ICOM

SERVICE MANUAL

HF/50MHz TRANSCEIVER

IC-729

Icom Inc.

INTRODUCTION

This service manual describes the latest service information for the **IC-729** HF/50 MHz TRANSCEIVER at the time of publication.

VERSION NO.	VERSION	SYMBOL
#02	General	OTH
#03	France	FRA

To upgrade quality, all electrical or mechanical parts and internal circuits are subject to change without notice or obligation.

DANGER

NEVER connect the transceiver to an AC outlet or to a DC power supply that uses more than 16 V. This will ruin the transceiver.

DO NOT expose the transceiver to rain, snow or any liquids.

DO NOT reverse the polarities of the power supply when connecting the transceiver.

DO NOT apply an RF signal of more than 20 dBm (100 mW) to the antenna connector. This could damage the transceiver's front end.

ORDERING PARTS

Be sure to include the following four points when ordering replacement parts:

1. 10-digit order numbers
2. Component part number and name
3. Equipment model name and unit name
4. Quantity required

<SAMPLE ORDER>

1790000050	IC	ND487C1-3R	IC-729	MAIN UNIT	5 pieces
8810002160	Screw	FH M3 × 5	IC-729	Chassis	10 pieces

Addresses are provided on the inside back cover for your convenience.

REPAIR NOTES

1. Make sure a problem is internal before disassembling the transceiver.
2. **DO NOT** open the transceiver until the transceiver is disconnected from its power source.
3. **DO NOT** force any of the variable components. Turn them slowly and smoothly.
4. **DO NOT** short any circuits or electronic parts. An insulated tuning tool **MUST** be used for all adjustments.
5. **DO NOT** keep power ON for a long time when the transceiver is defective.
6. **DO NOT** transmit power into a signal generator or a sweep generator.
7. **ALWAYS** connect a 50 dB~60 dB attenuator between the transceiver and a deviation meter or spectrum analyzer when using such test equipment.
8. **READ** the instructions of test equipment thoroughly before connecting equipment to the transceiver.

TABLE OF CONTENTS

SECTION 1 SPECIFICATIONS

GENERAL

• Frequency coverage	:	Receive	500 kHz~30 MHz	50 MHz~54 MHz
		Transmit	1.800~1.99999 MHz	18.068~18.168 MHz
			3.500~4.000 MHz	21.000~21.450 MHz
			7.000~7.300 MHz	24.890~24.990 MHz
			10.100~10.150 MHz	28.000~29.700 MHz
			14.000~14.350 MHz	50.000~54.000 MHz
• Mode	:	SSB, CW, AM, FM		
• Number of memory channels	:	26		
• Antenna impedance	:	50 Ω nominal		
• Usable temperature range	:	−10 °C~+60 °C (+14 °F~+140 °F)		
• Frequency stability	:	Less than ±200 Hz from 1 min. to 60 min. after power ON.		
		Less than ±30 Hz/hr. after one hour at +25 °C (+77 °F).		
		Temperature fluctuations (0 °C ~+50 °C ; +32 °F~+122 °F) less than ±350 Hz		
• Power supply requirement	:	13.8 V DC±15 %		
• Curret drain (at 13.8 V DC)	:	Transmit	20 A	
		Receive squelched	1.3 A	
		max. audio output	1.6 A	
• Dimensions	:	241 (W) × 94 (H) × 239 (D) mm		
		9.5 (W) × 3.7 (H) × 9.4 (D) in		
		(Projections not included)		
• Weight	:	4.9 kg (10.8 lb)		

TRANSMITTER

• Output power :

MODE	1.8~29.7 MHz	50~54 MHz
SSB, CW, FM	10~100 W	1~10 W
AM	10~40 W	1~4 W

(continuously adjustable)

• Spurious emissions	:	1.8~29.7 MHz	Less than −50 dB
		50~54 MHz	Less than −60 dB
• Carrier suppression	:	More than 40 dB	
• Unwanted sideband suppression	:	More than 50 dB	
• Microphone impedance	:	600 Ω	

RECEIVER

• Receive system	:	Triple-conversion superheterodyne			
• Intermediate frequencies	:				

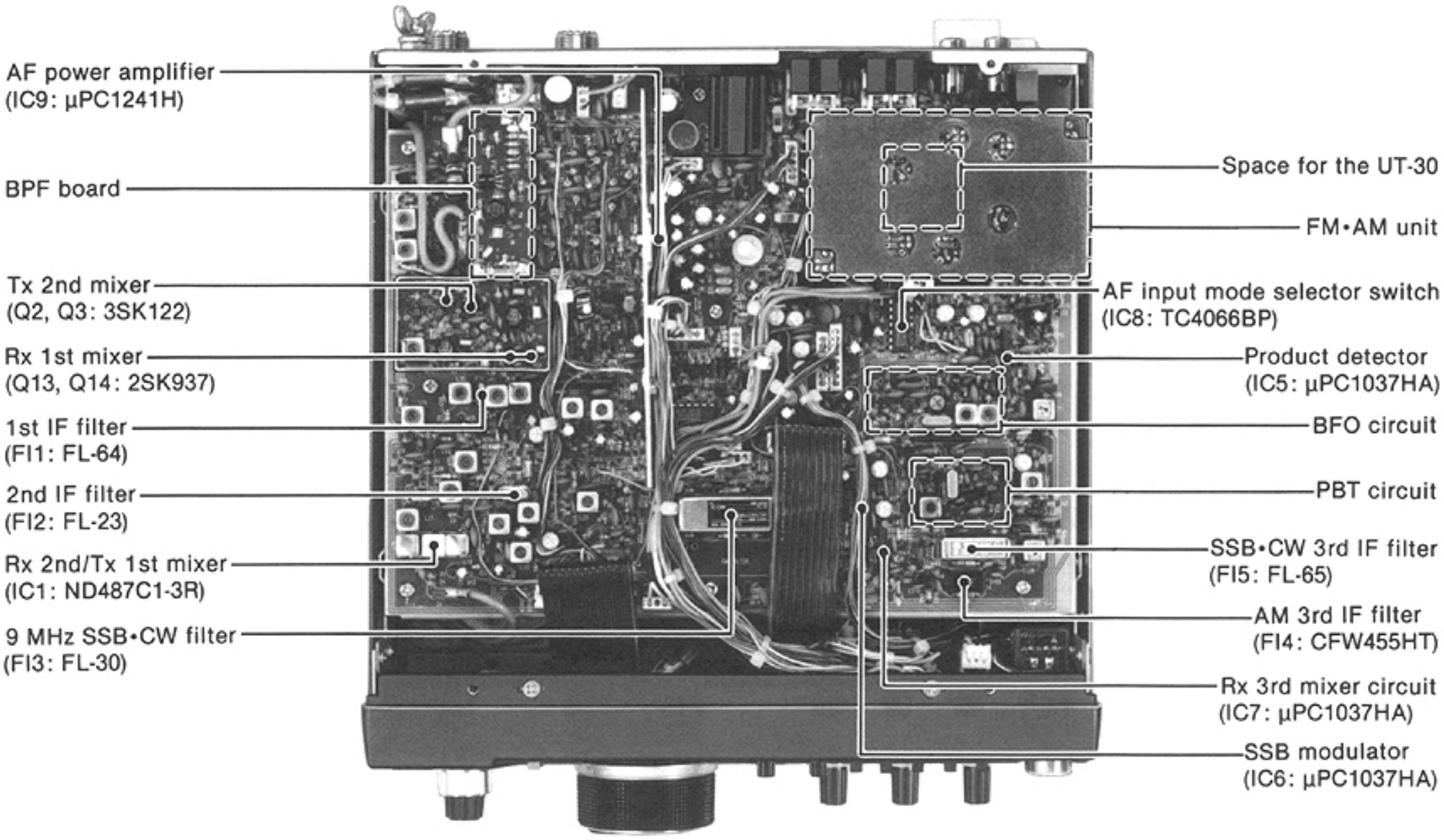
MODE	1st	2nd	3rd
SSB	70.4515 MHz	9.0115 MHz	455 kHz
CW	70.4506 MHz	9.0106 MHz	455 kHz
AM, FM	70.4500 MHz	9.0100 MHz	455 kHz

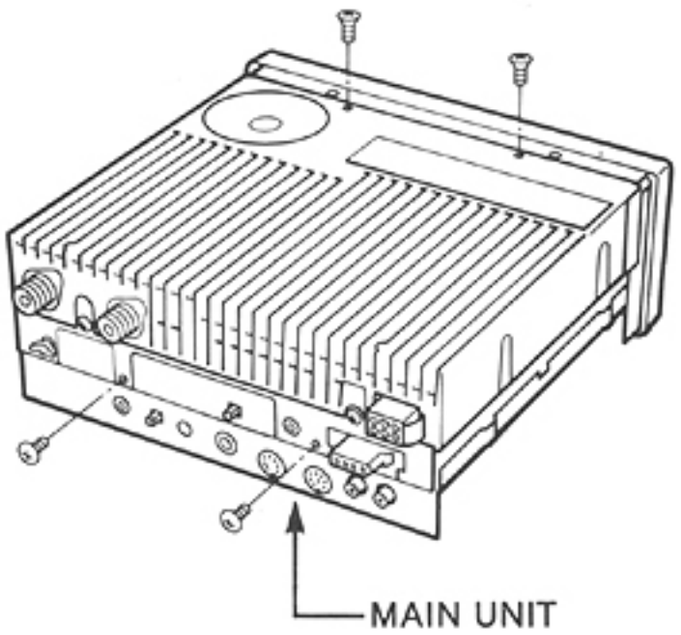
• Sensitivity (Preamp ON)	:	SSB, CW (10 dB S/N)	1.8~30 MHz	Less than 0.16 μV
			50~54 MHz	Less than 0.13 μV
		AM (10 dB S/N)	0.5~1.8 MHz	Less than 13.0 μV
			1.8~30 MHz	Less than 2.0 μV
			50~54 MHz	Less than 2.0 μV
		FM (12 dB SINAD)	28~30 MHz	Less than 0.5 μV
			50~54 MHz	Less than 0.3 μV
• FM squelch sensitivity	:	Less than 0.3 μV		
• Selectivity	:	SSB, CW	More than 2.1 kHz/−6 dB	Less than 4.0 kHz/−60 dB
		AM	More than 6.0 kHz/−6 dB	Less than 20.0 kHz/−40 dB
		FM	More than 12.0 kHz/−6 dB	Less than 30.0 kHz/−50 dB
• Spurious and image rejection ratio	:	More than 70 dB		
• Audio output power	:	More then 2.6 W with an 8 Ω load		
• RIT variable range	:	More than ±1.2 kHz		

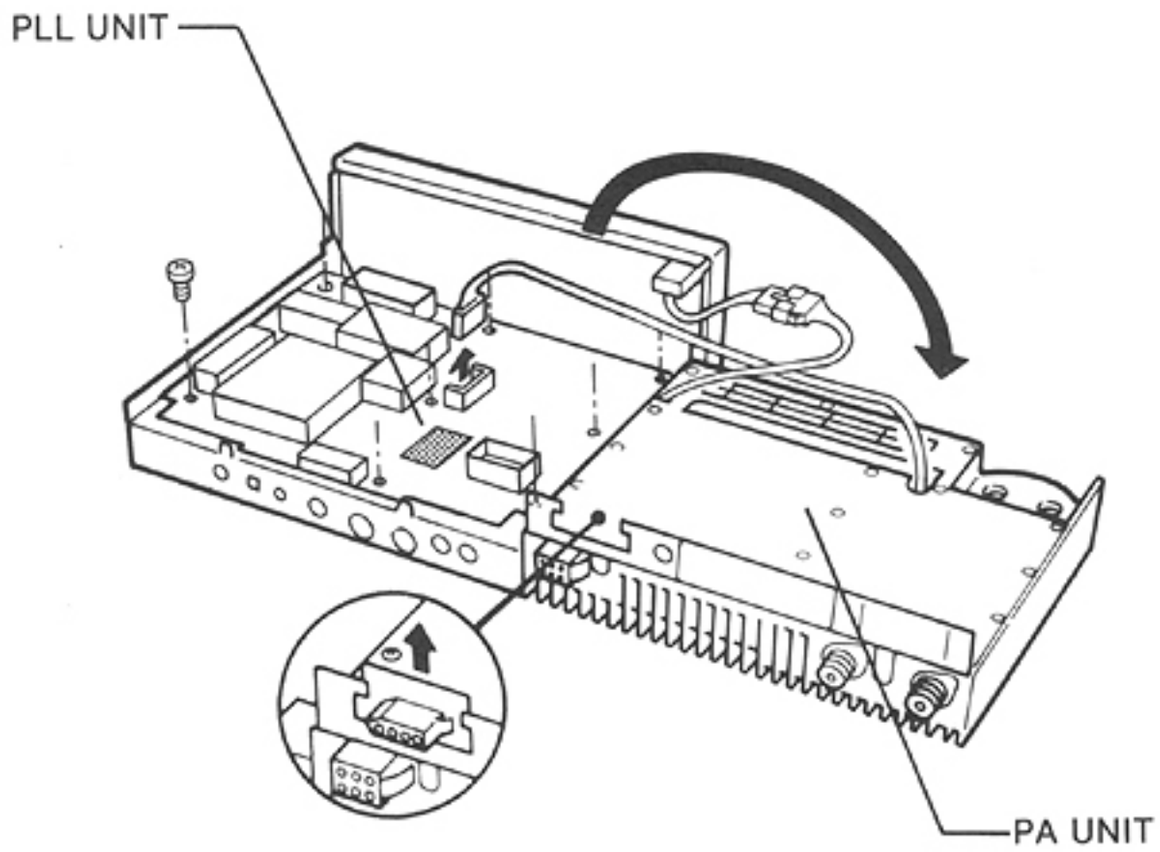
All stated specifications are approximate and subject to change without notice or obligaton.

SECTION 2 INSIDE VIEWS

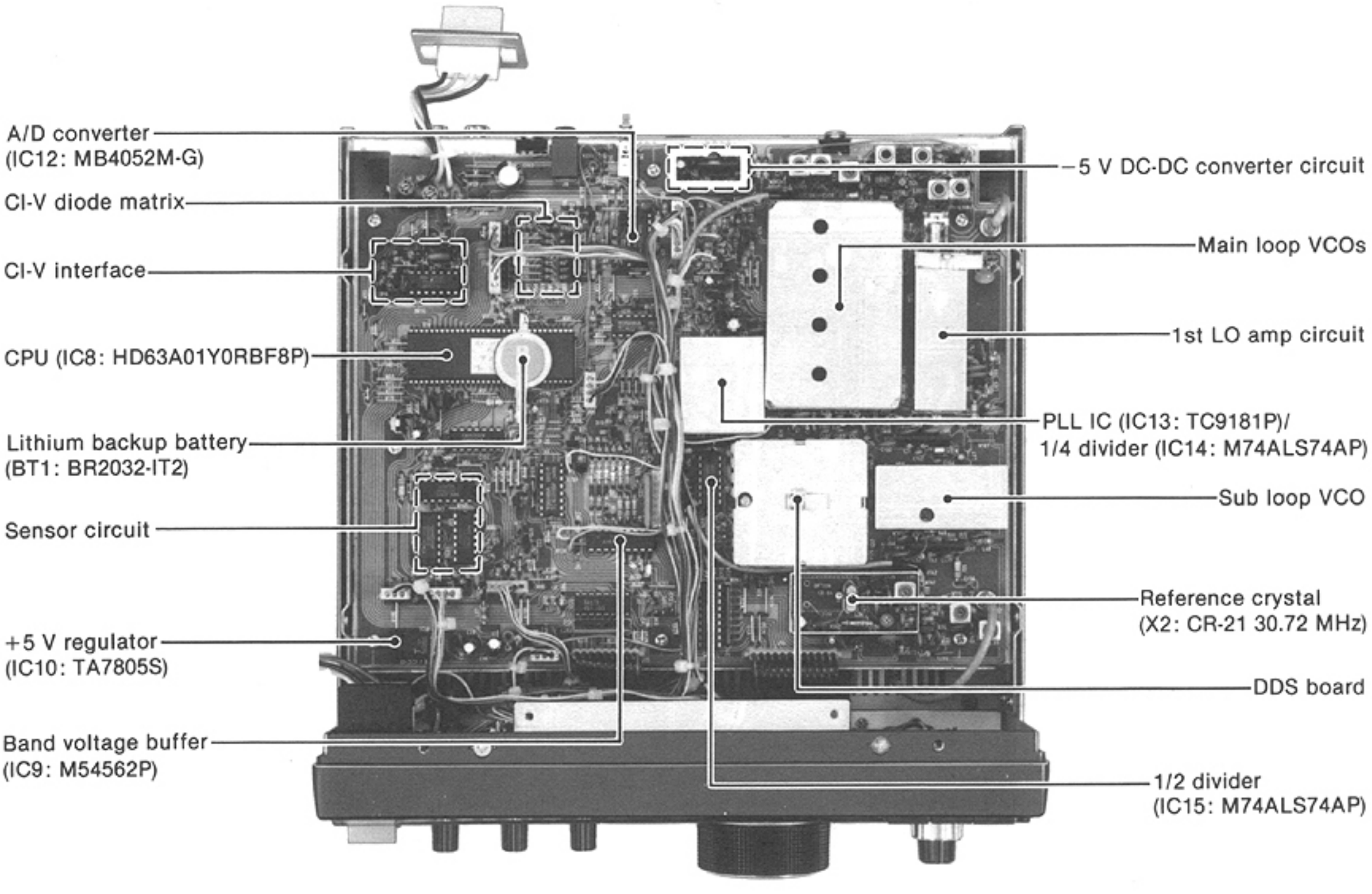
• MAIN UNIT



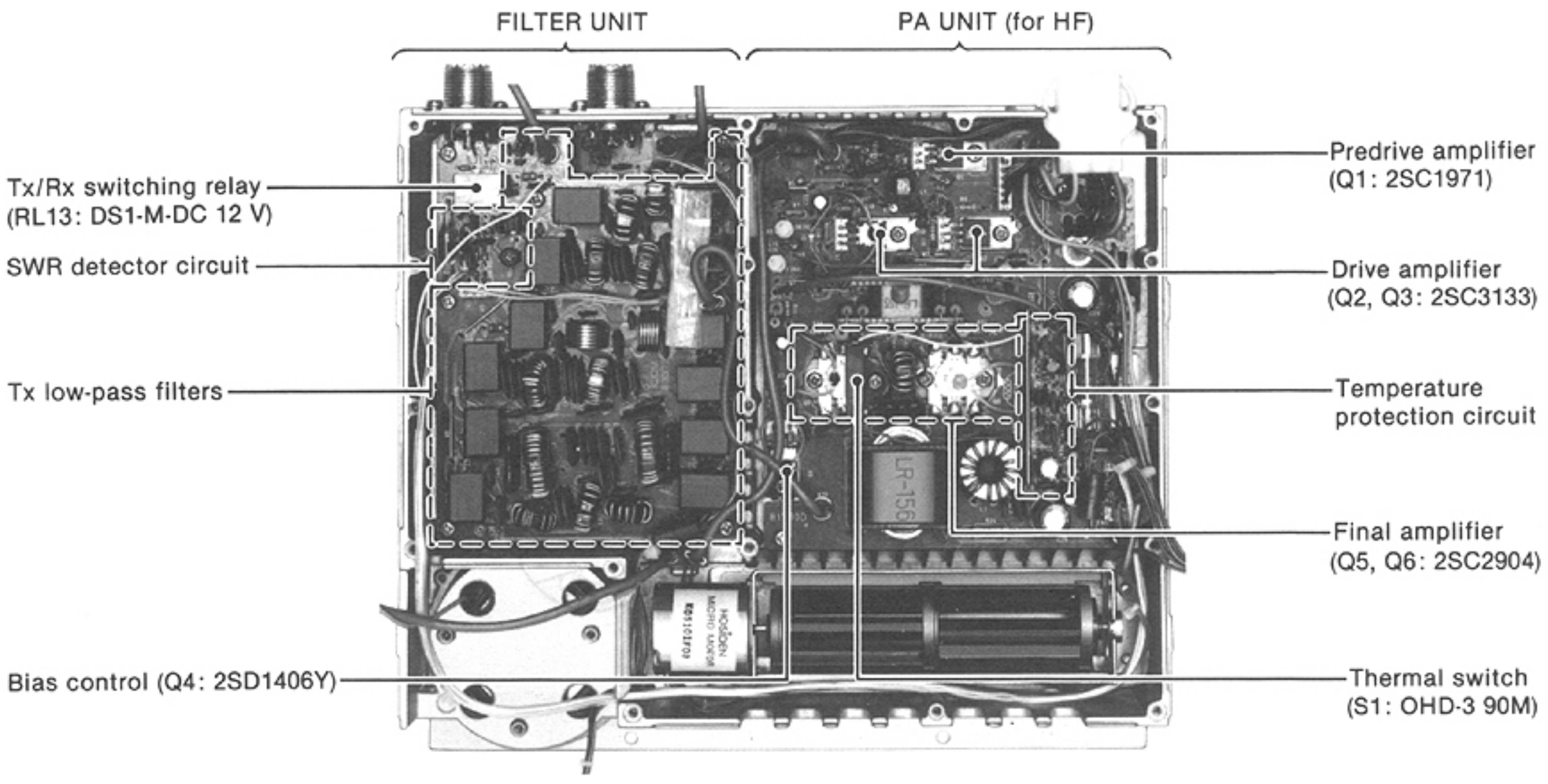




• PLL UNIT



• PA AND FILTER UNITS



PB unit (for 50 MHz) is located under the FILTER unit.

SECTION 3 CIRCUIT DESCRIPTION

3-1 RECEIVER CIRCUITS

3-1-1 HF SWITCHING CIRCUIT (FILTER AND MAIN UNITS)

The HF switching circuit leads receive signals to bandpass filters from the [HF ANT] connector while receiving. While transmitting, this circuit leads the signal from the HF power amplifier to the [HF ANT] connector. This circuit includes a 20 dB HF attenuator circuit to prevent distortion from very strong signals.

HF signals from the [HF ANT] connector pass through the transmit/receive switching relay (RL13) and low-pass filter (L26, C60~C62), and are then applied to the MAIN unit via P1 (MAIN unit: J12).

The signals from the FILTER unit are either bypassed or are attenuated at the 20 dB attenuator (R103, RL1). There are no non-linear components from the antenna connector to the attenuator in this circuit construction. Therefore the attenuator effectively prevents distortion caused by strong signals. The signals are then applied to HF bandpass filters.

3-1-2 HF BANDPASS FILTER CIRCUIT (MAIN UNIT)

HF bandpass filters pass only the desired band signals and suppress any undesired band signals.

The RF circuit has 7 RF bandpass filters (BPF) for signals above 1.6 MHz and 1 low-pass filter (LPF) for signals below 1.6 MHz. The signals pass through the low-pass or one of the bandpass filters depending on the frequency.

(1) 0.5~1.6 MHz

There is no diode at the low-pass filter (L38, L39, C148~C150) entrance so as to prevent distortion from very strong signals. The filtered signals bypass a preamplifier through a bypass switch (Q12) and are then applied to the 1st mixer circuit (Q13, Q14).

(2) 1.6~30.0 MHz

These signals pass through a high-pass filter (L42, L43, C143~C146) to suppress strong signals below 1.6 MHz, such as from broadcasting stations. The filtered signals are applied to one of 7 bandpass filters depending on the frequency and then applied to the preamplifier circuit.

USED RF FILTER

BAND	CONTROL SIGNAL	ENTRANCE DIODE	BAND	CONTROL SIGNAL	ENTRANCE DIODE
0.5~1.6 MHz	B0	–	8~11 MHz	B4	D44
1.6~2 MHz	B1	D38	11~15 MHz	B5	D46
2~4 MHz	B2	D40	15~22 MHz	B6	D48
4~8 MHz	B3	D42	22~30 MHz	B7	D50

3-1-3 50 MHz SWITCHING AND BANDPASS CIRCUIT (PB AND MAIN UNITS)

The 50 MHz switching circuit and 50 MHz bandpass filter adopt a diode switching system and an active bandpass filter respectively.

50 MHz signals from the [50M ANT] connector pass through the low-pass filter (L7~L10, C29~C37) and forward biased switching diodes (D5~D7) and are then applied to the MAIN unit via P5 (MAIN unit: J31). The switching diode (D4) is reverse biased while receiving, so that the 50M signals do not applied to the transmitter circuits.

50 MHz band signals which entered the MAIN unit pass through the HF/50M switching relay (RL1) and enter the BPF board. The signals are passed through the high-pass filter (L2, L3, C2~C4) and are then amplified to the 50M amplifier (Q1) on the BPF board. The signals are then passed to the HF signal line (last stage of the HF bandpass filter) to be applied to or bypass the preamplifier circuit.

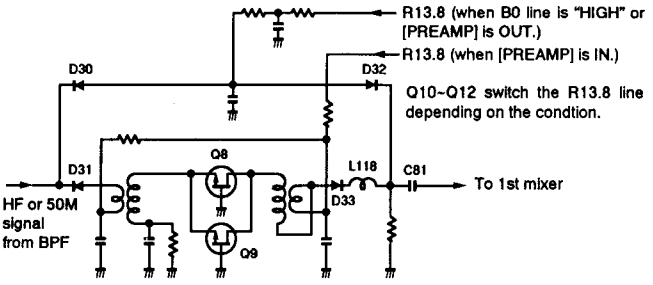
3-1-4 PREAMPLIFIER CIRCUIT (MAIN UNIT)

The preamplifier circuit uses two 2SK937s to obtain 10 dB gain over a wideband frequency range. When the [PREAMP] switch on the front panel is pushed IN, the signals above 1.6 MHz are applied to the preamplifier circuit.

Q8 and Q9 are connected in parallel to easily match the impedance to 50 Ω. Q10 and Q11 switch the signals from a bandpass filter, either to be bypassed, or to be applied to the preamplifier, depending on the [PREAMP] switch condition.

Amplified or bypassed signals are applied to the 1st mixer circuit (Q13, Q14).

PREAMP CIRCUIT



3-1-5 1ST MIXER CIRCUIT (MAIN UNIT)

The 1st mixer circuit mixes the receive signals with the 1st LO signal to convert the receive signal frequency to a 70 MHz 1st IF.

The signals from the preamplifier circuit, or signals which bypass the preamplifier, pass through a low-pass filter. This low-pass filter suppresses signals above 30 MHz to eliminate direct receiving of signals at 70 MHz and image interference at 140 MHz. Then the signals are applied to the 1st mixer (Q13, Q14).

The 1st LO signal (70.4800~100.4530 MHz for HF, or 120.4515~124.4515 MHz for 50 MHz) enters the MAIN unit from the PLL unit via J5. The LO signal is amplified at Q4, filtered by a low-pass filter, and then, applied to the 1st mixer. The low-pass filter uses a ring core inductor to prevent leakage of 1st LO signals. The output level from Q4 is approx. 15 dBm.

The 1st mixer (Q13, Q14) uses two 2SK937s to produce high level mixing with a high intercept point.

EXACT 1ST IF FREQUENCY

MODE	FREQUENCY (MHz)
SSB	70.4515
CW	70.4506
AM. FM	70.4500

3-1-6 1ST IF CIRCUIT (MAIN UNIT)

The 1st IF circuit filters and amplifies the 1st IF signals. The 1st IF signals from the 1st mixer circuit are applied to MCF (Monolithic Crystal Filter; FI1) to suppress out-of-band signals. The filtered signals are applied to the 1st IF amplifier (Q15). AGC is supplied to the 2nd gate of Q15.

3-1-7 2ND MIXER CIRCUIT (MAIN UNIT)

The 2nd mixer circuit mixes the amplified 1st IF signals and 2nd LO signal (61.44 MHz) to convert the 1st IF to a 2nd IF.

The amplified 1st IF signals from Q15 are converted to a 9 MHz 2nd IF signal at the 2nd mixer (IC1). IC1 is a DBM (Double Balanced Mixer). The DBM uses a coil with a glass-type core to treat the LO at a 0 dBm level.

The 2nd IF signals are applied to FI2 to suppress undesired signals such as the 2nd LO signal, and then are applied to the noise blanker gate (D5~D8).

EXACT 2ND IF FREQUENCY

MODE	FREQUENCY (MHz)
SSB	9.0115
CW	9.0106
AM. FM	9.0100

3-1-8 NOISE BLANKER CIRCUIT (MAIN UNIT)

The noise blanker circuit detects pulse type noise, and turns OFF the signal line when noise appears.

The 2nd IF signals from FI2 are applied to the noise blanker gate (D5~D8). A portion of the signals from FI2 is amplified at the noise amplifiers (Q16, IC2), then detected at the noise detector (D12, D13). The detected signal from the noise detector is applied to the noise blanker switch (Q19).

A portion of the detected signal from the noise detector is applied to the noise AGC circuit (Q17, Q18, C60, R47) to control the bias voltage of the noise amplifier (IC2 pins 2, 3).

The threshold level of the noise blanker switch (Q19) is set to 0.9 V. When the detected voltage exceeds the threshold level, Q20 outputs a blanking signal to close the noise blanker gate (D5~D8), depending on the pulse noise period.

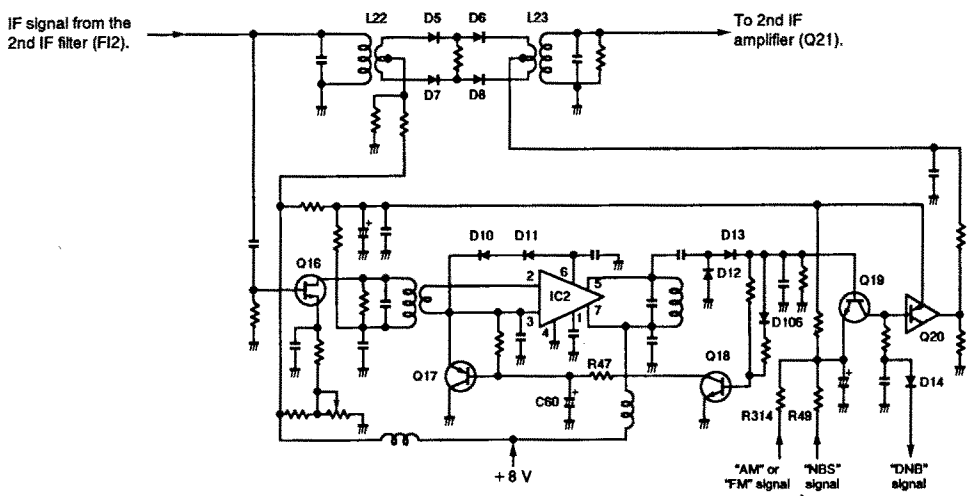
When the operating frequency is changed, the "DNB" signal line becomes "LOW," turning Q20 ON through D14. In this case, the noise blanker gate prevents PLL click noise.

3-1-9 2ND IF CIRCUIT (MAIN UNIT)

The 2nd IF circuit amplifies and filters the 2nd IF signals.

The signals passed through the noise blanker gate (D5~D8) are amplified at Q21. The Loose tuning circuit (L24, C47) matches the signals to the 2nd IF filters.

NOISE BLANKER CIRCUIT



When SSB or CW mode is selected, the signals pass through FI3 (FL-30) via D15. When an optional CW narrow filter is installed and CW-N mode is selected, signals pass through the CW narrow filter via D25. When AM mode is selected, the signals bypass the 2nd IF filter via D20. When FM mode is selected, the signals are applied to the FM•AM unit via D52.

The filters are selected with mode selecting signals (SSB•CW, AM, CW-N) and the "T8" voltage line.

Signals from a filter are applied to the 3rd mixer (IC7) through D63.

3-1-10 3RD MIXER AND 3RD IF CIRCUITS (MAIN UNIT)

The 3rd mixer circuit mixes the filtered 2nd IF signals and the 3rd LO signal to convert the 2nd IF to a 3rd IF.

The 2nd IF signals from D63 are converted to a 455 kHz 3rd IF signal at the 3rd mixer (IC7). The 3rd IF signal is applied to FI4 (for AM mode) or FI5 (for SSB and CW mode). The filters are selected by the mode selecting signals. The filtered signal is amplified at Q27, Q28 and Q29 to obtain a detectable level.

A rapid time constant of AGC is used for Q27 to prevent rising edge distortion of receive signals. Thermistors (R417, R419), connected to Q27, Q28 respectively, improves the temperature characteristics of the receiver gain. R138 adjusts the receiver gain. Q29 is a buffer amplifier and output signals from Q29 are shared between the SSB/CW detector, AM detector and AGC detector.

3-1-11 BFO CIRCUIT (MAIN UNIT)

A 9 MHz signal oscillated at the BFO circuit (Q31, X1) is buffer-amplified at Q42 and applied to the balanced modulator (IC6) for transmission and to a product detector (IC5) after mixing with the 3rd LO signal at IC12 for receive demodulation.

In USB mode, the "USB" signal line becomes "HIGH," turning D69 ON. The frequency is then adjusted with C294 to set the USB carrier point.

During CW transmission, the "CW" signal line becomes "HIGH" turning D68 ON. The frequency is then adjusted with L83 to set the CW transmit carrier point.

In LSB mode, the "LSB" signal line becomes "HIGH," turning D67 ON. The frequency is then adjusted with L82 to set the LSB carrier point.

During CW reception, R8 voltage turns Q33 ON, then switching diodes (D67~D69) are turned OFF. The frequency is fixed by coils (L81~L83) and capacitors (C294, C230).

BFO FREQUENCY IN EACH MODE

MODE	FREQUENCY (MHz)
USB	9.0130
CW (Tx)	9.0106
LSB	9.0100
CW (Rx)	9.0098
AM	NO OUTPUT

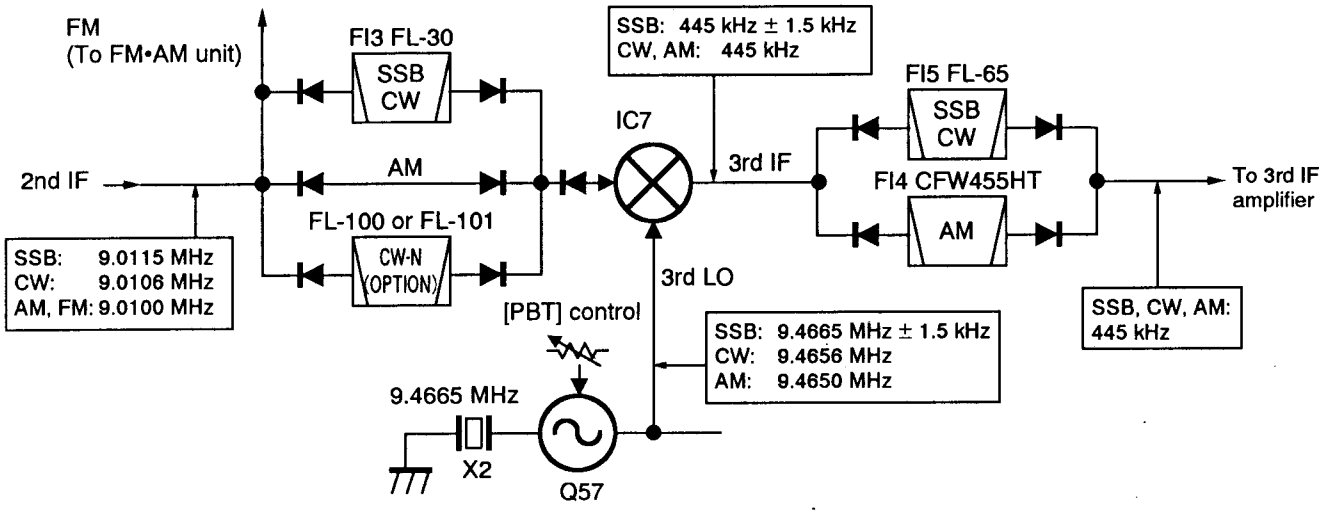
3-1-12 PBT CIRCUIT (MAIN UNIT)

The PBT circuit shifts the 3rd IF within ±1.5 kHz. As a result, the 3rd IF is shifted from the center frequency of the 3rd IF filter (FI5). This means the 3rd IF signal does not pass through the center of the 3rd IF filter because the passband width is fixed in the 2nd IF filter. Therefore, the overlap of the 2nd and 3rd IF filters appears to be narrowed.

Since the BFO frequency is also shifted the same value as the 3rd IF shift, frequency is corrected at the detector.

The 3rd LO to IC7 is produced by Q57 and X2. X2 is shifted ± 1.5 kHz by D101 in SSB mode. Therefore, the 3rd LO is shifted to activate the PBT.

PBT CIRCUIT



In AM mode, D101 variable voltage is replaced with a preset voltage by Q62 and 9.4650 MHz is output regardless of the [PBT] control location.

In CW mode, D101 variable voltage is replaced with a preset voltage by Q60 and 9.4656 MHz is output regardless of the [PBT] control location.

3-1-13 SSB/CW DEMODULATOR CIRCUITS (MAIN UNIT)

In SSB or CW mode, the 3rd IF signal from the IF amplifier (Q29) is mixed with the BFO signal from IC12 at the product detector (IC5) to demodulate the 3rd IF signal into an AF signal. The detected signal (AF) from IC5 (pin 2) is applied to the AF input mode selector switch (IC8).

3-1-14 AM DEMODULATOR CIRCUITS (MAIN UNIT)

In AM mode, the 3rd IF signal from the IF amplifier (Q29) passes through C121 and is detected at D62. The detected signal (AF) is then applied to the AF input mode selector switch (IC8).

3-1-15 FM DEMODULATOR CIRCUIT (FM•AM UNIT)

In FM mode, the 2nd IF signal, just before passing the 2nd IF filter, is applied to the FM•AM unit via D52. The passed signal is applied to the FM IF IC where the IF signal is converted into the 3rd IF signal and is then converted into AF signals.

X1 and X2 on the FM•AM unit are used for the 3rd local oscillator and quadrature detector, respectively.

The detected signal (AF) is then applied to the AF input mode selector switch (IC8) on the MAIN unit.

3-1-16 AF INPUT MODE SELECTOR SWITCH (MAIN UNIT)

The AF signal from one of detector circuits is applied to the AF input mode selector switch (IC8). IC8 consists of 4 analog switches which are selected with a mode signal and the squelch control signal. The AF signal is output from IC8 (pins 1, 4, 11) and then applied to the AF amplifier circuit.

3-1-17 AGC CIRCUIT (MAIN UNIT)

The AGC (Automatic Gain Control) circuit reduces IF amplifier gain to keep the audio output at a constant level.

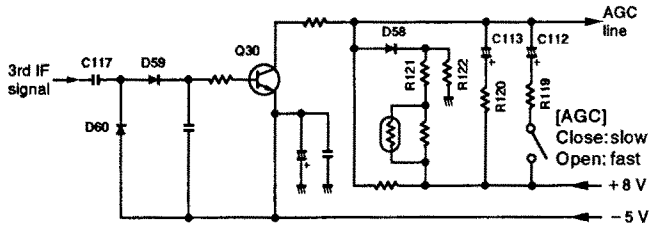
The receiver gain is determined by the voltage on the AGC line (Q30, collector). The voltage is usually set by the resistance ratio of R121 and R122.

The 3rd IF signal from the 3rd IF amplifier (Q29) is detected at the AGC detector (D59, D60) and is then applied to the DC amplifier (Q30). − 5 V is applied to the Q30 emitter to activate the AGC line to the minus voltage.

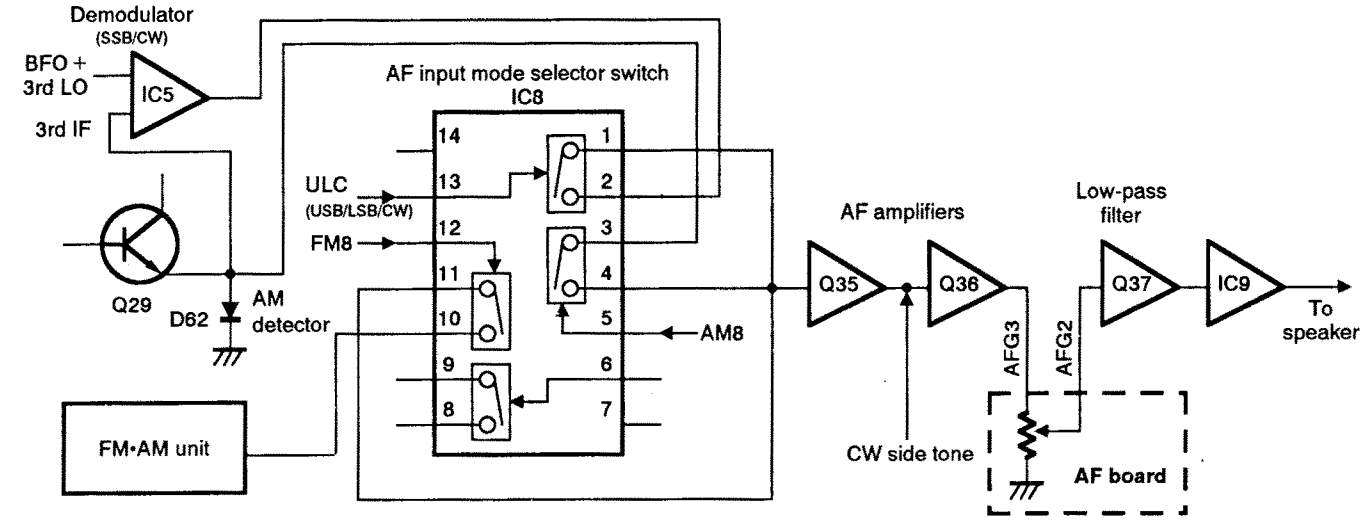
When receiving strong signals, the detected voltage increases and the voltage of the AGC line decreases via the DC amplifier (Q30). As the AGC line is used for the bias voltage of the IF amplifiers (Q15, Q21, Q27), the IF amplifiers' gain are decreases.

When the strong signal disappears, the AGC line voltage is released by C113 and R120 while fast AGC is set. When slow AGC is set, C112 and R119 are connected in parallel to obtain a slow AGC release time.

AGC CIRCUIT



AF CIRCUIT



3-1-18 S-METER CIRCUIT (MAIN UNIT)

The S-meter circuit indicates the relative received signal strength while receiving by utilizing the AGC voltage which is changed depending on the received signal strength.

The AGC bias voltage (time constant line) is applied to a differential amplifier (IC4, pin 6) where the difference between the bias and reference voltages is detected.

The resulting S-meter signal passes through the meter switching circuit (IC8) and is then applied to the meter on the front panel. The reference voltage is adjusted with R116. IC8 (pins 8 and 9) is shorted inside the IC while receiving.

The FM S-meter signal from the FM•AM unit is applied to the meter switching circuit (IC8, pin 9). The signal is also applied to the squelch circuit (IC4 pin 2).

3-1-19 SQUELCH CIRCUIT (MAIN AND FM•AM UNITS)

The squelch circuit mutes audio output when the S-meter signal is lower than the [SQUELCH] control setting level.

The S-meter signal (SSB, CW, AM) from IC4 (pin 7) is applied to the comparator (IC4, pin 2) through D56 and R110 to be compared with the threshold level set by the [SQUELCH] control.

In FM mode, the 3rd IF signal is amplified and detected at IC2 and D3/D4, respectively, in the FM•AM unit. The detected signal (S-meter signal) is then applied to the comparator (IC4, pin 2).

When the S-meter signal is lower than the threshold level, the comparator becomes "HIGH" and Q32 turns OFF to deactivate the AF input mode selector switch (IC8 pins 5, 12, 13). This cuts AF output OFF. This signal is then applied to Q34, turning OFF the [RX] indicator, and is also applied to the [MICROPHONE] connector (pin 4).

3-1-20 AF AMPLIFIER CIRCUIT (MAIN UNIT)

The AF amplifier amplifies the AF input signal to a suitable driving level for the speaker.

The AF signal from the AF input mode selector switch (IC8 pins 1, 4, 11) is applied to the AF preamplifier (Q35, Q36). The CW side tone signal is applied to Q36.

The amplified signal is applied to the [AF GAIN] control (AF board R1) and then to the 2.8 kHz cut-off active low-pass filter (Q37). The AF signal output from Q37 is power-amplified at IC9 to drive the speaker.

3-2 TRANSMITTER CIRCUITS

3-2-1 MICROPHONE AMPLIFIER CIRCUIT (SW UNIT AND VR BOARD)

The microphone amplifier circuit amplifies the microphone input signals and outputs the amplified signal to the balanced modulator and the FM•AM unit. The speech compressor circuit is included in this circuit.

Audio signals from the [MICROPHONE] connector are amplified at Q7 (SW unit) and then Q2 (VR board). The amplified signals are then applied to the [MIC GAIN] control and amplified again at Q1 (VR board). External modulation input from the [ACC(1)] socket (pin 4) is also applied to Q1 via R5 (VR board). The microphone bias voltage is supplied from this circuit.

When the speech compressor is ON, the gain of Q2 increases and the diode limiter (VR board D1, D2) is activated. The compression level is set by R1 (SW unit).

3-2-2 BALANCED MODULATOR (MAIN UNIT)

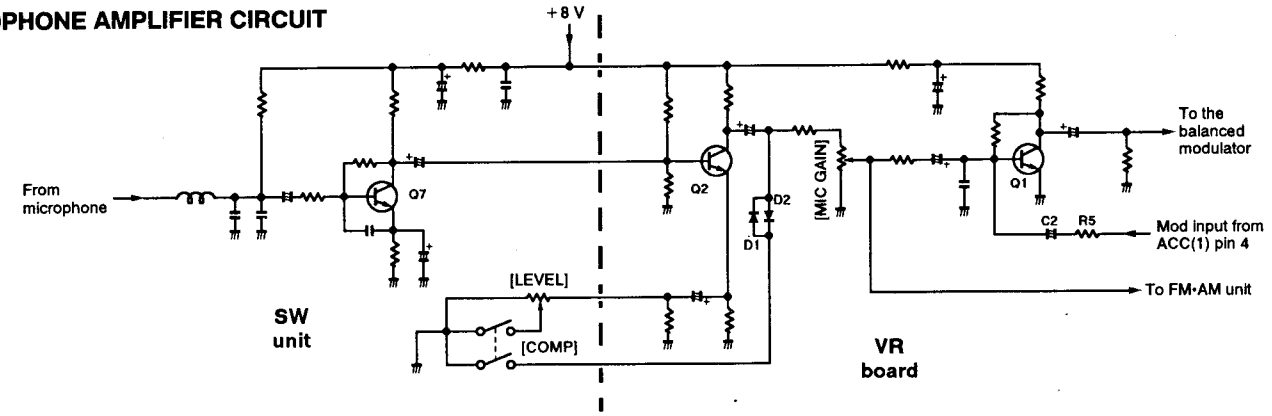
The balanced modulator converts the AF signal from the microphone amplifier to a 9 MHz IF signal with a BFO signal.

Output signals from the mic amplifier and the CW keying signal are applied to the balanced modulator (IC6). The BFO signal, buffer-amplified at Q42, is applied to IC6 (pin 7) as a carrier signal.

IC6 is a double balanced mixer IC and outputs a double side band (DSB) signal with −40 dB carrier suppression.

R177 and R179 adjust the balanced level of IC6 for maximum carrier suppression. In CW mode, the CW keying signal upsets the balance to create a carrier signal.

MICROPHONE AMPLIFIER CIRCUIT



3-2-3 FM AND AM MODULATION CIRCUITS (FM•AM UNIT)

The microphone signals from the VR unit enter the FM•AM unit via P2 (FMI2 line) and are then amplified to Q11 and the limiter amp/low-pass filter (IC5a/b).

In FM mode, the amplified signals are applied to the modulator circuit (D8). The modulation circuit changes the reactance of the FM local oscillator (Q1, X3) to obtain the FM modulation. The modulated signal is amplified at IC3 and IC4 and is then applied to the transmitter IF circuit (MAIN unit Q22).

In AM mode, the amplified signals are applied to the local oscillator amplifier (IC4) as bias voltages to obtain the AM modulation.

3-2-4 CW KEYING CIRCUIT (MAIN UNIT)

The CW keyer is connected to Q38. When the CW key is closed, 8 V is output from Q38 and this voltage controls break-in operation, the sidetone signal and the transmit signal.

The 8 V from Q38 is applied to the balanced modulator (IC6) to unbalance the IC6 input bias voltage and create a carrier signal. R241 determines the transmit delay timing.

(1) BREAK-IN

When the [BK IN] switch (S2 in the MAIN unit) is pushed IN, the IC-729 is automatically set to the transmission condition by CW keying. The 8 V from Q38 is applied to the base of Q52 via Q26. When the key is closed, Q52 grounds the SEND line for transmitting.

The transmit release delay time is determined by C252, R245 and the [DELAY] control (R244).

(2) SIDE TONE

When the CW key is closed, the side tone circuit oscillates and sends the signal to the AF circuit.

Normally, D91 is ON, and C249 is connected to the Q40 collector so that no oscillation occurs. When the CW key is closed, the 8 V from Q38 via D92 give D91 reverse bias to disconnect C249 from Q40. Q40 then oscillates with 800 Hz as a side tone signal. R268 prevents sidetone click noise.

(3) KEYING

Keying is controlled at 2 points in the IC-729. The balanced mixer (IC6) stops the carrier output by recovering the balance of the input bias voltage. D35, located at the 2nd IF mixer (IC1) input, cuts the signal line.

R240 and R241 determine the voltage wave form to IC6 (pin 5) to make the keying wave form.

3-2-5 IF AMPLIFIER (MAIN UNIT)

The SSB/CW 9 MHz IF signal passes through FI3 (FL-30) to suppress the unwanted sideband signal, then the signal is applied to a transmit IF amplifier (Q22). The optional CW narrow filter is not used in transmitting.

The amplified signal from Q22 is mixed with the 2nd LO signal and converted to a 70.45 MHz IF signal at IC1. IC1 is used in receiving and transmitting. The FM or AM signal from the FM•AM unit is also amplified at Q22 and is then applied to IC1.

The 70.45 MHz IF signal is amplified at the IF amplifier (Q7) and is then converted to the displayed frequency at the balanced mixer (Q2, Q3) with the 1st LO signal.

The gates of the IF amplifiers (Q7, Q22) are controlled by ALC bias voltage from the ALC circuit. A thermistor (R89), connected to the gate of Q22, improves the temperature characteristics of the transmitter gain. R85 adjusts the transmitter total gain.

3-2-6 RF CIRCUIT (PA, PB AND MAIN UNITS)

The displayed frequency signal converted at the balanced mixer (Q2, Q3 in MAIN unit) is applied to a bandpass filter (L2, L3, C4~C7, C415 for HF or L141, L142, C401~C405 for 50 MHz) where unwanted LO signal emission is reduced. The filtered signal is amplified at Q1, and is then applied to the PB unit via the attenuator. The signals from the MAIN unit are switched depending on HF or 50 MHz at RL1 on the PB unit.

During HF band operation, the switched signal is amplified at the predrive amplifier (Q1), drive amplifier (Q2, Q3) and power amplifier (Q5, Q6) in the PA unit to obtain a stable 100 W of RF output power.

During 50 MHz band operation, the switched signal is amplified at the predrive amplifier (Q1) and final power module (IC1) in the PB unit to obtain a stable 10 W of RF output power.

3-2-7 HF FILTER CIRCUIT (FILTER UNIT)

The HF filter circuit consists of 6 Chebyschev low-pass filters to suppress the higher harmonic components. The signal from the power amplifier (PA unit: Q5, Q6) is applied to one of the low-pass filters (depending on its frequency). The filter switching voltage from the PLL unit is applied to the FILTER unit via P2 (PLL unit: J7).

The filtered signal passes through the SWR detector circuit (L27) and is then applied to the [HF ANT] connector via RL13.

3-2-8 RF METER CIRCUIT (MAIN UNIT)

The "FOR" voltage from the FILTER or PB unit is applied to the Po meter amplifier (IC10 pin 3). The amplified voltage is output from IC10 (pin 1) and then applied to the meter. R186 adjusts the meter sensitivity and R189 and C261 are used for RF meter peak power hold.

3-2-9 ALC CIRCUIT (MAIN UNIT)

The ALC (Automatic Level Control) circuit controls the gain of IF amplifiers in order for the IC-729 to output a constant RF power set by the [RF PWR] control even when the supplied voltage shifts, etc.

The RF power signal level is detected at D1 (FILTER unit for HF) or D2 (PB unit for 50 MHz) and applied to the MAIN unit as the "FOR" voltage.

The "FOR" voltage from the FILTER or PB unit is applied to IC11 (pin 2) in the MAIN unit. The "POC" voltage, set by the [RF PWR] control (R2 on the SW unit), is applied to IC11 (pin 3) as the reference voltage.

When the "FOR" voltage exceeds the "POC" voltage, ALC bias voltage from IC11 (pin 1) controls the IF amplifiers (Q7, Q22) to adjust the output power to the determined level by the [RF PWR] control until the "FOR" and "POC" voltage levels are equalized.

In the PB unit, a high impedance resistor is used for the FOR detector circuit, therefore, the "FOR" voltage is higher than the HF detected level. Q85 and R411 on the MAIN unit compensate for the detected level when the 50 MHz band is selected.

The ALC bias voltage from IC11 (pin 1) is also applied to the inversion-amplifier (IC11 pin 6) to control the intensity of the [TX] indicator via D77 and R202, indicating the ALC level.

An external ALC input from the [ALC] jack is applied to the buffer amplifier (Q53). External ALC operation is identical to that of the internal ALC.

In AM mode, IC11 operates as an averaging ALC amplifier with C51 in the FM•AM unit. Q54 turns ON and the "POC" voltage is shifted for 40 W AM output power (maximum) through R207.

Q55 is used for power reduction to prevent excessive current flow when transmitting on the 28 MHz via the ALC line.

3-2-10 APC CIRCUIT (MAIN UNIT)

The APC (Automatic Power Control) circuit protects the power amplifiers on the PA and PB units from high SWR and excessive current.

