

SECTION III OPERATION

3.1 INTRODUCTION

This section describes the location and function of the instrument controls, indicators, and signal connectors. Figure 3-1 is a front view of the receiver with numerical designators that are referenced to the identification list of table 3-1. Figure 3-2 provides a back view of the instrument and is referenced to the nomenclature listed in table 3-2. Text regarding initialization and operation of the receiver will refer to a control or indicator by the listed nomenclature followed by the reference designator.

3.2 FUNCTION IDENTIFICATION

The following provides an explanation of function and purpose for each designated item located on the front and back panels of the receiver.

POWER SWITCH:	Two position toggle switch that controls the input power to the receiver.
SIGNAL INDICATOR:	Provides a visual display of either AM signal relative strength or FM signal, center tuning.
AM/FM SWITCH:	Two position toggle switch that selects the signal for display on the Signal Indicator.
AGC SWITCH:	Three position toggle switch for selection of automatic gain control modes.
RF GAIN CONTROL:	Provides manual variation of receiver gain.
RF OVERLOAD INDICATOR:	Light emitting diode that illuminates to indicate an RF overload.
SIGNAL IN CONNECTOR:	Type N jack for RF input signals above 250 KHz.
SIGNAL IN INDICATOR:	Light emitting diode (LED) that illuminates when the Signal In connectors are selected.
INPUT SELECT SWITCH:	Two position toggle switch for selection of Signal or Calibrate connectors.
CALIBRATE IN INDICATOR:	Light emitting diode that illuminates when the Calibrate In connectors are selected.
CALIBRATE IN CONNECTOR:	Type N jack for calibration signals above 250 KHz.

3.2 FUNCTION IDENTIFICATION (cont.)

ATTENUATION INDICATORS:	Twelve LEDs which individually illuminate to indicate the switch selected attenuation level.
ATTENUATION SWITCH:	Multi-position rotary switch that selects the input signal attenuation level.
BANDWIDTH INDICATORS:	Twelve LED's that illuminate in selected combinations to indicate bandwidth.
BANDWIDTH SWITCH:	Multi-position rotary switch that selects bandwidth.
TUNING CONTROL:	Provides manual tuning over the entire receiver frequency range.
ENTRY KEYPAD:	Key pad switches, used to enter frequency, decimal point, and tuning resolution.
AUDIO GAIN CONTROL:	Provides manual variation of audio output level.
AUDIO OUTPUT JACK:	Two conductor female phone jack for connection of headset or speaker.
200 KHz IF INDICATOR:	LED that illuminates when the 200 KHz IF is selected.
IF OUT CONNECTOR:	BNC Jack for connection of output signal from selected IF.
30 MHz IF INDICATOR:	LED that illuminates when the 30 MHz IF is selected.
FM VIDEO CONNECTOR:	BNC Jack for connection of detected FM video output signal.
AUDIO OUTPUT JACK:	BNC Jack for connection of detected audio output signal.
MODE SWITCH:	Three position toggle switch that selects the audio mode.
AM VIDEO CONNECTOR:	BNC Jack for connection of detected AM video output signal.
LOG/LINEAR SWITCH:	Two position toggle switch for selection of logarithmic or linear AM video detector response.

3.2 FUNCTION IDENTIFICATION (cont.)

BFO CONTROL:	Provides manual tuning of the 200 KHz IF beat frequency oscillator.
PRED. GAIN INDICATORS:	LED's that individually illuminate to indicate selected gain levels.
IF OVERLOAD INDICATOR:	LED that illuminates to indicate an IF overload condition.
PREDETECTION GAIN CONTROL:	Provides manual variation of the predetection gain level.
PREDETECTION GAIN SWITCH:	Multi-Position switch that selects predetection gain levels in 10 dB steps.
AM PULSE STRETCH CONTROL:	Provides manual variation of pulse width output from the AM video detector.
AM SLIDEBACK CONTROL:	Provides manual variation of AM threshold level used to indicate the peak value of the detected AM video.
SLIDEBACK INDICATOR:	LED that illuminates when the peak value of the detected AM video is equal to or above the threshold setting of the AM slideback control.
REMOTE INDICATOR:	LED that illuminates when receiver functions are under automatic control from data over the IEEE-488 interface.
FREQUENCY INDICATOR:	Eight digit display that provides visual indication of receiver tuned frequency.
DISPLAY INTENSITY CONTROL:	Provides manual variation of frequency indicator.
CAL IN (LOW FREQ) CONNECTOR:	Type N jack for calibration signals up to 250 KHz.
SIG IN (LOW FREQ) CONNECTOR:	Type N jack for RF signals up to 250 KHz.

