

DR-605T/E/TE1/TE2

Service Manual

CONTENTS

● SPECIFICATIONS

1) General.....	2
2) Transmitter	2
3) Receiver.....	2

● CIRCUIT DESCRIPTION

1) Frequency Configuration.....	3
2) Receiver Sytem	3-4
3) Power Supply Circuit.....	4
4) AF Signal Circuit.....	5
5) Transmitter System.....	5-6
6) PLL Circuit.....	6
7) Front CPU and Peripheral Circuit.....	7
8) Cross Band Repeater Circuit.....	7
9) Tone Burst Output Circuit.....	7
10) CTCSS Tone Encoder Circuit.....	8
11) CTCSS Tone Decoder Circuit.....	8
12) 9600bps Packet Circuit.....	8
13) Clone Circuit	8
14) CPU/I/O Port.....	9-10

● SEMICONDUCTOR DATA

1) AK2341	11
2) AN78L05M	12
3) AN8010M	12
4) AT24C16N-10SI-2.7	12
5) LA4425A	12
6) M64076GP	13
7) M57788	14
8) M67746	14
9) M68702H	14
10) MC3372VM	15
11) MC7808CT	15
12) NJM4558	16
13) RH5VA60AA	16
14) RN5VL25AA-T1	16
15) TC4W53FU	17
16) Transistor, Diode and LED Outline Drawings	17
17) LCD Connection	18

● EXPLODED VIEW

1) LCD Assembly.....	19
2) VHF Unit Assembly.....	20
3) UHF Unit Assembly.....	21

● PARTS LIST

VHF MAIN Unit.....	22-23
UHF MAIN Unit.....	24-26
FRONT CPU Unit.....	26-27
VHF VCO Unit.....	27-28
UHF VCO Unit.....	28
TCXO Unit.....	28
Mechanical Parts.....	28
PCB Unit.....	28
SP Unit.....	28
Packing.....	28

● ADJUSTMENT

1) Required Test Equipment.....	29-30
2) UHF PLL Adjustment	30
3) UHF RX Adjustment	31
4) UHF TX Adjustment	32
5) VHF PLL Adjustment	33
6) VHF RX Adjustment	33
7) VHF TX Adjustment	34
8) Adjustment Points.....	35

● PC BOARD VIEW

1) VHF Main Unit Side A	36
2) VHF VCO Unit Side A.....	36
3) UHF Main Unit Side A.....	37
4) UHF VCO Unit Side A.....	37
5) VHF Main Unit Side B.....	38
6) VHF VCO Unit Side B.....	38
7) UHF Main Unit Side B.....	39
8) UHF VCO Unit Side B.....	39
9) Front Unit Side A	40
10) Front Unit Side B	40
11) TCXO Unit	40

● SCHEMATIC DIAGRAM

1) CPU Unit.....	41-42
2) VHF Main Unit T/E.....	43-44
3) VHF Main Unit TE1/TE2.....	45-46
4) UHF Main Unit T/E.....	47-49
5) UHF Main Unit TE1/TE2	49-50
6) VHF PLL-VCO Unit.....	51-52
7) UHF PLL- VCO Unit.....	51-52
8) TCXO Unit	51-52

● BLOCK DIAGRAM

ALINCO, INC.

SPECIFICATIONS

1) General

Frequency Range:

(Version T)	VHF BAND	136.000 ~ 173.995MHz (RX)
		144.000 ~ 147.995MHz (TX)
	UHF BAND	420.000 ~ 470.000MHz (RX)
		430.000 ~ 449.995MHz (TX)
(Version E)	VHF BAND	144.000 ~ 145.995MHz (RX/TX)
	UHF BAND	430.000 ~ 439.995MHz (RX/TX)
(Version TE1)	VHF BAND	136.000 ~ 173.995MHz (RX/TX)
	UHF BAND	400.000 ~ 420.000MHz (RX/TX)
(Version TE2)	VHF BAND	136.000 ~ 173.995MHz (RX/TX)
	UHF BAND	450.000 ~ 470.000MHz (RX/TX)

Modulation: F3E (FM)

Antenna Impedance: 50 Ω

Supply Voltage: 13.8 Volts DC

Ground: Negative

Current Consumption

VHF TX	50W: 11.5A max. (T/E), 35W: 11.0A max. (TE1/TE2)
UHF TX	35W: 10.0A max.
RX	1.2A max.

Frequency Stability: ± 10 ppm max.

Dimensions (Body only): 140(W)mm x 40(H)mm x 176(D)mm

Weight: 1.1kg

Channel: VHF: 51 / UHF: 51 total 102

2) Transmitter

Output Power:

VHF BAND	High: 50W / Low: approx. 5W (T/E)
	High: 35W / Low: approx. 5W (TE1/TE2)
UHF BAND	High: 35W / Low: approx. 5W

Modulator: Reactance modulation

Spurious Emission: -60dB max.

Max. Deviation: ± 5 kHz

Mod. Distortion (@60% mod.): 3% max. (300 to 3000Hz)

Microphone Impedance: 2k Ω

3) Receiver

Rx System: Double Superheterodyne

Intermediate Frequency: VHF: First: 21.7MHz / Second: 450kHz

UHF: First: 30.85MHz / Second: 455kHz

Sensitivity (12dB SINAD): Main band: -16dB μ (0.16 μ V) or less

Selectivity: -6dB: 12kHz min., -60dB: 28kHz max.

Squelch Sensitivity: -20dB μ (0.1 μ V) or less

AF Output (@5% distortion): 2W or more (8 Ω load)

Speaker Output Impedance: 8 Ω

Note: Specifications are subject to change without notice or obligation.

Specifications guaranteed in the amateur band only. (T/E)

CIRCUIT DESCRIPTION

1) Frequency Configuration

- VHF and UHF bands have each PLL independently, and 2 IF systems are provided. Therefore 2 bands can be received simultaneously.
- The received signal of VHF band is mixed with the first local oscillator signal and converted into the first IF of 21.70MHz. Then the resulting signal is mixed with the second local oscillator signal of 21.25MHz and converted into 450kHz.
- The received signal of UHF band is mixed with the first local oscillator signal and converted into the first IF of 30.85kHz. Then the resulting signal is mixed with the second local oscillator signal of 30.395MHz and converted into 455kHz.

2) Receiver System

1. Receiver Circuit

The received signal from the antenna is passed through the duplexer (the circuit consists of low-pass filter for VHF and high-pass filter for UHF), and divided into the signals of VHF and UHF.

1-1 144M Band Receiver Circuit

After the received signal from the duplexer is passed through the band-pass filter via the antenna switch (D5, D6), the signal is amplified at RF amplifier Q11. The unwanted signal of the amplified signal is eliminated by the band-pass filter consisting of 3 varicaps. Next the signal is mixed with the first local oscillator signal at the first mixer Q12, and converted to the first IF. The unwanted signal is attenuated by the crystal filter circuit. Then the signal is fed to IC2 Pin16 after being amplified at IF amplifier Q7. In this IC2 the signal is mixed with the second oscillator signal and converted to the second IF, then it is output from Pin3. The output signal is attenuated the unwanted signal by the ceramic filter, and input again from IC2 Pin5. Next the signal is passed through the limiter amplifier and demodulated in the quadrature detection circuit of IC2 to be output from Pin9 as AF signal.

1-2 430M Band Receiver Circuit

The received signal from the duplexer is passed through the antenna switch (D206, D207), and amplified in the RF amplifier Q211. The amplified signal is attenuated the unwanted signal by the helical filter L218. The signal is amplified in RF amplifier Q212 and attenuated the unwanted signal again by the helical filter L219, then it is mixed with the first local oscillator signal at the first mixer Q213 and converted to the first IF. The unwanted signal is attenuated by the crystal filter circuit. Then the signal is fed to IC202 Pin16 after being amplified at IF amplifier Q214. In this IC202 the signal is mixed with the second oscillator signal and converted to the second IF, then it is output from Pin3. The output signal is attenuated the unwanted signal by the ceramic filter, and input again from IC202 Pin5. Next the signal is passed through the limiter amplifier and demodulated in the quadrature detection circuit of IC202 to be output from Pin9 as AF signal.

2. S (Signal) Meter Circuit

VHF:

The S meter signal DC voltage which is output from IC2 Pin13 is supplied to IC401 Pin10 via Trim. pot VR1, then it is digitized by A/D converter to be indicated on LCD as the S meter.

UHF:

The S meter signal DC voltage which is output from IC202 Pin13 is supplied to IC401 Pin5 via Trim. pot VR202 then it is digitized by A/D converter to be indicated on LCD as the S meter.

3. Squelch Circuit

VHF Squelch Circuit:

The AF signal which is output from IC2 Pin9 is input to Pin10. Only the noise is amplified by the active filter in IC2 and output from Pin11, then amplified by the noise amplifier Q6. The amplified noise is rectified to DC voltage by D2 and input to CPU IC401 Pin9 via Trim. pot VR2. In the IC the input voltage and the settled voltage by the squelch knob are compared to work the squelch ON/OFF. When the squelch is open, the squelch signal "H" is output from IC401 Pin41 and LED D401 (green) lights.

UHF Squelch Circuit:

The AF signal output from IC202 Pin9 is input to Pin10. Only the noise is amplified by the active filter in IC2 and output from Pin11, then amplified by the noise amplifier Q206. The amplified noise is rectified to DC voltage by D202 and input to CPU IC401 Pin5 via Trim. pot VR201. In the IC the input voltage and the settled voltage by the squelch knob are compared to work the squelch ON/OFF. When the squelch is open, the squelch signal "H" is output from IC401 Pin13 and LED D402 (green) lights.

3) Power Supply Circuit

1. VHF Power Supply Switch Circuit and Unlock Circuit

In the receiving mode, "H" is output from PLL shift register IC501 Pin16 according to the serial data from CPU, and Q17 and Q16 are turned ON, then 8V is added to 8RV line. In the transmitting mode, just same as the receiving mode, "H" is output from IC501 Pin17, and Q19 and Q18 are turned ON, then 8V is added to 8TV line. When PLL is unlocked, the unlock switch Q21 is turned ON because "H" is output from UL terminal of PLL-VCO unit. Then 8TV switch Q19 is turned OFF. Consequently, as 8TV line does not work, the unit does not transmit when PLL is unlocked.

2. UHF Power Supply Switch Circuit and Unlock Circuit

In the receiving mode, "H" is output from PLL shift register IC601 Pin16 according to the serial data from CPU, and Q217 and Q218 are turned ON, then 8V is added to 8RV line. In the transmitting mode, just same as the receiving mode, "H" is output from IC601 Pin17, and Q220 and Q219 are turned ON, then 8V is added to 8TV line. When PLL is unlocked, the unlock switch Q222 is turned ON because "H" is output from UL terminal of PLL-VCO unit. Then 8TV switch Q220 is turned

OFF. Consequently, as 8TV line does not work, the unit does not transmit when PLL is unlocked.

4) AF Signal Circuit

1. VHF AF Signal

The AF signal which is output from IF unit IC2 Pin9 is made the AF frequency characteristics 3kHz or below by the de-emphasis circuit (consisting of R19, C18, R13, C10, R12 and C9), then amplified by AF preamplifier Q3. Besides the amplified signal is made the AF frequency characteristics 300Hz or more by the de-emphasis circuit (consisting of C5, R8, C4, R3, C3). The de-emphasized AF signal ROV is muted and after the signal is adjusted by volume VR401, added to AF power amplifier IC3 Pin1 and amplified to drive the speaker.

2. UHF AF Signal

The AF signal which is output from IF unit IC202 Pin9 is made the AF frequency characteristics 3kHz or below by the de-emphasis circuit (consisting of R226, C213, R222, C211, R221 and C210), then amplified by AF preamplifier Q203. Besides the amplified signal is made the AF frequency characteristics 300Hz or more by the de-emphasis circuit (consisting of C207, R210, C206, R207, C205). The de-emphasized AF signal ROU is muted and after the signal is adjusted by volume VR402, added to AF power amplifier IC3 Pin1 and amplified to drive the speaker.

3. AF Mute Circuit

VHF:

When the squelch is turned ON and there is no input signal, the output control signal of the microcomputer IC401 Pin42 turns ON double mute switches Q2 and Q4, then the input signal of audio power amplifier IC3 is cut to mute the speaker output.

UHF:

When the squelch is turned ON and there is no input signal, the output control signal of the microcomputer IC401 Pin19 turns ON double mute switches Q204 and Q233, then the input signal of audio power amplifier IC3 is cut to mute the speaker output.

5) 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 Q401 to be amplified. The microphone amplifier includes the pre-emphasis circuit. The amplified voice signal is added to the IDC circuit of operational amplifier IC203 and limited the band width. Each frequency deviation can be adjusted in VR3 (VHF) or VR204 (UHF). The signal is added to varicap of VHF/UHF VCO unit for reactance modulation.

2. Drive/PA Amplifier Circuit

VHF:

The transmit signal from VCO of VHF band is amplified by the younger amplifiers Q9, Q10, then input to the power module IC1. The signal amplified to the desired level in IC1, is passed through the low-pass filter, antenna switch, and low-pass filter in duplexer to attenuate the second and third harmonics enough, then supplied to the antenna.

UHF:

The transmit signal from VCO of VHF band is amplified by the younger amplifiers Q208, Q209, Q210 then input to the power module IC201. The signal amplified to the desired level in IC201, is passed through the low-pass filter, antenna switch, and low-pass filter in duplexer to attenuate the second and third harmonics enough, then supplied to the antenna.

3. APC circuit

VHF:

A part of output power from low-pass filter is detected by Diodes D7 and D8, and converted to DC. The detection voltage is passed through the APC circuit of UHF side (Q229, Q228, Q227), then it controls the APC voltage supplied to the younger amplifier Q10 and the power module IC1 to fix the output power.

UHF:

A part of output power from low-pass filter is detected by Diodes D208 and D209, and converted to DC. The detection voltage is passed through the APC circuit of UHF side (Q229, Q228, Q227), then it controls the APC voltage supplied to the younger amplifier Q210 and the power module IC201 to fix the output power.

6) PLL Circuit

1. PLL Synthesizer Circuit

VHF and UHF bands have their own units isolatedly. The sub unit is packed in a hard shield case so as not to be influenced by the circumstances. The crystal X2: 21.25MHz is oscillated in IC501 (VHF), and the output is fed to IC601 (UHF) via buffer Q13. The reference oscillating frequency (X2) is divided inside IC501 and IC601 to gain the reference frequency of 5kHz or 6.25kHz. The comparison frequency is divided by the pulse swallow system PLL IC501 and IC601 after VCO output is amplified in Q505 (VHF) and Q604 (UHF). In the result, the PLL synthesizer which has 5, 10, 12.5, 15, 20, 25, 30 and 50kHz steps is obtained.

The reference frequency of 21.25MHz is passed through the buffer of IC501 and output from Pin1 XBO, then input to IC2 Pin1 as VHF (144MHz band) 2nd local oscillator.

*As for TE1 and TE2, reference frequency of 21.25MHz is oscillated in X901: TCXO unit and fed to IC501(VHF).

2. V-VCO Circuit

The desired frequency is oscillated directly in Colpitts oscillating circuit consisting of FET Q502. VCO control voltage is added to the varicaps D502 and D503 to tune the oscillating frequency. While receiving RXV becomes "H", and Q501 and D501 are turned ON to shift the oscillating frequency.

3. U-VCO Circuit

The desired frequency is oscillated directly in Colpitts oscillating circuit consisting of FET Q601. VCO control voltage is added to the varicaps D602 and D603 to tune the oscillating frequency.

7) Front CPU and Peripheral Circuit

1. Microphone Key Input Circuit

PTT key:

Soon after the switch on the microphone (PTT) is turned ON, "L" level is input to CPU IC401 directly.

UP/DOWN key:

Soon after this switch is turned ON, the voltage is generated by the resistors that are connected to keys and supplied to IC401 Pin4 then A/D converted in CPU.

2. Lighting Circuit

When the power is turned ON, the voltage which is stabilized to 10.5V at Q405 and D407 is supplied to LMP401 and LMP402 to turn ON the lamp.

3. Reset and Backup Circuit

When the power is turned ON, "L" level of approximately $2\mu\text{s}$ or more is output from IC403 OUT (equipped with reset function), then "H" level is output to reset CPU IC401. When the power is turned OFF, IC405 output (BU) becomes "L" level and the transceiver goes into the backup mode. The contents of the memory is written on E2PROM IC402 in the backup mode. Then IC403 (equipped with reset function) becomes "L" level to reset the CPU.

4. Beep Sound Output Circuit

The square pulse is output from CPU IC401 Pin23 (BEEP), then it is integrated by CR and input to AF amplifier without passing through Volume VR.

8) Cross Band Repeater Circuit (T, TE1, TE2)

When the Squelch of VHF side is opened in the Cross Band Repeater mode, the AF signal ROV (VHF) is unmuted and amplified by IC203. The amplified modulation signal is added to modulation varicap of UHF VCO and transmitted from UHF side. When the Squelch of UHF side is opened in the Cross Band Repeater mode, the AF signal ROU (UHF) is unmuted and amplified by IC203. The amplified modulation signal is added to modulation varicap of VHF VCO and transmitted from VHF side.

9) Tone Burst Output Circuit

When Down key is pressed while holding the PTT key down, the square pulse is output from CPU IC401 Pin14 (B1750). It is amplified by IC203 after being integrated by CR. The amplified signal is added to each VCO modulation varicap to output.

10) CTCSS Tone Encoder Circuit

The mimic sine wave is output from IC401 Pin11. It is integrated by CR, and converted to analogue wave to obtain 50 waves within 67.0~254.1. The tone is added to VCO to output.

11) CTCSS Tone Decoder Circuit (EJ-24U)

In IC1 (VHF) or IC2 (UHF), a kind of tone frequency is settled by the serial data selected from 50 kinds of frequencies within 67.0~254.1Hz. While receiving the voice and tone signals input from RAV (VHF) or RAU (UHF) are supplied to Pin1, and tone signal only is selected at the low-pass filter in IC. When the signal is accordance with the tone frequency which is settled by the serial data, "L" level is output to TDV (VHF) or TDU (UHF) terminal. The "L" level signal is input to IC401, Pin32 and Pin33, then the squelch is opened. When the tone signal is not accordance with the settled frequency, "H" level is output to the TDV (VHF) or TDU (UHF) terminal. The "H" level signal is input to IC401, Pin32 and Pin33, then the squelch is closed.

12) 9600bps Packet Circuit

In the 9600 packet mode, PTT is provided through the UART terminal of JK1 to IC401 Pin22, then it is transmitted in "L" level. The modulation signal from TNC is provided through 9600 PKT terminal of JK2. It is amplified and limited in Q29, unmuted in Q26 and Q27, and the VCO is modulated, then transmitted. The detection output of IF IC2 or IC202 is input to the signal switch IC4 via butter Q23 or Q235. The input V/U signal switches the input signal of IC4 according to the signal from CPU IC401 Pin33. Then the MAIN band signal is output from Pin1 to JK2.

13) Clone Circuit

In the Clone mode, the data which is output from IC401 Pin21 of Master unit is fed to the IC401 Pin22 of the Slave unit through the UART terminal JK1 and connecting cable.

14) CPU I/O Port

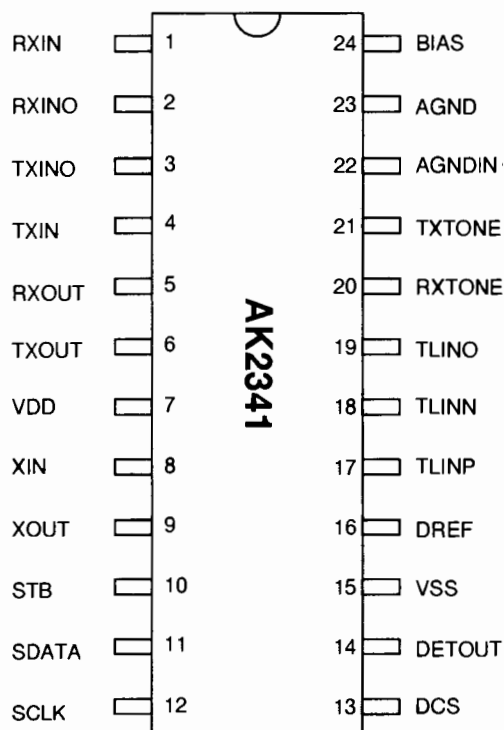
No.	Pin Name	Function	I/O	Logic	Description
1	C1	C1	-	-	NC
2	VL1	V1	-	-	LCD Power supply
3	P67/AN7	V/U	I	A/D	Key input (VHF/UHF/TOT key switch)
4	P66/AN6	UP/DN	I	A/D	Key input (UP/DOWN/CALL key switch)
5	P65/AN5	SMU	I	A/D	UHF side S meter voltage input
6	P64/AN4	SQU	I	A/D	UHF side SQ noise voltage input
7	P63/SCLK22/AN3	BP1	I	A/D	Destination setting (T=5V, E=3.2V)
8	P62/SCLK21/AN2	BP2	I	A/D	Extension specification
9	P61/SOUT2/AN1	SQV	I	A/D	VHF side SQ noise voltage input
10	P60/SIN2/AN0	SMV	I	A/D	VHF side S meter voltage input
11	P57/ADT/DA2	TONE	O	D/A	CTCSS tone output (50 waves)
12	P56/DA1	MMUT	O	H	Microphone mute OFF control output (TX="H")
13	P55/CNTR1	SDU	O	H	UHF Squelch signal output (When squelch is open = "H")
14	P54/CNTR0	B1750	I/O	A/D/H	Extension specification (when PSW is ON)/ Tone burst output
15	P53/RTP1	DATU	O	Pulse	UHF side PLL data output
16	P52/RTP0	CKU	O	Pulse	UHF side PLL clock output
17	P51/PWM1	STPU	O	Pulse	UHF side PLL reset output
18	P50/PWM0	PTT	I	L	Key input (PTT)
19	P47/SROY1	MUTU	O	H	UHF side AF signal mute control output ("H" = Mute is ON)
20	P46/SCLK1	XMUT	O	L	AF unmute output in cross band repeater mode (XBR = "L")
21	P45/TXD	TXD	O	Pulse	Clone data output
22	P44/RXD	RXD	I	Pulse	Clone data input (9600 packet = PTT input "L" = TX)
23	P43/S/TOUT	BEEP	O	H	Beep sound output
24	P42/INT2	ENC2	I	L	Rotary encoder B input
25	P41/INT1	ENC1	I	L	Rotary encoder A input
26	P40	UL	I	L	PLL unlock input (L = unlock)
27	P77	TP	I	H	Trunking mode input (H = Trunking mode)
28	P76	MONI	I/O	L	Key input (MONITOR) / 9600 mode (PTT ON = "L")
29	P75	MHZ	I	L	Key input (MHz)
30	P74	V/M	I	L	Key input (VFO/MR switch)
31	P73	FUNC	I	L	key input (FUNC)
32	P72	TDV	I	L	VHF CTCSS tone detection (when the tone is detected = "L")
33	P71	TDU	I/O	L/H	UHF CTCSS tone detection/RX switch in 9600 mode (VHF=L)
34	P70/INT0	BU	I	L	Backup signal input ("L"=Backup)
35	RESET	RES	I	L	Reset signal input ("L"=Reset)
36	Xcin	XC1	-	-	NC
37	Xcout	XC0	-	-	NC
38	Xin	XIN	I	-	CPU clock input (4.1943MHz)
39	Xout	XOUT	O	-	CPU clock output (4.1943MHz)

No.	Pin Name	Function	I/O	Logic	Description
40	Vss	GND	-	-	GND
41	P27	SDV	O	H	VHF squelch signal output (when squelch is open = "H")
42	P26	MUTV	-	-	VHF AF signal mute control output (H=Mute is ON)
43	P25	STPV	O	Pulse	VHF PLL reset output
44	P24	DATV	O	Pulse	VHF PLL/CTCSS data output
45	P23	CKV	O	Pulse	VHF PLL/CTCSS clock output
46	P22	SCL	O	Pulse	EEPROM clock output
47	P21	SDA	I/O	Pulse	EEPROM data input/output
48	P20	LOW	O	H	Transmitting output switch ("H"=Low output)
49	P17	STB2	O	Pulse	CTCSS UHF strobe signal output
50	P16	TID	I/O	Pulse	CTCSS board detection/CTCSS VHF strobe signal output
51	P15/SEG39	SEG39	O	H	Segment output for LCD
↓	↓	↓	↓	↓	↓
90	SEG0	SEG0	O	H	Segment output for LCD
91	Vcc	VCC	-	-	5V Power supply
92	Vref	AVCC	-	-	Reference power supply for A/D conversion
93	AVss	GND	-	-	GND
94	COM3	COM3	-	-	NC
95	COM2	COM2	O	-	Common output 2 for LCD
96	COM1	COM1	O	-	Common output 1 for LCD
97	COM0	COM0	O	-	Common output 0 for LCD
98	VL3	V3	-	-	Power supply for LCD
99	VL2	V2	-	-	Power supply for LCD
100	C2	C2	-	-	NC

