DSP VDT Menus

USER MANUAL

PN 9110.00259 (old part number = 916-T70A-004)

RELEASED

Specifications subject to change without notice

Document Change Record

Issue:	0, Preliminary
Date:	06/20/94
Changes:	none, original

Issue:	0, Preliminary
Date:	09/19/95
Changes:	format changes

Issue:	Revision B
Date:	10/19/95
Changes:	VDT to DSP Exciter cable

Issue:	Revision C
Date:	4/17/96
Changes:	update to released status

Issue:	Revision D
Date:	6/07/96
Changes:	changed menu items and transmitter faults descriptions

Issue:	Revision E
Date:	9/20/96
Changes:	revised reflected power calibration procedure per software revision 2.10

Issue:	Revision F
Date:	2/24/97
Changes:	deleted reference to 2-level FSK, entered mode A, B, C, and D select in 4-level FSK, added forward power and reflected power to display section

Table of Contents

dspsec1.toc

dspsec1.toc

List of Figures

dspsec1.lof

List of Tables

dspsec1.lot

1 GENERAL

1.1 Manual Scope

This manual provides information for VDT menus. This software controls transmitters. The software resides in a PEROM in the DSP exciter.

1.2 Applicable Documents

This manual is incomplete without additional manuals. Refer to *Table 1-1* for a listing of these manuals with their part number and a brief description.

Table 1-1 Applicable Documents

document	part number	description
GL-T8XX1 user manual	9110.00166	describes VHF (8XX1) transmitters
VDT menus manual	9110.00259	this manual
DSP exciter manual	9110.00172	describes DSP exciter hardware

1.3 Manual Sections

Table 1-2 lists the sections of this manual with a summary of their contents.

Table 1-2 Manual Sections

section	contents
1. *GENERAL*	introduction and purpose of manual
2. *REQUIREMENTS*	minimum features of VDT
3. *DESCRIPTION*	introduction and principal characteristics of software
4. *INSTALLATION AND SETUP*	initial installation and activation of VDT
5. *OPERATION*	operation of VDT screen and keyboard
6. *MENU TREE*	menu identification, keystrokes to display menus, in tree format
7. *CHANGE TX SETTINGS*	menus that permit frequencies setting, frequency password change, and entry password change/toggle
8. *SET UP DIGITAL MODE*	menus that permit 2-level deviation setting, 2-level offset setting, 4-level deviation setting, 4-level offset setting, data polarity selection, filter risetime selection, and controller selection
9. *SET UP ANALOG MODE*	menus that permit audio input level adjustment, analog deviation setting, analog limiter setting, analog offset setting, analog response selection, and analog polarity selection
10. *VIEW TX STATUS*	menus that display channel frequencies, faults status, and all TX presets
11. *CHANGE MODE*	menu that allows selection between analog, 2-level, and 4-level modes
12. *CHANGE CHANNEL*	menu that allow selection of channel one through eight
13. *RUN TX SELF TESTS*	menus that allow: activation of LEDs; alarm test; key/unkey of exciter only; reset of exciter
14. *TX SELF TESTS*	menus that allow: key/unkey of exciter only; activation of LEDs; testing of AGC, reset of exciter, testing of alarms, updating firmware

2   REQUIREMENTS

The software described in this manual requires a video display terminal (VDT) with a DEC® VT100-emulating program. The VDT requirements depend on the type of emulating program installed.

2.1   VDT Requirements

These requirements are for a VDT with a typical terminal emulation program installed, such as ProComm Plus®.

- **computer:** an IBM® PC, XT, AT, PS/2 or compatible

- **memory:** at least 192K of available RAM

- **operating system:** PC-DOS or MS-DOS, version 2.0 or later

- **disc drive:** at least one floppy drive

- **display:** VGA monitor and adapter, or compatible monitor and adapter

- **serial port:** with DB-9 or DB-25 connection

- **null modem cable:** with male DB-9 connector on transmitter end.

2.2   Emulating Program

These setup requirements are for all DEC VT100-type emulating programs:

- **baud rate:** 9600

- **parity:** none

- **data bits:** 8

- **stop bits:** 1

- **port:** serial port interface.

3 DESCRIPTION

The software described in this manual allows interactive operation with transmitters. Here is a brief list of the transmitter features that the software operates.

3.1 Status Display

The VDT displays principal transmitter status continuously, or specific transmitter status selectively.

Principal status is shown in the information block at the top of most screens. This block provides present information on 20 critical parameters of the transmitter, in addition to the fault or alarm condition.

The VDT can display more specific transmitter status if desired. Specific status includes regulated voltage readings, programmed channel frequencies, and four full-screen information displays as shown below.

- The present faults display lists every transmitter fault or alarm available at the present moment.

- The stored faults display lists the transmitter fault or alarm that was stored when the transmitter first left normal operating status.

- The readings at fault display lists the status and currents blocks that were stored when the transmitter first left normal operating status.

- The presets display lists programmed transmitter parameters for all eight channels.

3.2 Remote Control

When the transmitter is in service and is responding to controller commands, the VDT can perform remote control functions as shown below.

- Program frequencies into channels. If authorized, program with the frequency password. Frequency password can be changed.

- Change entry password used to gain access to VDT. Enable and disable use of entry password.

3.2.1 Software Downloading

Note

C2000/I20 overwrites user changes when in remote mode.

3.3 Local Control

After the VDT has removed the transmitter from service, the VDT can still perform remote control functions, but now can perform local control functions as shown below.

- Key or unkey transmitter.

- Change between analog and digital modes.

- Change between sixteen channels.

- Perform three built-in-tests (BITs) to exciter equipment. Check keyup circuit, front-panel LEDs, and digital alarm outputs.

- Reboot exciter.

- Update firmware.

3.3.1 Software Downloading

Note

I20 Interface software upgrade overwrites local programming.

3.4 Setup

When the transmitter is initially installed and set up at the paging site, the VDT presets the analog or digital modes for operation as shown below.

- Set number of hertz that the signal deviates the RF carrier.

- Set number of hertz to offset the center of the RF carrier.

- Select inverted or non-inverted input signal polarity.

- Select a filter for the RF output signal.

- Set optimum audio input level (analog mode).

- Set maximum audio input level (analog mode).

4 INSTALLATION AND SETUP

This section requires user manuals for VDT hardware and emulating software. Before starting this section, verify that all hardware required to run the emulating program has been installed into the VDT.

4.1 VDT Connection

Connect the VDT to the exciter equipment using the proper interconnecting cable. The exciter female DE-9 connector is configured as a serial, DCE, EIA-232 port. The VDT (or computer) female DB-25 or male DE-9 input is configured as a serial, DTE, EIA-232 port. The typical serial input connector for the VDT is a female DB-25, and that of most computers is a male DE-9, but there is no guarantee of this.

4.1.1 VDT-to-Exciter Interconnect Cable

The DSP exciter-to-VDT cable can be a straight through DE-9 to DE-9 cable, or a DE-9 to DB-25, EIA-232 adaptor cable, as shown in *Figure 4-1*. These cables may be purchased from a computer shop, adapted using standard EIA-232 parts, or fabricated. The exciter end of the cable is always a male DE-9 connector. The VDT end can be a male or female DE-9 or DB-25 connector, check your VDT for the correct connector type.

A 3-conductor cable can be used to fabricate either of the above mentioned cables, as only the TXD, RXD, and ground connections are needed. Connect the three conductors as shown in *Figure 4-1*.
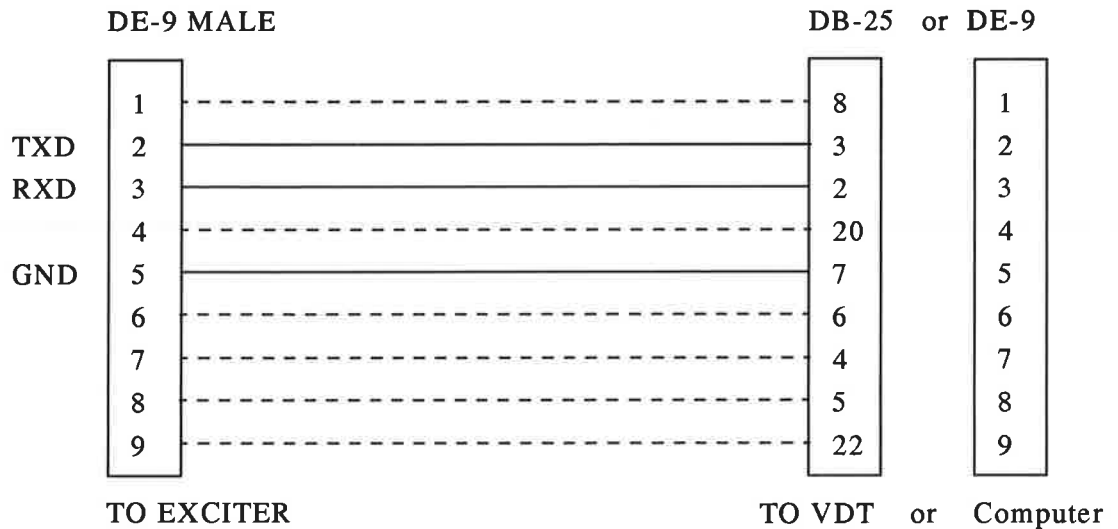
Note: The solid lines show the conductors necessary for the exciter and VDT (or computer) to communicate. The dotted lines show the rest of the conductors in the standard cables.

Figure 4-1 DSP Exciter to VDT Cable

4.1.2 Connecting the VDT to the Transmitter

Connect the VDT to the transmitter using the proper cable(s). Plug the male DB-9 DCE connector into the jack marked VT-100 INTERFACE located on the front panel of the exciter. Plug the other end of the cable or the adapter into one of the VDT's serial ports. Note the designation of this port for VDT start-up.

4.2 Starting Up the VDT

Apply power to the VDT. If it has not yet been installed, install the emulating program and all software required to run it.

4.2.1 Presetting the Emulating Program

Select the comm port I/O line settings screen on the VDT. Change the current settings to those shown in *Table 4-1*. After you are done, save and exit the line settings screen.

Table 4-1 VT-100 Line Settings

parameter	setting
baud rate	9600
data bits	8
parity	none
stops bits	1
port	select appropriate port
A common abbreviation for the above settings is: 9600 8N1 .	

4.2.2 Access VDT Communications

At this point, the VDT should display a screen containing the ENTRY LEVEL PASSWORD menu. From this menu, perform the following steps:

1. Type "abcd" from VDT keyboard. As each letter is typed, an asterisk (*) appears on the screen under the phrase ENTER PRESENT PASSWORD.

4.2.3 Changing Passwords

When the VDT is connected to the transmitter the first time, a password must be entered in order to access VT-100 communications. Enter the default password "abcd" to access VT-100 communications. The VDT uses another password to access channel carrier frequency assignments. This password is also initially the default password "abcd". It is important to change these default passwords to confidential passwords immediately after the VDT is connected the first time. By using two passwords, the frequency password may be maintained at a higher level of secrecy than the entry password. The entry password may be disabled if desired to permit immediate access to VT-100 communications. However, even if it is disabled, it is important to change the entry password to prevent unauthorized personnel from changing the default password.

dspsec4.794

4.3 Using the VT-100-Emulating Program

Most VT-100-emulating programs have additional features, some of which can be helpful when operating the program as a transmitter interface. The program may be capable of saving the active, or present settings for the RS-232 link with the transmitter. Some programs have a log function, which saves the keystrokes and displays from the current session. This feature is particularly useful for saving the transmitter parameters entered during a setup procedure. When used with a printer, the program may be able to dump the contents of the present screen display to the printer.

Caution

Some transmitter controllers may issue an alarm if a transmit command is sent with no resultant indication of transmitter forward power. This can be avoided by first placing the transmitter controller in a mode that does not allow it to issue alarms.

5   OPERATION

5.1 VT-100 Screen Displays

Display area STATUS and display area MENU are described in the paragraphs below.

5.1.1 Display Area: STATUS

STATUS display area contains two groups of two columns. The transmitter parameter is in the left column of each group, and its value or condition is in the right column of each group. The entire display area is repeated and continuously updated on all VT-100 screens except certain full-screen status displays. The STATUS display area is display-only and does not permit selections or data entry. The following text describes each parameter and condition displayed in the STATUS display area.

5.1.1.1   FWD PWR (Forward Power)

This display lists the forward power of the transmitter. This is measured at the output of the power amplifier.

5.1.1.2   REF PWR (Reflected Power)

This display lists the reflected power of the transmitter. This is measured at the output of the power amplifier.

5.1.1.3   EXC 28V (Exciter 28 Volts)

This display lists the actual operating voltage for the exciter. This voltage is measured at the power input of the exciter and is normally supplied by the transmitter's 26-volt power supply.

5.1.1.4   AGC (automatic gain control)

This display lists the AGC voltage, a dc voltage that controls the gain of the power amplifier. This voltage, generated by the PA metering board, is measured at the preamplifier (first stage) on the PA's driver board.

Note

Do not confuse AGC voltage generated in the PA with AGC reference voltage generated in the exciter. The PA's AGC voltage is produced by comparing AGC reference voltage against transmitter forward power.

5.1.1.5 VCO1 (voltage-controlled oscillator 1)

This display lists the dc control voltage for VCO-1, in the exciter IF stage circuitry. The VCO1 control voltage, necessary for phase-locking the VCO-1 carrier to the ten-MHz reference signal, is generated by synthesizer-1.

5.1.1.6 VCO2 (voltage-controlled oscillator 2)

This display lists the dc control voltage for VCO-2, in the exciter RF stage circuitry. The VCO2 control voltage, necessary for phase-locking the VCO-2 carrier to the ten-MHz reference signal, is generated by synthesizer-2.