REAR PANEL:

REGULATOR INDICATORS:	Seven light emitting diodes that indicate power supply regulator operation.
IF OUT CONNECTOR:	SMA Jack for the connection of the 30 MHz IF output signal.
AUDIO CONNECTOR:	SMA Jack for the connection of detected audio output signals.

3.2 FUNCTION IDENTIFICATION (cont.)

- INTERFACE BUS CONNECTOR:** Double row, 24 contact connector used to interface input/output IEEE-488 data.
- STATUS/CONTROL CONNECTOR:** Double row, 36 contact connector used to interface status and control data between subsystems.
- 1470 MHz OUTPUT CONNECTOR:** Type N Jack for the connection of the 1470 MHz output signal.
- LINE VOLTAGE RANGE SWITCH :** Three position rotary switch used to select the range of AC input voltage.
- LINE VOLTAGE SELECT SWITCH:** Two position slide switch used to select either 115V or 230V input AC power.

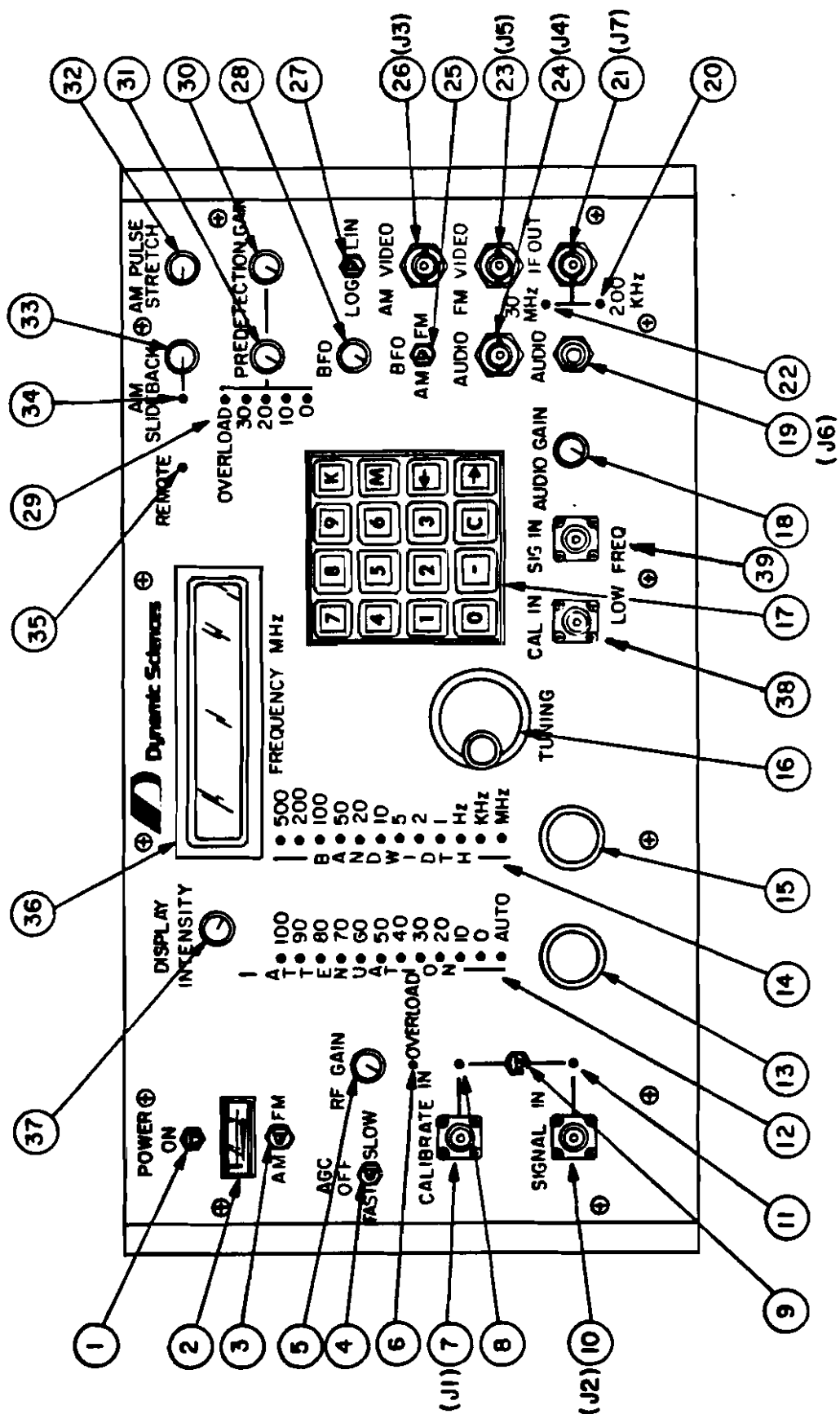


FIGURE 3-1 FRONT PANEL NOMENCLATURE LOCATION

TABLE 3-1
FRONT PANEL NOMENCLATURE

Location	Identification	Location	Identification
1	Power switch	20	200KHz IF indicator
2	Signal indicator	21	IF out connector
3	AM/FM switch	22	30 MHz IF indicator
4	AGC switch	23	FM video connector
5	RF Gain control	24	Audio output jack
6	RF Overload indicator	25	Mode switch
7	Calibrate in connector (H1-Freq)	26	AM Video connector
8	Calibrate In indicator	27	Log/linear switch
9	Input select switch	28	BFO control
10	Signal in connector (H1-Freq)	29	Pred. Gain and IF overload
11	Signal in indicator	30	Predetection gain control
12	Attenuation indicators	31	Predetection gain switch
13	Attenuation switch	32	AM Pulse stretch control
14	Bandwidth indicators	33	AM slideback control
15	Bandwidth switch	34	Slideback indicator
16	Tuning control	35	Remote indicator
17	Entry Key Pad	36	Frequency indicator
18	Audio Gain control	37	Display intensity control
19	Audio Output jack	38	Calibrate In Connector (Low Freq)
		39	Signal In Connector (Low Freq)