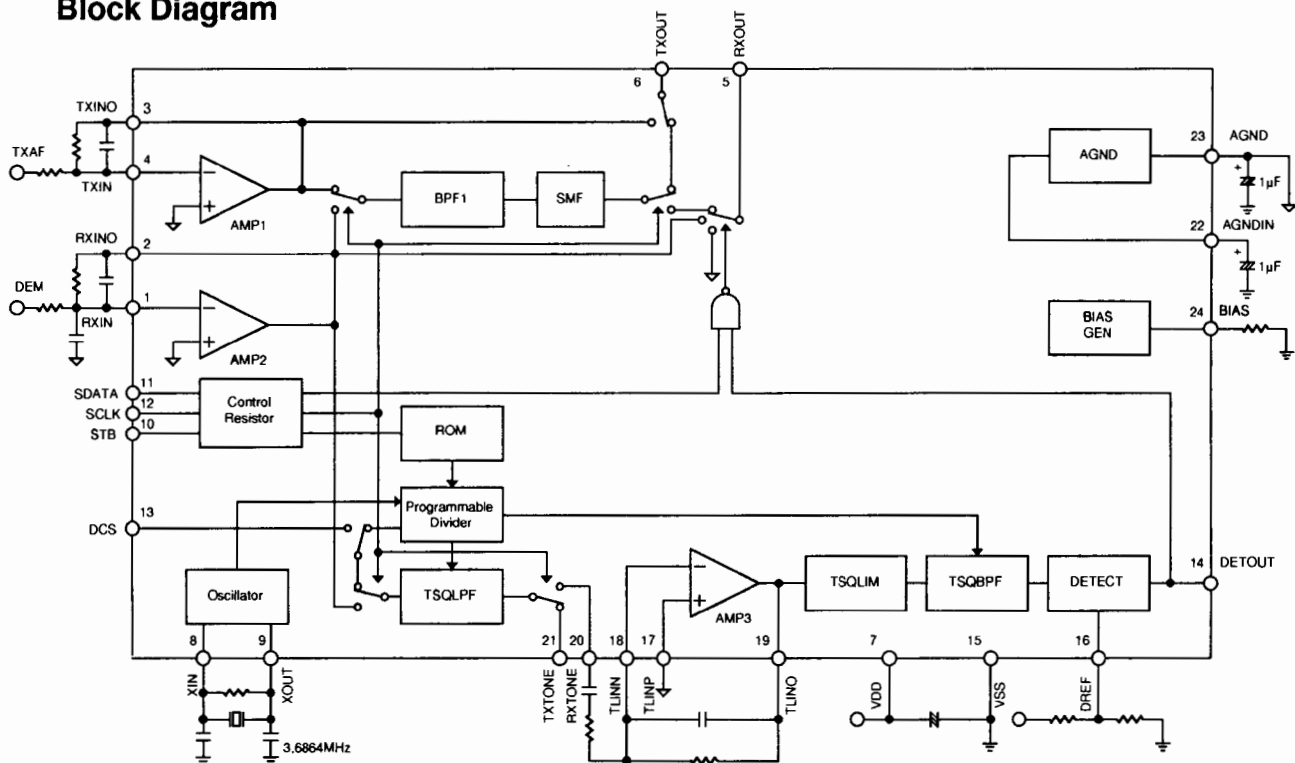
SEMICONDUCTOR DATA

1) AK2341 (XA0239) EJ24u (option) CTCSS Encoder/Decoder

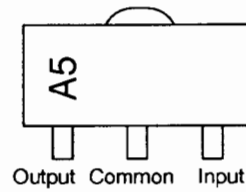
Pin No.	Pin Name	I/O	Function
1	RXIN	I	RX Signal Input
2	RXINO	O	AMP2 Output
3	TXINO	O	AMP1 Output
4	TXIN	I	TX Audio Input
5	RXOUT	O	RX Audio Output
6	TXOUT	O	TX Audio Output
7	VDD	-	Power Supply (1.8 ~ 5.5V)
8	XIN	I	Crystal Terminal (3.6864MHz)
9	XOUT	O	Crystal Terminal (3.6864MHz)
10	STB	I	Strobe for Serial Data
11	SDATA	I	Serial Data
12	SCLK	I	Serial Clock
13	DCS	I	DCS Input
14	DETOUT	O	Tone Detection Output (Detect: Low)
15	VSS	-	Ground
16	DREF	I	Tone Detection Level Adjust Input
17	TLINP	I	RX Tone Signal Reference Input
18	TLINN	I	RX Tone Signal Input
19	TLINO	O	AMP3 Output
20	RXTONE	O	RX Tone Signal Output
21	TXTONE	O	TX Tone Signal Output
22	AGNDIN	I	Analog Ground Input
23	AGND	O	Analog Ground Output
24	BIAS	I	Bias Input



Block Diagram

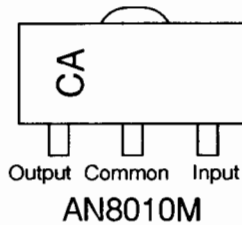
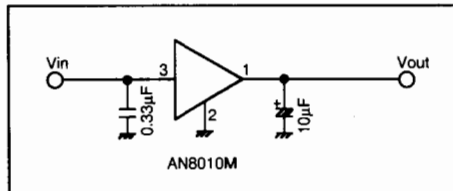


2) AN78L05M (XA0238)
5V Voltage Regulator



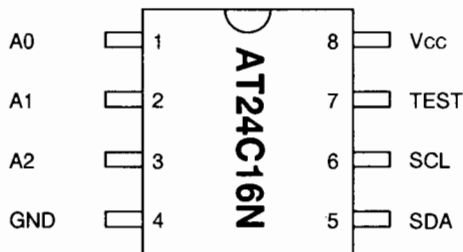
AN78L05M

3) AN8010M (XA0119)
Voltage Regulator
Test Circuit



AN8010M

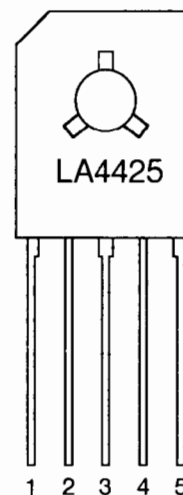
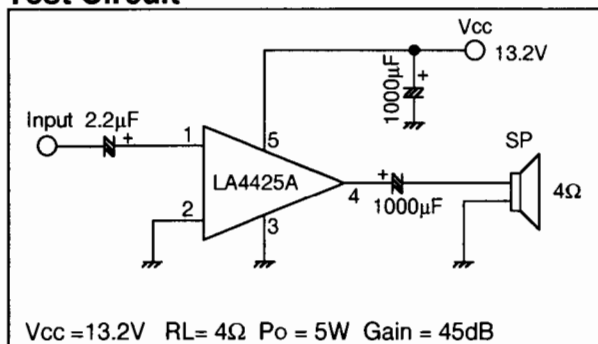
4) AT24C16N-10SI-2.7 (XA0368)
16K bits CMOS Serial EEPROM



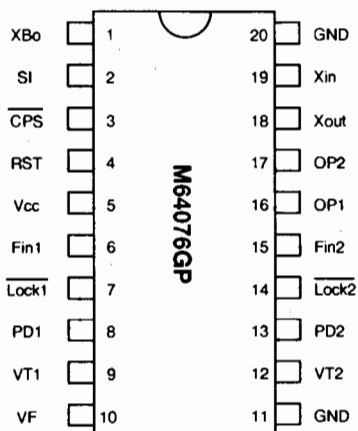
Pin Name	Function
A0 to A2	Address inputs
SDA	Serial Data
SCL	Serial Clock
Test	Test Input (GND or Vcc)
NC	No connection

5) LA4425A (XA0410)
5W Audio Power Amplifiers

Test Circuit

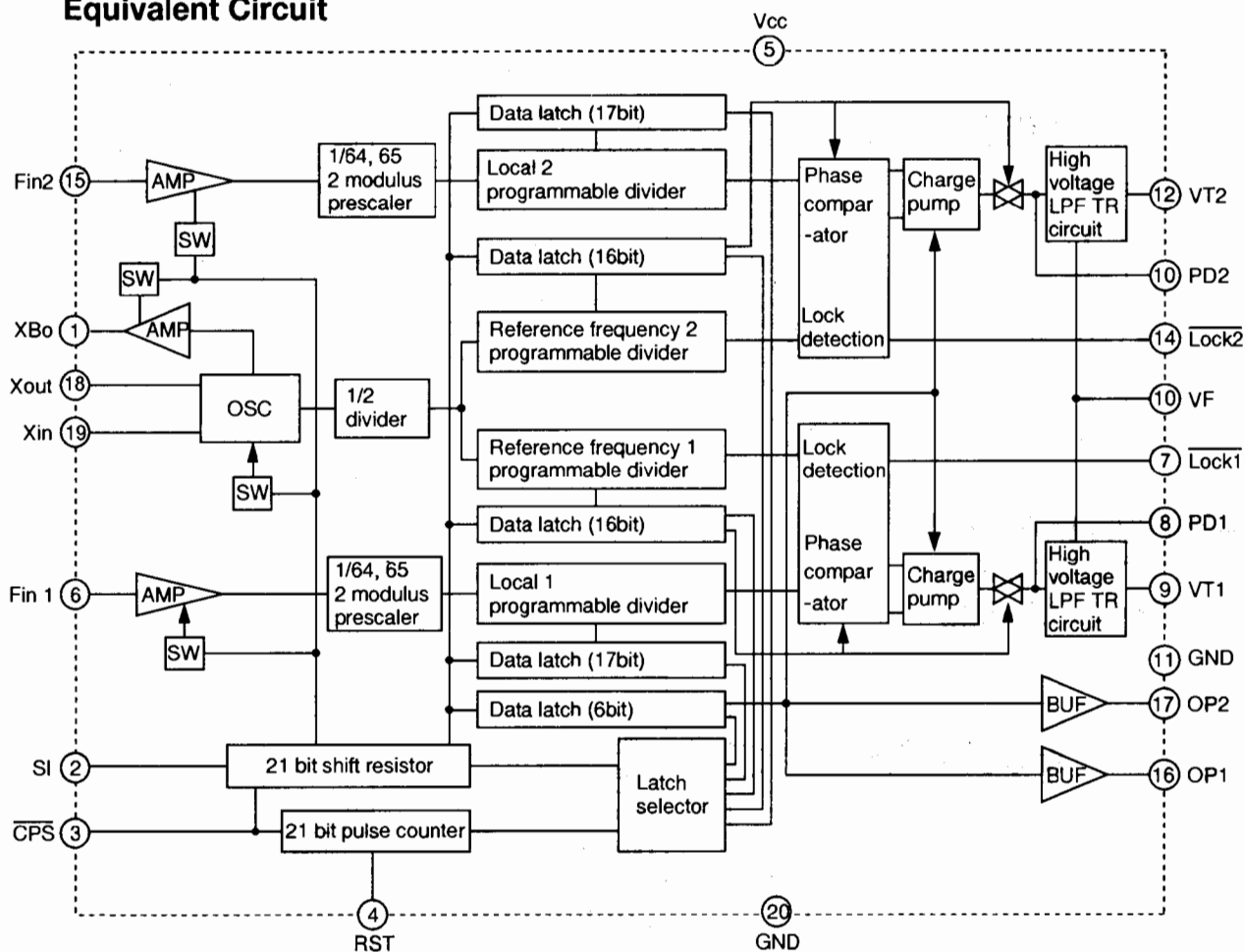


6) M64076GP (XA0352) Dual PLL Synthesizer

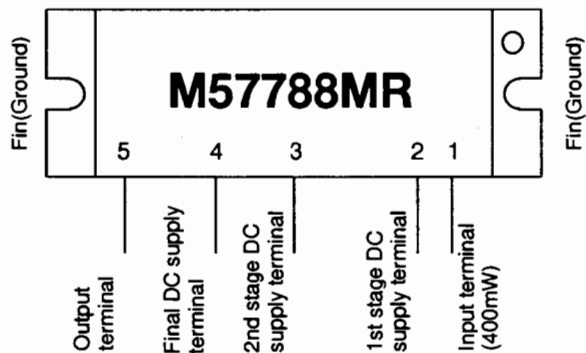


Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Power supply voltage	Vcc	Fin=80~520MHz Vin=-10dBm	2.7	-	5.5	V
LPF supply voltage	VF		-	9	12	V
Local oscillator input level	Vin	Fin=80~520MHz Vcc=2.7~5.5V	-20	-	-4	dBm
Local oscillator input frequency	Fin	Vin=-20~-4dBm Vcc=2.7~5.5V	80	-	520	MHz
Xin input level	Vxin	Vcc=2.7~5.5V Fxin=10~25MHz Sine wave	0.4	-	1.4	Vp-p
Xin input frequency	Fxin	Vcc=2.7~5.5V Vxin=0.4~1.4Vp-p	10	-	25	MHz

Equivalent Circuit



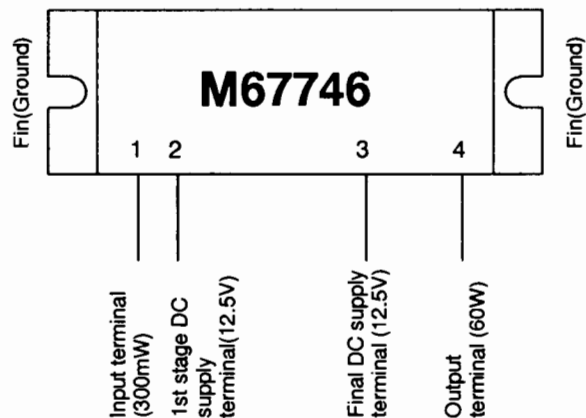
7) M57738LR (XA0447)
M57788MR (XA0313)
M57788HR (XA0448)
UHF FM 35W RF Power Module



Ratings	Symbol	Ratings	Unit
Supply voltage	Vcc	17.0	V
Total 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

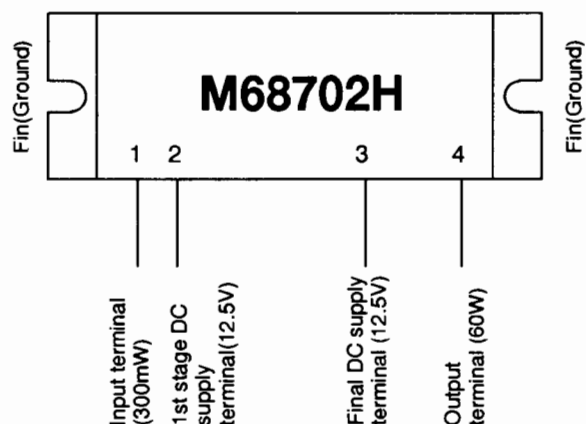
8) M67746 (XA0412)
144 ~ 148MHz 60W
RF Power Module



Ratings	Symbol	Ratings	Unit
Supply voltage	Vcc	17	V
Total current	Icc	20	A
Input power	Pin(max)	600	mW
Output power	Po(max)	70	W
Operation case temperature	Tc(op)	-30 to +110	°C
Storage temperature	Tstg	-40 to +110	°C

Zg=Zl=50Ω

9) M68702H (XA0444)
150 ~ 175MHz 60W
RF Power Module

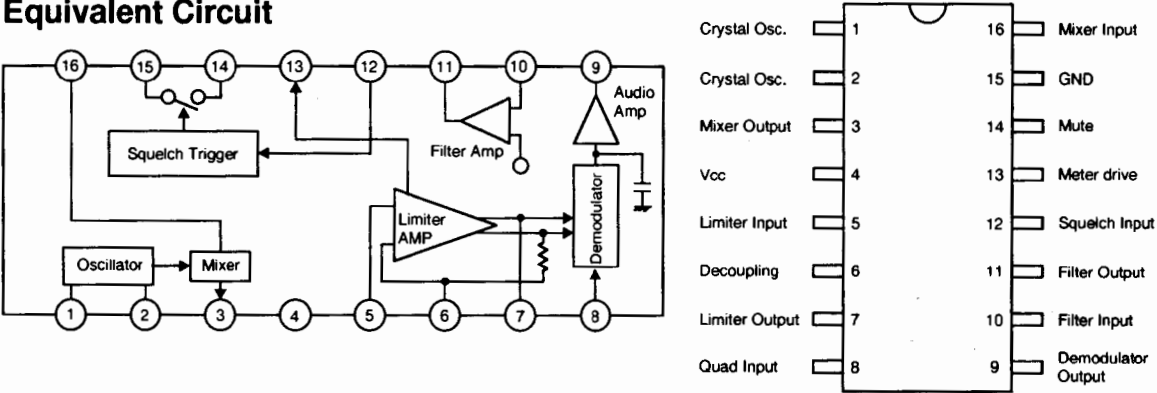


Ratings	Symbol	Ratings	Unit
Supply voltage	Vcc	17	V
Total current	Icc	20	A
Input power	Pin(max)	600	mW
Output power	Po(max)	75	W
Operation case temperature	Tc(op)	-30 to +110	°C
Storage temperature	Tstg	-40 to +110	°C

Zg=Zl=50Ω

10) MC3372VM (XA0343) Low Power FM IF

Equivalent Circuit

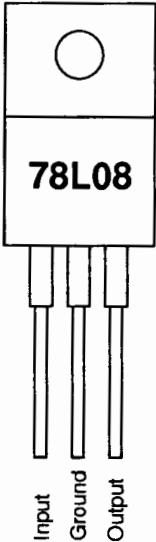
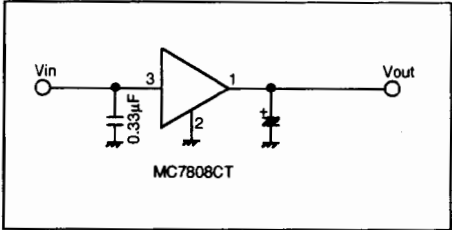


Ta=25°C

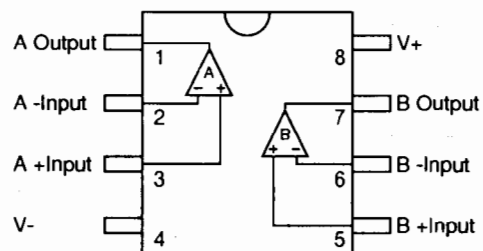
Parameter	Pin No.	Symbol	Ratings	Unit
Max. supply voltage	4	Vcc	2.4~9.0	Vdc
RF input voltage	16	Vrf	0.005~10	mVrms
RF input frequency	16	Frf	0.1~100	MHz
Oscillator input voltage	1	Vlocal	80~400	mVrms
IF frequency	-	Fif	455	kHz
Limiter amplifier input voltage	5	Vif	0~400	mVrms
Filter amplifier input voltage	10	Vfa	0.1~300	mVrms
Squelch input voltage	12	Vsq	0 or 2	Vdc
Mute sink current	14	Isq	0.1~30	mA
Temperature range	-	TA	-30~+75	°C

11) MC7808CT (XA0082) 8V Voltage Regulator

Test Circuit

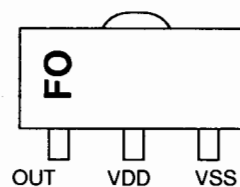
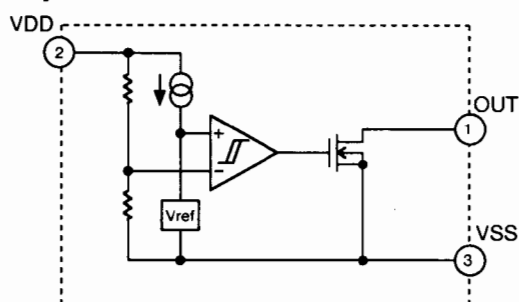


12) NJM4558 (XA0097)
Operational Amplifiers



13) RH5VA60AA (XA0315)
C-MOS Voltage Detector

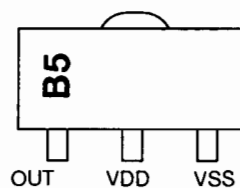
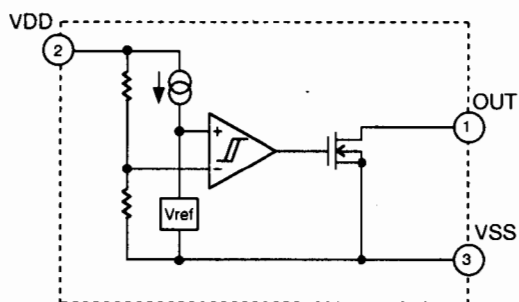
Equivalent Circuit



RH5VA60AA

14) RN5VL25AA-T1 (XA0309)
C-MOS Voltage Detector

Equivalent Circuit



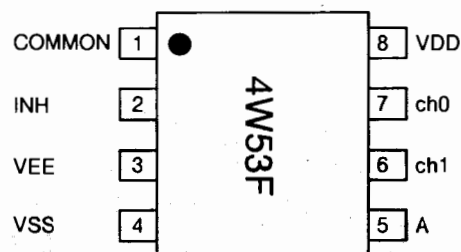
RL5VL25AA

15) TC4W53FU (XA0348) Multiplexer/Demultiplexer

Function Table

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

* Don't Care

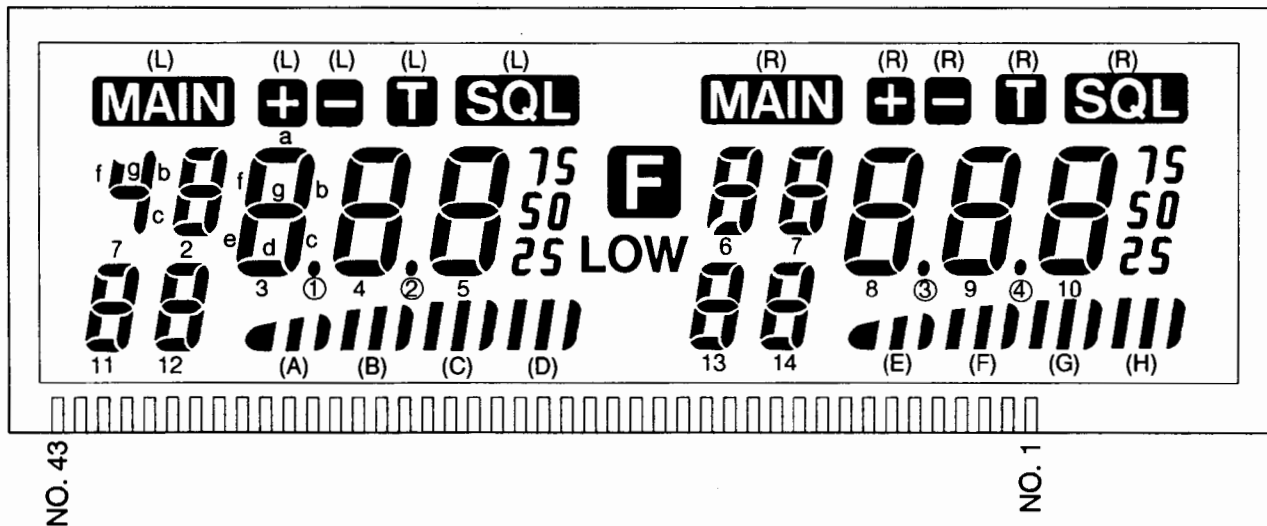


16) Transistor, Diode and LED Outline Drawings

Top View

1SS355 XD0254	1SS356 XD0272	1SV214 XD0131	1SV215 XD0132	1SV237 XD0141	1SV262 XD0300	1SV268 XD0301	DA204U XD0130
DAN202U XD0230	DAN235U XD0246	DTZ5.1A XD0136	DTZ11B XD0187	DSA3AI XD0274	MA729 XD0291	MA742 XD0250	MA8110H XD0255
MI407 XD0013	RN731V XD0257	UDZ3.0B XD0304	LT1EP53A XL0039	2SK1577 XE0022	2SK508 XE0010	2SK880GR XE0021	3SK131V12 XE0028
3SK177 XE0024	3SK184S XE0013	2SA1162Y XT0017	2SA1576 XT0094	2SB1132 XT0061	2SB1292 XT0112	2SB1302 XT0126	2SC2412K XT0037
2SC2873 XT0113	2SC2954 XT0084	2SC3357 XT0048	2SC4081 XT0095	2SC4215 XT0124	2SC4245 XT0125	2SC5226 XT0146	DTC363EK XU0160
FMC2 XU0028	UN5112 XU0174	UN5114 XU0179	UN5211 XU0061	UN5213 XU0180	XN111M XU0046	XN1213 XU0054	XP1215 XU0178
C2 C2 C1/B2	6B B E	6D B E	8A B E	8C B E	EK C2 C1	9L C2 C1	9M C2 C1

