

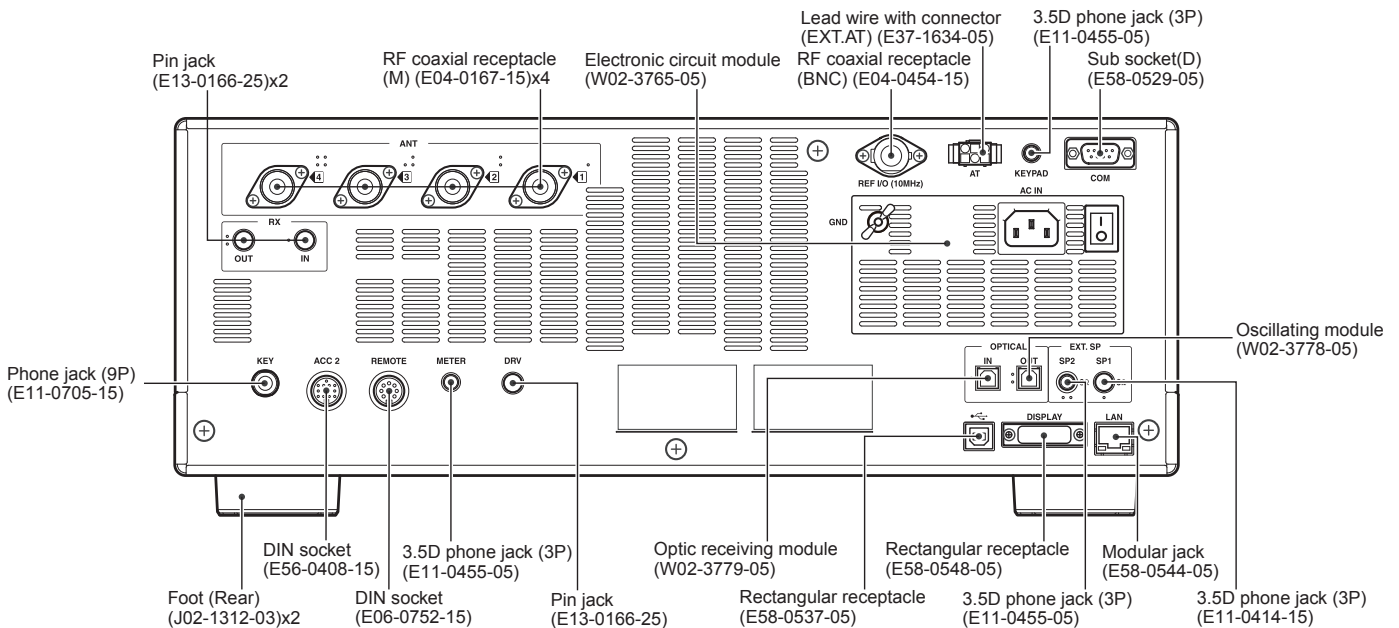
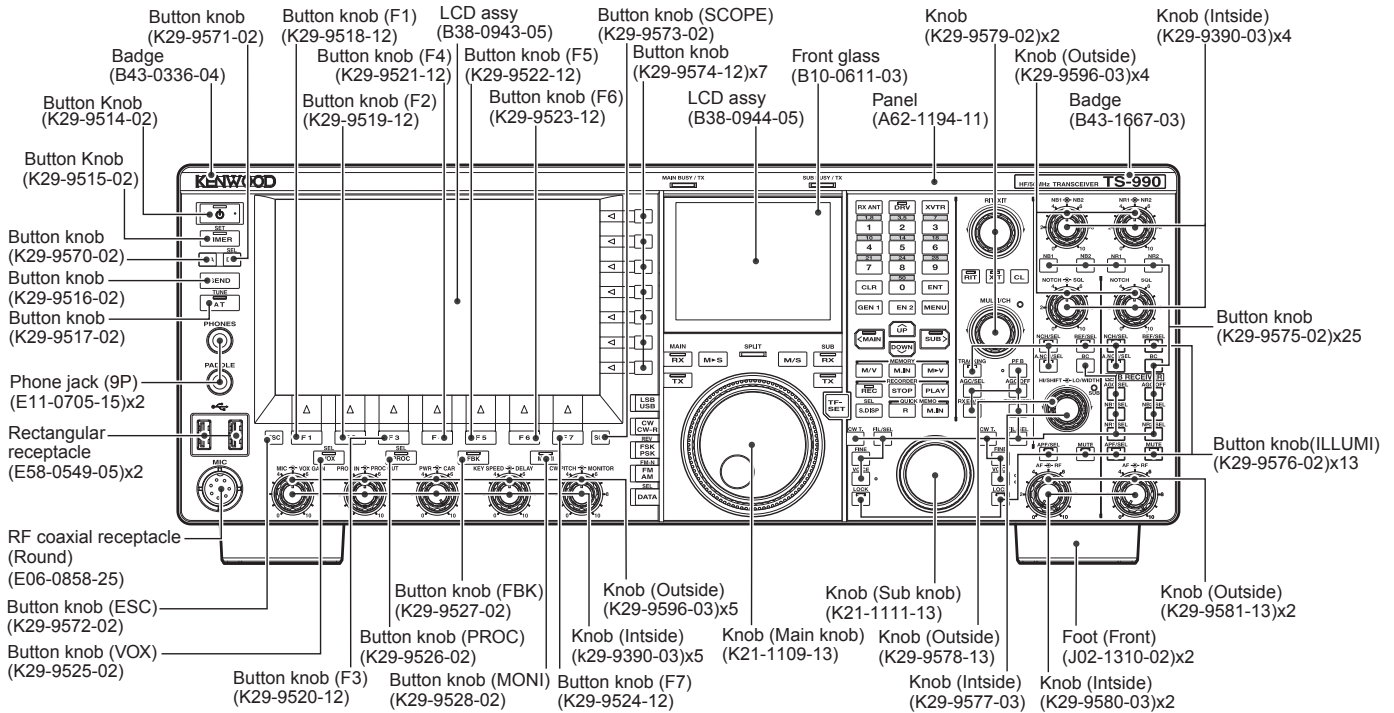
HF/50MHz TRANSCEIVER  
**TS-990S**

EXTERNAL SPEAKER  
**SP-990**  
**SERVICE MANUAL**  
**TEXT EDITION**

**KENWOOD**

JV KENWOOD Corporation

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### Safety Check after Repairs

Perform the insulation resistance test for the security of the product, after repairs.

#### ■ Point to be checked

Check that the power supply plug does not have poor contacts and that there is no garbage or conductive materials stuck between the terminals. If the power supply cord is damaged, do not repair it using tape; replace it with the specified part.

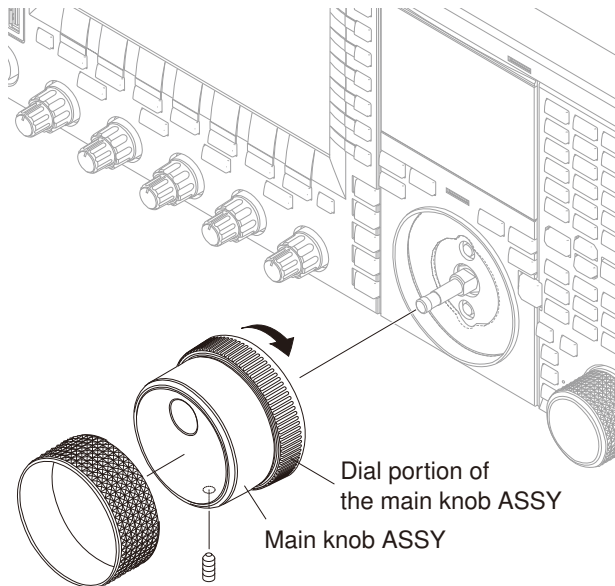
#### ■ Safety study

After repairs have been completed, remove the power supply cord from the outlet, the antenna, the outside connection cable, etc., and insert the power switch. Using a 500V DC insulation resistance meter, check the insulation between each terminal of the attachment plug and the antenna terminal and other outside metal parts, and ensure that the insulation resistance levels are more than  $4M\Omega$ . When the insulation resistance level is lower than this value, check repair of the transceiver is required.

## DISASSEMBLY FOR REPAIR

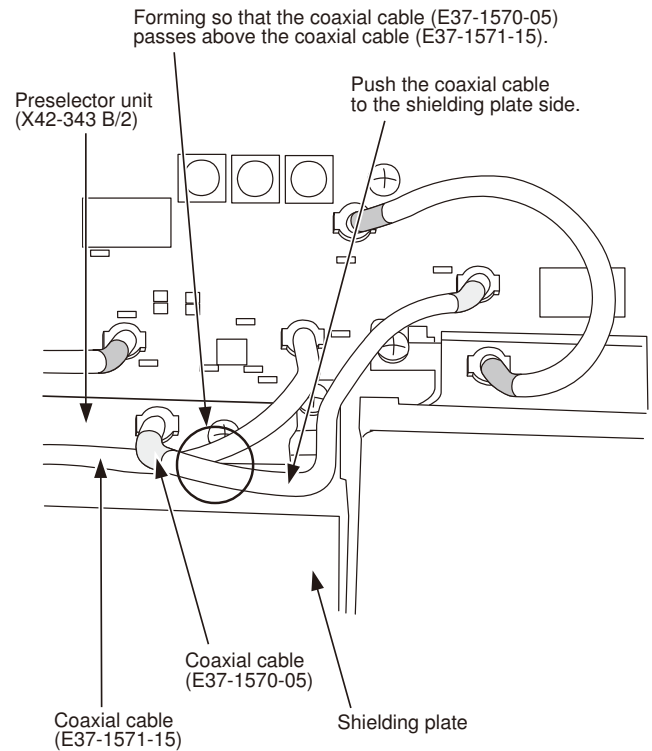
### Cautions for reassembling the main knob ASSY

Rotate the dial portion of the main knob ASSY clockwise to its maximum position (torque OFF), then attach the main knob ASSY to the panel.



### Forming the two coaxial cables (E37-1570-05, E37-1571-15)

Forming the two coaxial cables (E37-1570-05, E37-1571-15) as shown in the figure.



## CIRCUIT DESCRIPTION

### 1. Main Receiver Block

#### 1-1. Frequency Configuration

While receiving with the main receiver, the 1st IF operates in 8.248MHz double conversion. In modes other than

FM, 24kHz is used as the 2nd IF frequency. The 2nd IF is A/D converted and is applied to the DSP. In FM mode, the 1st IF signal (8.248MHz) is discriminated to an audio signal by the FM IC. It is then A/D converted and applied to the DSP.

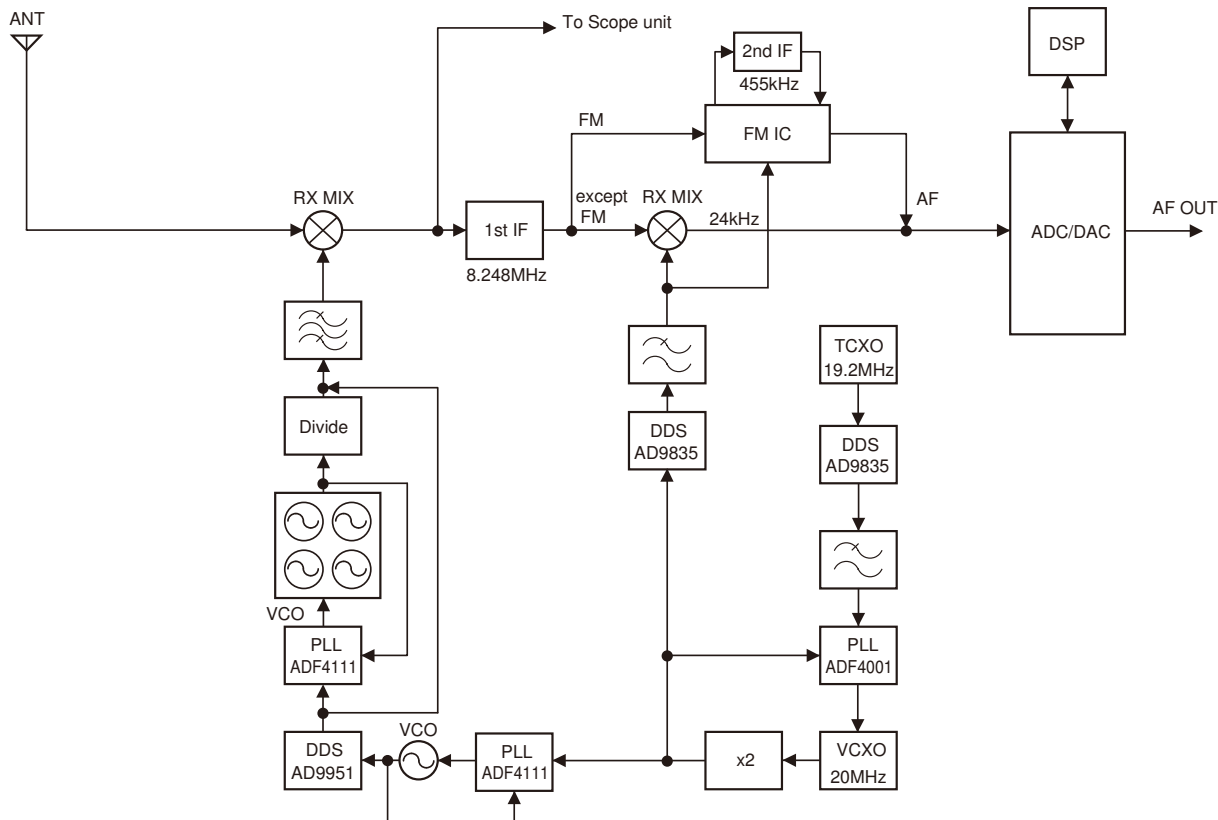


Fig. 1 Frequency configuration of the main receiver block

#### 1-2. Reference Signal Generator

##### ■ With Internal Reference Oscillation Signal Selected

The TCXO (X1) generates a 19.2MHz reference frequency for controlling the local oscillator frequency. The 19.2MHz signal is applied to the DDS (IC13) via the amplifier (Q10), and approximately 8.4MHz is generated. A signal at approximately 8.4MHz generated by the DDS (IC13) is applied to the PLL (IC18) via the ceramic filter (CF1). The frequency of the PLL (IC18) input is divided inside the PLL (IC18) and is used as a comparison frequency ( $f_0$ ).

The VCXO (X2) is a Voltage-Controlled Crystal Oscillator which generates 20MHz. The signal output from the VCXO (X2) is applied to D49 via a buffer (Q78), amplifier (Q79) and LPF, and is frequency-doubled by D49 to generate 40MHz. The 40MHz signal passes through the amplifier (Q82) and LPF, and is applied to the PLL (IC18) with the frequency of the signal divided by N in the PLL (IC18). The signal with its frequency divided by N and the  $f_0$  are compared by the phase comparator inside the PLL and the 40MHz is phase-locked. The phase-locked 40MHz is used as a reference signal for each local oscillator block.

##### ■ With External Reference Oscillation Signal Selected

The external 10MHz reference signal supplied from CN222 on the DC-DC unit (X43-322 A/3) to CN33 on the PLL (MAIN LO) unit (X50-322), is applied to the PLL (IC18) via the buffer (Q5) and AGC amplifier (Q11). When the external reference is selected, the external 10MHz is used as a reference signal for the PLL (IC18).

##### ■ External Output of 10MHz Reference Signal

The 40MHz which is generated for each local oscillator is applied to the frequency dividers (IC24 and IC25) via the amplifier (Q81) and LPF, and is frequency-divided by 4 to generate 10MHz. The obtained 10MHz reference signal is supplied to CN222 on the DC-DC unit via the amplifier (Q51), and is sent from CN220 to the external terminal (REF I/O (10MHz)).

##### ■ Frequency Adjustment

Frequency adjustment is made by fine-tuning the approximately 8.4MHz generated from the DDS (IC13).

## CIRCUIT DESCRIPTION

### 1-3. MLO1/MLO2

#### ■ MLO1 (1st Local Oscillator for Main Receiver)

The VCO (Q4) oscillates at 393.6MHz. It is applied to pin 5 of the PLL (IC2) via the BPF. The 40MHz reference signal is applied to pin 8. The signal which is applied to pin 5 of the PLL (IC2) is frequency-divided by N and the reference signal which is applied to pin 8 is frequency-divided by R. They are phase-compared to lock the phase, and the phase-locked 393.6MHz signal is used as the reference of the DDS (IC3).

The output signal from the DDS (IC3) is amplified by the wide-band amplifier (IC9). When using the DDS (IC3) output directly as the MLO1, it is sent via the BPF, buffer (IC23), amplifier (Q99) and BPF. When using the VCO as the MLO1, a signal which is amplified by the wide-band amplifier (IC9) is applied to pin 8 of the PLL (IC17) via the BPF.

There are four VCOs (Q25, Q26, Q38 and Q39) for the

MLO1. They oscillate at 82.78 to 138.992MHz. These oscillation outputs from the VCOs is applied to pin 5 of the PLL (IC17). The signal which is applied to pin 5 is frequency-divided by N and the signal which is applied to pin 8 is frequency-divided by R. They are phase-compared to lock the oscillating frequency, and used as a VCO output. The oscillation output from the VCO is applied to the frequency dividers (IC19, IC20, IC21 and IC22) where the frequency is divided by 4, 8, or 10. The frequency divided signal is passed through the amplifier (Q99) and BPF, and is sent as the MLO1.

#### ■ MLO2 (2nd Local Oscillator for Main Receiver)

The DDS (IC26) generates the MLO2 which is used for the detector. The DDS (IC26) output signal is sent from CN21 as the MLO2.

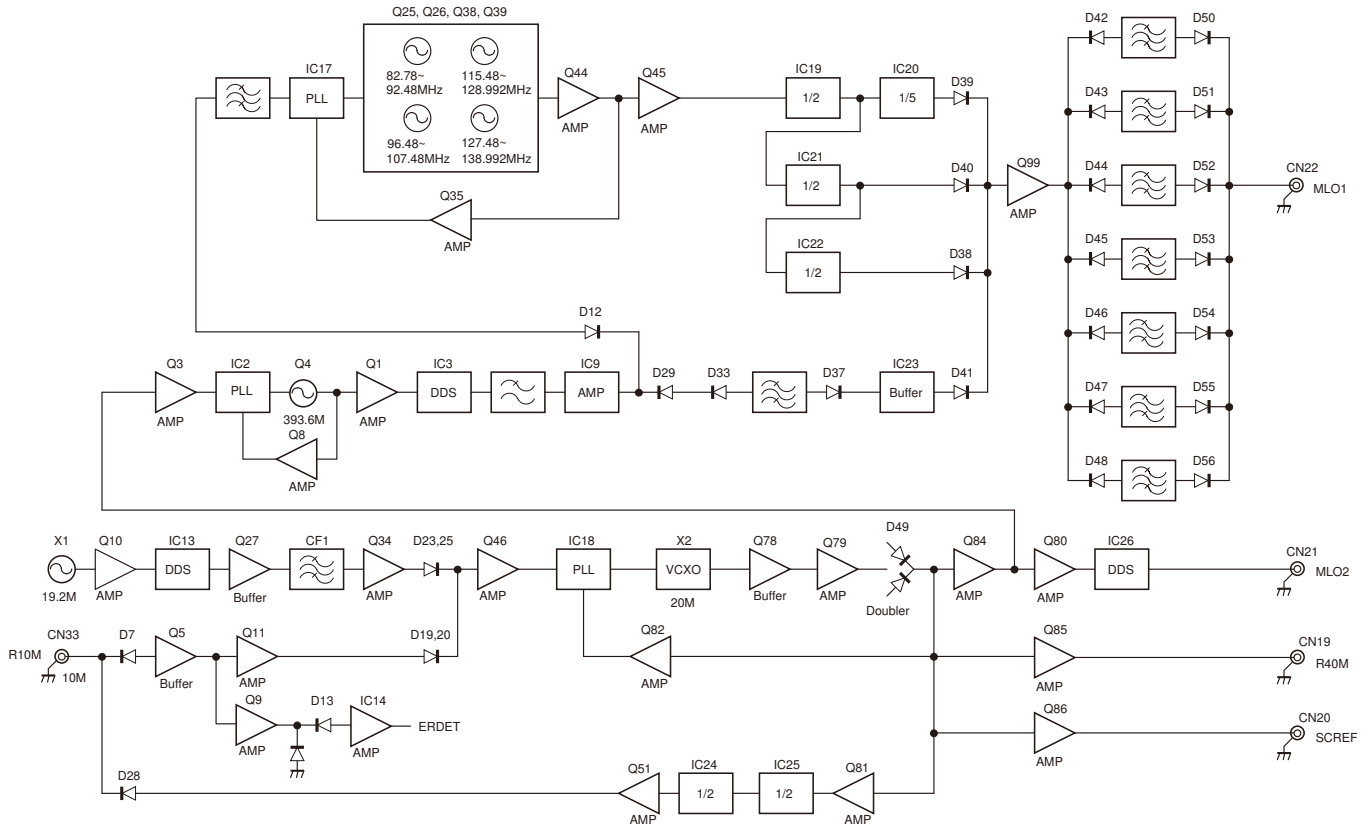


Fig. 2 Reference signal generator of the main receiver block, MLO1/MLO2

## CIRCUIT DESCRIPTION

● IF=8.248MHz

Frequency: 0.03 ~ 60MHz

MAIN RX MLO1		DDS AD9951 (MDEN1)											
		USB		USB-DATA		LSB		LSB-DATA		CW		CW-R	
		RX < 26.5	26.5 ≤ RX	RX < 26.5	26.5 ≤ RX	RX < 26.5	26.5 ≤ RX	RX < 26.5	26.5 ≤ RX	RX < 26.5	26.5 ≤ RX	RX < 26.5	26.5 ≤ RX
Mode offset 1		+(MDSPPFC)	+(MDSPPFC)	+(MDSHIFT)	+(MDSHIFT)	-(MDSPPFC)	-(MDSPPFC)	-(MDSHIFT)	-(MDSHIFT)	+(CW SHIFT)	+(CW SHIFT)	-(CW SHIFT)	-(CW SHIFT)
MAIN RIT		(ΔMRIT)	(ΔMRIT)	(ΔMRIT)	(ΔMRIT)	(ΔMRIT)	(ΔMRIT)	(ΔMRIT)	(ΔMRIT)	(ΔMRIT)	(ΔMRIT)	(ΔMRIT)	(ΔMRIT)
MAIN CAR	IF8M_2.7k	+(MCAR1)	-(MCAR1)	+(MCAR1)	-(MCAR1)	+(MCAR1)	-(MCAR1)	+(MCAR1)	-(MCAR1)	+(MCAR1)	-(MCAR1)	+(MCAR1)	-(MCAR1)
	IF8M_500	+(MCAR2)	-(MCAR2)	+(MCAR2)	-(MCAR2)	+(MCAR2)	-(MCAR2)	+(MCAR2)	-(MCAR2)	+(MCAR2)	-(MCAR2)	+(MCAR2)	-(MCAR2)
	IF8M_270	+(MCAR3)	-(MCAR3)	+(MCAR3)	-(MCAR3)	+(MCAR3)	-(MCAR3)	+(MCAR3)	-(MCAR3)	+(MCAR3)	-(MCAR3)	+(MCAR3)	-(MCAR3)

MAIN RX MLO1		DDS AD9951 (MDEN1)											
		PKS		PKS-R		FSK		FSK-R		AM		FM (FM-DATA)	
		RX < 26.5	26.5 ≤ RX	RX < 26.5	26.5 ≤ RX	RX < 26.5	26.5 ≤ RX	RX < 26.5	26.5 ≤ RX	RX < 26.5	26.5 ≤ RX	RX < 26.5	26.5 ≤ RX
Mode offset 1		0	0	0	0	-(FSK SHIFT/2)	-(FSK SHIFT/2)	-(FSK SHIFT/2)	-(FSK SHIFT/2)	0	0	0	0
MAIN RIT		(ΔMRIT)	(ΔMRIT)	(ΔMRIT)	(ΔMRIT)	(ΔMRIT)	(ΔMRIT)	(ΔMRIT)	(ΔMRIT)	(ΔMRIT)	(ΔMRIT)	(ΔMRIT)	(ΔMRIT)
MAIN CAR	IF8M_2.7k	+(MCAR1)	-(MCAR1)	+(MCAR1)	-(MCAR1)	+(MCAR1)	-(MCAR1)	+(MCAR1)	-(MCAR1)				
	IF8M_500	+(MCAR2)	-(MCAR2)	+(MCAR2)	-(MCAR2)	+(MCAR2)	-(MCAR2)	+(MCAR2)	-(MCAR2)				
	IF8M_270	+(MCAR3)	-(MCAR3)	+(MCAR3)	-(MCAR3)	+(MCAR3)	-(MCAR3)	+(MCAR3)	-(MCAR3)				

MLO2		DDS AD9951 (MDEN1)											
		USB		USB-DATA		LSB		LSB-DATA		CW		CW-R	
		RX < 26.5	26.5 ≤ RX	RX < 26.5	26.5 ≤ RX	RX < 26.5	26.5 ≤ RX	RX < 26.5	26.5 ≤ RX	RX < 26.5	26.5 ≤ RX	RX < 26.5	26.5 ≤ RX
Mode offset 1		+(MDSPPFC)	-(MDSPPFC)	+(MDSHIFT)	-(MDSPPFC)	-(MDSPPFC)	+(MDSPPFC)	-(MDSHIFT)	+(MDSPPFC)	+(CW SHIFT)	-(CW SHIFT)	-(CW SHIFT)	+(CW SHIFT)
MAIN CAR	IF8M_2.7k	+(MCAR1)	+(MCAR1)	+(MCAR1)	+(MCAR1)	+(MCAR1)	+(MCAR1)	+(MCAR1)	+(MCAR1)	+(MCAR1)	+(MCAR1)	+(MCAR1)	+(MCAR1)
	IF8M_500	+(MCAR2)	+(MCAR2)	+(MCAR2)	+(MCAR2)	+(MCAR2)	+(MCAR2)	+(MCAR2)	+(MCAR2)	+(MCAR2)	+(MCAR2)	+(MCAR2)	+(MCAR2)
	IF8M_270	+(MCAR3)	+(MCAR3)	+(MCAR3)	+(MCAR3)	+(MCAR3)	+(MCAR3)	+(MCAR3)	+(MCAR3)	+(MCAR3)	+(MCAR3)	+(MCAR3)	+(MCAR3)

MLO2		DDS AD9951 (MDEN1)											
		PKS		PKS-R		FSK		FSK-R		AM		FM (FM-DATA)	
		RX < 26.5	26.5 ≤ RX	RX < 26.5	26.5 ≤ RX	RX < 26.5	26.5 ≤ RX	RX < 26.5	26.5 ≤ RX	RX < 26.5	26.5 ≤ RX	RX < 26.5	26.5 ≤ RX
Mode offset 1		0	0	0	0	0	0	0	0	0	0	0	0
MAIN CAR	IF8M_2.7k	+(MCAR1)	+(MCAR1)	+(MCAR1)	+(MCAR1)	+(MCAR1)	+(MCAR1)	+(MCAR1)	+(MCAR1)				
	IF8M_500	+(MCAR2)	+(MCAR2)	+(MCAR2)	+(MCAR2)	+(MCAR2)	+(MCAR2)	+(MCAR2)	+(MCAR2)				
	IF8M_270	+(MCAR3)	+(MCAR3)	+(MCAR3)	+(MCAR3)	+(MCAR3)	+(MCAR3)	+(MCAR3)	+(MCAR3)				

(Δ MRIT): Main RIT frequency variable amount (-9.99~+9.99kHz)

(FSK SHIFT): FSK shift width frequency (170Hz, 200Hz, 425Hz, 850Hz, and initial value: 170Hz)

(CW SHIFT): CW shift amount

CAR correction: SSB IF-Filter adjustment range (The range is set to zero when an additional roofing filter is used.)

(MCAR1): Main, IF filter (2.7kHz) correction value

(MCAR2): Main, IF filter (500Hz) correction value

(MCAR3): Main, IF filter (270Hz) correction value

(MDSPPFC): Varied with the DSP filter set value

(MDSHIFT): DATA mode shift width frequency set value

**Table 1 MLO1/MLO2 frequency shift data**

## 2. Transmission and Sub Receiver Blocks

### 2-1. Frequency Configuration

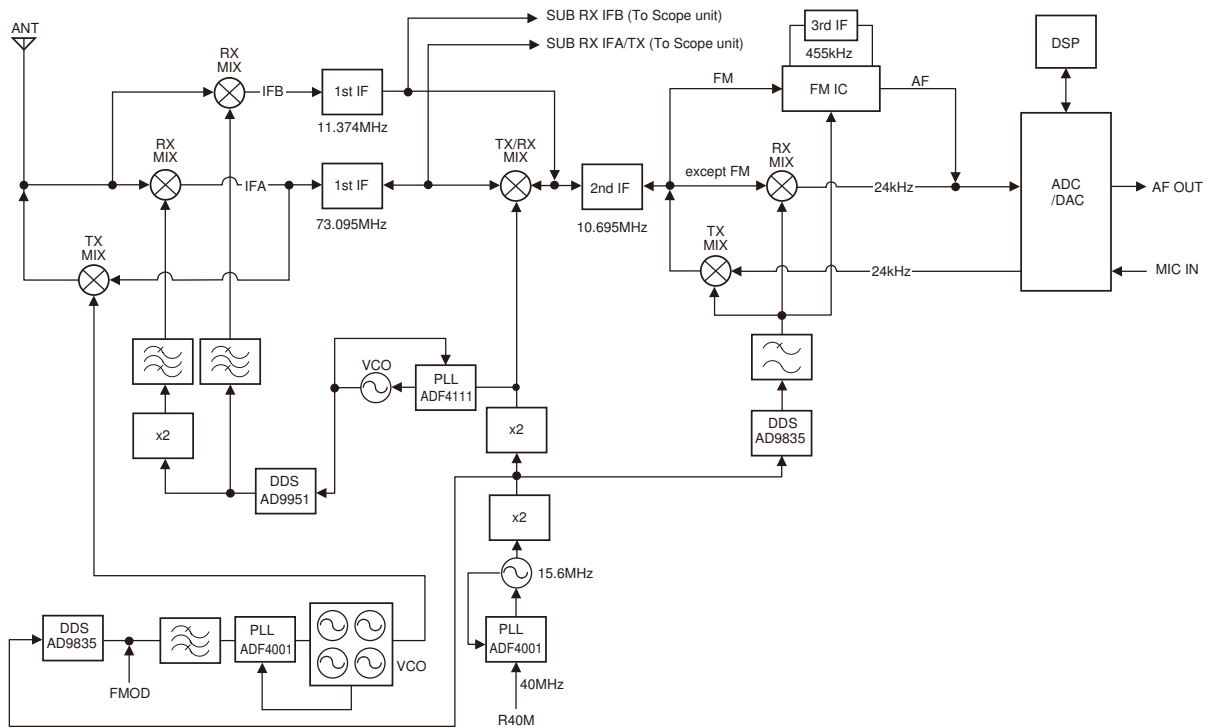
When transmitting in FM mode, it works in double conversion, and when transmitting in AM, SSB, CW, FSK or PSK mode, it works in triple conversion.

While sub receiving, the 1st IF works in 73.095MHz triple conversion. In modes other than FM, the 3rd IF works in 24kHz, and the IF signal is converted by an A/D converter (ADC) and is applied to DSP. In FM mode, the audio signal is discriminated by the FM IC, and is converted into the digi-

tal signal by an ADC and then is applied to the DSP. Under the following conditions, the 1st IF of the sub receiver block works in 11.374MHz double conversion.

- 1) Modes other than AM or FM
- 2) 1.8/ 3.5/ 7/ 14/ 21MHz amateur bands
- 3) DSP filter's bandwidth is 2.7kHz or lower

## CIRCUIT DESCRIPTION



**Fig. 3 Frequency configuration of the transmission and sub receiver blocks**

### 2-2. Reference Signal Generator

The frequency of the voltage-controlled crystal oscillator (VCXO: X1 and Q13) is locked to 15.6MHz and used as a reference frequency for the transmission and sub receiver blocks. The 15.6MHz signal is applied to pin 5 of the PLL (IC1) via the buffer (Q19) and amplifier (Q2). The signal which is applied to pin 5 is divided by N, and the 40MHz reference signal which is applied to pin 8 is divided by R. These signals are phase-compared to lock the VCXO frequency at 15.6MHz. The phase-locked 15.6MHz is frequency-doubled by the multiplier (Q34) to generate 31.2MHz.

The 31.2MHz is used as a reference signal for the DDS (IC12) for the 3rd local oscillator (SLO3) and the DDS (IC11) for transmission 1st local oscillator (TLO1). The 31.2MHz is frequency-doubled by the multiplier (Q50 and Q52) to generate 62.4MHz, and is used as a reference signal for the PLL (IC10) that generates a reference signal for the receiver's 1st local oscillator (SLO1).

### 2-3. TLO1/SLO1/SLO2/SLO3

#### ■ TLO1 (1st Local Oscillator for Transmission)

The DDS (IC11) outputs a frequency ranging from 8.33 to 8.47MHz in reference to the 31.2MHz. It passes through the ceramic filter (CF1) and is applied to the PLL (IC16). The 8.33 to 8.47MHz is divided by R by the PLL (IC16) and is used for a phase comparison frequency ( $f_0$ ).

The VCO (Q17, Q18, Q39, and Q40) of TLO1 oscillates at frequencies ranging from 73.125 to 133.125MHz. It is applied to pin 5 of the PLL (IC16) and is divided by N inside the PLL.

The phase comparator inside the PLL compares the phase between  $f_0$  and the frequency divided by N, and generates the phase-locked oscillation signal for the TL01. The output signal from the VCO (Q17, Q18, Q39, and Q40) is amplified by Q56, passes through the BPF, ATT and LPF, and is sent as the TLO1 (73.1 to 133.1MHz).

#### ■ SLO1 (1st Local Oscillator for Sub Receiver)

The VCO (Q16) oscillates at 393.6MHz. It is applied to pin 5 of the PLL (IC10) via the BPF, and the 62.4MHz which is obtained by multiplying the 15.6MHz reference frequency by 4 is applied to pin 8. The signal input to pin 5 is divided by N and input to pin 8 is divided by R. They are phase-compared to phase-lock the frequency, which is used as a reference of DDS (IC14).

The DDS outputs the 13.17 to 32.88MHz with the IFB selected. It is amplified by the wide-band amplifier (IC15), and output as an SLO1 via the BPF. The DDS outputs the 36.56 to 66.55MHz with the IFA selected, and is amplified by the wide-band amplifier (IC15). The output is frequency-doubled by the multiplier (D19), and is sent as an SLO1 (73.1 to 133.1MHz) via the BPF.

#### ■ SLO2 (2nd Local Oscillator for Sub Receiver)

The SLO2 outputs a 62.4MHz signal which is the 15.6MHz reference frequency multiplied by 4.

The 15.6MHz which is sent from the reference oscillation is applied to the frequency doubler (Q34) via the buffers (Q19 and Q25), and 31.2MHz is generated. The 31.2MHz is frequency doubled by the multiplier (Q50 and Q52) to generate



## CIRCUIT DESCRIPTION

a 62.4MHz.

The harmonic components are cut by the BPF from the 62.4MHz, amplified by Q57, and output as an SLO2.

The diode switch (D52) cuts the output of SLO2 if IFB is selected.

### ■ SLO3 (3rd Local Oscillator for Sub Receiver)

The DDS (IC12) generates an SLO3 which is used for the modulator and detector.

The DDS outputs the signal via the BPF as an SLO3.

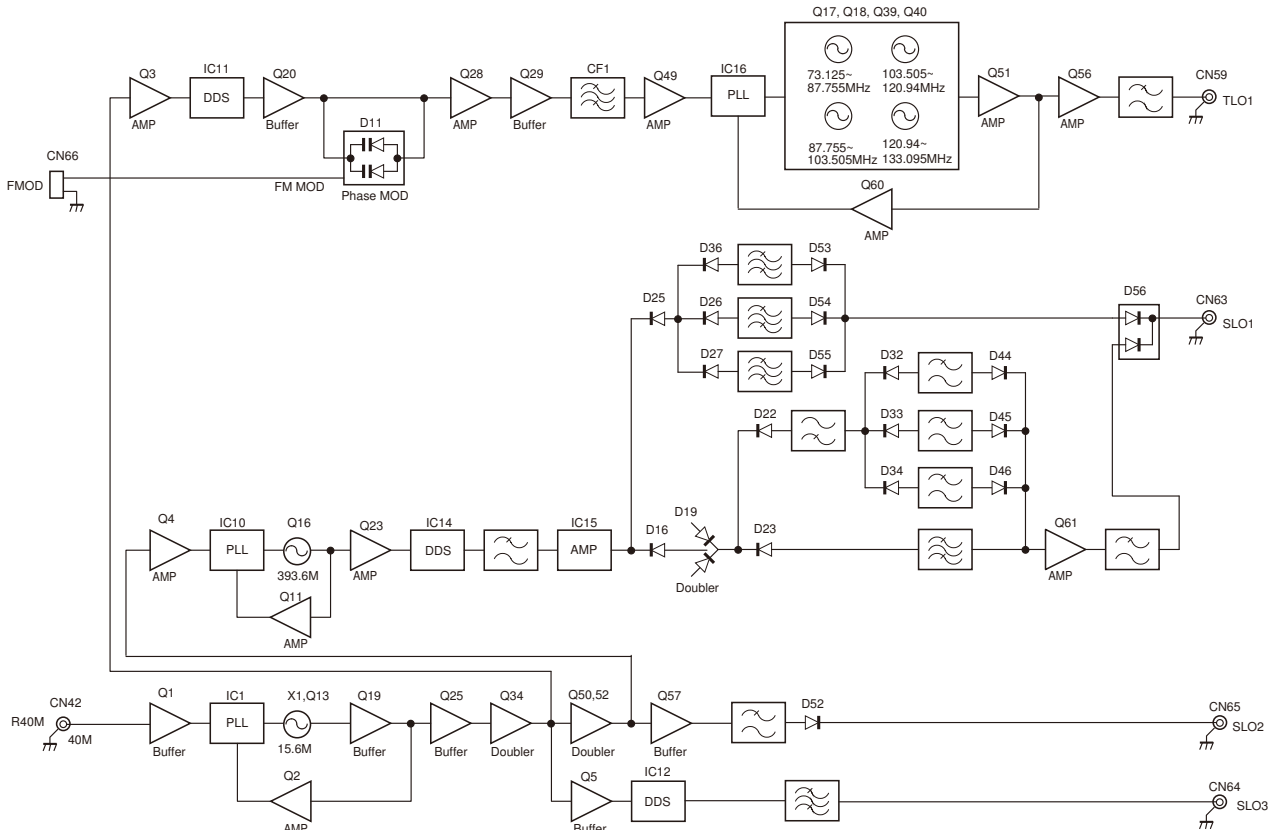


Fig. 4 Reference signal generator of the transmitter and receiver block, TLO1/SLO1/SLO2/SLO3



## CIRCUIT DESCRIPTION

### ● IFA=73M

Frequency: 0.03 ~ 60MHz

SUB RX IFA SLO1		AD9951 (SDEN1)											
		USB	USB-DATA	LSB	LSB-DATA	CW	CW-R	PKS	PKS-R	FSK	FSK-R	AM	FM (FM-DATA)
Filter offset 1		+(SDSPFC)	+(SDSHIFT)	-(SDSPFC)	-(SDSHIFT)	+(CW SHIFT)	-(CW SHIFT)	0	0	-(FSK SHIFT/2)	-(FSK SHIFT/2)	0	0
RIT		(ΔSRIT)	(ΔSRIT)	(ΔSRIT)	(ΔSRIT)	(ΔSRIT)	(ΔSRIT)	(ΔSRIT)	(ΔSRIT)	(ΔSRIT)	(ΔSRIT)	(ΔSRIT)	(ΔSRIT)
SUB CAR	IF10M_2.7k	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	-	-

### ● IFB=11M

Frequency: 0.03 ~ 21.5MHz

SUB RX IFB SLO1		AD9951 (SDEN1)									
		USB	USB-DATA	LSB	LSB-DATA	CW	CW-R	PKS	PKS-R	FSK	FSK-R
Filter offset 1		+(SDSPFC)	+(SDSHIFT)	-(SDSPFC)	-(SDSHIFT)	+(CW SHIFT)	-(CW SHIFT)	0	0	-(FSK SHIFT/2)	-(FSK SHIFT/2)
RIT		(ΔSRIT)	(ΔSRIT)	(ΔSRIT)	(ΔSRIT)	(ΔSRIT)	(ΔSRIT)	(ΔSRIT)	(ΔSRIT)	(ΔSRIT)	(ΔSRIT)
SUB CAR	IF11M_2.7k	+(SCAR2)	+(SCAR2)	+(SCAR2)	+(SCAR2)	+(SCAR2)	+(SCAR2)	+(SCAR2)	+(SCAR2)	+(SCAR2)	+(SCAR2)
	IF11M_500	+(SCAR3)	+(SCAR3)	+(SCAR3)	+(SCAR3)	+(SCAR3)	+(SCAR3)	+(SCAR3)	+(SCAR3)	+(SCAR3)	+(SCAR3)

SLO3		AD9835 (SDEN2)											
		USB	USB-DATA	LSB	LSB-DATA	CW	CW-R	PKS	PKS-R	FSK	FSK-R	AM	FM (FM-DATA)
Filter offset 1		+(SDSPFC)	+(SDSHIFT)	-(SDSPFC)	-(SDSHIFT)	+(CW SHIFT)	-(CW SHIFT)	0	0	0	0	0	0
SUB CAR	IF10M_2.7k	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	-	-
	IF11M_2.7k	+(SCAR2)	+(SCAR2)	+(SCAR2)	+(SCAR2)	+(SCAR2)	+(SCAR2)	+(SCAR2)	+(SCAR2)	+(SCAR2)	+(SCAR2)	-	-
	IF11M_500	+(SCAR3)	+(SCAR3)	+(SCAR3)	+(SCAR3)	+(SCAR3)	+(SCAR3)	+(SCAR3)	+(SCAR3)	+(SCAR3)	+(SCAR3)	-	-

(Δ SRIT): Sub RIT frequency variable amount (-9.99~+9.99kHz)

(FSK SHIFT): FSK shift width frequency (170Hz, 200Hz, 425Hz, 850Hz, and initial value: 170Hz)

(CW SHIFT): CW shift amount

CAR correction: SSB IF-Filter adjustment range

(SCAR1): IF 10.695MHz SSB IF filter (2.7kHz) correction value

(SCAR2): IF 11.374MHz, IF filter (2.7kHz) correction value

(SCAR3): IF 11.374MHz, IF filter (500Hz) correction value

(SDSPFC): Varied with the DSP filter set value

(SDSHIFT): DATA mode shift width frequency set value

**Table 2 SLO1/SLO3 (When receiving) frequency shift data**

### ● IF=73M

Frequency: 0.03 ~ 60MHz

TX TLO1		DDS AD9835 (SDEN3)											
		USB	USB-DATA	LSB	LSB-DATA	CW	CW-R	PKS	PKS-R	FSK	FSK-R	AM	FM (FM-DATA)
Filter offset 1		+1.5k	+1.5k	-1.5k	-1.5k	0	0	0	0	-(FSK SHIFT/2)	-(FSK SHIFT/2)	0	0
XIT		(ΔXIT)	(ΔXIT)	(ΔXIT)	(ΔXIT)	(ΔXIT)	(ΔXIT)	(ΔXIT)	(ΔXIT)	(ΔXIT)	(ΔXIT)	(ΔXIT)	(ΔXIT)
CAR *1	IF10M_2.7k	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	-	-

SLO3		DDS AD9835 (SDEN2)											
		USB	USB-DATA	LSB	LSB-DATA	CW	CW-R	PKS	PKS-R	FSK	FSK-R	AM	FM (FM-DATA)
Filter offset 1		+1.5k	+1.5k	-1.5k	-1.5k	0	0	0	0	0	0	0	0
CAR	IF10M_2.7k	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	+(SCAR1)	-	-

(Δ XIT): XIT frequency variable amount (-9.99~+9.99kHz)

(FSK SHIFT): FSK shift width frequency (170Hz, 200Hz, 425Hz, 850Hz, and initial value: 170Hz)

CAR correction: SSB IF-Filter adjustment range

(CAR1): IF10.695MHz SSB Normal Filter correction value

**Table 3 TLO1/SLO3 (When transmitting) frequency shift data**

## CIRCUIT DESCRIPTION

### 3. Main Receiver Circuit

#### 3-1. From the Antenna Terminal to the Preselector Amplifier (Q10 and Q11)

Figure 5 shows a front part of the block diagram for the main receiver circuit.

A double conversion is adopted for the main receiver process so that the 8.248MHz is used for the 1st IF and the 24kHz (FM: 455kHz) is used for the 2nd IF frequency (Refer to table 4).

The received signal from ANT1~ANT4 is fed to CN1 (MRAT) via K801 to 804 relays on the antenna connector unit (X45-388 B/2) and K18, K19, K10, K14 relays on antenna switch unit (X53-441 A/2). (Fig. 28)

A received signal enters CN1 (MRAT) on the RX unit (X55-313 A/2). The signal input to the RX unit is fed to the ATT (OFF/6dB/12dB/18dB) selector, and is fed to the BPF unit (X55-313 B/2) via the surge current absorbing limiter, BC band attenuator (except 30kHz to 1.705MHz and 35 to 40MHz). The two traps (11.7MHz and 15.5MHz) are embedded in the BC trap in order to prevent interference from high power broadcast stations.

The BPF divides in the range as shown in table 5. BPFs for 30kHz to 1.705MHz and 35 to 40MHz are mounted on the RX unit, and BPFs for 1.705 to 60MHz (except 35 to 40MHz) are mounted on the BPF unit. In major amateur bands, the toroidal coils and air core inductor are used to reduce insertion loss in the passband by the BPF, and the relay is used to suppress distortion by a large signal for the switch. In order to prevent intermodulation ranging from 522kHz to 1.705MHz due to high power broadcasting stations, the ATT (attenuator) is mounted (ATT ON: CN50=open, CN60=short / ATT OFF: CN50=short, CN60=open).

The signal passed through the BPF is applied to the PRESEL unit (X42-343 B/10) where a preselector (tuning circuit of the single-peaked characteristic) that can be selected with a preselector key ([P.SEL] key) is mounted.

The preselector makes it possible to improve the selectivity of the receiver. If the preselector is selected, the preselector amplifier (Q10 and Q11) will be selected where the signal attenuated in the preselector will be compensated for.

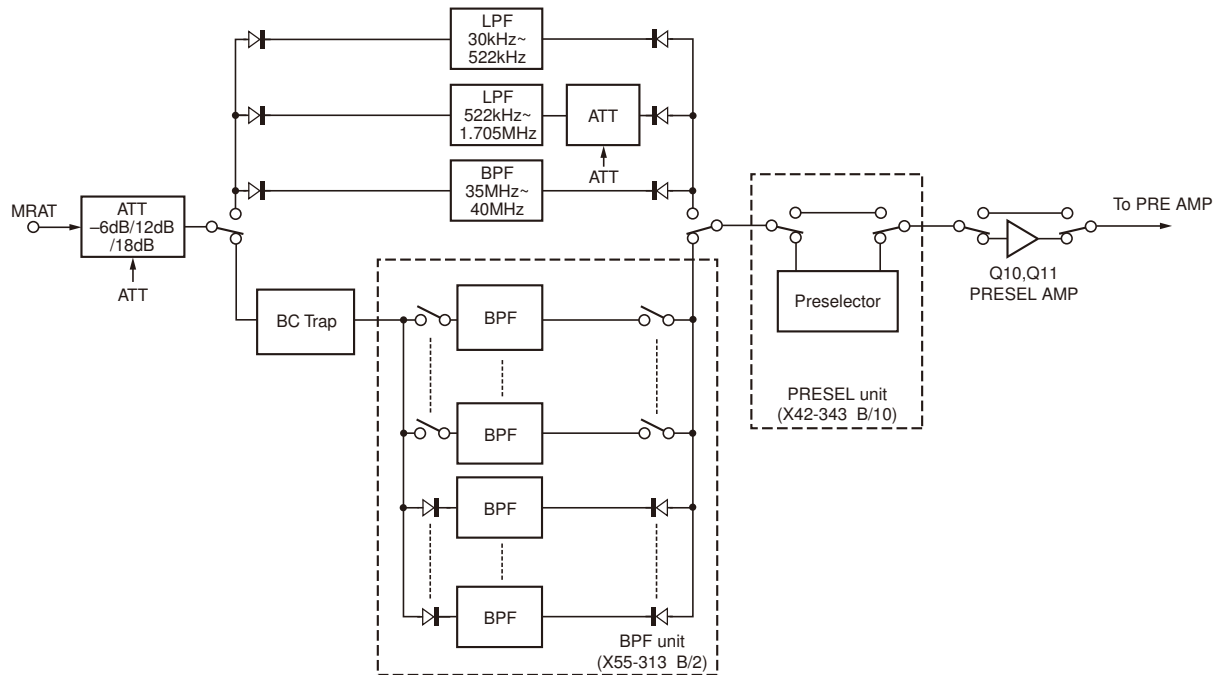


Fig. 5 Front part of the main receiver circuit

Mode		SSB	CW	FSK	AM	FM
RX-1 path	Conversion method	Double				
	IF frequency	1st	8.248MHz			
		2nd	24kHz			455kHz

Table 4 Mode, conversion method, and IF frequency

## CIRCUIT DESCRIPTION

Band	Filter range	SW
135kHz	30~522kHz	Diode
BC	522kHz~1.705MHz	Diode
1.8MHz	1.705~2.5MHz	Relay
3.5MHz	2.5~4.1MHz	Relay
5MHz	4.1~6.0MHz	Diode
7MHz	6.0~7.5MHz	Relay
10MHz	7.5~10.5MHz	Diode
14MHz	10.5~14.5MHz	Relay
18MHz	14.5~18.5MHz	Diode
21MHz	18.5~21.5MHz	Relay
24MHz	21.5~26.5MHz	Diode
28MHz	26.5~35MHz	Diode
35MHz	35~40MHz	Diode
40MHz	40~46.5MHz	Diode
50MHz	46.5~60MHz	Diode

**Table 5 BPF range**

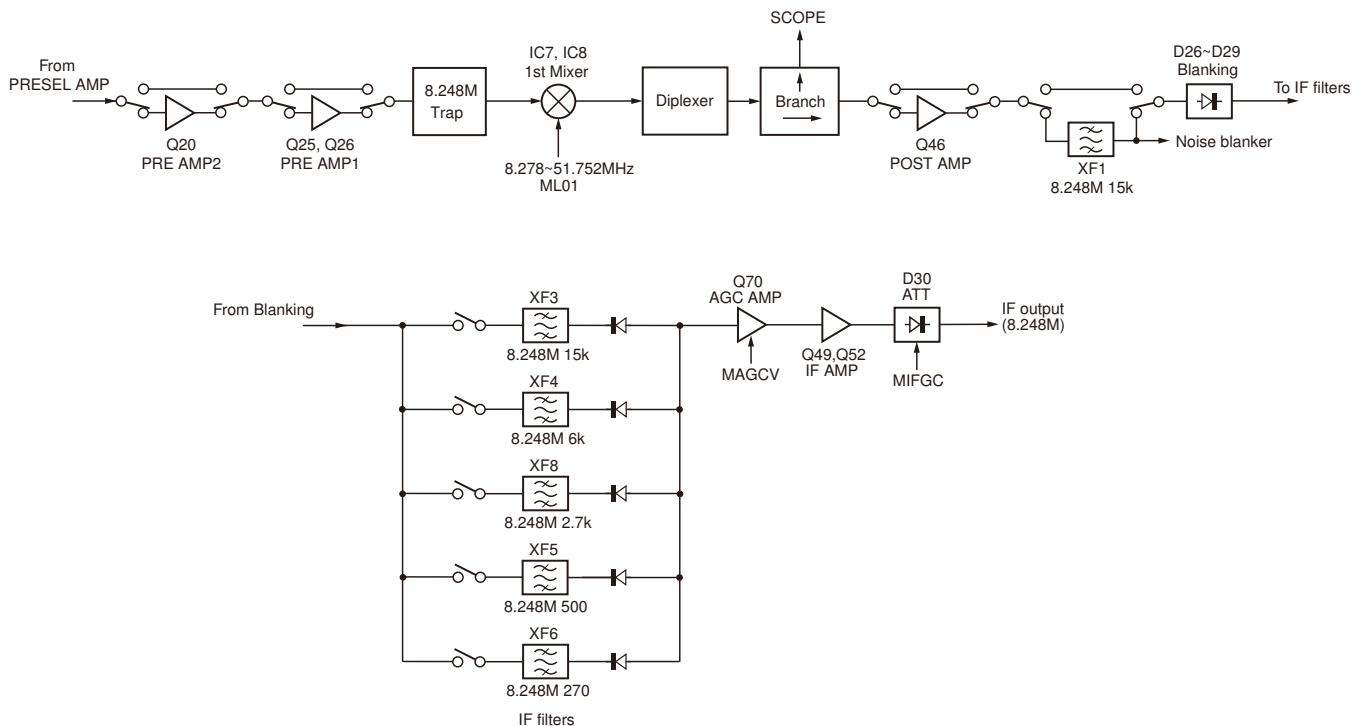
### 3-2. From the preselector amplifier (Q10 and Q11) to the 1st IF frequency (8.248MHz)

The output signal from the preselector amplifier (Q10 and Q11) is applied to two amplifiers, i.e., preamplifier 2 (Q20) and preamplifier 1 (Q25 and Q26) (Refer to Fig. 6). The pre-amplifier key ([P.AMP] key) is used to select preamp ON or OFF. When it is ON, preamplifier 1 is selected at 30kHz to 21.5MHz received frequency, and the preamplifier 2 is selected at 21.5 to 60MHz received frequency.

The signal from the preamplifier passes through the 8.248MHz IF trap and is mixed with the MLO1 output (ranging from 8.278 to 51.752MHz) in the 1st mixer of the double balanced grounded switch type consisting of IC7 and IC8 and converted into the 1st IF (8.248MHz).

The diplexer enables the wide-band matching of the mixer output impedance. The 1st IF signal from the diplexer is divided into two in the branch circuit, one of which is applied to the scope unit (X42-343 A/10) and the other is applied to the post amplifier (Q46). The post amplifier is selected only when the preamplifiers (preamplifier 1 or preamplifier 2) are ON and has a gain of approximately 8 dB. The 1st IF is applied to the blanking gate circuit (D26 to D29). If the noise blanker is ON, the path to the noise blanker filter (2-pole MCF x 2: XF1) and the noise blanker circuit is active. The blanking signal by the noise blanker drives the blanking gate circuit, and the noise is removed. The 1st IF signal passes through the IF filter (roofing filter). One of 5 filters is selected, depending on the frequency and mode (Refer to Table 6). Although the IF filter is usually automatically chosen according to the DSP filter bandwidth, it can also change the IF filter chosen with the filter setting menu. An additional roofing filter prepared by the user can also be set up.

The 1st IF signal passing the IF filter is applied to the AGC amplifier (Q70) that uses a dual-gate FET. The AGC voltage (MAGCV) output from the DSP is applied to the gate of the AGC amplifier (Q70). The gain varies by approximately 60 dB with an AGC voltage change. The 1st IF signal is amplified by approximately 20 dB in the IF amplifier (Q49 and Q52) and passes through the attenuator circuit (D30) using a PIN diode. The voltage determined while in adjustment mode is applied to D30 to compensate for the insertion loss of the IF filters (270Hz, 500Hz, 2.7kHz, 6kHz and 15kHz filters).



**Fig. 6 From the preselector amplifier (Q10 and Q11) to the 1st IF frequency (8.248MHz)**

## CIRCUIT DESCRIPTION

IF frequency	IF filter	Mode				
		FM	AM	SSB	FSK	CW
8.248MHz	15kHz	○	○	*1	*1	*1
	6kHz		○	○	*1	*1
	2.7kHz		*1	○	○	○
	500Hz		*1	○	○	○
	270Hz		*1	○	○	○

\*1 : manually selectable

**Table 6** Selecting an IF filter

### 3-3. From the 2nd IF to the MRIF output

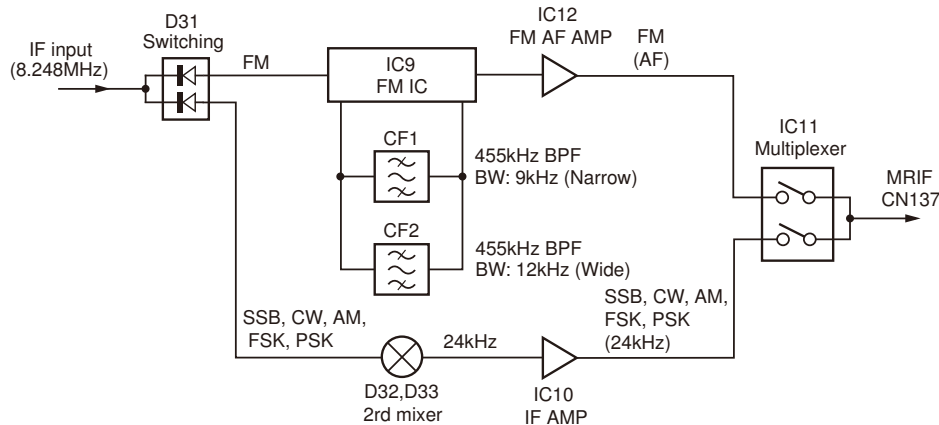
In FM mode, the signal passing through D30 is applied to the FM IC (IC9) via D31. In modes other than FM, the signal passing through D30 is input to the AM/SSB/CW/FSK/PSK mode mixer (D32 and D33) via D31 (Refer to Fig. 7).

In FM mode, the FM signal is mixed with the MLO2 (7.793MHz) output in the FM wave detecting IC and converted into the 2nd IF (455kHz). The 2nd IF signal passes through the ceramic filters (CF1: 9kHz (narrow) and CF2:

12kHz (wide)), is demodulated into audio signals and amplified by the FM AF AMP (IC12).

Signals other than FM mode are mixed in the AM/SSB/CW/FSK/PSK mode mixer (D32 and D33) with the MLO2 (8.224MHz) output, converted to the 2nd IF (24kHz), and amplified by the IF AMP (IC10).

These signals are output to the DSP unit (X53-453) through the MRIF connector (CN137).



**Fig. 7** From the 2nd IF to the MRIF output

### 3-4. Preselector circuit

This transceiver has a preselector on the PRESEL unit (X42-343 B/10). This function can be turned ON and OFF with a panel switch.

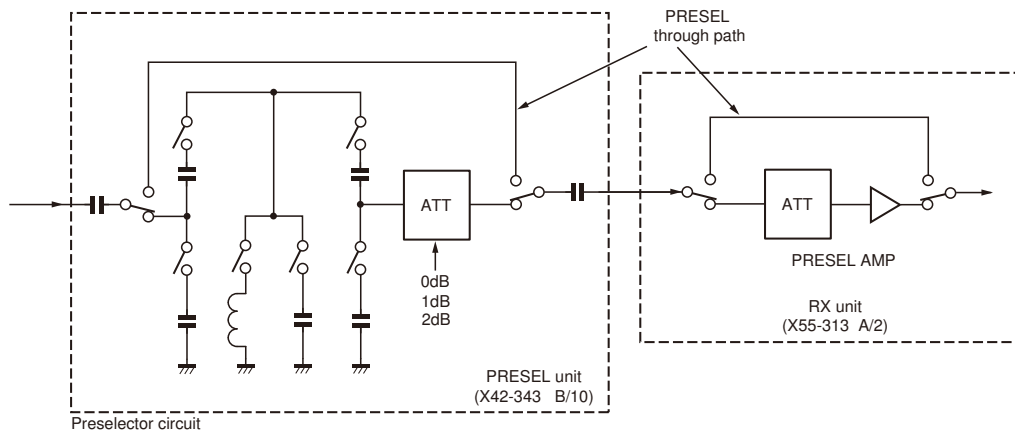
The preselector forms narrow band-pass filters in which inductors and capacitors are switched with relays for respective amateur bands. (Refer to Table 7.)

The filters cause an insertion loss of about 10 dB by the band if the preselector function is used. This insertion loss is compensated with the combined use of the variable attenuator (ATT) in the PRESEL unit and the preselector AMP (Q10 and Q11) in the RX unit (X55-313 A/2).

Band	Preselector operation frequency
1.8MHz	1.7975~2.00499MHz
3.5MHz	3.4925~4.01749MHz
5MHz	5.2400~5.46999MHz
7MHz	6.9800~7.33999MHz
10MHz	9.9800~10.17999MHz
14MHz	13.9500~14.44999MHz
18MHz	18.0180~18.26799MHz
21MHz	20.9000~21.69999MHz
24.9MHz	24.7900~25.18999MHz
28MHz	27.9000~29.89999MHz

**Table 7** Preselector operation frequency

## CIRCUIT DESCRIPTION



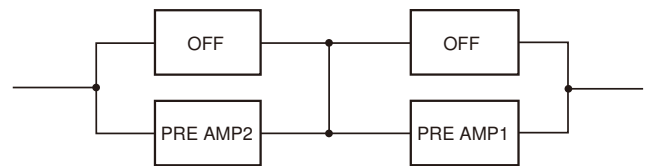
**Fig. 8 Preselector circuit**

### 3-5. Preamplifier circuit

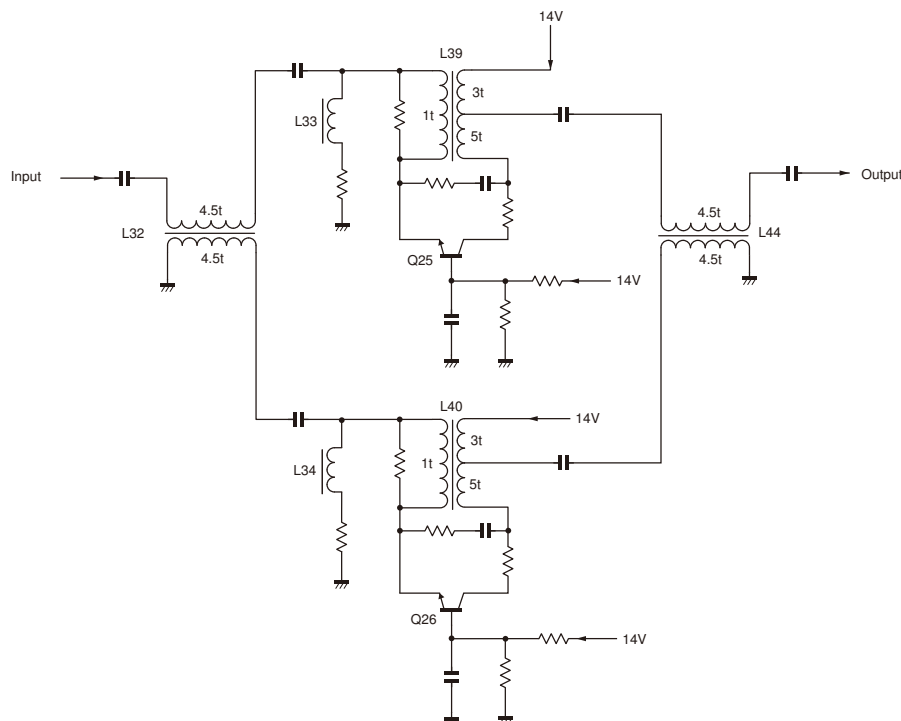
The preamplifier circuit consists of two amplifiers: preamplifier 1 and preamplifier 2. Preamplifier 1 operates at 30kHz to 21.5MHz, and has a gain of approximately 9 dB. Preamplifier 2 operates at 21.5 to 60MHz, and has a gain of approximately 22 dB.

Preamplifier 1 is a noiseless feedback amplifier of the transformer-feedback type, and incorporates a push-pull circuit in order to improve the IMD (Intermodulation Distortion) characteristics. Preamplifier 2 uses a bipolar transistor (Q20) and forms a grounded emitter circuit.

The preamplifier can be passed by turning off the P.AMP display with the [P.AMP] key (Refer to Table 8.).

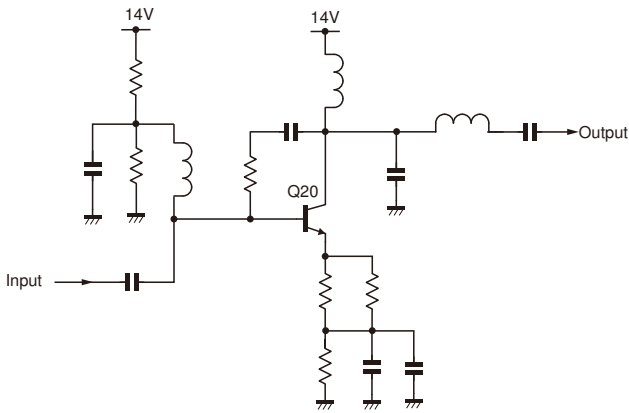


**Fig. 9 Configuration of the preamplifier**



**Fig. 10 Preamplifier 1 circuit**

## CIRCUIT DESCRIPTION



**Fig. 11 Preamplifier 2 circuit**

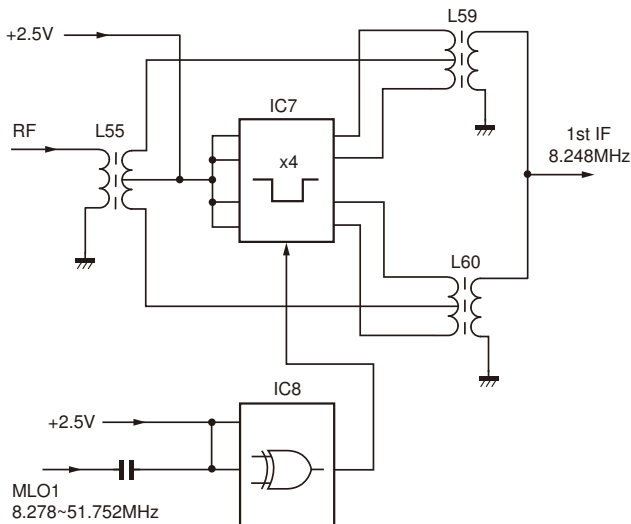
Screen display	Circuit operation		Preamplifier gain	Post amplifier
	Preamplifier circuit 1	Preamplifier circuit 2		
OFF	OFF	OFF	0dB	OFF
P.AMP	ON	OFF	9dB	ON
	OFF	ON	22dB	ON

**Table 8 Preamplifier key display**

### 3-6. 1st Mixer

The 1st mixer is of double balanced grounded switch type incorporating the bus switch (IC7) and logic driver (IC8), and the signal from the 1st mixer is mixed with the MLO1 (8.278 to 51.752MHz) at a level of approximately +10 dBm and is converted into the 1st IF (8.248MHz).

A bias voltage of 2.5 V from the bus switch is applied to IC7 and a voltage of 2.5 V for duty ratio determination is applied to IC8.



**Fig. 12 1st mixer circuit**

### 3-7. Noise Blanker Filter and IF Filter Adjustments

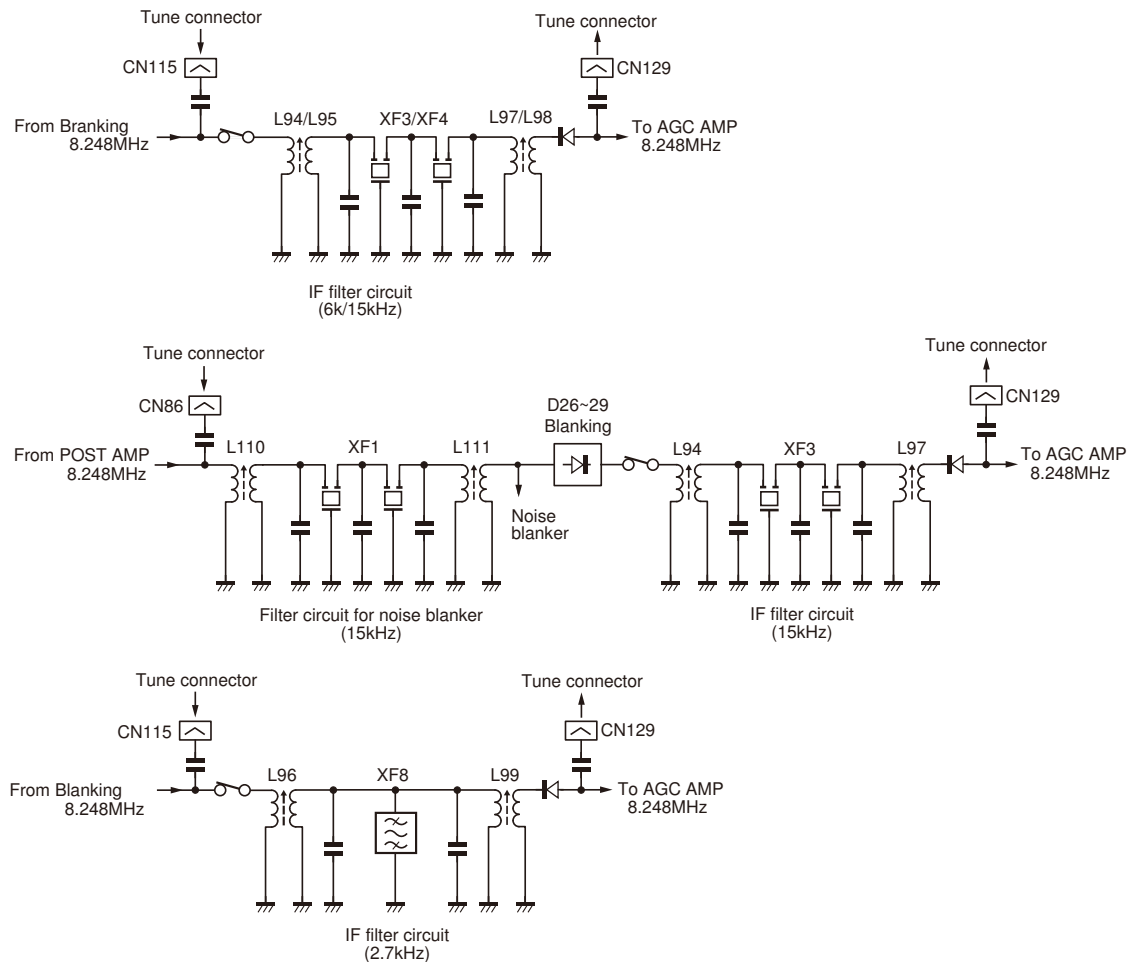
Five types of filters (MCFs and crystal filters) are used as a noise blanker filter and IF filters at a center frequency of 8.248MHz. The noise blanker filter (XF1) and the IF filters (XF3, XF4, and XF8) with a passband width of 15kHz, 6kHz, and 2.7kHz need adjustments. The 500Hz and 270Hz IF filters (XF5 and XF6) incorporate variable inductors, which are precisely adjusted at the factory before shipping. Users do not need to adjust them. Adjust the IF filters first. Then, adjust the noise blanker filters.

The IF filter (XF3) is a 2-pole MCF and its passband width is 15kHz. Since the terminating impedance of the IF filter (XF3) is 5.6 k $\Omega$ , it is converted into 50  $\Omega$  by the variable inductors (L94 and L97). Connect an appropriate equipment, such as a tracking generator, to the IF filter adjustment connectors (CN115 and CN129) and turn the variable inductors (L94 and L97) to adjust the IF filter. The IF filter (XF4) is a 2-pole MCF, has a passband width of 6kHz and a terminating impedance of 2.4 k $\Omega$ . The IF filter (XF8) is a 2-pole MCF, has a passband width of 2.7kHz and a terminating impedance of 1.35 k $\Omega$ . Perform the IF filter (XF4 and XF8) adjustment in the same manner as the XF3 adjustment. First, connect a tracking generator to CN115 and CN129, then turn the variable inductors (L95, L98, L96, and L99) to adjust the IF filter.

The noise blanker filter (XF1) is the same as the IF filter (XF3) with a passband width of 15kHz. Adjustment of the noise blanker filter (XF1) will be carried out after the completion of the IF filter adjustment in adjustment mode with a passband width 15kHz IF filter connected. Connect a tracking generator to the adjustment connectors (CN86 and CN129), and adjust the variable inductors (L110 and L111) on the noise blanker filter side. Do not adjust the variable inductors (L94 and L97) on the IF filter side when making adjustments.

If you have replaced the noise blanker filter, such as IF filters (XF1, XF3, XF4, and XF8), variable inductors (L110, L111, L94, L97, L95, L98, L96, and L99), or the main RX unit (X55-313 A/2), be sure to perform MCF adjustments in adjustment mode.

## CIRCUIT DESCRIPTION



**Fig. 13 Noise blanker filter and IF filter adjustments**

### 3-8. IF Filter

The IF filter includes multiple analog filters in addition to a DSP digital filter in the IF stage to have sufficient tolerance for unnecessary signals (Refer to Table 9).

In order to enhance the resistance to the interference due to nearby strong signals, not only the MCF but also the narrow bandwidth (500Hz and 270Hz) ladder-type crystal filters are mounted in the 1st IF (8.248MHz) stage. Any additional filter available commercially and attached by a user may be mounted on CN153 to CN155.

In FM mode, the ceramic filters (CF1 and CF2) with frequency bandwidths of 12kHz and 9kHz are mounted in the 2nd IF (455kHz) stage.

Table 10 shows the relationship between the types of DSP filters selectable and corresponding roofing filters.

IFBW shows the bandwidth of each roofing filter and is set according to Table 10 while in AUTO mode. Respective filters set in the user menu are selected if the default settings are changed.

Item	XF1, XF3: L71-0677-05	XF4: L71-0676-05	XF8: L71-0675-05
Nominal center frequency	8.248MHz	8.248MHz	8.248MHz
Pass bandwidth	±7.5kHz or more at 3dB	±3kHz or more at 6dB	±1.35kHz or more at 6dB
Attenuation bandwidth	±37.5kHz or less at 60dB	±16kHz or less at 60dB	±3.75kHz or less at 60dB
Ripple	1dB or less	1dB or less	2dB or less
Insertion loss	3dB or less	3dB or less	5dB or less
Guaranteed attenuation	70dB or more at fo±1MHz	70dB or more at fo±1MHz	60dB or more at fo±1MHz
Center frequency deviation	Within fo±1000Hz	Within fo±500Hz	Within fo±200Hz
Terminating impedance	5.6kΩ//0pF//2pF	2.4kΩ//2pF//15pF	1.35kΩ//7pF

**Table 9 (1/2) IF filter specifications**



## CIRCUIT DESCRIPTION

Item	XF5: L71-0674-05	XF6: L71-0673-05
Nominal center frequency	8.248MHz	8.248MHz
Pass bandwidth	±250Hz or more at 6dB	±135kHz or more at 6dB
Attenuation bandwidth	±1.4kHz or less at 60dB	±400Hz or less at 60dB
Ripple	2dB or less	2dB or less
Insertion loss	4dB or less	6dB or less
Guaranteed attenuation	70dB or more at fo±48kHz	70dB or more at fo±48kHz
Center frequency deviation	Within fo±100Hz	Within fo±50Hz
Terminating impedance	50Ω	50Ω

Item	CF1: L72-0376-05	CF2: L72-0372-05
Nominal center frequency	455kHz	455kHz
Pass bandwidth	±4.5kHz or more at 6dB	±6kHz or more at 6dB
Attenuation bandwidth	±10kHz or less at 50dB	±112.5kHz or less at 50dB
Ripple	2dB or less	3dB or less
Insertion loss	6dB or less	6dB or less
Guaranteed attenuation	35dB or more at fo±100kHz	35dB or more at fo±100kHz
Center frequency deviation	-	-
Terminating impedance	2kΩ	2kΩ

Table 9 (2/2) IF filter specifications

SSB/FM at Slope Tune [Hz]		SSB/PSK*2 at VBT [Hz]			AM [Hz]			CW [Hz]				FSK [Hz]	
LOW CUT	HI CUT	WIDTH	SHIFT	IFBW	LOW CUT	HI CUT	IFBW	WIDTH	IFBW	SHIFT(L)	SHIFT(H)	WIDTH	IFBW
0	1000	50	1000	270	0	2.5k	6k	50	270	-800	0	250	270
50	1200	80	1100	270	100	3.0k	6k	80	270	-750	50	300	500
100	1400	100	1200	270	200	4.0k	15k	100	270	-700	100	400	500
200	1600	150	1300	270	300	5.0k	15k	150	270	-650	150	500	500
300	1800	200	1400	270				200	270	-600	200	1000	2.7k
400	2000	250	1500	270				250	270	-550	250	1500	2.7k
500	2200	300	1600	500				300	500	-500	300		
600	2400	400	1700	500				400	500	-450	350		
700	2600	500*3	1800	500				500*1	500	-400	400		
800	2800	600	1900	2.7k				600	2.7k	-350	450		
900	3000	1000	2000	2.7k				1000	2.7k	-300	500		
1000	3400	1500	2100	2.7k				1500	2.7k	-250	550		
	4000	2000	2210	2.7k				2000	2.7k	-200	600		
	5000	2200		2.7k				2500	2.7k	-150	650		
		2400		2.7k						-100	700		
		2600*4		2.7k						-50	750		
		2800		6k							800		
		3000		6k									

FSK tone	FSK shift	Center frequency
1275Hz	170Hz	1360Hz
	200Hz	1375Hz
	425Hz	1487.5Hz
	850Hz	1700Hz
2125Hz	170Hz	2210Hz
	200Hz	2225Hz
	425Hz	2337.5Hz
	850Hz	2550Hz

Initial value

\*1 In CW mode, the DSP filter width is displayed as 500Hz; however, the DSP filter width is actually 600Hz.

\*2 LOW CUT: Low-cut frequency; HI CUT: High-cut frequency; WIDTH: Bandwidth; SHIFT: Center frequency (SSB);

SHIFT (L/H): Amount of change from the center frequency (CW); IFBW: Bandwidth with the roofing filter set to AUTO (default value).

\*3 The initial value of PSK mode is 500 Hz.

\*4 The initial value of SSB (WIDTH/SHIFT) mode is 2600 Hz.

Table 10 RX IF filter settings

## CIRCUIT DESCRIPTION

### 3-9. Noise Blanker (NB) Circuit

#### ■ Noise Detector

The Noise detector removes pulse noise of short cycle.

The 8.248MHz IF signal passes through the buffer (Q16) and NB post-amplifier in the RX unit (X55-313 A/2), and is sent to the same NB circuit block on the RX unit through the coaxial cable.

The IF signal passes through the buffer (Q36) in the NB circuit and is amplified by the 3-stage amplifier (Q21/Q24, Q28/Q30 and Q33). The IF signal then passes through the buffer (Q37) and is noise detected by D21.

A voltage from the noise detector (D21) switches Q35, turns Q38 ON, attenuates the IF signal in the blanking circuit (D26 to D29) depending on the noise, and removes the pulse noise.

The AGC works when a long cycle signal is applied, and the gains of NB amplifier 2 (Q21 and Q24), NB amplifier 3 (Q28 and Q30) and NB amplifier 4 (Q33) fall, which results

in a low detecting voltage, and Q38 is turned OFF. Thus, the IF signal is not attenuated. Since the time constant of the AGC is long, the AGC does not work for short pulses, which results in a high detecting voltage, and Q38 is turned ON. Therefore, the blanking circuit operates.

When the NB function is turned ON, a dc voltage MNBL (threshold control voltage) is applied to the emitter of Q35 from the D/A converter (IC1), so that the Noise Blanking effect can be adjusted by varying the emitter voltage.

#### ■ Noise Blanking Circuit

The noise blanking circuit attenuates the IF signal by the signal detected in the noise detector and removes pulse noises.

When pulse noise is detected in the NB circuit, the MBLNK goes to "H", Q54 is turned ON and Q53 is turned OFF. Diodes D26 to D29 are then turned OFF and the IF signal is attenuated.

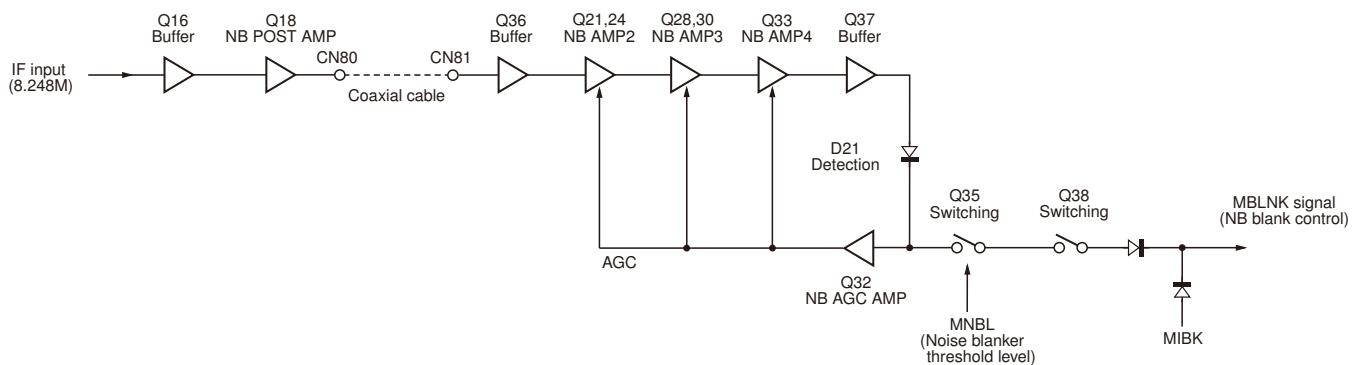


Fig. 14 Noise detection circuit

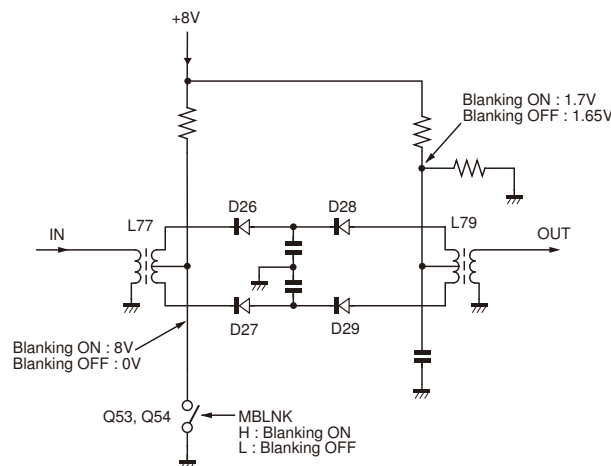


Fig. 15 Blanking circuit

## CIRCUIT DESCRIPTION

### 4. Sub Receiver Circuit

The configuration of the sub receiver circuit is almost the same as that of the receiver circuit of the TS-590. In 21MHz or lower major amateur bands and modes that require the

resistance to the interference due to nearby strong signals, the signal received passes through the double conversion SRX-1 path. In other frequency bands or modes, the signal passes through the triple conversion SRX-2 path.

Mode		SSB	CW	FSK	AM	FM
SRX-1 path	Conversion method		Double			-
	IF frequency	1st	11.374MHz			-
		2nd	24kHz			-
SRX-2 path	Conversion method		Triple			
	IF frequency	1st	73.095MHz			
		2nd	10.695MHz			
		3rd	24kHz			455kHz

**Table 11 Mode, conversion method, and IF frequency**

#### 4-1. From the Antenna Terminal to the Sub Pre-amplifier (Q219)

The sub received signal from the antenna terminal passes through ANT1 to ANT4 antenna change over relays (K801 to K808) in the antenna connector unit (X45-388 B/2), the AT IN/THROUGH changeover relay (K18 and K19) in the antenna switch unit (X53-441 B/2), the RX IN/OUT changeover relay (K10 to K13), the distributor changeover relay (K14 and K15), the distributor, and image filter, and is applied from CN18 to CN200 (SRAT) on the TX-RX unit (X57-827 A/2) through a coaxial cable. (Fig. 28)

The signal input into the TX-RX unit is applied to the 6 dB and 12 dB attenuators. Each attenuator can be turned ON and OFF individually so that an attenuation level of OFF, 6, 12 or 18 dB can be selected. The signal then passes through the LPF for IF trap use, surge absorption limiter, and BC band attenuator (except 30kHz to 1.705MHz), and is applied to the BPF.

An 11.7MHz and 15.5MHz trap circuit is embedded in

the BC band attenuator in order to prevent interference from high-power broadcast stations if the model is for European countries.

The BPF divides in the range as shown in table 12. In order to prevent intermodulation ranging from 522kHz to 1.705MHz due to high-power broadcast stations, there is an ATT (attenuator).

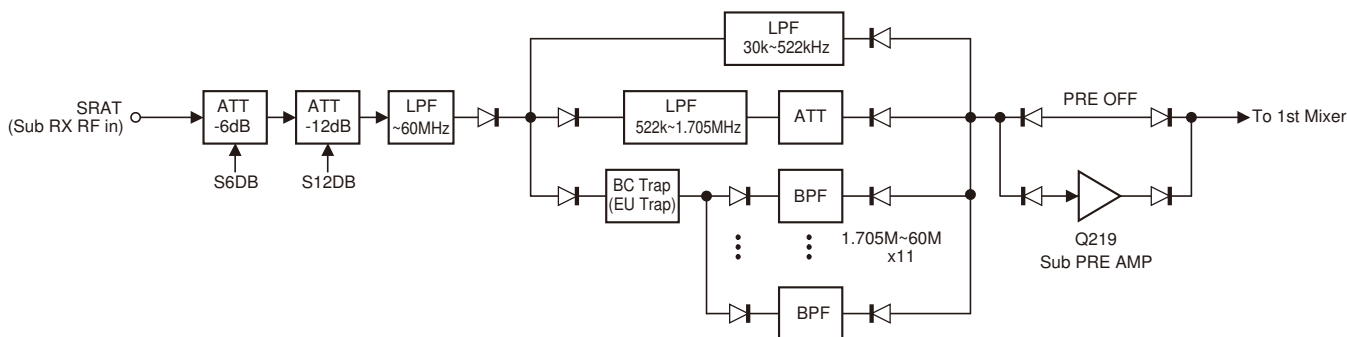
ATT ON: CN210=open, CN220=short

ATT OFF: CN210=short, CN220=open

The transmission signal also passes through the BPF.

The signal which is passed through the BPF is applied to the next stage preamplifier (Q219). The sub receiver block uses an emitter grounding circuit using a bipolar transistor and has a gain adjustment function by the band that uses Q220 to switch the emitter feedback level.

The sub preamplifier gain in 30kHz to 21.5MHz is approximately 12 dB and 21.5MHz to 60MHz is approximately 20 dB. By turning OFF the P.AMP display with the [P.AMP] key, the preamplifier (Q219) output is bypassed.



**Fig. 16 From the antenna terminal to the sub preamplifier (Q219)**

## CIRCUIT DESCRIPTION

Band	Filter range
135kHz	30~522kHz
BC	522kHz~1.705MHz
1.8MHz	1.705~2.5MHz
3.5MHz	2.5~4.1MHz
5MHz	4.1~6.9MHz
7MHz	6.9~7.5MHz
10MHz	7.5~10.5MHz
	10.5~13.9MHz
14MHz	13.9~14.5MHz
18MHz	14.5~21.5MHz
21MHz	
28MHz	21.5~30.0MHz
50MHz (TX)	49.0~54.0MHz
50MHz (RX)	30.0~60.0MHz

**Table 12 BPF range**

### 4-2. From the Sub Preamplifier (Q219) to the 2nd IF Frequency (10.695MHz/11.374MHz)

The signal from the sub preamplifier (Q219) to the 2nd

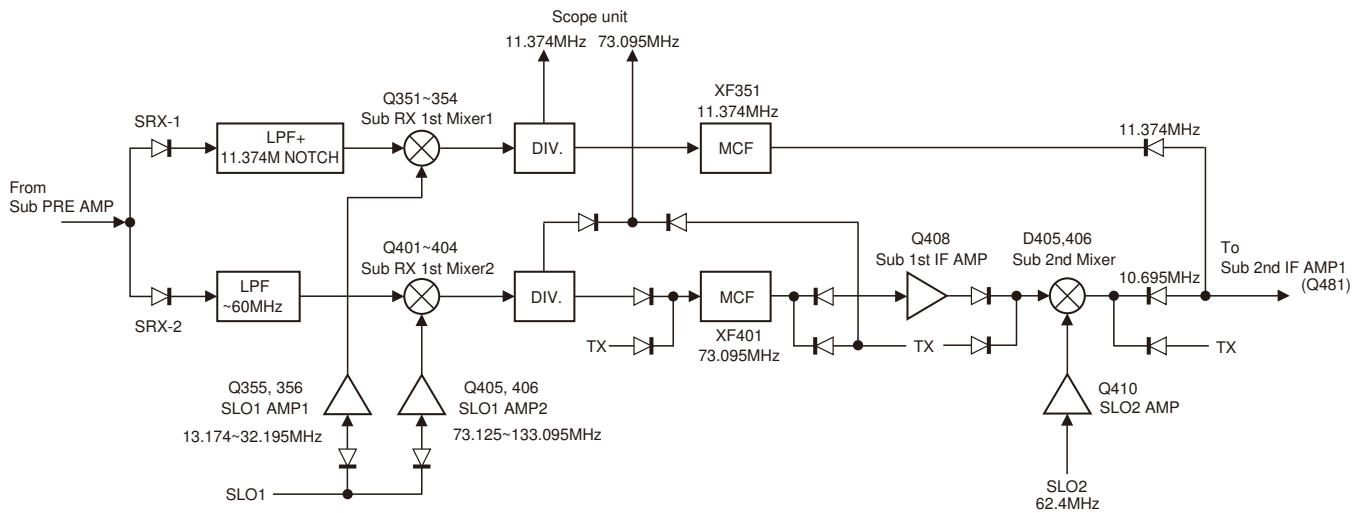
IF amplifier (Q481) is separated into two paths, SRX-1 and SRX-2, depending on the frequency band (Refer to Table 13.). The SRX-1 path is selected if the "L" signal is input to Q958, and the SRX-2 path is selected if the "H" signal is input.

The signal on the SRX-1 path passes through the LPF for IF trap, is mixed with the SLO1 (12.495MHz to 32.195MHz) in the quad-balanced 1st mixer (Q351 to Q354), and is then converted to the 1st IF (11.374MHz). The 1st IF signal passes through the 2-pole MCF(XF351) as a branch circuit to the scope unit (X42-343 A/10) and is applied to the 2nd IF amplifier 1 (Q481).

The SRX-2 path signal passes through the LPF for IF trap, is mixed with the SLO1 (73.120 to 133.095MHz) in the quad-balanced 1st mixer (Q401 to Q404), and is then converted to the 1st IF (73.095MHz). The 1st IF signal passes through the 2-pole MCF (XF401) as a branch circuit to the scope unit (X42-343 A/10) and is amplified by approximately 12 dB by the 1st IF amplifier (Q408: negative feedback with transformer type).

The amplified signal is mixed with the SLO2 (62.4MHz) in the 2nd mixer (D405 and D406) and is converted to the 2nd IF (10.695MHz), and is applied to the 2nd IF amplifier 1 (Q481).

The 2nd mixer is a passive type that uses a diode, and is a bilateral circuit that performs the frequency conversion of received and transmitted signals.



**Fig. 17 From the sub preamplifier (Q219) to the 2nd IF frequency (10.695MHz/11.374MHz)**

## CIRCUIT DESCRIPTION

Band	BPF selection classification	IF switching frequency criteria	IF frequency		
			TX IF	Sub RX IF	
135kHz	$f < 522\text{kHz}$	$f < 522\text{kHz}$	73M	73M	SRX-2
BC	$0.522 \leq f < 1.705\text{MHz}$	$0.522 \leq f < 1.705\text{MHz}$		73M	SRX-2
1.8MHz	$1.705 \leq f < 2.5\text{MHz}$	$1.705 \leq f < 2.1\text{MHz}$		11M	SRX-1
		$2.1 \leq f < 3.4\text{MHz}$		73M	SRX-2
3.5MHz	$2.5 \leq f < 4.1\text{MHz}$	$3.4 \leq f < 4.1\text{MHz}$		11M	SRX-1
		$4.1 \leq f < 6.9\text{MHz}$		73M	SRX-2
5MHz	$4.1 \leq f < 6.9\text{MHz}$	$4.1 \leq f < 6.9\text{MHz}$		73M	SRX-2
7MHz	$6.9 \leq f < 7.5\text{MHz}$	$6.9 \leq f < 7.5\text{MHz}$		11M	SRX-1
10MHz	$7.5 \leq f < 10.5\text{MHz}$	$7.5 \leq f < 10.5\text{MHz}$		73M	SRX-2
		$10.5 \leq f < 13.9\text{MHz}$		73M	SRX-2
14MHz	$13.9 \leq f < 14.5\text{MHz}$	$13.9 \leq f < 14.5\text{MHz}$		11M	SRX-1
18MHz	$14.5 \leq f < 21.5\text{MHz}$	$14.5 \leq f < 20.9\text{MHz}$		73M	SRX-2
21MHz		$20.9 \leq f < 21.5\text{MHz}$		11M	SRX-1
28MHz	$21.5 \leq f < 30.0\text{MHz}$	$21.5 \leq f < 30.0\text{MHz}$		73M	SRX-2
50MHz (TX)	$49.0 \leq f < 54.0\text{MHz}$	$49.0 \leq f < 54.0\text{MHz}$		-	-
50MHz (RX)	$30.0 \leq f < 60.0\text{MHz}$	$30.0 \leq f < 60.0\text{MHz}$		-	73M

**Table 13 Criteria for selecting the SRX-1 path or SRX-2 path**

### 4-3. 2nd IF Frequency (10.695MHz/11.374MHz)

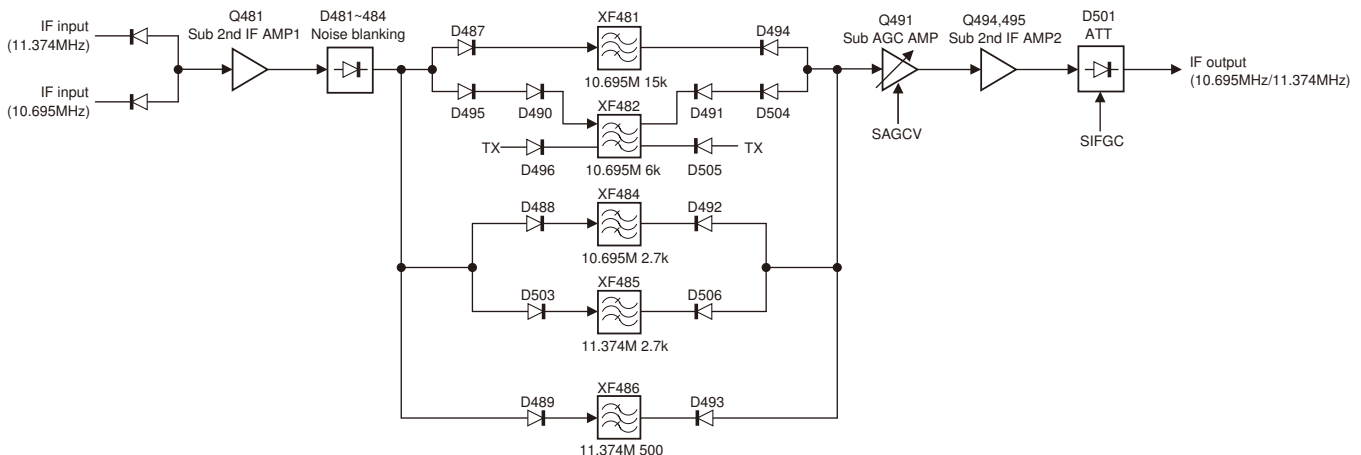
The 2nd IF signal passing through the SRX-1 or SRX-2 path is amplified by approximately 16 dB in the 2nd IF amplifier 1 (Q481), and is then distributed into 2 paths, the NB circuit and the blanking circuit (D481 to D484). Blanking is implemented by D481 to D484 for the signal from the NB circuit. The 2nd IF signal then passes through the IF filter. One of 5 filters is selected, depending on the frequency and the mode. (Refer to Table 14.)

The 2nd IF signal passing through the IF filter is input to the AGC amplifier (Q491). AGC voltage output from the DSP is input to the gate2 terminal of Q491, and the gain of AGC amplifier is controlled. Next, the signal is amplified to approximately 20 dB by the 2nd IF amplifier (Q494 and Q495) and passes through the ATT diode (D501). The voltage

determined in the adjustment mode is applied to D501, and the difference of the total gains between SRX-1 and SRX-2 paths have adjusted.

IF frequency	IF filter	Mode				
		FM	AM	SSB	FSK	CW
10.695MHz	15kHz	○	○			
	6kHz		○	○		
	2.7kHz			○	○	○
11.374MHz	2.7kHz			○	○	○
	500Hz			○	○	○

**Table 14 Selecting the IF filter**



**Fig. 18 2nd IF frequency (10.695MHz/11.374MHz)**

## CIRCUIT DESCRIPTION

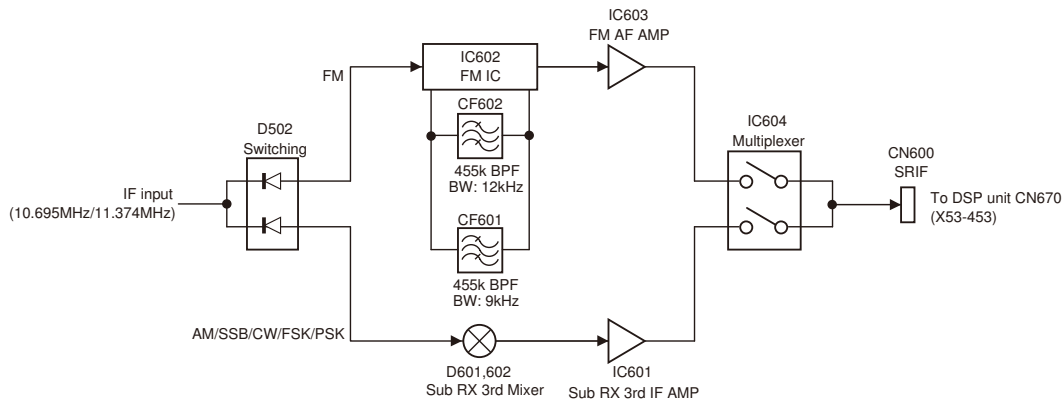
### 4-4. From the 2nd IF to the SRIF output

In FM mode, the signal is applied to the FM IC (IC602). In modes other than FM, the signal is input to the AM/SSB/CW/FSK/PSK mode mixer (D601 and D602) via D502.

The FM mode signal is mixed with SLO3 (10.240MHz) in the FM discriminator (IC602) and converted into the 3rd IF (455kHz). The 3rd IF signal passes through the ceramic filters (CF602: wide, CF601: narrow), and is demodulated into audio signals and amplified by the FM AF AMP (IC603).

Signals other than in FM mode are mixed in the AM/SSB/CW/FSK/PSK mode mixer (D601 and D602) with the SLO3 (SRX-1 path: 11.398MHz, SRX-2 path: 10.719MHz), converted to the 3rd IF (24kHz), and amplified by the 3rd IF AMP (IC601).

Signals in FM or other modes are sent from the SRIF connector (CN600) on the TX-RX unit (X57-827 A/2) to CN670 on the DSP unit (X53-453).



**Fig. 19 From the 2nd IF to the SRIF output**

### 4-5. 1st Mixer

There are two 1st mixers used:

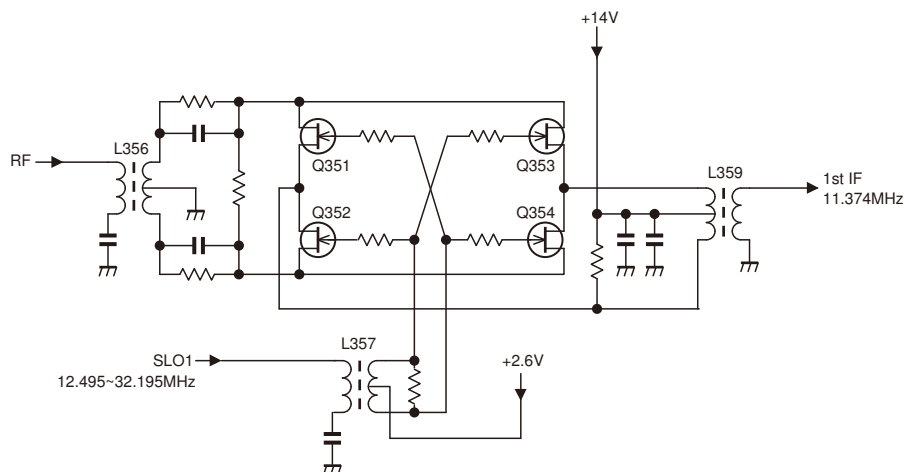
SRX-1 path: IF frequency=11.374MHz

SRX-2 path: IF frequency=73.095MHz

The 1st mixer for the SRX-1 path is a quad-balanced type mixer which consists of Q351 to Q354 (JFET), where the signal is mixed with the SLO1 (12.495MHz to 32.195MHz) at a level of approximately 18 dBm and converted to the 1st IF (11.374MHz). Approximately 2.6V bias is added to the SLO1 in order to suppress distortion.

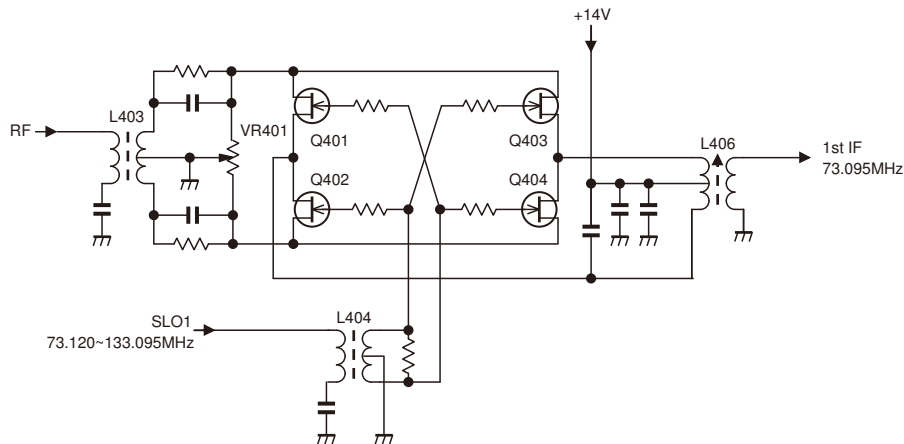
The 1st mixer for the SRX-2 path is a quad-balanced type mixer which consists of Q401 to Q404 (JFET), where the signal is mixed with the SLO1 (73.120MHz to 133.095MHz) at a level of approximately 10 dBm and converted to the 1st IF (73.095MHz). No bias is applied to the SLO1.

The variable resistor (VR401) in the 1st mixer are used to adjust the mixer balance. If you have replaced the FETs (Q401 to Q404), transformers (L403, L404 and L406), variable resistors (VR401), or TX-RX unit (X57-827 A/2), do the 1st mixer balance adjustment in adjustment mode.



**Fig. 20 1st mixer of the SRX-1 path**

## CIRCUIT DESCRIPTION



**Fig. 21 1st mixer of the SRX-2 path**

### 4-6. MCF Adjustment

Two types of MCFs are prepared for the SRX-1 path (at an IF frequency of 11.374MHz) and SRX-2 path (at an IF frequency of 73.095MHz).

The SRX-1 path MCF (XF351) is a filter that consists of a 2-pole MCF with a center frequency of 11.374MHz and a passband width of 6kHz. Since the XF351 termination impedance is 1 kΩ, the impedance is converted using variable inductors (L368 and L369).

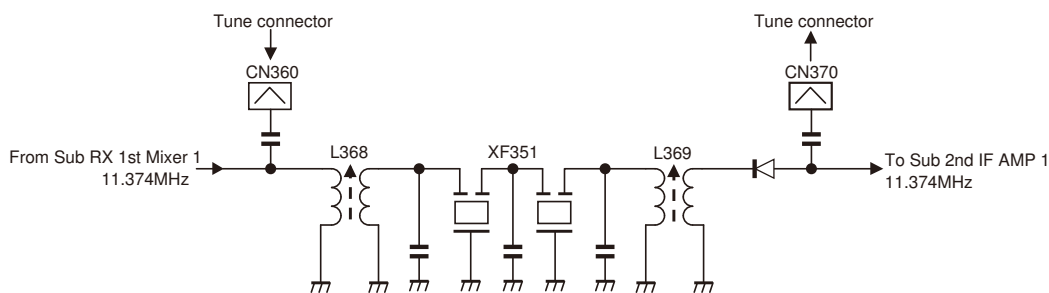
Connect an appropriate equipment, such as a tracking generator, to the MCF adjustment connectors (CN360 and CN370) and turn the variable inductors (L368 and L369) to adjust the MCF.

Make the MCF adjustments in adjustment mode, variable

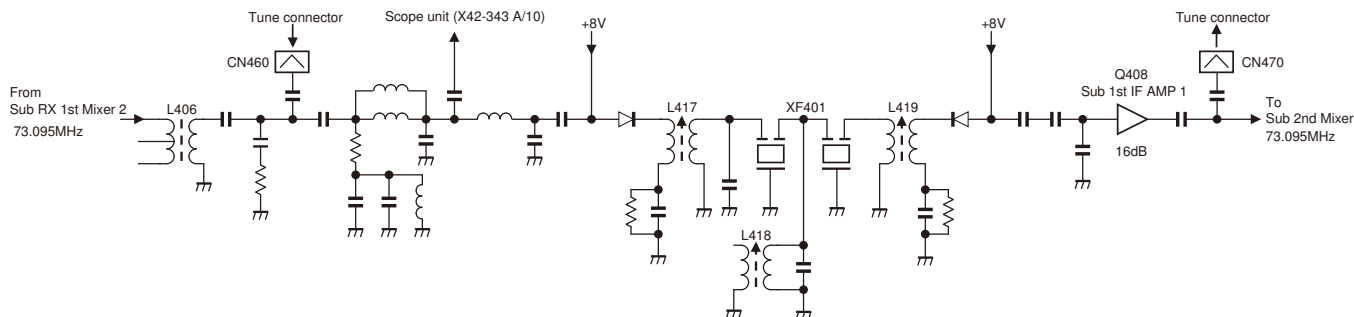
inductors (L368 and L369), or TX-RX unit (X57-827 A/2).

The SRX-2 path MCF (XF401) is a filter that consists of a 2-pole MCF with a center frequency of 73.095MHz and a passband width of 15kHz. Since the XF401 termination impedance is 2.5 kΩ, the impedance is converted using variable inductors (L406, L417, L418, and L419).

Connect an appropriate equipment, such as a tracking generator, to the MCF adjustment connectors (CN460 and CN470) and turn the variable inductors (L406, L417, L418, and L419) to adjust the MCF. If you have replaced the MCF (XF401), variable inductors (L406, L417, L418, and L419), or TX-RX unit (X57-827 A/2) make the MCF adjustments in adjustment mode.



**Fig. 22 The MCF circuit of the SRX-1 path**



**Fig. 23 The MCF circuit of the SRX-2 path**



## CIRCUIT DESCRIPTION

### 4-7. IF Filter

The IF filter includes multiple analog filters in addition to a DSP digital filter in the IF stage to have sufficient tolerance for unnecessary signals (Refer to Table 15).

In the SRX-1 path with enhanced the resistance to the interference due to nearby strong signals, the MCF (XF351) and crystal filters (XF485 and XF486) are mounted in the 1st IF (11.374MHz) line. The MCF (XF401) is mounted in the

1st IF (73.095MHz) line, the crystal filter (XF484) or MCFs (XF481 and XF482) are mounted in the 2nd IF (10.695MHz) line, and the ceramic filters (CF601 and CF602) are mounted in the 3rd IF (455kHz in FM mode only) line of the SRX-2 path.

Table 16 shows the relationship between the types of DSP filters selectable and their corresponding roofing filters. The IFBW of a roofing filter showing the bandwidth of the roofing filter, and is set according to Table 16.

Item	XF351: L71-0656-15	XF485: L71-0657-05	XF486: L71-0658-05
Nominal center frequency	11.374MHz	11.374MHz	11.374MHz
Pass bandwidth	BW 6.0kHz or more at 6dB	BW 2.7kHz or more at 6dB	BW 500Hz or more at 6dB
Attenuation bandwidth	fo±35.0kHz or less at 60dB	BW 8.0kHz or less at 60dB	BW 1.55kHz or less at 60dB
Ripple	1.0dB or less	2.0dB or less	2.0dB or less
Insertion loss	3.0dB or less	6.0dB or less	Within 6.0±3.0dB
Guaranteed attenuation	70dB or more at fo±1MHz	80dB or more at fo±1MHz	80dB or more at fo±1MHz
Center frequency deviation	fo±500Hz or less at 6dB	fo±150Hz or less at 6dB	fo±150Hz or less at 6dB
Terminating impedance	1.0kΩ//6.0pF	900Ω//9.0pF	100Ω//90pF

Item	XF401: L71-0605-05	XF481: L71-0230-15	XF482: L71-0664-05	XF484: L71-0569-15
Nominal center frequency	73.095MHz	10.695MHz	10.695MHz	10.695MHz
Pass bandwidth	fo±7.5kHz or more at 3dB	fo±7.5kHz or more at 3dB	BW 6.0kHz or more at 6dB	fo±1.35kHz or more at 6dB
Attenuation bandwidth	fo±35.0kHz or less at 40dB	fo±25.0kHz or less at 18dB	fo±35.0kHz or less at 60dB	fo±3.1kHz or less at 60dB
Ripple	1.0dB or less	0.5dB or less	2.0dB or less	2.0dB or less
Insertion loss	3.0dB or less	2.0dB or less	3.0dB or less	6.0dB or less
Guaranteed attenuation	70dB or more at fo+(500~1000kHz) 70dB or more at fo-(200~1000kHz)	30dB or more at fo±1MHz	60dB or more at fo±1MHz	60dB or more at fo±300kHz
Center frequency deviation	fo±1.5kHz or less at 3dB	-	fo±1.0kHz or less at 6dB	fo±150Hz or less at 6dB
Terminating impedance	2.5kΩ//0.5pF	3.0kΩ//2.0pF	1.2kΩ//6.0pF	1.2kΩ//7.0pF

Item	CF601: L72-0376-05	CF602: L72-0372-05
Nominal center frequency	455kHz	455kHz
Pass bandwidth	fo±4.5kHz or more at 6dB	fo±6.0kHz or more at 6dB
Attenuation bandwidth	fo±10.0kHz or less at 50dB	fo±12.5kHz or less at 50dB
Ripple	2.0dB or less	3.0dB or less
Insertion loss	6.0dB or less	6.0dB or less
Guaranteed attenuation	35dB or more at fo±100kHz	35dB or more at fo±100kHz
Center frequency deviation	-	-
Terminating impedance	2.0kΩ	2.0kΩ

Table 15 IF filter

## CIRCUIT DESCRIPTION

SSB/FM at Slope Tune [Hz]		SSB/PSK*2 at VBT [Hz]			AM [Hz]			CW [Hz]				FSK [Hz]	
LOW CUT	HI CUT	WIDTH	SHIFT	IFBW	LOW CUT	HI CUT	IFBW	WIDTH	IFBW	SHIFT(L)	SHIFT(H)	WIDTH	IFBW
0	1000	50	1000	500	0	2.5k	6k	50	500	-800	0	250	500
50	1200	80	1100	500	100	3.0k	6k	80	500	-750	50	300	500
100	1400	100	1200	500	200	4.0k	15k	100	500	-700	100	400	500
200	1600	150	1300	500	300	5.0k	15k	150	500	-650	150	500	500
300	1800	200	1400	500				200	500	-600	200	1000	2.7k
400	2000	250	1500	500				250	500	-550	250	1500	2.7k
500	2200	300	1600	500				300	500	-500	300		
600	2400	400	1700	500				400	500	-450	350		
700	2600	500*3	1800	500				500*1	500	-400	400		
800	2800	600	1900	2.7k				600	2.7k	-350	450		
900	3000	1000	2000	2.7k				1000	2.7k	-300	500		
1000	3400	1500	2100	2.7k				1500	2.7k	-250	550		
	4000	2000	2210	2.7k				2000	2.7k	-200	600		
	5000	2200		2.7k				2500	2.7k	-150	650		
		2400		2.7k						-100	700		
		2600*4		2.7k						-50	750		
		2800		6k							800		
		3000		6k									

FSK tone	FSK shift	Center frequency
1275Hz	170Hz	1360Hz
	200Hz	1375Hz
	425Hz	1487.5Hz
	850Hz	1700Hz
2125Hz	170Hz	2210Hz
	200Hz	2225Hz
	425Hz	2337.5Hz
	850Hz	2550Hz

Initial value

\*1 In CW mode, the DSP filter width is displayed as 500Hz; however, the DSP filter width is actually 600Hz.

\*2 LOW CUT: Low-cut frequency; HI CUT: High-cut frequency; WIDTH: Bandwidth; SHIFT: Center frequency (SSB);

SHIFT (L/H): Amount of change from the center frequency (CW); IFBW: Bandwidth with the roofing filter set to AUTO (default value).

\*3 The initial value of PSK mode is 500 Hz.

\*4 The initial value of SSB (WIDTH/SHIFT) mode is 2600 Hz.

**Table 16 RX IF filter settings**

### 4-8. Noise Blanker (NB) Circuit

#### ■ Noise Detector Circuit

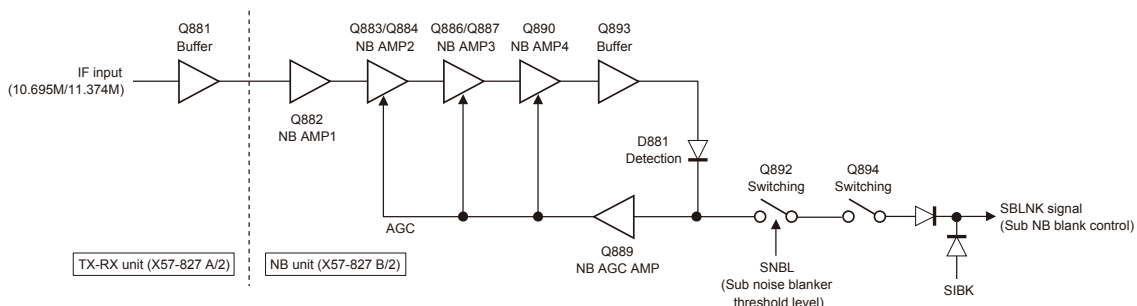
The Noise detector circuit generates the blanking signal, depending on the short cycle pulse noise.

The 10.695MHz or 11.374MHz IF signal passes through the buffer (Q881) in the TX-RX unit (X57-827 A/2), and is sent from CN900 to the NB unit (X57-827 B/2) CN950 (SN-BIF) through a coaxial cable.

The signal input into the NB unit is amplified by the 4 stage amplifier (Q882, Q883/Q884, Q886/Q887 and Q890), passes through the buffer (Q893), and is then noise detected by D881. This noise-detected voltage switches Q892, turns Q894 ON, attenuates the IF signal in the blanking circuit (D481 to D484) depending on the noise, and removes the pulse noise.

When a long cycle signal is applied, the AGC works and the gains of the NB amplifier 2 (Q883/Q884), NB amplifier 3 (Q886/Q887), and NB amplifier 4 (Q890) fall, which results in a low detecting voltage, and Q894 is not turned ON. Thus, the IF signal is not attenuated. The AGC time constant is long and as a result, the AGC does not work for short pulses to drop the detecting voltage. Therefore, Q894 is turned ON and the noise blanker operates.

When the NB function is turned ON, the threshold variable direct current "SNBL" is added to the Q892 emitter from the D/A converter (IC55). By changing the emitter's voltage, the NB effect can be adjusted. Also, when the IF signal is 10.695MHz, Q885, Q888 and Q891 become ON and the NB amplifier 2, NB amplifier 3, and NB amplifier 4's tuning points change.



**Fig. 24 Noise detector circuit**

## CIRCUIT DESCRIPTION

### ■ Blanking Circuit

The blanking circuit attenuates the IF signal by the signal detected in the noise detection circuit and removes the pulse noise.

The SBLNK is set to "H", Q483 is turned ON, and Q482 is turned OFF when pulse noise is detected in the noise blanker. Diodes (D481 to D484) are then turned OFF and the IF signal is attenuated.

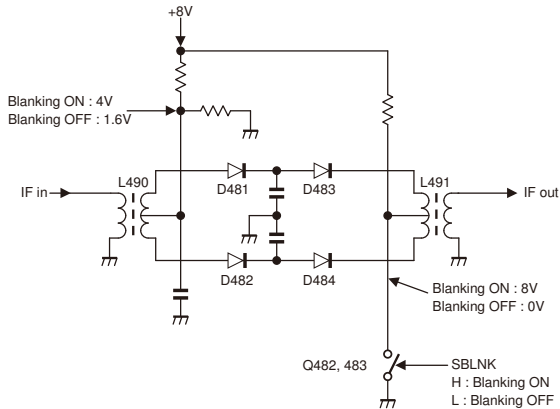


Fig. 25 Blanking circuit

## 5. Transmission Circuit

### 5-1. From the Transmission Signal (TIF) to the Drive output

The transmission signal (TIF) is divided by the analog switcher (IC686) in the DSP unit (X53-453) in accordance with whether it's in FM mode or a mode other than FM.

In FM mode, the transmission signal is switched by the analog switcher (IC686), sent to the PLL (MAIN LO) unit (X50-322), and the frequency is modulated in audio signals into the 1st local oscillator (TLO1) signal. In modes other than FM, the transmission signal is switched by the analog switcher (IC686), sent to the TX-RX unit (X57-827 A/2) and then input into the balanced mixer (IC701). The 24kHz TIF signal and 3rd local oscillator signal (SLO3) are input into this balanced mixer to generate the 10.695MHz IF signal.

The 10.695MHz transmission IF signal passes the IF filter (XF482) with a bandwidth of 6kHz through the buffer (Q702), and is amplified by the IF amplifier (Q703). The pin diodes (D703 and D705) operate the variable attenuator by the current control, and change the transmission IF signal gain. The variable gain provides the TGC function which controls each band's transmission gain.

The 10.695MHz transmission IF signal is converted to 73.095MHz by the mixer (D405 and D406). Signal attenuation is made variable by the current that passes through the pin diode (D707), and thus the level of the 73.095MHz transmission IF signal varies. The level control corrects the transmission signal gain (PGC function) at the time of power control. By varying the level of the transmission signal, correction of the gain at the time of power control can be performed.

The transmission signal passing through the MCF (XF401) with a bandwidth of 15kHz is converted to the target transmission frequency in the final transmission mixer (IC702). The MCF (XF401) helps reduce proximate spurious components. The 73.095MHz IF signal is applied to the 1st gate of the transmission IF amplifier (Q706) for ALC control, and the ALC voltage is in the 2nd gate control to make gain adjustments. The signal from the final transmit mixer passes through the receive BPF, and is amplified to the power needed to drive the final stage in the drive amplifier (Q707).

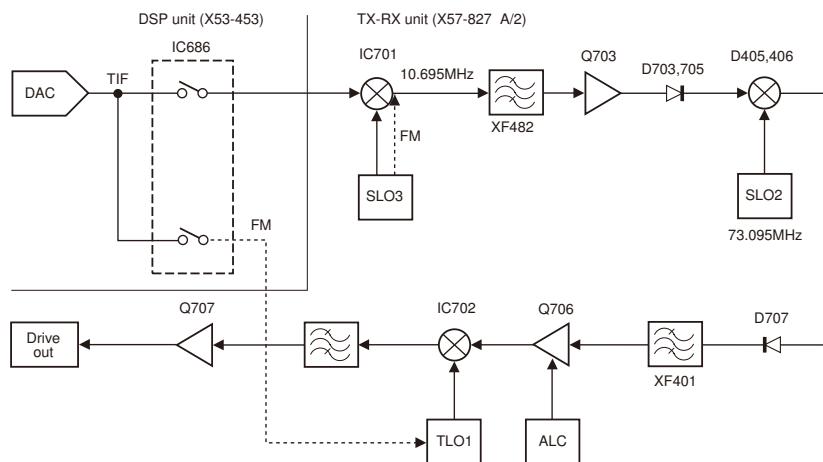


Fig. 26 From the transmission signal (TIF) to the drive output

## CIRCUIT DESCRIPTION

### 5-2. From the Drive output to the Antenna Terminal

The transmission signal sent to the CN2 (DRIVE) of the final unit (X45-388 A/2) from the TX-RX unit (X57-827 A/2) is amplified to the specified power by the final unit and input into the antenna connector unit (X45-388 B/2) through the LPF. This transceiver includes a relay antenna tuner circuit that operates in amateur bands.

The transmission signal that is applied to the CN2 of the final unit is amplified by the pre-drive amplifier (Q2) and drive amplifier (Q3), and then power amplified by the final amplifier (Q7) to 200 W. The harmonic components of the signal are then removed by the LPF, and the signal is sent to the antenna switch unit (X53-441 A/2).

The final amplifier is a push-pull amplifier consisting of a power MOS FET (VRF150MP) of 50 V type. Q7 (A/2) and Q7 (B/2) form a pair that is matched through VGS (TH). Q7 (A/2) and Q7 (B/2) are packaged under a single part number, therefore both of them need to be replaced even if one

of the push-pull elements is broken.

The signal amplified to 200 W is applied to J7 on the antenna switch unit (X53-441 A/2) from J1 on the final unit (X45-388 A/2). The signal goes through the forward/reflected wave detector, amplitude/phase detector for the antenna tuner, transmission/reception switching diode (D19), and antenna tuner IN/THROUGH switching relay (K18 and K19), and is sent from J4 on the antenna switch unit.

The signal is applied to J800 on the antenna connector unit (X45-388 B/2), and is finally sent from the ANT1, ANT2, ANT3, or ANT4 antenna terminal via the antenna switching relay (K801, K802, K803, or K804). In order to reduce the operating noise of the transmission/reception switching relay, the transmission path uses a diode switch and the reception path uses a relay circuit (as with the TS-940). The relay (K16) is turned ON during signal reception in order to maintain the isolation of the transmitter block from the receiver block.

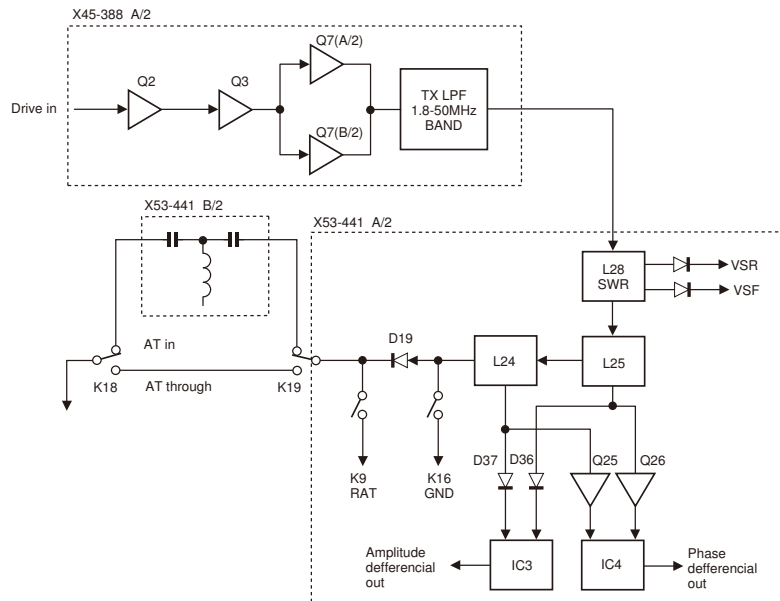


Fig. 27 From the drive output to the antenna terminal

### 5-3. Antenna Tuner and Various Protections

The antenna tuner is switched by antenna change over relays (K18 and K19). If IN is selected, the signal is applied to the antenna tuner unit (X53-441 B/2), where a capacitor and coil in combination tune the signal. Its operation is the same as in previous models. IC4's phase error signal switches the input side capacitor of the tuning circuit, and the IC3's amplitude difference signal switches the output side capacitor. The SWR is decided by calculating the voltage of the progressive wave (VSF) and that of the reflected wave (VSR) with the main MCU (X53-452 IC46).

The transmit signal is applied to the antenna connector unit (X45-388 B/2), and finally sent from antenna terminal ANT1, ANT2, ANT3, or ANT4 through an antenna switching relay (K801, K802, K803, or K804). If the main band and

sub band use the same antenna, the signal passes the path shown in Fig. 28 and the relay switches over the signal. The distribution circuit distributes approximately half the power of the receive signal to the main band and the rest to the sub band. If the main band and sub band use different antennas, the antenna for the main band or the one selected for transmission is connected through a relay (K801, K802, K803, or K804) and the antenna selected for the sub band is connected through a relay (K805, K806, K807, or K808) on the sub reception side.

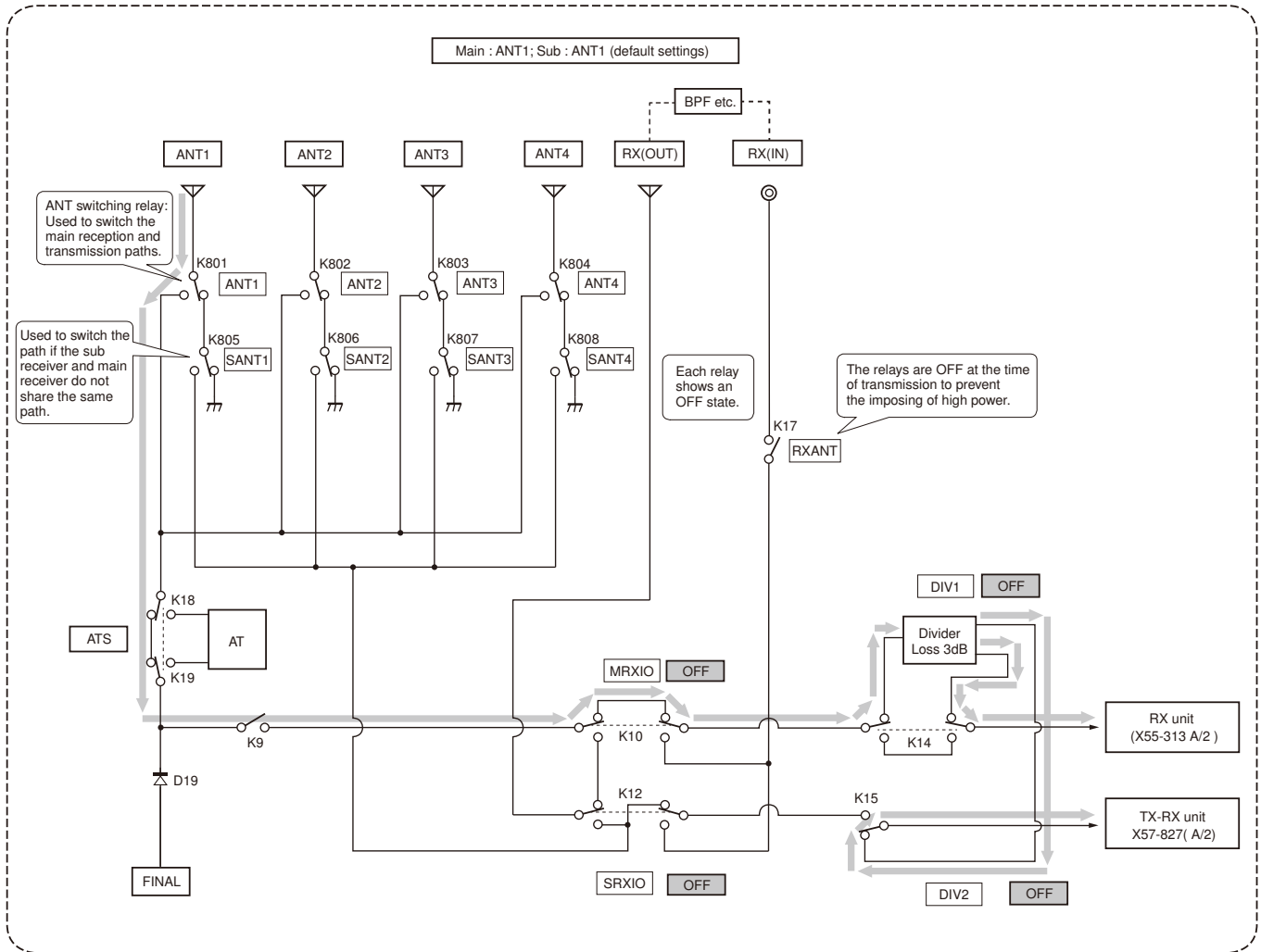
The transceiver has RX IN and RX OUT terminals, thus making it possible to connect an antenna dedicated for reception to the RX IN terminal or an external BPF or transverter to the RX IN or RX OUT terminal. You can activate an RX ANT function for either the main band or sub band and

## CIRCUIT DESCRIPTION

connect the antenna dedicated for reception through a relay (K10, K12, K14, K15, or K17).

This model includes a current protection circuit. The current running in the final portion is converted into a potential difference between the ends of a 5 mΩ resistor inserted into the power supply line, and IC5 detects the potential difference. When the potential difference is larger than a specified

value, IC5 output activates the ALC protection function. This ALC protection function is controlled so that the current does not exceed the predetermined value when the current at the final portion is increased for some unexpected reason. Other protection circuits include the same as those in previous models.



Main: ANT1; Sub: ANT1 (default settings)

ANT switching relay: Used to switch the main reception and transmission paths.

Used to switch the path if the sub receiver and main receiver do not share the same path.

Each relay shows an OFF state.

The relays are OFF at the time of transmission to prevent the imposing of high power

**Fig. 28 Antenna distribution diagram**

## CIRCUIT DESCRIPTION

### 5-4. Transmit Power Control

Transmit power control is done the same way as in previous models; the ALC circuit controls the ALC voltage using the progressive wave voltage (VSF) and keeps a constant output.

The voltage detected by the VSF/VSR detection circuit (a circuit for the detection of progressive and reflection wave voltages) in the antenna switch unit (X53-441 A/2) is sent to CN3 of the TX-RX unit (X57-827 A/2). The progressive wave voltage is divided into a suitable voltage by the resistance, and applied to the differential amplifiers consisting of IC801.

The output voltage of IC801 (1/2) rises along with a rise in progressive wave voltage while the base current of Q802 increases and the collector voltage, for which the ALC time constant CR is selected, goes down. The output voltage of the buffer (IC801 2/2) goes down along with a fall in collector voltage. The resistance-distributed ALC voltage then goes down. If the ALC voltage (2.5 V when the ALC is inactive) goes down, the IF amplifier's (Q706) second gate voltage goes down and the gain is decreased.

When transmitting AM, Q801 is turned on approximately 50 ms after transmission, and the ALC voltage is controlled by averaging the progressive wave voltage. The input voltage into pin 2 of IC801 (1/2), which will be the ALC's reference voltage, is controlled by the adjustment value (POC) from the main MCU, and sent from pin 5 of the D/A converter (IC55).

SWR protection is controlled by the reflection wave voltage. The reflection wave voltage is divided by the resistance and applied to IC802 (1/2). If it exceeds a specified voltage, the output of IC802 (1/2) increases the base current of Q803, which performs ALC voltage control, thus lowering the gain and power.

ID protection is under the control of the ID voltage detected in the final circuit. The ID voltage is applied to IC802 (2/2). If it exceeds a specified voltage, the output of IC802 (2/2) controls the ALC voltage and lowers the gain and power.

The PWR (power) meter is amplified from the progressive wave voltage, the SWR meter is amplified from the reflection wave voltage, and the ALC meter is amplified from the ALC voltage by the relevant operation amplifier, and they are applied to the ADC for meter-indication.

The VD meter indicates a divided drain voltage of the final circuit read by the A/D converter circuitry. The TEMP meter for temperature protection uses the A/D converter circuitry to read and display the voltages of the respective thermistors (X45-388 A/2 TH1 and TH2) on the push-pull FETs of the final circuit and performs the three-stage (low-, medium-, and high-speed) fan control of the final unit and two-stage (low- and high-speed) fan control of the AT unit. If an abnormally high temperature occurs, the transceiver lowers the transmit power to 5 W and displays a warning message. If the temperature still rises, the transceiver stops transmission and displays an error message.

The main screen displays each meter selected. Furthermore, the signals of meters selected in the configuration menu can be sent out as MMET and SMET signals to external meters through the METER terminal and ACC2 terminal. These signals are sent out from the D/A converter in the main MCU, and IC101 in the TX-RX unit (X57-827 A/2)

makes level changes in the signals.

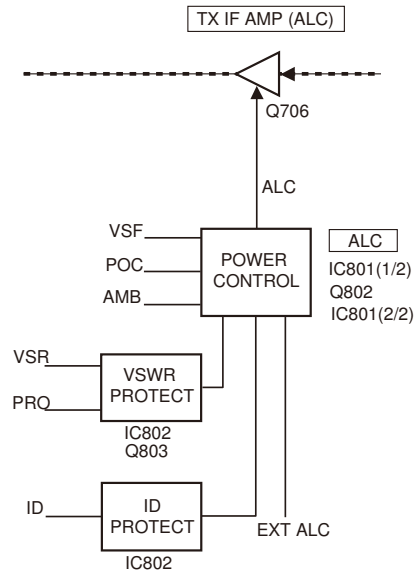


Fig. 29 Transmit power control

## 6. Scope Circuit

### 6-1. From the IF Input Stage to the IF Amplifier (SCIF1\_AMP)

The input signal into the scope circuit is an IF signal obtained from the RX unit or the TX-RX unit, the frequency of which is SC08M at the time of the main signal reception and is set to SC11S or SC73S which varies with the reception band at the time of the sub signal reception. And the scope display is available at the time of signal transmission, the frequency of which uses SC73S obtained from the TX-RX unit.

When SC08M and SC11S are selected, the signal is amplified by the input buffer amplifier (Q7 and Q8). The impedance is converted in L7 and L8 and sent to the next stage via the diode switchers (D2 and D3). When SC73S is selected, the input is amplified by the input buffer amplifier (Q12) and sent to the next stage (SCIF1\_BPF) via the diode switcher (D4). SC73S does not pass along the 1st Mixer.

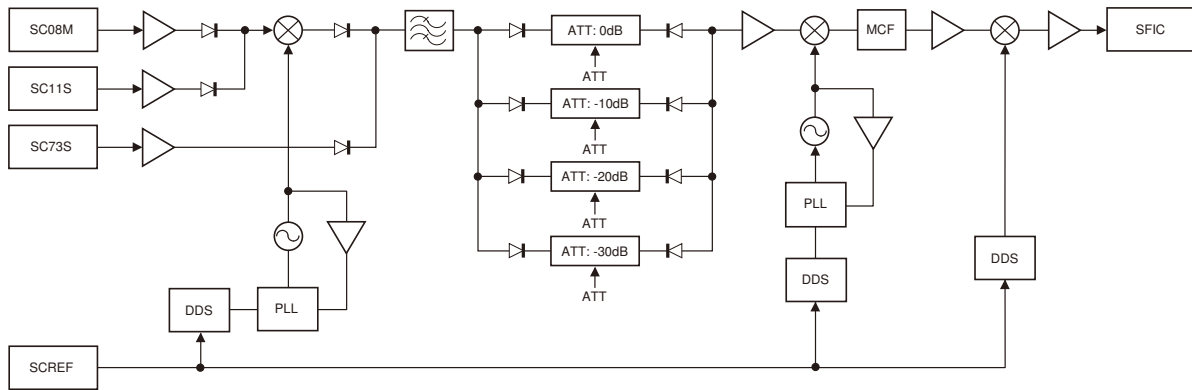
In the 1st mixer (SCMIX1), the signal is up converted by SCLO1 (main: 61.721MHz/sub: 64.847MHz), and converted to the 1st IF (SCIF1: 73.095MHz) for scope use. The SCIF1 signal passes through the BPF for the elimination of image interference, and is sent to the IF amplifier (SCIF1\_AMP) via the attenuator. The attenuator provides three levels of attenuation, -10 dB, -20 dB and -30 dB.

### 6-2. From the 2nd Mixer (SCMIX2) to the 3rd Mixer (SCMIX3) Input

The SCIF1 is applied to the diode-employed DBM (2nd mixer) and converted to the 2nd IF (SCIF2 at 10.7MHz). The balanced-unbalanced conversion of the 2nd IF signal is performed in L73 and transmitted to the MCF (XF1) on the next stage. The output signal from the MCF is amplified by the SCIF2\_AMP and sent to the SCMIX3 (3rd mixer).



## CIRCUIT DESCRIPTION



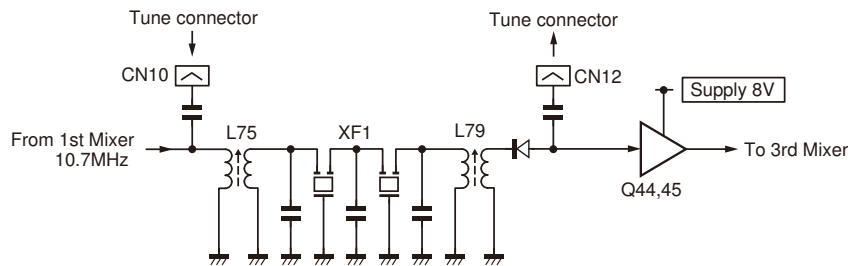
**Fig. 30 From the IF input stage to the SCIF (3rd IF)**

### 6-3. MCF Adjustment

The MCF (XF1) is prepared for the 2nd IF frequency (10.7MHz). Since the MCF terminal impedance is 1 k $\Omega$ , the impedance is converted using variable inductors. The MCF is a filter that consists of a 2-pole MCF with a center frequency of 10.7MHz and a passband width of 15kHz.

Connect an appropriate device, such as a tracking gen-

erator, to the MCF adjustment connectors (CN10 and CN12) and turn the variable inductors to adjust the MCF. Make the MCF adjustments while in adjustment mode if you have replaced the MCF (XF1), variable inductors, or scope unit (X42-343 A/10). When adjusting the MCF, apply 8 V (8 A) to the scope unit.



**Fig. 31 MCF adjustment**

### 6-4. From the IF Amplifier (SCIF2\_AMP) to the 3rd Mixer (SCMIX3) Output

In the 3rd mixer (SCMIX3), the signal is down converted by the SCLO3, and converted to the 3rd IF (SCIF3: 24kHz).

### 6-5. From the 3rd Mixer (SCMIX3) to the SCIF

The 3rd IF (SCIF3: 24kHz) is amplified by the OP amplifier (IC9) and sent to the control unit (X53-452) as SCIF.

### 6-6. SCREF

The scope unit has equipped two PLL and three DDS, and it receives a 40MHz reference signal as SCREF from the PLL (MAIN) unit (X50-322) in order to distribute approximately 8.4MHz reference signal to PLL (IC4, IC6) through DDS (IC1, IC2).

After this 40MHz reference signal passes buffer amplifier, it is distributed to three DDS as master clock.

Approximately 8.4MHz reference signal generated by DDS is inputted into each PLL of SCLO1 and SCLO2 through a ceramic filter. The signal for SCLO3 use is con-

verted into 10.676MHz by the DDS and becomes the SCLO3 signal via the amplifier and filter.

### 6-7. PLL to SCLO1/SCLO2

#### ■ SCLO1

The VCO consists of components including the inductor (L60) and variable capacitance diode (D15). The PLL (IC4) is in control of this VCO for the SCLO1 use. The VCO outputs different oscillation frequencies (64.847MHz and 61.721MHz) for main signal reception and sub signal reception.

#### ■ SCLO2

The VCO consists of components including the inductor (L85) and variable capacitance diode (D23). The PLL (IC6) is in control of this VCO for the SCLO2 use. This oscillation frequency (83.795MHz) is changed by  $\pm 250$ kHz to perform scope sweeping. It is performed every 10kHz by dividing the bandwidth.



## CIRCUIT DESCRIPTION

### 6-8. Interface Circuit

The interface circuit is connected to the control unit via the CN35 connector on the scope unit. The scope unit has a level shift circuit to shift voltage because it uses a 3.3 V power supply.

### 7. DC/DC Converter Circuit

#### 7-1. 13.8 V Power Supply and 5 V Backup Power Supply

1. The AC/DC power supply inputs 13.8 V (13 A) along with a backup of 5 V (0.1 A) into the DC-DC PCB (X43-322 A/3). The power supply input from the 13.8 V input terminal is distributed to each PCB through the following paths.
  - 1) 14 V system: 13.8 V input is supplied to the FINAL PCB (X45-388 A/2), CONTROL PCB (X53-452), and CATION DC-DC (APPLI) PCB (X43-322 C/3).
  - 2) 14S system: 13.8 V input is supplied through the FET switch to the FINAL PCB, LINK PCB (X43-322 B/3), DSP PCB(X53-453), DISPLAY PCB (X54-385 A/6),

- 3) 8 V system: 8 V generated from the 13.8 V input into the DC/DC converter is supplied to the PLL (MAIN LO) PCB (X50-322), PLL (SUB LO) PCB (X50-323), SCOPE PCB (X42-343 A/10), and RX PCB (X55-313 A/2).
  - 4) 5 V system: 5 V generated from the 13.8 V input into the DC/DC converter is supplied to the LINK PCB, CONTROL PCB, and DIGITAL PCB (X46-339).
  - 5) 3.3 V system: 13.8 V input into the DC/DC converter is supplied to the DIGITAL PCB, the RS-232C driver in the DC-DC PCB, and the analog multiplexer circuit. Furthermore, 13.8 V input is supplied via the FET switch from the 13.8 V input, to the LINK PCB and CONTROL PCB.
2. The power supply input from the backup 5 V input terminal is supplied through the CONTROL PCB and the reset IC and 3.3 V series regulator on the DC-DC PCB to the BKC detection circuit on the DC-DC PCB.
  3. The DC-DC PCB supplies a variety of control signals to the BKC circuit on the CONTROL PCB, RS-232C driver, external AT, KEY PAD, and LINK PCB.

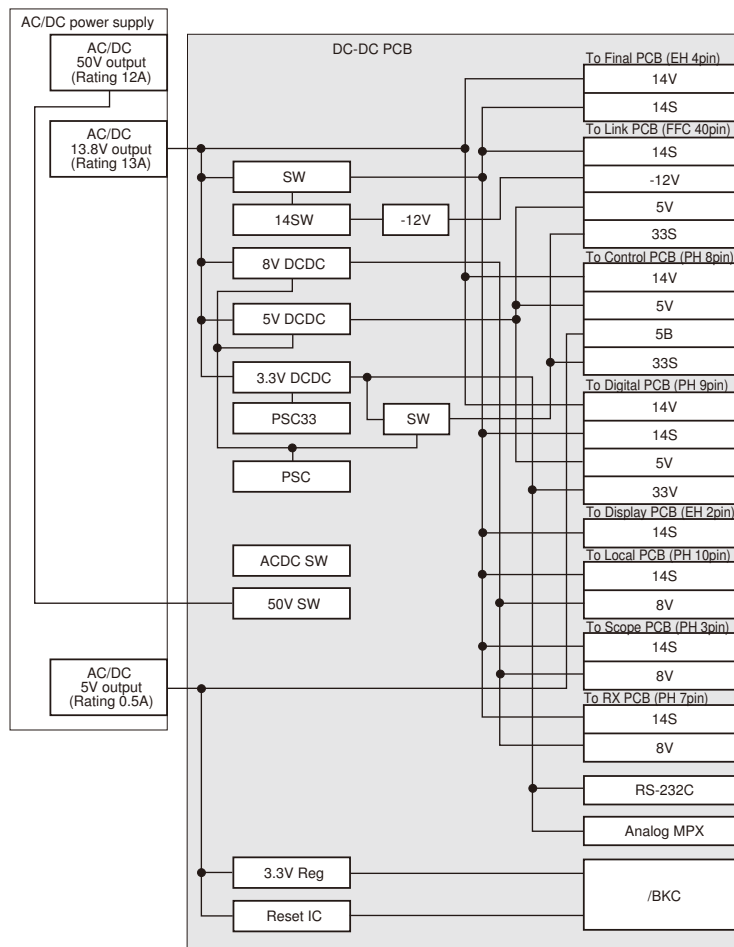


Fig. 32 13.8 V power supply and 5 V backup power supply

## CIRCUIT DESCRIPTION

### 7-2. 14S, 5 V, and 33S Power Supplies

- The 14S, 5 V, and 33S power supplies that are input from the DC-DC PCB are supplied to each PCB through the following paths.
  - 14S system: 14S input is supplied to the AT PCB, ANT SW PCB and TX-RX PCB.
  - 5 V system: 5 V input is supplied to the FINAL PCB, ANT SW PCB and TX-RX PCB.
  - 33S system: 33S input is supplied to the FINAL PCB, AT PCB, ANT SW PCB and TX-RX PCB.
- The LINK PCB serves to connect a variety of control signals input from the CONTROL PCB through the DC-DC PCB to the FINAL PCB, AT PCB, ANT SW PCB and TX-RX PCB.

