

# DR-135 / DR-435MKII

## Service Manual

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# SPECIFICATIONS

## ■ General

Frequency coverage	DR-135	DR-435
T MkII	118.000 ~ 135.995MHz (AM RX) 136.000 ~ 173.995MHz (RX) 144.000 ~ 147.995MHz (TX)	350.000 ~ 511.995MHz (RX) 430.000 ~ 449.995MHz (TX)
E MkII	144.000 ~ 145.995MHz (RX,TX)	

Operating mode	FM 16K0F3E (Wide mode) 8K50F3E (Narrow mode)
Frequency resolution	5, 8.33, 10, 12.5, 15, 20, 25, 30, 50 kHz
Number of memory Channels	100
Antenna impedance	50Ω unbalanced
Power requirement	13.8V DC ±15% (11.7 ~ 15.8V)
Ground method	Negative ground
Current drain	Receive 0.6A (max.) 0.4A (Squelched)
Transmit	11.0 A max. 10.0 A max
Operating temperature	-10°C ~ 60°C
Frequency stability	±2.5 ppm
Dimensions	142 (w)×40 (h)×174 (d) mm (142×40×188mm for projection included)
Weight	Approx. 1.0Kg

## ■ Transmitter

Output power	Hi	50W	35W
	Mid	10W	10W
	Low	Approx. 4W	Approx. 5W
Modulation system	Variable reactance frequency modulation		
Maximum Frequency deviation	±5kHz (Wide mode)		±2.5kHz (Narrow mode)
Spurious emission	-60dB		
Adjacent channel power	-60dB		
Noise and hum ratio	-40dB (Wide mode)		-34dB (Narrow mode)
Microphone impedance	2kΩ		

## ■ Receiver

Sensitivity	-16dBu for 12dB SINAD		
Receiver circuit	Double conversion super-heterodyne		
Intermediate frequency	1st 21.7MHz	2nd 450kHz	1st 30.85MHz 2nd 455kHz
Squelch sensitivity	-18dBu		
Adjacent channel selectivity	-65dB (Wide mode)		-55dB (Narrow mode)
Inter-modulation rejection ratio	60dB		
Spurious and image rejection ratio	70dB		
Audio output power	2.0W (8Ω, 10 % THD)		

! NOTE : All specifications are subject to change without notice or obligation.

# CIRCUIT DESCRIPTION

## 1) Receiver System DR-135

The receiver system is a double super-heterodyne system with a 21.7MHz first IF and a 450kHz second IF.

### 1. Front End

The received signal at any frequency in the 136.000MHz to 173.995MHz range is passed through the low-pass filter (L116, L115, L114, L113, C204, C203, C202, C216 and C215) and tuning circuit (L105, L104 and D105, D104), and amplified by the RF amplifier (Q107). The signal from Q107 is then passed through the tuning circuit (L103, L102, and variable capacitor D103, D102) and converted into 21.7MHz by the mixer (Q106). The tuning circuit, which consists of L105, L104, variable capacitor D105 and D104, L103, L102, variable capacitor D103 and D102, is controlled by the tracking voltage from the VCO. The local signal from the VCO is passed through the buffer (Q145), and supplied to the source of the mixer (Q106). The radio uses the lower side of the super-heterodyne system.

### 2. IF Circuit

The mixer mixes the received signal with the local signal to obtain the sum of and difference between them. The crystal filter (XF102, XF101) selects 21.7 MHz frequency from the results and eliminates the signal of the unwanted frequencies. The first IF amplifier (Q105) then amplifies the signal of the selected frequency.

### 3. Demodulator Circuit

After the signal is amplified by the first IF amplifier (Q105), it is input to pin24 of the demodulator IC (IC108). The second local signal of 21.25MHz (shared with PLL IC reference oscillation), which is oscillated the external oscillator X102 (VCTCXO), is input through pin 1 of IC108. Then, these two signals are mixed by the internal mixer in IC108 and the result is converted into the second IF signal with a frequency of 450kHz. The second IF signal is output from pin 3 of IC108 to the ceramic filter (FL102 or FL101), where the unwanted frequency band of that signal is eliminated, and the resulting signal is sent back to the IC108 through pin 5.

The second IF signal input via pin 5 is demodulated by the internal limiter amplifier and quadrature detection circuit in IC 108, and output as an audio signal through pin 12.

#### **4. Audio Circuit**

The audio signal from pin 12 of IC 108 is amplified by the audio amplifier (IC104:A, IC120), and switched by the signal switch IC (IC111) and then input it to the de-emphasis circuit.

And is compensated to the audio frequency characteristics in the de-emphasis circuit (R203, R207, R213, R209, C191, C218, C217) and amplified by the AF amplifier (IC104:D). The signal is then input to volume (VR1). The adjusted signal is sent to the audio power amplifier (IC117) through the pin 1 to drive the speaker.

#### **5. Squelch Circuit**

The detected output which is outputted from pin 12 of IC108 is inputted to pin 19 of IC108 after it was been amplified IC104:A, IC120 and it is outputted from pin 20 after the noise component was been eliminated from the composed band pass filter in the built in amplifier of the IC, then the signal is rectified by the internal diode in IC108 to convert into DC component. The adjusted voltage level at VR101 is delivered to the comparator of the CPU. The voltage is led to pin 2 of CPU and compared with the setting voltage. The squelch will open if the input voltage is lower than the setting voltage.

During open squelch, pin 30 (SQC) of the CPU becomes "L" level, AF control signal is begin controlled and sounds is outputted from speaker.

#### **6. AIR Band Reception (T only)**

When the frequency is within 118.000 ~ 135.995MHz, Q110 automatically turns on, pin 14 of IC 108 becomes "H" level and the condition becomes in AM detection mode.

The receiver signal passed through the duplexer is let to the antenna switch (D107, D101). After passing through the band-pass filter, the signal is amplified by RF amplifier Q112. Secondly the signal is mixed with the signal from the first local oscillator in the first-mixer Q106, then converted into the first IF. Its unwanted signal is let to pin 24 of IC106. Then converted into the second IF. And is demodulated by AM decoder of IC106, and is output from pin 13 as the AF signal.

#### **7. WIDE/NARROW Switching Circuit**

The second IF 450kHz signal which passes through filter FL101 (wide) and FL102 (narrow) during narrow, changes its width using the width control switching IC103 and IC102.

## 2) Transmitter System DR-135

### 1. Modulator Circuit

The audio signal is converted to an electrical signal by the microphone, and input it to the microphone amplifier (Q6). Amplified signal which passes through mic-mute control IC109 is adjusted to an appropriate mic-volume by means of mic-gain adjust VR106.

IC114:A and B consists of two operational amplifiers; one amplifier (pin 1, 2 and 3) is composed of pre-emphasis and IDC circuit and the other (pin 5, 6 and 7) is composed of a splatter filter. The maximum frequency deviation is obtained by VR107. And input to the signal switch (IC113) (9600 bps packet signal input switch) and input to the cathode of the variable capacitor of the VCO, to change the electric capacity in the oscillation circuit. This produces the frequency modulation.

### 2. Power Amplifier Circuit

The transmitted signal is oscillated by the VCO, amplified by the drive amplifier (Q145) and younger amplifier (Q115, Q144), and input to the final power module (IC110). The signal is then amplified by the final power module (IC110) and led to the antenna switch (D110) and low-pass filter (L113, L114, L115, L116, C215, C216, C202, C203 and C204), where unwanted high harmonic waves are reduced as needed, and the resulting signal is supplied to the antenna.

### 3. APC Circuit

Part of the transmission power from the low-pass filter is detected by D111 and D112, converted to DC. The detection voltage is passed through the APC circuit (Q118, Q117, Q116), then it controls the APC voltage supplied to the younger amplifier Q115 and the final power module IC110 to fix the transmission power.

## 3) PLL Synthesizer Circuit DR-135

### 1. PLL

The dividing ratio is obtained by sending data from CPU (IC1) to pin 2 and sending clock pulses to pin 3 of the PLL IC (IC116). The oscillated signal from the VCO is amplified by the buffer (Q134 and Q135) and input to pin 15 of IC116. Each programmable divider in IC116 divides the frequency of the input signal by N according to the frequency data, to generate a comparison frequency of 5 or 6.25 kHz.

### 2. Reference Frequency Circuit

The reference frequency appropriate for the channel steps is obtained by dividing the 21.25 MHz reference oscillation (X102) by 4250 or 3400, according to the data from the CPU (IC1). When the resulting frequency is 5 kHz, channel step of 5, 10, 15, 20, 25, 30 and 50 kHz are used. When it is 6.25 kHz, the 12.5 kHz channel step is used.

### 3. Phase Comparator Circuit

The PLL (IC116) uses the reference frequency, 5 or 6.25 kHz. The phase comparator in the IC116 compares the phase of the frequency from the VCO with that of the comparison frequency, 5 or 6.25 kHz, which is obtained by the internal divider in IC116.

### 4. PLL Loop Filter Circuit

If a phase difference is found in the phase comparison between the reference frequency and the VCO output frequency, the charge pump output (pin 13) of IC116 generates a pulse signal, which is converted DC voltage by the PLL loop filter and input to the input to the variable capacitor of the VCO unit for oscillation frequency control.

### 5. VCO Circuit

A Colpitts oscillation circuit driven by Q131 directly oscillates the desired frequency. The frequency control voltage determine in the CPU (IC1) and PLL circuit is input to the variable capacitor (D122 and D123). This change the oscillation frequency, which is amplified by the VCO buffer (Q134) and output from the VCO area.

### 6. VCO Shift Circuit

During transmission or the AIR band Reception (118 ~ 136 MHz), the VCO shift circuit turns ON Q138, change control the capacitance of L123 and safely oscillates the VCO by means of H signal from pin 16 of IC116.

## 4) Receiver System DR-435

The receiver system is a double super-heterodyne system with a 30.85MHz first IF and a 455kHz second IF.

### 1. Front End

The received signal at any frequency in the 430.000MHz to 449.995MHz range is passed through the low-pass filter ( L115, L114, L116, C204, C203, C202, C216 and C215) and amplified by the RF amplifier (Q107). The signal from Q107 is then passed through the BPF circuit (L103, L102) and converted into 30.85MHz by the mixer (Q106). The local signal from the VCO is passed through the buffer (Q503, Q504), and supplied to the source of the mixer (Q106). The radio uses the lower side of the super-heterodyne system.

### 2. IF Circuit

The mixer mixes the received signal with the local signal to obtain the sum of and difference between them. The crystal filter (XF101) selects 30.85 MHz frequency from the results and eliminates the signal of the unwanted frequencies. The first IF amplifier (Q105) then amplifies the signal of the selected frequency.

### **3. Demodulation Circuit**

After the signal is amplified by the first IF amplifier (Q105), it is input to pin16 of the demodulator IC (IC108). The second local signal of 30.395MHz (Crystal oscillator) is input through pin 1 of IC108. Then, these two signals are mixed by the internal mixer in IC108 and the result is converted into the second IF signal with a frequency of 455kHz. The second IF signal is output from pin 3 of IC108 to the ceramic filter (FL101 or FL102), where the unwanted frequency band of that signal is eliminated, and the resulting signal is sent back to the IC108 through pin 5.

The second IF signal input via pin 5 is demodulated by the internal limiter amplifier and quadrature detection circuit in IC 108, and output as an audio signal through pin 9.

### **4. Audio Circuit**

The audio signal from pin 9 of IC 108 is amplified by the audio amplifier (IC104:A), and switched by the signal switch IC (IC111) and then input it to the de-emphasis circuit.

And is compensated to the audio frequency characteristics in the de-emphasis circuit (R203, R207, R213, R209, C191, C218, C217) and amplified by the AF amplifier (IC104:D). The signal is then input to volume (VR1). The adjusted signal is sent to the audio power amplifier (IC117) through the pin 1 to drive the speaker.

### **5. Squelch Circuit**

The detected output which is outputted from pin 9 of IC108 is inputted to pin 8 of IC108 after it was been amplified IC104:A and it is outputted from pin 7 after the noise component was been eliminated from the composed band pass filter in the built in amplifier of the IC, then the signal is rectified by the internal diode in IC108 to convert into DC component. The adjusted voltage level at VR101 is delivered to the comparator of the CPU. The voltage is led to pin 2 of CPU and compared with the setting voltage. The squelch will open if the input voltage is lower than the setting voltage.

During open squelch, pin 30 (SQC) of the CPU becomes "L" level, AF control signal is begin controlled and sounds is outputted from speaker.

### **6. WIDE/NARROW Switching circuit**

The second IF 455kHz signal which passes through filter FL101 (wide) and FL102 (narrow) during narrow, changes its width using the width control switching IC103 and IC102.

## 5) Transmitter System DR-435

### 1. Modulator Circuit

The audio signal is converted to an electrical signal by the microphone, and input it to the microphone amplifier (Q6). Amplified signal which passes through mic-mute control IC109 is adjusted to an appropriate mic-volume by means of mic-gain adjust VR106.

IC114:A and B consists of two operational amplifiers; one amplifier (pin 1, 2 and 3) is composed of pre-emphasis and IDC circuit and the other (pin 5, 6 and 7) is composed of a splatter filter. The maximum frequency deviation is obtained by VR107. And input to the signal switch (IC113) (9600 bps packet signal input switch) and input to the cathode of the variable capacitor of the VCO, to change the electric capacity in the oscillation circuit. This produces the frequency modulation.

### 2. Power Amplifier Circuit

The transmitted signal is oscillated by the VCO, amplified by the drive amplifier (Q131, Q125) and younger amplifier (Q115), and input to the final power module (IC110). The signal is then amplified by the final power module (IC110) and led to the antenna switch (D110) and low-pass filter (L1163, L114, L115, C215, C216, C202, C203 and C204), where unwanted high harmonic waves are reduced as needed, and the resulting signal is supplied to the antenna.

### 3. APC Circuit

Part of the transmission power from the low-pass filter is detected by D111 and D112, converted to DC. The detection voltage is passed through the APC circuit (Q118, Q117, Q116), then it controls the APC voltage supplied to the younger amplifier Q115 and the final power module IC110 to fix the transmission power.

## 6) PLL Synthesizer Circuit DR-435

### 1. PLL

The dividing ratio is obtained by sending data from CPU (IC1) to pin 2 and sending clock pulses to pin 3 of the PLL IC (IC501). The oscillated signal from the VCO is amplified by the buffer (Q503 and Q501) and input to pin 15 of IC501. Each programmable divider in IC501 divides the frequency of the input signal by N according to the frequency data, to generate a comparison frequency of 5 or 6.25 kHz.

### 2. Reference Frequency Circuit

The reference frequency appropriate for the channel steps is obtained by dividing the 21.25 MHz reference oscillation (X102) by 4250 or 3400, according to the data from the CPU (IC1). When the resulting frequency is 5 kHz, channel step of 5, 10, 15, 20, 25, 30 and 50 kHz are used. When it is 6.25 kHz, the 12.5 kHz channel step is used.



### **3. Phase Comparator Circuit**

The PLL (IC501) uses the reference frequency, 5 or 6.25 kHz. The phase comparator in the IC501 compares the phase of the frequency from the VCO with that of the comparison frequency, 5 or 6.25 kHz, which is obtained by the internal divider in IC501.

### **4. PLL Loop Filter Circuit**

If a phase difference is found in the phase comparison between the reference frequency and the VCO output frequency, the charge pump output (pin 13) of IC501 generates a pulse signal, which is converted DC voltage by the PLL loop filter and input to the input to the variable capacitor of the VCO unit for oscillation frequency control.

### **5. VCO Circuit**

A Colpitts oscillation circuit driven by Q502 directly oscillates the desired frequency. The frequency control voltage determine in the CPU (IC1) and PLL circuit is input to the variable capacitor (D502 and D503). This change the oscillation frequency, which is amplified by the VCO buffer (Q503, Q504) and output from the VCO unit.

## **7) CPU and Peripheral Circuits**

### **1. LCD Display Circuit**

The CPU turns ON the LCD via segment and common terminals with 1/4 the duty and 1/3 the bias, at the frame frequency is 64 Hz.

### **2. Dimmer Circuit**

The dimmer circuit makes the output of pin 13 of CPU (IC1) into "H" level at set mode, so that Q9 and Q3 will turn ON to make the lamp control resistor R84 short and make its illumination bright. But on the other hand, if the dimmer circuit makes pin 13 into "L" level, Q9 and Q3 will turn OFF, R84's illumination will become dimmer as its hang on voltage falls down in the working LED (D11, D2, D5, D3 and D6).

### **3. Reset and Backup**

When the power from the DC cable increases from Circuits 0 V to 2.5 V or more, "H" level reset signal is output from the reset IC (IC4) to pin 33 of the CPU (IC1), causing the CPU to reset. The reset signal , however, waits at 100, and dose not enter the CPU until the CPU clock (X1) has stabilized.

### **4. S(Signal) Meter Circuit**

The DC potential of IF IC is input to pin 1 of the CPU (IC1), converted from an analog to a digital signal, and displayed as the S-meter signal on the LCD.

## 5. DTMF Encoder

The CPU (IC1) is equipped with an internal DTMF encoder. The DTMF signal is output from pin 10, through R35, R34 and R261 (for level adjustment), and then through the microphone amplifier (IC114:A), and is sent to the variable capacitor of the VCO for modulation. At the same time, the monitoring tone passes through the AF circuit and is output from the speaker.

## 6. Tone Encoder

The CPU (IC1) is equipped with an internal tone encoder. The tone signal (67.0 to 250.3 Hz) is output from pin 9 of CPU to the variable capacitor (D122 and D123) of the VCO for modulation.

## 7. DCS Encoder

The CPU (IC1) is equipped with an internal DCS code encoder. The code (023 to 754) is output from pin 9 of CPU to the variable capacitor (D124) of the PLL reference oscillator. When DCS is ON, DCS MUTE circuit (Q126-ON, Q133-ON, Q132-OFF) works. The modulation activates in X102 side only.

## 8. CTCSS, DCS Decoder

The voice band of the AF output signal from pin 1 of IC104:A is cut by sharp active filter IC104:B and C (VCVS) and amplified, then led to pin 4 of CPU. The input signal is compared with the programmed tone frequency code in the CPU. The squelch will open when they match. During DCS, Q108 is ON, C156 is working and cut off frequency is lowered.

## 8) Power Supply Circuit

When power supply is ON, there is a "L" signal being inputted to pin 39 (PSW) of CPU which enables the CPU to work.

Then, "H" signal is outputted from pin 41 (C5C) of CPU and drives ON the power supply switch control Q8 and Q7 which turns the 5VS ON.

5VS turns ON the PLL IC (IC116), main power supply switch Q127 and Q122, AF POWER IC117 and the 8V of AVR (IC115).

During reception, pin 29 (R5) of CPU outputs "H" level, Q124 is ON, and the reception circuits supplied by 8 V. While during transmission, pin 28 (T5) of CPU outputs "L" level which is reverse by Q11 so that the output in Q128 will be "H" level, Q123 is ON, and the transmission circuit is supplied by 8 V.

Or, in the case when the condition of PLL is UNLOCK, "H" level is outputted from pin 14 of PLL IC, UNLOCK switch Q129 is ON, transmission switch Q128 is OFF which makes the transmission to stop.

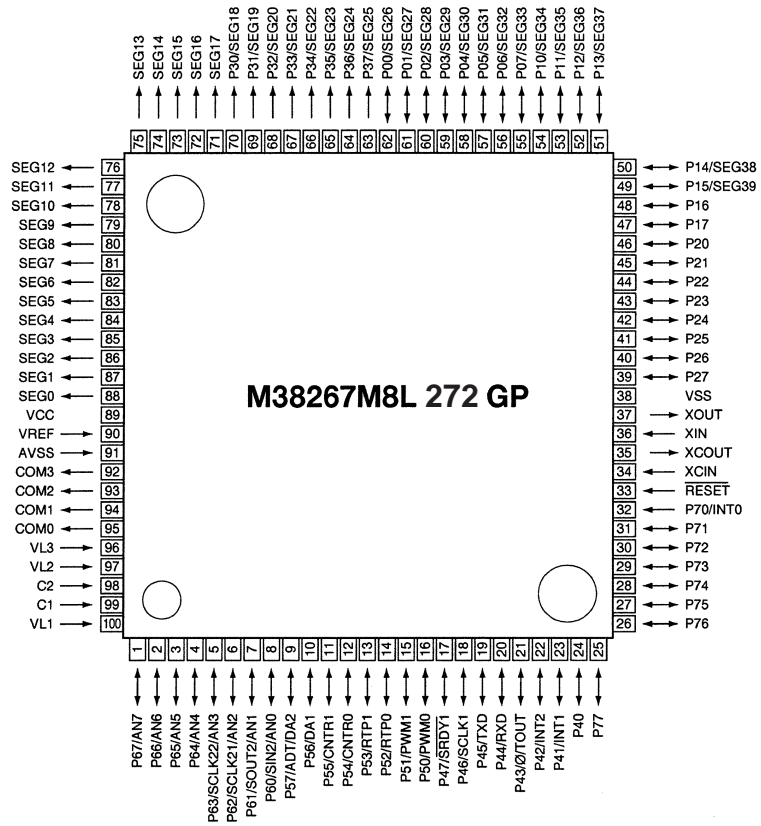
### 1. ACC External Power Supply Terminal

When optional power supply cord EDC-37 etc. is connected to the external power supply terminal JK101, with ACC power supply ON, switch Q101 will turn ON, 5 V of AVR IC101 pin 2 (STB) becomes "L" which makes C5V to turn ON. With this, it can turn the power supply of the radio ON.

# 9) M3826M8L272GP (XA0851)

CPU

Terminal Connection  
(TOP VIEW)



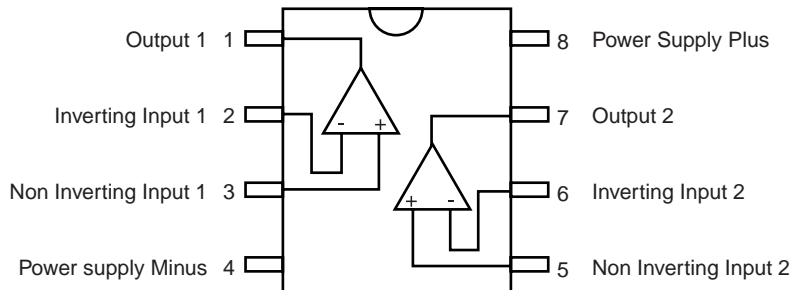
No.	Pin Name	Function	I/O	PU	Logic	Description
1	P67/AN7	SMT	I	-	A/D	S-meter input
2	P66/AN6	SQL	I	-	A/D	Noise level input for squelch
3	P65/AN5	BAT	I	-	A/D	Battery voltage input
4	P64/AN4	TIN	I	-	A/D	CTCSS tone input/DSC code input
5	P63/SCLK22/AN3	BP1	I	-	A/D	Band plan 1
6	P62/SCLK21/AN2	BP2	I	-	A/D	Band plan 2
7	P61/SOUT2/AN1	DCSW	O	-	Activ high	DCS signal mute
8	P60/SIN2/AN0	RE2	I	-	Activ low	Rotary encoder input
9	P57/ADT/DA2	TOUT	O	-	D/A	CTCSS tone output/DCS tone output
10	P56/DA1	DOUT	O	-	D/A	DTMF output
11	P55/CNTR1	SCL	O	-	Pulse	Serial clock for EEPROM
12	P54/CNTR0	TBST	O	-	Pulse	Tone burst output
13	P53/RTP1	BP4	I	-	-	Band plan 4
14	P52/RTP0	MUTE	I/O	-	Activ low	Microphone mute/Security alarm SW
15	P51/PWM3	CLK	O	-	Pulse	Serial clock output for PLL,scramble
16	P50/PWM	DATA	I/O	-	Pulse	Serial data output for PLL scramble/PLL unlock signal input
17	P47/SROY1	TSTB	I/O	-	Activ low/Pulse	Trunking board detection / Strobe signal to trunking board
18	P46/SCLK1	STB	O	-	Pulse	Strobe for PLL IC
19	P45/TXD	UTX	O	-	Pulse	UART data transmission output
20	P44/RXD	RTX	I	-	Pulse	UART data reception output
21	P43/Φ/TOUT	BEEP	I/O	-	Pulse/Activ low	Beep tone/Band plan 3
22	P42I/NT2	SEC	I	-	Activ high	Security voltage input
23	P41/INT1	RE1	I	-	Activ low	Rotary encoder input
24	P40	DSQ	I	-	Activ high	Digital squelch input
25	P77	PTT	I	-	Activ low	PTT input
26	P7	SSTB	O	-	Pulse/Activ low	Strobe signal to scramble IC/Security mode
27	P75	W/N	O	-	Activ low	Wide Narrow SW
28	P74	T5	O	-	Activ low	TX power ON/OFF output
29	P73	R5	O	-	Activ high	RX power ON/OFF output
30	P72	SQC	O	-	Activ low	SQL ON/OFF
31	P71	C/S	O	-	Activ low	Digital scramble ON/OFF
32	P70/INT0	BU	I	-	Activ low	Backup signal detection input
33	RESET	RESET	I	-	Activ low	Reset input
34	Xcin	Xcin	-	-	-	-
35	Xcout	Xcout	-	-	-	-
36	Xin	Xin	-	-	-	Main clock input
37	Xout	Xout	-	-	-	Main clock output
38	Vss	GND	-	-	-	CPU GND
39	P27	PSW	I	-	Activ low	Power switch input
40	P26	SDA	O	-	Pulse	Serial data for EEPROM
41	P25	C5C	O	-	Activ high	C5V power ON/OFF output
42	P24	AIR	O	-	Activ high	Air band SW / Tx middle power
43	P23	LOW	O	-	Activ high	Tx low power
44	P22	EXP	O	-	Activ high	Trunking data SW
45	P21	SW6	I	*	Activ low	Key sw6 (SQL)
46	P20	SW5	I	*	Activ low	Key sw5 (CALL)
47	P17	SW4	I	*	Activ low	Key sw4 (TSQ)
48	P16	SW3	I	*	Activ low	Key sw3 (MHz)
49	P15/SEG39	SW2	I	*	Activ low	Key sw2 (V/M)
50	P14/SEG38	SW1	I	*	Activ low	Key sw1 (FUNC)
51	P13/SEG37	DOWN	I	*	Activ low	Mic down input
52	P12/SEG36	DUD	I	-	-	Digital unit detect
53	P11/SEG35	SCR	I	*	Active low	Scramble IC ready signal/Packet PTT
54	P10/SEG34	UP	I	*	Active low	Mic down input
55	P07/SEG33	S33	O	-	-	LCD segment signal

No.	Pin Name	Function	I/O	PU	Logic	Description
56	P06/SEG32	S32	O	-	-	LCD segment signal
57	P05/SEG31	S31	O	-	-	
58	P04/SEG30	S30	O	-	-	
59	P03/SEG29	S29	O	-	-	
60	P02/SEG28	S28	O	-	-	
61	P01/SEG27	S27	O	-	-	
62	P00/SEG26	S26	O	-	-	
63	P37/SEG25	S25	O	-	-	
64	P36/SEG24	S24	O	-	-	
65	P35/SEG23	S23	O	-	-	
66	P34/SEG22	S22	O	-	-	
67	P33/SEG21	S21	O	-	-	
68	P32/SEG20	S20	O	-	-	
69	P31/SEG19	S19	O	-	-	
70	P30/SEG18	S18	O	-	-	
71	SEG17	S17	O	-	-	
72	SEG16	S16	O	-	-	
73	SEG15	S15	O	-	-	
74	SEG14	S14	O	-	-	
75	SEG13	S13	O	-	-	
76	SEG12	S12	O	-	-	
77	SEG11	S11	O	-	-	
78	SEG10	S10	O	-	-	
79	SEG9	S9	O	-	-	
80	SEG8	S8	O	-	-	
81	SEG7	S7	O	-	-	
82	SEG6	S6	O	-	-	
83	SEG5	S5	O	-	-	
84	SEG4	S4	O	-	-	
85	SEG3	S3	O	-	-	
86	SEG2	S2	O	-	-	
87	SEG1	S1	O	-	-	
88	SEG0	S0	O	-	-	
89	Vcc	VDD	-	-	-	CPU power terminal
90	Vref	Vref	-	-	-	AD converter power supply
91	Avss	Avss	-	-	-	AD converter GND
92	COM3	COM3	O	-	-	LCD COM3 output
93	COM2	COM2	O	-	-	LCD COM2 output
94	COM1	COM1	O	-	-	LCD COM1 output
95	COM0	COM0	O	-	-	LCD COM0 output
96	VL3	VL3	-	-	-	LCD power supply
97	VL2	VL2	-	-	-	
98	C2	I	-	-	-	-
99	C1	C1	-	-	-	-
100	VL1	VL1	I	-	A/D	LCD power supply

# SEMICONDUCTOR DATA

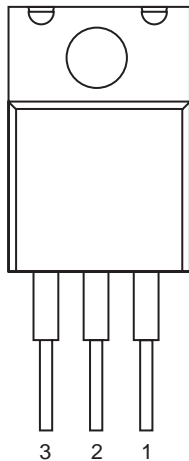
## 1) M5218FP (XA0068)

Dual Low Noise Operational Amplifiers



## 2) NJM7808FA (XA0102)

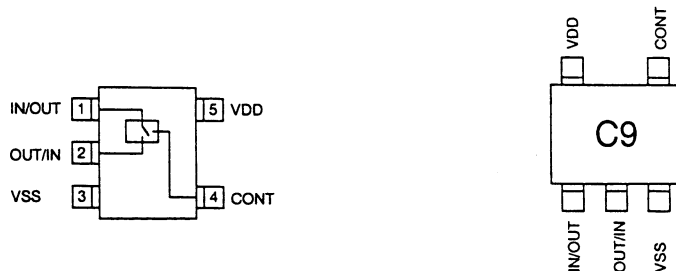
Voltage Regulator



- 1. OUTPUT
- 2. COMMON
- 3. INPUT

## 3) TC4S66F (XA0115)

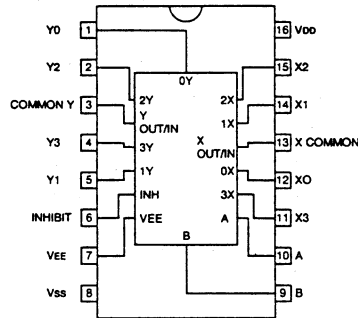
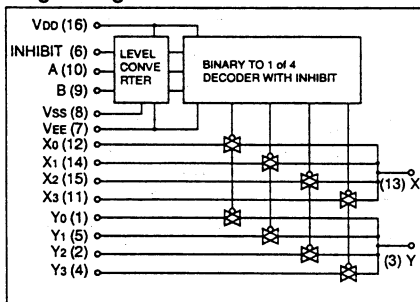
Bilateral Switch



