

HEWLETT  PACKARD

Operating the 8750A Storage-Normalizer

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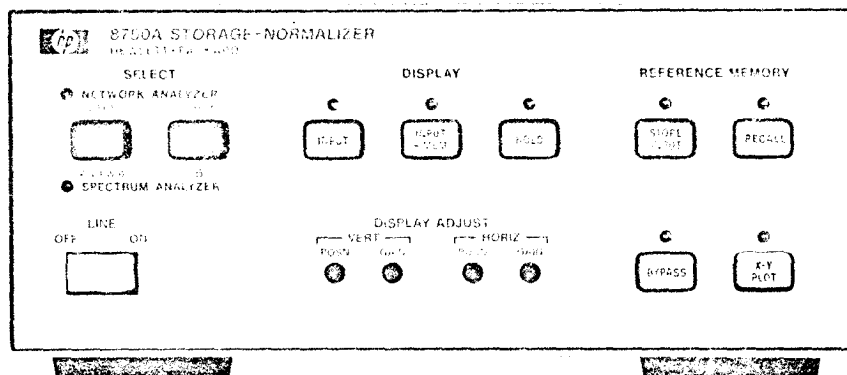
PREFACE

The 8750A Storage-Normalizer is capable of being used in a wide variety of network measurement and spectrum analyzer systems. This versatility results from its ability to be adapted to voltage levels received from or required by the system in which it is operating. These voltage levels vary from system to system.

Before the 8750A can be used properly with a particular measurement system, it must be set up for the voltage levels peculiar to that system. Because of differences in the basic instrumentation of the various systems compatible with the 8750A, different setup or adaption procedures are used for different systems.

This operating supplement contains setup procedures for adapting the 8750A to the systems it is considered to be most often used with. Separate setup procedures are provided for the individual kinds of systems. For systems not included in this manual it is suggested that the 140 Series Spectrum Analyzer setup procedure be used as a basic guideline for general electrical hookup and setup procedure sequence. Before you try to use the 8750A in a system that is not included here, however, you should make sure the 8750A and the system are compatible by inquiring at your nearest Hewlett-Packard office.

This manual supplements the Operation section of the 8750A Operating and Service Manual. It should be considered a part of the 8750A and kept with it for easy reference.



Chapter 1

INTRODUCTION

This Operating supplement explains the functions and use of the 8750A Storage-Normalizer's controls, indicators, and connectors. Although it has several operating features, a primary purpose of the 8750A is to eliminate the frequency response and tracking errors introduced by the measurement system itself. To accomplish this, the 8750A "remembers" (stores) the signal that is produced when there is no device-under-test (DUT) connected into the measurement system. Then, when the DUT is connected, the 8750A subtracts from the DUT output all the characteristics of the original signal, leaving only those characteristics caused by the DUT's influence on the signal. This operation is called "normalization."

The "normalizing" effect is such that if you "store" an input — the frequency response of a bandpass filter for example — and then normalize (Input minus memory mode) an identical frequency response, the resulting output will appear on a CRT display as a straight line because the two signals (the remembered one and the newly input one) have canceled each other.

CAUTION

If you use the 8750A with a variable persistence oscilloscope, **DO NOT** use the oscilloscope in the conventional mode. Set the oscilloscope CRT controls for minimum persistence. Failure to decrease the oscilloscope trace persistence can result in the trace being "burnt" into the CRT screen.

Chapter 2

8750A CONTROLS, INDICATORS, AND CONNECTORS

Figure 1 identifies each 8750A front-panel control and indicator and explains its function. Rear-panel controls and connectors are identified and functionally defined in Figure 2.