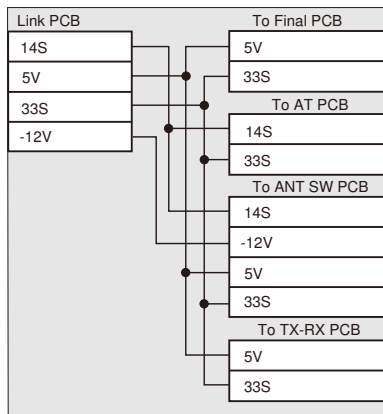


Fig. 33 14S, 5 V, and 33S power supplies

### 7-3. 1.8V and 1.2V Power Supplies

The DC-DC (APPLI) PCB uses the DC/DC converter to generate 1.8 V and 1.2 V from 14 V that is input from the DC-DC PCB and supply the voltages to the DIGITAL PCB.

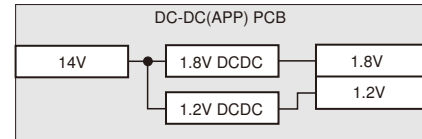


Fig. 34 1.8V and 1.2V power supplies

## 8. DSP (TXMRX and SRX) Unit

### 8-1. Outline

The DSP unit (X53-453) consists of two DSPs (IC202 and IC300), a DSP-SubMCU (IC101), two Latch ICs (IC200 and IC201), a Buffer (IC302), two Flash memories (IC203 and IC398), three A/D converters (ADCs) (IC389, IC392 and IC398), eight D/A converters (DACs) (IC385, IC386, IC387, IC388, IC390, IC391, IC397 and IC658), an optical I/O (A650 and A651) and two electronic volume ICs (IC664 and IC665), two AF power amplifiers (IC51 and IC52), and a headphone amplifier (IC50).

The DSP-SubMCU uses the UART to perform external communications with the main MCU (X53-452 IC46) while the SPI performs communications between the DSP-SubMCU and the DSP.

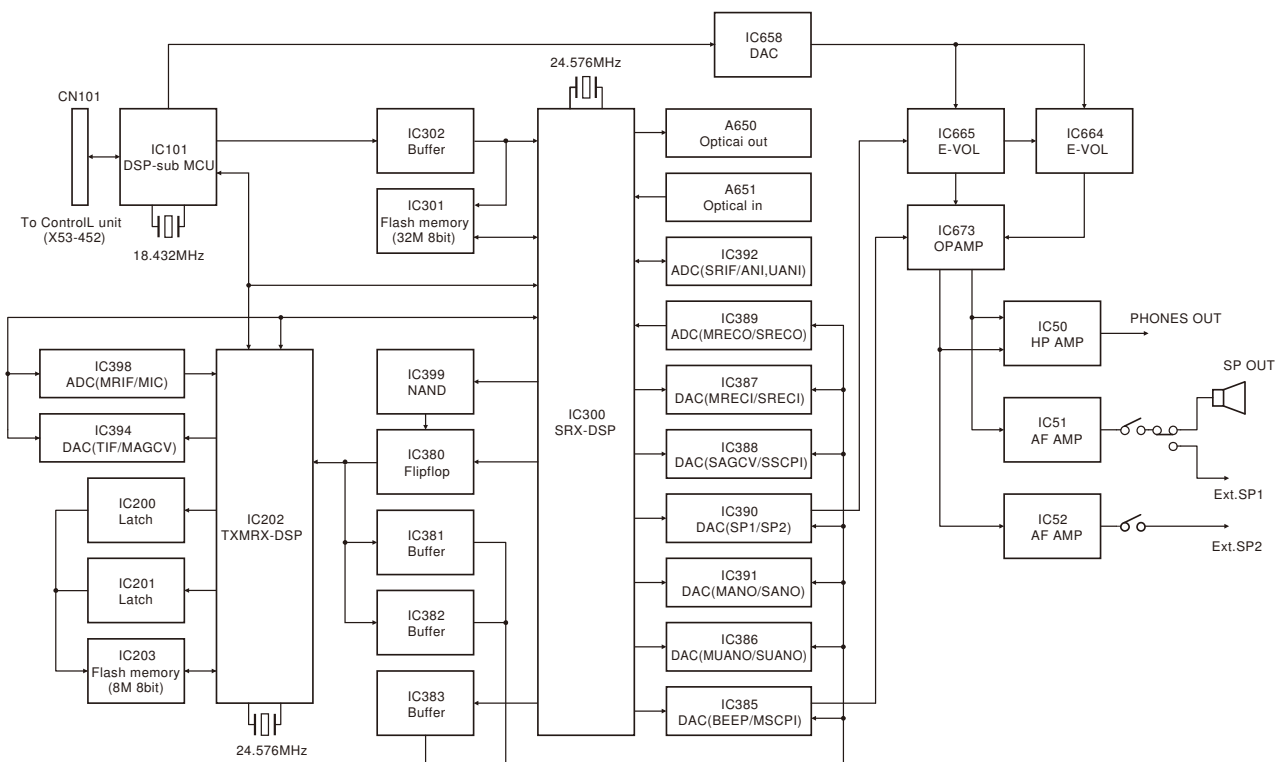


Fig. 35 DSP circuit

## CIRCUIT DESCRIPTION

### 8-2. DSPs (IC202 and IC300) and the Peripheral Circuit

There are two types of DSPs. The TXMRX-DSP (IC202) is used for transmission processing, main band reception, and RTTY/PSK31 encoding, and operates at an internal core voltage of 1.2 V, external I/O voltage of 3.3 V, reference clock frequency of 24.576MHz, and operating clock frequency of 331.776MHz. The SRX-DSP (IC300) is used for sub-band reception and various signal path processing (except for band scope and display processing and RTTY/PSK31 decoding), and operates at an internal core voltage of 1.2 V, external I/O voltage of 3.3 V, reference clock frequency of 24.576MHz, and operating clock frequency of 258.048MHz.

The SRX-DSP (IC300) supplies the BICK (SCLK96K) and LRCK (LRCK96K) for an MCLK frequency of 24.576MHz and a sampling frequency (fs) of 96kHz to each ADC and DAC. The Flip Flop (IC380) divides the SCLK96K and LRCK96K to generate the BICK (SCLK48K) and LRCK (LRCK48K) for an fs of 48kHz. The SCLK96K and LRCK96K

are supplied to the TXMRX-DSP (IC202) while the SCLK48K and LRCK48K are supplied to the TXMRX-DSP and SRX-DSP.

The Flash memories (IC203 and IC301) are used to store each DSP program, and the Latch ICs (IC200 and IC201) are used as an address decoder for the TXMRX-DSP use. The buffer (IC302) is used for the 8-port expansion input for the SRX-DSP. The SRS-DSP exchanges transmission and reception data from the optical I/O (A650 and A651).

The main MCU serves as a host. Therefore, the DSP-SubMCU (IC101) performs UART and SPI conversion in order to enable communications between the host and each DSP. The DAC (IC658) is connected to the DSP-SubMCU to control the electronic volume ICs (IC664 and IC664) in control of various functions, such as volume control, mute control DSP reset release control, or boot control.

When the DSP-SubMCU is in SPI communication with the TXMRX-DSP (IC202) and SRX-DSP (IC300), the DSP-SubMCU serves as the master and each DSP serves as a slave.

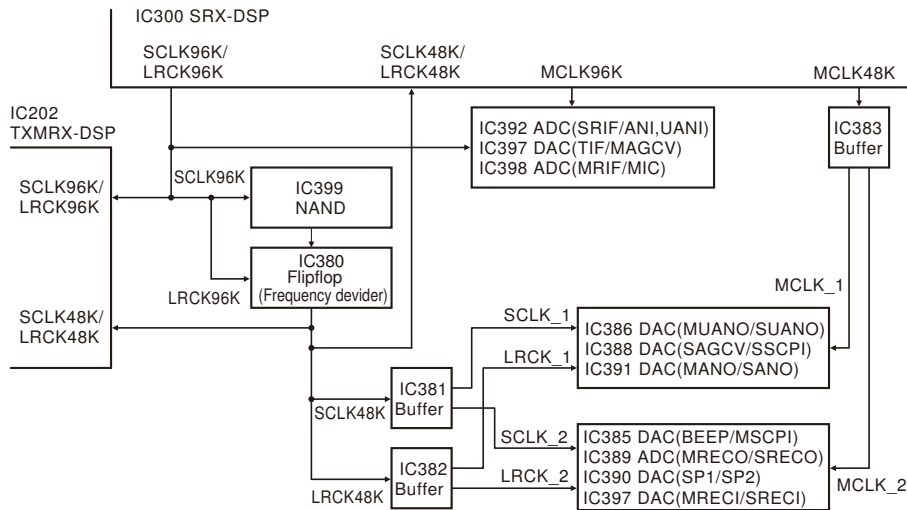


Fig. 36 Flow of audio clock

### 8-3. Reception Signal Path (IF Signal/FM Wave Detection to AF output)

The signal (MRIF) in FM or other modes output from the CN137 on the RX unit (X55-313 A/2) is sent to the MRIF connector (CN665) on the DSP unit (X53-453) and input into the L channel of the ADC (IC398) through the active filters (IC675 and IC667). The TXMRX-DSP processes the MRIF signal sampled by the ADC at a sampling frequency (fs) of 96kHz.

The signal (SRIF) in FM or other modes output from the CN600 on the TX-RX unit (X57-827 A/2) is sent to the SRIF connector (CN670) on the DSP unit and input into the L channel of the ADC (IC392) through the active filters (IC670 and IC678). The SRX-DSP processes the SRIF signal sampled by the ADC at a sampling frequency (fs) of 96kHz.

The signal processed by each DSP is sent from the SRX-DSP to the DAC (IC390) and converted to an AF signal at an fs of 48kHz. The DAC outputs the SP1 signal for the L chan-

nel and SP2 signal for the R channel.

The signal output from the DAC passes through the active filter (IC650), and is converted to a certain voltage level by the electronic volume ICs (IC664 and IC665). This signal mixed with the BEEP signal and MIXSP signal in IC673, and passes through the active filter (IC660 and IC661), and is applied to the AF power amplifiers (IC51 and IC52) and headphone amplifiers (IC50 and IC671).

The SP1 signal input into the AF power amplifier is sent as a built-in speaker output from CN50 after the signal passes through the mute circuit. If an external SP1 is used, the signal is sent from J50 (the built-in speaker and the external SP1 cannot be used simultaneously.). The SP2 signal is sent for an external SP2 from J51.

The SP1 signal (for the L channel) and SP2 signal (for the R channel) signal input into the headphone amplifier are sent from CN667 and connected to the PHONES jack on the front panel.

## CIRCUIT DESCRIPTION

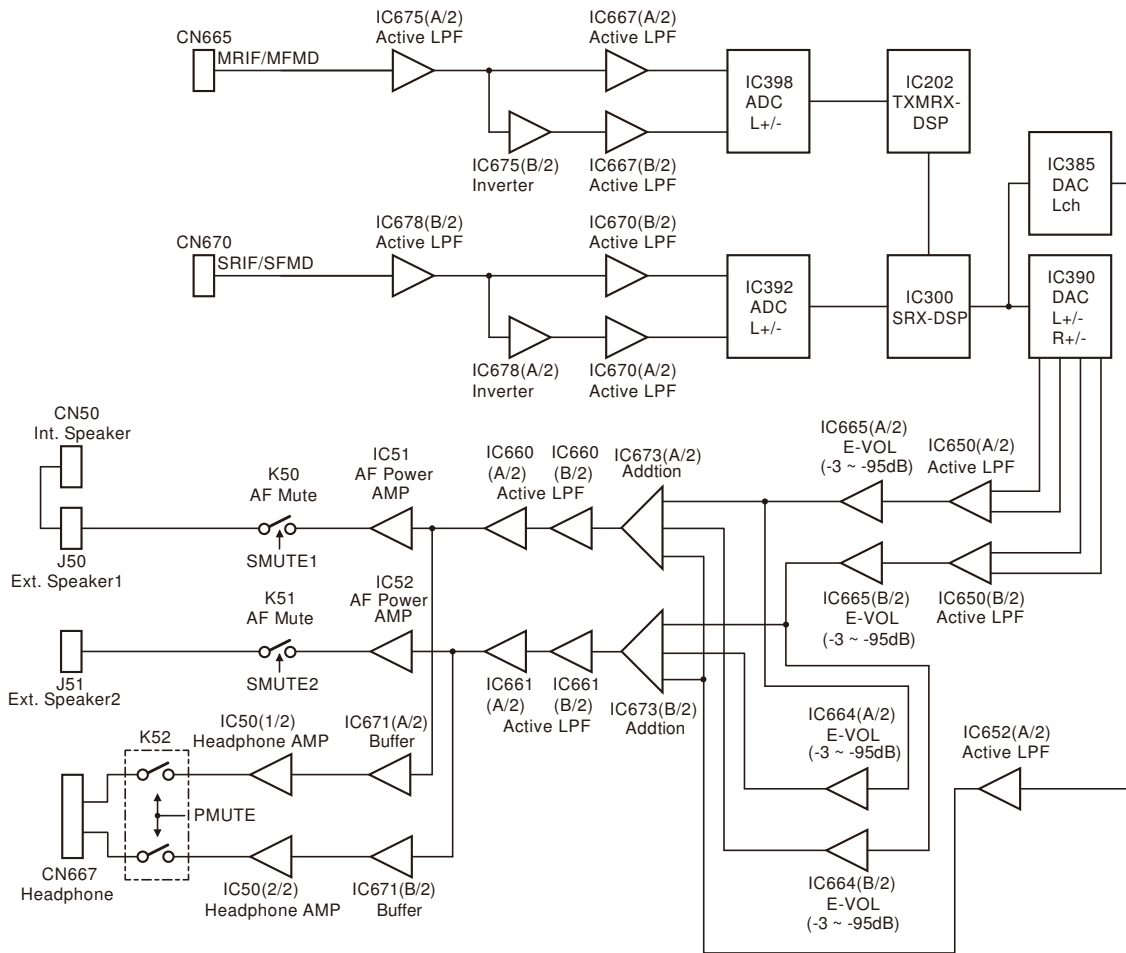


Fig. 37 Receive signal path

### 8-4. Transmission Signal Path (MIC Input to the IF Signal/FM Transmission AF output)

The signal input from the microphone is sent to the MIC connector (CN668) and is applied to the differential amplifier (IC683). The output signal from the differential amplifier is applied to the R channel of the ADC (IC398) through the active filters (IC674 and IC666). The TXMRX-DSP (IC202) processes the MIC signal sampled by the ADC at an fs of 96kHz, and the signal is sent from the L channel of the DAC (IC397) at an fs of 96kHz. The signal output from the DAC passes through the active filters (IC668 and IC679) and is applied to the analog switcher (IC686), when the output destination will be changed.

In the case of transmission in FM mode, the signal is sent from CN666 and input into the PLL (SUB LO) unit (X50-323 CN66). In the case of transmission in modes other than FM mode, the signal is sent from CN663 and input into the TX-RX unit (X57-827 A/2 CN700).

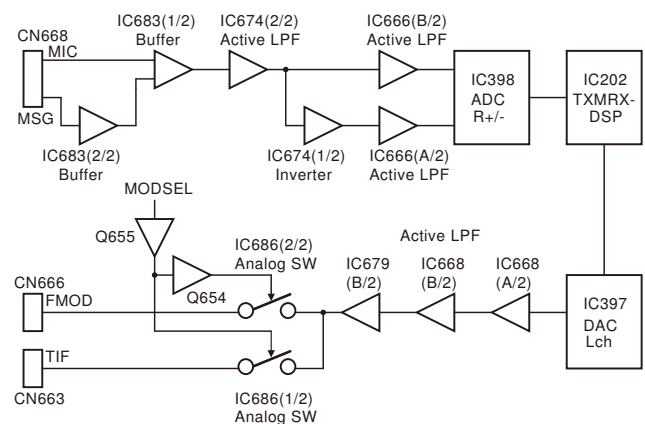


Fig. 38 Transmission signal path

## CIRCUIT DESCRIPTION

### 8-5. Signal Path to External I/O

The signal (ANI) output from the ACC2 and the signal (USB-ANI) output from the USB are applied to CN671 and CN672 respectively, and either one of which is selected by the analog switcher (IC684). This signal is applied to the R channel of the ADC (IC392) through the active filters (IC672 and IC682).

The ANI signal or USB-ANI signal sampled by the ADC at an fs of 96kHz is sent to the SRX-DSP.

The signals (MANO and SANO) output to the ACC2 are sent from the SRX-DSP to the DAC (IC391) and converted to an AF signal at an fs of 48kHz. The MANO signal output from the L channel of the DAC and the SANO signal output from the R channel of the DAC are output to the ACC2 from CN671 after passing through the active filter (IC651 and IC659) and the active filter (IC651 and IC657), respectively.

The signals (USB-MANO and USB-SANO) output to the USB are sent from the SRX-DSP to the DAC (IC391) and converted to an AF signal at an fs of 48kHz. The USB-MANO signal output from the L channel of the DAC and the SANO signal output from the R channel of the DAC are sent

to the digital unit (X46-339 CN11) from CN672 after passing through the active filter (IC653) and the active filter (IC654) and input into the USB codec IC (X46-339 IC703).

### 8-6. Signal Paths of Recording Sound and Playback Sound

The recording signals (MRECI and SRECI) are output from the SRX-DSP to the DAC (IC387) and converted to an AF signal at an fs of 48kHz. The MRECI signal output from the L channel of the DAC and the SRECI signal output from the R channel of the DAC are sent to the digital unit (X46-339 CN11) from CN672 after passing through the active filter (IC653) and the active filter (IC654) and input into the digital unit (X46-339 CN11).

The playback sound signals (MRECO and SRECO) are input into CN672 from the digital unit (X46-339 CN11). The MRECO signal is applied to the L channel of the ADC (IC389) and the SRECO signal is applied to the R channel of the ADC (IC389). The signal sampled at an fs of 48kHz by the ADC is sent to the SRX-DSP.

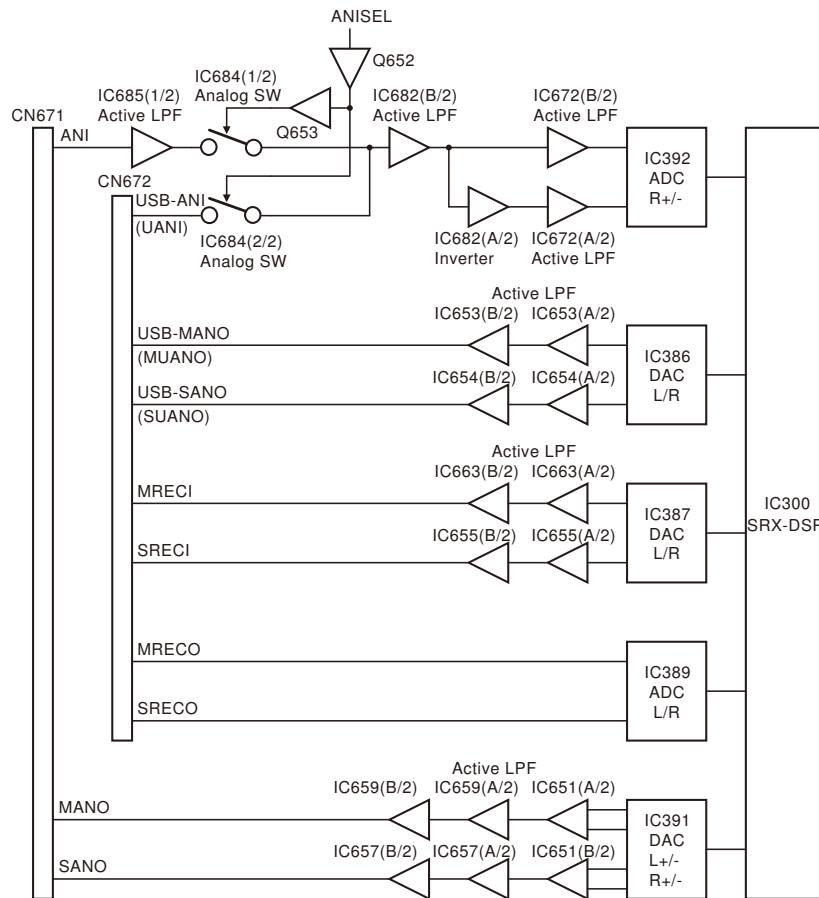


Fig. 39 External I/O and signal paths of recording and playback sounds

## CIRCUIT DESCRIPTION

### 8-7. Signal Path for the Band Scope and Decoder Use

The IF signals (MSCPI and SSCPI) for the band scope use and decoder use are sent to each DAC from the SRX-DSP.

The DAC (IC385) converts the MSCPI signal to an analog signal at an fs of 48kHz. The signal output from the R channel of the DAC is sent to the control unit (X53-452 CN450) from the MSCPI connector (CN662) after passing through the active filter (IC669).

The DAC (IC388) converts the SSCPI signal to an analog signal at an fs of 48kHz. The signal output from the R channel of the DAC is sent to the control unit (X53-452 CN451) from the SSCPI connector (CN669) after passing through the active filter (IC656).

### 8-8. AGC Voltage Output Circuit

The AGC voltage output (MAGCV) for the main signal reception is sent from the TXMRX-DSP to the R channel of the DAC (IC397) at an fs of 96kHz. The signal output from the R channel of the DAC is sent from the MAGCV connector (CN101) to the RX unit (X55-313 A/2 CN28) via the control unit (X53-452 CN32 and CN72) after passing through the buffer amplifier (IC681).

The AGC voltage output (SAGCV) for the sub signal reception is sent from the SRX-DSP to the L channel of the DAC (IC388) at an fs of 48kHz. The signal output from the L channel of the DAC is sent from the SAGCV connector (CN671) to the TX-RX unit (X57-827 A/2 CN2) after the signal passes through the buffer amplifier (IC662).

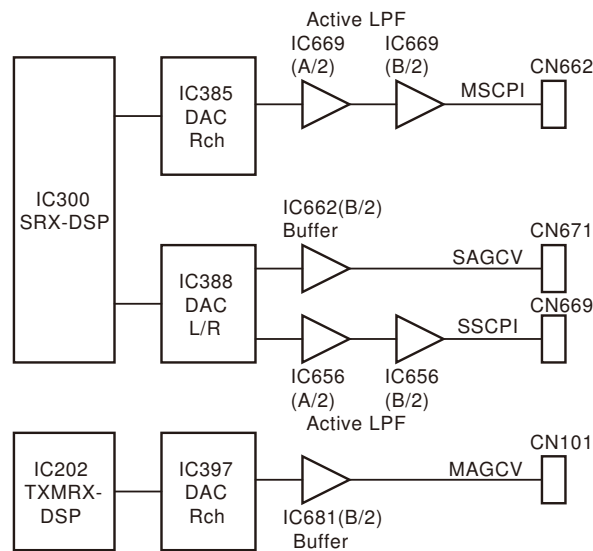


Fig. 40 Signal for the band scope and decoder use and the AGC voltage output path

## 9. Control Circuit

### 9-1. Outline

The control circuit consists of the main MCU (IC46) along with the EEPROM (IC47), reset IC (IC44), RTC IC (IC49), extension output ICs (IC31 to IC34, IC36 to IC39, IC42, and IC43), scope MCU (IC380), and scope DSP (IC381).

### 9-2. Main MCU and Its Periphery

The main MCU (IC46) operates at a power supply voltage of 3.3V and a clock frequency of 88.4736MHz obtained by multiplying 11.0592MHz in the main MCU by eight. Furthermore, the number of output ports is insufficient. Therefore, 10 expansion ICs are prepared to compensate for 80 ports.

The 3.3 V power supply must be always supplied. Therefore, this power supply is different from other power supplies.

The main MCU is connected with the EEPROM (IC47) for backup use, clock count RTC IC (IC49), and reset IC (IC44). The EEPROM mainly stores adjustment data, MAC address,

and various set values. In order to suppress the standby power consumption of the transceiver when the transceiver is turned OFF, a setting (turned ON by default for models shipped for European countries) allows the main MCU to go into stop mode to reduce the standby current.

This mode is available to models shipped for countries other than European countries.

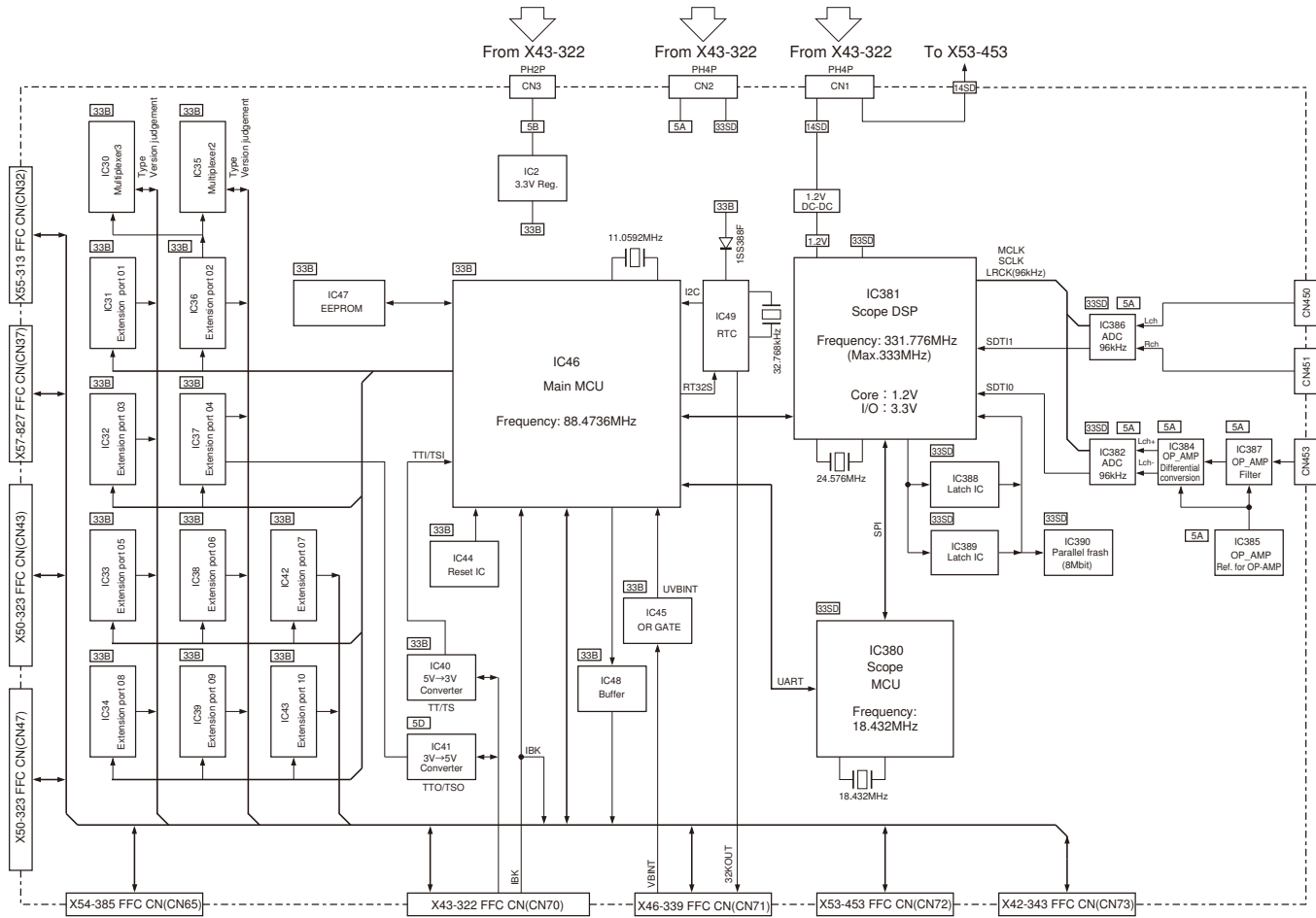
The UART mainly performs other MCU communication at a baud rate of 115,200 bps.

### 9-3. Scope MCU and Its Periphery

The scope MCU (IC380) is powered by a supply voltage of 3.3 V and operated at a clock frequency of 18.432MHz sourced by a crystal oscillator that oscillates at the same frequency. The scope MCU is mainly in output timing and reset control of the drawing data of the scope DSP (IC381). Additionally, the scope MCU is in the PLL and DDS control of the scope unit (X42-343 A/10) and the switching of the BPF for IF use.



## CIRCUIT DESCRIPTION



**Fig. 41 Control circuit**

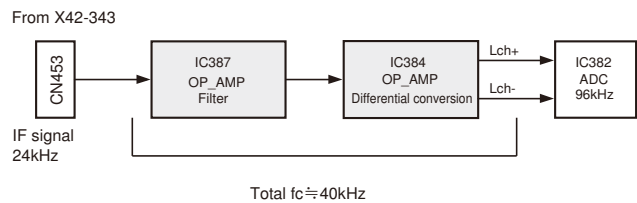
### 9-4. Scope DSP and Its Periphery

The scope DSP (IC381) is powered by two supply voltages, i.e., 3.3 V (I/O) and 1.2 V (Core). The scope DSP is operated at a clock frequency of 331.776MHz obtained by dividing 24.576MHz in the scope DSP and multiplying the divided frequency by 27.

The flash memory (IC390) for program storage, latch ICs (IC388 and IC389) for address decoding, and ADCs (IC382 and IC386) are connected as peripheral devices for the scope DSP. The scope DSP and the scope MCU are in the SPI communication mutually (at a communication speed of approximately 1.15MHz). Drawing data for a single screen is transferred at a cycle of 150 ms to the application MCU (X46-339). Such drawing data is transferred under the SPI communication at a speed of approximately 2MHz.

### 9-5. Scope IF Signal

A 24kHz IF signal received from the scope unit (X42-343 A/10) passes through the quaternary LPFs (IC384 and IC387), and is converted to a differential signal at a single end. This signal is applied to the ADC (IC382) and converted to drawing data in the scope DSP (IC381) (Band scope).



**Fig. 42 Scope IF signal**

### 9-6. MSCPI signal

The audio signal of the main receiver is received from the DSP unit (X53-453) and input into the ADC (IC386 L channel). The signal is converted to drawing data in the scope DSP (IC381) (Audio scope).

### 9-7. SSCPI signal

The audio signal of the sub receiver is received from the DSP unit (X53-453) and input into the ADC (IC386 R channel). The signal is converted to drawing data in the scope DSP (IC381) (Audio scope).



## CIRCUIT DESCRIPTION

### 10. Digital Control Circuit

#### 10-1. Outline

The digital unit (X46-339) mainly consists of two application MCUs (IC1 and IC201). IC1 mainly controls the main

display and external monitor output system (7-inch LCD, IC401, and IC402), USB host transceiver (IC502 and IC503), and Ethernet PHY IC (IC601) while IC201 is mainly in control of the sub display (3.5-inch LCD).

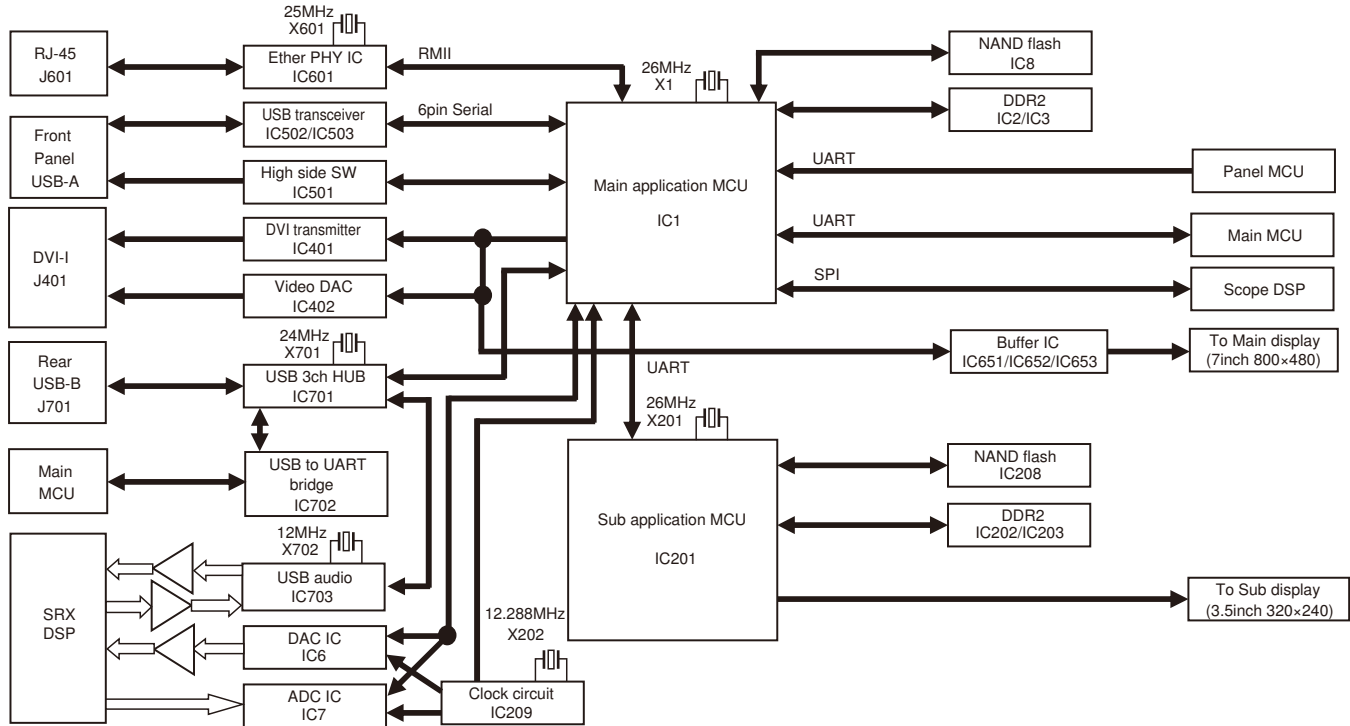


Fig. 43 Digital control circuit

#### 10-2. Application MCU and Its Periphery

The main application MCU (IC1) and sub application MCU (IC201) are the same in basic configuration. The clock frequency is 26MHz and the internal operating frequency is 600MHz. As for the memory configuration, 2G-bit NAND flash memories (IC8 and IC208) for program storage and 1G-bit DDR2 memories (IC2/IC3 and IC202/IC203) for program computation are incorporated.

Two application MCUs are in UART communication at a baud rate of 3,686,400 bps. Three types of supply voltages in five systems are used, i.e., 1.8 V (for the DDR controller system), 3.3 V (for the I/O system), 1.2 V (for the core), 1.8 V (for others), and 3.3 V (for the USB system), and started in the sequence shown in Fig. 44.

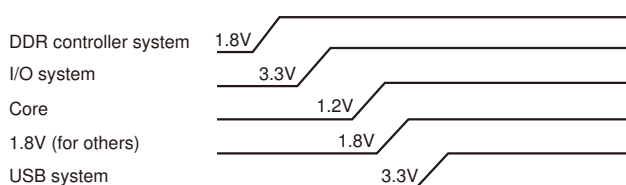


Fig. 44 Power supply voltage of the application MCU

#### 10-3. Communication with the Main MCU

The application MCU is basically operated by commands from the main MCU (IC46) of the control unit (X53-452). These commands are transmitted in UART communication at a baud rate of 115,200 bps.

#### 10-4. Communication with the Scope DSP

Scope image data displayed on the main display and sub display is received by both IC1 and IC201 from the scope DSP (IC380) of the control unit in serial peripheral interface (SPI) mode. The transfer baud rate is 2,073,600 bps.

#### 10-5. Communication with the Panel MCU

Coordinate data on the scope screen of the main display is received through the panel MCU (IC6) of the display unit (X54-385). The transfer baud rate is 115,200 bps.

#### 10-6. LAN Interface Circuit

The LAN interface of this transceiver supports 100BASE-TX and 10BASE-T standards, and consists of the MAC function of the main application MCU (IC1), PHY function of the Ethernet PHY IC (IC601), and the transformer-built-in RJ-45 connector (IC601). The MAC interface communicates over RMII.

## CIRCUIT DESCRIPTION

### 10-7. USB Interface (host)

This transceiver incorporates a 2-channel USB host function and supports USB 2.0 at full speed. The main application MCU (IC1) and USB transceiver (IC502) configures a single channel and the main application MCU and USB transceiver (IC503) configures another single channel.

The USB bus power supply uses the HIGH SIDE switch (IC501) for over-current detection. The interface of the main application MCU and USB transceiver (IC502 and IC503) performs 6-pin serial communications.

### 10-8. DVI output

This transceiver incorporates a DVI-I terminal with analog and digital video output functions.

The DVI transmitter (IC401) converts RGB888 digital signals from the main application MCU (IC1) so that digital image signals will be output from the DVI-I terminal (J401) via the digital visual interface (DVI).

The video DAC (IC402) performs the D/A conversion of RGB888 digital signals from the main application MCU so that analog image signals will be output from the DVI-I terminal (J401).

The output images are the same as images output from the main display.

### 10-9. Recording/Playback

This transceiver has a recording/playback function. The ADC (IC7) performs the A/D conversion of analog signals at a sampling frequency (fs) of 16kHz after the analog signals are input from the DSP (IC300) of the DSP unit (X53-453). The converted signals are stored in the main application MCU (IC1). At the time of playback, the DAC (IC6) performs the D/A conversion of the digital audio signal memorized in the main application MCU at an fs of 16kHz and transmits the converted analog signal to the DSP of the DSP unit.

### 10-10. Sub Display Interface

The incorporated sub display is a 3.5-inch (320 x 240 resolution) LCD. The sub application MCU (IC201) and the sub display interface are in mutual RGB888 communication. RGB888 digital signal output from the sub application MCU is transferred to the sub display.

### 10-11. Main Display Interface

The incorporated main display is a 7-inch (800 x 480 resolution) LCD. The interface of the main application MCU (IC1) and main display performs RGB666 communication. RGB666 digital signal output from the main application MCU is applied to the buffer ICs (IC651, IC652, and IC653) where waveform shaping is performed, and the signal is transferred to the main display.

### 10-12. Operating as USB 2.0 (device)

If this transceiver is connected to a PC over a USB cable, the following three items operate as high-speed USB 2.0 devices.

- USB to UART Bridge (IC702)  
Used for PC command communication for the ARCP.
- USB Audio (IC703)

The USB audio operates at the time of signal transmission and reception through the microphone and speaker connected to the PC or recording the sound received.

- Access to NAND Flash (IC8)  
In the case of updating firmware through the PC, the firmware is stored temporarily in the NAND flash via the main application MCU (IC1).

The above three devices are connected through the USB-B connector (J701) on the rear panel to the PC through the USB 3-channel hub (IC701).

## 11. Display Circuit

The display block consists of the panel MCU (X54-385 IC6), a peripheral circuit, LCD assy, LCD backlight block, and LED block. The display block uses the PTXD, PRXD, PCTS, and PRTS to communicate with the main MCU (X53-452 IC46) and uses the PATXD to communicate with the application MCU (X46-339 IC1) (at a baud rate of 115,200 bps).

### 11-1. Circuits Around the Panel MCU

Two power supplies, the 5D (5 V) and 33AVR (3.3 V), are used for the digital block. The panel MCU clock at 11.0592MHz (X101) is used. The reset signal is controlled from the main MCU. The panel MCU accepts signal the key matrix, various encoders, various volumes, external PF key, and the touch panel. The volumes and external PF key are all accepted from the multiplexer (IC9, IC10, and IC11) through the A/D port of the panel MCU.

### 11-2. Touch panel

The touch panel used for this transceiver is of resistive membrane system. The power supply switches (Q303 to Q308) for the touch detection X/Y axis are turned ON and OFF through the panel MCU to control the touch panel.

The coordinates are accepted through the A/D port of the panel MCU based on the division ratio of the voltage applied in the x-axis and y-axis direction.

### 11-3. LCD Backlight Controller

The LCD backlight controller uses IC306 on the main side and IC307 on the sub side. The built-in driver boosts and the PWM controls the power supply to the backlight to adjust the brightness of the backlight. The panel MCU is in PWM control. The LCD backlight controller is under the ON/OFF control of three MCUs, the main MCU, the application MCU, and the panel MCU.

### 11-4. LED

The main display and sub display are under a four-stage dimmer control. The user can set four levels of brightness. The panel MCU is in control of 50 LEDs, and each LED not used for the numeric keypad is driven by a different port. The panel MCU and shift register (IC7) are in control of the drive transistor.

## CIRCUIT DESCRIPTION

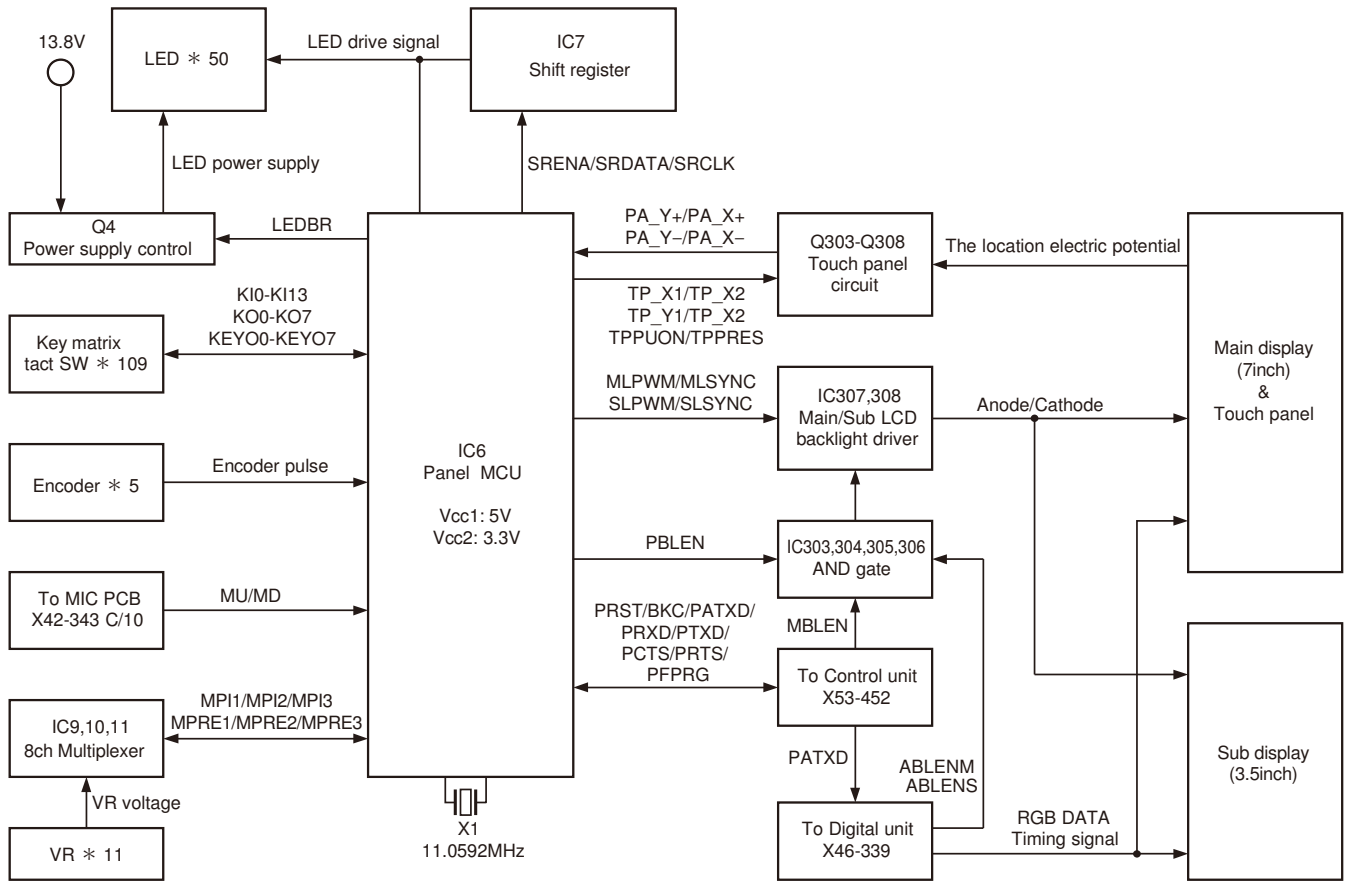


Fig. 45 Display circuit

## COMPONENTS DESCRIPTION

### ACCESSORY UNIT (X42-3430-00)

Ref. No.	Use/Function	Operation/Condition/Compatibility
IC1	DDS	SCLO1 reference signal generation
IC2	DDS	SCLO2 reference signal generation
IC3	DDS	SCLO3 signal generation
IC4	PLL	SCLO1 control
IC5	Bus buffer	Level shift
IC6	PLL	SCLO2 control
IC7,8	Bus buffer	Level shift
IC9	Amplifier	SCIF3 gain adjustment
IC10	Buffer amplifier	SCLO1 reference signal amplifier
IC11,12	5V AVR	5V regulator
IC401	EEPROM	Adjustment data record for preselector
IC402	Shift register	Q1 : CA1 Q2 : CA2 Q3 : CB1 Q4 : CB2 Q5 : CB3 Q6 : CB4 Q7 : CC1 Q8 : CC2
IC403	Shift register	Q1 : CC3 Q2 : CC4 Q3 : CC5 Q4 : CC6 Q5 : CC7 Q6 : CC8 Q7 : CC9 Q8 : CC10
IC404	Shift register	Q1 : CC1 Q2 : 1L Q3 : 2L Q4 : 3L Q5 : 4L Q6 : 5L Q7 : 3DB Q8 : 6DB
Q1	Switching	IF switching, ON when main receiver is active (when SC08M is selected)
Q2	Switching	IF switching, ON when sub receiver is active (when SC11S is selected)
Q3	Switching	IF switching, ON when main receiver is active (when SC08M is selected)
Q4	Switching	IF switching, ON when sub receiver is active (when SC11S is selected)
Q5	Switching	IF switching, ON when sub receiver is active (when SC73S is selected)
Q7	Amplifier	Common base, for 8MHz
Q8	Amplifier	Common base, for 11MHz

Ref. No.	Use/Function	Operation/Condition/Compatibility
Q9	Switching	IF switching, ON when sub receiver is active (when SC73S is selected)
Q11	Amplifier	Input amplifier for 40MHz
Q12	Amplifier	Common base, for 73MHz
Q14~16	Amplifier	Input amplifier for 40MHz
Q17~20	RX mixer	Receiving mixer Main receiver: SC08M→ 73.095MHz Sub receiver: SC11S→ 73.095MHz
Q21,22	Switching	Power supply control for SCLO1, for 8A
Q23~25	Amplifier	DDS output buffer amplifier
Q26,27	Switching	Power supply control for SCMIX1, for 14S
Q29	Amplifier	Amplifier for PLL REF (8.4MHz)
Q30	Amplifier	Amplifier for SCLO3 (10.676MHz)
Q31	Switching	Scope attenuator: 0dB ON
Q32	Switching	Scope attenuator: -10dB ON
Q33	Switching	Scope attenuator: -20dB ON
Q37	Switching	Scope attenuator: -30dB ON
Q38	Amplifier	Amplifier for loop filter
Q39	Amplifier	SCIF1 amplifier
Q40	Buffer amplifier	PLL IC f-in
Q41	Amplifier	Amplifier for loop filter
Q43	Amplifier	Amplifier for loop filter
Q44,45	Amplifier	SCIF2 amplifier
Q50,51	Switching	5V switch
Q401	Switching	Preselector ON
Q402	Switching	Capacitor switching for BPF (CC1)
Q403	Switching	Capacitor switching for BPF (CC2)
Q404	Switching	Capacitor switching for BPF (CC3)
Q405	Switching	Capacitor switching for BPF (CC4)
Q406	Switching	Capacitor switching for BPF (CC5)
Q407	Switching	Capacitor/coil switching for BPF (CB1)
Q408	Switching	Capacitor switching for BPF (CC6)
Q409	Switching	Capacitor/coil switching for BPF (CA1)
Q410	Switching	Capacitor/coil switching for BPF (CB2)
Q411	Switching	Capacitor/coil switching for BPF (CC7)
Q412	Switching	Capacitor/coil switching for BPF (CB3)

## COMPONENTS DESCRIPTION

Ref. No.	Use/Function	Operation/Condition/Compatibility
Q413	Switching	Capacitor switching for BPF (CC8)
Q414	Switching	Capacitor/coil switching for BPF (CA2)
Q415	Switching	Capacitor switching for BPF (CC9)
Q416	Switching	Capacitor/coil switching for BPF (CB4)
Q417	Switching	Capacitor switching for BPF (CC10)
Q418	Switching	Capacitor switching for BPF (CC11)
Q419	Switching	Scope attenuator: 9dB ON
Q420	Switching	Scope attenuator: 6dB ON
Q421	Switching	Scope attenuator: 3dB ON
Q422	Switching	Scope attenuator: 9dB ON
Q423	Switching	Coil switching for BPF (1L)
Q424	Switching	Coil switching for BPF (2L)
Q425	Switching	Coil switching for BPF (3L)
Q426	Switching	Preselector ON
Q427	Switching	Coil switching for BPF (4L)
Q428	Switching	Coil switching for BPF (5L)
Q430	Switching	Preselector ON
D1	Frequency control	VCO for SCL01
D2	Switching	ON when main receiver is active (when SC08M is selected)
D3	Switching	ON when sub receiver is active (when SC11S is selected)
D4	Switching	ON when sub receiver is active (when SC73S is selected)
D8	Switching	ON when receiver is active
D9	Reverse current prevention	SEL12 control line
D10~13	RF switching	SCIF1 attenuator
D14	Reverse current prevention	SCPUL control line
D15	VCO tuning	Variable capacitance for SCLO1 tuning
D16~119	RF switching	SCIF1 attenuator
D20,21	RX mixer	RX Mixer ON when main receiver is active: 73.095MHz→ 10.7MHz
D23	VCO tuning	Variable capacitance for SCLO2 tuning
D24,25	RX mixer	RX Mixer ON when main receiver is active: 10.7MHz→ 24kHz
D26	Switching	Scope ON
D401~417	Surg absorption	Relay (K401-417)
D418	Reverse current prevention	3DB/6DB control line

Ref. No.	Use/Function	Operation/Condition/Compatibility
D419~421	RF switching	Preselector attenuator
D422	Surge absorption	Relay (K418)
D423~425	RF switching	Preselector attenuator
D426	Surg absorption	Relay (K419)
D427	Surg absorption	Relay (K420)
D428	Surg absorption	Relay (K422)
D429	Surge absorption	Relay (K421)
D430	Surge absorption	Relay (K423)
D431	Surge absorption	Relay (K424)
D601~603	Reverse current prevention	for phone jack data
D607,608	Surge protection	for USB universal serial data
D609	LED (Green)	Key backlight
D610	LED (Yellow)	Key backlight
D611,612	LED (Green)	Key backlight
D613	LED (Yellow)	Multi encoder

### DC-DC UNIT (X43-3220-00)

Ref. No.	Use/Function	Operation/Condition/Compatibility
IC20	Voltage detector	14V line voltage
IC21	Delayed	D-type flip-flop
IC22	Bus buffer	14V Voltage detect signal line
IC23	Voltage detector	Voltage detection (BU5V)
IC24	AND gate	BKC line
IC40	3.3V AVR	3.3V regulator
IC50	Analog switch	Fun speed or thermistor voltage select
IC100	DC/DC converter	8V switching regulator
IC120	DC/DC converter	5V switching regulator
IC140	DC/DC converter	3.3V switching regulator
IC200	RS-232C driver	RS-232C level converter
IC803	DC/DC converter	1.8V switching regulator
IC804	DC/DC converter	1.2V switching regulator
Q1,2	Switching	14S power supply switch
Q20	Switching	Over voltage
Q160,161	Switching	33S power supply switch
Q270~272	Switching	Multi vibrator for -12V
Q807,808	Switching	1.8V power supply switch
D1	Reverse current prevention	From signal revolution pulse of fan
D2	Overvoltage protection	From signal revolution pulse of fan
D20	Zener diode	Voltage drop
D21	Zener diode	Over voltage protection
D40	Reverse current prevention	From BU5V power supply

## COMPONENTS DESCRIPTION

Ref. No.	Use/Function	Operation/Condition/Compatibility
D100	Back electromotive force protection	For L101
D120	Back electromotive force protection	For L121
D140	Back electromotive force protection	For L141
D220~222	Surge protection	For 10MHz reference receptacle
D223,244	Reverse current prevention	EL-KEY (PADDLE) prevention
D225,226	Surge protection	For EXT AT terminal
D230	Surge protection	For EXT AT terminal
D270,271	Rectifier	For -12V power supply
D805	Back electromotive force protection	For L808
D807	Back electromotive force protection	For L811

### Final unit (X45-3880-00)

Ref. No.	Use/Function	Operation/Condition/Compatibility
IC1	D/A convertor	Ao1: "H" when drive output power is too high Ao2: Reserved Ao3: Reserved Ao4: Reserved Ao5: Reserved Ao6: Reserved Ao7: Reserved Ao8: Reserved
IC3	OP amplifier	RF power control
IC5	Drain current detection	Current detection
IC6	Shift register	Q1: 50L "H" when 49.0~54.0MHz LPF is selected Q2: "H" when 50M and 28M band are selected Q3:L "H" when FINAL fan rotates at low speed Q4:M "H" when FINAL fan rotates at mid speed Q5:H "H" when FINAL fan rotates at high speed Q6: "H" when AT fan rotates at low speed. Q7: "H" when AT fan rotates at high speed Q8: 5M "H" when AT becomes ON at 5MHz band
IC7	Shift register	Q1: 2L "H" when 1.705~2.1MHz band LPF is selected Q2: 7L "H" when 5.5~7.5MHz band LPF is selected

Ref. No.	Use/Function	Operation/Condition/Compatibility
IC7	Shift register	Q3: 14L "H" when 10.5~14.5MHz band LPF is selected Q4: 3L "H" when 2.1~4.0MHz band LPF is selected Q5: 28L "H" when 21.5~30.0MHz band LPF is selected Q6: 10L "H" when 7.5~10.5MHz band LPF is selected Q7: 21L "H" when 14.5~21.5MHz band LPF is selected Q8: 5L "H" when 4.0~5.5MHz band LPF is selected
IC8	OP amplifier	Current protection
IC800	Shift register	Q1: ANT1 "H" when ANT1 is selected during transmission Q2: ANT2 "H" when ANT2 is selected during transmission Q3: ANT3 "H" when ANT3 is selected during transmission Q4: ANT4 "H" when ANT4 is selected during transmission Q5: SANT1 "H" when ANT1 is selected during reception Q6: SANT2 "H" when ANT2 is selected during reception Q7: SANT3 "H" when ANT3 is selected during reception Q8: SANT4 "H" when ANT4 is selected during reception
Q2	Pre-drive amplifier	HF band amplifier
Q3	Drive amplifier	HF band amplifier
Q4	Switching	ON when RX
Q5,6	Switching	Over drive protection
Q7(A/2,B/2)	Final amplifier	HF band amplifier
Q9	Switching	ON when FINAL fan rotates at high speed
Q10	Switching	ON when FINAL fan rotates at mid speed
Q11	Switching	ON when FINAL fan rotates at high speed
Q12	Switching	ON when FINAL fan rotates at mid speed
Q13	Switching	ON when FINAL fan rotates at low speed
Q14	Switching	ON when FINAL fan rotates at low speed
Q15	Switching	ON when 49.0~54.0MHz band LPF is selected
Q16	Switching	ON when 2.1~4.0MHz band LPF is selected
Q17	Switching	ON when 5.5~7.5MHz band LPF is selected
Q18	Switching	ON when 10.5~14.5MHz band LPF is selected



## COMPONENTS DESCRIPTION

Ref. No.	Use/Function	Operation/Condition/Compatibility
Q19	Switching	ON when 1.705~2.1MHz band LPF is selected
Q20	Switching	ON when 21.5~30.0MHz band LPF is selected
Q21	Switching	ON when 14.5~21.5MHz band LPF is selected
Q22	Switching	ON when 7.5~10.5MHz LPF is selected
Q23	Switching	ON when 4.0~5.5MHz LPF is selected
Q24	Switching	ON when AT fan rotates at low speed
Q25	Switching	ON when AT fan rotates at low speed
Q26	Switching	ON when AT fan rotates at high speed
Q27	Switching	ON when AT fan rotates at high speed
Q500	Switching	ON when operates over drive protection
Q502	Switching	ON when 50M and 28M band are selected
Q800	Switching	ON when ANT1 is selected during reception
Q801	Switching	ON when ANT3 is selected during reception
Q802	Switching	ON when ANT2 is selected during reception
Q803	Switching	ON when ANT4 is selected during reception
Q804	Switching	ON when ANT4 is selected during transmission
Q805	Switching	ON when ANT1 is selected during transmission
Q806	Switching	ON when ANT2 is selected during transmission
Q807	Switching	ON when ANT3 is selected during transmission
D1	Reverse voltage prevention	Surge protect
D2	Detection	RF power control
D3	Detection	RF power control
D5	Reverse voltage prevention	Surge protect
D8	Protection	Surge protect
D9~17	Protection	Surge protect
D50	Attenuator	RF power control
D51	Protection	Surge protect
D501	Reverse voltage prevention	Surge protect
D800~808	Protection	Surge protect

## DIGITAL UNIT (X46-3390-00)

Ref. No.	Use/Function	Operation/Condition/Compatibility
IC1	MCU	Main application MCU
IC2,3	DDR2 SDRAM	DDR2 166MHz
IC6	DAC	DA converter for SRECO and MRECO
IC7	ADC	AD converter for SRECI and MRECI
IC8	NAND flash	Program for IC1 and internal memory
IC9	AND gate IC	AHLT control
IC201	MCU	Sub application MCU
IC202,203	DDR2 SDRAM	DDR2 166MHz
IC208	NAND flash	Program for IC201
IC209	Triple inverter (Unbuffer type)	Inverter for crystal oscillation and buffer
IC401	DVI transmitter	DVI transmitter
IC402	Video DAC	Triple 8-bit video DAC
IC403	Dual buffer	Level shift from 3.3V to 5V for DSHSM and DSVSM
IC451	OP amplifier	Reference voltage of OP amplifier supply
IC452	OP amplifier	Active filter for SRECO signal
IC453	OP amplifier	Active filter for MRECO signal
IC501	2ch high side SW	Over current protection for USB VBUS
IC502, 503	USB transceiver	Universal serial bus transceivers
IC601	Ethernet PHY chip	Ethernet physical layer transceiver
IC651, 652,653	Octal BUS buffer	Buffer for main display interface
IC701	USB 3ch hub	USB 3ch hub device
IC702	USB-UART bridge	USB-UART bridge device
IC703	USB CODEC	USB audio device
IC704	High side SW	Power supply switch for USB device
IC705	AND gate	USB audio device full speed select control
IC706	OP amplifier	Active filter for USB audio analog input
IC707	OP amplifier	Active filter for USB audio analog output
IC708,709	3.3V AVR	From 5A voltage line
Q1	Inverter switch	AnRST control switch for IC1 and IC201
Q651	Power switch	Power supply control for 3.3V of main display
Q652	Switch	Q651 ON/OFF switch
Q701	Switch	USB-UART bridge device active signal switch



## COMPONENTS DESCRIPTION

Ref. No.	Use/Function	Operation/Condition/Compatibility
Q702	Switch	USB audio device active signal switch
Q703	Switch	USB device power supply control switch
Q803	Power switch	Power supply control for digital 3.3V
Q804	Switch	Q803 ON/OFF switch
Q805	Power switch	Power supply control for 3.3V of USB PHY
Q806	Switch	Q805 ON/OFF switch
Q808	Power switch	Power supply control for 3.3V of ADC
Q809	Switch	Q808 ON/OFF switch
D1	Reverse current prevention	Reduced voltage detection interrupt
D402~406	Protection	Surge protect
D420~422	Protection	Surge protect
D601~604	Protection	Surge protect
D701	Protection	Surge protect
D702	Reverse current prevention	For IC708,709 input line

### PLL (MAIN) UNIT (X50-3220-00)

Ref. No.	Use/Function	Operation/Condition/Compatibility
IC2	PLL	PLL for DDS (IC3) REF
IC3	DDS	DDS for MLO1
IC4	Level Shift of serial data	3.3V→5V
IC5	5V AVR	ML05C
IC6	3.3V AVR	For 19.2MHz TCXO
IC7	3.3V AVR	ML33C
IC8	1.8V AVR	For MLO1 DDS
IC9	Wide band AMP	Amplifies MLO1 DDS output
IC10,11	Level shift of serial data	3.3V→5V
IC12	OP amplifier	Control AGC AMP
IC13	DDS	Internal REF frequency
IC14	Comparator	Detect of 10MHz REF input
IC15	Shift resistor	Q1: MLVCO1 "H" when VCO1 operate Q2: MLVCO2 "H" when VCO2 operate Q3: MLVCO3 "H" when VCO3 operate Q4: MLVCO4 "H" when VCO4 operate Q5: MLDI "H" when 1/10 divide operate

Ref. No.	Use/Function	Operation/Condition/Compatibility
IC15	Shift resistor	Q6: MLDIV2 "H" when 1/4 or 1/8 divide operate Q7: MLDIV3 "H" when 1/8 divide operate Q8: MLDDS0 "H" when DDS output used direct as MLO1 "H" when DDS output used PLL reference
IC16	Shift resistor	Q1: MLFIL1 "H" when FIL1 operate Q2: MLFIL2 "H" when FIL2 operate Q3: MLFIL3 "H" when FIL3 operate Q4: MLFIL4 "H" when FIL4 operate Q5: MLFIL5 "H" when FIL5 operate Q6: MLFIL6 "H" when FIL6 operate Q7: MLFIL7 "H" when FIL7 operate Q8: MDIV20 "H" when 1/4 divide operate
IC17	PLL	PLL for MLO1 VCO
IC18	PLL	PLL for 20MHz VCXO
IC19	Flip-flop	1/2 divide
IC20	Counter	1/5 divide
IC21,22	Flip-flop	1/2 divide
IC23	Buffer	For MLO1 DDS output
IC24,25	Flip-flop	1/2 divide
IC26	DDS	DDS for MLO2
IC27	12V AVR	ML12C
IC28	Buffer of serial data	3.3V→3.3V
Q1	Amplifier	DDS (IC3) master clock input
Q2	Ripple filter	For DDS REF VCO
Q3	Amplifier	Reference input of PLL (IC2)
Q4	Oscillate VCO	DDS (IC3) REF VCO
Q5	Amplifier	Operate when external 10MHz REF is selected
Q6	Amplifier	DDS REF VCO
Q8	Amplifier	Fin AMP of PLL (IC2)
Q9	Amplifier	Operate when detect of 10MHz REF input enable
Q10	Amplifier	DDS (IC13) master clock Input
Q11	Amplifier	AGC AMP of 10MHz REF input
Q12	Switching	ON when source of MLO1 is VCO
Q13,14	Switching	Power supply SW of D12
Q17,18	Switching	MLO1 PLL loop filter
Q19	Ripple filter	For MLO1 VCO

## COMPONENTS DESCRIPTION

Ref. No.	Use/Function	Operation/Condition/Compatibility
Q20	Switching	Control detect of 10MHz REF input
Q21,22	Switching	Power supply SW of 10MHz REF input circuit
Q23	Switching	ON when VCO1 operate
Q24	Switching	ON when VCO2 operate
Q25	Oscillate VCO	VCO1
Q26	Oscillate VCO	VCO2
Q27	Buffer	DDS (IC13) output buffer
Q28	Switching	Power supply SW of DDS (IC13) output buffer
Q29	Switching	ON when 1/10 divide of VCO operate
Q30	Ripple filter	For MLO1 PLL loop filter
Q31	Switching	Power supply SW of DDS (IC13) output buffer
Q32,33	Switching	Power supply SW of 10MHz REF input circuit
Q34	Amplifier	Operate when internal REF is selected
Q35	Amplifier	Fin AMP of PLL (IC17)
Q36	Switching	ON when VCO3 operate
Q37	Switching	ON when VCO4 operate
Q38	Oscillate VCO	VCO3
Q39	Oscillate VCO	VCO4
Q40,41	Switching	Power supply SW of D45, D53
Q42,43	Switching	Power supply SW of D44, D52
Q44	Amplifier	MLO1 VCO
Q45	Amplifier	MLO1 VCO output
Q46	Amplifier	PLL (IC18) reference input
Q47,48	Switching	Power supply SW of D43, D51
Q49,50	Switching	Power supply SW of D42, D50
Q51	Amplifier	Amplifier of 10MHz REF output
Q52,53	Switching	Power supply SW of D29
Q54,55	Switching	Power supply SW of D46, D54
Q56,57	Switching	Power supply SW of D47, D55
Q60	Switching	Power supply SW of 10MHz REF output circuit
Q61,62	Switching	Power supply SW of D48, D56
Q63	Switching	Power supply SW of 10MHz REF output circuit
Q64	Switching	ON when 1/4 divide of VCO operate.
Q65	Switching	ON when 1/8 divide of VCO operate
Q66	Switching	ON when 1/10 divide of VCO operate
Q68,69	Switching	Power supply SW of D39
Q70,71	Switching	Power supply SW of D40

Ref. No.	Use/Function	Operation/Condition/Compatibility
Q72,73	Switching	Power supply SW of D38
Q74,75	Switching	Power supply SW of D41
Q76,77	Switching	Power supply SW of D33, D37
Q78	Buffer	20MHz VCXO output
Q79	Amplifier	Amplifies 20MHz signal
Q80	Amplifier	DDS (IC26) input
Q81	Amplifier	Amplifies 40MHz signal for 10MHz REF output circuit
Q82	Amplifier	Fin AMP of PLL (IC18)
Q84	Amplifier	Amplifies 40MHz signal for DDS (IC26) and PLL (IC2)
Q85	Amplifier	Amplifies 40MHz signal as SUB LO unit reference
Q86	Amplifier	Amplifies 40MHz signal as SCOPE unit reference
Q88	Switching	ON when source of MLO1 is DDS
Q90	Switching	Power supply SW of IC23
Q91	Switching	ON when FIL4 of MLO1 operate
Q92	Switching	ON when FIL3 of MLO1 operate
Q93	Switching	ON when FIL2 of MLO1 operate
Q94	Switching	ON when FIL1 of MLO1 operate
Q95	Switching	ON when FIL5 of MLO1 operate
Q96	Switching	ON when FIL6 of MLO1 operate
Q97	Switching	ON when FIL7 of MLO1 operate
Q98	Switching	ON when source of MLO1 is DDS
Q99	Amplifier	MLO1 output
D3,4	Surge protection	Protect surge from external 10MHz REF input connector
D5,6	VCO frequency control	DDS REF VCO
D7	Switching	ON when external 10MHz REF is selected
D8	Protection of reverse current	PLL (IC2) lock detect
D9	Switching	ON when external 10MHz REF is selected
D10	Voltage shift	Dorop input voltage of IC27
D11	Switching	ON when external 10MHz REF is selected
D12	Switching	ON when source of MLO1 is VCO
D13	Detect of signal	Detect external 10MHz REF
D14	VCO frequency control	MLO1 VCO1
D15	VCO frequency control	MLO1 VCO2
D16	Detect of signal	Control AGC AMP
D17	Switching	ON when VCO1 is operate
D18	Switching	ON when VCO2 is operate
D19,20	Switching	ON when external 10MHz REF is selected

## COMPONENTS DESCRIPTION

Ref. No.	Use/Function	Operation/Condition/Compatibility
D21	VCO frequency control	MLO1 VCO3
D22	VCO frequency control	MLO1 VCO4
D23	Switching	ON when internal REF is selected
D24	Protection of reverse current	PLL (IC17) lock detect
D25	Switching	ON when internal REF is selected
D26	Switching	ON when VCO3 is operate
D27	Switching	ON when VCO4 is operate
D28	Switching	ON when 10MHz REF output
D29	Switching	ON when source of MLO1 is DDS
D33	Switching	ON when source of MLO1 is DDS
D34	Protection of reverse current	PLL (IC18) lock detect
D37	Switching	ON when source of MLO1 is DDS
D38	Switching	ON when 1/8 divide of VCO operate
D39	Switching	ON when 1/10 divide of VCO operate
D40	Switching	ON when 1/4 divide of VCO operate
D41	Switching	ON when source of MLO1 is DDS
D42	Switching	ON when FIL1 of MLO1 operate
D43	Switching	ON when FIL2 of MLO1 operate
D44	Switching	ON when FIL3 of MLO1 operate
D45	Switching	ON when FIL4 of MLO1 operate
D46	Switching	ON when FIL5 of MLO1 operate
D47	Switching	ON when FIL6 of MLO1 operate
D48	Switching	ON when FIL7 of MLO1 operate
D49	Doubler	Doubler of 20MHz
D50	Switching	ON when FIL1 of MLO1 operate
D51	Switching	ON when FIL2 of MLO1 operate
D52	Switching	ON when FIL3 of MLO1 operate
D53	Switching	ON when FIL4 of MLO1 operate
D54	Switching	ON when FIL5 of MLO1 operate
D55	Switching	ON when FIL6 of MLO1 operate
D56	Switching	ON when FIL7 of MLO1 operate
D57	Voltage shift	Dorop input voltage of IC5,IC7

### PLL (SUB) UNIT (X50-3230-00)

Ref. No.	Use/Function	Operation/Condition/Compatibility
IC1	PLL	PLL for 15.6MHz VCXO
IC2	5V AVR	SL05C
IC3	3.3V AVR	SL33C

Ref. No.	Use/Function	Operation/Condition/Compatibility
IC5	Shift resistor	Q1: SLVCO1 "H" when VCO1 operate Q2: SLVCO2 "H" when VCO2 operate Q3: SLVCO3 "H" when VCO3 operate Q4: SLVCO4 "H" when VCO4 operate Q5: Not used Q6: Not used Q7: SLVB "H" when VCO shift is ON Q8: TXLO "H" when TX
		Q1: Not used Q2: NFT "L" when FM Mode Q3: SLIFL "L" when IFB is selected Q4: SLIFH "L" when IFA is selected Q5: SLFIL1 "H" when FIL1 is selected Q6: SLFIL2 "H" when FIL2 is selected Q7: SLFIL3 "H" when FIL3 is selected Q8: SLFIL4 "H" when FIL4 is selected
IC7~9	Level shift of serial data	3.3V→5V
IC10	PLL	PLL for DDS (IC14) REF
IC11	DDS	DDS for PLL (IC16) reference
IC12	DDS	DDS for SLO3
IC13	1.8V AVR	For DDS (IC14)
IC14	DDS	DDS for SLO1
IC15	Wide band AMP	Amplifies DDS (IC14) output
IC16	PLL	PLL for TLO1 VCO
IC17	12V AVR	ML12C
IC18	Buffer of serial data	3.3V→3.3V
IC20	Analog switch	Loop filetr shift
Q1	Buffer	PLL (IC1) reference input
Q2	Amplifier	Fin AMP of PLL (IC1)
Q3	Amplifier	DDS (IC11) master clock input
Q4	Amplifier	Reference input of PLL (IC10)
Q5	Amplifier	DDS (SLO3) master clock input
Q6	Switching	ON when VCO1 73.125~79.355MHz operate OFF when VCO1 79.355~87.755MHz operate
		ON when VCO2 87.755~95.105MHz operate OFF when VCO2 95.105~103.505MHz operate
Q8	Ripple filter	For TLO1 VCO

## COMPONENTS DESCRIPTION

Ref. No.	Use/Function	Operation/Condition/Compatibility
Q9	Switching	ON when VCO1 73.125~79.355MHz operate OFF when VCO1 79.355~87.755MHz operate
Q10	Switching	ON when VCO2 87.755~95.105MHz operate OFF when VCO2 95.105~103.505MHz operate
Q11	Amplifier	Fin AMP of PLL (IC10)
Q12	Ripple filter	For DDS REF VCO
Q13	Oscillate VCXO	15.6MHz VCXO
Q14	Switching	ON when VCO1 operate
Q15	Switching	ON when VCO2 operate
Q16	Oscillate VCO	DDS REF VCO
Q17	Oscillate VCO	VCO1
Q18	Oscillate VCO	VCO2
Q19	Buffer	Buffer of 15.6MHz VCXO output
Q20	Buffer	Buffer of DDS (IC11) output
Q21	Switching	ON when except FM mode OFF when FM mode
Q23	Amplifier	DDS (IC14) master clock input
Q24	Amplifier	DDS REF VCO
Q25	Buffer	Buffer of 15.6MHz signal
Q26	Switching	ON when VCO3 103.505~112.54MHz operate OFF when VCO3 112.54~120.94MHz operate
Q27	Switching	ON when VCO4 120.94~128.29MHz operate OFF when VCO4 128.29~133.095MHz operate
Q28	Buffer/Amplifier	Buffer/Amplifier of TLO1 refer- ence signal
Q29	Buffer	Buffer of PLL (IC16) reference signal
Q30,31	Switching	Power supply SW of D25,D56
Q32	Switching	ON when VCO3 103.505~112.54MHz operate OFF when VCO3 112.54~120.94MHz operate
Q33	Switching	ON when VCO4 120.94~128.29MHz operate OFF when VCO4 128.29~133.095MHz operate
Q34	Doubler	Doubler of 15.6MHz VCXO signal
Q35,36	Switching	Power supply SW of D16, D52, D56, Q57 (SLO2 output)
Q37	Switching	ON when VCO3 operate
Q38	Switching	ON when VCO4 operate
Q39	Oscillate VCO	VCO3
Q40	Oscillate VCO	VCO4

Ref. No.	Use/Function	Operation/Condition/Compatibility
Q41,42	Switching	Power supply SW of D20, D23, D30, D35, D40, D43, D47
Q43,44	Switching	Power supply SW of D20, D24, D28, D34, D46
Q45,46	Switching	Power supply SW of D24, D29, D33, D45
Q47,48	Switching	Power supply SW of D21, D36, D53, D32, D44
Q49	Amplifier	PLL (IC16) reference input
Q50	Doubler	Doubler of 31.2MHz signal
Q51	Amplifier	TLO1 VCO
Q52	Doubler	Doubler of 31.2MHz signal
Q53	Switching	TLO1 PLL loop filter ON when except FM mode OFF when FM mode
Q54,55	Switching	TLO1 PLL loop filter
Q56	Amplifier	TLO1 output
Q57	Amplifier	SLO2 output
Q58	Ripple filter	For PLL (IC16) loop filter, VCO shift SW
Q59	Switching	Power supply SW of D48, D49 ON when VCO1 or VCO2 operate
Q60	Amplifier	Fin AMP of TLO1 PLL
Q61	Amplifier	SLO1 (IFA) output
Q62	Switching	Power supply SW of D50, D51 ON when BPF1 or BPF2 operate
Q63	Switching	ON when FM mode OFF when except FM mode
Q64	Switching	ON when except FM mode OFF when FM mode
Q65	Switching	ON when FM mode OFF when except FM mode
Q66	Ripple filter	For 15.6MHz VCXO, doubler (15.6→31.2M, 31.2→62.4M)
Q68	Switching	Power supply SW of amplifier
D2	VCO frequency control	TLO1 VCO1
D3	VCO frequency control	TLO1 VCO2
D4	VCXO frequency control	15.6MHz VCXO
D5	VCO frequency control	DDS REF VCO
D6	VCO frequency shift	TLO1 VCO1
D7	VCO frequency shift	TLO1 VCO2
D8	VCO frequency control	DDS REF VCO
D9	Switching	ON when VCO1 is operate
D10	Switching	ON when VCO2 is operate
D11	FM modulation	Operate when FM mode

## COMPONENTS DESCRIPTION

Ref. No.	Use/Function	Operation/Condition/Compatibility
D12	VCO frequency control	TLO1 VCO3
D13	VCO frequency control	TLO1 VCO4
D14	VCO frequency shift	TLO1 VCO3
D15	VCO frequency shift	TLO1 VCO4
D16	Switching	ON when IFA is selected
D17	Switching	ON when VCO3 is operate
D18	Switching	ON when VCO4 is operate
D19	Doubler	Doubler of SLO1 DDS output
D20,21	Switching	Diode OR
D22	Switching	ON when IFA 30~60M, 16~30M,10~16MHz is selected
D23	Switching	ON when IFA 30k~10MHz is selected
D24	Switching	Diode OR
D25	Switching	ON when IFB is selected
D26	Switching	ON when IFB 7.0~7.3MHz is selected
D27	Switching	ON when IFB 1.8~2.0MHz/ 3.5~5.0MHz is selected
D28~30	Switching	Diode OR
D32	Switching	ON when IFA 30.0~60.0MHz is selected
D33	Switching	ON when IFA 16.0~30.0MHz is selected
D34	Switching	ON when IFA 10.0~16.0MHz is selected
D35	Switching	ON when IFB 1.8~2.0MHz is selected
D36	Switching	ON when IFB 14.0~21.5MHz is selected
D38	Switching	Diode OR
D39	Voltage shift	Dorop input voltage of IC17
D40,43	Switching	ON when IFB 1.8~2.0MHz is selected
D44	Switching	ON when IFA 30.0~60.0MHz is selected
D45	Switching	ON when IFA 16.0~30.0MHz is selected
D46	Switching	ON when IFA 10.0~16.0MHz is selected
D47	Switching	ON when IFA 30k~10MHz is selected
D48,49	Switching	ON when VCO1 or VCO2 operate
D50,51	Switching	ON when IFA 0.03~16.0MHz is selected
D52	Switching	ON when IFA is selected
D53	Switching	ON when IFB 14.0~21.5MHz is selected

Ref. No.	Use/Function	Operation/Condition/Compatibility
D54	Switching	ON when IFB 7.0~7.3MHz is selected
D55	Switching	ON when IFB 1.8~2.0MHz/ 3.5~5.0MHz is selected
D56	Switching	ON one element when IFA is selected, and ON other element when IFB is selected
D57	Protection of reverse current	PLL (IC1) lock detect
D58	Protection of reverse current	PLL (IC10) lock detect
D59	Protection of reverse current	PLL (IC16) lock detect
D60	Voltage shift	Input voltage shift of IC2, 3
D63	Voltage shift	Input voltage shift of IC20

### AT UNIT (X53-4410-00)

Ref. No.	Use/Function	Operation/Condition/Compatibility
IC2	Amplifier	Current detection
IC3	Comparator	Amplitude error detection
IC4	D flip-flop	Phase error detection
IC7	Amplifier	Voltage detection
IC8	Shift register	Q1: SRXIO "H" when RXANT ON and SUB RX are selected Q2: MRXIO "H" when RXANT ON and MAIN RX are selected Q3: DIV1 "H" when different ANT is selected MAIN RX and SUB RX Q4: DIV2 "H" when different ANT is selected MAIN RX and SUB RX Q5: RXANT "H" when RXANT is selected Q6: ATS "H" when TX with AT ON Q7: Reserved Q8: Reserved
IC300	Shift register	Q1: CI (1) "H" when antenna tuner input side capacitor (2.5p) is selected Q2: CI (2) "H" when antenna tuner input side capacitor (5p) is selected Q3: CI (3) "H" when antenna Tuner input side capacitor (10p) is selected Q4: CI (4) "H" when antenna Tuner input side capacitor (18p) is selected Q5: CI (5) "H" when antenna Tuner input side capacitor (36p) is selected Q6: CI (6) "H" when antenna Tuner input side capacitor (74p) is selected



## COMPONENTS DESCRIPTION

Ref. No.	Use/Function	Operation/Condition/Compatibility
IC300	Shift register	Q7: C1 (7) "H" when antenna Tuner input side capacitor (150p) is selected Q8: C1 (8) "H" when antenna Tuner input side capacitor (300p) is selected
IC320	Shift register	Q1: CO (1) "H" when antenna Tuner output side capacitor (2.5p) is selected Q2: CO (2) "H" when antenna Tuner output side capacitor (5p) is selected Q3: CO (3) "H" when antenna Tuner output side capacitor (10p) is selected Q4: CO (4) "H" when antenna Tuner output side capacitor (18p) is selected Q5: CO (5) "H" when antenna Tuner output side capacitor (36p) is selected Q6: CO (6) "H" when antenna Tuner output side capacitor (74p) is selected Q7: CO (7) "H" when antenna Tuner output side capacitor (150p) is selected Q8: CO (8) "H" when antenna Tuner output side capacitor (300p) is selected
IC340	Shift register	Q1: L1 "H" when antenna tuner coil (50M) is selected Q2: L2 "H" when antenna tuner coil (28M) is selected Q3: L3 "H" when antenna tuner coil (24M) is selected Q4: L4 "H" when antenna tuner coil (21M) is selected Q5: L5 "H" when antenna tuner coil (14M) is selected Q6: L6 "H" when antenna tuner coil (10M) is selected Q7: L7 "H" when antenna tuner coil (7M) is selected Q8: L9 "H" when antenna tuner coil (3.5M) is selected
Q12	Switching	MAIN RX circuit protection control
Q13	Switching	SUB RX circuit protection control
Q18~ 20	Switching	ON when TX
Q25	Amplifier	Amplifier for Vdet signal
Q26	Amplifier	Amplifier for Idet signal
Q27,28	Switching	ON When AT switch ON
Q31	Switching	ON when RX
Q50	Switching	ON when RX ANT ON
Q51	Switching	ON when RX
Q52	Switching	ON when K14 (for divider control) is ON

Ref. No.	Use/Function	Operation/Condition/Compatibility
Q53	Switching	ON when K15 (for SUB RX signal control) is ON
Q54	Switching	RX ANT ON or OFF for MAIN RX
Q55	Switching	MAIN RX circuit protection control
Q56	Switching	RX ANT ON or OFF for SUB RX
Q57	Switching	SUB RX circuit protection control
Q60	Switching	RX ANT ON or OFF for MAIN RX
Q61	Switching	RX ANT ON or OFF for SUB RX
Q62	Switching	SUB RX circuit protection control
Q63	Switching	MAIN RX circuit protection control
Q64	Switching	ON when K14 (for divider control) is ON
Q66	Switching	ON when K15 (for SUB RX signal control) is ON
Q67	Switching	ON when RX ANT ON
Q300~307	Switching	ON when antenna tuner input side capacitor is selected
Q320~327	Switching	ON when antenna tuner output side capacitor is selected
Q340~349	Switching	ON when antenna tuner coil is selected
D4	Protection	Surge protection
D9	Protection	Surge protection
D10	Reverse voltage prevention	Surge protection
D11	Reverse voltage prevention	Surge protection
D12	Protection	Surge protection
D13	Protection	Surge protection
D14	Protection	Surge protection
D15	Protection	Surge protection
D18	Protection	Surge protection
D19	Switching	For TX signal output
D20	Protection	Surge protection
D21	Protection	Surge protection
D22	Protection	Surge protection
D23	Protection	Surge protection
D24	Protection	Surge protection
D33	Protection	Surge protection
D34	Protection	Surge protection
D36	Detection	Current detection
D37	Detection	Voltage detection
D38	Protection	Surge protection
D57	Detection	VSR voltage detection
D58	Detection	VSF voltage detection
D201~208	Protection	Surge protection
D240~247	Protection	Surge protection

## COMPONENTS DESCRIPTION

Ref. No.	Use/Function	Operation/Condition/Compatibility
D280~288	Protection	Surge protection
D360	Reverse voltage prevention	Surge protection

### CONTROL UNIT (X53-452X-XX)

Ref. No.	Use/Function	Operation/Condition/Compatibility
IC1	1.2V switching regulator	Power supply for 1.2V (Scope DSP internal (core) supply)
IC2	3.3V linear regulator	Power supply for 3.3V (Main MCU power supply)
IC30	Multiplexer	For PCB version
IC31~34	Latch IC	Extension port of main MCU
IC35	Multiplexer	For type and PCB version
IC36~39	Latch IC	Extension port of main MCU
IC40	Level converter (5V→3.3V)	For external antenna tuner signal
IC41	Level converter (3.3V→5V)	For external antenna tuner signal
IC42,43	Latch IC	Extension port of main MCU
IC44	Reset IC	System reset
IC45	Level converter (5V→3.3V)	USB connection detection
IC46	MCU	Main MCU
IC47	EEPROM	EEPROM for backup
IC48	Buffer	For serial clock and data
IC49	Real time clock	Real time clock
IC380	MCU	Scope DSP-Sub MCU
IC381	DSP	Scope DSP
IC382	A/D converter	A/D converter for band scope IF signal
IC384,387	OP amplifier	Active filter for band scope IF signal
IC385	OP amplifier	Reference signal for OP amplifier
IC386	A/D converter	A/D converter for audio scope signal (Main RX/ Sub RX)
IC388,389	Latch IC	Address decoder for scope DSP
IC390	Flash memory	Program for scope DSP
Q380	Switching	3.3V switch
Q381	Switching	3.3V switch
D1	Switching	Catch diode for 1.2V switching regulator
D30	Reverse current prevention	For standby switch signal (SS)
D31	Reverse current prevention	For KEY jack judgement signal (KYSR)
D32	Reverse current prevention	For real time clock IC power
D380	Reverse current prevention	For reduced voltage detection (BKC)

### DSP UNIT (X53-4530-00)

Ref. No.	Use/Function	Operation/Condition/Compatibility
IC1	1.2V switching regulator	Power supply for 1.2V (DSP internal (core) Supply)
IC50	Phone amplifier	Phone output
IC51	Audio power amplifier	SP1 (internal SP)/ Ext. SP1
IC52	Audio power amplifier	Ext. SP2
IC101	MCU	DSP-Sub MCU
IC200, 201	Latch	Address decoder for TXMRX-DSP
IC202	DSP	TX/Main RX DSP
IC203	Flash memory	Program for TXMRX-DSP
IC300	DSP	Sub RX DSP
IC301	Flash memory	Program for SRX-DSP
IC302	Buffer	Extension output for SRX-DSP
IC322	Inverter	X'tal buffer
IC380	Flip-flop	A frequency divider for SCLK/ LRCK
IC381	Buffer	Buffer for SCLK48K
IC382	Buffer	Buffer for LRCK48K
IC383	Buffer	Buffer for MCLK48K
IC385	D/A converter	D/A converter for BEEP and MSCPI signal
IC386	D/A converter	D/A converter for MUANO and SUANO signal
IC387	D/A converter	D/A converter for MRECI and SRECI signal
IC388	D/A converter	D/A converter for SAGCV and SSCPI signal
IC389	A/D converter	A/D converter for MRECO and SRECO signal
IC390	D/A converter	D/A converter for SP1 and SP2 signal
IC391	D/A converter	D/A converter for MANO and SANO signal
IC392	A/D converter	A/D converter for SRIF/SFMD and ANI/UANI signal
IC397	D/A converter	D/A converter for TIF/FMOD and MAGCV signal
IC398	A/D converter	A/D converter for MRIF/MFMD and MIC signal
IC399	NAND gate	For SCLK96K
IC650	OP amplifier	Active filter for SP1 and SP2 signal
IC651	OP amplifier	Active filter for MANO and SANO signal
IC652	OP amplifier	Active filter for BEEP signal and reference voltage of OP amplifier
IC653	OP amplifier	Active filter for MUANO signal
IC654	OP amplifier	Active filter for SUANO signal



## COMPONENTS DESCRIPTION

Ref. No.	Use/Function	Operation/Condition/Compatibility
IC655	OP amplifier	Active filter for SRECI signal
IC656	OP amplifier	Active filter for SSCPI signal
IC657	OP amplifier	Active filter for SANO signal
IC658	D/A converter	D/A converter for electronic volume IC control
IC659	OP amplifier	Active filter for MANO signal
IC660	OP amplifier	Active filter for SP1 signal
IC661	OP amplifier	Active filter for SP2 signal
IC662	OP amplifier	Buffer for SAGCV signal and reference voltage of OP amplifier
IC663	OP amplifier	Active filter for MRECI signal
IC664	OP amplifier with electronic volume	Electronic volume for MIXSP1 and MIXSP2 signal
IC665	OP amplifier with electronic volume	Electronic volume for SP1 and SP2 signal
IC666	OP amplifier	Active filter for MIC signal
IC667	OP amplifier	Active filter for MRIF/MFMD signal
IC668	OP amplifier	Active filter for TIF/FMOD signal
IC669	OP amplifier	Active filter for MSCPI signal
IC670	OP amplifier	Active filter for SRIF/SFMD signal
IC671	OP amplifier	Active filter for SP1 and SP2 signal (phone line)
IC672	OP amplifier	Active filter for ANI/UANI signal
IC673	OP amplifier	Additional circuit for SP1/BEEP/MIXSP2 and SP2/BEEP/MIXSP1 signal
IC674	OP amplifier	Active filter for MIC signal
IC675	OP amplifier	Active filter for MRIF/MFMD signal
IC678	OP amplifier	Active filter for SRIF/SFMD signal
IC679	OP amplifier	Active filter for TIF/FMOD signal
IC681	OP amplifier	Buffer for MAGCV signal and reference voltage of OP amplifier
IC682	OP amplifier	Active filter for ANI/UANI signal
IC683	OP amplifier	Amplifier for MIC signal
IC684	Analog switch	Select signal (ANI or UANI) for ADC input
IC685	OP amplifier	Active filter for ANI signal
IC686	Analog switch	Select output line (TIF or FMOD)
Q50	Switching	Audio mute ON/OFF
Q51,52	Active filter	AF power AMP power supply
Q53~58	Switching	Audio mute
Q100	Switching	3.3V switch
Q101	Switching	Q100 Control
Q652,653	Switching	IC684 Control
Q654,655	Switching	IC686 Control
D1	Switching	Catch diode for 1.2V switching regulator

Ref. No.	Use/Function	Operation/Condition/Compatibility
D50~52	Surge absorption	Relay circuit
D100	Reverse current prevention	BKC signal line
D656	Reverse current prevention	For 5V (to X46-399)

### DISPLAY UNIT (X54-3850-00)

Ref. No.	Use/Function	Operation/Condition/Compatibility
IC5	3.3V AVR	Power supply for 3.3V (digital circuit)
IC6	MCU	Panel microcomputer
IC7	Shift register	Conversion "Serial" and "parallel"
IC9~11	Analog multiplexer	Selector for A/D port of panel MCU
IC12	Bus buffer	Extension output for PRST signal
IC301	AND gate	Display backlight controller IC for IC306,IC307 control
IC302	7.83V AVR	Power supply for 7.83V (main display)
IC303~305	AND gate	Display backlight controller IC for IC306,IC307 control
IC306,307	LCD backlight driver	Display backlight dimmer control
Q1	Driver	LED control for X42-343 G/10 PCB LED
Q2	Driver	LED dimmer control
Q4	Switching	13.8V power supply switch
Q7,10,12,14	Driver	LED control for X54-385 A/6 PCB LED
Q16~24	Driver	LED control for X54-385 A/6 PCB LED
Q26,27,29	Driver	LED control for X54-385 A/6 PCB LED
Q31~47	Driver	LED control for X54-385 A/6 PCB LED
Q48	Driver	LED control for X42-343 F/10 PCB LED
Q49	Driver	LED control for X54-385 C/6 PCB LED
Q50	Driver	LED control for X42-343 F/10 PCB LED
Q51	Driver	LED control for X54-385 C/6 PCB LED
Q52	Driver	LED control for X42-343 F/10 PCB LED
Q53	Driver	LED control for X54-385 C/6 PCB LED
Q54	Driver	LED control for X42-343 F/10 PCB LED
Q55	Driver	LED control for X54-385 C/6 PCB LED
Q301,302	Switching	Power supply switch for display

## COMPONENTS DESCRIPTION

Ref. No.	Use/Function	Operation/Condition/Compatibility
Q303~306	Switching	Touch panel SW (X1/Y1/Y2/X2)
Q307	Switching	Touch panel SW pull up on
Q308	Switching	Touch panel SW press
D1~8	Reverse current prevention	For key matrix
D9	LED (Green)	Key backlight
D10	LED (Green)	SPLIT
D11	LED (Green)	Key backlight
D12	LED (Yellow)	SPLIT
D13~18	LED (Green)	Key backlight
D19	Reverse current prevention	Reduced voltage detection interrupt for BKC
D20~22	LED (Green)	Key backlight
D23	LED (Green)	Main busy
D24	LED (Green)	Key backlight
D25	LED (Red)	Main TX
D26	LED (Green)	Key backlight
D27	LED (Green)	Sub busy
D28	LED (Green)	Key backlight
D29	LED (Red)	Sub TX
D31	LED (Yellow)	HI/LO encoder
D32,34	LED (Green)	Key backlight
D36	LED (Yellow)	Key backlight
D37~42	LED (Green)	Key backlight
D43	LED (Red)	Key backlight
D44	LED (Green)	Key backlight
D45,46	LED (Yellow)	Key backlight
D47~51	LED (Green)	Key backlight
D52	LED (Yellow)	Key backlight
D53,56	Reverse current prevention	MIC data line
D54	Poly-switch	Current limit for MIC supply (8V)
D55	Reverse current prevention	for MIC supply (8V)
D61~63	LED (Green)	Key backlight
D301,303	Switching	Catch diode for main and sub display backlight
D302,306	Reverse current prevention	Main and sub display backlight
D307,308	Surge protection	Touch panel signal line
D501~504	LED (Green)	Key backlight

### RX UNIT (X55-313X-XX)

Ref. No.	Use/Function	Operation/Condition/Compatibility
IC1	D/A converter	Ao1: Reserve Ao2: MIFGC Main RX IF gain control voltage Ao3: MNBL Main NB level control voltage

Ref. No.	Use/Function	Operation/Condition/Compatibility
IC1	D/A converter	Ao4: Reserve Ao5: Reserve Ao6: Reserve Ao7: Reserve Ao8: Reserve
IC2	Shift register	Q1: MBPF14 "H" when BPF of 35~40MHz or 46.5~60MHz is selected Q2: MBPF13 "H" when BPF of 40~46.5MHz band is selected Q3: MBPF12 "H" when BPF of 26.5~35MHz is selected Q4: MBPF11 "H" when BPF of 21.5~26.5MHz is selected Q5: MBPF10 "H" when BPF of 18.5~21.5MHz is selected Q6: MBPF9 "H" when BPF of 14.5~18.5MHz is selected Q7: MBPF8 "H" when BPF of 10.5~14.5MHz is selected Q8: MBPF7 "H" when BPF of 7.5~10.5MHz is selected
IC3	Shift register	Q1: MBPF6 "H" when BPF of 6~7.5MHz is selected Q2: MBPF5 "H" when BPF of 4.1~6MHz is selected Q3: MBPF4 "H" when BPF of 2.5~4.1MHz is selected Q4: MBPF3 "H" when BPF of 1.705~2.5MHz is selected Q5: MBPF2 "H" when BPF of 522k~1.705MHz is selected Q6: MBPF1 "H" when BPF of 30~522kHz is selected Q7: M6DB "L" when 6dB attenuator ON Q8: M12DB "L" when 12dB attenuator ON
IC4	Shift register	Q1: MFIL1 "H" when 15kHz IF filter is selected Q2: MFIL2 "H" when 6kHz IF filter is selected Q3: MFIL3 "H" when 2.7kHz IF filter is selected Q4: MFIL4 "H" when 500Hz IF filter is selected Q5: MFIL5 "H" when 270Hz IF filter is selected Q6: MFIL6 "H" when additional IF filter is selected Q7: MPRE1 "H" when preamp (PREAMP1) and post amp are ON Q8: MPRE2 "H" when preamps (PREAMP2) and post amp are ON
IC5	Shift register	Q1: MHFRGC "H" when 6dB IF attenuator is ON Q2: M50RGC "H" when 10dB IF attenuator is ON Q3: M455FIL "L" when 455kHz FM narrow filter is selected Q4: MRXFM "H" when RX FM mode is selected

## COMPONENTS DESCRIPTION

Ref. No.	Use/Function	Operation/Condition/Compatibility
IC5	Shift register	Q5: PSEL "H" when preselector is selected (1.7975~29.8MHz) Q6: PSAMP "H" when preselector amp is ON (1.7975~29.8MHz/30~60MHz (only PREOFF)) Q7: LHF "H" when BPF of 30k~522kHz or 522k~1.705MHz or 35-40MHz is selected Q8: NRLY "H" when any one of MBPF5, 7, 9, 11, 12, 13, 14 is selected
IC7	Mixer	1st receiving mixer (RF→8.248MHz)
IC8	Exclusive OR gate	Local signal drive circuit
IC9	Main RX FM IC	RX FM demodulator
IC10	OP amplifier	2nd IF amp
IC11	Multiplexer	Receiver output, FM (AF) and SSB/AM/CW (IF) changeover
IC12	OP amplifier	A/2: RX FM noise squelch voltage amplifier B/2: RX FM AF signal amplifier
IC13	OP amplifier	A/2: No used B/2: MAGC voltage amplifier
Q1	Switching	6dB ATT changeover relay (K1) control (OFF when main 6dB ATT is selected)
Q2	Switching	12dB ATT changeover relay (K2) control (OFF when main 12dB ATT is selected)
Q3	Switching	LHF changeover relay (K3) control (ON when MBPF1 or MBPF2 is selected (LHF is "H"))
Q4,5	Switching	Power supply switch of RX14 (ON when main receiver is active (MRXC is "H"))
Q6	Switching	LHF changeover relay (K4) control (ON when MBPF1 or MBPF2 is selected (LHF is "H"))
Q7	Switching	ON when BPF of 522kHz~1.705MHz is selected (ON when MBPF2 is "H")
Q8	Switching	ON when BPF of 30~522kHz is selected (ON when MBPF1 is "H")
Q9	Switching	Preselector amplifier changeover relay (K5) control (ON when PSAMP is "H")
Q10,11	Amplifier	Preselector amplifier
Q12	Switching	PREAMP1 changeover relay (K6) control (ON when MPRE1 is "H")
Q13	Switching	PREAMP2 changeover relay (K7) control (ON when MPRE2 is "H")
Q14,15	Switching	Power supply switch of RX14 for PREAMP1 and postamp (ON when MPRE1 or MPRE2 is "H")
Q16	Buffer amplifier	Noise blanker input buffer

Ref. No.	Use/Function	Operation/Condition/Compatibility
Q18	Amplifier	Noise blanker post amplifier
Q19	Switching	Power supply switch of RX8 (ON when main receiver is active (MRXC is "H"))
Q20	Amplifier	Pre-amplifier 2
Q21	Amplifier	Noise blanker amplifier 2
Q22,23	Switching	Power supply switch of RX14 for PREAMP2 (ON when MPRE2 is "H")
Q24	Amplifier	Noise blanker amplifier 2
Q25,26	Amplifier	Pre-amplifier 1
Q27	Switching	Power supply switch of RX8 (ON when main receiver is active (MRXC is "H"))
Q28	Amplifier	Noise blanker amplifier 3
Q29	Switching	PREAMP2 changeover relay (K8) control (ON when MPRE2 is "H")
Q30	Amplifier	Noise blanker amplifier 3
Q31	Switching	PREAMP1 changeover relay (K9) control (ON when MPRE1 is "H")
Q32	Amplifier	Noise blanker AGC control amplifier
Q33	Amplifier	Noise blanker amplifier 4
Q34	Switching	ATT switch (ON when MBPF14 is "H", except MPRE1 or MPRE2 is "H")
Q35	Switching	Audio mute signal is generated
Q36,37	Buffer amplifier	Noise blanker buffer
Q38	Switching	Audio mute signal is generated
Q39,40	Switching	Power supply switch of RX5 (ON when main receiver is active (MRXC is "H"))
Q42,43	Switching	Power supply switch of FM5 (ON when FM mode is active (MRXFM is "H"))
Q44	Switching	6dB IF ATT switch (ON when MHFRGC is "H")
Q45	Switching	10dB IF ATT switch (ON when M50RGC is "H")
Q46	Amplifier	Post amplifier
Q47,48	Switching	Power supply switch of NFM8 (ON when except FM mode is active (MRXFM is "L"))
Q49	Amplifier	IF amplifier
Q50	Switching	Power supply switch of NFM8 (ON when except FM mode is active (MRXFM is "L"))
Q51	Switching	Post amp changeover relay (K10) control (ON when MPRE1 or MPRE2 is "H")
Q52	Amplifier	IF amplifier
Q53,54	Switching	Blanking switch (OFF when MBLNK is "H")

## COMPONENTS DESCRIPTION

Ref. No.	Use/Function	Operation/Condition/Compatibility
Q55	Amplifier	MLO2 amplifier
Q56	Switching	ON when 15kHz IF filter is selected (ON when MFIL1 is "H")
Q57	Switching	ON when 6kHz IF filter is selected (ON when MFIL2 is "H")
Q58	Switching	ON when 2.7kHz IF filter is selected (ON when MFIL3 is "H")
Q59	Switching	ON when 500Hz IF filter is selected (ON when MFIL4 is "H")
Q60	Switching	ON when 270Hz IF filter is selected (ON when MFIL5 is "H")
Q61	Switching	ON when additional IF filter is selected (ON when MFIL6 is "H")
Q62	Switching	ON when 500Hz IF filter is selected (ON when MFIL4 is "H")
Q63	Switching	ON when 270Hz IF filter is selected (ON when MFIL5 is "H")
Q64	Switching	ON when additional IF filter is selected (ON when MFIL6 is "H")
Q65	Switching	ON when main FM narrow is selected (ON when M455FIL is "L")
Q66	Switching	ON when 15kHz IF filter is selected (ON when MFIL1 is "H")
Q67	Switching	ON when 6kHz IF filter is selected (ON when MFIL2 is "H")
Q68	Switching	ON when 2.7kHz IF filter is selected (ON when MFIL3 is "H")
Q69	Switching	ON when main FM wide is selected (ON when M455FIL is "H")
Q70	Amplifier	AGC amplifier
Q71	Switching	Receiver output, FM (AF) and SSB/AM/CW (IF) changeover multiplexer (IC11) control
Q72	Switching	ATT switch for NB mode (ON when except NB mode (NBS is "L"))
Q73	Switching	Noise blanker changeover relay (K17) control (ON when NBS is "H")
Q74,75	Switching	ON when MBPF14 is "H", except MPRE1 or MPRE2 is "H"
Q76	Switching	ON when BPF of 35~40MHz is selected (ON when MBPF14 is "H")
Q77	Switching	Blanking switch
Q501	Switching	ON when BPF of 2.5~4.1MHz is selected (ON when MBPF4 is "H")
Q502	Switching	ON when BPF of 6~7.5MHz is selected (ON when MBPF6 is "H")
Q503	Switching	ON when BPF of 10.5~14.5MHz is selected (ON when MBPF8 is "H")
Q504	Switching	ON when BPF of 18.5~21.5MHz is selected (ON when MBPF10 is "H")

Ref. No.	Use/Function	Operation/Condition/Compatibility
Q505	Switching	ON when any one of MBPF5, 7, 9, 11, 12, 13, 14 is selected (ON when NRLY is "H")
Q506	Switching	ON when BPF of 1.705~2.5MHz is selected (ON when MBPF3 is "H")
Q507	Switching	ON when BPF of 4.1~6MHz is selected (ON when MBPF5 is "H")
Q508	Switching	ON when BPF of 21.5~26.5MHz is selected (ON when MBPF11 is "H")
Q509	Switching	ON when BPF of 26.5~35MHz is selected (ON when MBPF12 is "H")
Q510	Switching	ON when BPF of 7.5~10.5MHz is selected (ON when MBPF7 is "H")
Q511	Switching	ON when BPF of 40~46.5MHz is selected (ON when MBPF13 is "H")
Q512	Switching	ON when BPF of 46.5~60MHz is selected (ON when MBPF14 is "H")
Q513	Switching	ON when BPF of 14.5~18.5MHz is selected (ON when MBPF9 is "H")
D1	Surge protection	Main receiver RF signal input
D2,3	Surge absorption	Relay (K1/K2)
D4,5	Surge absorption	Internal circuit protection
D6	Switching	6dB attenuator switch (ON when MBPF14 is "H", except MPRE1 or MPRE2 is "H")
D7,8	Surge absorption	Internal circuit protection
D10,11	Surge absorption	Relay (K3/K4)
D12	Switching	ON when BPF of 522k~1.705MHz is selected
D13	Switching	ON when BPF of 30~522kHz is selected
D14	Switching	ON when BPF of 522k~1.705MHz is selected
D15	Surge absorption	Relay (K5)
D16	Switching	ON when BPF of 30~522kHz is selected
D17~20	Surge absorption	Relay (K6~K9)
D21	Detection	Noise blanker switching pulse detection
D22,23	Reverse current prevention	MBLNK control line
D24	Switching	Select of MLO2 output
D25	Surge absorption	Relay (K10)
D26~29	Noise blanking (Mute)	ON when MBLNK signal is "H"
D30	Attenuator	IF gain adjustment
D31	Switching	Select of 2nd IF signal output

## COMPONENTS DESCRIPTION

Ref. No.	Use/Function	Operation/Condition/Compatibility
D32,33	RX 2nd mixer	Receiving mixer (8.248MHz→24kHz)
D34~39	Surge absorption	Relay (K11~K16)
D40,41	Clipper	FM demodulator IC input
D42,43	Switching	FM wide/narrow switching
D44	Switching	ON when 15kHz IF filter is selected
D45	Switching	ON when 6kHz IF filter is selected
D46	Switching	ON when 2.7kHz IF filter is selected
D47	Switching	ON when 500Hz IF filter is selected
D48	Switching	ON when 270Hz IF filter is selected
D49	Switching	ON when additional IF filter is selected
D50	Surge absorption	Relay (K17)
D52, 53	Reverse current prevention	Control line of Q51
D54, 55	Reverse current prevention	Control line of Q14
D56,57	Switching	ON when BPF of 35~40MHz is selected
D501~506	Surge absorption	Relay (K501~K506)
D507	Switching	ON when BPF of 14.5~18.5MHz is selected
D508	Switching	ON when BPF of 21.5~26.5MHz is selected
D509	Switching	ON when BPF of 26.5~35MHz is selected
D510	Switching	ON when BPF of 46.5~60MHz is selected
D511	Switching	ON when BPF of 4.1~6MHz is selected
D512	Switching	ON when BPF of 7.5~10.5MHz is selected
D513	Switching	ON when BPF of 40~46.5MHz is selected
D514	Switching	ON when BPF of 4.1~6MHz is selected
D515	Switching	ON when BPF of 7.5~10.5MHz is selected
D516	Switching	ON when BPF of 14.5~18.5MHz is selected
D517	Switching	ON when BPF of 21.5~26.5MHz is selected
D518	Switching	ON when BPF of 26.5~35MHz is selected
D519	Switching	ON when BPF of 40~46.5MHz is selected
D520	Switching	ON when BPF of 46.5~60MHz is selected

### TX-RX UNIT (X57-827X-XX)

Ref. No.	Use/Function	Operation/Condition/Compatibility
IC51	Shift register	Q1: SBPF[13] "H" when BPF of 50M band is selected (TX only) Q2: SBPF[12] "H" when BPF of 30~60M band is selected Q3: SBPF[11] "H" when BPF of 28M band is selected Q4: SBPF[10] "H" when BPF of 21M band is selected Q5: SBPF[9] "H" when BPF of 14M band is selected Q6: SBPF[8] "H" when BPF of 11M band is selected Q7: SBPF[7] "H" when BPF of 10M band is selected Q8: SBPF[6] "H" when BPF of 7M band is selected
IC52	Shift register	Q1: SBPF[5] "H" when BPF of 5M band is selected Q2: SBPF[4] "H" when BPF of 3.5M band is selected Q3: SBPF[3] "H" when BPF of 1.8M band is selected Q4: SBPF[2] "H" when BPF of BC band (522k~1.705MHz) is selected Q5: SBPF[1] "H" when BPF of BC band (30~522kHz) is selected Q6: S6DB "L" when sub RX 6dB or 18dB attenuator ON Q7: S12DB "L" when sub RX 12dB or 18dB attenuator ON Q8: S455FIL "L" when 455kHz FM 9kHz (narrow) filter is selected
IC53	Shift register	Q1: SFIL[1] "H" when 15kHz IF filter is selected Q2: SFIL[2] "H" when 6kHz IF filter is selected Q3: SFIL[3] "H" when 2.7kHz IF filter is selected Q4: SFIL[4] "H" when 500Hz IF filter is selected Q5: SRXFM "H" when sub RX FM mode is selected Q6: TXFM "H" when TX FM mode is selected Q7: SHFRGC Reserved Q8: S50RGC Reserved
IC54	Shift register	Q1: SPRE[1] "H" when sub receiving preamplifier is ON Q2: SPRE[2] "H" when sub receiving 21.5~60MHz and pre-amplifier is ON Q3: 1STIF "H" when sub RX 1st IF of 73.095MHz is selected Q4: DRVO "H" when drive output is selected Q5: AMC "H" when AM TX is selected (for 50msec) Q6: RLSW "H" when LINEAR is "H"



## COMPONENTS DESCRIPTION

Ref. No.	Use/Function	Operation/Condition/Compatibility
IC54	Shift register	Q7: LINEAR "H" when controlled linear relay is selected Q8: TCS "L" when during AT tuning
IC55	D/A convertor	Ao1: Reserved Ao2: SIFGC Sub RX IF gain control voltage Ao3: ALCREF ALC reference voltage Ao4: TGC TX band gain control voltage Ao5: POC TX power control voltage Ao6: PGC TX power gain control voltage Ao7: PRO SWR protection control voltage Ao8: SNBL/IDP Sub NB level control voltage on during sub reception Final circuit current protection on during transmission
IC101	OP amplifier	A/2: Sub RX S-meter voltage amplifier B/2: Main RX S-meter voltage amplifier
IC481	OP amplifier	A/2: No used B/2: SAGCV voltage amplifier
IC601	OP amplifier	A/2: Sub RX 3rd IF amplifier B/2: No used
IC602	Sub RX FM IC	Sub RX FM demodulator
IC603	OP amplifier	A/2: Sub RX FM noise squelch voltage amplifier B/2: Sub RX FM AF signal amplifier
IC604	Multiplexer	Sub receiver output, FM (AF) and SSB/AM/CW (IF) changeover
IC701	TX mixer	Transmission mixer (24kHz>10.695MHz)
IC702	TX mixer	Transmission mixer (73.095MHz>HF)
IC801~803	OP amplifier	ALC protection
IC804	OP amplifier	Amplifier for meter
Q102	Switching	External sub squelch output signal (open collector)
Q103	Mute	For main ANO mute
Q104	Buffer	Buffer amplifier for main ANO output
Q105	Mute	For sub ANO mute
Q106	Buffer	Buffer amplifier for sub ANO output
Q107	Switching	External main squelch output signal (open collector)
Q108	Buffer	Buffer amplifier for PKS input signal
Q109	Switching	ON when relay for HF band linear is used

Ref. No.	Use/Function	Operation/Condition/Compatibility
Q110	Switching	ON when relay for HF band linear is transmission
Q111	Switching	ON when relay for HF band linear is used
Q171,172	Switching	ON when relay for HF band linear is used
Q201	Switching	Sub RX 6dBATT changeover relay (K201) control (OFF when sub RX 6dB and 18dB ATT are ON)
Q202	Switching	Sub RX 12dBATT changeover relay (K202) control (OFF when sub RX 12dB and 18dB ATT are ON)
Q203	Sub RX Mute	Mutes reception path during transmission (ON during transmission)
Q204,205	Switching	ON when BPF of 30kHz~1.705MHz is selected
Q206	Switching	ON when BPF of 522kHz~1.705MHz is selected
Q207	Switching	ON when BPF of 30~522kHz is selected
Q208	Switching	ON when BPF of 1.705~2.5MHz is selected
Q209	Switching	ON when BPF of 2.5~4.1MHz is selected
Q210	Switching	ON when BPF of 4.1~6.9MHz is selected
Q211	Switching	ON when BPF of 6.9~7.5MHz is selected
Q212	Switching	ON when BPF of 7.5~10.5MHz is selected
Q213	Switching	ON when BPF of 10.5~13.9MHz is selected
Q214	Switching	ON when BPF of 13.9~14.5MHz is selected
Q215	Switching	ON when BPF of 14.5~21.5MHz is selected
Q216	Switching	ON when BPF of 21.5~30MHz is selected
Q217	Switching	ON when BPF of 30~60MHz is selected
Q218	Switching	ON when BPF of 49~54MHz is selected (TX only)
Q219	Amplifier	Sub RX preamplifier (~21.5MHz: 12dB, 21.5~60MHz: 20dB)
Q220	Switching	Sub RX preamplifier gain control (ON sub receiving at 21.5~60MHz)
Q351~354	Sub RX 1st mixer	Sub receiving 1st mixer (HF>11.374MHz)
Q355,356	Amplifier	Sub RX SLO1 amplifier (Sub RX 1st IF of 11.374MHz is selected)

## COMPONENTS DESCRIPTION

Ref. No.	Use/Function	Operation/Condition/Compatibility
Q358	Switching	ON when Sub RX 1st IF of 11.374MHz is selected
Q401~404	Sub RX 1st mixer	Sub receiving 1st mixer (HF>73.095MHz)
Q405,406	Amplifier	Sub RX SLO1 amplifier (Sub RX 1st IF of 73.095MHz is selected)
Q408	Amplifier	Sub RX 1st IF amplifier (Sub RX 1st IF of 73.095MHz is selected)
Q409	Switching	Gain correction between 1st IF (ON when TX or sub RX 1st IF of 73.095MHz are selected)
Q410	Amplifier	SLO2 Amplifier (ON when TX or sub RX 1st IF of 73.095MHz are selected)
Q481	Amplifier	Sub RX 2nd IF amplifier 1 (10.695MHz/11.374MHz)
Q482	Switching	OFF when SBLNK signal is "H"
Q483	Switching	ON when SBLNK signal is "H"
Q484	Switching	ON when 11.374MHz 2.7kHz IF filter is selected
Q485	Switching	ON when 10.695MHz 2.7kHz IF filter is selected
Q486	Switching	ON when 11.374MHz 2.7kHz IF filter is selected
Q487	Switching	ON when 500Hz IF filter is selected
Q488	Switching	ON when 15kHz IF filter is selected
Q489	Switching	ON when 6kHz IF filter is selected
Q490	Switching	ON when 10.695MHz 2.7kHz IF filter is selected
Q491	Amplifier	Sub RX AGC amplifier (10.695MHz/11.374MHz) Gain is controlled according to the SAGCV voltage
Q492	Switching	Gain correction between bands (ON when sub receiveing 21.5~30MHz and preamplifier is ON)
Q493	Switching	Gain correction between bands (ON when sub receiveing 30~60MHz and preamplifier is ON)
Q494,495	Amplifier	Sub RX 2nd IF amplifier 2 (10.695MHz/11.374MHz)
Q601	Amplifier	SLO3 amplifier (ON when sub RX SSB, AM and CW mode are selected)
Q602	Switching	ON when FM 455kHz 12kHz filter is selected
Q603	Switching	ON when FM 455kHz 9kHz filter is selected

Ref. No.	Use/Function	Operation/Condition/Compatibility
Q604	Switching	Sub receiver output, FM (AF) and SSB/AM/CW (IF) changeover multiplexer (IC604) control
Q701	Switching	Power supply control of FM circuit (ON when TX FM mode is selected)
Q702	Buffer	TX IF Buffer (10.695MHz)
Q703	Amplifier	TX IF amplifier (10.695MHz)
Q704	Switching	Transmission IF mute control (Mute when ON)
Q705	Amplifier	TX IF amplifier (73.095MHz)
Q706	Amplifier	TX IF amplifier (73.095MHz) Gain is controlled according to the ALC voltage
Q707	Amplifier	TX drive output amplifier
Q708	Switching	ON when drive output is selected
Q709	Switching	ON when ANT connector output is selected
Q710	Switching	Power supply control of TXB to final unit (X45 A/2) (ON when ANT connector output is selected)
Q801	Switching	On in AM mode, makes it an average value type ALC
Q802,803	Amplifier	ALC amplifier
Q806,807	Switching	Cancels the time constant for VSF and VSR voltage lines during antenna tuning
Q881	Buffer	Noise blanker input buffer
Q882	Amplifier	Noise blanker IF amplifier 1 (10.695M/11.374MHz)
Q883,884	Amplifier	Noise blanker IF amplifier 2 (10.695M/11.374MHz) Gain is controlled according to the NB voltage
Q885	Switching	ON when IF of 10.695MHz is selected
Q886,887	Amplifier	Noise blanker IF amplifier 3 (10.695M/11.374MHz) Gain is controlled according to the NB voltage
Q888	Switching	ON when IF of 10.695MHz is selected
Q889	Amplifier	Noise blanker AGC control amplifier
Q890	Amplifier	Noise blanker IF amplifier 4 (10.695M/11.374MHz) Gain is controlled according to the NB voltage
Q891	Switching	ON when IF of 10.695MHz is selected
Q892	Switching	Audio mute signal is generated
Q893	Buffer	Noise blanker IF buffer
Q894	Switching	Audio mute signal is generated



## COMPONENTS DESCRIPTION

Ref. No.	Use/Function	Operation/Condition/Compatibility
Q951,952	Switching	Power supply control of sub RX circuit (ON during sub reception)
Q953,954	Switching	Power supply control of sub RX preamplifier (ON when sub RX preamplifier is ON)
Q955,956	Switching	Power supply control of sub RX preamplifier (ON when sub RX preamplifier is OFF)
Q957,958	Switching	Power supply control of sub RX 1st IF circuit (ON when sub RX 1st IF of 73.095MHz is selected)
Q959,960	Switching	Power supply control of sub RX 1st IF circuit (ON when sub RX 1st IF of 11.374MHz is selected)
Q961,962	Switching	Power supply control of TXB (ON during transmission)
Q963,964	Switching	Power supply control of FM circuit (ON when TX FM mode is selected)
Q965,966	Switching	Power supply control of SRXB (ON during sub reception)
Q967	Switching	Power supply control of sub RX 1st IF circuit (ON when sub RX 1st IF of 73.095MHz is selected)
Q968	Switching	Power supply control of sub RX 1st IF circuit (ON when sub RX 1st IF of 11.374MHz is selected)
Q969	Switching	Power supply control of sub RX 1st IF circuit (ON when sub RX 1st IF of 73.095MHz is selected)
Q970	Switching	Power supply control of sub RX 1st IF circuit (ON when sub RX 1st IF of 11.374MHz is selected)
Q971,972	Switching	Power supply control of 3rd IF circuit (ON when sub RX SSB, AM and CW mode are selected)
Q973,974	Switching	Power supply control of FM circuit (ON when RX FM mode is selected)
Q975	Switching	Power supply control of SRXB (ON during transmission)
D103,104	Clipper	External packet data input
D105	Surge protection	ACC2 connector (7-pin SSQ)
D106	Mute	For main ANO mute
D107	Mute	For sub ANO mute
D110~112	Surge protection	ACC2 connector (2/5/9-pin)
D113	Reverse current prevention	Invert PKS control signal
D114	Surge protection	METER connector (3-pin SS-MET)
D115	Reverse current prevention	Linear amplifier control signal
D116	Surge absorption	Relay (K101)
D117	Surge protection	METER connector (2-pin MS-MET)

Ref. No.	Use/Function	Operation/Condition/Compatibility
D118	Reverse current prevention	KEY connector (2-pin KEY down/ Electric keyer dot signal)
D119	Reverse current prevention	KEY connector (3-pin KEY down/ Electric keyer dash signal)
D120,121	Surge protection	ACC2 connector (6/10-pin)
D171,172	Reverse current prevention	Linear amplifier control signal
D200	Surge protection	Sub receiver RF signal input
D201	Surge absorption	Relay (K201)
D202	Surge absorption	Relay (K202)
D204,205	Surge absorption	Internal circuit protection
D207	Switching	Sub RX/TX changeover, on during sub reception
D208	Switching	ON when sub receiving over 1.705MHz is selected
D209	Reverse current prevention	1/2: Sub receiving ON at 30~522kHz 2/2: Sub receiving ON at 522kHz~1.705MHz
D210	Switching	ON when sub receiving over 1.705MHz is selected
D211,212	Switching	ON when BPF of 522kHz~1.705MHz is selected
D213,214	Switching	ON when BPF of 30~522kHz is selected
D215,216	Switching	ON when BPF of 1.705~2.5MHz is selected
D217,218	Switching	ON when BPF of 2.5~4.1MHz is selected
D219,220	Switching	ON when BPF of 4.1~6.9MHz is selected
D221,222	Switching	ON when BPF of 6.9~7.5MHz is selected
D223,224	Switching	ON when BPF of 7.5~10.5MHz is selected
D225,226	Switching	ON when BPF of 10.5~13.9MHz is selected
D227,228	Switching	ON when BPF of 13.9~14.5MHz is selected
D229,230	Switching	ON when BPF of 14.5~21.5MHz is selected
D231,232	Switching	ON when BPF of 21.5~30MHz is selected
D233,234	Switching	ON when BPF of 30~60MHz is selected
D235,236	Switching	ON when BPF of 49~54MHz is selected (TX only)
D237,238	Switching	ON when sub receiving preamplifier is OFF
D239,240	Switching	ON when sub receiving preamplifier is ON
D251,252	Surge absorption	Internal circuit protection

## COMPONENTS DESCRIPTION

Ref. No.	Use/Function	Operation/Condition/Compatibility
D351, 353,354	Switching	ON when sub RX 1st IF of 11.374MHz is selected
D401,403	Switching	ON when sub RX 1st IF of 73.095MHz is selected
D404	Switching	Sub RX/TX changeover, ON during sub reception
D405,406	Sub RX/TX mixer	Sub receiving 2nd/Transmission mixer (Sub RX: 73.095MHz>10.695MHz) (TX: 10.695MHz>73.095MHz)
D407	Switching	ON when sub RX 1st IF of 73.095MHz is selected
D408	Switching	1/2: Sub RX/TX changeover, on during transmission 2/2: Sub RX/TX changeover, on during sub reception
D409	Switching	ON when sub RX 1st IF of 73.095MHz is selected
D410,411	Switching	Sub RX/TX changeover, on during sub reception
D481~484	Noise Blanking	ON when SBLNK signal is "H"
D487	Switching	ON when 15kHz IF filter is selected
D488	Switching	ON when 10.695MHz 2.7kHz IF filter is selected
D489	Switching	ON when 500Hz IF filter is selected
D490,491	Switching	Sub RX/TX changeover, on during sub reception
D492	Switching	ON when 10.695MHz 2.7kHz IF filter is selected
D493	Switching	ON when 500Hz IF filter is selected
D494	Switching	ON when 15kHz IF filter is selected
D495	Switching	ON when 6kHz IF filter is selected
D496	Switching	Sub RX/TX changeover, on during transmission
D501	Attenuator	IF gain adjustment
D502	Switching	1/2: ON when Sub RX FM mode is selected 2/2: ON when Sub RX SSB, AM and CW mode are selected
D503	Switching	ON when 11.374MHz 2.7kHz IF filter is selected
D504	Switching	ON when 6kHz IF filter is selected
D505	Switching	Sub RX/TX changeover, on during transmission
D506	Switching	ON when 11.374MHz 2.7kHz IF filter is selected

Ref. No.	Use/Function	Operation/Condition/Compatibility
D601,602	Sub RX Mixer	Sub receiving 3rd mixer (10.695MHz/11.374MHz>24kHz)
D603,604	Clipper	FM demodulator IC input
D605,606	Switching	1/2: ON when FM 455kHz 9kHz filter is selected 2/2: ON when FM 455kHz 12kHz filter is selected
D607	Switching	1/2: ON when Sub RX FM mode is selected 2/2: ON when Sub RX SSB, AM and CW mode are selected
D701	Switching	1/2: ON when TX SSB, AM and CW mode are selected 2/2: ON when TX SSB, AM and CW mode are selected
D702	Reverse current prevention	ON when TX FM mode
D703~705	Attenuator	TGC control attenuator
D706	Switching	Sub RX/TX changeover, on during transmission
D707	Attenuator	PGC control attenuator
D708	Switching	Sub RX/TX changeover, on during transmission
D709	Switching	On when transmitting from 30~522kHz
D710	Switching	On when transmitting over 1.705MHz
D711,712	Surge absorption	Drive output terminal
D713	Switching	ON when drive output is selected
D714	Switching	ON when ANT connector is selected
D715	Switching	Sub RX/TX changeover, on during transmission
D716	Switching	ON during transmission
D717,718	Switching	Sub RX/TX changeover, on during transmission
D801,802	Reverse current prevention	External ALC voltage
D803	Current protection	Reduce power at over current
D804	Surge protection	ALC meter voltage
D805	Reverse current prevention	CKY signal line
D808,809	Reverse current prevention	Meter circuit
D881	Detection	Noise blanker switching pulse detection
D882,883	Reverse current prevention	SIBK and NB mute signal matching, sub RX mute when ON

## SEMICONDUCTOR DATA

### Main MCU: F56104VDFKEUA (Control unit IC46)

Pin No.	Name	I/O	Function
1	TXD4	O	E1 emulator communication
2	UL	I	Un-lock detect H: Lock
3	SSMET	O	Sub RX S-meter voltage
4	MSMET	O	Main RX S-meter voltage
5	AVSS	-	Analog GND
6	TRST#	I	E1 emulator communication
7	VRXD	I	Virtual com port received data
8	VTXD	O	Virtual com port transmitted data
9	DOT	I	Electronic keyer dot signal L: KEY dot
10	EMLE	I	E1 emulator communication
11	TDO	O	E1 emulator communication
12	VSS	-	GND
13	MDE	I	Endianness setting L: Little endianness
14	VCL	-	Power terminal
15	MD1	I	E1 emulator communication
16	MD0	I	E1 emulator communication
17	DASH	I	Electronic keyer dash signal L: KEY dash
18	PKSR	I	PTT output for data communication L: PTT ON
19	MRESET	I	Reset
20	XTAL	I	X'tal input
21	VSS	-	GND
22	EXTAL	O	X'tal output
23	VCC	-	3.3V power
24	NMI	I	Interrupt terminal (no use)
25	UVBINT	I	USB connect interrupt input H: Connect
26	BOVER	I	Over voltage detection L: Over voltage
27	BKC	I	Reduced voltage detection interrupt L: Reduced voltage
28	RTINTA	I	RTC interrupt A
29	PWS	I	Power SW
30	SS	I	Standby switch L: TX ON
31	DTXD	O	Transmitted data for DSP MCU
32	DRXD	I	Received data from DSP MCU
33	NC (DCFV)	O	"L" output
34	KEY1	I	KEY down signal/ Electric keyer dot signal L: KEY down/ KEY dot

Pin No.	Name	I/O	Function
35	KEY2	I	KEY down signal/ Electric keyer dash signal L: KEY down / KEY dash
36	PRXD	I	Received data from panel MCU
37	PTXD	O	Transmitted data for panel MCU
38	ATXD	O	Transmitted data for application MCU
39	PLLvcc	-	3.3V power for PLL
40	ARXD	I	Received data from application MCU
41	PLLvss	-	GND for PLL
42	RTCL	I/O	RTC communicatio clock
43	RTDA	I/O	RTC communicatio data
44	STXD	O	Transmitted data for scope MCU
45	SRXD	I	Received data from scope MCU
46	PFPRG	I/O	Programming mode request for panel MCU L: Programming mode
47	KYSR	I	KEY jack judgement signal L: Plugged
48	CLK	O	Common serial clock
49	DATA	O	Common serial data
50	SCTS	I	RTS signal input from scope MCU L: Communication permit
51	SRTS	O	RTS signal output to scope MCU
52	NC	-	No connection
53	NC	-	No connection
54	NC	-	No connection
55	NC	-	No connection
56	SFPRG	I/O	Programming mode request for scope MCU L: Programming mode
57	Vss	-	GND
58	NC	-	No connection
59	Vcc	-	3.3V power
60	NC	-	No connection
61	DRST	O	Reset for DSP MCU
62	DCTS	I	RTS signal input from DSP MCU L: Communication permit
63	DFPRG	I/O	Programming mode request for DSP MCU L: Programming mode
64	AHLT	I	Status of application MCU H: Normal
65	ACTS	I	RTS signal input from application MCU L: Communication permit
66	ARST	O	Reset for application MCU
67	PCTS	I	RTS signal input from panel MCU L: Communication permit
68	CCTS	I	RS-232C clear to send
69	CTXD	O	RS-232C transmitted data
70	CRXD	I	RS-232C received data

## SEMICONDUCTOR DATA

Pin No.	Name	I/O	Function
71	VCTS	I	Virtual com port clear to send
72	MLPX2	I	Multiplexer X-common data input
73	MLPY2	I	Multiplexer Y-common data input
74	VCC	-	3.3V power
75	MLPX3	I	Multiplexer X-common data input
76	VSS	-	GND
77	MLPY3	I	Multiplexer Y-common data input
78	SLDT	O	Sub local data output
79	SLCK	O	Sub local clock output
80	FPRG	I	Programming mode request for main MCU L: Programming mode
81	EEN	O	EEPROM enable (backup)
82	EDA	O	EEPROM data output (backup)
83	ESI	I	EEPROM data input (backup)
84	ECK	O	EEPROM clock (backup)
85	PSC	O	Power switch control (5V/8V/LCD driver power) H: Active
86	NC	-	No connection
87	NC	-	No connection
88	NC	-	No connection
89	PSC33	O	Power switch control for 3.3V H: Active
90	14SW	O	Power switch control for 14V H: Active
91	VCC	-	3.3V power
92	LOE	O	Output enable for extension port IC
93	VSS	-	GND
94	LDAT7	O	Data bit 7 of extension port IC
95	LDAT6	O	Data bit 6 of extension port IC
96	LDAT5	O	Data bit 5 of extension port IC
97	LDAT4	O	Data bit 4 of extension port IC
98	LDAT3	O	Data bit 3 of extension port IC
99	LDAT2	O	Data bit 2 of extension port IC
100	LDAT1	O	Data bit 1 of extension port IC
101	LDAT0	O	Data bit 0 of extension port IC
102	NC	-	No connection
103	ODP	I	Over drive protection
104	RTINTB	I	Interrupt signal_B from RTC IC
105	LE1	O	Latch enable 1 of extension port IC
106	LE2	O	Latch enable 2 of extension port IC
107	LE3	O	Latch enable 3 of extension port IC
108	LE4	O	Latch enable 4 of extension port IC
109	LE5	O	Latch enable 5 of extension port IC
110	LE6	O	Latch enable 6 of extension port IC
111	LE7	O	Latch enable 7 of extension port IC

Pin No.	Name	I/O	Function
112	LE8	O	Latch enable 8 of extension port IC
113	LE9	O	Latch enable 9 of extension port IC
114	LE10	O	Latch enable 10 of extension port IC
115	PHD	I	Output voltage of phase detector
116	AMD	I	Output voltage of amplitude detector
117	TTI	I	External antenna tuner signal
118	TSI	I	External antenna tuner signal
119	MCTDET	I	CTCSS detection from TXMRX-DSP H: detection
120	SCTDET	I	CTCSS detection from SRX-DSP H: detection
121	PSEDA	O	EEPROM data output (preselector)
122	PSESI	I	EEPROM data input (preselector)
123	PSECK	O	EEPROM clock (preselector)
124	ERDET	I	External reference detect H: External input
125	MLDT	O	Main local data output
126	MLCK	O	Main local clock output
127	MLPY1	I	Multiplexer Y-common data input
128	MLPX1	I	Multiplexer X-common data input
129	ACDCTH	I	AC/DC temperature detection
130	VSS	-	GND
131	VD	I	Drain voltage input for meter
132	VCC	-	3.3V power
133	ID	I	Power current voltage
134	ALM	I	ALC meter voltage
135	SFSQL	I	Sub RX FM squelch voltage
136	SFSM	I	Sub RX FM S-meter voltage
137	MFSQL	I	Main RX FM squelch voltage
138	MFSM	I	Main RX FM S-meter voltage
139	VSRM	I	VSR meter voltage
140	VREFL	-	A/D converter reference "L" level (GND)
141	VSFM	I	VSF meter voltage
142	VREFH	-	A/D converter reference "H" level (3.3V)
143	AVCC	-	A/D converter power (3.3V)
144	RxD4	I	E1 emulator communication

### Scope-Sub MCU: F2136ACNFKEVA (Control unit IC380)

Pin No.	Name	I/O	Function
1	NC	-	No connection
2	NC	-	No connection
3	SMODE	I	E8a emulator communication
4	NC	-	No connection
5	SCDHLT	I	Status of scope DSP H: Normal

## SEMICONDUCTOR DATA

Pin No.	Name	I/O	Function
6	SRESET	I	Reset
7	XOUT	O	X'tal output
8	VSS	-	GND
9	XIN	I	X'tal input
10	VCC	-	3.3V power
11	NC	-	No connection
12	NC	-	No connection
13	SCDRES	O	Reset for scope DSP L: Reset
14	STPTRG	O	Band scope sweep timing (1 step)
15	SPSYNC	O	Band scope sweep timing (1 frame)
16	SCD-SOUT	O	Serial communication data output for scope DSP
17	SCDCLK	O	Serial communication clock output for scope DSP
18	SCDSIN	I	Serial communication data input from scope DSP
19	NC	-	No connection
20	SCDSCS	O	Serial communication chip select output for scope DSP
21	NC	-	No connection
22	NC	-	No connection
23	SCDRET	O	Communication request to scope DSP
24	NC	-	No connection
25	NC	-	No connection
26	SCWST1	I	Status1 of scope DSP flash writing
27	NC	-	No connection
28	NC	-	No connection
29	NC	-	No connection
30	TXC	I	TX ON/OFF H: TX ON
31	NC	-	No connection
32	NC	-	No connection
33	SCATT3	O	30dB attenuator control
34	SCATT2	O	20dB attenuator control
35	SCATT1	O	10dB attenuator control
36	SCATT0	O	Attenuator control
37	NC	-	No connection
38	SCDREQ	I	Communication request from scope DSP
39	NC	-	No connection
40	NC	-	No connection
41	BKC	I	Reduced voltage detection interrupt L: Reduced voltage
42	SCFPRG	I/O	Programming mode request from main MCU L: Programming mode
43	SCRXD	I	Received data from main MCU
44	SCTXD	O	Transmitted data for main MCU

Pin No.	Name	I/O	Function
45	SCCTS	I	RTS signal input from main MCU L: Communication permit
46	SCRTS	O	RTS signal output for main MCU
47	SCWST2	I	Status 2 of scope DSP flash writing
48	NC	-	No connection
49	SCLK	O	Serial clock for accessory unit
50	SCLDT	O	Serial data for accessory unit
51	SCDEN1	O	DDS1 enable signal for accessory unit
52	SCDEN2	O	DDS2 enable signal for accessory unit
53	SCDEN3	O	DDS3 enable signal for accessory unit
54	SCPEN1	O	PLL1 enable signal for accessory unit
55	SCPEN2	O	PLL2 enable signal for accessory unit
56	SCPUL	I	Un-lock detect from accessory unit H: Lock
57	NC	-	No connection
58	SCDBT	O	Boot configuration select to scope DSP
59	IFSEL1	O	IF select 1 (main IF)
60	IFSEL2	O	IF select 2 (11MHz sub IF)
61	IFSEL3	O	IF select 3 (73MHz sub IF)
62	IFSEL4	O	IF select 4 (for TX)
63	NC	-	No connection
64	NC	-	No connection

### Scope DSP: (Control unit IC381)

Pin No.	Name	I/O	Function
1	VDDINT	-	Core power (1.2V)
2	CLK_CFG0	I	Core to CLKIN raito control (GND connect)
3	CLK_CFG1	I	Core to CLKIN raito control (GND connect)
4	BOOT_CFG0	I	Boot configuration select (GND connect)
5	SCDBT	I	Boot configuration select from scope MCU
6	GND	-	GND
7	VDDEXT	-	External power (3.3V)
8	GND	-	GND
9	VDDINT	-	Core power (1.2V)
10	GND	-	GND
11	VDDINT	-	Core power (1.2V)
12	GND	-	GND
13	VDDINT	-	Core power (1.2V)
14	GND	-	GND
15	SCDRET	I	Communication request from scope MCU
16	SC-DREQ/SCWST0	O	Communication request to scope MCU/ Flash writing status

## SEMICONDUCTOR DATA

Pin No.	Name	I/O	Function
17	SCP_AD 7	I/O	Address/Data bus for flash memory
18	GND	-	GND
19	VDDINT	-	Core power (1.2V)
20	GND	-	GND
21	VDDEXT	-	External power (3.3V)
22	GND	-	GND
23	VDDINT	-	Core power (1.2V)
24	SCP_AD 6	I/O	Address/Data bus for flash memory
25	SCP_AD 5	I/O	Address/Data bus for flash memory
26	SCP_AD 4	I/O	Address/Data bus for flash memory
27	VDDINT	-	Core power (1.2V)
28	GND	-	GND
29	SCP_AD 3	I/O	Address/Data bus for flash memory
30	SCP_AD 2	I/O	Address/Data bus for flash memory
31	VDDEXT	-	External power (3.3V)
32	GND	-	GND
33	SCP_AD 1	I/O	Address/Data bus for flash memory
34	SCP_AD 0	I/O	Address/Data bus for flash memory
35	SCP_WR	O	Write enable for flash memory
36	VDDINT	-	Core power (1.2V)
37	VDDINT	-	Core power (1.2V)
38	GND	-	GND
39	SCP_RD	O	Output enable for flash memory
40	SCP_ALE	O	Address latch enable for address decoder
41	SCP_AD 15	O	Address bus for flash memory
42	SCP_AD 14	O	Address bus for flash memory
43	SCP_AD 13	O	Address bus for flash memory
44	GND	-	GND
45	VDDEXT	-	External power (3.3V)
46	SCP_AD 12	O	Address bus for flash memory
47	VDDINT	-	Core power (1.2V)
48	GND	-	GND
49	SCP_AD 11	O	Address bus for flash memory
50	SCP_AD 10	O	Address bus for flash memory
51	SCP_AD 9	O	Address bus for flash memory

Pin No.	Name	I/O	Function
52	SCP_AD 8	O	Address bus for flash memory
53	SCLK96K	O	Audio serial I/F (BICK)
54	VDDINT	-	Core power (1.2V)
55	GND	-	GND
56	LRCK 96K	O	Audio serial I/F (LRCK)
57	MCLK 96K	O	Audio serial I/F (MCLK)
58	GND	-	GND
59	VDDEXT	-	External power (3.3V)
60	VDDINT	-	Core power (1.2V)
61	GND	-	GND
62	SDTI0	I	Band scope signal data input
63	SDTI1	I	Main RX and sub RX audio scope signal input
64	SCSOMI	I	Serial data input from application MCU
65	SCSIMO	O	Serial data output to application MCU
66	VDDINT	-	Core power (1.2V)
67	GND	-	GND
68	VDDINT	-	Core power (1.2V)
69	GND	-	GND
70	SCCLK	O	Serial clock output to application MCU
71	SCCSO	O	Serial chip select output to application MCU
72	VDDINT	-	Core power (1.2V)
73	VDDEXT	-	External power (3.3V)
74	GND	-	GND
75	VDDINT	-	Core power (1.2V)
76	GND	-	GND
77	NC	-	No connection
78	NC	-	No connection
79	TXC	I	TX ON/OFF H: TX ON
80	SCP	I	Discriminate DSP H: Scope DSP/ L: TXMRX DSP
81	SC-WST2/ BERD	O	Flash writing status
82	SCDHLT	O	Status of scope DSP H: Normal
83	VDDINT	-	Core power (1.2V)
84	GND	-	GND
85	GND	-	GND
86	STPTRG	I	Band scope sweep timing (1 step)
87	SPSYNC	I	Band scope sweep timing (1 frame)
88	SC-WST1/ BERC	O	Flash writing status



## SEMICONDUCTOR DATA

Pin No.	Name	I/O	Function
89	SDTO0	O	No connection
90	VDDINT	-	Core power (1.2V)
91	GND	-	GND
92	GND	-	GND
93	VDDEXT	-	External power (3.3V)
94	NC	-	No connection
95	GND	-	GND
96	VDDINT	-	Core power (1.2V)
97	PDN	O	Power down for ADC/DAC
98	SCP_RYBY	I	Rady/Busy signal from flash memory
99	VDDINT	-	Core power (1.2V)
100	GND	-	GND
101	VDDINT	-	Core power (1.2V)
102	GND	-	GND
103	VDDINT	-	Core power (1.2V)
104	GND	-	GND
105	VDDINT	-	Core power (1.2V)
106	GND	-	GND
107	VDDINT	-	Core power (1.2V)
108	VDDINT	-	Core power (1.2V)
109	GND	-	GND
110	VDDINT	-	Core power (1.2V)
111	GND	-	GND
112	VDDINT	-	Core power (1.2V)
113	GND	-	GND
114	VDDINT	-	Core power (1.2V)
115	GND	-	GND
116	VDDEXT	-	External power (3.3V)
117	GND	-	GND
118	VDDINT	-	Core power (1.2V)
119	GND	-	GND
120	VDDINT	-	Core power (1.2V)
121	SCDRES	I	Reset
122	SCDSCS	I	Serial chip select input from scope MCU
123	GND	-	GND
124	VDDINT	-	Core power (1.2V)
125	SCDCLK	I	Serial clock input from scope MCU
126	SCDSIN	O	Serial data output to scope MCU
127	SCD-SOUT	I	Serial data input from scope MCU
128	GND	-	GND
129	VDDINT	-	Core power (1.2V)
130	VDDEXT	-	External power (3.3V)
131	AVDD	-	PLL power (1.2V)

Pin No.	Name	I/O	Function
132	AVSS	-	PLL GND
133	GND	-	GND
134	NC	-	No connection
135	SCP_EMU	O	For JTAG (no use)
136	SCP_TDO	O	For JTAG (no use)
137	SCP_TDI	I	For JTAG (no use)
138	SCP_TRST	I	For JTAG (no use)
139	SCP_TCK	I	For JTAG (no use)
140	SCP_TMS	I	For JTAG (no use)
141	GND	-	GND
142	CLKIN	I	X'tal input
143	XTAL	O	X'tal output
144	VDDEXT	-	External power (3.3V)

### Extension Port IC: TC74VHC373FT (Control unit IC31)

Pin No.	Name	I/O	Function
1	OE	I	Output enable
2	SRTS	O	RTS signal output to scope MCU
3	D0	I	Data bit 0
4	D1	I	Data bit 1
5	DRTS	O	RTS signal output to DSP MCU
6	ARTS	O	RTS signal output to application MCU
7	D2	I	Data bit 2
8	D3	I	Data bit 3
9	USBSW	O	Switch signal for USB device power H: Active
10	GND	-	GND
11	LE	I	Latch enable
12	RT32S	O	32kHz clock out control H: Active
13	D4	I	Data bit 4
14	D5	I	Data bit 5
15	PRTS	O	RTS signal output to panel MCU
16	CRTS	O	RS-232C request to send
17	D6	I	Data bit 6
18	D7	I	Data bit 7
19	VRTS	O	RTS signal output to USB-serial bridge
20	VCC	-	3.3V



## SEMICONDUCTOR DATA

### Extension Port IC: TC74VHC373FT (Control unit IC32)

Pin No.	Name	I/O	Function
1	OE	I	Output enable
2	ACDCSW	O	AC/DC power control H: Active
3	D0	I	Data bit 0
4	D1	I	Data bit 1
5	LPOFF	O	Standby LED control H: light
6	LTIMER	O	Timer LED control H: light
7	D2	I	Data bit 2
8	D3	I	Data bit 3
9	NBS	O	NB ON/OFF H: NB ON
10	GND	-	GND
11	LE	I	Latch enable
12	LCDREQ	O	LCD active request to application MCU H: Active
13	D4	I	Data bit 4
14	D5	I	Data bit 5
15	MIBK	O	Main RX IF blanking H: Mute
16	SIBK	O	Sub RX IF blanking signal H: Mute
17	D6	I	Data bit 6
18	D7	I	Data bit 7
19	50VSW	O	Power switch control for 50V H: Active
20	VCC	-	3.3V

### Extension Port IC: TC74VHC373FT (Control unit IC33)

Pin No.	Name	I/O	Function
1	OE	I	Output enable
2	REN1	O	Shift register enable signal for RX unit
3	D0	I	Data bit 0
4	D1	I	Data bit 1
5	REN2	O	Shift register enable signal for RX unit
6	PSEN	O	Shift register enable signal for preselector
7	D2	I	Data bit 2
8	D3	I	Data bit 3
9	PSEEN	O	EEPROM enable (preselector)
10	GND	-	GND
11	LE	I	Latch enable
12	DAEN1	O	D/A convertor IC enable for RX unit
13	D4	I	Data bit 4

Pin No.	Name	I/O	Function
14	D5	I	Data bit 5
15	MRXC	O	Main RX control signal H: RX/ L: TX
16	RPEN	O	Reference PLL enable
17	D6	I	Data bit 6
18	D7	I	Data bit 7
19	REFI	O	External ref. input select H: External ref. input
20	VCC	-	3.3V

### Extension Port IC: TC74VHC373FT (Control unit IC34)

Pin No.	Name	I/O	Function
1	OE	I	Output enable
2	MANO-MU	O	Main ANO mute control signal H: Main ANO mute
3	D0	I	Data bit 0
4	D1	I	Data bit 1
5	SANOMU	O	Sub ANO mute control signal H: Sub ANO mute
6	PKP	O	Invert PKS control signal H: PTT ON
7	D2	I	Data bit 2
8	D3	I	Data bit 3
9	TEN1	O	Shift register enable signal for TX-RX unit
10	GND	-	GND
11	LE	I	Latch enable
12	TEN2	O	Shift register enable signal for TX-RX unit
13	D4	I	Data bit 4
14	D5	I	Data bit 5
15	DAEN2	O	D/A converter enable signal for TX-RX unit
16	MSQC	O	Main squelch control signal (to ACC2) H: Main squelch open
17	D6	I	Data bit 6
18	D7	I	Data bit 7
19	SSQC	O	Sub squelch control signal (to ACC2) H: Sub squelch open
20	VCC	-	3.3V