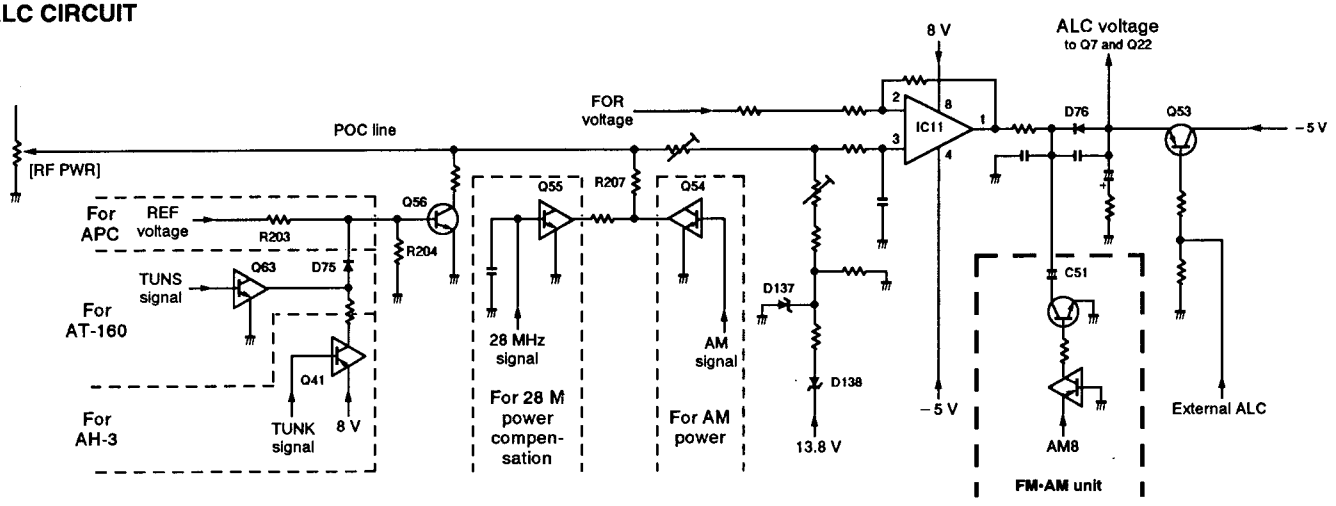
The reflected wave signal appears and increases on the antenna connector when the antenna is mismatched. D2 in the FILTER unit or D3 in the PB unit detects the signal and applies it to Q56 in the MAIN unit as the "REF" signal.

When the "REF" signal level increases, Q56 decreases the POC line voltage via R205. The POC line voltage is applied to IC11 to activate the ALC.

Since power transistors are used for the HF band's power amplifier, IC APC protects these transistors from excessive current. The power transistor current is obtained by detecting the voltage ("ICH" and "ICL") which appears at both terminals of a 0.012 Ω resistor (R26 on the PA unit). The detected voltage is applied to the differential amplifier (IC10 pins 5, 6). When the current of the final transistors is more than 22 A, the detected voltage is applied to the ALC line via D73 to prevent excessive current flow.

During tuning, with the optional AH-3 AUTOMATIC ANTENNA TUNER, the "TUNK" signal turns Q41 ON. As a result, Q56 is turned ON and the "POC" voltage is shifted for 12 W output power. When the AT-160 is selected with the tuner selection switch on the rear panel, Q63 turns ON via the "TUNS" signal, therefore, 8 V is not applied to Q56 and tuning is performed at 100 W.

ALC CIRCUIT



3-2-11 TEMPERATURE PROTECTION CIRCUIT (PA UNIT)

A cooling fan (MF1) is activated while transmitting or if the temperature of Q5 or Q6 exceeds the preset value.

A thermal switch (S1) is thermally-connected to Q6. When the Q6 temperature exceeds 90℃, S1 is turned ON and provides voltage to MF1 via R28.

Thermistor R32 detects the temperature of Q5. If the Q5 temperature is more than 50℃, when the transceiver condition has changed from transmitting to receiving, R32 rotates the cooling fan.

3-3 PLL CIRCUITS

3-3-1 GENERAL DESCRIPTION

The PLL unit generates a 1st LO signal (70.4800~100.4530 MHz for HF band and 120.4515~124.4515 MHz for 50 MHz band) and a 2nd LO signal (61.44 MHz fixed is used for the MAIN unit). The IC-729 uses a dual loop PLL system.

The main loop PLL contains 4 VCO circuits for all HF band coverage within 512 kHz steps. The sub loop PLL employs the DDS (Direct Digital Synthesizer) system which ensures a rapid lockup time and high quality frequency oscillation for 512 kHz coverage within 10 Hz steps.

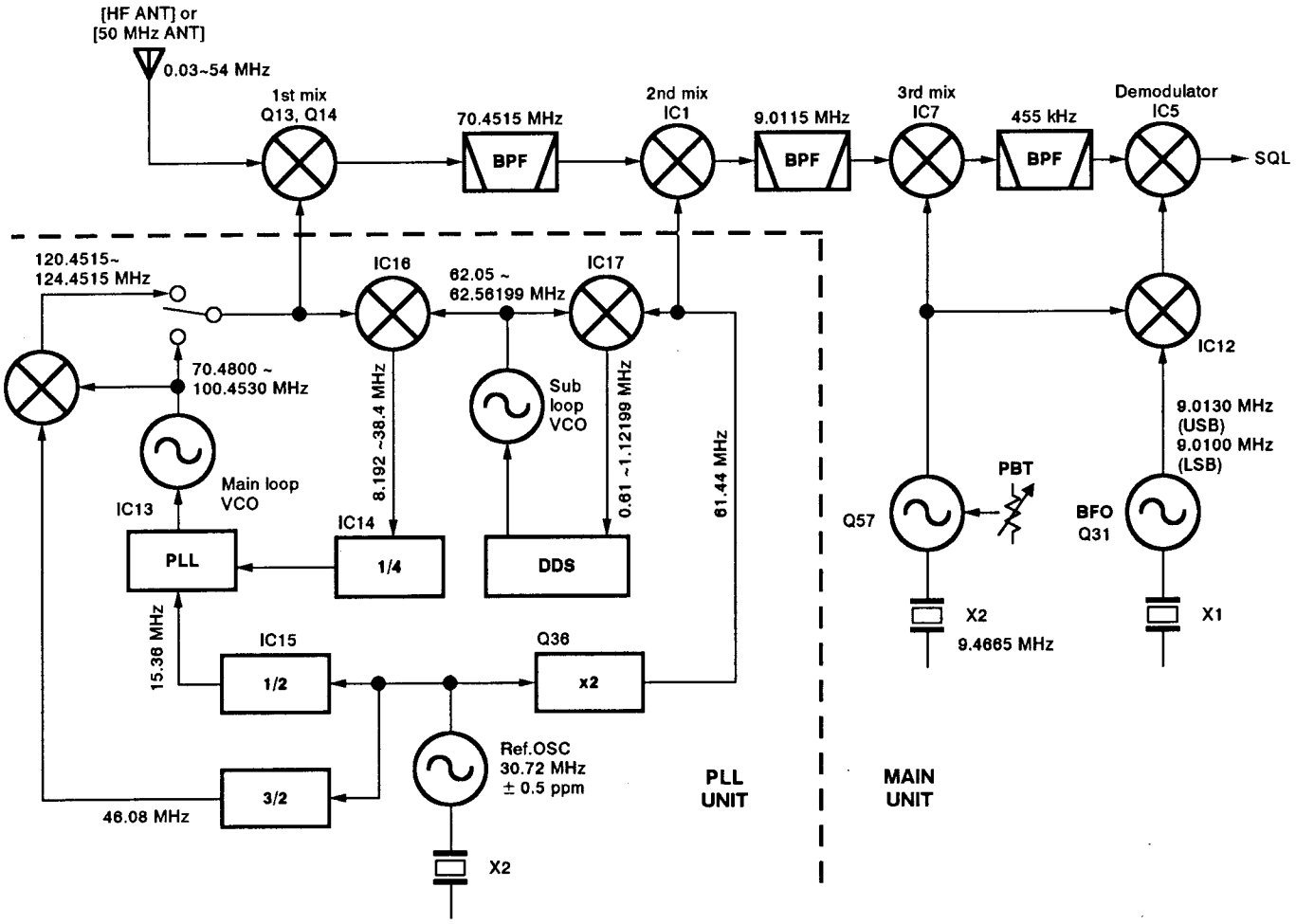
For the 50 MHz band's 1st LO signal, 46.08 MHz frequency is mixed with one of four VCO outputs to obtain 120.4515 ~ 124.4515 MHz.

3-3-2 1ST LO PLL CIRCUIT (PLL UNIT AND DDS BOARD)

The 1st LO circuit employs a dual loop PLL system. One of four VCO oscillation signals (main loop) is mixed with the signals from the sub loop PLL at IC16 and the resulting signal is divided by 4 at IC14 and then applied to the PLL IC (IC13). The signal is then divided by a programmable divider and compared with the reference frequency in IC13. The phase detected signal is converted to the lock voltage at the active loop filter (Q12~Q14) and is then fed back to a VCO circuit to control the oscillation frequency.

In the sub loop PLL, the programmable dividing and phase detection are performed by digital processing in the DDS board. The sub loop, therefore, ensures that a high speed and a high quality signal can be generated. Meanwhile, the main loop PLL generates 512 kHz steps – this means high speed PLL can be accomplished – and 10 Hz steps are processed by the DDS. The quality of the dual loop PLL circuit is determined by the sub loop PLL.

FREQUENCY CONSTRUCTION



3-3-3 MAIN LOOP CIRCUIT (PLL UNIT)

One of four VCO circuits is switched by the VCO switching signal ("VCO1"~"VCO4"). The oscillated signal is buffer-amplified at Q23 and Q46 and then applied to the mixer (IC16 pin 7). The sub loop PLL output signal is also applied to the mixer (IC16 pin 5).

The mixed signals are amplified at Q27 and then applied to the low-pass filter (L23~L25, C92, C93, C99~C103). The filtered signal is amplified at Q26 and then divided by 4 at IC14. Then the signal is applied to the PLL IC (IC13).

The signal is divided at the programmable divider section in IC13 and is then phase detected at the phase comparator section with the reference frequency. The phase detected signal is output from pin 17 and is then converted to a DC voltage (lock voltage) by the active loop filter (Q12~Q14). The lock voltage is applied to the varactor diodes (D48, D50, D52, D54) in the VCO circuits to change the capacitance of these diodes and control the oscillation frequency.

The VCO oscillating signal is then buffer-amplified at the buffer amplifiers (Q23, Q24) and is then applied to the MAIN unit as a 1st LO signal or applied to the MAIN unit after mixing with the 46.08 MHz signal for the HF band or the 50 MHz band, respectively.

3-3-4 SUB LOOP CIRCUIT (PLL UNIT AND DDS BOARD)

The oscillated signal at the sub loop VCO (Q29, 62.05~62.56199 MHz) is amplified at the buffer amplifier (Q30) and is then applied to the mixer (IC17 pin 5). The 61.44 MHz signal is also applied to this mixer (IC17 pin 7).

The mixed signal (0.61~1.12199 MHz) passes through the low-pass filter (L32, C126) and is amplified at Q32. The signal is then applied to the DDS board.

The DDS board outputs pulse-type signals. The signals are applied to the loop filter (R133, R134, C114, C115) to be converted to a DC voltage (lock voltage). The lock voltage is applied to the varactor diode (D56) to change the capacitance of this diode and control the sub loop VCO oscillation frequency.

3-3-5 REFERENCE OSCILLATOR CIRCUIT (PLL UNIT)

The reference oscillator circuit consists of Q33 and X2. 30.72 MHz reference frequency is oscillated to produce a 2nd LO signal and PLL reference frequency. The reference frequency is buffer-amplified at Q34 and is then divided by 2 at IC15 to obtain the PLL reference frequency for the PLL IC (IC13).

The 30.72 MHz reference frequency is multiplied by 2 at Q36 to obtain the 2nd LO signal. The resulting 61.44 MHz signal is filtered at the bandpass filter and is then applied to a sub loop mixer (IC17) and to the MAIN unit via P4 as the 2nd LO signal.

3-4 LOGIC CIRCUITS

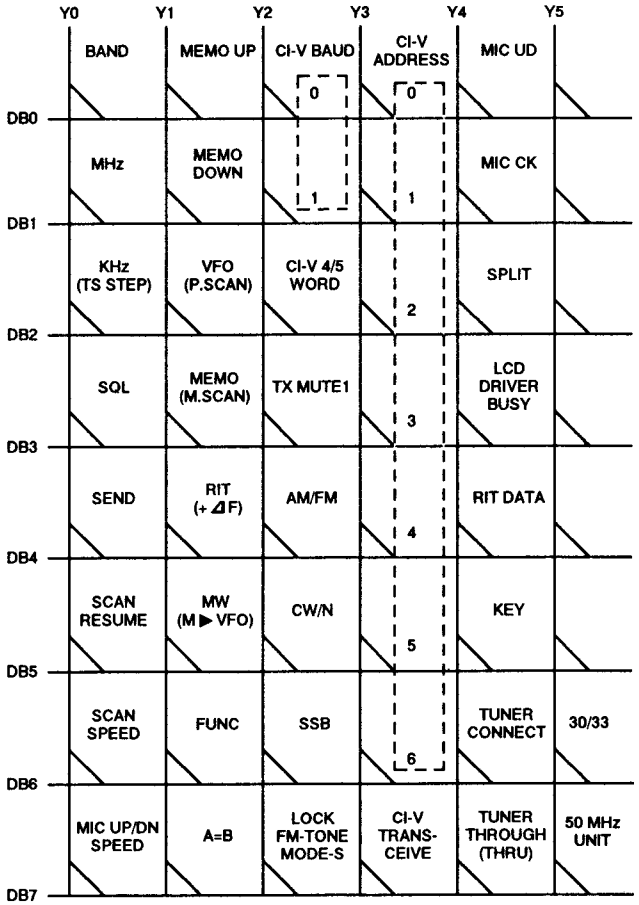
3-4-1 BAND SELECTION DATA (PLL UNIT)

To select the correct bandpass filter, the low-pass filter and VCOs on the MAIN and PLL units, the CPU outputs the following band selection data depending on the displayed frequency.

BAND SELECTION DATA

FREQUENCY (MHz)	BPF	BAND VOLTAGE	LPF	VCO
0.5~1.59999	B0	7.4 V	L1	VCO1
1.6~1.99999	B1			
2.0~3.99999	B2	6.4 V	L2	
4.0~7.99999	B3	5.4 V	L3	
8.0~10.99999	B4	0.0 V	L4	VCO2
11.0~14.99999	B5	4.4 V		
15.0~21.99999	B6	3.4 V	L5	VCO3
22.0~30.0	B7	2.4 V	L6	VCO4
50.0~54.0	BPF board	1.2 V	PB unit	VCO1

3-4-2 KEY MATRIX (PLL UNIT)



3-4-3 CPU (PLL UNIT)

The CPU (IC6) contains an 8-bit CMOS CPU, a 16k-byte ROM and a 256-byte RAM. The CPU controls the operating frequency, mode, function display, etc. The memory contents are stored in the CPU using a lithium backup battery which has a normal life of more than 5 years.

CPU PORT ALLOCATIONS

PORT NAME	PIN NUMBER	DESCRIPTION
EXTAL	3	Input port for the CPU clock.
$\overline{RES}$	6	Input port for CPU standby/operating mode switching.
$\overline{STBY}$	7	
NAR	9	Outputs a control signal for CW narrow mode.
START	10	Outputs a control signal for the connected antenna tuner.
RESET	11	Outputs a control signal for resetting a main dial counter.
P23	12	Input port for CI-V data.
P24	13	Output port for CI-V data.
ATS	14	Input port for the auto tuning step.
$\overline{Q}$, Q	15, 16	Input port for the dial up/down.
CLK, Q1~Q5	17~22	Input port for the dial counter data.
A, B, C	25~27	Outputs a band changing signal. IC19 provides each band signal.
$\overline{CS1}$	34	Outputs a control signal for reading the RIT data.
DSTB	35	Outputs a strobe signal for DDS.
PSTB	36	Outputs a strobe signal for the main loop PLL.
PCK	37	Outputs a clock signal.
$\overline{CD}$, $\overline{CS}$, $\overline{SCK}$	38~40	Outputs a command/clock signal for the display driver.

3-4-4 RIT CONTROL (PLL UNIT)

The [RIT] control shifts a voltage to shift the receive frequency. The voltage is applied to IC12 (pin 4). IC12 is an A/D converter which outputs 8-bit serial data regarding analog input voltage. The resulting serial data is applied to the CPU matrix Y4 → DB4.

3-4-5 PARALLEL/SERIAL CONVERTER (PLL UNIT)

IC11 is a parallel/serial converter IC. Parallel data from the CPU are converted into serial data to transfer the PLL N-data, DDS N-data, data for the LCD driver, etc. When the power is turned ON, the CPU also outputs programmable divider data and a control signal for universal ports to the PLL IC (IC13).

3-5 REGULATOR CIRCUITS

Either + 8 V, + 5 V or − 5 V DC is supplied from a corresponding regulator circuit. + 8 V, + 5 V and − 5 V DC are regulated at the following circuits using 13.8 V DC.

(1) + 5 V REGULATOR (PLL UNIT)

+ 5 V DC is provided by the three-terminal voltage regulator (IC10).

(2) + 8 V REGULATOR (MAIN UNIT)

+ 8 V DC is provided by the three-terminal voltage regulator (IC14).

(3) − 5 V REGULATOR (PLL UNIT)

IC6 generates a negative pulse-type voltage by converting the DC input to AC voltages (approx. 6.7 kHz) as a multi-vibrator. The voltage is rectified at D8 and D9, regulated by a zener diode (D10) and C13, and is then applied to the MAIN unit.

SECTION 4 ADJUSTMENT PROCEDURES

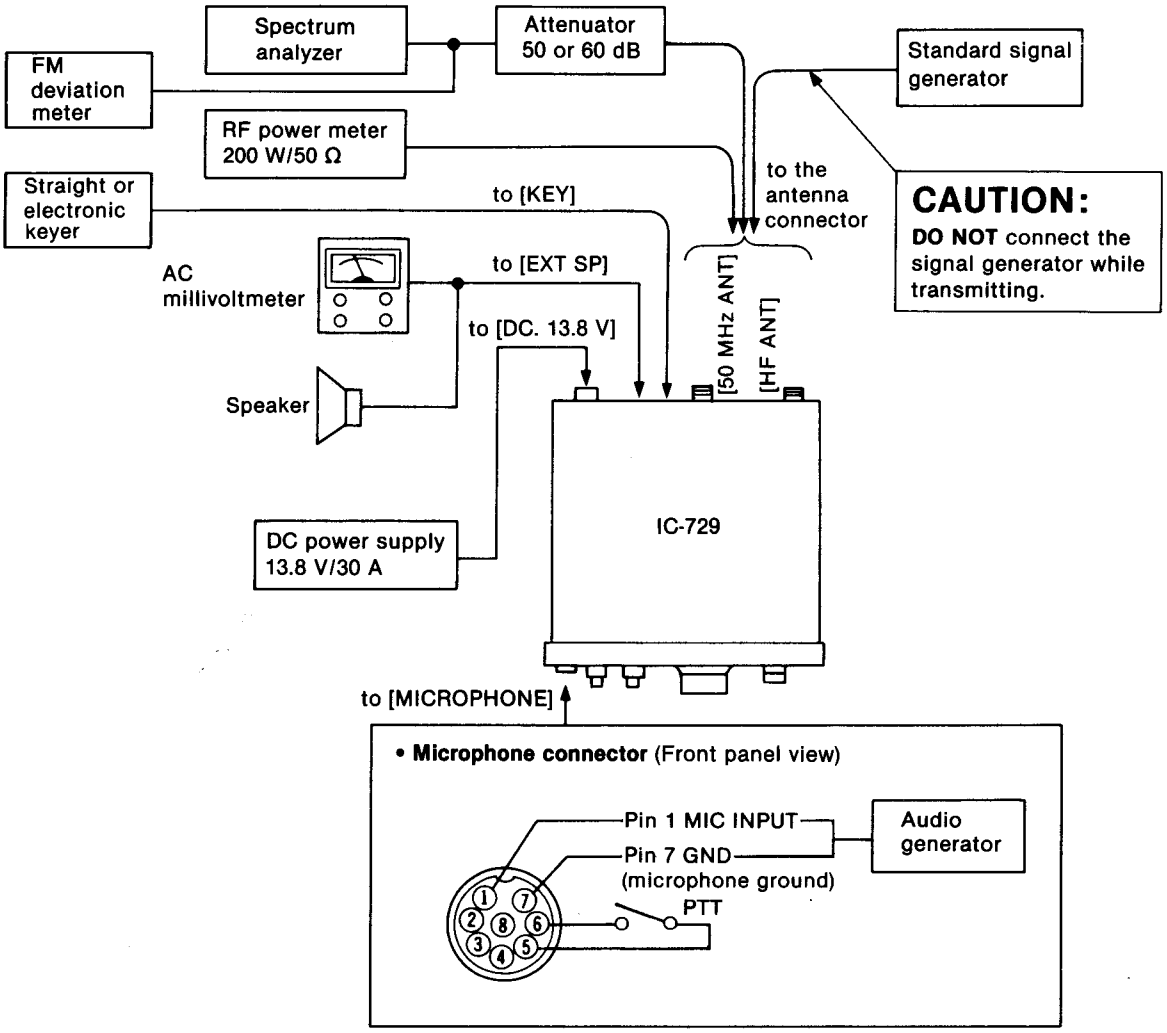
4-1 PREPARATION BEFORE SERVICING

■ REQUIRED TEST EQUIPMENT

EQUIPMENT	GRADE AND RANGE	EQUIPMENT	GRADE AND RANGE
DC power supply	Output voltage : 13.8 V DC Current capacity : 30 A or more	DC voltmeter	Input impedance : 50 kΩ/DC or better
RF power meter (terminated type)	Measuring range : 10~200 W Frequency range : 1.8~50 MHz Impedance : 50 Ω SWR : Less than 1.2:1	AC millivoltmeter	Measuring range : 10 mV~10 V
		External speaker	Impedance : 8 Ω
		Ammeter	Measurement capability: 1 A and 30 A
Frequency counter	Frequency range : 0.1~100 MHz Frequency accuracy : ±1 ppm or better Sensitivity : 100 mV or better	Audio generator	Frequency range : 300~3000 Hz Output level : 1~500 mV
		Attenuator	Power attenuation : 50 or 60 dB Capacity : 150 W or more
RF voltmeter	Frequency range : 0.1~100 MHz Measuring range : 0.01~10 V	Spectrum analyzer	Frequency range : At least 90 MHz Spectrum bandwidth : ±100 kHz or more
Standard signal generator (SSG)	Frequency range : 0.1~100 MHz Output level : −127~−17 dBm (0.1 μV~32 mV)	Digital multimeter or oscilloscope	Input impedance : 1 MΩ/DC or better

CW: Clockwise CCW: Counterclockwise

■ CONNECTION

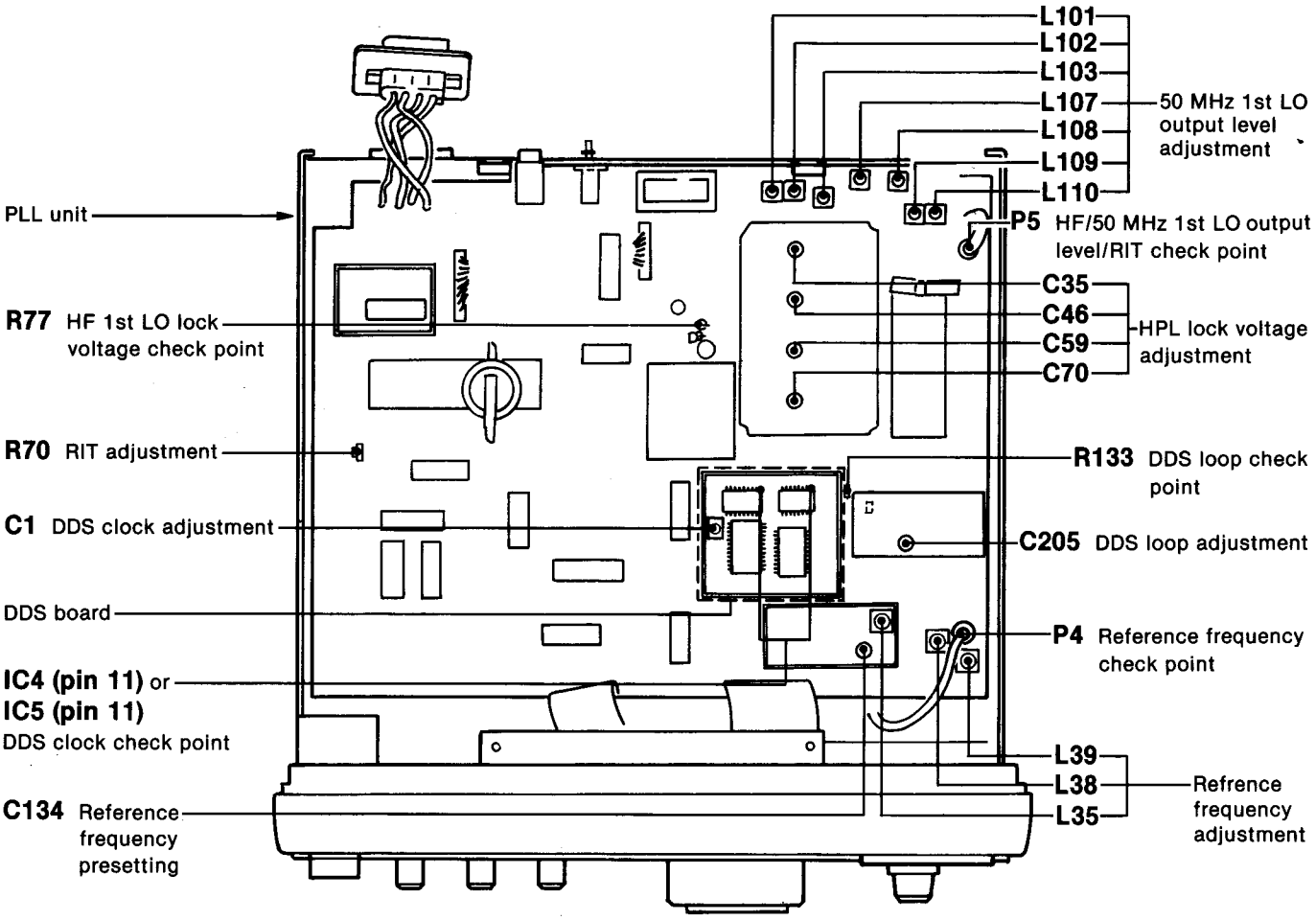


4-2 PLL ADJUSTMENT

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
DDS CLOCK	1	• Displayed frequency: 14.10000 MHz • Mode : USB • Receiving	DDS	Connect the frequency counter to IC4 (pin 11) or IC5 (pin 11).	5.24288 MHz	DDS	C1
REFERENCE FREQUENCY	1	• Displayed frequency: 14.10000 MHz • Mode : USB • Terminate P4 with a 50 Ω resistor. • Receiving	PLL	Connect the RF voltmeter to P4.	Preset to center as shown below. 	PLL	C134
	2				Maximum level (More than +3 dBm)		L38, L39
	3			Connect the frequency counter to P4.	61.4400 MHz		L35
	4	After adjustment, remove the resistor from P4 and re-plug P4.					
DDS LOOP	1	• Displayed frequency: 14.12650 MHz • Mode : USB • Receiving	PLL	Connect the digital multimeter or oscilloscope to R133.	1.0 V DC	PLL	C205
	2	• Displayed frequency: 14.12649 MHz			1.8~2.4 V DC		Verify
HPL LOCK VOLTAGE	1	• Displayed frequency: 7.99999 MHz • Mode : USB • Receiving	PLL	Connect the digital multimeter or oscilloscope to R77.	7.0 V DC	PLL	C35
	2	• Displayed frequency: 14.99999 MHz			7.0 V DC		C46
	3	• Displayed frequency: 21.99999 MHz			7.0 V DC		C59
	4	• Displayed frequency: 33.00000 MHz			7.5 V DC		C70
	5	• Displayed frequencies: 0.50000 MHz, 8.00000 MHz 15.00000 MHz and 22.00000 MHz			More than 1.65 V DC		Verify
50 MHz 1st LO OUTPUT LEVEL	1	• Displayed frequency: 51.00000 MHz • Mode : USB • Terminate P5 with a 50 Ω resistor. • Receiving	PLL	Connect the RF voltmeter to P5.	Maximum level (More than −2.0 dBm)	PLL	Adjust in sequence L101, L102, L103, L107, L108, L109, L110
	2	• Shift the frequency between 50.00000 MHz and 54.00000 MHz.			Adjust the output level within +2 dB.		Adjust in sequence L107, L108, L109, L110
	3	After adjustment, remove the resistor from P5 and re-plug P5.					

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
HF 1st LO OUTPUT LEVEL	1	• Displayed frequency: 14.10000 MHz • Mode : USB • Terminate P5 with a 50 Ω resistor. • Receiving	PLL	Connect the RF voltmeter to P5.	More than −2 dBm	PLL	Verify
	2	After confirmation, remove the resistor from P5 and re-plug P5.					
RIT	1	• Displayed frequency: 14.10000 MHz • Mode : USB • Terminate P5 with a 50 Ω resistor. • [RIT] control : Center • [RIT] switch : ON and OFF • Receiving	PLL	Connect the frequency counter to P5.	Same frequency on both conditions.	PLL	R70
	2	After adjustment, remove the resistor from P5 and re-plug P5.					

• PLL UNIT AND DDS BOARD

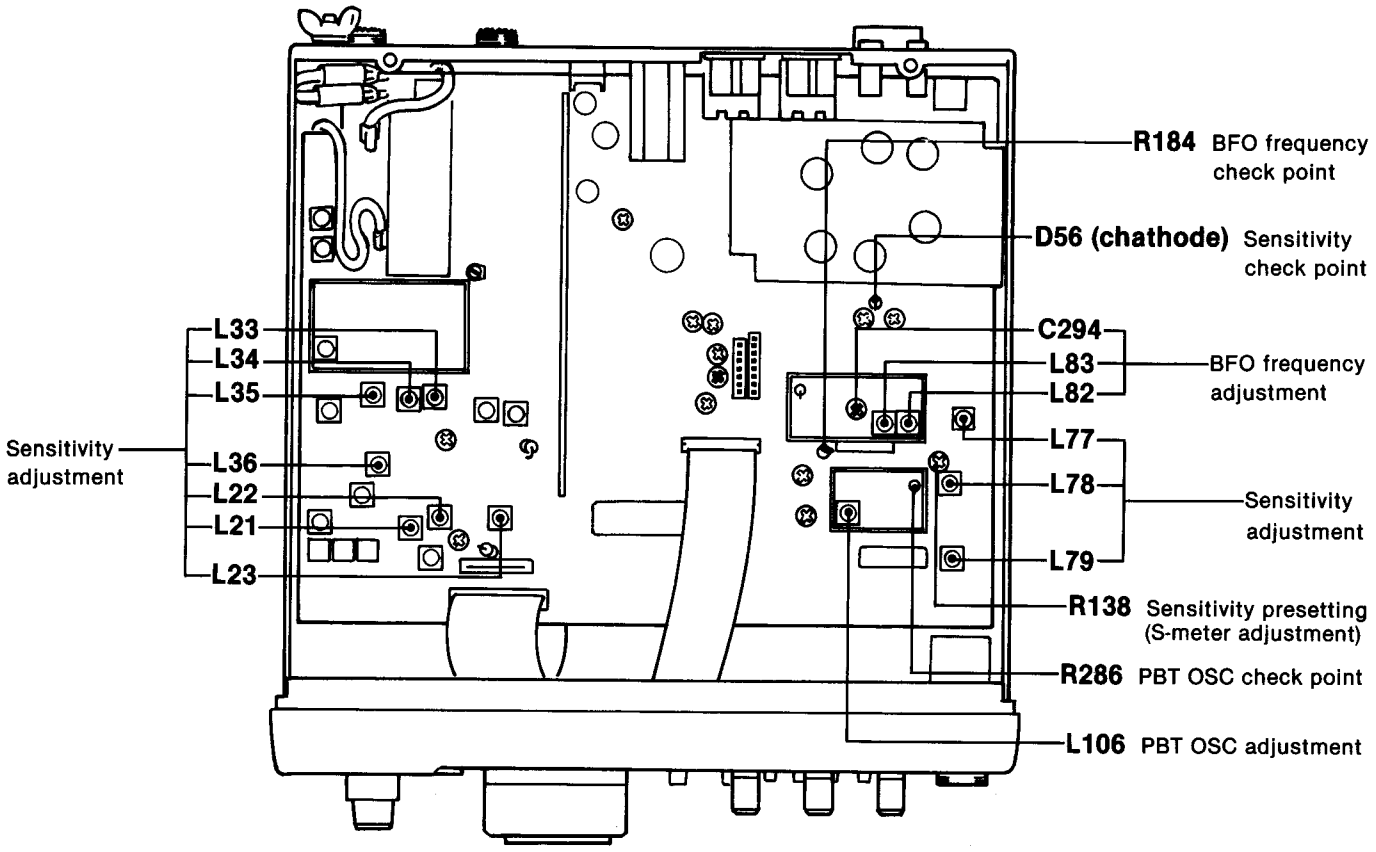


4-3 RECEIVER ADJUSTMENT

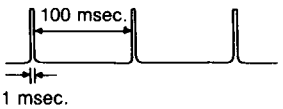
ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
BFO FREQUENCY	1	• Displayed frequency: 14.10000 MHz • Mode : USB • Receiving	MAIN	Connect the frequency counter to R184.	9.01300 MHz	MAIN	C294
	2	• Mode : CW • Transmitting			9.01060 MHz		L83
	3	• Mode : LSB • Receiving			9.01000 MHz		L82
	4	• Mode : CW • Receiving			9.00980 MHz (±150 Hz)		Verify
	5	• Mode : AM • Receiving			Not output		
PBT OSC	1	• Displayed frequency: 14.10000 MHz • Mode : USB • [PBT] control : Center • Receiving	MAIN	Connect the frequency counter to R286.	9.46650 MHz	MAIN	L106
	2	• Mode : CW • Receiving			9.46560 MHz (±500 Hz)		Verify
	3	• Mode : AM • Receiving			9.46500 MHz (±500 Hz)		
	4	• Mode : CW • [PBT] control : Max. CW			Higher than 9.46740 MHz		
	5	• Mode : CW • [PBT] control : Max. CCW			Lower than 9.46380 MHz		
SENSITIVITY	1	• Displayed frequency: 14.10000 MHz • Mode : FM • [RIT] switch : OFF • [AGC] switch : FAST • [ATT] switch : OFF • [NB] switch : OFF • [PREAMP] switch : ON	MAIN	Connect the digital multimeter or oscilloscope to the cathode of D56.	Maximum voltage	MAIN	Adjust in sequence L33, L34, L35, L36, L22, L23
	2	• [SQL] control : Max. CCW • Connect the SSG to the [HF ANT] connector and set as: Frequency : 14.0985 MHz Level : 50 μV* (−73 dBm) Modulation: FM/1 kHz Deviation : ±15 kHz • R138 (MAIN) : Max. CW • Receiving	Rear panel	Connect the distortion meter to the [EXT SP] jack with an 8 Ω load.	Minimum distortion level	MAIN	L21
	3	• Mode : AM • Connect the SSG to the [HF ANT] connector and set as: Modulation: AM/1 kHz Deviation : ±6 kHz • R138 (MAIN) : Max. CW • Receiving	MAIN	Connect the digital multimeter or oscilloscope to the cathode of D56.	Maximum voltage	MAIN	Adjust in sequence L79, L78, L77

*This oupout level of the standard signal generator (SSG) is indicated as SSG's open circuit.

• **MAIN UNIT**

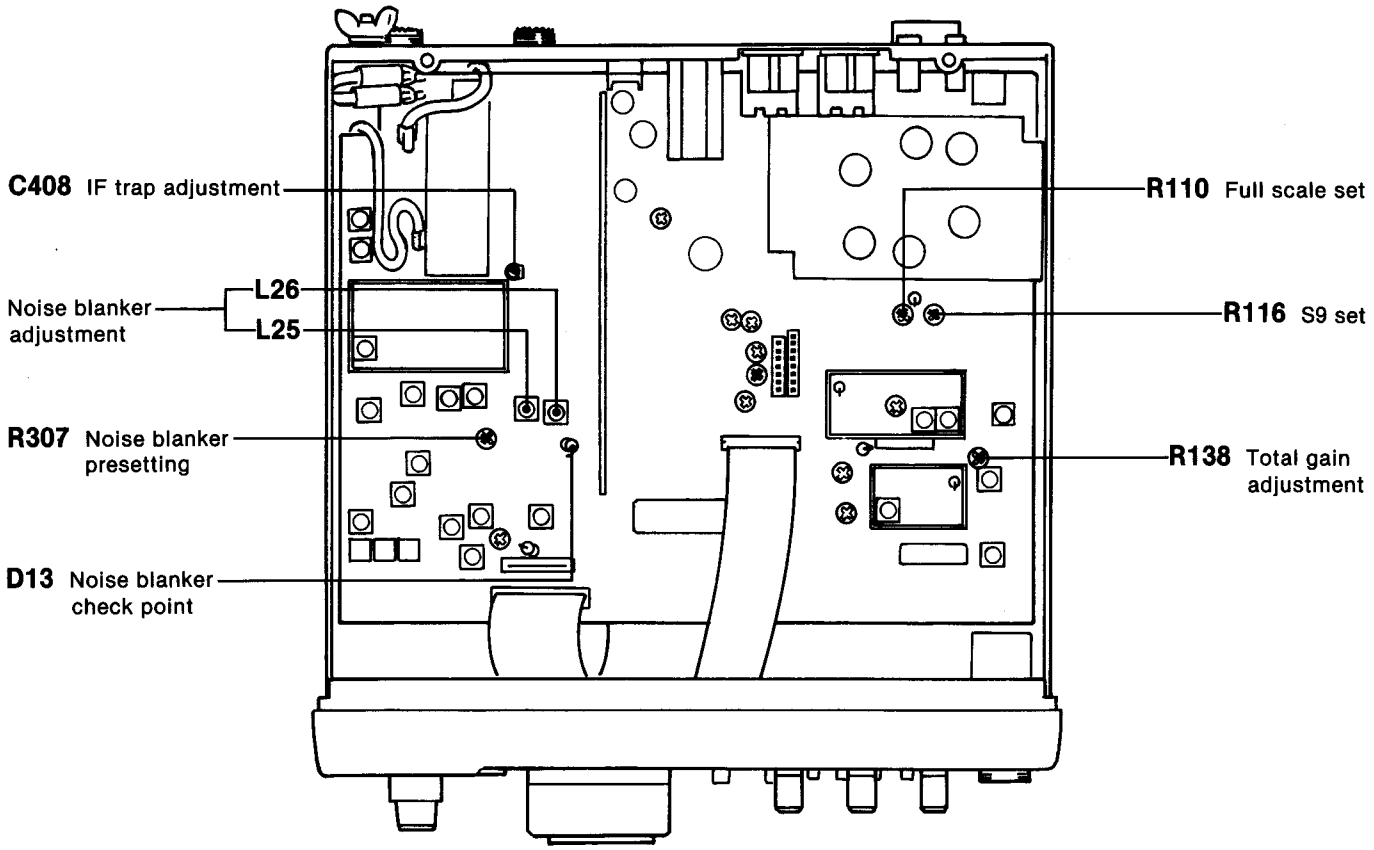

R184 BFO frequency check point
D56 (chathode) Sensitivity check point
C294
L83
L82
BFO frequency adjustment
L77
L78
L79
Sensitivity adjustment
R138 Sensitivity presetting (S-meter adjustment)
R286 PBT OSC check point
L106 PBT OSC adjustment
Sensitivity adjustment
L33
L34
L35
L36
L22
L21
L23

RECEIVER ADJUSTMENT (CONTINUED)

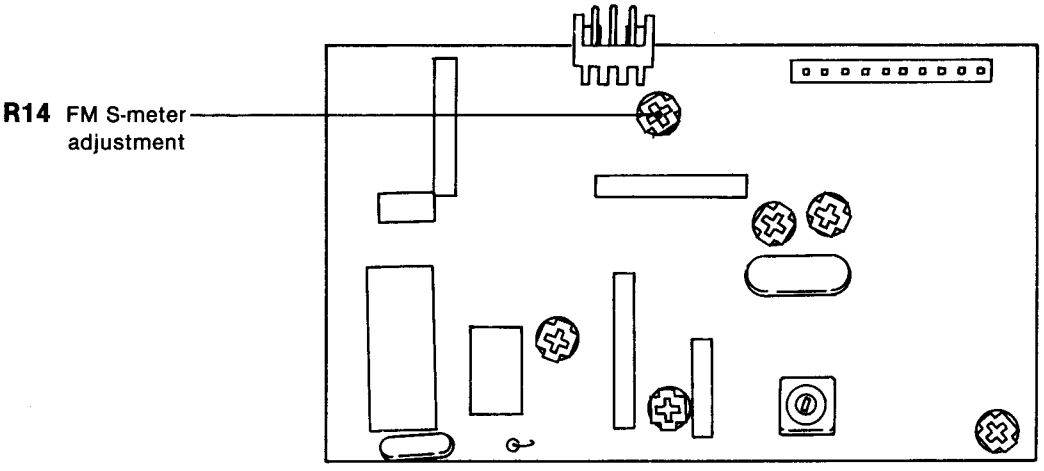
ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
TOTAL GAIN	1	• Displayed frequency: 14.10000 MHz • Mode : USB • [PREAMP] switch : OFF • Connect the SSG to the [HF ANT] connector and set as: Frequency : 14.1015 MHz Level : 1.0 mV* (−47 dBm) Modulation: OFF • Receiving	Rear panel	Connect the AC millivoltmeter to the [EXT SP] jack with an 8 Ω load.	1.0 V (0 dB)	Front panel	[AF] control
	2	• Set the SSG as: Level : OFF			30 mV (−30 dB)	MAIN	R138
S-METER	1	• Displayed frequency: 14.10000 MHz • Mode : USB • [PREAMP] switch : OFF • Connect the SSG to the [HF ANT] connector and set as: Level : 50 µV* (−73 dBm) Modulation: OFF • Receiving	Front panel	S-METER	S9	MAIN	R116
	2	• Set the SSG as: Level : 50 mV* (−13 dBm)			S9+60 dB		R110
	3	Repeat step 1 and 2 several times.					
FM S-METER		NOTE: Be sure that R14 in the FM • AM unit is rotated max. counterclockwise.					
NOISE BLANKER	1	• Displayed frequency: 14.10000 MHz • Mode : USB • [NB] switch : ON • [PREAMP] switch : ON • R307 (MAIN) : Max. CW • Receiving • Connect the SSG to the [HF ANT] connector and set as: Level : 3.2 µV* (−97 dBm) Modulation: OFF • Apply the following signal into the SSG's output.  	MAIN	Connect the oscilloscope to the cathode of D13.	Adjust for maximum waveform on the oscilloscope.	MAIN	L25, L26
	2	• Connect the SSG to the antenna connector and set as: Level : 10 µV* (−87 dBm) Modulation: OFF • Add the same signal above.			The noise must be blanked.		Verify
IF TRAP	1	• Displayed frequency: 50.20000 MHz • Mode : USB • Connect the SSG to the [50 MHz ANT] connector and set as: Frequency : 70.45150 MHz Modulation: OFF	Rear panel	Connect the AC millivoltmeter to the [EXT SP] jack with an 8 Ω load.	Set SSG's output level so that the signal is audible through the speaker.		SSG's output
					Adjust for minimum speaker output.	MAIN	C408

*This output level of the standard signal generator (SSG) is indicated as SSG's open circuit.

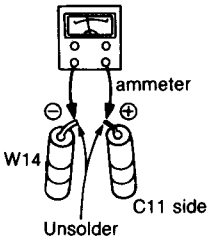
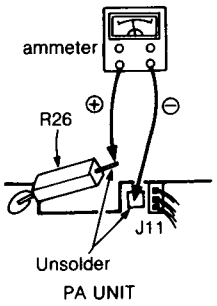
• **MAIN UNIT**



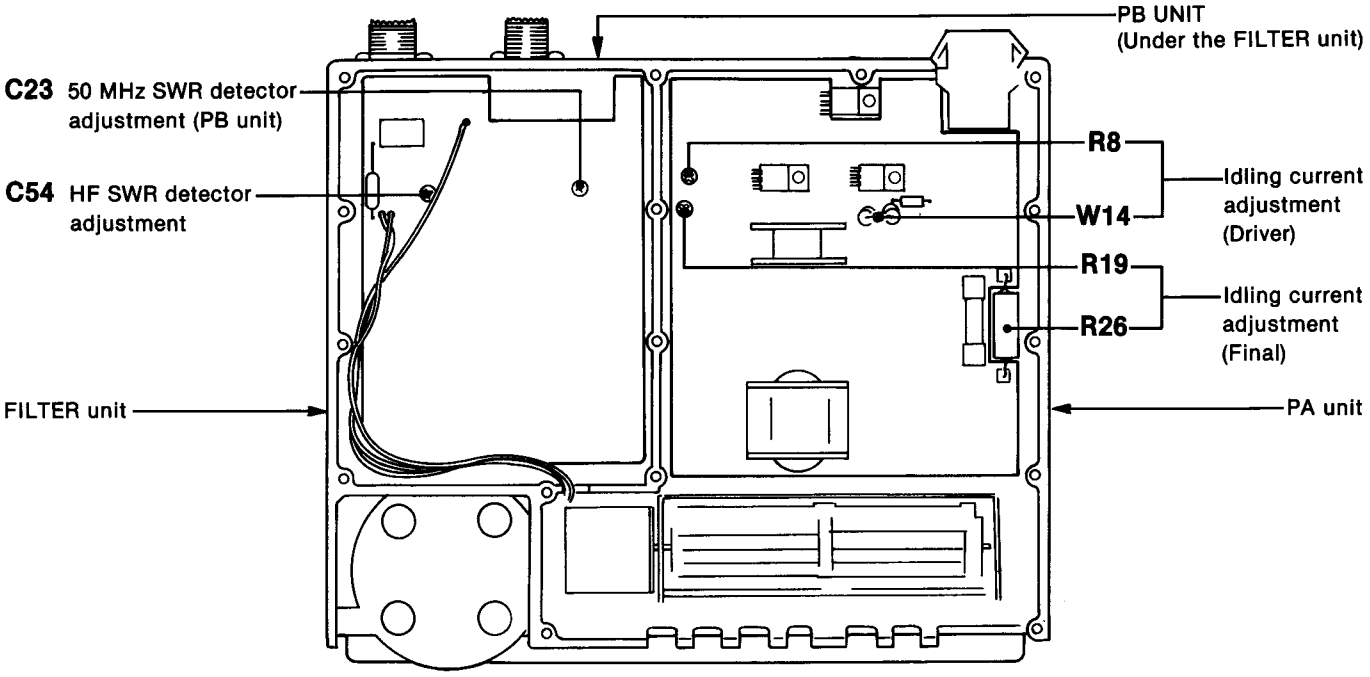
• **FM • AM UNIT**



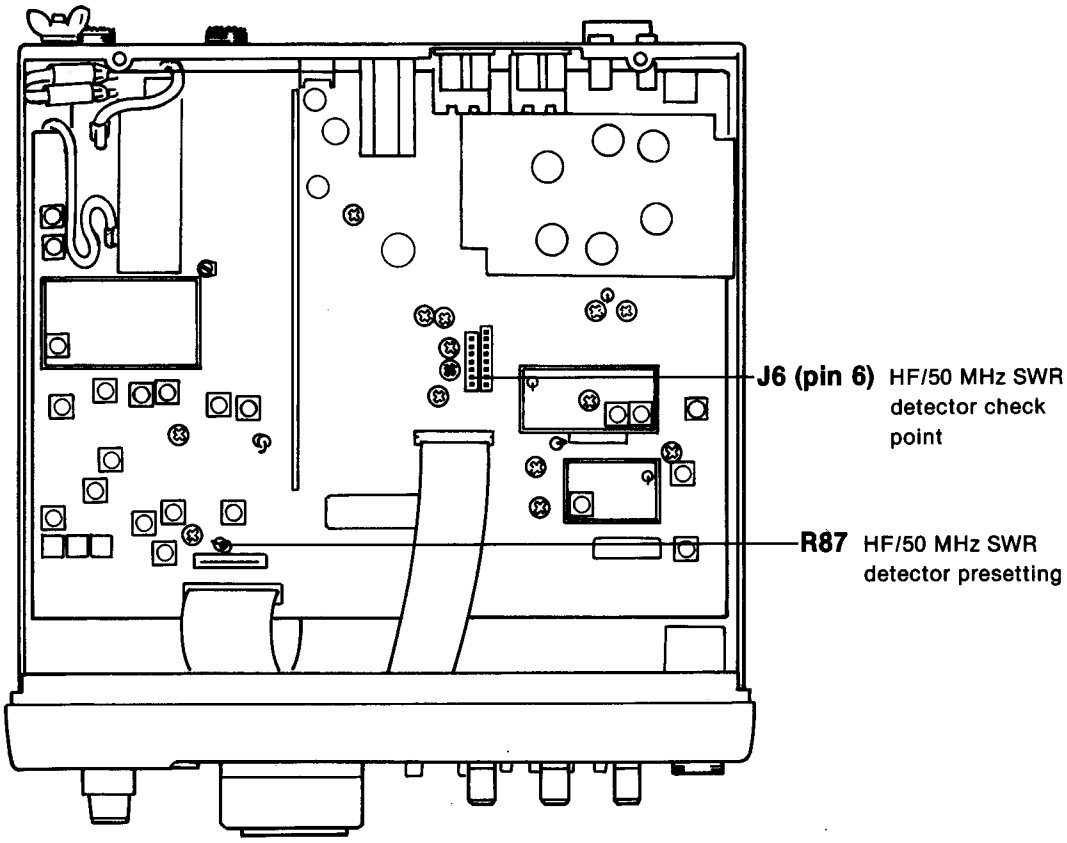
4-4 TRANSMITTER ADJUSTMENT

<table>
<tr><th rowspan="2" colspan="2">ADJUSTMENT</th><th rowspan="2">ADJUSTMENT CONDITIONS</th><th colspan="2">MEASUREMENT</th><th rowspan="2">VALUE</th><th colspan="2">ADJUSTMENT POINT</th></tr>
<tr><th>UNIT</th><th>LOCATION</th><th>UNIT</th><th>ADJUST</th></tr>
<tr><td rowspan="2">IDLING CURRENT
Ⓐ For drive transistors</td><td>1</td><td rowspan="3">• Displayed frequency: 14.10000 MHz
• Mode : CW
• [TRANSMIT] switch: IN
• [KEY] jack : No connection</td><td>PA</td><td>Unsolder W14 and connect the ammeter to the unsoldering points.
 
</td><td>100 mA</td><td>PA</td><td>R8</td></tr>
<tr><td>Ⓑ For final transistors</td><td>2</td><td>PA</td><td>Unsolder R26 and connect the ammeter to the unsoldering points.
 