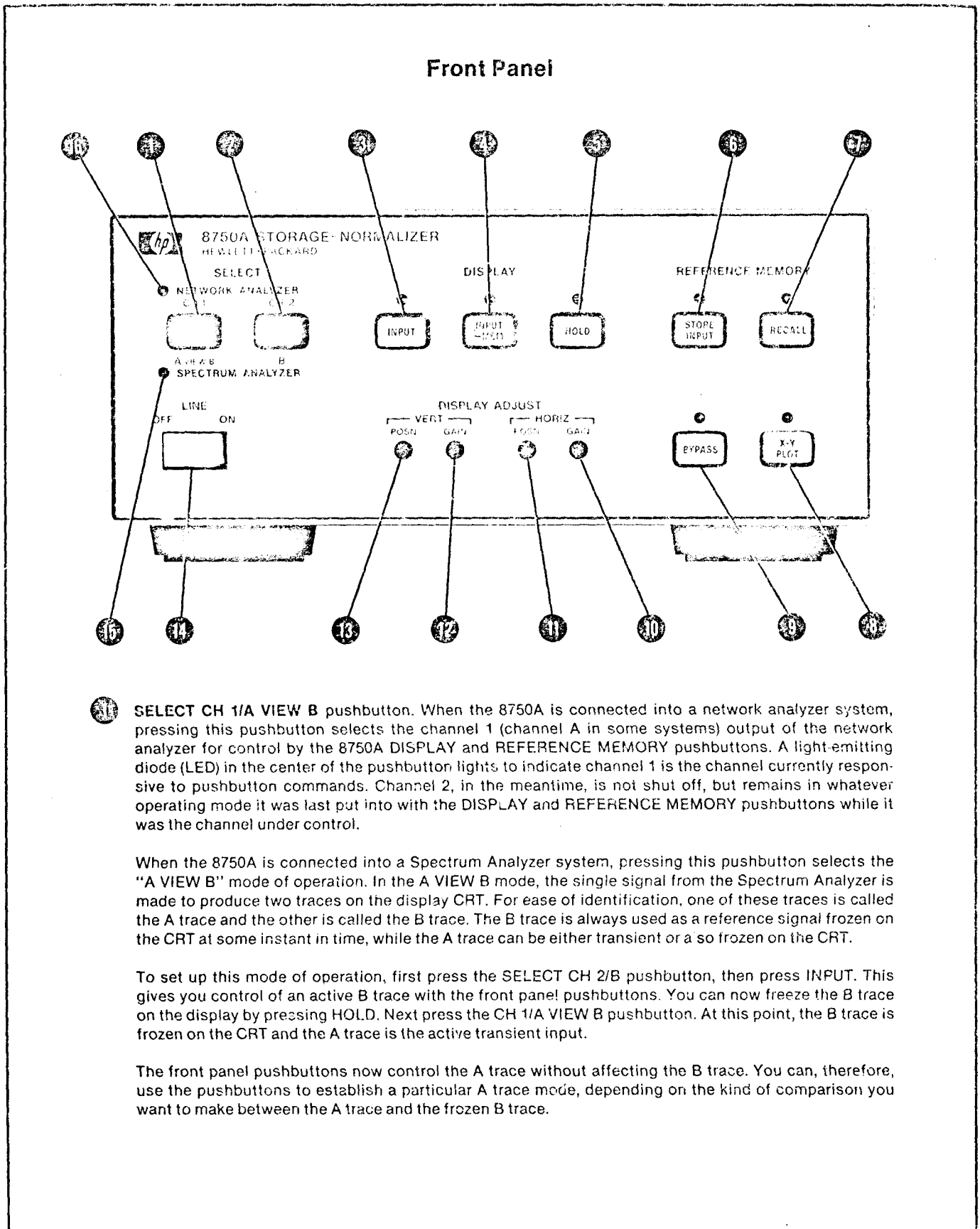


Figure 1. 8750A Front-Panel Controls and Indicators (1 of 2)

4 **SELECT CH 2/B** pushbutton. When the 8750A is connected into a network analyzer system, pressing this pushbutton selects the channel 2 (channel B in some systems) output of the network analyzer for control by the 8750A DISPLAY and REFERENCE MEMORY pushbuttons. A light-emitting diode (LED) in the center of the pushbutton lights to indicate channel 2 is the channel currently responsive to pushbutton commands. Channel 1, in the meantime, is not shut off, but remains in whatever operating mode it was last put into with the DISPLAY and REFERENCE MEMORY pushbuttons while it was the channel under control.