5.1.1.7 TEMP (temperature)

This display lists the temperature in degrees centigrade measured at the heatsink on the back of the PA.

5.1.1.8 CTRL VER (control version)

This display lists the version number for the MCU software that is presently installed in the exciter. It is the version of software installed in the programmable and erasable read-only memory (PEROM) for the MCU.

5.1.1.9 DSP VER (DSP version)

This display lists the version number for the DSP software that is presently installed in the exciter. It is the version of software installed in the programmable and erasable read-only memory (PEROM) for the DSP.

5.1.1.10 TX TYPE (transmitter type)

This display lists the transmitter type (e.g.,GL-T8521) the PEROM for the MCU. The present version of software for the MCU, designated by the CTRL VER display, is installed in U3.

5.1.1.11 Deviation

This display lists signal deviation values and other relative status items. The operation of the deviation display is dependent on the transmitter operating mode presently selected: digital FSK or analog.

dspsec5.794

5.1.1.12 Digital FSK Mode

When no input data is present, the DEVIATION display lists NO DATA.

When input data is present, the DEVIATION display lists the programmed deviation value for the channel and digital level currently selected. This value is the difference, in Hz, between f_0 and the highest FSK frequency, and between f_0 and the lowest FSK frequency. See OFFSET for a description of f_0.

5.1.1.13 Analog Mode

When in analog mode and no input signal is present above 100 Hz, the DEVIATION display lists 0 Hz.

When in analog mode and an input signal is present above the programmed limiting value, causing the transmitter to impose deviation limiting, the DEVIATION display lists LIMIT.

When in analog mode and an input signal is present above 100 Hz and below the programmed limiting value, the DEVIATION display lists the actual deviation value. This value is the number of Hz between f_0 and the highest modulated frequency, and between f_0 and the lowest modulated frequency. See OFFSET for a description of f_0.

5.1.1.14 Offset

This display lists the programmed offset value for the mode currently selected. And, when in the digital FSK mode, this display lists the channel currently selected. This offset of the channel frequency is needed in order to reduce overlap area nulls when simulcasting. Offset value is the number of Hz added to or subtracted from the channel frequency to create the center frequency (digital FSK mode) or carrier frequency (analog mode), also known as f_0.

5.1.1.15 Mode

This display lists the presently selected operating mode and, when in analog mode, also lists the audio response as shown below:

- If 4-LEVEL is listed, mode A, mode B, mode C, or mode D is selected.

- If ANLG-FLAT is listed, analog mode and audio response for flat is selected.

- If ANLG-PRE is listed, analog mode and audio response for preemphasis is selected.

5.1.1.16 Channel

This display lists the number (1 through 16) of the transmitter channel that is currently selected.

5.1.1.17 FREQ (Frequency)

This display lists the programmed channel frequency, in MHz, for the channel currently selected.

5.1.1.18 DATA POL or ANLG POL

This display lists the programmed input signal polarity state for the presently selected mode. The title of this display item is DATA POL if digital FSK mode is presently selected; the title is ANLG POL if analog mode is presently selected. NON-INV is listed to indicate the programmed input signal polarity state is noninverted. INV is listed to indicate the programmed input signal polarity state is inverted. The result of input signal polarity inversion is dependent on the mode presently selected.

5.1.1.19 DATA POL (polarity)

- When in 4-level FSK mode and NON-INV is listed, data "10" and data "11" generate frequencies above f_0. Data "01" and data "00" generate frequencies below f_0.

- When in 4-level FSK mode and INV is listed, data "10" and data "11" generate frequencies below f_0. Data "01" and data "00" generate frequencies above f_0. Note that data is rearranged, not just inverted (3-4/2-1 to 2-1/4-3).

5.1.1.20 ANLG POL (analog polarity)

- When in analog mode and NON-INV is listed, a positive voltage into audio (+) causes a positive deviation from f_0 and a negative voltage into audio (+) causes a negative deviation from f_0.

- When in analog mode and INV is listed, a positive voltage into audio (+) causes a negative deviation from f_0 and a negative voltage into audio (+) causes a positive deviation from f_0.

5.1.1.21 Control

This display lists the transmitters presently selected control state. This state is listed either as LOCAL or REMOTE.

- REMOTE - this is the transmitters normal operating mode. External control inputs such as channel, mode, and key commands are supplied by a device such as a transmitter controller and are obeyed by the transmitter. These commands are not possible through the VT-100 interface when in the remote control mode.

- LOCAL - this is the transmitters maintenance mode. External control inputs such as channel, mode, and key commands are ignored by the transmitter. These commands, in addition to maintenance, setup, and self test functions, are possible through the VT-100 interface when in the local control mode.

5.1.1.22 Key State

This display lists the transmitters presently selected key input state. This state is listed as KEYED or UNKEYED. The logic for this condition is detected in the exciter. A keyed condition indicates an external key hardline activation (in the remote control mode) or a VT-100 VDT [K] key software selection (in the local control mode).

dspsec5.794

5.1.1.23 Filter

This display lists the rise time, in uS, of the presently selected digital premodulation filter. This rise time is effective for the digital FSK modes only, although it is always displayed regardless of mode.

5.1.1.24 CHAN BW (channel bandwidth)

This display lists maximum bandwidth, in kHz, of all the transmitter channels. The bandwidth is determined by the filtering circuitry installed in the exciter.

5.1.1.25 Fault or Alarm

This display is normally blank, unless a transmitter malfunction has occurred that can be detected by the transmitter monitoring system. In the event that a transmitter malfunction is detected, FAULT or ALARM appears as inverted video. The display is reset after each key cycle, unless a serious malfunction prevents the transmitter from keying up. The serious-ness of the malfunction is indicated as FAULT or ALARM.

5.1.1.25.1 Alarm

An alarm is an indication that a less serious transmitter malfunction has occurred, requiring an operator alert but still permitting normal transmitter operation.

5.1.1.25.2 Fault

A fault is an indication that a more serious transmitter malfunction has occurred, requiring an operator alert and causing the transmitter to shut down or reduce power, thus preventing further transmitter damage.

5.1.2 Display Area: Menu

The remainder of this section describes the menu display area. In this area some menus permit data input and parameter selection. Each menu is described in five parts: access procedure, sample menu, menu function, menu operation, and active alpha function key list.

1. **Access Procedure** - an access procedure is included at the top of each page just below the menu title. The access procedure describes the key strokes or other actions required to display this menu.

2. **Sample Menu** - a sample menu is outlined by a square. This sample shows the typical contents of this display area when the menu is selected.

3. **Menu Function** - a menu function describes the purpose of the menu.

4. **Menu Operation** - a menu operation describes how to use the menu.

5. **Active Alpha Function Keys** - an active alpha function key list is at the bottom of each page. This list contains the alphabetical keys, active when the menu is displayed, that have been assigned a predetermined software function. The predetermined software function of these alpha keys is described in the previous introductory Section 4.

5.2 Keyboard Operation

Depending upon the displayed menu, the keys most often used on the keyboard are the numeric keys, enter/return key, [ESC], and alphabetic function keys.

5.2.1 Numeric Keys

The numeric keys are used to select a menu or transmitter parameter, or to enter a value into a data input field. With [NUM LOCK] enabled, the numeric keys on the keypad should function as the other numeric keys on the main keyboard.

If the menu contains a list of numbered options, a single press of a numeric key produces the menu or function desired. No further keystrokes are required if the number pressed was one of the options.

If the menu contains a data input field, more than one keystroke is usually required to produce the desired function. Pressing numeric keys causes the value to appear in this data input field, in the space underlined by the cursor. The backspace key is functional during this procedure. After typing a value into the data input field, a press of enter/return is required to activate the value.

5.2.2 Enter/Return Key

This key is labeled Enter, Return, or abbreviations thereof, depending upon the keyboard. This key performs the same enter function regardless of label, and so is called [ENTER]. The key is used to activate a value that has been typed into a data input field.

When a data input field first appears, it already contains the default value or the last value entered by previous keystrokes. A cursor located to the left of this value indicates where a typed numeral will appear. As the new value is typed into the data input field, the old value disappears and the cursor flows to the right of the new value. After [ENTER] is pressed, the cursor resets to the left to indicate the new value has become the operative value.

5.2.3 [Esc]

The [ESC], or escape key, is active when all except top-level menus are displayed. Pressing the escape key causes the previous menu to be displayed. The previous menu is the next-higher level, or one menu back. The escape key will not work if a Main Menu (remote or Local) is displayed.

5.2.4 Alphabetic Function Keys

Alphabetic function keys are a group of letters that, when pressed, cause a predetermined activity to occur. Only some keys are active when a particular menu is displayed. An active alphabetic function key list is provided for each menu. The following is a list of all the alphabetic function keys:

- M (display main menu)
- R (refresh main menu)
- K (key or unkey TX)

dspsec5.794

- A (select all channels)
- Y (yes, perform request)
- N (no, do not perform request)
- U (adjust value upwards)
- D (adjust value downwards)

5.2.4.1 M Key

Pressing the M (main menu) key causes a main menu to be displayed, if it is not already displayed. If the transmitter is in remote control, the M key displays the Remote Control Main Menu. If the transmitter is in local control, the M key displays the Local Control Main Menu.

5.2.4.2 R Key

Pressing the R (refresh) key causes a main menu to be displayed if it is not already displayed (the same as pressing the M key). The R key also causes the transmitter to update the status, currents, and powers values in the top half of the screen.

5.2.4.3 K Key

Pressing the K (key) key causes the transmitter to key, if unkeyed, or to unkey, if already keyed. The K key is active in local control only. When local control is entered, the K key is activated and the transmitter unkeys, if already keyed. When local control is exited, the K key is deactivated and the transmitter assumes the key state determined by the remote key input.

5.2.4.4 A Key

Pressing the A (all) key causes the channel-all menu to be displayed for the parameter presently selected. This key allows selection or change of a transmitter parameter for all channels simultaneously, without having to select each channel individually.

5.2.4.5 U and D Keys

Pressing the U (up) or D (down) key causes an incremental adjustment to the value for the parameter displayed. These keys permit numerous adjustments to a transmitter parameter value without having to enter the entire value many times.

5.2.4.6 Y and N Keys

Pressing the Y (yes) or N (no) key causes a positive or negative response to a question being asked by the displayed menu. These keys are used when selecting or changing an important transmitter parameter.

6   MENU TREE

dspsec6.794

MAIN MENU

1 CHANGE TX SETTINGS see page 7-1

ADJ FWD PWR see page 7-2
    Select Channel to Adj Fwd Pwr see page 7-2
      Adj Fwd Pwr For Channel see page 7-2
SET LOW PWR ALRM see page 7-3
    Select Channel To Set Low Pwr Alarm see page 7-3
      Set Low Pwr Alarm For Channel see page 7-3
SET FREQUENCIES see page 7-4
    Enter Password to Set Frequencies see page 7-4
      Select Channel To Set Frequencies see page 7-4
        Set Frequencies For Channel see page 7-5
CHANGE FREQUENCY PASSWORD see page 7-6
CHANGE/TOGGLE ENTRY PASSWORD see page 7-7
    Change Entry Password see page 7-7

2 DIGITAL MODE SETUP see page 8-1

SET DEVIATION see page 8-1
    Select Channel To Set Mode Deviation see page 8-2
      Set Mode Deviation For Channel see page 8-2
SET OFFSET see page 8-3
    Select Channel To Set Mode Offset see page 8-3
      Set Mode Offset For Channel see page 8-4
SELECT DATA POLARITY see page 8-4
SELECT FILTER RISETIME see page 8-5
    Select Channel To Set Filter Risetime see page 8-5
      Select Filter Risetime for Channel see page 8-5

3 ANALOG MODE SETUP see page 9-1

ADJUST AUDIO INPUT LEVEL see page 9-1
SET ANALOG DEVIATION see page 9-2
SET ANALOG LIMITER VALUE see page 9-2
SET ANALOG OFFSET see page 9-3
SELECT AUDIO RESPONSE see page 9-3
SELECT AUDIO POLARITY see page 9-4

4 VIEW TX STATUS see page 10-1

VIEW VOLTAGE READINGS see page 10-2
VIEW CHANNEL FREQS see page 10-2
VIEW FAULTS SELECTION see page 10-3
    View Present Faults see page 10-3
    View Stored Faults see page 10-4
    View Stored Fault Readings see page 10-12

5 EXIT LOCAL CONTROL see other main menu items for description

6 CALIBRATE FWD/REF PWR see page 11-1

7 CHANGE MODE see page 12-1

8 CHANGE CHANNEL see page 13-1

9 TESTS/UPLOAD see page 14-1

dspsec7.794

7   CHANGE TX SETTINGS

Refer to following diagram for initial steps of Change Tx Settings procedure.

```
┌ ─ ─ ─ ─ ─ ┐          ┌──────────┐
│   MAIN    │          │  CHANGE  │
│   MENU    │          │    TX    │
│  (REMOTE  ├──────────┤ SETTINGS │
│ OR LOCAL) │          │          │
│           │          └──────────┘
└ ─ ─ ─ ─ ─ ┘
```
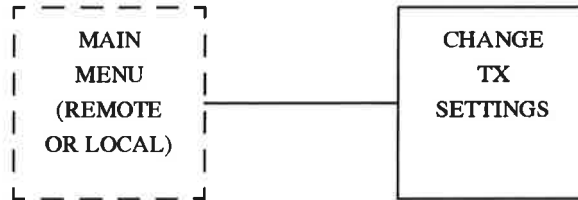
- Select option to **ADJ FWD PWR**

- Select option to **SET LOW PWR ALRM**

- Select option to **SET FREQUENCIES**

- Select option to **CHANGE FREQUENCY PASSWORD**

- Select option to **CHANGE/TOGGLE ENTRY PASSWORD**

7.1 ADJ FWD PWR

7.1.1 SELECT CHANNEL TO ADJ FWD PWR

Refer to the following diagram for initial steps of Select Channel to Adjust Forward Power Procedure.

```
+-----------+     +-----------+     +-----------+     +-----------+
| MAIN      |     | CHANGE    |     | ADJ FWD   |     | SELECT    |
| MENU      |     | TX        |     | PWR       |     | CHANNEL   |
| (REMOTE   |-----| SETTINGS  |-----|           |-----| TO ADJ FWD|
| OR LOCAL) |     |           |     |           |     | PWR       |
+-----------+     +-----------+     +-----------+     +-----------+
```

- To set one channel to a different forward power than other channels, press numeric key that corresponds to that channel. A menu to adjust forward power for one channel appears.

