DX-70TH/EH

(HF&50MHz 100W Version)

Service Manual

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ALINCO, INC.

SPECIFICATIONS

1) General

Operating mode		J3E (LSB, USB), A1A (CW), F3E (FM)
Number of memory channels		100
Antenna impedance		50Ω unbalanced
Power requirement		13.8V DC ± 15% (11.7 to 15.8 V DC)
Grounding method		Negative ground
Current drain	Receive	1.0A max.
	Transmit	25A max.
Operating temperature		-10°C to +60°C
Frequency stability		± 10ppm (-10°C to +50°C)
Dimensions		178(w) x 58(h) x 228(d) mm (179 x 71x 268 mm for projections included)
Weight		Approx. 2.7kg

2) Transmitter

Transmit frequency coverage (e.g. U.S. Version)		160m banc	1.8000 to 1.9999MHz
		80m band	3.5000 to 3.9999MHz
		40m band	7.0000 to 7.2999MHz
		30m band	10.1000 to 10.1499MHz
		20m band	14.0000 to 14.3499MHz
		17m band	18.0680 to 18.1679MHz
		15m band	21.0000 to 21.4499MHz
		12m band	24.8900 to 24.9899MHz
		10m band	28.0000 to 29.6999MHz
		6m band	50.0000 to 53.9999MHz
Power output	HF, 50MHz band	SSB, CW, FM	100W (high)
			Approx. 10W (low)
		AM	40W (high)
			Approx. 4W (low)
Modulation system		SSB	Balanced modulation
		AM	Low power modulation
		FM	Reactance modulation
Spurious emission		HF bands	Less than -50dB (-45dB in 10MHz band)
		50MHz band	Less than -60dB
Carrier suppression			More than 40dB
Sideband suppression			More than 50dB (at 1kHz)
Maximum FM deviation (default)		HF bands	± 2.5kHz
		50MHz band	± 5kHz
Microphone impedance			2kΩ

3) Receiver

Receiver circuitry			Double conversion superheterodyne
Receive frequency range			0.1500MHz to 30.0000MHz, 50.0000MHz to 54.0000MHz
Intermediate frequency			71.75MHz (1st), 455kHz (2nd)
Sensitivity	SSB, CW (S/N 10dB)	0.5 to 1.8MHz	0dB (1μV)
		1.8 to 30MHz	-12dB (0.25μV)
		50 to 54MHz	-16dB (0.15μV)
	AM (1kHz, 30% Mod, S/N 10dB)	0.5 to 1.8MHz	+20dB (10μV)
		1.8 to 30MHz	+6dB (2μV)
		50 to 54MHz	+6dB (2μV)
	FM (1kHz, 3.5kHz DEV SINAD 12dB)	28 to 30MHz	-6dB (0.5μV)
		50 to 54MHz	-10dB (0.3μV)
Selectivity	SSB, AM (Narrow)		2.4kHz/-6dB, 4.5kHz/-60dB
	SSB (Narrow), CW (Standard)		1.0kHz/-6dB, 3.0kHz/-60dB
	CW (Narrow)		500Hz/-6dB, 3.0kHz/-60dB
	AM (Standard), FM		9kHz/-6dB, 20kHz/-50dB
Spurious and image rejection ratio			More than 70dB
Audio output power			More than 2.0W (at 8Ω, 10% THD)
RIX/TXIT range			±1.4kHz

CIRCUIT DESCRIPTION

1. Receiving System

1) Filter Unit

a. Antenna Input

The electric charge on antenna is discharged by R501 or R507, and when the voltage exceeds about 300V, the gap in SA501 discharges thereby protecting the receive input circuit.
The input signal from antenna is passed through the HF/50MHz selecting relay RL503, the transmission/reception selecting relay RL502 and the attenuator relay RL514.
The LPF (consisting of L520, C545 and C546) filters out the followings: 2m band image receiving, passing through the First IF (71.75MHz), and leakage of the first local oscillating frequency (72~130MHz) to the antenna terminal.

b. 50MHz Antenna Input

The receiving signal from the antenna of 50MHz band is passed through the LPF and through the selecting relays RL503, RL514 and RL509, led to HPF.
The signal is amplified about 8dB in Q502. Because the space noise in 50MHz band is less than that in the HF band, its exclusive receiving preamplifier is expected to attain high sensitivity.
The receiving signal of 50MHz or HF is selected in RL509, then after passing through LPF consisting of L521, L522, C547, C548, C555, C556 and C557, the receiving signal is led to the Main unit.

2) Main Unit

a. Front End

The receiving signal output from Filter Unit is fed to Main unit through CN2.
HPF, consisting of L19, L20, C47, C48, C49, C50, C51 and C52, eliminates the strong radio signal of MW band of 1.6MHz or below. In case of receiving the signal of 1.6MHz or below, the sensitivity is controlled by the attenuator in R37 and BPF1, also the signal is separated into 1.6MHz, over or below.
5 BPF units consists of 9 filters. Each filter covers the following frequency range. The frequency of 2.5MHz or more consists of Chebyshëv BPF, and under 2.5MHz frequency band is LPF. Two BPF's are installed on the same unit. Not to be influenced so much, the distant frequency band BPF's are combined.

	- 1.6MHz	BPF1	
1.6	- 2.5MHz	BPF2	1.8MHz
2.5	- 4.5MHz	BPF3	3.5MHz
4.5	- 7.5MHz	BPF4	7MHz
7.5	- 10.5MHz	BPF1	10MHz
10.5	- 14.5MHz	BPF2	14MHz
14.5	- 21.5MHz	BPF3	18, 21MHz
21.5	- 30MHz	BPF4	24, 28MHz
50	- 54MHz	BPF5	50MHz

Passing through BPF, the signal turns ON/OFF in the switching diode, D29 and D30. This preamplifier is the parallel grounded gate operation of Q9 and Q10 (2SK2171), so the unit can obtain a good performance at a high level input signal with low NF.
The wide range frequency from about 1MHz to 60MHz is amplified about 10dB. This 10dB preamplifier and 20dB attenuator in the Filter unit are combined, then by pressing RF gain switch on the front panel, one of four steps, -20, -10, 0, or +10dB is selected.
The LPF, consisting of L52, L53, L54, C103, C104, C105, and C106, prevents the following first receiving mixer from the local oscillation leaking, and also prevents the first IF and image of the spurious receiving.
The first receiving mixer consisting of Q10 and Q11 is the balanced mixer, in which the local oscillating signal is fed to the gate of 2SK2171.
The 3rd intercept point is about 20dBm, and local oscillator of about 2V P-P is fed to the gate. The receiving signal is converted into the first IF of 71.75MHz.
As the ratio of the spurious interference is decreased in 50MHz band mode, the trap of 71.75MHz consisting of L72 and C107 keeps the ratio of spurious interference 70dB or more in all band.

b. The First IF Amplifier Circuit

FL1: A and FL1: B are the crystal filters of 71.75MHz. By the combination of two filters, the unit has the characteristics of the band width of 15kHz or more/3dB and the value of guaranteed attenuation of 70dB or more. Here the image ratio is determined 70dB or more (approx. 80dB). The first IF amplifier circuit of Q12 is located between the crystal filters to prevent the loss in the front-end and mutual interference.
The first IF amplifier circuit Q12 decides the sensitivity after passing the mixer. AGC voltage is applied to the second gate.

c. The Second Mixer Circuit, The Second Amplifier Circuit

DBM (Double Balanced Mixer) consists of L14, D7 and L16. The signal is passed in the opposite direction while receiving or transmitting in this DBM. Approximately 0dBm is fed as the second local oscillating level, and the third IP is approximately 10dBm.
The receiving signal (71.75MHz) and the second local oscillating frequency (71.295MHz) is mixed, and unwanted signal is eliminated in LPF consisting of L17, L73 and C36, then the signal of 455kHz is generated. After passing through the switching diode D8, the signal is amplified in Q22. The source of Q22 is controlled by the output of the noise blanker circuit.

d. IF Filter

After passing through the transmission/reception switching diode D9, the signal is led to one of three ceramic filters of 455kHz. The selectivity is decided here except CW narrow.

SSB, AM-NARROW	FL3(CFJ455K5)	2.4kHz/-6dB	4.5kHz/-60dB
SSB-NARROW, CW	FL2(CFJ455K8)	1.0kHz/-6dB	3.0kHz/-60dB
FM, AM	FL4(CFW455G)	9kHz/-6dB	20kHz/-50dB

Each filter has 4 switching diodes (D3~D48) in front and rear to isolate the filter. The isolation is required the value of guaranteed attenuation of each filter (approx. 70dB) or more. The diode connected in parallel in front and rear of no used filter is

short and the diode connected in series is open. The combination of open and short is used to get the high isolation.
The modes, transmission/reception and wide/narrow of this filter are selected by Q36~Q46, D79, D80, D82, D83, D84.

e. The Second IF Amplifier Circuit

After passing through the filter, the signal is led to the transmission/reception switching diode D49, and amplified in Q23 and Q24, then buffered in Q25.
The AGC voltage is applied to the second gate of Q22, Q23 and Q24.
The output level of Q25 is fixed because the AGC voltage is added to the receiving signal.
This output signal is used for the demodulation in SSB, AM and CW modes and AGC detection.
In the FM mode, after passing through the transmission/reception switching diode of D49, a part of receiving signal is fed to IC7(MC3357) from C221, then it is IF-amplified and demodulated. C214 is connected in parallel to the feedback resister R182, and the resister is de-emphasized. Even in the FM mode, Q23, Q24 and Q25 are active, also AGC is operated.

f. Demodulation Circuit

In SSB and CW modes, the following local oscillating frequency is supplied from PLL unit to IC3 balanced mixer, then the signal is demodulated.
The receiving signal is fed to Pin1, and local oscillation Pin3, then picked up the demodulation output of approximately 100mV from Pin7.

USB	456.5kHz	+IF	SHIFT
LSB	453.5kHz	+IF	SHIFT
CWU	455.8kHz	+IF	SHIFT
CWL	454.2kHz	+IF	SHIFT

The output is led to the switching circuit of each mode, and to the CW audio filter.
In AM mode, the signal is detected in D51, then led to IC5.
In FM mode, the signal is demodulated and de-emphasized in above-mentioned IC7, then led to IC5.

g. CW Audio Filter

IC4 is the active filter, which consists of the combination of low-pass filter and high-pass filter in the operational amplifier. It has the band width of about 600Hz (-6dB) centering the frequency of about 800Hz.

h. AF, AGC Time Constant Selection

IC5 is the analogue multiplexer which has 2 circuits with 4 contact points, and switches the demodulation output in every mode and AGC time constant. The voltage combined in D55 and D56 is input to Pin9 and Pin10, then the output of IC3 (SSB, CW-W), the modulation output of FM/AM and CW audio filter output (CW-N) are selected. The voltage of 8V is applied to Pin6 (INHIBIT) when transmitting, and the modulation output is turned OFF unconditionally.

i. AF Amplifier

The voltage that can pass through the analogue switch of IC5 is very low. The voltage is amplified approximately 20dB in IC12: B to get higher AF input voltage to following IC13 (voltage controlled electronic volume). Also a part of this output is picked up and output to Pin6 of microphone as non-squelched audio output. This output is used as the terminal of packet, RTTY, SSTV, etc.

j. Electronic Volume, AF Amplifier

IC13 is the dual electronic volume controlled by the voltage.
The volume is controlled by the AF GAIN VR on the front panel. Pin5 is the control terminal. The value of the attenuation is the minimum when the control voltage is about 3.4V, and the value is 90dB or more at maximum when the control voltage is about 3.1V.
One of the circuits is for volume control of the demodulation sound, and the other for the volume control of the beep and sidetone. The beep and sidetone can be heard even if the volume is set to the minimum point and sound tone is related with AF GAIN VR.
The squelch circuit (IC14:A, Q14) controls Pin5. The output of IC14: A activates to close the squelch when transmitting, so Q14 is turned OFF in D85 to control the volume of the sidetone.
The receiving sound is fed to Pin6 and applied from Pin7. As for the beep and side tones, Pin2 is for input and Pin1 for output. These two outputs are combined with the input of LPF amplifier IC12:A. The high tone noise that is generated in IF amplifier is decreased by LPF amplifier.
The output of IC12: A is attenuated in R309 and R310 to get the same level with IC20, and also to decrease the noise. IC20 is the AF power amplifier which can get the output of 2W or more (THD 10%) at 8Ω load. The ripple filter consists of Q51 and C260.

k. AGC

The AGC voltage is supplied one stage to first IF amplifier and three stages to second IF amplifier. These IF amplifiers consist of 3SK131. AGC voltage is applied to the Gate2. The IF amplifiers are designed that the gain is changed linearly corresponding to the AGC voltage.
D53 and D54 are the rectifier, and Q26 is DC amplifier. D50, the anode is set to about 2V in R176, D110, D111 and R177. Usually AGC voltage is applied 2.4V.
The strong signal rectifies D53 and D54 resulting in DC voltage. Q26 decreases the AGC voltage.
When AGC-FAST is selected in SSB/CW mode, C205 and C206 are connected between 5V and AGC line in parallel. The attack time of AGC is determined in R167 and C206, then the release time is determined in R168 and C206. The characteristics are "fast attack" and "slow release". In case of AGC-SLOW, the analogue switch IC6 is turned ON, then R175 and C287 are connected in parallel. The release time is lengthened because of C287. In case of AM, C206 is connected in parallel, then the attack time is delayed, which is the average type. D110 and D111 is the thermal compensation of D50.
In receiving AM, AGC is the average type not to follow the modulation.

l. S Meter, Squelch

The output of Pin1 and RF meter output are combined in the diode, then it is sent to the front CPU to display the meter. The output signal of Pin1 is fed to Pin6 of IC14:A. The voltage of Pin5 is determined by the squelch VR of front unit. Comparing with this voltage, the squelch is opened or closed.
While the check operation the CPU output decreases the voltage of squelch VR in front side to open the squelch forcedly. The squelch output controls IC13, at the same time it is provided to the front unit to light RX LED and led to CPU unit.

m. Noise Blanker Circuit

This circuit eliminates the pulse noise of a car, etc. Because the noise emitting time is short, in this duration the operation of receiver is stopped to prevent the unit from emitting a noise. The pulse noise is delayed when it is passed through the narrow band filter, and the emitting time becomes longer. It makes difficult to eliminate the noise, so it is necessary to eliminate the noise in the earlier stage.
A part of the second mixer output, whose band width is limited, is amplified in Q20, Q19, Q18, and Q16. The signal is detected in D33 and D34, and the AGC voltage is applied to Q19, Q18 and Q16.
The charge time constant of this AGC is determined by R82 and C128, and also the discharge constant is determined by R81+R82, C128. The voltage of AGC does not rise suddenly because of the charge constant, so that this voltage is not applied to almost all the short signals such as pulse noise, but is applied to the continuous signals such as receiving signal and amplifier gain is decreased.
While emitting the pulse noise, the AGC voltage does not follow the pulse noise, so the detected voltage is high, then Q15 is turned ON in that time.
On the contrary, as for the continuous signal, the detected voltage of D33 and D34 is fixed by AGC, so Q15 is turned OFF because of the emitter bias of R85 and R84.
Namely Q15 is turned ON only the time of the pulse noise, then Q21 is turned OFF. The source of IF amplifier of Q22 is biased through R98 and R102 so that the gain is decreased and the signal is blanked. When the emitter of Q15 is biased to high, the Noise Blanker is turned OFF.

2. Transmitter System

1) Main Unit

a. Microphone Amplifier

The input signal from microphone is amplified by the low noise amplifier Q56 through the mic gain VR1. It is possible to bias (8V) the microphone terminal with R388 for the microphone which needs the power supply. (solder bridge)
In SSB/AM mode, The gain of IC21 (approx. 15dB) is determined by R329 and R328.
In FM mode, R330 is connected to R320 in parallel by Q55, then the gain is increased approximately 34dB. Also the cut off frequency is risen, and the signal is pre-emphasized and operated as a limitter.
In the SSB/AM mode, C345 and R384 are conntected to the feedback circuit by Q63 when the speech compressor is turned ON. The gain is increased about 15dB, then IC21:B is operated as the limitter.
When the speech compressor is ON, the low frequency is cut by C345.
In FM mode, the gain is risen enough, so the speech compressor has no effect.
The output of Pin1 of IC21: B is attenuated in R326 and R325. The subaudible tone from PLL unit is applied through R325. (When the Tone is ON.)
IC21: A is LPF amplifier that is the Splutter filter in FM mode, and it is operated for speech compressor.
This signal is output to PLL unit as the FM modulation, and output to the balanced modulation of IC2.
The output to IC2 is muted by Q54 in CW/FM mode.

b. Balanced Mixer

IC2 is the balanced mixer, and the carrier is suppressed in SSB mode. To get more ratio of carrier suppression, the balance adjustment of VR3 and VR4 are applied.
The carrier is necessary in CW/FM/AM mode, so the input of Pin1 is made unbalanced by applying the DC voltage to obtain the carrier.
By applying the DC in AM/FM mode, or by keying in CW mode, the balance is broken to obtain the carrier wave. VR11 is used for the adjustment of carrier level.
In the AM mode, the DC and modulation is added simultaneously. In SSB mode, the modulation is added by R317. In AM mode, D93 is DC-biased and turned ON. Then the attenuator consisting of R317 and R393 limits the modulation.

c. IF Filter

After the output of IC2 increases the impedance in C177 and L77, it is passed through D49 and led into band limit IF filter. D52 is isolated highly by connecting to the output in parallel at receiving. In SSB mode, the output is DSB signal. (Double Side Band)
The filter is switched by the selection of above-mentioned diode switch. The signal is passed through the following filer in each mode.

SSB	FL3(CFJ455K5)	2.4kHz/-6dB	4.5kHz/-60dB
CW	FL2 (CFJ455K8)	1.0kHz/-6dB	3.0kHz/-60dB
FM, AM	FL4 (CFW455G)	9kHz/-6dB	20kHz/-50dB

SSB is obtained by eliminating one of side bands of DSB through the filter.

d. IF Amplifier, The Second Mixer

After passing through the filter, the signal is led to D37, Q7, and D6, and passed through the second mixer in the opposite direction of the receiving, then the signal of 71.75MHz is obtained. Q6 operates the CW keying.
The voltage of ALC is added to the second gate of Q7.
The local oscillating signal of 71.295MHz and unwanted signal are eliminated in FL1: A and FL5. The signal is amplified in Q5, passed through FL5, then led to the balanced mixer of Q3 and Q4.

e. The First Transmitting Mixer

This mixer is the balanced type, and the unwanted signals (IF and local oscillating signal) are decreased. The best operation is selected by biasing the second gate. To decrease the spurious, the signal is balanced in VR1.

f. Power Amplifier

Passing through the mixer, the transmitting signal which has the desired transmitting frequency is passed after switching the LPF for HF band or BPF for 50MHz band. The unwanted signal and especially the leak of local oscillating signal is decreased as less as possible.
The signal is amplified up to 0~3dBm in Q1. T notch filter consists of C1, C2 and L1. It is tuned to approximately 45MHz while using 50MHz band to decrease the spurious signal. Then the signal is supplied to PA unit.

2) PA Unit

a. Drive Amplifier

The signal input to PA unit is amplified up to approximately 100mW. The idling current of Q601 flows about 100mA during transmitting as A-class amplifier. The frequency characteristics are compensated by feedback, besides connecting the capacitor to emitter resistor in parallel.
The signal is amplified up to 5W in Q602 and Q603.
PA amplifier is the wide band range from 1.8MHz to 54MHz
The idling current flows 100mA (adjusted in VR601), and the amplifier is the push-pull type.
D601 is connected to Q602 and Q603 thermally, and the idling current is compensated for temperature.

b. Final Stage Power Amplifier

In the final stage amplifier circuit consisting of Q604 and Q605 (MRF255), the idling current of about 800mA is flowing. The gate bias is made by VR602, VR603.
The feedback circuit, consisting of L608, C625, R617 and R618, makes the gain flat in the wide range of 1.8MHz~54MHz.
The 100W output is led to filter unit.
The drain current of Q606 and Q607 is detected by using FB606 and L611. Then led to the main unit.

c. Fan Control

The heat of Q604 and Q605 is detected by the thermistor TH601, and the fan is controlled. While transmitting, the resistance value is decreased by the rising of the temperature, then the voltage of inverting input terminal of IC601A/B is decreased. Non-inverting input is applied with the settled voltage. When the temperature goes up to about 50°C or more and the compared inverting input voltage becomes lower than the non inverting input voltage, Q607 is turned ON by the output voltage of comparator, IC601: A. Then the fan starts turning at a low speed by the value of series resistor (R639).
When the temperature rises more and the voltage becomes much lower than the compared voltage IC601: B, Q608 is turned ON. Then R639 is turned OFF and the fan turns at a high speed according to the value of series resistor of R640 and decrease the compared voltage of IC601: A.
When the temperature goes up to about 100°C and the voltage is decreased further lower, IC601: A supplies again, then R639 and R640 are connected in parallel to turn the fan at a higher speed. Although ordinary PDWN is pulled up to 14V by R637, the power output is set to 50W because both cathode terminals of D608 become LOW when the fan turns at a high speed. Then the signal is sent to the main unit as the control signal for power down at high temperature.
As the compared voltage of IC601: B is decreased in D611 while receiving, IC601:B does not work if the temperature does not go up higher than it while transmitting. The temperature, at which the fan turns at a middle speed or more, is higher than it while transmitting. At high temperature, fan's turning speed comes down while receiving.

d. Protection Circuit

For the protection of the final power amplifier, the followings are equipped:
SWR detection
Protection against over current
Power down circuit for the temperature detection

e. CW Keying Circuit

As the base voltage of main unit Q49 goes down to LOW by CW keying, the voltage is supplied to collector. This output controls all of the circuit operation by CW keying.
The collector output of Q49 is passed through D95, VR11 and D93, and the balance is broken by applying DC voltage to the balanced mixer to generate the carrier. VR11 determines the CW waveform of rise and fall by adjusting the carrier level in R285 and C248.
At the same time Q48 is turned ON to turn OFF Q6 for keying isolation. C244 makes the OFF time of Q6 longer not to influence the keying waveform.
The voltage is applied to IC17: B Pin5 in D95, and the output of Pin7 turns Q46 ON to set PTT line to LOW in D73, then the unit enters the transmitting mode. The capacitor (C246, C247) is connected between Pin5 of IC17: B and the ground.
The holding time of transmitting is determined according to the discharge time constant. BK1, BK2, and BK3 are the voltages for the setting of 3-bit break-in time constant. 8 stages voltage is obtained by the combination of the resistors R269, R270 and R271.
In the Full Break-in mode, all of BK1, BK2 and BK3 are set to LOW, in the Semi Break-in mode, one of BK1, BK2, or BK3 is applied the voltage.

When all of the breakers are applied the voltage, it is used as the shortest time constant.
When in the full break-in mode, all of the voltages of BK1, BK2 and BK3 are low level, and Q47 is turned OFF. Therefore only C246 is the very short discharge constant, it is the full break-in mode with short transmitting time. One of BK1, BK2 and BK3 is supplied the voltage, and Q47 is turned OFF, then connected to C247 and C246 in parallel. The discharge time constant is longer, and it is the semi break-in time constant.
There are 7 stages of the voltage in the semi break-in mode according to the output voltage of BK1, BK2 or BK3. This is applied to the compared voltage of IC17: B, then the discharge time constant is changed. Namely when the voltage is applied to all of BK1, BK2 and BK3, the time constant is the shortest.
When the break-in mode is set to AUTO, BK1 only is supplied, and the compared voltage of IC17:B is controlled by the output voltage of IC17: B.
In the AUTO mode the keying output is emitted by one-shot multivibrator consisting of IC18A and B whenever the key is pressed. Therefore the average value of the output voltage of IC18: A is in proportion to the average speed of keying. To obtain the average voltage in R281, C245, etc., integrate the voltage. Then this output is D/C amplified in IC17:A, and provided as the compared voltage of keying.
D97 is used for OFF in the AUTO mode. When the AUTO mode is in the LOW level, the voltage charged in C245 is short, then the operation in AUTO mode is stopped.
D107 and R360 are used to get up speed rising when the keying is started. D92 and R280 determine the discharge time constant. While receiving the time constant is prolonged.
The selection of transmission/reception follows the keying speed from 30 letters/minute to 200 letters/minute.
The transmitting mode is held between letters, and the unit returns to receiving mode between words.

f. Power Control, ALC Circuit

The forward wave voltage in proportion to the transmitting power obtained in filter unit is inverting-input to IC8:A, and inverting-amplified. Non-inverting input is applied the voltage, and the output voltage is shifted by the non-inverting input voltage.
ALC line is applied the voltage of about 2.7V beforehand, and the ALC voltage is supplied to the second gate of the amplifier.
When the forward wave voltage is detected, the output voltage of IC8: A is decreased. If it is about 3V or below, the ALC line voltage is decreased by D63.
VR7 is used for the adjustment of 100W. When the unit is switched to 50W by S1, Q27 is turned ON and VR5 is connected in parallel to decrease the voltage, then the unit is adjusted to 50W.
In AM mode, R195 is connected in parallel to decrease the voltage up to about 40W.
In the low power mode, R191 is connected in parallel by setting to LOW, and the voltage is decreased.
Q29 and VR8 are used for the adjustment to get the required power of about 10W in the matching operation of external automatic tuner. (The required power depends on the tuner.)
When the value of SWR is high, the reflected wave voltage turns Q28 ON to decrease the power. The unit is operated when the SWR is about 3 or more.
Compared with the forward wave detection power in HF band of 100 W, the forward wave voltage in 50MHz band of 10W is set to higher a little.
In SSB mode, "fast attack" is obtained by D63, and the release time of "slow attack" is obtained by C222 and R130. In AM mode C221 is connected in parallel by Q30, and the unit is operated in near the average value.

g. Over Current Protection Circuit

The final stage collector current which is detected in PA unit is differential-amplified in IC8: B. The output voltage is decreased according to the increase of the current. Then ALC line is fallen by D63 and the output power is decreased. The operational point is decided in VR6.

h. RF Meter Circuit, ALC Indication

The forward wave is amplified in IC9: A to obtain the meter output voltage.
The peak is held in D70, R223 and C223, and the meter swings smoothly.
Meter output voltage and S meter output voltage are switched in D71 and D86 automatically.
ALC voltage is inverting voltage amplified in IC9: B.
This output is applied to the base of Q31, then sent to front unit for the detection of transmission/reception and lighting the transmitting LED. The LED brightness is changed according to the ALC voltage.

i. Sidetone Circuit

The comparison frequency of the second local oscillator in PLL unit (65kHz~85kHz) is divided by 10 in IC714, then led to the main unit. In addition the frequency is divided by 10 in IC19 of the main unit to obtain the sidetone of 650Hz~850Hz. The comparison frequency of the second local oscillator is changed according to the CW offset setting. To relate with the sidetone, comparison frequency is about 100 times the CW offset. IC19 Pin2 is controlled by Q65 at CW keying. The time constant is delayed not to give the influence to waveform of the sidetone.
The following active filter Q50 makes the square wave to sine wave to obtain better sound. The rise/fall wave of the sidetone is generated by keying controlling the bias of base and emitter.

j. Tune Circuit

When using the external automatic antenna tuner, this circuit controls the matching start signal and the operation of the unit during tuner matching.
When the tune operation is started, the Tune voltage is supplied to operate the one-shot multivibrator in IC18: C, D. The voltage of about 8 V is applied to outside for a fixed time through Q52 as the start signal. In the other hand, Q53 supplies the tune voltage of sink output, it becomes LOW while tuning. (For the transceiver made by ICOM, KENWOOD).
As soon as the tuner receives the tune start signal, the tuner provides it as the tuning signal . (TKEY terminal)
CPU observes the TKEY terminal, and keeps the unit in TUNE mode indicating that the tuner is operating while it is in the LOW level. CPU releases the TUNE mode when TKEY terminal is in LOW for 20 seconds or more. In the Tune mode the unit transmits a signal in AM mode, the microphone output is muted, then the carrier is kept on outputting about 10W (adjustable).

k. Regulated Power Supply Circuit

IC11 is the 8V Regulated Power Supply Circuit. T8V that is necessary for transmitting is made in Q33, and R8V that is necessary for receiving is made in Q35.
IC10, Q32 and Q34 control the transmission/reception. When PTT line is connected to the ground through the microphone terminal or CW keying output (Q46), H level is supplied from IC10: A and it is led to CPU of front unit to detect the transmission/reception switching.
IC10: C delays the rise of receiving in R227, C224 and D62 and controls in Q32 and Q33.
While receiving, the current is flowing from 13.8V through R230 and D75, then the base voltage Q33 is approximately 8.7V, and the emitter output is just 8V.
While transmitting, the base voltage of Q33 is 0V because Q32 is turned ON, and R8V is not provided.
While transmitting R8V is short by D77, and it makes the charge voltage such as electrolytic capacitor discharge momentarily not to remain R8V.
As for Q35, as same as R8V the current is flowing from 13.8V through R230 and D75, then the base voltage of Q35 is approximately 8.7V and the emitter output is just 8V while receiving. While transmitting, the base voltage is 0V because Q34 is turned ON, and T8V is not provided.
While transmitting T8V is short by D77, and it makes the charge voltage such as electrolytic capacitor discharge momentarily not to remain T8V.
After delayed the transmitting rise time in IC10:B, the signal is inverted in IC18:D, then T8V is controlled in Q34.
When Pin8 IC10:A is supplied the voltage, the unit enters PTT lock mode without changing the output of Pin10 even if the PTT line is connected to the ground.

l. Mode Voltage, Function Control (BPF/ LPF Selector)

The enable terminals of IC15 and IC16 select the signal ENX or ENY by using IC24 and Q62.
The data from CPU (DAT2) consists of 16-bit serial data, two 8-bit shift resistors are connected in series.
IC22 and IC23 control the band selection, ON/OFF of preamplifier, ATT, power, TX mute function, etc. They are operated in Low level.
IC15 controls the Mode voltage, and IC16 controls filter, AGC, Break-in, PTT lock, and Noise blanker. The voltage of every mode (USB, LSB, AM, CW, CWU, CWL, FM, TUNE) turns ON Q41, Q42, Q43 and Q44 to supply 8V .

m. LPF

HF supplied from PA final stage eliminates harmonics through LPF of filter unit.
Input/Output of this filter is switched by the relay, and Input/Output of unused filter is short at the relay contact.
LPF control is used the BPF control voltage of the main unit.
Every LPF consists of Chebyshëv filter, and double or more harmonics are attenuated about 40dB or more.

L0	~ 2.5MHz	BB0, BB1	1.8MHz band
L1	2.5MHz~4.0MHz	BB2	3.5MHz band
L2	4.0MHz~7.5MHz	BB3	7MHz band
L3	7.5MHz~14.5MHz	BB4, BB5	10, 14MHz band
L4	14.5MHz~21.5MHz	BB6	18, 21MHz band
L5	21.5MHz~30.0MHz	BB7	24, 28MHz band

The transmitting signal, whose spurious is eliminated by passing through LPF, is led to power detection circuit and supplied to HF antenna terminal passing through the selection relay.

n. 50MHz Transmission/Reception Selector

50MHz band performs the transmission/reception selection by the relay RL503. It is supplied to antenna terminal of 50MHz through LPF consisting of L507, L508, C510, C511, C513, C517 and C518.
50MHz LPF consists of Chebyshev filter and double or more harmonics are attenuated 60dB or more.

o. Power Detection Circuit

A power detection circuit is equipped.
The harmonics are sometimes generated depending on the using diode in the detection circuit. LPF makes the standing wave, so the circuit is located before the LPF in 50MHz band whose spurious specification is severe, and after LPF in HF band.
L502 is 8 turns bifilar of toroidal core (twisted pairs of AWG). Therefore the both sides are 16 turns with center tap.
Piercing the center hole of the core means the same with 1 turn. So the transformer is 1:16.
Therefore R514 is applied the voltage (forward wave voltage) according to the output voltage, and R515 is applied the voltage (reflected wave) according to the reflected power. The output power and reflection detect the power to control the power in the main unit.

p. Dial Rotating Detection

The pulse generated by the rotation of the main dial is eliminated the chattering in IC1001: A, B. IC1001: A and B are the Schmitt triggers by the feedback from the output.
The rise and fall of each output is differentiated in IC1002:A, C, so the pulse number is doubled. Then it is 4 times the pulse number because of synthesizing in IC1001: C.
To find the rotation direction, it is detected in IC1002: B and IC1003 and fed to CPU. As S1002 generates 50 pulse at 1 rotation, what is input to CPU is 200 pulse/rotation, and 5kHz/rotation in 25Hz step.
The main dial rotates very fast and generates so many pulses. The pulse is divided in IC1004, and the pulse number is stored as the 6-bit binary digit by each dividing output. At a high speed rotation the frequency is forwarded by counting the pulse number stored in IC1004, then the process is finished, the pulse number stored in IC1004 is reset by the output from CPU.
The dial rotation pulse is charged in D1016, R1022 and C1010, and the average voltage according to the speed is obtained. When the dial rotation speed is fast, the frequency step per pulse is four times that at normal speed.

3) Front Unit

a. Power Switch

When SW1001 is pressed, Q1001 is turned ON, then the contact of RL602 in PA unit is turned ON to supply the voltage of 13.8V to the front unit. Once the CPU starts operation, the output from PCONT of CPU turns Q1006 ON to hold ON the relay of RL602.
When SW1001 is kept pressing while the power is ON, the signal is detected in PSDET, and the Q1006 is turned OFF to cut OFF the power supply.

b. Power Supply

IC1007 is the regulated power supply of 5V which has the output for CPU reset.
IC1006 is the regulated power supply of 8V which generates the required voltage for IF shift and volume control.
When the power supply is cut OFF, the output of regulated power supply of 8V is increased first, and it is detected in D1018 and IC1002:D, then sent to CPU. In CPU the data is stored in the EEPROM of IC1005 before the output of regulated power supply of 5V is decreased and the unit is reset. D1019 and C1002 are used to hold the output voltage of 5V by keeping the input voltage of 5V regulated power supply as long as possible.

c. Dimmer Circuit

The regulated power supply of about 10.5V consists of Q1003, Q1004 and Q1005.
Q1003 supplies about 10.5V when the DIMM output from CPU is 5V.
In CPU unit, DIMM is the pulse output, and it switches ON/OFF of the output of about 10.5V.
At full lighting the output from CPU is fixed to 5V. In "LP4" mode the duty is 80% and in "LP 3 " mode the duty is 60%. In this way the brightness is changed by the duty in Q1003.
Q1003 is supplied the current by turning ON/OFF. At the maximum the brightness is the lightest, and the duty is decreased according to the dimmer, then the power dissipation is decreased. The dimmer can be operated by the small transistor.
The maximum brightness is 10.5V, and it is set to under the regulation voltage (6.3V x 2) to prolong the life of the lamp. The rush current when the lamp is turned ON is in pulse mode to decrease the load on the lamp.

d. LCD

The indication such as frequency that is required the speed is performed by the CPU itself, and the other indications are performed by the LCD driver of IC1009.
The LCD indication employs the frame frequency of about 128Hz, 1/2 DUTY and 1/2 bias.

e. Others

X1001 is the ceramic resonator of 8MHz selected not to enter the amateur band in the harmonics relations.
When the power is ON, the voltage is supplied from Y2 and Y3, to detect whether it is connected to the outputs DB0~DB6 or not, then the destination is determined.
The currents in Y0 and Y1, and between DB~DB6 are scanned to detect which switch on the front panel is pressed.
The both sides of RIT VR are applied 5V, and the location of VR is detected by the voltage of A/D input terminal.
In the Receiving frequency monitor Q1019 is turned ON by the MONI output from CPU, the squelch setting voltage programmed by turning the knob on the front panel is decreased forcedly. Then the squelch is open forcedly without any relation with VR position.
The output from the main unit (RTXC) lights the LED according to the change of the ALC voltage. The output cannot be supplied as it is, so it is changed to ON/OFF signal in Q1009.
Q1011 is the squelch output from the main unit, and it lights RX LED.

4) PLL Unit

Summary

The followings are performed in PLL unit:

- The generation of carrier signal
- The generation of the first and second local oscillating signal
- The generation of sidetone CTCSS
- Adding the FM modulation
- Making the power supply of 5V

Details

(1) There are 3 kinds of power supply as follows:
- The voltage of 13V passed through the switch
- The voltage of 8V made in the MAIN unit
- The voltage of 5V made in the PLL unit

Power supply depending on the MODE comes from the main unit.

(2) First the reference signal of 30MHz is generated in X701 and Q701 according to the constant of TC701 and L702.

(3) Secondly the signal of 9.420MHz +/- 1.5kHz is generated by the voltage of D706 in X702, Q721 and Q722.

(4) Thirdly the signal of 9.875MHz +/- 1.5kHz is generated according to the constant of TC702-TC704, C807, C809, C810, C811 and C812 in Q725 and Q724.

(5) The frequency of 9.875MHz is changed according to the MODE, transmission/reception.

[Transmission/Reception of LSB]
CN701 Pin21 (LSB) is applied the voltage of 8V and the signal is passed through D714, then results in the frequency of 9.8735MHz according to the constant of TC702 and C812. Also (LSB) 8V is passed through D718, and the voltage is applied to Q723 to emit the carrier signal.

[Transmission/Reception of USB]
CN701 Pin26 (USB) is applied the voltage of 8V and the signal is passed through D711, then results in the frequency of 9.8765MHz according to the constant of TC704 and C807. Also (LSB) 8V is passed through D717, and the voltage is applied to Q723 to emit the carrier signal.

[Reception of AM/FM/TUNE]
CN701 Pin20 (FM) or CN701 Pin22 (AT) is added the voltage of 8V and in the FM mode the signal is passed through D708, then results in the frequency of 9.875MHz according to the constant of TC703 and C811. Q723 has no voltage,

and carrier signal is never emitted.

[Transmission of AM/TUNE]
CN701 Pin22(AT) is applied 8V and results in the frequency of 9.875MHz according to the constant of TC703, C811.
The voltage of 8V from CN701 Pin23 (T8V) is passed through D718 to add the voltage to Q723, then the carrier signal is emitted.

[Transmission of FM]
CN701 Pin20 (FM) and CN701 Pin23 (T8V) are added the voltage of 8V , the Q729 and Q733 are turned ON. 8V voltage of CN701 Pin20 (FM) is passed through D708, Q733 and D714, then results in the frequency of 9.8735MHz according to the constant of TC702 and C812. Here FM is passed through AT and R814 to turn ON C811, however, as Q733 is also turned ON, Q727 is turned ON and C811 is shorted.
The voltage of 8V from CN701 Pin23 (T8V) is passed through D718, and led to Q723 to emit the carrier signal.
The voltage of 8V from Q733 turns ON the analogue switch of IC715.
The modulation signal is passed through R798, IC715, R796 and C801, and it is FM-modulated in VCO2.

[The Transmission of CWU/CWL]
CN701 Pin24 (CWU) or CN701 Pin25 (CWL) is supplied the voltage of 8V, then it is passed through D716, D732, Q716 (because Q729 is ON) and R814, then results in the frequency of 9.875MHz according to the constant of TC703 and C811.
Although here CWU tries to turn C810 ON or CWL tries to turn C809 ON, it can not be done through D715 because Q729 is also turned ON.

[The Reception of CWU]
CN701 Pin24 (CWU) is supplied the voltage of 8V, passed through D712, then resulting in the frequency of 9.8758MHz of frequency according to the constant of TC703 and C810. Also the voltage of 8V from CN701 Pin24 (CWL) is passed through D716 and D717 to the Q723, then the carrier signal is emitted.

[The Reception of CWL]
CN701 Pin25 (CWU) is supplied the voltage of 8V, passed through D712, then resulting in the frequency of 9.8742MHz of frequency according to the constant of TC703 and C809. Also the voltage of 8V from CN701 Pin25 (CWL) is passed through D716 and D717 to the Q723, then the carrier signal is emitted.
(6) The frequency of 9.42MHz can be changed only while receiving by the IF shift volume on the front panel.

The voltage supplied to CN701 Pin14 (SHV) is changed by the IF shift volume, and the capacitance of D706 is also changed, then 9.42MHz is changed. The center frequency of the IF shift volume is determined by VR702.
While transmitting Q715 is turned ON by T8V to eliminate the influence by SHV and VR 701, then the frequency is decided only by VR701.

In USB CN701 Pin26 (USB) and CN701 Pin15 (TONS) are supplied the voltage of 8V. As in UT mode TONS becomes the sink, Q735 is turned OFF and USB is supplied 0V , then Q730 is turned ON and a terminal of R767 is connected to the ground to decrease the voltage of D706, beside the frequency of 9.42MHz is decreased about 300Hz less while receiving and about 100Hz less while transmitting than the value in USB mode.

In the same manner, in LSB mode the voltages of CN701 Pin21 (LSB) and CN701 Pin15 (TONS) are 8V. As in LT mode TONS becomes the sink, Q735 is turned OFF and D729 is supplied the voltage by R767. Then voltage of D706 is increased. Beside the frequency of 9.42Hz is increased about 300Hz more while receiving and about 100Hz more while transmitting than the value in LSB mode.

(7) The Emission of 455kHz Carrier Signal
The above-mentioned 9.875MHz signal is input to Mixer IC712 Pin6, and 9.42MHz signal is input to IC712 Pin8. The difference frequency of 455kHz is output from IC712 Pin3 and sent to the MAIN unit from J701 after amplified in Q723. The Output level is approximately -5dB.

(Frequency Relations depending on the Mode)

USB(TX RX)		9.8765MHz - 9.42MHz (**)	= 456.5kHz (**)
LSB(TX RX)	FM(TX)	9.8735MHz - 9.42MHz (**)	= 453.5kHz (**)
CWU CWL AM TUNE (TX)		9.8750MHz - 9.42MHz	= 455.0kHz (*)
CWU(RX)		9.8758MHz - 9.42MHz (*)	= 455.8kHz (*)
CWL(RX)		9.8742MHz - 9.42MHz (*)	= 454.2kHz (*)
UT(RX)		9.8765MHz - 9.4197MHz (*)	= 456.8kHz (*)
LT(RX)		9.8735MHz - 9.4203MHz (*)	= 453.2kHz (*)
UT(TX)		9.8765MHz - 9.4199MHz	= 456.6kHz
LT(TX)		9.8735MHz - 9.4201MHz	= 453.4kHz

AM FM (RX) does not output
(**): While receiving IF Shift Operation (+/- 1.5kHz)
(*): IF Shift Operation (+/- 1.5kHz)

(8) The Second Local Oscillating Signal
In VCO2 unit, after the frequency of 71.295MHz is oscillated in Q941 and amplified in Q949, Q944 and Q945, the signal of approximately 3dB is supplied to MAIN unit through J702 as the second local oscillating signal.
The signal for PLL loop is supplied from Q942 to PLL unit.
The signal of 71.295MHz is fed to Mixer IC711 Pin7 and the signal of 9.42MHz is fed to Pin3, so that the deference frequency of 61.875MHz output from Pin6 only is picked up by Q711, L712 and L711, and fed to PLL IC707, then locked at 61.875MHz.
Therefore, by rotating the IF shift volume, 9.42MHz, and also 71.295MHz are changed.
The frequency of 30MHz is fed to IC707 through Pin1, and it is divided to get the following frequency as the reference frequency, and also the frequency of 61.875MHz is divided to get the reference frequency, then these two frequencies are compared.
The reference frequency changes according to the CW sidetone frequency.

When the sidetone frequency is 650Hz, the reference frequency is 64.655kHz.
When the sidetone frequency is 750Hz, the reference frequency is 75.000kHz.
When the sidetone frequency is 850Hz, the reference frequency is 85.227kHz.

(9) The First Local Oscillating Signal

In the HF mode, the frequency oscillated in VCO3 is amplified in Q710 and Q714, and passed through the switching diode D725 and D726, then band-pass filter and RL701. The signal of approximately 3dB is led to the MAIN unit from J703.

3 VCO's are built in VCO3, and it is oscillated under following frequency conditions:

150kHz~under 10.5MHz:

The VCO is oscillated within 71.90~82.25MHz by D961, TC961 and Q961.

10.5kHz~under 21.5MHz:

The VCO is oscillated within 82.25~93.25MHz by D963, TC962 and Q963.

21.5kHz~under 30.0MHz:

The VCO is oscillated within 93.25~101.75MHz by D965, TC963 and Q965.

These 3 VOC's are selected by the serial data of DAT2, CK2 and ENB from CPU. 8 signals from IC716 are reduced up to 3 signals, then VCO is selected by the switches of VCO3, Q962, Q964 and Q966.

When the frequency is 50MHz, in VCO3 the oscillated frequency within 76.75~80.75MHz by D961, TC961 and Q961 are synthesized with the frequency of 45MHz by the DBM (Double Balanced Mixer) in L729, L730 and D730, then the frequency within 121.75~125.75MHz is generated. It is passed through RL701 by the band-pass filters of L732, L733, L734 and L735 and Amplifier of Q731 and Q716, then the signal of approximately 3dB is output to J703.

The frequency of 45MHz is generated as follows: The reference signal of 30MHz is amplified in Q719 and fed to IC701 Pin3, then one half of the signal is supplied from Pin5. 3 times frequency of the signal only is passed through the filter L720, L721 and L722, and fed to the center tap of L729, then led to DBM.

The frequency loop of VCO3 is locked as follows: VCO3 oscillating frequency is passed through Q712 and input to the mixer IC709 Pin6, also the signal of 70.65~70.75MHz (25Hz step) is fed to IC709 Pin8. Then the signal of 1.1~31.1MHz passed through the amplifier Q713 and led to PLL IC702 Pin8 as the difference signal.

This frequency is locked by the following procedure.

1.1MHz is added to the digit number of 100kHz or more of the operation frequency, and divided to obtain 100kHz. Then the frequency is locked after comparing with the reference frequency 100kHz. See the examples as shown below.

Operation Frequency: 1MHz

--> PLL The frequency fed to IC702 Pin8: 2.1MHz

Operation Frequency: 29MHz

--> PLL The frequency fed to IC702 Pin8: 30.1MHz

Therefore, as the reference frequency of IC702, the reference frequency of 30MHz is divided up to 100kHz inside the unit.

In IC702, the operation frequency of 100kHz or more only is controlled.

In 50MHz band, CN701 Pin1 (50M) is sink, Q732 collector is supplied the voltage of 8V. The power supply of Q731, Q716 is turned ON. Q709 and D730 are turned ON. Q709, RL701, D724 and D724 are turned ON, then D730 is ON and Q724 is OFF.

The deviation while transmitting is 5kHz/DEV, and 2.5kHz/DEV while HF/FM transmitting.

In the HF mode, Q717 is ON, and D725 and D726 are turned ON, then D735 is ON. IC710 Pin4 is supplied about 0.7V so that the operation of IC710 is stopped.

When the unlock signal is emitted from every Pin7 in PLL IC IC702, IC703 and IC707, the voltage of 8V is supplied from the collector in Q728, and Q718 is turned ON so that Q714 is turned OFF, then the level of J703 is decreased about 30dB or more.

(10) 25Hz Step 70.65~70.75MHz

In VCO1 Unit, to generate 25Hz step of the first local oscillating, Q931 is used to oscillate the frequency of 155MHz~175MHz, the signal is passed through Q932 and divided by 20 in IC704, and supplied through Q933. Then the signal is divided by 10 in IC705, and the frequency of 775~875kHz (25Hz step) is fed to the mixer IC701. Therefore, the operation frequency of 100kHz digit or below can be operated in 25Hz step.

Also the frequency is input to PLL unit IC703 Pin8 through Q931 for the PLL loop. PLL IC divides the frequency of 155.000~174.995MHz to get 5kHz, and it is compared with the reference frequency of 5kHz to make the loop.

Indication of the operation frequency of 100kHz digit or below	Oscillating frequency
.0000(00)	155.000MHz
.5000(00)	165.000MHz
.9999(75)	174.995MHz

*The number in ( ) is the frequency of no indication.

The reference frequency of 30MHz is divided to get 5kHz (25Hz x 200), and used as the reference frequency in IC703. Because the signal of 9.875MHz is input to IC701 Pin8, the sum of the frequencies, 10.65~10.75MHz is supplied from IC703 Pin2, and passed through the ceramic filter of 10.7MHz, then fed to IC706 Pin6.

As the double harmonics of reference frequency of 30MHz are generated in Q708, L710 and L709, and they are fed to IC706 Pin8. The sum of the frequency of 70.65~70.75MHz is supplied from IC703 Pin3, passed through the band-pass filter of L706, L707 and L708, and fed to IC709 Pin8. Then the signal is ncluded in a part of the loop of the first local oscillating signal.

(11) CTCSS for only FM transmission

In Tone unit, T type controls the frequency with the DIP Switch SW901 Pin3 - 8, then it is oscillated between 67~251Hz, amplified in Q901 and passed through CN704-1, then led to the MAIN unit from CN701 Pin16.

In this circuit, ON operation is performed when TONS is the sink and IC901 Pin4 is 0V, and FM is supplied 8V and tone unit power supply is ON.

The tone level is controlled with the DIP switch SW901 Pin1 and Pin2 to adjust the level.

(12) FM TX deviation

Default is ±2.5kHz deviation on 29MHz and ±5kHz deviation on 51MHz.

a) Short-circuiting collector and emitter of Q734 will make both bands ±2.5kHz.

b) Short-circuiting the base and emitter of Q734 (and collector and emitter open) will make both bands ±5kHz.

Short-circuiting both (a) and (b) will result in the same effect as (a).

