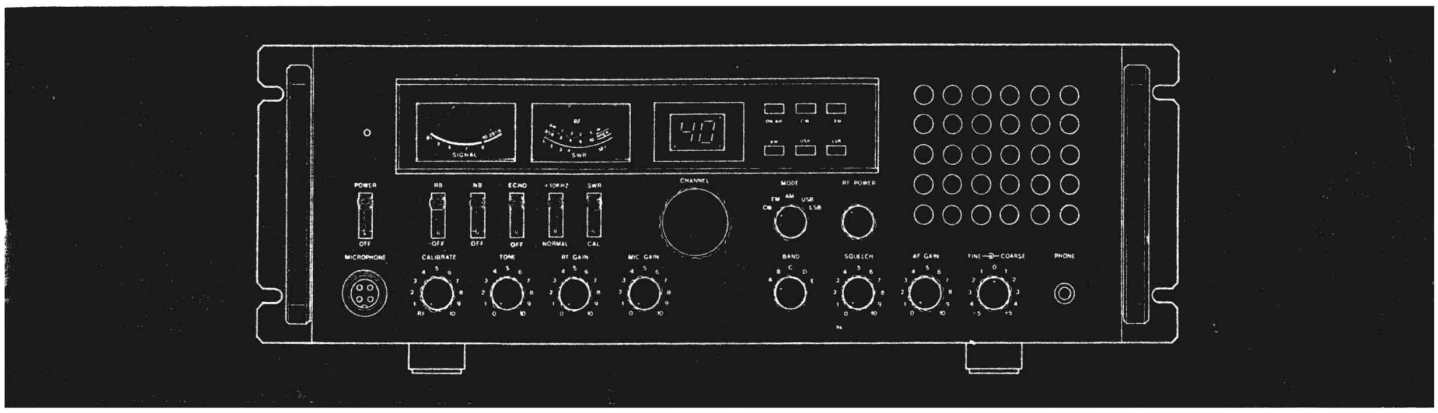


OWNER'S MANUAL

Deluxe Base Station Transceiver
Full Channels AM/FM/SSB/CW
AM/FM 10W • SSB 21W
with Roger Beep and ECHO

TABLE OF CONTENTS

Section 1 Specification

Thank you for your confidence in selecting **base station** two-way radio equipment. We know you'll find your transceiver as exciting as it is practical. Many years of valuable experience designing electronic products are behind our two-way communications systems. Only the highest quality components are incorporated into **base station** radios to assure reliability and maximum performance.

Installing and operating the **base station** radio is not complicated, but the flexibility provided by its numerous operating features may not be fully appreciated until a little time is spent becoming familiar with its controls and connections. It will be to your advantage to save all the packing materials-cartons, fillers, cushoning, etc., they will prove valuable in preventing damage should you ever have occasion to transport or ship the your **base station** radio Dealer.

Specifications

General

Channels	3000 channels
Modulation Modes	CW, FM, AM, USB, LSB
Frequency Range	26.065 to 28.305 MHz
Frequency Control	Phase-locked synthesizer
Frequency Tolerance	±0.005%
Frequency Stability	±0.003%
Operating Temperature Range	−30°C to + 50° C
Microphone	Plug-in [4-pin], 600 Ohm dynamic type
AC Input Voltage	110V 50Hz (220V 60Hz)
AC Power Consumption	90W
Antenna Connectors	Standard SO-239 type
Semiconductors	9 IC, 1 FETs, 61 Transistors
Meter #1	Indicates relative RF power output/antenna SWR
Meter #2	Indicates received signal strength

Transmitter

Power Output	CW/AM/FM 10W LSB/USB 21W
SSB Generation	Dual-balanced modulation
AM Modulation	Class B amplitude, collectors modulation
AM Modulation Capability	Up to 100%
FM Deviation	±1.5 KHz @ 1,250 Hz 20 mV audio
Clarifier Range	±5 KHz
Harmonic and Spurious Emission	Better than 60 dB
AM/FM Frequency Response	400 to 5,000 Hz
SSB Frequency Response	400 to 3,000 Hz
Output Impedance	50 Ohms unbalanced
Output Indicators	RF Meter shows relative RF output power.

Receiver

AM Sensitivity	1 μV for 10 dB S/N
FM Sensitivity	1 μV for 20 dB S/N
SSB Sensitivity	0.2 μV for 10 dB S/N
AM/FM Selectivity	5 dB at 4 kHz, 50 dB at 10 kHz
SSB Selectivity	5 dB at 2 kHz
Image Rejection	More than 50 dB
IF Rejection	More than 80 dB at 455 kHz
AGC	Change in audio output less than 12 dB: from 10μV to 0.4V
Squelch	Adjustable -threshold less than 0.7 μV
Audio Frequency Response	400 to 2,500 Hz
Distortion	Less than 10% at 2 watts output into 8 Ohms
Adjacent Channel Rejection	>75 dB
Cross Modulation	>50 dB
Intermediate Frequency	10.695 MHz [Am-1st, SSB], 455 KHz [AM-2nd]
Clarifier Range	±5 KHz
Noise blanker	IF single gate type
Audio Output Power	More than 3 watts into 8 Ohms
Built-in Speaker	8 Ohms, dynamic
External Speaker (optional)	Disables internal speaker when connected

Section 2 Installation

Location/Connection
The transceiver should be placed in a convenient operating location close to an AC power outlet and the antenna lead-in cable (s).

The transceiver is attached with the AC power cord set. Proceed as follows to complete all necessary connections to the transceiver.

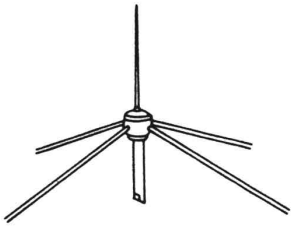
1) Your transceiver has standard antenna connectors of type SO-239 both located on rear panel, for easy connection to standard PL-259 coax plugs. If the coax antenna cable must be made longer, use coax cable with impedance of 50 ohms, frequency ratings for 27 MHz, and use only enough cable to suit your needs. This will insure a proper impedance match and maximum power transfer from the transmitter to the antenna.
2) **AC Power Operation** : Use 110 (220) volts AC power for the base station.

Noise Interference
There are several kinds of noise interfering you may encounter in base station operation. Some of these noise sources are; fluorescent buzz, nearby commercial broadcast, electrical appliance, lawnmower, and electrical storms, etc. Commercial products are available to reduce interference from these sources. Consult your dealer or CB/amateur radio supply shops.

Antennas

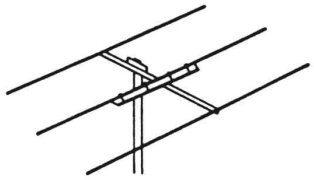
For best transmission and reception, your CB transceiver should use an antenna especially designed for a frequency of 27 MHz. Antennas are purchased separately and include installation instructions. Numerous types of CB antennas are available that range from emphasis on ease of installation to emphasis on performance. Often the difference in performance between many of the antenna is modest.