#### 4) BU4052BF (XA0236)

Analog Multiplexer/De-multiplexer

Logic Diagram



Truth Table

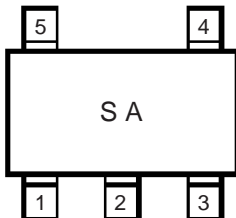
INHIBIT	A	B	ON SWITCH
L	L	L	X0 Y0
L	H	L	X1 Y1
L	L	H	X2 Y2
L	H	H	X3 Y3
H	X	X	NONE

X: Don't Care

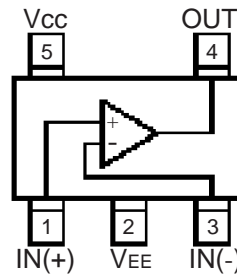
#### 5) TA75S01F (XA0332)

Single Operational Amplifier

Printing  
(top view)



Pin Assignment  
(top view)



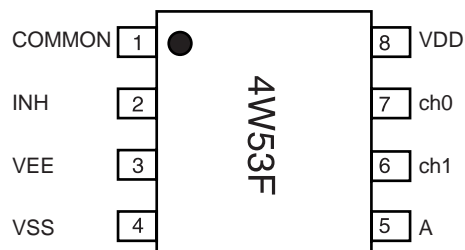
#### 6) TC4W53FU (XA0348)

Multiplexer/De-multiplexer

Function Table

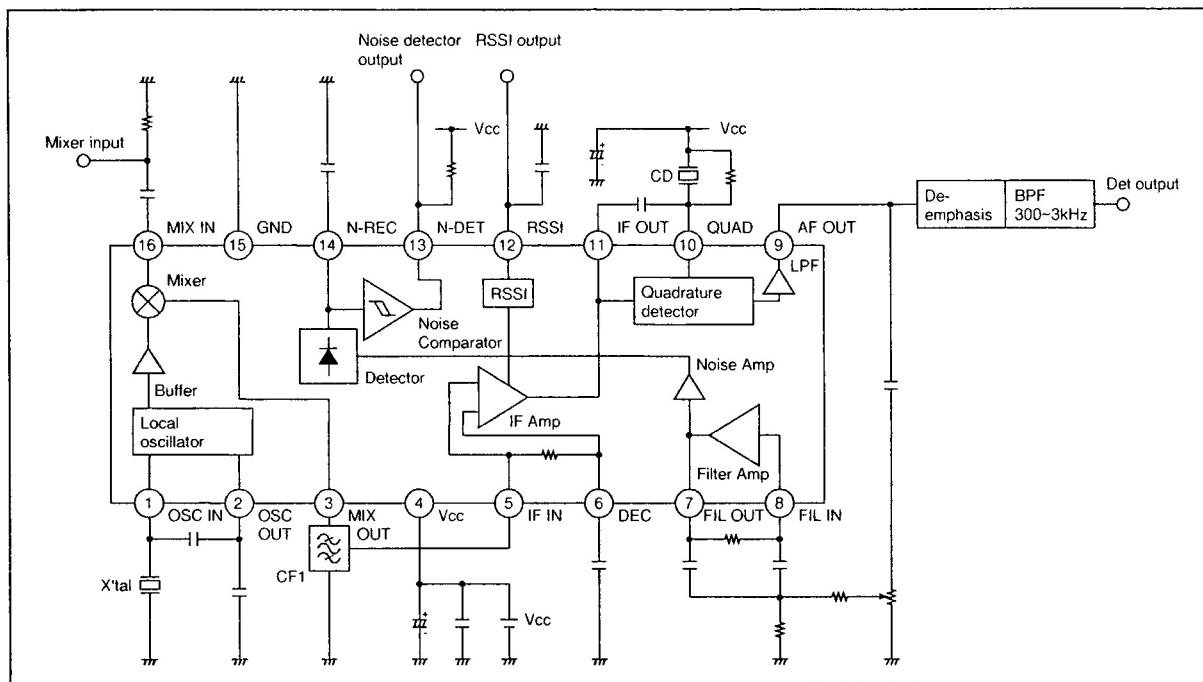
Control input		ON channel
INH	A	
L	L	ch0
L	H	ch1
H	*	NONE

\* Don't Care



## 7) TA31136FN (XA0404)

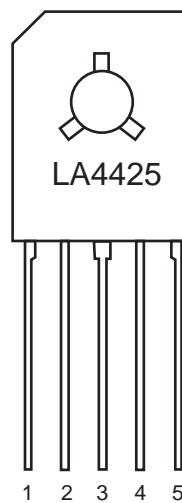
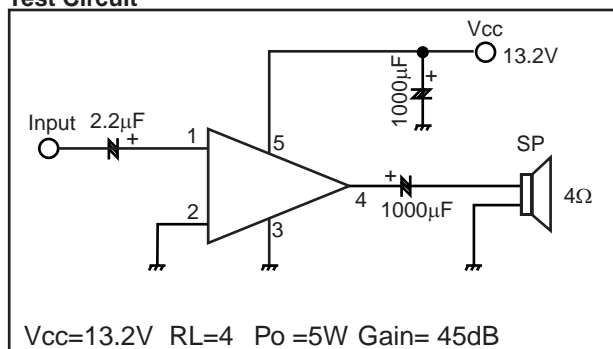
Narrow Band FM IF IC



## 8) LA4425A (XA0410)

5W Audio Power Amplifier

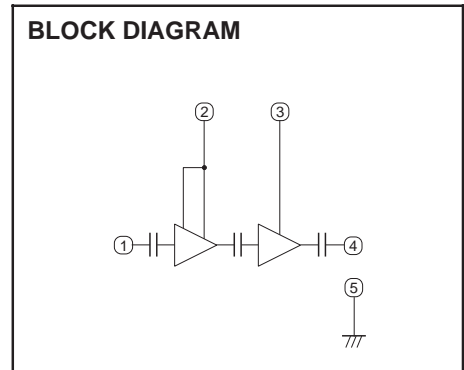
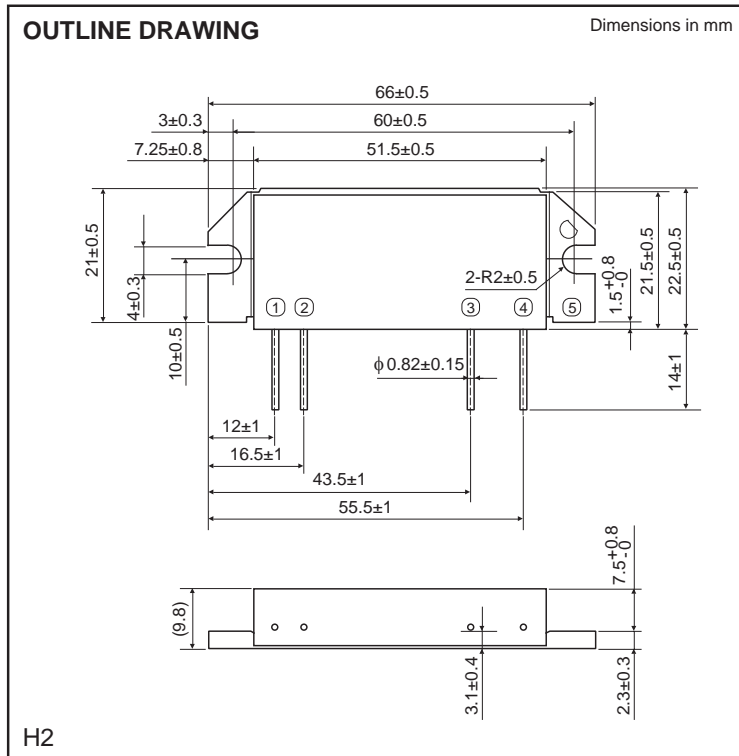
### Test Circuit





## 9) M67746 (XA0412)

144~148MHZ 60W RF Power Module



PIN:

- ① Pin : RF INPUT
- ② VCC1: 1st. DC SUPPLY
- ③ VCC2: 2nd. DC SUPPLY
- ④ Po : RF OUTPUT
- ⑤ GND: FIN

### ABSOLUTE MAXIMUM RATINGS (T<sub>c</sub>=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Ratings	Unit
V <sub>cc</sub>	Supply voltage	Z <sub>G</sub> =Z <sub>L</sub> =50Ω	17	V
I <sub>cc</sub>	Total current	Z <sub>G</sub> =Z <sub>L</sub> =50Ω	20	A
P <sub>in (max)</sub>	Input power	Z <sub>G</sub> =Z <sub>L</sub> =50Ω, V <sub>cc1</sub> ≤12.5V	600	mW
P <sub>o (max)</sub>	Output power	Z <sub>G</sub> =Z <sub>L</sub> =50Ω, V <sub>cc1</sub> ≤12.5V	70	W
T <sub>c (OP)</sub>	Operation case temperature	Z <sub>G</sub> =Z <sub>L</sub> =50Ω, V <sub>cc1</sub> ≤12.5V	-30 to +110	°C
T <sub>stg</sub>	Storage temperature		-40 to +110	°C

Note. Above parameters are guaranteed independently.

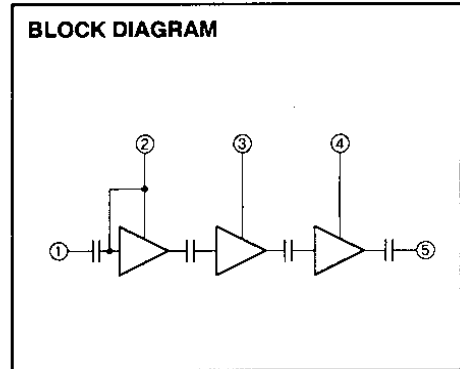
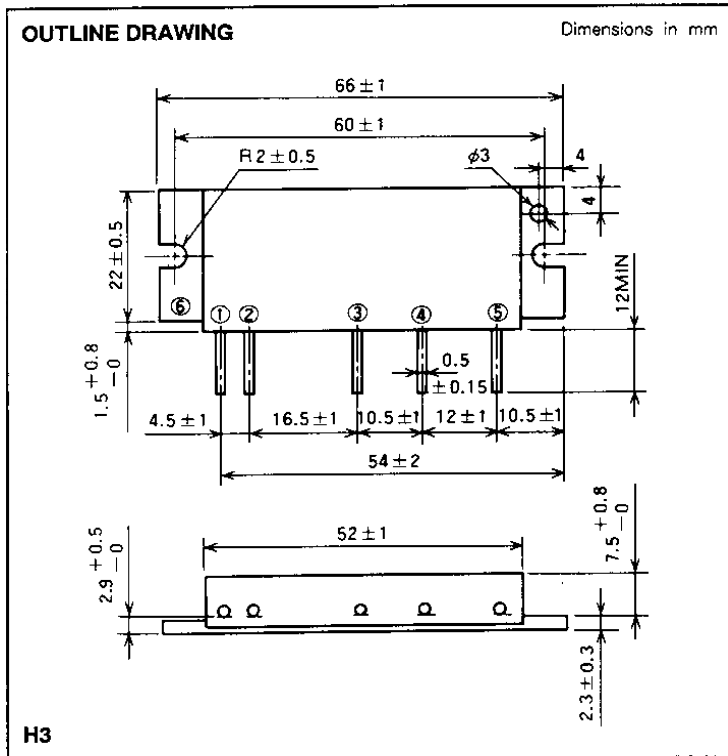
### ELECTRICAL CHARACTERISTICS (T<sub>c</sub>=25°C unless otherwise noted)

Symbol	Parameter	Test conditions	Limits		Unit
			Min	Max	
f	Frequency range		144	148	MHz
P <sub>o</sub>	Output power	V <sub>cc1</sub> =V <sub>cc2</sub> =12.5V, P <sub>in</sub> =300mW Z <sub>G</sub> =Z <sub>L</sub> =50Ω	60		W
η <sub>T</sub>	Total efficiency		50		%
2f <sub>o</sub>	2nd. harmonic			-30	dBc
3f <sub>o</sub>	3rd. harmonic			-30	dBc
ρ <sub>in</sub>	Input VSWR			3	-
-	Load VSWR tolerance	V <sub>cc1</sub> =V <sub>cc2</sub> =15.2V P <sub>o</sub> =60W (P <sub>in</sub> :controlled), Z <sub>G</sub> =50Ω Load VSWR=8:1 (All phase)	No degradation or destroy		-

Note. Above parameters, ratings, limits and test conditions are subject to change.

# 10) M57788M (XA0077A)

430~450MHz 40W RF Power Module



PIN :  
 ① Pin : RF INPUT  
 ② Vcc1 : 1st. DC SUPPLY  
 ③ Vcc2 : 2nd. DC SUPPLY  
 ④ Vcc3 : 3rd. DC SUPPLY  
 ⑤ Po : RF OUTPUT  
 ⑥ GND : FIN

## ABSOLUTE MAXIMUM RATINGS (T<sub>c</sub> = 25 °C unless otherwise noted)

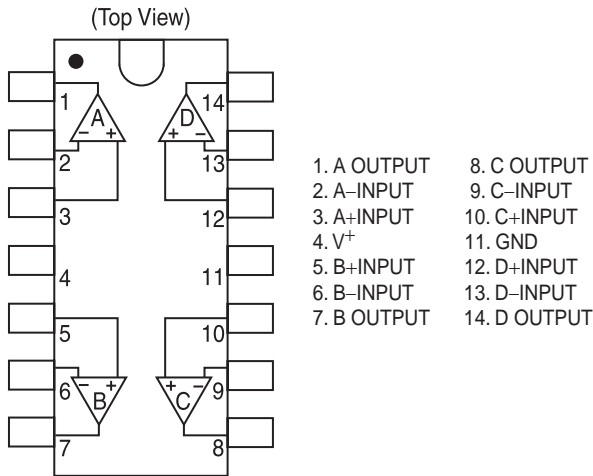
Symbol	Parameter	Conditions	Ratings	Unit
V <sub>cc1</sub>	Supply voltage		16	V
V <sub>cc2,3</sub>			17	V
I <sub>cc</sub>	Total current		12	A
P <sub>in(max)</sub>	Input power	Z <sub>G</sub> = Z <sub>L</sub> = 50 Ω	0.5	W
P <sub>o(max)</sub>	Output power	Z <sub>G</sub> = Z <sub>L</sub> = 50 Ω	50	W
T <sub>c(OP)</sub>	Operation case temperature		-30~110	°C
T <sub>stg</sub>	Storage temperature		-40~110	°C

## ELECTRICAL CHARACTERISTICS (T<sub>c</sub> = 25 °C unless otherwise noted)

Symbol	Parameter	Test conditions	Limits		Unit
			Min	Max	
f	Frequency range		430	450	MHz
P <sub>o</sub>	Output power	P <sub>in</sub> = 0.4W	40		W
η <sub>T</sub>	Total efficiency	V <sub>cc</sub> = 12.5V	40		%
2f <sub>o</sub>	2nd. harmonic	Z <sub>G</sub> = Z <sub>L</sub> = 50 Ω		-30	dB
ρ <sub>in</sub>	Input VSWR			2.8	-
-	Load VSWR tolerance	V <sub>cc</sub> = 15.2V, P <sub>o</sub> = 40W (P <sub>in</sub> : controlled) Load VSWR=8.8:1 (All phase), 2sec. Z <sub>G</sub> = 50 Ω	No degradation		-

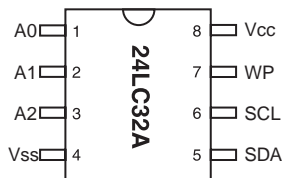
### 11) NJM2902V (XA0596)

Quad Operational Amplifiers



### 12) 24LC32A (XA0604)

EEPROM

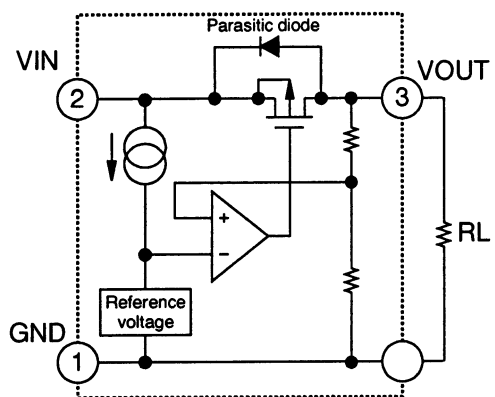
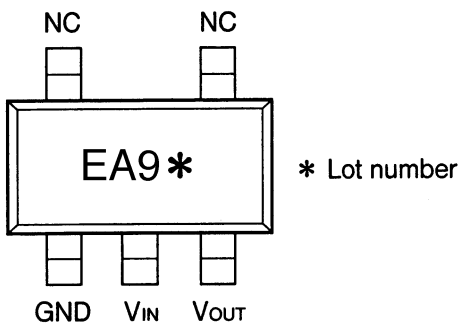


Name	Function
A0..A2	User Configurable Chip Selects
Vss	Ground
SDA	Serial Address/Data I/O
SCL	Serial Clock
WP	Write Protect Input
Vcc	+2.5V~6.0V Power Supply

### 13) S-80845ALMP (XA0620)

Voltage Detector

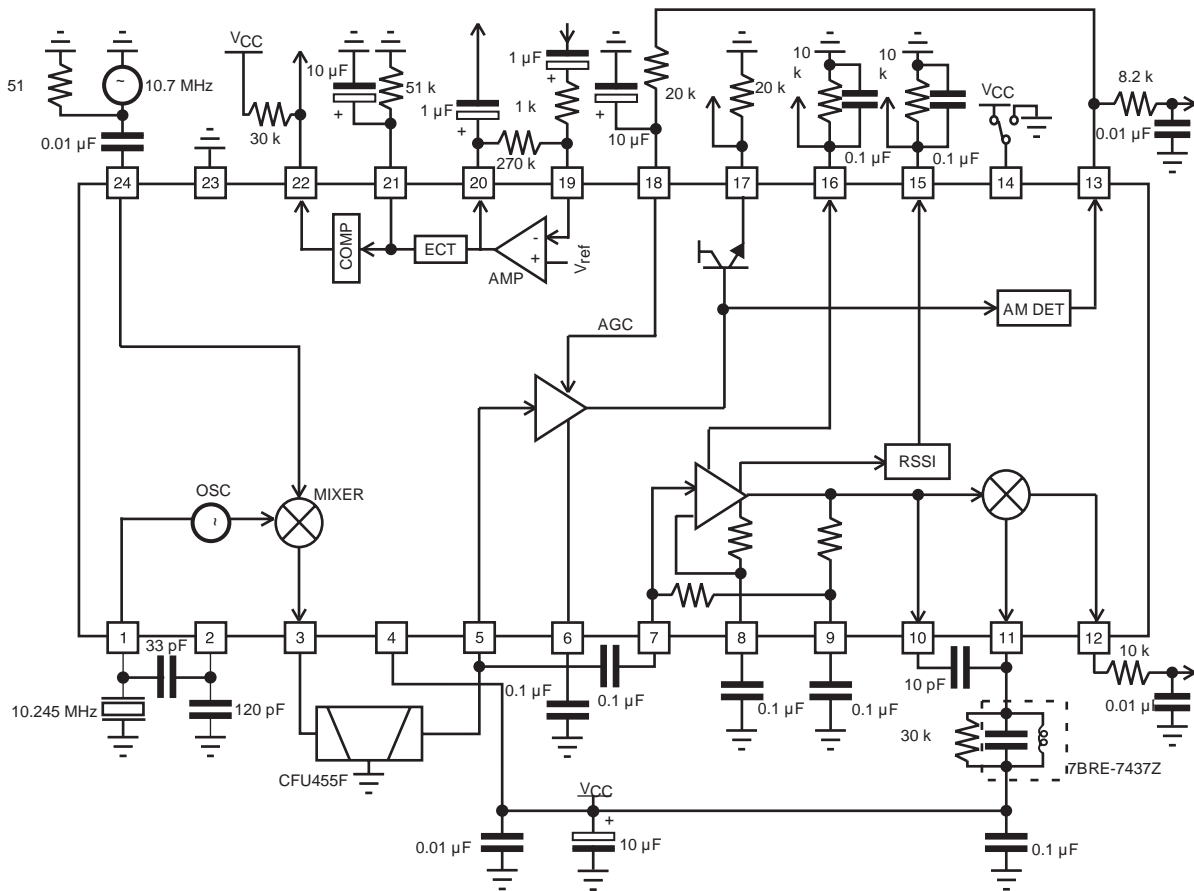
V<sub>in</sub>=18V  
 I<sub>out</sub>=100mA



# 14) TK10931V (XA0666)

Narrow Band AM/FM IF IC

## TEST CIRCUIT



## ELECTRICAL CHARACTERISTICS

Test Conditions:  $V_{CC} = 3.0\text{ V}$ ,  $T_A = 25\text{ }^\circ\text{C}$ , unless otherwise specified.

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
$I_{CC}$	Supply Current	No Input, AM ON		5.3	7.1	mA
		No Input, AM OFF		3.7	5.0	mA
$G_M$	Mixer Conversion Gain	Using CFU455F		22		dB
$R_{IM}$	Mixer Input Resistance	DC Measurement		3.6		k $\Omega$
<b>FM PORTION</b>						
SINAD	12 dB SINAD	$\pm 3\text{ kHz DEV}$		11	18	dB $\mu$
$V_{OUT(DET)2}$	Demodulation Output Voltage 1	+80 dB $\mu$ $\pm 3\text{ kHz DEV}$	55	80	105	mVrms
THD1	Total Harmonic Distortion	+80 dB $\mu$		1.0	2.0	%
$G_f$	Filter Amplifier Gain	$f_{IN} = 1\text{ kHz}$ , $R_f = 270\text{ k}\Omega$ $R_{IN} = 1\text{ k}\Omega$		47		dB
$S_H$	SCAN Control High Level	Squelch Input 2.5 V	2.5			V
$S_L$	SCAN Control Low Level	Squelch Input 0 V			0.3	V
HYS	Squelch Hysteresis			67		mV
$V_{RSSI}$	RSSI Output Voltage	No Input	0.0	0.1	0.5	V
		$V_{IN} = +40\text{ dB}\mu$	0.4	0.8	1.2	V
		$V_{IN} = +100\text{ dB}\mu$	1.0	1.4	1.8	V
$RF_{AGC}$	RF Automatic Gain Control	RF AGC OUT $V_{16}=1\text{ V}$	62	69	76	dB $\mu$

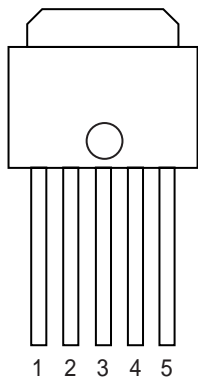
## ELECTRICAL CHARACTERISTICS (CONT.)

Test Conditions:  $V_{CC} = 3.0\text{ V}$ ,  $T_A = 25\text{ }^\circ\text{C}$ , unless otherwise specified.

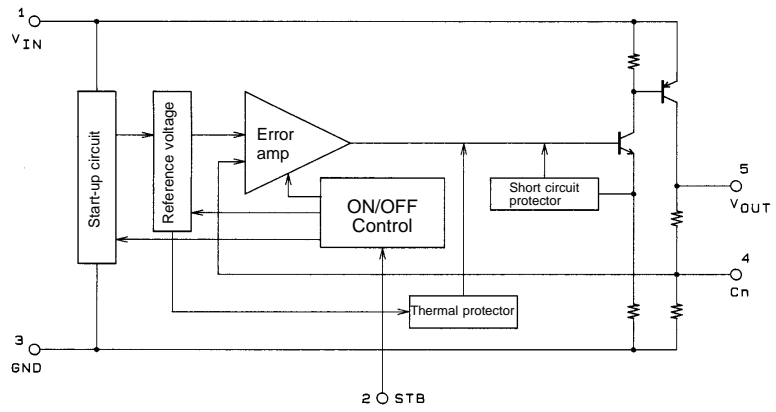
SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
<b>AM PORTION</b>						
S	Sensitivity	Input Level when Output Level = 20 mVrms		16	23	dB $\mu$
$V_{OUT(DET)1}$	Demodulation Output Voltage	1 kHz 30%, $V_{IN} = +60\text{ dB}\mu$	35	50	65	mV
THD2	Total Harmonic Distortion 2	1 kHz 30%, $V_{IN} = +60\text{ dB}\mu$		1.0	2.0	%
THD3	Total Harmonic Distortion 3	1 kHz 80%, $V_{IN} = +60\text{ dB}\mu$		2.0	4.0	%
$vol_{(AGC)}$	AGC Amplifier Output Level	Non Modulation $V_{IN} = +60\text{ dB}\mu$	500			mV <sub>P-P</sub>
$V_{OFF}$	AM OFF Voltage		-0.3		0.3	V
$V_{ON}$	AM ON Voltage		$0.8V_{CC}$			

# 15) L88MS05TLL (XA0675)

## 5V Voltage Regulator with On/Off Function

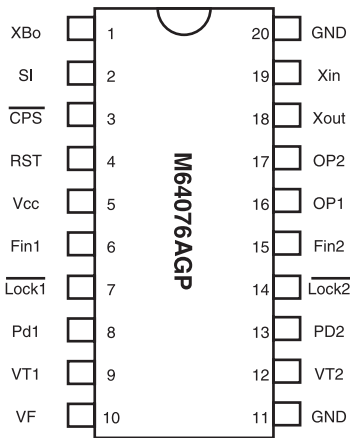


- 1. VIN
- 2. STB
- 3. GND
- 4. Cn
- 5. VOUT



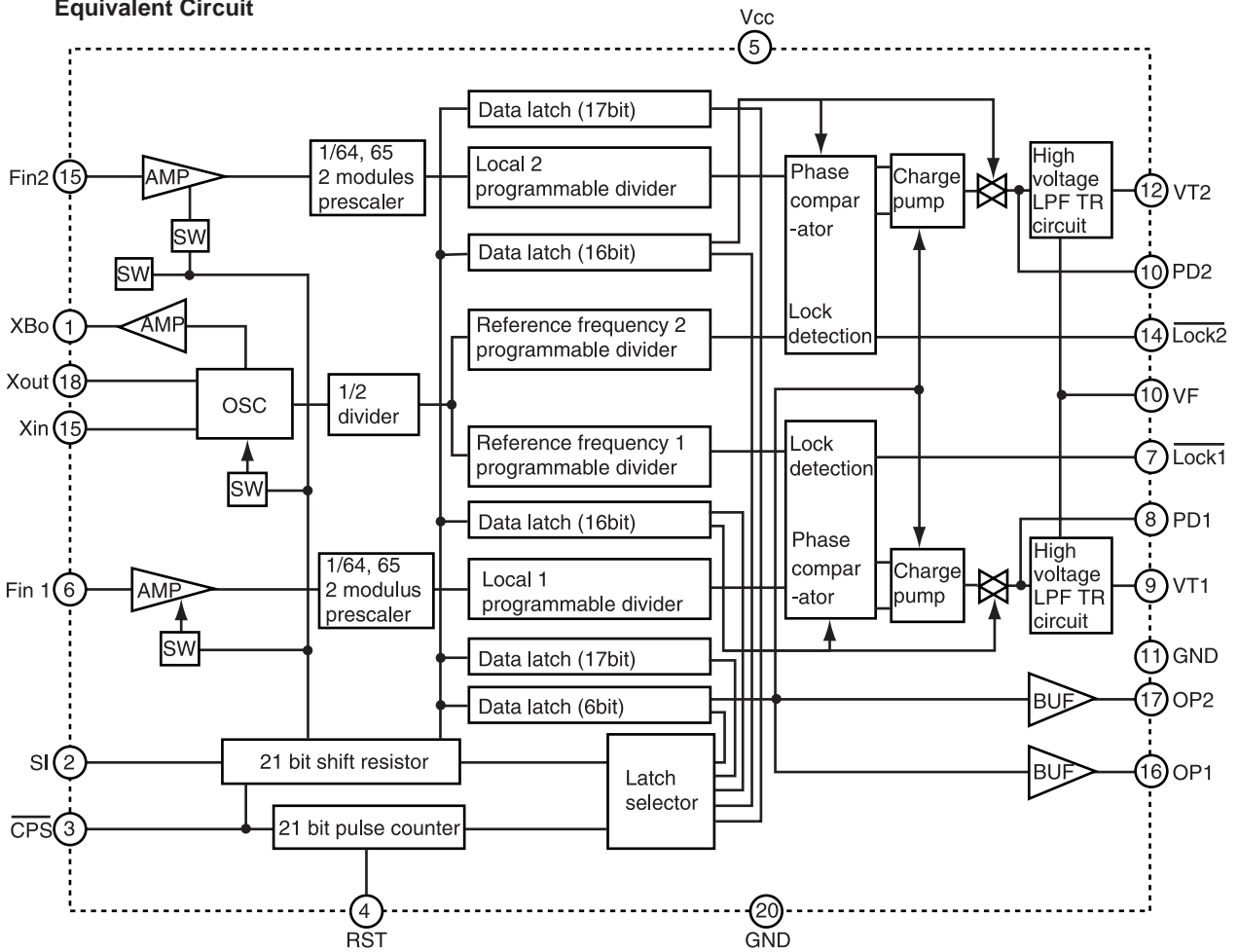
# 16) M64076AGP (XA0915)