### Extension Port IC: TC74VHC373FT (Control unit IC36)

Pin No.	Name	I/O	Function
1	OE	I	Output enable
2	ADC1	O	Multiplexer control signal 1

## SEMICONDUCTOR DATA

Pin No.	Name	I/O	Function
3	D0	I	Data bit 0
4	D1	I	Data bit 1
5	ADC2	O	Multiplexer control signal 2
6	MBLEN	O	Main bucklight enable H: Enable
7	D2	I	Data bit 2
8	D3	I	Data bit 3
9	MABK1	O	AF blanking 1 for TXMRX-DSP H: Mute
10	GND	-	GND
11	LE	I	Latch enable
12	MABK2	O	AF blanking 2 for TXMRX-DSP H: Mute
13	D4	I	Data bit 4
14	D5	I	Data bit 5
15	SABK1	O	AF blanking 1 for SRX-DSP H: Mute
16	SABK2	O	AF blanking 2 for SRX-DSP H: Mute
17	D6	I	Data bit 6
18	D7	I	Data bit 7
19	PRST	O	Panel MCU reset signal L: Reset
20	VCC	-	3.3V

### Extension Port IC: TC74VHC373FT (Control unit IC37)

Pin No.	Name	I/O	Function
1	OE	I	Output enable
2	MFEN1	O	Shift register enable signal for final unit and ANT tuner unit
3	D0	I	Data bit 0
4	D1	I	Data bit 1
5	MFEN2	O	Shift register enable signal for ANT tuner unit
6	MFEN3	O	D/A converter enable signal for final unit
7	D2	I	Data bit 2
8	D3	I	Data bit 3
9	AFEN	O	Shift register enable signal for ANT con- nector unit and ANT switch unit
10	GND	-	GND
11	LE	I	Latch enable
12	NC_TR	O	No connection
13	D4	I	Data bit 4
14	D5	I	Data bit 5
15	ATPWS	O	Stop operating AT relays, power ON
16	TTO	O	External antenna tuner signal
17	D6	I	Data bit 6

Pin No.	Name	I/O	Function
18	D7	I	Data bit 7
19	TSO	O	External antenna tuner signal
20	VCC	-	3.3V

### Extension Port IC: TC74VHC373FT (Control unit IC38)

Pin No.	Name	I/O	Function
1	OE	I	Output enable
2	MLSEN	O	Main local shift register enable
3	D0	I	Data bit 0
4	D1	I	Data bit 1
5	RDEN	O	Reference DDS enable for main local unit
6	MLRST	O	DDS1 reset for main local unit
7	D2	I	Data bit 2
8	D3	I	Data bit 3
9	MDEN1	O	DDS1 enable for main local unit
10	GND	-	GND
11	LE	I	Latch enable
12	MDIO	O	DDS1 I/O_update for main local unit
13	D4	I	Data bit 4
14	D5	I	Data bit 5
15	MDEN2	O	DDS2 enable for main local unit
16	MPEN1	O	Main PLL1 enable for main local unit
17	D6	I	Data bit 6
18	D7	I	Data bit 7
19	MPEN2	O	PLL2 enable for main local unit
20	VCC	-	3.3V

### Extension Port IC: TC74VHC373FT (Control unit IC39)

Pin No.	Name	I/O	Function
1	OE	I	Output enable
2	TXC	O	TX ON/OFF H: TX ON
3	D0	I	Data bit 0
4	D1	I	Data bit 1
5	CKY	O	CKY mute signal H: Mute
6	SRXC	O	Sub RX ON/OFF control signal H: SRXB (8V) ON
7	D2	I	Data bit 2
8	D3	I	Data bit 3
9	DC12SW	O	Switch signal for digital 1.2V DC/DC converter H: Active

## SEMICONDUCTOR DATA

Pin No.	Name	I/O	Function
10	GND	-	GND
11	LE	I	Latch enable
12	DC18SW	O	Switch signal for digital 1.8V DC/DC converter H: Active
13	D4	I	Data bit 4
14	D5	I	Data bit 5
15	33SW1	O	Switch signal for digital 3.3V FET H: Active
16	33SW2	O	Switch signal for digital 3.3V FET H: Active
17	D6	I	Data bit 6
18	D7	I	Data bit 7
19	REFO	O	Reference output select H: Reference output
20	VCC	-	3.3V

### Extension Port IC: TC74VHC373FT (Control unit IC42)

Pin No.	Name	I/O	Function
1	OE	I	Output enable
2	SDEN1	O	DDS1 enable for sub local unit
3	D0	I	Data bit 0
4	D1	I	Data bit 1
5	SDIO	O	DDS1 I/O_update for sub local unit
6	SDEN2	O	DDS2 enable for sub local unit
7	D2	I	Data bit 2
8	D3	I	Data bit 3
9	SDEN3	O	DDS3 enable for sub local unit
10	GND	-	GND
11	LE	I	Latch enable
12	SPEN1	O	PLL1 enable for sub local unit
13	D4	I	Data bit 4
14	D5	I	Data bit 5
15	SPEN2	O	PLL2 enable for sub local unit
16	SPEN3	O	PLL3 enable for sub local unit
17	D6	I	Data bit 6
18	D7	I	Data bit 7
19	SLSEN	O	Sub local shift register enable
20	VCC	-	3.3V

### Extension Port IC: TC74VHC373FT (Control unit IC43)

Pin No.	Name	I/O	Function
1	OE	I	Output enable
2	NC	O	No connection

Pin No.	Name	I/O	Function
3	D0	I	Data bit 0
4	D1	I	Data bit 1
5	NC	O	No connection
6	NC	O	No connection
7	D2	I	Data bit 2
8	D3	I	Data bit 3
9	NC	O	No connection
10	GND	-	GND
11	LE	I	Latch enable
12	NC	O	No connection
13	D4	I	Data bit 4
14	D5	I	Data bit 5
15	NC	O	No connection
16	NC	O	No connection
17	D6	I	Data bit 6
18	D7	I	Data bit 7
19	NC	O	No connection
20	VCC	-	3.3V

### DSP-Sub MCU: F2136ACNFKEVA (DSP unit IC101)

Pin No.	Name	I/O	Function
1	NC	O	No connection
2	VREF	I	A/D standard voltage input
3	DMODE	I	Flash programming mode signal
4	NC	O	No connection
5	MDHLT	I	TXMRX-DSP check signal input
6	DRESET	I	For reset L: Reset
7	XOUT	O	System clock output (18.432MHz)
8	VSS	-	GND
9	XIN	I	System clock input (18.432MHz)
10	VCC	I	Power supply input (3.3V)
11	SDHLT	I	SRX-DSP check signal input
12	NC	O	No connection
13	MDRES	O	TXMRX-DSP reset L: Reset
14	SDRES	O	SRX-DSP reset L: Reset
15	NC	O	No connection
16	DSOUT	O	DSP data output (SPI)
17	DCLK	O	DSP dlock output (SPI)
18	DSIN	I	DSP data input (SPI)
19	NC	O	No connection
20	MDSCS	O	TXMRX-DSP chip select L: Enable

## SEMICONDUCTOR DATA

Pin No.	Name	I/O	Function
21	SDSCS	O	SRX-DSP chip select L: Enable
22	NC	O	No connection
23	MDRET	O	Communication request to TXMRX-DSP
24	SDRET	O	Communication request to SRX-DSP
25	BEEP	O	Beep pattern instruction H: Beep output
26	MVOX	I	VOX transmit (MIC) signal input H: Active
27	SWST1	I	SRX-DSP programming status signal input
28	AVOX	I	VOX transmit (ANI) signal input H: Active
29	NC	O	No connection
30	TXC	I	TX ON/OFF H: TX ON
31	CKY	I	RF power ON/OFF H: Power ON
32	MABK1	I	AF blanking signal input for TXMRX-DSP H: Mute
33	SABK1	I	AF blanking signal input for SRX-DSP H: Mute
34	MABK2	I	AF blanking signal input for TXMRX-DSP H: Mute
35	SABK2	I	AF blanking signal input for SRX-DSP H: Mute
36	MIBK	I	IF blanking signal input for TXMRX-DSP H: Mute
37	SIBK	I	IF blanking signal input for SRX-DSP H: Mute
38	MDREQ	I	Communication request form TXMRX-DSP
39	SDREQ	I	Communication request form SRX-DSP
40	NC	O	No connection
41	BKC	I	Reduced voltage detect interrupt H→L: Interrupt
42	DFRRG	I	Compulsion firmware programming Mode detect
43	DRXD	I	Serial data input from main MPU
44	DTXD	O	Serial data output for main MPU
45	DCTS	I	RTS signal input from main MPU
46	DRTS	O	RTS signal output to main MPU
47	MCTDET	I	CTCSS detection signal input form TXMRX-DSP H: CTCSS detection
48	SCTDET	I	CTCSS detection signal input form SRX-DSP H: CTCSS detection
49	AN0	O	No connection
50	AN1	O	No connection
51	NC	O	No connection

Pin No.	Name	I/O	Function
52	ANISEL	O	ACC2 audio/ USB audio select H:USB audio/ L: ACC2 audio
53	MODSEL	O	Modulation select H: FM modulation/ L: TIF
54	SMUTE2	O	Audio mute control for Ext.SP2
55	SMUTE 1	O	Audio mute control for SP1/Ext.SP1
56	PMUTE	O	Audio mute control for phone circuite
57	SP2DET	I	Ext.SP2 detection
58	MDBT	O	Boot configuration select for TXMRX-DSP H: FLASH boot/ L: SPI slave boot
59	SDBT	O	Boot configuration select for SRX-DSP H: FLASH boot/ L: SPI slave boot
60	PHDET	I	Phone detection
61	VOLEN	O	Load enable for DAC (IC658)
62	VOLDT	O	Data output for DAC (IC658)
63	VOLCK	O	Clock output for DAC (IC658)
64	NC	O	No connection

### TXMRX-DSP: (DSP unit IC202)

Pin No.	Name	I/O	Function
1	VDDINT	I	Internal (core) supply voltage (1.2V)
2	CLK_CFG0	I	Core to CLKIN raito control (GND connect)
3	CLK_CFG1	I	Core to CLKIN raito control (GND connect)
4	BOOT_CFG0	I	Boot configuration select (GND connect)
5	MDBT	I	Boot configuration select H: FLASH boot/ L: SPI slave boot
6	GND	-	GND
7	VDDEXT	I	External (I/O) supply voltage (3.3V)
8	GND	-	GND
9	VDDINT	I	Internal (core) supply voltage (1.2V)
10	GND	-	GND
11	VDDINT	I	Internal (core) supply voltage (1.2V)
12	GND	-	GND
13	VDDINT	I	Internal (core) supply voltage (1.2V)
14	GND	-	GND
15	MDRET	I	Communication request from DSP-sub MCU
16	MDREQ	O	Communication request to DSP-sub MCU
17	AD7	I/O	Address/Data bus for flash memory
18	GND	-	GND
19	VDDINT	I	Internal (core) supply voltage (1.2V)
20	GND	-	GND
21	VDDEXT	I	External (I/O) supply voltage (3.3V)

## SEMICONDUCTOR DATA

Pin No.	Name	I/O	Function
22	GND	-	GND
23	VDDINT	I	Internal (core) supply voltage (1.2V)
24	AD6	I/O	Address/Data bus for flash memory
25	AD5	I/O	Address/Data bus for flash memory
26	AD4	I/O	Address/Data bus for flash memory
27	VDDINT	I	Internal (core) supply voltage (1.2V)
28	GND	-	GND
29	AD3	I/O	Address/Data bus for flash memory
30	AD2	I/O	Address/Data bus for flash memory
31	VDDEXT	I	External (I/O) supply voltage (3.3V)
32	GND	-	GND
33	AD1	I/O	Address/Data bus for flash memory
34	AD0	I/O	Address/Data bus for flash memory
35	nWR	O	Write enable for flash memory
36	VDDINT	I	Internal (core) supply voltage (1.2V)
37	VDDINT	I	Internal (core) supply voltage (1.2V)
38	GND	-	GND
39	nRD	O	Output enable for flash memory
40	ALE	O	Address latch enable for address decoder
41	AD15	O	Address bus for flash memory
42	AD14	O	Address bus for flash memory
43	AD13	O	Address bus for flash memory
44	GND	-	GND
45	VDDEXT	I	External (I/O) supply voltage (3.3V)
46	AD12	O	Address bus for flash memory
47	VDDINT	I	Internal (core) supply voltage (1.2V)
48	GND	-	GND
49	AD11	O	Address bus for flash memory
50	AD10	O	Address bus for flash memory
51	AD9	O	Address bus for flash memory
52	AD8	O	Address bus for flash memory
53	SCLK96K	I	Audio serial I/F (BICK) form SRX-DSP
54	VDDINT	I	Internal (core) supply voltage (1.2V)
55	GND	-	GND
56	LRCK 96K	I	Audio serial I/F (LRCK) form SRX-DSP
57	SCLK48K	I	Audio serial I/F (BICK) form flipflop
58	GND	-	GND
59	VDDEXT	I	External (I/O) supply voltage (3.3V)
60	VDDINT	I	Internal (core) supply voltage (1.2V)
61	GND	-	GND
62	LRCK 48K	I	Audio serial I/F (LRCK) form flipflop
63	M_SDTI1	I	Audio serial I/F (data) form ADC (IC398)
64	SDMI-SO1	O	Audio serial I/F (data) for SRX-DSP

Pin No.	Name	I/O	Function
65	M_SDTO2	O	Audio serial I/F (data) for DAC (IC397)
66	VDDINT	I	Internal (core) supply voltage (1.2V)
67	GND	-	GND
68	VDDINT	I	Internal (core) supply voltage (1.2V)
69	GND	-	GND
70	SDMI-SO0	O	Audio serial I/F (data) for SRX-DSP
71	SDMO-SI0	I	Audio serial I/F (data) from SRX-DSP
72	VDDINT	I	Internal (core) supply voltage (1.2V)
73	VDDEXT	I	External (I/O) supply voltage (3.3V)
74	GND	-	GND
75	VDDINT	I	Internal (core) supply voltage (1.2V)
76	GND	-	GND
77	SDMO-SI1	I	Audio serial I/F (data) from SRX-DSP
78	AVOX	O	VOX transmit (ANI) signal output to DSP-sub MCU
79	TXC	I	TX ON/OFF H: TX ON
80	SCP	I	Discriminate SCP form TXMRX L: TXMRX
81	MCTDET	O	CTCSS detection signal output H: CTCSS detection
82	MDHLT	O	TXMRX-DSP check signal to DSP-sub MCU
83	VDDINT	I	Internal (core) supply voltage (1.2V)
84	GND	-	GND
85	GND	-	GND
86	MABK1	I	AF blanking signal input H: Mute
87	CKY	I	RF power ON/OFF H: Power ON
88	MVOX	O	VOX transmit (MIC) signal output to DSP-sub MCU
89	MIBK	I	IF blanking signal input H: Mute
90	VDDINT	I	Internal (core) supply voltage (1.2V)
91	GND	-	GND
92	GND	-	GND
93	VDDEXT	I	External (I/O) supply voltage (3.3V)
94	MABK2	I	AF blanking signal input H: Mute
95	GND	-	GND
96	VDDINT	I	Internal (core) supply voltage (1.2V)
97	RTK	I	PTTY key signal form ACC2
98	RYBY	I	Rady/Busy signal from flash memory
99	VDDINT	I	Internal (core) supply voltage (1.2V)
100	GND	-	GND

## SEMICONDUCTOR DATA

Pin No.	Name	I/O	Function
101	VDDINT	I	Internal (core) supply voltage (1.2V)
102	GND	-	GND
103	VDDINT	I	Internal (core) supply voltage (1.2V)
104	GND	-	GND
105	VDDINT	I	Internal (core) supply voltage (1.2V)
106	GND	-	GND
107	VDDINT	I	Internal (core) supply voltage (1.2V)
108	VDDINT	I	Internal (core) supply voltage (1.2V)
109	GND	-	GND
110	VDDINT	I	Internal (core) supply voltage (1.2V)
111	GND	-	GND
112	VDDINT	I	Internal (core) supply voltage (1.2V)
113	GND	-	GND
114	VDDINT	I	Internal (core) supply voltage (1.2V)
115	GND	-	GND
116	VDDEXT	I	External (I/O) supply voltage (3.3V)
117	GND	-	GND
118	VDDINT	I	Internal (core) supply voltage (1.2V)
119	GND	-	GND
120	VDDINT	I	Internal (core) supply voltage (1.2V)
121	MDRES	I	TXMRX-DSP reset L: Reset
122	MDSCS	I	TXMRX-DSP chip select L: Enable
123	GND	-	GND
124	VDDINT	I	Internal (core) supply voltage (1.2V)
125	DCLK	I	DSP Clock Input from DSP-sub MCU
126	DSIN	O	DSP data output (SPI) for DSP-sub MCU
127	DSOUT	I	DSP data input (SPI) from DSP-sub MCU
128	GND	-	GND
129	VDDINT	I	Internal (core) supply voltage (1.2V)
130	VDDEXT	I	External (I/O) supply voltage (3.3V)
131	AVDD	I	Analog supply voltage (1.2V)
132	AVSS	-	Analog GND
133	GND	-	GND
134	nRESET-OUT	O	No connection
135	M_EMU	O	For JTAG (no use)
136	M_TDO	O	For JTAG (no use)
137	M_TDI	I	For JTAG (no use)
138	M_TRST	I	For JTAG (no use)
139	M_TCK	I	For JTAG (no use)
140	M_TMS	I	For JTAG (no use)
141	GND	-	GND
142	CLKIN	I	System clock input (24.576MHz)
143	XTAL	O	System clock output (24.576MHz)

Pin No.	Name	I/O	Function
144	VDDEXT	I	External (I/O) supply voltage (3.3V)

### SRX-DSP: (DSP unit IC300)

Pin No.	Name	I/O	Function
1	VDDINT	I	Internal (core) supply voltage (1.2V)
2	DATA28	I/O	No connection (internal pull up)
3	DATA27	I/O	No connection (internal pull up)
4	GND	-	GND
5	VDDEXT	I	External (I/O) supply voltage (3.3V)
6	DATA26	I/O	No connection (internal pull up)
7	DATA25	I/O	No connection (internal pull up)
8	DATA24	I/O	No connection (internal pull up)
9	DATA23	I/O	No connection (internal pull up)
10	GND	-	GND
11	VDDINT	I	Internal (core) supply voltage (1.2V)
12	DATA22	I/O	No connection (internal pull up)
13	DATA21	I/O	No connection (internal pull up)
14	DATA20	I/O	No connection (internal pull up)
15	VDDEXT	I	External (I/O) supply voltage (3.3V)
16	GND	-	GND
17	DATA19	I/O	No connection (internal pull up)
18	DATA18	I/O	No connection (internal pull up)
19	VDDINT	I	Internal (core) supply voltage (1.2V)
20	GND	-	GND
21	DATA17	I/O	No connection (internal pull up)
22	VDDINT	I	Internal (core) supply voltage (1.2V)
23	GND	-	GND
24	VDDINT	I	Internal (core) supply voltage (1.2V)
25	GND	-	GND
26	DATA16	I/O	No connection (internal pull up)
27	DATA15	I/O	No connection (internal pull up)
28	DATA14	I/O	No connection (internal pull up)
29	DATA13	I/O	No connection (internal pull up)
30	DATA12	I/O	No connection (internal pull up)
31	VDDEXT	I	External (I/O) supply voltage (3.3V)
32	GND	-	GND
33	VDDINT	I	Internal (core) supply voltage (1.2V)
34	GND	-	GND
35	DATA11	I/O	No connection (internal pull up)
36	DATA10	I/O	No connection (internal pull up)
37	DATA9	I/O	No connection (internal pull up)
38	DATA8	I/O	No connection (internal pull up)
39	DATA7	I/O	Data bus for flash memory
40	DATA6	I/O	Data bus for flash memory
41	VDDEXT	I	External (I/O) supply voltage (3.3V)



## SEMICONDUCTOR DATA

Pin No.	Name	I/O	Function
42	GND	-	GND
43	VDDINT	I	Internal (core) supply voltage (1.2V)
44	DATA4	I/O	Data bus for flash memory
45	DATA5	I/O	Data bus for flash memory
46	DATA2	I/O	Data bus for flash memory
47	DATA3	I/O	Data bus for flash memory
48	DATA0	I/O	Data bus for flash memory
49	DATA1	I/O	Data bus for flash memory
50	VDDEXT	I	External (I/O) supply voltage (3.3V)
51	GND	-	GND
52	VDDINT	I	Internal (core) supply voltage (1.2V)
53	VDDINT	I	Internal (core) supply voltage (1.2V)
54	GND	-	GND
55	VDDEXT	I	External (I/O) supply voltage (3.3V)
56	ADDR0	O	Address bus for flash memory
57	ADDR2	O	Address bus for flash memory
58	ADDR1	O	Address bus for flash memory
59	ADDR4	O	Address bus for flash memory
60	ADDR3	O	Address bus for flash memory
61	ADDR5	O	Address bus for flash memory
62	GND	-	GND
63	VDDINT	I	Internal (core) supply voltage (1.2V)
64	GND	-	GND
65	VDDEXT	I	External (I/O) supply voltage (3.3V)
66	ADDR6	O	Address bus for flash memory
67	ADDR7	O	Address bus for flash memory
68	ADDR8	O	Address bus for flash memory
69	ADDR9	O	Address bus for flash memory
70	ADDR10	O	Address bus for flash memory
71	GND	-	GND
72	VDDINT	I	Internal (core) supply voltage (1.2V)
73	GND	-	GND
74	VDDEXT	I	External (I/O) supply voltage (3.3V)
75	ADDR11	O	Address bus for flash memory
76	ADDR12	O	Address bus for flash memory
77	ADDR13	O	Address bus for flash memory
78	GND	-	GND
79	VDDINT	I	Internal (core) supply voltage (1.2V)
80	AVSS	-	GND
81	AVDD	I	Analog supply voltage (1.2V)
82	GND	-	GND
83	CLKIN	I	System clock input (24.576MHz)
84	XTAL	O	System clock output (24.576MHz)
85	VDDEXT	I	External (I/O) supply voltage (3.3V)
86	GND	-	GND

Pin No.	Name	I/O	Function
87	VDDINT	I	Internal (core) supply voltage (1.2V)
88	ADDR14	O	Address bus for flash memory
89	GND	-	GND
90	VDDEXT	I	External (I/O) supply voltage (3.3V)
91	ADDR15	O	Address bus for flash memory
92	ADDR16	O	Address bus for flash memory
93	ADDR17	O	Address bus for flash memory
94	ADDR18	O	Address bus for flash memory
95	GND	-	GND
96	VDDEXT	I	External (I/O) supply voltage (3.3V)
97	ADDR19	O	Address bus for flash memory
98	ADDR20	O	Address bus for flash memory
99	ADDR21	O	Address bus for flash memory
100	ADDR23	O	No connection (low level output)
101	ADDR22	O	No connection (low level output)
102	nMS1	O	Chip enable for flash memory
103	nMS0	O	Output enable for buffer IC
104	VDDINT	I	Internal (core) supply voltage (1.2V)
105	VDDINT	I	Internal (core) supply voltage (1.2V)
106	GND	-	GND
107	VDDEXT	I	External (I/O) supply voltage (3.3V)
108	nSDCAS	O	No connection (high level output)
109	nSDRAS	O	No connection (high level output)
110	SDCKE	O	No connection (high level output)
111	nSDWE	O	No connection (high level output)
112	nWR	O	Write enable for flash memory
113	SDA10	O	No connection (low level output)
114	GND	-	GND
115	VDDEXT	I	External (I/O) supply voltage (3.3V)
116	SDCLK0	O	No connection
117	GND	-	GND
118	VDDINT	I	Internal (core) supply voltage (1.2V)
119	nRD	O	Output enable for flash memory
120	ACK	I	No connection (internal pull up)
121	PDN	O	Power down for ADC/DAC
122	FLAG2	I	VDDEXT connect
123	FLAG1	I	VDDEXT connect
124	SDRET	I	Communication request to SRX-DSP
125	SDMO-S11	O	Audio serial I/F (data) for TXMRX-DSP
126	GND	-	GND
127	VDDINT	I	Internal (core) supply voltage (1.2V)
128	GND	-	GND
129	VDDEXT	I	External (I/O) supply voltage (3.3V)
130	SDMI-SO1	I	Audio serial I/F (data) form TXMRX-DSP

## SEMICONDUCTOR DATA

Pin No.	Name	I/O	Function
131	S_SDTO6	O	Audio serial I/F (data) for DAC(IC385)
132	SDMO-SI0	O	Audio serial I/F (data) for TXMRX-DSP
133	SDMI-SO0	I	Audio serial I/F (data) form SRX-DSP
134	S_SP-DIFO0	O	S/PDIF data output for optical CN (A650)
135	S_SP-DIFI0	I	S/PDIF data input from optical CN (A651)
136	S_SDTO5	O	Audio serial I/F (data) for DAC (IC386)
137	S_SDTO4	O	Audio serial I/F (data) for DAC (IC391)
138	VDDINT	I	Internal (core) supply voltage (1.2V)
139	VDDEXT	I	External (I/O) supply voltage (3.3V)
140	GND	-	GND
141	VDDINT	I	Internal (core) supply voltage (1.2V)
142	GND	-	GND
143	S_SDTO3	O	Audio serial I/F (data) for DAC (IC390)
144	S_SDTO2	O	Audio serial I/F (data) for DAC (IC388)
145	S_SDTI2	I	Audio serial I/F (data) form ADC (IC389)
146	S_SDTO1	O	Audio serial I/F (data) for DAC (IC387)
147	MCL K48K	O	Audio serial I/F (MCLK) for DAC/ADC
148	S_SDTI1	I	Audio serial I/F (data) form ADC (IC392)
149	MCLK 96K	O	Audio serial I/F (MCLK) for DAC/ADC
150	VDDEXT	I	External (I/O) supply voltage (3.3V)
151	GND	-	GND
152	VDDINT	I	Internal (core) supply voltage (1.2V)
153	GND	-	GND
154	VDDINT	I	Internal (core) supply voltage (1.2V)
155	GND	-	GND
156	VDDINT	I	Internal (core) supply voltage (1.2V)
157	VDDINT	I	Internal (core) supply voltage (1.2V)
158	VDDINT	I	Internal (core) supply voltage (1.2V)
159	GND	-	GND
160	VDDINT	I	Internal (core) supply voltage (1.2V)
161	VDDINT	I	Internal (core) supply voltage (1.2V)
162	VDDINT	I	Internal (core) supply voltage (1.2V)
163	TDI	I	For JTAG (no use)
164	nTRST	I	For JTAG (no use)
165	TCK	I	For JTAG (no use)
166	GND	-	GND
167	VDDINT	I	Internal (core) supply voltage (1.2V)

Pin No.	Name	I/O	Function
168	TMS	I	For JTAG (no use)
169	CLK_CFG0	I	Core to CLKIN raito control (GND connect)
170	BOOT_CFG0	I	Boot configuration select (GND connect)
171	CLK_CFG1	I	Core to CLKIN raito control (GND connect)
172	nEMU	O	For JTAG (no use)
173	BOOT_CFG1	I	Boot configuration select H: FLASH Boot / L: SPI slave boot
174	TDO	O	For JTAG (no use)
175	LRCK 48K	I	Audio serial I/F (LRCK) from flipflop
176	LRCK 96K	O	Audio serial I/F (LRCK) for ADC/DAC/SRX-DSP/flipflop
177	SCLK48K	I	Audio serial I/F (BICK) from flipflop
178	SCLK96K	O	Audio serial I/F (BICK) for ADC/DAC/SRX-DSP/flipflop
179	VDDEXT	I	External (I/O) supply voltage (3.3V)
180	GND	-	GND
181	VDDINT	I	Internal (core) supply voltage (1.2V)
182	GND	-	GND
183	FFCLR	O	Clear for flipflop
184	SDREQ	O	Communication request to DSP-sub MCU
185	SCTDET	O	CTCSS detection signal output H: CTCSS detection
186	SWST1	O	SRX-DSP write status signal output
187	UARTORX	I	No connection (external pull up)
188	UARTOTX	O	No connection
189	SPIFLG3	O	No connection
190	RYBY	I	Rady/Busy signal input from flash memory
191	VDDEXT	I	External (I/O) supply voltage (3.3V)
192	GND	-	GND
193	VDDINT	I	Internal (core) supply voltage (1.2V)
194	GND	-	GND
195	SPIFLG1	I	No connection (external pull up)
196	SDHLT	O	SRX-DSP check signal to DSP-sub MCU
197	SDSCS	I	TXMRX-DSP chip select L: Enable
198	DCLK	I	DSP clock input from DSP-sub MCU
199	DSOUT	I	DSP data input (SPI) from DSP-sub MCU
200	DSIN	O	DSP data output (SPI) for DSP-sub MCU
201	RESET-OUT	O	No connection
202	SDRES	I	SRX-DSP reset L: Reset

## SEMICONDUCTOR DATA

Pin No.	Name	I/O	Function
203	VDDEXT	I	External (I/O) supply voltage (3.3V)
204	GND	-	GND
205	DATA30	I/O	No connection (internal pull up)
206	DATA31	I/O	No connection (internal pull up)
207	DATA29	I/O	No connection (internal pull up)
208	VDDINT	I	Internal (core) supply voltage (1.2V)

### Panel MCU: F3651KDFCKEXA (Display unit IC6)

Pin No.	Name	I/O	Function
1	VREF	I	A/D standard voltage input (5.0V)
2	AVCC	I	Power supply input (5.0V)
3	LAT	O	AT LED (green) H: Light
4	MPI3	I	Multi plexer data input (A/D)
5	LPROC	O	PROC key LED (green) H: Light
6	SLPWM	O	Sub display backlight PWM control
7	MLPWM	O	Main display backlight PWM control
8	LFBK	O	FBK LED (green) H: Light
9	LMONI	O	MONI LED (green) H: Light
10	LHLENC	O	LC/HC encoder LED (yellow) H: Light
11	NC	-	Not used
12	LPON	O	Power on LED (green) H: Light
13	BYTE	I	Single chipmode selection (Vss connection)
14	E8CNV	I	For E8a (firmware writing)
15	LSPLIT	O	SPLIT LED (yellow & green) H: Light
16	LMRX	O	Main RX key LED (green) H: Light
17	PRST	I	For reset L: Reset
18	XOUT	O	System clock output (11.0592MHz)
19	VSS	-	GND
20	XIN	I	System clock input (11.0592MHz)
21	VCC1	-	Power supply input VCC1 (5.0V)
22	RITB	I	RIT encoder pulse B input
23	RITA	I	RIT encoder pulse A input
24	MPRE1	O	Multi plexer control output for IC9
25	MPRE2	O	Multi plexer control output for IC10
26	MENCB	I	Main encoder pulse B input
27	MENCA	I	Main encoder pulse A input
28	SENCB	I	Sub encoder pulse B input

Pin No.	Name	I/O	Function
29	SENCA	I	Sub encoder pulse A input
30	MPRE3	O	Multi plexer control output for IC11
31	LEDBR	O	LED PWM control
32	PBLEN	O	Display backlight enable output
33	SLSYNC	O	Backlight driver IC SYNC signal for sub display
34	LMBEF	O	Main BEF LED (green) H: Light
35	MLSYNC	O	Backlight driver IC SYNC signal for main display
36	E8TXD	O	For E8a (firmware writing)
37	VCC1	I	Power supply input VCC1 (5.0V)
38	E8RXD	I	For E8a (firmware writing)
39	VSS	-	GND
40	E8CLK	O	For E8a (firmware writing)
41	E8BSY	O	For E8a (firmware writing)
42	NC	-	Not used
43	LMAIN	O	< MAIN LED (green) H: Light
44	LSUB	O	SUB > LED (green) H: Light
45	LVOX	O	VOX LED (green) H: Light
46	LMTX	O	Main TX Key LED (green) H: Light
47	LSRX	O	Sub RX Key LED (green) H: Light
48,49	KI13,KI12	I	Key scan input bit 13, 12
50	LSTX	O	Sub TX key LED (green) H: Light
51	LMBSYG	O	Main busy LED (green) H: Light
52	E8EPM	O	For E8a (firmware writing)
53	LREC	O	REC LED (red) H: Light
54~57	KI11~KI8	I	Key scan input bit 11~8
58	LMBSYR	O	Main TX LED (red) H: Light
59	LSBSYG	O	Sub busy LED (green) H: Light
60	LSBSYR	O	Sub TX LED (red) H: Light
61	NC	-	Not used (external pull up)
62	LMLOCK	O	Main lock LED (yellow) H: Light
63,64	NC	-	Not used
65	PTXD	O	The serial port for connection with the main MCU
66	PRXD	I	The serial port for connection with the main MCU

## SEMICONDUCTOR DATA

Pin No.	Name	I/O	Function
67	PCTS	I	CTS port for connection with the main MCU
68	PRTS	O	RTS port for connection with the main MCU
69	HCENCB	I	Hi cut encoder pulse B input
70	LCENCB	I	Low cut encoder pulse B input
71	MULTIB	I	Multi encoder pulse B input
72	LDRV	O	DRV LED (green) H: Light
73~79	KI7~KI1	I	Key scan input bit 7~1
80	SRDATA	O	Shift register data output
81	SRCLK	O	Shift register clock output
82	SRENA	O	Shift register enable output
83	LTRACK	O	TRACK LED (green) H: Light
84	LSLOCK	O	Sub lock LED (yellow) H: Light
85	VCC2	I	Power supply input VCC2 (3.3V)
86	KI0	I	Key scan input bit 0
87	VSS	-	GND
88	LMAPF	O	Main APF LED (green) H: Light
89	LMMUTE	O	Main MUTE LED (yellow) H: Light
90	MULTIA	I	MULTI encoder pulse A input
91	PFPRG	I/O	Setup firmware write mode
92~95	NC	-	Not used
96	HCENCA	I	Hi cut encoder pulse A input
97	LCENCA	I	Low cut encoder pulse A input
98	PBKC	I	Reduced voltage detection interrupt
99	LSNCH	O	Sub NOTCH LED (green) H: Light

Pin No.	Name	I/O	Function
100	PATXD	O	The serial port for connection with the application MCU
101	PARXD	I	The serial port for connection with the application MCU (not used)
102	LSANCH	O	Sub ANOTCH LED (green) H: Light
103	LSBEF	O	Sub BEF LED (green) H: Light
104~111	KO7~KO0	O	Key scan output bit 7~0
112	PAPUON	O	Touch panel SW PULL UP ON
113	TPPRES	O	Touch panel SW PRESS
114	PA_Y2	O	Touch panel SW Y2
115	PA_Y1	O	Touch panel SW Y1
116	PA_X2	O	Touch panel SW X2
117	PA_X1	O	Touch panel SW X1
118	LSAPF	O	Sub APF LED (green) H: Light
119	LSMUTE	O	Sub MUTE LED (yellow) H: Light
120	PA_Y+(YU)	I	Touch panel detection input Y+
121	PA_Y-(YD)	I	Touch panel detection input Y-
122	PA_X+(XU)	I	Touch panel detection input X+
123	PA_X-(XD)	I	Touch panel detection input X-
124	MU	I	MIC up key input (A/D)
125	MD	I	MIC down key input (A/D)
126	MPI1	I	Multi plexer data input(A/D)
127	AVSS	-	Analog GND
128	MPI2	I	Multi plexer data input (A/D)

## PARTS LIST

\* New Parts.  $\Delta$  indicates safety critical components.

Parts without **Parts No.** are not supplied.

Les articles non mentionnés dans le **Parts No.** ne sont pas fournis.

Teile ohne **Parts No.** werden nicht geliefert.

L : Scandinavia

Y : PX (Far East, Hawaii)

C : China

K : USA

T : England

X : Australia

P : Canada

E : Europe

M : Other Areas

TS-990S

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
<b>TS-990S</b>											
1	1B	*	A01-2234-12	METALLIC CABINET(UPPER)		89	2L	*	E37-1570-05	LEAD WIRE WITH MINIPIN PLUG	
2	1D	*	A01-2235-02	METALLIC CABINET(LOWER)		90	3I,2L,1N	*	E37-1571-15	LEAD WIRE WITH MINIPIN PLUG	
15	1E	*	A22-2527-01	SUB PANEL		91	1L,3K	*	E37-1572-05	LEAD WIRE WITH MINIPIN PLUG	
16	3E	*	A62-1194-11	PANEL		92	1J,1M	*	E37-1573-05	LEAD WIRE WITH MINIPIN PLUG	
18	3B	*	A82-0089-21	REAR PANEL		93	3J,1N	*	E37-1577-05	LEAD WIRE WITH MINIPIN PLUG	
21	2B	*	B09-0761-05	CAP(DVI CN)		94	2I	*	E37-1579-05	FLAT CABLE	
22	3E	*	B10-6011-03	FRONT GLASS(SUB DISP)		95	1J,2L,2M	*	E37-1580-15	FLAT CABLE	
23	2G	*	B11-1898-03	ILLUMINATION GUIDE(TX/RX,SPLIT)		96	2L,3L	*	E37-1581-05	FLAT CABLE	
24	1G	*	B11-1899-03	ILLUMINATION GUIDE(MULTI,HI/LO)		97	1L,2L,3L	*	E37-1582-05	FLAT CABLE	
25	2F	*	B38-0943-05	LCD ASSY(7INCH TFT)		98	1K,2L,3L	*	E37-1583-05	FLAT CABLE	
26	2F	*	B38-0944-05	LCD ASSY(3.5INCH TFT)		99	3K,3L	*	E37-1585-15	FLAT CABLE	
31	2E	*	B43-0336-04	BADGE(KENWOOD)		100	3L,2M	*	E37-1586-15	FLAT CABLE	
32	3F	*	B43-1667-03	BADGE(TS-990)		101	2L	*	E37-1587-05	FLAT CABLE	
33	3F	*	B43-1668-04	BADGE(SUB RECEIVER)		102	3L	*	E37-1588-05	FLAT CABLE	
41	2O	*	B52-0624-00	SCHEMATIC DIAGRAM ACCESSORY		103	3L,2M	*	E37-1590-05	FLAT CABLE	
42	2O	*	B52-0625-00	SCHEMATIC DIAGRAM ACCESSORY		104	3L,2M	*	E37-1591-05	FLAT CABLE	
43	2O	*	B52-0626-00	SCHEMATIC DIAGRAM ACCESSORY		105	3L	*	E37-1592-05	FLAT CABLE	
44	2O	*	B52-0627-00	SCHEMATIC DIAGRAM ACCESSORY		106	1K,1L	*	E37-1593-15	FLAT CABLE	
52	2O	*	B62-2389-10	INSTRUCTION MANUAL(ENGLISH)		107	2I,1K	*	E37-1594-15	FLAT CABLE	
53	2O	*	B62-2390-10	INSTRUCTION MANUAL(FRENCH)	K	108	2I	*	E37-1595-05	FLAT CABLE	
-		*	B62-2391-10	INSTRUCTION MANUAL(SPANISH)	E	109	1I,2I	*	E37-1596-15	FLAT CABLE	
-		*	B62-2392-10	INSTRUCTION MANUAL(GERMAN)	E	110	2I,3I,1N	*	E37-1597-05	FLAT CABLE	
-		*	B62-2393-10	INSTRUCTION MANUAL(ITALIAN)	E	111	1L,3L	*	E37-1598-05	FLAT CABLE	
-		*	B62-2394-10	INSTRUCTION MANUAL(DUTCH)	E	112	3I,1N	*	E37-1600-05	FLAT CABLE	
$\Delta$ 58	2B	*	B72-2779-14	MODEL NAME-PLATE	K	113	2H	*	E37-1601-05	FLAT CABLE	
$\Delta$ 58	2B	*	B72-2780-14	MODEL NAME-PLATE	E	114	3H	*	E37-1602-05	FLAT CABLE	
61	2B		E04-0167-15	RF COAXIAL RECEPTACLE(M)		115	2H	*	E37-1603-05	FLAT CABLE	
62	2B		E04-0454-15	RF COAXIAL RECEPTACLE(BNC)		116	3I	*	E37-1604-05	FLAT CABLE	
63	1P		E07-0751-25	DIN PLUG(7P) ACCESSORY		117	2H	*	E37-1605-05	FLAT CABLE	
64	1P		E07-1351-25	DIN PLUG(13P) ACCESSORY		118	2F,1H,2H	*	E37-1606-05	FLAT CABLE	
65	2B		E23-1164-04	EARTH LUG(ANT/BNC)		121	1J,2M	*	E37-1610-05	LEAD WIRE WITH CONNECTOR	
66	3L, 2M		E30-7582-05	TRUNK CABLE(APP-PANEL)		122	2J,2M	*	E37-1611-05	LEAD WIRE WITH CONNECTOR	
$\Delta$ 67	1O	*	E30-7758-15	AC POWER CORD(K-TYPE)	K	123	1J,2M	*	E37-1612-05	LEAD WIRE WITH CONNECTOR	
$\Delta$ 68	1O	*	E30-7759-05	AC POWER CORD(E-TYPE)	E	124	2I,2K,2N	*	E37-1613-05	LEAD WIRE WITH CONNECTOR	
$\Delta$ 69	1O	*	E30-7760-05	AC POWER CORD(E(T)-TYPE)	E	125	1J,1L,3L	*	E37-1614-25	LEAD WIRE WITH CONNECTOR	
71	3H		E37-1507-05	LEAD WIRE WITH CONNECTOR		126	1B,1I,1L,2N	*	E37-1615-15	LEAD WIRE WITH CONNECTOR	
72	1J,2K,3K	*	E37-1552-05	LEAD WIRE WITH MINIPIN PLUG		127	1J,2I,2M	*	E37-1616-15	LEAD WIRE WITH CONNECTOR	
73	1I,2I,1K	*	E37-1553-05	LEAD WIRE WITH MINIPIN PLUG		128	1J,1L,3L	*	E37-1617-05	LEAD WIRE WITH CONNECTOR	
74	1K,2L	*	E37-1554-05	LEAD WIRE WITH MINIPIN PLUG		129	1L,3L	*	E37-1618-05	LEAD WIRE WITH CONNECTOR	
75	1K,2L	*	E37-1555-05	LEAD WIRE WITH MINIPIN PLUG		130	1L,3L	*	E37-1619-05	LEAD WIRE WITH CONNECTOR	
76	1K,2L	*	E37-1556-05	LEAD WIRE WITH MINIPIN PLUG		131	2L,3L	*	E37-1620-05	LEAD WIRE WITH CONNECTOR	
77	2K,2L	*	E37-1558-05	LEAD WIRE WITH MINIPIN PLUG		132	1L,3K	*	E37-1621-05	LEAD WIRE WITH CONNECTOR	
78	1K,2K	*	E37-1559-05	LEAD WIRE WITH MINIPIN PLUG		133	1L	*	E37-1622-05	LEAD WIRE WITH CONNECTOR	
79	1L,2K	*	E37-1560-05	LEAD WIRE WITH MINIPIN PLUG		134	1K,1L	*	E37-1623-05	LEAD WIRE WITH CONNECTOR	
80	2K,3K	*	E37-1561-05	LEAD WIRE WITH MINIPIN PLUG		135	1K,1L	*	E37-1624-05	LEAD WIRE WITH CONNECTOR	
81	2K,3K	*	E37-1562-05	LEAD WIRE WITH MINIPIN PLUG		136	1L,2L,3M	*	E37-1625-05	LEAD WIRE WITH CONNECTOR	
82	2K,3K	*	E37-1563-05	LEAD WIRE WITH MINIPIN PLUG		137	1L,2L,2M	*	E37-1626-05	LEAD WIRE WITH CONNECTOR	
83	2K,3K	*	E37-1564-05	LEAD WIRE WITH MINIPIN PLUG		138	3L,2M,3M	*	E37-1627-05	LEAD WIRE WITH CONNECTOR	
84	3K	*	E37-1565-05	LEAD WIRE WITH MINIPIN PLUG		139	2I,3K,2N	*	E37-1628-15	LEAD WIRE WITH CONNECTOR	
85	3I,1K	*	E37-1566-05	LEAD WIRE WITH MINIPIN PLUG		140	3K	*	E37-1629-05	LEAD WIRE WITH CONNECTOR	
86	3I,1K	*	E37-1567-05	LEAD WIRE WITH MINIPIN PLUG		141	1H	*	E37-1630-05	LEAD WIRE WITH CONNECTOR	
87	2L	*	E37-1568-05	LEAD WIRE WITH MINIPIN PLUG		142	1H	*	E37-1631-05	LEAD WIRE WITH CONNECTOR	
88	2L	*	E37-1569-05	LEAD WIRE WITH MINIPIN PLUG		143	2B	*	E37-1634-05	LEAD WIRE WITH CONNECTOR	
						144	2J	*	E37-1665-05	LEAD WIRE WITH CONNECTOR	
						$\Delta$ 153	2B	*	F09-1307-05	FANMOTOR(AT)	



# TS-990S

## PARTS LIST

### TS-990S

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
△ 154	3A	*	F09-1309-05	FANMOTOR(FINAL)		230	3F	*	K29-9508-02	KEY TOP(KEY AREA 2)	
166	3E	*	F10-3198-03	SHIELDING PLATE(MAIN-TORQUE)		231	3F	*	K29-9509-02	KEY TOP(KEY AREA 3)	
△ 168	1P		F52-0020-05	FUSE(BLADE TYPE)(4A) ACCESSORY		232	3F	*	K29-9510-01	KEY TOP(KEY AREA 4)	
170	3E,3F		G02-0505-05	KNOB SPRING(INNER KNOB)		234	3F	*	K29-9511-02	KEY TOP(KEY AREA 5)	
171	2D		G02-0791-14	FLAT SPRING(AUDIO IC)		235	3F	*	K29-9512-03	KEY TOP(KEY AREA 6)	
172	1A		G02-1838-14	EARTH SPRING(FINAL FET)		236	3G	*	K29-9514-02	BUTTON KNOB(POWER)	
173	3E	*	G02-1869-03	FLAT SPRING(MAIN TORQUE)		237	3G	*	K29-9515-02	BUTTON KNOB(TIMER)	
174	1F	*	G02-1871-04	FLAT SPRING(7INCH NOISE)		238	3G	*	K29-9516-02	BUTTON KNOB(SEND)	
175	1A	*	G02-1875-04	EARTH SPRING(FINAL FET)		239	3G	*	K29-9517-02	BUTTON KNOB(AT)	
176	3E		G09-0405-05	KNOB SPRING(MULTI,RIT)		240	3G	*	K29-9518-12	BUTTON KNOB(F1)	
177	1C,1H,1I,3L		G10-1278-04	FIBROUS SHEET(FLAT CABLE)		243	3G	*	K29-9519-12	BUTTON KNOB(F2)	
178	3E	*	G10-1836-04	FIBROUS SHEET(MAIN TORQUE)		244	3G	*	K29-9520-12	BUTTON KNOB(F3)	
179	2C,3C		G11-4510-04	RUBBER SHEET(DDS)		245	3G	*	K29-9521-12	BUTTON KNOB(F4)	
180	2F		G11-4520-04	SHEET(PANEL CORE)		246	2G	*	K29-9522-12	BUTTON KNOB(F5)	
181	3E	*	G11-4570-14	SHEET(SUB DISP)		247	2G	*	K29-9523-12	BUTTON KNOB(F6)	
182	2A	*	G11-4577-04	SHEET(FINAL F01)		248	2G	*	K29-9524-12	BUTTON KNOB(F7)	
183	1B	*	G11-4596-03	SHEET(FINAL PCB)		249	3G	*	K29-9525-02	BUTTON KNOB(VOX)	
184	2F	*	G11-4619-04	SHEET(7INCH)		250	3G	*	K29-9526-02	BUTTON KNOB(PROC)	
185	3E	*	G11-4621-04	SHEET(MAIN KNOB)		251	2G	*	K29-9527-02	BUTTON KNOB(FBK)	
186	3B	*	G11-4623-04	RUBBER SHEET(REAR PANEL)		252	2G	*	K29-9528-02	BUTTON KNOB(MONI)	
187	2C,2D	*	G13-1878-15	CONDUCTIVE CUSHION(TX VCO,BPF)		253	2G	*	K29-9529-02	BUTTON KNOB(LSB/USB)	
188	1D,2D,2F	*	G13-2102-04	CONDUCTIVE CUSHION(7IN,BPF,PRE)		254	2G	*	K29-9530-02	BUTTON KNOB(CW)	
189	1B	*	G13-2372-14	CUSHION(SP)		255	2G	*	K29-9531-02	BUTTON KNOB(FSK/PSK)	
190	2F	*	G13-2375-04	CUSHION(7INCH FRONT)		256	2G	*	K29-9532-02	BUTTON KNOB(FM/AM)	
191	2F,2H	*	G13-2376-04	CUSHION(7INCH REAR)		257	2G	*	K29-9533-02	BUTTON KNOB(DATA)	
192	2F	*	G13-2377-04	CUSHION(7INCH REAR)		258	2G	*	K29-9534-02	BUTTON KNOB(RX)	
193	2F	*	G13-2379-04	CUSHION(3.5 FRONT)		259	2G	*	K29-9535-02	BUTTON KNOB(TX)	
194	1E,1F	*	G13-2380-04	CUSHION(ON PCB)		260	2G	*	K29-9536-02	BUTTON KNOB(M>S)	
195	2C	*	G13-2421-04	CUSHION(L PLATE)		261	2G	*	K29-9537-02	BUTTON KNOB(M/S)	
196	2D	*	G13-2433-04	CUSHION(ON S-CASE)		262	2G	*	K29-9538-01	BUTTON KNOB(RX ANT)	
197	1A	*	G13-2434-04	CONDUCTIVE CUSHION(UPPER CASE)		263	1G	*	K29-9539-01	BUTTON KNOB(DRV)	
198	2B	*	G13-2436-04	CONDUCTIVE CUSHION(REAR PANEL)		264	1G	*	K29-9540-01	BUTTON KNOB(XVTR)	
199	1A	*	G13-2437-04	CONDUCTIVE CUSHION(DCDC CASE)		265	2G	*	K29-9541-01	BUTTON KNOB(1)	
201	2O		H02-0638-03	INNER CARTON CASE ACCESSORY		266	1G	*	K29-9542-01	BUTTON KNOB(2)	
202	3O	*	H10-6652-01	POLYSTYRENE FOAMED FIXTURE(FRONT)		267	1G	*	K29-9543-01	BUTTON KNOB(3)	
203	2P	*	H10-6653-11	POLYSTYRENE FOAMED FIXTURE(REAR)		268	2G	*	K29-9544-01	BUTTON KNOB(4)	
205	2P	*	H20-1452-14	PROTECTION COVER(BODY)		269	1G	*	K29-9545-01	BUTTON KNOB(6)	
206	1P		H25-0029-04	PROTECTION BAG (60/110/0.07)		270	2G	*	K29-9546-01	BUTTON KNOB(7)	
207	1O,2O		H25-2352-04	PROTECTION BAG (250/350/0.07)		271	1G	*	K29-9547-01	BUTTON KNOB(8)	
208	3O	*	H52-2520-02	ITEM CARTON CASE	K	272	1G	*	K29-9548-01	BUTTON KNOB(9)	
209	3P	*	H62-2173-13	OUTER CARTON CASE		273	2G	*	K29-9549-01	BUTTON KNOB(CLR)	
210	1D	*	J02-1310-02	FOOT(FRONT BASE)		274	1G	*	K29-9550-01	BUTTON KNOB(0)	
211	1D	*	J02-1311-02	FOOT(FRONT LEVER)		275	1G	*	K29-9551-01	BUTTON KNOB(ENT)	
212	1D	*	J02-1312-03	FOOT(REAR)		276	2G	*	K29-9552-01	BUTTON KNOB(GEN1)	
213	3B	*	J21-8645-03	MOUNTING HARDWARE(ANT HOLDER)		277	1G	*	K29-9553-01	BUTTON KNOB(GEN2)	
214	2B	*	J21-8646-02	MOUNTING HARDWARE(SP)		278	1G	*	K29-9554-01	BUTTON KNOB(MENU)	
215	2F	*	J21-8647-12	MOUNTING HARDWARE(7TFT)		279	2G	*	K29-9555-01	BUTTON KNOB(M/V)	
216	2F	*	J21-8648-03	MOUNTING HARDWARE(3.5TFT)		280	1G	*	K29-9556-01	BUTTON KNOB(M.IN)	
217	2F	*	J21-8649-04	MOUNTING HARDWARE(HI/LO AREA)		281	1G	*	K29-9557-01	BUTTON KNOB(M>V)	
218	1E	*	J21-8650-03	MOUNTING HARDWARE(VR AREA1)		282	2G	*	K29-9558-01	BUTTON KNOB(REC)	
219	2F	*	J21-8651-03	MOUNTING HARDWARE(VR AREA2)		283	1G	*	K29-9559-01	BUTTON KNOB(STOP)	
220	1F	*	J21-8652-03	MOUNTING HARDWARE(VR AREA3)		284	1G	*	K29-9560-01	BUTTON KNOB(PLAY)	
221	1F	*	J21-8653-03	MOUNTING HARDWARE(VR AREA4)		285	2G	*	K29-9561-01	BUTTON KNOB(S.DISP)	
-			J61-0307-05	BAND		286	1G	*	K29-9562-01	BUTTON KNOB(MR)	
225	3E	*	K21-1109-13	KNOB(MAIN UPPER)		287	1G	*	K29-9564-02	BUTTON KNOB(5)	
226	3E	*	K21-1110-03	KNOB(MAIN LOWER)		288	2G	*	K29-9565-02	BUTTON KNOB(TF SET)	
227	3E	*	K21-1111-13	KNOB(SUB KNOB)		289	2G	*	K29-9566-02	BUTTON KNOB(<MAIN)	
228	3E,3F	*	K29-9390-03	KNOB(VR SMALL IN)		290	1G	*	K29-9567-02	BUTTON KNOB(SUB>)	
229	2E	*	K29-9507-03	KEY TOP(KEY AREA 1)		291	1G	*	K29-9568-02	BUTTON KNOB(UP)	
						292	1G	*	K29-9569-02	BUTTON KNOB(DOWN)	



## PARTS LIST

TS-990S  
ACCESSORY UNIT (X42-3430-00)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
293	3G	*	K29-9570-02	BUTTON KNOB(PF A)	
294	3G	*	K29-9571-02	BUTTON KNOB(DIM)	
295	3G	*	K29-9572-02	BUTTON KNOB(ESC)	
296	2G	*	K29-9573-02	BUTTON KNOB(SCOPE)	
297	2G	*	K29-9574-12	BUTTON KNOB(FUNC-7TFT)	
298	1G,2G	*	K29-9575-02	BUTTON KNOB(NO PRINT)	
299	1G,2G	*	K29-9576-02	BUTTON KNOB(ILLUMI)	
300	3E	*	K29-9577-03	KNOB(HI/LO INNER)	
301	3E	*	K29-9578-13	KNOB(HI/LO OUTER)	
302	3E	*	K29-9579-02	KNOB(MULTI,RIT)	
303	3E	*	K29-9580-03	KNOB(VR BIG IN)	
304	3E	*	K29-9581-13	KNOB(VR BIG OUT)	
305	3E	*	K29-9582-03	KNOB RING(MAIN KNOB)	
306	3E	*	K29-9583-03	KNOB RING(SUB KNOB)	
307	1G	*	K29-9592-02	BUTTON KNOB(RIT)	
308	1G	*	K29-9593-02	BUTTON KNOB(XIT)	
309	1G	*	K29-9594-02	BUTTON KNOB(CL)	
310	3E,3F	*	K29-9596-03	KNOB(VR-SMAL-OUT)	
315	3M		L79-1407-05	LINE FILTER(PANEL)	
316	3L		L79-1417-05	LINE FILTER(HOSOCOAXIAL)	
317	3L		L79-1419-05	LINE FILTER	
318	1P		L79-1419-05	LINE FILTER(ACC)	E
319	2F,3L	*	L92-0493-05	FERRITE CORE(P,7IN,S FFC)	
A	3E		N09-6602-05	SPECIAL SCREW(PANEL)	
B	3A	*	N09-6617-05	SPECIAL SCREW(SUB PANEL)	
C	2J		N14-0802-05	WING NUT(ACDC-GND)	
D	2J	*	N15-1050-48	FLAT WASHER(ACDC-GND)	
E	1F		N19-0673-15	SPECIAL WASHER(RIT)	
F	1E,1F,2F		N33-2606-43	OVAL HEAD MACHINE SCREW(PANEL-PCB)	
G	2A,3A		N33-3006-43	OVAL HEAD MACHINE SCREW(FINAL.SUB-P)	
H	1E,2E,2F		N35-2604-43	BINDING HEAD MACHINE SCREW(PANEL-PCB)	
I	1A,2B,3B		N35-3005-43	BINDING HEAD MACHINE SCREW(SHIELD ETC)	
J	2B		N35-3008-43	BINDING HEAD MACHINE SCREW(ANT/BNC)	
K	2A,2B		N35-3020-48	BINDING HEAD MACHINE SCREW(60-FAN,HEAT)	
L	3A	*	N35-3030-48	BINDING HEAD MACHINE SCREW(80-FAN)	
M	1B,2B,2D		N35-4008-43	BINDING HEAD MACHINE SCREW(CABINET,SUB)	
N	3E	*	N38-2030-48	PAN HEAD MACHINE SCREW(MAIN KNOB)	
O	1A		N67-2612-48	PAN HEAD SEMS SCREW(FINAL)	
P	3E		N77-3006-43	HEXAGON SOCKET HEAD SET SCREW(MAIN/SUB)	
Q	1E,1F,2F		N82-2605-48	BINDING HEAD TAPTITE SCREW(PANEL)	
R	1A,2D		N87-2606-43	BRAZIER HEAD TAPTITE SCREW(BODY-PCB)	
S	1A,1C,2D		N87-2608-48	BRAZIER HEAD TAPTITE SCREW(BODY)	
T	1B,2B		N87-3005-43	BRAZIER HEAD TAPTITE SCREW(SPEAKER)	
331	1B	*	T07-0797-05	SPEAKER	
332	1E,1F		W02-1836-15	ENCODER(MAIN,SUB)	
333	1F		W02-3727-05	ENCODER(RIT)	
334	2A	*	W02-3765-05	ELECTRIC CIRCUIT MODULE(AC/DC UNIT)	
335	3D		W09-0971-05	LITHIUM CELL(COTROL UNIT)	
-		*	X46-3390-01	DIGITAL UNIT(FOR SERVICE)	

ACCESSORY UNIT (X42-3430-00)					
Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
D609		*	B30-2352-05	LED(GREEN)	
D610		*	B30-2350-05	LED(YELLOW)	
D611,612		*	B30-2352-05	LED(GREEN)	
D613		*	B30-2350-05	LED(YELLOW)	
C1			CK73GB1H103K	CHIP C 0.010UF K	
C2			CK73GB1E105K	CHIP C 1.0UF K	
C3 ,4			CK73GB1H104K	CHIP C 0.10UF K	
C5			CS77MA1VR33M	CHIP TINTL 0.33UF 35WV	
C6			CK73FB1C106K	CHIP C 10UF K	
C7 -10			CK73GB1H103K	CHIP C 0.010UF K	
C11			CK73GB1H104K	CHIP C 0.10UF K	
C12			CE32BM1C220M	CHIP EL 22UF 16WV	
C13			CK73GB1H104K	CHIP C 0.10UF K	
C14			CK73GB1H103K	CHIP C 0.010UF K	
C15 -18			CK73GB1H104K	CHIP C 0.10UF K	
C19			CK73GB1H103K	CHIP C 0.010UF K	
C20			CE32BM1C220M	CHIP EL 22UF 16WV	
C21 -23			CK73GB1H103K	CHIP C 0.010UF K	
C24			CC73GCH1H560J	CHIP C 56PF J	
C25 -27			CK73GB1H104K	CHIP C 0.10UF K	
C28			CK73GB1H103K	CHIP C 0.010UF K	
C29			CC73GCH1H070D	CHIP C 7.0PF D	
C30 -33			CK73GB1H104K	CHIP C 0.10UF K	
C34			CC73GCH1H101J	CHIP C 100PF J	
C35 ,36			CK73GB1H104K	CHIP C 0.10UF K	
C37			CC73GCH1H070D	CHIP C 7.0PF D	
C38 ,39			CK73GB1H103K	CHIP C 0.010UF K	
C40			CC73GCH1H560J	CHIP C 56PF J	
C41			CK73GB1H103K	CHIP C 0.010UF K	
C42			CK73GB1H104K	CHIP C 0.10UF K	
C43			CK73FB1C106K	CHIP C 10UF K	
C44			CK73GB1H103K	CHIP C 0.010UF K	
C45			CC73GCH1H560J	CHIP C 56PF J	
C46			CK73GB1H104K	CHIP C 0.10UF K	
C48			CK73GB1H104K	CHIP C 0.10UF K	
C49 -51			CK73GB1H103K	CHIP C 0.010UF K	
C52			CC73GCH1H330J	CHIP C 33PF J	
C53			CC73GCH1H820J	CHIP C 82PF J	
C54 -56			CK73GB1H103K	CHIP C 0.010UF K	
C57			CC73GCH1H390J	CHIP C 39PF J	
C58			CC73GCH1H270J	CHIP C 27PF J	
C59 -61			CK73GB1H104K	CHIP C 0.10UF K	
C62 -65			CK73GB1H103K	CHIP C 0.010UF K	
C66			CC73GCH1H390J	CHIP C 39PF J	
C67			CK73GB1H104K	CHIP C 0.10UF K	
C68 -70			CC73GCH1H101J	CHIP C 100PF J	
C71			CC73GCH1H050C	CHIP C 5.0PF C	
C72 -74			CC73GCH1H100D	CHIP C 10PF D	
C75			CC73GCH1H820J	CHIP C 82PF J	
C76 ,77			CK73GB1H104K	CHIP C 0.10UF K	
C78			CC73GCH1H050C	CHIP C 5.0PF C	
C80 -82			CC73GCH1H330J	CHIP C 33PF J	
C83			CC73GCH1H820J	CHIP C 82PF J	
C84			CK73GB1H103K	CHIP C 0.010UF K	
C85 -87			CK73FB1C106K	CHIP C 10UF K	
C88			CK73GB1H102K	CHIP C 1000PF K	
C89 -94			CK73GB1H103K	CHIP C 0.010UF K	
C96			CK73GB1H104K	CHIP C 0.10UF K	

## PARTS LIST

### ACCESSORY UNIT (X42-3430-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C97			CC73GCH1H471J	CHIP C 470PF J		C200			CK73GB1H104K	CHIP C 0.10UF K	
C98			CE32CL1C100M	CHIP EL 10UF 16WV		C203-205			CK73GB1H103K	CHIP C 0.010UF K	
C99			CK73FB1C106K	CHIP C 10UF K		C206			CC73GCH1H560G	CHIP C 56PF G	
C100			CK73GB1H103K	CHIP C 0.010UF K		C207			CK73GB1H103K	CHIP C 0.010UF K	
C101			CK73FB1C106K	CHIP C 10UF K		C208			CK73GB1H104K	CHIP C 0.10UF K	
C102			CK73GB1H103K	CHIP C 0.010UF K		C209			CK73GB1E105K	CHIP C 1.0UF K	
C103			CK73FB1C106K	CHIP C 10UF K		C210			CK73GB1H103K	CHIP C 0.010UF K	
C104,105			CK73GB1H103K	CHIP C 0.010UF K		C211			CC73GCH1H060B	CHIP C 6.0PF B	
C110-113			CK73GB1H104K	CHIP C 0.10UF K		C212			CK73GB1H103K	CHIP C 0.010UF K	
C114			CK73GB1H103K	CHIP C 0.010UF K		C213			CC73GCH1H390J	CHIP C 39PF J	
C115-117			CK73GB1H104K	CHIP C 0.10UF K		C214			CK73GB1H103K	CHIP C 0.010UF K	
C118-120			CK73GB1H103K	CHIP C 0.010UF K		C215			CK73GB1H102K	CHIP C 1000PF K	
C121-123			CK73GB1H104K	CHIP C 0.10UF K		C216,217			CC73GCH1H560G	CHIP C 56PF G	
C124			CC73GCH1H680G	CHIP C 68PF G		C218			CC73GCH1H050C	CHIP C 5.0PF C	
C125			CC73GCH1H391J	CHIP C 390PF J		C219			CK73GB1E105K	CHIP C 1.0UF K	
C126			CC73GCH1H020B	CHIP C 2.0PF B		C220			CC73GCH1H820J	CHIP C 82PF J	
C127			CC73GCH1H330J	CHIP C 33PF J		C221			CC73GCH1H050C	CHIP C 5.0PF C	
C128			CC73GCH1H150G	CHIP C 15PF G		C222			CK73GB1E105K	CHIP C 1.0UF K	
C129			CC73GCH1H561J	CHIP C 560PF J		C223			CK73GB1H103K	CHIP C 0.010UF K	
C130			CC73GCH1H820J	CHIP C 82PF J		C224			CC73GCH1H390J	CHIP C 39PF J	
C131			CC73GCH1H331J	CHIP C 330PF J		C225			CC73GCH1H090B	CHIP C 9.0PF B	
C132			CC73GCH1H820G	CHIP C 82PF G		C226,227			CK73GB1H103K	CHIP C 0.010UF K	
C133			CC73GCH1H050B	CHIP C 5.0PF B		C229-231			CK73GB1H103K	CHIP C 0.010UF K	
C134-136			CK73GB1H104K	CHIP C 0.10UF K		C232			CC73GCH1H020C	CHIP C 2.0PF C	
C138,139			CK73GB1H104K	CHIP C 0.10UF K		C233,234			CK73GB1H103K	CHIP C 0.010UF K	
C141			CC73GCH1H040B	CHIP C 4.0PF B		C236			CK73GB1E105K	CHIP C 1.0UF K	
C143			CK73GB1H104K	CHIP C 0.10UF K		C238			CK73GB1H103K	CHIP C 0.010UF K	
C146-148			CK73GB1H104K	CHIP C 0.10UF K		C241			CC73GCH1H020C	CHIP C 2.0PF C	
C150			CC73GCH1H681J	CHIP C 680PF J		C243			CK73GB1H103K	CHIP C 0.010UF K	
C151			CC73GCH1H391J	CHIP C 390PF J		C244			CC73GCH1H020C	CHIP C 2.0PF C	
C153			CC73GCH1H680J	CHIP C 68PF J		C246			CC73GCH1H220J	CHIP C 22PF J	
C155			CC73GCH1H471J	CHIP C 470PF J		C248,249			CK73GB1H103K	CHIP C 0.010UF K	
C156			CC73GCH1H820G	CHIP C 82PF G		C250			CK73GB1H104K	CHIP C 0.10UF K	
C157			CC73GCH1H330J	CHIP C 33PF J		C251			CC73GCH1H220J	CHIP C 22PF J	
C158			CC73GCH1H050B	CHIP C 5.0PF B		C253			CC73GCH1H101J	CHIP C 100PF J	
C159			CC73GCH1H561J	CHIP C 560PF J		C254			CC73GCH1H330J	CHIP C 33PF J	
C161			CC73GCH1H680J	CHIP C 68PF J		C255			CC73GCH1H180G	CHIP C 18PF G	
C163			CC73GCH1H271J	CHIP C 270PF J		C256			CC73GCH1H030C	CHIP C 3.0PF C	
C164			CC73GCH1H820J	CHIP C 82PF J		C257			CC73GCH1H680J	CHIP C 68PF J	
C165			CK73GB1H103K	CHIP C 0.010UF K		C258			CC73GCH1H060B	CHIP C 6.0PF B	
C166			CK73GB1H104K	CHIP C 0.10UF K		C259			CC73GCH1H030C	CHIP C 3.0PF C	
C167			CC73GCH1H331J	CHIP C 330PF J		C260			CK73GB1H103K	CHIP C 0.010UF K	
C169			CK73GB1H104K	CHIP C 0.10UF K		C261			CC73GCH1H180G	CHIP C 18PF G	
C170			CC73GCH1H680G	CHIP C 68PF G		C262			CC73GCH1H680J	CHIP C 68PF J	
C171			CC73GCH1H150G	CHIP C 15PF G		C263			CC73GCH1H681J	CHIP C 680PF J	
C172			CK73GB1H103K	CHIP C 0.010UF K		C264			CC73GCH1H101J	CHIP C 100PF J	
C173			CC73GCH1H080B	CHIP C 8.0PF B		C266			CK73FB1C106K	CHIP C 10UF K	
C174,175			CK73GB1H103K	CHIP C 0.010UF K		C267			CK73GB1H103K	CHIP C 0.010UF K	
C176,177			CK73GB1H104K	CHIP C 0.10UF K		C269			CC73GCH1H390G	CHIP C 39PF G	
C178			CK73GB1H103K	CHIP C 0.010UF K		C270			CK73GB1H104K	CHIP C 0.10UF K	
C181			CK73FB1C106K	CHIP C 10UF K		C272,273			CK73GB1H104K	CHIP C 0.10UF K	
C183			CC73GCH1H560G	CHIP C 56PF G		C275			CK73GB1H473K	CHIP C 0.047UF K	
C184-186			CK73GB1H103K	CHIP C 0.010UF K		C276			CC73GCH1H060B	CHIP C 6.0PF B	
C187			CK73GB1H333K	CHIP C 0.033UF K		C277-279			CK73GB1H104K	CHIP C 0.10UF K	
C189			CK73GB1H104K	CHIP C 0.10UF K		C280			CK73FB1C106K	CHIP C 10UF K	
C192			CK73GB1H103K	CHIP C 0.010UF K		C281,282			CK73GB1H103K	CHIP C 0.010UF K	
C194			CK73GB1H103K	CHIP C 0.010UF K		C283			CC73GCH1H390G	CHIP C 39PF G	
C195,196			CK73FB1C106K	CHIP C 10UF K		C284			CK73GB1H104K	CHIP C 0.10UF K	
C198		*	CC73GCH1H100B	CHIP C 10PF B		C285			CK73GB1H103K	CHIP C 0.010UF K	
C199			CK73FB1C106K	CHIP C 10UF K		C286			CC73GCH1H470G	CHIP C 47PF G	

## PARTS LIST

ACCESSORY UNIT (X42-3430-00)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C287			CK73GB1H104K	CHIP C 0.10UF K		C448			CK73HB1H103K	CHIP C 0.010UF K	
C288			CK73GB1E105K	CHIP C 1.0UF K		C449			CK73GB1H104K	CHIP C 0.10UF K	
C289-291			CK73GB1H103K	CHIP C 0.010UF K		C450			CC73GCH1H090B	CHIP C 9.0PF B	
C292			CK73GB1H104K	CHIP C 0.10UF K		C451			CC73GCH1H080B	CHIP C 8.0PF B	
C293			CK73GB1E105K	CHIP C 1.0UF K		C452			CC73GCH1H471J	CHIP C 470PF J	
C294			CC73GCH1H330J	CHIP C 33PF J		C454			CK73GB1H104K	CHIP C 0.10UF K	
C295			CK73GB1H103K	CHIP C 0.010UF K		C455			CK73HB1H103K	CHIP C 0.010UF K	
C296			CK73GB1H102K	CHIP C 1000PF K		C456			CC73GCH1H221J	CHIP C 220PF J	
C297,298			CC73GCH1H470G	CHIP C 47PF G		C457			CK73GB1H103K	CHIP C 0.010UF K	
C299			CC73GCH1H030C	CHIP C 3.0PF C		C458			CC73GCH1H080B	CHIP C 8.0PF B	
C300			CC73GCH1H680J	CHIP C 68PF J		C459			CC73GCH1H090B	CHIP C 9.0PF B	
C301			CK73GB1H104K	CHIP C 0.10UF K		C460,461			CK73GB1H104K	CHIP C 0.10UF K	
C302			CC73GCH1H030C	CHIP C 3.0PF C		C462			CC73GCH1H080B	CHIP C 8.0PF B	
C303			CC73GCH1H330J	CHIP C 33PF J		C463			CC73GCH1H221J	CHIP C 220PF J	
C304-306			CK73GB1H103K	CHIP C 0.010UF K		C466			CK73HB1H103K	CHIP C 0.010UF K	
C308			CK73GB1H103K	CHIP C 0.010UF K		C467			CK73GB1H103K	CHIP C 0.010UF K	
C309			CC73GCH1H020C	CHIP C 2.0PF C		C468			CC73GCH1H221J	CHIP C 220PF J	
C311,312			CK73GB1H103K	CHIP C 0.010UF K		C469			CK73GB1H104K	CHIP C 0.10UF K	
C313			CK73GB1E105K	CHIP C 1.0UF K		C470			CC73GCH1H080B	CHIP C 8.0PF B	
C317			CK73GB1H103K	CHIP C 0.010UF K		C471		*	C93-1910-05	CHIP C 68PF F	
C318			CC73GCH1H020C	CHIP C 2.0PF C		C472			CK73HB1H103K	CHIP C 0.010UF K	
C321			CK73GB1H103K	CHIP C 0.010UF K		C473,474			CK73GB1H104K	CHIP C 0.10UF K	
C322			CC73GCH1H020C	CHIP C 2.0PF C		C475			CC73GCH1H080B	CHIP C 8.0PF B	
C324			CK73GB1H103K	CHIP C 0.010UF K		C476			CC73GCH1H471J	CHIP C 470PF J	
C325			CC73GCH1H220J	CHIP C 22PF J		C477			CC73GCH1H080B	CHIP C 8.0PF B	
C326			CK73GB1H103K	CHIP C 0.010UF K		C478			CK73GB1H103K	CHIP C 0.010UF K	
C328,329			CK73GB1E105K	CHIP C 1.0UF K		C479			CK73HB1H103K	CHIP C 0.010UF K	
C330			CK73GB1H103K	CHIP C 0.010UF K		C480		*	C93-1911-05	CHIP C 120PF F	
C331			CK73GB1H104K	CHIP C 0.10UF K		C481			CC73GCH1H080B	CHIP C 8.0PF B	
C332			CC73GCH1H331J	CHIP C 330PF J		C482			CK73GB1H104K	CHIP C 0.10UF K	
C333			CC73GCH1H181J	CHIP C 180PF J		C483			CC73GCH1H080B	CHIP C 8.0PF B	
C334			CC73GCH1H331J	CHIP C 330PF J		C484			CC73GCH1H470G	CHIP C 47PF G	
C401			CK73GB1H104K	CHIP C 0.10UF K		C485			CK73GB1H103K	CHIP C 0.010UF K	
C413-417			CK73GB1H104K	CHIP C 0.10UF K		C486		*	C93-1911-05	CHIP C 120PF F	
C418			CK73GB1H103K	CHIP C 0.010UF K		C487		*	C93-1509-05	CHIP C 100PF F	
C419			CC73GCH1H470G	CHIP C 47PF G		C488-490			CK73GB1H104K	CHIP C 0.10UF K	
C420			CK73GB1H104K	CHIP C 0.10UF K		C491			CK73GB1H103K	CHIP C 0.010UF K	
C421			CK73GB1H103K	CHIP C 0.010UF K		C492			CK73GB1H104K	CHIP C 0.10UF K	
C422			CC73GCH1H0R5B	CHIP C 0.5PF B		C493,494		*	C93-1912-05	CHIP C 180PF F	
C423			CK73GB1H104K	CHIP C 0.10UF K		C495,496			CK73GB1H104K	CHIP C 0.10UF K	
C424			CK73GB1H103K	CHIP C 0.010UF K		C497			CK73GB1H103K	CHIP C 0.010UF K	
C425			CC73GCH1H010B	CHIP C 1.0PF B		C498		*	C93-1911-05	CHIP C 120PF F	
C426			CK73GB1H104K	CHIP C 0.10UF K		C499,500			CK73GB1H104K	CHIP C 0.10UF K	
C427			CK73GB1H103K	CHIP C 0.010UF K		C501			CK73GB1H103K	CHIP C 0.010UF K	
C428			CC73GCH1H020B	CHIP C 2.0PF B		C502		*	C93-1509-05	CHIP C 100PF F	
C429			CK73GB1H104K	CHIP C 0.10UF K		C503			CK73GB1H104K	CHIP C 0.10UF K	
C430			CK73GB1H103K	CHIP C 0.010UF K		C504,505			CK73GB1H103K	CHIP C 0.010UF K	
C431			CC73GCH1H040B	CHIP C 4.0PF B		C506,507			CK73GB1H104K	CHIP C 0.10UF K	
C432			CK73GB1H104K	CHIP C 0.10UF K		C508			CK73GB1H103K	CHIP C 0.010UF K	
C433			CC73GCH1H470G	CHIP C 47PF G		C509,510			CK73GB1H104K	CHIP C 0.10UF K	
C434			CC73GCH1H040B	CHIP C 4.0PF B		C511			CK73GB1H103K	CHIP C 0.010UF K	
C435			CK73GB1H103K	CHIP C 0.010UF K		C514-519			CC73GCH1H080B	CHIP C 8.0PF B	
C436			CK73GB1H104K	CHIP C 0.10UF K		C522-525			CC73GCH1H090B	CHIP C 9.0PF B	
C438			CC73GCH1H080B	CHIP C 8.0PF B		C526			CC73GCH1H560G	CHIP C 56PF G	
C440			CK73HB1H103K	CHIP C 0.010UF K		C528			CC73GCH1H470G	CHIP C 47PF G	
C441			CK73GB1H104K	CHIP C 0.10UF K		C530			CC73GCH1H090B	CHIP C 9.0PF B	
C442			CC73GCH1H040B	CHIP C 4.0PF B		C531			CC73GCH1H220G	CHIP C 22PF G	
C444			CC73GCH1H221J	CHIP C 220PF J		C601,602			CK73GB1H103K	CHIP C 0.010UF K	
C445			CK73GB1H104K	CHIP C 0.10UF K		C603			CK73GB1C474K	CHIP C 0.47UF K	
C446			CK73GB1H103K	CHIP C 0.010UF K		C604			CK73GB1H102K	CHIP C 1000PF K	

## PARTS LIST

### ACCESSORY UNIT (X42-3430-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C606			CK73GB1H102K	CHIP C 1000PF K		L51			L41-1295-33	SMALL FIXED INDUCTOR(1.2UH)	
C607			CK73GB1H103K	CHIP C 0.010UF K		L52			L34-4612-05	AIR-CORE COIL(6T)	
C608,609			CK73GB1H104K	CHIP C 0.10UF K		L53			L41-5685-33	SMALL FIXED INDUCTOR(0.56UH)	
C610-612			CK73GB1H102K	CHIP C 1000PF K		L54 -56			L41-1015-33	SMALL FIXED INDUCTOR(100UH)	
C614-618			CK73GB1H103K	CHIP C 0.010UF K		L57			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
C619			CK73GB1H102K	CHIP C 1000PF K		L58		*	L41-2798-60	SMALL FIXED INDUCTOR(2.7UH)	
-			E23-1176-04	EARTH LUG		L59			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
-		*	E37-1666-05	LEAD WIRE WITH TERMINAL		L60			L34-4614-05	AIR-CORE COIL(8T)	
CN1			E41-1683-05	PIN ASSY		L61			L41-1015-33	SMALL FIXED INDUCTOR(100UH)	
CN2 -4		*	E04-0490-05	PIN SOCKET		L62			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
CN6		*	E04-0490-05	PIN SOCKET		L63			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)	
CN10			E40-6852-05	PIN ASSY		L64			L41-1585-33	SMALL FIXED INDUCTOR(0.15UH)	
CN12			E40-6852-05	PIN ASSY		L65 ,66			L41-1595-33	SMALL FIXED INDUCTOR(1.5UH)	
CN35		*	E40-6908-05	FLAT CABLE CONNECTOR		L67			L41-1585-33	SMALL FIXED INDUCTOR(0.15UH)	
CN36			E41-1682-05	PIN ASSY		L68			L39-1553-05	TOROIDAL COIL	
CN37-40			E23-1330-05	TERMINAL		L69			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)	
CN401			E04-0491-05	PIN SOCKET		L70			L39-1480-15	TOROIDAL COIL	
CN402			E41-3176-05	FLAT CABLE CONNECTOR		L71			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)	
CN446		*	E04-0491-05	PIN SOCKET		L73			L39-1480-15	TOROIDAL COIL	
CN601			E41-1683-05	PIN ASSY		L74			L41-2785-33	SMALL FIXED INDUCTOR(0.27UH)	
CN602			E41-2741-05	PIN ASSY		L75		*	L34-4961-05	COIL	
CN603			E41-1690-05	PIN ASSY		L76 ,77			L41-1288-60	SMALL FIXED INDUCTOR(120NH)	
CN604			E41-1684-05	PIN ASSY		L78			L41-1015-33	SMALL FIXED INDUCTOR(100UH)	
CN606			E41-3177-05	FLAT CABLE CONNECTOR		L79			L34-4961-05	COIL	
CN607		*	E41-2736-05	PIN ASSY		L80			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
CN608-610		*	E40-6921-05	FLAT CABLE CONNECTOR		L81		*	L41-2798-60	SMALL FIXED INDUCTOR(2.7UH)	
CN614		*	E41-2736-05	PIN ASSY		L82			L41-1015-33	SMALL FIXED INDUCTOR(100UH)	
J601			E06-0858-25	RF COAXIAL RECEPTADLE(ROUND)		L83			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
J602,603			E11-0705-15	PHONE JACK(9P)		L84			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
J604,605		*	E58-0549-05	RECTANGULAR RECEPTACLE		L85			L34-4613-05	AIR-CORE COIL(7T)	
F1 -4			F53-0363-05	FUSE(0.5A)		L86			L39-1480-15	TOROIDAL COIL	
CF1 ,2			L72-1026-05	CERAMIC FILTER		L87			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)	
L1 ,2			L40-1085-92	SMALL FIXED INDUCTOR(100NH)		L88			L41-1288-60	SMALL FIXED INDUCTOR(120NH)	
L3 ,4			L41-1015-33	SMALL FIXED INDUCTOR(100UH)		L89 ,90			L41-1595-33	SMALL FIXED INDUCTOR(1.5UH)	
L7 ,8		*	L39-1802-05	TOROIDAL COIL		L91			L41-1288-60	SMALL FIXED INDUCTOR(120NH)	
L9			L41-2285-33	SMALL FIXED INDUCTOR(0.22UH)		L92			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)	
L10			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)		L95			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)	
L11 ,12			L41-2785-33	SMALL FIXED INDUCTOR(0.27UH)		L96			L41-2285-33	SMALL FIXED INDUCTOR(0.22UH)	
L13 -16			L41-1015-33	SMALL FIXED INDUCTOR(100UH)		L97 ,98			L41-6885-33	SMALL FIXED INDUCTOR(0.68UH)	
L18			L41-1288-60	SMALL FIXED INDUCTOR(120NH)		L401			L92-0408-05	CHIP FERRITE	
L19			L41-1085-33	SMALL FIXED INDUCTOR(0.1UH)		L402-420			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L20 ,21			L41-1015-33	SMALL FIXED INDUCTOR(100UH)		L421		*	L41-1015-44	SMALL FIXED INDUCTOR(100UH)	
L22 -24			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)		L422			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L25			L39-1554-05	TOROIDAL COIL		L423			L33-0695-05	SMALL FIXED INDUCTOR(1MH)	
L26 -30			L41-1585-33	SMALL FIXED INDUCTOR(0.15UH)		L424			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L31 -33			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L425			L33-0695-05	SMALL FIXED INDUCTOR(1MH)	
L34			L39-1480-15	TOROIDAL COIL		L426		*	L41-1015-44	SMALL FIXED INDUCTOR(100UH)	
L35			L41-1015-33	SMALL FIXED INDUCTOR(100UH)		L427			L39-1575-05	TOROIDAL COIL	
L36			L39-1555-05	TOROIDAL COIL		L428			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L37 ,38			L41-1015-33	SMALL FIXED INDUCTOR(100UH)		L429		*	L39-1586-05	TOROIDAL COIL	
L39			L41-8285-33	SMALL FIXED INDUCTOR(0.82UH)		L432		*	L39-1801-05	TOROIDAL COIL	
L40			L34-4612-05	AIR-CORE COIL(6T)		L433			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L41			L41-5685-33	SMALL FIXED INDUCTOR(0.56UH)		L434			L34-4616-05	AIR-CORE COIL(10T)	
L42			L34-4612-05	AIR-CORE COIL(6T)		L435			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L44 ,45			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)		L436			L34-4614-05	AIR-CORE COIL(8T)	
L46			L34-4612-05	AIR-CORE COIL(6T)		L601-603			L41-1085-33	SMALL FIXED INDUCTOR(0.1UH)	
L48			L41-1295-33	SMALL FIXED INDUCTOR(1.2UH)		L604-618			L92-0467-05	CHIP FERRITE	
L49			L41-8285-33	SMALL FIXED INDUCTOR(0.82UH)		XF1		*	L71-0534-25	CRYSTAL FILTER(10.7MHZ)	
						R1 ,2			RK73GB2A390J	CHIP R 39 J 1/10W	

## PARTS LIST

ACCESSORY UNIT (X42-3430-00)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R3 ,4			RK73GB2A102J	CHIP R 1.0K J 1/10W		R103			RK73GB2A560J	CHIP R 56 J 1/10W	
R6 ,7			RK73GB2A102J	CHIP R 1.0K J 1/10W		R104			RK73GB2A000J	CHIP R 0 J 1/10W	
R8			RK73GB2A560J	CHIP R 56 J 1/10W		R105			RK73GB2A331J	CHIP R 330 J 1/10W	
R10 ,11			RK73FB2B330J	CHIP R 33 J 1/8W		R106			RK73GB2A221J	CHIP R 220 J 1/10W	
R12			RK73GB2A390J	CHIP R 39 J 1/10W		R107			RK73GB2A331J	CHIP R 330 J 1/10W	
R14			RK73GB2A102J	CHIP R 1.0K J 1/10W		R108			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R17 ,18			RK73GB2A152J	CHIP R 1.5K J 1/10W		R109-111			RK73GB2A104J	CHIP R 100K J 1/10W	
R19			RK73GB2A102J	CHIP R 1.0K J 1/10W		R112			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R20			RK73GB2A121J	CHIP R 120 J 1/10W		R113			RK73GB2A101J	CHIP R 100 J 1/10W	
R21			RK73GB2A224J	CHIP R 220K J 1/10W		R114			RK73GB2A331J	CHIP R 330 J 1/10W	
R22			RK73GB2A121J	CHIP R 120 J 1/10W		R115			RK73GB2A101J	CHIP R 100 J 1/10W	
R23 ,24			RK73GB2A100J	CHIP R 10 J 1/10W		R116			RK73GB2A331J	CHIP R 330 J 1/10W	
R25			RK73FB2B470J	CHIP R 47 J 1/8W		R117			RK73GB2A101J	CHIP R 100 J 1/10W	
R27			RK73GB2A100J	CHIP R 10 J 1/10W		R118			RK73GB2A391J	CHIP R 390 J 1/10W	
R28			RK73GB2A000J	CHIP R 0 J 1/10W		R119,120			RK73GB2A471J	CHIP R 470 J 1/10W	
R31			RK73GB2A102J	CHIP R 1.0K J 1/10W		R121			RK73GB2A470J	CHIP R 47 J 1/10W	
R33			RK73GB2A103J	CHIP R 10K J 1/10W		R122,123			RK73GB2A331J	CHIP R 330 J 1/10W	
R34			RK73GB2A222J	CHIP R 2.2K J 1/10W		R124			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R35			RK73GB2A103J	CHIP R 10K J 1/10W		R127			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R36			RK73GB2A222J	CHIP R 2.2K J 1/10W		R128,129			RK73GB2A391J	CHIP R 390 J 1/10W	
R37			RK73GB2A100J	CHIP R 10 J 1/10W		R132-135			RK73GB2A153J	CHIP R 15K J 1/10W	
R39			RK73GB2A271J	CHIP R 270 J 1/10W		R137,138			RK73GB2A470J	CHIP R 47 J 1/10W	
R40			RK73GB2A181J	CHIP R 180 J 1/10W		R140			RK73GB2A221J	CHIP R 220 J 1/10W	
R41			RK73GB2A103J	CHIP R 10K J 1/10W		R141			RK73GB2A271J	CHIP R 270 J 1/10W	
R42			RK73GB2A222J	CHIP R 2.2K J 1/10W		R143			RK73FB2B181J	CHIP R 180 J 1/8W	
R45			RK73GB2A180J	CHIP R 18 J 1/10W		R146			RK73GB2A470J	CHIP R 47 J 1/10W	
R46			RK73GB2A330J	CHIP R 33 J 1/10W		R147			RK73GB2A271J	CHIP R 270 J 1/10W	
R47			RK73GB2A471J	CHIP R 470 J 1/10W		R148			RK73GB2A473J	CHIP R 47K J 1/10W	
R48			RK73GB2A271J	CHIP R 270 J 1/10W		R149			RK73FB2B151J	CHIP R 150 J 1/8W	
R49			RK73GB2A471J	CHIP R 470 J 1/10W		R150			RK73GB2A103J	CHIP R 10K J 1/10W	
R50			RK73GB2A181J	CHIP R 180 J 1/10W		R151			RK73GB2A390J	CHIP R 39 J 1/10W	
R53			RK73GB2A000J	CHIP R 0 J 1/10W		R152			RK73GB2A000J	CHIP R 0 J 1/10W	
R55			RK73GB2A270J	CHIP R 27 J 1/10W		R153			RK73GB2A270J	CHIP R 27 J 1/10W	
R58			RK73GB2A471J	CHIP R 470 J 1/10W		R154			RK73GB2A390J	CHIP R 39 J 1/10W	
R59 -61			RK73GB2A270J	CHIP R 27 J 1/10W		R155			RK73GB2A560J	CHIP R 56 J 1/10W	
R62			RK73GB2A471J	CHIP R 470 J 1/10W		R156			RK73GB2A103J	CHIP R 10K J 1/10W	
R64			RK73GB2A474J	CHIP R 470K J 1/10W		R157-160			RK73GB2A101J	CHIP R 100 J 1/10W	
R65			RK73GB2A000J	CHIP R 0 J 1/10W		R161			RK73GB2A103J	CHIP R 10K J 1/10W	
R66			RK73GB2A474J	CHIP R 470K J 1/10W		R162			RK73GB2A101J	CHIP R 100 J 1/10W	
R67			RK73GB2A000J	CHIP R 0 J 1/10W		R163			RK73GB2A103J	CHIP R 10K J 1/10W	
R68			RK73GB2A474J	CHIP R 470K J 1/10W		R165			RK73FB2B181J	CHIP R 180 J 1/8W	
R69			RK73GB2A000J	CHIP R 0 J 1/10W		R166			RK73GB2A101J	CHIP R 100 J 1/10W	
R70			RK73GB2A471J	CHIP R 470 J 1/10W		R167			RK73GB2A103J	CHIP R 10K J 1/10W	
R71 -73			RK73GB2A470J	CHIP R 47 J 1/10W		R168			RK73GB2A100J	CHIP R 10 J 1/10W	
R75			RK73GB2A000J	CHIP R 0 J 1/10W		R171			RK73GB2A103J	CHIP R 10K J 1/10W	
R76			RK73GB2A471J	CHIP R 470 J 1/10W		R172			RK73GB2A270J	CHIP R 27 J 1/10W	
R79 ,80			RK73EB2E331J	CHIP R 330 J 1/4W		R173			RK73GB2A390J	CHIP R 39 J 1/10W	
R81 -83			RK73GB2A153J	CHIP R 15K J 1/10W		R174			RK73GB2A560J	CHIP R 56 J 1/10W	
R84 ,85			RK73GB2A222J	CHIP R 2.2K J 1/10W		R175			RK73GB2A000J	CHIP R 0 J 1/10W	
R86 -88			RK73GB2A153J	CHIP R 15K J 1/10W		R176			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R89 -91			RK73GB2A392J	CHIP R 3.9K J 1/10W		R177			RK73GB2A271J	CHIP R 270 J 1/10W	
R92 ,93			RK73GB2A100J	CHIP R 10 J 1/10W		R180			RK73FB2B181J	CHIP R 180 J 1/8W	
R94			RK73GB2A271J	CHIP R 270 J 1/10W		R181			RK73GB2A271J	CHIP R 270 J 1/10W	
R95			RK73GB2A000J	CHIP R 0 J 1/10W		R182			RK73GB2A3R3J	CHIP R 3.3 J 1/10W	
R96 ,97			RK73GB2A100J	CHIP R 10 J 1/10W		R183			RK73GB2A470J	CHIP R 47 J 1/10W	
R98			RK73GB2A332J	CHIP R 3.3K J 1/10W		R184			RK73GB2A104J	CHIP R 100K J 1/10W	
R99			RK73GB2A182J	CHIP R 1.8K J 1/10W		R185			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R100			RK73FB2B100J	CHIP R 10 J 1/8W		R186			RK73GB2A103J	CHIP R 10K J 1/10W	
R101			RK73GB2A821J	CHIP R 820 J 1/10W		R187			RK73FB2B220J	CHIP R 22 J 1/8W	
R102			RK73GB2A000J	CHIP R 0 J 1/10W		R188			RK73GB2A391J	CHIP R 390 J 1/10W	



## PARTS LIST

### ACCESSORY UNIT (X42-3430-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R190			RK73GB2A101J	CHIP R 100 J 1/10W		R271			RK73GB2A000J	CHIP R 0 J 1/10W	
R192			RK73GB2A000J	CHIP R 0 J 1/10W		R272			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R194			RK73FB2B100J	CHIP R 10 J 1/8W		R273			RK73GB2A331J	CHIP R 330 J 1/10W	
R195			RK73GB2A471J	CHIP R 470 J 1/10W		R274			RK73GB2A000J	CHIP R 0 J 1/10W	
R198			RK73GB2A222J	CHIP R 2.2K J 1/10W		R275			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R199			RK73GB2A681J	CHIP R 680 J 1/10W		R277			RK73GB2A470J	CHIP R 47 J 1/10W	
R201			RK73GB2A470J	CHIP R 47 J 1/10W		R278			RK73GB2A000J	CHIP R 0 J 1/10W	
R202			RK73GB2A153J	CHIP R 15K J 1/10W		R279,280			RK73EB2E000J	CHIP R 0 J 1/4W	
R203			RK73GB2A682J	CHIP R 6.8K J 1/10W		R281			RK73GB2A000J	CHIP R 0 J 1/10W	
R204			RK73GB2A153J	CHIP R 15K J 1/10W		R282,283			RK73EB2E000J	CHIP R 0 J 1/4W	
R205			RK73GB2A682J	CHIP R 6.8K J 1/10W		R284			RK73GB2A000J	CHIP R 0 J 1/10W	
R206			RK73GB2A470J	CHIP R 47 J 1/10W		R285,286			RK73EB2E000J	CHIP R 0 J 1/4W	
R208			RK73GB2A101J	CHIP R 100 J 1/10W		R287-289			RK73FB2B000J	CHIP R 0 J 1/8W	
R210			RK73GB2A470J	CHIP R 47 J 1/10W		R290-295			RK73GB2A151J	CHIP R 150 J 1/10W	
R211			RK73GB2A153J	CHIP R 15K J 1/10W		R296			RK73GB2A000J	CHIP R 0 J 1/10W	
R212			RK73GB2A682J	CHIP R 6.8K J 1/10W		R297,298			RK73GB2A121J	CHIP R 120 J 1/10W	
R214			RK73GB2A100J	CHIP R 10 J 1/10W		R400			RK73GB2A103J	CHIP R 10K J 1/10W	
R217,218			RK73GB2A000J	CHIP R 0 J 1/10W		R403			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R221			RK73GB2A103J	CHIP R 10K J 1/10W		R404-406			RK73GB2A103J	CHIP R 10K J 1/10W	
R222			RK73GB2A000J	CHIP R 0 J 1/10W		R407-412			RK73GB2A000J	CHIP R 0 J 1/10W	
R223			RK73GB2A103J	CHIP R 10K J 1/10W		R413			RK73GB2A820J	CHIP R 82 J 1/10W	
R224-227			RK73GB2A101J	CHIP R 100 J 1/10W		R414			RK73GB2A103J	CHIP R 10K J 1/10W	
R229			RK73GB2A102J	CHIP R 1.0K J 1/10W		R415			RK73GB2A180J	CHIP R 18 J 1/10W	
R231			RK73GB2A561J	CHIP R 560 J 1/10W		R416			RK73GB2A8R2J	CHIP R 8.2 J 1/10W	
R232			RK73GB2A151J	CHIP R 150 J 1/10W		R417			RK73GB2A103J	CHIP R 10K J 1/10W	
R233			RK73GB2A000J	CHIP R 0 J 1/10W		R418			RK73EB2E680J	CHIP R 68 J 1/4W	
R234			RK73GB2A471J	CHIP R 470 J 1/10W		R419			RK73EB2E560J	CHIP R 56 J 1/4W	
R235			RK73GB2A220J	CHIP R 22 J 1/10W		R420			RK73GB2A103J	CHIP R 10K J 1/10W	
R237			RK73GB2A122J	CHIP R 1.2K J 1/10W		R421			RK73EB2E680J	CHIP R 68 J 1/4W	
R238			RK73GB2A000J	CHIP R 0 J 1/10W		R422			RK73EB2E820J	CHIP R 82 J 1/4W	
R239			RK73GB2A8R2J	CHIP R 8.2 J 1/10W		R423			RK73GB2A4R7J	CHIP R 4.7 J 1/10W	
R240			RK73GB2A100J	CHIP R 10 J 1/10W		R424			RK73GB2A103J	CHIP R 10K J 1/10W	
R241			RK73GB2A472J	CHIP R 4.7K J 1/10W		R425			RK73EB2E680J	CHIP R 68 J 1/4W	
R242			RK73GB2A100J	CHIP R 10 J 1/10W		R426			RK73EB2E820J	CHIP R 82 J 1/4W	
R243			RK73GB2A8R2J	CHIP R 8.2 J 1/10W		R427			RK73GB2A8R2J	CHIP R 8.2 J 1/10W	
R244			RK73GB2A103J	CHIP R 10K J 1/10W		R428			RK73GB2A180J	CHIP R 18 J 1/10W	
R245			RK73GB2A220J	CHIP R 22 J 1/10W		R429			RK73GB2A820J	CHIP R 82 J 1/10W	
R246,247			RK73GB2A221J	CHIP R 220 J 1/10W		R431-454			RK73HB1J100J	CHIP R 10 J 1/16W	
R248			RK73GB2A391J	CHIP R 390 J 1/10W		R601-604			RK73FB2B470J	CHIP R 47 J 1/8W	
R249,250			RK73GB2A000J	CHIP R 0 J 1/10W		R607,608			RK73PB2H220J	CHIP R 22 J 1/2W	
R251			RK73GB2A560J	CHIP R 56 J 1/10W		R611			RK73GB2A101J	CHIP R 100 J 1/10W	
R252			RK73EB2E221J	CHIP R 220 J 1/4W		R612			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R253			RK73GB2A681J	CHIP R 680 J 1/10W		R613			RK73FB2B000J	CHIP R 0 J 1/8W	
R254			RK73GB2A000J	CHIP R 0 J 1/10W		R614			RK73GB2A121J	CHIP R 120 J 1/10W	
R255			RK73GB2A470J	CHIP R 47 J 1/10W		R615			RK73GB2A681J	CHIP R 680 J 1/10W	
R256			RK73GB2A153J	CHIP R 15K J 1/10W		R616,617			RK73GB2A561J	CHIP R 560 J 1/10W	
R257			RK73GB2A682J	CHIP R 6.8K J 1/10W		VR601-604	*	R31-0687-05	VARIABLE RESISTOR(100k)		
R258			RK73GB2A153J	CHIP R 15K J 1/10W		K401-406		S76-0459-05	RELAY		
R259			RK73GB2A682J	CHIP R 6.8K J 1/10W		K407	*	S76-0476-05	RELAY		
R260			RK73GB2A472J	CHIP R 4.7K J 1/10W		K408		S76-0459-05	RELAY		
R261			RK73GB2A220J	CHIP R 22 J 1/10W		K409,410	*	S76-0476-05	RELAY		
R262			RK73GB2A470J	CHIP R 47 J 1/10W		K411		S76-0459-05	RELAY		
R263			RK73GB2A473J	CHIP R 47K J 1/10W		K412	*	S76-0476-05	RELAY		
R264			RK73GB2A472J	CHIP R 4.7K J 1/10W		K413		S76-0459-05	RELAY		
R265			RK73GB2A101J	CHIP R 100 J 1/10W		K414	*	S76-0476-05	RELAY		
R266			RK73GB2A000J	CHIP R 0 J 1/10W		K415		S76-0459-05	RELAY		
R267			RK73GB2A153J	CHIP R 15K J 1/10W		K416	*	S76-0476-05	RELAY		
R268			RK73GB2A682J	CHIP R 6.8K J 1/10W		K417-424		S76-0459-05	RELAY		
R269			RK73GB2A472J	CHIP R 4.7K J 1/10W		S601-604		S70-0439-15	TACT SWITCH		
R270			RK73GB2A470J	CHIP R 47 J 1/10W							



## PARTS LIST

ACCESSORY UNIT (X42-3430-00)  
DC-DC UNIT (X43-3220-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
S606			S70-0439-15	TACT SWITCH		Q49			2SC4226-A(R24)	TRANSISTOR	
S608			S70-0439-15	TACT SWITCH		Q50			LTC043ZEBFS8	TRANSISTOR	
S607			T99-0653-05	ROTARY ENCODER(MULT,CLICK TYPE)		Q51			2SB1694	TRANSISTOR	
D1			MC2848-T111	DIODE		Q401-418			RT5N234C-T112	TRANSISTOR	
D2 -4			HVC131	DIODE		Q419			INK0010AU1-T1	FET	
D6			HVC131	DIODE		Q420-422			LTC043ZEBFS8	TRANSISTOR	
D8			HVC131	DIODE		Q423-428			RT5N234C-T112	TRANSISTOR	
D9			MC2848-T111	DIODE		Q430			INK0010AU1-T1	FET	
D10 -13			HVC131	DIODE		S605		*	W02-3772-05	ENCODER	
D14			1SS388F	DIODE		<b>DC-DC UNIT (X43-3220-00)</b>					
D15			1SV228-F	VARIABLE CAPACITANCE DIODE		C1			CK73GB1H103K	CHIP C	0.010UF K
D16 -19			HVC131	DIODE		C2			CK73GB1H104K	CHIP C	0.10UF K
D20 ,21			HSM88ASR-E	DIODE		C3			CK73GB1H103K	CHIP C	0.010UF K
D22			1SS388F	DIODE		C4 -8			CK73GB1H102K	CHIP C	1000PF K
D23			1SV228-F	VARIABLE CAPACITANCE DIODE		C9			CK73EB1H104K	CHIP C	0.10UF K
D24 ,25			HSM88ASR-E	DIODE		C10 -12			CD04AZ1E471M	ELECTRO	470UF 25WV
D26			MC2848-T111	DIODE		C13 -15			CK73GB1H102K	CHIP C	1000PF K
D401-418			MC2858-T111	DIODE		C16 ,17		*	C90-4163-05	ELECTRO	470U 25WV
D419-421			HVC131	DIODE		C20 ,21			CK73GB1H103K	CHIP C	0.010UF K
D422			MC2858-T111	DIODE		C22			CK73GB1H104K	CHIP C	0.10UF K
D423-425			HVC131	DIODE		C23 ,24			CK73GB1H103K	CHIP C	0.010UF K
D426-431			MC2858-T111	DIODE		C25			CK73GB1H102K	CHIP C	1000PF K
D601-603			DA2S101	DIODE		C26 -28			CK73GB1H103K	CHIP C	0.010UF K
D607,608			RSB12JS2	ZENER DIODE		C29			CK73GB1H102K	CHIP C	1000PF K
IC1 -3			AD9835BRUZ	MOS-IC		C30			CK73GB1H103K	CHIP C	0.010UF K
IC4			<b>Note1</b>	MOS-IC		C31			CK73GB1H102K	CHIP C	1000PF K
IC5			TC7WT125FUF	MOS-IC		C40			CD04AZ1C471M	ELECTRO	470UF 16WV
IC6			<b>Note1</b>	MOS-IC		C41 ,42			CK73GB1A105K	CHIP C	1.0UF K
IC7 ,8			TC7WT125FUF	MOS-IC		C43 ,44			CD04AZ1C221M	ELECTRO	220UF 16WV
IC9		*	BA4580RFVM	BI-POLAR IC		C45			CD04AY1E470M	ELECTRO	47UF 25WV
IC10			NJU6368PF1	MOS-IC		C46			CK73GB1H104K	CHIP C	0.10UF K
IC11,12			XC6209B502P-G	MOS-IC		C51			CK73EB1C226M	CHIP C	22UF M
IC401		*	S25C256A0J8U	MOS-IC		C53 ,54			CK73GB1H102K	CHIP C	1000PF K
IC402-404			TC74HC4094AFF	MOS-IC		C55			CK73GB1H104K	CHIP C	0.10UF K
Q1 ,2			LTC043ZEBFS8	TRANSISTOR		C56 ,57			CK73GB1H102K	CHIP C	1000PF K
Q3 ,4			2SB1694	TRANSISTOR		C58 ,59			CK73GB1H104K	CHIP C	0.10UF K
Q5			LTC043ZEBFS8	TRANSISTOR		C60			CK73EB1C226M	CHIP C	22UF M
Q7 ,8			2SC5551AF	TRANSISTOR		C63			CK73EB1C226M	CHIP C	22UF M
Q9			2SB1694	TRANSISTOR		C66			CK73EB1C226M	CHIP C	22UF M
Q11			2SC4617(R)	TRANSISTOR		C69			CK73EB1C226M	CHIP C	22UF M
Q12			2SC5551AF	TRANSISTOR		C72			CK73GB1H102K	CHIP C	1000PF K
Q14 -16			2SC4617(R)	TRANSISTOR		C73			CK73GB1H104K	CHIP C	0.10UF K
Q17 -20			2SK1740-4	FET		C80 -85			CK73EB1E106K	CHIP C	10UF K
Q21			2SB1694	TRANSISTOR		C90			CD04AZ1V101M	ELECTRO	100UF 35WV
Q22			LTC043ZEBFS8	TRANSISTOR		C91			CK73EB1E106K	CHIP C	10UF K
Q23 -25			2SC4617(R)	TRANSISTOR		C92 -95			CK73FB1E475K	CHIP C	4.7UF K
Q26			2SB1694	TRANSISTOR		C100,101			CD04BQ1E331M	ELECTRO	330UF 25WV
Q27			LTC043ZEBFS8	TRANSISTOR		C102			CK73GB1H102K	CHIP C	1000PF K
Q29 ,30			2SC4617(R)	TRANSISTOR		C103-105			C93-1875-05	CHIP C	22UF M
Q31 -33			LTC043ZEBFS8	TRANSISTOR		C106			CK73GB1C225K	CHIP C	2.2UF K
Q37			LTC043ZEBFS8	TRANSISTOR		C109			CC73GCH1H471J	CHIP C	470PF J
Q38			MCH3914(7)-H	FET		C110			CK73EB1H474K	CHIP C	0.47UF K
Q39			2SC5551AF	TRANSISTOR		C112			CK73HB1E104K	CHIP C	0.10UF K
Q40 ,41			2SC4649(N,P)	TRANSISTOR		C113-116			C93-1875-05	CHIP C	22UF M
Q43			2SC4226-A(R24)	TRANSISTOR		C117,118			CD04BQ1E331M	ELECTRO	330UF 25WV
Q44 ,45			2SC5551AF	TRANSISTOR							
Q46			MCH3914(7)-H	FET							
Q47 ,48			2SC4649(N,P)	TRANSISTOR							

Note 1: This part cannot be replaced. Therefore, this part is not supplied as a service part.

## PARTS LIST

### DC-DC UNIT (X43-3220-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C120,121			CD04BQ1E331M	ELECTRO 330UF 25WV		C290			CK73GB1H222K	CHIP C 2200PF K	
C122			CK73GB1H102K	CHIP C 1000PF K		C291			CK73GB1H332K	CHIP C 3300PF K	
C123-125			C93-1875-05	CHIP C 22UF M		C292,293			CD04AY1E470M	ELECTRO 47UF 25WV	
C126			CK73GB1C225K	CHIP C 2.2UF K		C294			CK73GB1H103K	CHIP C 0.010UF K	
C129			CC73GCH1H471J	CHIP C 470PF J		C300-303			C93-1875-05	CHIP C 22UF M	
C130			CK73EB1H474K	CHIP C 0.47UF K		C320-323			C93-1875-05	CHIP C 22UF M	
C132			CK73HB1E104K	CHIP C 0.10UF K		C340-343			C93-1875-05	CHIP C 22UF M	
C133-136			C93-1875-05	CHIP C 22UF M		C400			CK73HB1H102K	CHIP C 1000PF K	
C137,138			CD04BQ1E331M	ELECTRO 330UF 25WV		C418			CK73GB1H104K	CHIP C 0.10UF K	
C140,141			CD04BQ1E331M	ELECTRO 330UF 25WV		C419			CK73HB1H102K	CHIP C 1000PF K	
C142			CK73GB1H102K	CHIP C 1000PF K		C420			CK73GB1H104K	CHIP C 0.10UF K	
C143-145			C93-1875-05	CHIP C 22UF M		C421			CK73HB1H102K	CHIP C 1000PF K	
C146			CK73GB1C225K	CHIP C 2.2UF K		C422			CK73GB1H104K	CHIP C 0.10UF K	
C149			CC73GCH1H471J	CHIP C 470PF J		C423			CK73HB1H102K	CHIP C 1000PF K	
C150			CK73EB1H474K	CHIP C 0.47UF K		C424			CK73GB1H104K	CHIP C 0.10UF K	
C152			CK73HB1E104K	CHIP C 0.10UF K		C425			CK73HB1H102K	CHIP C 1000PF K	
C153-156			C93-1875-05	CHIP C 22UF M		C448			CK73GB1H104K	CHIP C 0.10UF K	
C157,158			CD04BQ1E331M	ELECTRO 330UF 25WV		C449			CK73HB1H102K	CHIP C 1000PF K	
C160,161		*	C90-4163-05	ELECTRO 470U 25WV		C450			CK73GB1H104K	CHIP C 0.10UF K	
C162			CK73EB1E106K	CHIP C 10UF K		C451			CK73HB1H102K	CHIP C 1000PF K	
C163			CK73GB1H104K	CHIP C 0.10UF K		C452			CK73HB1H103K	CHIP C 0.010UF K	
C164			CK73GB1H102K	CHIP C 1000PF K		C454			CK73HB1H103K	CHIP C 0.010UF K	
C165,166		*	C90-4163-05	ELECTRO 470U 25WV		C472			CK73GB1H104K	CHIP C 0.10UF K	
C167			CK73FB1C106K	CHIP C 10UF K		C473			CK73HB1H102K	CHIP C 1000PF K	
C170-173			CK73EB1E106K	CHIP C 10UF K		C477			CK73GB1H104K	CHIP C 0.10UF K	
C180-183		*	C90-4163-05	ELECTRO 470U 25WV		C478			CK73HB1H102K	CHIP C 1000PF K	
C190,191			CK73EB1E106K	CHIP C 10UF K		C508			CK73GB1H104K	CHIP C 0.10UF K	
C193,194			CK73EB1E106K	CHIP C 10UF K		C509			CK73HB1H102K	CHIP C 1000PF K	
C195-198		*	C90-4163-05	ELECTRO 470U 25WV		C510			CK73GB1H104K	CHIP C 0.10UF K	
C200-207			CK73GB1H102K	CHIP C 1000PF K		C511			CK73HB1H102K	CHIP C 1000PF K	
C208-212			CK73GB1A105K	CHIP C 1.0UF K		C512			CK73GB1H104K	CHIP C 0.10UF K	
C213			CK73GB1H102K	CHIP C 1000PF K		C513			CK73HB1H102K	CHIP C 1000PF K	
C220,221			CK73GB1H104K	CHIP C 0.10UF K		C514			CK73GB1H104K	CHIP C 0.10UF K	
C222			CC73GCH1H220J	CHIP C 22PF J		C515			CK73HB1H102K	CHIP C 1000PF K	
C223,224			CC73GCH1H101J	CHIP C 100PF J		C535			CK73GB1H104K	CHIP C 0.10UF K	
C225			CK73FB1H103K	CHIP C 0.010UF K		C536			CK73HB1H102K	CHIP C 1000PF K	
C226-228			CK73FB1H102K	CHIP C 1000PF K		C537			CK73GB1H104K	CHIP C 0.10UF K	
C230-233			CK73HB1H102K	CHIP C 1000PF K		C538			CK73HB1H102K	CHIP C 1000PF K	
C235			CK73HB1H102K	CHIP C 1000PF K		C843,844			CD04BQ1E331M	ELECTRO 330UF 25WV	
C237-241			CK73HB1H102K	CHIP C 1000PF K		C845-847			C93-1875-05	CHIP C 22UF M	
C242			CK73GB1H104K	CHIP C 0.10UF K		C848			CK73GB1H102K	CHIP C 1000PF K	
C243			CK73HB1H102K	CHIP C 1000PF K		C850			CK73EB1H474K	CHIP C 0.47UF K	
C245,246			CK73HB1H102K	CHIP C 1000PF K		C851			CK73GB1C225K	CHIP C 2.2UF K	
C247,248			CC73HCH1H100D	CHIP C 10PF D		C852			CC73GCH1H471J	CHIP C 470PF J	
C249,250			CK73HB1H102K	CHIP C 1000PF K		C854			CK73HB1E104K	CHIP C 0.10UF K	
C251-253			CC73HCH1H101J	CHIP C 100PF J		C855-857			C93-1875-05	CHIP C 22UF M	
C254			CK73HB1H102K	CHIP C 1000PF K		C859,860			CD04BQ1E331M	ELECTRO 330UF 25WV	
C255-259			CC73HCH1H101J	CHIP C 100PF J		C861			CK73GB1H104K	CHIP C 0.10UF K	
C260-263			CK73HB1H102K	CHIP C 1000PF K		C863,864			CD04BQ1E331M	ELECTRO 330UF 25WV	
C264			CK73GB1H104K	CHIP C 0.10UF K		C865-867			C93-1875-05	CHIP C 22UF M	
C265			CK73GB1H102K	CHIP C 1000PF K		C868			CK73GB1H102K	CHIP C 1000PF K	
C266			CK73GB1H103K	CHIP C 0.010UF K		C870			CK73EB1H474K	CHIP C 0.47UF K	
C267			CK73GB1H104K	CHIP C 0.10UF K		C871			CK73GB1C225K	CHIP C 2.2UF K	
C270			CK73HB1H102K	CHIP C 1000PF K		C872			CC73GCH1H471J	CHIP C 470PF J	
C271,272			CC73HCH1H100D	CHIP C 10PF D		C874			CK73HB1E104K	CHIP C 0.10UF K	
C273-280			CK73HB1H102K	CHIP C 1000PF K		C875-877			C93-1875-05	CHIP C 22UF M	
C281-284			CC73HCH1H101J	CHIP C 100PF J		C879,880			CD04BQ1E331M	ELECTRO 330UF 25WV	
C285-287			CK73HB1H102K	CHIP C 1000PF K		C881-888			C93-1875-05	CHIP C 22UF M	
C288			CD04AY1E470M	ELECTRO 47UF 25WV		CN1			E40-6916-05	PIN ASSY	
C289			CK73FB1H103K	CHIP C 0.010UF K							

## PARTS LIST

DC-DC UNIT (X43-3220-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
CN16			E40-6527-05	PIN ASSY		L200,201			L92-0639-05	CHIP FERRITE	
CN80			E41-1690-05	PIN ASSY		L220,221			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
CN90			E40-6525-05	PIN ASSY		L230-232			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
CN170			E41-1683-05	PIN ASSY		L270,271			L33-0695-05	SMALL FIXED INDUCTOR(1MH)	
CN174			E41-1687-05	PIN ASSY		L807			L33-3001-05	CHOKE COIL	
CN180			E41-1688-05	PIN ASSY		L808			L33-1598-05	CHOKE COIL	
CN190			E41-1689-05	PIN ASSY		L809			L33-1595-05	CHOKE COIL	
CN220			E04-0191-05	PIN SOCKET		L810			L33-3001-05	CHOKE COIL	
CN222			E04-0191-05	PIN SOCKET		L811			L33-1598-05	CHOKE COIL	
CN226			E40-6528-05	PIN ASSY		L812			L33-1595-05	CHOKE COIL	
CN230			E40-6912-05	FLAT CABLE CONNECTOR		L813-820			L92-0639-05	CHIP FERRITE	
CN270			E40-6912-05	FLAT CABLE CONNECTOR		-			N82-3008-48	BINDING HEAD TAPTITE SCREW	
CN400			E40-6912-05	FLAT CABLE CONNECTOR							
CN440			E40-6908-05	FLAT CABLE CONNECTOR							
CN470			E40-6909-05	FLAT CABLE CONNECTOR		R1			RK73FB2B153J	CHIP R 15K J 1/8W	
CN500			E40-6917-05	FLAT CABLE CONNECTOR		R2			RK73FB2B332J	CHIP R 3.3K J 1/8W	
CN530			E41-3176-05	FLAT CABLE CONNECTOR		R3			RK73FB2B100J	CHIP R 10 J 1/8W	
CN803			E40-6905-05	FLAT CABLE CONNECTOR		R4			RK73GB2A223J	CHIP R 22K J 1/10W	
CN804			E41-1683-05	PIN ASSY		R5			RK73GB2A103J	CHIP R 10K J 1/10W	
J200			E58-0529-05	D SUB SOCKET(9P)		R6			RK73GB2A102J	CHIP R 1.0K J 1/10W	
J220			E11-0455-05	3.5D PHONE JACK(3P)		R7			RK73EB2E000J	CHIP R 0 J 1/4W	
W801			E37-1548-05	LEAD WIRE WITH CONNECTOR		R8 -10			R92-3625-05	RESISTOR 0.1 J 1/3W	
Δ F225			F52-0020-05	FUSE(BLADE TYPE)(4A)		R20 ,21			RK73GB2A103J	CHIP R 10K J 1/10W	
F1			F53-0407-05	FUSE(3.5A)		R22			RK73FB2B2R2J	CHIP R 2.2 J 1/8W	
F2			F53-0404-05	FUSE(10A)		R23			RK73GB2A182J	CHIP R 1.8K J 1/10W	
F3			F53-0407-05	FUSE(3.5A)		R24			RK73GB2A122J	CHIP R 1.2K J 1/10W	
F4			F53-0456-05	FUSE(5A)		R25			RK73GB2A223J	CHIP R 22K J 1/10W	
F80			F53-0407-05	FUSE(3.5A)		R27 ,28			RK73GB2A473J	CHIP R 47K J 1/10W	
F90			F53-0407-05	FUSE(3.5A)		R29			RK73GB2A331J	CHIP R 330 J 1/10W	
F170			F53-0407-05	FUSE(3.5A)		R30			RK73GB2A473J	CHIP R 47K J 1/10W	
F180			F53-0407-05	FUSE(3.5A)		R31			RK73GB2A223J	CHIP R 22K J 1/10W	
F190,191			F53-0407-05	FUSE(3.5A)		R32			RK73GB2A331J	CHIP R 330 J 1/10W	
F270-272			F53-0388-05	FUSE(1.25A)		R33 ,34			RK73GB2A473J	CHIP R 47K J 1/10W	
F801			F53-0363-05	FUSE(0.5A)		R35			RK73GB2A223J	CHIP R 22K J 1/10W	
-			G11-4535-04	SHEET		R50			RK73FB2B103J	CHIP R 10K J 1/8W	
Δ CN225			J13-0605-05	FUSE HOLDER		R52			RK73FB2B123J	CHIP R 12K J 1/8W	
L1 ,2			L33-1595-05	CHOKE COIL		R53 -55			RK73FB2B100J	CHIP R 10 J 1/8W	
L3			L33-1598-05	CHOKE COIL		R56 ,57			RK73FB2B101J	CHIP R 100 J 1/8W	
L40 ,41			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		R59			RK73EB2E000J	CHIP R 0 J 1/4W	
L50 -57			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		R60			RK73FB2B100J	CHIP R 10 J 1/8W	
L80 ,81			L33-1595-05	CHOKE COIL		R61 ,62			RK73FB2B473J	CHIP R 47K J 1/8W	
L90 ,91			L33-1595-05	CHOKE COIL		R63 ,64			RK73FB2B101J	CHIP R 100 J 1/8W	
L100			L33-3028-05	CHOKE COIL		R65 ,66			RK73FB2B100J	CHIP R 10 J 1/8W	
L101			L33-1593-05	CHOKE COIL		R66 ,67			RK73FB2B101J	CHIP R 100 J 1/8W	
L102			L33-1595-05	CHOKE COIL		R68			RK73FB2B123J	CHIP R 12K J 1/8W	
L120			L33-3001-05	CHOKE COIL		R69			RK73FB2B103J	CHIP R 10K J 1/8W	
L121			L33-1593-05	CHOKE COIL		R70			RK73FB2B123J	CHIP R 12K J 1/8W	
L122			L33-1595-05	CHOKE COIL		R71			RK73FB2B103J	CHIP R 10K J 1/8W	
L140			L33-3001-05	CHOKE COIL		R72 ,73			RK73FB2B123J	CHIP R 12K J 1/8W	
L141			L33-1598-05	CHOKE COIL		R74 ,75			RK73FB2B103J	CHIP R 10K J 1/8W	
L142			L33-1595-05	CHOKE COIL		R100			R92-3625-05	RESISTOR 0.1 J 1/3W	
L160-163			L33-1598-05	CHOKE COIL		R101-104			RK73PB2H1R0J	CHIP R 1 J 1/2W	
L170			L33-1595-05	CHOKE COIL		R105			RK73GB2A223J	CHIP R 22K J 1/10W	
L180,181			L33-1598-05	CHOKE COIL		R107			RK73GB2A103J	CHIP R 10K J 1/10W	
L190			L33-1595-05	CHOKE COIL		R108			RK73GB2A184J	CHIP R 180K J 1/10W	
L192,193			L33-1595-05	CHOKE COIL		R109			RK73GH2A124D	CHIP R 120K D 1/10W	
L194,195			L33-1598-05	CHOKE COIL		R110			RK73GH2A133D	CHIP R 13K D 1/10W	
						R111-113			RK73EB2E000J	CHIP R 0 J 1/4W	
						R120			R92-3625-05	RESISTOR 0.1 J 1/3W	
						R121-124			RK73PB2H1R0J	CHIP R 1 J 1/2W	

## PARTS LIST

### DC-DC UNIT (X43-3220-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R125			RK73GB2A103J	CHIP R 10K J 1/10W		R440			RK73EB2E000J	CHIP R 0 J 1/4W	
R127			RK73GB2A103J	CHIP R 10K J 1/10W		R441-448			RK73HB1J000J	CHIP R 0 J 1/16W	
R128			RK73GB2A184J	CHIP R 180K J 1/10W		R449			RK73EB2E000J	CHIP R 0 J 1/4W	
R129			RK73GH2A823D	CHIP R 82K D 1/10W		R450			RK73HB1J000J	CHIP R 0 J 1/16W	
R130			RK73GH2A153D	CHIP R 15K D 1/10W		R470			RK73EB2E000J	CHIP R 0 J 1/4W	
R131-135			RK73EB2E000J	CHIP R 0 J 1/4W		R471-485			RK73HB1J000J	CHIP R 0 J 1/16W	
R140			R92-3625-05	RESISTOR 0.1 J 1/3W		R486			RK73EB2E000J	CHIP R 0 J 1/4W	
R141-144			RK73PB2H1R0J	CHIP R 1 J 1/2W		R500-506			RK73HB1J000J	CHIP R 0 J 1/16W	
R145			RK73GB2A103J	CHIP R 10K J 1/10W		R507			RK73EB2E000J	CHIP R 0 J 1/4W	
R147			RK73GB2A103J	CHIP R 10K J 1/10W		R508			RK73HB1J000J	CHIP R 0 J 1/16W	
R148			RK73GB2A184J	CHIP R 180K J 1/10W		R509,510			RK73EB2E000J	CHIP R 0 J 1/4W	
R149			RK73GH2A393D	CHIP R 39K D 1/10W		R530,531			RK73HB1J000J	CHIP R 0 J 1/16W	
R150			RK73GH2A123D	CHIP R 12K D 1/10W		R532			RK73EB2E000J	CHIP R 0 J 1/4W	
R151-155			RK73EB2E000J	CHIP R 0 J 1/4W		R533-535			RK73HB1J000J	CHIP R 0 J 1/16W	
R162			RK73GB2A473J	CHIP R 47K J 1/10W		R536			RK73EB2E000J	CHIP R 0 J 1/4W	
R163			RK73GB2A103J	CHIP R 10K J 1/10W		R839			RK73EB2E000J	CHIP R 0 J 1/4W	
R164			RK73GB2A102J	CHIP R 1.0K J 1/10W		R841-844			RK73PB2H1R0J	CHIP R 1 J 1/2W	
R170			RK73EB2E000J	CHIP R 0 J 1/4W		R848			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R180			RK73EB2E000J	CHIP R 0 J 1/4W		R849			RK73GB2A184J	CHIP R 180K J 1/10W	
R182			R92-3625-05	RESISTOR 0.1 J 1/3W		R850			RK73GB2A103J	CHIP R 10K J 1/10W	
R190			RK73EB2E000J	CHIP R 0 J 1/4W		R852			RK73GH2A513D	CHIP R 51K D 1/10W	
R194			R92-3625-05	RESISTOR 0.1 J 1/3W		R853			RK73GH2A393D	CHIP R 39K D 1/10W	
R200-207			RK73GB2A000J	CHIP R 0 J 1/10W		R854			RK73GB2A000J	CHIP R 0 J 1/10W	
R209			RK73EB2E000J	CHIP R 0 J 1/4W		R855			RK73EB2E000J	CHIP R 0 J 1/4W	
R220			RK73FB2B473J	CHIP R 47K J 1/8W		R856			RK73GB2A473J	CHIP R 47K J 1/10W	
R221			RK73FB2B000J	CHIP R 0 J 1/8W		R857			RK73GB2A103J	CHIP R 10K J 1/10W	
R222,223			RK73EB2E101J	CHIP R 100 J 1/4W		R860			RK73EB2E000J	CHIP R 0 J 1/4W	
R230			RK73EB2E000J	CHIP R 0 J 1/4W		R862-865			RK73PB2H1R0J	CHIP R 1 J 1/2W	
R231-238			RK73HB1J101J	CHIP R 100 J 1/16W		R867			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R239-242			RK73HB1J000J	CHIP R 0 J 1/16W		R868			RK73GB2A184J	CHIP R 180K J 1/10W	
R243			RK73HB1J101J	CHIP R 100 J 1/16W		R869			RK73GB2A103J	CHIP R 10K J 1/10W	
R245			RK73HB1J000J	CHIP R 0 J 1/16W		R870			RK73GH2A273D	CHIP R 27K D 1/10W	
R246			RK73HB1J101J	CHIP R 100 J 1/16W		R871			RK73GH2A473D	CHIP R 47K D 1/10W	
R247-250			RK73HB1J100J	CHIP R 10 J 1/16W		R872			RK73GB2A000J	CHIP R 0 J 1/10W	
R251-254			RK73HB1J101J	CHIP R 100 J 1/16W		R885,886			RK73GB2A104J	CHIP R 100K J 1/10W	
R255			RK73GB2A000J	CHIP R 0 J 1/10W		R887-894			RK73EB2E000J	CHIP R 0 J 1/4W	
R256-259			RK73HB1J100J	CHIP R 10 J 1/16W		R895,896			RK73GB2A000J	CHIP R 0 J 1/10W	
R260-262			RK73HB1J101J	CHIP R 100 J 1/16W		D1			1SR154-400	DIODE	
R263			RK73EB2E000J	CHIP R 0 J 1/4W		D2			DZ2J039(M)	ZENER DIODE	
R264			RK73GH2A152D	CHIP R 1.5K D 1/10W		D20			DZ2S160(M)	ZENER DIODE	
R270			RK73EB2E000J	CHIP R 0 J 1/4W		D21			DZ2J056(M)	ZENER DIODE	
R273			RK73EB2E000J	CHIP R 0 J 1/4W		D40			RB080L-30	DIODE	
R275			RK73HB1J101J	CHIP R 100 J 1/16W		D100			RB080L-30	DIODE	
R278,279			RK73HB1J100J	CHIP R 10 J 1/16W		D120			RB080L-30	DIODE	
R280			RK73GH2A152D	CHIP R 1.5K D 1/10W		D140			RB080L-30	DIODE	
R281			RK73HB1J100J	CHIP R 10 J 1/16W		D220,221			DZ2J033(M)	ZENER DIODE	
R282			RK73GH2A152D	CHIP R 1.5K D 1/10W		D222			CSA70-401L	SURGE ABSORBER	
R283			RK73HB1J100J	CHIP R 10 J 1/16W		D223,224			1SS388F	DIODE	
R284-289			RK73HB1J101J	CHIP R 100 J 1/16W		D225,226			DA3S101F	DIODE	
R290-293			RK73HB1J100J	CHIP R 10 J 1/16W		D230			DZ2J039(M)	ZENER DIODE	
R294-296			RK73HB1J101J	CHIP R 100 J 1/16W		D270			1SS226-F	DIODE	
R297,298			RK73EB2E000J	CHIP R 0 J 1/4W		D271			DZ2J120(M)	ZENER DIODE	
R299			RK73GB2A272J	CHIP R 2.7K J 1/10W		D805			RB080L-30	DIODE	
R300			RK73GB2A473J	CHIP R 47K J 1/10W		D807			RB080L-30	DIODE	
R301,302			RK73GB2A223J	CHIP R 22K J 1/10W		IC20			BU4845FVE	MOS-IC	
R303			RK73GB2A471J	CHIP R 470 J 1/10W		IC21			TC7WH74FU-F	MOS-IC	
R307			RK73GB2A000J	CHIP R 0 J 1/10W		IC22			TC7WH126FU-F	MOS-IC	
R327			RK73GB2A000J	CHIP R 0 J 1/10W		IC23			BU4845FVE	MOS-IC	
R347			RK73GB2A000J	CHIP R 0 J 1/10W		IC24			TC7SH08FU-F	MOS-IC	
R400-417			RK73HB1J000J	CHIP R 0 J 1/16W							

## PARTS LIST

DC-DC UNIT (X43-3220-00)  
FINAL UNIT (X45-3880-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
IC40			MM3273DU	MOS-IC		C43			C93-1882-05	CHIP C 33PF 630WV	
IC50			TC74HC4052AFT	MOS-IC		C45			CK73GB1H102K	CHIP C 1000PF K	
IC100			<b>Note1</b>	ANALOGUE IC		C46 -49			CK73FB1H102K	CHIP C 1000PF K	
IC120			<b>Note1</b>	ANALOGUE IC		C50			CC73GCH1H101J	CHIP C 100PF J	
IC140			<b>Note1</b>	ANALOGUE IC		C51			CK73GB1H104K	CHIP C 0.10UF K	
IC200			ADM3202ARUZ	MOS-IC		C55			CK73GB1H103K	CHIP C 0.010UF K	
IC803,804			<b>Note1</b>	ANALOGUE IC		C56 ,57			C93-1878-05	CHIP C 15PF 630WV	
Q1			LTC023YEBFS8	TRANSISTOR		C58			CC73GCH1H101J	CHIP C 100PF J	
Q2			TPCA8104	FET		C59			C93-1902-05	CHIP C 1.0UF 50WV	
Q20			LSCR523EBFS8	TRANSISTOR		C60			C93-1903-05	CHIP C 4700PF 100WV	
Q160			LTC014EEBFS8	TRANSISTOR		C61			C93-1902-05	CHIP C 1.0UF 50WV	
Q161			RP1A090ZP	TRANSISTOR		C62			C93-1903-05	CHIP C 4700PF 100WV	
Q270			2SD2704K	TRANSISTOR		C63			CK73GB1H103K	CHIP C 0.010UF K	
Q271			2SA1037AK	TRANSISTOR		C64			CK73FB1C105K	CHIP C 1.0UF K	
Q272			2SD2704K	TRANSISTOR		C65			C93-1903-05	CHIP C 4700PF 100WV	
Q807			TPC6111-F	FET		C67			C93-1903-05	CHIP C 4700PF 100WV	
Q808			LTC043TEBFS8	TRANSISTOR		C68			CK73GB1H103K	CHIP C 0.010UF K	
						C69			CK73GB1H102K	CHIP C 1000PF K	
						C70			CK73FB1H102K	CHIP C 1000PF K	
						C71 ,72			CK73GB1H103K	CHIP C 0.010UF K	
						C78			CK73GB1H103K	CHIP C 0.010UF K	
						C80			C93-1874-05	CHIP C 0.1UF 630WV	
						C81			CK73FB1H102K	CHIP C 1000PF K	
						C82			C93-1874-05	CHIP C 0.1UF 630WV	
						C83			CK73FB1C105K	CHIP C 1.0UF K	
						C85			C93-1823-05	CHIP C 1000PF 630WV	
						C86			CD04AZ2A101M	ELECTRO 100UF 100WV	
						C87			C93-1908-05	CHIP C 0.47UF 250WV	
						C88			CK73GB1H102K	CHIP C 1000PF K	
						C89			CK73FB1H102K	CHIP C 1000PF K	
<b>FINAL UNIT (X45-3880-00)</b>											
C2			C93-1823-05	CHIP C 1000PF 630WV		C90 ,91			C93-1823-05	CHIP C 1000PF 630WV	
C3			CK73GB1H104K	CHIP C 0.10UF K		C92			C93-1901-05	CHIP C 0.22UF 250WV	
C5			CK73GB1H104K	CHIP C 0.10UF K		C93 -95			CK73GB1H102K	CHIP C 1000PF K	
C6			CK73EB1E106K	CHIP C 10UF K		C96			CK73FB1H102K	CHIP C 1000PF K	
C7			CC73GCH1H470J	CHIP C 47PF J		C97			C93-1823-05	CHIP C 1000PF 630WV	
C8			CK73GB1H103K	CHIP C 0.010UF K		C98			CK73GB1H102K	CHIP C 1000PF K	
C9 ,10			CC73FCH1H100D	CHIP C 10PF D		C100			C93-1823-05	CHIP C 1000PF 630WV	
C11 ,12			CK73GB1H104K	CHIP C 0.10UF K		C101			C93-1909-05	CHIP C 68000PF 630WV	
C13			CK73GB1H103K	CHIP C 0.010UF K		C102,103			CM73F2H560J	CHIP C 56PF J	
C14			CK73GB1E105K	CHIP C 1.0UF K		C104			C93-1823-05	CHIP C 1000PF 630WV	
C15			CK73GB1H104K	CHIP C 0.10UF K		C107			C93-1901-05	CHIP C 0.22UF 250WV	
C16			CD04AY1E470M	ELECTRO 47UF 25WV		C108			CK73GB1H102K	CHIP C 1000PF K	
C17			CK73FB1E104K	CHIP C 0.10UF K		C109			CK73GB1H103K	CHIP C 0.010UF K	
C18			CK73GB1H104K	CHIP C 0.10UF K		C110			CK73FB1H103K	CHIP C 0.010UF K	
C19 ,20			CC73FCH1H221J	CHIP C 220PF J		C111			CD04AZ2A101M	ELECTRO 100UF 100WV	
C21			CK73GB1E105K	CHIP C 1.0UF K		C112			CK73EB1E106K	CHIP C 10UF K	
C22			CC73FCH1H221J	CHIP C 220PF J		C113			CK73FB1H103K	CHIP C 0.010UF K	
C23			CK73GB1H103K	CHIP C 0.010UF K		C114			C93-1908-05	CHIP C 0.47UF 250WV	
C24			CC73FCH1H221J	CHIP C 220PF J		C115			C93-1823-05	CHIP C 1000PF 630WV	
C27			CK73GB1H104K	CHIP C 0.10UF K		C116			C93-1908-05	CHIP C 0.47UF 250WV	
C29			CK73GB1H103K	CHIP C 0.010UF K		C117			C93-1823-05	CHIP C 1000PF 630WV	
C31			CK73EB1H104K	CHIP C 0.10UF K		C121-128			CK73FB1H103K	CHIP C 0.010UF K	
C32			CK73GB1H102K	CHIP C 1000PF K		C129			CK73GB1H103K	CHIP C 0.010UF K	
C33			CK73FB1H104K	CHIP C 0.10UF K		C130,131			CC73FCH1H100D	CHIP C 10PF D	
C34			C93-1807-05	CHIP C 0.01UF 100WV		C132			CC73FCH1H101J	CHIP C 100PF J	
C35			CK73FB1H103K	CHIP C 0.010UF K		C133-141			CK73FB1H103K	CHIP C 0.010UF K	
C36			CD04AY1E470M	ELECTRO 47UF 25WV		C142			C93-1817-05	CHIP C 330PF 630WV	
C37			CK73FB1H104K	CHIP C 0.10UF K		C144			C93-1815-05	CHIP C 220PF 630WV	
C38			CK73GB1H104K	CHIP C 0.10UF K		C147			C93-1884-05	CHIP C 47PF 630WV	
C40			CK73GB1H104K	CHIP C 0.10UF K		C149			C93-1878-05	CHIP C 15PF 630WV	

Note 1: This part cannot be replaced. Therefore, this part is not supplied as a service part.



