

DJ-480C/T/E

Service Manual

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● CIRCUIT DIAGRAM

● BLOCK DIAGRAM

ALINCO ELECTRONICS INC.

SPECIFICATIONS

1) General

Frequency Coverage:	RX/TX: 440.000 ~ 449.995MHz (DJ-480T only) RX/TX: 430.000 ~ 439.995MHz (DJ-480E only) RX/TX: 400.000 ~ 519.995MHz (DJ-480C version only)
Frequency Resolution:	5, 10, 12.5, 15, 20, 25kHz steps
Memory Channels:	10 Channels (standard)
Antenna Impedance:	50Ω unbalanced
Signal Type:	F3E (FM)
Power Supply Requirement:	DC 5.5V~13.8V (Rated 7.2V Ni-Cd)
Dimensions:	Approximately 132(H) x 58(W) x 33(D) mm
Weight:	Approximately 350g

2) Transmitter

Output Power:	About 5.0W with Optional 12V Ni-Cd Battery About 2.0W with Standard 7.2V Ni-Cd Battery (440.000~449.995MHz) ... DJ-480T only (430.000~439.995MHz) ... DJ-480E only (400.000~420.000MHz) ... DJ-480C1 only (450.000~470.000MHz) ... DJ-480C2 only (430.000~450.000MHz) ... DJ-480C3 only
Modulation System:	Variable Reactance Frequency Modulation
Max. Frequency Deviation:	+/- 5kHz
Tone Frequency:	67.0 to 250.3Hz -38 Subaudible Encoding Tones (T version only)
DTMF Encoder:	(T version only)
Tone Burst:	(E version only)

3) Receiver

Receiver System:	Double-Conversion Superheterodyne
Intermediate Frequency:	1st IF: 30.85MHz 2nd IF: 455kHz
Sensitivity:	12dB SINAD less than -16dBμ (440.000~449.995MHz) ... DJ-480T only (430.000~439.995MHz) ... DJ-480E only (400.000~420.000MHz) ... DJ-480C1 only (450.000~470.000MHz) ... DJ-480C2 only (430.000~450.000MHz) ... DJ-480C3 only

4) Functions for Each Versions

Function Version	RX (MHz) Frequency Range (factory setting)	TX (MHz) Frequency Range (factory setting)	Tone Burst	CTCSS	DTMF	BAND	Final Operation
DJ-480T	435~455 (Display 400~520)	440~450	×	○	○	M	R + LA
DJ-480E	430~440	430~440	○	△ (option)	△ (option)	M	R
DJ-480C1	400~430 (Display 400~520)	400~420	×	△ (option)	×	L	R + LA
DJ-480C2	445~475 (Display 400~520)	450~470	×	△ (option)	×	H	R + LA
DJ-480C3	425~455 (Display 400~520)	430~450	×	△ (option)	×	M	R + LA

● Final Operation

R: Press and hold the "F" key, and turn on the radio.

R + LA: Press and hold the "F" and "LAMP" keys, and turn on the radio.

Note: The expanded frequency will return to the initial setting, if you reset the radio with "R" operation after "R + LA" operation. To resume the expanded frequency, reset the radio again with "R + LA" operation.

CIRCUIT DESCRIPTION

1) Receiver System

The receiver system is the double superheterodyne.
The first IF is 30.85MHz and the second IF is 455kHz.

1. Front End

The signal from the antenna is passed through a low-pass filter and input to the RF coil L9.

The signal from L9 is amplified by Q12, Q13 and led to the band pass filter (L10, L11, L12, L13), and led to the first mixer base of Q14.

2. First Mixer

The amplified signal (fo) by Q12, Q13 is mixed with the first local oscillator signal (fo -30.85MHz) from the PLL circuit by the first-stage mixer Q14 and so is converted into the first IF signal.

The unwanted frequency band of the first IF signal is eliminated by the monolithic crystal filter (XF1), and led to IF amplifier Q19.

3. IF Amplifier

The first IF signal is amplified by Q19, and input to pin20 of IC1, where it is mixed with the second local oscillator signal (30.395MHz) and so is converted into the second IF signal (455kHz).

The second IF signal is output from pin4 of IC1, and unwanted frequency band of the second IF signal is eliminated by a ceramic filter (FL1).

The resulting signal is then amplified by the second IF limiting amplifier, and detected by quadrature circuit. The audio signal is output from pin11 of IC1.

4. Audio Circuit

The detected signal from IC1 is passed through the low-pass filter and led to the flat amplifier Q21. When the optional Tone Squelch unit is equipped, the tone signal is eliminated by IC701.

Q21 is switched ON/OFF by AFC signal from CPU.

The audio signal is input to the main volume (VR3) and amplified by the power amplifier IC3 to drive the speaker.

The power supply voltage of IC3 is limited by AF regulator consisting of Q22 and Q23 to prevent the speaker from overdriving. The power supply voltage of IC3 is switched ON/OFF by AFP signal.

5. Squelch Circuit

The noise in the audio signal from IC1 is passed through the squelch control variable resistor (VR4) and input to pin12 of IC1. The audio signal is amplified by filter amplifier of IC1 and output to pin14. The desired noise of the audio signal is eliminated by the high-pass filter and amplified by Q20. The resulting signal is rectified by D13 and then input to pin15 of IC1. When the squelch circuit is close, pin16 of IC1 goes to "low". When the squelch circuit is open or a signal is received, pin16 goes to "high", then the signal of pin16 is led to CPU.

2) PLL, VCO Circuit

Output frequency of PLL circuit is set by the serial data (pin9: clock, pin10: data, pin11: load enable) from microprocessor.

PLL circuit consists of VCO Q201, Q203, buffer amplifier Q202.

When PLL is locked, pin7 of IC2 goes to "high" and UNLOCK SW Q901 becomes OFF, then T.MUTE signal goes to "low".

The pulse wave output of charge pump is converted to DC voltage by PLL loop filter circuit, and supplied to D202~D205 of varicap diode in VCO unit. The VCO tune voltage is applied to the varicaps D7, D8, D9, D10 and D11 in the front end.

The frequency modulation is executed when the audio signal voltage is supplied to the varicap D201.

3) Transmitter System

1. Microphone Amplifier

The voice from the internal or external microphone is led to the pre-emphasis circuit, and then input to the microphone amplifier IC4, which consists of two operational amplifiers.

The amplified signal is input to the low-pass filter IC4.

The output from the microphone amplifier is passed through variable resistors VR2 for modulation adjustment to varicap diode of the VCO, controlling the VCO frequency.

2. Power Amplifier

The signal from VCO is amplified by buffer amplifiers Q1 and Q2, and input to the power module IC6, and then passed through the low-pass filter, the antenna switch circuit and the output low-pass filter. The unwanted harmonics frequency signal is eliminated by the low-pass filter and input to the antenna. The LC matching circuits located between amplifiers of the transmitting circuit make the transmission smooth.

3. Automatic Power Control Circuit

The automatic power control(APC) circuit is used to obtain a stable transmission power. This circuit detects the transmission power by D3. The detected DC voltage is supplied to APC circuit. When the detected voltage goes higher than the settled voltage, the bias voltage of APC amplifier Q7 goes to low. The collector voltage of APC amplifier Q6 goes to low and the power supply voltage of Q1 goes to low, and output power becomes small to prevent from the over power.

At low power the Power Control Switch Q8 lets the base voltage of APC DET Q5 and the collector voltage of APC AMP Q6 down, also switches between high power and low power, and inhibits the transmission.

4) DTMF Encoder Circuit (option)

The DTMF signal corresponding to the combination of the column and row is output from tone output pin17 of IC401 Encoder, producing a frequency-modulated RF output. The Q401 switches the DTMF Encoder when IC401 is active during DTMF transmission.

5) Tone Squelch Circuit (option)

1. Decoder

The second IF signal from pin11 of IC1, and input to the tone squelch decoder IC701.

When the tone squelch decoder IC701 decodes the input tone signal frequency as the programmed frequency, pin13 goes to "Low". The signal is input to pin16(DET) of IC107, and the squelch goes off.

When the Tone squelch decoder IC701 does not decode the input tone signal frequency as the programmed frequency, pin13 goes to "High".

2. Encoder

The tone signal is output from pin16 of IC701, producing a frequency-modulated RF output.

6) Microprocessor (CPU) and Peripheral Circuit

Refer to "Terminal Function of Microprocessor" about each terminal function.

1. BS Mode

When the Squelch is closed for more than 5 seconds, the radio goes into the BS(Battery Save) mode automatically. Pin11(R5C) and pin19 become High or Low periodically. Open the Squelch, and the radio does not go into the BS mode.

2. Backup Reset

When the voltage detector circuit IC303 detects a decrease in the C5V line, CPU RAM data is stored in the EEPROM IC, IC601. IC 302 is also the voltage detector circuit and it detects the lower voltage than IC303. The circuit detects a increase in the C5V line when power is turned on, and then the CPU will be initialized.

3. Reset

Press and hold the "F" key, then turn on the power. The radio will reset to initial factory settings.

Even if you expanded the frequency, it will return to the initial setting. To resume the expanded frequency, press and hold the "F" and "Lamp" keys, then turn on the power.

7) Terminal Function of Microprocessor

Name	I/O	Description	Pin No.	Pin Name	H	L
TBST	O	1750Hz Tone Burst Output	9	P57/PWM3	Normal: H(HiZ)	Output: Pulse
BEEP	O	Beep Tone Output	10	P56/PWM2	Normal: H(HiZ)	Output: Pulse
R5C	O	RX5V ON/OFF	11	P55/PWM1	ON	OFF
T5C	O	TX5V ON/OFF	12	P54/PWM0	ON	OFF
AFP	O	AF Power Amplifier ON/OFF	13	P53/SIG	ON	OFF
AFC	O	IF Mute Output	14	P52/CNT2	Mute OFF	Mute ON
M. MUTE	O	Microphone Mute Output	15	P51/CNT1	during Tone Burst Transmission	Normal
RE1	I	Rotary Encoder Input 1	16	P50/INT3		
LAMP	O	Lamp ON/OFF Switch	17	P37/SRDY	ON	OFF
BAT	I	Battery Low Indicator Input	18	P36/CLK	Low	Normal
P5C	O	PLL Power ON/OFF	19	P35/SOUT	ON	OFF
EICD	I	EEPROM Unit Detection	20	P34/SIN	Equipped	Nothing
XWR	I	External EEPROM Write Cycle Detection	21	P33/T	Normal	Write Cycle
RE2	I	Rotary Encoder Input 2	22	P32/INT2		
SCOM	O	Band Plan Scan Output	23	P31/XCIN	H (Hiz)	Low Active
P.H/L	O	Transmit power Switch	24	P30/XCOUT	Low Power	High Power
$\overline{\text{BU}}$	I	Backup Mode Input	25	INT1	Normal	Negative Edge Triggered
			26	CNVss		
RES	I	Reset Input	27	$\overline{\text{RESET}}$	at Work	on Reset
		Clock Input 3.58MHz	28	XIN		
		Clock Output 3.58MHz	29	XOUT		
		Ground	30	Vss		
$\overline{\text{TSQD}}$	I	Tone Detection Input	31	P17	Undetected	Detected
TICD	I	Tone Unit Detection	32	P16	Nothing	Equipped
BP1	I	Band Plan (TX)	33	P15	Expanded	Normal
BP2	I	Band Plan (RX)	34	P14	Expanded	Normal
BP3	I	Band Plan (TX, RX)	35	P13	Expanded	Normal
BP4	I	Band Plan (Channel step)	36	P12	Expanded	Normal

Name	I/O	Description	Pin No.	Pin Name	H	L
BP5	I	Band Plan (Offset Freq.)	37	P11	Expanded	Normal
CH	I	Band Plan (Channel Disp.)	38	P10	Expanded	Normal
SLC	O	Clock for EEPROM IC	39	P07	Normal: Hiz	Output: Pulse
SDA	I/O	Data for EEPROM IC	40	P06	Normal: Hiz	Output: Pulse
CLK	O	Clock for PLL, TONE IC	41	P05	Output: Pulse	Normal: L
DTA	O	Data for PLL, TONE IC	42	P04	Output: Pulse	Normal: L
STB1	O	Strobe for PLL IC	43	P03	Output: Pulse	Normal: L
STB2	O	Strobe for TONE IC	44	P02	Output: Pulse	Normal: L
FUNC	I	Function Key Input	45	P01	OFF	ON
SD	I	Signal Detection Input	46	P00	Received	Nothing
TBST	I	Tone Burst Key Input	47	P27	OFF	ON
CALL	I	CALL (APO)	48	P26	OFF	ON
LAMP	I	LAMP (FL/PL)	49	P25	OFF	ON
MONI	I	MONI (P. H/L)	50	P24	OFF	ON
TONE	I	TONE (MW)	51	P23	OFF	ON
V/M	I	V/M (OFFSET)	52	P22	OFF	ON
T. SCAN	I	T. SCAN (CH STEP)	53	P21	OFF	ON
PTT	I	PTT Key Input	54	P20	OFF	ON
			55	VL3		
			56	VL2		
			57	VL1		
COM0	O	Common Output	58	COM0		
COM1	O	Common Output	59	COM1		
COM2	O	Common Output	60	COM2		
			61	COM3		
SEG0	O	Segment Output	62	SEG0		
SEG1	O	Segment Output	63	SEG1		
SEG2	O	Segment Output	64	SEG2		
SEG3	O	Segment Output	65	SEG3		
SEG4	O	Segment Output	66	SEG4		
SEG5	O	Segment Output	67	SEG5		
SEG6	O	Segment Output	68	SEG6		
SEG7	O	Segment Output	69	SEG7		

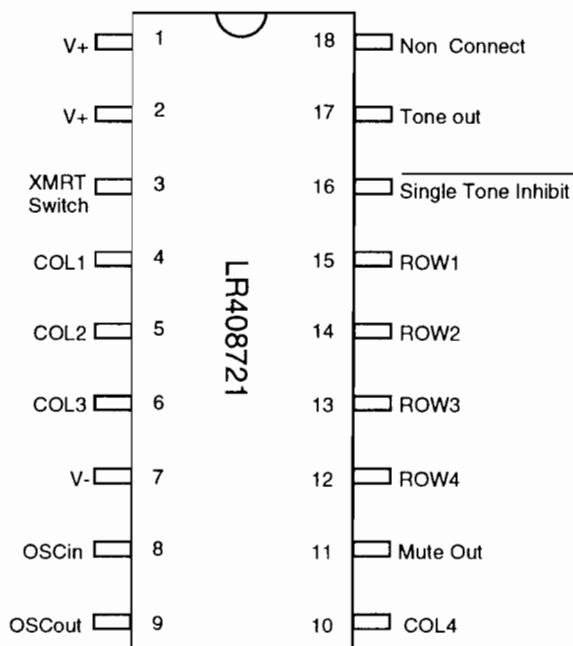
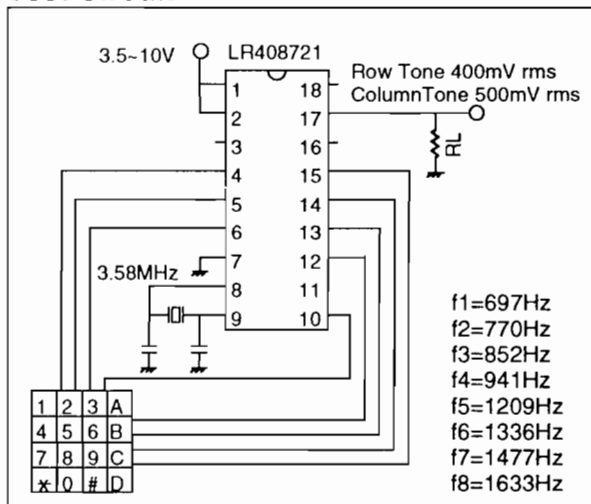
Name	I/O	Description	Pin No.	Pin Name	H	L
SEG8	O	Segment Output	70	SEG8		
SEG9	O	Segment Output	71	SEG9		
SEG10	O	Segment Output	72	SEG10		
SEG11	O	Segment Output	73	SEG11		
SEG12	O	Segment Output	74	SEG12/P43		
SEG13	O	Segment Output	75	SEG13/P42		
SEG14	O	Segment Output	76	SEG14/P41		
SEG15	O	Segment Output	77	SEG15/P40		
SEG16	O	Segment Output	78	SEG16/IN7		
SEG17	O	Segment Output	79	SEG17/IN6		
SEG18	O	Segment Output	80	SEG18/IN5		
SEG19	O	Segment Output	1	SEG19/IN4		
SEG20	O	Segment Output	2	SEG20/IN3		
SEG21	O	Segment Output	3	SEG21/IN2		
SEG22	O	Segment Output	4	SEG22/IN1		
SEG23	O	Segment Output	5	SEG23/IN0		
		Ground	6	AVss		
		+4V	7	Vref		
		+4V	8	Vcc		

SEMICONDUCTOR DATA

1) LR408721 (XA0042)

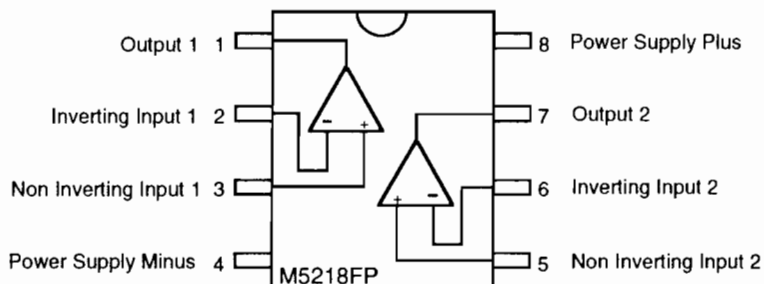
Tone Dialer

Test Circuit



2) M5218FP (XA0068)

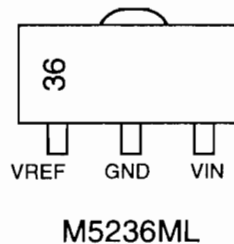
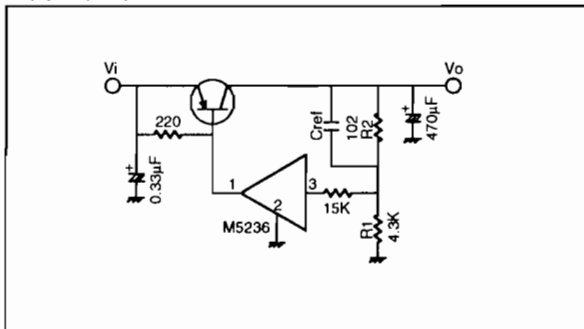
Dual Low Noise
Operational Amplifiers



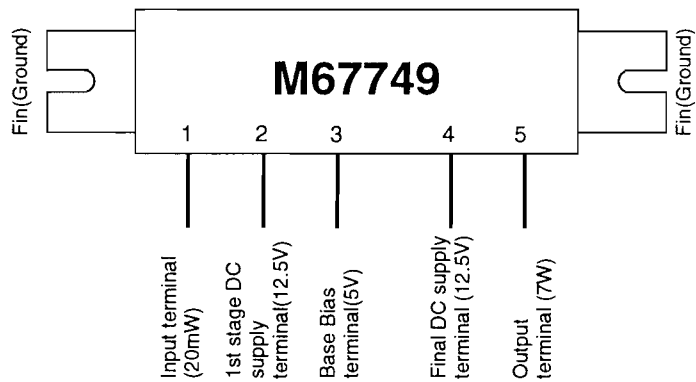
3) M5236ML (XA0104)

Voltage Regulator

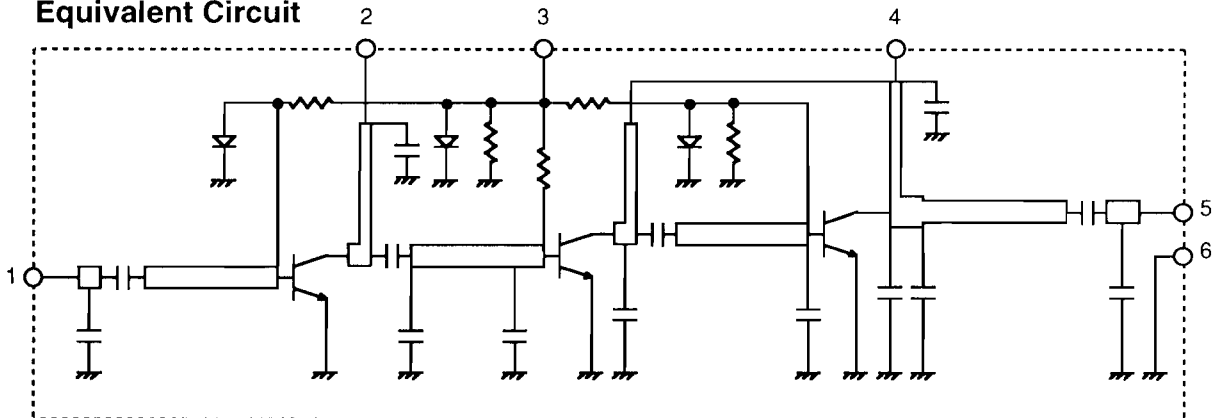
Test Circuit



- 4) M67749L (XA0177) 400 ~ 430MHz 7W RF Power Module
 M67749M (XA0143) 430 ~ 450MHz 7W RF Power Module
 M67749H (XA0178) 450 ~ 470MHz 7W RF Power Module