## Dual PLL Synthesizer



Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Power supply voltage	Vcc	Fin=80~520MHz Vin=-10dBm	3.0	-	5.5	V
LPF supply voltage	VF		-	-	12	V
Local oscillator input level	Vin	Fin=80~520MHz	-15	-	0	dBm
Local oscillator input frequency	Fin	Vin=-20~-4dBm Vcc=2.7~5.5V	100	-	650	MHz
Xin input level	Vxin	Vcc=2.7~5.5V Fxin=10~25MHz Sine wave	0.4	-	1.4	Vp-p
Xin input frequency	Fxin	Vcc=2.7~5.5V Vxin=0.4~1.4Vp-p	10	-	25	MHz

### Equivalent Circuit



# 17) Transistor, Diode and LED Outline Drawing

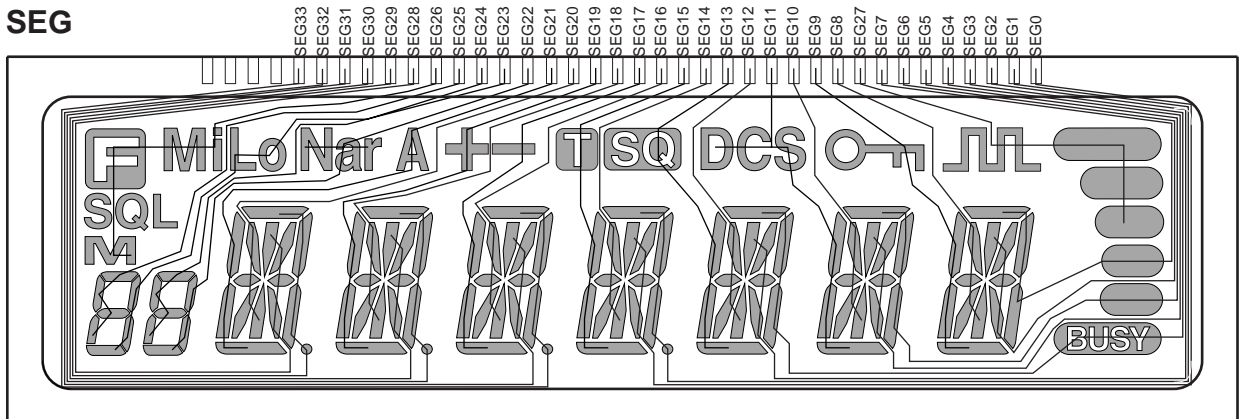
## Top View

RLS-73 XD0363	1SS355 XD0254	1SS356 XD0272	1SV214 XD0131	1SV237 XD0141	1SV262 XD0300	1SV268 XD0301
DA204U XD0130	DAN235U XD0246	DSA3A1 XD0131	MA304 XD0299	MA729 XD0300	MA8100 XD0297	MA742 XD0250
MI407 XD0013	2SK508 XE0010	2SK880GR XE0021	3SK131V12 XE0028	2SA1036K XT0110	2SA1576 XT0094	2SA1736 XT0099
2SB1132 XT0061	2SB1292F XT0112	2SC2954 XT0084	2SC3356 XT0030	2SC3357 XT0048	2SC4081 XT0095	2SC4099 XT0096
2SC4215 XT0124	2SC4226 XT0141	2SC4245 XT0125	3SK184S XE0013	DTA114YU XU0112	DTC114EU XU0131	DTC144EUA XU0148
DTC144YU XU0029	FA1111C XL0069	FA1111C XL0077	UDZ5.1B XD 0165	UMC3TR XU0047	UMC5N XU0152	U1BC44 XD0135
XP1215 XU0178						

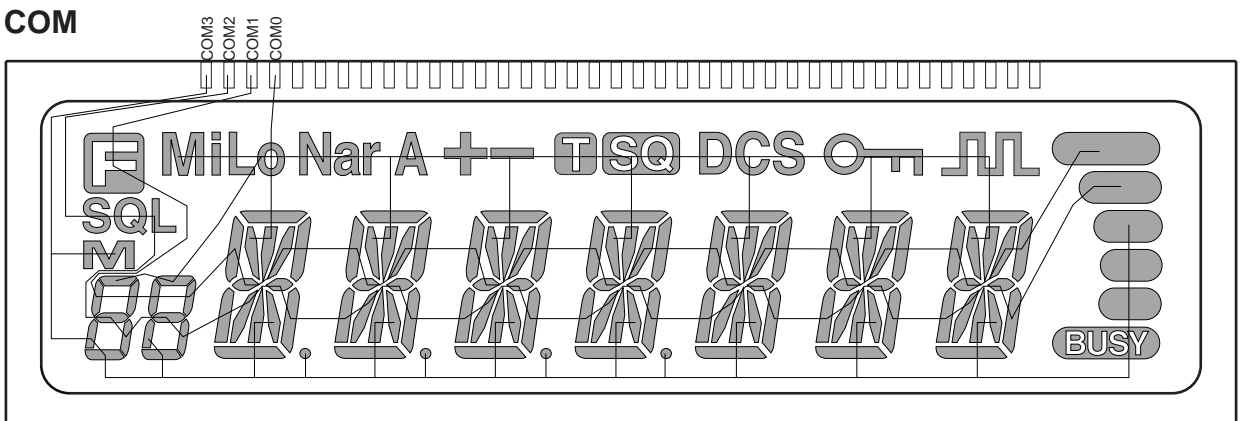


## 18) LCD Connection (TTR3626UPFDHN)

SEG

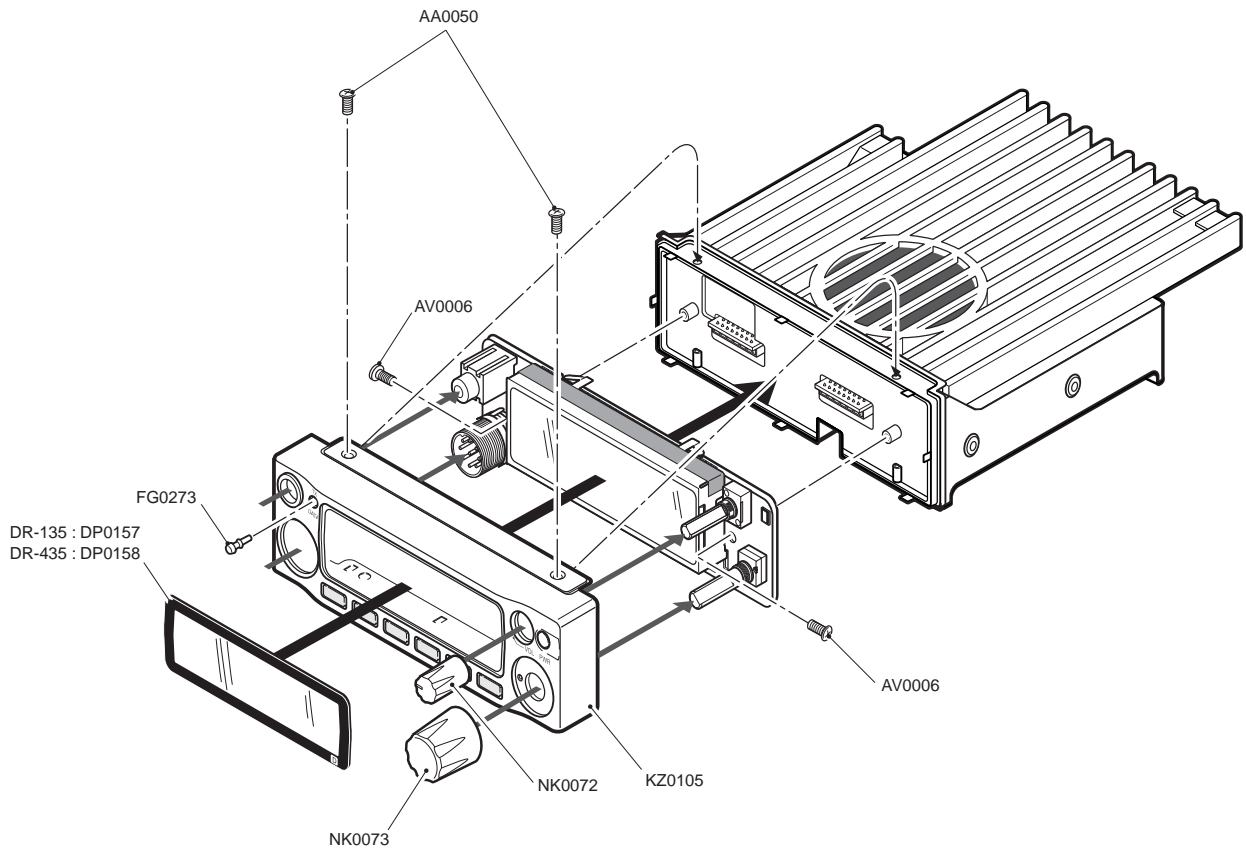


COM

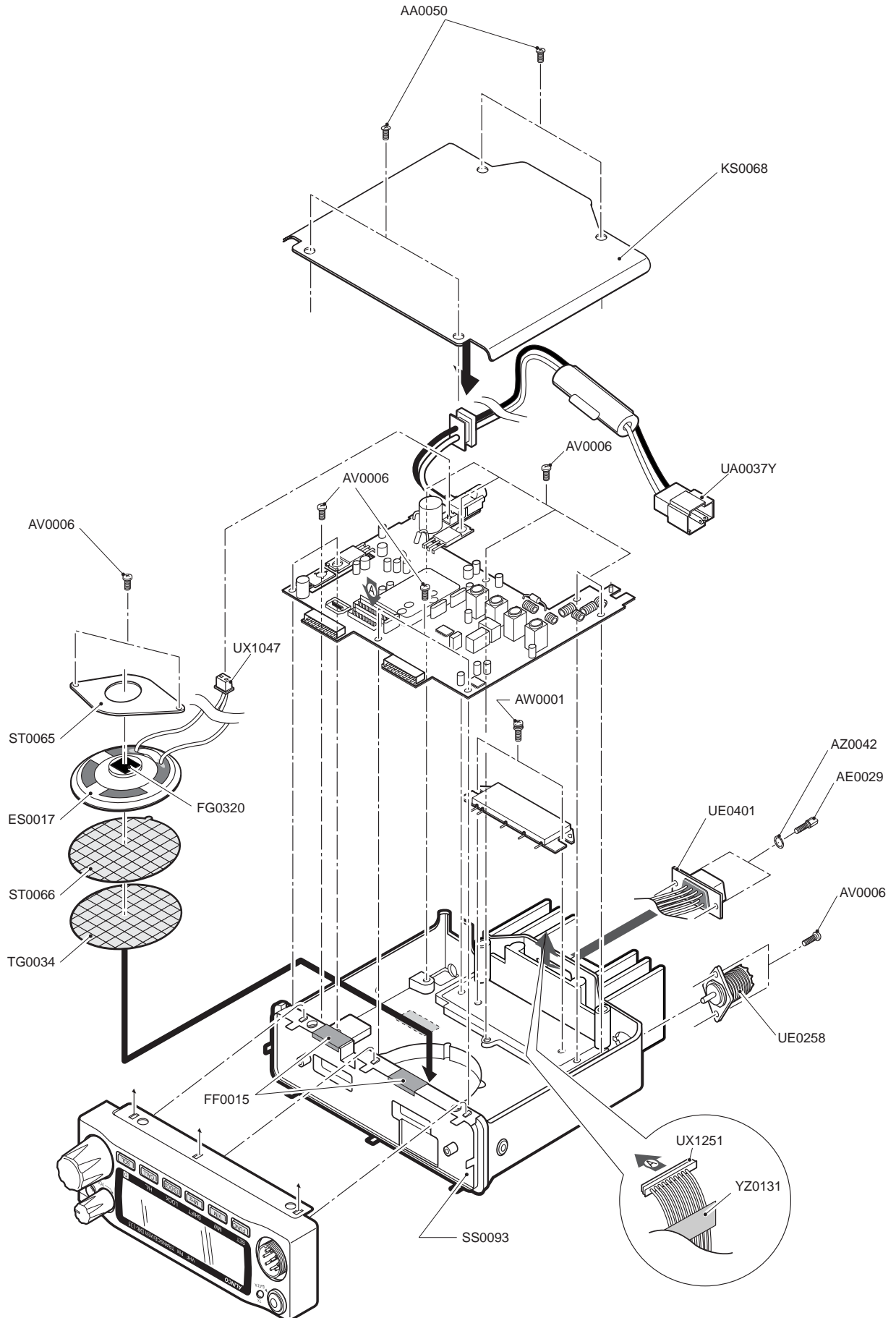


# EXPLODED VIEW

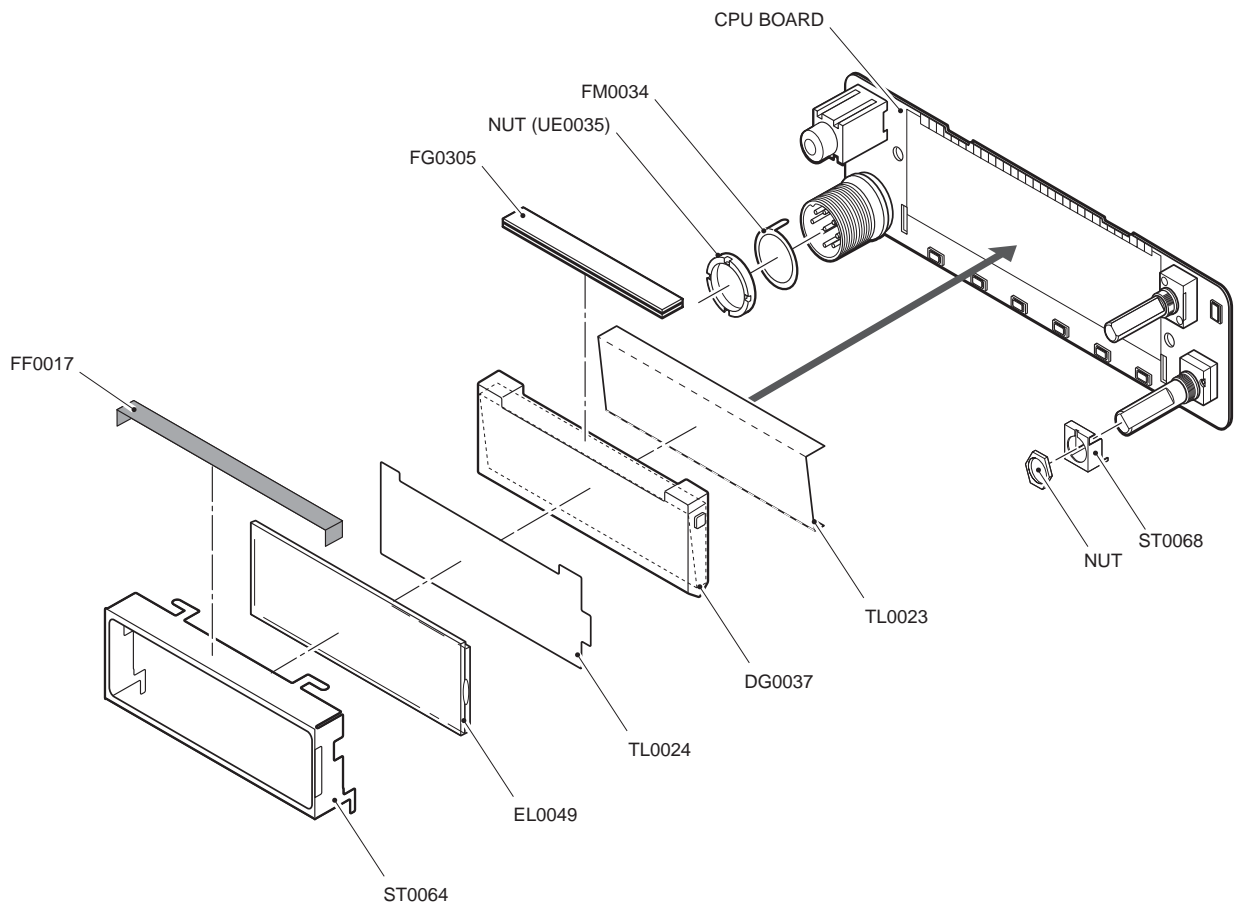
## 1) Top and Front View



## 2) Bottom View



### 3) LCD Assembly



# PARTS LIST

## CPU Unit

Ref No.	Parts No.	Description	Parts Name	Qty.		Ver.
				DR-135	DR-435	
C1	CU3111	Chip C.	C1608JB1C104KT-N	1	1	
C2	CU3111	Chip C.	C1608JB1C104KT-N	1	1	
C3	CU3049	Chip C.	C1608JB1E153KT-NS	1	1	
C4	CU3049	Chip C.	C1608JB1E153KT-NS	1	1	
C5	CU3111	Chip C.	C1608JB1C104KT-N	1	1	
C6	CU3023	Chip C.	C1608CH1H101JT-AS	1	1	
C7	CU3023	Chip C.	C1608CH1H101JT-AS	1	1	
C8	CU3043	Chip C.	C1608JB1H472KT-NS	1	1	
C9	CU3111	Chip C.	C1608JB1C104KT-N	1	1	
C10	CU3043	Chip C.	C1608JB1H472KT-NS	1	1	
C11	CU3043	Chip C.	C1608JB1H472KT-NS	1	1	
C12	CU3101	Chip C.	C1608JB1C473KT-NS	1	1	
C13	CS0049	Chip tantalum	TMCSA1C105MTR	1	1	
C14	CU3014	Chip C.	C1608CH1H180JT-AS	1	1	
C15	CU3014	Chip C.	C1608CH1H180JT-AS	1	1	
C16	CU3035	Chip C.	C1608JB1H102KT-AS	1	1	
C17	CS0424	Chip tantalum	TMCSA1C106MTR	1	1	
C18	CU3035	Chip C.	C1608JB1H102KT-AS	1	1	
C19	CU3111	Chip C.	C1608JB1C104KT-N	1	1	
C20	CU3101	Chip C.	C1608JB1C473KT-NS	1	1	
C21	CU3047	Chip C.	C1608JB1H103KT-N	1	1	
C22	CU3035	Chip C.	C1608JB1H102KT-AS	1	1	
C23	CU3047	Chip C.	C1608JB1H103KT-N	1	1	
C24	CU3035	Chip C.	C1608JB1H102KT-AS	1	1	
C25	CU3035	Chip C.	C1608JB1H102KT-AS	1	1	
C26	CU3035	Chip C.	C1608JB1H102KT-AS	1	1	
C27	CU3035	Chip C.	C1608JB1H102KT-AS	1	1	
C28	CS0394	Chip tantalum	TMCMBOJ476MTR	1	1	
C29	CS0049	Chip tantalum	TMCSA1C105MTR	1	1	
C30	CS0424	Chip tantalum	TMCSA1C106MTR	1	1	
C31	CU3047	Chip C.	C1608JB1H103KT-N	1	1	
C32	CU3047	Chip C.	C1608JB1H103KT-N	1	1	
CN1	UE0398	Connector	205082-301-017-100	1	1	
CN2	UE0398	Connector	205082-301-017-100	1	1	
CN3	UE0035	Mic Connector	FM214-8SMPY	1	1	
D1	XL0069	Chip LED	FA1111C-TR	1	1	
D2	XL0077	Chip LED	FA1111C-732-TR	1	1	
D3	XL0077	Chip LED	FA1111C-732-TR	1	1	
D4	XL0069	Chip LED	FA1111C-TR	1	1	
D5	XL0077	Chip LED	FA1111C-732-TR	1	1	
D6	XL0077	Chip LED	FA1111C-732-TR	1	1	
D8	XD0254	Chip Diode	1SS355 TE17	1	1	
D9	XD0291	Chip Diode	MA729-TX	1	1	
D10	XD0135	Chip Diode	U1BC44 TE12R	1	1	
D11	XL0077	Chip LED	FA1111C-732-TR	1	1	
D12	XD0165	Chip Diode	UDZSTE-17 5.1B	1	1	
D13	XD0165	Chip Diode	UDZSTE-17 5.1B	1	1	
D14	XD0291	Chip Diode	MA729-TX	1	1	
D15	XD0165	Chip Diode	UDZSTE-17 5.1B	1	1	
D16	XD0291	Chip Diode	MA729-TX	1	1	
D17	XD0291	Chip Diode	MA729-TX	1	1	
D19	XD0363	Chip Diode	RLS-73TE-11	1	1	
IC1	XA0851	CPU	CPU DR135/235/435	1	1	
IC2	XA0604	IC	24LC32AT-I/SN	1	1	
IC4	XA0620	IC	S-80845ALMP-EA9-T2	1	1	
IC5	XA0675	IC	L88MS05TLL-TL	1	1	
JK1	UJ0047	Jack	HSJ2013-01-120	1	1	
JP3	MACL04AA	Wire	#30A02-040-02	1	1	
LCD1	EL0049	LCD	TTR3626 UPTDHN	1	1	
Q1	XU0193	Chip Transistor	RN1107 TE85L	1	1	
Q2	XU0063	Chip Transistor	UN9211 TX	1	1	
Q3	XT0110	Chip Transistor	2SA1036K T146Q	1	1	
Q4	XU0063	Chip Transistor	UN9211 TX	1	1	
Q5	XU0063	Chip Transistor	UN9211 TX	1	1	
Q6	XT0095	Chip Transistor	2SC4081 T106R	1	1	
Q7	XT0061	Chip Transistor	2SB1132T 100Q	1	1	
Q8	XU0193	Chip Transistor	RN1107 TE85L	1	1	
Q9	XU0195	Chip Transistor	RN1104 TE85L	1	1	
Q10	XU0063	Chip Transistor	UN9211 TX	1	1	
Q11	XU0192	Chip Transistor	RN2107 TE85L	1	1	
Q12	XU0192	Chip Transistor	RN2107 TE85L	1	1	
Q13	XU0192	Chip Transistor	RN2107 TE85L	1	1	
R1	RK3054	Chip R.	MCR03EZHJ223	1	1	
R4	RK3054	Chip R.	MCR03EZHJ223	1	1	
R5	RK3050	Chip R.	MCR03EZHJ103	1	1	
R6	RK3050	Chip R.	MCR03EZHJ103	1	1	
R7	RK3023	Chip R.	MCR03EZHJ560	1	1	
R8	RK3023	Chip R.	MCR03EZHJ560	1	1	

Ref No.	Parts No.	Description	Parts Name	Qty.		Ver.
				DR-135	DR-435	
R9	RK3038	Chip R.	MCR03EZHJ102	1	1	
R10	RK3032	Chip R.	MCR03EZHJ331	1	1	
R11	RK3046	Chip R.	MCR03EZHJ472	1	1	
R13	RK3001	Chip R.	MCR03EZHJ000	1	1	E
R14	RK3048	Chip R.	MCR03EZHJ682	1	1	
R15	RK3001	Chip R.	MCR03EZHJ000	1	1	T
R16	RK3001	Chip R.	MCR03EZHJ000	1	1	T
R19	RK3062	Chip R.	MCR03EZHJ104	1	1	
R20	RK3046	Chip R.	MCR03EZHJ472	1	1	
R21	RK3030	Chip R.	MCR03EZHJ221	1	1	
R22	RK3038	Chip R.	MCR03EZHJ102	1	1	
R23	RK3064	Chip R.	MCR03EZHJ154	1	1	
R25	RK3050	Chip R.	MCR03EZHJ103	1	1	
R26	RK3050	Chip R.	MCR03EZHJ103	1	1	
R27	RK3050	Chip R.	MCR03EZHJ103	1	1	
R28	RK3038	Chip R.	MCR03EZHJ102	1	1	
R29	RK3038	Chip R.	MCR03EZHJ102	1	1	
R30	RK3038	Chip R.	MCR03EZHJ102	1	1	
R31	RK3038	Chip R.	MCR03EZHJ102	1	1	
R32	RK3044	Chip R.	MCR03EZHJ332	1	1	
R33	RK3034	Chip R.	MCR03EZHJ471	1	1	
R34	RK3047	Chip R.	MCR03EZHJ562	1	1	
R35	RK3052	Chip R.	MCR03EZHJ153	1	1	
R36	RK3062	Chip R.	MCR03EZHJ104	1	1	
R37	RK3049	Chip R.	MCR03EZHJ822	1	1	
R38	RK3050	Chip R.	MCR03EZHJ103	1	1	
R39	RK3058	Chip R.	MCR03EZHJ473	1	1	
R40	RK3062	Chip R.	MCR03EZHJ104	1	1	
R41	RK3026	Chip R.	MCR03EZHJ101	1	1	
R42	RK3050	Chip R.	MCR03EZHJ103	1	1	
R43	RK3050	Chip R.	MCR03EZHJ103	1	1	
R44	RK3026	Chip R.	MCR03EZHJ101	1	1	
R45	RK3050	Chip R.	MCR03EZHJ103	1	1	
R47	RK3038	Chip R.	MCR03EZHJ102	1	1	
R48	RK3038	Chip R.	MCR03EZHJ102	1	1	
R49	RK3038	Chip R.	MCR03EZHJ102	1	1	
R50	RK3043	Chip R.	MCR03EZHJ272	1	1	
R51	RK3038	Chip R.	MCR03EZHJ102	1	1	
R52	RK3038	Chip R.	MCR03EZHJ102	1	1	
R53	RK3062	Chip R.	MCR03EZHJ104	1	1	
R54	RK3050	Chip R.	MCR03EZHJ103	1	1	
R55	RK3074	Chip R.	MCR03EZHJ105	1	1	
R56	RK3050	Chip R.	MCR03EZHJ103	1	1	
R57	RK3066	Chip R.	MCR03EZHJ224	1	1	
R58	RK3034	Chip R.	MCR03EZHJ471	1	1	
R59	RK3026	Chip R.	MCR03EZHJ101	1	1	
R60	RK3034	Chip R.	MCR03EZHJ471	1	1	
R61	RK3074	Chip R.	MCR03EZHJ105	1	1	
R62	RK3050	Chip R.	MCR03EZHJ103	1	1	
R63	RK3026	Chip R.	MCR03EZHJ101	1	1	
R64	RK3046	Chip R.	MCR03EZHJ472	1	1	
R65	RK3026	Chip R.	MCR03EZHJ101	1	1	
R66	RK3050	Chip R.	MCR03EZHJ103	1	1	
R67	RK3026	Chip R.	MCR03EZHJ101	1	1	
R68	RK3050	Chip R.	MCR03EZHJ103	1	1	
R69	RK3046	Chip R.	MCR03EZHJ472	1	1	
R70	RK3062	Chip R.	MCR03EZHJ104	1	1	
R71	RK3072	Chip R.	MCR03EZHJ684	1	1	
R72	RK3050	Chip R.	MCR03EZHJ103	1	1	
R73	RK3032	Chip R.	MCR03EZHJ331	1	1	
R74	RK3026	Chip R.	MCR03EZHJ101	1	1	
R75	RK3046	Chip R.	MCR03EZHJ472	1	1	
R76	RK3032	Chip R.	MCR03EZHJ331	1	1	
R77	RK3028	Chip R.	MCR03EZHJ151	1	1	
R79	RK3038	Chip R.	MCR03EZHJ102	1	1	
R80	RK3038	Chip R.	MCR03EZHJ102	1	1	
R82	RK3050	Chip R.	MCR03EZHJ103	1	1	
R83	RK3038	Chip R.	MCR03EZHJ102	1	1	
R84	RK0008	Chip R.	ERJ6GEYJ330V	1	1	
R85	RK3046	Chip R.	MCR03EZHJ472	1	1	
R86	RK3050	Chip R.	MCR03EZHJ103	1	1	
R87	RK3054	Chip R.	MCR03EZHJ223	1	1	
R88	RK3050	Chip R.	MCR03EZHJ103	1	1	
R89	RK3058	Chip R.	MCR03EZHJ473	1	1	
R90	RK3058	Chip R.	MCR03EZHJ473	1	1	
R91	RK3050	Chip R.	MCR03EZHJ103	1	1	
R92	RK3032	Chip R.	MCR03EZHJ331	1	1	
R95	RK3062	Chip R.	MCR03EZHJ104	1	1	

Ref No.	Parts No.	Description	Parts Name	Qty.		Ver.
				DR-135	DR-435	
R96	RK4014	Chip R.	ERJ12YJ100U	1	1	
R97	RK3050	Chip R.	MCR03EZJ103	1	1	
RE1	UR0015	Dial	RH90N74E20-A90770	1	1	
RL1	UL0020	Reley	ATQ209	1	1	
SW1	UU0015Z	Switch	EVQPPPA25	1	1	
SW2	UU0015Z	Switch	EVQPPPA25	1	1	
SW3	UU0015Z	Switch	EVQPPPA25	1	1	
SW4	UU0015Z	Switch	EVQPPPA25	1	1	
SW5	UU0015Z	Switch	EVQPPPA25	1	1	
SW6	UU0015Z	Switch	EVQPPPA25	1	1	
SW7	UU0015Z	Switch	EVQPPPA25	1	1	
VR1	RV0035	Variable	RVUF2JFK4B14	1	1	
W1	UX1270	Wire	WIRE DR235 W1	1	1	
X1	XQ0131	Xtal	CSA310 3.686400MHZ	1	1	
	DG0037		LCD LIGHT DR135	1	1	
	FG0305		LCD RUB.CONNECT. 135	1	1	
	FM0034		MIC GND PLATE	1	1	
	FP0034		MIC SPACER DR110	1	1	
	ST0064		LCD HOLDER DR135	1	1	
	ST0068		DIAL FITTING DR135	1	1	
	TL0023		REFLECTION DR135	1	1	
	TL0024		DIFFUSION SHEET 135	1	1	
	YZ0042		CEMENT G17 / 1G	1	1	