When the 8750A is connected into a spectrum analyzer system, pressing this pushbutton selects a single trace (called B) for the spectrum analyzer display and enables the trace to be controlled by the 8750A DISPLAY and REFERENCE MEMORY pushbuttons. Essentially, this is similar to the one-channel-at-a-time operation used with network analyzer systems.

3 **INPUT** pushbutton. Pressing this pushbutton causes the input signal from the channel selected with the SELECT pushbuttons to be temporarily stored in the 8750A's display memory. In this mode, the signal is constantly being entered into and retrieved from the display memory, and displayed on the system CRT. An LED above the pushbutton lights to indicate the 8750A is in the DISPLAY INPUT mode of operation.

4 **INPUT—MEM** pushbutton. Pressing this pushbutton causes the signal stored in the 8750A's reference memory (see STORE INPUT below) to be subtracted from the input signal being entered into its display memory. For most measurement procedures, the signal stored in the reference memory is the test signal as it appears without the DUT (device under test) in the measurement system; while the signal in the display memory is the test signal after it has been passed through the DUT. This pushbutton is used for "normalization." An LED above the pushbutton lights to indicate the 8750A is in the DISPLAY INPUT—MEM mode of operation.

5 **HOLD** pushbutton. Pressing this pushbutton causes the trace on the display CRT to "freeze" in the form it is in at the moment. The information displayed in this mode is the information entered into the 8750A display memory just before the pushbutton is pressed. This mode is used when a stable trace is required for some reason, such as waveform photography or easier observation of the signal characteristics. An LED above the pushbutton lights to indicate the 8750A is in the DISPLAY HOLD mode of operation.

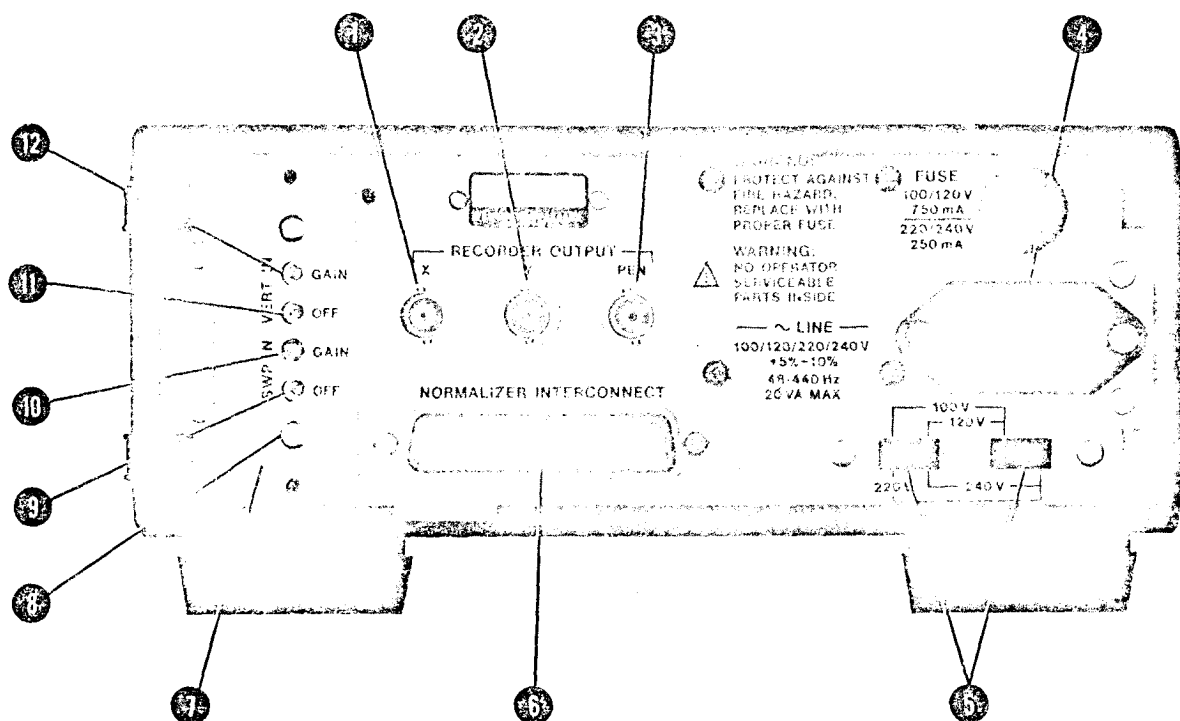
6 **STORE INPUT** pushbutton. Pressing this pushbutton causes the signal at the input to the 8750A to be stored in its reference memory. The stored signal can be retrieved two ways: by pressing the INPUT—MEM pushbutton (see above) to provide a normalized signal trace on the display CRT, or by pressing the RECALL pushbutton (see below). An LED above the pushbutton lights to indicate the 8750A is in the REFERENCE MEMORY STORE INPUT mode of operation. This LED stays lit for the period required to store one complete horizontal sweep into the 8750A reference memory. At the end of this period, the LED turns off.