## PARTS LIST

### FINAL UNIT (X45-3880-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C150,151			C93-1811-05	CHIP C 100PF 630WV		C225			C93-1898-05	CHIP C 680PF 630WV	
C152			C93-1892-05	CHIP C 220PF 630WV		C226			C93-1880-05	CHIP C 22PF 630WV	
C153			C93-1889-05	CHIP C 120PF 630WV		C228			C93-1895-05	CHIP C 390PF 630WV	
C154			C93-1898-05	CHIP C 680PF 630WV		C229			C93-1814-05	CHIP C 180PF 630WV	
C155			C93-1812-05	CHIP C 120PF 630WV		C230			C93-1884-05	CHIP C 47PF 630WV	
C156			C93-1877-05	CHIP C 12PF 630WV		C231			C93-1882-05	CHIP C 33PF 630WV	
C157,158			C93-1887-05	CHIP C 82PF 630WV		C232			C93-1884-05	CHIP C 47PF 630WV	
C159			C93-1877-05	CHIP C 12PF 630WV		C233	*		C93-1881-05	CHIP C 27PF 630WV	
C161			C93-1892-05	CHIP C 220PF 630WV		C234			C93-1884-05	CHIP C 47PF 630WV	
C163			C93-1889-05	CHIP C 120PF 630WV		C235			C93-1885-05	CHIP C 56PF 630WV	
C165			C93-1895-05	CHIP C 390PF 630WV		C236			C93-1884-05	CHIP C 47PF 630WV	
C166			C93-1885-05	CHIP C 56PF 630WV		C237			C93-1816-05	CHIP C 270PF 630WV	
C167			C93-1883-05	CHIP C 39PF 630WV		C240			C93-1817-05	CHIP C 330PF 630WV	
C169			C93-1895-05	CHIP C 390PF 630WV		C242-250			CK73FB1H103K	CHIP C 0.010UF K	
C170			CK73FB1H103K	CHIP C 0.010UF K		C253			CK73FB1C105K	CHIP C 1.0UF K	
C171			C93-1814-05	CHIP C 180PF 630WV		C254			CK73GB1H103K	CHIP C 0.010UF K	
C172			C93-1889-05	CHIP C 120PF 630WV		C255			CK73FB1C105K	CHIP C 1.0UF K	
C173,174		*	C93-1891-05	CHIP C 180PF 630WV		C256			C93-1823-05	CHIP C 1000PF 630WV	
C175			C93-1884-05	CHIP C 47PF 630WV		C257			CK73GB1H104K	CHIP C 0.10UF K	
C177			C93-1886-05	CHIP C 68PF 630WV		C258			CK73GB1H103K	CHIP C 0.010UF K	
C179			C93-1879-05	CHIP C 18PF 630WV		C259,260			CK73GB1H102K	CHIP C 1000PF K	
C180			C93-1811-05	CHIP C 100PF 630WV		C261			CK73FB1H103K	CHIP C 0.010UF K	
C181			C93-1883-05	CHIP C 39PF 630WV		C263			CK73GB1H102K	CHIP C 1000PF K	
C182			C93-1887-05	CHIP C 82PF 630WV		C265			CK73GB1H102K	CHIP C 1000PF K	
C183			C93-1817-05	CHIP C 330PF 630WV		C266			CK73EB1E106K	CHIP C 10UF K	
C184			C93-1887-05	CHIP C 82PF 630WV		C267			CC73FCH1H221J	CHIP C 220PF J	
C185			C93-1879-05	CHIP C 18PF 630WV		C300			CC73FCH1H122J	CHIP C 1200PF J	
C186			CC73GCH1H221J	CHIP C 220PF J		C301			CK73FB1H103K	CHIP C 0.010UF K	
C187			C93-1811-05	CHIP C 100PF 630WV		C302			CC73FCH1H122J	CHIP C 1200PF J	
C188			C93-1816-05	CHIP C 270PF 630WV		C303			CK73FB1H103K	CHIP C 0.010UF K	
C189			C93-1814-05	CHIP C 180PF 630WV		C305			CC45SL3A220J	CERAMIC 22PF J	
C190			C93-1817-05	CHIP C 330PF 630WV		C306-309			CC73FCH1H221J	CHIP C 220PF J	
C191			C93-1814-05	CHIP C 180PF 630WV		C310			CK73FB1H103K	CHIP C 0.010UF K	
C192			C93-1811-05	CHIP C 100PF 630WV		C311			CK73GB1H103K	CHIP C 0.010UF K	
C193			C93-1880-05	CHIP C 22PF 630WV		C312			CK73GB1H104K	CHIP C 0.10UF K	
C194			C93-1813-05	CHIP C 150PF 630WV		C500			CK73GB1H104K	CHIP C 0.10UF K	
C195			CC45FSL3A151J	CERAMIC 150PF J		C501,502			C93-1902-05	CHIP C 1.0UF 50WV	
C196			C93-1816-05	CHIP C 270PF 630WV		C503,504			C93-1903-05	CHIP C 4700PF 100WV	
C197			C93-1814-05	CHIP C 180PF 630WV		C506,507			C93-1873-05	CHIP C 10000PF 630WV	
C198			C93-1889-05	CHIP C 120PF 630WV		C508,509			C93-1909-05	CHIP C 68000PF 630WV	
C199			C93-1896-05	CHIP C 470PF 630WV		C510			C93-1873-05	CHIP C 10000PF 630WV	
C200			C93-1816-05	CHIP C 270PF 630WV		C513			C93-1877-05	CHIP C 12PF 630WV	
C201,202			C93-1811-05	CHIP C 100PF 630WV		C514			C93-1878-05	CHIP C 15PF 630WV	
C203			C93-1884-05	CHIP C 47PF 630WV		C515			C93-1879-05	CHIP C 18PF 630WV	
C204			C93-1817-05	CHIP C 330PF 630WV		C516,517			C93-1877-05	CHIP C 12PF 630WV	
C205			C93-1882-05	CHIP C 33PF 630WV		C518			C93-1886-05	CHIP C 68PF 630WV	
C206		*	C93-1881-05	CHIP C 27PF 630WV		C520			C93-1812-05	CHIP C 120PF 630WV	
C208			C93-1887-05	CHIP C 82PF 630WV		C521			C93-1811-05	CHIP C 100PF 630WV	
C209			C93-1884-05	CHIP C 47PF 630WV		C522			C93-1812-05	CHIP C 120PF 630WV	
C211			C93-1812-05	CHIP C 120PF 630WV		C523			C93-1885-05	CHIP C 56PF 630WV	
C212			C93-1883-05	CHIP C 39PF 630WV		C524	*		C93-1891-05	CHIP C 180PF 630WV	
C213			C93-1811-05	CHIP C 100PF 630WV		C527			C93-1884-05	CHIP C 47PF 630WV	
C214			C93-1879-05	CHIP C 18PF 630WV		C528	*		C93-1888-05	CHIP C 100PF 630WV	
C216			C93-1817-05	CHIP C 330PF 630WV		C550			C93-1908-05	CHIP C 0.47UF 250WV	
C218			C93-1879-05	CHIP C 18PF 630WV		C551			C93-1873-05	CHIP C 10000PF 630WV	
C219			C93-1877-05	CHIP C 12PF 630WV		C570			CK73GB1H102K	CHIP C 1000PF K	
C220			C93-1895-05	CHIP C 390PF 630WV		C600			C93-1892-05	CHIP C 220PF 630WV	
C222			C93-1813-05	CHIP C 150PF 630WV		C601	*		C93-1891-05	CHIP C 180PF 630WV	
C223			C93-1896-05	CHIP C 470PF 630WV		C603			C93-1890-05	CHIP C 150PF 630WV	
C224			CC45FSL3A820J	CERAMIC 82PF J		C604			C93-1813-05	CHIP C 150PF 630WV	



## PARTS LIST

FINAL UNIT (X45-3880-00)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C605			C93-1819-05	CHIP C 470PF 630WV		L47			L39-1529-15	TOROIDAL COIL	
C606,607			C93-1815-05	CHIP C 220PF 630WV		L48			L39-1528-15	TOROIDAL COIL	
C608			C93-1812-05	CHIP C 120PF 630WV		L49			L39-1592-15	TOROIDAL COIL	
C609			C93-1886-05	CHIP C 68PF 630WV		L50			L39-1531-15	TOROIDAL COIL	
C610			C93-1811-05	CHIP C 100PF 630WV		L51			L39-1530-15	TOROIDAL COIL	
C611			C93-1878-05	CHIP C 15PF 630WV		L52			L34-4949-05	AIR-CORE COIL(3.5T)	
C612			C93-1811-05	CHIP C 100PF 630WV		L53			L39-1525-15	TOROIDAL COIL	
C613			C93-1890-05	CHIP C 150PF 630WV		L54			L39-1527-15	TOROIDAL COIL	
C800-807			C93-1877-05	CHIP C 12PF 630WV		L56			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
C808			CK73FB1C105K	CHIP C 1.0UF K		L57			L39-1808-05	TOROIDAL COIL	
C809			CK73FB1E104K	CHIP C 0.10UF K		L58			L39-1540-15	TOROIDAL COIL	
C810-817			CK73FB1H103K	CHIP C 0.010UF K		L59			L39-1526-15	TOROIDAL COIL	
C818			CC73FCH1H100D	CHIP C 10PF D		L60 ,61			L39-1529-15	TOROIDAL COIL	
C819			CC73FCH1H101J	CHIP C 100PF J		L62			L39-1592-15	TOROIDAL COIL	
C820			CC73FCH1H100D	CHIP C 10PF D		L70 -75			L92-0639-05	CHIP FERRITE	
C821-828			CK73FB1H103K	CHIP C 0.010UF K		L80 -83			L92-0444-05	CHIP FERRITE	
C850,851			C93-1876-05	CHIP C 10PF 630WV		L84 -86			L92-0155-05	CHIP FERRITE	
C852			C93-1877-05	CHIP C 12PF 630WV		L800-808			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
C853			C93-1878-05	CHIP C 15PF 630WV		L850		*	L34-4970-05	AIR-CORE COIL(3.5T)	
CN2			E04-0154-05	PIN SOCKET		R1			RK73GB2A101J	CHIP R 100 J 1/10W	
CN16			E41-1683-05	PIN ASSY		R2			RK73EB2E000J	CHIP R 0 J 1/4W	
CN18			E41-1683-05	PIN ASSY		R3			RK73FB2B103J	CHIP R 10K J 1/8W	
CN32			E41-1734-05	PIN ASSY		R4			RK73FB2B680J	CHIP R 68 J 1/8W	
CN35			E40-6909-05	FLAT CABLE CONNECTOR		R6			RK73FB2B561J	CHIP R 560 J 1/8W	
CN36			E40-6527-05	PIN ASSY		R8			RK73GB2A473J	CHIP R 47K J 1/10W	
CN801-804			E23-1310-05	TEST TERMINAL		R10			RK73FB2B561J	CHIP R 560 J 1/8W	
CN815			E04-0490-05	PIN SOCKET		R11 ,12			RK73GB2A101J	CHIP R 100 J 1/10W	
CN816			E40-6914-05	FLAT CABLE CONNECTOR		R13			RK73GB2A121J	CHIP R 120 J 1/10W	
J1			E63-0405-05	PIN JACK		R16			RK73GB2A000J	CHIP R 0 J 1/10W	
J800			E63-0406-05	PIN JACK		R17			RK73GB2A470J	CHIP R 47 J 1/10W	
F1			F53-0388-05	FUSE(1.25A)		R18			RK73GB2A101J	CHIP R 100 J 1/10W	
L1 ,2			L92-0447-05	BEADS CORE		R19			RK73FB2B222J	CHIP R 2.2K J 1/8W	
L5			L92-0641-05	FERRITE CORE		R20			RK73GB2A472J	CHIP R 4.7K J 1/10W	
L6		*	L39-1813-05	TOROIDAL COIL		R21			RK73GB2A100J	CHIP R 10 J 1/10W	
L7			L92-0641-05	FERRITE CORE		R22			R92-3625-05	RESISTOR 0.1 J 1/3W	
L8			L39-1809-05	TOROIDAL COIL		R24 -30			RK73GB2A473J	CHIP R 47K J 1/10W	
L9 -12			L41-4705-33	SMALL FIXED INDUCTOR(47UH)		R32			RK73FB2B121J	CHIP R 120 J 1/8W	
L15			L41-4705-33	SMALL FIXED INDUCTOR(47UH)		R33			RK73EB2E5R6J	CHIP R 5.6 J 1/4W	
L16			L39-1581-05	TOROIDAL COIL		R35			RS14DB3DR22J	FL-PROOF RS 0.22 J 2W	
L17		*	L39-1813-05	TOROIDAL COIL		R36			RK73EB2E5R6J	CHIP R 5.6 J 1/4W	
L18			L39-1582-05	TOROIDAL COIL		R37			RS14DB3A471J	FL-PROOF RS 470 J 1W	
L19		*	L39-1813-05	TOROIDAL COIL		R38			RK73EB2E471J	CHIP R 470 J 1/4W	
L20		*	L39-1583-15	TOROIDAL COIL		R39			RK73FB2B000J	CHIP R 0 J 1/8W	
L22 -30			L41-4705-33	SMALL FIXED INDUCTOR(47UH)		R42			RK73EB2E392J	CHIP R 3.9K J 1/4W	
L31			L39-1532-15	TOROIDAL COIL		R46			RK73GB2A473J	CHIP R 47K J 1/10W	
L32			L39-1525-15	TOROIDAL COIL		R47			RK73GB2A104J	CHIP R 100K J 1/10W	
L33			L39-1531-15	TOROIDAL COIL		R48			RK73GB2A000J	CHIP R 0 J 1/10W	
L34			L39-1592-15	TOROIDAL COIL		R49			RK73FB2B000J	CHIP R 0 J 1/8W	
L35			L34-4947-05	AIR-CORE COIL(3.5T)		R51			RK73FB2B103J	CHIP R 10K J 1/8W	
L36			L34-4945-05	AIR-CORE COIL(4.5T)		R52			RK73GB2A333J	CHIP R 33K J 1/10W	
L37			L39-1527-15	TOROIDAL COIL		R53			RK73FB2B222J	CHIP R 2.2K J 1/8W	
L38			L39-1526-15	TOROIDAL COIL		R54			RK73FB2B000J	CHIP R 0 J 1/8W	
L39 ,40			L39-1527-15	TOROIDAL COIL		R55			RK73FB2B472J	CHIP R 4.7K J 1/8W	
L41 ,42			L39-1530-15	TOROIDAL COIL		R56			RK73GB2A104J	CHIP R 100K J 1/10W	
L43			L34-4948-05	AIR-CORE COIL(3.5T)		R57			RK73GB2A333J	CHIP R 33K J 1/10W	
L44			L39-1524-15	TOROIDAL COIL		R58			RK73GB2A103J	CHIP R 10K J 1/10W	
L45			L39-1525-15	TOROIDAL COIL		R59			RK73GB2A100J	CHIP R 10 J 1/10W	
L46			L39-1527-15	TOROIDAL COIL		R60			RK73FB2B222J	CHIP R 2.2K J 1/8W	
						R65			RK73GB2A222J	CHIP R 2.2K J 1/10W	



## PARTS LIST

DIGITAL UNIT (X46-3390-00)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C193-196			CC73HCH1H220J	CHIP C 22PF J		C604,605			CC73HCH1H080D	CHIP C 8.0PF D	
C201,202			CK73HB0J105K	CHIP C 1.0UF K		C606			CK73HB1A104K	CHIP C 0.10UF K	
C204			CK73HB1A104K	CHIP C 0.10UF K		C607			CK73GB0J475K	CHIP C 4.7UF K	
C206			CK73HB1A104K	CHIP C 0.10UF K		C608			CK73HB1A104K	CHIP C 0.10UF K	
C236-246			CK73HB1A104K	CHIP C 0.10UF K		C609			CK73GB0J475K	CHIP C 4.7UF K	
C247,248			CK73FB0J106K	CHIP C 10UF K		C610			CC73HCH1H471J	CHIP C 470PF J	
C251,252			CK73FB0J106K	CHIP C 10UF K		C611-614			CC73HCH1H100D	CHIP C 10PF D	
C253-276			CK73HB1A104K	CHIP C 0.10UF K		C615			CK73HB1E223K	CHIP C 0.022UF K	
C278-281			CK73FB0J106K	CHIP C 10UF K		C681			CK73HB1A104K	CHIP C 0.10UF K	
C341,342			CK73HB1A104K	CHIP C 0.10UF K		C683-685			CK73HB1A104K	CHIP C 0.10UF K	
C343,344			CC73HCH1H150J	CHIP C 15PF J		C688			CK73HB1H102K	CHIP C 1000PF K	
C345			CK73HB1H102K	CHIP C 1000PF K		C701			CK73HB0J105K	CHIP C 1.0UF K	
C350-379			CK73HB1A104K	CHIP C 0.10UF K		C702			CK73HB1H222K	CHIP C 2200PF K	
C384			CE32BQQJ221M	CHIP EL 220UF 6.3WV		C703			CK73HB0J105K	CHIP C 1.0UF K	
C385			C93-1875-05	CHIP C 22UF M		C704			CK73GB0J106K	CHIP C 10UF K	
C386			CK73HB1H102K	CHIP C 1000PF K		C705			CK73HB1H102K	CHIP C 1000PF K	
C388			C93-1875-05	CHIP C 22UF M		C706			CK73HB1A104K	CHIP C 0.10UF K	
C389			CK73HB1H102K	CHIP C 1000PF K		C707			CK73FB0J106K	CHIP C 10UF K	
C391,392			CC73HCH1H120J	CHIP C 12PF J		C708			CK73HB1H102K	CHIP C 1000PF K	
C395			CK73HB1E103K	CHIP C 0.010UF K		C709			CK73FB0J106K	CHIP C 10UF K	
C401			CK73FB0J106K	CHIP C 10UF K		C710			CK73HB1H102K	CHIP C 1000PF K	
C402-405			CK73HB0J105K	CHIP C 1.0UF K		C711			CC73HCH1H200J	CHIP C 20PF J	
C406			CK73FB0J106K	CHIP C 10UF K		C712			CC73HCH1H180J	CHIP C 18PF J	
C407-409			CK73HB1A104K	CHIP C 0.10UF K		C713			CK73FB0J106K	CHIP C 10UF K	
C410			CK73FB0J106K	CHIP C 10UF K		C714			CK73HB1H102K	CHIP C 1000PF K	
C411,412			CK73HB1A104K	CHIP C 0.10UF K		C715			CK73FB0J106K	CHIP C 10UF K	
C420-424			CK73HB1A104K	CHIP C 0.10UF K		C716			CK73HB1H102K	CHIP C 1000PF K	
C425-427			CC73HCH1H220J	CHIP C 22PF J		C717			CK73FB0J106K	CHIP C 10UF K	
C428-430			CC73HCH1H330J	CHIP C 33PF J		C718			CK73HB1H102K	CHIP C 1000PF K	
C431-433			CC73HCH1H220J	CHIP C 22PF J		C719-721			CK73FB0J106K	CHIP C 10UF K	
C434			CK73HB1A104K	CHIP C 0.10UF K		C722			CK73HB1H102K	CHIP C 1000PF K	
C436,437			CK73HB1A104K	CHIP C 0.10UF K		C723,724			CK73HB1A104K	CHIP C 0.10UF K	
C438,439			CK73HB1H221K	CHIP C 220PF K		C725			CK73HB0J105K	CHIP C 1.0UF K	
C451			CK73FB0J106K	CHIP C 10UF K		C726-728			CK73HB1A104K	CHIP C 0.10UF K	
C452			CK73HB1A104K	CHIP C 0.10UF K		C729			CK73HB0J105K	CHIP C 1.0UF K	
C453			CK73HB1H222K	CHIP C 2200PF K		C730-732			CK73HB1A104K	CHIP C 0.10UF K	
C454			CC73HCH1H331J	CHIP C 330PF J		C733			CK73HB1H102K	CHIP C 1000PF K	
C456			CK73GB1C225K	CHIP C 2.2UF K		C734			CK73GB1E105K	CHIP C 1.0UF K	
C457			CK73HB1A104K	CHIP C 0.10UF K		C735			CK73HB1A104K	CHIP C 0.10UF K	
C458			CK73GB1C225K	CHIP C 2.2UF K		C736			CK73HB0J105K	CHIP C 1.0UF K	
C459			CC73HCH1H331J	CHIP C 330PF J		C737			CK73HB1A104K	CHIP C 0.10UF K	
C460			CK73HB1A104K	CHIP C 0.10UF K		C738,739			CC73HCH1H220J	CHIP C 22PF J	
C461			CK73HB1H182K	CHIP C 1800PF K		C740,741			CK73HB1H222K	CHIP C 2200PF K	
C462			CK73HB1A104K	CHIP C 0.10UF K		C742			CK73HB0J105K	CHIP C 1.0UF K	
C463			CK73GB1C225K	CHIP C 2.2UF K		C743			CK73HB1H102K	CHIP C 1000PF K	
C464			CC73HCH1H331J	CHIP C 330PF J		C744			CK73GB0J106K	CHIP C 10UF K	
C465			CK73HB1H182K	CHIP C 1800PF K		C745			CK73HB0J105K	CHIP C 1.0UF K	
C466			CK73HB1H222K	CHIP C 2200PF K		C746			CK73HB1H472K	CHIP C 4700PF K	
C467			CK73HB1A104K	CHIP C 0.10UF K		C747			CK73HB1A104K	CHIP C 0.10UF K	
C468			CC73HCH1H331J	CHIP C 330PF J		C750,751			CK73HB1H102K	CHIP C 1000PF K	
C469-471			CK73GB1C225K	CHIP C 2.2UF K		C752			CK73GB0J106K	CHIP C 10UF K	
C472			CK73FB0J106K	CHIP C 10UF K		C753			CK73HB0J105K	CHIP C 1.0UF K	
C473-475			CK73HB1E103K	CHIP C 0.010UF K		C760-763			CK73HB0J105K	CHIP C 1.0UF K	
C501-504			CK73HB1A104K	CHIP C 0.10UF K		C821			CK73HB1A104K	CHIP C 0.10UF K	
C505,506			C90-6990-05	ELECTRO 220UF 10WV		C823			CK73HB1A104K	CHIP C 0.10UF K	
C570			CK73GB1E105K	CHIP C 1.0UF K		C831			CK73HB1A104K	CHIP C 0.10UF K	
C571,572			CK73HB0J105K	CHIP C 1.0UF K		CN1			E41-1684-05	PIN ASSY	
C601			CK73HB0J105K	CHIP C 1.0UF K		CN2			E40-6532-05	PIN ASSY	
C602			CK73HB1A104K	CHIP C 0.10UF K		CN3			E40-6905-05	FLAT CABLE CONNECTOR	
C603			CK73HB0J105K	CHIP C 1.0UF K							

## PARTS LIST

### DIGITAL UNIT (X46-3390-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
CN4			E40-6910-05	FLAT CABLE CONNECTOR		CP22-24			RK74HB1J220J	CHIP-COM 22 J 1/16W	
CN6			E40-6914-05	FLAT CABLE CONNECTOR		CP25			RK74HB1J103J	CHIP-COM 10K J 1/16W	
CN11			E41-3176-05	FLAT CABLE CONNECTOR		CP26-31			RK74HB1J101J	CHIP-COM 100 J 1/16W	
CN225			E40-6913-05	FLAT CABLE CONNECTOR		CP33			RK74HB1J220J	CHIP-COM 22 J 1/16W	
CN228			E40-6914-05	FLAT CABLE CONNECTOR		CP34,35			RK74HB1J101J	CHIP-COM 100 J 1/16W	
CN501			E41-1690-05	PIN ASSY		CP38-50			RK74HB1J470J	CHIP-COM 47 J 1/16W	
CN651			E40-6949-05	FLAT CABLE CONNECTOR		CP51-55			RK74HB1J101J	CHIP-COM 100 J 1/16W	
CN652			E04-0193-05	PIN SOCKET		CP57			RK74HA1J220J	CHIP-COM 22 J 1/16W	
J401		*	E58-0548-05	RECTANGULAR RECEPTACLE		CP58-60			RK74HA1J101J	CHIP-COM 100 J 1/16W	
J601			E58-0544-05	MODULAR JACK		CP61,62			RK74HA1J220J	CHIP-COM 22 J 1/16W	
J701			E58-0537-05	RECTANGULAR RECEPTACLE		CP63			RK74HA1J000J	CHIP-COM 0 J 1/16W	
W701			E37-1544-05	PROCESSED LEAD WIRE		CP64,65			RK74HA1J680J	CHIP-COM 68 J 1/16W	
F1			F53-0367-05	FUSE(1.0A)		CP66			RK74HA1J000J	CHIP-COM 0 J 1/16W	
F2 ,3			F53-0360-05	FUSE(0.25A)		CP67			RK74HA1J151J	CHIP-COM 150 J 1/16W	
F401			F53-0360-05	FUSE(0.25A)		CP68			RK74HA1J680J	CHIP-COM 68 J 1/16W	
F601			F53-0317-15	FUSE(4A)		CP69			RK74HA1J000J	CHIP-COM 0 J 1/16W	
401	2D		G13-1878-15	CONDUCTIVE CUSHION		CP70			RK74HA1J220J	CHIP-COM 22 J 1/16W	
402	2D	*	G13-2435-04	CONDUCTIVE CUSHION(DVI COVER)		CP71			RK74HA1J101J	CHIP-COM 100 J 1/16W	
L1 ,2			L33-1595-05	CHOCO COIL		CP72			RK74HA1J000J	CHIP-COM 0 J 1/16W	
L10 -19			L92-0639-05	CHIP FERRITE		CP73			RK74HA1J101J	CHIP-COM 100 J 1/16W	
L201,202			L33-1595-05	CHOCO COIL		R1 -20			RK73HB1J220J	CHIP R 22 J 1/16W	
L301-325			L92-0491-05	CHIP FERRITE		R22			RK73HB1J220J	CHIP R 22 J 1/16W	
L326			L92-0545-05	CHIP FERRITE		R23 ,24			RK73HB1J100J	CHIP R 10 J 1/16W	
L401,402			L92-0639-05	CHIP FERRITE		R25			RK73HB1J220J	CHIP R 22 J 1/16W	
L403			L41-8275-32	SMALL FIXED INDUCTOR(0.082UH)		R27 -29			RK73HB1J000J	CHIP R 0 J 1/16W	
L404-409			L41-8275-33	SMALL FIXED INDUCTOR(0.082UH)		R30 -51			RK73HB1J220J	CHIP R 22 J 1/16W	
L412-415		*	L92-0494-05	CHIP FERRITE		R52 -59			RK73HB1J101J	CHIP R 100 J 1/16W	
L451			L92-0639-05	CHIP FERRITE		R60 -81			RK73HB1J220J	CHIP R 22 J 1/16W	
L501,502			L92-0639-05	CHIP FERRITE		R82 -86			RK73HB1J101J	CHIP R 100 J 1/16W	
L601,602			L92-0639-05	CHIP FERRITE		R88 ,89			RK73HB1J101J	CHIP R 100 J 1/16W	
L603,604		*	L33-3033-05	CHOCO COIL		R90 ,91			RK73GB2A000J	CHIP R 0 J 1/10W	
L651			L79-1974-05	FILTER		R92			RK73GH2A49R9D	CHIP R 49.9 D 1/10W	
L652-670			L92-0490-05	CHIP FERRITE		R93 ,94			RK73GH2A102D	CHIP R 1.0K D 1/10W	
L671			L92-0639-05	CHIP FERRITE		R95			RK73HB1J221J	CHIP R 220 J 1/16W	
L672			L92-0492-05	CHIP FERRITE		R96			RK73HB1J104J	CHIP R 100K J 1/16W	
L701,702			L92-0639-05	CHIP FERRITE		R97 ,98			RK73HB1J223J	CHIP R 22K J 1/16W	
L705			L92-0639-05	CHIP FERRITE		R99 ,100			RK73HB1J000J	CHIP R 0 J 1/16W	
L707			L92-0639-05	CHIP FERRITE		R101,102			RK73HB1J470J	CHIP R 47 J 1/16W	
X1			L77-3078-05	CRYSTAL RESONATOR(26.0000MHZ)		R103,104			RK73HB1J102J	CHIP R 1.0K J 1/16W	
X201			L77-3078-05	CRYSTAL RESONATOR(26.0000MHZ)		R105,106			RK73HB1J101J	CHIP R 100 J 1/16W	
X202			L77-2979-05	CRYSTAL RESONATOR(12.288MHZ)		R107-109			RK73HB1J000J	CHIP R 0 J 1/16W	
X601			L77-3067-05	CRYSTAL RESONATOR(25MHZ)		R110-115			RK73HB1J470J	CHIP R 47 J 1/16W	
X701			L77-3813-05	CRYSTAL RESONATOR(24.0000MHZ)		R116-118			RK73HB1J103J	CHIP R 10K J 1/16W	
X702			L77-2951-05	CRYSTAL RESONATOR(12MHZ)		R120,121			RK73HB1J472J	CHIP R 4.7K J 1/16W	
CP1 ,2			RK74HA1J220J	CHIP-COM 22 J 1/16W		R122			RK73HB1J332J	CHIP R 3.3K J 1/16W	
CP3 ,4			RK74HA1J101J	CHIP-COM 100 J 1/16W		R123,124			RK73HB1J472J	CHIP R 4.7K J 1/16W	
CP5 ,6			RK74HA1J220J	CHIP-COM 22 J 1/16W		R125			RK73HB1J103J	CHIP R 10K J 1/16W	
CP7			RK74HA1J000J	CHIP-COM 0 J 1/16W		R126,127			RK73HB1J220J	CHIP R 22 J 1/16W	
CP8			RK74HA1J680J	CHIP-COM 68 J 1/16W		R128,129			RK73HB1J472J	CHIP R 4.7K J 1/16W	
CP9			RK74HA1J151J	CHIP-COM 150 J 1/16W		R130-142			RK73HB1J220J	CHIP R 22 J 1/16W	
CP10			RK74HA1J680J	CHIP-COM 68 J 1/16W		R143			RK73HB1J102J	CHIP R 1.0K J 1/16W	
CP11,12			RK74HA1J151J	CHIP-COM 150 J 1/16W		R144,145			RK73HB1J220J	CHIP R 22 J 1/16W	
CP15			RK74HA1J000J	CHIP-COM 0 J 1/16W		R146-153			RK73HB1J103J	CHIP R 10K J 1/16W	
CP16			RK74HA1J101J	CHIP-COM 100 J 1/16W		R154			RK73HB1J101J	CHIP R 100 J 1/16W	
CP17			RK74HA1J000J	CHIP-COM 0 J 1/16W		R155			RK73HB1J103J	CHIP R 10K J 1/16W	
CP18			RK74HA1J101J	CHIP-COM 100 J 1/16W		R156			RK73HB1J102J	CHIP R 1.0K J 1/16W	
CP19,20			RK74HB1J103J	CHIP-COM 10K J 1/16W		R157-159			RK73GB2A000J	CHIP R 0 J 1/10W	
CP21			RK74HA1J220J	CHIP-COM 22 J 1/16W		R160			RK73HB1J472J	CHIP R 4.7K J 1/16W	
						R161			RK73HB1J103J	CHIP R 10K J 1/16W	
						R164-166			RK73HB1J000J	CHIP R 0 J 1/16W	

## PARTS LIST

DIGITAL UNIT (X46-3390-00)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R170,171			RK73HB1J220J	CHIP R 22 J 1/16W		R376-378			RK73HB1J000J	CHIP R 0 J 1/16W	
R172-174			RK73HB1J472J	CHIP R 4.7K J 1/16W		R380-387			RK73HB1J330J	CHIP R 33 J 1/16W	
R175-177			RK73HB1J000J	CHIP R 0 J 1/16W		R398			RK73HB1J000J	CHIP R 0 J 1/16W	
R178			RK73HB1J221J	CHIP R 220 J 1/16W		R401			RK73GB2A103J	CHIP R 10K J 1/10W	
R179			RK73HB1J000J	CHIP R 0 J 1/16W		R403,404			RK73GB2A103J	CHIP R 10K J 1/10W	
R180			RK73HB1J101J	CHIP R 100 J 1/16W		R405,406			RK73GB2A470J	CHIP R 47 J 1/10W	
R181,182			RK73HB1J000J	CHIP R 0 J 1/16W		R407,408			RK73GB2A103J	CHIP R 10K J 1/10W	
R183			RK73HB1J680J	CHIP R 68 J 1/16W		R409			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R184			RK73HB1J102J	CHIP R 1.0K J 1/16W		R420			RK73GH2A561D	CHIP R 560 D 1/10W	
R185			RK73HB1J000J	CHIP R 0 J 1/16W		R421-423			RK73GB2A151J	CHIP R 150 J 1/10W	
R186			RK73HB1J472J	CHIP R 4.7K J 1/16W		R424			RK73GH2A8870D	CHIP R 887 D 1/10W	
R187			RK73HB1J102J	CHIP R 1.0K J 1/16W		R425,426			RK73GB2A470J	CHIP R 47 J 1/10W	
R189			RK73HB1J473J	CHIP R 47K J 1/16W		R427			RK73GB2A103J	CHIP R 10K J 1/10W	
R190,191			RK73HB1J000J	CHIP R 0 J 1/16W		R428,429			RK73HB1J220J	CHIP R 22 J 1/16W	
R193			RK73HB1J101J	CHIP R 100 J 1/16W		R431-433			RK73GB2A151J	CHIP R 150 J 1/10W	
R194			RK73HB1J000J	CHIP R 0 J 1/16W		R434,435			RK73GB2A470J	CHIP R 47 J 1/10W	
R196			RK73HB1J472J	CHIP R 4.7K J 1/16W		R436			RK73GB2A000J	CHIP R 0 J 1/10W	
R197			RK73HB1J102J	CHIP R 1.0K J 1/16W		R437			RK73GB2A470J	CHIP R 47 J 1/10W	
R198,199			RK73HB1J101J	CHIP R 100 J 1/16W		R438			RK73HB1J000J	CHIP R 0 J 1/16W	
R201-220			RK73HB1J220J	CHIP R 22 J 1/16W		R447			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R222			RK73HB1J220J	CHIP R 22 J 1/16W		R451-456			RK73HB1J223J	CHIP R 22K J 1/16W	
R223,224			RK73HB1J100J	CHIP R 10 J 1/16W		R457-468			RK73HB1J183J	CHIP R 18K J 1/16W	
R225			RK73HB1J220J	CHIP R 22 J 1/16W		R501-504			RK73GB2A330J	CHIP R 33 J 1/10W	
R227			RK73HB1J102J	CHIP R 1.0K J 1/16W		R505-508			RK73GB2A153J	CHIP R 15K J 1/10W	
R230-281			RK73HB1J220J	CHIP R 22 J 1/16W		R509,510			RK73HB1J223J	CHIP R 22K J 1/16W	
R282,283			RK73HB1J102J	CHIP R 1.0K J 1/16W		R511,512			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R285			RK73HB1J000J	CHIP R 0 J 1/16W		R571,572			RK73HB1J223J	CHIP R 22K J 1/16W	
R290,291			RK73GB2A000J	CHIP R 0 J 1/10W		R573-576			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R292			RK73GH2A49R9D	CHIP R 49.9 D 1/10W		R601-603			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R293,294			RK73GH2A102D	CHIP R 1.0K D 1/10W		R604-607			RK73GH2A49R9D	CHIP R 49.9 D 1/10W	
R300			RK73GB2A000J	CHIP R 0 J 1/10W		R609			RK73GB2A151J	CHIP R 150 J 1/10W	
R301			RK73HB1J102J	CHIP R 1.0K J 1/16W		R610			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R302			RK73HB1J000J	CHIP R 0 J 1/16W		R611			RK73EB2E000J	CHIP R 0 J 1/4W	
R303			RK73HB1J221J	CHIP R 220 J 1/16W		R612,613			RK73GB2A271J	CHIP R 270 J 1/10W	
R304			RK73HB1J101J	CHIP R 100 J 1/16W		R614			RK73GB2A103J	CHIP R 10K J 1/10W	
R306,307			RK73HB1J000J	CHIP R 0 J 1/16W		R615			RK73GH2A1212D	CHIP R 12.1K D 1/10W	
R308			RK73HB1J102J	CHIP R 1.0K J 1/16W		R620			RK73HB1J152J	CHIP R 1.5K J 1/16W	
R309-311			RK73HB1J000J	CHIP R 0 J 1/16W		R621			RK73HB1J101J	CHIP R 100 J 1/16W	
R312			RK73HB1J102J	CHIP R 1.0K J 1/16W		R622			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R314			RK73HB1J472J	CHIP R 4.7K J 1/16W		R660-675			RK73HB1J680J	CHIP R 68 J 1/16W	
R315			RK73HB1J473J	CHIP R 47K J 1/16W		R676-678			RK73HB1J121J	CHIP R 120 J 1/16W	
R316			RK73HB1J472J	CHIP R 4.7K J 1/16W		R679			RK73HB1J560J	CHIP R 56 J 1/16W	
R320			RK73HB1J103J	CHIP R 10K J 1/16W		R680,681			RK73HB1J101J	CHIP R 100 J 1/16W	
R321-324			RK73HB1J221J	CHIP R 220 J 1/16W		R683			RK73GB2A470J	CHIP R 47 J 1/10W	
R326,327			RK73HB1J220J	CHIP R 22 J 1/16W		R684			RK73HB1J473J	CHIP R 47K J 1/16W	
R328,329			RK73HB1J472J	CHIP R 4.7K J 1/16W		R685			RK73HB1J103J	CHIP R 10K J 1/16W	
R330-342			RK73HB1J220J	CHIP R 22 J 1/16W		R686,687			RK73GB2A000J	CHIP R 0 J 1/10W	
R344,345			RK73HB1J220J	CHIP R 22 J 1/16W		R701			RK73HB1J153J	CHIP R 15K J 1/16W	
R346-353			RK73HB1J103J	CHIP R 10K J 1/16W		R702,703			RK73HB1J223J	CHIP R 22K J 1/16W	
R355-358			RK73HB1J472J	CHIP R 4.7K J 1/16W		R704			RK73HB1J153J	CHIP R 15K J 1/16W	
R359			RK73HB1J103J	CHIP R 10K J 1/16W		R705			RK73HB1J105J	CHIP R 1.0M J 1/16W	
R364,365			RK73HB1J220J	CHIP R 22 J 1/16W		R706			RK73HB1J222J	CHIP R 2.2K J 1/16W	
R366			RK73HB1J000J	CHIP R 0 J 1/16W		R707,708			RK73HB1J220J	CHIP R 22 J 1/16W	
R367			RK73HB1J221J	CHIP R 220 J 1/16W		R709			RK73HB1J105J	CHIP R 1.0M J 1/16W	
R368			RK73HB1J472J	CHIP R 4.7K J 1/16W		R710			RK73HB1J152J	CHIP R 1.5K J 1/16W	
R369			RK73HB1J000J	CHIP R 0 J 1/16W		R711-714			RK73HB1J101J	CHIP R 100 J 1/16W	
R370			RK73HB1J102J	CHIP R 1.0K J 1/16W		R715,716			RK73HB1J000J	CHIP R 0 J 1/16W	
R371			RK73HB1J000J	CHIP R 0 J 1/16W		R717			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R372			RK73HB1J101J	CHIP R 100 J 1/16W		R718			RK73HB1J103J	CHIP R 10K J 1/16W	
R375			RK73HB1J100J	CHIP R 10 J 1/16W		R719			RK73HB1J102J	CHIP R 1.0K J 1/16W	



## PARTS LIST

DIGITAL UNIT (X46-3390-00)  
PLL UNIT (MAIN) (X50-3220-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R720-722			RK73HB1J103J	CHIP R 10K J 1/16W		D702			RB080L-30	DIODE	
R723			RK73HB1J105J	CHIP R 1.0M J 1/16W		IC1			<b>Note1</b>	MCU	
R724			RK73HB1J103J	CHIP R 10K J 1/16W		IC2 ,3			<b>Note1</b>	DRAM IC	
R725			RK73HB1J105J	CHIP R 1.0M J 1/16W		IC6			AK4387ET	MOS-IC	
R726			RK73HB1J103J	CHIP R 10K J 1/16W		IC7			WM8782ASEDSRV	MOS-IC	
R727			RK73HB1J102J	CHIP R 1.0K J 1/16W		IC8			<b>Note1</b>	ROM IC	
R729			RK73HB1J473J	CHIP R 47K J 1/16W		IC9			TC7SH08FU-F	MOS-IC	
R731			RK73HB1J473J	CHIP R 47K J 1/16W		IC201			<b>Note1</b>	MCU	
R733			RK73HB1J473J	CHIP R 47K J 1/16W		IC202,203			<b>Note1</b>	DRAM IC	
R734-736			RK73HB1J104J	CHIP R 100K J 1/16W		IC208			<b>Note1</b>	ROM IC	
R737			RK73HB1J103J	CHIP R 10K J 1/16W		IC209			TC7WU04FU-F	MOS-IC	
R738			RK73HB1J473J	CHIP R 47K J 1/16W		IC401			AD9889BBSTZ80	MOS-IC	
R740			RK73HB1J105J	CHIP R 1.0M J 1/16W		IC402			ADV7125KSTZ50	MOS-IC	
R741			RK73HB1J000J	CHIP R 0 J 1/16W		IC403			TC7WT126FU-F	MOS-IC	
R742			RK73GH2A123D	CHIP R 12K D 1/10W		IC451-453			NJM2100V-ZB	MOS-IC	
R743,744			RK73HB1J000J	CHIP R 0 J 1/16W		IC501			BD6516F	MOS-IC	
R745			RK73HB1J101J	CHIP R 100 J 1/16W		IC502,503			TUSB1106PWR	MOS-IC	
R746			RK73HB1J104J	CHIP R 100K J 1/16W		IC601			<b>Note1</b>	MOS-IC	
R747			RK73FB2B000J	CHIP R 0 J 1/8W		IC651,652			TC74VHC541FK	MOS-IC	
R748			RK73HB1J104J	CHIP R 100K J 1/16W		IC653			TC74VCX541FK	MOS-IC	
R749			RK73HB1J105J	CHIP R 1.0M J 1/16W		IC701			<b>Note1</b>	MOS-IC	
R750,751			RK73HB1J153J	CHIP R 15K J 1/16W		IC702			CP2102SX0567	MOS-IC	
R752,753			RK73HB1J223J	CHIP R 22K J 1/16W		IC703			PCM2903B	MOS-IC	
R754,755			RK73HB1J153J	CHIP R 15K J 1/16W		IC704			BD82001FVJ	MOS-IC	
R756			RK73HB1J472J	CHIP R 4.7K J 1/16W		IC705			TC7SH08FU-F	MOS-IC	
R761,762			RK73HB1J223J	CHIP R 22K J 1/16W		IC706			NJM2100V-ZB	MOS-IC	
R763			RK73HB1J153J	CHIP R 15K J 1/16W		IC707			TC75S51FE(F)	MOS-IC	
R817			RK73HB1J473J	CHIP R 47K J 1/16W		IC708,709			MM3273DU	MOS-IC	
R818			RK73HB1J103J	CHIP R 10K J 1/16W		Q1			SSM3K15TE(F)	FET	
R821			RK73HB1J473J	CHIP R 47K J 1/16W		Q651			TPC6111-F	FET	
R822			RK73HB1J103J	CHIP R 10K J 1/16W		Q652			LTC043TEBFS8	TRANSISTOR	
R831			RK73HB1J473J	CHIP R 47K J 1/16W		Q701-703			HN7G01FU-F(A)	TRANSISTOR	
R832			RK73HB1J333J	CHIP R 33K J 1/16W		Q803			TPC6111-F	FET	
R833,834			RK73HB1J103J	CHIP R 10K J 1/16W		Q804			LTC043TEBFS8	TRANSISTOR	
R901,902			RK73HB1J101J	CHIP R 100 J 1/16W		Q805			TPC6111-F	FET	
R904-909			RK73HB1J101J	CHIP R 100 J 1/16W		Q806			LTC043TEBFS8	TRANSISTOR	
R911			RK73HB1J103J	CHIP R 10K J 1/16W		Q808			SSM3J36TU	FET	
R912			RK73HB1J102J	CHIP R 1.0K J 1/16W		Q809			LTC043TEBFS8	TRANSISTOR	
R913-917			RK73HB1J000J	CHIP R 0 J 1/16W							
R922			RK73HB1J472J	CHIP R 4.7K J 1/16W							
R931			RK73HB1J103J	CHIP R 10K J 1/16W							
R933,934			RK73HB1J223J	CHIP R 22K J 1/16W							
R935,936			RK73HB1J102J	CHIP R 1.0K J 1/16W							
R937			RK73GB2A000J	CHIP R 0 J 1/10W							
R952-954			RK73HB1J103J	CHIP R 10K J 1/16W							
R956-963			RK73HB1J220J	CHIP R 22 J 1/16W							
R964-969			RK73HB1J330J	CHIP R 33 J 1/16W							
R974,975			RK73HB1J103J	CHIP R 10K J 1/16W							
R976			RK73HB1J105J	CHIP R 1.0M J 1/16W							
R977			RK73HB1J561J	CHIP R 560 J 1/16W							
R978,979			RK73HB1J000J	CHIP R 0 J 1/16W							
R980			RK73HB1J103J	CHIP R 10K J 1/16W							
R981,982			RK73HB1J330J	CHIP R 33 J 1/16W							
R983-986			RK73HB1J221J	CHIP R 220 J 1/16W							
R987,988			RK73HB1J101J	CHIP R 100 J 1/16W							
D1			RB501VM-40	DIODE		C1			CK73GB1H102K	CHIP C 1000PF	K
D402-406			RSB12JS2	ZENER DIODE		C5			CC73GCH1H470J	CHIP C 47PF	J
D420-422			1SS226-F	DIODE		C6 ,7			CC73GCH1H101J	CHIP C 100PF	J
D601-604			RSB12JS2	ZENER DIODE		C8			CK73GB1H102K	CHIP C 1000PF	K
D701			RSB12JS2	ZENER DIODE		C9			CC73GCH1H101J	CHIP C 100PF	J
						C10			CK73GB1H102K	CHIP C 1000PF	K
						C11 -13			CC73GCH1H101J	CHIP C 100PF	J
						C14			CK73GB1H102K	CHIP C 1000PF	K
						C15			CC73GCH1H101J	CHIP C 100PF	J
						C16			CK73GB1H102K	CHIP C 1000PF	K
<b>PLL UNIT (MAIN) (X50-3220-00)</b>											



## PARTS LIST

PLL UNIT (MAIN) (X50-3220-00)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C19			CK73GB1H104K	CHIP C 0.10UF K		C90			CC73GCH1H820J	CHIP C 82PF J	
C20			CK73GB1H102K	CHIP C 1000PF K		C91			CC73GCH1H0R5B	CHIP C 0.5PF B	
C21			CC73GCH1H101J	CHIP C 100PF J		C92			CC73GCH1H331J	CHIP C 330PF J	
C22			CK73GB1H472K	CHIP C 4700PF K		C93			CK73GB1H102K	CHIP C 1000PF K	
C23			CK73GB1H102K	CHIP C 1000PF K		C94			CK73GB1H104K	CHIP C 0.10UF K	
C24			CC73GCH1H101J	CHIP C 100PF J		C95			CC73GCH1H180J	CHIP C 18PF J	
C25			CK73FB1H153K	CHIP C 0.015UF K		C96			CK73GB1H103K	CHIP C 0.010UF K	
C26			CK73GB1H104K	CHIP C 0.10UF K		C97			CE32BM1C220M	CHIP EL 22UF 16WV	
C27			CE32BM1C220M	CHIP EL 22UF 16WV		C98			CC73GCH1H820J	CHIP C 82PF J	
C28			CS77BA1A100M	CHIP TNTL 10UF 10WV		C99			CK73GB1H103K	CHIP C 0.010UF K	
C29			CK73GB1H472K	CHIP C 4700PF K		C100			CC73GCH1H470J	CHIP C 47PF J	
C30			CK73GB1E105K	CHIP C 1.0UF K		C101			CK73GB1H103K	CHIP C 0.010UF K	
C31			CK73GB1C473K	CHIP C 0.047UF K		C102			CC73GCH1H180J	CHIP C 18PF J	
C32			CC73GCH1H101J	CHIP C 100PF J		C103			CC73GCH1H820J	CHIP C 82PF J	
C33			CK73FB1H153K	CHIP C 0.015UF K		C104			CC73GCH1H471J	CHIP C 470PF J	
C34			CK73GB1H102K	CHIP C 1000PF K		C106			CK73GB1H102K	CHIP C 1000PF K	
C35			CC73GCH1H471J	CHIP C 470PF J		C107			CK73EB1E106K	CHIP C 10UF K	
C36			CK73EB1E106K	CHIP C 10UF K		C108,109			CC73GCH1H270J	CHIP C 27PF J	
C37			CK73GB1H104K	CHIP C 0.10UF K		C110			CK73GB1H102K	CHIP C 1000PF K	
C38			CC73GCH1H060B	CHIP C 6.0PF B		C111			CC73GCH1H121J	CHIP C 120PF J	
C39			CC73GCH1H680J	CHIP C 68PF J		C112			CK73GB1H102K	CHIP C 1000PF K	
C40			CK73GB1H104K	CHIP C 0.10UF K		C113			CC73GCH1H221J	CHIP C 220PF J	
C41			CK73EB1E106K	CHIP C 10UF K		C114,115			CC73GCH1H101J	CHIP C 100PF J	
C43			CK73FB1H153K	CHIP C 0.015UF K		C116,117			CC73GCH1H150J	CHIP C 15PF J	
C44			CC73GCH1H120J	CHIP C 12PF J		C118			CK73GB1H104K	CHIP C 0.10UF K	
C45			CK73GB1H104K	CHIP C 0.10UF K		C119			CK73GB1H103K	CHIP C 0.010UF K	
C46			CK73EB1E106K	CHIP C 10UF K		C120			CC73GCH1H100C	CHIP C 10PF C	
C47			CK73GB1H104K	CHIP C 0.10UF K		C121			CK73GB1H104K	CHIP C 0.10UF K	
C48			CK73EB1E106K	CHIP C 10UF K		C122,123			CK73GB1H102K	CHIP C 1000PF K	
C49 -52			CK73GB1H104K	CHIP C 0.10UF K		C124			CK73FB0J106K	CHIP C 10UF K	
C54			CK73GB1H104K	CHIP C 0.10UF K		C125			CK73GB1H103K	CHIP C 0.010UF K	
C55			CC73GCH1H680J	CHIP C 68PF J		C126			CK73GB1H102K	CHIP C 1000PF K	
C56			CK73GB1H104K	CHIP C 0.10UF K		C127			CK73GB1E105K	CHIP C 1.0UF K	
C57			CC73GCH1H101J	CHIP C 100PF J		C128,129			CK73GB1H104K	CHIP C 0.10UF K	
C58 ,59			CK73GB1H103K	CHIP C 0.010UF K		C130-132			CK73EB1E106K	CHIP C 10UF K	
C60			CK73EB1E106K	CHIP C 10UF K		C133			CC73GCH1H220J	CHIP C 22PF J	
C61			CC73GCH1H090B	CHIP C 9.0PF B		C134			CC73GCH1H030B	CHIP C 3.0PF B	
C62			CK73GB1H104K	CHIP C 0.10UF K		C136			CC73GCH1H120J	CHIP C 12PF J	
C64			CC73GCH1H120G	CHIP C 12PF G		C137			CC73GCH1H560J	CHIP C 56PF J	
C65			CC73GCH1H040B	CHIP C 4.0PF B		C138			CK73GB1E105K	CHIP C 1.0UF K	
C66			CE32BM1C220M	CHIP EL 22UF 16WV		C139			CK73GB1H102K	CHIP C 1000PF K	
C67 ,68			CK73GB1H104K	CHIP C 0.10UF K		C140			CK73GB1H104K	CHIP C 0.10UF K	
C69			CC73GCH1H180J	CHIP C 18PF J		C141			CC73GCH1H100C	CHIP C 10PF C	
C70			CK73EB1E106K	CHIP C 10UF K		C142			CC73GCH1H471J	CHIP C 470PF J	
C71 ,72			CK73GB1H104K	CHIP C 0.10UF K		C143			CC73GCH1H100C	CHIP C 10PF C	
C73			CK73GB1H102K	CHIP C 1000PF K		C144,145			CK73GB1H104K	CHIP C 0.10UF K	
C74			CC73GCH1H050B	CHIP C 5.0PF B		C146			CC73GCH1H150J	CHIP C 15PF J	
C75			CK73GB1H103K	CHIP C 0.010UF K		C147			CC73GCH1H030B	CHIP C 3.0PF B	
C76			CC73GCH1H180J	CHIP C 18PF J		C148			CK73GB1H104K	CHIP C 0.10UF K	
C77			CK73GB1E105K	CHIP C 1.0UF K		C149			CK73GB1H102K	CHIP C 1000PF K	
C78			CC73GCH1H060B	CHIP C 6.0PF B		C150			CK73GB1H472K	CHIP C 4700PF K	
C79			CK73GB1H104K	CHIP C 0.10UF K		C151			CK73GB1H103K	CHIP C 0.010UF K	
C80			CK73GB1C473K	CHIP C 0.047UF K		C152			CK73GB1H104K	CHIP C 0.10UF K	
C81			CC73GCH1H060B	CHIP C 6.0PF B		C153			CC73GCH1H120J	CHIP C 12PF J	
C82			CC73GCH1H270J	CHIP C 27PF J		C155			CK73GB1H102K	CHIP C 1000PF K	
C83 -85			CK73GB1H104K	CHIP C 0.10UF K		C156			CK73GB1H104K	CHIP C 0.10UF K	
C86			CC73GCH1H270J	CHIP C 27PF J		C157			CC73GCH1H100C	CHIP C 10PF C	
C87			CK73GB1H102K	CHIP C 1000PF K		C158-160			CK73GB1H104K	CHIP C 0.10UF K	
C88			CK73GB1E105K	CHIP C 1.0UF K		C161			CK73GB1H102K	CHIP C 1000PF K	
C89			CK73GB1H104K	CHIP C 0.10UF K		C162			CK73GB1H104K	CHIP C 0.10UF K	

## PARTS LIST

### PLL UNIT (MAIN) (X50-3220-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C164			CK73GB1H104K	CHIP C 0.10UF K		C236			CK73GB1H103K	CHIP C 0.010UF K	
C165			CK73GB1H102K	CHIP C 1000PF K		C237			CC73GCH1H331J	CHIP C 330PF J	
C166			CC73GCH1H390J	CHIP C 39PF J		C238			CK73GB1H102K	CHIP C 1000PF K	
C167,168			CK73GB1H104K	CHIP C 0.10UF K		C239,240			CK73GB1H103K	CHIP C 0.010UF K	
C169			CC73GCH1H820J	CHIP C 82PF J		C241			CC73GCH1H470J	CHIP C 47PF J	
C170,171			CK73GB1H103K	CHIP C 0.010UF K		C242-245			CK73GB1H102K	CHIP C 1000PF K	
C172			CC73GCH1H680J	CHIP C 68PF J		C246			CC73GCH1H271J	CHIP C 270PF J	
C173			CK73GB1H104K	CHIP C 0.10UF K		C247			CK73GB1H102K	CHIP C 1000PF K	
C175			CK73GB1H223K	CHIP C 0.022UF K		C248,249			CC73GCH1H020B	CHIP C 2.0PF B	
C176			CK73GB1H104K	CHIP C 0.10UF K		C250			CK73EB1E106K	CHIP C 10UF K	
C177			CK73EB1E106K	CHIP C 10UF K		C251			CK73GB1H103K	CHIP C 0.010UF K	
C179			CK73GB1H103K	CHIP C 0.010UF K		C252			CK73EB1E106K	CHIP C 10UF K	
C180			CK73GB1H104K	CHIP C 0.10UF K		C253			CK73GB1H103K	CHIP C 0.010UF K	
C181,182			CK73GB1H103K	CHIP C 0.010UF K		C254			CC73GCH1H221J	CHIP C 220PF J	
C183,184			CK73GB1H104K	CHIP C 0.10UF K		C255			CK73GB1H104K	CHIP C 0.10UF K	
C185			C93-1906-05	PLASTIC FILM 0.047UF J		C256,257			CK73GB1H102K	CHIP C 1000PF K	
C186			CK73GB1H103K	CHIP C 0.010UF K		C258,259			CK73GB1H103K	CHIP C 0.010UF K	
C187			CK73GB1H104K	CHIP C 0.10UF K		C260			CC73GCH1H121J	CHIP C 120PF J	
C188			CK73GB1H103K	CHIP C 0.010UF K		C261			CK73GB1H104K	CHIP C 0.10UF K	
C189			CK73EB1E106K	CHIP C 10UF K		C262			CC73GCH1H221J	CHIP C 220PF J	
C190			CS77MA1D6R8M	CHIP TNTL 6.8UF 20WV		C263			CK73GB1H104K	CHIP C 0.10UF K	
C191,192			CC73GCH1H471J	CHIP C 470PF J		C264			CC73GCH1H391J	CHIP C 390PF J	
C193			CC73GCH1H330G	CHIP C 33PF G		C265			CE32BM1C101M	CHIP EL 100UF 16WV	
C194			CC73GCH1H060B	CHIP C 6.0PF B		C266			CK73GB1H104K	CHIP C 0.10UF K	
C195			CC73GCH1H330G	CHIP C 33PF G		C267,268			CC73GCH1H681J	CHIP C 680PF J	
C196			CC73GCH1H040B	CHIP C 4.0PF B		C269			CE32BM1C101M	CHIP EL 100UF 16WV	
C197			CK73GB1H103K	CHIP C 0.010UF K		C270			CC73GCH1H391J	CHIP C 390PF J	
C198			CC73GCH1H181J	CHIP C 180PF J		C271			CC73GCH1H100C	CHIP C 10PF C	
C199			CK73GB1H102K	CHIP C 1000PF K		C272			CK73GB1H102K	CHIP C 1000PF K	
C200			CS77MA1D6R8M	CHIP TNTL 6.8UF 20WV		C273			CK73GB1E105K	CHIP C 1.0UF K	
C201			CE32BM1C101M	CHIP EL 100UF 16WV		C274			CC73GCH1H120J	CHIP C 12PF J	
C202			CK73GB1H104K	CHIP C 0.10UF K		C275			CC73GCH1H220G	CHIP C 22PF G	
C203			CK73GB1H103K	CHIP C 0.010UF K		C276			CC73GCH1H060B	CHIP C 6.0PF B	
C205			CC73GCH1H100C	CHIP C 10PF C		C277			CC73GCH1H150G	CHIP C 15PF G	
C206			CC73GCH1H150G	CHIP C 15PF G		C278			CC73GCH1H120G	CHIP C 12PF G	
C207			CK73GB1H104K	CHIP C 0.10UF K		C279			CK73GB1H102K	CHIP C 1000PF K	
C208			CK73GB1H103K	CHIP C 0.010UF K		C280			CK73GB1H104K	CHIP C 0.10UF K	
C209			CC73GCH1H331J	CHIP C 330PF J		C281			CK73GB1H103K	CHIP C 0.010UF K	
C210			CC73GCH1H471J	CHIP C 470PF J		C282			CK73GB1H102K	CHIP C 1000PF K	
C211			CC73GCH1H270J	CHIP C 27PF J		C283			CK73GB1C473K	CHIP C 0.047UF K	
C212			CE32BM1C101M	CHIP EL 100UF 16WV		C284			CK73GB1H103K	CHIP C 0.010UF K	
C213			CK73GB1H104K	CHIP C 0.10UF K		C285			CC73GCH1H220G	CHIP C 22PF G	
C214			CK73GB1H103K	CHIP C 0.010UF K		C286			CC73GCH1H120G	CHIP C 12PF G	
C215			CC73GCH1H391J	CHIP C 390PF J		C287			CK73GB1H104K	CHIP C 0.10UF K	
C216,217			CC73GCH1H390G	CHIP C 39PF G		C288			CK73GB1H102K	CHIP C 1000PF K	
C218			CK73GB1H102K	CHIP C 1000PF K		C289			CK73GB1H472K	CHIP C 4700PF K	
C219			CK73FB0J106K	CHIP C 10UF K		C290,291			CK73GB1H104K	CHIP C 0.10UF K	
C220			CK73GB1H103K	CHIP C 0.010UF K		C292			CC73GCH1H330G	CHIP C 33PF G	
C221,222			CK73GB1E105K	CHIP C 1.0UF K		C293			CC73GCH1H390G	CHIP C 39PF G	
C223			CC73GCH1H030B	CHIP C 3.0PF B		C294,295			CK73GB1E105K	CHIP C 1.0UF K	
C224			CC73GCH1H181J	CHIP C 180PF J		C296			CC73GCH1H391J	CHIP C 390PF J	
C225			CC73GCH1H270J	CHIP C 27PF J		C297,298			CC73GCH1H180G	CHIP C 18PF G	
C226			CK73GB1H104K	CHIP C 0.10UF K		C299,300			CC73GCH1H150G	CHIP C 15PF G	
C227			CK73GB1H102K	CHIP C 1000PF K		C301			CC73GCH1H681J	CHIP C 680PF J	
C228			CK73GB1H103K	CHIP C 0.010UF K		C302			CK73GB1H102K	CHIP C 1000PF K	
C229,230			CC73GCH1H390G	CHIP C 39PF G		C304			CC73GCH1H391J	CHIP C 390PF J	
C231,232			CC73GCH1H330G	CHIP C 33PF G		C305			CK73GB1H472K	CHIP C 4700PF K	
C233			CS77MA1V0R1M	CHIP TNTL 0.1UF 35WV		C306			CK73GB1C473K	CHIP C 0.047UF K	
C234			CK73EB1E106K	CHIP C 10UF K		C307			CK73GB1H104K	CHIP C 0.10UF K	
C235			CK73GB1H104K	CHIP C 0.10UF K		C308-311			CK73GB1H102K	CHIP C 1000PF K	

## PARTS LIST

PLL UNIT (MAIN) (X50-3220-00)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C312,313			CC73GCH1H020B	CHIP C 2.0PF B		C402			CC73GCH1H391J	CHIP C 390PF J	
C314,315			CK73EB1E106K	CHIP C 10UF K		C403			CK73GB1H103K	CHIP C 0.010UF K	
C316			CK73GB1H103K	CHIP C 0.010UF K		C405			CC73GCH1H681J	CHIP C 680PF J	
C317			CK73EB1E106K	CHIP C 10UF K		C406			CC73GCH1H221J	CHIP C 220PF J	
C318			CK73GB1H103K	CHIP C 0.010UF K		C408			CC73GCH1H331J	CHIP C 330PF J	
C319			CK73GB1H104K	CHIP C 0.10UF K		C409			CS77BA1A100M	CHIP TNTL 10UF 10WV	
C320-324			CK73GB1H103K	CHIP C 0.010UF K		C410			CC73GCH1H121J	CHIP C 120PF J	
C325,326			CK73GB1H102K	CHIP C 1000PF K		C411			CC73GCH1H681J	CHIP C 680PF J	
C327,328			CK73GB1H103K	CHIP C 0.010UF K		C412			CC73GCH1H471J	CHIP C 470PF J	
C329			CK73GB1H472K	CHIP C 4700PF K		C413,414			CK73GB1H103K	CHIP C 0.010UF K	
C330			CK73GB1H102K	CHIP C 1000PF K		C415			CC73GCH1H391J	CHIP C 390PF J	
C331,332			CK73GB1H103K	CHIP C 0.010UF K		C416			CC73GCH1H470J	CHIP C 47PF J	
C333			CC73GCH1H270J	CHIP C 27PF J		C417			CC73GCH1H561J	CHIP C 560PF J	
C334,335			CK73GB1H472K	CHIP C 4700PF K		C418			CC73GCH1H331J	CHIP C 330PF J	
C336			CK73GB1H102K	CHIP C 1000PF K		C419			CK73GB1H103K	CHIP C 0.010UF K	
C337			CC73GCH1H120J	CHIP C 12PF J		C420			CC73GCH1H821J	CHIP C 820PF J	
C338			CK73GB1H103K	CHIP C 0.010UF K		C421			CC73GCH1H470J	CHIP C 47PF J	
C339			CC73GCH1H101J	CHIP C 100PF J		C422			CC73GCH1H331J	CHIP C 330PF J	
C340			CC73GCH1H271J	CHIP C 270PF J		C423			CK73GB1E105K	CHIP C 1.0UF K	
C341			CC73GCH1H270J	CHIP C 27PF J		C424-427			CK73GB1H103K	CHIP C 0.010UF K	
C342			CK73GB1H102K	CHIP C 1000PF K		C428-431			CK73GB1H102K	CHIP C 1000PF K	
C343			CK73GB1H472K	CHIP C 4700PF K		C433-437			CK73GB1H103K	CHIP C 0.010UF K	
C344,345			CK73GB1H103K	CHIP C 0.010UF K		C438			CK73GB1E105K	CHIP C 1.0UF K	
C346			CK73GB1E105K	CHIP C 1.0UF K		C439-448			CK73GB1H103K	CHIP C 0.010UF K	
C347			CC73GCH1H101J	CHIP C 100PF J		C449			CK73GB1H104K	CHIP C 0.10UF K	
C348			CK73GB1H472K	CHIP C 4700PF K		C450			CK73GB1H103K	CHIP C 0.010UF K	
C349			CK73GB1H102K	CHIP C 1000PF K		C451			CK73GB1E105K	CHIP C 1.0UF K	
C351			CK73GB1H102K	CHIP C 1000PF K		C452,453			CK73GB1H103K	CHIP C 0.010UF K	
C352			CC73GCH1H331J	CHIP C 330PF J		C454			CK73GB1E105K	CHIP C 1.0UF K	
C353			CK73GB1E105K	CHIP C 1.0UF K		C455			CK73GB1H104K	CHIP C 0.10UF K	
C354,355			CK73GB1H103K	CHIP C 0.010UF K		C456-466			CK73GB1H103K	CHIP C 0.010UF K	
C356			CK73GB1H104K	CHIP C 0.10UF K		C467			CK73GB1H472K	CHIP C 4700PF K	
C357			CC73GCH1H331J	CHIP C 330PF J		C468			CK73GB1H102K	CHIP C 1000PF K	
C358			CC73GCH1H090B	CHIP C 9.0PF B		C469-471			CK73GB1H103K	CHIP C 0.010UF K	
C359			CK73GB1H104K	CHIP C 0.10UF K		C472			CC73GCH1H330J	CHIP C 33PF J	
C360-362			CK73GB1H103K	CHIP C 0.010UF K		C473			CC73GCH1H820J	CHIP C 82PF J	
C363			CE32BM1C220M	CHIP EL 22UF 16WV		C474			CC73GCH1H330J	CHIP C 33PF J	
C364			CK73GB1H103K	CHIP C 0.010UF K		C475			CC73GCH1H101J	CHIP C 100PF J	
C366			CK73GB1H104K	CHIP C 0.10UF K		C476			CK73GB1H103K	CHIP C 0.010UF K	
C367,368			CK73GB1H103K	CHIP C 0.010UF K		C477			CC73GCH1H680J	CHIP C 68PF J	
C369			CK73GB1E105K	CHIP C 1.0UF K		C478			CC73GCH1H820J	CHIP C 82PF J	
C370			CK73GB1H102K	CHIP C 1000PF K		C479			CC73GCH1H220J	CHIP C 22PF J	
C371,372			CK73GB1H103K	CHIP C 0.010UF K		C480			CC73GCH1H680J	CHIP C 68PF J	
C373-377			CK73GB1H102K	CHIP C 1000PF K		C482			CK73GB1H104K	CHIP C 0.10UF K	
C378-385			CK73GB1H103K	CHIP C 0.010UF K		C483			CK73GB1H102K	CHIP C 1000PF K	
C386			CK73GB1C473K	CHIP C 0.047UF K		C484			CC73GCH1H101J	CHIP C 100PF J	
C387			CK73GB1H102K	CHIP C 1000PF K		C485,486			CC73GCH1H680J	CHIP C 68PF J	
C388			CK73GB1C473K	CHIP C 0.047UF K		C487			CK73GB1H103K	CHIP C 0.010UF K	
C389			CK73GB1H102K	CHIP C 1000PF K		C488			CC73GCH1H220J	CHIP C 22PF J	
C390			CK73GB1C473K	CHIP C 0.047UF K		C489			CC73GCH1H121J	CHIP C 120PF J	
C391			CK73GB1H102K	CHIP C 1000PF K		C490			CC73GCH1H681J	CHIP C 680PF J	
C392			CK73GB1C473K	CHIP C 0.047UF K		C491			CC73GCH1H471J	CHIP C 470PF J	
C393			CK73GB1H102K	CHIP C 1000PF K		C492			CC73GCH1H331J	CHIP C 330PF J	
C394			CK73GB1E105K	CHIP C 1.0UF K		C493			CC73GCH1H151J	CHIP C 150PF J	
C395			CK73GB1C473K	CHIP C 0.047UF K		C494,495			CC73GCH1H181J	CHIP C 180PF J	
C396			CK73GB1H102K	CHIP C 1000PF K		C496			CC73GCH1H151J	CHIP C 150PF J	
C397			CK73GB1H104K	CHIP C 0.10UF K		C497			CC73GCH1H680J	CHIP C 68PF J	
C399			CC73GCH1H821J	CHIP C 820PF J		C498			CC73GCH1H821J	CHIP C 820PF J	
C400			CC73GCH1H471J	CHIP C 470PF J		C499			CC73GCH1H561J	CHIP C 560PF J	
C401			CC73GCH1H561J	CHIP C 560PF J		C500			CC73GCH1H391J	CHIP C 390PF J	

## PARTS LIST

### PLL UNIT (MAIN) (X50-3220-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C501,502			CC73GCH1H561J	CHIP C 560PF J		C572			CC73GCH1H270J	CHIP C 27PF J	
C503			CC73GCH1H331J	CHIP C 330PF J		C573			CC73GCH1H090B	CHIP C 9.0PF B	
C504			CC73GCH1H181J	CHIP C 180PF J		C574			CC73GCH1H100C	CHIP C 10PF C	
C505			CC73GCH1H120J	CHIP C 12PF J		C575			CC73GCH1H330J	CHIP C 33PF J	
C506			CC73GCH1H680J	CHIP C 68PF J		C576			CC73GCH1H270J	CHIP C 27PF J	
C507			CK73GB1H103K	CHIP C 0.010UF K		C577			CK73GB1H103K	CHIP C 0.010UF K	
C508			CC73GCH1H680J	CHIP C 68PF J		C578,579			CC73GCH1H181J	CHIP C 180PF J	
C509			CC73GCH1H221J	CHIP C 220PF J		C580			CC73GCH1H121J	CHIP C 120PF J	
C510			CK73GB1H104K	CHIP C 0.10UF K		C581			CC73GCH1H151J	CHIP C 150PF J	
C511			CC73GCH1H271J	CHIP C 270PF J		C582			CC73GCH1H181J	CHIP C 180PF J	
C512			CC73GCH1H221J	CHIP C 220PF J		C583			CC73GCH1H101J	CHIP C 100PF J	
C513			CC73GCH1H121J	CHIP C 120PF J		C584			CC73GCH1H820J	CHIP C 82PF J	
C514-516			CC73GCH1H820J	CHIP C 82PF J		C585			CK73GB1H102K	CHIP C 1000PF K	
C517			CC73GCH1H560J	CHIP C 56PF J		C586			CC73GCH1H181J	CHIP C 180PF J	
C518			CC73GCH1H120J	CHIP C 12PF J		C587			CC73GCH1H390J	CHIP C 39PF J	
C519			CK73GB1H103K	CHIP C 0.010UF K		C588			CC73GCH1H330J	CHIP C 33PF J	
C520			CK73GB1H102K	CHIP C 1000PF K		C589			CC73GCH1H220J	CHIP C 22PF J	
C521			CC73GCH1H821J	CHIP C 820PF J		C590			CC73GCH1H470J	CHIP C 47PF J	
C522			CC73GCH1H471J	CHIP C 470PF J		C591			CC73GCH1H560J	CHIP C 56PF J	
C523,524			CC73GCH1H681J	CHIP C 680PF J		C592			CC73GCH1H330J	CHIP C 33PF J	
C525			CC73GCH1H331J	CHIP C 330PF J		C593			CC73GCH1H180J	CHIP C 18PF J	
C526			CC73GCH1H271J	CHIP C 270PF J		C594			CK73EB1E106K	CHIP C 10UF K	
C527			CK73EB1E106K	CHIP C 10UF K		C595			CK73GB1C473K	CHIP C 0.047UF K	
C528			CC73GCH1H121J	CHIP C 120PF J		C596			CC73GCH1H331J	CHIP C 330PF J	
C529			CK73GB1H472K	CHIP C 4700PF K		C597			CC73GCH1H271J	CHIP C 270PF J	
C530			CC73GCH1H271J	CHIP C 270PF J		C598			CC73GCH1H181J	CHIP C 180PF J	
C531			CC73GCH1H181J	CHIP C 180PF J		C599,600			CC73GCH1H121J	CHIP C 120PF J	
C532			CC73GCH1H121J	CHIP C 120PF J		C601			CC73GCH1H101J	CHIP C 100PF J	
C533-535			CC73GCH1H820J	CHIP C 82PF J		C602			CC73GCH1H820J	CHIP C 82PF J	
C536			CC73GCH1H560J	CHIP C 56PF J		C604			CC73GCH1H271J	CHIP C 270PF J	
C537-540			CK73GB1H103K	CHIP C 0.010UF K		C605			CC73GCH1H221J	CHIP C 220PF J	
C541			CK73GB1H102K	CHIP C 1000PF K		C606			CC73GCH1H151J	CHIP C 150PF J	
C542			CC73GCH1H821J	CHIP C 820PF J		C607			CC73GCH1H101J	CHIP C 100PF J	
C543			CC73GCH1H471J	CHIP C 470PF J		C608			CC73GCH1H330J	CHIP C 33PF J	
C544,545			CC73GCH1H561J	CHIP C 560PF J		C609			CC73GCH1H820J	CHIP C 82PF J	
C546			CC73GCH1H331J	CHIP C 330PF J		C610			CC73GCH1H330J	CHIP C 33PF J	
C547			CC73GCH1H271J	CHIP C 270PF J		C611			CC73GCH1H180J	CHIP C 18PF J	
C548			CK73GB1H103K	CHIP C 0.010UF K		C612			CC73GCH1H220J	CHIP C 22PF J	
C550			CK73GB1H103K	CHIP C 0.010UF K		C613			CC73GCH1H271J	CHIP C 270PF J	
C551			CC73GCH1H271J	CHIP C 270PF J		C614			CC73GCH1H331J	CHIP C 330PF J	
C552			CC73GCH1H221J	CHIP C 220PF J		C615			CC73GCH1H221J	CHIP C 220PF J	
C553			CC73GCH1H121J	CHIP C 120PF J		C616			CC73GCH1H181J	CHIP C 180PF J	
C554			CC73GCH1H151J	CHIP C 150PF J		C617			CC73GCH1H121J	CHIP C 120PF J	
C555			CC73GCH1H181J	CHIP C 180PF J		C618			CC73GCH1H151J	CHIP C 150PF J	
C556			CC73GCH1H820J	CHIP C 82PF J		C619			CC73GCH1H101J	CHIP C 100PF J	
C557			CC73GCH1H560J	CHIP C 56PF J		C620			CC73GCH1H820J	CHIP C 82PF J	
C558			CC73GCH1H821J	CHIP C 820PF J		C622			CK73GB1H102K	CHIP C 1000PF K	
C559			CC73GCH1H561J	CHIP C 560PF J		C623			CC73GCH1H181J	CHIP C 180PF J	
C560			CC73GCH1H391J	CHIP C 390PF J		C624,625			CC73GCH1H121J	CHIP C 120PF J	
C561			CC73GCH1H331J	CHIP C 330PF J		C626			CC73GCH1H820J	CHIP C 82PF J	
C562			CC73GCH1H181J	CHIP C 180PF J		C627			CC73GCH1H100C	CHIP C 10PF C	
C563			CK73GB1H103K	CHIP C 0.010UF K		C628,629			CC73GCH1H330J	CHIP C 33PF J	
C564			CC73GCH1H681J	CHIP C 680PF J		C630			CC73GCH1H270J	CHIP C 27PF J	
C565			CC73GCH1H471J	CHIP C 470PF J		C631			CC73GCH1H220J	CHIP C 22PF J	
C566			CC73GCH1H331J	CHIP C 330PF J		C632			CC73GCH1H181J	CHIP C 180PF J	
C567			CC73GCH1H181J	CHIP C 180PF J		C633			CC73GCH1H270J	CHIP C 27PF J	
C568			CC73GCH1H151J	CHIP C 150PF J		C634			CC73GCH1H101J	CHIP C 100PF J	
C569			CC73GCH1H101J	CHIP C 100PF J		C635			CC73GCH1H680J	CHIP C 68PF J	
C570			CC73GCH1H121J	CHIP C 120PF J		C636			CC73GCH1H101J	CHIP C 100PF J	
C571			CC73GCH1H470J	CHIP C 47PF J		C637			CC73GCH1H470J	CHIP C 47PF J	

## PARTS LIST

PLL UNIT (MAIN) (X50-3220-00)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C638			CC73GCH1H270J	CHIP C 27PF J		L26			L41-3388-08	SMALL FIXED INDUCTOR(330NH)	
C640			CK73GB1H102K	CHIP C 1000PF K		L27			L41-1285-14	SMALL FIXED INDUCTOR(120NH)	
C641-647			CK73GB1H103K	CHIP C 0.010UF K		L28			L41-1885-14	SMALL FIXED INDUCTOR(180NH)	
C650-653			CK73GB1H103K	CHIP C 0.010UF K		L29			L41-6885-33	SMALL FIXED INDUCTOR(0.68UH)	
C656-658			CC73GCH1H680J	CHIP C 68PF J		L30			L41-1885-14	SMALL FIXED INDUCTOR(180NH)	
C660-662			CK73GB1H103K	CHIP C 0.010UF K		L32			L41-1285-14	SMALL FIXED INDUCTOR(120NH)	
C664-666			CC73GCH1H680J	CHIP C 68PF J		L33			L41-5685-33	SMALL FIXED INDUCTOR(0.56UH)	
C667-669			CK73GB1H104K	CHIP C 0.10UF K		L34			L40-3375-92	SMALL FIXED INDUCTOR(33NH)	
C670-672			CC73GCH1H220J	CHIP C 22PF J		L36			L41-2285-33	SMALL FIXED INDUCTOR(0.22UH)	
C674-676			CC73GCH1H101J	CHIP C 100PF J		L37			L41-1275-08	SMALL FIXED INDUCTOR(12NH)	
C680-682			CC73GCH1H820J	CHIP C 82PF J		L38			L41-5678-14	SMALL FIXED INDUCTOR(56NH)	
C683,684			C93-1803-05	CHIP C 10UF M		L39			L41-3305-33	SMALL FIXED INDUCTOR(33UH)	
C685-687			CC73GCH1H330J	CHIP C 33PF J		L40			L41-3363-08	SMALL FIXED INDUCTOR(3.3NH)	
C689,690			CC73GCH1H010B	CHIP C 1.0PF B		L41			L41-6865-08	SMALL FIXED INDUCTOR(6.8NH)	
C692			CC73GCH1H100C	CHIP C 10PF C		L42			L41-5678-14	SMALL FIXED INDUCTOR(56NH)	
C693			CC73GCH1H010B	CHIP C 1.0PF B		L45			L41-3391-08	SMALL FIXED INDUCTOR(3.3NH)	
C694,695			CK73EB1E106K	CHIP C 10UF K		L46			L41-1275-08	SMALL FIXED INDUCTOR(12NH)	
C696			CE32BM1C220M	CHIP EL 22UF 16WV		L47			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
C697			CK73GB1H103K	CHIP C 0.010UF K		L48			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)	
C698,699			CK73GB1H102K	CHIP C 1000PF K		L49			L41-3395-33	SMALL FIXED INDUCTOR(3.3UH)	
C700			CK73GB1E105K	CHIP C 1.0UF K		L50			L41-4785-33	SMALL FIXED INDUCTOR(0.47UH)	
C710			CC73GCH1H100C	CHIP C 10PF C		L51			L41-1585-33	SMALL FIXED INDUCTOR(0.15UH)	
C711			CC73GCH1H390J	CHIP C 39PF J		L52			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
C712			CC73GCH1H560J	CHIP C 56PF J		L53 ,54			L41-2798-60	SMALL FIXED INDUCTOR(2.7UH)	
C713,714			CK73GB1E105K	CHIP C 1.0UF K		L55			L41-1085-08	SMALL FIXED INDUCTOR(100NH)	
C715			CK73GB1H103K	CHIP C 0.010UF K		L56			L41-6888-08	SMALL FIXED INDUCTOR(680NH)	
C716			CK73GB1E105K	CHIP C 1.0UF K		L57			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
C717			CK73GB1H103K	CHIP C 0.010UF K		L58			L34-4613-05	AIR-CORE COIL(7T)	
C718			CK73GB1E105K	CHIP C 1.0UF K		L59			L34-4612-05	AIR-CORE COIL(6T)	
C719			CC73GCH1H221J	CHIP C 220PF J		L60			L41-4778-08	SMALL FIXED INDUCTOR(47NH)	
C720			CC73GCH1H331J	CHIP C 330PF J		L61			L41-3305-33	SMALL FIXED INDUCTOR(33UH)	
C721,722			C93-1803-05	CHIP C 10UF M		L62			L41-5678-14	SMALL FIXED INDUCTOR(56NH)	
C723			CC73GCH1H271J	CHIP C 270PF J		L63			L41-6888-08	SMALL FIXED INDUCTOR(680NH)	
TC1 -5			C05-0384-05	CERAMIC TRIMMER CAPACITOR(10P)		L64			L41-1085-08	SMALL FIXED INDUCTOR(100NH)	
						L65 -68			L41-1598-60	SMALL FIXED INDUCTOR(1.5UH)	
CN1			E40-6907-05	FLAT CABLE CONNECTOR		L69			L41-6885-33	SMALL FIXED INDUCTOR(0.68UH)	
CN19-22			E04-0491-05	PIN SOCKET		L70			L41-5685-33	SMALL FIXED INDUCTOR(0.56UH)	
CN33			E04-0491-05	PIN SOCKET		L71 ,72			L41-1295-33	SMALL FIXED INDUCTOR(1.2UH)	
CN34			E41-1684-05	PIN ASSY		L73			L41-3305-33	SMALL FIXED INDUCTOR(33UH)	
CN50-52			E23-1330-05	TERMINAL		L74			L41-1295-33	SMALL FIXED INDUCTOR(1.2UH)	
CF1			L72-1026-05	CERAMIC FILTER		L75 ,76			L41-2298-60	SMALL FIXED INDUCTOR(2.2UH)	
L6			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L78			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L8			L41-3375-33	SMALL FIXED INDUCTOR(0.033UH)		L79			L41-2205-33	SMALL FIXED INDUCTOR(22UH)	
L9			L92-0639-05	CHIP FERRITE		L80			L34-4611-15	AIR-CORE COIL(10T)	
L10			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)		L81			L34-4610-15	AIR-CORE COIL(9T)	
L11			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L84			L41-1295-33	SMALL FIXED INDUCTOR(1.2UH)	
L12			L41-1575-06	SMALL FIXED INDUCTOR(15NH)		L85			L41-1015-33	SMALL FIXED INDUCTOR(100UH)	
L13			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L86			L41-1295-33	SMALL FIXED INDUCTOR(1.2UH)	
L14			L41-1575-06	SMALL FIXED INDUCTOR(15NH)		L87 -90			L41-1598-60	SMALL FIXED INDUCTOR(1.5UH)	
L15			L33-0695-05	SMALL FIXED INDUCTOR(1MH)		L91			L41-3305-33	SMALL FIXED INDUCTOR(33UH)	
L16			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L92			L41-5685-14	SMALL FIXED INDUCTOR(560NH)	
L17			L41-2285-33	SMALL FIXED INDUCTOR(0.22UH)		L93			L41-3975-33	SMALL FIXED INDUCTOR(0.039UH)	
L18			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L94 -96			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)	
L19			L41-2785-09	SMALL FIXED INDUCTOR(270NH)		L97 ,98			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
L20			L41-3388-08	SMALL FIXED INDUCTOR(330NH)		L99			L41-8285-33	SMALL FIXED INDUCTOR(0.82UH)	
L21			L41-2785-33	SMALL FIXED INDUCTOR(0.27UH)		L100			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)	
L22			L34-4606-15	AIR-CORE COIL		L101,102			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L23			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L103			L41-4785-33	SMALL FIXED INDUCTOR(0.47UH)	
L24			L41-3388-08	SMALL FIXED INDUCTOR(330NH)		L105,106			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L25			L39-1480-15	TOROIDAL COIL		L108			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	



## PARTS LIST

### PLL UNIT (MAIN) (X50-3220-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
L110-112			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L175			L41-2285-14	SMALL FIXED INDUCTOR(220NH)	
L114			L41-2298-60	SMALL FIXED INDUCTOR(2.2UH)		L176			L41-2785-14	SMALL FIXED INDUCTOR(270NH)	
L115			L40-1088-67	SMALL FIXED INDUCTOR(100NH)		L177			L41-2285-14	SMALL FIXED INDUCTOR(220NH)	
L116			L41-1895-09	SMALL FIXED INDUCTOR(1800NH)		L178			L41-1885-14	SMALL FIXED INDUCTOR(180NH)	
L117			L41-5685-33	SMALL FIXED INDUCTOR(0.56UH)		L179			L41-8275-33	SMALL FIXED INDUCTOR(0.082UH)	
L118			L41-1895-09	SMALL FIXED INDUCTOR(1800NH)		L180			L41-6885-33	SMALL FIXED INDUCTOR(0.68UH)	
L119			L41-6885-33	SMALL FIXED INDUCTOR(0.68UH)		L181			L41-4785-14	SMALL FIXED INDUCTOR(470NH)	
L120			L41-2298-60	SMALL FIXED INDUCTOR(2.2UH)		L182			L41-3988-14	SMALL FIXED INDUCTOR(390NH)	
L121			L41-6885-33	SMALL FIXED INDUCTOR(0.68UH)		L183			L41-2785-14	SMALL FIXED INDUCTOR(270NH)	
L122			L41-4785-33	SMALL FIXED INDUCTOR(0.47UH)		L184			L41-1885-14	SMALL FIXED INDUCTOR(180NH)	
L123			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)		L185,186			L41-2285-14	SMALL FIXED INDUCTOR(220NH)	
L124,125			L41-1598-60	SMALL FIXED INDUCTOR(1.5UH)		L187			L41-1885-14	SMALL FIXED INDUCTOR(180NH)	
L126			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L188			L41-5675-33	SMALL FIXED INDUCTOR(0.056UH)	
L127			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)		L189			L41-5678-14	SMALL FIXED INDUCTOR(56NH)	
L128			L41-1085-33	SMALL FIXED INDUCTOR(0.1UH)		L190			L41-6885-33	SMALL FIXED INDUCTOR(0.68UH)	
L129			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)		L191			L41-6885-14	SMALL FIXED INDUCTOR(680NH)	
L130			L41-1885-33	SMALL FIXED INDUCTOR(0.18UH)		L192			L41-3988-14	SMALL FIXED INDUCTOR(390NH)	
L131			L41-1085-33	SMALL FIXED INDUCTOR(0.1UH)		L193-195			L41-2785-14	SMALL FIXED INDUCTOR(270NH)	
L132			L41-1885-33	SMALL FIXED INDUCTOR(0.18UH)		L196			L41-1885-14	SMALL FIXED INDUCTOR(180NH)	
L133			L41-2285-33	SMALL FIXED INDUCTOR(0.22UH)		L197			L41-1285-14	SMALL FIXED INDUCTOR(120NH)	
L134			L41-3985-33	SMALL FIXED INDUCTOR(0.39UH)		L198			L41-8275-33	SMALL FIXED INDUCTOR(0.082UH)	
L135			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)		L200			L41-1895-33	SMALL FIXED INDUCTOR(1.8UH)	
L136			L41-8285-14	SMALL FIXED INDUCTOR(820NH)		L204-206			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)	
L137			L41-5685-14	SMALL FIXED INDUCTOR(560NH)		L207			L41-1895-33	SMALL FIXED INDUCTOR(1.8UH)	
L138			L41-2785-14	SMALL FIXED INDUCTOR(270NH)		L210-212			L41-1885-33	SMALL FIXED INDUCTOR(0.18UH)	
L139			L41-3988-14	SMALL FIXED INDUCTOR(390NH)		L213-215			L41-1085-33	SMALL FIXED INDUCTOR(0.1UH)	
L140			L41-3385-14	SMALL FIXED INDUCTOR(330NH)		L217			L41-1895-33	SMALL FIXED INDUCTOR(1.8UH)	
L141			L41-2785-14	SMALL FIXED INDUCTOR(270NH)		L219			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L142			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)		L220			L41-5685-14	SMALL FIXED INDUCTOR(560NH)	
L143			L41-3985-33	SMALL FIXED INDUCTOR(0.39UH)		L221			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L144			L41-8285-14	SMALL FIXED INDUCTOR(820NH)		L222			L41-8285-14	SMALL FIXED INDUCTOR(820NH)	
L145			L41-5685-14	SMALL FIXED INDUCTOR(560NH)		X1			L77-3083-05	TCXO(19.2MHZ)	
L146			L41-3988-14	SMALL FIXED INDUCTOR(390NH)		X2			L77-3068-05	VCXO(20MHZ)	
L147			L41-2285-14	SMALL FIXED INDUCTOR(220NH)		R1 -9			RK73GB2A101J	CHIP R 100 J 1/10W	
L148,149			L41-2785-14	SMALL FIXED INDUCTOR(270NH)		R10			RK73GB2A000J	CHIP R 0 J 1/10W	
L150			L41-1885-14	SMALL FIXED INDUCTOR(180NH)		R11			RK73GB2A180J	CHIP R 18 J 1/10W	
L151			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		R12			RK73GB2A000J	CHIP R 0 J 1/10W	
L152			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)		R13			RK73GB2A101J	CHIP R 100 J 1/10W	
L153			L41-8285-14	SMALL FIXED INDUCTOR(820NH)		R14			RK73GB2A472J	CHIP R 4.7K J 1/10W	
L154			L41-5685-14	SMALL FIXED INDUCTOR(560NH)		R15 ,16			RK73GB2A470J	CHIP R 47 J 1/10W	
L155			L41-3988-14	SMALL FIXED INDUCTOR(390NH)		R17			RK73GB2A153J	CHIP R 15K J 1/10W	
L156			L41-2785-14	SMALL FIXED INDUCTOR(270NH)		R18			RK73GB2A682J	CHIP R 6.8K J 1/10W	
L157			L41-3988-14	SMALL FIXED INDUCTOR(390NH)		R21			RK73GB2A000J	CHIP R 0 J 1/10W	
L158			L41-2785-14	SMALL FIXED INDUCTOR(270NH)		R22			RK73GB2A152J	CHIP R 1.5K J 1/10W	
L159			L41-1885-14	SMALL FIXED INDUCTOR(180NH)		R23			RK73GB2A101J	CHIP R 100 J 1/10W	
L160			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)		R24			RK73GB2A000J	CHIP R 0 J 1/10W	
L161			L41-8285-14	SMALL FIXED INDUCTOR(820NH)		R25 ,26			RK73GB2A153J	CHIP R 15K J 1/10W	
L162			L41-5685-14	SMALL FIXED INDUCTOR(560NH)		R27			RK73GB2A101J	CHIP R 100 J 1/10W	
L163			L41-3385-14	SMALL FIXED INDUCTOR(330NH)		R28			RK73GB2A221J	CHIP R 220 J 1/10W	
L164			L41-2785-14	SMALL FIXED INDUCTOR(270NH)		R29			RK73GB2A000J	CHIP R 0 J 1/10W	
L165			L39-1480-15	TOROIDAL COIL		R30			RK73GB2A221J	CHIP R 220 J 1/10W	
L166			L41-2785-14	SMALL FIXED INDUCTOR(270NH)		R32			RK73GB2A271J	CHIP R 270 J 1/10W	
L167			L41-3988-14	SMALL FIXED INDUCTOR(390NH)		R33			RK73GB2A103J	CHIP R 10K J 1/10W	
L168			L41-1885-14	SMALL FIXED INDUCTOR(180NH)		R34			RK73GB2A000J	CHIP R 0 J 1/10W	
L169			L41-1285-14	SMALL FIXED INDUCTOR(120NH)		R35			RK73GB2A102J	CHIP R 1.0K J 1/10W	
L170			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		R36			RK73GB2A000J	CHIP R 0 J 1/10W	
L171			L41-1895-33	SMALL FIXED INDUCTOR(1.8UH)		R37			RK73GB2A180J	CHIP R 18 J 1/10W	
L172			L41-6885-14	SMALL FIXED INDUCTOR(680NH)		R38			RK73GB2A101J	CHIP R 100 J 1/10W	
L173			L41-5685-14	SMALL FIXED INDUCTOR(560NH)		R39			RK73GB2A123J	CHIP R 12K J 1/10W	
L174			L41-3988-14	SMALL FIXED INDUCTOR(390NH)							



## PARTS LIST

PLL UNIT (MAIN) (X50-3220-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R43			RK73GB2A000J	CHIP R 0 J 1/10W		R118			RK73GB2A821J	CHIP R 820 J 1/10W	
R45			RK73GB2A821J	CHIP R 820 J 1/10W		R119,120			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R46			RK73GB2A000J	CHIP R 0 J 1/10W		R121			RK73GB2A103J	CHIP R 10K J 1/10W	
R47,48			RK73GB2A151J	CHIP R 150 J 1/10W		R122			RK73GB2A100J	CHIP R 10 J 1/10W	
R49-51			RK73GB2A101J	CHIP R 100 J 1/10W		R123			RK73GB2A103J	CHIP R 10K J 1/10W	
R52			RK73GB2A103J	CHIP R 10K J 1/10W		R124			RK73GB2A391J	CHIP R 390 J 1/10W	
R53,54			RK73GB2A101J	CHIP R 100 J 1/10W		R125,126			RK73GB2A153J	CHIP R 15K J 1/10W	
R55			RK73GB2A102J	CHIP R 1.0K J 1/10W		R127			RK73GB2A120J	CHIP R 12 J 1/10W	
R56			RN73GE1J221D	CHIP R 220 D 1/16W		R128			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R57			RK73GB2A101J	CHIP R 100 J 1/10W		R129			RK73GB2A391J	CHIP R 390 J 1/10W	
R58,59			RK73GB2A000J	CHIP R 0 J 1/10W		R130,131			RK73GB2A000J	CHIP R 0 J 1/10W	
R60			RK73GB2A100J	CHIP R 10 J 1/10W		R132			RK73GB2A564J	CHIP R 560K J 1/10W	
R61			RK73GB2A124J	CHIP R 120K J 1/10W		R133			RK73GH2A154D	CHIP R 150K D 1/10W	
R62			RK73GB2A000J	CHIP R 0 J 1/10W		R134			RK73GB2A101J	CHIP R 100 J 1/10W	
R63			RK73GB2A392J	CHIP R 3.9K J 1/10W		R135			RK73GB2A000J	CHIP R 0 J 1/10W	
R64,65			RK73GB2A101J	CHIP R 100 J 1/10W		R136			RK73GB2A104J	CHIP R 100K J 1/10W	
R66,67			RK73GB2A221J	CHIP R 220 J 1/10W		R137,138			RK73GB2A101J	CHIP R 100 J 1/10W	
R68			RK73GB2A470J	CHIP R 47 J 1/10W		R139			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R69			RN73GE1J151D	CHIP R 150 D 1/16W		R140			RK73GB2A392J	CHIP R 3.9K J 1/10W	
R70			RK73GB2A102J	CHIP R 1.0K J 1/10W		R141			RK73GB2A104J	CHIP R 100K J 1/10W	
R71			RK73GB2A180J	CHIP R 18 J 1/10W		R142			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R73			RK73GB2A000J	CHIP R 0 J 1/10W		R143			RK73GH2A393D	CHIP R 39K D 1/10W	
R75			RK73GB2A000J	CHIP R 0 J 1/10W		R144			RK73GB2A101J	CHIP R 100 J 1/10W	
R76			RK73GB2A102J	CHIP R 1.0K J 1/10W		R145			RK73GB2A392J	CHIP R 3.9K J 1/10W	
R77			RK73GB2A473J	CHIP R 47K J 1/10W		R146			RK73GB2A101J	CHIP R 100 J 1/10W	
R78			RK73GB2A101J	CHIP R 100 J 1/10W		R147,148			RK73GB2A000J	CHIP R 0 J 1/10W	
R79			RK73GB2A273J	CHIP R 27K J 1/10W		R149			RK73GB2A101J	CHIP R 100 J 1/10W	
R80			RK73GB2A393J	CHIP R 39K J 1/10W		R150			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R82			RK73GB2A102J	CHIP R 1.0K J 1/10W		R151			RK73GB2A101J	CHIP R 100 J 1/10W	
R83			RK73GB2A000J	CHIP R 0 J 1/10W		R152			RK73GB2A104J	CHIP R 100K J 1/10W	
R84,85			RK73GB2A101J	CHIP R 100 J 1/10W		R153,154			RK73GB2A101J	CHIP R 100 J 1/10W	
R86			RK73GB2A331J	CHIP R 330 J 1/10W		R157			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R87			RK73GB2A680J	CHIP R 68 J 1/10W		R158			RK73GB2A153J	CHIP R 15K J 1/10W	
R88,89			RK73GB2A101J	CHIP R 100 J 1/10W		R159			RK73GB2A103J	CHIP R 10K J 1/10W	
R90			RK73GB2A102J	CHIP R 1.0K J 1/10W		R160			RK73GB2A000J	CHIP R 0 J 1/10W	
R91			RK73GB2A000J	CHIP R 0 J 1/10W		R161			RK73GB2A474J	CHIP R 470K J 1/10W	
R92,93			RK73GB2A153J	CHIP R 15K J 1/10W		R162			RK73GB2A104J	CHIP R 100K J 1/10W	
R94			RK73GB2A000J	CHIP R 0 J 1/10W		R163			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R95			RK73GB2A103J	CHIP R 10K J 1/10W		R164			RK73GB2A151J	CHIP R 150 J 1/10W	
R96			RK73GB2A000J	CHIP R 0 J 1/10W		R165,166			RK73GB2A000J	CHIP R 0 J 1/10W	
R97			RN73GH1J333D	CHIP R 33K D 1/16W		R167			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R98			RK73GB2A470J	CHIP R 47 J 1/10W		R168			RK73GB2A121J	CHIP R 120 J 1/10W	
R99			RK73GB2A100J	CHIP R 10 J 1/10W		R169,170			RN73GH1J103D	CHIP R 10K D 1/16W	
R100			RK73GB2A102J	CHIP R 1.0K J 1/10W		R171			RK73GB2A331J	CHIP R 330 J 1/10W	
R101			RK73GB2A333J	CHIP R 33K J 1/10W		R172			RK73GB2A101J	CHIP R 100 J 1/10W	
R102			RK73GB2A223J	CHIP R 22K J 1/10W		R173			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R103			RK73GB2A822J	CHIP R 8.2K J 1/10W		R174			RN73GH1J272D	CHIP R 2.7K D 1/16W	
R104			RK73GB2A683J	CHIP R 68K J 1/10W		R175			RK73GB2A000J	CHIP R 0 J 1/10W	
R106			RK73GB2A473J	CHIP R 47K J 1/10W		R176			RK73GB2A474J	CHIP R 470K J 1/10W	
R107			RK73GB2A470J	CHIP R 47 J 1/10W		R177			RK73GB2A000J	CHIP R 0 J 1/10W	
R108			RK73GB2A101J	CHIP R 100 J 1/10W		R178			RK73GB2A104J	CHIP R 100K J 1/10W	
R109			RK73GB2A180J	CHIP R 18 J 1/10W		R179			RK73GB2A101J	CHIP R 100 J 1/10W	
R110			RK73GB2A181J	CHIP R 180 J 1/10W		R180			RK73GB2A121J	CHIP R 120 J 1/10W	
R111			RK73GB2A180J	CHIP R 18 J 1/10W		R181,182			RK73GB2A000J	CHIP R 0 J 1/10W	
R112			RK73GB2A561J	CHIP R 560 J 1/10W		R183			RK73GB2A100J	CHIP R 10 J 1/10W	
R113			RK73GB2A000J	CHIP R 0 J 1/10W		R184			RK73GB2A471J	CHIP R 470 J 1/10W	
R114			RK73GB2A100J	CHIP R 10 J 1/10W		R185			RK73GB2A560J	CHIP R 56 J 1/10W	
R115			RK73GB2A181J	CHIP R 180 J 1/10W		R186			RK73GB2A104J	CHIP R 100K J 1/10W	
R116			RK73GB2A104J	CHIP R 100K J 1/10W		R187			RK73GB2A121J	CHIP R 120 J 1/10W	
R117			RK73GB2A471J	CHIP R 470 J 1/10W		R188,189			RN73GE1J391D	CHIP R 390 D 1/16W	

## PARTS LIST

### PLL UNIT (MAIN) (X50-3220-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R190			RK73GB2A470J	CHIP R 47 J 1/10W		R268			RK73GB2A560J	CHIP R 56 J 1/10W	
R191,192			RK73GB2A102J	CHIP R 1.0K J 1/10W		R269			RK73GB2A221J	CHIP R 220 J 1/10W	
R193			RK73GB2A560J	CHIP R 56 J 1/10W		R270			RK73GB2A560J	CHIP R 56 J 1/10W	
R194,195			RK73GB2A000J	CHIP R 0 J 1/10W		R271,272			RK73GB2A100J	CHIP R 10 J 1/10W	
R196			RK73GB2A470J	CHIP R 47 J 1/10W		R273			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R197			RK73GB2A153J	CHIP R 15K J 1/10W		R274			RK73GB2A000J	CHIP R 0 J 1/10W	
R198			RK73GB2A104J	CHIP R 100K J 1/10W		R275			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R199			RK73GB2A102J	CHIP R 1.0K J 1/10W		R276			RK73GB2A471J	CHIP R 470 J 1/10W	
R200			RK73GB2A104J	CHIP R 100K J 1/10W		R277			RK73GB2A2R2J	CHIP R 2.2 J 1/10W	
R201			RK73GB2A102J	CHIP R 1.0K J 1/10W		R278			RK73GB2A471J	CHIP R 470 J 1/10W	
R202,203			RK73GB2A000J	CHIP R 0 J 1/10W		R279			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R204,205			RK73GB2A101J	CHIP R 100 J 1/10W		R280			RK73GB2A471J	CHIP R 470 J 1/10W	
R206			RK73GB2A331J	CHIP R 330 J 1/10W		R281,282			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R207			RK73GB2A101J	CHIP R 100 J 1/10W		R283			RK73GB2A101J	CHIP R 100 J 1/10W	
R208			RK73GB2A331J	CHIP R 330 J 1/10W		R284			RK73GB2A103J	CHIP R 10K J 1/10W	
R209			RK73GB2A102J	CHIP R 1.0K J 1/10W		R285-289			RK73GB2A821J	CHIP R 820 J 1/10W	
R210			RK73GB2A560J	CHIP R 56 J 1/10W		R290,291			RK73GB2A101J	CHIP R 100 J 1/10W	
R211			RK73GB2A682J	CHIP R 6.8K J 1/10W		R292			RK73GB2A821J	CHIP R 820 J 1/10W	
R212			RK73GB2A332J	CHIP R 3.3K J 1/10W		R293			RK73GB2A101J	CHIP R 100 J 1/10W	
R214			RK73GB2A820J	CHIP R 82 J 1/10W		R294			RK73GB2A821J	CHIP R 820 J 1/10W	
R215			RK73GB2A472J	CHIP R 4.7K J 1/10W		R295			RK73GB2A101J	CHIP R 100 J 1/10W	
R216			RK73GB2A100J	CHIP R 10 J 1/10W		R296			RK73GB2A821J	CHIP R 820 J 1/10W	
R217			RK73GB2A561J	CHIP R 560 J 1/10W		R297			RK73GB2A101J	CHIP R 100 J 1/10W	
R218			RK73GB2A471J	CHIP R 470 J 1/10W		R298			RK73GB2A821J	CHIP R 820 J 1/10W	
R219			RK73GB2A101J	CHIP R 100 J 1/10W		R299			RK73GB2A101J	CHIP R 100 J 1/10W	
R220			RK73GB2A560J	CHIP R 56 J 1/10W		R300			RK73GB2A821J	CHIP R 820 J 1/10W	
R221			RK73GB2A151J	CHIP R 150 J 1/10W		R301,302			RK73GB2A101J	CHIP R 100 J 1/10W	
R222,223			RN73GH1J103D	CHIP R 10K D 1/16W		R303			RK73GB2A821J	CHIP R 820 J 1/10W	
R224			RK73GB2A470J	CHIP R 47 J 1/10W		R305			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R225			RK73GB2A153J	CHIP R 15K J 1/10W		R306			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R226			RK73GB2A682J	CHIP R 6.8K J 1/10W		R307			RK73GB2A000J	CHIP R 0 J 1/10W	
R227,228			RK73GB2A000J	CHIP R 0 J 1/10W		R308			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R229-232			RK73GB2A101J	CHIP R 100 J 1/10W		R309			RN73GH1J392D	CHIP R 3.9K D 1/16W	
R233			RK73GB2A271J	CHIP R 270 J 1/10W		R310-313			RK73GB2A101J	CHIP R 100 J 1/10W	
R234,235			RK73GB2A000J	CHIP R 0 J 1/10W		R314			RK73GB2A000J	CHIP R 0 J 1/10W	
R236			RK73GB2A180J	CHIP R 18 J 1/10W		R315			RK73GB2A121J	CHIP R 120 J 1/10W	
R237			RK73GB2A271J	CHIP R 270 J 1/10W		R316			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R238,239			RN73GE1J391D	CHIP R 390 D 1/16W		R317			RK73GB2A560J	CHIP R 56 J 1/10W	
R240			RK73GB2A180J	CHIP R 18 J 1/10W		R318			RK73GB2A474J	CHIP R 470K J 1/10W	
R241-244			RK73GB2A102J	CHIP R 1.0K J 1/10W		R319			RK73GB2A121J	CHIP R 120 J 1/10W	
R245			RK73GB2A180J	CHIP R 18 J 1/10W		R322			RK73GB2A000J	CHIP R 0 J 1/10W	
R246			RK73GB2A102J	CHIP R 1.0K J 1/10W		R323			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R247			RK73GB2A271J	CHIP R 270 J 1/10W		R324-327			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R248			RK73GB2A180J	CHIP R 18 J 1/10W		R328			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R249			RK73GB2A150J	CHIP R 15 J 1/10W		R330			RK73GB2A821J	CHIP R 820 J 1/10W	
R250			RK73GB2A271J	CHIP R 270 J 1/10W		R331			RK73GB2A2R2J	CHIP R 2.2 J 1/10W	
R251			RK73GB2A180J	CHIP R 18 J 1/10W		R332			RK73GB2A180J	CHIP R 18 J 1/10W	
R252			RK73GB2A470J	CHIP R 47 J 1/10W		R333			RK73GB2A000J	CHIP R 0 J 1/10W	
R253			RK73GB2A153J	CHIP R 15K J 1/10W		R334			RK73GB2A182J	CHIP R 1.8K J 1/10W	
R254			RK73GB2A682J	CHIP R 6.8K J 1/10W		R335			RK73GB2A000J	CHIP R 0 J 1/10W	
R256			RK73GB2A150J	CHIP R 15 J 1/10W		R336			RK73GB2A822J	CHIP R 8.2K J 1/10W	
R257			RK73GB2A153J	CHIP R 15K J 1/10W		R337			RK73GB2A471J	CHIP R 470 J 1/10W	
R258			RK73GB2A682J	CHIP R 6.8K J 1/10W		R338			RK73GB2A104J	CHIP R 100K J 1/10W	
R259			RK73GB2A101J	CHIP R 100 J 1/10W		R339			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R260			RK73GB2A123J	CHIP R 12K J 1/10W		R340			RK73GB2A471J	CHIP R 470 J 1/10W	
R262			RK73GB2A6R8J	CHIP R 6.8 J 1/10W		R341			RK73GB2A100J	CHIP R 10 J 1/10W	
R263			RK73GB2A470J	CHIP R 47 J 1/10W		R342			RK73GB2A471J	CHIP R 470 J 1/10W	
R264			RK73GB2A101J	CHIP R 100 J 1/10W		R343			RK73GB2A000J	CHIP R 0 J 1/10W	
R265			RK73GB2A821J	CHIP R 820 J 1/10W		R344			RK73GB2A471J	CHIP R 470 J 1/10W	
R266,267			RK73GB2A102J	CHIP R 1.0K J 1/10W		R345			RK73GB2A000J	CHIP R 0 J 1/10W	

## PARTS LIST

PLL UNIT (MAIN) (X50-3220-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R346			RK73GB2A100J	CHIP R 10 J 1/10W		R449			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R348			RK73GB2A000J	CHIP R 0 J 1/10W		R450			RK73GB2A101J	CHIP R 100 J 1/10W	
R350-356			RK73GB2A000J	CHIP R 0 J 1/10W		R451			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R357			RK73GB2A682J	CHIP R 6.8K J 1/10W		R452			RK73GB2A101J	CHIP R 100 J 1/10W	
R358			RK73GB2A332J	CHIP R 3.3K J 1/10W		R453			RK73GB2A000J	CHIP R 0 J 1/10W	
R359-365			RK73GB2A152J	CHIP R 1.5K J 1/10W		R461			RK73GB2A000J	CHIP R 0 J 1/10W	
R366,367			RK73GB2A682J	CHIP R 6.8K J 1/10W		R463			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R368			RK73GB2A100J	CHIP R 10 J 1/10W		R464			RK73PB2H2R2J	CHIP R 2.2 J 1/2W	
R369			RK73GB2A101J	CHIP R 100 J 1/10W		R465			RK73GB2A273J	CHIP R 27K J 1/10W	
R370			RK73GB2A221J	CHIP R 220 J 1/10W		R466,467			RK73GB2A103J	CHIP R 10K J 1/10W	
R371			RK73GB2A683J	CHIP R 68K J 1/10W		R468			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R373-375			RK73GB2A471J	CHIP R 470 J 1/10W		R469			RK73GB2A273J	CHIP R 27K J 1/10W	
R377			RK73GB2A561J	CHIP R 560 J 1/10W		R470,471			RK73GB2A000J	CHIP R 0 J 1/10W	
R378			RK73GB2A471J	CHIP R 470 J 1/10W		R473			RK73GB2A473J	CHIP R 47K J 1/10W	
R379			RK73GB2A561J	CHIP R 560 J 1/10W		R474			RK73GB2A271J	CHIP R 270 J 1/10W	
R380			RK73GB2A222J	CHIP R 2.2K J 1/10W		R475-478			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R381			RK73GB2A560J	CHIP R 56 J 1/10W		R479			RK73GB2A271J	CHIP R 270 J 1/10W	
R382,383			RK73GB2A120J	CHIP R 12 J 1/10W		R480-482			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R384			RK73GB2A100J	CHIP R 10 J 1/10W		R483			RK73GB2A101J	CHIP R 100 J 1/10W	
R385			RK73GB2A000J	CHIP R 0 J 1/10W		R484			RK73GB2A560J	CHIP R 56 J 1/10W	
R386-388			RK73GB2A100J	CHIP R 10 J 1/10W		R486			RK73GB2A103J	CHIP R 10K J 1/10W	
R389			RK73GB2A000J	CHIP R 0 J 1/10W		R487,488			RK73GB2A560J	CHIP R 56 J 1/10W	
R390-392			RK73GB2A471J	CHIP R 470 J 1/10W		R489			RK73GB2A331J	CHIP R 330 J 1/10W	
R394			RK73GB2A561J	CHIP R 560 J 1/10W		R490			RK73GB2A100J	CHIP R 10 J 1/10W	
R395			RK73GB2A471J	CHIP R 470 J 1/10W		R492			RK73GB2A000J	CHIP R 0 J 1/10W	
R396			RK73GB2A561J	CHIP R 560 J 1/10W		D3 ,4			HZU3BLL	ZENER DIODE	
R397			RK73GB2A222J	CHIP R 2.2K J 1/10W		D5 ,6			1SV283F	VARIABLE CAPACITANCE DIODE	
R398			RK73GB2A100J	CHIP R 10 J 1/10W		D7			HVC131	DIODE	
R399			RK73GB2A101J	CHIP R 100 J 1/10W		D8			1SS388F	DIODE	
R400,401			RK73GB2A153J	CHIP R 15K J 1/10W		D9			HSC277	DIODE	
R402			RK73GB2A682J	CHIP R 6.8K J 1/10W		D10			1SR154-400	DIODE	
R403			RK73GB2A103J	CHIP R 10K J 1/10W		D11			HSC277	DIODE	
R404			RK73GB2A101J	CHIP R 100 J 1/10W		D12			HVC131	DIODE	
R405			RK73GB2A102J	CHIP R 1.0K J 1/10W		D13			HSM88AS-E	DIODE	
R406			RK73GB2A470J	CHIP R 47 J 1/10W		D14 ,15			1SV228-F	VARIABLE CAPACITANCE DIODE	
R407			RK73GB2A100J	CHIP R 10 J 1/10W		D16			HSM88AS-E	DIODE	
R408,409			RK73GB2A000J	CHIP R 0 J 1/10W		D17 -20			HSC277	DIODE	
R410			RK73GB2A102J	CHIP R 1.0K J 1/10W		D21 ,22			1SV228-F	VARIABLE CAPACITANCE DIODE	
R411			RK73GB2A392J	CHIP R 3.9K J 1/10W		D23			HSC277	DIODE	
R412			RK73GB2A102J	CHIP R 1.0K J 1/10W		D24			1SS388F	DIODE	
R413,414			RK73GB2A123J	CHIP R 12K J 1/10W		D25 -27			HSC277	DIODE	
R415			RK73GB2A000J	CHIP R 0 J 1/10W		D28 ,29			HVC131	DIODE	
R416			RK73GB2A102J	CHIP R 1.0K J 1/10W		D33			HVC131	DIODE	
R417			RK73GB2A000J	CHIP R 0 J 1/10W		D34			1SS388F	DIODE	
R418			RK73GB2A102J	CHIP R 1.0K J 1/10W		D37 -48			HVC131	DIODE	
R421-427			RK73GB2A152J	CHIP R 1.5K J 1/10W		D49			RB715F	DIODE	
R428			RK73GB2A330J	CHIP R 33 J 1/10W		D50 -56			HVC131	DIODE	
R429,430			RK73GB2A000J	CHIP R 0 J 1/10W		D57			1SR154-400	DIODE	
R431			RK73GB2A821J	CHIP R 820 J 1/10W		IC2			<b>Note1</b>	MOS-IC	
R432			RK73GB2A221J	CHIP R 220 J 1/10W		IC3			AD9951YSVZ	MOS-IC	
R433			RK73GB2A101J	CHIP R 100 J 1/10W		IC4			TC7W125FU-F	MOS-IC	
R434			RK73GB2A221J	CHIP R 220 J 1/10W		IC5			TA4805BF	MOS-IC	
R435			RK73GB2A123J	CHIP R 12K J 1/10W		IC6			TK71733S	BI-POLAR IC	
R436			RK73GB2A472J	CHIP R 4.7K J 1/10W		IC7			TA48M033F-SNQ	ANALOGUE IC	
R437-439			RK73GB2A123J	CHIP R 12K J 1/10W		IC8			XC6219B182PR-G	MOS-IC	
R440			RK73GB2A472J	CHIP R 4.7K J 1/10W		IC9			UPC2710TB-A	ANALOGUE IC	
R442-444			RK73GB2A100J	CHIP R 10 J 1/10W		IC10,11			TC7W125FU-F	MOS-IC	
R445,446			RK73GB2A821J	CHIP R 820 J 1/10W		IC12			TA75S01F-F	MOS-IC	
R447			RK73GB2A102J	CHIP R 1.0K J 1/10W		IC13			AD9835BRUZ	MOS-IC	
R448			RK73GB2A331J	CHIP R 330 J 1/10W		IC14			TC75S59F-F	MOS-IC	

**Note 1: This part cannot be replaced. Therefore, this part is not supplied as a service part.**

## PARTS LIST

PLL UNIT (MAIN) (X50-3220-00)

PLL UNIT (SUB) (X50-3230-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination	
IC15,16			TC74HC4094AFF	MOS-IC		Q64 -66			LTC044EEBFS8	TRANSISTOR		
IC17			<b>Note1</b>	MOS-IC		Q68			DTA123EE	DIGITAL TRANSISTOR		
IC18			<b>Note1</b>	MOS-IC		Q69			LTC044EEBFS8	TRANSISTOR		
IC19			TC7WG74FK-F	MOS-IC		Q70			DTA123EE	DIGITAL TRANSISTOR		
IC20			TC74AC390F-F	MOS-IC		Q71			LTC044EEBFS8	TRANSISTOR		
IC21,22			TC7WG74FK-F	MOS-IC		Q72			DTA123EE	DIGITAL TRANSISTOR		
IC23			TC7WZ04FU-F	MOS-IC		Q73			LTC044EEBFS8	TRANSISTOR		
IC24,25			TC7WG74FK-F	MOS-IC		Q74			DTA123EE	DIGITAL TRANSISTOR		
IC26			AD9835BRUZ	MOS-IC		Q75			LTC044EEBFS8	TRANSISTOR		
IC27			BA00DD0WHFP	ANALOGUE IC		Q76			DTA123EE	DIGITAL TRANSISTOR		
IC28			TC7W125FU-F	MOS-IC		Q77			LTC044EEBFS8	TRANSISTOR		
Q1			2SC5108(Y)F	TRANSISTOR		Q78 -82			2SC4617(R)	TRANSISTOR		
Q2			2SC4617(R)	TRANSISTOR		Q84 -86			2SC4617(R)	TRANSISTOR		
Q3			2SC4649(N,P)	TRANSISTOR		Q88			LTC044EEBFS8	TRANSISTOR		
Q4			MCH3914(7)-H	FET		Q90			SSM3J332R	FET		
Q5			2SC4617(R)	TRANSISTOR		Q91 -98			LTC044EEBFS8	TRANSISTOR		
Q6			2SC5108(Y)F	TRANSISTOR		Q99			2SC3357-A(RF)	TRANSISTOR		
Q8			2SC5108(Y)F	TRANSISTOR								
Q9 ,10			2SC4617(R)	TRANSISTOR								
Q11			3SK294-FP	FET								
Q12			LTC044EEBFS8	TRANSISTOR								
Q13			DTA123EE	DIGITAL TRANSISTOR								
Q14			LTC044EEBFS8	TRANSISTOR								
Q17 -19			2SC4116(BL)F	TRANSISTOR								
Q20			SSM3K15TE(F)	FET								
Q21			SSM3J332R	FET								
Q22 -24			SSM3K15TE(F)	FET								
Q25 ,26			MCH3914(7)-H	FET								
Q27			2SC4617(R)	TRANSISTOR								
Q28			SSM3J332R	FET								
Q29			LTC044EEBFS8	TRANSISTOR								
Q30			2SC4116(BL)F	TRANSISTOR								
Q31			SSM3K15TE(F)	FET								
Q32			SSM3J332R	FET								
Q33			SSM3K15TE(F)	FET								
Q34			2SC4617(R)	TRANSISTOR								
Q35			2SC4649(N,P)	TRANSISTOR								
Q36 ,37			SSM3K15TE(F)	FET								
Q38 ,39			MCH3914(7)-H	FET								
Q40			DTA123EE	DIGITAL TRANSISTOR								
Q41			LTC044EEBFS8	TRANSISTOR								
Q42			DTA123EE	DIGITAL TRANSISTOR								
Q43			LTC044EEBFS8	TRANSISTOR								
Q44 ,45			2SC4649(N,P)	TRANSISTOR								
Q46			2SC4617(R)	TRANSISTOR								
Q47			DTA123EE	DIGITAL TRANSISTOR								
Q48			LTC044EEBFS8	TRANSISTOR								
Q49			DTA123EE	DIGITAL TRANSISTOR								
Q50			LTC044EEBFS8	TRANSISTOR								
Q51			2SC3357-A(RF)	TRANSISTOR								
Q52			DTA123EE	DIGITAL TRANSISTOR								
Q53			LTC044EEBFS8	TRANSISTOR								
Q54			DTA123EE	DIGITAL TRANSISTOR								
Q55			LTC044EEBFS8	TRANSISTOR								
Q56			DTA123EE	DIGITAL TRANSISTOR								
Q57			LTC044EEBFS8	TRANSISTOR								
Q60			SSM3J332R	FET								
Q61			DTA123EE	DIGITAL TRANSISTOR								
Q62			LTC044EEBFS8	TRANSISTOR								
Q63			SSM3K15TE(F)	FET								
<b>PLL UNIT (SUB) (X50-3230-00)</b>												
						C4			CC73GCH1H470J	CHIP C	47PF	J
						C5 ,6			CC73GCH1H101J	CHIP C	100PF	J
						C7			CK73GB1H102K	CHIP C	1000PF	K
						C8			CC73GCH1H101J	CHIP C	100PF	J
						C9			CK73GB1H102K	CHIP C	1000PF	K
						C10 -12			CC73GCH1H101J	CHIP C	100PF	J
						C13 ,14			CK73GB1H102K	CHIP C	1000PF	K
						C17			CK73GB1E105K	CHIP C	1.0UF	K
						C18 ,19			CK73EB1E106K	CHIP C	10UF	K
						C20			CK73GB1C104K	CHIP C	0.10UF	K
						C21			CK73GB1H103K	CHIP C	0.010UF	K
						C22			CK73GB1E105K	CHIP C	1.0UF	K
						C23 ,24			CK73EB1E106K	CHIP C	10UF	K
						C25			CE32BM1C220M	CHIP EL	22UF	16WV
						C42 ,43			CK73GB1C473K	CHIP C	0.047UF	K
						C44			CK73GB1H103K	CHIP C	0.010UF	K
						C45			CK73EB1E106K	CHIP C	10UF	K
						C47 ,48			CK73GB1H102K	CHIP C	1000PF	K
						C49 ,50			CK73GB1C473K	CHIP C	0.047UF	K
						C52			CC73GCH1H560J	CHIP C	56PF	J
						C53			CK73GB1E105K	CHIP C	1.0UF	K
						C54 -57			CK73GB1H102K	CHIP C	1000PF	K
						C58			CK73GB1C473K	CHIP C	0.047UF	K
						C59 ,60			CK73GB1H103K	CHIP C	0.010UF	K
						C61			CC73GCH1H101J	CHIP C	100PF	J
						C62			CE32BM1C220M	CHIP EL	22UF	16WV
						C63			CK73EB1E106K	CHIP C	10UF	K
						C64			CK73GB1C473K	CHIP C	0.047UF	K
						C65			CK73EB1E106K	CHIP C	10UF	K
						C66			CC73GCH1H560J	CHIP C	56PF	J

## PARTS LIST

PLL UNIT (SUB) (X50-3230-00)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C67			CC73GCH1H151J	CHIP C 150PF J		C140			CE32BM1C220M	CHIP EL 22UF 16WV	
C68 -70			CK73GB1H103K	CHIP C 0.010UF K		C141			CC73GCH1H120J	CHIP C 12PF J	
C71			CK73EB1E106K	CHIP C 10UF K		C142			CK73EB1E106K	CHIP C 10UF K	
C72			CE32BM1C220M	CHIP EL 22UF 16WV		C143			CK73GB1C104K	CHIP C 0.10UF K	
C73			CC73GCH1H271J	CHIP C 270PF J		C144			CK73GB1H472K	CHIP C 4700PF K	
C74			CK73GB1E105K	CHIP C 1.0UF K		C145			CC73GCH1H471J	CHIP C 470PF J	
C75			CC73GCH1H151J	CHIP C 150PF J		C146			CC73GCH1H151J	CHIP C 150PF J	
C76 ,77			CK73GB1C473K	CHIP C 0.047UF K		C147			CC73GCH1H390J	CHIP C 39PF J	
C78			CK73GB1H472K	CHIP C 4700PF K		C148			CC73GCH1H090B	CHIP C 9.0PF B	
C79			CK73GB1H102K	CHIP C 1000PF K		C149			CK73GB1H103K	CHIP C 0.010UF K	
C80			CK73GB1C473K	CHIP C 0.047UF K		C150			CC73GCH1H070B	CHIP C 7.0PF B	
C81			CK73GB1H472K	CHIP C 4700PF K		C151,152			CK73GB1H103K	CHIP C 0.010UF K	
C82			CK73GB1H102K	CHIP C 1000PF K		C153			CC73GCH1H070B	CHIP C 7.0PF B	
C83			CS77MA1V0R1M	CHIP TNTL 0.1UF 35WV		C154,155			CK73EB1E106K	CHIP C 10UF K	
C84			CK73GB1C473K	CHIP C 0.047UF K		C156			CK73GB1H103K	CHIP C 0.010UF K	
C85			CK73FB1H153K	CHIP C 0.015UF K		C157			CC73GCH1H050B	CHIP C 5.0PF B	
C86			CK73GB1H472K	CHIP C 4700PF K		C158			CK73GB1C473K	CHIP C 0.047UF K	
C87			CK73GB1H102K	CHIP C 1000PF K		C159,160			CC73GCH1H020B	CHIP C 2.0PF B	
C89			CK73GB1H102K	CHIP C 1000PF K		C161			CC73GCH1H120J	CHIP C 12PF J	
C90			CS77BA1A100M	CHIP TNTL 10UF 10WV		C162			CC73GCH1H090B	CHIP C 9.0PF B	
C91			CC73GCH1H390J	CHIP C 39PF J		C163			CC73GCH1H100C	CHIP C 10PF C	
C92 ,93			CK73GB1H102K	CHIP C 1000PF K		C164			CK73GB1H103K	CHIP C 0.010UF K	
C94			CK73GB1C473K	CHIP C 0.047UF K		C165			CC73GCH1H100C	CHIP C 10PF C	
C95			CK73GB1H102K	CHIP C 1000PF K		C166			CC73GCH1H120G	CHIP C 12PF G	
C96			CS77MA1VR47M	CHIP TNTL 0.47UF 35WV		C167			CC73GCH1H040B	CHIP C 4.0PF B	
C97			CE32BM1C101M	CHIP EL 100UF 16WV		C168,169			CK73GB1E105K	CHIP C 1.0UF K	
C98			CS77MA1D010M	CHIP TNTL 1.0UF 20WV		C170			CC73GCH1H151J	CHIP C 150PF J	
C99			CC73GCH1H680J	CHIP C 68PF J		C171			CC73GCH1H390G	CHIP C 39PF G	
C101			CK73GB1H102K	CHIP C 1000PF K		C172			CC73GCH1H330G	CHIP C 33PF G	
C102			CC73GCH1H390J	CHIP C 39PF J		C173			CK73GB1H102K	CHIP C 1000PF K	
C103			CK73FB1H153K	CHIP C 0.015UF K		C174			CK73EB1E106K	CHIP C 10UF K	
C104			CC73GCH1H390J	CHIP C 39PF J		C175			CK73GB1C473K	CHIP C 0.047UF K	
C105			CK73EB1E106K	CHIP C 10UF K		C176			CC73GCH1H050B	CHIP C 5.0PF B	
C106			CK73GB1C104K	CHIP C 0.10UF K		C177			CK73GB1C473K	CHIP C 0.047UF K	
C107			CE32BM1C101M	CHIP EL 100UF 16WV		C178,179			CC73GCH1H100C	CHIP C 10PF C	
C108			CK73EB1E106K	CHIP C 10UF K		C180,181			CC73GCH1H220G	CHIP C 22PF G	
C109			CS77MA1VR47M	CHIP TNTL 0.47UF 35WV		C184			CC73GCH1H060B	CHIP C 6.0PF B	
C110			CK73EB1E106K	CHIP C 10UF K		C185			CC73GCH1H120J	CHIP C 12PF J	
C112			CK73GB1H472K	CHIP C 4700PF K		C186			CC73GCH1H101J	CHIP C 100PF J	
C113			CK73GB1C104K	CHIP C 0.10UF K		C187			CK73EB1E106K	CHIP C 10UF K	
C114			CC73GCH1H680J	CHIP C 68PF J		C188			CK73GB1H103K	CHIP C 0.010UF K	
C116			CC73GCH1H680J	CHIP C 68PF J		C189			CC73GCH1H060B	CHIP C 6.0PF B	
C117			CK73GB1C104K	CHIP C 0.10UF K		C190-193			CK73GB1H102K	CHIP C 1000PF K	
C118			CK73GB1H102K	CHIP C 1000PF K		C194			CK73GB1H103K	CHIP C 0.010UF K	
C119			CC73GCH1H101J	CHIP C 100PF J		C196			CK73EB1E106K	CHIP C 10UF K	
C120			CK73FB1H153K	CHIP C 0.015UF K		C197			CK73GB1C473K	CHIP C 0.047UF K	
C122			CK73GB1H103K	CHIP C 0.010UF K		C199,200			CC73GCH1H020B	CHIP C 2.0PF B	
C123			CK73GB1C473K	CHIP C 0.047UF K		C201,202			CK73GB1C473K	CHIP C 0.047UF K	
C125			CC73GCH1H040B	CHIP C 4.0PF B		C203			CC73GCH1H470J	CHIP C 47PF J	
C126			CC73GCH1H270G	CHIP C 27PF G		C204			CC73GCH1H471J	CHIP C 470PF J	
C127			CC73GCH1H030B	CHIP C 3.0PF B		C205			CK73EB1E106K	CHIP C 10UF K	
C128			CC73GCH1H220G	CHIP C 22PF G		C206			CK73GB1H103K	CHIP C 0.010UF K	
C129			CK73GB1H102K	CHIP C 1000PF K		C207			CK73EB1E106K	CHIP C 10UF K	
C130			CK73EB1E106K	CHIP C 10UF K		C208			CK73GB1H103K	CHIP C 0.010UF K	
C131			CK73GB1C104K	CHIP C 0.10UF K		C209			CK73GB1C473K	CHIP C 0.047UF K	
C132,133			CC73GCH1H101J	CHIP C 100PF J		C210			CK73GB1E105K	CHIP C 1.0UF K	
C134			CK73GB1H103K	CHIP C 0.010UF K		C211			CC73GCH1H0R5B	CHIP C 0.5PF B	
C135			CK73GB1H472K	CHIP C 4700PF K		C212,213			CK73GB1H103K	CHIP C 0.010UF K	
C136			CK73GB1H102K	CHIP C 1000PF K		C214			CC73GCH1H120J	CHIP C 12PF J	
C137			CK73GB1H103K	CHIP C 0.010UF K		C215			CK73GB1H103K	CHIP C 0.010UF K	



## PARTS LIST

PLL UNIT (SUB) (X50-3230-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C216			CK73GB1H223K	CHIP C 0.022UF K		C297			CK73GB1H103K	CHIP C 0.010UF K	
C217			CC73GCH1H470J	CHIP C 47PF J		C298			CC73GCH1H080B	CHIP C 8.0PF B	
C218,219			CC73GCH1H331J	CHIP C 330PF J		C299			CC73GCH1H391J	CHIP C 390PF J	
C220			CK73GB1E105K	CHIP C 1.0UF K		C300,301			CK73GB1E105K	CHIP C 1.0UF K	
C221			CK73GB1C473K	CHIP C 0.047UF K		C302			CK73GB1C104K	CHIP C 0.10UF K	
C223			CC73GCH1H101J	CHIP C 100PF J		C303			CK73GB1H102K	CHIP C 1000PF K	
C224			CK73GB1H102K	CHIP C 1000PF K		C304,305			CK73GB1C104K	CHIP C 0.10UF K	
C225			CC73GCH1H101J	CHIP C 100PF J		C306			CC73GCH1H330J	CHIP C 33PF J	
C226			CK73GB1H102K	CHIP C 1000PF K		C307,308			CC73GCH1H390G	CHIP C 39PF G	
C227			CK73EB1E106K	CHIP C 10UF K		C309			CC73GCH1H120J	CHIP C 12PF J	
C228			CC73GCH1H390J	CHIP C 39PF J		C310,311			CC73GCH1H180G	CHIP C 18PF G	
C229			CC73GCH1H150J	CHIP C 15PF J		C312,313			CC73GCH1H120G	CHIP C 12PF G	
C231			CC73GCH1H150J	CHIP C 15PF J		C314			CC73GCH1H150J	CHIP C 15PF J	
C232			CK73GB1H102K	CHIP C 1000PF K		C315			CK73GB1H103K	CHIP C 0.010UF K	
C233			CK73GB1C473K	CHIP C 0.047UF K		C316			CC73GCH1H821J	CHIP C 820PF J	
C235			CC73GCH1H680J	CHIP C 68PF J		C317			CC73GCH1H470J	CHIP C 47PF J	
C236			CC73GCH1H221J	CHIP C 220PF J		C318-321			CK73GB1H102K	CHIP C 1000PF K	
C237			CC73GCH1H101J	CHIP C 100PF J		C322			CC73GCH1H390J	CHIP C 39PF J	
C238,239			CK73GB1H102K	CHIP C 1000PF K		C323,324			CC73GCH1H020B	CHIP C 2.0PF B	
C241			CC73GCH1H220J	CHIP C 22PF J		C325			CC73GCH1H150J	CHIP C 15PF J	
C242			CC73GCH1H030B	CHIP C 3.0PF B		C326			CK73EB1E106K	CHIP C 10UF K	
C243			CK73GB1C104K	CHIP C 0.10UF K		C327			CK73GB1H103K	CHIP C 0.010UF K	
C244			CK73EB1E106K	CHIP C 10UF K		C328			CK73EB1E106K	CHIP C 10UF K	
C245			CC73GCH1H560J	CHIP C 56PF J		C329			CK73GB1H103K	CHIP C 0.010UF K	
C246			CC73GCH1H390J	CHIP C 39PF J		C330			CC73GCH1H470J	CHIP C 47PF J	
C247			CK73GB1H103K	CHIP C 0.010UF K		C331			CC73GCH1H391J	CHIP C 390PF J	
C248			CK73GB1C104K	CHIP C 0.10UF K		C332-337			CK73GB1H103K	CHIP C 0.010UF K	
C249			CK73GB1C473K	CHIP C 0.047UF K		C338			CC73GCH1H100C	CHIP C 10PF C	
C250-253			CK73GB1C104K	CHIP C 0.10UF K		C339			CC73GCH1H330J	CHIP C 33PF J	
C254			CK73GB1E105K	CHIP C 1.0UF K		C340			CC73GCH1H080B	CHIP C 8.0PF B	
C255			CC73GCH1H150J	CHIP C 15PF J		C341			CK73GB1H102K	CHIP C 1000PF K	
C256			CC73GCH1H030B	CHIP C 3.0PF B		C342-346			CK73GB1H103K	CHIP C 0.010UF K	
C257			CK73GB1H103K	CHIP C 0.010UF K		C347			CK73GB1C473K	CHIP C 0.047UF K	
C260			CC73GCH1H100C	CHIP C 10PF C		C348-351			CK73GB1H103K	CHIP C 0.010UF K	
C262			CK73GB1H103K	CHIP C 0.010UF K		C352			CK73GB1E105K	CHIP C 1.0UF K	
C264			CK73GB1H103K	CHIP C 0.010UF K		C353			CK73GB1H102K	CHIP C 1000PF K	
C265			CC73GCH1H070B	CHIP C 7.0PF B		C354			CC73GCH1H101J	CHIP C 100PF J	
C266			CC73GCH1H180G	CHIP C 18PF G		C355			CK73GB1H472K	CHIP C 4700PF K	
C267			CC73GCH1H1R5B	CHIP C 1.5PF B		C356			CC73GCH1H471J	CHIP C 470PF J	
C268			CC73GCH1H160G	CHIP C 16PF G		C357			CC73GCH1H270J	CHIP C 27PF J	
C269			CK73GB1H103K	CHIP C 0.010UF K		C358			CK73GB1H102K	CHIP C 1000PF K	
C270			CK73GB1C473K	CHIP C 0.047UF K		C359			CC73GCH1H681J	CHIP C 680PF J	
C271			CK73GB1C104K	CHIP C 0.10UF K		C360			CK73GB1H102K	CHIP C 1000PF K	
C273			CK73GB1H103K	CHIP C 0.010UF K		C361			CK73GB1C473K	CHIP C 0.047UF K	
C274			CK73GB1C473K	CHIP C 0.047UF K		C362			CK73EB1E106K	CHIP C 10UF K	
C275,276			CK73GB1C104K	CHIP C 0.10UF K		C363			CC73GCH1H820J	CHIP C 82PF J	
C277			CK73GB1H103K	CHIP C 0.010UF K		C364,365			CK73GB1H102K	CHIP C 1000PF K	
C280			CK73GB1H103K	CHIP C 0.010UF K		C366			CC73GCH1H391J	CHIP C 390PF J	
C282			CC73GCH1H060B	CHIP C 6.0PF B		C367			CK73GB1H102K	CHIP C 1000PF K	
C283			CK73GB1H103K	CHIP C 0.010UF K		C368			CK73GB1H472K	CHIP C 4700PF K	
C284			CC73GCH1H040B	CHIP C 4.0PF B		C369			CS77MA1V0R1M	CHIP TNL 0.1UF 35WV	
C285			CK73GB1H103K	CHIP C 0.010UF K		C370			CK73GB1H472K	CHIP C 4700PF K	
C287			CK73GB1E105K	CHIP C 1.0UF K		C371			CC73GCH1H820J	CHIP C 82PF J	
C288,289			CC73GCH1H180J	CHIP C 18PF J		C372			CK73GB1C104K	CHIP C 0.10UF K	
C290			CC73GCH1H270J	CHIP C 27PF J		C373			CC73GCH1H560J	CHIP C 56PF J	
C291			CK73GB1C473K	CHIP C 0.047UF K		C374			CC73GCH1H330J	CHIP C 33PF J	
C292			CK73GB1H102K	CHIP C 1000PF K		C375			CC73GCH1H680J	CHIP C 68PF J	
C293			CC73GCH1H100C	CHIP C 10PF C		C376			CK73GB1H102K	CHIP C 1000PF K	
C294			CK73GB1H103K	CHIP C 0.010UF K		C377			CK73GB1C473K	CHIP C 0.047UF K	
C295,296			CC73GCH1H1R5B	CHIP C 1.5PF B		C378			CK73GB1H472K	CHIP C 4700PF K	



## PARTS LIST

PLL UNIT (SUB) (X50-3230-00)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C379			CS77MA1D4R7M	CHIP TNL 4.7UF 20WV		C445			CC73GCH1H100C	CHIP C 10PF C	
C380			CC73GCH1H101J	CHIP C 100PF J		C446			CK73EB1E106K	CHIP C 10UF K	
C381			CC73GCH1H270J	CHIP C 27PF J		C447			CC73GCH1H220J	CHIP C 22PF J	
C382			CK73GB1H102K	CHIP C 1000PF K		C448			CC73GCH1H330J	CHIP C 33PF J	
C383			CC73GCH1H680J	CHIP C 68PF J		C449,450			CC73GCH1H560J	CHIP C 56PF J	
C384			CK73EB1E106K	CHIP C 10UF K		C451			CC73GCH1H820J	CHIP C 82PF J	
C385			CK73GB1H102K	CHIP C 1000PF K		C452			CC73GCH1H040B	CHIP C 4.0PF B	
C386			CC73GCH1H270J	CHIP C 27PF J		C453			CC73GCH1H100C	CHIP C 10PF C	
C387			CK73GB1C104K	CHIP C 0.10UF K		C454			CK73GB1H472K	CHIP C 4700PF K	
C388			CS77MA1D4R7M	CHIP TNL 4.7UF 20WV		C455			CC73GCH1H681J	CHIP C 680PF J	
C389			CK73GB1H102K	CHIP C 1000PF K		C456			CK73GB1H102K	CHIP C 1000PF K	
C390,391			CC73GCH1H680J	CHIP C 68PF J		C457			CC73GCH1H150J	CHIP C 15PF J	
C392			CC73GCH1H270J	CHIP C 27PF J		C458			CC73GCH1H220J	CHIP C 22PF J	
C393			CC73GCH1H330J	CHIP C 33PF J		C459,460			CC73GCH1H080B	CHIP C 8.0PF B	
C394			CC73GCH1H560J	CHIP C 56PF J		C461			CK73GB1H103K	CHIP C 0.010UF K	
C396			CK73GB1H102K	CHIP C 1000PF K		C462			CC73GCH1H030B	CHIP C 3.0PF B	
C397			CC73GCH1H120J	CHIP C 12PF J		C463			CK73GB1H102K	CHIP C 1000PF K	
C398			CC73GCH1H820J	CHIP C 82PF J		C464			CC73GCH1H270J	CHIP C 27PF J	
C399			CC73GCH1H270J	CHIP C 27PF J		C465			CC73GCH1H330J	CHIP C 33PF J	
C400			CC73GCH1H120J	CHIP C 12PF J		C466,467			CC73GCH1H560J	CHIP C 56PF J	
C401			CC73GCH1H271J	CHIP C 270PF J		C468			CC73GCH1H820J	CHIP C 82PF J	
C402			CK73GB1H103K	CHIP C 0.010UF K		C469			CC73GCH1H561J	CHIP C 560PF J	
C403			CK73EB1E106K	CHIP C 10UF K		C470			CC73GCH1H680J	CHIP C 68PF J	
C404,405			CK73GB1H102K	CHIP C 1000PF K		C471			CK73GB1H102K	CHIP C 1000PF K	
C406			CS77MA1VR33M	CHIP TNL 0.33UF 35WV		C472			CC73GCH1H060B	CHIP C 6.0PF B	
C407			CC73GCH1H080B	CHIP C 8.0PF B		C473			CC73GCH1H120J	CHIP C 12PF J	
C408			CK73GB1H102K	CHIP C 1000PF K		C474			CC73GCH1H090B	CHIP C 9.0PF B	
C409			CC73GCH1H560J	CHIP C 56PF J		C475			CC73GCH1H100C	CHIP C 10PF C	
C410			CC73GCH1H271J	CHIP C 270PF J		C476			CK73GB1H102K	CHIP C 1000PF K	
C411			CC73GCH1H181J	CHIP C 180PF J		C477			CK73GB1H472K	CHIP C 4700PF K	
C412			CK73GB1H102K	CHIP C 1000PF K		C478,479			CC73GCH1H150J	CHIP C 15PF J	
C413			CC73GCH1H270J	CHIP C 27PF J		C480,481			CC73GCH1H270J	CHIP C 27PF J	
C414			CC73GCH1H180J	CHIP C 18PF J		C482			CC73GCH1H470J	CHIP C 47PF J	
C415			CC73GCH1H221J	CHIP C 220PF J		C483			CC73GCH1H181J	CHIP C 180PF J	
C416			CC73GCH1H680J	CHIP C 68PF J		C484			CC73GCH1H040B	CHIP C 4.0PF B	
C417			CK73GB1H102K	CHIP C 1000PF K		C485			CC73GCH1H680J	CHIP C 68PF J	
C418			CC73GCH1H1R5B	CHIP C 1.5PF B		C486			CK73GB1H103K	CHIP C 0.010UF K	
C419			CC73GCH1H270J	CHIP C 27PF J		C487			CC73GCH1H560J	CHIP C 56PF J	
C420			CC73GCH1H120J	CHIP C 12PF J		C488			CK73GB1H102K	CHIP C 1000PF K	
C421			CC73GCH1H330J	CHIP C 33PF J		C489			CC73GCH1H030B	CHIP C 3.0PF B	
C422			CC73GCH1H220J	CHIP C 22PF J		C490			CC73GCH1H470J	CHIP C 47PF J	
C423			CC73GCH1H181J	CHIP C 180PF J		C491			CK73GB1H102K	CHIP C 1000PF K	
C424,425			CC73GCH1H680J	CHIP C 68PF J		C492			CC73GCH1H470J	CHIP C 47PF J	
C426			CC73GCH1H470J	CHIP C 47PF J		C493			CK73GB1H472K	CHIP C 4700PF K	
C427			CK73GB1C473K	CHIP C 0.047UF K		C494			CC73GCH1H121J	CHIP C 120PF J	
C428,429			CK73GB1H103K	CHIP C 0.010UF K		C495			CK73GB1H103K	CHIP C 0.010UF K	
C430			CK73GB1H102K	CHIP C 1000PF K		C496			CE32BM1C101M	CHIP EL 100UF 16WV	
C431			CC73GCH1H090B	CHIP C 9.0PF B		C497			CC73GCH1H121J	CHIP C 120PF J	
C432			CC73GCH1H030B	CHIP C 3.0PF B		C498			CK73GB1C473K	CHIP C 0.047UF K	
C433			CC73GCH1H560J	CHIP C 56PF J		C499			CC73GCH1H470J	CHIP C 47PF J	
C434			CC73GCH1H270J	CHIP C 27PF J		C500			CK73GB1H103K	CHIP C 0.010UF K	
C435			CC73GCH1H390J	CHIP C 39PF J		C501			CC73GCH1H330J	CHIP C 33PF J	
C436,437			CC73GCH1H270J	CHIP C 27PF J		C502			CC73GCH1H151J	CHIP C 150PF J	
C438			CC73GCH1H181J	CHIP C 180PF J		C503-505			CK73GB1H102K	CHIP C 1000PF K	
C439			CC73GCH1H470J	CHIP C 47PF J		C506			CC73GCH1H470J	CHIP C 47PF J	
C440			CC73GCH1H561J	CHIP C 560PF J		C507			CC73GCH1H560J	CHIP C 56PF J	
C441			CK73GB1H102K	CHIP C 1000PF K		C508			CK73GB1H102K	CHIP C 1000PF K	
C442			CC73GCH1H150J	CHIP C 15PF J		C509			CC73GCH1H330J	CHIP C 33PF J	
C443			CC73GCH1H180J	CHIP C 18PF J		C510			CK73GB1H102K	CHIP C 1000PF K	
C444			CC73GCH1H090B	CHIP C 9.0PF B		C511			CE32BM1C101M	CHIP EL 100UF 16WV	

## PARTS LIST

PLL UNIT (SUB) (X50-3230-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C512			CC73GCH1H121J	CHIP C 120PF J		CN66			E41-1682-05	PIN ASSY	
C513			CC73GCH1H220J	CHIP C 22PF J		CF1			L72-1026-05	CERAMIC FILTER	
C514			CC73GCH1H470J	CHIP C 47PF J		L4			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
C515			CK73GB1H102K	CHIP C 1000PF K		L5			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)	
C516			CC73GCH1H390J	CHIP C 39PF J		L6 ,7			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
C517			CC73GCH1H240J	CHIP C 24PF J		L8 ,9			L41-2785-33	SMALL FIXED INDUCTOR(0.27UH)	
C518			CC73GCH1H560J	CHIP C 56PF J		L10 ,11			L41-1595-33	SMALL FIXED INDUCTOR(1.5UH)	
C519,520			CK73GB1H472K	CHIP C 4700PF K		L12 ,13			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)	
C521			CC73GCH1H120J	CHIP C 12PF J		L14			L41-1585-33	SMALL FIXED INDUCTOR(0.15UH)	
C522-524			CK73GB1H102K	CHIP C 1000PF K		L15			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)	
C525			CC73GCH1H680J	CHIP C 68PF J		L16 ,17			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
C526			CC73GCH1H101J	CHIP C 100PF J		L18			L41-1585-33	SMALL FIXED INDUCTOR(0.15UH)	
C527			CC73GCH1H220J	CHIP C 22PF J		L19 ,20			L41-2798-60	SMALL FIXED INDUCTOR(2.7UH)	
C528			CC73GCH1H470J	CHIP C 47PF J		L21			L41-1585-33	SMALL FIXED INDUCTOR(0.15UH)	
C529			CC73GCH1H240J	CHIP C 24PF J		L22			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
C530			CK73GB1H472K	CHIP C 4700PF K		L24			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
C531			CC73GCH1H390J	CHIP C 39PF J		L26			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
C532			CC73GCH1H120J	CHIP C 12PF J		L27			L41-2285-33	SMALL FIXED INDUCTOR(0.22UH)	
C533			CK73GB1H472K	CHIP C 4700PF K		L28			L41-2785-09	SMALL FIXED INDUCTOR(270NH)	
C534			CK73GB1H103K	CHIP C 0.010UF K		L30 ,31			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
C535			CC73GCH1H100C	CHIP C 10PF C		L33			L41-3388-08	SMALL FIXED INDUCTOR(330NH)	
C536-539			CK73GB1H102K	CHIP C 1000PF K		L34			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
C540			CC73GCH1H180J	CHIP C 18PF J		L35			L34-4614-05	AIR-CORE COIL(8T)	
C541			CK73GB1H102K	CHIP C 1000PF K		L36			L34-4613-05	AIR-CORE COIL(7T)	
C542			CC73GCH1H470J	CHIP C 47PF J		L37			L34-4606-15	AIR-CORE COIL	
C543			CK73GB1H472K	CHIP C 4700PF K		L38			L41-3388-08	SMALL FIXED INDUCTOR(330NH)	
C544			CC73GCH1H220J	CHIP C 22PF J		L39 -42			L41-1598-60	SMALL FIXED INDUCTOR(1.5UH)	
C545			CC73GCH1H100C	CHIP C 10PF C		L44			L41-3388-08	SMALL FIXED INDUCTOR(330NH)	
C546			CK73GB1H102K	CHIP C 1000PF K		L46			L41-1595-33	SMALL FIXED INDUCTOR(1.5UH)	
C547			CC73GCH1H180J	CHIP C 18PF J		L47			L39-1480-15	TOROIDAL COIL	
C548			CK73GB1H102K	CHIP C 1000PF K		L48			L41-1015-33	SMALL FIXED INDUCTOR(100UH)	
C549			CK73GB1H472K	CHIP C 4700PF K		L49			L41-3375-33	SMALL FIXED INDUCTOR(0.033UH)	
C550			CC73GCH1H220J	CHIP C 22PF J		L50			L41-2295-33	SMALL FIXED INDUCTOR(2.2UH)	
C551-553			CK73GB1H102K	CHIP C 1000PF K		L51			L40-3375-92	SMALL FIXED INDUCTOR(33NH)	
C554			CC73GCH1H560J	CHIP C 56PF J		L53			L41-4795-33	SMALL FIXED INDUCTOR(4.7UH)	
C555			CK73GB1H102K	CHIP C 1000PF K		L55			L41-1275-08	SMALL FIXED INDUCTOR(12NH)	
C556			CC73GCH1H560J	CHIP C 56PF J		L56			L92-0639-05	CHIP FERRITE	
C557-559			CK73GB1H102K	CHIP C 1000PF K		L57			L41-5678-14	SMALL FIXED INDUCTOR(56NH)	
C560,561			CK73GB1H103K	CHIP C 0.010UF K		L58			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
C565			CK73GB1H102K	CHIP C 1000PF K		L59			L41-4795-33	SMALL FIXED INDUCTOR(4.7UH)	
C572			CC73GCH1H080B	CHIP C 8.0PF B		L60			L41-3363-08	SMALL FIXED INDUCTOR(3.3NH)	
C573			CC73GCH1H120G	CHIP C 12PF G		L61			L41-6865-08	SMALL FIXED INDUCTOR(6.8NH)	
C574			CC73GCH1H100C	CHIP C 10PF C		L62			L41-5678-14	SMALL FIXED INDUCTOR(56NH)	
C575			CK73GB1H103K	CHIP C 0.010UF K		L63			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
C577-580			CK73GB1H103K	CHIP C 0.010UF K		L64 ,65			L41-2298-60	SMALL FIXED INDUCTOR(2.2UH)	
C581,582			CS77BB21A470M	CHIP TNTL 47UF 10WV		L66			L41-1275-08	SMALL FIXED INDUCTOR(12NH)	
C583			CK73GB1H103K	CHIP C 0.010UF K		L67			L41-2295-33	SMALL FIXED INDUCTOR(2.2UH)	
C584			CK73EB1E106K	CHIP C 10UF K		L69			L39-1480-15	TOROIDAL COIL	
C588,589			CK73GB1H102K	CHIP C 1000PF K		L71			L34-4816-05	COIL	
C695			CK73GB1H102K	CHIP C 1000PF K		L72			L34-4612-05	AIR-CORE COIL(6T)	
C708-711			CK73GB1E105K	CHIP C 1.0UF K		L73			L34-4611-15	AIR-CORE COIL(10T)	
C712-714			C93-1803-05	CHIP C 10UF M		L75			L41-6875-33	SMALL FIXED INDUCTOR(0.068UH)	
C715			CC73GCH1H101J	CHIP C 100PF J		L76			L41-1895-33	SMALL FIXED INDUCTOR(1.8UH)	
TC1 -5			C05-0384-05	CERAMIC TRIMMER CAPACITOR(10P)		L77			L40-1588-67	SMALL FIXED INDUCTOR(150NH)	
CN1			E41-3176-05	FLAT CABLE CONNECTOR		L78 -81			L41-1598-60	SMALL FIXED INDUCTOR(1.5UH)	
CN35			E41-1684-05	PIN ASSY		L82			L41-3375-33	SMALL FIXED INDUCTOR(0.033UH)	
CN42			E04-0491-05	PIN SOCKET		L83			L41-1595-33	SMALL FIXED INDUCTOR(1.5UH)	
CN59			E04-0490-05	PIN SOCKET		L84			L40-1088-67	SMALL FIXED INDUCTOR(100NH)	
CN63-65			E04-0490-05	PIN SOCKET		L85			L40-8278-67	SMALL FIXED INDUCTOR(82NH)	