## MAIN Unit DR-135

Ref No.	Parts No.	Description	Parts Name	Qty.		Ver.
				DR-135	DR-435	
C101	CU3047	Chip C.	C1608JB1H103KT-N	1		
C102	CU3047	Chip C.	C1608JB1H103KT-N	1		
C103	CS0049	Chip tantalum	TMCSA1C105MTR	1		
C104	CU3047	Chip C.	C1608JB1H103KT-N	1		
C105	CS0394	Chip tantalum	TMCMB0J476MTR	1		
C106	CU3051	Chip C.	C1608JB1E223KT-NS	1		
C107	CU3111	Chip C.	C1608JB1C104KT-N	1		
C108	CU3047	Chip C.	C1608JB1H103KT-N	1		
C109	CE0339	Electrolytic C.	16MV 10SWB+TS	1		
C110	CU3047	Chip C.	C1608JB1H103KT-N	1		
C111	CU3047	Chip C.	C1608JB1H103KT-N	1		
C112	CU3047	Chip C.	C1608JB1H103KT-N	1		
C113	CU3047	Chip C.	C1608JB1H103KT-N	1		
C114	CU3047	Chip C.	C1608JB1H103KT-N	1		
C115	CU3011	Chip C.	C1608CH1H100DT-AS	1		
C117	CU3047	Chip C.	C1608JB1H103KT-N	1		
C118	CU3049	Chip C.	C1608JB1E153KT-NS	1		
C119	CU3051	Chip C.	C1608JB1E223KT-NS	1		
C120	CU3022	Chip C.	C1608CH1H820JT-AS	1		
C121	CU3005	Chip C.	C1608CH1H040CT-AS	1		
C122	CU3002	Chip C.	C1608CH1H010CT-AS	1		
C123	CU3013	Chip C.	C1608CH1H150JT-AS	1		
C124	CU3040	Chip C.	C1608JB1H272KT-NS	1		
C125	CU3044	Chip C.	C1608JB1H562KT-NS	1		
C126	CU3038	Chip C.	C1608JB1H182KT-AS	1		
C127	CU3041	Chip C.	C1608JB1H332KT-NS	1		
C129	CU3111	Chip C.	C1608JB1C104KT-N	1		
C130	CS0049	Chip tantalum	TMCSA1C105MTR	1		
C131	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C132	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C133	CU3005	Chip C.	C1608CH1H040CT-AS	1		
C134	CU3042	Chip C.	C1608JB1H392KT-NS	1		
C135	CU3044	Chip C.	C1608JB1H562KT-NS	1		
C137	CU3017	Chip C.	C1608CH1H330JT-AS	1		
C138	CS0049	Chip tantalum	TMCSA1C105MTR	1		
C139	CU3017	Chip C.	C1608CH1H330JT-AS	1		
C140	CU3017	Chip C.	C1608CH1H330JT-AS	1		
C141	CU3111	Chip C.	C1608JB1C104KT-N	1		
C142	CU3111	Chip C.	C1608JB1C104KT-N	1		
C143	CU3111	Chip C.	C1608JB1C104KT-N	1		
C144	CU3047	Chip C.	C1608JB1H103KT-N	1		
C145	CU3003	Chip C.	C1608CH1H020CT-AS	1		
C146	CE0339	Electrolytic C.	16MV 10SWB+TS	1		
C148	CU3017	Chip C.	C1608CH1H330JT-AS	1		
C149	CU3017	Chip C.	C1608CH1H330JT-AS	1		
C150	CU3005	Chip C.	C1608CH1H040CT-AS	1		
C151	CU3047	Chip C.	C1608JB1H103KT-N	1		
C152	CE0339	Electrolytic C.	16MV 10SWB+TS	1		
C153	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C154	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C155	CU3007	Chip C.	C1608CH1H060CT-A	1		
C156	CU3047	Chip C.	C1608JB1H103KT-N	1		
C157	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C158	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C159	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C160	CS0049	Chip tantalum	TMCSA1C105MTR	1		

Ref No.	Parts No.	Description	Parts Name	Qty.		Ver.
				DR-135	DR-435	
C161	CU3111	Chip C.	C1608JB1C104KT-N	1		
C162	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C165	CU3111	Chip C.	C1608JB1C104KT-N	1		
C167	CU3047	Chip C.	C1608JB1H103KT-N	1		
C168	CU3111	Chip C.	C1608JB1C104KT-N	1		
C169	CU3026	Chip C.	C1608CH1H181JT-AS	1		
C171	CU3111	Chip C.	C1608JB1C104KT-N	1		
C172	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C173	CU3037	Chip C.	C1608JB1H152KT-AS	1		
C174	CU3026	Chip C.	C1608CH1H181JT-AS	1		
C176	CU3018	Chip C.	C1608CH1H390JT-AS	1		
C177	CU3018	Chip C.	C1608CH1H390JT-AS	1		
C179	CU3111	Chip C.	C1608JB1C104KT-N	1		
C180	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C181	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C182	CU3047	Chip C.	C1608JB1H103KT-N	1		
C183	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C184	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C185	CS0232	Chip tantalum	TMCSA1V474MTR	1		
C186	CU3008	Chip C.	C1608CH1H070CT-A	1		
C187	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C188	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C189	CU3011	Chip C.	C1608CH1H100DT-AS	1		
C191	CU3102	Chip C.	C1608JB1C333KT-NS	1		
C192	CU3047	Chip C.	C1608JB1H103KT-N	1		
C193	CU4033	Chip C.	GRM42-6X7R102K500PT	1		
C194	CU3012	Chip C.	C1608CH1H120JT-AS	1		
C195	CU3012	Chip C.	C1608CH1H120JT-AS	1		
C196	CU3019	Chip C.	C1608CH1H470JT-AS	1		
C197	CU4003	Chip C.	GRM42-6CK020C500PT	1		
C198	CE0339	Electrolytic C.	16MV 10SWB+TS	1		
C199	CE0339	Electrolytic C.	16MV 10SWB+TS	1		
C200	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C201	CU4014	Chip C.	GRM42-6CH180J500PT	1		
C202	CU4016	Chip C.	GRM42-6CH270J500PT	1		
C203	CU4016	Chip C.	GRM42-6CH270J500PT	1		
C204	CU4013	Chip C.	GRM42-6CH150J500PT	1		
C205	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C206	CE0339	Electrolytic C.	16MV 10SWB+TS	1		
C207	CU3002	Chip C.	C1608CH1H010CT-AS	1		
C208	CU3002	Chip C.	C1608CH1H010CT-AS	1		
C209	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C210	CU3003	Chip C.	C1608CH1H020CT-AS	1		
C211	CU3003	Chip C.	C1608CH1H020CT-AS	1		
C212	CE0364	Electrolytic C.	16MV 47SWB+TS	1		
C213	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C214	CU3015	Chip C.	C1608CH1H220JT-AS	1		
C215	CU4016	Chip C.	GRM42-6CH270J500PT	1		
C216	CU4016	Chip C.	GRM42-6CH270J500PT	1		
C217	CU3051	Chip C.	C1608JB1E223KT-NS	1		
C218	CU3051	Chip C.	C1608JB1E223KT-NS	1		
C219	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C220	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C221	CU3047	Chip C.	C1608JB1H103KT-N	1		
C222	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C223	CE0364	Electrolytic C.	16MV 47SWB+TS	1		
C224	CU3023	Chip C.	C1608CH1H101JT-AS	1		
C225	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C226	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C227	CS0049	Chip tantalum	TMCSA1C105MTR	1		
C228	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C229	CU3101	Chip C.	C1608JB1C473KT-NS	1		
C230	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C231	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C232	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C233	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C234	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C235	CU3014	Chip C.	C1608CH1H180JT-AS	1		
C236	CU3014	Chip C.	C1608CH1H180JT-AS	1		
C237	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C238	CS0049	Chip tantalum	TMCSA1C105MTR	1		
C239	CS0049	Chip tantalum	TMCSA1C105MTR	1		
C240	CE0339	Electrolytic C.	16MV 10SWB+TS	1		
C241	CU3022	Chip C.	C1608CH1H820JT-AS	1		
C242	CU3051	Chip C.	C1608JB1E223KT-NS	1		
C243	CE0339	Electrolytic C.	16MV 10SWB+TS	1		
C244	CE0339	Electrolytic C.	16MV 10SWB+TS	1		
C245	CS0049	Chip tantalum	TMCSA1C105MTR	1		
C246	CU3043	Chip C.	C1608JB1H472KT-NS	1		
C247	CU3111	Chip C.	C1608JB1C104KT-N	1		
C248	CU3047	Chip C.	C1608JB1H103KT-N	1		
C249	CU3038	Chip C.	C1608JB1H182KT-AS	1		
C250	CU3026	Chip C.	C1608CH1H181JT-AS	1		
C251	CE0339	Electrolytic C.	16MV 10SWB+TS	1		
C252	CU3035	Chip C.	C1608JB1H102KT-AS	1		
C253	CU3111	Chip C.	C1608JB1C104KT-N	1		

Ref No.	Parts No.	Description	Parts Name	Qty.	Ver.
C254	CU3111	Chip C.	C1608JB1C104KT-N	1	
C255	CE0364	Electrolytic C.	16MV 47SWB+TS	1	
C256	CU3111	Chip C.	C1608JB1C104KT-N	1	
C257	CE0339	Electrolytic C.	16MV 10SWB+TS	1	
C258	CS0049	Chip tantalum	TMCSA1C105MTR	1	
C259	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C260	CS0424	Chip tantalum	TMCMA1C106MTR	1	
C261	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C262	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C263	CE0100	Electrolytic C.	16MV 22UW	1	
C264	CU3019	Chip C.	C1608CH1H470JT-AS	1	
C265	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C266	CU3064	Chip C.	C1608CH1H1R5CT-AS	1	
C267	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C268	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C269	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C270	CU3047	Chip C.	C1608JB1H103KT-N	1	
C271	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C272	CS0220	Chip tantalum	TMCMA1C225MTR	1	
C273	CS0220	Chip tantalum	TMCMA1C225MTR	1	
C275	CU3047	Chip C.	C1608JB1H103KT-N	1	
C276	CS0424	Chip tantalum	TMCMA1C106MTR	1	
C277	CE0343	Electrolytic C.	16MV 1000HC+T	1	
C278	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C279	CU3051	Chip C.	C1608JB1E223KT-NS	1	
C280	CS0237	Chip tantalum	TMCMA1A475MTR	1	
C281	CU3009	Chip C.	C1608CH1H080CT-A	1	
C282	CU3064	Chip C.	C1608CH1H1R5CT-AS	1	
C283	CU3027	Chip C.	C1608CH1H221JT-AS	1	
C284	CU3002	Chip C.	C1608CH1H010CT-AS	1	
C285	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C286	CU3027	Chip C.	C1608CH1H221JT-AS	1	
C287	CS0063	Chip tantalum	TMCSA1V104MTR	1	
C288	CU3011	Chip C.	C1608CH1H100DT-AS	1	
C290	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C291	CS0049	Chip tantalum	TMCSA1C105MTR	1	
C293	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C294	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C295	CU3047	Chip C.	C1608JB1H103KT-N	1	
C296	CU3011	Chip C.	C1608CH1H100DT-AS	1	
C297	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C298	CS0237	Chip tantalum	TMCMA1A475MTR	1	
C299	CU3047	Chip C.	C1608JB1H103KT-N	1	
C300	CU3015	Chip C.	C1608CH1H220JT-AS	1	
C301	CU3023	Chip C.	C1608CH1H101JT-AS	1	
C302	CU3023	Chip C.	C1608CH1H101JT-AS	1	
C303	CU3023	Chip C.	C1608CH1H101JT-AS	1	
C304	CU3047	Chip C.	C1608JB1H103KT-N	1	
C305	CU3047	Chip C.	C1608JB1H103KT-N	1	
C306	CU3111	Chip C.	C1608JB1C104KT-N	1	
C307	CU3047	Chip C.	C1608JB1H103KT-N	1	
C308	CE0342	Electrolytic C.	16MV 470HC+TS	1	
C309	CU3051	Chip C.	C1608JB1E223KT-NS	1	
C310	CU3023	Chip C.	C1608CH1H101JT-AS	1	
C311	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C312	CU3011	Chip C.	C1608CH1H100DT-AS	1	
C313	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C314	CS0237	Chip tantalum	TMCMA1A475MTR	1	
C315	CS0237	Chip tantalum	TMCMA1A475MTR	1	
C316	CS0237	Chip tantalum	TMCMA1A475MTR	1	
C317	CS0237	Chip tantalum	TMCMA1A475MTR	1	
C318	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C319	CS0237	Chip tantalum	TMCMA1A475MTR	1	
C320	CS0237	Chip tantalum	TMCMA1A475MTR	1	
C321	CS0220	Chip tantalum	TMCMA1C225MTR	1	
C322	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C323	CU3018	Chip C.	C1608CH1H390JT-AS	1	
C324	CU3016	Chip C.	C1608CH1H270JT-AS	1	
C325	CU3018	Chip C.	C1608CH1H390JT-AS	1	
C326	CU3029	Chip C.	C1608JB1H331KT-AS	1	
C327	CU3034	Chip C.	C1608JB1H821KT-AS	1	
C328	CS0237	Chip tantalum	TMCMA1A475MTR	1	
C701	CS0237	Chip tantalum	TMCMA1A475MTR	1	
C702	CU3111	Chip C.	C1608JB1C104KT-N	1	
C703	CS0237	Chip tantalum	TMCMA1A475MTR	1	
CN102	UE0397	Connector	105082-311-017-100	1	
CN103	UE0397	Connector	105082-311-017-100	1	
CN104	UA0037Y	Wire	DC CABLE UA0037	1	
CN105	UE0214	Connector	AXN420C530P	1	
CN106	UE0043	Connector	PI22A02M	1	
CN107	UE0393	Connector	PI28A11M	1	
CN110	UE0341	Connector	PI28A02M	1	
D101	XD0246	Chip Diode	DAN235UT 106	1	
D102	XD0299	Chip Diode	MA304-TX	1	
D103	XD0299	Chip Diode	MA304-TX	1	
D104	XD0299	Chip Diode	MA304-TX	1	

Ref No.	Parts No.	Description	Parts Name	Qty.	Ver.
D105	XD0299	Chip Diode	MA304-TX	1	
D106	XD0165	Chip Diode	UDZSTE-17 5.1B	1	
D107	XD0246	Chip Diode	DAN235UT 106	1	
D108	XD0130	Chip Diode	DA204U T106	1	
D109	XD0301	Chip Diode	1SV268-TD	1	
D110	XD0013	Diode	XB15A407AGB	1	
D111	XD0250	Chip Diode	MA742 TX	1	
D112	XD0250	Chip Diode	MA742 TX	1	
D113	XD0254	Chip Diode	1SS355 TE17	1	
D114	XD0246	Chip Diode	DAN235UT 106	1	
D115	XD0254	Chip Diode	1SS355 TE17	1	
D117	XD0254	Chip Diode	1SS355 TE17	1	
D118	XD0130	Chip Diode	DA204U T106	1	
D119	XD0254	Chip Diode	1SS355 TE17	1	
D120	XD0131	Chip Diode	1SV214 TPH4	1	
D121	XD0274	Diode	DSA3A1	1	
D122	XD0300	Chip Diode	1SV262TPH2	1	
D123	XD0300	Chip Diode	1SV262TPH2	1	
D124	XD0377	Chip Diode	MAZS0270HL	1	
D125	XD0272	Chip Diode	1SS356 TW11	1	
D126	XD0254	Chip Diode	1SS355 TE17	1	
D127	XD0165	Chip Diode	UDZSTE-17 5.1B	1	
D128	XD0291	Chip Diode	MA729-TX	1	
D129	XD0291	Chip Diode	MA729-TX	1	
D130	XD0254	Chip Diode	1SS355 TE17	1	
D131	XD0291	Chip Diode	MA729-TX	1	
FL101	XC0070	Ceramic Filter	ALFYM450E=K	1	
FL102	XC0052	Ceramic Filter	ALFYM450G=K	1	
IC101	XA0675	IC	L88MS05TLL-TL	1	
IC102	XA0348	IC	TC4W53FU(TE12)	1	
IC103	XA0348	IC	TC4W53FU(TE12)	1	
IC104	XA0596	IC	NJM2902V-TE1	1	
IC108	XA0666	IC	TK10931VTL	1	
IC109	XA0115	IC	TC4S66F TE85R	1	
IC110	XA0412	IC	M67746	1	
IC111	XA0236	IC	BU4052BCF-E2	1	
IC113	XA0348	IC	TC4W53FU(TE12)	1	
IC114	XA0068	IC	M5218AFP/600E	1	
IC115	XA0102	IC	NJM7808FA	1	
IC116	XA0915	IC	M64076AGP	1	
IC117	XA0410	IC	LA4425A	1	
IC118	XA0925	IC	S-816A50AMC-BAZ-T2	1	
IC119	XA0332	IC	TA75S01F(TE85L)	1	
IC120	XA0332	IC	TA75S01F(TE85L)	1	
IC121	XA0332	IC	TA75S01F(TE85L)	1	
IC701	XA0332	IC	TA75S01F(TE85L)	1	
JK101	UJ0046	Jack	MJ82-1	1	
JK102	UJ0024Z	Jack	LGY6501-0600	1	
L101	QC0043	Chip inductor	NL322522T-2R2J-3	1	
L102	QA0084	Coil	HELICAL FILTER	1	
L103	QA0084	Coil	HELICAL FILTER	1	
L104	QA0084	Coil	HELICAL FILTER	1	
L105	QA0084	Coil	HELICAL FILTER	1	
L106	QC0067	Chip inductor	NL322522T-R10JA	1	
L107	QC0065	Chip inductor	NL322522T-068JA	1	
L108	QC0065	Chip inductor	NL322522T-068JA	1	
L111	QKA45E	Coil	MR3.0 4.5T 0.8	1	
L112	QKA35D	Coil	MR3.0 3.5T 0.6	1	
L113	QKA45E	Coil	MR3.0 4.5T 0.8	1	
L114	QKA45E	Coil	MR3.0 4.5T 0.8	1	
L115	QKA45E	Coil	MR3.0 4.5T 0.8	1	
L116	QKA45E	Coil	MR3.0 4.5T 0.8	1	
L117	QC0065	Chip inductor	NL322522T-068JA	1	
L118	QKA95D	Chip inductor	MR3.0 9.5T 0.6	1	
L119	QC0538	Chip inductor	LQN21AR10J04	1	
L120	QC0534	Chip inductor	LQN21A47NJ04	1	
L121	QC0043	Chip inductor	NL322522T-2R2J-3	1	
L122	QC0040	Chip inductor	NL322522T-1R2J-3	1	
L123	QA0127	Chip Coil	VCO QA0127 5CBM	1	
L124	QC0442	Chip inductor	MLF1608A1R0K-T	1	
L125	QC0627	Chip inductor	LL1608-FSR10J	1	
L126	QC0040	Chip inductor	NL322522T-1R2J-3	1	
L127	QC0126	Chip inductor	NL322522T-R22J-3	1	
L128	QC0125	Chip inductor	NL322522T-R18J-3	1	
L129	QC0534	Chip inductor	LQN21A47NJ04	1	
L130	QC0534	Chip inductor	LQN21A47NJ04	1	
Q101	XU0063	Chip Transistor	UN9211 TX	1	
Q102	XU0063	Chip Transistor	UN9211 TX	1	
Q103	XU0047	Chip Transistor	UMC3NTR	1	
Q104	XU0063	Chip Transistor	UN9211 TX	1	
Q105	XT0096	Chip Transistor	2SC4099 T106N	1	
Q106	XE0028	Chip FET	3SK131V12-T1	1	
Q107	XE0028	Chip FET	3SK131V12-T1	1	
Q108	XU0063	Chip Transistor	UN9211 TX	1	
Q111	XE0021	Chip Transistor	2SK880GR TE85L	1	
Q112	XT0096	Chip Transistor	2SC4099 T106N	1	

Ref No.	Parts No.	Description	Parts Name	Qty.	Ver.
Q113	XU0047	Chip Transistor	UMC3NTR	1	
Q114	XU0063	Chip Transistor	UN9211 TX	1	
Q115	XT0084	Chip Transistor	2SC2954 T1	1	
Q116	XT0112	Transistor	2SB1292F	1	
Q117	XT0095	Chip Transistor	2SC4081 T106R	1	
Q118	XT0094	Chip Transistor	2SA1576A T106R	1	
Q119	XU0195	Chip Transistor	RN1104 TE85L	1	
Q120	XU0063	Chip Transistor	UN9211 TX	1	
Q121	XU0178	Chip Transistor	XP1215-TX	1	
Q122	XT0190	Chip Transistor	2SB1386 T100Q	1	
Q123	XT0061	Chip Transistor	2SB1132T 100Q	1	
Q124	XU0047	Chip Transistor	UMC3NTR	1	
Q125	XE0021	Chip FET	2SK880GR TE85L	1	
Q126	XU0063	Chip Transistor	UN9211 TX	1	
Q127	XT0095	Chip Transistor	2SC4081 T106R	1	
Q128	XU0063	Chip Transistor	UN9211 TX	1	
Q129	XU0195	Chip Transistor	RN1104 TE85L	1	
Q130	XU0195	Chip Transistor	RN1104 TE85L	1	
Q131	XE0010	Chip FET	2SK508K52 T2B	1	
Q132	XU0063	Chip Transistor	UN9211 TX	1	
Q133	XU0063	Chip Transistor	UN9211 TX	1	
Q134	XT0124	Chip Transistor	2SC4215-Y(TE85L)	1	
Q135	XT0124	Chip Transistor	2SC4215-Y(TE85L)	1	
Q136	XU0195	Chip Transistor	RN1104 TE85L	1	
Q137	XU0063	Chip Transistor	UN9211 TX	1	
Q138	XU0063	Chip Transistor	UN9211 TX	1	
Q139	XT0095	Chip Transistor	2SC4081 T106R	1	
Q140	XT0095	Chip Transistor	2SC4081 T106R	1	
Q141	XU0195	Chip Transistor	RN1104 TE85L	1	
Q142	XU0195	Chip Transistor	RN1104 TE85L	1	
Q144	XT0048	Chip Transistor	2SC3357RE T1	1	
Q145	XT0124	Chip Transistor	2SC4215-Y(TE85L)	1	
Q146	XT0061	Chip Transistor	2SB1132T 100Q	1	
R101	RK3050	Chip R.	MCR03EZHJ103	1	
R102	RK3091	Chip R.	MCR03EZPFX3902	1	
R103	RK3091	Chip R.	MCR03EZPFX3902	1	
R104	RK3050	Chip R.	MCR03EZHJ103	1	
R105	RK3030	Chip R.	MCR03EZHJ221	1	
R106	RK3026	Chip R.	MCR03EZHJ101	1	
R107	RK3026	Chip R.	MCR03EZHJ101	1	
R109	RK3026	Chip R.	MCR03EZHJ101	1	
R110	RK3026	Chip R.	MCR03EZHJ101	1	
R111	RK3049	Chip R.	MCR03EZHJ822	1	
R112	RK3026	Chip R.	MCR03EZHJ101	1	
R113	RK3042	Chip R.	MCR03EZHJ222	1	
R114	RK3040	Chip R.	MCR03EZHJ152	1	
R115	RK3049	Chip R.	MCR03EZHJ822	1	
R116	RK3034	Chip R.	MCR03EZHJ471	1	
R117	RK3062	Chip R.	MCR03EZHJ104	1	
R118	RK3026	Chip R.	MCR03EZHJ101	1	
R119	RK3052	Chip R.	MCR03EZHJ153	1	
R120	RK3045	Chip R.	MCR03EZHJ392	1	
R121	RK3063	Chip R.	MCR03EZHJ124	1	
R122	RK3059	Chip R.	MCR03EZHJ563	1	
R123	RK3061	Chip R.	MCR03EZHJ823	1	
R124	RK3057	Chip R.	MCR03EZHJ393	1	
R125	RK3038	Chip R.	MCR03EZHJ102	1	
R126	RK3052	Chip R.	MCR03EZHJ153	1	
R128	RK3058	Chip R.	MCR03EZHJ473	1	
R129	RK3050	Chip R.	MCR03EZHJ103	1	
R130	RK3060	Chip R.	MCR03EZHJ683	1	
R131	RK3061	Chip R.	MCR03EZHJ823	1	
R132	RK3050	Chip R.	MCR03EZHJ103	1	
R133	RK3037	Chip R.	MCR03EZHJ821	1	
R134	RK3055	Chip R.	MCR03EZHJ273	1	
R135	RK3062	Chip R.	MCR03EZHJ104	1	
R136	RK3050	Chip R.	MCR03EZHJ103	1	
R137	RK3067	Chip R.	MCR03EZHJ274	1	
R138	RK3059	Chip R.	MCR03EZHJ563	1	
R139	RK3050	Chip R.	MCR03EZHJ103	1	
R140	RK3072	Chip R.	MCR03EZHJ684	1	
R141	RK3064	Chip R.	MCR03EZHJ154	1	
R142	RK3054	Chip R.	MCR03EZHJ223	1	
R143	RK3042	Chip R.	MCR03EZHJ222	1	
R144	RK3042	Chip R.	MCR03EZHJ222	1	
R147	RK3050	Chip R.	MCR03EZHJ103	1	
R148	RK3062	Chip R.	MCR03EZHJ104	1	
R150	RK3054	Chip R.	MCR03EZHJ223	1	
R151	RK3050	Chip R.	MCR03EZHJ103	1	
R152	RK3053	Chip R.	MCR03EZHJ183	1	
R153	RK3048	Chip R.	MCR03EZHJ682	1	
R154	RK3042	Chip R.	MCR03EZHJ222	1	
R155	RK3052	Chip R.	MCR03EZHJ153	1	
R156	RK3034	Chip R.	MCR03EZHJ471	1	
R157	RK3062	Chip R.	MCR03EZHJ104	1	
R158	RK3030	Chip R.	MCR03EZHJ221	1	

Ref No.	Parts No.	Description	Parts Name	Qty.	Ver.
R160	RK3062	Chip R.	MCR03EZHJ104	1	
R161	RK3062	Chip R.	MCR03EZHJ104	1	
R162	RK3021	Chip R.	MCR03EZHJ390	1	
R163	RK3014	Chip R.	MCR03EZHJ100	1	
R164	RK3034	Chip R.	MCR03EZHJ471	1	
R165	RK3074	Chip R.	MCR03EZHJ105	1	
R167	RK3055	Chip R.	MCR03EZHJ273	1	
R168	RK3054	Chip R.	MCR03EZHJ223	1	
R171	RK3062	Chip R.	MCR03EZHJ104	1	
R172	RK3062	Chip R.	MCR03EZHJ104	1	
R173	RK3026	Chip R.	MCR03EZHJ101	1	
R176	RK3050	Chip R.	MCR03EZHJ103	1	
R177	RK3054	Chip R.	MCR03EZHJ223	1	
R179	RK3074	Chip R.	MCR03EZHJ105	1	
R180	RK3034	Chip R.	MCR03EZHJ471	1	
R181	RK3066	Chip R.	MCR03EZHJ224	1	
R182	RK3042	Chip R.	MCR03EZHJ222	1	
R183	RK3074	Chip R.	MCR03EZHJ105	1	
R184	RK3050	Chip R.	MCR03EZHJ103	1	
R185	RK3070	Chip R.	MCR03EZHJ474	1	
R186	RK3026	Chip R.	MCR03EZHJ101	1	
R188	RK3026	Chip R.	MCR03EZHJ101	1	
R189	RK3038	Chip R.	MCR03EZHJ102	1	
R191	RK3038	Chip R.	MCR03EZHJ102	1	
R193	RK3043	Chip R.	MCR03EZHJ272	1	
R195	RK3070	Chip R.	MCR03EZHJ474	1	
R196	RK3038	Chip R.	MCR03EZHJ102	1	
R197	RK3050	Chip R.	MCR03EZHJ103	1	
R198	RK3042	Chip R.	MCR03EZHJ222	1	
R199	RK3042	Chip R.	MCR03EZHJ222	1	
R201	RK3042	Chip R.	MCR03EZHJ222	1	
R202	RK0028	Chip R.	ERJ6GEYJ471V	1	
R203	RK3056	Chip R.	MCR03EZHJ333	1	
R204	RK3062	Chip R.	MCR03EZHJ104	1	
R205	RK0069	Chip R.	ERJ6GEYJ104V	1	
R206	RK0001	Chip R.	ERJ6GEYJ100V	1	
R207	RK3052	Chip R.	MCR03EZHJ153	1	
R208	RK3034	Chip R.	MCR03EZHJ471	1	
R209	RK3061	Chip R.	MCR03EZHJ823	1	
R210	RK3038	Chip R.	MCR03EZHJ102	1	
R211	RK4018	Chip R.	ERJ12YJ220U	1	
R212	RK4026	Chip R.	ERJ12YJ101U	1	
R213	RK3049	Chip R.	MCR03EZHJ822	1	
R214	RK3050	Chip R.	MCR03EZHJ103	1	
R215	RK3043	Chip R.	MCR03EZHJ272	1	
R216	RK3042	Chip R.	MCR03EZHJ222	1	
R217	RK3042	Chip R.	MCR03EZHJ222	1	
R219	RK3042	Chip R.	MCR03EZHJ222	1	
R220	RK4034	Chip R.	ERJ12YJ471U	1	
R221	RK3052	Chip R.	MCR03EZHJ153	1	
R222	RK3050	Chip R.	MCR03EZHJ103	1	
R223	RK3026	Chip R.	MCR03EZHJ101	1	
R224	RK3026	Chip R.	MCR03EZHJ101	1	
R225	RK3045	Chip R.	MCR03EZHJ392	1	
R226	RK3026	Chip R.	MCR03EZHJ101	1	
R227	RK3030	Chip R.	MCR03EZHJ221	1	
R228	RK3062	Chip R.	MCR03EZHJ104	1	
R229	RK3045	Chip R.	MCR03EZHJ392	1	
R230	RK3045	Chip R.	MCR03EZHJ392	1	
R231	RK3038	Chip R.	MCR03EZHJ102	1	
R232	RK3026	Chip R.	MCR03EZHJ101	1	
R233	RK3038	Chip R.	MCR03EZHJ102	1	
R234	RK3054	Chip R.	MCR03EZHJ223	1	
R235	RK3053	Chip R.	MCR03EZHJ183	1	
R236	RK3050	Chip R.	MCR03EZHJ103	1	
R237	RK3026	Chip R.	MCR03EZHJ101	1	
R238	RK3062	Chip R.	MCR03EZHJ104	1	
R239	RK3050	Chip R.	MCR03EZHJ103	1	
R240	RK3038	Chip R.	MCR03EZHJ102	1	
R241	RK3051	Chip R.	MCR03EZHJ123	1	
R242	RK3044	Chip R.	MCR03EZHJ332	1	
R243	RK3054	Chip R.	MCR03EZHJ223	1	
R244	RK3068	Chip R.	MCR03EZHJ334	1	
R245	RK3038	Chip R.	MCR03EZHJ102	1	
R246	RK3046	Chip R.	MCR03EZHJ472	1	
R247	RK3050	Chip R.	MCR03EZHJ103	1	
R248	RK3070	Chip R.	MCR03EZHJ474	1	
R249	RK3042	Chip R.	MCR03EZHJ222	1	
R250	RK3070	Chip R.	MCR03EZHJ474	1	
R251	RK3050	Chip R.	MCR03EZHJ103	1	
R252	RK3070	Chip R.	MCR03EZHJ474	1	
R253	RK3057	Chip R.	MCR03EZHJ393	1	
R254	RK3057	Chip R.	MCR03EZHJ393	1	
R255	RK3046	Chip R.	MCR03EZHJ472	1	
R256	RK3026	Chip R.	MCR03EZHJ101	1	
R257	RK3046	Chip R.	MCR03EZHJ472	1	



