CHAPTER 3
OPERATION

3.1 GENERAL

This Chapter explains how to operate the ST-8000A using the front
panel keypad and indicators. The operation of each front panel
feature is described. Use of the REMOTE port to control and
operate the ST-8000A is described in Chapter 4.

3.1.1 Start-Up

The ST-8000A is turned ON with the POWER toggle switch on the front
panel. A Power On Self Test (POST) is performed each time the
modem is turned ON. The operational state stored in memory prior
to power OFF is set up following the POST. Section 3.10.1 provides
additional details on start-up operation of the modem. The
built-in test (BIT) feature of the ST-8000A allows a more in depth
determination of the operational state of the modem than the POST.
Section 6.5 provides a detailed description of the BIT.

3.1.2 Local Operation

The control of the ST-8000A in the LOCAL mode of operation
provides control of the operational state and parameters of the
modem to be set and changed. The front panel controls, keypad and
displays provide access to all functions controlled by remote
commands. Section 3.2 provides a description of the front panel.
Sections 3.3 through 3.7 provide detailed descriptions of the
functions of all front panel controls and indicators. Section 3.8
contains a description of various LOCAL operations.

3.1.3 Emergency Operations

The ST-8000A can be operated, to a limited degree, in some failure
modes. However, operating the ST-8000A with any known failure is
not recommended. Section 3.8.4 contains descriptions of
"non-fatal" failure modes and the operational constraints for the
ST-8000A associated with each.

3.1.4 Power-Down

The ST-8000A does not require any special procedures for power
down. The front panel power switch may be used at any time to turn
the power OFF. The operational setup of the ST-8000A is stored in
non-volatile memory when the ENTER key is pressed during LOCAL
operation. If a parameter has been changed but not ENTERed, the
ENTER key's LED will be flashing ON and OFF. Prior to turning the

power OFF, press the ENTER key to store the applicable parameter.

3.2 <u>ST-8000 FRONT PANEL</u>

The front panel of the ST-8000A MODEM is shown in Figure 3.1. The
following is a brief description of major front panel controls and
indicators.   Each item will be discussed in greater detail in
following sections of this Chapter.   Item numbers correspond to
circled "call" numbers in Figure 3.1

1   POWER:

   This is the main AC power switch for the ST-8000A. When the
   switch handle is in the UP position, AC power is turned ON.

2   KEYPAD:

   The keypad is the means for front-panel entry of <u>all</u> user-set
   parameters. Keypad operation is discussed in section 3.3.

3   MARK, SPACE, BAUD Displays:

   The MARK and SPACE or CENTER and SHIFT frequencies are displayed
   in 5-digit format on the two upper numerical display fields.
   The selected data rate is shown on the four digit BAUD display.

4   MARK and SPACE Bar Indicators:

   These bar-graph indicators show the amplitude of the demodulator
   input signal or modulator output signal.

5   CHANNEL Indicators:

   The CHAN indicator and DEMOD and MOD LED's show the modem
   channel currently being displayed and/or controlled by data
   entry.

6   OUTPUT LEVEL:

   Sets the modulator output level.

7   MODE Indicators:

   These eight LED indicators (plus 3 keypad indicators on the DIV,

MUTE, and REMOTE keys) show currently selected modes of operation.

3.3 KEYPAD ENTRY

The ST-8000A keypad provides control over operation of the modem.
It is used to set the operational parameters of the modem for both
channels. The keypad is used to activate built in test routines.
The ST-8000A keypad is shown in Figure 3.2.

Whenever parameters are entered, the ENTER key indicator flashes
to   signal   the   change.   To   save   this new parameter in
non-volatile memory, press the ENTER key. At any time before
ENTER is pressed, the CLEAR key may be pressed to ignore the new
setting and return to the previously saved parameters.

In the following sections, the operation of each of the keypad
function keys is summarized. The keys are presented in keypad
order starting with the left hand column.