5) Terminal function of CPU

No.	Use1	Use2	Use3	Pin Name	Remarks	I/O	Description	L	H
2			AVss	GND		-			
3				GND		-			
4			X2	XTAL, LOSC		-			
5			X1	XTAL		-			
6			Vss	GND		-			
7			OSC1	XTAL		-			
8			OSC2	XTAL		-			
9			/RES	/RST		I			
10			MDO	5V?		I			
11	P20	IRQ4	ADTRG	DCK	DIAL CLOCK	I	Main dial rotation detection and pulse number	Rise edge detection	
12	P21		UD	PCONT	POWER ON	O	Power control output	Power OFF	Power ON
13	P22			PSDET	POWER DET	I	Condition detection when power switch is turned ON.	During power OFF	During power ON
14	P23			TKEY	TUNE KEY	I	Detection of working external antenna tuner	At work	Waiting
15	P24			UNLK	PLL UNLOCK	I	PLL unlock detection	Unlock	Lock
16	P25			MCK	EEPROM CK	O	Clock for data transmission/reception to EEPROM		
17	P26			MDAT	EEPROM DATA	I/O	Data Transmission/Reception to EEPROM		
18	P27			EXTIN	EXT IN	I	External EEPROM transmission acceptance	EEPROM	Acceptance
19	P30		SCK1	CK1	SERIAL1 CK	O	HPL, LPL data transmission clock		
20	P31		SI1	DAT1	SERIAL1 DATA	O	HPL, LPL data transmission		
21	P32		SO1	ENH	HPLL ENABLE	O	HPL data transmission enable		Enable
22	P33		SCK2	ENL	LPLL ENABLE	O	LPL data transmission enable		Enable
23	P34		SI2	CK2	SERIAL2 CK	O	MODE, BPF, etc. transmission clock		
24	P35		SO2	DAT2	SERIAL2 DATA	O	MODE, BPF, etc. data transmission		
25	P36		STRB	ENA	SERIAL SELECT	O	MODE, BPF, etc. data enable selection		Enable 1
26	P37		CS	ENB	SERIAL SELECT	O	MODE, BPF, etc. data enable selection		Enable 2
27			Vss	GND		-			
28			V3			-			
29			V2			-			
30			V1			-			
31			Vcc	5V		-			
32	PA3	COM4		COM4		O	LCD COMMON		
33	PA2	COM3		COM4		O	LCD COMMON		
34	PA1	COM2		COM3		O	LCD COMMON		
35	PA0	COM1		COM3		O	LCD COMMON		
36	P50	SEG1	WKP0	DB0		I	SW, initial setting detection		Detection
37	P51	SEG2	WKP1	DB1		I	SW, initial setting detection		Detection
38	P52	SEG3	WKP2	DB2		I	SW, initial setting detection		Detection
39	P53	SEG4	WKP3	DB3		I	SW, initial setting detection		Detection
40	P54	SEG5	WKP4	DB4		I	SW, initial setting detection		Detection
41	P55	SEG6	WKP5	DB5		I	SW, initial setting detection		Detection
42	P56	SEG7	WKP6	DB6		I	SW, initial setting detection		Detection
43	P57	SEG8	WKP7			O			Detection
44	P60	SEG9		Y0		O	Panel SW for ON detection		At detecting
45	P61	SEG10		Y1		O	Panel SW for ON detection		At detecting
46	P62	SEG11		Y2		O	Output for initial condition setting detection		
47	P63	SEG12		Y3		O	Output for initial condition setting detection		
48	P64	SEG13		GND		O			
49	P65	SEG14		LCDEN		O	LCD driver enable		
50	P66	SEG15		LCDCK		O	LCD driver clock		
51	P67	SEG16		LCDATA		O	LCD driver data		

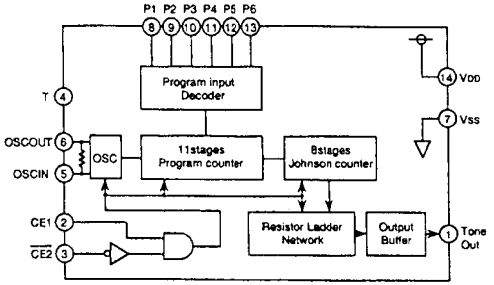
No.	Use1	Use2	Use3	Pin Name	Remarks	I/O	Description	L	H
52	P70	SEG17		SEG17		O	Output to LCD Segment		
53	P71	SEG18		SEG18		O	Output to LCD Segment		
54	P72	SEG19		SEG19		O	Output to LCD Segment		
55	P73	SEG20		SEG20		O	Output to LCD Segment		
56	P74	SEG21		SEG21		O	Output to LCD Segment		
57	P75	SEG22		SEG22		O	Output to LCD Segment		
58	P76	SEG23		SEG23		O	Output to LCD Segment		
59	P77	SEG24		SEG24		O	Output to LCD Segment		
60	P80	SEG25		SEG25		O	Output to LCD Segment		
61	P81	SEG26		SEG26		O	Output to LCD Segment		
62	P82	SEG27		SEG27		O	Output to LCD Segment		
63	P83	SEG28		SEG28		O	Output to LCD Segment		
64	P84	SEG29		SEG29		O	Output to LCD Segment		
65	P85	SEG30		SEG30		O	Output to LCD Segment		
66	P86	SEG31		SEG31		O	Output to LCD Segment		
67	P87	SEG32		SEG32		O	Output to LCD Segment		
68	P90	SEG33		SEG33		O	Output to LCD Segment		
69	P91	SEG34		SEG34		O	Output to LCD Segment		
70	P92	SEG35		SEG35		O	Output to LCD Segment		
71	P93	SEG36		SEG36		O	Output to LCD Segment		
72	P94	SEG37	M	SEG37		O	Output to LCD Segment		
73	P95	SEG38	D0	SEG38		O	Output to LCD Segment		
74	P96	SEG39	CL2	SEG39		O	Output to LCD Segment		
75	P97	SEG40	CL1	SEG40		O	Output to LCD Segment		
76			Vcc	5V		-			
77	P10		TMOW	MONI		O	Open the squelch forcedly (monitor)		Squelch open forcedly
78	P11		TMOFL	UT		O	The command to put out the light forcedly and flashing to LCD driver	Put out the light forcedly	During lighting
79	P12		TMOFH	BEEP		O	Beep sound output	Pulse output	
80	P13		TMIG	SQS		I	Squelch open/close condition detection	Squelch close	Squelch open
81	P14		PWM	DIMM	DIMMER	O	LCD dimmer control	Duty control of pulse output	
82	P15	IRQ1	TMIB	TXS		I	Transmission condition detection	Transmission	Reception
83	P16	IRQ2	TMIC	SUBA		I	MF dial rotation detection		
84	P17	IRQ3	TMIF	SUBB		I	MF dial rotation detection		
85	P40		SCK3	DRST	COUNT RESET	O	Dial pulse count reset	During counting	Reset
86	P41		RXD	GND		I			
87	P42		TXD	GND		I			
88	P43	IRQ0		POWDN	POWER DOWN	I	Power OFF detection	Power OFF	Power OK
89			AVcc	5V		-			
90	PB0	AN0		DQ1		I	Dial clock 1/2		
91	PB1	AN1		DQ2		I	Dial clock 1/4		
92	PB2	AN2		DQ3		I	Dial clock 1/8		
93	PB3	AN3		DQ4		I	Dial clock 1/16		
94	PB4	AN4		DQ5		I	Dial clock 1/32		
95	PB5	AN5		DQ6		I	Dial clock 1/64		
96	PB6	AN6		DQ		I	Dial up rotation		Up
97	PB7	AN7		/DQ		I	Dial down rotation		Down
98	PC0	AN8		DSDET		A/D	Dial speed detection	The voltage according to the speed of rotation.	
99	PC1	AN9		RIT		A/D	RIT VR position detection	0-5V	
100	PC2	AN10		U/D		A/D	Mic UP/DOWN detection	2-3V down	0-2V up
1	PC3	AN11		SRF		A/D	S & RF Meter voltage input	0-5V	

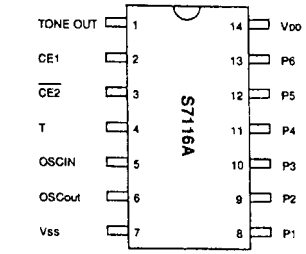
SEMICONDUCTOR DATA

1) S7116A (XA0052)

Tone Generator

Block Diagram



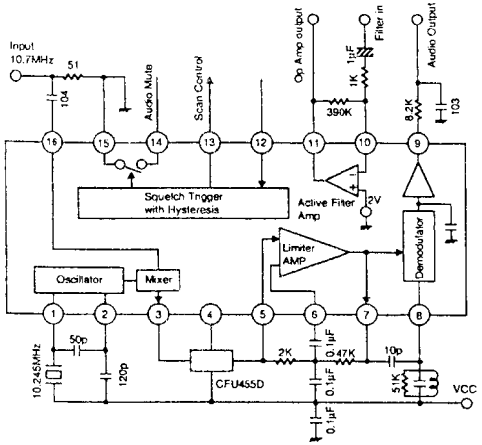


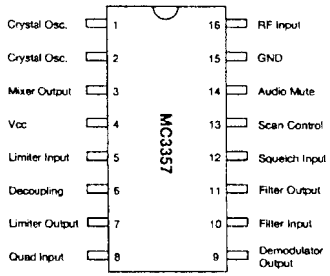
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Supply voltage	VDD		3.0	-	10	V
Supply current	IDDO	VDD=5.0V, CE1=VDD, CE2=Vss, CG=CD=10pF	-	0.4	1.0	mA
Stand by current	IDDS	VDD=5.0V, input: open, RL=50kΩ	-	20	60	μA
Tone output level	VOT	VDD=5.0V, RL=50kΩ	240	340	440	mV rms

Freq.	P1	P2	P3	P4	P5	P6	Freq.	P1	P2	P3	P4	P5	P6
67.0	1						186.2		1	1	1	1	
71.9		1					192.8	1	1	1	1	1	
74.4	1	1					203.5						1
77.0			1				210.7	1					1
79.7	1		1				218.1		1				1
82.5		1	1				225.7	1	1				1
85.4	1	1	1				233.6			1			1
88.5				1			241.8	1		1			1
91.5	1			1			250.3		1	1			1
94.8		1		1			500	1	1	1			1
97.4	1	1		1			600				1		1
100.0			1	1			700	1			1		1
103.5	1		1	1			800		1		1		1
107.2		1	1	1			900	1	1		1		1
110.9	1	1	1	1			1000			1	1		1
114.8					1		1600	1		1	1		1
118.8	1				1		1700		1	1	1		1
123.0		1			1		1750	1	1	1	1		1
127.3	1	1			1		1800					1	1
131.8			1		1		1300	1				1	1
136.5	1		1		1		2000		1			1	1
141.3		1	1		1		2200	1	1			1	1
146.2	1	1	1		1		2975			1		1	1
151.4				1	1		2550	1		1		1	1
156.7	1			1	1		2295		1	1		1	1
162.2		1		1	1		2125	1	1	1		1	1
167.9	1	1		1	1		1275				1	1	1
173.8			1	1	1		1445	1			1	1	1
179.9	1		1	1	1								

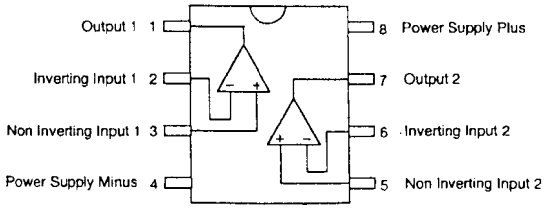
2) MC3357 (XA0063)
Low Power FM IF

Vcc=6V
F=10.7MHz
Icc 3mA
Limit 5μV -3dB
Vo 350mV Dev=+/-3KHz

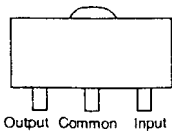




3) M5218FP (XA0068)
Dual Low Noise
Operational Amplifiers

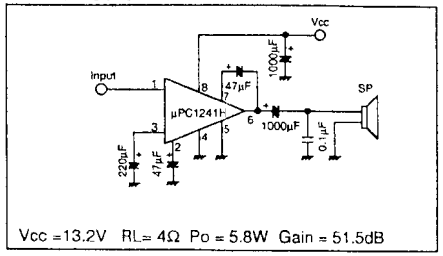


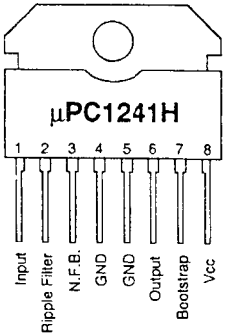
4) NJM78L08UA (XA0075)
8V Voltage Regulator



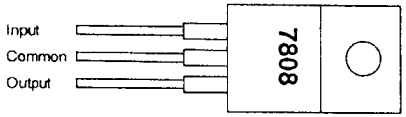
5) μPC1241H (XA0079)
Audio Power Amplifiers

Test Circuit



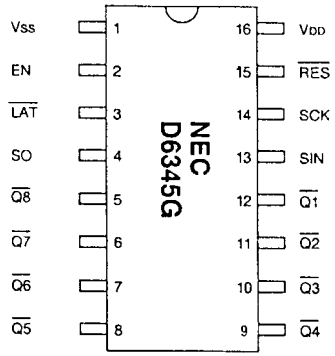


6) MC7808CT (XA0082)
8V Voltage Regulator

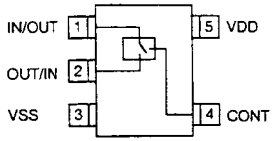


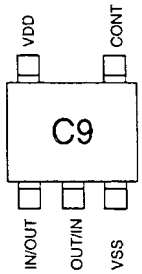
7) μPD6345GS (XA0114)
8bit Serial in Parallel Out Driver

No.	Pin Name	Description
1	GND	GND terminal
2	EN	Enable terminal
3	$\overline{LAT}$	Latch terminal
4	SO	Serial data output terminal
5-12	$\overline{Q8}$-$\overline{Q1}$	Data output terminal
13	SIN	Serial data input terminal
14	SCK	Serial clock input terminal
15	$\overline{RES}$	Reset input terminal
16	VDD	Power supply terminal



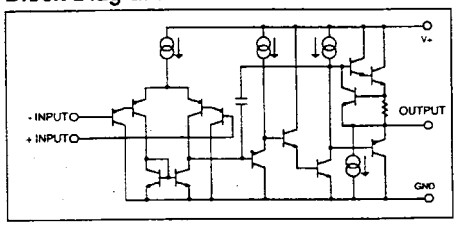
8) TC4S66F (XA0115)
Bilateral Switch

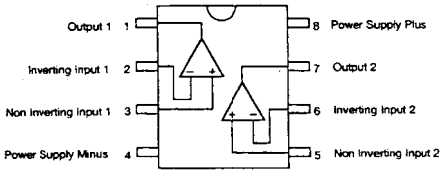




9) NJM2904M (XA0224)
Dual Operational Amplifiers

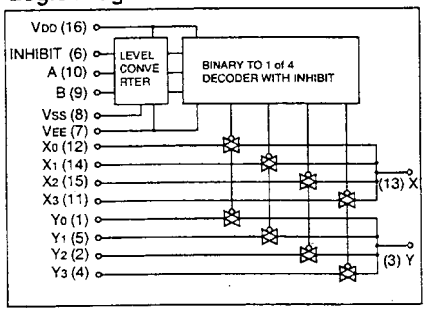
Block Diagram

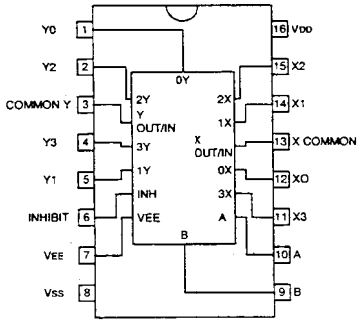




10) BU4052BF (XA0236)
Analog Multiplexer/Demultiplexer

Logic Diagram





Truth Table

INHIBIT	A	B	ON SWITCH
L	L	L	X0 Y0
L	H	L	X1 Y1
L	L	H	X2 Y2
L	H	H	X3 Y3
H	X	X	NONE

X: Don't Care

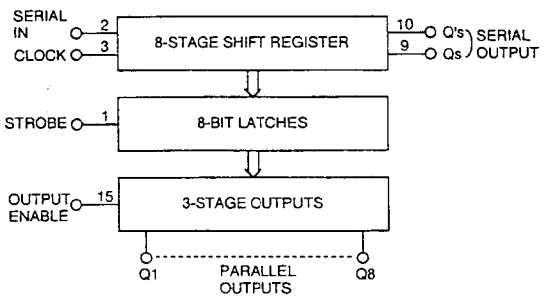
11) BU4094BF (XA0246)
8-Stage Shift Register

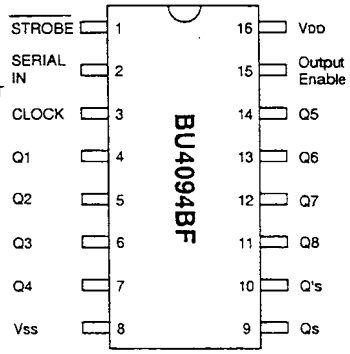
Truth Table

Clock	Output enable	Strobe	Data	Parallel outputs Q1	Parallel outputs Qn	Serial outputs Qs	Serial outputs Q's
↑	L	X	X	Z	Z	Q7	No Chg.
↓	L	X	X	Z	Z	No Chg.	Qs
↑	H	L	X	No Chg.	No Chg.	Q7	No Chg.
↑	H	H	L	L	Qn-1	Q7	No Chg.
↑	H	H	H	H	Qn-1	Q7	No Chg.
↓	H	X	X	No Chg.	No Chg.	No Chg.	Qs

Z=High Impedance
X=Don't Care

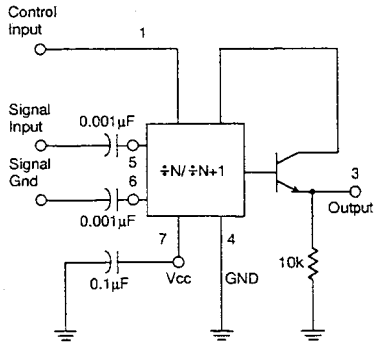
Block Diagram





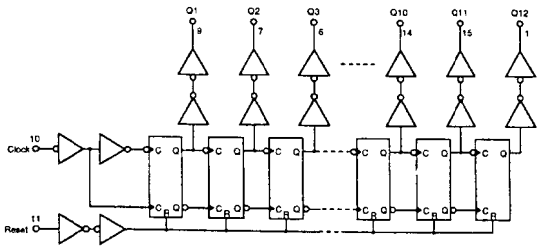
12) MC12019D (XA0292)
Two-Modulus Prescaler

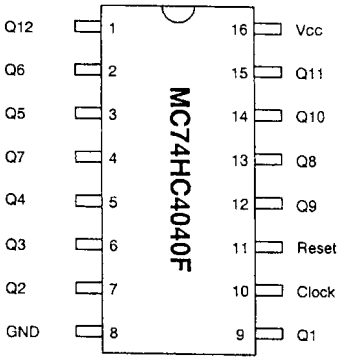
Block Diagram



Characteristics	Symbol	Min.	Typ	Max	Unit
Toggle frequency (Sine wave input)	fmax fmin	225 -	- -	- 20	MHz
Supply current	Icc	-	-	7.5	mA
Control input High (1/20)	VIH	2.0	-	-	V
Control input Low (1/21)	VIL	-	-	0.8	V
Output voltage swing	Vout	600	-	1200	mVpp
Input voltage sensitivity	Vin	200	-	800	mVpp
PLL response time	tPLL	-	-	tout-70	ns

13) MC74HC4040F (XA0293)
12-Stage Binary Ripple Counter

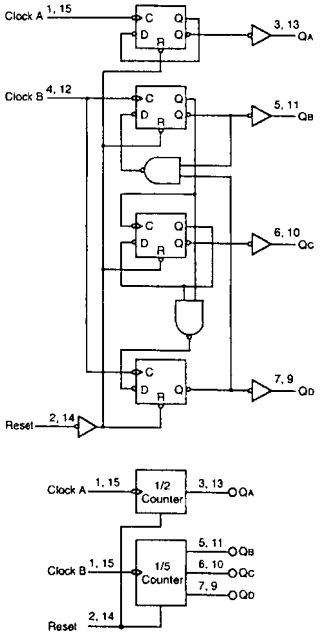


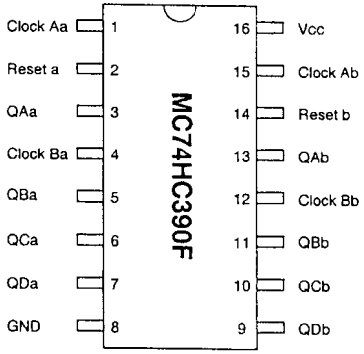


Truth Table

Clock	Reset	Output State
↑	L	No Charge
↓	L	Advance to next stage
X	H	All outputs are low

14) MC74HC390F (XA0294)
Dual 4-Stage Binary Ripple Counter 1/2 and 1/5 Sections

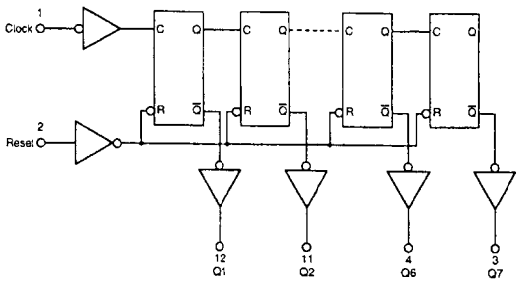


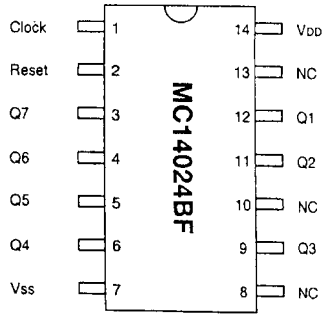


Truth Table

Clock		Reset	Action
A	B		
X	X	H	Reset 1/2 and 1/5
↓	X	L	increment 1/2
X	↓	L	Increment 1/5

15) MC14024BF (XA0295)
7-Stage Binary Counter





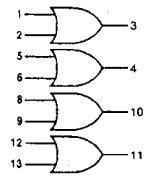
Truth Table

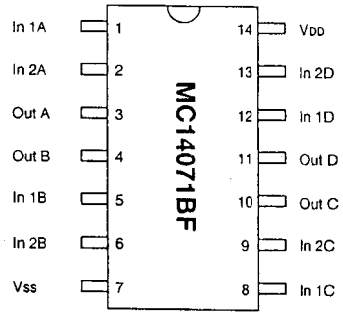
Clock	Clear	Output State
Don't care	H	All Output="L"
↑	L	No Charge
↓	L	Advance to next stage

16) MC14071BF (XA0296)
Quad 2-Input OR Gate

Truth Table

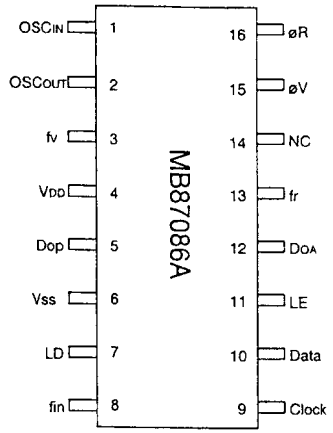
Input		Output
A	B	X
L	L	L
L	H	H
H	L	H
H	H	H

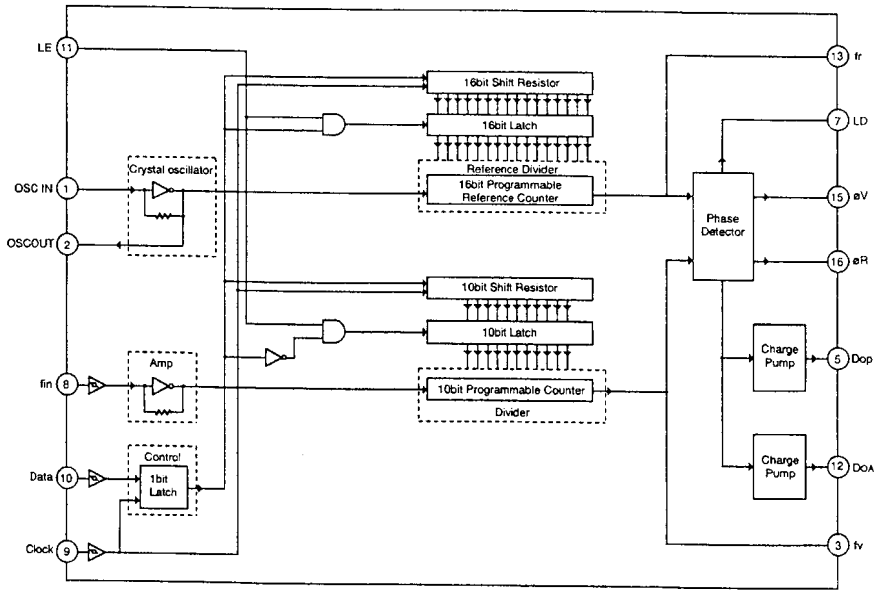




17) MB87086A (XA0297)
PLL Frequency Synthesizer

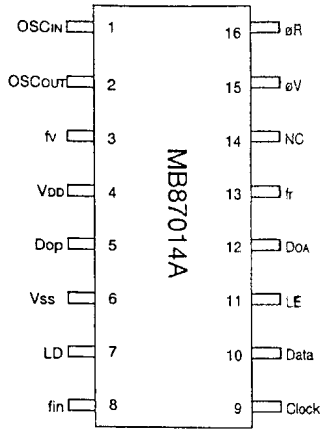
No.	Pin Name	I/O	Description
1	OSCIN	I	Crystal connection terminal
2	OSCOUT	O	Crystal connection terminal
3	fv	O	Phase comparator input monitor terminal Comparator divider output terminal
4	VDD	-	Power supply
5	Dop	O	Passive LPF connection terminal fr>fv: Drive mode, Dop="H" fr=fv: High impedance fr<fv: Sink mode, Dop="L"
6	Vss	-	GND terminal
7	LD	O	Phase detector output terminal Lock="H", Unlock=negative pulse
8	fin	I	Comparator divider input terminal
9	Clock	I	Serial clock input terminal
10	Data	I	Serial data input terminal
11	LE	I	Load enable input terminal
12	DOA	O	Active LPF connection terminal fr>fv: Drive mode, DOA="L" fr=fv: High impedance fr<fv: Sink mode, DOA="H"
13	fr	O	Phase comparator input monitor terminal Reference divider output terminal
14	NC	-	No connection
15	øV	O	Differential LPF connection terminal
16	øR	O	fr>fv: øV="H", øR="L" fr=fv: øV="H", øR="H" fr<fv: øV="L", øR="H"

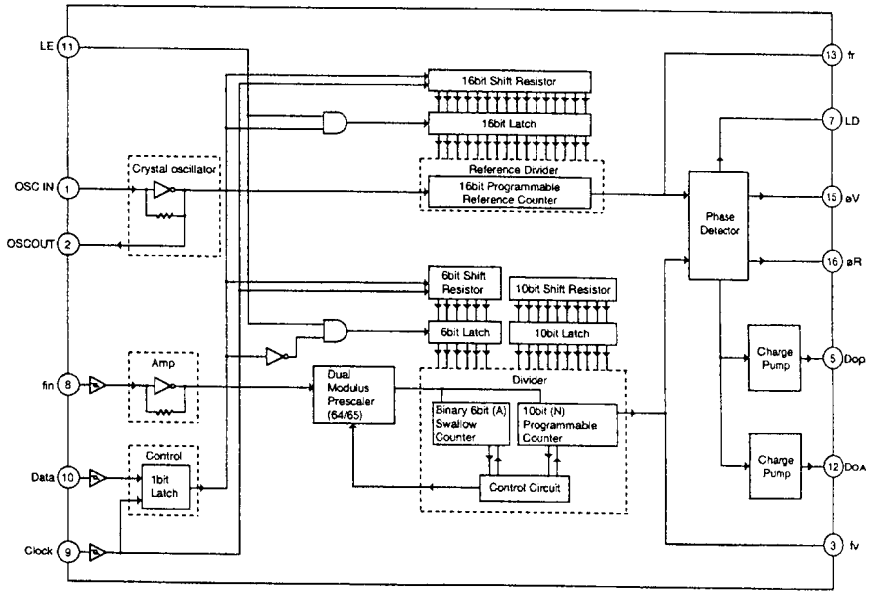




18) MB87014A (XA0298)
PLL Frequency Synthesizer

No.	Pin Name	I/O	Description
1	OSCIN	I	Crystal connection terminal
2	OSCOUT	O	Crystal connection terminal
3	fv	O	Phase comparator input monitor terminal Comparator divider output terminal
4	VDD	-	Power supply
5	Dop	O	Passive LPF connection terminal fr>fv: Drive mode, Dop="H" fr=fv: High impedance fr<fv: Sink mode, Dop="L"
6	Vss	-	GND terminal
7	LD	O	Phase detector output terminal Lock="H", Unlock=negative pulse
8	fin	I	Prescaler input terminal
9	Clock	I	Serial clock input terminal
10	Data	I	Serial data input terminal
11	LE	I	Load enable input terminal
12	DOA	O	Active LPF connection terminal fr>fv: Sink mode, DOA="L" fr=fv: High impedance fr<fv: Drive mode, DOA="H"
13	fr	O	Phase comparator input monitor terminal Reference divider output terminal
14	NC	-	No connection
15	øV	O	Differential LPF connection terminal
16	øR	O	fr>fv: øV="H", øR="L" fr=fv: øV="H", øR="H" fr<fv: øV="L", øR="H"

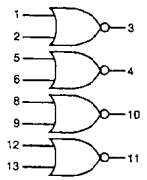


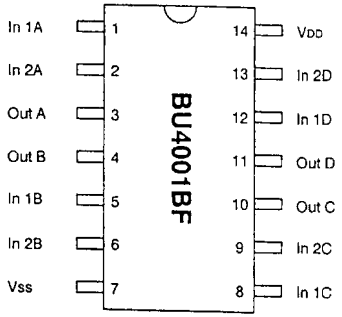


19) MC4001BF (XA0299)
Quad 2-Input NOR Gate

Truth Table

Input		Output
A	B	X
L	L	H
L	H	L
H	L	L
H	H	L

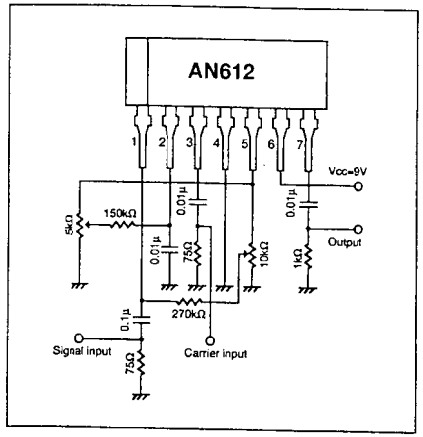


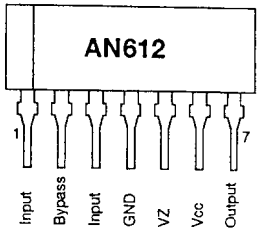


20) AN612 (XA0300)
Balanced Modulator Circuit

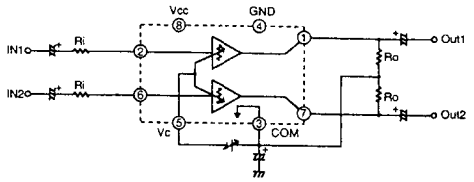
Parameter	Symbol	Condition	Ratings	Unit
Max. supply voltage	Vcc		14.4	V
Supply current	Icc		15	mA
Power dissipation	PD		220	mW
Total current	Itot	V6=12.0V	9.5	mA
Zener voltage	V5-4		6.15	V
Signal input terminal voltage	V1-4		3.1	V
Carrier input terminal voltage	V3-4		3.4	V
Output terminal voltage	V7-4		8.6	V
Output voltage (BM AC)	Vo(BM)	V6=9.0V	-3	dBm
Carrier suppression	SC		50	dB

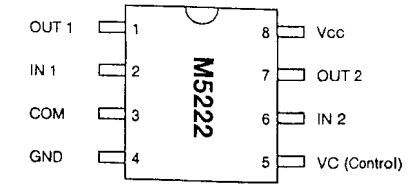
Test Circuit





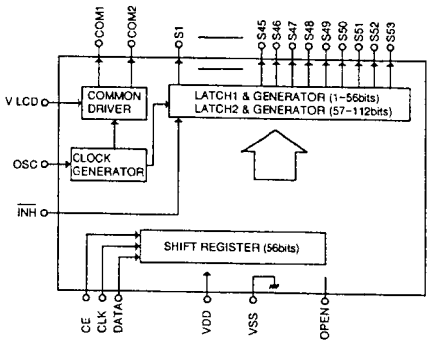
21) M5222FP (XA0385)
Low Voltage Dual VCA

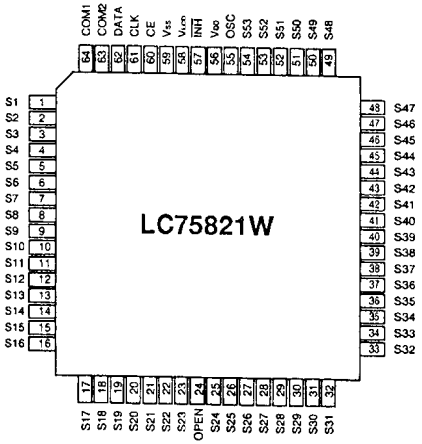




Parameter	Symbol	Condition	Vcc	Min	Typ	Max	Unit
Supply current	Icc	Vi=0, Vc=0	3V	2.5	3.6	5.5	mA
Max. input voltage	ViM1	f=1kHz, Vc=0, THD=1%, RI=10kΩ, RO=20kΩ	3V	0.7	1.0	-	Vrms
	ViM2	f=1kHz, Vc=0, THD=1%, RI=50kΩ, RO=100kΩ	9V	2.3	3.4	-	Vrms
Max. attenuation level	ATTM	Vc=-270mV, RI=10kΩ, RO=20kΩ	3V	80	90	-	dB
Noise output voltage	VNO1	Vc=0 (ATT=-1.4dB) RI=10kΩ, RO=20kΩ, BW=20Hz~20kHz	3V	-	30	60	μVrms
Noise output voltage	VNO2	Vc=-40dB RI=10kΩ, RO=20kΩ, BW=20Hz~20kHz	3V	-	5	-	μVrms

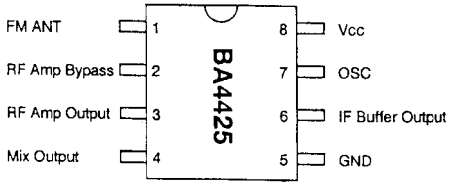
22) LC75821W (XA0303)
LCD Driver





Pin Name	Description
S1-S53	Segment output terminal
COM1, 2	Common output terminal
V LCD	LCD Bias voltage setting terminal
OSC	Oscillator terminal
CE, CLK, DATA	Serial data transmission terminal
VSS, VDD	Power supply terminal
$\overline{INH}$	Display turn off input terminal $\overline{INH}$="L" Vss, turn off (S1-S53, COM1,2="L") $\overline{INH}$="H" Vdd, turn on
OPEN	No connection

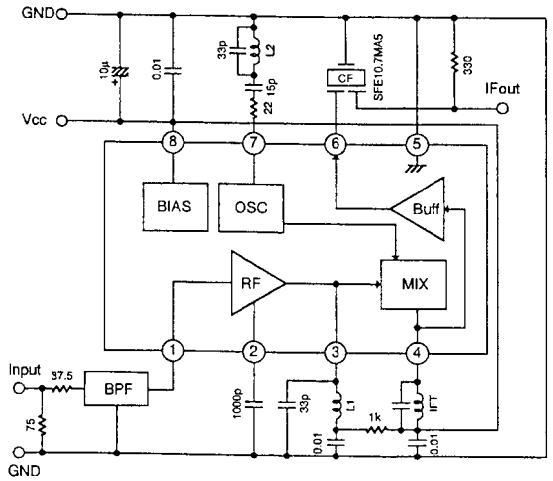
23) BA4425F (XA0304)
FM Front End IC



Vcc=4V

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Current	Iq	No signal	2.6	4.5	7.2	mA
Saturated output voltage	Vo	fd=98MHz, 80dBμV	30	50	72	mV rms
Local oscillator voltage	Vosc	fosc=108MHz	200	400	630	mV rms
Conversion gain	Gvc	fd=98MHz, 55dBμV	31	36	42	dB
Local oscillator stop voltage	OSC STOP		-	-	1.2	V

Test Circuit

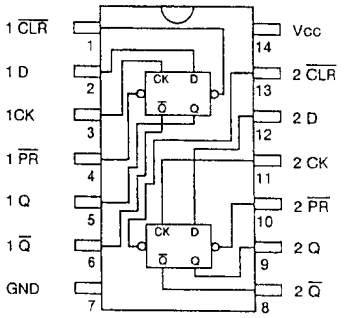


24) TC74AC74F (XA0305)
Dual D-Type Flip Flop

Truth Table

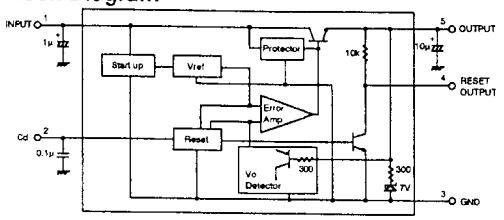
INPUTS				OUTPUTS		FUNCTION
$\overline{CLR}$	$\overline{PR}$	D	CK	Q	$\overline{Q}$	
L	H	X	X	L	H	CLEAR
H	L	X	X	H	L	PRESET
L	L	X	X	H	H	-
H	H	L	↑	L	H	-
H	H	H	↑	H	L	-
H	H	X	↓	Qn	$\overline{Qn}$	NO CHARGE

X=Don't Care

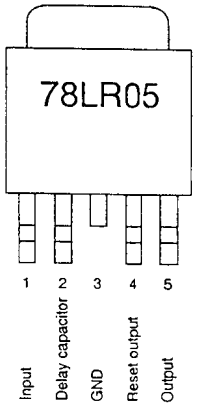


25) L78LR05B (XA0338)
Voltage Regulator

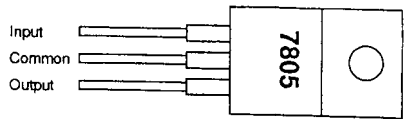
Block Diagram



Parameter	Symbol	Ratings	Unit
Input voltage	Vin	7.5~20	V
Output current	Iout	1~150	mA
Output voltage	Vout	5.0	V



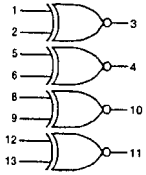
26) MCT7805 (XA0346)
5V Voltage Regulator

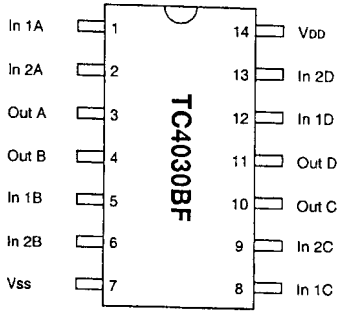


27) TC4030BF (XA0347)
Quad Exclusive-OR Gate

Truth Table

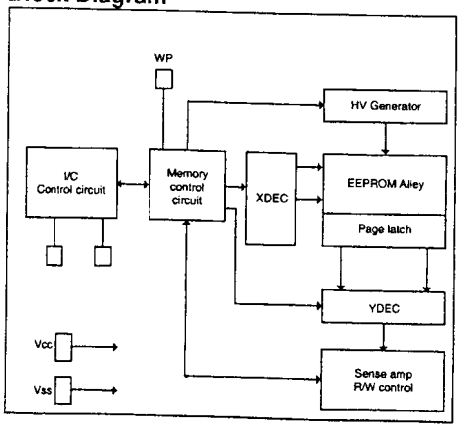
Input		Output
A	B	X
L	L	L
L	H	H
H	L	H
H	H	L

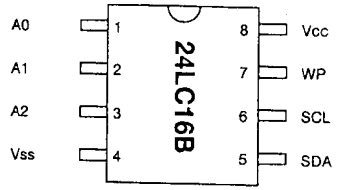




28) 24LC16B (XA0351)
16K bits CMOS Serial EEPROM

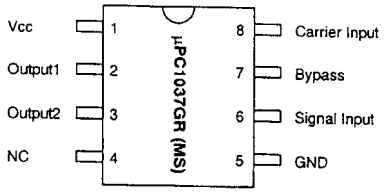
Block Diagram





Pin Name	Description
Vss	GND terminal
SDA	Serial address/data I/O
SCL	Serial clock
WP	Write protect
Vcc	+2.5V~5.5V power supply
A0, A1, A2	No connection

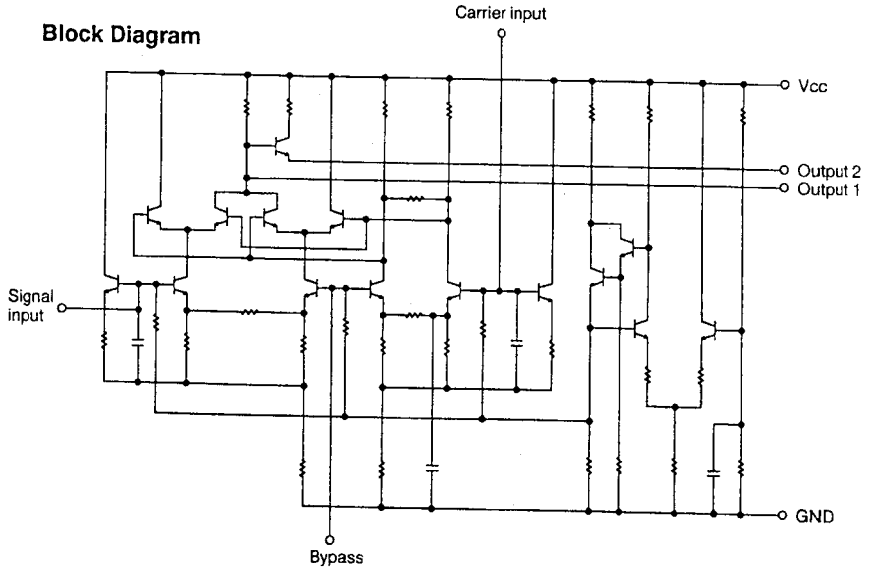
29) μPC1037GR (XA0379)
Double Balanced Modulator



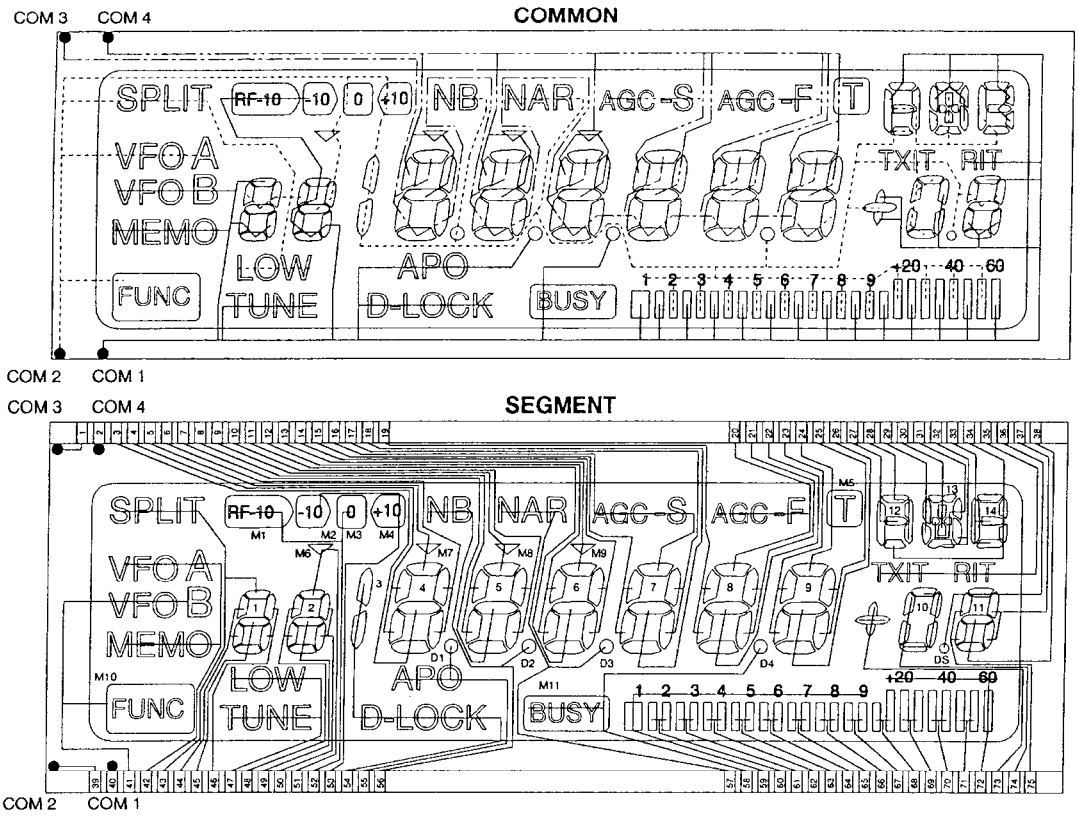
Vcc=6.0V

Characteristics	Symbol	Condition	Min.	Typ.	Max.	Unit
Circuit current	Icc	No signal	-	12	16	mA
Conversion gain	Gc	Signal: 70mV r.m.s. 1.75MHz	-2	0	+2	dB
Signal leakage	Ls	Carrier: 100mV r.m.s. 28.25MHz	-	-40	-20	dB
Carrier leakage	Lc	Output: 30MHz	-	-32	-20	dB
Inter modulated distortion	IMD	Signal 1: 42.5mV r.m.s. 1.75MHz Signal 2: 42.5mV r.m.s. 2.00MHz Carrier: 100mV r.m.s. 28.25MHz Output: 29.75MHz	-	-45	-35	dB
Signal input impedance	Zsi		-	500//9	-	Ω//pF
Carrier input impedance	Zci		-	1.0//9	-	kΩ//pF
Output impedance	Zol	Output 1	-	350//7	-	Ω//pF

Block Diagram

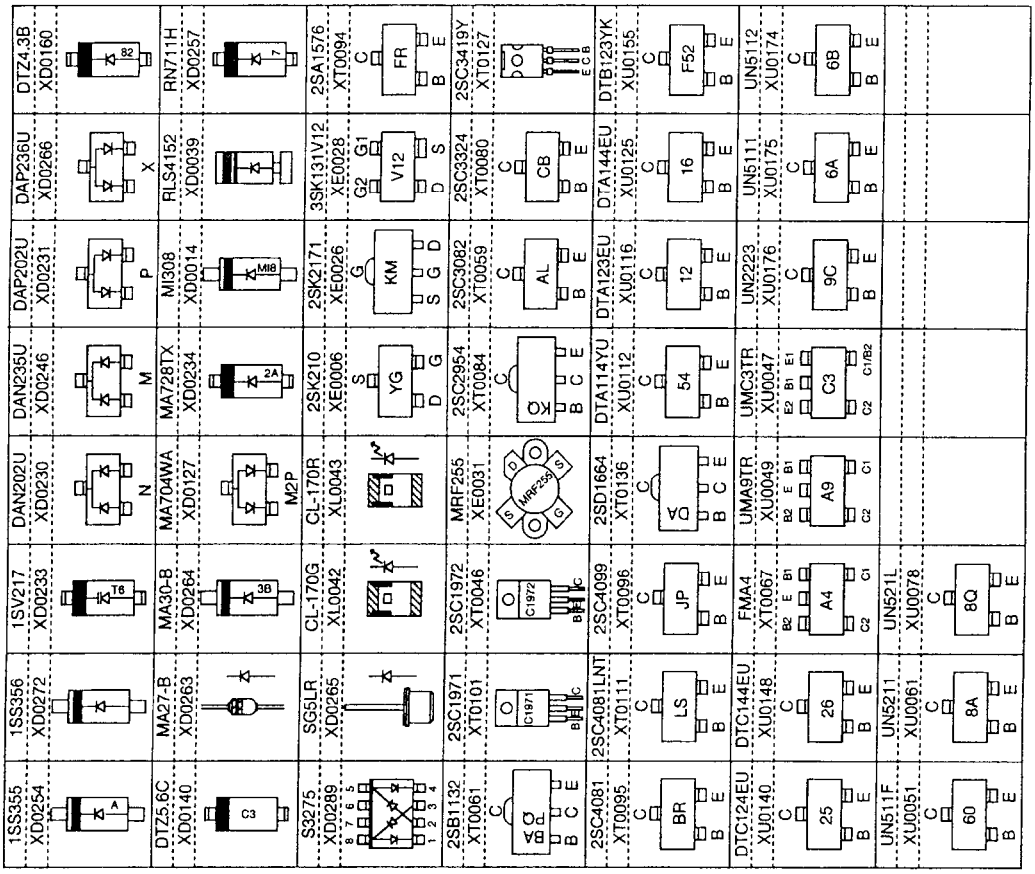


31) LCD Connection



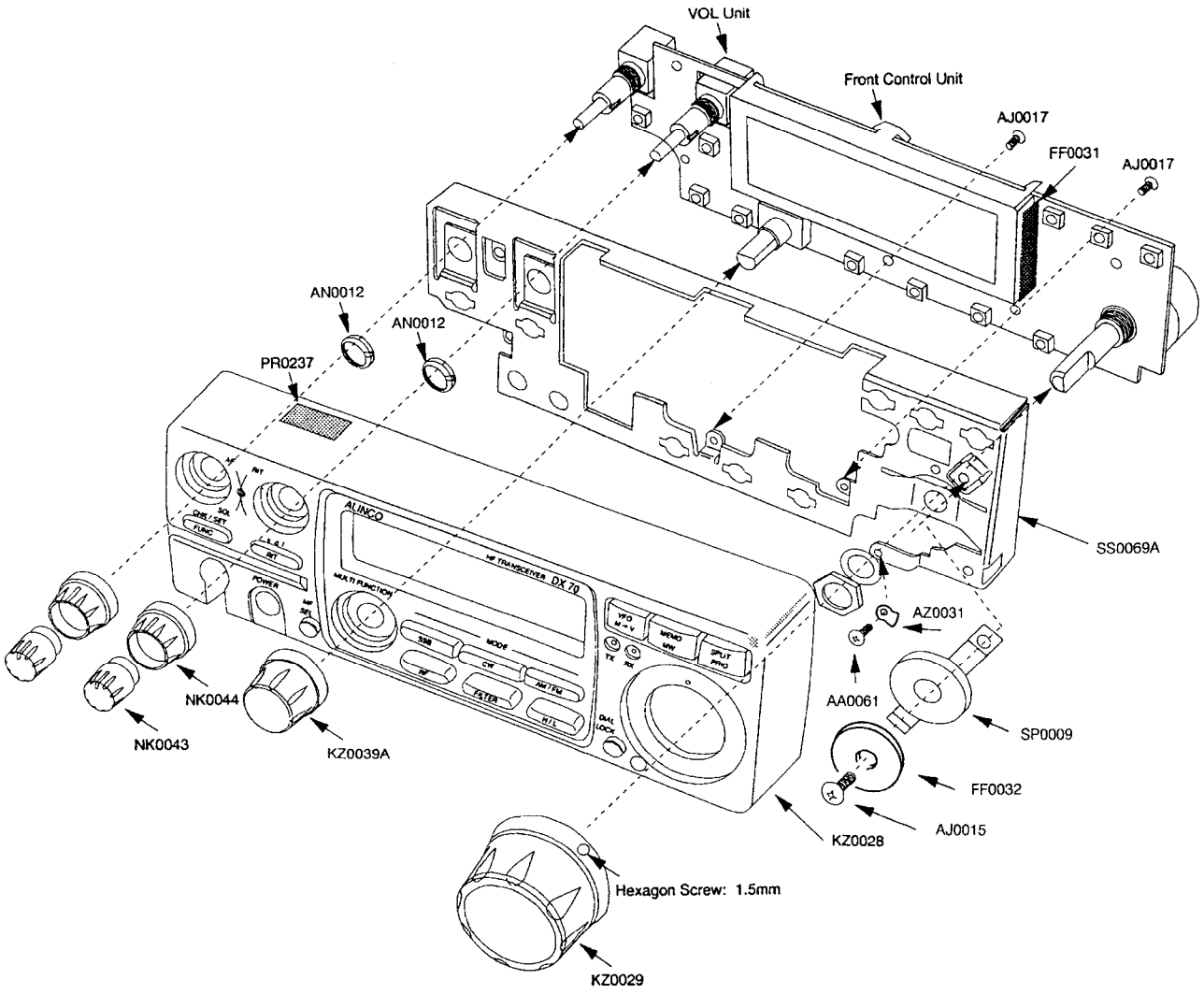
30) Transistor, Diode and LED Outline Drawings

Top View

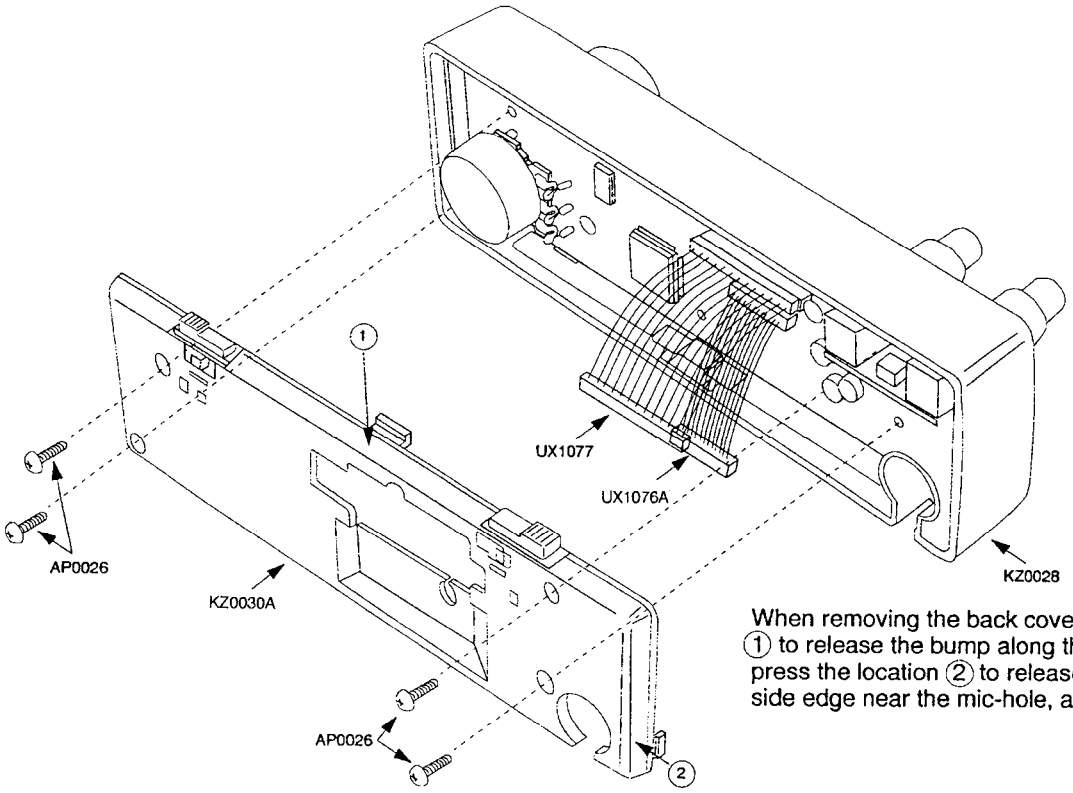


EXPLODED VIEW

1) Front Control Unit 1

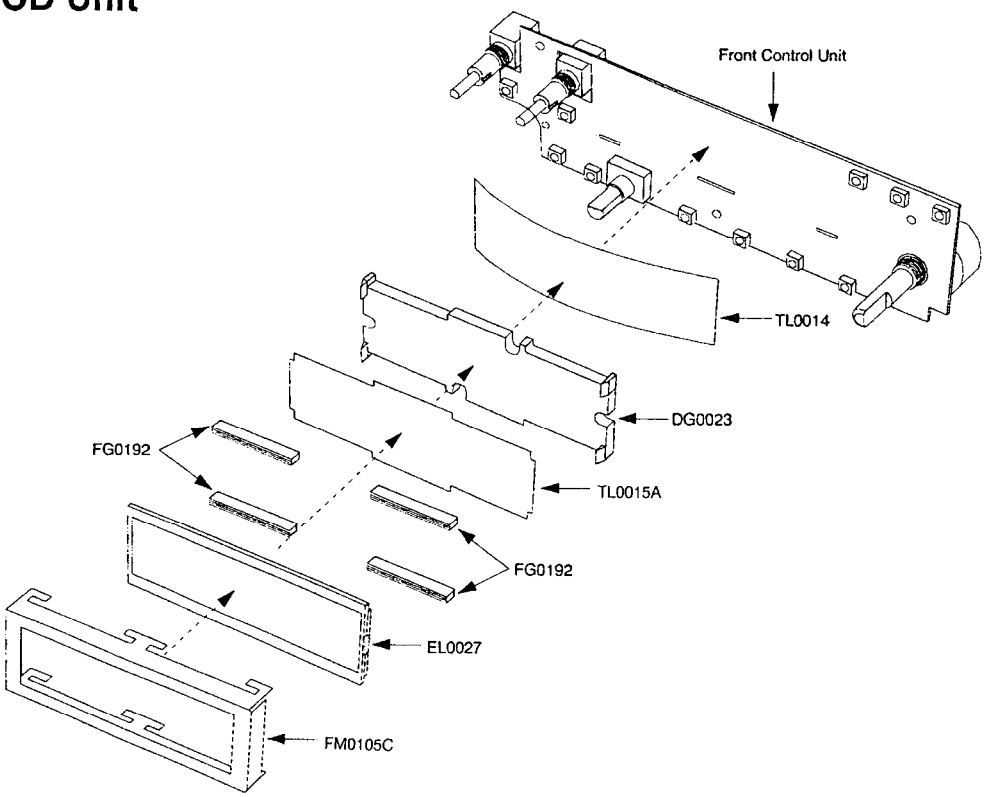


2) Front Control Unit 2

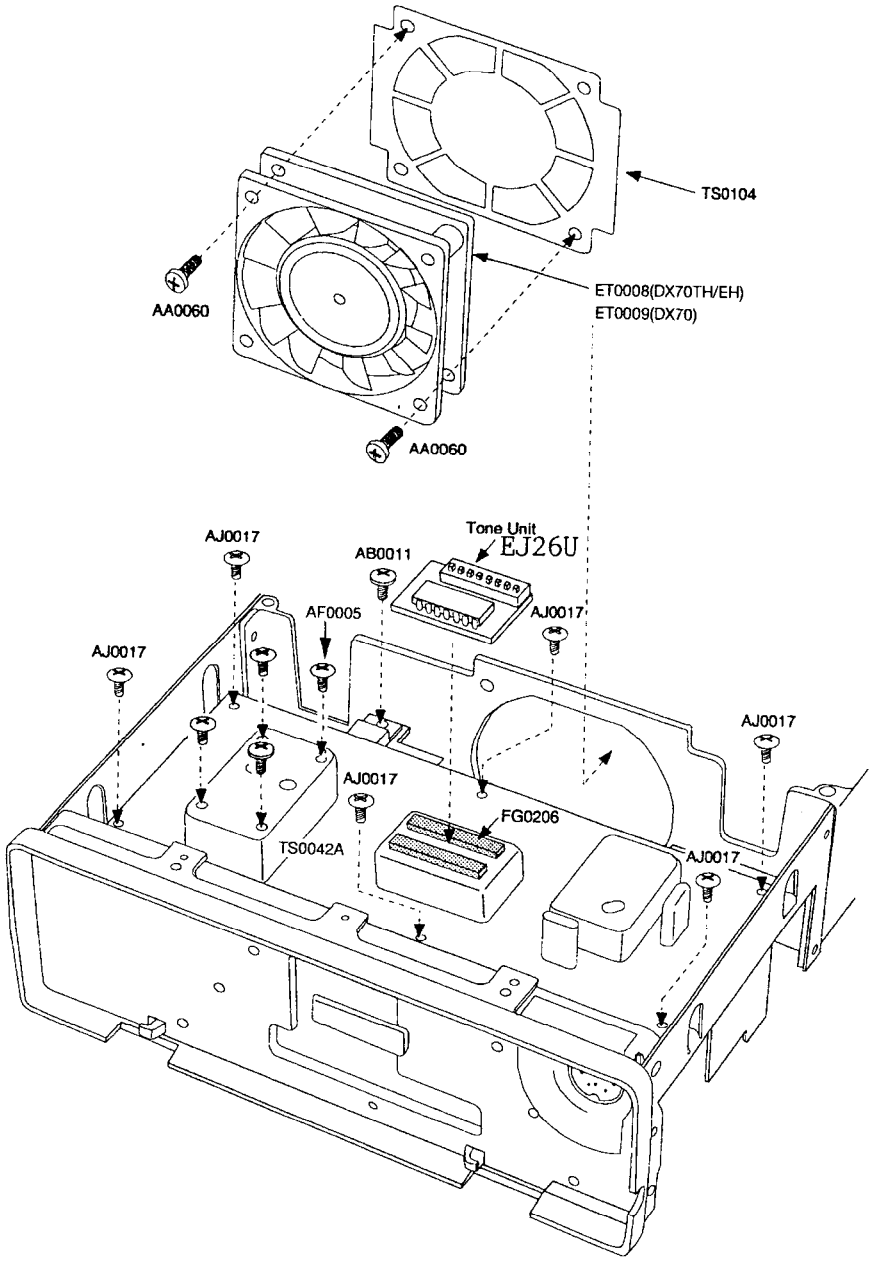


When removing the back cover, press the location ① to release the bump along the top edge, then press the location ② to release the bump along the side edge near the mic-hole, and open.