Ref No.	Parts No.	Description	Parts Name	Qty.	Ver.
R258	RK3057	Chip R.	MCR03EZHJ393	1	
R259	RK3050	Chip R.	MCR03EZHJ103	1	
R260	RK3054	Chip R.	MCR03EZHJ223	1	
R261	RK3054	Chip R.	MCR03EZHJ223	1	
R262	RK3067	Chip R.	MCR03EZHJ274	1	
R263	RK3051	Chip R.	MCR03EZHJ123	1	
R264	RK3038	Chip R.	MCR03EZHJ102	1	
R265	RK3047	Chip R.	MCR03EZHJ562	1	
R266	RK3050	Chip R.	MCR03EZHJ103	1	
R267	RK3022	Chip R.	MCR03EZHJ470	1	
R268	RK3050	Chip R.	MCR03EZHJ103	1	
R269	RK3062	Chip R.	MCR03EZHJ104	1	
R270	RK3060	Chip R.	MCR03EZHJ683	1	
R271	RK4034	Chip R.	ERJ12YJ471U	1	
R272	RK3050	Chip R.	MCR03EZHJ103	1	
R273	RK3062	Chip R.	MCR03EZHJ104	1	
R274	RK3050	Chip R.	MCR03EZHJ103	1	
R275	RK3050	Chip R.	MCR03EZHJ103	1	
R276	RK3034	Chip R.	MCR03EZHJ471	1	
R277	RK3042	Chip R.	MCR03EZHJ222	1	
R278	RK3026	Chip R.	MCR03EZHJ101	1	
R279	RK3046	Chip R.	MCR03EZHJ472	1	
R280	RK3058	Chip R.	MCR03EZHJ473	1	
R281	RK3041	Chip R.	MCR03EZHJ182	1	
R282	RK3050	Chip R.	MCR03EZHJ103	1	
R283	RK3038	Chip R.	MCR03EZHJ102	1	
R284	RK3026	Chip R.	MCR03EZHJ101	1	
R286	RK3034	Chip R.	MCR03EZHJ471	1	
R287	RK3046	Chip R.	MCR03EZHJ472	1	
R288	RK3046	Chip R.	MCR03EZHJ472	1	
R289	RK3046	Chip R.	MCR03EZHJ472	1	
R290	RK3054	Chip R.	MCR03EZHJ223	1	
R291	RK3058	Chip R.	MCR03EZHJ473	1	
R292	RK3018	Chip R.	MCR03EZHJ220	1	
R293	RK3042	Chip R.	MCR03EZHJ222	1	
R294	RK3052	Chip R.	MCR03EZHJ153	1	
R295	RK3038	Chip R.	MCR03EZHJ102	1	
R297	RK3032	Chip R.	MCR03EZHJ331	1	
R298	RK3042	Chip R.	MCR03EZHJ222	1	
R299	RK3042	Chip R.	MCR03EZHJ222	1	
R300	RK3026	Chip R.	MCR03EZHJ101	1	
R301	RK3038	Chip R.	MCR03EZHJ102	1	
R302	RK3024	Chip R.	MCR03EZHJ680	1	
R303	RK3056	Chip R.	MCR03EZHJ333	1	
R304	RK3059	Chip R.	MCR03EZHJ563	1	
R305	RK3058	Chip R.	MCR03EZHJ473	1	
R307	RK3001	Chip R.	MCR03EZHJ000	1	
R309	RK3050	Chip R.	MCR03EZHJ103	1	
R310	RK3026	Chip R.	MCR03EZHJ101	1	
R311	RK3038	Chip R.	MCR03EZHJ102	1	
R312	RK3038	Chip R.	MCR03EZHJ102	1	
R313	RK3038	Chip R.	MCR03EZHJ102	1	
R314	RK3022	Chip R.	MCR03EZHJ470	1	
R315	RK3042	Chip R.	MCR03EZHJ222	1	
R316	RK3051	Chip R.	MCR03EZHJ123	1	
R317	RK3038	Chip R.	MCR03EZHJ102	1	
R318	RK3068	Chip R.	MCR03EZHJ334	1	
R319	RK3061	Chip R.	MCR03EZHJ823	1	
R320	RK3062	Chip R.	MCR03EZHJ104	1	
R321	RK3043	Chip R.	MCR03EZHJ272	1	
R322	RD0108	Jumper	J1/6Z	1	
R324	RK3014	Chip R.	MCR03EZHJ100	1	
R326	RK3038	Chip R.	MCR03EZHJ102	1	
R327	RK3092	Chip R.	MCR03EZPFX7502	1	
R328	RD3013	Chip R.	ERG1SJ100	1	
R329	RK3062	Chip R.	MCR03EZHJ104	1	
R330	RK3062	Chip R.	MCR03EZHJ104	1	
R331	RK3038	Chip R.	MCR03EZHJ102	1	
R332	RK3054	Chip R.	MCR03EZHJ223	1	
R333	RK3062	Chip R.	MCR03EZHJ104	1	
R334	RK3042	Chip R.	MCR03EZHJ222	1	
R335	RK3050	Chip R.	MCR03EZHJ103	1	
R337	RK3062	Chip R.	MCR03EZHJ104	1	
R338	RK3054	Chip R.	MCR03EZHJ223	1	
R339	RK3050	Chip R.	MCR03EZHJ103	1	
R340	RK3050	Chip R.	MCR03EZHJ103	1	
R341	RK3050	Chip R.	MCR03EZHJ103	1	
R342	RK3058	Chip R.	MCR03EZHJ473	1	
R343	RK3048	Chip R.	MCR03EZHJ682	1	
R344	RK3057	Chip R.	MCR03EZHJ393	1	
R701	RK3038	Chip R.	MCR03EZHJ102	1	
R702	RK3026	Chip R.	MCR03EZHJ101	1	
R703	RK3062	Chip R.	MCR03EZHJ104	1	
R704	RK3055	Chip R.	MCR03EZHJ273	1	
R705	RK3038	Chip R.	MCR03EZHJ102	1	
SH101	TS0032B	Case	VCO CASE	1	

Ref No.	Parts No.	Description	Parts Name	Qty.	Ver.
TH102	XS0031	Thermistor	NTCCM16084BH682KCT	1	
VR101	RH0146	Trimmer R.	MVR22HXBRN473	1	
VR102	RH0148	Trimmer R.	MVR22HXBRN104	1	
VR103	RH0142	Trimmer R.	MVR22HXBRN103	1	
VR104	RH0142	Trimmer R.	MVR22HXBRN103	1	
VR105	RH0142	Trimmer R.	MVR22HXBRN103	1	
VR106	RH0146	Trimmer R.	MVR22HXBRN473	1	
VR107	RH0140	Trimmer R.	MVR22HXBRN472	1	
VR108	RH0148	Trimmer R.	MVR22HXBRN104	1	
VR109	RH0148	Trimmer R.	MVR22HXBRN104	1	
X101	XK0003	Discriminator	CDBM450C7	1	
X102	XQ0148	Xtal	DSA534HB 21.250MHZ	1	
XF101	XF0041	Xtal Filter	UM5 21.7M 21R15A5	1	
XF102	XF0041	Xtal Filter	UM5 21.7M 21R15A5	1	
	FG0327	Cushion	CUSHION DR135	1	
	SD0034	Spring	GND SPRING DR130	3	
	TZ0049	Dumper	SILICON DUMPER	2	
	TZ0072	Sheet	INSULATED SHEET	1	
	UP0467A	PCB	DR120 INTEGRATED	1	

## MAIN Unit DR-435

Ref No.	Parts No.	Description	Parts Name	Qty.	Ver.
C101	CU3047	Chip C.	C1608JB1H103KT-N	1	
C102	CU3047	Chip C.	C1608JB1H103KT-N	1	
C103	CS0049	Chip tantalum	TMCSA1C105MTR	1	
C104	CU3047	Chip C.	C1608JB1H103KT-N	1	
C105	CS0394	Chip tantalum	TMCMB0J476MTR	1	
C106	CU3051	Chip C.	C1608JB1E223KT-NS	1	
C107	CU3111	Chip C.	C1608JB1C104KT-N	1	
C108	CU3047	Chip C.	C1608JB1H103KT-N	1	
C109	CE0339	Electrolytic C.	16MV 10SWB+TS	1	
C110	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C111	CU3047	Chip C.	C1608JB1H103KT-N	1	
C112	CU3047	Chip C.	C1608JB1H103KT-N	1	
C113	CU3047	Chip C.	C1608JB1H103KT-N	1	
C114	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C115	CE0350	Electrolytic C.	16MV100HC	1	
C116	CS0237	Chip tantalum	TMCSA1A475MTR	1	
C117	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C118	CU3049	Chip C.	C1608JB1E153KT-NS	1	
C119	CU3051	Chip C.	C1608JB1E223KT-NS	1	
C120	CU3022	Chip C.	C1608CH1H820JT-AS	1	
C121	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C122	CU3047	Chip C.	C1608JB1H103KT-N	1	
C123	CU3012	Chip C.	C1608CH1H120JT-AS	1	
C124	CU3040	Chip C.	C1608JB1H272KT-NS	1	
C125	CU3044	Chip C.	C1608JB1H562KT-NS	1	
C126	CU3038	Chip C.	C1608JB1H182KT-AS	1	
C127	CU3041	Chip C.	C1608JB1H332KT-NS	1	
C129	CU3012	Chip C.	C1608CH1H120JT-AS	1	
C130	CS0220	Chip tantalum	TMCSA1C225MTR	1	
C131	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C132	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C133	CU3027	Chip C.	C1608CH1H221JT-AS	1	
C134	CU3042	Chip C.	C1608JB1H392KT-NS	1	
C135	CU3044	Chip C.	C1608JB1H562KT-NS	1	
C137	CU3017	Chip C.	C1608CH1H330JT-AS	1	
C138	CS0049	Chip tantalum	TMCSA1C105MTR	1	
C139	CU3031	Chip C.	C1608JB1H471KT-AS	1	
C141	CU3012	Chip C.	C1608CH1H120JT-AS	1	
C142	CU3111	Chip C.	C1608JB1C104KT-N	1	
C143	CU3111	Chip C.	C1608JB1C104KT-N	1	
C144	CU3015	Chip C.	C1608CH1H220JT-AS	1	
C145	CU3064	Chip C.	C1608CH1H1R5CT-AS	1	
C146	CE0339	Electrolytic C.	16MV 10SWB+TS	1	
C149	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C150	CU3111	Chip C.	C1608JB1C104KT-N	1	
C151	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C152	CE0339	Electrolytic C.	16MV 10SWB+TS	1	
C153	CU3003	Chip C.	C1608CH1H020CT-AS	1	
C154	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C155	CU3011	Chip C.	C1608CH1H100DT-AS	1	
C156	CU3047	Chip C.	C1608JB1H103KT-N	1	
C157	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C158	CU3004	Chip C.	C1608CH1H030CT-AS	1	
C159	CU3018	Chip C.	C1608CH1H390JT-AS	1	
C161	CS0237	Chip tantalum	TMCSA1A475MTR	1	
C162	CS0049	Chip tantalum	TMCSA1C105MTR	1	
C165	CU3111	Chip C.	C1608JB1C104KT-N	1	
C167	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C169	CU3027	Chip C.	C1608CH1H221JT-AS	1	
C170	CU3016	Chip C.	C1608CH1H270JT-AS	1	

Ref No.	Parts No.	Description	Parts Name	Qty.	Ver.
C171	CU3031	Chip C.	C1608JB1H471KT-AS	1	
C172	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C173	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C174	CU3027	Chip C.	C1608CH1H221JT-AS	1	
C176	CU3016	Chip C.	C1608CH1H270JT-AS	1	
C179	CU3111	Chip C.	C1608JB1C104KT-N	1	
C180	CU3111	Chip C.	C1608JB1C104KT-N	1	
C181	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C182	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C183	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C184	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C185	CS0232	Chip tantalum	TMCA1V474MTR	1	
C187	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C188	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C189	CU3015	Chip C.	C1608CH1H220JT-AS	1	
C191	CU3102	Chip C.	C1608JB1C333KT-NS	1	
C192	CU3047	Chip C.	C1608JB1H103KT-N	1	
C193	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C194	CU3004	Chip C.	C1608CH1H030CT-AS	1	
C195	CU3064	Chip C.	C1608CH1H1R5CT-AS	1	
C196	CU3011	Chip C.	C1608CH1H100DT-AS	1	
C197	CU4033	Chip C.	GRM42-6X7R102K500PT	1	
C198	CE0339	Electrolytic C.	16MV 10SWB+TS	1	
C199	CE0339	Electrolytic C.	16MV 10SWB+TS	1	
C200	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C201	CU4003	Chip C.	GRM42-6CK020C500PT	1	
C202	CU4011	Chip C.	GRM42-6CH100D500PT	1	
C203	CU4004	Chip C.	GRM42-6CJ030C500PT	1	
C204	CU4003	Chip C.	GRM42-6CK020C500PT	1	
C205	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C206	CE0339	Electrolytic C.	16MV 10SWB+TS	1	
C207	CU3002	Chip C.	C1608CH1H010CT-AS	1	
C208	CU3002	Chip C.	C1608CH1H010CT-AS	1	
C209	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C210	CU3003	Chip C.	C1608CH1H020CT-AS	1	
C211	CU3003	Chip C.	C1608CH1H020CT-AS	1	
C212	CE0364	Electrolytic C.	16MV 47SWB+TS	1	
C213	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C214	CU3004	Chip C.	C1608CH1H030CT-AS	1	
C215	CU4008	Chip C.	GRM42-6CH070D500PT	1	
C216	CU4011	Chip C.	GRM42-6CH100D500PT	1	
C217	CU3051	Chip C.	C1608JB1E223KT-NS	1	
C218	CU3051	Chip C.	C1608JB1E223KT-NS	1	
C219	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C220	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C221	CU3047	Chip C.	C1608JB1H103KT-N	1	
C222	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C223	CE0364	Electrolytic C.	16MV 47SWB+TS	1	
C224	CU3023	Chip C.	C1608CH1H101JT-AS	1	
C225	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C226	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C227	CS0049	Chip tantalum	TMCSA1C105MTR	1	
C228	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C229	CU3101	Chip C.	C1608JB1C473KT-NS	1	
C230	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C231	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C234	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C235	CU3011	Chip C.	C1608CH1H100DT-AS	1	
C236	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C237	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C238	CS0049	Chip tantalum	TMCSA1C105MTR	1	
C239	CS0063	Chip tantalum	TMCSA1V104MTR	1	
C240	CE0339	Electrolytic C.	16MV 10SWB+TS	1	
C241	CU3022	Chip C.	C1608CH1H820JT-AS	1	
C242	CU3051	Chip C.	C1608JB1E223KT-NS	1	
C243	CE0339	Electrolytic C.	16MV 10SWB+TS	1	
C244	CE0339	Electrolytic C.	16MV 10SWB+TS	1	
C245	CS0049	Chip tantalum	TMCSA1C105MTR	1	
C246	CU3043	Chip C.	C1608JB1H472KT-NS	1	
C247	CU3111	Chip C.	C1608JB1C104KT-N	1	
C248	CU3047	Chip C.	C1608JB1H103KT-N	1	
C249	CU3038	Chip C.	C1608JB1H182KT-AS	1	
C250	CU3026	Chip C.	C1608CH1H181JT-AS	1	
C251	CE0339	Electrolytic C.	16MV 10SWB+TS	1	
C253	CU3111	Chip C.	C1608JB1C104KT-N	1	
C254	CU3111	Chip C.	C1608JB1C104KT-N	1	
C255	CE0364	Electrolytic C.	16MV 47SWB+TS	1	
C256	CU3111	Chip C.	C1608JB1C104KT-N	1	
C257	CE0339	Electrolytic C.	16MV 10SWB+TS	1	
C259	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C261	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C270	CU3047	Chip C.	C1608JB1H103KT-N	1	
C277	CE0343	Electrolytic C.	16MV 1000HC+T	1	
C278	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C284	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C286	CU3027	Chip C.	C1608CH1H221JT-AS	1	

Ref No.	Parts No.	Description	Parts Name	Qty.	Ver.
C289	CS0049	Chip tantalum	TMCSA1C105MTR	1	
C294	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C297	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C305	CU3047	Chip C.	C1608JB1H103KT-N	1	
C306	CU3111	Chip C.	C1608JB1C104KT-N	1	
C307	CU3047	Chip C.	C1608JB1H103KT-N	1	
C308	CE0342	Electrolytic C.	16MV 470HC+TS	1	
C309	CU3051	Chip C.	C1608JB1E223KT-NS	1	
C310	CU3023	Chip C.	C1608CH1H101JT-AS	1	
C311	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C312	CU3004	Chip C.	C1608CH1H030CT-AS	1	
C314	CS0237	Chip tantalum	TMCA1A475MTR	1	
C315	CS0237	Chip tantalum	TMCA1A475MTR	1	
C316	CS0237	Chip tantalum	TMCA1A475MTR	1	
C317	CS0237	Chip tantalum	TMCA1A475MTR	1	
C318	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C319	CS0237	Chip tantalum	TMCA1A475MTR	1	
C320	CE0100	Electrolytic C.	16MV 22UW	1	
C321	CS0220	Chip tantalum	TMCA1C225MTR	1	
C322	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C701	CS0237	Chip tantalum	TMCA1A475MTR	1	
C702	CU3111	Chip C.	C1608JB1C104KT-N	1	
C703	CS0237	Chip tantalum	TMCA1A475MTR	1	
CN102	UE0397	Connector	105082-311-017-100	1	
CN103	UE0397	Connector	105082-311-017-100	1	
CN104	UA0037Y	Wire	DC CABLE UA0037	1	
CN105	UE0214	Connector	AXN420C530P	1	
CN106	UE0043	Connector	PI22A02M	1	
CN107	UE0393	Connector	PI28A11M	1	
CN108	UE0369	Connector	AXN49301616	1	
CN109	UE0041	Connector	TMPJ01XV6	1	
CN110	UE0341	Connector	PI28A02M	1	
D101	XD0141	Chip Diode	1SV237 TE85R	1	
D102	XD0254	Chip Diode	1SS355 TE17	1	
D103	XD0254	Chip Diode	1SS355 TE17	1	
D104	XD0254	Chip Diode	1SS355 TE17	1	
D105	XD0291	Chip Diode	MA729-TX	1	
D106	XD0165	Chip Diode	UDZSTE-17 5.1B	1	
D107	XD0141	Chip Diode	1SV237 TE85R	1	
D108	XD0254	Chip Diode	1SS355 TE17	1	
D109	XD0301	Chip Diode	1SV268-TD	1	
D110	XD0013	Chip Diode	XB15A407AGB	1	
D111	XD0250	Chip Diode	MA742 TX	1	
D112	XD0250	Chip Diode	MA742 TX	1	
D113	XD0254	Chip Diode	1SS355 TE17	1	
D114	XD0141	Chip Diode	1SV237 TE85R	1	
D115	XD0254	Chip Diode	1SS355 TE17	1	
D116	XD0297	Chip Diode	MA8100-TX	1	
D118	XD0130	Chip Diode	DA204U T106	1	
D119	XD0254	Chip Diode	1SS355 TE17	1	
D121	XD0274	Diode	DSA3A1	1	
D124	XD0377	Chip Diode	MAZS0270HL	1	
D127	XD0165	Chip Diode	UDZSTE-17 5.1B	1	
D128	XD0291	Chip Diode	MA729-TX	1	
D129	XD0291	Chip Diode	MA729-TX	1	
FL101	XC0047	Ceramic Filter	ALFYM455E=K	1	
FL102	XC0036	Ceramic Filter	ALFYM455G	1	
IC101	XA0675	IC	L88MS05TL-TL	1	
IC102	XA0348	IC	TC4W53FU(Te12)	1	
IC103	XA0348	IC	TC4W53FU(Te12)	1	
IC104	XA0596	IC	NJM2902V-TE1	1	
IC108	XA0404	IC	TA31136FN(EL)	1	
IC109	XA0115	IC	TC4S66F TE85R	1	
IC110	XA0077A	IC	M57788M E	1	
IC111	XA0236	IC	BU4052BFC-E2	1	
IC113	XA0348	IC	TC4W53FU(Te12)	1	
IC114	XA0068	IC	M5218AFP/600E	1	
IC115	XA0102	IC	NJM7808FA	1	
IC117	XA0410	IC	LA4425A	1	
IC118	XA0925	IC	S-816A50AMC-BAZ-T2	1	
IC119	XA0332	IC	TA75S01F(Te85L)	1	
IC120	XA0332	IC	TA75S01F(Te85L)	1	
IC121	XA0332	IC	TA75S01F(Te85L)	1	
IC701	XA0332	IC	TA75S01F(Te85L)	1	
JK101	UJ0046	Jack	MJ82-1	1	
JK102	UJ0024Z	Jack	LGY6501-0600	1	
L101	QC0043	Chip inductor	NL322522T-2R2J-3	1	
L102	QA0104	Coil	QA0104	1	
L103	QA0104	Coil	QA0104	1	
L104	QC0057	Chip inductor	NL322522T-015JA	1	
L105	QC0057	Chip inductor	NL322522T-015JA	1	
L106	QC0055	Chip inductor	NL322522T-010JA	1	
L107	QC0057	Chip inductor	NL322522T-015JA	1	
L108	QC0124	Chip inductor	NL322522T-R15J-3	1	
L109	QC0061	Chip inductor	NL322522T-033JA	1	
L111	QKA25E	Coil	MR3.0 2.5T 0.8	1	

Ref No.	Parts No.	Description	Parts Name	Qty.	Ver.
L112	QKA15D	Coil	MR3.0 1.5T 0.6	1	
L113	QC0062	Chip inductor	NL322522T-039JA	1	
L114	QKA15E	Coil	MR3.0 1.5T 0.8	1	
L115	QKA15E	Coil	MR3.0 1.5T 0.8	1	
L116	QKA15E	Coil	MR3.0 1.5T 0.8	1	
L117	QKA25D	Coil	MR3.0 2.5T 0.6	1	
L118	QKA95D	Coil	MR3.0 9.5T 0.6	1	
L119	QC0059	Chip inductor	NL322522T-022JA	1	
L120	QC0059	Chip inductor	NL322522T-022JA	1	
Q101	XU0063	Chip Transistor	UN9211 TX	1	
Q102	XU0063	Chip Transistor	UN9211 TX	1	
Q103	XU0152	Chip Transistor	UMC5NTR	1	
Q104	XU0063	Chip Transistor	UN9211 TX	1	
Q105	XT0125	Chip Transistor	2SC4245-Y(TE85L)	1	
Q106	XE0048	Chip FET	3SK240 TE85L	1	
Q107	XE0048	Chip FET	3SK240 TE85L	1	
Q108	XU0063	Chip Transistor	UN9211 TX	1	
Q111	XT0141	Chip Transistor	2SC4226-T1 R24	1	
Q112	XT0141	Chip Transistor	2SC4226-T1 R24	1	
Q113	XU0152	Chip Transistor	UMC5NTR	1	
Q114	XU0063	Chip Transistor	UN9211 TX	1	
Q115	XT0084	Chip Transistor	2SC2954 T1	1	
Q116	XT0112	Transistor	2SB1292F	1	
Q117	XT0095	Chip Transistor	2SC4081 T106R	1	
Q118	XT0094	Chip Transistor	2SA1576A T106R	1	
Q119	XU0195	Chip Transistor	RN1104 TE85L	1	
Q120	XU0063	Chip Transistor	UN9211 TX	1	
Q121	XU0178	Chip Transistor	XP1215-TX	1	
Q122	XT0190	Chip Transistor	2SB1386 T100Q	1	
Q123	XT0061	Chip Transistor	2SB1132T 100Q	1	
Q124	XU0152	Chip Transistor	UMC5NTR	1	
Q125	XT0048	Chip Transistor	2SC3357RE T1	1	
Q126	XU0063	Chip Transistor	UN9211 TX	1	
Q127	XT0095	Chip Transistor	2SC4081 T106R	1	
Q128	XU0063	Chip Transistor	UN9211 TX	1	
Q129	XU0195	Chip Transistor	RN1104 TE85L	1	
Q130	XU0195	Chip Transistor	RN1104 TE85L	1	
Q131	XT0141	Chip Transistor	2SC4226-T1 R24	1	
Q132	XU0063	Chip Transistor	UN9211 TX	1	
Q133	XU0063	Chip Transistor	UN9211 TX	1	
Q136	XU0195	Chip Transistor	RN1104 TE85L	1	
Q137	XU0063	Chip Transistor	UN9211 TX	1	
Q139	XT0095	Chip Transistor	2SC4081 T106R	1	
Q140	XT0095	Chip Transistor	2SC4081 T106R	1	
Q141	XU0195	Chip Transistor	RN1104 TE85L	1	
Q142	XU0195	Chip Transistor	RN1104 TE85L	1	
Q143	XT0061	Chip Transistor	2SB1132T 100Q	1	
R101	RK3050	Chip R.	MCR03EZHJ103	1	
R102	RK3091	Chip R.	MCR03ZPFX3902	1	
R103	RK3091	Chip R.	MCR03ZPFX3902	1	
R104	RK3050	Chip R.	MCR03EZHJ103	1	
R105	RK3030	Chip R.	MCR03EZHJ221	1	
R106	RK3026	Chip R.	MCR03EZHJ101	1	
R107	RK3026	Chip R.	MCR03EZHJ101	1	
R109	RK3026	Chip R.	MCR03EZHJ101	1	
R110	RK3022	Chip R.	MCR03EZHJ470	1	
R111	RK3049	Chip R.	MCR03EZHJ822	1	
R112	RK3022	Chip R.	MCR03EZHJ470	1	
R113	RK3022	Chip R.	MCR03EZHJ470	1	
R114	RK3040	Chip R.	MCR03EZHJ152	1	
R115	RK3049	Chip R.	MCR03EZHJ822	1	
R116	RK3030	Chip R.	MCR03EZHJ221	1	
R117	RK3070	Chip R.	MCR03EZHJ474	1	
R118	RK3026	Chip R.	MCR03EZHJ101	1	
R119	RK3052	Chip R.	MCR03EZHJ153	1	
R120	RK3045	Chip R.	MCR03EZHJ392	1	
R121	RK3063	Chip R.	MCR03EZHJ124	1	
R122	RK3059	Chip R.	MCR03EZHJ563	1	
R123	RK3061	Chip R.	MCR03EZHJ823	1	
R124	RK3057	Chip R.	MCR03EZHJ393	1	
R125	RK3036	Chip R.	MCR03EZHJ681	1	
R126	RK3049	Chip R.	MCR03EZHJ822	1	
R128	RK3062	Chip R.	MCR03EZHJ104	1	
R129	RK0069	Chip R.	ERJ6GEYJ104V	1	
R131	RK3054	Chip R.	MCR03EZHJ223	1	
R132	RK3050	Chip R.	MCR03EZHJ103	1	
R133	RK3032	Chip R.	MCR03EZHJ331	1	
R134	RK3054	Chip R.	MCR03EZHJ223	1	
R135	RK3056	Chip R.	MCR03EZHJ333	1	
R136	RK3050	Chip R.	MCR03EZHJ103	1	
R137	RK3067	Chip R.	MCR03EZHJ274	1	
R138	RK3059	Chip R.	MCR03EZHJ563	1	
R139	RK3050	Chip R.	MCR03EZHJ103	1	
R140	RK3072	Chip R.	MCR03EZHJ684	1	
R141	RK3064	Chip R.	MCR03EZHJ154	1	
R142	RK3032	Chip R.	MCR03EZHJ331	1	