- To set forward power for all channels simultaneously, press A. A menu to adjust forward power for all channels appears. Refer to next paragraph for more information.

7.1.1.1 Adj Fwd Pwr For Channel

Refer to following diagram for initial steps of Adjust Forward Power For Channel Procedure.

```
+-----------+  +-----------+  +-----------+  +-----------+  +-----------+
| MAIN      |  | CHANGE    |  | ADJ FWD   |  | SELECT    |  | ADJ FWD   |
| MENU      |  | TX        |  | PWR       |  | CHANNEL   |  | PWR FOR   |
| (REMOTE   |--| SETTINGS  |--|           |--| TO ADJ FWD|--| CHANNEL   |
| OR LOCAL) |  |           |  |           |  | PWR       |  |           |
+-----------+  +-----------+  +-----------+  +-----------+  +-----------+
```
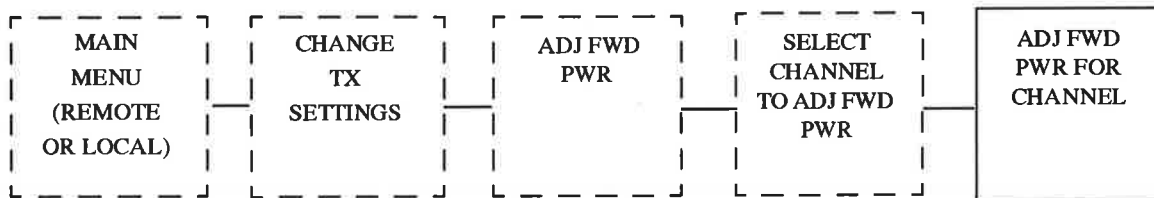
- For incremental adjustments, press U to increase or D to decrease forward power shown in shaded area. Forward power must remain between wattage limits stated on screen.

- For entry of a specific value, press numeric keys to input forward power into shaded area. Forward power must be whole number between wattage limits stated on screen. Press Enter to store value and reset cursor.

dspsec7.794

7.2 Set Low Pwr Alrm

7.2.1 Select Channel To Set Low Pwr Alarm

Refer to following diagram for initial steps of Select Channel To Set Low Power Alarm Procedure.

```
┌ ─ ─ ─ ─ ─ ┐     ┌ ─ ─ ─ ─ ┐     ┌ ─ ─ ─ ─ ┐     ┌───────────┐
│  MAIN     │     │ CHANGE  │     │ SET LOW │     │  SELECT   │
│  MENU     │     │  TX     │     │ PWR ALARM│     │  CHANNEL  │
│ (REMOTE   │─────│ SETTINGS│─────│         │─────│ TO SET LOW│
│ OR LOCAL) │     │         │     │         │     │ PWR ALARM │
└ ─ ─ ─ ─ ─ ┘     └ ─ ─ ─ ─ ┘     └ ─ ─ ─ ─ ┘     └───────────┘
```
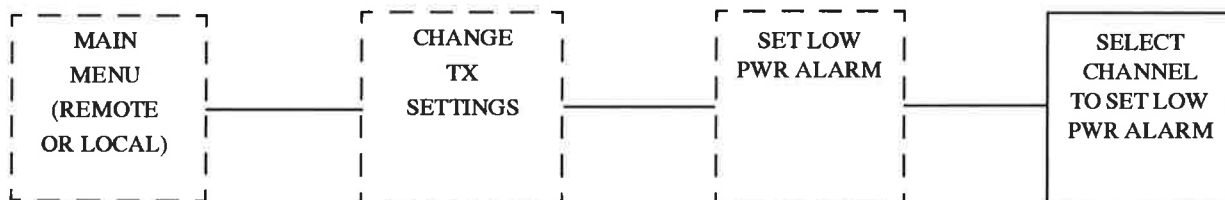
- To set one channel to a different low power alarm than other channels, press numeric key that corresponds to that channel. A menu to set low power alarm for one channel appears.

- To set low power alarm for all channels simultaneously, press A. A menu to set low power alarm for all channels appears. Refer to next paragraph for more information.

7.2.1.1 Set Low Pwr Alarm For Channel

Refer to following diagram for initial steps of Set Low Power Alarm For Channel Procedure.

```
┌ ─ ─ ─ ─ ─ ┐   ┌ ─ ─ ─ ─ ┐   ┌ ─ ─ ─ ─ ┐   ┌ ─ ─ ─ ─ ┐   ┌─────────┐
│  MAIN     │   │ CHANGE  │   │ SET LOW │   │ SELECT  │   │ SET LOW │
│  MENU     │   │  TX     │   │ PWR ALRM│   │ CHANNEL │   │  PWR    │
│ (REMOTE   │───│ SETTINGS│───│         │───│TO SET LOW│──│ALARM FOR│
│ OR LOCAL) │   │         │   │         │   │PWR ALARM│   │ CHANNEL │
└ ─ ─ ─ ─ ─ ┘   └ ─ ─ ─ ─ ┘   └ ─ ─ ─ ─ ┘   └ ─ ─ ─ ─ ┘   └─────────┘
```
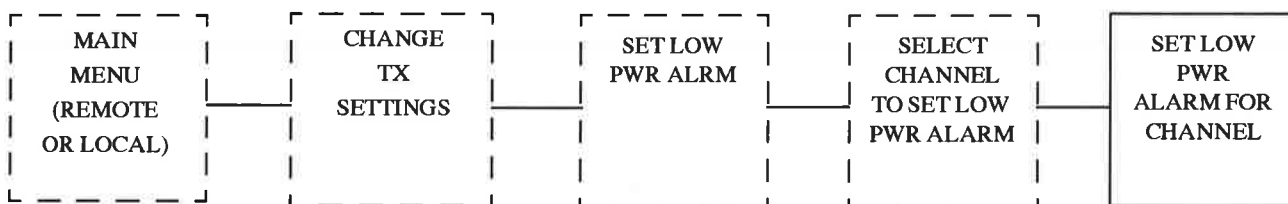
- Press numeric keys to input desired alarm level into shaded area. Alarm level must be a whole number between wattage limits stated on screen.

- Set deviation to maximum setting without causing channel interference.

- Press Enter to store deviation and reset cursor.

7.3 Set Frequencies

7.3.1 Enter Password To Set Frequencies

Refer to following diagram for initial steps of Enter Password To Set Frequencies procedure.

```
┌──────────┐      ┌──────────┐      ┌──────────┐      ┌──────────┐
│   MAIN   │      │  CHANGE  │      │   SET    │      │  ENTER   │
│   MENU   │      │    TX    │      │ FREQUEN- │      │ PASSWORD │
│ (REMOTE  │──────│ SETTINGS │──────│   CIES   │──────│  TO SET  │
│ OR LOCAL)│      │          │      │          │      │ FREQUEN- │
│          │      │          │      │          │      │   CIES   │
└──────────┘      └──────────┘      └──────────┘      └──────────┘
```
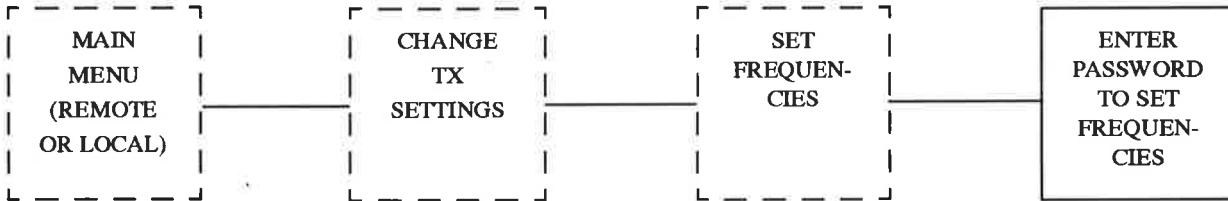
- Press keys corresponding to frequency password. Asterisk (*) appears in shaded area as each key is pressed.

- Press Enter. A screen to select channel to set frequencies appears if password is correct. Refer to next paragraph for more information.

7.3.1.1 Select Channel To Set Frequencies

Refer to following diagram for initial steps of Select Channel To Set Frequencies procedure.

```
┌──────────┐   ┌──────────┐   ┌──────────┐   ┌──────────┐   ┌──────────┐
│   MAIN   │   │  CHANGE  │   │   SET    │   │  ENTER   │   │  SELECT  │
│   MENU   │   │    TX    │   │ FREQUEN- │   │ PASSWORD │   │ CHANNEL  │
│ (REMOTE  │───│ SETTINGS │───│   CIES   │───│  TO SET  │───│  TO SET  │
│ OR LOCAL)│   │          │   │          │   │ FREQUEN- │   │ FREQUEN- │
│          │   │          │   │          │   │   CIES   │   │   CIES   │
└──────────┘   └──────────┘   └──────────┘   └──────────┘   └──────────┘
```

- To set one channel to a different frequency than other channels, press numeric key that corresponds to that channel. A menu to set frequency for one channel appears.

- To set frequency for all channels simultaneously, press A. A menu to set frequencies for all channels appears.

dspsec7.794

7.3.1.1.1 Set Frequencies For Channel

Refer to following diagram for initial steps of Set Frequencies For Channel procedure.

```
┌─────────┐   ┌─────────┐   ┌─────────┐   ┌─────────┐   ┌─────────┐
│ CHANGE  │   │   SET   │   │  ENTER  │   │ SELECT  │   │   SET   │
│   TX    │   │ FREQUEN-│   │PASSWORD │   │ CHANNEL │   │ FREQUEN-│
│SETTINGS │───│  CIES   │───│ TO SET  │───│ TO SET  │───│CIES FOR │─
│         │   │         │   │ FREQUEN-│   │ FREQUEN-│   │ CHANNEL │
│         │   │         │   │  CIES   │   │  CIES   │   │         │
└─────────┘   └─────────┘   └─────────┘   └─────────┘   └─────────┘
```
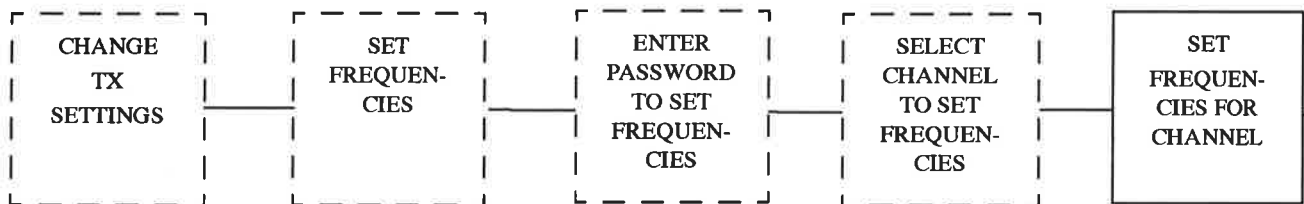
Note

Different frequency ranges appear for different bands. The ranges which are available to you, correspond to the available frequency range of the exciter, except in cases where the frequency band is subdivided (banded) so that frequencies selected must be within the range of resonant parts. For example, if your range is 920-960 MHz, you may legitimately select a new frequency around 925 MHz. The particular exciter, however, has resonant parts for, say, approximately 955 MHz and may not work at the programmed frequency because the VCO cannot lock unless you also install banded parts for the range which corresponds to the new frequency.

- Press numeric keys to input desired frequency into shaded area. Frequency must be within limits and proper multiple as stated on screen. Frequency must be within bandwidth of VCO/RF amplifier board. Press at least three whole digits and no more than eight digits total. A decimal may be pressed if desired.

- Press Enter to store frequency and reset cursor. A decimal is assumed between third and fourth digits if not pressed in previous step.

7.4 Change Frequency Password

Refer to following diagram for initial steps of Change Frequency Password procedure.
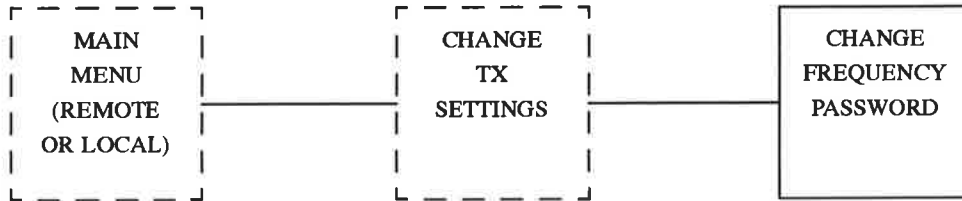
```
┌ ─ ─ ─ ─ ┐          ┌ ─ ─ ─ ─ ┐          ┌──────────┐
│  MAIN   │          │ CHANGE  │          │  CHANGE  │
│  MENU   │          │   TX    │          │FREQUENCY │
│ (REMOTE ├──────────┤ SETTINGS├──────────┤ PASSWORD │
│OR LOCAL)│          │         │          │          │
│         │          │         │          │          │
└ ─ ─ ─ ─ ┘          └ ─ ─ ─ ─ ┘          └──────────┘
```

- Enter present password.