3.3.1 Number Keys

The number keys, 0 to 9 and 0.5, are used to enter new
frequencies, baud rates, regeneration word length, and select
internal BIT tests. The number keys are only active after one of
the following function keys has been pressed: MARK, SPACE, BAUD
RATE, or SYNCH. When entering a number, the corresponding display
window shows the new setting, but the new parameter is not
activated until the ENTER key is pressed. If the CLEAR key is
pressed before ENTER, the modem will return to the previously
stored settings and will ignore the new setting.

3.3.2 ENTER Key

The ENTER key stores the current modem parameters in non-volatile
memory and turns OFF the flashing ENTER indicator. Pressing any
operational parameter key causes the ENTER indicator to flash.
If the CLEAR key is pressed before ENTER, the modem returns to the
previously stored parameters.

NOTE: The   REMOTE,   M/S-CENT, and CHAN keys do not require the
ENTER key.

3.3.3 M/S CENT Key

The M/S key determines the front panel display mode and the
parameter entry mode. Pressing the M/S key turns ON the MARK and
SPACE indicators and displays the MARK and SPACE filter center
frequencies when channel 1 is selected, or the transmit tone
frequencies when channel 2 is selected. In this mode, the MARK
and SPACE keys set the MARK and SPACE frequencies directly for
the selected channel.

  Pressing 2ND then M/S changes the front panel display to show the
CENTER and SHIFT frequencies for either channel 1 or 2. In this
mode, the indicators next to the CENTER and SHIFT labels are
turned ON. In addition, the MARK and SPACE keys load the CENTER
and SHIFT frequencies, respectively, for the selected channel.

Whenever the display mode changes, the new setting is immediately
stored in the non-volatile memory.

3.3.4 <u>BIT Key</u>

The BIT (Built-In-Test) routines are activated by pressing 2ND
then BIT followed by ENTER or a number and ENTER. If ENTER alone
is pressed, the automatic BIT procedure is performed. The table
below summarizes the available test features and the corresponding
BAUD display message.

TABLE 3.1

BIT ROUTINES

KEY	DESCRIPTION	BAUD DISPLAY
ENTER	Automatic BIT procedure	--
1	Automatic BIT procedure	--
2	Constant MARK	"/~~~"
3	Constant SPACE	"/___"
4	Alternating MARK/SPACE at TX BAUD	"Alt "
5	Analog Loopback at 0 dBm	"LP 1"
6	Analog Loopback at -20 dBm	"LP 2"
7	Analog Loopback at -45 dBm	"LP 3"
8	(reserved)	
9	(reserved)	
0	(reserved)	
0.5	Remote Port Echo	"Echo"
REMOTE	Remote Port QBF	"Port"
CHAN	Control Board Options	--

3.3.4.1 Internal BIT

When BIT #2 to #7, 0.5, or REMOTE is selected, the test continues

until another key is pressed to terminate the test.

When 2ND - BIT - 0.5 or 2ND - BIT - REMOTE is activated, the
remote port operation is disabled for the duration of the test.
Remote port ECHO enables a remote port digital loopback and all
characters   received from the remote control terminal   are
immediately echoed. Remote port QBF transmits a continuous QBF
message to the remote port until another key is pressed. Tests 2,
3, and 4 close the keyline and turn on the transmit tones even if
MUTE is on.

 3.3.4.2 Internal Options

When the 2ND - BIT - CHAN sequence is entered, the internal
control board switch and jumper settings are displayed on the
front panel.   Pressing ENTER selects each option display.   A
summary of the display information follows:

                              TABLE 3.2

                    DISPLAY OF INTERNAL OPTIONS

        KEY   DISPLAY   DESCRIPTION
        -----   -------   --------------------------------
        ENTER   Unit   Display Title
                     1   Current Unit Number
                     4   Set by SW4

        ENTER   ChAn   Display Title
                     01-02   Current Channel Numbers
                     4   Set by SW4

        ENTER   Port   Display Title
                     19200   Remote Control Port Rate
                     3   Set by SW3

        ENTER   Port   Display Title
                     rS232   Remote Control Port Data Type
                     J7   Set by J7

        ENTER   dAtA   Display Title
                     188   Data Port Type
                     J2   Set by J2

        ENTER   dELAY   Display Title
                     1000   Keyline Delay in MS.
                     1-2   Set by SW1 and SW2

3.3.5 2ND Key

The 2ND key accesses the second level functions on certain keys.
The ST-8000A has second level functions only on the following

                                 11

keys: M/S CENT, BIT, MARK ONLY, SPACE ONLY, AMH HOLD, NORM REV,
CHAN, and SYNCH REGEN. Pressing any key other than those listed
above returns the keypad to first level functions.