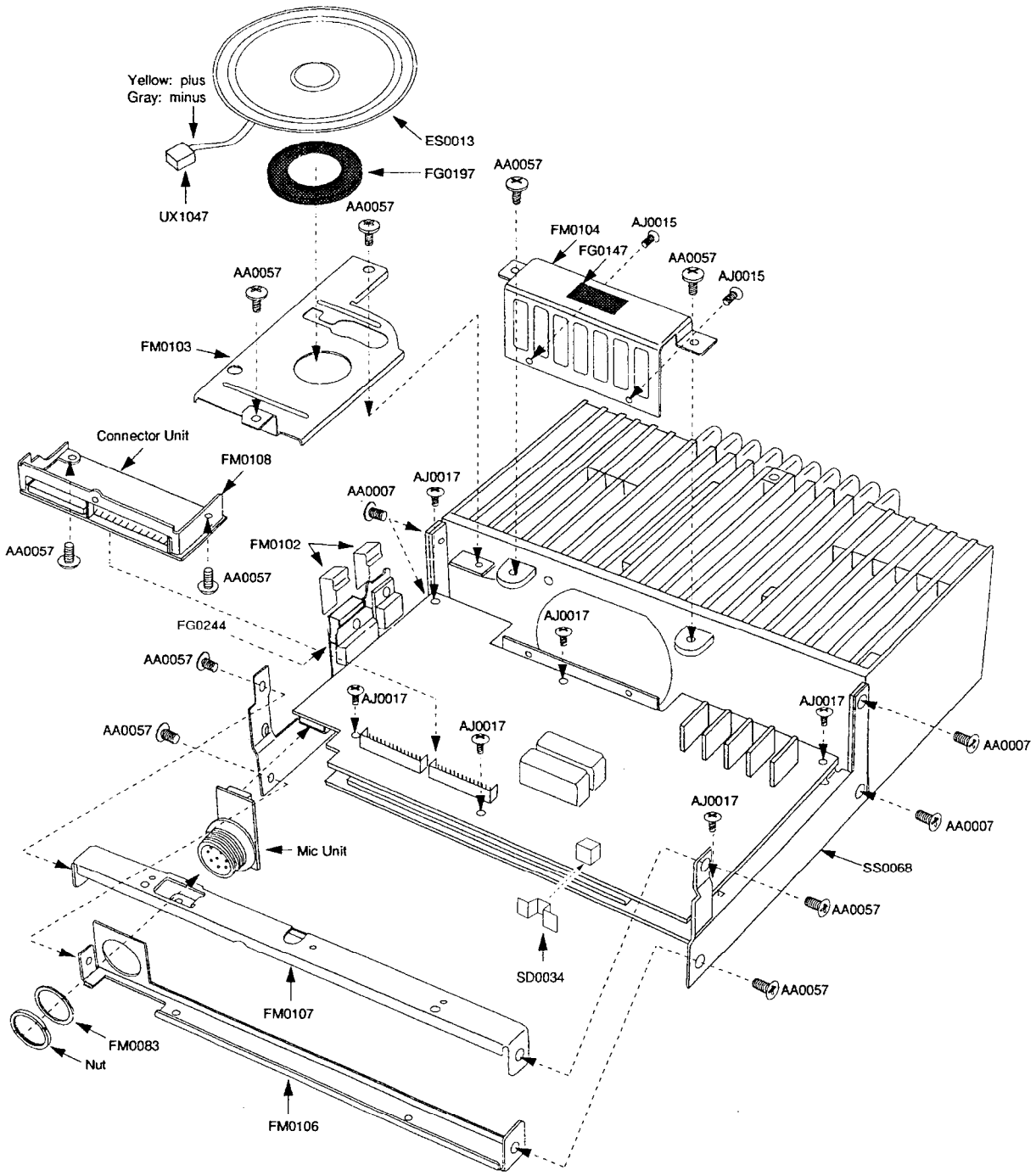
3) LCD Unit



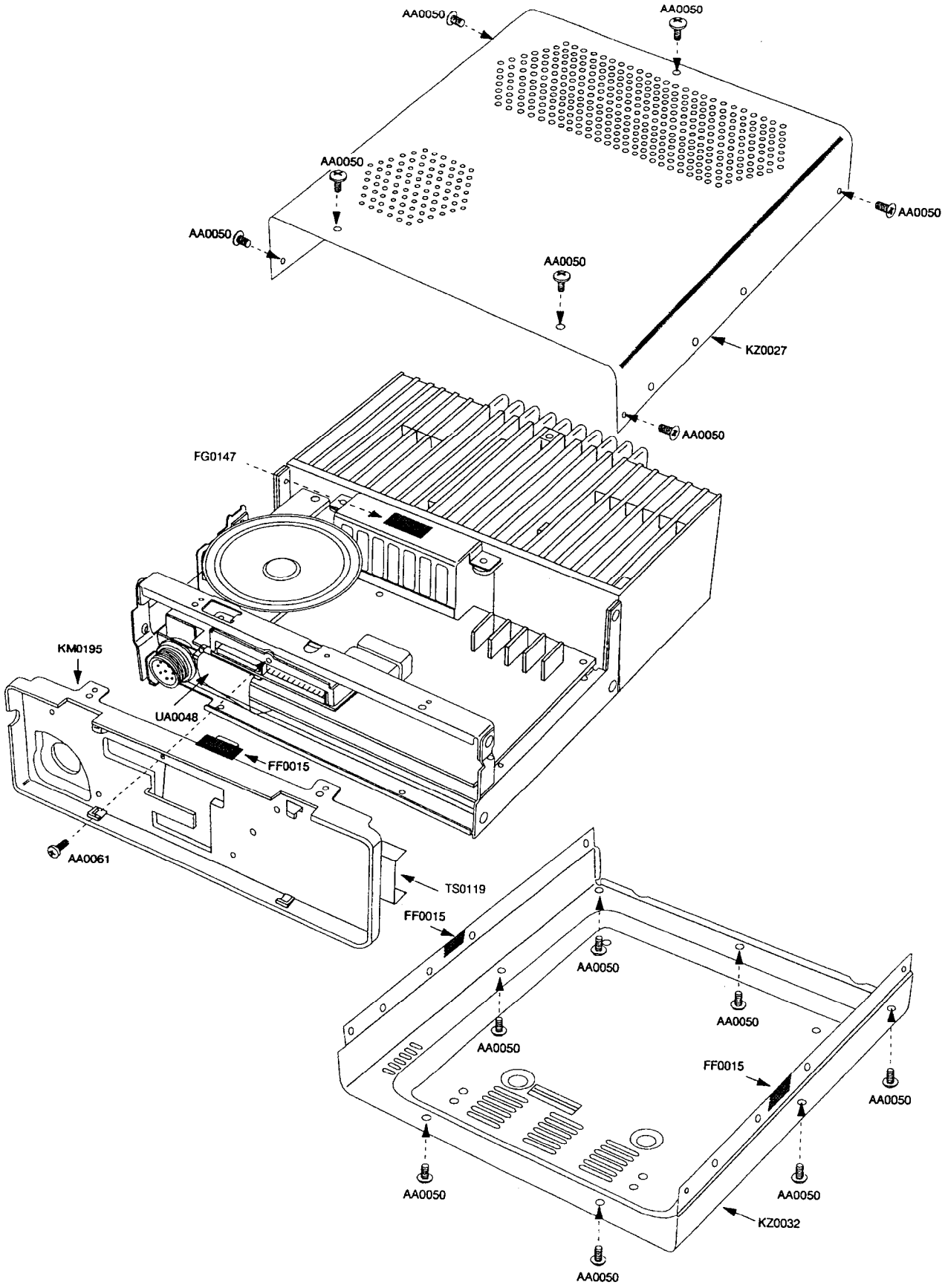
4) PLL Unit and Fan



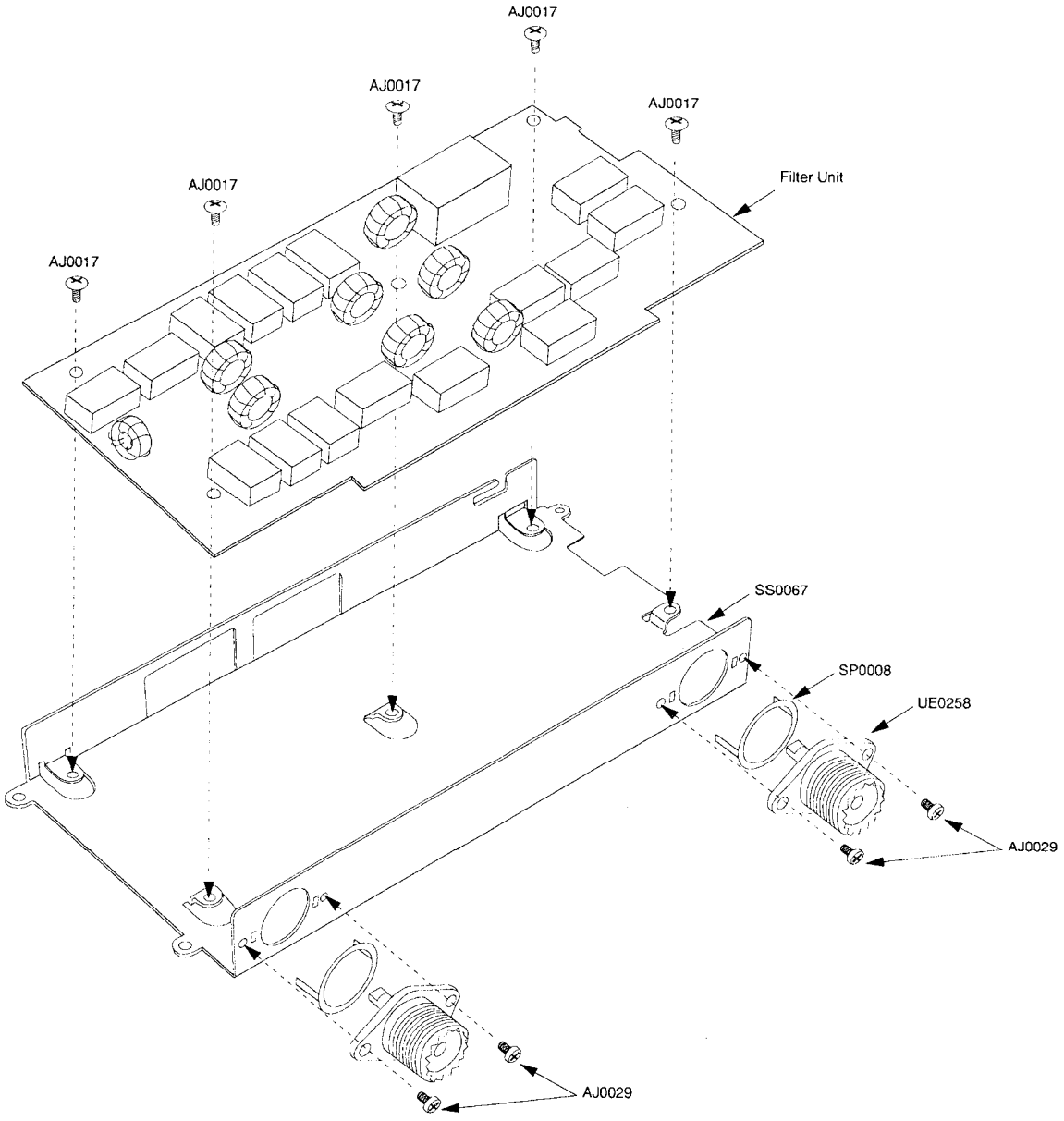
5) Top View 1



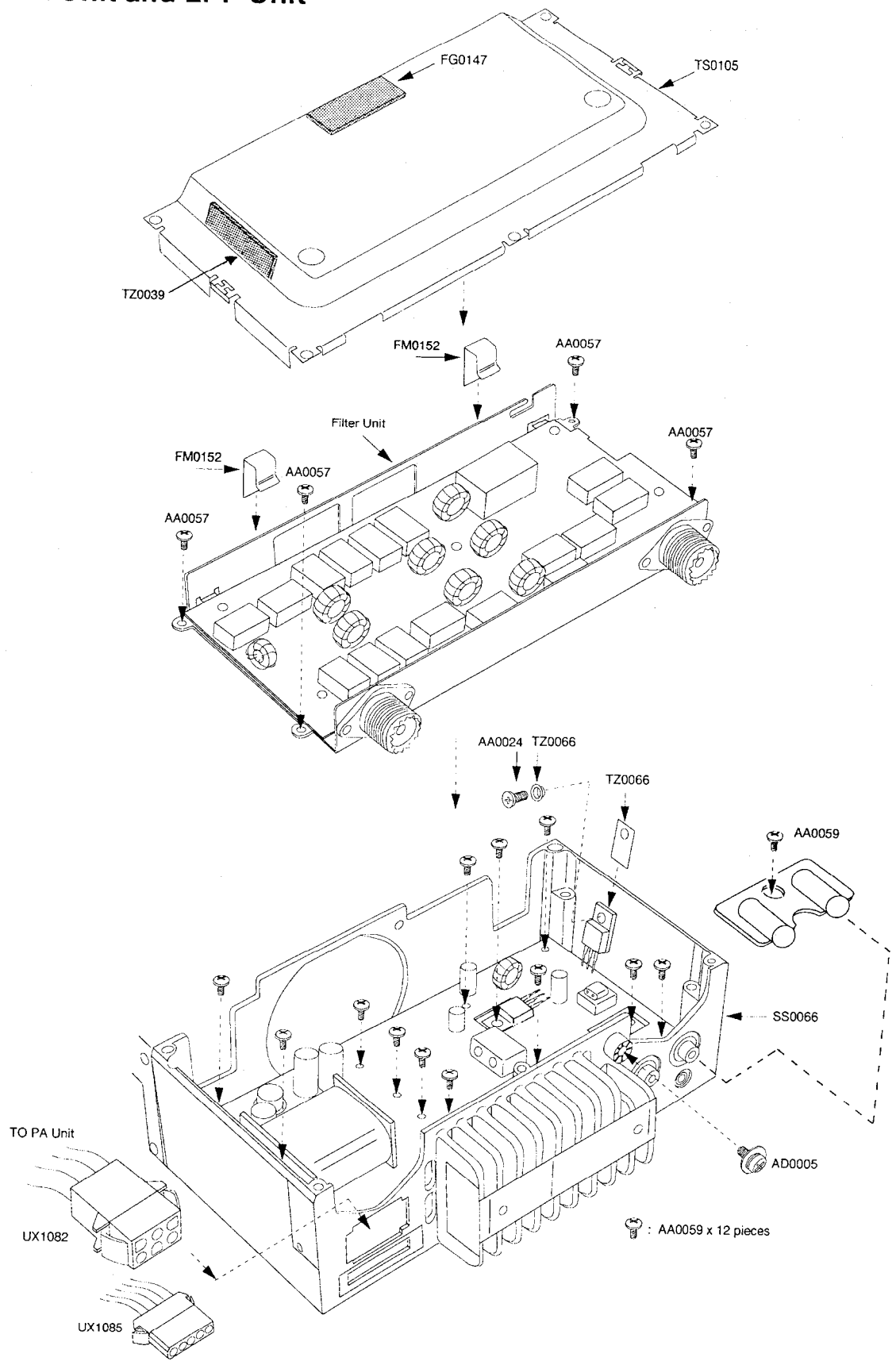
6) Top View 2


AA0050
AA0050
AA0050
AA0050
AA0050
AA0050
KZ0027
AA0050
FG0147
KM0195
UA0048
FF0015
AA0061
TS0119
FF0015
AA0050
AA0050
AA0050
FF0015
AA0050
AA0050
AA0050
KZ0032
AA0050

7) LPF Unit


AJ0017
AJ0017
AJ0017
AJ0017
AJ0017
Filter Unit
SS0067
SP0008
UE0258
AJ0029
AJ0029

8) PA Unit and LPF Unit



PARTS LIST BPF Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
BPF Unit				
BPF1				
C54	CU3059	Chip C.	C1608CH1H104ZT-A	
C55	CU3023	Chip C.	C1608CH1H101JT-A	
C56	CU3035	Chip C.	C1608JB1H102KT-A	
C57	CU3035	Chip C.	C1608JB1H102KT-A	
C58	CU3059	Chip C.	C1608JF1E104ZT-A	
C73	CU3025	Chip C.	C1608CH1H151JT-A	
C74	CU3034	Chip C.	C1608JB1H821KT-A	
C75	CU3034	Chip C.	C1608JB1H821KT-A	
C76	CU3056	Chip C.	C1608JF1E473ZT-A	
C77	CU3056	Chip C.	C1608JF1E473ZT-A	
D12	XD0066	Diode	RLS135TE11	
D13	XD0066	Diode	RLS135TE11	
D130	XD0066	Diode	RLS135TE11	
L22	QC0079	Chip L.	NL322522T-270J	
L23	QC0078	Chip L.	NL322522T-220J	
L33	QC0043	Chip L.	NL322522T-2R2J	
L34	QC0129	Chip L.	NL322522T-R39J-3	
L35	QC0129	Chip L.	NL322522T-R39J-3	
R39	RK4070	Chip R.	ERJ14YJ271H	
R40	RK3015	Chip R.	ERJ3GSYJ120V	
R41	RK3031	Chip R.	ERJ3GSYJ271V	
R47	RK3028	Chip R.	ERJ3GSYJ151V	
R48	RK4068	Chip R.	ERJ14YJ151H	
BPF2				
C59	CU3040	Chip C.	C1608JB1H272KT-A	
C60	CU3042	Chip C.	C1608JB1H392KT-A	
C61	CU3040	Chip C.	C1608JB1H272KT-A	
C62	CU3056	Chip C.	C1608JF1E473ZT-A	
C78	CU3024	Chip C.	C1608CH1H121JT-A	
C79	CU3033	Chip C.	C1608JB1H681KT-A	
C80	CU3033	Chip C.	C1608JB1H681KT-A	
C81	CU3056	Chip C.	C1608JF1E473ZT-A	
C82	CU3056	Chip C.	C1608JF1E473ZT-A	
D14	XD0066	Diode	RLS135TE11	
D15	XD0066	Diode	RLS135TE11	
D131	XD0066	Diode	RLS135TE11	
D132	XD0066	Diode	RLS135TE11	
L24	QC0045	Chip L.	NL322522T-3R3J	
L25	QC0045	Chip L.	NL322522T-3R3J	
L26	QC0497	Chip L.	LQH4N102J04	
L36	QC0041	Chip L.	NL322522T-1R5J	
L37	QC0127	Chip L.	NL322522T-R27J-3	
L38	QC0127	Chip L.	NL322522T-R27J-3	
R42	RK4069	Chip R.	ERJ14YJ221H	
R49	RK3028	Chip R.	ERJ3GSYJ151V	
R50	RK4068	Chip R.	ERJ14YJ151H	
BPF3				
C63	CU3034	Chip C.	C1608JB1H821KT-A	
C64	CU3037	Chip C.	C1608JB1H152KT-A	
C65	CU3037	Chip C.	C1608JB1H152KT-A	
C66	CU3056	Chip C.	C1608JF1E473ZT-A	
C67	CU3056	Chip C.	C1608JF1E473ZT-A	
C83	CU3022	Chip C.	C1608CH1H820JT-A	
C84	CU3030	Chip C.	C1608JB1H391KT-A	
C85	CU3030	Chip C.	C1608JB1H391KT-A	
C86	CU3056	Chip C.	C1608JF1E473ZT-A	
C87	CU3056	Chip C.	C1608JF1E473ZT-A	
D16	XD0066	Diode	RLS135TE11	
D17	XD0066	Diode	RLS135TE11	
D133	XD0066	Diode	RLS135TE11	
D134	XD0066	Diode	RLS135TE11	
L27	QC0046	Chip L.	NL322522T-3R9J	
L28	QC0043	Chip L.	NL322522T-2R2J	
L29	QC0043	Chip L.	NL322522T-2R2J	
L39	QC0039	Chip L.	NL322522T-1R0J	
L40	QC0126	Chip L.	NL322522T-R22J-3	
L41	QC0126	Chip L.	NL322522T-R22J-3	
R43	RK3028	Chip R.	ERJ3GSYJ151V	
R44	RK4068	Chip R.	ERJ14YJ151H	
R51	RK3028	Chip R.	ERJ3GSYJ151V	
R52	RK4068	Chip R.	ERJ14YJ151H	
BPF4				
C68	CU3030	Chip C.	C1608JB1H391KT-A	
C69	CU3034	Chip C.	C1608JB1H821KT-A	
C70	CU3034	Chip C.	C1608JB1H821KT-A	
C71	CU3056	Chip C.	C1608JF1E473ZT-A	
C72	CU3056	Chip C.	C1608JF1E473ZT-A	
C88	CU3092	Chip C.	C1608CH1H510JT-A	
C89	CU3029	Chip C.	C1608JB1H331KT-A	
C90	CU3029	Chip C.	C1608JB1H331KT-A	
C91	CU3056	Chip C.	C1608JF1E473ZT-A	
C92	CU3056	Chip C.	C1608JF1E473ZT-A	
D18	XD0066	Diode	RLS135TE11	
D19	XD0066	Diode	RLS135TE11	
D135	XD0066	Diode	RLS135TE11	
D136	XD0066	Diode	RLS135TE11	
L30	QC0043	Chip L.	NL322522T-2R2J	
L31	QC0039	Chip L.	NL322522T-1R0J	
L32	QC0039	Chip L.	NL322522T-1R0J	
L42	QC0133	Chip L.	NL322522T-R82J-3	
L43	QC0123	Chip L.	NL322522T-R12J-3	
L44	QC0123	Chip L.	NL322522T-R12J-3	
R45	RK3028	Chip R.	ERJ3GSYJ151V	
R46	RK4068	Chip R.	ERJ14YJ151H	
R53	RK3028	Chip R.	ERJ3GSYJ151V	
R54	RK4068	Chip R.	ERJ14YJ151H	
BPF5				
C93	CU3013	Chip C.	C1608CH1H150JT-A	
C94	CU3026	Chip C.	C1608CH1H181JT-A	
C95	CU3026	Chip C.	C1608CH1H181JT-A	
C96	CU3047	Chip C.	C1608JB1H103KT-A	
C97	CU3047	Chip C.	C1608JB1H103KT-A	
D27	XD0066	Diode	RLS135TE11	
D28	XD0066	Diode	RLS135TE11	
L45	QC0131	Chip L.	NL322522TR56J-3	
L46	QC0063	Chip L.	NL322522T-047J	
L47	QC0063	Chip L.	NL322522T-047J	
R55	RK3030	Chip R.	ERJ3GSYJ221V	
R56	RK4069	Chip R.	ERJ14YJ221H	

CONNECTOR Unit / FILTER Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
CONNECTOR Unit				
CN7	UE0266	Connector	S12B-EH	
CN8	UE0254	Connector	S13B-ZR	
CN14	UE0263	Connector	IMSA-9120S-13	
CN15	UE0263	Connector	IMSA-9120S-13	
FILTER Unit				
	YZ0042		Adhesion G-17 1g	
C501	CC5091	Ceramic C.	RCC11SL331J-L46AU	
C503	CC5077	Ceramic C.	RCC07SL820J	
C504	CC5085	Ceramic C.	RCC09SL181J-L46AU	
C505	CU3047	Chip C.	C1608JB1H103KT-A	
C507	CU0087	Chip C.	C2012CH1H221J	
C508	CU3047	Chip C.	C1608JB1H103KT-A	
C509	CU3047	Chip C.	C1608JB1H103KT-A	
C510	CC5056	Ceramic C.	RCC05SL080D-L46AE	
C511	CC5064	Ceramic C.	RCC05SL220J-L46AE	
C512	CU3029	Chip C.	C1608JB1H331KT-A	
C513	CC5069	Ceramic C.	RCC06SL470J-L46AU	
C514	CC5095	Ceramic C.	RCC12SL471J-L46AU	
C515	CC5097	Ceramic C.	HM15SJSL561J	
C516	CC5095	Ceramic C.	RCC12SL471J-L46AU	
C517	CC5077	Ceramic C.	RCC07SL820J-L46AU	
C518	CC5067	Ceramic C.	RCC05SL330J-L46AE	
C519	CU3031	Chip C.	C1608JB1H471KT-A	
C520	CU3031	Chip C.	C1608JB1H471KT-A	
C521	CU3019	Chip C.	C1608CH1H470JT-A	
C522	CU3017	Chip C.	C1608CH1H330JT-A	
C523	CC5087	Ceramic C.	RCC09SL221J-L46AU	
C524	CC5077	Ceramic C.	RCC07SL820J-L46AU	
C525	CU3047	Chip C.	C1608JB1H103KT-A	
C526	CU3047	Chip C.	C1608JB1H103KT-A	
C527	CU3047	Chip C.	C1608JB1H103KT-A	
C528	CU3027	Chip C.	C1608CH1H221JT-A	
C529	CC5097	Ceramic C.	HM15SJSL561J	
C530	CC5097	Ceramic C.	HM15SJSL561J	
C531	CC5099	Ceramic C.	HM15SJ-SL681J	
C532	CC5099	Ceramic C.	HM15SJ-SL681J	
C533	CU3047	Chip C.	C1608JB1H103KT-A	
C534	CU3047	Chip C.	C1608JB1H103KT-A	
C535	CU3047	Chip C.	C1608JB1H103KT-A	
C536	CU3047	Chip C.	C1608JB1H103KT-A	
C537	CU3047	Chip C.	C1608JB1H103KT-A	
C538	CC5085	Ceramic C.	RCC08SL181J-L46AU	
C539	CC5068	Ceramic C.	RCC06SL390J-L46AU	
C540	CU3047	Chip C.	C1608JB1H103KT-A	
C541	CC5091	Ceramic C.	RCC11SL331J-L46AU	
C542	CC5099	Ceramic C.	HM15SJ-SL681J	
C543	CC5093	Ceramic C.	RCC12SL391J-L46AU	
C544	CU3047	Chip C.	C1608JB1H103KT-A	
C545	CU3025	Chip C.	C1608CH1H151JT-A	
C546	CU3025	Chip C.	C1608CH1H151JT-A	
C547	CU3006	Chip C.	C1608CH1H050CT-A	
C548	CU3019	Chip C.	C1608CH1H470JT-A	
C549	CU3047	Chip C.	C1608JB1H103KT-A	
C550	CU3047	Chip C.	C1608JB1H103KT-A	
C551	CU3047	Chip C.	C1608JB1H103KT-A	
C552	CC5004	Ceramic C.	HM60SJSL680J	
C553	CC5062	Ceramic C.	RCC07SL180J-L46AE	
C554	CU3047	Chip C.	C1608JB1H103KT-A	
C555	CU3021	Chip C.	C1608CH1H680JT-A	
C556	CU3023	Chip C.	C1608CH1H101JT-A	
C557	CU3022	Chip C.	C1608CH1H820JT-A	
C558	CU3047	Chip C.	C1608JB1H103KT-A	
C559	CC5085	Ceramic C.	RCC09SL181J-L46AU	
C560	CC5091	Ceramic C.	RCC11SL331J-L46AU	
C561	CC5085	Ceramic C.	RCC09SL181J-L46AU	
C562	CU8042	Chip C.	C2012JB1C104KT-A	
C563	CU3047	Chip C.	C1608JB1H103KT-A	
C564	CU3047	Chip C.	C1608JB1H103KT-A	
C565	CC5059	Ceramic C.	RCC05SL120J-L46AE	
C566	CC5069	Ceramic C.	RCC06SL470J-L46AU	
C567	CU3047	Chip C.	C1608JB1H103KT-A	
C568	CU3047	Chip C.	C1608JB1H103KT-A	
C569	CU3047	Chip C.	C1608JB1H103KT-A	
C570	CU3047	Chip C.	C1608JB1H103KT-A	
C571	CC5087	Ceramic C.	RCC09SL221J-L46AU	
C572	CC5095	Ceramic C.	RCC12SL471J-L46AU	
C573	CC5079	Ceramic C.	RCC07SL101J-L46AU	
C574	CC5081	Ceramic C.	RCC07SL121J-L46AU	
C575	CU3047	Chip C.	C1608JB1H103KT-A	
C576	CC5060	Ceramic C.	RCC05SL150J-L46AE	
C577	CC5067	Ceramic C.	RCC05SL330J-L46AE	
C578	CU3047	Chip C.	C1608JB1H103KT-A	
C579	CU3047	Chip C.	C1608JB1H103KT-A	
C580	CC5068	Ceramic C.	RCC06SL390J-L46AU	
C581	CC5083	Ceramic C.	RCC08SL151J-L46AU	
C582	CC5004	Ceramic C.	HM60SJSL680J	
C583	CU3047	Chip C.	C1608JB1H103KT-A	
C584	CC5095	Ceramic C.	RCC12SL471J-L46AU	
C585	CC5097	Ceramic C.	HM15SJSL561J	
C586	CC5097	Ceramic C.	HM15SJSL561J	
C587	CC5073	Ceramic C.	RCC06SL560J-L46AU	
CN501	RD0108	Connector	0 ohm Jumper	
CN502	UE0136	Connector	TMP-J02X-A1	
CN503	RD0108	Connector	0 ohm Jumper	
CN504	UE0071	Connector	PI22A05M	
CN505	UE0070	Connector	PI22A04M	
CN506	UE0235	Connector	00-6208-000-112-001	
CN507	UE0043	Connector	PI22A02M	
D501	XD0273	Diode	RLS-93TE-11	
D502	XD0273	Diode	RLS-93TE-11	
D503	XD0273	Diode	RLS-93TE-11	
D504	XD0127	Diode	MA704WA	
D505	XD0273	Diode	RLS-93TE-11	
D506	XD0254	Diode	1SS355 TE-17	
D507	XD0273	Diode	RLS-93TE-11	
D508	XD0254	Diode	1SS355 TE-17	
D509	XD0273	Diode	RLS-93TE-11	
D510	XD0273	Diode	RLS-93TE-11	
D511	XD0273	Diode	RLS-93TE-11	
D512	XD0273	Diode	RLS-93TE-11	
D513	XD0273	Diode	RLS-93TE-11	
D514	XD0273	Diode	RLS-93TE-11	
D515	XD0254	Diode	1SS355 TE-17	
L501	RD1013	Jumper	0 ohm Jumper	
L502	QR0022	Coil	Troidal Core QR0022	
L503	QR0007	Coil	Troidal Core QR0007	
L504	QR0004	Coil	Troidal Core QR0004	
L505	QC0087	Chip L.	NL322522T-121J	
L506	QR0004	Coil	Troidal Core QR0004	

FILTER Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
L507	QKA35H	Coil	COIL MR10.0 3.5T 1.0	
L508	QKA25H	Coil	COIL MR10.0 2.5T 1.0	
L509	QR0006	Coil	Troidal Core QR0006	
L510	QR0007	Coil	Troidal Core QR0007	
L511	QC0044	Chip L.	NL322522T-2R7J	
L512	QC0087	Chip L.	NL322522T-121J	
L513	QC0124	Chip L.	NL322522T-R15J-3	
L514	QR0017	Coil	QR0017	
L516	QR0008	Coil	Troidal Core QR0008	
L517	QR0009A	Coil	Troidal Core QR0009A	
L518	QC0124	Chip L.	NL322522T-R15J-3	
L519	QC0087	Chip L.	NL322522T-121J	
L520	QC0127	Chip L.	NL322522T-R27J-3	
L521	QC0067	Chip L.	NL322522TR10J	
L522	QC0124	Chip L.	NL322522T-R15J-3	
L523	QR0010	Coil	Troidal Core QR0010	
L524	QR0011	Coil	Troidal Core QR0011	
L525	QC0048	Chip L.	NL322522T-100J	
L526	QKA75H	Coil	COIL MR10.0 7.5T 1.0	
L527	QKA65H	Coil	COIL MR10.0 6.5T 1.0	
L528	QC0048	Chip L.	NL322522T-100J	
L529	QB0037	Inductor	ZBF253D-00	
L530	QKA55H	Coil	COIL MR10.0 5.5T 1.0	
L531	QKA45H	Coil	COIL MR10.0 4.5T 1.0	
L532	QC0048	Chip L.	NL322522T-100J	
L533	QKA45G	Coil	COIL MR5.0 4.0T 0.6	
Q501	XU0078	Transistor	UN521L-TX	
Q502	XE0026	FET	2SK2171-4	
Q503	XU0078	Transistor	UN521L-TX	
Q504	XT0067	Transistor	FMA4	
Q505	XU0116	Transistor	DTA123EUT106	
Q506	XT0067	Transistor	FMA4	
Q507	XT0067	Transistor	FMA4	
Q508	XU0116	Transistor	DTA123EUT106	
R501	RK0065	Chip R.	ERJ6GEYJ683V	
R502	RK4054	Chip R.	ERJ14YJ560V	
R503	RK1020	Chip R.	ERJ8GEYJ151V	
R505	RD1013	Jumper	0 ohm Jumper	
R506	RK3050	Chip R.	ERJ3GSYJ103V	
R507	RK0065	Chip R.	ERJ6GEYJ683V	
R508	RK0005	Chip R.	ERJ6GEYJ220V	
R509	RK0005	Chip R.	ERJ6GEYJ220V	
R510	RK3050	Chip R.	ERJ3GSYJ103V	
R511	RK3050	Chip R.	ERJ3GSYJ103V	
R512	RK3042	Chip R.	ERJ3GSYJ222V	
R513	RK3052	Chip R.	ERJ3GSYJ153V	
R514	RK3062	Chip R.	ERJ3GSYJ104V	
R515	RK3062	Chip R.	ERJ3GSYJ104V	
R516	RK3052	Chip R.	ERJ3GSYJ153V	
R517	RK3042	Chip R.	ERJ3GSYJ222V	
R518	RK3050	Chip R.	ERJ3GSYJ103V	
R519	RK3050	Chip R.	ERJ3GSYJ103V	
R520	RK3042	Chip R.	ERJ3GSYJ222V	
R521	RK3026	Chip R.	ERJ3GSYJ101V	
R522	RK0005	Chip R.	ERJ6GEYJ220V	
R523	RK3038	Chip R.	ERJ3GSYJ102V	
R524	RK3038	Chip R.	ERJ3GSYJ102V	
R525	RK3020	Chip R.	ERJ3GSYJ330V	
R526	RK3038	Chip R.	ERJ3GSYJ102V	
R527	RK3038	Chip R.	ERJ3GSYJ102V	

Ref. No.	Parts No.	Description	Parts Name	Ver.
R528	RK3038	Chip R.	ERJ3GSYJ102V	
R529	RK4064	Chip R.	ERJ14YJ471V	
R530	RK3020	Chip R.	ERJ3GSYJ330V	
R531	RK3038	Chip R.	ERJ3GSYJ102V	
R532	RK1013	Chip R.	ERJ8GEYJ560V	
R533	RK0005	Chip R.	ERJ6GEYJ220V	
RL501	UL0007	Relay	ATQ203	
RL502	UL0007	Relay	ATQ203	
RL503	UL0007	Relay	ATQ203	
RL504	UL0007	Relay	ATQ203	
RL505	UL0007	Relay	ATQ203	
RL506	UL0007	Relay	ATQ203	
RL507	UL0007	Relay	ATQ203	
RL508	UL0007	Relay	ATQ203	
RL509	UL0007	Relay	ATQ203	
RL510	UL0007	Relay	ATQ203	
RL511	UL0007	Relay	ATQ203	
RL512	UL0007	Relay	ATQ203	
RL513	UL0007	Relay	ATQ203	
RL514	UL0007	Relay	ATQ203	
RL515	UL0007	Relay	ATQ203	
RL516	UL0007	Relay	ATQ203	
RL517	UL0015	Relay	SVR-12	
SA501	EU0001	Surge absorber	DSA-301LA	
TC501	CT0035	Trimmer	ECV1ZW20X53T	
W506	UX1079	Wire	Wire FILTER-MAIN 2	
W507	UA0050	Power cord	FFC SMCD-12X95-BD	
W508	UX1080	Wire	Wire FILTER-MAIN 3	

FRONT Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
FRONT Unit				
	TT1002		Tube 1.0 1mm	
	TL0015A		LCD Filter	
	FM0105C		LCD Holder	
	EL0027		LCD DX70	
	TT1002		Tube 1.0 1mm	
	UP0287D		FRONT Circuit Board D	Later
	UP0287C		FRONT Circuit Board C	Early
	TT1002		Tube 1.0 1mm	
	DG0023		LCD Light	
	TL0014		LCD Filter	
	FG0192		LCD Rubber Connector	
	FG0192		LCD Rubber Connector	
	FG0192		LCD Rubber Connector	
	FG0192		LCD Rubber Connector	
	TZ0028		VOL Spacer	
C1002	CU3035	Chip C.	C1608JB1H102KT-A	
C1003	CU3101	Chip C.	C1608JB1H473KT-A	
C1004	CU3101	Chip C.	C1608JB1H473KT-A	
C1005	CU3039	Chip C.	C1608JB1H222KT-A	
C1006	CU3035	Chip C.	C1608JB1H102KT-A	
C1007	CU3035	Chip C.	C1608JB1H102KT-A	
C1008	CU3039	Chip C.	C1608JB1H222KT-A	
C1009	CU3035	Chip C.	C1608JB1H102KT-A	
C1010	CS0230	Chip Tantal	TMCMA1E105MTR	
C1011	CU3059	Chip C.	C1608JF1E104ZT-A	
C1014	CU3020	Chip C.	C1608CH1H560JT-A	
C1015	CU3020	Chip C.	C1608CH1H560JT-A	
C1016	CU3059	Chip C.	C1608JF1E104ZT-A	
C1017	CE0351	Electrolytic C.	16MV220HC	
C1018	CU3047	Chip C.	C1608JB1H103KT-A	
C1019	CE0315	Electrolytic C.	ECEV1CA470P	
C1020	CU3035	Chip C.	C1608JB1H102KT-A	
C1021	CS0061	Chip Tantal	TMCSA1V224MTR	
C1022	CE0375	Electrolytic C.	16CV220BS	
C1023	CU3035	Chip C.	C1608JB1H102KT-A	
C1024	CE0315	Electrolytic C.	ECEV1CA470P	
C1025	CS0230	Chip Tantal	TMCMA1E105MTR	
C1026	CU3047	Chip C.	C1608JB1H103KT-A	
C1027	CU3043	Chip C.	C1608JB1H472KT-A	
C1028	CE0315	Electrolytic C.	ECEV1CA470P	
C1029	CU3035	Chip C.	C1608JB1H102KT-A	
C1030	CU3059	Chip C.	C1608JF1E104ZT-A	
C1031	CU3047	Chip C.	C1608JB1H103KT-A	
C1032	CU3047	Chip C.	C1608JB1H103KT-A	
C1033	CU3047	Chip C.	C1608JB1H103KT-A	
C1034	CU3047	Chip C.	C1608JB1H103KT-A	
C1035	CU3047	Chip C.	C1608JB1H103KT-A	
C1036	CU3035	Chip C.	C1608JB1H102KT-A	
C1037	CU3047	Chip C.	C1608JB1H103KT-A	
C1038	CU3047	Chip C.	C1608JB1H103KT-A	
C1039	CU3047	Chip C.	C1608JB1H103KT-A	
C1040	CU3035	Chip C.	C1608JB1H102KT-A	
C1041	CU3035	Chip C.	C1608JB1H102KT-A	
C1042	CU3027	Chip C.	C1608CH1H221JT-A	
C1043	CU3027	Chip C.	C1608CH1H221JT-A	
C1044	CU3035	Chip C.	C1608JB1H102KT-A	
C1045	CU3032	Chip C.	C1608JB1H561KT-A	
CN1001	UE0306	Connector	205082301008100(8P)	Later
CN1001	UE0222	Connector	5237-0890	Early
CN1002	UE0265	Connector	B12B-EH	
CN1003	UE0174	Connector	B13B-ZR	

Ref. No.	Parts No.	Description	Parts Name	Ver.
CN1004	UE0165	Connector	B4B-ZR	
D1002	XL0043	LED	CL-170R-CD-T	
D1003	XL0042	LED	CL-170G-CD-T	
D1004	XD0230	Diode	DAN202U T106	
D1005	XD0230	Diode	DAN202U T106	
D1007	XD0230	Diode	DAN202U T106	
D1008	XD0254	Diode	1SS355 TE-17	
D1009	XD0230	Diode	DAN202U T106	
D1010	XD0230	Diode	DAN202U T106	
D1011	XD0230	Diode	DAN202U T106	
D1016	XD0254	Diode	1SS355 TE-17	
D1017	XD0254	Diode	1SS355 TE-17	
D1018	XD0160	Diode	DTZ4.3B TT11	
D1019	XD0254	Diode	1SS355 TE-17	
D1020	XD0230	Diode	DAN202U T106	
D1021	XD0230	Diode	DAN202U T106	
D1022	XD0254	Diode	1SS355 TE-17	
D1024	XD0230	Diode	DAN202U T106	
D1025	XD0230	Diode	DAN202U T106	
D1026	XD0230	Diode	DAN202U T106	
D1027	XD0230	Diode	DAN202U T106	
D1028	XD0230	Diode	DAN202U T106	
D1029	XD0230	Diode	DAN202U T106	
D1030	XD0230	Diode	DAN202U T106	
IC1001	XA0296	IC	MC14071BFL2	
IC1002	XA0575	IC	TC4030BF(EL)	
IC1003	XA0299	IC	BU4001BF-T1	
IC1004	XA0295	IC	MC14024BF	
IC1005	XA0351	IC	24LC16B	
IC1006	XA0393A	IC	CPU DX-70	
IC1007	XA0338	IC	L78LR05B-TL/TR	
IC1008	XA0075	IC	NJM78L08UA-TE1	
IC1009	XA0303	IC	LC75821W	
L1001	QC0489	Chip L.	LQH4N221J04	
PL1001	EP0009	Lamp	BQ031-20805A	
PL1002	EP0009	Lamp	BQ031-20805A	
PL1003	EP0009	Lamp	BQ031-20805A	
PL1004	EP0009	Lamp	BQ031-20805A	
Q1001	XT0094	Transistor	2SA1576T106R	
Q1002	XU0061	Transistor	UN5211-TX	
Q1003	XT0061	Transistor	2SB1132T100Q	
Q1004	XT0095	Transistor	2SC4081T106R	
Q1005	XT0095	Transistor	2SC4081T106R	
Q1006	XU0061	Transistor	UN5211-TX	
Q1009	XU0061	Transistor	UN5211-TX	
Q1010	XU0061	Transistor	UN5211-TX	
Q1011	XU0061	Transistor	UN5211-TX	
R1005	RK3034	Chip R.	ERJ3GSYJ471V	
R1006	RK3034	Chip R.	ERJ3GSYJ471V	
R1007	RK3034	Chip R.	ERJ3GSYJ471V	
R1008	RK3058	Chip R.	ERJ3GSYJ473V	
R1009	RK3058	Chip R.	ERJ3GSYJ473V	
R1010	RK3062	Chip R.	ERJ3GSYJ104V	
R1011	RK3066	Chip R.	ERJ3GSYJ224V	
R1012	RK3062	Chip R.	ERJ3GSYJ104V	
R1013	RK3074	Chip R.	ERJ3GSYJ105V	
R1014	RK3052	Chip R.	ERJ3GSYJ153V	
R1015	RK3054	Chip R.	ERJ3GSYJ223V	

FRONT Unit / JACK Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
R1016	RK3062	Chip R.	ERJ3GSYJ104V	
R1017	RK3066	Chip R.	ERJ3GSYJ224V	
R1018	RK3062	Chip R.	ERJ3GSYJ104V	
R1019	RK3074	Chip R.	ERJ3GSYJ105V	
R1020	RK3052	Chip R.	ERJ3GSYJ153V	
R1021	RK3050	Chip R.	ERJ3GSYJ103V	
R1022	RK3054	Chip R.	ERJ3GSYJ223V	
R1023	RK3074	Chip R.	ERJ3GSYJ105V	
R1024	RK3050	Chip R.	ERJ3GSYJ103V	
R1025	RK3050	Chip R.	ERJ3GSYJ103V	
R1026	RK3058	Chip R.	ERJ3GSYJ473V	
R1027	RK3050	Chip R.	ERJ3GSYJ103V	
R1028	RK3050	Chip R.	ERJ3GSYJ103V	
R1029	RK3034	Chip R.	ERJ3GSYJ471V	
R1030	RK3034	Chip R.	ERJ3GSYJ471V	
R1031	RK0001	Chip R.	ERJ6GEYJ100V	
R1032	RK3046	Chip R.	ERJ3GSYJ472V	
R1033	RK3030	Chip R.	ERJ3GSYJ221V	
R1035	RK3050	Chip R.	ERJ3GSYJ103V	
R1036	RK3050	Chip R.	ERJ3GSYJ103V	
R1037	RK3050	Chip R.	ERJ3GSYJ103V	
R1038	RK3050	Chip R.	ERJ3GSYJ103V	
R1039	RK3050	Chip R.	ERJ3GSYJ103V	
R1040	RK3050	Chip R.	ERJ3GSYJ103V	
R1041	RK3050	Chip R.	ERJ3GSYJ103V	
R1042	RK3044	Chip R.	ERJ3GSYJ332V	
R1043	RK3058	Chip R.	ERJ3GSYJ473V	
R1044	RK3058	Chip R.	ERJ3GSYJ473V	
R1045	RK3038	Chip R.	ERJ3GSYJ102V	
R1046	RK3050	Chip R.	ERJ3GSYJ103V	
R1047	RK3050	Chip R.	ERJ3GSYJ103V	
R1048	RK3050	Chip R.	ERJ3GSYJ103V	
R1049	RK3050	Chip R.	ERJ3GSYJ103V	
R1050	RK3050	Chip R.	ERJ3GSYJ103V	
R1051	RK3038	Chip R.	ERJ3GSYJ102V	
R1052	RK3047	Chip R.	ERJ3GSYJ562V	
R1053	RK3046	Chip R.	ERJ3GSYJ472V	
R1054	RK3050	Chip R.	ERJ3GSYJ103V	
R1055	RK3038	Chip R.	ERJ3GSYJ102V	
R1056	RK3034	Chip R.	ERJ3GSYJ471V	
R1057	RK3034	Chip R.	ERJ3GSYJ471V	
R1058	RK3038	Chip R.	ERJ3GSYJ102V	
R1059	RK3034	Chip R.	ERJ3GSYJ471V	
R1060	RK3026	Chip R.	ERJ3GSYJ101V	
R1061	RK3030	Chip R.	ERJ3GSYJ221V	
R1062	RK3042	Chip R.	ERJ3GSYJ222V	
R1063	RK3030	Chip R.	ERJ3GSYJ221V	
R1064	RK3050	Chip R.	ERJ3GSYJ103V	
R1065	RK3038	Chip R.	ERJ3GSYJ102V	
R1066	RK3034	Chip R.	ERJ3GSYJ471V	
R1067	RK3034	Chip R.	ERJ3GSYJ471V	
R1068	RK3034	Chip R.	ERJ3GSYJ471V	
R1069	RK3034	Chip R.	ERJ3GSYJ471V	
R1070	RK3034	Chip R.	ERJ3GSYJ471V	
R1071	RK3034	Chip R.	ERJ3GSYJ471V	
R1072	RK3034	Chip R.	ERJ3GSYJ471V	
R1073	RK3034	Chip R.	ERJ3GSYJ471V	
R1074	RK3034	Chip R.	ERJ3GSYJ471V	
R1075	RK3034	Chip R.	ERJ3GSYJ471V	
R1076	RK3030	Chip R.	ERJ3GSYJ221V	
R1077	RK3058	Chip R.	ERJ3GSYJ473V	
R1079	RK3074	Chip R.	ERJ3GSYJ105V	