1) Vertical Ground Plane Antennas.
These are omnidirectional antennas that provide optimum performance for contacting other fixed stations using vertical type antennas in addition to all mobile stations. For mediumlong range communications work.



Ground Plane

2) Directional Beam Antennas.
Highly efficient and directional antennas generally intended for fixed-to-fixed very long range communications.



Directional Beam
Antenna

Remote Speaker

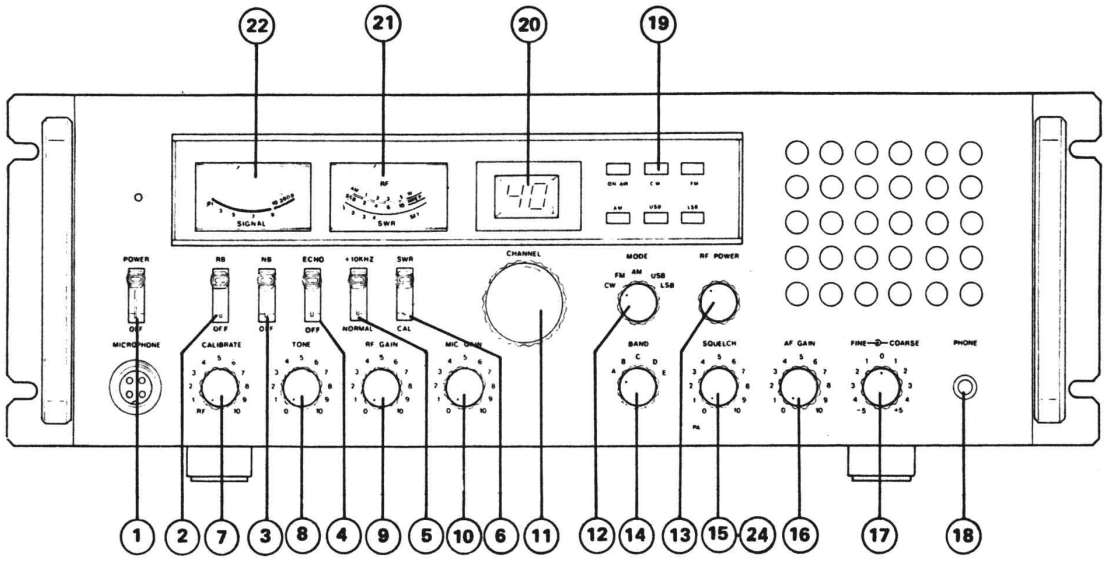
The external speaker jack (EXT. SP) on the rear panel is used for remote receiver monitoring. The external speaker should have 8 ohms impedance and be able to handle at least 3 watts. When the external speaker is plugged in, the internal speaker is disconnected.
Note. The PHONE jack on the front panel overrides both external and internal speakers. When the plug from a headphone is plugged to the PHONE jack, both internal and external speakers are silenced simultaneously.

Public Address
An external 8 ohm, 3 watt speaker must be connected to the PA jack located on the rear panel when the transceiver is used as a public address system. The speaker should be directed away from the microphone to prevent acoustic feedback. Physical separation or isolation of the microphone and speaker is important when operating the PA at high output levels.

Section 3 Operation

Controls/Indicators

There are 17 controls and 10 indicators on the front panel.



Control Functions

1 Power/On-off
Place in **Power** (lever up) position to apply power to the unit.

2 RB Switch
This switch activates the ROGER BEEP circuit when placed in RB (lever up) position.

3 NB Switch
This switch activates the noise blanker circuit in the audio when placed in NB (lever up) position.

4 ECHO Switch
Set this switch to ECHO when you desire to add an echo effect to your transmitting voice. This switch has no effect on receiving.

5 +10KHz Switch
This switch activates the frequency is shifted 10 KHz up. On following channels. A channel can be used by setting this switch to +10KHz position.

Normal	+10KHz
3	3A
7	7A
11	11A
15	15A
19	19A

6 SWR-Calibrate Switch
This switch changes the SWR meter function in two ways:
- **CALIB (lever down)**: Used to calibrate the SWR Meter before measuring your antenna SWR ratio.
- **SWR (lever up)**: Used to directly read the SWR of antenna connected to the unit. See Accessory Circuit Operation.

7 Calibrate Control
This control is used for calibrating the SWR meter for accurate SWR readout in conjunction with the SWR-CALIB Switch.
Note: So that the meter functions as RF power meter, be sure to set this control to fully counterclockwise position marked **RF.**

8 Tone Control
This changes tonal sound quality when receiving. Clockwise rotation will emphasize the high tone.

9 RF Gain
This control is used primarily to optimize the reception in strong signal areas. Under normal operating conditions the control should be turned fully clockwise. When strong overloading or distorted signals are received rotate this control counterclockwise to reduce gain.
Note: The Squelch Control 15) may require readjustment with reduced RF Gain control.

10 Microphone Gain
A preamplifier circuit is built into this unit to increase microphone gain. Experiment with this control for the setting that will best suit your individual use.

11 Channel Selector
Has 40 detents in a turn and selects one of the channels desired. Use the Channel selector in conjunction with the Band Select switch. The selected channel is digitally displayed in the window above the selector.

12 Mode Selector
Selects the mode of operation in either CW, standard FM, AM or USB and LSB. Transmissions in any mode can only be communicated to stations operating in the same mode.

13. RF Power
This control that to adjust the RF power output level you want in AM or FM transmission.

14 Band Select Switch
Used with the channel selector. Selects one of 5 bands of 40 frequencies.. See back cover to page 11 for information of channel provision and frequencies.

15 Squelch
This control is used to cut off or eliminate receiver background noise in the absence of an incoming signal. For maximum receiver sensitivity it is desired that the control be adjusted only to the point where the receiver background noise or ambient background noise is eliminated. Turn fully counterclockwise then slowly clockwise until the receiver noise just disappears. Any signal to be received must now be slightly stronger than the average received noise. Further clockwise rotation will increase the threshold level which a signal must overcome in order to be heard. Only strong signals will be heard at a maximum clockwise setting.

16 AF Gain
Permits you to adjust the listening level when receiving.

17 Coarse Control
Allows variation of the receiver operating frequencies above and below the assigned frequency. Although this control is intended primarily to tune in SSB signals, it may be used to optimize AM/FM signals as described in the Operating Procedure Paragraphs.

18 Phone Jack
Accepts a plug from a headset of 4 to 32 Ohm impedance. Insertion of the plug will silence the built in speaker (and external speaker connected to External Speaker jack).

19 Function Indicators
LED indicators located in the LED area permit you to know instantly the mode to which the unit is engaged.
On Air: Lights up during transmit mode indicating you are on-the-air.