 3.3.6 <u>FSK Key</u>

The FSK key is used with MARK ONLY and SPACE ONLY to set the
demodulator discriminator mode. Pressing FSK turns ON the FSK
indicator and selects the MARK/SPACE discriminator mode.   This
key is functional whether channel 1 or channel 2 is selected.

     KEYS   ACTION
     -----   ---
     FSK   Select demodulator MARK/SPACE mode.
                   Turns ON the FSK indicator.

To save the new demodulator mode, the ENTER key must be pressed.

3.3.7 <u>MARK ONLY Key</u>

The MARK ONLY key has both a first and a second level function.

3.3.7.1 MARK (first level):

Press MARK alone to enter the MARK filter frequency (channel 1)
or the MARK transmit tone (channel 2) when the MARK/SPACE display
mode is active.   The following example assumes that the
demodulator, channel 1, is selected.

     KEYS   ACTION
     -----   ---
     MARK   Blank the MARK display window, ENTER turns ON
     2125   "2125.0" shows in the MARK window
     ENTER   "2125.0" flashes, ENTER turns OFF
                   The MARK filter is set to 2125.0 Hz

When the display mode is set for CENTER/SHIFT, the MARK key sets
a new CENTER frequency for the demodulator filters, channel 1, or
the transmit tones, channel 2. The following example assumes
that the demodulator, channel 1, is selected.

     KEYS   ACTION
     -----   ---
     MARK   Blank the CENTER display window, ENTER turns ON
     2210   "2210.0" shows in the CENTER window
     0.5   "2210.5" shows in the CENTER window
     0.5   "2210.0" shows in the CENTER window

     ENTER   "2210.0" flashes, ENTER turns OFF
                  The demodulator center frequency is set to 2210 Hz

Note: When the center changes, the previous shift frequency is
maintained. If previous MARK and SPACE were 1000.0 and 1200.0 Hz
(Shift = 200.0 Hz), setting center to 2210 Hz will maintain 200
Hz shift and change MARK to 2110.0 Hz and SPACE to 2310.0 Hz.

To save the new center frequency, the ENTER key must be pressed.

3.3.7.2 MARK ONLY (2nd level):

Pressing 2ND then MARK enables the MARK ONLY demodulator mode and
turns ON the MK ONLY indicator. If the FSK indicator was ON,
that indicator turns OFF. If the SP ONLY indicator was on, that
indicator turns OFF.

```
    KEYS          ACTION
    -----         ------------------------------------------------
    2nd           Enable second level function
    MARK          Select demodulator MARK ONLY mode.
                  Turn ON the MK ONLY indicator.
```

To save the new demodulator mode, the ENTER key must be pressed.

3.3.8 SPACE ONLY Key

The SPACE ONLY key has both a first and a second level function.

3.3.8.1 SPACE (first level):

Press SPACE alone to enter the SPACE filter frequency (channel 1)
or the SPACE transmit tone (channel 2) when the MARK/SPACE
display mode is active. The following example assumes that the
demodulator, channel 1, is selected.

```
    KEYS          ACTION
    -----         ------------------------------------------------
    SPACE          Blank the SPACE display window, ENTER turns ON
    2295          "2295.0" shows in the SPACE window
    ENTER         "2295.0" flashes, ENTER turns OFF
                  The SPACE filter is set to 2295.0 Hz
```


When the display mode is set for CENTER/SHIFT, the SPACE key sets
a new SHIFT frequency for the demodulator filters, channel 1, or
the transmit tones, channel 2. The following example assumes
that the demodulator, channel 1, is selected.

```
    KEYS          ACTION
    -----         ------------------------------------------------
    SPACE         Blank the SHIFT display window, ENTER turns ON
    200           " 200.0" shows in the SHIFT window
```

    ENTER   " 200.0" flashes, ENTER turns OFF
                 The demodulator shift frequency is set to 200 Hz.