- If password is not correct, invalid password is displayed, go back to previous step.

- If password is correct, enter new password. Password is any combination of one to six alphanumeric keys on keyboard.

- Enter new password again.

- If password is not correct, invalid password is displayed, go back to previous step.

- If password is correct, password is saved.

dspsec7.794

7.5 Change/Toggle Entry Password

Refer to the following diagram for initial steps of Change/Toggle Entry Password procedure.

```
┌──────────┐     ┌──────────┐     ┌──────────┐
│  MAIN    │     │ CHANGE   │     │ CHANGE/  │
│  MENU    │─────│   TX     │─────│ TOGGLE   │
│ (REMOTE  │     │ SETTINGS │     │ ENTRY    │
│ OR LOCAL)│     │          │     │ PASSWORD │
└──────────┘     └──────────┘     └──────────┘
```
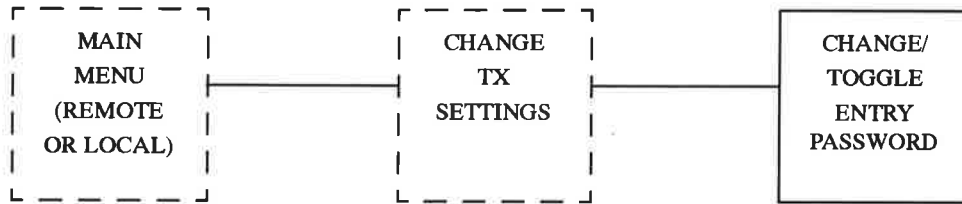
- Press option to enable entry password if disabled. Password status changes to **ENTRY PASSWORD IS CURRENTLY ENABLED**. Password is now required to gain access to VT-100 communications.

- Press option to disable entry password if enabled. Password status changes to **ENTRY PASSWORD IS CURRENTLY DISABLED**. Password is now no longer required to gain access to VT-100 communications.Press option to **CHANGE ENTRY PASSWORD**. Refer to next paragraph for more information.

7.5.1 Change Entry Password

Refer to following diagram for initial steps of Change Entry Password procedure

```
┌──────────┐     ┌──────────┐     ┌──────────┐     ┌──────────┐
│  MAIN    │     │ CHANGE   │     │ CHANGE/  │     │ CHANGE   │
│  MENU    │─────│   TX     │─────│ TOGGLE   │─────│ ENTRY    │
│ (REMOTE  │     │ SETTINGS │     │ ENTRY    │     │ PASSWORD │
│ OR LOCAL)│     │          │     │ PASSWORD │     │          │
└──────────┘     └──────────┘     └──────────┘     └──────────┘
```

- Enter present password.

- If password is not correct, invalid password is displayed, go back to previous step.

- If password is correct, enter new password. Password is any combination of one to six alphanumeric keys on keyboard.

- Enter new password again.

- If password is not correct, invalid password is displayed, go back to previous step.

- If password is correct, password is saved.

8 DIGITAL MODE SETUP

Refer to following diagram for initial steps of DIGITAL MODE SETUP procedure.

```
┌ ─ ─ ─ ─ ─ ┐          ┌─────────────┐
│  MAIN     │          │  DIGITAL    │
│  MENU     │          │  MODE       │
│  (REMOTE  │──────────│  SETUP      │
│  OR LOCAL)│          │             │
└ ─ ─ ─ ─ ─ ┘          └─────────────┘
```
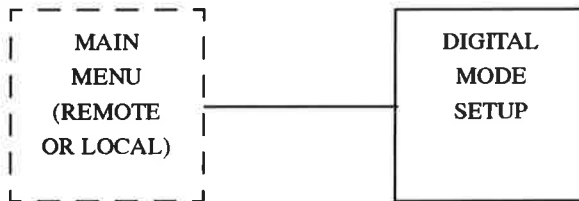
- Press option to SET DEVIATION

- Press option to SET OFFSET

- Press option to SELECT DATA POLARITY

- Press option to SELECT FILTER RISETIME

8.1 Set Deviation

Refer to following diagram for initial steps of SET DEVIATION procedure.

```
┌ ─ ─ ─ ─ ─ ┐      ┌ ─ ─ ─ ─ ─ ┐      ┌─────────────┐
│  MAIN     │      │  DIGITAL  │      │   SET       │
│  MENU     │      │  MODE     │      │ DEVIATION   │
│  (REMOTE  │──────│  SETUP    │──────│             │
│  OR LOCAL)│      │           │      │             │
└ ─ ─ ─ ─ ─ ┘      └ ─ ─ ─ ─ ─ ┘      └─────────────┘
```
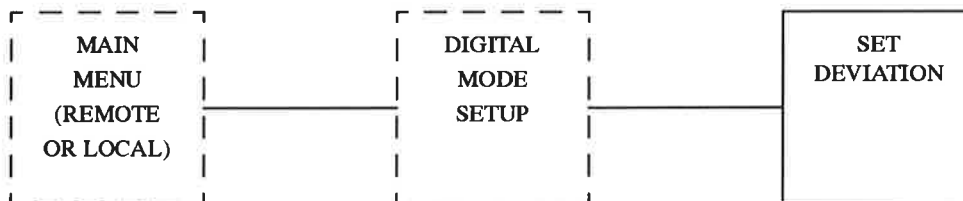
- To set one mode to a different deviation than other modes, press numeric key that corresponds to that mode.Up to four modes are adjustable (A,B,C, and D). A menu to select channel to set mode deviation appears.

8.1.1 Select Channel To Set Mode Deviation

Refer to following diagram for initial steps of SELECT CHANNEL TO SET MODE DEVIATION procedure.

```
+------------+     +------------+     +------------+     +------------+
| MAIN       |     | DIGITAL    |     | SET        |     | SELECT     |
| MENU       |     | MODE       |     | DEVIATION  |     | CHANNEL    |
| (REMOTE    |-----| SETUP      |-----|            |-----| TO SET     |
| OR LOCAL)  |     |            |     |            |     | MODE       |
|            |     |            |     |            |     | DEVIATION  |
+------------+     +------------+     +------------+     +------------+
```
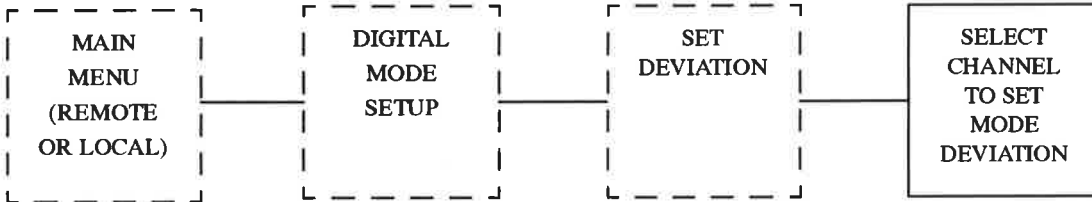
- To set one channel to a different mode deviation than other channels, press numeric key that corresponds to that channel. A menu to set mode deviation for one channel appears.

- To set mode deviation for all channels simultaneously, press A. A menu to set mode deviation for all channels appears.

8.1.1.1 Set Mode Deviation For Channel

Refer to following diagram for initial steps of SET MODE DEVIATION FOR CHANNEL Procedure.
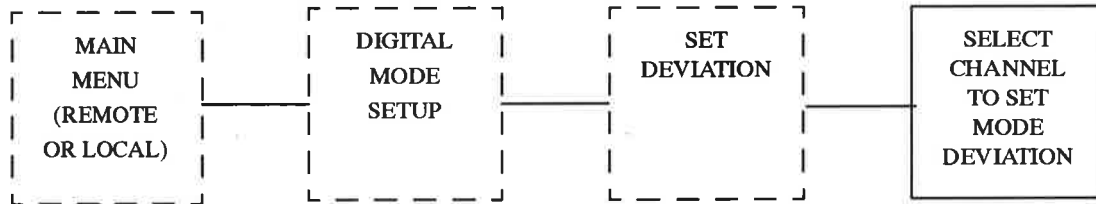
```
+------------+     +------------+     +------------+     +------------+
| MAIN       |     | DIGITAL    |     | SET        |     | SELECT     |
| MENU       |     | MODE       |     | DEVIATION  |     | CHANNEL    |
| (REMOTE    |-----| SETUP      |-----|            |-----| TO SET     |
| OR LOCAL)  |     |            |     |            |     | MODE       |
|            |     |            |     |            |     | DEVIATION  |
+------------+     +------------+     +------------+     +------------+
```

- Press numeric keys to input desired deviation into shaded area. Deviation must be whole number between frequency limits stated on screen.

- Set deviation to maximum setting without causing channel interference.

- Press Enter to store deviation and reset cursor.

dspsec8.794

8.2 Set Offset

Refer to the following diagram for initial steps of SET OFFSET procedure.

```
+-----------+      +-----------+      +-----------+
|   MAIN    |      |  DIGITAL  |      |           |
|   MENU    |------|   MODE    |------|SET OFFSET |
| (REMOTE   |      |  SETUP    |      |           |
| OR LOCAL) |      |           |      |           |
+-----------+      +-----------+      +-----------+
```
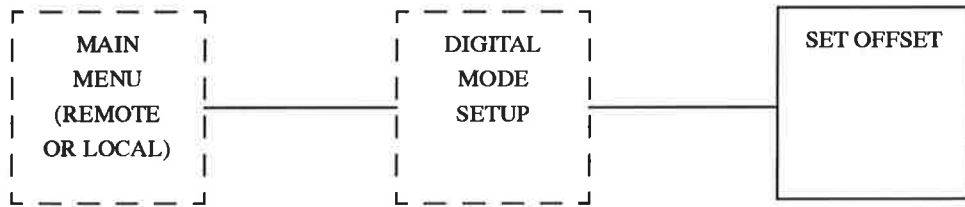
- To set one mode to a different offset than other modes, press numeric key that corresponds to that mode. A menu to select channel to set mode offset appears.

8.2.1 Select Channel To Set Mode Offset

Refer to following diagram for initial steps of SELECT CHANNEL TO SET MODE OFFSET Procedure.

```
+-----------+   +-----------+   +-----------+   +-----------+
|   MAIN    |   |  DIGITAL  |   |           |   |  SELECT   |
|   MENU    |   |   MODE    |   |SET OFFSET |   |  CHANNEL  |
| (REMOTE   |---|  SETUP    |---|           |---|  TO SET   |
| OR LOCAL) |   |           |   |           |   |   MODE    |
|           |   |           |   |           |   |  OFFSET   |
+-----------+   +-----------+   +-----------+   +-----------+
```
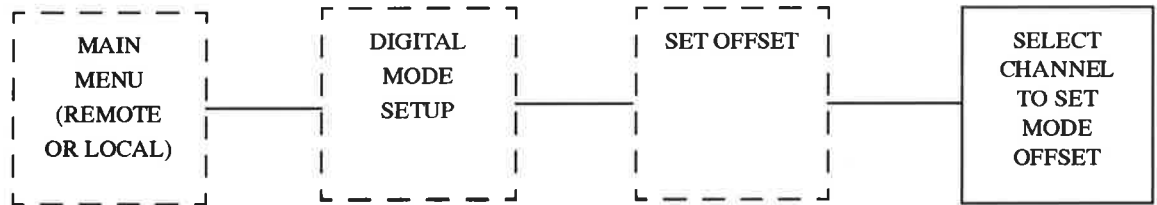
- To set one channel to a different mode offset than other channels, press numeric key that corresponds to that channel. A menu to set mode offset for one channel appears.

- To set mode offset for all channels simultaneously, press A. A menu to set mode offset for all channels appears.

8.2.1.1   Set Mode Offset For Channel

Refer to following diagram for initial steps of SET MODE OFFSET FOR CHANNEL Procedure.

```
┌─ ─ ─ ─ ─┐   ┌─ ─ ─ ─ ─┐   ┌─ ─ ─ ─ ─┐   ┌─ ─ ─ ─ ─┐   ┌─────────┐
│  MAIN   │   │ DIGITAL │   │SET OFFSET│  │ SELECT  │   │ SET MODE │
│  MENU   │   │  MODE   │   │         │   │ CHANNEL │   │OFFSET FOR│
│ (REMOTE │   │  SETUP  │   │         │   │ TO SET  │   │ CHANNEL │
│OR LOCAL)│   │         │   │         │   │  MODE   │   │         │
│         │   │         │   │         │   │ OFFSET  │   │         │
└─ ─ ─ ─ ─┘   └─ ─ ─ ─ ─┘   └─ ─ ─ ─ ─┘   └─ ─ ─ ─ ─┘   └─────────┘
```

- Press minus (-) key if negative offset. If positive offset, plus (+) key may be pressed if desired.

- Press numeric keys to input desired offset into shaded area. Offset must be whole number between frequency limits stated in menu.

- Set offset to O if not simulcasting. If simulcasting, set one tx to 0, a second to +400, and a third tx to -400.

- Press Enter to store offset and reset cursor.

8.3   Select Data Polarity

Refer to following diagram for initial steps of SELECT DATA POLARITY procedure .

```
┌─ ─ ─ ─ ─┐      ┌─ ─ ─ ─ ─┐      ┌─────────┐
│  MAIN   │      │ DIGITAL │      │ SELECT  │
│  MENU   │      │  MODE   │      │  DATA   │
│ (REMOTE │      │  SETUP  │      │POLARITY │
│OR LOCAL)│      │         │      │         │
│         │      │         │      │         │
└─ ─ ─ ─ ─┘      └─ ─ ─ ─ ─┘      └─────────┘
```
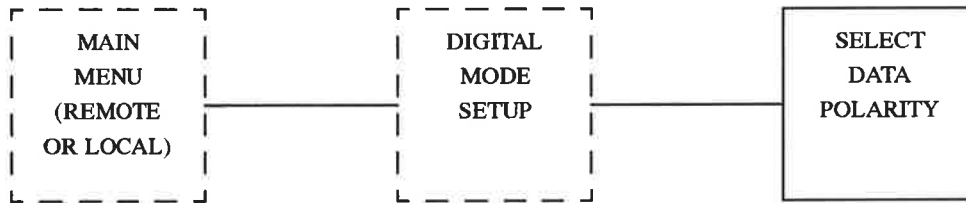
- Press 1 to invert data if noninverted. Polarity status changes to DATA POLARITY IS CURRENTLY INVERTED.