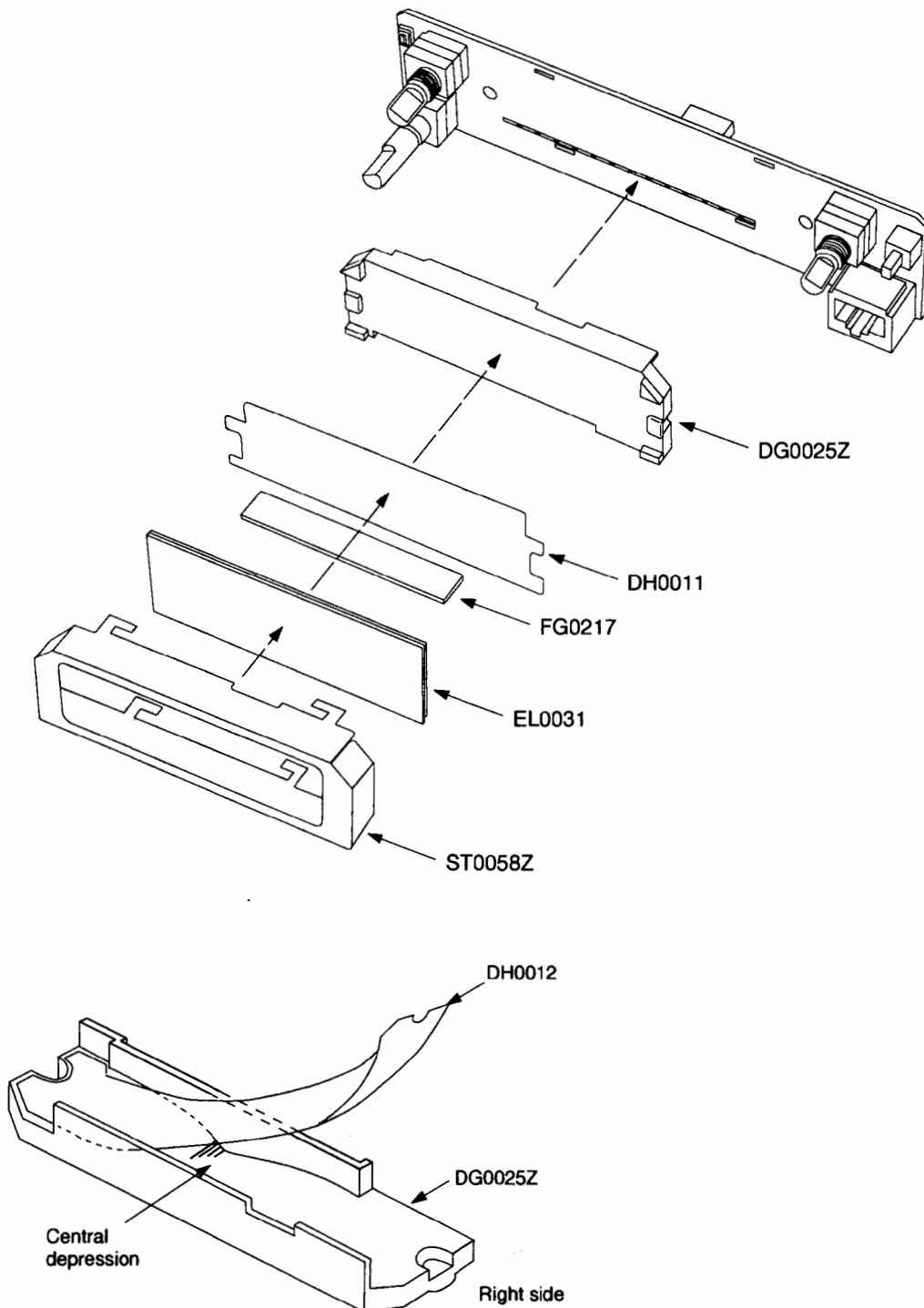
17) LCD Connection



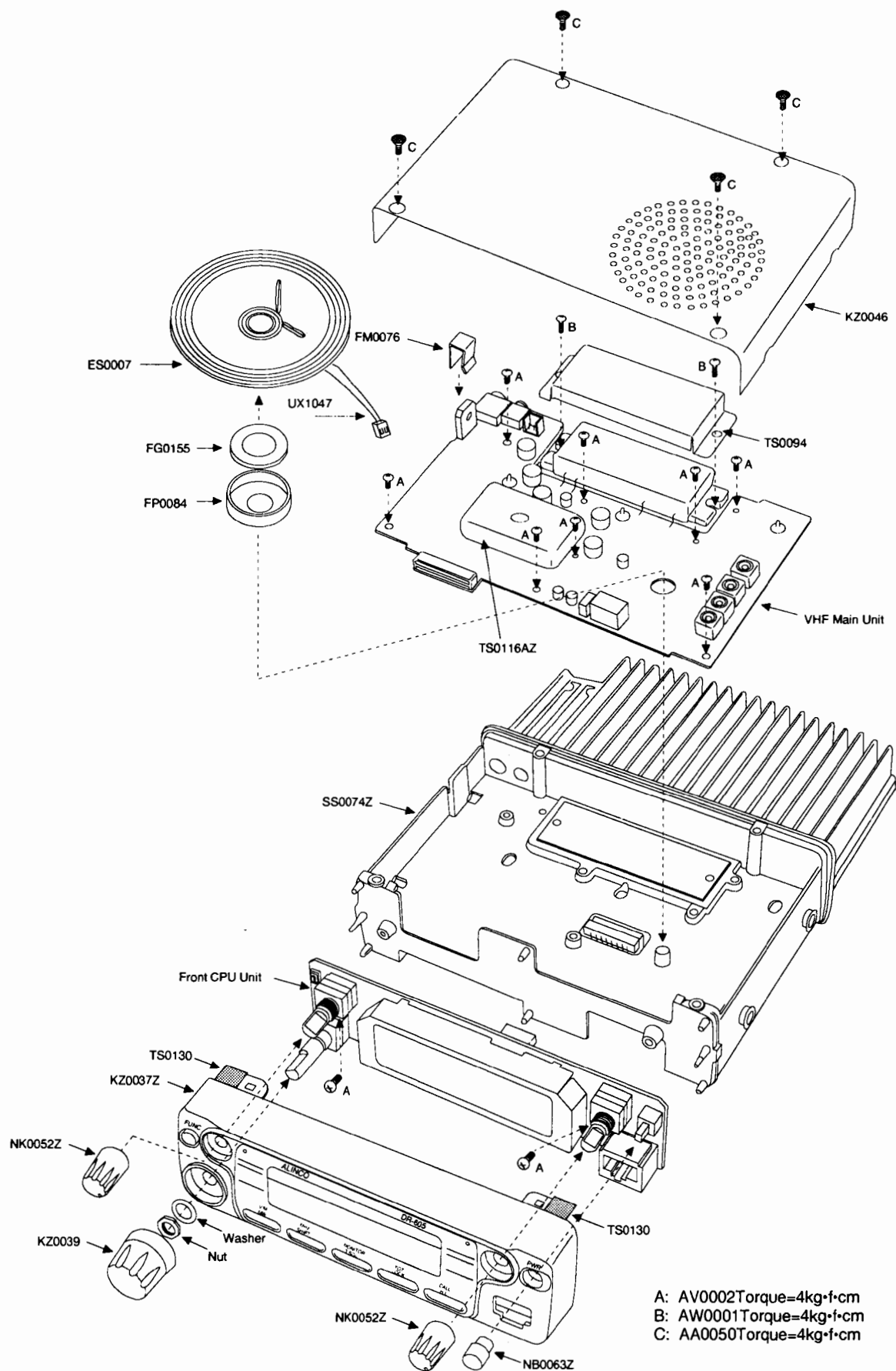
No.	COM.3	COM.2	COM.1	No.	COM.3	COM.2	COM.1
1	COM.3			26	5c	5b	(C) ///
2		COM.2		27	5g	5a	5d
3			COM.1	28	5e	5f	② .
4	(R) SQL	(R) T	(H) ///	29	4c	4b	(B) ///
5	(R) 50	(R) 75	(R) 25	30	4g	4a	4d
6	10c	10b	(G) ///	31	4e	4f	① .
7	10g	10a	10d	32	3c	3b	(A) ///
8	10e	10f	④ .	33	3g	3a	3d
9	9c	9b	(F) ///	34	3e	3f	(L) SQL
10	9g	9a	9d	35	2c	2b	(L) T
11	9e	9f	③ .	36	2g	2a	2d
12	8c	8b	(E) ///	37	2e	2f	(L) □
13	8g	8a	8d	38	12c	12b	(L) ⊕
14	8e	8f	(R) □	39	12g	12a	12d
15	7c	7b	(R) ⊕	40	12e	12f	1bc
16	7g	7a	7d	41	11c	11b	1fg
17	7e	7f	7a	42	11g	11a	11d
18	14c	14b	6bcg	43	11e	11f	(L) MAIN
19	14g	14a	14d				
20	14e	14f	6e				
21	13c	13b	6f				
22	13g	13a	13d				
23	13e	13f	(R) MAIN				
24	LOW	F	(D) ///				
25	(L) 50	(L) 75	(L) 25				

EXPLODED VIEW

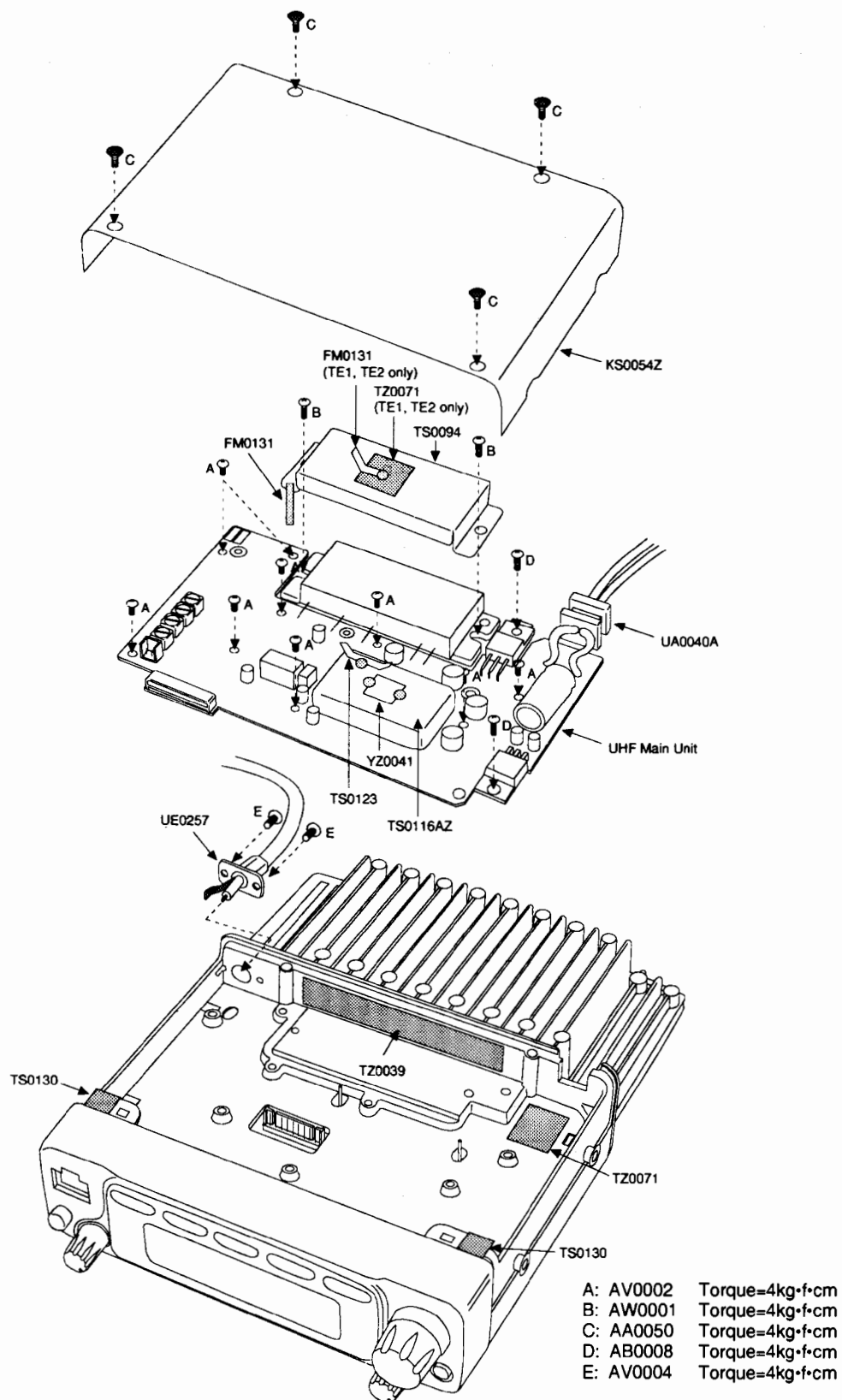
1) LCD Assembly



2) VHF Unit Assembly



3) UHF Unit Assembly



PARTS LIST

VHF MAIN Unit					VHF MAIN Unit					VHF MAIN Unit					VHF MAIN Unit				
Ref. No.	Parts No.	Description	Parts Name	Ver.	Ref. No.	Parts No.	Description	Parts Name	Ver.	Ref. No.	Parts No.	Description	Parts Name	Ver.	Ref. No.	Parts No.	Description	Parts Name	Ver.
C1	CJ3018	Chip C.	C3216B1C105MT-N		C53	CJ3035	Chip C.	C1608JB1H102KT-A		C10	CE0374	Electrolytic C	16V 100BS		CN7	UE0080	Short Pin	16MM	
C2	CE0312	Electrolytic C	ECCEV1CA100R		C54	CC5052	Ceramic C.	RCC05SL040L-46AE	T.E	C11	CJ3019	Chip C.	C1608CH1H47JLT-A	T.E	D1	XD0136	Diode	D725 1A TT11	
C3	CJ3044	Chip C.	C1608JB1H562KT-A		C55	CC5050	Ceramic C.	RCC05SL020L-46AE	1.2	C111	CJ3035	Chip C.	C1608JB1H102KT-A	1.2	D2	XD0250	Diode	MA742-TX	
C4	CJ3044	Chip C.	C1608JB1H562KT-A		C56	CJ3035	Chip C.	C1608JB1H102KT-A		C112	CJ3016	Chip C.	C1608CH1H27JLT-A	T.E	D3	XD0246	Diode	DAN325UT106	
C5	CJ3035	Chip C.	C2012B1E333K		C57	CJ3035	Chip C.	C1608JB1H102KT-A		C113	CJ3012	Chip C.	C1608JB1H12JLT-A	T.E	D4	XD0254	Diode	1SS335 TE-17	
C6	CE0312	Electrolytic C	ECCEV1CA100R		C58	CC5060	Ceramic C.	DD05-975SL150J500		C114	CJ3009	Chip C.	C1608CH1H080CT-A	T.E	D5	XD0254	Diode	1SS335 TE-17	
C7	CJ3047	Chip C.	C1608JB1H103KT-A		C59	CC5025	Ceramic C.	HM605JVB 102K		C115	CJ3023	Chip C.	C1608CH1H101JT-A	1.2	D6	XD0301	Diode	1SV268	
C8	CJ3034	Chip C.	C2012XTR1E333K		C60	CC5067	Ceramic C.	RCC05SL330L-46AE	T.E	C116	CJ3023	Chip C.	C1608CH1H101JT-A	T.E	D7	XD0250	Diode	MA742-TX	
C9	CJ3041	Chip C.	C1608JB1H53KT-A		C61	CC5065	Ceramic C.	RCC05SL270L-46AE	1.2	C117	CJ3047	Chip C.	C1608JB1H103KT-A		D8	XD0130	Diode	DA204UT106	
C10	CJ3041	Chip C.	C1608JB1E153KT-A		C62	CJ3032	Chip C.	RCC06SL470L-46AU		C118	CJ3018	Chip C.	C3216B1C105MT-N		D9	XD0132	Diode	1SV215 TP4	
C11	CJ3042	Chip C.	C2012B1C104KT-A		C63	CC5068	Ceramic C.	RCC06SL390L-46AU		C119	CJ3035	Chip C.	C1608JB1H102KT-A		D10	XD0132	Diode	1SV215 TP4	
C12	CJ3018	Chip C.	C3216B1C105MT-N		C64	CC5062	Ceramic C.	RCC05SL270L-46AE	1.2	C120	CJ3047	Chip C.	C1608JB1H103KT-A		D11	XD0132	Diode	1SV215 TP4	
C13	CJ3035	Chip C.	C1608JB1H102KT-A		C65	CC5067	Ceramic C.	RCC05SL330L-46AE		C121	CJ3047	Chip C.	C1608JB1H103KT-A		D12	XD0132	Diode	1SV215 TP4	
C14	CJ3035	Chip C.	TMCSA1D684MTR		C66	CC5067	Ceramic C.	RCC05SL330L-46AE		C125	CJ3018	Chip C.	C3216B1C105MT-N		D13	XD0132	Diode	1SV215 TP4	
C15	CJ3042	Chip C.	C2012B1C104KT-A		C67	CJ3033	Chip C.	C1608CH1H020CT-A		C126	CJ3047	Chip C.	C1608JB1H103KT-A		D14	XD0254	Diode	1SS335 TE-17	
C16	CJ3047	Chip C.	C1608JB1H103KT-A		C68	CJ3033	Chip C.	C1608CH1H020CT-A		C127	CE0342	Electrolytic C	16MV 470HC TS		D21	XD0257	Diode	MA729-TX	
C17	CJ3035	Chip C.	C1608JB1H102KT-A		C69	CJ3033	Chip C.	C1608JB1H102KT-A		C128	CJ3042	Chip C.	C2012B1C104KT-A						
C18	CJ3035	Chip C.	C1608JB1H102KT-A		C70	CJ3035	Chip C.	C1608JB1H102KT-A		C129	CJ3059	Chip C.	C1608JB1H102KT-A						
C19	CJ3023	Chip C.	T1608CH1H101JT-A		C71	CJ3035	Chip C.	C1608JB1H102KT-A		C130	CJ3035	Chip C.	C1608JB1H102KT-A						
C20	CJ3023	Chip C.	T1608CH1H101JT-A		C72	CJ3035	Chip C.	C1608JB1H102KT-A		C131	CJ3035	Chip C.	C1608JB1H102KT-A						
C21	CJ3047	Chip C.	C1608JB1H103KT-A		C73	CJ3035	Chip C.	C1608JB1H102KT-A		C132	CJ3047	Chip C.	C1608JB1H103KT-A						
C22	CJ3051	Chip C.	C1608JB1E23KT-A		C74	CJ3035	Chip C.	C1608JB1H102KT-A		C133	CE0337	Electrolytic C	16V 100BS						
C23	CE0312	Electrolytic C	ECCEV1CA100R		C75	CJ3023	Chip C.	C1608CH1H101JT-A		C134	CJ3035	Chip C.	C1608JB1H102KT-A						
C24	CJ3059	Chip C.	C1608JB1E104ZTA		C76	CJ3035	Chip C.	C1608CH1H080JLT-A	1.2	C135	CJ3035	Chip C.	C1608JB1H102KT-A						
C25	CJ3059	Chip C.	C1608JB1E104ZTA		C77	CJ3035	Chip C.	C1608JB1H102KT-A		C136	CJ3035	Chip C.	C1608JB1H102KT-A						
C26	CJ3023	Chip C.	T1608CH1H101JT-A		C78	CJ3035	Chip C.	C1608JB1H102KT-A		C137	CJ3035	Chip C.	C1608JB1H102KT-A						
C27	CJ3059	Chip C.	C1608JB1E104ZTA		C79	CJ3035	Chip C.	C1608CH1H101JT-A		C138	CJ3035	Chip C.	C1608JB1H102KT-A						
C28	CJ3035	Chip C.	C1608JB1H102KT-A		C80	CJ3019	Chip C.	C1608CH1H47JLT-A		C139	CJ3035	Chip C.	C1608JB1H102KT-A						
C29	CJ3035	Chip C.	C1608JB1H102KT-A		C81	CJ3035	Chip C.	C1608CH1H47JLT-A		C140	CE0374	Electrolytic C	16V 100BS						
C30	CJ3018	Chip C.	C1608JB1H103KT-A		C82	CJ3019	Chip C.	C1608CH1H47JLT-A		C142	CE0374	Electrolytic C	16V 100BS						
C31	CJ3047	Chip C.	C1608JB1H103KT-A		C83	CJ3017	Chip C.	C1608CH1H47JLT-A		C143	CJ3035	Chip C.	C1608JB1H102KT-A						
C32	CJ3019	Chip C.	C1608CH1H47JLT-A		C84	CJ3035	Chip C.	C1608JB1H102KT-A		C144	CJ3035	Chip C.	C1608JB1H102KT-A						
C33	CJ3035	Chip C.	C1608JB1H102KT-A		C85	CJ3047	Chip C.	C1608JB1H103KT-A		C146	CE0327	Chip Tantal	TMCM1A475MTR						
C34	CJ3035	Chip C.	C1608JB1H102KT-A		C86	CJ3035	Chip C.	C1608JB1H102KT-A		C147	CE0327	Chip Tantal	TMCM1A475MTR						
C35	CJ3015	Chip C.	C1608CH1H22JLT-A		C87	CJ3047	Chip C.	C1608JB1H103KT-A		C148	CJ3035	Chip C.	C1608JB1H102KT-A						
C36	CJ3015	Chip C.	C1608CH1H22JLT-A		C88	CJ3015	Chip C.	C1608CH1H22JLT-A		C149	CJ3035	Chip C.	C1608JB1H102KT-A						
C37	CJ3035	Chip C.	C1608CH1H22JLT-A		C89	CJ3035	Chip C.	C1608CH1H22JLT-A		C150	CJ3035	Chip C.	C1608JB1H102KT-A						
C38	CJ3016	Chip C.	C1608JB1H102KT-A		C90	CE0237	Chip Tantal	TMCM1A475MTR		C151	CJ3035	Chip C.	C1608JB1H102KT-A						
C39	CJ3035	Chip C.	C1608CH1H27JLT-A		C91	CJ3035	Chip C.	C1608JB1H102KT-A		C152	CJ3047	Chip C.	C1608JB1H103KT-A						
C40	CJ3035	Chip C.	C1608JB1H102KT-A		C94	CC5026	Chip Tantal	TMCM1A465MTR		C153	CJ3047	Chip C.	C1608JB1H103KT-A						
C41	CJ3035	Chip C.	C2012CH1H47J		C96	CJ3035	Chip C.	C1608JB1H102KT-A		C154	CJ3035	Chip C.	C1608JB1H102KT-A						
C42	CJ3035	Chip C.	C1608JB1H102KT-A		C97	CE0315	Electrolytic C	ECCEV1CA470P		C155	CC5049	Chip C.	C2012XTR1E333K						
C43	CJ3035	Chip C.	C1608JB1H102KT-A		C98	CJ3035	Chip C.	C1608JB1H102KT-A		C156	CJ3035	Chip C.	C1608JB1H102KT-A						
C44	CJ3015	Chip C.	C1608CH1H22JLT-A		C99	CJ3035	Chip C.	C1608JB1H102KT-A		C157	CJ3042	Chip C.	C32012B1C104KT-A						
C45	CJ3015	Chip C.	C1608CH1H22JLT-A		C98	CJ3035	Chip C.	C1608JB1H102KT-A		C158	CJ3017	Chip C.	C1608CH1H33JLT-A						
C46	CJ3015	Chip C.	C1608CH1H22JLT-A		C100	CJ3035	Chip C.	C1608JB1H102KT-A											
C47	CJ3035	Chip C.	C1608CH1H102KT-A		C101	CJ3035	Chip C.	C1608JB1H102KT-A											
C48	CJ3035	Chip C.	C1608CH1H102KT-A		C102	CJ3035	Chip C.	C1608JB1H102KT-A											
C49	CE0315	Electrolytic C	ECCEV1CA470P		C103	CJ3035	Chip C.	C1608JB1H102KT-A											
C50	CE0312	Electrolytic C	ECCEV1CA100R		C104	CJ3035	Chip C.	C1608JB1H102KT-A											
C51	CJ3035	Chip C.	C1608JB1H102KT-A		C108	CJ3047	Chip C.	C1608JB1H103KT-A											
C52	CE0312	Electrolytic C	ECCEV1CA100R		C109	CJ3047	Chip C.	C1608JB1H103KT-A											

Note: Version1=TE1, Version2=TE2

Note: Version1=TE1, Version2=TE2

VHF MAIN Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
Q1	XT0095	Transistor	2SC4081T106R	
Q2	XT0095	Transistor	2SC4081T106R	
Q3	XT0095	Transistor	2SC4081T106R	
Q4	XT0095	Transistor	2SC4081T106R	
Q5	XT0095	Transistor	2SC4081T106R	
Q6	XT0095	Transistor	2SC4081T106R	
Q7	XT0124	Transistor	2SC4215-1T(E85L)	
Q8	XT0124	Transistor	2SC4215-1T(E85L)	
Q9	XT0048	Transistor	2SC3357T1 RE	
Q10	XT0084	Transistor	2SC2954-1T	
Q11	XT0013	FET	3SK184S-TX	
Q12	XT0013	FET	3SK184S-TX	
Q13	XT0095	Transistor	2SC4081T106R	
Q15	XT0021	FET	2SK480GTE85L	
Q16	XT0017	Transistor	2SA1162YTE85	
Q17	XT0061	Transistor	2SA1162YTE85	
Q18	XT0061	Transistor	2SA1162YTE85	
Q19	XT0061	Transistor	2SA1162YTE85	
Q20	XT0061	Transistor	2SA1162YTE85	
Q21	XT0061	Transistor	2SA1162YTE85	
Q22	XT0061	Transistor	2SA1162YTE85	
Q23	XT0095	Transistor	2SC4081T106R	
Q25	XT0060	Transistor	2SC4081T106R	
Q26	XT0095	Transistor	2SC4081T106R	
Q27	XT0079	Transistor	2SC4081T106R	
Q28	XT0080	Transistor	2SC4081T106R	
Q29	XT0095	Transistor	2SC4081T106R	
Q30	XT0146	Transistor	2SC5226-4-TL	
R1	RK3038	Chip R.	ERJ3GSYJ102V	
R2	RK3042	Chip R.	ERJ3GSYJ102V	
R3	RK3058	Chip R.	ERJ3GSYJ102V	
R4	RK3071	Chip R.	ERJ3GSYJ102V	
R5	RK3034	Chip R.	ERJ3GSYJ102V	
R6	RK3026	Chip R.	ERJ3GSYJ102V	
R7	RK3042	Chip R.	ERJ3GSYJ102V	
R8	RK3054	Chip R.	ERJ3GSYJ102V	
R9	RK3050	Chip R.	ERJ3GSYJ102V	
R10	RK3032	Chip R.	ERJ3GSYJ102V	
R11	RK3071	Chip R.	ERJ3GSYJ102V	
R12	RK3057	Chip R.	ERJ3GSYJ102V	
R13	RK3054	Chip R.	ERJ3GSYJ102V	
R14	RK3059	Chip R.	ERJ3GSYJ102V	
R15	RK3041	Chip R.	ERJ3GSYJ102V	
R16	RK3041	Chip R.	ERJ3GSYJ102V	
R17	RK3058	Chip R.	ERJ3GSYJ102V	
R18	RK3030	Chip R.	ERJ3GSYJ102V	
R19	RK3046	Chip R.	ERJ3GSYJ102V	
R20	RK3038	Chip R.	ERJ3GSYJ102V	
R21	RK3050	Chip R.	ERJ3GSYJ102V	
R22	RK3056	Chip R.	ERJ3GSYJ102V	
R23	RK3038	Chip R.	ERJ3GSYJ102V	
R24	RK3038	Chip R.	ERJ3GSYJ102V	
R25	RK3043	Chip R.	ERJ3GSYJ102V	