</td><td>300 mA</td><td>PA</td><td>R19</td></tr>
<tr><td colspan="2"></td><td colspan="5">After adjustment, re-solder W14 and R26.</td></tr>
<tr><td rowspan="3">HF SWR DETECTOR</td><td>1</td><td rowspan="2">• Displayed frequency: 14.10000 MHz
• Mode : USB
• [RF PWR] control : Max. CW
• Connect the jumper wire between R87 (MAIN unit) and a ground.
• Connect the audio generator to the [MIC] connector and set as:
Level : 10 mV
Frequency : 1.5 kHz
• Transmitting</td><td>Rear panel</td><td>Connect the RF power meter to the [HF ANT] connector.</td><td>100 W</td><td>Front panel</td><td>[MIC] control</td></tr>
<tr><td>2</td><td>MAIN</td><td>Connect the DC voltmeter to J6 (pin 6).</td><td>Minimum</td><td>FILTER</td><td>C54</td></tr>
<tr><td>3</td><td colspan="5">After adjustment, remove the jumper wire from R87.</td></tr>
<tr><td rowspan="3">50 MHz SWR DETECTOR</td><td>1</td><td rowspan="2">• Displayed frequency: 52.00000 MHz
• Mode : USB
• [RF PWR] control : Max. CW
• Connect the jumper wire between R87 (MAIN unit) and a ground.
• Connect the audio generator to the [MIC] connector and set as:
Level : 10 mV
Frequency : 1.5 kHz
• Transmitting</td><td>Rear panel</td><td>Connect the RF power meter to the [50 MHz ANT] connector.</td><td>10 W</td><td>Front panel</td><td>[MIC] control</td></tr>
<tr><td>2</td><td>MAIN</td><td>Connect the DC voltmeter to J6 (pin 6).</td><td>Minimum</td><td>PB</td><td>C23</td></tr>
<tr><td>3</td><td colspan="5">After adjustment, remove the jumper wire from R87.</td></tr>
</table>

• PA, FILTER AND PB UNITS



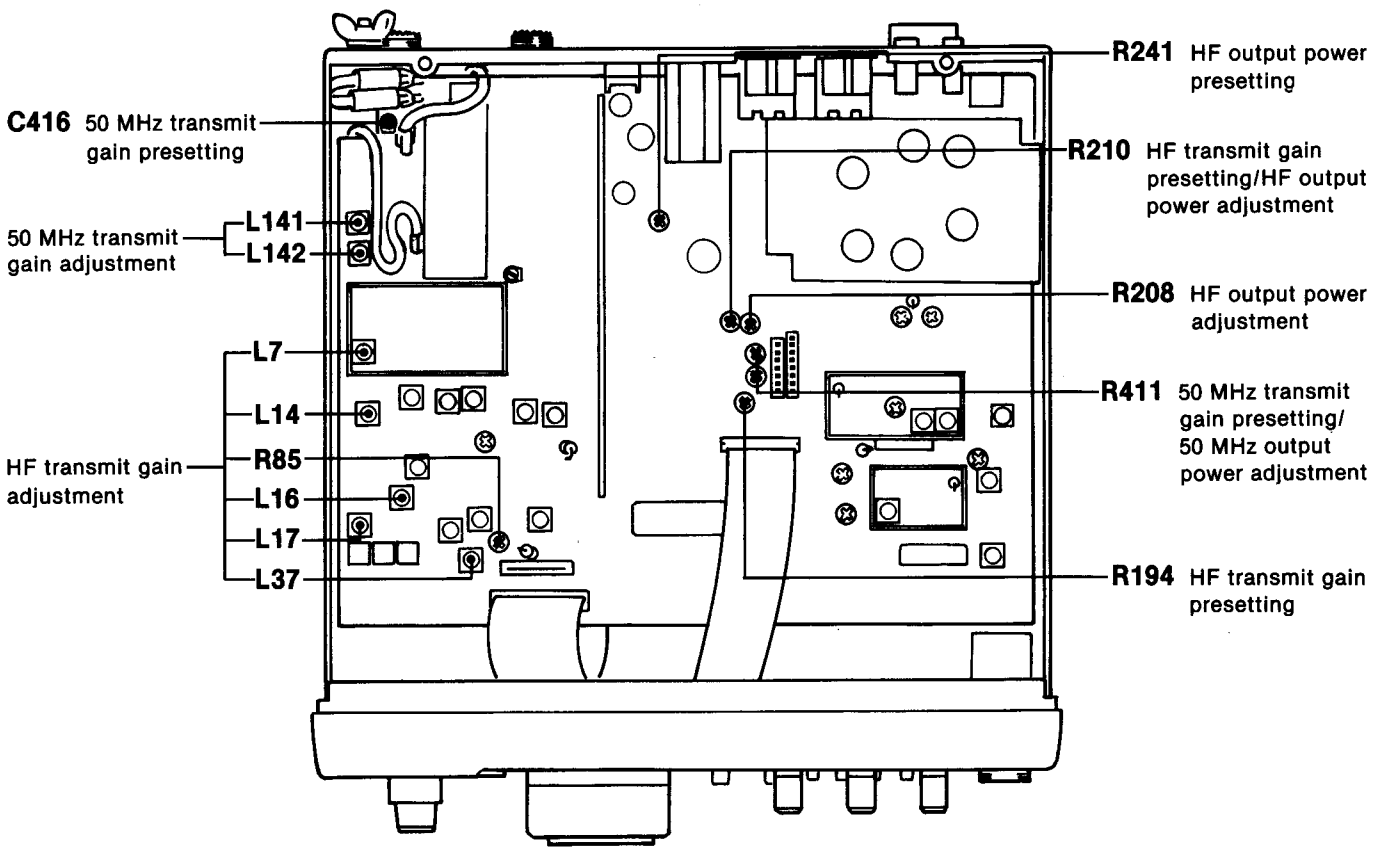
• MAIN UNIT



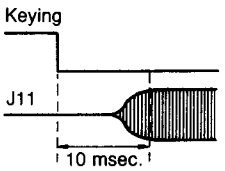
TRANSMITTER ADJUSTMENT (CONTINUED)

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
HF TRANSMIT GAIN	1	• Displayed frequency: 14.10000 MHz • Mode : USB • [RF PWR] control : Max. CW • R85, R210 (MAIN unit): Max. CW • R194 (MAIN unit) : Max. CCW • Connect the audio generator to the [MIC] connector and set as: Level : 3 mV Frequency: 1.5 kHz • Transmitting	Rear panel	Connect the RF power meter to the [HF ANT] connector.	50 W	Front panel	[MIC] control
	2				Maximum level	MAIN	L37, L17, L16, L14, L7
	3	• [MIC] control Center			50 W		R85
		NOTE: Adjust the [MIC] control to keep the output power at 50 W for each adjustment.					
HF OUTPUT POWER	1	• Displayed frequency: 28.50000 MHz • Mode : CW • [RF PWR] control : Max. CW • R241 (MAIN unit) : Max. CCW • Connect a key to the [KEY] jack and key down.	Rear panel	Connect the RF power meter to the [HF ANT] connector.	100 W	MAIN	R210
	2	• Mode : AM			40 W		R208
	3	• Mode : CW • [RF PWR] control : Max. CCW			5~15 W		Verify
	4	Repeat step 1~3 several times.					
50 MHz TRANSMIT GAIN	1	• Displayed frequency: 53.00000 MHz • Mode : USB • [RF PWR] control : Max. CW • C416 (MAIN unit) : Max. CW • R411 (MAIN unit) : Max. CCW • Connect the audio generator to the [MIC] connector and set as: Level : 3 mV Frequency: 1.5 kHz • Transmitting	Rear panel	Connect the RF power meter to the [50 MHz ANT] connector.	5 W	Front panel	[MIC] control
	2				Maximum level	MAIN	L141, L142
		NOTE: Adjust the [MIC] control to keep the output power at 5 W for each adjustment.					
50 MHz OUTPUT POWER	1	• Displayed frequency: 53.00000 MHz • Mode : USB • [RF PWR] control : Max. CW • [MIC] control : Max. CW • Connect the audio generator to the [MIC] connector and set as: Level : 30 mV Frequency: 1.5 kHz • Transmitting	Rear panel	Connect the RF power meter to the [50 MHz ANT] connector.	10 W	MAIN	R411

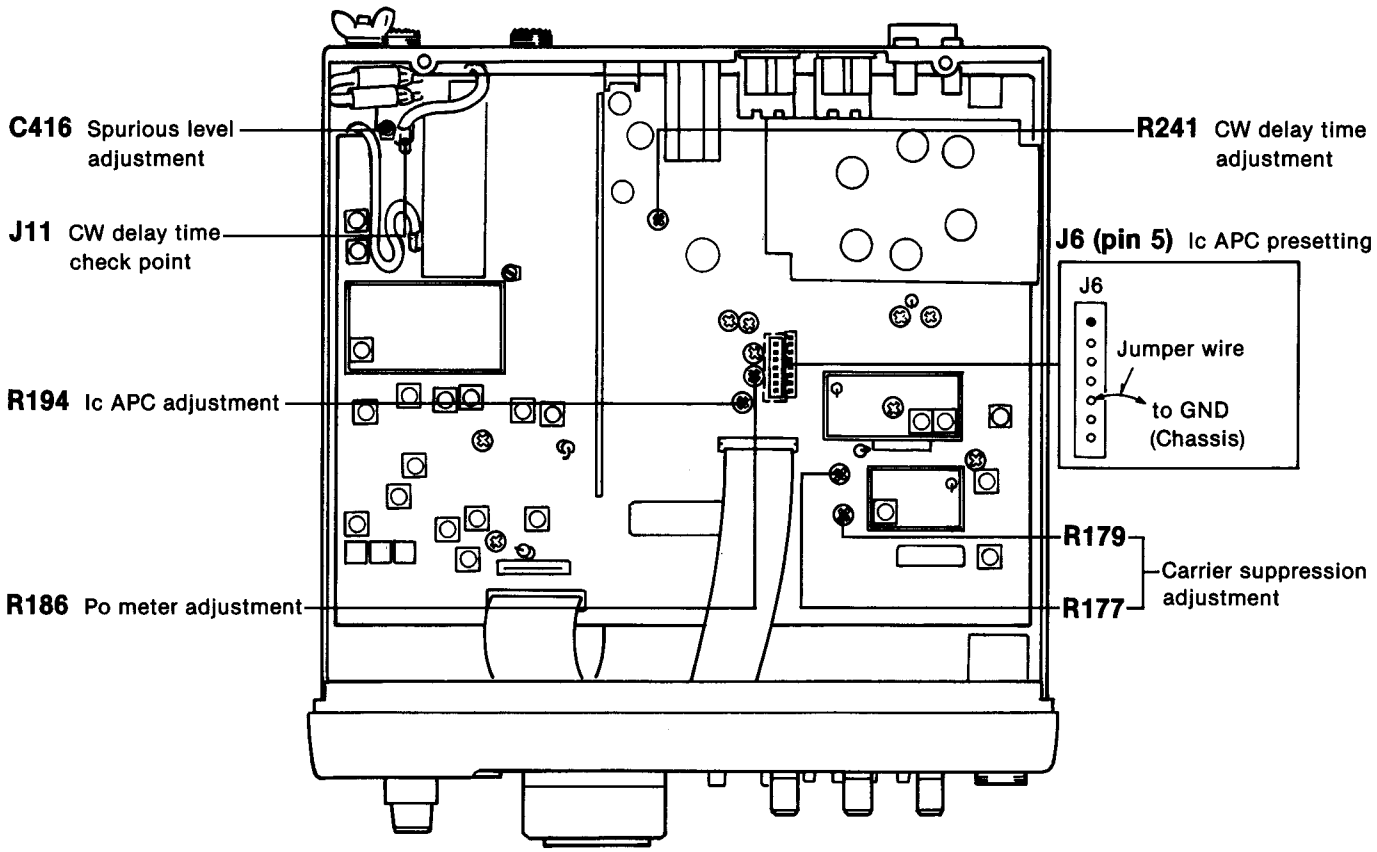
• **MAIN UNIT**


C416 50 MHz transmit gain presetting
50 MHz transmit gain adjustment
L141
L142
HF transmit gain adjustment
L7
L14
R85
L16
L17
L37
R241 HF output power presetting
R210 HF transmit gain presetting/HF output power adjustment
R208 HF output power adjustment
R411 50 MHz transmit gain presetting/ 50 MHz output power adjustment
R194 HF transmit gain presetting

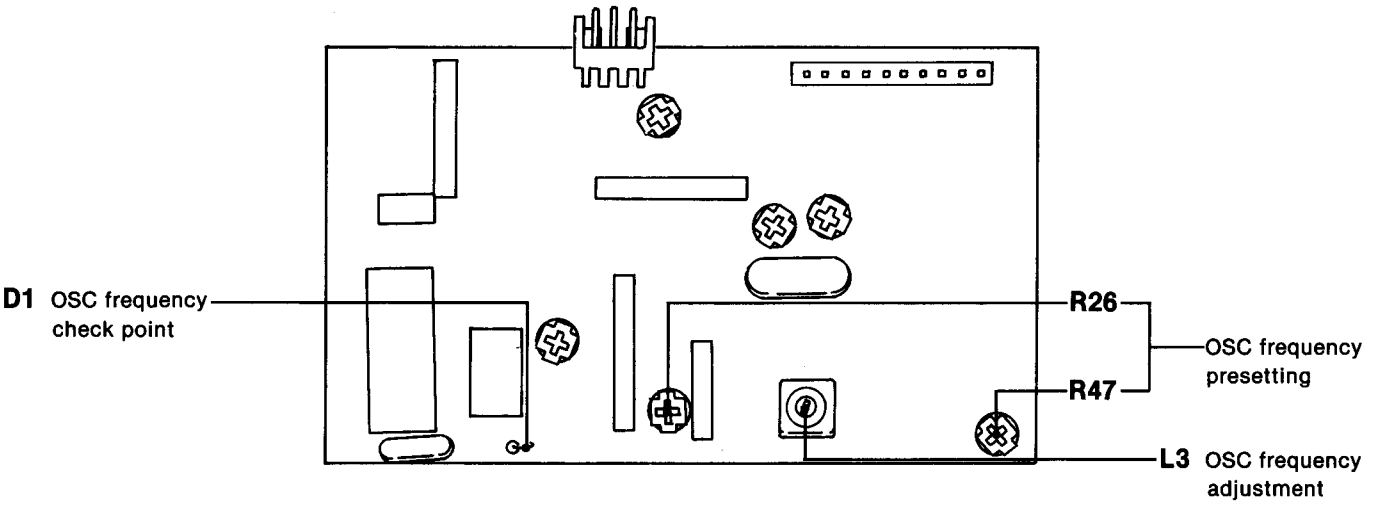
TRANSMITTER ADJUSTMENT (CONTINUED)

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
Ic APC	1	• Displayed frequency: 14.10000 MHz • Mode : CW • [RF PWR] control : Max. CW • Connect the jumper wire between J6 (pin 5) and a ground. • Connect a key to the [KEY] jack and key down.	Rear panel	Connect the ammeter between the DC power supply and IC-729.	22 A	MAIN	R194
	2	After adjustment, remove the jumper wire from J6 (pin 5).					
Po METER	1	• Displayed frequency: 14.10000 MHz • Mode : CW • [RF PWR] control : Max. CW • Connect a key to the [KEY] jack and key down.	Front panel	S-METER	100 %	MAIN	R186
CW DELAY TIME	1	• Displayed frequency: 14.10000 MHz • Mode : CW • [BK IN] switch : ON • [DELAY] control : Max. CCW • Connect an external electronic keyer to the [KEY] jack and close the key.	MAIN	Connect the oscilloscope to J11 and the electronic keyer.	Adjust as follows:  	MAIN	R241
CARRIER SUPPRESSION	1	• Displayed frequency: 14.10000 MHz • Mode : USB and LSB • [MIC] control : Max. CCW • Apply no signal to the [MIC] connector. • Transmitting	Rear panel	Connect the spectrum analyzer to the [HF ANT] connector via the attenuator.	Minimum carrier level (Less than −50 dB)	MAIN	R177, R179 (Alternate adjustment)
SPURIOUS LEVEL	1	• Displayed frequency: 50.00000 MHz • Mode : CW • [RF PWR] control : Max. CW • Transmitting	Rear panel	Connect the spectrum analyzer to the [50 MHz ANT] connector via the attenuator.	Minimum spurious level	MAIN	C416
OSC FREQUENCY	1	• Displayed frequency: 29.10000 MHz • Mode : FM • R26 (FM • AM unit): Max. CW • R47 (FM • AM unit): Max. CCW • Transmitting	FM • AM	Connect the frequency counter to the cathode of D1.	9.01000 MHz	FM • AM	L3

• **MAIN UNIT**



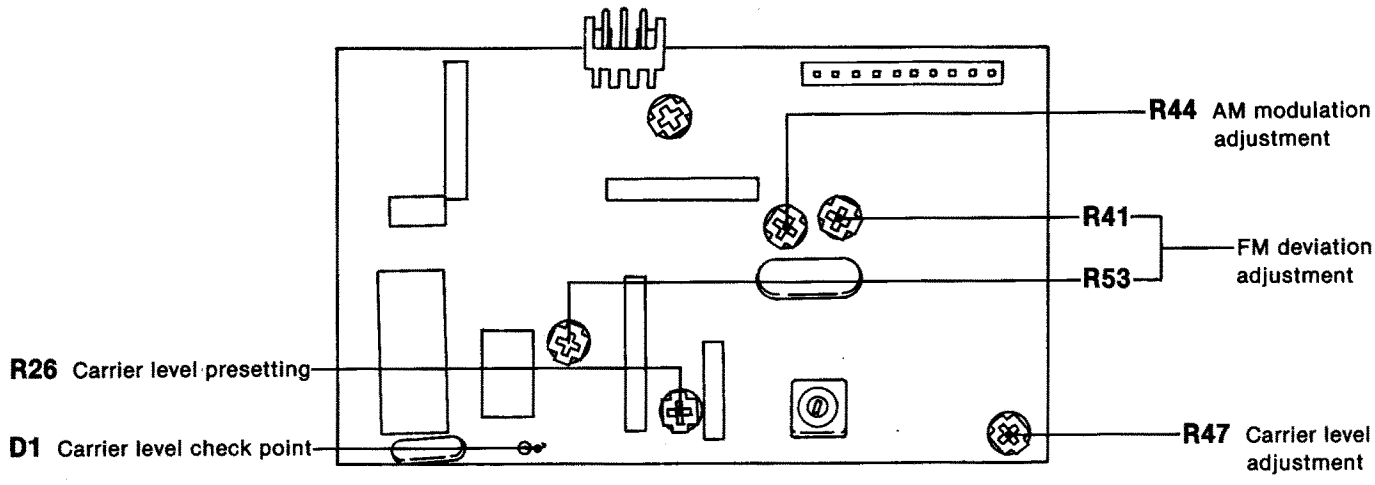
• **FM • AM UNIT**



TRANSMITTER ADJUSTMENT (CONTINUED)

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
FM DEVIATION	1	• Displayed frequency: 29.10000 MHz • Mode : FM • [RF PWR] control : Center • Connect the audio generator to the [MIC] connector and set as: Level : 10 mV Frequency : 1 kHz • Set the FM deviation meter as: HPF : 50 Hz LPF : 20 kHz De-emphasis: OFF Detector : (P-P)/2 • Transmitting	Rear panel	Connect the FM deviation meter to the [HF ANT] connector via the attenuator.	±4.8 kHz	FM • AM	R41
	2	• Connect the audio generator to the [MIC] connector and set as: Level : 1 mV Frequency : 1 kHz			±3.5 kHz		R53
CARRIER LEVEL	1	• Displayed frequency: 29.10000 MHz • Mode : FM • R26 (FM • AM unit): Center • Transmitting	FM • AM	Connect the oscilloscope to the cathode of D1.	350 mVp-p	FM • AM	R41
AM MODULATION	1	• Displayed frequency: 29.10000 MHz • Mode : AM • R44 (FM • AM unit): Center • [MIC] control : Max. CW • Connect the audio generator to the [MIC] connector and set as: Level : 1 mV Frequency : 1 kHz • Transmitting	Rear panel	Connect the FM deviation meter to the [HF ANT] connector via the attenuator.	Maximum level	Front panel	Audio generator output frequency
	2				70 % modulation	FM • AM	R44

• FM • AM UNIT



SECTION 5 PARTS LIST

[FRONT PART]

REF. NO.	ORDER NO.	DESCRIPTION	
S1	7600000100	ENCODER	EC24B50B0013A [MAIN DIAL]

[SW UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1130000790	S. IC	μPD7225G00
Q1	1520000230	TRANSISTOR	2SB909M Q
Q2	1530000110	TRANSISTOR	2SC2458-GR
Q3	1530000110	TRANSISTOR	2SC2458-GR
Q4	1530000110	TRANSISTOR	2SC2458-GR
Q5	1590000350	TRANSISTOR	RN1204
Q6	1530000110	TRANSISTOR	2SC2458-GR
Q7	1530000940	TRANSISTOR	2SC1571G
D1	1730000180	ZENER	RD8.2E B2
D2	1710000611	DIODE	1SS133 T77 (26M/M)
D3	1710000611	DIODE	1SS133 T77 (26M/M)
D4	1710000611	DIODE	1SS133 T77 (26M/M)
D5	1710000611	DIODE	1SS133 T77 (26M/M)
D6	1710000160	DIODE	1SS133
D7	1710000611	DIODE	1SS133 T77 (26M/M)
D8	1710000611	DIODE	1SS133 T77 (26M/M)
D9	1710000611	DIODE	1SS133 T77 (26M/M)
D10	1710000611	DIODE	1SS133 T77 (26M/M)
D11	1710000611	DIODE	1SS133 T77 (26M/M)
D12	1710000611	DIODE	1SS133 T77 (26M/M)
D13	1710000611	DIODE	1SS133 T77 (26M/M)
D14	1710000611	DIODE	1SS133 T77 (26M/M)
D15	1710000611	DIODE	1SS133 T77 (26M/M)
D16	1710000611	DIODE	1SS133 T77 (26M/M)
D17	1710000611	DIODE	1SS133 T77 (26M/M)
D18	1710000611	DIODE	1SS133 T77 (26M/M)
D19	1710000611	DIODE	1SS133 T77 (26M/M)
D20	1710000611	DIODE	1SS133 T77 (26M/M)
L1	6180000900	COIL	LAL 03NA 101K
L2	6180000900	COIL	LAL 03NA 101K
L4	6180000900	COIL	LAL 03NA 101K
L5	6180000900	COIL	LAL 03NA 101K
L6	6180000900	COIL	LAL 03NA 101K
L7	6180000900	COIL	LAL 03NA 101K
L8	6180000900	COIL	LAL 03NA 101K
R1	7210002240	TRIMMER	EVU-FLAEC2 C13 [LEVEL]
R2	7210002230	TRIMMER	EVU-FLAEC2 B14 [RF PWR]
R7	7010004720	RESISTOR	R50XJ 100 Ω
R8	7010004720	RESISTOR	R50XJ 100 Ω
R9	7010003400	RESISTOR	ELR20J 1 kΩ
R10	7010003520	RESISTOR	ELR20J 8.2 kΩ
R11	7010003480	RESISTOR	ELR20J 4.7 kΩ
R12	7010003400	RESISTOR	ELR20J 1 kΩ
R13	7010004251	RESISTOR	R20 T-24J 3.3 kΩ
R14	7010004321	RESISTOR	R20 T-24J 10 kΩ

[SW UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R15	7010004321	RESISTOR	R20 T-24J 10 kΩ
R16	7010004481	RESISTOR	R20 T-24J 180 kΩ
R17	7010004410	RESISTOR	R20J 47 kΩ
R18	7010004321	RESISTOR	R20 T-24J 10 kΩ
R19	7010004321	RESISTOR	R20 T-24J 10 kΩ
R20	7010004170	RESISTOR	R20J 680 Ω
R21	7010003530	RESISTOR	ELR20J 10 kΩ
R22	7010004321	RESISTOR	R20 T-24J 10 kΩ
R24	7010004321	RESISTOR	R20 T-24J 10 kΩ
R25	7010004451	RESISTOR	R20 T-24J 100 kΩ
R26	7010004410	RESISTOR	R20J 47 kΩ
R27	7010003240	RESISTOR	ELR20J 47 Ω
R28	7010003400	RESISTOR	ELR20J 1 kΩ
R29	7010003400	RESISTOR	ELR20J 1 kΩ
R30	7010004271	RESISTOR	R20 T-24J 4.7 kΩ
R31	7010003620	RESISTOR	ELR20J 47 kΩ
R32	7010003360	RESISTOR	ELR20J 470 Ω
C1	4010000520	CERAMIC	DD108 B 472K 50V
C2	4010000520	CERAMIC	DD108 B 472K 50V
C4	4010000520	CERAMIC	DD108 B 472K 50V
C5	4040000260	BARRIER	UZE 08X 104M
C6	4010000520	CERAMIC	DD108 B 472K 50V
C7	4010000520	CERAMIC	DD108 B 472K 50V
C9	4010000520	CERAMIC	DD108 B 472K 50V
C10	4020000250	CYLINDER	UP125 X 472M
C11	4510004950	ELECTROLYTIC	50 MV R47 SWNP
C12	4510004320	ELECTROLYTIC	25 MV 47 SW
C14	4510003800	ELECTROLYTIC	25 MV 4R7 SW
C15	4020000250	CYLINDER	UP125 X 472M
C16	4040000150	BARRIER	UAT 05X 472K
C17	4510005070	ELECTROLYTIC	10 MV 47 SW
DS1	5030000380	LCD	HLC9599-01-3210 [FUNCTION DISPLAY]
DS4	5080000170	LAMP	HRS-7219A-Y2-30
DS5	5080000170	LAMP	HRS-7219A-Y2-30
DS7	5080000170	LAMP	HRS-7219A-Y2-30
S1	2260001580	SWITCH	JPZ2120-0101 (TV-3) [POWER]
S2	2230000550	SWITCH	SPPH23079A [ATT]
S3	2230000550	SWITCH	SPPH23079A [PREAMP]
S4	2230000550	SWITCH	SPPH23079A [NB]
S5	2230000550	SWITCH	SPPH23079A [AGC]
S6	2230000550	SWITCH	SPPH23079A [LOCK]
S7	2230000550	SWITCH	SPPH23079A [TRANSMIT]
S8	2260000070	SWITCH	SKHHAK013A [UP]
S9	2260000070	SWITCH	SKHHAK013A [DOWN]
S10	2260000070	SWITCH	SKHHAK013A [VFO]
S11	2260000070	SWITCH	SKHHAK013A [MEMO]
S12	2260000070	SWITCH	SKHHAK013A [RIT]
S13	2260000070	SWITCH	SKHHAK013A [MW]
S14	2260000070	SWITCH	SKHHAK013A [FUNC]
S15	2260000070	SWITCH	SKHHAK013A [SPLIT]
S16	2260000070	SWITCH	SKHHAK013A [TUNER]
S17	2260000070	SWITCH	SKHHAK013A [BAND]
S18	2260000070	SWITCH	SKHHAK013A [MHz]
S19	2260000070	SWITCH	SKHHAK013A [kHz]
S20	2260000070	SWITCH	SKHHAK013A [AM/FM]
S21	2260000070	SWITCH	SKHHAK013A [CW/N]
S22	2260000070	SWITCH	SKHHAK013A [SSB]
S23	2260000070	SWITCH	SKHHAK013A [A=B]
S24	2230000550	SWITCH	SPPH23079A [COMP]
J5	6510003080	CONNECTOR	RT01T-1.0B

S.=Surface mount

[SW UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
W60	6910001020	JUMPER	IPS-1041-2
W61	7120000380	JUMPER	JPW 01 R-01
W64	6910001020	JUMPER	IPS-1041-2
W65	6910001030	JUMPER	IPS-1041-4
W67	6910001020	JUMPER	IPS-1041-2
W68	6910001030	JUMPER	IPS-1041-4
W69	6910001020	JUMPER	IPS-1041-2
W70	6910001030	JUMPER	IPS-1041-4
W71	6910001030	JUMPER	IPS-1041-4
W74	6910001020	JUMPER	IPS-1041-2
W75	6910001020	JUMPER	IPS-1041-2
W76	6910001030	JUMPER	IPS-1041-4
W77	6910001030	JUMPER	IPS-1041-4
W78	6910001030	JUMPER	IPS-1041-4
W79	6910001030	JUMPER	IPS-1041-4
W80	6910001030	JUMPER	IPS-1041-4
W81	6910001030	JUMPER	IPS-1041-4
W82	6910001020	JUMPER	IPS-1041-2
W83	6910001020	JUMPER	IPS-1041-2
W84	6910001020	JUMPER	IPS-1041-2
W85	6910001020	JUMPER	IPS-1041-2
W86	6910001030	JUMPER	IPS-1041-4
W87	6910001030	JUMPER	IPS-1041-4
W88	6910001030	JUMPER	IPS-1041-4
W89	6910001030	JUMPER	IPS-1041-4
W91	6910001030	JUMPER	IPS-1041-4
W92	6910001030	JUMPER	IPS-1041-4
W94	6910001030	JUMPER	IPS-1041-4
W95	6910001030	JUMPER	IPS-1041-4
W96	6910001030	JUMPER	IPS-1041-4
W97	6910001030	JUMPER	IPS-1041-4
W98	6910001020	JUMPER	IPS-1041-2
W99	6910001020	JUMPER	IPS-1041-2
W100	6910001020	JUMPER	IPS-1041-2
W101	6910001030	JUMPER	IPS-1041-4
W102	6910001030	JUMPER	IPS-1041-4
W103	6910001020	JUMPER	IPS-1041-2
W104	6910001030	JUMPER	IPS-1041-4
W105	6910001020	JUMPER	IPS-1041-2
W106	6910001030	JUMPER	IPS-1041-4
W108	7120000010	JUMPER	JPW 02A
W109	7120000010	JUMPER	JPW 02A
W110	6910001020	JUMPER	IPS-1041-2
EP1	0910033914	PCB	B 3273D (SW)
EP4	0910035721	PCB	B 3468A (LCD SPACER)

[LED BOARD]

REF. NO.	ORDER NO.	DESCRIPTION	
DS2	5040001290	LED	SLP153B [TX]
DS3	5040001300	LED	SLP253B [RX]
EP1	0910033892	PCB	B 3418B (LED)

[AF BOARD]

REF. NO.	ORDER NO.	DESCRIPTION	
R1	7210001820	VARIABLE	RV-169 (RK0971110) 10KA [AF GAIN]
J1	6510003510	CONNECTOR	S03B-EH-S
EP1	0910033902	PCB	B 3419B (AF)

[VR BOARD]

REF. NO.	ORDER NO.	DESCRIPTION	
Q1	1530000110	TRANSISTOR	2SC2458-GR
Q2	1530000591	TRANSISTOR	2SC2785 EL
D1	1710000580	DIODE	1SS265
D2	1710000580	DIODE	1SS265
R1	7210001780	VARIABLE	RV-166 (RK097111) 10KB [SQUELCH]
R2	7210001780	VARIABLE	RV-166 (RK097111) 10KB [MIC GAIN]
R3	7010003580	RESISTOR	ELR20J 22 kΩ
R4	7010003550	RESISTOR	ELR20J 15 kΩ
R5	7010003530	RESISTOR	ELR20J 10 kΩ
R6	7010003240	RESISTOR	ELR20J 47 Ω
R7	7010004270	RESISTOR	R20J 4.7 kΩ
R8	7010003660	RESISTOR	ELR20J 100 kΩ
R9	7010003660	RESISTOR	ELR20J 100 kΩ
R10	7010003580	RESISTOR	ELR20J 22 kΩ
R11	7010003530	RESISTOR	ELR20J 10 kΩ
R12	7010003420	RESISTOR	ELR20J 1.5 kΩ
R13	7010003400	RESISTOR	ELR20J 1 kΩ
R14	7010003360	RESISTOR	ELR20J 470 Ω
C1	4510003800	ELECTROLYTIC	25 MV 4R7 SW
C2	4510004910	ELECTROLYTIC	16 MV 10 SWNP
C3	4510003840	ELECTROLYTIC	50 MV 1 SW
C4	4510005000	ELECTROLYTIC	16 MV 220 HC
C5	4010000520	CERAMIC	DD108 B 472K 50V
C6	4510003800	ELECTROLYTIC	25 MV 4R7 SW
C7	4510003800	ELECTROLYTIC	25 MV 4R7 SW
J1	6510003460	CONNECTOR	B10B-EH-S
W1	6910001030	JUMPER	IPS-1041-4
W2	6910001030	JUMPER	IPS-1041-4
W3	6910001020	JUMPER	IPS-1041-2
W4	6910001020	JUMPER	IPS-1041-2
EP1	0910033832	PCB	B 3274B (VR)

[PBT BOARD]

REF. NO.	ORDER NO.	DESCRIPTION	
R1	7210002180	VARIABLE	RV-273 (RK1242210) 10KB [RIT/PBT]
EP1	0910033871	PCB	B 3416A (PBT)

[MIC BOARD]

REF. NO.	ORDER NO.	DESCRIPTION	
J3	6510000190	CONNECTOR	FM214-8SS (P) [MICROPHONE]
EP4	0910006331	FPC	B 792A

[JACK UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
L1	6180000900	COIL	LAL 03NA 101K
R1	7010003280	RESISTOR	ELR20J 100 Ω
R2	7010003280	RESISTOR	ELR20J 100 Ω
C1	4020000250	CYLINDER	UP125 X 472M
J1	6510003390	CONNECTOR	B03B-EH-S
J2	6450001250	CONNECTOR	HLJ4306-01-3070 [PHONES]
EP1	0910033882	PCB	B 3417B (JACK)

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1790000050	IC	ND487C1-3R
IC2	1110001310	IC	μPC577HA
IC4	1110002500	IC	M5218AL
IC5	1110001320	IC	μPC1037HA
IC6	1110001320	IC	μPC1037HA
IC7	1110001320	IC	μPC1037HA
IC8	1130000120	IC	TC4066BP
IC9	1110000890	IC	μPC1241H

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC10	1110002500	IC	M5218AL
IC11	1110002500	IC	M5218AL
IC12	1110001320	IC	μPC1037HA
IC13	1130003880	IC	GD4011B
IC14	1180000470	IC	NJM7808A
Q1	1530000810	TRANSISTOR	2SC2053
Q2	1580000230	FET	3SK122 K
Q3	1580000230	FET	3SK122 K
Q4	1530000810	TRANSISTOR	2SC2053
Q5	1520000230	TRANSISTOR	2SB909M Q
Q6	1590000340	TRANSISTOR	RN1202
Q7	1560000100	FET	2SK241-Y
Q8	1560000620	FET	2SK937
Q9	1560000620	FET	2SK937
Q10	1590000360	TRANSISTOR	RN2202
Q11	1530000110	TRANSISTOR	2SC2458-GR
Q12	1590000340	TRANSISTOR	RN1202
Q13	1560000620	FET	2SK937
Q14	1560000620	FET	2SK937
Q15	1580000010	FET	3SK101-GR
Q16	1560000080	FET	2SK192A-Y
Q17	1510000080	TRANSISTOR	2SA1048-GR
Q18	1530000110	TRANSISTOR	2SC2458-GR
Q19	1530000110	TRANSISTOR	2SC2458-GR
Q20	1590000360	TRANSISTOR	RN2202
Q21	1580000010	FET	3SK101-GR
Q22	1560000100	FET	2SK241-Y
Q23	1590000340	TRANSISTOR	RN1202
Q24	1590000360	TRANSISTOR	RN2202
Q25	1590000360	TRANSISTOR	RN2202
Q26	1530000110	TRANSISTOR	2SC2458-GR
Q27	1580000010	FET	3SK101-GR
Q28	1560000100	FET	2SK241-Y
Q29	1530000110	TRANSISTOR	2SC2458-GR
Q30	1530000110	TRANSISTOR	2SC2458-GR
Q31	1530000110	TRANSISTOR	2SC2458-GR
Q32	1590000340	TRANSISTOR	RN1202
Q33	1590000350	TRANSISTOR	RN1204
Q34	1590000340	TRANSISTOR	RN1202
Q35	1530000110	TRANSISTOR	2SC2458-GR
Q36	1530000110	TRANSISTOR	2SC2458-GR
Q37	1530000110	TRANSISTOR	2SC2458-GR
Q38	1510000080	TRANSISTOR	2SA1048-GR
Q39	1590000350	TRANSISTOR	RN1204
Q40	1530000110	TRANSISTOR	2SC2458-GR
Q41	1590000360	TRANSISTOR	RN2202
Q42	1530000110	TRANSISTOR	2SC2458-GR
Q44	1530000180	TRANSISTOR	2SC2878-B
Q46	1540000070	TRANSISTOR	2SD468C
Q47	1540000070	TRANSISTOR	2SD468C
Q48	1540000150	TRANSISTOR	2SD1225M R
Q49	1530000110	TRANSISTOR	2SC2458-GR
Q50	1530000110	TRANSISTOR	2SC2458-GR
Q51	1590000340	TRANSISTOR	RN1202
Q52	1540000150	TRANSISTOR	2SD1225M R
Q53	1510000080	TRANSISTOR	2SA1048-GR
Q54	1590000350	TRANSISTOR	RN1204
Q55	1590000350	TRANSISTOR	RN1204
Q56	1530000110	TRANSISTOR	2SC2458-GR
Q57	1530000040	TRANSISTOR	2SC1815-Y
Q58	1530000110	TRANSISTOR	2SC2458-GR
Q59	1590000280	FET	2SJ105-Y
Q60	1590000350	TRANSISTOR	RN1204
Q61	1590000340	TRANSISTOR	RN1202
Q62	1590000350	TRANSISTOR	RN1204
Q63	1590000340	TRANSISTOR	RN1202
Q81	1540000150	TRANSISTOR	2SD1225M R
Q83	1540000150	TRANSISTOR	2SD1225M R
Q84	1590000340	TRANSISTOR	RN1202
Q85	1590000340	TRANSISTOR	RN1202
Q86	1590000340	TRANSISTOR	RN1202
Q89	1590000340	TRANSISTOR	RN1202
Q91	1540000150	TRANSISTOR	2SD1225M R

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
D1	1710000050	DIODE	1SS53
D2	1710000050	DIODE	1SS53
D3	1710000050	DIODE	1SS53
D4	1710000050	DIODE	1SS53
D5	1710000050	DIODE	1SS53
D6	1710000050	DIODE	1SS53
D7	1710000050	DIODE	1SS53
D8	1710000050	DIODE	1SS53
D9	1710000050	DIODE	1SS53
D10	1710000611	DIODE	1SS133 T77 (26M/M)
D11	1710000611	DIODE	1SS133 T77 (26M/M)
D12	1710000330	DIODE	1K60
D13	1710000330	DIODE	1K60
D14	1710000611	DIODE	1SS133 T77 (26M/M)
D15	1710000050	DIODE	1SS53
D16	1710000050	DIODE	1SS53
D17	1710000611	DIODE	1SS133 T77 (26M/M)
D18	1710000050	DIODE	1SS53
D19	1710000050	DIODE	1SS53
D20	1710000050	DIODE	1SS53
D21	1710000050	DIODE	1SS53
D22	1710000611	DIODE	1SS133 T77 (26M/M)
D23	1710000050	DIODE	1SS53
D24	1710000050	DIODE	1SS53
D25	1710000050	DIODE	1SS53
D26	1710000050	DIODE	1SS53
D27	1710000611	DIODE	1SS133 T77 (26M/M)
D28	1710000050	DIODE	1SS53
D29	1710000050	DIODE	1SS53
D30	1710000050	DIODE	1SS53
D31	1710000050	DIODE	1SS53
D32	1710000050	DIODE	1SS53
D33	1710000050	DIODE	1SS53
D34	1710000611	DIODE	1SS133 T77 (26M/M)
D35	1710000050	DIODE	1SS53
D36	1710000050	DIODE	1SS53
D37	1710000050	DIODE	1SS53
D38	1710000050	DIODE	1SS53
D39	1710000050	DIODE	1SS53
D40	1710000050	DIODE	1SS53
D41	1710000050	DIODE	1SS53
D42	1710000050	DIODE	1SS53
D43	1710000050	DIODE	1SS53
D44	1710000050	DIODE	1SS53
D45	1710000050	DIODE	1SS53
D46	1710000050	DIODE	1SS53
D47	1710000050	DIODE	1SS53
D48	1710000050	DIODE	1SS53
D49	1710000050	DIODE	1SS53
D50	1710000050	DIODE	1SS53
D51	1710000050	DIODE	1SS53
D52	1710000050	DIODE	1SS53
D55	1710000611	DIODE	1SS133 T77 (26M/M)
D56	1710000330	DIODE	1K60
D58	1710000611	DIODE	1SS133 T77 (26M/M)
D59	1790000070	DIODE	1SS237
D60	1790000070	DIODE	1SS237
D61	1710000611	DIODE	1SS133 T77 (26M/M)
D62	1710000330	DIODE	1K60
D63	1710000050	DIODE	1SS53
D64	1710000611	DIODE	1SS133 T77 (26M/M)
D65	1710000611	DIODE	1SS133 T77 (26M/M)
D66	1710000611	DIODE	1SS133 T77 (26M/M)
D67	1710000050	DIODE	1SS53
D68	1710000050	DIODE	1SS53
D69	1710000050	DIODE	1SS53
D70	1710000050	DIODE	1SS53
D71	1710000050	DIODE	1SS53
D72	1710000611	DIODE	1SS133 T77 (26M/M)
D73	1710000611	DIODE	1SS133 T77 (26M/M)
D75	1710000611	DIODE	1SS133 T77 (26M/M)
D76	1710000611	DIODE	1SS133 T77 (26M/M)
D77	1710000611	DIODE	1SS133 T77 (26M/M)
D78	1710000611	DIODE	1SS133 T77 (26M/M)
D80	1730000070	ZENER	RD3.9E B2

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
D81	1710000611	DIODE	1SS133 T77 (26M/M)
D82	1710000611	DIODE	1SS133 T77 (26M/M)
D83	1710000611	DIODE	1SS133 T77 (26M/M)
D84	1710000611	DIODE	1SS133 T77 (26M/M)
D85	1710000611	DIODE	1SS133 T77 (26M/M)
D86	1710000611	DIODE	1SS133 T77 (26M/M)
D87	1710000611	DIODE	1SS133 T77 (26M/M)
D91	1710000611	DIODE	1SS133 T77 (26M/M)
D92	1710000611	DIODE	1SS133 T77 (26M/M)
D93	1710000611	DIODE	1SS133 T77 (26M/M)
D94	1710000611	DIODE	1SS133 T77 (26M/M)
D95	1710000611	DIODE	1SS133 T77 (26M/M)
D96	1710000611	DIODE	1SS133 T77 (26M/M)
D97	1710000030	DIODE	1S1555
D98	1710000611	DIODE	1SS133 T77 (26M/M)
D101	1720000230	VARICAP	1SV101
D102	1710000580	DIODE	1SS265
D103	1710000580	DIODE	1SS265
D104	1710000580	DIODE	1SS265
D105	1710000580	DIODE	1SS265
D106	1710000611	DIODE	1SS133 T77 (26M/M)
D107	1710000611	DIODE	1SS133 T77 (26M/M)
D109	1710000050	DIODE	1SS53
D110	1710000050	DIODE	1SS53
D111	1710000050	DIODE	1SS53
D113	1710000611	DIODE	1SS133 T77 (26M/M)
D114	1710000611	DIODE	1SS133 T77 (26M/M)
D131	1710000050	DIODE	1SS53
D132	1710000050	DIODE	1SS53
D133	1710000050	DIODE	1SS53
D134	1710000050	DIODE	1SS53
D135	1710000050	DIODE	1SS53
D136	1710000611	DIODE	1SS133 T77 (26M/M)
D137	1730000170	ZENER	RD8.2E B1
D138	1730000080	ZENER	RD4.7E B2
X1	6050001800	XTAL	CR-49
X2	6050001340	XTAL	CR-1
FI1	2010000500	FILTER	70M15B (FL-64)
FI2	2010000270	FILTER	9M15A (FL-23)
FI3	2010000320	FILTER	9M22D2 (FL-30)
FI4	2020000150	CERAMIC	CFW455HT
FI5	2020000210	CERAMIC	CFJ455K5 (FL-65)
L1	6140000080	COIL	LR-20
L2	6180000670	COIL	LAL 02NA R22K
L3	6180002520	COIL	LAL 02NA R27K
L4	6180000860	COIL	LAL 03NA 5R6K
L5	6180000960	COIL	LAL 03NA 102K
L6	6140002050	COIL	LR-224
L7	6150001770	COIL	LS-198
L8	6110001620	COIL	LA-245
L9	6180000900	COIL	LAL 03NA 101K
L10	6110001640	COIL	LA-247
L11	6110001570	COIL	LA-237
L12	6180000710	COIL	LAL 03NA R33M
L13	6180000690	COIL	LAL 03NA R22M
L14	6150000990	COIL	LS-114
L16	6150002430	COIL	LS-254
L17	6150002430	COIL	LS-254
L18	6140002060	COIL	LR-225
L19	6140002060	COIL	LR-225
L20	6180000900	COIL	LAL 03NA 101K
L21	6150001640	COIL	LS-180B
L22	6150000711	COIL	LS-452
L23	6150000711	COIL	LS-452
L24	6180000950	COIL	LAL 03NA 150K
L25	6150001590	COIL	LS-175
L26	6150001590	COIL	LS-175
L27	6140000640	COIL	LR-86
L28	6140001540	COIL	LR-169

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
L29	6110001640	COIL	LA-247
L30	6110001570	COIL	LA-237
L31	6140002050	COIL	LR-224
L32	6180000880	COIL	LAL 03NA 100K
L33	6150001770	COIL	LS-198
L34	6150002430	COIL	LS-254
L35	6150002430	COIL	LS-254
L36	6150000990	COIL	LS-114
L37	6150001471	COIL	LS-453
L38	6180000940	COIL	LAL 03NA 270K
L39	6180000930	COIL	LAL 03NA 220K
L40	6180000900	COIL	LAL 03NA 101K
L41	6180000900	COIL	LAL 03NA 101K
L42	6180000870	COIL	LAL 03NA 6R8K
L43	6180002920	COIL	LAL 02NA 5R6K
L44	6180000900	COIL	LAL 03NA 101K
L45	6180000870	COIL	LAL 03NA 6R8K
L46	6180000850	COIL	LAL 03NA 4R7K
L47	6180000900	COIL	LAL 03NA 101K
L48	6180000810	COIL	LAL 03NA 2R2M
L49	6180000810	COIL	LAL 03NA 2R2M
L50	6180000830	COIL	LAL 03NA 3R3K
L51	6180000850	COIL	LAL 03NA 4R7K
L52	6180000900	COIL	LAL 03NA 101K
L53	6180000800	COIL	LAL 03NA 1R8M
L54	6180000780	COIL	LAL 03NA 1R2M
L55	6180000790	COIL	LAL 03NA 1R5M
L56	6180000790	COIL	LAL 03NA 1R5M
L57	6180000900	COIL	LAL 03NA 101K
L58	6180000780	COIL	LAL 03NA 1R2M
L59	6180000770	COIL	LAL 03NA 1R0M
L60	6180000760	COIL	LAL 03NA R82M
L61	6180000760	COIL	LAL 03NA R82M
L62	6180000900	COIL	LAL 03NA 101K
L63	6180000760	COIL	LAL 03NA R82M
L64	6180000750	COIL	LAL 03NA R68M
L65	6180000750	COIL	LAL 03NA R68M
L66	6180000740	COIL	LAL 03NA R56M
L67	6180000900	COIL	LAL 03NA 101K
L68	6180000730	COIL	LAL 03NA R47M
L69	6180000730	COIL	LAL 03NA R47M
L70	6180000730	COIL	LAL 03NA R47M
L71	6180000730	COIL	LAL 03NA R47M
L72	6180000900	COIL	LAL 03NA 101K
L73	6180000700	COIL	LAL 03NA R27M
L74	6180000700	COIL	LAL 03NA R27M
L75	6180000710	COIL	LAL 03NA R33M
L76	6180001290	COIL	LAL 02NA R33K
L77	6150002291	COIL	LS-450
L78	6150002271	COIL	LS-451
L79	6150002291	COIL	LS-450
L80	6170000140	COIL	LW-15
L81	6180000690	COIL	LAL 03NA R22M
L82	6150001220	COIL	LS-134
L83	6150001210	COIL	LS-133A
L85	6180000900	COIL	LAL 03NA 101K
L86	6180000900	COIL	LAL 03NA 101K
L87	6180000900	COIL	LAL 03NA 101K
L88	6180000880	COIL	LAL 03NA 100K
L91	6180000900	COIL	LAL 03NA 101K
L92	6180000900	COIL	LAL 03NA 101K
L93	6910000670	COIL	BT01RN1-A61-001
L94	6180000900	COIL	LAL 03NA 101K
L95	6180000900	COIL	LAL 03NA 101K
L96	6910000670	COIL	BT01RN1-A61-001
L97	6180000900	COIL	LAL 03NA 101K
L98	6910000670	COIL	BT01RN1-A61-001
L99	6180000900	COIL	LAL 03NA 101K
L100	6180000900	COIL	LAL 03NA 101K
L101	6180000900	COIL	LAL 03NA 101K
L102	6910000670	COIL	BT01RN1-A61-001
L103	6180000900	COIL	LAL 03NA 101K
L105	6180000900	COIL	LAL 03NA 101K
L106	6150001210	COIL	LS-133A
L108	6180000920	COIL	LAL 03NA 221K

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
L115	6180000900	COIL	LAL 03NA 101K
L116	6180001510	COIL	LAL 02NA 101K
L117	6180000900	COIL	LAL 03NA 101K
L141	6150001770	COIL	LS-198
L142	6150001770	COIL	LS-198
L144	6170000230	COIL	LW-25
L147	6180000760	COIL	LAL 03NA R82M
L148	6180000900	COIL	LAL 03NA 101K
L149	6180000900	COIL	LAL 03NA 101K
L150	6180002290	COIL	LAL 03NA 330K
L151	6180000900	COIL	LAL 03NA 101K
L152	6910000670	COIL	BT01RN1-A61-001
L153	6170000230	COIL	LW-25
R1	7010003330	RESISTOR	ELR20J 270 Ω
R2	7010003190	RESISTOR	ELR20J 18 Ω
R3	7010003330	RESISTOR	ELR20J 270 Ω
R4	7010000951	RESISTOR	R25X T-24J 22 Ω
R5	7010003520	RESISTOR	ELR20J 8.2 kΩ
R6	7010003130	RESISTOR	ELR20J 5.6 Ω
R7	7010004211	RESISTOR	R20 T-24J 1.5 kΩ
R8	7010003250	RESISTOR	ELR20J 56 Ω
R9	7010003660	RESISTOR	ELR20J 100 kΩ
R10	7010003660	RESISTOR	ELR20J 100 kΩ
R11	7010003530	RESISTOR	ELR20J 10 kΩ
R12	7010003240	RESISTOR	ELR20J 47 Ω
R13	7010003160	RESISTOR	ELR20J 10 Ω
R14	7010004171	RESISTOR	R20 T-24J 680 Ω
R15	7010003490	RESISTOR	ELR20J 5.6 kΩ
R16	7010003260	RESISTOR	ELR20J 68 Ω
R17	7010004071	RESISTOR	R20 T-24J 100 Ω
R18	7010003510	RESISTOR	ELR20J 6.8 kΩ
R19	7010000791	RESISTOR	R25X T-24J 1 Ω
R20	7010003440	RESISTOR	ELR20J 2.2 kΩ
R21	7010003460	RESISTOR	ELR20J 3.3 kΩ
R22	7010004091	RESISTOR	R20 T-24J 150 Ω
R23	7010004271	RESISTOR	R20 T-24J 4.7 kΩ
R24	7010003330	RESISTOR	ELR20J 270 Ω
R25	7010003330	RESISTOR	ELR20J 270 Ω
R26	7010003190	RESISTOR	ELR20J 18 Ω
R27	7010003460	RESISTOR	ELR20J 3.3 kΩ
R28	7010004231	RESISTOR	R20 T-24J 2.2 kΩ
R29	7010004231	RESISTOR	R20 T-24J 2.2 kΩ
R30	7010001191	RESISTOR	R25X T-24J 2.2 kΩ
R31	7010003320	RESISTOR	ELR20J 220 Ω
R32	7010000991	RESISTOR	R25X T-24J 47 Ω
R33	7010004531	RESISTOR	R20 T-24J 470 kΩ
R34	7010003580	RESISTOR	ELR20J 22 kΩ
R36	7010003320	RESISTOR	ELR20J 220 Ω
R37	7010004071	RESISTOR	R20 T-24J 100 Ω
R38	7010003660	RESISTOR	ELR20J 100 kΩ
R39	7010004071	RESISTOR	R20 T-24J 100 Ω
R40	7010004071	RESISTOR	R20 T-24J 100 Ω
R41	7010003951	RESISTOR	R20 T-24J 10 Ω
R42	7010003480	RESISTOR	ELR20J 4.7 kΩ
R43	7010003660	RESISTOR	ELR20J 100 kΩ
R45	7010003620	RESISTOR	ELR20J 47 kΩ
R46	7010004451	RESISTOR	R20 T-24J 100 kΩ
R47	7010003530	RESISTOR	ELR20J 10 kΩ
R48	7010003510	RESISTOR	ELR20J 6.8 kΩ
R49	7010004131	RESISTOR	R20 T-24J 330 Ω
R50	7010003580	RESISTOR	ELR20J 22 kΩ
R51	7010004191	RESISTOR	R20 T-24J 1 kΩ
R52	7010004321	RESISTOR	R20 T-24J 10 kΩ
R53	7010004321	RESISTOR	R20 T-24J 10 kΩ
R54	7010004231	RESISTOR	R20 T-24J 2.2 kΩ
R55	7010004231	RESISTOR	R20 T-24J 2.2 kΩ
R56	7010003460	RESISTOR	ELR20J 3.3 kΩ
R57	7010004211	RESISTOR	R20 T-24J 1.5 kΩ
R58	7010004071	RESISTOR	R20 T-24J 100 Ω
R59	7010004231	RESISTOR	R20 T-24J 2.2 kΩ
R60	7010003420	RESISTOR	ELR20J 1.5 kΩ
R61	7010004231	RESISTOR	R20 T-24J 2.2 kΩ
R62	7010003440	RESISTOR	ELR20J 2.2 kΩ

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R63	7010001031	RESISTOR	R25X T-24J 100 Ω
R64	7010003440	RESISTOR	ELR20J 2.2 kΩ
R65	7010000330	RESISTOR	ELR25J 470 Ω
R66	7010004111	RESISTOR	R20 T-24J 220 Ω
R67	7010003991	RESISTOR	R20 T-24J 22 Ω
R68	7010003320	RESISTOR	ELR20J 220 Ω
R69	7010003911	RESISTOR	R20 T-24J 4.7 Ω
R70	7010003440	RESISTOR	ELR20J 2.2 kΩ
R71	7010003400	RESISTOR	ELR20J 1 kΩ
R72	7010003400	RESISTOR	ELR20J 1 kΩ
R73	7010003360	RESISTOR	ELR20J 470 Ω
R74	7010003360	RESISTOR	ELR20J 470 Ω
R75	7010003530	RESISTOR	ELR20J 10 kΩ
R76	7010004031	RESISTOR	R20 T-24J 47 Ω
R77	7010003270	RESISTOR	ELR20J 82 Ω
R78	7010001531	RESISTOR	R25X T-24J 1 MΩ
R79	7010003991	RESISTOR	R20 T-24J 22 Ω
R80	7010004111	RESISTOR	R20 T-24J 220 Ω
R81	7010000991	RESISTOR	R25X T-24J 47 Ω
R82	7010003540	RESISTOR	ELR20J 12 kΩ
R83	7010004231	RESISTOR	R20 T-24J 2.2 kΩ
R84	7010004031	RESISTOR	R20 T-24J 47 Ω
R85	7310003200	TRIMMER	EVN-2ACA00 B14 (103)
R86	7010004071	RESISTOR	R20 T-24J 100 Ω
R87	7010004951	RESISTOR	R20 T-24J 1.5 MΩ
R88	7010003360	RESISTOR	ELR20J 470 Ω
R89	7510000300	THERMISTOR	ERT-D2ZGL 601S
R90	7010003530	RESISTOR	ELR20J 10 kΩ
R91	7010004031	RESISTOR	R20 T-24J 47 Ω
R92	7010004131	RESISTOR	R20 T-24J 330 Ω
R93	7010001111	RESISTOR	R25X T-24J 470 Ω
R94	7010000330	RESISTOR	ELR25J 470 Ω
R95	7010004071	RESISTOR	R20 T-24J 100 Ω
R96	7010004071	RESISTOR	R20 T-24J 100 Ω
R97	7010004071	RESISTOR	R20 T-24J 100 Ω
R98	7010004071	RESISTOR	R20 T-24J 100 Ω
R99	7010004071	RESISTOR	R20 T-24J 100 Ω
R100	7010004071	RESISTOR	R20 T-24J 100 Ω
R102	7010003350	RESISTOR	ELR20J 390 Ω
R103	7010003250	RESISTOR	ELR20J 56 Ω
R104	7010003620	RESISTOR	ELR20J 47 kΩ
R105	7010000871	RESISTOR	R25X T-24J 4.7 Ω
R106	7010003480	RESISTOR	ELR20J 4.7 kΩ
R107	7010003740	RESISTOR	ELR20J 470 kΩ
R108	7010004371	RESISTOR	R20 T-24J 22 kΩ
R109	7010003630	RESISTOR	ELR20J 56 kΩ
R110	7310003200	TRIMMER	EVN-2ACA00 B14 (103)
R111	7010003530	RESISTOR	ELR20J 10 kΩ
R112	7010001031	RESISTOR	R25X T-24J 100 Ω
R113	7010003820	RESISTOR	ELR20J 3.3 MΩ
R114	7010004551	RESISTOR	R20 T-24J 680 kΩ
R115	7010004371	RESISTOR	R20 T-24J 22 kΩ
R116	7310003200	TRIMMER	EVN-2ACA00 B14 (103)
R117	7010003660	RESISTOR	ELR20J 100 kΩ
R118	7010003820	RESISTOR	ELR20J 3.3 MΩ
R119	7010003530	RESISTOR	ELR20J 10 kΩ
R120	7010004071	RESISTOR	R20 T-24J 100 Ω
R121	7010003520	RESISTOR	ELR20J 8.2 kΩ
R122	7010004191	RESISTOR	R20 T-24J 1 kΩ
R123	7010003360	RESISTOR	ELR20J 470 Ω
R124	7010003480	RESISTOR	ELR20J 4.7 kΩ
R125	7010003550	RESISTOR	ELR20J 15 kΩ
R126	7010003510	RESISTOR	ELR20J 6.8 kΩ
R127	7010003640	RESISTOR	ELR20J 68 kΩ
R128	7010003660	RESISTOR	ELR20J 100 kΩ
R129	7010003400	RESISTOR	ELR20J 1 kΩ
R130	7010004151	RESISTOR	R20 T-24J 470 Ω
R131	7010003700	RESISTOR	ELR20J 220 kΩ
R132	7010003550	RESISTOR	ELR20J 15 kΩ
R133	7010003510	RESISTOR	ELR20J 6.8 kΩ
R134	7010003460	RESISTOR	ELR20J 3.3 kΩ
R135	7010003240	RESISTOR	ELR20J 47 Ω
R136	7010004031	RESISTOR	R20 T-24J 47 Ω
R137	7010004071	RESISTOR	R20 T-24J 100 Ω
R138	7310003210	TRIMMER	EVN-2ACA00 B54 (503)