CW-FM-AM-USB-LSB: Indicates a corresponding mode selected by the Mode selector 12.

20 Channel Readout
This is the LED [light emitting diode] digital readout to indicate the channel selected by the Channel selector.

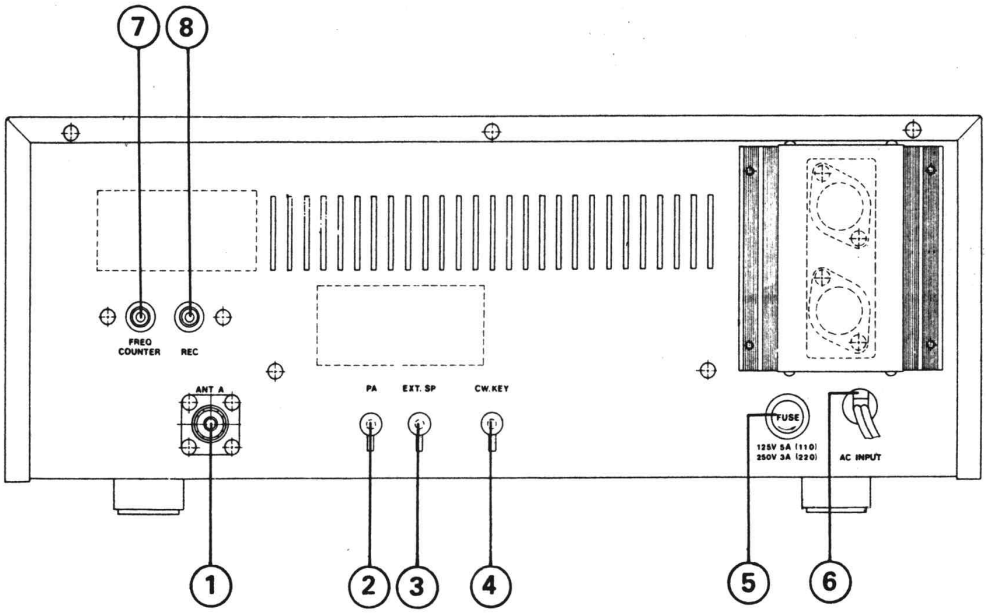
21 Power/SWR Meter
Used for two purpose - to indicate relative transmitter power when transmitting and to indicate antenna SWR [standing wave ratio]. Note that the power meter has separate scales for AM (FM) and SSB (CW) transmission, respectively.

22 S [Signal] Meter
The left hand meter provides a relative indication of the signal strength of a received signal in S units during reception. Note that SSB signals will respond this meter only during voice modulation. This being due to the fact that SSB transmissions do not contain a continuous RF carrier as is found on AM or FM and CW.

23 Push-to-Talk Microphone
The receiver and transmitter are controlled by the Push-to-Talk switch on the microphone. Press the switch and the transmitter is activated; release the switch to receive. When transmitting, hold the microphone two inches from the mouth and speak clearly in a normal voice. The radio comes complete with the low impedance dynamic microphone (supplied). Note: Depressing the Push-to-Talk switch on the microphone is also required to activate the PA system.

24 PA Switch (PULL)
This switch selects the public address mode of the transceiver. The PA function should not be used unless an external speaker is connected to the PA SP jack on the rear panel. See the Public Address Operation on page 6.

Rear Panel



Rear Panel Connectors

1 Antenna
Accepts 50 ohm coaxial cable with a type PL-259 plug to be connected.

2 PA Speaker Jack
Used for public address operation. The PA speaker should be connected to this jack using 1/8" (3.6mm) diameter plug. Insertion of an external speaker into the External Speaker jack will not interrupt the PA operation.

3 External Speaker Jack
Used to connect an external speaker for extra sound source. Use 1/8" (3.6mm) diameter plug for connection. Insertion of the plug into this jack will silence the internal speaker.

4 CW Key
Use for morse code operation. Connect a CW key to this jack and place the CW/FM/AM/USB/LSB switch in the CW position.

5 Fuse
Accomodates a fuse for AC input circuit protection. Use 125V 5A or 250V 3A fuse for replacement.
Note. Before replacing the fuse, see your dealer to check to find out the reason why the fuse was blow. Replacing without check may only blow the fuse again.

6 AC Power Cord
Connects to AC power outlet for AC mains supply.

7 Frequency Counter Output Jack
The RCA-type (pin) jack is used to connect an optional frequency counter so that you can watch channel frequency digitally. The frequency counter readout will be possible on transmitting only.

8 Recording Output Jack
The RCA-type (pin) jack provides output for connection to a tape recorder to permit recording of received signals or your modulating voice.

Operating Procedure To Receive

IMPORTANT: Make sure that the antenna, power source, and microphone are connected before you operate.

1) Set the ECHO switch to OFF position.
2) Turn the unit on by setting the Power Switch to On position. Now the meters, Channel Indicator, and Function Indicators will be illuminated.
3) Temporarily, set the Mode Switch in AM position.
4) Set the Squelch Control in fully counterclockwise position and ajust the AF Gain control for a comfortable listening level.
5) Listen to the background noise from the speaker. Turn the Squelch Control slowly clockwise until the noise just disappears (no signal should be present). Leave the Squelch Control at this setting. The Squelch Control is now properly adjusted. The receiver will remain quiet until a singal is actualy received. Do not advance the Squelch Control too far clockwise or some of the weaker signals will not be heard.
6) Depress the Coarse and set it to the center (12 o'clock) position.
7) Select a desired mode of operation, CW, FM, AM, USB or LSB and adjust the Clarifier.
8) Select a channel you desire by the Band Select switch, then by the Channel Selector.

Operating Procedure To Transmit

1) Select the desired channel and mode of transmission.
2) If the channel is clear, depress the Push-to-Talk switch on the microphone. Speak in a normal tone of voice.

Standby-Beep

A special provision has been built in you radio to give other stations a sign which tells that you are turning to receive. Without needing switching operation to activate this feature, a been tone is automatically transmitted at each time you release the push-to-talk switch on the microphone to turn to receive mode.

Microphone gain control

A preamplifier circuit is built into the radio to increase the microphone gain. Experiment with the control for setting that will best suit your individual use.

Note. When the microphone gain control is set to maximum, ambient noise may also be picked up by the microphone. In high noise situations, low microphone gain setting may produce the best results.
The microphone gain control is also used to adjust PA loudness.

Public Address Operation

To use this feature of the transceiver, a speaker having a voice coil impedance of 8 to 16 ohms and a power handling capability of at least 3 watts should be connected to the PA SP jack on the rear panel. Be sure that there is physical separation between the microphone and the PA speaker itself. If the PA speaker is located very close to the microphone, acoustic feedback will result when the PA amplifier is operated at high volume (or when PA is used indoors). Adjustment of PA volume is made with the MIC GAIN control.