Ref. No.	Parts No.	Description	Parts Name	Ver.
R1080	RK3001	Chip R.	ERJ3GSY0R00V	
R1081	RK3001	Chip C.	ERJ3GSY0R00V	TH
R1083	RK3001	Chip R.	ERJ3GSY0R00V	
R1087	RK3001	Chip R.	ERJ3GSY0R00V	
R1093	RK3001	Chip R.	ERJ3GSY0R00V	
R1094	RK3062	Chip R.	ERJ3GSYJ104V	
R1095	RK3062	Chip R.	ERJ3GSYJ104V	
R1096	RK3062	Chip R.	ERJ3GSYJ104V	
R1097	RK3062	Chip R.	ERJ3GSYJ104V	
R1098	RK3050	Chip R.	ERJ3GSYJ103V	
R1099	RK0001	Chip R.	ERJ6GEYJ100V	
S1001	UR0009	Switch	EC11B15204	
S1002	UR0010	Switch	EC24B50B0	
SW1001	UU0020	Switch	JPM1110-0101	
SW1002	UU0020	Switch	JPM1110-0101	
SW1003	UU0020	Switch	JPM1110-0101	
SW1004	UU0020	Switch	JPM1110-0101	
SW1005	UU0020	Switch	JPM1110-0101	
SW1006	UU0020	Switch	JPM1110-0101	
SW1007	UU0020	Switch	JPM1110-0101	
SW1008	UU0020	Switch	JPM1110-0101	
SW1009	UU0020	Switch	JPM1110-0101	
SW1010	UU0020	Switch	JPM1110-0101	
SW1011	UU0020	Switch	JPM1110-0101	
SW1012	UU0020	Switch	JPM1110-0101	
SW1013	UU0020	Switch	JPM1110-0101	
SW1014	UU0020	Switch	JPM1110-0101	
W1001	RD0108	Jumper	0 ohm Jumper	
W1002	RD0108	Jumper	0 ohm Jumper	
W1003	RD0108	Jumper	0 ohm Jumper	
X1001	XB0019	Ctystal	CSACS8.000MT	

JACK Unit

C691	CU3047	Chip C.	C1608JB1H103KT-A	
C692	CU3047	Chip C.	C1608JB1H103KT-A	
C693	CU3047	Chip C.	C1608JB1H103KT-A	
C694	CU3047	Chip C.	C1608JB1H103KT-A	
J691	UJ0031	Jack	HSJ1332-01-050	
J692	UJ0032	Jack	HSJ1332-01-040	
R691	RK3001	Chip R.	ERJ3GSY0R00V	
W691	UX1086	Wire	Wire JACK-MAIN 1	

MAIN Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
MAIN Unit				
	SD0034		Earth lug	
	SD0055		Earth lug	
	TZ0049		UM-1	
	TZ0049		UM-1	
	UP0288D		MAIN Circuit Board C	
	TZ0049		UM-1	
C1	CU3109	Chip C.	C1608CH1H110JT-A	
C2	CU3109	Chip C.	C1608CH1H110JT-A	
C3	CU3056	Chip C.	C1608JF1E473ZT-A	
C5	CU3035	Chip C.	C1608JB1H102KT-A	
C7	CU3056	Chip C.	C1608JF1E473ZT-A	
C8	CU3056	Chip C.	C1608JF1E473ZT-A	
C9	CU3059	Chip C.	C1608JF1E104ZT-A	
C10	CU3028	Chip C.	C1608CH1H271JT-A	
C11	CU3047	Chip C.	C1608JB1H103KT-A	
C12	CU3024	Chip C.	C1608CH1H121JT-A	
C13	CU3011	Chip C.	C1608CH1H100CT-A	
C14	CU3018	Chip C.	C1608CH1H390JT-A	
C15	CU3027	Chip C.	C1608CH1H221JT-A	
C16	CU3028	Chip C.	C1608CH1H271JT-A	
C17	CU3013	Chip C.	C1608CH1H150JT-A	
C18	CU3047	Chip C.	C1608JB1H103KT-A	
C19	CU3025	Chip C.	C1608CH1H151JT-A	
C20	CU3056	Chip C.	C1608JF1E473ZT-A	
C21	CU3056	Chip C.	C1608JF1E473ZT-A	
C22	CU3056	Chip C.	C1608JF1E473ZT-A	
C23	CU3056	Chip C.	C1608JF1E473ZT-A	
C24	CU3007	Chip C.	C1608CH1H060CT-A	
C25	CU3047	Chip C.	C1608JB1H103KT-A	
C26	CU3012	Chip C.	C1608CH1H120JT-A	
C27	CU3047	Chip C.	C1608JB1H103KT-A	
C28	CU3043	Chip C.	C1608JB1H472KT-A	
C29	CU3009	Chip C.	C1608CH1H080CT-A	
C30	CU3047	Chip C.	C1608JB1H103KT-A	
C31	CU3047	Chip C.	C1608JB1H103KT-A	
C32	CU3012	Chip C.	C1608CH1H120JT-A	
C33	CU3012	Chip C.	C1608CH1H120JT-A	
C34	CU3003	Chip C.	C1608CH1H020CT-A	
C35	CU3035	Chip C.	C1608JB1H102KT-A	
C36	CU3045	Chip C.	C1608JB1H682KT-A	
C37	CU3006	Chip C.	C1608CH1H050CT-A	
C38	CU3043	Chip C.	C1608JB1H472KT-A	
C39	CS0232	Chip Tantal	TMCMA1V474MTR	
C40	CU3056	Chip C.	C1608JF1E473ZT-A	
C41	CU3031	Chip C.	C1608JB1H471KT-A	
C42	CU3056	Chip C.	C1608JF1E473ZT-A	
C43	CU3056	Chip C.	C1608JF1E473ZT-A	
C44	CU3047	Chip C.	C1608JB1H103KT-A	
C45	CU3047	Chip C.	C1608JB1H103KT-A	
C46	CU3056	Chip C.	C1608JF1E473ZT-A	
C47	CU3038	Chip C.	C1608JB1H182KT-A	
C48	CU3037	Chip C.	C1608JB1H152KT-A	
C49	CU3038	Chip C.	C1608JB1H182KT-A	
C50	CU3041	Chip C.	C1608JB1H332KT-A	
C51	CU8042	Chip C.	C2012JB1C104KT-A	
C52	CU3051	Chip C.	C1608JB1E223KT-A	
C53	CU3056	Chip C.	C1608JF1E473ZT-A	
C98	CU3059	Chip C.	C1608JF1E104ZT-A	
C99	CU3059	Chip C.	C1608JF1E104ZT-A	
C100	CU3059	Chip C.	C1608JF1E104ZT-A	
C101	CU3018	Chip C.	C1608CH1H390JT-A	
C102	CU3059	Chip C.	C1608JF1E104ZT-A	

Ref. No.	Parts No.	Description	Parts Name	Ver.
C103	CU3013	Chip C.	C1608CH1H150JT-A	
C104	CU3021	Chip C.	C1608CH1H680JT-A	
C105	CU3017	Chip C.	C1608CH1H330JT-A	
C106	CU3023	Chip C.	C1608CH1H101JT-A	
C107	CU3005	Chip C.	C1608CH1H040CT-A	
C108	CU3035	Chip C.	C1608JB1H102KT-A	
C109	CU3059	Chip C.	C1608JF1E104ZT-A	
C110	CU3059	Chip C.	C1608JF1E104ZT-A	
C111	CU3059	Chip C.	C1608JF1E104ZT-A	
C112	CU3011	Chip C.	C1608CH1H100CT-A	
C113	CU3056	Chip C.	C1608JF1E473ZT-A	
C114	CU3011	Chip C.	C1608CH1H100CT-A	
C115	CU3007	Chip C.	C1608CH1H060CT-A	
C116	CU3059	Chip C.	C1608JF1E104ZT-A	
C117	CU3047	Chip C.	C1608JB1H103KT-A	
C118	CU3047	Chip C.	C1608JB1H103KT-A	
C119	CU3007	Chip C.	C1608CH1H060CT-A	
C120	CU3047	Chip C.	C1608JB1H103KT-A	
C121	CU3035	Chip C.	C1608JB1H102KT-A	
C122	CU3047	Chip C.	C1608JB1H103KT-A	
C123	CU3035	Chip C.	C1608JB1H102KT-A	
C124	CU3018	Chip C.	C1608CH1H390JT-A	
C125	CU3047	Chip C.	C1608JB1H103KT-A	
C126	CU3013	Chip C.	C1608CH1H150JT-A	
C127	CU3018	Chip C.	C1608CH1H390JT-A	
C128	CS0069	Chip Tantal	TMCSA1V154MTR	
C130	CE0310	Electrolytic C.	ECEV1AA330P	
C131	CU3035	Chip C.	C1608JB1H102KT-A	
C132	CU3056	Chip C.	C1608JF1E473ZT-A	
C133	CU3056	Chip C.	C1608JF1E473ZT-A	
C134	CU3031	Chip C.	C1608JB1H471KT-A	
C135	CU3056	Chip C.	C1608JF1E473ZT-A	
C136	CU3056	Chip C.	C1608JF1E473ZT-A	
C137	CU3056	Chip C.	C1608JF1E473ZT-A	
C138	CU3031	Chip C.	C1608JB1H471KT-A	
C139	CE0315	Electrolytic C.	ECEV1CA470P	
C140	CU3056	Chip C.	C1608JF1E473ZT-A	
C141	CU3056	Chip C.	C1608JF1E473ZT-A	
C142	CU3031	Chip C.	C1608JB1H471KT-A	
C143	CU3056	Chip C.	C1608JF1E473ZT-A	
C144	CU3056	Chip C.	C1608JF1E473ZT-A	
C145	CU3056	Chip C.	C1608JF1E473ZT-A	
C146	CU3015	Chip C.	C1608CH1H220JT-A	
C147	CU3056	Chip C.	C1608JF1E473ZT-A	
C148	CU3031	Chip C.	C1608JB1H471KT-A	
C149	CU3051	Chip C.	C1608JB1E223KT-A	
C150	CU3056	Chip C.	C1608JF1E473ZT-A	
C151	CU3056	Chip C.	C1608JF1E473ZT-A	
C152	CU3056	Chip C.	C1608JF1E473ZT-A	
C153	CU3056	Chip C.	C1608JF1E473ZT-A	
C154	CU3056	Chip C.	C1608JF1E473ZT-A	
C155	CU3056	Chip C.	C1608JF1E473ZT-A	
C156	CU3056	Chip C.	C1608JF1E473ZT-A	
C157	CU3056	Chip C.	C1608JF1E473ZT-A	
C158	CU3056	Chip C.	C1608JF1E473ZT-A	
C159	CU3056	Chip C.	C1608JF1E473ZT-A	
C160	CU3056	Chip C.	C1608JF1E473ZT-A	
C161	CU3056	Chip C.	C1608JF1E473ZT-A	
C162	CU3039	Chip C.	C1608JB1H222KT-A	
C163	CU3056	Chip C.	C1608JF1E473ZT-A	
C164	CU3056	Chip C.	C1608JF1E473ZT-A	
C165	CU3056	Chip C.	C1608JF1E473ZT-A	

MAIN Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
C166	CU3031	Chip C.	C1608JB1H471KT-A	
C167	CU3056	Chip C.	C1608JF1E473ZT-A	
C168	CU3031	Chip C.	C1608JB1H471KT-A	
C169	CU3056	Chip C.	C1608JF1E473ZT-A	
C170	CU3027	Chip C.	C1608CH1H221JT-A	
C171	CU3056	Chip C.	C1608JF1E473ZT-A	
C172	CU3056	Chip C.	C1608JF1E473ZT-A	
C173	CU3035	Chip C.	C1608JB1H102KT-A	
C174	CU3051	Chip C.	C1608JB1E223KT-A	
C175	CU3056	Chip C.	C1608JF1E473ZT-A	
C176	CU3056	Chip C.	C1608JF1E473ZT-A	
C177	CU3037	Chip C.	C1608JB1H152KT-A	
C178	CU3047	Chip C.	C1608JB1H103KT-A	
C179	CU3056	Chip C.	C1608JF1E473ZT-A	
C180	CS0372	Chip Tantal	TMCMB1C106MTR	
C181	CU3056	Chip C.	C1608JF1E473ZT-A	
C182	CU3051	Chip C.	C1608JB1E223KT-A	
C183	CU3056	Chip C.	C1608JF1E473ZT-A	
C184	CU3056	Chip C.	C1608JF1E473ZT-A	
C185	CU3056	Chip C.	C1608JF1E473ZT-A	
C186	CU3056	Chip C.	C1608JF1E473ZT-A	
C187	CU3056	Chip C.	C1608JF1E473ZT-A	
C188	CU3056	Chip C.	C1608JF1E473ZT-A	
C189	CS0372	Chip Tantal	TMCMB1C106MTR	
C190	CU3102	Chip C.	C1608JB1C333KT-A	
C191	CU8042	Chip C.	C2012JB1C104KT-A	
C192	CU3047	Chip C.	C1608JB1H103KT-A	
C193	CU3047	Chip C.	C1608JB1H103KT-A	
C194	CU3047	Chip C.	C1608JB1H103KT-A	
C195	CU3047	Chip C.	C1608JB1H103KT-A	
C196	CS0372	Chip Tantal	TMCMB1C106MTR	
C197	CU3045	Chip C.	C1608JB1H682KT-A	
C198	CU3102	Chip C.	C1608JB1C333KT-A	
C199	CU3029	Chip C.	C1608JB1H331KT-A	
C200	CS0230	Chip Tantal	TMCMA1E105MTR	
C201	CU3018	Chip C.	C1608CH1H390JT-A	
C202	CU3029	Chip C.	C1608JB1H331KT-A	
C203	CU3056	Chip C.	C1608JF1E473ZT-A	
C204	CS0061	Chip Tantal	TMCSA1V224MTR	
C205	CS0230	Chip Tantal	TMCMA1E105MTR	
C206	CU3101	Chip C.	C1608JB1C473KT-A	
C207	CU3059	Chip C.	C1608JF1E104ZT-A	
C208	CU3059	Chip C.	C1608JF1E104ZT-A	
C209	CU3059	Chip C.	C1608JF1E104ZT-A	
C210	CU3025	Chip C.	C1608CH1H151JT-A	
C212	CU3059	Chip C.	C1608JF1E104ZT-A	
C213	CS0372	Chip Tantal	TMCMB1C106MTR	
C214	CU3051	Chip C.	C1608JB1E223KT-A	
C215	CU3047	Chip C.	C1608JB1H103KT-A	
C216	CU3047	Chip C.	C1608JB1H103KT-A	
C217	CU8042	Chip C.	C2012JB1C104KT-A	
C218	CU3047	Chip C.	C1608JB1H103KT-A	
C219	CU3047	Chip C.	C1608JB1H103KT-A	
C220	CU3059	Chip C.	C1608JF1E104ZT-A	
C221	CS0372	Chip Tantal	TMCMB1C106MTR	
C222	CS0230	Chip Tantal	TMCMA1E105MTR	
C223	CS0372	Chip Tantal	TMCMB1C106MTR	
C224	CU3047	Chip C.	C1608JB1H103KT-A	
C225	CU3047	Chip C.	C1608JB1H103KT-A	
C226	CS0230	Chip Tantal	TMCMA1E105MTR	
C227	CS0225	Chip Tantal	TMCMA1D155MTR	
C228	CU3047	Chip C.	C1608JB1H103KT-A	

Ref. No.	Parts No.	Description	Parts Name	Ver.
C229	CE0312	Electrolytic C.	ECEV1CA100R	
C230	CU3047	Chip C.	C1608JB1H103KT-A	
C231	CE0315	Electrolytic C.	ECEV1CA470P	
C232	CU3026	Chip C.	C1608CH1H181JT-A	
C233	CU3043	Chip C.	C1608JB1H472KT-A	
C234	CU3038	Chip C.	C1608JB1H182KT-A	
C236	CU3059	Chip C.	C1608JF1E104ZT-A	
C237	CU3059	Chip C.	C1608JF1E104ZT-A	
C238	CS0367	Chip Tantal	TMCMA0J106MTR	
C239	CU3059	Chip C.	C1608JF1E104ZT-A	
C240	CU8042	Chip C.	C2012JB1C104KT-A	
C241	CS0372	Chip Tantal	TMCMB1C106MTR	
C242	CU3047	Chip C.	C1608JB1H103KT-A	
C243	CU3101	Chip C.	C1608JB1C473KT-A	
C244	CS0371	Chip Tantal	TMCMA1C335MTR	
C245	CS0372	Chip Tantal	TMCMB1C106MTR	
C246	CU3041	Chip C.	C1608JB1H332KT-A	
C247	CS0230	Chip Tantal	TMCMA1E105MTR	
C248	CS0230	Chip Tantal	TMCMA1E105MTR	
C249	CU3101	Chip C.	C1608JB1C473KT-A	
C250	CS0220	Chip Tantal	TMCMA1C225MTR	
C251	CS0220	Chip Tantal	TMCMA1C225MTR	
C252	CU3047	Chip C.	C1608JB1H103KT-A	
C253	CU3056	Chip C.	C1608JF1E473ZT-A	
C254	CS0372	Chip Tantal	TMCMB1C106MTR	
C255	CU3056	Chip C.	C1608JF1E473ZT-A	
C256	CU3102	Chip C.	C1608JB1C333KT-A	
C257	CU3029	Chip C.	C1608JB1H331KT-A	
C258	CS0229	Chip Tantal	TMCMA1E684MTR	
C259	CU3051	Chip C.	C1608JB1E223KT-A	
C260	CE0315	Electrolytic C.	ECEV1CA470P	
C261	CE0352	Electrolytic C.	16MV330HC	
C262	CU8042	Chip C.	C2012JB1C104KT-A	
C263	CE0353	Electrolytic C.	16MV470HC	
C264	CE0315	Electrolytic C.	ECEV1CA470P	
C265	CE0315	Electrolytic C.	ECEV1CA470P	
C266	CE0315	Electrolytic C.	ECEV1CA470P	
C267	CU3056	Chip C.	C1608JF1E473ZT-A	
C268	CU8042	Chip C.	C2012JB1C104KT-A	
C269	CS0230	Chip Tantal	TMCMA1E105MTR	
C270	CU3059	Chip C.	C1608JF1E104ZT-A	
C271	CU3059	Chip C.	C1608JF1E104ZT-A	
C272	CU3026	Chip C.	C1608CH1H181JT-A	
C273	CU3043	Chip C.	C1608JB1H472KT-A	
C274	CU3039	Chip C.	C1608JB1H222KT-A	
C275	CU3047	Chip C.	C1608JB1H103KT-A	
C276	CS0372	Chip Tantal	TMCMB1C106MTR	
C277	CU3051	Chip C.	C1608JB1E223KT-A	
C278	CU8042	Chip C.	C2012JB1C104KT-A	
C279	CU3047	Chip C.	C1608JB1H103KT-A	
C280	CS0230	Chip Tantal	TMCMA1E105MTR	
C281	CE0315	Electrolytic C.	ECEV1CA470P	
C282	CS0232	Chip Tantal	TMCMA1V474MTR	
C283	CU3047	Chip C.	C1608JB1H103KT-A	
C284	CU3027	Chip C.	C1608CH1H221JT-A	
C285	CU3027	Chip C.	C1608CH1H221JT-A	
C286	CU3027	Chip C.	C1608CH1H221JT-A	
C287	CS0210	Chip Tantal	TMCMB0J156MTR	
C289	CU3056	Chip C.	C1608JF1E473ZT-A	
C290	CU3047	Chip C.	C1608JB1H103KT-A	
C291	CU3047	Chip C.	C1608JB1H103KT-A	
C292	CU3047	Chip C.	C1608JB1H103KT-A	

MAIN Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
C293	CU3047	Chip C.	C1608JB1H103KT-A	
C294	CU3059	Chip C.	C1608JF1E104ZT-A	
C296	CU3047	Chip C.	C1608JB1H103KT-A	
C297	CU3059	Chip C.	C1608JF1E104ZT-A	
C298	CU8042	Chip C.	C2012JB1C104KT-A	
C299	CU3047	Chip C.	C1608JB1H103KT-A	
C300	CU3035	Chip C.	C1608JB1H102KT-A	
C301	CU3047	Chip C.	C1608JB1H103KT-A	
C302	CU3047	Chip C.	C1608JB1H103KT-A	
C303	CU3047	Chip C.	C1608JB1H103KT-A	
C304	CU3047	Chip C.	C1608JB1H103KT-A	
C305	CU3047	Chip C.	C1608JB1H103KT-A	
C306	CU3047	Chip C.	C1608JB1H103KT-A	
C307	CU3047	Chip C.	C1608JB1H103KT-A	
C308	CU3047	Chip C.	C1608JB1H103KT-A	
C309	CU3047	Chip C.	C1608JB1H103KT-A	
C310	CU3047	Chip C.	C1608JB1H103KT-A	
C311	CU3047	Chip C.	C1608JB1H103KT-A	
C312	CU3056	Chip C.	C1608JF1E473ZT-A	
C313	CU3047	Chip C.	C1608JB1H103KT-A	
C314	CU3047	Chip C.	C1608JB1H103KT-A	
C315	CU3027	Chip C.	C1608CH1H221JT-A	
C316	CU3027	Chip C.	C1608CH1H221JT-A	
C317	CU3027	Chip C.	C1608CH1H221JT-A	
C318	CU3027	Chip C.	C1608CH1H221JT-A	
C319	CU3027	Chip C.	C1608CH1H221JT-A	
C320	CU3027	Chip C.	C1608CH1H221JT-A	
C321	CU3027	Chip C.	C1608CH1H221JT-A	
C322	CU3027	Chip C.	C1608CH1H221JT-A	
C323	CU3047	Chip C.	C1608JB1H103KT-A	
C324	CU3059	Chip C.	C1608JF1E104ZT-A	
C325	CS0230	Chip Tantal	TMCMA1E105MTR	
C326	CU3047	Chip C.	C1608JB1H103KT-A	
C327	CU3047	Chip C.	C1608JB1H103KT-A	
C328	CU3047	Chip C.	C1608JB1H103KT-A	
C329	CU3047	Chip C.	C1608JB1H103KT-A	
C330	CU3047	Chip C.	C1608JB1H103KT-A	
C331	CU3039	Chip C.	C1608JB1H222KT-A	
C332	CU3047	Chip C.	C1608JB1H103KT-A	
C333	CU3047	Chip C.	C1608JB1H103KT-A	
C334	CU3047	Chip C.	C1608JB1H103KT-A	
C335	CU3047	Chip C.	C1608JB1H103KT-A	
C336	CU3047	Chip C.	C1608JB1H103KT-A	
C337	CU3047	Chip C.	C1608JB1H103KT-A	
C338	CU3047	Chip C.	C1608JB1H103KT-A	
C339	CU3047	Chip C.	C1608JB1H103KT-A	
C340	CU3047	Chip C.	C1608JB1H103KT-A	
C341	CU3047	Chip C.	C1608JB1H103KT-A	
C342	CU3047	Chip C.	C1608JB1H103KT-A	
C343	CS0372	Chip Tantal	TMCMB1C106MTR	
C344	CU3047	Chip C.	C1608JB1H103KT-A	
C345	CU3044	Chip C.	C1608JB1H562KT-A	
C346	CU3047	Chip C.	C1608JB1H103KT-A	
C347	CU3027	Chip C.	C1608CH1H221JT-A	
C348	CU8042	Chip C.	C2012JB1C104KT-A	
C349	CU3056	Chip C.	C1608JF1E473ZT-A	
C350	CU3056	Chip C.	C1608JF1E473ZT-A	
C351	CU3035	Chip C.	C1608JB1H102KT-A	
C353	CU3047	Chip C.	C1608JB1H103KT-A	
C354	CU3047	Chip C.	C1608JB1H103KT-A	
C356	CU3017	Chip C.	C1608CH1H330J	

Ref. No.	Parts No.	Description	Parts Name	Ver.
CN1	UE0235	Connector	00-6208-000-112-001	
CN2	UE0043	Connector	PI22A02M	
CN3	UE0070	Connector	PI22A04M	
CN4	UE0071	Connector	PI22A05M	
CN5	UE0044	Connector	PI22A09M	
CN6	UE0259	Connector	CFP0526-0201	
CN9	UE0260	Connector	09PS-JE	
CN11	UE0043	Connector	PI22A02M	
CN12	UE0262	Connector	IMSA-9120B-13	
CN13	UE0262	Connector	IMSA-9120B-13	
D1	XD0272	Diode	1SS356 TW11	
D2	XD0272	Diode	1SS356 TW11	
D4	XD0266	Diode	DAP236U T106	
D5	XD0254	Diode	1SS355 TE-17	
D6	XD0246	Diode	DAN235UT106	
D7	XD0289	Diode	S3275(TE12L)	
D8	XD0246	Diode	DAN235UT106	
D9	XD0246	Diode	DAN235UT106	
D10	XD0231	Diode	DAP202U T106	
D11	XD0231	Diode	DAP202U T106	
D29	XD0246	Diode	DAN235UT106	
D30	XD0246	Diode	DAN235UT106	
D33	XD0234	Diode	MA728 TX	
D34	XD0234	Diode	MA728 TX	
D37	XD0272	Diode	1SS356 TW11	
D38	XD0272	Diode	1SS356 TW11	
D39	XD0272	Diode	1SS356 TW11	
D40	XD0272	Diode	1SS356 TW11	
D41	XD0272	Diode	1SS356 TW11	
D42	XD0272	Diode	1SS356 TW11	
D43	XD0272	Diode	1SS356 TW11	
D44	XD0272	Diode	1SS356 TW11	
D45	XD0272	Diode	1SS356 TW11	
D46	XD0272	Diode	1SS356 TW11	
D47	XD0272	Diode	1SS356 TW11	
D48	XD0272	Diode	1SS356 TW11	
D49	XD0246	Diode	DAN235UT106	
D50	XD0254	Diode	1SS355 TE-17	
D51	XD0234	Diode	MA728 TX	
D52	XD0272	Diode	1SS356 TW11	
D53	XD0234	Diode	MA728 TX	
D54	XD0234	Diode	MA728 TX	
D55	XD0230	Diode	DAN202U T106	
D56	XD0230	Diode	DAN202U T106	
D59	XD0231	Diode	DAP202U T106	
D60	XD0254	Diode	1SS355 TE-17	
D62	XD0254	Diode	1SS355 TE-17	
D63	XD0231	Diode	DAP202U T106	
D64	XD0140	Diode	DTZ5.6C TT11	
D65	XD0254	Diode	1SS355 TE-17	
D66	XD0254	Diode	1SS355 TE-17	
D67	XD0231	Diode	DAP202U T106	
D68	XD0230	Diode	DAN202U T106	
D69	XD0254	Diode	1SS355 TE-17	
D70	XD0254	Diode	1SS355 TE-17	
D71	XD0231	Diode	DAP202U T106	
D72	XD0254	Diode	1SS355 TE-17	
D73	XD0254	Diode	1SS355 TE-17	
D74	XD0254	Diode	1SS355 TE-17	
D75	XD0254	Diode	1SS355 TE-17	
D76	XD0254	Diode	1SS355 TE-17	

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Ref. No.	Parts No.	Description	Parts Name	Ver.
D77	XD0254	Diode	1SS355 TE-17	
D78	XD0254	Diode	1SS355 TE-17	
D79	XD0254	Diode	1SS355 TE-17	
D80	XD0230	Diode	DAN202U T106	
D82	XD0230	Diode	DAN202U T106	
D83	XD0254	Diode	1SS355 TE-17	
D84	XD0254	Diode	1SS355 TE-17	
D85	XD0254	Diode	1SS355 TE-17	
D86	XD0231	Diode	DAP202U T106	
D88	XD0254	Diode	1SS355 TE-17	
D89	XD0231	Diode	DAP202U T106	
D90	XD0230	Diode	DAN202U T106	
D91	XD0230	Diode	DAN202U T106	
D92	XD0254	Diode	1SS355 TE-17	
D93	XD0231	Diode	DAP202U T106	
D94	XD0246	Diode	DAN235UT106	
D95	XD0231	Diode	DAP202U T106	
D96	XD0254	Diode	1SS355 TE-17	
D97	XD0254	Diode	1SS355 TE-17	
D99	XD0254	Diode	1SS355 TE-17	
D100	XD0254	Diode	1SS355 TE-17	
D101	XD0230	Diode	DAN202U T106	
D102	XD0230	Diode	DAN202U T106	
D103	XD0254	Diode	1SS355 TE-17	
D104	XD0254	Diode	1SS355 TE-17	
D106	XD0230	Diode	DAN202U T106	
D107	XD0254	Diode	1SS355 TE-17	
D108	XD0230	Diode	DAN202U T106	
D109	XD0230	Diode	DAN202U T106	
D110	XD0254	Diode	1SS355 TE-17	
D111	XD0254	Diode	1SS355 TE-17	
D112	XD0230	Diode	DAN202U T106	
D120	XD0254	Diode	1SS355	
D121	XD0254	Diode	1SS355	
D122	XD0254	Diode	1SS355	
FB1	QB0037	Inductor	ZBF253D-00	
FL1	XF0017	Crystal Filter	71M15B4 UM1	
FL2	XC0012	Ceramic Filter	CFJ455K8	
FL3	XC0011	Ceramic Filter	CFJ455K5	
FL4	XC0017	Ceramic Filter	CFW455G	
FL5	XF0021	Crystal Filter	71M15A2	
IC2	XA0300	IC	AN612	
IC3	XA0300	IC	AN612	
IC4	XA0224	IC	NJM2904M-T1	
IC5	XA0236	IC	BU4052BCF-T1	
IC6	XA0115	IC	TC4S66F-TE85L	
IC7	XA0063	IC	MC3357DR	
IC8	XA0224	IC	NJM2904M-T1	
IC9	XA0224	IC	NJM2904M-T1	
IC10	XA0299	IC	BU4001BF	
IC11	XA0082	IC	MC7808CT	
IC12	XA0068	IC	M5218FP-T01-1	
IC13	XA0385	IC	M5222FP	
IC14	XA0224	IC	NJM2904M-T1	
IC15	XA0246	IC	BU4094BF-T1	
IC16	XA0114	IC	UPD6345GS-T1	
IC17	XA0224	IC	NJM2904M-T1	
IC18	XA0299	IC	BU4001BF	
IC19	XA0294	IC	MC74HC390FL2	
IC20	XA0079	IC	MPC1241H	
IC21	XA0068	IC	M5218FP-T01-1	

Ref. No.	Parts No.	Description	Parts Name	Ver.
IC22	XA0114	IC	UPD6345GS-T1	
IC23	XA0114	IC	UPD6345GS-T1	
IC24	XA0299	IC	BU4001BF	
J1	UE0041	Connector	TMP-J01X-V6	
J3	UE0041	Connector	TMP-J01X-V6	
J4	UE0041	Connector	TMP-J01X-V6	
J5	UE0041	Connector	TMP-J01X-V6	
L1	QC0131	Chip L.	NL322522TR56J-3	
L2	QR0017	Coil	QR0017	
L3	QC0061	Chip L.	NL322522T-033J	
L4	QC0126	Chip L.	NL322522T-R22J-3	
L5	QC0039	Chip L.	NL322522T-1R0J	
L6	QC0127	Chip L.	NL322522T-R27J-3	
L7	QC0061	Chip L.	NL322522T-033J	
L8	QR0017	Coil	QR0017	
L9	QA0108	Coil	QA0108	
L10	QA0107	Coil	QA0107	
L11	QA0107	Coil	QA0107	
L12	QA0107	Coil	QA0107	
L13	QA0107	Coil	QA0107	
L14	QR0017	Coil	QR0017	
L15	QC0039	Chip L.	NL322522T-1R0J	
L16	QR0017	Coil	QR0017	
L17	QC0078	Chip L.	NL322522T-220J	
L18	QA0119	Coil	QA0119	
L19	QC0074	Chip L.	NL322522T-8R2J	
L20	QC0072	Chip L.	NL322522T-5R6J	
L21	QC0493	Chip L.	LQH4N471J04	
L48	QC0493	Chip L.	LQH4N471J04	
L49	QC0493	Chip L.	LQH4N471J04	
L50	QC0493	Chip L.	LQH4N471J04	
L51	QR0017	Coil	QR0017	
L52	QC0124	Chip L.	NL322522T-R15J-3	
L53	QC0124	Chip L.	NL322522T-R15J-3	
L54	QC0124	Chip L.	NL322522T-R15J-3	
L55	QR0017	Coil	QR0017	
L56	QA0108	Coil	QA0108	
L57	QA0107	Coil	QA0107	
L58	QA0107	Coil	QA0107	
L59	QA0107	Coil	QA0107	
L60	QC0047	Chip L.	NL322522T-4R7J	
L61	QC0062	Chip L.	NL322522T-039J	
L62	QC0123	Chip L.	NL322522T-R12J-3	
L63	QA0119	Coil	QA0119	
L64	QA0119	Coil	QA0119	
L65	QA0119	Coil	QA0119	
L66	QA0119	Coil	QA0119	
L67	QC0493	Chip L.	LQH4N471J04	
L68	QA0119	Coil	QA0119	
L69	QA0119	Coil	QA0119	
L70	QC0048	Chip L.	NL322522T-100J	
L71	QC0048	Chip L.	NL322522T-100J	
L72	QC0039	Chip L.	NL322522T-1R0J	
L73	QC0078	Chip L.	NL322522T-220J	
L75	QC0040	Chip L.	NL322522T∞1R2J	
L76	QC0048	Chip L.	NL322522T-100J	
L77	QC0086	Chip L.	NL322522T-101J	
L80	QR0017	Coil	QR0017	

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Ref. No.	Parts No.	Description	Parts Name	Ver.
Q1	XT0084	Transistor	2SC2954-T1	
Q3	XE0028	FET	3SK131V12T1	
Q4	XE0028	FET	3SK131V12T1	
Q5	XE0028	FET	3SK131V12T1	
Q6	XU0061	Transistor	UN5211-TX	
Q7	XE0028	FET	3SK131V12T1	
Q8	XE0026	FET	2SK2171-4	
Q9	XE0026	FET	2SK2171-4	
Q10	XE0026	FET	2SK2171-4	
Q11	XE0026	FET	2SK2171-4	
Q12	XE0028	FET	3SK131V12T1	
Q13	XT0084	Transistor	2SC2954-T1	
Q14	XT0094	Transistor	2SA1576T106R	
Q15	XT0095	Transistor	2SC4081T106R	
Q16	XT0095	Transistor	2SC4081T106R	
Q18	XT0095	Transistor	2SC4081T106R	
Q19	XT0095	Transistor	2SC4081T106R	
Q20	XE0028	FET	3SK131V12T1	
Q21	XU0078	Transistor	UN521L-TX	
Q22	XE0028	FET	3SK131V12T1	
Q23	XE0028	FET	3SK131V12T1	
Q24	XE0028	FET	3SK131V12T1	
Q25	XT0095	Transistor	2SC4081T106R	
Q26	XT0095	Transistor	2SC4081T106R	
Q27	XU0148	Transistor	DTC144EUT106	
Q28	XT0095	Transistor	2SC4081T106R	
Q29	XU0148	Transistor	DTC144EUT106	
Q30	XT0094	Transistor	2SA1576T106R	
Q31	XT0095	Transistor	2SC4081T106R	
Q32	XU0061	Transistor	UN5211-TX	
Q33	XT0136	Transistor	2SD1664	
Q34	XU0061	Transistor	UN5211-TX	
Q35	XT0136	Transistor	2SD1664	
Q36	XU0148	Transistor	DTC144EUT106	
Q37	XT0095	Transistor	2SC4081T106R	
Q38	XU0148	Transistor	DTC144EUT106	
Q39	XT0095	Transistor	2SC4081T106R	
Q40	XU0051	Transistor	UN511F-TX	
Q41	XU0049	Transistor	UMA9TR	
Q42	XU0049	Transistor	UMA9TR	
Q43	XU0049	Transistor	UMA9TR	
Q44	XU0049	Transistor	UMA9TR	
Q45	XU0047	Transistor	UMC3TR	
Q46	XU0061	Transistor	UN5211-TX	
Q47	XT0095	Transistor	2SC4081T106R	
Q48	XU0148	Transistor	DTC144EUT106	
Q49	XT0094	Transistor	2SA1576T106R	
Q50	XT0095	Transistor	2SC4081T106R	
Q51	XT0127	Transistor	2SC3419-Y	
Q52	XU0061	Transistor	UN5211-TX	
Q53	XU0061	Transistor	UN5211-TX	
Q54	XT0095	Transistor	2SC4081T106R	
Q55	XU0148	Transistor	DTC144EUT106	
Q56	XT0111	Transistor	2SC4081LNT106S	
Q57	XU0116	Transistor	DTA123EUT106	
Q58	XU0112	Transistor	DTA114YUT106	
Q59	XU0112	Transistor	DTA114YUT106	
Q60	XT0095	Transistor	2SC4081T106R	
Q61	XU0047	Transistor	UMC3TR	
Q62	XU0061	Transistor	UN5211-TX	
Q63	XU0148	Transistor	DTC144EUT106	
Q64	XU0029	Transistor	DTC114YUA T106	

Ref. No.	Parts No.	Description	Parts Name	Ver.
Q65	XU0148	Transistor	DTC144EUT106	
Q66	XU0061	Transistor	UN5211-TX	
Q70	XU0148	Transister	DTC144EUA	
R1	RK3026	Chip R.	ERJ3GSYJ101V	
R2	RK3013	Chip R.	ERJ3GSYJ8R2V	
R3	RK3038	Chip R.	ERJ3GSYJ102V	
R4	RK3042	Chip R.	ERJ3GSYJ222V	
R5	RK3032	Chip R.	ERJ3GSYJ331V	
R7	RK3038	Chip R.	ERJ3GSYJ102V	
R8	RK3037	Chip R.	ERJ3GSYJ821V	
R9	RK3030	Chip R.	ERJ3GSYJ221V	
R10	RK3034	Chip R.	ERJ3GSYJ471V	
R11	RK3035	Chip R.	ERJ3GSYJ561V	
R12	RK3042	Chip R.	ERJ3GSYJ222V	
R13	RK3018	Chip R.	ERJ3GSYJ220V	
R14	RK3030	Chip R.	ERJ3GSYJ221V	
R15	RK3049	Chip R.	ERJ3GSYJ822V	
R16	RK3043	Chip R.	ERJ3GSYJ272V	
R17	RK3038	Chip R.	ERJ3GSYJ102V	
R18	RK3040	Chip R.	ERJ3GSYJ152V	
R19	RK3050	Chip R.	ERJ3GSYJ103V	
R20	RK3026	Chip R.	ERJ3GSYJ101V	
R21	RK3034	Chip R.	ERJ3GSYJ471V	
R22	RK3030	Chip R.	ERJ3GSYJ221V	
R23	RK3026	Chip R.	ERJ3GSYJ101V	
R25	RK3042	Chip R.	ERJ3GSYJ222V	
R26	RK3046	Chip R.	ERJ3GSYJ472V	
R28	RK3038	Chip R.	ERJ3GSYJ102V	
R29	RK3038	Chip R.	ERJ3GSYJ102V	
R30	RK3026	Chip R.	ERJ3GSYJ101V	
R31	RK3034	Chip R.	ERJ3GSYJ471V	
R32	RK3066	Chip R.	ERJ3GSYJ224V	
R33	RK3026	Chip R.	ERJ3GSYJ101V	
R34	RK3058	Chip R.	ERJ3GSYJ473V	
R35	RK3050	Chip R.	ERJ3GSYJ103V	
R36	RK3030	Chip R.	ERJ3GSYJ221V	
R37	RK3023	Chip R.	ERJ3GSYJ560V	
R38	RK1025	Chip R.	ERJ6GEYJ331V	
R57	RK3031	Chip R.	ERJ3GSYJ271V	
R58	RK3018	Chip R.	ERJ3GSYJ220V	
R59	RK3024	Chip R.	ERJ3GSYJ680V	
R60	RK4068	Chip R.	ERJ14YJ151H	
R61	RK3041	Chip R.	ERJ3GSYJ182V	
R62	RK4088	Chip R.	ERJ14YJ561H	
R63	RK3035	Chip R.	ERJ3GSYJ561V	
R64	RK3034	Chip R.	ERJ3GSYJ471V	
R65	RK3022	Chip R.	ERJ3GSYJ470V	
R66	RK3054	Chip R.	ERJ3GSYJ223V	
R67	RK3074	Chip R.	ERJ3GSYJ105V	
R68	RK3026	Chip R.	ERJ3GSYJ101V	
R69	RK3034	Chip R.	ERJ3GSYJ471V	
R70	RK3043	Chip R.	ERJ3GSYJ272V	
R71	RK3026	Chip R.	ERJ3GSYJ101V	
R72	RK3044	Chip R.	ERJ3GSYJ332V	
R73	RK3032	Chip R.	ERJ3GSYJ331V	
R74	RK3044	Chip R.	ERJ3GSYJ332V	
R75	RK3038	Chip R.	ERJ3GSYJ102V	
R76	RK3013	Chip R.	ERJ3GSYJ8R2V	
R77	RK3020	Chip R.	ERJ3GSYJ330V	
R78	RK3040	Chip R.	ERJ3GSYJ152V	
R79	RK3022	Chip R.	ERJ3GSYJ470V	
R80	RK3030	Chip R.	ERJ3GSYJ221V	

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Ref. No.	Parts No.	Description	Parts Name	Ver.
R81	RK3058	Chip R.	ERJ3GSYJ473V	
R82	RK3052	Chip R.	ERJ3GSYJ153V	
R83	RK3038	Chip R.	ERJ3GSYJ102V	
R84	RK3032	Chip R.	ERJ3GSYJ331V	
R85	RK3050	Chip R.	ERJ3GSYJ103V	
R86	RK3026	Chip R.	ERJ3GSYJ101V	
R87	RK3042	Chip R.	ERJ3GSYJ222V	
R88	RK3050	Chip R.	ERJ3GSYJ103V	
R89	RK3062	Chip R.	ERJ3GSYJ104V	
R90	RK3042	Chip R.	ERJ3GSYJ222V	
R91	RK3054	Chip R.	ERJ3GSYJ223V	
R92	RK3026	Chip R.	ERJ3GSYJ101V	
R93	RK3022	Chip R.	ERJ3GSYJ470V	
R94	RK3034	Chip R.	ERJ3GSYJ471V	
R95	RK3078	Chip R.	ERJ3GSYJ225V	
R96	RK3043	Chip R.	ERJ3GSYJ272V	
R97	RK3058	Chip R.	ERJ3GSYJ473V	
R98	RK3038	Chip R.	ERJ3GSYJ102V	
R99	RK3042	Chip R.	ERJ3GSYJ222V	
R100	RK3070	Chip R.	ERJ3GSYJ474V	
R101	RK3026	Chip R.	ERJ3GSYJ101V	
R102	RK3034	Chip R.	ERJ3GSYJ471V	
R103	RK3050	Chip R.	ERJ3GSYJ103V	
R104	RK3026	Chip R.	ERJ3GSYJ101V	
R105	RK3050	Chip R.	ERJ3GSYJ103V	
R106	RK3051	Chip R.	ERJ3GSYJ123V	
R107	RK3034	Chip R.	ERJ3GSYJ471V	
R108	RK3046	Chip R.	ERJ3GSYJ472V	
R109	RK3046	Chip R.	ERJ3GSYJ472V	
R110	RK3045	Chip R.	ERJ3GSYJ392V	
R111	RK3050	Chip R.	ERJ3GSYJ103V	
R112	RK3030	Chip R.	ERJ3GSYJ221V	
R113	RK3030	Chip R.	ERJ3GSYJ221V	
R114	RK3030	Chip R.	ERJ3GSYJ221V	
R115	RK3042	Chip R.	ERJ3GSYJ222V	
R116	RK3046	Chip R.	ERJ3GSYJ472V	
R117	RK3046	Chip R.	ERJ3GSYJ472V	
R118	RK3046	Chip R.	ERJ3GSYJ472V	
R119	RK3030	Chip R.	ERJ3GSYJ221V	
R120	RK3030	Chip R.	ERJ3GSYJ221V	
R121	RK3030	Chip R.	ERJ3GSYJ221V	
R122	RK3051	Chip R.	ERJ3GSYJ123V	
R123	RK3050	Chip R.	ERJ3GSYJ103V	
R124	RK3050	Chip R.	ERJ3GSYJ103V	
R125	RK3058	Chip R.	ERJ3GSYJ473V	
R126	RK3026	Chip R.	ERJ3GSYJ101V	
R127	RK3026	Chip R.	ERJ3GSYJ101V	
R128	RK3034	Chip R.	ERJ3GSYJ471V	
R130	RK3050	Chip R.	ERJ3GSYJ103V	
R131	RK3026	Chip R.	ERJ3GSYJ101V	
R132	RK3054	Chip R.	ERJ3GSYJ223V	
R133	RK3026	Chip R.	ERJ3GSYJ101V	
R134	RK3058	Chip R.	ERJ3GSYJ473V	
R135	RK3059	Chip R.	ERJ3GSYJ563V	
R136	RK3042	Chip R.	ERJ3GSYJ222V	
R137	RK3042	Chip R.	ERJ3GSYJ222V	
R138	RK3032	Chip R.	ERJ3GSYJ331V	
R139	RK3070	Chip R.	ERJ3GSYJ474V	
R140	RK3047	Chip R.	ERJ3GSYJ562V	
R141	RK3062	Chip R.	ERJ3GSYJ104V	
R142	RK3038	Chip R.	ERJ3GSYJ102V	
R143	RK3042	Chip R.	ERJ3GSYJ222V	

Ref. No.	Parts No.	Description	Parts Name	Ver.
R144	RK3026	Chip R.	ERJ3GSYJ101V	
R145	RK3058	Chip R.	ERJ3GSYJ473V	
R146	RK3074	Chip R.	ERJ3GSYJ105V	
R147	RK3038	Chip R.	ERJ3GSYJ102V	
R148	RK3038	Chip R.	ERJ3GSYJ102V	
R149	RK3045	Chip R.	ERJ3GSYJ392V	
R150	RK3026	Chip R.	ERJ3GSYJ101V	
R151	RK3050	Chip R.	ERJ3GSYJ103V	
R152	RK3048	Chip R.	ERJ3GSYJ682V	
R153	RK3052	Chip R.	ERJ3GSYJ153V	
R154	RK3044	Chip R.	ERJ3GSYJ332V	
R155	RK3068	Chip R.	ERJ3GSYJ334V	
R156	RK3050	Chip R.	ERJ3GSYJ103V	
R157	RK3058	Chip R.	ERJ3GSYJ473V	
R158	RK3051	Chip R.	ERJ3GSYJ123V	
R159	RK3058	Chip R.	ERJ3GSYJ473V	
R160	RK3050	Chip R.	ERJ3GSYJ103V	
R161	RK3058	Chip R.	ERJ3GSYJ473V	
R162	RK3030	Chip R.	ERJ3GSYJ221V	
R163	RK3050	Chip R.	ERJ3GSYJ103V	
R164	RK3062	Chip R.	ERJ3GSYJ104V	
R165	RK3046	Chip R.	ERJ3GSYJ472V	
R166	RK3050	Chip R.	ERJ3GSYJ103V	
R167	RK3034	Chip R.	ERJ3GSYJ471V	
R168	RK3076	Chip R.	ERJ3GSYJ155V	
R169	RK3062	Chip R.	ERJ3GSYJ104V	
R170	RK3058	Chip R.	ERJ3GSYJ473V	
R171	RK3038	Chip R.	ERJ3GSYJ102V	
R172	RK3050	Chip R.	ERJ3GSYJ103V	
R173	RK3058	Chip R.	ERJ3GSYJ473V	
R174	RK3001	Chip R.	ERJ3GSY0R00V	
R175	RK3044	Chip R.	ERJ3GSYJ332V	
R176	RK3048	Chip R.	ERJ3GSYJ682V	
R177	RK3044	Chip R.	ERJ3GSYJ332V	
R178	RK3058	Chip R.	ERJ3GSYJ473V	
R179	RK3050	Chip R.	ERJ3GSYJ103V	
R180	RK3049	Chip R.	ERJ3GSYJ822V	
R181	RK3026	Chip R.	ERJ3GSYJ101V	
R182	RK3054	Chip R.	ERJ3GSYJ223V	
R183	RK3050	Chip R.	ERJ3GSYJ103V	
R184	RK3050	Chip R.	ERJ3GSYJ103V	
R185	RK3050	Chip R.	ERJ3GSYJ103V	
R186	RK3058	Chip R.	ERJ3GSYJ473V	
R187	RK3050	Chip R.	ERJ3GSYJ103V	
R189	RK3062	Chip R.	ERJ3GSYJ104V	
R190	RK3062	Chip R.	ERJ3GSYJ104V	
R191	RK3058	Chip R.	ERJ3GSYJ473V	
R192	RK3058	Chip R.	ERJ3GSYJ473V	
R193	RK3058	Chip R.	ERJ3GSYJ473V	
R194	RK3056	Chip R.	ERJ3GSYJ333V	
R195	RK3064	Chip R.	ERJ3GSYJ154V	
R196	RK3058	Chip R.	ERJ3GSYJ473V	
R197	RK3056	Chip R.	ERJ3GSYJ333V	
R198	RK3074	Chip R.	ERJ3GSYJ105V	
R199	RK3058	Chip R.	ERJ3GSYJ473V	
R200	RK3064	Chip R.	ERJ3GSYJ154V	
R201	RK3067	Chip R.	ERJ3GSYJ274V	
R202	RK3068	Chip R.	ERJ3GSYJ334V	
R203	RK3042	Chip R.	ERJ3GSYJ222V	
R204	RK3074	Chip R.	ERJ3GSYJ105V	
R205	RK3034	Chip R.	ERJ3GSYJ471V	
R206	RK3051	Chip R.	ERJ3GSYJ123V	

MAIN Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
R208	RK3049	Chip R.	ERJ3GSYJ822V	
R209	RK3032	Chip R.	ERJ3GSYJ331V	
R212	RK3045	Chip R.	ERJ3GSYJ392V	
R213	RK3046	Chip R.	ERJ3GSYJ472V	
R214	RK3049	Chip R.	ERJ3GSYJ822V	
R215	RK3074	Chip R.	ERJ3GSYJ105V	
R216	RK3074	Chip R.	ERJ3GSYJ105V	
R217	RK3062	Chip R.	ERJ3GSYJ104V	
R218	RK3075	Chip R.	ERJ3GSYJ125V	
R219	RK3074	Chip R.	ERJ3GSYJ105V	
R220	RK3074	Chip R.	ERJ3GSYJ105V	
R221	RK3070	Chip R.	ERJ3GSYJ474V	
R222	RK3047	Chip R.	ERJ3GSYJ562V	
R223	RK3034	Chip R.	ERJ3GSYJ471V	
R224	RK3050	Chip R.	ERJ3GSYJ103V	
R225	RK3030	Chip R.	ERJ3GSYJ221V	
R226	RK3049	Chip R.	ERJ3GSYJ822V	
R227	RK3070	Chip R.	ERJ3GSYJ474V	
R228	RK3070	Chip R.	ERJ3GSYJ474V	
R229	RK4082	Chip R.	ERJ14YK4R7H	
R230	RK1035	Chip R.	ERJ8GEYJ102V	
R231	RK4082	Chip R.	ERJ14YK4R7H	
R232	RK1035	Chip R.	ERJ8GEYJ102V	
R233	RK3054	Chip R.	ERJ3GSYJ223V	
R234	RK3058	Chip R.	ERJ3GSYJ473V	
R235	RK3050	Chip R.	ERJ3GSYJ103V	
R236	RK3001	Chip R.	ERJ3GSY0R00V	
R237	RK3057	Chip R.	ERJ3GSYJ393V	
R238	RK3057	Chip R.	ERJ3GSYJ393V	
R239	RK3062	Chip R.	ERJ3GSYJ104V	
R240	RK3042	Chip R.	ERJ3GSYJ222V	
R241	RK3053	Chip R.	ERJ3GSYJ183V	
R242	RK3060	Chip R.	ERJ3GSYJ683V	
R243	RK3050	Chip R.	ERJ3GSYJ103V	
R244	RK3062	Chip R.	ERJ3GSYJ104V	
R245	RK3060	Chip R.	ERJ3GSYJ683V	
R246	RK3056	Chip R.	ERJ3GSYJ333V	
R247	RK3056	Chip R.	ERJ3GSYJ333V	
R248	RK3054	Chip R.	ERJ3GSYJ223V	
R249	RK3062	Chip R.	ERJ3GSYJ104V	
R250	RK3050	Chip R.	ERJ3GSYJ103V	
R251	RK3046	Chip R.	ERJ3GSYJ472V	
R252	RK3062	Chip R.	ERJ3GSYJ104V	
R253	RK3050	Chip R.	ERJ3GSYJ103V	
R254	RK3026	Chip R.	ERJ3GSYJ101V	
R255	RK3069	Chip R.	ERJ3GSYJ394V	
R256	RK3071	Chip R.	ERJ3GSYJ564V	
R257	RK3074	Chip R.	ERJ3GSYJ105V	
R258	RK3041	Chip R.	ERJ3GSYJ182V	
R259	RK3052	Chip R.	ERJ3GSYJ153V	
R260	RK3060	Chip R.	ERJ3GSYJ683V	
R261	RK3051	Chip R.	ERJ3GSYJ123V	
R262	RK3038	Chip R.	ERJ3GSYJ102V	
R263	RK3034	Chip R.	ERJ3GSYJ471V	
R264	RK3034	Chip R.	ERJ3GSYJ471V	
R265	RK3058	Chip R.	ERJ3GSYJ473V	
R266	RK3034	Chip R.	ERJ3GSYJ471V	
R267	RK3053	Chip R.	ERJ3GSYJ183V	
R268	RK3034	Chip R.	ERJ3GSYJ471V	
R269	RK3058	Chip R.	ERJ3GSYJ473V	
R270	RK3054	Chip R.	ERJ3GSYJ223V	
R271	RK3074	Chip R.	ERJ3GSYJ105V	