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R139	7010003640	RESISTOR	ELR20J 68 kΩ
R141	7010004071	RESISTOR	R20 T-24J 100 Ω
R142	7010003340	RESISTOR	ELR20J 330 Ω
R143	7010004151	RESISTOR	R20 T-24J 470 Ω
R144	7010004321	RESISTOR	R20 T-24J 10 kΩ
R145	7010004071	RESISTOR	R20 T-24J 100 Ω
R146	7010004231	RESISTOR	R20 T-24J 2.2 kΩ
R147	7010003440	RESISTOR	ELR20J 2.2 kΩ
R148	7010003530	RESISTOR	ELR20J 10 kΩ
R149	7010003831	RESISTOR	R20 T-24J 1 Ω
R150	7010003300	RESISTOR	ELR20J 150 Ω
R151	7010003400	RESISTOR	ELR20J 1 kΩ
R152	7010003530	RESISTOR	ELR20J 10 kΩ
R153	7010004321	RESISTOR	R20 T-24J 10 kΩ
R154	7010003530	RESISTOR	ELR20J 10 kΩ
R155	7010004321	RESISTOR	R20 T-24J 10 kΩ
R156	7010004191	RESISTOR	R20 T-24J 1 kΩ
R157	7010003480	RESISTOR	ELR20J 4.7 kΩ
R158	7010003400	RESISTOR	ELR20J 1 kΩ
R159	7010003400	RESISTOR	ELR20J 1 kΩ
R160	7010004391	RESISTOR	R20 T-24J 33 kΩ
R161	7010003200	RESISTOR	ELR20J 22 Ω
R162	7010003400	RESISTOR	ELR20J 1 kΩ
R164	7010003660	RESISTOR	ELR20J 100 kΩ
R165	7010003280	RESISTOR	ELR20J 100 Ω
R166	7010003660	RESISTOR	ELR20J 100 kΩ
R167	7010004451	RESISTOR	R20 T-24J 100 kΩ
R168	7010003660	RESISTOR	ELR20J 100 kΩ
R169	7010003440	RESISTOR	ELR20J 2.2 kΩ
R170	7010004231	RESISTOR	R20 T-24J 2.2 kΩ
R171	7010003440	RESISTOR	ELR20J 2.2 kΩ
R172	7010004231	RESISTOR	R20 T-24J 2.2 kΩ
R173	7010003480	RESISTOR	ELR20J 4.7 kΩ
R174	7010003470	RESISTOR	ELR20J 3.9 kΩ
R175	7010003420	RESISTOR	ELR20J 1.5 kΩ
R176	7010004451	RESISTOR	R20 T-24J 100 kΩ
R177	7310003200	TRIMMER	EVN-2ACA00 B14 (103)
R178	7010003660	RESISTOR	ELR20J 100 kΩ
R179	7310003200	TRIMMER	EVN-2ACA00 B14 (103)
R180	7010004491	RESISTOR	R20 T-24J 220 kΩ
R181	7010004231	RESISTOR	R20 T-24J 2.2 kΩ
R182	7010003480	RESISTOR	ELR20J 4.7 kΩ
R183	7010003530	RESISTOR	ELR20J 10 kΩ
R184	7010004231	RESISTOR	R20 T-24J 2.2 kΩ
R185	7010003710	RESISTOR	ELR20J 270 kΩ
R186	7310003230	TRIMMER	EVN-2ACA00 B15 (104)
R187	7010003620	RESISTOR	ELR20J 47 kΩ
R188	7010003620	RESISTOR	ELR20J 47 kΩ
R189	7010003530	RESISTOR	ELR20J 10 kΩ
R190	7010003400	RESISTOR	ELR20J 1 kΩ
R191	7010003620	RESISTOR	ELR20J 47 kΩ
R192	7010003620	RESISTOR	ELR20J 47 kΩ
R193	7010003600	RESISTOR	ELR20J 33 kΩ
R194	7310003200	TRIMMER	EVN-2ACA00 B14 (103)
R195	7010004391	RESISTOR	R20 T-24J 33 kΩ
R196	7010003780	RESISTOR	ELR20J 1 MΩ
R197	7010003360	RESISTOR	ELR20J 470 Ω
R198	7010004571	RESISTOR	R20 T-24J 1 MΩ
R199	7010005220	RESISTOR	ELR20J 10 MΩ
R200	7010003780	RESISTOR	ELR20J 1 MΩ
R201	7010004271	RESISTOR	R20 T-24J 4.7 kΩ
R202	7010003360	RESISTOR	ELR20J 470 Ω
R203	7010004431	RESISTOR	R20 T-24J 68 kΩ
R204	7010003720	RESISTOR	ELR20J 330 kΩ
R205	7010004151	RESISTOR	R20 T-24J 470 Ω
R206	7010003680	RESISTOR	ELR20J 150 kΩ
R207	7010003510	RESISTOR	ELR20J 6.8 kΩ
R208	7310003170	TRIMMER	EVN-2ACA00 B53 (502)
R209	7010003580	RESISTOR	ELR20J 22 kΩ
R210	7310000780	TRIMMER	RH0651CS4J25A (473)
R211	7010001491	RESISTOR	R25X T-24J 470 kΩ
R212	7010003480	RESISTOR	ELR20J 4.7 kΩ
R213	7010003810	RESISTOR	ELR20J 2.2 MΩ
R214	7010003360	RESISTOR	ELR20J 470 Ω
R215	7010003300	RESISTOR	ELR20J 150 Ω

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R216	7010003530	RESISTOR	ELR20J 10 kΩ
R217	7010003660	RESISTOR	ELR20J 100 kΩ
R218	7010003400	RESISTOR	ELR20J 1 kΩ
R220	7010003740	RESISTOR	ELR20J 470 kΩ
R221	7010003740	RESISTOR	ELR20J 470 kΩ
R222	7010003530	RESISTOR	ELR20J 10 kΩ
R223	7010003280	RESISTOR	ELR20J 100 Ω
R224	7010003530	RESISTOR	ELR20J 10 kΩ
R225	7010000090	RESISTOR	ELR25J 4.7 Ω
R226	7010000370	RESISTOR	ELR25J 1 kΩ
R227	7010000090	RESISTOR	ELR25J 4.7 Ω
R228	7010000370	RESISTOR	ELR25J 1 kΩ
R229	7010000090	RESISTOR	ELR25J 4.7 Ω
R230	7010003400	RESISTOR	ELR20J 1 kΩ
R232	7010004111	RESISTOR	R20 T-24J 220 Ω
R233	7010003480	RESISTOR	ELR20J 4.7 kΩ
R234	7010003480	RESISTOR	ELR20J 4.7 kΩ
R235	7010003490	RESISTOR	ELR20J 5.6 kΩ
R236	7010004311	RESISTOR	R20 T-24J 8.2 kΩ
R237	7010003380	RESISTOR	ELR20J 680 Ω
R238	7310000860	TRIMMER	RH1051D13J0JA (1KB)
R239	7010003540	RESISTOR	ELR20J 12 kΩ
R240	7010003440	RESISTOR	ELR20J 2.2 kΩ
R241	7310003200	TRIMMER	EVN-2ACA00 B14 (103)
R242	7010003530	RESISTOR	ELR20J 10 kΩ
R243	7010004071	RESISTOR	R20 T-24J 100 Ω
R244	7210001540	VARIABLE	RK09K1110AEFA (1MB) [DELAY]
R245	7010004321	RESISTOR	R20 T-24J 10 kΩ
R246	7010003400	RESISTOR	ELR20J 1 kΩ
R247	7010004301	RESISTOR	R20 T-24J 6.8 kΩ
R248	7010004571	RESISTOR	R20 T-24J 1 MΩ
R249	7010001031	RESISTOR	R25X T-24J 100 Ω
R256	7010004271	RESISTOR	R20 T-24J 4.7 kΩ
R257	7010004271	RESISTOR	R20 T-24J 4.7 kΩ
R258	7010004411	RESISTOR	R20 T-24J 47 kΩ
R259	7010003250	RESISTOR	ELR20J 56 Ω
R260	7010003400	RESISTOR	ELR20J 1 kΩ
R261	7010003360	RESISTOR	ELR20J 470 Ω
R262	7010003440	RESISTOR	ELR20J 2.2 kΩ
R263	7010004231	RESISTOR	R20 T-24J 2.2 kΩ
R264	7010003580	RESISTOR	ELR20J 22 kΩ
R265	7010003530	RESISTOR	ELR20J 10 kΩ
R266	7010004191	RESISTOR	R20 T-24J 1 kΩ
R267	7010003480	RESISTOR	ELR20J 4.7 kΩ
R268	7010003360	RESISTOR	ELR20J 470 Ω
R269	7010003120	RESISTOR	ELR20J 4.7 Ω
R270	7010004321	RESISTOR	R20 T-24J 10 kΩ
R271	7010004321	RESISTOR	R20 T-24J 10 kΩ
R272	7010004171	RESISTOR	R20 T-24J 680 Ω
R273	7010003660	RESISTOR	ELR20J 100 kΩ
R275	7010003530	RESISTOR	ELR20J 10 kΩ
R276	7010003650	RESISTOR	ELR20J 82 kΩ
R277	7010004371	RESISTOR	R20 T-24J 22 kΩ
R278	7010004071	RESISTOR	R20 T-24J 100 Ω
R279	7010001401	RESISTOR	R25X T-24J 100 kΩ
R280	7010004451	RESISTOR	R20 T-24J 100 kΩ
R281	7010004371	RESISTOR	R20 T-24J 22 kΩ
R282	7010004321	RESISTOR	R20 T-24J 10 kΩ
R283	7010003420	RESISTOR	ELR20J 1.5 kΩ
R284	7010003530	RESISTOR	ELR20J 10 kΩ
R285	7010003620	RESISTOR	ELR20J 47 kΩ
R286	7010001151	RESISTOR	R25X T-24J 1 kΩ
R287	7010003530	RESISTOR	ELR20J 10 kΩ
R288	7010004191	RESISTOR	R20 T-24J 1 kΩ
R289	7010004071	RESISTOR	R20 T-24J 100 Ω
R290	7010003280	RESISTOR	ELR20J 100 Ω
R291	7010003440	RESISTOR	ELR20J 2.2 kΩ
R292	7010003490	RESISTOR	ELR20J 5.6 kΩ
R293	7010004231	RESISTOR	R20 T-24J 2.2 kΩ
R295	7010004321	RESISTOR	R20 T-24J 10 kΩ
R296	7010001281	RESISTOR	R25X T-24J 10 kΩ
R297	7010003660	RESISTOR	ELR20J 100 kΩ
R298	7010003530	RESISTOR	ELR20J 10 kΩ
R299	7010001281	RESISTOR	R25X T-24J 10 kΩ

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R300	7010003480	RESISTOR	ELR20J 4.7 kΩ
R302	7010003420	RESISTOR	ELR20J 1.5 kΩ
R304	7010003660	RESISTOR	ELR20J 100 kΩ
R305	7010003480	RESISTOR	ELR20J 4.7 kΩ
R306	7010004271	RESISTOR	R20 T-24J 4.7 kΩ
R307	7310003200	TRIMMER	EVN-2ACA00 B14 (103)
R308	7010004521	RESISTOR	R20 T-24J 390 kΩ
R309	7010003600	RESISTOR	ELR20J 33 kΩ
R311	7010003480	RESISTOR	ELR20J 4.7 kΩ
R312	7010004031	RESISTOR	R20 T-24J 47 Ω
R313	7010003360	RESISTOR	ELR20J 470 Ω
R314	7010003420	RESISTOR	ELR20J 1.5 kΩ
R315	7510000320	THERMISTOR	ERT-D2ZGL 202S
R316	7010003470	RESISTOR	ELR20J 3.9 kΩ
R401	7010004211	RESISTOR	R20 T-24J 1.5 kΩ
R402	7010003360	RESISTOR	ELR20J 470 Ω
R403	7010004211	RESISTOR	R20 T-24J 1.5 kΩ
R404	7010004141	RESISTOR	R20 T-24J 390 Ω
R405	7010003250	RESISTOR	ELR20J 56 Ω
R407	7010003480	RESISTOR	ELR20J 4.7 kΩ
R410	7010003400	RESISTOR	ELR20J 1 kΩ
R411	7310003230	TRIMMER	EVN-2ACA00 B15 (104)
R412	7010000791	RESISTOR	R25X T-24J 1 Ω
R415	7010003180	RESISTOR	ELR20J 15 Ω
R416	7010004321	RESISTOR	R20 T-24J 10 kΩ
R417	7510000071	THERMISTOR	ERT-D2ZHL 503S
R418	7010004151	RESISTOR	R20 T-24J 470 Ω
R419	7510000590	THERMISTOR	ERT-D2ZGL 101S
R420	7010003480	RESISTOR	ELR20J 4.7 kΩ
R421	7010004111	RESISTOR	R20 T-24J 220 Ω
R422	7010003530	RESISTOR	ELR20J 10 kΩ
R423	7010004191	RESISTOR	R20 T-24J 1 kΩ
C1	4010000520	CERAMIC	DD108 B 472K 50V
C2	4040000260	BARRIER	UZE 08X 104M
C4	4010000270	CERAMIC	DD104 SL 510J 50V
C5	4010000340	CERAMIC	DD105 SL 121J 50V
C6	4010000160	CERAMIC	DD104 SL 180J 50V
C7	4010000280	CERAMIC	DD104 SL 560J 50V
C8	4040000110	BARRIER	UAT 04X 222K
C9	4010004840	CERAMIC	DD305 F 104Z 12V
C10	4040000130	BARRIER	UAT 05X 332K
C11	4010000070	CERAMIC	DD104 SL 050C 50V
C12	4020000730	CYLINDER	UP050 SL 150J
C13	4010000340	CERAMIC	DD105 SL 121J 50V
C14	4010000520	CERAMIC	DD108 B 472K 50V
C15	4010000520	CERAMIC	DD108 B 472K 50V
C16	4010000020	CERAMIC	DD104 SL 010C 50V
C17	4010000150	CERAMIC	DD104 SL 150J 50V
C18	4010000080	CERAMIC	DD104 SL 060D 50V
C19	4010000010	CERAMIC	DD104 SL 0R5C 50V
C20	4010000500	CERAMIC	DD104 B 102K 50V
C21	4010000330	CERAMIC	DD105 SL 101J 50V
C23	4010000240	CERAMIC	DD104 SL 390J 50V
C25	4010000500	CERAMIC	DD104 B 102K 50V
C26	4010000100	CERAMIC	DD104 SL 080D 50V
C27	4040000150	BARRIER	UAT 05X 472K
C28	4010000520	CERAMIC	DD108 B 472K 50V
C29	4010000500	CERAMIC	DD104 B 102K 50V
C30	4010000520	CERAMIC	DD108 B 472K 50V
C31	4010000100	CERAMIC	DD104 SL 080D 50V
C32	4010000100	CERAMIC	DD104 SL 080D 50V
C33	4010000300	CERAMIC	DD104 SL 680J 50V
C35	4010000520	CERAMIC	DD108 B 472K 50V
C36	4010000520	CERAMIC	DD108 B 472K 50V
C37	4010000340	CERAMIC	DD105 SL 121J 50V
C38	4020000030	CYLINDER	UP125 SL 2R2K
C39	4010000070	CERAMIC	DD104 SL 050C 50V
C40	4010004840	CERAMIC	DD305 F 104Z 12V
C42	4040000260	BARRIER	UZE 08X 104M
C43	4010000520	CERAMIC	DD108 B 472K 50V
C44	4010000520	CERAMIC	DD108 B 472K 50V
C46	4010000520	CERAMIC	DD108 B 472K 50V
C47	4010000200	CERAMIC	DD104 SL 270J 50V

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C49	4010000520	CERAMIC	DD108 B 472K 50V
C50	4040000150	BARRIER	UAT 05X 472K
C51	4510003790	ELECTROLYTIC	16 MV 10 SW
C52	4010000520	CERAMIC	DD108 B 472K 50V
C53	4040000150	BARRIER	UAT 05X 472K
C54	4040000150	BARRIER	UAT 05X 472K
C55	4010000520	CERAMIC	DD108 B 472K 50V
C56	4010000520	CERAMIC	DD108 B 472K 50V
C58	4010000340	CERAMIC	DD105 SL 121J 50V
C59	4020000620	CYLINDER	UP050 SL 220J
C60	4510003790	ELECTROLYTIC	16 MV 10 SW
C61	4510003910	ELECTROLYTIC	16 MV 47 HW
C62	4040000260	BARRIER	UZE 08X 104M
C64	4010000520	CERAMIC	DD108 B 472K 50V
C65	4010000520	CERAMIC	DD108 B 472K 50V
C66	4010004840	CERAMIC	DD305 F 104Z 12V
C67	4040000150	BARRIER	UAT 05X 472K
C68	4040000150	BARRIER	UAT 05X 472K
C69	4010004840	CERAMIC	DD305 F 104Z 12V
C70	4040000250	BARRIER	UAT 08X 473M
C71	4040000250	BARRIER	UAT 08X 473M
C72	4010000330	CERAMIC	DD105 SL 101J 50V
C73	4040000250	BARRIER	UAT 08X 473M
C74	4040000250	BARRIER	UAT 08X 473M
C75	4040000250	BARRIER	UAT 08X 473M
C77	4010000160	CERAMIC	DD104 SL 180J 50V
C78	4010000340	CERAMIC	DD105 SL 121J 50V
C79	4010000280	CERAMIC	DD104 SL 560J 50V
C80	4010000280	CERAMIC	DD104 SL 560J 50V
C81	4040000260	BARRIER	UZE 08X 104M
C82	4010000120	CERAMIC	DD104 SL 100D 50V
C83	4010004840	CERAMIC	DD305 F 104Z 12V
C84	4010004840	CERAMIC	DD305 F 104Z 12V
C85	4010000500	CERAMIC	DD104 B 102K 50V
C86	4040000260	BARRIER	UZE 08X 104M
C87	4010000100	CERAMIC	DD104 SL 080D 50V
C89	4010000100	CERAMIC	DD104 SL 080D 50V
C90	4010000100	CERAMIC	DD104 SL 080D 50V
C91	4040000260	BARRIER	UZE 08X 104M
C92	4010000520	CERAMIC	DD108 B 472K 50V
C93	4010000080	CERAMIC	DD104 SL 060D 50V
C94	4010000520	CERAMIC	DD108 B 472K 50V
C95	4510003830	ELECTROLYTIC	50 MV R47 SW
C96	4010000520	CERAMIC	DD108 B 472K 50V
C97	4510003860	ELECTROLYTIC	50 MV 3R3 SW
C99	4010000520	CERAMIC	DD108 B 472K 50V
C100	4510003910	ELECTROLYTIC	16 MV 47 HW
C101	4010004840	CERAMIC	DD305 F 104Z 12V
C102	4010000500	CERAMIC	DD104 B 102K 50V
C109	4510003790	ELECTROLYTIC	16 MV 10 SW
C110	4310000400	MYLER	50 F2D 223J
C112	4510003790	ELECTROLYTIC	16 MV 10 SW
C113	4510003840	ELECTROLYTIC	50 MV 1 SW
C114	4040000150	BARRIER	UAT 05X 472K
C115	4510003910	ELECTROLYTIC	16 MV 47 HW
C116	4010000330	CERAMIC	DD105 SL 101J 50V
C117	4010000350	CERAMIC	DD106 SL 151J 50V
C118	4040000150	BARRIER	UAT 05X 472K
C119	4010000520	CERAMIC	DD108 B 472K 50V
C120	4010004840	CERAMIC	DD305 F 104Z 12V
C121	4010000520	CERAMIC	DD108 B 472K 50V
C122	4040000390	BARRIER	UAT 06V 103K
C123	4010000380	CERAMIC	DD107 SL 221J 50V
C124	4310000440	MYLER	50 F2D 473J
C125	4040000250	BARRIER	UAT 08X 473M
C126	4010004840	CERAMIC	DD305 F 104Z 12V
C127	4010004840	CERAMIC	DD305 F 104Z 12V
C129	4010000500	CERAMIC	DD104 B 102K 50V
C130	4040000260	BARRIER	UZE 08X 104M
C132	4010000520	CERAMIC	DD108 B 472K 50V
C133	4010004840	CERAMIC	DD305 F 104Z 12V
C135	4040000260	BARRIER	UZE 08X 104M
C136	4310000400	MYLER	50 F2D 223J
C137	4010000160	CERAMIC	DD104 SL 180J 50V
C138	4010000520	CERAMIC	DD108 B 472K 50V

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C139	4040000250	BARRIER	UAT 08X 473M
C140	4010000520	CERAMIC	DD108 B 472K 50V
C141	4010000520	CERAMIC	DD108 B 472K 50V
C142	4010000080	CERAMIC	DD104 SL 060D 50V
C143	4040000090	BARRIER	UAT 04X 152K
C144	4040000130	BARRIER	UAT 05X 332K
C145	4040000460	BARRIER	RAU 08SA 821K
C146	4040000180	BARRIER	UAT 05X 822K
C147	4040000130	BARRIER	UAT 05X 332K
C148	4040000070	BARRIER	UAT 04X 102K
C149	4020000630	CYLINDER	UP050 B 101K
C150	4040000070	BARRIER	UAT 04X 102K
C151	4040000250	BARRIER	UAT 08X 473M
C152	4040000260	BARRIER	UZE 08X 104M
C153	4040000260	BARRIER	UZE 08X 104M
C154	4010000520	CERAMIC	DD108 B 472K 50V
C155	4040000100	BARRIER	UAT 04X 182K
C156	4040000100	BARRIER	UAT 04X 182K
C157	4010000410	CERAMIC	DD107 SL 331J 50V
C158	4040000260	BARRIER	UZE 08X 104M
C159	4040000080	BARRIER	UAT 04X 122K
C160	4010000330	CERAMIC	DD105 SL 101J 50V
C161	4040000080	BARRIER	UAT 04X 122K
C162	4040000170	BARRIER	UAT 05X 682K
C163	4040000180	BARRIER	UAT 05X 822K
C164	4040000080	BARRIER	UAT 04X 122K
C165	4040000250	BARRIER	UAT 08X 473M
C166	4040000260	BARRIER	UZE 08X 104M
C167	4010000440	CERAMIC	DD109 SL 511J 50V
C168	4010000330	CERAMIC	DD105 SL 101J 50V
C169	4010000430	CERAMIC	DD109 SL 471J 50V
C170	4040000080	BARRIER	UAT 04X 122K
C171	4040000160	BARRIER	UAT 05X 562K
C172	4040000440	BARRIER	RAU 06SA 561K
C173	4040000250	BARRIER	UAT 08X 473M
C174	4040000260	BARRIER	UZE 08X 104M
C175	4010000410	CERAMIC	DD107 SL 331J 50V
C176	4010000270	CERAMIC	DD104 SL 510J 50V
C177	4010000410	CERAMIC	DD107 SL 331J 50V
C178	4010000410	CERAMIC	DD107 SL 331J 50V
C179	4040000120	BARRIER	UAT 05X 272K
C180	4010000410	CERAMIC	DD107 SL 331J 50V
C181	4040000250	BARRIER	UAT 08X 473M
C182	4040000260	BARRIER	UZE 08X 104M
C183	4010000410	CERAMIC	DD107 SL 331J 50V
C184	4010000260	CERAMIC	DD104 SL 470J 50V
C185	4010000380	CERAMIC	DD107 SL 221J 50V
C186	4010000380	CERAMIC	DD107 SL 221J 50V
C187	4040000100	BARRIER	UAT 04X 182K
C188	4010000370	CERAMIC	DD106 SL 201J 50V
C189	4040000250	BARRIER	UAT 08X 473M
C190	4040000260	BARRIER	UZE 08X 104M
C191	4010000380	CERAMIC	DD107 SL 221J 50V
C192	4010000160	CERAMIC	DD104 SL 180J 50V
C193	4010000330	CERAMIC	DD105 SL 101J 50V
C194	4010000380	CERAMIC	DD107 SL 221J 50V
C195	4040000080	BARRIER	UAT 04X 122K
C196	4010000350	CERAMIC	DD106 SL 151J 50V
C197	4040000250	BARRIER	UAT 08X 473M
C198	4040000260	BARRIER	UZE 08X 104M
C199	4010000220	CERAMIC	DD104 SL 330J 50V
C200	4010000340	CERAMIC	DD105 SL 121J 50V
C201	4010000240	CERAMIC	DD104 SL 390J 50V
C202	4010000300	CERAMIC	DD104 SL 680J 50V
C203	4010000340	CERAMIC	DD105 SL 121J 50V
C204	4040000460	BARRIER	RAU 08SA 821K
C205	4010000330	CERAMIC	DD105 SL 101J 50V
C206	4040000250	BARRIER	UAT 08X 473M
C207	4040000150	BARRIER	UAT 05X 472K
C208	4530000350	ARRAY	B8ZC0111-32N
C209	4010000520	CERAMIC	DD108 B 472K 50V
C210	4510004590	ELECTROLYTIC	16 MV 470 HC
C211	4040000260	BARRIER	UZE 08X 104M
C212	4510004990	ELECTROLYTIC	16 MV 100 HC
C213	4510004600	ELECTROLYTIC	16 MV 1000 HC

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C214	4510004990	ELECTROLYTIC	16 MV 100 HC
C215	4510003910	ELECTROLYTIC	16 MV 47 HW
C216	4040000250	BARRIER	UAT 08X 473M
C217	4510003820	ELECTROLYTIC	50 MV R22 SW
C218	4510004990	ELECTROLYTIC	16 MV 100 HC
C219	4040000110	BARRIER	UAT 04X 222K
C220	4310000060	MYLER	50 F2D 223K
C221	4510003790	ELECTROLYTIC	16 MV 10 SW
C222	4510003910	ELECTROLYTIC	16 MV 47 HW
C223	4510003850	ELECTROLYTIC	50 MV 2R2 SW
C224	4040000150	BARRIER	UAT 05X 472K
C225	4510003830	ELECTROLYTIC	50 MV R47 SW
C226	4040000210	BARRIER	UAT 06X 153K
C228	4040000150	BARRIER	UAT 05X 472K
C229	4040000150	BARRIER	UAT 05X 472K
C230	4010000840	CERAMIC	DD105 CH 390J 50V
C231	4010001020	CERAMIC	DD111 CH 221J 50V
C232	4010001020	CERAMIC	DD111 CH 221J 50V
C233	4010000520	CERAMIC	DD108 B 472K 50V
C234	4010000520	CERAMIC	DD108 B 472K 50V
C235	4010000520	CERAMIC	DD108 B 472K 50V
C236	4010004840	CERAMIC	DD305 F 104Z 12V
C237	4010000180	CERAMIC	DD104 SL 220J 50V
C238	4010000520	CERAMIC	DD108 B 472K 50V
C239	4040000150	BARRIER	UAT 05X 472K
C240	4010000520	CERAMIC	DD108 B 472K 50V
C241	4010000180	CERAMIC	DD104 SL 220J 50V
C242	4310000060	MYLER	50 F2D 223K
C243	4310000060	MYLER	50 F2D 223K
C244	4310000060	MYLER	50 F2D 223K
C245	4510003790	ELECTROLYTIC	16 MV 10 SW
C246	4510004350	ELECTROLYTIC	16 MV 22 SW
C247	4040000150	BARRIER	UAT 05X 472K
C248	4510003910	ELECTROLYTIC	16 MV 47 HW
C249	4510003840	ELECTROLYTIC	50 MV 1 SW
C250	4510003850	ELECTROLYTIC	50 MV 2R2 SW
C251	4510003840	ELECTROLYTIC	50 MV 1 SW
C252	4510003840	ELECTROLYTIC	50 MV 1 SW
C253	4010000520	CERAMIC	DD108 B 472K 50V
C254	4010000520	CERAMIC	DD108 B 472K 50V
C255	4010000520	CERAMIC	DD108 B 472K 50V
C256	4010000520	CERAMIC	DD108 B 472K 50V
C257	4010000520	CERAMIC	DD108 B 472K 50V
C258	4010000330	CERAMIC	DD105 SL 101J 50V
C259	4010000520	CERAMIC	DD108 B 472K 50V
C260	4010004840	CERAMIC	DD305 F 104Z 12V
C261	4510004130	ELECTROLYTIC	16 MV 33 HW
C262	4040000250	BARRIER	UAT 08X 473M
C263	4010000500	CERAMIC	DD104 B 102K 50V
C264	4510003840	ELECTROLYTIC	50 MV 1 SW
C265	4040000190	BARRIER	UAT 05X 103K
C266	4040000190	BARRIER	UAT 05X 103K
C267	4510003830	ELECTROLYTIC	50 MV R47 SW
C268	4510003830	ELECTROLYTIC	50 MV R47 SW
C269	4510003910	ELECTROLYTIC	16 MV 47 HW
C270	4040000260	BARRIER	UZE 08X 104M
C271	4510003910	ELECTROLYTIC	16 MV 47 HW
C274	4010000460	CERAMIC	DD104 B 471K 50V
C279	4040000150	BARRIER	UAT 05X 472K
C280	4040000150	BARRIER	UAT 05X 472K
C281	4020000670	CYLINDER	UP050 SL 470J
C283	4510003840	ELECTROLYTIC	50 MV 1 SW
C284	4010000520	CERAMIC	DD108 B 472K 50V
C285	4010000520	CERAMIC	DD108 B 472K 50V
C286	4010000520	CERAMIC	DD108 B 472K 50V
C287	4010000520	CERAMIC	DD108 B 472K 50V
C288	4010000520	CERAMIC	DD108 B 472K 50V
C289	4010000520	CERAMIC	DD108 B 472K 50V
C290	4010000520	CERAMIC	DD108 B 472K 50V
C291	4010000460	CERAMIC	DD104 B 471K 50V
C292	4010000520	CERAMIC	DD108 B 472K 50V
C293	4310000420	MYLER	50 F2D 333J
C294	4610001200	TRIMMER	CVSSE3001
C295	4010000500	CERAMIC	DD104 B 102K 50V
C296	4010000520	CERAMIC	DD108 B 472K 50V

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C297	4040000250	BARRIER	UAT 08X 473M
C298	4010004840	CERAMIC	DD305 F 104Z 12V
C299	4040000260	BARRIER	UZE 08X 104M
C300	4040000250	BARRIER	UAT 08X 473M
C301	4010000520	CERAMIC	DD108 B 472K 50V
C302	4010000520	CERAMIC	DD108 B 472K 50V
C303	4010000940	CERAMIC	DD107 CH 101J 50V
C304	4010004840	CERAMIC	DD305 F 104Z 12V
C305	4010000940	CERAMIC	DD107 CH 101J 50V
C306	4010000060	CERAMIC	DD104 SL 040C 50V
C307	4010000350	CERAMIC	DD106 SL 151J 50V
C308	4010000520	CERAMIC	DD108 B 472K 50V
C309	4010004840	CERAMIC	DD305 F 104Z 12V
C310	4010004840	CERAMIC	DD305 F 104Z 12V
C311	4010004840	CERAMIC	DD305 F 104Z 12V
C312	4040000440	BARRIER	RAU 06SA 561K
C314	4010004840	CERAMIC	DD305 F 104Z 12V
C315	4010004840	CERAMIC	DD305 F 104Z 12V
C316	4010000350	CERAMIC	DD106 SL 151J 50V
C317	4020000340	CYLINDER	UP125 B 151K
C318	4010004840	CERAMIC	DD305 F 104Z 12V
C319	4010000500	CERAMIC	DD104 B 102K 50V
C320	4010000500	CERAMIC	DD104 B 102K 50V
C321	4010000520	CERAMIC	DD108 B 472K 50V
C323	4040000260	BARRIER	UZE 08X 104M
C324	4010000500	CERAMIC	DD104 B 102K 50V
C325	4010000520	CERAMIC	DD108 B 472K 50V
C327	4010000500	CERAMIC	DD104 B 102K 50V
C328	4010000500	CERAMIC	DD104 B 102K 50V
C329	4010000500	CERAMIC	DD104 B 102K 50V
C330	4040000150	BARRIER	UAT 05X 472K
C331	4010000520	CERAMIC	DD108 B 472K 50V
C332	4010000330	CERAMIC	DD105 SL 101J 50V
C401	4040000250	BARRIER	UAT 08X 473M
C402	4030000910	S. CERAMIC	GRM40 CH 120J 50PT
C403	4010000600	CERAMIC	DD104 CK 010C 50V
C404	4030000910	S. CERAMIC	GRM40 CH 120J 50PT
C405	4040000250	BARRIER	UAT 08X 473M
C406	4040000150	BARRIER	UAT 05X 472K
C408	4610001470	TRIMMER	CV38D 2001E
C409	4010000520	CERAMIC	DD108 B 472K 50V
C410	4040000150	BARRIER	UAT 05X 472K
C411	4010000460	CERAMIC	DD104 B 471K 50V
C412	4040000260	BARRIER	UZE 08X 104M
C413	4040000260	BARRIER	UZE 08X 104M
C414	4010004840	CERAMIC	DD305 F 104Z 12V
C415	4010000260	CERAMIC	DD104 SL 470J 50V
C416	4610001470	TRIMMER	CV38D 2001E
C417	4010000040	CERAMIC	DD104 SL 020C 50V
C418	4010000520	CERAMIC	DD108 B 472K 50V
S2	2230000700	SWITCH	SPPJ31309A [BK IN]
RL1	6330000800	RELAY	G5A-237P DC12V
RL2	6330000560	RELAY	OUC-SH-114D
J1	6510010030	CONNECTOR	52011-1210
J2	6510003410	CONNECTOR	B05B-EH-S
J3	6510014290	CONNECTOR	SD-52011-0910
J4	6510003250	CONNECTOR	TMP-J01X-A2
J5	6510003250	CONNECTOR	TMP-J01X-A2
J6	6510003430	CONNECTOR	B07B-EH-S
J7	6510003410	CONNECTOR	B05B-EH-S
J8	6510003450	CONNECTOR	B09B-EH-S
J9	6510003410	CONNECTOR	B05B-EH-S
J10	6510003440	CONNECTOR	B08B-EH-S
J11	6510003250	CONNECTOR	TMP-J01X-A2
J12	6510003250	CONNECTOR	TMP-J01X-A2
J13	6510003390	CONNECTOR	B03B-EH-S
J14	6450000140	CONNECTOR	HSJ0807-01-010
J15	6450001240	CONNECTOR	HLJ4306-01-3000 [KEY]
J16	6450000150	CONNECTOR	JPJ2545-01-510 [SEND]

S.=Surface mount

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
J17	6450000150	CONNECTOR	JPJ2545-01-510 [ALC]
J18	6450000160	CONNECTOR	TCS4470-01-1111 [ACC(2)]
J19	6450000170	CONNECTOR	TCS4480-01-1111 [ACC(1)]
J20	6510001110	CONNECTOR	3024-10CH
J21	6510003390	CONNECTOR	B03B-EH-S
J22	6510003390	CONNECTOR	B03B-EH-S
J24	6510013780	CONNECTOR	PDK-2081-65
J31	6510003250	CONNECTOR	TMP-J01X-A2
J32	6510003390	CONNECTOR	B03B-EH-S
J33	6510004960	CONNECTOR	3022-02B
J34	6510008360	CONNECTOR	3022-03B
W30	6910001020	JUMPER	IPS-1041-2
W32	6910001030	JUMPER	IPS-1041-4
W33	6910001030	JUMPER	IPS-1041-4
W34	6910001030	JUMPER	IPS-1041-4
W35	6910001020	JUMPER	IPS-1041-2
W37	6910001030	JUMPER	IPS-1041-4
W39	6910001020	JUMPER	IPS-1041-2
W40	6910001030	JUMPER	IPS-1041-4
W41	6910001020	JUMPER	IPS-1041-2
W42	6910001020	JUMPER	IPS-1041-2
W45	6910001020	JUMPER	IPS-1041-2
W46	6910001030	JUMPER	IPS-1041-4
W47	6910001020	JUMPER	IPS-1041-2
W50	6910001030	JUMPER	IPS-1041-4
W51	6910001030	JUMPER	IPS-1041-4
W52	6910001030	JUMPER	IPS-1041-4
W53	6910001030	JUMPER	IPS-1041-4
W54	6910001030	JUMPER	IPS-1041-4
W55	6910001020	JUMPER	IPS-1041-2
W56	6910001020	JUMPER	IPS-1041-2
W57	6910001030	JUMPER	IPS-1041-4
W58	6910001030	JUMPER	IPS-1041-4
W59	6910001030	JUMPER	IPS-1041-4
W60	6910001020	JUMPER	IPS-1041-2
W61	6910001020	JUMPER	IPS-1041-2
W62	6910001020	JUMPER	IPS-1041-2
W63	6910001020	JUMPER	IPS-1041-2
W65	6910001020	JUMPER	IPS-1041-2
W69	6910001030	JUMPER	IPS-1041-4
W71	6910001030	JUMPER	IPS-1041-4
W72	6910001020	JUMPER	IPS-1041-2
W73	6910001020	JUMPER	IPS-1041-2
W74	6910001020	JUMPER	IPS-1041-2
W75	6910001020	JUMPER	IPS-1041-2
W76	7120000020	JUMPER	JPW 02H
W77	6910001020	JUMPER	IPS-1041-2
W78	7120000020	JUMPER	JPW 02H
W79	6910001020	JUMPER	IPS-1041-2
W80	6910001030	JUMPER	IPS-1041-4
W81	6910001020	JUMPER	IPS-1041-2
W83	6910001020	JUMPER	IPS-1041-2
W84	6910001020	JUMPER	IPS-1041-2
W85	6910001030	JUMPER	IPS-1041-4
W86	6910001030	JUMPER	IPS-1041-4
W87	6910001020	JUMPER	IPS-1041-2
W88	6910001020	JUMPER	IPS-1041-2
W89	6910001030	JUMPER	IPS-1041-4
W90	6910001020	JUMPER	IPS-1041-2
W91	6910001020	JUMPER	IPS-1041-2
W92	6910001020	JUMPER	IPS-1041-2
W93	6910001020	JUMPER	IPS-1041-2
W94	6910001020	JUMPER	IPS-1041-2
W95	6910001020	JUMPER	IPS-1041-2
W96	6910001030	JUMPER	IPS-1041-4
W97	6910001020	JUMPER	IPS-1041-2
W98	6910001020	JUMPER	IPS-1041-2
W99	6910001020	JUMPER	IPS-1041-2
W100	6910001020	JUMPER	IPS-1041-2
W101	6910001030	JUMPER	IPS-1041-4
W102	6910001030	JUMPER	IPS-1041-4
W103	6910001030	JUMPER	IPS-1041-4
W104	6910001030	JUMPER	IPS-1041-4

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
W105	6910001030	JUMPER	IPS-1041-4
W106	6910001030	JUMPER	IPS-1041-4
W107	6910001020	JUMPER	IPS-1041-2
W108	6910001030	JUMPER	IPS-1041-4
W110	6910001020	JUMPER	IPS-1041-2
W111	6910001030	JUMPER	IPS-1041-4
W112	6910001030	JUMPER	IPS-1041-4
W113	6910001030	JUMPER	IPS-1041-4
W114	6910001030	JUMPER	IPS-1041-4
W115	6910001020	JUMPER	IPS-1041-2
W116	6910001030	JUMPER	IPS-1041-4
W118	6910001020	JUMPER	IPS-1041-2
W119	6910001020	JUMPER	IPS-1041-2
W120	6910001020	JUMPER	IPS-1041-2
W121	6910001030	JUMPER	IPS-1041-4
W122	6910001020	JUMPER	IPS-1041-2
W123	6910001020	JUMPER	IPS-1041-2
W124	6910001030	JUMPER	IPS-1041-4
W125	6910001020	JUMPER	IPS-1041-2
W126	6910001020	JUMPER	IPS-1041-2
W131	6910001020	JUMPER	IPS-1041-2
W134	6910001030	JUMPER	IPS-1041-4
W135	6910001030	JUMPER	IPS-1041-4
W136	6910001030	JUMPER	IPS-1041-4
W137	6910001030	JUMPER	IPS-1041-4
W140	6910001020	JUMPER	IPS-1041-2
W142	6910001030	JUMPER	IPS-1041-4
W144	6910001020	JUMPER	IPS-1041-2
W145	6910001020	JUMPER	IPS-1041-2
W146	6910001030	JUMPER	IPS-1041-4
W147	6910001030	JUMPER	IPS-1041-4
W148	6910001030	JUMPER	IPS-1041-4
W149	6910001020	JUMPER	IPS-1041-2
W150	6910001030	JUMPER	IPS-1041-4
W151	6910001030	JUMPER	IPS-1041-4
W152	6910001020	JUMPER	IPS-1041-2
W153	6910001030	JUMPER	IPS-1041-4
W154	6910001020	JUMPER	IPS-1041-2
W155	6910001030	JUMPER	IPS-1041-4
W156	6910001030	JUMPER	IPS-1041-4
W160	6910001020	JUMPER	IPS-1041-2
W162	6910001020	JUMPER	IPS-1041-2
W163	6910001020	JUMPER	IPS-1041-2
W164	6910001020	JUMPER	IPS-1041-2
W165	6910001020	JUMPER	IPS-1041-2
W166	6910001030	JUMPER	IPS-1041-4
W167	6910001030	JUMPER	IPS-1041-4
W168	6910001020	JUMPER	IPS-1041-2
W170	6910001020	JUMPER	IPS-1041-2
W171	7120000020	JUMPER	JPW 02H
W213	6910001020	JUMPER	IPS-1041-2
W215	6910001020	JUMPER	IPS-1041-2
W216	6910001020	JUMPER	IPS-1041-2
W217	6910001020	JUMPER	IPS-1041-2
W218	6910001020	JUMPER	IPS-1041-2
W223	7120000010	JUMPER	JPW 02A
EP1	0910035524	PCB	B 3570D (MAIN)

[BPF BOARD]

REF. NO.	ORDER NO.	DESCRIPTION	
Q1	1560000130	FET	2SK125
D1	1790000070	DIODE	1SS237
L2	6180000670	COIL	LAL 02NA R22K
L3	6180001290	COIL	LAL 02NA R33K
L5	6180002380	COIL	LAL 02NA 2R2K
L6	6140002050	COIL	LR-224
L7	6110001630	COIL	LA-246
R1	7010003990	RESISTOR	R20J 22 Ω
R2	7010003910	RESISTOR	R20J 4.7 Ω
R3	7010004410	RESISTOR	R20J 47 kΩ
R4	7010003040	RESISTOR	ELR20J 1 Ω
R5	7010004410	RESISTOR	R20J 47 kΩ
C2	4020000870	CYLINDER	UP050 SL 510J
C3	4020000870	CYLINDER	UP050 SL 510J
C4	4020000840	CYLINDER	UP050 B 181K
C5	4020000850	CYLINDER	EP050 Y 103M
C6	4010000250	CERAMIC	DD104 SL 430J 50V
C7	4010000150	CERAMIC	DD104 SL 150J 50V
C10	4020000860	CYLINDER	UP050 SL 430J
C12	4040000150	BARRIER	UAT 05X 472K
W1	7120000380	JUMPER	JPW 01 R-01
W2	7120000380	JUMPER	JPW 01 R-01
EP1	0910023991	PCB	B 2298A (BPF)

[FM • AM UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1110000630	IC	MC3357 P
IC2	1110001310	IC	μPC577HA
IC3	1110000250	IC	BA401
IC4	1110001320	IC	μPC1037HA
IC5	1110002500	IC	M5218AL
Q1	1530000591	TRANSISTOR	2SC2785 EL
Q2	1590000340	TRANSISTOR	RN1202
Q3	1590000340	TRANSISTOR	RN1202
Q4	1510000080	TRANSISTOR	2SA1048-GR
Q5	1590000340	TRANSISTOR	RN1202
Q6	1590000360	TRANSISTOR	RN2202
Q7	1590000340	TRANSISTOR	RN1202
Q8	1590000340	TRANSISTOR	RN1202
Q9	1590000360	TRANSISTOR	RN2202
Q10	1590000340	TRANSISTOR	RN1202
Q11	1530000110	TRANSISTOR	2SC2458-GR
Q12	1590000360	TRANSISTOR	RN2202
Q13	1530000110	TRANSISTOR	2SC2458-GR
D1	1710000050	DIODE	1SS53
D2	1730000120	ZENER	RD6.2E B2
D3	1790000070	DIODE	1SS237
D4	1790000070	DIODE	1SS237

[FM • AM UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
D8	1720000060	VARICAP	1SV50 (1) E
D9	1710000050	DIODE	1SS53
D10	1710000160	DIODE	1SS133
D11	1710000160	DIODE	1SS133
D12	1710000160	DIODE	1SS133
D13	1710000160	DIODE	1SS133
X1	6050008190	XTAL	CR-404 9.46500MHZ
X2	6070000010	DISCRIMINATOR	CDB455C7A
X3	6050000280	XTAL	HC-12/U 9.0105
FI1	2020000120	CERAMIC	CFW455E
L1	6180001710	COIL	LAL 03NA 561K
L2	6180001680	COIL	LAL 03NA 151K
L3	6150001200	COIL	LS-133
L4	6180000950	COIL	LAL 03NA 150K
L5	6180000880	COIL	LAL 03NA 100K
L6	6180000880	COIL	LAL 03NA 100K
L7	6180000900	COIL	LAL 03NA 101K
L8	6180000900	COIL	LAL 03NA 101K
L9	6180000960	COIL	LAL 03NA 102K
R1	7010003400	RESISTOR	ELR20J 1 kΩ
R2	7010001030	RESISTOR	R25XJ 100 Ω
R3	7010003420	RESISTOR	ELR20J 1.5 kΩ
R4	7010003420	RESISTOR	ELR20J 1.5 kΩ
R5	7010003620	RESISTOR	ELR20J 47 kΩ
R6	7010003420	RESISTOR	ELR20J 1.5 kΩ
R7	7010003550	RESISTOR	ELR20J 15 kΩ
R8	7010003580	RESISTOR	ELR20J 22 kΩ
R9	7010003460	RESISTOR	ELR20J 3.3 kΩ
R10	7510000320	THERMISTOR	ERT-D2ZGL 202S
R11	7010003360	RESISTOR	ELR20J 470 Ω
R14	7310000720	TRIMMER	RH0651CJ3J0CA (222)
R15	7010004230	RESISTOR	R20J 2.2 kΩ
R16	7010003280	RESISTOR	ELR20J 100 Ω
R17	7510000240	THERMISTOR	ERT-D2ZGL 332S
R18	7010003510	RESISTOR	ELR20J 6.8 kΩ
R19	7010003580	RESISTOR	ELR20J 22 kΩ
R20	7010003740	RESISTOR	ELR20J 470 kΩ
R21	7010003480	RESISTOR	ELR20J 4.7 kΩ
R22	7010003510	RESISTOR	ELR20J 6.8 kΩ
R23	7010001320	RESISTOR	R25XJ 22 kΩ
R24	7010004370	RESISTOR	R20J 22 kΩ
R25	7010003420	RESISTOR	ELR20J 1.5 kΩ
R26	7310000710	TRIMMER	RH0651C13J1YA (102)
R27	7010003420	RESISTOR	ELR20J 1.5 kΩ
R28	7010004190	RESISTOR	R20J 1 kΩ
R29	7010004950	RESISTOR	R20J 1.5 MΩ
R30	7010003400	RESISTOR	ELR20J 1 kΩ
R31	7010003780	RESISTOR	ELR20J 1 MΩ
R32	7010004190	RESISTOR	R20J 1 kΩ
R33	7010003410	RESISTOR	ELR20J 1.2 kΩ
R34	7010005090	RESISTOR	ELR20J 910 Ω
R35	7010003440	RESISTOR	ELR20J 2.2 kΩ
R36	7010003530	RESISTOR	ELR20J 10 kΩ
R37	7010004430	RESISTOR	R20J 68 kΩ
R38	7010004430	RESISTOR	R20J 68 kΩ
R39	7010003640	RESISTOR	ELR20J 68 kΩ
R40	7010000910	RESISTOR	R25XJ 10 Ω
R41	7310000740	TRIMMER	RH0651CS3J2KA (472)
R42	7010004230	RESISTOR	R20J 2.2 kΩ
R43	7010004270	RESISTOR	R20J 4.7 kΩ
R44	7310000750	TRIMMER	RH0651C14J2WA (103)
R45	7010003530	RESISTOR	ELR20J 10 kΩ
R46	7010003470	RESISTOR	ELR20J 3.9 kΩ
R47	7310000750	TRIMMER	RH0651C14J2WA (103)
R48	7010004310	RESISTOR	R20J 8.2 kΩ
R49	7010003580	RESISTOR	ELR20J 22 kΩ
R50	7010003810	RESISTOR	ELR20J 2.2 MΩ

[FM • AM UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R51	7010003550	RESISTOR	ELR20J 15 kΩ
R52	7010003400	RESISTOR	ELR20J 1 kΩ
R53	7310000740	TRIMMER	RH0651CS3J2KA (472)
R54	7010003360	RESISTOR	ELR20J 470 Ω
R55	7010003400	RESISTOR	ELR20J 1 kΩ
R58	7010004270	RESISTOR	R20J 4.7 kΩ
C1	4010000260	CERAMIC	DD104 SL 470J 50V
C2	4010000520	CERAMIC	DD108 B 472K 50V
C3	4010000760	CERAMIC	DD104 CH 180J 50V
C4	4010000360	CERAMIC	DD106 SL 181J 50V
C5	4040000260	BARRIER	UZE 08X 104M
C6	4040000260	BARRIER	UZE 08X 104M
C7	4010000320	CERAMIC	DD104 SL 820J 50V
C8	4040000260	BARRIER	UZE 08X 104M
C9	4510003800	ELECTROLYTIC	25 MV 4R7 SW
C10	4010000150	CERAMIC	DD104 SL 150J 50V
C11	4040000250	BARRIER	UAT 08X 473M
C12	4040000460	BARRIER	RAU 08SA 821K
C13	4040000250	BARRIER	UAT 08X 473M
C14	4040000250	BARRIER	UAT 08X 473M
C15	4040000250	BARRIER	UAT 08X 473M
C16	4040000190	BARRIER	UAT 05X 103K
C17	4040000260	BARRIER	UZE 08X 104M
C19	4310000610	MYLER	50 F2D 472J
C20	4310000610	MYLER	50 F2D 472J
C21	4040000250	BARRIER	UAT 08X 473M
C22	4010000520	CERAMIC	DD108 B 472K 50V
C23	4010000520	CERAMIC	DD108 B 472K 50V
C24	4010000140	CERAMIC	DD104 SL 120J 50V
C25	4010000090	CERAMIC	DD104 SL 070D 50V
C26	4010000940	CERAMIC	DD107 CH 101J 50V
C27	4010000940	CERAMIC	DD107 CH 101J 50V
C28	4010000520	CERAMIC	DD108 B 472K 50V
C29	4040000150	BARRIER	UAT 05X 472K
C30	4010000520	CERAMIC	DD108 B 472K 50V
C31	4010000460	CERAMIC	DD104 B 471K 50V
C32	4510003820	ELECTROLYTIC	50 MV R22 SW
C33	4010000520	CERAMIC	DD108 B 472K 50V
C34	4010000520	CERAMIC	DD108 B 472K 50V
C35	4010000520	CERAMIC	DD108 B 472K 50V
C36	4010000520	CERAMIC	DD108 B 472K 50V
C37	4510003830	ELECTROLYTIC	50 MV R47 SW
C38	4310000570	MYLER	50 F2D 222J
C39	4510003790	ELECTROLYTIC	16 MV 10 SW
C40	4510003790	ELECTROLYTIC	16 MV 10 SW
C41	4510003790	ELECTROLYTIC	16 MV 10 SW
C42	4010000500	CERAMIC	DD104 B 102K 50V
C43	4040000310	BARRIER	UAT 04V 222K
C44	4010000340	CERAMIC	DD105 SL 121J 50V
C45	4510003820	ELECTROLYTIC	50 MV R22 SW
C46	4510004950	ELECTROLYTIC	50 MV R47 SWNP
C48	4510003840	ELECTROLYTIC	50 MV 1 SW
C49	4010000330	CERAMIC	DD105 SL 101J 50V
C50	4510003860	ELECTROLYTIC	50 MV 3R3 SW
C51	4510004910	ELECTROLYTIC	16 MV 10 SWNP
C52	4010000520	CERAMIC	DD108 B 472K 50V
C53	4010000520	CERAMIC	DD108 B 472K 50V
C58	4040000190	BARRIER	UAT 05X 103K
J1	6510007990	CONNECTOR	3022-10B
J2	6510008000	CONNECTOR	TSL-P03P-D2
J3	6510007010	CONNECTOR	001P-1100
W9	6910001020	JUMPER	IPS-1041-2
W10	6910001020	JUMPER	IPS-1041-2
W12	6910001020	JUMPER	IPS-1041-2
W13	6910001020	JUMPER	IPS-1041-2
W14	6910001020	JUMPER	IPS-1041-2
W15	6910001020	JUMPER	IPS-1041-2
W16	6910001020	JUMPER	IPS-1041-2
W17	7120000020	JUMPER	JPW 02H