SWR Measurement

Most antennas are factory tuned, but the antenna efficiency may be peaked by slightly adjusting the length of antenna using the SWR meter built into the unit. This adjustment may improve the antenna standing wave ratio (SWR). The SWR permits you to determine how well matched the antenna and its cables are to your transceiver.

1) Set the unit in the receive mode as instructed under the Operating Procedure to Receive section.
2) Set the Mode switch to AM position; the SWR-Cal 6 switch to the Cal position.
3) Press the Push-to-Talk switch on the microphone and turn the Calibrate Control clockwise (past click) so that the SWR meter pointer exactly coincides with the Set mark on the scale. Release the Push-to-Talk switch.
4) Set the SWR-Cal switch to the SWR position and depress the Push-to-Talk switch again. The SWR of your antenna is read directly on the scale.
Note: An SWR below 2 or less is desired as this indicates that over 95% of the transmitted power is broadcast into the air.

Section 4 Maintenance & Adjustment

Circuit Theory

The concept of PLL system frequency synthesization is not of recent development, however, it has not been a long age since the digital theory has been coupled with the PLL synthesization technology. Although details of the PLL theory is somewhat complicated and not within the scope of this brochure, we hereby provide the fundamental theory of it.

PLL Circuitry. PLL is an abbreviation of the phase-locked loop which is fundamentary composed of a closed loop feedback circuit. The feedback component is the balance of frequency drifts and the PLL circuit acts to cancel it out. To detect out the frequency drift of the PLL output, a fixed reference oscillator (10 kHz, 1/1024 divided down from 10.240 MHz) is compared constantly with the input frequency (10 kHz). The input frequency is obtained by dividing the VCO frequency. A functional block diagram is provided below under 'PLL Circuit' for the easier understanding.

Off-Set frequency oscillator TR-29 The off-set-frequency oscillator TR-29 oscillates at 14.460 MHz for all band Switching between these oscillating frequencies is made by biasing the diodes D 97 to D111.
The off-set frequency signal is obtained at TR-29 emitter and flows through L-16 and C-88 into TR-25 mixer where it is beat with the VCO signal. The VCO signal is obtained from the following:

$$f_{VCO} = f_{off\text{-}set} + N_{fr}$$

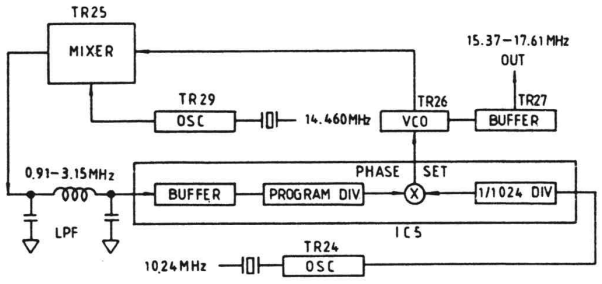
Where, f_{VCO} = VCO frequency, N = programming code for divider output, fr = reference frequency step, 0.01 MHz.

i.e. At channel #1 in band A, and AM band corresponding N code is 91.

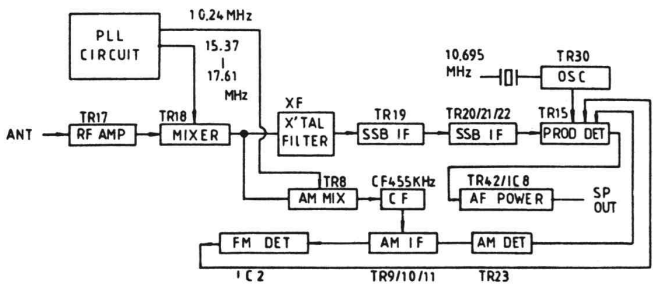
$$f_{VCO} = 14.460 + 91 \times 0.01 = 15.370 \text{ MHz}$$

Since the mixer output is determined by two factors-the off- set frequency output (dependent on band selector switch) and the VCO output, the mixer output contains the subtracted frequencies of 0.91 to 3.15 MHz. These frequencies appear in pin #2 of IC-5 through C-82, and divided by the progrrammable divider in IC-5 down to 10 KHz which is compared with another 10 KHz signal obtained from the reference oscillator (10.240 MHz).
The VCO output is mixed with the off-set frequency signal and applied to the TX mixer IC-9 through band-pass filters L-43 and L-44. i.e. At channel 1 in band A, and AM band, the TX mixer IC-9 accepts 15.370 + 10.695 MHz = 26.065 MHz is TX frequency. The mised with 10.695 MHz signal from Tr-30. When receiving channel 1 in band A (26.065 MHz), the 1st RX mixer TR-18 accepts 15.370 local signal at its base, and converts down it to 10.695 MHz IF (for AM/FM modes, this is the 1st intermediate frequency). TR-18 off-sets the 10.695 MHz signal so that TR-30 can oscillates at 10.6975 MHz for LSB.

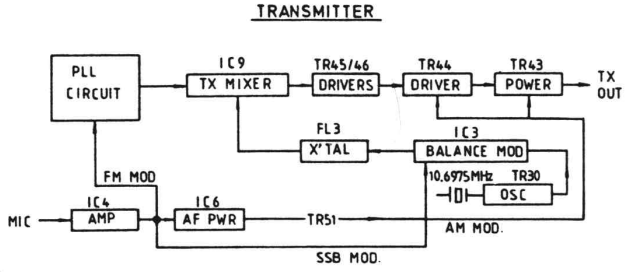
PLL CIRCUIT



RECEIVER



TRANSMITTER



Alignment Procedure

1– Measurement Condition
(1) Reference temperature_____25° C
(2) Reference humidity_____65%
Note: Unless otherwise specified, alignment may be performed under the room temperature of 5°– 35° C and the room humidity of 45 – 80%.
3) Power supply_____AC 110V or 220V ±3%

2– Test Equipment. All test equipment should be properly calibrated.
a) 50 Ohms resistive antenna load, 40W.
b) Frequency counter operable in the required frequency range.
c) HF signal generator operable over 50 kHz to 60 MHz.
d) Synchroschope, 0–100 MHz, high input Z.
e) FM deviation meter.
f) Digital voltmeter
g) 8 Ohms 5W resistive speaker load.
h) Two audio signal generators, 10 Hz to 20 kHz, attenuative.
i) RF wattmeter, 50 ohm/40 watt, thermocoupled.
j) Circuit tester, input impedance 20 kOhm/V.
k) Regulated DC power supply, more than 6A.
l) Dummy microphone plugs, receive and transmit mode.
m) VTVM, 0.1 mV measurable.

3– PLL Circuit Alignment
A. [10.24 MHz] Reference Frequency Adjustment (Check)
1) Connect ferquency counter to pin terminal between C-78 and C-79.
2) Check counter reads 10.24000 MHz.
3) Tolerance within ±200 Hz is acceptable. Otherwise, replace X-1 (10.24 MHz).