- Press 2 to non-invert data if inverted. Polarity status changes to DATA POLARITY IS CURRENTLY NON-INVERTED.

- Set to non-inverted unless data is inverted by a receiver or controller.

8.4   Select Filter Risetime

8.4.1   Select Channel To Set Filter Risetime

Refer to the following diagram for initial steps of SELECT CHANNEL TO SET FILTER RISETIME procedure.

```
┌─────────────┐     ┌─────────────┐     ┌─────────────┐     ┌─────────────┐
│    MAIN     │     │   DIGITAL   │     │   SELECT    │     │   SELECT    │
│    MENU     │     │    MODE     │     │   FILTER    │     │  CHANNEL    │
│  (REMOTE    │─────│   SETUP     │─────│  RISETIME   │─────│  TO SET     │
│  OR LOCAL)  │     │             │     │             │     │   FILTER    │
│             │     │             │     │             │     │  RISETIME   │
└─────────────┘     └─────────────┘     └─────────────┘     └─────────────┘
```
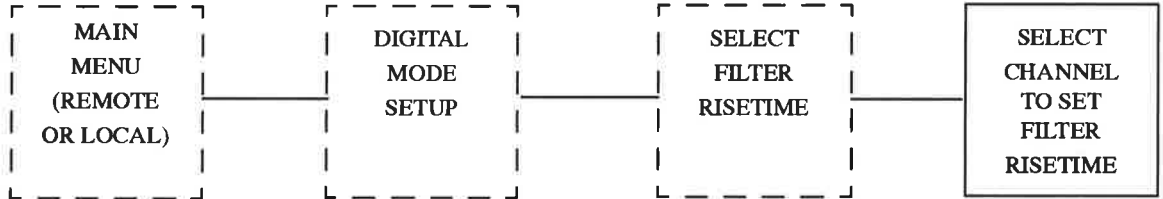
- To set one channel to a different filter risetime than other channels, press numeric key that corresponds to that channel. A menu to select filter risetime for one channel appears.

- To set filter risetime for all channels simultaneously, press A. A menu to set filter risetime for all channels appears.

8.4.1.1   Select Filter Risetime for Channel

Refer to the following diagram for initial steps of SELECT FILTER RISETIME FOR CHANNEL procedure.

```
┌──────────┐  ┌──────────┐  ┌──────────┐  ┌──────────┐  ┌──────────┐
│   MAIN   │  │  DIGITAL │  │  SELECT  │  │  SELECT  │  │  SELECT  │
│   MENU   │  │   MODE   │  │  FILTER  │  │  CHANNEL │  │  FILTER  │
│ (REMOTE  │──│  SETUP   │──│ RISETIME │──│  TO SET  │──│ RISETIME │
│ OR LOCAL)│  │          │  │          │  │  FILTER  │  │   FOR    │
│          │  │          │  │          │  │ RISETIME │  │ CHANNEL  │
└──────────┘  └──────────┘  └──────────┘  └──────────┘  └──────────┘
```

- Press 1 to select standard rise time. Premodulation filter selection status changes to FILTER RISETIME IS CURRENTLY 88uS.

- Press 2 to select narrowband rise time. Premodulation filter selection status changes to FILTER RISETIME IS CURRENTLY 150uS.

- Set to standard 88uS unless this is a retrofit to a system that already uses 150uS bessel.

dspsec8.794

9 ANALOG MODE SETUP

Refer to following diagram for initial steps of **ANALOG MODE SETUP** procedure

```
┌ ─ ─ ─ ─ ─ ┐          ┌──────────┐
│   MAIN    │          │  ANALOG  │
│   MENU    │          │   MODE   │
│  (REMOTE  │──────────│  SETUP   │
│ OR LOCAL) │          │          │
└ ─ ─ ─ ─ ─ ┘          └──────────┘
```

- Press option to **ADJUST AUDIO INPUT LEVEL** (must enter analog mode and local control to initiate this command).Press Y for yes to enter analog mode and l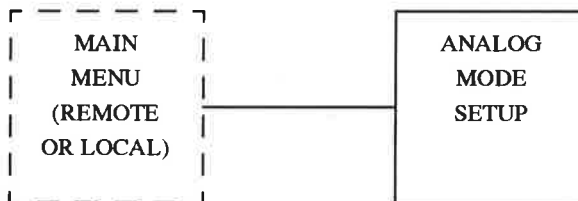ocal control. Press N for no to do not enter analog mode and local control. Press M to display main menu. Press R to refresh main menu. Press K when in local control to key or unkey TX.

- Press option to **SET ANALOG DEVIATION** (must enter analog mode and local control to initiate this command).

- Press option to **SET ANALOG LIMITER**.

- Press option to **SET ANALOG OFFSET**.

- Press option to **SELECT AUDIO RESPONSE**.

- Press option to **SELECT AUDIO POLARITY**.

9.1 Adjust Audio Input Level

1. Remove exciter far enough to gain access to AUDIO INPUT ADJUST control through top cover.

2. Input standard-level (1000-Hz) audio tone from transmitter controller.

3. Refer to following diagram for next steps of **ADJUST AUDIO INPUT LEVEL** Procedure.

```
┌ ─ ─ ─ ─ ─ ┐     ┌ ─ ─ ─ ─ ─ ┐     ┌──────────┐
│   MAIN    │     │  ANALOG   │     │  ADJUST  │
│   MENU    │     │   MODE    │     │  AUDIO   │
│  (REMOTE  │─────│  SETUP    │─────│  INPUT   │
│ OR LOCAL) │     │           │     │  LEVEL*  │
└ ─ ─ ─ ─ ─ ┘     └ ─ ─ ─ ─ ─ ┘     └──────────┘
```
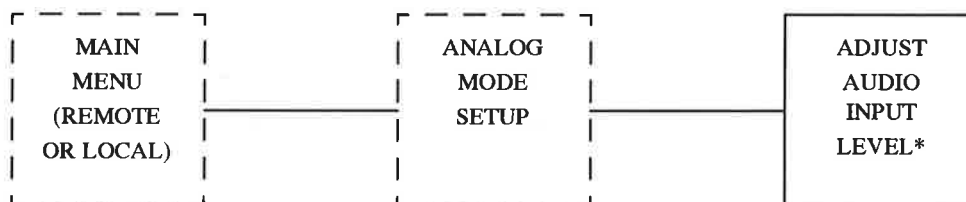
4. Set to appropriate (normal) level by rotating audio input adjust clockwise if message at bottom of menu says low. Set to normal level by rotating audio input adjust counter-clockwise if message at bottom of menu says high.

5. Remove audio input and replace exciter.

6. Return transmitter to service.

Procedure is complete.

9.2 Set Analog Deviation

Perform audio input level adjustment procedure referenced on previous page.

```
┌──────────────┐        ┌──────────────┐        ┌──────────────┐
│    MAIN      │        │   ANALOG     │        │     SET      │
│    MENU      │        │    MODE      │        │   ANALOG     │
│  (REMOTE     │────────│   SETUP      │────────│  DEVIATION*  │
│  OR LOCAL)   │        │              │        │              │
└──────────────┘        └──────────────┘        └──────────────┘
```

* (Must be in analog mode and local control)
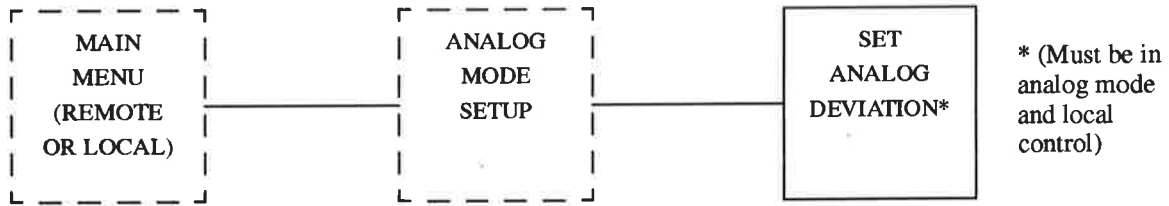
- Input standard (1000-Hz) level audio tone to exciter from transmitter controller or other source.

- Press numeric keys to input desired deviation into shaded area. Deviation must be whole number between frequency limits stated on screen.

- Set to 3500 Hz.

- Press `Enter` to store value and reset cursor.

- Press `Reset` on transmitter controller to remove audio tone from exciter.

9.3 Set Analog Limiter Value

Refer to following diagram for initial steps of SET ANALOG LIMITER VALUE procedure.

```
┌──────────────┐        ┌──────────────┐        ┌──────────────┐
│    MAIN      │        │   ANALOG     │        │     SET      │
│    MENU      │        │    MODE      │        │   ANALOG     │
│  (REMOTE     │────────│   SETUP      │────────│   LIMITER    │
│  OR LOCAL)   │        │              │        │    VALUE     │
└──────────────┘        └──────────────┘        └──────────────┘
```
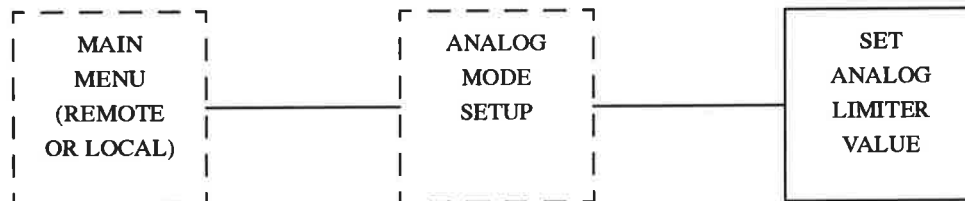
- Press numeric keys to input analog limiter level into shaded area. Limiter level must be whole number between frequency limits stated in menu.

- Set to 4800 Hz.

- Press `Enter` to store limiter level and reset cursor.

dspsec9.794

9.4 Set Analog Offset

Refer to following diagram for initial steps of SET ANALOG OFFSET Procedure.
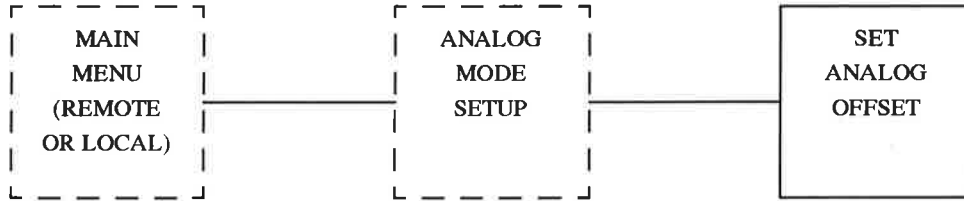
```
┌ ─ ─ ─ ─ ─ ┐        ┌ ─ ─ ─ ─ ┐        ┌─────────┐
│   MAIN    │        │ ANALOG  │        │   SET   │
│   MENU    │        │  MODE   │        │ ANALOG  │
│ (REMOTE   │────────│ SETUP   │────────│ OFFSET  │
│ OR LOCAL) │        │         │        │         │
└ ─ ─ ─ ─ ─ ┘        └ ─ ─ ─ ─ ┘        └─────────┘
```

- Press minus (-) key if negative offset. If positive offset, plus (+) key may be pressed if desired.

- Press numeric keys to input desired offset into shaded area. Offset must be whole number between frequency limits stated on screen.

- Set to 0 if not simulcasting. If simulcasting, set as follows. Two transmitters: set tx1 to 0; set tx2 to between +2 and +8 Hz. Three transmitters: set tx1 to 0; set tx2 to between +2 and +4; set tx3 to between -2 and -4 Hz. Note: Never set more than 8 Hz total spread in offset between transmitters of same simulcast area.

- Press Enter to store offset and reset cursor.

9.5 Select Audio Response

Refer to following diagram for initial steps of SELECT AUDIO RESPONSE procedure.

```
┌ ─ ─ ─ ─ ─ ┐        ┌ ─ ─ ─ ─ ┐        ┌─────────┐
│   MAIN    │        │ ANALOG  │        │ SELECT  │
│   MENU    │        │  MODE   │        │  AUDIO  │
│ (REMOTE   │────────│ SETUP   │────────│RESPONSE │
│ OR LOCAL) │        │         │        │         │
└ ─ ─ ─ ─ ─ ┘        └ ─ ─ ─ ─ ┘        └─────────┘
```
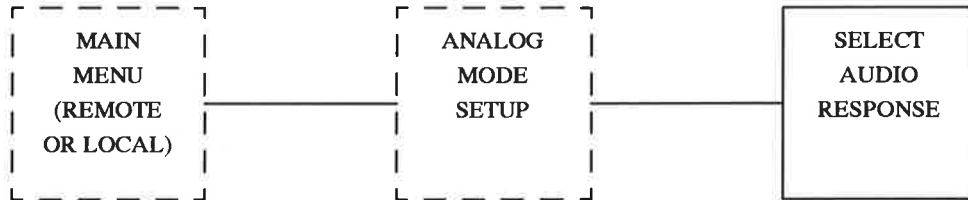
- Press option to disable audio preemphasis if enabled. Audio response status changes to AUDIO RESPONSE IS CURRENTLY FLAT.