Equivalent Circuit

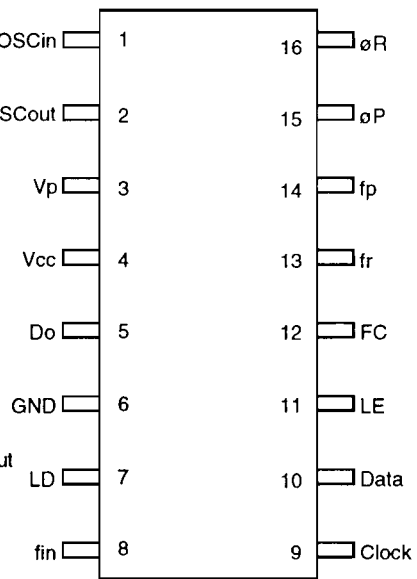


5) MB1504LPF-G-BND-TF (XA0145)
 Frequency Synthesizer

Function Table

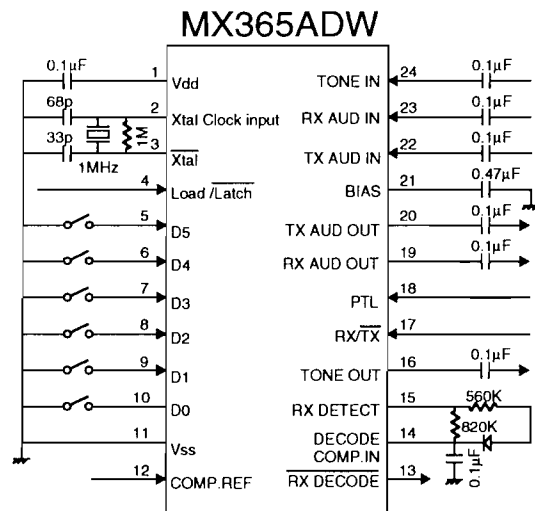
FC input	P.D.input	Do output
High or Low	$f_r = f_p$	Hi Z
High	$f_r > f_p$	High
High	$f_r < f_p$	Low
Low	$f_r > f_p$	Low
Low	$f_r < f_p$	High

Reference oscillator input terminal
 Reference oscillator output terminal
 Power supply terminal for charge pump
 Power supply terminal 3V 15mA
 Charge pump output terminal
 Ground terminal
 Phase detector output terminal when locked: LD=H
 Prescaler input terminal $f_{max} = 1100\text{MHz}$



Phase detector output terminal for external charge pump
 Phase detector output terminal for external charge pump
 Programmable divider output terminal
 Reference divider output terminal
 Phase switch input terminal of phase comparator
 Load enable signal input terminal
 Serial data input terminal
 Clock input terminal

6) MX365 (XA0203) CTCSS Encoder/Decoder



Decode Comparator Ref: This pin is internally biased to VDD/3 or 2VDD/3 via 1M resistors depending on the logical state of the Rx Tone Decode Out pin. Rx Tone Decode Out = 1 will bias this input 2VDD/3; a logic "0" will bias this input VDD/3. This input provides the decode comparator reference voltage, and switching of bias voltages provides hysteresis to reduce "chatter" under marginal conditions.

RX Tone Decode Out: This is the gated output of the decode comparator. This output is used to gate the RX Audio path. A logic "0" on this pin indicates a successful decode and that the Decode Comparator Input pin is more positive than the Decode Comparator Ref. input.

Decode Comparator Input: This is the inverting input of the decode comparator. This pin is normally connected to the integrated output of the Rx Tone Detect line.

Rx Tone Detect : In Rx mode this pin will go to logic '1' during a successful decode. It must be externally integrated to control response and deresponse times.

Tx Tone Out: The CTCSS sinewave output appears on this pin under the control of the Rx/Tx pin. This pin, when not transmitting a tone, may be biased to VDD/2 - 0.7V or O/C .

Rx/Tx: This input (in parallel mode) selects Rx or Tx modes . In serial mode this function is serially loaded. This pin is internally pulled to VDD via a 1 MΩ resistor.

PTL: In parallel Rx mode this pin operates as a 'Press To Listen' function by enabling the Rx audio path, thus overriding the tone squelch function. In parallel Tx mode this pin reverses the phase of the transmitted CTCSS tone (used for squelch tail elimination). In serial mode this function is serially loaded.

Rx Audio Out: This is the high pass filtered receive audio output pin. This pin outputs audio when Rx TONE DECODE = 0, or PTL = 1, or when Notone is programmed. In Tx mode this pin is biased to VDD/2.

Tx Audio Out: This is the high pass filtered transmit audio output pin. In Tx mode this pin outputs audio present at the Tx Audio Input pin. In Rx mode this pin is biased to VDD/2.

Bias: This pin is the output of an internally generated VDD/2 bias level and would normally be externally decoupled to Vss via C7.

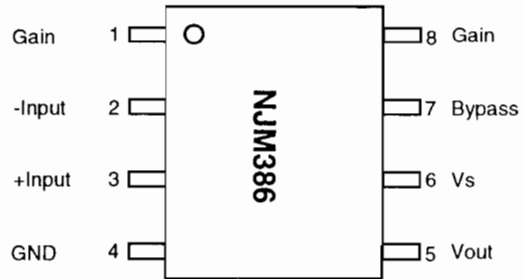
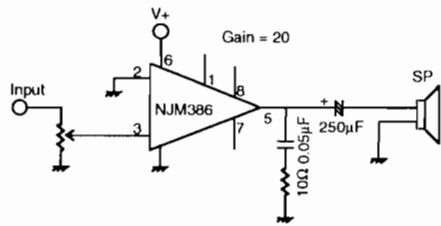
Tx Audio In: This is the Tx Audio input pin. In Tx mode it may be prefiltered, using the Tx audio path, thus helping to avoid talk off due to intermodulation of speech frequencies with the transmitted CTCSS tone. This pin is internally biased to VDD/2.

Rx Audio In: This is the input to the audio high pass filter in Rx mode. It is internally biased to VDD/2.

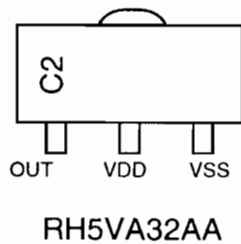
Tone Input: This is the input to the CTCSS tone detector. It is internally biased to VDD/2.

7) NJM386 (XA0061) Power Amplifiers

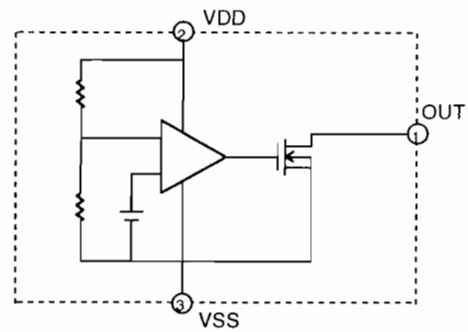
$V_+ = 9V$ $R_L = 16\Omega$ $P_o = 500mW$



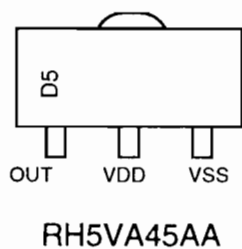
8) RH5VA32AA-T1 (XA0198) C-MOS Voltage Detector



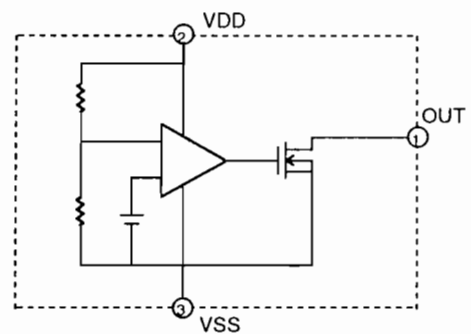
Equivalent Circuit



9) RH5VA45AA-T1 (XA0208) C-MOS Voltage Detector



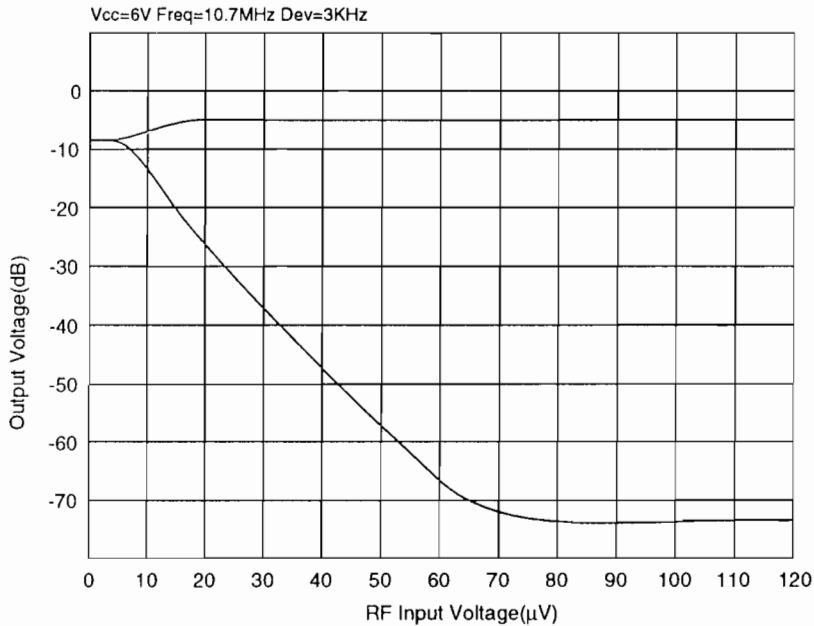
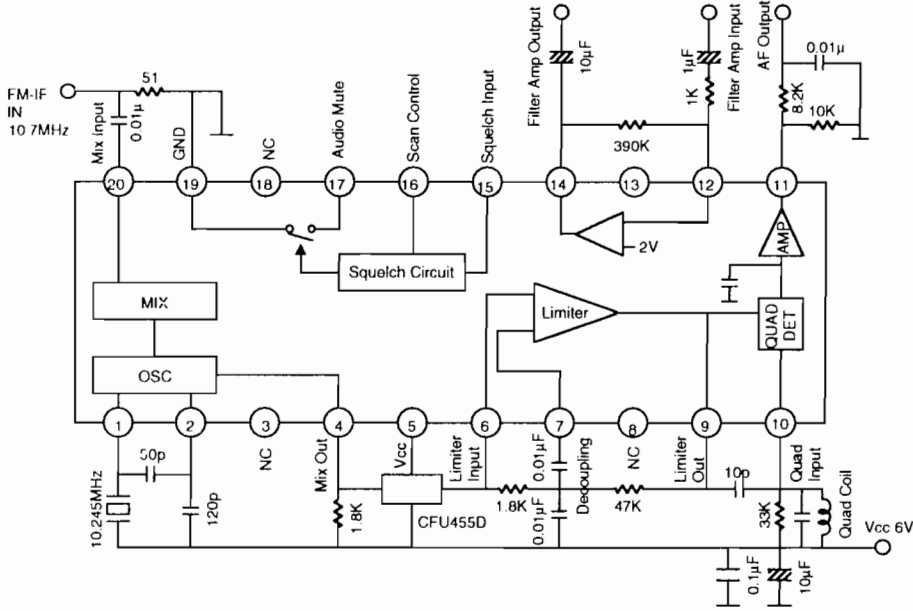
Equivalent Circuit



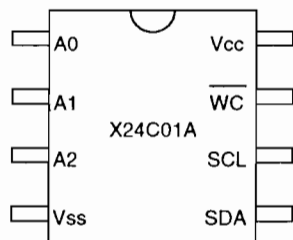
10) TK10420MTR (XA0234)

Narrow Band FM IF IC

Characteristic	Symbol	Typical
Supply Current	I _{cc}	4.0mA
Limiting Sensitivity	Limit	3.0μV
Output Impedance	Z _{out}	400Ω
Output Voltage	V _{out}	550mVrms
Filter Gain	F _{gain}	46dB
Mute Switch Resistance	ML	15Ω
Scan Control Voltage	SL	0V
Mixer Conversion Gain	M _g	20dB
Mixer Input Impedance	M _g	3.3KΩ
Mixer Input Capacitance	M _{im}	2.2pF
Frequency Range	F _{op}	455KHz ~ 60MHz



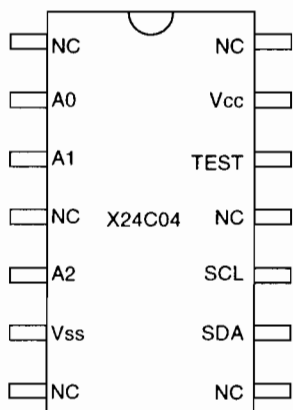
11) X24C01A (XA0199)
EEPROM 1024Bit



Pin Names

A0 ~ A2	Address inputs
SDA	Serial Data
SCL	Serial Clock
WC	Write Control
Vss	Ground
Vcc	+5V

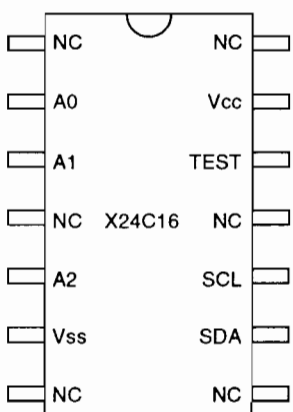
12) X24C04S14 (XA0200)
EEPROM 4096Bit



Pin Names

A0 ~ A2	Address inputs
SDA	Serial Data
SCL	Serial Clock
TEST	Hold at Vss
Vss	Ground
Vcc	+5V
NC	No Connect

13) X24C16S14 (XA0201)
EEPROM 16384Bit



Pin Names

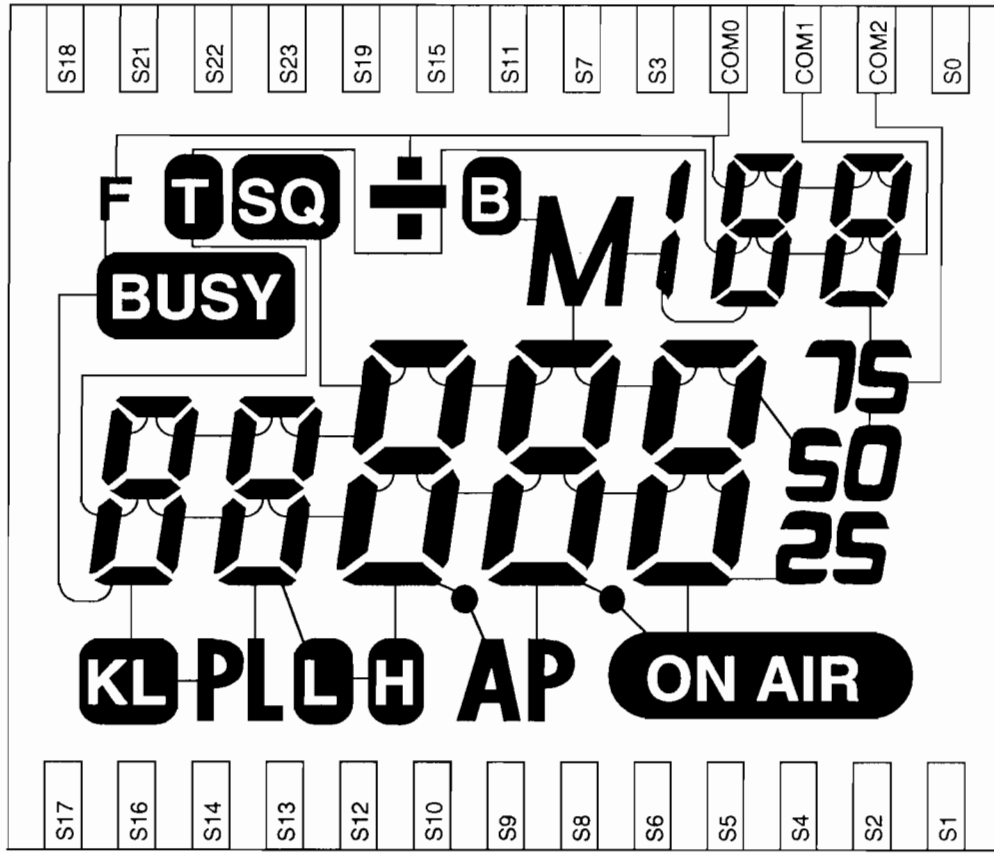
A0 ~ A2	Address inputs
SDA	Serial Data
SCL	Serial Clock
TEST	Hold at Vss
Vss	Ground
Vcc	+5V
NC	No Connect

14) Transistor, Diode and LED Outline Drawings

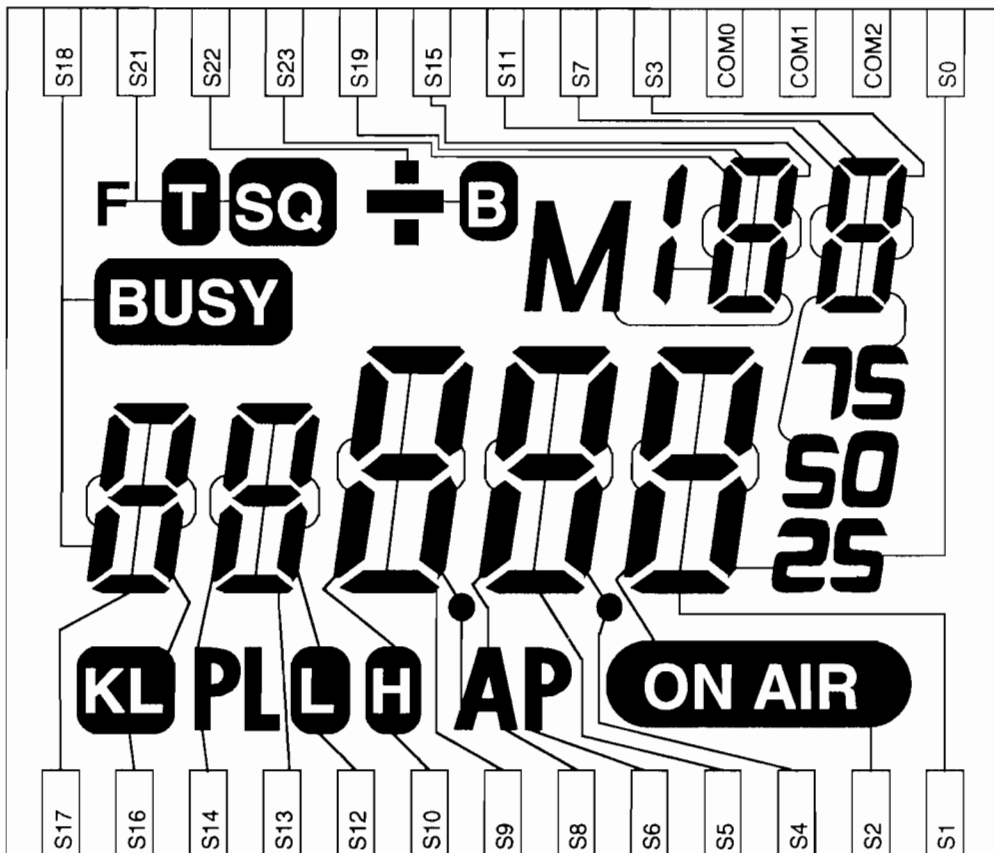
2SA1162 XT0068 C SG B E	2SA1213 XT0088 C NY B C E	2SC2412 XT0037 C BR B E	2SC3356 XT0030 C R24 B E	2SC4081 XT0095 C BR B E	2SC4099 XT0096 C JP B E	2SC4393 XT0097 C ME B E	2SC4226 XT0106 C R24 B E
2SK508 XE0010 G K52 S D	UN211L XU0039 C 6Q B E	UN211H XU0040 C 6P B E	UN2214 XU0038 C 8D B E	UN2215 XU0037 C 8E B E			
1SS184 XD0057 B3	1SS226 XD0103 C3	1SS355 XD0254 A	1SV214 XD0131 1T1	1SV215 XD0132 1T2	1SV229 XD0133 1T8	DTZ2.4A XD0147 21	DTZ6.2A XD0137 E1
MA704WK XD0120 M2R	MA716 XD0118 M1U	RB450F XD0134 3F	RLS135 XD0066 RLS135	SLM-13MWS XL0016 SLM-13MWS			
XN111F XU0036 C1 C2 70 B1 E B2	XN1213 XU0054 C1 C2 9L B1 E B2	XN1214 XU0035 C1 C2 9H B1 E B2	XN1401 XT0034 C1 C2 5V B1 E B2				
XN1501 XU0053 C1 C2 5R B1 E B2	XN1A312 XU0041 C1/B2 C2 4P E1 B1 E2						

