DR-610T/E Service Manual

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ALINCO ELECTRONICS INC.

SPECIFICATIONS

1) General

Frequency Coverage:	(Version T)	
	VHF BAND	108.000 ~ 173.995MHz (RX)
		420.000 ~ 470.000MHz (RX)
		144.000 ~ 147.995MHz (TX)
	UHF BAND	138.000 ~ 173.995MHz (RX)
		420.000 ~ 470.000MHz (RX)
		438.000 ~ 449.995MHz (TX)
	(Version E)	
	VHF BAND	144.000 ~ 145.995MHz (RX/TX)
		430.000 ~ 439.995MHz (RX)
	UHF BAND	144.000 ~ 145.995MHz (RX)
		430.000 ~ 439.995MHz (RX/TX)
Channel steps:	5, 10, 12.5, 15, 20, 25, 30, 50kHz steps	
Antenna Impedance:	50Ω unbalanced	
Microphone Impedance:	2kΩ unbalanced	
Speaker Impedance:	8Ω unbalanced	
Supply Voltage:	13.8 Volts DC	
Dimensions (Body only):	140mm(W) x 40mm(H) x 162mm(D)	
Weight:	1.1kg (approx.)	

2) Transmitter

Output Power:	VHF BAND	High: 50W / Mid: 10W / Low: 5W (approx.)
	UHF BAND	High: 35W / Mid: 10W / Low: 5W (approx.)
Emission Mode:	F3E (FM), F2E (F2)	
Modulation System:	Reactance Modulation	
Max. Frequency Deviation:	+/ -5kHz	
Spurious Emission:	not more than -60dB	

3) Receiver

Modulation Mode:	F3E (FM), A3E (AM)	
Receiving System:	Double Superheterodyne	
Intermediate Frequency:	VHF BAND	First: 45.1MHz / Second: 455kHz
	UHF BAND	First: 58.3MHz / Second: 455kHz
Sensitivity (12dB SINAD):	Main band: -16dBμ or better, Sub band: -13dBμ or better	
Selectivity:	-6dB: 12kHz or more, -60dB: 28kHz or less	
AF Output:	2.5W or more (5% distortion)	

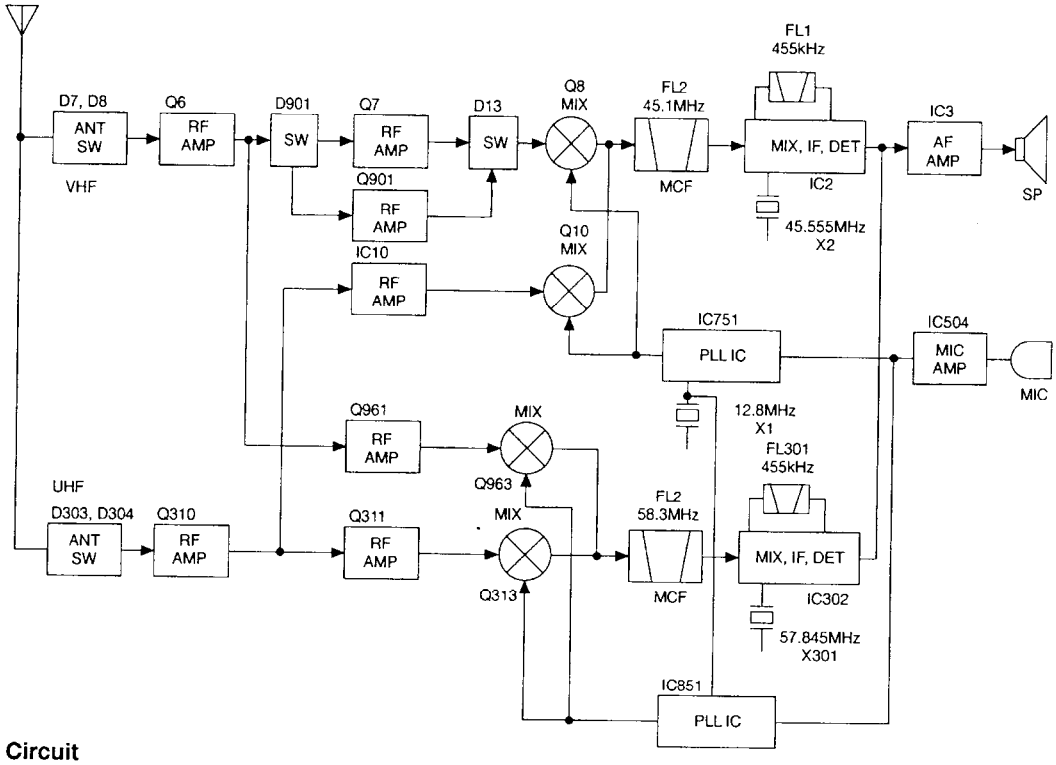
Specifications are subject to change without notice or obligation.
Specifications guaranteed in the amateur band only.

CIRCUIT DESCRIPTION

1. Receiver System

1) Receiver Signal Circuit

The receiver signal from the antenna is passed through the duplexer, the circuit consisting of VHF: Low-pass filter and UHF: high-pass filter, and the signal is divided into VHF and UHF.



144M Band Receiver Circuit

The receiver signal passed through the duplexer is led to the antenna switch (D7, D8). After passing through the high-pass filter, the signal is amplified by RF amplifier,. Q6. The amplified signal is amplified again by RF amplifier Q7, then the unwanted signal will be eliminated by the varicap tuned triple band-pass filter. Secondly the signal is mixed with the signal from the first local oscillator in the first mixer Q8, then converted into the first IF. Its unwanted signal is attenuated in the crystal filter circuit. After amplified by IF amplifier Q25, the signal is led to IC2 Pin24.

The signal is mixed with the signal from the second local oscillator in IC2, then converted into the second IF, and output from Pin3. The output signal is input to the IC2 Pin7 again after unwanted signal is attenuated by the ceramic filter. The signal is led to the limiter amplifier IC2, and demodulated by quadrature circuit in IC2, then the signal is output from Pin12 as the AF signal.

AIR Band Receiver Circuit

The receiver signal passed through the duplexer is led to the antenna switch (D7, D8). After passing through the high-pass filter, the signal is amplified by RF amplifier Q6. The amplified signal is led to the band-pass filter in AIR Front Unit, and amplified by RF amplifier Q901, then output from Pin9.

Secondly the signal is mixed with the signal from the first local oscillator in the first

mixer Q8, then converted into the first IF. Its unwanted signal is attenuated by the crystal filter circuit. After amplified by IF amplifier Q25, the signal is led to IC2, Pin24.

The signal is mixed with the signal from the second local oscillator in IC2, then converted into the second IF, and output from Pin3. The output signal is input to the IC2 Pin5 again after unwanted signal is attenuated by the ceramic filter. Then the second IF is demodulated by AM detector of IC2, and is output from Pin13 as the AF signal.

430M Band Receiver Circuit

The receiver signal passed through the duplexer is led to the antenna switch (D303, D304). The signal is amplified by RF amplifier Q301. The amplified signal is amplified again by RF amplifier Q311 and the unwanted frequency band is eliminated by the helical filter L322, then amplified by the RF amplifier Q312, and after eliminating the unwanted frequency band by the helical filter L323, the signal is mixed with the signal from the first local oscillator in the first mixer Q313, then converted into the first IF. Its unwanted signal is attenuated in the crystal filter circuit. After amplified by IF amplifier Q326, the signal is led to IC302 Pin20.

The signal is mixed with the signal from the second local oscillator in IC302, then converted into the second IF, and output from Pin4. The output signal is input to IC302 Pin6 again after unwanted signal is attenuated by the ceramic filter. The signal is led to the limiter amplifier IC302, and demodulated by quadrature detection circuit, then the signal is output from Pin11 as the AF signal.

144M Band Sub Receiver Circuit

The receiver signal from the antenna is led to the VHF Receiver. After amplified by RF amplifier Q6, the signal is input to the VHF Sub Receiver. Passing through the high-pass filter to attenuate the unwanted signal, the signal is amplified by RF amplifier Q315. The amplified signal is led to the band-pass filter to attenuate the unwanted signal, then mixed with the oscillating frequency from U sub V-VCO in the first mixer Q316, and converted to the first IF of UHF. The first IF is led to IC302.

430M Band Sub Receiver Circuit

The receiver signal from the antenna is led to the UHF Receiver. After amplified by RF amplifier Q310, the signal is input to the UHF Sub Receiver. The signal is amplified again by the RF amplifier IC10 and led to the band-pass filter to attenuate the unwanted signal. Then the signal is mixed with the oscillating frequency from V sub U-VCO in the first mixer Q10, and converted to the first IF of VHF. The first IF is led to IC2.

S (Signal) Meter Circuit

VHF:

The S meter signal, DC voltage of IC 2 Pin16 is passed through variable register VR5. After added to IC601 Pin34, the signal is digitized by AD converter and indicated on LCD as the S meter.

UHF:

The S meter signal, DC voltage of IC 302 Pin12 is passed through variable register VR304. After added to IC601 Pin31, the signal is digitized by AD converter and indicated on LCD as the S meter.

RF Attenuator Circuit

VHF:

When the ATT key is pushed, "H" is output from the Shift Register IC7 Pin14, then Q16 is turned ON to work the RF Attenuator Circuit consisting of D2, D3 and D4. The input signal passed through the Duplexer, Low-pass filter and Antenna switch, is attenuated about 15dB by RF attenuator before input to Q6 to decrease the interference.

UHF:

When the ATT key is pushed, "H" is output from the Shift Register IC305 Pin11, then Q321 and Q318 are turned ON to work the RF Attenuator Circuit consisting of D303 and D313. The input signal passed through the Duplexer, Low-pass filter and Antenna switch, is attenuated about 15dB by RF attenuator before input to Q310 to decrease the interference.

AGC (Auto Gain Control) Circuit

When the input signal is increased while receiving AM, the AGC circuit consisting of Q24 increases the bias current according to the climb of the DC voltage from IC2 Pin16 to decrease the power gain. (Forward AGC)

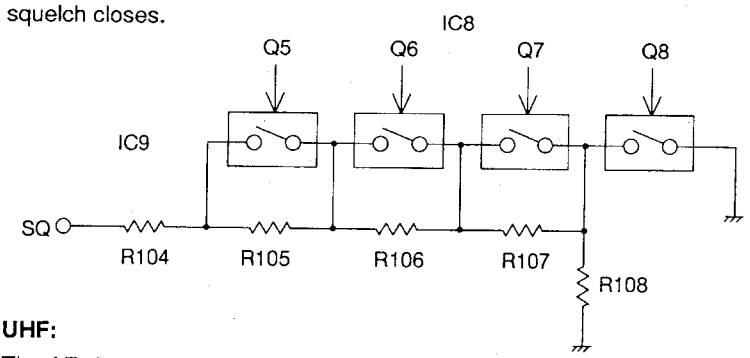
2) Squelch Circuit

VHF:

The AF signal output from IC2 Pin12 is input to Pin19. Only the noise is amplified by the active filter in IC2, and output from Pin20, then amplified by the Noise amplifier Q27. The amplified noise is rectified to DC voltage by D20 and input to Pin21. The input voltage is determined by the analogue switch IC9 depending on the position of the Squelch VR.

In case that Squelch VR is set to MIN, all of the analogue switches in IC9 are turned ON, and the voltage of Pin21 decreases. Secondly the voltages are compared in IC2. The squelch signal (SDV) from Pin21 becomes "L" and the squelch opens.

In case that Squelch VR is set to MAX, all of the analogue switches in IC9 are turned OFF, and the voltage of Pin21 increases. Secondly the voltages are compared in IC2, the Squelch signal (SDV) from Pin21 becomes "H", and the squelch closes.

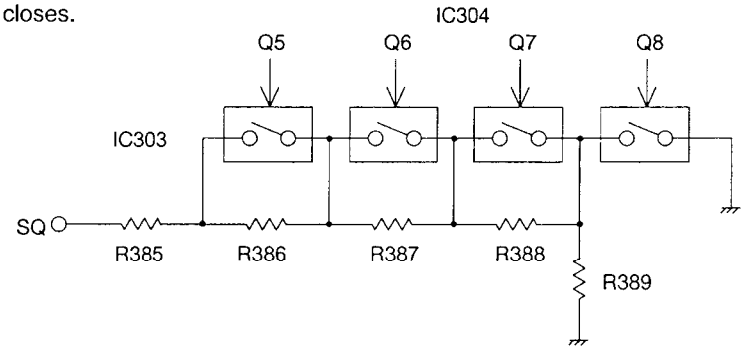


UHF:

The AF signal output from IC302 Pin11 is input to Pin13. Only the noise is amplified by the active filter in IC2, and output from Pin14, then amplified by the Noise amplifier Q325. The amplified noise is rectified to DC voltage by D315 and input to Pin15. The voltage is determined by the analogue switch IC303 depending on the position of the Squelch VR.

In case that Squelch VR is set to MIN, all of the analogue switches are turned ON, and the voltage of Pin15 decreases. Secondly the voltages are compared in IC2.

The Squelch signal (SDV) from Pin16 becomes "L" and the squelch opens.
In case that Squelch VR is set to MAX, all of the analogue switches in IC9 are turned OFF, and the voltage of Pin15 increases. Secondly the voltage are compared in IC2, the Squelch signal (SDV) from Pin21 becomes "H", and the squelch closes.



3) Power Supply Circuit

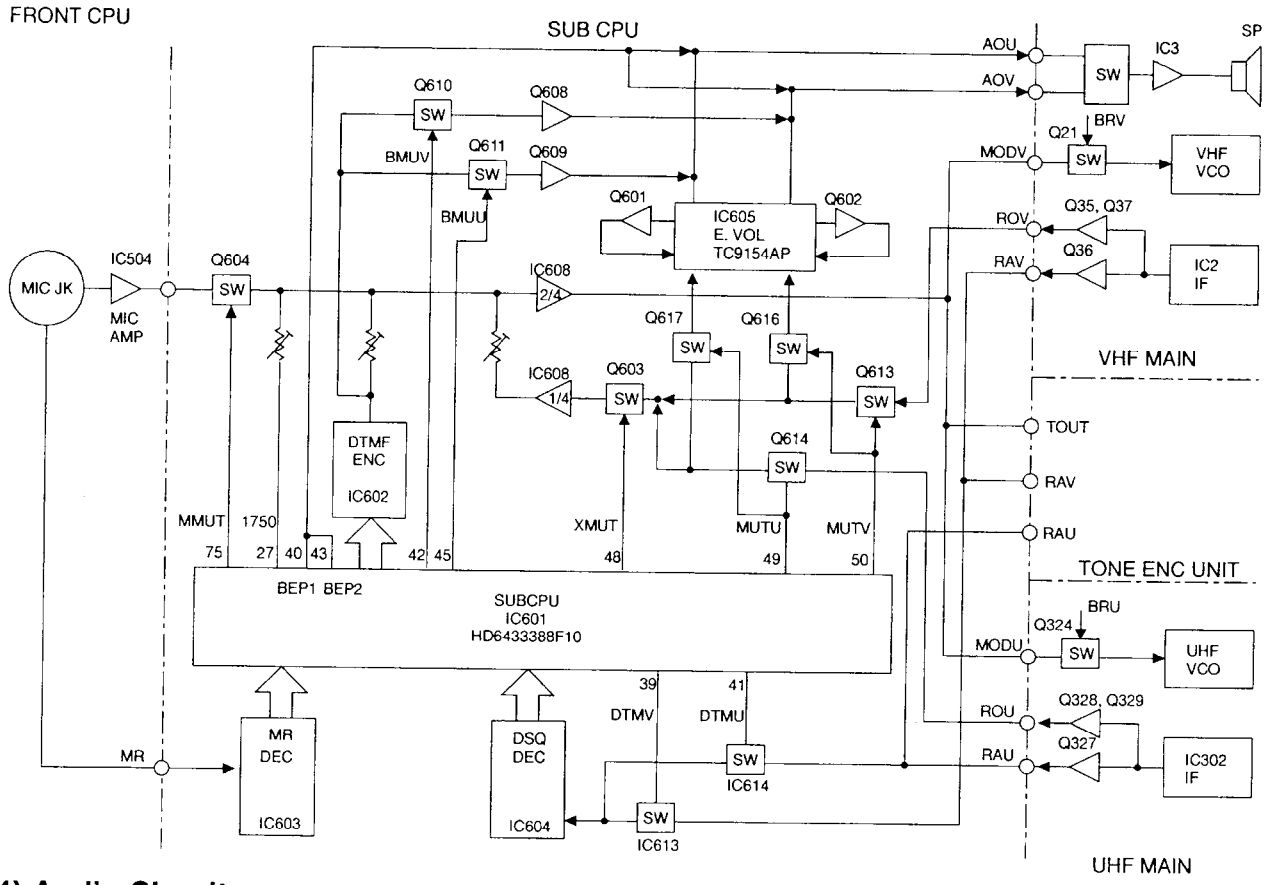
VHF Power Supply Switch Circuit and Unlock Circuit

In the receiving mode, "H" is output from Pin4 of Shift Register IC8 according to the serial data from CPU, and Q30 and Q29 are turned ON, then 8V is added to 8RV line.
In the transmitting mode, just same as receiving , "H" is output from Pin5 of IC8, and Q32 and Q31 are turned ON, then 8V is added to 8TV line.
When PLL is unlocked, the unlock switch Q38 is turned ON because "H" is output from PLL-VCO unit UL terminal. Then 8TV switch Q32 is turned OFF.
Accordingly the transmitting is enable when PLL is unlocked because 8TV line does not work.

UHF Power Supply Switch Circuit and Unlock Circuit

In the receiving mode, "H" is output from Pin4 of Shift Register IC304 according to the serial data from CPU, and Q332 and Q330 are turned ON, then 8V is added to 8RV line.
When transmitting the signal, just same as receiving , "H" is output from Pin5 of IC304, and Q333 and Q331 are turned ON, then 8V is added to 8TV line.
The Unlock Switch Q334 is turned ON when PLL is unlocked, because "H" is output from PLL-VCO unit UL terminal, and 8TV Switch Q333 is turned OFF.
Accordingly the transmitting is enable when PLL is unlocked because 8TV line does not work.

AF Signal Circuit



4) Audio Circuit

VHF FM:

The AF signal output from IF unit IC2 Pin12 is made the AF frequency characteristics 3kHz or below by the de-emphasis circuit (consisting of R112, C165, R128, C170, R171 and C171), then amplified by AF preamplifier Q35.

The amplified signal is made the AF frequency characteristics 300 Hz or more by the de-emphasis circuit (consisting of Q37, R138, C174, R139 and C175).

The de-emphasized AF signal ROV is muted in the sub control unit, and after the signal is adjusted by electronic volume IC 605, added to AF power amplifier IC3 Pin2 as AOV to drive the speaker, then the signal is amplified.

VHF AM:

The AF signal output from IF unit IC302, Pin13 is made the AF frequency characteristics 3kHz or below by the de-emphasis circuit (consisting of R110, C163, R111, C229 and C164), and amplified by the AM amplifier Q34.

Then the signal is processed just same as the FM.

UHF:

The AF signal output from IF unit IC302, Pin11 is made the AF frequency characteristics 3kHz or below by the de-emphasis circuit (consisting of R392, C433, R406, C449, R413 and C448), then amplified by AF preamplifier Q328.

The amplified signal is made the AF frequency characteristics 300 Hz or more by the de-emphasis circuit (consisting of Q329, R409, C451, R412 and C452).

The de-emphasized AF signal ROU is muted by the sub control unit, and after the signal is adjusted by electronic volume IC 605, added to AF power amplifier IC3 Pin5 as AOU to drive the speaker, then the signal is amplified.

AF Mute Circuit

VHF:

When the squelch is closed during no signal, two mute switches Q613 and Q616 are turned ON by the signal from IC 601 Pin50, then the voice output is muted.

UHF:

When the squelch is closed during no signal two mute switches Q614 and Q617 are turned ON by the signal from IC 601 Pin49, then the voice output is muted.

Electronic Volume Circuit

VHF:

The muted AF signal ROV is added to the electronic volume IC605 Pin3. The added signal is attenuated in10dB steps from 0 to -60dB. There are 7 steps from 0 to -60dB to attenuate the signal. The signal is output from Pin2. The output signal is amplified by the amplifier Q601 and added to IC605 Pin5 again. The signal is attenuated in 2dB steps. There are 5 steps from 0 to 8dB to attenuate the signal. The signal is output from Pin6.

The attenuation level is controlled by the serial data from CPU IC601 after the VR502 register value is changed to the voltage and converted to A/D.

UHF:

The muted AF signal ROU is added to the electronic volume IC605 Pin14. The added signal is attenuated in10dB steps from 0 to -60dB. There are 7 steps from 0 to -60dB to attenuate the signal. The signal is output from Pin15. The output signal is amplified by the amplifier Q602 and added to IC605 Pin12 again. The signal is attenuated in 2dB steps. There are 5 steps from 0 to 8dB to attenuate the signal. The signal is output from Pin11.

The attenuation level is controlled by the serial data from CPU IC601 after the value of VR501 register is changed to the voltage and converted to A/D.

Speaker Output Switching Circuit

The AF signals, AOV (VHF) and AOU (UHF) are passed through the analogue switch IC5, and mixed. The signal is added to the audio power amplifier IC3 Pin5, then amplified. In this time, the voices of VHF and UHF bands are output from the speaker simultaneously.

2. Transmitter System

1) Modulator Circuit VHF/UHF

After the voice is converted into the electric signal by the microphone, the signal is led to the microphone amplifier IC504. IC 504 consists of two operational amplifiers including the pre-emphasis circuit.
The amplified voice signal is added to the IDC circuit of operational amplifier.
The frequency deviation can be adjusted in VR3(VHF), or VR305(UHF). The signal is added to VCO varicap for reactance modulation of VHF/UHF.

2) Drive/PA Amplifier Circuit

VHF

The transmitting signal from VCO of VHF band is amplified by the younger amplifiers Q1 and Q2, then input to the power module IC1. The transmitting signal amplified to the desired level in IC1, is passed through the low-pass filter, antenna switch, and high-pass filter in the duplexer to attenuate the second and third harmonics enough, then supplied to the antenna.

UHF:

The transmitting signal from VCO of UHF band is amplified by the younger amplifiers Q301, Q302 and Q303, then input to the power module IC301. The transmitting signal amplified to the desired level in IC301 is passed through the low-pass filter, antenna switch, and high-pass filter in the duplexer to attenuate the second and third harmonics enough, then supplied to the antenna.

3) APC Circuit

VHF:

A part of transmitting power from low-pass filter is detected by Diodes D1 and D2. Its detection voltage is passed through the APC circuit of UHF (Q307, Q308 and Q309) and controls the APC voltage supplied to the younger amplifier Q1 of VHF and the power module IC1 to fix the output power.

UHF:

A part of transmitting power from low-pass filter is detected by Diode D301 and D302. Its detection voltage is passed through the APC circuit of UHF (Q307, Q308 and Q309) and controls the APC voltage supplied to the younger amplifier Q301 of VHF and the power module IC301 to fix the output power.

4) Air-Cooled Fun Power Control Circuit

The air-cooled fun is built-in to cool the heat sink. When the PTT is turned ON, Q335 is also turned ON simultaneously. Then the fun turns at a high speed.
When the PTT is turned OFF, "H" is output from IC304 Pin7, Q335 is turned ON, then the fun turns at a low speed.
The temperature switch TS1 is installed. When the temperature in the unit goes up over 95°C, the thermal relay opens, and Q40 is turned ON. Also Q4(VHF) and Q305(UHF) are turned OFF, and the unit is set to low-power even while transmitting at HI or MID power.

3. PLL Circuit

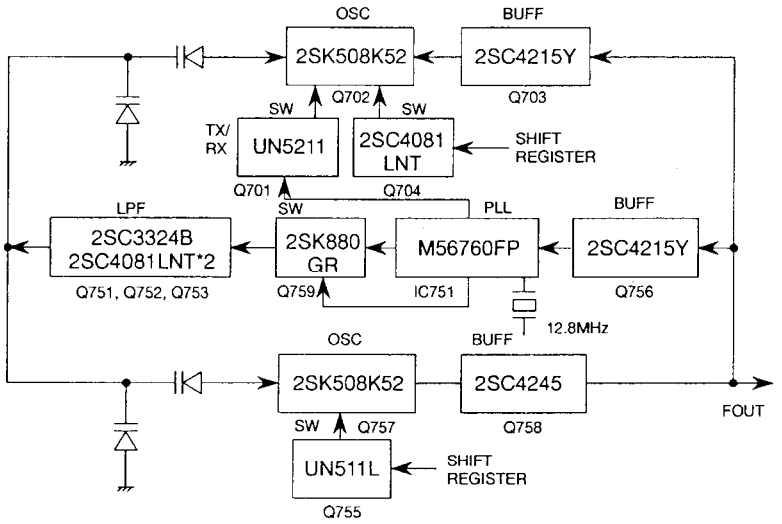
1) PLL Synthesizer Circuit

VHF and UHF bands have their own units isolatedly. The sub unit has the dual construction consisting of VCO in the upper place and PLL in the lower place. Both of the sub units are packed in a hard shield case so as not to be influenced by the circumstances.

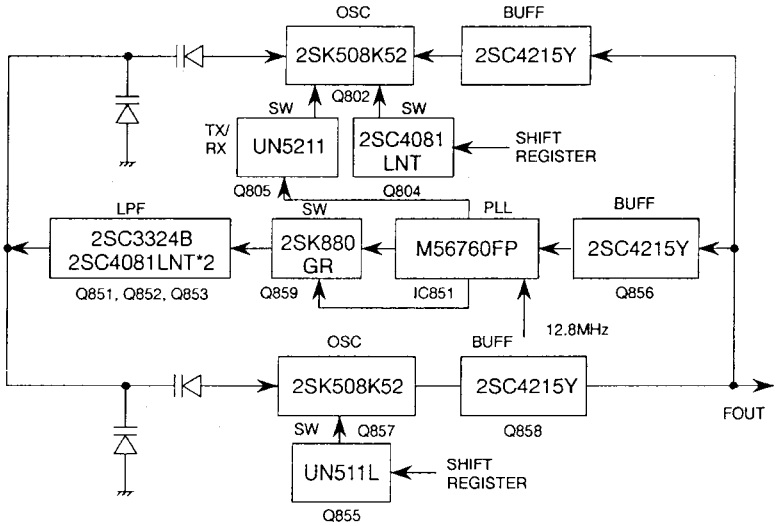
The crystal X1 of 12.8MHz is oscillated in IC751 (VHF), the output is led to Q22, and the output of Q22 is added to IC851 (UHF).

The reference oscillating frequency is divided in IC751 and IC851 to get the reference frequency of 5kHz or 6.25kHz.

The comparison frequency is divided by the PLL of pulse swallow system, IC751 and IC851 after the VCO output is amplified in Q703 (VHF) and Q803 (UHF). The reference frequency of 5, 10, 12.5, 15, 20, 25, 30, 50kHz steps can be obtained by dividing X1.



144MHz PLL-VCO BlockDiagram



430MHz PLL-VCO BlockDiagram

2) V-VCO Circuit

SW Q704 is turned ON, and the desired frequency is oscillated directly in Colpitts oscillating circuit consisting of FET Q757. VCO control voltage is added to the varicaps D702 and D703, and the oscillating frequency is tuned.
SW2 becomes "H" while receiving, and Q701 and D701 are turned ON to shift the oscillating frequency.

3) V Sub U-VCO Circuit

SW Q755 is turned ON, and the desired frequency is oscillated directly in Colpitts oscillating circuit consisting of FET 757. VCO control voltage is added to the varicaps D751 and D752, and the oscillating frequency is tuned.
(Q704 is turned OFF in 144MHz band, and the oscillation is stopped.)

4) U-VCO Circuit

SW Q804 is turned ON, and the desired frequency is oscillated directly in Colpitts oscillating circuit consisting of FET Q802. VCO control voltage is added to the varicaps D802 and D803, and the oscillating frequency is tuned.
SW2 becomes "L" while receiving, and Q801 and D801 are turned OFF to switch the oscillating frequency.

5) U Sub V-VCO Circuit

SW Q855 is turned ON, and the desired frequency is oscillated directly in Colpitts oscillating circuit consisting of FET Q857. VCO control voltage is added to the varicaps D851 and D852, and the oscillating frequency is tuned.
(Q804 is turned OFF in 430MHz band, and the oscillation is stopped.)

6) Shift SW (SW1) Circuit

When PTT is turned ON, SW1 of PLL IC becomes "H" momentarily, and the switch Q759(VHF) or Q859(UHF) is turned ON.
The constant of LPF is changed and the lockup time from receiving to transmitting is shorten .

4. Front CPU and Peripheral Circuit

1) Reset Circuit

When B power supply is turned ON, "L" pulse of about 40ms is output from IC503 with Reset Function Pin4, and CPU IC501 is reset.
When B power supply is turned OFF, the decreasing of 5V line is detected in IC503. The output is shifted from "H" to "L" level.

2) Microphone Key Input Circuit

When the switch(PTT, UP or DOWN) on the microphone is turned ON, "L" level is input to CPU IC501 simultaneously.

3) LCD Display Circuit

LCD display circuit consists of LCD driver IC502, its peripheral circuit and LCD.
The lighting mode is dynamic lighting of 1/3 duty and 1/3 bias, and the serial data of the content is transmitted to the LCD driver from V1~V5 of IC501.

4) Lighting and Dimmer Circuit

Soon after the power is turned ON, "H" is output from IC501 Pin85 (PSWO) and P25 (LED1), and the LED for key lighting (green) and the LED for LCD back lighting (green) are lit.
When the F key is pushed, "L" is output from IC501 Pin25, and the LED (green) is turned OFF, then "H" is output from Pin26 (LED2) and the LED for key lighting (orange) is turned ON. Also when the Band switch is pushed, the LED of the band which can be transmitted is lit green. The LED changes from green to red while transmitting (dual colored LED).
When the Dimmer Switch is turned ON, CPU IC501 Pin81 (DIM) changes from "H" to "L" normally, and Q507 and Q508 are turned OFF. Accordingly the current is controlled to dim the LED D501~D508.

5. Sub CPU and Peripheral Circuit

1) Reset and Backup Circuit

When B power supply is turned ON, "L" pulse of about 20ms is output from IC612 (equipped with Reset Function) Pin4, and CPU IC601 is reset.
When B power supply is turned OFF, the decreasing of 5V line is detected in IC503. The output is shifted from "H" to "L".
Also when power supply B is turned OFF, IC601 Pin80 (BU) becomes "L", and the unit enters into the Backup Mode.
The contents of the memory is written on E2PROM IC610 in the Backup Mode.

2) Beep Sound Output Circuit

The square pulse is output from CPU IC601, Pin40 (BEP1), and Pin43 (BEP2), then the signal is integrated by CR to obtain the sine wave.

3) DTMF Decoder Circuit

VHF:
A part of AF signal (RAV) from IC2 Pin12 is controlled by CPU IC601, and input to DTMF decoder IC604 Pin7.
The input signal is judged whether available or not by the signal judge circuit in IC604. Then the judged signal is converted to 4-bit code, and sent to IC601.
UHF:
A part of AF signal (RAU) from IC302 Pin11 is controlled by CPU IC601 to input to DTMF decoder IC604 Pin7.
The input signal is judged whether available or not by the signal judge circuit in IC604. Then the judged signal is converted to 4-bit code, and sent to IC601.

4) Microphone Remote Control Circuit

The DTMF signal from the microphone (MR) is input to DTMF decoder IC603 Pin7.
The input signal is judged whether available or not by the signal judge circuit in IC604. Then the judged signal is converted to 4-bit code, and sent to IC601.

5) DTMF Encoder Circuit

DTMF encoder IC602 generates the audio sine wave (based on the 4-bit data from IC601), and synthesizes the signal which is applied for the DTMF dialing and outputs the signal from Pin14.
After the level of DTMF signal is adjusted by the variable register VR602, amplified by IC608. The amplified signal is added to each varicap of VCO for modulation. At the same time the monitor sound is passed through the AF circuit, and output from the speaker.

6) Cross Band Repeater Circuit

In the Cross Band Repeater Mode, Q603 in Cross Band Mute Circuit is turned OFF, and the AF signal is connected to the Modulation Circuit.
When the squelch of VHF is opened, the AF signal ROV (VHF) is unmuted. Then after the level of signal is adjusted by the variable register VR603, it is amplified by IC608. The amplified modulation signal is added to the varicap for the modulation of UHF VCO, then UHF enters into the transmitting mode.
When the squelch of UHF is opened, the AF signal ROU (UHF) is unmuted. Then after the level of signal is adjusted by the variable register VR603, it is amplified by IC608. The amplified modulation signal is added to the varicap for the modulation of VHF VCO, then VHF enters into the transmitting mode.

7) Tone Burst Output Circuit

While pressing the Tone Burst key, the square pulse is output from CPU IC601, Pin27 (1750), then the wave is integrated by CR to obtain the sine wave. After the level of the signal is adjusted by the variable register VR601. The signal is amplified by IC608. Then it is added to each varicap for modulation of VCO.

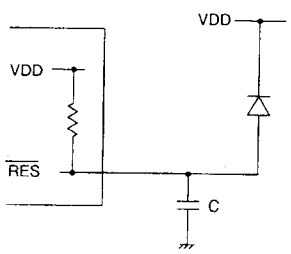
6. CTCSS Tone Encoder Circuit

1) Reset Circuit

The CPU is initialized by setting the RES terminal to "L" for 10msec or more because the oscillation of the CPU is unstable just after the power is ON.

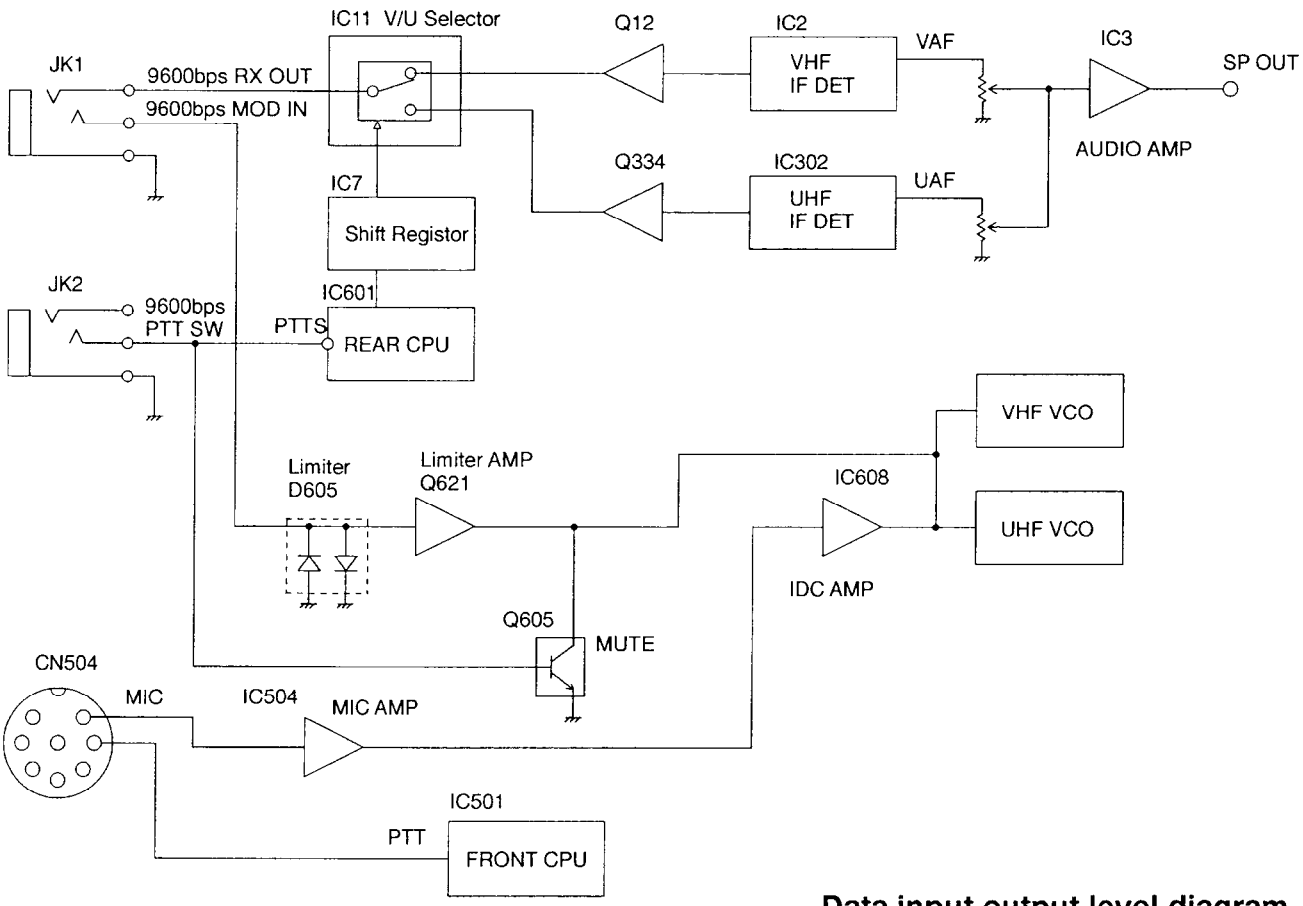
2) Tone Generating Circuit

The mimic sine wave is output from IC981 Pin10~13, and converted to the analogue wave by the ladder register to get 50 waves within 67.5~254.1.
After amplified by Q981, the tone signal is output to TOUT terminal.



7. Packet Circuit

1200bps mode is the normal packet equipped with the squelch control.
The modulation signal input from the front MIC connector CN504 is amplified by microphone amplifier of IC504, and led to IDC circuit, then VCO is modulated.
As for the receiving signal, squelch controlled AF signal is output from SPOUT.
9600bps mode is used for 9600bps GMSK/G3RUH Packet communication.
The modulation signal is input from rear jack, and the signal is limited in D504, Q621, the VCO is modulated directly without passing the IDC circuit.
As for the receiving signal, FM demodulated signal output is input to the V/U selector of IC11 passing through the buffer of Q12 and Q334.
The V/U selector is controlled by the control signal of CPU so that the detection output is led to JK1.