Note: When the shift changes, the previous center frequency is
maintained. If previous center and shift were 2210.0 and 170.0 Hz,
setting shift to 200 Hz will retain the 2210 Hz center
frequency and change MARK to 2110.0 Hz and SPACE to 2310.0 Hz.

To save the new shift frequency, the ENTER key must be pressed.

 3.3.8.2 SPACE ONLY (2nd level):

Pressing 2ND then SPACE enables the SPACE ONLY demodulator mode and
turns ON the SP ONLY indicator. If the FSK indicator was ON,
that indicator turns OFF. If the MK ONLY indicator was on, that
indicator turns OFF.

```
    KEYS        ACTION
    -----       -------------------------------------------------
    2nd         Enable second level function
    SPACE       Select demodulator SPACE ONLY mode.
                Turn ON the SP ONLY indicator.
```

To save the new demodulator mode, the ENTER key must be pressed.

3.3.9 DIV Key

The DIV key toggles the demodulator diversity option ON and OFF.
When ON, the DIV indicator turns ON.

```
    KEYS        ACTION
    -----       -------------------------------------------------
    DIV         Turn DIVERSITY option ON; turn ON DIV indicator
    DIV         Turn DIVERSITY option OFF; turn OFF DIV indicator
```

This option works ONLY when the diversity option is installed.
If the diversity option is not installed, the DIV key is ignored.

To save the new demodulator mode, the ENTER key must be pressed.

3.3.10 MUTE Key

The MUTE key toggles the modulator mute feature ON and OFF. When
MUTE is ON, the front panel MUTE indicator turns ON and the
transmit tones are disabled. The keyline operates as before. When
the MUTE option is OFF and transmit data stops, the transmit tones
are turned OFF with the keyline output after the keyline delay
expires.

```
    KEYS        ACTION
    -----       -------------------------------------------------
    MUTE        Turn MUTE option ON; turn ON the MUTE indicator
```

    MUTE   Turn MUTE option OFF; turn OFF the MUTE indicator

To save the new mute setting, the ENTER key must be pressed.

 3.3.11 <u>REMOTE Key</u>

The REMOTE key selects local and remote control of the ST-8000A.
When REMOTE is enabled, the REMOTE indicator turns ON and all
parameter control is via the rear panel REMOTE port. The REMOTE
LED is ON whenever Remote control is active. When remote control
mode is enabled, all keypad keys are disabled except for the
REMOTE key. Keypad or local control is restored by pressing the
REMOTE key.

```
    KEYS        ACTION
    -----       -------------------------------------------------
    REMOTE      Enable REMOTE control; turn ON REMOTE indicator
    REMOTE      Enable LOCAL control; turn OFF REMOTE indicator
```

The local or remote control status is saved in the non-volatile
memory immediately; no ENTER key press is required.

3.3.12 <u>AMH HOLD Key</u>

The AMH HOLD key has both a first and a second level function.

3.3.12.1 AMH (first level):

The AMH key toggles the Automatic Mark-Hold receive feature ON
and OFF. When AMH is ON, the AMH indicator is turned ON.

```
    KEYS        ACTION
    -----       -------------------------------------------------
    AMH         Turn AMH option ON; turn ON the AMH indicator
    AMH         Turn AMH option OFF; turn OFF the AMH indicator
```

To save the new AMH setting, the ENTER key must be pressed.

3.3.12.2 HOLD (2nd level):

Pressing 2ND then HOLD toggles the MARK hold feature for the
selected channel. When channel 1 is selected, the demodulator
output is held in the MARK condition.   When channel 2 is
selected, the transmit tone output is held in the MARK state
and the DATA I/O TXD is disabled. The HOLD indicator on the front
panel shows the current state for the selected channel. The
following example assumes   that   the transmit channel 2 is

selected.

```
    KEYS         ACTION
    -----        ----------------------------------------------------
    2ND          Enable second level function
    HOLD         Turn HOLD option ON; turn ON the HOLD indicator
    2ND          Enable second level function
    HOLD         Turn HOLD option OFF; turn OFF the HOLD indicator
```

To save the new HOLD setting, the ENTER key must be pressed.