15) LCD Connection

COMMON

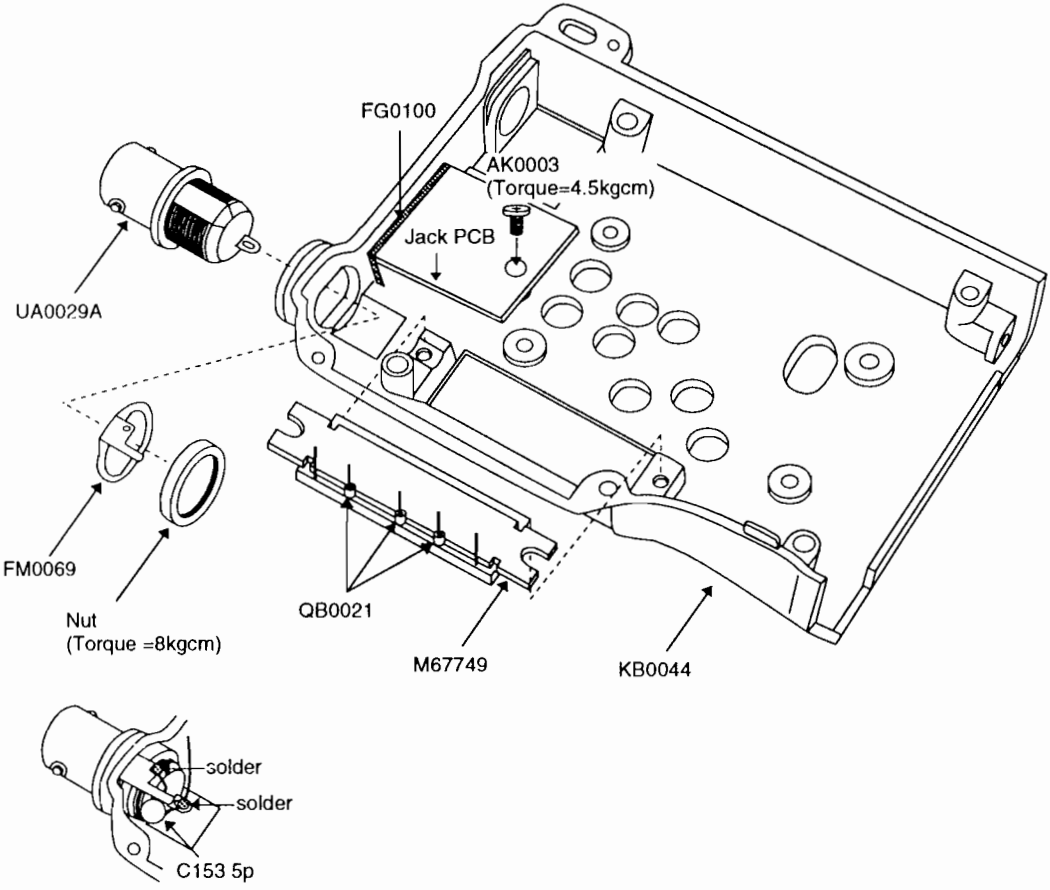


SEGMENT

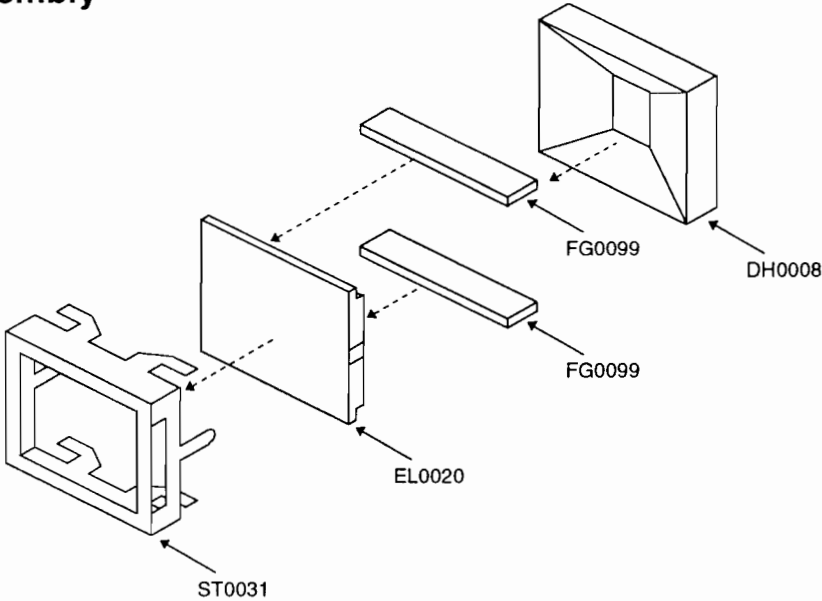


EXPLODED VIEW

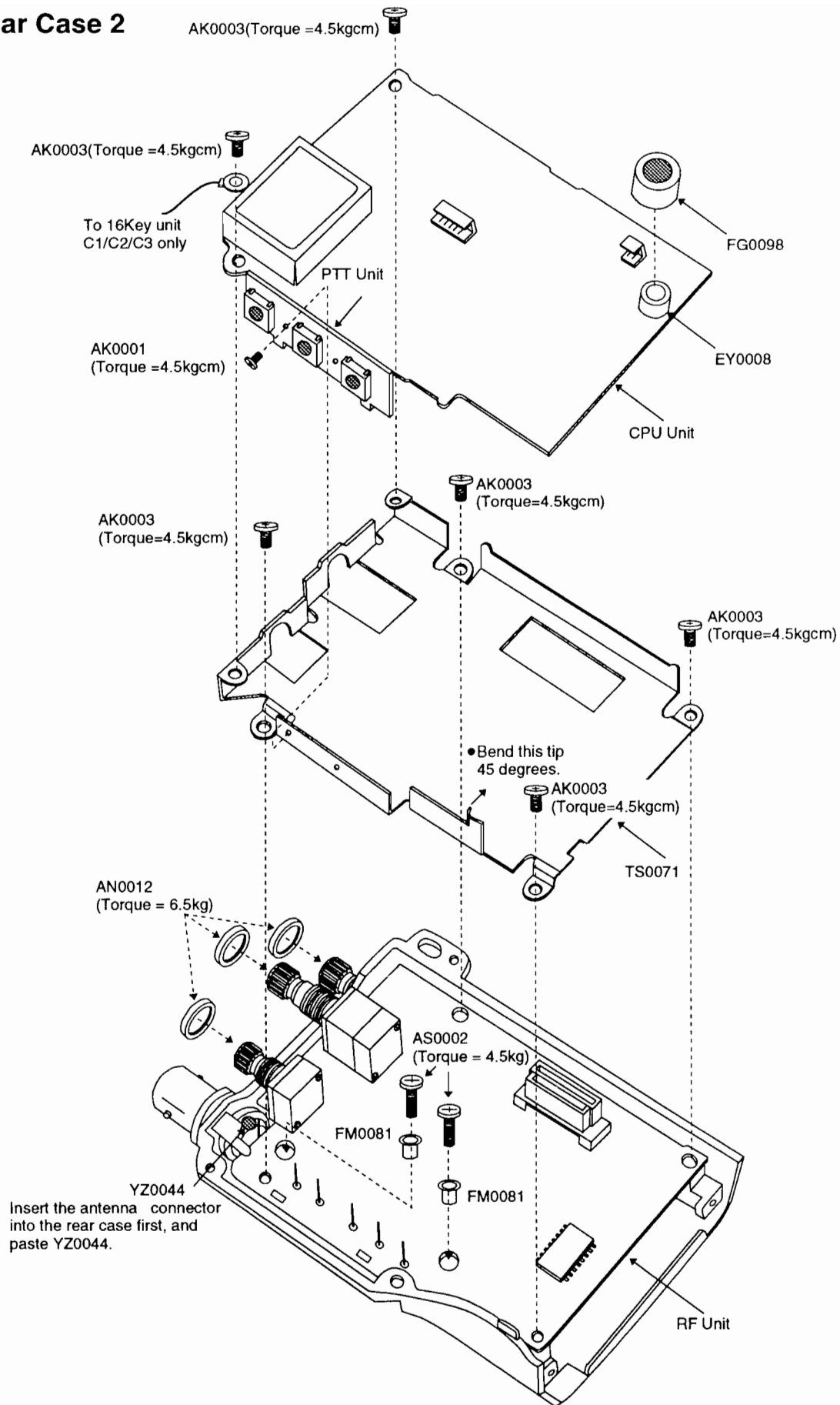
1) Rear Case 1



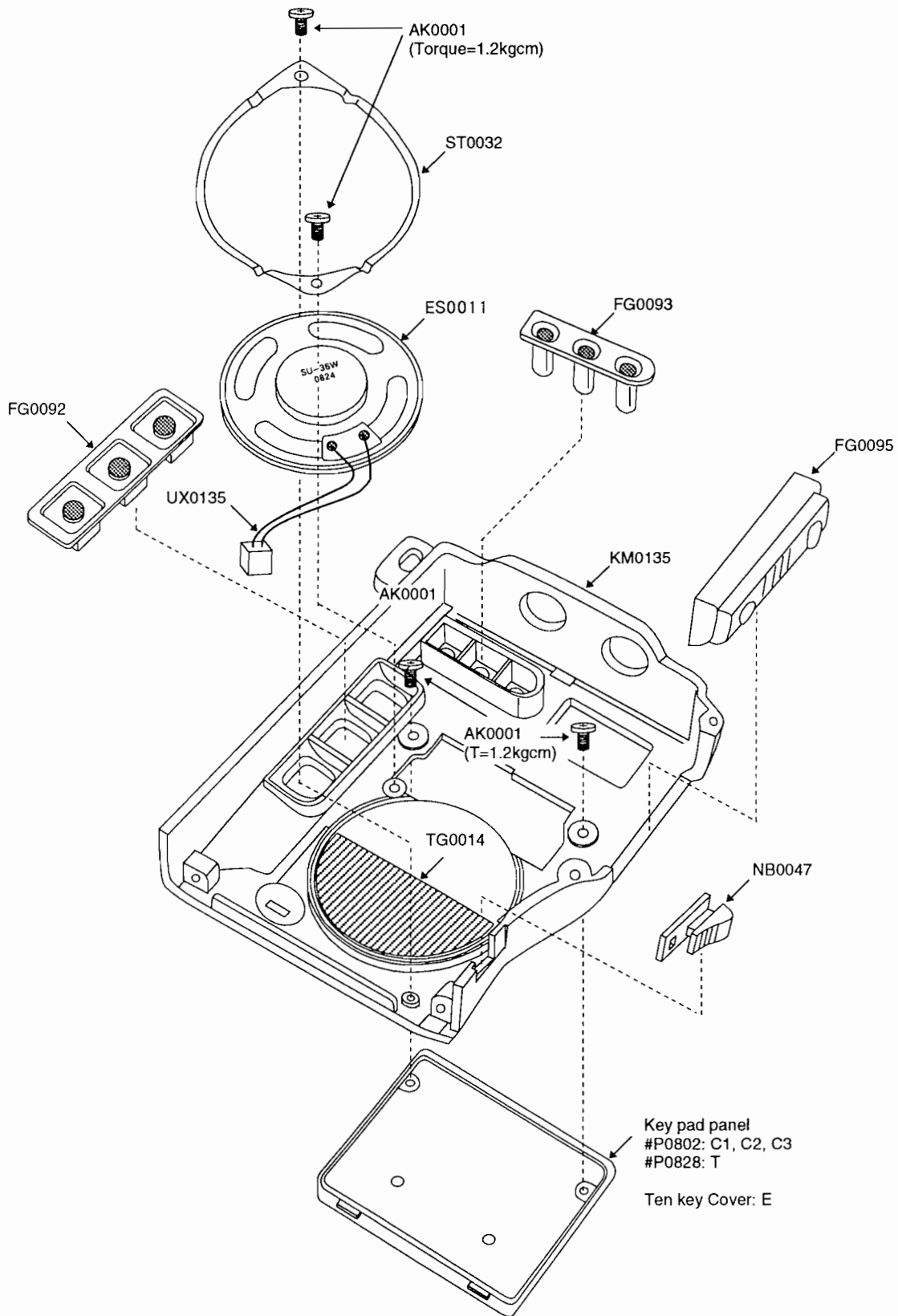
2) LCD Assembly



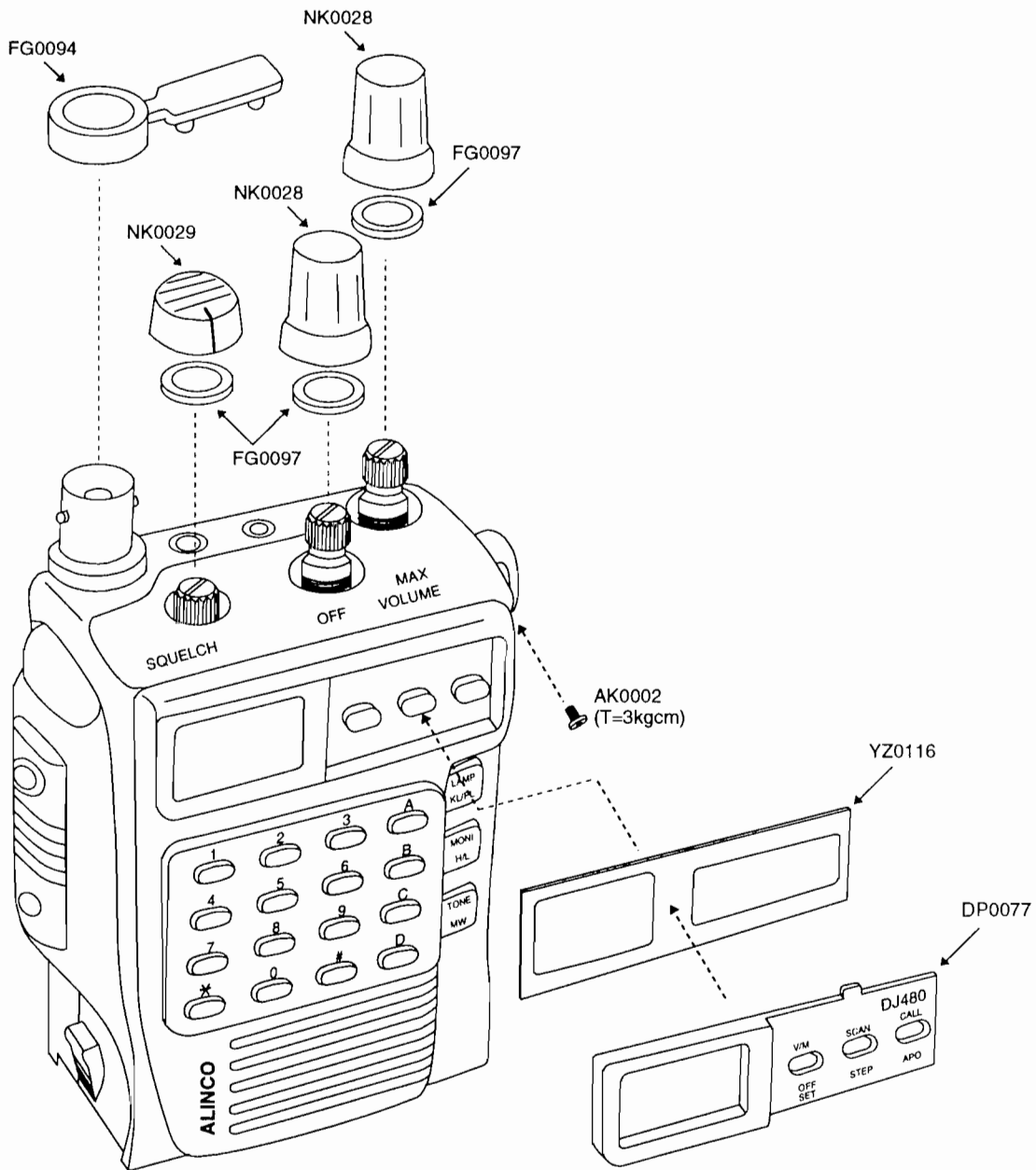
3) Rear Case 2



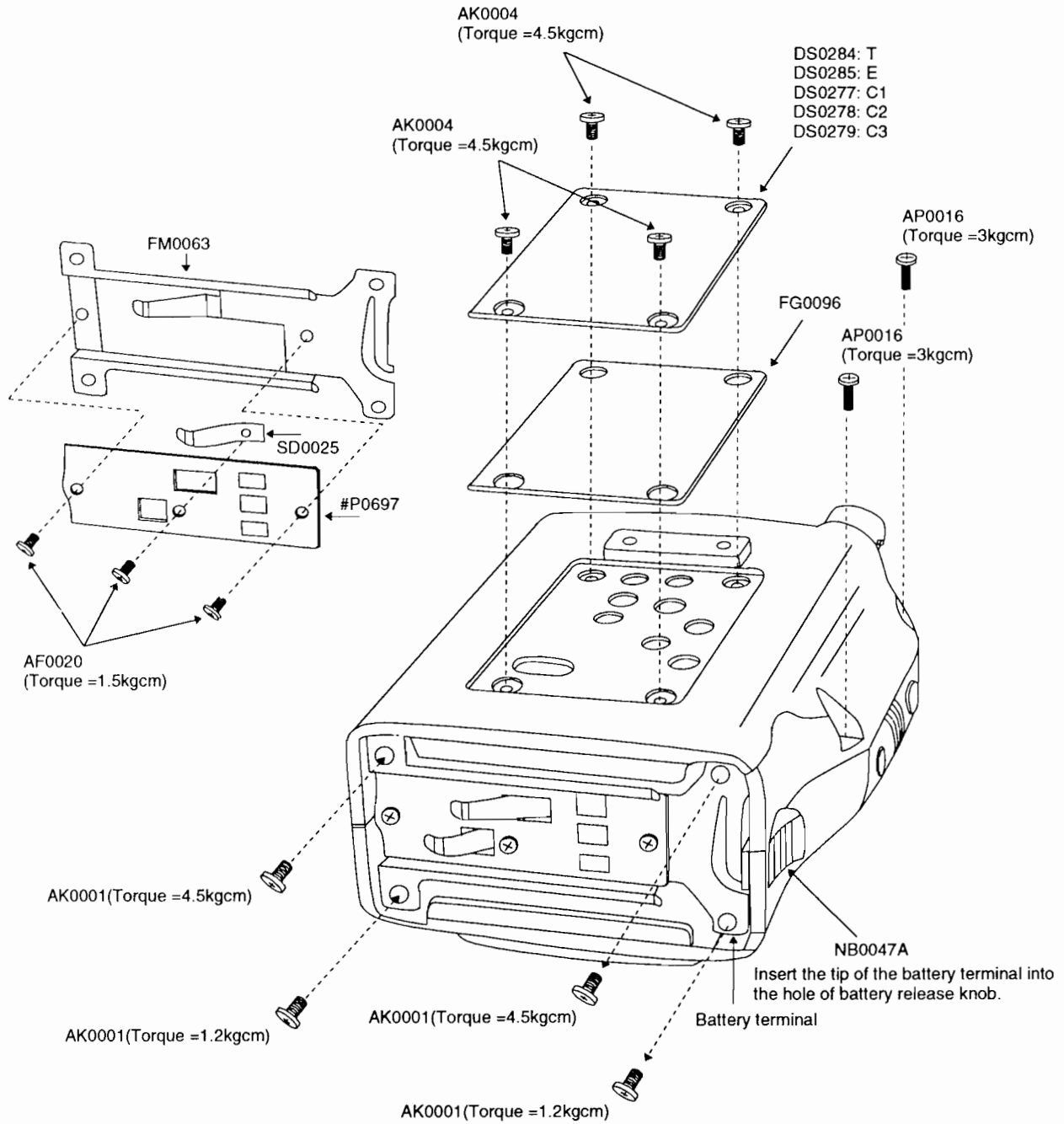
4) Front Case 1



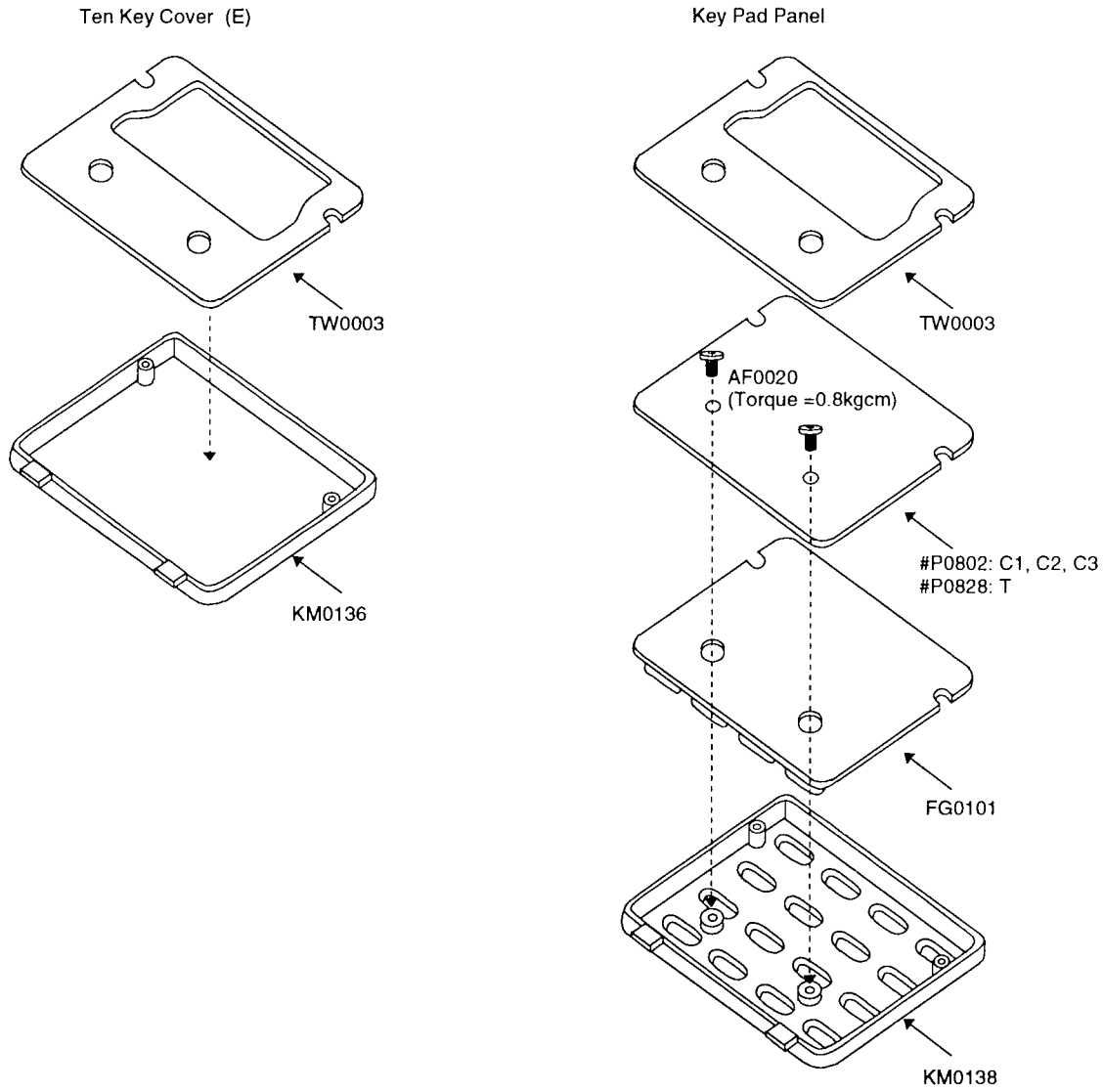
5) Front Case 2



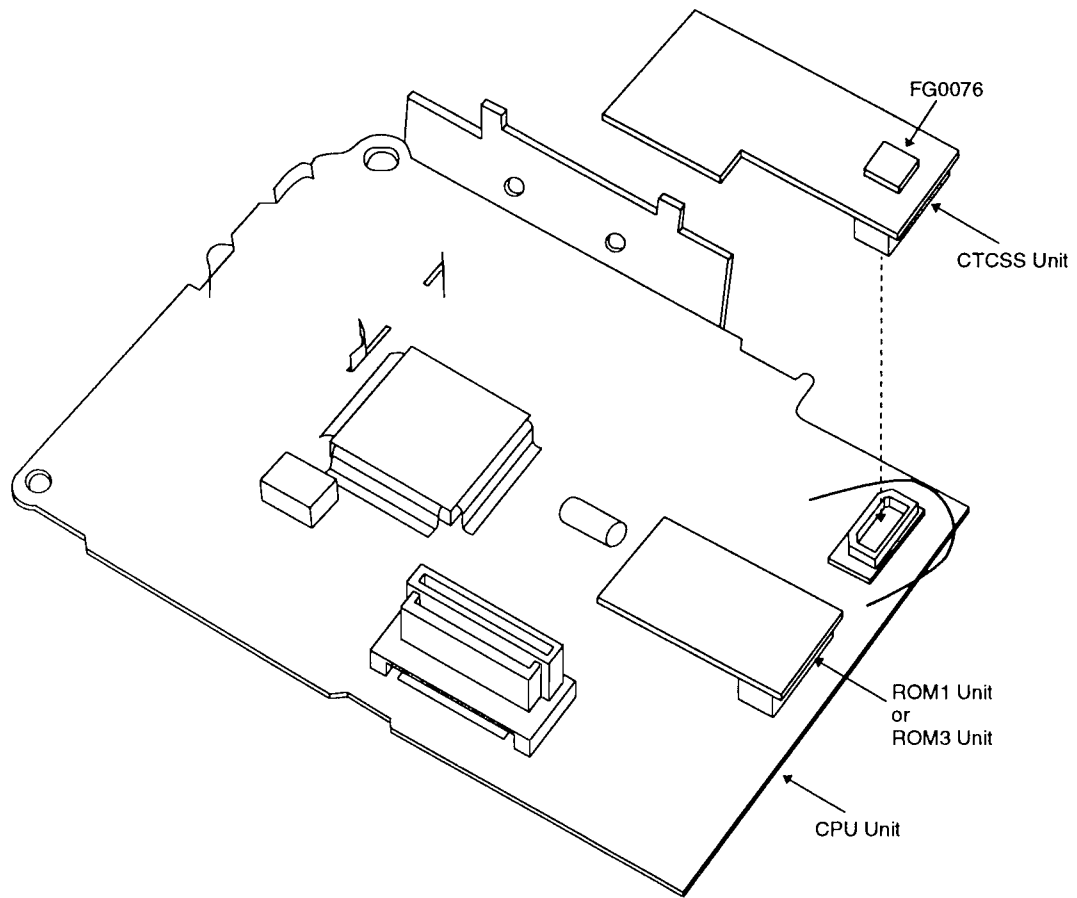
6) Rear Case 3 and Battery Terminal



7) Ten Key Cover and Key Pad Panel



8) CTCSS Unit and ROM Unit



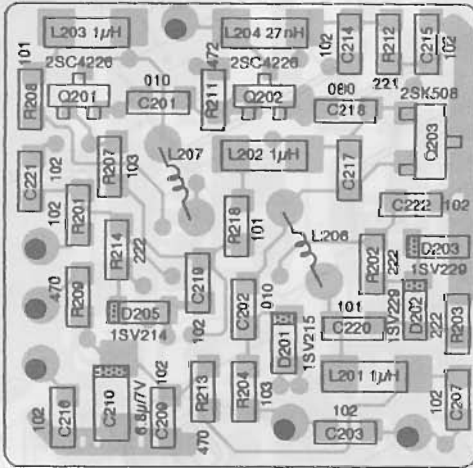
Model No.	DJ-480				
	T	E	C1	C2	C3
CTCSS Unit	1	0	0	0	0
ROM1 Unit	1	1	0	0	0
ROM3 Unit	0	0	1	1	1