- Press option to enable audio preemphasis if disabled. Audio response status changes to AUDIO RESPONSE IS CURRENTLY PRE-EMPH.

- Set to flat for most sites. Set to preemphasis if paging receivers correspondingly deemphasize received signal.

9.6 Select Audio Polarity

Refer to following diagram for initial steps of **SELECT AUDIO POLARITY** procedure.

```
┌ ─ ─ ─ ─ ┐          ┌ ─ ─ ─ ─ ┐          ┌──────────┐
│  MAIN   │          │ ANALOG  │          │  SELECT  │
│  MENU   │          │  MODE   │          │  AUDIO   │
│ (REMOTE │──────────│  SETUP  │──────────│ POLARITY │
│ OR LOCAL)│         │         │          │          │
└ ─ ─ ─ ─ ┘          └ ─ ─ ─ ─ ┘          └──────────┘
```
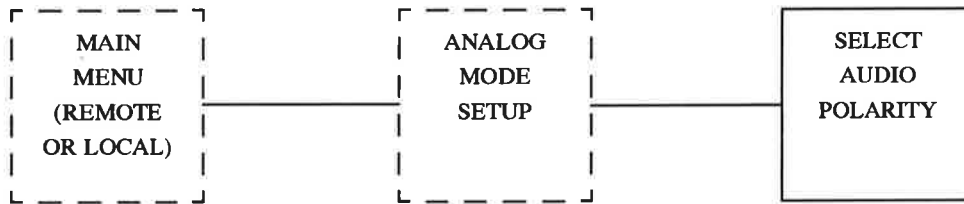
- Press option to invert audio if noninverted. Polarity status changes to **AUDIO POLARITY IS CURRENTLY INVERTED.**

- Press option to non-invert audio if inverted. Polarity status changes to **AUDIO POLARITY IS CURRENTLY NON-INVERTED.**

- Set to non-inverted unless audio is inverted by a receiver or controller.

10 VIEW TX STATUS

Refer to following diagram for initial steps of VIEW TX STATUS procedure.

```
┌ ─ ─ ─ ─ ─ ┐          ┌──────────┐
│   MAIN    │          │   VIEW   │
│   MENU    │          │    TX    │
│  (REMOTE  │──────────│  STATUS  │
│  OR LOCAL)│          │          │
└ ─ ─ ─ ─ ─ ┘          └──────────┘
```
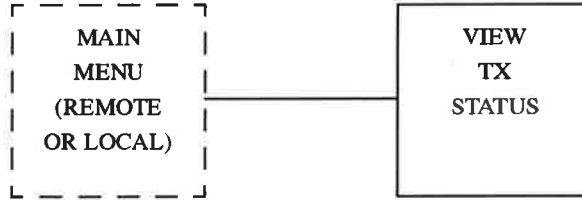
- Press option to VIEW VOLTAGE READINGS
- Press option to VIEW CHANNEL FREQS
- Press option to VIEW FAULTS SELECTION
- Press option to VIEW ALL TX PRESETS

10.1 View Voltage Readings

Refer to following diagram for intitial steps of View Voltage Readings Procedure.

```
┌─ ── ── ── ─┐        ┌─ ── ── ── ── ─┐        ┌──────────────┐
│    MAIN    │        │    VIEW       │        │    VIEW       │
│    MENU    │        │    TX         │        │   VOLTAGE     │
│  (REMOTE   │────────│    STATUS     │────────│   READINGS    │
│  OR LOCAL) │        │               │        │               │
│            │        │               │        │               │
└─ ── ── ── ─┘        └─ ── ── ── ── ─┘        └──────────────┘
```

- The screen displays two groups of two columns. Location of each voltage measurement (either power amplifier or exciter) and its expected value are in left column of each group. Actual value is in right column of each group, adjacent to its expected value. Each voltage is measured at output of its respective regulating device.

10.2 View Channel Freqs

Refer to following diagram for initial steps of VIEW CHANNEL FREQuencieS procedure.

```
┌─ ── ── ── ─┐           ┌─ ── ── ── ─┐        ┌──────────────┐
│    MAIN    │           │    VIEW    │        │    VIEW       │
│    MENU    │   type    │    TX      │        │   CHANNEL     │
│  (REMOTE   │──────────│    STATUS   │────────│    FREQS      │
│  OR LOCAL) │           │            │        │               │
│            │           │            │        │               │
└─ ── ── ── ─┘           └─ ── ── ── ─┘        └──────────────┘
```
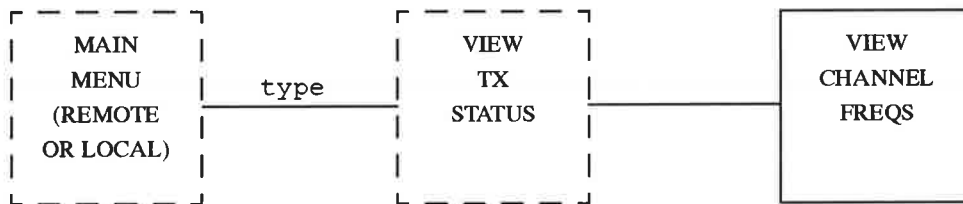
- This screen displays two groups of two columns. Each channel number (FREQUENCY 1 through FREQUENCY 16) is in left column of each group. Programmed frequency is in right column of each group, adjacent to its channel number.
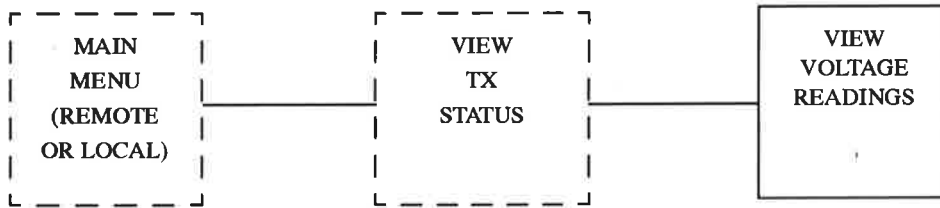
10.3 View Faults Selection

Refer to following diagram for initial steps of **VIEW FAULTS SELECTION** Procedure.
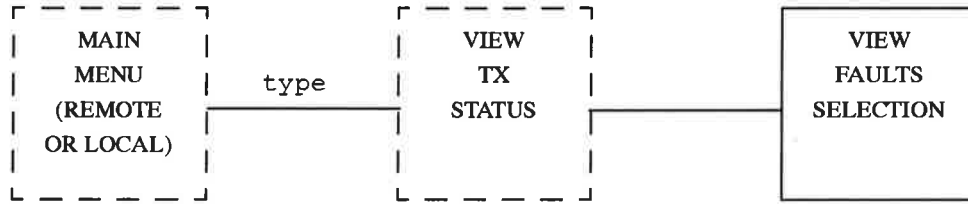
- Press option to PRESENT TX FAULTS.
- Press option to STORED TX FAULTS.
- Press option to VIEW READINGS AT FAULT.

10.3.1 View Present Tx Faults

Refer to following diagram for initial steps of **VIEW PRESENT FAULTS** full-screen display procedure

- This full screen displays four groups of two columns. Location/function of each item is in left column of each group. **FAULT/ALARM/OK** or **HI/LO** status is in right column of each group, adjacent to its location/function. Refer to Section 7 for a detailed description of all faults screens.

10.3.2 View Stored Tx Faults

Refer to following diagram for initial steps of VIEW STORED FAULTS full-screen display.

```
┌ ─ ─ ─ ─ ─ ┐       ┌ ─ ─ ─ ─ ─ ┐       ┌ ─ ─ ─ ─ ─ ┐       ┌───────────┐
│   MAIN    │       │   VIEW    │       │   VIEW    │       │   VIEW-   │
│   MENU    │       │    TX     │       │  FAULTS   │       │  STORED   │
│  (REMOTE  │───────│  STATUS   │───────│ SELECTION │───────│  FAULTS   │
│ OR LOCAL) │       │           │       │           │       │           │
└ ─ ─ ─ ─ ─ ┘       └ ─ ─ ─ ─ ─ ┘       └ ─ ─ ─ ─ ─ ┘       └───────────┘
```
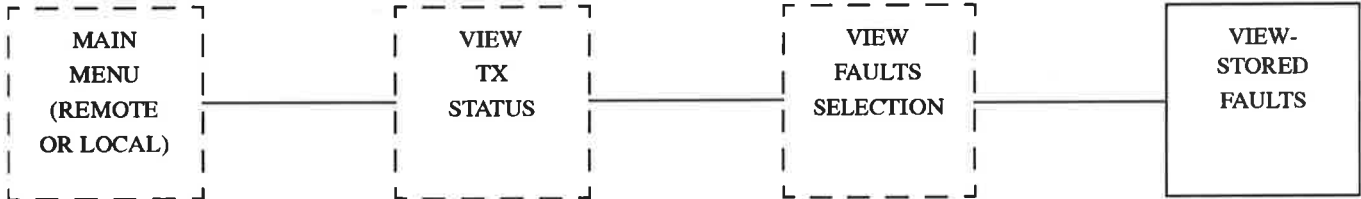
- This full screen displays four groups of two columns. Location/function of each item is in left column of each group. FAULT/ALARM/OK or HI/LO status is in right column of each group, adjacent to its location/function. Refer to Section 7 for a detailed description of all fault screens.

dspsec10.794

display legend	normal state	alarm state	fault state
PA1 BOARD OK	PA1 board is fully operational.		
PA1 BOARD ALARM		PA1 board should be replaced soon.	
PA1 BOARD FAULT			PA1 board must be replaced immediately.
PA1-A CURR OK	Current through A pair of transistors on PA1 board is within **window**: ((TOT FWD PWR ÷ NO. OF PAs) ÷ PA SUPPLY VOLTAGE) ±1.5A for 8311 ±3.5A for others		
PA1-A CURR LO		Current through A pair of transistors on PA1 board is below **window** or below: 0.2A for 8311 2A for others	
PA1-A CURR HI		Current through A pair of transistors on PA1 board is above **window** and below: 5.5A for 8311 11A for 8411 11A for 8611 12A for 8321/31 12A for 8521/31	Current through A pair of transistors on PA1 board is above: 5.5A for 8311 11A for 8411 11A for 8611 12A for 8321/31 12A for 8521/31
PA1-B CURR OK	Current through B pair of transistors on PA1 board is within **window**: ((TOT FWD PWR ÷ NO. OF PAs) ÷ PA SUPPLY VOLTAGE) ±1.5A for 8311 ±3.5A for others		
PA1-B CURR LO		Current through B pair of transistors on PA1 board is below **window** or below: 0.2A for 8311 2A for others	

Table 10-1 TX Faults Legend Display Description

display legend		normal state	alarm state	fault state
PA1-B CURR	HI		Current through B pair of transistors on PA1 board is above **window** and below: 5.5A for 8311 11A for 8411 11A for 8611 12A for 8321/31 12A for 8521/31	Current through B pair of transistors on PA1 board is above: 5.5A for 8311 11A for 8411 11A for 8611 12A for 8321/31 12A for 8521/31
DRVR CURR	OK	Current through driver transistor on driver board is between: 0.8A and 4.0A for 8311 1.0A and 5.5A for 8411 1.5A and 5.5A for 8611 0.8A and 4.0A for 8321/31 1.5A and 6.7A for 8521/31		
DRVR CURR	LO		Current through driver transistor on driver board is below 1.5 A.	
DRVR CURR	HI			Current through driver transistor on driver board is above 4.5 A.
TOT FWD PWR	OK	Forward power of combiner is above low-power alarm setting.		
TOT FWD PWR	LO		Forward power of combiner board is below lower power alarm setting and above: 15W for 8311 90W for 8411 190W for 8611 30W for 8321/31 90W for 8521/31	Forward power of combiner board is below: 15W for 8311 90W for 8411 190W for 8611 30W for 8321/31 90W for 8521/31
TOT REF PWR	OK	Reflected power at isolator is below: 12W for 8311 22W for 8411 45W for 8611 12W for 8321/31 32W for 8521/31		

Table 10-1 TX Faults Legend Display Description (continued)

dspsec10.794

display legend		normal state	alarm state	fault state
TOT REF PWR	HI			Reflected power at isolator is above: 12W for 8311 22W for 8411 45W for 8611 12W for 8321/31 32W for 8521/31
EXC OUT-PUT	OK	Power amplifier's modulated RF input signal is above 1 Vrmms or 200 mW.		
EXC OUT-PUT	LO			Power amplifier's modulated RF input signal is below 1 Vrms or 200 mW.
ISOLATOR	OK	Isolator module is fully operational.		
ISOLATOR	FAULT			Isolator module must be replaced immediately.
PA -15V	OK	Power amplifier's -15 Vdc power input is between -18 V and -12 V.		
PA -15V	LO		Power amplifier's -15 Vdc power input is below -18 V.	
PA -15V	HI		Power amplifier's -15 Vdc power input is above -12 V.	
PA 34V	OK	Power amplifier's 34 Vdc power input is between 30 V and 38 V.		
PA 34V	LO		Power amplifier's 34 Vdc power input is below 30 V.	
PA 34V	HI		Power amplifier's 34 Vdc power input is above 38 V.	
PA 28V	OK	Power amplifier's 28 Vdc power input is between 22 V and 30.5 V.		
PA 28V	LO		Power amplifier's 28 Vdc power input is below 22 V.	
PA 28V	HI		Power amplifier's 28 Vdc power input is above 30.5 V.	