Data input output level diagram

	1200bps	9600bps
Input level	10mVp-p	2Vp-p
Deviation	3.5+/-0.5kHz	2+/-0.5kHz
Output level	0~5Vrms/8Ω Variable	300mVp-p/47kΩ

8) Front CPU I/O Port (IC501)

No.	Pin Name	Function	I/O	Logic	Description
1	PC3/AN11	-	-	-	-
2	AVSS	GND	I	-	-
3	TEST	-	I	-	-
4	X2	-	O	-	-
5	X1	-	I	-	-
6	VSS	GND	I	-	-
7	OSC1	OSC1	I	-	System clock
8	OSC2	OSC2	O	-	System clock
9	RES	RES	I	-	CPU reset
10	MDO	MDO	I	-	(Mode terminal)
11	P20/IRQ4/ADTRG	FUP	I	Active Low	Microphone up key input
12	P21/UD	FDN	I	Active Low	Microphone down key input
13	P22	PTT	I	Active Low	PTT key input
14	P23	FUNC	I	Active Low	Function key input
15	P24	LM	I	Active Low	LM key input
16	P25	SRCH	I	Active Low	Search key input
17	P26	SCAN	I	Active Low	Scan key input
18	P27	TSQ	I	Active Low	TSQ key input
19	P30/SCK1	RPT	I	Active Low	RPT key input
20	P31/SI1	REV	I	Active Low	REV key input
21	P32/SO1	CALL	I	Active Low	CALL key input
22	P33/SCK2	MHZ	I	Active Low	MHz key input
23	P34/SI2	MR	I	Active Low	MR key input
24	P35/SO2	VFO	I	Active Low	VFO key input
25	P36/STRB	LED1	I	Active High	Key illumination LED ON
26	P37/CS	LED2	I	Active High	Key illumination while FUNC key is pressed.
27	VSS	-	I	-	-
28	V3	V3	I	-	LCD power supply
29	V2	V2	I	-	LCD power supply
30	V1	V1	I	-	LCD power supply
31	VCC	-	I	-	-
32	PA3/COM4	NC	I	-	-
33	PA2/COM3	COM3	O	-	LCD common output 3
34	PA1/COM2	COM2	O	-	LCD common output 2
35	PA0/COM1	COM1	O	-	LCD common output 1
36	P50/WKP0/SEG1	NC	-	-	-
37	P51/WKP1/SEG2	NC	-	-	-
38	P52/WKP2/SEG3	NC	-	-	-
39	P53/WKP3/SEG4	NC	-	-	-
40	P54/WKP4/SEG5	NC	-	-	-
41	P55/WKP5/SEG6	NC	-	-	-
42	P56/WKP6/SEG7	NC	-	-	-
43	P57/WKP7/SEG8	NC	-	-	-
44	P60/SEG9	NC	-	-	-
45	P61/SEG10	NC	-	-	-
46	P62/SEG11	NC	-	-	-
47	P63/SEG12	NC	-	-	-
48	P64/SEG13	NC	-	-	-
49	P65/SEG14	NC	-	-	-
50	P66/SEG15	NC	-	-	-

No.	Pin Name	Function	I/O	Logic	Description
51	P67/SEG16	NC	-	-	-
52	P70/SEG17	NC	-	-	-
53	P71/SEG18	NC	-	-	-
54	P72/SEG19	NC	-	-	-
55	P73/SEG20	NC	-	-	-
56	P74/SEG21	NC	-	-	-
57	P75/SEG22	NC	-	-	-
58	P76/SEG23	NC	-	-	-
59	P77/SEG24	NC	-	-	-
60	P80/SEG25	NC	-	-	-
61	P81/SEG26	NC	-	-	-
62	P82/SEG27	NC	-	-	-
63	P83/SEG28	NC	-	-	-
64	P84/SEG29	NC	-	-	-
65	P85/SEG30	NC	-	-	-
66	P86/SEG31	NC	-	-	-
67	P87/SEG32	NC	-	-	-
68	P90/SEG33	NC	-	-	-
69	P91/SEG34	NC	-	-	-
70	P92/SEG35	NC	-	-	-
71	P93/SEG36	NC	-	-	-
72	P94/SEG37/M	M	O	-	LCD driver AC signal
73	P95/SEG38/DO	DO	O	-	LCD shift resistor output
74	P96/SEG39/CL2	CL2	O	-	LCD shift resistor shift signal
75	P97/SEG40/CL1	CL1	O	-	LCD data latch signal
76	VCC	-	I	-	-
77	P10/TMOW	UPT	O	Active High	TX band display
78	P11/TMOFL	UTX	O	Active High	TX lamp output
79	P12/TMOFH	VTX	O	Active High	TX lamp output
80	P13/TMIG	VPT	O	Active High	TX band display
81	P14/PWM	DIM	O	Active High	Lamp dimmer control
82	P15/IRQ1/TMIB	PSW	I	Positive edge	Power switch input
83	P16/IRQ2/TMIC	ENC1	I	Active Low	Rotary encoder Up input
84	P17/IRQ3/TMIP	ENC2	I	Active Low	Rotary encoder Down input
85	P40/SCK3	PSWO	O	Active High	Front unit 5V power switch
86	P41/RXD	RXD	I	Pulse	Serial communication receiving data
87	P42/TXD	TXD	O	Pulse	Serial communication transmitting data
88	P43/IRQ0	NC	I	-	-
89	AVCC	GND	I	-	A/D power supply
90	PB0/AN0	VHF	I	Active Low	VHF key
91	PB1/AN1	UHF	I	Active Low	UHF key
92	PB2/AN2	VVOL	I	A/D	VHF volume
93	PB3/AN3	VSQ	I	A/D	VHF squelch
94	PB4/AN4	UVOL	I	A/D	UHF volume
95	PB5/AN5	USQ	I	A/D	UHF squelch
96	PB6/AN6	UP/DN	I	A/D	Relay microphone control input UP/DN
97	PB7/AN7	NC	I	-	-
98	PC0/AN8	BP1	I	A/D	Band plan 1 (destination)
99	PC1/AN9	BP2	I	A/D	Band plan 2
100	PC2/AN10	BP3	I	A/D	Band plan 3

9) Main CPU I/O Port (IC601)

No.	Pin Name	Function	I/O	Logic	Description
1	RES	RES	I	-	-
2	XTAL	OSC1	I	-	CPU clock 9.8304MHz
3	EXATL	OSC2	O	-	CPU clock 9.8304MHz
4	MD1	-	I	Active High	Single chip mode
5	MD2	-	I	Active High	Single chip mode
6	NMI	-	I	-	-
7	STBY	-	I	-	-
8	VCC	VCC	-	-	-
9	P52/SCK0	S5V	O	Active Low	5V power switch output
10	P51/RXD0	RXD	I	-	Serial communication receiving data
11	P50/TXD0	TXD	O	-	Serial communication transmitting data
12	VSS	-	-	-	-
13	P97/WAIT	SCL1	O	Pulse	E2PROM clock
14	P96/	-	-	-	-
15	P95/AS	SDA	I/O	Pulse	E2PROM data
16	P94/WR	STBE	O	-	Electronic volume strobe
17	P93/RD	DATE	O	-	Electronic volume data
18	P92/IRQ0	-	I	-	Power ON interrupt
19	P91/IRQ1	CKE	O	-	Electronic volume/CTCSS clock
20	P90/ADTRG/IRQ2	DATV	O	-	VHF side data (PLL, 4094)
21	P60/FTCI	STPU	O	Active High	UHF side PLL strobe
22	P61/FTOA	STBU	O	Active High	UHF side 4094 strobe
23	P62/FTIA	CKU	O	-	UHF side clock (PLL, 4094)
24	P63/FTIB	DATU	O	-	UHF side data (PLL, 4094)
25	P64/FTIC	STPV	O	Active High	VHF side PLL strobe
26	P65/FTID	STBV	O	Active High	VHF side 4094 strobe
27	P66/FTOB/IRQ6	1750	O	Pulse	1750Hz Tone burst signal output
28	P67/IRQ7	CKV	O	-	VHF side clock (PLL, 4094)
29	AVCC	-	-	-	-
30	P70/AN0	SDU	A/D	-	UHF side squelch signal
31	P71/AN1	SMU	A/D	-	UHF side S meter signal
32	P72/AN2	ULU	A/D	-	UHF side PLL unlock signal
33	P73/AN3	SDV	A/D	-	VHF side squelch signal
34	P74/AN4	SMV	A/D	-	VHF side S meter signal
35	P75/AN5	ULV	A/D	-	VHF side PLL unlock signal
36	P76/AN6/DA0	PTTS	A/D	-	PTT input terminal for the packet
37	P77/AN7/DA1	-	-	-	-
38	AVSS	-	-	-	-
39	P40/TMCI0	DTMV	O	Active High	DSQ VHF side DEC signal (4066 control A)
40	P41/TMO0	BEP1	O	Pulse	1 side beep sound output
41	P42/TMRI0	DTMU	O	Active High	DSQ UHF side DEC signal (4066 control B)
42	P43/TMCI1	BMUV	O	Active High	VHF side DTMF ENC monitor mute signal
43	P44/TMO1	BEP2	O	Pulse	2 side beep sound output
44	P45/TMRI1	BMUU	O	Active High	UHF side DTMF ENC monitor mute signal
45	P46/PW0	SQVD	O	Active High	VHF side squelch signal output
46	P47/PW1	SQUD	O	Active High	UHF side squelch signal output
47	VCC	-	-	-	-
48	P27/A15	XMUT	O	Active Low	Mute signal for cross band repeater
49	P26/A14	MUTU	O	Active High	UHF side AF mute signal (4066 control C)
50	P25/A13	MUTV	O	Active High	VHF side AF mute signal (4066 control C)

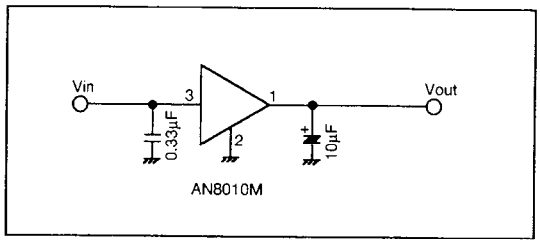
No.	Pin Name	Function	I/O	Logic	Description
51	P24/A12	STB2	O	Active High	UHF side CTCSS strobe signal
52	P23/A11	STB1	O	Active High	VHF side CTCSS strobe signal
53	P22/A10	TID	I	Active Low	CTCSS unit detection
54	P21/A9	TDU	I	Active Low	UHF side CTCSS tone detection signal
55	P20/A8	TDV	I	Active Low	VHF side CTCSS tone detection signal
56	VSS	-	-	-	-
57	P17/A7	DD4	I	-	VHF/UHF DTMF DEC data
58	P16/A6	DD3	I	-	VHF/UHF DTMF DEC data
59	P15/A5	DD2	I	-	VHF/UHF DTMF DEC data
60	P14/A4	DD1	I	-	VHF/UHF DTMF DEC data
61	P13/A3	DM4	I	-	DTMF DEC data for remote control microphone
62	P12/A2	DM3	I	-	DTMF DEC data for remote control microphone
63	P11/A1	DM2	I	-	DTMF DEC data for remote control microphone
64	P10/A0	DM1	I	-	DTMF DEC data for remote control microphone
65	P30/D0	DVD	I	Active High	VHF/UHF DTMF DEC detection
66	P31/D1	PDD	O	Active High	VHF/UHF DTMF DEC enable
67	P32/D2	DVM	I	Active High	DTMF DEC detection for remote control microphone
68	P33/D3	PDM	O	Active High	DTMF DEC enable for remote control microphone
69	P34/D4	DAT1	O	-	DTMF ENC data
70	P35/D5	DAT2	O	-	DTMF ENC data
71	P36/D6	DAT3	O	-	DTMF ENC data
72	P37/D7	DAT4	O	-	DTMF ENC data
73	VSS	-	-	-	-
74	P80	DEE	O	Active High	DTMF ENC output enable
75	P81	MMUT	O	Active High	Microphone mute signal
76	P82	MPSW	O	Active High	Main power switch output
77	P83	PKT	O	Active High	9600BPS packet mode
78	P84/TXD1/IRQ3	-	-	-	-
79	P85/RXD1/IRQ4	-	-	-	-
80	P86/SCK1/IRQ5	BU	I	Active Low	Back up signal

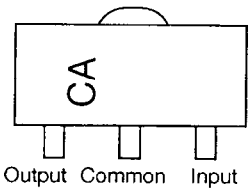
SEMICONDUCTOR DATA

1) AN8010M (XA0119)

Voltage Regulator

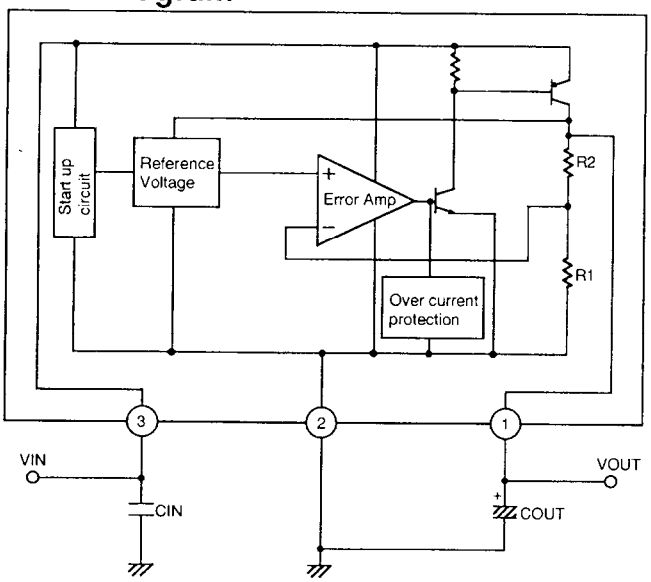
Test Circuit





AN8010M

Block Diagram



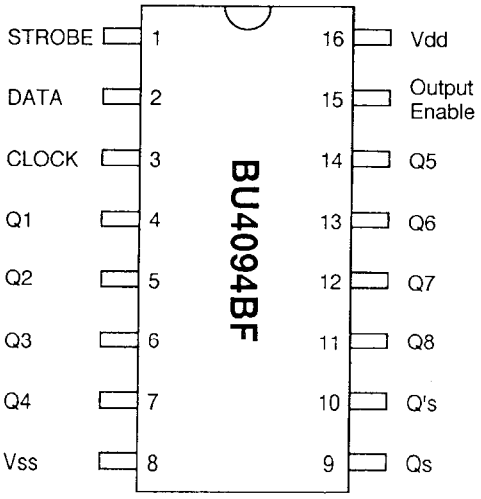
2) BU4094BF (XA0246)

8-Stage Shift Register

Function Table

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

Z=High Impedance
X=Don't Care



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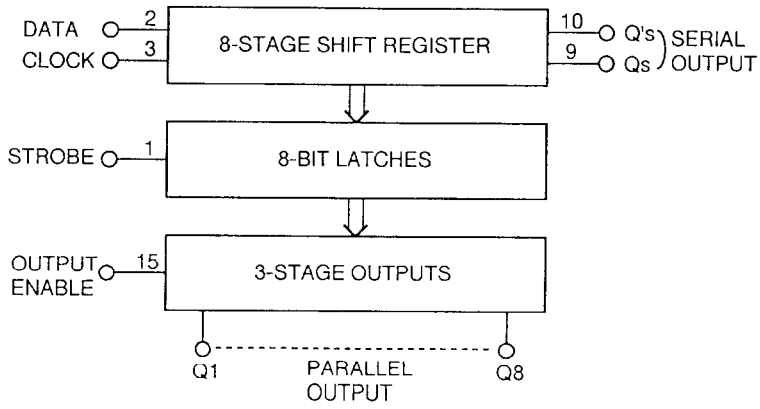
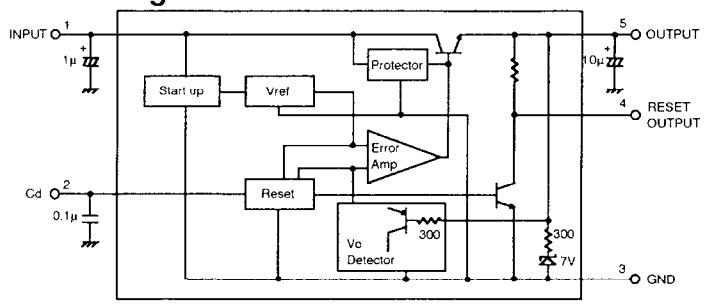
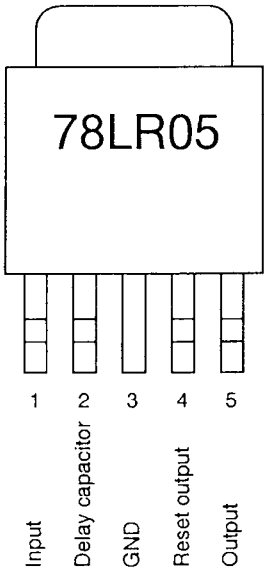


3) L78LR05D (XA0285)
Voltage Regulator

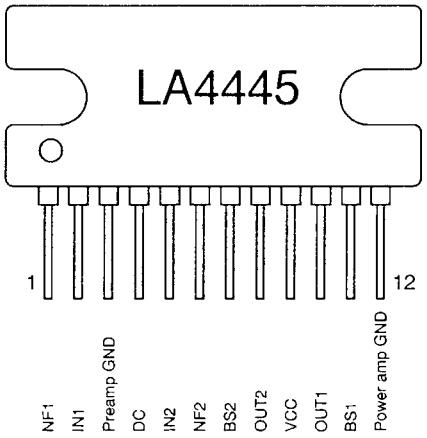
Block Diagram

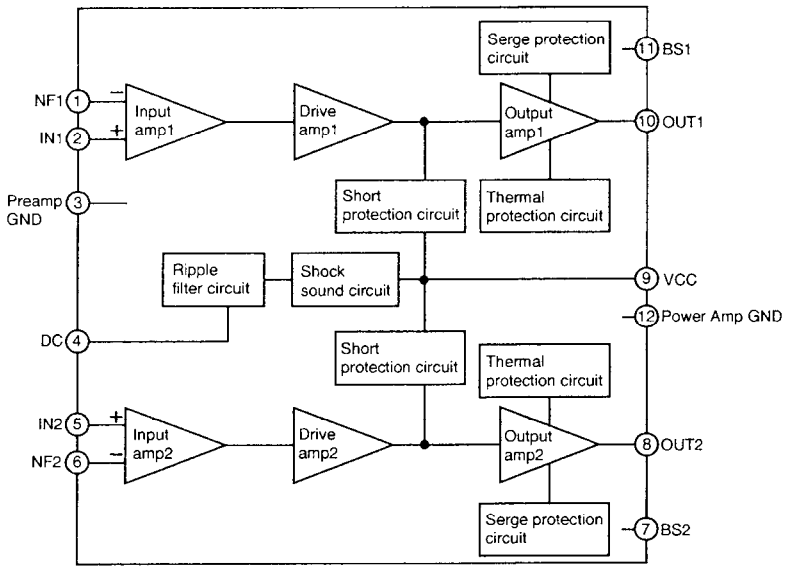




Parameter	Symbol	Ratings	Unit
Input voltage	Vin	7.5~20	V
Output current	Iout	1~150	mA
Output voltage	Vout	5.0	V

4) LA4445 (XA0116)
Audio Power Amplifiers

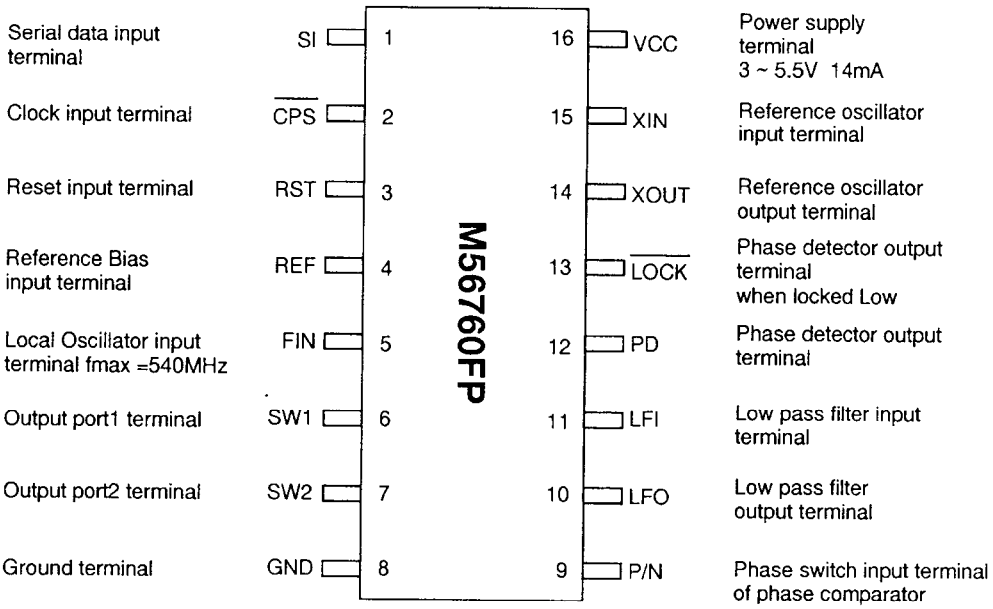




Parameter	Symbol	Condition	Ratings	Unit
Idle current	Icco		75	ma
Voltage gain	VG		51.5	dB
Output power	Po	THD=10%	5.5	W
Total harmonics distortion	THD	Po=1W	0.15	%
Input resistance	Ri		30	kΩ
Output noise voltage	VNo	Rg=0	0.6	mV
		Rg=10kΩ	1	mV
Ripple rejection ratio	Rr	Rg=0, Vr=200mV, fR=100Hz	46	dB
Channel separation	ch sep	Rg=10kΩ, Vo=0dBm	55	dB

5) M56760FP (XA0235)

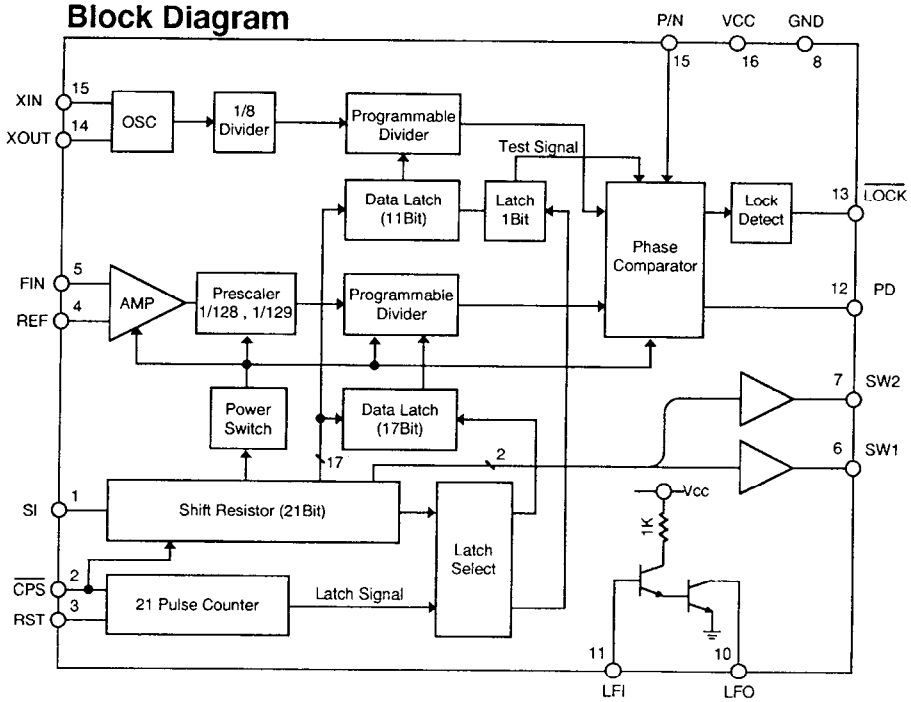
540MHz Frequency Synthesizer



Function Table

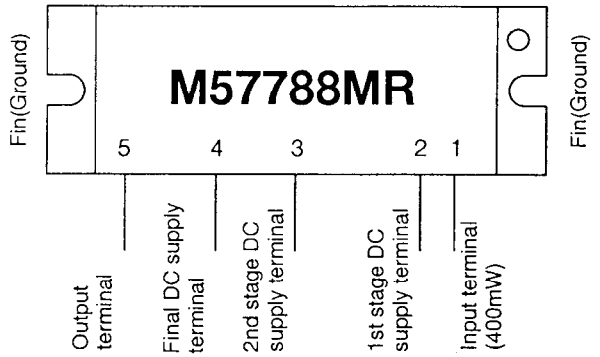
P/N input	Phase	PD output
High or Low	Locked	Hi-Z
High	Lead	High
High	Lag	Low
Low	Lead	Low
Low	Lag	High

Block Diagram



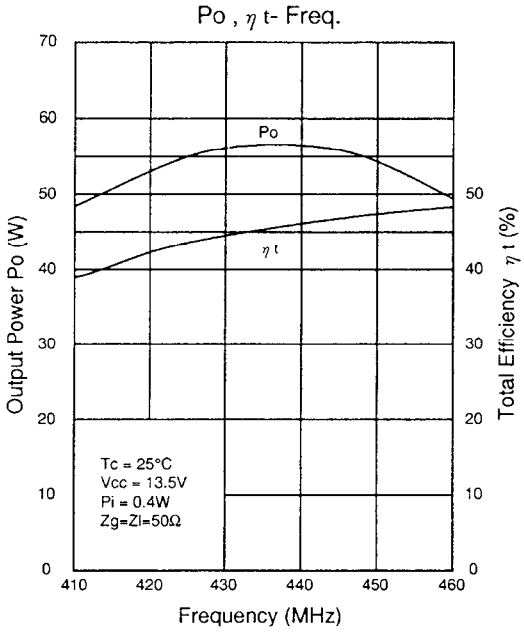
6) M57788MR (XA0313)

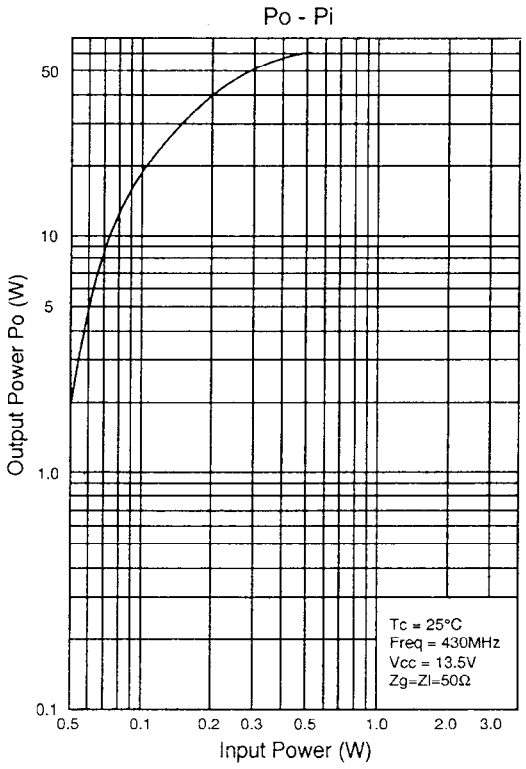
430 ~ 450MHz FM 35W RF Power Module

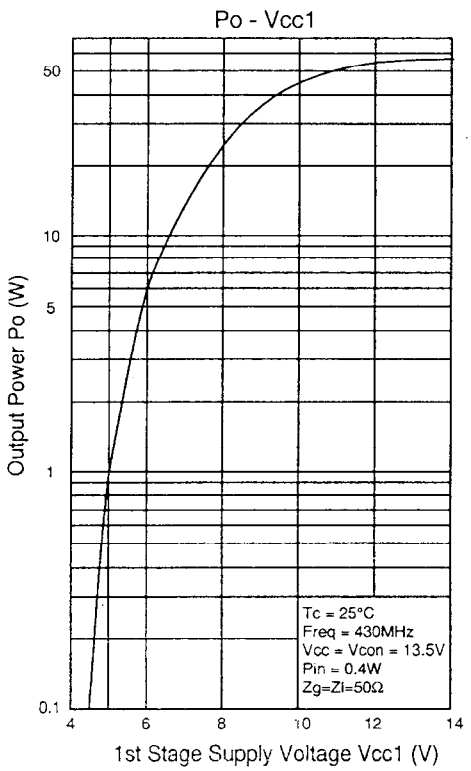


Ratings	Symbol	Ratings	Unit
Supply voltage	Vcc	17.0	V
Current	Icc	12	A
Input power	Pin	0.8	W
Output power	Po	50	W
Operation case temperature	Tc(op)	-30~+110	°C
Storage temperature	Tstg	-40~+110	°C

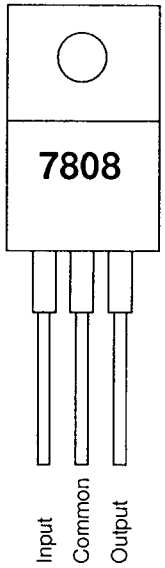
f=430~450MHz, Vcc1≦13.5V, Zg=Zl=50Ω



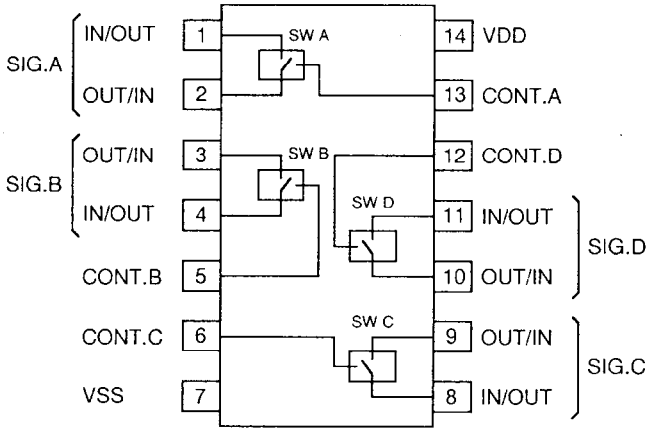




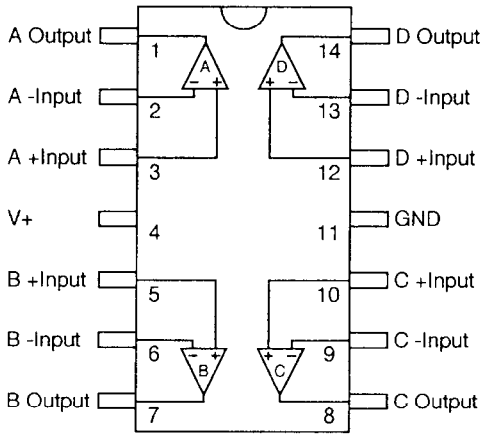
7) MC7808 (XA0082)
8V Voltage Regulator



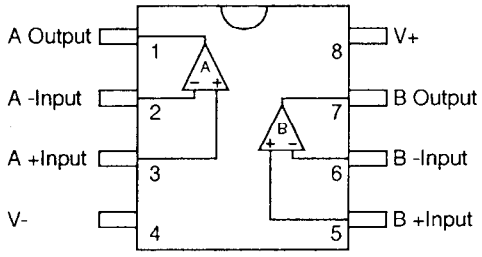
8) NJM4066B (XA0095)
Bilateral Switch



9) NJM2902M (T1) (XA0265)
Operational Amplifiers

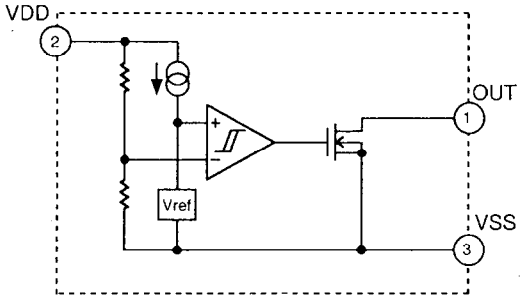


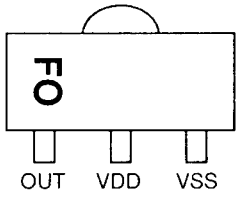
10) NJM4558 (XA0097)
Operational Amplifiers



11) RH5VA60AA (XA0315)
C-MOS Voltage Detector

Equivalent Circuit

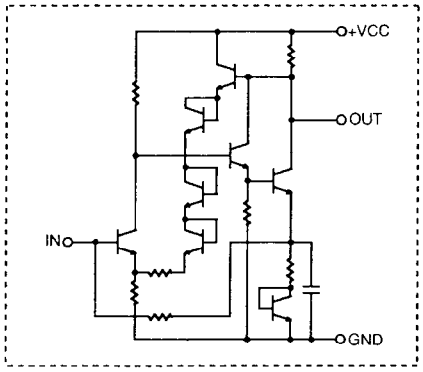


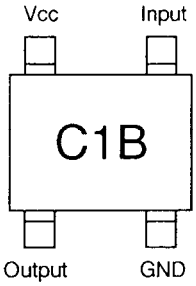


RH5VA60AA

12) μPC1676G (XA0151)
RF Amplifier

Block Diagram



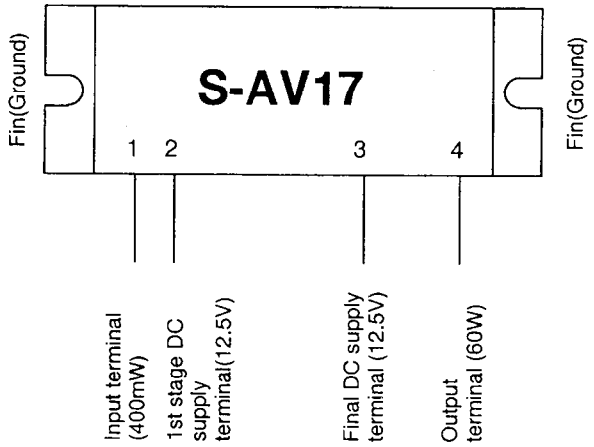


Parameter	Symbol	Condition	Ratings	Unit
Max. supply voltage	Vcc		6	V
Power dissipation	Ptot		200	mW
Idle current	Icc	no signal	19	mA
Power gain	GP	f=500MHz	22	dB
Noise figure	NF	f=500MHz	4.5	dB
Upper frequency	fu	3dB down	1200	MHz
Isolation	ISL	f=500MHz	28	dB
Input return loss	RLin	f=500MHz	12	dB
Output return loss	RLout	f=500MHz	9	dB
Max. output power	Po	f=500MHz	5.5	dBm

13) S-AV17 (XA0185)

144 ~ 148MHz 60W

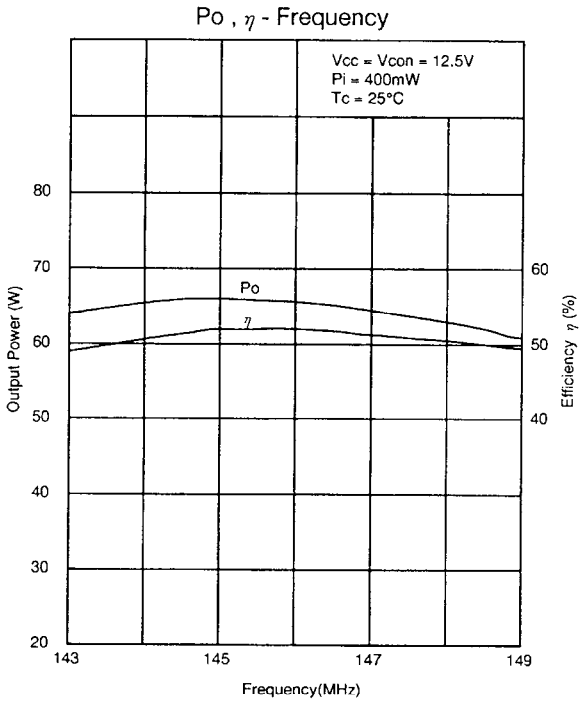
RF Power Module



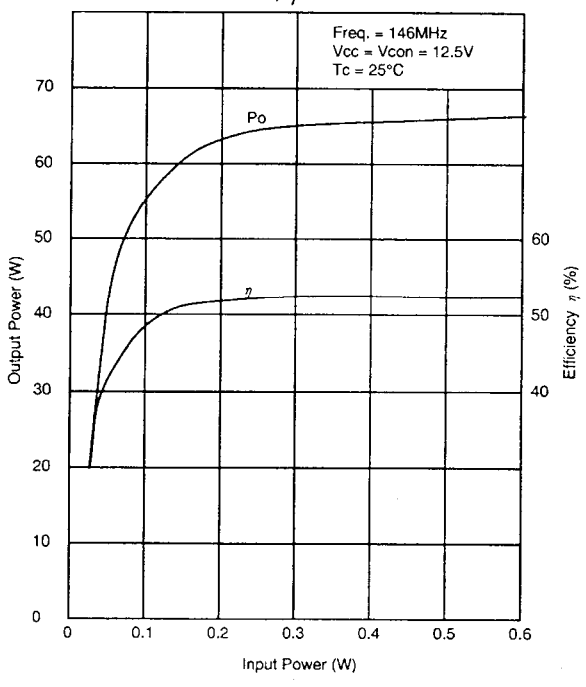
Ratings	Symbol	Ratings	Unit
Supply voltage	Vcc	16	V
Control voltage	Vcon	16	V
Current	IT	14	A
Input power	Pi	600	mW
Output power	Po	65	W
Operation case temperature	Tc(opr)	-30~+100	°C
Storage temperature	Tstg	-40~+110	°C

12.5V<Vcc≦16V, Vcon ≦12.5V, Pi=400mW, Zg=Zl=50Ω

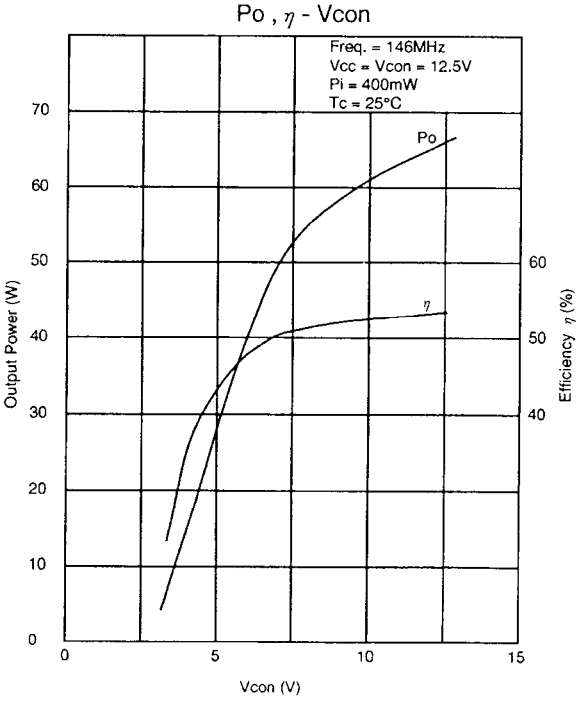
Po , η - Frequency



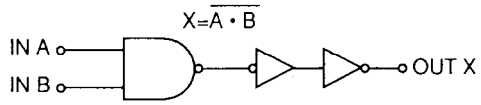
Po , η - Pi

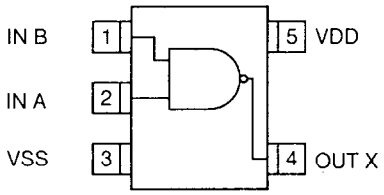


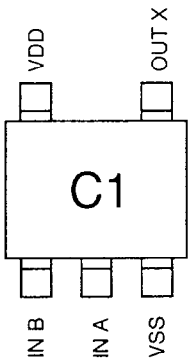
Po , η - Vcon



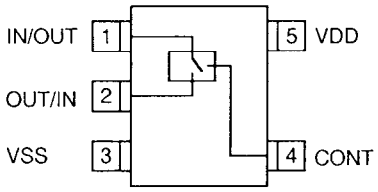
14) TC4S11F (XA0126)
NAND Gate

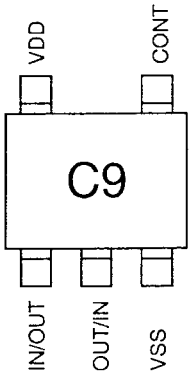






15) TC4S66F (XA0115)
Bilateral Switch



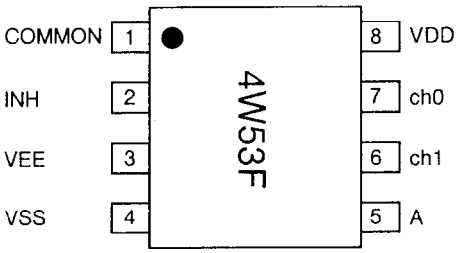


16) TC4W53F (XA0319)
Multiplexer/Demultiplexer

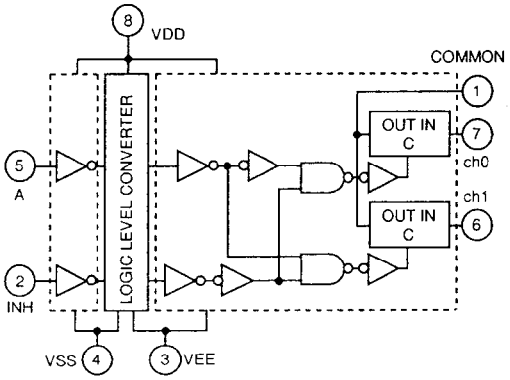
Function Table

Control input		ON channel
INH	A	
L	L	ch 0
L	H	ch 1
H	*	NONE

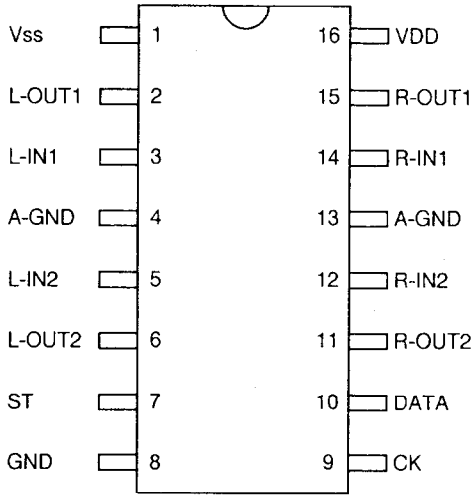
* Don't Care



Block Diagram



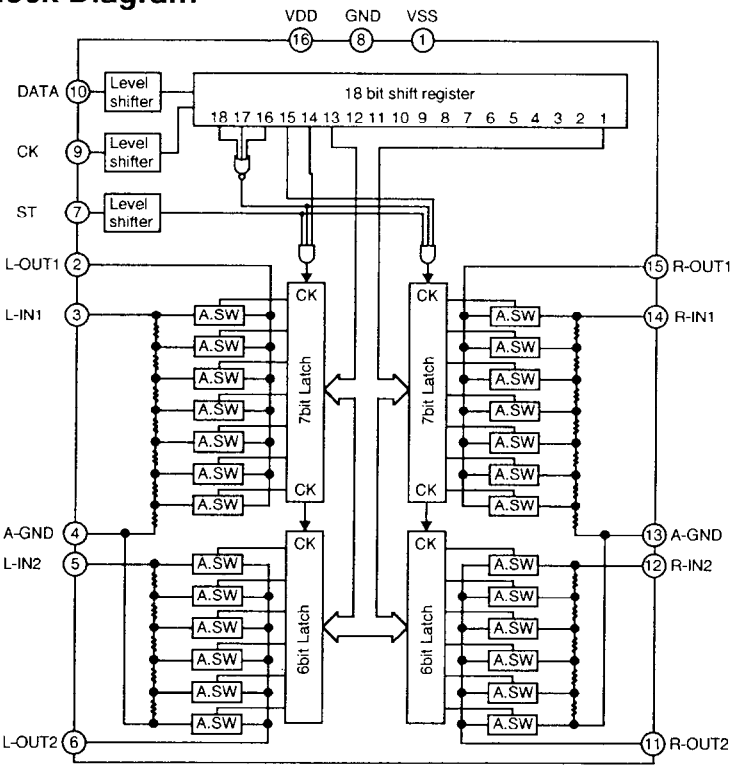
17) TC9154AP (XA0283)
Attenuator



Function Table

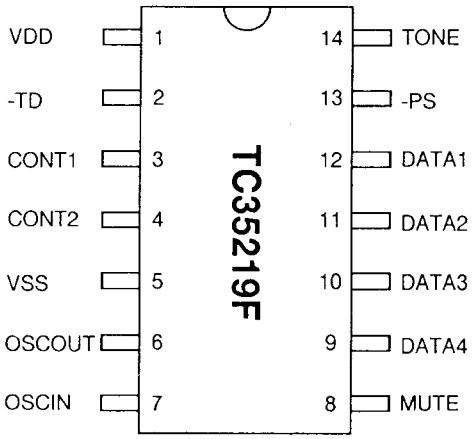
No.	Pin Name	Description
2 15	L-OUT1 R-OUT1	10dB step attenuator output (0~-60dB)
3 14	L-IN1 R-IN1	10dB step attenuator input
4 13	A-GND	AC GND terminal
5 12	L-IN2 R-IN2	2dB step attenuator input (0~8dB)
6 11	L-OUT2 R-OUT2	2dB step attenuator output
10	DATA	Data input terminal
9	CK	Clock input terminal
7	ST	Strobe input terminal
1 16 8	VSS VDD GND	(-) Power Supply (+) Power Supply GND

Block Diagram



18) TC35219F (XA0282)

DTMF Transmitter

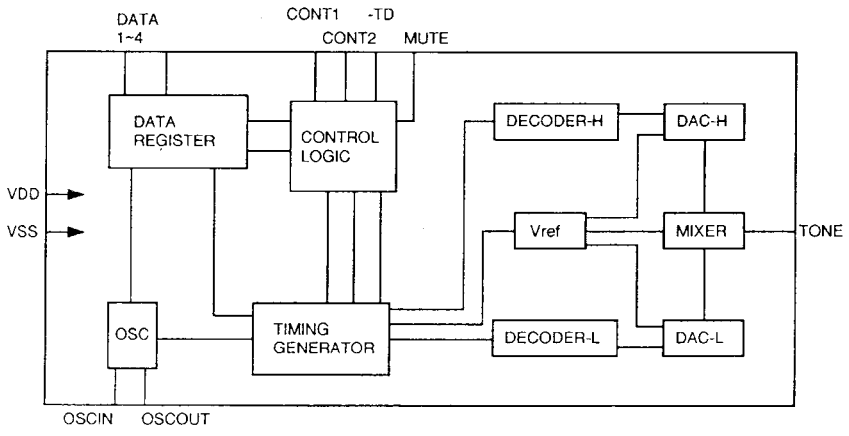


Function Table

No.	Pin Name	Description
1	VDD	Power Supply
5	VSS	GND terminal
2	-TD	Output mode selection input terminal
8	MUTE	Mute output terminal
14	TONE	Tone output terminal
6	OSCOUT	Oscillator terminal
7	OSCIN	Oscillator terminal
3	CONT1	Single tone output selection terminal
4	CONT2	Single tone output selection terminal
12	DATA1	Data input terminal
11	DATA2	Data input terminal
10	DATA3	Data input terminal
9	DATA4	Data input terminal
13	-PS	Oscillator control input terminal