PC BOARD VIEW

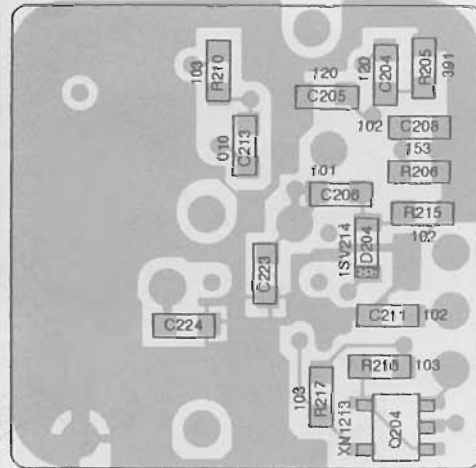
B) CTCSS Unit and ROM Unit

1) VCO Unit

Side A



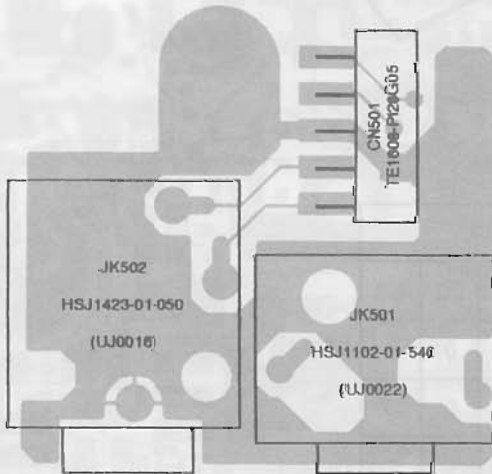
Side B



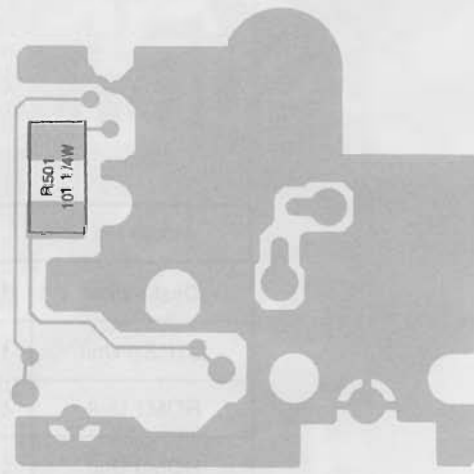
	C217	C223	C224	L206	L207
C1	5p	-	-	45B	45B (2.0 4.5T 0.5)
C2	5p	-	-	35B	35B (2.0 3.5T 0.5)
C3/T/E	6p	2p	2p	35B	35B (2.0 3.5T 0.5)

2) Jack Unit

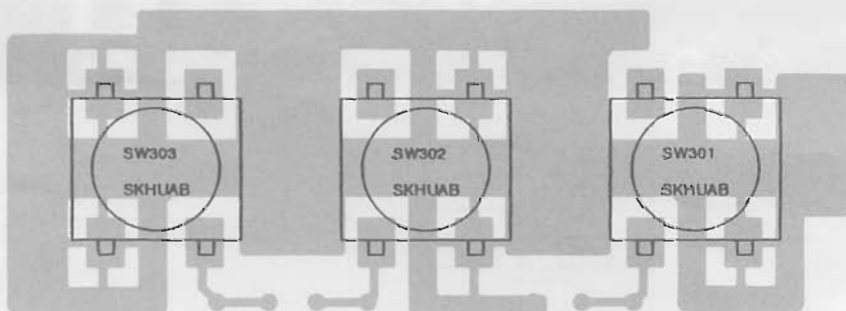
Side A



Side B



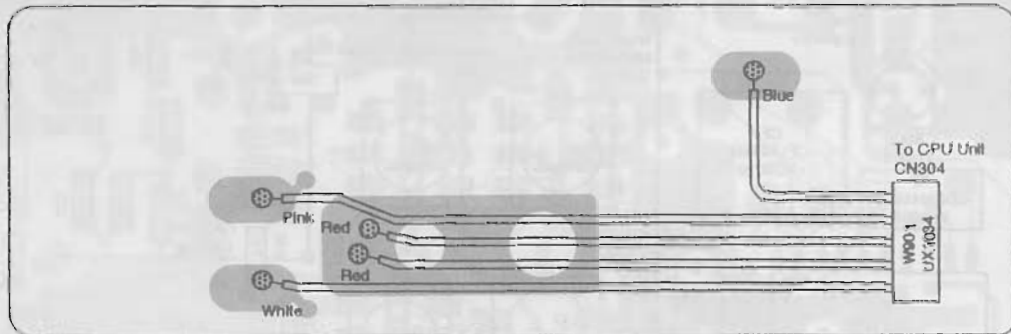
3) PTT Unit Side B



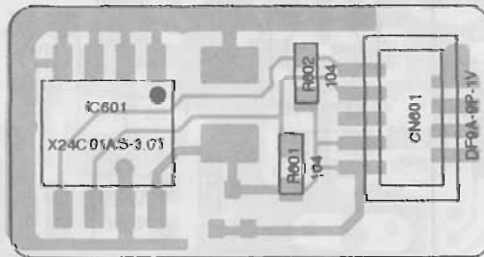
**4) PS Unit
Side A**



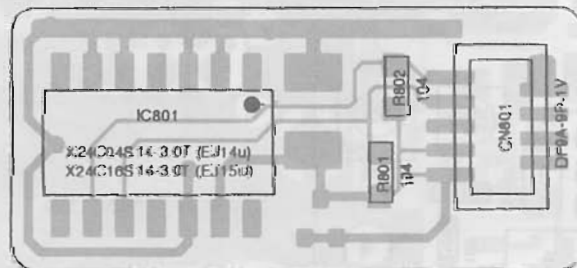
Side B



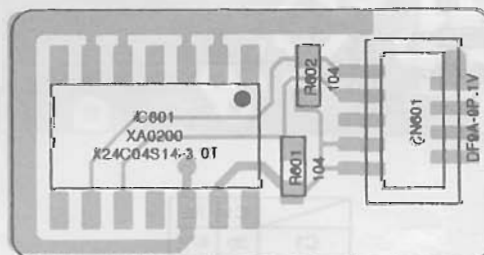
5) ROM1 Unit Side B



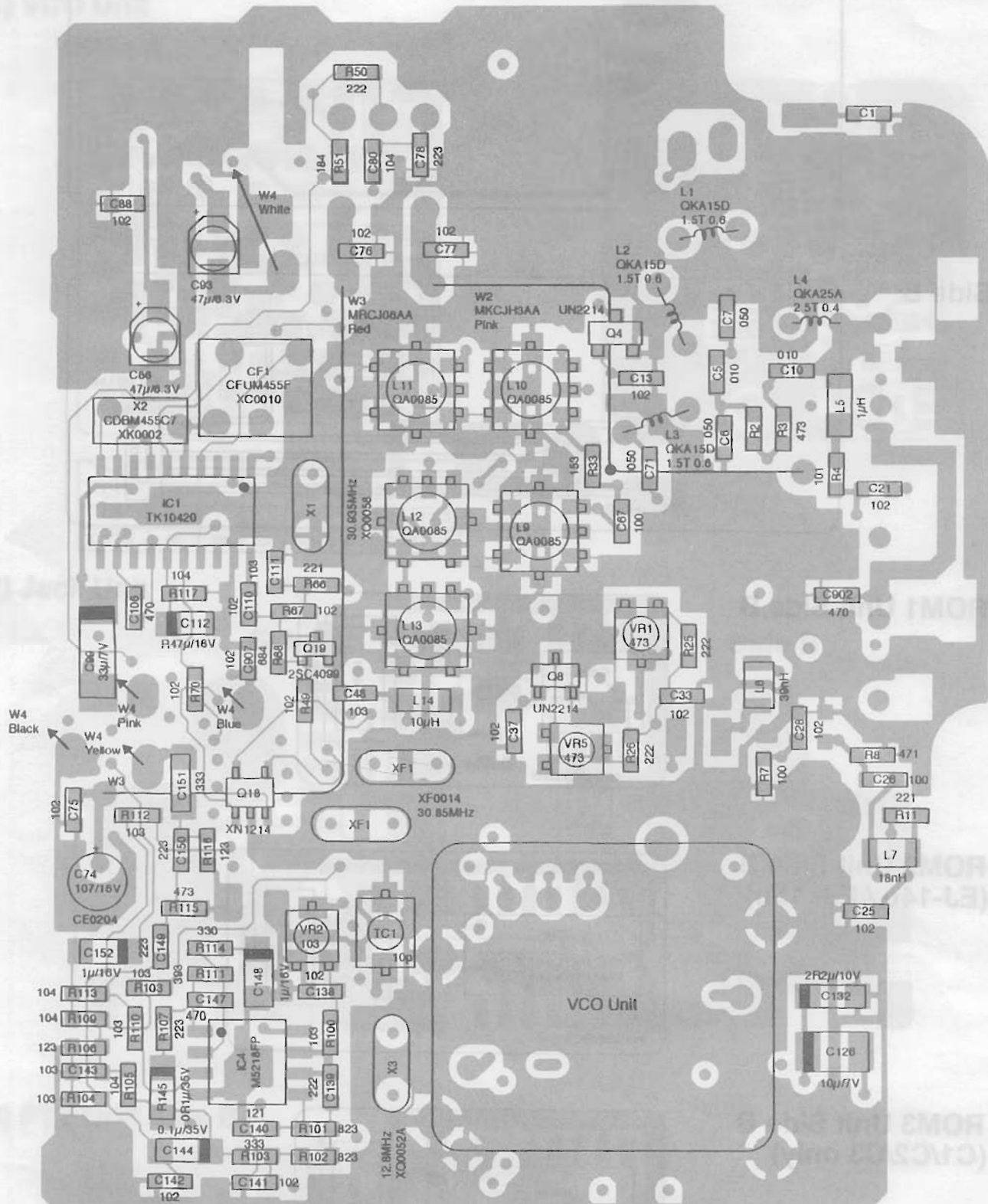
**6) ROM2 Unit Side B
(EJ-14u / EJ-15u)**