7 **RECALL** pushbutton. Pressing this pushbutton causes the signal stored in the reference memory (see STORE INPUT above) to be retrieved and displayed on the system display CRT. An LED above the pushbutton lights to indicate the 8750A is in the REFERENCE MEMORY RECALL mode of operation.

- 9** **X-Y PLOT** pushbutton. Pressing this pushbutton starts an X-Y plot of the trace or traces appearing on the display CRT at the moment the pushbutton is pressed. During the plot, the traces are "frozen" just as they are in the HOLD mode (see above). The outputs to the X-Y recorder are fed out of the 8750A through the RECORDER OUTPUT X, Y, and PEN connectors on the rear panel. The plot rate is 30 seconds per each displayed trace. If there are two traces on the display, they will be drawn consecutively and each will require 30 seconds. When the X-Y PLOT pushbutton is pressed, the LED above it lights to indicate a plot is in progress. When the plot is complete, the LED turns off and the 8750A returns to the mode it was in when the X-Y PLOT pushbutton was pressed. Pressing any pushbutton other than BYPASS or X-Y PLOT while a plot is in progress stops the plot. If a plot is started while the 8750A is in the BYPASS mode (see below), the display will show the real time input while the recorder continues to draw the "frozen" instantaneous display. If a plot is started while the 8750A is in a DISPLAY mode, the display sweeps at the plot rate of 30 seconds per trace. Thus, what you see on the CRT is a dot moving in concert with the plot.
- 10** **BYPASS** pushbutton. Pressing this pushbutton effectively removes the 8750A from the test setup, allowing the network or spectrum analyzer to operate as if the 8750A were not connected into the measurement system. An LED above the pushbutton lights to indicate the 8750A is in the BYPASS mode of operation.
- 11** **HORIZ (Horizontal) GAIN** control. Rotating this control adjusts the gain of the 8750A horizontal (X-axis) output amplifier. It is used to lengthen or shorten the CRT display trace as necessary to make it equal the edge-to-edge width of the display screen.
- 12** **HORIZ POSN (Horizontal Position)** control. Rotating this control adjusts the horizontal position of the trace on the display CRT. The HORIZ GAIN and HORIZ POSN controls are used together to set the trace ends on the far left and far right graticule lines of the CRT screen.
- 13** **VERT (Vertical) GAIN** control. Rotating this control adjusts the gain of the 8750A vertical (Y-axis) output amplifier to extend or decrease the full-deflection vertical excursion of the trace on the CRT display.
- 14** **VERT POSN (Vertical Position)** control. Rotating this control adjusts the vertical position or center reference of the trace on the CRT display. The VERT GAIN and VERT POSN controls are used together to obtain a trace that at full vertical deflection extends 1/8-inch above the top graticule line on the CRT screen and 1/8-inch below the bottom graticule line.
- 15** **LINE OFF-ON** switch. This switch connects and disconnects the ac line power input to the 8750A rectifier circuits.
- 16** **SPECTRUM ANALYZER** indicator. This is an LED that lights when the Spectrum Analyzer Interface Board Assembly is plugged into the 8750A rear panel.
- 17** **NETWORK ANALYZER** indicator. This is an LED that lights when the Network Analyzer Interface Board Assembly is plugged into the 8750A rear panel.