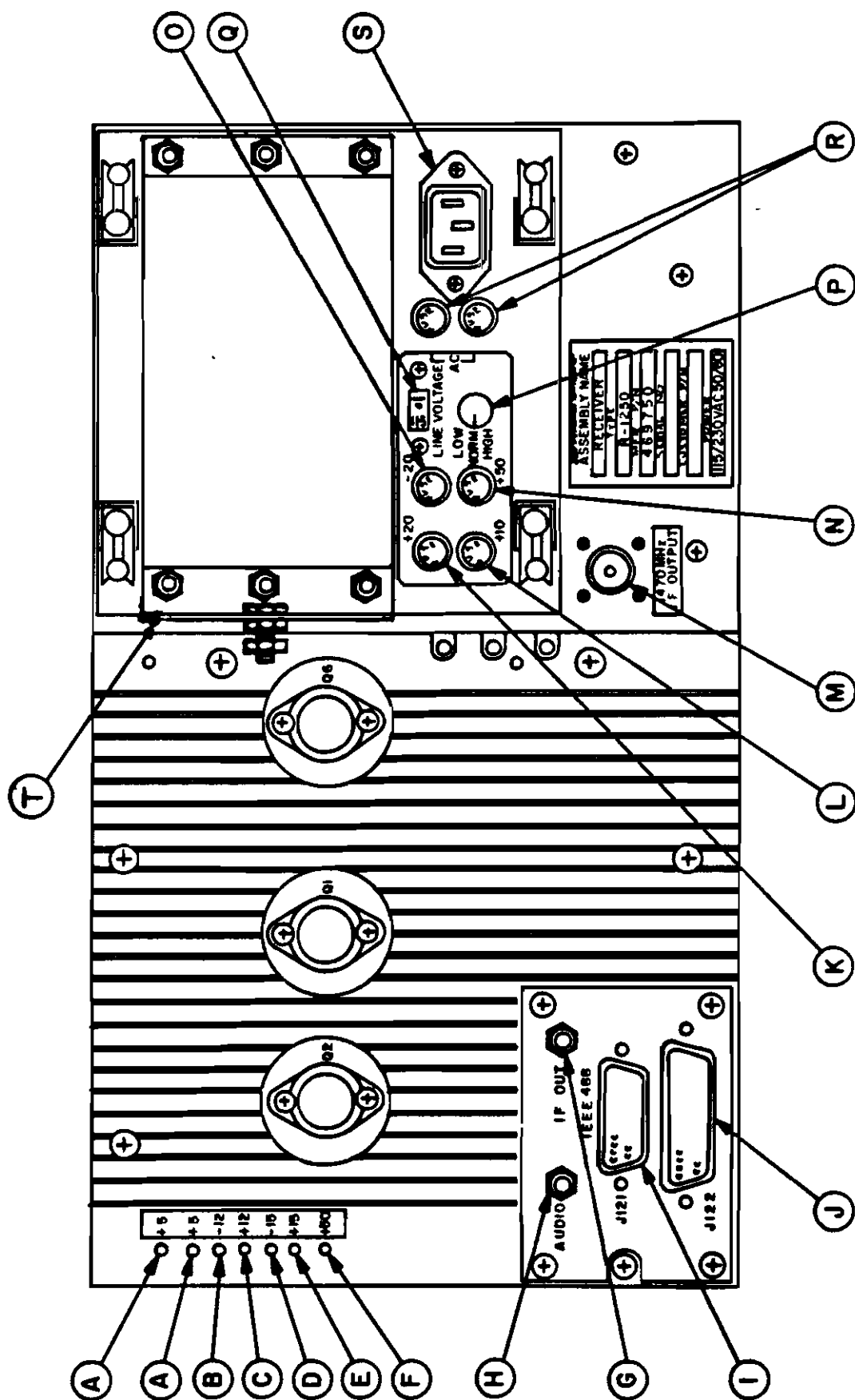


FIGURE 3-2 BACK PANEL NOMENCLATURE LOCATION

TABLE 3-2
BACK PANEL NOMENCLATURE

Location	Identification	Location	Identification
A	+5VDC indicators	K	+20VDC fuse
B	-12VDC indicator	L	+10VDC fuse
C	+12VDC indicator	M	1470 MHz IF out connector
D	-15VDC indicator	N	+50VDC fuse
E	+15VDC indicator	O	-20VDC fuse
F	+50VDC indicator	P	Line voltage range switch
G	IF out connector (with pad)	Q	Line voltage select switch
H	Audio out connector	R	AC input fuses
I	Interface bus connector	S	AC input connector
J	Status/control connector	T	Ground Strap

3.3 INITIALIZATION

Before applying power to the receiver, ensure that the line voltage selection switches, located on the rear panel, are set for the line voltage to be used.

Verify that a 50 ohm pad is connected to the IF out SMA connector on the rear panel.

Connect the appropriate 50 ohm impedance input device to the Signal In (7) connector. A signal generator may be connected to the Calibrate In (10) connector for signal substitution and comparison. Place the Input Select switch (9) to the desired signal source. Connect any external signal monitoring or interface subsystems to the appropriate connection points.

Set the following controls to the position required for the type of signal to be received.

Place the Power switch (1) to the on position.

Place the AM/FM switch (3) to the required position for display on the signal indicator (2). Select the AGC mode (4), and adjust the RF Gain (5) until the overload indicator (6) is extinguished.

*** NOTE ***

When either fast or slow AGC modes are selected, position the RF Gain (5) control to the full clockwise position.