Ref. No.	Parts No.	Description	Parts Name	Ver.
R272	RK3050	Chip R.	ERJ3GSYJ103V	
R273	RK3054	Chip R.	ERJ3GSYJ223V	
R274	RK3070	Chip R.	ERJ3GSYJ474V	
R275	RK3062	Chip R.	ERJ3GSYJ104V	
R276	RK3070	Chip R.	ERJ3GSYJ474V	
R277	RK3058	Chip R.	ERJ3GSYJ473V	
R278	RK3058	Chip R.	ERJ3GSYJ473V	
R279	RK3058	Chip R.	ERJ3GSYJ473V	
R280	RK3080	Chip R.	ERJ3GSYJ335V	
R281	RK3080	Chip R.	ERJ3GSYJ335V	
R282	RK3074	Chip R.	ERJ3GSYJ105V	
R283	RK3067	Chip R.	ERJ3GSYJ274V	
R284	RK3050	Chip R.	ERJ3GSYJ103V	
R285	RK3042	Chip R.	ERJ3GSYJ222V	
R286	RK3074	Chip R.	ERJ3GSYJ105V	
R287	RK3035	Chip R.	ERJ3GSYJ561V	
R288	RK3048	Chip R.	ERJ3GSYJ682V	
R289	RK3050	Chip R.	ERJ3GSYJ103V	
R290	RK3022	Chip R.	ERJ3GSYJ470V	
R291	RK3038	Chip R.	ERJ3GSYJ102V	
R292	RK3058	Chip R.	ERJ3GSYJ473V	
R293	RK3054	Chip R.	ERJ3GSYJ223V	
R294	RK3045	Chip R.	ERJ3GSYJ392V	
R295	RK3030	Chip R.	ERJ3GSYJ221V	
R296	RK3050	Chip R.	ERJ3GSYJ103V	
R297	RK3050	Chip R.	ERJ3GSYJ103V	
R298	RK3050	Chip R.	ERJ3GSYJ103V	
R299	RK3057	Chip R.	ERJ3GSYJ393V	
R300	RK3058	Chip R.	ERJ3GSYJ473V	
R301	RK3050	Chip R.	ERJ3GSYJ103V	
R302	RK3045	Chip R.	ERJ3GSYJ392V	
R303	RK3070	Chip R.	ERJ3GSYJ474V	
R304	RK0022	Chip R.	ERJ6GEYJ221V	
R305	RK0022	Chip R.	ERJ6GEYJ221V	
R306	RK0114	Chip R.	ERJ6GEYJ010V	
R307	RK3026	Chip R.	ERJ3GSYJ101V	
R308	RK3001	Chip R.	ERJ3GSY0R00V	
R309	RK3048	Chip R.	ERJ3GSYJ682V	
R310	RK3032	Chip R.	ERJ3GSYJ331V	
R311	RK3074	Chip R.	ERJ3GSYJ105V	
R312	RK3050	Chip R.	ERJ3GSYJ103V	
R313	RK3050	Chip R.	ERJ3GSYJ103V	
R314	RK3058	Chip R.	ERJ3GSYJ473V	
R315	RK3058	Chip R.	ERJ3GSYJ473V	
R316	RK3058	Chip R.	ERJ3GSYJ473V	
R317	RK3038	Chip R.	ERJ3GSYJ102V	
R318	RK3046	Chip R.	ERJ3GSYJ472V	
R319	RK3054	Chip R.	ERJ3GSYJ223V	
R320	RK3038	Chip R.	ERJ3GSYJ102V	
R321	RK3057	Chip R.	ERJ3GSYJ393V	
R322	RK3057	Chip R.	ERJ3GSYJ393V	
R323	RK3056	Chip R.	ERJ3GSYJ333V	
R324	RK3038	Chip R.	ERJ3GSYJ102V	
R325	RK3050	Chip R.	ERJ3GSYJ103V	
R326	RK3050	Chip R.	ERJ3GSYJ103V	
R327	RK3064	Chip R.	ERJ3GSYJ154V	
R328	RK3072	Chip R.	ERJ3GSYJ684V	
R329	RK3062	Chip R.	ERJ3GSYJ104V	
R330	RK3042	Chip R.	ERJ3GSYJ222V	
R331	RK3062	Chip R.	ERJ3GSYJ104V	
R332	RK3054	Chip R.	ERJ3GSYJ223V	
R333	RK3055	Chip R.	ERJ3GSYJ273V	

MAIN Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
R334	RK3038	Chip R.	ERJ3GSYJ102V	
R335	RK3026	Chip R.	ERJ3GSYJ101V	
R336	RK3066	Chip R.	ERJ3GSYJ224V	
R337	RK3038	Chip R.	ERJ3GSYJ102V	
R338	RK3026	Chip R.	ERJ3GSYJ101V	
R339	RK3042	Chip R.	ERJ3GSYJ222V	
R340	RK3042	Chip R.	ERJ3GSYJ222V	
R341	RK3034	Chip R.	ERJ3GSYJ471V	
R342	RK3034	Chip R.	ERJ3GSYJ471V	
R343	RK3050	Chip R.	ERJ3GSYJ103V	
R344	RK1035	Chip R.	ERJ8GEYJ102V	
R345	RK3034	Chip R.	ERJ3GSYJ471V	
R346	RK3034	Chip R.	ERJ3GSYJ471V	
R347	RK3034	Chip R.	ERJ3GSYJ471V	
R348	RK3050	Chip R.	ERJ3GSYJ103V	
R349	RK3046	Chip R.	ERJ3GSYJ472V	
R350	RK3050	Chip R.	ERJ3GSYJ103V	
R351	RK3033	Chip R.	ERJ3GSYJ391V	
R352	RK3015	Chip R.	ERJ3GSYJ120V	
R353	RK3024	Chip R.	ERJ3GSYJ680V	
R354	RK3033	Chip R.	ERJ3GSYJ391V	
R355	RK3064	Chip R.	ERJ3GSYJ154V	
R356	RK3046	Chip R.	ERJ3GSYJ472V	
R357	RK3030	Chip R.	ERJ3GSYJ221V	
R358	RK3045	Chip R.	ERJ3GSYJ392V	
R359	RK3030	Chip R.	ERJ3GSYJ221V	
R360	RK3066	Chip R.	ERJ3GSYJ224V	
R361	RK0020	Chip R.	ERJ6GEYJ151V	
R362	RK3018	Chip R.	ERJ3GSYJ220V	
R363	RK3018	Chip R.	ERJ3GSYJ220V	
R364	RK3048	Chip R.	ERJ3GSYJ682V	
R365	RK3042	Chip R.	ERJ3GSYJ222V	
R366	RK3042	Chip R.	ERJ3GSYJ222V	
R367	RK3040	Chip R.	ERJ3GSYJ152V	
R368	RK3001	Chip R.	ERJ3GSY0R00V	
R369	RK3050	Chip R.	ERJ3GSYJ103V	
R370	RK3050	Chip R.	ERJ3GSYJ103V	
R371	RK3050	Chip R.	ERJ3GSYJ103V	
R372	RK3050	Chip R.	ERJ3GSYJ103V	
R373	RK3050	Chip R.	ERJ3GSYJ103V	
R374	RK3050	Chip R.	ERJ3GSYJ103V	
R375	RK3050	Chip R.	ERJ3GSYJ103V	
R376	RK3050	Chip R.	ERJ3GSYJ103V	
R377	RK3064	Chip R.	ERJ3GSYJ154V	
R378	RK3050	Chip R.	ERJ3GSYJ103V	
R379	RK3050	Chip R.	ERJ3GSYJ103V	
R380	RK3050	Chip R.	ERJ3GSYJ103V	
R381	RK3058	Chip R.	ERJ3GSYJ473V	
R382	RK3050	Chip R.	ERJ3GSYJ103V	
R383	RK3053	Chip R.	ERJ3GSYJ183V	
R384	RK3054	Chip R.	ERJ3GSYJ223V	
R385	RK3047	Chip R.	ERJ3GSYJ562V	
R386	RK3026	Chip R.	ERJ3GSYJ101V	
R388	RK3034	Chip R.	ERJ3GSYJ471V	
R389	RK3034	Chip R.	ERJ3GSYJ471V	
R390	RK3053	Chip R.	ERJ3GSYJ183V	
R391	RK3064	Chip R.	ERJ3GSYJ154V	
R392	RK3050	Chip R.	ERJ3GSYJ103V	
R393	RK3042	Chip R.	ERJ3GSYJ222V	
R394	RK3058	Chip R.	ERJ3GSYJ473V	
R395	RK3066	Chip R.	ERJ3GSYJ224V	
R396	RK3042	Chip R.	ERJ3GSYJ222V	

Ref. No.	Parts No.	Description	Parts Name	Ver.
R397	RK1023	Chip R.	ERJ8GEYJ271V	
R398	RK3054	Chip R.	ERJ3GSYJ223V	
R399	RK3054	Chip R.	ERJ3GSYJ223V	
R400	RK3054	Chip R.	ERJ3GSYJ223V	
R401	RK3054	Chip R.	ERJ3GSYJ223V	
R402	RK3054	Chip R.	ERJ3GSYJ223V	
R404	RK3062	Chip R.	ERJ3GSYJ104V	
R405	RK3047	Chip R.	ERJ3GSYJ562V	
R406	RK3049	Chip R.	ERJ3GSYJ822V	
R407	RK3046	Chip R.	ERJ3GSYJ472V	
R408	RK3054	Chip R.	ERJ3GSYJ223V	
R409	RK3014	Chip R.	ERJ3GSYJ100V	
R411	RK3027	Chip R.	ERJ3GSYJ121V	
R412	RK3001	Chip R.	ERJ3GSY0R00V	
S1	US0012	Switch	SSSS212A NS L=2	
TH1	XS0019	Thermistor	TBPS1R472K440H5Q	
TH2	XS0017	Thermistor	TBPS1R222K410H5Q	
VR1	RH0115	Trim.Pot	EVM1YSX50B12	
VR2	RH0101	Trim.Pot	EVM1YSX50BQ3	
VR3	RH0103	Trim.Pot	EVM1YSX50B14	
VR4	RH0103	Trim.Pot	EVM1YSX50B14	
VR5	RH0111	Trim.Pot	EVM1YSX50BQ5	
VR6	RH0103	Trim.Pot	EVM1YSX50B14	
VR7	RH0108	Trim.Pot	EVM1YSX50B15	
VR8	RH0111	Trim.Pot	EVM1YSX50BQ5	
VR9	RH0108	Trim.Pot	EVM1YSX50B15	
VR10	RH0099	Trim.Pot	EVM1YSX50BE3	
VR11	RH0099	Trim.Pot	EVM1YSX50BE3	
VR12	RH0099	Trim.Pot	EVM1YSX50BE3	
VR13	RH0103	Trim.Pot	EVM1YSX50B14	
VR14	RH0103	Trim.Pot	EVM1YSX50B14	
VR15	RH0113	Trim.Pot	EVM1YSX50B16	
X1	XK0001	Filter	CDB455C7	

Mechanical / MIC Unit / OTHER / PA Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
Mechanical				
	AA0007		M2.6+6FeCr	
	AA0024		M3+6FeN	
	AA0050		26+6FeBC	
	AA0057		M2.6+6FeCr	
	AA0059		M2.6+6FeN	
	AA0060		M4+20FeCr	
	AA0061		M2.6+8BC	
	AA0070		26+8FeNi	
	AB0011		XYN3+8FN	
	AD0005		M4+10FeCr	
	AF0005		M2+3.5FeN	
	AJ0015		2.6+6FeCr	
	AJ0017		2.6+6FeBG	
	AJ0029		3+6FeCr	
	AN0012		Dial Nut	
	AP0026		2.6+14BC	
	AZ0031		Washer	
	FF0015		Light Shield Cloth	
	FF0031		Cloth 7*30	
	FF0032		Pad	
	FG0147		Rubber	
	FG0197		SP Cushion	
	FG0206		TONE UNIT Cushion	TH/T
	FG0244		Insulation Rubber	
	FM0152		IC Spring	
	FM0083		Washer	
	FM0102		IC Spring	
	FM0103		SP Angle	
	FM0104		Fan Cover Angle	
	FM0106		FRONT Angle B	
	FM0107		FRONT Angle U	
	FM0108		Connecter Angle	
	FP0004		Bind Wire	
	FP0099		Sheet	
	FP0100		Blind Seal	
	KM0195		Shassis Case	
	KZ0027		Top Case	
	KZ0028		FRONT Panel S	
	KZ0029		M. Dial Knob	
	KZ0030A		FRONT Cover S	
	KZ0032		Under Case T	
	KZ0039		SUB Dial Knob	
	NK0043		VOL Knob	
	NK0044		SUB Dial Knob	
	SP0008		Earthing Spring	
	SP0009		M.Dial Spring	
	SP0014		Earth lug	
	SS0066		Chassis	
	SS0067		Filter P.B. Chassis	
	SS0068		MAIN Chassis	
	SS0069A		FRONT Chassis	
	TS0042A		VCO Cover	
	TS0104		Fan Shield	
	TS0105		Filter Shield	
	TS0119		Shield cover	
	TZ0066		2SC1971-01 Attachment	
	SD0034		Earth spring	

Ref. No.	Parts No.	Description	Parts Name	Ver.
MIC Unit				
CN10	UE0261	Connector	09R-JE	
J6	UE0035	Connector	MIC FM214-8SMPY	
L78	QC0086	Chip L.	NL322522T-101J	
L79	QC0086	Chip L.	NL322522T-101J	
OTHER				
	YZ0001		Silicon Grease	
	UX1085		Wire ACC Connecter	
	UE0258		FM-M.D.R.(4)	
	SD0034		Earth lug	
	ET0008		FBA 06T12HF	
Q601	XT0101	Transistor	2SC1971	
Q602	XT0046	Transistor	2SC1972	
Q603	XT0046	Transistor	2SC1972	
Q604	XE0031	FET	MRF255	
Q605	XE0031	FET	MRF255	
W1	UX1076A	Wire	Wire FRONT-MAIN 1	
W2	UX1077	Wire	Wire FRONT-MAIN 2	
PA Unit				
	TT1001		Tube 0.7 1mm	
	TT1002		Tube 1.0 1mm	
	TT0405		Protection Bag	
	UP0319A		PA Circuit Board	
C601	CU8042	Chip C.	C2012JB1C104KT-A	
C602	CU8042	Chip C.	C2012JB1C104KT-A	
C603	CU3047	Chip C.	C1608JB1H103KT-A	
C605	CU8016	Chip C.	C2012JB1H102K	
C606	CU0089	Chip C.	C2012CH1H331J	
C607	CU8032	Chip C.	C2012JB1E223KT-A	
C608	CU8042	Chip C.	C2012JB1C104KT-A	
C609	CU8016	Chip C.	C2012JB1H102K	
C610	CE0302	Electrolytic C.	ECEV0GA470R	
C611	CU3059	Chip C.	C1608JF1E104ZT-A	
C612	CU3035	Chip C.	C1608JB1H102KT-A	
C613	CU8002	Chip C.	C2012JB1H103KT-A	
C614	CU0089	Chip C.	C2012CH1H331J	
C615	CU8002	Chip C.	C2012JB1H103KT-A	
C616	CU9021	Chip C.	C3216CH1H470JT-A	
C617	CE0335	Electrolytic C.	ECEA1CKS101	
C618	CU3059	Chip C.	C1608JF1E104ZT-A	
C619	CU8016	Chip C.	C2012JB1H102K	
C621	CU8032	Chip C.	C2012JB1E223KT-A	
C622	CU8032	Chip C.	C2012JB1E223KT-A	
C623	CU8032	Chip C.	C2012JB1E223KT-A	
C624	CU8032	Chip C.	C2012JB1E223KT-A	
C625	CU9023	Chip C.	C3216CH1H121JT-A	
C626	CU7040	Chip C.	GRM43-2CH331J500PT	
C627	CU7041	Chip C.	GRM43-2CH391J500PT	
C628	CU7041	Chip C.	GRM43-2CH391J500PT	
C629	CU8032	Chip C.	C2012JB1E223KT-A	
C631	CU3101	Chip C.	C1608JB1C473KT-A	
C632	CU3101	Chip C.	C1608JB1C473KT-A	
C637	CC5085	Ceramic C.	RCC09SL181J-L46AU	
C638	CC5087	Ceramic C.	RCC09SL221J-L46AU	
C641	CE0353	Electrolytic C.	16MV470HC	
C642	CU9012	Chip C.	C3216JF1H104ZT	
C643	CU9009	Chip C.	C3216JB1H103KT-A	
C644	CU8016	Chip C.	C2012JB1H102K	

PA Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
C645	CU3035	Chip C.	C1608JB1H102KT-A	
C646	CU3035	Chip C.	C1608JB1H102KT-A	
C647	CE0343	Electrolytic C.	16MV 1000HC+T	
C648	CU3047	Chip C.	C1608JB1H103KT-A	
C649	CU3047	Chip C.	C1608JB1H103KT-A	
C650	CU3047	Chip C.	C1608JB1H103KT-A	
C651	CU3047	Chip C.	C1608JB1H103KT-A	
C652	CU3047	Chip C.	C1608JB1H103KT-A	
C653	CU3035	Chip C.	C1608JB1H102KT-A	
C654	CE0376	Electrolytic C.	ECEV1CS100SR	
C655	CE0353	Electrolytic C.	16MV470HC	
C656	CU3047	Chip C.	C1608JB1H103KT-A	
C657	CU3047	Chip C.	C1608JB1H103KT-A	
C658	CU3047	Chip C.	C1608JB1H103KT-A	
C659	CU3047	Chip C.	C1608JB1H103KT-A	
C661	CU3035	Chip C.	C1608JB1H102KT-A	
C663	CU3047	Chip C.	C1608JB1H103KT-A	
C664	CU3047	Chip C.	C1608JB1H103KT-A	
C665	CU3035	Chip C.	C1608JB1H102KT-A	
C666	CU3047	Chip C.	C1608JB1H103KT-A	
C667	CU3047	Chip C.	C1608JB1H103KT-A	
C668	CU3047	Chip C.	C1608JB1H103KT-A	
C669	CU3047	Chip C.	C1608JB1H103KT-A	
C670	CU3047	Chip C.	C1608JB1H103KT-A	
C671	CU3023	Chip C.	C1608CH1H101JT-A	
C672	CU3047	Chip C.	C1608JB1H103KT-A	
C673	CU3047	Chip C.	C1608JB1H103KT-A	
C676	CU8040	Chip C.	C2012JB1E473KT	
C677	CU3035	Chip C.	C1608JB1H102KT-A	
C678	CU3021	Chip C.	C1608CH1H680JT-A	
C679	CU3019	Chip C.	C1608CH1H470JT-A	
C680	CU3023	Chip C.	C1608CH1H101JT-A	
C681	CU3005	Chip C.	C1608CH1H050CT-A	
C682	CU3022	Chip C.	C1608CH1H820JT-A	
C685	CC5085	Ceramic C.	RCC08SL181J-L46AU	
CN608	UE0071	Connector	PI22A05M	
CN609	UE0226	Connector	B2B-PH-K-S	
CP601	UE0047	Round Pin	R9X10	
CP602	UE0047	Round Pin	R9X10	
CP603	UE0047	Round Pin	R9X10	
CP604	UE0047	Round Pin	R9X10	
CP605	UE0047	Round Pin	R9X10	
CP606	UE0047	Round Pin	R9X10	
CP607	UE0047	Round Pin	R9X10	
CP608	UE0047	Round Pin	R9X10	
D601	XD0263	Diode	MA27-B	
D604	XD0273	Diode	RLS-93TE-11	
D605	XD0273	Diode	RLS-93TE-11	
D606	XD0273	Diode	RLS-93TE-11	
D607	XD0265	Diode	SG5LR	
D608	XD0231	Diode	DAP202U T106	
D609	XD0273	Diode	RLS-93TE-11	
D610	XD0254	Diode	1SS355 TE-17	
D611	XD0254	Diode	1SS355 TE-17	
D612	XD0273	Diode	RLS-93TE-11	
D613	XD0230	Diode	DAN202U T106	
F601	EF0011	Fuse	Fuse 5A 125V	

Ref. No.	Parts No.	Description	Parts Name	Ver.
FH601	UH0014	Fuse holder	PFC5000-0301	
FH602	UH0014	Fuse holder	PFC5000-0301	
IC801	XA0224	IC	NJM2904M-T1	
J601	UJ0030	Jack	JPJ2545-01-510	
J602	UJ0030	Jack	JPJ2545-01-510	
L601	QC0039	Chip L.	NL322522T-1R0J	
L602	QR0014C	Coil	QR0014C	
L603	QC0039	Chip L.	NL322522T-1R0J	
L604	QC0039	Chip L.	NL322522T-1R0J	
L605	QB0037	Inductor	ZBF253D-00	
L606	QR0012	Coil	Troidal Core QR0012	
L607	QR0025	Coil	QR0025	
L608	QR0012	Coil	Troidal Core QR0012	
L609	QB0008	Chip L.	HF30ACB201209-T	
L610	QR0024	Coil	QR0024	
L611	QR0012	Coil	Troidal Core QR0012	
L612	QB0037	Inductor	ZBF253D-00	
L613	QB0038	Inductor	EXCELSA39	
L614	QB0037	Inductor	ZBF253D-00	
L615	QB0037	Inductor	ZBF253D-00	
L616	QC0067	Chip L.	NL322522TR10J	
L617	QC0124	Chip L.	NL322522T-R15J-3	
Q607	XU0173	Transistor	DTD114EK-T146	
Q608	XU0173	Transistor	DTD114EK-T146	
Q609	XU0078	Transistor	UN521L-TX	
R601	RK3030	Chip R.	ERJ3GSYJ221V	
R602	RK0020	Chip R.	ERJ6GEYJ151V	
R603	RK1028	Chip R.	ERJ8GEYJ471V	
R604	RK0020	Chip R.	ERJ6GEYJ151V	
R605	RK0128	Chip R.	ERJ6GEYJ5R6V	
R606	RK0128	Chip R.	ERJ6GEYJ5R6V	
R607	RK4023	Chip R.	ERJ12YJ560H	
R608	RK0028	Chip R.	ERJ6GEYJ471V	
R609	RK4030	Chip R.	ERJ12YJ221H	
R610	RK4051	Chip R.	ERJ14YJ101V	
R611	RK4055	Chip R.	ERJ-14YJ470H	
R612	RK4055	Chip R.	ERJ-14YJ470H	
R613	RK4030	Chip R.	ERJ12YJ221H	
R614	RK1018	Chip R.	ERJ8GEYJ101V	
R615	RK3038	Chip R.	ERJ3GSYJ102V	
R616	RK3038	Chip R.	ERJ3GSYJ102V	
R617	RE0020	Resistor	ERG3SJ180P	
R618	RE0020	Resistor	ERG3SJ180P	
R619	RK4018	Chip R.	ERJ-12YJ220U	
R620	RK3038	Chip R.	ERJ3GSYJ102V	
R621	RK3038	Chip R.	ERJ3GSYJ102V	
R624	RK0056	Chip R.	ERJ6GEYJ223V	
R625	RK0056	Chip R.	ERJ6GEYJ223V	
R626	RK4018	Chip R.	ERJ-12YJ220U	
R629	RE0017	Resistor	ERX3SJ4R7	
R630	RK3042	Chip R.	ERJ3GSYJ222V	
R631	RK3042	Chip R.	ERJ3GSYJ222V	
R632	RK0005	Chip R.	ERJ6GEYJ220V	
R634	RK4030	Chip R.	ERJ12YJ221H	
R635	RK3026	Chip R.	ERJ3GSYJ101V	
R637	RK3054	Chip R.	ERJ3GSYJ223V	
R638	RK3026	Chip R.	ERJ3GSYJ101V	

PA Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
R639	RK6024	Chip R.	ERJ1WYJ680H	
R640	RK6010	Chip R.	ERJ1WYJ4R7H	
R641	RK3070	Chip R.	ERJ3GSYJ474V	
R642	RK3049	Chip R.	ERJ3GSYJ822V	
R643	RK3054	Chip R.	ERJ3GSYJ223V	
R644	RK3051	Chip R.	ERJ3GSYJ123V	
R645	RK3053	Chip R.	ERJ3GSYJ183V	
R646	RK3056	Chip R.	ERJ3GSYJ333V	
R647	RK3049	Chip R.	ERJ3GSYJ822V	
R648	RK3052	Chip R.	ERJ3GSYJ153V	
R649	RK3044	Chip R.	ERJ3GSYJ332V	
R650	RK3038	Chip R.	ERJ3GSYJ102V	
R651	RK3015	Chip R.	ERJ3GSYJ120V	
R652	RK3033	Chip R.	ERJ3GSYJ391V	
R653	RK3033	Chip R.	ERJ3GSYJ391V	
R654	RK3030	Chip R.	ERJ3GSYJ221V	
R655	RK0005	Chip R.	ERJ6GEYJ220V	
R659	RK3001	Chip R.	ERJ3GSY0R00V	
R660	RK3026	Chip R.	ERJ3GSYJ101V	
R661	RK3026	Chip R.	ERJ3GSYJ101V	
R663	RK6026	Chip R.	ERJ1WYJ101H	
R664	RK6026	Chip R.	ERJ1WYJ101H	
RL602	UL0012	Relay	AJK3241	
RL603	UL0016	Relay	KH-12	
TH601	XS0032	Thermistor	ERTG1AHJ103	
VR601	RH0164	Trim.Pot	EVND8AA03BE2	
VR602	RH0165	Trim.Pot	EVND8AA03BE3	
VR603	RH0165	Trim.Pot	EVND8AA03BE3	
W601	UX1081	Wire	Wire PA-MAIN 1	
W602	UX1081	Wire	Wire PA-MAIN 1	
W605	UX1082	Wire	Wire PA 1	
W606	UX1083	Wire	Wire PA-MAIN 2	
W607	UX1084	Wire	Wire PA-FILTER 1	
W610	RD0108	Jumper	0 ohm Jumper	

VOL Unit

C1001	CU3047	Chip C.	C1608JB1H103KT-A	
CN1005	UE0305	Connector	105082311008100 (8P)	Later
CN1005	UE0223	Connector	53263-0890	Early
D1001	XD0254	Diode	1SS355 TE-17	
R1001	RK3057	Chip R.	ERJ3GSYJ393V	
R1002	RK3029	Chip R.	ERJ3GSYJ181V	
R1003	RK3053	Chip R.	ERJ3GSYJ183V	
R1004	RK3041	Chip R.	ERJ3GSYJ182V	
VR1001	RV0027	Variable R	RK972210(10KBC)	
VR1002	RV0022	Variable R	RK972210(10KB*2)	

SPEAKER Unit

SP1	ES0013	Speaker	VS-66-Y0811-2.0W	
W3	UX1047	Wire	Harness DR130	

Parts No.	Description	Parts Name	TH	EH	T	
PACKING						
	DS0369A	Serial No. plate (DX70TH)	1	0	0	0
	DS0388	Serial No. Plate (NEW)	0	1	0	1
	DS0362B	Serial No. Plate (DX70T)	0	0	1	0
	FP0100	HIDDEN SHEET DX70	0	1	0	1
	EMS42	MIC	1	1	1	1
	PR0237	Label (FCC PART15)	1	0	1	0
	PR0287	Label (F STICKER DX70T)	1	0	1	0
	PR0288	Label (Screw STKR DX70)	2	2	2	2
	PR0309	Label (CE-MARKLABEL)	0	0	0	1
	HK0385	A Package (DX70)	1	1	1	1
	HP0039	Protect. Bag (65×250×400)	1	1	1	1
	HU0080	P.MTL/Carton (A) DX70	1	1	1	1
	HU0082	P.MTL/Carton (C) DX70	1	1	1	1
	HU0088	P.MTL/Carton (D) DX70	0	1	1	1
	HU0104	P.MTL (G) DX70	1	1	1	1
	HU0106	P.MTL/Carton (F) DX70C	1	0	0	0
	KZ0033Z	BRACKET EBC9	1	0	0	0
	PF0043	BRACKET INSTALL DX70	1	0	0	0
	PH0009A	WARRANTY CERT EXPORT	1	0	1	0
	PK0060	Schematic diagram DX70	0	0	1	1
	PK0064	Schematic diagram DX70TH	1	1	0	0
	PS0221C	Instruction manual DX70TH	1	1	1	1
	PT0004A	Label (Serial No. for carton)	2	2	2	2
	ADUA52	POWER CORD 100W	0	0	1	1
	ADUA60	POWER CORD 30A	1	1	0	0
	PR0309	CE-MARKLABEL	0	0	0	1
	AJ0025	Screw (PH T3.5+10Fe/N1)	2	2	2	2
	FM0114Z	MIC HANGER	1	1	1	1
	HP0016	Protect. Bag (5×75×90)	1	1	1	1
	YZ0138	TAPE (W.SIDED EBC7)	1	1	1	1
	AA0013	Screw (BH M5+20 Fe/Zn)	6	0	0	0
	AE0020	Screw (HEX M4+10 Fe/B.Zn)	6	0	0	0
	AJ0003	Screw (BH T5+20 Fe/Zn)	6	0	0	0
	AN0002	Nut (HEX N5×0.8 Fe/Zn)	6	0	0	0
	AZ0009	Washer (SW 5×9.2×1.3 Fe/Zn)	6	0	0	0
	AZ0010	Washer (SW 5×12×0.8 Fe/Zn)	6	0	0	0
	FM0079Z	Spanner DR130	1	0	0	0
	HP0006	Protect. Bag (5×90×170)	1	0	0	0
	YZ0121	TAPE (10mm)	2	0	0	0

PLL Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
PLL Unit				
	UP02893		PLL Circuit Board B	
	UA0048		SMCD26x50-BDx6-P1.0	
	TZ0056		49U	
	TZ0056		49U	
	TZ0056		49U	
C701	CU3012	Chip C.	C1608CH1H120JT-A	
C702	CU3022	Chip C.	C1608CH1H820JT-A	
C703	CU3047	Chip C.	C1608JB1H103KT-A	
C704	CU3047	Chip C.	C1608JB1H103KT-A	
C705	CU3013	Chip C.	C1608CH1H150JT-A	
C706	CU3035	Chip C.	C1608JB1H102KT-A	
C707	CU3035	Chip C.	C1608JB1H102KT-A	
C708	CU3035	Chip C.	C1608JB1H102KT-A	
C709	CU3035	Chip C.	C1608JB1H102KT-A	
C710	CU3023	Chip C.	C1608CH1H101JT-A	
C711	CS0372	Chip Tantal	TMCMB1C106MTR	
C712	CU3035	Chip C.	C1608JB1H102KT-A	
C713	CS0372	Chip Tantal	TMCMB1C106MTR	
C714	CU3035	Chip C.	C1608JB1H102KT-A	
C715	CU3035	Chip C.	C1608JB1H102KT-A	
C716	CS0220	Chip Tantal	TMCMA1C225MTR	
C717	CS0220	Chip Tantal	TMCMA1C225MTR	
C718	CU3035	Chip C.	C1608JB1H102KT-A	
C719	CU8042	Chip C.	C2012JB1C104KT-A	
C720	CE0374	Electrolytic C.	16CV100BS	
C721	CU3101	Chip C.	C1608JB1C473KT-A	
C722	CU3014	Chip C.	C1608CH1H180JT-A	
C723	CU3035	Chip C.	C1608JB1H102KT-A	
C724	CS0372	Chip Tantal	TMCMB1C106MTR	
C725	CU3035	Chip C.	C1608JB1H102KT-A	
C726	CU3035	Chip C.	C1608JB1H102KT-A	
C727	CU3035	Chip C.	C1608JB1H102KT-A	
C728	CU3101	Chip C.	C1608JB1C473KT-A	
C729	CU3033	Chip C.	C1608JB1H681KT-A	
C730	CU3019	Chip C.	C1608CH1H470JT-A	
C731	CU3034	Chip C.	C1608JB1H821KT-A	
C732	CU3024	Chip C.	C1608CH1H121JT-A	
C733	CU3032	Chip C.	C1608JB1H561KT-A	
C734	CU3101	Chip C.	C1608JB1C473KT-A	
C735	CS0225	Chip Tantal	TMCMA1D155MTR	
C736	CU3101	Chip C.	C1608JB1C473KT-A	
C737	CU3047	Chip C.	C1608JB1H103KT-A	
C738	CU3051	Chip C.	C1608JB1E223KT-A	
C739	CU3035	Chip C.	C1608JB1H102KT-A	
C740	CU3047	Chip C.	C1608JB1H103KT-A	
C741	CU3047	Chip C.	C1608JB1H103KT-A	
C742	CU3047	Chip C.	C1608JB1H103KT-A	
C743	CS0061	Chip Tantal	TMCSA1V224MTR	
C744	CU3047	Chip C.	C1608JB1H103KT-A	
C745	CU3047	Chip C.	C1608JB1H103KT-A	
C746	CU3012	Chip C.	C1608CH1H120JT-A	
C747	CU3002	Chip C.	C1608CH1H010CT-A	
C748	CU3002	Chip C.	C1608CH1H010CT-A	
C749	CU3012	Chip C.	C1608CH1H120JT-A	
C750	CU3007	Chip C.	C1608CH1H060CT-A	
C751	CU3035	Chip C.	C1608JB1H102KT-A	
C752	CU3035	Chip C.	C1608JB1H102KT-A	
C753	CU3014	Chip C.	C1608CH1H180JT-A	
C754	CU3001	Chip C.	C1608CH1H0R5CT-A	
C755	CU3088	Chip C.	C1608CH1H200JT-A	
C756	CU3035	Chip C.	C1608JB1H102KT-A	

Ref. No.	Parts No.	Description	Parts Name	Ver.
C757	CU3035	Chip C.	C1608JB1H102KT-A	
C758	CU3035	Chip C.	C1608JB1H102KT-A	
C759	CU3035	Chip C.	C1608JB1H102KT-A	
C760	CE0310	Electrolytic C.	ECEV1AA330P	
C761	CU3047	Chip C.	C1608JB1H103KT-A	
C762	CU3035	Chip C.	C1608JB1H102KT-A	
C763	CU3035	Chip C.	C1608JB1H102KT-A	
C764	CU3035	Chip C.	C1608JB1H102KT-A	
C765	CU3014	Chip C.	C1608CH1H180JT-A	
C766	CU3035	Chip C.	C1608JB1H102KT-A	
C767	CU3035	Chip C.	C1608JB1H102KT-A	
C768	CE0313	Electrolytic C.	ECEV1CA220P	
C769	CU3047	Chip C.	C1608JB1H103KT-A	
C770	CE0313	Electrolytic C.	ECEV1CA220P	
C771	CU3047	Chip C.	C1608JB1H103KT-A	
C772	CU3014	Chip C.	C1608CH1H180JT-A	
C773	CU3004	Chip C.	C1608CH1H030CT-A	
C774	CU3035	Chip C.	C1608JB1H102KT-A	
C775	CU3101	Chip C.	C1608JB1C473KT-A	
C776	CU3047	Chip C.	C1608JB1H103KT-A	
C777	CU3101	Chip C.	C1608JB1C473KT-A	
C780	CU3046	Chip C.	C1608JB1H822KT-A	
C781	CU3046	Chip C.	C1608JB1H822KT-A	
C782	CU3041	Chip C.	C1608JB1H332KT-A	
C783	CS0069	Chip Tantal	TMCSA1V154MTR	
C784	CU3047	Chip C.	C1608JB1H103KT-A	
C785	CU3051	Chip C.	C1608JB1E223KT-A	
C786	CU3101	Chip C.	C1608JB1C473KT-A	
C787	CU8042	Chip C.	C2012JB1C104KT-A	
C788	CU3047	Chip C.	C1608JB1H103KT-A	
C789	CU3047	Chip C.	C1608JB1H103KT-A	
C790	CU3015	Chip C.	C1608CH1H220JT-A	
C791	CU3027	Chip C.	C1608CH1H221JT-A	
C792	CU3027	Chip C.	C1608CH1H221JT-A	
C793	CU3035	Chip C.	C1608JB1H102KT-A	
C794	CS0372	Chip Tantal	TMCMB1C106MTR	
C795	CU3051	Chip C.	C1608JB1E223KT-A	
C796	CS0372	Chip Tantal	TMCMB1C106MTR	
C797	CU3047	Chip C.	C1608JB1H103KT-A	
C798	CU8042	Chip C.	C2012JB1C104KT-A	
C799	CU3047	Chip C.	C1608JB1H103KT-A	
C800	CS0220	Chip Tantal	TMCMA1C225MTR	
C801	CS0049	Chip Tantal	TMCSA1C105MTR	
C802	CU3035	Chip C.	C1608JB1H102KT-A	
C803	CU3047	Chip C.	C1608JB1H103KT-A	
C804	CU3015	Chip C.	C1608CH1H220JT-A	
C805	CU3025	Chip C.	C1608CH1H151JT-A	
C806	CU3025	Chip C.	C1608CH1H151JT-A	
C807	CU3016	Chip C.	C1608CH1H270JT-A	
C808	CU3047	Chip C.	C1608JB1H103KT-A	
C809	CU3021	Chip C.	C1608CH1H680JT-A	
C810	CU3011	Chip C.	C1608CH1H100CT-A	
C811	CU3016	Chip C.	C1608CH1H270JT-A	
C812	CU3020	Chip C.	C1608CH1H560JT-A	
C813	CU3035	Chip C.	C1608JB1H102KT-A	
C814	CU3047	Chip C.	C1608JB1H103KT-A	
C816	CU3035	Chip C.	C1608JB1H102KT-A	
C817	CE0310	Electrolytic C.	ECEV1AA330P	
C818	CU3035	Chip C.	C1608JB1H102KT-A	
C819	CU3035	Chip C.	C1608JB1H102KT-A	

PLL Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
C820	CU3035	Chip C.	C1608JB1H102KT-A	
C821	CU3101	Chip C.	C1608JB1C473KT-A	
C823	CU3035	Chip C.	C1608JB1H102KT-A	
C824	CU3051	Chip C.	C1608JB1E223KT-A	
C825	CU3035	Chip C.	C1608JB1H102KT-A	
C826	CU3020	Chip C.	C1608CH1H560JT-A	
C827	CU3019	Chip C.	C1608CH1H470JT-A	
C828	CU3024	Chip C.	C1608CH1H121JT-A	
C829	CU3013	Chip C.	C1608CH1H150JT-A	
C830	CU3021	Chip C.	C1608CH1H680JT-A	
C831	CU3043	Chip C.	C1608JB1H472KT-A	
C832	CU3043	Chip C.	C1608JB1H472KT-A	
C833	CU3049	Chip C.	C1608JB1E153KT-A	
C834	CU3101	Chip C.	C1608JB1C473KT-A	
C835	CU3101	Chip C.	C1608JB1C473KT-A	
C836	CU3101	Chip C.	C1608JB1C473KT-A	
C837	CU3015	Chip C.	C1608CH1H220JT-A	
C838	CU3035	Chip C.	C1608JB1H102KT-A	
C840	CU3035	Chip C.	C1608JB1H102KT-A	
C841	CU3035	Chip C.	C1608JB1H102KT-A	
C842	CU3013	Chip C.	C1608CH1H150JT-A	
C844	CU3035	Chip C.	C1608JB1H102KT-A	
C845	CU3006	Chip C.	C1608CH1H050CT-A	
C846	CU3020	Chip C.	C1608CH1H560JT-A	
C847	CU3020	Chip C.	C1608CH1H560JT-A	
C848	CU3027	Chip C.	C1608CH1H221JT-A	
C849	CU3016	Chip C.	C1608CH1H270JT-A	
C850	CU3014	Chip C.	C1608CH1H180JT-A	
C851	CU3016	Chip C.	C1608CH1H270JT-A	
C852	CU3035	Chip C.	C1608JB1H102KT-A	
C853	CU3035	Chip C.	C1608JB1H102KT-A	
C854	CU3022	Chip C.	C1608CH1H820JT-A	
C855	CU3019	Chip C.	C1608CH1H470JT-A	
C856	CU3010	Chip C.	C1608CH1H090CT-A	
C857	CU3002	Chip C.	C1608CH1H010CT-A	
C858	CU3011	Chip C.	C1608CH1H100CT-A	
C859	CU3035	Chip C.	C1608JB1H102KT-A	
C860	CU3035	Chip C.	C1608JB1H102KT-A	
C861	CU3002	Chip C.	C1608CH1H010CT-A	
C862	CU3011	Chip C.	C1608CH1H100CT-A	
C863	CU3011	Chip C.	C1608CH1H100CT-A	
C864	CU3035	Chip C.	C1608JB1H102KT-A	
C865	CU3035	Chip C.	C1608JB1H102KT-A	
C866	CU3047	Chip C.	C1608JB1H103KT-A	
C867	CU3047	Chip C.	C1608JB1H103KT-A	
C868	CU3047	Chip C.	C1608JB1H103KT-A	
C869	CU3013	Chip C.	C1608CH1H150JT-A	
C870	CU3006	Chip C.	C1608CH1H050CT-A	
C871	CU3047	Chip C.	C1608JB1H103KT-A	
C872	CU3016	Chip C.	C1608CH1H270JT-A	
C873	CU3002	Chip C.	C1608CH1H010CT-A	
C874	CU3002	Chip C.	C1608CH1H010CT-A	
C875	CU3016	Chip C.	C1608CH1H270JT-A	
C876	CU3016	Chip C.	C1608CH1H270JT-A	
C877	CU3047	Chip C.	C1608JB1H103KT-A	
C878	CU3006	Chip C.	C1608CH1H050CT-A	
C879	CU3047	Chip C.	C1608JB1H103KT-A	
C880	CU3101	Chip C.	C1608JB1C473KT-A	
C881	CS0220	Chip Tantal	TMCMA1C225MTR	
CN701	UE0259	Connector	CFP0526-0201	
CN702	UE0165	Connector	B4B-ZR	

Ref. No.	Parts No.	Description	Parts Name	Ver.
D701	XD0254	Diode	1SS355 TE-17	
D702	XD0254	Diode	1SS355 TE-17	
D703	XD0254	Diode	1SS355 TE-17	
D704	XD0289	Diode	S3275(TE12L)	
D705	XD0273	Diode	RLS-93TE-11	
D706	XD0233	Diode	1SV217TPH4	
D707	XD0254	Diode	1SS355 TE-17	
D708	XD0231	Diode	DAP202U T106	
D709	XD0230	Diode	DAN202U T106	
D710	XD0254	Diode	1SS355 TE-17	
D711	XD0230	Diode	DAN202U T106	
D712	XD0230	Diode	DAN202U T106	
D713	XD0254	Diode	1SS355 TE-17	
D714	XD0230	Diode	DAN202U T106	
D715	XD0230	Diode	DAN202U T106	
D716	XD0230	Diode	DAN202U T106	
D717	XD0230	Diode	DAN202U T106	
D718	XD0230	Diode	DAN202U T106	
D719	XD0230	Diode	DAN202U T106	
D720	XD0230	Diode	DAN202U T106	
D721	XD0230	Diode	DAN202U T106	
D722	XD0254	Diode	1SS355 TE-17	
D723	XD0254	Diode	1SS355 TE-17	
D724	XD0272	Diode	1SS356 TW11	
D725	XD0257	Diode	RN711H	
D726	XD0272	Diode	1SS356 TW11	
D727	XD0254	Diode	1SS355 TE-17	
D728	XD0254	Diode	1SS355 TE-17	
D729	XD0254	Diode	1SS355 TE-17	
D730	XD0254	Diode	1SS355 TE-17	
D732	XD0254	Diode	1SS355 TE-17	
D733	XD0254	Diode	1SS355 TE-17	
D734	XD0254	Diode	1SS355 TE-17	
D735	XD0254	Diode	1SS355 TE-17	
FL701	XC0013	Ceramic Filter	SK107M3-AE-20(A)	
IC701	XA0379	IC	UPC1037GR-E1(MS)	
IC702	XA0297	IC	MB87086APF-G-BND-TF	
IC703	XA0298	IC	MB87014APF-G-BND-TF	
IC705	XA0294	IC	MC74HC390FL2	
IC706	XA0379	IC	UPC1037GR-E1(MS)	
IC707	XA0297	IC	MB87086APF-G-BND-TF	
IC708	XA0346	IC	MCT7805CT	
IC709	XA0379	IC	UPC1037GR-E1(MS)	
IC710	XA0305	IC	TC74AC74F(EL)	
IC711	XA0304	IC	BA4425F-E1	
IC712	XA0379	IC	UPC1037GR-E1(MS)	
IC714	XA0294	IC	MC74HC390FL2	
IC715	XA0115	IC	TC4S66F-TE85L	
IC716	XA0246	IC	BU4094BF-T1	
J701	UX1087	Wire	Wire PLL - MAIN	
J702	UX1087	Wire	Wire PLL - MAIN	
J703	UX1087	Wire	Wire PLL - MAIN	
L701	QC0039	Chip L.	NL322522TIR0J	
L702	QA0108	Coil	QA0108	
L703	QC0085	Chip L.	NL322522T-820J	
L704	QC0084	Chip L.	NL322522T-680J	

PLL Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
L705	QC0086	Chip L.	NL322522T-101J	
L706	QA0107	Coil	QA0107	
L707	QA0107	Coil	QA0107	
L708	QA0107	Coil	QA0107	
L709	QA0107	Coil	QA0107	
L710	QA0107	Coil	QA0107	
L711	QA0107	Coil	QA0107	
L712	QA0107	Coil	QA0107	
L713	QC0132	Chip L.	NL322522T-R68J-3	
L714	QC0075	Chip L.	NL322522T-120J	
L715	QC0080	Chip L.	NL322522T-330J	
L716	QC0076	Chip L.	NL322522T-150J	
L717	QC0074	Chip L.	NL322522T-8R2J	
L718	QC0072	Chip L.	NL322522T-5R6J	
L719	QC0048	Chip L.	NL322522T-100J	
L720	QA0108	Coil	QA0108	
L721	QA0108	Coil	QA0108	
L722	QA0108	Coil	QA0108	
L724	QC0124	Chip L.	NL322522T-R15J-3	
L725	QC0126	Chip L.	NL322522T-R22J-3	
L726	QC0076	Chip L.	NL322522T-150J	
L727	QC0064	Chip L.	NL322522T-056J	
L728	QC0123	Chip L.	NL322522T-R12J-3	
L729	QR0017	Coil	QR0017	
L730	QR0017	Coil	QR0017	
L731	QC0130	Chip L.	NL322522T-R47J-3	
L732	QA0118	Coil	QA0118	
L733	QA0118	Coil	QA0118	
L734	QA0118	Coil	QA0118	
L735	QA0118	Coil	QA0118	
L736	QC0048	Chip L.	NL322522T-100J	
L737	QC0473	Chip L.	LQH4N100J04	
L738	QC0064	Chip L.	NL322522T-056J	
Q701	XT0095	Transistor	2SC4081T106R	
Q702	XT0059	Transistor	2SC3082KT146Q	
Q703	XT0059	Transistor	2SC3082KT146Q	
Q704	XT0080	Transistor	2SC3324B	
Q705	XT0080	Transistor	2SC3324B	
Q706	XT0080	Transistor	2SC3324B	
Q707	XT0059	Transistor	2SC3082KT146Q	
Q708	XT0059	Transistor	2SC3082KT146Q	
Q709	XU0140	Transistor	DTC124EUT106	
Q710	XT0059	Transistor	2SC3082KT146Q	
Q711	XT0059	Transistor	2SC3082KT146Q	
Q712	XT0059	Transistor	2SC3082KT146Q	
Q713	XT0096	Transistor	2SC4099T106N	
Q714	XT0059	Transistor	2SC3082KT146Q	
Q715	XU0140	Transistor	DTC124EUT106	
Q716	XT0059	Transistor	2SC3082KT146Q	
Q717	XU0140	Transistor	DTC124EUT106	
Q718	XU0148	Transistor	DTC144EUT106	
Q719	XT0059	Transistor	2SC3082KT146Q	
Q721	XT0095	Transistor	2SC4081T106R	
Q722	XT0095	Transistor	2SC4081T106R	
Q723	XT0095	Transistor	2SC4081T106R	
Q724	XT0095	Transistor	2SC4081T106R	
Q725	XT0095	Transistor	2SC4081T106R	
Q726	XU0125	Transistor	DTA144EUT106	
Q727	XU0148	Transistor	DTC144EUT106	
Q728	XT0094	Transistor	2SA1576T106R	

Ref. No.	Parts No.	Description	Parts Name	Ver.
Q729	XU0148	Transistor	DTC144EUT106	
Q730	XU0148	Transistor	DTC144EUT106	
Q731	XT0059	Transistor	2SC3082KT146Q	
Q732	XU0174	Transistor	UN5112	
Q733	XU0125	Transistor	DTA144EUT106	
Q734	XU0148	Transistor	DTC144EUT106	
Q735	XU0148	Transistor	DTC144EUT106	
R701	RK3030	Chip R.	ERJ3GSYJ221V	
R702	RK3052	Chip R.	ERJ3GSYJ153V	
R703	RK3046	Chip R.	ERJ3GSYJ472V	
R704	RK3034	Chip R.	ERJ3GSYJ471V	
R705	RK3022	Chip R.	ERJ3GSYJ470V	
R706	RK3054	Chip R.	ERJ3GSYJ223V	
R707	RK3038	Chip R.	ERJ3GSYJ102V	
R708	RK3054	Chip R.	ERJ3GSYJ223V	
R709	RK3042	Chip R.	ERJ3GSYJ222V	
R710	RK3022	Chip R.	ERJ3GSYJ470V	
R711	RK3054	Chip R.	ERJ3GSYJ223V	
R712	RK3038	Chip R.	ERJ3GSYJ102V	
R713	RK3054	Chip R.	ERJ3GSYJ223V	
R714	RK3042	Chip R.	ERJ3GSYJ222V	
R715	RK3050	Chip R.	ERJ3GSYJ103V	
R716	RK3050	Chip R.	ERJ3GSYJ103V	
R717	RK3034	Chip R.	ERJ3GSYJ471V	
R718	RK3034	Chip R.	ERJ3GSYJ471V	
R719	RK3034	Chip R.	ERJ3GSYJ471V	
R720	RK3050	Chip R.	ERJ3GSYJ103V	
R721	RK3038	Chip R.	ERJ3GSYJ102V	
R722	RK3034	Chip R.	ERJ3GSYJ471V	
R723	RK3034	Chip R.	ERJ3GSYJ471V	
R724	RK3034	Chip R.	ERJ3GSYJ471V	
R725	RK3042	Chip R.	ERJ3GSYJ222V	
R726	RK3038	Chip R.	ERJ3GSYJ102V	
R727	RK3038	Chip R.	ERJ3GSYJ102V	
R728	RK3070	Chip R.	ERJ3GSYJ474V	
R729	RK3026	Chip R.	ERJ3GSYJ101V	
R730	RK3038	Chip R.	ERJ3GSYJ102V	
R731	RK3046	Chip R.	ERJ3GSYJ472V	
R732	RK3026	Chip R.	ERJ3GSYJ101V	
R733	RK3026	Chip R.	ERJ3GSYJ101V	
R734	RK3050	Chip R.	ERJ3GSYJ103V	
R735	RK3058	Chip R.	ERJ3GSYJ473V	
R736	RK3048	Chip R.	ERJ3GSYJ682V	
R737	RK3035	Chip R.	ERJ3GSYJ561V	
R739	RK3026	Chip R.	ERJ3GSYJ101V	
R740	RK3030	Chip R.	ERJ3GSYJ221V	
R741	RK3001	Chip R.	ERJ3GSY0R00V	
R742	RK3038	Chip R.	ERJ3GSYJ102V	
R743	RK3026	Chip R.	ERJ3GSYJ101V	
R744	RK3030	Chip R.	ERJ3GSYJ221V	
R745	RK3050	Chip R.	ERJ3GSYJ103V	
R746	RK3041	Chip R.	ERJ3GSYJ182V	
R747	RK3038	Chip R.	ERJ3GSYJ102V	
R748	RK3026	Chip R.	ERJ3GSYJ101V	
R749	RK3001	Chip R.	ERJ3GSY0R00V	
R750	RK3022	Chip R.	ERJ3GSYJ470V	
R751	RK3026	Chip R.	ERJ3GSYJ101V	
R752	RK3026	Chip R.	ERJ3GSYJ101V	
R753	RK3038	Chip R.	ERJ3GSYJ102V	
R754	RK3054	Chip R.	ERJ3GSYJ223V	
R755	RK3044	Chip R.	ERJ3GSYJ332V	