**7) ROM3 Unit Side B
(C1/C2/C3 only)**

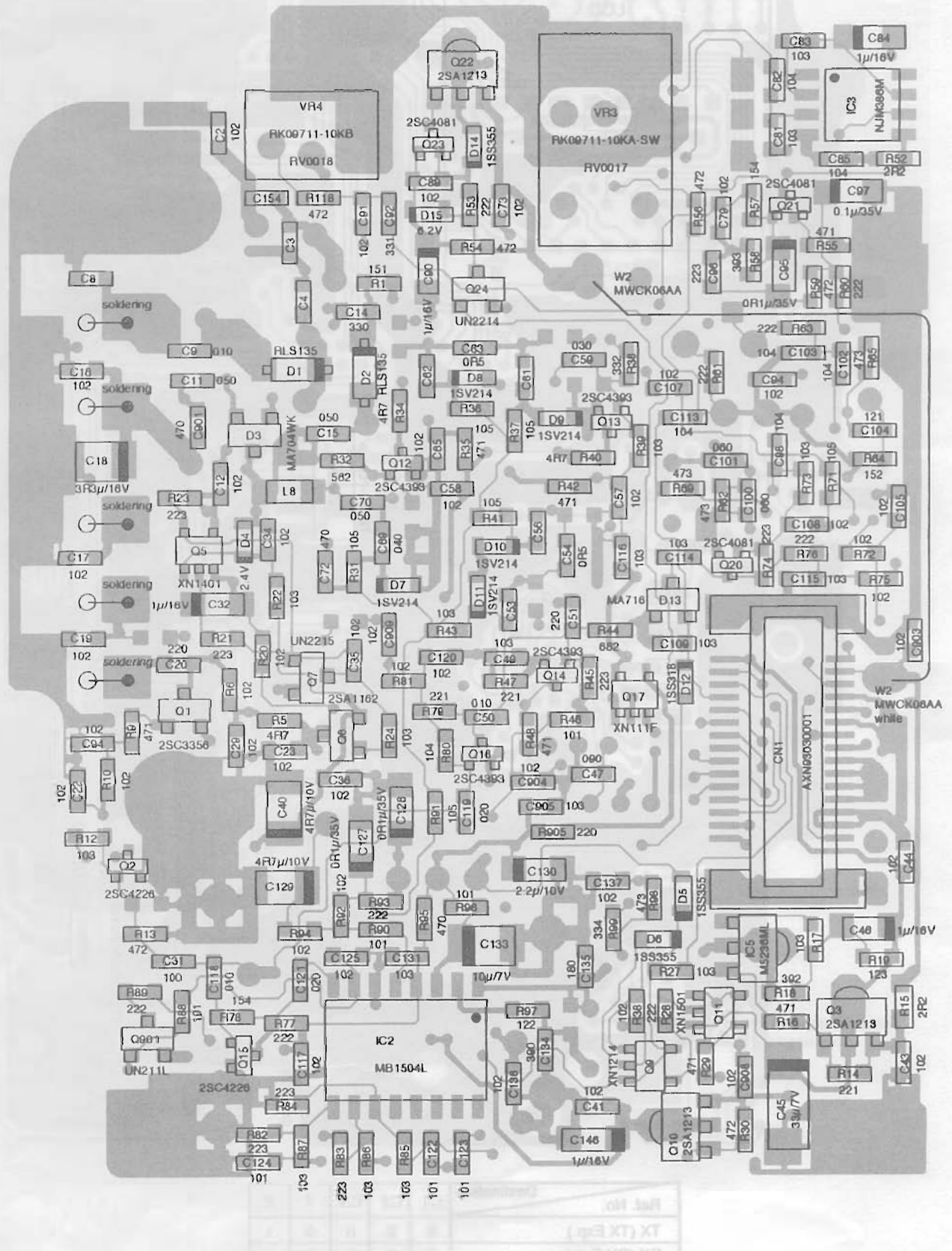


8) RF Unit Side A



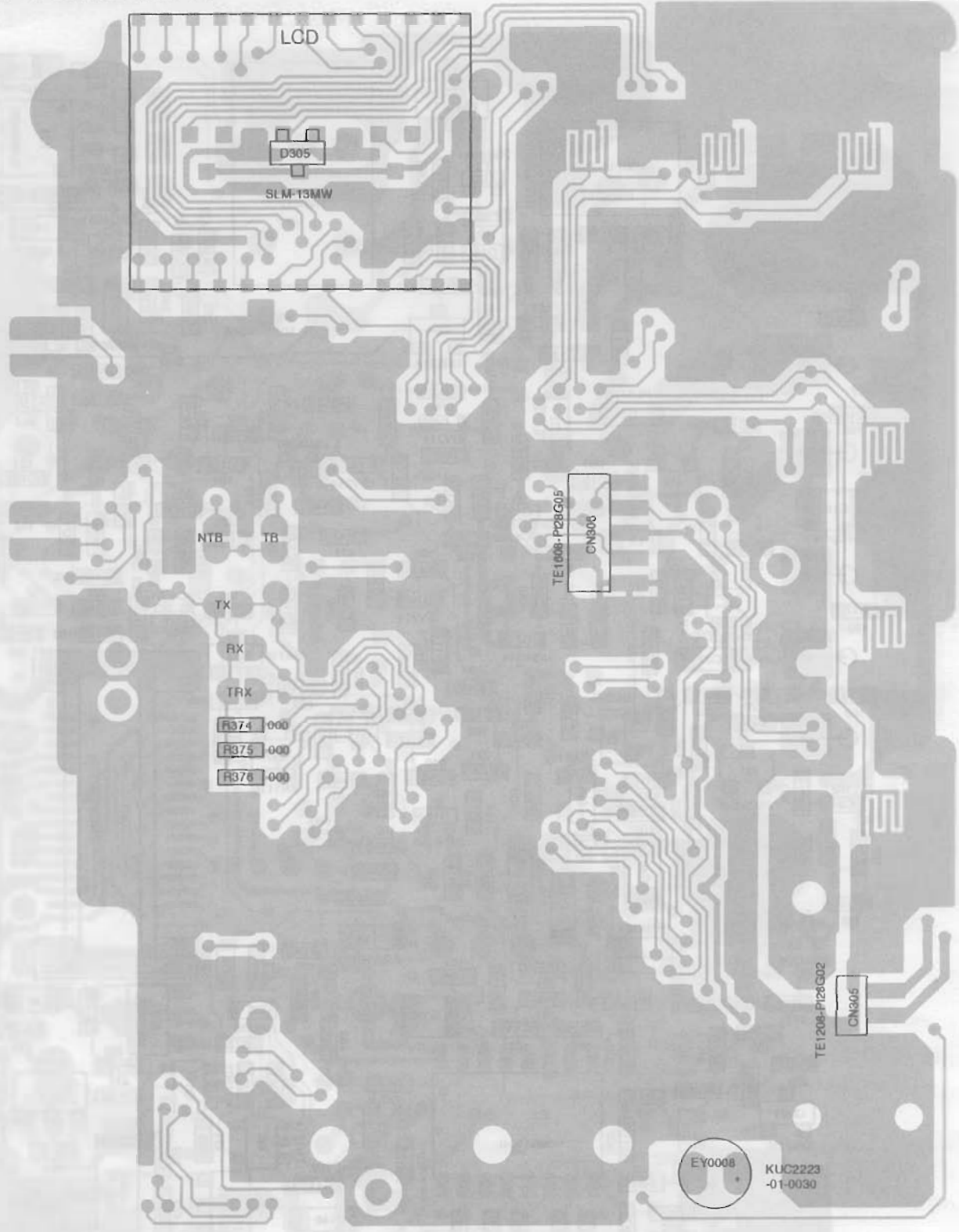
	C1	R2
C1	3p	47K
C2	-	22K
C3/T/E	-	22K

9) RF Unit Side B



	C3	C4	C8	C53	C56	C61	C62	C164	L8
C1	12p	18p	10p	7p	7p	7p	7p	3p	22n
C2	10p	15p	7p	6p	6p	6p	6p	-	10n
C3/TE	10p	15p	7p	6p	6p	6p	6p	-	10n

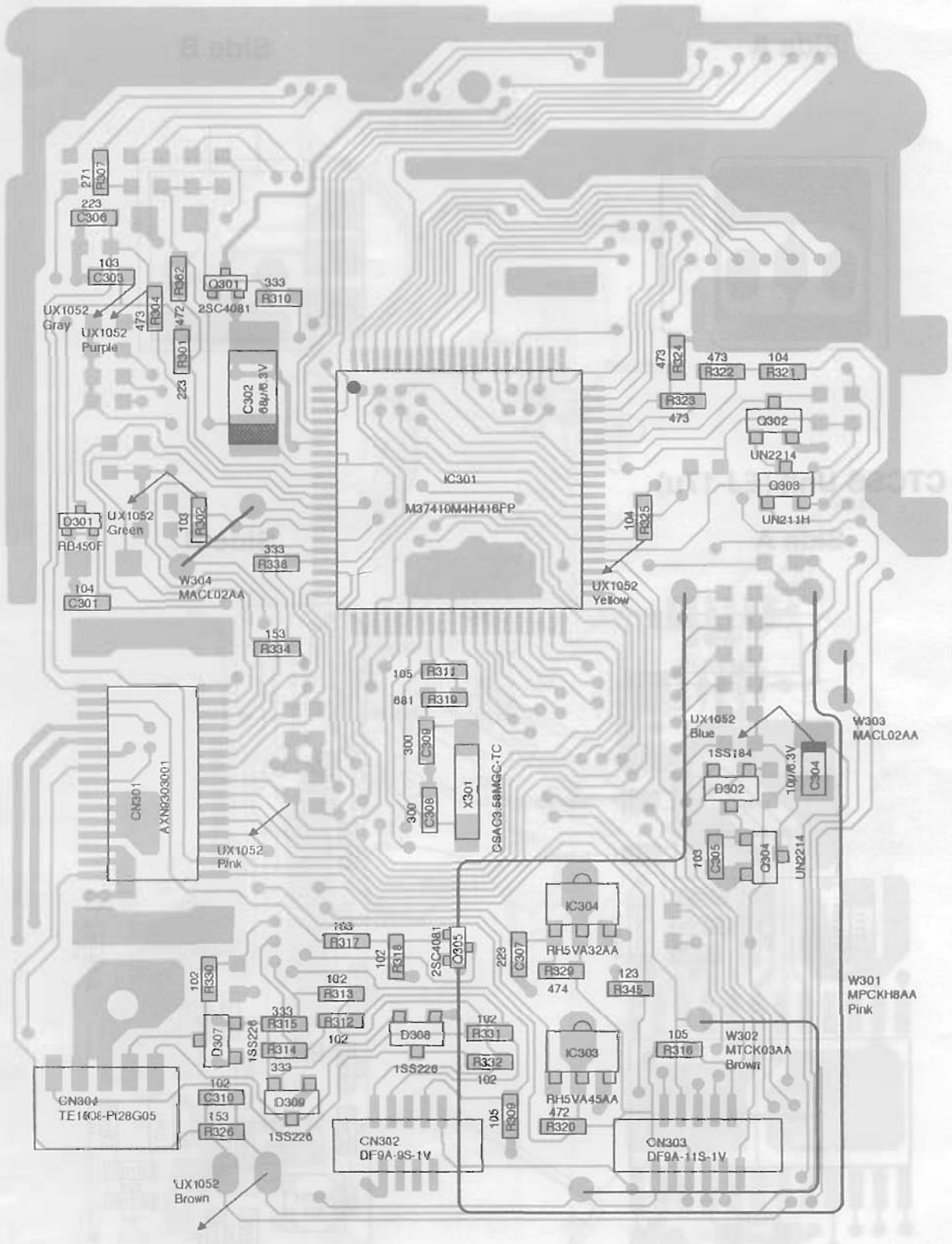
10) CPU Unit Side A



Ref. No.	Destination	C1	C2	C3	T	E
TX (TX Exp.)		0	0	0	0	1
RX (RX Exp.)		0	0	0	0	1
TRX (TX/RX Exp.)		0	0	0	1	0
R374		0	0	0	1	1
R375		0	0	0	1	0
CN306		0	0	0	1	1

11) CPU Unit Side B

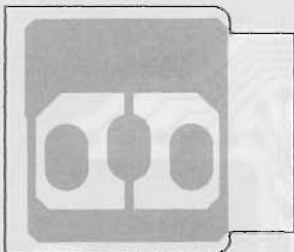
(S) RE Unit



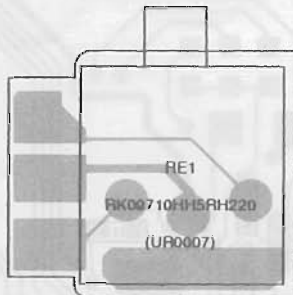
Ref.No.	Destination	C1	C2	C3	T	E
TB (with Tone Burst)		0	0	0	0	1
NTB (without Tone Burst)		1	1	1	1	0
W301 (Cut when TX is expanded.)		0	0	0	1	0
W302 (Cut when CTCSS is equipped.)		1	1	1	0	1
UX1052		1	1	1	0	0

12) RE Unit

Side A

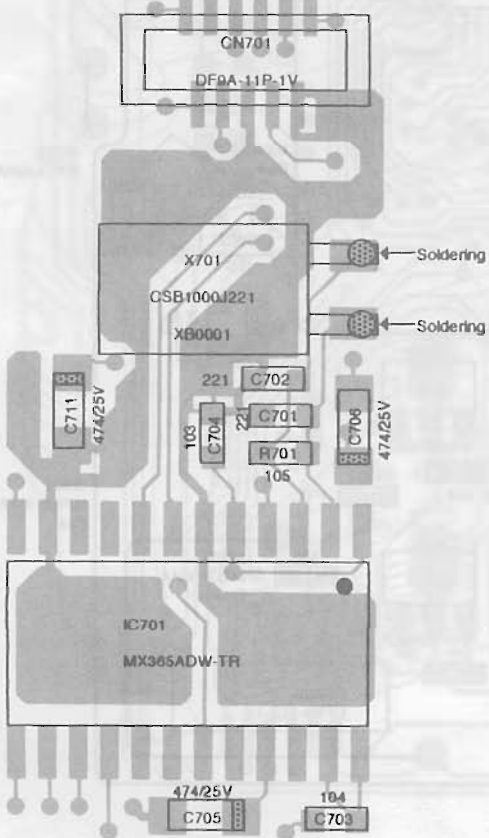


Side B

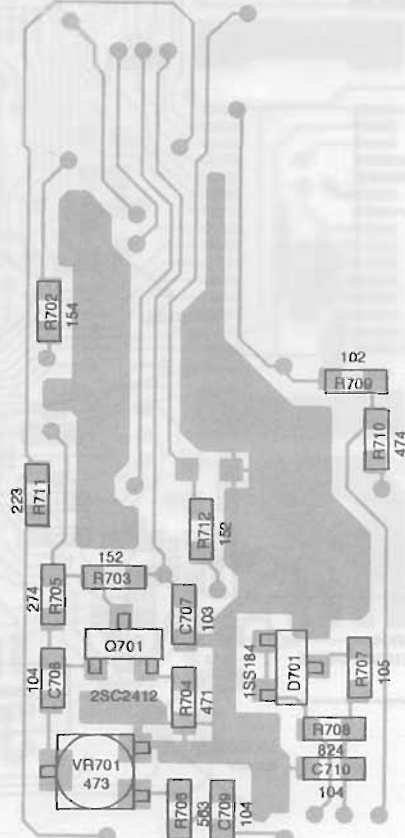


13) CTCSS Unit (EJ-17u)

Side A

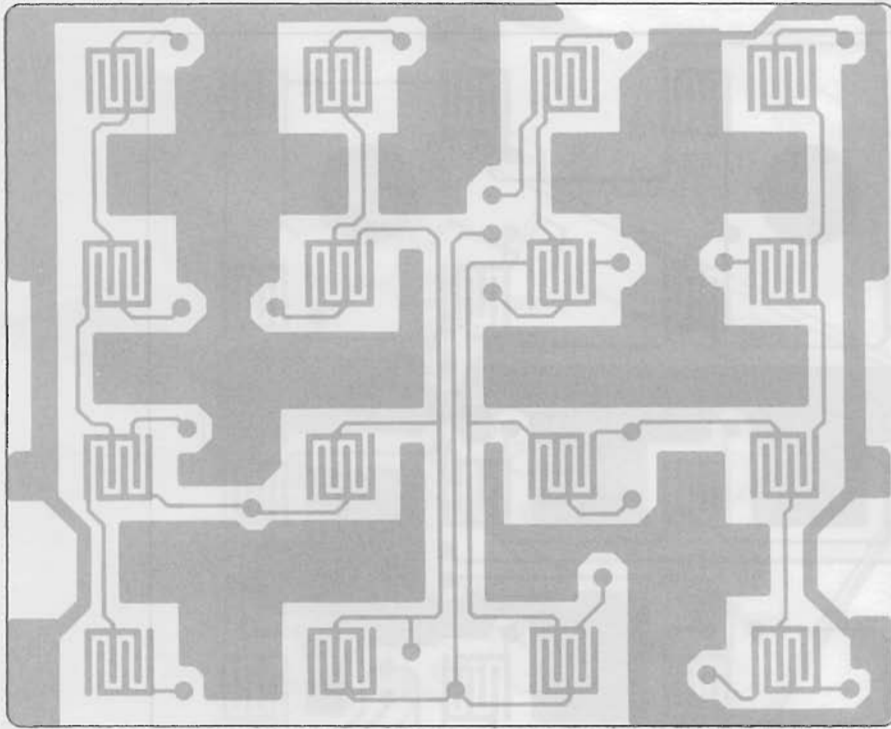


Side B

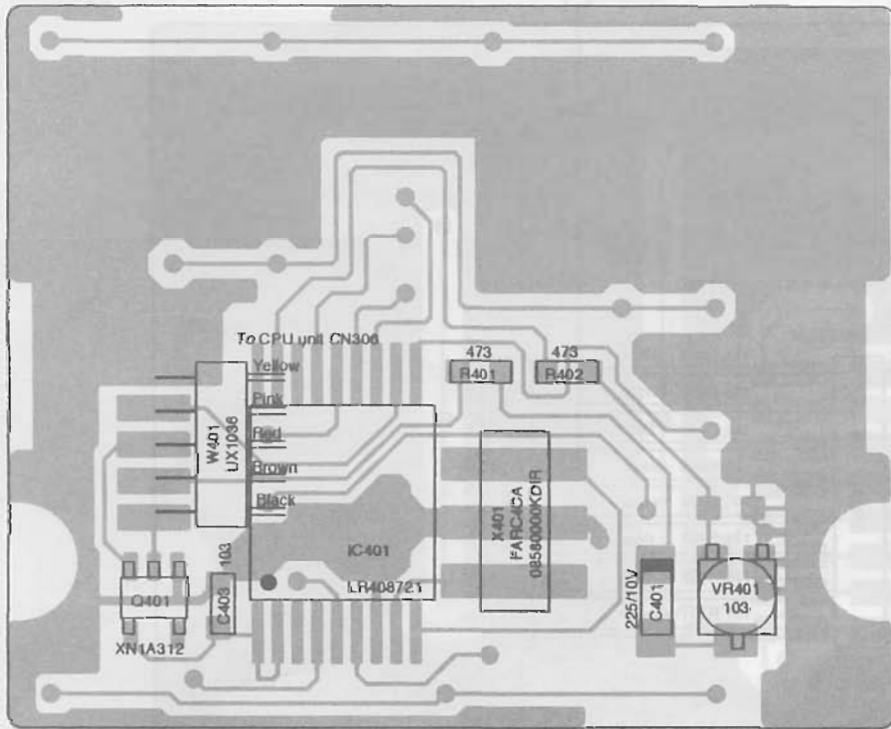


14) DTMF Unit (EJ-13u)