Note: Version1=TE1, Version2=TE2

VHF MAIN Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
R81	RK3038	Chip R.	ERJ3GSYJ102V	
R82	RK3050	Chip R.	ERJ3GSYJ102V	
R83	RK3062	Chip R.	ERJ3GSYJ102V	
R84	RK3001	Chip R.	ERJ3GSYJ102V	
R85	RK3026	Chip R.	ERJ3GSYJ102V	
R86	RK3054	Chip R.	ERJ3GSYJ102V	
R87	RK3056	Chip R.	ERJ3GSYJ102V	
R88	RK3034	Chip R.	ERJ3GSYJ102V	
R89	RK3062	Chip R.	ERJ3GSYJ102V	
R90	RK3026	Chip R.	ERJ3GSYJ102V	
R91	RK3074	Chip R.	ERJ3GSYJ102V	
R92	RK3026	Chip R.	ERJ3GSYJ102V	
R93	RK3074	Chip R.	ERJ3GSYJ102V	
R94	RK3026	Chip R.	ERJ3GSYJ102V	
R95	RK3038	Chip R.	ERJ3GSYJ102V	
R96	RK3038	Chip R.	ERJ3GSYJ102V	
R97	RK3038	Chip R.	ERJ3GSYJ102V	
R98	RK3038	Chip R.	ERJ3GSYJ102V	
R99	RK3038	Chip R.	ERJ3GSYJ102V	
R100	RK3038	Chip R.	ERJ3GSYJ102V	
R101	RK3038	Chip R.	ERJ3GSYJ102V	
R102	RK3038	Chip R.	ERJ3GSYJ102V	
R103	RK3038	Chip R.	ERJ3GSYJ102V	
R104	RK3038	Chip R.	ERJ3GSYJ102V	
R105	RK3038	Chip R.	ERJ3GSYJ102V	
R106	RK3038	Chip R.	ERJ3GSYJ102V	
R107	RK3038	Chip R.	ERJ3GSYJ102V	
R108	RK3038	Chip R.	ERJ3GSYJ102V	
R109	RK3038	Chip R.	ERJ3GSYJ102V	
R110	RK3038	Chip R.	ERJ3GSYJ102V	
R111	RK3038	Chip R.	ERJ3GSYJ102V	
R112	RK3038	Chip R.	ERJ3GSYJ102V	
R113	RK3038	Chip R.	ERJ3GSYJ102V	
R114	RK3038	Chip R.	ERJ3GSYJ102V	
R115	RK3038	Chip R.	ERJ3GSYJ102V	
R116	RK3038	Chip R.	ERJ3GSYJ102V	
R117	RK3038	Chip R.	ERJ3GSYJ102V	
R118	RK3038	Chip R.	ERJ3GSYJ102V	
R119	RK3038	Chip R.	ERJ3GSYJ102V	
R120	RK3038	Chip R.	ERJ3GSYJ102V	
R121	RK3038	Chip R.	ERJ3GSYJ102V	
R122	RK3038	Chip R.	ERJ3GSYJ102V	
R123	RK3038	Chip R.	ERJ3GSYJ102V	
R124	RK3038	Chip R.	ERJ3GSYJ102V	
R125	RK3038	Chip R.	ERJ3GSYJ102V	
R126	RK3038	Chip R.	ERJ3GSYJ102V	
R127	RK3038	Chip R.	ERJ3GSYJ102V	
R128	RK3038	Chip R.	ERJ3GSYJ102V	
R129	RK3038	Chip R.	ERJ3GSYJ102V	
R130	RK3038	Chip R.	ERJ3GSYJ102V	
R131	RK3038	Chip R.	ERJ3GSYJ102V	
R132	RK3038	Chip R.	ERJ3GSYJ102V	
R133	RK3038	Chip R.	ERJ3GSYJ102V	
R134	RK3038	Chip R.	ERJ3GSYJ102V	
R135	RK3038	Chip R.	ERJ3GSYJ102V	

Note: Version1=TE1, Version2=TE2

UHF MAIN UNIT

Ref. No.	Parts No.	Description	Parts Name	Ver.
UHF MAIN UNIT				
C201	CU3047	Chip C.	C1608JB1H103KT-A	
C202	CU9018	Chip C.	C3216JB1C105MT-N	
C203	CU9018	Chip C.	C3216JB1C105MT-N	
C204	CE0312	Electrolytic C.	EECEVCA100R	
C205	CU3044	Chip C.	C1608JB1H562KT-A	
C206	CU3044	Chip C.	C1608JB1H562KT-A	
C207	CU8035	Chip C.	C2012B1E393K	
C208	CE0312	Electrolytic C.	EECEVCA100R	
C209	CU8034	Chip C.	C2012X7R1E333K	
C210	CU3041	Chip C.	C1608JB1H332KT-A	
C211	CU3049	Chip C.	C1608JB1E153KT-A	
C212	CU8042	Chip C.	C2012JB1C104KT-A	
C213	CU3035	Chip C.	C1608JB1H102KT-A	
C214	CU3023	Chip C.	C1608CH1H101JT-A	
C215	CU3023	Chip C.	C1608CH1H101JT-A	
C216	CU3035	Chip C.	C1608JB1H102KT-A	
C217	CU3047	Chip C.	C1608JB1H103KT-A	
C218	CU8042	Chip C.	C2012JB1C104KT-A	
C219	CS0065	Chip Tantal	TMCSA1D684MTR	
C220	CU3047	Chip C.	C1608JB1H103KT-A	
C221	CU3051	Chip C.	C1608JB1E223KT-A	
C222	CE0312	Electrolytic C.	EECEVCA100R	
C223	CU3059	Chip C.	C1608JB1E104ZTA	
C224	CU3022	Chip C.	C1608CH1H820JT-A	
C225	CU3059	Chip C.	C1608JB1E104ZTA	
C226	CU3059	Chip C.	C1608JB1E104ZTA	
C227	CU3010	Chip C.	C1608CH1H090CT-A	
C228	CU3007	Chip C.	C1608CH1H090CT-A	
C229	CU3018	Chip C.	C1608CH1H090CT-A	
C230	CU3005	Chip C.	C1608CH1H040CT-A	
C231	CU3011	Chip C.	C1608CH1H100CT-A	
C232	CU3035	Chip C.	C1608JB1H102KT-A	
C233	CU3035	Chip C.	C1608JB1H102KT-A	
C234	CU3035	Chip C.	C1608JB1H102KT-A	
C235	CU3035	Chip C.	C1608JB1H102KT-A	
C236	CU3004	Chip C.	C1608CH1H030CT-A	
C237	CU3035	Chip C.	C1608JB1H102KT-A	
C238	CU3015	Chip C.	C1608CH1H220JT-A	
C239	CU3035	Chip C.	C1608JB1H102KT-A	
C240	CU3011	Chip C.	C1608CH1H100CT-A	
C241	CU3035	Chip C.	C1608JB1H102KT-A	
C242	CU3035	Chip C.	C1608JB1H102KT-A	
C243	CU3035	Chip C.	C1608JB1H102KT-A	
C244	CU3035	Chip C.	C1608JB1H102KT-A	
C245	CU3035	Chip C.	C1608JB1H102KT-A	
C246	CU3011	Chip C.	C1608CH1H030CT-A	
C247	CU3011	Chip C.	C1608CH1H030CT-A	
C248	CU3004	Chip C.	C1608CH1H030CT-A	
C249	CU3035	Chip C.	C1608JB1H102KT-A	
C250	CU3035	Chip C.	C1608JB1H102KT-A	
C251	CU3035	Chip C.	C1608JB1H102KT-A	
C252	CU3004	Chip C.	C1608CH1H030CT-A	
C253	CU3003	Chip C.	C1608CH1H020CT-A	
C254	CE0315	Electrolytic C.	EECEVCA470P#	

Note: Version1=TE1, Version2=TE2

Ref. No.	Parts No.	Description	Parts Name	Ver.
C255	CU3023	Chip C.	C1608CH1H101JT-A	
C256	CE0312	Electrolytic C.	EECEVCA100R	
C257	CU3031	Chip C.	C1608JB1H47KT-A	
C258	CU3031	Chip C.	C1608JB1H47KT-A	
C259	CS0051	Ceramic C.	RCC05SL0300C-L46AE	
C260	CS0050	Ceramic C.	RCC05SL0200C-L46AE	
C261	CS0049	Ceramic C.	RCC05SL0100C-L46AE	
C262	CU3035	Chip C.	C1608JB1H102KT-A	
C263	CU3002	Chip C.	RCC05SL0700C-L46AE	
C264	CU3002	Chip C.	RCC05SL0700C-L46AE	
C265	CS0058	Ceramic C.	DD05-979SL1000500	
C266	CS0058	Ceramic C.	DD05-979SL1000500	
C267	CU3002	Chip C.	RCC05SL120L-L46AE	
C268	CS0056	Ceramic C.	RCC05SL0800C-L46AE	
C269	CS0056	Ceramic C.	RCC05SL0800C-L46AE	
C270	CS0054	Ceramic C.	RCC05SL0600C-L46AE	
C271	CS0054	Ceramic C.	RCC05SL0600C-L46AE	
C272	CS0073	Ceramic C.	RCC05SL0900C-L46AE	
C273	CS0050	Ceramic C.	RCC05SL1200C-L46AE	
C274	CU3004	Chip C.	C1608CH1H030CT-A	
C275	CU3004	Chip C.	C1608CH1H030CT-A	
C276	CU3035	Chip C.	C1608JB1H102KT-A	
C277	CU3035	Chip C.	C1608JB1H102KT-A	
C278	CU3035	Chip C.	C1608JB1H102KT-A	
C279	CU3035	Chip C.	C1608JB1H102KT-A	
C280	CU3002	Chip C.	C1608CH1H101JT-A	
C281	CU3002	Chip C.	C1608CH1H101JT-A	
C282	CU3035	Chip C.	C1608JB1H102KT-A	
C283	CU3035	Chip C.	C1608JB1H102KT-A	
C284	CU3035	Chip C.	C1608JB1H102KT-A	
C285	CU3035	Chip C.	C1608JB1H102KT-A	
C286	CU3035	Chip C.	C1608JB1H102KT-A	
C287	CU3004	Chip C.	C1608CH1H101JT-A	
C288	CU3002	Chip C.	C1608CH1H220JT-A	
C289	CU3012	Chip C.	C1608CH1H220JT-A	
C290	CU3035	Chip C.	C1608JB1H102KT-A	
C291	CU3035	Chip C.	C1608JB1H102KT-A	
C292	CU3035	Chip C.	C1608JB1H102KT-A	
C293	CU3035	Chip C.	C1608JB1H102KT-A	
C294	CU3011	Chip C.	C1608CH1H030CT-A	
C295	CU3035	Chip C.	C1608JB1H102KT-A	
C296	CU3035	Chip C.	C1608JB1H102KT-A	
C297	CU3011	Chip C.	C1608CH1H030CT-A	
C298	CU3035	Chip C.	C1608JB1H102KT-A	
C299	CU3035	Chip C.	C1608JB1H102KT-A	
C300	CU3035	Chip C.	C1608JB1H102KT-A	
C301	CU8042	Chip C.	C2012JB1C104KT-A	
C302	CU3051	Chip C.	C1608JB1E223KT-A	

Note: Version1=TE1, Version2=TE2

UHF MAIN UNIT

Ref. No.	Parts No.	Description	Parts Name	Ver.
C303	CU8034	Chip C.	C2012X7R1E333KT-A	
C304	CU7002	Chip C.	TIC2C31NAC0300C	
C305	CU3047	Chip C.	C1608JB1H103KT-A	
C306	CU3019	Chip C.	C1608CH1H470JT-A	
C307	CU8042	Chip C.	C2012JB1C104KT-A	
C308	CU3047	Chip C.	C1608JB1H103KT-A	
C309	CU3019	Chip C.	C1608CH1H470JT-A	
C310	CE0312	Electrolytic C.	EECEVCA100R	
C311	CU3035	Chip C.	C1608JB1H102KT-A	
C312	CE0312	Electrolytic C.	EECEVCA100R	
C313	CU3028	Chip C.	C1608CH1H271JT-A	
C314	CU3039	Chip C.	C1608JB1H222KT-A	
C315	CS0237	Chip Tantal	TMCSA1A475MTR	
C316	CU3035	Chip C.	C1608JB1H102KT-A	
C317	CU3035	Chip C.	C1608JB1H102KT-A	
C318	CU3035	Chip C.	C1608JB1H102KT-A	
C319	CU3035	Chip C.	C1608JB1H102KT-A	
C320	CU3035	Chip C.	C1608JB1H102KT-A	
C321	CE0315	Electrolytic C.	EECEVCA470P	
C322	CU3035	Chip C.	C1608JB1H102KT-A	
C323	CU3035	Chip C.	C1608JB1H102KT-A	
C324	CU3035	Chip C.	C1608JB1H102KT-A	
C325	CU3035	Chip C.	C1608JB1H102KT-A	
C326	CU3035	Chip C.	C1608JB1H102KT-A	
C327	CE0315	Electrolytic C.	EECEVCA100R	
C328	CU3035	Chip C.	C1608JB1H102KT-A	
C329	CE0315	Electrolytic C.	EECEVCA100R	
C330	CU3035	Chip C.	C1608JB1H102KT-A	
C331	CU3025	Chip C.	C1608CH1H151JT-A	
C332	CU3019	Chip C.	C1608CH1H470JT-A	
C333	CU3035	Chip C.	C1608JB1H102KT-A	
C334	CU3035	Chip C.	C1608JB1H102KT-A	
C335	CE0315	Electrolytic C.	EECEVCA100R	
C336	CU3047	Chip C.	C1608JB1H103KT-A	
C337	CU3047	Chip C.	C1608JB1H103KT-A	
C338	CE0312	Electrolytic C.	EECEVCA100R	
C339	CU3047	Chip C.	C1608JB1H103KT-A	
C340	CU3035	Chip C.	C1608JB1H102KT-A	
C341	CE0316	Electrolytic C.	EECEVCA470P	
C342	CU3035	Chip C.	C1608JB1H102KT-A	
C343	CU3035	Chip C.	C1608JB1H102KT-A	
C344	CS0049	Chip Tantal	TMCSA1C105MTR	
C345	CS0061	Chip C.	TMCSA1V224MTR	
C346	CU3035	Chip C.	C1608JB1H102KT-A	
C347	CU3035	Chip C.	C1608JB1H102KT-A	
C348	CU3035	Chip C.	C1608JB1H102KT-A	
C349	CS0049	Chip Tantal	TMCSA1C105MTR	
C350	CE0380	Electrolytic C.	CEDSM1C152M	
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	CU3035	Chip C.	C1608JB1H102KT-A	
C358	CU3035	Chip C.	C1608JB1H102KT-A	
C359	CU3035	Chip C.	C1608JB1H102KT-A	

Note: Version1=TE1, Version2=TE2

Ref. No.	Parts No.	Description	Parts Name	Ver.
C360	CS0328	Chip Tantal	ECSTU7V685R	
C361	CU3035	Chip C.	C1608JB1H102KT-A	
C362	CU3002	Chip C.	C1608CH1H101JT-A	
C363	CE0312	Electrolytic C.	EECEVCA100R	
C364	CU3031	Chip C.	C1608JB1H47KT-A	
C365	CU3035	Chip C.	C1608JB1H102KT-A	
C366	CU3035	Chip C.	C1608JB1H102KT-A	
C367	CU3035	Chip C.	C1608JB1H102KT-A	
C368	CU3035	Chip C.	C1608JB1H102KT-A	
C369	CU3059	Chip C.	C1608JB1E223KT-A	
C370	CS0237	Chip Tantal	TMCSA1A475MTR	
C371	CU3018	Chip C.	C216JB1C105MT-N	
C372	CU3035	Chip C.	C1608JB1H102KT-A	
C373	CU3035	Chip C.	C1608JB1H102KT-A	
C374	CU3035	Chip C.	C1608JB1H102KT-A	
C375	CU3035	Chip C.	C1608JB1H102KT-A	
C376	CU3035	Chip C.	C1608JB1H102KT-A	
C377	CU3035	Chip C.	C1608JB1H102KT-A	
C378	CS0216	Chip Tantal	TMCSA1A106MTR	
C379	CS0049	Ceramic C.	RCC05SL0100C-L46AE	
C380	CU3014	Chip C.	C1608CH1H820JT-A	
C381	CU3019	Chip C.	C1608CH1H470JT-A	
C382	CU3035	Chip C.	C1608JB1H102KT-A	
C383	CU3035	Chip C.	C1608JB1H102KT-A	
C384	CU3035	Chip C.	C1608JB1H102KT-A	
C385	CU3035	Chip C.	C1608JB1H102KT-A	
C386	CU3035	Chip C.	C1608JB1H102KT-A	
C387	CE0315	Electrolytic C.	EECEVCA470P	
C388	CU3035	Chip C.	C1608JB1H102KT-A	
C389	CU3035	Chip C.	C1608JB1H102KT-A	
C390	CU3035	Chip C.	C1608JB1H102KT-A	
C391	CU3035	Chip C.	C1608JB1H102KT-A	
C392	CU3035	Chip C.	C1608JB1H102KT-A	
C393	CU3035	Chip C.	C1608JB1H102KT-A	
C394	CU3035	Chip C.	C1608JB1H102KT-A	
C395	CE0315	Electrolytic C.	EECEVCA470P	
C396	CU3035	Chip C.	C1608JB1H102KT-A	
C397	CU3035	Chip C.	C1608JB1H102KT-A	
C398	CU3035	Chip C.	C1608JB1H102KT-A	
C399	CU3035	Chip C.	C1608JB1H102KT-A	
C400	CU3035	Chip C.	C1608JB1H102KT-A	
C401	CU3035	Chip C.	C1608JB1H102KT-A	
C402	CU3035	Chip C.	C1608JB1H102KT-A	

Note: Version1=TE1, Version2=TE2

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

UHF MAIN Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.	Ref. No.	Parts No.	Description	Parts Name	Ver.
IC202	XA0343	IC	MC372VW-EL		Q214	XT0125	Transistor	2SC4245(T7E85L)	
IC203	XA0097	IC	NLM459M T1		Q216	XU0160	Transistor	OTC835EXT146	
IC205	XA0119	IC	AN8010M4-ET1		Q217	XU0061	Transistor	UNE211-TX	
IC206	XA0082	IC	MC7808CT		Q218	XT0061	Transistor	2SB1132T100Q	
JK201	UE0257	Connector	A30-30190-15		Q219	XT0061	Transistor	2SB1132T100Q	
JK202	U00040A	Connector	R-82.0*0.2Mphg15A		Q220	XU0061	Transistor	UNE211-TX	
L201	OC0061	Chip Coil	NL322522T-033J		Q221	XU0180	Transistor	UNE213-TX	
L202	OC0059	Chip Coil	NL322522T-022J		Q222	XU0061	Transistor	UNE211-TX	
L203	OC0059	Chip Coil	NL322522T-022J		Q223	XU0054	Transistor	FM2C	
L204	OKA250	Coil	MR3.0 2.5T 0.6		Q224	XU0046	Transistor	XN1123-TX	
L205	OKA150	Coil	MR3.0 1.5T 0.6		Q225	XU0061	Transistor	XN1114M-TX	
L206	OKA55E	Coil	MR3.0 5.5T 0.8		Q226	XU0061	Transistor	UNE211-TX	
L207	OKA950	Coil	MR 3.0 9.5T 0.6		Q227	XT0112	Transistor	2SB1292F	
L208	OKA250	Coil	MR3.0 2.5T 0.6		Q228	XT0037	Transistor	2SC24126T146R	
L209	OKA15E	Coil	MR3.0 1.5T 0.8		Q229	XT0094	Transistor	2SA1576T106R	
L210	OKA15E	Coil	MR3.0 1.5T 0.8		Q230	XT0126	Transistor	2SB1302S-1D	
L211	OKA15E	Coil	MR3.0 1.5T 0.8		Q231	XT0095	Transistor	2SC4081T106R	
L212	OKA15E	Coil	MR3.0 1.5T 0.8		Q232	XU0160	Transistor	DTCA86EKT146	
L213	OKA15E	Coil	MR3.0 1.5T 0.8		Q233	XU0180	Transistor	UNE213-TX	
L214	OKA12E	Coil	MR3.0 1.25T 0.8		Q235	XT0095	Transistor	2SC4081T106R	
L215	OKA12E	Coil	MR3.0 1.25T 0.8						
L216	OC0398	Chip Coil	LON1A15NU04						
L217	OC0398	Chip Coil	LON1A15NU04						
L218	OKA0113	Coil	KE-07319						
L218	OKA0114	Coil	KE-07320						
L218	OKA0128	Coil	QA0128						
L218	OKA0129	Coil	QA0128						
L219	OKA0113	Coil	KE-07319						
L219	OKA0114	Coil	KE-07320						
L219	OKA0128	Coil	QA0128						
L220	OC0060	Chip Coil	NL322522T-027J						
L220	OC0059	Chip Coil	NL322522T-022J						
L220	OC0057	Chip Coil	NL322522T-015J						
L221	OC0062	Chip Coil	NL322522T-039J						
L222	OC0043	Chip Coil	NL322522T-2R2J						
L223	OC0048	Chip Coil	NL322522T-100J						
L227	OC0402	Chip Coil	LON1A39NU04						
Q201	XU0061	Transistor	UNE211-TX						
Q202	XT0095	Transistor	2SC4081T106R						
Q203	XT0095	Transistor	2SC4081T106R						
Q204	XT0095	Transistor	2SC4081T106R						
Q205	XU0174	Transistor	UNE211-TX						
Q206	XT0095	Transistor	2SC4081T106R						
Q207	XT0125	Transistor	2SC4245(T7E85L)						
Q208	XT0146	Transistor	2SC5224-1L						
Q209	XT0048	Transistor	2SC335T11-RE						
Q210	XT0084	Transistor	2SC2956-1T						
Q211	XE0013	FET	3SK184STX						
Q212	XE0022	FET	2SK1577						
Q213	XE0013	FET	3SK184STX						

Note: Version1=TE1, Version2=TE2

Ref. No.	Parts No.	Description	Parts Name	Ver.
R354	RK3058	Chip R.	ERJ3GSVJ473V	
R355	RK3050	Chip R.	ERJ3GSVJ103V	
R356	RK1107	Chip R.	ERJ3GSVY0R00V	
R357	RK3050	Chip R.	ERJ3GSVJ103V	
R359	RK3001	Chip R.	ERJ3GSVY0R00V	
R361	RK3001	Chip R.	ERJ3GSVY0R00V	
R363	RK3001	Chip R.	ERJ3GSVY0R00V	
R366	RK3001	Chip R.	ERJ3GSVY0R00V	
R367	RK3026	Chip R.	ERJ3GSVJ101V	
R368	RK3048	Chip R.	ERJ3GSVJ472V	
R369	RK3046	Chip R.	ERJ3GSVJ472V	
R370	RK1107	Chip R.	ERJ3GSVY0R00V	
TC201	CT70012	Trim. C	CTZ10AW	
TC202	CT70012	Trim. C	CTZ10AW	
TH201	X50031	Thermistor	NTCCM16084B-H682KC	
TH202	X50031	Thermistor	NTCCM16084B-H682KC	
VR201	RH0104	Trim. Pot	EXM1YSX50BE4	
VR202	RH0108	Trim. Pot	EXM1YSX50B15	
VR203	RH0104	Trim. Pot	EXM1YSX50BE4	
VR204	RH0106	Trim. Pot	EXM1YSX50B04	
VR205	RH0106	Trim. Pot	EXM1YSX50B04	
X201	XK0002	Discriminator	CDBM455C7	
X202	XK0058A	Crystal	UM-5 30.385MHz	
Y201	TZ0046	Spring	Earth Spring DR130	
Y202	TZ0049	Silicon Dumper	Silicon Dumper	