PLL Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
R755	RK3042	Chip R.	ERJ3GSYJ222V	
R756	RK3054	Chip R.	ERJ3GSYJ223V	
R757	RK3050	Chip R.	ERJ3GSYJ103V	
R758	RK3034	Chip R.	ERJ3GSYJ471V	
R759	RK3034	Chip R.	ERJ3GSYJ471V	
R760	RK3034	Chip R.	ERJ3GSYJ471V	
R761	RK3034	Chip R.	ERJ3GSYJ471V	
R762	RK3026	Chip R.	ERJ3GSYJ101V	
R763	RK3050	Chip R.	ERJ3GSYJ103V	
R764	RK3046	Chip R.	ERJ3GSYJ472V	
R765	RK3038	Chip R.	ERJ3GSYJ102V	
R766	RK3066	Chip R.	ERJ3GSYJ224V	
R767	RK3074	Chip R.	ERJ3GSYJ105V	
R769	RK3062	Chip R.	ERJ3GSYJ104V	
R770	RK3034	Chip R.	ERJ3GSYJ471V	
R771	RK3034	Chip R.	ERJ3GSYJ471V	
R773	RK3042	Chip R.	ERJ3GSYJ222V	
R774	RK3043	Chip R.	ERJ3GSYJ272V	
R775	RK3046	Chip R.	ERJ3GSYJ472V	
R776	RK3026	Chip R.	ERJ3GSYJ101V	
R777	RK3038	Chip R.	ERJ3GSYJ102V	
R778	RK3042	Chip R.	ERJ3GSYJ222V	
R779	RK3034	Chip R.	ERJ3GSYJ471V	
R780	RK3042	Chip R.	ERJ3GSYJ222V	
R781	RK3054	Chip R.	ERJ3GSYJ223V	
R782	RK3054	Chip R.	ERJ3GSYJ223V	
R783	RK3042	Chip R.	ERJ3GSYJ222V	
R784	RK3054	Chip R.	ERJ3GSYJ223V	
R785	RK3052	Chip R.	ERJ3GSYJ153V	
R786	RK3062	Chip R.	ERJ3GSYJ104V	
R787	RK3062	Chip R.	ERJ3GSYJ104V	
R788	RK3046	Chip R.	ERJ3GSYJ472V	
R793	RK3038	Chip R.	ERJ3GSYJ102V	
R794	RK3026	Chip R.	ERJ3GSYJ101V	
R795	RK3050	Chip R.	ERJ3GSYJ103V	
R796	RK3074	Chip R.	ERJ3GSYJ105V	
R797	RK3046	Chip R.	ERJ3GSYJ472V	
R798	RK3054	Chip R.	ERJ3GSYJ223V	
R800	RK3038	Chip R.	ERJ3GSYJ102V	
R801	RK3030	Chip R.	ERJ3GSYJ221V	
R802	RK3036	Chip R.	ERJ3GSYJ681V	
R803	RK3050	Chip R.	ERJ3GSYJ103V	
R804	RK3050	Chip R.	ERJ3GSYJ103V	
R805	RK3039	Chip R.	ERJ3GSYJ122V	
R806	RK3054	Chip R.	ERJ3GSYJ223V	
R807	RK3052	Chip R.	ERJ3GSYJ153V	
R808	RK3046	Chip R.	ERJ3GSYJ472V	
R809	RK3046	Chip R.	ERJ3GSYJ472V	
R810	RK3030	Chip R.	ERJ3GSYJ221V	
R811	RK3046	Chip R.	ERJ3GSYJ472V	
R812	RK3030	Chip R.	ERJ3GSYJ221V	
R813	RK3046	Chip R.	ERJ3GSYJ472V	
R814	RK3046	Chip R.	ERJ3GSYJ472V	
R815	RK3042	Chip R.	ERJ3GSYJ222V	
R816	RK3030	Chip R.	ERJ3GSYJ221V	

Ref. No.	Parts No.	Description	Parts Name	Ver.
R817	RK3046	Chip R.	ERJ3GSYJ472V	
R818	RK3062	Chip R.	ERJ3GSYJ104V	
R819	RK3039	Chip R.	ERJ3GSYJ122V	
R820	RK3026	Chip R.	ERJ3GSYJ101V	
R821	RK3026	Chip R.	ERJ3GSYJ101V	
R822	RK3054	Chip R.	ERJ3GSYJ223V	
R823	RK3054	Chip R.	ERJ3GSYJ223V	
R824	RK3042	Chip R.	ERJ3GSYJ222V	
R825	RK3038	Chip R.	ERJ3GSYJ102V	
R826	RK3026	Chip R.	ERJ3GSYJ101V	
R827	RK3056	Chip R.	ERJ3GSYJ333V	
R828	RK3050	Chip R.	ERJ3GSYJ103V	
R829	RK3014	Chip R.	ERJ3GSYJ100V	
R830	RK3032	Chip R.	ERJ3GSYJ331V	
R831	RK3026	Chip R.	ERJ3GSYJ101V	
R832	RK3026	Chip R.	ERJ3GSYJ101V	
R833	RK3033	Chip R.	ERJ3GSYJ391V	
R834	RK3042	Chip R.	ERJ3GSYJ222V	
R835	RK3038	Chip R.	ERJ3GSYJ102V	
R836	RK3026	Chip R.	ERJ3GSYJ101V	
R838	RK3042	Chip R.	ERJ3GSYJ222V	
R839	RK3026	Chip R.	ERJ3GSYJ101V	
R840	RK3062	Chip R.	ERJ3GSYJ104V	
R841	RK3042	Chip R.	ERJ3GSYJ222V	
R842	RK3033	Chip R.	ERJ3GSYJ391V	
R843	RK3046	Chip R.	ERJ3GSYJ472V	
R844	RK3030	Chip R.	ERJ3GSYJ221V	
R845	RK3034	Chip R.	ERJ3GSYJ471V	
R846	RK3050	Chip R.	ERJ3GSYJ103V	
R847	RK3034	Chip R.	ERJ3GSYJ471V	
R848	RK3014	Chip R.	ERJ3GSYJ100V	
R849	RK3034	Chip R.	ERJ3GSYJ471V	
R850	RK3052	Chip R.	ERJ3GSYJ153V	
R851	RK3046	Chip R.	ERJ3GSYJ472V	
R852	RK3026	Chip R.	ERJ3GSYJ101V	
R853	RK3026	Chip R.	ERJ3GSYJ101V	
R854	RK3022	Chip R.	ERJ3GSYJ470V	
R855	RK3018	Chip R.	ERJ3GSYJ220V	
R856	RK3050	Chip R.	ERJ3GSYJ103V	
R857	RK3038	Chip R.	ERJ3GSYJ102V	
R858	RK3030	Chip R.	ERJ3GSYJ221V	
R859	RK3051	Chip R.	ERJ3GSYJ123V	
R860	RK3034	Chip R.	ERJ3GSYJ471V	
R861	RK3032	Chip R.	ERJ3GSYJ331V	
R862	RK3038	Chip R.	ERJ3GSYJ102V	
R863	RK3062	Chip R.	ERJ3GSYJ104V	
R864	RK3032	Chip R.	ERJ3GSYJ331V	
R865	RK3026	Chip R.	ERJ3GSYJ101V	
R866	RK3034	Chip R.	ERJ3GSYJ471V	
R867	RK3034	Chip R.	ERJ3GSYJ471V	
R868	RK3062	Chip R.	ERJ3GSYJ104V	
R869	RK3034	Chip R.	ERJ3GSYJ471V	
R870	RK3026	Chip R.	ERJ3GSYJ101V	
R871	RK3042	Chip R.	ERJ3GSYJ222V	
R872	RK3038	Chip R.	ERJ3GSYJ102V	
R873	RK3034	Chip R.	ERJ3GSYJ471V	
R874	RK3054	Chip R.	ERJ3GSYJ223V	
R875	RK3026	Chip R.	ERJ3GSYJ101V	
R876	RK3058	Chip R.	ERJ3GSYJ473V	
R877	RK3026	Chip R.	ERJ3GSYJ101V	
R878	RK3001	Chip R.	ERJ3GSY0R00V	
R879	RK3042	Chip R.	ERJ3GSYJ222V	

PLL Unit / TONE Unit / VCO Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
R880	RK3054	Chip R.	ERJ3GSYJ223V	
R881	RK3050	Chip R.	ERJ3GSYJ103V	
R882	RK3050	Chip R.	ERJ3GSYJ103V	
R883	RK3050	Chip R.	ERJ3GSYJ103V	
R884	RK3050	Chip R.	ERJ3GSYJ103V	
R885	RK3050	Chip R.	ERJ3GSYJ103V	
R886	RK3050	Chip R.	ERJ3GSYJ103V	
R887	RK3050	Chip R.	ERJ3GSYJ103V	
R888	RK3050	Chip R.	ERJ3GSYJ103V	
R889	RK3026	Chip R.	ERJ3GSYJ101V	
R890	RK3024	Chip R.	ERJ3GSYJ680V	
R891	RK3030	Chip R.	ERJ3GSYJ221V	
R892	RK3030	Chip R.	ERJ3GSYJ221V	
R893	RK3030	Chip R.	ERJ3GSYJ221V	
R894	RK3050	Chip R.	ERJ3GSYJ103V	
R898	RK3001	Chip R.	ERJ3GSY0R00V	
RL701	UL0010	Relay	FBR22D12	
TC701	CT0012	Trimmer	CTZ-10AW	
TC702	CT0034	Trimmer	CTZ3S-30CW1-P	
TC703	CT0034	Trimmer	CTZ3S-30CW1-P	
TC704	CT0034	Trimmer	CTZ3S-30CW1-P	
TC705	CT0012	Trimmer	CTZ-10AW	
TH701	XS0014	Thermistor	TBPS1R223K460H5Q	
VR701	RH0106	Trim.Pot	EVM1YSX50BQ4	
VR702	RH0106	Trim.Pot	EVM1YSX50BQ4	
X701	XQ0065Z	Crystal	49U-30.00MHz	
X702	XQ0066	Crystal	49U-9.420MHz	
X703	XQ0067	Crystal	49U-9.875MHz	
TONE Unit				
C901	CS0049	Chip Tantal	TMCSA1C105MTR	TH
C902	CU3047	Chip C.	C1608JB1H103KT-A	TH
C903	CS0372	Chip Tantal	TMCMB1C106MTR	TH
C904	CS0220	Chip Tantal	TMCMA1C225MTR	TH
C905	CU3006	Chip C.	C1608CH1H050CT-A	TH
C907	CU3101	Chip C.	C1608JB1C473KT-A	TH
CN991	UX1049	Wire	Wire EJ19U	TH
D901	XD0254	Diode	1SS355 TE-17	TH
IC901	XA0052	IC	S7116A	TH
Q901	XT0095	Transistor	2SC4081T106R	TH
R901	RK3050	Chip R.	ERJ3GSYJ103V	TH
R902	RK3058	Chip R.	ERJ3GSYJ473V	TH
R903	RK3026	Chip R.	ERJ3GSYJ101V	TH
R904	RK3066	Chip R.	ERJ3GSYJ224V	TH
R905	RK3046	Chip R.	ERJ3GSYJ472V	TH
R906	RK3057	Chip R.	ERJ3GSYJ393V	TH
R907	RK3034	Chip R.	ERJ3GSYJ471V	TH
R908	RK3057	Chip R.	ERJ3GSYJ393V	TH
R909	RK3058	Chip R.	ERJ3GSYJ473V	TH
R910	RK3054	Chip R.	ERJ3GSYJ223V	TH
SW901	UD0005		SSGM18001A	TH
X901	XB0001		FARC4CA0380K01R	TH

Ref. No.	Parts No.	Description	Parts Name	Ver.
VCO Unit				
VCO1				
	TS0106		VCO Case(A)	
C924	CS0372	Chip Tantal	TMCMB1C106MTR	
C925	CU3035	Chip C.	C1608JB1H102KT-A	
C926	CU3035	Chip C.	C1608JB1H102KT-A	
C927	CU3035	Chip C.	C1608JB1H102KT-A	
C928	CU3035	Chip C.	C1608JB1H102KT-A	
C929	CS0372	Chip Tantal	TMCMB1C106MTR	
C930	CU3035	Chip C.	C1608JB1H102KT-A	
C931	CU3035	Chip C.	C1608JB1H102KT-A	
C932	CU3051	Chip C.	C1608JB1E223KT-A	
C933	CU3024	Chip C.	C1608CH1H121JT-A	
C934	CU3024	Chip C.	C1608CH1H121JT-A	
C935	CU3008	Chip C.	C1608CH1H070JT-A	
C936	CU3007	Chip C.	C1608CH1H060JT-A	
C937	CU3006	Chip C.	C1608CH1H050CT-A	
C938	CU3035	Chip C.	C1608JB1H102KT-A	
C939	CS0382	Chip Tantal	TMCMB1A226MTR	
CN901	UE0185	Connector	B6P-BC-2	
D931	XD0233	Diode	1SV217TPH4	
IC704	XA0292	IC	MC12019DR2	
L931	QA0109	Coil	QA0109	
L932	QC0043	Chip L.	NL322522T-2R2J	
Q931	XE0006	FET	2SK210GR-TE85L	
Q932	XT0059	Transistor	2SC3082KT146Q	
Q933	XT0095	Transistor	2SC4081T106R	
R926	RK3050	Chip R.	ERJ3GSYJ103V	
R927	RK3030	Chip R.	ERJ3GSYJ221V	
R928	RK3026	Chip R.	ERJ3GSYJ101V	
R929	RK3065	Chip R.	ERJ3GSYJ184V	
R930	RK3038	Chip R.	ERJ3GSYJ102V	
R931	RK3050	Chip R.	ERJ3GSYJ103V	
R932	RK3062	Chip R.	ERJ3GSYJ104V	
R933	RK3062	Chip R.	ERJ3GSYJ104V	
R934	RK3028	Chip R.	ERJ3GSYJ151V	
R935	RK3050	Chip R.	ERJ3GSYJ103V	
R936	RK3050	Chip R.	ERJ3GSYJ103V	
R937	RK3030	Chip R.	ERJ3GSYJ221V	
R939	RK3038	Chip R.	ERJ3GSYJ102V	
VCO2				
	TS0106		VCO Case(A)	
C941	CU3035	Chip C.	C1608JB1H102KT-A	
C942	CU3021	Chip C.	C1608CH1H680JT-A	
C943	CU3020	Chip C.	C1608CH1H560JT-A	
C944	CU3017	Chip C.	C1608CH1H330JT-A	
C945	CU3012	Chip C.	C1608CH1H120JT-A	
C946	CU3012	Chip C.	C1608CH1H120JT-A	
C947	CU3004	Chip C.	C1608CH1H030CT-A	
C948	CU3035	Chip C.	C1608JB1H102KT-A	
C949	CU3004	Chip C.	C1608CH1H030CT-A	
C950	CS0382	Chip Tantal	TMCMB1A226MTR	
C951	CU3035	Chip C.	C1608JB1H102KT-A	
C952	CU3035	Chip C.	C1608JB1H102KT-A	
C953	CU3035	Chip C.	C1608JB1H102KT-A	

VCO Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
C954	CU3035	Chip C.	C1608JB1H102KT-A	
C955	CU3035	Chip C.	C1608JB1H102KT-A	
C956	CS0237	Chip Tantal	TMCMA1A475MTR	
C957	CU3047	Chip C.	C1608JB1H103KT-A	
C958	CU3035	Chip C.	C1608JB1H102KT-A	
CN902	UE0185	Connector	B6P-BC-2	
D941	XD0233	Diode	1SV217TPH4	
L941	QA0110	Coil	QA0110	
L942	QC0047	Chip L.	NL322522T-4R7J	
Q941	XE0006	FET	2SK210GR-TE85L	
Q942	XT0059	Transistor	2SC3082KT146Q	
Q943	XT0059	Transistor	2SC3082KT146Q	
Q944	XT0059	Transistor	2SC3082KT146Q	
Q945	XT0059	Transistor	2SC3082KT146Q	
R925	RK3062	Chip R.	ERJ3GSYJ104V	
R940	RK3026	Chip R.	ERJ3GSYJ101V	
R941	RK3050	Chip R.	ERJ3GSYJ103V	
R942	RK3054	Chip R.	ERJ3GSYJ223V	
R943	RK3062	Chip R.	ERJ3GSYJ104V	
R944	RK3062	Chip R.	ERJ3GSYJ104V	
R945	RK3031	Chip R.	ERJ3GSYJ271V	
R946	RK3054	Chip R.	ERJ3GSYJ223V	
R947	RK3054	Chip R.	ERJ3GSYJ223V	
R948	RK3042	Chip R.	ERJ3GSYJ222V	
R949	RK3054	Chip R.	ERJ3GSYJ223V	
R950	RK3054	Chip R.	ERJ3GSYJ223V	
R951	RK3038	Chip R.	ERJ3GSYJ102V	
R952	RK3030	Chip R.	ERJ3GSYJ221V	
R953	RK3030	Chip R.	ERJ3GSYJ221V	
R954	RK3040	Chip R.	ERJ3GSYJ152V	
R955	RK3032	Chip R.	ERJ3GSYJ331V	
R956	RK3035	Chip R.	ERJ3GSYJ561V	
R957	RK3036	Chip R.	ERJ3GSYJ681V	
R958	RK3050	Chip R.	ERJ3GSYJ103V	
R959	RK3047	Chip R.	ERJ3GSYJ562V	
R960	RK3054	Chip R.	ERJ3GSYJ223V	
VCO3				
	TS0107		VCO Case(B)	
C961	CU3026	Chip C.	C1608CH1H181JT-A	
C962	CU3011	Chip C.	C1608CH1H100CT-A	
C963	CU3020	Chip C.	C1608CH1H560JT-A	
C964	CU3013	Chip C.	C1608CH1H150JT-A	
C965	CU3012	Chip C.	C1608CH1H120JT-A	
C966	CU3006	Chip C.	C1608CH1H050CT-A	
C967	CU3035	Chip C.	C1608JB1H102KT-A	
C968	CS0382	Chip Tantal	TMCMB1A226MTR	
C969	CU3035	Chip C.	C1608JB1H102KT-A	
C970	CU3035	Chip C.	C1608JB1H102KT-A	
C971	CU3022	Chip C.	C1608CH1H820JT-A	
C972	CU3009	Chip C.	C1608CH1H080CT-A	
C973	CU3018	Chip C.	C1608CH1H390JT-A	
C974	CU3012	Chip C.	C1608CH1H120JT-A	
C975	CU3010	Chip C.	C1608CH1H090CT-A	
C976	CU3006	Chip C.	C1608CH1H050CT-A	
C977	CU3035	Chip C.	C1608JB1H102KT-A	
C978	CS0382	Chip Tantal	TMCMB1A226MTR	

Ref. No.	Parts No.	Description	Parts Name	Ver.
C979	CU3035	Chip C.	C1608JB1H102KT-A	
C980	CU3035	Chip C.	C1608JB1H102KT-A	
C981	CU3018	Chip C.	C1608CH1H390JT-A	
C982	CU3005	Chip C.	C1608CH1H040CT-A	
C983	CU3017	Chip C.	C1608CH1H330JT-A	
C984	CU3011	Chip C.	C1608CH1H100CT-A	
C985	CU3006	Chip C.	C1608CH1H050CT-A	
C986	CU3006	Chip C.	C1608CH1H050CT-A	
C987	CU3035	Chip C.	C1608JB1H102KT-A	
C988	CS0382	Chip Tantal	TMCMB1A226MTR	
C989	CU3035	Chip C.	C1608JB1H102KT-A	
C990	CU3035	Chip C.	C1608JB1H102KT-A	
C991	CU3101	Chip C.	C1608JB1C473KT-A	
C992	CU3101	Chip C.	C1608JB1C473KT-A	
CN903	UE0183	Connector	B4P-BC-2	
CN904	UE0182	Connector	B3P-BC-2	
D961	XD0233	Diode	1SV217TPH4	
D962	XD0266	Diode	DAP236U T106	
D963	XD0233	Diode	1SV217TPH4	
D965	XD0233	Diode	1SV217TPH4	
D966	XD0272	Diode	1SS356 TW11	
L962	QA0110	Coil	QA0110	
L963	QC0047	Chip L.	NL322522T-4R7J	
L965	QA0110	Coil	QA0110	
L966	QC0047	Chip L.	NL322522T-4R7J	
L968	QA0110	Coil	QA0110	
L969	QC0047	Chip L.	NL322522T-4R7J	
Q961	XE0006	FET	2SK210GR-TE85L	
Q962	XU0140	Transistor	DTC124EUT106	
Q963	XE0006	FET	2SK210GR-TE85L	
Q964	XU0140	Transistor	DTC124EUT106	
Q965	XE0006	FET	2SK210GR-TE85L	
Q966	XU0140	Transistor	DTC124EUT106	
R961	RK3062	Chip R.	ERJ3GSYJ104V	
R962	RK3062	Chip R.	ERJ3GSYJ104V	
R963	RK3028	Chip R.	ERJ3GSYJ151V	
R964	RK3044	Chip R.	ERJ3GSYJ332V	
R965	RK3030	Chip R.	ERJ3GSYJ221V	
R966	RK3062	Chip R.	ERJ3GSYJ104V	
R967	RK3062	Chip R.	ERJ3GSYJ104V	
R968	RK3028	Chip R.	ERJ3GSYJ151V	
R969	RK3044	Chip R.	ERJ3GSYJ332V	
R970	RK3030	Chip R.	ERJ3GSYJ221V	
R971	RK3062	Chip R.	ERJ3GSYJ104V	
R972	RK3062	Chip R.	ERJ3GSYJ104V	
R973	RK3028	Chip R.	ERJ3GSYJ151V	
R974	RK3044	Chip R.	ERJ3GSYJ332V	
R975	RK3030	Chip R.	ERJ3GSYJ221V	
R976	RK3046	Chip R.	ERJ3GSYJ472V	
R977	RK3046	Chip R.	ERJ3GSYJ472V	
R978	RK3046	Chip R.	ERJ3GSYJ472V	
TC961	CT0012	Trimmer	CTZ-10AW	
TC962	CT0012	Trimmer	CTZ-10AW	
TC963	CT0012	Trimmer	CTZ-10AW	

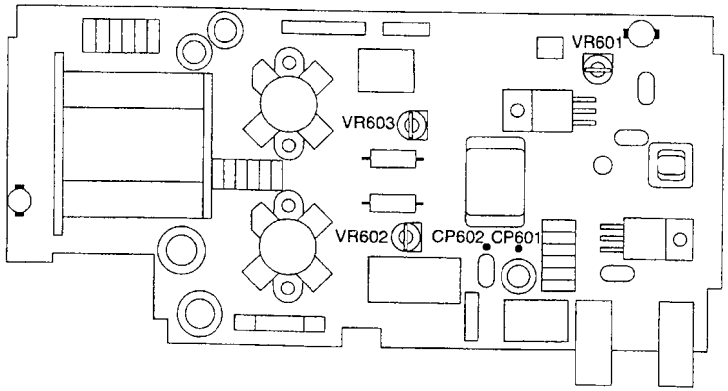
ADJUSTMENT

1) PA unit Adjustment

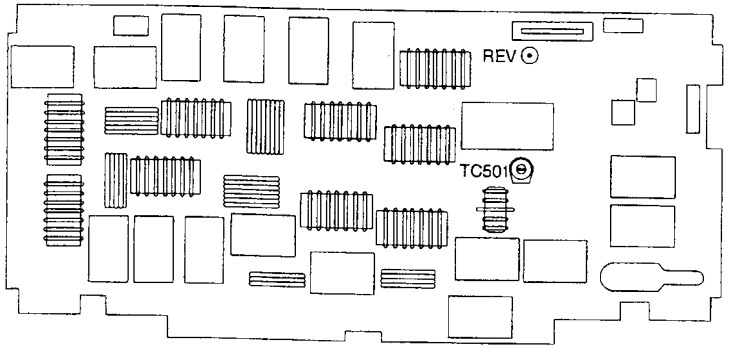
Required Test Equipment

1. Digital voltage meter
2. DC current meter — 300~500mA, 3A
3. DC regulated power supply — 13.80V 25A or more (should be equipped with 20~25A current limit and current meter)
4. Power meter — 100W (1.9~60MHz)
5. Linear detector
6. SG or RF generator — 1.9~60MHz, -10~+10dBm

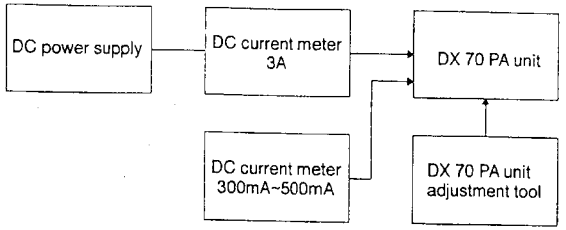
PA Unit Adjustment Points



Filter Unit Adjustment Points

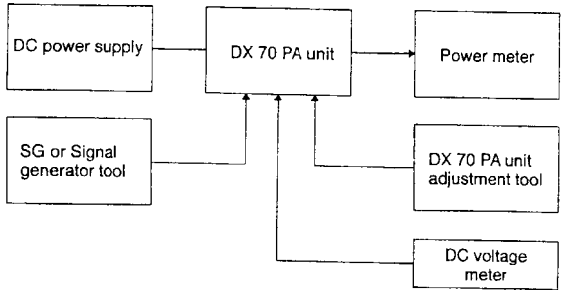


Idle Current Adjustment Setting



Adjustment the idle current without input signal.

SWR Adjustment Setting



Adjust SWR at approximately 50W.

PA Adjustment

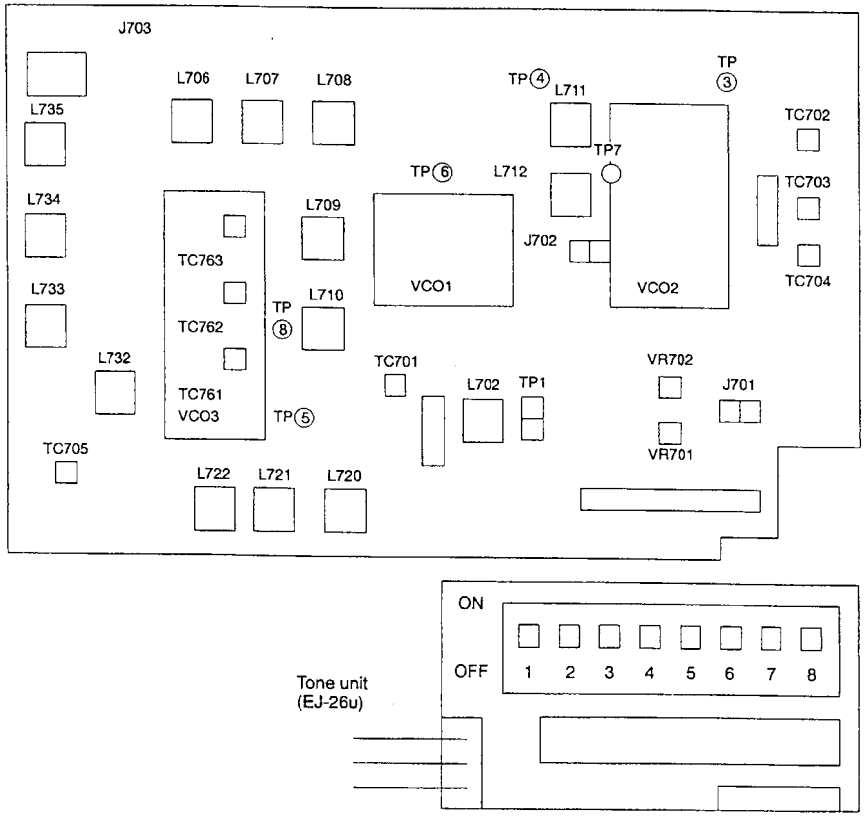
Item	Condition	Measurement		Adjustment		
		Equipment	Terminal	Unit	Parts	Method
Idling current 2SC1972 x 2	SSG: OFF Mode: USB VR601, 602, 603: min.	Current Meter 300~500mA	CP601 ⊖ CP602 ⊕	PA	VR601	Connect the current meter between CP601 and CP602, then adjust VR601 to 100mA.
Idling current MRF255 x 2	SSG: OFF Mode: USB	Current Meter 3A	CN605 unit total current		VR602 VR603	Turn VR602 and VR603 counterclockwise fully, check the total current in transmission mode. Turn VR602 clockwise slowly so that the total current increases 400mA. Then turn VR603 clockwise slowly so that the total current increases 400mA. As a result, the total current increases 800mA.
Connect TP1and TP2 by soldering after adjusting.						
SWR detection	f=1.9MHz SG >>PA unit	Voltage Meter	REV	Filter	TC501	Adjust the output power to 50W, then adjust the TC501 so that REV voltage is min.
When you adjust the finished goods, set the mode to SSB, adjust the input level of microphone, and set the output power to about 50W.						

2) PLL Adjustment

Required Test Equipment

1. Digital voltage meter
2. DC regulated power supply — 13.80V 5A or more
3. Frequency counter — 500MHz or more
4. Spectrum Analyzer — 1GHz or more
5. Oscilloscope — 100MHz or more

PLL Unit Adjustment Points



Item	Condition	Measurement			Adjustment		
		Equipment	Unit	Terminal	Unit	Parts	Method
VCO1 Frequency	PD1=1.2V	Freq. Counter	VCO1	CN90 1~3			175MHz or above
	PD1=4.3V						155MHz or below
VCO2 Frequency	PD1=1.5~4V	Freq. Counter	VCO2	CN90 2~4			VCO2 freq.: 71MHz
Attach the VCO to PLL, then adjust the unit after installing the PLL to the unit.							
VCO2 Lock range	f=7.100MHz	Digital tester	PLL	TP7		Check	1.5V~4V
VCO1 Lock range	f=7.0999MHz			TP6			1V~3V
	f=7.1000MHz						3V~4.3V
VCO3 Lock range	f=0.1500MHz			TP8	VCO3	TC961	2.5V
	f=10.4999MHz					TC961	When the voltage is 6.45V or below, adjust the unit to 6.5V again. (6.45V~7.0V)
	f=10.5000MHz					TC962	2.5V
	f=21.4999MHz					TC962	When the voltage is 6.45V or below, adjust the unit to 6.5V again. (6.45V~7.0V)
	f=21.5000MHz					TC963	2.5V
	f=29.9999MHz					Check	6.5V or below
2nd LO Level	f=7.100MHz	Oscilloscope		TP4	PLL	L711 L712	Turn the coils to the max. repeatedly.
1st LO Level	f=7.100MHz			TP5		L709 L710	Turn the coils to the max. repeatedly.
	f=7.100MHz					L706 L707 L708	Turn the coils to the max. repeatedly.

Item	Condition	Measurement			Adjustment		
		Equipment	Unit	Terminal	Unit	Parts	Method
Frequency (Mode)	RX LSB	Freq. Counter	PLL	TP3	PLL	TC702	9873.60kHz +/- 0.02kHz
	RX USB					TC704	9876.40kHz +/- 0.02kHz
	RX AM and FM					TC703	9875.00kHz +/- 0.02kHz
	RX CWU					Check	9875.80kHz +/- 0.3kHz
	RX CWL						9874.20kHz +/- 0.3kHz
Frequency (IF Shift)	RX LSB			J701		VR702	453.60kHz +/- 0.1kHz
	TX LSB					VR701	453.60kHz +/- 0.01kHz
	RX LT, (IF Shift center)					Check	453.30kHz +/- 0.2kHz
	TX LT, (IF Shift center)						453.50kHz +/- 0.2kHz
	RX UT, (IF Shift center)						456.70kHz +/- 0.2kHz
	TX UT, (IF Shift center)						456.50kHz +/- 0.2kHz
Frequency	f=7.1000MHz, FM			J703		TC701 L702	78850.00kHz Adjust TC701 at first, then L702 when TC701 can not be adjusted.
Level	f=7.100MHz, USB	Spectrum Analyzer		J701		Check	-6~0dBm f=456.4kHz
Level	f=7.100MHz, USB			J702			1~6dBm f=71.295MHz
Level	f=53.9999MHz			J703		L720 L721 L722	Turn the coils to the max. repeatedly. f=123.75MHz
Level	f=53.9999MHz					L732 L733 L734 L745	Turn the coils to the max. repeatedly f=123.75MHz 1~6dBm
Spurious	f=53.9999MHz					TC705	Spurious min. (60dB or more)
Level	f=150kHz f=10.400MHz f=10.500MHz f=21.400MHz f=21.500MHz f=29.9999MHz					Check	Level: 2~6dBm +/-2dB

3) Tone Unit Adjustment

1 Attach EJ26U to DX70.

2 When the subaudible Tone is ON in FM mode, adjust the unit according to following table.

3 When the subaudible Tone is OFF in FM mode, the tone should not be emitted.

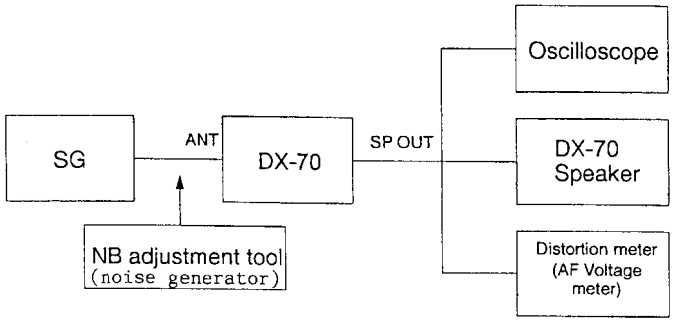
Item	Condition	Measurement			Adjustment		
		Equipment	Unit	Terminal	Unit	Parts	Method
Tone Frequency	250.3Hz 1 2 3 4 5 6 7 8 * * *	Freq. Counter	EJ26 u	CN99 1~1			249.6~251.0Hz
Tone Frequency	156.3Hz 1 2 3 4 5 6 7 8 * * *	Freq. Counter	EJ26 u	CN99 1~1			156.2~157.2Hz
Tone Level	156.3Hz 1 2 3 4 5 6 7 8 * * *	Oscilloscope	EJ26 u	CN99 1~1			1.8~3.0V p-p
Tone Level	156.3Hz 1 2 3 4 5 6 7 8 * * * *	Oscilloscope	EJ26 u	CN99 1~1			2.8~3.8V p-p
Tone Level	156.3Hz 1 2 3 4 5 6 7 8 * * * * *	Oscilloscope	EJ26 u	CN99 1~1			3.8~4.8V p-p
Final Setting	88.5Hz 1 2 3 4 5 6 7 8 * *						Attach to the DX70T after the tone level obtains 88.5Hz.

* indicates the number is ON.

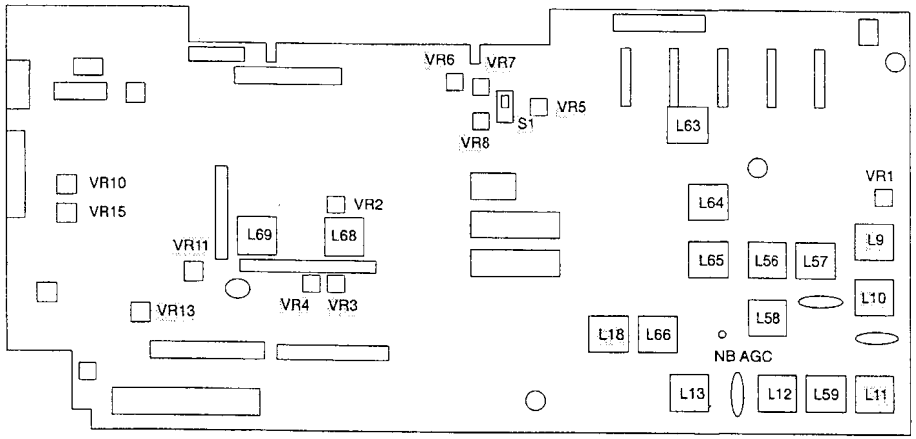
Required Test Equipment

1. Digital voltage meter
2. DC regulated power supply — 13.80V 3A or more
3. SG — about 200MHz
4. Distortion meter, AF voltage meter
5. 8Ω speaker
6. Oscilloscope
7. (NB adjustment tool)

Main Unit Adjustment Setting



Main Unit Adjustment Points



TX Adjustment

4) Sensitivity Adjustment

SG Output Frequency: 14.1000MHz
Frequency: 14.0993MHz — Mode: USB
RF Gain: +10dB — ΔIF: Center
Filter: Wide

Connect to HF Antenna Terminal.
RIT: OFF — AGC: FAST — NB: OFF
Squelch VR: Turn the knob counterclockwise fully.

Item	Condition	Measurement		Adjustment		
		Equipment	Terminal	Unit	Parts	Method
Tuning	SG output: 0dBμ Mod: OFF AF output: 300mV	Audio Voltmeter	SP	Main	L56 L57 L58 L59 L12 L13 L66 L68 L69	Adjust every following group repeatedly to obtain the maximum receiving signal; L56, 57, 58 L59, 12, 13 L66 L68, L69
	Mode: FM f=14.1000MHz SG output: 0dBμ Mod: 1kHz, 3.5kHzDEV	Distortion Meter			L59 L12 L13	Adjust repeatedly to obtain the maximum SINAD. SINAD should be 13dB or more.
	SG output: 60dBμ 1kHz, 3.5kHzDEV				Check	SINAD should be 30dB or more. If SINAD is below 30dB, adjust L59, L12 and L13 again.
	SG output: -6dBμ Mod: OFF Mode: USB f=14.0993MHz AF output: 300mV	Audio Voltmeter			Check	Make sure that S/N is 10.5dB or more by turning ON/OFF SG output.
	SG output: 10dBμ Mod: 1kHz, 30% Mode: AM f=14.1000MHz				Check	Make sure S/N is 10dB or more by turning ON/OFF SG modulation.

5) Noise Blanker Adjustment

SG Output Frequency: 14.1000MHz
Frequency: 14.0993MHz Mode: USB
RF Gain: +10dB ΔIF: Center
Filter: Wide

Connect to HF Antenna Terminal.
RIT: OFF AGC: FAST NB: OFF
Squelch VR: Turn the knob counterclockwise fully.

Item	Condition	Measurement		Adjustment		
		Equipment	Terminal	Unit	Parts	Method
Tuning	SG output: 0dBμ Mod: OFF Mode: USB f=14.0993MHz NB: ON RF Gain: +10dB	Oscilloscope	NB AGC (MAIN)	Main	L63 L64 L65	Adjust the coils, and set DC voltage of the terminal to the minimum with the oscilloscope.

6) S Meter Adjustment

Item	Condition	Measurement		Adjustment		
		Equipment	Terminal	Unit	Parts	Method
RX Total Gain	SG output: 40dBμ Mod: OFF Mode: USB f=14.0993MHz RF Gain: 0dB	AF Voltmeter	SP	Main	VR2	Adjust SP output by setting the AF gain to about 1V. The output level should be 0dB. Adjust only the noise output to -28dB by turning OFF SG output.
S Meter	SG output: 20dBμ Mod: OFF SG output: 40dBμ	S Meter	S Meter		VR10 VR15	The indicator between first and second digits is turned ON. The 9th digit starts flashing. Adjust VR10 and VR15 repeatedly.
	SG: OFF				Check	S Meter is not turned ON.
Squelch	SG: OFF		BUSY RX LED (Green) AF output		Check	Turn the Squelch VR to make sure that the squelch closes at about 10 o'clock.

7) Receiving Function Adjustment

SG Output Frequency: 14.1000MHz
Frequency: 14.0993MHz Mode: USB
RF Gain: +10dB ΔIF: Center
Filter: Wide

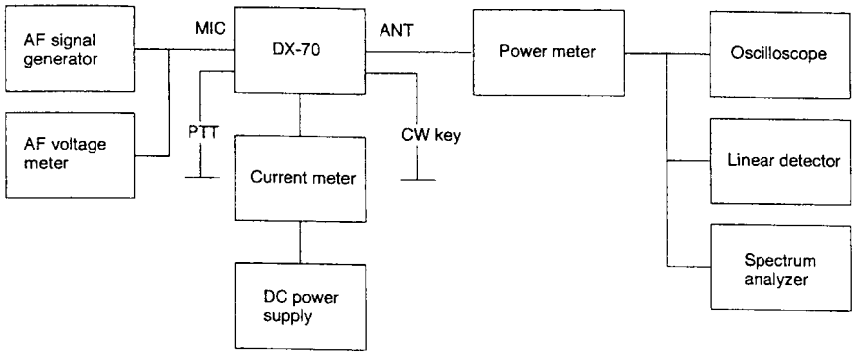
Connect to HF Antenna Terminal.
RIT: OFF AGC: FAST NB: OFF
Squelch VR: Turn the knob counterclockwise fully.

Item	Condition	Measurement		Adjustment		
		Equipment	Terminal	Unit	Parts	Method
AGC	SG output: 40dBμ Output: ON/OFF Mod: OFF		S Meter		Check	Switch AGC. When SG is turned OFF, the meter moves slowly in SLOW, and fast in FAST.
RF GAIN	SG output: 40dBμ		S Meter		Check	Switch the RF GAIN from +10dB orderly, the meter swings shorter and shorter.
FILTER Switching	Output: OFF Mode: USB, AM, CW				Check	Switch the FILTER in every mode (except FM), the noise sound should be changed.
Band Sensitivity	SG output: -6dBμ f=1.9000MHz f=3.6000MHz f=7.0000MHz f=10.1000MHz f=21.1000MHz f=28.1000MHz Mode: USB or LSB	Audio Voltmeter	SP		Check	In USB mode, SG frequency is -700Hz. In LSB mode, SG frequency is +700Hz. Make sure that S/N is 10dB or more.
50MHz Sensitivity	Connect SG to 50MHz antenna terminal. SG output: -10dBμ SG freq.: 52.1000MHz Mode: USB f=52.0993MHz				Check	S/N is 10.5dB or more when turning ON/OFF SG output.
	SG output: -4dBμ Mod: 1kHz, 3.5kHzDev Mode: FM f=52.0000MHz	Distortion Meter			Check	SINAD: 13dB or more

Required Test Equipment

1. Digital voltage meter
2. DC current meter 20~30A
3. DC regulated power supply 13.80V 25A or more
   (should be equipped with 25~30A current limit)
4. Power meter 100W (1.9~60MHz)
5. Linear detector
6. AF generator (600Ω)
7. AF voltage meter
8. Oscilloscope
9. Electronic keyer (CW telegraphy key)
10. TUNE operation tool

TX Adjustment Setting



8) Transmission Adjustment

Connect the power meter to HF antenna terminal.
Frequency: 7.1000MHz Mode: USB Power: High
Speech Compressor (SET mode): OFF FM-TONE: OFF

Item	Condition	Measurement		Adjustment		
		Equipment	Terminal	Unit	Parts	Method
Tuning	Slide S1 to rear panel side. AG output: -50dBm	Power Meter	HF Antenna Terminal	Main	L18 L11 L10 L9	Adjust to the maximum power. (Adjust the AG input level so that the power becomes the maximum at about 50W.
Current Limit	AG output: OFF Mode: FM Set VR7 to 9 o'clock. Set VR6 to 3 o'clock.	Current Meter	Power Supply Terminal		VR6	Turn VR6 counterclockwise so that the total current becomes 20A. Be careful not to run much current for short time.
Power	Mode: FM	Power Meter	HF Antenna Terminal		VR7	Turn VR7 clockwise to decrease the power, then adjust to 100W.
	Slide S1 to front panel side.				VR5	Turn VR5 to obtain the power of 50W.
	Slide S1 to rear panel side. Operate TUNE with tool.				VR8	Turn VR8 to obtain the power of 10W.
	f: 52.0000MHz Mode: FM		50MHz Antenna Terminal	Filter	Check	That the power to 10W or approximate value. 100W ± 10W
FM Frequency Deviation	AG output: -30dBm f: 52.0000MHz Mode: FM	Linear Detector		Main	VR13	Adjust the maximum frequency deviation to 4.3kHz.
	FM-TONE: ON (only the unit equipped with TONE)				Check	The frequency deviation is increased. (Approx. 5kHz)

Connect the power meter to 50MHz antenna terminal.
Frequency: 52.000MHz Mode: USB Power: High
Speech Compressor (SET mode): OFF FM-TONE: OFF

Item	Condition	Measurement		Adjustment		
		Equipment	Terminal	Unit	Parts	Method
Filter Tuning	AG output: -30dBm Mode: FM FM-TONE: OFF	Oscilloscope (Linear Detector)	50MHz Antenna Terminal	Main	L11 L10 L9	Set the AM modulation factor to the minimum. It should be 5% or below.
Carrier Balance	AG output: OFF f: 7.1000MHz Mode: LSB/USB	Oscilloscope	HF Antenna Terminal		VR3 VR4	Adjust VR3 and VR4 so that the carrier suppression is 50dB (1/300) or below at 100W. The carrier suppression should be decreased in both USB and LSB.
CW Wave Form	Mode: CW-L/CW-U Electronic-keyer (dot): approx. 20mS				VR11 Check	Make sure of the wave form. The wave form of rise and fall should be symmetry. (The inclination is approx. 3mS.) The side tone of CW is should be heard from speaker.
Low Power	Mode: FM Power: Low	Power Meter			Check	Within 10~20W
AM Power	AG output: OFF Mode: AM Power: High				Check	35~50W
Band Power	Mode: FM Band (MHz): 1.9, 3.5, 10, 14,18,21,24,28,50				Check	Make sure that the power is 90~110W.

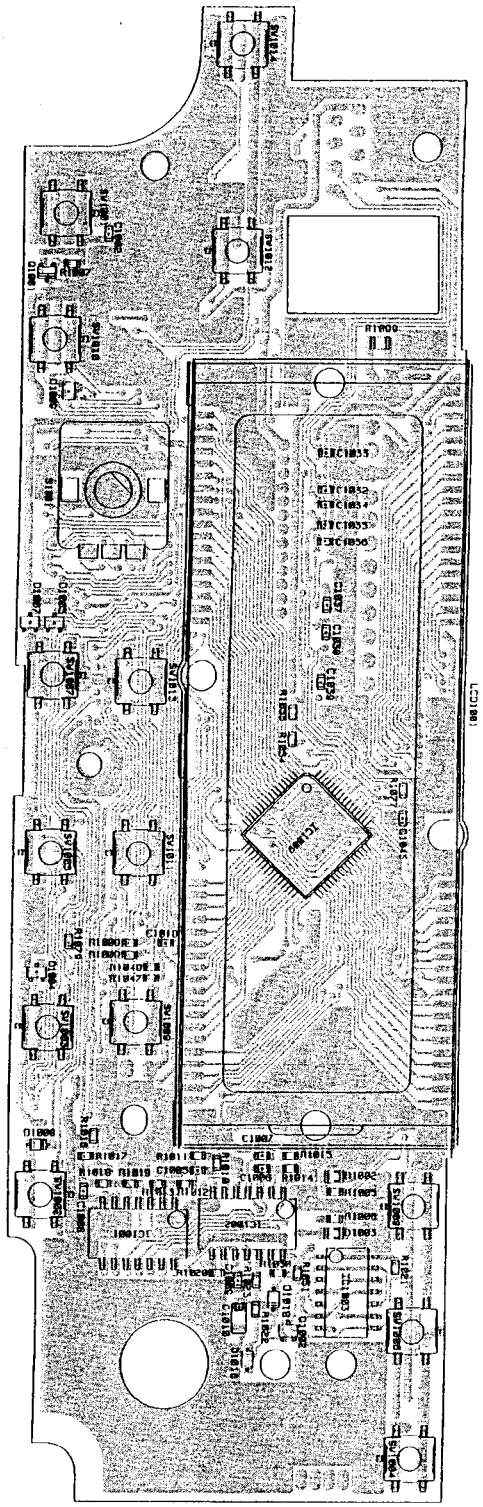
9) Spurious Adjustment

Connect the power meter to HF or 50MHz antenna terminal.
Frequency: 52.000MHz Mode: FM Power: High
Speech Compressor (SET mode): OFF FM-TONE: OFF

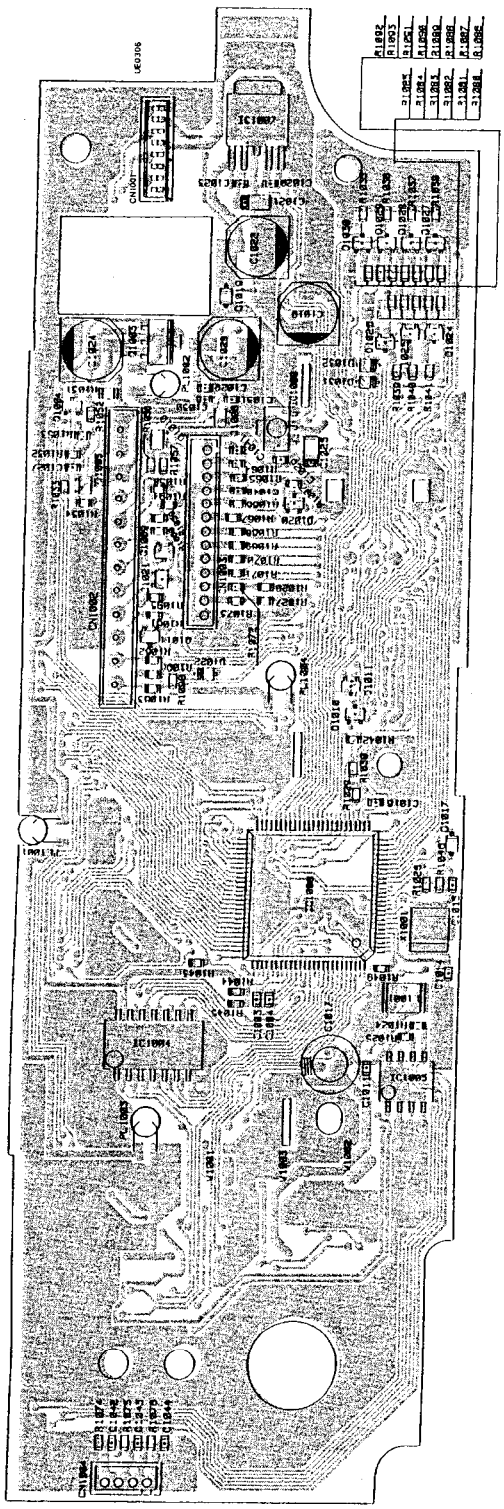
Item	Condition	Measurement		Adjustment		
		Equipment	Terminal	Unit	Parts	Method
Spurious Balance	AG output: OFF Mode: FM FM-TONE: OFF (f: 52.0000MHz)	ATT + spectrum Analyzer	50MHz Antenna Terminal	Main	VR1	Balance the spurious to obtain the minimum value. -60dB or below
Spurious	AG output: OFF Mode: FM Band (MHz): 1.9, 3.5, 10, 14, 18, 21, 24, 28		HF Antenna Terminal		Check	-52dB or below (-47dB or below in 10MHz band only)
					L9	Adjust so that the value is within the regulation. (Adjust L9 when the spurious is not -52dB or below in 24/28MHz band.)
Carrier Balance	AG output: OFF Mode: LSB/USB				Check (VR3 VR4)	-50dB or below (Adjust VR3 and VR4 when the carrier suppression is not -50dB or below.)
Modulation	Mode: CW Keying: OFF f: 53.99MHz				Check	-60dB or below
	Mode: FM, AM, USB/LSB Connect the microphone.	Monitor Transceiver			Check	Make sure the modulation sound in every mode.