[FM • AM UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
W19	6910001020	JUMPER	IPS-1041-2
EP1	0910036132	PCB	B 3608B (FM•AM)

[PLL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1130000670	IC	μPD4071BC
IC2	1130000970	IC	μPD4030BC
IC3	1130003870	IC	GD4001B
IC4	1130001270	IC	μPD4069UBC
IC5	1130003890	IC	GD4024B
IC6	1110000240	IC	BA222-V
IC7	1110001680	IC	S-8054ALB
IC8	1140002760	IC	HD63A01Y0RBF8P
IC9	1120000970	IC	M54562P
IC10	1110002020	IC	TA7805S
IC11	1130001360	IC	TC4021BP
IC12	1130003860	IC	MB4052M-G
IC13	1130002960	IC	TC9181P
IC14	1120001620	IC	M74ALS74AP
IC15	1120001620	IC	M74ALS74AP
IC16	1110001320	IC	μPC1037HA
IC17	1110001320	IC	μPC1037HA
IC19	1130000070	IC	TC4028BP
IC21	1120000970	IC	M54562P
IC22	1110000290	IC	BA618
IC31	1790000050	IC	ND487C1-3R
Q1	1530000110	TRANSISTOR	2SC2458-GR
Q2	1530000110	TRANSISTOR	2SC2458-GR
Q3	1530000110	TRANSISTOR	2SC2458-GR
Q4	1530000110	TRANSISTOR	2SC2458-GR
Q5	1530000110	TRANSISTOR	2SC2458-GR
Q6	1530000110	TRANSISTOR	2SC2458-GR
Q8	1530000110	TRANSISTOR	2SC2458-GR
Q9	1530000110	TRANSISTOR	2SC2458-GR
Q10	1530000110	TRANSISTOR	2SC2458-GR
Q11	1530000110	TRANSISTOR	2SC2458-GR
Q12	1530000940	TRANSISTOR	2SC1571G
Q13	1530000110	TRANSISTOR	2SC2458-GR
Q14	1530000110	TRANSISTOR	2SC2458-GR
Q15	1560000090	FET	2SK192A-GR
Q16	1530000110	TRANSISTOR	2SC2458-GR
Q17	1560000090	FET	2SK192A-GR
Q18	1530000110	TRANSISTOR	2SC2458-GR
Q19	1560000090	FET	2SK192A-GR
Q20	1530000110	TRANSISTOR	2SC2458-GR
Q21	1560000090	FET	2SK192A-GR
Q22	1530000110	TRANSISTOR	2SC2458-GR
Q23	1530000150	TRANSISTOR	2SC2668-O
Q24	1530000150	TRANSISTOR	2SC2668-O
Q25	1590000340	TRANSISTOR	RN1202
Q26	1530000150	TRANSISTOR	2SC2668-O
Q27	1530000150	TRANSISTOR	2SC2668-O
Q29	1560000090	FET	2SK192A-GR
Q30	1530000150	TRANSISTOR	2SC2668-O
Q31	1590000360	TRANSISTOR	RN2202
Q32	1530000100	TRANSISTOR	2SC2458-Y
Q33	1530000110	TRANSISTOR	2SC2458-GR
Q34	1530000150	TRANSISTOR	2SC2668-O
Q35	1590000340	TRANSISTOR	RN1202
Q36	1530000150	TRANSISTOR	2SC2668-O

[PLL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
Q37	1510000080	TRANSISTOR	2SA1048-GR
Q46	1530000150	TRANSISTOR	2SC2668-O
Q47	1530000110	TRANSISTOR	2SC2458-GR
Q48	1530000110	TRANSISTOR	2SC2458-GR
Q49	1510000080	TRANSISTOR	2SA1048-GR
Q61	1590000340	TRANSISTOR	RN1202
Q62	1530000150	TRANSISTOR	2SC2668-O
Q63	1520000230	TRANSISTOR	2SB909M Q
Q64	1590000340	TRANSISTOR	RN1202
Q65	1590000340	TRANSISTOR	RN1202
D1	1710000611	DIODE	1SS133 T77 (26M/M)
D3	1710000160	DIODE	1SS133
D4	1710000160	DIODE	1SS133
D5	1710000160	DIODE	1SS133
D6	1710000611	DIODE	1SS133 T77 (26M/M)
D7	1710000611	DIODE	1SS133 T77 (26M/M)
D8	1710000160	DIODE	1SS133
D9	1710000160	DIODE	1SS133
D10	1730000100	ZENER	RD5.1E B2
D11	1710000160	DIODE	1SS133
D12	1710000160	DIODE	1SS133
D13	1710000160	DIODE	1SS133
D14	1710000160	DIODE	1SS133
D15	1710000160	DIODE	1SS133
D16	1710000160	DIODE	1SS133
D17	1710000160	DIODE	1SS133
D19	1710000160	DIODE	1SS133
D20	1710000160	DIODE	1SS133
D21	1710000611	DIODE	1SS133 T77 (26M/M)
D22	1710000160	DIODE	1SS133
D23	1710000050	DIODE	1SS53
D24	1710000160	DIODE	1SS133
D25	1710000160	DIODE	1SS133
D26	1710000160	DIODE	1SS133
D27	1710000160	DIODE	1SS133
D28	1710000160	DIODE	1SS133
D29	1710000160	DIODE	1SS133
D30	1710000050	DIODE	1SS53
D31	1710000050	DIODE	1SS53
D32	1710000050	DIODE	1SS53
D33	1710000050	DIODE	1SS53
D34	1710000050	DIODE	1SS53
D35	1710000160	DIODE	1SS133
D36	1710000160	DIODE	1SS133
D37	1710000160	DIODE	1SS133
D38	1710000160	DIODE	1SS133
D39	1710000160	DIODE	1SS133
D40	1710000160	DIODE	1SS133
D41	1710000160	DIODE	1SS133
D42	1710000611	DIODE	1SS133 T77 (26M/M)
D43	1710000040	DIODE	1S953
D44	1710000050	DIODE	1SS53
D45	1710000160	DIODE	1SS133
D46	1710000611	DIODE	1SS133 T77 (26M/M)
D47	1710000050	DIODE	1SS53
D48	1720000230	VARICAP	1SV101
D49	1710000050	DIODE	1SS53
D50	1720000230	VARICAP	1SV101
D51	1710000050	DIODE	1SS53
D52	1720000230	VARICAP	1SV101
D53	1710000050	DIODE	1SS53
D54	1720000230	VARICAP	1SV101
D55	1710000050	DIODE	1SS53
D56	1720000120	VARICAP	FC52M
D58	1710000160	DIODE	1SS133
D60	1710000160	DIODE	1SS133
D61	1710000160	DIODE	1SS133
D62	1710000611	DIODE	1SS133 T77 (26M/M)
D64	1710000611	DIODE	1SS133 T77 (26M/M)
D65	1710000050	DIODE	1SS53
D82	1710000160	DIODE	1SS133
D83	1710000160	DIODE	1SS133
D84	1710000611	DIODE	1SS133 T77 (26M/M)

[PLL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
D85	1710000611	DIODE	1SS133 T77 (26M/M)
D101	1710000160	DIODE	1SS133
D102	1710000050	DIODE	1SS53
D103	1710000030	DIODE	1S1555
X1	6060000120	CERAMIC	CSA4.91MG
X2	6050001520	XTAL	CR-21
L1	6180000880	COIL	LAL 03NA 100K
L2	6140000580	COIL	LR-79
L3	6110002740	COIL	LA-472
L4	6170000230	COIL	LW-25
L5	6140000580	COIL	LR-79
L6	6110002740	COIL	LA-472
L7	6170000230	COIL	LW-25
L8	6140000580	COIL	LR-79
L9	6110002740	COIL	LA-472
L10	6170000230	COIL	LW-25
L11	6140000580	COIL	LR-79
L12	6110002740	COIL	LA-472
L13	6170000230	COIL	LW-25
L14	6180000900	COIL	LAL 03NA 101K
L15	6180000900	COIL	LAL 03NA 101K
L16	6180000740	COIL	LAL 03NA R56M
L17	6110001560	COIL	LA-236
L18	6110001560	COIL	LA-236
L19	6110001550	COIL	LA-235
L20	6180000900	COIL	LAL 03NA 101K
L22	6180000880	COIL	LAL 03NA 100K
L23	6180000720	COIL	LAL 03NA R39M
L24	6180000700	COIL	LAL 03NA R27M
L25	6180000690	COIL	LAL 03NA R22M
L26	6180000960	COIL	LAL 03NA 102K
L27	6180000900	COIL	LAL 03NA 101K
L28	6180000900	COIL	LAL 03NA 101K
L29	6180000900	COIL	LAL 03NA 101K
L30	6150003100	COIL	LS-316
L31	6180000850	COIL	LAL 03NA 4R7K
L32	6180000850	COIL	LAL 03NA 4R7K
L33	6910000670	COIL	BT01RN1-A61-001
L34	6170000180	COIL	LW-19
L35	6150000760	COIL	LS-94
L36	6180001510	COIL	LAL 02NA 101K
L37	6180000900	COIL	LAL 03NA 101K
L38	6150000990	COIL	LS-114
L39	6150000990	COIL	LS-114
L40	6910003570	COIL	2943-666663
L41	6110001640	COIL	LA-247
L42	6140000580	COIL	LR-79
L43	6180000900	COIL	LAL 03NA 101K
L44	6910000670	COIL	BT01RN1-A61-001
L45	6180000960	COIL	LAL 03NA 102K
L46	6910003570	COIL	2943-666663
L47	6180000900	COIL	LAL 03NA 101K
L48	6180000960	COIL	LAL 03NA 102K
L49	6110001560	COIL	LA-236
L51	6180000960	COIL	LAL 03NA 102K
L63	6180000900	COIL	LAL 03NA 101K
L64	6180000900	COIL	LAL 03NA 101K
L65	6180000900	COIL	LAL 03NA 101K
L66	6180000960	COIL	LAL 03NA 102K
L67	6180000900	COIL	LAL 03NA 101K
L68	6180000900	COIL	LAL 03NA 101K
L69	6180000900	COIL	LAL 03NA 101K
L70	6180000860	COIL	LAL 03NA 5R6K
L71	6180000900	COIL	LAL 03NA 101K
L101	6150001770	COIL	LS-198
L102	6150001770	COIL	LS-198
L103	6150001770	COIL	LS-198
L104	6110001630	COIL	LA-246
L105	6140002050	COIL	LR-224
L106	6140002050	COIL	LR-224
L107	6150003820	COIL	LS-440

[PLL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
L108	6150003820	COIL	LS-440
L109	6150003820	COIL	LS-440
L110	6150003820	COIL	LS-440
L111	6180000880	COIL	LAL 03NA 100K
L112	6180000960	COIL	LAL 03NA 102K
R1	7010003780	RESISTOR	ELR20J 1 MΩ
R2	7010003550	RESISTOR	ELR20J 15 kΩ
R3	7010004321	RESISTOR	R20 T-24J 10 kΩ
R4	7010003810	RESISTOR	ELR20J 2.2 MΩ
R5	7010003780	RESISTOR	ELR20J 1 MΩ
R6	7010003550	RESISTOR	ELR20J 15 kΩ
R7	7010001401	RESISTOR	R25X T-24J 100 kΩ
R8	7010003700	RESISTOR	ELR20J 220 kΩ
R9	7010003660	RESISTOR	ELR20J 100 kΩ
R10	7010003700	RESISTOR	ELR20J 220 kΩ
R11	7010003660	RESISTOR	ELR20J 100 kΩ
R12	7010003660	RESISTOR	ELR20J 100 kΩ
R13	7010003530	RESISTOR	ELR20J 10 kΩ
R14	7010003530	RESISTOR	ELR20J 10 kΩ
R15	7010003420	RESISTOR	ELR20J 1.5 kΩ
R16	7010003530	RESISTOR	ELR20J 10 kΩ
R17	7010003620	RESISTOR	ELR20J 47 kΩ
R18	7010004451	RESISTOR	R20 T-24J 100 kΩ
R19	7010003620	RESISTOR	ELR20J 47 kΩ
R20	7010003620	RESISTOR	ELR20J 47 kΩ
R21	7010004321	RESISTOR	R20 T-24J 10 kΩ
R22	7010003620	RESISTOR	ELR20J 47 kΩ
R29	7010001111	RESISTOR	R25X T-24J 470 Ω
R30	7010001111	RESISTOR	R25X T-24J 470 Ω
R31	7010001111	RESISTOR	R25X T-24J 470 Ω
R32	7010004191	RESISTOR	R20 T-24J 1 kΩ
R33	7010004191	RESISTOR	R20 T-24J 1 kΩ
R34	7010004191	RESISTOR	R20 T-24J 1 kΩ
R35	7010005230	RESISTOR	ELR20J 750 Ω
R36	7010003430	RESISTOR	ELR20J 1.8 kΩ
R37	7010003460	RESISTOR	ELR20J 3.3 kΩ
R38	7010003490	RESISTOR	ELR20J 5.6 kΩ
R39	7010005420	RESISTOR	ELR20J 9.1 kΩ
R40	7010004271	RESISTOR	R20 T-24J 4.7 kΩ
R49	7010004670	RESISTOR	R50XJ 22 Ω
R50	7010004321	RESISTOR	R20 T-24J 10 kΩ
R51	7010003240	RESISTOR	ELR20J 47 Ω
R52	7010003660	RESISTOR	ELR20J 100 kΩ
R53	7010003530	RESISTOR	ELR20J 10 kΩ
R54	7010004031	RESISTOR	R20 T-24J 47 Ω
R55	7010004271	RESISTOR	R20 T-24J 4.7 kΩ
R56	7010004231	RESISTOR	R20 T-24J 2.2 kΩ
R57	7010003620	RESISTOR	ELR20J 47 kΩ
R58	7010003620	RESISTOR	ELR20J 47 kΩ
R59	7010001361	RESISTOR	R25X T-24J 47 kΩ
R60	7010004451	RESISTOR	R20 T-24J 100 kΩ
R61	7010004411	RESISTOR	R20 T-24J 47 kΩ
R62	7010003620	RESISTOR	ELR20J 47 kΩ
R63	7010004411	RESISTOR	R20 T-24J 47 kΩ
R65	7010004411	RESISTOR	R20 T-24J 47 kΩ
R66	7410000180	ARRAY	RMX- 8 103K
R67	7010003530	RESISTOR	ELR20J 10 kΩ
R68	7010001361	RESISTOR	R25X T-24J 47 kΩ
R69	7010003640	RESISTOR	ELR20J 68 kΩ
R70	7310003250	TRIMMER	EVN-D2AA03 B33 (302)
R71	7010003550	RESISTOR	ELR20J 15 kΩ
R72	7010004071	RESISTOR	R20 T-24J 100 Ω
R73	7010004670	RESISTOR	R50XJ 22 Ω
R74	7010003400	RESISTOR	ELR20J 1 kΩ
R75	7010003700	RESISTOR	ELR20J 220 kΩ
R76	7010003440	RESISTOR	ELR20J 2.2 kΩ
R77	7010001190	RESISTOR	R25XJ 2.2 kΩ
R78	7010003660	RESISTOR	ELR20J 100 kΩ
R79	7010003660	RESISTOR	ELR20J 100 kΩ
R80	7010004101	RESISTOR	R20 T-24J 180 Ω
R81	7010003300	RESISTOR	ELR20J 150 Ω
R82	7010003660	RESISTOR	ELR20J 100 kΩ
R83	7010003660	RESISTOR	ELR20J 100 kΩ

[PLL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R85	7010003660	RESISTOR	ELR20J 100 kΩ
R86	7010004450	RESISTOR	R20J 100 kΩ
R88	7010003660	RESISTOR	ELR20J 100 kΩ
R89	7010003660	RESISTOR	ELR20J 100 kΩ
R91	7010004101	RESISTOR	R20 T-24J 180 Ω
R92	7010004251	RESISTOR	R20 T-24J 3.3 kΩ
R93	7010004091	RESISTOR	R20 T-24J 150 Ω
R94	7010004251	RESISTOR	R20 T-24J 3.3 kΩ
R95	7010003300	RESISTOR	ELR20J 150 Ω
R96	7010004251	RESISTOR	R20 T-24J 3.3 kΩ
R97	7010003300	RESISTOR	ELR20J 150 Ω
R98	7010003460	RESISTOR	ELR20J 3.3 kΩ
R99	7010003780	RESISTOR	ELR20J 1 MΩ
R100	7010004571	RESISTOR	R20 T-24J 1 MΩ
R101	7010003360	RESISTOR	ELR20J 470 Ω
R102	7010004321	RESISTOR	R20 T-24J 10 kΩ
R103	7010000991	RESISTOR	R25X T-24J 47 Ω
R104	7010003480	RESISTOR	ELR20J 4.7 kΩ
R105	7010004111	RESISTOR	R20 T-24J 220 Ω
R106	7010003340	RESISTOR	ELR20J 330 Ω
R107	7010003991	RESISTOR	R20 T-24J 22 Ω
R108	7010003400	RESISTOR	ELR20J 1 kΩ
R109	7010003490	RESISTOR	ELR20J 5.6 kΩ
R110	7010004031	RESISTOR	R20 T-24J 47 Ω
R111	7010003220	RESISTOR	ELR20J 33 Ω
R112	7010003320	RESISTOR	ELR20J 220 Ω
R113	7010003390	RESISTOR	ELR20J 820 Ω
R114	7010003921	RESISTOR	R20 T-24J 5.6 Ω
R115	7010003390	RESISTOR	ELR20J 820 Ω
R116	7010001151	RESISTOR	R25X T-24J 1 kΩ
R117	7010004191	RESISTOR	R20 T-24J 1 kΩ
R118	7010004191	RESISTOR	R20 T-24J 1 kΩ
R119	7010001071	RESISTOR	R25X T-24J 220 Ω
R121	7010003480	RESISTOR	ELR20J 4.7 kΩ
R123	7010003280	RESISTOR	ELR20J 100 Ω
R124	7010004151	RESISTOR	R20 T-24J 470 Ω
R125	7010003620	RESISTOR	ELR20J 47 kΩ
R126	7010003420	RESISTOR	ELR20J 1.5 kΩ
R127	7010000951	RESISTOR	R25X T-24J 22 Ω
R128	7010003360	RESISTOR	ELR20J 470 Ω
R129	7010004111	RESISTOR	R20 T-24J 220 Ω
R130	7010004191	RESISTOR	R20 T-24J 1 kΩ
R131	7010004191	RESISTOR	R20 T-24J 1 kΩ
R132	7010004191	RESISTOR	R20 T-24J 1 kΩ
R133	7010004271	RESISTOR	R20 T-24J 4.7 kΩ
R134	7010003160	RESISTOR	ELR20J 10 Ω
R136	7010003580	RESISTOR	ELR20J 22 kΩ
R137	7010003660	RESISTOR	ELR20J 100 kΩ
R138	7010003300	RESISTOR	ELR20J 150 Ω
R141	7010003460	RESISTOR	ELR20J 3.3 kΩ
R142	7010004131	RESISTOR	R20 T-24J 330 Ω
R143	7010003280	RESISTOR	ELR20J 100 Ω
R144	7010003280	RESISTOR	ELR20J 100 Ω
R145	7010003240	RESISTOR	ELR20J 47 Ω
R146	7010004071	RESISTOR	R20 T-24J 100 Ω
R147	7010003530	RESISTOR	ELR20J 10 kΩ
R149	7010004071	RESISTOR	R20 T-24J 100 Ω
R150	7010004191	RESISTOR	R20 T-24J 1 kΩ
R151	7010003640	RESISTOR	ELR20J 68 kΩ
R152	7010003440	RESISTOR	ELR20J 2.2 kΩ
R155	7010001151	RESISTOR	R25X T-24J 1 kΩ
R156	7010003480	RESISTOR	ELR20J 4.7 kΩ
R157	7010003550	RESISTOR	ELR20J 15 kΩ
R158	7010003360	RESISTOR	ELR20J 470 Ω
R159	7010003240	RESISTOR	ELR20J 47 Ω
R160	7010003320	RESISTOR	ELR20J 220 Ω
R161	7010003530	RESISTOR	ELR20J 10 kΩ
R162	7010003410	RESISTOR	ELR20J 1.2 kΩ
R163	7010003580	RESISTOR	ELR20J 22 kΩ
R164	7010004431	RESISTOR	R20 T-24J 68 kΩ
R165	7010003330	RESISTOR	ELR20J 270 Ω
R166	7010004071	RESISTOR	R20 T-24J 100 Ω
R167	7010004321	RESISTOR	R20 T-24J 10 kΩ
R168	7010004321	RESISTOR	R20 T-24J 10 kΩ
R169	7010003530	RESISTOR	ELR20J 10 kΩ

[PLL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R170	7010003530	RESISTOR	ELR20J 10 kΩ
R171	7010003620	RESISTOR	ELR20J 47 kΩ
R172	7010003620	RESISTOR	ELR20J 47 kΩ
R173	7010004151	RESISTOR	R20 T-24J 470 Ω
R174	7010004321	RESISTOR	R20 T-24J 10 kΩ
R175	7010004191	RESISTOR	R20 T-24J 1 kΩ
R176	7010003360	RESISTOR	ELR20J 470 Ω
R177	7010003360	RESISTOR	ELR20J 470 Ω
R178	7010003360	RESISTOR	ELR20J 470 Ω
R179	7010003400	RESISTOR	ELR20J 1 kΩ
R180	7010003460	RESISTOR	ELR20J 3.3 kΩ
R181	7010003760	RESISTOR	ELR20J 680 kΩ
R182	7010004321	RESISTOR	R20 T-24J 10 kΩ
R205	7010004111	RESISTOR	R20 T-24J 220 Ω
R206	7010003530	RESISTOR	ELR20J 10 kΩ
R207	7010003580	RESISTOR	ELR20J 22 kΩ
R208	7010003360	RESISTOR	ELR20J 470 Ω
R209	7010003280	RESISTOR	ELR20J 100 Ω
R210	7010004321	RESISTOR	R20 T-24J 10 kΩ
R211	7410000180	ARRAY	RMX- 8 103K
R213	7410000530	ARRAY	RMX- 7 103K
R214	7010004070	RESISTOR	R20J 100 Ω
R215	7010003660	RESISTOR	ELR20J 100 kΩ
R216	7010004321	RESISTOR	R20 T-24J 10 kΩ
R217	7010003530	RESISTOR	ELR20J 10 kΩ
R218	7010003530	RESISTOR	ELR20J 10 kΩ
R220	7010003400	RESISTOR	ELR20J 1 kΩ
R221	7010004411	RESISTOR	R20 T-24J 47 kΩ
R222	7010003530	RESISTOR	ELR20J 10 kΩ
R223	7510000260	THERMISTOR	ERT-D2ZGL 102S
R224	7010003470	RESISTOR	ELR20J 3.9 kΩ
R225	7010003320	RESISTOR	ELR20J 220 Ω
R226	7010004411	RESISTOR	R20 T-24J 47 kΩ
R304	7010003480	RESISTOR	ELR20J 4.7 kΩ
R305	7010003480	RESISTOR	ELR20J 4.7 kΩ
R306	7010003480	RESISTOR	ELR20J 4.7 kΩ
R307	7010003530	RESISTOR	ELR20J 10 kΩ
R308	7010003280	RESISTOR	ELR20J 100 Ω
R309	7010003580	RESISTOR	ELR20J 22 kΩ
R310	7010004071	RESISTOR	R20 T-24J 100 Ω
R311	7010003280	RESISTOR	ELR20J 100 Ω
R313	7010003400	RESISTOR	ELR20J 1 kΩ
R314	7010004341	RESISTOR	R20 T-24J 15 kΩ
R315	7010003580	RESISTOR	ELR20J 22 kΩ
R316	7010003330	RESISTOR	ELR20J 270 Ω
R317	7010003981	RESISTOR	R20 T-24J 18 Ω
R318	7010004121	RESISTOR	R20 T-24J 270 Ω
R319	7010003490	RESISTOR	ELR20J 5.6 kΩ
R320	7010004191	RESISTOR	R20 T-24J 1 kΩ
R321	7010003580	RESISTOR	ELR20J 22 kΩ
C1	4010000500	CERAMIC	DD104 B 102K 50V
C2	4010000500	CERAMIC	DD104 B 102K 50V
C3	4510003830	ELECTROLYTIC	50 MV R47 SW
C4	4040000260	BARRIER	UZE 08X 104M
C5	4010000500	CERAMIC	DD104 B 102K 50V
C6	4010000500	CERAMIC	DD104 B 102K 50V
C8	4010000500	CERAMIC	DD104 B 102K 50V
C9	4310000330	MYLER	50 F2D 102J
C10	4510003790	ELECTROLYTIC	16 MV 10 SW
C11	4550000340	TANTALUM	DN 1C 100M
C12	4550000340	TANTALUM	DN 1C 100M
C13	4550000400	TANTALUM	DN 1C 2R2M
C14	4040000260	BARRIER	UZE 08X 104M
C15	4010000810	CERAMIC	DD105 CH 300J 50V
C16	4010000810	CERAMIC	DD105 CH 300J 50V
C17	4550000400	TANTALUM	DN 1C 2R2M
C18	4510003910	ELECTROLYTIC	16 MV 47 HW
C19	4040000260	BARRIER	UZE 08X 104M
C20	4510004990	ELECTROLYTIC	16 MV 100 HC
C24	4040000250	BARRIER	UAT 08X 473M
C25	4010004840	CERAMIC	DD305 F 104Z 12V
C26	4010000520	CERAMIC	DD108 B 472K 50V
C27	4510004990	ELECTROLYTIC	16 MV 100 HC

[PLL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C28	4010000500	CERAMIC	DD104 B 102K 50V
C29	4510004950	ELECTROLYTIC	50 MV R47 SWNP
C31	4010003460	CERAMIC	DD104 UJ 330J 50V
C32	4040000250	BARRIER	UAT 08X 473M
C33	4010000940	CERAMIC	DD107 CH 101J 50V
C34	4010000770	CERAMIC	DD104 CH 200J 50V
C35	4610001130	TRIMMER	CVSSA1001
C36	4010000900	CERAMIC	DD107 CH 680J 50V
C38	4010000720	CERAMIC	DD104 CH 120J 50V
C39	4010000720	CERAMIC	DD104 CH 120J 50V
C40	4010000520	CERAMIC	DD108 B 472K 50V
C41	4010000520	CERAMIC	DD108 B 472K 50V
C42	4010000060	CERAMIC	DD104 SL 040C 50V
C43	4010000500	CERAMIC	DD104 B 102K 50V
C44	4010000900	CERAMIC	DD107 CH 680J 50V
C45	4010000740	CERAMIC	DD104 CH 150J 50V
C46	4610001130	TRIMMER	CVSSA1001
C47	4010000860	CERAMIC	DD106 CH 470J 50V
C49	4010000720	CERAMIC	DD104 CH 120J 50V
C50	4010000720	CERAMIC	DD104 CH 120J 50V
C51	4010000520	CERAMIC	DD108 B 472K 50V
C52	4010000520	CERAMIC	DD108 B 472K 50V
C53	4010000060	CERAMIC	DD104 SL 040C 50V
C54	4010000860	CERAMIC	DD106 CH 470J 50V
C55	4010000870	CERAMIC	DD106 CH 510J 50V
C56	4010000500	CERAMIC	DD104 B 102K 50V
C57	4010000870	CERAMIC	DD106 CH 510J 50V
C58	4010000700	CERAMIC	DD104 CH 100D 50V
C59	4610001000	TRIMMER	CVSSA0701
C60	4010000860	CERAMIC	DD106 CH 470J 50V
C62	4010000680	CERAMIC	DD104 CH 080D 50V
C63	4010000720	CERAMIC	DD104 CH 120J 50V
C64	4010000520	CERAMIC	DD108 B 472K 50V
C65	4010000520	CERAMIC	DD108 B 472K 50V
C66	4010000050	CERAMIC	DD104 SL 030C 50V
C67	4010000500	CERAMIC	DD104 B 102K 50V
C68	4010000860	CERAMIC	DD106 CH 470J 50V
C69	4010000630	CERAMIC	DD104 CJ 030C 50V
C70	4610001000	TRIMMER	CVSSA0701
C71	4010000820	CERAMIC	DD105 CH 330J 50V
C73	4010000660	CERAMIC	DD104 CH 060D 50V
C74	4010000720	CERAMIC	DD104 CH 120J 50V
C75	4010000520	CERAMIC	DD108 B 472K 50V
C76	4010004840	CERAMIC	DD305 F 104Z 12V
C77	4510004990	ELECTROLYTIC	16 MV 100 HC
C78	4010000520	CERAMIC	DD108 B 472K 50V
C79	4010000050	CERAMIC	DD104 SL 030C 50V
C80	4010000500	CERAMIC	DD104 B 102K 50V
C81	4010000260	CERAMIC	DD104 SL 470J 50V
C82	4040000150	BARRIER	UAT 05X 472K
C83	4010000460	CERAMIC	DD104 B 471K 50V
C84	4040000250	BARRIER	UAT 08X 473M
C85	4010000380	CERAMIC	DD107 SL 221J 50V
C86	4010000500	CERAMIC	DD104 B 102K 50V
C87	4010000240	CERAMIC	DD104 SL 390J 50V
C88	4010000150	CERAMIC	DD104 SL 150J 50V
C89	4010000240	CERAMIC	DD104 SL 390J 50V
C90	4010000160	CERAMIC	DD104 SL 180J 50V
C91	4010000200	CERAMIC	DD104 SL 270J 50V
C92	4010000230	CERAMIC	DD104 SL 360J 50V
C93	4010000180	CERAMIC	DD104 SL 220J 50V
C94	4010000120	CERAMIC	DD104 SL 100D 50V
C95	4040000150	BARRIER	UAT 05X 472K
C96	4010000520	CERAMIC	DD108 B 472K 50V
C97	4010000520	CERAMIC	DD108 B 472K 50V
C98	4010000520	CERAMIC	DD108 B 472K 50V
C99	4010000300	CERAMIC	DD104 SL 680J 50V
C100	4010000080	CERAMIC	DD104 SL 060D 50V
C101	4010000320	CERAMIC	DD104 SL 820J 50V
C102	4010000160	CERAMIC	DD104 SL 180J 50V
C103	4010000310	CERAMIC	DD104 SL 750J 50V
C104	4010000520	CERAMIC	DD108 B 472K 50V
C105	4010004840	CERAMIC	DD305 F 104Z 12V
C106	4010000520	CERAMIC	DD108 B 472K 50V
C107	4040000250	BARRIER	UAT 08X 473M

[PLL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C108	4010000520	CERAMIC	DD108 B 472K 50V
C109	4010000460	CERAMIC	DD104 B 471K 50V
C110	4010000020	CERAMIC	DD104 SL 010C 50V
C111	4010000410	CERAMIC	DD107 SL 331J 50V
C112	4040000190	BARRIER	UAT 05X 103K
C113	4010004840	CERAMIC	DD305 F 104Z 12V
C114	4550000400	TANTALUM	DN 1C 2R2M
C115	4010000520	CERAMIC	DD108 B 472K 50V
C116	4010000780	CERAMIC	DD104 CH 220J 50V
C117	4010000890	CERAMIC	DD106 CH 620J 50V
C118	4010000860	CERAMIC	DD106 CH 470J 50V
C119	4010000720	CERAMIC	DD104 CH 120J 50V
C120	4010000720	CERAMIC	DD104 CH 120J 50V
C121	4040000150	BARRIER	UAT 05X 472K
C122	4510003790	ELECTROLYTIC	16 MV 10 SW
C123	4010000500	CERAMIC	DD104 B 102K 50V
C124	4010000520	CERAMIC	DD108 B 472K 50V
C125	4010000520	CERAMIC	DD108 B 472K 50V
C126	4010000380	CERAMIC	DD107 SL 221J 50V
C127	4010004840	CERAMIC	DD305 F 104Z 12V
C128	4010004840	CERAMIC	DD305 F 104Z 12V
C129	4040000150	BARRIER	UAT 05X 472K
C130	4010000500	CERAMIC	DD104 B 102K 50V
C131	4040000260	BARRIER	UZE 08X 104M
C132	4510005240	ELECTROLYTIC	16 MV 22 SWB
C133	4010000270	CERAMIC	DD104 SL 510J 50V
C134	4610001120	TRIMMER	CVSSC2001
C135	4010003100	CERAMIC	DD106 TH 820J 50V
C136	4010000520	CERAMIC	DD108 B 472K 50V
C137	4010000520	CERAMIC	DD108 B 472K 50V
C138	4010003100	CERAMIC	DD106 TH 820J 50V
C139	4550000320	TANTALUM	DN 1V 0R1M
C140	4010000520	CERAMIC	DD108 B 472K 50V
C141	4010000500	CERAMIC	DD104 B 102K 50V
C142	4010000500	CERAMIC	DD104 B 102K 50V
C143	4010000500	CERAMIC	DD104 B 102K 50V
C144	4010000380	CERAMIC	DD107 SL 221J 50V
C145	4010004840	CERAMIC	DD305 F 104Z 12V
C146	4010000100	CERAMIC	DD104 SL 080D 50V
C147	4010000520	CERAMIC	DD108 B 472K 50V
C148	4010000010	CERAMIC	DD104 SL 0R5C 50V
C149	4010000100	CERAMIC	DD104 SL 080D 50V
C150	4010000520	CERAMIC	DD108 B 472K 50V
C151	4010004840	CERAMIC	DD305 F 104Z 12V
C152	4010004840	CERAMIC	DD305 F 104Z 12V
C153	4510004600	ELECTROLYTIC	16 MV 1000 HC
C154	4040000190	BARRIER	UAT 05X 103K
C155	4040000190	BARRIER	UAT 05X 103K
C156	4040000190	BARRIER	UAT 05X 103K
C157	4010000520	CERAMIC	DD108 B 472K 50V
C158	4010000520	CERAMIC	DD108 B 472K 50V
C159	4010000520	CERAMIC	DD108 B 472K 50V
C160	4020000180	CYLINDER	UP125 B 471K
C161	4040000190	BARRIER	UAT 05X 103K
C162	4010000210	CERAMIC	DD104 SL 300J 50V
C163	4010000180	CERAMIC	DD104 SL 220J 50V
C164	4010000210	CERAMIC	DD104 SL 300J 50V
C165	4020000260	CYLINDER	TP125 X 103M
C166	4040000250	BARRIER	UAT 08X 473M
C167	4040000250	BARRIER	UAT 08X 473M
C168	4040000250	BARRIER	UAT 08X 473M
C169	4010000010	CERAMIC	DD104 SL 0R5C 50V
C171	4040000150	BARRIER	UAT 05X 472K
C190	4510003850	ELECTROLYTIC	50 MV 2R2 SW
C196	4550000400	TANTALUM	DN 1C 2R2M
C197	4010000050	CERAMIC	DD104 SL 030C 50V
C199	4010000500	CERAMIC	DD104 B 102K 50V
C200	4010000520	CERAMIC	DD108 B 472K 50V
C201	4010000520	CERAMIC	DD108 B 472K 50V
C202	4530000270	ARRAY	B8XC0114-32N
C203	4010000520	CERAMIC	DD108 B 472K 50V
C204	4010000520	CERAMIC	DD108 B 472K 50V
C205	4610001130	TRIMMER	CVSSA1001
C206	4010000520	CERAMIC	DD108 B 472K 50V
C207	4010000520	CERAMIC	DD108 B 472K 50V

[PLL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C209	4010004840	CERAMIC	DD305 F 104Z 12V
C210	4010000520	CERAMIC	DD108 B 472K 50V
C211	4040000190	BARRIER	UAT 05X 103K
C302	4010000650	CERAMIC	DD104 CH 050C 50V
C303	4010000680	CERAMIC	DD104 CH 080D 50V
C304	4010000620	CERAMIC	DD104 CK 020C 50V
C305	4010000740	CERAMIC	DD104 CH 150J 50V
C306	4010000620	CERAMIC	DD104 CK 020C 50V
C307	4010000700	CERAMIC	DD104 CH 100D 50V
C308	4010000330	CERAMIC	DD105 SL 101J 50V
C309	4010000280	CERAMIC	DD104 SL 560J 50V
C310	4010000330	CERAMIC	DD105 SL 101J 50V
C311	4010000740	CERAMIC	DD104 CH 150J 50V
C312	4010000600	CERAMIC	DD104 CK 010C 50V
C313	4010000700	CERAMIC	DD104 CH 100D 50V
C314	4010000240	CERAMIC	DD104 SL 390J 50V
C315	4010000460	CERAMIC	DD104 B 471K 50V
C316	4010000720	CERAMIC	DD104 CH 120J 50V
C317	4040000150	BARRIER	UAT 05X 472K
C318	4010000600	CERAMIC	DD104 CK 010C 50V
C319	4010000700	CERAMIC	DD104 CH 100D 50V
C320	4010000520	CERAMIC	DD108 B 472K 50V
C321	4010000520	CERAMIC	DD108 B 472K 50V
C322	4010000520	CERAMIC	DD108 B 472K 50V
C323	4010000740	CERAMIC	DD104 CH 150J 50V
C324	4010000700	CERAMIC	DD104 CH 100D 50V
C325	4010000500	CERAMIC	DD104 B 102K 50V
S1	2230000700	SWITCH	SPPJ31309A [TUNER SELECTION SWITCH]
BT1	3020000020	LITHIUM	BR2032-1T2
RL1	6330000800	RELAY	G5A-237P DC12V
J1	6510003390	CONNECTOR	B03B-EH-S
J2	6510003430	CONNECTOR	B07B-EH-S
J3	6510003400	CONNECTOR	B04B-EH-S
J4	6510003450	CONNECTOR	B09B-EH-S
J5	6510003390	CONNECTOR	B03B-EH-S
J6	6510003400	CONNECTOR	B04B-EH-S
J7	6510003430	CONNECTOR	B07B-EH-S
J8	6450000140	CONNECTOR	HSJ0807-01-010 [CI-V]
J12	6510007900	CONNECTOR	TBP-P01X-A1
J13	6510007900	CONNECTOR	TBP-P01X-A1
J14	6510014270	CONNECTOR	51052-1200
J15	6510014280	CONNECTOR	51052-0900
W1	6910001030	JUMPER	IPS-1041-4
W3	6910001020	JUMPER	IPS-1041-2
W4	6910001030	JUMPER	IPS-1041-4
W5	6910001030	JUMPER	IPS-1041-4
W6	6910001030	JUMPER	IPS-1041-4
W7	6910001020	JUMPER	IPS-1041-2
W8	6910001020	JUMPER	IPS-1041-2
W9	6910001020	JUMPER	IPS-1041-2
W10	6910001020	JUMPER	IPS-1041-2
W11	6910001020	JUMPER	IPS-1041-2
W12	6910001030	JUMPER	IPS-1041-4
W13	6910001030	JUMPER	IPS-1041-4
W14	6910001020	JUMPER	IPS-1041-2
W16	6910001030	JUMPER	IPS-1041-4
W17	6910001020	JUMPER	IPS-1041-2
W18	6910001030	JUMPER	IPS-1041-4
W19	6910001030	JUMPER	IPS-1041-4
W20	6910001030	JUMPER	IPS-1041-4
W21	6910001030	JUMPER	IPS-1041-4
W22	6910001030	JUMPER	IPS-1041-4
W23	6910001020	JUMPER	IPS-1041-2
W24	6910001030	JUMPER	IPS-1041-4

[PLL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
W25	6910001030	JUMPER	IPS-1041-4
W26	6910001030	JUMPER	IPS-1041-4
W27	6910001020	JUMPER	IPS-1041-2
W28	6910001020	JUMPER	IPS-1041-2
W30	6910001030	JUMPER	IPS-1041-4
W31	6910001020	JUMPER	IPS-1041-2
W32	6910001030	JUMPER	IPS-1041-4
W33	6910001020	JUMPER	IPS-1041-2
W34	6910001020	JUMPER	IPS-1041-2
W35	6910001020	JUMPER	IPS-1041-2
W36	6910001030	JUMPER	IPS-1041-4
W37	6910001020	JUMPER	IPS-1041-2
W38	6910001030	JUMPER	IPS-1041-4
W39	6910001030	JUMPER	IPS-1041-4
W40	6910001020	JUMPER	IPS-1041-2
W41	6910001020	JUMPER	IPS-1041-2
W42	6910001030	JUMPER	IPS-1041-4
W43	6910001030	JUMPER	IPS-1041-4
W44	6910001020	JUMPER	IPS-1041-2
W45	6910001020	JUMPER	IPS-1041-2
W46	6910001030	JUMPER	IPS-1041-4
W47	6910001030	JUMPER	IPS-1041-4
W48	6910001030	JUMPER	IPS-1041-4
W49	6910001020	JUMPER	IPS-1041-2
W50	6910001020	JUMPER	IPS-1041-2
W51	6910001030	JUMPER	IPS-1041-4
W52	6910001020	JUMPER	IPS-1041-2
W53	6910001030	JUMPER	IPS-1041-4
W54	6910001030	JUMPER	IPS-1041-4
W56	6910001020	JUMPER	IPS-1041-2
W57	6910001030	JUMPER	IPS-1041-4
W58	6910001020	JUMPER	IPS-1041-2
W59	6910001020	JUMPER	IPS-1041-2
W60	6910001030	JUMPER	IPS-1041-4
W61	6910001030	JUMPER	IPS-1041-4
W62	6910001020	JUMPER	IPS-1041-2
W63	6910001020	JUMPER	IPS-1041-2
W64	6910001030	JUMPER	IPS-1041-4
W65	6910001020	JUMPER	IPS-1041-2
W66	6910001020	JUMPER	IPS-1041-2
W67	6910001030	JUMPER	IPS-1041-4
W68	6910001030	JUMPER	IPS-1041-4
W69	6910001030	JUMPER	IPS-1041-4
W70	6910001030	JUMPER	IPS-1041-4
W71	6910001030	JUMPER	IPS-1041-4
W72	6910001030	JUMPER	IPS-1041-4
W73	6910001030	JUMPER	IPS-1041-4
W74	6910001020	JUMPER	IPS-1041-2
W75	6910001030	JUMPER	IPS-1041-4
W76	6910001030	JUMPER	IPS-1041-4
W77	6910001030	JUMPER	IPS-1041-4
W78	6910001030	JUMPER	IPS-1041-4
W79	6910001030	JUMPER	IPS-1041-4
W80	6910001030	JUMPER	IPS-1041-4
W81	6910001030	JUMPER	IPS-1041-4
W82	6910001020	JUMPER	IPS-1041-2
W83	6910001030	JUMPER	IPS-1041-4
W84	6910001030	JUMPER	IPS-1041-4
W85	6910001030	JUMPER	IPS-1041-4
W86	6910001030	JUMPER	IPS-1041-4
W87	6910001020	JUMPER	IPS-1041-2
W88	6910001030	JUMPER	IPS-1041-4
W89	6910001020	JUMPER	IPS-1041-2
W90	6910001020	JUMPER	IPS-1041-2
W91	6910001030	JUMPER	IPS-1041-4
W92	6910001030	JUMPER	IPS-1041-4
W93	6910001020	JUMPER	IPS-1041-2
W94	6910001020	JUMPER	IPS-1041-2
W95	6910001020	JUMPER	IPS-1041-2
W96	6910001020	JUMPER	IPS-1041-2
W97	6910001020	JUMPER	IPS-1041-2
W98	6910001030	JUMPER	IPS-1041-4
W99	6910001030	JUMPER	IPS-1041-4
W100	6910001030	JUMPER	IPS-1041-4
W101	6910001020	JUMPER	IPS-1041-2

[PLL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
W102	6910001030	JUMPER	IPS-1041-4
W103	6910001030	JUMPER	IPS-1041-4
W104	6910001030	JUMPER	IPS-1041-4
W105	6910001030	JUMPER	IPS-1041-4
W106	6910001030	JUMPER	IPS-1041-4
W107	6910001030	JUMPER	IPS-1041-4
W108	6910001030	JUMPER	IPS-1041-4
W109	7120000010	JUMPER	JPW 02A
W110	7120000010	JUMPER	JPW 02A
W111	6910001020	JUMPER	IPS-1041-2
W112	6910001020	JUMPER	IPS-1041-2
W115	6910001020	JUMPER	IPS-1041-2
W116	6910001020	JUMPER	IPS-1041-2
W117	6910001020	JUMPER	IPS-1041-2
W118	6910001020	JUMPER	IPS-1041-2
W119	6910001020	JUMPER	IPS-1041-2
W120	6910001020	JUMPER	IPS-1041-2
W121	6910001020	JUMPER	IPS-1041-2
W122	6910001030	JUMPER	IPS-1041-4
W123	6910001020	JUMPER	IPS-1041-2
W124	6910001020	JUMPER	IPS-1041-2
W125	6910001020	JUMPER	IPS-1041-2
W126	6910001030	JUMPER	IPS-1041-4
W127	6910001030	JUMPER	IPS-1041-4
W128	6910001030	JUMPER	IPS-1041-4
W129	6910001020	JUMPER	IPS-1041-2
W130	6910001030	JUMPER	IPS-1041-4
W135	6910001030	JUMPER	IPS-1041-4
W143	6910001020	JUMPER	IPS-1041-2
W144	6910001030	JUMPER	IPS-1041-4
W145	6910001020	JUMPER	IPS-1041-2
W146	6910001030	JUMPER	IPS-1041-4
W147	6910001020	JUMPER	IPS-1041-2
W148	6910001030	JUMPER	IPS-1041-4
W149	6910001020	JUMPER	IPS-1041-2
W150	6910001030	JUMPER	IPS-1041-4
W151	6910001030	JUMPER	IPS-1041-4
W162	6910001020	JUMPER	IPS-1041-2
W163	6910001020	JUMPER	IPS-1041-2
W165	6910001030	JUMPER	IPS-1041-4
W167	6910001030	JUMPER	IPS-1041-4
W169	6910001030	JUMPER	IPS-1041-4
W172	6910001030	JUMPER	IPS-1041-4
W173	6910001020	JUMPER	IPS-1041-2
W175	6910001020	JUMPER	IPS-1041-2
W176	6910001020	JUMPER	IPS-1041-2
W177	6910001020	JUMPER	IPS-1041-2
W178	6910001020	JUMPER	IPS-1041-2
W184	6910001020	JUMPER	IPS-1041-2
W186	6910001020	JUMPER	IPS-1041-2
W188	6910001020	JUMPER	IPS-1041-2
W189	6910001030	JUMPER	IPS-1041-4
W190	7120000380	JUMPER	JPW 01 R-01
W191	6910001020	JUMPER	IPS-1041-2
W192	7120000380	JUMPER	JPW 01 R-01
W193	6910001030	JUMPER	IPS-1041-4
W194	6910001030	JUMPER	IPS-1041-4
W195	6910001020	JUMPER	IPS-1041-2
W196	6910001030	JUMPER	IPS-1041-4
W198	6910001030	JUMPER	IPS-1041-4
W199	6910001020	JUMPER	IPS-1041-2
W200	6910001020	JUMPER	IPS-1041-2
W201	6910001030	JUMPER	IPS-1041-4
W202	6910001020	JUMPER	IPS-1041-2
W204	6910001020	JUMPER	IPS-1041-2
W205	6910001020	JUMPER	IPS-1041-2
W206	6910001020	JUMPER	IPS-1041-2
W207	6910001020	JUMPER	IPS-1041-2
W208	6910001020	JUMPER	IPS-1041-2
W209	6910001020	JUMPER	IPS-1041-2
W210	6910001020	JUMPER	IPS-1041-2
W211	6910001030	JUMPER	IPS-1041-4
W212	6910001020	JUMPER	IPS-1041-2
W213	6910001030	JUMPER	IPS-1041-4
W215	6910001020	JUMPER	IPS-1041-2

[PLL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
W220	7120000380	JUMPER	JPW 01 R-01
W221	8900003290	CABLE	OPC-337
W222	8900003300	CABLE	OPC-338
W229	6910001020	JUMPER	IPS-1041-2
W230	6910001030	JUMPER	IPS-1041-4
W231	6910001030	JUMPER	IPS-1041-4
W232	6910001030	JUMPER	IPS-1041-4
W233	6910001030	JUMPER	IPS-1041-4
W234	6910001030	JUMPER	IPS-1041-4
W237	6910001020	JUMPER	IPS-1041-2
W238	6910001030	JUMPER	IPS-1041-4
W239	6910001030	JUMPER	IPS-1041-4
W240	6910001030	JUMPER	IPS-1041-4
W242	6910001020	JUMPER	IPS-1041-2
W243	7120000010	JUMPER	JPW 02A
W310	6910001020	JUMPER	IPS-1041-2
W311	6910001030	JUMPER	IPS-1041-4
W312	6910001030	JUMPER	IPS-1041-4
W313	6910001020	JUMPER	IPS-1041-2
EP1	6910000600	BEAD	FSOH050RN
EP2	0910035543	PCB	B 3571C (PLL)

[DDS BOARD]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1140000500	S. IC	SC1051
IC2	1130005570	S. IC	SC1052
IC3	1130005580	S. IC	SC1053
IC4	1130006580	S. IC	TC74HCT374AF (TP1)
IC5	1130006580	S. IC	TC74HCT374AF (TP1)
IC6	1130003830	S. IC	TC7S04F (TE85R)
X1	6050003230	XTAL	CR-180
L1	6200000040	S. COIL	LQN 5N 331K
L2	6200000040	S. COIL	LQN 5N 331K
L3	6200000040	S. COIL	LQN 5N 331K
R1	7030000740	S. RESISTOR	MCR10EZHJ 1 MΩ (105)
R2	7030000360	S. RESISTOR	MCR10EZHJ 680 Ω (681)
R3	7030000420	S. RESISTOR	MCR10EZHJ 2.2 kΩ (222)
R4	7410000320	ARRAY	GF 5096
R5	7030000500	S. RESISTOR	MCR10EZHJ 10 kΩ (103)
R6	7030000500	S. RESISTOR	MCR10EZHJ 10 kΩ (103)
R7	7030000500	S. RESISTOR	MCR10EZHJ 10 kΩ (103)
C1	4610000520	S. TRIMMER	TZB04N100BA006
C2	4030000950	S. CERAMIC	GRM40 CH 330J 50PT
C3	4030001150	S. CERAMIC	GRM40 F 104Z 25PT
C7	4030000720	S. CERAMIC	GRM40 SL 680J 50PT
C8	4030000560	S. CERAMIC	GRM40 SL 020C 50PT
C9	4030000750	S. CERAMIC	GRM40 SL 121J 50PT
C10	4030000610	S. CERAMIC	GRM40 SL 070D 50PT
C11	4030000750	S. CERAMIC	GRM40 SL 121J 50PT
C12	4030000640	S. CERAMIC	GRM40 SL 120J 50PT
C13	4030000720	S. CERAMIC	GRM40 SL 680J 50PT
C14	4030001150	S. CERAMIC	GRM40 F 104Z 25PT
C15	4030001150	S. CERAMIC	GRM40 F 104Z 25PT
C16	4030001150	S. CERAMIC	GRM40 F 104Z 25PT

[DDS BOARD]

REF. NO.	ORDER NO.	DESCRIPTION	
C17	4030001150	S. CERAMIC	GRM40 F 104Z 25PT
C18	4030002430	S. CERAMIC	GRM40 TH 220J 50PT
C19	4030001100	S. CERAMIC	GRM40 B 102K 50PT
C20	4030001100	S. CERAMIC	GRM40 B 102K 50PT
C21	4030001150	S. CERAMIC	GRM40 F 104Z 25PT
J1	6510004950	CONNECTOR	3022-06B
J2	6510004960	CONNECTOR	3022-02B
EP1	0910028230	PCB	B 2853 (DDS)

[PA PARTS]

REF. NO.	ORDER NO.	DESCRIPTION	
SP1	2510000040	SPEAKER	C065K12I0810
J1	6510004880	CONNECTOR	MR-DS-E 01 [HF ANT]
J2	6510004880	CONNECTOR	MR-DS-E 01 [50M ANT]

[PA UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
Q1	1530000790	TRANSISTOR	2SC1971
Q2	1530000190	TRANSISTOR	2SC3133
Q3	1530000190	TRANSISTOR	2SC3133
Q4	1540000200	TRANSISTOR	2SD1406 Y
Q5	1530000200	TRANSISTOR	2SC2904
Q6	1530000200	TRANSISTOR	2SC2904
Q7	1520000060	TRANSISTOR	2SB562C
Q8	1590000340	TRANSISTOR	RN1202
Q9	1590000340	TRANSISTOR	RN1202
Q10	1590000360	TRANSISTOR	RN2202
D1	1790000710	VARISTOR	MA29B
D2	1790000710	VARISTOR	MA29B
D3	1790000710	VARISTOR	MA29B
D4	1710000010	DIODE	15CD11
D5	1710000030	DIODE	1S1555
D6	1710000030	DIODE	1S1555
L1	6140001170	COIL	LR-142
L2	6910000670	COIL	BT01RN1-A61-001
L3	6910000670	COIL	BT01RN1-A61-001
L4	6140001300	COIL	LR-155
L5	6140000610	COIL	LR-83
L6	6140001310	COIL	LR-156
L7	6140002030	COIL	LR-230 (SK-10M-15Y 120)
L8	6180001230	COIL	LAL 04NA 8R2K
L9	6180001570	COIL	LAL 04NA 4R7K
L10	6910000670	COIL	BT01RN1-A61-001