Select the desired attenuator setting (13) for either the Auto Mode, or any setting from 0 to 100 dB. The appropriate indicator will illuminate as each attenuator setting is selected.

Using the keyboard shown in figure 3-3, and the identifier listed in table 3-3, enter the frequency to be received by pressing the proper keys (1) in sequence, and entering the decimal point (2), until the desired frequency is displayed. Errors in values entered may be canceled by pressing the clear key (3) which will clear the entire entry and the display will indicate any previously entered value. Enter the final designator by pressing the desired terminator key, K (7) for kilohertz, or M (6) for megahertz.

*** NOTE ***

The displayed value is always shown in MHz. For example, a frequency entry of 1, followed by pressing the K terminator will result in a displayed value of 0.0010000MHz.

3.3 INITIALIZATION(continued)

Coarse or fine tuning may now be performed, using the tuning control (16). Resolution selection is determined by the shift left (5), or the shift right (4) key entries.

Select the bandwidth (15) for the signal to be received. The bandwidth indicators (14) will illuminate to display the selected setting. The IF output frequencies of either 200 KHz or 30 MHz will be automatically selected according to the setting of the bandwidth switch, and will illuminate the appropriate LED indicator that shows the signal available at the IF out (21) jack.

*** NOTE ***

When flashing of the bandwidth LED indicators occurs, it indicates that an out of range bandwidth value has been selected. For instance, if the receiver is tuned to 10 MHz, the maximum bandwidth which can be used is 5MHz; if a larger bandwidth is selected the indicators will flash.

Select the desired mode, with the mode select switch (25).