Table 10-1 TX Faults Legend Display Description (continued)

display legend		normal state	alarm state	fault state
PA 7.5V	OK	Power amplifier's 7.5 Vdc power input is between 6 V and 9 V.		
PA 7.5V	LO		Power amplifier's 7.5 Vdc power input is below 6 V.	
PA 7.5V	HI		Power amplifier's 7.5 Vdc power input is above 9 V.	
PA 5V	OK	Power amplifier's internal 5 Vdc supply is between 4 V and 6.5 V.		
PA 5V	LO		Power amplifier's internal 5 Vdc supply is below 4 V.	
PA 5V	HI		Power amplifier's internal 5 Vdc supply is above 6.5 V.	
EXC 28V	OK	Exciter's 28 Vdc power input is between 25 V and 29.5 V.		
EXC 28V	LO		Exciter's 28 Vdc power input is below 25 V.	
EXC 28V	HI		Exciter's 28 Vdc power input is above 29.5 V.	
EXC 13.5V	OK	Exciter's internal 13.5 Vdc supply is between 11 V and 15 V.		
EXC 13.5V	LO		Exciter's internal 13.5-Vdc supply is below 11 V.	
EXC 13.5V	HI		Exciter's internal 13.5-Vdc supply is above 15 V.	
EXC 5V	OK	Exciter's internal 5 Vdc supply is between 4 V and 6 V.		
EXC 5V	LO		Exciter's internal 5-Vdc supply is below 4 V.	
EXC 5V	HI		Exciter's internal 5-Vdc supply is above 6 V.	
TEMP	OK	Power amplifier's heatsink temperature below 85°C		
TEMP	HI			Power amplifier's heatsink temperature above 85°C.

Table 10-1 TX Faults Legend Display Description (continued)

dspsec10.794

display legend		normal state	alarm state	fault state
100KHZ LEVEL	OK	DSP's modulated 1st IF signal output is above 1 Vrms.		
100KHZ LEVEL	LO			DSP's modulated 1st IF signal output is below 1 Vrms.
10MHZ LEVEL	OK	10-MHz reference signal is above 1 Vrms.		
10MHZ LEVEL	LO			10-MHz reference signal is below 1 Vrms.
OSC WARM	OK	10 MHz oscillator is at operating temperature.		
OSC WARM	FAULT		10-MHz oscillator is below operating temperature in local control.	10-MHz oscillator is below operating tempera-ture in remote control.
SYNTH1 LCK	OK	No. 1 stage VCO-1 carrier signal is phase-locked.		
SYNTH1 LCK	FAULT			No. 1 stage VCO-1 carrier signal is not phase-locked.
SYNTH2 LCK	OK	No. 2 stage VCO-2 carrier signal is phase-locked.		
SYNTH2 LCK	FAULT			No. 2 stage VCO-2 carrier signal is not phase-locked.
SCI COMM	OK	Serial data link with VT-100 VDT has no overrun, framing, or lockup errors.		
SCI COMM	FAULT		Serial data link with VT-100 VDT has overrun, framing, or lockup error.	
SPI COMM	OK	Serial data link to synth-1 and synth-2 has no lockup error.		
SPI COMM	FAULT			Serial data link to synth-1 and synth-2 has lockup error.
DSP COMM	OK	DSP responds to status requests.		
DSP COMM	FAULT			DSP unresponsive to status requests.
RAM	OK	No read/write errors by MCU's internal RAM.		

Table 10-1 TX Faults Legend Display Description (continued)

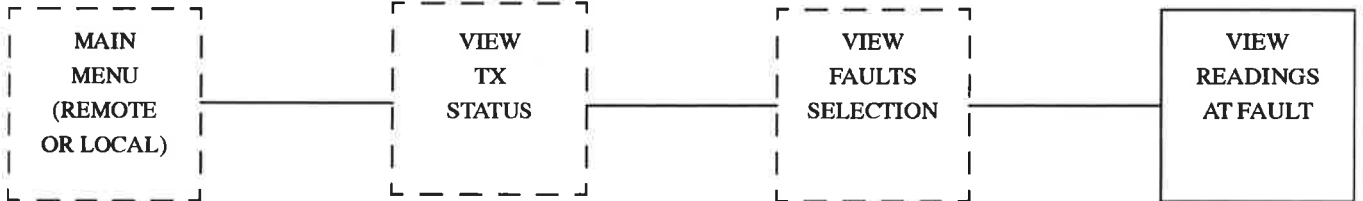| display legend		normal state	alarm state	fault state
RAM	FAULT			Data read from MCU's internal RAM not same as written.
EEPROM	OK	No read/write errors by MCU's internal ROM.		
EEPROM	FAULT			Data read from MCU's internal ROM not same as written.
ROM	OK	No checksum errors by MCU's external ROM.		
ROM	FAULT			Calculated checksum from MCU's external ROM does not equal known checksum.
DSP ROM	OK	No checksum errors by DSP's external ROM.		
DSP ROM	FAULT			Calculated checksum from DSP's external ROM does not equal known checksum.
DSP FAULTS				Check main menu item "TX STATUS".

Table 10-1 TX Faults Legend Display Description (continued)
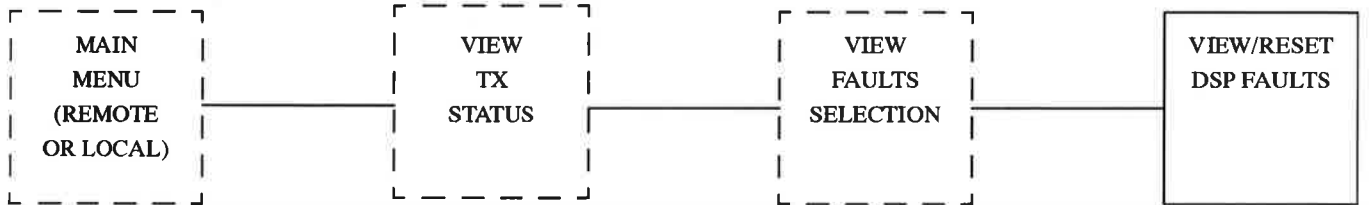
dspsec10.794

10.3.3 View Stored Fault Readings

10.3.3.1   View Readings At Fault

Refer to following diagram for initial steps of **VIEW READINGS AT FAULT** full-screen display procedure

```
┌─ ─ ─ ─ ─ ─┐        ┌─ ─ ─ ─ ─ ─┐        ┌─ ─ ─ ─ ─ ─┐        ┌───────────┐
│   MAIN    │        │   VIEW    │        │   VIEW    │        │   VIEW    │
│   MENU    │        │    TX     │        │  FAULTS   │        │  READINGS │
│ (REMOTE   │────────│  STATUS   │────────│ SELECTION │────────│  AT FAULT │
│ OR LOCAL) │        │           │        │           │        │           │
└─ ─ ─ ─ ─ ─┘        └─ ─ ─ ─ ─ ─┘        └─ ─ ─ ─ ─ ─┘        └───────────┘
```

- This full screen displays fault readings in display areas. Instead of being continuously updated, **STATUS, CURRENTS,** and **POWERS** readings indicate saved values when first fault or alarm occurred during most recent key cycle. If no fault or alarm occurred, menu displays phrase **THERE ARE NO TX FAULTS** and fault readings are zero. Refer to Section 7 for a detailed description of all faults screens.

10.3.4 View/Reset DSP Faults

```
┌─ ─ ─ ─ ─ ─┐        ┌─ ─ ─ ─ ─ ─┐        ┌─ ─ ─ ─ ─ ─┐        ┌───────────┐
│   MAIN    │        │   VIEW    │        │   VIEW    │        │ VIEW/RESET│
│   MENU    │        │    TX     │        │  FAULTS   │        │ DSP FAULTS│
│ (REMOTE   │────────│  STATUS   │────────│ SELECTION │────────│           │
│ OR LOCAL) │        │           │        │           │        │           │
└─ ─ ─ ─ ─ ─┘        └─ ─ ─ ─ ─ ─┘        └─ ─ ─ ─ ─ ─┘        └───────────┘
```
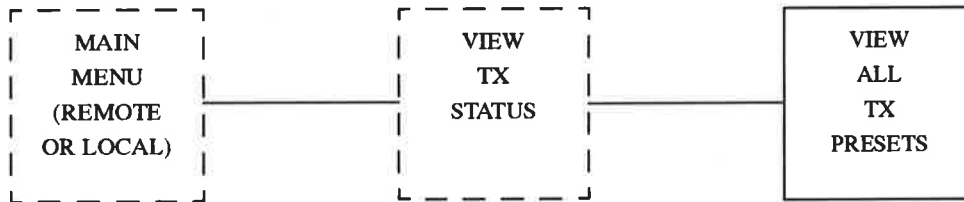
- Screen displays current number of DSP faults. Select option to reset DSP faults.

10.4 View All Tx Presets

Refer to following diagram for initial steps of VIEW ALL TRANSMITTER PRESETS full-screen displays procedure.

```
┌ ─ ─ ─ ─ ─ ┐          ┌ ─ ─ ─ ─ ─ ┐          ┌───────────┐
│   MAIN    │          │   VIEW    │          │   VIEW    │
│   MENU    │          │    TX     │          │   ALL     │
│  (REMOTE  │          │  STATUS   │          │    TX     │
│ OR LOCAL) │          │           │          │  PRESETS  │
└ ─ ─ ─ ─ ─ ┘          └ ─ ─ ─ ─ ─ ┘          └───────────┘
```

- Full screen displays presently selected transmitter parameters: frequency for each channel; mode A, B, C, and D, 4-level FSK deviation for each channel; mode A, B, C, and D, 4-level FSK offset for each channel; analog deviation; analog limiter; analog polarity; digital polarity; digital filter; audio response; and mode.

dspsec11.794

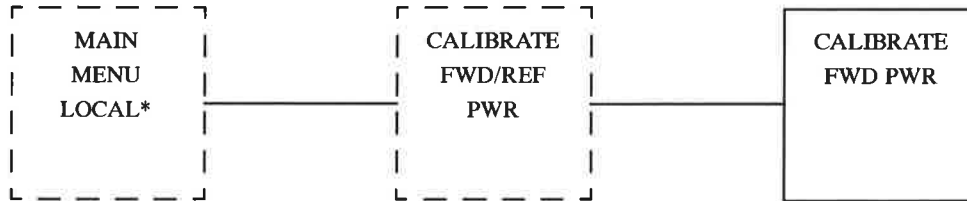# 11 CALIBRATE FWD/REF PWR

Refer to following diagram for initial steps of **CALIBRATE FWD/REF PWR** Procedure.

```
  ┌─────────┐          ┌─────────────┐
  │  MAIN   │          │  CALIBRATE  │
  │  MENU   │──────────│   FWD/REF   │     *IN LOCAL CONTROL
  │ LOCAL*  │          │     PWR     │     ONLY.
  │         │          │             │
  └─────────┘          └─────────────┘
```
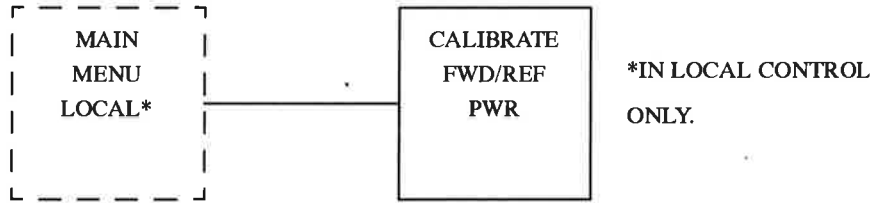
- Press option to CALIBRATE FWD PWR.
- Press option to CALIBRATE REF PWR.

11.1 CALIBRATE FWD PWR

Refer to following diagram for initial steps of **CALIBRATE FWD PWR** procedure.

```
  ┌─────────┐     ┌───────────┐       ┌─────────────┐
  │  MAIN   │     │ CALIBRATE │       │  CALIBRATE  │
  │  MENU   │─────│  FWD/REF  │───────│   FWD PWR   │
  │ LOCAL*  │     │    PWR    │       │             │
  │         │     │           │       │             │
  └─────────┘     └───────────┘       └─────────────┘
```

- Press K to unkey transmitter if transmitter is keyed.
- Connect wattmeter and dummy load to transmitter RF output.
- Press K on VDT keyboard to key transmitter.
- Press and hold U on VDT keyboard until wattmeter reads correct wattage if wattmeter reads below that wattage.
- Press and hold D on VDT keyboard until wattmeter reads correct wattage if wattmeter reads above that wattage.
- Press Enter on VDT keyboard when the wattmeter reads correct wattage.
- Press N on VDT keyboard if wattmeter does not read correct wattage. Go to step 5.
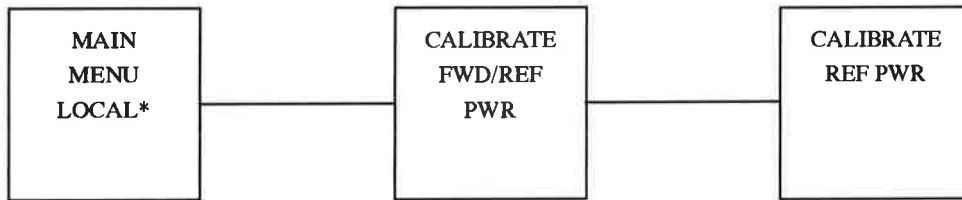- Press Y on VDT keyboard if wattmeter does read correct wattage.

Caution
Wattmeter must read exactly correct wattage to ensure proper metering.

- Menu displays **TX CALIBRATED**. Press K on VDT keyboard to unkey transmitter.
- Disconnect wattmeter and dummy load; return transmitter to service.