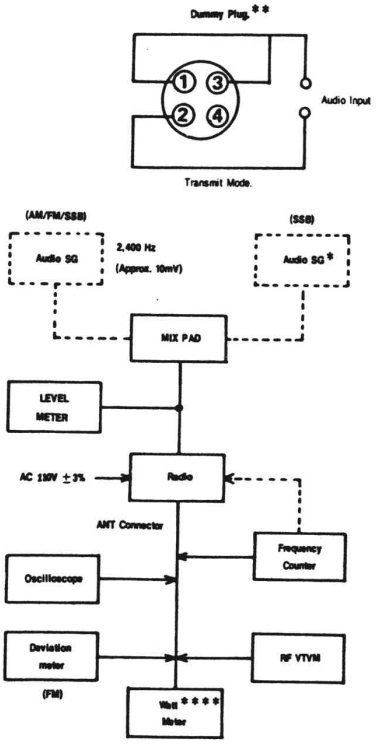
B. [10.695/10.6925/10.6975 MHz] Adjustment.
1) Connect frequency counter to TP-6.
2) 10.695 MHz: Set the mode selector to CW. Adjust L-26 to 10.695 MHz + 0, –100 Hz.
3) 10.6925 MHz: Reset Mode Selector to USB. Adjust L-27 to 10.6925 MHz, + 0, –100 Hz.
4) 10.6975 MHz: Reset Mode Selector to LSB. Adjust L-28 to 10.6975 MHz, + 0, –100 Hz.

C. PLL Input Level Adjustment
1) Set the mode selector to AM, and the coarse Control to center, and set the band selector to Position C of CH 19.
2) Connect synchroscope to TP-4 (pin terminal between the C-82 and R-107).
3) Adjust L-16 for maximum RF output.

D. [VCO] Adjustment
1) Set the mode selector to AM, and the coarse control to center, and set the band selector to position E with CH 40.
2) Connect synchroscope to TP-3.
3) Adjust L-18 for maximum RF output.
4) Connect DC voltmeter to TP-2 (pin terminal between the R-109 and R-258 from IC-5).
5) Adjust L-17 to DC 5.0 + 0.1V.
6) Check A band of CH7, must be DC 1.5V minimum.

E. [Off-set Frequency] Adjustment
1) Connect frequency counter to TP-3 (pin terminal of L-18).
2) Set the Mode Selector to AM, and the Coarse Control to center.
3) Set the Band Selector to position C of CH19.
4) Adjust L-19 for 16.490 MHz ±50 Hz.
5) Set the mode Selector to USB.
6) Adjust L-20 for 16.4925 MHz ±50 Hz.
7) Set the mode Selector to LSB.
8) Adjust L-21 for 16.4875 MHz ±50 Hz.
9) Set the mode Selector to LSB. and transmitte station.

4.– Transmitter Alignment
A. Test set-up
Connect testing unit to the unit as shown:



B. RF Power Transistor of Current Adjustment
   1) Set the mode selector to USB, and the band selector to C of CH 19.
   2) Connect current meter to TP-9 (+) and TP-8 (–).
   3) Adjust VR 11 to 20 ± 0.5 mA.
   4) Adjust VR10 and VR20 to min. position.
   5) Connect current meter to TP-9 (+) and TP-7 (–).
   6) Adjust VR 10 to 50 ± 5mA, and VR20 to 100 ± 5mA.

C. RF Power Amplifier Adjustment
   1) Set the Mode Selector to USB.
   2) Apply 1,000 Hz 30 mV audio to microphone input circuit (use dummy microphone plug).
   3) Set the band Selector to E with CH40.
   4) Adjust VR-12 and L-42 for maximum RF output.
   5) Adjust L-40, L-43, L-44 and L-33 for maximum RF output.
   6) Repeat steps 3) through 5) until no further improvement is obtained.
   7) Adjust L-42 for balance of E band CH40 and A band CH1 with RF output.

D. Two-Tone Adjustment
   1) Apply 500 Hz and 2,400 Hz (30 mV) audio tones to the microphone input circuit at the same time. Use two audio signal generator set with attenuators.
   2) Adjust test audio levels of 500 Hz generator by means of attenuator on the generator so that the scope present wave figure like 'A' as shown below.
   3) Adjust VR-12 to 20W p-p power output.

E. AM/FM/CW RF Power Output Adjustment
   1) Set the Mode Selector to AM.
   2) Select the Band Selector to C.
   3) Select the Channel Selector to 19.
   4) Adjust VR-13 for 10 W RF power output.

F. AM Modulation Adjustment
   1) Apply 1,000 Hz 30 mV audio to the unit.
   2) Adjust VR-14 for modulation depth of gerater than 90%.

G. FM Deviation Adjustment
   1) Set the Mode Selector to FM.
   2) Apply 1,000 Hz 30 mV audio to modulation circuit. Use dummy microphone plug.
   3) Connect deviation meter (or linear detector) to antenna output on the unit.
   4) Adjust VR-5 to obtain 2-3 KHz.

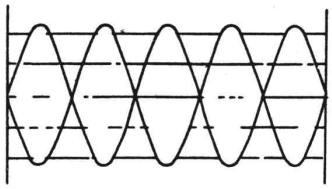
H. RF power Meter Adjustment
   1) Set the Mode Selector to AM.
   2) Comparing the reading of external RF power and the built-in meter, Adjust VR-8 for equal indication on the unit power meter.

I. CW Tone Level Adjustment
   1) Set the mode selector to CW.
   2) Connet 8 Ohm dummy load and AF VTVM to ext S.P jack, and connect a key sw to key sw Jack.
   3) Key sw on and adjust VR-16 to 200 ± 10 mV.

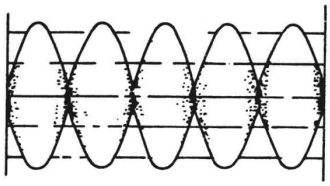
Reference –SSB Two-Tone Alignment

Important: RV-12 (bias) Adjustment: RV-12 should not be rotated clockwise beyond 2 o'clock position, or the RF power transistor will be destroyed.

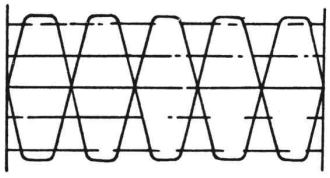
A. Properly adjusted transmitter.



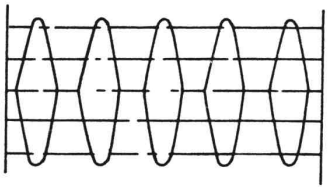
B. Unequal tones-Adjust generator outputs to balance.



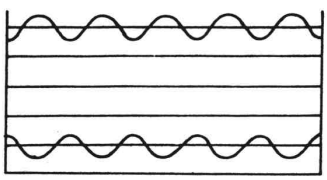
C. Excessive modulation - Adjust RV12 counterclockwise.