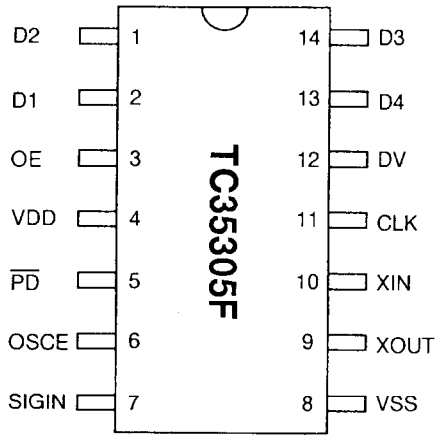
KEY	INPUT DATA						TONE FREQ.	
	CONT1	CONT2	DATA1	DATA2	DATA3	DATA4	fL	fH
1	H	H	L	L	L	H	697	1209
2	H	H	L	L	H	L	697	1336
3	H	H	L	L	H	H	697	1477
4	H	H	L	H	L	L	770	1209
5	H	H	L	H	L	H	770	1336
6	H	H	L	H	H	L	770	1477
7	H	H	L	H	H	H	852	1209
8	H	H	H	L	L	L	852	1336
9	H	H	H	L	L	H	852	1477
0	H	H	H	L	H	L	941	1336
*	H	H	H	L	H	H	941	1209
#	H	H	H	H	L	L	941	1477
A	H	H	H	H	L	H	697	1633
B	H	H	H	H	H	L	770	1633
C	H	H	H	H	H	H	852	1633
D	H	H	L	L	L	L	941	1633
	L	H	BINARY INPUT				fL	-
	H	L					-	fH
	L	L					H	H

Block Diagram



19) TC35305F (TP1) (XA0268)

DTMF Receiver

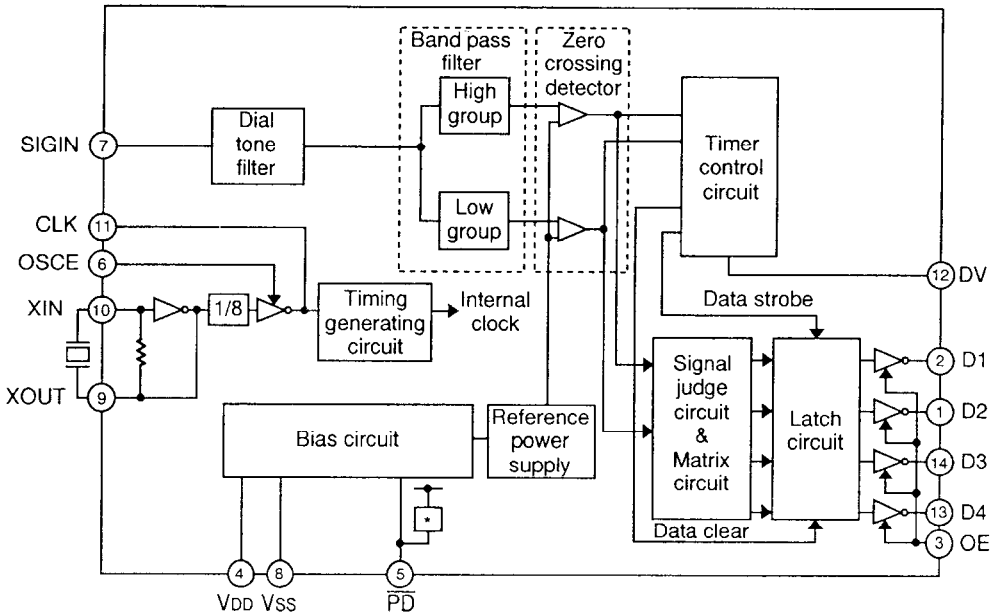


Function Table

FL	FH	Digit	OE	D4	D3	D2	D1
697	1209	1	H	L	L	L	H
697	1336	2	H	L	L	H	L
697	1477	3	H	L	L	H	H
770	1209	4	H	L	H	L	L
770	1336	5	H	L	H	L	H
770	1477	6	H	L	H	H	L
852	1209	7	H	L	H	H	H
852	1336	8	H	H	L	L	L
852	1477	9	H	H	L	L	H
941	1336	0	H	H	L	H	L
941	1209	*	H	H	L	H	H
941	1477	#	H	H	H	L	L
697	1633	A	H	H	H	L	H
770	1633	B	H	H	H	H	L
852	1633	C	H	H	H	H	H
941	1633	D	H	L	L	L	L
-	-	ANY	L	Z	Z	Z	Z

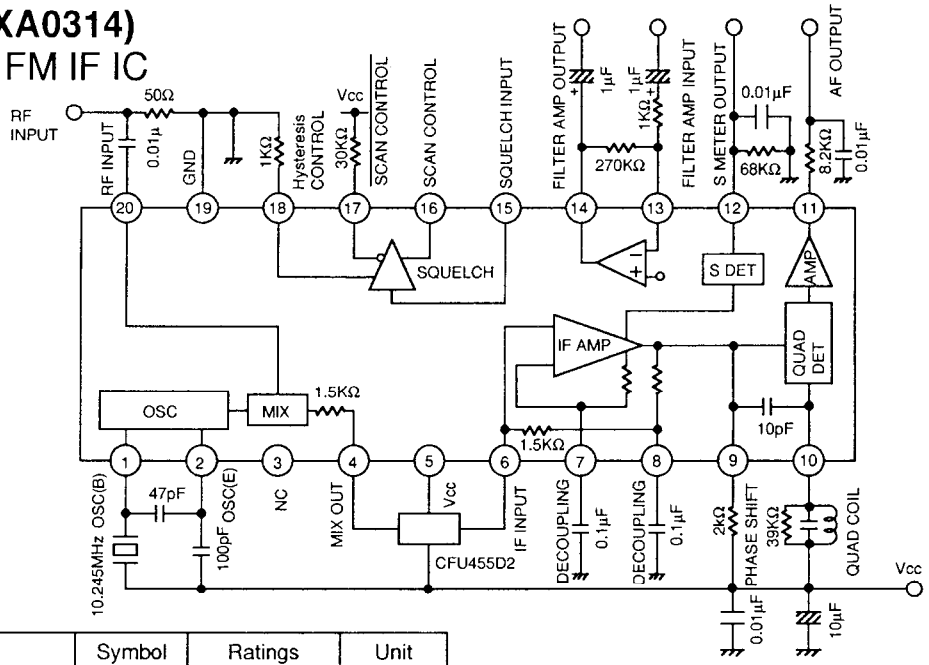
No.	Name	I/O	Description
2	D1	O	Data output terminal
1	D2	O	OE="L": Hi impedance
14	D3	O	OE="H": data is output
13	D4	O	
3	OE	I	When OE is "High", D1~D4 are enable.
4	VDD	V	Power Supply: 5V
5	PD	I	PD="Low": stand by mode
6	OSCE	I	Control terminal of the oscillator stage
7	SIGIN	I	Signal input terminal
8	VSS	G	Power Supply: 0V
9	XOUT	O	Crystal terminal (3.579545MHz)
10	XIN	I	Crystal terminal (3.579545MHz)
11	CLK	I/O	"H": external clock output "L": external clock input
12	DV	O	Data valid

Block Diagram



20) TK10489M (XA0314)

Narrow Band FM IF IC



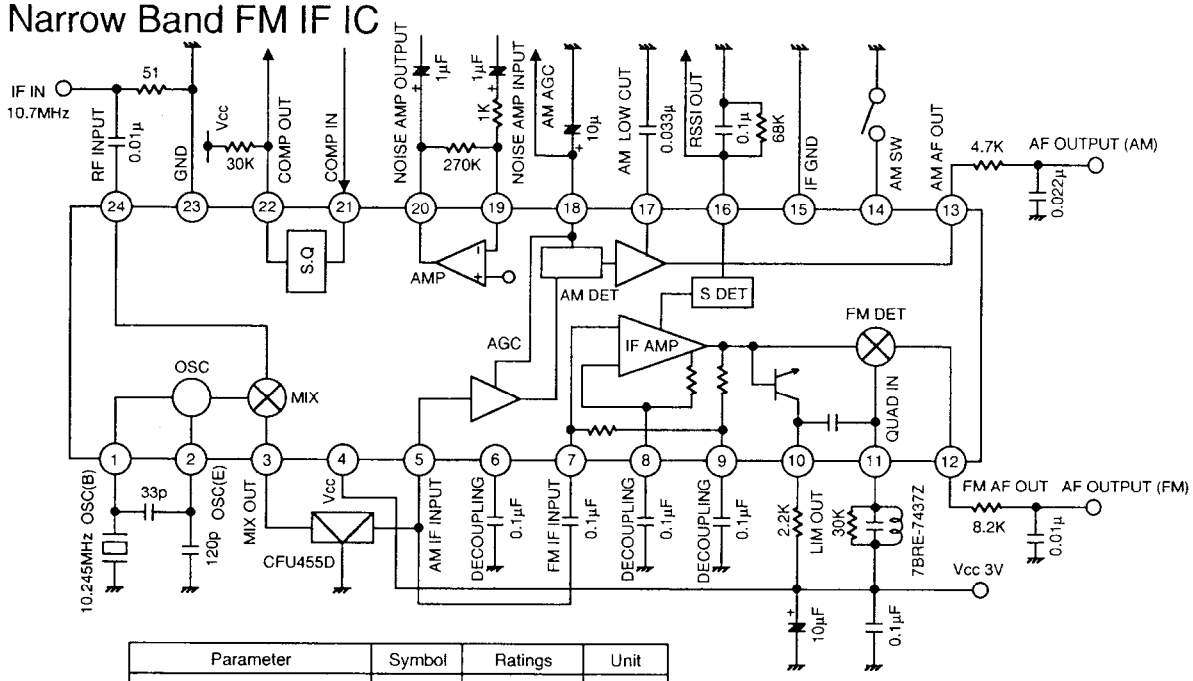
Parameter	Symbol	Ratings	Unit
Supply voltage	Vcc max.	10.0	V
Power dissipation	Pd	410	mW
Storage temperature	Tstg	-55~+150	°C
Operating temperature	Top	-30~+70	°C
Operating voltage	Vop	2.5~8.0	V
Operating frequency	fop	~60	MHz

Vcc=5V, Fc=10.7MHz, Dev=+/-3kHz, fm=1kHz, Ta=25°C

Parameter	Symbol	Ratings			Unit	Condition
		Min	Typical	Max		
Supply Current 1	Icc1	1.8	2.6	4.0	mA	No signal, Squelch OFF
Supply Current 2	Icc2	2.2	3.2	5.0	mA	No signal, Squelch ON
Limiting Sensitivity	Limit	0.8	2.0	6.0	μV	-3.0dB
Output Voltage	Vo	170	250	350	mVrms	Vin=10mV +/-3kHz DEV
Output Impedance	Zo	500	800	1500	Ω	Vin=10mV
Distortion	THD	0.3	1.0	2.5	%	Vin=10mV
Filter Gain	Fc	40	46	52	dB	f=10kHz, Vin=3mV
Filter Amp Output Voltage	FDC	0.5	0.7	0.95	V	No signal
Scan Control Hi Voltage	SH	4.3	4.9	5.0	V	Squelch input=0V
Scan Control Low Voltage	SL	-0.2	0.01	0.5	V	Squelch input=2.5V
$\overline{\text{Scan Control Hi Voltage}}$	$\overline{\text{SH}}$	4.3	4.95	5.0	V	Squelch input=2.5V
$\overline{\text{Scan Control Low Voltage}}$	$\overline{\text{SL}}$	-0.2	0.04	0.5	V	Squelch input=0V
Squelch Hysteresis	Hys	40	80	180	mV	Rhys=1kΩ
Mixer Conversion Gain	Mc	22	28	34	dB	Mixer output terminal open
Mixer Input Impedance	MR	2.4	3.6	4.7	KΩ	DC Test
S meter Output Voltage	S0	0.0	0.25	0.50	V	Vin=0.00mV, RS=68kΩ
S meter Output Voltage	S1	0.15	0.50	0.80	V	Vin=0.01mV, RS=68kΩ
S meter Output Voltage	S2	0.70	1.05	1.40	V	Vin=0.1mV, RS=68kΩ
S meter Output Voltage	S3	1.25	1.65	2.00	V	Vin=1mV, RS=68kΩ
S meter Output Voltage	S4	1.85	2.20	2.60	V	Vin=10mV, RS=68kΩ
S meter Output Voltage	S5	2.05	2.40	2.80	V	Vin=100mV, RS=68kΩ

21) TK10930VTL (XA0223)

Narrow Band FM IF IC



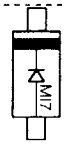
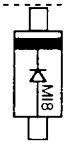
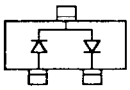
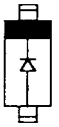
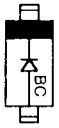
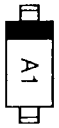
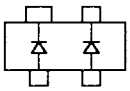
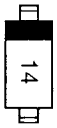
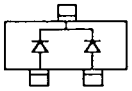
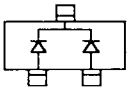
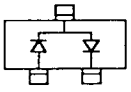
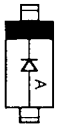
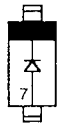
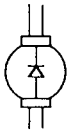
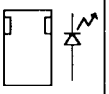
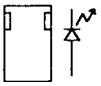
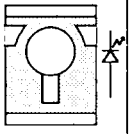
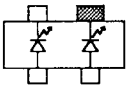
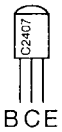
Parameter	Symbol	Ratings	Unit
Supply voltage	Vcc max	10.0	V
Power dissipation	Pd	400	mW
Storage temperature	Tstg	-55~+150	°C
Operating temperature	Top	-30~+75	°C
Operating voltage	Vop	2.5~8.5	V
Operating frequency	fop	~60	MHz

Ta=25°C Vcc=3V

Parameter	Symbol	Ratings			Unit	Condition
		Min	Typical	Max		
Supply Current 1	Icc1		6.8	8.9	mA	No signal, AM ON
Supply Current 2	Icc2		3.9	5.3	mA	No signal, AM OFF
Mixer Conversion Gain	Mg		20		dB	
Mixer Input Impedance	Mz		3.6		KΩ	DC Test
FM						
Limiting Sensitivity	Limit		2.0	8.0	µV	-3.0dB
Output Voltage	Vo1	85	150	230	mVrms	10mVin +/-3kHz DEV
Distortion	THD1		1.0	2.0	%	10mVin +/-3kHz DEV
Output Impedance	Zo		800		Ω	10mVin
Filter Gain	Gf	30	38		dB	Fin=30kHz, Vo=100mV
Scan Control Hi Voltage	SH	2.3			V	Squelch input=2.5V
Scan Control Low Voltage	SL			0.3	V	Squelch input=0V
Squelch Hysteresis	Hys		30		mV	
S meter Output Voltage	S0		0.05	0.5	V	Vin=0mV, RS=68kΩ
S meter Output Voltage	S1	0.05	0.5	0.9	V	Vin=0.01mV, RS=68kΩ
S meter Output Voltage	S2	0.7	1.2	1.7	V	Vin=0.1mV, RS=68kΩ
S meter Output Voltage	S3	1.2	1.8	2.5	V	Vin=1mV, RS=68kΩ
S meter Output Voltage	S4	1.6	2.3	2.9	V	Vin=10mV, RS=68kΩ
S meter Output Voltage	S5	1.8	2.4	2.9	V	Vin=100mV, RS=68kΩ
AM						
Sensitivity	US	20	15		µV	required input level to get 20mV rms output
Output Voltage	Vo2	60	120	160	mVrms	1kHz, 30%, Vin=1mV
Distortion-1	THD2		1.0	2.0	%	1kHz, 30%, Vin=1mV
Distortion-2	THD3		2.0	4.0	%	1kHz, 30%, Vin=1mV
S/N	S/N	40	48		dB	1kHz, 30%, Vin=1mV
AM OFF	Vo	-0.3		0.3	%	

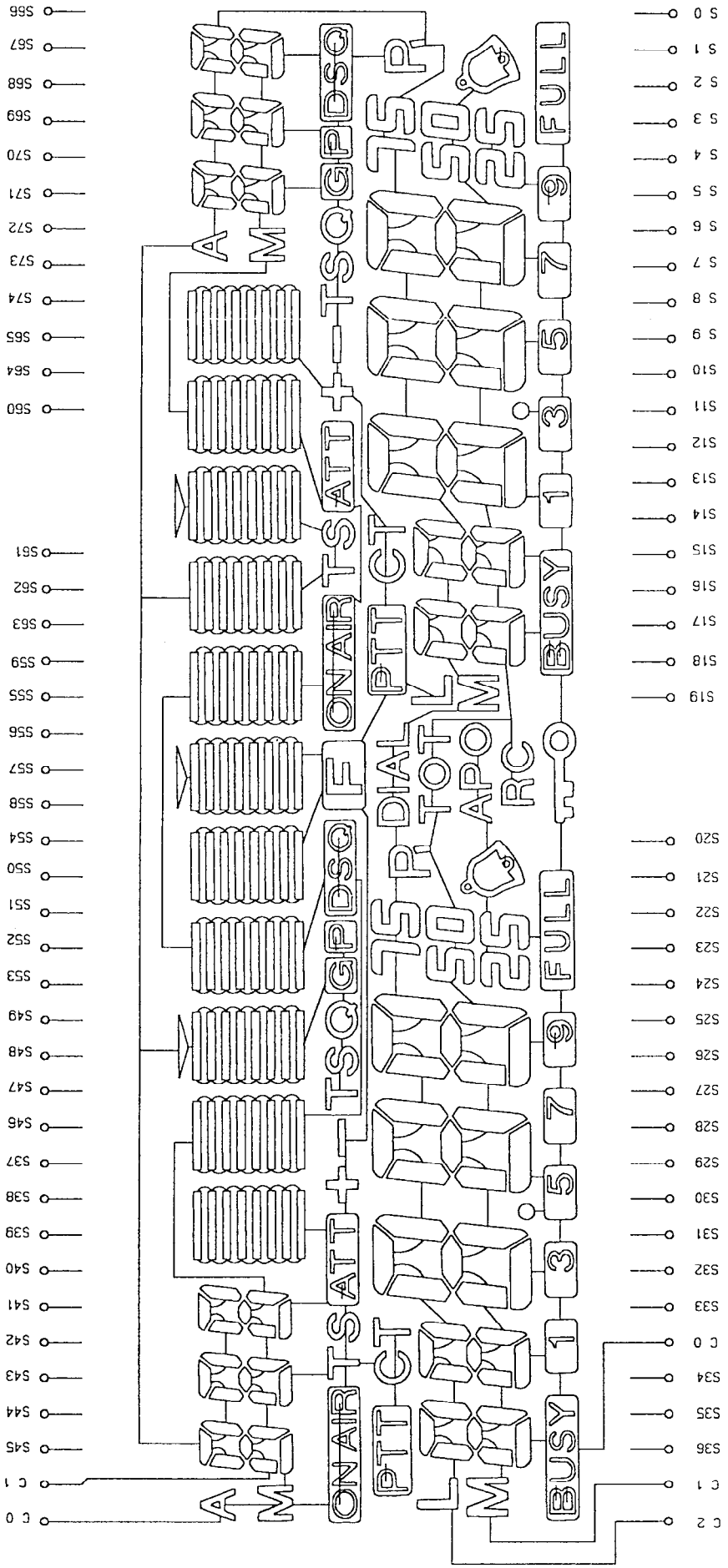
22) Transistor, Diode and LED Outline Drawings

Top View

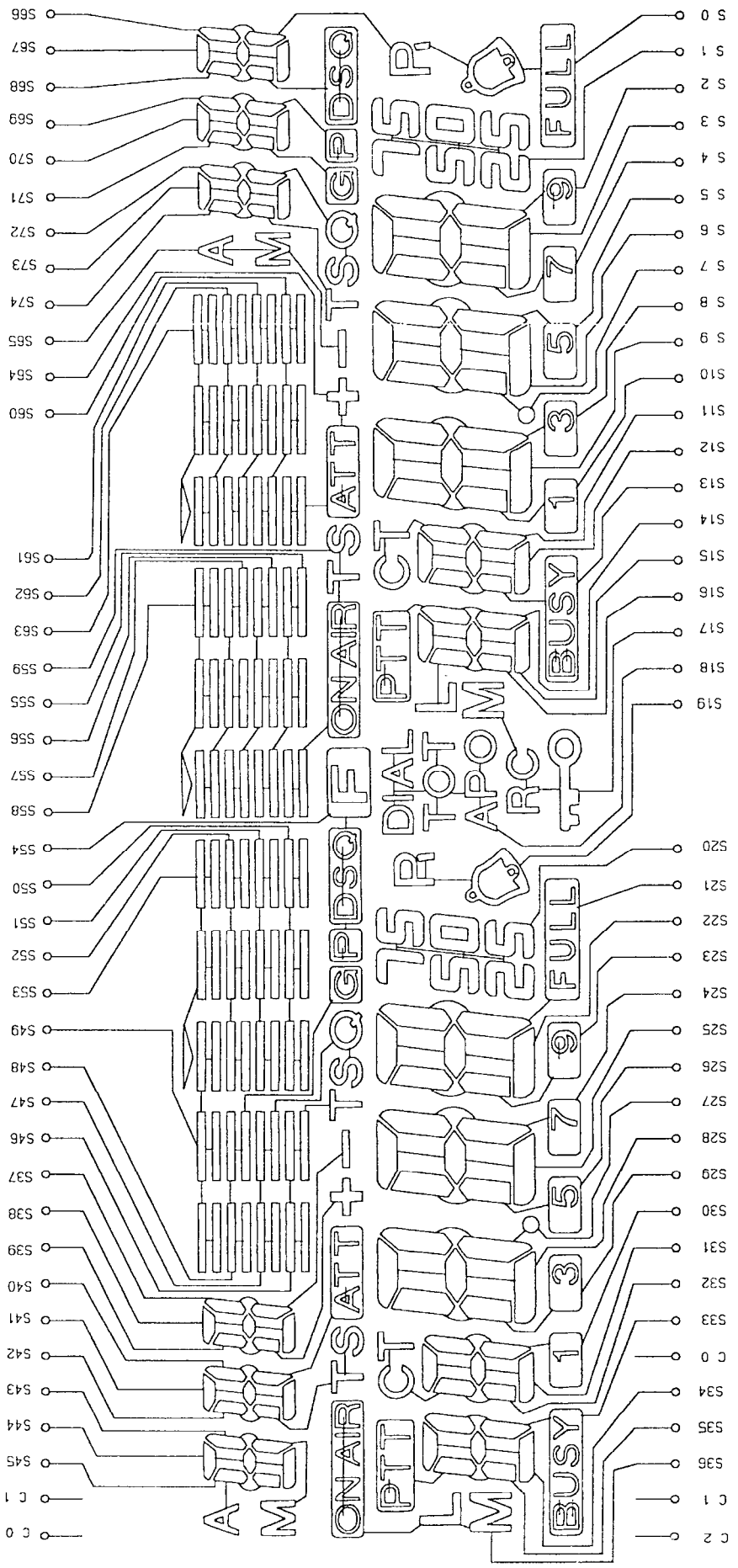
MI407	MI308	1SS226	1SS318	1SV214	U1BC44	DTZ5.1A	DTZ5.6C
XD0013	XD0014	XD0103	XD0129	XD0131	XD0135	XD0136	XD0140
							
1SV237	DTZ6.2C	DTZ11B	DAN202U	1SV217	DAN235U	MA742	1SS355
XD0141	XD0170	XD0187	XD0230	XD0233	XD0246	XD0250	XD0254
							
RN711H	DSA3AI	CL-170YG	CL-170	CL-200YG	LT1EP53A	2SK508	3SK131V11
XD0257	XD0274	XL0032	XL0034	XL0038	XL0039	XE0010	XE0012
						G K52 S D	G2 G1 V11 D S
3SK184S	3SK184R	2SJ144	2SK880GR	2SK1577	3SK177	2SK1588	3SK131V12
XE0013	XE0014	XE0019	XE0021	XE0022	XE0024	XE0025	XE0028
G2 G1 3RS D S	G2 G1 3RR D S	G VY S D	G XG S D	G P2 S D	G2 G1 U74 D S	NG G D S	G2 G1 V12 D S
2SC2407	2SC3356	2SC3357	2SB1132	2SD1761E	2SC3369	2SC2954	2SA1576
XT0019	XT0119	XT0048	XT0061	XT0064	XT0078	XT0084	XT0094
	C R24 B E	C RE B C E	C BA PQ B C E	O D1761 B C E	B E E C	C KQ B C E	C FR B E
2SC4081	2SC4099	2SA1036	2SC4081LNT	2SC4226	2SC4215	2SC4245	2SB1302
XT0095	XT0096	XT0110	XT0111	XT0115	XT0124	XT0125	XT0126
C BR B E	C JP B E	C HQ B E	C LS B E	C R24 B E	C QY B E	C HB B E	C BQ B C E
FMC3	XN1214	XN111M	XN1501	XN1213	UN5211	DTA114YU	DTC363EK
XU0021	XU0035	XU0046	XU0053	XU0054	XU0061	XU0112	XU0160
E2 B E1 C3 C2 C1	B2 E B1 9H C2 C1	B2 E B1 EK C2 C1	B2 E B1 5R C2 C1	B2 E B1 9L C2 C1	C 8A B E	C 54 B E	C H27 B E
XN1212	UN511L	UN2122	UN2222				
XU0164	XU0165	XU0167	XU0168				
B2 E B1 9K C2 C1	C 6Q B E	C 7B B E	C 9B B E				

23) LCD

Common

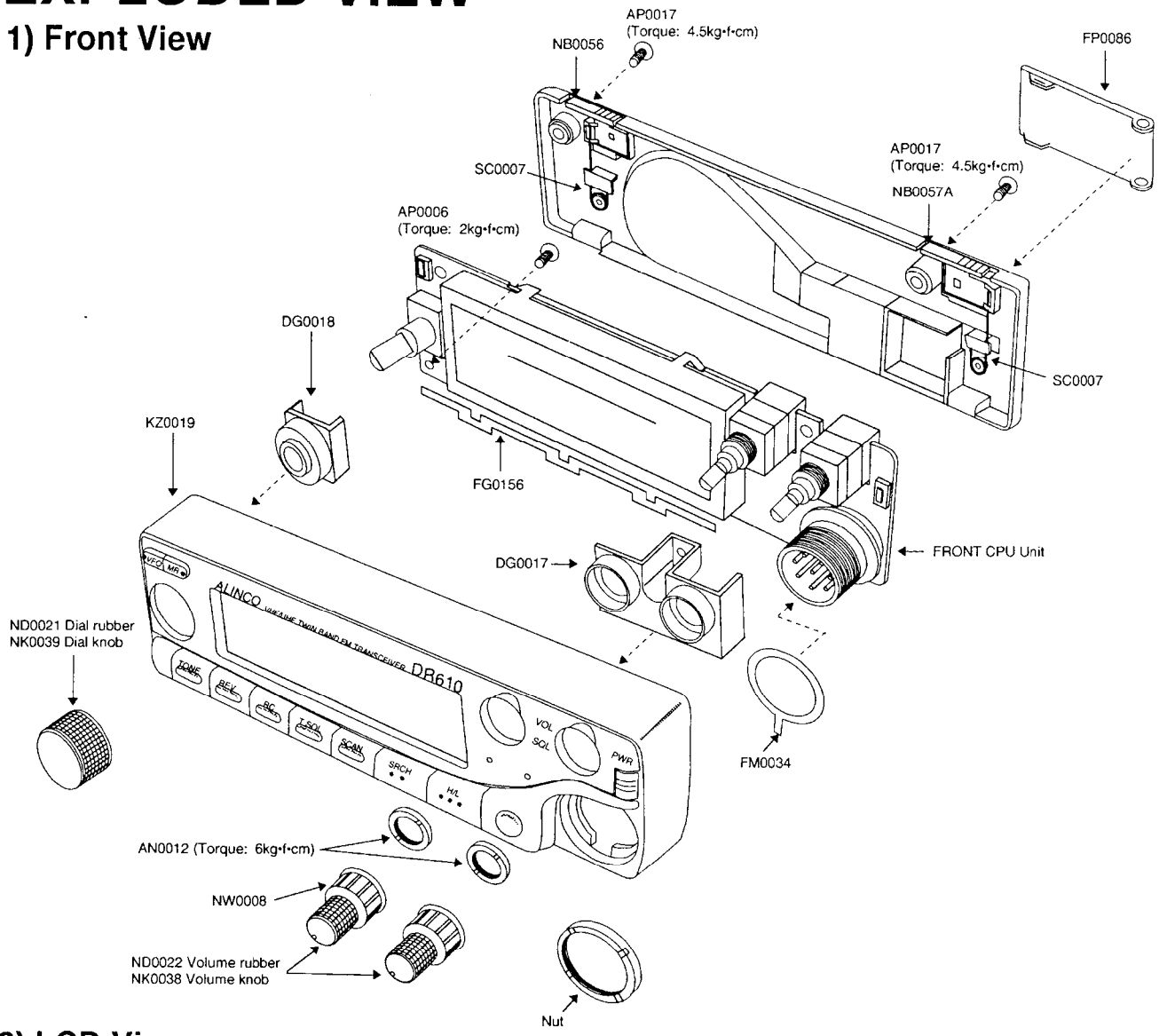


Segment

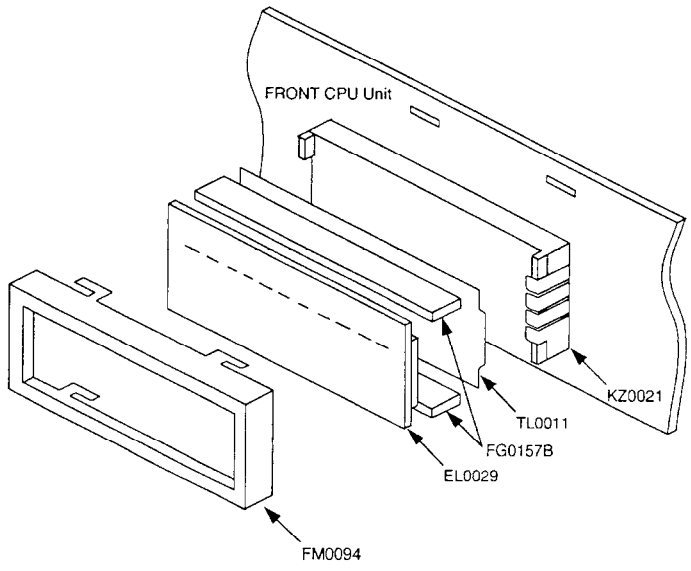

S66
S67
S68
S69
S70
S71
S72
S73
S74
S65
S64
S60
S61
S62
S63
S59
S55
S56
S57
S58
S54
S50
S51
S52
S53
S49
S48
S47
S46
S37
S38
S39
S40
S41
S42
S43
S44
S45
C 1
C 0
S 0
S 1
S 2
S 3
S 4
S 5
S 6
S 7
S 8
S 9
S10
S11
S12
S13
S14
S15
S16
S17
S18
S19
S20
S21
S22
S23
S24
S25
S26
S27
S28
S29
S30
S31
S32
S33
C 0
S34
S35
S36
C 1
C 2
GPDSC
TSC
ATT+-
ON AIR
PTT
CT
DIAL
DOT
APO
RC
BUSY
FULL
75
50
25
9
7
5
3
1
M
A

EXPLODED VIEW

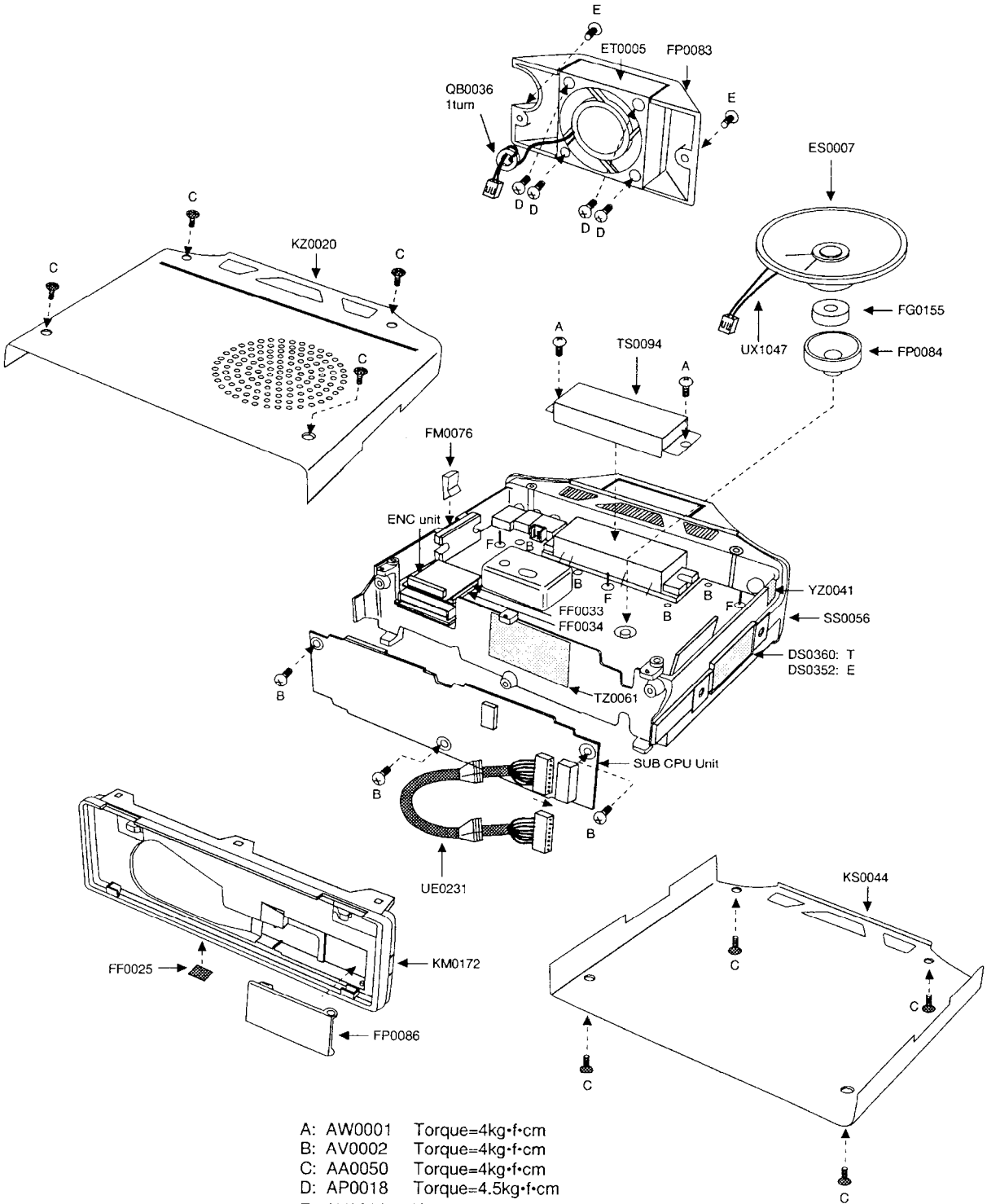
1) Front View



2) LCD View

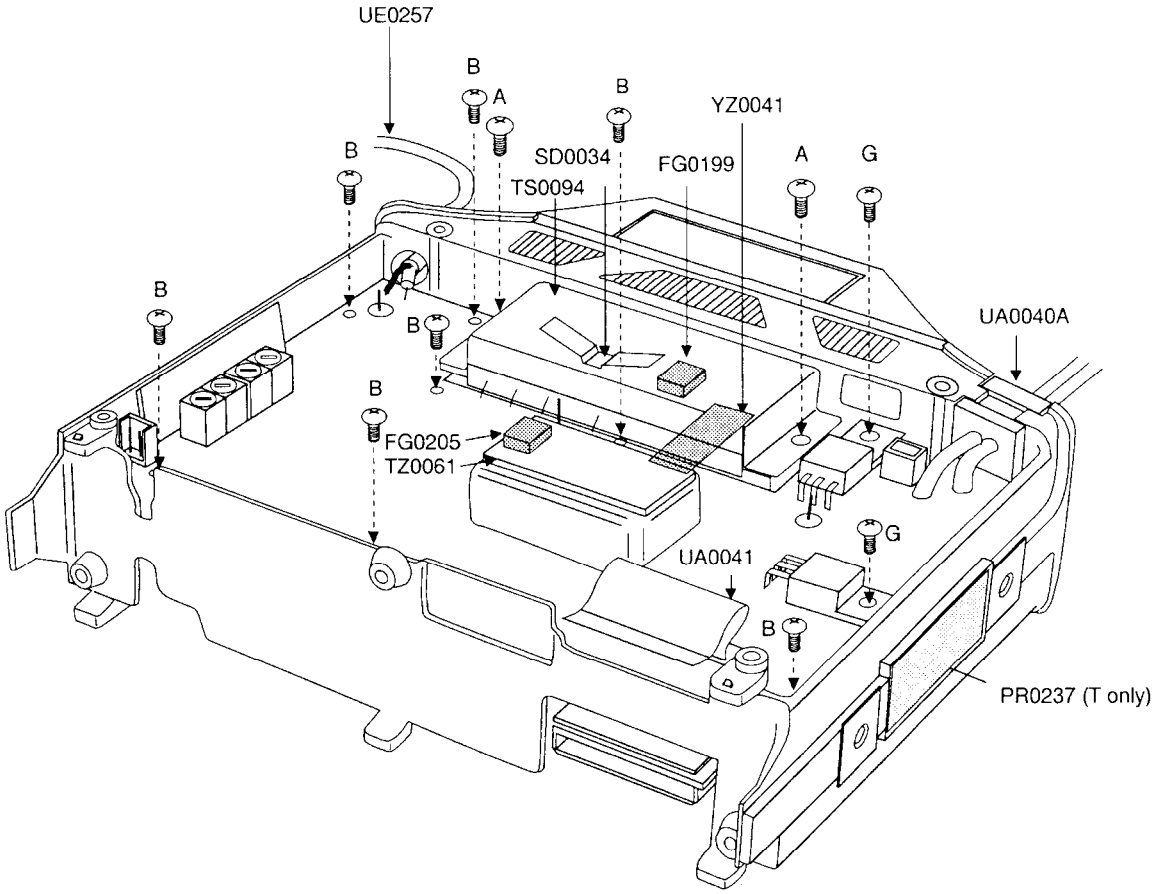


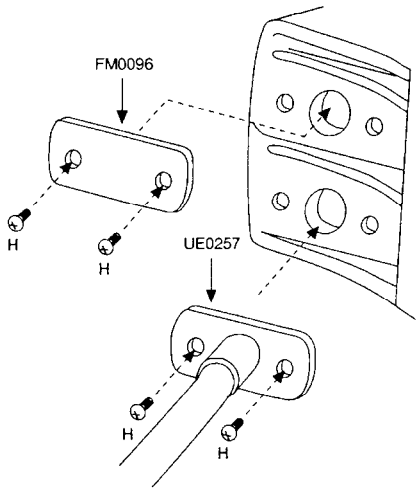
3) VHF Unit View



A: AW0001 Torque=4kg•f•cm
B: AV0002 Torque=4kg•f•cm
C: AA0050 Torque=4kg•f•cm
D: AP0018 Torque=4.5kg•f•cm
E: AV0003 Torque=4kg•f•cm
F: UE0116

4) UHF Unit View





A: AW0001 Torque=4kg•f•cm
B: AV0002 Torque=4kg•f•cm
G: AW0003 Torque=4kg•f•cm
H: AV0001 Torque=5kg•f•cm

PARTS LIST

VHF MAIN Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
C2	CC5067	Ceramic C.	RCC05SL330J-L46AE	
C3	CU3001	Chip C.	C1608CH1H0R5CT-A	
C4	CC5068	Ceramic C.	RCC06SL390J-L46AU	
C5	CC5069	Ceramic C.	RCC06SL470J-L46AU	
C6	CU3001	Chip C.	C1608CH1H0R5CT-A	
C7	CU3003	Chip C.	C1608CH1H020CT-A	
C8	CU3003	Chip C.	C1608CH1H020CT-A	
C9	CC5067	Ceramic C.	RCC05SL330J-L46AE	
C10	CC5025	Ceramic C.	HM60SJYB102K	
C11	CC5062	Ceramic C.	DD05-979SL180J500	
C13	CU3016	Chip C.	C1608CH1H270JT-A	
C14	CU3035	Chip C.	C1608JB1H102KT-A	
C15	CU3035	Chip C.	C1608JB1H102KT-A	
C16	CU3035	Chip C.	C1608JB1H102KT-A	
C17	CU3035	Chip C.	C1608JB1H102KT-A	
C18	CU3035	Chip C.	C1608JB1H102KT-A	
C19	CU3035	Chip C.	C1608JB1H102KT-A	
C20	CU3035	Chip C.	C1608JB1H102KT-A	
C21	CU3035	Chip C.	C1608JB1H102KT-A	
C22	CU3043	Chip C.	C1608JB1H472KT-A	
C23	CU3035	Chip C.	C1608JB1H102KT-A	
C24	CE0376	Electrolytic.C	ECEV1CS100SR	
C25	CE0376	Electrolytic.C	ECEV1CS100SR	
C26	CU3035	Chip C.	C1608JB1H102KT-A	
C27	CU3035	Chip C.	C1608JB1H102KT-A	
C28	CU0019	Chip C.	C2012CH1H220K	
C29	CU0013	Chip C.	C2012CH1H120K	
C30	CU0019	Chip C.	C2012CH1H220K	
C31	CE0376	Electrolytic.C	ECEV1CS100SR	
C32	CU3035	Chip C.	C1608JB1H102KT-A	
C33	CU3035	Chip C.	C1608JB1H102KT-A	
C36	CU3035	Chip C.	C1608JB1H102KT-A	
C37	CU3019	Chip C.	C1608CH1H470JT-A	
C38	CU3035	Chip C.	C1608JB1H102KT-A	
C39	CU3019	Chip C.	C1608CH1H470JT-A	
C40	CE0339	Electrolytic.C	16MV10SWB	
C41	CU3035	Chip C.	C1608JB1H102KT-A	
C42	CU3035	Chip C.	C1608JB1H102KT-A	
C43	CU3035	Chip C.	C1608JB1H102KT-A	
C44	CU3019	Chip C.	C1608CH1H470JT-A	
C45	CU3035	Chip C.	C1608JB1H102KT-A	
C46	CU3035	Chip C.	C1608JB1H102KT-A	
C47	CU3013	Chip C.	C1608CH1H150JT-A	
C48	CU3013	Chip C.	C1608CH1H150JT-A	
C49	CU3035	Chip C.	C1608JB1H102KT-A	
C50	CU3016	Chip C.	C1608CH1H270JT-A	
C51	CU3006	Chip C.	C1608CH1H050CT-A	
C52	CU3023	Chip C.	C1608CH1H101JT-A	
C53	CU3035	Chip C.	C1608JB1H102KT-A	
C54	CU3035	Chip C.	C1608JB1H102KT-A	
C55	CU3035	Chip C.	C1608JB1H102KT-A	
C56	CU3011	Chip C.	C1608CH1H100DT-A	
C57	CS0216	Chip Tantal	TMCMB1A106MTR	