PC BORD VIEW

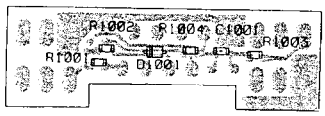
CPU Unit Side A (Later)



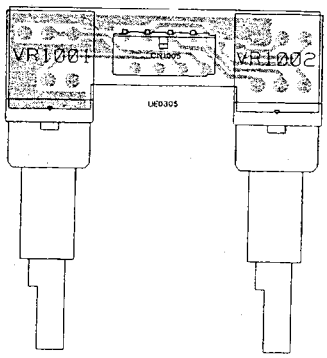
CPU Unit Side B (Later)



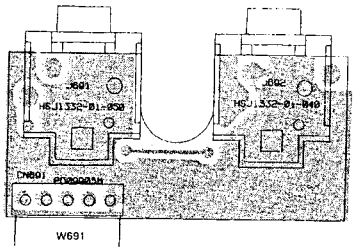
Vol. Unit Side A (Later)



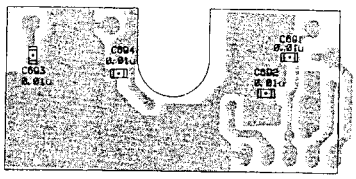
Vol. Unit Side B (Later)



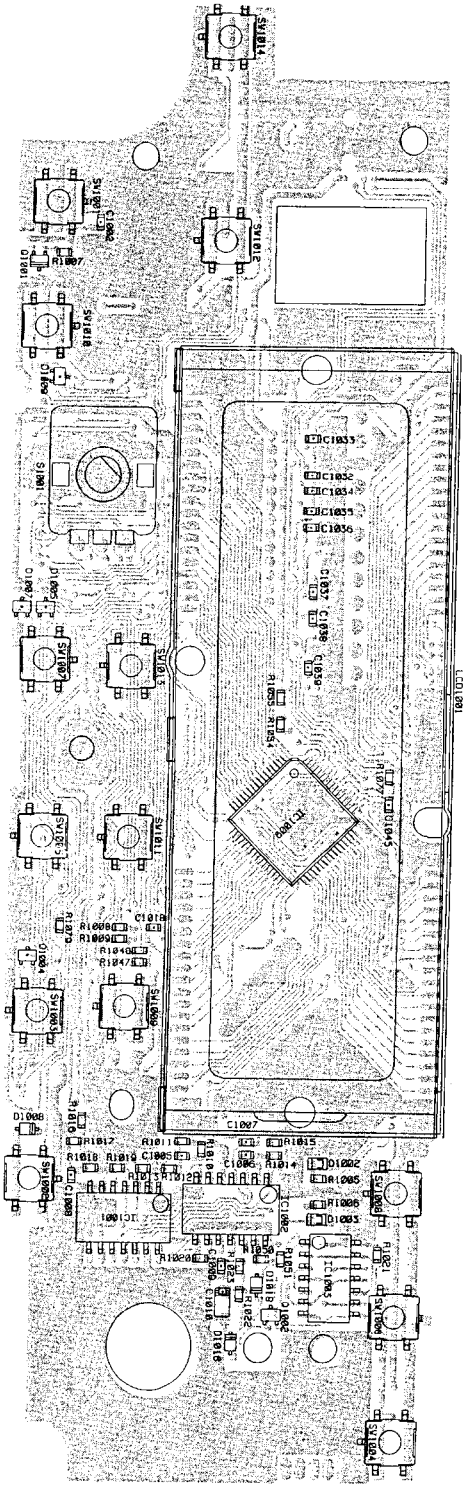
Jack Unit Side A



Jack Unit Side B



CPU Unit Side A (Early)



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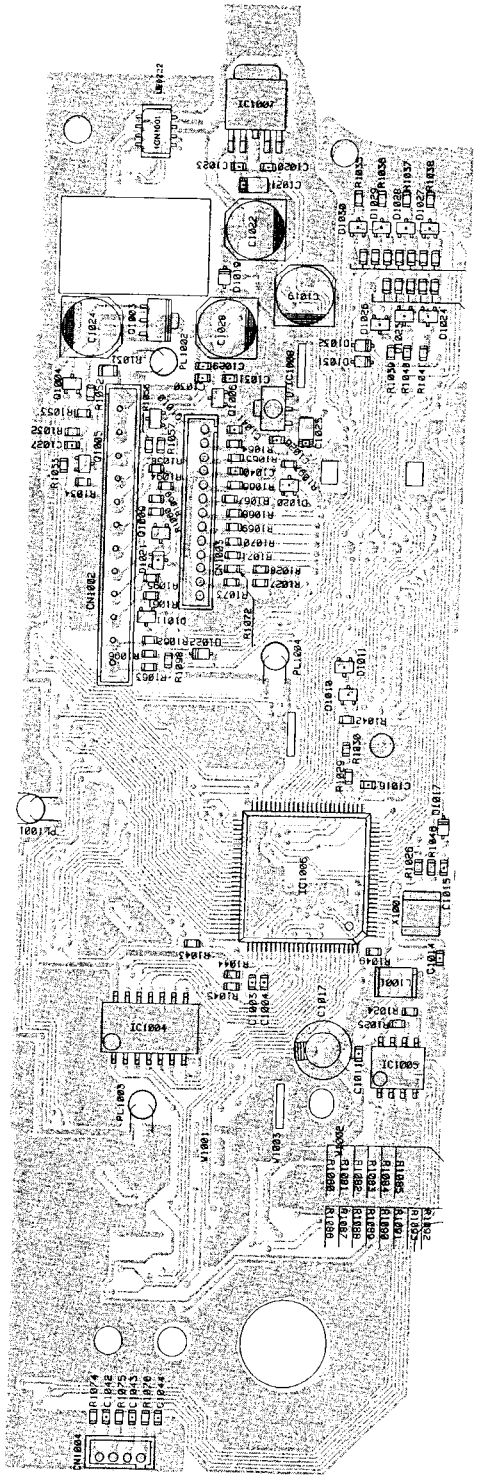
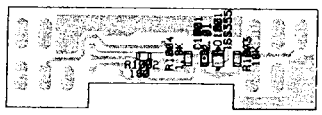


Vol. Unit Side A (Early)

3) Vol. Unit Side A



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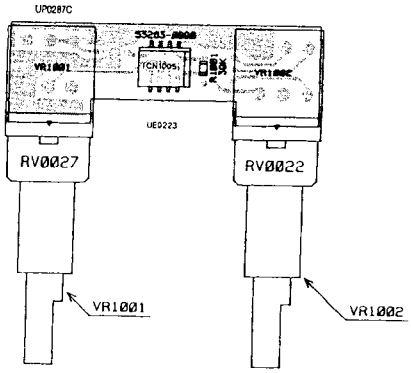
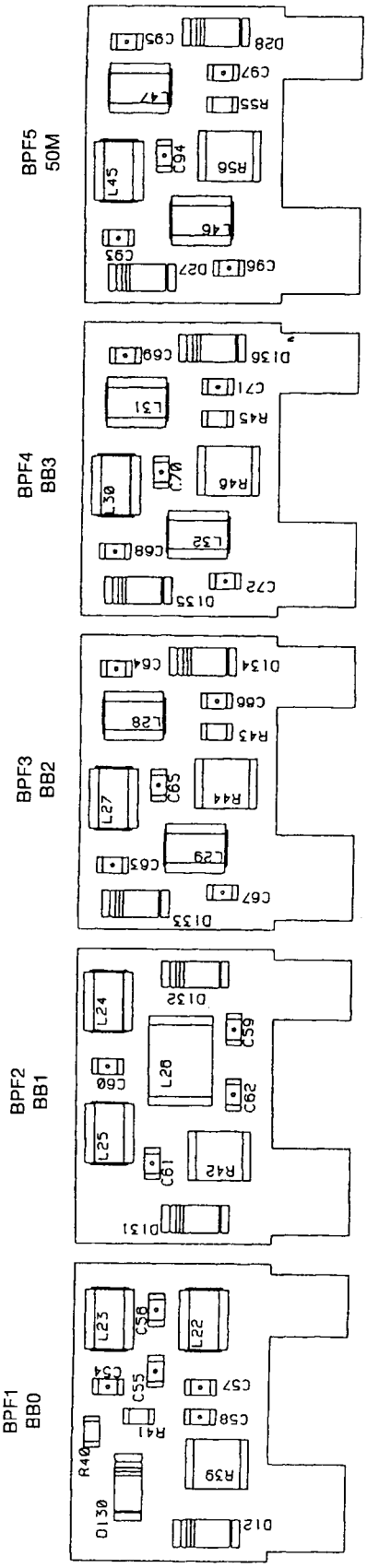
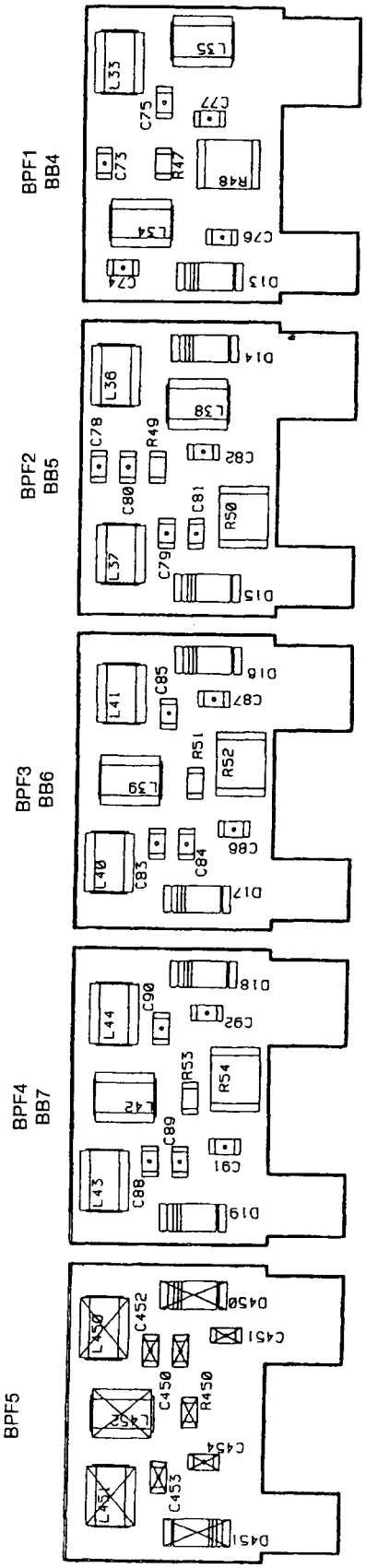


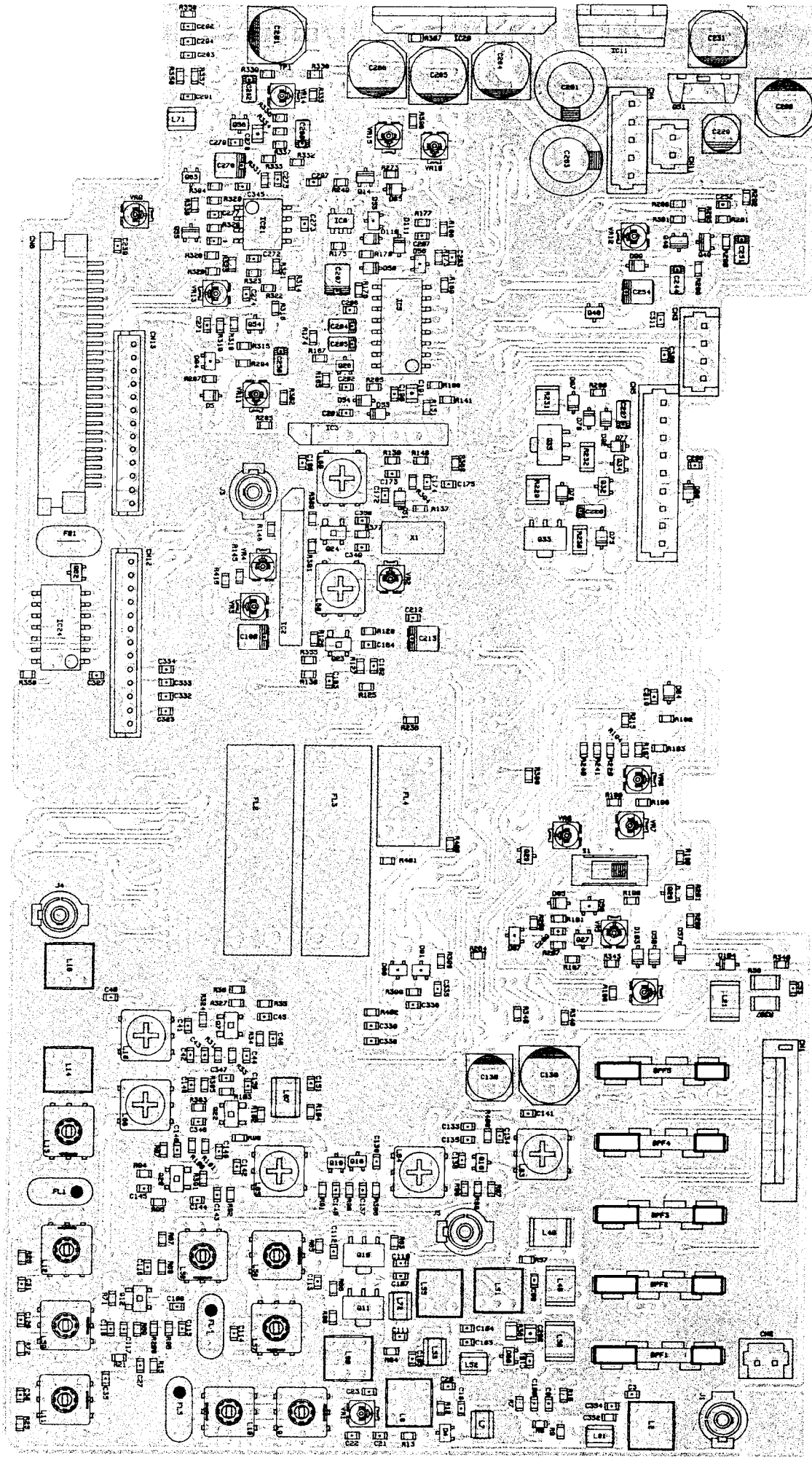
BPF UNIT Side A



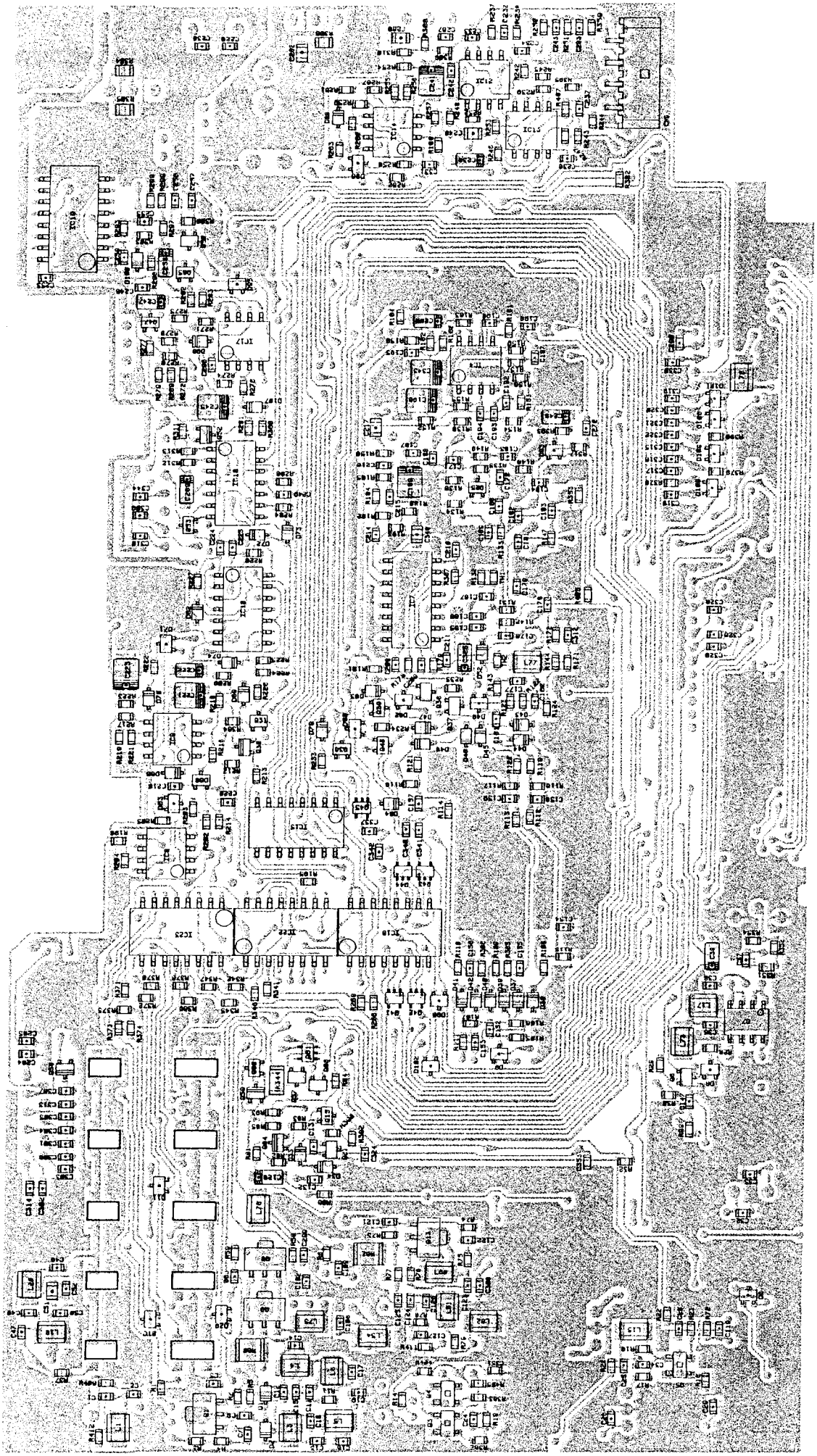
BPF UNIT Side B



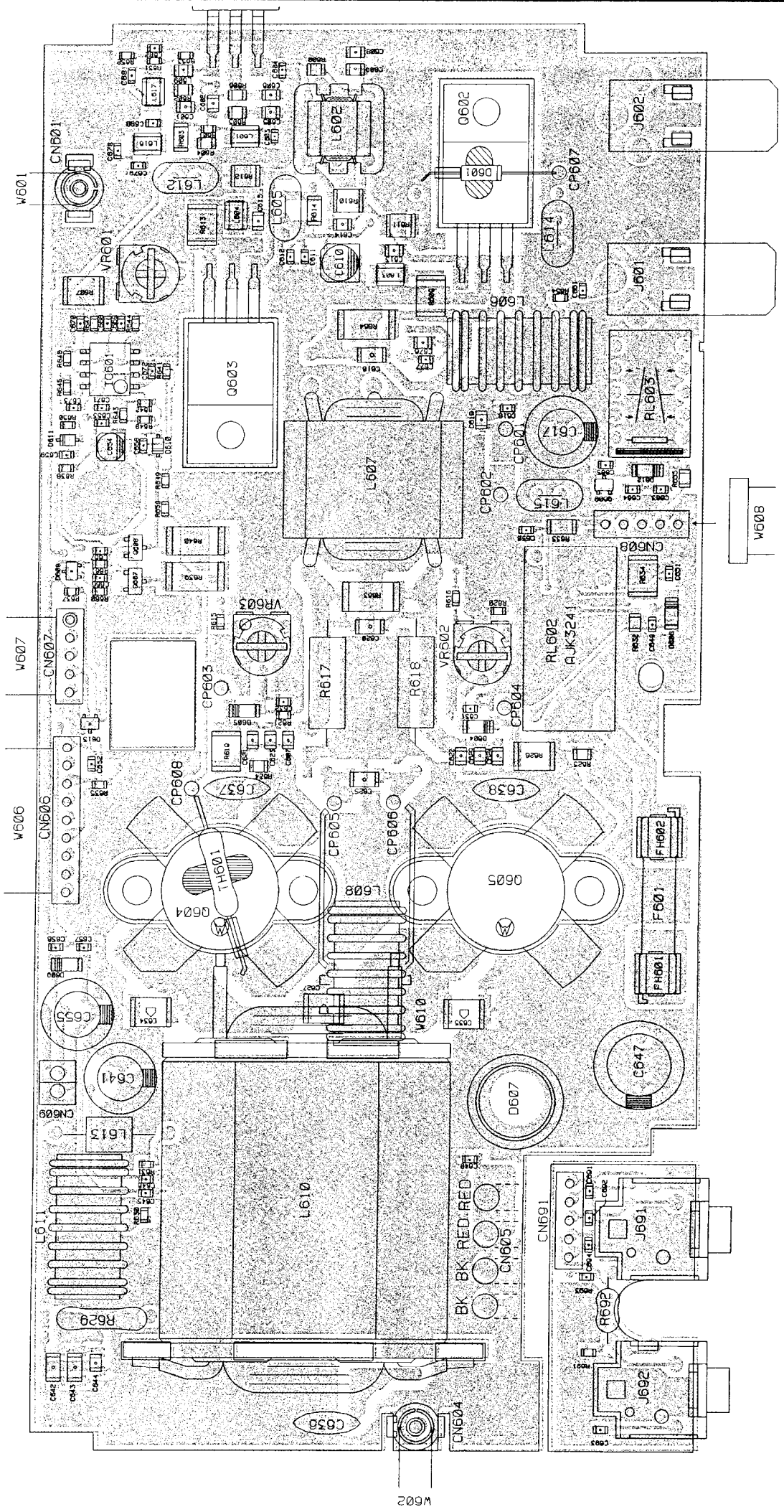
Main Unit Side A



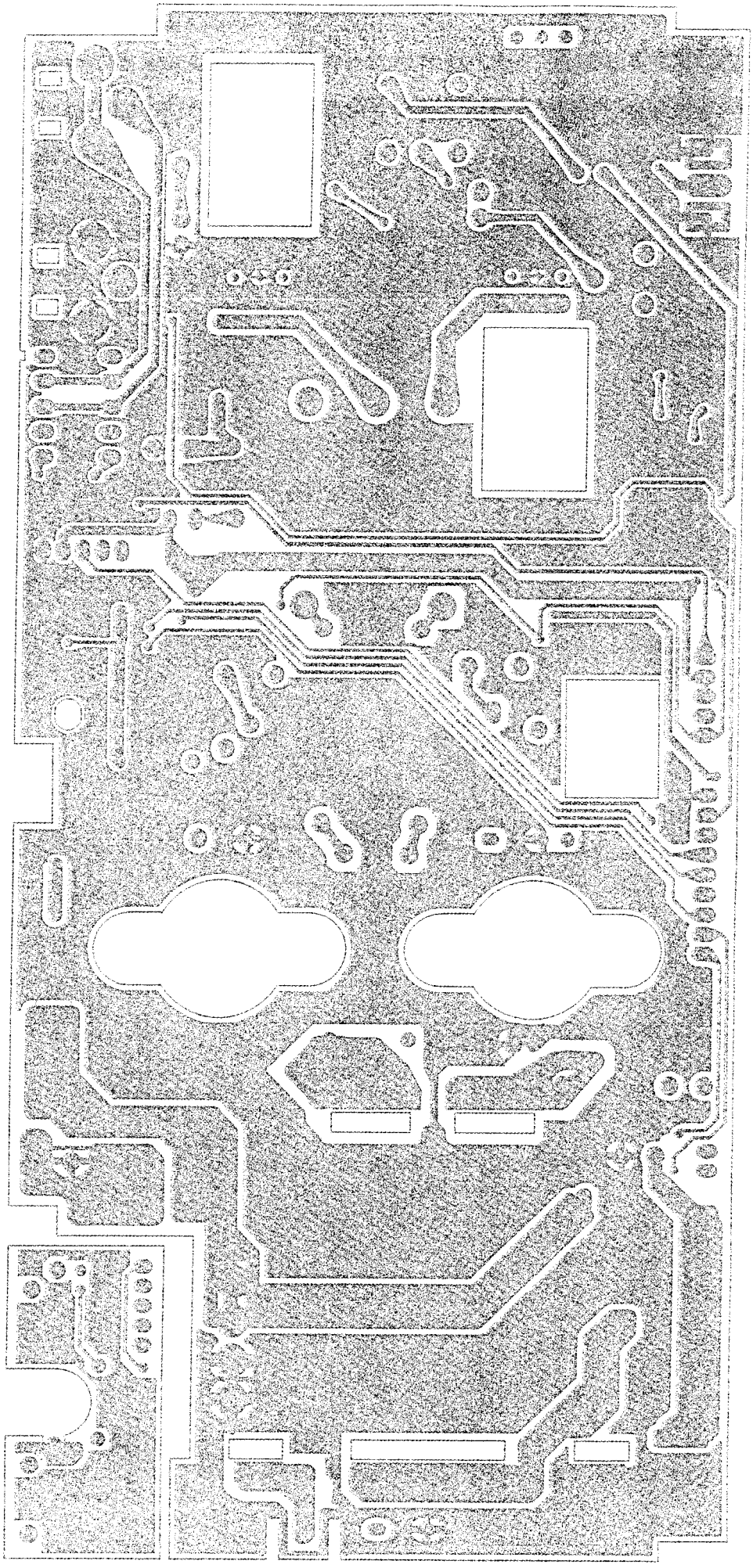
Main Unit Side B



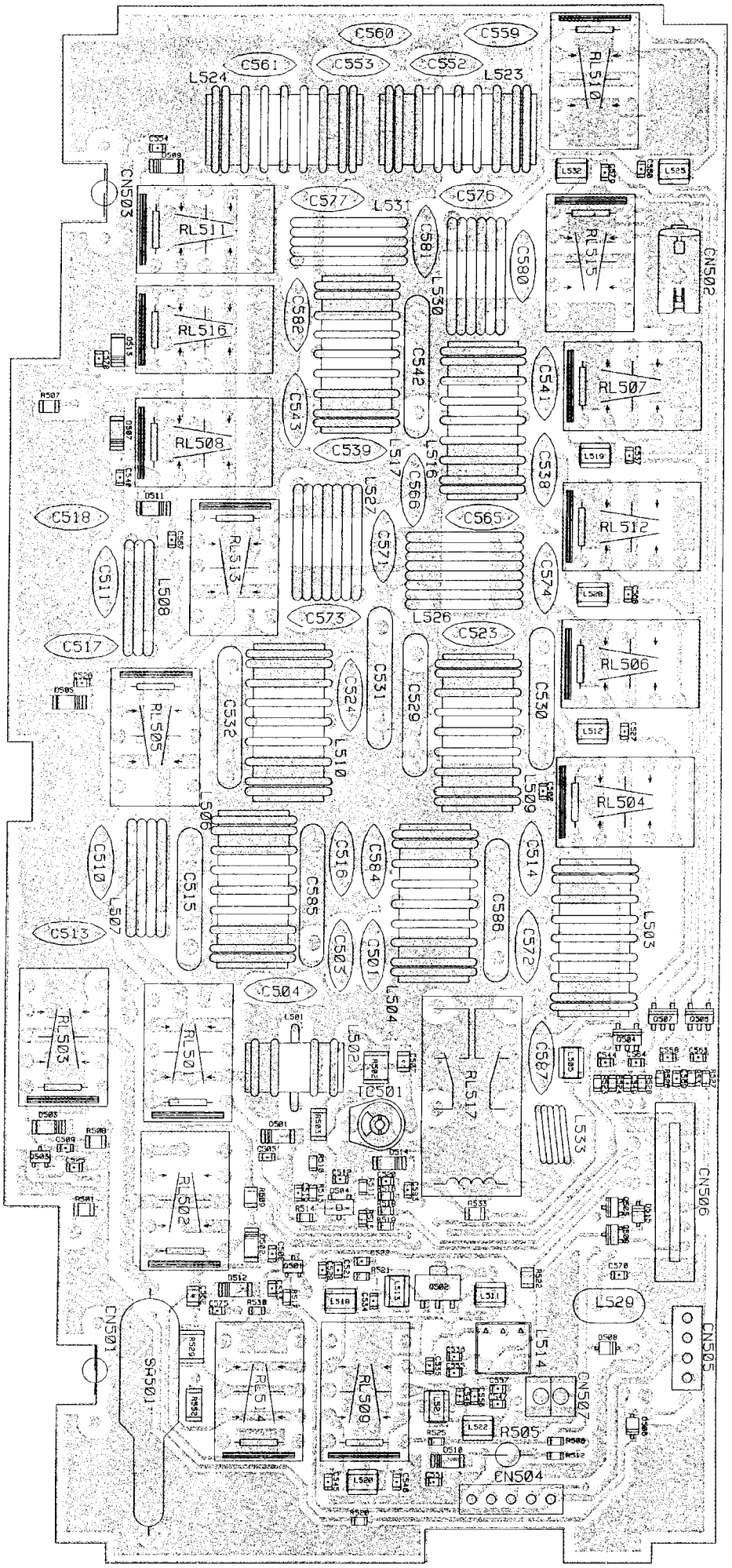
PA Unit Side A



PA Unit Side B



Filter Unit Side A



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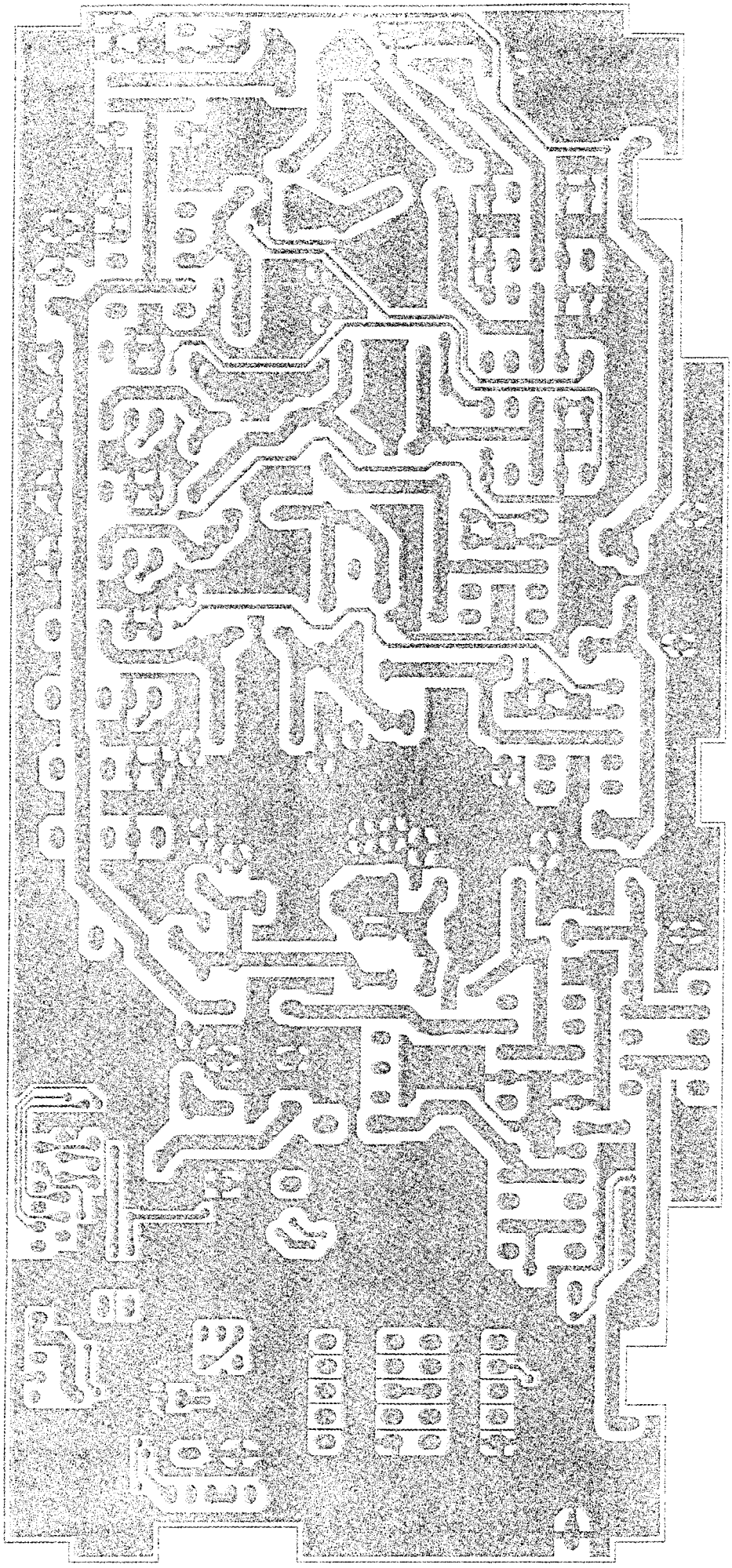
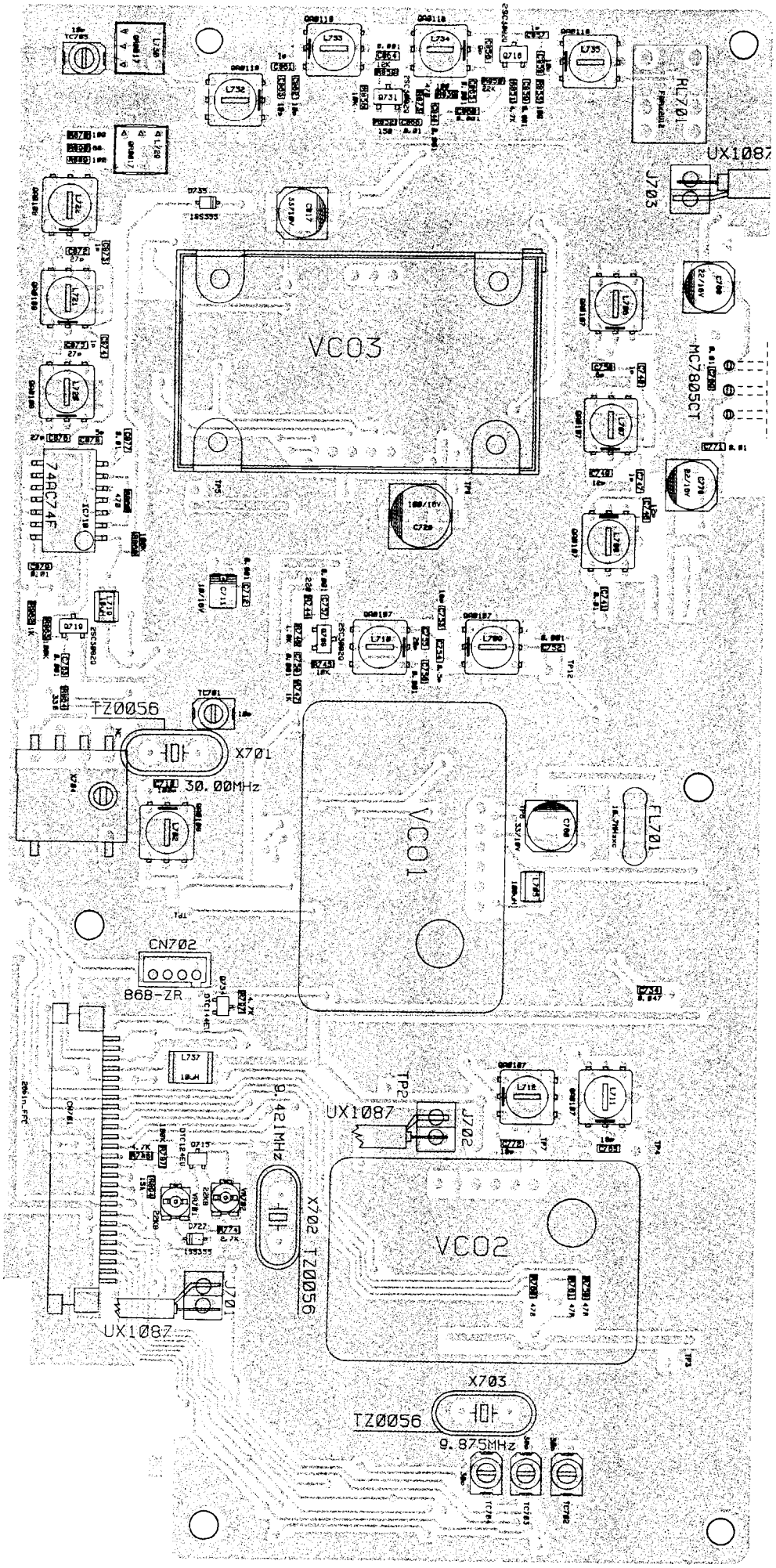
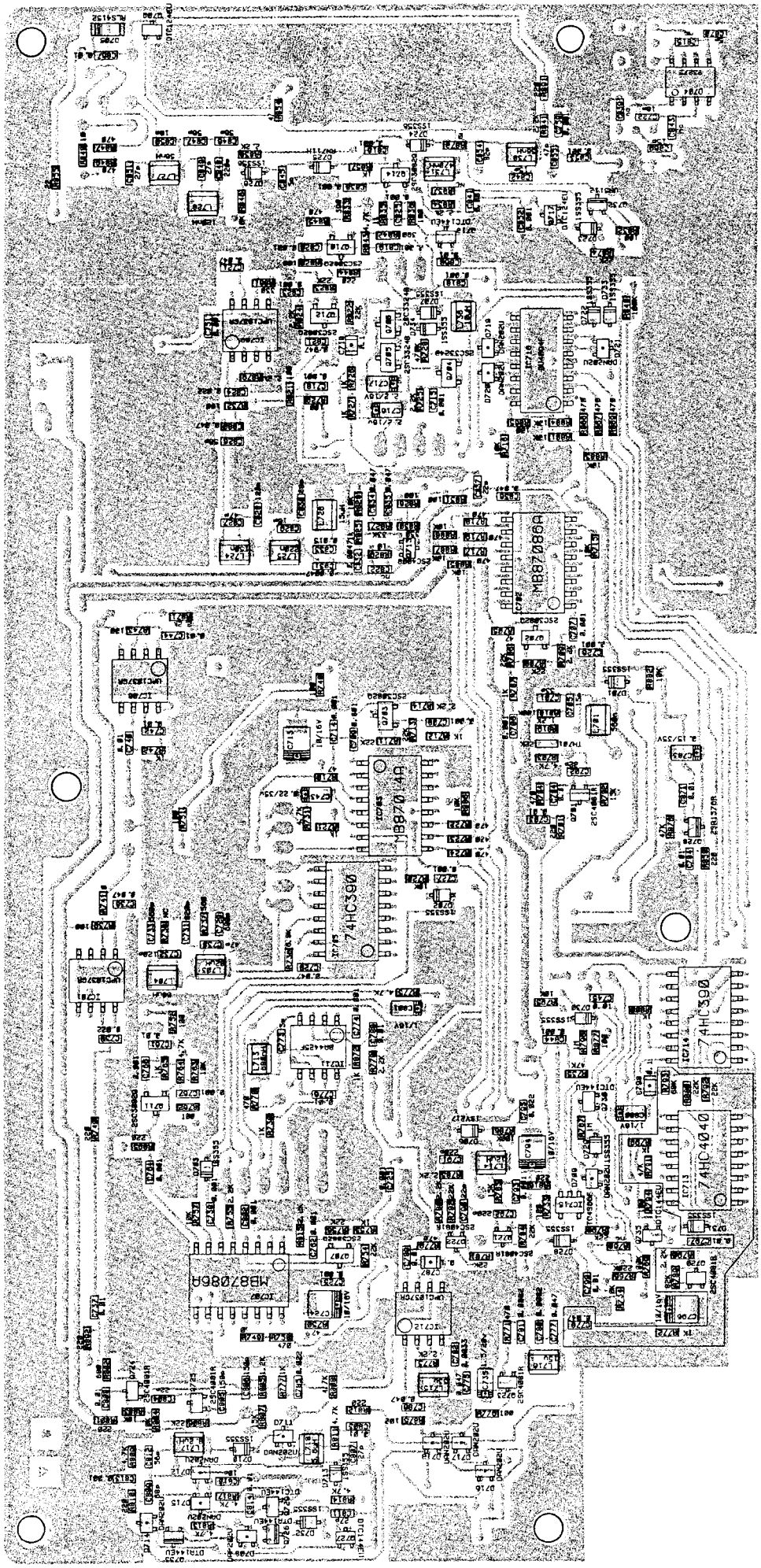