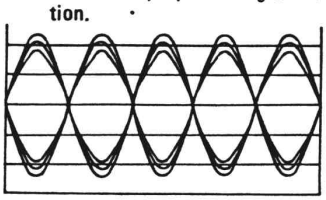
D. Final transistor incorrectly biased - Adjust RV 12.



E. Undermodulation-Adjust RV 12 clockwise.



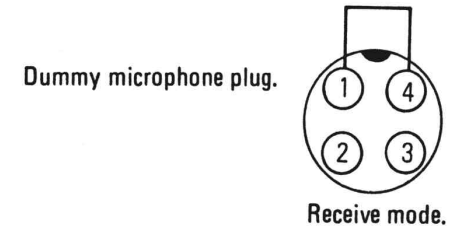
F. Similar to A but showing hum-Check for proper testing condition.

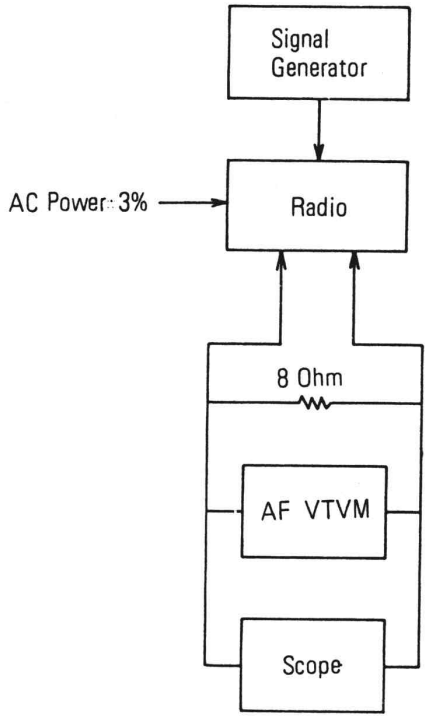


5.– Receiver Alignment

A. Test set-up

Connect testing equipment to the unit as shown:





B. AM Sensitivity Adjustment
1) Set signal generator to 27.185 MHz 30% modulation.
2) Set the Channel Selector 19 in Band C.
3) Set the Mode Selector to AM.
4) Adjust L3, L4, L6, L7, L8, L10, L11, and L12 for maximum audio output From speaker output terminals (across dummy load).
NOTE: Keep generator output level as low as possible to avoid AGC action.
5) After completing above; adjust L-8 for balance A band and E band.

C. SSB Sensitivity Adjustment
1) Set signal generator to 27.186 MHz. without Modulation.
2) Set the Channel Selector to channel 19 in Band C.
3) Set the Mode Selector to USB.
4) Adjust L-13 and L-14 for maximum audio output. Set clarifier to center.

D. FM IF/Demodulator Alignment (FM Sensitivity Adjustment)
1) Select channel 19 in Band C, set the Mode Selector to FM.
2) Set signal-generator to 27.185 MHz.
3) Apply FM signal (1 μV, 1.5 KHz deviation with 1 KHz audio) to unit.
4) Readjust L-5 for maximum audio output.

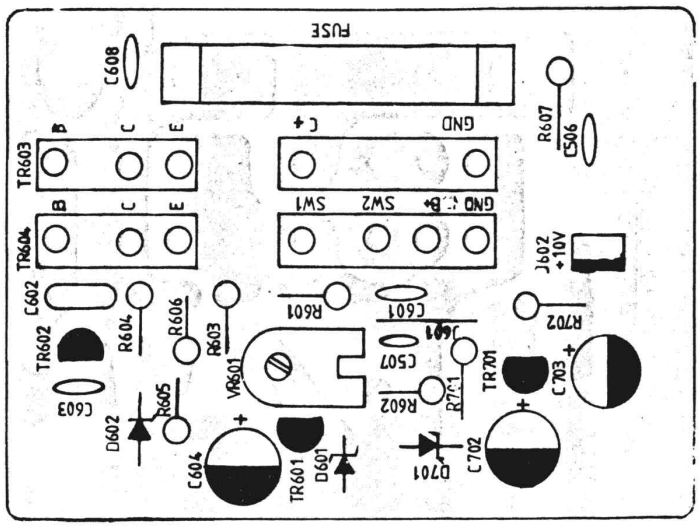
E. Squelch Adjustment
1) Set the Mode Selector to AM.
2) Set signal generator to provide RF input signal of 60 dB (1000 μV), 1 KHz 30% modulated, and rotate squelch control to the fully clockwise position.
3) Connect scope to speaker output terminal. Adjust VR-4 to a point at which audio output is critically disappeared on scope.
Check the Squelch circuit will opeate within 48-70 dB at all modes. SSB RX squelch is automatically adjust by VR-3 and requires no particular adjustment.

F. S-Meter Adjustment
1) Set the Mode Selector to AM.
2) Adjust signal gererator output to 40 dB (100 μV).
3) Adjust VR-1 so that S-meter indicates '9' on the unit meter scale.
4) Set the Mode Selector to USB.
5) Adjust VR-2 so that S-meter indicates '9'.

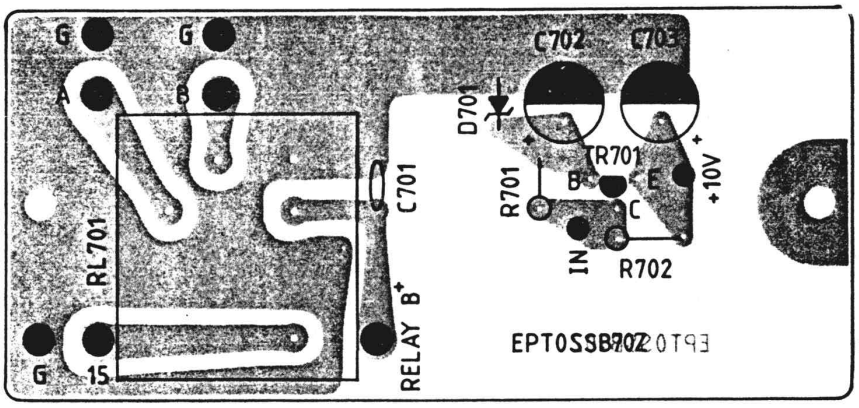
G. Noise blaker Adjustment
1) Set the mod selsctor to AM, select channel 40 in band A.
2) Set signal generator to 26.495 MHz (CH 39 position) without Modulation, RF input signal of 40 dB (100 μV).
3) The NB/ANL SW ON.
4) Connet DC voltmeter to TP-1.
5) Adjust L-1 and L-2 to obtain DC 2-3V.