Ref No.	Parts No.	Description	Parts Name	Qty.	Ver.
R144	RK3042	Chip R.	MCR03EZHJ222	1	
R147	RK3050	Chip R.	MCR03EZHJ103	1	
R148	RK3062	Chip R.	MCR03EZHJ104	1	
R150	RK3050	Chip R.	MCR03EZHJ103	1	
R151	RK3050	Chip R.	MCR03EZHJ103	1	
R152	RK3050	Chip R.	MCR03EZHJ103	1	
R153	RK3038	Chip R.	MCR03EZHJ102	1	
R154	RK3042	Chip R.	MCR03EZHJ222	1	
R155	RK3052	Chip R.	MCR03EZHJ153	1	
R156	RK3034	Chip R.	MCR03EZHJ471	1	
R157	RK3058	Chip R.	MCR03EZHJ473	1	
R158	RK3026	Chip R.	MCR03EZHJ101	1	
R160	RK3050	Chip R.	MCR03EZHJ103	1	
R161	RK3034	Chip R.	MCR03EZHJ471	1	
R162	RK3026	Chip R.	MCR03EZHJ101	1	
R163	RK3026	Chip R.	MCR03EZHJ101	1	
R164	RK0107	Chip R.	ERJ6GEY0R00V	1	
R165	RK3074	Chip R.	MCR03EZHJ105	1	
R168	RK3054	Chip R.	MCR03EZHJ223	1	
R172	RK3056	Chip R.	MCR03EZHJ333	1	
R173	RK3026	Chip R.	MCR03EZHJ101	1	
R176	RK3044	Chip R.	MCR03EZHJ332	1	
R180	RK3038	Chip R.	MCR03EZHJ102	1	
R181	RK3062	Chip R.	MCR03EZHJ104	1	
R182	RK3042	Chip R.	MCR03EZHJ222	1	
R183	RK3068	Chip R.	MCR03EZHJ334	1	
R184	RK3052	Chip R.	MCR03EZHJ153	1	
R185	RK3070	Chip R.	MCR03EZHJ474	1	
R186	RK3062	Chip R.	MCR03EZHJ104	1	
R188	RK3026	Chip R.	MCR03EZHJ101	1	
R189	RK3038	Chip R.	MCR03EZHJ102	1	
R191	RK3038	Chip R.	MCR03EZHJ102	1	
R193	RK3038	Chip R.	MCR03EZHJ102	1	
R195	RK3070	Chip R.	MCR03EZHJ474	1	
R196	RK3038	Chip R.	MCR03EZHJ102	1	
R197	RK3050	Chip R.	MCR03EZHJ103	1	
R198	RK3042	Chip R.	MCR03EZHJ222	1	
R199	RK3042	Chip R.	MCR03EZHJ222	1	
R201	RK3042	Chip R.	MCR03EZHJ222	1	
R203	RK3056	Chip R.	MCR03EZHJ333	1	
R204	RK3062	Chip R.	MCR03EZHJ104	1	
R206	RK0130	Chip R.	ERJ6GEYJ4R7V	1	
R207	RK3052	Chip R.	MCR03EZHJ153	1	
R208	RK3034	Chip R.	MCR03EZHJ471	1	
R209	RK3061	Chip R.	MCR03EZHJ823	1	
R210	RK3030	Chip R.	MCR03EZHJ221	1	
R211	RK4018	Chip R.	ERJ12YJ220U	1	
R212	RK4026	Chip R.	ERJ12YJ101U	1	
R213	RK3049	Chip R.	MCR03EZHJ822	1	
R214	RK3050	Chip R.	MCR03EZHJ103	1	
R215	RK3036	Chip R.	MCR03EZHJ681	1	
R216	RK3042	Chip R.	MCR03EZHJ222	1	
R217	RK3042	Chip R.	MCR03EZHJ222	1	
R219	RK3042	Chip R.	MCR03EZHJ222	1	
R220	RK4034	Chip R.	ERJ12YJ471U	1	
R221	RK3051	Chip R.	MCR03EZHJ123	1	
R222	RK3050	Chip R.	MCR03EZHJ103	1	
R223	RK3026	Chip R.	MCR03EZHJ101	1	
R224	RK3018	Chip R.	MCR03EZHJ220	1	
R226	RK3038	Chip R.	MCR03EZHJ102	1	
R227	RK3034	Chip R.	MCR03EZHJ471	1	
R228	RK3054	Chip R.	MCR03EZHJ223	1	
R229	RK3045	Chip R.	MCR03EZHJ392	1	
R230	RK3050	Chip R.	MCR03EZHJ103	1	
R231	RK3022	Chip R.	MCR03EZHJ470	1	
R234	RK3054	Chip R.	MCR03EZHJ223	1	
R235	RK3050	Chip R.	MCR03EZHJ103	1	
R236	RK3050	Chip R.	MCR03EZHJ103	1	
R237	RK3026	Chip R.	MCR03EZHJ101	1	
R238	RK3062	Chip R.	MCR03EZHJ104	1	
R239	RK3050	Chip R.	MCR03EZHJ103	1	
R240	RK3038	Chip R.	MCR03EZHJ102	1	
R241	RK3051	Chip R.	MCR03EZHJ123	1	
R242	RK3038	Chip R.	MCR03EZHJ102	1	
R243	RK3054	Chip R.	MCR03EZHJ223	1	
R244	RK3068	Chip R.	MCR03EZHJ334	1	
R245	RK3038	Chip R.	MCR03EZHJ102	1	
R246	RK3046	Chip R.	MCR03EZHJ472	1	
R247	RK3050	Chip R.	MCR03EZHJ103	1	
R248	RK3070	Chip R.	MCR03EZHJ474	1	
R249	RK3044	Chip R.	MCR03EZHJ332	1	
R250	RK3070	Chip R.	MCR03EZHJ474	1	
R251	RK3050	Chip R.	MCR03EZHJ103	1	
R252	RK3070	Chip R.	MCR03EZHJ474	1	
R253	RK3057	Chip R.	MCR03EZHJ393	1	
R254	RK3057	Chip R.	MCR03EZHJ393	1	

Ref No.	Parts No.	Description	Parts Name	Qty.	Ver.
R255	RK3046	Chip R.	MCR03EZHU472	1	
R256	RK3026	Chip R.	MCR03EZHU101	1	
R257	RK3046	Chip R.	MCR03EZHU472	1	
R258	RK3057	Chip R.	MCR03EZHU393	1	
R259	RK3050	Chip R.	MCR03EZHU103	1	
R260	RK3054	Chip R.	MCR03EZHU223	1	
R261	RK3054	Chip R.	MCR03EZHU223	1	
R262	RK3065	Chip R.	MCR03EZHU184	1	
R264	RK3038	Chip R.	MCR03EZHU102	1	
R265	RK3062	Chip R.	MCR03EZHU104	1	
R266	RK3050	Chip R.	MCR03EZHU103	1	
R268	RK3050	Chip R.	MCR03EZHU103	1	
R271	RK4034	Chip R.	ERJ12YJ471U	1	
R272	RK3050	Chip R.	MCR03EZHU103	1	
R273	RK3050	Chip R.	MCR03EZHU103	1	
R274	RK3050	Chip R.	MCR03EZHU103	1	
R277	RK3042	Chip R.	MCR03EZHU222	1	
R279	RK3046	Chip R.	MCR03EZHU472	1	
R280	RK1028	Chip R.	ERJ8GEYJ471V	1	
R281	RK3041	Chip R.	MCR03EZHU182	1	
R283	RK3038	Chip R.	MCR03EZHU102	1	
R287	RK3046	Chip R.	MCR03EZHU472	1	
R295	RK3038	Chip R.	MCR03EZHU102	1	
R303	RK3049	Chip R.	MCR03EZHU822	1	
R304	RK3049	Chip R.	MCR03EZHU822	1	
R305	RK3042	Chip R.	MCR03EZHU222	1	
R309	RK3050	Chip R.	MCR03EZHU103	1	
R310	RK3042	Chip R.	MCR03EZHU222	1	
R315	RK3042	Chip R.	MCR03EZHU222	1	
R316	RK3051	Chip R.	MCR03EZHU123	1	
R318	RK3068	Chip R.	MCR03EZHU334	1	
R319	RK3061	Chip R.	MCR03EZHU823	1	
R320	RK3062	Chip R.	MCR03EZHU104	1	
R322	RD0108	Jumper	J1/6Z	1	
R324	RK3014	Chip R.	MCR03EZHU100	1	
R326	RK3038	Chip R.	MCR03EZHU102	1	
R327	RK3092	Chip R.	MCR03EZPFX7502	1	
R328	RD3013	Chip R.	ERG1SJ100	1	
R329	RK3062	Chip R.	MCR03EZHU104	1	
R330	RK3062	Chip R.	MCR03EZHU104	1	
R331	RK3038	Chip R.	MCR03EZHU102	1	
R332	RK3054	Chip R.	MCR03EZHU223	1	
R333	RK3062	Chip R.	MCR03EZHU104	1	
R334	RK3042	Chip R.	MCR03EZHU222	1	
R339	RK3056	Chip R.	MCR03EZHU333	1	
R340	RK3050	Chip R.	MCR03EZHU103	1	
R341	RK3050	Chip R.	MCR03EZHU103	1	
R342	RK3055	Chip R.	MCR03EZHU273	1	
R343	RK3048	Chip R.	MCR03EZHU682	1	
R344	RK3057	Chip R.	MCR03EZHU393	1	
R701	RK3038	Chip R.	MCR03EZHU102	1	
R702	RK3026	Chip R.	MCR03EZHU101	1	
R703	RK3062	Chip R.	MCR03EZHU104	1	
R704	RK3059	Chip R.	MCR03EZHU563	1	
R705	RK3038	Chip R.	MCR03EZHU102	1	
SH101	TS0164A	Case	VCO CASE DR235	1	
TC102	CT0046	Trimmer C.	TC03C100A-TP02	1	
TC103	CT0046	Trimmer C.	TC03C100A-TP02	1	
TH101	XS0031	Thermistor	NTCCM16084BH682KCT	1	
VR101	RH0148	Trimmer R.	MVR22HXBRN104	1	
VR102	RH0152	Trimmer R.	MVR22HXBRN474	1	
VR103	RH0142	Trimmer R.	MVR22HXBRN103	1	
VR104	RH0142	Trimmer R.	MVR22HXBRN103	1	
VR105	RH0142	Trimmer R.	MVR22HXBRN103	1	
VR106	RH0146	Trimmer R.	MVR22HXBRN473	1	
VR107	RH0140	Trimmer R.	MVR22HXBRN472	1	
VR108	RH0148	Trimmer R.	MVR22HXBRN104	1	
VR109	RH0144	Trimmer R.	MVR22HXBRN223	1	
VR110	RH0148	Trimmer R.	MVR22HXBRN104	1	
X101	XK0002	Discriminator	CDBM455C7	1	
X102	XQ0148	Xtal	DSA534HB 21.250MHZ	1	
X104	XQ0058Z	Xtal	UM5 30.395MHZ	1	
XF101	XF0014Z	Xtal Filter	30M152A 30.85MHZ	1	
SD0034		Spring	GND SPRING DR130	1	
TZ0049		Dumper	SILICON DUMPER	2	
TZ0072		Sheet	INSULATED SHEET	1	
UP0468A		PCB	DR420 INTEGRATED A	1	

## VCO DR-135

Ref No.	Parts No.	Description	Parts Name	Qty.	Ver.
C501	CU3047	Chip C.	C1608JB1H103KT-N	1	
C502	CU3023	Chip C.	C1608CH1H101JT-AS	1	

Ref No.	Parts No.	Description	Parts Name	Qty.	Ver.
C503	CU3047	Chip C.	C1608JB1H103KT-N	1	
C504	CU3023	Chip C.	C1608CH1H101JT-AS	1	
C505	CU3023	Chip C.	C1608CH1H101JT-AS	1	
C506	CU3031	Chip C.	C1608JB1H471KT-AS	1	
C507	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C508	CU3102	Chip C.	C1608JB1C333KT-NS	1	
C509	CS0220	Chip tantalum	TMCMA1C225MTR	1	
C510	CS0220	Chip tantalum	TMCMA1C225MTR	1	
C511	CU3006	Chip C.	C1608CH1H050CT-AS	1	
C512	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C513	CS0063	Chip tantalum	TMCSA1V104MTR	1	
C514	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C515	CU3003	Chip C.	C1608CH1H020CT-AS	1	
C516	CU3019	Chip C.	C1608CH1H470JT-AS	1	
C517	CU3006	Chip C.	C1608CH1H050CT-AS	1	
C518	CU3004	Chip C.	C1608CH1H030CT-AS	1	
C519	CU3002	Chip C.	C1608CH1H101CT-AS	1	
C520	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C521	CU3003	Chip C.	C1608CH1H020CT-AS	1	
C522	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C523	CS0424	Chip tantalum	TMCMA1C106MTR	1	
C524	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C525	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C526	CU3011	Chip C.	C1608CH1H100DT-AS	1	
C527	CU3011	Chip C.	C1608CH1H100DT-AS	1	
C528	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C529	CU3006	Chip C.	C1608CH1H050CT-AS	1	
CN501	UE0368	Connector	AXN39301613	1	
D501	XD0131	Chip Diode	1SV214 TPH4	1	
D502	XD0131	Chip Diode	1SV214 TPH4	1	
D503	XD0131	Chip Diode	1SV214 TPH4	1	
IC501	XA0915	IC	M64076AGP	1	
L501	QC0101	Chip inductor	LER015TR82M	1	
L503	QA0093	Chip Coil	QA0093	1	
L504	QC0101	Chip inductor	LER015TR82M	1	
L505	QC0096	Chip inductor	LER015TR33M	1	
L506	QC0627	Chip inductor	LL1608-FSR10J	1	
L507	QC0627	Chip inductor	LL1608-FSR10J	1	
Q501	XT0124	Chip Transistor	2SC4215-Y(TE85L)	1	
Q502	XE0010	Chip FET	2SK508K52 T2B	1	
Q503	XT0125	Chip Transistor	2SC4245-Y(TE85L)	1	
Q504	XT0125	Chip Transistor	2SC4245-Y(TE85L)	1	
R501	RK3030	Chip R.	MCR03EZHU221	1	
R502	RK3022	Chip R.	MCR03EZHU470	1	
R503	RK3038	Chip R.	MCR03EZHU102	1	
R504	RK3038	Chip R.	MCR03EZHU102	1	
R505	RK3038	Chip R.	MCR03EZHU102	1	
R506	RK3001	Chip R.	MCR03EZHU000	1	
R507	RK3047	Chip R.	MCR03EZHU562	1	
R508	RK3050	Chip R.	MCR03EZHU103	1	
R509	RK3038	Chip R.	MCR03EZHU102	1	
R510	RK3026	Chip R.	MCR03EZHU101	1	
R511	RK3034	Chip R.	MCR03EZHU471	1	
R512	RK3054	Chip R.	MCR03EZHU223	1	
R513	RK3043	Chip R.	MCR03EZHU272	1	
R514	RK3060	Chip R.	MCR03EZHU683	1	
R515	RK3058	Chip R.	MCR03EZHU473	1	
R516	RK3022	Chip R.	MCR03EZHU470	1	
R517	RK3060	Chip R.	MCR03EZHU683	1	
R518	RK3022	Chip R.	MCR03EZHU470	1	
R519	RK3022	Chip R.	MCR03EZHU470	1	
R520	RK3050	Chip R.	MCR03EZHU103	1	
R521	RK3045	Chip R.	MCR03EZHU392	1	
R522	RK3030	Chip R.	MCR03EZHU221	1	
R523	RK3030	Chip R.	MCR03EZHU221	1	
R524	RK3050	Chip R.	MCR03EZHU103	1	
R525	RK3042	Chip R.	MCR03EZHU222	1	
R526	RK3044	Chip R.	MCR03EZHU332	1	
R527	RK3038	Chip R.	MCR03EZHU102	1	

## Mechanical Parts

Ref No.	Parts No.	Description	Parts Name	Qty.		Ver.
				DR-135	DR-435	
CN7	UE0401	Dsub Connector	K-D-09S-SE	1	1	
CN6	UX1251	Wire	WIRE D SUB	1	1	
	ES0017	Speaker	057M9017	1	1	
	UX1047	Wire	WIRE DR130	1	1	
	AA0050	Screw	XSC26+6FZ	6	6	
	AE0029	Screw	RDG-LNA-W1(01)	2	2	
	AV0006	Screw	B2.6+8 FE/NI	16	16	
	AW0001	Screw	XYN3+J8FN	2	2	
	AZ0037Y	Screw	W3 FE BC	2	2	
	AZ0042	Washer	WASHER	2	2	

Ref No.	Parts No.	Description	Parts Name	Qty.		Ver.
				DR-135	DR-435	
	DP0157	LCD PANEL	LCD PANEL DR135TM2	1		
	DP0158	LCD PANEL	LCD PANEL DR435TM2		1	T
	FF0015	Cloth	BLIND CLOTH DR110	3	3	
	FF0017	Cloth	BLIND CLOTH DR570	1	1	
	FG0273	Rubber	ON AIR KEY RUBBER	1	1	
	FG0320	SP Cushion	SP CUSHION DR135	1	1	
	KS0068	Bottom Case	BOTTOM CASE DR135	1	1	
	KZ0105	Front Pannel	FRONT ASSY. DR135	1	1	
	NK0072	Knob	KL0677A-VOL DR135	1	1	
	NK0073	Knob	KL0678A-DIAL DR135	1	1	
	SS0093	Shassis	CHASSIS DR135	1	1	
	ST0065	SP Holder	SP HOLDER DR135	1	1	
	ST0066	SP Fitting	SP FITTING DR135	1	1	
	TG0034	SP Himelon	SP HIMERON DR135	1	1	
	UE0258	ANT Connector	FM-M.D.R-(4)	1	1	
	YZ0131	Tape	#9110 12X1mm	60	60	
	DS0446	Label	NITTO MODEL PLATE(S)	1	1	T
	DS0446	Label	NITTO MODEL PLATE(S)	2		E
	PR0478	Label	SER.NO.STICKER	2		E
	PR0451	Label	FCC PART15(3)	1	1	T
	PR0452	Label	FCC HOME USE	1	1	T
	PR0610	Label	N-10X49SEAL(Y)	1		E

## Packing Parts

Ref No.	Parts No.	Description	Parts Name	Qty.		Ver.
				DR-135	DR-435	
	HK0539	Packege	PACKAGE DR135Z	1		
	HK0540	Packege	PACKAGE DR435Z		1	
	HM0218Z	Carton Box	MASTER CARTON DR135Z	0.2	0.2	
	HU0161Z	P.MTL/Carton	INNER 2 PCS	0.4	0.4	
	HU0159Z	P.MTL/Carton	INNER DR135T	1	1	
	HU0099Z	P.MTL/Carton	FRONT INNER DR605	1	1	
	DS0446	Label	NITTO MODEL PLATE(S)	0.2		E
	PR0478	Label	SER.NO.STICKER	0.2		E
	PR0513	Label	NITTO 13X13 LABEL(W)	4	4	
	PR0514	Label	EPSON 10X49 LABEL(W)	2	2	T
	PR0514	Label	EPSON 10X49 LABEL(W)	3		E

## ACCESSORIES

Ref No.	Parts No.	Description	Parts Name	Qty.		Ver.
				DR-135	DR-435	
	ADFM78	Bracket	BRACKET DR130	1	1	
	ADUA38	Power Cable	R-B2.0X3M RECEPT.15A	1	1	E
	EMS53B	Microphone		1		E
	EMS57D	Microphone		1	1	T
	HP0009	Plastic Bag	5X125X250(ADUA38)	1	1	
	HP0035	Plastic Bag	5X200X250(UNIT)	1	1	
	PH0013		WARRANTY CEAT EXPORT	1	1	T
	PK0096A			1		
	PK0097				1	
	PR0454	Label	SECURITY STICKER T	2	2	
	PS0422A	Manual	INSTRUCTION DR135TM2	1	1	
	UX1259	Wire	WIRE SCR1 DR135T	1	1	
	UX1260	Wire	WIRE SCR2 DR135T	1	1	

## ACCESSORIES (SCREW SET)

Ref No.	Parts No.	Description	Parts Name	Qty.		Ver.
				DR-135	DR-435	
	AA0013	Screw	XSB5+20	4	4	
	AE0012		OH B2.6+6B FE/B.ZN	4	4	
	AJ0003		XTB5+20A	4	4	
	AN0002		XNG5A	4	4	
	AZ0009		XWA5B	4	4	
	AZ0010		XWG5	4	4	
	EF0005	Fuse	FGBO 125V 15A	2	2	
	FM0079Z	Spanner	SPANNER DR130	1	1	
	HP0006	Plastic Bag	5X90X170	1	1	
	YZ0121	Tape	TAPE 10MM	2	2	

# TNC (EJ41U)

Ref No.	Parts No.	Description	Parts Name	Qty.	Ver.
BAT1	ED0006	Battery	BR2032 1F2	1	
C1	CS0408	Chip Tantal	6MCM156MATER	1	
C2	CS0408	Chip Tantal	6MCM156MATER	1	
C2	CS0408	Chip Tantal	6MCM156MATER	1	
C3	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C4	CU3111	Chip C.	C1608JB1C104KT-N	1	
C5	CU9018	Chip C.	C3216JB1C105MT-N	1	
C6	CU3047	Chip C.	C1608JB1H103KT-N	1	
C7	CU3047	Chip C.	C1608JB1H103KT-N	1	
C8	CU3111	Chip C.	C1608JB1C104KT-N	1	
C9	CU3051	Chip C.	C1608JB1E223KT-NS	1	
C10	CU3111	Chip C.	C1608JB1C104KT-N	1	
C11	CU3111	Chip C.	C1608JB1C104KT-N	1	
C12	CU9018	Chip C.	C3216JB1C105MT-N	1	
C13	CU3051	Chip C.	C1608JB1E223KT-NS	1	
C14	CU3116	Chip C.	C1608CH1H471JT-AS	1	
C15	CU3051	Chip C.	C1608JB1E223KT-NS	1	
C16	CU3051	Chip C.	C1608JB1E223KT-NS	1	
C17	CU3045	Chip C.	C1608JB1H682KT-NS	1	
C18	CU3045	Chip C.	C1608JB1H682KT-NS	1	
C19	CU3047	Chip C.	C1608JB1H103KT-N	1	
C20	CU9018	Chip C.	C3216JB1C105MT-N	1	
C21	CU3111	Chip C.	C1608JB1C104KT-N	1	
C22	CU3035	Chip C.	C1608JB1H102KT-AS	1	
C23	CU3111	Chip C.	C1608JB1C104KT-N	1	
C24	CU3004	Chip C.	C1608CH1H030CT-AS	1	
C25	CU3047	Chip C.	C1608JB1H103KT-N	1	
C26	CU3027	Chip C.	C1608CH1H221JT-AS	1	
C27	CU3023	Chip C.	C1608CH1H101JT-AS	1	
C28	CU3111	Chip C.	C1608JB1C104KT-N	1	
C29	CU3111	Chip C.	C1608JB1C104KT-N	1	
C30	CU3111	Chip C.	C1608JB1C104KT-N	1	
C31	CU3062	Chip C.	C1608CH1H160JT-A	1	
C32	CU3111	Chip C.	C1608JB1C104KT-N	1	
C33	CS0049	Chip Tantal	TMCSA1C105MTR	1	
C34	CS0394	Chip Tantal	TMCMBOJ476MTR	1	
C35	CU3111	Chip C.	C1608JB1C104KT-N	1	
C36	CU3019	Chip C.	C1608CH1H470JT-AS	1	
C37	CU3043	Chip C.	C1608JB1H472KT-NS	1	
C38	CU3111	Chip C.	C1608JB1C104KT-N	1	
C39	CU3047	Chip C.	C1608JB1H103KT-N	1	
C40	CU3045	Chip C.	C1608JB1H682KT-NS	1	
C41	CU3116	Chip C.	C1608CH1H471JT-AS	1	
C42	CU9018	Chip C.	C3216JB1C105MT-N	1	
C43	CU3039	Chip C.	C1608JB1H222KT-AS	1	
C44	CU3051	Chip C.	C1608JB1E223KT-NS	1	
C45	CU3045	Chip C.	C1608JB1H682KT-NS	1	
C46	CU3039	Chip C.	C1608JB1H222KT-AS	1	
C48	CU3111	Chip C.	C1608JB1C104KT-N	1	
CN1	UE0402	Connector	PI2B11M	1	
D1X	L0036	LED	SML-310MTT86	1	
D2	XL0035	LED	SML-310UTT86	1	
D3	XL0036	LED	SML-310MTT86	1	
D4	XL0036	LED	SML-310MTT86	1	
D5	XD0291	Diode	MA729-TX	1	
D6	XD0291	Diode	MA729-TX	1	
IC1	XA0678	IC	TGT0210Q	1	
IC2	XA0463	IC	TA75S393F(TE85L)	1	
IC3	XA0679	IC	TMT0110Q	1	
IC4	XA0224	IC	NJM2904M T1	1	
IC5	XA0326	IC	NJM2903(T1)	1	
IC6	XA0680	IC	ADM232AARN-REEL	1	
IC7	XA0668	IC	S-80829ALNP-EAS-T2	1	
L2	QB0044	Chip Coil	BK1608HM601-T	1	
Q1	XT0095	Transistor	2SC4081 T106R	1	
Q2	XT0094	Transistor	2SA1576A T106R	1	
Q3	XT0094	Transistor	2SA1576A T106R	1	
Q4	XT0094	Transistor	2SA1576A T106R	1	
Q5	XE0029	FET	2SK1580-T1	1	
Q6	XT0095	Transistor	2SC4081 T106R	1	
Q7	XU0078	Transistor	UN521L-TX	1	
Q8	XT0095	Transistor	2SC4081 T106R	1	
Q9	XT0094	Transistor	2SA1576A T106R	1	
Q10	XT0095	Transistor	2SC4081 T106R	1	
Q11	XT0095	Transistor	2SC4081 T106R	1	
R1	RK3062	Chip R.	MCR03EZJH104	1	
R2	RK3062	Chip R.	MCR03EZJH104	1	
R3	RK3062	Chip R.	MCR03EZJH104	1	
R4	RK3062	Chip R.	MCR03EZJH104	1	
R5	RK3034	Chip R.	MCR03EZJH471	1	
R6	RK3034	Chip R.	MCR03EZJH471	1	
R7	RK3034	Chip R.	MCR03EZJH471	1	
R8	RK3032	Chip R.	MCR03EZJH331	1	
R9	RK3038	Chip R.	MCR03EZJH102	1	
R10	RK3050	Chip R.	MCR03EZJH103	1	
R11	RK3066	Chip R.	MCR03EZJH224	1	
R12	RK3038	Chip R.	MCR03EZJH102	1	

Ref No.	Parts No.	Description	Parts Name	Qty.	Ver.
R13	RK3038	Chip R.	MCR03EZJH102	1	
R14	RK3038	Chip R.	MCR03EZJH102	1	
R15	RK3038	Chip R.	MCR03EZJH102	1	
R16	RK3038	Chip R.	MCR03EZJH102	1	
R17	RK3050	Chip R.	MCR03EZJH103	1	
R18	RK3050	Chip R.	MCR03EZJH103	1	
R19	RK3038	Chip R.	MCR03EZJH102	1	
R20	RK3038	Chip R.	MCR03EZJH102	1	
R21	RK3053	Chip R.	MCR03EZJH183	1	
R22	RK3054	Chip R.	MCR03EZJH223	1	
R23	RK3050	Chip R.	MCR03EZJH103	1	
R24	RK3071	Chip R.	MCR03EZJH564	1	
R25	RK3050	Chip R.	MCR03EZJH103	1	
R26	RK3050	Chip R.	MCR03EZJH103	1	
R27	RK3050	Chip R.	MCR03EZJH103	1	
R28	RK3048	Chip R.	MCR03EZJH682	1	
R29	RK3050	Chip R.	MCR03EZJH103	1	
R30	RK3044	Chip R.	MCR03EZJH332	1	
R32	RK3042	Chip R.	MCR03EZJH222	1	
R33	RK3050	Chip R.	MCR03EZJH103	1	
R34	RK3051	Chip R.	MCR03EZJH123	1	
R35	RK3051	Chip R.	MCR03EZJH123	1	
R36	RK3054	Chip R.	MCR03EZJH223	1	
R37	RK3051	Chip R.	MCR03EZJH123	1	
R38	RK3051	Chip R.	MCR03EZJH123	1	
R39	RK3050	Chip R.	MCR03EZJH103	1	
R40	RK3051	Chip R.	MCR03EZJH123	1	
R41	RK3054	Chip R.	MCR03EZJH223	1	
R42	RK3044	Chip R.	MCR03EZJH332	1	
R44	RK3001	Chip R.	MCR03EZJH000	1	
R45	RK3030	Chip R.	MCR03EZJH221	1	
R46	RK3057	Chip R.	MCR03EZJH393	1	
R47	RK3050	Chip R.	MCR03EZJH103	1	
R48	RK3050	Chip R.	MCR03EZJH103	1	
R49	RK3046	Chip R.	MCR03EZJH472	1	
R50	RK3038	Chip R.	MCR03EZJH102	1	
R51	RK3061	Chip R.	MCR03EZJH823	1	
R52	RK3058	Chip R.	MCR03EZJH473	1	
R53	RK3054	Chip R.	MCR03EZJH223	1	
R54	RK3001	Chip R.	MCR03EZJH000	1	
R55	RK3062	Chip R.	MCR03EZJH104	1	
R56	RK3064	Chip R.	MCR03EZJH154	1	
R57	RK3058	Chip R.	MCR03EZJH473	1	
R58	RK3050	Chip R.	MCR03EZJH103	1	
R59	RK3001	Chip R.	MCR03EZJH000	1	
R60	RK3044	Chip R.	MCR03EZJH332	1	
R61	RK3001	Chip R.	MCR03EZJH000	1	
R62	RK3060	Chip R.	MCR03EZJH683	1	
R63	RK3029	Chip R.	MCR03EZJH181	1	
R64	RK3050	Chip R.	MCR03EZJH103	1	
R65	RK3050	Chip R.	MCR03EZJH103	1	
R66	RK3059	Chip R.	MCR03EZJH563	1	
R67	RK3050	Chip R.	MCR03EZJH103	1	
R68	RK3054	Chip R.	MCR03EZJH223	1	
R69	RK3050	Chip R.	MCR03EZJH103	1	
R70	RK3050	Chip R.	MCR03EZJH103	1	
R71	RK3050	Chip R.	MCR03EZJH103	1	
R72	RK3050	Chip R.	MCR03EZJH103	1	
R73	RK3001	Chip R.	MCR03EZJH000	1	
R74	RK3058	Chip R.	MCR03EZJH473	1	
R75	RK3062	Chip R.	MCR03EZJH104	1	
R76	RK3064	Chip R.	MCR03EZJH154	1	
R77	RK3030	Chip R.	MCR03EZJH221	1	
R78	RK3050	Chip R.	MCR03EZJH103	1	
R79	RK3050	Chip R.	MCR03EZJH103	1	
R80	RK3058	Chip R.	MCR03EZJH473	1	
R81	RK3058	Chip R.	MCR03EZJH473	1	
R82	RK3044	Chip R.	MCR03EZJH332	1	
R83	RK3074	Chip R.	MCR03EZJH105	1	
R84	RK3050	Chip R.	MCR03EZJH103	1	
R85	RK3046	Chip R.	MCR03EZJH472	1	
R87	RK3062	Chip R.	MCR03EZJH104	1	
R88	RK3062	Chip R.	MCR03EZJH104	1	
VR1	RH0142	Trim.Pot	MVR22HXBRN103	1	
VR2	RH0142	Trim.Pot	MVR22HXBRN103	1	
W2	UX1253	Connector	WIRE TNC	1	
X1	XQ0124	Xtal	AT-49 7.9872MHZ	1	
	UP0402	PCB	EJ41U (TNC )	0.125	
	FF0033	VELCRO	A	1	
	FG0040	Cushion		2	
	TZ0024	Insulator	ITHIUM BATT.	L1	
	TZ0056	Insulator	SILICON 49U	1	
	YZ0131	Tape	#9110 12X1mm	25	