 3.3.13 <u>NORM REV Key</u>

The NORM REV key has both a first and second level function.

3.3.13.1 NORM (first level):

The NORM key sets the selected channel polarity to NORMAL and turns
OFF the REV indicator.

```
    KEYS        ACTION
    -----       ------------------------------------------------
    NORM        Enable NORMAL polarity; turn OFF REV indicator
```

To save the new polarity setting, the ENTER key must be pressed.

3.3.13.2 REV (2nd level):

Pressing 2ND then REV sets the selected channel polarity to
REVERSE and turns ON the REV indicator.

```
    KEYS        ACTION
    -----       ------------------------------------------------
    2ND         Enable second level function
    REV         Enable REVERSE polarity; turn ON REV indicator
```

To save the new polarity setting, the ENTER key must be pressed.

3.3.14 <u>SYNCH REGEN Key</u>

The SYNCH REGEN key has both a first and second level function.

3.3.14.1 SYNCH (first level)

The SYNCH key toggles the clocked synchronous data mode ON and OFF.
When ON, the SYNCH indicator turns ON and the modem receive data
outputs are internally re-clocked with a recovered mid-bit clock.
 When OFF, the SYNCH indicator turns OFF and the modem receive
data outputs are directly connected to the demodulator output.

 When the SYNCH indicator turns OFF, the BAUD display prompts
for the   receive data regeneration word length.   The current
setting is shown, and it may be set to 5, 6, 7, or 8 bits.
If the current setting is correct, ENTER only is pressed.

```
    KEYS        ACTION
    -----       -----------------------------------------------
    SYNCH       Enable SYNCH mode; turn ON the SYNCH indicator
    SYNCH       Disable SYNCH mode; turn OFF the SYNCH indicator
                "L=5 " is displayed in the BAUD window.
    8           "L=8 " is displayed in the BAUD window.
    ENTER       "L=8 " flashes, then restore BAUD RATE
                The new configuration is saved immediately.
```

To save the SYNCH mode, the ENTER key must be pressed.

3.3.14.2 REGEN (2nd level)

Pressing 2ND then REGEN toggles the receive data regeneration
mode ON and OFF. When ON, the REGEN indicator turns ON, the SYNCH
indicator turns OFF, and data characters received from the
demodulator are regenerated for the receive data outputs.

When REGEN turns ON, the BAUD display shows the current
regeneration word length. This length may be set to 5, 6, 7, or 8
bits by pressing the corresponding number key. If the current
setting is correct, press ENTER.

```
    KEYS        ACTION
    -----       -----------------------------------------------
    2ND         Enable second level function
    REGEN       Enable REGENERATION; turn ON the REGEN indicator
                "L=5 " is displayed in the BAUD window.
    8           "L=8 " is displayed in the BAUD window.
    ENTER       "L=8 " flashes, then restores BAUD RATE
                The new configuration is saved immediately.
    2ND         Enable second level function
    REGEN       Disable REGENERATION; turn OFF the REGEN indicator
```

To save the regeneration mode, the ENTER key must be pressed.

3.3.15 CHAN Key

The CHAN key has both a first and second level operation.

 3.3.15.1 CHAN (first level)

The CHAN key alternately selects channel 1 and channel 2 for the
front panel display and parameter entry.

```
    KEYS        ACTION
    -----       ----------------------------------------------------
    CHAN        Display channel 1, the demodulator
    CHAN        Display channel 2, the modulator
```

The channel selection is saved in the non-volatile memory
immediately; no ENTER key press is required.

3.3.15.2 CHAN (2nd level)

Pressing 2ND then CHAN copies parameters from the currently
displayed channel into the other channel. The MARK, SPACE, BAUD,
HOLD, and REVERSE settings are copied. This command simplifies
ST-8000A setup by eliminating the need to setup both channels
directly. After channel 1 is configured, 2ND then CHAN will copy
all of the channel 1 parameter settings into channel 2.

```
    KEYS        ACTION
    -----       ----------------------------------------------------
    2ND         Enable second level function
    CHAN        Copy current channel parameters into other channel
```

To save the new configuration, the ENTER key must be pressed.