For reception of AM signals, the predetection gain switch (31) should be set to the desired gain in dB, and the predetection gain control (30) should be adjusted to provide optimum dynamic range without an overload indication (29).

For reception of CW signals, a variable beat frequency oscillator signal is available when the 200 KHz IF has been selected, and may be adjusted ± 1 KHz by use of the BFO control (28).

*** NOTE ***

When using the AM mode, the AM slideback control (33) may be used to establish the peak value of the input signal, thus providing a reference point for comparison against an external standard. Adjust the AM slideback control (33) until the reference indicator (34) is just extinguished, then apply an external calibration source and adjust its signal level until the reference indicator (34) is just extinguished. The external calibration signal is now equivalent to the receiver input signal.

Select the AM video response desired, either linear or logarithmic (27).

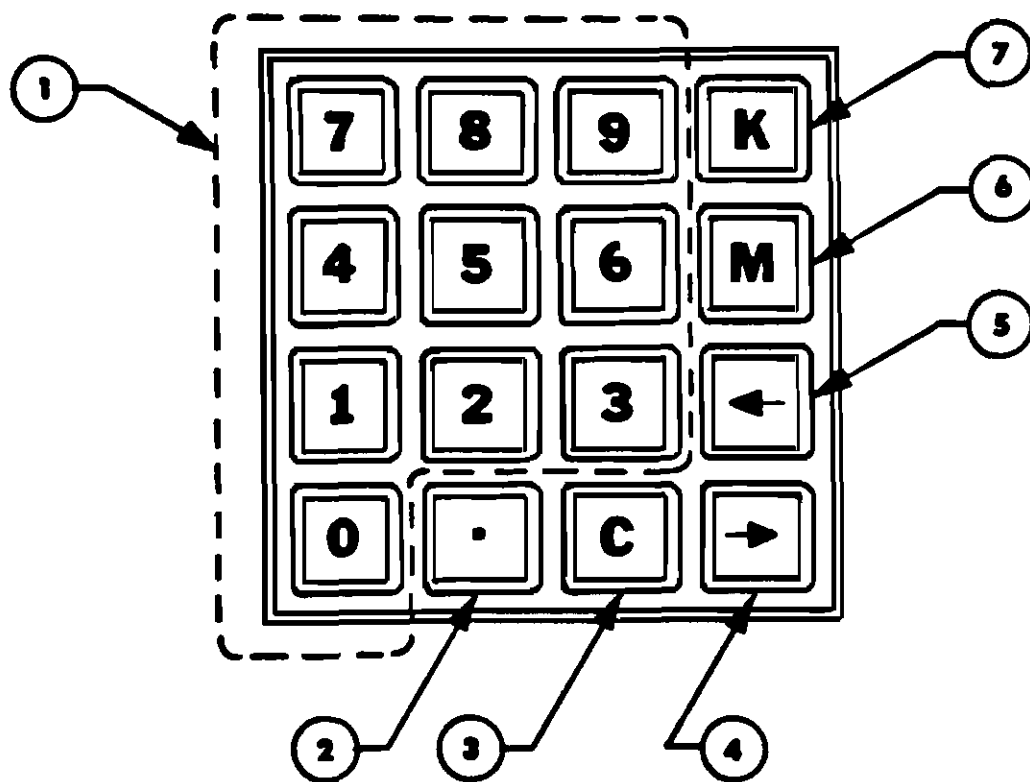


FIGURE 3-3 KEY PAD NOMENCLATURE LOCATION

TABLE 3-3
KEYPAD NOMENCLATURE

Location	Function
1 Numeric Keys:	used to enter individual numbers
2 Decimal Point Key:	used to establish a decimal value
3 Clear Key:	used to clear the value being entered
4 Shift Right Key:	changes the tuning resolution by selecting one of five digits which individually flash to indicate the selected tuning digit
5 Shift Left Key:	changes the tuning resolution by selecting one of five digits which individually flash to indicate the selected tuning digit
6 Megahertz Key:	termination designator for the entered frequency
7 Kilohertz Key:	termination designator for the entered frequency

3.4 FAULT INDICATIONS

The power supply voltage indicators located on the back panel of the instrument are normally illuminated when the instrument is operating. If an abnormal function is observed, determine that all LED indicators are illuminated. If any of the indicators, but not all of them are extinguished, check the fuse associated with the voltage source indicated. If all indicators are extinguished, check the power source to the instrument and the AC line fuses.

(THIS PAGE INTENTIONALLY LEFT BLANK)