Ref. No.	Parts No.	Description	Parts Name	Ver.
C401	CU3035	Chip C.	C1608JB1H102KT-A	
C402	CU3035	Chip C.	C1608JB1H102KT-A	
C403	CU3035	Chip C.	C1608JB1H102KT-A	
C404	CU3035	Chip C.	C1608JB1H102KT-A	
C405	CU3035	Chip C.	C1608JB1H102KT-A	
C406	CU3035	Chip C.	C1608JB1H102KT-A	
C407	CU3035	Chip C.	C1608JB1H102KT-A	
C408	CU3035	Chip C.	C1608JB1H102KT-A	
C409	CU3035	Chip C.	C1608JB1H102KT-A	
C410	CE0374	Electrolytic C.	16CV 100B5	
C411	CU3035	Chip C.	C1608JB1H102KT-A	
C412	CU3042	Chip C.	C1608JB1H102KT-A	
C413	CU3047	Chip C.	C1608JB1H102KT-A	
C414	CU3047	Chip C.	C1608JB1H102KT-A	
C415	CU3047	Chip C.	C1608JB1H102KT-A	
C416	CU3047	Chip C.	C1608JB1H102KT-A	
C417	CU3014	Chip C.	C1608JB1H102KT-A	
C418	CU3014	Chip C.	C1608JB1H102KT-A	
C419	CU3047	Chip C.	C1608JB1H102KT-A	
C420	CS0367	Chip Tantal	TMCMAL0106MTR	
C421	CU3035	Chip C.	C1608JB1H102KT-A	
C422	CE0372	Chip Tantal	TMCMAL0106MTR	
C423	CU3051	Chip C.	C1608JB1E22KT-A	
C424	CU8032	Chip C.	C2012B1E22KT-A	
C425	CU8032	Chip C.	C2012B1E22KT-A	
C426	CE0372	Chip Tantal	TMCMAL0106MTR	
C427	CU3035	Chip C.	C1608JB1H102KT-A	
C428	CU3035	Chip C.	C1608JB1H102KT-A	
C429	CU3035	Chip C.	C1608JB1H102KT-A	
C430	CU3035	Chip C.	C1608JB1H102KT-A	
C431	CU3035	Chip C.	C1608JB1H102KT-A	
C432	CU3035	Chip C.	C1608JB1H102KT-A	
C433	CU3035	Chip C.	C1608JB1H102KT-A	
C434	CU3035	Chip C.	C1608JB1H102KT-A	
C435	CU3035	Chip C.	C1608JB1H102KT-A	
C436	CU3035	Chip C.	C1608JB1H102KT-A	
C437	CU3035	Chip C.	C1608JB1H102KT-A	
C438	CU3035	Chip C.	C1608JB1H102KT-A	
C439	CU3035	Chip C.	C1608JB1H102KT-A	
C440	CU3035	Chip C.	C1608JB1H102KT-A	
C441	CU3035	Chip C.	C1608JB1H102KT-A	
C442	CU3035	Chip C.	C1608JB1H102KT-A	
C443	CU3035	Chip C.	C1608JB1H102KT-A	
C444	CU3035	Chip C.	C1608JB1H102KT-A	
C445	CU3035	Chip C.	C1608JB1H102KT-A	
C446	CU3035	Chip C.	C1608JB1H102KT-A	
C447	CU3035	Chip C.	C1608JB1H102KT-A	
C448	CU3047	Chip C.	C1608JB1H102KT-A	
C449	CU3059	Chip C.	C1608JB1H102KT-A	
C450	CU3035	Chip C.	C1608JB1H102KT-A	
C451	CU3035	Chip C.	C1608JB1H102KT-A	
C452	CS0049	Chip Tantal	TMCSA/C105MTR	

Ref. No.	Parts No.	Description	Parts Name	Ver.
CH401	UE0035	Connector	HLC0272-010022	
CH402	UE0173	Connector	B12B-ZR	
CH403	UE0291	Connector	17R-JE	
CH404	UE0295	Connector	19R-JE	
CH405	UE0292	Connector	B07B-ZR	
DL001	XL0039	Chip LED	L1TEPS3A	
DL002	XL0039	Chip LED	L1TEPS3A	
DL003	XD0291	Diode	MA729-TX	
DL004	XD0291	Diode	MA729-TX	
DL005	XA0250	Diode	MA742-TX	
DL006	XD0254	Diode	1SS355TE17	
DL007	XD0255	Diode	MA8110H-TX	
DL008	XD0187	Diode	DTZ11B-TT11	
DL009	XD0230	Diode	DAN202U-TT06	
EL401	EL0031	LCD	HLG8792-012300	
IC401	XA0420	IC	M88287MBL-107FP	
IC402	XA0386	IC	AT24C16N-10S1-2.7	
IC403	XA0309	IC	RMSV25AA-T1	
IC404	XA0238	IC	AN76L05M-E1	
IC405	XA0315	IC	RHSV460AA	
JP401	MAAL02AA	Wire	Wire #02 Blue	
JP402	MPAL05AA	Wire	#30P02-050-02	
JP403	MPAL05AA	Wire	#30P02-050-02	
JP404	MRAL02AA	Wire	Wire #02 Red	
LP401	EP0003	Lightbulb	BC0031-30403A	
LP402	EP0003	Lightbulb	BC0031-30403A	
LP403	EP0003	Lightbulb	BC0031-30403A	
LP404	EP0003	Lightbulb	BC0031-30403A	
XT001	XT0095	Transistor	2SC4081T106R	
XT002	XT0095	Transistor	2SC4081T106R	
XT003	XT0095	Transistor	2SC4081T106R	
XT004	XT0095	Transistor	2SC4081T106R	
XT005	XT0095	Transistor	2SC4081T106R	
XT006	XT0095	Transistor	2SC4081T106R	
XT007	XT0095	Transistor	2SC4081T106R	
XT008	XT0095	Transistor	2SC4081T106R	
XT009	XT0095	Transistor	2SC4081T106R	
XT010	XT0095	Transistor	2SC4081T106R	
XT011	XT0095	Transistor	2SC4081T106R	
XT012	XT0095	Transistor	2SC4081T106R	
XT013	XT0095	Transistor	2SC4081T106R	
XT014	XT0095	Transistor	2SC4081T106R	
XT015	XT0095	Transistor	2SC4081T106R	
XT016	XT0095	Transistor	2SC4081T106R	
XT017	XT0095	Transistor	2SC4081T106R	
XT018	XT0095	Transistor	2SC4081T106R	
XT019	XT0095	Transistor	2SC4081T106R	
XT020	XT0095	Transistor	2SC4081T106R	
XT021	XT0095	Transistor	2SC4081T106R	
XT022	XT0095	Transistor	2SC4081T106R	
XT023	XT0095	Transistor	2SC4081T106R	
XT024	XT0095	Transistor	2SC4081T106R	
XT025	XT0095	Transistor	2SC4081T106R	
XT026	XT0095	Transistor	2SC4081T106R	
XT027	XT0095	Transistor	2SC4081T106R	
XT028	XT0095	Transistor	2SC4081T106R	
XT029	XT0095	Transistor	2SC4081T106R	
XT030	XT0095	Transistor	2SC4081T106R	
XT031	XT0095	Transistor	2SC4081T106R	
XT032	XT0095	Transistor	2SC4081T106R	
XT033	XT0095	Transistor	2SC4081T106R	
XT034	XT0095	Transistor	2SC4081T106R	
XT035	XT0095	Transistor	2SC4081T106R	
XT036	XT0095	Transistor	2SC4081T106R	
XT037	XT0095	Transistor	2SC4081T106R	
XT038	XT0095	Transistor	2SC4081T106R	
XT039	XT0095	Transistor	2SC4081T106R	
XT040	XT0095	Transistor	2SC4081T106R	
XT041	XT0095	Transistor	2SC4081T106R	
XT042	XT0095	Transistor	2SC4081T106R	
XT043	XT0095	Transistor	2SC4081T106R	
XT044	XT0095	Transistor	2SC4081T106R	
XT045	XT0095	Transistor	2SC4081T106R	
XT046	XT0095	Transistor	2SC4081T106R	
XT047	XT0095	Transistor	2SC4081T106R	
XT048	XT0095	Transistor	2SC4081T106R	
XT049	XT0095	Transistor	2SC4081T106R	
XT050	XT0095	Transistor	2SC4081T106R	
XT051	XT0095	Transistor	2SC4081T106R	
XT052	XT0095	Transistor	2SC4081T106R	
XT053	XT0095	Transistor	2SC4081T106R	
XT054	XT0095	Transistor	2SC4081T106R	
XT055	XT0095	Transistor	2SC4081T106R	
XT056	XT0095	Transistor	2SC4081T106R	
XT057	XT0095	Transistor	2SC4081T106R	
XT058	XT0095	Transistor	2SC4081T106R	
XT059	XT0095	Transistor	2SC4081T106R	
XT060	XT0095	Transistor	2SC4081T106R	
XT061	XT0095	Transistor	2SC4081T106R	
XT062	XT0095	Transistor	2SC4081T106R	
XT063	XT0095	Transistor	2SC4081T106R	
XT064	XT0095	Transistor	2SC4081T106R	
XT065	XT0095	Transistor	2SC4081T106R	
XT066	XT0095	Transistor	2SC4081T106R	
XT067	XT0095	Transistor	2SC4081T106R	
XT068	XT0095	Transistor	2SC4081T106R	
XT069	XT0095	Transistor	2SC4081T106R	
XT070	XT0095	Transistor	2SC4081T106R	
XT071	XT0095	Transistor	2SC4081T106R	
XT072	XT0095	Transistor	2SC4081T106R	
XT073	XT0095	Transistor	2SC4081T106R	
XT074	XT0095	Transistor	2SC4081T106R	
XT075	XT0095	Transistor	2SC4081T106R	
XT076	XT0095	Transistor	2SC4081T106R	
XT077	XT0095	Transistor	2SC4081T106R	
XT078	XT0095	Transistor	2SC4081T106R	
XT079	XT0095	Transistor	2SC4081T106R	
XT080	XT0095	Transistor	2SC4081T106R	
XT081	XT0095	Transistor	2SC4081T106R	
XT082	XT0095	Transistor	2SC4081T106R	
XT083	XT0095	Transistor	2SC4081T106R	
XT084	XT0095	Transistor	2SC4081T106R	
XT085	XT0095	Transistor	2SC4081T106R	
XT086	XT0095	Transistor	2SC4081T106R	
XT087	XT0095	Transistor	2SC4081T106R	
XT088	XT0095	Transistor	2SC4081T106R	
XT089	XT0095	Transistor	2SC4081T106R	
XT090	XT0095	Transistor	2SC4081T106R	
XT091	XT0095	Transistor	2SC4081T106R	
XT092	XT0095	Transistor	2SC4081T106R	
XT093	XT0095	Transistor	2SC4081T106R	
XT094	XT0095	Transistor	2SC4081T106R	
XT095	XT0095	Transistor	2SC4081T106R	
XT096	XT0095	Transistor	2SC4081T106R	
XT097	XT0095	Transistor	2SC4081T106R	
XT098	XT0095	Transistor	2SC4081T106R	
XT099	XT0095	Transistor	2SC4081T106R	
XT100	XT0095	Transistor	2SC4081T106R	

Ref. No.	Parts No.	Description	Parts Name	Ver.
R414	RK3060	Chip R.	ERJ3GSVJ683V	
R415	RK3067	Chip R.	ERJ3GSVJ333V	
R416	RK3057	Chip R.	ERJ3GSVJ333V	
R417	RK3060	Chip R.	ERJ3GSVJ683V	
R418	RK3001	Chip R.	ERJ3GSVY0R00V	
R419	RK3001	Chip R.	ERJ3GSVY0R00V	
R420	RK3001	Chip R.	ERJ3GSVY0R00V	
R421	RK3038	Chip R.	ERJ3GSVJ102V	
R422	RK3046	Chip R.	ERJ3GSVJ472V	
R423	RK3046	Chip R.	ERJ3GSVJ472V	
R424	RK3046	Chip R.	ERJ3GSVJ472V	
R425	RK3008	Chip R.	EXB4V102JN	
R426	RK3008	Chip R.	EXB4V102JN	
R427	RK3008	Chip R.	EXB4V102JN	
R428	RK3038	Chip R.	EXB4V102JN	
R429	RK3038	Chip R.	EXB4V102JN	
R430	RK3057	Chip R.	EXB4V102JN	
R431	RK3057	Chip R.	EXB4V102JN	
R432	RK3038	Chip R.	EXB4V102JN	
R433	RK3054	Chip R.	EXB4V102JN	
R434	RK3038	Chip R.	EXB4V102JN	
R435	RK3050	Chip R.	EXB4V102JN	
R436	RK3050	Chip R.	EXB4V102JN	
R437	RK3043	Chip R.	EXB4V102JN	
R438	RK3074	Chip R.	EXB4V102JN	
R439	RK3058	Chip R.	EXB4V102JN	
R440	RK3050	Chip R.	EXB4V102JN	
R441	RK3038	Chip R.	EXB4V102JN	
R442	RK3058	Chip R.	EXB4V102JN	
R443	RK3070	Chip R.	EXB4V102JN	
R444	RK3058	Chip R.	EXB4V102JN	
R445	RK3070	Chip R.		

Ref. No.	Parts No.	Description	Parts Name	Ver.
R469	RK3058	Chip R.	ERJ3GSYJ473V	
R470	RK3058	Chip R.	ERJ3GSYJ473V	
R471	RK3058	Chip R.	ERJ3GSYJ473V	
R472	RK3058	Chip R.	ERJ3GSYJ473V	
R473	RK3058	Chip R.	ERJ3GSYJ473V	
R474	RK3058	Chip R.	ERJ3GSYJ473V	
R475	RK3058	Chip R.	ERJ3GSYJ473V	
R476	RK3058	Chip R.	ERJ3GSYJ473V	
R477	RK3058	Chip R.	ERJ3GSYJ473V	
R478	RK3058	Chip R.	ERJ3GSYJ473V	
R479	RK3058	Chip R.	ERJ3GSYJ473V	
R481	RK3001	Chip R.	ERJ3GSYJ102V	
R482	RK3038	Chip R.	ERJ3GSYJ102V	
R483	RK3058	Chip R.	ERJ3GSYJ473V	
R484	RK3058	Chip R.	ERJ3GSYJ473V	
R485	RK3058	Chip R.	ERJ3GSYJ473V	
R486	RK3038	Chip R.	ERJ3GSYJ102V	
R487	RK0107	Chip R.	ERJ6GSY0R00V	
RE401	UR0015	Resistor Encoder	RH90N74E20 20F	
SW401	UJ0017	Switch	SKOD-AA	
SW402	UJ0023	Switch	SKOMAH	
SW403	UJ0023	Switch	SKOMAH	
SW404	UJ0023	Switch	SKOMAH	
SW405	UJ0023	Switch	SKOMAH	
SW406	UJ0023	Switch	SKOMAH	
SW407	UJ0011	Switch	ESB-64801	
SW408	UJ0023	Switch	SKOMAH	
VR401	RV0032	Trim. Pot	RH96N74 15F A10K	
VR402	RV0032	Trim. Pot	RH96N74 15F A10K	
X401	XO0084	Cystal	38C 4.19MHz	
ST0058Z			LCD Holder	
DH0011			Diffusion Sheet DR605T	
DH0012			Reflection Sheet DR605T	
FG0217			LCD Rubber Connector	
DG0025Z			LCD Light DR605T	
TT1001			Tape 0.7mm	

Ref. No.	Parts No.	Description	Parts Name	Ver.
C501	CU3035	Chip C.	C1608JB1H102KT-A	
C502	CU3035	Chip C.	C1608JB1H102KT-A	
C503	CU3035	Chip C.	C1608JB1H102KT-A	
C504	CU3035	Chip C.	C1608JB1H102KT-A	
C505	CU3035	Chip C.	C1608JB1H102KT-A	
C506	CU3063	Chip Tantal	TMCSA1V104MTR	
C507	CU3035	Chip C.	C1608JB1H102KT-A	
C508	CU3002	Chip C.	C1608CH1H010CT-A	
C509	CU3027	Chip C.	C1608CH1H221KT-A	
C510	CU3011	Chip C.	C1608CH1H100CT-A	
C511	CU3009	Chip C.	C1608CH1H080CT-A	
C512	CU3064	Chip C.	C1608CH1H155CT-A	
C513	CU3035	Chip C.	C1608JB1H102KT-A	
C514	CU3015	Chip C.	C1608CH1H220JT-A	
C515	CU3035	Chip C.	C1608JB1H102KT-A	
C516	CU3035	Chip C.	C1608JB1H102KT-A	
C517	CU3064	Chip C.	C1608CH1H155CT-A	
C518	CU3035	Chip C.	C1608JB1H102KT-A	
C519	CU3047	Chip C.	C1608JB1E223KT-A	
C520	CU3051	Chip C.	TMCSA1C225MTR	
C521	CU3020	Chip Tantal	TMCSA1C225MTR	
C522	CU3020	Chip Tantal	TMCSA1C225MTR	
C523	CU3035	Chip C.	C1608JB1H102KT-A	
C524	CU3035	Chip C.	C1608JB1H102KT-A	
C525	CU3035	Chip C.	C1608JB1H102KT-A	
C526	CU3035	Chip C.	C1608JB1H102KT-A	
C527	CU3023	Chip C.	C1608CH1H101JT-A	
C528	CU3023	Chip C.	C1608CH1H101JT-A	
C529	CU3023	Chip C.	C1608CH1H101JT-A	
C530	CU3047	Chip C.	C1608JB1H103KT-A	
C531	CU3008	Chip C.	C1608CH1H070CT-A	
C532	CU3035	Chip C.	C1608JB1H102KT-A	
C533	CU3011	Chip C.	C1608CH1H103KT-A	
C534	CS0216	Chip C.	TMCSA1A108MTR	
C535	CU3035	Chip C.	C1608JB1H102KT-A	
C537	CU3035	Chip C.	C1608JB1H102KT-A	
CN601	UE0295	Connector	B7P-BC-2	
CN502	UE0188	Connector	B9P-BC-2	
CN602	UE0304	Connector	BB(9-7)P-BC-2	
D501	XD0272	Diode	1SS356 TW11	
D502	XD0300	Diode	1SV262 TP#2	
D503	XD0300	Diode	1SV262 TP#2	
D504	XD0131	Diode	1SV214 TP#4	
IC501	XA0352	IC	M64076GP	
L501	OC0442	Chip Coil	MLF1608A1R0KT	
L502	OC0106	Chip Coil	LER0157R2M	
L503	OC0103	Chip Coil	LER01571R2M	
L504	OC0106	Chip Coil	LER0157R2M	
L505	QA0127	Chip Coil	VCO coil SC3M	
L506	OC0430	Chip Coil	MLF1608DR10KT	
L507	OC0103	Chip Coil	LER01571R2M	

Ref. No.	Parts No.	Description	Parts Name	Ver.
O501	XU0061	FET	2SK508K5C-12B	
O502	XT0124	Transistor	2SC4215-Y(TTEB5L)	
O503	XU0061	Transistor	UMS211-TX	
O505	XT0124	Transistor	2SC4215-Y(TTEB5L)	
R501	RK3050	Chip R.	ERJ3GSYJ103V	
R502	RK3058	Chip R.	ERJ3GSYJ683V	
R503	RK3022	Chip R.	ERJ3GSYJ470V	
R504	RK3058	Chip R.	ERJ3GSYJ473V	
R505	RK3042	Chip R.	ERJ3GSYJ223V	
R506	RK3042	Chip R.	ERJ3GSYJ222V	
R507	RK3054	Chip R.	ERJ3GSYJ223V	
R508	RK3024	Chip R.	ERJ3GSYJ153V	
R509	RK3018	Chip R.	ERJ3GSYJ220V	
R510	RK3042	Chip R.	ERJ3GSYJ222V	
R511	RK3046	Chip R.	ERJ3GSYJ472V	
R512	RK3026	Chip R.	ERJ3GSYJ101V	
R513	RK3034	Chip R.	ERJ3GSYJ471V	
R514	RK3001	Chip R.	ERJ3GSY0R00V	
R515	RK3050	Chip R.	ERJ3GSYJ103V	
R516	RK3054	Chip R.	ERJ3GSYJ223V	
R517	RK3030	Chip R.	ERJ3GSYJ221V	
R518	RK3047	Chip R.	ERJ3GSYJ562V	
R519	RK3054	Chip R.	ERJ3GSYJ223V	
R520	RK3054	Chip R.	ERJ3GSYJ223V	
R521	RK3034	Chip R.	ERJ3GSYJ471V	
R522	RK3043	Chip R.	ERJ3GSYJ101V	
R523	RK3026	Chip R.	ERJ3GSYJ101V	
R524	RK3038	Chip R.	ERJ3GSYJ102V	
R525	RK3038	Chip R.	ERJ3GSYJ102V	
TS0116Z		VCO Case	VCO Case DR605	

Ref. No.	Parts No.	Description	Parts Name	Ver.
C601	CU3035	Chip C.	C1608JB1H102KT-A	
C602	CU3003	Chip C.	C1608CH1H020CT-A	
C603	CU3064	Chip C.	C1608CH1H155CT-A	
C604	CS0216	Chip Tantal	TMCSA1A108MTR	
C605	CU3035	Chip C.	C1608JB1H102KT-A	
C606	CU3006	Chip Tantal	TMCSA1V104MTR	
C607	CU3035	Chip C.	C1608JB1H102KT-A	
C608	CU3019	Chip C.	C1608CH1H70JT-A	
C609	CU3008	Chip C.	C1608CH1H070CT-A	
C610	CU3006	Chip C.	C1608CH1H060CT-A	
C611	CU3002	Chip C.	C1608CH1H010CT-A	
C612	CU3035	Chip C.	C1608JB1H102KT-A	
C613	CU3011	Chip C.	C1608CH1H100CT-A	
C614	CU3047	Chip C.	C1608JB1H103KT-A	
C615	CU3035	Chip C.	C1608JB1H102KT-A	
C616	CU3051	Chip C.	C1608JB1E223KT-A	
C617	CS0220	Chip Tantal	TMCSA1C225MTR	
C618	CS0220	Chip Tantal	TMCSA1C225MTR	
C619	CU3035	Chip C.	C1608JB1H102KT-A	
C620	CU3035	Chip C.	C1608JB1H102KT-A	
C621	CU3035	Chip C.	C1608JB1H102KT-A	
C622	CU3023	Chip C.	C1608CH1H101JT-A	
C623	CU3023	Chip C.	C1608CH1H101JT-A	
C624	CU3023	Chip C.	C1608CH1H101JT-A	
C625	CU3047	Chip C.	C1608JB1H103KT-A	
C626	CU3006	Chip C.	C1608CH1H050CT-A	
C627	CU3035	Chip C.	C1608JB1H102KT-A	
C628	CU3003	Chip C.	C1608CH1H020CT-A	
C629	CU3031	Chip C.	C1608JB1H171KT-A	
C633	CU3035	Chip C.	C1608JB1H102KT-A	
CN601	UE0295	Connector	B7P-BC-2	
CN602	UE0188	Connector	B9P-BC-2	
D601	XD0131	Diode	1SV214 TP#4	
D602	XD0131	Diode	1SV214 TP#4	
D603	XD0131	Diode	1SV214 TP#4	
IC501	XA0352	IC	M64076GP	
L601	OC0101	Chip Coil	LER0157R2M	
L602	OC0101	Chip Coil	LER0157R2M	
L603	OC0101	Chip Coil	LER0157R2M	
L604	OC0096	Chip Coil	LER0157R33M	
L605	OC0430	Chip Coil	MLF1608DR10KT	
L606	QA0093	Chip Coil	K512-275-1	

UHF VCO Unit / TCXO Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
Q601	XE0010	FET	FET 2SK5984S2-128	
Q602	XT0125	Transistor	2SC4245-Y(TTE85L)	
Q604	XT0124	Transistor	2SC4215-Y(TTE85L)	
R601	RK3062	Chip R.	ERJ3G5VJ104V	
R602	RK3060	Chip R.	ERJ3G5VJ483V	
R603	RK3022	Chip R.	ERJ3G5VJ470V	
R604	RK3030	Chip R.	ERJ3G5VJ221V	
R605	RK3021	Chip R.	ERJ3G5VJ290V	
R606	RK3022	Chip R.	ERJ3G5VJ470V	
R607	RK3045	Chip R.	ERJ3G5VJ392V	
R608	RK3050	Chip R.	ERJ3G5VJ103V	
R609	RK3054	Chip R.	ERJ3G5VJ221V	
R610	RK3030	Chip R.	ERJ3G5VJ221V	
R611	RK3054	Chip R.	ERJ3G5VJ223V	
R612	RK3053	Chip R.	ERJ3G5VJ183V	
R613	RK3001	Chip R.	ERJ3G5VJ0R00V	
R614	RK3034	Chip R.	ERJ3G5VJ471V	
R615	RK3038	Chip R.	ERJ3G5VJ102V	
R616	RK3038	Chip R.	ERJ3G5VJ102V	
R617	RK3054	Chip R.	ERJ3G5VJ223V	
R618	RK3043	Chip R.	ERJ3G5VJ272V	
R619	RK3026	Chip R.	ERJ3G5VJ101V	
R620	RK3056	Chip R.	ERJ3G5VJ473V	
	TS0116Z	VCO Case	VCO Case DR605	

Ref. No.	Parts No.	Description	Parts Name	Ver.
		TCXO Unit		
TP901	UT0019	Connector	FOR PCB CK-1-2	1,2
TP902	UT0019	Connector	FOR PCB CK-1-2	1,2
	JP901	Wire	#30G02-035-02	1,2
	C901	Chip C.	C1608J11H103KT-A	1,2
	R901	Chip R.	ERJ3G5VJ331V	1,2
	X00304	Diode	UD23.0B TTT1	1,2
	X00090	TCXO	NT0-796BL 21.25MHz	1,2

Ref. No.	Parts No.	Description	Parts Name	Ver.
		Mechanical Parts		
A00050		Screw	S2.6x5FeBC	
A00008		Screw	B2.6x8FeNi	
AV0002		Screw	B2.6x5FeNi	
AV0004		Screw	B2.6x8FeNi	
AW0001		Screw	W3x8FeNi	
AZ0006			Insulator Washer 3.2x4x0.3	
FF0035			SP Nut	
FG0155			SP Cushion	
FM0076			IC Spring	
FM0131			Earth Spring DR-M50	
FP0004			SP Base	
KS0054Z			Bottom Case	
KZ0037Z			Front Panel	
KZ0039			Sub Dial Knob	
KZ0046			Top Case	
NB0063Z			Power Button	
NK0052Z			VOL Knob	
SS0074Z			Chassis H	
TS0094			PM shield	
TS0123			Shield Case	
TS0130			Earth Spring	
TZ0039			Earth Sheet 605	
TZ0061			P1 Insulator Sheet	
UX1200			Insulator Sheet 21x33	
YX0007			Wire DR605TE	
YX0011			SP Net Tape	
YZ0001			TCXO Tape	
YZ0041			Silicon Grease G746	
YZ0062			Copper Tape	
			Filament Tape 9111x8mmT1	

Ref. No.	Parts No.	Description	Parts Name	Ver.
		PCB Unit		
UP0307			FRONT CPU UNIT	
UP0308C			MAIN UNIT	
UP0316			TCXO UNIT	
		SP Unit		
ES0007		Speaker	VS-57-0814-1.5W	
UX1047		Wire	Wire DR130	

Mechanical Parts / PCB / SP Unit / Packing

Ref. No.	Parts No.	Description	Parts Name	Ver.
		Packing		
EHM-45Z			Microphone	T,1,2
EHM-46			Microphone	E
#G0508			Power Cable	
#G0509			Screw Set	
#G0588A			Mic Hanger	
DS0352A			Spec. Card	E,1,2
FM0078Z			Bracket	
HK0405			Item Carton DR605	
HP0035			Protection Bag (Radio)	
HU0098			Fixture	
HU0099			Fixture DR605	
PK0062			Schematic Diagram	
PS0239			Instruction Card	
PT0004A			Lot Number Seal	
PR0237			FCC PART15 Seal	T
PH0009			Certification (Export)	T

Note: Version1=TE1, Version2=TE2

Note: Version1=TE1, Version2=TE2

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 Load

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

7. Speaker

Impedance: 8Ω

8. SSG

Output frequency: Up to 1GHz
Output level: -20dB/0.1μV to 120dB/1V
Modulation: AM/FM

9. Transceiver Tester

Up to 500MHz

a. Frequency Counter

b. Power Meter

Impedance: 50Ω
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%

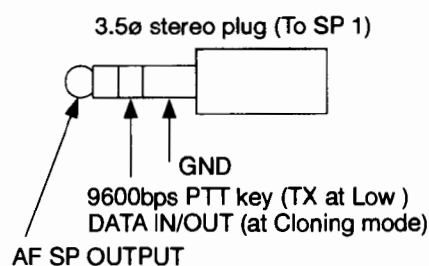
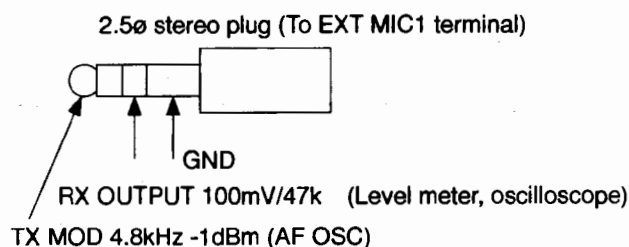
e. Audio Generator

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

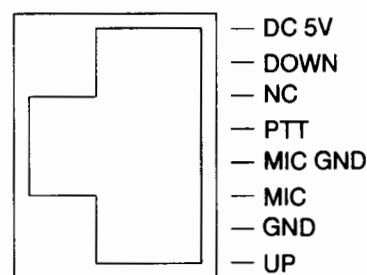
f. Linear Detector

10. 9600bps Hi-Speed Packet Testing

While holding the FUNC key down, press the VHF knob. "9600" is shown on the sub-band frequency display.