3.3.16 <u>BAUD RATE Key</u>

Press BAUD RATE to enter the baud rate for the selected channel.
If channel 1 is selected, the BAUD RATE sets the bandwidth for
the receive filters, the regeneration data rate, and the receive
data mid-bit clock center frequency. When channel 2 is selected,
BAUD RATE loads the new synchronous transmit clock frequency.

```
    KEYS        ACTION
    ---------   ----------------------------------------------------
    BAUD RATE   Blank the BAUD display window, ENTER turns ON
    110         " 110." shows in the BAUD window
    ENTER       " 110." flashes, ENTER turns OFF
```

The BAUD RATE is set to 110 bits per second.

3.3.17 <u>CLEAR Key</u>

The CLEAR key restores the last saved modem parameter settings
whenever the ENTER key indicator is flashing. This key may be
used to restore the old MARK, SPACE, and BAUD RATE settings if
CLEAR is pressed before ENTER as a new value is entered.

 During the power-on self test (POST), the CLEAR key sets factory
defaults for all keypad entered parameters. The CLEAR key must be
pressed while the software version is displayed. See Section 6.4
for a detailed description of the POST.

3.4   <u>NUMERICAL DISPLAYS</u>

The ST-8000A has four numerical display fields on the front panel
(Figure 3.1, call numbers 3 and 4, and Figure 3.3).

The MARK and SPACE fields have five digits that are used to show
the MARK and SPACE channel frequencies between 300 and 3000 Hz to
0.5 Hz resolution. These fields are also used to display and enter
the CENTER and SHIFT frequencies as explained in sections 3.3.7 and
3.3.8. When the MARK/SPACE display/entry mode is active, the MARK
and SPACE LED indicators are turned ON. The CENTER and SHIFT LED
indicators show when the frequency display and entry mode is set
for CENTER and SHIFT.

The BAUD display field shows 4 digits that correspond to the Baud
rate for the selected channel, as explained in section 3.3.16. The
Baud rate may be set to any value between30 and 1200 BPS in 1 BPS
increments.
The CHAN display is a single digit that indicates "1" (demodulator)
or "2" (modulator). This digit, as well as the DEMOD and MOD LED
indicators to the right show which channel of the modem is
currently active for display and data entry. Changing the active
channel is discussed in section 3.3.15.

All four numerical display fields (MARK/CENTER, SPACE/SHIFT, BAUD,
and CHAN) are also used during BIT routines to show current test
parameters. Refer to section 3.3.4 for full details.

3.5   <u>MODE INDICATORS</u>

The ST-8000A front panel has 11 mode LED indicators, 3 within the
keypad on DIV, MUTE, and REMOTE keys and 8 in a vertical line to
the left of the keypad. The indicators show the current operating
mode of the selected channel.   Mode operation is discussed in
detail in section 3.3.

3.6 BAR INDICATORS

There are two 20 segment LED bar-graph indicators on the top left
of the front panel. They show the MARK and SPACE tone amplitudes.
When channel 1 (demodulator) is selected for display and entry, the
bars show the amplitude of the FSK signal input to the demodulator.
When channel 2 (modulator) is selected, the bars show the amplitude
of the FSK signal output from the modulator.

The amplitude scale of each bar-graph is calibrated in dBm,
referenced to 600 ohms. They are calibrated from -42 dBm (6.3 mV
rms) to +6 dBm (1.52 V rms). When channel 1 is selected, this
corresponds to a measurement of the input voltage across pins 10
and 12 of rear panel J2 (Audio I/O). This is the input to the
demodulator. When channel 2 is selected, the bar-graph voltages
correspond to the output voltage across pins 1 and 3 of rear panel
J2 (AUDIO I/O). This is the modulator output signal. Both
demodulator (channel 1) and modulator (channel 2) assume a 600 ohm
terminated system is used. If the modulator output is not
terminated in 600 ohms, the modulator output voltage will be about
6 dB higher than shown on the bar graphs.