Side A

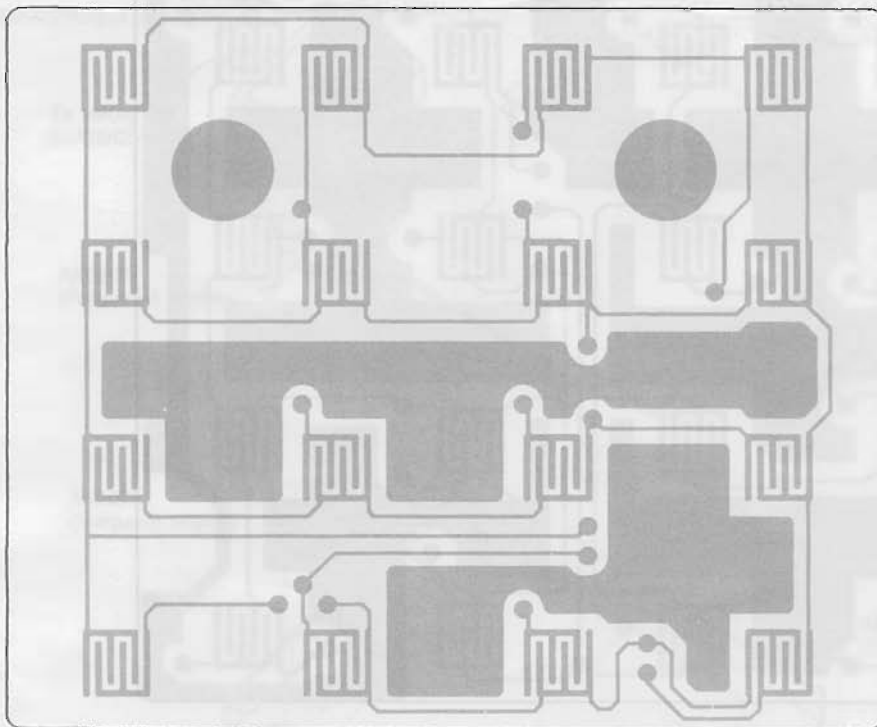


Side B

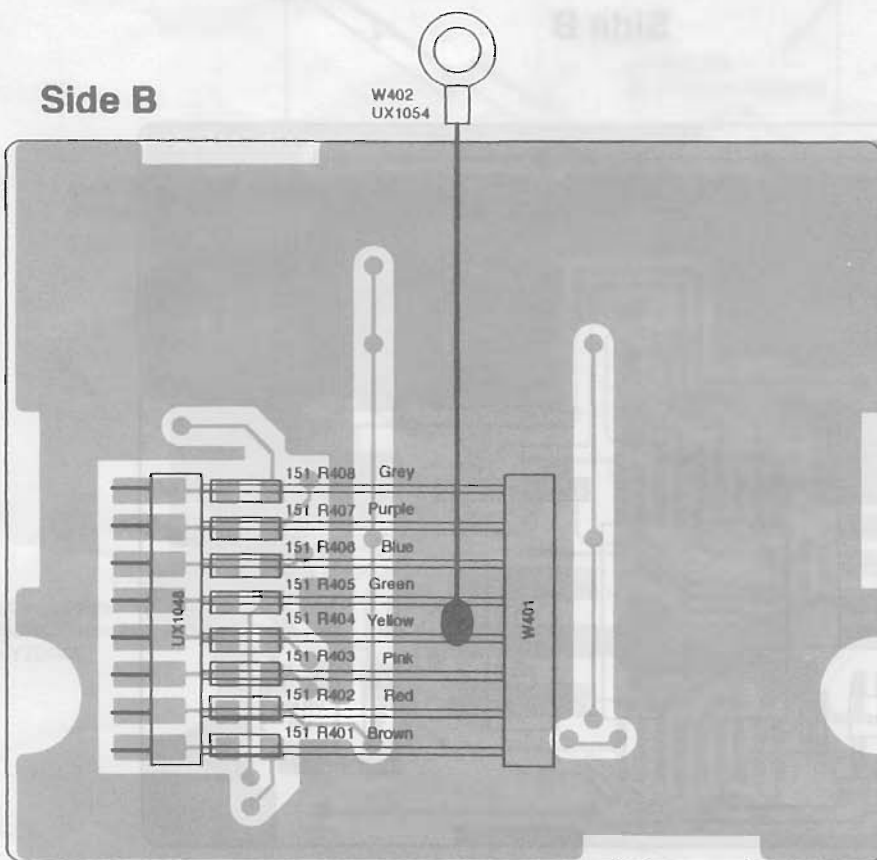


15) 16KEY Unit

Side A



Side B



PARTS LIST

CPU Unit

Ref. No.	Parts No.	Description	Parts Name	Ref. No.	Parts No.	Description	Parts Name
CPU Unit							
C301	CU3059	Chip C.	C1608JF1E104ZT-A	R319	RK3036	Chip R.	ERJ3GSYJ681V
C302	CS0333	Chip Tantal	ECST0JV686R	R320	RK3042	Chip R.	ERJ3GSYJ222V
C303	CU3047	Chip C.	C1608JB1H103KT-A	R321	RK3062	Chip R.	ERJ3GSYJ104V
C304	CS0239	Chip Tantal	ECST0JX106R	R322	RK3058	Chip R.	ERJ3GSYJ473V
C305	CU3047	Chip C.	C1608JB1H103KT-A	R323	RK3058	Chip R.	ERJ3GSYJ473V
C306	CU3054	Chip C.	C1608JB1E223KT-A	R324	RK3058	Chip R.	ERJ3GSYJ473V
C307	CU3054	Chip C.	C1608JB1E223KT-A	R325	RK3062	Chip R.	ERJ3GSYJ104V
C308	CU3085	Chip C.	C1608CH1H300JT-A	R326	RK3052	Chip R.	ERJ3GSYJ153V
C309	CU3085	Chip C.	C1608CH1H300JT-A	R329	RK3070	Chip R.	ERJ3GSYJ474V
C310	CU3035	Chip C.	C1608JB1H102KT-A	R330	RK3038	Chip R.	ERJ3GSYJ102V
C311	CU3035	Chip C.	C1608JB1H102KT-A	R331	RK3038	Chip R.	ERJ3GSYJ102V
C312	CU3035	Chip C.	C1608JB1H102KT-A	R332	RK3038	Chip R.	ERJ3GSYJ102V
C313	CU3035	Chip C.	C1608JB1H102KT-A	R334	RK3052	Chip R.	ERJ3GSYJ153V
C314	CE0344	Electrolytic C.	6MV 220SWB	R338	RK3056	Chip R.	ERJ3GSYJ333V
CN301	UE0143	Connector	AXN93030001	R345	RK3051	Chip R.	ERJ3GSYJ123V
CN302	UE0129	Connector	DF9A-9S-1V (22)	R362	RK3046	Chip R.	ERJ3GSYJ472V
CN303	UE0130	Connector	DF9A-11S-1V (22)	R371	RK3050	Chip R.	ERJ3GSYJ103V
CN304	UE0147	Connector	TE1608-PI28G05	R374	RK3001	Chip R.	ERJ3GSY0R00V (E/T series)
CN305	UE0144	Connector	TE1208-PI28G02	R375	RK3001	Chip R.	ERJ3GSY0R00V (T series)
CN306	UE0147	Connector	TE1608-PI28G05	R376	RK3001	Chip R.	ERJ3GSY0R00V
D301	XD0134	Diode	RB450FT106	X301	XB0008	Crystal	CSAC3.58MGC-TC
D302	XD0057	Diode	1SS184TE85L	W301	MPCKH8AA	Wire	DJ-180 J301 (T series)
D305	XL0016	LED	SLM-13MWSF96B	W302	MTCK03AA	Wire	DJ-180 J302 (C1/C2/C3/E series)
D307	XD0103	Diode	1SS226TE85L	W303	MACL02AA	Wire	#30A02-020-02
D308	XD0103	Diode	1SS226TE85L	W304	MACL02AA	Wire	#30A02-020-02
D309	XD0103	Diode	1SS226TE85L	W305	UX1052	Wire	EJ-18u W2 (C1/C2/C3 series)
IC301	XA0242	IC	M37410M4H416FP	EL0020		LCD	DJ145 LCD
IC303	XA0208	IC	RH5VA45AA-T1	EY0008		Microphone	KUC2223-01-0030
IC304	XA0198	IC	RH5VA32AA-T1	DH0008			Lighting Plate
Q301	XT0095	Transistor	2SC4081T106R	FG0098			Mic Rubber DJ-180T
Q302	XU0038	Transistor	UN2214-TX	FG0099			Rubber Connector
Q303	XU0040	Transistor	UN211H-TX	ST0031A			LCD Frame
Q304	XU0038	Transistor	UN2214-TX				
Q305	XT0095	Transistor	2SC4081T106R				
R301	RK3054	Chip R.	ERJ3GSYJ223V				
R302	RK3050	Chip R.	ERJ3GSYJ103V				
R304	RK3058	Chip R.	ERJ3GSYJ473V				
R307	RK3031	Chip R.	ERJ3GSYJ271V				
R309	RK3074	Chip R.	ERJ3GSYJ105V				
R310	RK3056	Chip R.	ERJ3GSYJ333V				
R311	RK3074	Chip R.	ERJ3GSYJ105V				
R312	RK3038	Chip R.	ERJ3GSYJ102V				
R313	RK3038	Chip R.	ERJ3GSYJ102V				
R314	RK3056	Chip R.	ERJ3GSYJ333V				
R315	RK3056	Chip R.	ERJ3GSYJ333V				
R316	RK3074	Chip R.	ERJ3GSYJ105V				
R317	RK3050	Chip R.	ERJ3GSYJ103V				
R318	RK3038	Chip R.	ERJ3GSYJ102V				

Ref. No.	Parts No.	Description	Parts Name	Ref. No.	Parts No.	Description	Parts Name
RF Unit							
C1			See the "Version Table".	C59	CU3004	Chip C.	C1608CH1H030CT-A
C2	CU3035	Chip C.	C1608JB1H102KT-A	C61			See the "Version Table".
C3			See the "Version Table".	C62			See the "Version Table".
C4			See the "Version Table".	C63	CU3001	Chip C.	C1608CH1H0R5CT-A
C5	CU3002	Chip C.	C1608CH1H010CT-A	C65	CU3035	Chip C.	C1608JB1H102KT-A
C6	CU3006	Chip C.	C1608CH1H050CT-A	C67	CU3011	Chip C.	C1608CH1H100CT-A
C7	CU3006	Chip C.	C1608CH1H050CT-A	C69	CU3005	Chip C.	C1608CH1H040CT-A
C8			See the "Version Table".	C70	CU3006	Chip C.	C1608CH1H050CT-A
C9	CU3002	Chip C.	C1608CH1H010CT-A	C71	CU3006	Chip C.	C1608CH1H050CT-A
C10	CU3002	Chip C.	C1608CH1H010CT-A	C72	CU3019	Chip C.	C1608CH1H470JT-A
C11	CU3006	Chip C.	C1608CH1H050CT-A	C73	CU3035	Chip C.	C1608JB1H102KT-A
C12	CU3035	Chip C.	C1608JB1H102KT-A	C74	CE0204	Electrolytic C.	ECEA1CKA107
C13	CU3035	Chip C.	C1608JB1H102KT-A	C75	CU3035	Chip C.	C1608JB1H102KT-A
C14	CU3017	Chip C.	C1608CH1H330JT-A	C76	CU3035	Chip C.	C1608JB1H102KT-A
C15	CU3006	Chip C.	C1608CH1H050CT-A	C77	CU3035	Chip C.	C1608JB1H102KT-A
C16	CU3035	Chip C.	C1608JB1H102KT-A	C78	CU3054	Chip C.	C1608JB1E223KT-A
C17	CU3035	Chip C.	C1608JB1H102KT-A	C79	CU3035	Chip C.	C1608JB1H102KT-A
C18	CS0269	Chip Tantal	ECST1CX335R	C80	CU3059	Chip C.	C1608JF1E104ZT-A
C19	CU3035	Chip C.	C1608JB1H102KT-A	C81	CU3047	Chip C.	C1608JB1H103KT-A
C20	CU3015	Chip C.	C1608CH1H220JT-A	C82	CU3059	Chip C.	C1608JF1E104ZT-A
C21	CU3035	Chip C.	C1608JB1H102KT-A	C83	CU3047	Chip C.	C1608JB1H103KT-A
C22	CU3035	Chip C.	C1608JB1H102KT-A	C84	CS0277	Chip Tantal	ECST1CY105R
C23	CU3035	Chip C.	C1608JB1H102KT-A	C85	CU3059	Chip C.	C1608JF1E104ZT-A
C24	CU3035	Chip C.	C1608JB1H102KT-A	C86	CE0307	Electrolytic C.	ECEV0JA476P
C25	CU3035	Chip C.	C1608JB1H102KT-A	C88	CU3035	Chip C.	C1608JB1H102KT-A
C26	CU3011	Chip C.	C1608CH1H100CT-A	C90	CS0277	Chip Tantal	ECST1CY105R
C28	CU3035	Chip C.	C1608JB1H102KT-A	C89	CU3035	Chip C.	C1608JB1H102KT-A
C29	CU3035	Chip C.	C1608JB1H102KT-A	C91	CU3035	Chip C.	C1608JB1H102KT-A
C31	CU3011	Chip C.	C1608CH1H100CT-A	C92	CU3029	Chip C.	C1608JB1H331KT-A
C32	CS0277	Chip Tantal	ECST1CY105R	C93	CE0307	Electrolytic C.	ECEV0JA476P
C33	CU3035	Chip C.	C1608JB1H102KT-A	C94	CU3035	Chip C.	C1608JB1H102KT-A
C34	CU3035	Chip C.	C1608JB1H102KT-A	C95	CS0307	Chip Tantal	ECST1VY104R
C35	CU3035	Chip C.	C1608JB1H102KT-A	C96	CU3054	Chip C.	C1608JB1E223KT-A
C36	CU3035	Chip C.	C1608JB1H102KT-A	C97	CS0307	Chip Tantal	ECST1VY104R
C37	CU3035	Chip C.	C1608JB1H102KT-A	C98	CU3059	Chip C.	C1608JF1E104ZT-A
C38	CU3035	Chip C.	C1608JB1H102KT-A	C99	CS0331	Chip Tantal	ECST0JC336R
C39	CU3006	Chip C.	C1608CH1H050CT-A	C100	CU3007	Chip C.	C1608CH1H060CT-A
C40	CS0258	Chip Tantal	ECST1AX475R	C101	CU3007	Chip C.	C1608CH1H060CT-A
C41	CU3035	Chip C.	C1608JB1H102KT-A	C102	CU3059	Chip C.	C1608JF1E104ZT-A
C43	CU3035	Chip C.	C1608JB1H102KT-A	C103	CU3059	Chip C.	C1608JF1E104ZT-A
C44	CU3035	Chip C.	C1608JB1H102KT-A	C104	CU3024	Chip C.	C1608CH1H121JT-A
C45	CS0331	Chip Tantal	ECST0JC336R	C105	CU3035	Chip C.	C1608JB1H102KT-A
C46	CS0277	Chip Tantal	ECST1CY105R	C106	CU3019	Chip C.	C1608CH1H470JT-A
C47	CU3010	Chip C.	C1608CH1H090CT-A	C107	CU3035	Chip C.	C1608JB1H102KT-A
C48	CU3047	Chip C.	C1608JB1H103KT-A	C108	CU3035	Chip C.	C1608JB1H102KT-A
C49	CU3047	Chip C.	C1608JB1H103KT-A	C109	CU3047	Chip C.	C1608JB1H103KT-A
C50	CU3002	Chip C.	C1608CH1H010CT-A	C110	CU3035	Chip C.	C1608JB1H102KT-A
C51	CU3015	Chip C.	C1608CH1H220JT-A	C111	CU3047	Chip C.	C1608JB1H103KT-A
C53			See the "Version Table".	C112	CS0060	Chip Tantal	TMCSA1E474MTR
C54	CU3001	Chip C.	C1608CH1H0R5CT-A	C113	CU3059	Chip C.	C1608JF1E104ZT-A
C56			See the "Version Table".	C114	CU3047	Chip C.	C1608JB1H103KT-A
C57	CU3035	Chip C.	C1608JB1H102KT-A	C115	CU3047	Chip C.	C1608JB1H103KT-A
C58	CU3035	Chip C.	C1608JB1H102KT-A	C116	CU3047	Chip C.	C1608JB1H103KT-A
				C117	CU3035	Chip C.	C1608JB1H102KT-A

RF Unit

Ref. No.	Parts No.	Description	Parts Name	Ref. No.	Parts No.	Description	Parts Name
C118	CU3002	Chip C.	C1608CH1H010CT-A	D6	XD0254	Diode	1SS355TE-17
C119	CU3003	Chip C.	C1608CH1H020CT-A	D7	XD0131	Diode	1SV214TPH4
C120	CU3035	Chip C.	C1608JB1H102KT-A	D8	XD0131	Diode	1SV214TPH4
C121	CU3003	Chip C.	C1608CH1H020CT-A	D9	XD0131	Diode	1SV214TPH4
C122	CU3023	Chip C.	C1608CH1H101JT-A	D10	XD0131	Diode	1SV214TPH4
C123	CU3023	Chip C.	C1608CH1H101JT-A	D11	XD0131	Diode	1SV214TPH4
C124	CU3023	Chip C.	C1608CH1H101JT-A	D12	XD0254	Diode	1SS355TE-17
C125	CU3035	Chip C.	C1608JB1H102KT-A	D13	XD0118	Diode	MA716-TW
C126	CS0329	Chip Tantal	ECST0JX106R	D14	XD0254	Diode	1SS355TE-17
C127	CS0307	Chip Tantal	ECST1VY104R	D15	XD0137	Diode	DTZ6.2ATT11
C128	CS0307	Chip Tantal	ECST1VY104R	FB1	QB0021	Ferrite Bead	HF70BB3.4X3X1
C129	CS0258	Chip Tantal	ECST1AX475R	FB2	QB0021	Ferrite Bead	HF70BB3.4X3X1
C130	CS0256	Chip Tantal	ECST1AY225R	FB3	QB0021	Ferrite Bead	HF70BB3.4X3X1
C131	CU3047	Chip C.	C1608JB1H103KT-A	IC1	XA0234	IC	TK10420MTR
C132	CS0256	Chip Tantal	ECST1AY225R	IC2	XA0145	IC	MB1504LPF-G-BND-TF
C133	CS0329	Chip Tantal	ECST0JX106R	IC3	XA0061	IC	NJM386M-T1
C134	CU3018	Chip C.	C1608CH1H390JT-A	IC4	XA0068	IC	M5218FP-T01-1
C135	CU3014	Chip C.	C1608CH1H180JT-A	IC5	XA0104	IC	M5236ML-T73A-36
C136	CU3035	Chip C.	C1608JB1H102KT-A	IC6		IC	See the "Version Table".
C137	CU3035	Chip C.	C1608JB1H102KT-A	L1	QKA15D	Coil	MR3.0 1.5T 0.6
C138	CU3035	Chip C.	C1608JB1H102KT-A	L2	QKA15D	Coil	MR3.0 1.5T 0.6
C139	CU3039	Chip C.	C1608JB1H222KT-A	L3	QKA15D	Coil	MR3.0 1.5T 0.6
C140	CU3024	Chip C.	C1608CH1H121JT-A	L4	QKA25A	Coil	MR1.5 2.5T 0.4
C141	CU3035	Chip C.	C1608JB1H102KT-A	L5	QC0288	Chip L.	NL252018T-1R0J
C142	CU3035	Chip C.	C1608JB1H102KT-A	L6	QC0271	Chip L.	NL252018T-390J
C143	CU3047	Chip C.	C1608JB1H103KT-A	L7	QC0267	Chip L.	NL252018T-018K
C144	CS0307	Chip Tantal	ECST1VY104R	L8			See the "Version Table".
C145	CS0307	Chip Tantal	ECST1VY104R	L9	QA0085	Coil	QA0085
C146	CS0277	Chip Tantal	ECST1CY105R	L10	QA0085	Coil	QA0085
C147	CU3019	Chip C.	C1608CH1H470JT-A	L11	QA0085	Coil	QA0085
C148	CS0277	Chip Tantal	ECST1CY105R	L12	QA0085	Coil	QA0085
C149	CU3054	Chip C.	C1608JB1E223KT-A	L13	QA0085	Coil	QA0085
C150	CU3054	Chip C.	C1608JB1E223KT-A	L14	QC0010	Coil	MLF3216E100M
C151	CU9016	Chip C.	C3216JB1H333KT	Q1	XT0030	Transistor	2SC3356T1BR24/25
C152	CS0277	Chip Tantal	ECST1CY105R	Q2	XT0106	Transistor	2SC4226-T1
C154			See the "Version Table".	Q3	XT0088	Transistor	2SA1213YTE12L
C901	CU3019	Chip C.	C1608CH1H470JT-A	Q4	XU0038	Transistor	UN2214-TX
C902	CU3019	Chip C.	C1608CH1H470JT-A	Q5	XU0034	Transistor	XN1401-TX
C903	CU3035	Chip C.	C1608JB1H102KT-A	Q6	XT0068	Transistor	2SA1162GRTE85L
C904	CU3035	Chip C.	C1608JB1H102KT-A	Q7	XU0037	Transistor	UN2215-TX
C905	CU3047	Chip C.	C1608JB1H103KT-A	Q8	XU0038	Transistor	UN2214-TX
C907	CU3035	Chip C.	C1608JB1H102KT-A	Q9	XU0035	Transistor	XN1214-TX
C908	CU3035	Chip C.	C1608JB1H102KT-A	Q10	XT0088	Transistor	2SA1213YTE12L
C909	CU3035	Chip C.	C1608JB1H102KT-A	Q11	XU0053	Transistor	XN1501-TX
CF1	XC0010	Filter	CFUM455F	Q12	XT0097	Transistor	2SC4393TE85R
CN1	UE0143	Connector	AXN93030001	Q13	XT0097	Transistor	2SC4393TE85R
D1	XD0066	Diode	RLS135-TE-11	Q14	XT0097	Transistor	2SC4393TE85R
D2	XD0066	Diode	RLS135-TE-11	Q15	XT0106	Transistor	2SC4226-T1
D3	XD0120	Diode	MA704WK-TX	Q16	XT0106	Transistor	2SC4226-T1
D4	XD0147	Diode	DTZ2.4ATT11	Q17	XU0036	Transistor	XN111F-TX
D5	XD0254	Diode	1SS355TE-17				