Mic terminal



Test Equipment

1. All SSG output is indicated by EMF.
2. AG output level connecting with the load is measured.
3. Standard Modulation: 1kHz \pm 3.5kHz/DEV
4. Audio Output level: 50mW~100mW at 8 Ω
5. Test Equipment level filter: HPF (30Hz~50Hz), LPF (10kHz~15kHz)
6. Coaxial cable: 5D2W 1m

Note:

1. Power supply voltage is 13.8V.
Power switch is off.
2. Turn the volume knobs counterclockwise.
3. SQ volume (press VHF or UHF after pressing FUNC key)
4. Press and hold the "F" key, then turn the power switch on.
The display lights full.

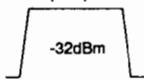
S0=squelch is open. S9=tight is closed.

2) UHF PLL Adjustment

Item	Condition	Measurement			Adjustment			Specifications
		Equipment	Unit	Terminal	Unit	Parts	Method	
Reference Frequency	f=435.00 TX	Freq. Counter Power Meter	Back	UHF ANT	VHF Main	TC1	435.0000MHz	\pm 100Hz
PLL VCO	f=440.00 RX(T, E)	Digital Multimeter	UHF Main	TP3	UHF VCO	L606	3.40V (Adjust)	3.4V \pm 0.2V
	f=410.00 RX(TE1)						2.50V (Adjust)	2.5V \pm 0.2V
	f=460.00 RX(TE2)						3.20V (Adjust)	3.2V \pm 0.2V
	f=440.00 TX(T, E)						5.50V (Check)	5.0V~6.0V
	f=410.00 TX(TE1)						4.50V (Check)	3.8V~5.2V
	f=460.00 TX(TE2)						5.30V (Check)	4.7V~6.0V

3) UHF RX Adjustment

(*): f=445.00 (T), f=435.00 (E), f=410.00 (TE1), f=460.00 (TE2)

Item	Condition	Measurement			Adjustment			Specifications
		Equipment	Unit	Terminal	Unit	Parts	Method	
Herical coil	f=435.00 (445.00)	T.G. -30dBm	Back	UHF ANT	UHF Main	TC201 TC202 L218 L219	Max Gain	430M (E) 440M 438M (T) 450M 400M (TE1) 420M 450M (TE2) 470M  -32dBm
		Spectrum Analyzer	UHF	TP2				
Sensitivity	f=438.00 (T) f=440.00 (T) f=449.99 (T) f=430.00 (E) f=435.00 (E) f=439.99 (E) f=400.00 (TE1) f=410.00 (TE1) f=420.00 (TE1) f=450.00 (TE2) f=460.00 (TE2) f=470.00 (TE2) SSG OUT: -9.0dBμ	SSG Distortion Meter Oscilloscope Level Meter	Back	UHF SP1			Check	SINAD is 12dB or more.
S Meter	f=445.00 (*) SSG OUT: 18.0dBμ	SSG LCD UHF S Meter	Front panel		UHF Main	VR202	Starts lighting "Full."	
	SSG OFF						Check	Does not light.
SQL level	f=445.00 (*) SSG OFF SQL LEVEL: 1	Digital Multimeter	Main	TP5	UHF Main	VR201	2.05V (Adjust)	2.05V±0.1V The squelch is closed.
Distortion	f=445.00 (*) SSG OUT: 60.0dBμ	SSG Distortion Meter Level Meter	Back	SP1			Check	4% or below
RX S/N	f=445.00 (*) SSG OUT: 60.0dBμ	SSG Level Meter Oscilloscope	Back	SP1			Check	40dB or more
9600bps Packet Out	f=445.00 (*) SSG OUT: 20.0dBμ f=4.8kHz 2.5kHz/DEV	SSG Level Meter Oscilloscope	Back	MIC1				100mV ±50mVrms /47kΩ

4) UHF TX Adjustment

(*): f=445.00 (T), f=435.00 (E), f=410.00 (TE1), f=460.00 (TE2)

Item	Condition	Measurement			Adjustment			Specifications	
		Equipment	Unit	Terminal	Unit	Parts	Method		
High Power	f=445.00 (T) f=435.00 (E) f=410.00 (TE1) f=460.00 (TE2)	Power Meter Current Meter	Back	UHF ANT	UHF Main	VR203	Max	36W or more	
						VR203	35W	±1.0W 11A or below	
Low Power	f=445.00 (*)						Check	5±2W	
DEV	f=445.00 (*) AG: 1kHz -30dBm	Linear Det. Oscilloscope Power Meter AG					VR204	4.5kHz /DEV	4.5kHz ±0.2kHz /DEV
MIC Gain	f=445.00 (*) AG: 1kHz -46dBm						VR205	Adjust	4.0 kHz ±0.3kHz /DEV
CTCSS Tone Level	f=445.00 (*) AG=0 TONE SW ENC 88.5Hz	Linear Det. Oscilloscope Power Meter						Check	0.5~1.3kHz /DEV
Tone Burst Level	f=445.00 (*) AG=0 PTT+DOWN key							Check	3.0kHz ±0.5kHz /DEV
9600bps Packet IN	f=445.00 (*) AG: 4.8kHz -1dBm FUNC+VHF key	Linear Det. Oscilloscope AG						Check	2.0kHz ±0.5kHz /DEV

5) VHF PLL Adjustment

Item	Condition	Measurement			Adjustment			Specifications
		Equipment	Unit	Terminal	Unit	Parts	Method	
Reference Frequency	f=145.00 TX	Freq. Counter Power Meter	Back	VHF ANT			Check	±100Hz
PLL VCO	f=145.00 RX(T, E) f=173.99 RX(TE1, 2)	Digital Multimeter	VHF Main	TP1	VHF VCO	L505	2.80V 7.35V	±0.3V ±0.05V
	f=145.00 RX(T, E) f=173.99 RX(TE1, 2)						Check	2.8V±1.0V 7.35V±0.4V

6) VHF RX Adjustment

Item	Condition	Measurement			Adjustment			Specifications
		Equipment	Unit	Terminal	Unit	Parts	Method	
Gain	f=145.00 (T,E) f=165.00 (TE1) f=165.00 (TE2)	SSG Distortion Meter Oscilloscope Level Meter	Back	VHF SP1	VHF Main	L14 L15 L16 L17	Adjust the SSG output level around 0dBμ, and turn L14~L17 to make the wave form max.	SINAD is 12dB or more.
Sensitivity	f=144.00 (T) f=147.99 (T) f=144.00 (E) f=145.99 (E) f=150.00 (TE1,2) f=162.00 (TE1,2) f=173.99 (TE1,2) SSG OUT: -9.0dBμ	SSG Distortion Meter Oscilloscope Level Meter	Back	VHF SP1	VHF Main	L14~ L17	Adjust the SINAD sensitivity and wave form to the best.	SINAD is 12dB or more.
	f=136.00 SSG OUT: 0dBμ						Check	SINAD is 12dB or more.
S Meter	f=145.00 (T,E) f=165.00 (TE1,2) SSG OUT: 18dBμ	SSG LCD VHF S Meter	Front Panel		VHF Main	VR1	Starts lighting "Full."	
	SSG OFF						Check	Does not light.
SQL level	f=145.00 (T,E) f=165.00 (TE1,2) SSG OFF SQL Level 1	Digital Multimeter	VHF Main	TP4	VHF Main	VR2	2.05V (Adjust)	2.05V±0.1V The squelch is closed.

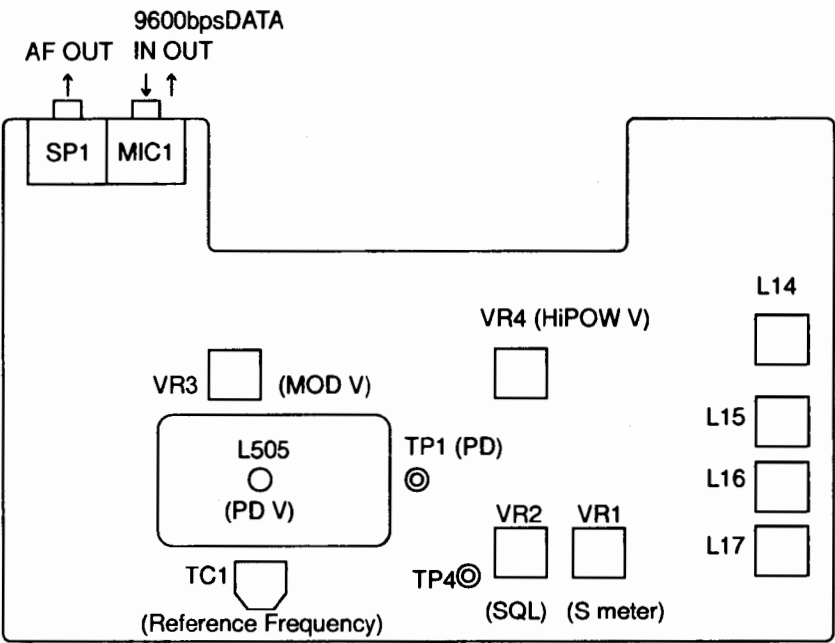
7) VHF TX Adjustment

(frequency) = TE1, TE2

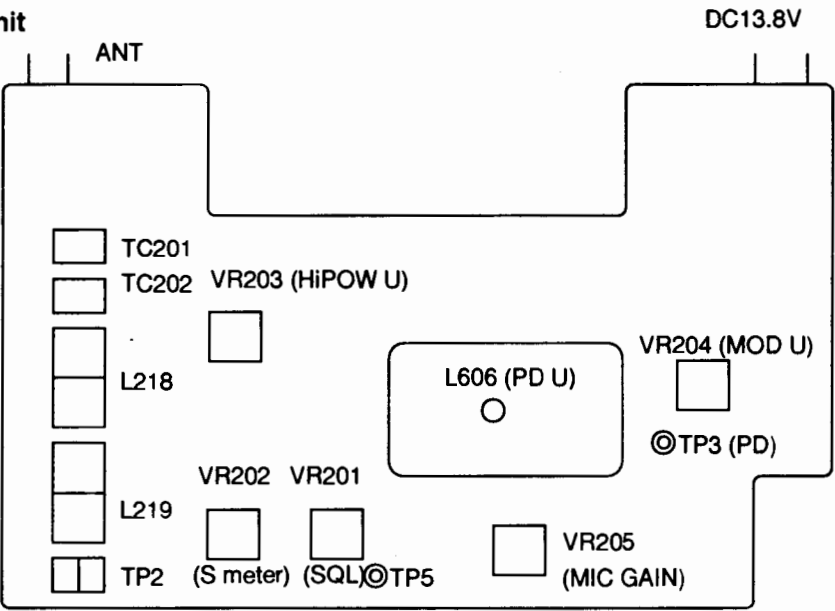
Item	Condition	Measurement			Adjustment			Specifications
		Equipment	Unit	Terminal	Unit	Parts	Method	
High Power	f=145.00 (165.00)	Power Meter Current Meter	Back	VHF ANT	VHF Main	VR4	Max	55W or more (T,E) 45W or more (TE1,TE2)
	f=144.00 (150.00) f=145.99 (173.99)					VR4	52W (T,E) 35W (TE1,TE2)	±1.0W 11A or below
	f=173.99 (136.00)						Check	48~55W 7A (T,E) 32~40W 11A (TE1,TE2)
								Power is output.
Low Power	f=145.00 (160.00)						Check	3~7W
DEV	f=145.00 (160.00) AG: 1kHz -30dBm	Linear Det. Oscilloscope Power Meter	Back	VHF ANT	VHF Main	VR3	4.5kHz /DEV	4.5kHz ±0.2kHz /DEV
MIC Gain	f=145.00 (160.00) AG: 1kHz -46dBm						Check	4.0 kHz ±0.3kHz /DEV
CTCSS Tone Level	f=145.00 (160.00) AG=0 TONE SW ENC 88.5Hz							0.5~1.3kHz /DEV
Tone Burst Level	f=145.00 (160.00) PTT+DOWN key							3.0kHz ±0.5kHz /DEV
9600bps Packet IN	f=445.00 (*) AG: 4.8kHz -1dBm FUNC+VHF key						Check	2.0kHz ±0.5kHz /DEV
X-BAND Repeater	f=145.00 f=445.00 (T) f=145.00 f=430.00 (E) f=160.00 f=410.00 (TE1) f=160.00 f=460.00 (TE2) XBR ON (VHF+PWR ON)						Check	3.5kHz ±0.5kHz /DEV