Frequency/Channel Chart

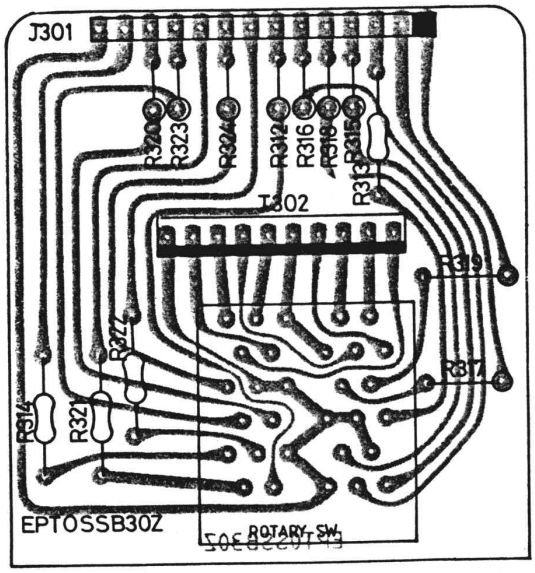
	ANT FREQUENCY (MHz)									
	A BAND		B BAND		C BAND		D BAND		E BAND	
Channel	Normal	+10 KHz	Normal	+10 KHz	Normal	+10 KHz	Normal	+10 KHz	Normal	+10 KHz
1	26.065	26.075	26.515	26.525	26.965	26.975	27.415	27.425	27.865	27.875
2	26.075	26.085	26.525	26.535	26.975	26.985	27.425	27.435	27.875	27.885
3	26.085	26.095 (3A)	26.535	26.545 (3A)	26.985	26.995 (3A)	27.435	27.445 (3A)	27.885	27.895 (3A)
4	26.105	26.115	26.555	26.565	27.005	27.015	27.455	27.465	27.905	27.915
5	26.115	26.125	26.565	26.575	27.015	27.025	27.465	27.475	27.915	27.925
6	26.125	26.135	26.575	26.585	27.025	27.035	27.475	27.485	27.925	27.935
7	26.135	26.145 (7A)	26.585	26.595 (7A)	27.035	27.045 (7A)	27.485	27.495 (7A)	27.935	27.945 (7A)
8	26.155	26.165	26.605	26.615	27.055	27.065	27.505	27.515	27.955	27.965
9	26.165	26.175	26.615	26.625	27.065	27.075	27.515	27.525	27.965	27.975
10	26.175	26.185	26.625	26.635	27.075	27.085	27.525	27.535	27.975	27.985
11	26.185	26.195 (11A)	26.635	26.645 (11A)	27.085	27.095 (11A)	27.535	27.545 (11A)	27.985	27.995 (11A)
12	26.205	26.215	26.655	26.665	27.105	27.115	27.555	27.565	28.005	28.015
13	26.215	26.225	26.665	26.675	27.115	27.125	27.565	27.575	28.015	28.025
14	26.225	26.235	26.675	26.685	27.125	27.135	27.575	27.585	28.025	28.035
15	26.235	26.245 (15A)	26.685	26.695 (15A)	27.135	27.145 (15A)	27.585	27.595 (15A)	28.035	28.045 (15A)
16	26.255	26.265	26.705	26.715	27.155	27.165	27.605	27.615	28.055	28.065
17	26.265	26.275	26.715	26.725	27.165	27.175	27.615	27.625	28.065	28.075
18	26.275	26.285	26.725	26.735	27.175	27.185	27.625	27.635	28.075	28.085
19	26.285	26.295 (19A)	26.735	26.745 (19A)	27.185	27.195 (19A)	27.635	27.645 (19A)	28.085	28.095 (19A)
20	26.305	26.315	26.755	26.765	27.205	27.215	27.655	27.665	28.105	28.115
21	26.315	26.325	26.765	26.775	27.215	27.225	27.665	27.675	28.115	28.125
22	26.325	26.335	26.775	26.785	27.225	27.235	27.675	27.685	28.125	28.135
23	26.355	26.365	26.805	26.815	27.255	27.265	27.705	27.715	28.155	28.165
24	26.335	26.345	26.785	26.795	27.235	27.245	27.685	27.695	28.135	28.145
25	26.345	26.355	26.795	26.805	27.245	27.255	27.695	27.705	28.145	28.155
26	26.365	26.375	26.815	26.825	27.265	27.275	27.715	27.725	28.165	28.175
27	26.375	26.385	26.825	26.835	27.275	27.285	27.725	27.735	28.175	28.185
28	26.385	26.395	26.835	26.845	27.285	27.295	27.735	27.745	28.185	28.195
29	26.395	26.405	26.845	26.855	27.295	27.305	27.745	27.755	28.195	28.205
30	26.405	26.415	26.855	26.865	27.305	27.315	27.755	27.765	28.205	28.215
31	26.415	26.425	26.865	26.875	27.315	27.325	27.765	27.775	28.215	28.225
32	26.425	26.435	26.875	26.885	27.325	27.335	27.775	27.785	28.225	28.235
33	26.435	26.445	26.885	26.895	27.335	27.345	27.785	27.795	28.235	28.245
34	26.445	26.455	26.895	26.905	27.345	27.355	27.795	27.805	28.245	28.255
35	26.455	26.465	26.905	26.915	27.355	27.365	27.805	27.815	28.255	28.265
36	26.465	26.475	26.915	26.925	27.365	27.375	27.815	27.825	28.265	28.275
37	26.475	26.485	26.925	26.935	27.375	27.385	27.825	27.835	28.275	28.285
38	26.485	26.495	26.935	26.945	27.385	27.395	27.835	27.845	28.285	28.295
39	26.495	26.505	26.945	26.955	27.395	27.405	27.845	27.855	28.295	28.305
40	26.505	26.515	26.955	26.965	27.405	27.415	27.855	27.865	28.305	28.315