S.=Surface mount

[PA UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
L11	6910000670	COIL	BT01RN1-A61-001
L12	6180000880	COIL	LAL 03NA 100K
L13	6910000670	COIL	BT01RN1-A61-001
L14	6910000670	COIL	BT01RN1-A61-001
L15	6910000670	COIL	BT01RN1-A61-001
L16	6910000670	COIL	BT01RN1-A61-001
L17	6180000900	COIL	LAL 03NA 101K
L18	6180000900	COIL	LAL 03NA 101K
L19	6110001670	COIL	LA-253
R1	7010000310	RESISTOR	ELR25J 330 Ω
R2	7010001050	RESISTOR	R25XJ 150 Ω
R3	7010000290	RESISTOR	ELR25J 220 Ω
R4	7010000330	RESISTOR	ELR25J 470 Ω
R5	7010004830	RESISTOR	R50XJ 4.7 Ω
R6	7010004110	RESISTOR	R20J 220 Ω
R7	7010004720	RESISTOR	R50XJ 100 Ω
R8	7310003750	TRIMMER	EVN-2ACA00 B52 (501)
R9	7010000990	RESISTOR	R25XJ 47 Ω
R10	7010000990	RESISTOR	R25XJ 47 Ω
R11	7010004730	RESISTOR	R50XJ 120 Ω
R12	7010004730	RESISTOR	R50XJ 120 Ω
R13	7010004650	RESISTOR	R50XJ 10 Ω
R14	7080000650	RESISTOR	RSS1P 3R3 Ω
R15	7080000650	RESISTOR	RSS1P 3R3 Ω
R16	7080000650	RESISTOR	RSS1P 3R3 Ω
R17	7080000650	RESISTOR	RSS1P 3R3 Ω
R18	7010005240	RESISTOR	R50XJ 820 Ω
R19	7310003240	TRIMMER	EVN-2ACA00 B23 (202)
R20	7010004650	RESISTOR	R50XJ 10 Ω
R21	7010004650	RESISTOR	R50XJ 10 Ω
R22	7080000650	RESISTOR	RSS1P 3R3 Ω
R23	7080000650	RESISTOR	RSS1P 3R3 Ω
R24	7070000520	RESISTOR	CRH300 R-02J 2.7 Ω (2R7)
R25	7010000370	RESISTOR	ELR25J 1 kΩ
R26	7100000510	RESISTOR	CP-5AJ 0.012 Ω
R27	7010000370	RESISTOR	ELR25J 1 kΩ
R28	7010001090	RESISTOR	R25XJ 330 Ω
R29	7010004150	RESISTOR	R20J 470 Ω
R30	7010004190	RESISTOR	R20J 1 kΩ
R31	7010003490	RESISTOR	ELR20J 5.6 kΩ
R32	7510000070	THERMISTOR	ERT-D2FHL 503S
R33	7010003610	RESISTOR	ELR20J 39 kΩ
R34	7010004020	RESISTOR	R20J 39 Ω
R35	7070000270	RESISTOR	CRH100X R-02J 100 Ω (101)
C1	4010000520	CERAMIC	DD108 B 472K 50V
C2	4010000510	CERAMIC	DD106 B 222K 50V
C3	4040000250	BARRIER	UAT 08X 473M
C4	4040000250	BARRIER	UAT 08X 473M
C5	4040000250	BARRIER	UAT 08X 473M
C6	4040000250	BARRIER	UAT 08X 473M
C7	4310000610	MYLER	50 F2D 472J
C8	4310000610	MYLER	50 F2D 472J
C9	4010000380	CERAMIC	DD107 SL 221J 50V
C10	4040000250	BARRIER	UAT 08X 473M
C11	4010000500	CERAMIC	DD104 B 102K 50V
C12	4030001370	S. CERAMIC	GR44 CH 682K
C13	4030001370	S. CERAMIC	GR44 CH 682K
C14	4040000250	BARRIER	UAT 08X 473M
C15	4040000250	BARRIER	UAT 08X 473M
C16	4510003880	ELECTROLYTIC	10 MV 47 HW
C17	4030001340	S. CERAMIC	GR44 CH 102K
C18	4010000420	CERAMIC	DD108 SL 391J 50V
C19	4010004070	CERAMIC	DD12 SL 221K 500V
C20	4320000220	DIP MICA	DM19C 681J5
C21	4030001340	S. CERAMIC	GR44 CH 102K
C22	4010004070	CERAMIC	DD12 SL 221K 500V
C23	4510003910	ELECTROLYTIC	16 MV 47 HW
C24	4010000520	CERAMIC	DD108 B 472K 50V
C25	4510004600	ELECTROLYTIC	16 MV 1000 HC
C26	4040000260	BARRIER	UZE 08X 104M

[PA UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C27	4010000380	CERAMIC	DD107 SL 221J 50V
C28	4040000250	BARRIER	UAT 08X 473M
C29	4510004600	ELECTROLYTIC	16 MV 1000 HC
C30	4040000250	BARRIER	UAT 08X 473M
C31	4040000260	BARRIER	UZE 08X 104M
C32	4010000380	CERAMIC	DD107 SL 221J 50V
C33	4010000520	CERAMIC	DD108 B 472K 50V
C34	4510003790	ELECTROLYTIC	16 MV 10 SW
C35	4010000520	CERAMIC	DD108 B 472K 50V
C36	4510005000	ELECTROLYTIC	16 MV 220 HC
C37	4040000250	BARRIER	UAT 08X 473M
C38	4010000520	CERAMIC	DD108 B 472K 50V
C39	4010000520	CERAMIC	DD108 B 472K 50V
C40	4030001340	S. CERAMIC	GR44 CH 102K
C41	4510003910	ELECTROLYTIC	16 MV 47 HW
C42	4010000520	CERAMIC	DD108 B 472K 50V
C43	4010000520	CERAMIC	DD108 B 472K 50V
C44	4010000520	CERAMIC	DD108 B 472K 50V
C45	4010003910	CERAMIC	DD06 SL 220K 500V
S1	6910000060	THERMAL	OHD-3 90M
F1	5210000130	FUSE	FGB 4A
F2	5220000020	HOLDER	S-N5051
F3	5220000020	HOLDER	S-N5051
J1	6510003780	CONNECTOR	LLR-06 [DC. 13.8V]
J2	6510003390	CONNECTOR	B03B-EH-S
J4	6510006790	CONNECTOR	TSL-P03P-V2
J5	6510006790	CONNECTOR	TSL-P03P-V2
J6	6510006790	CONNECTOR	TSL-P03P-V2
J7	6510006790	CONNECTOR	TSL-P03P-V2
J9	6510003080	CONNECTOR	RT01T-1.0B
J10	6510003080	CONNECTOR	RT01T-1.0B
J11	6510003390	CONNECTOR	B03B-EH-S
J15	6510003420	CONNECTOR	B03B-EH-S
W4	6910001030	JUMPER	IPS-1041-4
W5	6910001030	JUMPER	IPS-1041-4
W6	7120000020	JUMPER	JPW 02H
W7	6910001020	JUMPER	IPS-1041-2
W9	6910001020	JUMPER	IPS-1041-2
W10	6910001030	JUMPER	IPS-1041-4
EP1	6910000600	BEAD	FSOH050RN
EP2	6910000600	BEAD	FSOH050RN
EP3	6910000600	BEAD	FSOH050RN
EP4	6910000600	BEAD	FSOH050RN
EP5	6910000600	BEAD	FSOH050RN
EP6	6910000600	BEAD	FSOH050RN
EP13	0910035731	PCB	B 3370A (PA100W)
EP15	6910000600	BEAD	FSOH050RN
EP16	6910000600	BEAD	FSOH050RN
EP20	6910000630	BEAD	FSOH070RN
EP21	6910000630	BEAD	FSOH070RN

S.=Surface mount

[FILTER UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
D1	1790000070	DIODE	1SS237
D2	1790000070	DIODE	1SS237
D3	1710000030	DIODE	1S1555
D4	1710000030	DIODE	1S1555
D5	1710000030	DIODE	1S1555
D6	1710000030	DIODE	1S1555
D7	1710000030	DIODE	1S1555
D8	1710000030	DIODE	1S1555
D9	1710000030	DIODE	1S1555
D10	1790000070	DIODE	1SS237
L1	6140001990	COIL	LR-226
L2	6140002000	COIL	LR-227
L3	6140001780	COIL	LR-214
L4	6140001790	COIL	LR-215
L5	6140001800	COIL	LR-216
L6	6140001800	COIL	LR-216
L7	6140002010	COIL	LR-228
L8	6140001810	COIL	LR-217
L9	6140002010	COIL	LR-228
L10	6140002020	COIL	LR-229
L11	6110001490	COIL	LA-196
L12	6110001500	COIL	LA-197
L13	6180000900	COIL	LAL 03NA 101K
L14	6180000900	COIL	LAL 03NA 101K
L15	6180000900	COIL	LAL 03NA 101K
L16	6180000900	COIL	LAL 03NA 101K
L17	6180000900	COIL	LAL 03NA 101K
L18	6180000900	COIL	LAL 03NA 101K
L19	6180000900	COIL	LAL 03NA 101K
L20	6180000900	COIL	LAL 03NA 101K
L21	6180000880	COIL	LAL 03NA 100K
L22	6180000880	COIL	LAL 03NA 100K
L23	6180000880	COIL	LAL 03NA 100K
L24	6180000880	COIL	LAL 03NA 100K
L25	6180000900	COIL	LAL 03NA 101K
L26	6140001460	COIL	LR-170
L27	6140001340	COIL	LR-163
L28	6140001820	COIL	LR-218
R1	7010004020	RESISTOR	R20J 39 Ω
R2	7010004320	RESISTOR	R20J 10 kΩ
R3	7010003530	RESISTOR	ELR20J 10 kΩ
R4	7010003620	RESISTOR	ELR20J 47 kΩ
R6	7010003530	RESISTOR	ELR20J 10 kΩ
R7	7010003660	RESISTOR	ELR20J 100 kΩ
R8	7540000010	ABSORBER	DSA-301LA
R9	7010004390	RESISTOR	R20J 33 kΩ
C1	4320000290	DIP MICA	DM20C 152J5
C2	4010004040	CERAMIC	DD10 SL 151K 500V
C3	4010004100	CERAMIC	DD14 SL 331K 500V
C5	4010004030	CERAMIC	DD10 SL 121K 500V
C6	4320000290	DIP MICA	DM20C 152J5
C7	4010004070	CERAMIC	DD12 SL 221K 500V
C8	4010004050	CERAMIC	DD12 SL 181K 500V
C9	4010004040	CERAMIC	DD10 SL 151K 500V
C10	4010004070	CERAMIC	DD12 SL 221K 500V
C12	4010003990	CERAMIC	DD09 SL 680K 500V
C13	4010004070	CERAMIC	DD12 SL 221K 500V
C14	4010004070	CERAMIC	DD12 SL 221K 500V
C15	4010004070	CERAMIC	DD12 SL 221K 500V
C16	4010004070	CERAMIC	DD12 SL 221K 500V
C17	4010004050	CERAMIC	DD12 SL 181K 500V
C18	4010004010	CERAMIC	DD09 SL 101K 500V
C19	4010004070	CERAMIC	DD12 SL 221K 500V
C20	4010004070	CERAMIC	DD12 SL 221K 500V
C21	4010004070	CERAMIC	DD12 SL 221K 500V
C22	4010003950	CERAMIC	DD06 SL 330K 500V
C23	4010004070	CERAMIC	DD12 SL 221K 500V
C24	4010004050	CERAMIC	DD12 SL 181K 500V
C25	4010004010	CERAMIC	DD09 SL 101K 500V

[FILTER UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C28	4010004020	CERAMIC	DD09 SL 111K 500V
C29	4010004030	CERAMIC	DD10 SL 121K 500V
C30	4010004020	CERAMIC	DD09 SL 111K 500V
C31	4010004050	CERAMIC	DD12 SL 181K 500V
C32	4010004000	CERAMIC	DD09 SL 820K 500V
C33	4010003850	CERAMIC	DD06 SL 080D 500V
C34	4010004070	CERAMIC	DD12 SL 221K 500V
C35	4010003950	CERAMIC	DD06 SL 330K 500V
C36	4010004010	CERAMIC	DD09 SL 101K 500V
C37	4010003990	CERAMIC	DD09 SL 680K 500V
C38	4010003960	CERAMIC	DD06 SL 390K 500V
C39	4010004040	CERAMIC	DD10 SL 151K 500V
C40	4010003870	CERAMIC	DD06 SL 120K 500V
C41	4010003990	CERAMIC	DD09 SL 680K 500V
C42	4040000250	BARRIER	UAT 08X 473M
C43	4040000250	BARRIER	UAT 08X 473M
C44	4040000250	BARRIER	UAT 08X 473M
C45	4040000250	BARRIER	UAT 08X 473M
C46	4040000250	BARRIER	UAT 08X 473M
C47	4040000250	BARRIER	UAT 08X 473M
C48	4010000520	CERAMIC	DD108 B 472K 50V
C49	4010000520	CERAMIC	DD108 B 472K 50V
C50	4010000520	CERAMIC	DD108 B 472K 50V
C51	4010000520	CERAMIC	DD108 B 472K 50V
C52	4010000520	CERAMIC	DD108 B 472K 50V
C53	4010000520	CERAMIC	DD108 B 472K 50V
C54	4610001120	TRIMMER	CVSSC2001
C55	4010000410	CERAMIC	DD107 SL 331J 50V
C56	4010000410	CERAMIC	DD107 SL 331J 50V
C57	4010000430	CERAMIC	DD109 SL 471J 50V
C58	4010000430	CERAMIC	DD109 SL 471J 50V
C59	4040000250	BARRIER	UAT 08X 473M
C60	4010000330	CERAMIC	DD105 SL 101J 50V
C61	4010000120	CERAMIC	DD104 SL 100D 50V
C62	4010000330	CERAMIC	DD105 SL 101J 50V
C63	4010003960	CERAMIC	DD06 SL 390K 500V
C64	4010004030	CERAMIC	DD10 SL 121K 500V
C65	4010004050	CERAMIC	DD12 SL 181K 500V
C66	4010004090	CERAMIC	DD14 SL 301K 500V
C67	4010004090	CERAMIC	DD14 SL 301K 500V
C68	4010004090	CERAMIC	DD14 SL 301K 500V
C69	4010004090	CERAMIC	DD14 SL 301K 500V
C72	4010004070	CERAMIC	DD12 SL 221K 500V
C73	4010005290	CERAMIC	DD12 SL 621K 500V
C74	4010005290	CERAMIC	DD12 SL 621K 500V
C75	4010005290	CERAMIC	DD12 SL 621K 500V
C76	4010005290	CERAMIC	DD12 SL 621K 500V
RL1	6330000180	RELAY	MZ-12HG
RL2	6330000180	RELAY	MZ-12HG
RL3	6330000180	RELAY	MZ-12HG
RL4	6330000180	RELAY	MZ-12HG
RL5	6330000180	RELAY	MZ-12HG
RL6	6330000180	RELAY	MZ-12HG
RL7	6330000180	RELAY	MZ-12HG
RL8	6330000180	RELAY	MZ-12HG
RL9	6330000180	RELAY	MZ-12HG
RL10	6330000180	RELAY	MZ-12HG
RL11	6330000180	RELAY	MZ-12HG
RL12	6330000180	RELAY	MZ-12HG
RL13	6330000720	RELAY	DS1-M-DC12V (AG2013)
J2	6510007020	CONNECTOR	TMP-J01X-V6
J4	6510003390	CONNECTOR	B03B-EH-S
W5	7120000010	JUMPER	JPW 02A
W6	7120000020	JUMPER	JPW 02H
W7	7120000010	JUMPER	JPW 02A
W10	6910001030	JUMPER	IPS-1041-4
W18	6910001020	JUMPER	IPS-1041-2

[FILTER UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
EP1	0910028622	PCB	B 2918B (FILTER)
EP2	6910000630	BEAD	FSOH070RN

[PB UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1150000570	IC	SC1069
Q1	1530000640	TRANSISTOR	2SC2407 (A)
Q2	1510000370	TRANSISTOR	2SA1359-Y
Q3	1530000110	TRANSISTOR	2SC2458-GR
Q4	1590000360	TRANSISTOR	RN2202
D1	1710000050	DIODE	1SS53
D2	1790000070	DIODE	1SS237
D3	1790000070	DIODE	1SS237
D4	1710000300	DIODE	MI402
D5	1710000060	DIODE	1SS55
D6	1710000060	DIODE	1SS55
D7	1710000060	DIODE	1SS55
D8	1710000050	DIODE	1SS53
D9	1710000030	DIODE	1S1555
D10	1710000050	DIODE	1SS53
D11	1730000160	ZENER	RD7.5E B2
L1	6180000710	COIL	LAL 03NA R33M
L2	6110001630	COIL	LA-246
L3	6110001650	COIL	LA-248
L4	6140002040	COIL	LR-231
L5	6170000180	COIL	LW-19
L6	6170000180	COIL	LW-19
L7	6110001640	COIL	LA-247
L8	6110001640	COIL	LA-247
L9	6170000180	COIL	LW-19
L10	6110001640	COIL	LA-247
L12	6180000880	COIL	LAL 03NA 100K
L14	6180000880	COIL	LAL 03NA 100K
R1	7010004240	RESISTOR	R20J 2.7 kΩ
R2	7010003240	RESISTOR	ELR20J 47 Ω
R3	7010003160	RESISTOR	ELR20J 10 Ω
R5	7010003330	RESISTOR	ELR20J 270 Ω
R6	7010000960	RESISTOR	R25XJ 27 Ω
R7	7010004210	RESISTOR	R20J 1.5 kΩ
R8	7010004110	RESISTOR	R20J 220 Ω
R9	7010004270	RESISTOR	R20J 4.7 kΩ
R11	7010004270	RESISTOR	R20J 4.7 kΩ
R13	7010004120	RESISTOR	R20J 270 Ω
R14	7540000010	ABSORBER	DSA-301LA
R15	7010003120	RESISTOR	ELR20J 4.7 Ω
R18	7010003480	RESISTOR	ELR20J 4.7 kΩ
R19	7010003610	RESISTOR	ELR20J 39 kΩ
C1	4040000190	BARRIER	UAT 05X 103K
C3	4040000190	BARRIER	UAT 05X 103K
C4	4010000520	CERAMIC	DD108 B 472K 50V
C5	4040000190	BARRIER	UAT 05X 103K
C6	4010000520	CERAMIC	DD108 B 472K 50V
C7	4040000190	BARRIER	UAT 05X 103K
C8	4010000520	CERAMIC	DD108 B 472K 50V

[PB UNIT]

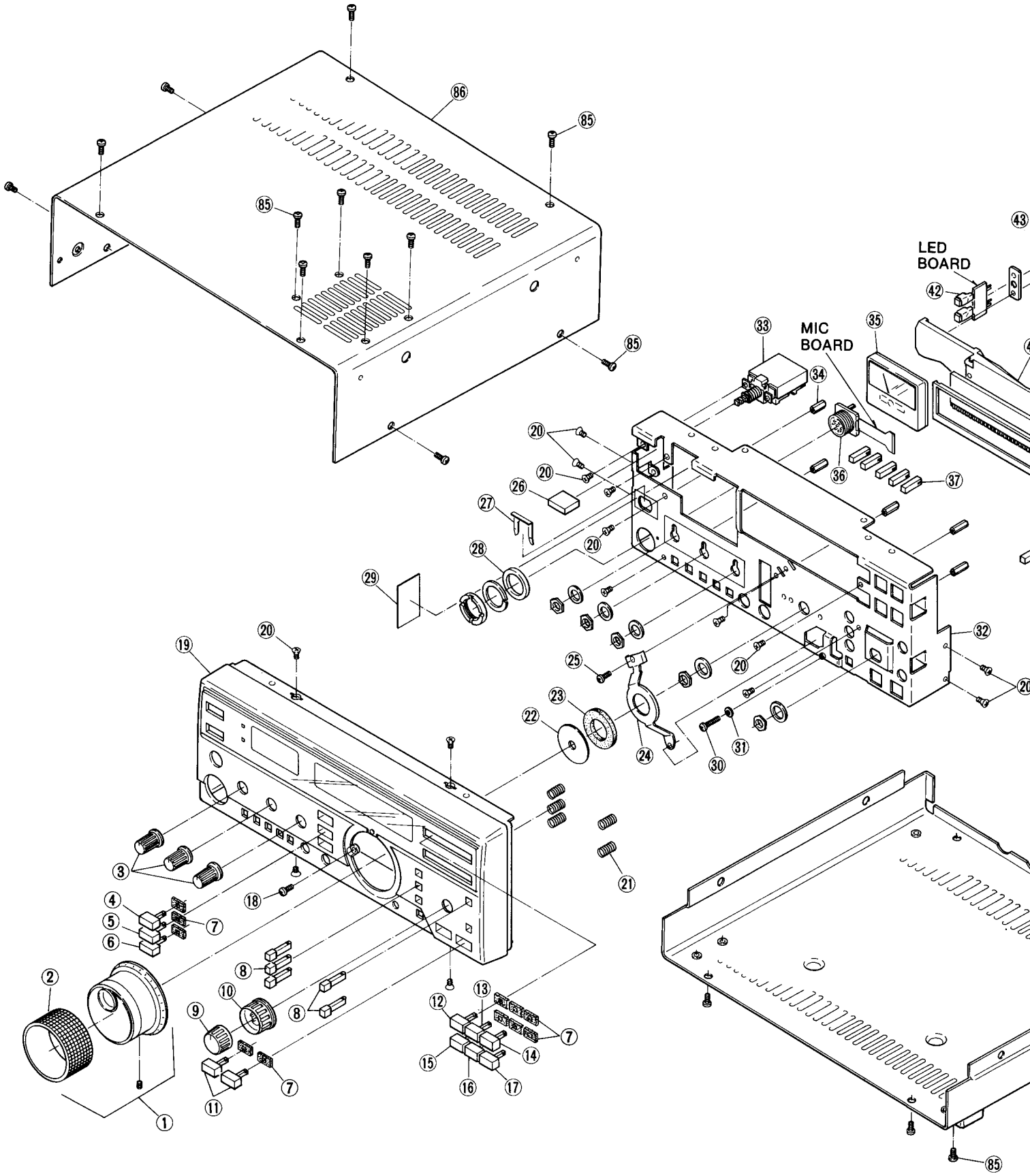
REF. NO.	ORDER NO.	DESCRIPTION	
C9	4010000190	CERAMIC	DD104 SL 240J 50V
C10	4010000340	CERAMIC	DD105 SL 121J 50V
C11	4010000340	CERAMIC	DD105 SL 121J 50V
C13	4040000190	BARRIER	UAT 05X 103K
C14	4010000520	CERAMIC	DD108 B 472K 50V
C15	4550000260	TANTALUM	DN 1V 100M
C16	4040000250	BARRIER	UAT 08X 473M
C17	4040000190	BARRIER	UAT 05X 103K
C18	4550000260	TANTALUM	DN 1V 100M
C20	4010000520	CERAMIC	DD108 B 472K 50V
C21	4510004320	ELECTROLYTIC	25 MV 47 SW
C22	4010000520	CERAMIC	DD108 B 472K 50V
C23	4610001120	TRIMMER	CVSSC2001
C24	4010000940	CERAMIC	DD107 CH 101J 50V
C25	4010000350	CERAMIC	DD106 SL 151J 50V
C26	4010000380	CERAMIC	DD107 SL 221J 50V
C27	4010000380	CERAMIC	DD107 SL 221J 50V
C28	4040000250	BARRIER	UAT 08X 473M
C29	4010003960	CERAMIC	DD06 SL 390K 500V
C30	4010003900	CERAMIC	DD06 SL 200K 500V
C31	4010004000	CERAMIC	DD09 SL 820K 500V
C32	4010003870	CERAMIC	DD06 SL 120K 500V
C33	4010003970	CERAMIC	DD07 SL 470K 500V
C34	4010000520	CERAMIC	DD108 B 472K 50V
C35	4010003970	CERAMIC	DD07 SL 470K 500V
C36	4010003800	CERAMIC	DD06 SL 030C 500V
C37	4010003970	CERAMIC	DD07 SL 470K 500V
C44	4040000150	BARRIER	UAT 05X 472K
C45	4020000250	CYLINDER	UP125 X 472M
C46	4040000250	BARRIER	UAT 08X 473M
C47	4040000190	BARRIER	UAT 05X 103K
C48	4040000250	BARRIER	UAT 08X 473M
C49	4010003930	CERAMIC	DD06 SL 270K 500V
RL1	6330000720	RELAY	DS1-M-DC12V (AG2013)
J1	6510007020	CONNECTOR	TMP-J01X-V6
J2	6510003080	CONNECTOR	RT01T-1.0B
J3	6510003080	CONNECTOR	RT01T-1.0B
J4	6510003080	CONNECTOR	RT01T-1.0B
J5	6510003080	CONNECTOR	RT01T-1.0B
J6	6510003080	CONNECTOR	RT01T-1.0B
J7	6510003080	CONNECTOR	RT01T-1.0B
J8	6510003080	CONNECTOR	RT01T-1.0B
J12	6510009860	CONNECTOR	2461-02B
J13	6510006790	CONNECTOR	TSL-P03P-V2
W6	6910001020	JUMPER	IPS-1041-2
W7	6910001030	JUMPER	IPS-1041-4
W13	6910001020	JUMPER	IPS-1041-2
W14	6910001030	JUMPER	IPS-1041-4
W15	6910001020	JUMPER	IPS-1041-2
W16	6910001020	JUMPER	IPS-1041-2
W17	6910001020	JUMPER	IPS-1041-2
W18	6910001020	JUMPER	IPS-1041-2
W19	6910001020	JUMPER	IPS-1041-2
W20	6910001020	JUMPER	IPS-1041-2
EP1	6910000970	BEAD	DL 2OP 2.6-3-1.2H
EP2	6910000970	BEAD	DL 2OP 2.6-3-1.2H
EP3	6910000970	BEAD	DL 2OP 2.6-3-1.2H
EP4	0910022883	PCB	B 2206C (PB)
EP6	6910000630	BEAD	FSOH070RN
EP7	6910000630	BEAD	FSOH070RN

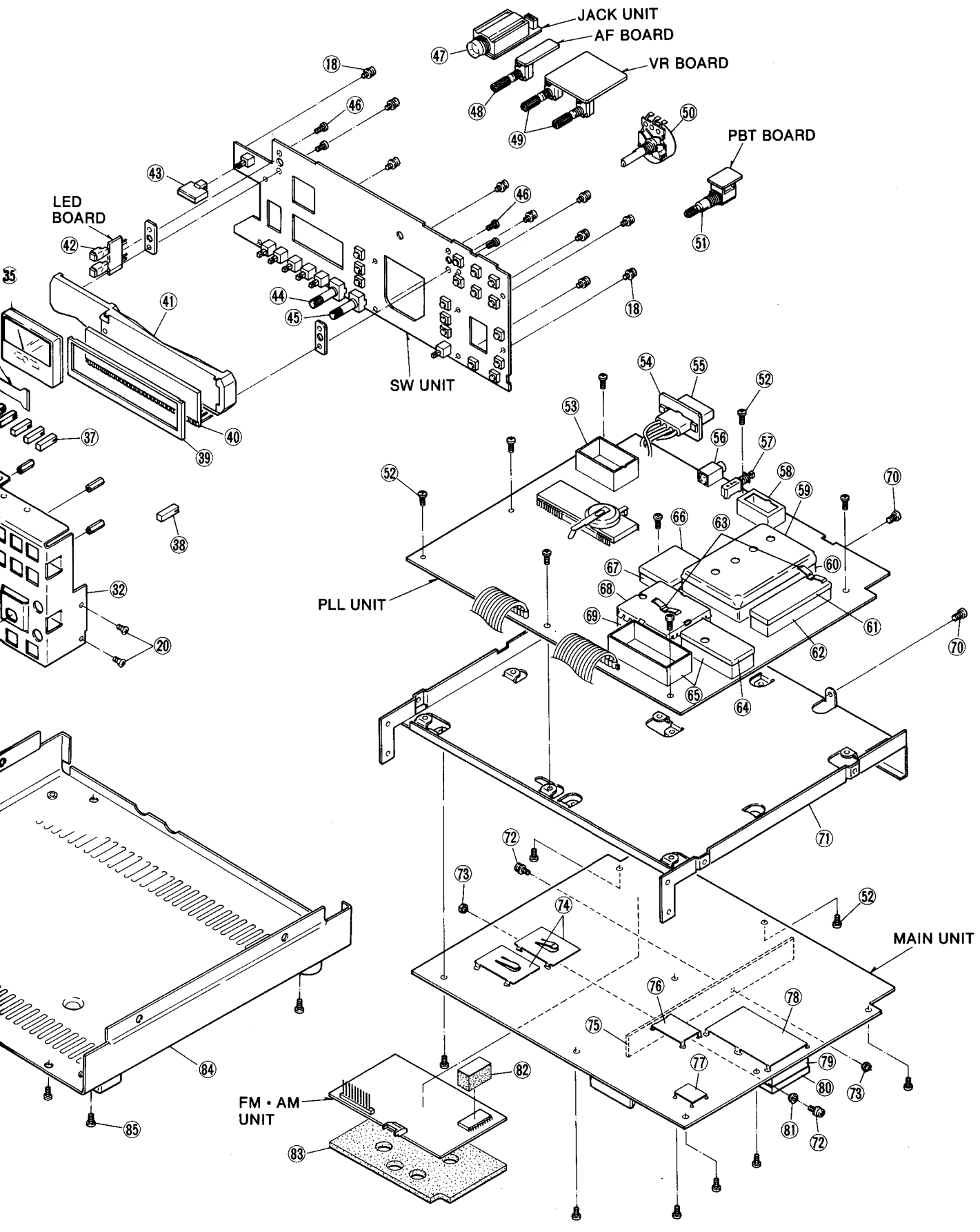
SECTION 6 MECHANICAL PARTS AND DISASSEMBLY

6-1 CHASSIS PARTS

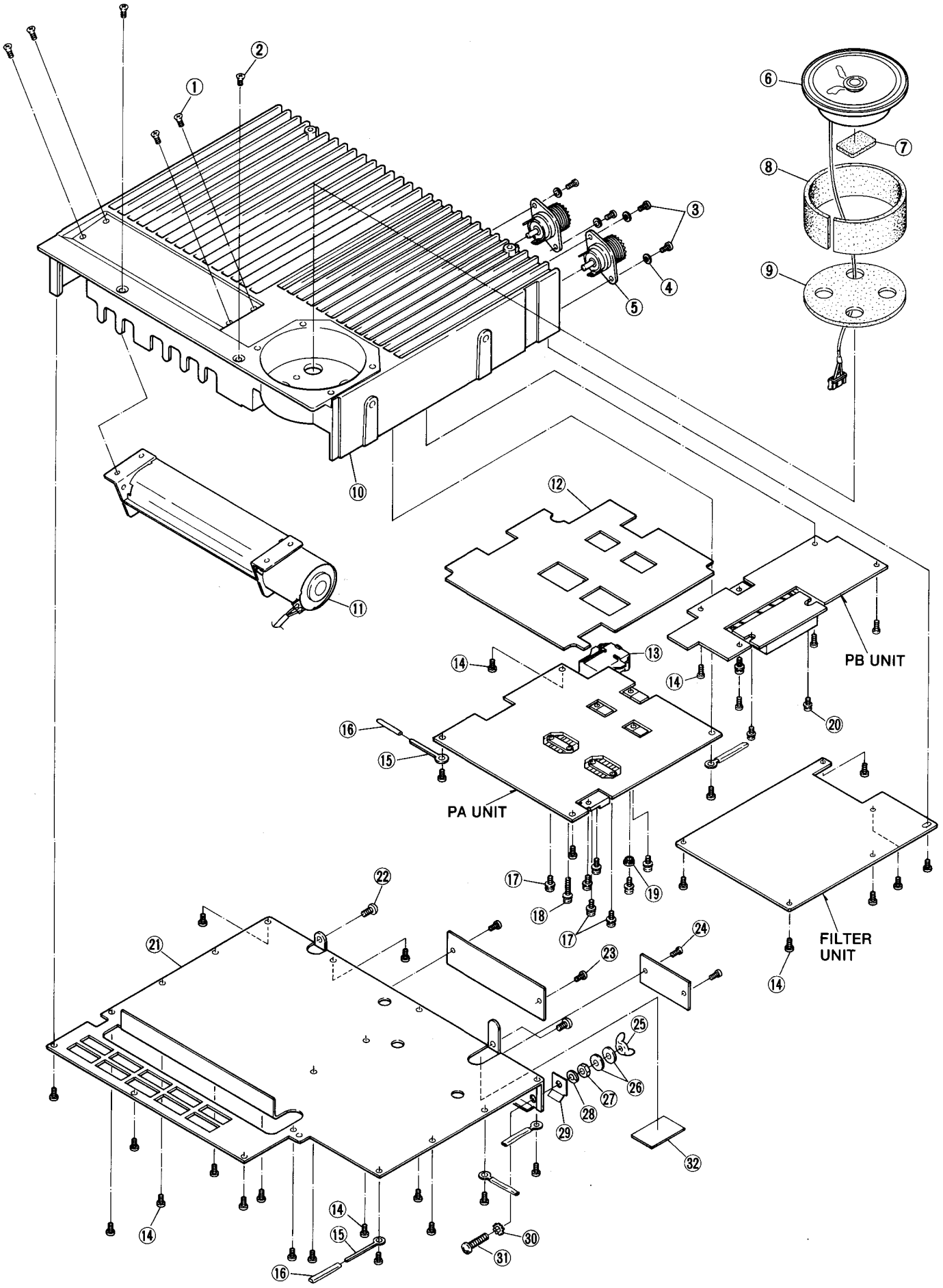
LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.
①	8610004760	Knob N104 (A) [MAIN DIAL] (incl. rubber ring and screw)	1
②	8010006510	N104 rubber ring	1
③	8610004150	Knob N120 [AF GAIN, SQUELCH, MIC GAIN]	3
④	8610007860	Button K119 (O) [SSB]	1
⑤	8610007870	Button K119 (P) [CW/N]	1
⑥	8610007880	Button K119 (Q) [AM/FM]	1
⑦	8930014000	610 mode sponge	11
⑧	8610007750	Button K185 [kHz, MHz, BAND, etc.]	5
⑨	8610007400	Knob N171 [RIT]	1
⑩	8610000530	Knob N72 [PBT]	1
⑪	8610007890	Button K119 (H) [MEMO UP/DOWN]	2
⑫	8610007800	Button K119 (I) [VFO]	1
⑬	8610007810	Button K119 (J) [A=B]	1
⑭	8610007820	Button K119 (K) [SPLIT]	1
⑮	8610007830	Button K119 (L) [MEMO]	1
⑯	8610007840	Button K119 (M) [MW]	1
⑰	8610007850	Button K119 (N) [FUNC]	1
⑱	8810003160	Setscrew A M3×6	11
⑲	8210007391	1113 front panel (D)-1	1
⑳	8810002160	Screw FH M3×5	15
㉑	8930017960	Spring	5
㉒	8930013940	610 brake sheet	1
㉓	8930014030	610 brake pad	1
㉔	8930013990	610 brake plate	1
㉕	8810000220	Screw PH M3×5	1
㉖	8610001560	Button K42 [POWER]	1
㉗	6450001230	Stopper HLJ0999-01-480	1
㉘	8930003200	Spacer (P)	1
㉙	8930014110	Insulate sheet (B)	1
㉚	8810006150	Screw PH M2.6×12 ZK	1
㉛	8850001040	Insulate flat washer (I)	1
㉜	8010012160	Sub chassis	1
㉝	2260001580	Switch JPZ2120-0101 (TV-3) [POWER]	1
㉞	8930000720	Stand-off (V)	5
㉟	5510000380	Meter KL-218U-46 (ME-31) [S/RF METER]	1
㊱	6510000190	Connector FM214-8SS (P) [MICROPHONE] (incl. nut, washer)	1
㊲	8610002540	Button K66 (A) [NB, ATT, PREAMP, etc.]	5
㊳	8610007910	Button K66 (B) [LOCK]	1
㊴	8930023730	LCD rubber	1
㊵	5030000380	LCD HLC9599-01-3210 [FUNCTION DISPLAY]	1
㊶	8010005530	504 reflector	1
㊷	9056000040	Tube D=8.0 L=10mm	2
㊸	8610003850	Button K98 [TRANSMIT]	1
㊹	7210002240	Variable resistor EVU-FLAEC2 C13 [LEVEL]	1
㊺	7210002230	Variable resistor EVU-FLAEC2 B14 [RF POWER]	1
㊻	8810001320	Screw PH B1 M2.6×6 NI	4
㊼	6450001250	Connector HLJ4306-01-3070 [PHONES]	1
㊽	7210001820	Variable resistor RV-169 (RK0971110) 10KA [AF GAIN] (incl. nut, washer)	1
㊾	7210001780	Variable resistor RV-166 (RK097111) 10KB [SQUELCH, MIC GAIN] (incl. nut, washer)	2
㊿	7600000100	Rotary encoder EC24B50B0013A [MAIN DIAL] (incl. nut, washer)	1
(51)	7210002180	Variable resistor RV-273 (RK1242210) 10KB [RIT/PBT] (incl. nut washer)	1
(52)	8810001350	Screw PH B1 M3×6	16
(53)	8510002200	VCO case	1
(54)	8310014710	610 connector plate	1
(55)	6510001920	Connector 1490R [TUNER]	1
(56)	6450000140	Connector HSJ0807-01-010 [CI-V]	1
(57)	2230000700	Switch SPPJ31309A [TUNER SELECTION]	1
(58)	8510000881	194 VCO case-1	1
(59)	8510001340	79 shield case cover	1
(60)	8510001330	79 shield case	1
(61)	8510001740	Shield case cover	1
(62)	8510001060	Shield case	1
(63)	8930014140	Ground spring (D)	2
(64)	8510000241	220 shield case cover-1	1
(65)	8510000230	220 shield case	2
(66)	8510004360	PA shield case (B) cover (A)	1
(67)	8510002690	PA shield caes (B)	1
(68)	8510005320	DDS shield case cover	1
(69)	8510005310	DDS shield case	1
(70)	8810003670	Icom screw A 6	2
(71)	8010007851	610 chassis-1	1
(72)	8810003170	Setscrew A M3×8	2
(73)	8830000100	Nut M 3	2
(74)	8510003160	VCO shield plate	2
(75)	8410000770	AF heatsink-1	1
(76)	8510000210	194 shield plate	1
(77)	8510002280	VCO shield plate (A)	1
(78)	8510004370	506 shield plate	1
(79)	8510001080	Shield case (A)	1
(80)	8510001101	Shield case (A) cover (A)-1	1
(81)	6910000310	B312D insulate bush	1
(82)	8930014500	Sponge (BN)	1
(83)	8930014491	719 insulate sponge-1	1
(84)	8110003280	Bottom cover (complete)	1
(85)	8810005510	Screw FH M3×6 ZK BS	16
(86)	8110003270	Top cover (complete)	1

Screw abbreviations PH: Pan head FH: Flat head B1: Self-tapping screw BS: Brass NI: Nickel ZK: Black


LED
BOARD
MIC
BOARD


JACK UNIT
AF BOARD
VR BOARD
PBT BOARD
LED BOARD
SW UNIT
PLL UNIT
MAIN UNIT
FM • AM UNIT

6-2 PA PARTS AND ACCESSORIES



• PA PARTS

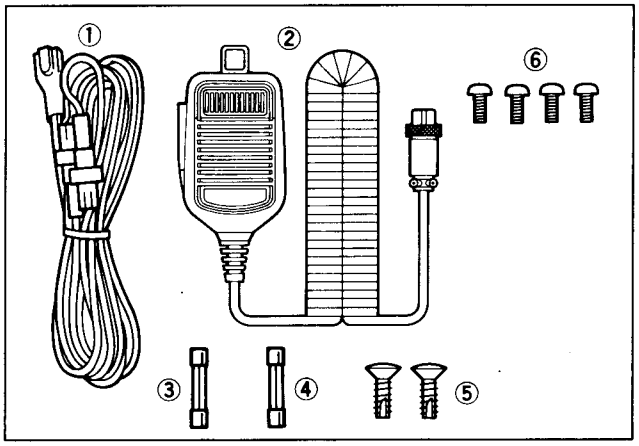
LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.
①	8810000230	Screw PH M3×6	4
②	8810002160	Screw FH M3×5	2
③	8810001910	Screw PH M3×6 NI BS	4
④	8850000420	Spring washer M3 NI	4
⑤	6510004880	Connector MR-DS-E 01	2
⑥	2510000040	Speaker C065K12I0810	1
⑦	8930006610	Sponge (AH)	1
⑧	8930007831	401 sponge (C)-1	1
⑨	8930007821	401 sponge (B)-1	1
⑩	8410001410	795 heatsink	1
⑪	2710000160	Fan motor HMK2605-01-100	1
⑫	8930007620	PA insulate plate	1
⑬	6510003780	Connector LLR-06 [DC. 13.8V]	1
⑭	8810001350	Screw PH B1 M3×6	31
⑮	6910000690	Clip 59TC4772	5
⑯	9034003901	Tube D=2.0 L=30mm	5
⑰	8810003170	Setscrew A M3×8	8
⑱	8810003210	Setscrew A M3×15	1
⑲	6910000310	Insulate bush B312D	1
⑳	8810003370	Setscrew C M3×8	2
㉑	8510006203	795 PA cover -3	1
㉒	8810003670	Icom screw 6	2
㉓	8810005530	Screw PH ST M2.6×6 NI	2
㉔	8810005530	Screw PH ST M2.6×6 NI (OTH)	2
	8860000040	Rivet M2×6 No. 2 NI (FRA)	
㉕	8830000360	Wing nut M5 NI	1
㉖	8850000150	Washer M5 NI BS	2
㉗	8830000210	Nut M5 NI BS	1
㉘	8850000440	Spring washer M5 NI	1
㉙	8930017460	795 spring	1
㉚	8850000590	Star washer M5	1
㉛	8810001980	Screw PH M5×16 NI BS	1
㉜	8930026040	Aluminum sheet Q	1

Screw abbreviations PH: Pan head FH: Flat head B1, ST: Self-tapping screw NI: Nickel
BS: Brass

• ACCESSORIES

LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.
①	Optional product	OPC-025A DC POWER CABLE	1
②	Optional product	HM-12 HAND MICROPHONE	1
③	5210000080	Spare fuse FGB 20A	1
④	5210000130	Spare fuse FGB 4A	1
⑤	8810005500	Screw OH B1 M4×12 CR	2
⑥	8810001650	Screw PH FT M3×6	4

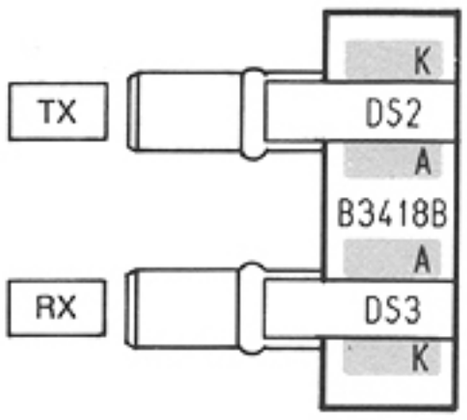
Screw abbreviations PH: Pan head
OH: Oval countersunk head
B1: Self-tapping screw