VHF MAIN Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
C58	CS0216	Chip Tantal	TMCMB1A106MTR	
C59	CU3035	Chip C.	C1608JB1H102KT-A	
C60	CU3035	Chip C.	C1608JB1H102KT-A	
C61	CU3008	Chip C.	C1608CH1H070CT-A	
C62	CU3015	Chip C.	C1608CH1H220JT-A	
C63	CU3035	Chip C.	C1608JB1H102KT-A	
C64	CU3035	Chip C.	C1608JB1H102KT-A	
C65	CU3019	Chip C.	C1608CH1H470JT-A	
C66	CU3019	Chip C.	C1608CH1H470JT-A	
C67	CU3019	Chip C.	C1608CH1H470JT-A	
C68	CU3002	Chip C.	C1608CH1H010CT-A	
C69	CU3002	Chip C.	C1608CH1H010CT-A	
C70	CU3035	Chip C.	C1608JB1H102KT-A	
C71	CU3035	Chip C.	C1608JB1H102KT-A	
C72	CU3035	Chip C.	C1608JB1H102KT-A	
C73	CU3017	Chip C.	C1608CH1H330JT-A	
C74	CU3008	Chip C.	C1608CH1H070CT-A	
C75	CU3035	Chip C.	C1608JB1H102KT-A	
C76	CU3035	Chip C.	C1608JB1H102KT-A	
C77	CU3012	Chip C.	C1608CH1H120JT-A	
C78	CU3035	Chip C.	C1608JB1H102KT-A	
C79	CS0216	Chip Tantal	TMCMB1A106MTR	
C80	CU3035	Chip C.	C1608JB1H102KT-A	
C81	CU3008	Chip C.	C1608CH1H070CT-A	
C82	CU3008	Chip C.	C1608CH1H070CT-A	
C83	CU3011	Chip C.	C1608CH1H100DT-A	
C84	CU3005	Chip C.	C1608CH1H040CT-A	
C85	CU3011	Chip C.	C1608CH1H100DT-A	
C86	CU3006	Chip C.	C1608CH1H050CT-A	
C91	CU3003	Chip C.	C1608CH1H020CT-A	
C92	CU3003	Chip C.	C1608CH1H020CT-A	
C93	CU3035	Chip C.	C1608JB1H102KT-A	
C96	CU3023	Chip C.	C1608CH1H101JT-A	
C97	CU3035	Chip C.	C1608JB1H102KT-A	
C98	CU3047	Chip C.	C1608JB1H103KT-A	
C99	CE0364	Electrolytic.C	16MV47SWB	
C100	CU9018	Chip C.	C3216JB1C105MT-N	
C101	CE0365	Electrolytic.C	16MV220HC	
C102	CU9018	Chip C.	C3216JB1C105MT-N	
C103	CE0364	Electrolytic.C	16MV47SWB	
C104	CE0364	Electrolytic.C	16MV47SWB	
C105	CE0342	Electrolytic.C	16MV 470HC+TS	
C106	CU8042	Chip C.	C2012JB1C104KT-A	
C107	CE0364	Electrolytic.C	16MV47SWB	
C108	CE0342	Electrolytic.C	16MV 470HC+TS	
C109	CU8042	Chip C.	C2012JB1C104KT-A	
C110	CU3047	Chip C.	C1608JB1H103KT-A	
C111	CE0366	Electrolytic.C	16MV100SWB	
C113	CU3035	Chip C.	C1608JB1H102KT-A	
C114	CU3047	Chip C.	C1608JB1H103KT-A	
C115	CU3047	Chip C.	C1608JB1H103KT-A	
C116	CU3047	Chip C.	C1608JB1H103KT-A	
C117	CU3047	Chip C.	C1608JB1H103KT-A	
C118	CU3047	Chip C.	C1608JB1H103KT-A	

Ref. No.	Parts No.	Description	Parts Name	Ver.
C119	CS0237	Chip Tantal	TMCMA1A475MTR	
C120	CU3035	Chip C.	C1608JB1H102KT-A	
C121	CU3035	Chip C.	C1608JB1H102KT-A	
C122	CU3035	Chip C.	C1608JB1H102KT-A	
C123	CE0364	Electrolytic.C	16MV47SWB	
C124	CE0367	Electrolytic.C	10MV220SWB	
C125	CU3103	Chip C.	C1608UJ1H150JT-A	
C126	CU3106	Chip C.	C1608UJ1H390J	
C127	CU3006	Chip C.	C1608CH1H050CT-A	
C128	CU3047	Chip C.	C1608JB1H103KT-A	
C129	CU3035	Chip C.	C1608JB1H102KT-A	
C131	CU3035	Chip C.	C1608JB1H102KT-A	
C132	CU3035	Chip C.	C1608JB1H102KT-A	
C133	CU3035	Chip C.	C1608JB1H102KT-A	
C134	CE0367	Electrolytic.C	10MV220SWB	
C135	CU3047	Chip C.	C1608JB1H103KT-A	
C136	CS0216	Chip Tantal	TMCMB1A106MTR	
C137	CU3047	Chip C.	C1608JB1H103KT-A	
C138	CU3013	Chip C.	C1608CH1H150JT-A	
C139	CU3047	Chip C.	C1608JB1H103KT-A	
C140	CU3035	Chip C.	C1608JB1H102KT-A	
C141	CS0216	Chip Tantal	TMCMB1A106MTR	
C143	CU3047	Chip C	C1608JB1H103KT-A	
C144	CU8042	Chip C.	C2012JB1C104KT-A	
C145	CS0049	Chip Tantal	TMCSA1C105MTR	
C146	CU3023	Chip C.	C1608CH1H101JT-A	
C147	CU3023	Chip C.	C1608CH1H101JT-A	
C148	CU3035	Chip C.	C1608JB1H102KT-A	
C149	CU3035	Chip C.	C1608JB1H102KT-A	
C150	CU3102	Chip C.	C1608JB1C333KT-A	
C151	CU3047	Chip C.	C1608JB1H103KT-A	
C152	CU3047	Chip C.	C1608JB1H103KT-A	
C153	CU3006	Chip C.	C1608CH1H050CT-A	
C155	CU3008	Chip C.	C1608CH1H070CT-A	
C156	CU3059	Chip C.	C1608JF1E104ZT-A	
C157	CU3059	Chip C.	C1608JF1E104ZT-A	
C158	CU3059	Chip C.	C1608JF1E104ZT-A	
C159	CU3059	Chip C.	C1608JF1E104ZT-A	
C160	CU3021	Chip C.	C1608CH1H680JT-A	
C161	CE0376	Electrolytic.C	ECEV1CS100SR	
C162	CU3047	Chip C.	C1608JB1H103KT-A	
C163	CU3047	Chip C.	C1608JB1H103KT-A	
C164	CU3047	Chip C.	C1608JB1H103KT-A	
C165	CU3035	Chip C.	C1608JB1H102KT-A	
C166	CS0216	Chip Tantal	TMCMB1A106MTR	
C167	CU3059	Chip C.	C1608JF1E104ZT-A	
C168	CU8035	Chip C.	C2012B1E393	
C169	CU3059	Chip C.	C1608JF1E104ZT-A	
C170	CU3049	Chip C.	C1608JB1E153KT-A	
C171	CU8034	Chip C.	C2012X7R1E333KT	
C172	CU8035	Chip C.	C2012B1E393	
C173	CS0216	Chip Tantal	TMCMB1A106MTR	
C174	CU3044	Chip C.	C1608JB1H562KT-A	
C175	CU3044	Chip C.	C1608JB1H562KT-A	

VHF MAIN Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
C176	CU3059	Chip C.	C1608JF1E104ZT-A	
C177	CU9018	Chip C.	C3216JB1C105MT-N	
C178	CS0216	Chip Tantal	TMCMB1A106MTR	
C179	CS0216	Chip Tantal	TMCMB1A106MTR	
C180	CU3047	Chip C.	C1608JB1H103KT-A	
C181	CU3047	Chip C.	C1608JB1H103KT-A	
C182	CU3047	Chip C.	C1608JB1H103KT-A	
C183	CE0364	Electrolytic.C	16MV47SWB	
C184	CU3047	Chip C.	C1608JB1H103KT-A	
C185	CE0339	Electrolytic.C	16MV10SWB	
C186	CU3047	Chip C.	C1608JB1H103KT-A	
C187	CU3047	Chip C.	C1608JB1H103KT-A	
C188	CU3059	Chip C.	C1608JF1E104ZT-A	
C189	CU8046	Chip C.	C2012JB1C224KT-A	
C190	CU8046	Chip C.	C2012JB1C224KT-A	
C191	CU3023	Chip C.	C1608CH1H101JT-A	
C192	CU3035	Chip C.	C1608JB1H102KT-A	
C193	CU3035	Chip C.	C1608JB1H102KT-A	
C194	CS0063	Chip Tantal	TMCSA1V104MTR	
C195	CU3023	Chip C.	C1608CH1H101JT-A	
C196	CU3023	Chip C.	C1608CH1H101JT-A	
C197	CU3035	Chip C.	C1608JB1H102KT-A	
C198	CU3023	Chip C.	C1608CH1H101JT-A	
C199	CU3023	Chip C.	C1608CH1H101JT-A	
C200	CU3035	Chip C.	C1608JB1H102KT-A	
C201	CU3035	Chip C.	C1608JB1H102KT-A	
C202	CU3059	Chip C.	C1608JF1E104ZT-A	
C203	CU3047	Chip C.	C1608JB1H103KT-A	
C204	CU3035	Chip C.	C1608JB1H102KT-A	
C205	CU3047	Chip C.	C1608JB1H103KT-A	
C206	CU3047	Chip C.	C1608JB1H103KT-A	
C207	CU3035	Chip C.	C1608JB1H102KT-A	
C208	CU3035	Chip C.	C1608JB1H102KT-A	
C209	CU3047	Chip C.	C1608JB1H103KT-A	
C210	CU3035	Chip C.	C1608JB1H102KT-A	
C211	CU3047	Chip C.	C1608JB1H103KT-A	
C212	CU3035	Chip C.	C1608JB1H102KT-A	
C213	CU3047	Chip C.	C1608JB1H103KT-A	
C214	CS0237	Chip Tantal	TMCMA1A475MTR	
C215	CU3107	Chip C.	C1608UJ1H820J	
C216	CU3035	Chip C.	C1608JB1H102KT-A	
C217	CU3059	Chip C.	C1608JF1E104ZT-A	
C227	CU3035	Chip C.	C1608JB1H102KT-A	
C228	CU3035	Chip C.	C1608JB1H102KT-A	
C229	CU8042	Chip C.	C2012JB1C104KT-A	
C230	CU3035	Chip C.	C1608JB1H102KT-A	
C231	CU3059	Chip C.	C1608JF1E104ZT-A	
C232	CS0049	Chip Tantal	TMCSA1C105MTR	
C233	CU3035	Chip C.	C1608JB1H102KT-A	
C234	CS0237	Chip Tantal	TMCMA1A475MTR	
C235	CU3047	Chip C.	C1608JB1H103KT-A	
C236	CU3035	Chip C.	C1608JB1H102KT-A	
C237	CS0237	Chip Tantal	TMCMA1A475MTR	
C238	CU3047	Chip C.	C1608JB1H103KT-A	

Ref. No.	Parts No.	Description	Parts Name	Ver.
Q36	XT0095	Transistor	2SC4081T106R	
Q37	XT0095	Transistor	2SC4081T106R	
Q38	XU0061	Transistor	UN5211-TX	
Q39	XU0061	Transistor	UN5211-TX	
Q40	XT0095	Transistor	2SC4081T106R	
Q41	XU0054	Transistor	XN1213-TX	
Q42	XU0112	Transistor	DTA114YUT106	
Q43	XT0095	Transistor	2SC4081T106R	
R1	RK3050	Chip R.	ERJ3GSYJ103V	
R2	RK3050	Chip R.	ERJ3GSYJ103V	
R3	RK3064	Chip R.	ERJ3GSYJ154V	
R4	RK3042	Chip R.	ERJ3GSYJ222V	
R5	RK3042	Chip R.	ERJ3GSYJ222V	
R6	RK3049	Chip R.	ERJ3GSYJ822V	
R7	RK3042	Chip R.	ERJ3GSYJ222V	
R8	RK3042	Chip R.	ERJ3GSYJ222V	
R9	RK4026	Chip R.	ERJ-12YJ101V	
R11	RK4018	Chip R.	ERJ-12YJ220V	
R12	RK3043	Chip R.	ERJ3GSYJ272V	
R13	RK3034	Chip R.	ERJ3GSYJ471V	
R14	RK3001	Chip R.	ERJ3GSY0R00V	
R15	RK3014	Chip R.	ERJ3GSYJ100V	
R16	RK3038	Chip R.	ERJ3GSYJ102V	
R17	RK3046	Chip R.	ERJ3GSYJ472V	
R18	RK3022	Chip R.	ERJ3GSYJ470V	
R19	RK3042	Chip R.	ERJ3GSYJ222V	
R20	RK3042	Chip R.	ERJ3GSYJ222V	
R21	RK3034	Chip R.	ERJ3GSYJ471V	
R22	RK3050	Chip R.	ERJ3GSYJ103V	
R23	RK3042	Chip R.	ERJ3GSYJ222V	
R24	RK3026	Chip R.	ERJ3GSYJ101V	
R25	RK3067	Chip R.	ERJ3GSYJ274V	
R26	RK3056	Chip R.	ERJ3GSYJ333V	E
R26	RK3052	Chip R.	ERJ3GSYJ153V	T
R27	RK3038	Chip R.	ERJ3GSYJ102V	
R28	RK3026	Chip R.	ERJ3GSYJ101V	
R29	RK3022	Chip R.	ERJ3GSYJ470V	
R31	RK3022	Chip R.	ERJ3GSYJ470V	
R33	RK3026	Chip R.	ERJ3GSYJ101V	
R34	RK3062	Chip R.	ERJ3GSYJ104V	
R35	RK3058	Chip R.	ERJ3GSYJ473V	
R36	RK3052	Chip R.	ERJ3GSYJ153V	T
R36	RK3056	Chip R.	ERJ3GSYJ333V	E
R37	RK3050	Chip R.	ERJ3GSYJ103V	
R38	RK3022	Chip R.	ERJ3GSYJ470V	
R39	RK3062	Chip R.	ERJ3GSYJ104V	
R40	RK3062	Chip R.	ERJ3GSYJ104V	
R41	RK3062	Chip R.	ERJ3GSYJ104V	
R42	RK3050	Chip R.	ERJ3GSYJ103V	
R43	RK3050	Chip R.	ERJ3GSYJ103V	
R44	RK3050	Chip R.	ERJ3GSYJ103V	
R45	RK3058	Chip R.	ERJ3GSYJ473V	
R46	RK3042	Chip R.	ERJ3GSYJ222V	

VHF MAIN Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
R48	RK3062	Chip R.	ERJ3GSYJ104V	
R49	RK3042	Chip R.	ERJ3GSYJ222V	
R50	RK3026	Chip R.	ERJ3GSYJ101V	
R51	RK3026	Chip R.	ERJ3GSYJ101V	
R52	RK3026	Chip R.	ERJ3GSYJ101V	
R53	RK3058	Chip R.	ERJ3GSYJ473V	
R54	RK3042	Chip R.	ERJ3GSYJ222V	
R55	RK3026	Chip R.	ERJ3GSYJ101V	
R56	RK3062	Chip R.	ERJ3GSYJ104V	
R57	RK3062	Chip R.	ERJ3GSYJ104V	
R60	RK3001	Chip R.	ERJ3GSY0R00V	
R61	RK3050	Chip R.	ERJ3GSYJ103V	
R62	RK3050	Chip R.	ERJ3GSYJ103V	
R63	RK3030	Chip R.	ERJ3GSYJ221V	
R64	RK3054	Chip R.	ERJ3GSYJ223V	
R65	RK3054	Chip R.	ERJ3GSYJ223V	
R66	RK3030	Chip R.	ERJ3GSYJ221V	
R67	RK0130	Chip R.	ERJ6GEYJ4R7V	
R68	RK0130	Chip R.	ERJ6GEYJ4R7V	
R69	RK3039	Chip R.	ERJ3GSYJ122V	
R70	RK3074	Chip R.	ERJ3GSYJ105V	
R71	RK3050	Chip R.	ERJ3GSYJ103V	
R72	RK3050	Chip R.	ERJ3GSYJ103V	
R73	RK3050	Chip R.	ERJ3GSYJ103V	
R74	RK3050	Chip R.	ERJ3GSYJ103V	
R75	RK3042	Chip R.	ERJ3GSYJ222V	
R76	RK3018	Chip R.	ERJ3GSYJ220V	
R77	RK3026	Chip R.	ERJ3GSYJ101V	
R78	RK3058	Chip R.	ERJ3GSYJ473V	
R79	RK3034	Chip R.	ERJ3GSYJ471V	
R80	RK3058	Chip R.	ERJ3GSYJ473V	
R81	RK3026	Chip R.	ERJ3GSYJ101V	
R82	RK3038	Chip R.	ERJ3GSYJ102V	
R83	RK3062	Chip R.	ERJ3GSYJ104V	
R85	RK3050	Chip R.	ERJ3GSYJ103V	
R86	RK3062	Chip R.	ERJ3GSYJ104V	
R87	RK3074	Chip R.	ERJ3GSYJ105V	
R88	RK3050	Chip R.	ERJ3GSYJ103V	
R89	RK3032	Chip R.	ERJ3GSYJ331V	
R90	RK3033	Chip R.	ERJ3GSYJ391V	
R91	RK3026	Chip R.	ERJ3GSYJ101V	
R92	RK3038	Chip R.	ERJ3GSYJ102V	
R93	RK3062	Chip R.	ERJ3GSYJ104V	
R94	RK3026	Chip R.	ERJ3GSYJ101V	
R95	RK3050	Chip R.	ERJ3GSYJ103V	
R96	RK3052	Chip R.	ERJ3GSYJ153V	
R97	RK3071	Chip R.	ERJ3GSYJ564V	
R98	RK3050	Chip R.	ERJ3GSYJ103V	
R99	RK3044	Chip R.	ERJ3GSYJ332V	
R100	RK3070	Chip R.	ERJ3GSYJ474V	
R101	RK3052	Chip R.	ERJ3GSYJ153V	
R102	RK3001	Chip R.	ERJ3GSY0R00V	
R104	RK3042	Chip R.	ERJ3GSYJ222V	
R105	RK3055	Chip R.	ERJ3GSYJ273V	

VHF MAIN Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
CN1	UE0224	Connector	19PS-JE	
CN2	UE0227	Connector	00-8283-0912	
CN3	UE0043	Connector	PI22A02M	
CN4	UE0116	Short Pin	Pin18MM	
CN5	UE0116	Short Pin	Pin18MM	
CN6	UE0116	Short Pin	Pin18MM	
D1	XD0250	Diode	MA742-TX	
D2	XD0250	Diode	MA742-TX	
D3	XD0103	Diode	1SS226TE85L	
D4	XD0257	Diode	RN711HTT11	
D5	XD0254	Diode	1SS355 TE17	
D6	XD0230	Diode	DAN202UT106	
D7	XD0013	Diode	MI407	
D8	XD0014	Diode	MI308	
D9	XD0254	Diode	1SS355 TE17	
D10	XD0246	Diode	DAN235UT106	
D11	XD0246	Diode	DAN235UT106	
D12	XD0230	Diode	DAN202UT106	
D13	XD0246	Diode	DAN235UT106	
D14	XD0233	Diode	1SV217TPH4	
D15	XD0233	Diode	1SV217TPH4	
D16	XD0233	Diode	1SV217TPH4	
D17	XD0233	Diode	1SV217TPH4	
D18	XD0136	Diode	DTZ5.1ATT11	
D19	XD0254	Diode	1SS355 TE17	
D20	XD0250	Diode	MA742-TX	
D23	XD0136	Diode	DTZ5.1ATT11	
D24	XD0246	Diode	DAN235UT106	
FL1	XC0016	Filter	CFWS455E	
FL2	XF0016	Filter	45N15B1H	
IC1	XA0185	IC	S-AV17	
IC2	XA0223	IC	TK10930VTL	
IC3	XA0116	IC	LA4445	
IC4	XA0087	IC	TC4S01F TE85	
IC5	XA0115	IC	TC4S66FTE85L	
IC6	XA0115	IC	TC4S66FTE85L	
IC7	XA0246	IC	BU4094BF-T1	
IC8	XA0246	IC	BU4094BF-T1	
IC9	XA0095	IC	NJU4066BM-T1	
IC10	XA0151	IC	µPC1676G-T1	
IC11	XA0319	IC	TC4W53F(TE12L)	
JK1	UJ0027	Connector	HSJ1468-01-020	
JK2	UJ0021	Connector	HSJ0837-01-010	
L1	QKA35E	Coil	COIL MR3.0 3.5T 0.8	
L2	QKA35E	Coil	COIL MR3.0 3.5T 0.8	
L3	QKA35E	Coil	COIL MR3.0 3.5T 0.8	
L4	QKA45E	Coil	COIL MR3.0 4.5T 0.8	
L5	QKA95D	Coil	COIL MR3.0 9.5T 0.6	
L6	QKA55E	Coil	COIL MR3.0 5.5T 0.8	

Ref. No.	Parts No.	Description	Parts Name	Ver.
L7	QKA95D	Coil	COIL MR3.0 9.5T 0.6	
L8	QKA35D	Coil	COIL MR3.0 3.5T 0.6	
L9	QC0063	Coil	NL322522T-047J	
L10	QC0063	Coil	NL322522T-047J	
L11	QC0067	Coil	NL322522T-R10J	
L12	QC0066	Coil	NL322522T-082M	
L13	QC0125	Coil	NL322522T-R18J-3	
L14	QC0125	Coil	NL322522T-R18J-3	
L15	QA0112	Coil	V666SHS-063DAQ	
L16	QA0112	Coil	V666SHS-063DAQ	
L17	QA0112	Coil	V666SHS-063DAQ	
L18	QA0112	Coil	V666SHS-063DAQ	
L19	QC0039	Coil	NL322522T-1R0J	
L20	QC0058	Coil	NL322522T-018J	
L21	QC0058	Coil	NL322522T-018J	
L23	QC0062	Coil	NL322522T-039J	
L24	QC0069	Coil	NL322522T-R15M	
L25	QC0048	Coil	NL322522T-100J	
L26	QC0063	Coil	NL322522T-047J	
Q1	XT0084	Transistor	2SC2954T1	
Q2	XT0048	Transistor	2SC3357T1RE	
Q3	XT0124	Transistor	2SC4215Y TE85L	
Q4	XU0164	Transistor	XN1212-TX	
Q5	XT0095	Transistor	2SC4081T106R	
Q6	XE0013	FET	3SK184STX	
Q7	XE0028	FET	3SK131V12	
Q8	XE0028	FET	3SK131V12	
Q9	XU0061	Transistor	UN5211-TX	
Q10	XE0013	FET	3SK184STX	
Q11	XU0061	Transistor	UN5211-TX	
Q12	XT0095	Transistor	2SC4081T106R	
Q13	XU0021	Transistor	FMC3T98	
Q14	XE0025	Transistor	2SK1588T1	
Q16	XU0021	Transistor	FMC3T98	
Q17	XU0046	Transistor	XN111M-TX	
Q18	XU0046	Transistor	XN111M-TX	
Q19	XU0054	Transistor	XN1213-TX	
Q20	XU0054	Transistor	XN1213-TX	
Q21	XT0095	Transistor	2SC4081T106R	
Q22	XT0095	Transistor	2SC4081T106R	
Q23	XE0021	FET	2SK880GRTE85L	
Q24	XE0021	FET	2SK880GRTE85L	
Q25	XT0096	Transistor	2SC4099T106N	
Q26	XE0019	Transistor	2SJ144YTE85R	
Q27	XT0095	Transistor	2SC4081T106R	
Q28	XU0061	Transistor	UN5211-TX	
Q29	XT0061	Transistor	2SB1132T100Q	
Q30	XU0061	Transistor	UN5211-TX	
Q31	XT0061	Transistor	2SB1132T100Q	
Q32	XU0061	Transistor	UN5211-TX	
Q33	XU0021	Transistor	FMC3T98	
Q34	XT0095	Transistor	2SC4081T106R	
Q35	XT0095	Transistor	2SC4081T106R	

VHF MAIN Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
R106	RK3051	Chip R.	ERJ3GSYJ123V	
R107	RK3048	Chip R.	ERJ3GSYJ682V	
R108	RK3044	Chip R.	ERJ3GSYJ332V	
R109	RK3001	Chip R.	ERJ3GSY0R00V	
R110	RK3044	Chip R.	ERJ3GSYJ332V	
R111	RK3048	Chip R.	ERJ3GSYJ682V	
R112	RK3044	Chip R.	ERJ3GSYJ332V	
R113	RK3071	Chip R.	ERJ3GSYJ564V	
R114	RK3038	Chip R.	ERJ3GSYJ102V	
R115	RK3050	Chip R.	ERJ3GSYJ103V	
R116	RK3030	Chip R.	ERJ3GSYJ221V	
R117	RK3043	Chip R.	ERJ3GSYJ272V	
R118	RK3042	Chip R.	ERJ3GSYJ222V	
R119	RK3050	Chip R.	ERJ3GSYJ103V	
R120	RK3040	Chip R.	ERJ3GSYJ152V	
R121	RK3050	Chip R.	ERJ3GSYJ103V	
R122	RK3040	Chip R.	ERJ3GSYJ152V	
R123	RK3026	Chip R.	ERJ3GSYJ101V	
R124	RK3044	Chip R.	ERJ3GSYJ332V	
R125	RK3030	Chip R.	ERJ3GSYJ221V	
R126	RK3026	Chip R.	ERJ3GSYJ101V	
R127	RK3046	Chip R.	ERJ3GSYJ472V	
R128	RK3054	Chip R.	ERJ3GSYJ223V	
R129	RK3071	Chip R.	ERJ3GSYJ564V	
R130	RK3030	Chip R.	ERJ3GSYJ221V	
R131	RK3046	Chip R.	ERJ3GSYJ472V	
R132	RK3071	Chip R.	ERJ3GSYJ564V	
R133	RK3050	Chip R.	ERJ3GSYJ103V	
R134	RK3042	Chip R.	ERJ3GSYJ222V	
R135	RK3001	Chip R.	ERJ3GSY0R00V	
R136	RK3071	Chip R.	ERJ3GSYJ564V	
R137	RK3001	Chip R.	ERJ3GSY0R00V	
R138	RK3054	Chip R.	ERJ3GSYJ223V	
R139	RK3058	Chip R.	ERJ3GSYJ473V	
R141	RK3042	Chip R.	ERJ3GSYJ222V	
R142	RK3038	Chip R.	ERJ3GSYJ102V	
R143	RK3042	Chip R.	ERJ3GSYJ222V	
R146	RK3071	Chip R.	ERJ3GSYJ564V	
R147	RK3050	Chip R.	ERJ3GSYJ103V	
R148	RK3062	Chip R.	ERJ3GSYJ104V	
R150	RK3001	Chip R.	ERJ3GSY0R00V	
R154	RK3050	Chip R.	ERJ3GSYJ103V	
R166	RK3026	Chip R.	ERJ3GSYJ101V	
R167	RK3062	Chip R.	ERJ3GSYJV104	
R169	RK3001	Chip R.	ERJ3GSY0R00V	
R170	RK3001	Chip R.	ERJ3GSY0R00V	
R171	RK3057	Chip R.	ERJ3GSYJ393V	
R172	RK3001	Chip R.	ERJ3GSY0R00V	
R177	RK3001	Chip R.	ERJ3GSY0R00V	
R178	RK3050	Chip R.	ERJ3GSYJ103V	
R179	RK3060	Chip R.	ERJ3GSYJ683V	
R180	RK3042	Chip R.	ERJ3GSYJ222V	
R181	RK3050	Chip R.	ERJ3GSYJ103V	
R182	RK3070	Chip R.	ERJ3GSYJ474V	

Ref. No.	Parts No.	Description	Parts Name	Ver.
R183	RK3026	Chip R.	ERJ3GSYJ101V	
R184	RK3050	Chip R.	ERJ3GSYJ103V	
R185	RK3050	Chip R.	ERJ3GSYJ103V	
R186	RK3052	Chip R.	ERJ3GSYJ153V	
R187	RK3050	Chip R.	ERJ3GSYJ103V	
R188	RK3001	Chip R.	ERJ3GSY0R00V	
R189	RK3050	Chip R.	ERJ3GSYJ103V	
R190	RK3052	Chip R.	ERJ3GSYJ153V	
R191	RK3026	Chip R.	ERJ3GSYJ101V	
R192	RK3001	Chip R.	ERJ3GSY0R00V	
TC1	CT0012	Trim. C.	CTZ-10AW	
TH1	XS0014	Thermister	TBPS1R223K460H5Q	
TS1	UL0013	Thermal Relay	OHD5S-95B	
VR1	RH0103	Trim. Pot	EVM1YSX50B14	
VR2	RH0103	Trim. Pot	EVM1YSX50B14	
VR3	RH0106	Trim. Pot	EVM1YSX50BQ4	
VR4	RH0103	Trim. Pot	EVM1YSX50B14	
VR5	RH0106	Trim. Pot	EVM1YSX50BQ4	
X1	XQ0068	Crystal	HC-49/T 12.8MHz	
X2	XQ0069	Crystal	UM5 45.555MHz	
X3	XK0002	Discriminator	CDBM455C7	
Y1	TZ0056	Silicon Dumper	Silicon Dumper 49U	
Y2	TZ0049	Silicon Dumper	Silicon Dumper	
Y3	TZ0049	Silicon Dumper	Silicon Dumper	
Y4	TZ0049	Silicon Dumper	Silicon Dumper	
M1	SD0034	Spring	Earth Spring DR130	
M2	SD0034	Spring	Earth Spring DR130	
	TS0094	Shield Case	PM shield DR610	

UHF MAIN Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
		UHF MAIN Unit		
C293	CU7010	Chip C.	TE82U232H0020C	
C294	CC5049	Ceramic C.	RCC05SL010C-L46AE	
C295	CU3023	Chip C.	C1608CH1H101JT-A	
C296	CU3007	Chip C.	C1608CH1H060CT-A	
C299	CU3035	Chip C.	C1608JB1H102KT-A	
C301	CC5060	Ceramic C.	RCC05SL150J-L46AE	
C302	CC5053	Ceramic C.	RCC05SL050C-L46AE	
C303	CC5056	Ceramic C.	RCC05SL080D-L46AE	
C304	CC5073	Ceramic C.	RCC05SL560J-L46AU	
C305	CU3004	Chip C.	C1608CH1H030CT-A	E
C306	CU3003	Chip C.	C1608CH1H020CT-A	
C307	CU3004	Chip C.	C1608CH1H030CT-A	
C308	CC5056	Ceramic C.	RCC05SL080D-L46AE	
C309	CU3001	Chip C.	C1608CH1H0R5CT-A	
C310	CC5058	Ceramic C.	RCC05SL100D-L46AE	
C311	CU3001	Chip C.	C1608CH1H0R5CT-A	
C312	CC5053	Ceramic C.	RCC05SL050C-L46AE	
C314	CE0376	Electrolytic.C	ECEV1CS100SR	
C315	CU3035	Chip C.	C1608JB1H102KT-A	
C316	CU7014	Chip C.	TE82U232H0060D	
C317	CU3035	Chip C.	C1608JB1H102KT-A	
C318	CU3047	Chip C.	C1608JB1H103KT-A	
C319	CU3035	Chip C.	C1608JB1H102KT-A	
C320	CU0004	Chip C.	C2012CH1H030CT-A	
C321	CU0006	Chip C.	C2012CH1H050CT-A	
C322	CS0049	Chip Tantal	TMCSA1C105MTR	
C323	CU3035	Chip C.	C1608JB1H102KT-A	
C324	CE0376	Electrolytic.C	ECEV1CS100SR	
C325	CE0376	Electrolytic.C	ECEV1CS100SR	
C326	CU3035	Chip C.	C1608JB1H102KT-A	
C327	CU3035	Chip C.	C1608JB1H102KT-A	
C328	CU3004	Chip C.	C1608CH1H030CT-A	
C329	CU3011	Chip C.	C1608CH1H100DT-A	
C330	CU3035	Chip C.	C1608JB1H102KT-A	
C331	CU3035	Chip C.	C1608JB1H102KT-A	
C332	CU3035	Chip C.	C1608JB1H102KT-A	
C333	CU3011	Chip C.	C1608CH1H100DT-A	
C334	CU3035	Chip C.	C1608JB1H102KT-A	
C335	CU3035	Chip C.	C1608JB1H102KT-A	
C336	CU3015	Chip C.	C1608CH1H220JT-A	
C337	CU3035	Chip C.	C1608JB1H102KT-A	
C338	CE0339	Electrolytic.C	16MV10SWB	
C339	CU3035	Chip C.	C1608JB1H102KT-A	
C340	CU3003	Chip C.	C1608CH1H020CT-A	
C341	CU3035	Chip C.	C1608JB1H102KT-A	
C342	CU3035	Chip C.	C1608JB1H102KT-A	
C343	CU3035	Chip C.	C1608JB1H102KT-A	
C344	CU3003	Chip C.	C1608CH1H020CT-A	
C345	CU3035	Chip C.	C1608JB1H102KT-A	
C346	CU3043	Chip C.	C1608JB1H472KT-A	
C347	CU3035	Chip C.	C1608JB1H102KT-A	
C348	CU3035	Chip C.	C1608JB1H102KT-A	
C349	CS0049	Chip Tantal	TMCSA1C105MTR	

UHF MAIN Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
C350	CU3035	Chip C.	C1608JB1H102KT-A	
C351	CU3035	Chip C.	C1608JB1H102KT-A	
C352	CU3035	Chip C.	C1608JB1H102KT-A	
C353	CU3035	Chip C.	C1608JB1H102KT-A	
C354	CU3035	Chip C.	C1608JB1H102KT-A	
C355	CU3035	Chip C.	C1608JB1H102KT-A	
C356	CU3035	Chip C.	C1608JB1H102KT-A	
C357	CU3023	Chip C.	C1608CH1H101JT-A	
C358	CU3002	Chip C.	C1608CH1H010CT-A	
C359	CU3035	Chip C.	C1608JB1H102KT-A	
C360	CU3035	Chip C.	C1608JB1H102KT-A	
C361	CU3035	Chip C.	C1608JB1H102KT-A	
C363	CU3035	Chip C.	C1608JB1H102KT-A	
C364	CU3005	Chip C.	C1608CH1H040CT-A	
C365	CU3035	Chip C.	C1608JB1H102KT-A	
C366	CE0376	Electrolytic.C	ECEV1CS100SR	
C367	CU3035	Chip C.	C1608JB1H102KT-A	
C370	CU3003	Chip C.	C1608CH1H020CT-A	
C371	CU3035	Chip C.	C1608JB1H102KT-A	
C372	CU3059	Chip C.	C1608JF1E104ZT-A	
C373	CU3035	Chip C.	C1608JB1H102KT-A	
C374	CU3035	Chip C.	C1608JB1H102KT-A	
C375	CU3003	Chip C.	C1608CH1H020CT-A	
C376	CU3017	Chip C.	C1608CH1H330JT-A	
C377	CU3035	Chip C.	C1608JB1H102KT-A	
C378	CU3035	Chip C.	C1608JB1H102KT-A	
C379	CU3035	Chip C.	C1608JB1H102KT-A	
C380	CU3002	Chip C.	C1608CH1H010CT-A	
C381	CU3017	Chip C.	C1608CH1H330JT-A	
C382	CU3003	Chip C.	C1608CH1H020CT-A	
C383	CU3004	Chip C.	C1608CH1H030CT-A	
C384	CU3035	Chip C.	C1608JB1H102KT-A	
C385	CU3035	Chip C.	C1608JB1H102KT-A	
C386	CU3008	Chip C.	C1608CH1H070CT-A	
C387	CU3013	Chip C.	C1608CH1H150JT-A	
C388	CU3013	Chip C.	C1608CH1H150JT-A	
C389	CU3020	Chip C.	C1608CH1H560JT-A	
C390	CU3035	Chip C.	C1608JB1H102KT-A	
C391	CU3035	Chip C.	C1608JB1H102KT-A	
C392	CU3016	Chip C.	C1608CH1H270JT-A	
C393	CU3014	Chip C.	C1608CH1H180JT-A	
C394	CU3015	Chip C.	C1608CH1H220JT-A	
C395	CU3007	Chip C.	C1608CH1H060CT-A	
C396	CU3014	Chip C.	C1608CH1H180JT-A	
C397	CU3011	Chip C.	C1608CH1H100DT-A	
C398	CU3007	Chip C.	C1608CH1H060CT-A	
C399	CU3006	Chip C.	C1608CH1H050CT-A	
C400	CU3035	Chip C.	C1608JB1H102KT-A	
C401	CE0376	Electrolytic.C	ECEV1CS100SR	
C402	CU3035	Chip C.	C1608JB1H102KT-A	
C403	CU3047	Chip C.	C1608JB1H103KT-A	
C404	CU3047	Chip C.	C1608JB1H103KT-A	
C405	CU3047	Chip C.	C1608JB1H103KT-A	
C406	CU3035	Chip C.	C1608JB1H102KT-A	

UHF MAIN Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
C407	CU3023	Chip C.	C1608CH1H101JT-A	
C408	CU3023	Chip C.	C1608CH1H101JT-A	
C409	CU3047	Chip C.	C1608JB1H103KT-A	
C410	CU3035	Chip C.	C1608JB1H102KT-A	
C411	CU3035	Chip C.	C1608JB1H102KT-A	
C412	CU3011	Chip C.	C1608CH1H100DT-A	
C413	CU3006	Chip C.	C1608CH1H050CT-A	
C414	CE0367	Electrolytic.C	10MV220SWB	
C415	CU3035	Chip C.	C1608JB1H102KT-A	
C416	CE0364	Electrolytic.C	16MV47SWB	
C417	CU3035	Chip C.	C1608JB1H102KT-A	
C418	CU3035	Chip C.	C1608JB1H102KT-A	
C419	CS0237	Chip Tantal	TMCMA1A475MTR	
C420	CU3035	Chip C.	C1608JB1H102KT-A	
C421	CU3013	Chip C.	C1608CH1H150JT-A	
C422	CE0376	Electrolytic.C	ECEV1CS100SR	
C423	CU3035	Chip C.	C1608JB1H102KT-A	
C424	CU3035	Chip C.	C1608JB1H102KT-A	
C426	CU3047	Chip C.	C1608JB1H103KT-A	
C427	CU8042	Chip C.	C2012JB1C104KT-A	
C428	CS0049	Chip Tantal	TMCSA1C105MTR	
C429	CU3023	Chip C.	C1608CH1H101JT-A	
C430	CU3023	Chip C.	C1608CH1H101JT-A	
C431	CU3035	Chip C.	C1608JB1H102KT-A	
C432	CU3035	Chip C.	C1608JB1H102KT-A	
C433	CU3035	Chip C.	C1608JB1H102KT-A	
C434	CU3047	Chip C.	C1608JB1H103KT-A	
C435	CU3004	Chip C.	C1608CH1H030CT-A	
C436	CU3035	Chip C.	C1608JB1H102KT-A	
C437	CU3007	Chip C.	C1608CH1H060CT-A	
C438	CU3059	Chip C.	C1608JF1E104ZT-A	
C439	CU3059	Chip C.	C1608JF1E104ZT-A	
C440	CU3020	Chip C.	C1608CH1H560JT-A	
C441	CU3047	Chip C.	C1608JB1H103KT-A	
C442	CE0376	Electrolytic.C	ECEV1CS100SR	
C443	CE0376	Electrolytic.C	ECEV1CS100SR	
C444	CU3059	Chip C.	C1608JF1E104ZT-A	
C445	CU8046	Chip C.	C2012JB1C224KT-A	
C446	CU8046	Chip C.	C2012JB1C224KT-A	
C447	CU3059	Chip C.	C1608JF1E104ZT-A	
C448	CU8034	Chip C.	C2012X7R1E333KT	
C449	CU3049	Chip C.	C1608JF1E153KT-A	
C450	CU8035	Chip C.	C2012B1E393	
C451	CU3044	Chip C.	C1608JB1H562KT-A	
C452	CU3044	Chip C.	C1608JB1H562KT-A	
C453	CU3059	Chip C.	C1608JF1E104ZT-A	
C454	CU9018	Chip C.	C3216JB1C105MT-N	
C455	CE0364	Electrolytic.C	16MV47SWB	
C456	CU3047	Chip C.	C1608JB1H103KT-A	
C457	CU3047	Chip C.	C1608JB1H103KT-A	
C458	CE0339	Electrolytic.C	16MV10SWB	
C459	CU3047	Chip C.	C1608JB1H103KT-A	
C460	CU3047	Chip C.	C1608JB1H103KT-A	
C461	CS0216	Chip Tantal	TMCMB1A106MTR	