8) Adjustment Points

VHF Main Unit

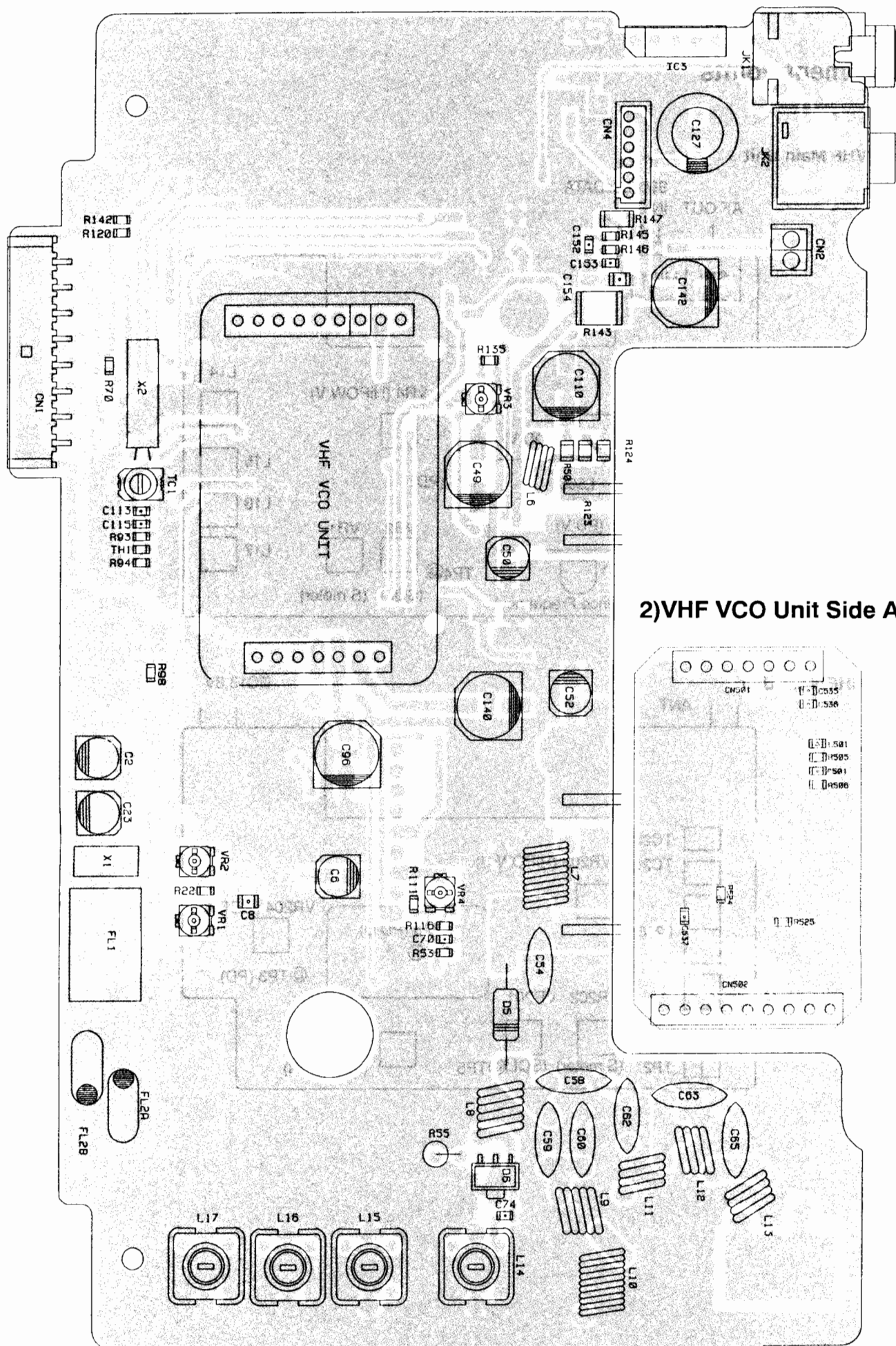


UHF Main Unit

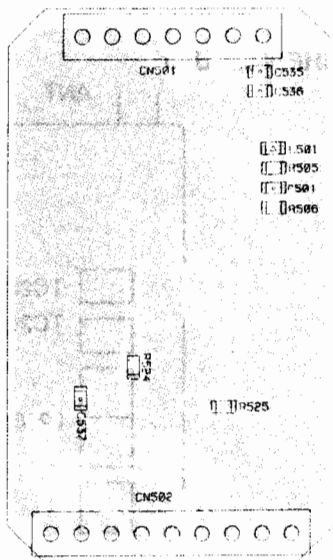


PC BOARD VIEW

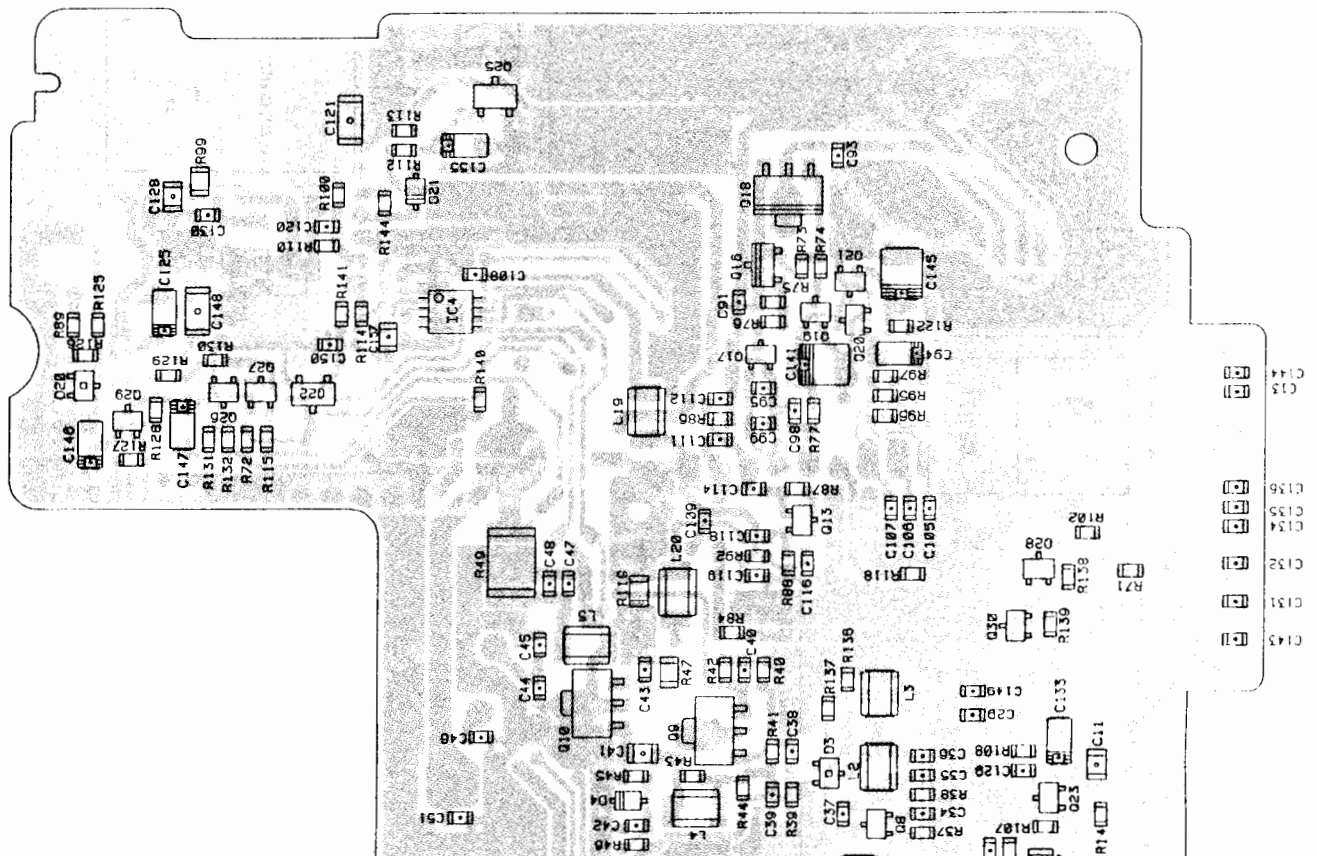
1) VHF Main Unit Side A



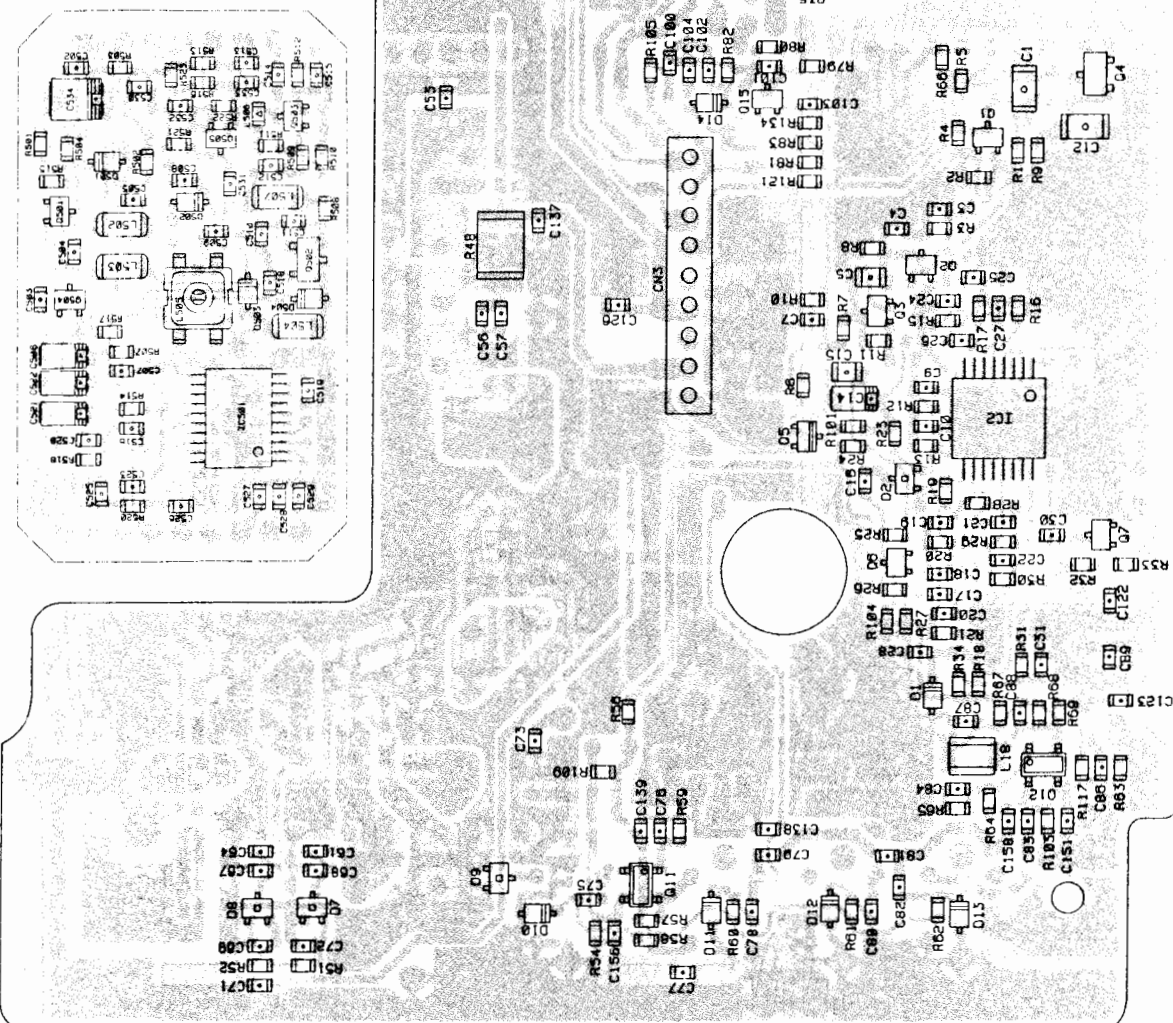
2)VHF VCO Unit Side A



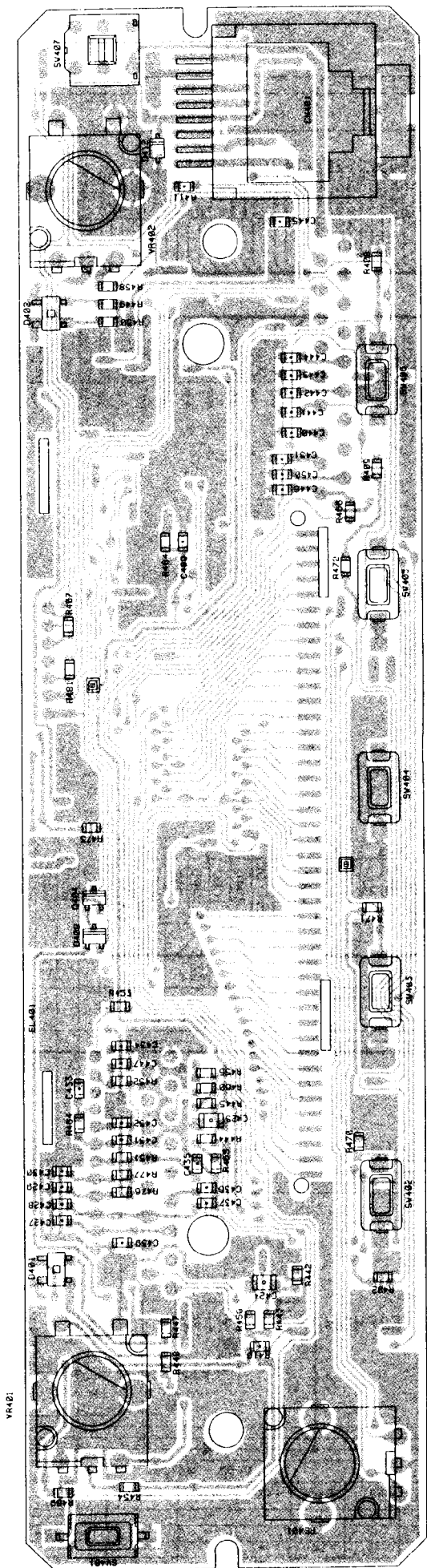
5) VHF Main Unit Side B



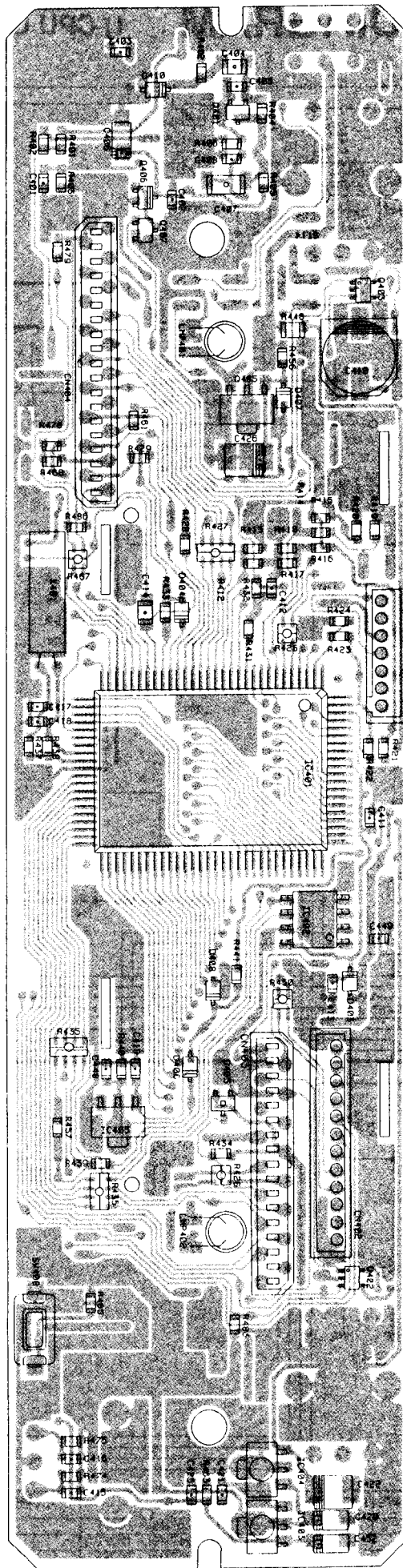
6) VHF VCO Unit Side B



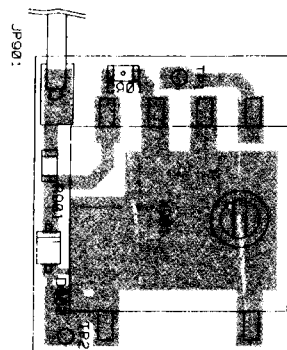
9) Front Unit Side A

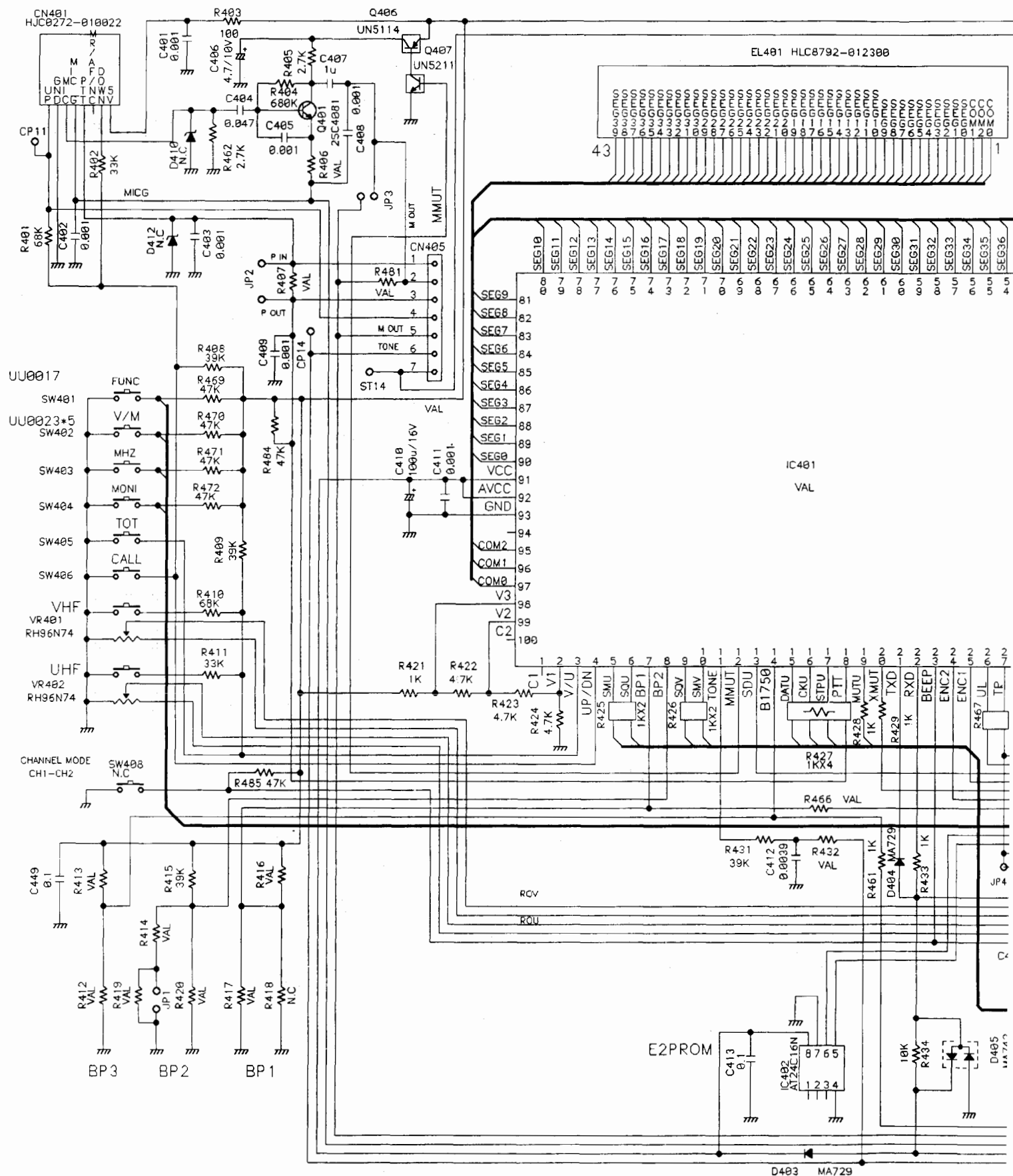


10) Front Unit Side B

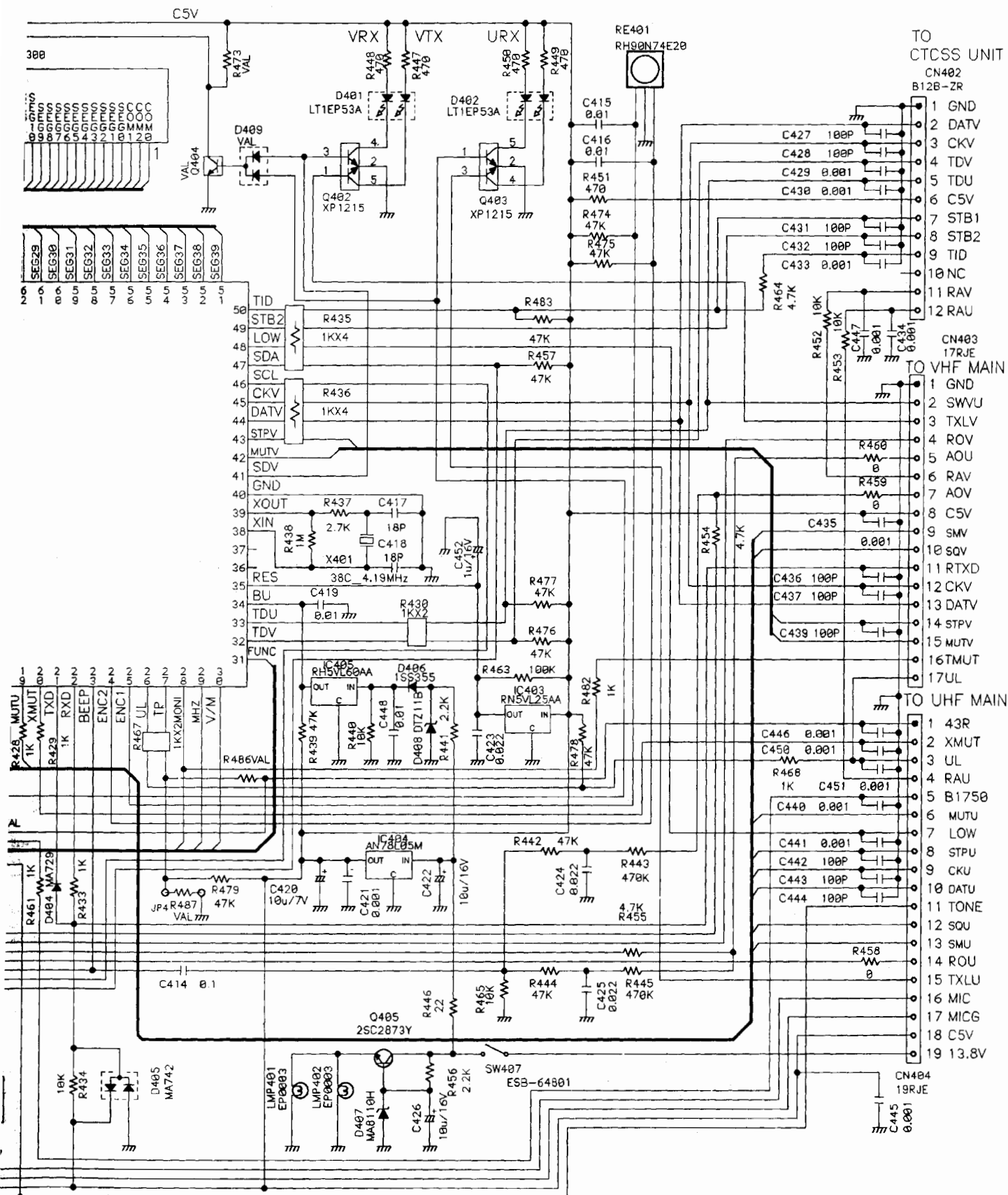


11) TCXO Unit



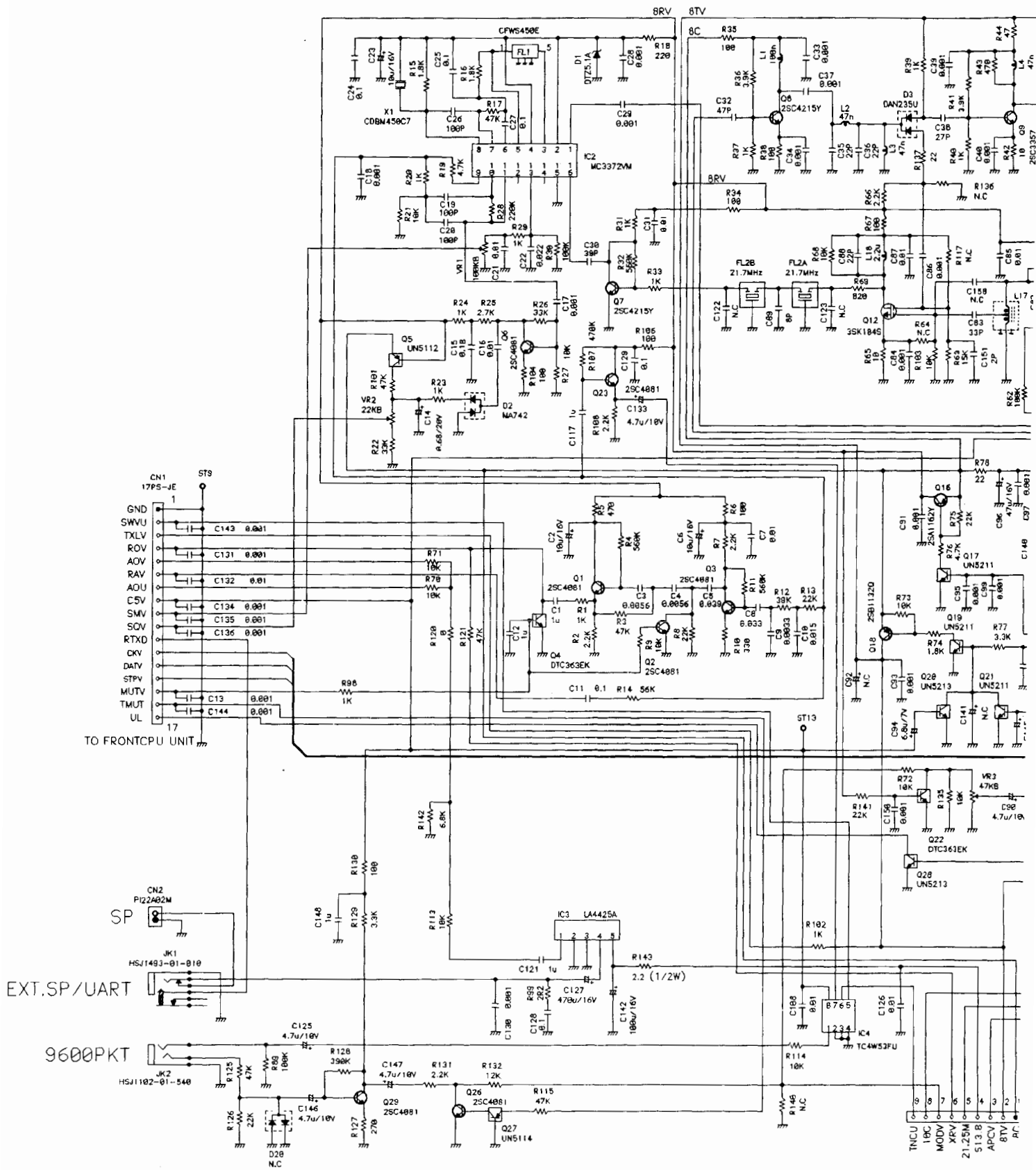


	R412	R413	R416	R417	R419	R420	R466	IC401	CN405	R414	R407	R481	R486	R473	Q404	D409	JP1	JP2
D,H	—	—	—	—	—	0	1K	XA0419 M38267M8L-106FP	—	—	0	0	—	—	—	—	—	—
T	—	47K	39K	—	—	—	—	XA0420 M38267M8L-107FP	—	68K	0	0	—	—	—	—	MAC184AA	—
E	4.7K	47K	39K	68K	0	0	—	XA0420 M38267M8L-107FP	—	68K	0	0	1K	—	—	—	—	—
TE1,TE2	—	47K	39K	—	—	—	—	XA0420 M38267M8L-107FP	67B-ZR	—	—	—	—	47K	UN5211	DAN202U	—	MPAL01



D409	JP1	JP2	JP3	JP4	R406	R432
---	---	---	---	---	100	1K
---	MACL04AA	---	---	R487(B)	100	1K
---	---	---	---	---	100	1K
DAN202U	---	MPAL05AA	MPAL05AA	MPAL04AA	220	22K