Ref. No.	Parts No.	Description	Parts Name	Ref. No.	Parts No.	Description	Parts Name
Q18	XU0035	Transistor	XN1214-TX	R46	RK3026	Chip R.	ERJ3GSYJ101V
Q19	XT0096	Transistor	2SC4099T106N	R47	RK3030	Chip R.	ERJ3GSYJ221V
Q20	XT0095	Transistor	2SC4081T106R	R48	RK3034	Chip R.	ERJ3GSYJ471V
Q21	XT0095	Transistor	2SC4081T106R	R49	RK3038	Chip R.	ERJ3GSYJ102V
Q22	XT0088	Transistor	2SA1213YTE12L	R50	RK3042	Chip R.	ERJ3GSYJ222V
Q23	XT0095	Transistor	2SC4081T106R	R51	RK3065	Chip R.	ERJ3GSYJ184V
Q24	XU0038	Transistor	UN2214-TX	R52	RK3010	Chip R.	ERJ3GSYJ2R2V
Q901	XU0039	Transistor	UN211L-TX	R53	RK3042	Chip R.	ERJ3GSYJ222V
R1	RK3028	Chip R.	ERJ3GSYJ151V	R54	RK3046	Chip R.	ERJ3GSYJ472V
R2			See the "Version Table".	R55	RK3034	Chip R.	ERJ3GSYJ471V
R3	RK3058	Chip R.	ERJ3GSYJ473V	R56	RK3046	Chip R.	ERJ3GSYJ472V
R4	RK3026	Chip R.	ERJ3GSYJ101V	R57	RK3064	Chip R.	ERJ3GSYJ154V
R5	RK3010	Chip R.	ERJ3GSYJ4R7V	R58	RK3057	Chip R.	ERJ3GSYJ393V
R6	RK3038	Chip R.	ERJ3GSYJ102V	R59	RK3046	Chip R.	ERJ3GSYJ472V
R7	RK3014	Chip R.	ERJ3GSYJ100V	R60	RK3042	Chip R.	ERJ3GSYJ222V
R8	RK3034	Chip R.	ERJ3GSYJ471V	R61	RK3042	Chip R.	ERJ3GSYJ222V
R9	RK3034	Chip R.	ERJ3GSYJ471V	R62	RK3058	Chip R.	ERJ3GSYJ473V
R10	RK3038	Chip R.	ERJ3GSYJ102V	R63	RK3042	Chip R.	ERJ3GSYJ222V
R11	RK3030	Chip R.	ERJ3GSYJ221V	R64	RK3040	Chip R.	ERJ3GSYJ152V
R12	RK3050	Chip R.	ERJ3GSYJ103V	R65	RK3058	Chip R.	ERJ3GSYJ473V
R13	RK3046	Chip R.	ERJ3GSYJ472V	R66	RK3030	Chip R.	ERJ3GSYJ221V
R14	RK3030	Chip R.	ERJ3GSYJ221V	R67	RK3038	Chip R.	ERJ3GSYJ102V
R15	RK0105	Chip R.	ERJ6GEYJ2R2V	R68	RK3072	Chip R.	ERJ3GSYJ684V
R16	RK3034	Chip R.	ERJ3GSYJ471V	R69	RK3058	Chip R.	ERJ3GSYJ473V
R17	RK3050	Chip R.	ERJ3GSYJ103V	R70	RK3038	Chip R.	ERJ3GSYJ102V
R18	RK3045	Chip R.	ERJ3GSYJ392V	R71	RK3074	Chip R.	ERJ3GSYJ105V
R19	RK3051	Chip R.	ERJ3GSYJ123V	R72	RK3038	Chip R.	ERJ3GSYJ102V
R20	RK3038	Chip R.	ERJ3GSYJ102V	R73	RK3050	Chip R.	ERJ3GSYJ103V
R21	RK3054	Chip R.	ERJ3GSYJ223V	R74	RK3054	Chip R.	ERJ3GSYJ223V
R22	RK3050	Chip R.	ERJ3GSYJ103V	R75	RK3038	Chip R.	ERJ3GSYJ102V
R23	RK3054	Chip R.	ERJ3GSYJ223V	R76	RK3042	Chip R.	ERJ3GSYJ222V
R24	RK3050	Chip R.	ERJ3GSYJ103V	R77	RK3042	Chip R.	ERJ3GSYJ222V
R25	RK3042	Chip R.	ERJ3GSYJ222V	R78	RK3064	Chip R.	ERJ3GSYJ154V
R26	RK3042	Chip R.	ERJ3GSYJ222V	R79	RK3030	Chip R.	ERJ3GSYJ221V
R27	RK3050	Chip R.	ERJ3GSYJ103V	R80	RK3062	Chip R.	ERJ3GSYJ104V
R28	RK3042	Chip R.	ERJ3GSYJ222V	R81	RK3038	Chip R.	ERJ3GSYJ102V
R29	RK3034	Chip R.	ERJ3GSYJ471V	R82	RK3054	Chip R.	ERJ3GSYJ223V
R30	RK3046	Chip R.	ERJ3GSYJ472V	R83	RK3054	Chip R.	ERJ3GSYJ223V
R31	RK3074	Chip R.	ERJ3GSYJ105V	R84	RK3054	Chip R.	ERJ3GSYJ223V
R32	RK3047	Chip R.	ERJ3GSYJ562V	R85	RK3050	Chip R.	ERJ3GSYJ103V
R33	RK3052	Chip R.	ERJ3GSYJ153V	R86	RK3050	Chip R.	ERJ3GSYJ103V
R34	RK3010	Chip R.	ERJ3GSYJ4R7V	R87	RK3050	Chip R.	ERJ3GSYJ103V
R35	RK3034	Chip R.	ERJ3GSYJ471V	R88	RK3026	Chip R.	ERJ3GSYJ101V
R36	RK3074	Chip R.	ERJ3GSYJ105V	R89	RK3042	Chip R.	ERJ3GSYJ222V
R37	RK3074	Chip R.	ERJ3GSYJ105V	R90	RK3026	Chip R.	ERJ3GSYJ101V
R38	RK3044	Chip R.	ERJ3GSYJ332V	R91	RK3074	Chip R.	ERJ3GSYJ105V
R39	RK3050	Chip R.	ERJ3GSYJ103V	R92	RK3038	Chip R.	ERJ3GSYJ102V
R40	RK3010	Chip R.	ERJ3GSYJ4R7V	R93	RK3042	Chip R.	ERJ3GSYJ222V
R41	RK3074	Chip R.	ERJ3GSYJ105V	R94	RK3038	Chip R.	ERJ3GSYJ102V
R42	RK3034	Chip R.	ERJ3GSYJ471V	R95	RK3022	Chip R.	ERJ3GSYJ470V
R43	RK3074	Chip R.	ERJ3GSYJ105V	R96	RK3026	Chip R.	ERJ3GSYJ101V
R44	RK3048	Chip R.	ERJ3GSYJ682V	R97	RK3039	Chip R.	ERJ3GSYJ122V
R45	RK3054	Chip R.	ERJ3GSYJ223V	R98	RK3058	Chip R.	ERJ3GSYJ473V
				R99	RK3068	Chip R.	ERJ3GSYJ334V

RF Unit / VCO Unit

Ref. No.	Parts No.	Description	Parts Name	Ref. No.	Parts No.	Description	Parts Name
R100	RK3050	Chip R.	ERJ3GSYJ103V	VCO Unit			
R101	RK3061	Chip R.	ERJ3GSYJ823V	C201	CU3002	Chip C.	C1608CH1H010CT-A
R102	RK3061	Chip R.	ERJ3GSYJ823V	C202	CU3002	Chip C.	C1608CH1H010CT-A
R103	RK3056	Chip R.	ERJ3GSYJ333V	C203	CU3035	Chip C.	C1608JB1H102KT-A
R104	RK3050	Chip R.	ERJ3GSYJ103V	C204	CU3012	Chip C.	C1608CH1H120JT-A
R105	RK3062	Chip R.	ERJ3GSYJ104V	C205	CU3012	Chip C.	C1608CH1H120JT-A
R106	RK3051	Chip R.	ERJ3GSYJ123V	C206	CU3023	Chip C.	C1608CH1H101JT-A
R107	RK3054	Chip R.	ERJ3GSYJ223V	C207	CU3035	Chip C.	C1608JB1H102KT-A
R108	RK3050	Chip R.	ERJ3GSYJ103V	C208	CU3035	Chip C.	C1608JB1H102KT-A
R109	RK3062	Chip R.	ERJ3GSYJ104V	C209	CU3035	Chip C.	C1608JB1H102KT-A
R110	RK3050	Chip R.	ERJ3GSYJ103V	C210	CS0328	Chip Tantal	ECST0JY685R
R111	RK3057	Chip R.	ERJ3GSYJ393V	C211	CU3035	Chip C.	C1608JB1H102KT-A
R112	RK3050	Chip R.	ERJ3GSYJ103V	C213	CU3002	Chip C.	C1608CH1H010CT-A
R113	RK3062	Chip R.	ERJ3GSYJ104V	C214	CU3035	Chip C.	C1608JB1H102KT-A
R114	RK3020	Chip R.	ERJ3GSYJ330V	C215	CU3035	Chip C.	C1608JB1H102KT-A
R115	RK3058	Chip R.	ERJ3GSYJ473V	C216	CU3035	Chip C.	C1608JB1H102KT-A
R116	RK3051	Chip R.	ERJ3GSYJ123V	C217			See the "Version Table".
R117	RK3062	Chip R.	ERJ3GSYJ104V	C218	CU3009	Chip C.	C1608CH1H080CT-A
R118	RK3046	Chip R.	ERJ3GSYJ472V	C219	CU3035	Chip C.	C1608JB1H102KT-A
R905	RK3018	Chip R.	ERJ3GSYJ220V	C220	CU3023	Chip C.	C1608CH1H101JT-A
TC1	CT0012	Trimmer	CTZ-10AW	C221	CU3035	Chip C.	C1608JB1H102KT-A
VR1	RH0106	Trim. Pot	EVM1YSX50BQ4	C222	CU3035	Chip C.	C1608JB1H102KT-A
VR2	RH0103	Trim. Pot	EVM1YSX50B14	C223			See the "Version Table".
VR3	RV0017	Trim. Pot	RK09711-10KA-SW	C224			See the "Version Table".
VR4	RV0018	Trim. Pot	RK09711-10KB	D201	XD0132	Diode	1SV215 TPH4
VR5	RH0106	Trim. Pot	EVM1YSX50BQ4	D202	XD0133	Diode	1SV229TPH3
W1	MWCK06AA	Wire	#28W02-060-02	D203	XD0133	Diode	1SV229TPH3
W2	MKCJH3AA	Wire	#26K02-035-02	D204	XD0131	Diode	1SV214 TPH4
W3	MRCJ06AA	Wire	#26R02-060-02	D205	XD0131	Diode	1SV214 TPH4
W4	UX1033A	Wire	DJ145 W4	L201	QC0003	Chip L.	MLF3216A1R0M
X1	XQ0058	Crystal	30.395MHz	L202	QC0003	Chip L.	MLF3216A1R0M
X2	XK0002	Discriminator	CDBM455C7	L203	QC0003	Chip L.	MLF3216A1R0M
X3	XQ0052A	Crystal	UM-5 12.800MHz	L204	QC0269	Chip L.	ML252018T-027K
XF1	XF0014	Crystal Filter	30.850MHz 30M15B9	L206			See the "Version Table".
	YZ0042		Adhesion G17	L207			See the "Version Table".
	TZ0049		Silicon Dumper	Q201	XT0106	Transistor	2SC4226-T1
				Q202	XT0106	Transistor	2SC4226-T1
				Q203	XE0010	FET	2SK508K52T2
				Q204	XU0054	Transistor	XN1213-TX
				R201	RK3038	Chip R.	ERJ3GSYJ102V
				R202	RK3042	Chip R.	ERJ3GSYJ222V
				R203	RK3042	Chip R.	ERJ3GSYJ222V
				R204	RK3050	Chip R.	ERJ3GSYJ103V
				R205	RK3033	Chip R.	ERJ3GSYJ391V
				R206	RK3052	Chip R.	ERJ3GSYJ153V
				R207	RK3050	Chip R.	ERJ3GSYJ103V
				R208	RK3026	Chip R.	ERJ3GSYJ101V
				R209	RK3022	Chip R.	ERJ3GSYJ470V
				R210	RK3050	Chip R.	ERJ3GSYJ103V
				R211	RK3046	Chip R.	ERJ3GSYJ472V

Ref. No.	Parts No.	Description	Parts Name	Ref. No.	Parts No.	Description	Parts Name
R212	RK3030	Chip R.	ERJ3GSYJ221V	CTCSS Unit			
R213	RK3022	Chip R.	ERJ3GSYJ470V	C701	CU3027	Chip C.	C1608CH1H221JT-A
R214	RK3042	Chip R.	ERJ3GSYJ222V	C702	CU3027	Chip C.	C1608CH1H221JT-A
R215	RK3038	Chip R.	ERJ3GSYJ102V	C703	CU3059	Chip C.	C1608JF1E104ZT-A
R216	RK3050	Chip R.	ERJ3GSYJ103V	C704	CU3047	Chip C.	C1608JB1H103KT-A
R217	RK3050	Chip R.	ERJ3GSYJ103V	C705	CS0296	Chip C.	ECST1EY474R
R218	RK3026	Chip R.	ERJ3GSYJ101V	C706	CS0296	Chip C.	ECST1EY474R
	TS0072		VCO Case	C707	CU3047	Chip C.	C1608JB1H103KT-A
	UT0019		CK-1-2	C708	CU3059	Chip C.	C1608JF1E104ZT-A
	YZ0107		Varnish VA-30 1cc	C709	CU3059	Chip C.	C1608JF1E104ZT-A
DTMF Unit				C710	CU3059	Chip C.	C1608JF1E104ZT-A
C401	CS0256	Chip C.	ECST1AY225R	C711	CS0296	Chip C.	ECST1EY474R
C403	CU3047	Chip C.	C1608JB1H103KT-A	CN701	UE0133	Connector	DF9A-11P-1V (22)
IC401	XA0042	IC	LR408721	D701	XD0057	Diode	1SS184TE85L
Q401	XU0041	Digital T.	XN1A312-TX	IC701	XA0203	IC	MX365ADW-TR
R401	RK3058	Chip R.	ERJ3GSYJ473V	Q701	XT0037	Transistor	2SC2412KT146R
R402	RK3058	Chip R.	ERJ3GSYJ473V	R701	RK3074	Chip R.	ERJ3GSYJ 105V
R403	RK3050	Chip R.	ERJ3GSYJ103V	R702	RK3064	Chip R.	ERJ3GSYJ 154V
VR401	RH0103	Trim. Pot	EVM1YSX50B14	R703	RK3040	Chip R.	ERJ3GSYJ 152V
W401	UX1036	Wire	DJ-145 W401	R704	RK3034	Chip R.	ERJ3GSYJ 471V
X401	XB0001	Crystal	FARC4CA03580000K01R	R705	RK3067	Chip R.	ERJ3GSYJ 274V
	AF0020		0 2 + 3 Fe Ni1	R706	RK3059	Chip R.	ERJ3GSYJ 563V
	FG0101		Silicon Ten Key	R707	RK3074	Chip R.	ERJ3GSYJ 105V
	KM0138		Keypad Panel	R708	RK3073	Chip R.	ERJ3GSYJ 824V
	TW0003		Water Proof Cushion	R709	RK3038	Chip R.	ERJ3GSYJ 102V
				R710	RK3070	Chip R.	ERJ3GSYJ 474V
				R711	RK3054	Chip R.	ERJ3GSYJ 223V
				R712	RK3040	Chip R.	ERJ3GSYJ 152V
				VR701	RH0060	Trim. Pot	MVR32 HXBRN473
				X701	XB0006	Crystal	CSB1000J 221
					YZ0042		Adhesion G17

PTT SW Unit / JACK Unit / RE Unit / PS Unit
 ROM1 Unit / ROM2 Unit / ROM3 Unit /16KEY Unit

Ref. No.	Parts No.	Description	Parts Name
PTT SW Unit			
SW301	UU0013	Switch	SKHUAB
SW302	UU0013	Switch	SKHUAB
SW303	UU0013	Switch	SKHUAB
JACK Unit			
CN501	UE0147	Connector	TE1608-Pi28G05
JK501	UJ0022	Jack	HSJ1102-01-540
JK502	UJ0016	Jack	HSJ1423-01-050
R501	RK4051	Chip R.	ERJ-14YS 101V
RE Unit			
	UR0007		RK09710HH5RH 220
PS Unit			
W901	UX1034	Wire	DJ145 W901
	AF0020		0 2 + 3 Fe Ni1
	FM0063		Rear Case
	SD0025		Plus Terminal
	YZ0044		Screw Lock 1401C

Ref. No.	Parts No.	Description	Parts Name
ROM1 Unit (T/E)			
CN601	UE0132	Connector	DF9A-9P-1V (22)
IC601	XA0199	IC	X24C01AS-3.0T
R601	RK3062	Chip R	ERJ3GSYJ104V
R602	RK3062	Chip R	ERJ3GSYJ104V
ROM2 Unit			
CN801	UE0132	Connector	DF9A-9P-1V
IC801	XA0200	IC	X24C04S14-3.0T (EJ-14u)
IC801	XA0201	IC	X24C16S-3.0T (EJ-15u)
R801	RK3062	Chip R.	ERF3GSYJ104V
R802	RK3062	Chip R.	ERF3GSYJ104V
	HK0284		Carton Box EJ-14u
	HK0285		Carton Box EJ-15u
	HP0029		Protection Bag
	UP0220B		CPU P.C.B.
	YZ0121		Tape
ROM3 Unit (C1/C2/C3)			
CN601	UE0132	Connector	DF9A-9P-1V (22)
IC601	XA0200	IC	X24C04S14-3.0T
R601	RK3062	Chip R	ERJ3GSYJ104V
R602	RK3062	Chip R	ERJ3GSYJ104V
16KEY Unit (C1/C2/C3)			
W401	UX1048	Wire	EJ18u
W402	UX1054	Wire	DJ480
	AF0020		0 2 + 3 Fe Ni1
	FG0101		Silicon Ten Key
	KM0138		Keypad Panel
	UP0244A		PCB
	TW0003		Water Proof Cushion

Ref. No.	Parts No.	Description	Parts Name	Ref. No.	Parts No.	Description	Parts Name
OTHERS				PACKING			
	AK0001		0 B 2 + 4 Fe Ni		AK0004		0 B 2 + 3 Fe B/C
	AK0002		0 B 2 + 4 Fe B/C		DS0277		Model Name Plate DJ-480C1
	AK0003		0 B 26 + 6 Fe Ni		DS0278		Model Name Plate DJ-480C2
	AN0012		Dial Nut		DS0279		Model Name Plate DJ-480C3
	AP0016		P 2 + 8 Fe B/C		DS0284		Model Name Plate DJ-480T
	AS0002		S026 + 10 Fe N3		DS0285		Model Name Plate DJ-480E
	CC0106	Ceramic C.	50V 5pF CH		EA0032		Antenna DJ-480C1
	DP0077		LCD Panel		EA0033		Antenna DJ-480C2
	ES0011	Speaker	SU-36W 0824		EA0034		Antenna DJ-480C3
	FG0076		Battery Rubber		EG0016A		Ni-Cd (EBP26N)
	FG0092		Silicone Key 1		EW0001		Charger (EDC-49 120V)
	FG0093		Silicone Key 2		EW0002		Charger (EDC-50 220V)
	FG0094		Jack Cap		FG0096		Model Name Rubber
	FG0095		PTT Rubber		HK0303		Item Carton Box DJ-480C1
	FG0097		VOL Rubber		HM0100A		Carton Box
	FG0100		EP/MIC Cushion		HU0037A		Fixture
	FM0069		Antenna Earth		HU0041		Fixture
	FM0081		Earth Ring DJ-480		KM0137		Switch Cover
	KB0044		Rear Case		HP0016		Protection Bag 75 X 90
	KM0135		Front Case		HP0028		Protection Bag 165 X 280
	KM0136		Ten Key Cover (E)		HP0031		Protection Bag 100 X 200
	NB0047A		Release Knob		PK0046		Schematic Diagram DJ-480
	NK0028		VOL Knob		PR0085		Seal C1
	NK0029		SQL Knob		PR0086		Seal C2
	ST0032		SP Holder		PR0170		Seal E
	TG0014		SP Net		PR0214		Seal C3
	TS0071		RF Shield		PR0216		Seal T
	TW0003		Water Proof Cushion (E)		PS0159C		Instruction Manual DJ-480T/E
	UE0029A		BNC Receptacle		PS0171		Instruction Manual DJ-480C
W201	UX1035	Wire	DJ145		PT0004A		Lot Number Seal
	YZ0044		Screw Lock 1401C		YZ0117		Switch Cover Tape
	YZ0116		Acrylic Tape		YZ0118		Tape 50mm
					YZ0120		Tape 10mm
					#G0434		Belt Clip Unit

Version Table

Ref. No.	Part Name	C1	C2	C3	T	E
	Model Name Plate	DS0277	DS0278	DS0279	DS0284	DS0285
	Antenna	EA0032	EA0033	EA0034	EA0034	EA0034
	Charger	EW0002	EW0002	EW0002	EW0001	EW0002
	Ten Key Cover	-	-	-	-	KM0136
	Seal	PR0085	PR0086	PR0214	PR0216	PR0170
	Water Proof Cushion	-	-	-	-	TW0003
	16 Key Unit	#P0187	#P0187	#P0187	-	-
	ROM1 Unit	-	-	-	#P0690	#P0690
	ROM3 Unit	#P0808	#P0808	#P0808	-	-
	CTCSS Unit	-	-	-	#P0696	-
	DTMT Unit	-	-	-	#P0828	-
C1	C1608CH1H030CT-A	CU3002	-	-	-	-
C3	C1608CH1H100JT-A	-	CU3011	CU3011	CU3011	CU3011
	C1608CH1H120JT-A	CU3012	-	-	-	-
C4	C1608CH1H150JT-A	-	CU3013	CU3013	CU3013	CU3013
	C1608CH1H180JT-A	CU3014	-	-	-	-
C8	C1608CH1H070CT-A	-	CU3008	CU3008	CU3008	CU3008
	C1608CH1H100JT-A	CU3011	-	-	-	-
C53/C56	C1608CH1H060CT-A	-	CU3007	CU3007	CU3007	CU3007
C61/C62	C1608CH1H070CT-A	CU3008	-	-	-	-
C154	C1608CH1H030CT-A	CU3002	-	-	-	-
C217	C1608CH1H050CT-A	CU3006	CU3006	-	-	-
	C1608CH1H060CT-A	-	-	CU3007	CU3007	CU3007
C223/C224	C1608CH1H020CT-A	-	-	CU3003	CU3003	CU3003
IC6	M67749L	XA0177	-	-	-	-
	M67749M	-	XA0178	-	-	-
	M67749H	-	-	XA0143	XA0143	XA0143
L8	NL252018T-010K	-	QC0264	QC0264	QC0264	QC0264
	NL252018T-022K	QC0268	-	-	-	-
L206/L207	MR2.0 3.5T 0.5	-	QKA35B	QKA35B	QKA35B	QKA35B
	MR2.0 4.5T 0.5	QKA45B	-	-	-	-
R2	ERJ3GSY223V	-	RK3054	RK3054	RK3054	RK3054
	ERJ3GSY473V	RK3058	-	-	-	-
R374	ERJ3GEY0R00V	-	-	-	RK3001	RK3001
R375	ERJ3GEY0R00V	-	-	-	RK3001	-
W301	Wire	-	-	-	MPCKH8AA	-
W302	Wire	MTCK03AA	MTCK03AA	MTCK03AA	-	MTCK03AA

ADJUSTMENT

1) Required Test Equipment

1. Regulated Power Supply

Supply voltage: 2V to 15V
Current: 2A or more
Standard voltage: 13.8V

2. Frequency Counter

Measurable frequency: Up to 1GHz
Measurements stability: 0.2ppm or so

3. Power Meter

Measurable frequency: Up to 500MHz
Impedance: 50Ω, unbalanced
Measuring range: Full scale of 10W or so

4. Linear Detector

Measurable frequency: Up to 500MHz
Characteristics: Flat
CN: 60dB or more

5. Digital Multimeter

Voltage range: FS = 18V or so
Input resistance: 1MΩ or more

6. Oscilloscope

Measurable frequency: DC to 30MHz

7. AF Voltmeter

Measurable frequency: 50Hz to 1MHz
Maximum sensitivity: 1mV or more

8. Spectrum Analyzer

Measuring range: DC to 2GHz or more

9. SSG

Maximum frequency: 1GHz or more
Output: -20dB/0.1μV to 120dB/1V
Output Impedance: 50Ω, unbalanced

10. Dummy Load

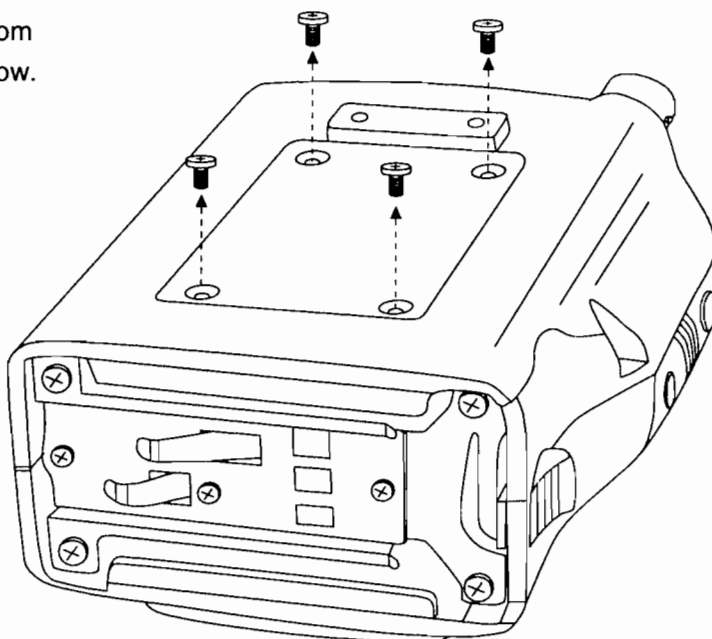
Impedance: 8Ω
Dissipation: 2W or more

11. Distortion Meter

Measurable frequency: 30Hz to 100kHz
Input level: 50mV to 10V rms

2) Before Adjustment

Remove four screws from the radio as shown below.