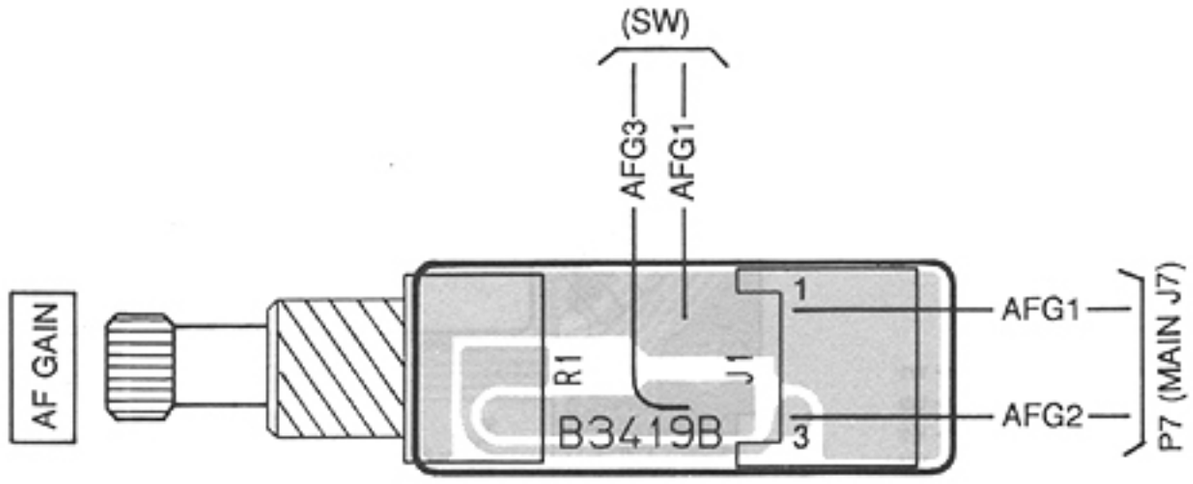
SECTION 7 BOARD LAYOUTS

7-1 LED, AF, VR, PBT BOARDS AND JACK UNIT

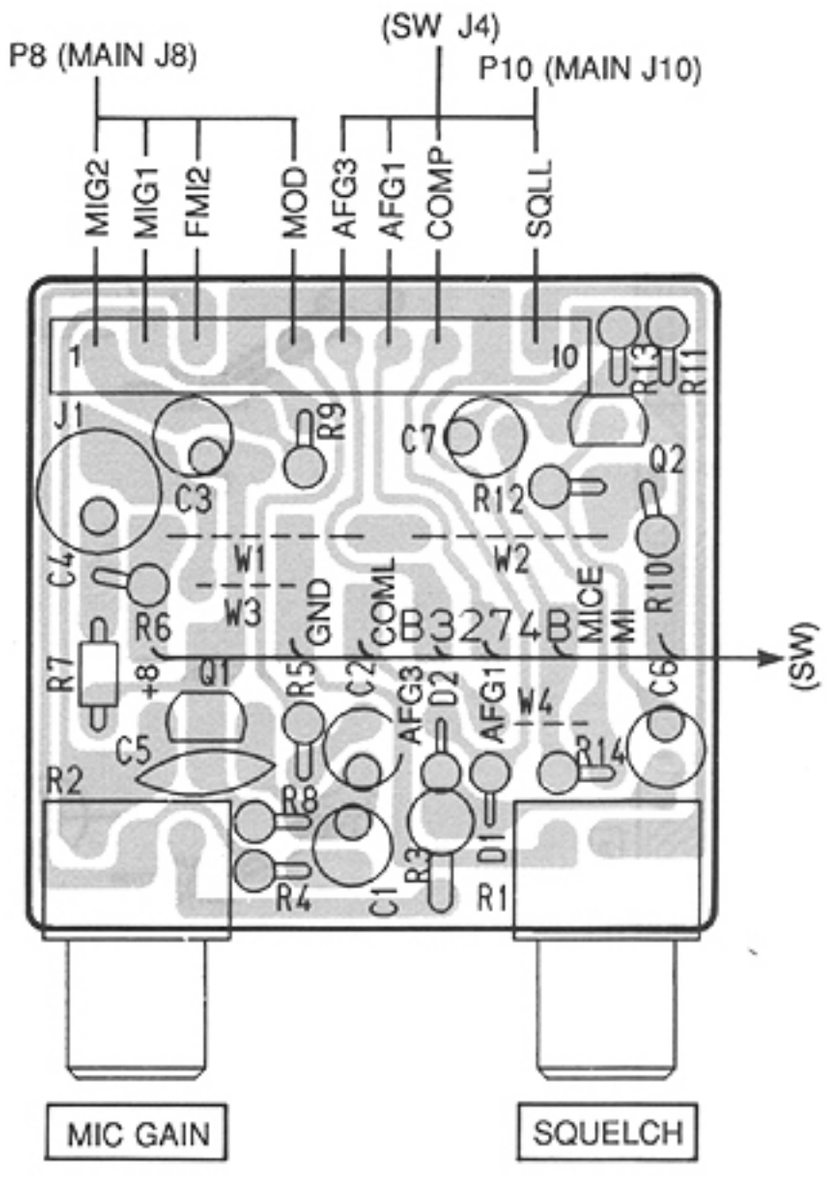
• LED BOARD



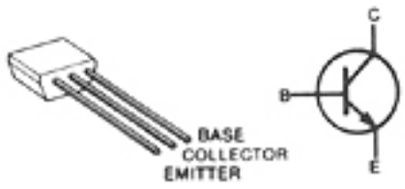
• AF BOARD



• VR BOARD

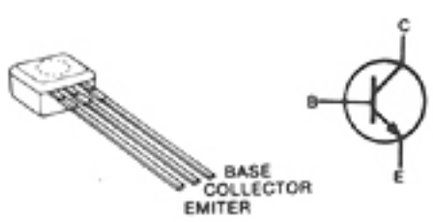


2SC2458 GR



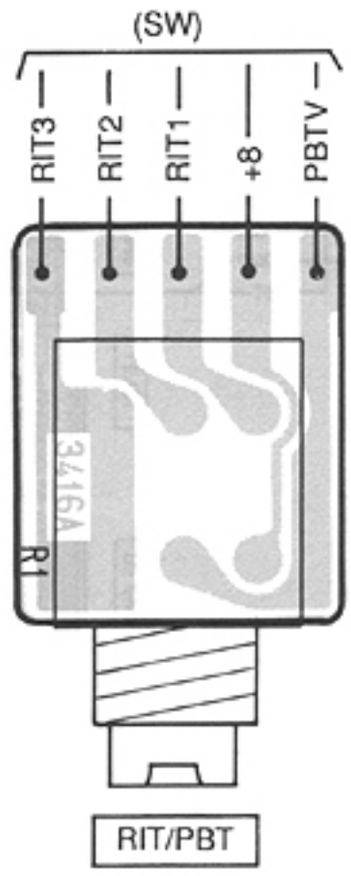
Q1

2SC2785 EL

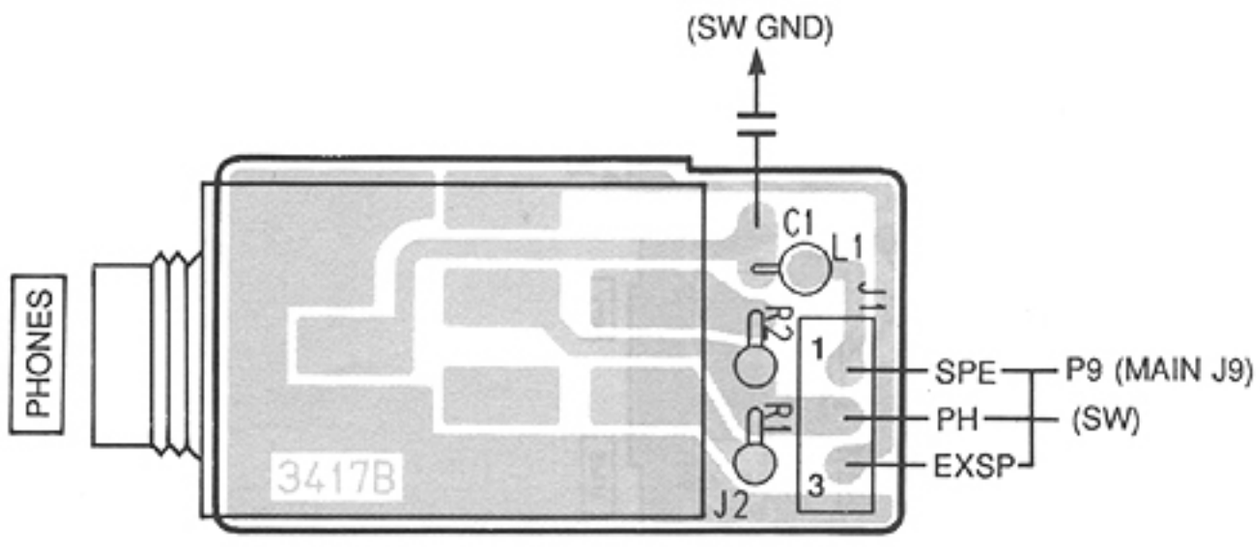


Q2

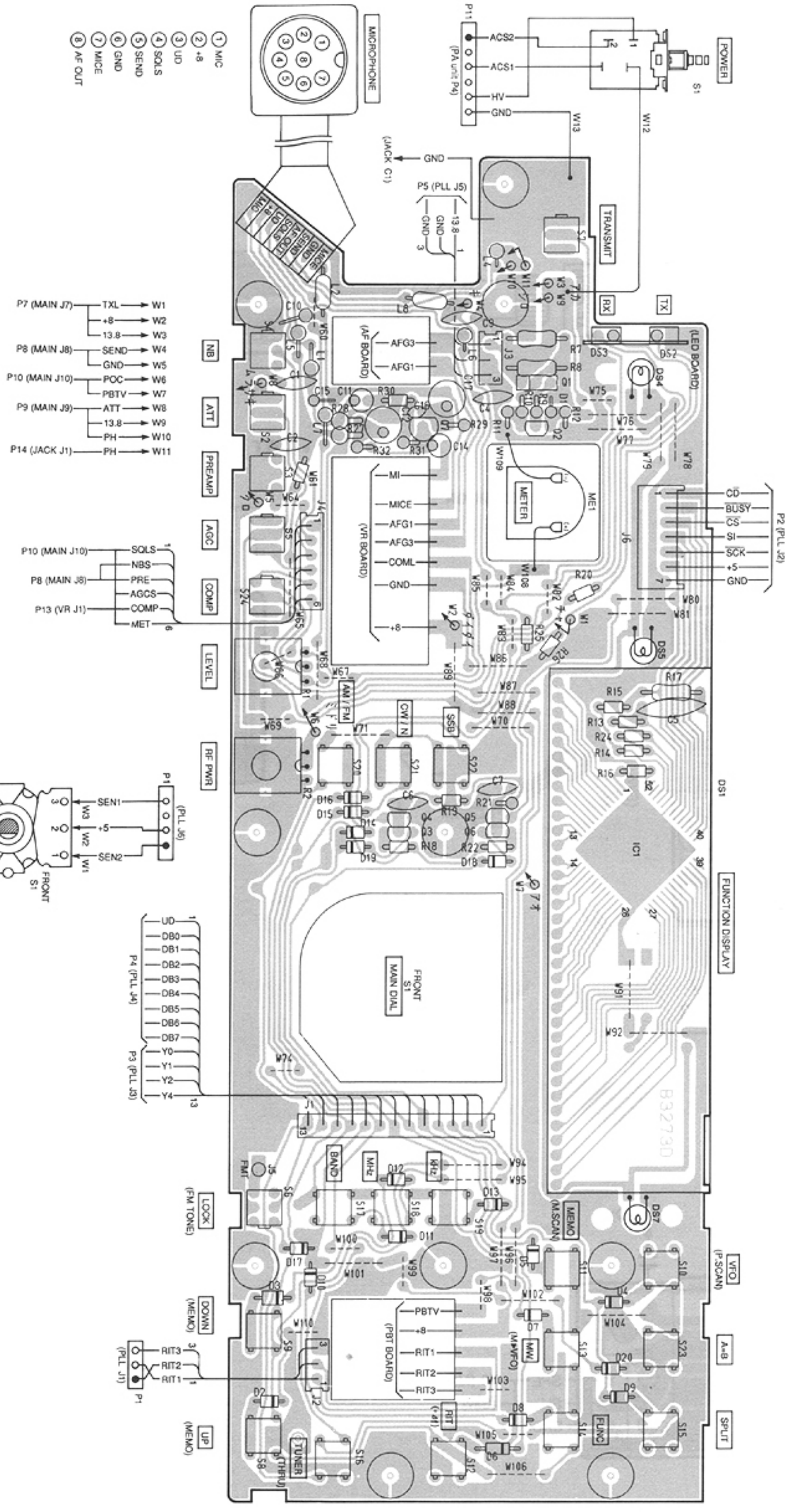
• PBT BOARD



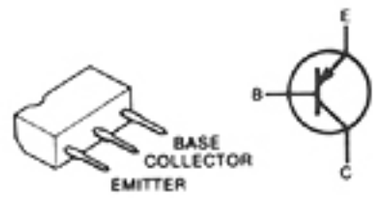
• JACK UNIT



7-2 SW UNIT

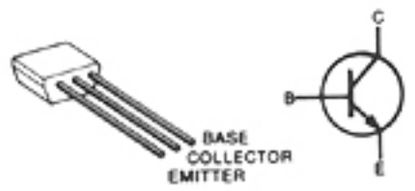


2SB909M Q



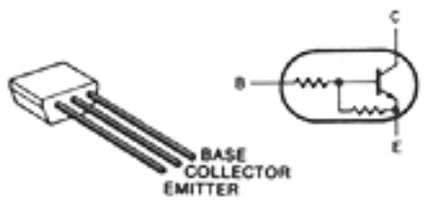
Q1

2SC2458 GR



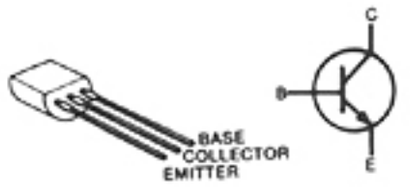
Q2, Q3, Q4, Q6

RN1204



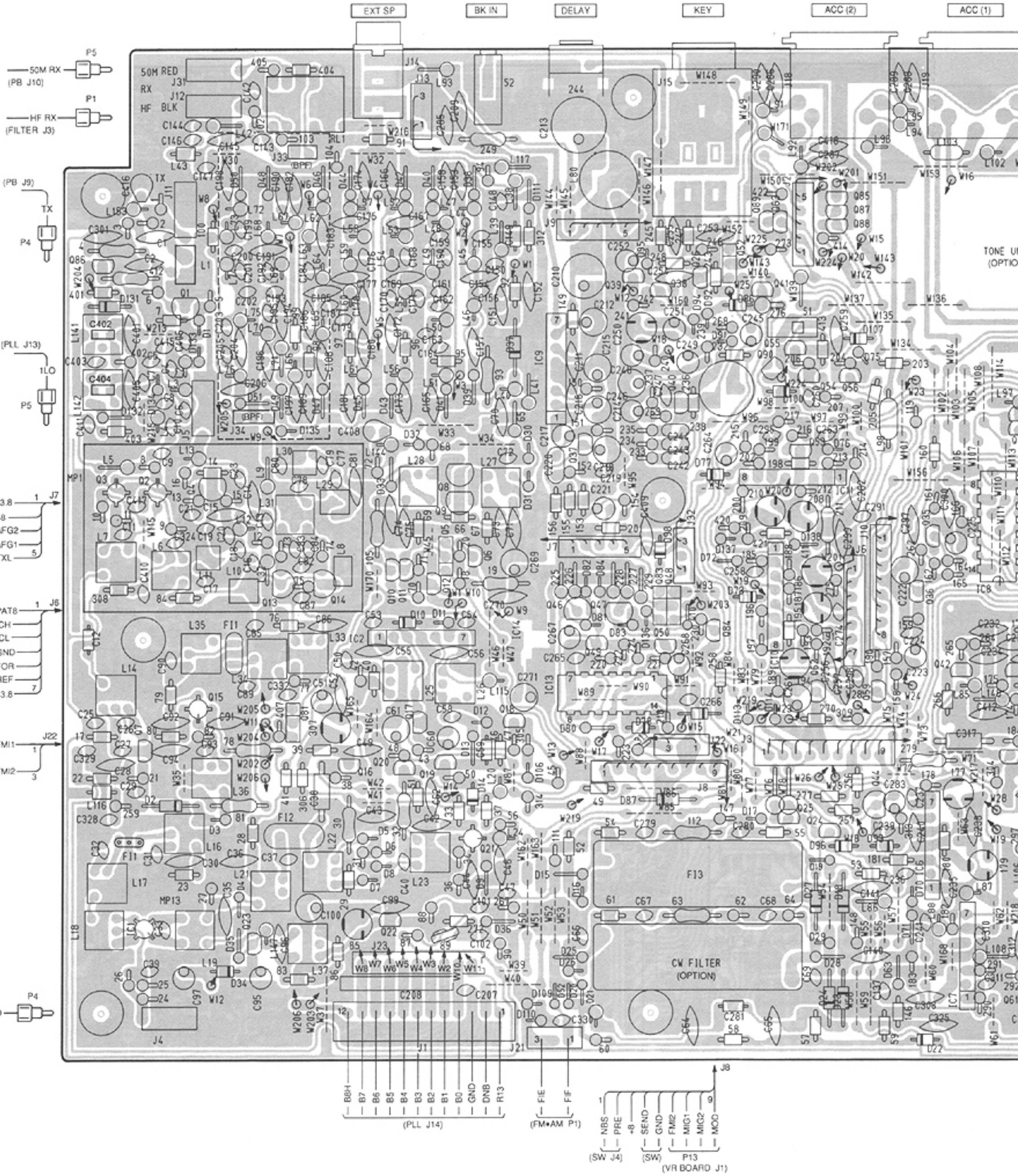
Q5

2SC1571G

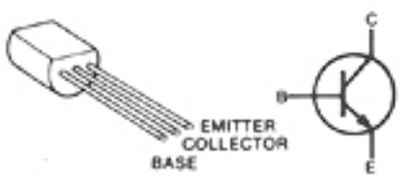


Q7

7-3 MAIN UNIT

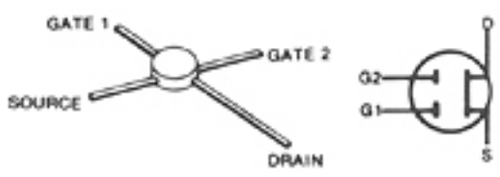


2SC2053



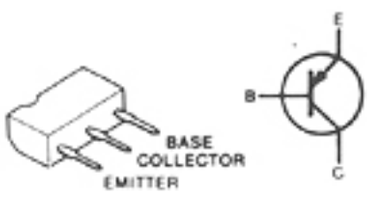
Q1, Q4

3SK122 K



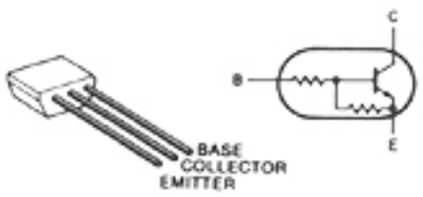
Q2, Q3

2SB909M Q



Q5

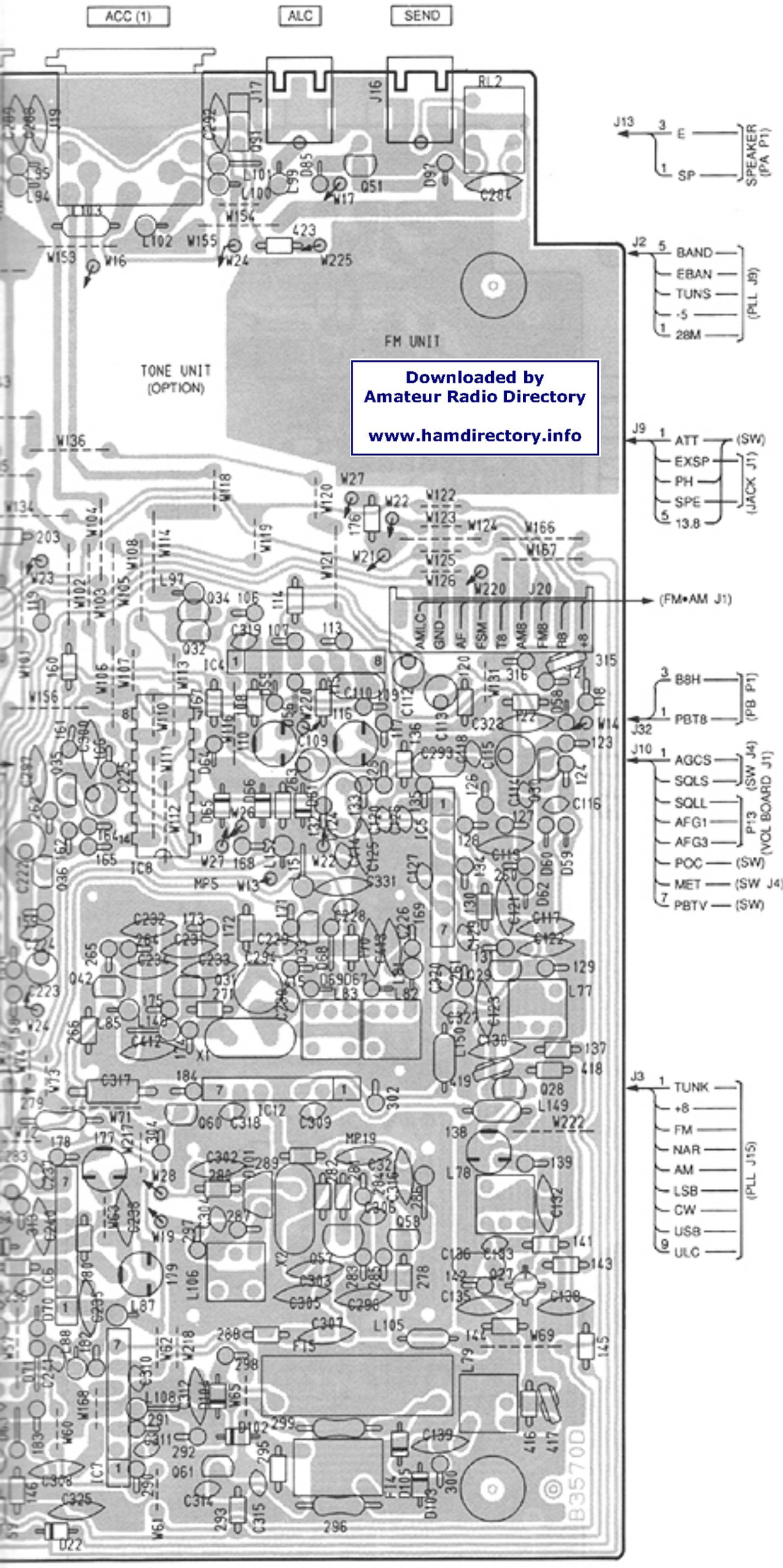
RN1202



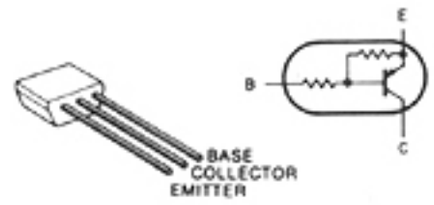
Q6, Q12, Q23, Q32, Q34, Q51, Q61, Q63, Q84, Q85, Q86, Q89

2SI

Q7,

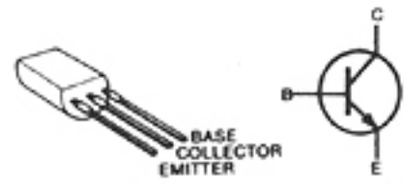


RN2202



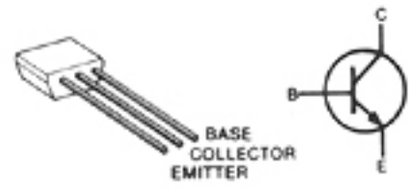
Q10, Q20, Q24, Q25, Q41

2SC2878 B



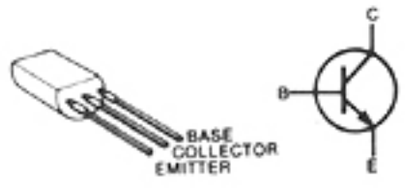
Q44

2SC2458 GR



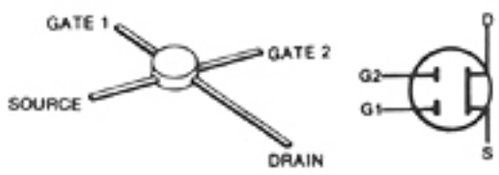
Q11, Q18, Q19, Q26, Q29, Q30, Q31, Q35, Q36, Q37, Q40, Q42, Q49, Q50, Q56, Q58

2SD468C



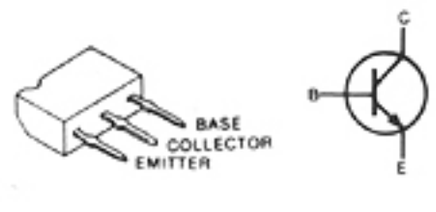
Q46, Q47

3SK101 GR



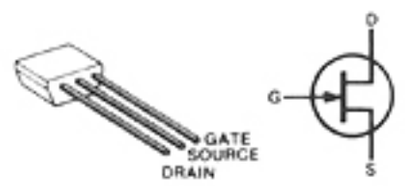
Q15, Q21, Q27

2SD1225M R



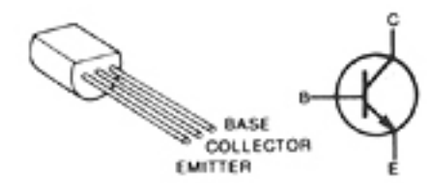
Q48, Q52, Q81, Q83, Q91

2SK192A Y



Q16

2SC1815 Y

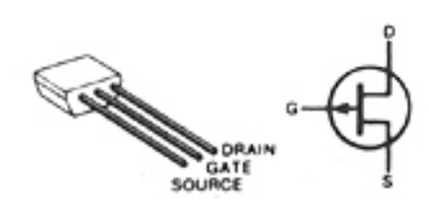


Q57

2SA1048 GR

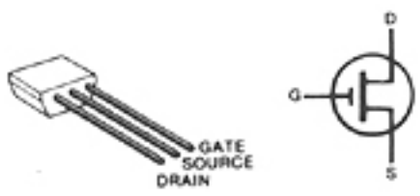
Q17, Q38, Q53

2SJ105 Y



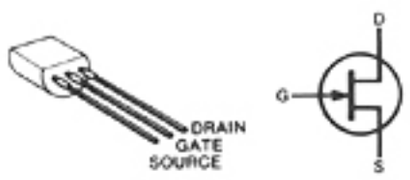
Q59

2SK241 Y



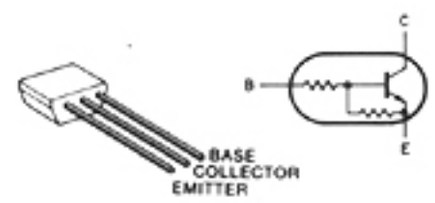
Q7, Q22, Q28

2SK937



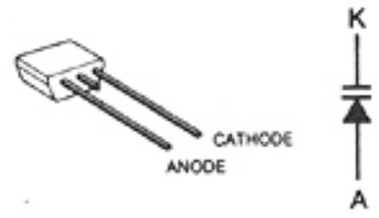
Q8, Q9, Q13, Q14

RN1204



Q33, Q39, Q54, Q55, Q60, Q62

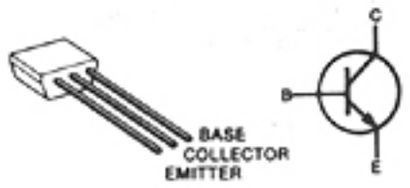
1SV101



D101

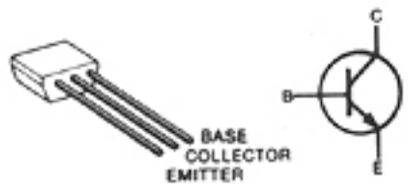
7-4 PLL UNIT

2SC2458 GR



Q1, Q2, Q3, Q4, Q5, Q6, Q8, Q9, Q10, Q11, Q13, Q14, Q16, Q18, Q20, Q22, Q33, Q47, Q48

2SC2458 Y



Q32

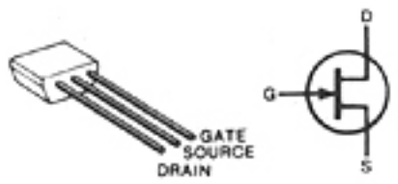
2SC1571G

Q12

2SA1048 GR

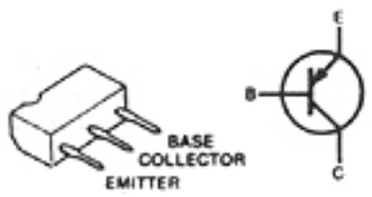
Q37, Q49

2SK192A GR



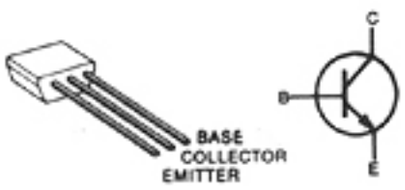
Q15, Q17, Q19, Q21, Q29

2SB909M Q



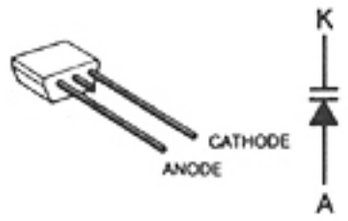
Q63

2SC2668 O



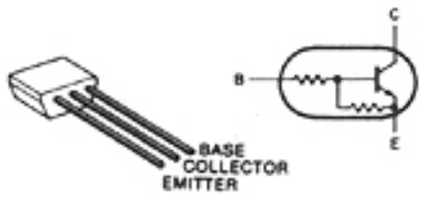
Q23, Q24, Q26, Q27, Q30, Q34, Q36, Q46, Q62

1SV101



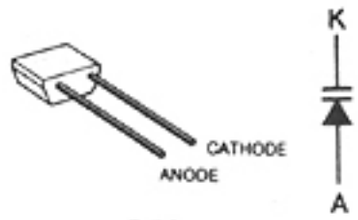
D48, D50, D52, D54

RN1202



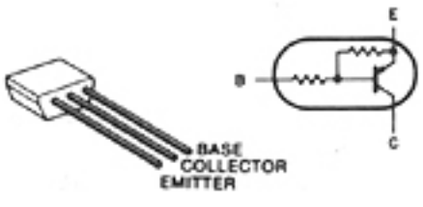
Q25, Q35, Q61, Q64, Q65

FC52M

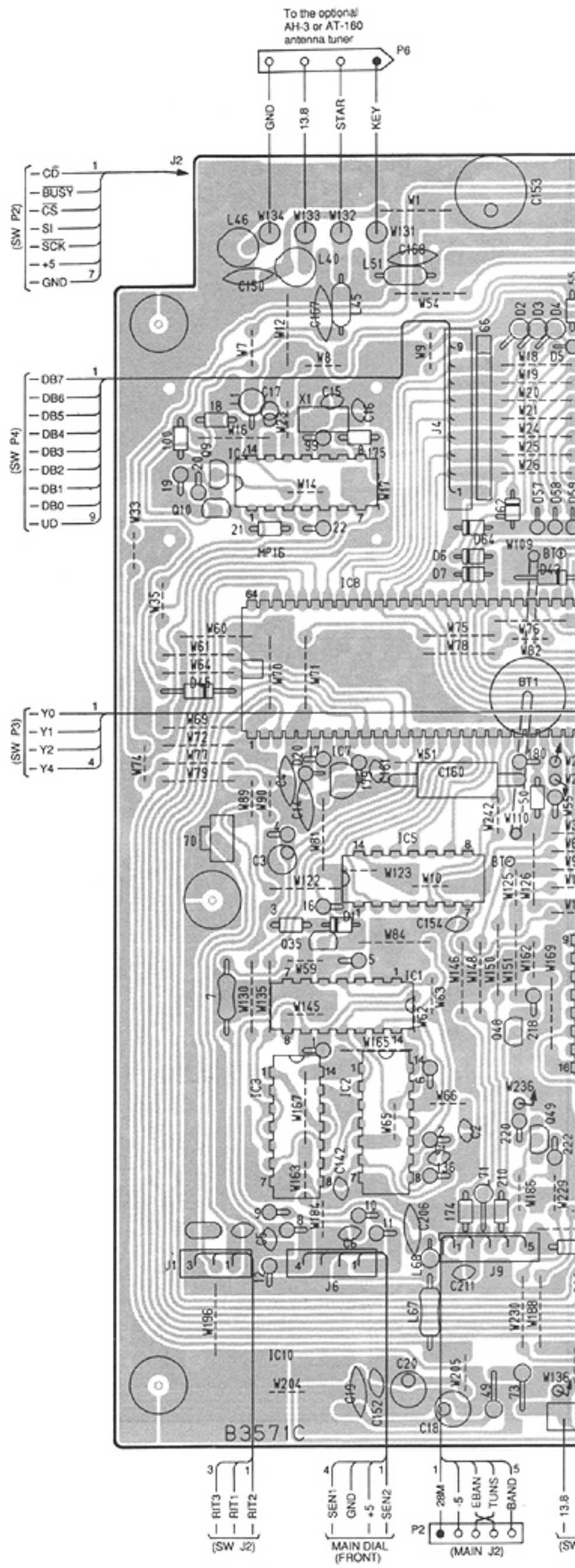


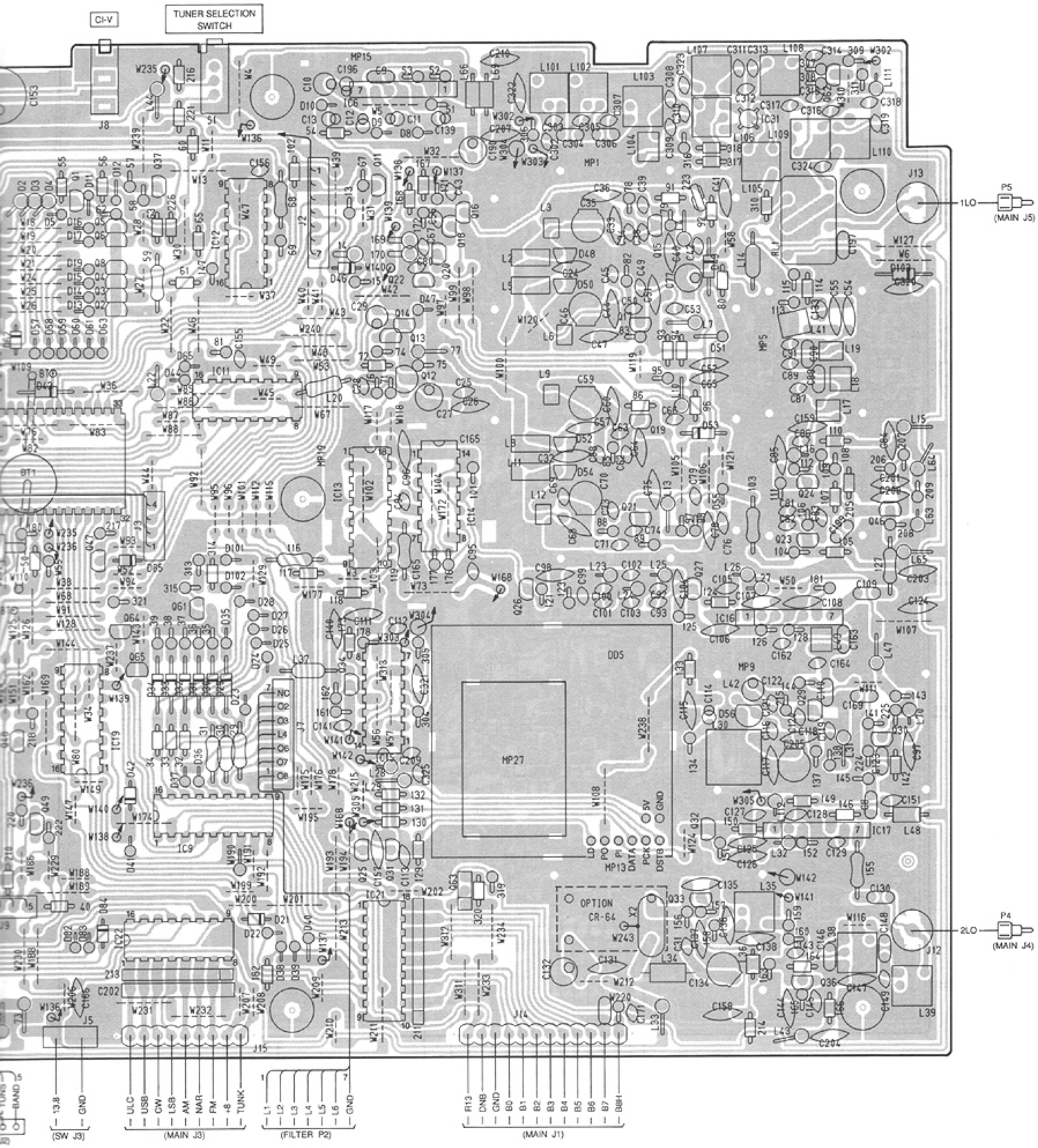
D56

RN2202



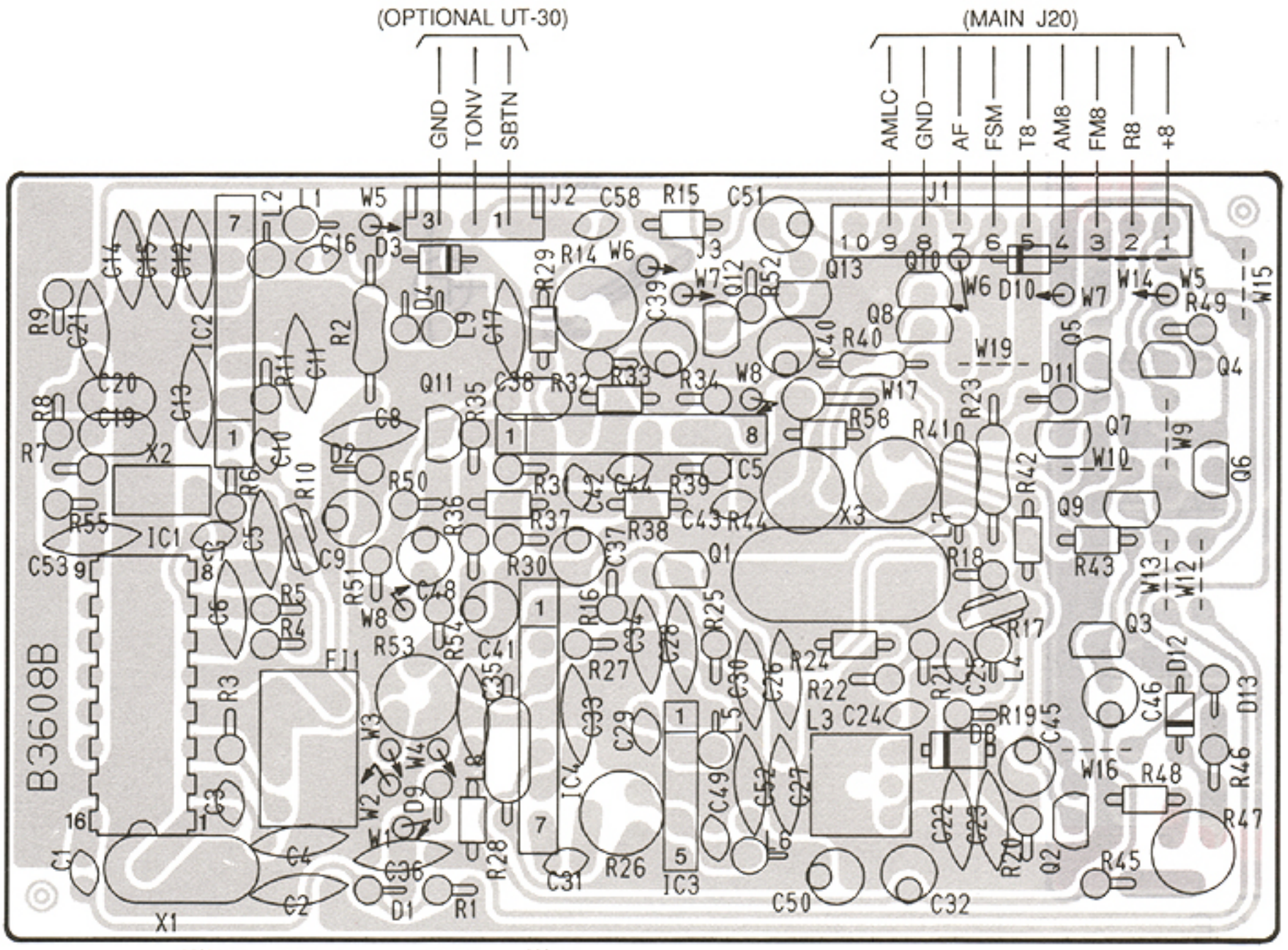
Q31

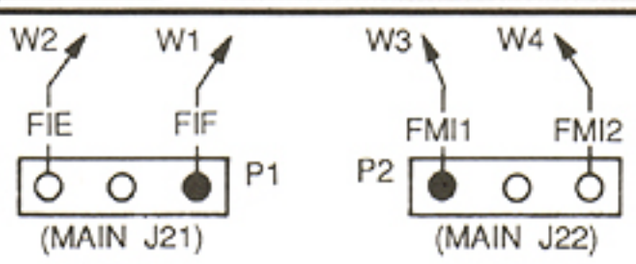



CI-V
TUNER SELECTION SWITCH
MP15
MP1
MP5
MP9
MP19
MP27
MP13
DDS
OPTION CR-64
1LO
(MAIN J5)
P5
2LO
(MAIN J4)
P4
13.8
GND
(SW J3)
ULC
USB
CW
LSB
AM
NAR
FM
+8
TUNK
(MAIN J3)
L1
L2
L3
L4
L5
L6
GND
(FILTER P2)
R13
CNB
GND
B0
B1
B2
B3
B4
B5
B6
B7
B8H
(MAIN J1)

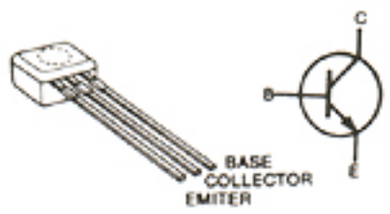
7-5 FM•AM UNIT, DDS AND BPF BOARDS

• FM•AM UNIT



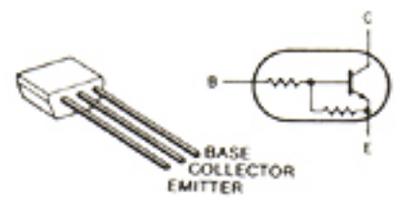


2SC2785 EL



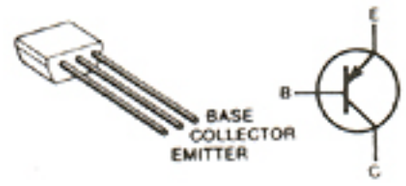
Q1

RN1202



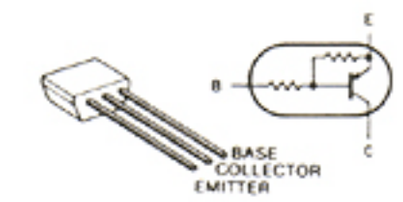
Q2, Q3, Q5, Q7, Q8, Q10

2SA1048 GR



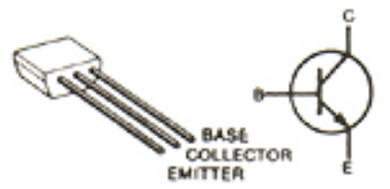
Q4

RN2202



Q6, Q9, Q12

2SC2458 GR

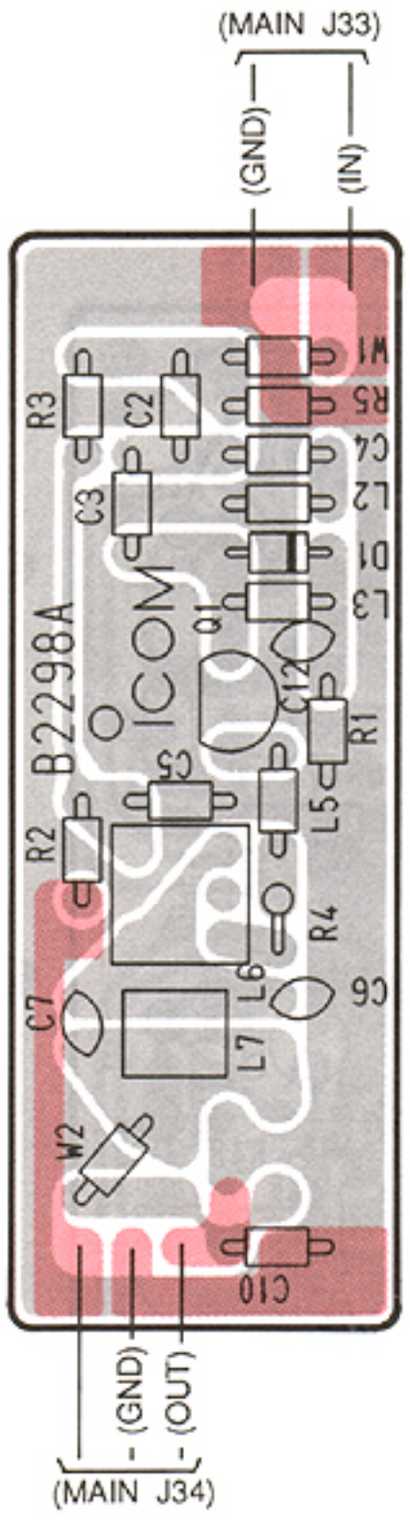


Q11, Q13

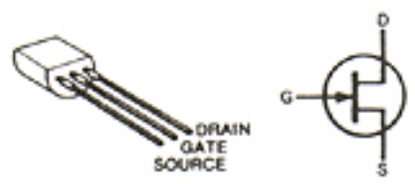
• DDS BOARD

The combination of this page and the next page show the DDS board layout in the same configuration as the actual P.C. Board.

• BPF BOARD



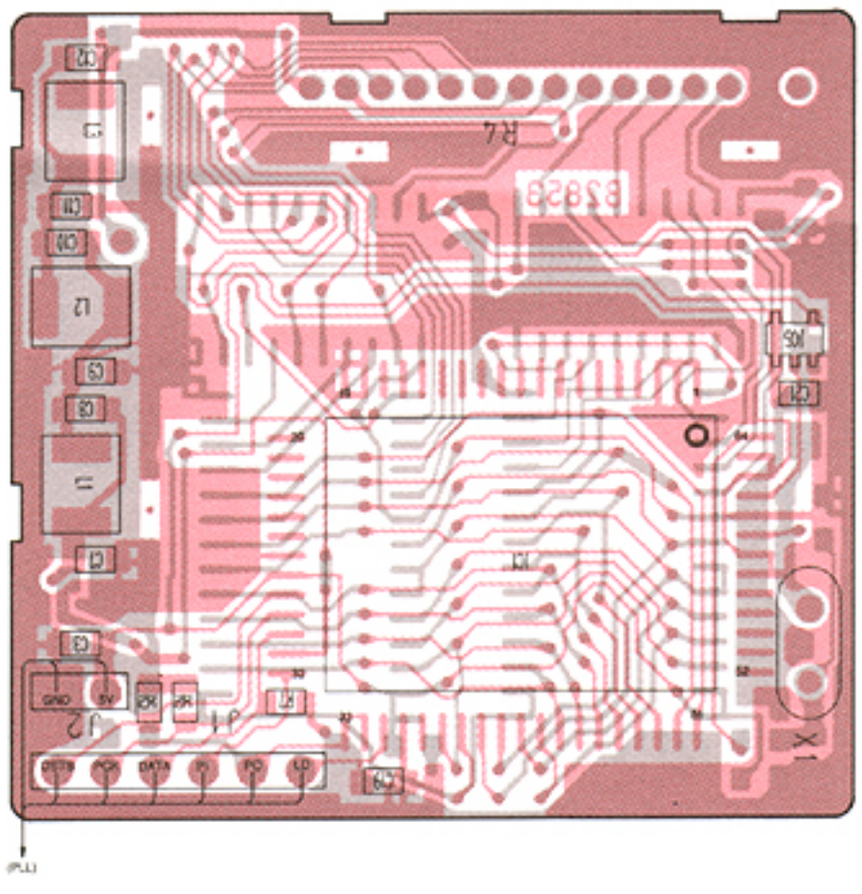
2SK125



Q1

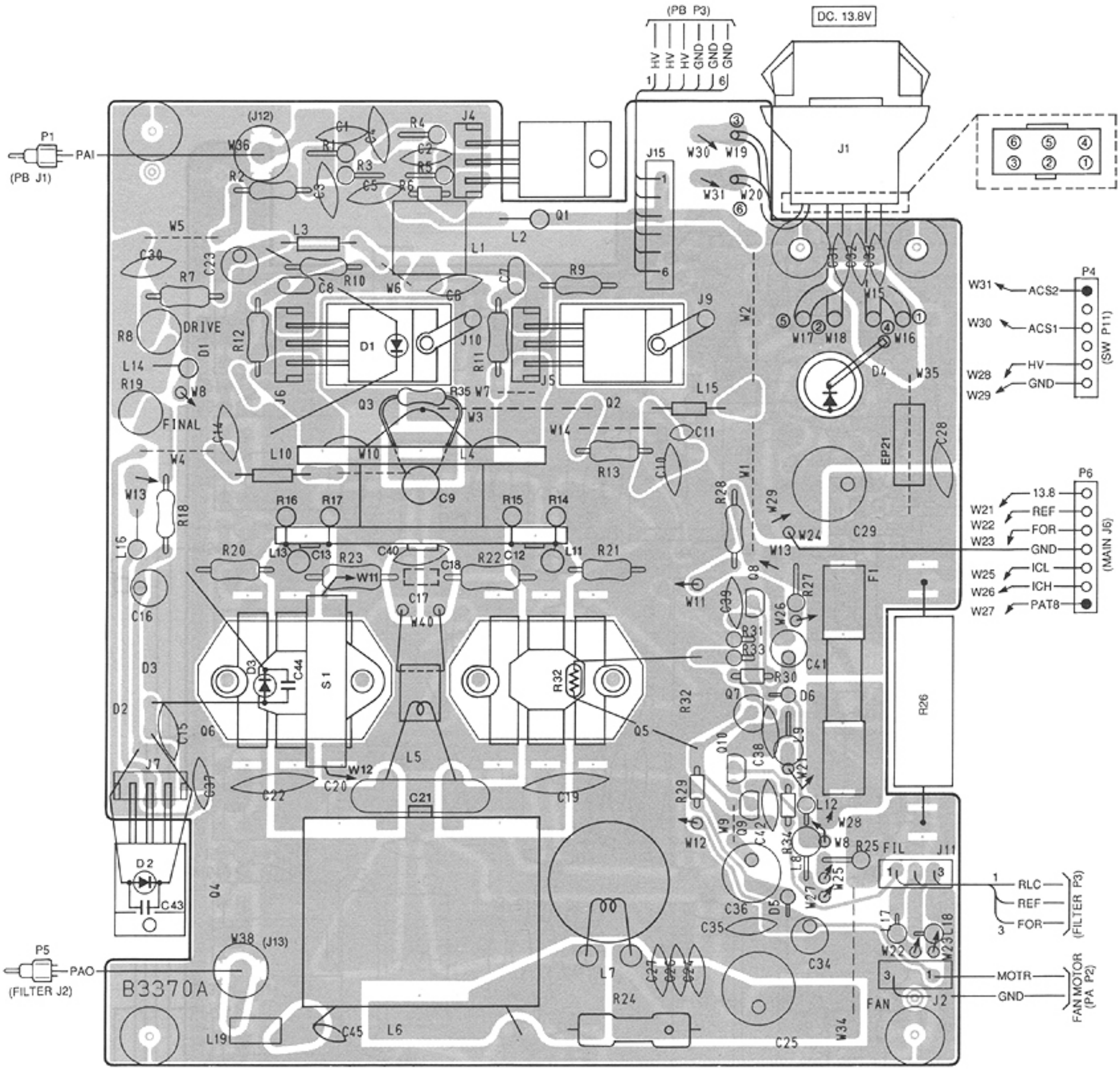
• DDS BOARD

The combination of this page and the previous page show the DDS board layout in the same configuration as the actual P.C. Board.

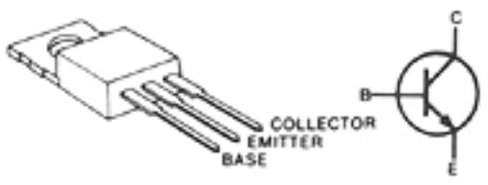


7-6 PA, FILTER AND PB UNITS

• PA UNIT

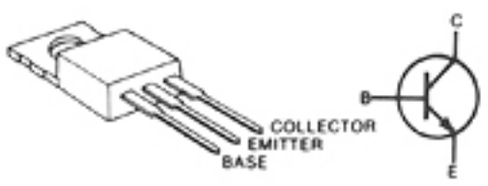


2SC1971



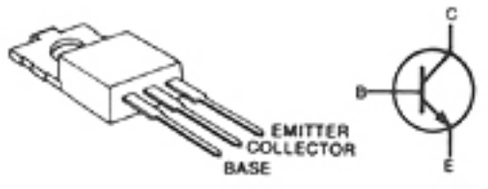
Q1

2SC3133



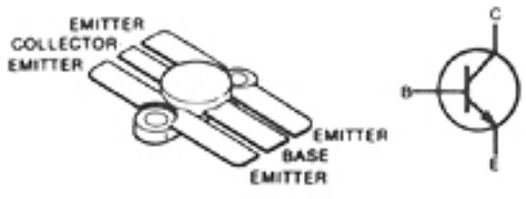
Q2, Q3

2SD1406 Y



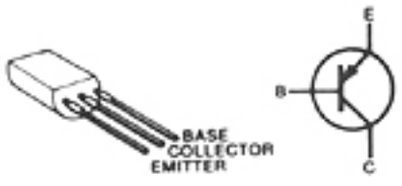
Q4

2SC2904



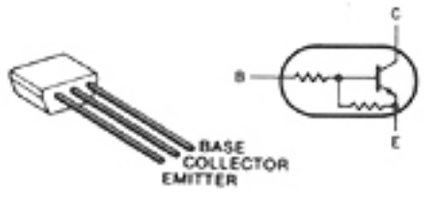
Q5, Q6

2SB562 C



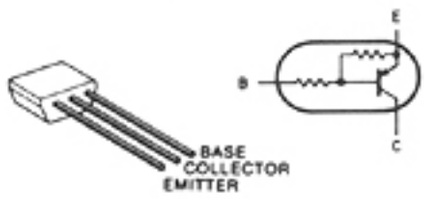
Q7

RN1202



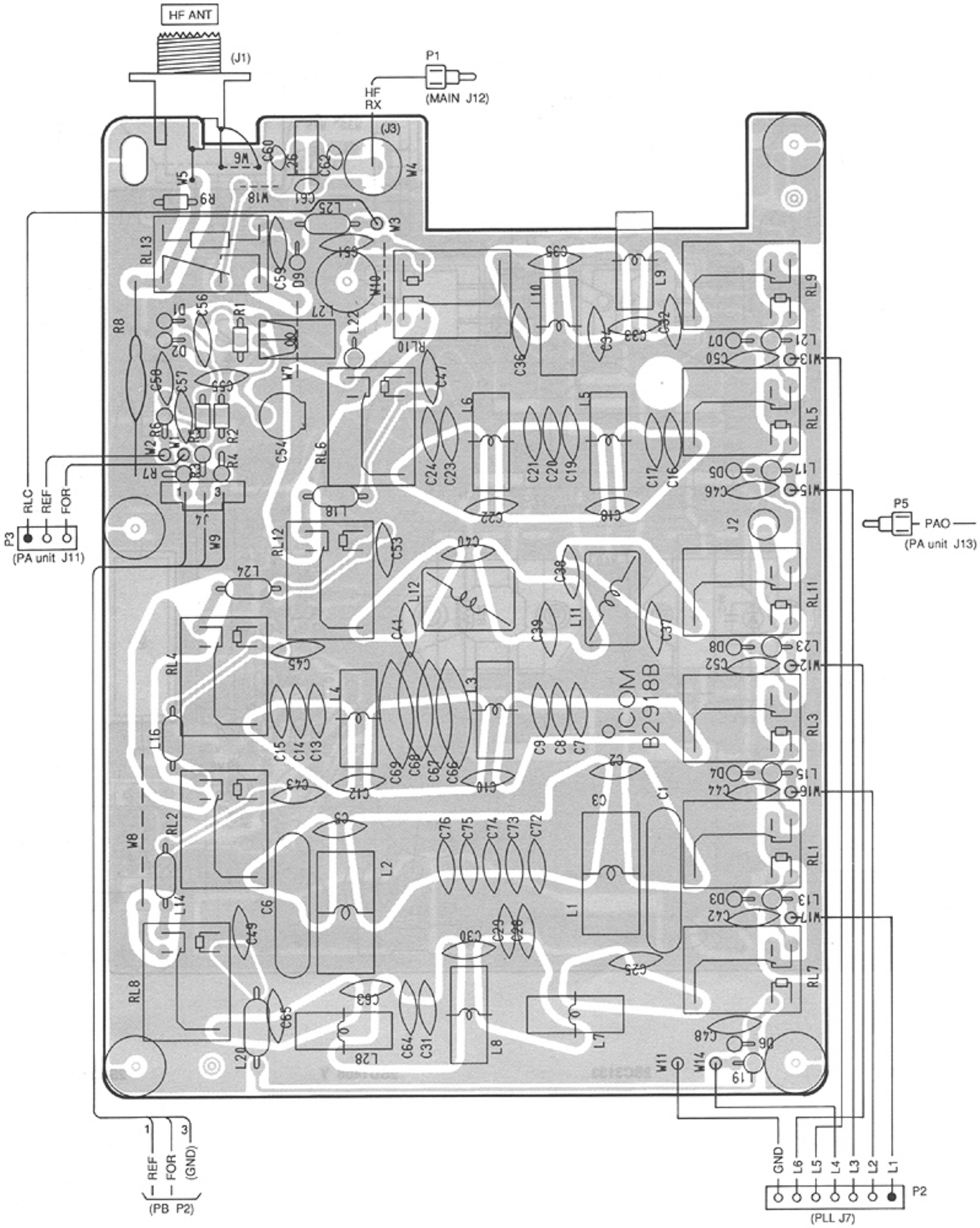
Q8, Q9

RN2202

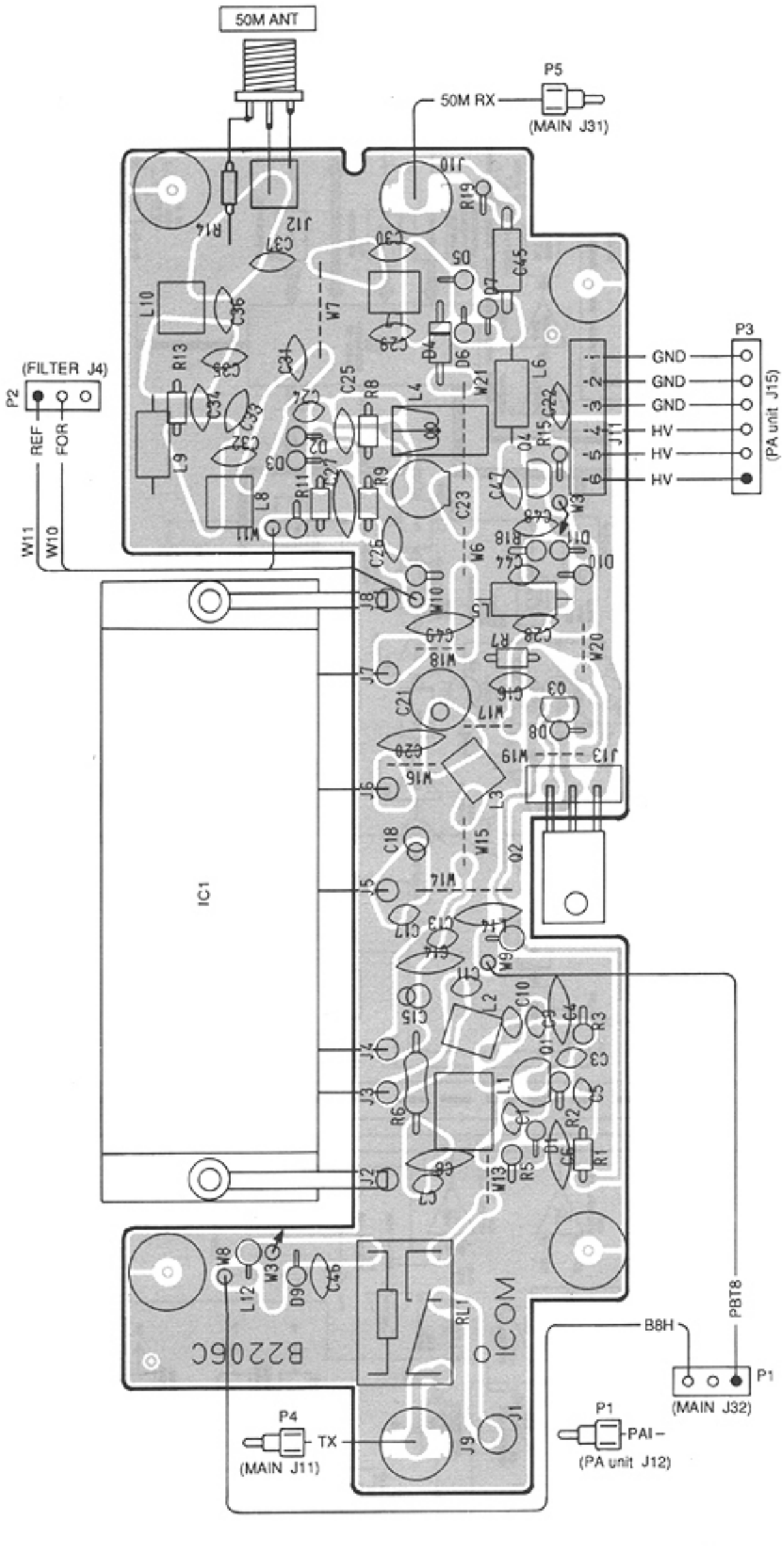


Q10

• FILTER UNIT


HF ANT
(J1)
P1
HF RX
(MAIN J12)
(J3)
P3
RLC
REF
FOR
(PA unit J11)
P5
PAO
(PA unit J13)
ICOM
B2918B
1
REF
3
FOR
(GND)
(PB P2)
GND
L6
L5
L4
L3
L2
L1
P2
(PLL J7)