Ref. No.	Parts No.	Description	Parts Name	Ver.
C462	CE0366	Electrolytic.C	16MV100SWB	
C463	CU3035	Chip C.	C1608JB1H102KT-A	
C464	CU3035	Chip C.	C1608JB1H102KT-A	
C465	CU3035	Chip C.	C1608JB1H102KT-A	
C466	CU3047	Chip C.	C1608JB1H103KT-A	
C467	CE0364	Electrolytic.C	16MV47SWB	
C468	CU3047	Chip C.	C1608JB1H103KT-A	
C469	CE0366	Electrolytic.C	16MV100SWB	
C470	CU3035	Chip C.	C1608JB1H102KT-A	
C471	CU3047	Chip C.	C1608JB1H103KT-A	
C472	CE0366	Electrolytic.C	16MV100SWB	
C473	CU3035	Chip C.	C1608JB1H102KT-A	
C474	CU3047	Chip C.	C1608JB1H103KT-A	
C475	CE0343	Electrolytic.C	16MV 1000HC+T	
C476	CU3035	Chip C.	C1608JB1H102KT-A	
C477	CU3035	Chip C.	C1608JB1H102KT-A	
C478	CU3035	Chip C.	C1608JB1H102KT-A	
C479	CS0063	Chip Tantal	TMCSA1V104MTR	
C480	CU3023	Chip C.	C1608CH1H101JT-A	
C481	CU3023	Chip C.	C1608CH1H101JT-A	
C482	CU3023	Chip C.	C1608CH1H101JT-A	
C483	CU3023	Chip C.	C1608CH1H101JT-A	
C484	CU3035	Chip C.	C1608JB1H102KT-A	
C485	CU3023	Chip C.	C1608CH1H101JT-A	
C486	CE0367	Electrolytic.C	10MV220SWB	
C487	CU3047	Chip C.	C1608JB1H103KT-A	
C488	CU3047	Chip C.	C1608JB1H103KT-A	
C489	CS0237	Chip Tantal	TMCMA1A475MTR	
C490	CU8012	Chip C.	C2012JB1H471KT-A	
C491	CU3035	Chip C.	C1608JB1H102KT-A	
C492	CU3047	Chip C.	C1608JB1H103KT-A	
C493	CS0237	Chip Tantal	TMCMA1A475MTR	
C495	CU3035	Chip C.	C1608JB1H102KT-A	
C496	CU3031	Chip C.	C1608JB1H471KT-A	
C498	CU3035	Chip C.	C1608JB1H102KT-A	
C499	CE0343	Electrolytic.C	16MV 1000HC+T	
CN301	UE0234	Connector	00-6208-000-120-001	
CN302	UE0228	Connector	28-5084-009-000-808	
CN303	UE0226	Connector	B2B-PH-K-S	
CN304	UE0129	Connector	DF9A9S-1V(22)	
CN305	UE0043	Connector	PI22B02M	
CN306	UE0257	Connector	A30-30190-05	
CN307	UA0040A	Connector	R-B2.0*0.2Mplug15A	

UHF MAIN Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
D301	XD0250	Diode	MA742-TX	
D302	XD0250	Diode	MA742-TX	
D303	XD0014	Diode	MI308	
D304	XD0013	Diode	MI407	
D305	XD0254	Diode	1SS355 TE17	
D306	XD0254	Diode	1SS355 TE17	
D307	XD0254	Diode	1SS355 TE17	
D308	XD0141	Diode	1SV237TE85R	
D309	XD0230	Diode	DAN202UT106	
D310	XD0103	Diode	1SS226TE85L	
D311	XD0246	Diode	DAN235UT106	
D312	XD0230	Diode	DAN202UT106	
D313	XD0141	Diode	1SV237TE85R	
D314	XD0257	Diode	RN711HTT11	E
D315	XD0250	Diode	MA742-TX	
D316	XD0274	Diode	DSA3A1	
D317	XD0230	Diode	DAN202UT106	
D318	XD0136	Diode	DTZ5.1ATT11	
D319	XD0135	Diode	U1BC44TE12L	
FL301	XC0016	Filter	CFWS455E	
FL302	XF0018	Filter	58.3MHz 58N15B	
IC301	XA0313	IC	M57788MR	
IC302	XA0314	IC	TK10489MTL	
IC303	XA0095	IC	NJU4066BM-T1	
IC304	XA0246	IC	BU4094BF-T1	
IC305	XA0246	IC	BU4094BF-T1	
IC306	XA0119	IC	AN8010M-E1	
IC307	XA0082	IC	MCT7808CT	
L301	QKA15E	Coil	COIL MR3.0 1.5T 0.8	
L302	QKA15E	Coil	COIL MR3.0 1.5T 0.8	
L303	QKA15E	Coil	COIL MR3.0 1.5T 0.8	
L304	QKA15E	Coil	COIL MR3.0 1.5T 0.8	
L306	QKA15E	Coil	COIL MR3.0 1.5T 0.8	
L307	QKA25D	Coil	COIL MR3.0 2.5T 0.6	
L308	QKA95D	Coil	COIL MR3.0 9.5T 0.6	
L309	QKA12E	Coil	COIL MR3.0 1.25T 0.8	
L310	QKA12E	Coil	COIL MR3.0 1.25T 0.8	
L311	QKA15D	Coil	COIL MR3.0 1.5T 0.6	
L312	QKA35D	Coil	COIL MR3.0 3.5T 0.6	
L314	QC0058	Coil	NL322522T-018J	
L316	QC0058	Coil	NL322522T-018J	
L317	QC0060	Coil	NL322522T-027J	
L318	QC0063	Coil	NL322522T-047J	
L319	QC0063	Coil	NL322522T-047J	
L320	QC0055	Coil	NL322522T-010J	
L321	QC0055	Coil	NL322522T-010J	
L322	QA0113	Filter	KE07319	T
L322	QA0114	Filter	KE07320	E
L323	QA0113	Filter	KE07319	T
L323	QA0114	Filter	KE07320	E
L324	QC0057	Coil	NL322522T-015J	T

Ref. No.	Parts No.	Description	Parts Name	Ver.
L324	QC0058	Coil	NL322522T-018J	E
L325	QC0062	Coil	NL322522T-039J	
L326	QC0039	Coil	NL322522T-1R0J	
L327	QC0066	Coil	NL322522T-082J	
L328	QC0055	Coil	NL322522T-010J	
L329	QC0039	Coil	NL322522T-1R0J	
L330	QC0056	Coil	NL322522T-012J	
L331	QC0065	Coil	NL322522T-068J	
L332	QC0063	Coil	NL322522T-047J	
L333	QC0063	Coil	NL322522T-047J	
L334	QC0048	Coil	NL322522T-100J	
L335	QKA55E	Coil	COIL MR 3.0 5.5T 0.8	
Q301	XT0078	Transistor	2SC3369	
Q302	XT0048	Transistor	2SC3357T1RE	
Q303	XT0142	Transistor	2SC3356T1BR25	
Q304	XT0125	Transistor	2SC4245Y(TE85L)	
Q305	XU0164	Transistor	XN1212-TX	
Q306	XT0111	Transistor	2SC4081LNT106S	
Q307	XU0053	Transistor	XN1501-TX	
Q308	XT0094	Transistor	2SA1576T106R	
Q309	XT0064	Transistor	2SD1761E	
Q310	XE0013	FET	3SK184STX	
Q311	XE0013	FET	3SK184STX	
Q312	XE0022	FET	2SK1577	
Q313	XE0013	FET	3SK184STX	
Q314	XU0061	Transistor	UN5211-TX	
Q315	XT0115	Transistor	2SC4226T1R24	
Q316	XE0028	FET	3SK131V12T1	
Q317	XU0061	Transistor	UN5211-TX	
Q318	XU0046	Transistor	XN111M-TX	
Q319	XU0046	Transistor	XN111M-TX	
Q320	XU0046	Transistor	XN111M-TX	
Q321	XU0054	Transistor	XN1213-TX	
Q322	XU0054	Transistor	XN1213-TX	
Q323	XU0054	Transistor	XN1213-TX	
Q324	XT0095	Transistor	2SC4081T106R	
Q325	XT0111	Transistor	2SC4081LNT106S	
Q326	XT0096	Transistor	2SC4099T106N	
Q327	XT0111	Transistor	2SC4081LNT106S	
Q328	XT0095	Transistor	2SC4081T106R	
Q329	XT0095	Transistor	2SC4081T106R	
Q330	XT0061	Transistor	2SB1132T100Q	
Q331	XT0061	Transistor	2SB1132T100Q	
Q332	XU0061	Transistor	UN5211-TX	
Q333	XU0061	Transistor	UN5211-TX	
Q334	XT0111	Transistor	2SC4081LNT106S	
Q335	XU0168	Transistor	UN2222-TX	
Q336	XU0168	Transistor	UN2222-TX	
Q337	XT0126	Transistor	2SB1302S-TD	
Q338	XT0095	Transistor	2SC4081T106R	
Q339	XE0019	FET	2SJ144YTE85R	
Q340	XU0054	Transistor	XN1213-TX	
Q341	XU0061	Transistor	UN5211-TX	

UHF MAIN Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
Q342	XU0061	Transistor	UN5211-TX	
Q343	XU0112	Transistor	DTA114YUT106	
R301	RK3050	Chip R.	ERJ3GSYJ103V	
R302	RK3050	Chip R.	ERJ3GSYJ103V	
R303	RK3064	Chip R.	ERJ3GSYJ154V	
R304	RK3044	Chip R.	ERJ3GSYJ332V	
R305	RK4026	Chip R.	ERJ-12YJ101V	
R306	RK0107	Chip R.	ERJ6GSY0R00V	
R308	RK0028	Chip R.	ERJ6GSYJ471V	
R309	RK4018	Chip R.	ERJ-12YJ220V	
R310	RK3042	Chip R.	ERJ3GSYJ222V	
R311	RK3026	Chip R.	ERJ3GSYJ101V	
R312	RK3038	Chip R.	ERJ3GSYJ102V	
R313	RK3022	Chip R.	ERJ3GSYJ470V	
R314	RK3040	Chip R.	ERJ3GSYJ152V	
R315	RK3026	Chip R.	ERJ3GSYJ101V	
R316	RK3022	Chip R.	ERJ3GSYJ470V	
R317	RK3038	Chip R.	ERJ3GSYJ102V	
R318	RK3018	Chip R.	ERJ3GSYJ220V	
R319	RK3050	Chip R.	ERJ3GSYJ103V	
R320	RK3042	Chip R.	ERJ3GSYJ222V	
R322	RK3001	Chip R.	ERJ3GSY0R00V	
R324	RK3038	Chip R.	ERJ3GSYJ102V	
R325	RK3042	Chip R.	ERJ3GSYJ222V	
R326	RK3034	Chip R.	ERJ3GSYJ471V	
R327	RK3050	Chip R.	ERJ3GSYJ103V	
R328	RK3042	Chip R.	ERJ3GSYJ222V	
R329	RK3026	Chip R.	ERJ3GSYJ101V	
R330	RK3018	Chip R.	ERJ3GSYJ220V	
R331	RK3040	Chip R.	ERJ3GSYJ152V	
R332	RK3050	Chip R.	ERJ3GSYJ103V	
R333	RK3050	Chip R.	ERJ3GSYJ103V	
R334	RK3040	Chip R.	ERJ3GSYJ152V	
R335	RK3042	Chip R.	ERJ3GSYJ222V	
R336	RK3038	Chip R.	ERJ3GSYJ102V	
R337	RK3046	Chip R.	ERJ3GSYJ472V	
R338	RK3054	Chip R.	ERJ3GSYJ223V	
R339	RK3026	Chip R.	ERJ3GSYJ101V	
R340	RK3062	Chip R.	ERJ3GSYJ104V	
R341	RK3059	Chip R.	ERJ3GSYJ563V	
R342	RK3022	Chip R.	ERJ3GSYJ470V	
R343	RK3038	Chip R.	ERJ3GSYJ102V	
R344	RK3022	Chip R.	ERJ3GSYJ470V	
R345	RK3030	Chip R.	ERJ3GSYJ221V	
R346	RK3022	Chip R.	ERJ3GSYJ470V	
R347	RK3030	Chip R.	ERJ3GSYJ221V	
R348	RK3001	Chip R.	ERJ3GSY0R00V	
R349	RK3042	Chip R.	ERJ3GSYJ222V	
R350	RK3026	Chip R.	ERJ3GSYJ101V	
R351	RK3062	Chip R.	ERJ3GSYJ104V	
R352	RK3059	Chip R.	ERJ3GSYJ563V	
R353	RK3026	Chip R.	ERJ3GSYJ101V	
R354	RK3026	Chip R.	ERJ3GSYJ101V	

Ref. No.	Parts No.	Description	Parts Name	Ver.
R355	RK3018	Chip R.	ERJ3GSYJ220V	
R356	RK3050	Chip R.	ERJ3GSYJ103V	
R357	RK3050	Chip R.	ERJ3GSYJ103V	
R358	RK3054	Chip R.	ERJ3GSYJ223V	
R359	RK3038	Chip R.	ERJ3GSYJ102V	
R360	RK3042	Chip R.	ERJ3GSYJ222V	
R361	RK3026	Chip R.	ERJ3GSYJ101V	
R362	RK3042	Chip R.	ERJ3GSYJ222V	
R363	RK3026	Chip R.	ERJ3GSYJ101V	
R364	RK3022	Chip R.	ERJ3GSYJ470V	
R365	RK3054	Chip R.	ERJ3GSYJ223V	
R366	RK3048	Chip R.	ERJ3GSYJ682V	
R367	RK3026	Chip R.	ERJ3GSYJ101V	
R368	RK3026	Chip R.	ERJ3GSYJ101V	
R369	RK3042	Chip R.	ERJ3GSYJ222V	
R370	RK3054	Chip R.	ERJ3GSYJ223V	
R371	RK3026	Chip R.	ERJ3GSYJ101V	
R372	RK3028	Chip R.	ERJ3GSYJ151V	
R373	RK3030	Chip R.	ERJ3GSYJ221V	
R374	RK3026	Chip R.	ERJ3GSYJ101V	
R375	RK3038	Chip R.	ERJ3GSYJ102V	
R376	RK3069	Chip R.	ERJ3GSYJ394V	
R377	RK3050	Chip R.	ERJ3GSYJ103V	
R378	RK3038	Chip R.	ERJ3GSYJ102V	
R380	RK3056	Chip R.	ERJ3GSYJ333V	
R381	RK3044	Chip R.	ERJ3GSYJ332V	
R382	RK3070	Chip R.	ERJ3GSYJ474V	
R384	RK3001	Chip R.	ERJ3GSY0R00V	
R385	RK3042	Chip R.	ERJ3GSYJ222V	
R386	RK3055	Chip R.	ERJ3GSYJ273V	
R387	RK3051	Chip R.	ERJ3GSYJ123V	
R388	RK3048	Chip R.	ERJ3GSYJ682V	
R389	RK3044	Chip R.	ERJ3GSYJ332V	
R390	RK3050	Chip R.	ERJ3GSYJ103V	
R391	RK3071	Chip R.	ERJ3GSYJ564V	
R392	RK3044	Chip R.	ERJ3GSYJ332V	
R393	RK3001	Chip R.	ERJ3GSY0R00V	
R394	RK3071	Chip R.	ERJ3GSYJ564V	
R395	RK3038	Chip R.	ERJ3GSYJ102V	
R396	RK3050	Chip R.	ERJ3GSYJ103V	
R397	RK3030	Chip R.	ERJ3GSYJ221V	
R398	RK3041	Chip R.	ERJ3GSYJ182V	
R399	RK3042	Chip R.	ERJ3GSYJ222V	
R400	RK3046	Chip R.	ERJ3GSYJ472V	
R401	RK3050	Chip R.	ERJ3GSYJ103V	
R402	RK3071	Chip R.	ERJ3GSYJ564V	
R403	RK3042	Chip R.	ERJ3GSYJ222V	
R404	RK3026	Chip R.	ERJ3GSYJ101V	
R405	RK3043	Chip R.	ERJ3GSYJ272V	
R406	RK3054	Chip R.	ERJ3GSYJ223V	
R407	RK3070	Chip R.	ERJ3GSYJ474V	
R408	RK3033	Chip R.	ERJ3GSYJ391V	
R409	RK3054	Chip R.	ERJ3GSYJ223V	
R410	RK3001	Chip R.	ERJ3GSY0R00V	

Ref. No.	Parts No.	Description	Parts Name	Ver.
R411	RK3071	Chip R.	ERJ3GSYJ564V	
R412	RK3058	Chip R.	ERJ3GSYJ473V	
R413	RK3057	Chip R.	ERJ3GSYJ393V	
R414	RK3042	Chip R.	ERJ3GSYJ222V	
R415	RK3038	Chip R.	ERJ3GSYJ102V	
R416	RK3050	Chip R.	ERJ3GSYJ103V	
R417	RK3042	Chip R.	ERJ3GSYJ222V	
R418	RK3050	Chip R.	ERJ3GSYJ103V	
R419	RK3040	Chip R.	ERJ3GSYJ152V	
R420	RK3050	Chip R.	ERJ3GSYJ103V	
R421	RK3040	Chip R.	ERJ3GSYJ152V	
R422	RK3050	Chip R.	ERJ3GSYJ103V	
R423	RK3042	Chip R.	ERJ3GSYJ222V	
R425	RK2012	Chip R.	ERJ-12YJ470V	
R426	RK2012	Chip R.	ERJ-12YJ470V	
R427	RK4034	Chip R.	ERJ-12YJ471V	
R428	RK3050	Chip R.	ERJ3GSYJ103V	
R429	RK3050	Chip R.	ERJ3GSYJ103V	
R431	RK3022	Chip R.	ERJ3GSYJ470V	
R432	RK3062	Chip R.	ERJ3GSYJ104V	
R433	RK3062	Chip R.	ERJ3GSYJ104V	
R434	RK3042	Chip R.	ERJ3GSYJ222V	
R435	RK3042	Chip R.	ERJ3GSYJ222V	
R438	RK3026	Chip R.	ERJ3GSYJ101V	
R439	RK3001	Chip R.	ERJ3GSY0R00V	
R442	RK3050	Chip R.	ERJ3GSYJ103V	
R443	RK3001	Chip R.	ERJ3GSY0R00V	
R444	RK5001	Chip R.	RN3A2BY68MJ-T	
R445	RK3052	Chip R.	ERJ3GSYJ153V	
R446	RK3014	Chip R.	ERJ3GSYJ100V	
R447	RK3026	Chip R.	ERJ3GSYJ101V	
R448	RK3070	Chip R.	ERJ3GSYJ474V	
R449	RK3042	Chip R.	ERJ3GSYJ222V	
R450	RK3060	Chip R.	ERJ3GSYJ683V	
R451	RK3050	Chip R.	ERJ3GSYJ103V	
R452	RK3050	Chip R.	ERJ3GSYJ103V	
R453	RK3001	Chip R.	ERJ3GSY0R00V	E
R453	RK3026	Chip R.	ERJ3GSYJ101V	T
R454	RK1107	Chip R.	ERJ8GEY0R00V	
TC301	CT0012	Trim. C	CTZ-10AW	
TC302	CT0012	Trim. C	CTZ-10AW	
VR301	RH0103	Trim. Pot	EVM1YSX50B14	
VR302	RH0103	Trim. Pot	EVM1YSX50B14	
VR303	RH0103	Trim. Pot	EVM1YSX50B14	
VR304	RH0106	Trim. Pot	EVM1YSX50BQ4	
VR305	RH0106	Trim. Pot	EVM1YSX50BQ4	
X301	XQ0070	Crystal	UM5 57.845MHz	
X302	XK0002	Discriminator	CDBM455C7	

UHF MAIN Unit / VOL Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
Y301	TZ0049	Silicon Dumper	Silicon Dumper49U	
Y302	TZ0049	Silicon Dumper	Silicon Dumper49U	
Y303	TZ0049	Silicon Dumper	Silicon Dumper49U	
M301	SD0034	Spring	Earth Spring DR130	
M302	SD0034	Spring	Earth Spring DR130	
M303	SD0034	Spring	Earth Spring DR130	
	TS0094	Shield Case	PM shield	

VOL Unit

C501	CU3047	Chip C.	C1608JB1H103KT-A	
C502	CU3047	Chip C.	C1608JB1H103KT-A	
C503	CU3047	Chip C.	C1608JB1H103KT-A	
C504	CU3047	Chip C.	C1608JB1H103KT-A	
C505	CU3047	Chip C.	C1608JB1H103KT-A	
C506	CU3047	Chip C.	C1608JB1H103KT-A	
CN502	UE0223	Connector	53263-980	
VR501	RV0026	Trim. Pot	TP96D00A	
VR502	RV0026	Trim. Pot	TP96D00A	

FRONT CPU Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
		FRONT CPU Unit		
C507	CE0376	Electrolytic.C	ECEV1CS100SR	
C508	CU3035	Chip C.	C1608JB1H102KT-A	
C509	CS0232	Chip Tantal	TMCMA1V475MTR	
C510	CU3035	Chip C.	C1608JB1H102KT-A	
C511	CS0381	Chip Tantal	TMCMB0J336MTR	
C512	CU8046	Chip C.	C2012JB1H224KT-A	
C514	CU3035	Chip C.	C1608JB1H102KT-A	
C515	CU3035	Chip C.	C1608JB1H102KT-A	
C516	CU3035	Chip C.	C1608JB1H102KT-A	
C517	CU3035	Chip C.	C1608JB1H102KT-A	
C518	CU8046	Chip C.	C2012JB1H224KT-A	
C519	CU3035	Chip C.	C1608JB1H102KT-A	
C520	CU3035	Chip C.	C1608JB1H102KT-A	
C521	CU3047	Chip C.	C1608JB1H103KT-A	
C522	CU9018	Chip C.	C3216JB1C105MT-N	
C523	CU3047	Chip C.	C1608JB1H103KT-A	
C524	CU3023	Chip C.	C1608CH1H101JT-A	
C525	CS0367	Chip Tantal	TMCMA0J106MTR	
C526	CU3035	Chip C.	C1608JB1H102KT-A	
C527	CU3035	Chip C.	C1608JB1H102KT-A	
C528	CU3035	Chip C.	C1608JB1H102KT-A	
C529	CU3035	Chip C.	C1608JB1H102KT-A	
C530	CU3023	Chip C.	C1608CH1H101JT-A	
C531	CU3023	Chip C.	C1608CH1H101JT-A	
C532	CU3059	Chip C.	C1608JF1E104ZT-A	
C533	CU3059	Chip C.	C1608JF1E104ZT-A	
C534	CU3059	Chip C.	C1608JF1E104ZT-A	
C535	CS0220	Chip Tantal	TMCMA1C225MTR	
C536	CU3035	Chip C.	C1608JB1H102KT-A	
C537	CU3035	Chip C.	C1608JB1H102KT-A	
C538	CU3035	Chip C.	C1608JB1H102KT-A	
C539	CU3035	Chip C.	C1608JB1H102KT-A	
C540	CS0208	Chip Tantal	TMCMA0J475MTR	
C541	CU3035	Chip C.	C1608JB1H102KT-A	
C542	CU3035	Chip C.	C1608JB1H102KT-A	
C543	CU3035	Chip C.	C1608JB1H102KT-A	
C544	CU3035	Chip C.	C1608JB1H102KT-A	
C545	CU3023	Chip C.	C1608CH1H101JT-A	
CN501	UE0230	Connector	S9B-ZR	
CN503	UE0222	Connector	52357-0890	
CN504	UE0229	Connector	FM214-8SMPT	
D501	XL0038	LED	CL-200YG-C	
D502	XL0038	LED	CL-200YG-C	
D503	XL0038	LED	CL-200YG-C	
D504	XL0038	LED	CL-200YG-C	
D505	XL0038	LED	CL-200YG-C	
D506	XL0038	LED	CL-200YG-C	
D507	XL0038	LED	CL-200YG-C	
D508	XL0038	LED	CL-200YG-C	
D509	XL0032	LED	CL-170YG-CD-T	
D510	XD0273	Diode	RLS93 TT11	

Ref. No.	Parts No.	Description	Parts Name	Ver.
D511	XL0039	LED	LT1EP53A	
D512	XL0032	LED	CL-170YG-CD-T	
D513	XL0039	LED	LT1EP53A	
D514	XL0032	LED	CL-170YG-CD-T	
D515	XL0032	LED	CL-170YG-CD-T	
D516	XL0032	LED	CL-170YG-CD-T	
D517	XL0032	LED	CL-170YG-CD-T	
D518	XL0032	LED	CL-170YG-CD-T	
D519	XL0032	LED	CL-170YG-CD-T	
D520	XL0032	LED	CL-170YG-CD-T	
D521	XL0034	LED	CL-170Y-CD-T	
D522	XL0034	LED	CL-170Y-CD-T	
D523	XL0034	LED	CL-170Y-CD-T	
D524	XL0034	LED	CL-170Y-CD-T	
D525	XL0034	LED	CL-170Y-CD-T	
D526	XL0034	LED	CL-170Y-CD-T	
D527	XL0034	LED	CL-170Y-CD-T	
D528	XD0273	LED	RLS93 TT11	
D530	XL0032	Diode	CL-170YG-CD-T	
D531	XD0140	Diode	DTZ5.6CTT11	
D532	XD0140	Diode	DTZ5.6CTT11	
D533	XD0140	Diode	DTZ5.6CTT11	
EL501	EL0029	LCD	LD-BU4294E	
IC501	XA0336	IC	HD6473837H(TE)	
IC502	XA0316	IC	HD66100F	
IC503	XA0285	IC	L78LR05D-TL	
IC504	XA0097	IC	NJM4558M-T1	
IC505	XA0126	IC	TC4S11F-TE85L	
IC506	XA0126	IC	TC4S11F-TE85L	
JP501	MACL02AA	Wire	LEAD#02BLUE	T
JP502	MRCL02AA	Wire	LEAD#02RED	T
L501	QC0048	Coil	NL322522T-100J	
Q501	XT0126	Transistor	2SB1302S-TD	
Q502	XT0095	Transistor	2SC4081T106R	
Q503	XT0095	Transistor	2SC4081T106R	
Q504	XT0095	Transistor	2SC4081T106R	
Q505	XT0110	Transistor	2SA1036KT146Q	
Q507	XT0094	Transistor	2SA1576T106R	
Q508	XU0029	Transistor	DTC114YUT106	
Q509	XU0029	Transistor	DTC114YUT106	
Q510	XU0166	Transistor	UN511H-TX	
Q511	XU0029	Transistor	DTC114YUT106	
Q512	XU0035	Transistor	XN1214-TX	
Q513	XU0035	Transistor	XN1214-TX	

Ref. No.	Parts No.	Description	Parts Name	Ver.
R501	RK4087	Chip R.	ERJ14YJ151V	
R502	RK4087	Chip R.	ERJ14YJ151V	
R503	RK3044	Chip R.	ERJ3GSYJ332V	
R504	RK3041	Chip R.	ERJ3GSYJ182V	
R505	RK3050	Chip R.	ERJ3GSYJ103V	
R507	RK3039	Chip R.	ERJ3GSYJ122V	
R508	RK3046	Chip R.	ERJ3GSYJ472V	
R509	RK3058	Chip R.	ERJ3GSYJ473V	
R510	RK3046	Chip R.	ERJ3GSYJ472V	
R511	RK3058	Chip R.	ERJ3GSYJ473V	
R512	RK3050	Chip R.	ERJ3GSYJ103V	
R513	RK3032	Chip R.	ERJ3GSYJ331V	
R514	RK3001	Chip R.	ERJ3GSY0R00V	
R515	RK3058	Chip R.	ERJ3GSYJ473V	
R516	RK3074	Chip R.	ERJ3GSYJ105V	
R517	RK3042	Chip R.	ERJ3GSYJ222V	
R518	RK3020	Chip R.	ERJ3GSYJ330V	
R519	RK3058	Chip R.	ERJ3GSYJ473V	
R520	RK3058	Chip R.	ERJ3GSYJ473V	
R521	RK3058	Chip R.	ERJ3GSYJ473V	
R522	RK3043	Chip R.	ERJ3GSYJ272V	
R523	RK3038	Chip R.	ERJ3GSYJ102V	
R524	RK3070	Chip R.	ERJ3GSYJ474V	
R525	RK3050	Chip R.	ERJ3GSYJ103V	
R526	RK3051	Chip R.	ERJ3GSYJ123V	
R527	RK3046	Chip R.	ERJ3GSYJ472V	
R528	RK3066	Chip R.	ERJ3GSYJ224V	
R529	RK3046	Chip R.	ERJ3GSYJ472V	
R530	RK3034	Chip R.	ERJ3GSYJ471V	
R531	RK3058	Chip R.	ERJ3GSYJ473V	
R532	RK3058	Chip R.	ERJ3GSYJ473V	
R533	RK3058	Chip R.	ERJ3GSYJ473V	
R534	RK3038	Chip R.	ERJ3GSYJ102V	
R535	RK3074	Chip R.	ERJ3GSYJ105V	
R536	RK3030	Chip R.	ERJ3GSYJ221V	
R537	RK3050	Chip R.	ERJ3GSYJ103V	
R538	RK3050	Chip R.	ERJ3GSYJ103V	
R539	RK3050	Chip R.	ERJ3GSYJ103V	
R540	RK3050	Chip R.	ERJ3GSYJ103V	
R541	RK3057	Chip R.	ERJ3GSYJ393V	
R542	RK3057	Chip R.	ERJ3GSYJ393V	
R543	RK3058	Chip R.	ERJ3GSYJ473V	
R544	RK3060	Chip R.	ERJ3GSYJ683V	E
R546	RK3060	Chip R.	ERJ3GSYJ683V	T
R547	RK3054	Chip R.	ERJ3GSYJ223V	E
R548	RK3057	Chip R.	ERJ3GSYJ393V	
R549	RK3050	Chip R.	ERJ3GSYJ103V	
R551	RA0020	Chip R.	EXBV8V473J	
R552	RK3050	Chip R.	ERJ3GSYJ103V	
R553	RK3038	Chip R.	ERJ3GSYJ102V	
R554	RK3038	Chip R.	ERJ3GSYJ102V	
R555	RK3058	Chip R.	ERJ3GSYJ473V	
R556	RK3038	Chip R.	ERJ3GSYJ102V	
R557	RK3038	Chip R.	ERJ3GSYJ102V	

Ref. No.	Parts No.	Description	Parts Name	Ver.
R558	RK3038	Chip R.	ERJ3GSYJ102V	
R559	RK3058	Chip R.	ERJ3GSYJ473V	
R560	RK3058	Chip R.	ERJ3GSYJ473V	
R561	RK3058	Chip R.	ERJ3GSYJ473V	
R562	RK3058	Chip R.	ERJ3GSYJ473V	
R563	RK3058	Chip R.	ERJ3GSYJ473V	
R564	RK3050	Chip R.	ERJ3GSYJ103V	
R565	RK3038	Chip R.	ERJ3GSYJ102V	
R566	RK3001	Chip R.	ERJ3GSY0R00V	E
R567	RA0009	Chip R.	EXBS8V102J	
R568	RK1022	Chip R.	ERJ8GSYJ221V	
R569	RK1022	Chip R.	ERJ8GSYJ221V	
R570	RK1022	Chip R.	ERJ8GSYJ221V	
R571	RK1023	Chip R.	ERJ8GSYJ271V	
R572	RK1025	Chip R.	ERJ8GSYJ331V	
R573	RK3001	Chip R.	ERJ3GSY0R00V	
R574	RK3058	Chip R.	ERJ3GSYJ473V	
R575	RK3001	Chip R.	ERJ3GSY0R00V	E
R576	RK3032	Chip R.	ERJ3GSYJ331V	
R577	RK3030	Chip R.	ERJ3GSYJ221V	
R578	RK3032	Chip R.	ERJ3GSYJ331V	
R579	RK3032	Chip R.	ERJ3GSYJ331V	
R580	RK3032	Chip R.	ERJ3GSYJ331V	
R581	RK1019	Chip R.	ERJ8GSYJ121V	
R582	RK3001	Chip R.	ERJ3GSY0R00V	
R583	RK3050	Chip R.	ERJ3GSYJ103V	
RE501	UR0011	Rotary Encoder	EC11B15244	
SW501	UU0017	Switch	SKQD-AA	
SW502	UU0017	Switch	SKQD-AA	
SW503	UU0017	Switch	SKQD-AA	
SW504	UU0017	Switch	SKQD-AA	
SW505	UU0017	Switch	SKQD-AA	
SW506	UU0017	Switch	SKQD-AA	
SW507	UU0017	Switch	SKQD-AA	
SW508	UU0017	Switch	SKQD-AA	
SW509	UU0017	Switch	SKQD-AA	
SW510	UU0017	Switch	SKQD-AA	
SW511	UU0017	Switch	SKQD-AA	
VR503	RH0116	Trim. Pot	EVMIYSX50BQ2	
X501	XB0017	Crystal	EF0S9834B5	
	FM0094		LCD Holder	
	FG0157B		Rubber Connector	
	KZ0021		LCD Light	
	TL0011		Reflector	

SUB CPU Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
		SUB CPU Unit		
C601	CU3035	Chip C.	C1608JB1H102KT-A	
C602	CU3035	Chip C.	C1608JB1H102KT-A	
C603	CU3047	Chip C.	C1608JB1H103KT-A	
C604	CU3025	Chip C.	C1608CH1H151JT-A	
C605	CU3025	Chip C.	C1608CH1H151JT-A	
C606	CU3047	Chip C.	C1608JB1H103KT-A	
C607	CU3047	Chip C.	C1608JB1H103KT-A	
C608	CS0237	Chip Tantal	TMCMA1A475MTR	
C609	CS0236	Chip Tantal	TMCMAOJ685MTR	
C610	CU8042	Chip C.	C2012JB1C104KT-A	
C611	CU8042	Chip C.	C2012JB1C104KT-A	
C612	CU8042	Chip C.	C2012JB1C104KT-A	
C613	CU8042	Chip C.	C2012JB1C104KT-A	
C614	CU8042	Chip C.	C2012JB1C104KT-A	
C615	CU8042	Chip C.	C2012JB1C104KT-A	
C616	CU3035	Chip C.	C1608JB1H102KT-A	
C618	CU3023	Chip C.	C1608CH1H101JT-A	
C619	CU3023	Chip C.	C1608CH1H101JT-A	
C620	CU3085	Chip C.	C1608CH1H300JT-A	T
C620	CU3012	Chip C.	C1608CH1H120JT-A	E
C621	CU3085	Chip C.	C1608CH1H300JT-A	T
C621	CU3012	Chip C.	C1608CH1H120JT-A	E
C622	CU3051	Chip C.	C2012JB1E223KT-A	
C623	CU3035	Chip C.	C1608JB1H102KT-A	
C624	CU3051	Chip C.	C2012JB1E223KT-A	
C626	CU3016	Chip C.	C1608CH1H270JT-A	
C627	CU3051	Chip C.	C2012JB1E223KT-A	
C628	CU3023	Chip C.	C1608CH1H101JT-A	
C629	CU3023	Chip C.	C1608CH1H101JT-A	
C630	CU3023	Chip C.	C1608CH1H101JT-A	
C631	CU3023	Chip C.	C1608CH1H101JT-A	
C632	CU3035	Chip C.	C1608JB1H102KT-A	
C633	CU8042	Chip C.	C2012JB1C104KT-A	
C634	CU3016	Chip C.	C1608CH1H270JT-A	
C635	CS0237	Chip Tantal	TMCMA1A475MTR	
C636	CU8034	Chip C.	C2012X7R1E333KT	
C637	CU3034	Chip C.	C1608JB1H821KT-A	
C638	CU3041	Chip C.	C1608JB1H332KT-A	
C639	CU3022	Chip C.	C1608CH1H820JT-A	
C640	CU3035	Chip C.	C1608JB1H102KT-A	
C641	CS0237	Chip Tantal	TMCMA1A475MTR	
C645	CU9018	Chip C.	C3216JB1C105MT-N	
C646	CU3035	Chip C.	C1608JB1H102KT-A	
C647	CU8042	Chip C.	C2012JB1C104KT-A	
C648	CU8042	Chip C.	C2012JB1C104KT-A	
C649	CU3047	Chip C.	C1608JB1H103KT-A	
C650	CU3047	Chip C.	C1608JB1H103KT-A	
C651	CU3047	Chip C.	C1608JB1H103KT-A	
C652	CU3047	Chip C.	C1608JB1H103KT-A	
C653	CU3047	Chip C.	C1608JB1H103KT-A	
C654	CU8034	Chip C.	C2012X7R1E333KT	
C655	CU3047	Chip C.	C1608JB1H103KT-A	
C656	CU3047	Chip C.	C1608JB1H103KT-A	

Ref. No.	Parts No.	Description	Parts Name	Ver.
C657	CU8034	Chip C.	C2012X7R1E333KT	
C658	CU3047	Chip C.	C1608JB1H103KT-A	
C659	CS0049	Chip Tantal	TMCSA1C105MTR	
C660	CU3047	Chip C.	C1608JB1H103KT-A	
C661	CS0368	Chip Tantal	TMCMC0J476MTR	
C662	CU3035	Chip C.	C1608JB1H102KT-A	
C663	CU3035	Chip C.	C1608JB1H102KT-A	
C664	CS0061	Chip Tantal	TMCSA1V224MTR	
C665	CS0049	Chip Tantal	TMCSA1C105MTR	
C666	CU3035	Chip C.	C1608JB1H102KT-A	
C667	CE0339	Electrolytic.C	16MV10SWB	
C668	CU3035	Chip C.	C1608JB1H102KT-A	
C669	CU3035	Chip C.	C1608JB1H102KT-A	
C670	CU3035	Chip C.	C1608JB1H102KT-A	
C671	CU3035	Chip C.	C1608JB1H102KT-A	
C673	CU3035	Chip C.	C1608JB1H102KT-A	
C674	CU3059	Chip C.	C1608JF1E104ZT-A	
C675	CU3051	Chip C.	C1608JB1E223KT-A	
C676	CU3035	Chip C.	C1608JB1H102KT-A	
C677	CU3035	Chip C.	C1608JB1H102KT-A	
C678	CU3035	Chip C.	C1608JB1H102KT-A	
C679	CU3035	Chip C.	C1608JB1H102KT-A	
C680	CU3047	Chip C.	C1608JB1H103KT-A	
C681	CU3035	Chip C.	C1608JB1H102KT-A	
C682	CU3035	Chip C.	C1608JB1H102KT-A	
C683	CU3035	Chip C.	C1608JB1H102KT-A	
C684	CU3051	Chip C.	C1608JB1E223KT-A	
C685	CU3023	Chip C.	C1608CH1H101JT-A	
C686	CU3035	Chip C.	C1608JB1H102KT-A	
C687	CU3035	Chip C.	C1608JB1H102KT-A	
C688	CU3047	Chip C.	C1608JB1H103KT-A	
C690	CU3035	Chip C.	C1608JB1H102KT-A	
C691	CU3035	Chip C.	C1608JB1H102KT-A	
C697	CS0237	Chip Tantal	TMCMA1A475MTR	
C698	CU9018	Chip C.	C3216JB1C105MT-N	
C699	CS0237	Chip Tantal	TMCMA1A475MTR	
C700	CU8042	Chip C.	C2012JB1C104KT-A	
CN601	UE0173	Connector	B12B-ZR	
CN602	UE0230	Connector	S9B-ZR	
CN603	UE0225	Connector	19R-JE	
CN604	UE0234	Connector	00-6208-000-120-001	
D601	XD0273	Diode	RLS-93 TT11	
D602	XD0254	Diode	1SS355 TE17	
D603	XD0187	Diode	DTZ11B-TT11	
D604	XD0170	Diode	DTZ6.2C	
D605	XD0103	Diode	1SS226TE85L	

Ref. No.	Parts No.	Description	Parts Name	Ver.
IC601	XA0335	IC	HD6473388F10 (T, E)	
IC602	XA0282	IC	TC35219F (TP1)	
IC603	XA0268	IC	TC35305F(TP1)	
IC604	XA0268	IC	TC35305F(TP1)	
IC605	XA0283	IC	TC9154AP	
IC606	XA0126	IC	TC4S11F(TE85L)	
IC607	XA0126	IC	TC4S11F(TE85L)	
IC608	XA0265	IC	NJM2902M(T1)	
IC610	XA0329	IC	AT24C164-10SI-2.7	
IC611	XA0315	IC	RH5VA60AA	
IC612	XA0338	IC	L78LR05B-TL	
IC613	XA0115	IC	TC4S66FTE85L	
IC614	XA0115	IC	TC4S66FTE85L	
Q601	XT0095	Transistor	2SC4081T106R	
Q602	XT0095	Transistor	2SC4081T106R	
Q603	XU0061	Transistor	UN5211-TX	
Q604	XU0160	Transistor	DTC363EKT146	
Q605	XT0095	Transistor	2SC4081T106R	
Q607	XU0167	Transistor	UN2122-TX	
Q608	XT0095	Transistor	2SC4081T106R	
Q609	XT0095	Transistor	2SC4081T106R	
Q610	XU0061	Transistor	UN5211-TX	
Q611	XU0061	Transistor	UN5211-TX	
Q612	XU0061	Transistor	UN5211-TX	
Q613	XU0160	Transistor	DTC363EKT146	
Q614	XU0160	Transistor	DTC363EKT146	
Q615	XU0021	Transistor	FMC3T98	
Q616	XT0095	Transistor	2SC4081T106R	
Q617	XT0095	Transistor	2SC4081T106R	
Q619	XU0061	Transistor	UN5211-TX	
Q620	XU0112	Transistor	DTA114YUT106	
Q621	XT0095	Transistor	2SC4081T106R	
Q622	XU0061	Transistor	UN5211-TX	
R601	RK3038	Chip R.	ERJ3GSYJ102V	
R602	RK3048	Chip R.	ERJ3GSYJ682V	
R603	RK3058	Chip R.	ERJ3GSYJ473V	
R604	RK3046	Chip R.	ERJ3GSYJ472V	
R605	RA0009	Chip R.	EXBV8V102JV	
R606	RK3038	Chip R.	ERJ3GSYJ102V	
R607	RA0008	Chip R.	EXBV4V102JV	
R608	RK3034	Chip R.	ERJ3GSYJ471V	
R609	RK3050	Chip R.	ERJ3GSYJ103V	
R610	RA0009	Chip R.	EXBV8V102JV	
R611	RA0008	Chip R.	EXBV4V102JV	
R612	RA0009	Chip R.	EXBV8V102JV	
R613	RA0008	Chip R.	EXBV4V102JV	
R614	RK3038	Chip R.	ERJ3GSYJ102V	
R615	RA0009	Chip R.	EXBV8V102JV	
R616	RK3038	Chip R.	ERJ3GSYJ102V	
R617	RK3044	Chip R.	ERJ3GSYJ332V	
R618	RK3071	Chip R.	ERJ3GSYJ564V	
R619	RK3036	Chip R.	ERJ3GSYJ681V	