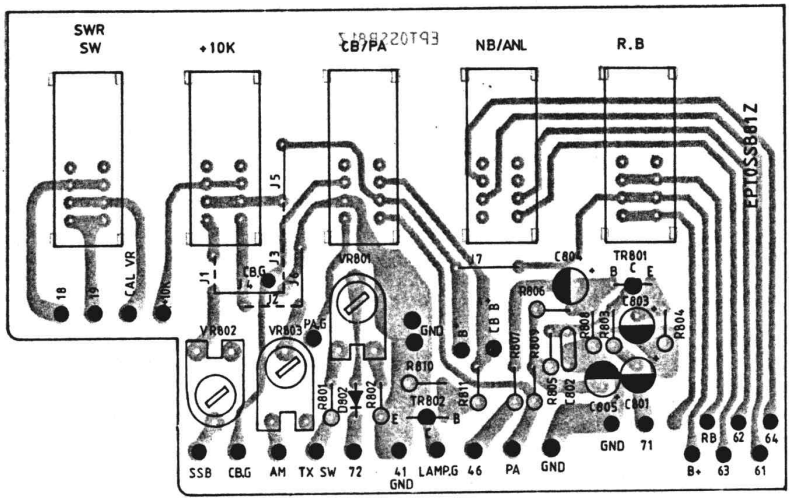
EPTOSSB60A Power Supply



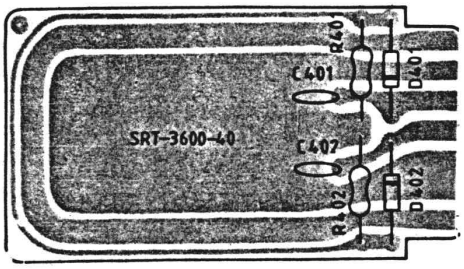
EPTOSSB70Z Antenna Selector



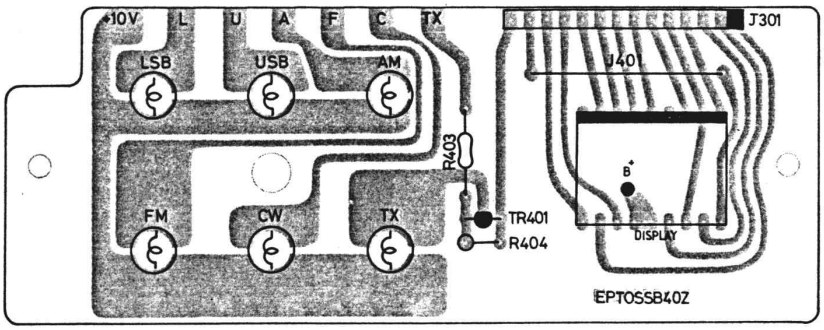
EPTOSSB30Z Channel Selector



EPTOSSB81Z Function Selector



EPT360040Z SWR



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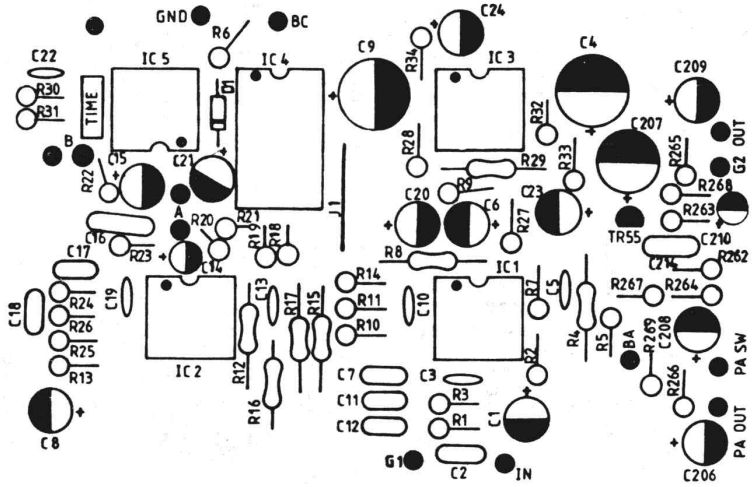
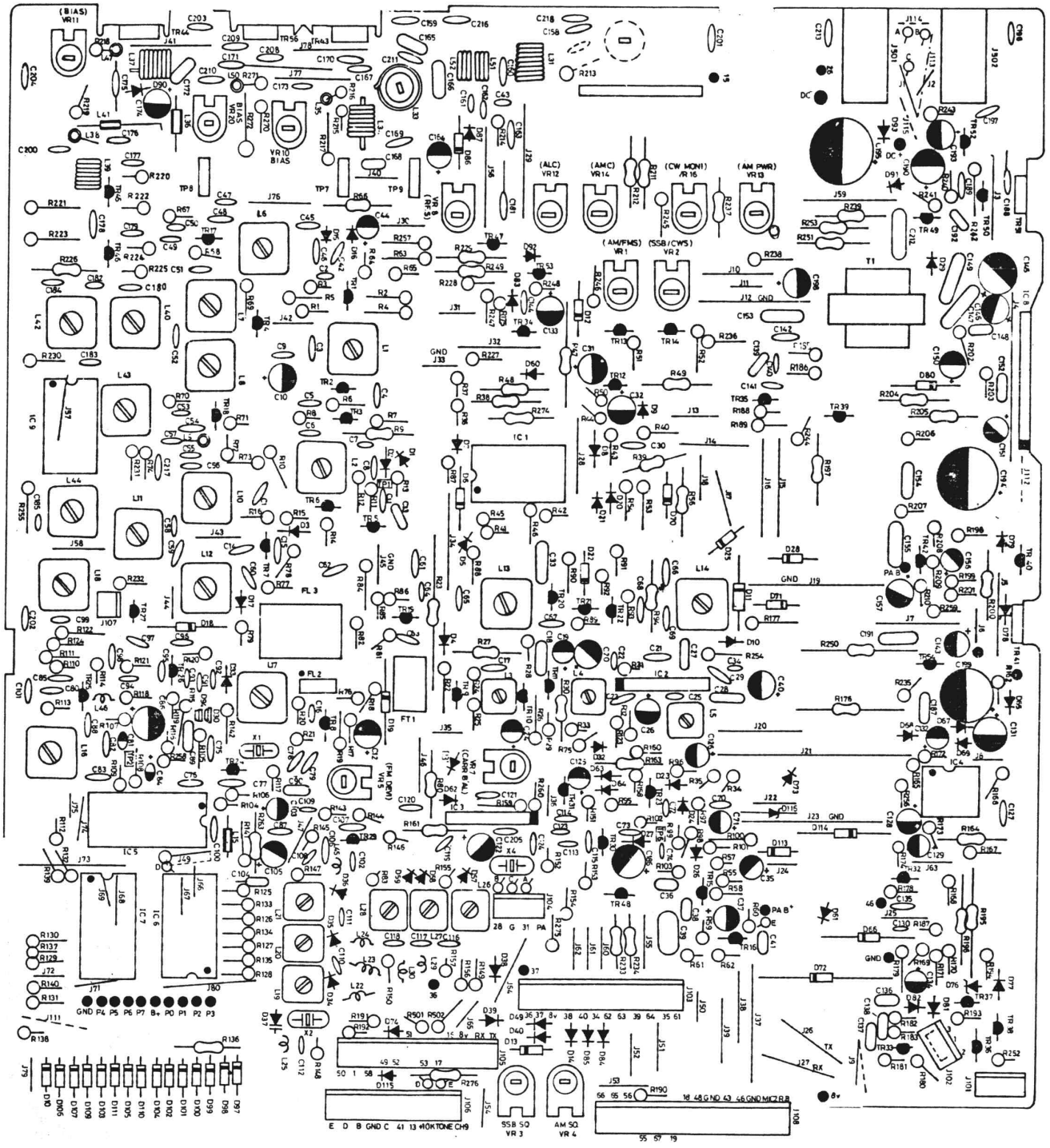


EPTOSSB50Z ECHO

EPT360010A Main Board



EPT360010A Main Board