## TNC (EJ41U) Packing Parts

Ref No.	Parts No.	Description	Parts Name	Qty.	Ver.
	FD0001	Floppy-Disc	(WIN2HD)	1	
	FF0034	VELCRO	B	1	
	FG0040	Cushion		1	
	HK0487	Package	Item Carton EJ41U	1	
	HP0029	Plastic bag	5X100X100	1	
	HP0040	Plastic bag	8X130X200	1	
	PF0061	SHEET	EJ41U	1	
	PR0449	Label	EJ41U	1	
	PS0354	Manual	INSTRUCTION EJ41U	1	
	PS0355	Manual	INST-DISC EJ41U	1	
	UZ0030	Plug	MP-013LC 3.5mm Plug	1	

# DR-135 ADJUSTMENT

## 1) Adjustment Spot

Power Supply Voltage 13.8 V

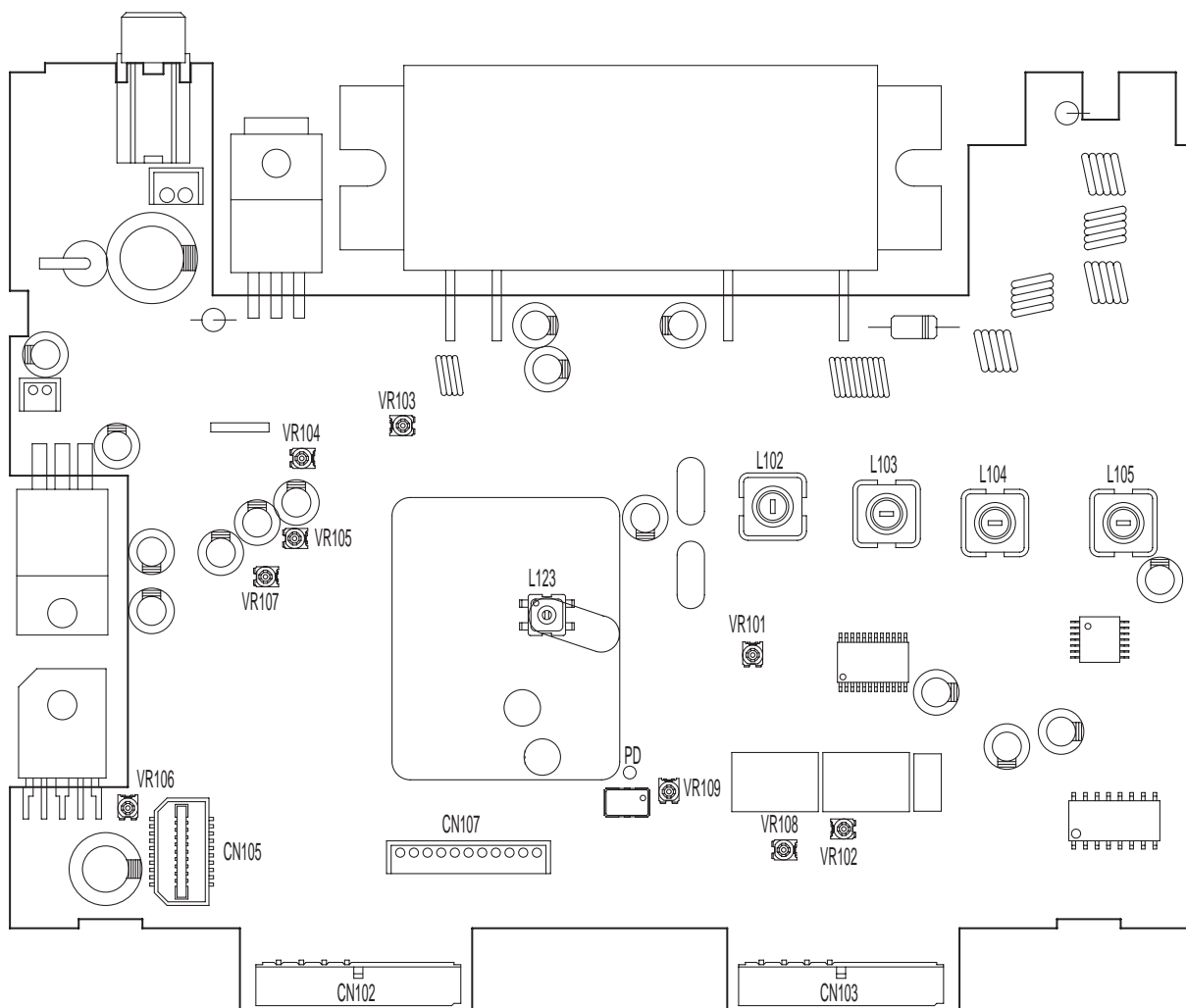
Output of SSG is all EMF indication

If without instruction, WIDE mode

If without instruction, SSG output is MOD 1KHz WIDE DEV 3.5KHz/DEV, NARROW DEV 1.75KHz/DEV

Standard Modulation is also based above.

Speaker load is  $8\Omega$  and Output is 50~100 mV.



Attention: Don't set the variable resistor into its open position.



## 2) VCO and RX Adjustment Specification

ITEM	CONDITION	UNIT	ADJ.SPOT	ADJUSTING METHOD
Adjustment Frequency	145.90MHz TX	MAIN	VR109	Adjust so that Tx Frequency becomes within 145.90MHz±100Hz
VCO Adjustment	136.00MHz RX	MAIN	L123	Adjust so that PD voltage becomes 1.5V
VCO Confirmation	173.99MHz RX	MAIN		Confirm if PD voltage becomes less than 7.3 V
Rx Signal Sensitivity Adjustment	146.05MHz  136.05MHz 146.05MHz 173.95MHz	MAIN	L105, L104 L103, L102	Repeatedly adjust so that the Rx sensitivity becomes in maximum. Confirm: At -7dBu SINAD more than 12dB At -8dBu SINAD more than 12dB At -6dBu SINAD more than 12dB
Squelch Adjustment	146.05MHz SSG OFF Indication 01	MAIN	VR101	Adjust so that the squelch stops at perfectly close location
S Meter Adjustment	146.05MHz SSG20dBu 1KHz 3.5KHz/DEV	MAIN	VR102	Adjust so that all the indicator appears

## 3) Tx Adjustment Specification

ITEM	CONDITION	UNIT	ADJ.SPOT	ADJUSTING METHOD
HI POWER Adjustment	146.00MHz HI POWER	MAIN	VR103	Adjust to 50.0±1.0W
MID POWER Adjustment	146.00MHz MID POWER	MAIN	VR104	Adjust to 10.0±1.0W
LOW POWER Confirmation	146.00MHz LOW POWER	MAIN		Confirm if it becomes 4.0 ±1.0W
Maximum Deviation Adjustment	146.00MHz MOD 1KHz40mVemf WIDE	MAIN	VR107	4.5±0.1KHz/DEV
Maximum Deviation Adjustment	146.00MHz MOD 1KHz40mVemf NARROW	MAIN	VR105	2.2±0.1KHz/DEV
Mic Gain Adjustment	146.00MHz MOD 1KHz4mVemf WIDE	MAIN	VR106	3.0±0.1KHz/DEV
CTCSS Modulation Level Confirmation	146.00MHz 88.5Hz	MAIN		800±200Hz/DEV 3KHz LPF ON
DCS Modulation Level Adjustment	146.00MHz 255 Code	MAIN	VR108	800±50Hz/DEV 3KHz LPF ON
1750Hz Modulation Level Confirmation	146.00MHz 1750Hz	MAIN		3.0±0.5KHz/DEV
DTMF Modulation Level Confirmation	146.00MHz DTMFⓈ Press the V/M key during TX	MAIN		3.0±0.5KHz/DEV

#### 4) Rx Test Specification

TEST ITEM	CONDITION	ADJ STANDARD	TEST STANDARD	NOTE
RX Sensitivity	136.05MHz	Less than -7dBu	Less than -6dBu	12dB SINAD
	146.05MHz	Less than -8dBu	Less than -7dBu	
	173.95MHz	Less than -6dBu	Less than -5dBu	
	146.05MHz NARROW	Less than -8dBu	Less than -7dBu	
	135.05MHz	Less than 9dBu	Less than 10dBu	AM 10dB S/N
RX Distortion	WIDE	Less than 4%	Less than 5%	SSG OUT PUT 30dBu
	NARROW			
RX S/N	WIDE	More than 40dB	More than 38dB	SSG OUT PUT 30dBu 0.3~3KHzBPF OFF
	NARROW	More than 34dB	More than 32dB	
Squelch Sensitivity	146.05MHz	Squelch Open	Squelch Open	SSG Output -10dBu
	Indication 02	Squelch Close	Squelch Close	SSG Output OFF
S Meter	146.05MHz 1KHz 3.5KHz/DEV	All appears at 20dBu	All appears at 25dBu	Decrease SSG level and decrease S Meter level
AF Output	146.05MHz	More than 2W	More than 2W	SSG Output 30dBu
CTCSS Sensitivity	WIDE	Open at 500Hz/DEV	Open at 500Hz/DEV	SSG Output 0dBu 88.5Hz
	NARROW	Open at 250Hz/DEV	Open at 250Hz/DEV	
DCS Sensitivity	WIDE	Opens when Test Equipment is in Tx	Opens when Test Equipment is in Tx	255 code
	NARROW	Opens when Test Equipment is in Tx	Opens when Test Equipment is in Tx	255 code
Drain Current	146.05MHz	Less than 0.65A	Less than 0.65A	MAX VR
Power Off Current	146.05MHz	Less than 10mA	Less than 10mA	Power Off
Howling	146.05MHz	Don't occur	Don't occur	SSG Output 60dBu MOD OFF MAX VR

## 5) Tx Test Specification

TEST ITEM	CONDITION	ADJ STANDARD	TEST STANDARD	NOTE
TX Output HI POWER	144.00MHz	50±1W	50±3W	
	146.00MHz		50±3W	
	148.00MHz		50±3W	
TX Output MID POWER	146.00MHz	10±1W	10 ±2W	
TX Output LOW POWER	146.00MHz	4±1W	3~6W	
Drain Current	146.00MHz	Less than 10A	Less than 11A	
Frequency Deviation	146.00MHz	Within ±0.3KHz	Within±0.5KHz	
Spurious	144.00MHz 146.00MHz 148.00MHz	More than 65dB More than 65dB More than 65dB	More than 60dB More than 60dB More than 60dB	M and L standard power is also the same as of H power level
Modulation Level	WIDE 146.00MHz	3.0±0.1KHz/DEV 4.5±0.1KHz/DEV	3.0±0.2KHz/DEV 4.5±0.2KHz/DEV	MIC IN 4mVemf MIC IN 40mVemf
	NARROW 146.00MHz	2.2±0.1KHz/DEV	2.2±0.2KHz/DEV	MIC IN 40mVemf
CTCSS Modulation Level	WIDE 146.00MHz	800±200Hz/DEV	800±200Hz/DEV	88.5Hz 3KHz LPF ON
DCS Modulation Level	WIDE 146.00MHz	800±200Hz/DEV	800±200Hz/DEV	Code 255 3KHz LPF ON
	NARROW 146.00MHz	450±100Hz/DEV	450±100Hz/DEV	Code 255 3KHz LPF ON
1750Hz Modulation Level	WIDE 146.00MHz	3.0±0.5KHz/DEV	3.0±0.5KHz/DEV	
DTMF Modulation Level	WIDE 146.00MHz	3.0±0.5KHz/DEV	3.0±0.5KHz/DE V	Press the V/M key during TX
Modulation Distortion	146.00MHz	Less than 3%	Less than 4%	
TX S/N	WIDE	More than 40dB	More than 38dB	0.3 ~ 3KHz BPF ON
	NARROW	More than 34dB	More than 32dB	

# DR-435 ADJUSTMENT

## 1) Adjustment Spot

Power Supply Voltage 13.8 V

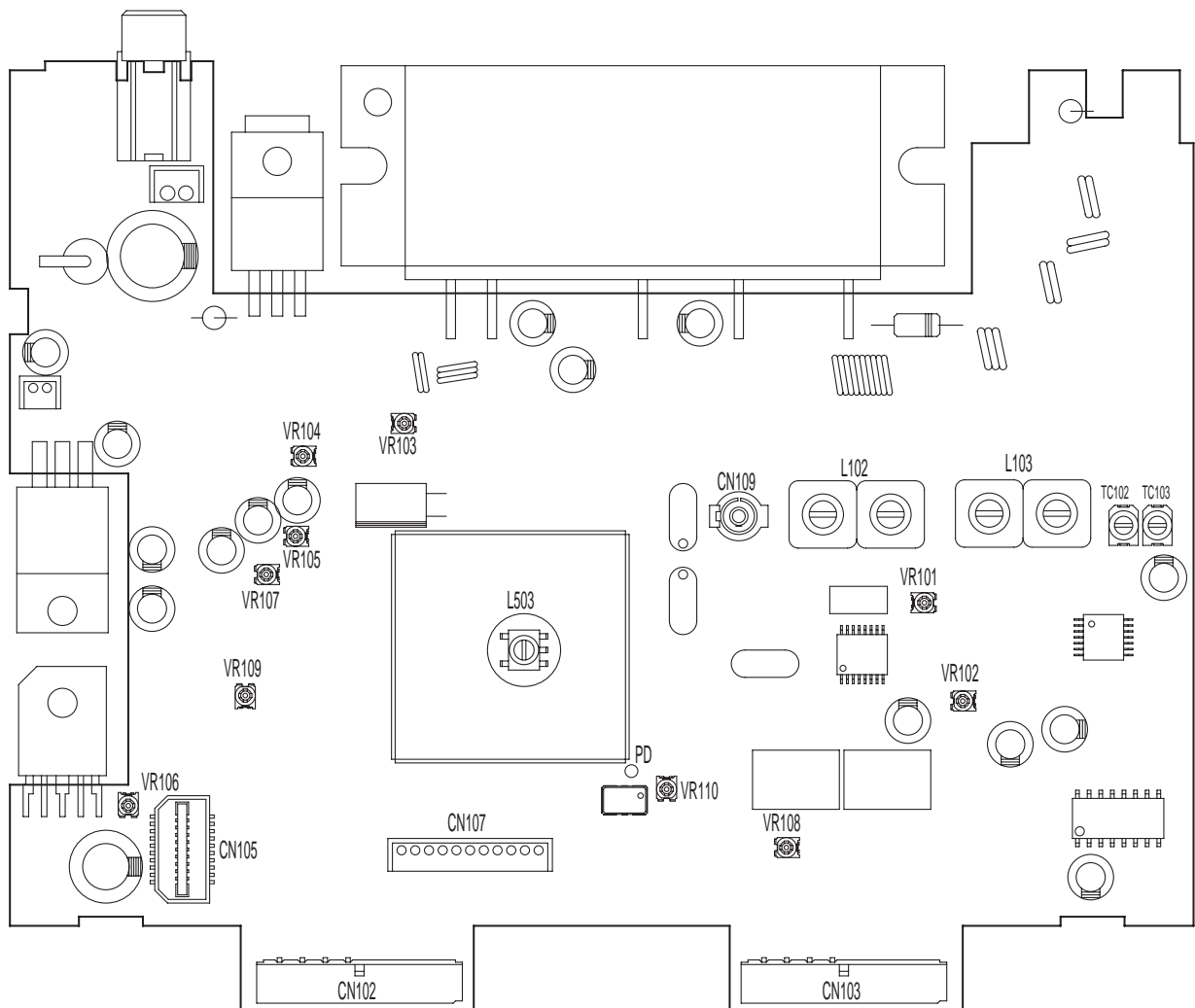
Output of SSG is all EMF indication

If without instruction, WIDE mode

If without instruction, SSG output is MOD 1KHz WIDE DEV 3.5KHz/DEV, NARROW DEV 1.75KHz/DEV

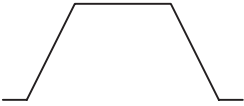
Standard Modulation is also based above.

Speaker load is  $8\Omega$  and Output is 50~100 mV.



Attention: Don't set the variable resistor into its open position.

## 2) VCO and RX Adjustment Specification

ITEM	CONDITION	UNIT	ADJ SPOT	ADJUSTING METHOD
Adjustment Frequency	440.00MHz TX	MAIN	VR110	Adjust so that Tx Frequency becomes within 440.00MHz±100Hz
VCO Adjustment	425.00MHz RX	MAIN	L503	Adjust so that PD voltage becomes 1.7V.
VCO Confirmation	511.95MHz RX	MAIN		Confirm if PD voltage becomes less than 9.0 V
Rx Signal Sensitivity Adjustment	440.05MHz  430.05MHz 440.05MHz 450.05MHz	MAIN	TC103,TC102 L103,L102	<p>It is a tracking generator from an antenna connector. -30dBm is inputted. And when CN109 is seen with a spectrum analyzer, by the maximum gain, it becomes as it is shown in the following figure, and appearance adjustment is carried out.</p>  <p>430.00M                      450.00M</p> <p>At -7.5dBu SINAD more than 12dB At -7.5dBu SINAD more than 12dB At -7.5dBu SINAD more than 12dB</p>
Squelch Adjustment	440.05MHz SSG OFF Indication 01	MAIN	VR101	Adjust so that the squelch stops at perfectly close location
S Meter Adjustment	440.05MHz SSG20dBu 1KHz 3.5KHz/DEV	MAIN	VR102	Adjust so that all the indicator appears

### 3) Tx Adjustment Specification

ITEM	CONDITION	UNIT	ADJ SPOT	ADJUSTING METHOD
HI POWER Adjustment	440.00MHz HI POWER	MAIN	VR103	Adjust to $35.0 \pm 11W$
MID POWER Adjustment	440.00MHz MID POWER	MAIN	VR104	Adjust to $10.0 \pm 1.0W$
LOW POWER Confirmation	440.00MHz LOW POWER	MAIN		Confirm if it becomes $5.0 \pm 1.0W$
Maximum Deviation Adjustment	440.00MHz MOD 1KHz40mVemf WIDE	MAIN	VR107	$4.5 \pm 0.1KHz/DEV$
Maximum Deviation Adjustment	440.00MHz MOD 1KHz 40mVemf NARROW	MAIN	VR105	$2.2 \pm 0.1KHz/DEV$
Mic Gain Adjustment	440.00MHz MOD 1KHz 4mVemf WIDE	MAIN	VR106	$3.0 \pm 0.1KHz/DEV$
CTCSS Modulation Level Confirmation	440.00MHz 88.5Hz	MAIN		$500 \sim 1000Hz/DEV$ 3KHz LPF ON
DCS Modulation Level Confirmation	440.00MHz 255 Code	MAIN	VR108	$800 \pm 200Hz/DEV$ 3KHz LPF ON
1750Hz Modulation Level Confirmation	440.00MHz 1750Hz	MAIN	VR109	$3.0 \pm 0.5KHz/DEV$
DTMF Modulation Level Confirmation	440.00MHz DTMF 1 Press the V/M key during TX	MAIN		$3.0 \pm 0.5KHz/DEV$

#### 4) Rx Test Specification

TEST ITEM	CONDITION	ADJ STANDARD	TEST STANDARD	NOTE
RX Sensitivity	350.05MHz	Less than -1dBu	Less than 0dBu	12dBSINAD
	430.05MHz	Less than -7.5dBu	Less than -6.5dBu	
440.05MHz	Less than -7.5dBu	Less than -6.5dBu		
450.05MHz	Less than -7.5dBu	Less than -6.5dBu		
511.95MHz	Less than +1dBu	Less than +2dBu		
	440.05MHz NARROW	Less than -7.5dBu	Less than -6.5dBu	
RX Distortion	WIDE	Less than 4%	Less than 5%	SSG Output 40dBu
	NARROW			
RX S/N	WIDE	More than 40dB	More than 38dB	SSG Output 40dBu 0.3~3KHzBPF OFF
	NARROW	More than 34dB	More than 32dB	
Squelch Sensitivity	440.05MHz Indication 02	Squelch Open	Squelch Open	SSG Output -10dBu
		Squelch Close	Squelch Close	SSG Output OFF
S Meter	440.05MHz 1KHz 3.5KHz/DEV	All appears at 20dBu	All appears at 25dBu	Decrease SSG level and decrease S Meter level
AF Output	440 05MHz	More than 2W	More than 2W	SSG Output 40dBu
CTCSS Sensitivity	WIDE	Open at 500Hz/DEV	Open at 500Hz/DEV	SSG Output 0dBu 88.5Hz
	NARROW	Open at 250Hz/DEV	Open at 250Hz/DEV	
DCS Sensitivity	WIDE	Opens when Test Equipment is in Tx	Opens when Test Equipment is in Tx	255 code
	NARROW	Opens when Test Equipment is in Tx	Opens when Test Equipment is in Tx	255 code
Drain Current	440 05MHz	Less than 0 7A	Less than 0 7A	MAX VR
Power Off Current	440 05MHz	Less than 10mA	Less than 10mA	Power Off
Howling	440.05MHz NARROW MODE	Don't occur	Don't occur	SSG Output 60dBu MOD OFF MAX VR

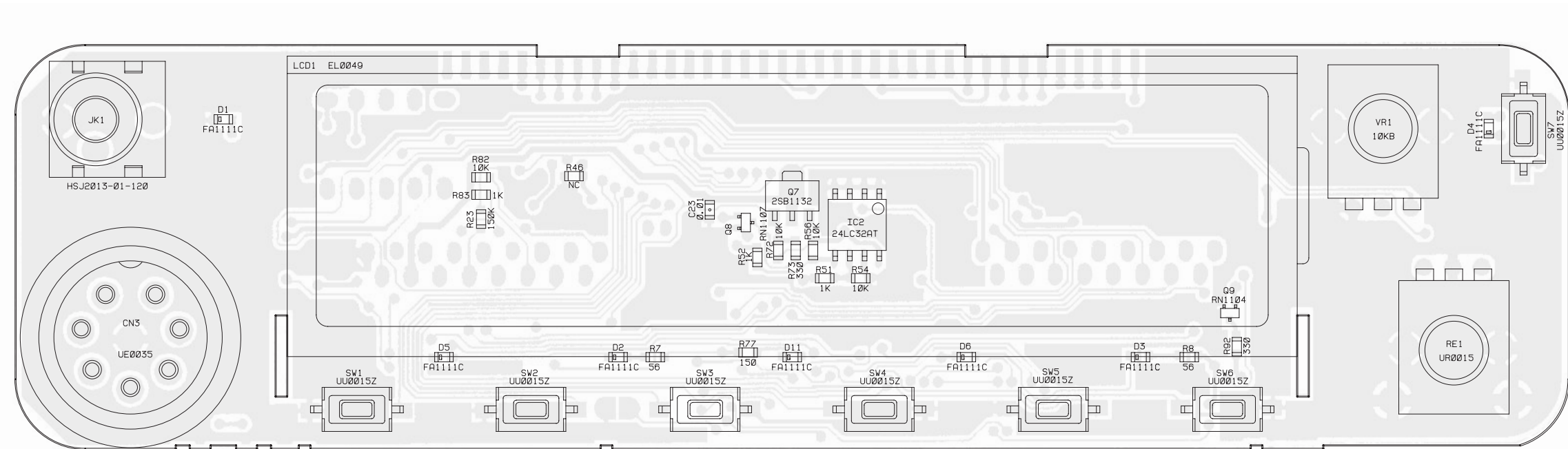
## 5) Tx Test Specification

TEST ITEM	CONDITION	ADJ STANDARD	TEST STANDARD	NOTE
TX Output HI POWER	430.00MHz 440.00MHz 450.00MHz	35±1W	35±3W 35±3W 35±3W	
TX Output MID POWER	440.00MHz	10±1W	10±2W	
TX Output LOW POWER	440.00MHz	5±1W	5±2W	
Drain Current	440.00MHz	Less than 9A	Less than 10A	
Frequency Deviation	440.00MHz	Within± 0.5KHz	Within±1.0KHz	
Spurious	430.00MHz 440.00MHz 450.00MHz	More than 62dB More than 62dB More than 62dB	More than 60dB More than 60dB More than 60dB 450MHz TM2 ONLY	M and L standard power is also the same as of H power level
Modulation Level	WIDE 440.00MHz	3.0± 0.1KHz/DEV 4.5± 0.1KHz/DEV	3.0± 0.2KHz/DEV 4.5± 0.2KHz/DEV	MIC IN 4mVemf MIC IN 40mVemf
	NARROW 440.00MHz	2.2± 0.1KHz/DEV	2.2± 0.2KHz/DEV	MIC IN 40mVemf
CTCSS Modulation Level	WIDE 440.00MHz	500~1000Hz/DEV	500~1000Hz/DEV	88.5Hz 3KHz LPF ON
DCS Modulation Level	WIDE 440.00MHz	800±200Hz/DEV	800± 200Hz/DEV	Code 255 3KHz LPF ON
	NARROW 440.00MHz	450±100Hz/DEV	450± 100Hz/DEV	Code 255 3KHz LPF ON