## PARTS LIST

PLL UNIT (SUB) (X50-3230-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
L86			L41-6875-33	SMALL FIXED INDUCTOR(0.068UH)		L152			L41-3975-33	SMALL FIXED INDUCTOR(0.039UH)	
L87			L39-1480-15	TOROIDAL COIL		L153			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)	
L88			L41-1895-33	SMALL FIXED INDUCTOR(1.8UH)		L154			L41-1585-33	SMALL FIXED INDUCTOR(0.15UH)	
L89			L41-8285-33	SMALL FIXED INDUCTOR(0.82UH)		L155			L41-3375-33	SMALL FIXED INDUCTOR(0.033UH)	
L90			L41-1895-33	SMALL FIXED INDUCTOR(1.8UH)		L156			L41-3975-33	SMALL FIXED INDUCTOR(0.039UH)	
L91			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L157			L41-3375-33	SMALL FIXED INDUCTOR(0.033UH)	
L92			L41-6885-33	SMALL FIXED INDUCTOR(0.68UH)		L158			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)	
L93			L40-1288-67	SMALL FIXED INDUCTOR(120NH)		L159			L40-3391-86	SMALL FIXED INDUCTOR(3.3UH)	
L94			L41-3391-08	SMALL FIXED INDUCTOR(3.3NH)		L160			L41-2295-33	SMALL FIXED INDUCTOR(2.2UH)	
L95			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)		L161,162			L40-2285-92	SMALL FIXED INDUCTOR(220NH)	
L96			L41-1085-14	SMALL FIXED INDUCTOR(100NH)		L163,164			L41-8275-33	SMALL FIXED INDUCTOR(0.082UH)	
L97			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)		L165			L41-1895-33	SMALL FIXED INDUCTOR(1.8UH)	
L98			L41-1085-14	SMALL FIXED INDUCTOR(100NH)		L167,168			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L99			L41-1015-33	SMALL FIXED INDUCTOR(100UH)		L169			L41-1585-33	SMALL FIXED INDUCTOR(0.15UH)	
L100			L41-4785-33	SMALL FIXED INDUCTOR(0.47UH)		L170			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)	
L101			L41-1085-14	SMALL FIXED INDUCTOR(100NH)		X1			L77-1906-05	CRYSTAL RESONATOR(15.6MHZ)	
L102			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)		R2 -13			RK73GB2A101J	CHIP R 100 J 1/10W	
L103			L40-1288-67	SMALL FIXED INDUCTOR(120NH)		R16			RK73GB2A000J	CHIP R 0 J 1/10W	
L104			L41-1085-33	SMALL FIXED INDUCTOR(0.1UH)		R17			RN73GH1J333D	CHIP R 33K D 1/16W	
L105			L41-3975-33	SMALL FIXED INDUCTOR(0.039UH)		R18			RN73GH1J272D	CHIP R 2.7K D 1/16W	
L106			L41-4785-33	SMALL FIXED INDUCTOR(0.47UH)		R19			RN73GH1J392D	CHIP R 3.9K D 1/16W	
L107			L40-3391-86	SMALL FIXED INDUCTOR(3.3UH)		R20			RK73PB2H2R2J	CHIP R 2.2 J 1/2W	
L108			L41-4785-33	SMALL FIXED INDUCTOR(0.47UH)		R29			RK73GB2A000J	CHIP R 0 J 1/10W	
L109			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		R31			RK73GB2A103J	CHIP R 10K J 1/10W	
L110			L41-2275-33	SMALL FIXED INDUCTOR(0.022UH)		R32 -34			RK73GB2A101J	CHIP R 100 J 1/10W	
L111			L41-8285-33	SMALL FIXED INDUCTOR(0.82UH)		R35			RK73GB2A2R2J	CHIP R 2.2 J 1/10W	
L112			L34-4936-05	COIL		R36			RK73GB2A100J	CHIP R 10 J 1/10W	
L113			L41-1085-33	SMALL FIXED INDUCTOR(0.1UH)		R37			RK73GB2A101J	CHIP R 100 J 1/10W	
L114			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		R38			RK73GB2A822J	CHIP R 8.2K J 1/10W	
L115			L41-2275-33	SMALL FIXED INDUCTOR(0.022UH)		R39			RK73GB2A153J	CHIP R 15K J 1/10W	
L116			L34-4936-05	COIL		R42			RK73GB2A391J	CHIP R 390 J 1/10W	
L117			L41-4785-33	SMALL FIXED INDUCTOR(0.47UH)		R44 -49			RK73GB2A101J	CHIP R 100 J 1/10W	
L118			L41-8275-33	SMALL FIXED INDUCTOR(0.082UH)		R50			RK73GB2A472J	CHIP R 4.7K J 1/10W	
L119			L41-6878-14	SMALL FIXED INDUCTOR(68NH)		R55 -60			RK73GB2A101J	CHIP R 100 J 1/10W	
L120			L41-1085-33	SMALL FIXED INDUCTOR(0.1UH)		R61			RK73GB2A153J	CHIP R 15K J 1/10W	
L121			L41-6878-14	SMALL FIXED INDUCTOR(68NH)		R62			RK73GB2A822J	CHIP R 8.2K J 1/10W	
L122			L41-1085-14	SMALL FIXED INDUCTOR(100NH)		R63			RK73GB2A470J	CHIP R 47 J 1/10W	
L123			L41-1085-33	SMALL FIXED INDUCTOR(0.1UH)		R64			RK73GB2A100J	CHIP R 10 J 1/10W	
L124			L41-3385-33	SMALL FIXED INDUCTOR(0.33UH)		R65			RK73GB2A180J	CHIP R 18 J 1/10W	
L125			L41-5678-14	SMALL FIXED INDUCTOR(56NH)		R66			RK73GB2A331J	CHIP R 330 J 1/10W	
L126			L41-8275-14	SMALL FIXED INDUCTOR(82NH)		R67			RK73GB2A683J	CHIP R 68K J 1/10W	
L127,128			L41-1085-14	SMALL FIXED INDUCTOR(100NH)		R68			RK73GB2A101J	CHIP R 100 J 1/10W	
L129			L34-4936-05	COIL		R69 -71			RK73GB2A000J	CHIP R 0 J 1/10W	
L130			L41-2785-33	SMALL FIXED INDUCTOR(0.27UH)		R72			RK73GB2A470J	CHIP R 47 J 1/10W	
L131			L41-5678-14	SMALL FIXED INDUCTOR(56NH)		R73			RK73GB2A153J	CHIP R 15K J 1/10W	
L132			L41-6878-14	SMALL FIXED INDUCTOR(68NH)		R74			RK73GB2A682J	CHIP R 6.8K J 1/10W	
L133,134			L40-1288-67	SMALL FIXED INDUCTOR(120NH)		R75			RK73GB2A122J	CHIP R 1.2K J 1/10W	
L135			L34-4936-05	COIL		R76			RK73GB2A000J	CHIP R 0 J 1/10W	
L136			L41-3385-33	SMALL FIXED INDUCTOR(0.33UH)		R77			RK73GB2A331J	CHIP R 330 J 1/10W	
L137			L41-5678-14	SMALL FIXED INDUCTOR(56NH)		R78			RK73GB2A683J	CHIP R 68K J 1/10W	
L138			L41-6878-14	SMALL FIXED INDUCTOR(68NH)		R80			RK73GB2A101J	CHIP R 100 J 1/10W	
L139,140			L41-1085-14	SMALL FIXED INDUCTOR(100NH)		R81			RK73GB2A102J	CHIP R 1.0K J 1/10W	
L141			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)		R82			RK73GB2A101J	CHIP R 100 J 1/10W	
L142			L41-2285-14	SMALL FIXED INDUCTOR(220NH)		R83			RK73GB2A152J	CHIP R 1.5K J 1/10W	
L144			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)		R84			RK73GB2A000J	CHIP R 0 J 1/10W	
L145,146			L41-2785-14	SMALL FIXED INDUCTOR(270NH)		R85			RK73GB2A221J	CHIP R 220 J 1/10W	
L147			L41-2285-14	SMALL FIXED INDUCTOR(220NH)		R86,87			RK73GB2A000J	CHIP R 0 J 1/10W	
L148,149			L34-4936-05	COIL		R88			RK73GB2A102J	CHIP R 1.0K J 1/10W	
L150			L41-1895-33	SMALL FIXED INDUCTOR(1.8UH)		R89,90			RK73GB2A153J	CHIP R 15K J 1/10W	
L151			L41-1585-33	SMALL FIXED INDUCTOR(0.15UH)							

## PARTS LIST

PLL UNIT (SUB) (X50-3230-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R91			RK73GB2A101J	CHIP R 100 J 1/10W		R172			RK73GB2A393J	CHIP R 39K J 1/10W	
R92			RK73GB2A000J	CHIP R 0 J 1/10W		R173			RK73GB2A180J	CHIP R 18 J 1/10W	
R93			RK73GB2A221J	CHIP R 220 J 1/10W		R174			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R94 ,95			RK73GB2A103J	CHIP R 10K J 1/10W		R175			RK73GB2A101J	CHIP R 100 J 1/10W	
R96			RK73GB2A123J	CHIP R 12K J 1/10W		R176			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R97 ,98			RK73GB2A153J	CHIP R 15K J 1/10W		R177			RK73GB2A470J	CHIP R 47 J 1/10W	
R100			RK73GB2A102J	CHIP R 1.0K J 1/10W		R178			RK73GB2A180J	CHIP R 18 J 1/10W	
R101			RK73GB2A392J	CHIP R 3.9K J 1/10W		R179			RK73GB2A103J	CHIP R 10K J 1/10W	
R102			RK73GB2A102J	CHIP R 1.0K J 1/10W		R180			RK73GB2A000J	CHIP R 0 J 1/10W	
R103			RK73GB2A000J	CHIP R 0 J 1/10W		R181			RK73GB2A180J	CHIP R 18 J 1/10W	
R105			RK73GB2A101J	CHIP R 100 J 1/10W		R182			RK73GB2A101J	CHIP R 100 J 1/10W	
R106			RN73GH1J103D	CHIP R 10K D 1/16W		R183			RK73GB2A470J	CHIP R 47 J 1/10W	
R107			RN73GH1J473D	CHIP R 47K D 1/16W		R184			RK73GB2A103J	CHIP R 10K J 1/10W	
R108			RN73GH1J103D	CHIP R 10K D 1/16W		R185			RK73GB2A331J	CHIP R 330 J 1/10W	
R109			RN73GH1J473D	CHIP R 47K D 1/16W		R187			RK73GB2A000J	CHIP R 0 J 1/10W	
R110			RK73GB2A472J	CHIP R 4.7K J 1/10W		R188			RK73GB2A101J	CHIP R 100 J 1/10W	
R111			RK73GB2A102J	CHIP R 1.0K J 1/10W		R189			RK73GB2A000J	CHIP R 0 J 1/10W	
R112,113			RK73GB2A153J	CHIP R 15K J 1/10W		R190			RK73GB2A103J	CHIP R 10K J 1/10W	
R114			RK73GB2A392J	CHIP R 3.9K J 1/10W		R191			RK73GB2A101J	CHIP R 100 J 1/10W	
R115			RK73GB2A103J	CHIP R 10K J 1/10W		R192			RK73GB2A822J	CHIP R 8.2K J 1/10W	
R116			RK73GB2A102J	CHIP R 1.0K J 1/10W		R193			RK73GB2A153J	CHIP R 15K J 1/10W	
R117,118			RN73GH1J473D	CHIP R 47K D 1/16W		R194			RK73GB2A104J	CHIP R 100K J 1/10W	
R119			RK73GB2A102J	CHIP R 1.0K J 1/10W		R195			RK73GB2A331J	CHIP R 330 J 1/10W	
R120-123			RK73GB2A101J	CHIP R 100 J 1/10W		R196			RK73GB2A391J	CHIP R 390 J 1/10W	
R124			RK73GB2A103J	CHIP R 10K J 1/10W		R197,198			RK73GB2A000J	CHIP R 0 J 1/10W	
R125			RK73GB2A223J	CHIP R 22K J 1/10W		R199			RK73GB2A104J	CHIP R 100K J 1/10W	
R126			RK73GB2A100J	CHIP R 10 J 1/10W		R200			RN73GH1J103D	CHIP R 10K D 1/16W	
R128			RK73GB2A470J	CHIP R 47 J 1/10W		R201			RK73GB2A000J	CHIP R 0 J 1/10W	
R129			RK73GB2A101J	CHIP R 100 J 1/10W		R202			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R131			RK73GB2A101J	CHIP R 100 J 1/10W		R203			RK73GB2A100J	CHIP R 10 J 1/10W	
R132			RK73GB2A222J	CHIP R 2.2K J 1/10W		R204			RK73GB2A000J	CHIP R 0 J 1/10W	
R133			RK73GB2A102J	CHIP R 1.0K J 1/10W		R205			RK73GB2A104J	CHIP R 100K J 1/10W	
R135,136			RK73GB2A180J	CHIP R 18 J 1/10W		R207			RK73GB2A101J	CHIP R 100 J 1/10W	
R137			RK73GB2A101J	CHIP R 100 J 1/10W		R208			RK73GB2A470J	CHIP R 47 J 1/10W	
R138			RK73GB2A100J	CHIP R 10 J 1/10W		R209			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R139,140			RN73GH1J103D	CHIP R 10K D 1/16W		R212			RK73GB2A104J	CHIP R 100K J 1/10W	
R141			RK73GB2A331J	CHIP R 330 J 1/10W		R213			RK73GB2A181J	CHIP R 180 J 1/10W	
R142			RN73GE1J221D	CHIP R 220 D 1/16W		R214			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R143			RK73GB2A180J	CHIP R 18 J 1/10W		R215			RK73GB2A331J	CHIP R 330 J 1/10W	
R144			RK73GB2A822J	CHIP R 8.2K J 1/10W		R216			RK73GB2A470J	CHIP R 47 J 1/10W	
R145			RK73GB2A153J	CHIP R 15K J 1/10W		R217			RK73GB2A000J	CHIP R 0 J 1/10W	
R146			RK73GB2A822J	CHIP R 8.2K J 1/10W		R218			RN73GH1J103D	CHIP R 10K D 1/16W	
R147			RK73GB2A153J	CHIP R 15K J 1/10W		R219			RN73GH1J473D	CHIP R 47K D 1/16W	
R148			RK73GB2A470J	CHIP R 47 J 1/10W		R220			RN73GH1J103D	CHIP R 10K D 1/16W	
R149			RK73GB2A391J	CHIP R 390 J 1/10W		R221			RN73GH1J473D	CHIP R 47K D 1/16W	
R150			RK73GB2A331J	CHIP R 330 J 1/10W		R222,223			RK73GB2A151J	CHIP R 150 J 1/10W	
R151			RK73GB2A103J	CHIP R 10K J 1/10W		R224			RK73GB2A000J	CHIP R 0 J 1/10W	
R152,153			RK73GB2A000J	CHIP R 0 J 1/10W		R225			RK73GB2A224J	CHIP R 220K J 1/10W	
R154			RK73GB2A331J	CHIP R 330 J 1/10W		R226,227			RN73GH1J473D	CHIP R 47K D 1/16W	
R155			RN73GE1J151D	CHIP R 150 D 1/16W		R228			RK73GB2A101J	CHIP R 100 J 1/10W	
R157,158			RN73GE1J391D	CHIP R 390 D 1/16W		R229			RK73GB2A000J	CHIP R 0 J 1/10W	
R161,162			RK73GB2A102J	CHIP R 1.0K J 1/10W		R230			RK73GB2A101J	CHIP R 100 J 1/10W	
R163			RK73GB2A000J	CHIP R 0 J 1/10W		R231			RK73GB2A000J	CHIP R 0 J 1/10W	
R164			RK73GB2A102J	CHIP R 1.0K J 1/10W		R232			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R165			RK73GB2A000J	CHIP R 0 J 1/10W		R233			RK73GB2A470J	CHIP R 47 J 1/10W	
R166			RK73GB2A101J	CHIP R 100 J 1/10W		R234			RK73GB2A101J	CHIP R 100 J 1/10W	
R167,168			RK73GB2A153J	CHIP R 15K J 1/10W		R237			RK73GB2A000J	CHIP R 0 J 1/10W	
R169			RK73GB2A470J	CHIP R 47 J 1/10W		R238			RK73GB2A470J	CHIP R 47 J 1/10W	
R170			RK73GB2A000J	CHIP R 0 J 1/10W		R239			RK73GB2A392J	CHIP R 3.9K J 1/10W	
R171			RK73GB2A273J	CHIP R 27K J 1/10W		R241			RK73GB2A102J	CHIP R 1.0K J 1/10W	

## PARTS LIST

PLL UNIT (SUB) (X50-3230-00)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R242			RK73GB2A180J	CHIP R 18 J 1/10W		R316-320			RK73GB2A000J	CHIP R 0 J 1/10W	
R244			RK73GB2A000J	CHIP R 0 J 1/10W		R321			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R245,246			RN73GH1J103D	CHIP R 10K D 1/16W		R322-324			RK73GB2A000J	CHIP R 0 J 1/10W	
R247			RK73GB2A391J	CHIP R 390 J 1/10W		R325-327			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R248-250			RK73GB2A000J	CHIP R 0 J 1/10W		R328			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R251-253			RK73GB2A102J	CHIP R 1.0K J 1/10W		R329			RK73GB2A180J	CHIP R 18 J 1/10W	
R254			RK73GB2A100J	CHIP R 10 J 1/10W		R330			RK73GB2A392J	CHIP R 3.9K J 1/10W	
R255			RK73GB2A102J	CHIP R 1.0K J 1/10W		R331			RK73GB2A271J	CHIP R 270 J 1/10W	
R256,257			RN73GE1J391D	CHIP R 390 D 1/16W		R333,334			RK73GB2A180J	CHIP R 18 J 1/10W	
R258,259			RK73GB2A102J	CHIP R 1.0K J 1/10W		R335			RK73GB2A271J	CHIP R 270 J 1/10W	
R260			RK73GB2A152J	CHIP R 1.5K J 1/10W		R336			RK73GB2A180J	CHIP R 18 J 1/10W	
R261			RK73GB2A101J	CHIP R 100 J 1/10W		R337			RK73GB2A153J	CHIP R 15K J 1/10W	
R262,263			RK73GB2A153J	CHIP R 15K J 1/10W		R338			RK73GB2A682J	CHIP R 6.8K J 1/10W	
R264			RK73GB2A000J	CHIP R 0 J 1/10W		R339			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R265			RK73GB2A220J	CHIP R 22 J 1/10W		R340			RK73GB2A470J	CHIP R 47 J 1/10W	
R266			RK73GB2A101J	CHIP R 100 J 1/10W		R341			RK73GB2A101J	CHIP R 100 J 1/10W	
R267			RK73GB2A271J	CHIP R 270 J 1/10W		R342			RK73GB2A470J	CHIP R 47 J 1/10W	
R268			RK73GB2A000J	CHIP R 0 J 1/10W		R343,344			RK73GB2A682J	CHIP R 6.8K J 1/10W	
R269			RK73GB2A220J	CHIP R 22 J 1/10W		R345			RK73GB2A473J	CHIP R 47K J 1/10W	
R270			RK73GB2A680J	CHIP R 68 J 1/10W		R346			RK73GB2A561J	CHIP R 560 J 1/10W	
R271			RK73GB2A102J	CHIP R 1.0K J 1/10W		R347			RK73GB2A101J	CHIP R 100 J 1/10W	
R272			RK73GB2A220J	CHIP R 22 J 1/10W		R348			RK73GB2A471J	CHIP R 470 J 1/10W	
R273			RK73GB2A101J	CHIP R 100 J 1/10W		R349			RK73GB2A103J	CHIP R 10K J 1/10W	
R274			RK73GB2A220J	CHIP R 22 J 1/10W		R350			RK73GB2A000J	CHIP R 0 J 1/10W	
R275			RK73GB2A153J	CHIP R 15K J 1/10W		R352			RK73GB2A000J	CHIP R 0 J 1/10W	
R276			RK73GB2A682J	CHIP R 6.8K J 1/10W		R353			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R277			RK73GB2A103J	CHIP R 10K J 1/10W		R354			RK73GB2A120J	CHIP R 12 J 1/10W	
R278			RK73GB2A821J	CHIP R 820 J 1/10W		R355,356			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R279,280			RK73GB2A470J	CHIP R 47 J 1/10W		R357			RK73GB2A473J	CHIP R 47K J 1/10W	
R281			RK73GB2A153J	CHIP R 15K J 1/10W		R358			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R282			RK73GB2A682J	CHIP R 6.8K J 1/10W		R359			RK73GB2A471J	CHIP R 470 J 1/10W	
R283			RK73GB2A271J	CHIP R 270 J 1/10W		R360			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R284			RK73GB2A152J	CHIP R 1.5K J 1/10W		R361			RK73GB2A101J	CHIP R 100 J 1/10W	
R285			RK73GB2A100J	CHIP R 10 J 1/10W		R362			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R287			RK73GB2A102J	CHIP R 1.0K J 1/10W		R363-366			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R288			RK73GB2A470J	CHIP R 47 J 1/10W		R367			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R289			RK73GB2A153J	CHIP R 15K J 1/10W		R368			RK73GB2A821J	CHIP R 820 J 1/10W	
R290			RK73GB2A682J	CHIP R 6.8K J 1/10W		R369			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R291			RK73GB2A101J	CHIP R 100 J 1/10W		R370			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R292			RK73GB2A104J	CHIP R 100K J 1/10W		R371			RK73GB2A101J	CHIP R 100 J 1/10W	
R293			RK73GB2A271J	CHIP R 270 J 1/10W		R372			RK73GB2A271J	CHIP R 270 J 1/10W	
R294			RK73GB2A000J	CHIP R 0 J 1/10W		R373,374			RK73GB2A121J	CHIP R 120 J 1/10W	
R295			RK73GB2A821J	CHIP R 820 J 1/10W		R375			RK73GB2A151J	CHIP R 150 J 1/10W	
R296			RK73GB2A152J	CHIP R 1.5K J 1/10W		R376			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R297			RK73GB2A000J	CHIP R 0 J 1/10W		R377			RK73GB2A180J	CHIP R 18 J 1/10W	
R298			RK73GB2A474J	CHIP R 470K J 1/10W		R378,379			RK73GB2A470J	CHIP R 47 J 1/10W	
R299			RK73GB2A103J	CHIP R 10K J 1/10W		R380			RK73GB2A390J	CHIP R 39 J 1/10W	
R300-302			RK73GB2A101J	CHIP R 100 J 1/10W		R381			RK73GB2A271J	CHIP R 270 J 1/10W	
R303			RK73GB2A681J	CHIP R 680 J 1/10W		R382,383			RK73GB2A121J	CHIP R 120 J 1/10W	
R304			RK73GB2A821J	CHIP R 820 J 1/10W		R384			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R305			RK73GB2A2R2J	CHIP R 2.2 J 1/10W		R385			RK73GB2A151J	CHIP R 150 J 1/10W	
R306			RK73GB2A821J	CHIP R 820 J 1/10W		R386			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R307			RK73GB2A180J	CHIP R 18 J 1/10W		R387			RK73GB2A470J	CHIP R 47 J 1/10W	
R308,309			RK73GB2A152J	CHIP R 1.5K J 1/10W		R388			RK73GB2A153J	CHIP R 15K J 1/10W	
R310			RK73GB2A104J	CHIP R 100K J 1/10W		R389			RK73GB2A682J	CHIP R 6.8K J 1/10W	
R311			RK73GB2A101J	CHIP R 100 J 1/10W		R390			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R312			RK73GB2A000J	CHIP R 0 J 1/10W		R391			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R313			RK73GB2A152J	CHIP R 1.5K J 1/10W		R392-394			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R314			RK73GB2A104J	CHIP R 100K J 1/10W		R395,396			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R315			RK73GB2A152J	CHIP R 1.5K J 1/10W		R397			RK73GB2A153J	CHIP R 15K J 1/10W	



## PARTS LIST

### PLL UNIT (SUB) (X50-3230-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R399			RK73GB2A271J	CHIP R 270 J 1/10W		D52 -55			HVC131	DIODE	
R400			RK73GB2A102J	CHIP R 1.0K J 1/10W		D56			1SV312-F	DIODE	
R401			RK73GB2A470J	CHIP R 47 J 1/10W		D57 -59			1SS388F	DIODE	
R402			RK73GB2A180J	CHIP R 18 J 1/10W		D60			1SR154-400	DIODE	
R403			RK73GB2A101J	CHIP R 100 J 1/10W		D63			HSC277	DIODE	
R404			RK73GB2A821J	CHIP R 820 J 1/10W		IC1			<b>Note1</b>	MOS-IC	
R405			RK73GB2A272J	CHIP R 2.7K J 1/10W		IC2			TA4805BF	MOS-IC	
R406			RK73GB2A102J	CHIP R 1.0K J 1/10W		IC3			TA48M033F-SNQ	ANALOGUE IC	
R407			RK73GB2A180J	CHIP R 18 J 1/10W		IC5 ,6			TC74HC4094AFF	MOS-IC	
R408,409			RK73GB2A271J	CHIP R 270 J 1/10W		IC7 -9			TC7W125FU-F	MOS-IC	
R410			RK73GB2A180J	CHIP R 18 J 1/10W		IC10			<b>Note1</b>	MOS-IC	
R411			RK73GB2A152J	CHIP R 1.5K J 1/10W		IC11,12			AD9835BRUZ	MOS-IC	
R412			RK73GB2A470J	CHIP R 47 J 1/10W		IC13			XC6219B182PR-G	MOS-IC	
R413,414			RK73GB2A271J	CHIP R 270 J 1/10W		IC14			AD9951YSVZ	MOS-IC	
R415			RK73GB2A180J	CHIP R 18 J 1/10W		IC15			UPC2710TB-A	ANALOGUE IC	
R416			RK73GB2A152J	CHIP R 1.5K J 1/10W		IC16			<b>Note1</b>	MOS-IC	
R417,418			RK73GB2A271J	CHIP R 270 J 1/10W		IC17			BA00DD0WHFP	ANALOGUE IC	
R419			RK73GB2A180J	CHIP R 18 J 1/10W		IC18			TC7W125FU-F	MOS-IC	
R420			RK73GB2A271J	CHIP R 270 J 1/10W		IC20			TC7S66FU	MOS-IC	
R421			RK73GB2A821J	CHIP R 820 J 1/10W		Q1 -3			2SC4617(R)	TRANSISTOR	
R422,423			RK73GB2A101J	CHIP R 100 J 1/10W		Q4			2SC4649(N,P)	TRANSISTOR	
R424			RK73GB2A000J	CHIP R 0 J 1/10W		Q5			2SC4617(R)	TRANSISTOR	
R426,427			RK73GB2A000J	CHIP R 0 J 1/10W		Q6 ,7			RN47A5-F	TRANSISTOR	
R428			RK73GB2A103J	CHIP R 10K J 1/10W		Q8			2SC4116(BL)F	TRANSISTOR	
R636			RK73GB2A000J	CHIP R 0 J 1/10W		Q9 ,10			LTC044EEBFS8	TRANSISTOR	
R639			RK73GB2A000J	CHIP R 0 J 1/10W		Q11			2SC5108(Y)F	TRANSISTOR	
R642			RK73GB2A000J	CHIP R 0 J 1/10W		Q12 ,13			2SC4617(R)	TRANSISTOR	
R645,646			RK73GB2A000J	CHIP R 0 J 1/10W		Q14 ,15			SSM3K15TE(F)	FET	
R647			RK73GB2A101J	CHIP R 100 J 1/10W		Q16 -18			MCH3914(7)-H	FET	
R648,649			RK73GB2A560J	CHIP R 56 J 1/10W		Q19 -21			2SC4617(R)	TRANSISTOR	
R650			RK73GB2A470J	CHIP R 47 J 1/10W		Q23 ,24			2SC5108(Y)F	TRANSISTOR	
R654-657			RK73GB2A560J	CHIP R 56 J 1/10W		Q25			2SC4617(R)	TRANSISTOR	
D2 ,3			1SV228-F	VARIABLE CAPACITANCE DIODE		Q26 ,27			RN47A5-F	TRANSISTOR	
D4			HVC350B	VARIABLE CAPACITANCE DIODE		Q28			UMX2N	TRANSISTOR	
D5			1SV283F	VARIABLE CAPACITANCE DIODE		Q29			2SC4617(R)	TRANSISTOR	
D6 ,7			HSC277	DIODE		Q30			LTA014EEBFS8	TRANSISTOR	
D8			1SV283F	VARIABLE CAPACITANCE DIODE		Q31 -33			LTC044EEBFS8	TRANSISTOR	
D9 ,10			HSC277	DIODE		Q34			2SC5108(Y)F	TRANSISTOR	
D11			KV1470-G	VARIABLE CAPACITANCE DIODE		Q35			LTA014EEBFS8	TRANSISTOR	
D12 ,13			1SV228-F	VARIABLE CAPACITANCE DIODE		Q36			LTC044EEBFS8	TRANSISTOR	
D14 ,15			HSC277	DIODE		Q37 ,38			SSM3K15TE(F)	FET	
D16			HVC131	DIODE		Q39 ,40			MCH3914(7)-H	FET	
D17 ,18			HSC277	DIODE		Q41			LTA014EEBFS8	TRANSISTOR	
D19			RB715F	DIODE		Q42			LTC044EEBFS8	TRANSISTOR	
D20			MC2858-T111	DIODE		Q43			LTA014EEBFS8	TRANSISTOR	
D21			HSC277	DIODE		Q44			LTC044EEBFS8	TRANSISTOR	
D22 ,23			HVC131	DIODE		Q45			LTA014EEBFS8	TRANSISTOR	
D24			MC2858-T111	DIODE		Q46			LTC044EEBFS8	TRANSISTOR	
D25 -27			HVC131	DIODE		Q47			LTA014EEBFS8	TRANSISTOR	
D28 -30			HSC277	DIODE		Q48			LTC044EEBFS8	TRANSISTOR	
D32 -34			HVC131	DIODE		Q49 ,50			2SC4617(R)	TRANSISTOR	
D35			HSC277	DIODE		Q51			2SC4649(N,P)	TRANSISTOR	
D36			HVC131	DIODE		Q52			2SC4617(R)	TRANSISTOR	
D38			MC2858-T111	DIODE		Q53			UMX2N	TRANSISTOR	
D39			1SR154-400	DIODE		Q54 ,55			2SC4116(BL)F	TRANSISTOR	
D40			HSC277	DIODE		Q56 ,57			2SC4649(N,P)	TRANSISTOR	
D43			HSC277	DIODE		Q58			2SC4116(BL)F	TRANSISTOR	
D44 -47			HVC131	DIODE		Q59			RN47A5-F	TRANSISTOR	
D48 -51			HSC277	DIODE		Q60			2SC4649(N,P)	TRANSISTOR	
						Q61			2SC5108(Y)F	TRANSISTOR	



## PARTS LIST

PLL UNIT (SUB) (X50-3230-00)  
AT UNIT (X53-4410-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
Q62			RN47A5-F	TRANSISTOR		C83			CK73FB1E104K	CHIP C	0.10UF K
Q63 ,64			SSM3K15TE(F)	FET		C84 ,85			CK73FB1C105K	CHIP C	1.0UF K
Q65			2SC4617(R)	TRANSISTOR		C86			CC73GCH1H101J	CHIP C	100PF J
Q66			2SC4116(BL)F	TRANSISTOR		C87			CC73GCH1H100D	CHIP C	10PF D
Q68			RN47A5-F	TRANSISTOR		C88			CC73GCH1H101J	CHIP C	100PF J
<b>AT UNIT (X53-4410-00)</b>						C89			CK73GB1E104K	CHIP C	0.10UF K
C1			CC73GCH1H040B	CHIP C	4.0PF B	C90			CK73GB1E105K	CHIP C	1.0UF K
C4			CK73FB1H103K	CHIP C	0.010UF K	C93			CK73EB1E106K	CHIP C	10UF K
C17			CK73FB1H103K	CHIP C	0.010UF K	C95			CK73GB1H103K	CHIP C	0.010UF K
C18			CK73FB1H472K	CHIP C	4700PF K	C96			CK73EB1E106K	CHIP C	10UF K
C19			CK73FB1H102K	CHIP C	1000PF K	C97			C93-1873-05	CHIP C	10000PF 630WV
C20			CK73FB1H103K	CHIP C	0.010UF K	C98			CK73GB1E103K	CHIP C	0.010UF K
C21			C93-0553-05	CHIP C	3.0PF C	C99			CK73GB1E105K	CHIP C	1.0UF K
C22			C93-1880-05	CHIP C	22PF 630WV	C100			CK73EB1E106K	CHIP C	10UF K
C23			C93-0553-05	CHIP C	3.0PF C	C101			CK73FB1H102K	CHIP C	1000PF K
C24			C93-1880-05	CHIP C	22PF 630WV	C102			CK73EB1E106K	CHIP C	10UF K
C26 ,27			CK73FB1H103K	CHIP C	0.010UF K	C103			CK73FB1E104K	CHIP C	0.10UF K
C29 ,30			CK73GB1H222K	CHIP C	2200PF K	C105,106			CK73GB1H103K	CHIP C	0.010UF K
C32 ,33			CK73FB1H103K	CHIP C	0.010UF K	C108			CK73FB1H102K	CHIP C	1000PF K
C38			CK73GB1H103K	CHIP C	0.010UF K	C109-112			CK73GB1H103K	CHIP C	0.010UF K
C39			CK73GB1H102K	CHIP C	1000PF K	C113			C93-0555-05	CHIP C	5.0PF C
C40			CK73FB1H102K	CHIP C	1000PF K	C114			CC73FCH1H101J	CHIP C	100PF J
C41			CK73GB1H102K	CHIP C	1000PF K	C115			CK73GB1H102K	CHIP C	1000PF K
C42			CK73FB1H102K	CHIP C	1000PF K	C116,117			CK73GB1H103K	CHIP C	0.010UF K
C43 ,44			CK73FB1H103K	CHIP C	0.010UF K	C118			CD04AY1E470M	ELECTRO	47UF 25WV
C45			CK73FB1H102K	CHIP C	1000PF K	C119			CK73FB1H103K	CHIP C	0.010UF K
C46 -48			CK73FB1E104K	CHIP C	0.10UF K	C120			C93-0555-05	CHIP C	5.0PF C
C49			CK73FB1C105K	CHIP C	1.0UF K	C121			CC73FCH1H820J	CHIP C	82PF J
C50			CK73FB1E104K	CHIP C	0.10UF K	C122			CK73FB1E104K	CHIP C	0.10UF K
C51			C93-0715-05	CHIP C	1000PF 630WV	C123,124			CK73GB1H103K	CHIP C	0.010UF K
C52			C93-1908-05	CHIP C	0.47UF 250WV	C125			CK73FB1H102K	CHIP C	1000PF K
C53 -55			CK73FB1H103K	CHIP C	0.010UF K	C126			CK73FB1E104K	CHIP C	0.10UF K
C59			CK73FB1C105K	CHIP C	1.0UF K	C130-133			CK73FB1C105K	CHIP C	1.0UF K
C60			CK73FB1H102K	CHIP C	1000PF K	C141			CC73GCH1H390G	CHIP C	39PF G
C61			CK73FB1E104K	CHIP C	0.10UF K	C143			CC73GCH1H050B	CHIP C	5.0PF B
C62			C93-0715-05	CHIP C	1000PF 630WV	C147			CC73FCH1H030B	CHIP C	3.0PF B
C63			C93-1908-05	CHIP C	0.47UF 250WV	C150-152			CC73FCH1H102J	CHIP C	1000PF J
C64			C93-1873-05	CHIP C	10000PF 630WV	C153			CC73GCH1H100D	CHIP C	10PF D
C65			CK73FB1H102K	CHIP C	1000PF K	C154			CC73FCH1H102J	CHIP C	1000PF J
C66 ,67			CK73FB1E104K	CHIP C	0.10UF K	C155			CC73GCH1H100D	CHIP C	10PF D
C68			CC73FCH1H820J	CHIP C	82PF J	C156			CC73FCH1H102J	CHIP C	1000PF J
C69			CK73FB1H103K	CHIP C	0.010UF K	C157			CC73GCH1H101J	CHIP C	100PF J
C70			CK73FB1C105K	CHIP C	1.0UF K	C160,161			CK73GB1H103K	CHIP C	0.010UF K
C71			CK73FB1E104K	CHIP C	0.10UF K	C171			CC73GCH1H470J	CHIP C	47PF J
C72 ,73			CK73FB1H103K	CHIP C	0.010UF K	C172			CC73GCH1H080B	CHIP C	8.0PF B
C74			CK73FB1H472K	CHIP C	4700PF K	C173			CC73GCH1H470J	CHIP C	47PF J
C75			CK73FB1H102K	CHIP C	1000PF K	C176,177			C93-1909-05	CHIP C	68000PF 630WV
C76			CK73FB1H103K	CHIP C	0.010UF K	C180			CC73GCH1H180G	CHIP C	18PF G
C78			CK73FB1H103K	CHIP C	0.010UF K	C181-183			CC73GCH1H390G	CHIP C	39PF G
C80			CK73FB1H103K	CHIP C	0.010UF K	C184			CC73GCH1H270G	CHIP C	27PF G
C81 ,82			CK73GB1H102K	CHIP C	1000PF K	C185-187			CC73GCH1H390G	CHIP C	39PF G
						C188,189			CC73GCH1H020B	CHIP C	2.0PF B
						C190			CC73GCH1H220G	CHIP C	22PF G
						C201-206			C91-3115-05	HV C	10PF 2KWV
						C207,208			CK73FB1H103K	CHIP C	0.010UF K
						C209,210			C91-3115-05	HV C	10PF 2KWV
						C211,212			CK73FB1H103K	CHIP C	0.010UF K
						C213			C91-3211-05	HV C	10PF 6KWV
						C214,215			CK73FB1H103K	CHIP C	0.010UF K
						C216			C91-3210-05	HV C	18PF 6KWV

## PARTS LIST

### AT UNIT (X53-4410-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C217,218			CK73FB1H103K	CHIP C 0.010UF K		J4 -6			E63-0406-05	PIN JACK	
C219,220			C91-3210-05	HV C 18PF 6KWV		J7			E63-0405-05	PIN JACK	
C221,222			CK73FB1H103K	CHIP C 0.010UF K		W201			E37-1575-05	LEAD WIRE WITH MINIPIN PLUG	
C223			C91-3209-05	HV C 56PF 6KWV		W202			E37-1576-05	LEAD WIRE WITH MINIPIN PLUG	
C224			C91-3210-05	HV C 18PF 6KWV							
C225,226			CK73FB1H103K	CHIP C 0.010UF K		L9			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
C227			C91-3193-05	HV C 150PF 6KWV		L11 ,12			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
C228,229			CK73FB1H103K	CHIP C 0.010UF K		L14 ,15			L39-1810-05	TOROIDAL COIL	
C230,231			C91-3123-05	HV C 150PF 3KWV		L17			L33-2600-05	CHOCO COIL	
C232,233			CK73FB1H103K	CHIP C 0.010UF K		L18			L39-1594-05	TOROIDAL COIL	
C240-245			C91-3115-05	HV C 10PF 2KWV		L19 -22			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
C246,247			CK73FB1H103K	CHIP C 0.010UF K		L24			L39-1812-05	TOROIDAL COIL	
C248,249			C91-3115-05	HV C 10PF 2KWV		L25			L39-1574-05	TOROIDAL COIL	
C250,251			CK73FB1H103K	CHIP C 0.010UF K		L27			L33-0695-05	SMALL FIXED INDUCTOR(1MH)	
C252			C91-3211-05	HV C 10PF 6KWV		L28			L39-1579-05	TOROIDAL COIL	
C253,254			CK73FB1H103K	CHIP C 0.010UF K		L29			L33-0695-05	SMALL FIXED INDUCTOR(1MH)	
C255			C91-3210-05	HV C 18PF 6KWV		L30 -33			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
C256,257			CK73FB1H103K	CHIP C 0.010UF K		L34			L33-2600-05	CHOCO COIL	
C258,259			C91-3210-05	HV C 18PF 6KWV		L35			L33-1554-05	CHOCO COIL	
C260,261			CK73FB1H103K	CHIP C 0.010UF K		L36			L41-1585-32	SMALL FIXED INDUCTOR(0.15UH)	
C262			C91-3210-05	HV C 18PF 6KWV		L38 -40			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
C263			C91-3209-05	HV C 56PF 6KWV		L50 -52			L34-4616-05	AIR-CORE COIL(10T)	
C264,265			CK73FB1H103K	CHIP C 0.010UF K		L53			L34-4615-05	AIR-CORE COIL(9T)	
C266			C91-3193-05	HV C 150PF 6KWV		L55 -57			L92-0444-05	CHIP FERRITE	
C267,268			CK73FB1H103K	CHIP C 0.010UF K		L201-208			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
C269,270			C91-3123-05	HV C 150PF 3KWV		L240-247			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
C271,272			CK73FB1H103K	CHIP C 0.010UF K		L270			L33-1552-05	SMALL FIXED INDUCTOR(22UH)	
C273			CK73FB1E104K	CHIP C 0.10UF K		L281			L39-1543-05	TOROIDAL COIL	
C274			CK73FB1H102K	CHIP C 1000PF K		L282			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
C275			CK73FB1E104K	CHIP C 0.10UF K		L283			L34-4923-05	AIR-CORE COIL(5.5T)	
C276			CK73FB1H102K	CHIP C 1000PF K		L284			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
C277			CK73FB1E104K	CHIP C 0.10UF K		L285			L34-4922-05	AIR-CORE COIL(3.5T)	
C280-297			CK73FB1H103K	CHIP C 0.010UF K		L286			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
C300,301			CC73GCH1H100D	CHIP C 10PF D		L287			L34-4922-05	AIR-CORE COIL(3.5T)	
C302			CC73GCH1H101J	CHIP C 100PF J		L288			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
C303			CK73FB1H103K	CHIP C 0.010UF K		L289			L34-4921-05	AIR-CORE COIL(2.5T)	
C320			CC73GCH1H100D	CHIP C 10PF D		L290			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
C321,322			CC73GCH1H101J	CHIP C 100PF J		L291			L34-4919-05	AIR-CORE COIL(1.5T)	
C323			CK73FB1H103K	CHIP C 0.010UF K		L292			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
C330,331			CK73FB1E104K	CHIP C 0.10UF K		L293			L34-4919-05	AIR-CORE COIL(1.5T)	
C332			CK73FB1H102K	CHIP C 1000PF K		L294			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
C340-342			CC73GCH1H100D	CHIP C 10PF D		L296		*	L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
C343			CK73FB1H103K	CHIP C 0.010UF K		L297			L34-4969-05	AIR-CORE COIL(2.5T)	
C360			CC73GCH1H101J	CHIP C 100PF J		L298			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
C361,362			CC73GCH1H100D	CHIP C 10PF D		L299			L34-4919-05	AIR-CORE COIL(1.5T)	
C363			CC73GCH1H101J	CHIP C 100PF J		L303-309			L92-0444-05	CHIP FERRITE	
C364			CC73GCH1H100D	CHIP C 10PF D		L330			L33-1552-05	SMALL FIXED INDUCTOR(22UH)	
C365,366			CC73GCH1H101J	CHIP C 100PF J		R5 ,6			RK73GB2A103J	CHIP R 10K J 1/10W	
C367-372			CK73GB1H103K	CHIP C 0.010UF K		R7 ,8			RK73GB2A104J	CHIP R 100K J 1/10W	
C373-375			CK73FB1H103K	CHIP C 0.010UF K		R10 ,11			RK73GB2A473J	CHIP R 47K J 1/10W	
C376-379			CK73GB1H103K	CHIP C 0.010UF K		R12 ,13		*	RK73EB2E224J	CHIP R 220K J 1/4W	
TC1			C05-0370-05	CERAMIC TRIMMER CAPACITOR(20P)		R14 -16			RK73FB2B103J	CHIP R 10K J 1/8W	
CN17,18			E04-0491-05	PIN SOCKET		R17			RK73FB2B102J	CHIP R 1.0K J 1/8W	
CN24			E40-6914-05	FLAT CABLE CONNECTOR		R18			RK73FB2B103J	CHIP R 10K J 1/8W	
CN37			E04-0491-05	PIN SOCKET		R19 -21			RK73PB2H6R8J	CHIP R 6.8 J 1/2W	
CN47			E40-6917-05	FLAT CABLE CONNECTOR		R24			RK73PB2H6R8J	CHIP R 6.8 J 1/2W	
CN360			E40-6908-05	FLAT CABLE CONNECTOR		R26			RK73FB2B473J	CHIP R 47K J 1/8W	
CN381			E41-1700-05	PIN ASSY		R28			RK73EB2E101J	CHIP R 100 J 1/4W	
J1 ,2			E13-0166-25	PIN JACK		R29			RK73GB2A101J	CHIP R 100 J 1/10W	
						R30			RK73GB2A333J	CHIP R 33K J 1/10W	

## PARTS LIST

AT UNIT (X53-4410-00)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R31 -34			RK73FB2B104J	CHIP R 100K J 1/8W		K14 ,15			S76-0424-05	RELAY	
R35 -37			RK73GB2A101J	CHIP R 100 J 1/10W		K16			S76-0472-05	RELAY	
R70			RK73GB2A221J	CHIP R 220 J 1/10W		K17			S76-0458-05	RELAY	
R71 -77			RK73HB1J100J	CHIP R 10 J 1/16W		K18 ,19			S76-0464-05	RELAY	
R78 ,79			RK73PB2H820J	CHIP R 82 J 1/2W		K201-208			S76-0480-05	RELAY	
R80 ,81			RK73FB2B101J	CHIP R 100 J 1/8W		K240-247			S76-0480-05	RELAY	
R82 ,83			RK73GB2A102J	CHIP R 1.0K J 1/10W		K280-288			S76-0473-05	RELAY	
R84 ,85			RK73FB2B101J	CHIP R 100 J 1/8W							
R87 ,88			RK73GB2A104J	CHIP R 100K J 1/10W		D4			1SS355	DIODE	
R89 -92			RK73GB2A000J	CHIP R 0 J 1/10W		D9			1SS355	DIODE	
R93 ,94			RK73GB2A103J	CHIP R 10K J 1/10W		D10 ,11			1SS372F	DIODE	
R95			RK73FB2B000J	CHIP R 0 J 1/8W		D12 -15			1SS355	DIODE	
R96 ,97			RK73GB2A471J	CHIP R 470 J 1/10W		D18	*		CG5350	SURGE ABSORBER	
R98			RK73FB2B103J	CHIP R 10K J 1/8W		D19			RM4C	DIODE	
R100,101			RK73GB2A102J	CHIP R 1.0K J 1/10W		D20 -22			1SS355	DIODE	
R105			RK73FB2B000J	CHIP R 0 J 1/8W		D23 ,24			CG590	SURGE ABSORBER	
R108,109			RK73GB2A105J	CHIP R 1.0M J 1/10W		D33 ,34			1SS355	DIODE	
R112			RS14DB3A470J	FL-PROOF RS 47 J 1W		D36 ,37			HSM88ASR-E	DIODE	
R117			RS14DB3A470J	FL-PROOF RS 47 J 1W		D38			CG590	SURGE ABSORBER	
R118			RK73GB2A000J	CHIP R 0 J 1/10W		D40			DZ2J062(M)	ZENER DIODE	
R126			RK73FB2B180J	CHIP R 18 J 1/8W		D57 ,58			RB480Y-90	DIODE	
R127			RK73GB2A223J	CHIP R 22K J 1/10W		D201-208			DAN202U	DIODE	
R130,131			RK73GB2A103J	CHIP R 10K J 1/10W		D240-247			DAN202U	DIODE	
R132			RK73FB2B101J	CHIP R 100 J 1/8W							
R133			RK73FB2B103J	CHIP R 10K J 1/8W		D280-288			DAN202U	DIODE	
R134			RK73GB2A223J	CHIP R 22K J 1/10W		D360			DAN202U	DIODE	
R135			RK73GB2A000J	CHIP R 0 J 1/10W		IC2			TC7SHU04F-F	MOS-IC	
R136,137			RS14DB3A1R0J	FL-PROOF RS 1 J 1W		IC3			TA75S393F-F	MOS-IC	
R140,141			RK73FB2B000J	CHIP R 0 J 1/8W		IC4			TC7WH74FU-F	MOS-IC	
R146,147			RK73FB2B104J	CHIP R 100K J 1/8W		IC7			TC7SHU04F-F	MOS-IC	
R150			RK73FB2B000J	CHIP R 0 J 1/8W		IC8			TC74HC4094AFF	MOS-IC	
R151			RK73GB2A100J	CHIP R 10 J 1/10W		IC300			TC74HC4094AFF	MOS-IC	
R152			RK73FB2B472J	CHIP R 4.7K J 1/8W		IC320			TC74HC4094AFF	MOS-IC	
R153,154		*	RK73EB2E224J	CHIP R 220K J 1/4W		IC340			TC74HC4094AFF	MOS-IC	
R169			RK73GB2A103J	CHIP R 10K J 1/10W		Q12 ,13			2SC4617(R,S)	TRANSISTOR	
R170			RK73GB2A472J	CHIP R 4.7K J 1/10W		Q18			2SC4617(R,S)	TRANSISTOR	
R171			RK73GB2A103J	CHIP R 10K J 1/10W		Q19			2SB1188(Q,R)	TRANSISTOR	
R172			RK73GB2A472J	CHIP R 4.7K J 1/10W		Q20			2SD2153(V,W)	TRANSISTOR	
R173			RK73GB2A103J	CHIP R 10K J 1/10W		Q25 ,26			2SK520-A(K44)	FET	
R174			RK73GB2A472J	CHIP R 4.7K J 1/10W		Q27			DTC123YE	DIGITAL TRANSISTOR	
R175			RK73GB2A103J	CHIP R 10K J 1/10W		Q28			DTB143EK	DIGITAL TRANSISTOR	
R176			RK73GB2A472J	CHIP R 4.7K J 1/10W		Q31	*		LTA043XUBFS8	TRANSISTOR	
R304-306			RK73GB2A101J	CHIP R 100 J 1/10W		Q50 -57			LTC024EUBFS8	TRANSISTOR	
R324-326			RK73GB2A101J	CHIP R 100 J 1/10W		Q60 -63			2SA1586(Y,GR)F	TRANSISTOR	
R331			RK73GB2A473J	CHIP R 47K J 1/10W		Q64	*		LTA043XUBFS8	TRANSISTOR	
R340			RK73GB2A104G	CHIP R 100K G 1/10W		Q66 ,67	*		LTA043XUBFS8	TRANSISTOR	
R342			RK73GB2A103J	CHIP R 10K J 1/10W		Q300-307			DTC123YE	DIGITAL TRANSISTOR	
R347-349			RK73GB2A152J	CHIP R 1.5K J 1/10W		Q320-327			DTC123YE	DIGITAL TRANSISTOR	
R354			RK73GB2A473J	CHIP R 47K J 1/10W		Q340,341			2SK1830F	FET	
R360			RK73GB2A000J	CHIP R 0 J 1/10W		Q342-349			DTC123YE	DIGITAL TRANSISTOR	
R361-366			RK73GB2A101J	CHIP R 100 J 1/10W							
R370,371			RK73FB2B000J	CHIP R 0 J 1/8W							
R400-405			RK73FB2B000J	CHIP R 0 J 1/8W							
VR1			R12-6742-05	TRIMMING POT.(22K)							
K9			S76-0472-05	RELAY							
K10			S76-0424-05	RELAY							
K11			S76-0472-05	RELAY							
K12			S76-0424-05	RELAY							
K13			S76-0472-05	RELAY							

## PARTS LIST

### CONTROL UNIT (X53-452X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
<b>CONTROL UNIT (X53-452X-XX) 0-11: K 2-71: E</b>						C125			CK73HB1H102K	CHIP C	1000PF K
C2			CK73FB0J106K	CHIP C	10UF K	C126			CK73GB1H104K	CHIP C	0.10UF K
C8 ,9			CD04BQ1E331M	ELECTRO	330UF 25WV	C127,128			CC73HCH1H101J	CHIP C	100PF J
C10			CK73GB1H102K	CHIP C	1000PF K	C129-134			CK73HB1H102K	CHIP C	1000PF K
C11			C93-1875-05	CHIP C	22UF M	C135			CK73GB1H104K	CHIP C	0.10UF K
C14			CK73GB1C225K	CHIP C	2.2UF K	C136-139			CK73HB1H102K	CHIP C	1000PF K
C16			CC73GCH1H471J	CHIP C	470PF J	C140			CK73GB1H104K	CHIP C	0.10UF K
C17			CK73GB1A474K	CHIP C	0.47UF K	C141,142			CK73HB1H102K	CHIP C	1000PF K
C18			CK73HB1E104K	CHIP C	0.10UF K	C143			CK73GB1H104K	CHIP C	0.10UF K
C19			C93-0912-05	CHIP C	100UF M	C144			CK73HB1H102K	CHIP C	1000PF K
C23			CD04BQ1E331M	ELECTRO	330UF 25WV	C145			CK73GB1H104K	CHIP C	0.10UF K
C25 ,26			CK73HB1E104K	CHIP C	0.10UF K	C146-150			CK73HB1H102K	CHIP C	1000PF K
C29			C93-0912-05	CHIP C	100UF M	C151			CK73GB1H104K	CHIP C	0.10UF K
C30 ,31			CK73HB1H102K	CHIP C	1000PF K	C152			CK73HB1H102K	CHIP C	1000PF K
C32 ,33			CC73HCH1H330J	CHIP C	33PF J	C153			CK73GB1A105K	CHIP C	1.0UF K
C34 ,35			CC73HCH1H101J	CHIP C	100PF J	C158-161			CK73HB1H102K	CHIP C	1000PF K
C36 -40			CK73GB1H104K	CHIP C	0.10UF K	C162			CK73GB1H104K	CHIP C	0.10UF K
C41 ,42			CC73HCH1H101J	CHIP C	100PF J	C163			CK73HB1H102K	CHIP C	1000PF K
C43 -45			CK73HB1H102K	CHIP C	1000PF K	C164			CC73GCH1H020C	CHIP C	2.0PF C
C46 -49			CC73HCH1H101J	CHIP C	100PF J	C165,166			CC73HCH1H101J	CHIP C	100PF J
C50 -54			CK73GB1H104K	CHIP C	0.10UF K	C167			CC73GCH1H010C	CHIP C	1.0PF C
C55 -59			CK73HB1H102K	CHIP C	1000PF K	C168,169			CC73HCH1H101J	CHIP C	100PF J
C60			CK73GB1H104K	CHIP C	0.10UF K	C170			CK73HB1H102K	CHIP C	1000PF K
C61			CK73HB1H102K	CHIP C	1000PF K	C171,172			CC73HCH1H101J	CHIP C	100PF J
C62 ,63			CC73HCH1H330J	CHIP C	33PF J	C173,174			CK73HB1H102K	CHIP C	1000PF K
C64 ,65			CC73HCH1H101J	CHIP C	100PF J	C175,176			CC73HCH1H330J	CHIP C	33PF J
C66			CK73GB1H104K	CHIP C	0.10UF K	C177-211			CK73HB1H102K	CHIP C	1000PF K
C67			CC73HCH1H101J	CHIP C	100PF J	C212-214			CC73HCH1H101J	CHIP C	100PF J
C68			CK73HB1H102K	CHIP C	1000PF K	C216			CC73HCH1H101J	CHIP C	100PF J
C69 ,70			CK73GB1H104K	CHIP C	0.10UF K	C217,218			CK73HB1H102K	CHIP C	1000PF K
C71			CK73HB1H102K	CHIP C	1000PF K	C219			CK73GB1A105K	CHIP C	1.0UF K
C72			CK73GB1H102K	CHIP C	1000PF K	C220-240			CK73HB1H102K	CHIP C	1000PF K
C73			CK73HB1H102K	CHIP C	1000PF K	C241			CK73GB1A105K	CHIP C	1.0UF K
C74			CK73GB1H102K	CHIP C	1000PF K	C243			CK73HB1H102K	CHIP C	1000PF K
C75 -88			CK73HB1H102K	CHIP C	1000PF K	C244			CK73GB1A105K	CHIP C	1.0UF K
C89			CC73HCH1H101J	CHIP C	100PF J	C246			CK73HB1H102K	CHIP C	1000PF K
C90 ,91			CK73HB1H102K	CHIP C	1000PF K	C247			CK73GB1A105K	CHIP C	1.0UF K
C92			CC73HCH1H101J	CHIP C	100PF J	C248			CK73HB1H102K	CHIP C	1000PF K
C93			CK73GB1H104K	CHIP C	0.10UF K	C249			CK73GB1A105K	CHIP C	1.0UF K
C94			CK73FB0J106K	CHIP C	10UF K	C250-257			CK73HB1H102K	CHIP C	1000PF K
C95			CC73HCH1H101J	CHIP C	100PF J	C258-264			CC73HCH1H101J	CHIP C	100PF J
C96			CK73GB1H104K	CHIP C	0.10UF K	C265,266			CK73HB1H102K	CHIP C	1000PF K
C97			CC73HCH1H101J	CHIP C	100PF J	C267			CC73HCH1H101J	CHIP C	100PF J
C98			CK73GB1H104K	CHIP C	0.10UF K	C268-279			CK73HB1H102K	CHIP C	1000PF K
C99			CK73HB1H102K	CHIP C	1000PF K	C290			CK73HB1H102K	CHIP C	1000PF K
C100			CK73GB1H102K	CHIP C	1000PF K	C291			CK73GB1H153K	CHIP C	0.015UF K
C101			CK73HB1H102K	CHIP C	1000PF K	C292			CK73HB1H102K	CHIP C	1000PF K
C102-104			CK73GB1H104K	CHIP C	0.10UF K	C293			CK73HB1E103K	CHIP C	0.010UF K
C105-107			CC73HCH1H101J	CHIP C	100PF J	C294,295			CK73HB1E104K	CHIP C	0.10UF K
C108			CK73HB1H102K	CHIP C	1000PF K	C296-299			C93-1875-05	CHIP C	22UF M
C109-112			CC73HCH1H101J	CHIP C	100PF J	C382-386			CK73FB0J106K	CHIP C	10UF K
C113			CK73GB1H104K	CHIP C	0.10UF K	C390-398			CK73HB1E104K	CHIP C	0.10UF K
C114-117			CC73HCH1H101J	CHIP C	100PF J	C400			CK73HB1E104K	CHIP C	0.10UF K
C118			CK73GB1H104K	CHIP C	0.10UF K	C401			CC73HCH1H120J	CHIP C	12PF J
C119,120			CC73HCH1H101J	CHIP C	100PF J	C402,403			CK73HB1E104K	CHIP C	0.10UF K
C121			CC73GCH1H120J	CHIP C	12PF J	C410			CK73HB1E103K	CHIP C	0.010UF K
C122			CC73HCH1H101J	CHIP C	100PF J	C411			CC73HCH1H100D	CHIP C	10PF D
C123			CK73HB1H102K	CHIP C	1000PF K	C412			CK73HB1H102K	CHIP C	1000PF K
C124			CC73GCH1H120J	CHIP C	12PF J	C415			CK73HB1E104K	CHIP C	0.10UF K
						C417,418			CC73HCH1H180J	CHIP C	18PF J

## PARTS LIST

CONTROL UNIT (X53-452X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C419-422			CK73HB1E104K	CHIP C 0.10UF K		CN69			J19-5386-05	HOLDER	
C425-435			CK73HB1E104K	CHIP C 0.10UF K		L1 -9			L92-0639-05	CHIP FERRITE	
C438,439			CK73HB1E104K	CHIP C 0.10UF K		L10			L33-3001-05	CHOKE COIL	
C441			CK73HB1E104K	CHIP C 0.10UF K		L11			L33-1598-05	CHOKE COIL	
C443-445			CK73HB1E104K	CHIP C 0.10UF K		L13			L92-0639-05	CHIP FERRITE	
						L30			L92-0639-05	CHIP FERRITE	
C448			CK73HB1E104K	CHIP C 0.10UF K		L32 -37			L92-0639-05	CHIP FERRITE	
C449			CK73FB0J106K	CHIP C 10UF K		L38			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
C450,451			CK73HB1E104K	CHIP C 0.10UF K		L39 ,40			L92-0639-05	CHIP FERRITE	
C452			CK73FB0J106K	CHIP C 10UF K		L380			L92-0641-05	FERRITE CORE	
C462			CC73HCH1H470J	CHIP C 47PF J		L381			L33-1554-05	CHOKE COIL	
C463			CK73HB0J224K	CHIP C 0.22UF K		L382			L92-0378-05	CHIP FERRITE	
C465			CK73FB0J106K	CHIP C 10UF K		L383,384			L33-1554-05	CHOKE COIL	
C466			CK73HB1E104K	CHIP C 0.10UF K		L385			L92-0639-05	CHIP FERRITE	
C467			CK73GB1H104K	CHIP C 0.10UF K		X30			L77-2974-05	CRYSTAL RESONATOR(11.0592MHZ)	
C468			CK73FB0J106K	CHIP C 10UF K		X31			L77-1802-05	CRYSTAL RESONATOR(32768HZ)	
C474-483			CK73HB1E104K	CHIP C 0.10UF K		X380			L77-3070-05	CRYSTAL RESONATOR(24.576MH)	
C484,485			CK73HB1E103K	CHIP C 0.010UF K		X381			L77-3080-05	CRYSTAL RESONATOR(18.432MHZ)	
C486			CK73HB1E104K	CHIP C 0.10UF K		CP34,35			RK74HB1J100J	CHIP-COM 10 J 1/16W	
C487			CK73FB0J106K	CHIP C 10UF K		CP37-39			RK74HB1J000J	CHIP-COM 0 J 1/16W	
C488			CK73HB1E104K	CHIP C 0.10UF K		CP40-42			RK74GB1J473J	CHIP-COM 47K J 1/16W	
C489			CC73HCH1H121J	CHIP C 120PF J		CP50-52			RK74HA1J470J	CHIP-COM 47 J 1/16W	
C490			CK73HB1E104K	CHIP C 0.10UF K		CP53-58			RK74HA1J101J	CHIP-COM 100 J 1/16W	
C491			CK73FB0J106K	CHIP C 10UF K		CP386,387			RK74HB1J000J	CHIP-COM 0 J 1/16W	
C492			CC73HCH1H121J	CHIP C 120PF J		R2			RK73EB2E000J	CHIP R 0 J 1/4W	
C493			CK73HB1E104K	CHIP C 0.10UF K		R7 -10			RK73PB2H1R0J	CHIP R 1 J 1/2W	
C495			CK73FB0J106K	CHIP C 10UF K		R12			RK73GB2A103J	CHIP R 10K J 1/10W	
C496,497			CK73HB1H821K	CHIP C 820PF K		R14			RK73HB1J000J	CHIP R 0 J 1/16W	
C498			CK73HB1E104K	CHIP C 0.10UF K		R15			RK73GB2A103J	CHIP R 10K J 1/10W	
C499,500			CK73FB0J106K	CHIP C 10UF K		R16			RK73GB2A184J	CHIP R 180K J 1/10W	
C501			CK73HB1E104K	CHIP C 0.10UF K		R17			RK73GH2A273D	CHIP R 27K D 1/10W	
C503,504			CK73HB1E104K	CHIP C 0.10UF K		R18			RK73GH2A473D	CHIP R 47K D 1/10W	
C505			CK73FB0J106K	CHIP C 10UF K		R20			RK73GB2A101J	CHIP R 100 J 1/10W	
C508			CK73HB1E104K	CHIP C 0.10UF K		R21			RK73HB1J000J	CHIP R 0 J 1/16W	
C509			CK73FB0J106K	CHIP C 10UF K		R30			RK73HB1J470J	CHIP R 47 J 1/16W	
C510			CK73HB1E104K	CHIP C 0.10UF K		R31 ,32			RK73GB2A473J	CHIP R 47K J 1/10W	
C512			CC73HCH1H560J	CHIP C 56PF J		R33			RK73HB1J470J	CHIP R 47 J 1/16W	
C513			CK73HB1E104K	CHIP C 0.10UF K		R34 ,35			RK73GB2A473J	CHIP R 47K J 1/10W	
C514			CK73HB1E103K	CHIP C 0.010UF K		R36			RK73HB1J470J	CHIP R 47 J 1/16W	
C515			CK73HB1H122K	CHIP C 1200PF K		R37 -39			RK73GB2A473J	CHIP R 47K J 1/10W	
C516			CK73FB0J106K	CHIP C 10UF K		R40 -44			RK73HB1J470J	CHIP R 47 J 1/16W	
C550,551			CK73GB1A105K	CHIP C 1.0UF K		R45 -48			RK73GB2A103J	CHIP R 10K J 1/10W	
CN1			E41-1684-05	PIN ASSY		R49 -51			RK73HB1J470J	CHIP R 47 J 1/16W	
CN2			E41-1685-05	PIN ASSY		R52 -54			RK73GB2A473J	CHIP R 47K J 1/10W	
CN3			E41-1682-05	PIN ASSY		R55			RK73HB1J470J	CHIP R 47 J 1/16W	
CN32			E40-6907-05	FLAT CABLE CONNECTOR		R56 ,57			RK73GB2A473J	CHIP R 47K J 1/10W	
CN37			E40-6911-05	FLAT CABLE CONNECTOR		R58			RK73HB1J470J	CHIP R 47 J 1/16W	
CN43			E40-6907-05	FLAT CABLE CONNECTOR		R59 ,60			RK73GB2A473J	CHIP R 47K J 1/10W	
CN47			E41-3176-05	FLAT CABLE CONNECTOR		R61 ,62			RK73HB1J470J	CHIP R 47 J 1/16W	
CN63			E40-6727-05	FLAT CABLE CONNECTOR		R64 ,65			RK73GB2A473J	CHIP R 47K J 1/10W	
CN65			E40-6910-05	FLAT CABLE CONNECTOR		R66			RK73GB2A102J	CHIP R 1.0K J 1/10W	E
CN70			E40-6912-05	FLAT CABLE CONNECTOR		R67 ,68			RK73GB2A473J	CHIP R 47K J 1/10W	
CN71,72			E40-6910-05	FLAT CABLE CONNECTOR		R69 -72			RK73GB2A103J	CHIP R 10K J 1/10W	
CN73			E40-6908-05	FLAT CABLE CONNECTOR		R73			RK73GB2A473J	CHIP R 47K J 1/10W	
CN382			E40-6914-05	FLAT CABLE CONNECTOR		R76 ,77			RK73GB2A473J	CHIP R 47K J 1/10W	
CN450,451			E41-1682-05	PIN ASSY		R78			RK73GB2A000J	CHIP R 0 J 1/10W	
CN453			E41-1682-05	PIN ASSY		R79 -84			RK73HB1J470J	CHIP R 47 J 1/16W	
F380			F53-0360-05	FUSE(0.25A)		R85			RK73GB2A101J	CHIP R 100 J 1/10W	
-			G11-4535-04	SHEET							



## PARTS LIST

### CONTROL UNIT (X53-452X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R86 -92			RK73HB1J470J	CHIP R 47 J 1/16W		R191			RK73GB2A473J	CHIP R 47K J 1/10W	
R93 ,94			RK73GB2A103J	CHIP R 10K J 1/10W		R192			RK73HB1J470J	CHIP R 47 J 1/16W	
R95			RK73HB1J470J	CHIP R 47 J 1/16W		R193			RK73GB2A473J	CHIP R 47K J 1/10W	
R96			RK73GB2A101J	CHIP R 100 J 1/10W		R194-197			RK73HB1J470J	CHIP R 47 J 1/16W	
R97			RK73HB1J470J	CHIP R 47 J 1/16W		R198			RK73GB2A101J	CHIP R 100 J 1/10W	
R98			RK73GB2A103J	CHIP R 10K J 1/10W		R199,200			RK73GB2A103J	CHIP R 10K J 1/10W	
R99			RK73HB1J470J	CHIP R 47 J 1/16W		R201			RK73HB1J000J	CHIP R 0 J 1/16W	
R100			RK73GB2A103J	CHIP R 10K J 1/10W		R202			RK73HB1J562J	CHIP R 5.6K J 1/16W	
R101-115			RK73HB1J470J	CHIP R 47 J 1/16W		R203,204			RK73GB2A473J	CHIP R 47K J 1/10W	
R116			RK73GB2A105J	CHIP R 1.0M J 1/10W		R206			RK73GB2A473J	CHIP R 47K J 1/10W	
R117,118			RK73HB1J000J	CHIP R 0 J 1/16W		R207,208			RK73HB1J101J	CHIP R 100 J 1/16W	
R119-122			RK73HB1J470J	CHIP R 47 J 1/16W		R209			RK73GB2A473J	CHIP R 47K J 1/10W	
R123			RK73GB2A473J	CHIP R 47K J 1/10W		R210			RK73GB2A103J	CHIP R 10K J 1/10W	
R124,125			RK73GB2A105J	CHIP R 1.0M J 1/10W		R211-213			RK73HB1J470J	CHIP R 47 J 1/16W	
R126-129			RK73GB2A473J	CHIP R 47K J 1/10W		R214			RK73HB1J000J	CHIP R 0 J 1/16W	
R131,132			RK73HB1J000J	CHIP R 0 J 1/16W		R215-218			RK73HB1J470J	CHIP R 47 J 1/16W	
R133,134			RK73HB1J470J	CHIP R 47 J 1/16W		R219			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R135			RK73HB1J000J	CHIP R 0 J 1/16W		R220-222			RK73GB2A103J	CHIP R 10K J 1/10W	
R136			RK73HB1J470J	CHIP R 47 J 1/16W		R223,224			RK73HB1J000J	CHIP R 0 J 1/16W	
R137			RK73GB2A473J	CHIP R 47K J 1/10W		R225,226			RK73HB1J470J	CHIP R 47 J 1/16W	
R138			RK73HB1J470J	CHIP R 47 J 1/16W		R227			RK73GB2A000J	CHIP R 0 J 1/10W	
R139			RK73GB2A103J	CHIP R 10K J 1/10W		R228			RK73HB1J470J	CHIP R 47 J 1/16W	
R140			RK73HB1J470J	CHIP R 47 J 1/16W		R229			RK73GB2A473J	CHIP R 47K J 1/10W	
R141			RK73GB2A105J	CHIP R 1.0M J 1/10W		R230			RK73GB2A000J	CHIP R 0 J 1/10W	
R142-144			RK73HB1J470J	CHIP R 47 J 1/16W		R231,232			RK73HB1J470J	CHIP R 47 J 1/16W	
R145-147			RK73GB2A473J	CHIP R 47K J 1/10W		R233			RK73HB1J000J	CHIP R 0 J 1/16W	
R148			RK73GB2A103J	CHIP R 10K J 1/10W		R234,235			RK73HB1J470J	CHIP R 47 J 1/16W	
R149,150			RK73HB1J470J	CHIP R 47 J 1/16W		R237,238			RK73HB1J470J	CHIP R 47 J 1/16W	
R151			RK73GB2A103J	CHIP R 10K J 1/10W		R239-242			RK73EB2E000J	CHIP R 0 J 1/4W	
R152			RK73HB1J000J	CHIP R 0 J 1/16W		R243			RK73FB2B000J	CHIP R 0 J 1/8W	
R153			RK73HB1J470J	CHIP R 47 J 1/16W		R244			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R154			RK73GB2A103J	CHIP R 10K J 1/10W		R245-248			RK73HB1J470J	CHIP R 47 J 1/16W	
R155			RK73HB1J000J	CHIP R 0 J 1/16W		R249,250			RK73HB1J100J	CHIP R 10 J 1/16W	
R156			RK73HB1J470J	CHIP R 47 J 1/16W		R251-254			RK73HB1J470J	CHIP R 47 J 1/16W	
R157,158			RK73GB2A473J	CHIP R 47K J 1/10W		R256			RK73HB1J470J	CHIP R 47 J 1/16W	
R159			RK73HB1J470J	CHIP R 47 J 1/16W		R257			RK73HB1J100J	CHIP R 10 J 1/16W	
R160			RK73GB2A473J	CHIP R 47K J 1/10W		R258-274			RK73HB1J470J	CHIP R 47 J 1/16W	
R161			RK73HB1J470J	CHIP R 47 J 1/16W		R276-290			RK73HB1J470J	CHIP R 47 J 1/16W	
R162			RK73GB2A000J	CHIP R 0 J 1/10W		R292-294			RK73HB1J470J	CHIP R 47 J 1/16W	
R163,164			RK73HB1J470J	CHIP R 47 J 1/16W		R296-330			RK73HB1J470J	CHIP R 47 J 1/16W	
R166			RK73GB2A105J	CHIP R 1.0M J 1/10W		R331			RK73HB1J473J	CHIP R 47K J 1/16W	
R167			RK73HB1J470J	CHIP R 47 J 1/16W		R332			R92-0150-05	JUMPER REST 0 OHM	E
R169			RK73GB2A000J	CHIP R 0 J 1/10W		R334			RK73HB1J473J	CHIP R 47K J 1/16W	
R170			RK73HB1J470J	CHIP R 47 J 1/16W		R335			RK73GB2A000J	CHIP R 0 J 1/10W	
R172,173			RK73HB1J470J	CHIP R 47 J 1/16W		R336-344			RK73HB1J470J	CHIP R 47 J 1/16W	
R174			RK73GB2A103J	CHIP R 10K J 1/10W		R345,346			RK73HB1J473J	CHIP R 47K J 1/16W	
R175			RK73HB1J470J	CHIP R 47 J 1/16W		R349			RK73GB2A000J	CHIP R 0 J 1/10W	K
R176			RK73HB1J000J	CHIP R 0 J 1/16W		R350			RK73GB2A000J	CHIP R 0 J 1/10W	E
R177			RK73GB2A102J	CHIP R 1.0K J 1/10W		R351-353			RK73HB1J470J	CHIP R 47 J 1/16W	
R178			RK73GB2A473J	CHIP R 47K J 1/10W		R354-356			RK73GB2A101J	CHIP R 100 J 1/10W	
R179			RK73HB1J470J	CHIP R 47 J 1/16W		R357			RK73HB1J000J	CHIP R 0 J 1/16W	
R180,181			RK73GB2A103J	CHIP R 10K J 1/10W		R358,359			RK73GB2A103J	CHIP R 10K J 1/10W	
R182			RK73HB1J000J	CHIP R 0 J 1/16W		R360			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R183			RK73HB1J470J	CHIP R 47 J 1/16W		R361			RK73GB2A103J	CHIP R 10K J 1/10W	
R184			RK73GB2A473J	CHIP R 47K J 1/10W		R362-364			RK73HB1J000J	CHIP R 0 J 1/16W	
R185			RK73HB1J470J	CHIP R 47 J 1/16W		R366,367			RK73HB1J103J	CHIP R 10K J 1/16W	
R186			RK73HB1J472J	CHIP R 4.7K J 1/16W		R368,369			RK73HB1J101J	CHIP R 100 J 1/16W	
R188			RK73HB1J470J	CHIP R 47 J 1/16W		R370-372			RK73HB1J105J	CHIP R 1.0M J 1/16W	
R189			RK73GB2A473J	CHIP R 47K J 1/10W		R373			RK73HB1J470J	CHIP R 47 J 1/16W	
R190			RK73HB1J470J	CHIP R 47 J 1/16W		R380-382			RK73EB2E000J	CHIP R 0 J 1/4W	



## PARTS LIST

CONTROL UNIT (X53-452X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R385			RK73FB2B000J	CHIP R 0 J 1/8W		R504,505			RK73HB1J333J	CHIP R 33K J 1/16W	
R387			RK73HB1J105J	CHIP R 1.0M J 1/16W		R506			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R388-400			RK73HB1J000J	CHIP R 0 J 1/16W		R507,508			RK73HB1J333J	CHIP R 33K J 1/16W	
R401,402			RK73HB1J472J	CHIP R 4.7K J 1/16W		R509,510			RK73HB1J103J	CHIP R 10K J 1/16W	
R403			RK73HB1J105J	CHIP R 1.0M J 1/16W		R511			RK73HB1J223J	CHIP R 22K J 1/16W	
R404			RK73HB1J473J	CHIP R 47K J 1/16W		R512-515			RK73HB1J101J	CHIP R 100 J 1/16W	
R406			RK73HB1J000J	CHIP R 0 J 1/16W		R516			RK73HB1J332J	CHIP R 3.3K J 1/16W	
R407			RK73HB1J472J	CHIP R 4.7K J 1/16W		R517			RK73HB1J473J	CHIP R 47K J 1/16W	
R408-410			RK73HB1J473J	CHIP R 47K J 1/16W		R518-521			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R411,412			RK73HB1J000J	CHIP R 0 J 1/16W		R522			RK73HB1J223J	CHIP R 22K J 1/16W	
R414,415			RK73HB1J473J	CHIP R 47K J 1/16W		R523			RK73FB2B000J	CHIP R 0 J 1/8W	
R416			RK73GB2A105J	CHIP R 1.0M J 1/10W		R525			RK73FB2B000J	CHIP R 0 J 1/8W	
R417			RK73HB1J473J	CHIP R 47K J 1/16W		R526,527			RK73HB1J101J	CHIP R 100 J 1/16W	
R418			RK73GB2A105J	CHIP R 1.0M J 1/10W		R528			RK73HB1J000J	CHIP R 0 J 1/16W	
R419			RK73HB1J471J	CHIP R 470 J 1/16W		R529			RK73HB1J101J	CHIP R 100 J 1/16W	
R420-422			RK73HB1J000J	CHIP R 0 J 1/16W		R530			RK73HB1J000J	CHIP R 0 J 1/16W	
R423			RK73HB1J101J	CHIP R 100 J 1/16W		R531			RK73HB1J333J	CHIP R 33K J 1/16W	
R424,425			RK73HB1J000J	CHIP R 0 J 1/16W		R532			RK73HB1J682J	CHIP R 6.8K J 1/16W	
R426			RK73GB2A000J	CHIP R 0 J 1/10W		R533			RK73GB2A000J	CHIP R 0 J 1/10W	
R427			RK73HB1J470J	CHIP R 47 J 1/16W		R534			RK73FB2B000J	CHIP R 0 J 1/8W	
R430			RK73HB1J000J	CHIP R 0 J 1/16W		R535			RK73HB1J682J	CHIP R 6.8K J 1/16W	
R431-433			RK73HB1J473J	CHIP R 47K J 1/16W		R536			RK73HB1J473J	CHIP R 47K J 1/16W	
R434-439			RK73HB1J000J	CHIP R 0 J 1/16W		R537			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R440,441			RK73HB1J473J	CHIP R 47K J 1/16W		R539			RK73HB1J000J	CHIP R 0 J 1/16W	
R442			RK73HB1J472J	CHIP R 4.7K J 1/16W		R548			RK73HB1J473J	CHIP R 47K J 1/16W	
R443			RK73HB1J101J	CHIP R 100 J 1/16W		R549			RK73HB1J101J	CHIP R 100 J 1/16W	
R444			RK73HB1J473J	CHIP R 47K J 1/16W		R569			RK73HB1J473J	CHIP R 47K J 1/16W	
R445			RK73HB1J000J	CHIP R 0 J 1/16W		R570,571			RK73GB2A000J	CHIP R 0 J 1/10W	
R446			RK73HB1J473J	CHIP R 47K J 1/16W		D1			RB080L-30	DIODE	
R448			RK73HB1J000J	CHIP R 0 J 1/16W		D30 -32			1SS388F	DIODE	
R449			RK73HB1J473J	CHIP R 47K J 1/16W		D380			1SS388F	DIODE	
R450			RK73HB1J000J	CHIP R 0 J 1/16W		IC1			<b>Note1</b>	ANALOGUE IC	
R451			RK73HB1J470J	CHIP R 47 J 1/16W		IC2			MM3273DU	MOS-IC	
R452			RK73HB1J000J	CHIP R 0 J 1/16W		IC30			TC74HC4052AFT	MOS-IC	
R453			RK73HB1J473J	CHIP R 47K J 1/16W		IC31-34			TC74VHC373FT	MOS-IC	
R454			RK73HB1J000J	CHIP R 0 J 1/16W		IC35			TC74HC4052AFT	MOS-IC	
R455			RK73HB1J473J	CHIP R 47K J 1/16W		IC36-39			TC74VHC373FT	MOS-IC	
R456			RK73HB1J000J	CHIP R 0 J 1/16W		IC40			HD74LV2G34AUS	MOS-IC	
R457			RK73HB1J473J	CHIP R 47K J 1/16W		IC41			TC7WT125FUF	MOS-IC	
R458			RK73HB1J000J	CHIP R 0 J 1/16W		IC42,43			TC74VHC373FT	MOS-IC	
R459			RK73HB1J470J	CHIP R 47 J 1/16W		IC44			XC6118N31BMRG	MOS-IC	
R460			RK73HB1J000J	CHIP R 0 J 1/16W		IC45			TC7SH32FU-F	MOS-IC	
R462			RK73HB1J473J	CHIP R 47K J 1/16W		IC46			F56104VDFKEUA	MCU	
R463			RK73HB1J000J	CHIP R 0 J 1/16W		IC47			S25C256A0J8U	MOS-IC	
R464			RK73FB2B000J	CHIP R 0 J 1/8W		IC48			HD74LV2G34AUS	MOS-IC	
R465-467			RK73HB1J000J	CHIP R 0 J 1/16W		IC49			R2223T	MOS-IC	
R471			RK73GB2A000J	CHIP R 0 J 1/10W		IC380			F2136ACNFKEVA	MCU	
R472			RK73HB1J101J	CHIP R 100 J 1/16W		IC381			<b>Note1</b>	DSP	
R473-482			RK73HB1J000J	CHIP R 0 J 1/16W		IC382			AK5385BVF	MOS-IC	
R483,484			RK73HB1J470J	CHIP R 47 J 1/16W		IC384			NJM2732V	BI-POLAR IC	
R485,486			RK73HB1J101J	CHIP R 100 J 1/16W		IC385			NJM2100V-ZB	MOS-IC	
R487,488			RK73HB1J100J	CHIP R 10 J 1/16W		IC386			WM8782ASEDSRV	MOS-IC	
R489-491			RK73HB1J000J	CHIP R 0 J 1/16W		IC387			NJM2732V	BI-POLAR IC	
R492,493			RK73HB1J220J	CHIP R 22 J 1/16W		IC388,389			TC74VHC373FT	MOS-IC	
R495			RK73FB2B000J	CHIP R 0 J 1/8W		IC390			E29LV80CB7TIP	ROM IC	
R496,497			RK73HB1J223J	CHIP R 22K J 1/16W		Q380			SSM3J36TU	FET	
R498			RK73FB2B000J	CHIP R 0 J 1/8W		Q381			LTC043TEBFS8	TRANSISTOR	
R499,500			RK73HB1J223J	CHIP R 22K J 1/16W							
R501,502			RK73HB1J473J	CHIP R 47K J 1/16W							
R503			RK73HB1J472J	CHIP R 4.7K J 1/16W							

**Note 1: This part cannot be replaced. Therefore, this part is not supplied as a service part.**

## PARTS LIST

### DSP UNIT (X53-4530-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
<b>DSP UNIT (X53-4530-00)</b>											
C1 ,2			CD04BQ1E331M	ELECTRO 330UF 25WV		C347			CK73HB1H102K	CHIP C 1000PF K	
C3			CK73GB1H103K	CHIP C 0.010UF K		C348			CK73HB1E103K	CHIP C 0.010UF K	
C4			C93-1875-05	CHIP C 22UF M		C349-362			CK73HB1A104K	CHIP C 0.10UF K	
C7			CK73GB1C225K	CHIP C 2.2UF K		C363			CK73HB1E103K	CHIP C 0.010UF K	
C8			CC73HCH1H471J	CHIP C 470PF J		C364			CK73HB1H102K	CHIP C 1000PF K	
C9			CK73GB1A474K	CHIP C 0.47UF K		C366			CC73HCH1H680J	CHIP C 68PF J	
C10			CK73HB1A104K	CHIP C 0.10UF K		C369,370			CC73HCH1H680J	CHIP C 68PF J	
C14			C93-0912-05	CHIP C 100UF M		C380-383			CK73HB1A104K	CHIP C 0.10UF K	
C15			CD04BQ1E331M	ELECTRO 330UF 25WV		C384			CK73HB1E103K	CHIP C 0.010UF K	
C22 ,23			CK73GB1A105K	CHIP C 1.0UF K		C385,386			CK73GB0J106K	CHIP C 10UF K	
C24 ,25			CK73HB1H102K	CHIP C 1000PF K		C387			CK73HB1A104K	CHIP C 0.10UF K	
C28			CC73HCH1H220J	CHIP C 22PF J		C388,389			CK73GB0J106K	CHIP C 10UF K	
C29 -32			C93-1875-05	CHIP C 22UF M		C390-392			CK73HB1A104K	CHIP C 0.10UF K	
C50 ,51			CK73GB1C225K	CHIP C 2.2UF K		C395			CK73HB1A104K	CHIP C 0.10UF K	
C52 ,53			CK73GB1H332K	CHIP C 3300PF K		C397			CK73HB1H472K	CHIP C 4700PF K	
C54			CE32CL1C470M	CHIP EL 47UF 16WV		C400			CK73HB1E103K	CHIP C 0.010UF K	
C55 ,56			CE32CL1H4R7M	CHIP EL 4.7UF 50WV		C401			CK73GB0J106K	CHIP C 10UF K	
C57			CK73GB1H104K	CHIP C 0.10UF K		C402,403			CK73HB1A104K	CHIP C 0.10UF K	
C59			CD04AZ1E471M	ELECTRO 470UF 25WV		C404			CK73GB0J106K	CHIP C 10UF K	
C60			CE32CL1C470M	CHIP EL 47UF 16WV		C406-410			CK73HB1A104K	CHIP C 0.10UF K	
C61			CD04AZ1V101M	ELECTRO 100UF 35WV		C411,412			CC73HCH1H470J	CHIP C 47PF J	
C62			CK73GB1H104K	CHIP C 0.10UF K		C413			CK73HB1A104K	CHIP C 0.10UF K	
C63 ,64			CD04AZ1E471M	ELECTRO 470UF 25WV		C414			CK73GB0J106K	CHIP C 10UF K	
C65			CD04AZ1V101M	ELECTRO 100UF 35WV		C415-420			CK73HB1A104K	CHIP C 0.10UF K	
C67			CK73GB1H103K	CHIP C 0.010UF K		C421-424			CK73GB0J106K	CHIP C 10UF K	
C68			CD04AZ1E471M	ELECTRO 470UF 25WV		C425,426			CK73HB1A104K	CHIP C 0.10UF K	
C70			CD04AZ1E471M	ELECTRO 470UF 25WV		C427			CK73GB0J106K	CHIP C 10UF K	
C71 ,72			CK73GB1H103K	CHIP C 0.010UF K		C429			CK73GB1C224K	CHIP C 0.22UF K	
C73 -77			CD04AZ1E471M	ELECTRO 470UF 25WV		C430-432			CK73HB1A104K	CHIP C 0.10UF K	
C78 ,79			CK73GB1H104K	CHIP C 0.10UF K		C434			CK73HB1A104K	CHIP C 0.10UF K	
C80			CK73GB1H103K	CHIP C 0.010UF K		C435,436			CK73GB0J106K	CHIP C 10UF K	
C81			CK73GB1H104K	CHIP C 0.10UF K		C437,438			CK73HB1A104K	CHIP C 0.10UF K	
C82			CK73GB1H103K	CHIP C 0.010UF K		C439			CK73GB0J106K	CHIP C 10UF K	
C83 -87			CK73GB1H104K	CHIP C 0.10UF K		C440,441			CK73HB1A104K	CHIP C 0.10UF K	
C88 ,89			CK73GB1C225K	CHIP C 2.2UF K		C442			CK73GB1C225K	CHIP C 2.2UF K	
C100			CK73GB0J106K	CHIP C 10UF K		C443-452			CK73GB0J106K	CHIP C 10UF K	
C108,109			CK73HB1H102K	CHIP C 1000PF K		C454-456			CK73GB0J106K	CHIP C 10UF K	
C115-124			CK73HB1H102K	CHIP C 1000PF K		C459,460			CK73HB1A104K	CHIP C 0.10UF K	
C127			CK73GB1H104K	CHIP C 0.10UF K		C461			CK73GB0J106K	CHIP C 10UF K	
C128,129			CC73HCH1H180J	CHIP C 18PF J		C462,463			CK73HB1A104K	CHIP C 0.10UF K	
C131-136			CK73HB1H102K	CHIP C 1000PF K		C464			CK73GB0J106K	CHIP C 10UF K	
C200-209			CK73HB1A104K	CHIP C 0.10UF K		C467			CK73HB1A104K	CHIP C 0.10UF K	
C210			CC73HCH1H120J	CHIP C 12PF J		C468			CC73HCH1H470J	CHIP C 47PF J	
C211			CK73HB1A104K	CHIP C 0.10UF K		C469			CK73HB1H222K	CHIP C 2200PF K	
C212			CK73HB1E103K	CHIP C 0.010UF K		C471			CK73GB0J106K	CHIP C 10UF K	
C213			CC73GCH1H100D	CHIP C 10PF D		C472			CK73GB1C224K	CHIP C 0.22UF K	
C214			CK73HB1H102K	CHIP C 1000PF K		C473			CD04AZ1E471M	ELECTRO 470UF 25WV	
C216-241			CK73HB1A104K	CHIP C 0.10UF K		C474			CK73HB1A104K	CHIP C 0.10UF K	
C242,243			CK73GB0J106K	CHIP C 10UF K		C476			CK73GB0J106K	CHIP C 10UF K	
C245,246			CK73GB0J106K	CHIP C 10UF K		C477,478			CK73HB1A104K	CHIP C 0.10UF K	
C249-256			CK73HB1A104K	CHIP C 0.10UF K		C479			CK73GB0J106K	CHIP C 10UF K	
C258			CK73HB1A104K	CHIP C 0.10UF K		C481			CK73HB1A104K	CHIP C 0.10UF K	
C264			CC73HCH1H680J	CHIP C 68PF J		C483			CK73GB0J106K	CHIP C 10UF K	
C300-311			CK73HB1A104K	CHIP C 0.10UF K		C485			CK73GB0J106K	CHIP C 10UF K	
C314			CK73GB0J106K	CHIP C 10UF K		C492			CC73HCH1H220J	CHIP C 22PF J	
C316-318			CK73GB0J106K	CHIP C 10UF K		C510,511			CK73HB1H472K	CHIP C 4700PF K	
C319-340			CK73HB1A104K	CHIP C 0.10UF K		C650			CK73HB1H152K	CHIP C 1500PF K	
C342-346			CK73HB1A104K	CHIP C 0.10UF K		C651			CC73HCH1H181J	CHIP C 180PF J	
						C652-655			CK73GB1C225K	CHIP C 2.2UF K	
						C656			CK73HB1A104K	CHIP C 0.10UF K	

## PARTS LIST

DSP UNIT (X53-4530-00)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C657			CK73HB1E223K	CHIP C 0.022UF K		C753			CK73GB0J106K	CHIP C 10UF K	
C658			CK73HB1H152K	CHIP C 1500PF K		C754			CK73HB1A104K	CHIP C 0.10UF K	
C659			CC73HCH1H181J	CHIP C 180PF J		C755			CK73HB1H122K	CHIP C 1200PF K	
C660			CK73HB1E103K	CHIP C 0.010UF K		C756			CK73GB1C225K	CHIP C 2.2UF K	
C661			CK73GB0J106K	CHIP C 10UF K		C757			CK73HB1H122K	CHIP C 1200PF K	
C662			CK73HB1A104K	CHIP C 0.10UF K		C758,759			CK73HB1A683K	CHIP C 0.068UF K	
C663			CK73HB1H222K	CHIP C 2200PF K		C760,761			CK73HB1E103K	CHIP C 0.010UF K	
C664			CK73HB1H681K	CHIP C 680PF K		C762			CK73HB1H222K	CHIP C 2200PF K	
C665,666			CK73HB1H821K	CHIP C 820PF K		C763,764			CK73HB1A104K	CHIP C 0.10UF K	
C667			CK73HB1H682K	CHIP C 6800PF K		C765			CK73GB0J475K	CHIP C 4.7UF K	
C668			CC73HCH1H331J	CHIP C 330PF J		C766			CK73GB1C225K	CHIP C 2.2UF K	
C669			CK73HCH1H682K	CHIP C 6800PF K		C767			CE32CL1C470M	CHIP EL 47UF 16WV	
C670			CC73HCH1H331J	CHIP C 330PF J		C768			CK73GB1C225K	CHIP C 2.2UF K	
C671			CK73HB1A104K	CHIP C 0.10UF K		C769			CK73GB1A105K	CHIP C 1.0UF K	
C672			CK73HB1E103K	CHIP C 0.010UF K		C770			CC73HCH1H331J	CHIP C 330PF J	
C673			CK73HB1H152K	CHIP C 1500PF K		C771,772			CK73HB1A104K	CHIP C 0.10UF K	
C674			CC73HCH1H181J	CHIP C 180PF J		C774			CK73GB1C225K	CHIP C 2.2UF K	
C675			CC73HCH1H151J	CHIP C 150PF J		C775			CK73HB1E103K	CHIP C 0.010UF K	
C676,677			CK73HB1A104K	CHIP C 0.10UF K		C776			CK73GB0J106K	CHIP C 10UF K	
C678			CC73HCH1H151J	CHIP C 150PF J		C777			CK73GB1C225K	CHIP C 2.2UF K	
C679,680			CK73HB1A104K	CHIP C 0.10UF K		C778			CK73HB1E103K	CHIP C 0.010UF K	
C681			CC73HCH1H331J	CHIP C 330PF J		C779			CK73GB1C225K	CHIP C 2.2UF K	
C682,683			CK73HB1A104K	CHIP C 0.10UF K		C780			CE32CL1C470M	CHIP EL 47UF 16WV	
C684			CC73HCH1H151J	CHIP C 150PF J		C781			CK73GB1A105K	CHIP C 1.0UF K	
C685,686			CK73HB1A104K	CHIP C 0.10UF K		C782			CK73GB1C225K	CHIP C 2.2UF K	
C687			CK73HB1H682K	CHIP C 6800PF K		C783			CC73HCH1H331J	CHIP C 330PF J	
C688			CK73HB1H152K	CHIP C 1500PF K		C784			CK73GB0J106K	CHIP C 10UF K	
C689			CC73HCH1H181J	CHIP C 180PF J		C785			CK73HB1H102K	CHIP C 1000PF K	
C690			CK73GB0J475K	CHIP C 4.7UF K		C786			CK73HB1H681K	CHIP C 680PF K	
C691			CK73GB1C225K	CHIP C 2.2UF K		C787			CK73HB1A104K	CHIP C 0.10UF K	
C692			CK73GB0J475K	CHIP C 4.7UF K		C788			CK73GB0J106K	CHIP C 10UF K	
C693,694			CK73GB1C225K	CHIP C 2.2UF K		C789			CK73HB1A104K	CHIP C 0.10UF K	
C695,696			CK73HB1H681K	CHIP C 680PF K		C790			CK73GB0J106K	CHIP C 10UF K	
C697,698			CK73HB1E153K	CHIP C 0.015UF K		C791			CK73HB1A104K	CHIP C 0.10UF K	
C699-702			CK73GB1C225K	CHIP C 2.2UF K		C793			CC73HCH1H820J	CHIP C 82PF J	
C703,704			CC73HCH1H151J	CHIP C 150PF J		C794,795			CK73HB1A104K	CHIP C 0.10UF K	
C705			CC73HCH1H331J	CHIP C 330PF J		C796			CC73HCH1H151J	CHIP C 150PF J	
C706			CC73HCH1H121J	CHIP C 120PF J		C797-799			CK73HB1A104K	CHIP C 0.10UF K	
C708,709			CK73HB1A104K	CHIP C 0.10UF K		C800			CC73HCH1H151J	CHIP C 150PF J	
C710,711			CK73GB1H104K	CHIP C 0.10UF K		C801			CK73GB1C225K	CHIP C 2.2UF K	
C712,713			CK73HB1A104K	CHIP C 0.10UF K		C802			CC73HCH1H331J	CHIP C 330PF J	
C715,716			CK73HB1A104K	CHIP C 0.10UF K		C804			CK73GB0J106K	CHIP C 10UF K	
C717-720			CK73HB1E103K	CHIP C 0.010UF K		C805			CK73HB1E103K	CHIP C 0.010UF K	
C721			CC73HCH1H151J	CHIP C 150PF J		C806			CC73HCH1H121J	CHIP C 120PF J	
C722,723			CK73HB1A104K	CHIP C 0.10UF K		C807			CC73HCH1H151J	CHIP C 150PF J	
C724			CC73HCH1H151J	CHIP C 150PF J		C808			CK73HB1E103K	CHIP C 0.010UF K	
C725,726			CK73HB1H821K	CHIP C 820PF K		C809			CK73GB0J475K	CHIP C 4.7UF K	
C727			CK73HB1H182K	CHIP C 1800PF K		C810			CC73HCH1H121J	CHIP C 120PF J	
C728			CK73HB1H821K	CHIP C 820PF K		C811			CK73GB0J106K	CHIP C 10UF K	
C729			CK73HB1H472K	CHIP C 4700PF K		C812			CK73HB1H182K	CHIP C 1800PF K	
C730,731			CK73HB1A104K	CHIP C 0.10UF K		C813			CK73HB1A104K	CHIP C 0.10UF K	
C732			CK73HB1H472K	CHIP C 4700PF K		C814,815			CK73GB1C225K	CHIP C 2.2UF K	
C733,734			CK73HB1A104K	CHIP C 0.10UF K		C817			CK73GB1C225K	CHIP C 2.2UF K	
C735-738			CK73GB1C225K	CHIP C 2.2UF K		C818			CK73HB1E103K	CHIP C 0.010UF K	
C743,744			CK73GB0J475K	CHIP C 4.7UF K		C819			CK73HB1H182K	CHIP C 1800PF K	
C745,746			CC73HCH1H121J	CHIP C 120PF J		C820			CK73GB1C225K	CHIP C 2.2UF K	
C747			CK73HB1E103K	CHIP C 0.010UF K		C821			CK73HB1A104K	CHIP C 0.10UF K	
C748,749			CK73GB1C225K	CHIP C 2.2UF K		C822			CK73HB1H182K	CHIP C 1800PF K	
C750			CK73HB1A104K	CHIP C 0.10UF K		C823			CK73GB1C225K	CHIP C 2.2UF K	
C751,752			CK73HB1H222K	CHIP C 2200PF K		C824			CK73HB1A104K	CHIP C 0.10UF K	

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### DSP UNIT (X53-4530-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C825			CK73GB1C225K	CHIP C 2.2UF K		C905			CK73HB1H102K	CHIP C 1000PF K	
C826			CK73HB1H821K	CHIP C 820PF K		C908			CK73HB1E103K	CHIP C 0.010UF K	
C827			CC73HCH1H101J	CHIP C 100PF J		C910			CK73HB1H102K	CHIP C 1000PF K	
C828			CK73HB1A104K	CHIP C 0.10UF K		C911			CK73GB1A105K	CHIP C 1.0UF K	
C829			CK73HB1H821K	CHIP C 820PF K		C912			CK73HB1H102K	CHIP C 1000PF K	
C830			CK73GB1C225K	CHIP C 2.2UF K		C913			CK73HB1H122K	CHIP C 1200PF K	
C831			CC73HCH1H121J	CHIP C 120PF J		C914			CC73HCH1H391J	CHIP C 390PF J	
C832			CK73HB1E103K	CHIP C 0.010UF K		C916			CK73HB1A104K	CHIP C 0.10UF K	
C833			CC73HCH1H121J	CHIP C 120PF J		C917			CK73HB1E103K	CHIP C 0.010UF K	
C834			CK73GB1C225K	CHIP C 2.2UF K		C920			CK73HB1H222K	CHIP C 2200PF K	
C835,836			CK73HB1A104K	CHIP C 0.10UF K		C922			CK73HB1A684K	CHIP C 0.68UF K	
C837			CC73HCH1H121J	CHIP C 120PF J		C924			CK73GB0J106K	CHIP C 10UF K	
C838			CK73HB1E103K	CHIP C 0.010UF K		C925			CK73HB1A104K	CHIP C 0.10UF K	
C840			CK73HB1H561K	CHIP C 560PF K		C931			CK73GB1C225K	CHIP C 2.2UF K	
C841			CK73GB0J106K	CHIP C 10UF K		C933			CK73HB1E223K	CHIP C 0.022UF K	
C842,843			CK73HB1A104K	CHIP C 0.10UF K		C942,943			CK73HB1H272K	CHIP C 2700PF K	
C844			CK73HB1H821K	CHIP C 820PF K		C944,945			CC73HCH1H471J	CHIP C 470PF J	
C845			CK73GB1C225K	CHIP C 2.2UF K		C946,947			CK73HB1E103K	CHIP C 0.010UF K	
C846			CK73HB1A104K	CHIP C 0.10UF K		C948			CK73HB1A104K	CHIP C 0.10UF K	
C847			CC73HCH1H471J	CHIP C 470PF J		C949			CC73HCH1H331J	CHIP C 330PF J	
C849			CK73GB0J106K	CHIP C 10UF K		C950			CK73HB1H222K	CHIP C 2200PF K	
C850			CK73GB1C225K	CHIP C 2.2UF K		C951			CK73GB1C225K	CHIP C 2.2UF K	
C851			CK73HB1A104K	CHIP C 0.10UF K		C952			CK73HB1H182K	CHIP C 1800PF K	
C852			CC73HCH1H471J	CHIP C 470PF J		C953			CK73HB1E103K	CHIP C 0.010UF K	
C853			CK73HB1H821K	CHIP C 820PF K		C954			CK73GB1A105K	CHIP C 1.0UF K	
C854			CK73GB1C225K	CHIP C 2.2UF K		CN1			E41-1682-05	PIN ASSY	
C855			CK73HB1H821K	CHIP C 820PF K		CN2			E41-1683-05	PIN ASSY	
C856			CK73HB1H122K	CHIP C 1200PF K		CN50			E41-1682-05	PIN ASSY	
C857			CK73HB1H222K	CHIP C 2200PF K		CN101			E40-6910-05	FLAT CABLE CONNECTOR	
C858			CK73GB0J106K	CHIP C 10UF K		CN112			E40-6914-05	FLAT CABLE CONNECTOR	
C859			CK73HB1E103K	CHIP C 0.010UF K		CN662,663			E41-1682-05	PIN ASSY	
C860,861			CK73HB1A104K	CHIP C 0.10UF K		CN665,666			E41-1682-05	PIN ASSY	
C862			CK73HB1H222K	CHIP C 2200PF K		CN667			E41-1684-05	PIN ASSY	
C863			CK73GB0J106K	CHIP C 10UF K		CN668			E41-1683-05	PIN ASSY	
C864,865			CK73HB1A104K	CHIP C 0.10UF K		CN669,670			E41-1682-05	PIN ASSY	
C867			CK73HB1H821K	CHIP C 820PF K		CN671			E40-6914-05	FLAT CABLE CONNECTOR	
C869,870			CK73GB0J106K	CHIP C 10UF K		CN672			E41-3176-05	FLAT CABLE CONNECTOR	
C871			CC73HCH1H470J	CHIP C 47PF J		J50			E11-0414-15	3.5D PHONE JACK(3P)	
C872,873			CK73HB1A104K	CHIP C 0.10UF K		J51			E11-0455-05	3.5D PHONE JACK(3P)	
C874			CK73GB0J106K	CHIP C 10UF K		F1			F53-0360-05	FUSE(0.25A)	
C875			CK73HB1A104K	CHIP C 0.10UF K		-			G11-4535-04	SHEET	
C876			CK73HB1E103K	CHIP C 0.010UF K		L1			L33-3001-05	CHOKE COIL	
C877			CK73GB1C225K	CHIP C 2.2UF K		L2			L33-1598-05	CHOKE COIL	
C878			CC73HCH1H560J	CHIP C 56PF J		L4 -10			L92-0639-05	CHIP FERRITE	
C879			CK73HB1A104K	CHIP C 0.10UF K		L50			L33-1553-05	CHOKE COIL	
C880			CK73GB0J106K	CHIP C 10UF K		L51			L41-1005-32	SMALL FIXED INDUCTOR(10UH)	
C882			CK73HB1H182K	CHIP C 1800PF K		L52			L33-1553-05	CHOKE COIL	
C883			CK73HB1E103K	CHIP C 0.010UF K		L53			L41-1005-32	SMALL FIXED INDUCTOR(10UH)	
C884			CK73GB1C225K	CHIP C 2.2UF K		L55 -57			L92-0639-05	CHIP FERRITE	
C887			CK73HB1A104K	CHIP C 0.10UF K		L200			L92-0378-05	CHIP FERRITE	
C888			CK73GB0J106K	CHIP C 10UF K		L201			L33-1554-05	CHOKE COIL	
C889			CK73HB1H122K	CHIP C 1200PF K		L202			L92-0639-05	CHIP FERRITE	
C890			CK73GB1C225K	CHIP C 2.2UF K		L300			L92-0639-05	CHIP FERRITE	
C895			CK73GB0J106K	CHIP C 10UF K		L301			L33-1554-05	CHOKE COIL	
C896			CK73HB1E103K	CHIP C 0.010UF K		L302			L92-0378-05	CHIP FERRITE	
C897,898			CK73HB1E223K	CHIP C 0.022UF K		L380			L41-4701-44	SMALL FIXED INDUCTOR(47UH)	
C899,900			CK73HB1H682K	CHIP C 6800PF K		L650			L33-1554-05	CHOKE COIL	
C901			CC73HCH1H560J	CHIP C 56PF J		L651-653			L92-0639-05	CHIP FERRITE	
C902			CK73HB1E103K	CHIP C 0.010UF K							
C903			CK73HB1A104K	CHIP C 0.10UF K							

## PARTS LIST

DSP UNIT (X53-4530-00)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
L654			L41-1005-39	SMALL FIXED INDUCTOR(10UH)		R123			RK73HB1J473J	CHIP R 47K J 1/16W	
L655			L41-1005-32	SMALL FIXED INDUCTOR(10UH)		R128-130			RK73HB1J000J	CHIP R 0 J 1/16W	
L657,658			L41-1005-39	SMALL FIXED INDUCTOR(10UH)		R131			RK73HB1J473J	CHIP R 47K J 1/16W	
L701-703			L92-0639-05	CHIP FERRITE		R133			RK73HB1J473J	CHIP R 47K J 1/16W	
X100			L77-3080-05	CRYSTAL RESONATOR(18.432MHZ)		R137			RK73HB1J472J	CHIP R 4.7K J 1/16W	
X200			L77-3070-05	CRYSTAL RESONATOR(24.576MHZ)		R138			RK73HB1J473J	CHIP R 47K J 1/16W	
X300		*	L77-3120-05	TCXO(24.576MHZ)		R141			RK73HB1J473J	CHIP R 47K J 1/16W	
CP50-55			RK74HA1J101J	CHIP-COM 100 J 1/16W		R143			RK73HB1J000J	CHIP R 0 J 1/16W	
CP56-58			RK74HA1J470J	CHIP-COM 47 J 1/16W		R144			RK73HB1J473J	CHIP R 47K J 1/16W	
CP59-61			RK74HA1J101J	CHIP-COM 100 J 1/16W		R146			RK73HB1J473J	CHIP R 47K J 1/16W	
CP62			RK74HA1J000J	CHIP-COM 0 J 1/16W		R148			RK73HB1J473J	CHIP R 47K J 1/16W	
CP63-71			RK74HA1J101J	CHIP-COM 100 J 1/16W		R150			RK73HB1J473J	CHIP R 47K J 1/16W	
CP229,230			RK74HB1J470J	CHIP-COM 47 J 1/16W		R154			RK73HB1J473J	CHIP R 47K J 1/16W	
CP333			RK74HB1J470J	CHIP-COM 47 J 1/16W		R155			RK73HB1J473J	CHIP R 47K J 1/16W	
CP335			RK74HB1J470J	CHIP-COM 47 J 1/16W		R158			RK73HB1J000J	CHIP R 0 J 1/16W	
R1 ,2			RK73EB2E000J	CHIP R 0 J 1/4W		R159			RK73HB1J473J	CHIP R 47K J 1/16W	
R4			RK73EB2E000J	CHIP R 0 J 1/4W		R161			RK73HB1J101J	CHIP R 100 J 1/16W	
R6			RK73EB2E000J	CHIP R 0 J 1/4W		R162			RK73HB1J473J	CHIP R 47K J 1/16W	
R7 -9			RK73PB2H1R0J	CHIP R 1 J 1/2W		R164			RK73GB2A105J	CHIP R 1.0M J 1/10W	
R12			RK73GB2A103J	CHIP R 10K J 1/10W		R165			RK73HB1J473J	CHIP R 47K J 1/16W	
R13			RK73EB2E000J	CHIP R 0 J 1/4W		R167			RK73HB1J000J	CHIP R 0 J 1/16W	
R15			RK73GB2A103J	CHIP R 10K J 1/10W		R168			RK73HB1J470J	CHIP R 47 J 1/16W	
R16			RK73HB1J184J	CHIP R 180K J 1/16W		R173,174			RK73HB1J000J	CHIP R 0 J 1/16W	
R17			RK73GH2A223D	CHIP R 22K D 1/10W		R177-181			RK73HB1J473J	CHIP R 47K J 1/16W	
R18			RK73GH2A473D	CHIP R 47K D 1/10W		R187-192			RK73HB1J470J	CHIP R 47 J 1/16W	
R24			RK73HB1J000J	CHIP R 0 J 1/16W		R193			RK73HB1J473J	CHIP R 47K J 1/16W	
R25 ,26			RK73EB2E000J	CHIP R 0 J 1/4W		R194			RK73HB1J101J	CHIP R 100 J 1/16W	
R31			RK73HB1J000J	CHIP R 0 J 1/16W		R198			RK73HB1J473J	CHIP R 47K J 1/16W	
R32			RK73GH2A362D	CHIP R 3.6K D 1/10W		R200-202			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R50			RK73GB2A4R7J	CHIP R 4.7 J 1/10W		R203			RK73HB1J000J	CHIP R 0 J 1/16W	
R51			RK73GB2A103J	CHIP R 10K J 1/10W		R204,205			RK73HB1J473J	CHIP R 47K J 1/16W	
R52			RK73HB1J104J	CHIP R 100K J 1/16W		R206			RK73HB1J105J	CHIP R 1.0M J 1/16W	
R55 ,56			RK73GB2A102J	CHIP R 1.0K J 1/10W		R207			RK73HB1J000J	CHIP R 0 J 1/16W	
R57			RK73EB2E000J	CHIP R 0 J 1/4W		R208			RK73HB1J101J	CHIP R 100 J 1/16W	
R58			RK73GB2A4R7J	CHIP R 4.7 J 1/10W		R210			RK73HB1J000J	CHIP R 0 J 1/16W	
R60			RK73GB2A102J	CHIP R 1.0K J 1/10W		R213			RK73HB1J101J	CHIP R 100 J 1/16W	
R61			RK73GB2A4R7J	CHIP R 4.7 J 1/10W		R215			RK73HB1J471J	CHIP R 470 J 1/16W	
R62			RK73GB2A102J	CHIP R 1.0K J 1/10W		R216-218			RK73HB1J000J	CHIP R 0 J 1/16W	
R65 ,66			RK73GB2A103J	CHIP R 10K J 1/10W		R220-222			RK73HB1J000J	CHIP R 0 J 1/16W	
R67			RK73EB2E331J	CHIP R 330 J 1/4W		R224			RK73HB1J473J	CHIP R 47K J 1/16W	
R68			RK73GB2A151J	CHIP R 150 J 1/10W		R225			RK73HB1J000J	CHIP R 0 J 1/16W	
R69			RK73EB2E331J	CHIP R 330 J 1/4W		R226			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R70			RK73GB2A470J	CHIP R 47 J 1/10W		R227			RK73HB1J101J	CHIP R 100 J 1/16W	
R71			RK73GB2A151J	CHIP R 150 J 1/10W		R228			RK73HB1J473J	CHIP R 47K J 1/16W	
R72 ,73			RK73GB2A470J	CHIP R 47 J 1/10W		R229			RK73HB1J000J	CHIP R 0 J 1/16W	
R74			RK73EB2E680J	CHIP R 68 J 1/4W		R231			RK73HB1J000J	CHIP R 0 J 1/16W	
R75 -77			RK73GB2A472J	CHIP R 4.7K J 1/10W		R232			RK73HB1J473J	CHIP R 47K J 1/16W	
R78			RK73EB2E680J	CHIP R 68 J 1/4W		R233			RK73HB1J000J	CHIP R 0 J 1/16W	
R79 -81			RK73GB2A472J	CHIP R 4.7K J 1/10W		R234			RK73HB1J101J	CHIP R 100 J 1/16W	
R82			RK73HB1J682J	CHIP R 6.8K J 1/16W		R235			RK73HB1J470J	CHIP R 47 J 1/16W	
R83			RK73GB2A103J	CHIP R 10K J 1/10W		R237			RK73HB1J101J	CHIP R 100 J 1/16W	
R84			RK73HB1J682J	CHIP R 6.8K J 1/16W		R239			RK73HB1J470J	CHIP R 47 J 1/16W	
R86			RK73FB2B182J	CHIP R 1.8K J 1/8W		R240,241			RK73HB1J101J	CHIP R 100 J 1/16W	
R90			RK73GB2A102J	CHIP R 1.0K J 1/10W		R242			RK73HB1J000J	CHIP R 0 J 1/16W	
R91			RK73GB2A101J	CHIP R 100 J 1/10W		R243			RK73HB1J101J	CHIP R 100 J 1/16W	
R101			RK73HB1J473J	CHIP R 47K J 1/16W		R244			RK73HB1J473J	CHIP R 47K J 1/16W	
R103-113			RK73HB1J470J	CHIP R 47 J 1/16W		R246			RK73HB1J101J	CHIP R 100 J 1/16W	
R114			RK73HB1J473J	CHIP R 47K J 1/16W		R249-251			RK73HB1J101J	CHIP R 100 J 1/16W	
R118,119			RK73HB1J470J	CHIP R 47 J 1/16W		R252			RK73HB1J000J	CHIP R 0 J 1/16W	
						R254			RK73HB1J000J	CHIP R 0 J 1/16W	



## PARTS LIST

### DSP UNIT (X53-4530-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R255-257			RK73HB1J151J	CHIP R 150 J 1/16W		R392			RK73HB1J101J	CHIP R 100 J 1/16W	
R258-260			RK73HB1J000J	CHIP R 0 J 1/16W		R393			RK73HB1J470J	CHIP R 47 J 1/16W	
R261,262			RK73HB1J221J	CHIP R 220 J 1/16W		R396-398			RK73HB1J000J	CHIP R 0 J 1/16W	
R263,264			RK73HB1J101J	CHIP R 100 J 1/16W		R401-406			RK73HB1J000J	CHIP R 0 J 1/16W	
R265,266			RK73HB1J100J	CHIP R 10 J 1/16W		R410			RK73HB1J000J	CHIP R 0 J 1/16W	
R267			RK73HB1J101J	CHIP R 100 J 1/16W		R413-426			RK73HB1J473J	CHIP R 47K J 1/16W	
R276			RK73HB1J000J	CHIP R 0 J 1/16W		R428			RK73HB1J000J	CHIP R 0 J 1/16W	
R293			RK73HB1J473J	CHIP R 47K J 1/16W		R432			RK73HB1J000J	CHIP R 0 J 1/16W	
R300			RK73HB1J472J	CHIP R 4.7K J 1/16W		R436			RK73HB1J000J	CHIP R 0 J 1/16W	
R301,302			RK73HB1J473J	CHIP R 47K J 1/16W		R437-440			RK73HB1J221J	CHIP R 220 J 1/16W	
R303			RK73HB1J472J	CHIP R 4.7K J 1/16W		R441			RK73HB1J220J	CHIP R 22 J 1/16W	
R305-307			RK73HB1J473J	CHIP R 47K J 1/16W		R451-464			RK73HB1J473J	CHIP R 47K J 1/16W	
R308			RK73HB1J472J	CHIP R 4.7K J 1/16W		R465			RK73HB1J000J	CHIP R 0 J 1/16W	
R309-311			RK73HB1J000J	CHIP R 0 J 1/16W		R479			RK73HB1J000J	CHIP R 0 J 1/16W	
R312			RK73HB1J472J	CHIP R 4.7K J 1/16W		R484,485			RK73HB1J000J	CHIP R 0 J 1/16W	
R313			RK73HB1J473J	CHIP R 47K J 1/16W		R493			RK73HB1J000J	CHIP R 0 J 1/16W	
R314			RK73HB1J101J	CHIP R 100 J 1/16W		R495			RK73HB1J000J	CHIP R 0 J 1/16W	
R315			RK73HB1J000J	CHIP R 0 J 1/16W		R500			RK73HB1J000J	CHIP R 0 J 1/16W	
R317			RK73HB1J101J	CHIP R 100 J 1/16W		R504			RK73HB1J473J	CHIP R 47K J 1/16W	
R318			RK73HB1J151J	CHIP R 150 J 1/16W		R505			RK73HB1J332J	CHIP R 3.3K J 1/16W	
R319,320			RK73HB1J000J	CHIP R 0 J 1/16W		R506-513			RK73HB1J473J	CHIP R 47K J 1/16W	
R324			RK73HB1J000J	CHIP R 0 J 1/16W		R517,518			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R326			RK73HB1J000J	CHIP R 0 J 1/16W		R524,525			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R327			RK73HB1J4R7J	CHIP R 4.7 J 1/16W		R530,531			RK73HB1J000J	CHIP R 0 J 1/16W	
R328			RK73HB1J000J	CHIP R 0 J 1/16W		R536-539			RK73HB1J000J	CHIP R 0 J 1/16W	
R329			RK73HB1J4R7J	CHIP R 4.7 J 1/16W		R543,544			RK73HB1J000J	CHIP R 0 J 1/16W	
R330			RK73HB1J101J	CHIP R 100 J 1/16W		R557,558			RK73HB1J000J	CHIP R 0 J 1/16W	
R331,332			RK73HB1J000J	CHIP R 0 J 1/16W		R567-569			RK73HB1J473J	CHIP R 47K J 1/16W	
R334			RK73HB1J000J	CHIP R 0 J 1/16W		R580-587			RK73HB1J000J	CHIP R 0 J 1/16W	
R335			RK73HB1J101J	CHIP R 100 J 1/16W		R589			RK73HB1J000J	CHIP R 0 J 1/16W	
R336-339			RK73HB1J000J	CHIP R 0 J 1/16W		R591			RK73HB1J000J	CHIP R 0 J 1/16W	
R340			RK73HB1J4R7J	CHIP R 4.7 J 1/16W		R592,593			RK73HB1J680J	CHIP R 68 J 1/16W	
R341			RK73HB1J000J	CHIP R 0 J 1/16W		R594			RK73HB1J331J	CHIP R 330 J 1/16W	
R342			RK73HB1J470J	CHIP R 47 J 1/16W		R600-607			RK73HB1J470J	CHIP R 47 J 1/16W	
R343			RK73HB1J151J	CHIP R 150 J 1/16W		R616			RK73HB1J473J	CHIP R 47K J 1/16W	
R344			RK73HB1J000J	CHIP R 0 J 1/16W		R617			RK73HB1J102J	CHIP R 1.0K J 1/16W	
R345-348			RK73HB1J151J	CHIP R 150 J 1/16W		R650			RK73HB1J000J	CHIP R 0 J 1/16W	
R349			RK73HB1J000J	CHIP R 0 J 1/16W		R651,652			RK73HB1J332J	CHIP R 3.3K J 1/16W	
R350			RK73HB1J220J	CHIP R 22 J 1/16W		R653			RK73HB1J000J	CHIP R 0 J 1/16W	
R351			RK73HB1J000J	CHIP R 0 J 1/16W		R654,655			RK73HB1J220J	CHIP R 22 J 1/16W	
R352,353			RK73HB1J151J	CHIP R 150 J 1/16W		R656			RK73HB1J103J	CHIP R 10K J 1/16W	
R354			RK73HB1J000J	CHIP R 0 J 1/16W		R657			RK73HB1J332J	CHIP R 3.3K J 1/16W	
R355-357			RK73HB1J473J	CHIP R 47K J 1/16W		R658			RK73HB1J000J	CHIP R 0 J 1/16W	
R358			RK73HB1J000J	CHIP R 0 J 1/16W		R659			RK73HB1J332J	CHIP R 3.3K J 1/16W	
R359			RK73HB1J100J	CHIP R 10 J 1/16W		R660,661			RK73HB1J103J	CHIP R 10K J 1/16W	
R360			RK73HB1J473J	CHIP R 47K J 1/16W		R662			RK73HB1J332J	CHIP R 3.3K J 1/16W	
R361			RK73HB1J101J	CHIP R 100 J 1/16W		R663			RK73HB1J103J	CHIP R 10K J 1/16W	
R362			RK73HB1J000J	CHIP R 0 J 1/16W		R664			RK73HB1J223J	CHIP R 22K J 1/16W	
R366-368			RK73HB1J101J	CHIP R 100 J 1/16W		R665,666			RK73HB1J103J	CHIP R 10K J 1/16W	
R373			RK73HB1J000J	CHIP R 0 J 1/16W		R667-670			RK73HB1J183J	CHIP R 18K J 1/16W	
R375			RK73HB1J101J	CHIP R 100 J 1/16W		R671			RK73HB1J000J	CHIP R 0 J 1/16W	
R376			RK73HB1J104J	CHIP R 100K J 1/16W		R672,673			RK73HB1J103J	CHIP R 10K J 1/16W	
R377			RK73HB1J101J	CHIP R 100 J 1/16W		R674			RK73HB1J000J	CHIP R 0 J 1/16W	
R380			RK73HB1J000J	CHIP R 0 J 1/16W		R675			RK73HB1J821J	CHIP R 820 J 1/16W	
R381			RK73HB1J680J	CHIP R 68 J 1/16W		R676			RK73HB1J183J	CHIP R 18K J 1/16W	
R383-385			RK73HB1J000J	CHIP R 0 J 1/16W		R677-684			RK73HB1J223J	CHIP R 22K J 1/16W	
R386			RK73HB1J221J	CHIP R 220 J 1/16W		R685			RK73HB1J821J	CHIP R 820 J 1/16W	
R388,389			RK73HB1J680J	CHIP R 68 J 1/16W		R686			RK73HB1J103J	CHIP R 10K J 1/16W	
R390			RK73HB1J101J	CHIP R 100 J 1/16W		R687-690			RK73HB1J183J	CHIP R 18K J 1/16W	
R391			RK73HB1J470J	CHIP R 47 J 1/16W		R691			RK73GB2A103J	CHIP R 10K J 1/10W	



## PARTS LIST

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Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R692,693			RK73HB1J183J	CHIP R 18K J 1/16W		R799			RK73HB1J822J	CHIP R 8.2K J 1/16W	
R694			RK73GB2A103J	CHIP R 10K J 1/10W		R800,801			RK73HB1J223J	CHIP R 22K J 1/16W	
R695,696			RK73HB1J183J	CHIP R 18K J 1/16W		R802			RK73HB1J000J	CHIP R 0 J 1/16W	
R697			RK73HB1J152J	CHIP R 1.5K J 1/16W		R804			RK73HB1J000J	CHIP R 0 J 1/16W	
R698			RK73HB1J332J	CHIP R 3.3K J 1/16W		R805			RK73HB1J223J	CHIP R 22K J 1/16W	
R699			RK73HB1J821J	CHIP R 820 J 1/16W		R806,807			RK73HB1J103J	CHIP R 10K J 1/16W	
R700			RK73HB1J183J	CHIP R 18K J 1/16W		R809			RK73HB1J183J	CHIP R 18K J 1/16W	
R701			RK73HB1J103J	CHIP R 10K J 1/16W		R810,811			RK73HB1J000J	CHIP R 0 J 1/16W	
R702			RK73HB1J822J	CHIP R 8.2K J 1/16W		R812			RK73HB1J470J	CHIP R 47 J 1/16W	
R703			RK73HB1J103J	CHIP R 10K J 1/16W		R813-815			RK73HB1J223J	CHIP R 22K J 1/16W	
R704			RK73HB1J821J	CHIP R 820 J 1/16W		R816			RK73HB1J000J	CHIP R 0 J 1/16W	
R705			RK73HB1J822J	CHIP R 8.2K J 1/16W		R818,819			RK73HB1J000J	CHIP R 0 J 1/16W	
R706			RK73HB1J103J	CHIP R 10K J 1/16W		R820			RK73HB1J4R7J	CHIP R 4.7 J 1/16W	
R707			RK73HB1J223J	CHIP R 22K J 1/16W		R821			RK73HB1J153J	CHIP R 15K J 1/16W	
R710,711			RK73HB1J332J	CHIP R 3.3K J 1/16W		R822			RK73HB1J682J	CHIP R 6.8K J 1/16W	
R712			RK73HB1J223J	CHIP R 22K J 1/16W		R825,826			RK73HB1J000J	CHIP R 0 J 1/16W	
R713,714			RK73HB1J103J	CHIP R 10K J 1/16W		R831,832			RK73HB1J183J	CHIP R 18K J 1/16W	
R715,716			RK73HB1J332J	CHIP R 3.3K J 1/16W		R833			RK73HB1J223J	CHIP R 22K J 1/16W	
R717-720			RK73HB1J223J	CHIP R 22K J 1/16W		R834			RK73HB1J000J	CHIP R 0 J 1/16W	
R722			RK73HB1J123J	CHIP R 12K J 1/16W		R838-840			RK73HB1J000J	CHIP R 0 J 1/16W	
R723-727			RK73HB1J223J	CHIP R 22K J 1/16W		R841,842			RK73HB1J183J	CHIP R 18K J 1/16W	
R729			RK73HB1J123J	CHIP R 12K J 1/16W		R843			RK73HB1J000J	CHIP R 0 J 1/16W	
R730			RK73HB1J223J	CHIP R 22K J 1/16W		R845			RK73HB1J223J	CHIP R 22K J 1/16W	
R731			RK73HB1J100J	CHIP R 10 J 1/16W		R846			RK73GH2A362D	CHIP R 3.6K D 1/10W	
R732			RK73HB1J332J	CHIP R 3.3K J 1/16W		R847			RK73HB1J183J	CHIP R 18K J 1/16W	
R733			RK73HB1J272J	CHIP R 2.7K J 1/16W		R848,849			RK73HB1J000J	CHIP R 0 J 1/16W	
R735			RK73HB1J332J	CHIP R 3.3K J 1/16W		R850			RK73HB1J223J	CHIP R 22K J 1/16W	
R736			RK73HB1J272J	CHIP R 2.7K J 1/16W		R851,852			RK73HB1J220J	CHIP R 22 J 1/16W	
R737-748			RK73HB1J183J	CHIP R 18K J 1/16W		R853,854			RK73HB1J183J	CHIP R 18K J 1/16W	
R749,750			RK73HB1J332J	CHIP R 3.3K J 1/16W		R855			RK73HB1J223J	CHIP R 22K J 1/16W	
R753,754			RK73GH2A222D	CHIP R 2.2K D 1/10W		R857			RK73GH2A472D	CHIP R 4.7K D 1/10W	
R755			RK73HB1J223J	CHIP R 22K J 1/16W		R858			RK73HB1J103J	CHIP R 10K J 1/16W	
R756,757			RK73HB1J103J	CHIP R 10K J 1/16W		R859,860			RK73HB1J183J	CHIP R 18K J 1/16W	
R758			RK73HB1J183J	CHIP R 18K J 1/16W		R861			RK73HB1J223J	CHIP R 22K J 1/16W	
R759			RK73HB1J223J	CHIP R 22K J 1/16W		R862			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R760			RK73HB1J183J	CHIP R 18K J 1/16W		R863			RK73HB1J333J	CHIP R 33K J 1/16W	
R761			RK73HB1J223J	CHIP R 22K J 1/16W		R866			RK73HB1J333J	CHIP R 33K J 1/16W	
R762			RK73GH2A222D	CHIP R 2.2K D 1/10W		R867			RK73HB1J472J	CHIP R 4.7K J 1/16W	
R763-765			RK73HB1J332J	CHIP R 3.3K J 1/16W		R868			RK73HB1J183J	CHIP R 18K J 1/16W	
R766			RK73HB1J182J	CHIP R 1.8K J 1/16W		R870			RK73HB1J183J	CHIP R 18K J 1/16W	
R767			RK73HB1J332J	CHIP R 3.3K J 1/16W		R872,873			RK73HB1J223J	CHIP R 22K J 1/16W	
R768			RK73HB1J182J	CHIP R 1.8K J 1/16W		R874			RK73HB1J183J	CHIP R 18K J 1/16W	
R769			RK73HB1J223J	CHIP R 22K J 1/16W		R875,876			RK73HB1J223J	CHIP R 22K J 1/16W	
R772			RK73HB1J102J	CHIP R 1.0K J 1/16W		R877			RK73HB1J333J	CHIP R 33K J 1/16W	
R775			RK73HB1J104J	CHIP R 100K J 1/16W		R881			RK73HB1J822J	CHIP R 8.2K J 1/16W	
R776			RK73HB1J183J	CHIP R 18K J 1/16W		R882			RK73HB1J333J	CHIP R 33K J 1/16W	
R777			RK73HB1J473J	CHIP R 47K J 1/16W		R885			RK73HB1J223J	CHIP R 22K J 1/16W	
R778,779			RK73HB1J223J	CHIP R 22K J 1/16W		R886-888			RK73HB1J332J	CHIP R 3.3K J 1/16W	
R781,782			RK73HB1J183J	CHIP R 18K J 1/16W		R889			RK73HB1J272J	CHIP R 2.7K J 1/16W	
R783			RK73HB1J103J	CHIP R 10K J 1/16W		R890,891			RK73HB1J183J	CHIP R 18K J 1/16W	
R785			RK73GH2A362D	CHIP R 3.6K D 1/10W		R892			RK73HB1J103J	CHIP R 10K J 1/16W	
R786			RK73HB1J473J	CHIP R 47K J 1/16W		R893			RK73HB1J223J	CHIP R 22K J 1/16W	
R787,788			RK73HB1J220J	CHIP R 22 J 1/16W		R894			RK73HB1J332J	CHIP R 3.3K J 1/16W	
R789,790			RK73HB1J103J	CHIP R 10K J 1/16W		R895			RK73HB1J272J	CHIP R 2.7K J 1/16W	
R791,792			RK73HB1J100J	CHIP R 10 J 1/16W		R896			RK73HB1J183J	CHIP R 18K J 1/16W	
R793			RK73HB1J000J	CHIP R 0 J 1/16W		R897			RK73HB1J103J	CHIP R 10K J 1/16W	
R794			RK73GH2A472D	CHIP R 4.7K D 1/10W		R899			RK73HB1J103J	CHIP R 10K J 1/16W	
R795			RK73GH2A222D	CHIP R 2.2K D 1/10W		R900,901			RK73HB1J332J	CHIP R 3.3K J 1/16W	
R796			RK73HB1J223J	CHIP R 22K J 1/16W		R902			RK73HB1J223J	CHIP R 22K J 1/16W	
R797,798			RK73HB1J000J	CHIP R 0 J 1/16W		R904			RK73HB1J103J	CHIP R 10K J 1/16W	

## PARTS LIST

### DSP UNIT (X53-4530-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R905			RK73HB1J472J	CHIP R 4.7K J 1/16W		D1			RB080L-30	DIODE	
R906			RK73HB1J333J	CHIP R 33K J 1/16W		D50 -52			DA2S101	DIODE	
R907			RK73HB1J273J	CHIP R 27K J 1/16W		D100			1SS388F	DIODE	
R908			RK73HB1J333J	CHIP R 33K J 1/16W		D656			RB080L-30	DIODE	
R909			RK73HB1J472J	CHIP R 4.7K J 1/16W		IC1			<b>Note1</b>	ANALOGUE IC	
R910			RK73HB1J392J	CHIP R 3.9K J 1/16W		IC50			NJM2768BM-ZB	MOS-IC	
R911			RK73HB1J273J	CHIP R 27K J 1/16W		IC51,52			LA4425A	MOS-IC	
R912			RK73HB1J392J	CHIP R 3.9K J 1/16W		IC101			F2136ACNFKEVA	MCU	
R913			RK73HB1J822J	CHIP R 8.2K J 1/16W		IC200,201			TC74VHC373FT	MOS-IC	
R914			RK73HB1J333J	CHIP R 33K J 1/16W		IC202			<b>Note1</b>	DSP	
R916,917			RK73HB1J183J	CHIP R 18K J 1/16W		IC203			E29LV80CB7TIP	ROM IC	
R918			RK73HB1J333J	CHIP R 33K J 1/16W		IC300			<b>Note1</b>	DSP	
R920,921			RK73HB1J183J	CHIP R 18K J 1/16W		IC301			E29LV32BB7TIP	SRAM IC	
R922			RK73HB1J223J	CHIP R 22K J 1/16W		IC302			TC74VHC541FT	MOS-IC	
R924			RK73HB1J123J	CHIP R 12K J 1/16W		IC322		*	TC7WHU04FK-F	MOS-IC	
R925			RK73HB1J223J	CHIP R 22K J 1/16W		IC380			TC74VHC74FT	MOS-IC	
R927			RK73HB1J103J	CHIP R 10K J 1/16W		IC381-383			HD74LV2G34AUS	MOS-IC	
R930-932			RK73HB1J223J	CHIP R 22K J 1/16W		IC385-388			AK4387ET	MOS-IC	
R934,935			RK73HB1J183J	CHIP R 18K J 1/16W		IC389			WM8782ASEDSRV	MOS-IC	
R937			RK73HB1J103J	CHIP R 10K J 1/16W		IC390,391			AK4396VF	MOS-IC	
R938,939			RK73HB1J223J	CHIP R 22K J 1/16W		IC392			AK5385BVF	MOS-IC	
R943,944			RK73HB1J183J	CHIP R 18K J 1/16W		IC397			AK4387ET	MOS-IC	
R945			RK73HB1J103J	CHIP R 10K J 1/16W		IC398			AK5385BVF	MOS-IC	
R946			RK73HB1J223J	CHIP R 22K J 1/16W		IC399			TC7SH00FU-F	MOS-IC	
R948			RK73HB1J333J	CHIP R 33K J 1/16W		IC650,651			NJM2732V	BI-POLAR IC	
R949			RK73HB1J682J	CHIP R 6.8K J 1/16W		IC652-656			NJM2100V-ZB	MOS-IC	
R950			RK73HB1J103J	CHIP R 10K J 1/16W		IC657			NJM2732V	BI-POLAR IC	
R952			RK73HB1J104J	CHIP R 100K J 1/16W		IC658			M62353AGPDF5J	MOS-IC	
R954			RK73HB1J103J	CHIP R 10K J 1/16W		IC659-661			NJM2732V	BI-POLAR IC	
R958			RK73HB1J682J	CHIP R 6.8K J 1/16W		IC662,663			NJM2100V-ZB	MOS-IC	
R960			RK73HB1J223J	CHIP R 22K J 1/16W		IC664,665			NJM2172V-ZB	MOS-IC	
R961,962			RK73HB1J4R7J	CHIP R 4.7 J 1/16W		IC666,667			NJM2732V	BI-POLAR IC	
R967			RK73HB1J333J	CHIP R 33K J 1/16W		IC668,669			NJM2100V-ZB	MOS-IC	
R968			RK73HB1J682J	CHIP R 6.8K J 1/16W		IC670-673			NJM2732V	BI-POLAR IC	
R970,971			RK73HB1J331J	CHIP R 330 J 1/16W		IC674			BA4580RFVM	BI-POLAR IC	
R972			RK73HB1J472J	CHIP R 4.7K J 1/16W		IC675			NJM2732V	BI-POLAR IC	
R974			RK73HB1J223J	CHIP R 22K J 1/16W		IC678			NJM2732V	BI-POLAR IC	
R975			RK73HB1J222J	CHIP R 2.2K J 1/16W		IC679			NJM2100V-ZB	MOS-IC	
R976			RK73HB1J102J	CHIP R 1.0K J 1/16W		IC681			NJM2100V-ZB	MOS-IC	
R977			RK73HB1J123J	CHIP R 12K J 1/16W		IC682			NJM2732V	BI-POLAR IC	
R978			RK73HB1J222J	CHIP R 2.2K J 1/16W		IC683			BA4580RFVM	BI-POLAR IC	
R980,981			RK73HB1J183J	CHIP R 18K J 1/16W		IC684			TC7W66FK-F	MOS-IC	
R982			RK73HB1J682J	CHIP R 6.8K J 1/16W		IC685			BA4580RFVM	BI-POLAR IC	
R983			RK73HB1J334J	CHIP R 330K J 1/16W		IC686			TC7W66FK-F	MOS-IC	
R984			RK73HB1J183J	CHIP R 18K J 1/16W		Q51 ,52			2SC5566-E	TRANSISTOR	
R985			RK73HB1J472J	CHIP R 4.7K J 1/16W		Q53 -55			2SB1694	TRANSISTOR	
R986			RK73HB1J223J	CHIP R 22K J 1/16W		Q56 -58			LTC043ZEBFS8	TRANSISTOR	
R987			RK73HB1J103J	CHIP R 10K J 1/16W		Q100			SSM3J05FU-F	FET	
R988			RK73HB1J102J	CHIP R 1.0K J 1/16W		Q101			LTC043TEBFS8	TRANSISTOR	
R989,990			RK73HB1J473J	CHIP R 47K J 1/16W		Q652			LTC043ZEBFS8	TRANSISTOR	
R992			RK73HB1J183J	CHIP R 18K J 1/16W		Q653,654			RT5P431C-T112	TRANSISTOR	
R993			RK73HB1J223J	CHIP R 22K J 1/16W		Q655			LTC043ZEBFS8	TRANSISTOR	
R994,995			RK73HB1J183J	CHIP R 18K J 1/16W		A650		*	W02-3778-05	OSCILLATING MODULE	
R996			RK73HB1J000J	CHIP R 0 J 1/16W		A651		*	W02-3779-05	OPTIC RECEIVING MODULE	
R997			RK73HB1J102J	CHIP R 1.0K J 1/16W							
R998			RK73HB1J104J	CHIP R 100K J 1/16W							
R999			RK73HB1J103J	CHIP R 10K J 1/16W							
K50 ,51			S76-0458-05	RELAY							
K52			S76-0424-05	RELAY							

## PARTS LIST

DISPLAY UNIT (X54-3850-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
<b>DISPLAY UNIT (X54-3850-00)</b>											
D9 -11		*	B30-2352-05	LED(GREEN)		C337-339			CK73FB1C106K	CHIP C 10UF K	
D12		*	B30-2350-05	LED(YELLOW)		C340			CK73GB1H104K	CHIP C 0.10UF K	
D13 -18		*	B30-2352-05	LED(GREEN)		C351-356			CK73HB1H102K	CHIP C 1000PF K	
D20 -24		*	B30-2352-05	LED(GREEN)		C357,358			CK73FB1C106K	CHIP C 10UF K	
D25		*	B30-2351-05	LED(RED)		C359,360			CK73GB1E105K	CHIP C 1.0UF K	
D26 -28		*	B30-2352-05	LED(GREEN)		C361			CK73GB1H102K	CHIP C 1000PF K	
D29		*	B30-2351-05	LED(RED)		C362			CK73GB1E105K	CHIP C 1.0UF K	
D31		*	B30-2350-05	LED(YELLOW)		C363			CK73FB1C106K	CHIP C 10UF K	
D32		*	B30-2352-05	LED(GREEN)		C364			CK73GB1H104K	CHIP C 0.10UF K	
D34		*	B30-2352-05	LED(GREEN)		C365			CK73FB1C106K	CHIP C 10UF K	
D36		*	B30-2350-05	LED(YELLOW)		C366,367			CK73GB1H104K	CHIP C 0.10UF K	
D37 -42		*	B30-2352-05	LED(GREEN)		C368			CK73GB1H103K	CHIP C 0.010UF K	
D43		*	B30-2351-05	LED(RED)		C369,370			CK73FB1C106K	CHIP C 10UF K	
D44		*	B30-2352-05	LED(GREEN)		C371			CK73GB1E105K	CHIP C 1.0UF K	
D45 ,46		*	B30-2350-05	LED(YELLOW)		C372			CK73GB1H104K	CHIP C 0.10UF K	
D47 -51		*	B30-2352-05	LED(GREEN)		C373			CK73GB1H103K	CHIP C 0.010UF K	
D52		*	B30-2350-05	LED(YELLOW)		C374			CK73FB1C106K	CHIP C 10UF K	
D61 -63		*	B30-2352-05	LED(GREEN)		C375			CK73GB1H104K	CHIP C 0.10UF K	
D501-504		*	B30-2352-05	LED(GREEN)		C376			CK73FB1C106K	CHIP C 10UF K	
						C377			CK73GB1H104K	CHIP C 0.10UF K	
C11			CK73GB1H102K	CHIP C 1000PF K		C378			CC73GCH1H152J	CHIP C 1500PF J	
C13 -16			CK73GB1H102K	CHIP C 1000PF K		C379			CK73GB1H103K	CHIP C 0.010UF K	
C17 ,18			CK73GB1E105K	CHIP C 1.0UF K		C380			CK73GB1E105K	CHIP C 1.0UF K	
C19 -25			CK73GB1H102K	CHIP C 1000PF K		C381			CK73FB1C106K	CHIP C 10UF K	
C26			CK73GB1E105K	CHIP C 1.0UF K		C382			CC73GCH1H151J	CHIP C 150PF J	
C27 -32			CK73GB1H102K	CHIP C 1000PF K		C383			CK73GB1H103K	CHIP C 0.010UF K	
C36			CK73GB1H104K	CHIP C 0.10UF K		C384			CK73GB1E105K	CHIP C 1.0UF K	
C46			CK73GB1H104K	CHIP C 0.10UF K		C385,386			CK73GB1H104K	CHIP C 0.10UF K	
C47 ,48			CC73GCH1H180J	CHIP C 18PF J		C387			CC73GCH1H101J	CHIP C 100PF J	
C49			CK73GB1H104K	CHIP C 0.10UF K		C388			CK73GB1H103K	CHIP C 0.010UF K	
C50			CK73GB1H102K	CHIP C 1000PF K		C390			CE32BQ1H100M	CHIP EL 10UF 50WV	
C52			CK73GB1H104K	CHIP C 0.10UF K		C391			CK73GB1C224K	CHIP C 0.22UF K	
C55			CK73GB1H104K	CHIP C 0.10UF K		C392			CE32BQ1H100M	CHIP EL 10UF 50WV	
C56			CK73FB1C106K	CHIP C 10UF K		C395			CC73GCH1H471J	CHIP C 470PF J	
C58			CK73FB1C106K	CHIP C 10UF K		C397			CK73GB1E105K	CHIP C 1.0UF K	
C59 -70			CK73GB1H102K	CHIP C 1000PF K		C398			CC73GCH1H151J	CHIP C 150PF J	
C71 -73			CK73GB1H104K	CHIP C 0.10UF K		C399			CK73GB1H103K	CHIP C 0.010UF K	
C74 -85			CK73GB1H102K	CHIP C 1000PF K		C400			CC73GCH1H560J	CHIP C 56PF J	
C87			C93-0912-05	CHIP C 100UF M		C401			CK73GB1H104K	CHIP C 0.10UF K	
C88			CK73GB1H102K	CHIP C 1000PF K		C402			CC73GCH1H101J	CHIP C 100PF J	
C90			CK73GB1E105K	CHIP C 1.0UF K		C403			CK73EB1H475K	CHIP C 4.7UF K	
C91			CK73GB1H102K	CHIP C 1000PF K		C404			CK73GB1C224K	CHIP C 0.22UF K	
C92 -94			CK73GB1H104K	CHIP C 0.10UF K		C411			CC73GCH1H560J	CHIP C 56PF J	
C95 -103			CK73GB1H102K	CHIP C 1000PF K		C436-439			CE32BM1E101M	CHIP EL 100UF 25WV	
C104			CC73GCH1H101J	CHIP C 100PF J		C462			CC73GCH1H471J	CHIP C 470PF J	
C105-116			CK73GB1H102K	CHIP C 1000PF K		C501			CK73GB1H103K	CHIP C 0.010UF K	
C117			CK73GB1E105K	CHIP C 1.0UF K		C502			CC73HCH1H330J	CHIP C 33PF J	
C120			CK73GB1H102K	CHIP C 1000PF K		C506-530			CC73HCH1H330J	CHIP C 33PF J	
C121			CK73GB1E105K	CHIP C 1.0UF K		C531			CK73FB1C106K	CHIP C 10UF K	
C122-139			CC73GCH1H101J	CHIP C 100PF J		C533			CC73HCH1H220J	CHIP C 22PF J	
C162			CK73GB1H102K	CHIP C 1000PF K					E37-1666-05	LEAD WIRE WITH TERMINAL	
C163			CK73GB1E105K	CHIP C 1.0UF K		CN1			E41-3191-05	FLAT CABLE CONNECTOR	
C164			CK73GB1H102K	CHIP C 1000PF K		CN2 ,3			E40-6527-05	PIN ASSY	
C171-173			CK73GB1H104K	CHIP C 0.10UF K		CN4			E41-2673-05	PIN ASSY	
C201,202			CE32BM1E101M	CHIP EL 100UF 25WV		CN5			E41-2736-05	PIN ASSY	
C205-226			CK73GB1H102K	CHIP C 1000PF K		CN6			E40-6919-05	FLAT CABLE CONNECTOR	
C301			CK73GB1E105K	CHIP C 1.0UF K		CN141			E40-6727-05	FLAT CABLE CONNECTOR	
C302			CK73GB1H103K	CHIP C 0.010UF K		CN259			E41-3176-05	FLAT CABLE CONNECTOR	
C303,304			CK73GB1E105K	CHIP C 1.0UF K		CN260-262			E40-6919-05	FLAT CABLE CONNECTOR	
						CN263			E40-6910-05	FLAT CABLE CONNECTOR	

## PARTS LIST

### DISPLAY UNIT (X54-3850-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
CN264			E41-2741-05	PIN ASSY		R36			RK73GB2A332J	CHIP R	3.3K J 1/10W
CN265			E41-2736-05	PIN ASSY		R44 -47			RK73GB2A473J	CHIP R	47K J 1/10W
CN266			E41-3177-05	FLAT CABLE CONNECTOR		R49			RK73GB2A000J	CHIP R	0 J 1/10W
CN267			E40-6922-05	FLAT CABLE CONNECTOR		R50 -53			RK73GB2A473J	CHIP R	47K J 1/10W
CN301			E40-6525-05	PIN ASSY		R56			RK73GB2A000J	CHIP R	0 J 1/10W
CN302			E41-3191-05	FLAT CABLE CONNECTOR		R57 -60			RK73GB2A473J	CHIP R	47K J 1/10W
CN303			E41-3192-05	FLAT CABLE CONNECTOR		R61			RK73GB2A103J	CHIP R	10K J 1/10W
CN405			E40-6913-05	FLAT CABLE CONNECTOR		R62			RK73GB2A000J	CHIP R	0 J 1/10W
CN406			E40-6949-05	FLAT CABLE CONNECTOR		R63			RK73EB2E000J	CHIP R	0 J 1/4W
CN465			E41-2332-05	FLAT CABLE CONNECTOR		R65			RK73GB2A561J	CHIP R	560 J 1/10W
CN466			E41-2874-05	PIN ASSY		R67			RK73GB2A473J	CHIP R	47K J 1/10W
CN467			E40-6920-05	FLAT CABLE CONNECTOR		R68			RK73GB2A332J	CHIP R	3.3K J 1/10W
CN468			E04-0193-05	PIN SOCKET		R69			RK73GB2A000J	CHIP R	0 J 1/10W
CN501			E41-3176-05	FLAT CABLE CONNECTOR		R70 ,71			RK73GB2A473J	CHIP R	47K J 1/10W
CN502			E41-3346-05	FLAT CABLE CONNECTOR		R72			RK73GB2A105J	CHIP R	1.0M J 1/10W
CN503			E40-6921-05	FLAT CABLE CONNECTOR		R73			RK73GB2A332J	CHIP R	3.3K J 1/10W
CN504		*	E41-3405-05	FLAT CABLE CONNECTOR		R74			RK73GB2A105J	CHIP R	1.0M J 1/10W
CN587			E40-6912-05	FLAT CABLE CONNECTOR		R75			RK73GB2A391J	CHIP R	390 J 1/10W
L1			L92-0639-05	CHIP FERRITE		R76			RK73GB2A561J	CHIP R	560 J 1/10W
L4			L92-0639-05	CHIP FERRITE		R78			RK73GB2A392J	CHIP R	3.9K J 1/10W
L9			L92-0639-05	CHIP FERRITE		R79			RK73GB2A154J	CHIP R	150K J 1/10W
L10 ,11			L92-0641-05	FERRITE CORE		R80			RK73GB2A473J	CHIP R	47K J 1/10W
L13			L33-1554-05	CHOKE COIL		R82			RK73GB2A561J	CHIP R	560 J 1/10W
L14			L92-0467-05	CHIP FERRITE		R83			RK73GB2A391J	CHIP R	390 J 1/10W
L15			L92-0639-05	CHIP FERRITE		R84			RK73GB2A561J	CHIP R	560 J 1/10W
L16			L33-3023-05	CHOKE COIL		R85			RK73GB2A000J	CHIP R	0 J 1/10W
L17 -22			L92-0639-05	CHIP FERRITE		R86			RK73GB2A473J	CHIP R	47K J 1/10W
L31 ,32			L92-0639-05	CHIP FERRITE		R88			RK73GB2A561J	CHIP R	560 J 1/10W
L301			L33-3022-05	CHOKE COIL		R89			RK73GB2A000J	CHIP R	0 J 1/10W
L302			L33-1597-05	CHOKE COIL		R90 ,91			RK73GB2A473J	CHIP R	47K J 1/10W
L303			L92-0639-05	CHIP FERRITE		R92			RK73GB2A000J	CHIP R	0 J 1/10W
L304,305			L92-0641-05	FERRITE CORE		R94			RK73GB2A561J	CHIP R	560 J 1/10W
L310			L33-1597-05	CHOKE COIL		R96			RK73GB2A561J	CHIP R	560 J 1/10W
L311			L33-3022-05	CHOKE COIL		R97			RK73GB2A473J	CHIP R	47K J 1/10W
L312			L41-1001-62	SMALL FIXED INDUCTOR(10UH)		R99			RK73GB2A272J	CHIP R	2.7K J 1/10W
L313			L33-1600-05	CHOKE COIL		R100			RK73EB2E000J	CHIP R	0 J 1/4W
L314		*	L92-0492-05	CHIP FERRITE		R101,102			RK73GB2A473J	CHIP R	47K J 1/10W
L316			L92-0639-05	CHIP FERRITE		R103			RK73GB2A391J	CHIP R	390 J 1/10W
L501			L41-1505-33	SMALL FIXED INDUCTOR(15UH)		R104			RK73GB2A561J	CHIP R	560 J 1/10W
X1			L77-2974-05	CRYSTAL RESONATOR(11.0592MHZ)		R106			RK73GB2A272J	CHIP R	2.7K J 1/10W
CP1 ,2			RK75GB1JR00	CHIP-COM 0 1/16W		R107,108			RK73GB2A000J	CHIP R	0 J 1/10W
CP3 ,4			RK74GB1J101J	CHIP-COM 100 J 1/16W		R110			RK73GB2A272J	CHIP R	2.7K J 1/10W
CP5			RK74GB1J103J	CHIP-COM 10K J 1/16W		R111			RK73GB2A561J	CHIP R	560 J 1/10W
CP7 ,8			RK74GB1J103J	CHIP-COM 10K J 1/16W		R113			RK73GB2A561J	CHIP R	560 J 1/10W
CP9 -11			RK75GB1JR00	CHIP-COM 0 1/16W		R115			RK73GB2A682J	CHIP R	6.8K J 1/10W
CP12-22			RK74GB1J101J	CHIP-COM 100 J 1/16W		R116-121			RK73GB2A561J	CHIP R	560 J 1/10W
CP301			RK75GB1JR00	CHIP-COM 0 1/16W		R122			RK73GB2A272J	CHIP R	2.7K J 1/10W
CP302			RK74GB1J101J	CHIP-COM 100 J 1/16W		R123			RK73EB2E000J	CHIP R	0 J 1/4W
CP303-309			RK74GB1J220J	CHIP-COM 22 J 1/16W		R124			RK73GB2A561J	CHIP R	560 J 1/10W
CP311			RK75GB1JR00	CHIP-COM 0 1/16W		R125,126			RK73GB2A272J	CHIP R	2.7K J 1/10W
CP312-315			RK74HB1J000J	CHIP-COM 0 J 1/16W		R127-129			RK73GB2A561J	CHIP R	560 J 1/10W
CP317			RK75GB1JR00	CHIP-COM 0 1/16W		R130			RK73GB2A392J	CHIP R	3.9K J 1/10W
CP502-507			RK74GB1J101J	CHIP-COM 100 J 1/16W		R131			RK73GB2A561J	CHIP R	560 J 1/10W
R1			RK73GB2A000J	CHIP R 0 J 1/10W		R132			RK73GB2A392J	CHIP R	3.9K J 1/10W
R2 -13			RK73GB2A101J	CHIP R 100 J 1/10W		R133			RK73GB2A561J	CHIP R	560 J 1/10W
R18 -23			RK73GB2A101J	CHIP R 100 J 1/10W		R134			RK73GB2A272J	CHIP R	2.7K J 1/10W
R24 ,25			RK73GB2A000J	CHIP R 0 J 1/10W		R135-137			RK73GB2A470J	CHIP R	47 J 1/10W
R26			RK73GB2A101J	CHIP R 100 J 1/10W		R138-153			RK73GB2A101J	CHIP R	100 J 1/10W
R34 ,35			RK73GB2A101J	CHIP R 100 J 1/10W		R154			RK73GB2A000J	CHIP R	0 J 1/10W
						R155			RK73GB2A332J	CHIP R	3.3K J 1/10W

## PARTS LIST

DISPLAY UNIT (X54-3850-00)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R156			RK73GB2A103J	CHIP R 10K J 1/10W		R371			RK73GH2A102D	CHIP R 1.0K D 1/10W	
R157			RK73GB2A101J	CHIP R 100 J 1/10W		R373			RK73GB2A000J	CHIP R 0 J 1/10W	
R158			RK73GB2A103J	CHIP R 10K J 1/10W		R375			RK73GB2A220J	CHIP R 22 J 1/10W	
R159,160			RK73GB2A473J	CHIP R 47K J 1/10W		R378			RK73GB2A820J	CHIP R 82 J 1/10W	
R162-169			RK73HB1J000J	CHIP R 0 J 1/16W		R379-381			RK73HB1J000J	CHIP R 0 J 1/16W	
R171,172			RK73GB2A103J	CHIP R 10K J 1/10W		R382			RK73HB1J680J	CHIP R 68 J 1/16W	
R301			RK73GB2A473J	CHIP R 47K J 1/10W		R383-398			RK73HB1J000J	CHIP R 0 J 1/16W	
R302			RK73PB2H2R2J	CHIP R 2.2 J 1/2W		R399			RK73GB2A000J	CHIP R 0 J 1/10W	
R303			RK73PB2H330J	CHIP R 33 J 1/2W		R501-504			RK73GB2A561J	CHIP R 560 J 1/10W	
R304			RK73GH2A912D	CHIP R 9.1K D 1/10W		R505-508			RK73HB1J000J	CHIP R 0 J 1/16W	
R305			RK73PB2H330J	CHIP R 33 J 1/2W		R512			RK73GB2A000J	CHIP R 0 J 1/10W	
R306,307			RK73HB1J000J	CHIP R 0 J 1/16W		R514			RK73GB2A000J	CHIP R 0 J 1/10W	
R308			RK73PB2H330J	CHIP R 33 J 1/2W		R517			RK73GB2A101J	CHIP R 100 J 1/10W	
R309			RK73GH2A473D	CHIP R 47K D 1/10W		R521			RK73GB2A101J	CHIP R 100 J 1/10W	
R310,311			RK73HB1J101J	CHIP R 100 J 1/16W		R524			RK73GB2A000J	CHIP R 0 J 1/10W	
R312			RK73PB2H330J	CHIP R 33 J 1/2W		R525			RK73GB2A271J	CHIP R 270 J 1/10W	
R314-318			RK73GB2A473J	CHIP R 47K J 1/10W		VR501-507	*		R31-0687-05	VARIABLE RESISTOR(100k)	
R319			RK73GB2A000J	CHIP R 0 J 1/10W		S1 -91			S70-0439-15	TACT SWITCH	
R320			RK73GB2A473J	CHIP R 47K J 1/10W		S501-513			S70-0439-15	TACT SWITCH	
R321			RK73GB2A121J	CHIP R 120 J 1/10W		D1 -8			DA2S101	DIODE	
R322			RK73EB2E100J	CHIP R 10 J 1/4W		D19			RB501VM-40	DIODE	
R323			RK73GH2A563D	CHIP R 56K D 1/10W		D53			1SS348-F	DIODE	
R324			RK73GB2A000J	CHIP R 0 J 1/10W		D54			MINISMD C05002F	VARIATOR	
R325,326			RK73GB2A473J	CHIP R 47K J 1/10W		D55			1SS355	DIODE	
R327			RK73GB2A104J	CHIP R 100K J 1/10W		D56			1SS348-F	DIODE	
R328			RK73GB2A473J	CHIP R 47K J 1/10W		D301-303			DB2J317	DIODE	
R329			RK73GB2A102J	CHIP R 1.0K J 1/10W		D306			RB162M-40	DIODE	
R331			RK73GB2A121J	CHIP R 120 J 1/10W		D307,308			RSB12JS2	ZENER DIODE	
R332			RK73GB2A222J	CHIP R 2.2K J 1/10W		IC5			MM3273DU	MOS-IC	
R333,334			RK73GB2A102J	CHIP R 1.0K J 1/10W		IC6			F3651KDFCKEXA	MCU	
R335			RK73GH2A562D	CHIP R 5.6K D 1/10W		IC7			TC74HC4094AFF	MOS-IC	
R336			RK73GH2A153D	CHIP R 15K D 1/10W		IC9 -11			TC74VHC4051AT	MOS-IC	
R338			RK73EB2E100J	CHIP R 10 J 1/4W		IC12			TC7SET125FU-F	MOS-IC	
R339			RK73GH2A563D	CHIP R 56K D 1/10W		IC301			TC7SH08FU-F	MOS-IC	
R340			RK73GB2A473J	CHIP R 47K J 1/10W		IC302			BA00DD0WHFP	ANALOGUE IC	
R341			RK73GH2A564D	CHIP R 560K D 1/10W		IC303-305			TC7SH08FU-F	MOS-IC	
R342			RK73GB2A222J	CHIP R 2.2K J 1/10W		IC306,307			<b>Note1</b>	ANALOGUE IC	
R343			RK73GB2A102J	CHIP R 1.0K J 1/10W		Q1 ,2			LTC043ZEBFS8	TRANSISTOR	
R344			RK73GB2A473J	CHIP R 47K J 1/10W		Q4			TPC6111-F	FET	
R345			RK73GH2A913D	CHIP R 91K D 1/10W		Q7			LTC043ZEBFS8	TRANSISTOR	
R346			RK73GB2A104J	CHIP R 100K J 1/10W		Q10			LTC043ZEBFS8	TRANSISTOR	
R347-349			RK73GB2A473J	CHIP R 47K J 1/10W		Q12			LTC043ZEBFS8	TRANSISTOR	
R350			RK73GB2A102J	CHIP R 1.0K J 1/10W		Q14			LTC043ZEBFS8	TRANSISTOR	
R351			RK73GB2A000J	CHIP R 0 J 1/10W		Q16 -24			LTC043ZEBFS8	TRANSISTOR	
R352-354			RK73HB1J000J	CHIP R 0 J 1/16W		Q26 ,27			LTC043ZEBFS8	TRANSISTOR	
R356			RK73GH2A243D	CHIP R 24K D 1/10W		Q29			LTC043ZEBFS8	TRANSISTOR	
R357			RK73GH2A124D	CHIP R 120K D 1/10W		Q31 -55			LTC043ZEBFS8	TRANSISTOR	
R358			RK73GB2A102J	CHIP R 1.0K J 1/10W		Q301,302			TPC6111-F	FET	
R359			RK73GB2A473J	CHIP R 47K J 1/10W		Q303,304			2SA2018	TRANSISTOR	
R360			RK73GB2A000J	CHIP R 0 J 1/10W		Q305,306			2SC5585	TRANSISTOR	
R361			RK73GH2A914D	CHIP R 910K D 1/10W		Q307			LTA014YEBFS8	TRANSISTOR	
R362			RK73GH2A473D	CHIP R 47K D 1/10W		Q308			DSC90010(S)	TRANSISTOR	
R363			RK73GH2A683D	CHIP R 68K D 1/10W							
R364			RK73GH2A100D	CHIP R 10 D 1/10W							
R365			RK73GH2A220D	CHIP R 22 D 1/10W							
R366			RK73GH2A100D	CHIP R 10 D 1/10W							
R367			RK73GH2A220D	CHIP R 22 D 1/10W							
R368			RK73GH2A223D	CHIP R 22K D 1/10W							
R369			RK73GB2A4R7J	CHIP R 4.7 J 1/10W							
R370			RK73GB2A224J	CHIP R 220K J 1/10W							

Note 1: This part cannot be replaced. Therefore, this part is not supplied as a service part.