3) Adjustment for DJ480

fc: Test Center frequency

DJ480C1..... fc = 410.00MHz

DJ480C2..... fc = 460.00MHz

DJ480C3, T, E..... fc = 440.00MHz

TX , PLL Adjustment

Item	Condition	Measurement		Adjustment			Specifications / Remarks
		Test-equipment	Terminal	Unit	Parts	Method	
Reference Frequency	Frequency: fc PTT: ON	Frequency Counter	ANT	RF	TC1		fc +/-100Hz
Power	Frequency: fc PTT: ON Power: High	Power Meter	ANT	RF	VR1		5.0 +/-0.2W
	Freq: fc PTT: ON Power: Low				VR5		0.4 +/-0.05W
MIC DEV	Frequency: fc AG output: 1kHz, -30dBm PTT: ON Power: Low	AF OSC Linear Detector	ANT	RF	VR2		4.3kHz +/-0.2kHz/DEV
DTMF DEV (option)	Frequency: fc PTT: ON Power: Low Push "1" key on keypad			DTMF	VR401		3.0kHz +/-0.5kHz/DEV
TONE 88.5Hz DEV (option)	Frequency: fc PTT: ON Power: Low TONE 88.5Hz set			TONE	VR701		0.8kHz +/-0.1kHz/DEV

RX Adjustment

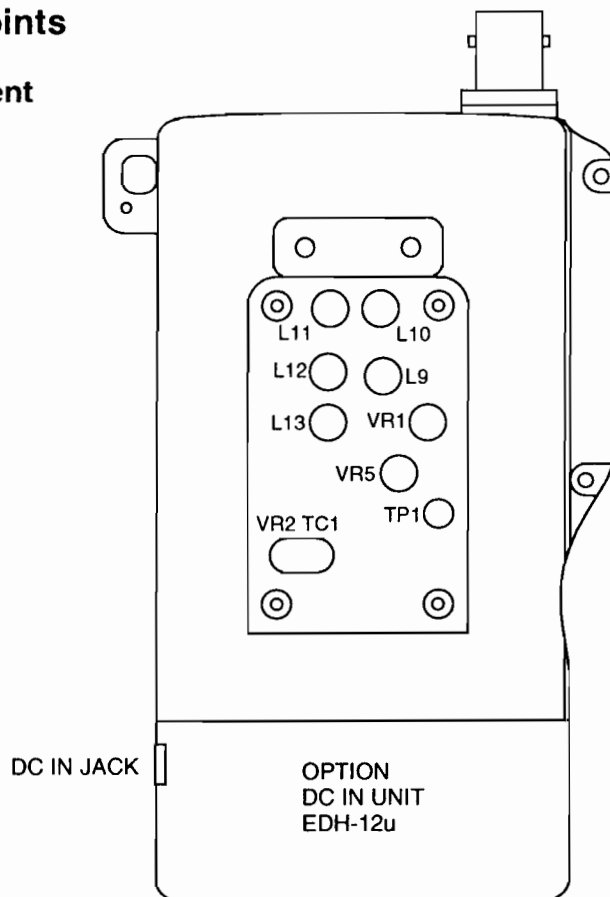
Item	Condition	Measurement		Adjustment			Specifications / Remarks
		Test-equipment	Terminal	Unit	Parts	Method	
RX Front End	Frequency: fc SSG mod: 1kHz 3.5kHz DEV	SSG Oscilloscope AF Voltmeter Distortion Meter	Speaker	RF	L9 ~ L13	12dB SINAD: MAX	12dB SINAD -6.0dBμV (EMF)

4) Adjustment Quick Reference

Parts	Item	Specifications
L9	RX Sensitivity	-6dB μ V (12dB SINAD)
L10	RX Sensitivity	-6dB μ V (12dB SINAD)
L11	RX Sensitivity	-6dB μ V (12dB SINAD)
L12	RX Sensitivity	-6dB μ V (12dB SINAD)
L13	RX Sensitivity	-6dB μ V (12dB SINAD)
TC1	Reference Frequency	fc +/- 100Hz
VR1	TX High Power	5.0 +/-0.2W
VR2	Mic Deviation	4.3kHz +/- 0.2kHz
VR5	TX Low Power	0.4 +/-0.05W
VR401	DTMF Deviation	3.0kHz +/-0.5kHz
VR701	TONE Deviation	0.8kHz +/-0.1kHz

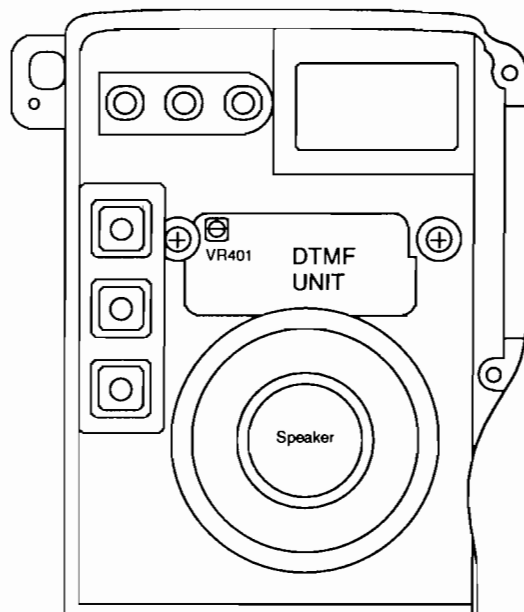
5) Adjustment Points

1. RF Unit Adjustment

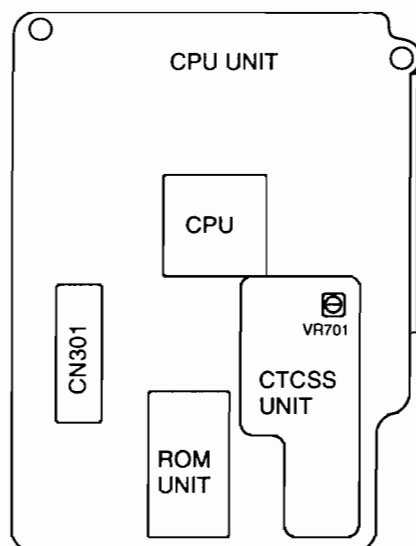


- Attach the DC IN unit to the radio and power supply voltage 13.8V will be supplied.

2. DTMF Unit Adjustment



3. CTCSS Unit Adjustment

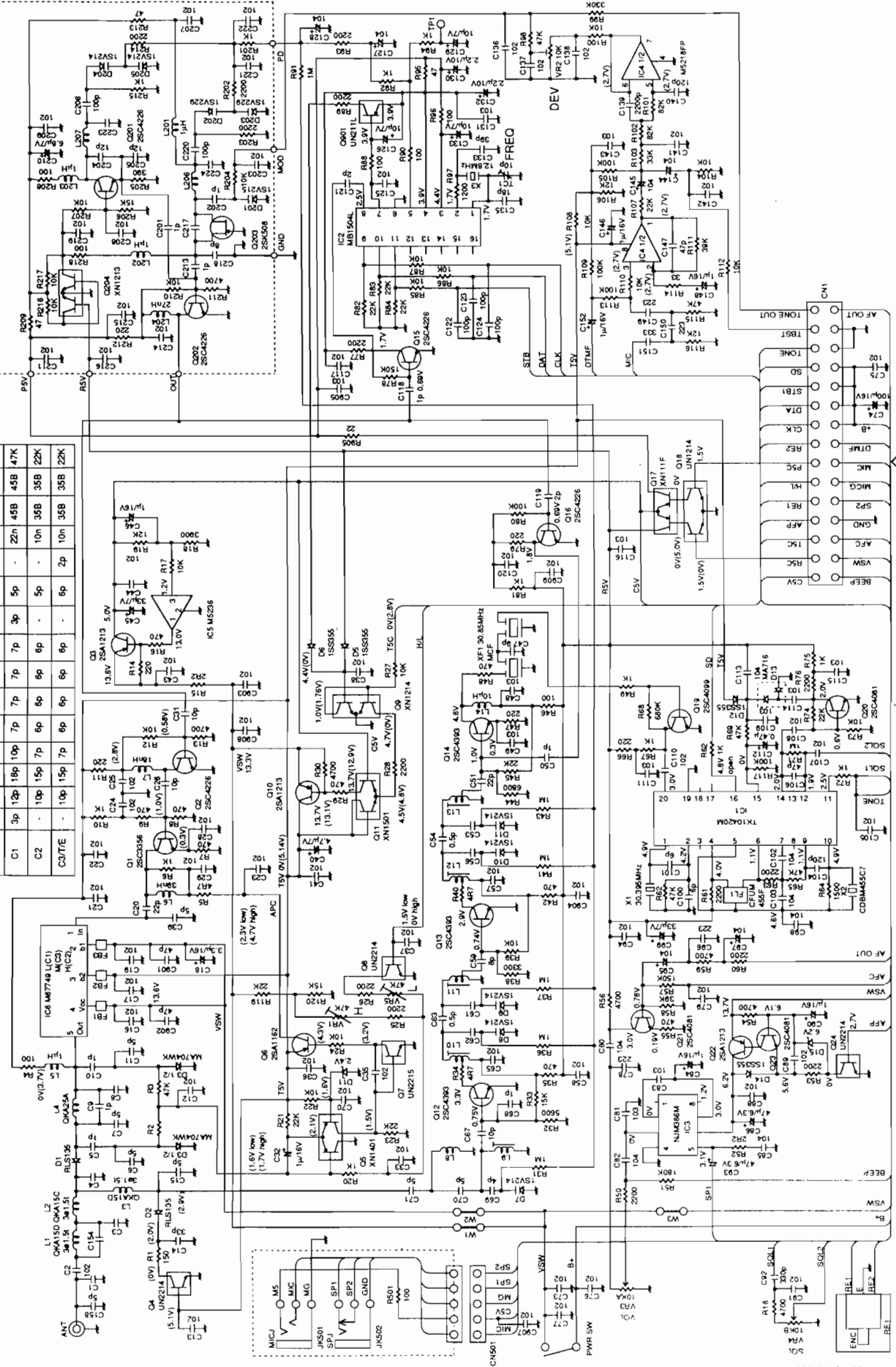


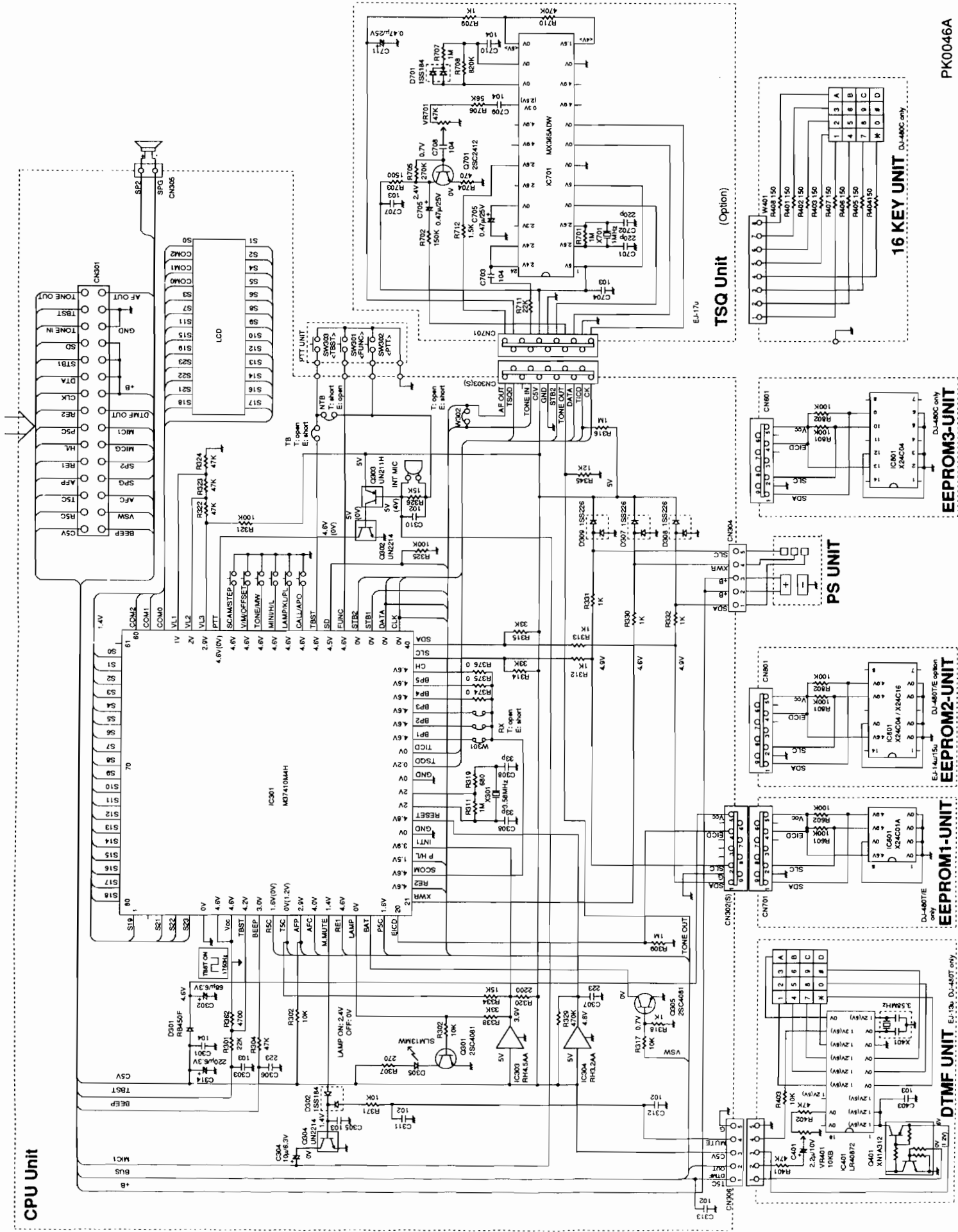
SCHEMATIC DIAGRAM DJ-480C1/C2/C3/T/E

Specifications are subject to change without notice or obligation.

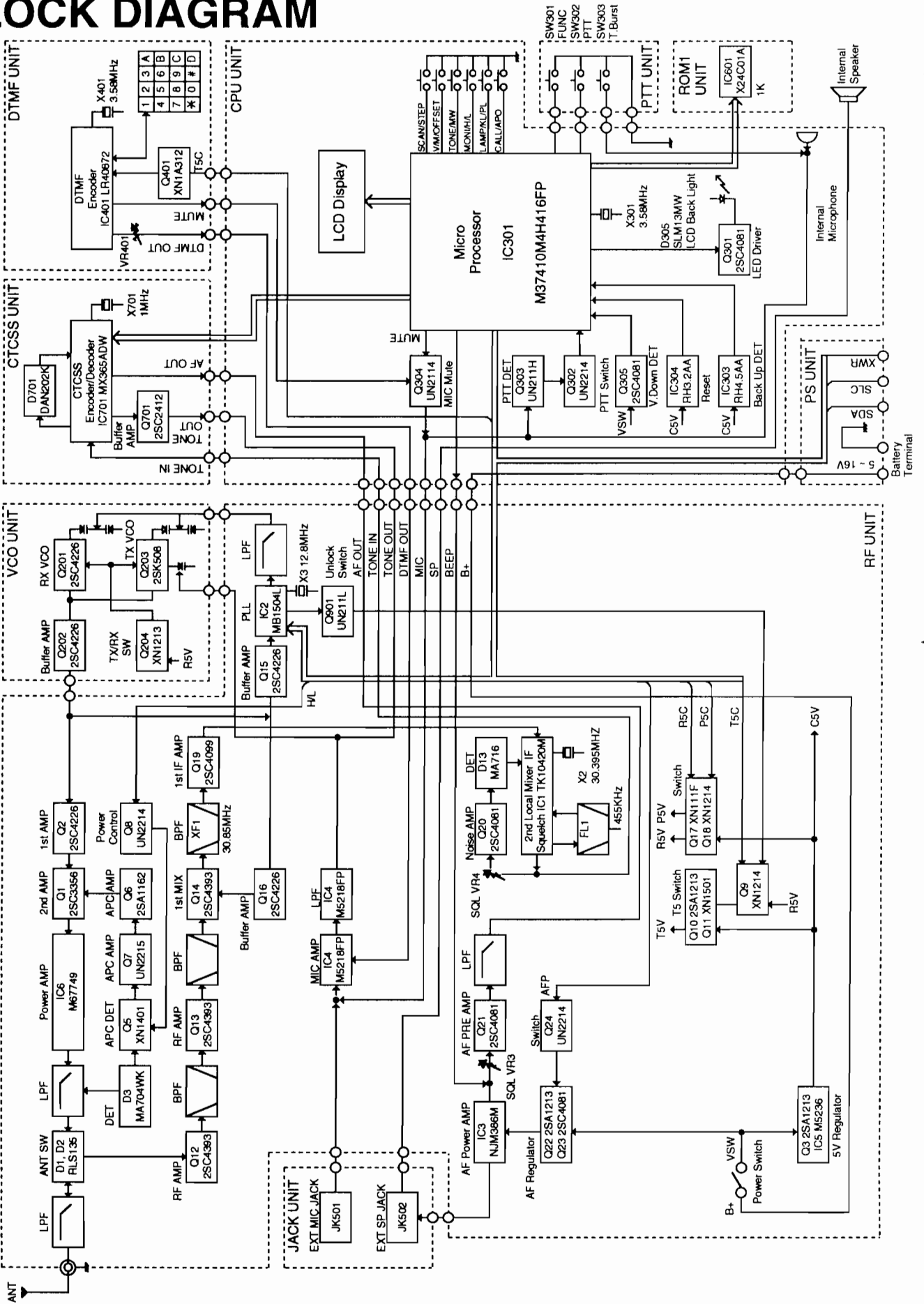
C1	C3	C4	C8	C53	C56	C81	C82	C154	C217	C224	L8	L206	L207	RE	
C1	3p	12p	18p	10p	7p	7p	7p	7p	3p	5p	5p	22n	45B	47K	
C2		10p	15p	7p	6p	6p	6p	6p	6p	6p	6p	10n	35B	35B	22K
C3/T/E		10p	15p	7p	6p	6p	6p	6p	6p	6p	6p	10n	35B	35B	22K

RF UNIT





BLOCK DIAGRAM





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