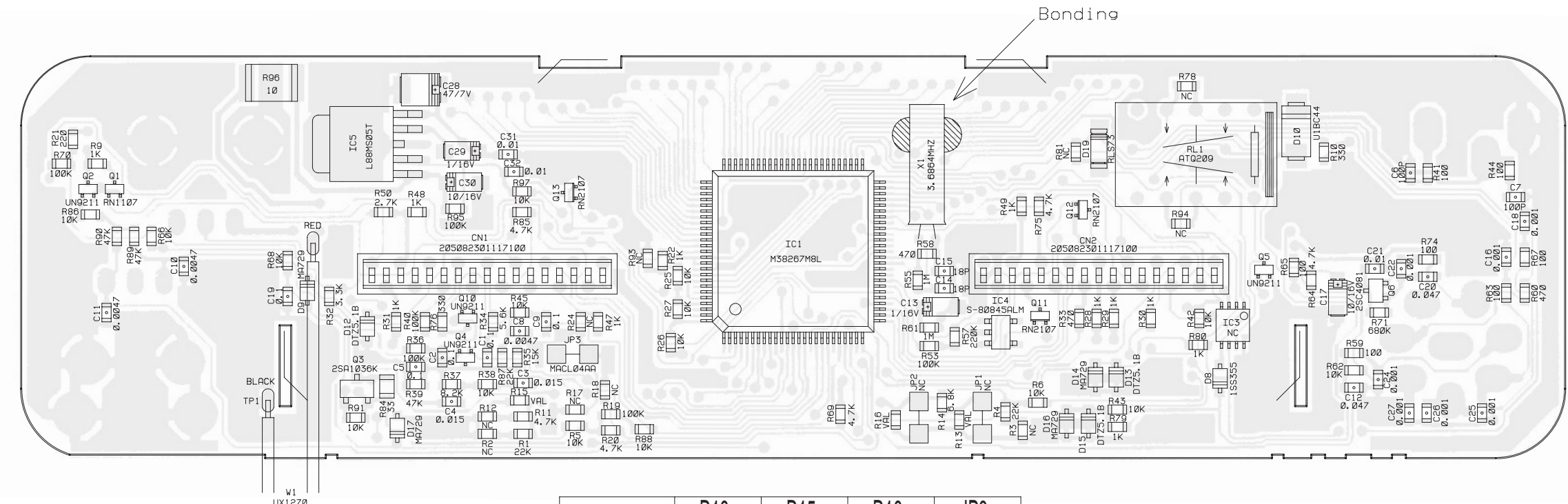


# PC BOARD VIEW

## 1) CPU Unit Side A

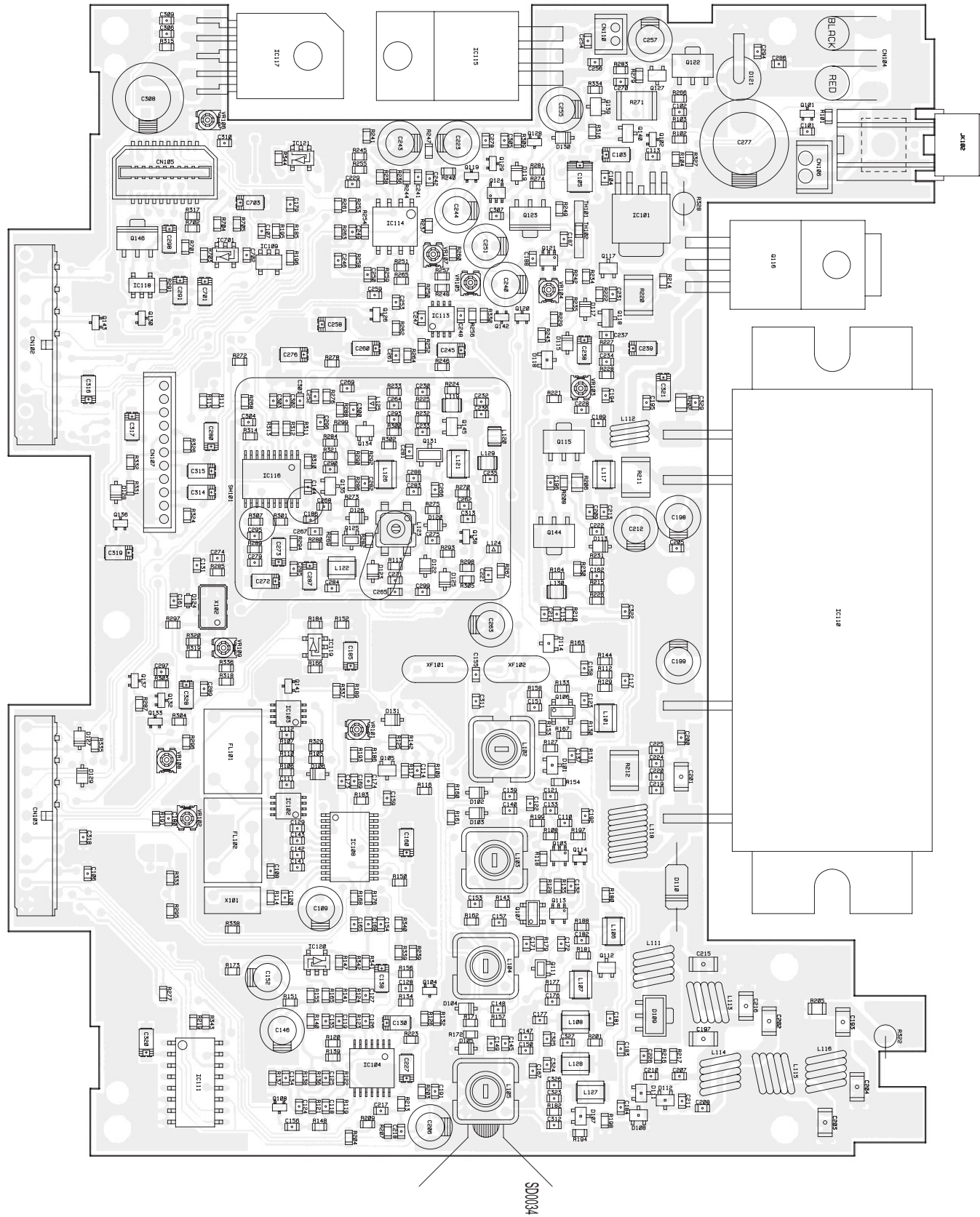


## 2) CPU Unit Side B

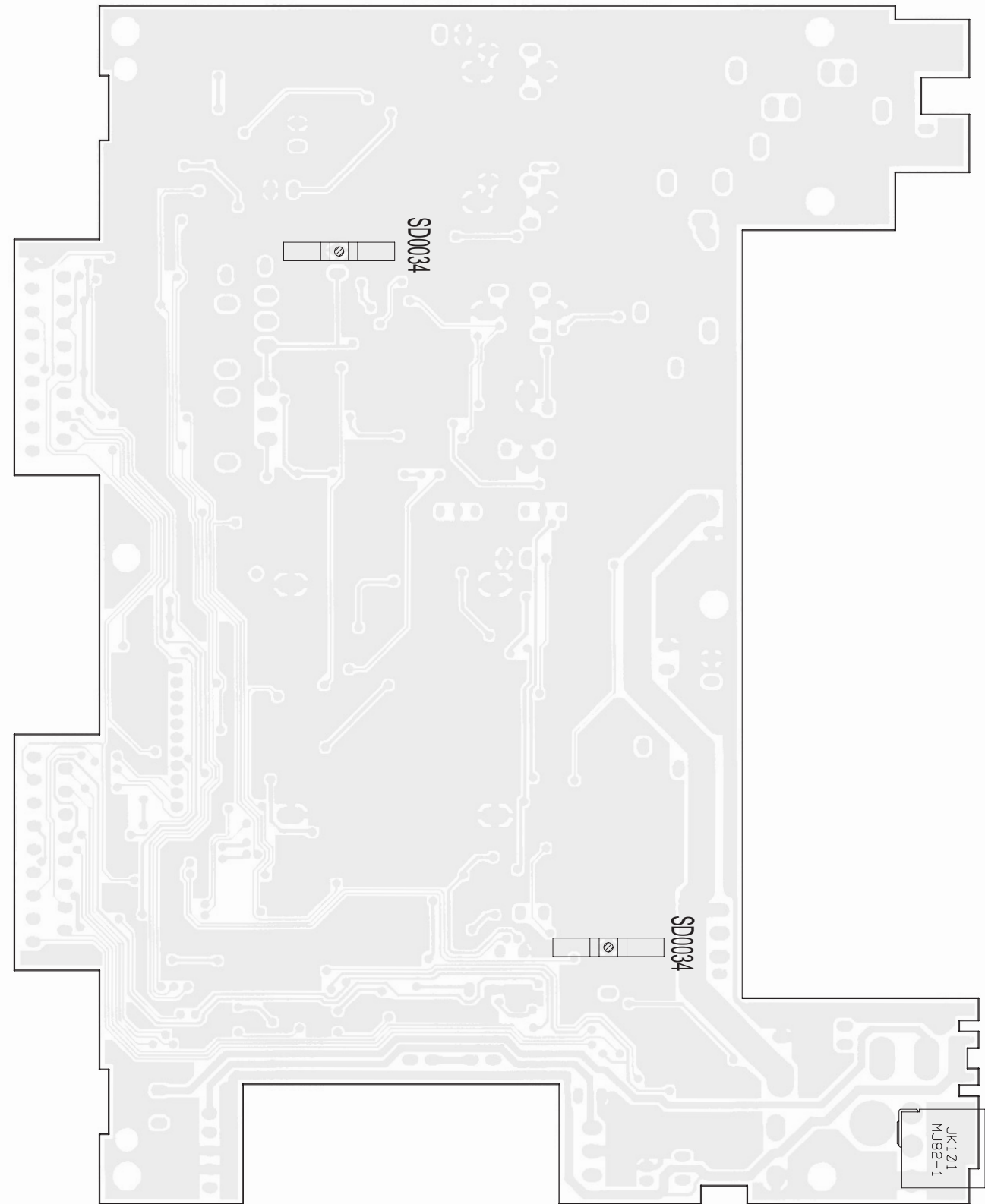


	R13	R15	R16	JP3
DR135TMk2	NC	NC	0	JUMPER
DR135EMk2	0	NC	NC	JUMPER
DR435TMk2	NC	0	0	JUMPER

3) MAIN Unit Side A DR-135 (UP0467A)



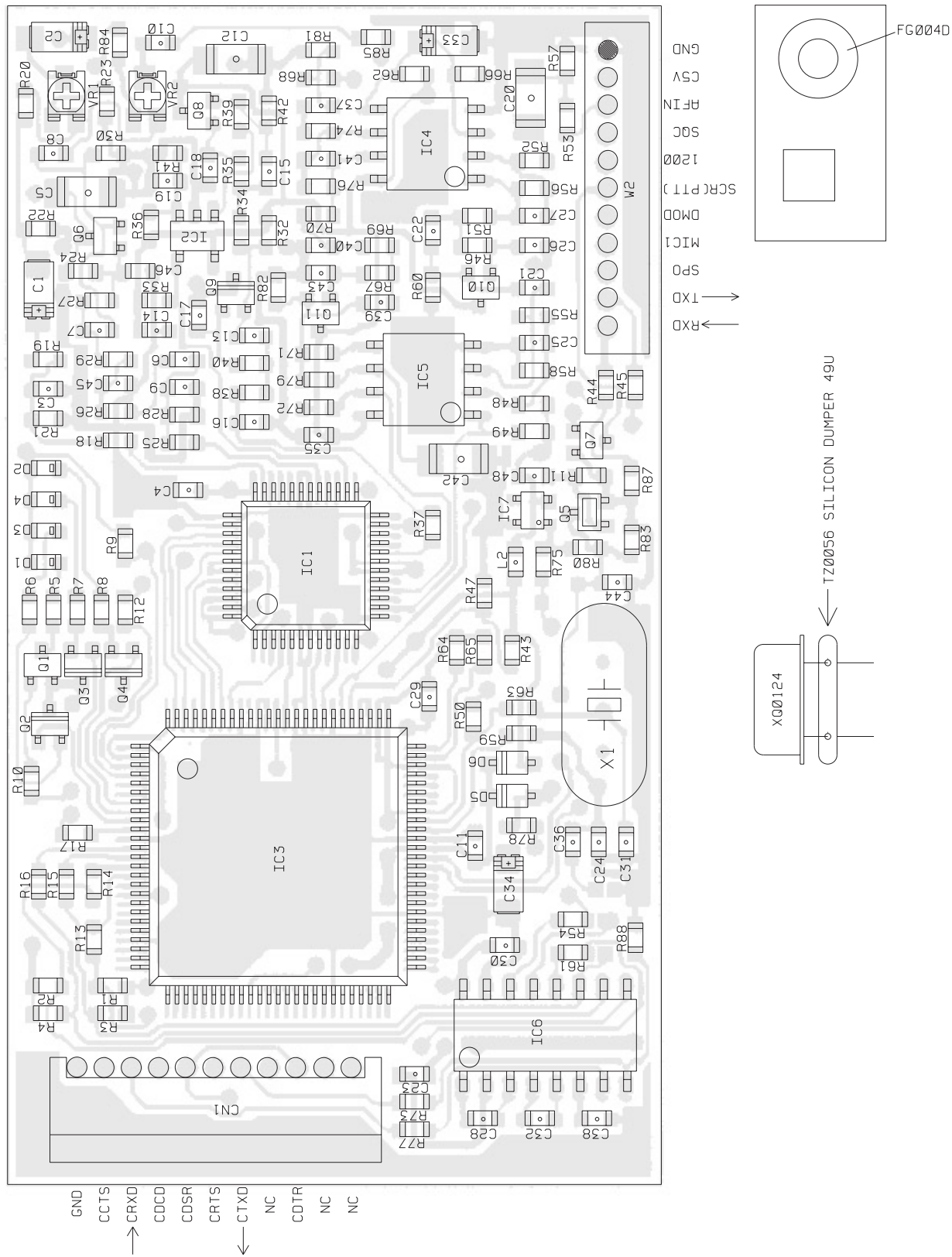
4) MAIN Unit Side B DR-135 (UP0467A)





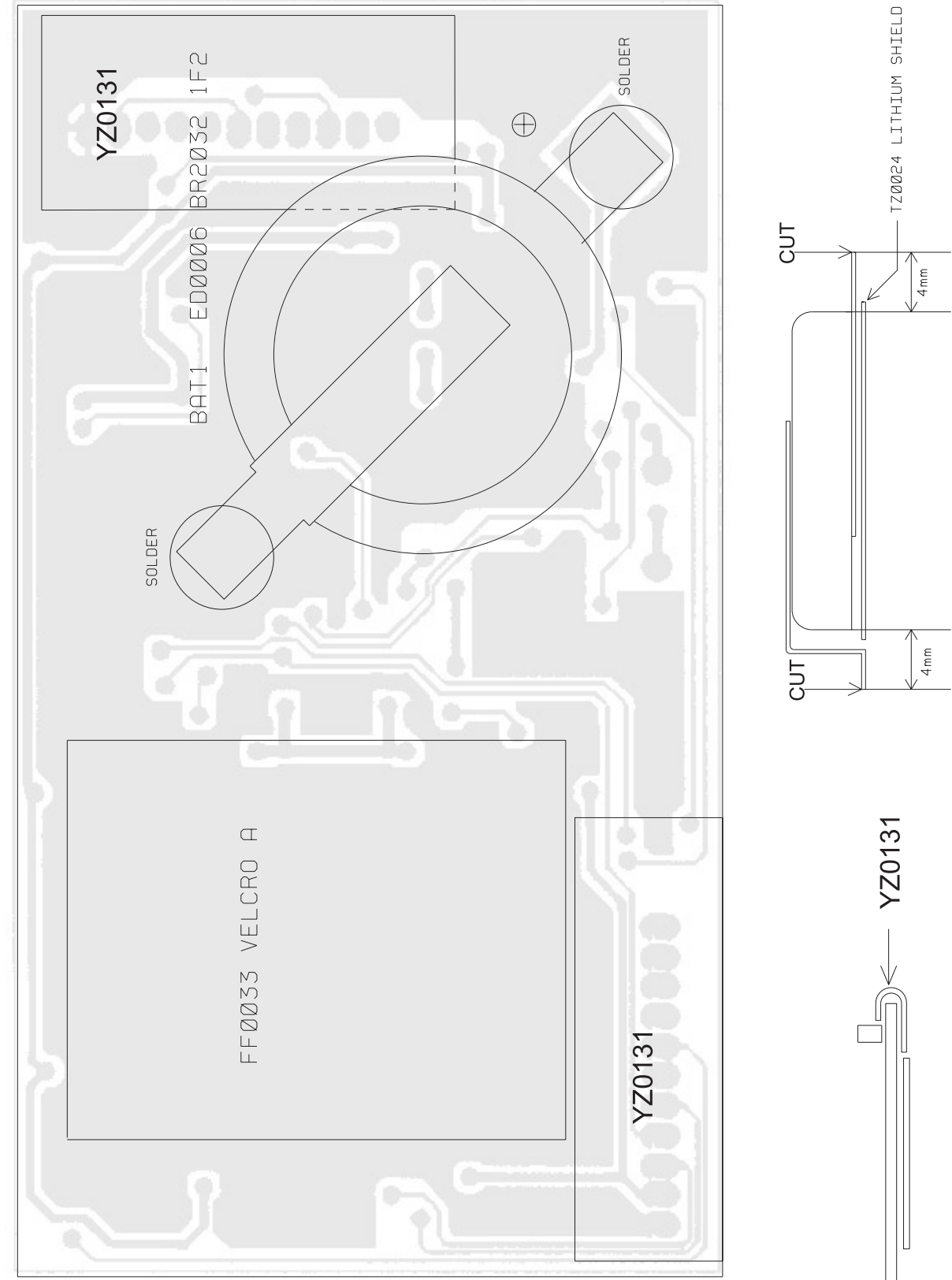
### 7) TNC Unit Side A (UP0402)

OPTION unit (EJ41U)



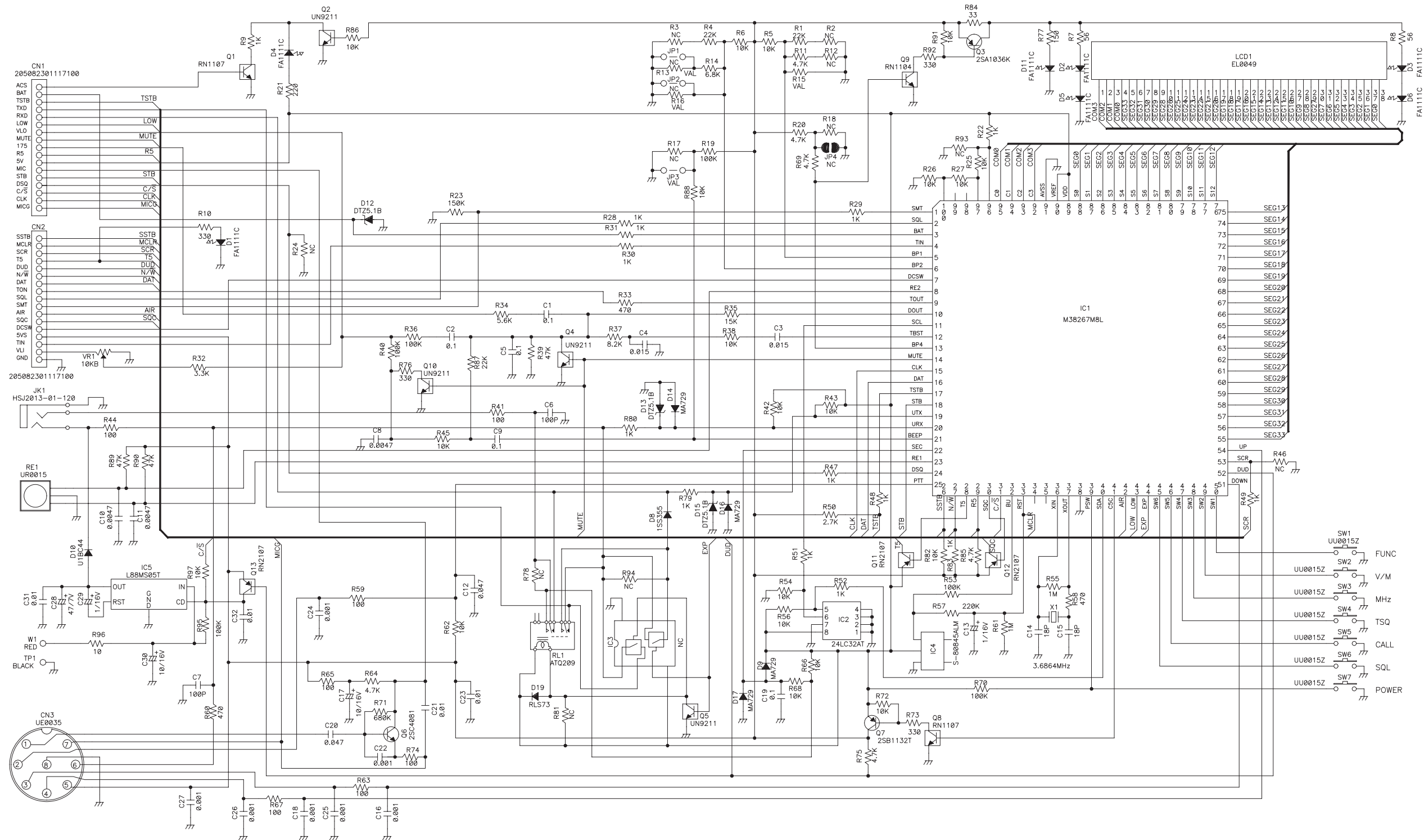
### 8) TNC Unit Side B (UP0402)

OPTION unit (EJ41U)



# SCHEMATIC DIAGRAM

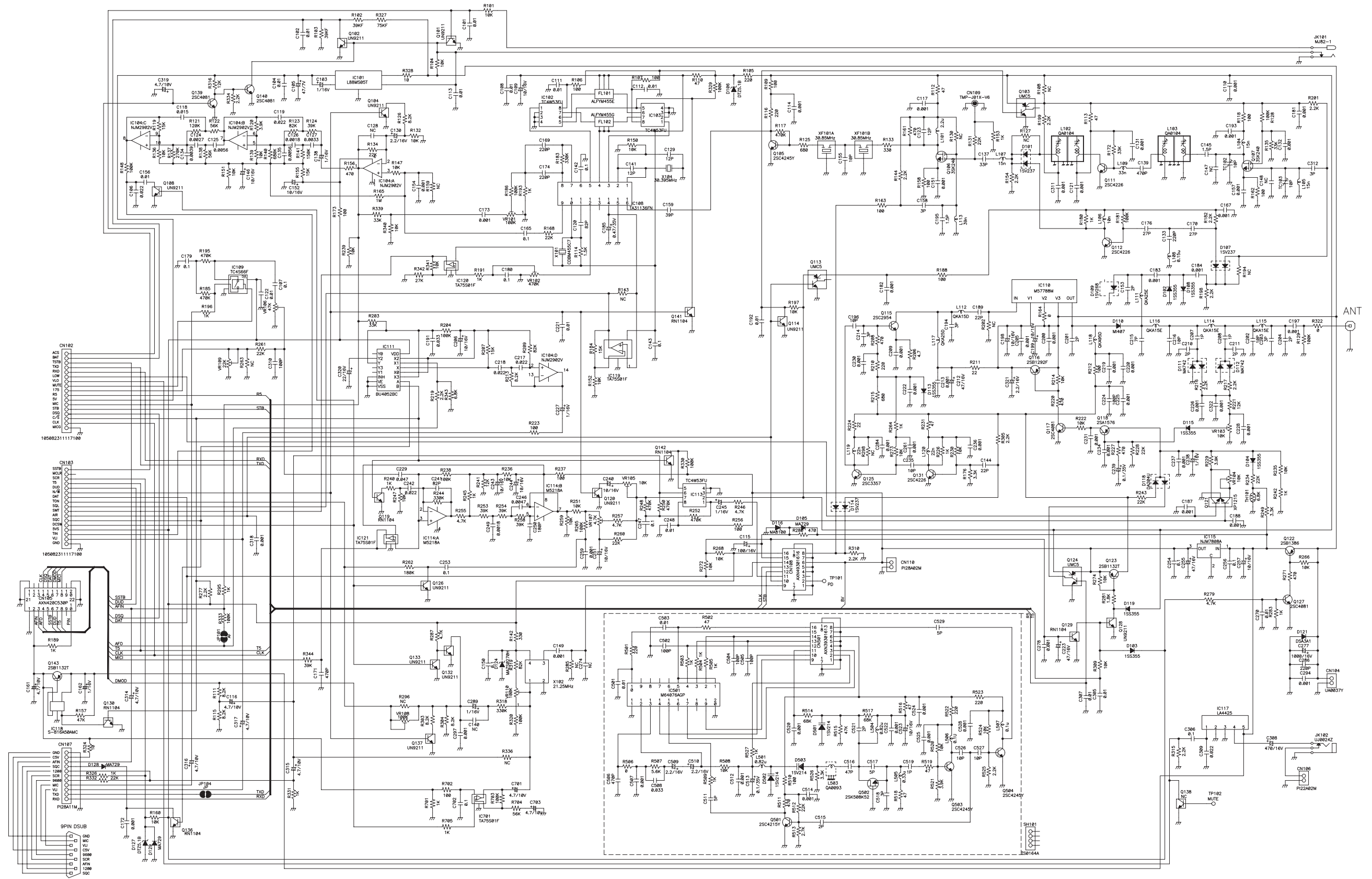
## 1) CPU Unit DR-135 / DR-435



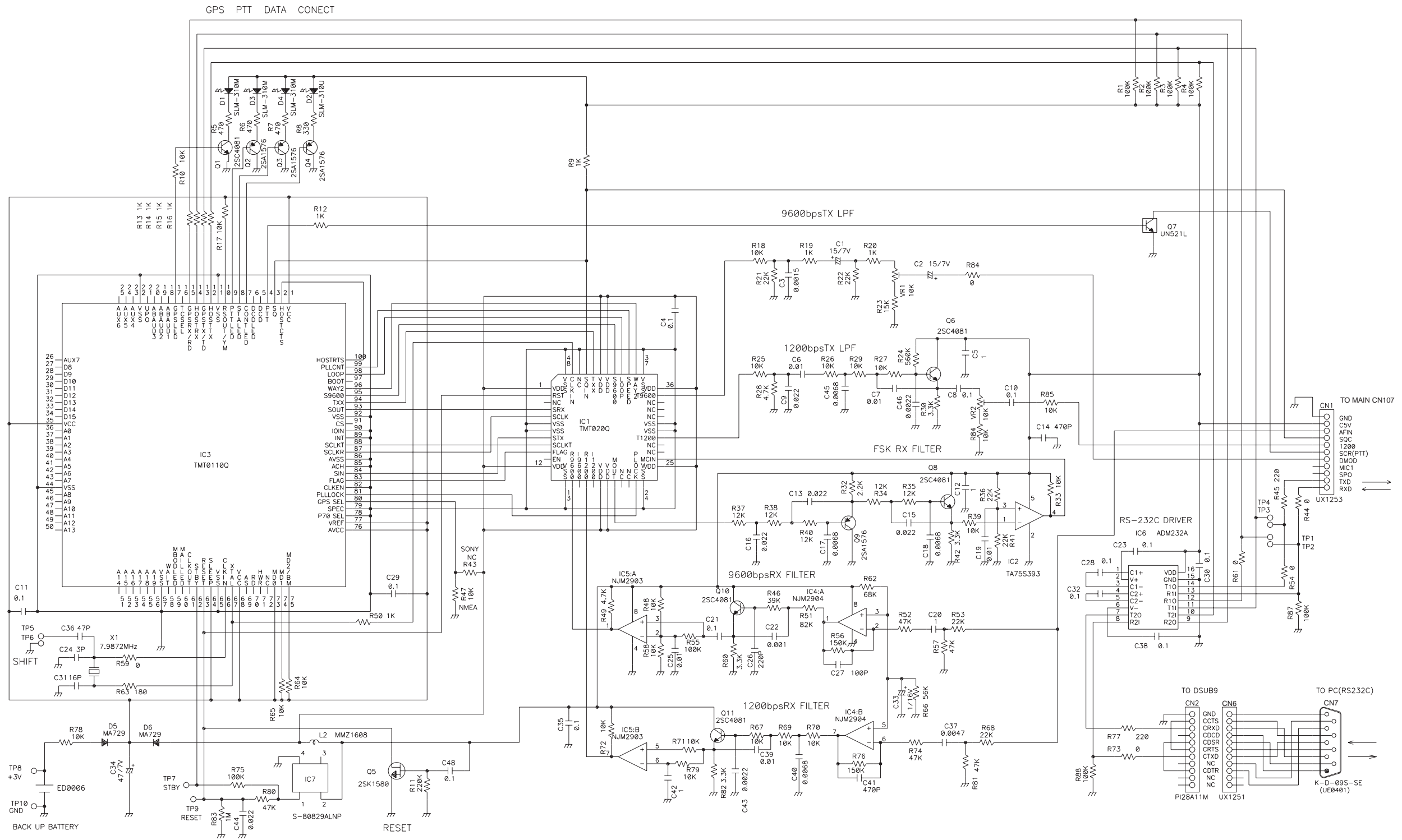
	R13	R15	R16	JP3
DR135Tmk2	NC	NC	0	JUMPER
DR135EMk2	0	NC	NC	JUMPER
DR435Tmk2	NC	0	0	JUMPER



### 3) MAIN Unit DR-435



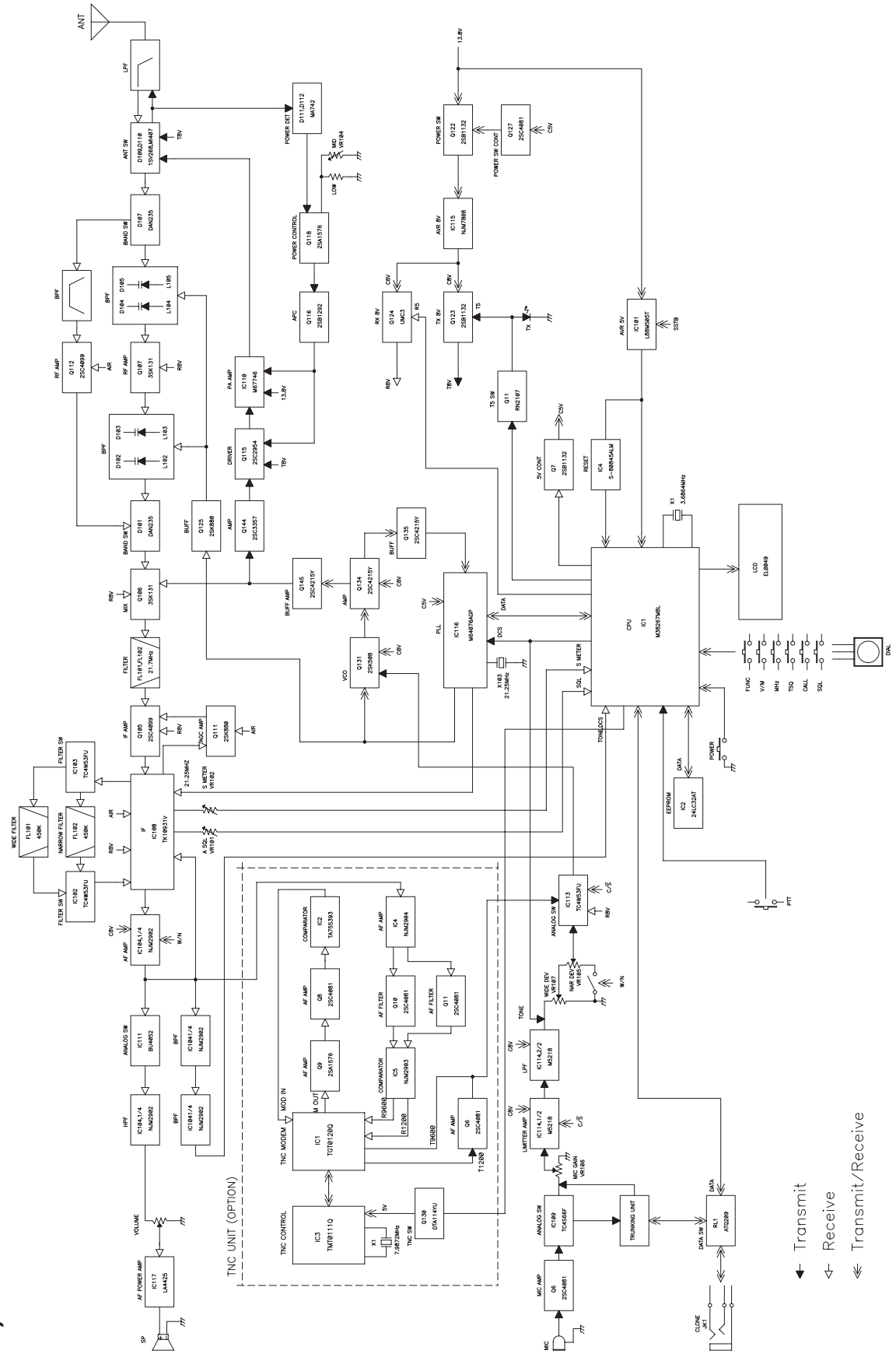
4) TNC Unit  
OPTION unit (EJ41U)





# BLOCK DIAGRAM

## 1) DR-135







# ALINCO, INC.

**Head Office :** Shin-Dai Building 9th Floor  
2-6, 1-Chome, Dojimahama, Kita-ku, Osaka 530-0004, Japan  
Phone: +81-6-4797-2136 Fax: +81-6-4797-2157  
E-mail: [export@alinco.co.jp](mailto:export@alinco.co.jp)

Dealer/Distributor