## PARTS LIST

### RX UNIT (X55-313X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
<b>RX UNIT (X55-313X-XX) 0-00: K 2-71: E</b>						C117			CE32CL1C470M	CHIP EL	47UF 16WV
C3 ,4			CK73GB1H102K	CHIP C 1000PF K		C118,119			CK73GB1H103K	CHIP C	0.010UF K
C5 ,6			CK73GB1H104K	CHIP C 0.10UF K		C121			CK73GB1H104K	CHIP C	0.10UF K
C7			CK73GB1E105K	CHIP C 1.0UF K		C122			CK73GB1H103K	CHIP C	0.010UF K
C8			CD04BQ1C471M	ELECTRO 470UF 16WV		C123			CK73GB1H102K	CHIP C	1000PF K
C10 ,11			CK73GB1H103K	CHIP C 0.010UF K		C125			CK73GB1H104K	CHIP C	0.10UF K
C12			CK73GB1E105K	CHIP C 1.0UF K		C126,127			CK73GB1H103K	CHIP C	0.010UF K
C13			CK73EB1H104K	CHIP C 0.10UF K		C129,130			CK73GB1E105K	CHIP C	1.0UF K
C14 -19			CK73GB1H104K	CHIP C 0.10UF K		C132,133			CK73GB1H104K	CHIP C	0.10UF K
C20			CK73EB1H104K	CHIP C 0.10UF K		C135			CK73GB1H104K	CHIP C	0.10UF K
C21			CK73GB1H104K	CHIP C 0.10UF K		C137,138			CK73GB1H104K	CHIP C	0.10UF K
C22			CK73GB1H102K	CHIP C 1000PF K		C139			CK73GB1E105K	CHIP C	1.0UF K
C23			CK73GB1H104K	CHIP C 0.10UF K		C140			CC73GCH1H470J	CHIP C	47PF J
C24			CK73GB1H103K	CHIP C 0.010UF K		C141			CK73GB1H103K	CHIP C	0.010UF K
C26 ,27			CK73GB1H104K	CHIP C 0.10UF K		C142			CC73GCH1H221J	CHIP C	220PF J
C28			CD04AZ1E471M	ELECTRO 470UF 25WV		C143,144			CK73GB1H103K	CHIP C	0.010UF K
C29			CK73GB1H102K	CHIP C 1000PF K		C145,146			CK73GB1E105K	CHIP C	1.0UF K
C30			CC73GCH1H180J	CHIP C 18PF J		C147			CK73GB1H104K	CHIP C	0.10UF K
C31			CC73GCH1H330J	CHIP C 33PF J		C148			CK73GB1H103K	CHIP C	0.010UF K
C32			CC73FCH1H152J	CHIP C 1500PF J		C149			CK73GB1E105K	CHIP C	1.0UF K
C33			CC73FCH1H472J	CHIP C 4700PF J		C150			CC73GCH1H090D	CHIP C	9.0PF D
C35			CK73GB1E105K	CHIP C 1.0UF K		C151			CK73GB1H104K	CHIP C	0.10UF K
C36			CC73FCH1H152J	CHIP C 1500PF J		C152			CC73GCH1H090D	CHIP C	9.0PF D
C37			CK73GB1H104K	CHIP C 0.10UF K		C153			CK73GB1H104K	CHIP C	0.10UF K
C38			CK73GB1H103K	CHIP C 0.010UF K		C154			CK73GB1H102K	CHIP C	1000PF K
C40			CK73GB1H104K	CHIP C 0.10UF K		C155			CC73GCH1H101J	CHIP C	100PF J
C43			CK73GB1H104K	CHIP C 0.10UF K		C156			CK73GB1H103K	CHIP C	0.010UF K
C45			CK73GB1H102K	CHIP C 1000PF K		C157			CK73GB1H104K	CHIP C	0.10UF K
C47			CC73GCH1H222J	CHIP C 2200PF J		C160,161			CK73GB1H104K	CHIP C	0.10UF K
C49			CK73HB1H102K	CHIP C 1000PF K		C162			CK73GB1E105K	CHIP C	1.0UF K
C50			CC73FCH1H332J	CHIP C 3300PF J		C163-165			CK73GB1H104K	CHIP C	0.10UF K
C68			CC73GCH1H221J	CHIP C 220PF J		C167			CK73GB1H104K	CHIP C	0.10UF K
C70			CC73GCH1H222J	CHIP C 2200PF J		C168			CK73GB1H102K	CHIP C	1000PF K
C71			CK73GB1H103K	CHIP C 0.010UF K		C170			CK73GB1H104K	CHIP C	0.10UF K
C72			CK73GB1H104K	CHIP C 0.10UF K		C171-174			CK73GB1H103K	CHIP C	0.010UF K
C73 -75			CC73HCH1H560J	CHIP C 56PF J		C175			CC73GCH1H330J	CHIP C	33PF J
C76			CK73GB1H104K	CHIP C 0.10UF K		C176			CK73GB1H103K	CHIP C	0.010UF K
C77			CK73GB1H103K	CHIP C 0.010UF K		C177			CK73GB1H104K	CHIP C	0.10UF K
C78			CK73GB1H153K	CHIP C 0.015UF K		C178			CC73GCH1H020B	CHIP C	2.0PF B
C79			CC73HCH1H560J	CHIP C 56PF J		C179,180			CK73GB1H103K	CHIP C	0.010UF K
C80			CK73GB1E105K	CHIP C 1.0UF K		C182			CC73GCH1H101J	CHIP C	100PF J
C85			CK73GB1H103K	CHIP C 0.010UF K		C183			CK73GB1H103K	CHIP C	0.010UF K
C87			CK73GB1H103K	CHIP C 0.010UF K		C185			CC73GCH1H270J	CHIP C	27PF J
C90			CK73GB1E105K	CHIP C 1.0UF K		C186			CK73GB1E474K	CHIP C	0.47UF K
C92			CK73GB1H103K	CHIP C 0.010UF K		C187			CK73GB1H104K	CHIP C	0.10UF K
C95 ,96			CK73GB1H104K	CHIP C 0.10UF K		C188			CC73GCH1H330J	CHIP C	33PF J
C98			CK73GB1H104K	CHIP C 0.10UF K		C191			CC73GCH1H050B	CHIP C	5.0PF B
C100			CK73HB1H102K	CHIP C 1000PF K		C192			CC73GCH1H270J	CHIP C	27PF J
C101,102			CK73GB1H104K	CHIP C 0.10UF K		C194,195			CK73GB1H104K	CHIP C	0.10UF K
C103			CK73GB1E105K	CHIP C 1.0UF K		C197			CK73GB1H102K	CHIP C	1000PF K
C104			CK73GB1H104K	CHIP C 0.10UF K		C198			CK73GB1H103K	CHIP C	0.010UF K
C105			CK73GB1E105K	CHIP C 1.0UF K		C199			CK73GB1H104K	CHIP C	0.10UF K
C106			CK73GB1H104K	CHIP C 0.10UF K		C201			CK73GB1H103K	CHIP C	0.010UF K
C108			CK73GB1H104K	CHIP C 0.10UF K		C205			CK73GB1H473K	CHIP C	0.047UF K
C110,111			CK73GB1H104K	CHIP C 0.10UF K		C206			CK73GB1H103K	CHIP C	0.010UF K
C112			CK73GB1H103K	CHIP C 0.010UF K		C207			CC73GCH1H101J	CHIP C	100PF J
C113			CC73GCH1H220J	CHIP C 22PF J		C208,209			CK73GB1H103K	CHIP C	0.010UF K
C115			CK73GB1E105K	CHIP C 1.0UF K		C211			CK73GB1H103K	CHIP C	0.010UF K
C116			CK73GB1H103K	CHIP C 0.010UF K		C213			CK73GB1H103K	CHIP C	0.010UF K
						C214			CC73GCH1H100D	CHIP C	10PF D



## PARTS LIST

RX UNIT (X55-313X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C215			CK73GB1H103K	CHIP C 0.010UF K		C320,321			CC73GCH1H390J	CHIP C 39PF J	
C216			CK73GB1H102K	CHIP C 1000PF K		C322			CC73GCH1H820J	CHIP C 82PF J	
C218			CK73GB1E105K	CHIP C 1.0UF K		C323			CK73GB1H223K	CHIP C 0.022UF K	
C219-223			CK73GB1H103K	CHIP C 0.010UF K		C325,326			CC73GCH1H020B	CHIP C 2.0PF B	
C224,225			CK73GB1H102K	CHIP C 1000PF K		C327			CC73GCH1H070B	CHIP C 7.0PF B	
C226			CK73GB1H103K	CHIP C 0.010UF K		C329			CC73GCH1H120J	CHIP C 12PF J	
C227			CK73GB1E105K	CHIP C 1.0UF K		C330			CK73GB1H104K	CHIP C 0.10UF K	
C228			CK73GB1H103K	CHIP C 0.010UF K		C333,334			CK73GB1H104K	CHIP C 0.10UF K	
C230			CC73GCH1H331J	CHIP C 330PF J		C335			CC73GCH1H330J	CHIP C 33PF J	
C231			CK73GB1H104K	CHIP C 0.10UF K		C336,337			CC73GCH1H390J	CHIP C 39PF J	
C233			CC73GCH1H331J	CHIP C 330PF J		C338,339			CK73GB1H104K	CHIP C 0.10UF K	
C235			CK73GB1H102K	CHIP C 1000PF K		C340			CC73GCH1H050B	CHIP C 5.0PF B	
C238			CC73GCH1H151J	CHIP C 150PF J		C341,342			CC73GCH1H020B	CHIP C 2.0PF B	
C239			CC73GCH1H560J	CHIP C 56PF J		C343-345			CK73GB1H104K	CHIP C 0.10UF K	
C242			CK73GB1H103K	CHIP C 0.010UF K		C346			CC73GCH1H270J	CHIP C 27PF J	
C244			CK73GB1H103K	CHIP C 0.010UF K		C347-355			CK73GB1H103K	CHIP C 0.010UF K	
C245			CC73GCH1H391J	CHIP C 390PF J		C356,357			CC73GCH1H271J	CHIP C 270PF J	
C246			CC73GCH1H150J	CHIP C 15PF J		C358			CC73GCH1H151J	CHIP C 150PF J	
C247,248			CK73GB1H103K	CHIP C 0.010UF K		C359			CK73GB1H223K	CHIP C 0.022UF K	
C250,251			CK73GB1H103K	CHIP C 0.010UF K		C360			CC73GCH1H100C	CHIP C 10PF C	
C252			CK73GB1E105K	CHIP C 1.0UF K		C361			CK73GB1H104K	CHIP C 0.10UF K	
C254,255			CK73GB1H103K	CHIP C 0.010UF K		C362			CK73GB1E105K	CHIP C 1.0UF K	
C257,258			CK73GB1H103K	CHIP C 0.010UF K		C363			CC73GCH1H391J	CHIP C 390PF J	
C259			CK73GB1E105K	CHIP C 1.0UF K		C364			CC73GCH1H150J	CHIP C 15PF J	
C260-262			CK73GB1H103K	CHIP C 0.010UF K		C366			CK73GB1E105K	CHIP C 1.0UF K	
C263			CK73GB1H104K	CHIP C 0.10UF K		C367			CK73FB1A106K	CHIP C 10UF K	
C264,265			CK73GB1H103K	CHIP C 0.010UF K		C369,370			CK73GB1H103K	CHIP C 0.010UF K	
C266			CK73GB1E105K	CHIP C 1.0UF K		C371			CK73GB1E105K	CHIP C 1.0UF K	
C267			CK73GB1H104K	CHIP C 0.10UF K		C372			CK73GB1H103K	CHIP C 0.010UF K	
C268,269			CC73GCH1H100D	CHIP C 10PF D		C373			CK73GB1H222K	CHIP C 2200PF K	
C270			CK73GB1H103K	CHIP C 0.010UF K		C374			CC73GCH1H331J	CHIP C 330PF J	
C271			CK73GB1H104K	CHIP C 0.10UF K		C375			CK73GB1E105K	CHIP C 1.0UF K	
C272			CK73GB1H103K	CHIP C 0.010UF K		C377			CK73GB1H103K	CHIP C 0.010UF K	
C273			CK73GB1H102K	CHIP C 1000PF K		C378			CK73GB1H104K	CHIP C 0.10UF K	
C274-277			CK73GB1H103K	CHIP C 0.010UF K		C379			CK73FB1A106K	CHIP C 10UF K	
C278			CK73GB1H102K	CHIP C 1000PF K		C380			CK73GB1H103K	CHIP C 0.010UF K	
C280			CC73GCH1H470J	CHIP C 47PF J		C381			CK73GB1E105K	CHIP C 1.0UF K	
C281			CK73GB1H103K	CHIP C 0.010UF K		C382			CK73GB1H223K	CHIP C 0.022UF K	
C282			CC73GCH1H150J	CHIP C 15PF J		C383			CK73GB1H103K	CHIP C 0.010UF K	
C283			CK73GB1H103K	CHIP C 0.010UF K		C384			CK73GB1H104K	CHIP C 0.10UF K	
C284			CK73GB1H104K	CHIP C 0.10UF K		C385-387			CK73GB1H103K	CHIP C 0.010UF K	
C285,286			CK73GB1H103K	CHIP C 0.010UF K		C388			CC73GCH1H181J	CHIP C 180PF J	
C287			CK73GB1H104K	CHIP C 0.10UF K		C389-391			CK73GB1H103K	CHIP C 0.010UF K	
C288			CK73GB1H103K	CHIP C 0.010UF K		C398			CC73GCH1H391J	CHIP C 390PF J	
C289			CC73GCH1H121J	CHIP C 120PF J		C399			CC73GCH1H560J	CHIP C 56PF J	
C290			CK73GB1E105K	CHIP C 1.0UF K		C400			CK73FB1A106K	CHIP C 10UF K	
C291			CK73GB1H102K	CHIP C 1000PF K		C401			CK73GB1H103K	CHIP C 0.010UF K	
C292			CC73GCH1H560J	CHIP C 56PF J		C402			CK73GB1H104K	CHIP C 0.10UF K	
C293-299			CK73GB1H103K	CHIP C 0.010UF K		C403			CK73GB1E105K	CHIP C 1.0UF K	
C300			CC73GCH1H121J	CHIP C 120PF J		C405			CC73GCH1H121J	CHIP C 120PF J	
C301-306			CK73GB1H103K	CHIP C 0.010UF K		C406,407			CC73GCH1H390G	CHIP C 39PF G	
C307			CK73GB1H104K	CHIP C 0.10UF K		C408			CC73GCH1H821J	CHIP C 820PF J	
C308,309			CK73GB1H103K	CHIP C 0.010UF K		C409			CC73GCH1H391J	CHIP C 390PF J	
C310			CK73GB1H104K	CHIP C 0.10UF K		C410			CC73GCH1H121J	CHIP C 120PF J	
C311			CE32CL1C220M	CHIP EL 22UF 16WV		C411			CC73GCH1H821J	CHIP C 820PF J	
C312			CC73GCH1H221J	CHIP C 220PF J		C412			CC73GCH1H101J	CHIP C 100PF J	
C313-316			CK73GB1H104K	CHIP C 0.10UF K		C413			CK73GB1H103K	CHIP C 0.010UF K	
C317			CK73GB1H103K	CHIP C 0.010UF K		C414			CC73GCH1H100C	CHIP C 10PF C	
C318			CK73GB1E105K	CHIP C 1.0UF K		C415			CC73GCH1H391J	CHIP C 390PF J	
C319			CC73GCH1H330J	CHIP C 33PF J		C416			CC73GCH1H680G	CHIP C 68PF G	

## PARTS LIST

### RX UNIT (X55-313X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C417			CC73GCH1H100C	CHIP C 10PF C		C597			CC73GCH1H100C	CHIP C 10PF C	
C418			CC73GCH1H331J	CHIP C 330PF J		C598			CC73GCH1H330G	CHIP C 33PF G	
C419			CC73GCH1H680G	CHIP C 68PF G		C599			CC73GCH1H020B	CHIP C 2.0PF B	
C420			CC73GCH1H100C	CHIP C 10PF C		C600			CC73GCH1H271J	CHIP C 270PF J	
C421			CC73GCH1H391J	CHIP C 390PF J		C601			CC73GCH1H391J	CHIP C 390PF J	
C422			CK73GB1H103K	CHIP C 0.010UF K		C602			CC73GCH1H102J	CHIP C 1000PF J	
C423			CC73GCH1H102J	CHIP C 1000PF J		C603			CC73GCH1H181J	CHIP C 180PF J	
C424			CK73GB1E105K	CHIP C 1.0UF K		C604			CC73GCH1H121J	CHIP C 120PF J	
C425			CC73GCH1H102J	CHIP C 1000PF J		C606			CC73GCH1H181J	CHIP C 180PF J	
C426-428			CK73HB1H102K	CHIP C 1000PF K		C607			CK73GB1H104K	CHIP C 0.10UF K	
C501-506			CK73GB1H104K	CHIP C 0.10UF K		C608			CC73GCH1H100B	CHIP C 10PF B	
C507-511			CK73GB1H103K	CHIP C 0.010UF K		C609			CK73GB1H103K	CHIP C 0.010UF K	
C516			CC73GCH1H122J	CHIP C 1200PF J		C610			CC73GCH1H331J	CHIP C 330PF J	
C517			CC73GCH1H471J	CHIP C 470PF J		C611			CC73GCH1H391J	CHIP C 390PF J	
C518			CC73GCH1H821J	CHIP C 820PF J		C612			CC73GCH1H121J	CHIP C 120PF J	
C519			CC73GCH1H152J	CHIP C 1500PF J		C613			CC73GCH1H100C	CHIP C 10PF C	
C520			CC73GCH1H821J	CHIP C 820PF J		C614			CC73GCH1H221J	CHIP C 220PF J	
C522			CC73GCH1H561J	CHIP C 560PF J		C615			CK73GB1E105K	CHIP C 1.0UF K	
C523			CC73GCH1H470J	CHIP C 47PF J		C617			CK73GB1E105K	CHIP C 1.0UF K	
C524,525			CC73GCH1H101J	CHIP C 100PF J		C618			CC73GCH1H391J	CHIP C 390PF J	
C531			CK73GB1E105K	CHIP C 1.0UF K		C619			CK73GB1E105K	CHIP C 1.0UF K	
C532			CC73GCH1H070B	CHIP C 7.0PF B		C620			CC73GCH1H270G	CHIP C 27PF G	
C533			CC73GCH1H100C	CHIP C 10PF C		C621			CC73GCH1H560J	CHIP C 56PF J	
C535			CC73GCH1H080B	CHIP C 8.0PF B		C622			CC73GCH1H471J	CHIP C 470PF J	
C536			CC73GCH1H050B	CHIP C 5.0PF B		C623-626			CC73GCH1H102J	CHIP C 1000PF J	
C537			CC73GCH1H470J	CHIP C 47PF J		C627			CC73GCH1H121J	CHIP C 120PF J	
C538			CC73GCH1H102J	CHIP C 1000PF J		C629			CC73GCH1H121J	CHIP C 120PF J	
C539			CC73GCH1H220J	CHIP C 22PF J		C630			CC73GCH1H100B	CHIP C 10PF B	
C540			CC73GCH1H820J	CHIP C 82PF J		C631			CC73GCH1H090B	CHIP C 9.0PF B	
C541			CC73GCH1H020B	CHIP C 2.0PF B		C632			CC73GCH1H471J	CHIP C 470PF J	
C542			CC73GCH1H680J	CHIP C 68PF J		C633			CC73GCH1H560J	CHIP C 56PF J	
C543			CC73GCH1H560J	CHIP C 56PF J		C634-636			CC73GCH1H102J	CHIP C 1000PF J	
C544			CC73GCH1H561J	CHIP C 560PF J		C637			CC73GCH1H330G	CHIP C 33PF G	
C545			CC73GCH1H220J	CHIP C 22PF J		C638			CC73GCH1H100B	CHIP C 10PF B	
C548			CC73GCH1H122J	CHIP C 1200PF J		C639			CC73GCH1H100C	CHIP C 10PF C	
C549			CC73GCH1H471J	CHIP C 470PF J		C640			CC73GCH1H330J	CHIP C 33PF J	
C550			CC73GCH1H821J	CHIP C 820PF J		C641			CC73GCH1H680G	CHIP C 68PF G	
C552			CC73GCH1H152J	CHIP C 1500PF J		C642			CC73GCH1H271J	CHIP C 270PF J	
C553			CC73GCH1H821J	CHIP C 820PF J		C643			CC73GCH1H270G	CHIP C 27PF G	
C554			CK73GB1H104K	CHIP C 0.10UF K		C644-646			CK73GB1E105K	CHIP C 1.0UF K	
C555			CC73GCH1H470J	CHIP C 47PF J		C647			CC73GCH1H040B	CHIP C 4.0PF B	
C556,557			CC73GCH1H101J	CHIP C 100PF J		C648			CC73GCH1H680J	CHIP C 68PF J	
C559			CC73GCH1H561J	CHIP C 560PF J		C649			CC73GCH1H390G	CHIP C 39PF G	
C561			CK73GB1H103K	CHIP C 0.010UF K		C650			CC73GCH1H330G	CHIP C 33PF G	
C562-566			CC73GCH1H102J	CHIP C 1000PF J		C651			CC73GCH1H390J	CHIP C 39PF J	
C568-572			CK73GB1H104K	CHIP C 0.10UF K		C652			CC73GCH1H220G	CHIP C 22PF G	
C573-577			CK73GB1H103K	CHIP C 0.010UF K		C653			CC73GCH1H330G	CHIP C 33PF G	
C578-582			CK73GB1H104K	CHIP C 0.10UF K		C654			CC73GCH1H470G	CHIP C 47PF G	
C584			CK73GB1H104K	CHIP C 0.10UF K		C655-658			CC73GCH1H102J	CHIP C 1000PF J	
C585			CC73GCH1H102J	CHIP C 1000PF J		C659			CC73GCH1H101J	CHIP C 100PF J	
C586			CC73GCH1H471J	CHIP C 470PF J		C660			CC73GCH1H270J	CHIP C 27PF J	
C587			CK73GB1H103K	CHIP C 0.010UF K		C662			CC73GCH1H121J	CHIP C 120PF J	
C588			CC73GCH1H121J	CHIP C 120PF J		C663			CC73GCH1H102J	CHIP C 1000PF J	
C589			CC73GCH1H2R5B	CHIP C 2.5PF B		C664			CK73GB1E105K	CHIP C 1.0UF K	
C590			CK73GB1E105K	CHIP C 1.0UF K		C665			CC73GCH1H391J	CHIP C 390PF J	
C591			CC73GCH1H471J	CHIP C 470PF J		C666			CK73GB1E105K	CHIP C 1.0UF K	
C592			CC73GCH1H560J	CHIP C 56PF J		C667			CC73GCH1H181J	CHIP C 180PF J	
C593			CK73GB1H103K	CHIP C 0.010UF K		C668			CK73GB1E105K	CHIP C 1.0UF K	
C594			CC73GCH1H270J	CHIP C 27PF J		C670			CK73GB1E105K	CHIP C 1.0UF K	
C596			CC73GCH1H121J	CHIP C 120PF J		C671			CK73GB1H103K	CHIP C 0.010UF K	

## PARTS LIST

RX UNIT (X55-313X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C672			CC73GCH1H101G	CHIP C 100PF G		CN86			E40-6852-05	PIN ASSY	
C674			CC73GCH1H391J	CHIP C 390PF J		CN89			E04-0491-05	PIN SOCKET	
C675			CC73GCH1H221J	CHIP C 220PF J		CN93			E40-6852-05	PIN ASSY	
C676			CC73GCH1H101J	CHIP C 100PF J		CN104			E04-0491-05	PIN SOCKET	
C677			CC73GCH1H121J	CHIP C 120PF J		CN109			E04-0491-05	PIN SOCKET	
C678			CC73GCH1H330J	CHIP C 33PF J		CN115			E40-6852-05	PIN ASSY	
C679			CK73GB1H103K	CHIP C 0.010UF K		CN129			E40-6852-05	PIN ASSY	
C680,681			CK73GB1H104K	CHIP C 0.10UF K		CN137			E41-1682-05	PIN ASSY	
C682-685			CC73GCH1H102J	CHIP C 1000PF J		CN153-155			E40-6959-05	PIN ASSY	
C686-689			CK73GB1H104K	CHIP C 0.10UF K		CN158-162			E23-1330-05	TERMINAL	
C690			CC73GCH1H180G	CHIP C 18PF G		CN501			E04-0491-05	PIN SOCKET	
C691			CK73GB1E105K	CHIP C 1.0UF K		CN520			E40-6907-05	FLAT CABLE CONNECTOR	
C692			CC73GCH1H470G	CHIP C 47PF G		CN534			E04-0491-05	PIN SOCKET	
C693			CC73GCH1H101J	CHIP C 100PF J		CN535,536			E23-1330-05	TERMINAL	
C694			CC73GCH1H390J	CHIP C 39PF J		CN539-543			E23-1330-05	TERMINAL	
C695,696			CC73GCH1H101J	CHIP C 100PF J		F1			F53-0388-05	FUSE(1.25A)	
C697			CC73GCH1H121J	CHIP C 120PF J		F2			F53-0363-05	FUSE(0.5A)	
C698			CC73GCH1H101J	CHIP C 100PF J		-	*	G11-4628-04		SHEET(IFRESPONSE)	
C699			CC73GCH1H181J	CHIP C 180PF J		CF1			L72-0376-05	CERAMIC FILTER(455KHZ)	
C700			CC73GCH1H560G	CHIP C 56PF G		CF2			L72-0372-05	CERAMIC FILTER(455KHZ)	
C701			CC73GCH1H030B	CHIP C 3.0PF B		L1			L33-1554-05	CHOKO COIL	
C702			CC73GCH1H181J	CHIP C 180PF J		L2 ,3			L41-2215-32	SMALL FIXED INDUCTOR(220UH)	
C704			CC73GCH1H090B	CHIP C 9.0PF B		L4			L33-1557-05	CHOKO COIL	
C705			CC73GCH1H100C	CHIP C 10PF C		L5			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
C706			CC73GCH1H560G	CHIP C 56PF G		L6			L41-2215-32	SMALL FIXED INDUCTOR(220UH)	
C707			CC73GCH1H150G	CHIP C 15PF G		L7 -9			L34-4941-05	COIL	
C708			CC73GCH1H820G	CHIP C 82PF G		L10			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
C709			CC73GCH1H271J	CHIP C 270PF J		L11			L33-0695-05	SMALL FIXED INDUCTOR(1MH)	
C710			CC73GCH1H560G	CHIP C 56PF G		L12			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
C712			CC73GCH1H271J	CHIP C 270PF J		L13			L41-2215-32	SMALL FIXED INDUCTOR(220UH)	
C713			CC73GCH1H680G	CHIP C 68PF G		L14 ,15			L41-6891-44	SMALL FIXED INDUCTOR(6.8UH)	
C715			CC73GCH1H331J	CHIP C 330PF J		L16			L33-0695-05	SMALL FIXED INDUCTOR(1MH)	
C716			CK73GB1H103K	CHIP C 0.010UF K		L17			L41-1505-44	SMALL FIXED INDUCTOR(15UH)	
C717,718			CC73GCH1H020C	CHIP C 2.0PF C		L18			L33-0695-05	SMALL FIXED INDUCTOR(1MH)	
C719			CK73GB1E105K	CHIP C 1.0UF K		L19			L41-1505-44	SMALL FIXED INDUCTOR(15UH)	
C720			CC73GCH1H680J	CHIP C 68PF J		L20 ,21			L33-0695-05	SMALL FIXED INDUCTOR(1MH)	
C721			CC73GCH1H050B	CHIP C 5.0PF B		L22			L41-2215-32	SMALL FIXED INDUCTOR(220UH)	
C722			CC73GCH1H820G	CHIP C 82PF G		L23			L41-1015-33	SMALL FIXED INDUCTOR(100UH)	
TC1 ,2			C05-0216-05	CERAMIC TRIMMER CAPACITOR(10P)		L24			L41-1005-44	SMALL FIXED INDUCTOR(10UH)	
TC501-505			C05-0216-05	CERAMIC TRIMMER CAPACITOR(10P)		L25			L41-1015-44	SMALL FIXED INDUCTOR(100UH)	
TC506			C05-0608-05	CERAMIC TRIMMER CAPACITOR(50P)		L26 ,27			L41-2215-32	SMALL FIXED INDUCTOR(220UH)	
TC507			C05-0609-05	CERAMIC TRIMMER CAPACITOR(25P)		L28			L41-1005-44	SMALL FIXED INDUCTOR(10UH)	
TC508,509			C05-0216-05	CERAMIC TRIMMER CAPACITOR(10P)		L30			L41-1015-33	SMALL FIXED INDUCTOR(100UH)	
TC510			C05-0609-05	CERAMIC TRIMMER CAPACITOR(25P)		L32			L39-1590-05	TOROIDAL COIL	
TC511-513			C05-0216-05	CERAMIC TRIMMER CAPACITOR(10P)		L33 ,34			L33-1594-05	CHOKO COIL	
TC514-516			C05-0609-05	CERAMIC TRIMMER CAPACITOR(25P)		L35			L41-1015-33	SMALL FIXED INDUCTOR(100UH)	
CN1			E18-0254-05	SOCKET		L36			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
CN2			E04-0491-05	PIN SOCKET		L37			L41-1088-60	SMALL FIXED INDUCTOR(100NH)	
CN11			E41-1684-05	PIN ASSY		L38			L41-1895-33	SMALL FIXED INDUCTOR(1.8UH)	
CN13			E04-0491-05	PIN SOCKET		L39 ,40			L39-1591-05	TOROIDAL COIL	
CN22			E40-6907-05	FLAT CABLE CONNECTOR		L41 ,42			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
CN26			E04-0491-05	PIN SOCKET		L43			L34-4938-05	COIL	
CN28			E40-6907-05	FLAT CABLE CONNECTOR		L44			L39-1590-05	TOROIDAL COIL	
CN50			E40-5487-05	PIN ASSY		L45			L33-0695-05	SMALL FIXED INDUCTOR(1MH)	
CN53			E04-0491-05	PIN SOCKET		L46			L41-2215-32	SMALL FIXED INDUCTOR(220UH)	
CN60			E40-5487-05	PIN ASSY		L47			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
CN70			E41-3176-05	FLAT CABLE CONNECTOR		L49			L41-2215-32	SMALL FIXED INDUCTOR(220UH)	
CN80,81			E04-0491-05	PIN SOCKET		L50			L39-1575-05	TOROIDAL COIL	

## PARTS LIST

### RX UNIT (X55-313X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
L52			L34-4938-05	COIL		L511			L39-1589-05	TOROIDAL COIL	
L53			L39-1575-05	TOROIDAL COIL		L512,513			L39-1588-05	TOROIDAL COIL	
L55			L39-1596-05	TOROIDAL COIL		L514			L39-1586-05	TOROIDAL COIL	
L56			L34-4938-05	COIL		L515			L39-1587-05	TOROIDAL COIL	
L59 ,60			L39-1595-05	TOROIDAL COIL		L516-520			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L61			L41-1005-44	SMALL FIXED INDUCTOR(10UH)		L521			L39-1588-05	TOROIDAL COIL	
L67		*	L41-6888-60	SMALL FIXED INDUCTOR(680NH)		L522			L39-1586-05	TOROIDAL COIL	
L69			L41-2215-32	SMALL FIXED INDUCTOR(220UH)		L523			L39-1585-05	TOROIDAL COIL	
L70		*	L41-6888-60	SMALL FIXED INDUCTOR(680NH)		L524			L39-1584-05	TOROIDAL COIL	
L71			L33-0695-05	SMALL FIXED INDUCTOR(1MH)		L525			L34-4613-05	AIR-CORE COIL(7T)	
L72			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L526			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L73			L41-1015-33	SMALL FIXED INDUCTOR(100UH)		L527-529			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
L74			L39-1811-05	TOROIDAL COIL		L530-534			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L75			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L535			L33-0695-05	SMALL FIXED INDUCTOR(1MH)	
L76			L41-1015-33	SMALL FIXED INDUCTOR(100UH)		L536			L34-4960-05	COIL	
L77			L39-1576-05	TOROIDAL COIL		L538			L34-4613-05	AIR-CORE COIL(7T)	
L78			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L539,540			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L79			L39-1576-05	TOROIDAL COIL		L541			L34-4612-05	AIR-CORE COIL(6T)	
L80			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L542			L34-4614-05	AIR-CORE COIL(8T)	
L81			L41-1015-33	SMALL FIXED INDUCTOR(100UH)		L543			L34-4613-05	AIR-CORE COIL(7T)	
L82 ,83			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L544			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L84 -89			L41-2215-32	SMALL FIXED INDUCTOR(220UH)		L545			L41-1015-33	SMALL FIXED INDUCTOR(100UH)	
L90			L39-1480-15	TOROIDAL COIL		L546			L41-2788-60	SMALL FIXED INDUCTOR(270NH)	
L91			L41-1595-33	SMALL FIXED INDUCTOR(1.5UH)		L547			L41-2288-60	SMALL FIXED INDUCTOR(220NH)	
L92			L41-4705-33	SMALL FIXED INDUCTOR(47UH)		L548		*	L41-3378-60	SMALL FIXED INDUCTOR(33NH)	
L93			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L549			L41-1298-60	SMALL FIXED INDUCTOR(1.2UH)	
L94			L34-4960-05	COIL		L550			L34-4612-05	AIR-CORE COIL(6T)	
L95			L34-4959-05	COIL		L551			L34-4614-05	AIR-CORE COIL(8T)	
L96			L34-4958-05	COIL		L552			L41-1898-60	SMALL FIXED INDUCTOR(1.8UH)	
L97			L34-4960-05	COIL		L553			L41-2798-60	SMALL FIXED INDUCTOR(2.7UH)	
L98			L34-4959-05	COIL		L554		*	L41-3378-60	SMALL FIXED INDUCTOR(33NH)	
L99			L34-4958-05	COIL		L555			L41-3398-60	SMALL FIXED INDUCTOR(3.3UH)	
L100-102			L41-1015-33	SMALL FIXED INDUCTOR(100UH)		L556			L34-4613-05	AIR-CORE COIL(7T)	
L103			L34-4946-05	COIL		L557			L34-4612-05	AIR-CORE COIL(6T)	
L104			L41-1015-33	SMALL FIXED INDUCTOR(100UH)		L558			L34-4614-05	AIR-CORE COIL(8T)	
L105			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)		L559			L41-1888-60	SMALL FIXED INDUCTOR(180NH)	
L106			L39-1597-05	TOROIDAL COIL		L560			L41-2788-60	SMALL FIXED INDUCTOR(270NH)	
L107			L41-1015-33	SMALL FIXED INDUCTOR(100UH)		L561			L41-2288-60	SMALL FIXED INDUCTOR(220NH)	
L108			L39-1598-05	TOROIDAL COIL		L562		*	L41-3378-60	SMALL FIXED INDUCTOR(33NH)	
L109			L41-1598-60	SMALL FIXED INDUCTOR(1.5UH)		L563			L41-1298-60	SMALL FIXED INDUCTOR(1.2UH)	
L110,111			L34-4960-05	COIL		L564			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L112			L41-2215-32	SMALL FIXED INDUCTOR(220UH)		L565			L41-1015-33	SMALL FIXED INDUCTOR(100UH)	
L115			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L566			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L116			L41-4788-60	SMALL FIXED INDUCTOR(470NH)		L567			L41-2288-60	SMALL FIXED INDUCTOR(220NH)	
L118		*	L41-6888-60	SMALL FIXED INDUCTOR(680NH)		L568,569			L41-1888-60	SMALL FIXED INDUCTOR(180NH)	
L119		*	L41-4798-60	SMALL FIXED INDUCTOR(4.7UH)		L570			L33-0695-05	SMALL FIXED INDUCTOR(1MH)	
L120		*	L41-6888-60	SMALL FIXED INDUCTOR(680NH)		L571			L41-2788-60	SMALL FIXED INDUCTOR(270NH)	
L121			L41-1898-60	SMALL FIXED INDUCTOR(1.8UH)		L572-574			L41-3988-60	SMALL FIXED INDUCTOR(390NH)	
L122			L41-5688-60	SMALL FIXED INDUCTOR(560NH)		L576			L41-3388-60	SMALL FIXED INDUCTOR(330NH)	
L123			L41-2288-60	SMALL FIXED INDUCTOR(220NH)		L577			L41-2288-60	SMALL FIXED INDUCTOR(220NH)	
L124			L41-1015-33	SMALL FIXED INDUCTOR(100UH)		L579			L41-1588-60	SMALL FIXED INDUCTOR(150NH)	
L125,126		*	L41-3978-60	SMALL FIXED INDUCTOR(39NH)		L580		*	L41-6888-60	SMALL FIXED INDUCTOR(680NH)	
L127,128			L41-2295-33	SMALL FIXED INDUCTOR(2.2UH)		L581		*	L41-3378-60	SMALL FIXED INDUCTOR(33NH)	
L129		*	L41-3978-60	SMALL FIXED INDUCTOR(39NH)		L582,583			L41-2295-33	SMALL FIXED INDUCTOR(2.2UH)	
L501-505			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L584		*	L41-6888-60	SMALL FIXED INDUCTOR(680NH)	
L506			L39-1588-05	TOROIDAL COIL		XF1			L71-0677-05	MCF(8.248M/15KHZ)	
L507			L39-1586-05	TOROIDAL COIL		XF3			L71-0677-05	MCF(8.248M/15KHZ)	
L508			L39-1585-05	TOROIDAL COIL		XF4			L71-0676-05	MCF(8.248M/6KHZ)	
L509			L39-1584-05	TOROIDAL COIL		XF5			L71-0674-05	CRYSTAL FILTER(8.248M/500HZ)	
L510			L34-4613-05	AIR-CORE COIL(7T)		XF6			L71-0673-05	CRYSTAL FILTER(8.248M/270HZ)	

## PARTS LIST

RX UNIT (X55-313X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
XF8			L71-0675-05	CRYSTAL FILTER(8.248M/2.7KHZ)		R81			RK73GB2A220J	CHIP R 22 J 1/10W	
R1			RK73EB2E101J	CHIP R 100 J 1/4W		R82			RK73GB2A221J	CHIP R 220 J 1/10W	
R2			RK73EB2E680J	CHIP R 68 J 1/4W		R83			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R3			RK73EB2E470J	CHIP R 47 J 1/4W		R84			RK73GB2A682J	CHIP R 6.8K J 1/10W	
R4			RK73GB2A103J	CHIP R 10K J 1/10W		R85			RK73GB2A223J	CHIP R 22K J 1/10W	
R5			RK73EB2E151J	CHIP R 150 J 1/4W		R86			RK73GB2A101J	CHIP R 100 J 1/10W	
R6			RK73GB2A222J	CHIP R 2.2K J 1/10W		R87			RK73FB2B471J	CHIP R 470 J 1/8W	
R7			RK73GB2A472J	CHIP R 4.7K J 1/10W		R88			RK73GB2A562J	CHIP R 5.6K J 1/10W	
R8 ,9			RK73FB2B221J	CHIP R 220 J 1/8W		R89 ,90			RK73EB2E102J	CHIP R 1.0K J 1/4W	
R10 ,11			RK73GB2A103J	CHIP R 10K J 1/10W		R91			RK73GB2A473J	CHIP R 47K J 1/10W	
R12			RK73GB2A473J	CHIP R 47K J 1/10W		R93			RK73GB2A683J	CHIP R 68K J 1/10W	
R13			RK73FB2B330J	CHIP R 33 J 1/8W		R94			RK73GB2A390J	CHIP R 39 J 1/10W	
R14			RK73GB2A471J	CHIP R 470 J 1/10W		R95			RK73GB2A103J	CHIP R 10K J 1/10W	
R15			RK73EB2E680J	CHIP R 68 J 1/4W		R97			RK73GB2A223J	CHIP R 22K J 1/10W	
R16			RK73FB2B330J	CHIP R 33 J 1/8W		R99			RK73GB2A103J	CHIP R 10K J 1/10W	
R17			RK73EB2E680J	CHIP R 68 J 1/4W		R100-102			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R18			RK73EB2E560J	CHIP R 56 J 1/4W		R103			RK73GB2A103J	CHIP R 10K J 1/10W	
R19			RK73GB2A000J	CHIP R 0 J 1/10W		R104			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R20			RK73GB2A271J	CHIP R 270 J 1/10W		R108			RK73GB2A271J	CHIP R 270 J 1/10W	
R21			RK73GB2A180J	CHIP R 18 J 1/10W		R109			RK73GB2A470J	CHIP R 47 J 1/10W	
R22			RK73GB2A271J	CHIP R 270 J 1/10W		R110			RK73GB2A101J	CHIP R 100 J 1/10W	
R23 ,24			RK73FB2B221J	CHIP R 220 J 1/8W		R111			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R25			RK73GB2A122J	CHIP R 1.2K J 1/10W		R112			RK73GB2A123J	CHIP R 12K J 1/10W	
R26			RK73GB2A181J	CHIP R 180 J 1/10W		R113			RK73GB2A103J	CHIP R 10K J 1/10W	
R27			RK73GB2A331J	CHIP R 330 J 1/10W		R114			RK73GB2A221J	CHIP R 220 J 1/10W	
R28 ,29			RK73GB2A120J	CHIP R 12 J 1/10W		R115			RK73GB2A154J	CHIP R 150K J 1/10W	
R30			RK73GB2A100J	CHIP R 10 J 1/10W		R116			RK73GB2A333J	CHIP R 33K J 1/10W	
R32			RK73GB2A472J	CHIP R 4.7K J 1/10W		R117			RK73GB2A471J	CHIP R 470 J 1/10W	
R33			RK73GB2A154J	CHIP R 150K J 1/10W		R118			RK73GB2A563J	CHIP R 56K J 1/10W	
R34			RK73GB2A000J	CHIP R 0 J 1/10W		R119			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R35			RK73GB2A222J	CHIP R 2.2K J 1/10W		R120			RK73GB2A101J	CHIP R 100 J 1/10W	
R36			RK73GB2A101J	CHIP R 100 J 1/10W		R121			RK73GB2A271J	CHIP R 270 J 1/10W	
R37			RK73GB2A471J	CHIP R 470 J 1/10W		R122			RK73GB2A681J	CHIP R 680 J 1/10W	
R41			RK73GB2A562J	CHIP R 5.6K J 1/10W		R123,124			RK73GB2A470J	CHIP R 47 J 1/10W	
R42			RK73GB2A152J	CHIP R 1.5K J 1/10W		R126,127			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R43			RK73GB2A151J	CHIP R 150 J 1/10W		R128			RK73GB2A101J	CHIP R 100 J 1/10W	
R44			RK73GB2A682J	CHIP R 6.8K J 1/10W		R129			RK73GB2A000J	CHIP R 0 J 1/10W	
R45			RK73GB2A152J	CHIP R 1.5K J 1/10W		R130			RK73GB2A101J	CHIP R 100 J 1/10W	
R47			RK73GB2A102J	CHIP R 1.0K J 1/10W		R134			RK73GB2A000J	CHIP R 0 J 1/10W	
R48 ,49			RK73GB2A4R7J	CHIP R 4.7 J 1/10W		R141,142			RK73GB2A000J	CHIP R 0 J 1/10W	
R50			RK73FB2B330J	CHIP R 33 J 1/8W		R143			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R51			RK73GB2A472J	CHIP R 4.7K J 1/10W		R147			RK73FB2B330J	CHIP R 33 J 1/8W	
R52 ,53			RK73FB2B470J	CHIP R 47 J 1/8W		R148			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R54			RK73GB2A100J	CHIP R 10 J 1/10W		R149			RK73GB2A471J	CHIP R 470 J 1/10W	
R55			RK73GB2A221J	CHIP R 220 J 1/10W		R150			RK73GB2A101J	CHIP R 100 J 1/10W	
R56			RK73GB2A220J	CHIP R 22 J 1/10W		R153			RK73GB2A270J	CHIP R 27 J 1/10W	
R57			RK73GB2A102J	CHIP R 1.0K J 1/10W		R154			RK73GB2A4R7J	CHIP R 4.7 J 1/10W	
R58			RK73GB2A222J	CHIP R 2.2K J 1/10W		R155			RK73GB2A471J	CHIP R 470 J 1/10W	
R59			RK73GB2A4R7J	CHIP R 4.7 J 1/10W		R156			RK73FB2B470J	CHIP R 47 J 1/8W	
R62			RK73GB2A682J	CHIP R 6.8K J 1/10W		R157			RK73GB2A682J	CHIP R 6.8K J 1/10W	
R63 ,64			RK73GB2A102J	CHIP R 1.0K J 1/10W		R158			RK73GB2A182J	CHIP R 1.8K J 1/10W	
R65 -67			RK73GB2A101J	CHIP R 100 J 1/10W		R159			RK73GB2A561J	CHIP R 560 J 1/10W	
R68 ,69			RK73FB2B470J	CHIP R 47 J 1/8W		R160			RK73GB2A151J	CHIP R 150 J 1/10W	
R70			RK73GB2A682J	CHIP R 6.8K J 1/10W		R161			RK73GB2A000J	CHIP R 0 J 1/10W	
R71			RK73GB2A152J	CHIP R 1.5K J 1/10W		R162			RK73GB2A103J	CHIP R 10K J 1/10W	
R72			RK73GB2A682J	CHIP R 6.8K J 1/10W		R163			RK73EB2E221J	CHIP R 220 J 1/4W	
R73			RK73GB2A152J	CHIP R 1.5K J 1/10W		R164			RK73GB2A681J	CHIP R 680 J 1/10W	
R74			RK73GB2A473J	CHIP R 47K J 1/10W		R167			RK73GB2A000J	CHIP R 0 J 1/10W	
R77 -79			RK73GB2A000J	CHIP R 0 J 1/10W		R168			RK73GB2A102J	CHIP R 1.0K J 1/10W	
						R170			RK73EB2E470J	CHIP R 47 J 1/4W	



## PARTS LIST

### RX UNIT (X55-313X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R171			RK73GB2A8R2J	CHIP R 8.2 J 1/10W		R258			RK73GB2A470J	CHIP R 47 J 1/10W	
R172			RK73GB2A102J	CHIP R 1.0K J 1/10W		R259			RK73GB2A103J	CHIP R 10K J 1/10W	
R173			RK73GB2A103J	CHIP R 10K J 1/10W		R261			RK73GB2A101J	CHIP R 100 J 1/10W	
R174			RK73GB2A222J	CHIP R 2.2K J 1/10W		R262			RK73GB2A4R7J	CHIP R 4.7 J 1/10W	
R175			RK73GB2A8R2J	CHIP R 8.2 J 1/10W		R263			RK73GB2A000J	CHIP R 0 J 1/10W	
R176			RK73GB2A100J	CHIP R 10 J 1/10W		R265,266			RK73GB2A103J	CHIP R 10K J 1/10W	
R177			RK73GB2A472J	CHIP R 4.7K J 1/10W		R267			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R178			RK73GB2A152J	CHIP R 1.5K J 1/10W		R268			RK73GB2A122J	CHIP R 1.2K J 1/10W	
R180			RK73GB2A470J	CHIP R 47 J 1/10W		R269			RK73GB2A333J	CHIP R 33K J 1/10W	
R181			RK73GB2A101J	CHIP R 100 J 1/10W		R270			RK73GB2A000J	CHIP R 0 J 1/10W	
R182			RK73GB2A331J	CHIP R 330 J 1/10W		R272			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R183			RK73GB2A103J	CHIP R 10K J 1/10W		R273-282			RK73GB2A101J	CHIP R 100 J 1/10W	
R184			RK73GB2A151J	CHIP R 150 J 1/10W		R283			RK73GB2A000J	CHIP R 0 J 1/10W	K
R185			RK73GB2A270J	CHIP R 27 J 1/10W		R284,285			RK73GB2A000J	CHIP R 0 J 1/10W	E
R186,187			RK73GB2A471J	CHIP R 470 J 1/10W		R285			RK73GB2A000J	CHIP R 0 J 1/10W	K
R188,189			RK73GB2A221J	CHIP R 220 J 1/10W		R286,287			RK73GB2A103J	CHIP R 10K J 1/10W	
R190			RK73GB2A180J	CHIP R 18 J 1/10W		R288			RK73GB2A100J	CHIP R 10 J 1/10W	
R191,192			RK73GB2A271J	CHIP R 270 J 1/10W		R289,290			RK73GB2A271J	CHIP R 270 J 1/10W	
R193			RK73GB2A681J	CHIP R 680 J 1/10W		R291			RK73GB2A180J	CHIP R 18 J 1/10W	
R194			RK73GB2A103J	CHIP R 10K J 1/10W		R292			RK73GB2A393J	CHIP R 39K J 1/10W	
R195			RK73GB2A471J	CHIP R 470 J 1/10W		R293			RK73GB2A682J	CHIP R 6.8K J 1/10W	
R196,197			RK73GB2A152J	CHIP R 1.5K J 1/10W		R294			RK73GB2A4R7J	CHIP R 4.7 J 1/10W	
R199			RK73GB2A222J	CHIP R 2.2K J 1/10W		R296			RK73GB2A680J	CHIP R 68 J 1/10W	
R200,201			RK73GB2A103J	CHIP R 10K J 1/10W		R297			RK73GB2A220J	CHIP R 22 J 1/10W	
R202			RK73GB2A822J	CHIP R 8.2K J 1/10W		R298,299			RK73GB2A4R7J	CHIP R 4.7 J 1/10W	
R205,206			RK73GB2A223J	CHIP R 22K J 1/10W		R300			RK73GB2A271J	CHIP R 270 J 1/10W	
R207			RK73GB2A222J	CHIP R 2.2K J 1/10W		R301			RK73GB2A000J	CHIP R 0 J 1/10W	
R208,209			RK73GB2A000J	CHIP R 0 J 1/10W		R303			RK73GB2A000J	CHIP R 0 J 1/10W	
R211			RK73GB2A473J	CHIP R 47K J 1/10W		R305			RK73GB2A000J	CHIP R 0 J 1/10W	
R214,215			RK73GB2A103J	CHIP R 10K J 1/10W		R306			RK73GB2A470J	CHIP R 47 J 1/10W	
R216-218			RK73FB2B221J	CHIP R 220 J 1/8W		R308			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R219			RK73GB2A334J	CHIP R 330K J 1/10W		R309			RK73GB2A684J	CHIP R 680K J 1/10W	
R221			RK73GB2A223J	CHIP R 22K J 1/10W		R310			RK73GB2A103J	CHIP R 10K J 1/10W	
R222			RK73GB2A122J	CHIP R 1.2K J 1/10W		R311			RK73FB2B330J	CHIP R 33 J 1/8W	
R223-229			RK73GB2A103J	CHIP R 10K J 1/10W		R312			RK73EB2E680J	CHIP R 68 J 1/4W	
R230,231			RK73GB2A473J	CHIP R 47K J 1/10W		R314			RK73GB2A103J	CHIP R 10K J 1/10W	
R232			RK73GB2A333J	CHIP R 33K J 1/10W		R315			RK73GB2A100J	CHIP R 10 J 1/10W	
R233			RK73GB2A102J	CHIP R 1.0K J 1/10W		R316			RK73GB2A270J	CHIP R 27 J 1/10W	
R234,235			RK73GB2A473J	CHIP R 47K J 1/10W		R319			RK73GB2A000J	CHIP R 0 J 1/10W	
R236			RK73GB2A104J	CHIP R 100K J 1/10W		R501			RK73FB2B121J	CHIP R 120 J 1/8W	
R237			RK73GB2A684J	CHIP R 680K J 1/10W		R502			RK73FB2B151J	CHIP R 150 J 1/8W	
R238			RK73GB2A682J	CHIP R 6.8K J 1/10W		R503-509			RK73GB2A103J	CHIP R 10K J 1/10W	
R239			RK73GB2A223J	CHIP R 22K J 1/10W		R510-512			RK73FB2B330J	CHIP R 33 J 1/8W	
R240			RK73GB2A684J	CHIP R 680K J 1/10W		R513-515			RK73EB2E680J	CHIP R 68 J 1/4W	
R241			RK73EB2E331J	CHIP R 330 J 1/4W		R516,517			RK73FB2B330J	CHIP R 33 J 1/8W	
R242			RK73GB2A683J	CHIP R 68K J 1/10W		R518			RK73GB2A330J	CHIP R 33 J 1/10W	
R243			RK73GB2A473J	CHIP R 47K J 1/10W		R519			RK73FB2B330J	CHIP R 33 J 1/8W	
R244			RK73GB2A273J	CHIP R 27K J 1/10W		R520			RK73GB2A330J	CHIP R 33 J 1/10W	
R245			RK73GB2A183J	CHIP R 18K J 1/10W		R521			RK73GB2A220J	CHIP R 22 J 1/10W	
R246			RK73GB2A470J	CHIP R 47 J 1/10W		R522			RK73FB2B330J	CHIP R 33 J 1/8W	
R247			RK73GB2A273J	CHIP R 27K J 1/10W		R523			RK73GB2A330J	CHIP R 33 J 1/10W	
R248			RK73GB2A000J	CHIP R 0 J 1/10W		R524-527			RK73EB2E680J	CHIP R 68 J 1/4W	
R249			RK73GB2A683J	CHIP R 68K J 1/10W		R528			RK73FB2B121J	CHIP R 120 J 1/8W	
R250			RK73GB2A104J	CHIP R 100K J 1/10W		R529			RK73FB2B151J	CHIP R 150 J 1/8W	
R251			RK73GB2A223J	CHIP R 22K J 1/10W		R530,531			RK73GB2A103J	CHIP R 10K J 1/10W	
R252			RK73GB2A103J	CHIP R 10K J 1/10W		R532			RK73GB2A000J	CHIP R 0 J 1/10W	
R253			RK73GB2A220J	CHIP R 22 J 1/10W		R533-535			RK73GB2A220J	CHIP R 22 J 1/10W	
R255			RK73GB2A103J	CHIP R 10K J 1/10W		VR2			R32-0350-05	SEMI FIXED VARIABLE RESISTOR(10K)	
R256			RK73GB2A000J	CHIP R 0 J 1/10W		K1 -4			S76-0459-05	RELAY	
R257			RK73GB2A123J	CHIP R 12K J 1/10W							



## PARTS LIST

RX UNIT (X55-313X-XX)  
TX-RX UNIT (X57-827X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
K5			S76-0476-05	RELAY		Q22			LTC043ZEBFS8	TRANSISTOR	
K6 -9			S76-0459-05	RELAY		Q23			2SB1694	TRANSISTOR	
K10			S76-0476-05	RELAY		Q24			2SC4226-A(R24)	TRANSISTOR	
K11 -16			S76-0459-05	RELAY		Q25 ,26			2SC5551AF	TRANSISTOR	
K17			S76-0476-05	RELAY		Q27			2SB1188(Q,R)	TRANSISTOR	
K501-505			S76-0459-05	RELAY		Q28			2SC4226-A(R24)	TRANSISTOR	
K506		*	S76-0482-05	RELAY		Q29			RT5N234C-T112	TRANSISTOR	
K507-511			S76-0459-05	RELAY		Q30			2SC4226-A(R24)	TRANSISTOR	
K512		*	S76-0482-05	RELAY		Q31			RT5N234C-T112	TRANSISTOR	
D1			EZJZ1V500AA	VARISTOR		Q32			2SK1824-A	FET	
D2 ,3			MC2858-T111	DIODE		Q33			2SC4226-A(R24)	TRANSISTOR	
D4 ,5			L8103R	DIODE		Q34		*	LTA043EEBFS8	TRANSISTOR	
D6			HVC131	DIODE		Q35			LSCR523EBFS8	TRANSISTOR	
D7 ,8			RLS245	DIODE		Q36 ,37			2SC4226-A(R24)	TRANSISTOR	
D10 ,11			MC2858-T111	DIODE		Q38			LTA014EEBFS8	TRANSISTOR	
D12 -14			HVC131	DIODE		Q39			LTC043ZEBFS8	TRANSISTOR	
D15			MC2858-T111	DIODE		Q40			2SB1694	TRANSISTOR	
D16			HVC131	DIODE		Q42			LTC043ZEBFS8	TRANSISTOR	
D17 -20			MC2858-T111	DIODE		Q43			2SB1694	TRANSISTOR	
D21			RB706F-40	DIODE		Q44 ,45			LTC043ZEBFS8	TRANSISTOR	
D22 ,23			1SS388F	DIODE		Q46			2SC5551AF	TRANSISTOR	
D24 ,25			MC2858-T111	DIODE		Q47			LTC043ZEBFS8	TRANSISTOR	
D26 -29			HVC131	DIODE		Q48			SSM3K15AMFV	FET	
D30			L204BBB	DIODE		Q49			2SC5551AF	TRANSISTOR	
D31			MC2858-T111	DIODE		Q50			2SB1694	TRANSISTOR	
D32 ,33			HSM88ASR-E	DIODE		Q51			RT5N234C-T112	TRANSISTOR	
D34 -39			MC2858-T111	DIODE		Q52			2SC5551AF	TRANSISTOR	
D40 ,41			1SS226-F	DIODE		Q53 ,54			LTC043ZEBFS8	TRANSISTOR	
D42 ,43			MC2858-T111	DIODE		Q55			2SC4725	TRANSISTOR	
D44 -49			HVC131	DIODE		Q56 -61			RT5N234C-T112	TRANSISTOR	
D50			MC2858-T111	DIODE		Q62 -64			LTC043ZEBFS8	TRANSISTOR	
D52 -55			1SS388F	DIODE		Q65			2SK1830F	FET	
D56 ,57			HVC131	DIODE		Q66 -68			LTC043ZEBFS8	TRANSISTOR	
D501-506			MC2858-T111	DIODE		Q69			2SK1830F	FET	
D507-522			HVC131	DIODE		Q70			3SK293-F	FET	
IC1			M62353AGPDF5J	MOS-IC		Q71			LTC043ZEBFS8	TRANSISTOR	
IC2 -5			TC74HC4094AFF	MOS-IC		Q72			LTC014EEBFS8	TRANSISTOR	
IC7			SN74CBT3125PW	MOS-IC		Q73			RT5N234C-T112	TRANSISTOR	
IC8			TC74AC86FT	MOS-IC		Q74 -77			LTC043ZEBFS8	TRANSISTOR	
IC9			NJM2591V	BI-POLAR IC		Q501-506			RT5N234C-T112	TRANSISTOR	
IC10			BA4580RFVM	BI-POLAR IC		Q507-513			LTC043ZEBFS8	TRANSISTOR	
IC11			TC4W53FU-F	MOS-IC		TH1 ,2			157-101-65001	THERMISTOR	
IC12			NJM2732V	BI-POLAR IC		TH3 ,4			NCP18WB473J0S	THERMISTOR	
IC13			NJM12904V	MOS-IC							
Q1 -3			RT5N234C-T112	TRANSISTOR							
Q4			LTC043ZEBFS8	TRANSISTOR							
Q5			2SB1188(Q,R)	TRANSISTOR							
Q6			RT5N234C-T112	TRANSISTOR							
Q7 ,8			LTC043ZEBFS8	TRANSISTOR							
Q9			RT5N234C-T112	TRANSISTOR							
Q10 ,11			2SC5551AF	TRANSISTOR							
Q12 ,13			RT5N234C-T112	TRANSISTOR							
Q14			LTC043ZEBFS8	TRANSISTOR							
Q15			2SB1694	TRANSISTOR							
Q16			2SC4725	TRANSISTOR							
Q18			2SC5551AF	TRANSISTOR							
Q19			LTC043ZEBFS8	TRANSISTOR							
Q20			2SC5551AF	TRANSISTOR							
Q21			2SC4226-A(R24)	TRANSISTOR							
<b>TX-RX UNIT (X57-827X-XX) 0-00: K 2-71: E</b>											
C3 -7				CK73HB1H103K	CHIP C	0.010UF	K				
C9 ,10				CK73HB1H103K	CHIP C	0.010UF	K				
C13 ,14				CK73HB1H103K	CHIP C	0.010UF	K				
C27				CK73HB1H103K	CHIP C	0.010UF	K				
C51 -54				CK73HB1H103K	CHIP C	0.010UF	K				

## PARTS LIST

### TX-RX UNIT (X57-827X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C55 -63			CK73GB1H104K	CHIP C 0.10UF K		C225			CC73GCH1H222J	CHIP C 2200PF J	
C101			CK73HB1H103K	CHIP C 0.010UF K		C226			CK73GB1H104K	CHIP C 0.10UF K	
C102			CK73GB1E474K	CHIP C 0.47UF K		C227			CK73GB1H103K	CHIP C 0.010UF K	
C103			CK73GB1H102K	CHIP C 1000PF K		C228			CK73GB1E105K	CHIP C 1.0UF K	
C104			CK73GB1E474K	CHIP C 0.47UF K		C229			CK73GB1H103K	CHIP C 0.010UF K	
C105			CK73GB1H102K	CHIP C 1000PF K		C230			CK73GB1H153K	CHIP C 0.015UF K	
C106			CC73GCH1H471J	CHIP C 470PF J		C231,232			CK73GB1H103K	CHIP C 0.010UF K	
C107			CK73GB1H472K	CHIP C 4700PF K		C233			CK73GB1E105K	CHIP C 1.0UF K	
C108			CC73GCH1H471J	CHIP C 470PF J		C235			CC73FCH1H392J	CHIP C 3900PF J	
C109			CK73GB1H472K	CHIP C 4700PF K		C236			CK73GB1H104K	CHIP C 0.10UF K	
C111			CD04AZ1V101M	ELECTRO 100UF 35WV		C237			CK73GB1E105K	CHIP C 1.0UF K	
C113			CK73GB1E105K	CHIP C 1.0UF K		C238			CC73GCH1H122J	CHIP C 1200PF J	
C115			CK73GB1H103K	CHIP C 0.010UF K		C239			CK73GB1E105K	CHIP C 1.0UF K	
C116			CK73GB1H102K	CHIP C 1000PF K		C240			CC73FCH1H392J	CHIP C 3900PF J	
C117			CK73FB1E475K	CHIP C 4.7UF K		C241			CK73GB1H104K	CHIP C 0.10UF K	
C118			CK73GB1H104K	CHIP C 0.10UF K		C243			CC73GCH1H222J	CHIP C 2200PF J	
C119			CK73GB1H473K	CHIP C 0.047UF K		C244			CK73GB1H104K	CHIP C 0.10UF K	
C120			CK73FB1E475K	CHIP C 4.7UF K		C245			CC73GCH1H102J	CHIP C 1000PF J	
C122			CK73GB1E105K	CHIP C 1.0UF K		C246			CC73GCH1H471J	CHIP C 470PF J	
C124			CK73FB1E475K	CHIP C 4.7UF K		C247			CC73GCH1H102J	CHIP C 1000PF J	
C125			CK73GB1H102K	CHIP C 1000PF K		C248			CC73GCH1H222J	CHIP C 2200PF J	
C126			CK73FB1E475K	CHIP C 4.7UF K		C249			CK73GB1H104K	CHIP C 0.10UF K	
C127			CK73GB1H104K	CHIP C 0.10UF K		C250			CC73GCH1H102J	CHIP C 1000PF J	
C128			CK73GB1H473K	CHIP C 0.047UF K		C251			CK73GB1H104K	CHIP C 0.10UF K	
C129			CK73FB1E475K	CHIP C 4.7UF K		C252			CC73GCH1H102J	CHIP C 1000PF J	
C131			CK73GB1E105K	CHIP C 1.0UF K		C253			CC73GCH1H471J	CHIP C 470PF J	
C133			CK73FB1E475K	CHIP C 4.7UF K		C254,255			CC73GCH1H102J	CHIP C 1000PF J	
C134			CK73GB1H102K	CHIP C 1000PF K		C256			CK73GB1H104K	CHIP C 0.10UF K	
C136,137			CK73GB1E474K	CHIP C 0.47UF K		C257			CC73GCH1H680J	CHIP C 68PF J	
C138,139			CK73GB1H102K	CHIP C 1000PF K		C258			CK73GB1H104K	CHIP C 0.10UF K	
C140,141			CC73GCH1H471J	CHIP C 470PF J		C259			CC73GCH1H120J	CHIP C 12PF J	
C142,143			CK73GB1H472K	CHIP C 4700PF K		C260			CC73GCH1H680J	CHIP C 68PF J	
C144			CK73GB1H102K	CHIP C 1000PF K		C261			CC73GCH1H102J	CHIP C 1000PF J	
C145			CK73GB1H103K	CHIP C 0.010UF K		C262			CC73GCH1H120J	CHIP C 12PF J	
C146-148			CK73GB1H102K	CHIP C 1000PF K		C263			CC73GCH1H680J	CHIP C 68PF J	
C149,150			CK73GB1H103K	CHIP C 0.010UF K		C264			CC73GCH1H102J	CHIP C 1000PF J	
C151			CK45FE3A222Z	CERAMIC 2200PF Z		C265			CK73GB1H104K	CHIP C 0.10UF K	
C152			CK73GB1H103K	CHIP C 0.010UF K		C266			CC73GCH1H102J	CHIP C 1000PF J	
C153-155			CK73GB1H102K	CHIP C 1000PF K		C267			CK73GB1H104K	CHIP C 0.10UF K	
C156			CK73GB1H103K	CHIP C 0.010UF K		C268			CC73GCH1H102J	CHIP C 1000PF J	
C157-159			CK73GB1H102K	CHIP C 1000PF K		C269			CC73GCH1H151J	CHIP C 150PF J	
C162,163			CK73GB1H103K	CHIP C 0.010UF K		C270,271			CC73GCH1H102J	CHIP C 1000PF J	
C201-204			CK73GB1H103K	CHIP C 0.010UF K		C272			CK73GB1H104K	CHIP C 0.10UF K	
C205			CC73GCH1H560J	CHIP C 56PF J		C273			CC73GCH1H821J	CHIP C 820PF J	
C206			CC73GCH1H090D	CHIP C 9.0PF D		C274			CK73GB1H104K	CHIP C 0.10UF K	
C207			CC73GCH1H560J	CHIP C 56PF J		C275			CC73GCH1H102J	CHIP C 1000PF J	
C208,209			CK73EB1H104K	CHIP C 0.10UF K		C276			CC73GCH1H101J	CHIP C 100PF J	
C210-212			CK73GB1H103K	CHIP C 0.010UF K		C277			CC73GCH1H102J	CHIP C 1000PF J	
C213			CK73GB1E105K	CHIP C 1.0UF K		C278			CC73GCH1H821J	CHIP C 820PF J	
C214			CK73GB1H103K	CHIP C 0.010UF K		C279			CK73GB1H104K	CHIP C 0.10UF K	
C215			CC73GCH1H150J	CHIP C 15PF J	E	C280			CC73GCH1H470J	CHIP C 47PF J	
C216			CC73GCH1H270J	CHIP C 27PF J	E	C281			CK73GB1H104K	CHIP C 0.10UF K	
C217			CC73FCH1H152J	CHIP C 1500PF J		C282			CC73GCH1H050C	CHIP C 5.0PF C	
C218			CK73GB1E105K	CHIP C 1.0UF K		C283			CC73GCH1H470J	CHIP C 47PF J	
C219			CC73FCH1H472J	CHIP C 4700PF J		C284			CC73GCH1H102J	CHIP C 1000PF J	
C220			CK73GB1H103K	CHIP C 0.010UF K		C285			CC73GCH1H050C	CHIP C 5.0PF C	
C221			CC73FCH1H152J	CHIP C 1500PF J		C286			CC73GCH1H470J	CHIP C 47PF J	
C222			CC73GCH1H222J	CHIP C 2200PF J		C287			CC73GCH1H102J	CHIP C 1000PF J	
C223			CC73FCH1H332J	CHIP C 3300PF J		C288			CK73GB1H104K	CHIP C 0.10UF K	
C224			CC73GCH1H221J	CHIP C 220PF J		C289			CC73GCH1H271J	CHIP C 270PF J	

## PARTS LIST

TX-RX UNIT (X57-827X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C290			CK73GB1H104K	CHIP C 0.10UF K		C370			CE32CL1C100M	CHIP EL 10UF 16WV	
C291			CC73GCH1H102J	CHIP C 1000PF J		C371			CK73GB1H104K	CHIP C 0.10UF K	
C292			CC73GCH1H680J	CHIP C 68PF J		C373			CK73GB1H102K	CHIP C 1000PF K	
C293			CC73GCH1H102J	CHIP C 1000PF J		C374			CC73GCH1H471J	CHIP C 470PF J	
C294			CC73GCH1H331J	CHIP C 330PF J		C375,376			CK73GB1H103K	CHIP C 0.010UF K	
C295			CK73GB1H104K	CHIP C 0.10UF K		C377			CK73GB1H104K	CHIP C 0.10UF K	
C296			CC73GCH1H151J	CHIP C 150PF J		C378			CK73GB1H103K	CHIP C 0.010UF K	
C297			CK73GB1H104K	CHIP C 0.10UF K		C379			CK73GB1H104K	CHIP C 0.10UF K	
C298			CC73GCH1H102J	CHIP C 1000PF J		C380			CK73GB1H472K	CHIP C 4700PF K	
C299			CC73GCH1H330J	CHIP C 33PF J		C381			CK73GB1H103K	CHIP C 0.010UF K	
C300			CK73GB1H102K	CHIP C 1000PF K		C382,383			CK73GB1H104K	CHIP C 0.10UF K	
C301			CC73GCH1H151J	CHIP C 150PF J		C384			CK73GB1H472K	CHIP C 4700PF K	
C302			CK73GB1H104K	CHIP C 0.10UF K		C385			CK73GB1H103K	CHIP C 0.010UF K	
C303			CC73GCH1H270J	CHIP C 27PF J		C388			CC73GCH1H271J	CHIP C 270PF J	
C304			CK73GB1H104K	CHIP C 0.10UF K		C389			CC73GCH1H220J	CHIP C 22PF J	
C305			CC73GCH1H102J	CHIP C 1000PF J		C390			CC73GCH1H470J	CHIP C 47PF J	
C306			CC73GCH1H560J	CHIP C 56PF J		C391			CC73GCH1H221J	CHIP C 220PF J	
C307			CC73GCH1H102J	CHIP C 1000PF J		C392			CK73GB1H103K	CHIP C 0.010UF K	
C308			CC73GCH1H680J	CHIP C 68PF J		C393			CC73GCH1H271J	CHIP C 270PF J	
C309			CK73GB1H104K	CHIP C 0.10UF K		C394			CC73GCH1H470J	CHIP C 47PF J	
C310			CC73GCH1H120J	CHIP C 12PF J		C395			CC73GCH1H150J	CHIP C 15PF J	
C311			CC73GCH1H150J	CHIP C 15PF J		C396			CC73GCH1H390J	CHIP C 39PF J	
C312			CK73GB1H104K	CHIP C 0.10UF K		C397			CC73GCH1H270J	CHIP C 27PF J	
C313			CC73GCH1H271J	CHIP C 270PF J		C398			CC73GCH1H390J	CHIP C 39PF J	
C314			CC73GCH1H102J	CHIP C 1000PF J		C399			CK73GB1H103K	CHIP C 0.010UF K	
C315			CC73GCH1H090D	CHIP C 9.0PF D		C400			CC73GCH1H150J	CHIP C 15PF J	
C316			CC73GCH1H102J	CHIP C 1000PF J		C401			CC73GCH1H560J	CHIP C 56PF J	
C317			CC73GCH1H271J	CHIP C 270PF J		C402			CC73GCH1H330J	CHIP C 33PF J	
C318			CC73GCH1H680J	CHIP C 68PF J		C403			CC73GCH1H820J	CHIP C 82PF J	
C319,320			CK73GB1H104K	CHIP C 0.10UF K		C404			CC73GCH1H390J	CHIP C 39PF J	
C321			CK73GB1H102K	CHIP C 1000PF K		C405			CC73GCH1H270J	CHIP C 27PF J	
C322,323			CK73GB1H103K	CHIP C 0.010UF K		C406-408			CK73GB1H104K	CHIP C 0.10UF K	
C324			CK73GB1H104K	CHIP C 0.10UF K		C410			CK73GB1H103K	CHIP C 0.010UF K	
C325			CK73GB1E105K	CHIP C 1.0UF K		C412			CC73GCH1H020C	CHIP C 2.0PF C	
C326			CK73GB1H103K	CHIP C 0.010UF K		C413			CK73GB1H104K	CHIP C 0.10UF K	
C327			CC73GCH1H101J	CHIP C 100PF J		C414			CC73GCH1H471J	CHIP C 470PF J	
C329,330			CK73GB1E105K	CHIP C 1.0UF K		C415			CK73GB1H102K	CHIP C 1000PF K	
C331			CK73GB1H103K	CHIP C 0.010UF K		C416,417			CK73GB1H103K	CHIP C 0.010UF K	
C332			CK73GB1E105K	CHIP C 1.0UF K		C418,419			CK73GB1H104K	CHIP C 0.10UF K	
C333			CK73GB1H104K	CHIP C 0.10UF K		C420			CK73GB1H103K	CHIP C 0.010UF K	
C334			CK73GB1H103K	CHIP C 0.010UF K		C421			CK73GB1H472K	CHIP C 4700PF K	
C335			CK73GB1H104K	CHIP C 0.10UF K		C422			CK73GB1H104K	CHIP C 0.10UF K	
C336			CK73GB1H103K	CHIP C 0.010UF K		C423			CK73GB1H103K	CHIP C 0.010UF K	
C347,348			CC73GCH1H271J	CHIP C 270PF J		C424,425			CK73GB1H104K	CHIP C 0.10UF K	
C349			CK73GB1H103K	CHIP C 0.010UF K		C426			CK73GB1H472K	CHIP C 4700PF K	
C351			CC73GCH1H330J	CHIP C 33PF J		C427,428			CC73GCH1H270J	CHIP C 27PF J	
C352			CC73GCH1H560J	CHIP C 56PF J		C429,430			CC73GCH1H102J	CHIP C 1000PF J	
C353			CC73GCH1H820J	CHIP C 82PF J		C431			CC73GCH1H020C	CHIP C 2.0PF C	
C354			CC73GCH1H151J	CHIP C 150PF J		C432			CK73GB1H103K	CHIP C 0.010UF K	
C355			CC73GCH1H470J	CHIP C 47PF J		C433			CC73GCH1H330J	CHIP C 33PF J	
C356			CC73GCH1H560J	CHIP C 56PF J		C434			CC73GCH1H221J	CHIP C 220PF J	
C357			CC73GCH1H680J	CHIP C 68PF J		C435			CC73GCH1H820J	CHIP C 82PF J	
C358			CC73GCH1H330J	CHIP C 33PF J		C436			CC73GCH1H100D	CHIP C 10PF D	
C359			CC73GCH1H221J	CHIP C 220PF J		C437-439			CK73GB1H103K	CHIP C 0.010UF K	
C360			CC73GCH1H681J	CHIP C 680PF J		C440			CC73GCH1H680J	CHIP C 68PF J	
C361			CC73GCH1H470J	CHIP C 47PF J		C441			CK73GB1H103K	CHIP C 0.010UF K	
C362-364			CK73GB1H104K	CHIP C 0.10UF K		C442			CK73GB1H102K	CHIP C 1000PF K	
C366			CK73GB1H103K	CHIP C 0.010UF K		C443			CC73GCH1H010C	CHIP C 1.0PF C	
C367			CK73GB1H102K	CHIP C 1000PF K		C446			CK73GB1H102K	CHIP C 1000PF K	
C369			CK73GB1H104K	CHIP C 0.10UF K		C447			CK73GB1H103K	CHIP C 0.010UF K	

## PARTS LIST

### TX-RX UNIT (X57-827X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C448			CC73GCH1H180J	CHIP C 18PF J		C550			CC73GCH1H680J	CHIP C 68PF J	
C449			CC73GCH1H060D	CHIP C 6.0PF D		C551			CC73GCH1H101J	CHIP C 100PF J	
C450			CK73GB1E105K	CHIP C 1.0UF K		C552			CC73GCH1H680J	CHIP C 68PF J	
C451			CC73GCH1H090D	CHIP C 9.0PF D		C555			CC73GCH1H680J	CHIP C 68PF J	
C452,453			CK73GB1H103K	CHIP C 0.010UF K		C556			CC73GCH1H101J	CHIP C 100PF J	
C454			CK73GB1E105K	CHIP C 1.0UF K		C557			CC73GCH1H820J	CHIP C 82PF J	
C455			CK73GB1H103K	CHIP C 0.010UF K		C558,559			CK73GB1H103K	CHIP C 0.010UF K	
C456			CC73GCH1H020C	CHIP C 2.0PF C		C564-569			CK73GB1H103K	CHIP C 0.010UF K	
C457-459			CK73GB1H103K	CHIP C 0.010UF K		C572			CK73GB1H103K	CHIP C 0.010UF K	
C461			CC73GCH1H220J	CHIP C 22PF J		C573			CK73HB1H103K	CHIP C 0.010UF K	
C462-466			CK73GB1H103K	CHIP C 0.010UF K		C574			CK73GB1H103K	CHIP C 0.010UF K	
C467			CK73GB1H102K	CHIP C 1000PF K		C575			CK73GB1E105K	CHIP C 1.0UF K	
C468			CC73GCH1H090D	CHIP C 9.0PF D		C581-584			CK73GB1H103K	CHIP C 0.010UF K	
C469			CK73GB1H103K	CHIP C 0.010UF K		C585			CK73GB1H104K	CHIP C 0.10UF K	
C470			CC73GCH1H330J	CHIP C 33PF J		C586			CK73GB1E105K	CHIP C 1.0UF K	
C471			CK73GB1E105K	CHIP C 1.0UF K		C587			CK73GB1H103K	CHIP C 0.010UF K	
C472			CK73GB1H103K	CHIP C 0.010UF K		C588			CK73GB1H104K	CHIP C 0.10UF K	
C473,474			CC73GCH1H560J	CHIP C 56PF J		C589			CK73GB1H103K	CHIP C 0.010UF K	
C475			CK73GB1H103K	CHIP C 0.010UF K		C601			CK73GB1H103K	CHIP C 0.010UF K	
C476			CC73GCH1H560J	CHIP C 56PF J		C602			CC73GCH1H470J	CHIP C 47PF J	
C477,478			CK73GB1H102K	CHIP C 1000PF K		C603,604			CK73GB1H103K	CHIP C 0.010UF K	
C481,482			CK73GB1H103K	CHIP C 0.010UF K		C605			CC73GCH1H101J	CHIP C 100PF J	
C483			CC73GCH1H151J	CHIP C 150PF J		C606			CK73GB1H103K	CHIP C 0.010UF K	
C484,485			CK73GB1H103K	CHIP C 0.010UF K		C607			CK73GB1E105K	CHIP C 1.0UF K	
C486			CK73GB1E105K	CHIP C 1.0UF K		C608-613			CK73GB1H103K	CHIP C 0.010UF K	
C487			CK73GB1H104K	CHIP C 0.10UF K		C614			CK73GB1H102K	CHIP C 1000PF K	
C488			CK73GB1E105K	CHIP C 1.0UF K		C615,616			CK73GB1H103K	CHIP C 0.010UF K	
C489			CC73GCH1H151J	CHIP C 150PF J		C617			CC73GCH1H151J	CHIP C 150PF J	
C490			CK73GB1H103K	CHIP C 0.010UF K		C618			C93-1886-05	CHIP C 68PF J	
C498			CK73GB1H104K	CHIP C 0.10UF K		C619			CC73GCH1H151J	CHIP C 150PF J	
C499,500			CC73GCH1H100D	CHIP C 10PF D		C620			CK73GB1E105K	CHIP C 1.0UF K	
C501			CK73GB1H102K	CHIP C 1000PF K		C621			CK73GB1H103K	CHIP C 0.010UF K	
C503,504			CK73GB1H103K	CHIP C 0.010UF K		C622			CK73GB1E105K	CHIP C 1.0UF K	
C507,508			CK73GB1H103K	CHIP C 0.010UF K		C623			CC73GCH1H100D	CHIP C 10PF D	
C509			CC73GCH1H820J	CHIP C 82PF J		C624			CK73HB1H103K	CHIP C 0.010UF K	
C510			CC73GCH1H220J	CHIP C 22PF J		C626			CK73GB1H103K	CHIP C 0.010UF K	
C513			CC73GCH1H220J	CHIP C 22PF J		C627			CK73GB1H104K	CHIP C 0.10UF K	
C514			CC73GCH1H820J	CHIP C 82PF J		C628,629			CK73GB1H103K	CHIP C 0.010UF K	
C515-518			CK73GB1H103K	CHIP C 0.010UF K		C630			CK73GB1H104K	CHIP C 0.10UF K	
C519			CC73GCH1H680J	CHIP C 68PF J		C631			CC73GCH1H820J	CHIP C 82PF J	
C520			CC73GCH1H390J	CHIP C 39PF J		C632-637			CK73GB1H104K	CHIP C 0.10UF K	
C521			CC73GCH1H100D	CHIP C 10PF D		C638			CC73GCH1H270J	CHIP C 27PF J	
C522			CC73GCH1H180J	CHIP C 18PF J		C639,640			CC73GCH1H271J	CHIP C 270PF J	
C523			CC73GCH1H150J	CHIP C 15PF J		C641			CC73GCH1H151J	CHIP C 150PF J	
C524			CC73GCH1H270J	CHIP C 27PF J		C642			CC73GCH1H391J	CHIP C 390PF J	
C525			CC73GCH1H680J	CHIP C 68PF J		C643-646			CK73GB1H104K	CHIP C 0.10UF K	
C526-529			CK73GB1H103K	CHIP C 0.010UF K		C647			CK73GB1E105K	CHIP C 1.0UF K	
C530			CC73GCH1H820J	CHIP C 82PF J		C648			CC73GCH1H100D	CHIP C 10PF D	
C531			CC73GCH1H560J	CHIP C 56PF J		C649			CK73GB1H104K	CHIP C 0.10UF K	
C532,533			CC73GCH1H060D	CHIP C 6.0PF D		C650			CK73FB1A106K	CHIP C 10UF K	
C534			CC73GCH1H560J	CHIP C 56PF J		C651			CK73GB1E105K	CHIP C 1.0UF K	
C535			CC73GCH1H121J	CHIP C 120PF J		C652			CK73GB1H222K	CHIP C 2200PF K	
C536-539			CK73GB1H103K	CHIP C 0.010UF K		C653			CC73GCH1H331J	CHIP C 330PF J	
C540			CC73GCH1H820J	CHIP C 82PF J		C654			CK73FB1A106K	CHIP C 10UF K	
C541			CC73GCH1H470J	CHIP C 47PF J		C655			CK73GB1H103K	CHIP C 0.010UF K	
C542			CC73GCH1H030C	CHIP C 3.0PF C		C656			CK73GB1E105K	CHIP C 1.0UF K	
C543			CC73GCH1H020C	CHIP C 2.0PF C		C659			CK73FB1A106K	CHIP C 10UF K	
C544			CC73GCH1H560J	CHIP C 56PF J		C660			CK73GB1E105K	CHIP C 1.0UF K	
C545			CC73GCH1H101J	CHIP C 100PF J		C661			CK73HB1H103K	CHIP C 0.010UF K	
C546-549			CK73GB1H103K	CHIP C 0.010UF K		C662			CK73GB1H103K	CHIP C 0.010UF K	

## PARTS LIST

TX-RX UNIT (X57-827X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C663,664			CK73GB1H104K	CHIP C 0.10UF K		C788			CK73GB1H102K	CHIP C 1000PF K	
C701			CK73GB1H103K	CHIP C 0.010UF K		C789			CK73GB1H103K	CHIP C 0.010UF K	
C703			CK73GB1H103K	CHIP C 0.010UF K		C790			CK73GB1H102K	CHIP C 1000PF K	
C705,706			CK73GB1H103K	CHIP C 0.010UF K		C791			CC73GCH1H180J	CHIP C 18PF J	
C707			CE32CL1C100M	CHIP EL 10UF 16WV		C792			CK73GB1H103K	CHIP C 0.010UF K	
C708			CK73HB1H103K	CHIP C 0.010UF K		C793			CC73GCH1H390J	CHIP C 39PF J	
C709			CC73GCH1H102J	CHIP C 1000PF J		C794			CK73GB1H102K	CHIP C 1000PF K	
C710			CC73GCH1H100D	CHIP C 10PF D		C795,796			CK73GB1E105K	CHIP C 1.0UF K	
C711			CK73FB1A225K	CHIP C 2.2UF K		C801			CK73GB1H102K	CHIP C 1000PF K	
C712			CK73GB1E105K	CHIP C 1.0UF K		C802			CK73GB1H103K	CHIP C 0.010UF K	
C714			CC73GCH1H330J	CHIP C 33PF J		C803			CC73GCH1H101J	CHIP C 100PF J	
C715			CK73GB1H103K	CHIP C 0.010UF K		C804			CK73GB1H103K	CHIP C 0.010UF K	
C716			CC73GCH1H180J	CHIP C 18PF J		C805			CC73GCH1H101J	CHIP C 100PF J	
C717-719			CK73GB1H103K	CHIP C 0.010UF K		C806			CK73GB1E474K	CHIP C 0.47UF K	
C720			CK73GB1E105K	CHIP C 1.0UF K		C807			CC73GCH1H101J	CHIP C 100PF J	
C721			CC73GCH1H102J	CHIP C 1000PF J		C808			CK73HB1H103K	CHIP C 0.010UF K	
C722,723			CK73GB1H103K	CHIP C 0.010UF K		C809			CC73GCH1H101J	CHIP C 100PF J	
C724,725			CK73GB1H102K	CHIP C 1000PF K		C810			CK73HB1H103K	CHIP C 0.010UF K	
C726			CK73GB1H103K	CHIP C 0.010UF K		C811			CS77MA1C3R3M	CHIP TNTL 3.3UF 16WV	
C727			CC73GCH1H220J	CHIP C 22PF J		C812			CK73GB1E105K	CHIP C 1.0UF K	
C728-732			CK73GB1H103K	CHIP C 0.010UF K		C813			CE32CL1V4R7M	CHIP EL 4.7UF 35WV	
C733			CC73GCH1H050C	CHIP C 5.0PF C		C814			CC73GCH1H101J	CHIP C 100PF J	
C735			CK73GB1E105K	CHIP C 1.0UF K		C815			CK73GB1H333K	CHIP C 0.033UF K	
C737,738			CK73GB1H102K	CHIP C 1000PF K		C816,817			CK73GB1H103K	CHIP C 0.010UF K	
C739,740			CC73GCH1H470J	CHIP C 47PF J		C818			CK73HB1H103K	CHIP C 0.010UF K	
C741			CK73GB1H102K	CHIP C 1000PF K		C819			CK73GB1H103K	CHIP C 0.010UF K	
C742			CK73GB1H103K	CHIP C 0.010UF K		C825			CK73GB1H103K	CHIP C 0.010UF K	
C743			CK73GB1H104K	CHIP C 0.10UF K		C826,827			CK73GB1E105K	CHIP C 1.0UF K	
C744			CK73GB1H102K	CHIP C 1000PF K		C828			CK73GB1H104K	CHIP C 0.10UF K	
C745-747			CK73GB1H103K	CHIP C 0.010UF K		C829			CK73GB1H103K	CHIP C 0.010UF K	
C748			CC73GCH1H020C	CHIP C 2.0PF C		C830			CK73GB1H102K	CHIP C 1000PF K	
C749			CC73GCH1H470J	CHIP C 47PF J		C831			CK73HB1H103K	CHIP C 0.010UF K	
C750-753			CK73GB1H103K	CHIP C 0.010UF K		C832,833			CC73GCH1H100D	CHIP C 10PF D	
C754,755			CK73GB1H102K	CHIP C 1000PF K		C881			CC73GCH1H100D	CHIP C 10PF D	
C756			CK73GB1H103K	CHIP C 0.010UF K		C882			CC73GCH1H020C	CHIP C 2.0PF C	
C757			CC73GCH1H020C	CHIP C 2.0PF C		C883,884			CK73GB1H103K	CHIP C 0.010UF K	
C758			CK73GB1H102K	CHIP C 1000PF K		C886			CK73GB1H103K	CHIP C 0.010UF K	
C759			CK73GB1H103K	CHIP C 0.010UF K		C887			CK73GB1H102K	CHIP C 1000PF K	
C763			CK73GB1H103K	CHIP C 0.010UF K		C888			CK73GB1H103K	CHIP C 0.010UF K	
C764			CK73GB1H104K	CHIP C 0.10UF K		C889			CC73GCH1H470J	CHIP C 47PF J	
C765			CK73GB1H103K	CHIP C 0.010UF K		C890			CK73GB1H102K	CHIP C 1000PF K	
C766			CK73GB1H104K	CHIP C 0.10UF K		C891			CK73GB1H103K	CHIP C 0.010UF K	
C767,768			CK73GB1H103K	CHIP C 0.010UF K		C893			CK73GB1H103K	CHIP C 0.010UF K	
C769			CC73GCH1H120J	CHIP C 12PF J		C894			CK73GB1E105K	CHIP C 1.0UF K	
C770			CC73GCH1H471J	CHIP C 470PF J		C895			CC73GCH1H430J	CHIP C 43PF J	
C771			CC73GCH1H060D	CHIP C 6.0PF D		C896			CC73GCH1H080D	CHIP C 8.0PF D	
C772			CK73GB1H103K	CHIP C 0.010UF K		C897			CK73GB1H103K	CHIP C 0.010UF K	
C773			CK73GB1E105K	CHIP C 1.0UF K		C899-901			CK73GB1H103K	CHIP C 0.010UF K	
C774			CC73GCH1H120J	CHIP C 12PF J		C902			CC73GCH1H390J	CHIP C 39PF J	
C776			CE32CL1V4R7M	CHIP EL 4.7UF 35WV		C903			CC73GCH1H090D	CHIP C 9.0PF D	
C777			CC73GCH1H330J	CHIP C 33PF J		C904			CK73GB1H103K	CHIP C 0.010UF K	
C778			CK73GB1H104K	CHIP C 0.10UF K		C906			CK73GB1H103K	CHIP C 0.010UF K	
C779			CK73GB1H103K	CHIP C 0.010UF K		C908			CC73GCH1H080D	CHIP C 8.0PF D	
C780			CK73GB1H104K	CHIP C 0.10UF K		C909			CK73GB1H103K	CHIP C 0.010UF K	
C781			CK73GB1E105K	CHIP C 1.0UF K		C910			CC73GCH1H390J	CHIP C 39PF J	
C782			CK73GB1H103K	CHIP C 0.010UF K		C911			CK73GB1H103K	CHIP C 0.010UF K	
C783			CE32CL1V4R7M	CHIP EL 4.7UF 35WV		C913			CC73GCH1H100D	CHIP C 10PF D	
C784			CC73GCH1H150J	CHIP C 15PF J		C914,915			CK73GB1H103K	CHIP C 0.010UF K	
C785,786			CK73GB1E105K	CHIP C 1.0UF K		C916			CK73GB1H102K	CHIP C 1000PF K	
C787			CK73GB1H103K	CHIP C 0.010UF K		C918			CK73GB1E105K	CHIP C 1.0UF K	

## PARTS LIST

### TX-RX UNIT (X57-827X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
C919,920			CK73GB1H103K	CHIP C 0.010UF K		J700			E13-0166-25	PIN JACK	
C921			CK73GB1E105K	CHIP C 1.0UF K							
C923			CE32CL1C470M	CHIP EL 47UF 16WV		F951			F53-0388-05	FUSE(1.25A)	
C924			CK73GB1H103K	CHIP C 0.010UF K		F952			F53-0367-05	FUSE(1.0A)	
C925			CK73GB1E474K	CHIP C 0.47UF K		F953-955			F53-0363-05	FUSE(0.5A)	
C951			CD04BQ1C471M	ELECTRO 470UF 16WV		CF601			L72-0376-05	CERAMIC FILTER	
C952			CK73GB1H102K	CHIP C 1000PF K		CF602			L72-0372-05	CERAMIC FILTER	
C953			CK73GB1E105K	CHIP C 1.0UF K		L101,102			L92-0639-05	CHIP FERRITE	
C954			CK73GB1H102K	CHIP C 1000PF K		L103,104			L41-1015-33	SMALL FIXED INDUCTOR(100UH)	
C955			CK73GB1E105K	CHIP C 1.0UF K		L105-107			L92-0639-05	CHIP FERRITE	
C957			CD04AZ1E471M	ELECTRO 470UF 25WV		L108,109			L41-1015-33	SMALL FIXED INDUCTOR(100UH)	
C958,959			CK73GB1H102K	CHIP C 1000PF K		L110			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)	
C960			CK73GB1H104K	CHIP C 0.10UF K		L111-113			L41-1085-33	SMALL FIXED INDUCTOR(0.1UH)	
C961,962			CK73GB1H102K	CHIP C 1000PF K		L201,202			L41-2215-32	SMALL FIXED INDUCTOR(220UH)	
C963			CK73GB1H104K	CHIP C 0.10UF K		L203			L41-1585-32	SMALL FIXED INDUCTOR(0.15UH)	
C965			CK73GB1H104K	CHIP C 0.10UF K		L204,205			L33-0695-05	SMALL FIXED INDUCTOR(1MH)	
C966			CK73GB1H102K	CHIP C 1000PF K		L206,207			L34-4940-05	COIL	E
C968			CK73GB1H104K	CHIP C 0.10UF K		L208			L34-4939-05	COIL	
C969			CE32CL1C220M	CHIP EL 22UF 16WV		L209			L33-0695-05	SMALL FIXED INDUCTOR(1MH)	
C970			CK73GB1H104K	CHIP C 0.10UF K		L210,211			L41-6891-44	SMALL FIXED INDUCTOR(6.8UH)	
C973-975			CK73GB1H104K	CHIP C 0.10UF K		L212,213			L33-0695-05	SMALL FIXED INDUCTOR(1MH)	
C978			CE32CL1C220M	CHIP EL 22UF 16WV		L214,215			L41-1505-44	SMALL FIXED INDUCTOR(15UH)	
C979			CK73GB1H104K	CHIP C 0.10UF K		L216			L33-0695-05	SMALL FIXED INDUCTOR(1MH)	
C980			CE32CL1C220M	CHIP EL 22UF 16WV		L217			L41-1898-60	SMALL FIXED INDUCTOR(1.8UH)	
C981			CK73GB1H104K	CHIP C 0.10UF K		L218			L34-4940-05	COIL	
C983			CK73HB1H103K	CHIP C 0.010UF K		L219			L41-1898-60	SMALL FIXED INDUCTOR(1.8UH)	
C986			CK73HB1H103K	CHIP C 0.010UF K		L220			L41-1298-60	SMALL FIXED INDUCTOR(1.2UH)	
C988-990			CK73HB1H103K	CHIP C 0.010UF K		L221			L34-4939-05	COIL	
TC201			C05-0378-05	CERAMIC TRIMMER CAPACITOR(20P)		L222			L41-1298-60	SMALL FIXED INDUCTOR(1.2UH)	
-			E18-0254-05	SOCKET		L223			L41-1098-60	SMALL FIXED INDUCTOR(1UH)	
CN1			E40-6911-05	FLAT CABLE CONNECTOR		L224			L41-1898-60	SMALL FIXED INDUCTOR(1.8UH)	
CN2			E40-6914-05	FLAT CABLE CONNECTOR		L225			L41-1098-60	SMALL FIXED INDUCTOR(1UH)	
CN3			E41-3176-05	FLAT CABLE CONNECTOR		L226-228			L34-4941-05	COIL	
CN4			E41-1683-05	PIN ASSY		L229			L41-3388-60	SMALL FIXED INDUCTOR(330NH)	
CN200			E04-0491-05	PIN SOCKET		L230			L41-2298-60	SMALL FIXED INDUCTOR(2.2UH)	
CN210			E40-5487-05	PIN ASSY		L231			L41-3388-60	SMALL FIXED INDUCTOR(330NH)	
CN220			E40-5487-05	PIN ASSY		L232			L41-2288-60	SMALL FIXED INDUCTOR(220NH)	
CN230			E40-6852-05	PIN ASSY		L233			L41-1898-60	SMALL FIXED INDUCTOR(1.8UH)	
CN300			E04-0491-05	PIN SOCKET		L234			L41-2288-60	SMALL FIXED INDUCTOR(220NH)	
CN350			E04-0491-05	PIN SOCKET		L235-237			L34-4942-05	COIL	
CN360			E40-6852-05	PIN ASSY		L238			L41-2288-60	SMALL FIXED INDUCTOR(220NH)	
CN370			E40-6852-05	PIN ASSY		L239			L41-1098-60	SMALL FIXED INDUCTOR(1UH)	
CN400			E04-0491-05	PIN SOCKET		L240,241			L41-2288-60	SMALL FIXED INDUCTOR(220NH)	
CN450			E04-0491-05	PIN SOCKET		L242			L41-1098-60	SMALL FIXED INDUCTOR(1UH)	
CN460			E40-6852-05	PIN ASSY		L243			L41-2288-60	SMALL FIXED INDUCTOR(220NH)	
CN470			E40-6852-05	PIN ASSY		L244			L41-1588-60	SMALL FIXED INDUCTOR(150NH)	
CN500			E04-0491-05	PIN SOCKET		L245			L41-2788-60	SMALL FIXED INDUCTOR(270NH)	
CN600			E41-1682-05	PIN ASSY		L246			L41-1588-60	SMALL FIXED INDUCTOR(150NH)	
CN700			E41-1682-05	PIN ASSY		L247			L34-4943-05	COIL	
CN800			E04-0491-05	PIN SOCKET		L248			L34-4608-15	AIR-CORE COIL(7T)	
CN850			E04-0491-05	PIN SOCKET		L249			L41-1098-60	SMALL FIXED INDUCTOR(1UH)	
CN900			E04-0491-05	PIN SOCKET		L250			L34-4608-15	AIR-CORE COIL(7T)	
CN910			E41-1686-05	PIN ASSY		L251,252			L33-0695-05	SMALL FIXED INDUCTOR(1MH)	
CN920			E41-1686-05	PIN ASSY		L253			L41-2288-60	SMALL FIXED INDUCTOR(220NH)	
CN950			E04-0491-05	PIN SOCKET		L254			L39-1556-05	TOROIDAL COIL	
J1			E11-0455-05	3.5D PHONE JACK(3P)		L255			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
J2			E56-0408-15	DIN SOCKET		L256			L41-1585-33	SMALL FIXED INDUCTOR(0.15UH)	
J3			E06-0752-15	DIN SOCKET		L257			L33-0695-05	SMALL FIXED INDUCTOR(1MH)	
J4			E11-0705-15	PHONE JACK(9P)		L351			L41-2288-60	SMALL FIXED INDUCTOR(220NH)	
						L352			L34-4938-05	COIL	



## PARTS LIST

TX-RX UNIT (X57-827X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
L353,354			L41-2288-60	SMALL FIXED INDUCTOR(220NH)		L506			L41-1898-60	SMALL FIXED INDUCTOR(1.8UH)	
L355			L34-4938-05	COIL		L507			L41-1895-33	SMALL FIXED INDUCTOR(1.8UH)	
L356			L39-1554-05	TOROIDAL COIL		L508			L41-1015-33	SMALL FIXED INDUCTOR(100UH)	
L357			L39-1480-15	TOROIDAL COIL		L510			L41-1015-33	SMALL FIXED INDUCTOR(100UH)	
L358			L41-1015-33	SMALL FIXED INDUCTOR(100UH)		L511			L39-1599-05	TOROIDAL COIL	
L359			L39-1555-05	TOROIDAL COIL		L512			L41-1015-33	SMALL FIXED INDUCTOR(100UH)	
L360,361			L41-1015-33	SMALL FIXED INDUCTOR(100UH)		L513			L39-1598-05	TOROIDAL COIL	
L362			L41-4705-33	SMALL FIXED INDUCTOR(47UH)		L515			L41-1015-33	SMALL FIXED INDUCTOR(100UH)	
L363			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L516			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L364		*	L41-5688-60	SMALL FIXED INDUCTOR(560NH)		L517			L41-1015-33	SMALL FIXED INDUCTOR(100UH)	
L366		*	L41-5688-60	SMALL FIXED INDUCTOR(560NH)		L518-520			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L368,369			L34-4937-05	COIL		L601			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L370			L41-1015-33	SMALL FIXED INDUCTOR(100UH)		L602			L39-1480-15	TOROIDAL COIL	
L371,372		*	L41-5688-60	SMALL FIXED INDUCTOR(560NH)		L603,604			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L373			L41-3388-60	SMALL FIXED INDUCTOR(330NH)		L605			L40-8281-86	SMALL FIXED INDUCTOR(0.82UH)	
L374			L40-8281-86	SMALL FIXED INDUCTOR(0.82UH)		L606			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
L401			L41-1288-60	SMALL FIXED INDUCTOR(120NH)		L607			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L402			L41-1088-60	SMALL FIXED INDUCTOR(100NH)		L608			L34-4946-05	COIL	
L403			L39-1493-15	TOROIDAL COIL		L609			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L404			L39-1480-15	TOROIDAL COIL		L701			L40-1001-86	SMALL FIXED INDUCTOR(10UH)	
L405			L41-1015-33	SMALL FIXED INDUCTOR(100UH)		L702,703			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L406			L34-4709-05	COIL		L704			L41-1015-33	SMALL FIXED INDUCTOR(100UH)	
L407			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L706			L41-1015-33	SMALL FIXED INDUCTOR(100UH)	
L408			L41-1015-33	SMALL FIXED INDUCTOR(100UH)		L707			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
L409			L41-4785-33	SMALL FIXED INDUCTOR(0.47UH)		L708			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L410			L41-1095-33	SMALL FIXED INDUCTOR(1.0UH)		L709-711			L41-1015-33	SMALL FIXED INDUCTOR(100UH)	
L411			L41-1088-60	SMALL FIXED INDUCTOR(100NH)		L712			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
L412			L41-6878-60	SMALL FIXED INDUCTOR(68NH)		L714			L41-1085-33	SMALL FIXED INDUCTOR(0.1UH)	
L413			L41-8278-60	SMALL FIXED INDUCTOR(82NH)		L715			L41-3385-33	SMALL FIXED INDUCTOR(0.33UH)	
L414			L41-1878-60	SMALL FIXED INDUCTOR(18NH)		L716			L41-1885-33	SMALL FIXED INDUCTOR(0.18UH)	
L415			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L720,721			L34-4818-05	COIL	
L416			L41-1088-60	SMALL FIXED INDUCTOR(100NH)		L724			L41-1015-33	SMALL FIXED INDUCTOR(100UH)	
L417-419			L34-4818-05	COIL		L725			L39-1476-05	TOROIDAL COIL	
L420			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L726			L39-1480-15	TOROIDAL COIL	
L421			L39-1553-05	TOROIDAL COIL		L727			L40-2785-92	SMALL FIXED INDUCTOR(270NH)	
L422			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L728			L33-0695-05	SMALL FIXED INDUCTOR(1MH)	
L423,424			L39-1480-15	TOROIDAL COIL		L729			L41-1085-33	SMALL FIXED INDUCTOR(0.1UH)	
L425			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L730			L41-2785-33	SMALL FIXED INDUCTOR(0.27UH)	
L426			L41-4785-33	SMALL FIXED INDUCTOR(0.47UH)		L731			L41-1085-33	SMALL FIXED INDUCTOR(0.1UH)	
L427			L41-1288-60	SMALL FIXED INDUCTOR(120NH)		L732			L41-1015-33	SMALL FIXED INDUCTOR(100UH)	
L428			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L733			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
L429			L41-2288-60	SMALL FIXED INDUCTOR(220NH)		L741			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L430			L41-1015-33	SMALL FIXED INDUCTOR(100UH)		L881			L41-1085-33	SMALL FIXED INDUCTOR(0.1UH)	
L431			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L882			L41-4795-33	SMALL FIXED INDUCTOR(4.7UH)	
L471,472			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L883			L41-2285-33	SMALL FIXED INDUCTOR(0.22UH)	
L473			L40-1281-86	SMALL FIXED INDUCTOR(0.12UH)		L884			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
L481			L41-1015-33	SMALL FIXED INDUCTOR(100UH)		L885			L34-4938-05	COIL	
L482			L41-1098-60	SMALL FIXED INDUCTOR(1UH)		L886			L41-4705-33	SMALL FIXED INDUCTOR(47UH)	
L483,484			L41-1015-33	SMALL FIXED INDUCTOR(100UH)		L887,888			L34-4938-05	COIL	
L485			L41-1098-60	SMALL FIXED INDUCTOR(1UH)		L889			L33-0695-05	SMALL FIXED INDUCTOR(1MH)	
L490			L39-1480-15	TOROIDAL COIL		L951			L33-1557-05	CHOKO COIL	
L491			L39-1571-05	TOROIDAL COIL		L952			L33-1554-05	CHOKO COIL	
L492			L41-1015-33	SMALL FIXED INDUCTOR(100UH)		L953,954			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L493,494			L41-1005-33	SMALL FIXED INDUCTOR(10UH)		L955			L41-1015-33	SMALL FIXED INDUCTOR(100UH)	
L495,496			L41-6895-33	SMALL FIXED INDUCTOR(6.8UH)		L956,957			L41-1005-33	SMALL FIXED INDUCTOR(10UH)	
L497			L41-1015-33	SMALL FIXED INDUCTOR(100UH)		XF351			L71-0656-15	MCF(11.374M/6KHZ)	
L498,499			L41-5695-33	SMALL FIXED INDUCTOR(5.6UH)		XF401			L71-0605-05	MCF(73.095M/15KHZ)	
L500,501			L41-1015-33	SMALL FIXED INDUCTOR(100UH)		XF481			L71-0230-15	MCF(10695KHZ)	
L502,503			L41-5695-33	SMALL FIXED INDUCTOR(5.6UH)		XF482			L71-0664-05	MCF(10.695MHZ)	
L504,505			L41-1015-33	SMALL FIXED INDUCTOR(100UH)		XF484			L71-0569-15	CRYSTAL FILTER(10.695M/2.7KHZ)	

## PARTS LIST

### TX-RX UNIT (X57-827X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
XF485			L71-0657-05	CRYSTAL FILTER(11.374M/2.7KHZ)		R210			RK73GB2A222J	CHIP R	2.2K J 1/10W
XF486			L71-0658-05	CRYSTAL FILTER(11.374M/500HZ)		R211			RK73EB2E151J	CHIP R	150 J 1/4W
R1 -5			RK73GB2A101J	CHIP R	100 J 1/10W	R212			RK73GB2A103J	CHIP R	10K J 1/10W
R6 ,7			RK73GB2A000J	CHIP R	0 J 1/10W	R213,214			RK73EB2E151J	CHIP R	150 J 1/4W
R8 ,9			RK73HB1J000J	CHIP R	0 J 1/16W	R215			RK73GB2A103J	CHIP R	10K J 1/10W
R10 -12			RK73GB2A000J	CHIP R	0 J 1/10W	R216			RK73FB2B330J	CHIP R	33 J 1/8W
R13 -17			RK73HB1J000J	CHIP R	0 J 1/16W	R217			RK73EB2E330J	CHIP R	33 J 1/4W
R18			RK73GB2A222J	CHIP R	2.2K J 1/10W	R218			RK73GB2A471J	CHIP R	470 J 1/10W
R51 -53			RK73GB2A103J	CHIP R	10K J 1/10W	R219			RK73EB2E560J	CHIP R	56 J 1/4W
R99 ,100			RK73GB2A104J	CHIP R	100K J 1/10W	R220			RK73GB2A103J	CHIP R	10K J 1/10W
R101			RK73GB2A123J	CHIP R	12K J 1/10W	R221			RK73FB2B330J	CHIP R	33 J 1/8W
R102			RK73GB2A183J	CHIP R	18K J 1/10W	R222			RK73EB2E560J	CHIP R	56 J 1/4W
R103,104			RK73GB2A000J	CHIP R	0 J 1/10W	R223			RK73GB2A103J	CHIP R	10K J 1/10W
R105			RK73GB2A183J	CHIP R	18K J 1/10W	R224			RK73GB2A560J	CHIP R	56 J 1/10W
R107			RK73GB2A123J	CHIP R	12K J 1/10W	R225			RK73FB2B330J	CHIP R	33 J 1/8W
R108			RK73GB2A332J	CHIP R	3.3K J 1/10W	R226			RK73EB2E680J	CHIP R	68 J 1/4W
R110			RK73GB2A332J	CHIP R	3.3K J 1/10W	R227			RK73GB2A103J	CHIP R	10K J 1/10W
R111			RK73GB2A101J	CHIP R	100 J 1/10W	R228			RK73GB2A560J	CHIP R	56 J 1/10W
R115			RK73GB2A123J	CHIP R	12K J 1/10W	R229			RK73FB2B330J	CHIP R	33 J 1/8W
R116			RK73GB2A392J	CHIP R	3.9K J 1/10W	R230			RK73EB2E680J	CHIP R	68 J 1/4W
R117			RK73GB2A562J	CHIP R	5.6K J 1/10W	R231			RK73GB2A103J	CHIP R	10K J 1/10W
R118			RK73GB2A2R2J	CHIP R	2.2 J 1/10W	R232			RK73GB2A560J	CHIP R	56 J 1/10W
R119			RK73GB2A682J	CHIP R	6.8K J 1/10W	R233			RK73FB2B330J	CHIP R	33 J 1/8W
R120,121			RK73GB2A000J	CHIP R	0 J 1/10W	R234			RK73EB2E680J	CHIP R	68 J 1/4W
R124			RK73GB2A104J	CHIP R	100K J 1/10W	R235			RK73GB2A103J	CHIP R	10K J 1/10W
R125			RK73GB2A101J	CHIP R	100 J 1/10W	R236			RK73FB2B330J	CHIP R	33 J 1/8W
R126			RK73GB2A471J	CHIP R	470 J 1/10W	R237			RK73GB2A560J	CHIP R	56 J 1/10W
R127			RK73GB2A682J	CHIP R	6.8K J 1/10W	R238			RK73EB2E680J	CHIP R	68 J 1/4W
R128,129			RK73GB2A000J	CHIP R	0 J 1/10W	R239			RK73GB2A103J	CHIP R	10K J 1/10W
R132			RK73GB2A104J	CHIP R	100K J 1/10W	R240			RK73GB2A560J	CHIP R	56 J 1/10W
R133			RK73GB2A101J	CHIP R	100 J 1/10W	R241			RK73FB2B330J	CHIP R	33 J 1/8W
R134			RK73GB2A471J	CHIP R	470 J 1/10W	R242			RK73EB2E680J	CHIP R	68 J 1/4W
R143,144			RK73GB2A332J	CHIP R	3.3K J 1/10W	R243			RK73GB2A103J	CHIP R	10K J 1/10W
R145			RK73GB2A101J	CHIP R	100 J 1/10W	R244			RK73GB2A560J	CHIP R	56 J 1/10W
R146			RK73GB2A474J	CHIP R	470K J 1/10W	R245			RK73FB2B330J	CHIP R	33 J 1/8W
R147			RK73GB2A2R2J	CHIP R	2.2 J 1/10W	R246			RK73EB2E680J	CHIP R	68 J 1/4W
R148			RK73GB2A223J	CHIP R	22K J 1/10W	R247			RK73GB2A103J	CHIP R	10K J 1/10W
R149			RK73GB2A221J	CHIP R	220 J 1/10W	R248			RK73GB2A560J	CHIP R	56 J 1/10W
R150			RK73GB2A153J	CHIP R	15K J 1/10W	R249			RK73FB2B330J	CHIP R	33 J 1/8W
R152			RK73GB2A472J	CHIP R	4.7K J 1/10W	R250			RK73EB2E680J	CHIP R	68 J 1/4W
R153			RK73GB2A103J	CHIP R	10K J 1/10W	R251			RK73GB2A103J	CHIP R	10K J 1/10W
R154,155			RK73GB2A101J	CHIP R	100 J 1/10W	R252			RK73GB2A560J	CHIP R	56 J 1/10W
R156			RK73GB2A152J	CHIP R	1.5K J 1/10W	R253			RK73FB2B330J	CHIP R	33 J 1/8W
R157			RK73GB2A102J	CHIP R	1.0K J 1/10W	R254			RK73EB2E680J	CHIP R	68 J 1/4W
R162			RK73GB2A183J	CHIP R	18K J 1/10W	R255			RK73GB2A103J	CHIP R	10K J 1/10W
R165			RK73GB2A183J	CHIP R	18K J 1/10W	R256			RK73GB2A560J	CHIP R	56 J 1/10W
R166,167			RK73GB2A103J	CHIP R	10K J 1/10W	R257			RK73FB2B330J	CHIP R	33 J 1/8W
R168-170			RK73GB2A152J	CHIP R	1.5K J 1/10W	R258			RK73EB2E680J	CHIP R	68 J 1/4W
R171-173			RK73GB2A101J	CHIP R	100 J 1/10W	R259			RK73GB2A103J	CHIP R	10K J 1/10W
R175			RK73GB2A153J	CHIP R	15K J 1/10W	R260			RK73GB2A560J	CHIP R	56 J 1/10W
R201			RK73EB2E101J	CHIP R	100 J 1/4W	R261			RK73FB2B330J	CHIP R	33 J 1/8W
R202			RK73EB2E470J	CHIP R	47 J 1/4W	R262			RK73EB2E680J	CHIP R	68 J 1/4W
R203			RK73EB2E560J	CHIP R	56 J 1/4W	R263			RK73GB2A103J	CHIP R	10K J 1/10W
R204			RK73EB2E151J	CHIP R	150 J 1/4W	R264			RK73GB2A560J	CHIP R	56 J 1/10W
R205			RK73GB2A101J	CHIP R	100 J 1/10W	R265			RK73FB2B330J	CHIP R	33 J 1/8W
R206			RK73GB2A222J	CHIP R	2.2K J 1/10W	R266			RK73EB2E680J	CHIP R	68 J 1/4W
R207			RK73EB2E181J	CHIP R	180 J 1/4W	R267			RK73GB2A682J	CHIP R	6.8K J 1/10W
R208			RK73EB2E151J	CHIP R	150 J 1/4W	R268			RK73EB2E121J	CHIP R	120 J 1/4W
R209			RK73GB2A472J	CHIP R	4.7K J 1/10W	R269			RK73EB2E101J	CHIP R	100 J 1/4W
						R270			RK73GB2A562J	CHIP R	5.6K J 1/10W

## PARTS LIST

TX-RX UNIT (X57-827X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R271,272			RK73EB2E221J	CHIP R 220 J 1/4W		R447			RK73GB2A220J	CHIP R 22 J 1/10W	
R273			RK73GB2A682J	CHIP R 6.8K J 1/10W		R448			RK73GB2A100J	CHIP R 10 J 1/10W	
R274			RK73GB2A122J	CHIP R 1.2K J 1/10W		R449			RK73GB2A220J	CHIP R 22 J 1/10W	
R275			RK73GB2A471J	CHIP R 470 J 1/10W		R450			RK73GB2A331J	CHIP R 330 J 1/10W	
R276			RK73GB2A821J	CHIP R 820 J 1/10W		R451			RK73GB2A180J	CHIP R 18 J 1/10W	
R277			RK73GB2A100J	CHIP R 10 J 1/10W		R452			RK73GB2A331J	CHIP R 330 J 1/10W	
R278			RK73FB2B390J	CHIP R 39 J 1/8W		R453			RK73GB2A103J	CHIP R 10K J 1/10W	
R279			RK73GB2A151J	CHIP R 150 J 1/10W		R471,472			RK73GB2A331J	CHIP R 330 J 1/10W	
R280			RK73GB2A820J	CHIP R 82 J 1/10W		R474			RK73GB2A000J	CHIP R 0 J 1/10W	
R281			RK73GB2A181J	CHIP R 180 J 1/10W		R481			RK73FB2B471J	CHIP R 470 J 1/8W	
R282,283			RK73FB2B271J	CHIP R 270 J 1/8W		R482			RK73GB2A392J	CHIP R 3.9K J 1/10W	
R351			RK73FB2B271J	CHIP R 270 J 1/8W		R483			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R352			RK73GB2A472J	CHIP R 4.7K J 1/10W		R484			RK73GB2A122J	CHIP R 1.2K J 1/10W	
R354,355			RK73EB2E331J	CHIP R 330 J 1/4W		R485			RK73GB2A150J	CHIP R 15 J 1/10W	
R358,359			RK73GB2A100J	CHIP R 10 J 1/10W		R486			RK73GB2A8R2J	CHIP R 8.2 J 1/10W	
R360			RK73GB2A271J	CHIP R 270 J 1/10W		R487			RK73GB2A101J	CHIP R 100 J 1/10W	
R362,363			RK73GB2A100J	CHIP R 10 J 1/10W		R488			RK73EB2E221J	CHIP R 220 J 1/4W	
R364			RK73GB2A332J	CHIP R 3.3K J 1/10W		R489			RK73GB2A221J	CHIP R 220 J 1/10W	
R365			RK73GB2A182J	CHIP R 1.8K J 1/10W		R490			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R366			RK73GB2A100J	CHIP R 10 J 1/10W		R491			RK73GB2A103J	CHIP R 10K J 1/10W	
R367			RK73GB2A821J	CHIP R 820 J 1/10W		R492			RK73GB2A331J	CHIP R 330 J 1/10W	
R368,369			RK73GB2A561J	CHIP R 560 J 1/10W		R493			RK73GB2A391J	CHIP R 390 J 1/10W	
R370			RK73GB2A151J	CHIP R 150 J 1/10W		R494			RK73GB2A681J	CHIP R 680 J 1/10W	
R371			RK73GB2A681J	CHIP R 680 J 1/10W		R495			RK73GB2A101J	CHIP R 100 J 1/10W	
R372,373			RK73GB2A8R2J	CHIP R 8.2 J 1/10W		R496			RK73GB2A681J	CHIP R 680 J 1/10W	
R374			RK73FB2B100J	CHIP R 10 J 1/8W		R497			RK73GB2A391J	CHIP R 390 J 1/10W	
R377			RK73GB2A000J	CHIP R 0 J 1/10W		R498			RK73GB2A101J	CHIP R 100 J 1/10W	
R379			RK73GB2A103J	CHIP R 10K J 1/10W		R499			RK73GB2A103J	CHIP R 10K J 1/10W	
R380			RK73GB2A470J	CHIP R 47 J 1/10W		R500			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R401			RK73FB2B271J	CHIP R 270 J 1/8W		R501			RK73GB2A000J	CHIP R 0 J 1/10W	
R403,404			RK73GB2A681J	CHIP R 680 J 1/10W		R502			RK73GB2A101J	CHIP R 100 J 1/10W	
R405,406			RK73GB2A100J	CHIP R 10 J 1/10W		R503			RK73GB2A000J	CHIP R 0 J 1/10W	
R407			RK73GB2A271J	CHIP R 270 J 1/10W		R504			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R408-410			RK73GB2A100J	CHIP R 10 J 1/10W		R505			RK73GB2A101J	CHIP R 100 J 1/10W	
R412			RK73EB2E561J	CHIP R 560 J 1/4W		R506			RK73GB2A103J	CHIP R 10K J 1/10W	
R413			RK73GB2A121J	CHIP R 120 J 1/10W		R507			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R414			RK73GB2A560J	CHIP R 56 J 1/10W		R508			RK73GB2A000J	CHIP R 0 J 1/10W	
R415			RK73GB2A121J	CHIP R 120 J 1/10W		R509			RK73GB2A101J	CHIP R 100 J 1/10W	
R416			RK73GB2A471J	CHIP R 470 J 1/10W		R510			RK73GB2A000J	CHIP R 0 J 1/10W	
R417,418			RK73GB2A151J	CHIP R 150 J 1/10W		R511			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R419,420			RK73GB2A8R2J	CHIP R 8.2 J 1/10W		R512			RK73FB2B101J	CHIP R 100 J 1/8W	
R421			RK73FB2B180J	CHIP R 18 J 1/8W		R513			RK73GB2A103J	CHIP R 10K J 1/10W	
R422			RK73GB2A102J	CHIP R 1.0K J 1/10W		R514			RK73GB2A561J	CHIP R 560 J 1/10W	
R423			RK73GB2A470J	CHIP R 47 J 1/10W		R515			RK73GB2A220J	CHIP R 22 J 1/10W	
R424,425			RK73GB2A471J	CHIP R 470 J 1/10W		R516			RK73GB2A101J	CHIP R 100 J 1/10W	
R428,429			RK73GB2A331J	CHIP R 330 J 1/10W		R517			RK73GB2A220J	CHIP R 22 J 1/10W	
R430			RK73FB2B220J	CHIP R 22 J 1/8W		R518			RK73GB2A561J	CHIP R 560 J 1/10W	
R431			RK73GB2A101J	CHIP R 100 J 1/10W		R519			RK73FB2B101J	CHIP R 100 J 1/8W	
R432			RK73GB2A222J	CHIP R 2.2K J 1/10W		R520			RK73GB2A103J	CHIP R 10K J 1/10W	
R433			RK73GB2A681J	CHIP R 680 J 1/10W		R522			RK73GB2A000J	CHIP R 0 J 1/10W	
R437			RK73GB2A471J	CHIP R 470 J 1/10W		R523			RK73GB2A101J	CHIP R 100 J 1/10W	
R438			RK73GB2A331J	CHIP R 330 J 1/10W		R524			RK73GB2A000J	CHIP R 0 J 1/10W	
R439			RK73GB2A271J	CHIP R 270 J 1/10W		R526			RK73FB2B101J	CHIP R 100 J 1/8W	
R440			RK73GB2A330J	CHIP R 33 J 1/10W		R527			RK73GB2A103J	CHIP R 10K J 1/10W	
R441			RK73GB2A221J	CHIP R 220 J 1/10W		R528			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R442			RK73FB2B331J	CHIP R 330 J 1/8W		R529			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R443			RK73GB2A330J	CHIP R 33 J 1/10W		R530			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R444			RK73GB2A124J	CHIP R 120K J 1/10W		R531			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R445			RK73GB2A000J	CHIP R 0 J 1/10W		R532			RK73FB2B331J	CHIP R 330 J 1/8W	
R446			RK73GB2A102J	CHIP R 1.0K J 1/10W		R533			RK73GB2A104J	CHIP R 100K J 1/10W	

## PARTS LIST

### TX-RX UNIT (X57-827X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R535			RK73GB2A104J	CHIP R 100K J 1/10W		R656			RK73GB2A103J	CHIP R 10K J 1/10W	
R536			RK73GB2A220J	CHIP R 22 J 1/10W		R657			RK73GB2A682J	CHIP R 6.8K J 1/10W	
R537			RK73GB2A103J	CHIP R 10K J 1/10W		R658,659			RK73GB2A223J	CHIP R 22K J 1/10W	
R538			RK73GB2A471J	CHIP R 470 J 1/10W		R660			RK73GB2A183J	CHIP R 18K J 1/10W	
R539			RK73GB2A470J	CHIP R 47 J 1/10W		R661			RK73GB2A273J	CHIP R 27K J 1/10W	
R540,541			RK73GB2A103J	CHIP R 10K J 1/10W		R663-666			RK73GB2A473J	CHIP R 47K J 1/10W	
R542			RK73GB2A682J	CHIP R 6.8K J 1/10W		R667			RK73GB2A103J	CHIP R 10K J 1/10W	
R543			RK73GB2A122J	CHIP R 1.2K J 1/10W		R668			RK73GB2A471J	CHIP R 470 J 1/10W	
R546			RK73GB2A393J	CHIP R 39K J 1/10W		R675			RK73GB2A000J	CHIP R 0 J 1/10W	
R547			RK73GB2A682J	CHIP R 6.8K J 1/10W		R701			RK73GB2A680J	CHIP R 68 J 1/10W	
R549			RK73GB2A151J	CHIP R 150 J 1/10W		R702			RK73GB2A470J	CHIP R 47 J 1/10W	
R550			RK73GB2A390J	CHIP R 39 J 1/10W		R703			RK73GB2A471J	CHIP R 470 J 1/10W	
R551			RK73GB2A151J	CHIP R 150 J 1/10W		R704			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R552			RK73GB2A330J	CHIP R 33 J 1/10W		R705			RK73GB2A820J	CHIP R 82 J 1/10W	
R553			RK73GB2A120J	CHIP R 12 J 1/10W		R706,707			RK73GB2A223J	CHIP R 22K J 1/10W	
R554			RK73GB2A561J	CHIP R 560 J 1/10W		R708			RK73GB2A392J	CHIP R 3.9K J 1/10W	
R555			RK73GB2A151J	CHIP R 150 J 1/10W		R709			RK73GB2A000J	CHIP R 0 J 1/10W	
R556			RK73GB2A821J	CHIP R 820 J 1/10W		R710			RK73GB2A182J	CHIP R 1.8K J 1/10W	
R557,558			RK73GB2A8R2J	CHIP R 8.2 J 1/10W		R711,712			RK73GB2A471J	CHIP R 470 J 1/10W	
R559			RK73GB2A120J	CHIP R 12 J 1/10W		R713			RK73GB2A681J	CHIP R 680 J 1/10W	
R561			RK73GB2A101J	CHIP R 100 J 1/10W		R714			RK73GB2A101J	CHIP R 100 J 1/10W	
R562			RK73GB2A331J	CHIP R 330 J 1/10W		R715			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R563			RK73GB2A151J	CHIP R 150 J 1/10W		R716			RK73GB2A224J	CHIP R 220K J 1/10W	
R564			RK73GB2A471J	CHIP R 470 J 1/10W		R717			RK73GB2A331J	CHIP R 330 J 1/10W	
R601			RK73GB2A471J	CHIP R 470 J 1/10W		R718			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R602,603			RK73GB2A221J	CHIP R 220 J 1/10W		R719,720			RK73GB2A101J	CHIP R 100 J 1/10W	
R604			RK73GB2A472J	CHIP R 4.7K J 1/10W		R721			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R605			RK73GB2A471J	CHIP R 470 J 1/10W		R722			RK73GB2A330J	CHIP R 33 J 1/10W	
R607			RK73GB2A000J	CHIP R 0 J 1/10W		R723			RK73GB2A000J	CHIP R 0 J 1/10W	
R609			RK73GB2A103J	CHIP R 10K J 1/10W		R724			RK73GB2A330J	CHIP R 33 J 1/10W	
R610			RK73GB2A222J	CHIP R 2.2K J 1/10W		R725			RK73GB2A103J	CHIP R 10K J 1/10W	
R611			RK73GB2A152J	CHIP R 1.5K J 1/10W		R726			RK73GB2A184J	CHIP R 180K J 1/10W	
R612			RK73GB2A470J	CHIP R 47 J 1/10W		R727			RK73GB2A563J	CHIP R 56K J 1/10W	
R613			RK73GB2A4R7J	CHIP R 4.7 J 1/10W		R728			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R614			RK73GB2A270J	CHIP R 27 J 1/10W		R729			RK73GB2A123J	CHIP R 12K J 1/10W	
R616			RK73GB2A000J	CHIP R 0 J 1/10W		R730			RK73GB2A471J	CHIP R 470 J 1/10W	
R618			RK73GB2A223J	CHIP R 22K J 1/10W		R731			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R619			RK73GB2A000J	CHIP R 0 J 1/10W		R732			RK73GB2A151J	CHIP R 150 J 1/10W	
R621			RK73GB2A223J	CHIP R 22K J 1/10W		R733			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R622			RK73GB2A472J	CHIP R 4.7K J 1/10W		R736			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R623			RK73GB2A563J	CHIP R 56K J 1/10W		R737			RK73GB2A470J	CHIP R 47 J 1/10W	
R625,626			RK73GB2A471J	CHIP R 470 J 1/10W		R738			RK73GB2A331J	CHIP R 330 J 1/10W	
R627			RK73GB2A682J	CHIP R 6.8K J 1/10W		R741			RK73GB2A100J	CHIP R 10 J 1/10W	
R629			RK73GB2A334J	CHIP R 330K J 1/10W		R742			RK73GB2A331J	CHIP R 330 J 1/10W	
R630			RK73GB2A223J	CHIP R 22K J 1/10W		R744			RK73GB2A390J	CHIP R 39 J 1/10W	
R631			RK73GB2A122J	CHIP R 1.2K J 1/10W		R745			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R632			RK73GB2A273J	CHIP R 27K J 1/10W		R746			RK73GB2A332J	CHIP R 3.3K J 1/10W	
R633			RK73GB2A102J	CHIP R 1.0K J 1/10W		R747			RK73GB2A182J	CHIP R 1.8K J 1/10W	
R634			RK73GB2A104J	CHIP R 100K J 1/10W		R748			RK73GB2A471J	CHIP R 470 J 1/10W	
R635			RK73GB2A684J	CHIP R 680K J 1/10W		R749			RK73GB2A103J	CHIP R 10K J 1/10W	
R636			RK73GB2A103J	CHIP R 10K J 1/10W		R751			RK73GB2A331J	CHIP R 330 J 1/10W	
R637,638			RK73GB2A152J	CHIP R 1.5K J 1/10W		R752			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R640,641			RK73GB2A103J	CHIP R 10K J 1/10W		R753			RK73GB2A824J	CHIP R 820K J 1/10W	
R644,645			RK73GB2A000J	CHIP R 0 J 1/10W		R754			RK73GB2A470J	CHIP R 47 J 1/10W	
R648,649			RK73GB2A103J	CHIP R 10K J 1/10W		R755			RK73GB2A820J	CHIP R 82 J 1/10W	
R651			RK73GB2A103J	CHIP R 10K J 1/10W		R756			RK73GB2A101J	CHIP R 100 J 1/10W	
R652			RK73GB2A684J	CHIP R 680K J 1/10W		R757			RK73GB2A470J	CHIP R 47 J 1/10W	
R653			RK73GB2A473J	CHIP R 47K J 1/10W		R758			RK73EB2E820J	CHIP R 82 J 1/4W	
R654			RK73GB2A273J	CHIP R 27K J 1/10W		R759			RK73GB2A681J	CHIP R 680 J 1/10W	
R655			RK73GB2A223J	CHIP R 22K J 1/10W		R760			RK73GB2A102J	CHIP R 1.0K J 1/10W	