This Procedure is complete.
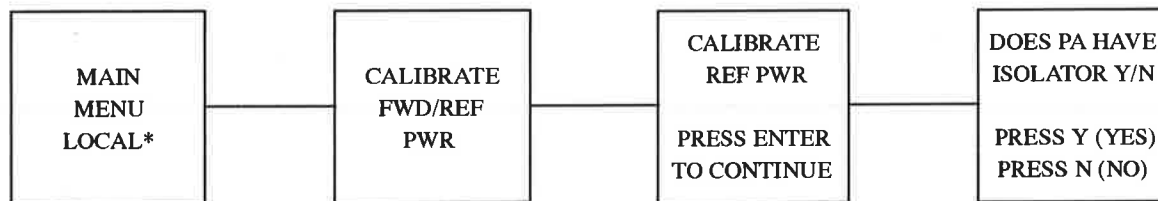
11.2 Calibrate Ref Pwr Pre 2.10 Software

Refer to following diagram for initial steps of **CALIBRATE REF PWR** procedure.

```
┌─────────────┐     ┌─────────────┐     ┌─────────────┐
│   MAIN      │     │  CALIBRATE  │     │  CALIBRATE  │
│   MENU      │─────│  FWD/REF    │─────│  REF PWR    │
│   LOCAL*    │     │   PWR       │     │             │
└─────────────┘     └─────────────┘     └─────────────┘
```

- Press Enter to continue.

- Turn potentiometer R235 fully counter-clockwise.

- Disconnect coax cable from output of PA.

- Press enter to continue.

- Reflected power calibration has just occurred.

- Adjust R235 until VSWR LED on exciter front panel just indicates red.

- Turn AC power off then reconnect PA RF output to antenna or load.

- When AC power is restored, the transmitter will come up in the remote mode.

- This procedure is finished.

11.3 Calibrate Ref Pwr Version 2.10 Software

Refer to following diagram for initial steps of **CALIBRATE REF PWR** procedure.

```
┌─────────────┐   ┌─────────────┐   ┌──────────────┐   ┌──────────────┐
│   MAIN      │   │  CALIBRATE  │   │  CALIBRATE   │   │ DOES PA HAVE │
│   MENU      │───│  FWD/REF    │───│  REF PWR     │───│ ISOLATOR Y/N │
│   LOCAL*    │   │   PWR       │   │              │   │              │
│             │   │             │   │ PRESS ENTER  │   │ PRESS Y (YES)│
│             │   │             │   │ TO CONTINUE  │   │ PRESS N (NO) │
└─────────────┘   └─────────────┘   └──────────────┘   └──────────────┘
```

11.3.1 PA Has Isolator

- Disconnect coax cable from output of isolator.

- Press Enter to calibrate isolator REF PWR.

- Isolator reflected power is calibrated. Press enter to proceed.

- Reconnect coax cable to output of isolator.

- Turn potentiometer R235 fully counter-clockwise.

- Disconnect coax cable from output of PA.

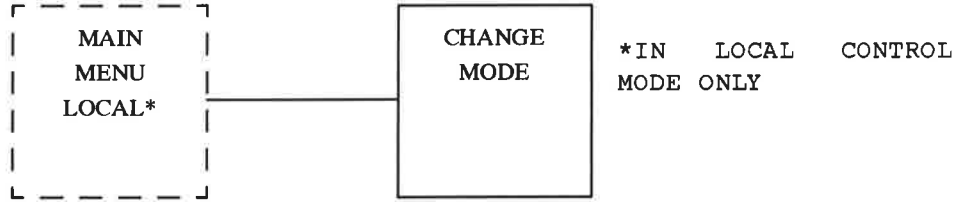- Press Enter to calibrate PA REF PWR.

dspsec11.794

- Reflected power calibrated, proceed to following steps.
- Adjust R235 until VSWR LED on exciter front panel just indicates red.
- Turn AC power off then reconnect PA RF output to isolator input.
- When AC power is restored, the transmitter will come up in the remote mode.
- This procedure is finished.

11.3.2 PA Has No Isolator

- Turn potentiometer R235 fully counter-clockwise.
- Disconnect coax cable from output of PA.
- Press Enter to calibrate PA REF PWR.
- Reflected power calibrated, proceed to following steps.
- Adjust R235 until VSWR LED on exciter front panel just indicates red.
- Turn AC power off then reconnect PA RF output to antenna or load.
- When AC power is restored, the transmitter will come up in the remote mode.
- This procedure is finished.

12 CHANGE MODE

Refer to following diagram for initial steps of **CHANGE MODE** procedure

```
┌ ─ ─ ─ ─ ─ ┐          ┌──────────┐
│   MAIN    │          │  CHANGE  │    *IN   LOCAL   CONTROL
│   MENU    │──────────│  MODE    │    MODE ONLY
│  LOCAL*   │          │          │
│           │          └──────────┘
└ ─ ─ ─ ─ ─ ┘
```
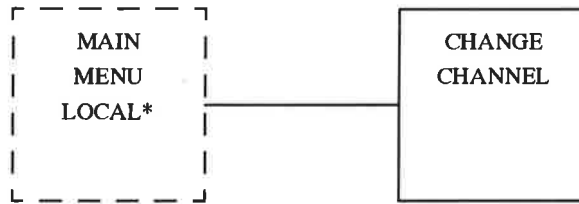
- Press option to select analog mode if not already selected. Transmitter operating mode selection status changes to **MODE IS CURRENTLY ANALOG**.

- Press option to select digital mode A if not already selected. Transmitter operating mode selection status changes to **MODE IS CURRENTLY MODE A**.

- Press option to select digital mode B if not already selected. Transmitter operating mode selection status changes to **MODE IS CURRENTLY MODE B**.

- Press option to select digital mode C if not already selected. Transmitter operating mode selection status changes to **MODE IS CURRENTLY MODE C**.

- Press option to select digital mode D if not already selected. Transmitter operating mode selection status changes to **MODE IS CURRENTLY MODE D**.

13 CHANGE CHANNEL

dspsec13.794

Refer to following diagram for initial steps of CHANGE CHANNEL procedure.

```
┌ ─ ─ ─ ─ ─ ┐              ┌──────────┐
│   MAIN    │              │  CHANGE  │
│   MENU    │──────────────│ CHANNEL  │
│   LOCAL*  │              │          │
│           │              └──────────┘
└ ─ ─ ─ ─ ─ ┘
```
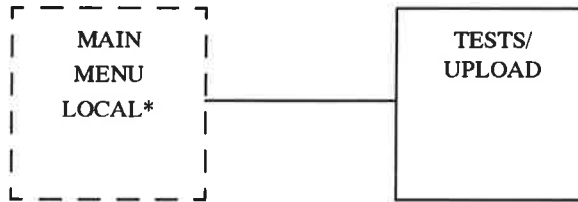
- Press option to change channel and status indication to channel one.
- Press option to change channel and status indication to channel two.
- Press option to change channel and status indication to channel three.
- Press option to change channel and status indication to channel four.
- Press option to change channel and status indication to channel five.
- Press option to change channel and status indication to channel six.
- Press option to change channel and status indication to channel seven.
- Press option to change channel and status indication to channel eight.
- Press option to change channel and status indication to channel nine.
- Press option to change channel and status indication to channel ten.
- Press option to change channel and status indication to channel eleven.
- Press option to change channel and status indication to channel twelve.
- Press option to change channel and status indication to channel thirteen.
- Press option to change channel and status indication to channel fourteen.
- Press option to change channel and status indication to channel fifteen.
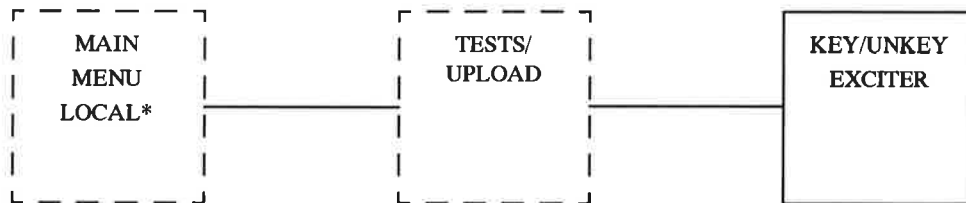- Press option to change channel and status indication to channel sixteen.

14 TESTS/UPLOAD

dspsec14.794

Refer to following diagram for initial steps of **TESTS/UPLOAD** procedure.

```
┌ ─ ─ ─ ─ ─ ┐            ┌──────────┐
│   MAIN    │            │  TESTS/  │
│   MENU    ├────────────┤  UPLOAD  │
│   LOCAL*  │            │          │
│           │            │          │
└ ─ ─ ─ ─ ─ ┘            └──────────┘
```

- Press option to **KEY/UNKEY EXCITER**

- Press option to initiate exciter front-panel LEDs test and display menu: **LEDS TEST**

- N/A

- Press option to **RESET EXCITER**

- Press option to initiate alarms test to see if alarms are reported correctly: **TEST ALARMS**

- Press option to **UPDATE FIRMWARE**

14.1 Key/Unkey Exciter

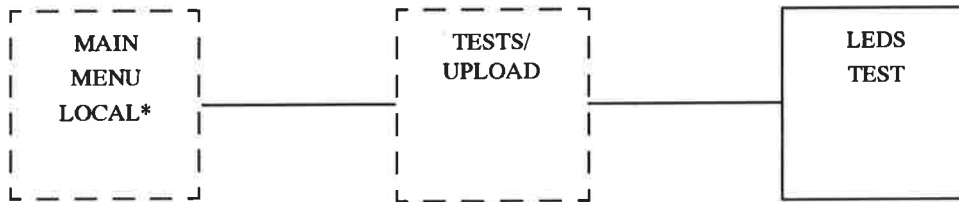Refer to following diagram for initial steps of **KEY/UNKEY EXCITER** procedure.

```
┌ ─ ─ ─ ─ ─ ┐      ┌ ─ ─ ─ ─ ─ ┐      ┌──────────┐
│   MAIN    │      │  TESTS/   │      │ KEY/UNKEY│
│   MENU    ├──────┤  UPLOAD   ├──────┤  EXCITER │
│   LOCAL*  │      │           │      │          │
│           │      │           │      │          │
└ ─ ─ ─ ─ ─ ┘      └ ─ ─ ─ ─ ─ ┘      └──────────┘
```

*IN LOCAL CONTROL
MODE ONLY

- Press option to key exciter internal keyline if transmitter is unkeyed. Exciter key state changes to **KEYED. KEY** LED on exciter front panel is illuminated. Any exciter keyline outputs or key reports are activated.

- Press option to unkey exciter internal keyline if exciter is keyed and AGC reference voltage is low (PA unkeyed). Exciter key state changes to UNKEYED. KEY LED on exciter front panel is extinguished. Any exciter keyline outputs or key reports are deactivated.

14.2 LEDs Test

Refer to following diagram for initial steps of **LEDS TEST** procedure.

```
 ┌ ─ ─ ─ ─ ─ ┐          ┌ ─ ─ ─ ─ ─ ┐          ┌───────────┐
 │   MAIN    │          │   TESTS/  │          │   LEDS    │
 │   MENU    │          │   UPLOAD  │          │   TEST    │
 │  LOCAL*   │          │           │          │           │
 │           │          │           │          │           │
 └ ─ ─ ─ ─ ─ ┘          └ ─ ─ ─ ─ ─ ┘          └───────────┘
```

- Observe that front-panel LEDs on exciter light as follows:
  All tested LEDs: light green except VSWR which lights red.
  FAULT/ALARM: lights red; flashes green; flashes red; returns to green.
  REMOTE LOCAL: toggles orange/green; returns to green.
  KEY: flashes green; returns to green.
  RF OUT/RF LOW: toggles orange/green; toggles orange/red; returns to green.
  VSWR: flashes red; returns to red.
  DIGITAL/ANALOG: toggles orange/green.

- All tested LEDs: return to original pretest color. Ignore DC POWER and MODULA-
  TION/LIMITING LEDs which are not tested during this procedure.

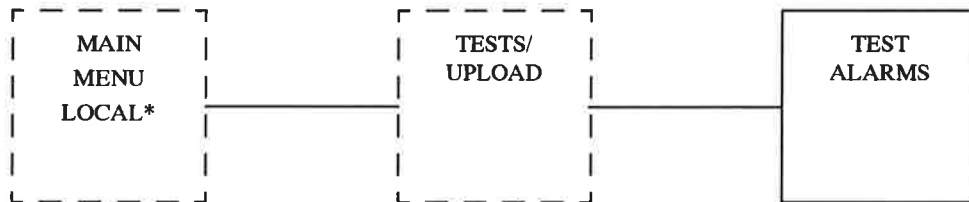- Return transmitter to service

Test is complete.

14.3 N/A

14.4 Reset Exciter

Select to reset exciter.

14.5 Test Alarms

Refer to following diagram for initial steps of TEST ALARMS procedure.

- Press option to toggle RF IN fault on/off.

- Press option to toggle PA DC LOW fault on/off.

- Press option to toggle PA SHTDWN fault on/off.

- Press option to toggle ISOLATOR fault on/off

- N/A

- Press option to toggle PA FLT fault on/off.

- Press option to toggle MOD IND fault on/off.

- Press option to toggle TEMP FLT fault on/off

14.6 Update Firmware

Refer to following diagram for initial steps of Update Firmware Procedure.

```
  ┌ ─ ─ ─ ─ ─ ┐          ┌ ─ ─ ─ ─ ─ ┐          ┌───────────┐
  │   MAIN    │          │  TESTS/   │          │  UPDATE   │
  │   MENU    │──────────│  UPLOAD   │──────────│  FIRMWARE │
  │   LOCAL*  │          │           │          │           │
  │           │          │           │          │           │
  └ ─ ─ ─ ─ ─ ┘          └ ─ ─ ─ ─ ─ ┘          └───────────┘
```

Press enter to continue firmware ugrade.

- Place firmware update diskette in drive A or B.

- Press ALT-F5 to continue firmware update.

- Use filename. Example: a:\upload.asx.