Ref. No.	Parts No.	Description	Parts Name	Ver.
R621	RK3034	Chip R.	ERJ3GSYJ471V	
R622	RK3044	Chip R.	ERJ3GSYJ332V	
R623	RK3071	Chip R.	ERJ3GSYJ564V	
R624	RK3036	Chip R.	ERJ3GSYJ681V	
R625	RK3058	Chip R.	ERJ3GSYJ473V	
R626	RK3058	Chip R.	ERJ3GSYJ473V	
R627	RK3074	Chip R.	ERJ3GSYJ105V	
R628	RK3038	Chip R.	ERJ3GSYJ102V	
R629	RK3052	Chip R.	ERJ3GSYJ153V	
R630	RK3059	Chip R.	ERJ3GSYJ563V	
R631	RK3038	Chip R.	ERJ3GSYJ102V	
R632	RK3054	Chip R.	ERJ3GSYJ223V	
R633	RK3070	Chip R.	ERJ3GSYJ474V	
R634	RK3058	Chip R.	ERJ3GSYJ473V	
R635	RK3058	Chip R.	ERJ3GSYJ473V	
R637	RK3046	Chip R.	ERJ3GSYJ472V	
R638	RK3056	Chip R.	ERJ3GSYJ333V	
R639	RK3062	Chip R.	ERJ3GSYJ104V	
R640	RK3060	Chip R.	ERJ3GSYJ683V	
R641	RK3038	Chip R.	ERJ3GSYJ102V	
R642	RK3038	Chip R.	ERJ3GSYJ102V	
R643	RK3045	Chip R.	ERJ3GSYJ392V	
R644	RK3066	Chip R.	ERJ3GSYJ224V	
R645	RK3035	Chip R.	ERJ3GSYJ561V	
R646	RK3069	Chip R.	ERJ3GSYJ394V	
R647	RK3065	Chip R.	ERJ3GSYJ184V	
R648	RK3056	Chip R.	ERJ3GSYJ333V	
R649	RK3058	Chip R.	ERJ3GSYJ473V	
R650	RK3066	Chip R.	ERJ3GSYJ224V	
R651	RK3061	Chip R.	ERJ3GSYJ823V	
R652	RK3061	Chip R.	ERJ3GSYJ823V	
R653	RK3066	Chip R.	ERJ3GSYJ224V	
R654	RK3061	Chip R.	ERJ3GSYJ823V	
R655	RK3050	Chip R.	ERJ3GSYJ103V	
R656	RK3050	Chip R.	ERJ3GSYJ103V	
R658	RK3050	Chip R.	ERJ3GSYJ103V	
R660	RK3043	Chip R.	ERJ3GSYJ272V	
R662	RK3050	Chip R.	ERJ3GSYJ103V	
R663	RK3050	Chip R.	ERJ3GSYJ103V	
R664	RK3050	Chip R.	ERJ3GSYJ103V	
R665	RK3050	Chip R.	ERJ3GSYJ103V	
R666	RK3058	Chip R.	ERJ3GSYJ473V	
R667	RK3062	Chip R.	ERJ3GSYJ104V	
R668	RK3058	Chip R.	ERJ3GSYJ473V	
R669	RK3062	Chip R.	ERJ3GSYJ104V	
R670	RK3062	Chip R.	ERJ3GSYJ104V	
R671	RK3042	Chip R.	ERJ3GSYJ222V	
R672	RK3034	Chip R.	ERJ3GSYJ471V	
R673	RK3046	Chip R.	ERJ3GSYJ472V	
R674	RK3058	Chip R.	ERJ3GSYJ473V	
R675	RK3069	Chip R.	ERJ3GSYJ394V	
R676	RK3062	Chip R.	ERJ3GSYJ104V	
R677	RK3042	Chip R.	ERJ3GSYJ222V	
R678	RK3069	Chip R.	ERJ3GSYJ394V	

SUB CPU Unit / VHF VCO Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
R679	RK3026	Chip R.	ERJ3GSYJ101V	
R680	RK3034	Chip R.	ERJ3GSYJ471V	
R681	RK3046	Chip R.	ERJ3GSYJ472V	
R682	RK3058	Chip R.	ERJ3GSYJ473V	
R683	RK3046	Chip R.	ERJ3GSYJ472V	
R684	RK3046	Chip R.	ERJ3GSYJ472V	
R685	RK3058	Chip R.	ERJ3GSYJ473V	
R686	RK3050	Chip R.	ERJ3GSYJ103V	
R687	RK3052	Chip R.	ERJ3GSYJ153V	
R688	RK3038	Chip R.	ERJ3GSYJ102V	
R689	RK3038	Chip R.	ERJ3GSYJ102V	
R690	RK3058	Chip R.	ERJ3GSYJ473V	
R691	RK3038	Chip R.	ERJ3GSYJ102V	
R692	RA0020	Chip R.	EXBV8V473J	
R693	RK3074	Chip R.	ERJ3GSYJ105V	
R694	RK3001	Chip R.	ERJ3GSY0R00V	
R695	RK3058	Chip R.	ERJ3GSYJ473V	
R696	RK3052	Chip R.	ERJ3GSYJ153V	
R697	RK3050	Chip R.	ERJ3GSYJ103V	
R698	RK3058	Chip R.	ERJ3GSYJ473V	
R699	RA0020	Chip R.	EXBV8V473J	
R721	RK3058	Chip R.	ERJ3GSYJ473V	
R722	RK3046	Chip R.	ERJ3GSYJ472V	
R723	RK3049	Chip R.	ERJ3GSYJ822V	
R724	RK3053	Chip R.	ERJ3GSYJ183V	
R725	RK3063	Chip R.	ERJ3GSYJ124V	
R726	RA0008	Chip R.	EXBV4V102J	
R727	RK3054	Chip R.	ERJ3GSYJ223V	
R728	RK3054	Chip R.	ERJ3GSYJ223V	
R729	RK3046	Chip R.	ERJ3GSYJ472V	
R732	RK3046	Chip R.	ERJ3GSYJ472V	
R733	RK3046	Chip R.	ERJ3GSYJ472V	
R734	RK3046	Chip R.	ERJ3GSYJ472V	
R735	RK3042	Chip R.	ERJ3GSYJ222V	
R736	RK3050	Chip R.	ERJ3GSYJ103V	
R737	RK3054	Chip R.	ERJ3GSYJ223V	
R738	RK3026	Chip R.	ERJ3GSYJ101V	
R739	RK3044	Chip R.	ERJ3GSYJ332V	
R740	RK3074	Chip R.	ERJ3GSYJ105V	
R741	RK3031	Chip R.	ERJ3GSYJ271V	
R742	RK3065	Chip R.	ERJ3GSYJ184V	
R743	RK3001	Chip R.	ERJ3GSY0R00V	
VR601	RH0106	Trim. Pot	EVM1YSX50BQ4	
VR602	RH0106	Trim. Pot	EVM1YSX50BQ4	
VR603	RH0106	Trim. Pot	EVM1YSX50BQ4	
X601	XB0018	Ceralock	CSBF480J914TC01	
X602	XQ0045	Crystal	DSMT3.58MHz	
X603	XB0016	Ceralock	CSACS9.83MT100-TC	T
X603	XQ0071	Crystal	LIM-A9.8304MHz	E
	UA0041	FFC	SMCD-20x25-BD	

VHF VCO Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
C701	CU3035	Chip C.	C1608JB1H102KT-A	
C702	CU3035	Chip C.	C1608JB1H102KT-A	
C703	CU3035	Chip C.	C1608JB1H102KT-A	
C704	CU3035	Chip C.	C1608JB1H102KT-A	
C705	CS0061	Chip Tantal	TMCSA1V224MTR	
C706	CU3064	Chip C.	C1608CH1H1R5CT-A	
C707	CU3031	Chip C.	C1608JB1H471KT-A	
C708	CU3008	Chip C.	C1608CH1H070CT-A	
C709	CU3010	Chip C.	C1608CH1H090CT-A	
C710	CU3064	Chip C.	C1608CH1H1R5CT-A	
C711	CU3035	Chip C.	C1608JB1H102KT-A	
C712	CU3015	Chip C.	C1608CH1H220JT-A	
C713	CU3035	Chip C.	C1608JB1H102KT-A	
C714	CU3035	Chip C.	C1608JB1H102KT-A	
C715	CS0216	Chip Tantal	TMCMB1A106MTR	
C716	CU3035	Chip C.	C1608JB1H102KT-A	
C717	CU3035	Chip C.	C1608JB1H102KT-A	
C718	CU3003	Chip C.	C1608CH1H020CT-A	
CN701	UE0218	Connector	9270B-1-09A-T	
D701	XD0129	Diode	1SS318TT11	
D702	XD0233	Diode	1SV217TPH4	
D703	XD0233	Diode	1SV217TPH4	
D704	XD0131	Diode	1SV214TPH4	
L701	QC0215	Coil	MLF2012A1R0KT	
L703	QC0103	Coil	LER015T1R2M	
L704	QC0106	Coil	LER015T2R2M	
L705	QA0111	Coil	VCO COIL QA0111	
L706	QC0106	Coil	LER015T2R2M	
L707	QC0103	Coil	LER015T1R2M	
L708	QC0257	Coil	LQN2A82NM04	
Q701	XU0061	Transistor	UN5211-TX	
Q702	XE0010	FET	2SK508K52-T2B	
Q703	XT0124	Transistor	2SC4215Y TE85L	
Q704	XT0111	Transistor	2SC4081LNT106S	
R701	RK3050	Chip R.	ERJ3GSYJ103V	
R702	RK3060	Chip R.	ERJ3GSYJ683V	
R703	RK3022	Chip R.	ERJ3GSYJ470V	
R704	RK3030	Chip R.	ERJ3GSYJ221V	
R705	RK3058	Chip R.	ERJ3GSYJ473V	
R706	RK3042	Chip R.	ERJ3GSYJ222V	
R707	RK3042	Chip R.	ERJ3GSYJ222V	
R708	RK3042	Chip R.	ERJ3GSYJ222V	
R709	RK3023	Chip R.	ERJ3GSYJ560V	
R710	RK3018	Chip R.	ERJ3GSYJ220V	
R711	RK3040	Chip R.	ERJ3GSYJ152V	
R712	RK3044	Chip R.	ERJ3GSYJ332V	
R713	RK3050	Chip R.	ERJ3GSYJ103V	
R714	RK3026	Chip R.	ERJ3GSYJ101V	
	TS0093	VCO Case	VCO Case DR610	

VHF PLL Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
C751	CU3047	Chip C.	C1608JB1H103KT-A	
C752	CS0063	Chip Tantal	TMCSA1V104MTR	
C753	CU3051	Chip C.	C1608JB1E223KT-A	
C754	CS0220	Chip Tantal	TMCMA1C225MTR	
C755	CS0220	Chip Tantal	TMCMA1C225MTR	
C757	CU3035	Chip C.	C1608JB1H102KT-A	
C758	CU3047	Chip C.	C1608JB1H103KT-A	
C759	CU3011	Chip C.	C1608CH1H100DT-A	
C760	CU3035	Chip C.	C1608JB1H102KT-A	
C761	CU3011	Chip C.	C1608CH1H100DT-A	
C762	CU3023	Chip C.	C1608CH1H101JT-A	
C763	CU3023	Chip C.	C1608CH1H101JT-A	
C764	CU3023	Chip C.	C1608CH1H101JT-A	
C765	CU3035	Chip C.	C1608JB1H102KT-A	
C766	CU3035	Chip C.	C1608JB1H102KT-A	
C767	CS0063	Chip Tantal	TMCSA1V104MTR	
C768	CU3023	Chip C.	C1608CH1H101JT-A	
C769	CU3008	Chip C.	C1608CH1H070CT-A	
C770	CU3006	Chip C.	C1608CH1H050CT-A	
C771	CU3002	Chip C.	C1608CH1H010CT-A	
C772	CU3003	Chip C.	C1608CH1H020CT-A	
C773	CU3035	Chip C.	C1608JB1H102KT-A	
C774	CU3035	Chip C.	C1608JB1H102KT-A	
C775	CU3035	Chip C.	C1608JB1H102KT-A	
C776	CU3035	Chip C.	C1608JB1H102KT-A	
C777	CU3001	Chip C.	C1608CH1H0R5CT-A	
C778	CU3047	Chip C.	C1608JB1H103KT-A	
C779	CU3023	Chip C.	C1608CH1H101JT-A	
C780	CU3023	Chip C.	C1608CH1H101JT-A	
C781	CU3031	Chip C.	C1608JB1H471KT-A	
CN751	UE0219	Connector	9270B-1-08B-T	
D751	XD0100	Diode	1SV164T2-K	
D752	XD0100	Diode	1SV164T2-K	
D753	XD0254	Diode	1SS355 TE17	
IC751	XA0235	IC	M56760FP-600A	
L751	QC0101	Coil	LER015TR82M	
L752	QC0101	Coil	LER015TR82M	
L753	QC0395	Coil	LQN1A33NJ04	
L754	QC0099	Coil	LER015TR56M	
L755	QC0096	Coil	LER015TR33M	
L756	QC0253	Coil	LQN2A39NM04	
Q751	XT0111	Transistor	2SC4081LNT106S	
Q752	XT0111	Transistor	2SC4081LNT106S	
Q753	XT0080	Transistor	2SC3324B	
Q755	XU0165	Transistor	UN511L-TX	
Q756	XT0124	Transistor	2SC4215Y TE85L	
Q757	XE0010	FET	2SK508K52-T2B	
Q758	XT0125	Transistor	2SC4215Y(TE85L)	

VHF PLL Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
Q759	XE0021	FET	2SK880GRTE85L	
R751	RK3030	Chip R.	ERJ3GSYJ221V	
R752	RK3042	Chip R.	ERJ3GSYJ222V	
R753	RK3043	Chip R.	ERJ3GSYJ272V	
R754	RK3048	Chip R.	ERJ3GSYJ682V	
R755	RK3070	Chip R.	ERJ3GSYJ474V	
R756	RK3001	Chip R.	ERJ3GSY0R00V	
R757	RK3047	Chip R.	ERJ3GSYJ562V	
R758	RK3058	Chip R.	ERJ3GSYJ473V	
R759	RK3058	Chip R.	ERJ3GSYJ473V	
R760	RK3001	Chip R.	ERJ3GSY0R00V	
R761	RK3074	Chip R.	ERJ3GSYJ105V	
R762	RK3046	Chip R.	ERJ3GSYJ472V	
R763	RK3001	Chip R.	ERJ3GSY0R00V	
R764	RK3026	Chip R.	ERJ3GSYJ101V	
R765	RK3034	Chip R.	ERJ3GSYJ471V	
R766	RK3054	Chip R.	ERJ3GSYJ223V	
R767	RK3043	Chip R.	ERJ3GSYJ272V	
R768	RK3022	Chip R.	ERJ3GSYJ470V	
R769	RK3030	Chip R.	ERJ3GSYJ221V	
R770	RK3051	Chip R.	ERJ3GSYJ123V	
R771	RK3023	Chip R.	ERJ3GSYJ560V	
R773	RK3050	Chip R.	ERJ3GSYJ103V	
R774	RK3045	Chip R.	ERJ3GSYJ392V	
R775	RK3067	Chip R.	ERJ3GSYJ274V	
R776	RK3001	Chip R.	ERJ3GSY0R00V	
R777	RK3042	Chip R.	ERJ3GSYJ222V	

UHF VCO Unit / UHF PLL Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
		UHF VCO Unit		
C801	CU3035	Chip C.	C1608JB1H102KT-A	
C802	CU3031	Chip C.	C1608JB1H471KT-A	
C803	CU3031	Chip C.	C1608JB1H471KT-A	
C804	CU3035	Chip C.	C1608JB1H102KT-A	
C805	CS0061	Chip Tantal	TMCSA1V224MTR	
C806	CU3003	Chip C.	C1608CH1H020CT-A	
C807	CU3019	Chip C.	C1608CH1H470JT-A	
C808	CU3008	Chip C.	C1608CH1H070CT-A	
C809	CU3005	Chip C.	C1608CH1H040CT-A	
C810	CU3002	Chip C.	C1608CH1H010CT-A	
C811	CU3035	Chip C.	C1608JB1H102KT-A	
C812	CU3006	Chip C.	C1608CH1H050CT-A	
C813	CU3035	Chip C.	C1608JB1H102KT-A	
C814	CU3035	Chip C.	C1608JB1H102KT-A	
C815	CS0216	Chip Tantal	TMCMB1A106MTR	
C816	CU3035	Chip C.	C1608JB1H102KT-A	
CN801	UE0218	Connector	9270B-1-09A-T	
D801	XD0129	Diode	1SS318TT11	
D802	XD0131	Diode	1SV214TPH4	
D803	XD0131	Diode	1SV214TPH4	
D804	XD0131	Diode	1SV214TPH4	
L801	QC0215	Coil	MLF2012A1R0KT	
L802	QC0398	Coil	LQN1A15NJ04	
L803	QC0101	Coil	LER015TR82M	
L804	QC0101	Coil	LER015TR82M	
L805	QA0093	Coil	KS12-275-1	
L806	QC0101	Coil	LER015TR82M	
L807	QC0096	Coil	LER015TR33M	
L808	QC0250	Coil	LQN2A18NM04	
Q801	XU0061	Transistor	UN5211-TX	
Q802	XE0010	FET	2SK508K52-T2B	
Q803	XT0125	Transistor	2SC4215Y(TE85L)	
Q804	XT0111	Transistor	2SC4081LNT106S	
R801	RK3062	Chip R.	ERJ3GSYJ104V	
R802	RK3060	Chip R.	ERJ3GSYJ683V	
R803	RK3022	Chip R.	ERJ3GSYJ470V	
R804	RK3030	Chip R.	ERJ3GSYJ221V	
R805	RK3058	Chip R.	ERJ3GSYJ473V	
R806	RK3042	Chip R.	ERJ3GSYJ222V	
R807	RK3042	Chip R.	ERJ3GSYJ222V	
R808	RK3048	Chip R.	ERJ3GSYJ682V	
R809	RK3021	Chip R.	ERJ3GSYJ390V	
R810	RK3022	Chip R.	ERJ3GSYJ470V	
R811	RK3045	Chip R.	ERJ3GSYJ392V	
R812	RK3050	Chip R.	ERJ3GSYJ103V	
R813	RK3050	Chip R.	ERJ3GSYJ103V	
	TS0093	VCO Case	VCO Case DR610	

Ref. No.	Parts No.	Description	Parts Name	Ver.
		UHF PLL Unit		
C851	CU3047	Chip C.	C1608JB1H103KT-A	
C852	CS0063	Chip Tantal	TMCSA1V104MTR	
C853	CU3047	Chip C.	C1608JB1H103KT-A	
C854	CS0220	Chip Tantal	TMCMA1C225MTR	
C855	CS0220	Chip Tantal	TMCMA1C225MTR	
C857	CU3035	Chip C.	C1608JB1H102KT-A	
C858	CU3047	Chip C.	C1608JB1H103KT-A	
C859	CU3006	Chip C.	C1608CH1H050CT-A	
C860	CU3035	Chip C.	C1608JB1H102KT-A	
C861	CU3011	Chip C.	C1608CH1H100DT-A	
C862	CU3023	Chip C.	C1608CH1H101JT-A	
C863	CU3023	Chip C.	C1608CH1H101JT-A	
C864	CU3023	Chip C.	C1608CH1H101JT-A	
C865	CU3035	Chip C.	C1608JB1H102KT-A	
C866	CU3035	Chip C.	C1608JB1H102KT-A	
C867	CS0063	Chip Tantal	TMCSA1V104MTR	
C868	CU3031	Chip C.	C1608JB1H471KT-A	
C869	CU3013	Chip C.	C1608CH1H150JT-A	
C870	CU3013	Chip C.	C1608CH1H150JT-A	
C871	CU3064	Chip C.	C1608CH1H1R5CT-A	
C872	CU3008	Chip C.	C1608CH1H070CT-A	
C873	CU3035	Chip C.	C1608JB1H102KT-A	
C874	CU3035	Chip C.	C1608JB1H102KT-A	
C875	CU3035	Chip C.	C1608JB1H102KT-A	
C876	CU3035	Chip C.	C1608JB1H102KT-A	
C878	CU3035	Chip C.	C1608JB1H102KT-A	
C880	CU3035	Chip C.	C1608JB1H102KT-A	
CN851	UE0219	Connector	9270B-1-08B-T	
D851	XD0233	Diode	1SV217TPH4	
D852	XD0233	Diode	1SV217TPH4	
IC851	XA0235	IC	M56760FP-600A	
L851	QC0108	Coil	LER015T3R3M	
L852	QC0108	Coil	LER015T3R3M	
L853	QC0406	Coil	LQN1A84NJ04	
L854	QC0103	Coil	LER015T1R2M	
L855	QC0099	Coil	LER015TR56M	
L856	QC0257	Coil	LQN2A82NM04	
Q851	XT0111	Transistor	2SC4081LNT106S	
Q852	XT0111	Transistor	2SC4081LNT106S	
Q853	XT0080	Transistor	2SC3224B	
Q855	XU0165	Transistor	UN511L-TX	
Q856	XT0124	Transistor	2SC4215Y TE85L	
Q857	XE0010	FET	2SK508K52-T2B	
Q858	XT0124	Transistor	2SC4215Y TE85L	
Q859	XE0021	FET	2SK880GRTE85L	

UHF PLL Unit / AIR Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
R851	RK3030	Chip R.	ERJ3GSYJ221V	
R852	RK3042	Chip R.	ERJ3GSYJ222V	
R853	RK3043	Chip R.	ERJ3GSYJ272V	
R854	RK3047	Chip R.	ERJ3GSYJ562V	
R855	RK3070	Chip R.	ERJ3GSYJ474V	
R856	RK3001	Chip R.	ERJ3GSY0R00V	
R857	RK3048	Chip R.	ERJ3GSYJ682V	
R858	RK3058	Chip R.	ERJ3GSYJ473V	
R859	RK3058	Chip R.	ERJ3GSYJ473V	
R860	RK3001	Chip R.	ERJ3GSY0R00V	
R861	RK3074	Chip R.	ERJ3GSYJ105V	
R862	RK3050	Chip R.	ERJ3GSYJ103V	
R863	RK3001	Chip R.	ERJ3GSY0R00V	
R864	RK3026	Chip R.	ERJ3GSYJ101V	
R865	RK3034	Chip R.	ERJ3GSYJ471V	
R866	RK3054	Chip R.	ERJ3GSYJ223V	
R867	RK3043	Chip R.	ERJ3GSYJ272V	
R868	RK3022	Chip R.	ERJ3GSYJ470V	
R869	RK3026	Chip R.	ERJ3GSYJ101V	
R870	RK3052	Chip R.	ERJ3GSYJ153V	
R871	RK3023	Chip R.	ERJ3GSYJ560V	
R873	RK3054	Chip R.	ERJ3GSYJ223V	
R874	RK3050	Chip R.	ERJ3GSYJ103V	
R875	RK3069	Chip R.	ERJ3GSYJ394V	
R876	RK3001	Chip R.	ERJ3GSY0R00V	
R877	RK3043	Chip R.	ERJ3GSYJ272V	
R879	RK3001	Chip R.	ERJ3GSY0R00V	

Ref. No.	Parts No.	Description	Parts Name	Ver.
		AIR Unit		
C901	CU3035	Chip C.	C1608JB1H102KT-A	
C902	CU3018	Chip C.	C1608CH1H390JT-A	
C903	CU3015	Chip C.	C1608CH1H220JT-A	
C904	CU3018	Chip C.	C1608CH1H390JT-A	
C905	CU3006	Chip C.	C1608CH1H050CT-A	
C906	CU3019	Chip C.	C1608CH1H470JT-A	
C907	CU3019	Chip C.	C1608CH1H470JT-A	
C908	CU3015	Chip C.	C1608CH1H220JT-A	
C909	CU3018	Chip C.	C1608CH1H390JT-A	
C910	CU3035	Chip C.	C1608JB1H102KT-A	
C911	CU3035	Chip C.	C1608JB1H102KT-A	
C912	CU3035	Chip C.	C1608JB1H102KT-A	
C913	CU3035	Chip C.	C1608JB1H102KT-A	
C915	CU3011	Chip C.	C1608CH1H100DT-A	
CN901	UE0221	Connector	9230B-1-05Z009T	
CN902	UE0220	Connector	9230B-1-04Z009T	
D901	XD0246	Diode	DAN235UT106	
D902	XD0129	Diode	1SS318TT11	
L901	QC0063	Coil	NL322522T-047J	
L902	QC0063	Coil	NL322522T-047J	
L903	QC0067	Coil	NL322522T-R10J	
L904	QC0067	Coil	NL322522T-R10J	
L905	QC0064	Coil	NL322522T-056J	
L906	QC0067	Coil	NL322522T-R10J	
Q901	XT0115	Transistor	2SC4226T1R24	
Q902	XU0061	Transistor	UN5211-TX	
R901	RK3050	Chip R.	ERJ3GSYJ103V	
R902	RK3050	Chip R.	ERJ3GSYJ103V	
R903	RK3050	Chip R.	ERJ3GSYJ103V	
R904	RK3026	Chip R.	ERJ3GSYJ101V	
R905	RK3066	Chip R.	ERJ3GSYJ224V	
R907	RK3034	Chip R.	ERJ3GSYJ471V	
R908	RK3042	Chip R.	ERJ3GSYJ222V	
R909	RK3050	Chip R.	ERJ3GSYJ103V	

ENC Unit / SP Unit / FAN Unit / PACKET / Mechanical Parts / PCB

Ref. No.	Parts No.	Description	Parts Name	Ver.
ENC Unit				
C981	CU3047	Chip C.	C1608JB1H103KT-A	
C982	CS0236	Chip Tantal	TMCMA0J685MTR	
C983	CU8034	Chip C.	C2012X7R1E333KT	
C984	CU8042	Chip C.	C2012JB1C104KT-A	
C985	CU3051	Chip C.	C1608JB1E223KT-A	
C986	CU8030	Chip C.	C2012JB1H153KT-A	
C987	CU3085	Chip C.	C1608CH1H300JT-A	
C988	CU3085	Chip C.	C1608CH1H300JT-A	
C989	CU8042	Chip C.	C2012JB1C104KT-A	
CN981	UX1064	Wire	Wire DR610	
D981	XD0254	Diode	1SS355 TE17	
IC981	XA0280	IC	LC6528F-4D24	
Q981	XT0095	Transistor	2SC4081T106R	
R981	RK3058	Chip R.	ERJ3GSYJ473V	
R982	RK3054	Chip R.	ERJ3GSYJ223V	
R983	RK3054	Chip R.	ERJ3GSYJ223V	
R984	RK3054	Chip R.	ERJ3GSYJ223V	
R985	RA0020	Chip R.	EXBV8V473J	
R986	RK3058	Chip R.	ERJ3GSYJ473V	
R987	RK3050	Chip R.	ERJ3GSYJ103V	
R988	RK3067	Chip R.	ERJ3GSYJ274V	
R989	RK3030	Chip R.	ERJ3GSYJ221V	
R990	RK3040	Chip R.	ERJ3GSYJ152V	
R991	RK3018	Chip R.	ERJ3GSYJ220V	
R992	RK3050	Chip R.	ERJ3GSYJ103V	
R993	RK3050	Chip R.	ERJ3GSYJ103V	
R994	RK3050	Chip R.	ERJ3GSYJ103V	
R995	RK3050	Chip R.	ERJ3GSYJ103V	
VR981	RH0106	Trim. Pot	EVM1YSX50BQ4	
X981	XB0014	Ceralock	CSAC3.58MGC300GA-TC	
SP Unit				
	ES0007	Speaker	VS-57-0814-1.5W	
	UX1047	Wire	Wire DR130	
FAN Unit				
	ET0005	Fan	MF40C-12H007	
	QB0036	Ferrite Core	BP53RB120070060M	
Packet (Option)				
	UZ0022	Ø2.5 Plug	ML025L	
	UZ0004	Ø3.5 Plug	AP370B	

Ref. No.	Parts No.	Description	Parts Name	Ver.
Mechanical Parts				
	AA0050	Screw	2.6+6FeBC	
	AN0012	Nut	Dial Nut	
	AP0006	Screw	P2+6FeCr	
	AP0017	Screw	P2.6+10FeBC	
	AP0018	Screw	P3+16FeCr	
	AV0001	Screw	B2.6+6FeNi	
	AV0002	Screw	B2.6+6FeBC	
	AV0003	Screw	B2.6+6FeBC	
	AW0001	Screw	W3+8FeNi	
	AW0003	Screw	W2.6+6FeNi	
	DG0017		VOL Light	
	DG0018		Dial Light	
	FF0025		Cloth	
	FF0033		Magic Tape A	
	FF0034		Magic Tape B	
	FG0155		SP Cushion	
	FG0156		Button Cushion	
	FG0191		Rubber Cushion EJ-24U	
	FG0198		Rubber Cushion 3x8	
	FG0199		Rubber Cushion 8x8	
	FG0205		Rubber DR610	
	FM0076		IC Spring	
	FM0096		Blind Plate	
	FP0083		Fun Cover	
	FP0084		SP Base	
	FP0086		Cable Cover	
	KB0048A		Front Cover	
	KM0172		Chassis Cover	
	KS0044		Bottom Case	
	KZ0019		Front Panel DR610	
	KZ0020		Top Case	
	NB0056		Release L	
	NB0057A		Release R	
	ND0021		Dial Rubber	
	ND0022		Volume Rubber	
	NK0038		VOL Knob	
	NK0039		Dial Knob	
	NW0008		SQL Knob	
	SC0007		Release Spring	
	SS0056		Chassis	
	TT1001		Tube 0.7 1mm	
	TZ0061		Insulator Sheet 21x33	
	TZ0062		Insulator Sheet 6x12	
	UE0231		Cable	
	YZ0041		Cupper Tape	
	YZ0042		Adhesion G17	
	YZ0054		Copper Tape W=5mm	
PCB				
	UP0259A		FRONT CPU UNIT	
	UP0260A		SUB CPU & RF UNIT	

Packing / EHM35B

Ref. No.	Parts No.	Description	Parts Name	Ver.
Packing				
	EHM35B		Microphone	E
	EHM39		Microphone	T
	#G0508		Power Cable	
	#G0509		Screw Set	
	#G0598		Mic. Hanger	
	DS0352A		Spec. Card	E
	DS0360A		Spec. Card	T
	FM0078		Bracket	
	HK0378		Item Carton DR610	
	HP0002		Protection Bag (Instruction Card)	
	HP0035		Protection Bag (Radio)	
	HP0037		Protection Bag (Bracket)	
	HU0069		Fixture DR610	
	HU0073		Fixture 45x148	
	HU0075		Fixture DR150	
	PF0026		Operation Seal	
	PF0029A		Operation Card	
	PH0009		Registration Card	T
	PK0056		Schematic Diagram	
	PR0237		FCC Part15 Seal	T
	PS0215		Instruction Card	
	PT0004A		Lot Number Seal	

Ref. No.	Parts No.	Description	Parts Name	Ver.
EHM35B				
C1	CK0002	Ceramic C.	CK45-F1H 103ZYA	
C2	CK1002	Ceramic C.	SC45-F1C104Z-PT	
C3	CE0345	Electrolytic.C	6MV100µF+TS	
C4	CK1001	Ceramic C.	SC45-F1H102Z-PT	
D1	XD0067	Diode	MA700	
R1	RD2002	Resistor	ERDS2TYJ681T	
R2	RD0019	Resistor	ERDS2TYJ121T	
R3	RD0108	Resistor	JPW01 R-01 00HM	
R4	RD2003	Resistor	ERDS2TYJ222T	
S1	US0015	Switch	HSW0880-01-210	
S2	UU0009	Switch	EVQ-QHJ04G	
S3	UU0009	Switch	EVQ-QHJ04G	
S4	UM0002	Switch	SS-5	
	AE0018	Screw	S26+4FeCr	
	AJ0024	Screw	1M3.5+10FeBC	
	AJ0028	Screw	2M2.3+12FeCr	
	AP0004	Screw	PM2+5FeCr	
	AP0008	Screw	PM3+8FeBC	
	AS0142		Screw Set	
	DE0006		Stopper	
	EY0006	Microphone	WM-60AT	
	FG0045		Mic Rubber Cushion	
	FM0097		Weight	
	HP0036		Protection Bag	
	KB0033		Rear Case	
	KM0071A		Front Case	
	NP0041		PTT Button	
	NP0042		Up Button	
	NP0043		Down Button	
	NS0003		Slide Knob	
	SC0004		PTT Spring	
	UE0209		Curl Code	
	UP0193	P.C.B.	P.C.B.	
	UX0133	Wire	Wire EMS-5	

EHM39

Ref. No.	Parts No.	Description	Parts Name	Ver.
		EHM39		
C3	CU8003	Chip C.	C2012JF1E104Z	
C4	CU8012	Chip C.	C2012JB1H471J	
C5	CU8012	Chip C.	C2012JB1H471J	
C6	CU8016	Chip C.	C2012JB1H102K	
C7	CE0308	Electrolytic.C	ECE1CJA101P	
C8	CK0004	Ceramic C.	50V 102MYA	
C9	CU8024	Chip C.	C2012B1H472K	
C10	CS0066	Chip Tantal	TMC1D225TR	
D1	XD0109	Diode	RLZJ5.1BTE11	
FAR1	XB0001	Ceralock	C4CA03580000K01R	
IC1	XA0042	IC	LR40872	
IC2	XA0125	IC	TC7S00F	
IC3	XA0125	IC	TC7S00F	
Q1	XT0077	Transistor	2SC3326A TE85L	
R1	RK0062	Chip R.	MCR10EZHJ473E	
R2	RK0062	Chip R.	MCR10EZHJ473E	
R3	RK0035	Chip R.	MCR10EZHJ102E	
R4	RK0039	Chip R.	MCR10EZHJ222E	
R5	RK0031	Chip R.	MCR10EZHJ681E	
R7	RK0107	Chip R.	ERJ6GEY0R00V	
R8	RK0019	Chip R.	ERJ6GEYJ121V	
R10	RK0069	Chip R.	MCR10EZHJ104E	
R11	RK0045	Chip R.	MCR10EZHJ472E	
R12	RK0045	Chip R.	MCR10EZHJ472E	
R13	RK0069	Chip R.	MCR10EZHJ104E	
R14	RK0086	Chip R.	MCR10EZHJ105E	
R15	RK0025	Chip R.	MCR10EZHJ331E	
SW1	UM0002	Switch	SS-5	
SW2	UU0009	Switch	EVQ-QHJ04G	
SW3	UU0009	Switch	EVQ-QHJ04G	
SW4	US0015	Switch	HSW0880-01-210	
SW5	US0015	Switch	HSW0880-01-210	
VR1	RH0031	Trim. Pot	CVR-42A-103AW1D	
W1	MACK02GG	Wire	Wire Blue	
W2	MYCK02GG	Wire	Wire Yellow	

Ref. No.	Parts No.	Description	Parts Name	Ver.
	AE0018	Screw	S26+4FeCr	
	AJ0024	Screw	1M3.5+10FeBC	
	AJ0028	Screw	2M2.3+12FeCr	
	AP0004	Screw	PM2+5FeCr	
	AP0008	Screw	PM3+8FeBC	
	DE0007		Stopper	
	EB0002	Buzzer	KBS-15DB-4A	
	EY0006	Microphone	WM-60AT	
	FG0045		Mic Rubber Cushion	
	FG0055		Rubber Switch	
	FG0057		Rubber Cushion	
	FM0097		Weight	
	HP0036		Protection Bag	
	KB0033		Rear Case	
	KM0159		Front Case	
	NP0041		PTT Button	
	NP0042		Up Button	
	NP0043		Down Button	
	NS0003		Slide Switch	
	SC0004		PTT Spring	
	TT1002	Tube	1.0x1mm	
	UE0208		Curl Code	
	UP0183C	P.C.B.	P.C.B.	
	YZ0133		Holding Tape 10mm	

ADJUSTMENT

1) Required Test Equipment

1. Digital Multimeter

2. Regulated Power Supply

Supply voltage: 13.8VDC
Current: 15A or more

3. Oscilloscope

Measurable frequency: Audio Frequency

4. Spectrum Analyzer

Measuring range: Up to 2GHz or more

5. Tracking Generator

Output frequency: Up to 2GHz or more

6. Dummy Road

Measurable frequency: Up to 500MHz
Impedance: 50Ω, unbalanced
Power: 50W or more

7. Speaker (2 units)

Impedance: 8Ω

8. SSG

Output frequency: 1GHz or more
Output level: -20dB/0.1μV to120dB/1V
Moduration: AM/FM

9. Transceiver Tester

500MHz or more

a. Frequency Counter

b. Power Meter

Impedance: 50Ω, unbalanced
Measuring range: 50W or more

c. Audio Voltmeter

Measurable frequency: 50Hz~10kHz
Sensitivity: 1mV ~ 10V

d. Distortion Meter

Measurable frequency: 1kHz
Input level: Up to 40dB
Distortion level: 1% ~100%

e. Audio Generator

Output frequency: 1kHz~10kHz
Output impedance: 600Ω, unbalanced

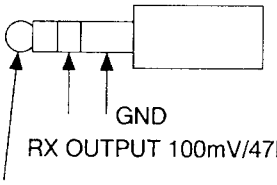
f. Linear Detector

Filter: HPF (30Hz~50Hz)
LPF (10kHz~15kHz)

10. 9600bps Hi-Speed Packet Testing

While pushing the FUNC key, push RC key.
Make sure that "A" flashes on the UHF side.
Connect the plug to the SP1 jack on the rear of the unit.