## PARTS LIST

TX-RX UNIT (X57-827X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation	Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R761			RK73GB2A471J	CHIP R 470 J 1/10W		R835			RK73GB2A153J	CHIP R 15K J 1/10W	
R762			RK73GB2A000J	CHIP R 0 J 1/10W		R836			RK73GB2A474J	CHIP R 470K J 1/10W	
R764			RK73GB2A000J	CHIP R 0 J 1/10W		R837			RK73GB2A100J	CHIP R 10 J 1/10W	
R765,766			RK73GB2A100J	CHIP R 10 J 1/10W		R838			RK73GB2A104J	CHIP R 100K J 1/10W	
R767			RK73GB2A471J	CHIP R 470 J 1/10W		R839			RK73GB2A333J	CHIP R 33K J 1/10W	
R768			RK73GB2A102J	CHIP R 1.0K J 1/10W		R840			RK73GB2A104J	CHIP R 100K J 1/10W	
R769,770			RK73GB2A471J	CHIP R 470 J 1/10W		R841			RK73GB2A123J	CHIP R 12K J 1/10W	
R771			RK73GB2A151J	CHIP R 150 J 1/10W		R842			RK73GB2A333J	CHIP R 33K J 1/10W	
R772			RK73FB2B473J	CHIP R 47K J 1/8W		R843			RK73GB2A183J	CHIP R 18K J 1/10W	
R773			RK73FB2B821J	CHIP R 820 J 1/8W		R844			RK73GB2A334J	CHIP R 330K J 1/10W	
R774-776			RK73GB2A103J	CHIP R 10K J 1/10W		R851			RK73GB2A333J	CHIP R 33K J 1/10W	
R777			RK73FB2B821J	CHIP R 820 J 1/8W		R852			RK73GB2A821J	CHIP R 820 J 1/10W	
R778			RK73GB2A6R8J	CHIP R 6.8 J 1/10W		R853			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R779			RK73GB2A472J	CHIP R 4.7K J 1/10W		R854			RK73GB2A393J	CHIP R 39K J 1/10W	
R780			RK73GB2A471J	CHIP R 470 J 1/10W		R855			RK73GB2A473J	CHIP R 47K J 1/10W	
R781			RK73GB2A000J	CHIP R 0 J 1/10W		R856			RK73GB2A000J	CHIP R 0 J 1/10W	
R782			RK73GB2A101J	CHIP R 100 J 1/10W		R858			RK73GB2A101J	CHIP R 100 J 1/10W	
R783			RK73GB2A331J	CHIP R 330 J 1/10W		R859			RK73GB2A000J	CHIP R 0 J 1/10W	
R785			RK73GB2A000J	CHIP R 0 J 1/10W		R860			RK73GB2A223J	CHIP R 22K J 1/10W	
R787			RK73FB2B221J	CHIP R 220 J 1/8W		R861			RK73GB2A103J	CHIP R 10K J 1/10W	
R788			RK73GB2A000J	CHIP R 0 J 1/10W		R862			RK73GB2A224J	CHIP R 220K J 1/10W	
R789			RK73GB2A102J	CHIP R 1.0K J 1/10W		R863			RK73GB2A104J	CHIP R 100K J 1/10W	
R790			RK73GB2A470J	CHIP R 47 J 1/10W		R864			RK73GB2A183J	CHIP R 18K J 1/10W	
R791			RK73GB2A000J	CHIP R 0 J 1/10W		R865			RK73GB2A394J	CHIP R 390K J 1/10W	
R792			RK73GB2A470J	CHIP R 47 J 1/10W		R866,867			RK73GB2A184J	CHIP R 180K J 1/10W	
R793			RK73GB2A000J	CHIP R 0 J 1/10W		R868			RK73GB2A394J	CHIP R 390K J 1/10W	
R794			RK73GB2A562J	CHIP R 5.6K J 1/10W		R869			RK73GB2A101J	CHIP R 100 J 1/10W	
R795			RK73GB2A473J	CHIP R 47K J 1/10W		R870			RK73GB2A000J	CHIP R 0 J 1/10W	
R796			RK73GB2A184J	CHIP R 180K J 1/10W		R871			RK73GB2A103J	CHIP R 10K J 1/10W	
R797			RK73GB2A103J	CHIP R 10K J 1/10W		R882			RK73GB2A101J	CHIP R 100 J 1/10W	
R798			RK73GB2A472J	CHIP R 4.7K J 1/10W		R883			RK73GB2A154J	CHIP R 150K J 1/10W	
R799			RK73GB2A471J	CHIP R 470 J 1/10W		R884			RK73GB2A101J	CHIP R 100 J 1/10W	
R800			RK73GB2A103J	CHIP R 10K J 1/10W		R885			RK73GB2A471J	CHIP R 470 J 1/10W	
R801			RK73GB2A224J	CHIP R 220K J 1/10W		R889			RK73GB2A104J	CHIP R 100K J 1/10W	
R802			RK73GB2A104J	CHIP R 100K J 1/10W		R890			RK73GB2A221J	CHIP R 220 J 1/10W	
R803			RK73GB2A472J	CHIP R 4.7K J 1/10W		R891,892			RK73GB2A101J	CHIP R 100 J 1/10W	
R804			RK73GB2A103J	CHIP R 10K J 1/10W		R893			RK73GB2A221J	CHIP R 220 J 1/10W	
R805			RK73GB2A273J	CHIP R 27K J 1/10W		R894			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R806			RK73GB2A104J	CHIP R 100K J 1/10W		R895			RK73GB2A182J	CHIP R 1.8K J 1/10W	
R807			RK73GB2A563J	CHIP R 56K J 1/10W		R896			RK73GB2A101J	CHIP R 100 J 1/10W	
R808			RK73GB2A333J	CHIP R 33K J 1/10W		R897			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R809,810			RK73GB2A104J	CHIP R 100K J 1/10W		R898,899			RK73GB2A473J	CHIP R 47K J 1/10W	
R811,812			RK73GB2A471J	CHIP R 470 J 1/10W		R902			RK73GB2A220J	CHIP R 22 J 1/10W	
R813,814			RK73GB2A103J	CHIP R 10K J 1/10W		R903			RK73GB2A221J	CHIP R 220 J 1/10W	
R815,816			RK73GB2A473J	CHIP R 47K J 1/10W		R904			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R817			RK73GB2A104J	CHIP R 100K J 1/10W		R905			RK73GB2A222J	CHIP R 2.2K J 1/10W	
R818			RK73GB2A124J	CHIP R 120K J 1/10W		R906			RK73GB2A101J	CHIP R 100 J 1/10W	
R819			RK73GB2A102J	CHIP R 1.0K J 1/10W		R907			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R820,821			RK73GB2A331J	CHIP R 330 J 1/10W		R908			RK73GB2A223J	CHIP R 22K J 1/10W	
R822			RK73GB2A105J	CHIP R 1.0M J 1/10W		R909,910			RK73GB2A473J	CHIP R 47K J 1/10W	
R823			RK73GB2A471J	CHIP R 470 J 1/10W		R911			RK73GB2A683J	CHIP R 68K J 1/10W	
R824			RK73GB2A333J	CHIP R 33K J 1/10W		R912			RK73GB2A103J	CHIP R 10K J 1/10W	
R825			RK73GB2A100J	CHIP R 10 J 1/10W		R913			RK73GB2A223J	CHIP R 22K J 1/10W	
R826,827			RK73GB2A104J	CHIP R 100K J 1/10W		R914			RK73GB2A270J	CHIP R 27 J 1/10W	
R828			RK73GB2A224J	CHIP R 220K J 1/10W		R915			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R829			RK73GB2A101J	CHIP R 100 J 1/10W		R916			RK73GB2A473J	CHIP R 47K J 1/10W	
R830			RK73GB2A100J	CHIP R 10 J 1/10W		R917			RK73GB2A152J	CHIP R 1.5K J 1/10W	
R831			RK73GB2A123J	CHIP R 12K J 1/10W		R918			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R832			RK73GB2A103J	CHIP R 10K J 1/10W		R919			RK73GB2A153J	CHIP R 15K J 1/10W	
R833,834			RK73GB2A104J	CHIP R 100K J 1/10W		R920			RK73GB2A221J	CHIP R 220 J 1/10W	

## PARTS LIST

### TX-RX UNIT (X57-827X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
R921			RK73GB2A103J	CHIP R 10K J 1/10W		D601,602			HSM88ASR-E	DIODE	
R922			RK73GB2A333J	CHIP R 33K J 1/10W		D603,604			1SS226-F	DIODE	
R923			RK73GB2A563J	CHIP R 56K J 1/10W		D605-607			MC2858-T111	DIODE	
R924			RK73GB2A102J	CHIP R 1.0K J 1/10W		D701			MC2858-T111	DIODE	
R925			RK73GB2A271J	CHIP R 270 J 1/10W		D702			DA2S101	DIODE	
R926			RK73GB2A681J	CHIP R 680 J 1/10W		D703			RN731V	DIODE	
R928			RK73GB2A000J	CHIP R 0 J 1/10W		D704			DA204U	DIODE	
R951,952			RK73GB2A222J	CHIP R 2.2K J 1/10W		D705			RN731V	DIODE	
R954-957			RK73GB2A472J	CHIP R 4.7K J 1/10W		D706			HVC131	DIODE	
R959-962			RK73GB2A472J	CHIP R 4.7K J 1/10W		D707			RN731V	DIODE	
R963,964			RK73GB2A102J	CHIP R 1.0K J 1/10W		D708-710			HVC131	DIODE	
R965			RK73GB2A473J	CHIP R 47K J 1/10W		D711,712			EDZ18B	ZENER DIODE	
R966			RK73GB2A103J	CHIP R 10K J 1/10W		D713,714			RN142S	DIODE	
R967			RK73GB2A102J	CHIP R 1.0K J 1/10W		D715-718			HVC131	DIODE	
R968			RK73GB2A473J	CHIP R 47K J 1/10W		D801			DA2S101	DIODE	
R969,970			RK73GB2A102J	CHIP R 1.0K J 1/10W		D802			DZ2J120(M)	ZENER DIODE	
R971			RK73GB2A473J	CHIP R 47K J 1/10W		D803			DA2S101	DIODE	
R972,973			RK73GB2A103J	CHIP R 10K J 1/10W		D804			DZ2J033(M)	ZENER DIODE	
R974,975			RK73GB2A682J	CHIP R 6.8K J 1/10W		D805			DA2S101	DIODE	
R977,978			RK73GB2A472J	CHIP R 4.7K J 1/10W		D808,809			1SS388F	DIODE	
R991			RK73GB2A000J	CHIP R 0 J 1/10W	K	D881			RB706F-40	DIODE	
R992			RK73GB2A000J	CHIP R 0 J 1/10W	E	D882,883			1SS388F	DIODE	
VR401			R32-0346-05	SEMI FIXED VARIABLE RESISTOR(4.7K)		IC51-54			TC74HC4094AFF	MOS-IC	
K101			S51-1420-05	RELAY		IC55			M62353AGPDF5J	MOS-IC	
K201,202			S76-0459-05	RELAY		IC101			BA2904FVM	MOS-IC	
D103,104			1SS226-F	DIODE		IC481			BA2904FVM	MOS-IC	
D105			EDZ18B	ZENER DIODE		IC601			BA4580RFVM	BI-POLAR IC	
D106,107			1SS388F	DIODE		IC602			NJM2591V	BI-POLAR IC	
D110			DA3S101F	DIODE		IC603			NJM2732V	BI-POLAR IC	
D111			EDZ18B	ZENER DIODE		IC604			TC4W53FU-F	MOS-IC	
D112			EDZ4.3B	ZENER DIODE		IC701,702			TA4107F-F	MOS-IC	
D113			DA2S101	DIODE		IC801-804			BA2904FVM	MOS-IC	
D114			DZ2J062(M)	ZENER DIODE		Q102			LTC043ZEBFS8	TRANSISTOR	
D115			DA2S101	DIODE		Q103			2SK1824-A	FET	
D116			MC2858-T111	DIODE		Q104			2SC4617(R)	TRANSISTOR	
D117			DZ2J062(M)	ZENER DIODE		Q105			2SK1824-A	FET	
D118,119			DA2S101	DIODE		Q106			2SC4617(R)	TRANSISTOR	
D120,121			DZ2J062(M)	ZENER DIODE		Q107			LTC043ZEBFS8	TRANSISTOR	
D171,172			DA2S101	DIODE		Q108			2SK1824-A	FET	
D200			EZJZ1V500AA	VARISTOR		Q109			LTC014EEBFS8	TRANSISTOR	
D201,202			MC2858-T111	DIODE		Q110			LTC043ZEBFS8	TRANSISTOR	
D204,205			RLS245	DIODE		Q111			2SB1188(Q,R)	TRANSISTOR	
D207,208			HVC131	DIODE		Q171			2SK1824-A	FET	
D209			MC2858-T111	DIODE		Q172			LTC043ZEBFS8	TRANSISTOR	
D210-240			HVC131	DIODE		Q201,202			RT5N234C-T112	TRANSISTOR	
D251,252			L8103R	DIODE		Q203			2SC6046-T112	TRANSISTOR	
D351			HVC131	DIODE		Q204			LSCR523EBFS8	TRANSISTOR	
D353,354			HVC131	DIODE		Q205-218			LTC043ZEBFS8	TRANSISTOR	
D401			HVC131	DIODE		Q219			2SC5551AF	TRANSISTOR	
D403,404			HVC131	DIODE		Q220			LTC043ZEBFS8	TRANSISTOR	
D405,406			HSM88ASR-E	DIODE		Q351-354			2SK1740-4	FET	
D407			HVC131	DIODE		Q355,356			2SC5551AF	TRANSISTOR	
D408			MC2858-T111	DIODE		Q358			LTC014EEBFS8	TRANSISTOR	
D409-411			HVC131	DIODE		Q401-404			2SK1740-4	FET	
D481-484			HVC131	DIODE		Q405,406			2SC5551AF	TRANSISTOR	
D487-496			HVC131	DIODE		Q408			2SC5551AF	TRANSISTOR	
D501			L204BBB	DIODE		Q409			LTC014EEBFS8	TRANSISTOR	
D502			MC2858-T111	DIODE		Q410			2SC3356-A	TRANSISTOR	
D503-506			HVC131	DIODE		Q481			2SC5551AF	TRANSISTOR	
						Q482,483			LTC043ZEBFS8	TRANSISTOR	



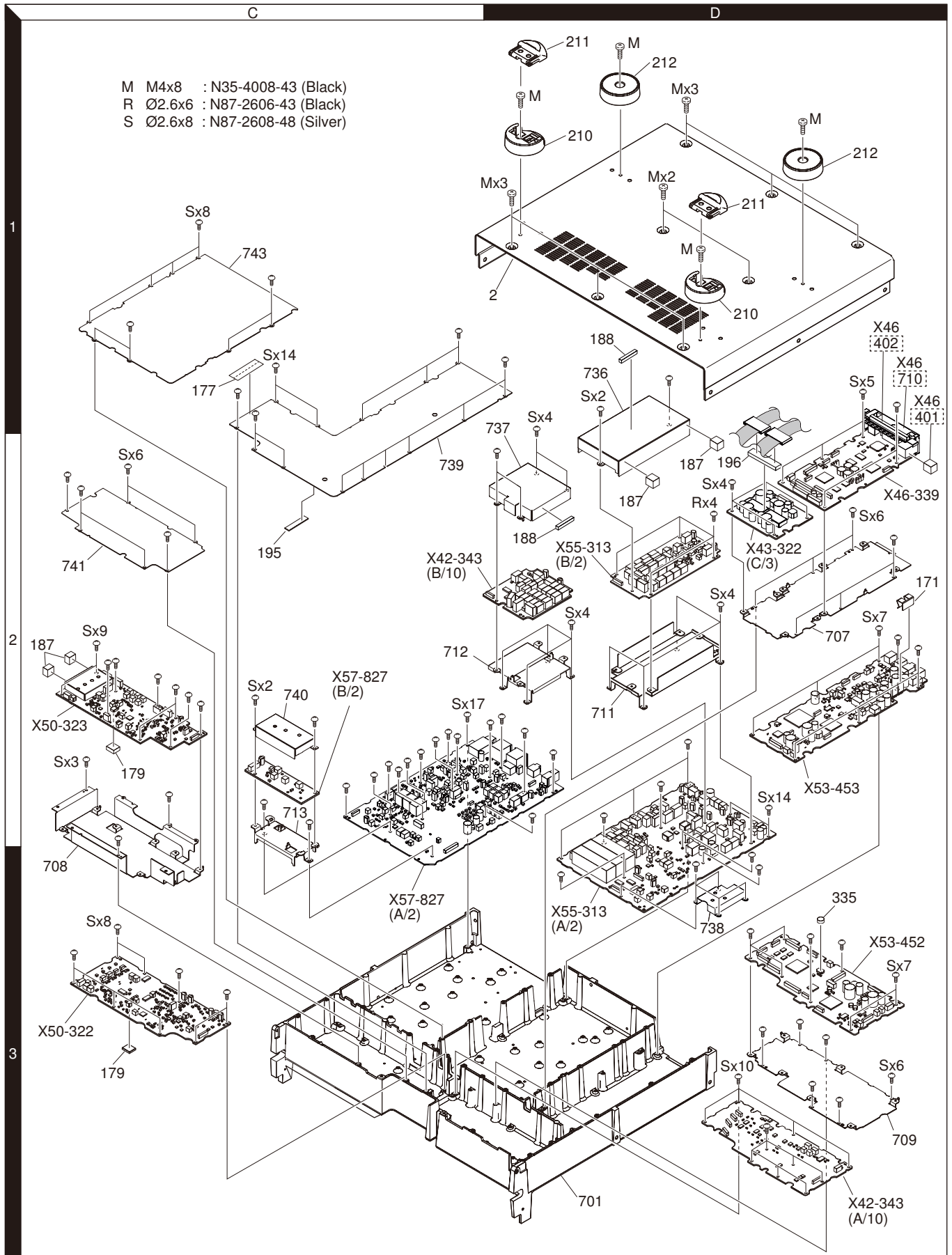
## PARTS LIST

TX-RX UNIT (X57-827X-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Ref. No.	Address	New parts	Parts No.	Description	Destination
Q484-486			LSCR523EBFS8	TRANSISTOR							
Q487-490			LTC043ZEBFS8	TRANSISTOR							
Q491			3SK293-F	FET							
Q492,493			LTC043ZEBFS8	TRANSISTOR							
Q494,495			2SC5551AF	TRANSISTOR							
Q601			2SC4725	TRANSISTOR							
Q602,603			2SK1830F	FET							
Q604			LTC043ZEBFS8	TRANSISTOR							
Q701			LTC043ZEBFS8	TRANSISTOR							
Q702			2SC4725	TRANSISTOR							
Q703			3SK293-F	FET							
Q704			2SK1830F	FET							
Q705			2SC3356-A	TRANSISTOR							
Q706			3SK293-F	FET							
Q707			NESG260234	TRANSISTOR							
Q708,709			SSM3K15AMFV	FET							
Q710			RT5P431C-T112	TRANSISTOR							
Q801			SSM3K15AMFV	FET							
Q802,803			2SC4617(R)	TRANSISTOR							
Q806,807			LTC043ZEBFS8	TRANSISTOR							
Q881-884			2SC4226-A(R24)	TRANSISTOR							
Q885			LSCR523EBFS8	TRANSISTOR							
Q886,887			2SC4226-A(R24)	TRANSISTOR							
Q888			LSCR523EBFS8	TRANSISTOR							
Q889			2SK1824-A	FET							
Q890			2SC4226-A(R24)	TRANSISTOR							
Q891,892			LSCR523EBFS8	TRANSISTOR							
Q893			2SC4226-A(R24)	TRANSISTOR							
Q894			LTA014EEBFS8	TRANSISTOR							
Q951			2SB1188(Q,R)	TRANSISTOR							
Q952,953			LTC043ZEBFS8	TRANSISTOR							
Q954			2SB1694	TRANSISTOR							
Q955			SSM3K15AMFV	FET							
Q956,957			2SB1694	TRANSISTOR							
Q958			LTC043ZEBFS8	TRANSISTOR							
Q959			SSM3K15AMFV	FET							
Q960			2SB1694	TRANSISTOR							
Q961			2SB1188(Q,R)	TRANSISTOR							
Q962			LTC043ZEBFS8	TRANSISTOR							
Q963			2SB1694	TRANSISTOR							
Q964			SSM3K15AMFV	FET							
Q965			2SB1188(Q,R)	TRANSISTOR							
Q966,967			LTC043ZEBFS8	TRANSISTOR							
Q968			SSM3K15AMFV	FET							
Q969,970			RT5P431C-T112	TRANSISTOR							
Q971			SSM3K15AMFV	FET							
Q972			2SB1694	TRANSISTOR							
Q973			LTC043ZEBFS8	TRANSISTOR							
Q974			2SB1694	TRANSISTOR							
Q975			2SK1830F	FET							
TH401			157-101-65001	THERMISTOR							
TH481,482			157-101-65001	THERMISTOR							
TH601,602			NCP18WB473J0S	THERMISTOR							
TH701			157-302-65801	THERMISTOR							
TH702,703			157-102-65001	THERMISTOR							



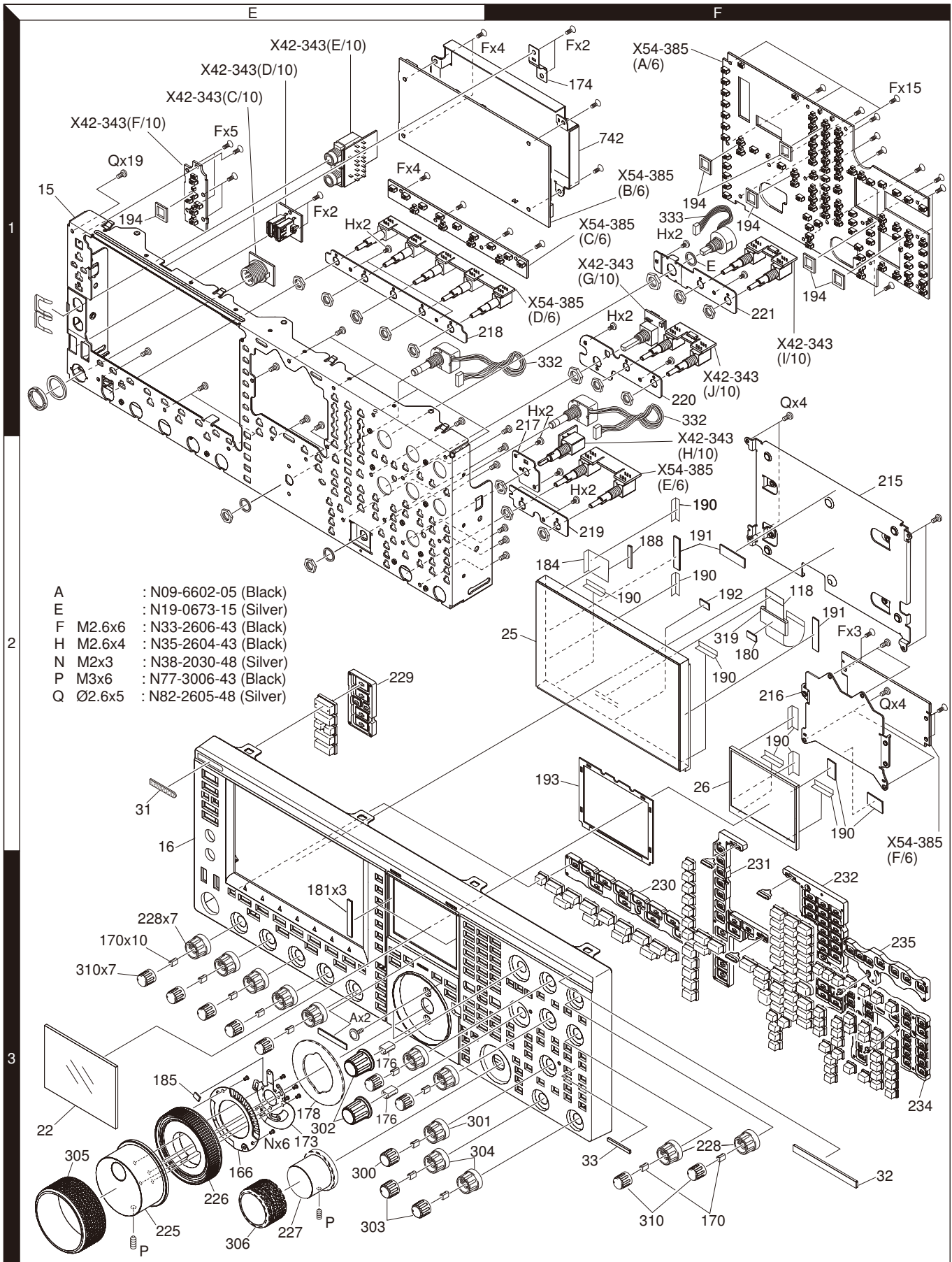
## EXPLODED VIEW (MAIN BODY LOWER SIDE)



Parts with the exploded numbers larger than 700 are not supplied.

# TS-990S

## EXPLODED VIEW (PANEL 1/2)







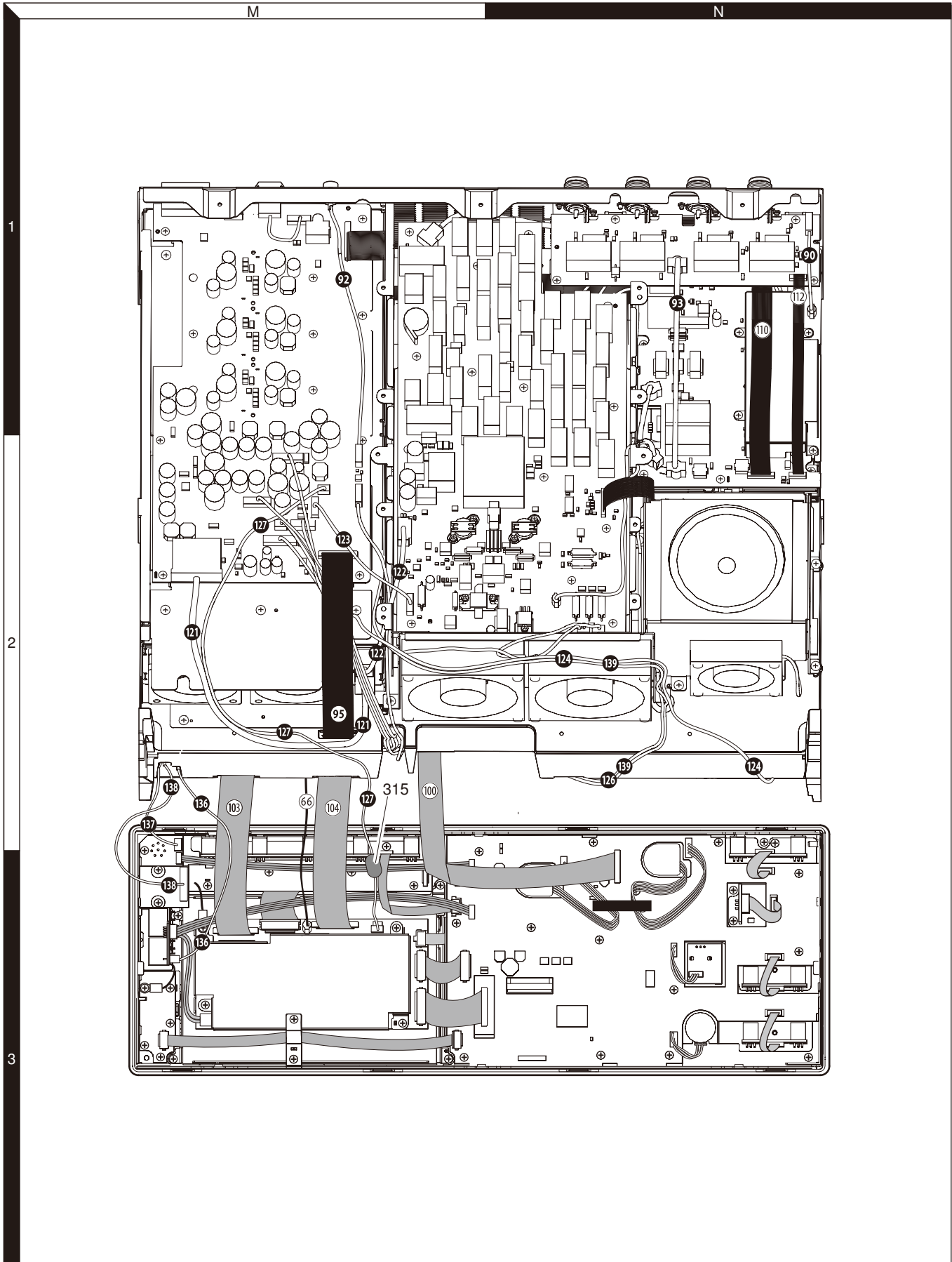




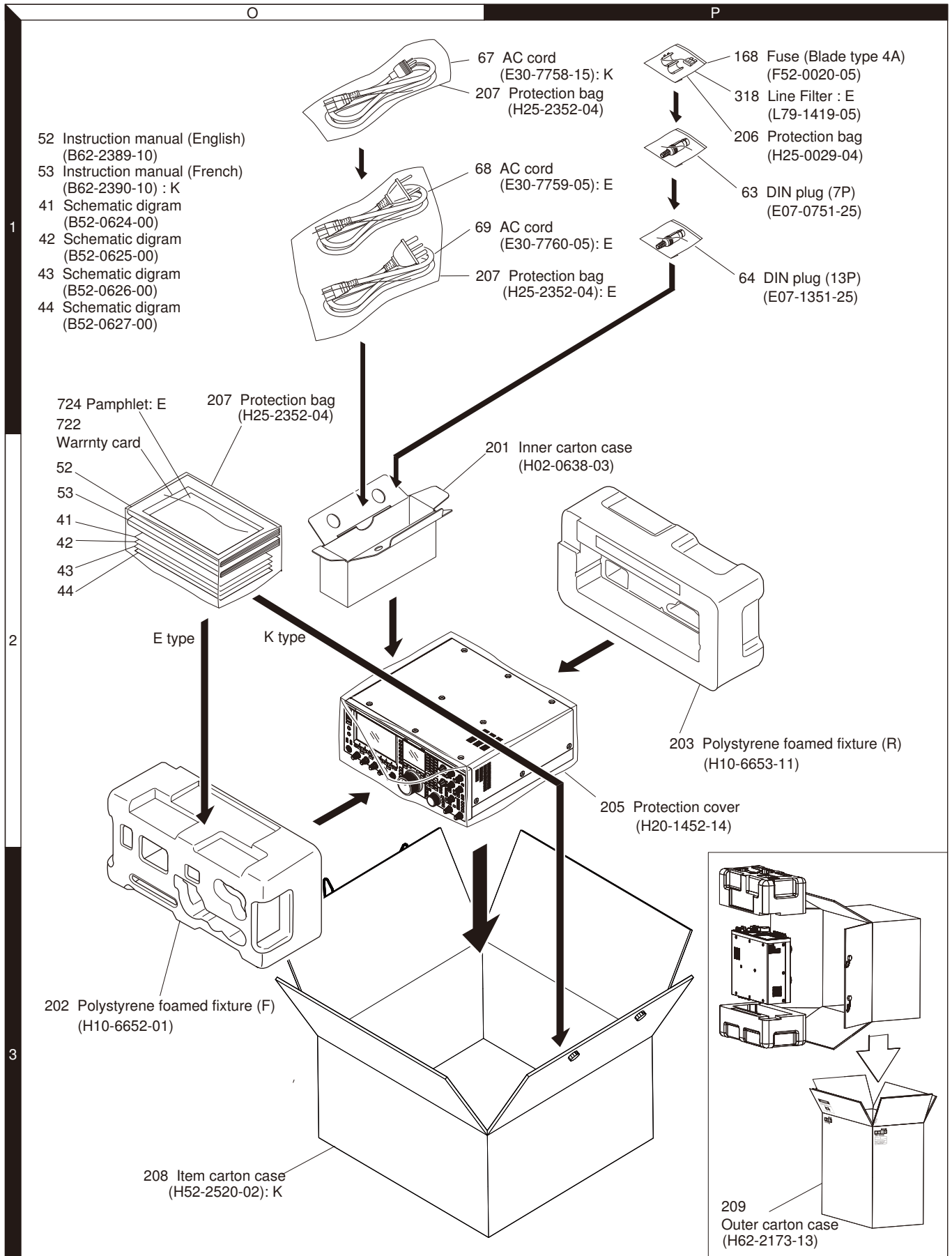


# TS-990S

## EXPLODED VIEW (WIRING - PANEL)



## PACKING



Parts with the exploded numbers larger than 700 are not supplied.

## TROUBLE SHOOTING

### Fault Diagnosis of the BGA (Ball Grid Array) IC

#### ■ Overview

This flow chart will determine whether the BGA parts are faulty when the transceiver does not start normally, or the LCD screen is blurry or has an unusual coloring.

#### ■ BGA parts

Application MCU (IC1, IC201), DDR2 (IC2, IC3, IC202, IC203)

When the BGA IC is problematic, please bring the printed circuit board (X46-3390-01) in for service.

#### ● Checking power supply voltage

Checking voltage

Points to be checked	Normal voltage
1.8V_1: L1 or L201	1.8V
3.3V_2: F1	3.3V (Check whether F1 is problematic.)
1.2V_3: L2 or L202	1.2V
1.8V_4: CN2 (1 pin)	1.8V (Check whether F801 (DC-DC unit C/3) is problematic.)
3.3V_5: F2	3.3V (Check whether F2 is problematic.)

Power supply of each device is connected through the fuse or coil.

[MCU: IC1]  
1.8V\_1: L1, 3.3V\_2: F1, 1.2V\_3: L2  
1.8V\_4: F801 (DC-DC unit C/3), 3.3V\_5: F2

[MCU: IC201]  
1.8V\_1: L201, 3.3V\_2: F1, 1.2V\_3: L202  
1.8V\_4: F801 (DC-DC unit C/3), 3.3V\_5: F2

[DDR2: IC2, IC3]  
1.8V\_1: L1

[DDR2: IC202, IC203]  
1.8V\_1: L201

When a normal value is confirmed.

#### ● Checking the clock

Checking the SYS clock

Points to be checked	Normal voltage (Amplitude: about 1.5V)
26.000MHz MCU (IC1) side R95	26.000MHz
MCU (IC201) side R303	26.000MHz

Checking the SYS\_32k clock

Points to be checked	Normal voltage (3.3V)
32.768kHz MCU (IC1) side R166	32.768kHz
MCU (IC201) side R369	32.768kHz

When a normal value is confirmed.

#### ● Checking the Reset/LCDREQ signal input

Checking the MCU reset signal

Points to be checked	Normal voltage
AnRST MCU (IC1) side R197	3.3V
MCU (IC201) side R370	3.3V
LCDREQ MCU (IC1) side R184	3.3V
MCU (IC201) side R227	3.3V

When a normal value is confirmed.

Checking for an abnormal point

1.8V\_1 has an abnormal voltage.  
[MCU: IC1 and DDR2:IC2, IC3]  
Remove L1 to check the voltage of the 1.8V\_1.  
If the voltage becomes normal, the MCU (IC1) or DDR2 (IC2, IC3) is broken.  
[MCU: IC201 & DDR2: IC202, IC203]  
Remove L201 to check the voltage of the 1.8V\_1.  
If the voltage becomes normal, the MCU (IC1) or DDR2 (IC2, IC3) is broken.

3.3V\_2 has an abnormal voltage.  
[MCU]  
Remove R747, L601, L403 and F601 (remove the flat cable of CN651 and CN225, and the coaxial cable of CN652) to check the voltage of the 3.3V\_2.  
If the voltage becomes normal, the device connected after having removed the parts and flat cable, etc., is broken.  
→ Check devices other than the BGA.  
If the voltage becomes abnormal, the MCU is broken.

1.2V\_3 has an abnormal voltage.  
[MCU: IC1]  
Remove L2 to check the voltage of the 1.2V\_3.  
If the voltage becomes normal, the MCU (IC1) is broken.  
[MCU: IC201]  
Remove L202 to check the voltage of the 1.2V\_3.  
If the voltage becomes normal, the MCU (IC201) is broken.

1.8V\_4 has an abnormal voltage.  
[MCU]  
Remove F801 of the DC-DC unit (C/3) to check the voltage of the 1.8V\_4.  
If the voltage becomes normal, the MCU is broken.

3.3V\_5 has an abnormal voltage.  
[MCU: IC1]  
Remove F2 to check the voltage of the 3.3V\_5.  
If the voltage becomes normal, the MCU (IC1) is broken.

If the voltage is not corrected, there is a problem other than the BGA parts.

When an abnormal value is confirmed.

When an abnormal value is confirmed.

When an abnormal value is confirmed.

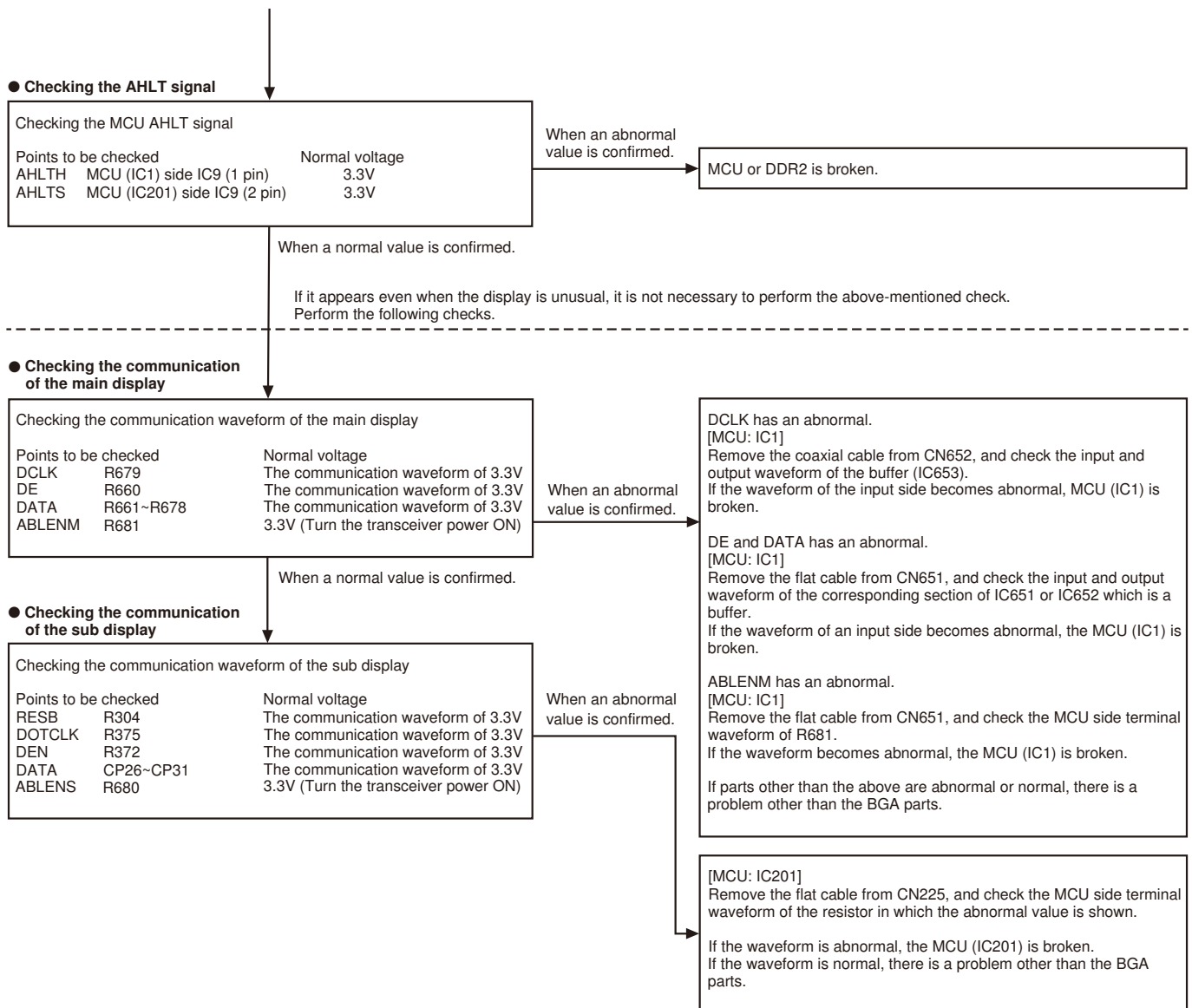
SYS clock has an abnormal.  
[MCU]  
MCU (IC1): Replace the crystal oscillator (X1) and check the waveform.  
MCU (IC201): Replace the crystal oscillator (X201) and check the waveform.  
If the waveform is normal, the crystal oscillator is broken.  
If the waveform is abnormal, the MCU is broken.

SYS\_32k clock has an abnormal.  
[MCU]  
Remove R166 and R369 to check the waveform.  
If the waveform is normal, the MCU is broken.

If the voltage is not corrected, there is a problem other than the BGA parts.

The BGA parts are not broken.

## TROUBLE SHOOTING



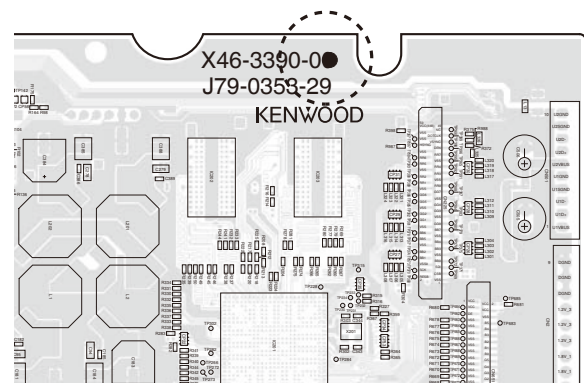
## Replacing Digital Unit

### ■ Digital unit Information

Original Digital unit Number	For Service Digital unit Number
X46-3390-00	X46-3390-01

### ■ Method of confirming “Original Digital unit” and “Service Digital unit”

The black marking is attached to the silk print part of the Service Digital unit (X46-3390-01).





## ADJUSTMENT

### Updating Firmware

You can use a firmware file (zip file) and update the firmware for all processors. The firmware file (zip file) contains the firmware for all processors. The firmware-updating program incorporated by the transceiver overwrites the old firmware for the processors with the firmware in the firmware file (zip file). Follow the procedure explained in the Operation Manual to update the firmware.

You can download the firmware file (zip file) from the following site:

[http://www.kenwood.com/j/products/info/amateur/software\\_download.html](http://www.kenwood.com/j/products/info/amateur/software_download.html)

\* The URL may change without notice.

**Note:** Be sure to use the latest version of the firmware file (zip file) and update the firmware if you have replaced any of the following units: 1. Digital unit (X46-339) 2. Four MCUs, i.e., main MCU (X53-452 IC46), scope MCU (X53-452 IC380), sub MCU (X53-453 IC101) for DSP control, and panel MCU (X54-385 IC6) 3. Flash memory for DSP use (X53-453 IC203 and IC301)

### Required Test Equipment

#### 1. Digital Voltmeter (DVM)

- 1) Input resistance: More than 1M $\Omega$
- 2) Voltage range: 1.5 to 1000V AC/DC

**Note:** A high-precision multimeter may be used. However, accurate readings can not be obtained for high-impedance circuits.

#### 2. DC Ammeter

- 1) Current range: 100mA, 1.5A, 30A, high-precision ammeter may be used.

#### 3. RF VTVM (RF VM)

- 1) Input impedance: 1M $\Omega$  and less than 3pF, min.
- 2) Voltage range: 10mV to 300V
- 3) Frequency range: 10kHz to 500MHz

#### 4. AF Voltmeter (AF VM)

- 1) Frequency range: 50Hz to 10kHz
- 2) Input resistance: 1M $\Omega$  or greater
- 3) Voltage range: 10mV to 30V

#### 5. AF Generator (AG)

- 1) Frequency range: 200Hz to 5kHz
- 2) Output: 1mV or less to 1V, low distortion

#### 6. AF Dummy Load (DM. SP)

- 1) Impedance: 8 $\Omega$
- 2) Dissipation: 3W or greater

#### 7. Oscilloscope

Requires high sensitivity, and external synchronization capability (150MHz or greater).

#### 8. Standard Signal Generator (SSG)

- 1) Frequency range: 50kHz to 60MHz
- 2) Output: -133dBm/0.1 $\mu$ V to 7dBm/1V

When performing the frequency adjustment, the following accuracy is necessary.

- 0.05ppm

- 3) Output impedance: 50 $\Omega$

- 4) AM and FM modulation can be possible

**Note:** Generator must be frequency stable.

#### 9. Frequency Counter (f. counter)

- 1) Minimum input voltage: 50mV
- 2) Frequency range: 150MHz or greater
- 3) Frequency accuracy: 0.05ppm or less

#### 10. Noise Generator (Noise G.)

Must generate ignition noise containing harmonics beyond 60MHz.

#### 11. Audio Analyzer

#### 12. RF Dummy Load

- 1) Impedance: 150 $\Omega$  and 50 $\Omega$
- 2) Dissipation: 500W or greater

#### 13. Linear Detector

- 1) Frequency range: 60MHz or greater

#### 14. Power Meter

- 1) Impedance: 50 $\Omega$
- 2) Dissipation: 300W continuous or greater
- 3) Frequency limits: 60MHz or greater

#### 15. Spectrum Analyzer

- 1) Frequency range: 100kHz to 140MHz or greater
- 2) Bandwidth: 1kHz to 3MHz

#### 16. Tracking Generator

#### 17. Directional Coupler

#### 18. Monitor Receiver

#### 19. Microphone

MC-43S or MC-60S8

#### 20. Distortion Meter

#### 21. Double Signal Pad (50 $\Omega$ )

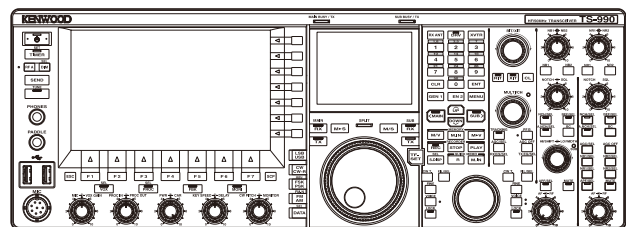
#### 22. Insulation resistance meter (500V DC)

### Preparation

Unless otherwise specified, knobs and switches should be set as follows.

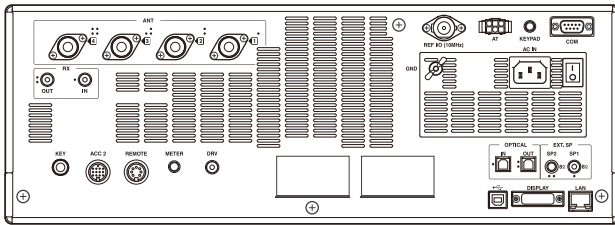
POWER .....	ON
NOTCH (Main band).....	Center
AF (Main band) .....	MIN
RF (Main band) .....	MAX
SQL (Main band) .....	MIN
NOTCH (Sub band) .....	Center
AF (Sub band) .....	MIN
RF (Sub band) .....	MAX
SQL (Sub band) .....	MIN

### ■ Front panel



## ADJUSTMENT

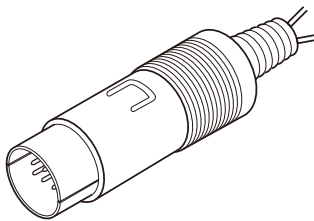
### ■ Rear panel



### Service Jig

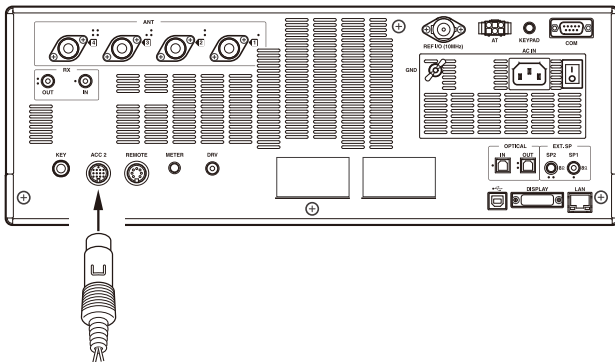
#### 1. ACC 2 connector short plug

Use the same adjustment jig as the TS-570.



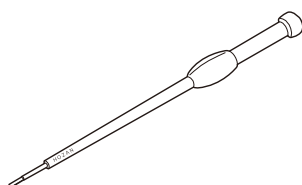
#### ■ How to use the ACC 2 connector short plug

Insert the adjustment jig into the ACC 2 connector located on the rear panel of the transceiver.



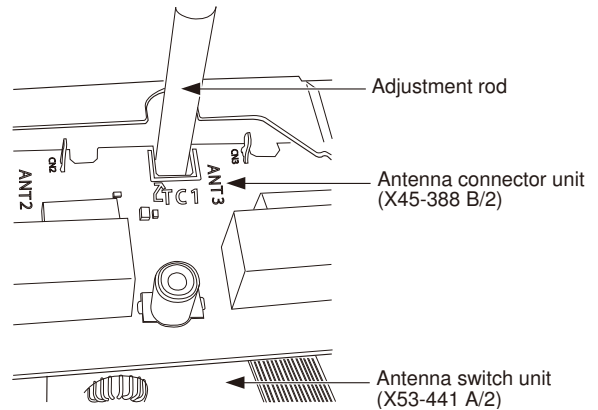
#### 2. Adjustment rod (W05-1770-00/ HOZAN: D-272)

Use the adjustment rod when adjusting the 14.1MHz Null point.



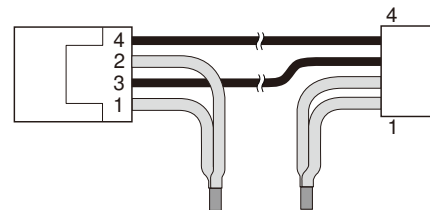
### ■ Adjustment method using the adjustment rod

- 1) Insert the adjustment rod into the hole of the antenna connector unit (X45-388 B/2) as shown in the figure.
- 2) Perform the adjustment after inserting the tip of the adjustment rod in TC1 of the antenna switch unit (X53-441 A/2) which is mounted in the lower part of the antenna connector unit.



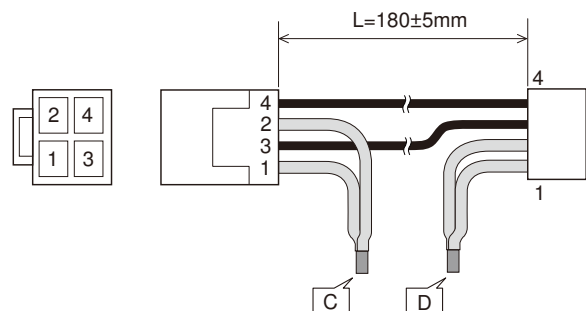
#### 3. Jig cable (W05-1772-00)

Use the jig cable when adjusting the final idling current.



### ■ The modification method when using the lead wire with connector (E37-1611-05)

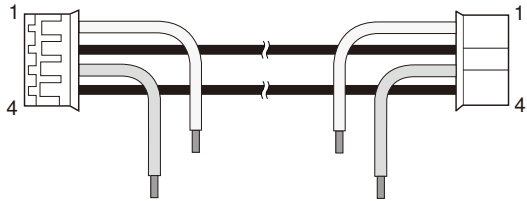
- 1) Cut the center part of the red lead wires (pins 1 and 2) of the cable (E37-1611-05).
- 2) Bundle and solder the tips of each lead wire (parts C and D) as shown in the figure.



## ADJUSTMENT

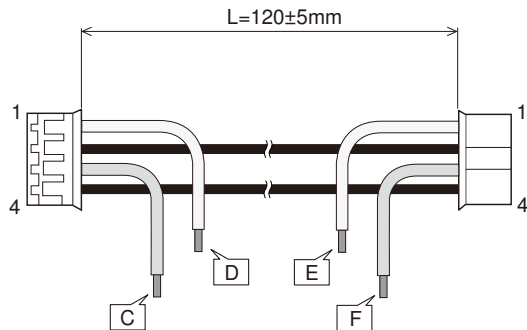
### 4. Jig cable (W05-1776-00)

Use the jig cable when adjusting the final idling current.



### ■ The modification method when using the lead wire with connector (E37-1612-05)

- 1) Cut the center part of the yellow lead wire (pin 1) and orange lead wire (pin 3) of the cable (E37-1612-05).
- 2). Solder the tip of each lead wire (parts C, D, E and F) as shown in the figure.



## Adjustment Mode

### ■ Outline

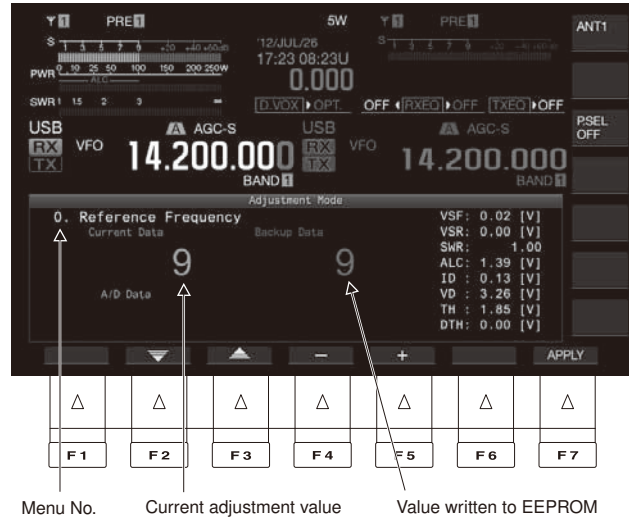
1. Use two adjustment methods for the transceiver. One method requires manual adjustments (e.g., coil and trimmer adjustments). In the other method, the transceiver is placed into service adjustment mode, where the transceiver is adjusted with panel keys. The adjustment items in Menu 0 to Menu 130 are prepared for the service adjustment mode (hereinafter referred to as “adjustment mode”), and adjustment data is stored in two EEPROMs (X42-343: IC401 and X53-452: IC309).
2. Place the transceiver into adjustment mode and change the adjustment data on each adjustment item, if necessary.
3. By executing “Write All” in Menu 128, new adjustment data is written to the EEPROMs. Furthermore, you can write new adjustment data for each Menu number.

### ■ Operating Procedure for Adjustment Mode

1. Starting the Adjustment Mode
  - 1) Insert an adjustment jig into the ACC2 connector on the rear panel of the transceiver.
  - 2) The transceiver is placed into adjustment mode if you turn ON the power while pressing the [NB1] key and [NR2]

key.

A menu number and adjustment item appear on the “Adjustment Mode” display in the main screen. When the menu number appears, remove the adjustment jig from the transceiver.



2. Changing the Menu Number  
Press the [▲] (F2)/[▼] (F3) keys or rotate the [MULTI/CH] control to change the menu number.
3. Making Adjustment Data Changes  
Press [-] (F4)/[+] (F5)/ [UPDATE] (F5) keys or [UP]/[DOWN] keys to change the current data (value).  
**Note:** The lower side of the main screen displays [-]/[+]/[UPDATE] only for adjustment items that require adjustments.
4. Writing Adjustment Data  
You can write adjustment data in two ways, as explained below.
  - 1) Writing Adjustment Data for Each Adjustment Item  
If you press the [APPLY] (F7) key for each adjustment item, the current adjustment data (value) is written to the corresponding EEPROM (i.e., the backup data value is replaced with the current data value).  
**Note:** The lower side of the main screen displays [APPLY] only for adjustment items that require adjustments.
  - 2) Writing Adjustment Data for All Adjustment Items  
If you press the [APPLY] (F7) key, [UP] key, or [Down] key for Menu 128, the current adjustment data is written to the corresponding EEPROM.
5. Canceling the Adjustment Mode  
Press the [CLR] key or [ESC] key to return to the normal VFO mode display.  
**Note:** The adjustment mode is canceled if you turn OFF the power.

## ADJUSTMENT

### ■ Adjustment Mode Menu (Menu No. 0~130)

No.	Adjustment Item	Condition	
		Frequency (MHz)	Mode
0	Reference Frequency	14.2	USB
1	VR Center PITCH	14.2	USB
2	VR Center POWER	14.2	USB
3	VR Center Main NOTCH	14.2	USB
4	VR Center Sub NOTCH	14.2	USB
5	Main MCF Waveform	14.2	USB
6	Main RX Carrier Point 2.7k	1.81	USB
7	Main RX Carrier Point 500		CW
8	Main RX Carrier Point 270		CW
9	Main RX HF IF Gain 2.7k	14.2	USB
10	Main RX HF IF Gain 500		
11	Main RX HF IF Gain 270		
12	Main RX HF IF Gain 6k		
13	Main RX Mixer Balance	0.100	USB
14	Main RX AGC Reference	14.2	USB
15	Main RX HF S-Meter S1	14.2	USB
16	Main RX HF S-Meter S9		
17	Main RX HF S-Meter S-Full		
18	Main RX HF FM S-Meter S1	29.2	FM
19	Main RX HF FM S-Meter S-Full		
20	Main RX HF FM S-Meter S-Full2		
21	Main RX FM Squelch Threshold	29.2	FM
22	Main RX FM Squelch Tight		
23	Main RX 50M IF Gain 2.7k	50.2	USB
24	Main RX 50M IF Gain 500		
25	Main RX 50M IF Gain 270		
26	Main RX 50M IF Gain 6k		
27	Main RX 50M S-Meter S1	50.2	USB
28	Main RX 50M S-Meter S9		
29	Main RX 50M S-Meter S-Full		
30	Main RX 50M FM S-Meter S1	50.2	FM
31	Main RX 50M FM S-Meter S-Full		
32	Main RX 50M FM S-Meter S-Full2		
33	Main RX FM Squelch Threshold	50.2	FM
34	Main RX FM Squelch Tight		
35	Main RX SCOPE Level Full scale	14.2	CW

No.	Adjustment Item	Condition	
		Frequency (MHz)	Mode
36	Sub RX MCF Waveform 11M	14.2	USB
37	Sub RX Carrier Point 10M 2.7k	1.81	USB
38	Sub RX Carrier Point 11M 2.7k		USB
39	Sub RX Carrier Point 11M 500		CW
40	Sub RX HF IF Gain 73M 6k	14.2	USB
41	Sub RX HF IF Gain 73M 2.7k		
42	Sub RX HF IF Gain 11M 2.7k		
43	Sub RX HF IF Gain 11M 500		
44	Sub RX Mixer Balance 11.374MHz	0.136	USB
45	Sub RX Mixer Balance 73.095MHz	0.100	USB
46	Sub RX AGC Reference	14.2	USB
47	Sub RX HF S-Meter SSB S1	14.2	USB
48	Sub RX HF S-Meter SSB S9		
49	Sub RX HF S-Meter SSB S-Full		
50	Sub RX HF FM S-Meter S1	29.2	FM
51	Sub RX HF FM S-Meter S-Full		
52	Sub RX HF FM S-Meter S-Full2		
53	Sub RX FM Squelch Threshold	29.2	FM
54	Sub RX FM Squelch Tight		
55	Sub RX 50M IF Gain 73M/6k	50.2	USB
56	Sub RX 50M IF Gain 73M/2.7k		USB
57	Sub RX 50M S-Meter S1	50.2	USB
58	Sub RX 50M S-Meter S9		
59	Sub RX 50M S-Meter S-Full		
60	Sub RX 50M FM S-Meter S1	50.2	FM
61	Sub RX 50M FM S-Meter S-Full		
62	Sub RX 50M FM S-Meter S-Full2		
63	Sub RX FM Squelch Threshold	50.2	FM
64	Sub RX FM Squelch Tight		

## ADJUSTMENT

No.	Adjustment Item	Condition	
		Frequency (MHz)	Mode
65	Sub RX SCOPE Level 11M Full scale	14.2	CW
66	Sub RX SCOPE Level 73M Full scale	14.2	
67	ALC Reference	14.1	USB
68	VSR det. Null	14.1	CW
69	HF 200W Power set	14.1	CW
70	HF 200W Meter set		
71	50M 200W Power set	50.1	
72	50M 200W Meter set		
73	100W Power set	14.1	
74	100W Meter set		
75	50W Power set		
76	50W Meter set		
77	25W Power set		
78	25W Meter set		
79	10W Power set		
80	10W Meter set		
81	5W Power set		
82	5W Meter set		
83	TX GAIN TGC 14M	14.1	CW
84	ALC Meter Start	14.1	CW
85	ALC Meter Zone Max		
86	TGC LW	0.136	CW
87	TGC 1.8M	1.83	
88	TGC 3.5M	3.51	
89	TGC 5M	5.3	
90	TGC 7M	7.01	
91	TGC 10M	10.1	
92	TGC 18M	18.1	
93	TGC 21M	21.1	
94	TGC 24.9M	24.9	
95	TGC 28M	29.1	
96	TGC 50M	50.1	

No.	Adjustment Item	Condition	
		Frequency (MHz)	Mode
97	PGC 100W	14.1	CW
98	PGC 50W		
99	PGC 25W		
100	PGC 10W		
101	PGC 5W		
102	FM Dev. WIDE	29.1	FM
103	FM Dev. NARROW		
104	Current value set	29.1	CW
105	Protection SWR set	14.1	
106	Protection SWR set	50.1	CW
107	SWR Meter HF	14.1	CW
108	SWR Meter 50M	50.1	CW
109	AT AMD	50.1	CW
110	Drain Voltage Meter set	14.1	USB
111	Reserved	-	-
112	OPTICAL I/O Check	14.1	USB
113	SCOPE Gain TX Reference	14.1	CW
114	2Tone IMD 136kHz	0.136	USB
115	2Tone IMD 1.83MHz	1.83	
116	2Tone IMD 3.51MHz	3.51	
117	2Tone IMD 5.30MHz	5.30	
118	2Tone IMD 7.01MHz	7.01	
119	2Tone IMD 10.1MHz	10.1	
120	2Tone IMD 14.1MHz	14.1	
121	2Tone IMD 18.1MHz	18.1	
122	2Tone IMD 21.1MHz	21.1	
123	2Tone IMD 24.9MHz	24.9	
124	2Tone IMD 29.1MHz	29.1	
125	2Tone IMD 50.1MHz	50.1	
126	TX protection OFF	14.1	CW
127	Reserved	-	-
128	Write All	14.2	USB
129	Display check / Change Color / AT Check (Firmware ver. 1.01 or later)	14.2	USB
130	Firmware Version	14.2	USB



## ADJUSTMENT

### Display Check

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Setting and full reset	1) Setting (1) Plug the AC power cable into an AC outlet. (2) Press the main I/O power switch located on the rear panel, to the "I" (ON) to source the power to the transceiver.							
	2) Full reset (1) Press the [MENU] key. (2) Press the [RESET] (F) key. The reset selection screen appears. (3) Press the [▲] (F2)/[▼] (F3) keys or rotate the [MULTI/CH] control, then select "Full Reset". (4) Press the [SELECT] (F4) key. A message prompting you to start the Full Reset appears. (5) Press the [RESET] (F4) key. The transceiver is reset and automatically restarts.				Front panel	Main display	After displaying the startup screen, the display is reset as follows; Main band: 14.000.000 (USB) Sub band: 14.000.000 (USB) ANT: 1 ATT: OFF P.SEL: OFF P.AMP: ON MAX-Po: 200W MATER: Po TX-FIL: FIL-A	Display should be normal. Should be at the reset frequency.
2. LCD and LED Check	1) Menu No.: 129						Check	The main and sub display become white. All LEDs (54) light.

### PLL Section

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. MAIN REF lock voltage	1) Main display f.: 14.100000MHz Mode: USB	DVM	PLL (MAIN)	MD_CV	PLL (MAIN)	TC1	3.0V	±0.1V
2. MAIN VCO1 lock voltage	1) Main display f.: 0.030000MHz Mode: USB			M_CV		TC3	1.3V	±0.05V
	2) Main display f.: 0.999990MHz						Check	11.2V or less
3. MAIN VCO2 lock voltage	1) Main display f.: 1.400000MHz Mode: USB				PLL (MAIN)	TC2	1.3V	±0.05V
	2) Main display f.: 2.499990MHz						Check	11.2V or less

## ADJUSTMENT

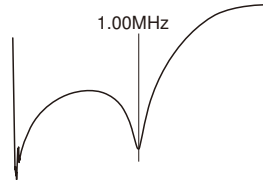


Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
4. MAIN VCO3 lock voltage	1) Main display f.: 3.300000MHz Mode: USB	DVM	PLL (MAIN)	M_CV	PLL (MAIN)	TC4	1.3V	±0.05V
	2) Main display f.: 23.999990MHz						Check	11.2V or less
5. MAIN VCO4 lock voltage	1) Main display f.: 4.500000MHz Mode: USB				PLL (MAIN)	TC5	1.3V	±0.05V
	2) Main display f.: 26.499990MHz						Check	11.2V or less
6. SUB LO2 level	1) Menu No.: 0 Mode: USB Spectrum analyzer setting Center f.: 62.4MHz Frequency span : 1MHz Disconnect the cable from CN65 and insert a cable from the spectrum analyzer. After the adjustment, connect the cable to CN65.	Spectrum analyzer	PLL (SUB)	CN65 (GR/BK)	PLL (SUB)	L71	Level max.	-13dBm or more
				SD_CV		TC3	3.0V	±0.1V
8. SUB LO1 level	1) Sub display f.: 1.900000MHz Mode: USB Spectrum analyzer setting Center f.: 13.274MHz Frequency span: 1MHz Disconnect the cable from CN63 and insert a cable from the spectrum analyzer.			CN63 (BL/WH)		L112 L129 L149	Level max.	-7dBm or more
	2) Sub display f.: 7.150000MHz Mode: USB Spectrum analyzer setting Center f.: 18.524MHz Frequency span: 1MHz After the adjustment, connect the cable to CN63.					L116 L135 L148	Level max.	-3dBm or more
9. TX VCO1 lock voltage	1) Main display f.: 0.030000MHz Mode : USB [TX] key selection: Main	DVM	PLL (SUB)	S_CV	PLL (SUB)	TC1	1.5V	±0.05V
	2) Main display f.: 6.259990MHz						Check	11.2V or less
	3) Main display f.: 6.260000MHz							1.0V~1.8V

## ADJUSTMENT

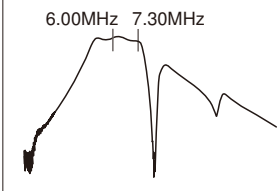
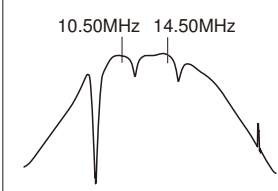
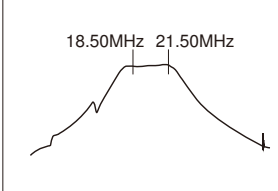

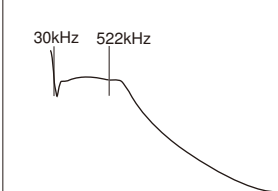
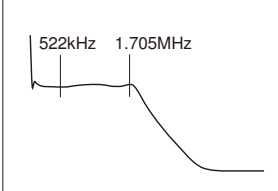
Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
10. TX VCO2 lock voltage	1) Main display f.: 14.660000MHz Mode: USB [TX] key selection: Main	DVM	PLL (SUB)	S_CV	PLL (SUB)	TC2	1.2V	±0.05V  * The TX VCO adjustment can be adjusted in the state not transmitted.
						Check	11.2V or less	
							1.5V~2.5V	
11. TX VCO3 lock voltage	1) Main display f.: 30.410000MHz Mode: USB [TX] key selection: Main				PLL (SUB)	TC4	1.2V	±0.05V  * The TX VCO adjustment can be adjusted in the state not transmitted.
						Check	11.2V or less	
							2.8V~4.2V	
12. TX VCO4 lock voltage	1) Main display f.: 47.84500MHz Mode: USB [TX] key selection: Main				PLL (SUB)	TC5	1.4V	±0.05V  * The TX VCO adjustment can be adjusted in the state not transmitted.
						Check	11.2V or less	
							2.3V~4.1V	

## ADJUSTMENT

### Receiver Section

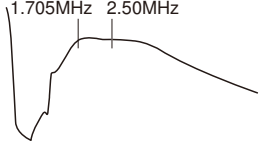
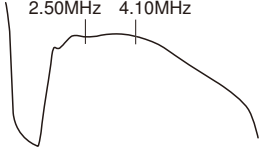
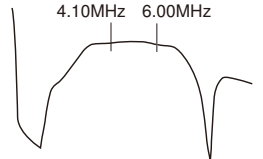
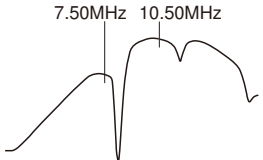
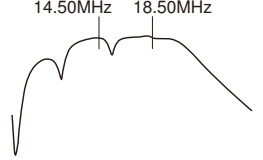
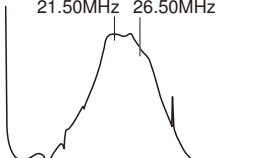
Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
<ul style="list-style-type: none"> <li>Perform the following in the adjustment mode. Item 7, 8, 9, 11, 12, 13 and 22~60.</li> <li>To terminate the adjustment menu in the middle, save your settings with Menu No. 128.</li> <li>*1: Do the following preparation prior to the 8.248MHz trap adjustment of the item 1 and adjustments of the item 2~5;               <ul style="list-style-type: none"> <li>Remove the Preselector unit from the RX unit.</li> <li>Connect CN26 and CN53 using a coaxial cable (E37-1571-15)</li> </ul> </li> </ul>								
1. MAIN RX Trap frequency  • 1MHz	1) Main display f.: 14.200000MHz Mode: USB P.AMP: ON Spectrum analyzer setting Start Frequency: 0MHz Stop Frequency: 2MHz TG level: 0dBm Disconnect the cable from CN1 and connect the tracking generator output to CN1. Disconnect the cable from CN11 and connect the spectrum analyzer input to CN1.	Tracking generator  Spectrum analyzer	RX (A/2)	CN1 CN11	RX (A/2)	L9	Adjust the coil to get a null point at 1MHz as shown.	
	• 11.7MHz	2) Main display f.: 14.200000MHz Mode: USB P.AMP: ON Spectrum analyzer setting Center Frequency: 11.7MHz Frequency span: 2MHz TG level: -10dBm				L8	Adjust the coil to get a null point at 11.7MHz as shown.	
	• 15.501MHz	3) Main display f.: 14.200000MHz Mode: USB P.AMP: ON Spectrum analyzer setting Center Frequency: 15.501MHz Frequency span: 2MHz TG level: -10dBm After the adjustment, disconnect the cable from CN11, and connect the original cable.				L7	Adjust the coil to get a null point at 15.501MHz as shown.	
	• 8.248MHz (adjustment 1) *1	4) Main display f.: 7.200000MHz Mode: USB P.AMP: ON Spectrum analyzer setting Center f.: 8.248MHz Frequency span: 1MHz TG level: 0dBm Disconnect the cable from CN93 and connect the spectrum analyzer input to CN93.			CN1 CN93		TC1 TC2	Adjust each trimmer to get a null point at 8.248MHz as shown.

## ADJUSTMENT

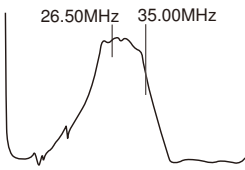
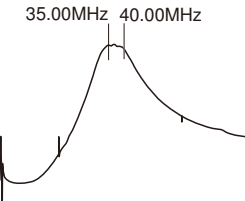
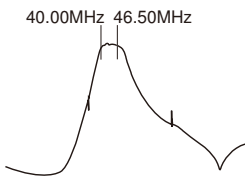
Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
2. HF BPF*1  • 7MHz  • 14M  • 21M  • 50M  • 30~522k  • 522k ~1.705M	1) Main display f.: 7.200000MHz Mode: USB P.AMP: ON Spectrum analyzer setting Start Frequency: 1MHz Stop Frequency: 15MHz TG level: 0dBm	Tracking generator  Spectrum analyzer	RX (A/2)	CN1 CN93	RX (B/2)	TC506	Adjust the trimmer to get the highest peak points at 7.3MHz as shown.	
	2) Main display f.: 14.200000MHz Mode: USB P.AMP: ON Spectrum analyzer setting Start Frequency: 2MHz Stop Frequency: 24MHz TG level: 0dBm					TC507	Adjust the trimmer to obtain the frequency response as shown.	
	3) Main display f.: 21.200000MHz Mode: USB P.AMP: ON Spectrum analyzer setting Start Frequency: 10MHz Stop Frequency: 30MHz TG level: 0dBm					TC508	Adjust the trimmer to obtain the frequency response as shown.	
	4) Main display f.: 50.200000MHz Mode: USB P.AMP: ON Spectrum analyzer setting Center f.: 55MHz Frequency span: 50MHz TG level: -20dBm					TC509 TC510 TC511	Adjust each trimmer to obtain the frequency response as shown.	
	5) Main display f.: 137kHz Mode: USB P.AMP: ON Spectrum analyzer setting Start frequency: 0MHz Stop frequency: 2MHz TG level: 0dBm						Check that the frequency response is as shown.	
	6) Main display f.: 550kHz Mode: USB P.AMP: ON Spectrum analyzer setting Start frequency: 0MHz Stop frequency: 4MHz TG level: 0dBm							



## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
HF BPF*1  • 1.8M check	7) Main display f.: 1.800000MHz Mode: USB P.AMP: ON Spectrum analyzer setting Start frequency: 0MHz Stop frequency: 6MHz TG level: 0dBm	Tracking generator	RX (A/2)	CN1 CN93			Check that it is the frequency response as shown.	
	• 3.5M	8) Main display f.: 3.500000MHz Mode: USB P.AMP: ON Spectrum analyzer setting Start frequency: 0MHz Stop frequency: 8MHz TG level: 0dBm	Spectrum analyzer					
• 5M	9) Main display f.: 5.330000MHz Mode: USB P.AMP: ON Spectrum analyzer setting Start frequency: 0MHz Stop frequency: 10MHz TG level: 0dBm							
• 10M	10) Main display f.: 10.100000MHz Mode: USB P.AMP: ON Spectrum analyzer setting Start frequency: 2MHz Stop frequency: 16MHz TG level: 0dBm							
• 18M	11) Main display f.: 18.100000MHz Mode: USB P.AMP: ON Spectrum analyzer setting Start frequency: 8MHz Stop frequency: 26MHz TG level: 0dBm							
• 24M	12) Main display f.: 24.900000MHz Mode: USB P.AMP: ON Spectrum analyzer setting Start frequency: 0MHz Stop frequency: 50MHz TG level: -10dBm							

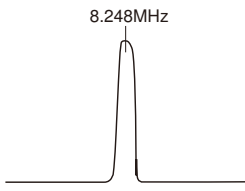
## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
HF BPF*1  • 28M  • 35M~40M  • 40M~46.5M	13) Main display f.: 28.200000MHz Mode: USB P.AMP: ON Spectrum analyzer setting Start frequency: 0MHz Stop frequency: 60MHz TG level: -10dBm	Tracking generator  Spectrum analyzer	RX (A/2)	CN1 CN93			Check that it is the frequency response as shown.	
	14) Main display f.: 37.500000MHz Mode: USB P.AMP: ON Spectrum analyzer setting Start frequency: 0MHz Stop frequency: 80MHz TG level: -10dBm							
	15) Main display f.: 43.000000MHz Mode: USB P.AMP: ON Spectrum analyzer setting Start frequency: 0MHz Stop frequency: 100MHz TG level: -10dBm After the adjustment, disconnect the cable from CN1 and CN93, and connect the original cable.							
3. MAIN RX 1st mixer balance*1	1) Main display f.: 14.200000MHz Mode: USB P.AMP: ON AGC: OFF SSG output: OFF Disconnect the cable from CN1 and connect the SSG output to CN1.	SSG DVM	RX (A/2)	CN1 CN98 (DUTY)	RX (A/2)	VR2	2.5V	±0.05V
4. MAIN RX 1st IF notch 8.248MHz (adjustment 2) *1	1) Main display f.: 7.000000MHz Mode: USB P.AMP: ON AGC: OFF SSG f.: 8.248MHz SSG output: -35dBm (3.98mV)	SSG AF VM	Rear panel RX (A/2)	EXT. SP2 CN1	RX (A/2)	TC1 TC2	Adjust each trimmer to get the AF minimum output. Repeat the adjustment 4 to 5 times.	

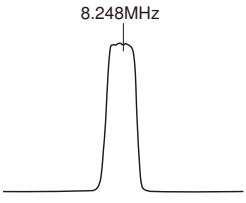
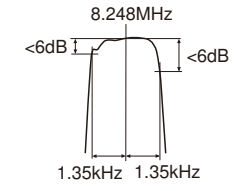
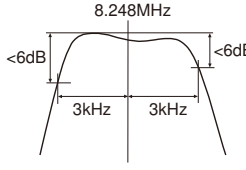
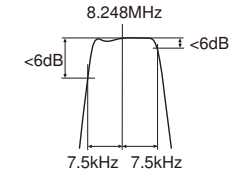
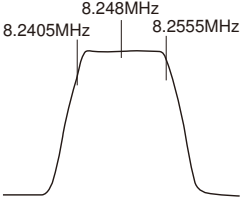
## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks		
		Test-equipment	Unit	Terminal	Unit	Parts	Method			
5. MAIN RX HF BPF notch*1  • 1.8M	1) Main display f.: 1.800000MHz Mode: USB P.AMP: ON AGC: OFF SSG f.: 18.298MHz SSG output: -35dBm (3.98mV)	SSG AF VM	Rear panel RX (A/2)	EXT. SP2 CN1	RX (B/2)	TC502	Adjust the trimmer to get the AF minimum output.			
	• 7M								2) Main display f.: 7.000000MHz Mode: USB P.AMP: ON AGC : OFF SSG f.: 23.498MHz SSG output: -35dBm (3.98mV)	TC505
	• 14M								3) Main display f.: 14.000000MHz Mode: USB P.AMP: ON AGC: OFF SSG f.: 30.498MHz SSG output: -35dBm (3.98mV)	TC503
	• 3.5M								4) Main display f. : 3.500000MHz Mode : USB P.AMP: ON AGC : OFF SSG f. : 19.998MHz SSG output : -35dBm (3.98mV)	TC504
	• 21M								5) Main display f.: 21.300000MHz Mode: USB P.AMP: ON AGC: OFF SSG f.: 37.798MHz SSG output: -35dBm (3.98mV)	TC501
	• 5M								6) Main display f.: 5.330000MHz Mode: USB P.AMP: ON AGC: OFF SSG f.: 21.828MHz SSG output: -35dBm (3.98mV)	TC513


## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
MAIN RX HF BPF notch*1  • 10M  • 24M  • 28M  • 50M	7) Main display f.: 10.100000MHz Mode: USB P.AMP: ON AGC : OFF SSG f.: 26.598MHz SSG output: -35dBm (3.98mV)	SSG AF VM	Rear panel RX (A/2)	EXT. SP2 CN1	RX (B/2)	TC512	Adjust the trimmer to get the AF minimum output.  <b>Note:</b> Do not adjust L536.	
	TC514							
	TC516							
	TC515							
6. IF filter  • 270Hz	1) Main display f.: 14.200000MHz Mode: USB FIL/SEL(M):270Hz Spectrum analyzer setting Center f.: 8.248MHz Frequency span: 5kHz TG level: 0dBm Connect the tracking genera- tor output to CN115. Connect the spectrum ana- lyzer input to CN129.	Tracking generator  Spectrum analyzer	RX (A/2)	CN115 CN129			Check that the fre- quency response is as shown.	 <p>8.248MHz</p>

## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
IF filter • 500Hz	2) Main display f.: 14.20000MHz Mode: USB FIL/SEL(M):500Hz Spectrum analyzer setting Center f.: 8.248MHz Frequency span: 5kHz TG level: 0dBm	Tracking generator  Spectrum analyzer	RX (A/2)	CN115 CN129			Check that the frequency response is as shown.	
• 2.7kHz	3) Main display f.: 14.20000MHz Mode: USB Spectrum analyzer setting Center f.: 8.248MHz Frequency span: 10kHz TG level: 0dBm				RX (A/2)	L96 L99	Adjust each coil to obtain the frequency response as shown.	
• 6kHz	4) Main display f.: 14.20000MHz Mode: USB Spectrum analyzer setting Center f.: 8.248MHz Frequency span: 10kHz TG level: 0dBm					L95 L98	Adjust each coil to obtain the frequency response as shown.	
• 15kHz	5) Main display f.: 14.20000MHz Mode: USB Spectrum analyzer setting Center f.: 8.248MHz Frequency span: 50kHz TG level: 0dBm After the adjustment, disconnect the cable from CN115.					L94 L97	Adjust each coil to obtain the frequency response as shown.	
7. NB MCF (15kHz)	1) Menu No.: 5 (14.2MHz, USB) P.AMP: ON AGC: OFF FIL/SEL(M):15kHz NB1: ON Spectrum analyzer setting Center f.: 8.248MHz Frequency span: 40kHz TG level: 0dBm Connect the tracking generator output to CN86. Connect the spectrum analyzer input to CN129.	Tracking generator  Spectrum analyzer	RX (A/2)	CN86 CN129	RX (A/2)	L110 L111	Adjust each coil to obtain the frequency response as shown.	

## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
8. Preselector  • 1.8M Low    • 1.8M Mid    • 1.8M High    • 3.5M Low    • 3.5M High    • 5M	1) Menu No.: 0 (14.2MHz, USB) P.SEL: ON Spectrum analyzer setting Center f.: 1.8215MHz Frequency span: 5kHz TG level: -10dBm Disconnect the cable from CN401 and connect the tracking generator output to CN401. Disconnect the cable from CN446 and connect the spectrum analyzer input to CN446.	Tracking generator  Spectrum analyzer	Accessory (B/10)	CN401 (PREI) CN446 (PREO)	Front panel	[UP]/[+] (F5) or [DOWN] /[-](F4)	Change the adjustment values to get the highest peak points as shown. Press the [Apply] (F7) key to store the adjustment value.	1.8215MHz±2.5kHz  
	2) Menu No.: 0 (14.2MHz, USB) P.SEL: ON Spectrum analyzer setting Center f.: 1.8865MHz Frequency span: 50kHz TG level: -10dBm							1.8865MHz±2.5kHz
	3) Menu No.: 0 (14.2MHz, USB) P.SEL: ON Spectrum analyzer setting Center f.: 1.9640MHz Frequency span: 50kHz TG level: -10dBm							1.9640MHz±2.5kHz
	4) Menu No.: 0 (14.2MHz, USB) P.SEL: ON Spectrum analyzer setting Center f.: 3.5775MHz Frequency span: 150kHz TG level: -10dBm							3.5775MHz±7.5kHz
	5) Menu No.: 0 (14.2MHz, USB) P.SEL: ON Spectrum analyzer setting Center f.: 3.8475MHz Frequency span: 150kHz TG level: -10dBm							3.8475MHz±7.5kHz
	6) Menu No.: 0 (14.2MHz, USB) P.SEL: ON Spectrum analyzer setting Center f.: 5.3425MHz Frequency span: 400kHz TG level: -10dBm							5.3425MHz±20kHz



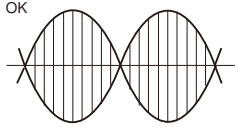
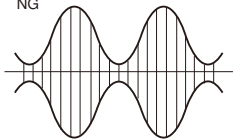
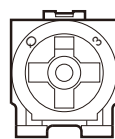
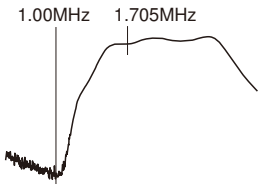
## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
Pre-selector  • 7M	7) Menu No.: 0 (14.2MHz, USB) P.SEL: ON Spectrum analyzer setting Center f.: 7.1650MHz Frequency span: 400kHz TG level: -10dBm	Tracking generator  Spectrum analyzer	Accessory (B/10)	CN401 (PREI) CN446 (PREO)	Front panel	[UP]/[+] (F5) or [DOWN] /[-](F4)	Change the adjustment values to get the highest peak points as shown. Press the [Apply] (F7) key to store the adjustment value.	7.1650MHz±20kHz
• 10M	8) Menu No.: 0 (14.2MHz, USB) P.SEL: ON Spectrum analyzer setting Center f.: 10.0650MHz Frequency span: 400kHz TG level: -10dBm							10.0650MHz±20kHz
• 14M	9) Menu No.: 0 (14.2MHz, USB) P.SEL: ON Spectrum analyzer setting Center f.: 14.1625MHz Frequency span: 1MHz TG level: -10dBm							14.1625MHz±50kHz
• 18M	10) Menu No.: 0 (14.2MHz, USB) P.SEL: ON Spectrum analyzer setting Center f.: 18.1305MHz Frequency span: 2MHz TG level: -10dBm							18.1305MHz±100kHz
• 21M	11) Menu No.: 0 (14.2MHz, USB) P.SEL: ON Spectrum analyzer setting Center f.: 21.2250MHz Frequency span: 2MHz TG level: -10dBm							21.2250MHz±100kHz
• 24M	12) Menu No.: 0 (14.2MHz, USB) P.SEL: ON Spectrum analyzer setting Center f.: 24.9150MHz Frequency span: 2MHz TG level: -10dBm							24.9150MHz±100kHz
• 28M	13) Menu No.: 0 (14.2MHz, USB) P.SEL: ON Spectrum analyzer setting Center f.: 28.8250MHz Frequency span: 4MHz TG level: -10dBm							28.8250MHz±200kHz

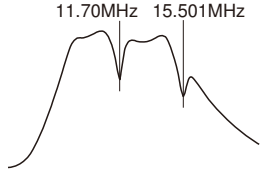
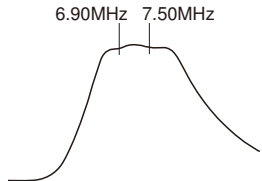
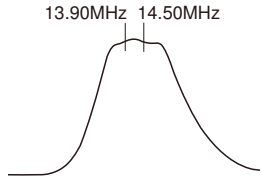
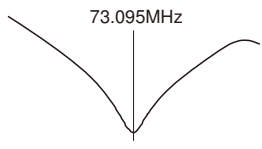
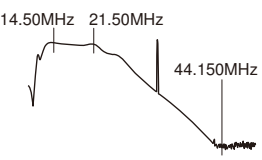
## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
9. Frequency	Adjust by the method of 1) or 2). 1) Menu No. : 0 (14.2MHz, USB) Connect the frequency counter to the REF I/O (10MHz) terminal.	f. counter	Rear panel	REF I/O (10MHz)	Front panel	[UP]/[+](F5) or [DOWN]/[-](F4)	Set the adjustment value within the limit of the specified frequency.	10MHz±0.1Hz (9.9999999~10.0000001MHz)
	2) Menu No. : 0 (14.2MHz, USB) Mode: CW SSG f.: 14.2MHz SSG output: -53dBm (0.501mV) Using a cable, connect the between frequency counter and EXT.SP1 terminal. Adjust to 700 by the rotating CW pitch knob. Rotate the AF knob to a level detectable by the frequency counter.	f. counter SSG	Rear panel	EXT. SP1	Front panel	[UP]/[+](F5) or [DOWN]/[-](F4)	Set the adjustment value within the limit of the specified frequency.	700Hz±0.17Hz
10. FM discriminator	1) Main display f.: 29.200000MHz Mode: FM P.AMP: ON AF output: 0.63V/8Ω SSG f.: 29.200MHz SSG output: -53dBm (0.501mV) MOD: 1kHz DEV: 3kHz	SSG Oscilloscope AF VM Distortion meter DM.SP Audio analyzer	RX (A/2) Rear panel	CN1 EXT. SP2	RX (A/2)	L103	Adjust the L103 to get the AF maximum output of 0.63V/ 8 ohms.  Check the distortion and the waveform is a good sine wave.	AF max.  2.3% or less
11. NB voltage	1) Menu No.: 5 P.AMP: ON AGC: OFF FIL/SEL(M): 15kHz NB1: ON SSG f.: 14.201MHz SSG output: -60dBm (224μV)	DVM SSG Oscilloscope AF VM DM.SP Noise G.	RX (A/2)	CN1 TP2	RX (A/2)	L43 L52 L56	Voltage min.	
	2) Menu No.: 5 SSG f.: 14.201MHz SSG output: -101dBm (2μV)						Check	4.1V or less

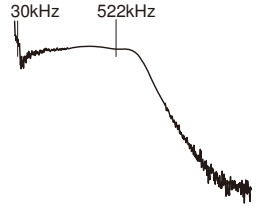
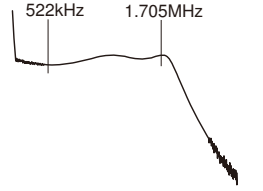
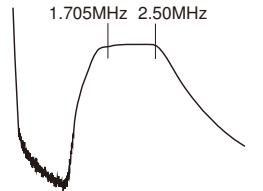
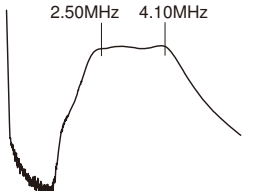
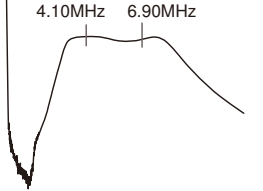
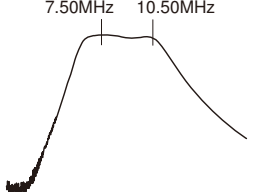
## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks	
		Test-equipment	Unit	Terminal	Unit	Parts	Method		
12. Carrier point  • XF8/2.7kHz	1) Menu No.: 6 (1.81MHz, USB) P.AMP: OFF AGC: OFF FIL/SEL(M): 2.7kHz SSG1 f.: 1.813MHz SSG2 f.: 1.810MHz SSG output: -33dBm (5.01mV)	SSG1 SSG2 2 signal pad Oscilloscope	RX (A/2)	CN1 TP1	Front panel	[UP]/[+] (F5) or [DOWN] /[-](F4)	Change the adjustment values to get the waveform as shown.	 	
	• XF5/500Hz								2) Menu No.: 7 (1.81MHz, CW) P.AMP: OFF AGC: OFF FIL/SEL(M): 500Hz SSG1 f.: 1.810275MHz SSG2 f.: 1.809725MHz SSG output: -33dBm (5.01mV)
	• XF6/270Hz								3) Menu No.: 8 (1.81MHz, CW) P.AMP: OFF AGC: OFF FIL/SEL(M): 270Hz SSG1 f.: 1.810145MHz SSG2 f.: 1.809855MHz SSG output: -33dBm (5.01mV)
13. SUB RX 1st mixer balance	1) Menu No.: 45 (100kHz, USB) P.AMP: OFF ANT: Open (X57-827 A/2 CN200 Open)	AF VM	Rear panel	EXT. SP2	TX-RX (A/2)	VR401	Noise min.	<b>Note:</b> When the noise level minimum is not understood, adjust the volume position of VR401 as shown in the figure below.  	
14. SUB RX Trap frequency  • 1MHz	1) Sub display f.: 1.800000MHz Mode: USB P.AMP: ON Spectrum analyzer setting Start frequency: 0MHz Stop frequency: 3MHz TG level: -10dBm Disconnect the cable from CN200 and connect the tracking generator output to CN200. Connect the spectrum analyzer input to CN230.	Tracking generator  Spectrum analyzer	TX-RX (A/2)	CN200 CN230	TX-RX (A/2)	L208	Adjust the coil to get a null point at 1MHz as shown.		

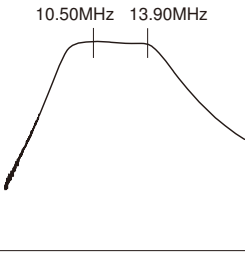
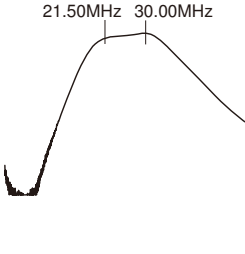
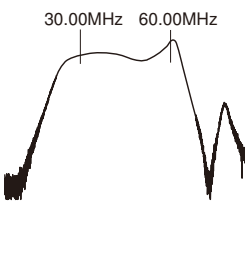
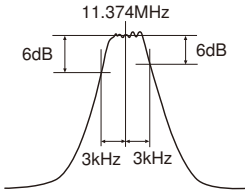
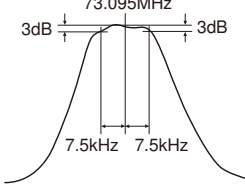
## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
SUB RX Trap frequency  • 15.501MHz/ 11.700MHz (E type only)	2) Sub display f.: 13.890MHz Mode: USB P.AMP: ON Spectrum analyzer setting Start Frequency: 5MHz Stop Frequency: 20MHz TG level: 0dBm	Tracking generator  Spectrum analyzer	TX-RX (A/2)	CN200 CN230	TX-RX (A/2)	L206 L207	Adjust L206 to get a null point at 15.501MHz as shown. Then, adjust L207 to get a null point at 11.700MHz as shown. Repeat the trap frequency adjustment 2 to 3 times, alternating between 15.5MHz and 11.7MHz.	
						L226 L227 L228		
• 7M	1) Sub display f.: 7.200000MHz Mode: USB P.AMP: OFF Spectrum analyzer setting Center Frequency: 7.2MHz Frequency span: 5MHz TG level: 0dBm						Adjust each coil to obtain the frequency response as shown.	
• 14M	2) Sub display f.: 14.2MHz Mode: USB P.AMP: OFF Spectrum analyzer setting Center Frequency: 14.2MHz Frequency span: 8MHz TG level: 0dBm					L235 L236 L237	Adjust each coil to obtain the frequency response as shown.	
16. SUB RX IF trap frequency (30M~60M)  • 73.095MHz	1) Sub display f.: 50.000000MHz Mode: USB P.AMP: ON Spectrum analyzer setting Center Frequency: 73.095MHz Frequency span: 12MHz TG level: -20dBm					L247	Adjust the coil to get a null point at 73.095MHz as shown.	
17. SUB RX Trap frequency (21M)  • 44.150MHz	1) Sub display f.: 21.400000MHz Mode: USB P.AMP: ON Spectrum analyzer setting Center Frequency: 30.0MHz Frequency span: 40MHz TG level: -10dBm					TC201	Adjust the trimmer to get a null point at 44.150MHz as shown.  <b>Note:</b> Check that the 14.5 to 21.5M level does not fall.	

## ADJUSTMENT

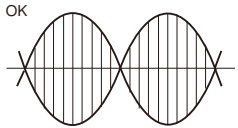
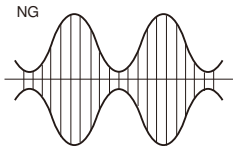
Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
18. SUB RX HF BPF  • 30k~522k  • 522k~~1.705M  • 1.8M  • 3.5M  • 5M  • 10M	1) Sub display f.: 135kHz Mode: USB P.AMP: OFF Spectrum analyzer setting Start frequency: 0MHz Stop frequency: 1.2MHz TG level: 0dBm	Tracking generator	TX-RX (A/2)	CN200 CN230			Check the waveform.	
	2) Sub display f.: 525kHz Mode: USB P.AMP: OFF Spectrum analyzer setting Start frequency: 0MHz Stop frequency: 2.5MHz TG level: 0dBm							
	3) Sub display f.: 1.800000MHz Mode: USB P.AMP: OFF Spectrum analyzer setting Start frequency: 0MHz Stop frequency: 4MHz TG level: 0dBm							
	4) Sub display f.: 3.500000MHz Mode: USB P.AMP: OFF Spectrum analyzer setting Start frequency: 0MHz Stop frequency: 6MHz TG level: 0dBm							
	5) Sub display f.: 5.300000MHz Mode: USB P.AMP: OFF Spectrum analyzer setting Start frequency: 0MHz Stop frequency: 12MHz TG level: 0dBm							
	6) Sub display f.: 10.100000MHz Mode: USB P.AMP: OFF Spectrum analyzer setting Start frequency: 2MHz Stop frequency: 16MHz TG level: 0dBm							

## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
SUB RX HF BPF  • 11M  • 28M  • 30M~60M	7) Sub display f.: 13.890000MHz Mode: USB P.AMP: OFF Spectrum analyzer setting Start frequency: 5MHz Stop frequency: 20MHz TG level: 0dBm	Tracking generator	TX-RX (A/2)	CN200 CN230			Check the waveform.	
	8) Sub display f.: 28.100000MHz Mode: USB P.AMP: OFF Spectrum analyzer setting Center Frequency: 25.75MHz Frequency span: 50MHz TG level: 0dBm							
	9) Sub display f.: 50.000000MHz Mode: USB P.AMP: OFF Spectrum analyzer setting Start frequency: 5MHz Stop frequency: 85MHz TG level: -20dBm After the adjustment, disconnect the cable from CN200 and CN203.							
19. SUB RX MCF  • 6kHz  • 15kHz	1) Sub display f.: 14.200000MHz Mode: USB Spectrum analyzer setting Center f.: 11.374MHz Frequency span: 30kHz TG level: 0dBm Connect the tracking generator output to CN360. Connect the spectrum analyzer input to CN370. After the adjustment, disconnect the cable from CN360 and CN370.	Tracking generator	TX-RX (A/2)	CN360 CN370	TX-RX (A/2)	L368 L369	Adjust each coil to obtain the frequency response as shown.	
	2) Menu No.: 36 (14.2MHz, USB) Spectrum analyzer setting Center f.: 73.095MHz Frequency span: 75kHz TG level: 0dBm Connect the tracking generator output to CN460. Connect the spectrum analyzer input to CN470. After the adjustment, disconnect the cable from CN460 and CN470.			CN460 CN470		L406 L417 L418 L419		



## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
20. SUB RX Trap frequency  •11.3745MHz	1) Sub Display f.: 21.400000MHz Mode: USB P.AMP: ON AGC: OFF SSG f.: 11.3745MHz SSG output: -30dBm (7.07mV) Disconnect the cable from CN200 and connect the SSG output to CN200.	AF VM	TX-RX (A/2) Rear panel	CN200  EXT. SP2	TX-RX (A/2)	L352 L355	AF output min. Repeat adjust for 2 to 3 times.	
21. SUB RX FM discriminator	1) Sub Display f.: 29.200000MHz Mode: FM P.AMP: ON AF output: 0.63V/8Ω SSG f.: 29.200MHz SSG output: -53dBm (0.501mV) MOD: 1kHz DEV: 3kHz	SSG Oscillo- scope AF VM Distortion meter DM.SP Audio analyzer				L608	Adjust the L103 to get the AF maximum output of 0.63V/ 8 ohms.  Check the distortion and the waveform is a good sine wave.	AF max.  2.3% or less
22. SUB RX Carrier point  • XF484 10.695M/ 2.7kHz	1) Menu No.: 37 (1.81MHz, USB) P.AMP: OFF AGC: OFF FIL/SEL(S): 10M 2.7kHz SSG1 f.: 1.81010MHz SSG2 f.: 1.81290MHz SSG output: -33dBm (5.01mV)	SSG1 SSG2 2 signal pad Oscillo- scope	TX-RX (A/2)	CN200 TP2 (CAR)	Front panel	[UP]/[+] (F5) or [DOWN] /[−](F4)	Change the adjust- ment values to get the waveform as shown.	OK   NG 
• XF485 11.374M/ 2.7kHz	2) Menu No.: 38 (1.81MHz, USB) P.AMP: OFF AGC: OFF FIL/SEL(S): 11M 2.7kHz SSG1 f.: 1.81010MHz SSG2 f.: 1.81290MHz SSG output: -33dBm (5.01mV)							
• XF486 11.374M/ 500Hz	3) Menu No.: 39 (1.81MHz, CW) P.AMP: OFF AGC: OFF FIL/SEL(S): 11M 500Hz SSG1 f.: 1.809700MHz SSG2 f.: 1.810300MHz SSG output: -33dBm (5.01mV)							

## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
23. SUB RX NB voltage	1) Menu No.: 65 (14.2MHz, CW) SUB P.AMP: ON SUB NB1: ON AGC: FAST SSG f.: 14.200MHz SSG output: -103dBm (1.58μV)	DVM SSG Oscilloscope AF VM DM.SP Noise G.	TX-RX (A/2) TX-RX (B/2)	CN200 TP11 (NB)	TX-RX (B/2)	L885 L887 L888	Voltage min. Repeat adjust for 2 to 3 times.	3.9V or less
24. OPTICAL I/O Check	1) Menu No.: 112 (14.1MHz, USB) Mode: USB Connect between the OPTICAL IN terminal and OPTICAL OUT terminal using the cable.						Check that a 1kHz sound emerges from the internal speaker.	
25. EXT REF I/O Check	1) Menu No.: 1 (14.2MHz, USB) SSG f.: 10MHz SSG output: 0dBm (224mV) Connect the cables to the REF I/O (10MHz) terminal from the SSG. After the check, disconnect the cable from the REF I/O (10MHz) terminal.	SSG	Rear panel	REF I/O (10MHz)			Check the main display.	"ERDET: 1" appears on the main display.
26. MAIN RX AGC start level (2.7kHz)	1) Menu No.: 9 (14.2MHz, USB) P.AMP: ON FIL/SEL(M): 2.7kHz AGC: OFF SSG f.: 14.201MHz SSG output: -110dBm (0.707μV)	SSG	Rear panel	ANT 1	Front panel	[UP]/[+] (F5) or [DOWN]/[-] (F4)	Using the [UP]/[+] (F5) or [DOWN]/[-] (F4) key, adjust to the point when "A/D data" displays "1" for the first time.	
27. MAIN RX AGC start level (500Hz)	1) Menu No.: 10 (14.2MHz, USB) P.AMP: ON FIL/SEL(M): 500Hz AGC: OFF SSG f.: 14.201MHz SSG output: -110dBm (0.707μV)							
28. MAIN RX AGC start level (270Hz)	1) Menu No.: 11 (14.2MHz, USB) P.AMP: ON FIL/SEL(M): 270Hz AGC: OFF SSG f.: 14.201MHz SSG output: -110dBm (0.707μV)							

## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
29. MAIN RX AGC start level (6kHz)	1) Menu No.: 12 (14.2MHz, USB) P.AMP: ON FIL/SEL(M): 6kHz AGC: OFF SSG f.: 14.201MHz SSG output: -110dBm (0.707μV)	SSG	Rear panel	ANT 1	Front panel	[UP]/[+] (F5) or [DOWN]/[-]/[-](F4)	Using the [UP]/[+] (F5) or [DOWN]/[-] (F4) key, adjust to the point when "A/D data" displays "1" for the first time.	
30. MAIN RX AGC gain curve	1) Menu No.: 14 (14.2MHz, USB) P.AMP: ON FIL/SEL(M): 2.7kHz AGC: MID SSG f.: 14.201MHz SSG output: -55dBm (0.398mV)					[UP]/[UP-DATE] (F5)	Set the SSG, press the [UP]/[UPDATE] (F5) key.	
31. MAIN RX HF SSB S-meter • S1	1) Menu No.: 15 (14.2MHz, USB) P.AMP: ON FIL/SEL(M): 2.7kHz AGC: MID SSG f.: 14.201MHz SSG output: -107dBm (1μV)							
• S9	2) Menu No.: 16 (14.2MHz, USB) P.AMP: ON FIL/SEL(M): 2.7kHz AGC: MID SSG f.: 14.201MHz SSG output: -81dBm (19.9μV)							
• Full scale (Lights up all)	3) Menu No.: 17 (14.2MHz, USB) P.AMP: ON FIL/SEL(M): 2.7kHz AGC: MID SSG f.: 14.201MHz SSG output: -21dBm (19.9mV)							
32. MAIN RX HF FM S-meter • S1	1) Menu No.: 18 (29.2MHz, FM) FIL/SEL(M): 15kHz SSG f.: 29.200MHz SSG output: -117dBm (0.32μV) MOD: 1kHz DEV: 3kHz							

## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
MAIN RX HF FM S-meter  • Full scale (Lights up all)	2) Menu No.: 19 (29.2MHz, FM) FIL/SEL(M): 15kHz SSG f.: 29.200MHz SSG output: -95dBm (3.98μV) MOD: 1kHz DEV: 3kHz	SSG	Rear panel	ANT 1	Front panel	[UP]/ [UP- DATE] (F5)	Set the SSG, press the [UP]/[UPDATE] (F5) key.	
	• Full scale 2 (Lights up all)							
33. MAIN RX HF FM SQL threshold	1) Menu No.: 21 (29.2MHz, FM) FIL/SEL(M): 15kHz SSG f.: 29.200MHz SSG output: OFF MOD: 1kHz DEV: 3kHz							
34. MAIN RX HF FM SQL tight	1) Menu No.: 22 (29.2MHz, FM) FIL/SEL(M): 15kHz SSG f.: 29.200MHz SSG output: -113dBm (0.501μV) MOD: 1kHz DEV: 3kHz							
35. MAIN RX 50M AGC start level (2.7kHz)	1) Menu No.: 23 (50.2MHz, USB) P.AMP: ON FIL/SEL(M): 2.7kHz AGC: OFF SSG f.: 50.201MHz SSG output: -117dBm (0.32μV)					[UP]/[+] (F5) or [DOWN] /[-(F4)	Using the [UP]/[+] (F5) or [DOWN]/[-] (F4) key, adjust to the point when "A/D data" displays "1" for the first time.	
36. MAIN RX AGC start level (500Hz)	1) Menu No.: 24 (50.2MHz, USB) P.AMP: ON FIL/SEL(M): 500Hz AGC: OFF SSG f.: 50.201MHz SSG output: -117dBm (0.32μV)							

## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
37. MAIN RX 50M AGC start level (270Hz)	1) Menu No.: 25 (50.2MHz, USB) P.AMP: ON FIL/SEL(M): 270Hz AGC: OFF SSG f.: 50.201MHz SSG output: -117dBm (0.32μV)	SSG	Rear panel	ANT 1	Front panel	[UP]/[+] (F5) or [DOWN] /[−](F4)	Using the [UP]/[+] (F5) or [DOWN]/[−] (F4) key, adjust to the point when “A/D data” displays “1” for the first time.	
38. MAIN RX 50M AGC start level (6kHz)	1) Menu No.: 26 (50.2MHz, USB) P.AMP: ON FIL/SEL(M): 6kHz AGC: OFF SSG f.: 50.201MHz SSG output: -117dBm (0.32μV)							
39. MAIN RX 50M SSB S- meter  • S1	1) Menu No.: 27 (50.2MHz, USB) P.AMP: ON FIL/SEL(M): 2.7kHz AGC: MID SSG f.: 50.201MHz SSG output: -114dBm (0.44μV)					[UP]/ [UP- DATE] (F5)	Set the SSG, press the [UP]/[UPDATE] (F5) key.	
• S9	2) Menu No.: 28 (50.2MHz, USB) P.AMP: ON FIL/SEL(M): 2.7kHz AGC: MID SSG f.: 50.201MHz SSG output: -88dBm (8.9μV)							
• Full scale (Lights up all)	3) Menu No.: 29 (50.2MHz, USB) P.AMP: ON FIL/SEL(M): 2.7kHz AGC: MID SSG f.: 50.201MHz SSG output: -28dBm (8.9mV)							
40. MAIN RX 50M FM S- meter  • S1	1) Menu No.: 30 (50.2MHz, FM) FIL/SEL(M): 15kHz SSG f.: 50.200MHz SSG output: -117dBm (0.32μV) MOD: 1kHz DEV: 3kHz							

## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks		
		Test-equipment	Unit	Terminal	Unit	Parts	Method			
MAIN RX 50M FM S-meter  • Full scale (Lights up all)	2) Menu No.: 31 (50.2MHz, FM) FIL/SEL(M): 15kHz SSG f.: 50.200MHz SSG output: -95dBm (3.98μV) MOD: 1kHz DEV: 3kHz	SSG	Rear panel	ANT 1	Front panel	[UP]/[UP-DATE] (F5)	Set the SSG, press the [UP]/[UPDATE] (F5) key.			
	• Full scale 2 (Lights up all)								3) Menu No.: 32 (50.2MHz, FM) FIL/SEL(M): 15kHz SSG f.: 50.200MHz SSG output: -81dBm (19.9μV) MOD: 1kHz DEV: 3kHz	
41. MAIN RX 50M FM SQL threshold	1) Menu No.: 33 (50.2MHz, FM) FIL/SEL(M): 15kHz SSG f.: 50.200MHz SSG output: OFF MOD: 1kHz DEV: 3kHz									
42. MAIN RX 50M FM SQL tight	1) Menu No.: 34 (50.2MHz, FM) FIL/SEL(M): 15kHz SSG f.: 50.200MHz SSG output: -113dBm (0.501μV) MOD: 1kHz DEV: 3kHz									
43. SCOPE gain	1) Menu No.: 35 (14.2MHz, CW) P.AMP: ON FIL/SEL(M): 2.7kHz SSG f.: 14.2MHz SSG output: -40dBm (2.24mV)									
44. SUB RX AGC start level (73M/6kHz)	1) Menu No.: 40 (14.2MHz, USB) P.AMP: ON FIL/SEL(S): 10M 6kHz AGC: OFF SSG f.: 14.201MHz SSG output: -110dBm (0.707μV)								[UP]/[+] (F5) or [DOWN]/[-] (F4)	Using the [UP]/[+] (F5) or [DOWN]/[-] (F4) key, adjust to the point when "A/D data" displays "1" for the first time.
45. SUB RX AGC start level (73M/2.7kHz)	1) Menu No.: 41 (14.2MHz, USB) P.AMP: ON FIL/SEL(S): 10M 2.7kHz AGC: OFF SSG f.: 14.201MHz SSG output: -110dBm (0.707μV)									



## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
46. SUB RX AGC start level (11M/ 2.7kHz)	1) Menu No.: 42 (14.2MHz, USB) P.AMP: ON FIL/SEL(S): 11M 2.7kHz AGC: OFF SSG f.: 14.201MHz SSG output: -110dBm (0.707μV)	SSG	Rear panel	ANT 1	Front panel	[UP]/[+] (F5) or [DOWN]/[-] (F4)	Using the [UP]/[+] (F5) or [DOWN]/[-] (F4) key, adjust to the point when "A/D data" displays "1" for the first time.	
47. SUB RX AGC start level (11M 500Hz)	1) Menu No.: 43 (14.2MHz, USB) P.AMP: ON FIL/SEL(S): 11M 500Hz AGC: OFF SSG f.: 14.201MHz SSG output: -110dBm (0.707μV)							
48. SUB RX AGC gain curve	1) Menu No.: 46 (14.2MHz, USB) P.AMP: ON FIL/SEL(S): 11M 2.7kHz AGC: MID SSG f.: 14.201MHz SSG output: -55dBm (0.398mV)				[UP]/[UP-DATE] (F5)	Set the SSG, press the [UP]/[UPDATE] (F5) key.		
49. SUB RX HF SSB S-meter  • S1	1) Menu No.: 47 (14.2MHz, USB) P.AMP: ON FIL/SEL(S): 11M 2.7kHz AGC: MID SSG f.: 14.201MHz SSG output: -107dBm (1μV)							
	• S9				2) Menu No.: 48 (14.2MHz, USB) P.AMP: ON FIL/SEL(S): 11M 2.7kHz AGC: MID SSG f.: 14.201MHz SSG output: -81dBm (19.9μV)			
	• Full scale (Lights up all)	3) Menu No.: 49 (14.2MHz, USB) P.AMP: ON FIL/SEL(S): 11M 2.7kHz AGC: MID SSG f.: 14.201MHz SSG output: -21dBm (19.9mV)						
50. SUB RX HF FM S-meter  • S1	1) Menu No.: 50 (29.2MHz, FM) SSG f.: 29.200MHz SSG output: -117dBm (0.32μV) MOD: 1kHz DEV: 3kHz							

## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
SUB RX HF FM S-meter  • Full scale (Lights up all)	2) Menu No.: 51 (29.2MHz, FM) SSG f.: 29.200MHz SSG output: -95dBm (3.98μV) MOD: 1kHz DEV: 3kHz	SSG	Rear panel	ANT 1	Front panel	[UP]/ [UP- DATE] (F5)	Set the SSG, press the [UP]/[UPDATE] (F5) key.	
	• Full scale 2 (Lights up all)							
51. SUB RX HF FM SQL threshold	1) Menu No.: 53 (29.2MHz, FM) SSG f.: 29.200MHz SSG output: OFF MOD: 1kHz DEV: 3kHz							
52. SUB RX HF FM SQL tight	1) Menu No.: 54 (29.2MHz, FM) SSG f.: 29.200MHz SSG output: -113dBm (0.501μV) MOD: 1kHz DEV: 3kHz							
53. SUB RX 50M AGC start level (73M/6kHz)	1) Menu No.: 55 (50.2MHz, USB) P.AMP: ON FIL/SEL(S): 10M 6kHz AGC: OFF SSG f.: 50.201MHz SSG output: -120dBm (0.22μV)					[UP]/[+] (F5) or [DOWN] /[-(F4)	Using the [UP]/[+] (F5) or [DOWN]/[-] (F4) key, adjust to the point when "A/D data" displays "1" for the first time.	
54. SUB RX 50M AGC start level (73M/ 2.7kHz)	1) Menu No.: 56 (50.2MHz, USB) P.AMP: ON FIL/SEL(S): 10M 2.7kHz AGC: OFF SSG f.: 50.201MHz SSG output: -120dBm (0.22μV)							
55. SUB RX 50M SSB S- meter  • S1	1) Menu No.: 57 (50.2MHz, USB) P.AMP: ON FIL/SEL(S): 10M 2.7kHz AGC: MID SSG f.: 50.201MHz SSG output: -114dBm (0.44μV)					[UP]/ [UP- DATE] (F5)	Set the SSG, press the [UP]/[UPDATE] (F5) key.	

## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks	
		Test-equipment	Unit	Terminal	Unit	Parts	Method		
SUB RX 50M SSB S-meter  • S9	2) Menu No.: 58 (50.2MHz, USB) P.AMP: ON FIL/SEL(S): 10M 2.7kHz AGC: MID SSG f.: 50.201MHz SSG output: -88dBm (8.9μV)	SSG	Rear panel	ANT 1	Front panel	[UP]/ [UP- DATE] (F5)	Set the SSG, press the [UP]/[UPDATE] (F5) key.		
	• Full scale (Lights up all)								3) Menu No.: 59 (50.2MHz, USB) P.AMP: ON FIL/SEL(S): 10M 2.7kHz AGC: MID SSG f.: 50.201MHz SSG output: -28dBm (8.9mV)
56. SUB RX 50M FM S-meter  • S1	1) Menu No.: 60 (50.2MHz, FM) SSG f.: 50.200MHz SSG output: -117dBm (0.32μV) MOD: 1kHz DEV: 3kHz								
	• Full scale (Lights up all)								2) Menu No.: 61 (50.2MHz, FM) SSG f.: 50.200MHz SSG output: -95dBm (3.98μV)
	• Full scale 2 (Lights up all)								3) Menu No.: 62 (50.2MHz, FM) SSG f.: 50.200MHz SSG output: -81dBm (19.9μV)
57. SUB RX 50M FM SQL threshold	1) Menu No.: 63 (50.2MHz, FM) SSG f.: 50.200MHz SSG output: OFF MOD: 1kHz DEV: 3kHz								
58. SUB RX 50M FM SQL tight	1) Menu No.: 64 (50.2MHz, FM) SSG f.: 50.200MHz SSG output: -113dBm (0.501μV) MOD: 1kHz DEV: 3kHz								

## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks																																																																																																																																																																
		Test-equipment	Unit	Terminal	Unit	Parts	Method																																																																																																																																																																	
59. SUB RX SCOPE gain (11M/ 2.7kHz)	1) Menu No.: 65 (14.2MHz, CW) P.AMP: ON FIL/SEL(S): 11M 2.7kHz SSG f.: 14.200MHz SSG output: -40dBm (2.24mV)	SSG	Rear panel	ANT1	Front panel	[UP]/[UP-DATE] (F5)	Set the SSG, press the [UP]/[UPDATE] (F5) key.																																																																																																																																																																	
60. SUB RX SCOPE gain (73M/ 2.7kHz)	1) Menu No.: 66 (14.2MHz, CW) P.AMP: ON FIL/SEL(S): 10M 2.7kHz SSG f.: 14.205MHz SSG output: -40dBm (2.24mV)																																																																																																																																																																							
<p>• Writing data: After items 7, 8, 9, 11, 12, 13 and 22~60 have been adjusted;            1) Menu No.: 128            2) [APPLY] (F7) key: Push once time.</p>																																																																																																																																																																								
61. MAIN RX S/N Check	1) Main display f.: Refer to Table 1. AF output: 0.63V/8Ω AGC: FAST SSG f.: Refer to Table 1. However, USB : +1kHz LSB: -1kHz P.AMP: ON ATT: OFF	SSG Oscilloscope AF VM DM.SP	Rear panel	ANT1 EXT. SP1																																																																																																																																																																				
		<table border="1"> <thead> <tr> <th>Frequency</th> <th>Mode</th> <th>SSG frequency</th> <th>SSG RF level (dBm)</th> <th>SSG MOD</th> <th>DEV</th> <th>Measurement</th> <th>Spec.</th> </tr> </thead> <tbody> <tr><td>137kHz</td><td>LSB</td><td>136kHz</td><td>-111</td><td>OFF</td><td>OFF</td><td>S/N</td><td>&gt;10dB</td></tr> <tr><td>550kHz</td><td>AM</td><td>550kHz</td><td>-85</td><td>1kHz</td><td>60% → OFF</td><td>S/N</td><td>&gt;10dB</td></tr> <tr><td>1.8MHz</td><td>LSB</td><td>1.799MHz</td><td>-119</td><td>OFF</td><td>OFF</td><td>S/N</td><td>&gt;10dB</td></tr> <tr><td>3.7MHz</td><td>CW</td><td>3.700MHz</td><td>-123</td><td>OFF</td><td>OFF</td><td>S/N</td><td>&gt;10dB</td></tr> <tr><td>5.3MHz</td><td>LSB</td><td>5.299MHz</td><td>-119</td><td>OFF</td><td>OFF</td><td>S/N</td><td>&gt;10dB</td></tr> <tr><td>7.2MHz</td><td>LSB</td><td>7.199MHz</td><td>-119</td><td>OFF</td><td>OFF</td><td>S/N</td><td>&gt;10dB</td></tr> <tr><td>7.05MHz</td><td>USB</td><td>8.248MHz</td><td>-45</td><td>OFF</td><td>OFF</td><td>S/N</td><td>&lt;10dB</td></tr> <tr><td>10.1MHz</td><td>USB</td><td>10.101MHz</td><td>-119</td><td>OFF</td><td>OFF</td><td>S/N</td><td>&gt;10dB</td></tr> <tr><td>12.2MHz</td><td>USB</td><td>12.201MHz</td><td>-119</td><td>OFF</td><td>OFF</td><td>S/N</td><td>&gt;10dB</td></tr> <tr><td>14.2MHz</td><td>USB</td><td>14.201MHz</td><td>-119</td><td>OFF</td><td>OFF</td><td>S/N</td><td>&gt;10dB</td></tr> <tr><td>18.2MHz</td><td>USB</td><td>18.201MHz</td><td>-119</td><td>OFF</td><td>OFF</td><td>S/N</td><td>&gt;10dB</td></tr> <tr><td>21.2MHz</td><td>FSK</td><td>21.200MHz</td><td>-119</td><td>OFF</td><td>OFF</td><td>S/N</td><td>&gt;10dB</td></tr> <tr><td>24.8MHz</td><td>PSK</td><td>24.800MHz</td><td>-123</td><td>OFF</td><td>OFF</td><td>S/N</td><td>&gt;10dB</td></tr> <tr><td>29.6MHz</td><td>FM</td><td>29.600MHz</td><td>-118.5</td><td>1kHz</td><td>3kHz</td><td>SINAD</td><td>&gt;12dB</td></tr> <tr><td>38.0MHz</td><td>USB</td><td>38.001MHz</td><td>-110</td><td>OFF</td><td>OFF</td><td>S/N</td><td>&gt;10dB</td></tr> <tr><td>43.0MHz</td><td>USB</td><td>43.001MHz</td><td>-110</td><td>OFF</td><td>OFF</td><td>S/N</td><td>&gt;10dB</td></tr> <tr><td>51.2MHz</td><td>FM</td><td>51.200MHz</td><td>-118.5</td><td>1kHz</td><td>3kHz</td><td>SINAD</td><td>&gt;12dB</td></tr> <tr><td>50.2MHz</td><td>USB</td><td>50.201MHz</td><td>-123</td><td>OFF</td><td>OFF</td><td>S/N</td><td>&gt;10dB</td></tr> <tr><td>53.5MHz</td><td>USB</td><td>53.500MHz</td><td>-123</td><td>OFF</td><td>OFF</td><td>S/N</td><td>&gt;10dB</td></tr> </tbody> </table>							Frequency	Mode	SSG frequency	SSG RF level (dBm)	SSG MOD	DEV	Measurement	Spec.	137kHz	LSB	136kHz	-111	OFF	OFF	S/N	>10dB	550kHz	AM	550kHz	-85	1kHz	60% → OFF	S/N	>10dB	1.8MHz	LSB	1.799MHz	-119	OFF	OFF	S/N	>10dB	3.7MHz	CW	3.700MHz	-123	OFF	OFF	S/N	>10dB	5.3MHz	LSB	5.299MHz	-119	OFF	OFF	S/N	>10dB	7.2MHz	LSB	7.199MHz	-119	OFF	OFF	S/N	>10dB	7.05MHz	USB	8.248MHz	-45	OFF	OFF	S/N	<10dB	10.1MHz	USB	10.101MHz	-119	OFF	OFF	S/N	>10dB	12.2MHz	USB	12.201MHz	-119	OFF	OFF	S/N	>10dB	14.2MHz	USB	14.201MHz	-119	OFF	OFF	S/N	>10dB	18.2MHz	USB	18.201MHz	-119	OFF	OFF	S/N	>10dB	21.2MHz	FSK	21.200MHz	-119	OFF	OFF	S/N	>10dB	24.8MHz	PSK	24.800MHz	-123	OFF	OFF	S/N	>10dB	29.6MHz	FM	29.600MHz	-118.5	1kHz	3kHz	SINAD	>12dB	38.0MHz	USB	38.001MHz	-110	OFF	OFF	S/N	>10dB	43.0MHz	USB	43.001MHz	-110	OFF	OFF	S/N	>10dB	51.2MHz	FM	51.200MHz	-118.5	1kHz	3kHz	SINAD	>12dB	50.2MHz	USB	50.201MHz	-123	OFF	OFF	S/N	>10dB	53.5MHz	USB	53.500MHz	-123	OFF	OFF	S/N	>10dB
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		<p style="text-align: center;">Table 1</p>																																																																																																																																																																						



## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks		
		Test-equipment	Unit	Terminal	Unit	Parts	Method			
65. SUB PRE-AMP gain  • 14M	1) Display f.: 14.200000MHz Mode: USB P.AMP: ON AGC: FAST AF output: 0.63V/8Ω SSG f.: 14.201MHz SSG output: -119dBm (0.25μV)	SSG Oscillo- scope AF VM DM.SP	Rear panel	ANT1 EXT. SP1			Set the AF level at 0dB.			
	2) P.AMP: OFF							Check the AF level.	-(5~15)dB	
	• 50M							3) Display f.: 50.200000MHz Mode: USB P.AMP: ON AGC: FAST AF output: 0.63V/8Ω SSG f.: 50.201MHz SSG output: -119dBm (0.25μV)	Set the AF level at 0dB.	
								4) P.AMP: OFF	Check the AF level.	-(8~18)dB
66. MAIN RF ATT	1) Display f.: 14.200000MHz Mode: USB ATT: OFF P.AMP: OFF AGC: FAST AF output: 0.63V/8Ω SSG f.: 14.201MHz SSG output: -100dBm (2.24μV)						Set the AF level at 0dB.			
	2) ATT: OFF → -18dB SSG f.: 14.201MHz SSG output: -82dBm (18μV)						Check the AF level.	±2dB		
67. SUB RF ATT	1) Display f.: 14.200000MHz Mode: USB ATT: OFF P.AMP: OFF AGC: FAST AF output: 0.63V/8Ω SSG f.: 14.201MHz SSG output: -100dBm (2.24μV)						Set the AF level at 0dB.			
	2) ATT: OFF → -18dB SSG f.: 14.201MHz SSG output: -82dBm (18μV)						Check the AF level.	±2dB		



# TS-990S

## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
68. MAIN NB gain	1) Display f.: 14.250000MHz Mode: USB P.AMP: OFF NB1: OFF	Oscilloscope AF VM DM.SP Noise G.	Rear panel	RX IN EXT. SP1			Adjust output of noise generator to S7, and check.	S-meter 27 dots (S7) or more
	S-meter check						S-meter 11 dots (S3) or less	
69. SUB NB gain	1) Display f.: 14.250000MHz Mode: USB P.AMP: OFF NB1: OFF						Adjust output of noise generator to S7, and check.	S-meter 27 dots (S7) or more
	S-meter check						S-meter 11 dots (S3) or less	

## ADJUSTMENT

### Transmitter Section

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
• Perform the following in the adjustment mode. Item 1 and 7~35 have been adjusted; To terminate the adjustment menu in the middle, save your settings with Menu No. 128.								
1. ALC reference voltage	1) Menu No. : 67 (14.1MHz, USB) Transmit	DVM	TX-RX (A/2)	TP1 (ALC)	Front panel	[UP]/[+] (F5) or [DOWN] /[-](F4)	Set the adjustment value within the limit of the specified voltage.	2.5V±0.1V
2. TX IF Gain	1) Main display f.: 18.100000MHz Mode: CW DRV: ON Transmit Connect the spectrum analyzer input to J700. After the adjustment, disconnect the cable from J700.	50Ω dummy Oscilloscope Spectrum analyzer		J700 (DRV)	TX-RX (A/2)	L720 L721	Output level max.	-4dBm or more
3. TX IF Gain Check	1) Main display f.: 18.100000MHz Mode: CW DRV: OFF Transmit Disconnect the cable from CN800 and connect the spectrum analyzer input to CN800. After the adjustment, disconnect the cable from CN800.			CN800			Check the output level.	-4dBm or more
4. TX HF BPF (49~54M) Check	1) Main display f.: 50.000000MHz Mode: CW Transmit						Check the drive output level.	
5. Final idling current	1) Main display f.: 51.990000MHz Mode: USB Final unit (A/2) VR1~4: MIN Transmit  Disconnect the lead wire with connector (E37-1612-05) that is connected between the CN36 and CN16, and attach jig cable (W05-1776-00). When you adjust VR1, connect each pin 1 of jig cable to an ammeter. When you adjust VR2, connect each pin 3 of jig cable to an ammeter. (Refer to page 162.) After the adjustment, disconnect jig cable and reconnect the lead wire with connector (E37-1612-05) to its original position.	Ammeter	Final (A/2) DC-DC (A/3)	CN36 CN16	Final (A/2)		Check the default current ( $I_0$ ).	
						VR1	$I_0 + 650\text{mA}$	±50mA
						VR2	1500mA	±100mA

## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
Final idling current	2) Main display f.: 51.990000MHz Mode: USB Final unit (A/2) VR1~4: MIN Transmit Disconnect the lead wire with connector (E37-1611-05) that is connected between the CN32 and the AC/DC power supply 4-pin connectors, and attach jig cable (W05-1772-00). Connect the jig cable to an ammeter. (Refer to page 161.) After the adjustment, disconnect jig cable and reconnect the lead wire with connector (E37-1611-05) to its original position.  <b>Note:</b> • Continuously adjust VR3 and VR4. Do not return to the reception condition after adjusting VR3.  • Prior to connecting a jig cable to an ammeter, turn the main power OFF with the main power switch (I/O) on the rear panel.	Ammeter	Final (A/2) AC/DC power supply	CN32 4-pin connector	Final (A/2)		Check the default current ( $I_1$ ). $I_1 = 16\text{mA}$ (approximately)	
						VR3	$I_1 + 250\text{mA} = I_2$	$\pm 50\text{mA}$
						VR4	$I_2 + 250\text{mA} = I_3$	$\pm 50\text{mA}$
6. FAN Check	1) Main display f.: 14.100000MHz Mode: CW AT: ON Short TP5 and GND.		Final (A/2)	TP5			Check	Two Final FAN rotate strongly. The AT FAN operates during AT ON. There are no abnormal noises.
	2) Main display f.: 14.100000MHz Mode: CW AT: ON Short TP6 and GND.			TP6				
7. Vd meter	1) Menu No.: 110 (14.1MHz, USB) Transmit	Power meter 500W ATT	Rear panel	ANT1	Front panel	[UP]/[UPDATE] (F5)	1 push	
8. ID current setting	1) Menu No.: 104 (29.1MHz, CW) Transmit <b>Note:</b> Record the current adjustment value.				Front panel	[UP]/[+](F5) or [DOWN]/[-](F4)	Set the adjustment value to 35.	This adjustment is performed for "9. Power Check".

## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
9. Power Check  • 1.83MHz  • 3.51MHz  • 5.3MHz  • 7.01MHz  • 10.1MHz  • 14.1MHz  • 18.1MHz	1) Menu No.: 126 Main display f.: 1.830000MHz Mode: CW CAR: MAX Power: 20W Transmit	Power meter 500W ATT	Rear panel	ANT1			Check	5W or more  <b>Note:</b> To check LPF operating
	2) Menu No.: 126 Main display f.: 3.510000MHz Mode: CW CAR: MAX Power: 20W Transmit							
	3) Menu No.: 126 Main display f.: 5.300000MHz Mode: CW CAR: MAX Power: 20W Transmit							
	4) Menu No. : 126 Main display f.: 7.010000MHz Mode: CW CAR: MAX Power: 20W Transmit							
	5) Menu No.: 126 Main display f.: 10.100000MHz Mode: CW CAR: MAX Power: 20W Transmit							
	5) Menu No.: 126 Main display f.: 14.100000MHz Mode: CW CAR: MAX Power: 20W Transmit							
	6) Menu No.: 126 Main display f.: 18.100000MHz Mode: CW CAR: MAX Power: 20W Transmit							

## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
Power Check • 21.1MHz  • 29.1MHz  • 50.1MHz	7) Menu No.: 126 Main display f.: 21.100000MHz Mode: CW CAR: MAX Power: 20W Transmit	Power meter 500W ATT	Rear panel	ANT1			Check	5W or more
	8) Menu No.: 126 Main display f.: 29.100000MHz Mode: CW CAR: MAX Power: 20W Transmit							
	9) Menu No.: 126 Main display f.: 50.100000MHz Mode: CW CAR: MAX Power: 20W Transmit							
10. ID current resetting	1) Menu No.: 104 (29.1MHz, CW) Transmit				Front panel	[UP]/ [+](F5) or [DOWN] /[-](F4)	Set the original adjustment value recorded by "8. ID current setting."	
11. 14.1MHz Null	1) Menu No.: 73 (14.1MHz, CW) Transmit Check that the volume posi- tion of VR1 is at center.	Power meter 500W ATT	Rear panel	ANT1	AT (A/2)	VR1	Check the transmit power.	50~150W
	2) Menu No.: 73 (14.1MHz, CW) Transmit	Power meter 500W ATT DVM	Rear panel AT (A/2)	ANT1 TP1 (VSR)	AT (A/2)	TC1	VSR voltage min.  <b>Note:</b> Use an ad- justment rod (W05- 1770-00) to adjust TC1.	0.3V or less
12. AT detec- tion balance	1) Menu No.: 79 (14.1MHz, CW) Transmit	Power meter 500W ATT	Rear panel	ANT1	Front panel	[UP]/ [+](F5) or [DOWN] /[-](F4)	Set the adjustment value within the limit of the specifi ed power.	10W±1W

## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
AT detection balance	2) Menu No.: 109 (50.1MHz, CW) Power: 10W Transmit	Oscilloscope Power meter 500W ATT	Rear panel AT (A/2)	ANT1 TP2 (AMD)	AT (A/2)	VR1	Turn the VR1 to the point where the waveform on the oscilloscope changes from high to low. (Threshold point)	
13. Antenna terminal Check	1) Menu No.: 79 (14.1MHz, CW) Select "ANT1" by pressing the function key. Transmit	Power meter	Rear panel	ANT1			Check that the transmit power is sent from the antenna terminal "ANT1".	10W
	2) Menu No.: 79 (14.1MHz, CW) Transmit Select "ANT2" by pressing the function key. Disconnect the cable from ANT1 and connect a cable to ANT2.			ANT2			Check that the transmit power is sent from the antenna terminal "ANT2".	
	3) Menu No.: 79 (14.1MHz, CW) Select "ANT3" by pressing the function key. Transmit Disconnect the cable from ANT2 and connect a cable to ANT3.			ANT3			Check that the transmit power is sent from the antenna terminal "ANT3".	
	4) Menu No.: 79 (14.1MHz, CW) Select "ANT4" by pressing the function key. Transmit Disconnect the cable from ANT3 and connect a cable to ANT4.			ANT4			Check that the transmit power is sent from the antenna terminal "ANT4".	
14. HF POC 200W	1) Menu No.: 69 (14.1MHz, CW) Transmit	Power meter 500W ATT	Rear panel	ANT1	Front panel	[UP]/ [+](F5) or [DOWN]/ [-](F4)	Set the adjustment value within the limit of the specified power.	200W±5W
15. Power meter 200W	1) Menu No.: 70 (14.1MHz, CW) Transmit					[UP]/ [UPDATE] (F5)	1 push	



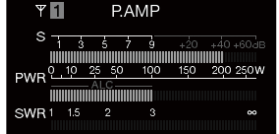
## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
16. 50M POC 200W	1) Menu No.: 71 (14.1MHz, CW) Transmit	Power meter 500W ATT	Rear panel	ANT1	Front panel	[UP]/ [+](F5) or [DOWN] /[-](F4)	Set the adjustment value within the limit of the specified power.	200W±5W
17. 50M Power meter 200W	1) Menu No.: 72 (14.1MHz, CW) Transmit					[UP]/ [UP- DATE] (F5)	1 push	Power meter lights up to 200W position.
18. HF POC 100W	1) Menu No.: 73 (14.1MHz, CW) Transmit					[UP]/ [+](F5) or [DOWN] /[-](F4)	Set the adjustment value within the limit of the specified power.	100W±3W
19. Power meter 100W	1) Menu No.: 74 (14.1MHz, CW) Transmit					[UP]/ [UP- DATE] (F5)	1 push	Power meter lights up to 100W position.
20. HF POC 50W	1) Menu No.: 75 (14.1MHz, CW) Transmit					[UP]/ [+](F5) or [DOWN] /[-](F4)	Set the adjustment value within the limit of the specified power.	50W±2W
21. Power meter 50W	1) Menu No.: 76 (14.1MHz, CW) Transmit					[UP]/ [UP- DATE] (F5)	1 push	Power meter lights up to 50W position.
22. HF POC 25W	1) Menu No.: 77 (14.1MHz, CW) Transmit					[UP]/ [+](F5) or [DOWN] /[-](F4)	Set the adjustment value within the limit of the specified power.	25W±1W

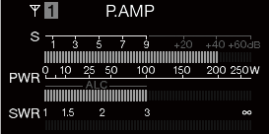
## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
23. Power meter 25W	1) Menu No.: 78 (14.1MHz, CW) Transmit	Power meter 500W ATT	Rear panel	ANT1	Front panel	[UP]/[UP-DATE] (F5)	1 push	Power meter lights up to 25W position.
24. HF POC 10W	1) Menu No.: 79 (14.1MHz, CW) Transmit					[UP]/[+](F5) or [DOWN]/[-](F4)	Set the adjustment value within the limit of the specified power.	10W±0.5W
25. Power meter 10W	1) Menu No.: 80 (14.1MHz, CW) Transmit					[UP]/[UP-DATE] (F5)	1 push	Power meter lights up to 10W position.
26. HF POC 5W	1) Menu No.: 81 (14.1MHz, CW) Transmit					[UP]/[+](F5) or [DOWN]/[-](F4)	Set the adjustment value within the limit of the specified power.	5.0W±0.3W
27. Power meter 5W	1) Menu No.: 82 (14.1MHz, CW) Transmit					[UP]/[UP-DATE] (F5)	1 push	Power meter lights up to 5W position.
28. HF TGC 14M	1) Menu No.: 83 (14.1MHz, CW) Transmit					[UP]/[+](F5) or [DOWN]/[-](F4)	Set the adjustment value within the limit of the specified power.	200W±5W
29. ALC meter • Start point	1) Menu No.: 84 (14.1MHz, CW) Transmit					[UP]/[UP-DATE] (F5)	1 push	ALC meter lights up to 1.
• Zone max. point	2) Menu No.: 85 (14.1MHz, CW) Transmit					[UP]/[UP-DATE] (F5)	1 push	ALC meter zone max.

## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
30. HF TGC • 1.8M  • 3.5M  • 5M  • 7M  • 10M  • 18M  • 21M  • 24.9M  • 28M  • 50M	1) Menu No.: 87 (1.83MHz, CW) Transmit	Power meter 500W ATT	Rear panel	ANT1	Front panel	[UP]/ [+](F5) or [DOWN]/ [-](F4)	Adjust the ALC meter zone to maximum.	ALC meter 35 dots  
	2) Menu No.: 88 (3.51MHz, CW) Transmit							
	3) Menu No.: 89 (5.3MHz, CW) Transmit							
	4) Menu No.: 90 (7.01MHz, CW) Transmit							
	5) Menu No.: 91 (10.1MHz, CW) Transmit							
	6) Menu No.: 92 (18.1MHz, CW) Transmit							
	7) Menu No.: 93 (21.1MHz, CW) Transmit							
	8) Menu No.: 94 (24.9MHz, CW) Transmit							
	9) Menu No.: 95 (29.1MHz, CW) Transmit							
	10) Menu No.: 96 (50.1MHz, CW) Transmit							

## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
31. HF PGC  • 100W  • 50W  • 25W  • 10W  • 5W	1) Menu No.: 97 (14.1MHz, CW) Transmit	Power meter 500W ATT	Rear panel	ANT1	Front panel	[UP]/ [+](F5) or [DOWN]/ [-](F4)	Adjust the ALC meter zone to maximum.	ALC meter 35 dots  
	2) Menu No.: 98 (14.1MHz, CW) Transmit							
	3) Menu No.: 99 (14.1MHz, CW) Transmit							
	4) Menu No.: 100 (14.1MHz, CW) Transmit							
	5) Menu No.: 101 (14.1MHz, CW) Transmit							
32. FM deviation  • Wide  • Narrow	1) Menu No.: 102 (29.1MHz, FM) Transmit	Power meter Linear detector 500W ATT	Rear panel	ANT1	Front panel	[UP]/ [+](F5) or [DOWN]/ [-](F4)	4.2kHz According to the larger +, -.	±0.05kHz
	2) Menu No.: 103 (29.1MHz, FM) Transmit						2.1kHz According to the larger +, -.	±0.05kHz
33. SCOPE gain	1) Menu No.: 113 (14.1MHz, CW) Transmit	Power meter 500W ATT	Rear panel	ANT1	Front panel	[[UP]/ [UP-DATE]] (F5)	1 push	
34. Protection  • 14M	1) Menu No.: 105 (14.1MHz, CW) Transmit Use a cable that is 1m long TS-990 ↓ (1m cable) Power meter ↓ (Direct connection) 150Ω dummy load	150Ω dummy load Through type power meter	Rear panel	ANT1	Front panel	[UP]/ [+](F5) or [DOWN]/ [-](F4)	Set the adjustment value within the limit of the specified power.	80W±2W

## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
Protection • 50M	2) Menu No.: 106 (50.1MHz, CW) Transmit Use a cable that is 1m long TS-990 ↓ (1m cable) Power meter ↓ (Direct connection) 150Ω dummy load	150Ω dummy load Through type power meter	Rear panel	ANT1	Front panel	[UP]/ [+](F5) or [DOWN] /[-](F4)	Set the adjustment value within the limit of the specified power.	80W±2W
35. SWR meter • 14M (SWR: 3)	1) Menu No.: 107 (14.1MHz, CW) Transmit 150Ω dummy connection : Use a cable that is 18cm long	150Ω dummy load	Rear panel	ANT1	Front panel	[UP]/ [UP-DATE] (F5)	1 push	SWR meter lights up to 3 position.
• 50M (SWR: 3)	2) Menu No.: 108 (50.1MHz, CW) Transmit 150Ω dummy connection: Use a cable that is 18cm long							
• Writing data : After items 1 and 7~35 have been adjusted; 1) Menu No.: 128 2) [APPLY] (F7) key: Push once time.								
36. SWR meter Check • 1.81M	1) Main display f.: 1.810000MHz Mode: CW Transmit 150Ω dummy connection: Use a cable that is 18cm long	150Ω dummy load	Rear panel	ANT1			Check the SWR meter.	SWR meter position: 3
37. AT Check • 1.81M	1) Main display f.: 1.810000MHz Mode: CW AT: ON (Press and hold the [AT] key) Transmit 150Ω dummy connection: Use a cable that is 1m long							SWR meter position: 1.3 or less
38. SWR meter Check • 14.1M	1) Main display f.: 14.100000MHz Mode: CW AT: OFF Transmit 150Ω dummy connection: Use a cable that is 18cm long							SWR meter position: 3

## ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
39. AT Check • 14.1M	1) Main display f.: 14.100000MHz Mode: CW AT: ON (Press and hold the [AT] key) Transmit 150Ω dummy connection: Use a cable that is 1m long	150Ω dummy load	Rear panel	ANT1			Check the SWR meter.	SWR meter position: 1.3 or less
40. SWR meter Check • 50M	1) Main display f.: 51.990000MHz Mode: CW AT: OFF Transmit 150Ω dummy connection: Use a cable that is 18cm long							SWR meter position: 3
41. AT Check • 50M	1) Main display f.: 51.990000MHz Mode: CW AT: ON (Press and hold the [AT] key) Transmit 150Ω dummy connection: Use a cable that is 1m long	150Ω dummy load	Rear panel	ANT1			Check the SWR meter.	SWR meter position: 1.3 or less
42. METER Check	1) Main display f.: 14.200000MHz Mode: CW Power: 200W Transmit	150Ω dummy load Through type power meter			Front panel	[METER] (F)	Check that each meter is in the specified range.	TEMP meter: 10~60 dots Vd meter: 48~52V Id meter: 7~10A

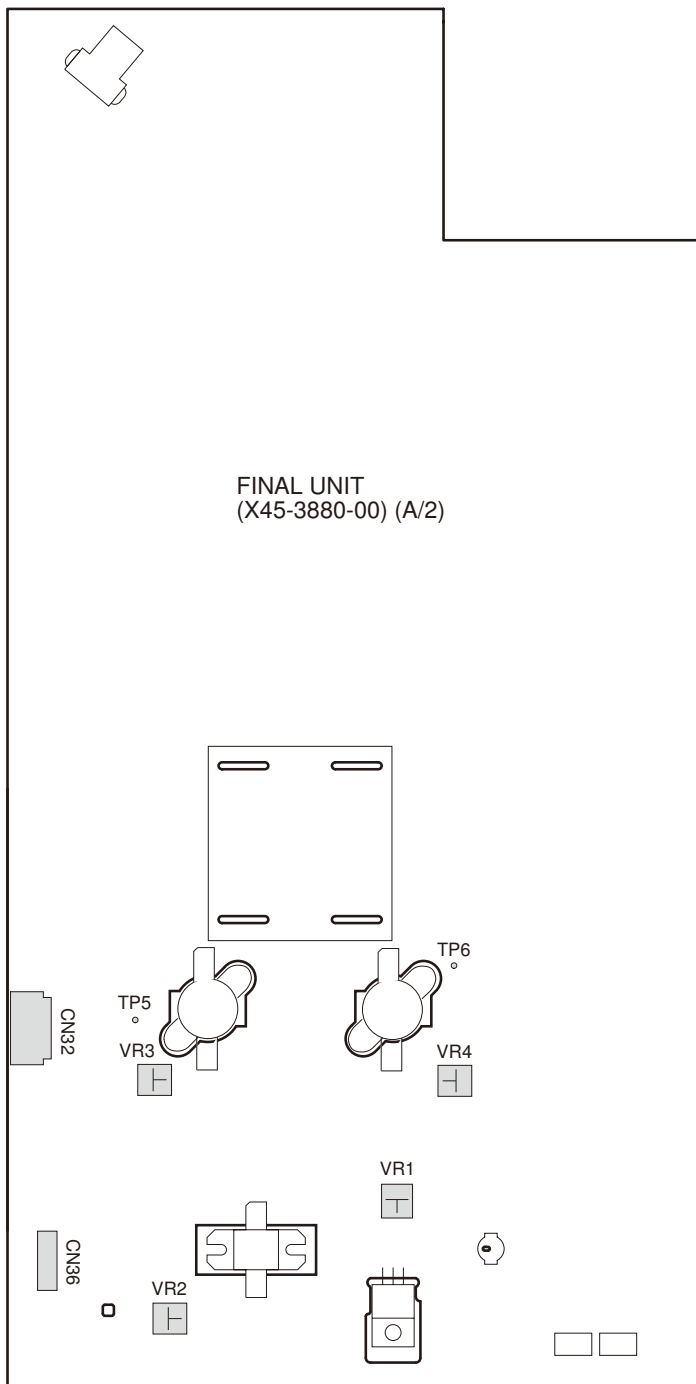


## ADJUSTMENT

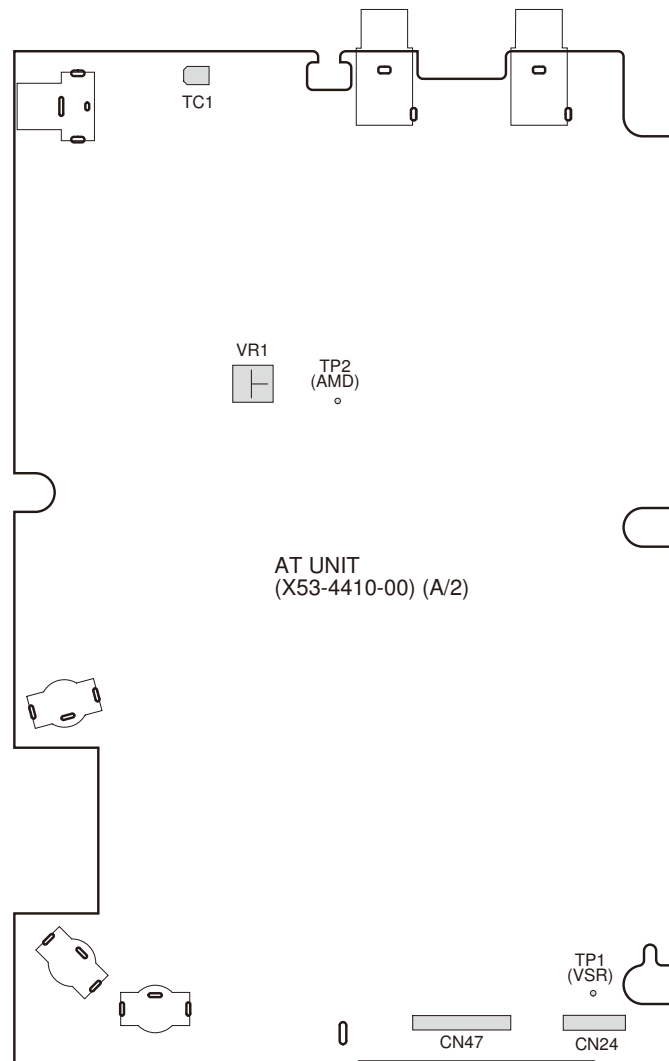
### Adjustment Points (Upper Side)

■ FINAL UNIT (X45-3880-00) (A/2)

■ AT UNIT (X53-4410-00) (A/2)



↓  
FRONT

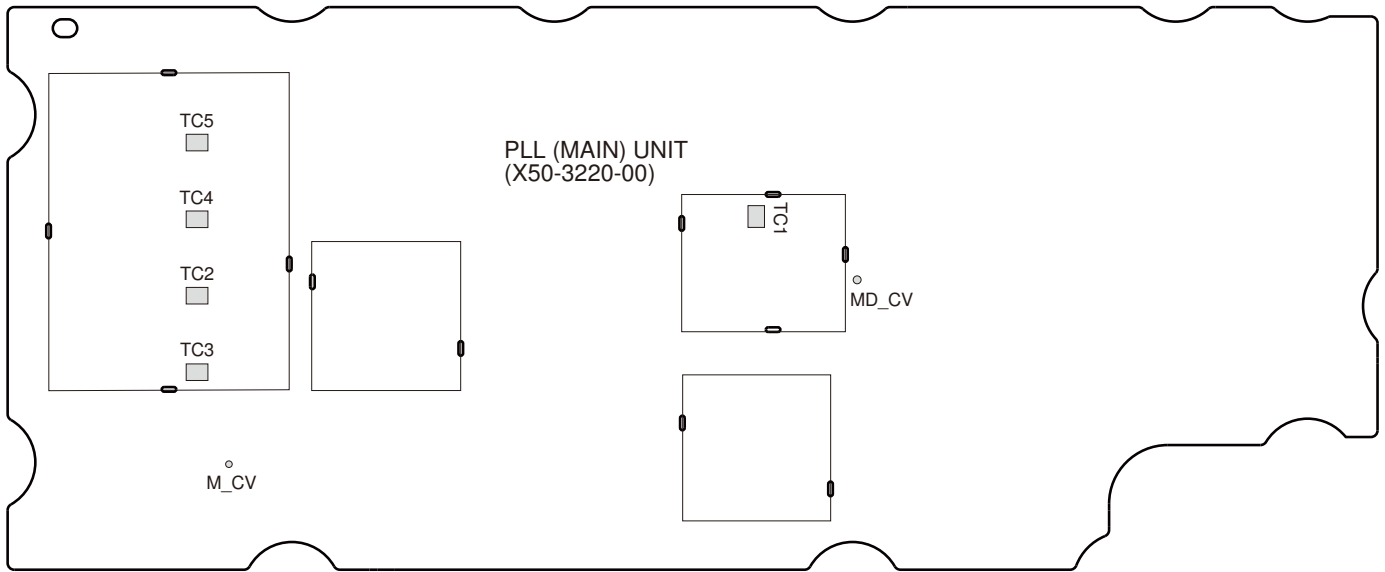


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FRONT

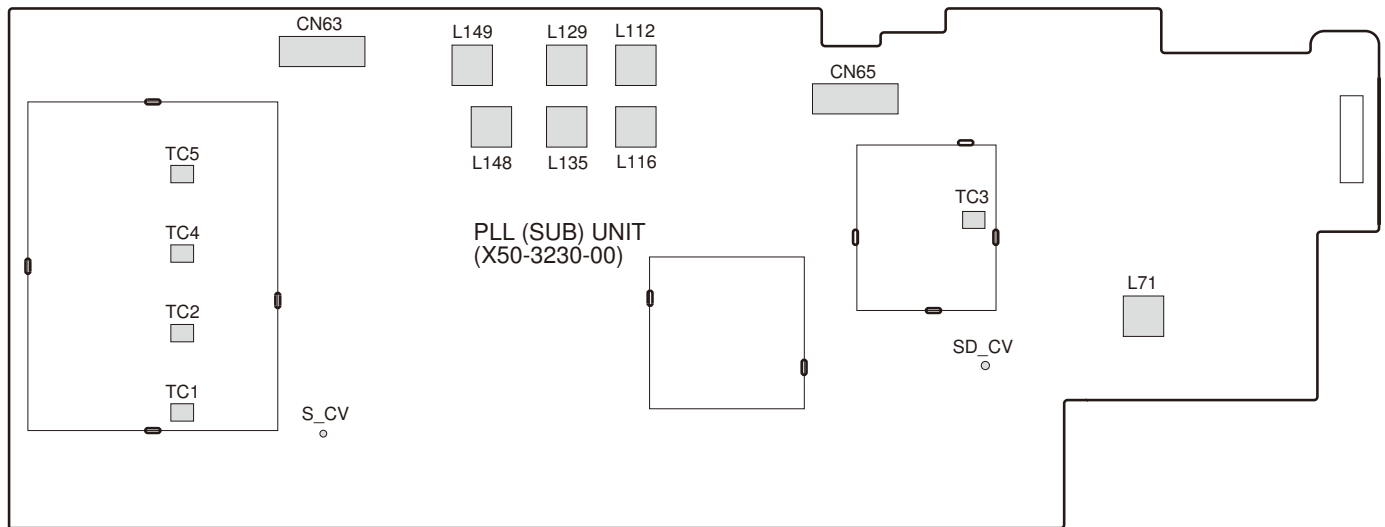
## ADJUSTMENT

### Adjustment Points (Lower Side)

#### ■ PLL (MAIN) UNIT (X50-3220-00)



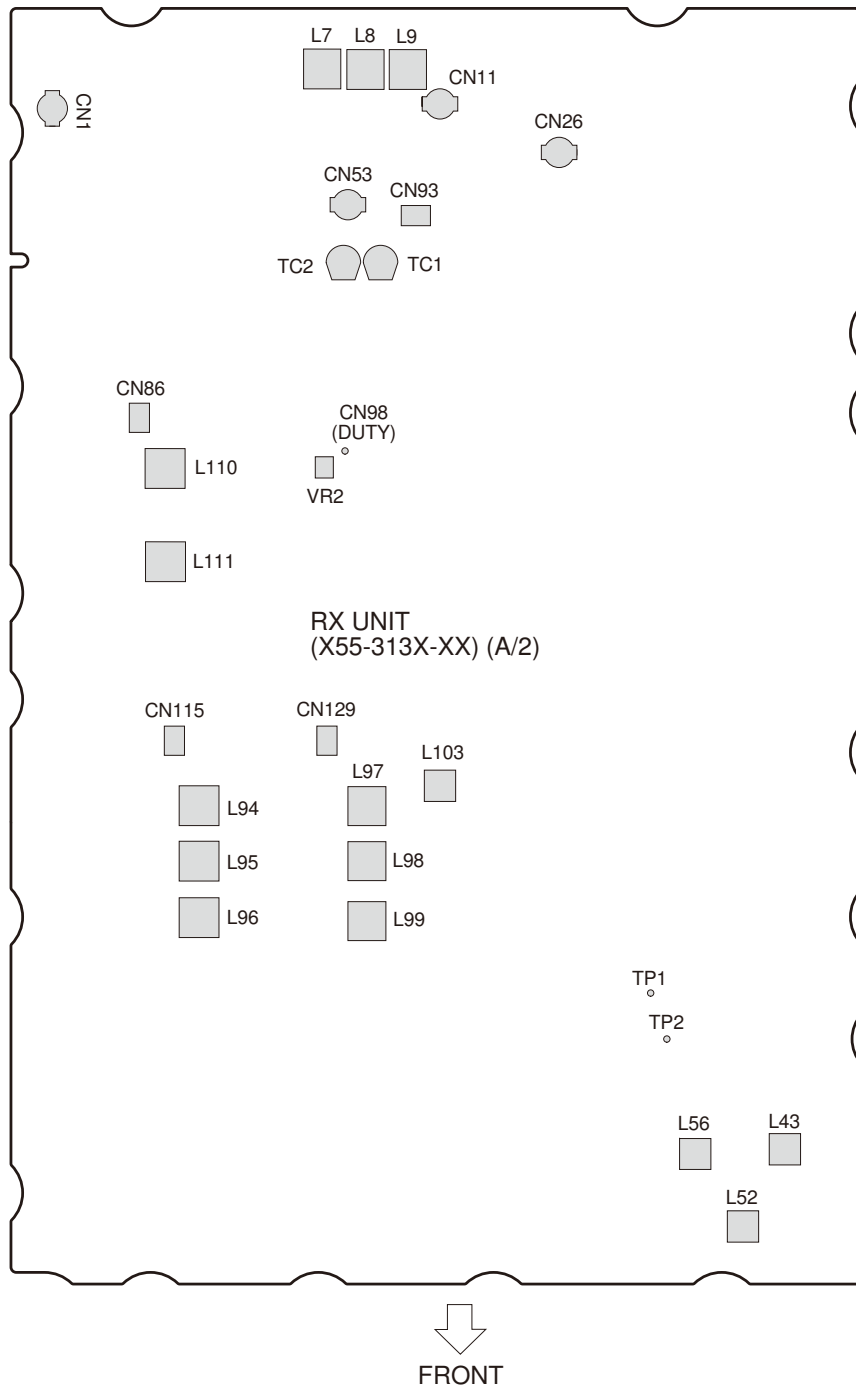
#### ■ PLL (SUB) UNIT (X50-3230-00)



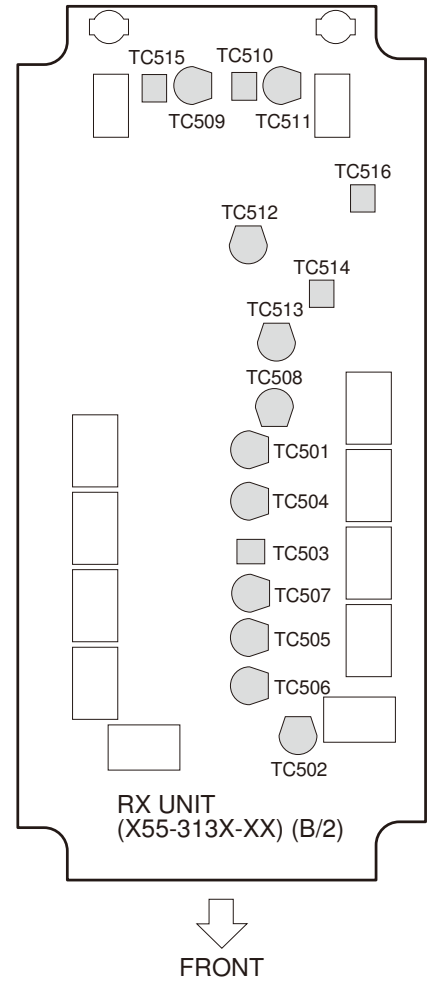
## ADJUSTMENT

### Adjustment Points (Lower Side)

#### ■ RX UNIT (X55-313X-XX) (A/2)



#### ■ RX UNIT (X55-313X-XX) (B/2)

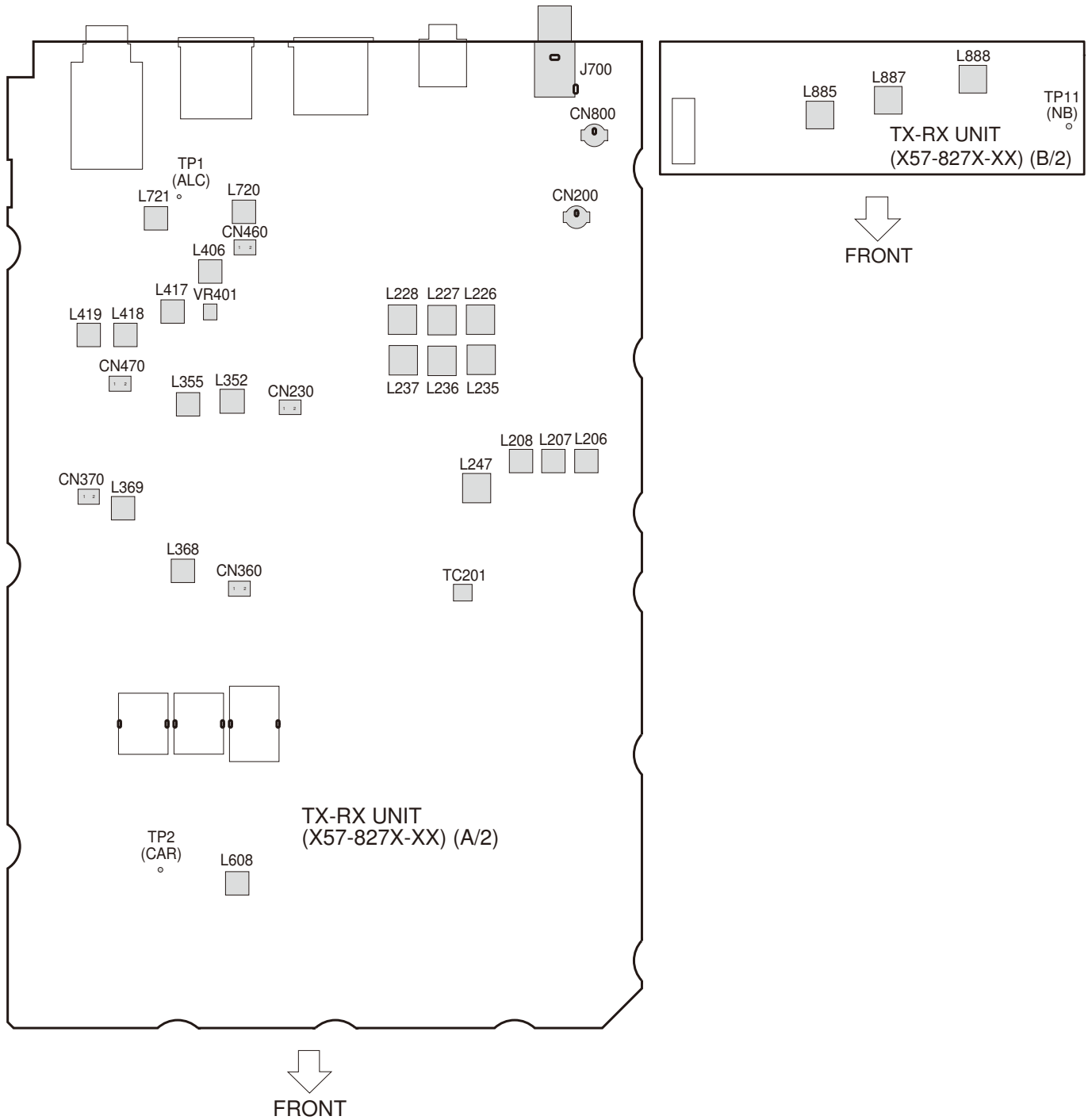


## ADJUSTMENT

### Adjustment Points (Lower Side)

■ TX-RX UNIT (X57-827X-XX) (A/2)

■ TX-RX UNIT (X57-827X-XX) (B/2)



## TERMINAL FUNCTION

### Accessory (SCOPE) unit (X42-3430-00 A/10)

Pin No.	Name	I/O	Function
<b>CN1 (to DC-DC unit A/3 CN170)</b>			
1	14S	I	Power supply (14V)
2	GND	-	GND
3	8A	I	Power supply (8V)
<b>CN2 (to RX unit A/2 CN109)</b>			
1	SC08M	I	Main RX 8M IF signal input (Coaxial)
<b>CN3 (to TX-RX unit A/2 CN350)</b>			
1	SC11S	I	Sub RX 11M IF signal input (Coaxial)
<b>CN4 (to TX-RX unit A/2 CN450)</b>			
1	SC73S	I	Sub RX/TX 73M IF signal input (Coaxial)
<b>CN6 (to PLL (MAIN) unit CN20)</b>			
1	SCREF	I	Reference 40MHz input (Coaxial)
<b>CN35 (to Control unit CN73)</b>			
1	8A	O	8V (DC/DC)
2	NC	-	No connection
3	GND	-	GND
4	NC	-	No connection
5	5A	I	5V (DC/DC)
6	NC	-	No connection
7	33SD	I	3.3V (DC/DC)
8	X45V1	O	Version detection signal
9	IFSEL1	I	IF select 1
10	IFSEL2	I	IF select 2
11	IFSEL3	I	IF select 3
12	IFSEL4	I	IF select 4
13	SCATT0	I	Attenuator 0 control
14	SCATT1	I	Attenuator 1 control
15	SCATT2	I	Attenuator 2 control
16	SCATT3	I	Attenuator 3 control
17	SCPCK	I	Serial clock
18	SCPDT	I	Serial data
19	SCPEN1	I	PLL1 (IC4) enable signal
20	SCPEN2	I	PLL2 (IC6) enable signal
21	SCDEN1	I	DDS1 (IC1) enable signal
22	SCDEN2	I	DDS2 (IC2) enable signal
23	SCDEN3	I	DDS3 (IC3) enable signal
24	SCPUL	O	Unlock detection
<b>CN36 (to Control unit CN453)</b>			
1	SCIF	O	Scope IF output (24kHz)
2	GND	-	GND

### Accessory (PRESEL) unit (X42-3430-00 B/10)

Pin No.	Name	I/O	Function
<b>CN401 (to RX unit A/2 CN26)</b>			
1	PREI	I	RF input (Coaxial)
<b>CN402 (to RX unit A/2 CN70)</b>			
1	33S	I	3.3V (DC/DC)
2	CLK	I	Serial clock
3	DATA	I	Serial data
4	PSEDA	I	EEPROM data output
5	PSESI	O	EEPROM serial data input
6	PSECK	I	EEPROM clock
7	PSEEN	I	EEPROM enable
8	PSEN	I	PRESEL Serial/Parallel IC enable
9	PSEL	I	PRESEL ON
10	GND	-	GND
11	GND	-	GND
12	X55V2	-	Accessory (PRESEL) unit version control
13	8A	I	8V (DC/DC)
14	8A	I	8V (DC/DC)
15	NC	-	No connection
16	14S	I	13.8V (DC/DC)
<b>CN446 (to RX unit A/2 CN53)</b>			
1	PREO	O	RF output (Coaxial)

### Accessory (MIC) unit (X42-3430-00 C/10)

Pin No.	Name	I/O	Function
<b>CN601 (to DSP unit CN668)</b>			
1	MIC	O	MIC signal
2	MSG	-	MIC GND
3	MCG	-	GND
<b>CN602 (to Display (MAIN PANEL) unit A/6 CN264)</b>			
1	MU	O	MIC up control
2	MD	O	MIC down control
3	SS	O	PTT control L: TX
4	8A	I	8V (DC/DC)
<b>J601 (MIC)</b>			
1	MIC	I	MIC signal
2	SS	I	PTT control L: TX
3	MD	I	MIC down control
4	MU	I	MIC up control
5	8A	O	8V (DC/DC)
6	NC	-	No connection
7	MSG	-	MIC GND
8	MCG	-	GND

## TERMINAL FUNCTION

### Accessory (USB) unit (X42-3430-00 D/10)

Pin No.	Name	I/O	Function
<b>CN603 (to Digital unit CN501)</b>			
1	U1VBUS	I	VBUS 5V (USB Host 1)
2	U1D+	I/O	Positive universal serial data (USB Host 1)
3	U1D-	I/O	Negative universal serial data (USB Host 1)
4	U1S-GND	-	Shield GND (USB Host 1)
5	U1GND	-	Digital GND (USB Host 1)
6	U2VBUS	I	VBUS 5V (USB Host 2)
7	U2D+	I/O	Positive universal serial data (USB Host 2)
8	U2D-	I/O	Negative universal serial data (USB Host 2)
9	U2S-GND	-	Shield GND (USB Host 2)
10	U2GND	-	Digital GND (USB Host 2)
<b>J604 (USB HOST 1)</b>			
1	U1VBUS	I	VBUS 5V (USB Host 1)
2	U1D-	I/O	Negative universal serial data (USB Host 1)
3	U1D+	I/O	Positive universal serial data (USB Host 1)
4	U1GND	-	Digital GND (USB Host 1)
5	GND	-	GND
6	GND	-	GND
<b>J605 (USB HOST 2)</b>			
1	U2VBUS	I	VBUS 5V (USB Host 2)
2	U2D-	I/O	Negative universal serial data (USB Host 2)
3	U2D+	I/O	Positive universal serial data (USB Host 2)
4	U2GND	-	Digital GND (USB Host 2)
5	GND	-	GND
6	GND	-	GND

### Accessory (PHONES/PADDLE) unit (X42-3430-00 E/10)

Pin No.	Name	I/O	Function
<b>CN604 (to DSP UNIT CN667)</b>			
1	PH1	I	AF output (Lch of phone output)
2	PHG	-	GND for phone jack
3	PH2	I	AF output (Rch of phone output)
4	PHDET	O	Phone jack detection signal H: No phone jack
<b>CN605 (to Display (MAIN PANEL) unit A/6 CN265)</b>			
1	DOT	I	Electronic keyer dot signal L: KEY dot
2	DOG	-	Paddle jack GND
3	DASH	I	Electronic keyer dash signal L: KEY dash
4	KYSR	I	KEY jack/ PADDLE judgement signal L: KEY or PADDLE plugged

Pin No.	Name	I/O	Function
5	NC	-	No connection
<b>J602 (PHONES)</b>			
1	PHG	-	GND for phone jack
2	PH1	O	AF output (Lch of phone output)
3	PH2	O	AF output (Rch of phone output)
4	NC	-	No connection
5	PHG	-	GND for phone jack
6	PHDET	I	Phone jack detection signal
7	NC	-	No connection
8	PHG	-	GND for phone jack
9	PHDET	I	Phone jack detection signal
<b>J603 (PADDLE)</b>			
1	GND	-	GND
2	DOT	I	Electronic keyer dot signal L: KEY dot
3	DASH	I	Electronic keyer dash signal L: KEY dash
4	NC	-	No connection
5	KYSR	I	KEY jack/ PADDLE judgement signal L: KEY or PADDLE plugged
6	DOG	-	PADDLE jack GND
7	NC	-	No connection
8	NC	-	No connection
9	NC	-	No connection

### Accessory (POW SW) unit (X42-3430-00 F/10)

Pin No.	Name	I/O	Function
<b>CN606 (to Display (MAIN PANEL) unit A/6 CN266)</b>			
1	PWS	O	Power switch output signal
2	KI0	O	Key scan input 0
3	KEYO7	I	Key scan output 7
4	KEYO6	I	Key scan output 6
5	KEYO5	I	Key scan output 5
6	KEYO4	I	Key scan output 4
7	KEYO3	I	Key scan output 3
8	NC	-	No connection
9	33B	I	3.3V (DC/DC)
10	NC	-	No connection
11	LTIMER	O	Timer LED (D609)
12	LPOFF	O	Power OFF LED (D610)
13	GND	-	GND
14	LPON	O	Power ON LED(D611)
15	LAT	O	AT LED (D612)
16	LEDDIM	I	LED power supply



## TERMINAL FUNCTION

### Accessory (MULTI) unit (X42-3430-00 G/10)

Pin No.	Name	I/O	Function
<b>CN607 (to Display (MAIN PANEL) unit A/6 CN5)</b>			
1	LMULTI	O	Multi encoder LED (D613)
2	LEDDIM	I	LED power supply
3	MULTIB	O	Multi encoder pulse B
4	MULTIC	-	GND
5	MULTIA	O	Multi encoder pulse A

### Accessory (HC/LC) unit (X42-3430-00 H/10)

Pin No.	Name	I/O	Function
<b>CN608 (to Display (MAIN PANEL) unit A/6 CN6)</b>			
1	LCENCB	O	Low cut encorder pulse B
2	GND	-	GND
3	LCENCA	O	Low cut encorder pulse A
4	HCENCB	O	High cut encorder pulse B
5	NC	-	No connection
6	HCENCA	O	High cut encorder pulse A

### Accessory (NR/NB) unit (X42-3430-00 I/10)

Pin No.	Name	I/O	Function
<b>CN609 (to Display (MAIN PANEL) UNIT A/6 CN260)</b>			
1	VNR1	O	Noise reduction 1 volume voltage
2	VNR2	O	Noise reduction 2 volume voltage
3	GND	-	GND
4	VNB1	O	Noise blanker 1 volume voltage
5	VNB2	O	Noise blanker 2 volume voltage
6	5D	I	5V (DC/DC)

### Accessory (NOTCH/SQL) unit (X42-3430-00 J/10)

Pin No.	Name	I/O	Function
<b>CN610 (to Display (MAIN PANEL) unit A/6 CN261)</b>			
1	VSNCH	O	Sub notch volume voltage
2	VSSQ	O	Sub squelch volume voltage
3	GND	-	GND
4	VMNCH	O	Main notch volume voltage
5	VMSQ	O	Main squelch volume voltage
6	5D	I	5V (DC/DC)

### DC-DC unit (X43-3220-00 A/3)

Pin No.	Name	I/O	Function
<b>CN1 (to AC/DC power supply)</b>			
1	13.8V	I	13.8V power supply input

Pin No.	Name	I/O	Function
2	13.8V	I	13.8V power supply input
3	BU5V	I	BU5V power supply input
4	DFAN1	I	Fan 1 rotation signal input
5	TH	I	Thermistor voltage input
6	50VSW	O	50V power control signal
7	GND	-	GND
8	GND	-	GND
9	ACDC-SW	O	13.8V power control signal
10	DFAN2	I	Fan 2 rotation signal input
11	GND	-	GND
12	FACDC	I	Fan drive voltage input
<b>CN16 (to Final unit A/2 CN36)</b>			
1	14S	O	13.8V power supply output
2	GND	-	GND
3	14V	O	13.8V power supply output
4	GND	-	GND
<b>CN80 (to PLL (MAIN) unit CN34)</b>			
1	14SL	O	13.8V power supply output
2	GND	-	GND
3	NC	-	No connection
4	8AL	O	8V power supply output
5	GND	-	GND
6	14SL	O	13.8V power supply output
7	GND	-	GND
8	NC	-	No connection
9	8AL	O	8V power supply output
10	GND	-	GND
<b>CN90 (to Display (MAIN LCD BACK) unit B/6 CN301)</b>			
1	14SP	O	13.8V power supply output
2	GND	-	GND
<b>CN170 (to Accessory (SCOPE) unit A/10 CN1)</b>			
1	14S	O	13.8V power supply output
2	GND	-	GND
3	8A	O	8V power supply output
<b>CN174 (to RX unit A/2 CN2/ TX-RX unit A/2 CN4)</b>			
1	14S	O	13.8V power supply output
2	GND	-	GND
3	8A	O	8V power supply output
4	8A	O	8V power supply output
5	14S	O	13.8V power supply output
6	GND	-	GND
7	8A	O	8V power supply output
<b>CN180 (to Control unit CN1, CN2, CN3)</b>			
1	33SD	O	3.3V power supply output
2	GND	-	GND

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
3	5A	O	5V power supply output
4	GND	-	GND
5	5B	O	5V power supply output
6	GND	-	GND
7	14V	O	13.8V power supply output
8	GND	-	GND
<b>CN190 (to DSP unit CN1/ DC-DC (APP) unit C/3 CN804/ Digital unit CN1)</b>			
1	33V	O	3.3V power supply output
2	GND	-	GND
3	5D	O	5V power supply output
4	GND	-	GND
5	14AF	O	13.8V power supply output
6	GND	-	GND
7	14V	O	13.8V power supply output
8	GND	-	GND
9	GND	-	GND
<b>CN210 (to DSP unit CN50)</b>			
1	SP	I	AF for internal speaker
2	SPG	-	Speaker GND
<b>CN211 (to INT. SP)</b>			
1	SP	O	Speaker output
2	SPG	-	Speaker GND
<b>CN220 (to PLL (MAIN) unit CN33)</b>			
1	R10M	O	10MHz reference signal (Coaxial)
<b>CN222 (to 10MHz IN)</b>			
1	R10M	I	10MHz reference signal input (Coaxial)
<b>CN226 (to EXT AT)</b>			
1	14S	O	13.8V power supply output
2	GND	-	GND
3	TT	I/O	External AT IN/THROUGH control
4	TS	I/O	External AT tuning start control
5	GND	-	GND
<b>CN230 (to Control unit CN70)</b>			
1	EXTPF2	I/O	External PF1 signal
2	EXTPF1	I/O	External PF2 signal
3	50VSW	I	50V power control signal
4	CCTS	O	Clear to send
5	CTRS	I	Request to send
6	CRXD	I	Received data
7	CTXD	O	Transmitted data
8	ODP	O	Over drive protection
9	X45V1	O	X45 version detection
10	X45V2	O	X45 version detection
11	PSC33	I	3.3V switching power control
12	14SW	I	14V power control

Pin No.	Name	I/O	Function
13	PSC	I	8V/5V switching power control
14	ACDCTH	O	AC/DC power thermistor voltage output
15	ACDC-SW	I	13.8V power control signal
16	GND	-	GND
17	NC	-	No connection
18	GND	-	GND
19	X53V2	O	X53 version detection
20	BKC	O	BU5V voltage detection
21	BOVER	O	Over voltage detection (Over 19V becomes "H")
22	GND	-	GND
23	DATA	I	Shift register data
24	CLK	I	Shift register clock
25	MLPY1	O	Multiplexer output 1
26	MLPY2	O	Multiplexer output 2
27	ADC2	I	Multiplexer control signal 2
28	ADC1	I	Multiplexer control signal 1
29	MRXC	I	Main RX control signal
30	VD	O	Drain voltage output terminal
31	TH33B	I	3.3V power supply for thermistor pull up
32	MFEN1	I	Shift register enable signal 1
33	MFEN2	I	Shift register enable signal 2
34	MFEN3	I	DAC enable signal
35	AFEN	I	Shift register enable signal 3
36	ATPWS	I	AT relay operation stops when power is ON
37	TS	I/O	External AT IN/THROUGH control
38	TT	I/O	External AT tuning start control
39	AMD	O	Amplitude detector output
40	PHD	O	Phase detector output
<b>CN270 (to DC-DC (LINK) unit C/3 CN400)</b>			
1	PHD	I	Phase detector input
2	AMD	I	Amplitude detector input
3	ATPWS	O	AT relay operation stops when power is ON
4	AFEN	O	Shift register enable signal
5	MFEN3	O	DAC enable signal
6	MFEN2	O	Shift register enable signal 2
7	MFEN1	O	Shift register enable signal 1
8	X53V2	I	X53 version detection
9	VD	I	Drain voltage input terminal
10	MRXC	O	Main RX control signal
11	FFANP2	I	Final fan 2 rotation pulse input
12	FFANP1	I	Final fan 1 rotation pulse input
13	FFANAT	I	AT fan rotation pulse input
14	NC	-	No connection

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
15	FTH2	I	Final thermistor input 2
16	FTH1	I	Final thermistor input 1
17	CLK	O	Shift register clock
18	DATA	O	Shift register data
19	GND	-	GND
20	GND	-	GND
21	GND	-	GND
22	GND	-	GND
23	ODP	I	Over drive protection
24	33S	O	3.3V power supply output
25	33S	O	3.3V power supply output
26	33S	O	3.3V power supply output
27	GND	-	GND
28	GND	-	GND
29	GND	-	GND
30	-12V	O	-12V power supply output
31	5A	O	5V power supply output
32	5A	O	5V power supply output
33	NC	-	No connection
34	GND	-	GND
35	GND	-	GND
36	NC	-	No connection
37	14S	O	13.8V power supply output
38	14S	O	13.8V power supply output
39	X45V1	I	X45 version detection
40	X45V2	I	X45 version detection

### DC-DC (LINK) unit (X43-3220-00 B/3)

Pin No.	Name	I/O	Function
<b>CN400 (to DC-DC unit A/3 CN270)</b>			
1	X45V2	O	X45 version detection
2	X45V1	O	X45 version detection
3	14S	I	13.8V power supply input
4	14S	I	13.8V power supply input
5	NC	-	No connection
6	GND	-	GND
7	GND	-	GND
8	NC	-	No connection
9	5A	I	5V power supply input
10	5A	I	5V power supply input
11	-12V	I	-12V power supply input
12	GND	-	GND
13	GND	-	GND
14	THGND	-	GND for thermistor
15	33S	I	3.3V power supply input

Pin No.	Name	I/O	Function
16	33S	I	3.3V power supply input
17	33S	I	3.3V power supply input
18	ODP	O	Over drive protection
19	GND	-	GND
20	GND	-	GND
21	GND	-	GND
22	GND	-	GND
23	DATA	I	Shift register data
24	CLK	I	Shift register clock
25	FTH1	O	Final thermistor output 1
26	FTH2	O	Final thermistor output 2
27	NC	-	No connection
28	FFANAT	O	AT FAN rotation pulse output
29	FFANP1	O	AT FAN1 rotation pulse output
30	FFANP2	O	AT FAN2 rotation pulse output
31	MRXC	I	Main RX control signal
32	VD	O	Drain voltage output terminal
33	X53V2	O	X53 version detection
34	MFEN1	I	Shift register enable signal 1
35	MFEN2	I	Shift register enable signal 2
36	MFEN3	I	DAC enable signal
37	AFEN	I	Shift register enable signal
38	ATPWS	I	AT relay operation stops when power is ON
39	AMD	O	Amplitude detector output
40	PHD	O	Phase detector output
<b>CN440 (to AT unit B/2 CN360)</b>			
1	NC	-	No connection
2	FAN-	O	AT FAN power supply (-)
3	FAN-	O	AT FAN power supply (-)
4	FFANAT	I	AT FAN rotation pulse input
5	FAN+	O	AT FAN power supply (+)
6	FAN+	O	AT FAN power supply (+)
7	NC	-	No connection
8	GND	-	GND
9	GND	-	GND
10	NC	-	No connection
11	14S	O	13.8V power supply output
12	14S	O	13.8V power supply output
13	NC	-	No connection
14	33S	O	3.3V power supply output
15	X53V2	I	X53 version detection
16	5M	O	AT coil selection
17	NC	-	No connection
18	DATA	O	Shift register data
19	CLK	O	Shift register clock

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
20	MFEN2	O	Shift register enable signal 2
21	MFEN1	O	Shift register enable signal 1
22	ATPWS	O	AT relay operation stops when power is ON
23	QSL	O	Shift register control
24	GND	-	GND
<b>CN470 (to Final unit A/2 CN53)</b>			
1	GND	-	GND
2	GND	-	GND
3	THGND	-	GND for thermistor
4	ODP	I	Over drive protection
5	MRXC	O	Main RX control signal
6	TXB	O	TX control signal
7	ID1	I	Power current signal
8	FTH2	I	Final thermistor input 2
9	FAN-	I	AT FAN power supply (-)
10	FAN-	I	AT FAN power supply (-)
11	NC	-	No connection
12	FAN+	O	AT FAN power supply (+)
13	FAN+	O	AT FAN power supply (+)
14	VD	I	Drain voltage input terminal
15	FFANP2	I	AT FAN2 rotation pulse input
16	FFANP1	I	AT FAN1 rotation pulse input
17	5M	I	AT coil selection
18	QSL	I	Shift register control
19	X45V2	I	X45 version detection
20	33S	O	3.3V power supply output
21	FTH1	I	Final thermistor input 1
22	MFEN1	O	Shift register enable signal 1
23	MFEN3	O	DAC enable signal
24	X45V1	I	X45 version detection
25	5A	O	3.3V power supply output
26	CLK	O	Shift register clock
27	DATA	O	Shift register data
28	GND	-	GND
<b>CN500 (to AT (ANT SW) unit A/2 CN47)</b>			
1	GND	-	GND
2	GND	-	GND
3	GND	-	GND
4	-12V	O	-12V power supply output
5	33S	O	3.3V power supply output
6	33S	O	3.3V power supply output
7	33S	O	3.3V power supply output
8	NC	-	No connection
9	GND	-	GND
10	GND	-	GND

Pin No.	Name	I/O	Function
11	NC	-	No connection
12	14S	O	13.8V power supply output
13	14S	O	13.8V power supply output
14	NC	-	No connection
15	5A	O	3.3V power supply output
16	5A	O	3.3V power supply output
17	TXB	O	TX control signal
18	GND	-	GND
19	AMD	I	Amplitude detector input
20	NC	-	No connection
21	PHD	I	Phase detector input
22	DATA	O	Shift register data
23	VSF	I	Forward wave voltage detection
24	CLK	O	Shift register clock
25	VSR	I	Reflected wave voltage detection
26	AFEN	O	Shift register enable signal
<b>CN530 (to TX-RX unit A/2 CN3)</b>			
1	5A	O	3.3V power supply output
2	NC	-	No connection
3	GND	-	GND
4	NC	-	No connection
5	33S	O	3.3V power supply output
6	NC	-	No connection
7	ID1	O	Power current signal
8	VSR	O	Reflected wave voltage detection
9	VSF	O	Forward wave voltage detection
10	GND	-	GND
11	NC	-	No connection
12	TXB	I	TX control signal
13	NC	-	No connection
14	GND	-	GND
15	NC	-	No connection
16	NC	-	No connection

### DC-DC (APP) unit (X43-3220-00 C/3)

Pin No.	Name	I/O	Function
<b>CN803 (to Digital unit CN3)</b>			
1	GND	-	GND
2	DC-12SW	I	1.2V DC/DC converter control signal
3	GND	-	GND
4	NC	-	No connection
5	GND	-	GND
6	DC-18SW	I	1.8V DC/DC converter control signal

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
<b>CN804 (to DC-DC unit A/3 CN190)</b>			
1	14V	I	13.8V power supply input
2	GND	-	GND
3	GND	-	GND
<b>W801 (to Digital unit CN2)</b>			
1	X45V2	O	X45 version detection
2	X45V1	O	X45 version detection
3	14S	I	13.8V power supply input
4	14S	I	13.8V power supply input
5	NC	-	No connection
6	GND	-	GND
7	GND	-	GND
8	NC	-	No connection
9	5A	I	5V power supply input

### Final unit (X45-3880-00 A/2)

Pin No.	Name	I/O	Function
<b>CN2 (to TX-RX unit A/2 CN800)</b>			
1	DRIVE	I	TX RF signal output (coaxial)
<b>CN16 (to FAN2)</b>			
1	FANP2	I	Pulse signal when FAN2 operates
2	FAN2+	O	Supply FAN2 voltage
3	GND	-	GND
<b>CN18 (to FAN1)</b>			
1	FANP1	I	Pulse signal when FAN1 operates
2	FAN1+	O	Supply FAN1 voltage
3	GND	-	GND
<b>CN32 (to AC/DC Power supply)</b>			
1	+50V	I	Supply 50V DC
2	+50V	I	Supply 50V DC
3	GND	-	GND
4	GND	-	GND
<b>CN35 (to DC-DC unit B/3 CN470)</b>			
1	GND	-	GND
2	DATA	I	Serial data
3	CLK	I	Serial clock
4	5V	O	Non switched 5V
5	X45V1	O	Version detection signal
6	MFEN3	I	Enable signal (IC1)
7	MFEN1	I	Enable signal (IC6,7)
8	TH1	O	The thermistor detection voltage for FAN, power operation
9	33C	I	3.3V (DC/DC)
10	X45V2	O	Version detection signal
11	ATDAT1 QS	O	Serial data for AT unit X53-441 B/2

Pin No.	Name	I/O	Function
12	SP-Q8(5M)	O	AT coil selection when 5M band
13	FANP1	O	Pulse signal when FAN1 operates
14	FANP2	O	Pulse signal when FAN2 operates
15	VD	O	Drain voltage input for meter
16	FAN1+	I	Supply AT FAN voltage
17	FAN1+	I	Supply AT FAN voltage
18	NC	-	No connection
19	FAN1-	-	FAN GND
20	FAN1-	-	FAN GND
21	TH2	O	The thermistor detection voltage for FAN, Power operation
22	ID1	O	Power current signal
23	TXB	I	TX 8V
24	MRXC	I	RX ON/OFF
25	ODP	O	Over drive protection
26	GND	-	GND
27	GND	-	GND
28	GND	-	GND
<b>CN36 (to DC-DC unit A/3 CN16)</b>			
1	14S	I	Switched 14V
2	GND	-	GND
3	14V	I	Non switched 14V
4	GND	-	GND
<b>J1 (to AT (ANT SW) unit A/2 J7)</b>			
1	HFPO1	O	RF Power output (Coaxial)

### Final (ANT CN) unit (X45-3880-00 B/2)

Pin No.	Name	I/O	Function
<b>CN815 (to AT (ANT SW) unit A/2 CN37)</b>			
1	E_ANT		(Coaxial)
<b>CN816 (to AT (ANT SW) unit A/2 CN24)</b>			
1	QS	O	Serial data for AT unit X53-441 B/2 IC8
2	AFEN	I	Enable signal (IC800)
3	DATA	I	Serial data
4	CLK	I	Serial clock
5	NC	-	No connection
6	14S	I	Switched 14V
7	14S	I	Switched 14V
8	NC	-	No connection
9	33S	I	3.3V (DC/DC)
10	33S	I	3.3V (DC/DC)
11	NC	-	No connection
12	GND	-	GND
13	GND	-	GND
<b>J800 (to AT (ANT SW) unit A/2 J4)</b>			
1	HFPO2	I	TX RF signal output (Coaxial)

## TERMINAL FUNCTION

### Digital unit (X46-3390-00)

Pin No.	Name	I/O	Function
<b>CN1 (to DC-DC unit A/3 CN190)</b>			
1	33V	I	Digital 3.3V
2	GND	-	Digital GND
3	5D	I	Digital 5.0V
4	GND	-	Digital GND
<b>CN2 (to DC-DC (APP) unit C/3 W801)</b>			
1	1.8V_4	I	Digital 1.8V
2	1.8V_1	I	Digital 1.8V
3	1.8V_1	I	Digital 1.8V
4	1.2V_3	I	Digital 1.2V
5	1.2V_3	I	Digital 1.2V
6	1.2V_3	I	Digital 1.2V
7	DGND	-	Digital GND
8	DGND	-	Digital GND
9	DGND	-	Digital GND
<b>CN3 (to DC-DC (APP) unit C/3 CN803)</b>			
1	DC18SW	O	Switch signal for digital 1.8V DC/DC converter
2	GND	-	Digital GND
3	NC	-	No connection
4	GND	-	Digital GND
5	DC12SW	O	Switch signal for digital 1.2V DC/DC converter
6	GND	-	Digital GND
<b>CN4 (to Control unit CN71)</b>			
1	5D	O	Digital 5V
2	NC	-	No connection
3	PSC	I	Power switch control
4	LCDREQ	I	LCD request from main MCU
5	GND	-	Digital GND
6	PATXD	I	Serial data input from panel MCU
7	PARXD	O	Serial data output to panel MCU
8	GND	-	Digital GND
9	SCCLK	I	Scope CLK from scope DSP
10	DREQ AP	I	Interrupt signal from scope DSP
11	SCSIMO	I	Scope signal slave input master output
12	SCSOMI	O	Scope signal slave output master input
13	SCCS0	I	Scope signal chip select from scope DSP
14	33SW2	I	Switch signal for digital 3.3V FET(Q803)
15	33SW1	I	Switch signal for digital 3.3V FET(Q805)
16	USBSW	I	Switch signal for USB device
17	ARST	I	Reset for APP MCU
18	AHLT	O	APP check signal
19	MACTS	O	RTS signal output to main MCU

Pin No.	Name	I/O	Function
20	MARTS	I	RTS signal input from main MCU
21	MARXD	O	Serial data output to main MCU
22	MATXD	I	Serial data input from main MCU
23	BKC	I	Reduced voltage detect interrupt
24	32KOUT	I	32kHz CLK from main MCU
25	VBINT	O	USB connect interrupt input
26	NC	-	No connection
27	VCTS	O	RTS signal output to main MCU for USB-serial bridge
28	VRTS	I	RTS signal input from main MCU for USB-serial bridge
29	VRXD	O	Serial data output to main MCU for USB-serial bridge
30	VTXD	I	Serial data input from main MCU for USB-serial bridge
31	DC12SW	I	Switch signal for digital 1.2V DC/DC converter
32	DC18SW	I	Switch signal for digital 1.8V DC/DC converter
<b>CN11 (to DSP unit CN672)</b>			
1	SRECO	O	Sub RX analog output for play
2	AGND	-	Analog GND
3	MRECO	O	Main RX analog output for play
4	AGND	-	Analog GND
5	MRECI	I	Main RX analog input for REC
6	AGND	-	Analog GND
7	SRECI	I	Sub RX analog input for REC
8	AGND	-	Analog GND
9	MUANO	I	Main RX analog input for USB
10	AGND	-	Analog GND
11	SUANO	I	Sub RX analog input for USB
12	AGND	-	Analog GND
13	UANI	O	Analog output for USB
14	AGND	-	Analog GND
15	NC	-	No connection
16	5A	I	Analog 5V
<b>CN225 (to Display (MAIN LCD BACK) unit B/6 CN405)</b>			
1	VSS	-	Sub display system GND
2	RESB	O	Sub display system reset
3	CSB	O	Not used
4	SCK	O	Not used
5	SDI	O	Not used
6	VSS	-	Sub display system GND
7	BB0	O	Graphic blue data 0 output for sub display
8	BB1	O	Graphic blue data 1 output for sub display
9	VSS	-	Sub display system GND
10	BB2	O	Graphic blue data 2 output for sub display



## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
11	BB3	O	Graphic blue data 3 output for sub display
12	VSS	-	Sub display system GND
13	BB4	O	Graphic blue data 4 output for sub display
14	BB5	O	Graphic blue data 5 output for sub display
15	VSS	-	Sub display system GND
16	BB6	O	Graphic blue data 6 output for sub display
17	BB7	O	Graphic blue data 7 output for sub display
18	VSS	-	Sub display system GND
19	GG0	O	Graphic green data 0 output for sub display
20	GG1	O	Graphic green data 1 output for sub display
21	VSS	-	Sub display system GND
22	GG2	O	Graphic green data 2 output for sub display
23	GG3	O	Graphic green data 3 output for sub display
24	VSS	-	Sub display system GND
25	GG4	O	Graphic green data 4 output for sub display
26	GG5	O	Graphic green data 5 output for sub display
27	VSS	-	Sub display system GND
28	GG6	O	Graphic green data 6 output for sub display
29	GG7	O	Graphic green data 7 output for sub display
30	VSS	-	Sub display system GND
31	RR0	O	Graphic red data 0 output for sub display
32	RR1	O	Graphic red data 1 output for sub display
33	VSS	-	Sub display system GND
34	RR2	O	Graphic red data 2 output for sub display
35	RR3	O	Graphic red data 3 output for sub display
36	VSS	-	Sub display system GND
37	RR4	O	Graphic red data 4 output for sub display
38	RR5	O	Graphic red data 5 output for sub display
39	VSS	-	Sub display system GND
40	RR6	O	Graphic red data 6 output for sub display
41	RR7	O	Graphic red data 7 output for sub display
42	VSS	-	Sub display system GND
43	DEN	O	Display enable output for sub display
44	HSYNC	O	Not used
45	VSNC	O	Not used
46	VSS	-	Sub display system GND
47	DOTCLK	O	Dot clock output for sub display
48	VSS	-	Sub display system GND
49	NC	-	No connection
50	VCC	O	Digital 3.3V for sub display

Pin No.	Name	I/O	Function
<b>CN501 (to Accessory (USB) unit D/10 CN603)</b>			
1	U1VBUS	O	VBUS 5V for USB HOST 1
2	U1D+	I/O	Positive universal serial data for USB HOST1
3	U1D-	I/O	Negative universal serial data for USB HOST1
4	U1SGND	-	Shield GND for USB HOST 1
5	U1GND	-	Digital GND for USB HOST1
6	U2VBUS	O	VBUS 5V for USB HOST 2
7	U2D+	I/O	Positive universal serial data for USB HOST2
8	U2D-	I/O	Negative universal serial data for USB HOST 2
9	U2SGND	-	Shield GND for USB HOST 2
10	U2GND	-	Digital GND for USB HOST2
<b>CN651 (to Display (MAIN LCD BACK) unit B/6 CN406)</b>			
1	VCC	O	Digital 3.3V for main display
2	VCC	O	Digital 3.3V for main display
3	VCC	O	Digital 3.3V for main display
4	VCC	O	Digital 3.3V for main display
5	DE	O	Data enable for main display
6	VSS	-	Main display system GND
7	VSS	-	Main display system GND
8	B5	O	Graphic blue data 5 output for main display
9	VSS	-	Main display system GND
10	B4	O	Graphic blue data 4 output for main display
11	VSS	-	Main display system GND
12	B3	O	Graphic blue data 3 output for main display
13	VSS	-	Main display system GND
14	B2	O	Graphic blue data 2 output for main display
15	VSS	-	Main display system GND
16	B1	O	Graphic blue data 1 output for main display
17	VSS	-	Main display system GND
18	B0	O	Graphic blue data 0 output for main display
19	VSS	-	Main display system GND
20	G5	O	Graphic green data 5 output for main display
21	VSS	-	Main display system GND
22	G4	O	Graphic green data 4 output for main display
23	VSS	-	Main display system GND
24	G3	O	Graphic green data 3 output for main display
25	VSS	-	Main display system GND

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
26	G2	O	Graphic green data 2 output for main display
27	VSS	-	Main display system GND
28	G1	O	Graphic green data 1 output for main display
29	VSS	-	Main display system GND
30	G0	O	Graphic green data 0 output for main display
31	VSS	-	Main display system GND
32	R5	O	Graphic red data 5 output for main display
33	VSS	-	Main display system GND
34	R4	O	Graphic red data 4 output for main display
35	VSS	-	Main display system GND
36	R3	O	Graphic red data 3 output for main display
37	VSS	-	Main display system GND
38	R2	O	Graphic red data 2 output for main display
39	VSS	-	Main display system GND
40	R1	O	Graphic red data 1 output for main display
41	VSS	-	Main display system GND
42	R0	O	Graphic red data 0 output for main display
43	VSS	-	Main display system GND
44	NC	-	No connection
45	VSS	-	Main display system GND
46	ABLENS	O	Backlight enable for sub display
47	ABLENM	O	Backlight enable for main display
48	NC	-	No connection
<b>CN652 (to Display (MAIN LCD BACK) unit B/6 CN462)</b>			
1	DCLK	O	Dot clock Output for Main Display (Coaxial)
<b>J401 (to External DVI)</b>			
1	TX2-	O	Digital red negative output for DVI
2	TX2+	O	Digital red positive output for DVI
3	GND	-	Digital GND for DVI
4	NC	-	No connection
5	NC	-	No connection
6	NC	-	No connection
7	NC	-	No connection
8	VSYNC	O	Analog vertical synchronization output for DVI
9	TX1-	O	Digital green negative output for DVI
10	TX1+	O	Digital green positive output for DVI
11	GND	-	Digital GND for DVI
12	NC	-	No connection

Pin No.	Name	I/O	Function
13	NC	-	No connection
14	+5V	O	Power 5V for monitor when in standby
15	GND	-	Digital GND for DVI
16	NC	-	No connection
17	TX0-	O	Digital blue negative output for DVI
18	TX0+	O	Digital blue positive output for DVI
19	GND	-	Digital GND for DVI
20	NC	-	No connection
21	NC	-	No connection
22	GND	-	Digital GND for DVI
23	TXC+	O	Digital clock positive output for DVI
24	TXC-	O	Digital clock negative output for DVI
25	AR	O	Analog red output for DVI
26	AG	O	Analog green output for DVI
27	AB	O	Analog blue output for DVI
28	HSYNC	O	Analog horizontal synchronization output for DVI
29	AGND	-	Analog GND for DVI
30	AGND	-	Analog GND for DVI
<b>J601 (to External LAN)</b>			
1	TD+	I/O	Transmit/Receive positive channel 1
2	TD-	I/O	Transmit/Receive negative channel 1
3	RD+	I/O	Transmit/Receive positive channel 2
4	NC	-	No connection
5	NC	-	No connection
6	RD-	I/O	Transmit/Receive negative channel 2
7	NC	-	No connection
8	NC	-	No connection
<b>J701 (to External USB Device)</b>			
1	VBUS	I	Power supply from PC (5V)
2	D-	I/O	Negative universal serial data
3	D+	I/O	Positive universal serial data
4	GND	-	GND

### PLL (MAIN) unit (X50-3220-00)

Pin No.	Name	I/O	Function
<b>CN1 (to Control unit CN43)</b>			
1	NC	-	No connection
2	NC	-	No connection
3	NC	-	No connection
4	NC	-	No connection
5	X50V1	O	PCB version
6	GND	-	GND
7	MPEN2	I	Main PLL enable (IC17)
8	MDIO	I	Main DDS I/O_update (IC3)

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
9	MDEN1	I	Main DDS enable (IC3)
10	MLRST	I	Main DDS reset (IC3)
11	MLSEN	I	Main local shift register enable (IC15)
12	MPEN1	I	Main PLL enable (IC2)
13	RDEN	I	Reference DDS enable (IC13)
14	ERDET	O	External ref. detect
15	REFO	I	Reference output select
16	MLCK	I	Main local serial clock
17	MLDT	I	Main local serial data
18	RPEN	I	Reference PLL enable (IC18)
19	UL	O	Main PLL unlock
20	REFI	I	External reference input select
21	MDEN2	I	Main DDS enable (IC26)
22	GND	-	GND
<b>CN19 (to PLL (SUB) unit CN42)</b>			
1	R40M	O	Reference 40MHz (Coaxial)
<b>CN20 (to Accessory (SCOPE) unit A/10 CN6)</b>			
1	SCREF	O	Reference 40MHz (Coaxial)
<b>CN21 (to RX unit A/2 CN104)</b>			
1	MLO2	O	Main LO2 (Coaxial)
<b>CN22 (to RX unit A/2 CN89)</b>			
1	MLO1	O	Main LO1 (Coaxial)
<b>CN33 (to DC-DC unit A/3 CN222)</b>			
1	R10M	I/O	REF I/O
<b>CN34 (to DC-DC unit A/3 CN80)</b>			
1	14SL	I	14V
2	GND	-	GND
3	8V	I	8V
4	GND	-	GND

### PLL (SUB) unit (X50-3230-00)

Pin No.	Name	I/O	Function
<b>CN1 (to Control unit CN47)</b>			
1	NC	-	No connection
2	X50V2	O	PCB version
3	GND	-	GND
4	SLDT	I	Sub local serial data
5	SLCK	I	Sub local serial clock
6	UL	O	Sub PLL unlock
7	MLRST	I	Sub DDS reset (IC14)
8	SDEN1	I	Sub DDS enable (IC14)
9	SDIO	I	Sub DDS I/O_update (IC14)
10	SDEN2	I	Sub DDS enable (IC12)
11	SDEN3	I	Sub DDS enable (IC11)
12	SPEN1	I	Sub PLL enable (IC10)

Pin No.	Name	I/O	Function
13	SPEN2	I	Sub PLL enable (IC16)
14	SPEN3	I	Sub PLL enable (IC1)
15	SISEN	I	Sub local shift register enable (IC5)
16	GND	-	GND
<b>CN35 (to DC-DC unit A/3 CN80)</b>			
1	14V	I	14SL
2	GND	-	GND
3	8V	I	8V
4	GND	-	GND
<b>CN42 (to PLL (MAIN) unit CN19)</b>			
1	R40M	I	Reference 40MHz (Coaxial)
<b>CN59 (to TX-RX A/2 unit CN850)</b>			
1	TLO1	O	Sub TX LO1 (Coaxial)
<b>CN63 (to TX-RX A/2 unit CN300)</b>			
1	SLO1	O	Sub RX LO1 (Coaxial)
<b>CN64 (to TX-RX A/2 unit CN500)</b>			
1	SLO3	O	Sub LO3 (Coaxial)
<b>CN65 (to TX-RX A/2 unit CN400)</b>			
1	SLO2	O	Sub LO2 (Coaxial)
<b>CN66 (to DSP unit CN666)</b>			
1	FMOD	I	FM modulation (AF)
2	GND	-	Analog GND

### AT (ANT SW) unit (X53-4410-00 A/2)

Pin No.	Name	I/O	Function
<b>CN17 (to RX unit A/2 CN1)</b>			
1	MRAT	O	Main RX RF signal input (Coaxial)
<b>CN18 (to TX-RX unit A/2 CN200)</b>			
1	SRAT	O	Sub RX RF signal input (Coaxial)
<b>CN24 (to Final (ANT CN) unit B/3 CN816)</b>			
1	GND	-	GND
2	GND	-	GND
3	NC	-	No connection
4	33S	I	3.3V (DC/DC)
5	33S	I	3.3V (DC/DC)
6	NC	-	No connection
7	14S	I	Switched 14V
8	14S	I	Switched 14V
9	NC	-	No connection
10	CLK	I	Serial clock
11	DATA	I	Serial data
12	AFEN	O	Enable signal (IC8, X45-388 B/2 IC800)
13	QS	I	Serial data for IC8

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
<b>CN37 (to Final (ANT CN) unit B/2 CN815)</b>			
1	E_ANT	I	Sub RX RF signal input (Coaxial)
<b>CN47 (to DC-DC (LINK) unit B/3 CN500)</b>			
1	AFEN	I	Enable signal (IC8, X45-388 B/2 IC800)
2	VSR	O	Reflected wave power detection voltage
3	CLK	I	Serial clock
4	VSF	O	Forward wave power detection voltage
5	DATA	I	Serial data
6	PHD	O	Output voltage of phase detector
7	NC	-	No connection
8	AMD	O	Output voltage of amplitude detector
9	GND	-	GND
10	TXB	I	TX 8V
11	5A	I	Switched 5V
12	5A	I	Switched 5V
13	NC	-	No connection
14	14S	I	Switched 14V
15	14S	I	Switched 14V
16	NC	-	No connection
17	14GND	-	GND for 14S
18	14GND	-	GND for 14S
19	NC	-	No connection
20	33S	I	3.3V (DC/DC)
21	33S	I	3.3V (DC/DC)
22	33S	I	3.3V (DC/DC)
23	-12V	-	RX -12V
24	33GND	-	GND for 33S
25	33GND	-	GND for 33S
26	33GND	-	GND for 33S
<b>J1 (RX IN)</b>			
1	RX IN	I	RX input
<b>J2 (RX OUT)</b>			
1	RX OUT	O	RX output
<b>J4 (to Final (ANT CN) unit B/2 J800)</b>			
1	HFPO2	O	TX RF signal output (Coaxial)
<b>J5 (to AT unit B/2 W202)</b>			
1	AT OUT	O	Output power from antenna tuner (Coaxial)
<b>J6 (to AT unit B/2 W201)</b>			
1	AT IN	O	Input power from antenna tuner (Coaxial)
<b>J7 (to Final unit A/2 J1)</b>			
1	HFPO1	O	TX RF signal output (Coaxial)

### AT unit (X53-4410-00 B/2)

Pin No.	Name	I/O	Function
<b>CN360 (to DC-DC (LINK) unit B/3 CN440)</b>			
1	GND	-	GND
2	QSL	I	Serial data for IC340
3	ATPWS	I	AT relays ON/OFF switch H: ON, L: OFF
4	MFEN1	I	Enable signal (IC340)
5	MFEN2	I	Enable signal (IC300, IC320)
6	CLK	I	Serial clock
7	DATA	I	Serial data
8	NC	-	No connection
9	5M	I	K281 ON/OFF H: ON, L: OFF
10	NC	-	No connection
11	33S	I	3.3V (DC/DC)
12	NC	-	No connection
13	14S	I	Switched 14V
14	14S	I	Switched 14V
15	NC	-	No connection
16	GND	-	GND
17	GND	-	GND
18	NC	-	No connection
19	FAN+	I	Supply FAN voltage
20	FAN+	I	Supply FAN voltage
21	FFANAT	O	AT FAN rotation pulse output
22	FAN-	-	FAN GND
23	FAN-	-	FAN GND
24	NC	-	No connection
<b>CN381 (to FAN)</b>			
1	FFANAT	O	Pulse signal when AT FAN operates
2	FAN+	I	Supply FAN voltage
3	FAN-	-	FAN GND
<b>W201 (to AT (ANT SW) unit A/2 J6)</b>			
1	AT IN	O	Input power from antenna tuner (Coaxial)
<b>W202 (to AT (ANT SW) unit A/2 J5)</b>			
1	AT OUT	O	Output power from antenna tuner (Coaxial)

### Control unit (X53-452X-XX)

Pin No.	Name	I/O	Function
<b>CN1 (to DC-DC unit A/3 CN180, DSP unit CN2)</b>			
1	14SD	I	14V for digital circuit
2	GND	-	GND
3	14SD	O	14V for DSP Unit
4	GND	-	GND
<b>CN2 (to DC-DC unit A/3 CN180)</b>			
1	33SD	I	3.3V (DC/DC)

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
2	GND	-	GND
3	NC	-	No connection
4	5A	I	5V (DC/DC)
5	GND	-	GND
<b>CN3 (to DC-DC unit A/3 CN180)</b>			
1	5B	I	5V for main MCU circuit
2	GND	-	GND
<b>CN450 (to DSP unit CN662)</b>			
1	MSCPI	I	AF input for main audio scope
2	GND	-	GND
<b>CN451 (to DSP unit CN669)</b>			
1	SSCPI	I	AF input for sub audio scope
2	GND	-	GND
<b>CN453 (to Accessory (SCOPE) unit A/10 CN36)</b>			
1	SCIF	I	Scope IF input (24kHz)
2	GND	-	GND
<b>CN32 (to RX unit A/2 CN28)</b>			
1	MAGCV	O	Automatic gain control voltage
2	MIBK	O	IF blanking
3	CLK	O	Serial clock
4	DATA	O	Serial data
5	PSEDA	O	EEPROM data output for Accessory (PRESEL) unit
6	PSESI	I	EEPROM serial data input from Accessory (PRESEL) unit
7	PSECK	O	EEPROM clock for Accessory (PRESEL) unit
8	PSEEN	O	EEPROM enable for Accessory (PRESEL) unit
9	MFSQL	I	FM squelch voltage
10	MFSM	I	FM S-meter voltage
11	MRXC	O	RX ON/OFF H: RX ON
12	DAEN1	O	D/A IC enable
13	PSEN	O	PRESEL serial/parallel IC enable
14	REN2	O	Serial/parallel IC4, IC5 enable
15	REN1	O	Serial/parallel IC2, IC3 enable
16	NBS	O	NB ON/OFF H: NB ON
17	33S	O	3.3V (DC/DC)
18	X55V2	I	PRESEL unit version control
19	GND	-	GND
20	GND	-	GND
21	X55V1	I	RX unit version control
22	5A	O	5V (DC/DC)
<b>CN37 (to TX-RX unit A/2 CN1)</b>			
1	5A	I	5V (DC/DC)
2	NC	-	No connection
3	GND	-	GND

Pin No.	Name	I/O	Function
4	NC	-	No connection
5	33S	I	3.3V (DC/DC)
6	X57V	I	Version detection signal H: ver.1, L: ver.2
7	VSRM	I	VSR meter voltage
8	VSFM	I	VSF meter voltage
9	ID	I	Drain current signal
10	NC	-	No connection
11	ALM	I	ALC meter voltage
12	SFSQL	I	Sub RX FM squelch voltage
13	SFSM	I	Sub RX FM S-meter voltage
14	GND	-	GND
15	DATA	O	Serial data
16	CLK	O	Serial clock
17	DAEN2	O	D/A converter (IC55) enable signal
18	TEN2	O	Shift register (IC53, IC54) enable signal
19	TEN1	O	Shift register (IC51, IC52) enable signal
20	SRXC	O	Sub RX ON/OFF control signal H: SRXB (8V) ON
21	CKY	O	CKY mute signal H: Mute
22	TXC	O	TX ON/OFF control signal H: TXB (8V) ON
23	NC_TR	-	No connection (Reserved)
24	SIBK	O	Sub RX IF blanking signal H: Sub RX IF mute
25	SANO-MU	O	Sub ANO mute control signal H: Sub ANO mute
26	MANO-MU	O	Main ANO mute control signal H: Main ANO mute
27	SSQC	O	Sub squelch control signal (to ACC2) H: Sub squelch open
28	MSQC	O	Main squelch control signal (to ACC2) H: Main squelch open
29	PKP	O	Invert PKS control signal H: PTT ON
30	PKSR	I	PTT output for data communication L: PTT ON
31	SS	I	Standby switch L: TX
32	KYSR	I	KEY jack / PADDLE judgement signal L: When KEY or PADDLE is connected
33	KEY2	I	KEY down signal / Electric keyer dash signal L: KEY down / KEY dash
34	KEY1	I	KEY down signal / Electric keyer dot signal L: KEY down / KEY dot
35	SSMET	O	Sub RX S-meter voltage
36	MSMET	O	Main RX S-meter voltage
<b>CN43 (to PLL (MAIN) unit CN1)</b>			
1	GND	-	GND
2	MDEN2	O	DDS2 (IC26) enable
3	REFI	O	External reference input select H: External reference input

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
4	UL	I	Unlock detect H: Lock
5	RPEN	O	Reference PLL enable (IC18)
6	MLDT	O	Main local data output
7	MLCK	O	Main local clock output
8	REFO	O	Reference output select H: Reference output
9	ERDET	I	External reference detect H: External input
10	RDEN	O	Reference DDS (IC13) enable
11	MPEN1	O	Main PLL1 (IC2) enable
12	MLSEN	O	Main local shift register (IC15/IC16) enable
13	MLRST	O	DDS1 (IC3) reset
14	MDEN1	O	DDS1 (IC13) enable
15	MDIO	O	DDS1 (IC13) I/O update
16	MPEN2	O	PLL2 (IC17) enable
17	GND	-	GND
18	X50V1	I	Version detection signal H: ver.1, L: ver.2
19	NC	-	No connection
20	NC	-	No connection
21	NC	-	No connection
22	NC	-	No connection
<b>CN47 (to PLL (SUB) unit CN1)</b>			
1	GND	-	GND
2	SISEN	O	Local shift register (IC5/IC6) enable
3	SPEN3	O	PLL3 (IC1) enable
4	SPEN2	O	PLL2 (IC16) enable
5	SPEN1	O	PLL1 (IC10) enable
6	SDEN3	O	DDS3 (IC11) enable
7	SDEN2	O	DDS2 (IC12) enable
8	SDIO	O	DDS1 (IC14) I/O update
9	SDEN1	O	DDS1 (IC14) enable
10	MLRST	O	DDS1 (IC14) reset
11	UL	I	Unlock detect
12	SLCK	O	Sub local clock output
13	SLDT	O	Sub local data output
14	GND	-	GND
15	X50V2	I	Version detection signal H: ver.1, L: ver.2
16	NC	-	No connection
<b>CN65 (to Display (MAIN PANEL) unit A/6 CN263)</b>			
1	LTIMER	O	Timer LED control
2	LPOFF	O	Standby LED control
3	PRST	O	Panel MCU reset signal
4	DOT	I	Electronic keyer dot signal L: KEY dot
5	DASH	I	Electronic keyer dash signal

Pin No.	Name	I/O	Function
6	KYSR	I	KEY jack judgement signal L: Plugged
7	PWS	I	Power switch signal
8	SS	I	Standby switch L: TX
9	BKC	O	Reduced voltage detection interrupt L: Reduced voltage
10	PTXD	O	Serial data output to panel MCU
11	PRXD	I	Serial data input from panel MCU
12	PRTS	O	RTS signal output to panel MCU
13	PCTS	I	RTS signal input from panel MCU
14	EXTPF1	O	External PF1 signal output
15	EXTPF2	O	External PF2 signal output
16	MBLEN	O	Main bucklight enable
17	PARXD	I	Serial data input from panel MCU to application MCU
18	PATXD	O	Serial data output to panel MCU from application MCU
19	NC	-	No connection
20	33B	O	3.3V regulator output
21	NC	-	No connection
22	NC	-	No connection
23	NC	-	No connection
24	5D	O	5V (DC/DC)
25	NC	-	No connection
26	GND	-	GND
27	GND	-	GND
28	NC	-	No connection
29	8A	O	8V (DC/DC)
30	NC	-	No connection
31	NC	-	No connection
32	PFPRG	I/O	Programming mode request L: Programming mode
<b>CN70 (to DC-DC unit A/3 CN230)</b>			
1	PHD	I	Output voltage of phase detector
2	AMD	I	Output voltage of amplitude detector
3	TT	I/O	External antenna tuner in/through control
4	TS	I/O	External antenna tuner tuning start control
5	ATPWS	O	AT relay operation stops when power is ON
6	AFEN	O	Shift register (IC800) enable signal for ANT connector unit and shift register (IC8) for ANT switch unit
7	MFEN3	O	D/A converter (IC1) enable signal for final unit
8	MFEN2	O	Shift register (IC300,IC320) enable signal for ANT tuner unit
9	MFEN1	O	Shift register (IC6, IC7) enable signal for final unit and shift register (IC340) for ANT tuner unit



## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
10	TH33B	O	3.3V power supply for thermister
11	VD	I	Drain voltage input for meter
12	MRXC	O	Main RX control signal
13	ADC1	O	Multiplexer control signal 1
14	ADC2	O	Multiplexer control signal 2
15	MLPX1	I	Multiplexer (IC50) X-common data input
16	MLPY1	I	Multiplexer (IC50) Y-common data input
17	CLK	O	Serial clock
18	DATA	O	Serial data
19	GND	-	GND
20	BOVER	I	Over voltage detection L: Over voltage
21	BKC	I	Reduced voltage detection interrupt L: Reduced voltage
22	X53V2	I	Version detection signal H: ver.1, L: ver.2
23	DGND	-	Digital GND
24	NC	-	No connection
25	DGND	-	Digital GND
26	ACDC-SW	O	AC/DC power control H: Active
27	ACDCTH	I	AC/DC temperature detection
28	PSC	O	Power switch control (5V/8V/LCD driver power) H: Active
29	14SW	O	Power switch control for 14V H: Active
30	PSC33	O	Power switch control for 3.3V H: Active
31	X45V2	I	Version detection signal H: ver.1, L: ver.2
32	X45V1	I	Version detection signal H: ver.1, L: ver.2
33	ODP	I	Over drive protection
34	CTXD	O	RS-232C transmitted data
35	CRXD	I	RS-232C received data
36	CRTS	O	RS-232C request to send
37	CCTS	I	RS-232C clear to send
38	50VSW	O	Power switch control for 50V H: Active
39	EXTPF1	I	External PF1 signal input
40	EXTPF2	I	External PF2 signal input
<b>CN71 (to Digital unit CN4)</b>			
1	DC18SW	O	Switch signal for digital 1.8V DC/DC converter H: Active
2	DC12SW	O	Switch signal for digital 1.2V DC/DC converter H: Active
3	VTXD	O	Serial data output to USB-serial bridge
4	VRXD	I	Serial data input from USB-serial bridge
5	VRTS	O	RTS signal output to USB-serial bridge
6	VCTS	I	CTS signal input from USB-serial bridge
7	NC	-	No connection

Pin No.	Name	I/O	Function
8	VBINT	I	USB connection interrupt input H: connection
9	32KOUT	O	32kHz CLK to application MCU
10	BKC	O	Reduced voltage detection interrupt L: Active
11	MATXD	O	Serial data output to application MCU
12	MARXD	I	Serial data input from application MCU
13	MARTS	O	RTS signal output to application MCU
14	MACTS	I	RTS signal input from application MCU
15	AHLT	I	Application MCU check signal H: Status OK
16	ARST	O	Reset to application MCU L: Active
17	USBSW	O	Switch signal for USB device power H: Active
18	33SW1	O	Switch signal for digital 3.3V FET(Q805) H: Active
19	33SW2	O	Switch signal for digital 3.3V FET(Q803) H: Active
20	SCCS0	O	Serial communication chip select to application MCU
21	SCSOMI	I	Serial data input from application MCU
22	SCSIMO	O	Serial data output to application MCU
23	NC	-	No connection
24	SCCLK	O	Serial communication CLK to application MCU
25	GND	-	GND
26	PARXD	I	Serial data input from application MCU
27	PATXD	O	Serial data output to application MCU
28	GND	-	GND
29	LCDREQ	O	LCD active request to application MCU H: Active
30	PSC	O	Power switch control H: Active
31	NC	-	No connection
32	5D	I	5V (DC/DC)
<b>CN72 (to DSP unit CN101)</b>			
1	NC	-	No connection
2	BKC	O	Reduced voltage detect interrupt L: Active
3	DTXD	O	Serial data output to DSP MCU
4	DRXD	I	Serial data input from DSP MCU
5	DRTS	O	RTS signal output to DSP MCU
6	DCTS	I	RTS signal input from DSP MCU
7	DRES	O	Reset signal for DSP MCU
8	DFPRG	I/O	Programming mode request L: Programming mode
9	CKY	O	RF power ON/OFF H: RF power ON
10	TXC	O	TX ON/OFF H: TX ON
11	14SW	O	1.2V DC/DC convertor SW control H: Active

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
12	SIBK	O	IF blanking for SRX-DSP H: Mute
13	MIBK	O	IF blanking for TXMRX-DSP H: Mute
14	SABK2	O	AF blanking 2 for SRX-DSP H: Mute
15	SABK1	O	AF blanking 1 for SRX-DSP H: Mute
16	MABK2	O	AF blanking 2 for TXMRX-DSP H: Mute
17	MABK1	O	AF blanking 1 for TXMRX-DSP H: Mute
18	MAGCV	I	Automatic gain control voltage form TXMRX-DSP (to RX unit)
19	MCTDET	I	CTCSS detection from TXMRX-DSP H: Detection
20	SCTDET	I	CTCSS detection from SRX-DSP H: Detection
21	NC	-	No connection
22	33SD	O	3.3V (DC/DC)
23	33SD	O	3.3V (DC/DC)
24	NC	-	No connection
25	DGND	-	Digital GND
26	DGND	-	Digital GND
27	GND	-	GND
28	GND	-	GND
29	NC	-	No connection
30	5A	O	5V (DC/DC)
31	5A	O	5V (DC/DC)
32	NC	-	No connection
<b>CN73 (to Accessory (SCOPE) unit A/10 CN35)</b>			
1	SCPUL	I	Unlock detection H: LOCK
2	SCDEN3	O	DDS3 (IC3) enable signal
3	SCDEN2	O	DDS2 (IC2) enable signal
4	SCDEN1	O	DDS1 (IC1) enable signal
5	SCPEN2	O	PLL2 (IC6) enable signal
6	SCPEN1	O	PLL1 (IC4) enable signal
7	SCPDT	O	Serial data
8	SCPCK	O	Serial clock
9	SCATT3	O	Attenuator 3 control
10	SCATT2	O	Attenuator 2 control
11	SCATT1	O	Attenuator 1 control
12	SCATT0	O	Attenuator 0 control
13	IFSEL4	O	IF select 4
14	IFSEL3	O	IF select 3
15	IFSEL2	O	IF select 2
16	IFSEL1	O	IF select 1
17	X42V1	I	Version detection signal H: ver.1, L: ver.2
18	33SD	O	3.3V (DC/DC)
19	NC	-	No connection
20	5A	O	5V (DC/DC)
21	NC	-	No connection

Pin No.	Name	I/O	Function
22	GND	-	GND
23	NC	-	No connection
24	8A	I	8V (DC/DC)

### DSP unit (X53-4530-00)

Pin No.	Name	I/O	Function
<b>CN1 (to DC-DC unit A/3 CN190)</b>			
1	14AF	I	Switched 14V for AF power amplifier
2	GND	-	Power amplifier GND
<b>CN2 (to Control unit CN1)</b>			
1	14SD	I	Non-switched 14V for switching regulator
2	NC	-	No connection
3	GND	-	Switching regulator GND
<b>CN50 (to DC-DC unit A/3 CN210)</b>			
1	SP	O	AF output for internal speaker
2	SPG	-	Speaker GND
<b>CN101 (to Control unit CN72)</b>			
1	NC	-	No connection
2	5A	I	5V (DC/DC)
3	5A	I	5V (DC/DC)
4	NC	-	No connection
5	GND	-	GND
6	GND	-	GND
7	DGND	-	Digital GND
8	DGND	-	Digital GND
9	NC	-	No connection
10	33SD	I	3.3V (DC/DC)
11	33SD	I	3.3V (DC/DC)
12	NC	-	No connection
13	SCTDET	O	CTCSS detection from SRX-DSP H: Detection
14	MCTDET	O	CTCSS detection from TXMRX-DSP H: Detection
15	MAGCV	O	Automatic gain control voltage form TXMRX-DSP
16	MABK1	I	AF blanking for TXMRX-DSP H: Mute
17	MABK2	I	AF blanking for TXMRX-DSP H: Mute
18	SABK1	I	AF blanking for SRX-DSP H: Mute
19	SABK2	I	AF blanking for SRX-DSP H: Mute
20	MIBK	I	IF blanking for TXMRX-DSP H: Mute
21	SIBK	I	IF blanking for SRX-DSP H: Mute
22	14SW	I	Power down for switching regulator IC H: Power ON
23	TXC	I	TX ON/OFF H: TX ON
24	CKY	I	RF power ON/OFF H: RF power ON

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
25	DFPRG	I/O	Setup firmware write mode for DSP-sub MPU L: Firmware write mode
26	DRST	I	Reset signal for DSP-sub MPU L: Reset
27	DCTS	O	Request to send form DSP unit
28	DRTS	I	Permission to send from control unit
29	DRXD	O	Transmitted data form DSP unit
30	DTXD	I	Received data from control unit
31	BKC	I	Reduced voltage detection interrupt L: Detection
32	NC	-	No connection
<b>CN662 (to Control unit CN450)</b>			
1	MSCPI	O	AF output for main bandscope / IF output for main decoder
2	GND	-	GND
<b>CN663 (to TX-RX unit A/2 CN700)</b>			
1	TIF	O	TX IF
2	GND	-	GND
<b>CN665 (to RX unit A/2 CN137)</b>			
1	MRIF/MFMD	I	Main RX IF / Main RX FM detection
2	GND	-	GND
<b>CN666 (to PLL (SUB) unit CN66)</b>			
1	FMOD	O	AF output for TX FM
2	GND	-	GND
<b>CN667 (to Accessory (PHONES/PADDLE) unit E/10 CN604)</b>			
1	PH1	O	AF output (Lch of phone output)
2	PHG	-	Phones GND
3	PH2	O	AF output (Rch of phone output)
4	PHDET	I	Phone jack insertion detection L: Jack insertion
<b>CN668 (to Accessory (MIC) unit C/10 CN601)</b>			
1	MIC	I	Microphone signal (hot) input
2	MSG	I	Microphone signal (cold) input
3	MCG	-	Common GND
<b>CN669 (to Control unit CN451)</b>			
1	SSCPI	O	AF output for sub bandscope/IF output for sub decoder
2	GND	-	GND
<b>CN670 (to TX-RX unit A/2 CN600)</b>			
1	SRIF/SFMD	I	Sub RX IF/Sub RX FM detection
2	GND	-	GND
<b>CN671 (to TX-RX unit A/2 CN2)</b>			
1	GND	-	GND
2	MANO	O	Main AF output to ACC2
3	GND	-	GND
4	SANO	O	Sub AF output to ACC2
5	GND	-	GND

Pin No.	Name	I/O	Function
6	GND	-	GND
7	ANI	I	AF input from ACC2
8	GND	-	GND
9	RTK	I	PTTY key signal form ACC2
10	SAGCV	O	Automatic gain control voltage form SRX-DSP
11	GND	-	GND
12	SP1	O	AF output for REMOTE (after power amplifier)
13	GND	-	GND
<b>CN672 (to Digital unit CN11)</b>			
1	5A	O	5V (DC/DC)
2	NC	-	No connection
3	GND	-	GND
4	UANI	I	AF input form USB codec
5	GND	-	GND
6	SUANO	O	Sub AF output for USB codec
7	GND	-	GND
8	MUANO	O	Main AF output for USB codec
9	GND	-	GND
10	SRECI	O	Sub AF output for recording
11	GND	-	GND
12	MRECI	O	Main AF output for recording
13	GND	-	GND
14	MRECO	I	Main AF input for recording
15	GND	-	GND
16	SRECO	I	Sub AF input for recording

### Display (MAIN PANEL) unit (X54-3850-00 A/6)

Pin No.	Name	I/O	Function
<b>CN1 (to Display (MAIN LCD BACK) unit B/6 CN302)</b>			
1	PA_Y+	I	Touch panel detection Y+
2	PA_X+	I	Touch panel detection X+
3	PA_Y-	I	Touch panel detection Y-
4	PA_X-	I	Touch panel detection X-
5	NC	-	No connection
6	X1	O	Touch panel SW X1
7	X2	O	Touch panel SW X2
8	Y1	O	Touch panel SW Y1
9	Y2	O	Touch panel SW Y2
10	TPPRES	O	Touch panel SW PRESS
11	TPPUON	O	Touch panel SW PULL UP ON
12	GND	-	GND
13	MLPWM	O	Main display backlight PWM control

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
14	GND	-	GND
15	MLSYNC	O	Backlight driver IC SYNC signal for main display
16	GND	-	GND
17	PBLEN	O	Display backlight enable from panel MCU
18	NC	-	No connection
19	MBLEN	O	Display backlight enable from main MCU
20	GND	-	GND
21	SLPWM	O	Sub display backlight PWM control
22	GND	-	GND
23	SLSYNC	O	Backlight driver IC SYNC signal for sub display
24	GND	-	GND
25	NC	-	No connection
26	5D	O	5.0V (DC/DC)
27	NC	-	No connection
28	14SP	I	13.8V
29	14SP	I	13.8V
30	14SP	I	13.8V
31	14SP	I	13.8V
32	14SP	I	13.8V
<b>CN2 (to Main Encoder )</b>			
1	5D	O	5.0V (DC/DC)
2	MENCB	I	Main encoder pulse B
3	MENCA	I	Main encoder pulse A
4	GND	-	GND
<b>CN3 (to Sub Encoder )</b>			
1	5D	O	5.0V (DC/DC)
2	SENCB	I	Sub encoder pulse B
3	SENCA	I	Sub encoder pulse A
4	GND	-	GND
<b>CN4 (to RIT Encoder)</b>			
1	5D	O	5.0V (DC/DC)
2	RITA	I	RIT encoder pulse A
3	RITB	I	RIT encoder pulse B
4	GND	-	GND
<b>CN5 (to Accessory (MULTI) unit G/10 CN607)</b>			
1	LMULTI	O	Multi encoder LED (D613)
2	LEDDIM	I	LED power supply 13.8V
3	MULTIB	O	Multi encoder pulse B
4	MULTIC	-	GND
5	MULTIA	O	Multi encoder pulse A
<b>CN6 (to Accessory (HC/LC) unit H/10 CN608)</b>			
1	LCENCB	I	Low cut encoder pulse B
2	GND	-	GND
3	LCENCA	I	Low cut encoder pulse A

Pin No.	Name	I/O	Function
4	HCENCB	I	Hi cut encoder pulse B
5	NC	-	No connection
6	HCENCA	I	High cut encoder pulse A
<b>CN259 (to Display (F1-F7 KEY) unit C/6 CN501)</b>			
1	KI1	I	Key scan input 1
2	KI3	I	Key scan input 3
3	KI0	I	Key scan input 0
4	KEYO7	O	Key scan output 7
5	KEYO6	O	Key scan output 6
6	KEYO5	O	Key scan output 5
7	KEYO4	O	Key scan output 4
8	KEYO3	O	Key scan output 3
9	KEYO2	O	Key scan output 2
10	KEYO1	O	Key scan output 1
11	KEYO0	O	Key scan output 0
12	LVOX	I	VOX LED (D501)
13	LPROC	I	PROC LED (D502)
14	LFBK	I	FBK LED (D503)
15	LMONI	I	MONI LED (D504)
16	LEDDIM	O	LED power supply 13.8V
<b>CN260 (to Accessory (NB/NR) unit I/10 CN609)</b>			
1	5D	O	5.0V (DC/DC)
2	VNB2	I	Noise blanker 2 volume voltage
3	VNB1	I	Noise blanker 1 volume voltage
4	GND	-	GND
5	VNR2	I	Noise reduction 2 volume voltage
6	VNR1	I	Noise reduction 1 volume voltage
<b>CN261 (to Accessory (NOTCH/SQL) unit J/10 CN610)</b>			
1	5D	O	5.0V (DC/DC)
2	VMSQ	I	Main SQL volume voltage
3	VMNCH	I	Main NOTCH volume voltage
4	GND	-	GND
5	VSSQ	I	Sub SQL volume voltage
6	VSNCH	I	Sub NOTCH volume voltage
<b>CN262 (to Display (AF/RF VOL) unit E/6 CN503)</b>			
1	VSAF	I	Sub AF volume voltage
2	VSRF	I	Sub RF volume voltage
3	GND	-	GND
4	VMAF	I	Main AF volume voltage
5	VMRF	I	Main RF volume voltage
6	5D	O	5.0V (DC/DC)
<b>CN263 (to Control unit CN65)</b>			
1	PFPRG	I	Firmware write mode for panel MCU L: Firmware write mode
2	NC	-	No connection
3	NC	-	No connection

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
4	8A	I	8.0V (DC/DC)
5	NC	-	No connection
6	GND	-	GND
7	GND	-	GND
8	NC	-	No connection
9	5D	I	5.0V (DC/DC)
10	NC	-	No connection
11	NC	-	No connection
12	NC	-	No connection
13	33B	I	3.3V (DC/DC)
14	NC	-	No connection
15	PARXD	I	Serial data input from application MCU
16	PATXD	O	Serial data output to application MCU
17	MBLEN	I	LCD backlight enable from main MCU
18	EXTPF2	I	External PF key 2 input
19	EXTPF1	I	External PF key 1 input
20	PRTS	O	RTS signal output to main MCU
21	PCTS	I	RTS signal input from main MCU
22	PTXD	O	Serial data output to main MCU
23	PRXD	I	Serial data input from main MCU
24	BKC	I	Reduced voltage detection interrupt
25	SS	O	PTT control L: TX
26	PWS	O	Power switch signal L: Power ON
27	KYSR	O	KEY jack judgement signal L: When KEY or PADDLE is connected
28	DASH	O	Electronic keyer dash signal L: KEY dash
29	DOT	O	Electronic keyer dot signal L: KEY dot
30	PRST	I	Panel MCU reset signal
31	LPOFF	I	Standby LED (D610)
32	LTIMER	I	Timer LED (D609)
<b>CN264 (to Accessory (MIC) unit C/10 CN602)</b>			
1	MU	I	MIC up control L: Up
2	MD	I	MIC down control L: Down
3	SS	I	PTT control L: TX
4	8A	O	8.0V (DC/DC)
<b>CN265 (to Accessory (PHONES/PADDLE) unit E/10 CN605)</b>			
1	DOT	O	Electronic keyer dot signal L: KEY dot
2	DOG	-	PADDLE jack GND
3	DASH	O	Electronic keyer dash signal L: KEY dash
4	KYSR	O	KEY jack judgement signal L: When KEY or PADDLE is connected
5	NC	-	No connection
<b>CN266 (to Accessory (POW SW) unit F/10 CN606)</b>			
1	LEDDIM	O	LED power supply 13.8V
2	LAT	I	AT LED (D612)

Pin No.	Name	I/O	Function
3	LPON	I	Power ON LED (D611)
4	GND	-	GND
5	LPOFF	I	Power OFF LED (D610)
6	LTIMER	I	Timer LED (D609)
7	NC	-	No connection
8	33B	O	3.3V (DC/DC)
9	NC	-	No connection
10	KEYO3	O	Key scan output 3
11	KEYO4	O	Key scan output 4
12	KEYO5	O	Key scan output 5
13	KEYO6	O	Key scan output 6
14	KEYO7	O	Key scan output 7
15	KI0	I	Key scan input 0
16	PWS	I	Power switch input signal
<b>CN267 (to Display (VOLUME) unit D/6 CN502)</b>			
1	GND	-	GND
2	VCW-PCH	I	CWPITCH volume voltage
3	VCW-MON	I	MONITOR volume voltage
4	VC-WSPD	I	KEYSPEED volume voltage
5	VCW-DRY	I	DELAY volume voltage
6	VPWR	I	PWR volume voltage
7	VCAR	I	CAR volume voltage
8	VPROCI	I	PROCIN volume voltage
9	VPROCO	I	PROCOUT volume voltage
10	VMIC	I	MIC volume voltage
11	VVXGIN	I	VOXGAIN volume voltage
12	5D	O	5.0V (DC/DC)

### Display (MAIN LCD BACK) unit (X54-3850-00 B/6)

Pin No.	Name	I/O	Function
<b>CN301 (to DC-DC unit A/3 CN90)</b>			
1	14SP	I	13.8V
2	DCDC-GND	-	DC-DC GND
<b>CN302 (to Display (MAIN PANEL) unit A/6 CN1)</b>			
1	14SP	O	13.8V
2	14SP	O	13.8V
3	14SP	O	13.8V
4	14SP	O	13.8V
5	14SP	O	13.8V

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
6	NC	-	No connection
7	5D	I	5.0V (DC/DC)
8	NC	-	No connection
9	GND	-	GND
10	SLSYNC	I	Backlight driver IC SYNC signal for sub display
11	GND	-	GND
12	SLPWM	I	Sub display backlight PWM control
13	GND	-	GND
14	MBLEN	I	Display backlight enable from main microcomputer
15	NC	-	No connection
16	PBLEN	I	Display backlight enable from panel microcomputer
17	GND	-	GND
18	MLSYNC	I	Backlight driver IC SYNC signal for main display
19	GND	-	GND
20	MLPWM	I	Main display backlight PWM control
21	GND	-	GND
22	TPPUON	I	Touch panel SW PULL UP ON
23	TPPRES	I	Touch panel SW PRESS
24	Y2	I	Touch panel SW Y2
25	Y1	I	Touch panel SW Y1
26	X2	I	Touch panel SW X2
27	X1	I	Touch panel SW X1
28	NC	-	No connection
29	PA_X-	O	Touch panel detection X-
30	PA_Y-	O	Touch panel detection Y-
31	PA_X+	O	Touch panel detection X+
32	PA_Y+	O	Touch panel detection Y+
<b>CN303 (to Display (SUB LCD) unit F/6 CN587)</b>			
1	NC	-	No connection
2	SDISPA	O	Power supply for sub display backlight anode
3	NC	-	No connection
4	SDISPK	I	Power supply for sub display backlight cathode
5	NC	-	No connection
6	VCC	O	Power supply for sub display (3.3V)
7	NC	-	No connection
8	DOTCLK	O	Dot clock for sub display
9	VSYNC	O	Vertical SYNC signal
10	HSYNC	O	Horizontal SYNC signal
11	DEN	O	Data enable for sub display
12	RR7	O	Red data for sub display
13	RR6	O	Red data for sub display

Pin No.	Name	I/O	Function
14	RR5	O	Red data for sub display
15	RR4	O	Red data for sub display
16	RR3	O	Red data for sub display
17	RR2	O	Red data for sub display
18	RR1	O	Red data for sub display
19	RR0	O	Red data for sub display
20	GG7	O	Green data for sub display
21	GG6	O	Green data for sub display
22	GG5	O	Green data for sub display
23	GG4	O	Green data for sub display
24	GG3	O	Green data for sub display
25	GG2	O	Green data for sub display
26	GG1	O	Green data for sub display
27	GG0	O	Green data for sub display
28	BB7	O	Blue data for sub display
29	BB6	O	Blue data for sub display
30	BB5	O	Blue data for sub display
31	BB4	O	Blue data for sub display
32	BB3	O	Blue data for sub display
33	BB2	O	Blue data for sub display
34	BB1	O	Blue data for sub display
35	BB0	O	Blue data for sub display
36	SDI	O	Data input in serial mode for sub display
37	SCK	O	Clock of serial interface for sub display
38	CSB	O	Chip select of serial interface for sub display
39	RESB	O	System reset for sub display
40	VSS	-	Application GND
<b>CN405 (to Digital unit CN225)</b>			
1	VCC (33B)	-	Power supply for sub display (3.3V)
2	NC	O	No connection
3	VSS	-	Application GND
4	DOTCLK	I	Dot clock for sub display
5	VSS	-	Application GND
6	VSYNC	I	Vertical SYNC signal for sub display
7	HSYNC	I	Horizontal SYNC signal for sub display
8	DEN	I	Data enable for sub display
9	VSS	-	Application GND
10	RR7	I	Red data for sub display
11	RR6	I	Red data for sub display
12	VSS	-	Application GND
13	RR5	I	Red data for sub display
14	RR4	I	Red data for sub display
15	VSS	-	Application GND
16	RR3	I	Red data for sub display



## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
17	RR2	I	Red data for sub display
18	VSS	-	Application GND
19	RR1	I	Red data for sub display
20	RR0	I	Red data for sub display
21	VSS	-	Application GND
22	GG7	I	Green data for sub display
23	GG6	I	Green data for sub display
24	VSS	-	Application GND
25	GG5	I	Green data for sub display
26	GG4	I	Green data for sub display
27	VSS	-	Application GND
28	GG3	I	Green data for sub display
29	GG2	I	Green data for sub display
30	VSS	-	Application GND
31	GG1	I	Green data for sub display
32	GG0	I	Green data for sub display
33	VSS	-	Application GND
34	BB7	I	Blue data for sub display
35	BB6	I	Blue data for sub display
36	VSS	-	Application GND
37	BB5	I	Blue data for sub display
38	BB4	I	Blue data for sub display
39	VSS	-	Application GND
40	BB3	I	Blue data for sub display
41	BB2	I	Blue data for sub display
42	VSS	-	Application GND
43	BB1	I	Blue data for sub display
44	BB0	I	Blue data for sub display
45	VSS	-	Application GND
46	SDI	I	Data input in serial mode
47	SCK	I	Clock of serial interface
48	CSB	I	Chip select of serial interface
49	RESB	I	System reset for sub display
50	VSS	-	Application GND
<b>CN406 (to Digital unit CN651)</b>			
1	NC	-	No connection
2	ABLENM	I	Main display backlight enable from application MCU
3	ABLENS	I	Sub display backlight enable from application MCU
4	VSS	-	Application GND
5	NC	-	No connection
6	VSS	-	Application GND
7	R0	I	Red data for main display
8	VSS	-	Application GND
9	R1	I	Red data for main display

Pin No.	Name	I/O	Function
10	VSS	-	Application GND
11	R2	I	Red data for main display
12	VSS	-	Application GND
13	R3	I	Red data for main display
14	VSS	-	Application GND
15	R4	I	Red data for main display
16	VSS	-	Application GND
17	R5	I	Red data for main display
18	VSS	-	Application GND
19	G0	I	Green data for main display
20	VSS	-	Application GND
21	G1	I	Green data for main display
22	VSS	-	Application GND
23	G2	I	Green data for main display
24	VSS	-	Application GND
25	G3	I	Green data for main display
26	VSS	-	Application GND
27	G4	I	Green data for main display
28	VSS	-	Application GND
29	G5	I	Green data for main display
30	VSS	-	Application GND
31	B0	I	Blue data for main display
32	VSS	-	Application GND
33	B1	I	Blue data for main display
34	VSS	-	Application GND
35	B2	I	Blue data for main display
36	VSS	-	Application GND
37	B3	I	Blue data for main display
38	VSS	-	Application GND
39	B4	I	Blue data for main display
40	VSS	-	Application GND
41	B5	I	Blue data for main display
42	VSS	-	Application GND
43	DE	I	Data enable for main display
44	NC	-	No connection
45	VCC	I	Power supply for main display (3.3V)
46	VCC	I	Power supply for main display (3.3V)
47	VCC	I	Power supply for main display (3.3V)
48	VCC	I	Power supply for main display (3.3V)
<b>CN465 (to Touch panel)</b>			
1	Y1(YU)	-	Touch screen Y1
2	X1(XU)	-	Touch screen X1
3	Y2(YD)	-	Touch screen Y2
4	X2(XD)	-	Touch screen X2

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
<b>CN466 (to Main display backlight)</b>			
1	MDISPA	O	Power supply for main display backlight anode
2	MDISPK	I	Power supply for main display backlight cathode
<b>CN467 (to Main display)</b>			
1	VSS	-	Application GND
2	VSS	-	Application GND
3	DCLK	O	Dot clock for main display
4	VSS	-	Application GND
5	VSS	-	Application GND
6	R0	O	Red data for main display
7	R1	O	Red data for main display
8	R2	O	Red data for main display
9	VSS	-	Application GND
10	R3	O	Red data for main display
11	R4	O	Red data for main display
12	R5	O	Red data for main display
13	VSS	-	Application GND
14	G0	O	Green data for main display
15	G1	O	Green data for main display
16	G2	O	Green data for main display
17	VSS	-	Application GND
18	G3	O	Green data for main display
19	G4	O	Green data for main display
20	G5	O	Green data for main display
21	VSS	-	Application GND
22	B0	O	Blue data for main display
23	B1	O	Blue data for main display
24	B2	O	Blue data for main display
25	VSS	-	Application GND
26	B3	O	Blue data for main display
27	B4	O	Blue data for main display
28	B5	O	Blue data for main display
29	VSS	-	Application GND
30	VSS	-	Application GND
31	VSS	-	Application GND
32	DE	O	Data enable for main display
33	NC	-	No connection
34	VCC	O	Power supply for main display (3.3V)
35	VCC	O	Power supply for main display (3.3V)
36	VCC	O	Power supply for main display (3.3V)
37	VCC	O	Power supply for main display (3.3V)
38	NC	-	No connection
39	VSS	-	Application GND
40	VSS	-	Application GND

Pin No.	Name	I/O	Function
<b>CN468 (to Digital unit CN652)</b>			
1	DCLK	I	Dot clock output for main display (Coaxial)

### Display (F1-F7 KEY) unit (X54-3850-00 C/6)

Pin No.	Name	I/O	Function
<b>CN501 (to Display (MAIN PANEL) unit A/6 CN259)</b>			
1	LEDDIM	I	LED power supply
2	LMONI	O	MONI LED (D504)
3	LFBK	O	FBK LED (D503)
4	LPROC	O	PROC LED (D502)
5	LVOX	O	VOX LED (D501)
6	KEYO0	I	Key scan output 0
7	KEYO1	I	Key scan output 1
8	KEYO2	I	Key scan output 2
9	KEYO3	I	Key scan output 3
10	KEYO4	I	Key scan output 4
11	KEYO5	I	Key scan output 5
12	KEYO6	I	Key scan output 6
13	KEYO7	I	Key scan output 7
14	KI0	O	Key scan input 0
15	KI3	O	Key scan input 3
16	KI1	O	Key scan input 1

### Display (VOLUME) unit (X54-3850-00 D/6)

Pin No.	Name	I/O	Function
<b>CN502 (to Display (MAIN PANEL) unit A/6 CN267)</b>			
1	GND	-	GND
2	VCW-PCH	O	CWPITCH volume voltage
3	VCW-MON	O	MONITOR volume voltage
4	VC-WSPD	O	KEYSPEED volume voltage
5	VCW-DRY	O	DELAY volume voltage
6	VPWR	O	PWR volume voltage
7	VCAR	O	CAR volume voltage
8	VPROCI	O	PROCIN volume voltage
9	VPRO-CO	O	PROCOUT volume voltage
10	VMIC	O	MIC volume voltage
11	VVXGIN	O	VOXGAIN volume voltage
12	5D	I	5.0V (DC/DC)

## TERMINAL FUNCTION

### Display (AF/RF) unit (X54-3850-00 E/6)

Pin No.	Name	I/O	Function
<b>CN503 (to Display (MAIN PANEL) unit A/6 CN262)</b>			
1	5D	I	5.0V (DC/DC)
2	VMRF	O	Main RF volume voltage
3	VMAF	O	Main AF volume voltage
4	GND	-	GND
5	VMRF	O	Sub RF volume voltage
6	VMAF	O	Sub AF volume voltage

### Display (SUB LCD) unit (X54-3850-00 F/6)

Pin No.	Name	I/O	Function
<b>CN504 (to Sub display)</b>			
1	VSS	-	Application GND
2	POL	I	Polarity signal to monitor VCOM signal
3	SDO	I	Data output in serial mode
4	RESB	O	System reset for sub display for sub display
5	CSB	O	Chip select of serial interface for sub display
6	SCK	O	Clock of serial interface for sub display
7	SDI	O	Data input in serial mode for sub display
8	BB0	O	Blue data for sub display
9	BB1	O	Blue data for sub display
10	BB2	O	Blue data for sub display
11	BB3	O	Blue data for sub display
12	BB4	O	Blue data for sub display
13	BB5	O	Blue data for sub display
14	BB6	O	Blue data for sub display
15	BB7	O	Blue data for sub display
16	GG0	O	Green data for sub display
17	GG1	O	Green data for sub display
18	GG2	O	Green data for sub display
19	GG3	O	Green data for sub display
20	GG4	O	Green data for sub display
21	GG5	O	Green data for sub display
22	GG6	O	Green data for sub display
23	GG7	O	Green data for sub display
24	RR0	O	Red data for sub display
25	RR1	O	Red data for sub display
26	RR2	O	Red data for sub display
27	RR3	O	Red data for sub display
28	RR4	O	Red data for sub display
29	RR5	O	Red data for sub display
30	RR6	O	Red data for sub display
31	RR7	O	Red data for sub display

Pin No.	Name	I/O	Function
32	DEN	O	Data enable for sub display
33	HSYNC	O	Horizontal SYNC signal for sub display
34	VSYSN	O	Vertical SYNC signal for sub display
35	DOTCLK	O	Dot clock for sub display
36	TB	O	Select gate driver scan direction for sub display
37	REV	O	Select the display reversion for sub display
38	RL	O	Select the source driver data shift direction for sub display
39	BGR	O	Select the color mapping for sub display
40	SEL0	O	Select interface mode for sub display
41	SEL1	O	Select interface mode for sub display
42	SEL2	O	Select interface mode for sub display
43	CPE	O	Enable internal charge pump circuit for sub display
44	PINV	O	Control the polarity of POL signal for sub display
45	VCI	O	Power supply for analog circuits for sub display
46	VDDIO	O	Voltage input pin for I/O logic for sub display
47	NC	-	No connection
48	NC	-	No connection
49	SDISPK	I	Power supply for sub display backlight cathode
50	SDISPA	O	Power supply for sub display backlight anode
<b>CN587 (to Display (MAIN LCD BACK) unit B/6 CN303)</b>			
1	VSS	-	Application GND
2	RESB	I	System reset for sub display
3	CSB	I	Chip select of serial interface for sub display
4	SCK	I	Clock of serial interface for sub display
5	SDI	I	Data input in serial mode for sub display
6	BB0	I	Blue data for sub display
7	BB1	I	Blue data for sub display
8	BB2	I	Blue data for sub display
9	BB3	I	Blue data for sub display
10	BB4	I	Blue data for sub display
11	BB5	I	Blue data for sub display
12	BB6	I	Blue data for sub display
13	BB7	I	Blue data for sub display
14	GG0	I	Green data for sub display
15	GG1	I	Green data for sub display
16	GG2	I	Green data for sub display
17	GG3	I	Green data for sub display
18	GG4	I	Green data for sub display
19	GG5	I	Green data for sub display

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
20	GG6	I	Green data for sub display
21	GG7	I	Green data for sub display
22	RR0	I	Red data for sub display
23	RR1	I	Red data for sub display
24	RR2	I	Red data for sub display
25	RR3	I	Red data for sub display
26	RR4	I	Red data for sub display
27	RR5	I	Red data for sub display
28	RR6	I	Red data for sub display
29	RR7	I	Red data for sub display
30	DEN	I	Data enable for sub display
31	HSYNC	I	Horizontal SYNC signal for sub display
32	VSYNC	I	Vertical SYNC signal for sub display
33	DOTCLK	I	Dot clock for sub display
34	NC	-	No connection
35	VCC	I	Power supply for sub display (3.3V)
36	NC	-	No connection
37	SDISPK	O	Power supply for sub display backlight cathode
38	NC	-	No connection
39	SDISPA	I	Power supply for sub display backlight anode
40	NC	-	No connection

### RX unit (X55-313X-XX A/2)

Pin No.	Name	I/O	Function
<b>CN1 (to AT unit B/2 CN17)</b>			
1	MRAT	I	MRAT input (Coaxial)
<b>CN2 (to DC-DC unit A/3 CN174)</b>			
1	8A	I	8V (DC/DC)
2	8A	I	8V (DC/DC)
3	GND	-	GND
4	14S	I	13.8V (DC/DC)
<b>CN11 (to RX (BPF) unit B/2 CN501)</b>			
1	BPFI	O	BPF input (Coaxial)
<b>CN13 (to RX (BPF) unit B/2 CN534)</b>			
1	BPFO	I	BPF output (Coaxial)
<b>CN22 (to RX (BPF) unit B/2 CN520)</b>			
1	14S	O	13.8V (DC/DC)
2	NC	-	No connection
3	GND	-	GND
4	GND	-	GND
5	NC	-	No connection
6	RX14	O	Switched 14V
7	NC	-	No connection

Pin No.	Name	I/O	Function
8	8A	O	8V (DC/DC)
9	NC	-	No connection
10	MBPF14	O	BPF14 (46.5~60MHz) ON
11	MBPF13	O	BPF13 (40~46.5MHz) ON
12	MBPF12	O	BPF12 (26.5~35MHz) ON
13	MBPF11	O	BPF11 (21.5~26.5MHz) ON
14	MBPF10	O	BPF10 (18.5~21.5MHz) ON
15	MBPF9	O	BPF9 (14.5~18.5MHz) ON
16	MBPF8	O	BPF8 (10.5~14.5MHz) ON
17	MBPF7	O	BPF7 (7.5~10.5MHz) ON
18	MBPF6	O	BPF6 (6~7.5MHz) ON
19	MBPF5	O	BPF5 (4.1~6MHz) ON
20	MBPF4	O	BPF4 (2.5~4.1MHz) ON
21	MBPF3	O	BPF3 (1.705~2.5MHz) ON
22	NRLY	O	Diode SW BPF block ON
<b>CN26 (to Accessory (PRESEL) unit B/10 CN401)</b>			
1	PREI	O	PRESEL input (Coaxial)
<b>CN28 (to Control unit CN32)</b>			
1	5A	I	5V (DC/DC)
2	X55V1		RX unit version control
3	GND	-	GND
4	GND	-	GND
5	X55V2		PRESEL unit version control
6	33S	I	3.3V (DC/DC)
7	NBS	I	NB ON/OFF
8	REN1	I	Serial/Parallel IC2, IC3 enable
9	REN2	I	Serial/Parallel IC4, IC5 enable
10	PSEN	I	PRESEL serial/parallel IC enable
11	DAEN1	I	D/A IC enable
12	MRXC	I	RX ON/OFF
13	MFSM	O	FM S-meter voltage
14	MFSQL	O	FM squelch voltage
15	PSEEN	I	EEPROM enable
16	PSECK	I	EEPROM clock
17	PSESI	O	EEPROM serial data input
18	PSEDA	I	EEPROM data output
19	DATA	I	Serial data
20	CLK	I	Serial clock
21	MIBK	I	IF blanking
22	MAGCV	I	Automatic gain control voltage
<b>CN53 (to Accessory (PRESEL) unit B/10 CN446)</b>			
1	PREO	I	PRESEL output (Coaxial)
<b>CN70 (to Accessory (PRESEL) unit B/10 CN402)</b>			
1	14S	O	13.8V (DC/DC)
2	NC	-	No connection

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
3	8A	O	8V (DC/DC)
4	8A	O	8V (DC/DC)
5	X55V2		PRESEL unit version control
6	GND	-	GND
7	GND	-	GND
8	PSEL	O	PRESEL ON
9	PSEN	O	PRESEL serial/parallel IC enable
10	PSEEN	O	EEPROM enable
11	PSECK	O	EEPROM clock
12	PSESI	I	EEPROM serial data input
13	PSEDA	O	EEPROM data output
14	DATA	O	Serial data
15	CLK	O	Serial clock
16	33S	O	3.3V (DC/DC)
<b>CN80 (to RX unit A/2 CN81)</b>			
1	NB	O	NB IF output (Coaxial)
<b>CN81 (to RX unit A/2 CN80)</b>			
1	NB	I	NB IF input (Coaxial)
<b>CN89 (to PLL (MAIN) unit CN22)</b>			
1	MLO1	I	1st local signal (Coaxial)
<b>CN104 (to PLL (MAIN) unit CN21)</b>			
1	MLO2	I	2nd local signal (Coaxial)
<b>CN109 (to Accessory (SCOPE) unit A/10 CN2)</b>			
1	SC08M	O	Scope signal output (Coaxial)
<b>CN137 (to DSP unit CN665)</b>			
1	MRIF	O	RX IF output
2	GND	-	GND

### RX (BPF) unit (X55-313X-XX B/2)

Pin No.	Name	I/O	Function
<b>CN501 (to RX unit A/2 CN11)</b>			
1	BPFI	I	BPF input (Coaxial)
<b>CN520 (to RX unit A/2 CN22)</b>			
1	NRLY	I	Diode SW BPF block ON
2	MBPF3	I	BPF3 (1.705~2.5MHz) ON
3	MBPF4	I	BPF4 (2.5~4.1MHz) ON
4	MBPF5	I	BPF5 (4.1~6MHz) ON
5	MBPF6	I	BPF6 (6~7.5MHz) ON
6	MBPF7	I	BPF7 (7.5~10.5MHz) ON
7	MBPF8	I	BPF8 (10.5~14.5MHz) ON
8	MBPF9	I	BPF9 (14.5~18.5MHz) ON
9	MBPF10	I	BPF10 (18.5~21.5MHz) ON
10	MBPF11	I	BPF11 (21.5~26.5MHz) ON
11	MBPF12	I	BPF12 (26.5~35MHz) ON
12	MBPF13	I	BPF13 (40~46.5MHz) ON

Pin No.	Name	I/O	Function
13	MBPF14	I	BPF14 (46.5~60MHz) ON
14	NC	-	No connection
15	8A	I	8V (DC/DC)
16	NC		No connection
17	RX14	I	Switched 14V
18	NC	-	No connection
19	GND	-	GND
20	GND	-	GND
21	NC	-	No connection
22	14S	I	13.8V (DC/DC)
<b>CN534 (to RX unit A/2 CN13)</b>			
1	BPFO	O	BPF output (Coaxial)

### TX-RX unit (X57-827X-XX A/2)

Pin No.	Name	I/O	Function
<b>CN1 (to Control unit CN37)</b>			
1	MSMET	I	Main RX S-meter voltage
2	SSMET	I	Sub RX S-meter voltage
3	KEY1	O	KEY down signal / Electric keyer dot signal
4	KEY2	O	KEY down signal / Electric keyer dash signal
5	KYSR	O	KEY jack / PADDLE judgement signal
6	SS	O	Standby switch
7	PKSR	O	PTT output for data communication
8	PKP	I	Invert PKS control signal
9	MSQC	I	Main squelch control signal (to ACC2)
10	SSQC	I	Sub squelch control signal (to ACC2)
11	MANO-MU	I	Main ANO mute control signal
12	SANO-MU	I	Sub ANO mute control signal
13	SIBK	I	Sub RX IF blanking signal
14	NC_TR	-	No connection (reserved)
15	TXC	I	TX ON/OFF control signal
16	CKY	I	CKY mute signal
17	SRXC	I	Sub RX ON/OFF control signal
18	TEN1	I	Shift register (IC51, IC52) enable signal
19	TEN2	I	Shift register (IC53, IC54) enable signal
20	DAEN2	I	D/A converter (IC55) enable signal
21	CLK	I	Serial clock
22	DATA	I	Serial data
23	GND	-	GND
24	SFSM	O	Sub RX FM S-meter voltage
25	SFSQL	O	Sub RX FM squelch voltage
26	ALM	O	ALC meter voltage

## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
27	NC	-	No connection
28	ID	O	Drain current signal
29	VFSM	O	VSF meter voltage
30	VSRM	O	VSR meter voltage
31	X57V	O	Version detection signal
32	33S	O	Switched 3.3V
33	NC	-	No connection
34	GND	-	GND
35	NC	-	No connection
36	5A	O	Audio 5V
<b>CN2 (to DSP unit CN671)</b>			
1	GND	-	GND
2	SP1	I	Speaker output (to REMOTE)
3	GND	-	GND
4	SAGCV	I	Sub RX AGC control voltage
5	RTK	O	RTTY key signal
6	GND	-	GND
7	ANI	O	Packet data input (from ACC2)
8	GND	-	GND
9	GND	-	GND
10	SANO	I	Sub RX AF signal output (to ACC2)
11	GND	-	GND
12	MANO	I	Main RX AF signal output (to ACC2)
13	GND	-	GND
<b>CN3 (to DC-DC unit B/3 CN530)</b>			
1	NC	-	No connection
2	NC	-	No connection
3	33GND	-	GND (3.3V)
4	NC	-	No connection
5	TXB	O	TX 8V
6	NC	-	No connection
7	33GND	-	GND (3.3V)
8	VSF	I	Forward wave power detection voltage
9	VSR	I	Reflected wave power detection voltage
10	ID	I	Drain current signal
11	NC	-	No connection
12	33S	I	Switched 3.3V
13	NC	-	No connection
14	5GND	-	GND (5V)
15	NC	-	No connection
16	5A	I	Audio 5V
<b>CN4 (to DC-DC unit A/3 CN174)</b>			
1	14S	I	Switched 14V
2	GND	-	GND
3	8A	I	Audio 8V

Pin No.	Name	I/O	Function
<b>CN200 (to AT (ANT SW) unit A/2 CN18)</b>			
1	SRAT	I	Sub RX RF signal input (Coaxial)
<b>CN300 (to PLL (SUB) unit CN63)</b>			
1	SLO1	I	Sub RX 1st local signal input (Coaxial)
<b>CN350 (to Accessory (SCOPE) unit A/10 CN3)</b>			
1	SC11S	O	Sub RX 11M IF signal output (Coaxial)
<b>CN400 (to PLL (SUB) unit CN65)</b>			
1	SLO2	I	Sub RX 2nd local signal input (Coaxial)
<b>CN450 (to Accessory (SCOPE) unit A/10 CN4)</b>			
1	SC73S	O	Sub RX/TX 73M IF signal output (Coaxial)
<b>CN500 (to PLL (SUB) unit CN64)</b>			
1	SLO3	I	Sub RX 3rd local signal input (coaxial)
<b>CN600 (to DSP unit CN670)</b>			
1	SRIF	O	Sub RX IF signal output
2	GND	-	GND
<b>CN700 (to DSP unit CN663)</b>			
1	TIF	I	TX IF signal input
2	GND	-	GND
<b>CN800 (to Final unit A/2 CN2)</b>			
1	DRIVE	O	TX RF signal output (Coaxial)
<b>CN850 (to PLL (SUB) unit CN59)</b>			
1	TLO1	I	TX 1st local signal input (Coaxial)
<b>CN900 (to TX-RX (NB) unit B/2 CN950)</b>			
1	SNBIF	O	Sub RX noise blanker IF output (Coaxial)
<b>CN910 (to TX-RX (NB) unit B/2 CN920)</b>			
1	SIBK	O	Sub RX IF blanking signal
2	1STIF	O	1st IF signal switch
3	SNBL	O	Sub RX noise blanker level
4	SBLNK	I	Sub RX IF mute signal
5	8A	O	Audio 8V
6	GND	-	GND
<b>J1 (METER)</b>			
1	GND	-	GND
2	MSMET	O	Main RX S-meter voltage
3	SSMET	O	Sub RX S-meter voltage
10	NC	-	No connection
11	NC	-	No connection
<b>J2 (ACC2)</b>			
1	SANO	O	Sub RX AF signal output
2	RTTY	I	RTTY key input
3	MANO	O	Main RX AF signal output
4	GND	-	GND
5	MSQ	O	Main squelch control signal
6	MSMET	O	Main RX S-meter voltage
7	SSQ	O	Sub squelch control signal



## TERMINAL FUNCTION

Pin No.	Name	I/O	Function
8	GND	-	GND
9	PKS	I	PTT line control for data communication
10	SSMET	O	Sub RX S-meter voltage
11	ANI	I	Packet data input
12	GND	-	GND
13	SS	I	Standby switch
<b>J3 (REMOTE)</b>			
1	SPO	O	Speaker output
2	COM	-	Relay (K101) common terminal
3	SS	I	Standby switch
4	MKE	-	Relay (K101) make terminal
5	BRK	-	Relay (K101) break terminal
6	ALC	I	ALC voltage
7	RL	O	Linear amplifier control signal
<b>J4 (KEY)</b>			
1	GND	-	GND
2	KEY1	I	KEY down signal/ Electric keyer dot signal
3	KEY2	I	KEY down signal/ Electric keyer dash signal
4	NC	-	No connection

Pin No.	Name	I/O	Function
5	KYSR	I	KEY jack/ PADDLE judgement signal
6	GND	-	GND
7	NC	-	No connection
8	NC	-	No connection
9	NC	-	No connection
<b>J700 (DRV)</b>			
1	DRV	O	Drive output (Coaxial)

### TX-RX (NB) unit (X57-827X-XX B/2)

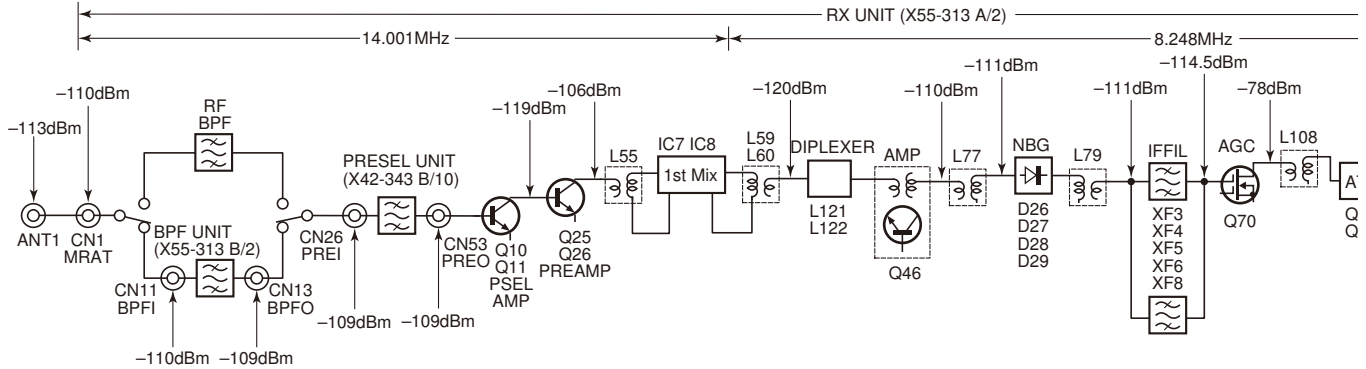
Pin No.	Name	I/O	Function
<b>CN920 (to TX-RX unit A/2 CN910)</b>			
1	SIBK	I	Sub RX IF blanking signal
2	1STIF	I	1st IF signal switch
3	SNBL	I	Sub RX noise blanker level
4	SBLNK	O	Sub RX IF mute signal
5	8A	I	Audio 8V
6	GND	-	GND
<b>CN950 (to TX-RX unit A/2 CN900)</b>			
1	SNBIF	I	Sub RX noise blanker IF input (Coaxial)

**MEMO**

## LEVEL DIAGRAM

### Receiver Section

#### MAIN BAND



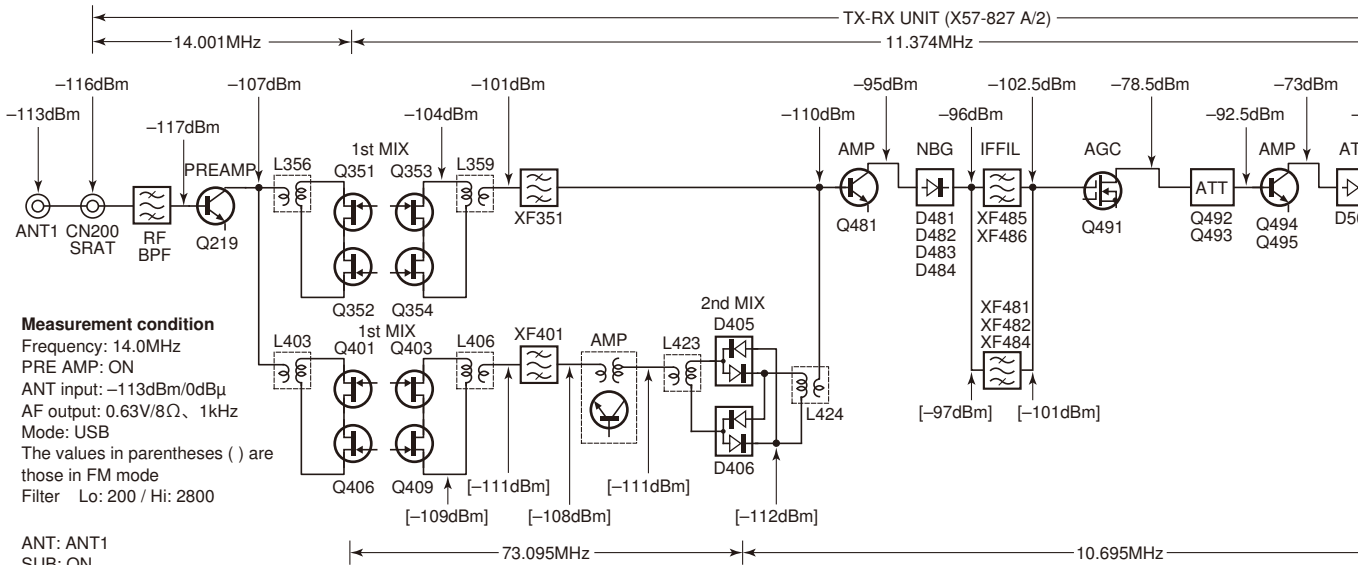
#### Measurement condition

Frequency: 14.0MHz  
 PRE AMP: ON  
 ANT input: -113dBm/0dBμ  
 AF output: 0.63V/8Ω, 1kHz  
 Mode: USB  
 The values in parentheses ( ) are those in FM mode  
 Filter Lo: 200 / Hi: 2800

ANT: ANT1  
 SUB: OFF  
 PSEL: OFF

Input -113dBm from the antenna, set AF VOLUME so that AF output is 0.63Vrms, and measure the signal. The AF section is measured with an oscilloscope and the other parts are measured with a Spectrum Analyzer.

#### SUB BAND



#### Measurement condition

Frequency: 14.0MHz  
 PRE AMP: ON  
 ANT input: -113dBm/0dBμ  
 AF output: 0.63V/8Ω, 1kHz  
 Mode: USB  
 The values in parentheses ( ) are those in FM mode  
 Filter Lo: 200 / Hi: 2800

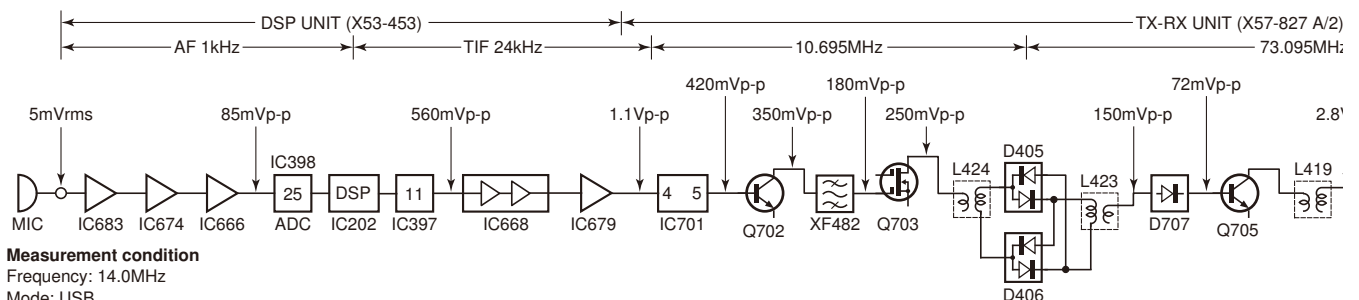
ANT: ANT1  
 SUB: ON

(The signal which passed the MAIN/SUB distributor.)

The values in parentheses [ ] are those in RX2 (IF1: 73.095MHz)  
 Filter Lo: 200 / Hi: 3000

Input -113dBm from the antenna, set AF VOLUME so that AF output is 0.63Vrms, and measure the signal. The AF section is measured with an oscilloscope and the other parts are measured with a Spectrum Analyzer.

### Transmitter Section

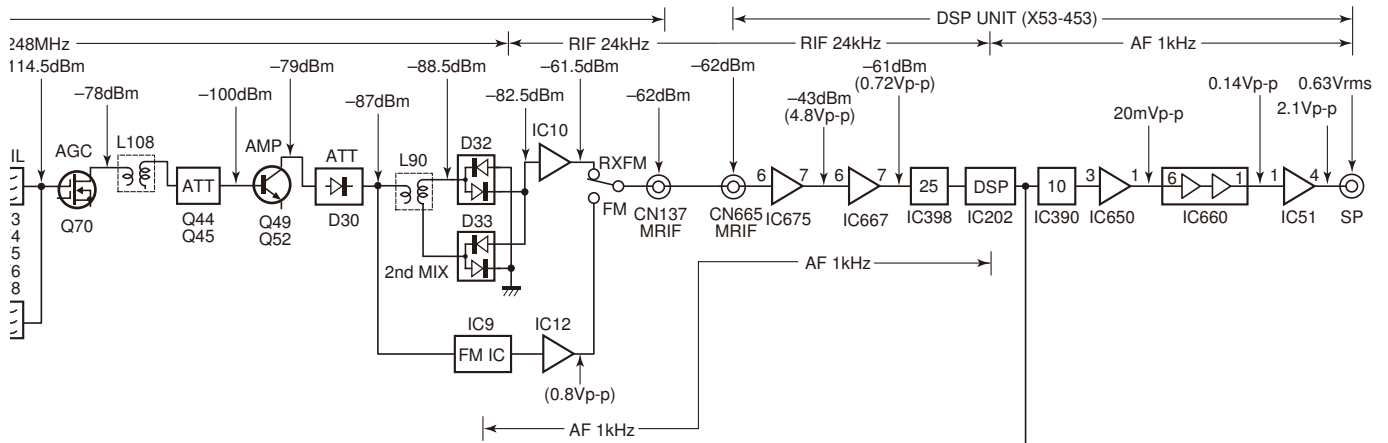


#### Measurement condition

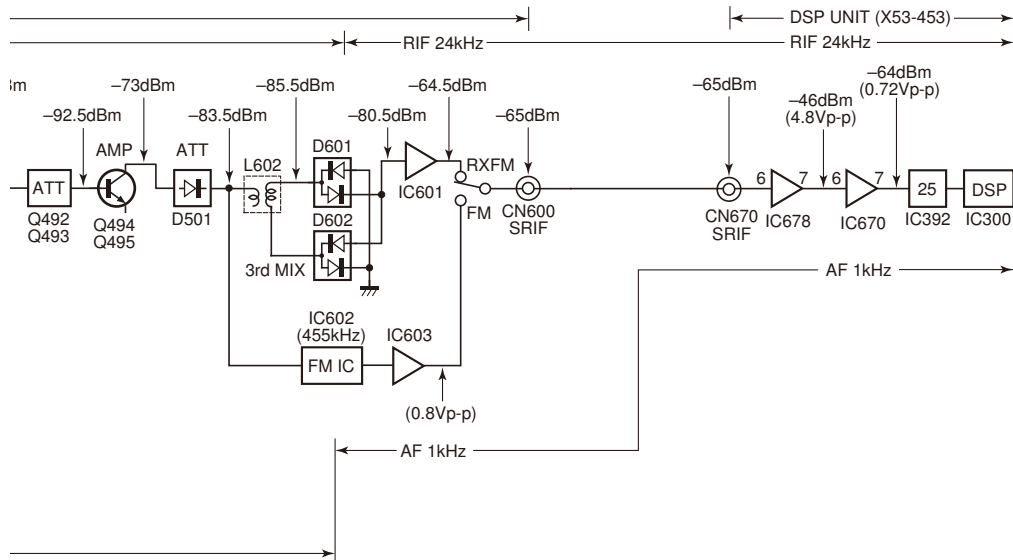
Frequency: 14.0MHz  
 Mode: USB  
 MIC input: 1kHz/5mV  
 Output power: 100W  
 MIC level: ALC zone maximum

Audio frequency section is measured by the AF voltmeter or oscilloscope.  
 Radio frequency section is measured by high impedance RF voltmeter.

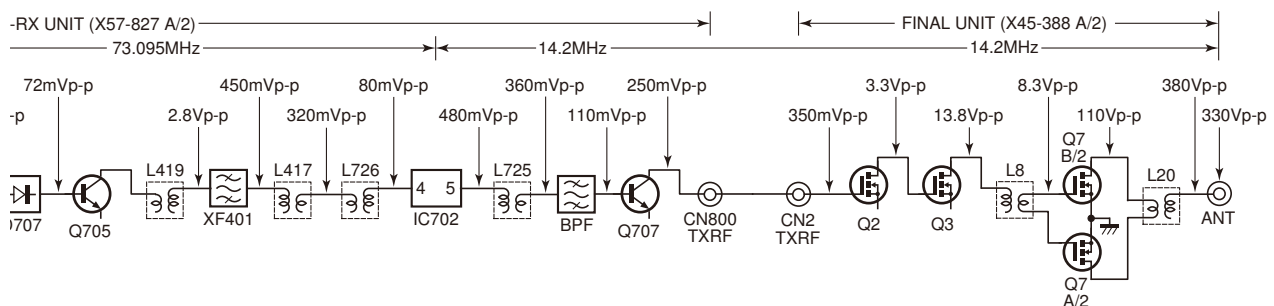
## LEVEL DIAGRAM



is, and measure the signal level at each part.  
 and with a Spectrum Analyzer. (Probe: 100kΩ/3pF)



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## OPTIONAL ACCESSORIES

### ARCP-990 (Radio Control Program)

### ARHP-990 (Radio Host Program)

ARCP-990 Radio Control Program and ARHP-990 Radio Host Program can be downloaded from the following web site.

[http://www.kenwood.com/i/products/info/amateur/software\\_download.html](http://www.kenwood.com/i/products/info/amateur/software_download.html)

### SP-990 (External Speaker)

#### ■ Specifications

Operating Temperature Range

..... -10°C to 50°C (14°F to 122°F)

Maximum Input ..... 5W

Input Impedance ..... 8Ω ±15%

Filter Cutoff Frequency

HIGH 1 ..... 2.4kHz, -3dB

HIGH 2 ..... 1.0kHz, -3dB

HIGH 1+2 ..... 700Hz, -3dB

LOW 1 ..... 200Hz, -3dB

LOW 2 ..... 400Hz, -3dB

LOW 1+2 ..... 600Hz, -3dB

Dimensions (Width x Height x Depth)

..... 200 x 165 x 300 mm (7.87 x 6.5 x 11.8 in)

(Exclusive of projections)

Weight ..... Approx. 2.8 kg (6.2 lbs)

#### ■ External View



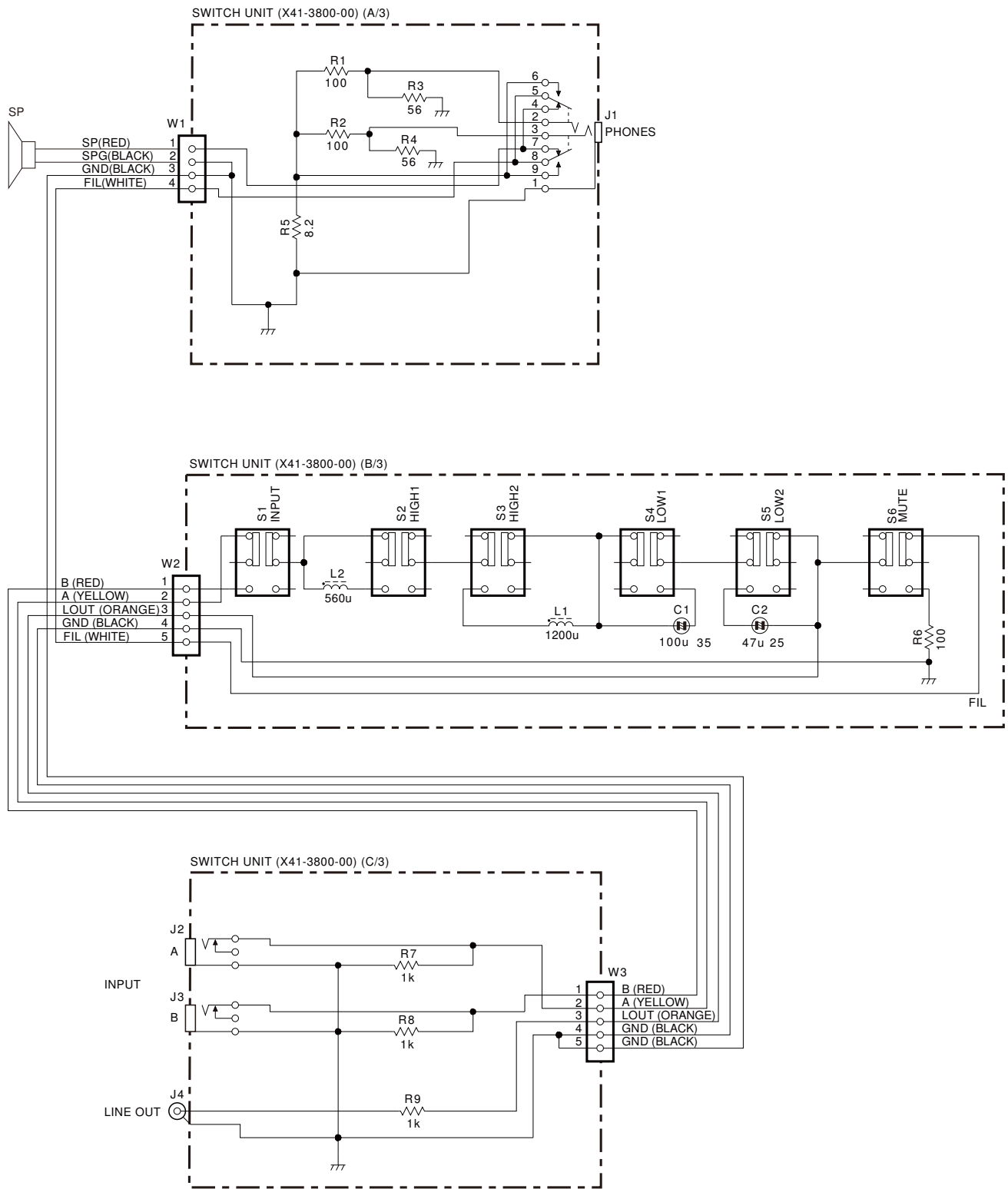
#### ■ Parts List

\* New Parts. Δ indicates safety critical components.

Ref. No.	Address	New parts	Parts No.	Description	Destination
<b>SP-990</b>					
		*	A01-2232-02	METALLIC CABINET(UPPER)	
		*	A01-2233-02	METALLIC CABINET(LOWER)	
		*	A62-1192-13	PANEL	
		*	B04-0421-03	PUNCHING METAL	
			B42-7733-04	STICKER	
		*	B43-0336-04	BADGE	
		*	B62-2456-00	INSTRUCTION MANUAL	
		*	B72-2769-04	MODEL NAME-PLATE	
		*	E30-7753-05	CORD WITH PLUG ACCESSORY	
		*	G10-1850-04	FIBROUS SHEET(PANEL)	
		*	G11-4636-04	RUBBER SHEET(REAR GAP)	
		*	H12-4328-12	PACKING FIXTURE	
		*	H12-4344-12	PACKING FIXTURE	
			H25-2352-04	PROTECTION BAG (250/350/0.07)	
		*	H52-2504-02	ITEM CARTON CASE	
		*	J02-1310-02	FOOT(FRONT BASE)	
		*	J02-1311-02	FOOT(FRONT LIFT)	
		*	J02-1312-03	FOOT(REAR)	
		*	J21-8644-04	MOUNTING HARDWARE	
			J61-0307-05	BAND	
		*	K24-2010-04	PUSH KNOB(FILTER KNOB)	
			N33-3006-43	OVAL HEAD MACHINE SCREW(CABINET)	
			N35-4006-43	BINDING HEAD MACHINE SCREW(FOOT)	
		*	N83-3006-48	PAN HEAD TAPTITE SCREW(PCB,PHONES)	
		*	N87-4006-43	BRAZIER HEAD TAPTITE SCREW(SPEAKER)	
		*	T07-0795-05	SPEAKER	
<b>SWITCH UNIT (X41-3800-00)</b>					
C1		*	CD04AU1V101M	NP-ELEC 100UF 35WV	
C2		*	CD04AU1E470M	NP-ELEC 47UF 25WV	
J1			E11-0705-15	PHONE JACK(9P)	
J2 ,3			E11-0425-05	3.5D PHONE JACK(3P)	
J4			E13-0166-25	PIN JACK	
W1 -3		*	E37-1635-05	LEAD WIRE WITH CONNECTOR	
L1		*	L33-3004-05	CHOKE COIL	
L2		*	L33-3005-05	CHOKE COIL	
R1 ,2			RD14DB2H101J	SMALL-RD 100 J 1/2W	
R3 ,4			RD14DB2H560J	SMALL-RD 56 J 1/2W	
R5			RS14DB3D8R2J	FL-PROOF RS 8.2 J 2W	
R6			RD14DB2H101J	SMALL-RD 100 J 1/2W	
R7 -9			RD14DB2H102J	SMALL-RD 1.0K J 1/2W	
S1 -6		*	S68-0431-05	PUSH SWITCH	

# OPTIONAL ACCESSORIES: SP-990 (EXTERNAL SPEAKER) TS-990S

## ■ Schematic Diagram





## SPECIFICATIONS

### General

Frequency range (Transmitter)	160 m band	1.8~2.0MHz (K type)/ 1.81~2.0MHz (E type)
	80 m band	3.5~4.0MHz (K type)/ 3.5~3.8MHz (E type)
	60 m band *4	5.1675MHz, 5.25~5.45MHz (K type)/ 5.25~5.45MHz (E type)
	40 m band	7.0~7.3MHz (K type)/ 7.0~7.2MHz (E type)
	30 m band	10.1~10.15MHz
	20 m band	14.0~14.35MHz
	17 m band	18.068~18.168MHz
	15 m band	21.0~21.45MHz
	12 m band	24.89~24.99MHz
	10 m band	28.0~29.7MHz
	6 m band	50.0~54.0MHz (K type)/ 50.0~52.0MHz (E type)
Frequency range (Receiver) *1		0.13~30MHz, 50~54MHz (VFO: Continuous 30kHz~60MHz)
Mode		A1A (CW)/ A3E (AM)/ J3E (SSB)/ F3E (FM)/ F1B (FSK)/ G1B (PSK)
Frequency stability	0°C ~ 50°C	Within ±0.1ppm
Antenna impedance		50Ω
Antenna tuner load range		16.7Ω~150Ω
Standard voltage		AC 120V (60Hz) (K type)/ AC 220-240V (50/60Hz) (E type)
Supply voltage range		AC 90V~132V (K type) AC 198V~264V (E type)
Power consumption	Transmit (max.)	720VA or less (K type)/ 840VA or less (E type)
	Receive (no signal)	120VA or less (K type)/ 200VA or less (E type)
Usable temperature range		0°C~+50°C (+32°F~+122°F)
Dimensions	Without projection	W 460 x H 165 x D 400 mm (W 18.11 x H 6.50 x D 15.75 in)
	Include projection	W 460 x H 182 x D 449 mm (W 18.11 x H 7.17 x D 17.68 in)
	At front leg up position	Front panel: H 201 mm (H 7.91 in)/ Rear panel: H 173 mm (H 6.81 in)
Weight		Approx. 24.5 kg (54.01 lbs)

### Transmitter

Output power	SSB/CW/FSK/PSK/FM (AM)	200W (50W)
Modulation		SSB: Balanced, AM: Low power, FM: Reactance
Maximum frequency deviation (FM)		Wide: ±5kHz or less, Narrow: ±2.5kHz or less
Spurious emissions		HF (harmonics): -60dB or less HF (others): -50dB or less 50MHz: -66dB or less
Carrier suppression (SSB)		-60dB or less
Unwanted sideband suppression		-60dB or less
Transmit frequency response		Within -6dB (300~2700Hz)
Microphone impedance		600Ω
XIT variable range		±9.999kHz

## SPECIFICATIONS

### Receiver

Circuit type		Main	Sub *2	Sub *3
		Double superheterodyne	Double superheterodyne	Triple superheterodyne
Intermediate frequency	1st IF	8.248MHz	11.374MHz	73.095MHz
	2nd IF (FM)	24kHz/ (455kHz)	24kHz	10.695MHz
	3rd IF (FM)	-	-	24kHz/ (455kHz)
Sensitivity (typ.)	SSB/CW/FSK/PSK (S/N 10dB)	0.5μV (0.13~0.522MHz)		
		4μV (0.522~1.705MHz)		
		0.2μV (1.705~24.5MHz)		
		0.13μV (24.5~30MHz)		
		0.13μV (50~54MHz)		
	AM (S/N 10dB)	6.3μV (0.13~0.522MHz)		
		32μV (0.522~1.705MHz)		
		2μV (1.705~24.5MHz)		
		1.3μV (24.5~30MHz)		
		1.3μV (50~54MHz)		
FM (12dB SINAD)	0.22μV (28~30MHz)			
	0.22μV (50~54MHz)			
Image rejection ratio (50MHz)		70dB (60dB) or more		
IF rejection ratio		70dB or more		
Selectivity	SSB (LO: 200/ HI: 2800Hz)	2.4kHz or more (-6dB)		
		4.4kHz or less (-60dB)		
	CW/FSK/PSK (WIDTH: 500Hz)	500Hz or more (-6dB)		
		1.2kHz or less (-60dB)		
	AM (LO: 100/ HI: 3000Hz)	6.0kHz or more (-6dB)		
		12.0kHz or less (-50dB)		
FM	12.0kHz or more (-6dB)			
	25.0kHz or less (-50dB)			
RIT variable range		±9.999kHz		
Notch filter attenuation		60dB or more (Auto), 70dB or more (Manual)		
Beat cancel attenuation		40dB or more		
Audio output		1.5W or more (8Ω)		
Audio output impedance		8Ω		

\*1 MAIN BAND: Spec. guaranteed in amateur band 160 m through 6 m

\*2 In 160 m/ 80 m/ 40 m/ 20 m/ 15 m amateur bands, IF band width 2.7kHz or less (SSB/CW/FSK/PSK)

\*3 Except in above \*2

\*4 60m band: Refer to applicable amateur radio regulations to your country (E type only).

**Note:** Specifications are subject to change without notice due to advancements in technology.

# TS-990S

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