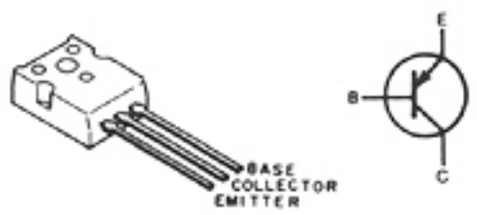
• PB UNIT



2SC2407

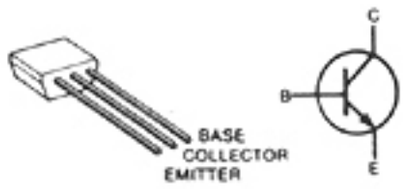
Q1

2SA1359 Y



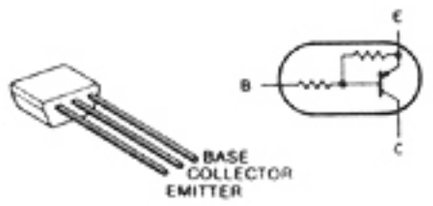
Q2

2SC2458 GR



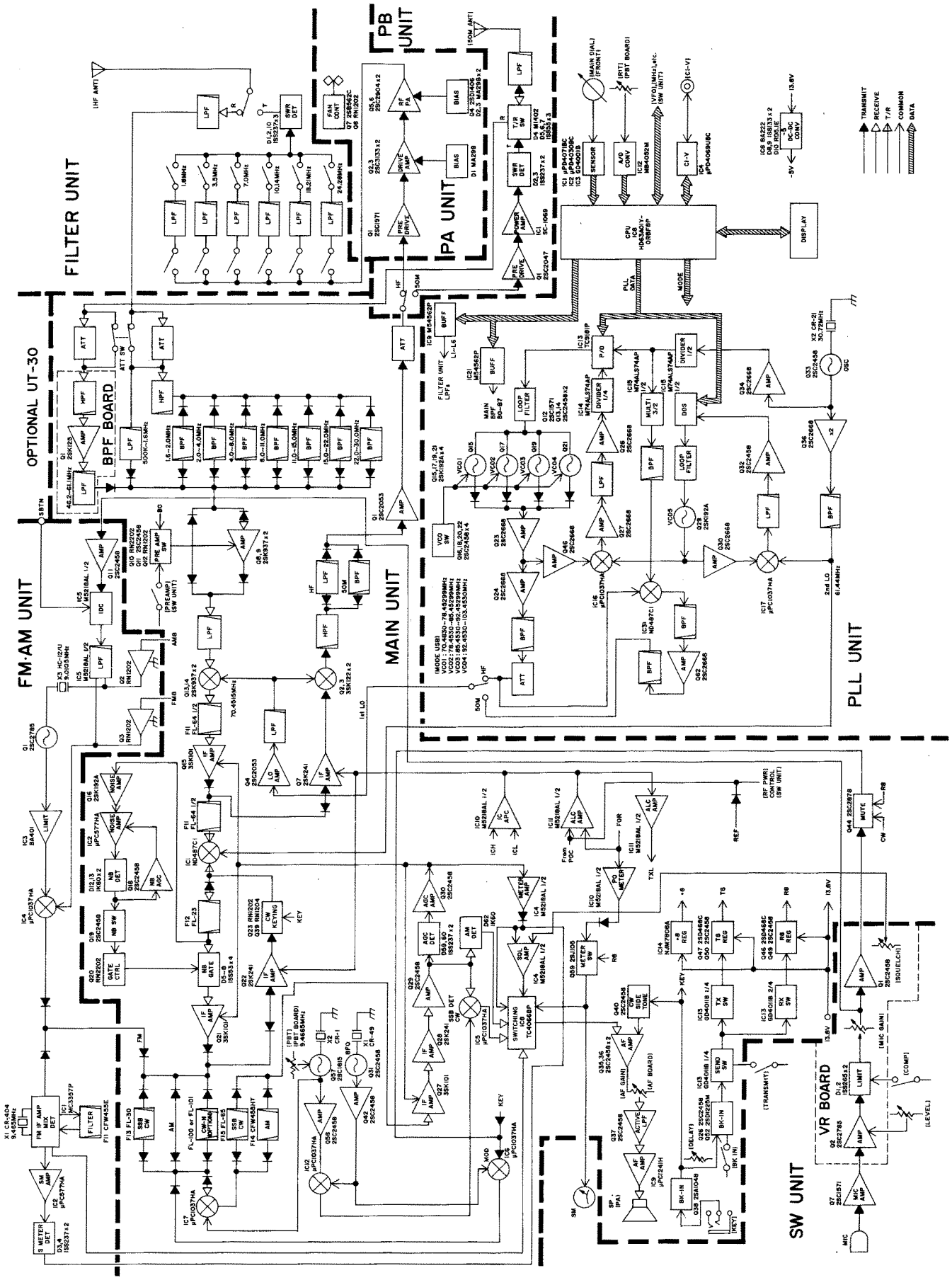
Q3

RN2202



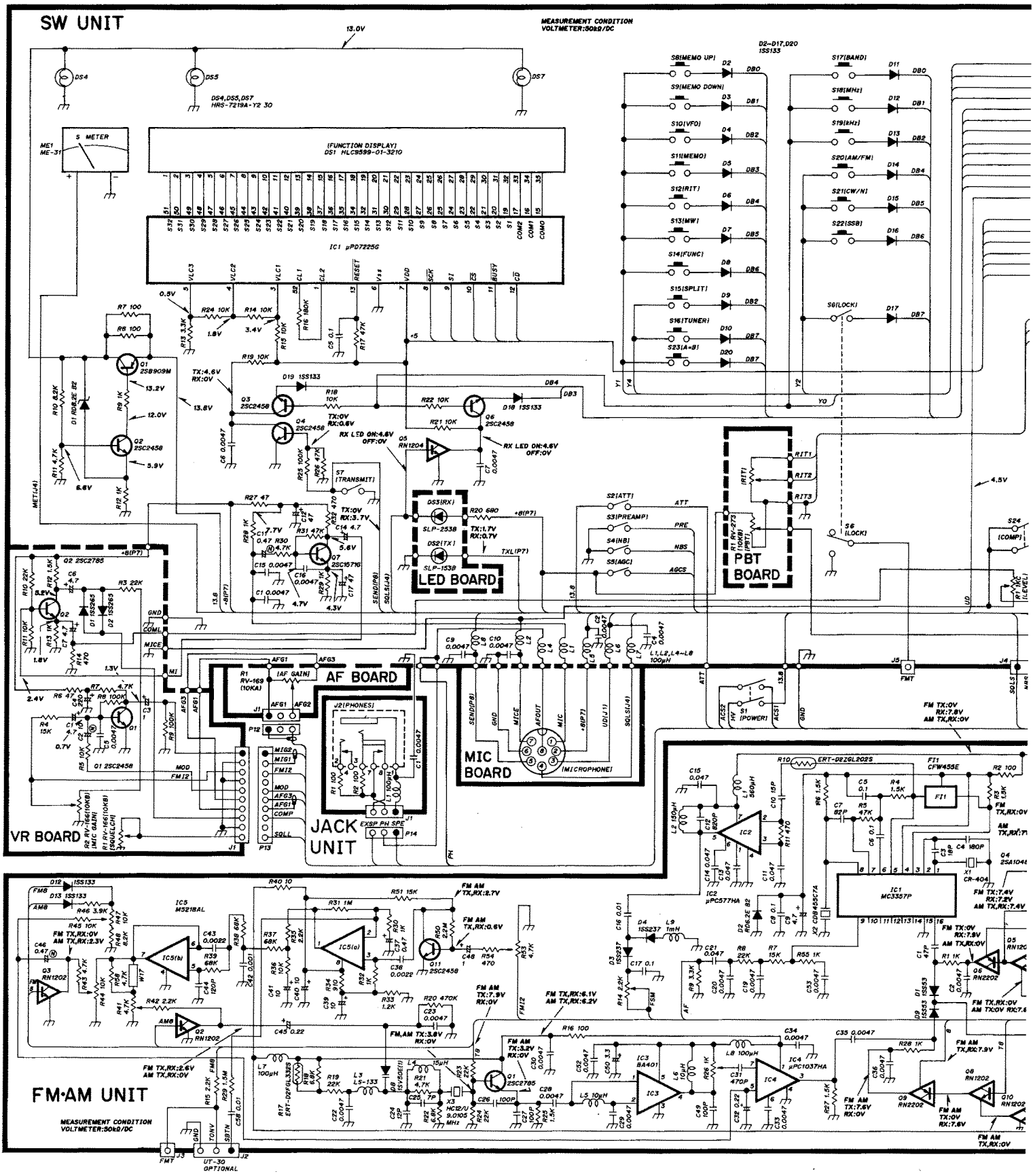
Q4

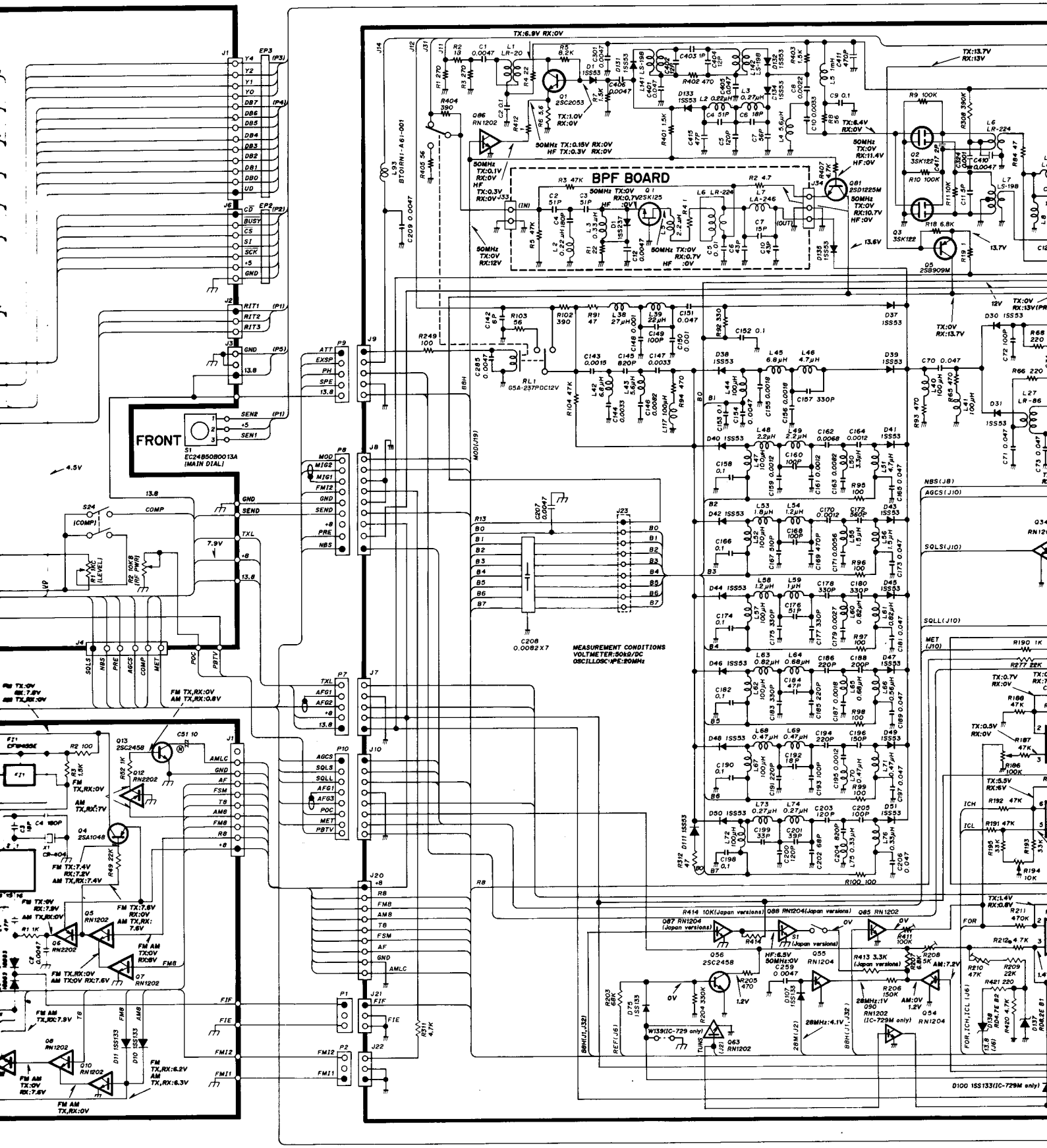
SECTION 8 BLOCK DIAGRAM



SECTION 9 VOLTAGE DIAGRAMS

9-1 SW AND MAIN UNITS




BPF BOARD
FRONT
S1
EC24B50B0013A
(MAIN DIAL)
MEASUREMENT CONDITIONS
VOLTMETER:50kΩ/DC
OSCILLOSCOPE:20MHz
TX:6.9V RX:0V
TX:13.7V
RX:13V
50MHz TX:0.15V RX:0V
HF TX:0.3V RX:0V
50MHz TX:0V
RX:0.7V
HF :0V
50MHz TX:0V
RX:11.4V
HF:0V
50MHz TX:0V
RX:10.7V
HF :0V
50MHz TX:0.1V
RX:0V
HF
TX:0.3V
RX:0V
50MHz TX:0V
RX:12V
50MHz TX:0V
RX:0.7V
HF :0V
TX:1.0V
RX:0V
TX:6.4V
RX:0V
TX:0V
RX:13V
13.6V
13.7V
12V
4.5V
7.9V
FM TX,RX:0V
AM TX,RX:0.8V
FM TX:7.8V
RX:0V
AM TX,RX:
7.8V
FM TX,RX:0V
AM TX,RX:7.4V
FM TX:7.4V
RX:7.2V
AM TX,RX:7.4V
FM TX:0V
RX:7.9V
AM TX,RX:0V
FM TX,RX:0V
AM TX:0V RX:7.6V
FM AM
TX,RX:0V
FM TX,RX:6.2V
AM
TX,RX:6.3V
FM AM
TX:0V
RX:7.6V
FM AM
TX,RX:7.9V
FM AM
TX,RX:0V
HF:6.5V
50MHz:0V
28MHz:1V
28MHz:4.1V
AM:0V
AM:7.2V
TX:1.4V
RX:0.8V
TX:0.7V
RX:0V
TX:0.5V
RX:0V
TX:5.5V
RX:6V
W139(IC-729 only)
D100 1SS133(IC-729M only)
J1
J2
J3
J4
J6
J7
J8
J9
J10
J20
J21
J22
J23
P1
P2
P7
P8
P9
P10
EP2
EP3
(P1)
(P2)
(P3)
(P4)
(P5)
Y4
Y2
Y1
Y0
DB7
DB6
DB5
DB4
DB3
DB2
DB1
DB0
UD
CD
BUSY
CS
SI
SCK
+5
GND
RIT1
RIT2
RIT3
SEN2
SEN1
ATT
EXSP
PH
SPE
13.8
MOD
MIG2
MIG1
FMI2
SEND
+8
PRE
NBS
TXL
AFG1
AFG2
AGCS
SQLS
SQLL
AFG3
POC
MET
PBTV
AMLC
AF
FSM
T8
AM8
FM8
R8
FIF
FIE
FMI2
FMI1
S24
(COMP)
COMP
RF GAIN
(LEVEL)
RF PWR
(MIC)
SQLS
NBS
PRE
AGCS
COMP
MET
POC
PBTV
MOD(J19)
NBS(J8)
AGCS(J10)
SQLS(J10)
SQLL(J10)
MET
(J10)
ICH
ICL
FOR,ICH,ICL (J6)
88H(J1,J32)
REF(J6)
TUNE
28M(J21)
RL1
G5A-237PDC12V
Q1 2SC2053
Q2 3SK122
Q3 3SK122
Q61 2SD1225M
Q5 2SB909M
Q86 RN1202
Q87 RN1204
(Japan versions)
Q88 RN1204(Japan versions)
Q85 RN1202
Q56 2SC2458
Q55 RN1204
Q54 RN1204
Q63 RN1202
Q13 2SC2458
Q12 RN2202
Q4 2SA1048
Q5 RN1202
Q6 RN2202
Q7 RN1202
Q8 RN1202
Q10 RN1202
D75 1SS133
D100 1SS133(IC-729M only)
D138 RD4.7E B2
D139 RD6.2E B1
D1 1SS133
D2 1SS133
D3 1SS133
D10 1SS133
D11 1SS133
D111 1SS53
D131 1SS53
D133 1SS53
D135 1SS53
D30 1SS53
D31 1SS53
D37 1SS53
D38 1SS53
D39 1SS53
D40 1SS53
D41 1SS53
D42 1SS53
D43 1SS53
D44 1SS53
D45 1SS53
D46 1SS53
D47 1SS53
D48 1SS53
D49 1SS53
D50 1SS53
D51 1SS53
L1 LR-20
L2 0.82μH
L3 0.27μH
L4 5.6μH
L5 1mH
L6 LR-224
L7 LS-198
L27 LR-86
L93 BTOIRNI-A61-001
L141 LS-198
L142 LS-198
L143 LS-198
L144 LS-198
L145 LS-198
L146 LS-198
L147 LS-198
L148 LS-198
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L995 LS-198
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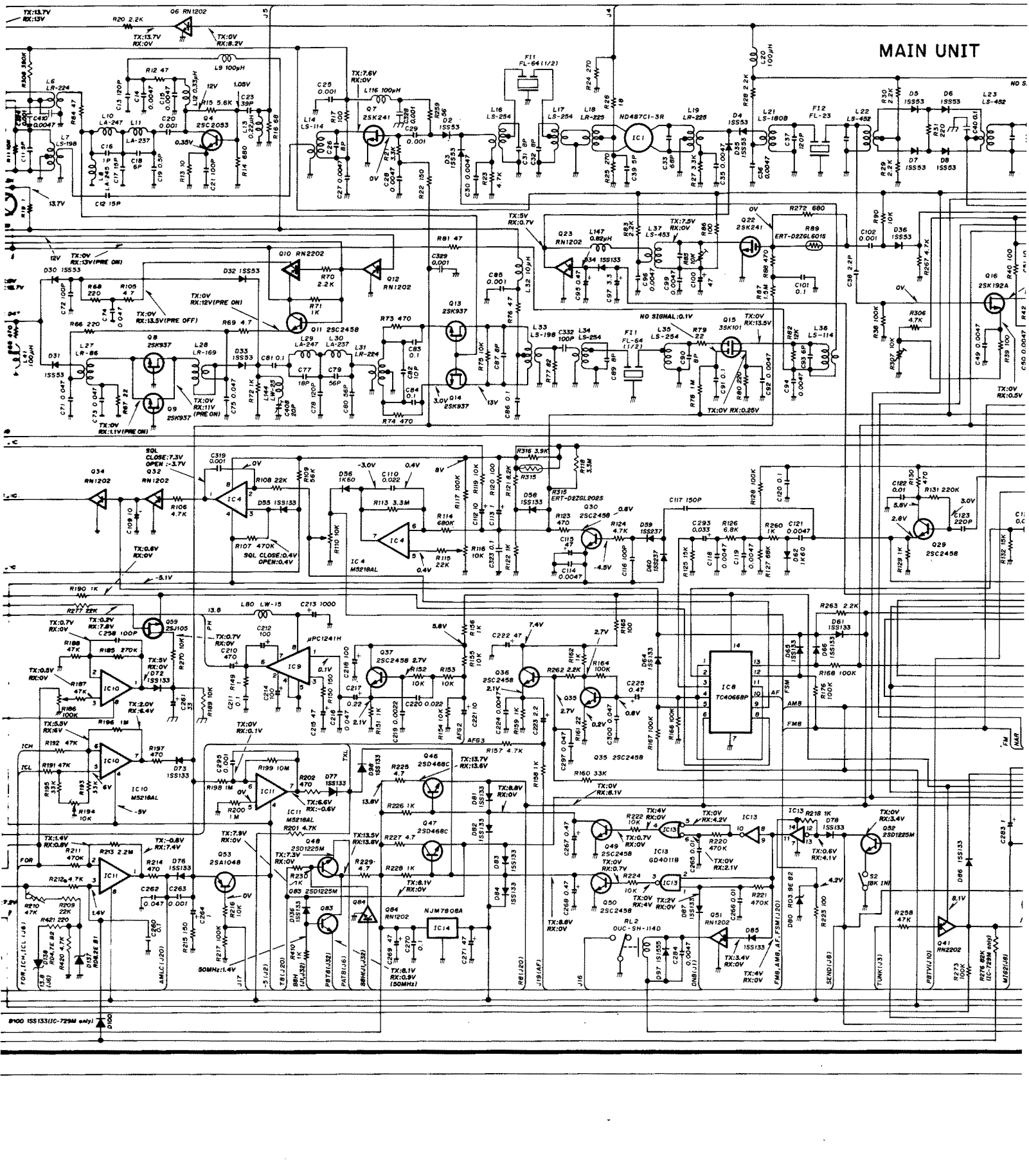
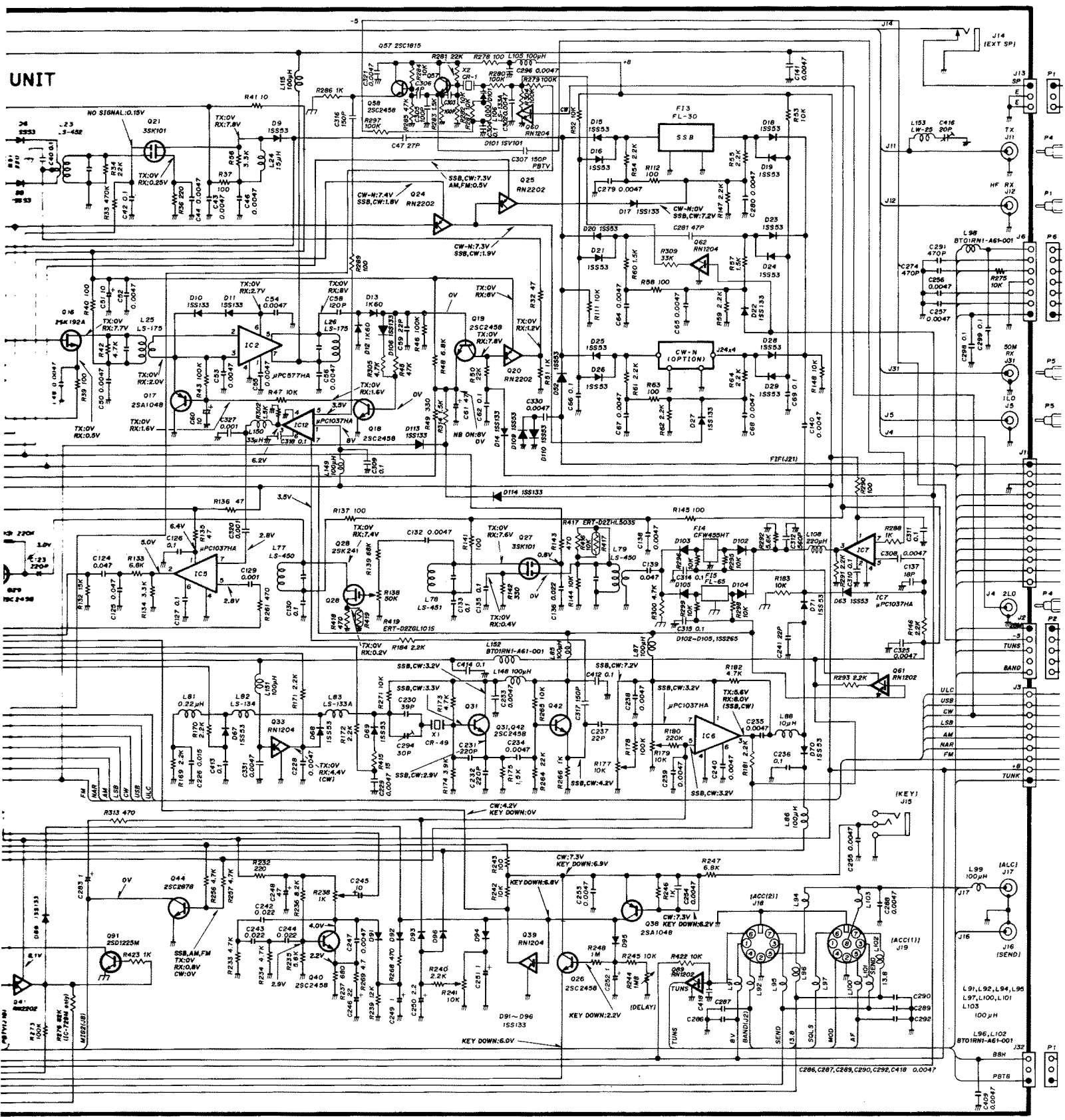
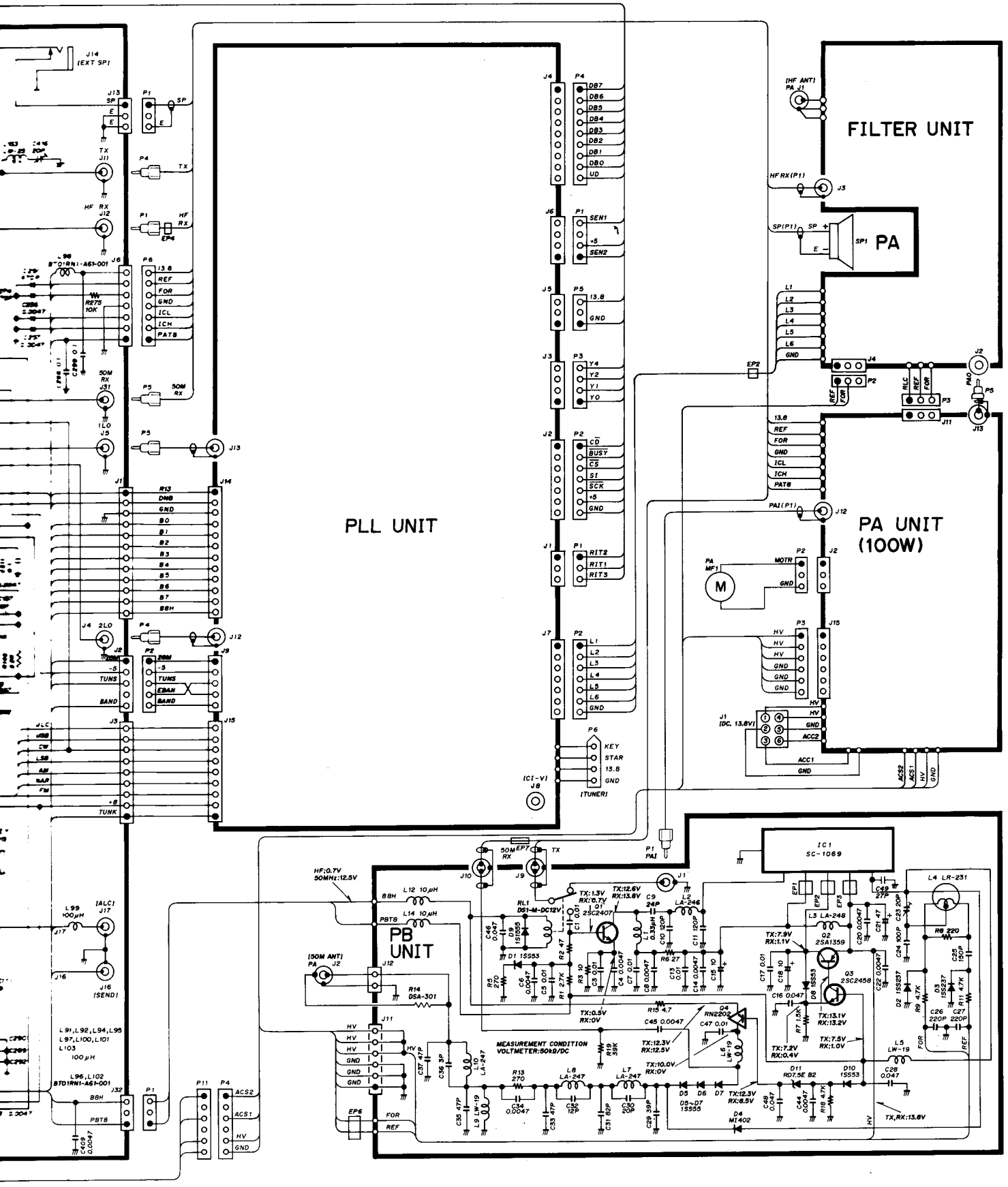
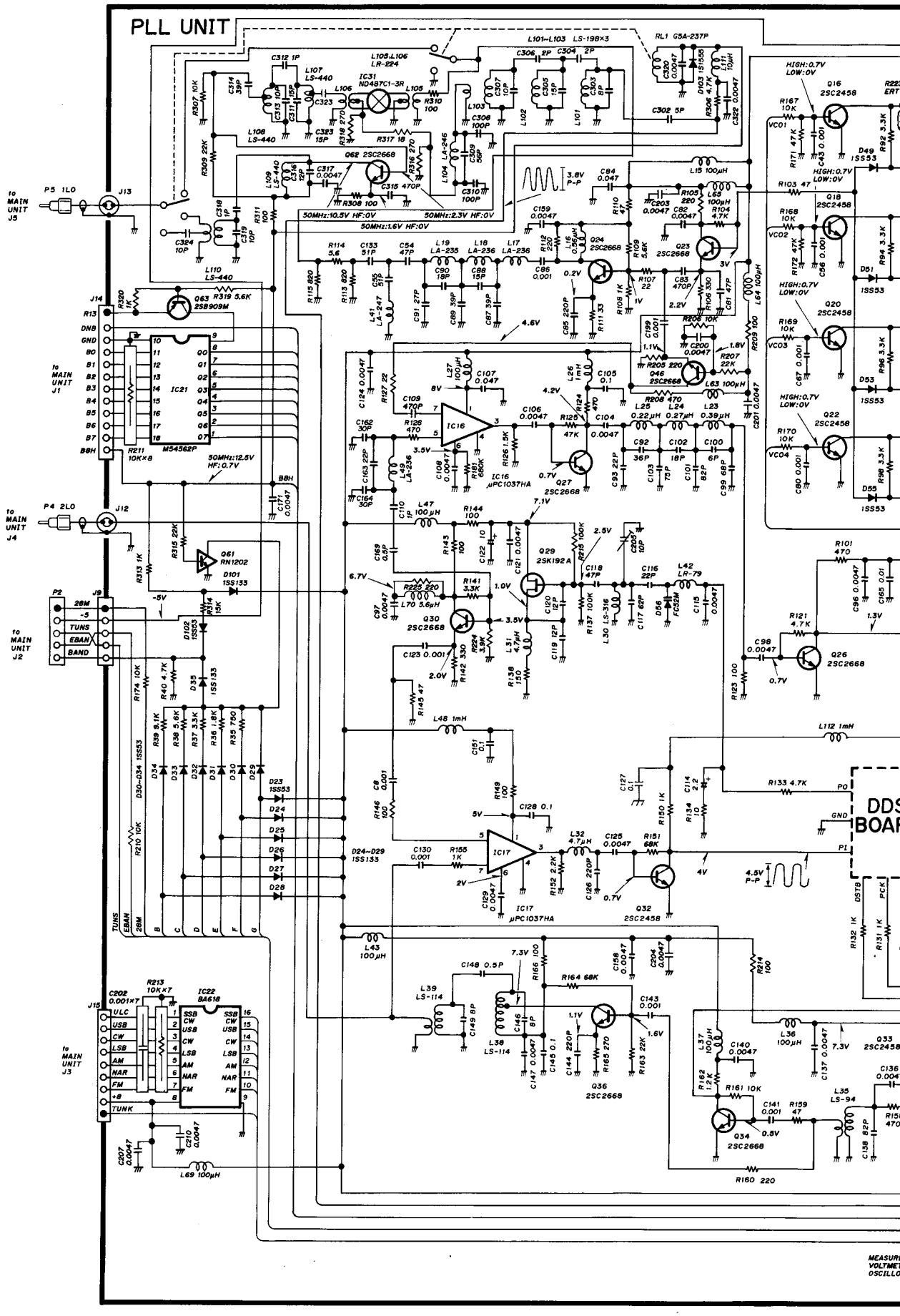
L997 LS-198
L998 LS-198
L999 LS-198
L1000 LS-198

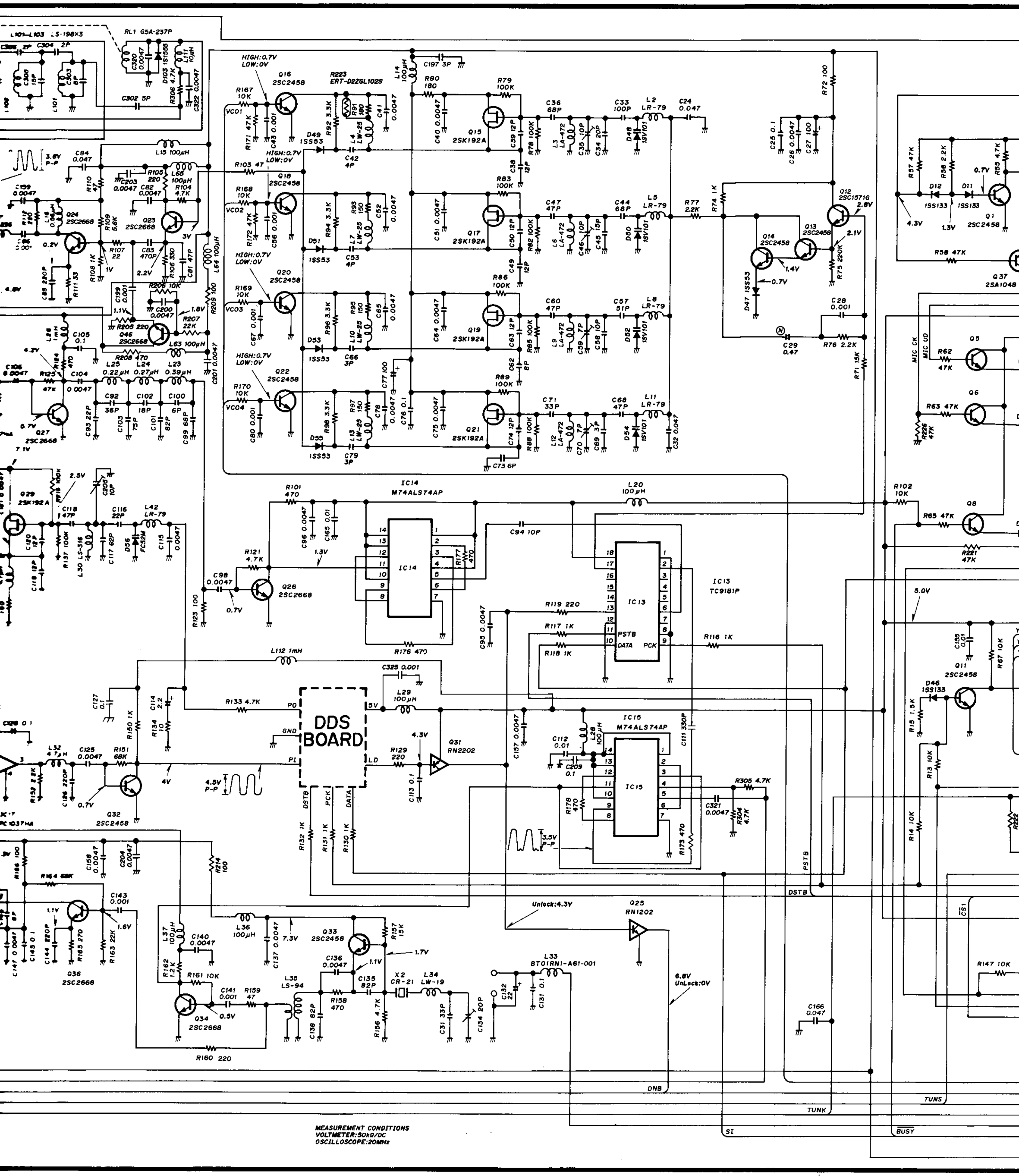

MAIN UNIT


UNIT
NO SIGNAL:0.15V
TX:0V RX:7.8V
TX:0V RX:0.25V
TX:0V RX:2.7V
TX:0V RX:8V
TX:0V RX:7.7V
TX:0V RX:2.0V
TX:0V RX:1.6V
TX:0V RX:0.5V
TX:0V RX:7.4V
TX:0V RX:7.6V
TX:0V RX:0.4V
TX:0V RX:0.2V
TX:0V RX:4.4V (CW)
TX:0V RX:1.2V
TX:0V RX:7.8V
SSB,CW:7.3V AM,FM:0.5V
CW-N:7.4V SSB,CW:1.6V
CW-N:7.3V SSB,CW:1.9V
CW-N:0V SSB,CW:7.2V
NB ON:8V 0V
SSB,CW:3.2V
SSB,CW:3.3V
SSB,CW:7.2V
SSB,CW:2.9V
SSB,CW:4.2V
SSB,CW:3.2V
CW:4.2V KEY DOWN:0V
CW:7.3V KEY DOWN:6.9V
KEY DOWN:6.6V
KEY DOWN:2.2V
KEY DOWN:6.0V
SSB,AM,FM TX:0V RX:0.8V CW:0V
(DELAY)
(KEY) J15
[ALC] J17
[ACC(2)] J18
[ACC(1)] J19
[SEND] J16
J14 (EXT SP)
J13 SP
J11 TX
J12 HF RX
J31 50M RX
J5 1LO
J4 2LO
J2 -5 TUNS BAND
J3 ULC USB CW LSB AM NAR FM +8 TUNK
J1
J32 88M PBTB
F1F(J21)
F13 FL-30 SSB
F14 CFW455HT
F15 FL-65
CW:N (OPTION)
IC1 μPC577HA
IC2 μPC577HA
IC5 μPC1037HA
IC6 μPC1037HA
IC7 μPC1037HA
IC12 μPC1037HA
Q16 2SK192A
Q17 2SA1048
Q18 2SC2458
Q19 2SC2458
Q20 RN2202
Q21 3SK101
Q24 RN2202
Q25 RN2202
Q26 2SC2458
Q27 3SK101
Q28 2SK241
Q31,Q42 2SC2458
Q33 RN1204
Q38 2SA1048
Q39 RN1204
Q40 2SC2458
Q41 RN2202
Q44 2SC2878
Q57 2SC1815
Q58 2SC2458
Q61 RN1202
Q62 RN1204
Q89 RN1202
Q91 2SD1225M
L91,L92,L94,L95 L97,L100,L101 L103 100μH
L96,L102 BT01RN1-A61-001
C286,C287,C289,C290,C292,C418 0.0047

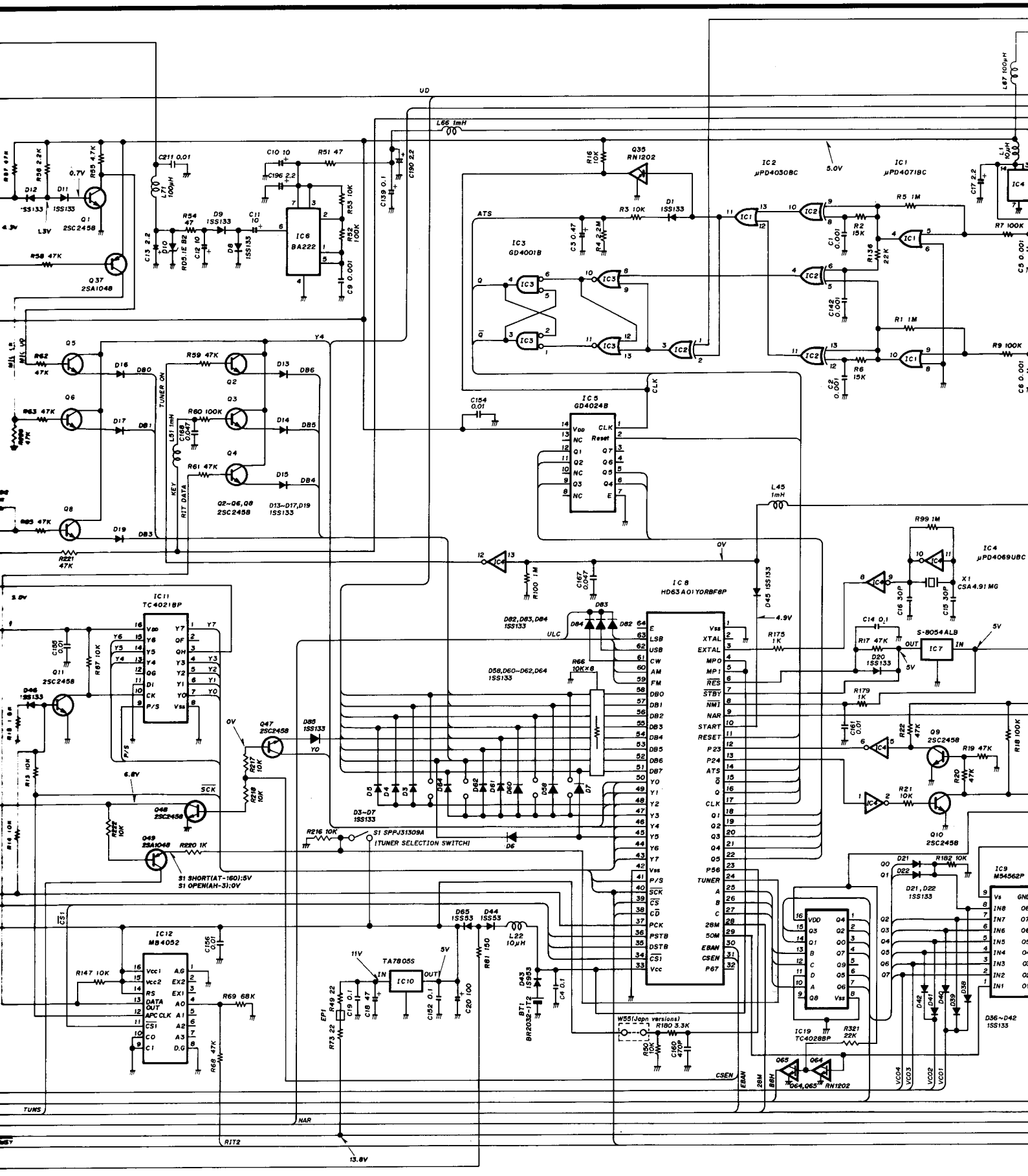

FILTER UNIT
PA
PA UNIT
(100W)
PLL UNIT
PB
UNIT
IC1
SC-1069
[HF ANT]
PA J1
HF RX(P1)
SP(P1)
PA(P1)
[50M ANT]
PA J2
[ALC]
[SEND]
[TUNER]
[DC 13.8V]
MEASUREMENT CONDITION
VOLTMETER:50kΩ/DC
HF:0.7V
50MHz:12.5V
TX,RX:13.8V

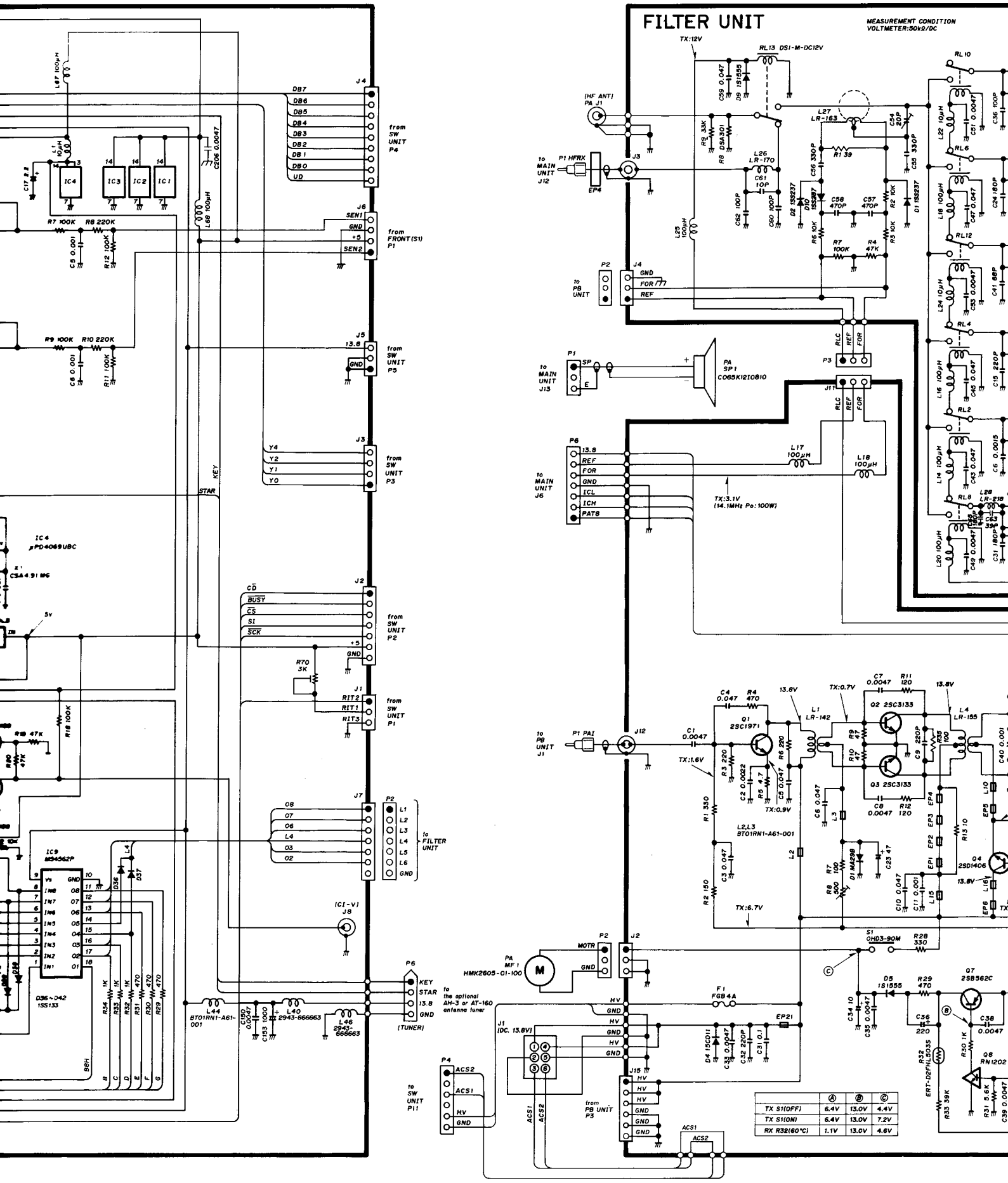
9-2 PLL AND PA UNITS

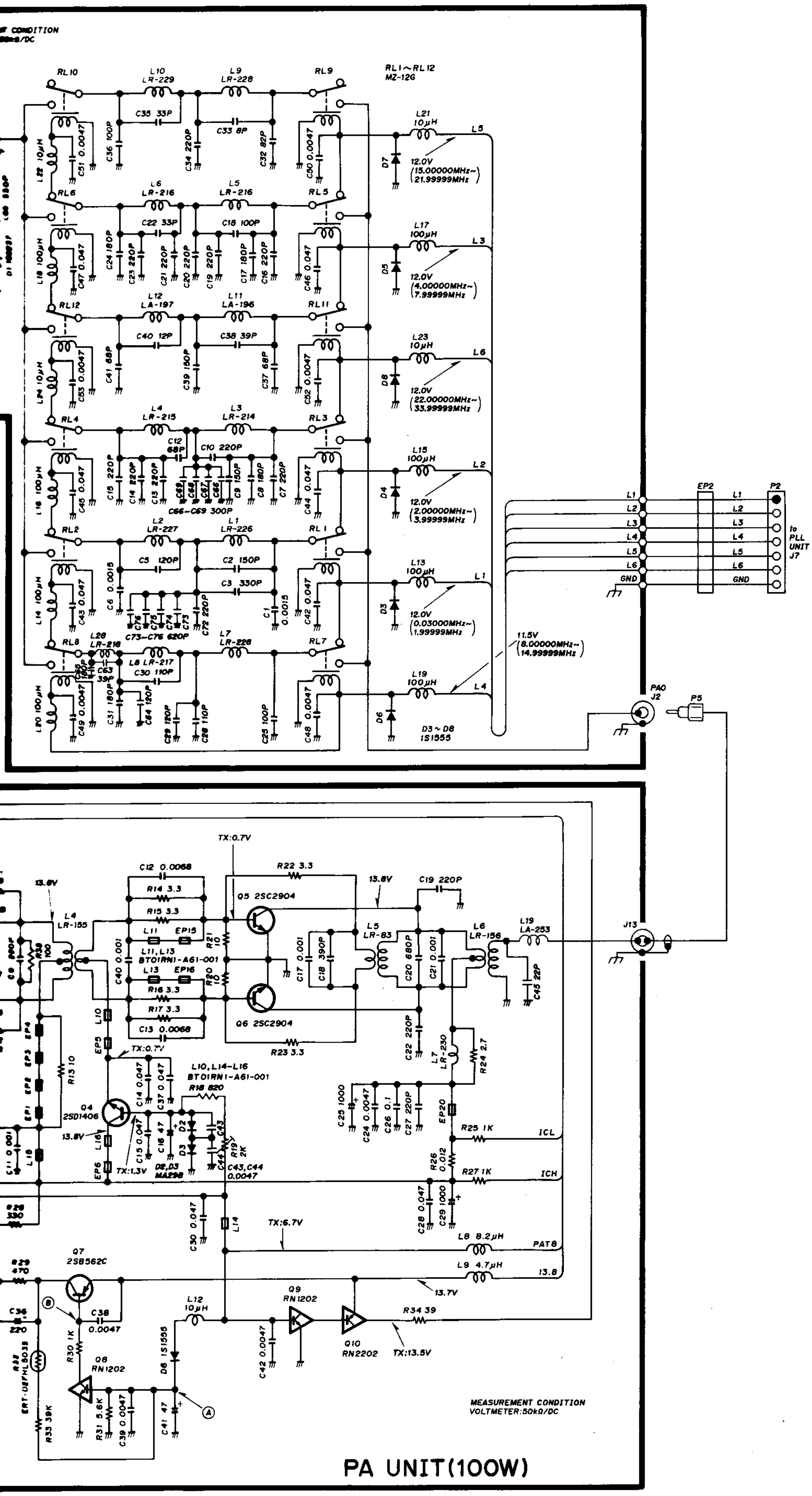




L101–L103 LS-198×3
RL1 G5A-237P
DDS BOARD
IC14 M74ALS74AP
IC13 TC9181P
IC15 M74ALS74AP
Q16 2SC2458
Q18 2SC2458
Q20 2SC2458
Q22 2SC2458
Q15 2SK192A
Q17 2SK192A
Q19 2SK192A
Q21 2SK192A
Q12 2SC1571G
Q13 2SC2458
Q14 2SC2458
Q23 2SC2668
Q24 2SC2668
Q26 2SC2668
Q27 2SC2668
Q29 2SK192A
Q31 RN2202
Q32 2SC2458
Q33 2SC2458
Q34 2SC2668
Q36 2SC2668
Q25 RN1202
Q46 2SC2668
Q1 2SC2458
Q11 2SC2458
Q37 2SA1048
R223 ERT-D2ZGL102S
HIGH:0.7V LOW:0V
VCO1
VCO2
VCO3
VCO4
PSTB
DATA
PCK
DSTB
DNB
TUNK
TUNS
SI
BUSY
Unlock:4.3V
6.8V UnLock:0V
X2 CR-21
L33 BT01RN1-A61-001
MIC CK
MIC UD
MEASUREMENT CONDITIONS
VOLTMETER:50kΩ/DC
OSCILLOSCOPE:20MHz


UD
L66 1mH
IC2 μPD4030BC
IC1 μPD4071BC
5.0V
Q35 RN1202
ATS
IC3 GD4001B
IC5 GD4024B
CLK
Reset
IC6 BA222
TUNER ON
KEY
RIT DATA
Q2~Q6,Q8 2SC2458
D13~D17,D19 1SS133
IC8 HD63A01YORBF6P
ULC
D82,D83,D84 1SS133
D58,D60~D62,D64 1SS133
R66 10KX8
D3~D7 1SS133
S1 SPPJ31309A (TUNER SELECTION SWITCH)
S1 SHORT(AT-160):5V
S1 OPEN(AH-3):0V
IC11 TC40218P
IC12 MB4052
IC10 TA7805S
11V
5V
13.8V
W55(Japan versions)
IC19 TC4028BP
IC4 μPD4069UBC
X1 CSA4.91MG
S-8054ALB
IC7
IC9 M54562P
D36~D42 1SS133
D21,D22 1SS133
Q64,Q65 RN1202
TUNS
NAR
RIT2
CSEN
EBAN
28M
88M
VCO4
VCO3
VCO2
VCO1


FILTER UNIT
MEASUREMENT CONDITION
VOLTMETER:50kΩ/DC
TX:12V
RL13 DSI-M-DC12V
RL10
[HF ANT] PA J1
to MAIN UNIT J12
P1 HFRX
EP4
J3
L27 LR-163
L26 LR-170
L25 100μH
P2
J4
to PB UNIT
GND
FOR
REF
P3
J11
RLC
REF
FOR
P1
SP
E
PA SP1 CO65K121O810
to MAIN UNIT J13
P6
13.8
REF
FOR
GND
ICL
ICH
PAT8
to MAIN UNIT J6
L17 100μH
L18 100μH
TX:3.1V (14.1MHz Po:100W)
RL6
RL12
RL4
RL2
RL8
L28 LR-218
L22 10μH
L19 100μH
L24 10μH
L16 100μH
L14 100μH
L20 100μH
C36 100P
C24 180P
C41 68P
C15 220P
C6 0.0015
C63 39P
C31 180P
J4
DB7
DB6
DB5
DB4
DB3
DB2
DB1
DB0
UD
from SW UNIT P4
J6
SEN1
GND
+5
SEN2
from FRONT(S1) P1
J5
13.8
GND
from SW UNIT P5
J3
Y4
Y2
Y1
Y0
from SW UNIT P3
KEY
STAR
J2
CD
BUSY
CS
SI
SCK
+5
GND
from SW UNIT P2
R70 3K
J1
RIT2
RIT1
RIT3
from SW UNIT P1
J7
08
07
06
L4
03
02
P2
L1
L2
L3
L4
L5
L6
GND
to FILTER UNIT
(CI-V) J8
P6
KEY
STAR
13.8
GND
(TUNER)
to the optional AH-3 or AT-160 antenna tuner
to SW UNIT P11
ACS2
ACS1
HV
GND
from PB UNIT P3
J15
J1 (DC. 13.8V)
P4
IC4 μPD4069UBC
IC9 M54562P
D36~D42 1SS133
L44 BTO1RN1-A61-001
L40 2943-666663
L46 2943-666663
C153 1000
C150 0.047
R7 100K
R8 220K
R9 100K
R10 220K
R11 100K
R12 100K
R18 100K
R19 47K
C5 0.001
C6 0.001
C206 0.0047
L68 100μH
L67 100μH
L1 10μH
C17 2.2
IC4
IC3
IC2
IC1
5V
C4 0.047
R4 470
C7 0.0047
R11 120
13.8V
TX:0.7V
Q1 2SC1971
Q2 2SC3133
Q3 2SC3133
L1 LR-142
L4 LR-155
P1 PAI
J12
to PB UNIT J1
C1 0.0047
TX:1.6V
R3 220
C2 0.0022
R5 4.7
C5 0.047
TX:0.9V
R6 820
R9 47
R10 47
C9 220P
R35 100
C8 0.0047
R12 120
R1 330
L2,L3 BTO1RN1-A61-001
L2
L3
C6 0.047
C3 0.047
R2 150
TX:6.7V
R7 100
R8 820
D1 MA4S28
C23 47
C10 0.047
C11 0.001
L15
L10
EP5
EP4
EP3
EP2
EP1
EP6
R13 10
Q4 2SD1406
13.8V
L16
TX
S1 OHD3-90M
R28 330
PA MF1 HMK2605-01-100
P2
MOTR
GND
J2
F1 FGB4A
EP21
D4 1SD111
C33 0.0047
C32 220P
C31 0.1
D5 1S1555
R29 470
Q7 2SB562C
C34 10
C35 0.0047
C36 220
C38 0.0047
R32 ERT-D2FHL303S
R30 1K
Q8 RN1202
R33 39K
R31 5.6K
C39 0.0047
Ⓐ
Ⓑ
Ⓒ
TX S1(OFF) 6.4V 13.0V 4.4V
TX S1(ON) 6.4V 13.0V 7.2V
RX R32(60°C) 1.1V 13.0V 4.6V


RL1~RL12
MZ-12G
to
PLL
UNIT
J7
D3~D8
1S1555
PAO
J2
P5
J13
MEASUREMENT CONDITION
VOLTMETER:50kΩ/DC
PA UNIT(100W)

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