3.7 MODULATOR OUTPUT LEVEL

The OUTPUT LEVEL front panel control (call 7 in Figure 3.1) allows
user adjustment of the amplitude of the modulator (channel 2) FSK
output signal. To adjust modulator output level, use the CHAN
keypad to select CHAN 2 as the active channel (see 3.3.15.1). The
bar-graphs show the current modulator output level. Use a small
screw-driver to adjust the bar-graph display to the desired signal
level. A full clockwise rotation of this control produces 0 dBm
(775 mV rms) output into a 600 ohm load. Counter-clockwise
rotation of the control reduces the output level to amplitudes well
below -30 dBm (24.5 mV rms).

3.8 OPERATIONAL MODES

3.8.1 Start-Up

****

CAUTION

   Prior to powering the ST-8000A ON, ensure the set-up
   procedure described in Chapter 2 has been completed.

****

The ST-8000A executes a Power On Self Test (POST) when the power is
turned on.   See section 6.4 of this manual for a detailed
description of the POST. The ST-8000A settings on Power-Up are the
same as when it was last turned off.   This memory feature is
controlled by the ENTER key when changes are made to the ST-8000A
set-up. Unless changes are "ENTERed", they are not stored in
memory. If a checksum error is detected in the memory during the
POST, the ST-8000A defaults to a factory set state. The MODEM may
be operated with this failure but will require set-up of
operational parameters at each power-ON.

3.8.2 Local Operation

The ST-8000A front panel keypad and the OUTPUT LEVEL control are
used for local operation. Keypad keys are explained in detail in
section 3.3. The controls and indicators on the front panel of the
ST-8000A are shown in Figure 3.1 and described in later portions of
this chapter. Some of the keys and the OUTPUT LEVEL control affect
only the modulator or the demodulator no matter which channel of
the ST-8000A is selected.   Others affect the state of only the
channel selected. The keys and the channels they affect are listed
in table 3.1.

Table 3-1 Keypad Keys Application

KEY	MODULATOR	DEMODULATOR
MUTE	X	
AMH		X
* MARK ONLY		X
* SPACE ONLY		X
SYNCH		X
* REGEN		X
FSK		X
* HOLD	X	X
CHAN	X	X

	MARK	X	X
	SPACE	X	X
	BAUD RATE	X	X
	CLEAR	X	X
	NORM	X	X
*	REV	X	X
	M/S	X	X
*	CENT	X	X
	NUMBER KEYS	X	X
	ENTER	X	X
	BIT	X	X

NOTE: The "2ND" key selects the second function of keys. The
function selected determines the effect. 2ND functions are
indicated by an "*" next to the function name in table 3-1.

3.8.3 Standby Mode

Enter AMH HOLD without the 2ND key to select the AUTO MARK HOLD
mode. AMH sets the demodulator output to a steady MARK condition
after a Delay when the input signal drops below the Threshold.
Section 2.5.2 details the settings of the Delay and Threshold for
AMH.

3.8.4 Emergency Operation

The ST-8000A may be operated with certain failures in an emergency.
However, operation of the ST-8000A with a known failure is not
recommended.   Failure conditions with emergency operation
requirements are:

1.   A Front panel failure may not affect operation of the
ST-8000A through the REMOTE port. The failure may be the
indicators or keypad. In these cases, the BIT may indicate
correct operation when executed from the REMOTE terminal. The
modem may be temporarily operated using remote control. The
front panel OUTPUT LEVEL control will not be affected by failure
of the keypad.

2. The REMOTE port may fail without causing a failure in LOCAL
operation. In this case the BIT will show no error if executed
from the front panel but control from the REMOTE terminal may
not work. The ST-8000A may be operated in LOCAL mode under
these conditions.

3. The ST-8000A memory feature ensures retention of operational
setup through power down and up. If the an error in the
applicable memory is detected, the ST-8000A will default to a
factory preset setup state. The MODEM may be operated under
these conditions in an emergency.

4.   The REGENeration circuits can have a failure without
affecting other modes of operation.

5.   Either the MIL-188C or RS-232 outputs may fail without
affecting the other.

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