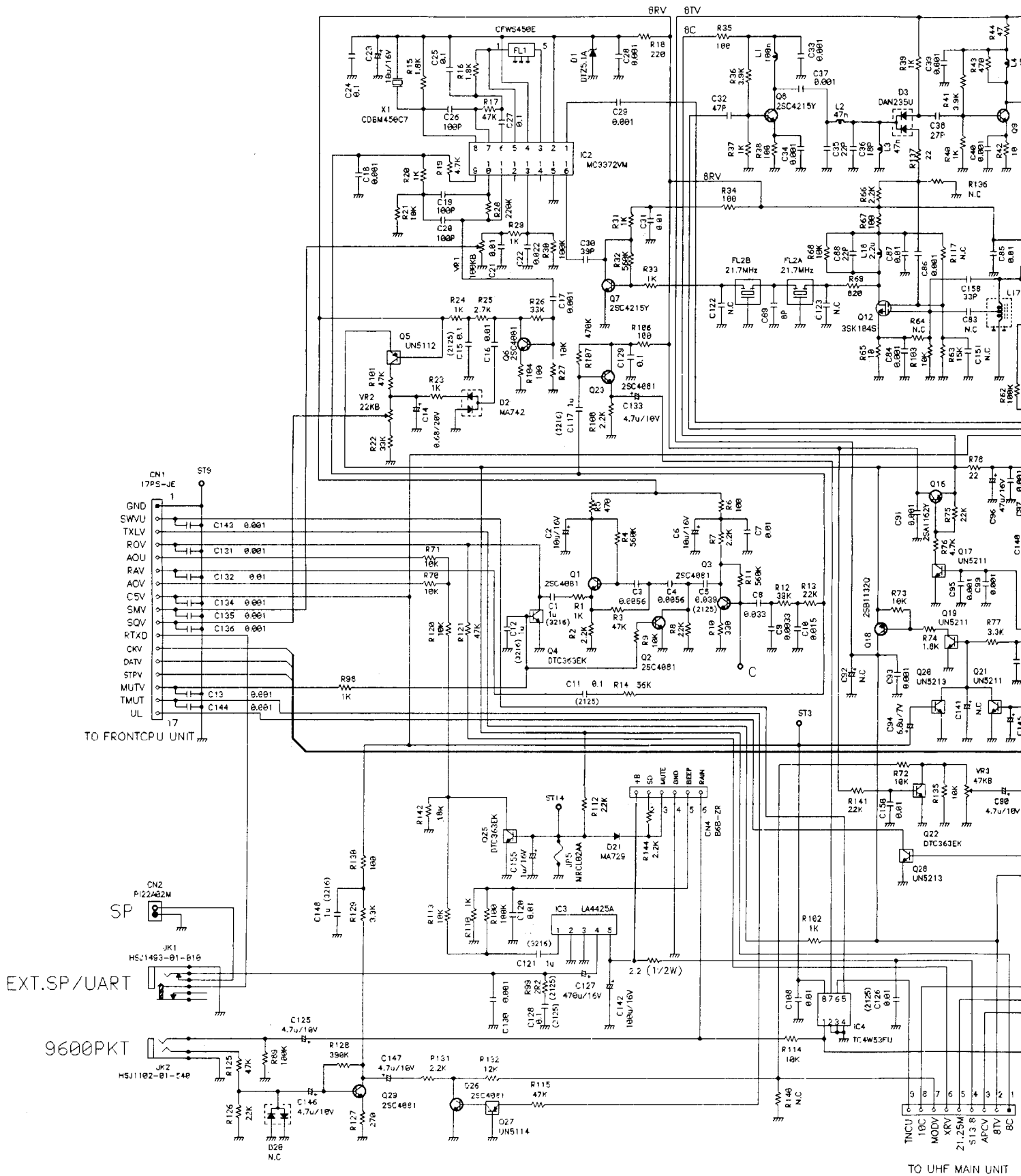
2) VHF Main Unit T/E

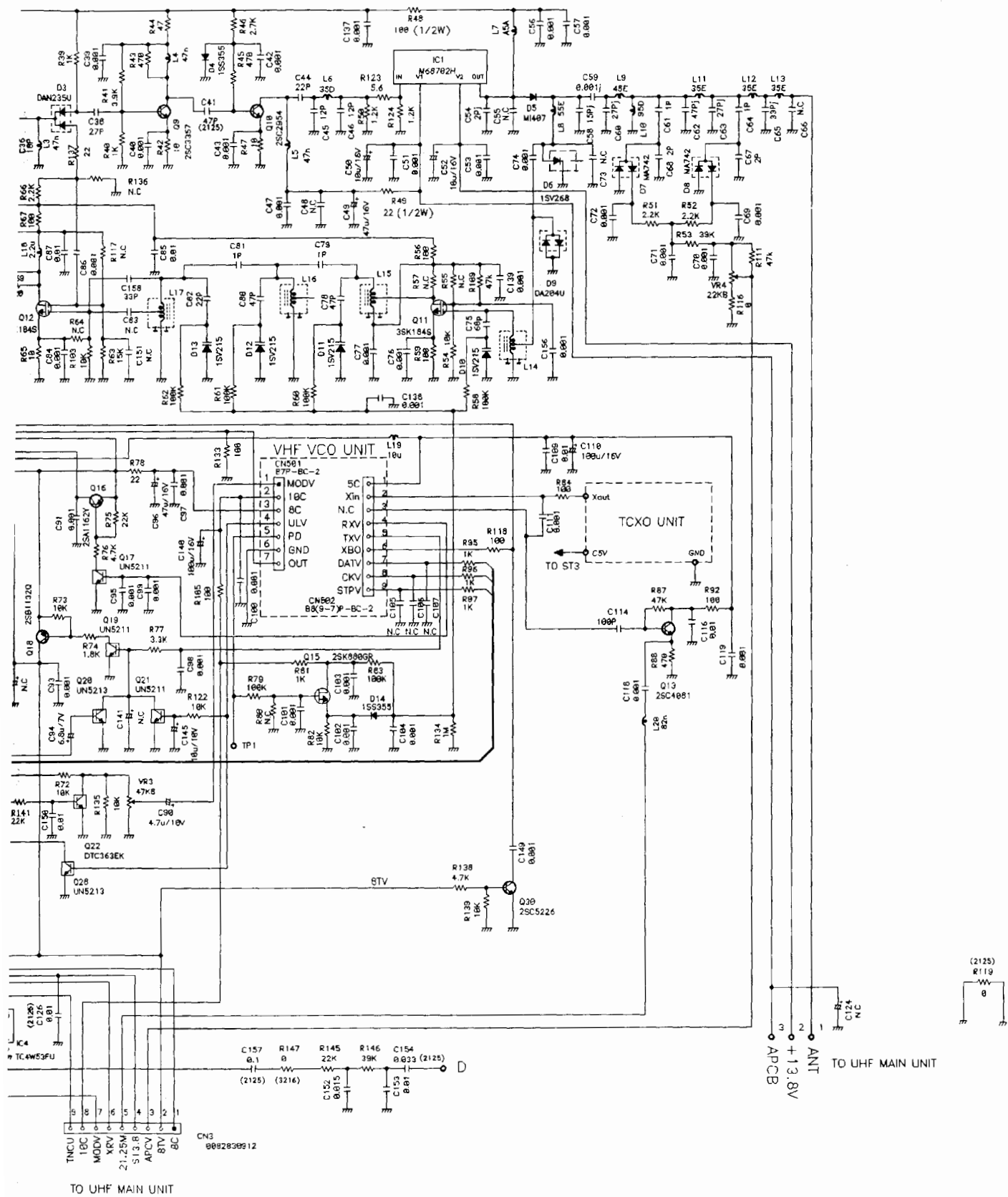


TO UHF MAIN UNIT

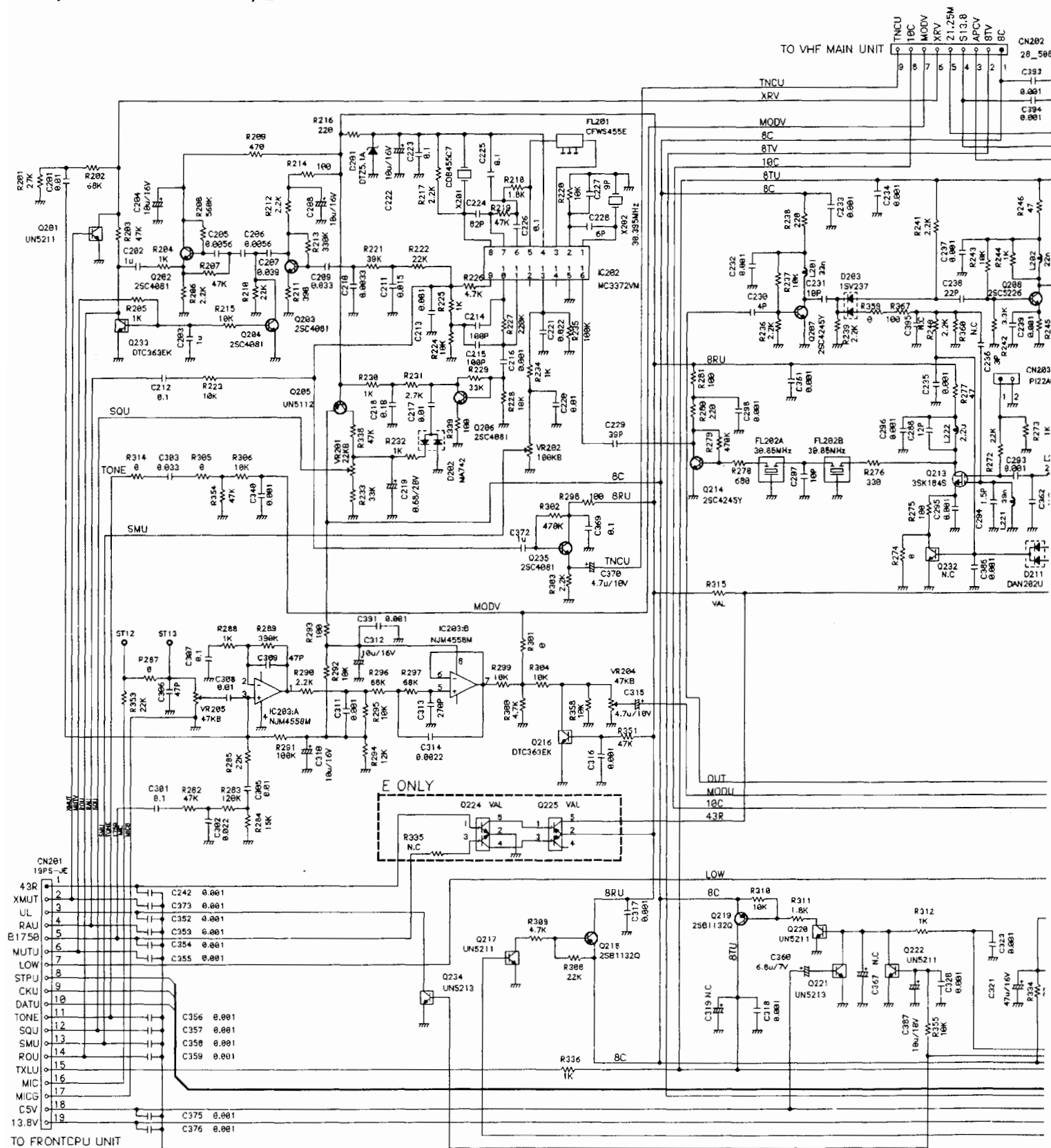


3) VHF Main Unit TE1/TE2

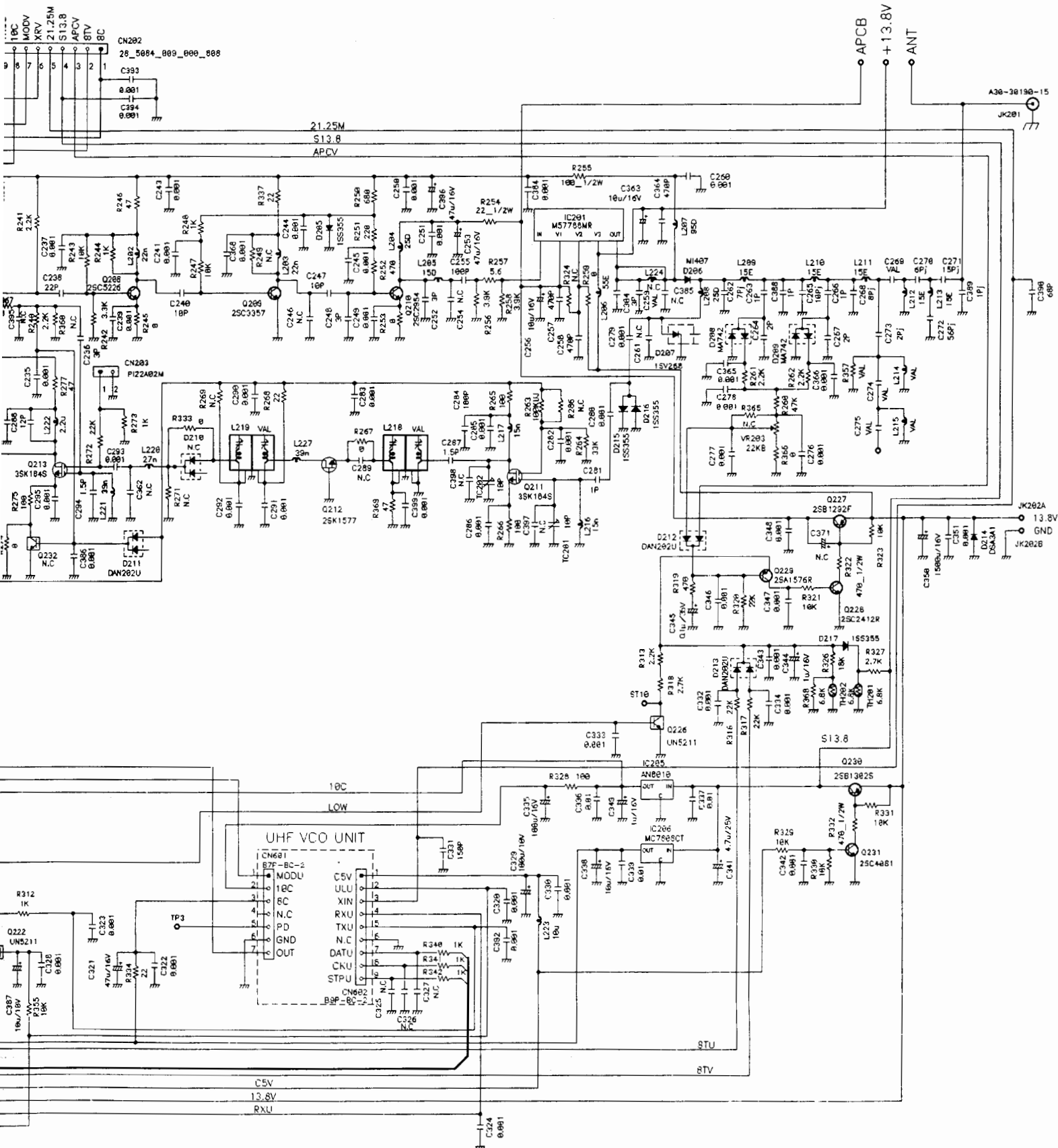




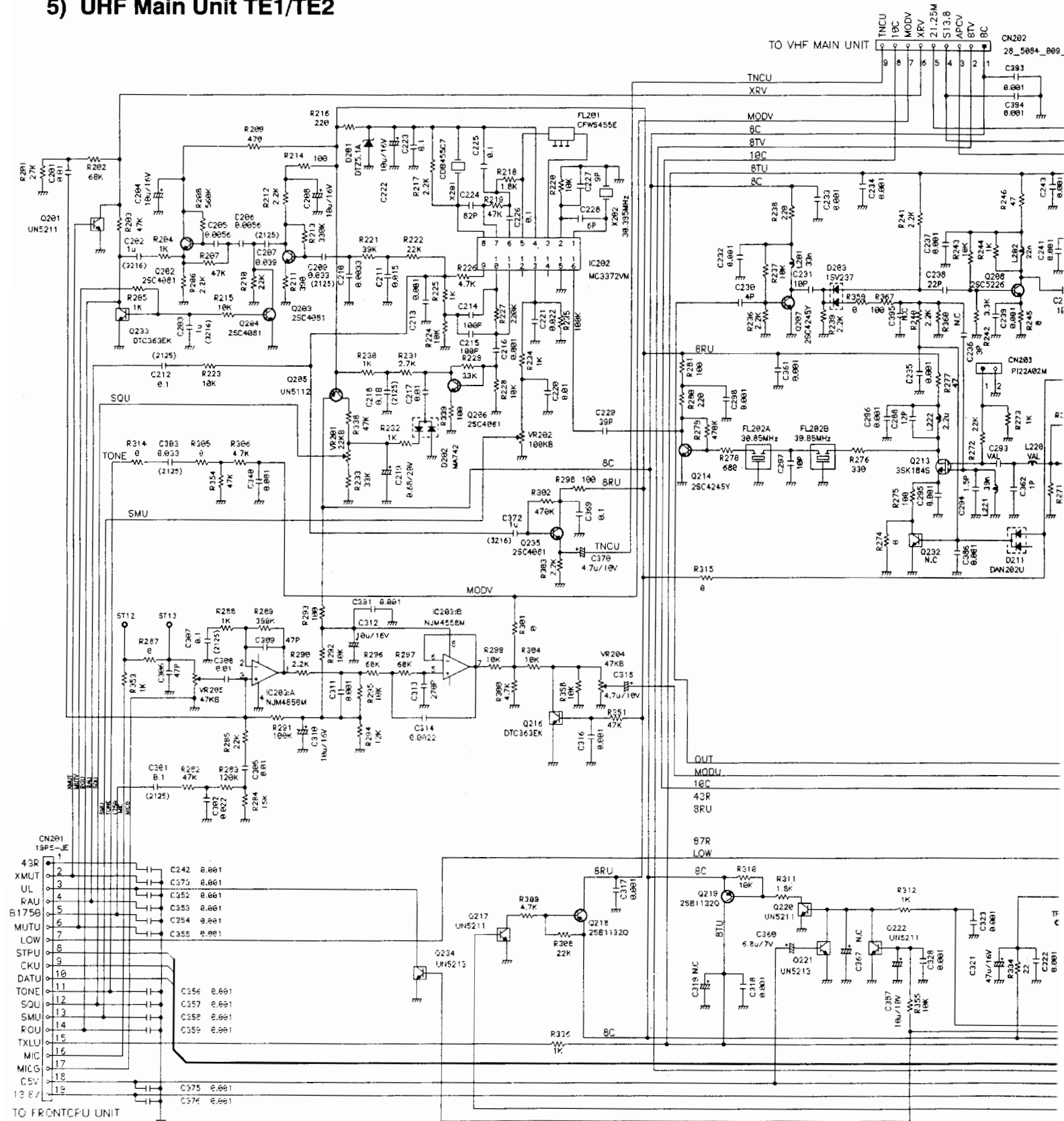
4) UHF Main Unit T/E



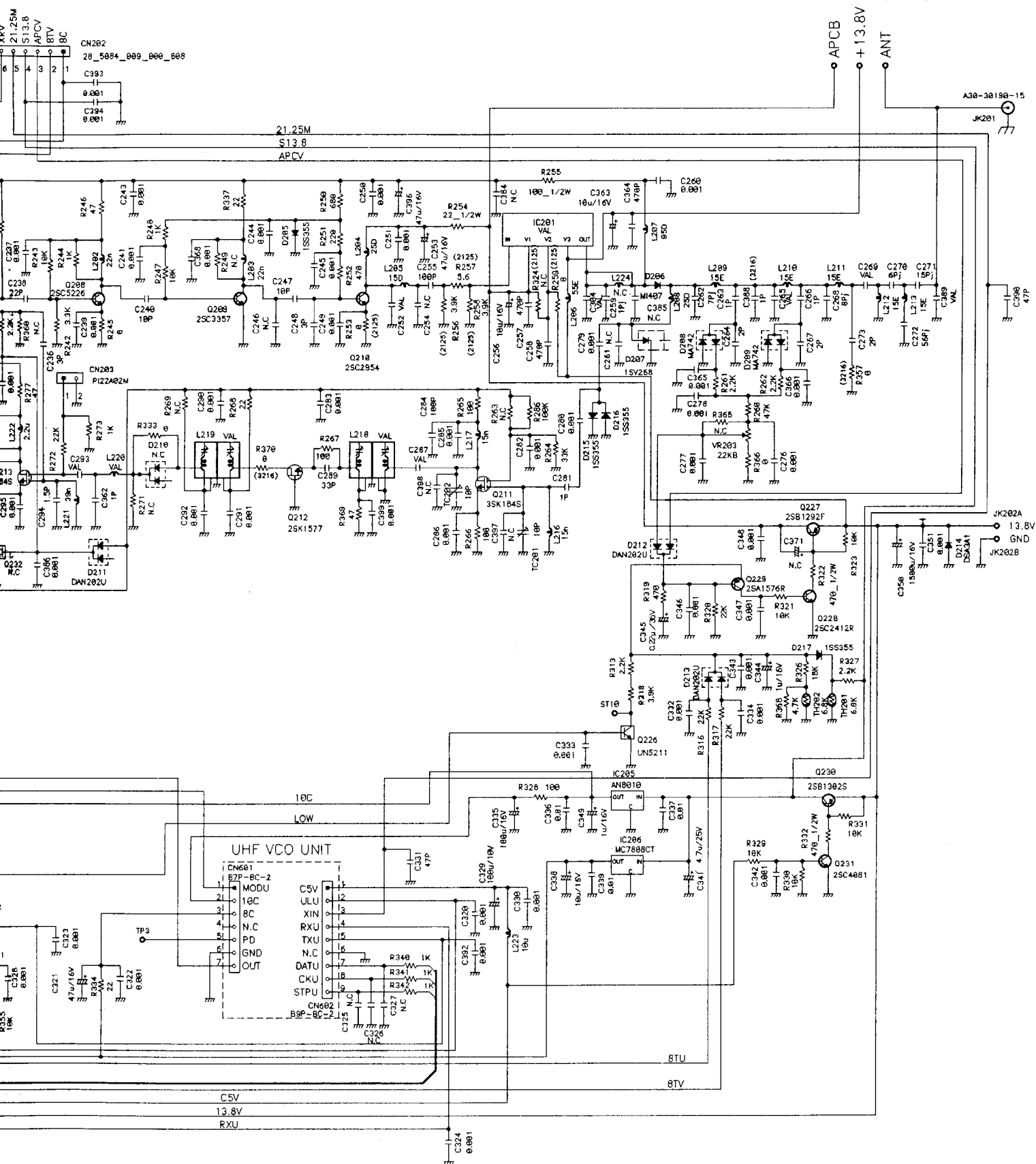
PART	L218	L219	R315	R357	C269	C274	C275	C300	Q224	Q225	D204	L214	L215	C259
T	QAB113	QAB113	0	0	7Pj	—	—	—	—	—	—	—	—	3P
E	QAB114	QAB114	—	8Pj	3P	3P	—	0001	XN1213	XN111M	RN731V	QKA12E	QKA12E	2P



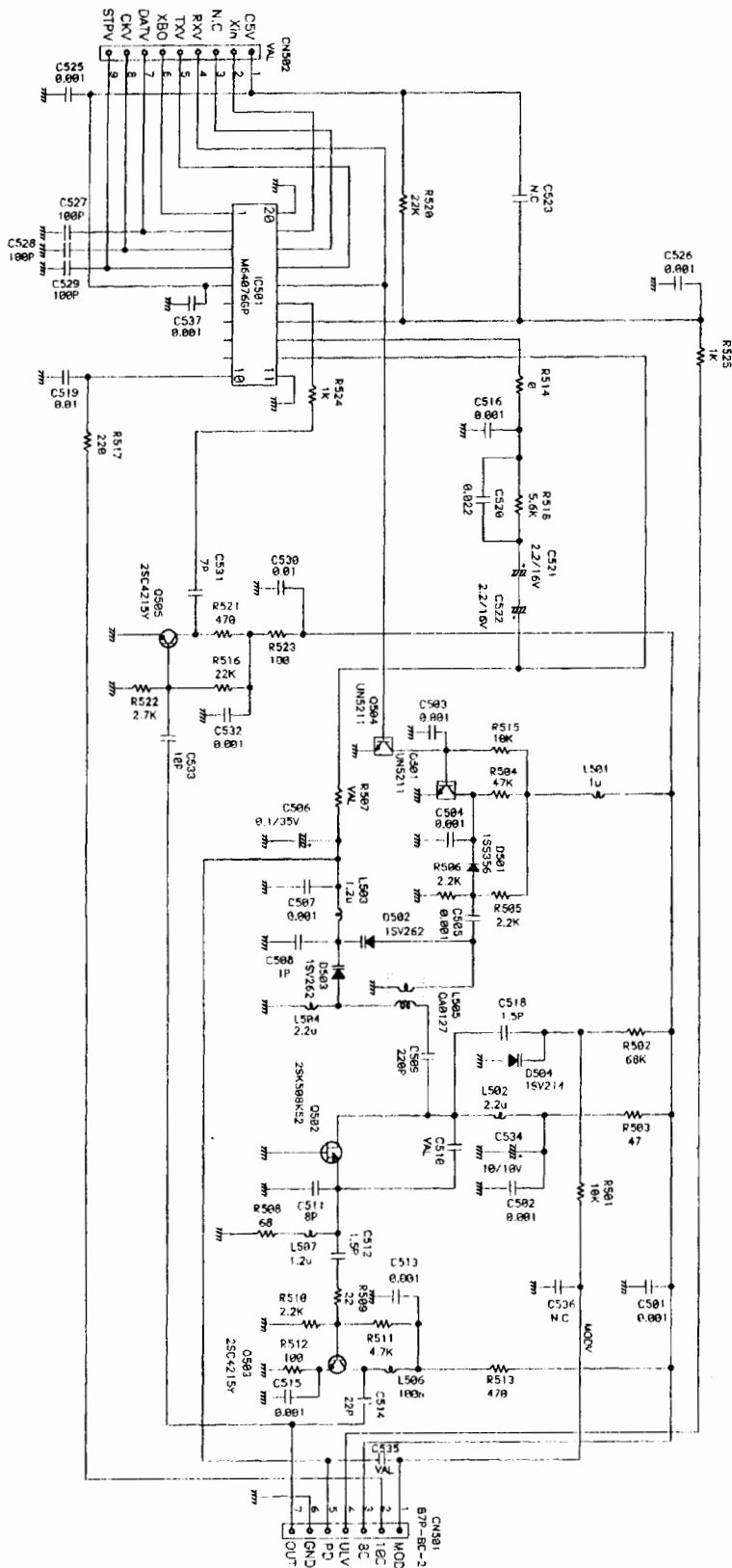
5) UHF Main Unit TE1/TE2



	C269	C267	C293	C304	L220	L218	L219	IC201	C252	C265	C389
TE1	8Pj	2P	33P	3P(3216)	22N	QA0128	QA0128	M57788LR	3P	12Pj	2Pj
TE2	6Pj	1P	10P	N.C	15N	QA0129	QA0129	M57788HR	2P	10Pj	1Pj

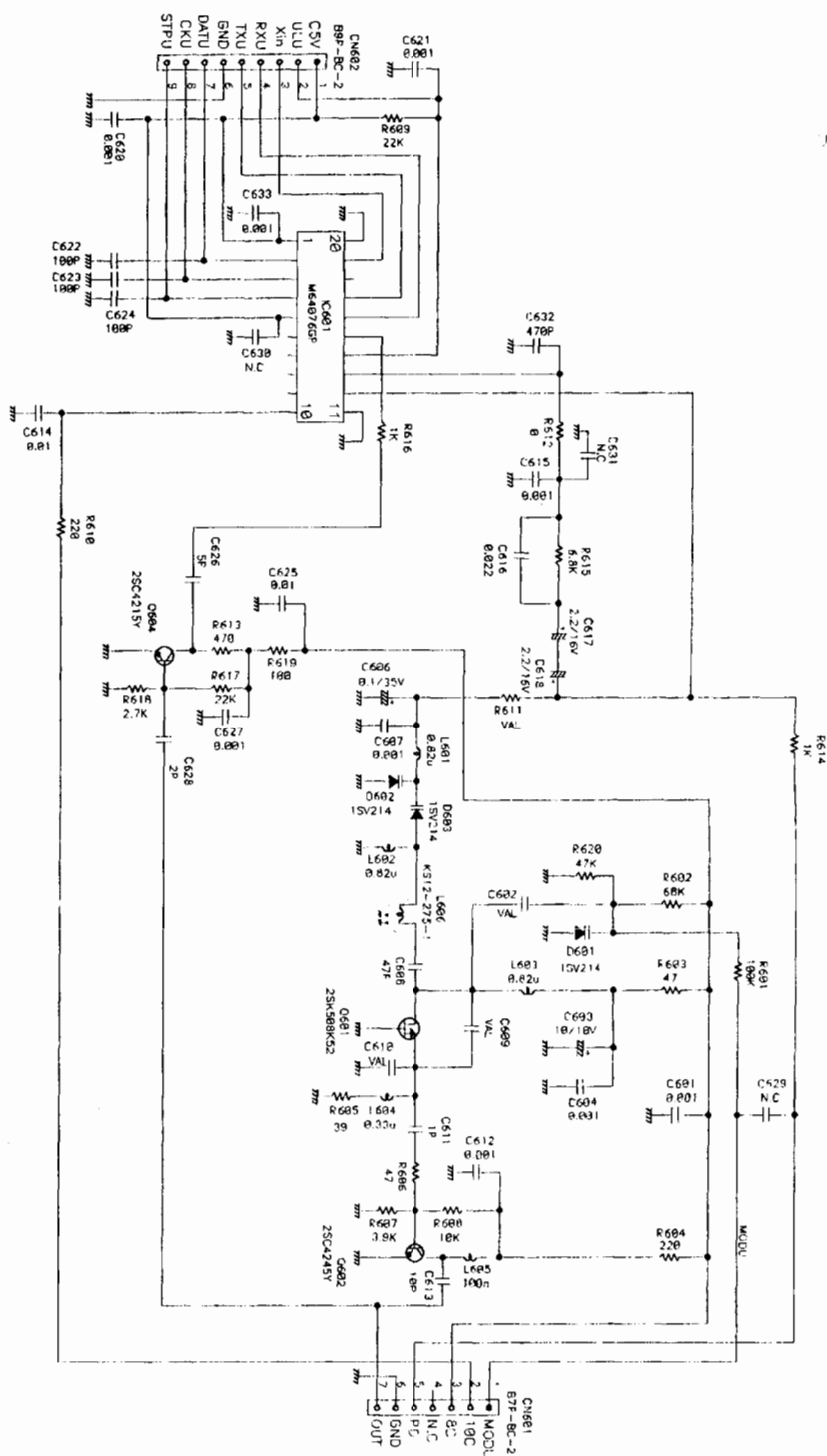


6) VHF PLL-VCO Unit

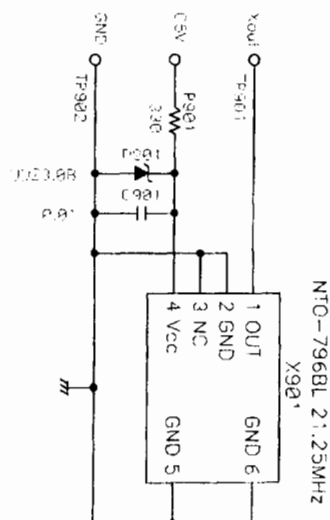


	C510	CN502	R507	C535
TE1,TE2	8P	B8(9-7)P-BC-2	15K	0.001
T.E	10P	B9P-BC-2	22K	—

7) UHF PLL- VCO Unit



8) TCXO Unit (TE1/TE2 only)



[illegible]