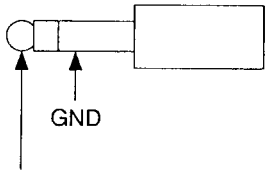
2.5ø stereo plug (To ext mic terminal)
(UZ0022)



RX OUTPUT 100mV/47k (Level meter, oscilloscope)

TX MOD 4.8kHz -1dBm (AF OSC)

3.0ø monaural plug (To SP 1)
(UZ0004)



PTT (TX: Low)

Note 1

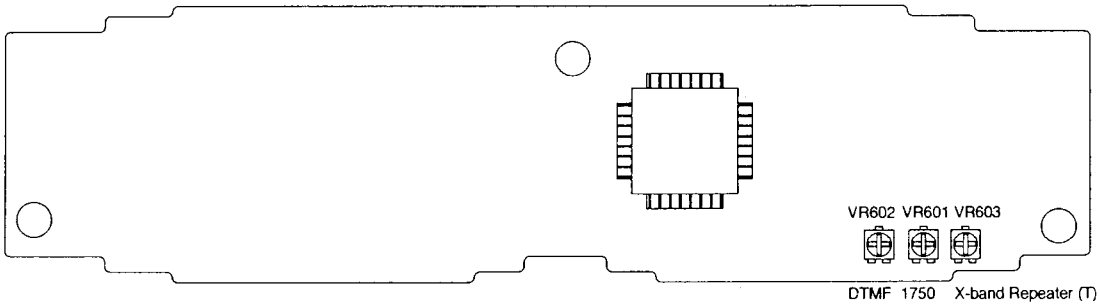
1. All SSG output is indicated by EMF.
2. AG output level connecting with the load is measured.
3. Standard Modulation: 1kHz +/- 3.5kHz/DEV
4. Audio Output level: 50mW~100mW at 8Ω
5. Coaxial cable: 5D2W 1m

Note 2

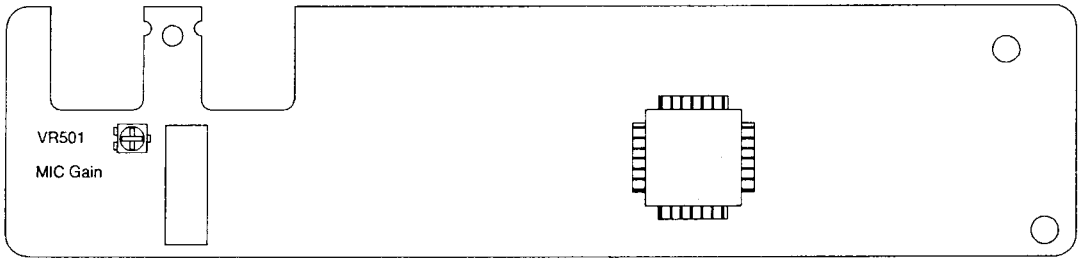
1. Power supply voltage is 13.8V.
   Power switch is off.
2. Turn the squelch and volume knobs counterclockwise.
3. Press and hold the "F" key, then turn the power switch on.
   The display shows the frequency as follows:
   145.00 433.00 (E version)
   145.00 445.00 (T version)

2) Adjustment Points

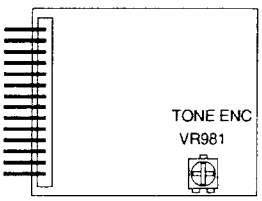
Sub Control Unit



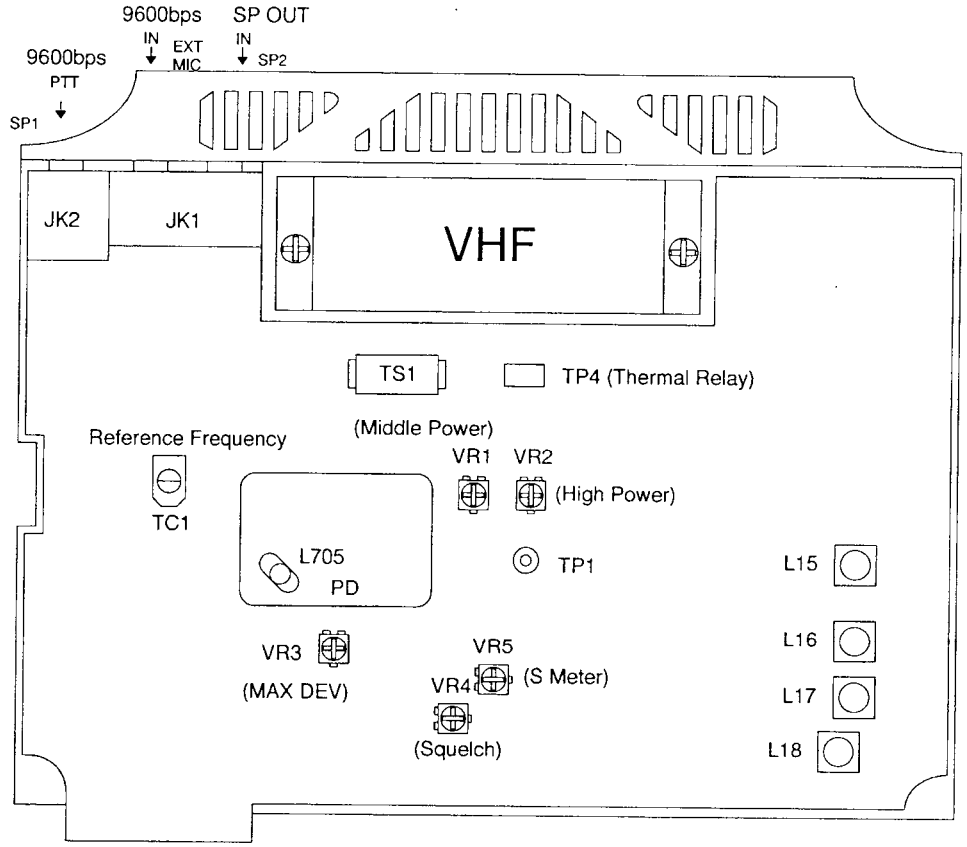
Front Control Unit

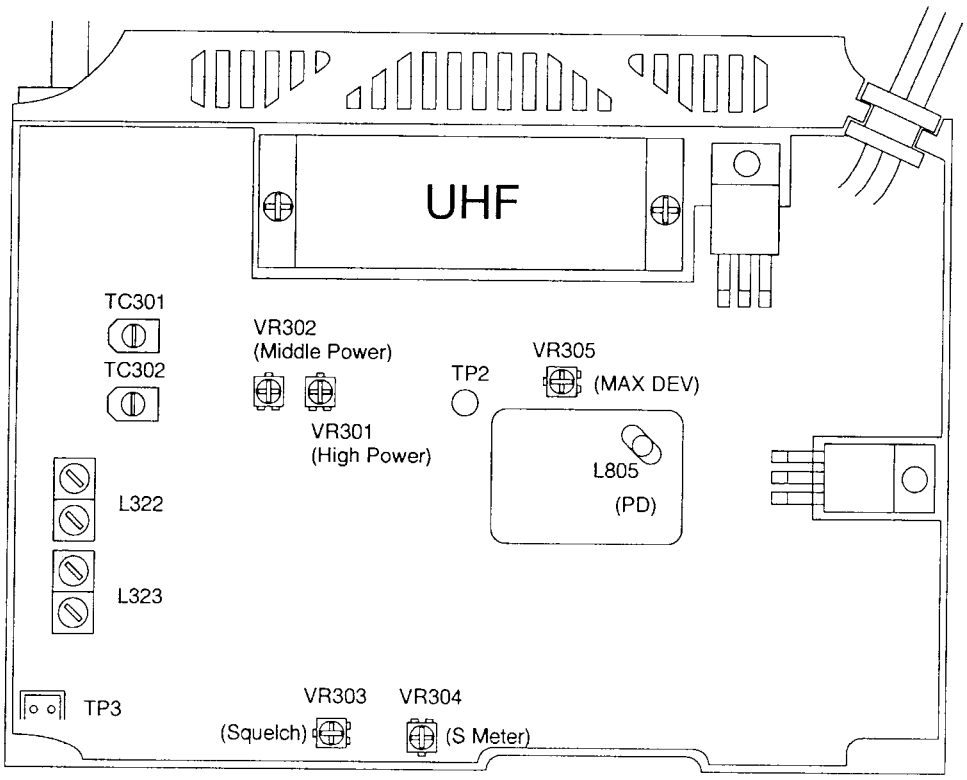


Tone ENC Unit



Main Unit


9600bps
IN
EXT MIC
SP OUT
IN
SP2
9600bps
PTT
SP1
JK2
JK1
VHF
TS1
TP4 (Thermal Relay)
Reference Frequency
(Middle Power)
VR1
VR2
(High Power)
TC1
L705
PD
TP1
L15
VR3
(MAX DEV)
VR5
VR4
(S Meter)
(Squelch)
L16
L17
L18


UHF
TC301
TC302
VR302
(Middle Power)
VR301
(High Power)
TP2
VR305
(MAX DEV)
L805
(PD)
L322
L323
TP3
VR303
(Squelch)
VR304
(S Meter)

3) UHF RX Adjustment

Item	Condition	TX/RX	Measurement			Adjustment			Specifications
			Equipment	Unit	Terminal	Unit	Parts	Method	
Reference Frequency	f=445.00MHz (T) f=435.00MHz (E)	TX	Freq. Counter Power Meter	Back	UHF ANT	VHF Main	TC1	445MHz (T) 435MHz (E)	+/- 100Hz
PLL VCO	f=440.00MHz	RX	Digital Multimeter	UHF Main	TP2	UHF VCO	L805	4.2V	4.2V+/-0.2V
	f=440.00MHz	TX					—	4.5V (Check)	4.0V~5.5V
	f=145.00MHz (SUB)	RX						3.8V (Check)	3.2V~4.8V
Herical coil	f=445.00MHz (T) f=435.00MHz (E)	RX	T.G. -40dBm	Back	UHF ANT	UHF Main	L322 L323 TC301 TC302	Max Gain	440M (T) 450M (T) 430M (E) 440M (E) -42dBm
			Spectrum Analyzer	UHF	TP3				
UHF Sensitivity	f=438.00MHz (T) f=445.02MHz (T) f=449.99MHz (T) SSG OUT: -9.0dBμ	RX	SSG Dist. Meter Oscilloscope	Back	UHF SP2			Check	SINAD is above 12dB
	f=430.00MHz (E) f=435.00MHz (E) f=439.99MHz (E) SSG OUT: -9.0dBμ								
VHF Sensitivity	f=138.00MHz (T) SSG OUT: -4.0dBμ	RX						Check	SINAD is above 12dB
	f=145.00MHz SSG OUT: -6.0dBμ								
	f=173.99MHz (T) SSG OUT: -4.0dBμ								
S Meter	f=445.00MHz (T) f=435.00MHz (E) SSG OUT: 18.0dBμ	RX	LCD UHF S Meter	Front panel		UHF Main	VR304	"Full" Flashing	
	SSG OFF							Check	Does not light.
SQL level	f=445.00MHz (T) f=435.00MHz (E) SSG OFF SQ VR: 9 o'clock	RX		Main		UHF Main	VR303	Turn VR303 to close the squelch	
			Turn the UHF SQ VR to make sure that the squelch closes at 9~10 o'clock.						
ATT	f=445.00MHz (T) f=435.00MHz (E)	RX	While pushing FUNC key, push H/L key. The ATT is lit. Make sure that the receiving sensitivity is attenuated about 10 ~ 20dB.						

4) UHF TX Adjustment

Item	Condition	TX/RX	Measurement			Adjustment			Specifications
			Equipment	Unit	Terminal	Unit	Parts	Method	
High Power	f=445.05MHz (T) f=435.05MHz (E)	TX High	Power Meter Current Meter Voltage Meter	Back	UHF ANT	UHF Main	VR301	Max	Above 36W
								36W	+/-1.0W below 10A
	f=438.00MHz (T) f=449.99MHz (T) f=430.00MHz (E) f=439.99MHz (E)							Check	33~40W 9A
Middle Power	f=445.00MHz (T) f=435.00MHz (E)	TX Middle					VR302	10W	10+/-0.5W
Low Power		TX Low						Check	5+/-1W
DEV	f=445.00MHz (T) f=435.00MHz (E) Mod: 1kHz Mic : -30dBm	TX	Linear Det. Oscilloscope Power Meter	Back	UHF ANT	UHF Main	VR305	4.7kHz /DEV	4.7kHz +/-0.2kHz /DEV
MIC Gain	Mod: 1kHz Mic : -46dBm					Front	VR501	Check	4.0 kHz +/-0.3kHz /DEV
CTCSS Tone	f=445.00MHz (T) f=435.00MHz (E) Mod: OFF Tone SW ENC 88.5Hz					ENC	VR981	0.8kHz /DEV	0.8kHz +/-0.1kHz /DEV
Tone Burst	f=439.00MHz Mod: OFF PTT+DOWN					SUB	VR601	Check	3.0kHz +/-0.3kHz /DEV
DTMF	f=439.00MHz CODE= "111111111111111" Auto dialer ON						VR602	Check	3.0kHz +/-0.4kHz /DEV

5) VHF RX Adjustment

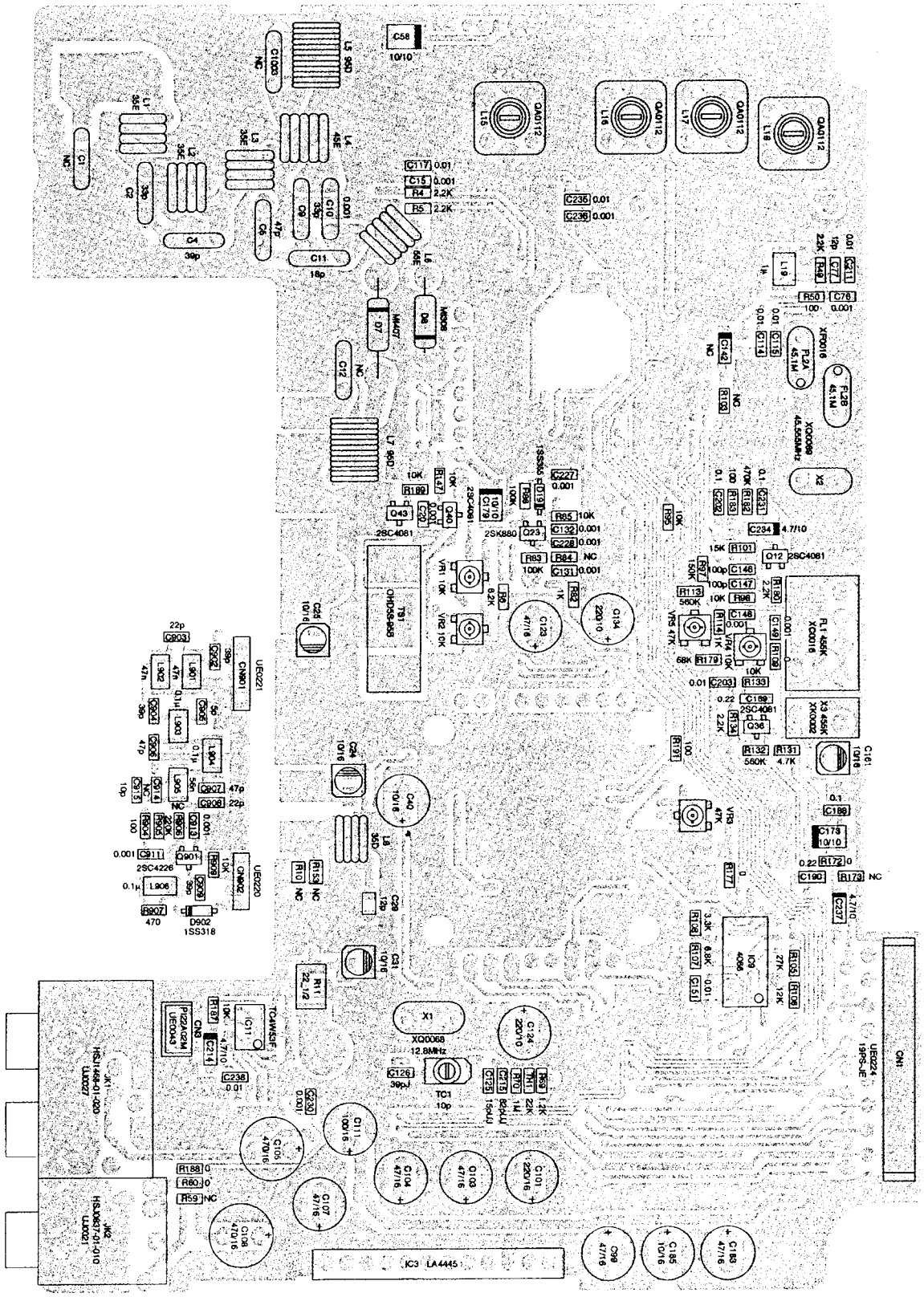
Item	Condition		Measurement			Adjustment			Specifications
		TX/RX	Equipment	Unit	Terminal	Unit	Parts	Method	
Frequency	f=145.00MHz	TX	Freq. Counter Power Meter	Back	VHF ANT			Check	+/- 100Hz
PLL VCO	f=145.00MHz	RX	Digital Multimeter	VHF Main	TP1	VHF VCO	L705	3.00V	0.5V/-1V
	f=145.00MHz	TX						Check	3.0V+/-1.0V
	f=440.00MHz (SUB)	RX						Check	2.5V+/-0.8V
Note:	When you set the voltage of VHF RX PD to 3.0V, turn the core of L705 clockwise. If the voltage can not be set to 3.0V, 2.0V is allowable.								
GAIN	f=145.00MHz	RX	Dist. Meter Oscilloscope	Back	VHF SP2	VHF Main	L15 ~ L18	SINAD MAX	SINAD is above 12dB
Sensitivity	f=145.00MHz SSG OUT: -9.0dBμ		SSG Dist. Meter Oscilloscope				L15 ~ L18	SINAD MAX	SINAD is above 12dB
	f=138.00MHz (T) f=173.99MHz SSG OUT: -4.0dBμ							Check	SINAD is above 12dB
AM Sensitivity (T only)	f=118.00MHz SSG OUT: 5.0dBμ	RX						Check	S/N is above 10dB
S Meter	f=145.00MHz SSG OUT: 20.0dBμ	RX	LCD VHF S Meter	Front panel		VHF Main	VR5	"Full" Flashing	
	SSG OFF							Check	Does not light.
SQL level	f=145.00MHz SSG OFF SQ VR: 9 o'clock	RX		VHF Main		VHF Main	VR4	Turn VR4 to close the squelch	
				Turn the VHF SQ VR to make sure that the squelch closes at 9~10 o'clock.					
ATT	f=145.00MHz	RX		While pushing FUNC key, push H/L key. The ATT is lit. Make sure that the receiving sensitivity is attenuated about 10 ~ 20dB.					

6) VHF TX Adjustment

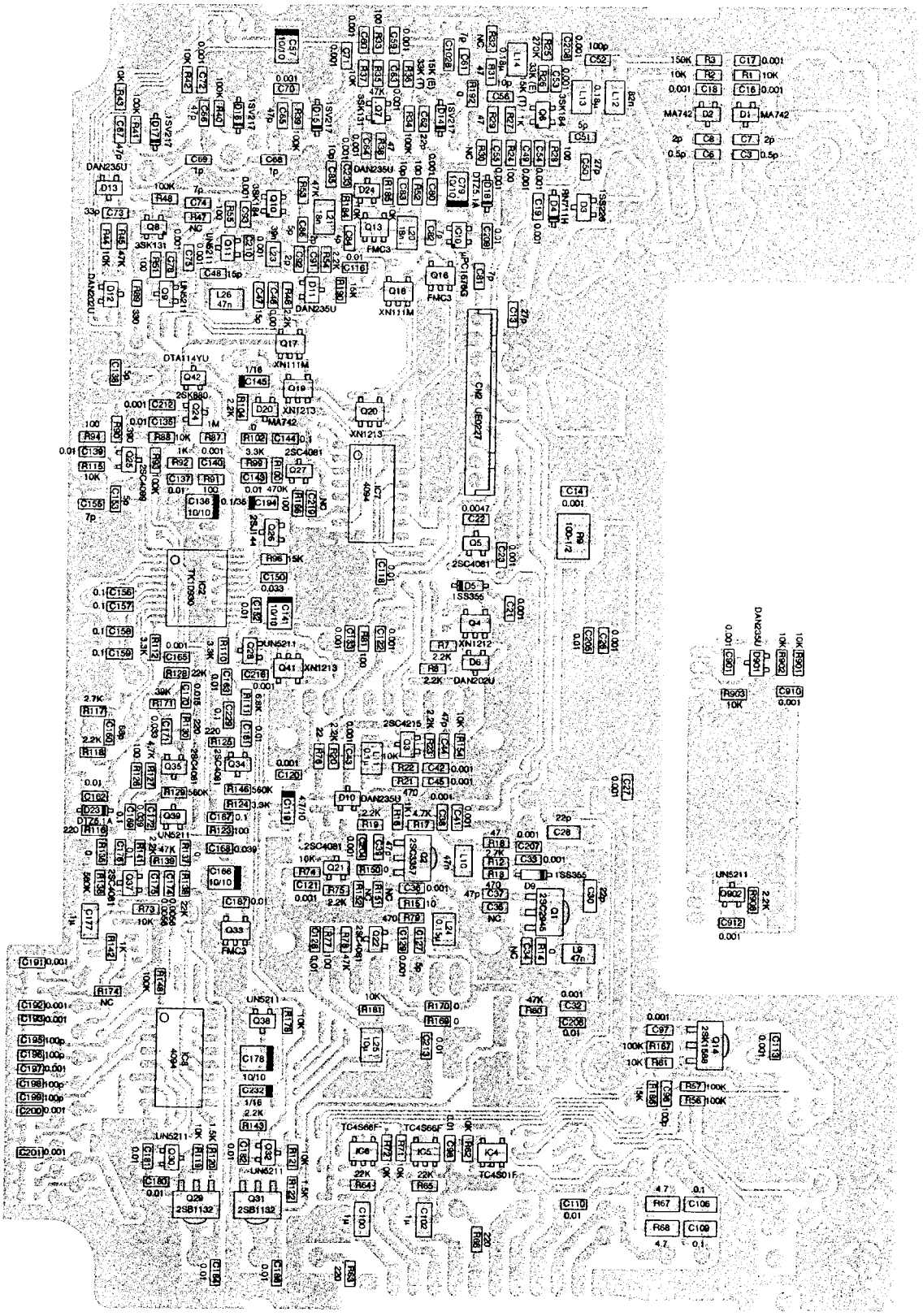
Item	Condition	TX/RX	Measurement			Adjustment			Specifications
			Equipment	Unit	Terminal	Unit	Parts	Method	
High Power	f=145.00MHz	TX High	Power Meter Current Meter Voltage Meter	Back	VHF ANT	VHF Main	VR1	Max	Above 55W
							VR1	52W	+/-1.0W below 11A
	f=144.00MHz (T) f=147.99MHz (T) f=144.00MHz (E) f=145.99MHz (E)							Check	43~48W 11A
Middle Power	f=146.00MHz (T) f=145.00MHz (E)	TX Middle					VR2	10W	10+/-1W
Low Power		TX Low						Check	4~7W
DEV	f=145.00MHz Mod: 1kHz Mic : -30dBm	TX	Linear Det. Oscilloscope Power Meter	Back	VHF ANT	VHF Main	VR3	4.7kHz /DEV	4.7kHz +/-0.2kHz /DEV
MIC Gain	Mod: 1kHz Mic : -46dBm							Check	4.0 kHz +/-0.3kHz /DEV
CTCSS Tone	f=145.00MHz Mod: OFF Tone SW ENC 88.5Hz							Check	0.8kHz +/-0.2kHz /DEV
Tone Burst	f=145.00MHz Mod: OFF PTT+DOWN							Check	3.0kHz +/-0.4kHz /DEV
DTMF	f=145.00MHz CODE= "111111111111111" Auto dialer ON							Check	3.0kHz +/-0.4kHz /DEV
X-BAND Repeater	f=145.00MHz RXf=445.00MHz (T) RXf=433.00MHz (E) X-BAND ON					SUB	VR603	Check	3.5kHz +/-0.5kHz /DEV
Thermal Relay	f=145.00MHz	TX High			TP4	VHF Main		Make sure that the power changes from "Hi" to "Low" when TP4 is connected to GND.	