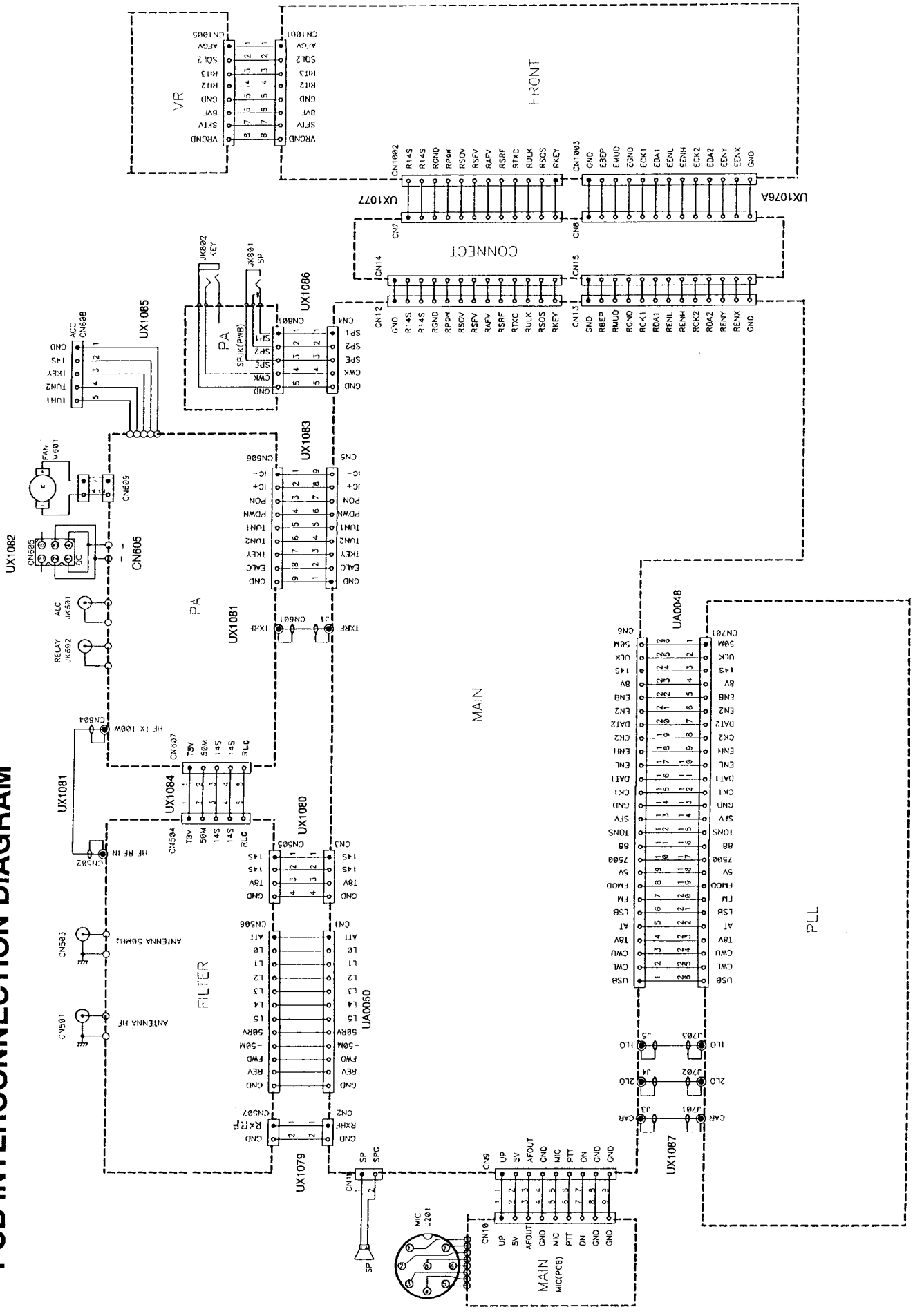
PLL Unit Side A



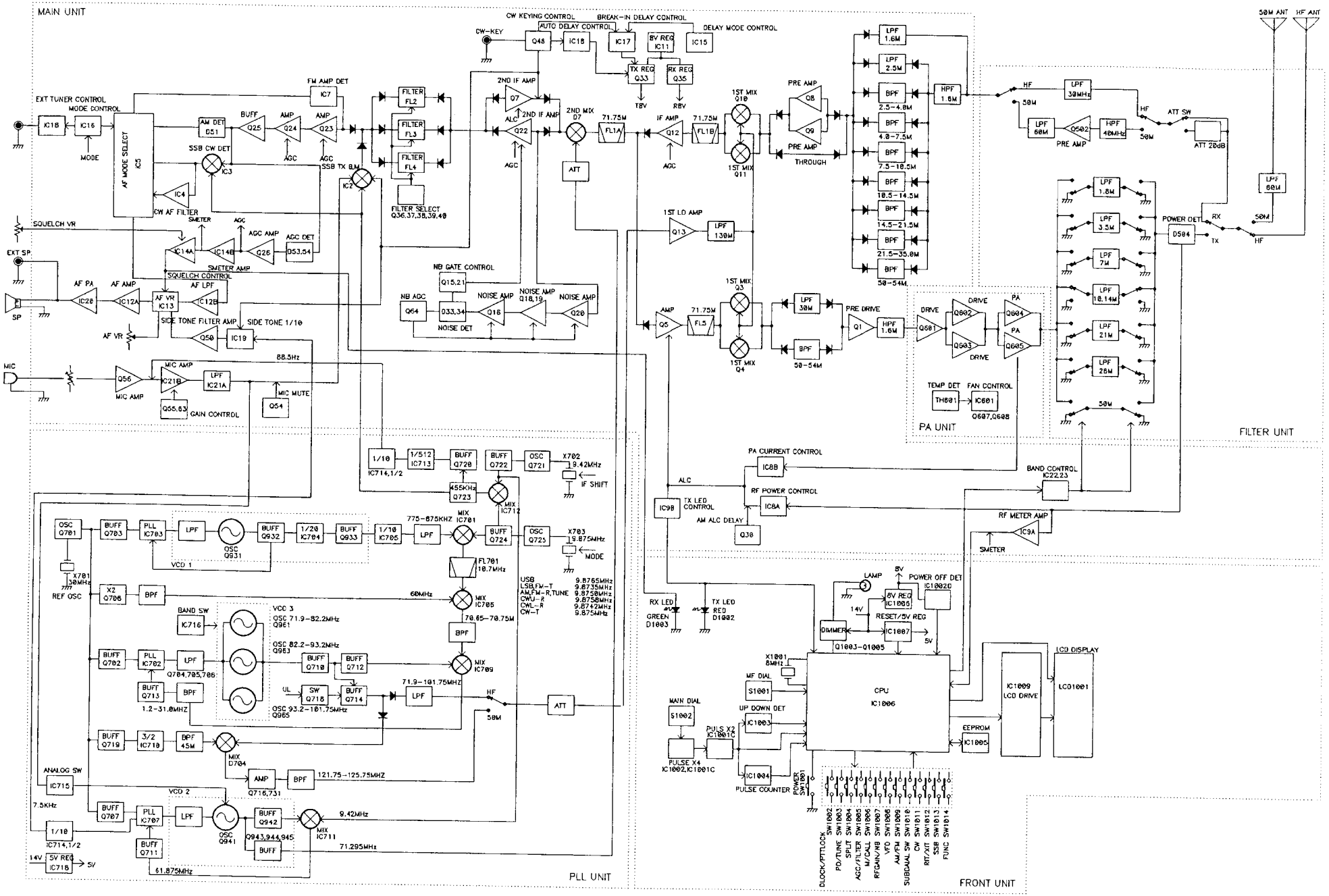
PLL Unit Side B



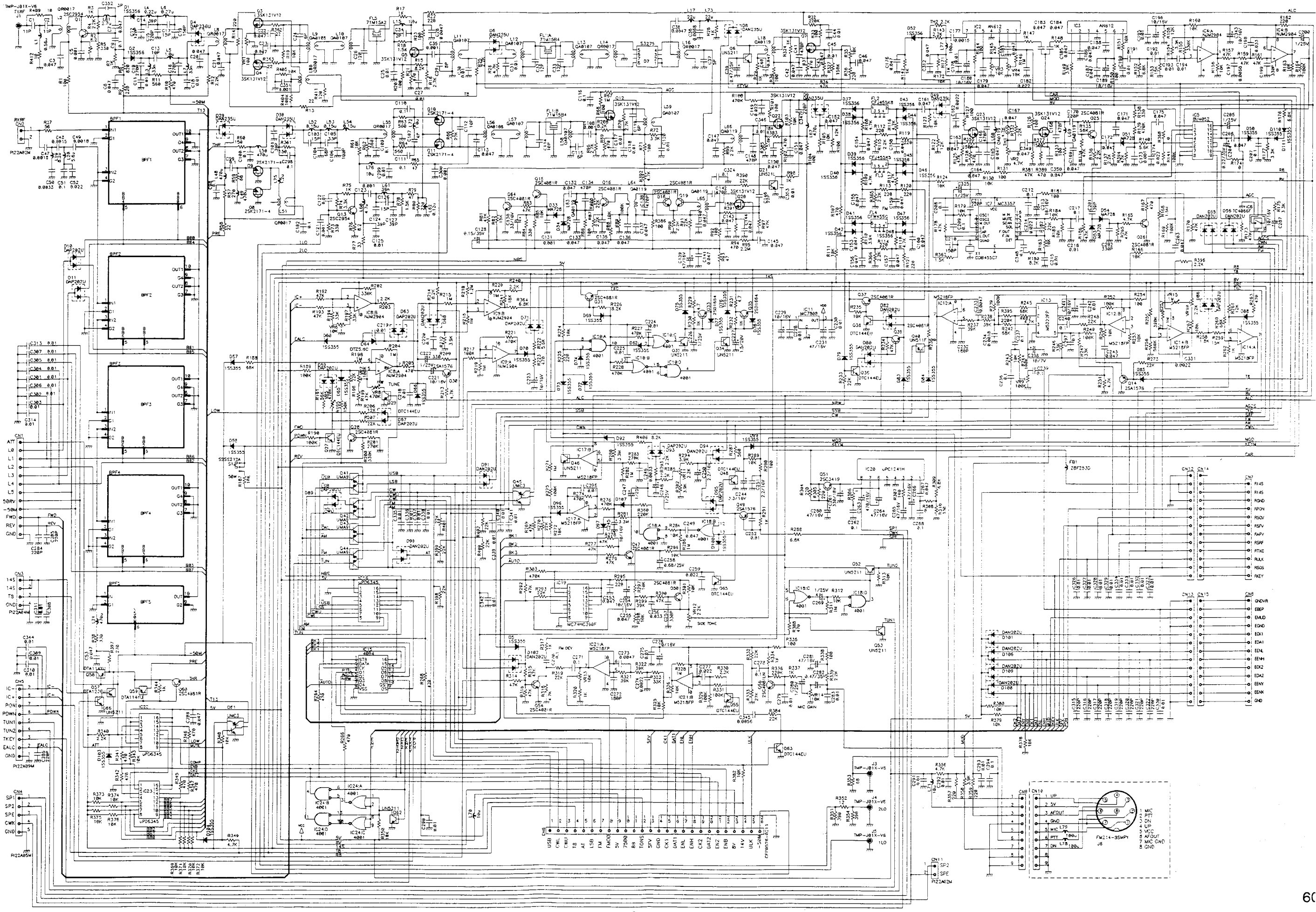
PCB INTERCONNECTION DIAGRAM

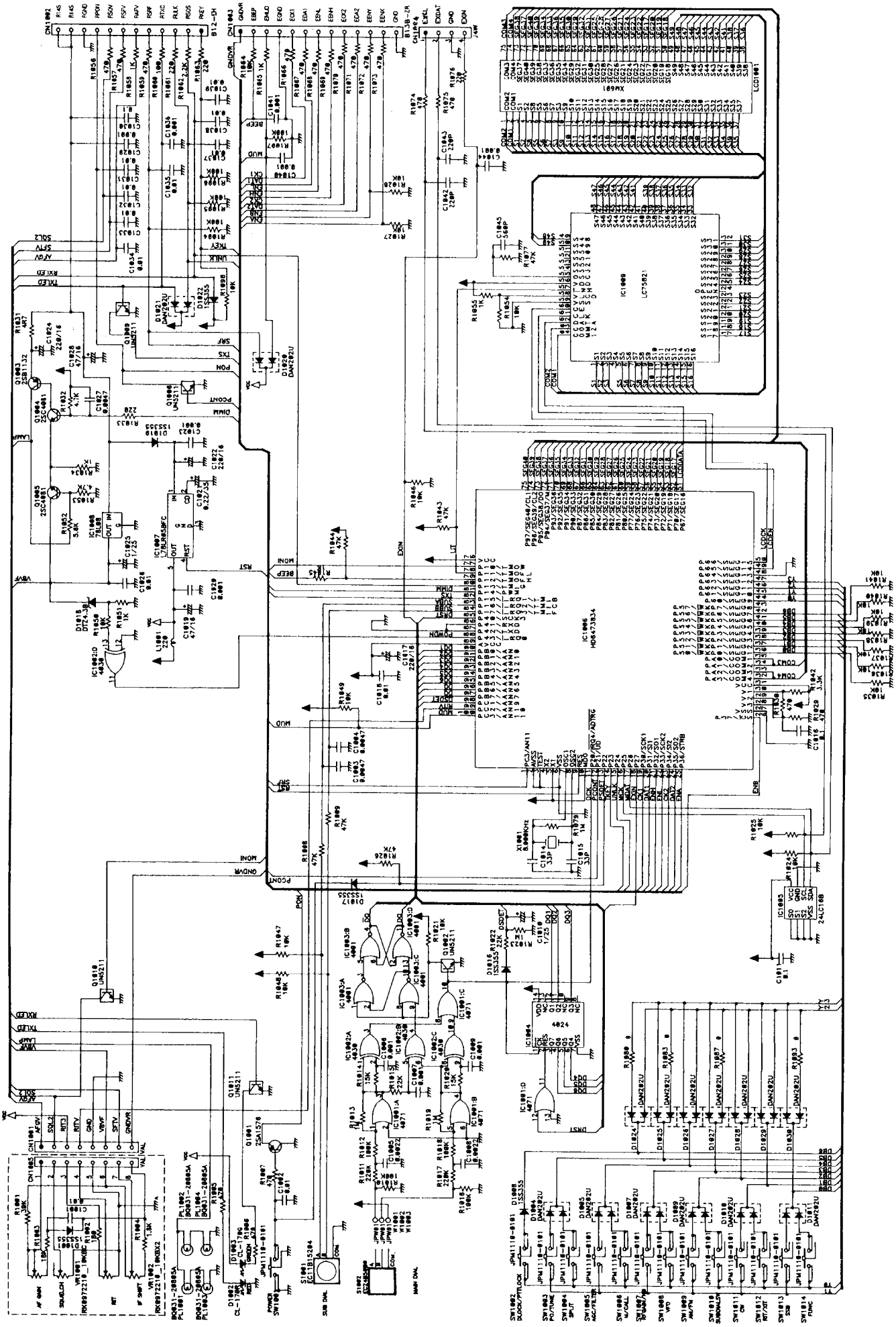


BLOCK DIAGRAM



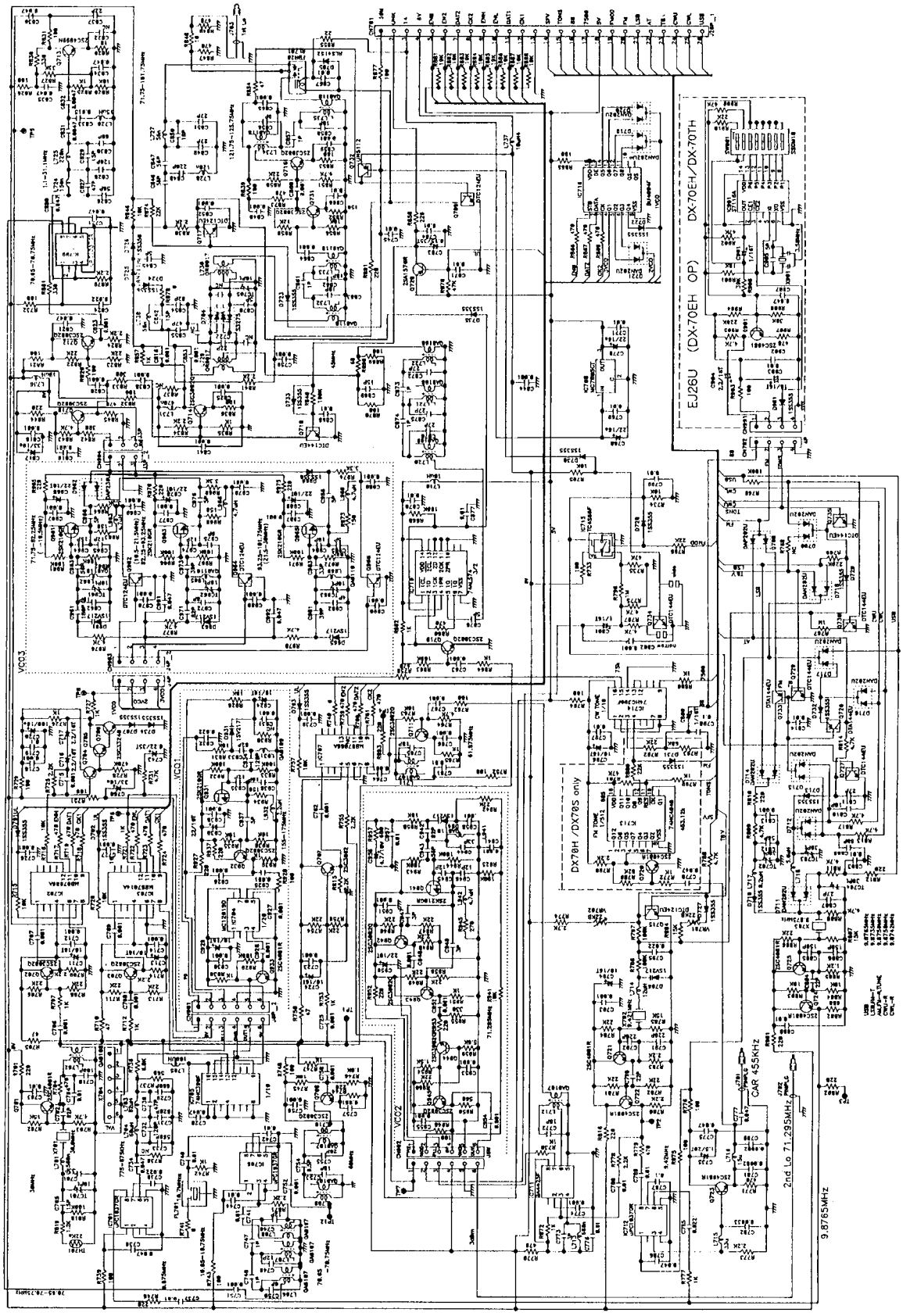
CIRCUIT DIAGRAM MAIN UNIT





CPU UNIT

PLL UNIT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DX-70EH/DX-70TH
DX-70H /DX-70S only
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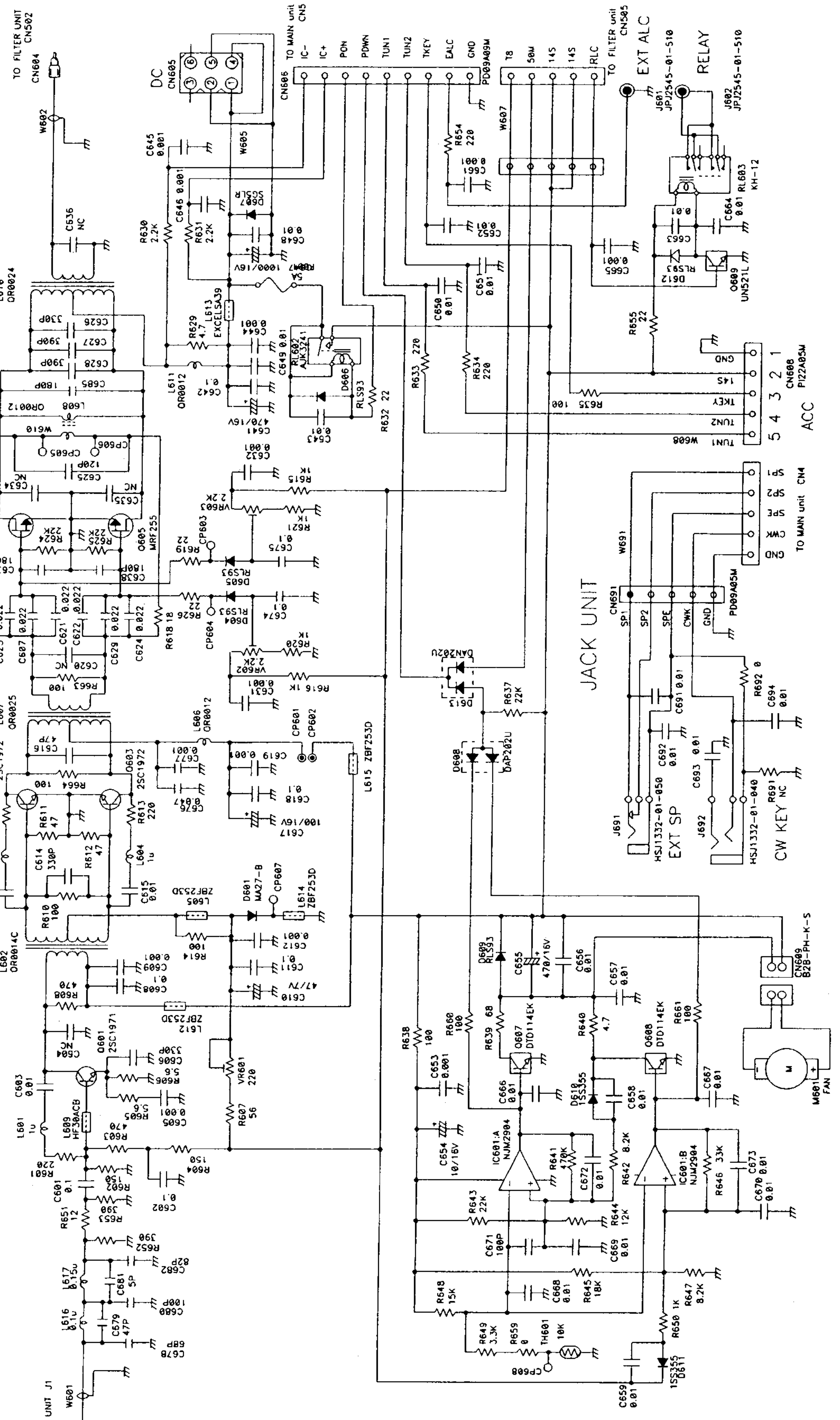
VCO1
VCO2
CAR 455KHz
2nd Lo 71.295MHz
9.8765MHz

PA UNIT



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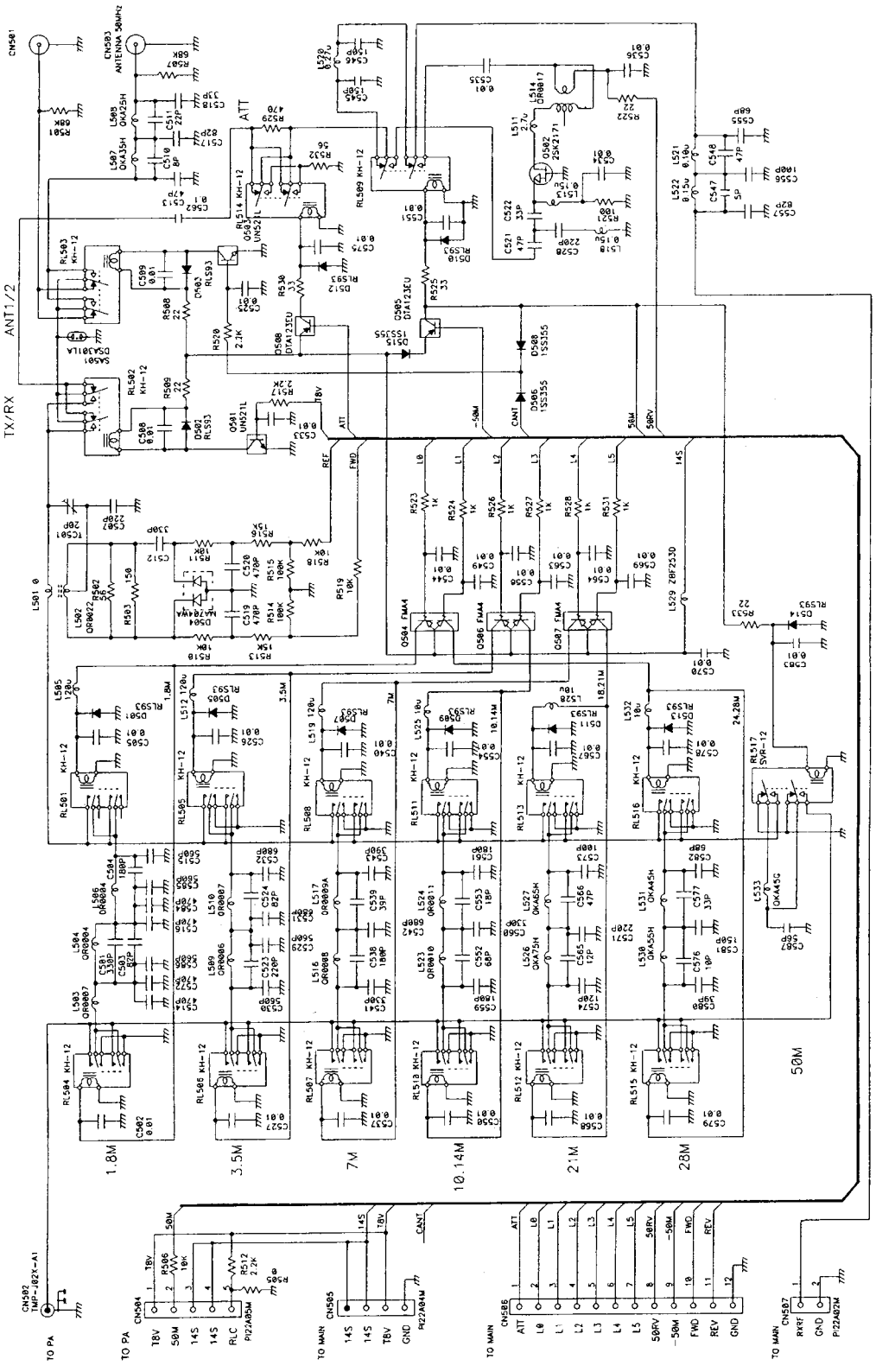
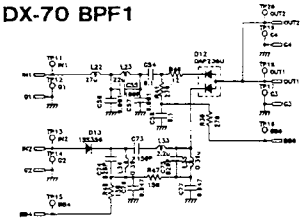
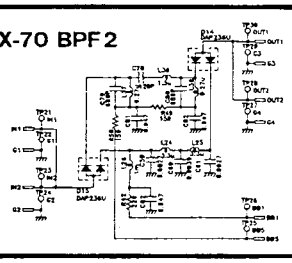


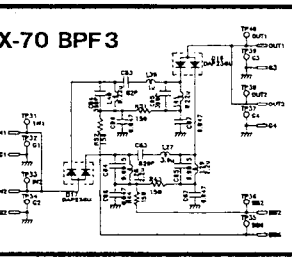
DX-70 BPF1



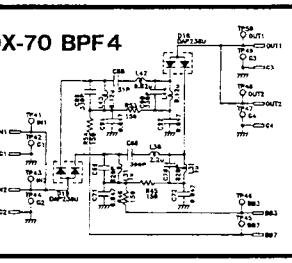
DX-70 BPF2



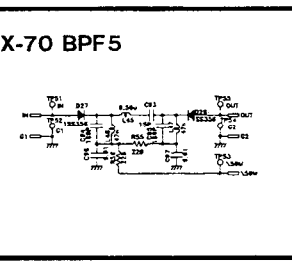
DX-70 BPF3



DX-70 BPF4

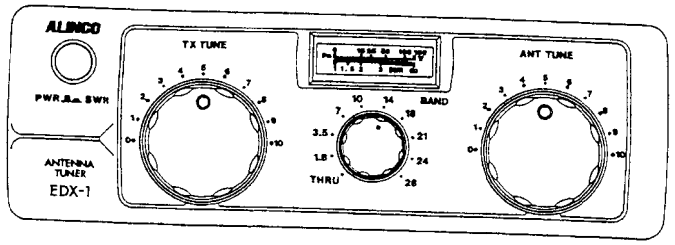


DX-70 BPF5

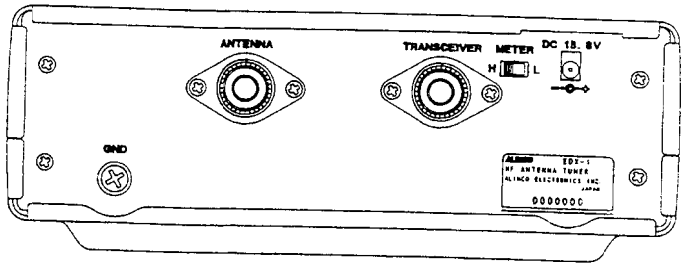


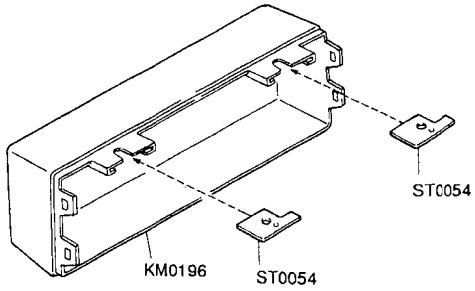
Exploded View for EDX-1

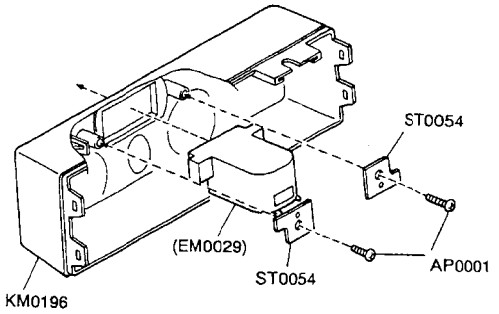
1) Front View

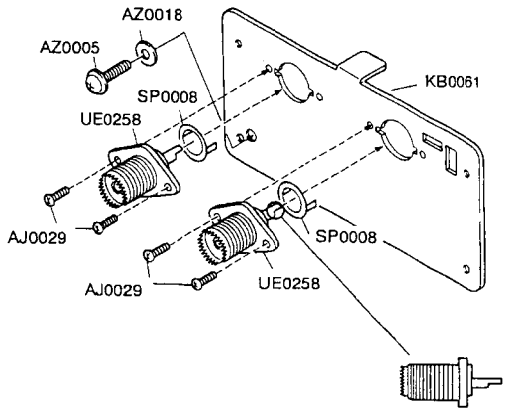


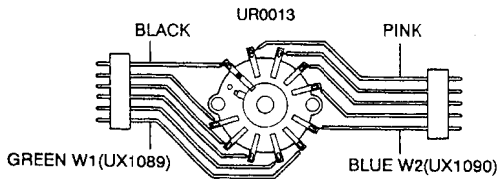
2) Rear View







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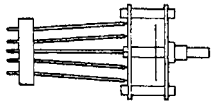
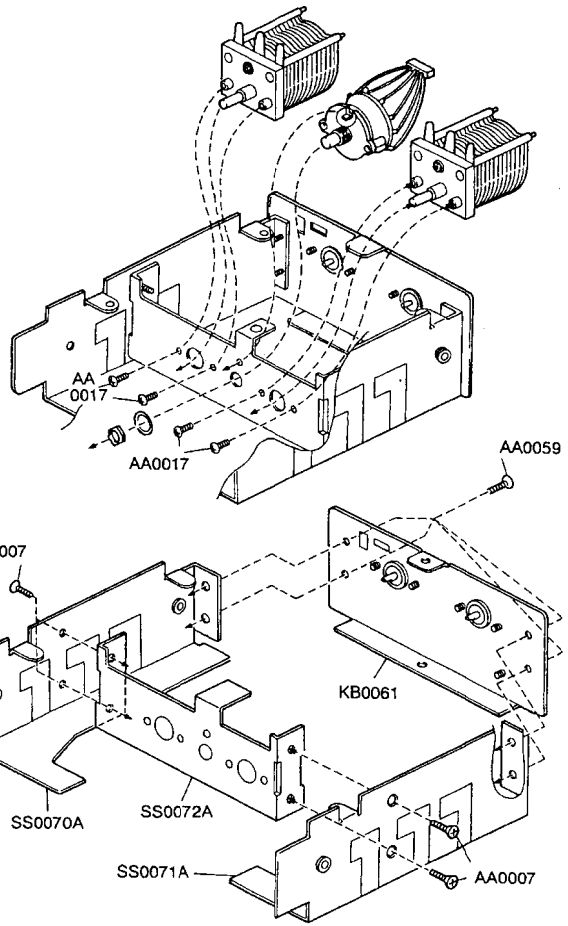
BLACK
PINK
GREEN W1(UX1089)
BLUE W2(UX1090)

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AA0017
AA0059
AA0007
KB0061
SS0070A
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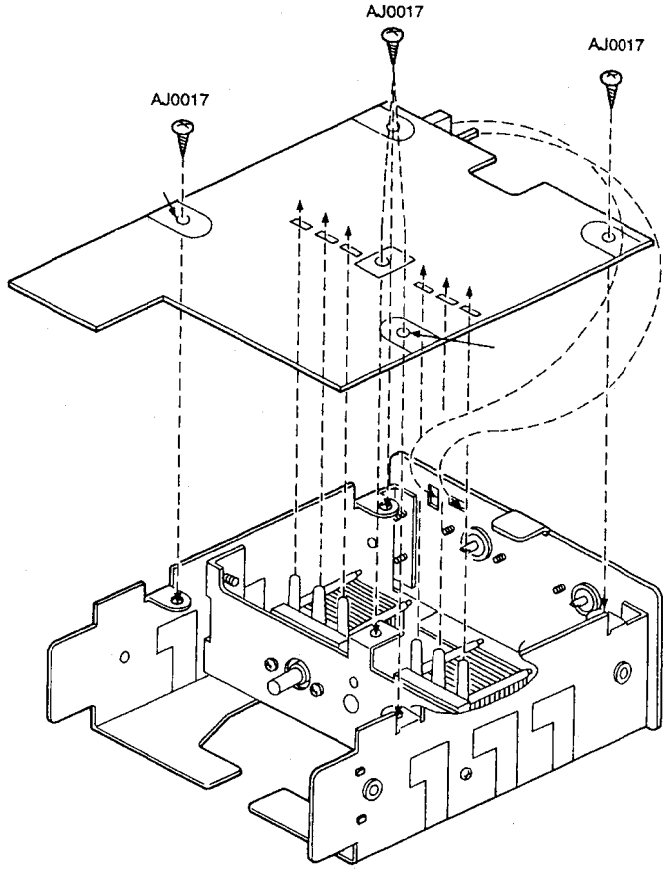
SS0071A
AA0007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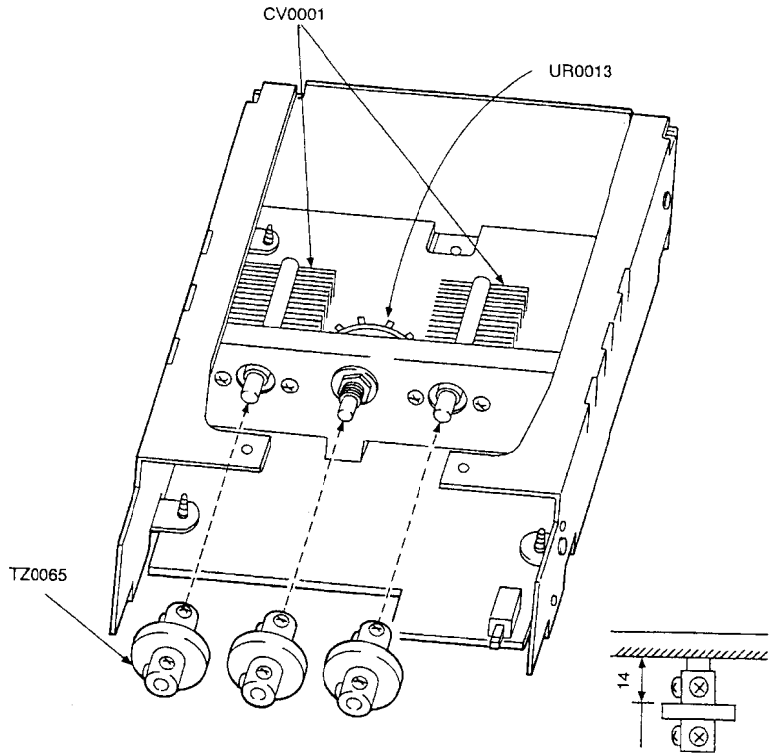
AJ0017
AJ0017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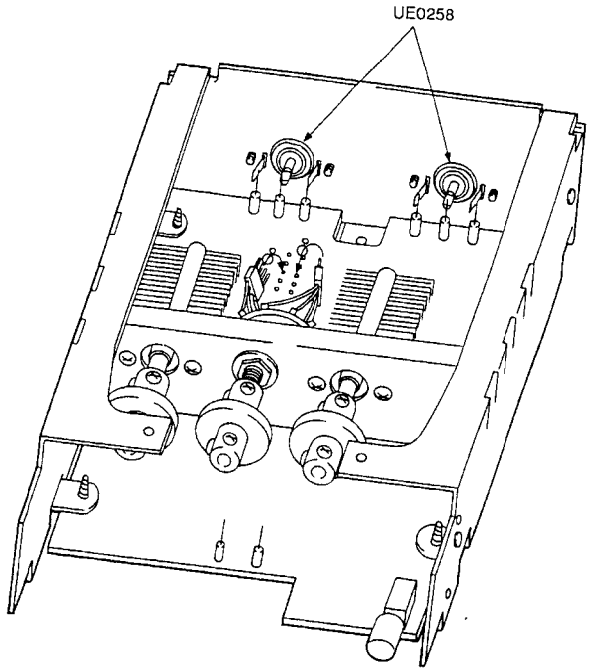
14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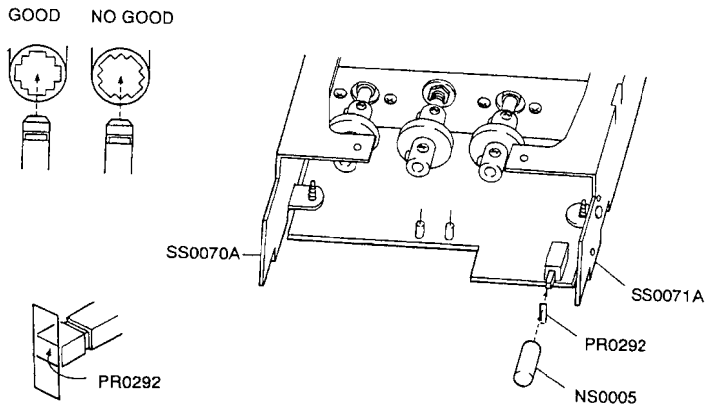
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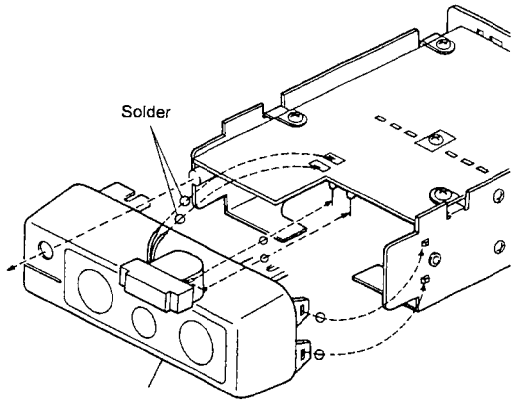
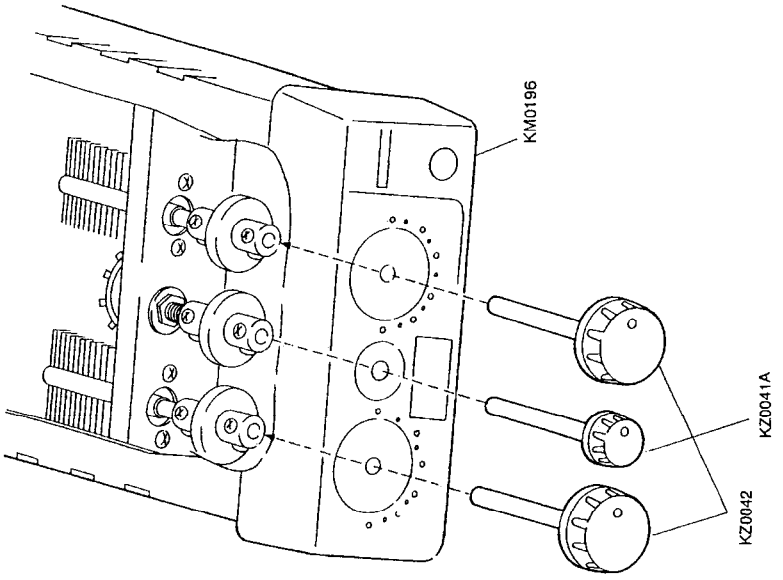
SS0071A
PR0292
PR0292
NS0005


Solder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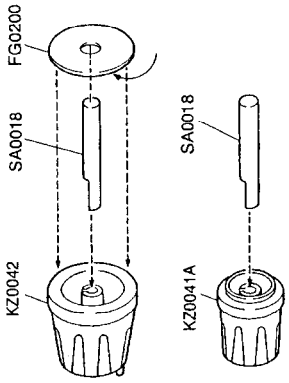
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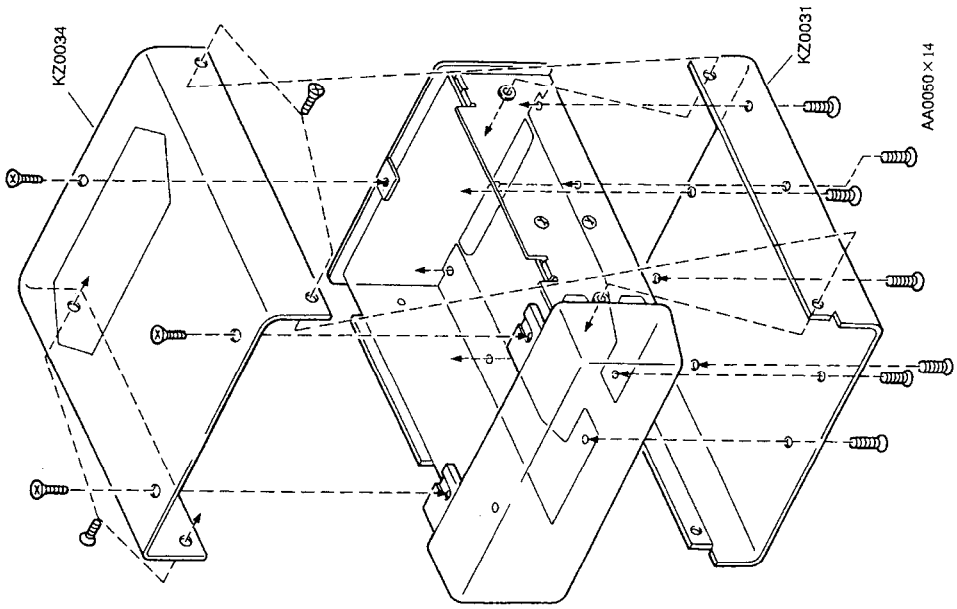
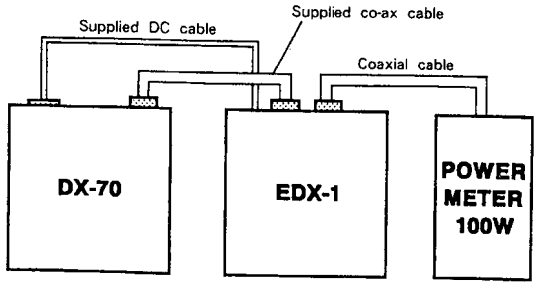

KZ0034
KZ0031
AA0050×14

Parts List for EDX-1

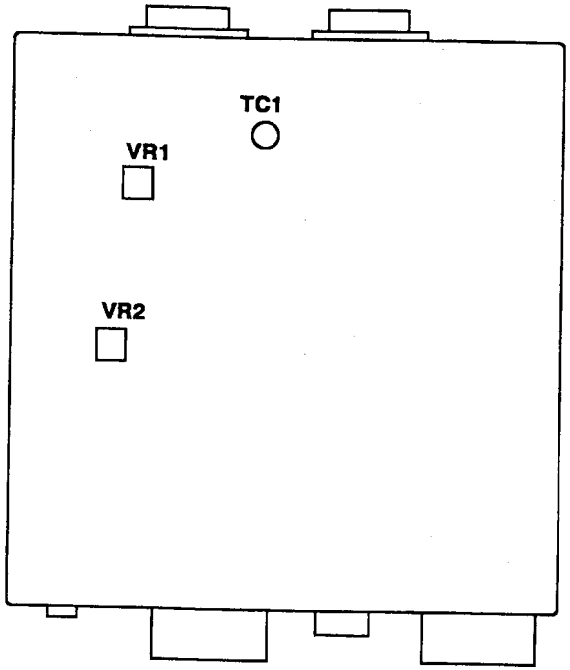
Ref. No.	Parts No.	Parts Name	Loc
		Tuner	
C1	CU3047	C1608JB1H103KT-A	A
C2	CE0201	16MV10SZ SEI	M
C3	CE0201	16MV10SZ SEI	M
C4	CU3047	C1608JB1H103KT-A	A
C5	CU3027	C1608CH1H221KT-A	A
C6	CU3029	C1608JB1H331KT-A	A
C7	CU3031	C1608JB1H471KT-A	A
C8	CU3031	C1608JB1H471KT-A	A
C9	CU3101	C1608JB1C473KT-A	A
C10	CU3101	C1608JB1C473KT-A	A
C11	CU3101	C1608JB1C473KT-A	A
C12	CU3031	C1608JB1H471KT-A	A
C13	CU3044	C1608JB1H562KT-A	A
C14	CS0060	TMCSA1E474MTR	A
C15	CU3047	C1608JB1H103KT-A	A
C16	CU3047	C1608JB1H103KT-A	A
C17	CU3047	C1608JB1H103KT-A	A
C18	CU3047	C1608JB1H103KT-A	A
C19	CU3047	C1608JB1H103KT-A	A
C20	CU3047	C1608JB1H103KT-A	A
C21		NC NC	
C22	CU3047	C1608JB1H103KT-A	A
C23	CU3047	C1608JB1H103KT-A	A
C24	CU3047	C1608JB1H103KT-A	A
C25	CU3047	C1608JB1H103KT-A	A
C26	CU3047	C1608JB1H103KT-A	A
C27	CU3047	C1608JB1H103KT-A	A
C28	CU3030	C1608JB1H391KT-A	A
C29	CU3047	C1608JB1H103KT-A	A
C30	CU3047	C1608JB1H103KT-A	A
D1	XD0273	RLS-93 TE11	A
D2	XD0297	MA8100 TX	A
D3	XD0127	MA704WA TX	A
D4	XD0273	RLS-93 TE11	A
D5	XD0273	RLS-93 TE11	A
IC1	XA0224	NJM2904M-T1 JRC	A
IC2	XA0224	NJM2904M-T1 JRC	A
J1	UJ0033	HEC2781-010520	M
JP1	RD1013	JPW02 R01	H
JP2	RD1013	JPW02 R01	H
JP3	RD1013	JPW02 R01	H
JP4	RD1013	JPW02 R01	H
JP5	RD1013	JPW02 R01	H
JP6	RD1013	JPW02 R01	H
JP7	RD1013	JPW02 R01	H
JP8	RD1013	JPW02 R01	H
JP9	RD1013	JPW02 R01	H
JP10		NC NC	
JP11	RK1107	ERJ8GEY0R00V	A
L1	RD1013	JPW02 R01	H
L2	QR0013A	Toroidal Coil QR0013A	H
L3	QKB002	COIL QKB002	H
L4	QR0019	Toroidal Coil QR0019	H
L5	QR0020	Toroidal Coil QR0020	H
L6	QC0048	NL322522T-100J	A
Q1	XT0113	2SC2873Y TE12L	A
Q2	XU0148	DTC144EU T106	A
Q3	XU0148	DTC144EU T106	A
R1	RK4087	ERJ14YJ151V	A
R2	RD0001	ERD S2TJ 100	M
R3	RK4029	ERJ-12YJ181H	A
R4	RK4024	ERJ-12YJ680H	A
R5	RK3050	ERJ3GSYJ103V	A
R6	RK3050	ERJ3GSYJ103V	A
R7	RK3052	ERJ3GSYJ153V	A
R8	RK3052	ERJ3GSYJ153V	A
R9	RK3060	ERJ3GSYJ683V	A
R10	RK3062	ERJ3GSYJ104V	A
R11	RK3062	ERJ3GSYJ104V	A
R12	RK3062	ERJ3GSYJ104V	A
R13	RK3050	ERJ3GSYJ103V	A
R14	RK3050	ERJ3GSYJ103V	A
R15	RK3063	ERJ3GSYJ124V	A
R16	RK3048	ERJ3GSYJ682V	A
R17	RK3050	ERJ3GSYJ103V	A
R18	RK3054	ERJ3GSYJ223V	A
R19	RK3048	ERJ3GSYJ682V	A
R20	RK3050	ERJ3GSYJ103V	A
R21	RK3050	ERJ3GSYJ103V	A
R22	RK3057	ERJ3GSYJ393V	A
R23	RK3074	ERJ3GSYJ105V	A
R24	RK3057	ERJ3GSYJ393V	A
R25	RK3057	ERJ3GSYJ393V	A
R26	RK3062	ERJ3GSYJ104V	A
R27	RK3050	ERJ3GSYJ103V	A
R28	RK0001	ERJ6GEYJ100V	A
R29	RK3026	ERJ3GSYJ101V	A
R30	RK3070	ERJ3GSYJ474V	A
R31	RK3026	ERJ3GSYJ101V	A
RL1	UL0015	SVR-12	M
RL2	UL0015	SVR-12	M
SW1	UQ0015	SPPJ22727A	M
SW2	UR0013	SRRY101AN-R15	H
SW3	US0020	ESD1522209	M
TC1	CT0036	ECV1ZW20X64T	M
VC1	CV0001	UV44B 300P	H
VC2	CV0001	UV44B 300P	H
VR1	RH0105	EVM1YSX50BY4	A
VR2	RH0106	EVM1YSX50B04	A
W1	UX1089	Wires EDX-1 1	H
W2	UX1090	Wires EDX-1 2	H
W3	UX1091	Wires EDX-1 3	H
W4	UX1091	Wires EDX-1 3	H
	UP0291	EDX-1 PC Board	T
R33	RK3046	ERJ3GSYJ472V	A
R32	RK1011	ERJ8GEYJ470V 1 A	A

Packing		
Parts No.	Parts Name	QTY
HK0386A	PACKAGE EDX-1	1
HP0009	Prctect. Bag (5×125×250)	1
HP00039	Prctect. Bag (65×250×400)	1
HU0080	P.MTL/CARTON(A)DX70	1
HU0082	P.MTL/CARTON(A)DX70	1
HU0087	P.MTL/CARTON(A)DX70	1
PS0229	INSTRUCTION MANUAL EDX1	1
PT0004A	SERIAL NO. FOR CARTON	2
UA0049	EDX1 DC CODE	1
UE0264	M-M CABLE EDX1	1
	Mechanical Parts	
Parts No.	Parts Name	QTY
PR0288	LABEL(SCREW STKR DX-70)	2
DS03898A	Serial No. PLATE(NEW)	1
AA0007	SCREW FH M2.6+6 Fe/Zn	4
AA0017	SCREW PH M3+8 Fe/Zn	4
AA50	SCREW OH M2.6+6 Fe/B.Zn	14
AA0059	SCREW BH M2.6+6 Fe/Ni	4
AD0005	SCREW PH/D M4+10 Fe/Zn	1
AJ0017	SCREW TH T2.6+6 Fe/N	5
AJ0029	SCREW PH T3+6 Fe/Zn	4
AP0001	SCREW PH M2.6+8 Fe/Zn	2
AZ0018	WASHER PW 4×10×0.8 Fe/Zn	1
EM0029	METER KL284A55	1
FG0200	DIAL PAT	2
KB0061	REAR CASE	1
KM0196	FRONTCASE	1
KZ0031	BOTTOM COVER DX-70	1
KZ0034	UPPERCASE EDX-1	1
KZ0041A	SUBDIAL EDX-1	1
KZ0042	DIAL DX-701	2
NS0005	SW KNOB(PS) CIRCLE	1
PR0292	LABEL (KNOB)	1
SA0018	STAY D6×60	3
SP0008	TERMINAL(GND DX-70)	2
SS0070A	CHASSIS(LEFT)	1
SS0071A	CHASSIS(RIGHT)	1
SS0072A	CHASSIS(CENTER)	1
ST0054	FIX METER	4
TZ0065	CUP RING C	3
UE0258	FM-M.D.R-(4)	2
UR0013	CONNECTOR SRRY101AN-R15	1
UX1089	WIRE EDX-1 W1	1
UX1090	WIRE EDX-1 W2	1

Connection Example



Adjustment Point



Required Test Equipment for EDX-1

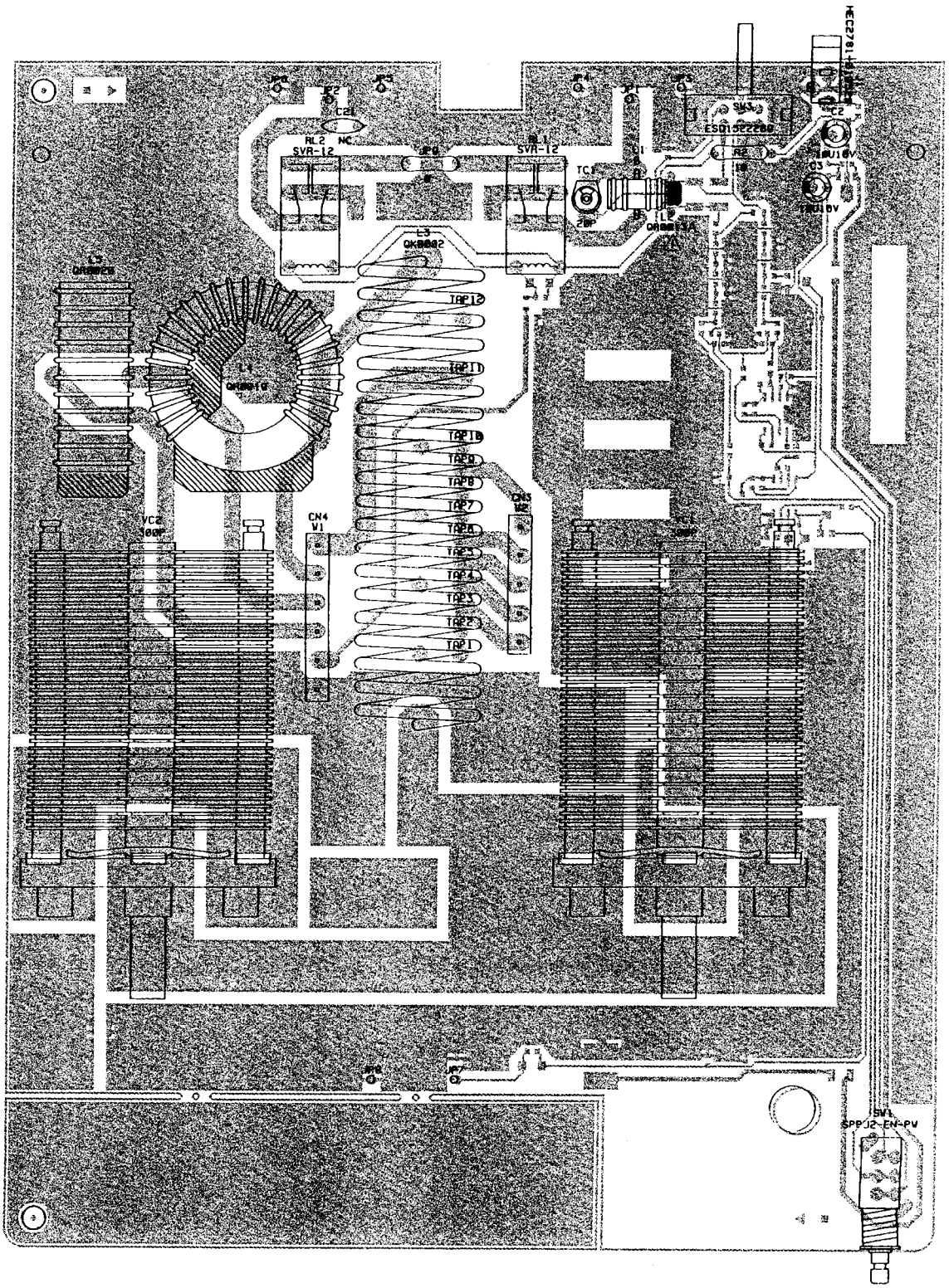
TX ON	BAND	SWR	METER	TX TUNE	ANT TUNE	METER READING	UNIT
14.1MHz 100W	1.8	ON	H	10	10	∞	SWR
14.1MHz 100W	THRU	OFF	H	–	–	100W	PWR
14.1MHz 10W	THRU	OFF	L	–	–	10W (100W on scale)	PWR
1.9MHz 100W	1.8	ON	H	4	4	1.5max.	SWR
3.6MHz 100W	3.5	ON	H	7	7	1.5max.	SWR
7.1MHz 100W	7	ON	H	6	6	1.5max.	SWR
10.1MHz 100W	10	ON	H	7.5	7.5	1.5max.	SWR
14.1MHz 100W	14	ON	H	8	8	1.5max.	SWR
18.1MHz 100W	18	ON	H	8.5	8.5	1.5max.	SWR
21.1MHz 100W	21	ON	H	9	9	1.5max.	SWR
24.9MHz 100W	24	ON	H	9	9	1.5max.	SWR
28.1MHz 100W	28	ON	H	9	9	1.5max.	SWR

Adjustment for EDX-1

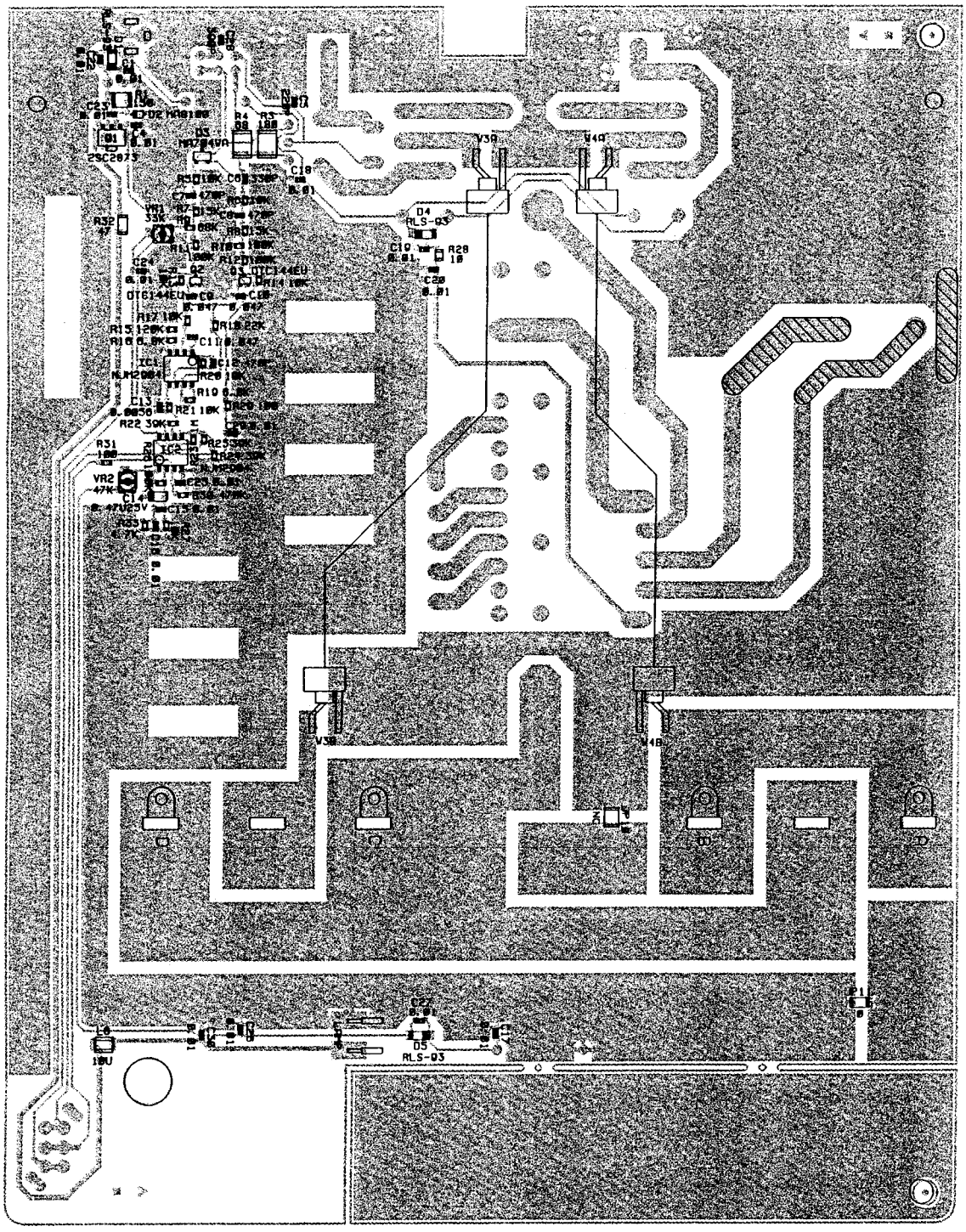
DX-70 TX FREQ. 14.1MHz TX POWER 100W						
BAND	SWR	METER	TX TUNE	ANT TUNE	ADJUST POINT	METER READING
THRU	ON	H	–	–	TC 1	MIN
1.8	ON	H	10	10	VR 2	∞
THRU	OFF	H	–	–	VR1	100W

PC Bord View for EDX-1

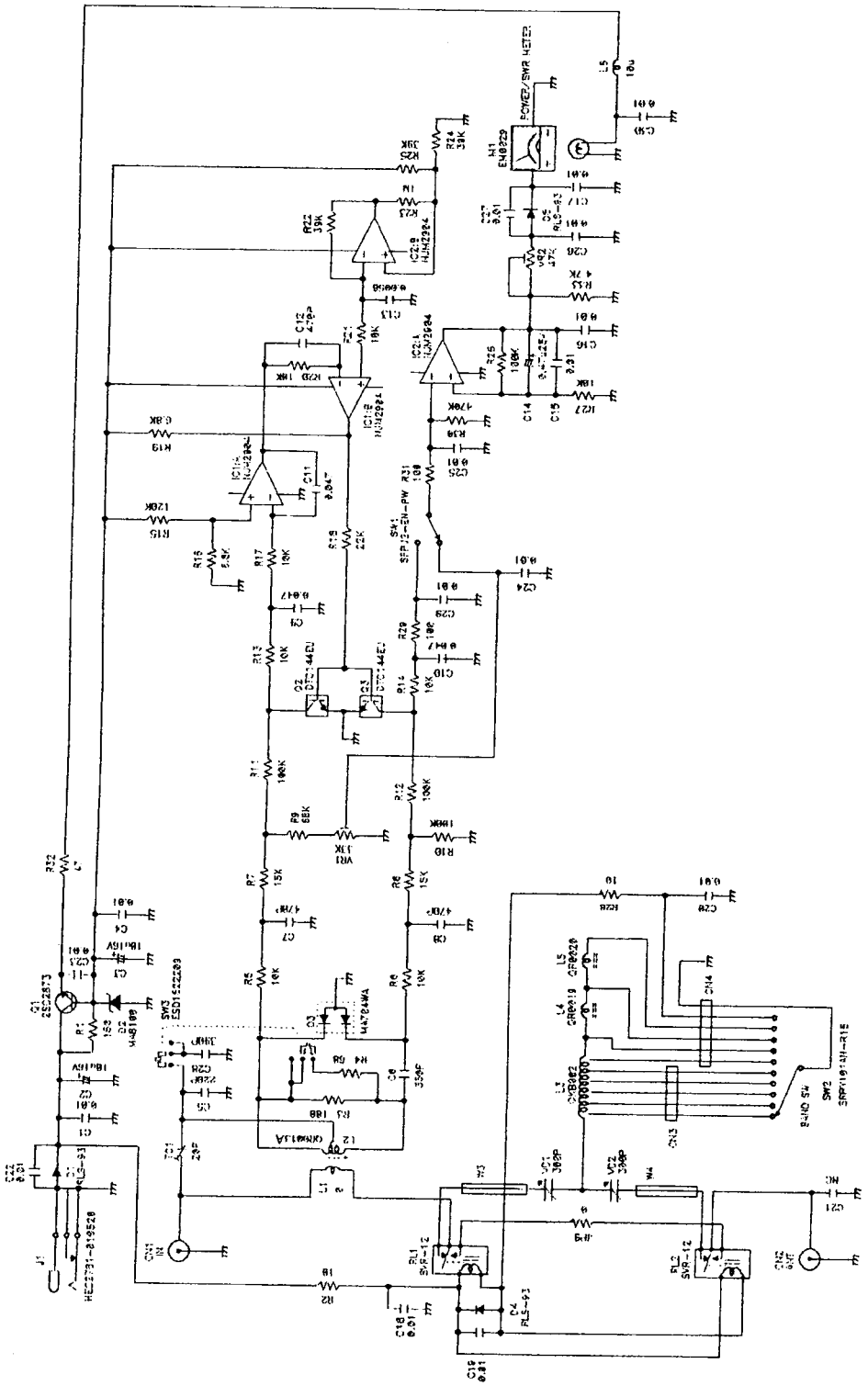
Side A



Side B


V3A
V4A
V3B
V4B
D4
RLS-03
D5
RLS-03
C19
C20
R28
10
VR1
VR2
IC1
IC2
IC3
IC4
P1

Schematic Diagram for EDX-1



ALINCO, INC.

Head office: "TWIN 21" MID Tower Building 25F
1-61, 2-Chome, Shiromi, Chuo-ku, Osaka 540-8580, Japan
Phone: 06-6946-8150 Fax: 06-6946-8175
E-mail: export@alinco.co.jp
U.S.A.: 438 Amapola Avenue, Unit 130, Torrance, CA 90501-6201, U.S.A.
Phone: 310-618-8616 Fax: 310-618-8758
http://www.alinco.com/
Germany: Eschborner Landstrasse 55, 60489 Frankfurt am Main, Germany
Phone: 069-786018 Fax: 069-789-60766
http://www.alinco.de/

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