PC BOARD VIEW

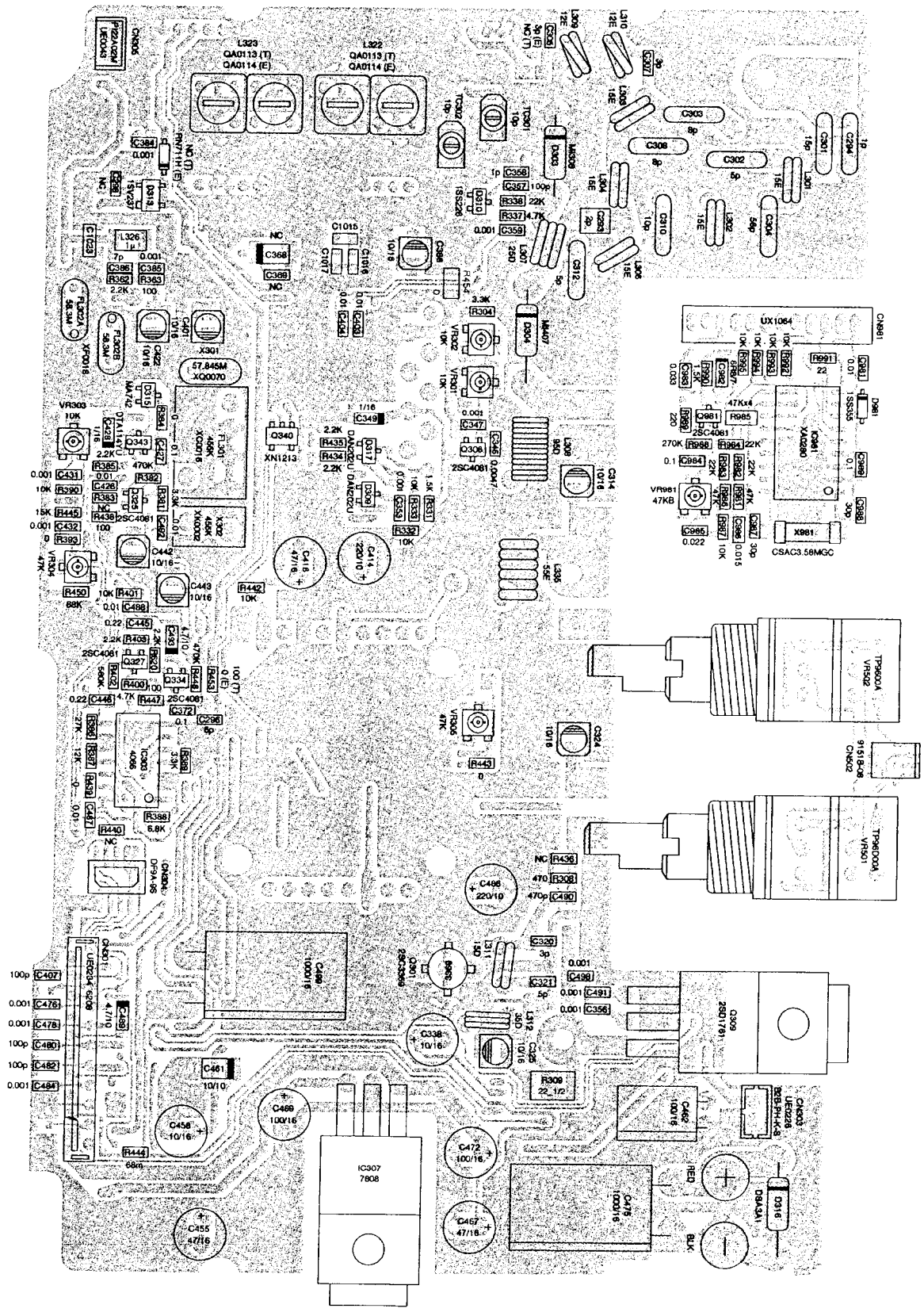
1) VHF MAIN/AIR Unit Side A



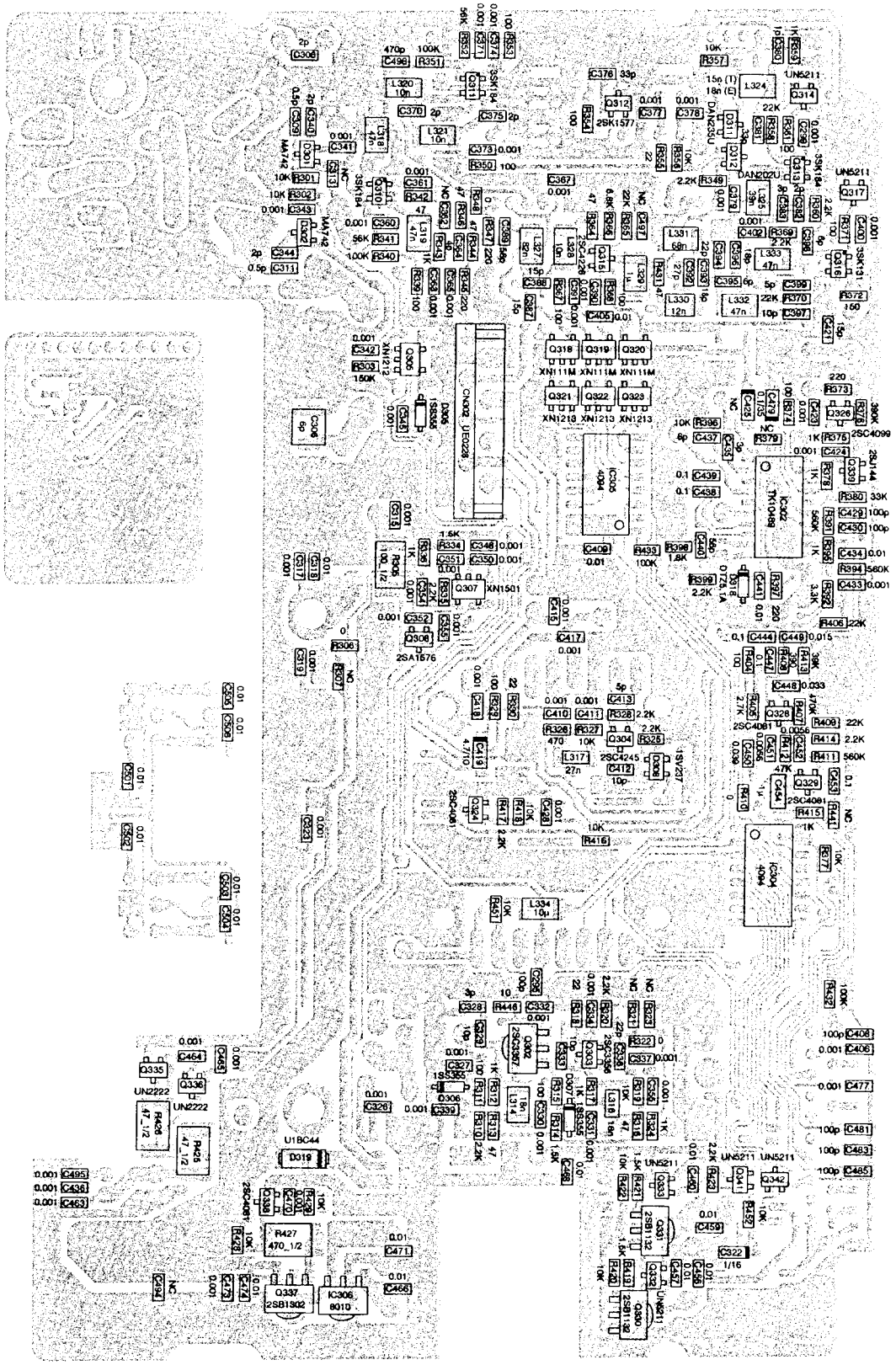
2) VHF MAIN/AIR Unit Side B



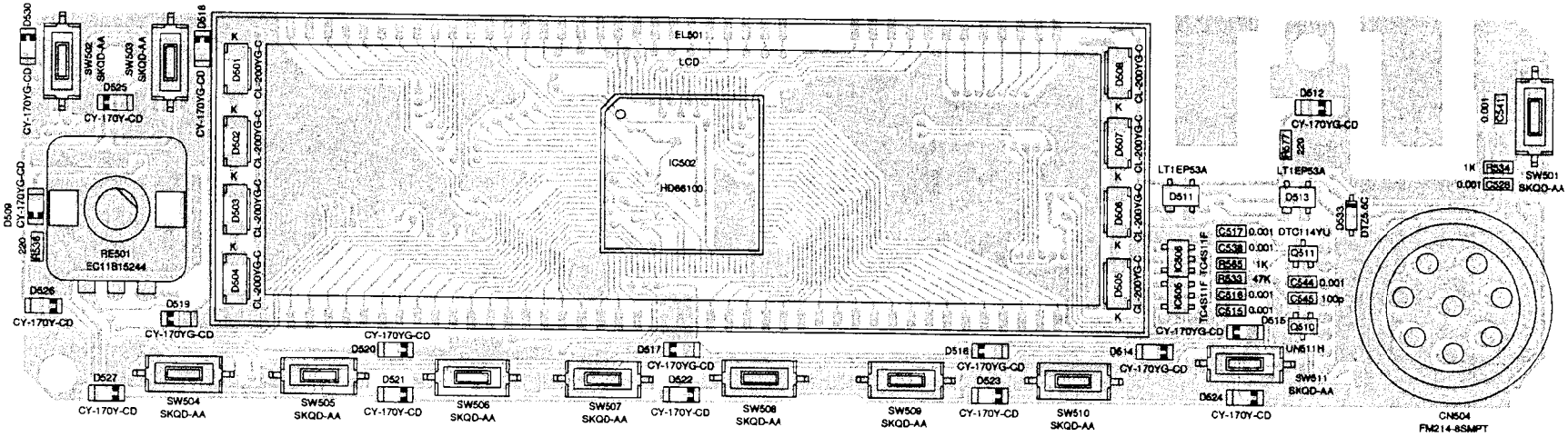
3) UHF MAIN/ENC/VOL Unit Side A



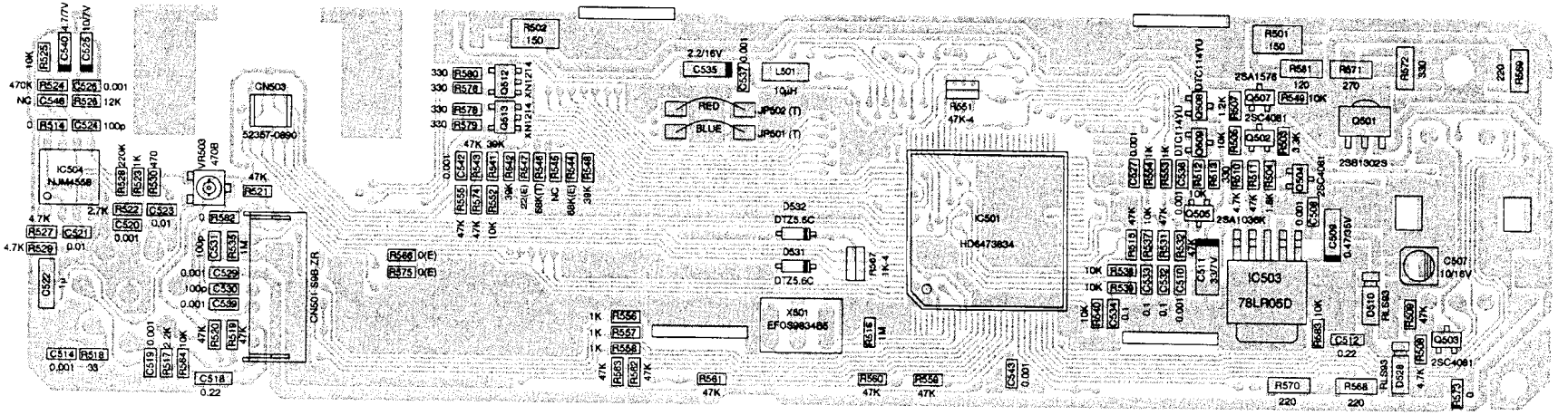
4) UHF MAIN/ENC/VOL Unit Side B



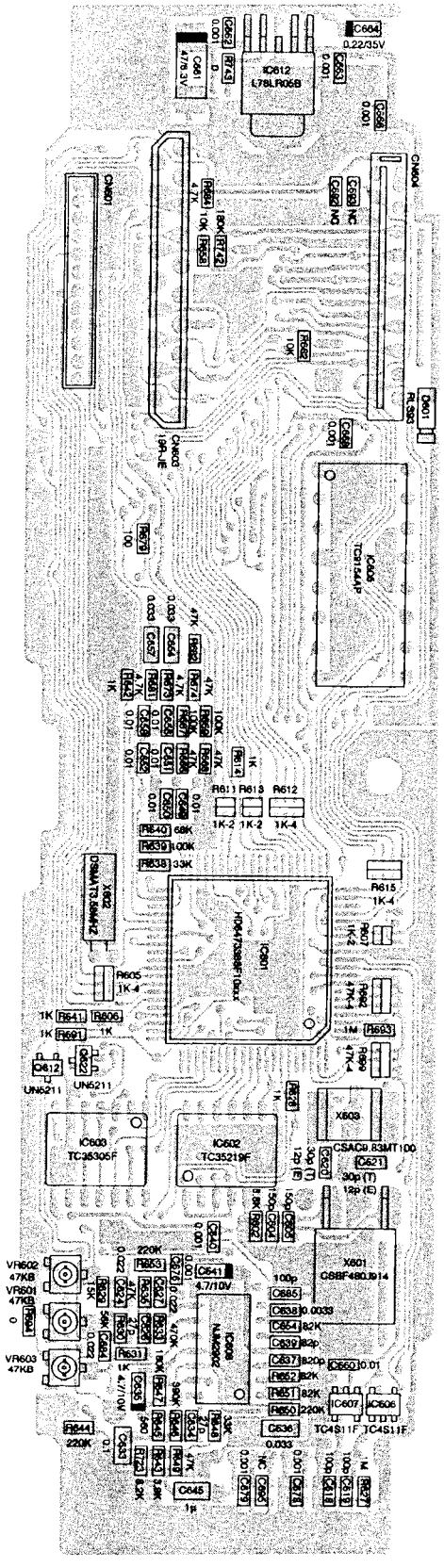
5) Front CPU Unit A



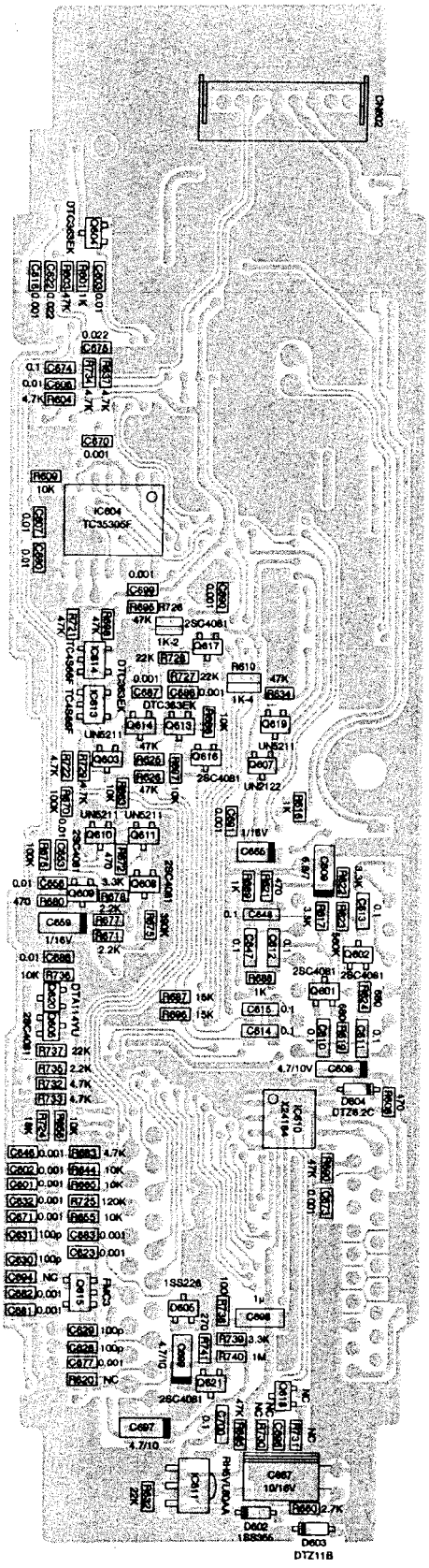
6) Front CPU Unit B



7) SUB CPU Unit A

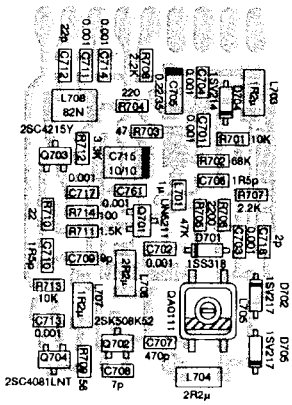


8) SUB CPU Unit B

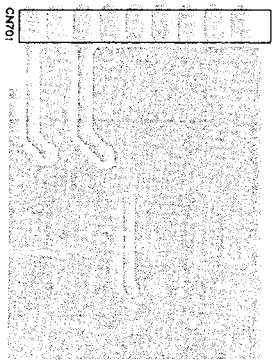


9) VHF VCO Unit

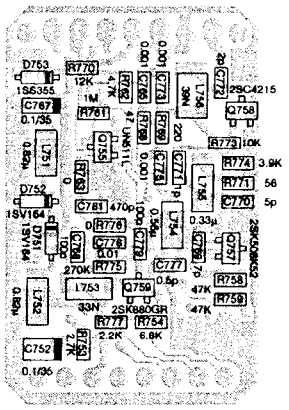
Side A

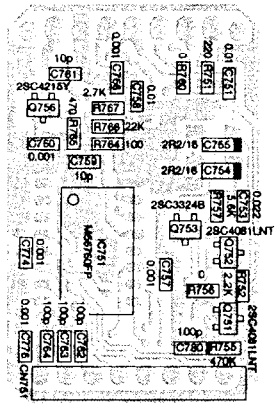


Side B

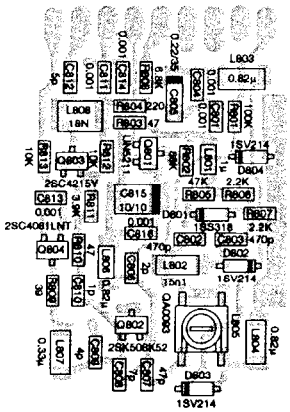


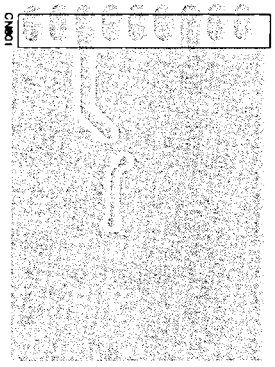
10) VHF PLL Unit



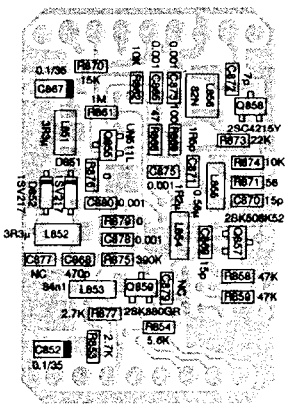


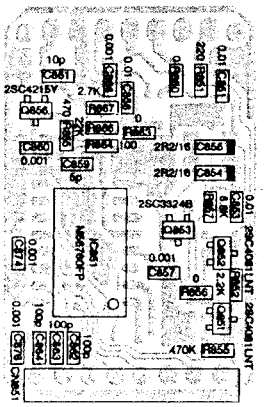
11) UHF VCO Unit





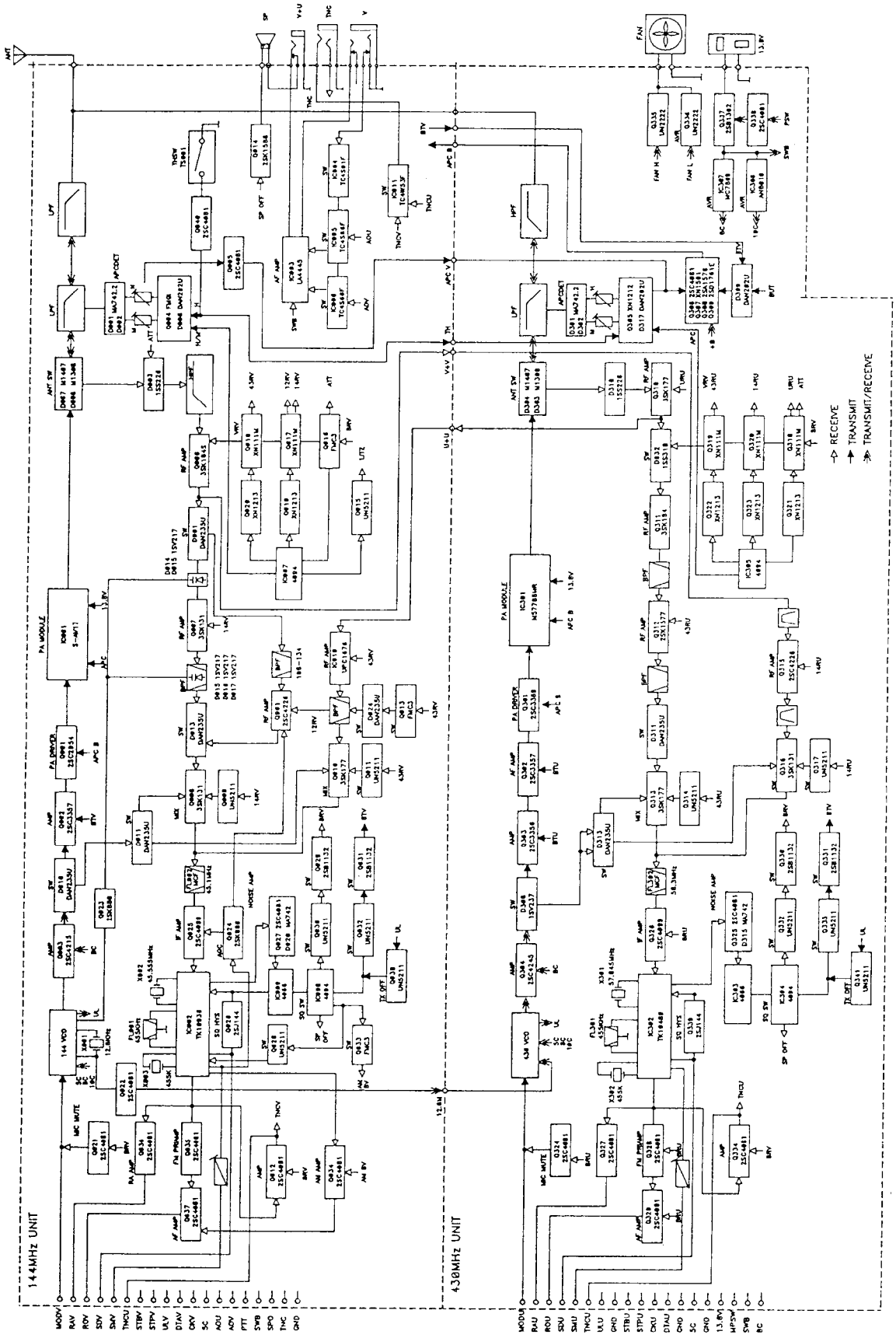
12) UHF PLL Unit



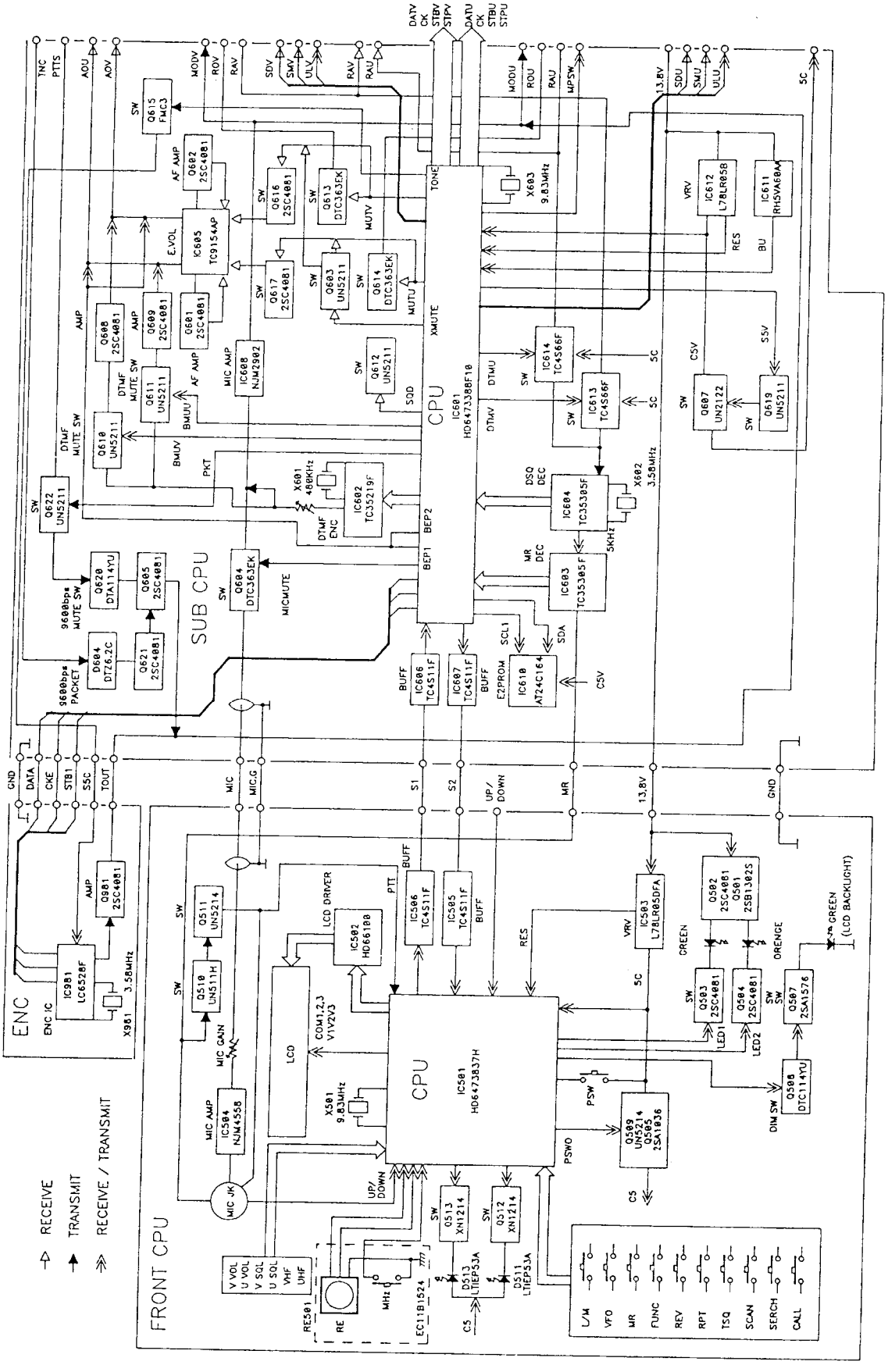


BLOCK DIAGRAM

1) Main Block Diagram

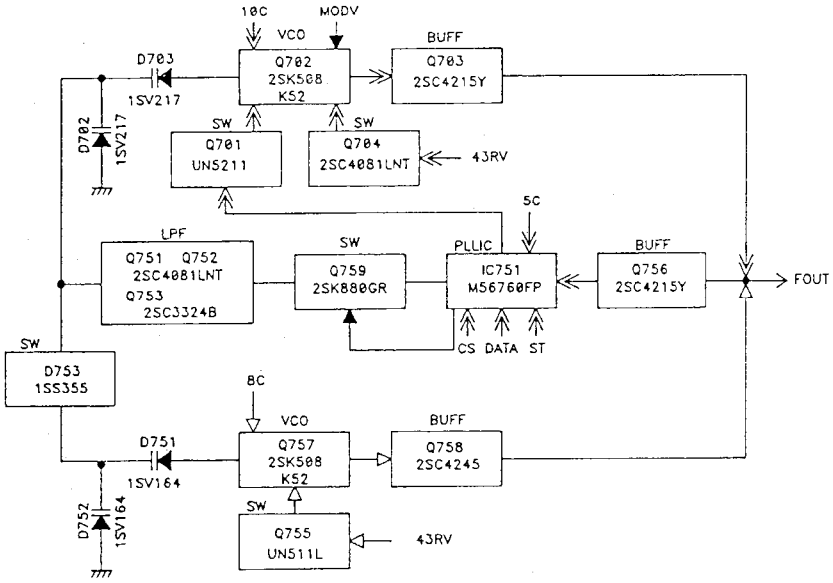


2) CPU Block Diagram

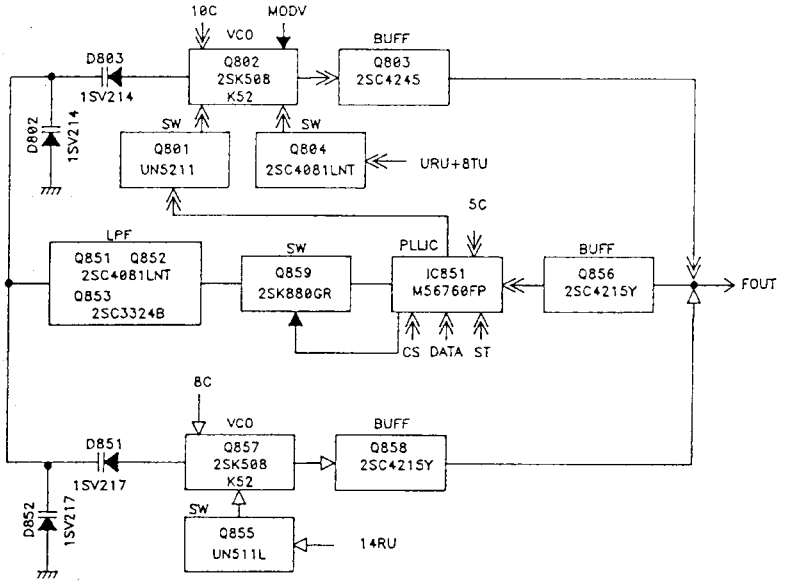


3) PLL, VCO Block Diagram

VHF PLL-VCO



UHF PLL-VCO



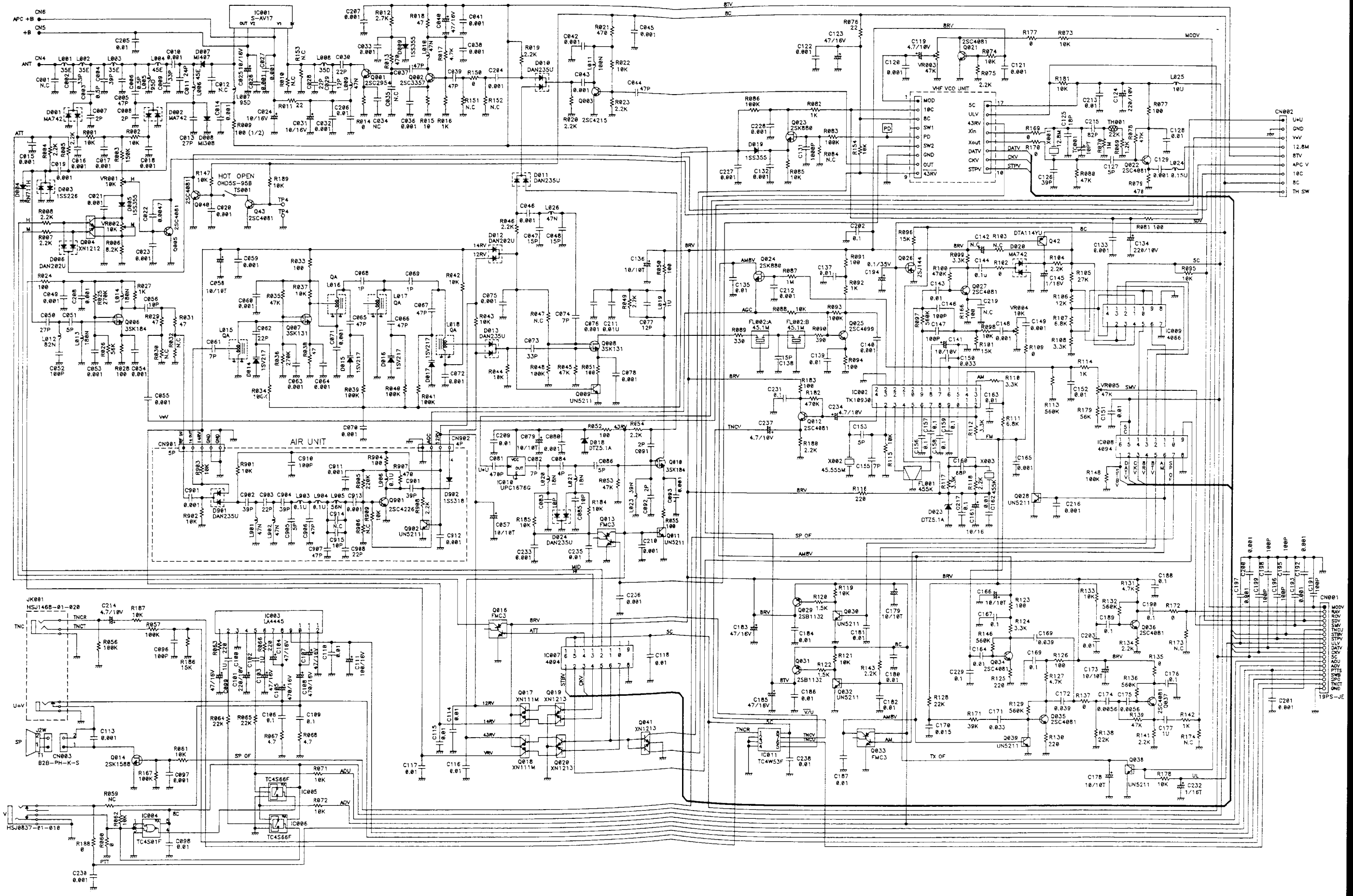
→ RECEIVE

→ TRANSMIT

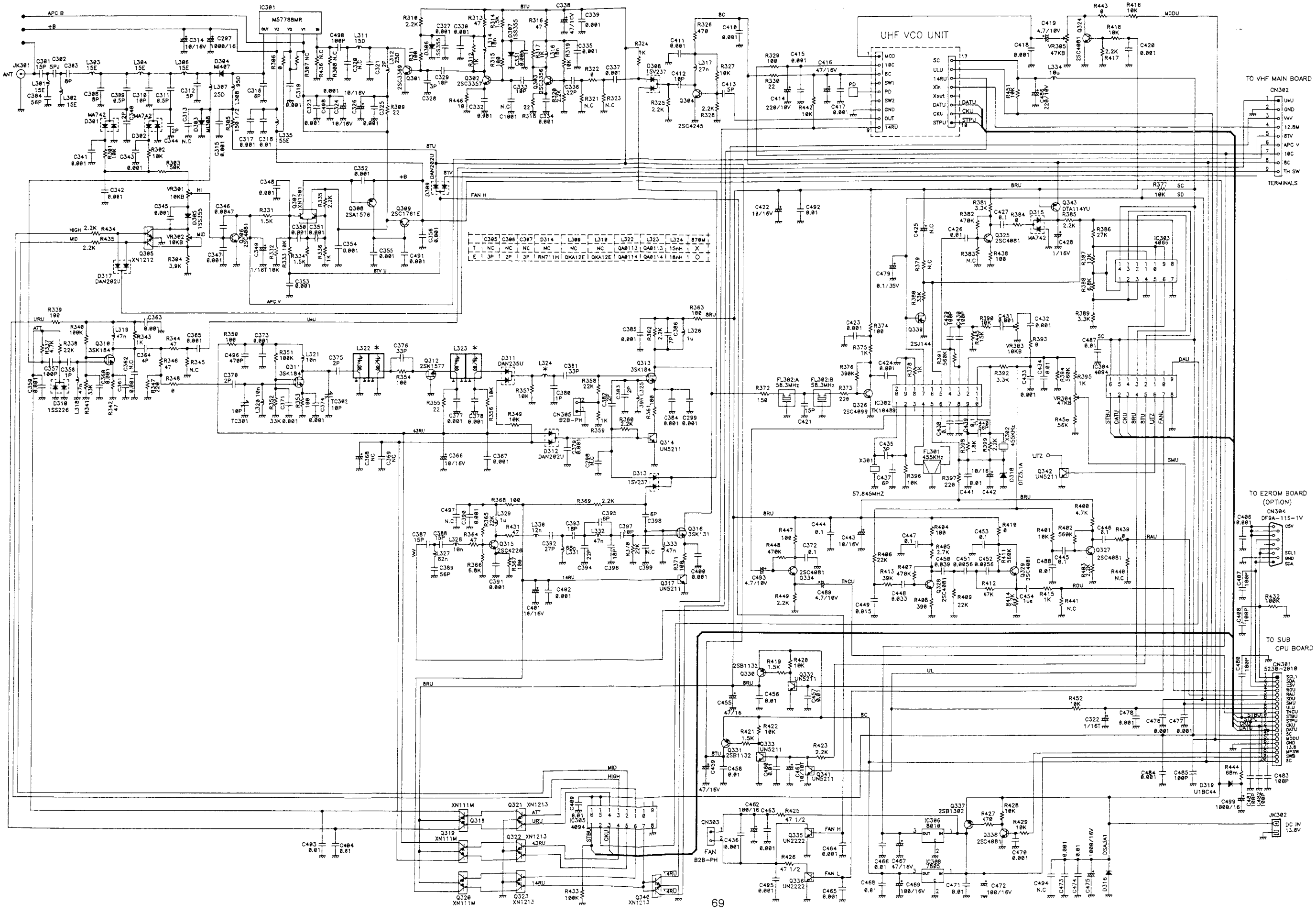
⇒ TRANSMIT/RECEIVE

SCHEMATIC DIAGRAM

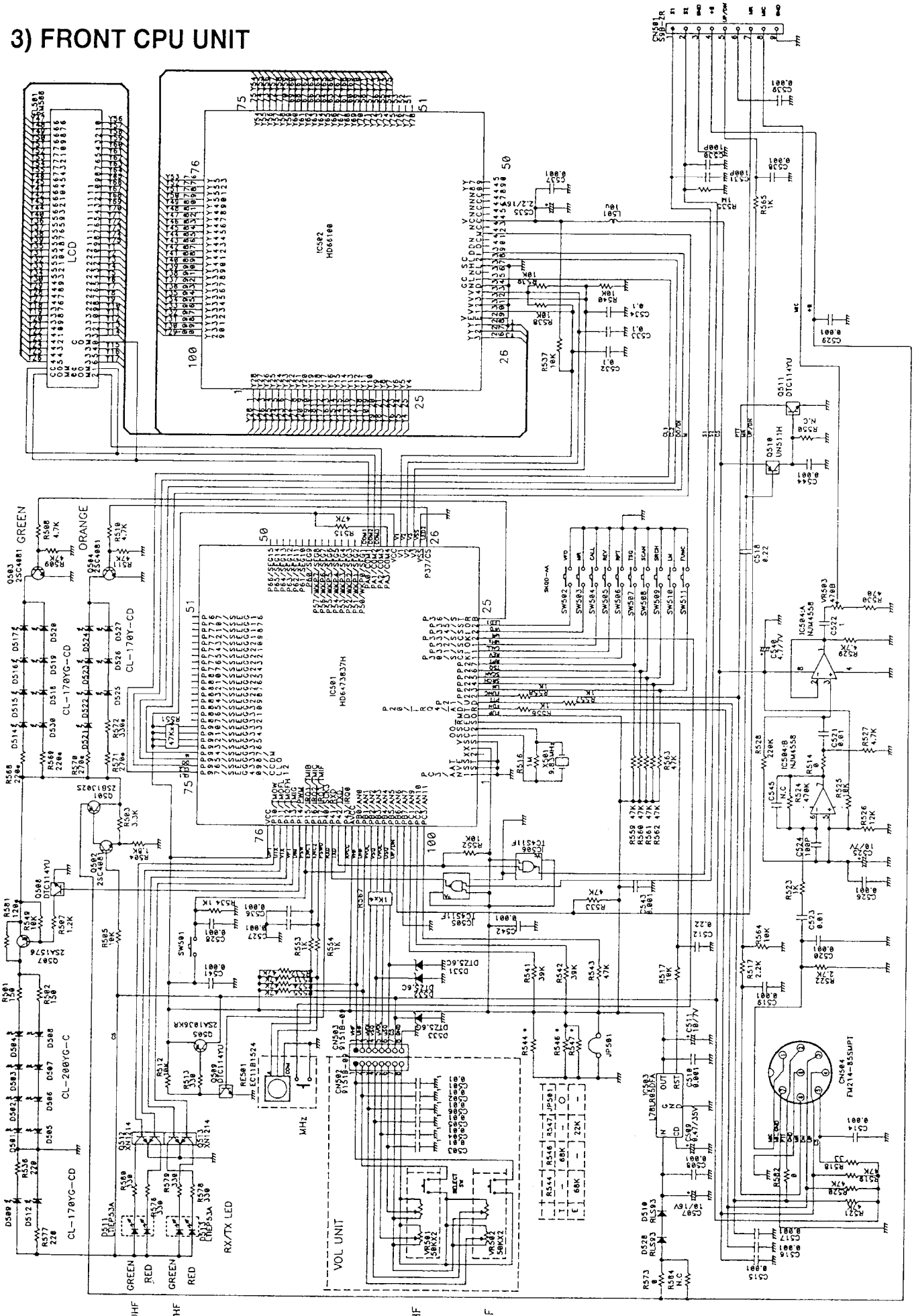
1) VHF MAIN UNIT



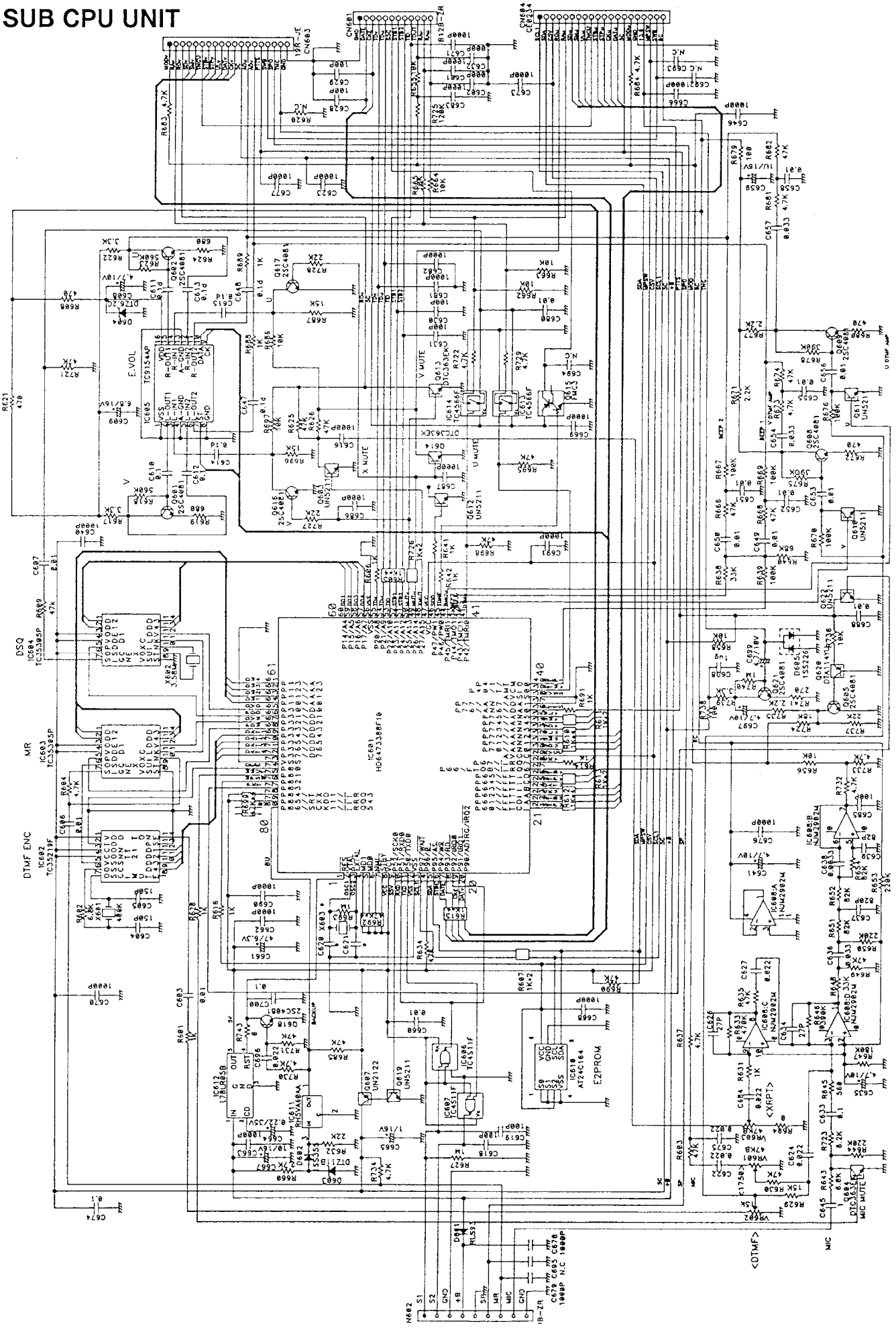
2) UHF MAIN UNIT



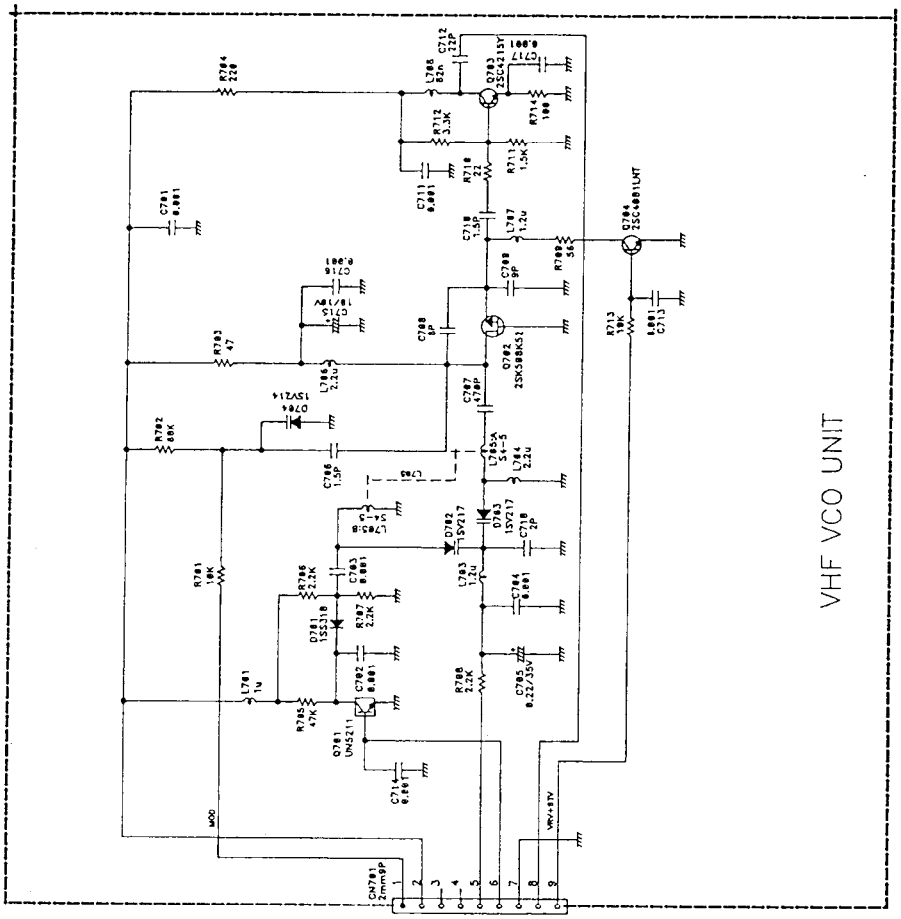
3) FRONT CPU UNIT

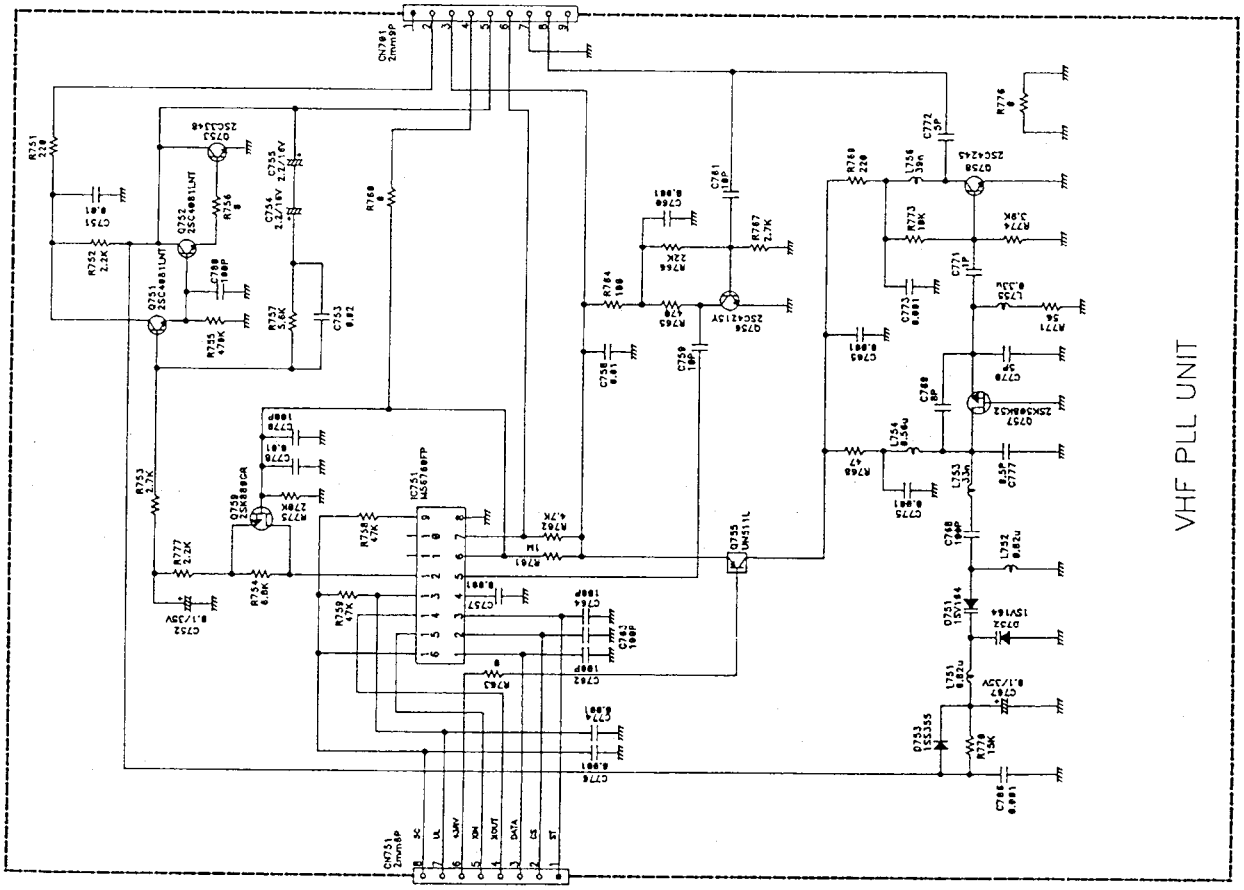


4) SUB CPU UNIT

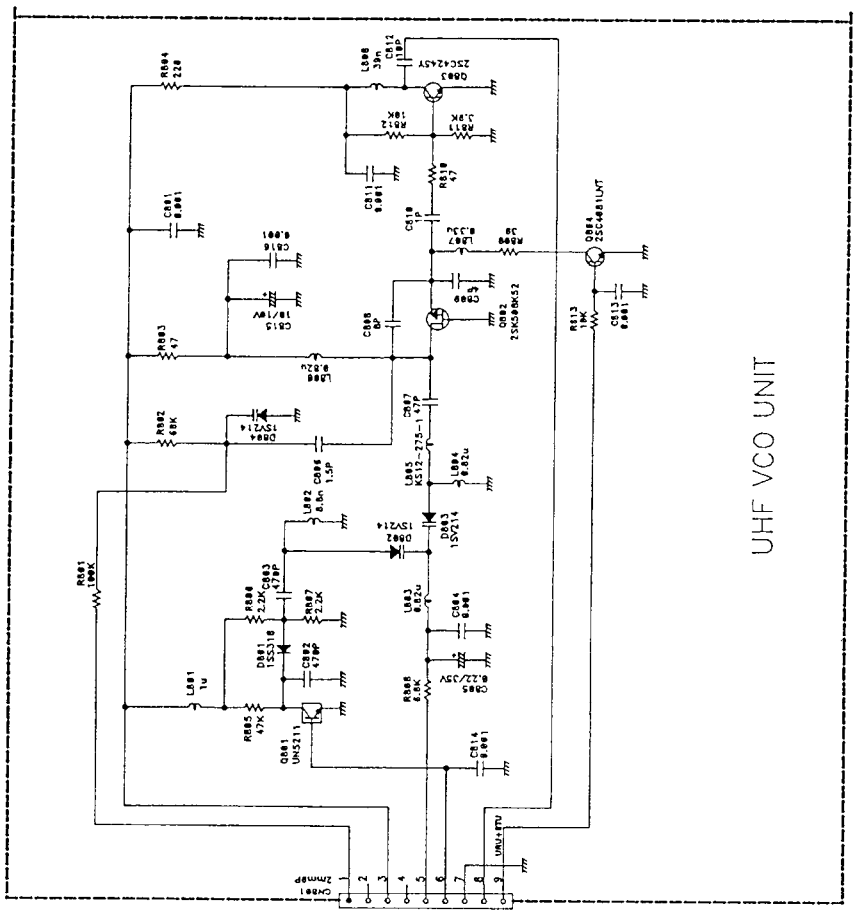


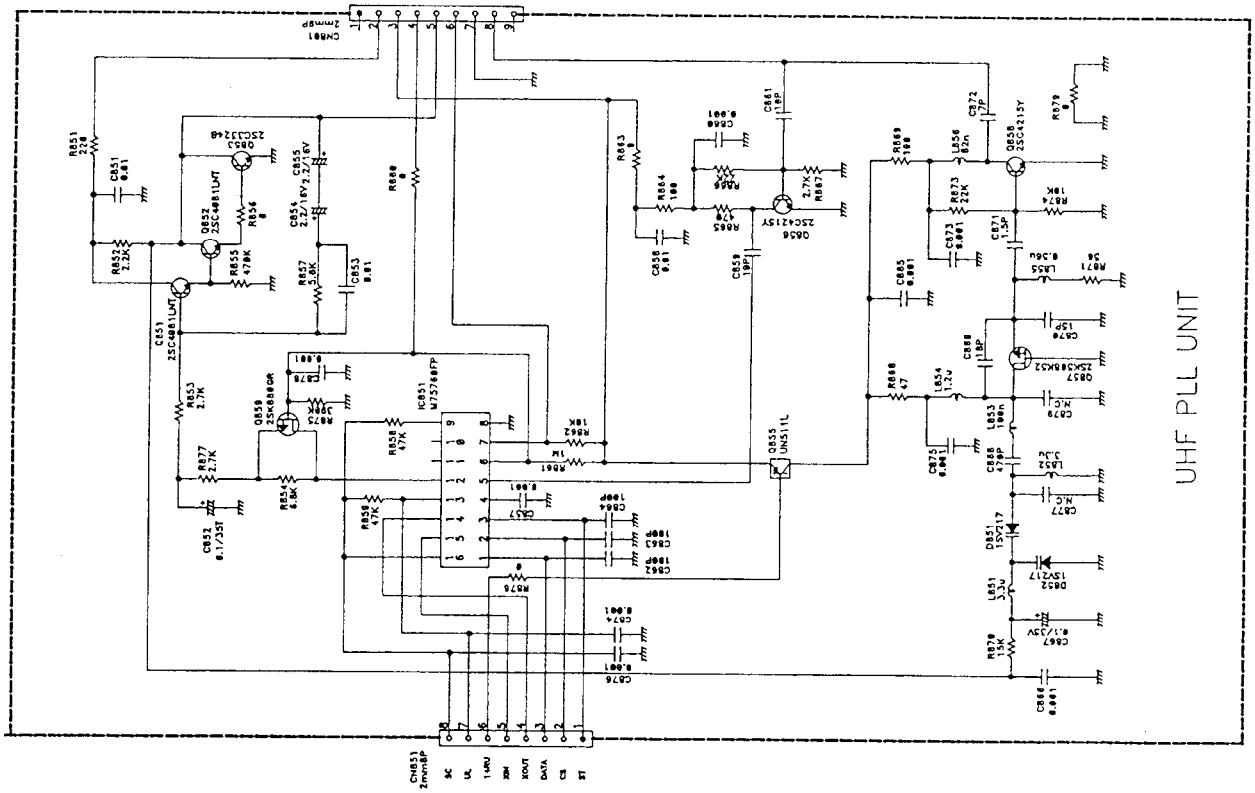
5) VHF VCO, PLL UNIT



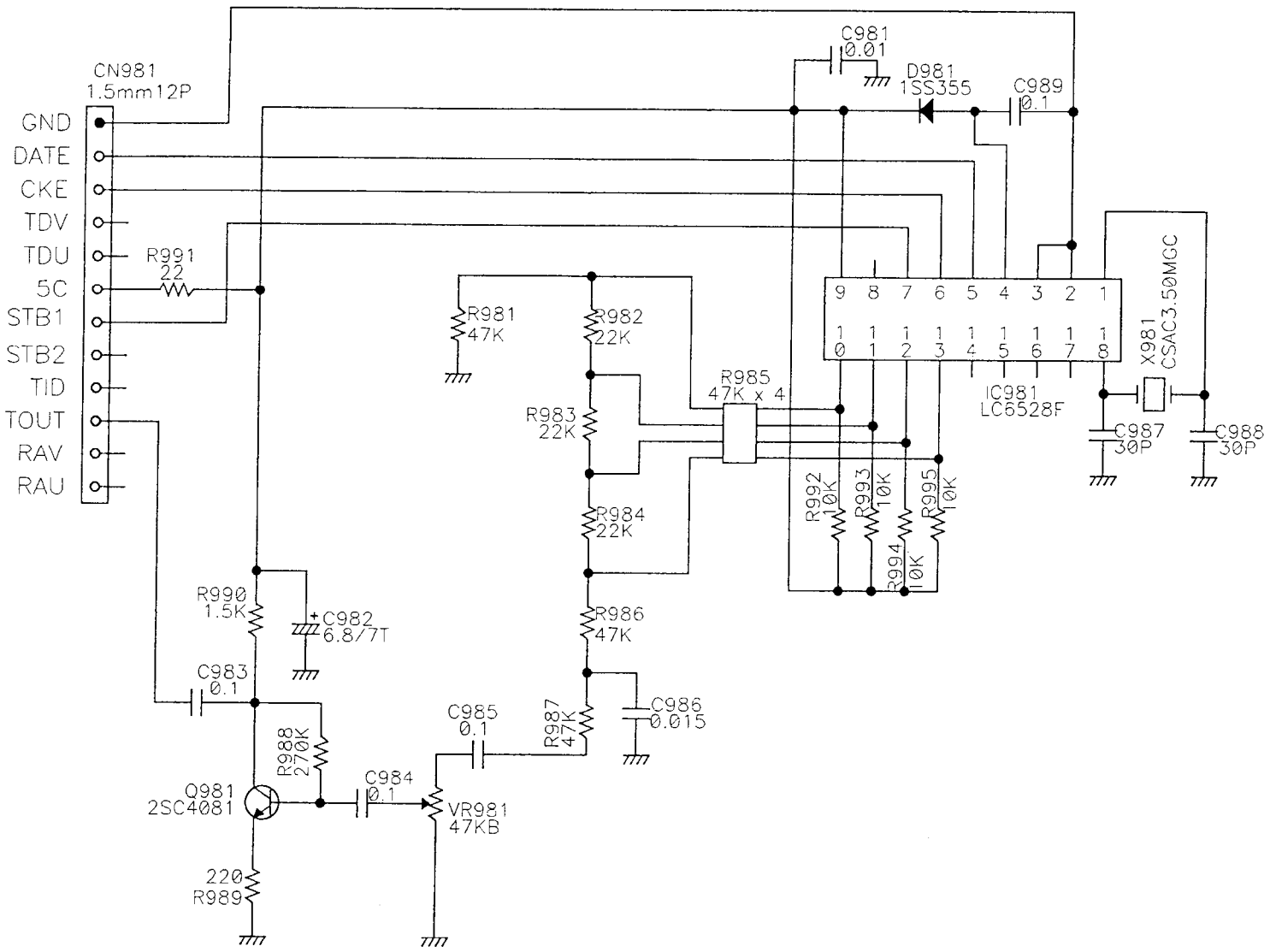


6) UHF VCO, PLL UNIT





7) ENC UNIT


CN981
1.5mm12P
GND
DATE
CKE
TDV
TDU
5C
STB1
STB2
TID
TOUT
RAV
RAU
R991
22
C981
0.01
D981
1SS355
C989
0.1
R981
47K
R982
22K
R983
22K
R985
47K x 4
R984
22K
R986
47K
R987
47K
R988
270K
R989
220
R990
1.5K
C982
6.8/7T
C983
0.1
C984
0.1
C985
0.1
C986
0.015
Q981
2SC4081
VR981
47KB
R992
10K
R993
10K
R994
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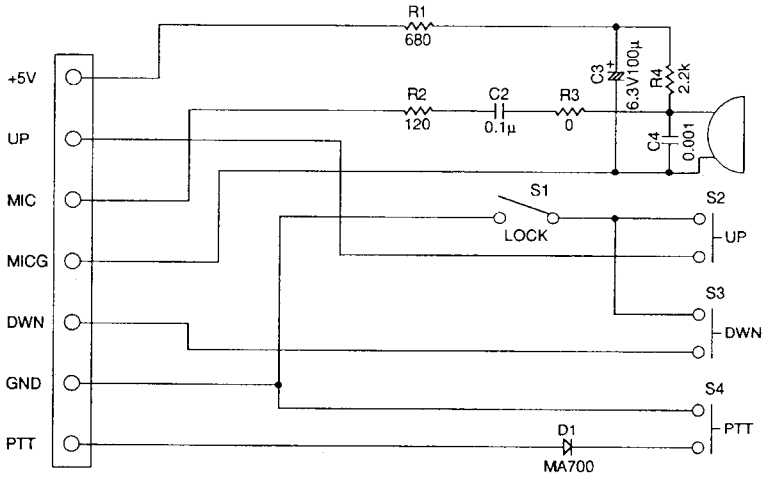
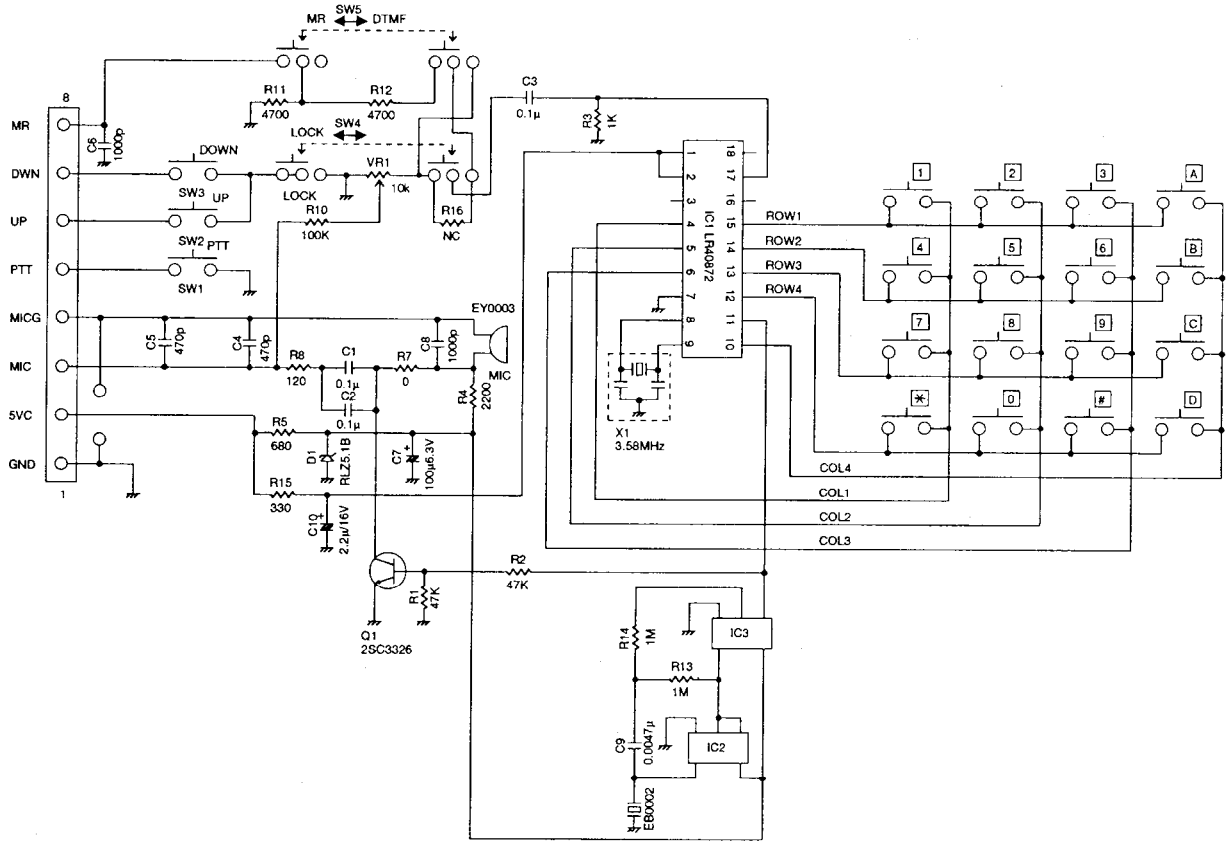
30P

8) EHM35B



9) EHM39



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