Figure 1. 8750A Front-Panel Controls and Indicators (2 of 2)

Rear Panel



- 1** X RECORDER OUTPUT connector (J1). This is a BNC (female) connection for the X channel of an X-Y recorder. The output range at this connector is 0 to + 1 volt nominal.
- 2** Y RECORDER OUTPUT connector (J2). This is a BNC (female) connection for the Y channel of an X-Y recorder. The output range at this connector is – 4 volts to + 4 volts nominal.
- 3** PEN RECORDER OUTPUT connector (J3). This is a BNC (female) connection for the pen-lift coil of an X-Y recorder. This is an open-collector output. Maximum pen-up level is + 20 volts and maximum pen-down sink current is 150 mA. The output is diode clamped at approximately + 0.7 volt in the negative (pen-down), sink current direction.
- 4** AC LINE power connector. This is a three-contact male receptacle for the ac power cable. (supplied).
- 5** AC Power Level Selector Switch Assembly (S1). The two switches on this assembly are used to adapt the 8750A to the ac line voltage that will be connected to it.

Figure 2. 8750A Rear-Panel Controls and Connectors (1 of 2)

- ⑥ **NORMALIZER INTERCONNECT** connector (J4). This is the receptacle for the interconnect cable (supplied) that connects the 8750A to the Network or Spectrum Analyzer.
- ⑦ **Plug-in Interface Board Assembly (A5)**. This board assembly contains the circuits that interface the 8750A with the Network or Spectrum Analyzer. Two such board assemblies are supplied, one for use with Network Analyzers and one for use with Spectrum Analyzers. Optional Network Analyzer Interface Board Assemblies for use with specific Network Analyzers are available.

NOTE

Use plastic screwdriver, HP Part Number 8710-0772 (supplied with 8750A), or equivalent to adjust the Interface Board Assembly controls.

- ⑧ **SWP IN OFF** (Sweep Input Offset) slotted control. This control is used to adjust the offset of the horizontal sweep input from the network or spectrum analyzer to accommodate the requirements of the 8750A.
- ⑨ **SWP IN GAIN** (Sweep Input Gain) slotted control. This control is used to adjust the gain of the horizontal sweep input from the network or spectrum analyzer to accommodate the requirements of the 8750A.
- ⑩ **VERT IN OFF** (Vertical Input Offset) slotted control. This control is used to adjust the offset of the vertical input from the network or spectrum analyzer to accommodate the requirements of the 8750A.
- ⑪ **VERT IN GAIN** (Vertical Input Gain) slotted control. This control is used to adjust the gain of the vertical input from the network or spectrum analyzer to accommodate the requirements of the 8750A.

Figure 2. 8750A Rear-Panel Controls and Connectors (2 of 2)

Chapter 3

8750A ADAPTION TO THE MEASUREMENT SYSTEM

Before the 8750A can be used properly, it must be matched to the network or spectrum analyzer measurement system in which it will be used. A matching procedure and functional checkout for a number of measurement systems compatible with the 8750A is included in this manual. Locations of these procedures are given in Table 1.

TABLE 1. *Matching Procedures And Functional Checkouts*

SYSTEM	PAGE NUMBER
Network Analyzer	
8755A/B, 182T or 180TR, 8620A/B/C	8
8410B, 8412A, 8620A/C	14
8505A	20
8410B, 8412A, 8690B	24
8755A/B, 182T or 180TR, 8690B	28
8407A, 8412A, 8601A	34
Network Analyzer Functional Test	39
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8557A/182T or 180TR	42
8558B/182T or 180TR	42
8565A	42
140 Series	48
Spectrum Analyzer Functional Test	53

In addition to their main purpose of providing a simple checkout procedure for the equipment operator, the functional tests may be used in lieu of the Performance Tests (Section IV of 8750A Operating and Service Manual) as part of the incoming inspection routine performed by receiving personnel. The functional tests in this manual, however, prove only that the 8750A is operating in an apparently normal manner; they do not prove it is operating in accordance with its listed specifications. To verify that the 8750A's performance is within its specified limits, you must do the Performance Tests in Section IV of the 8750A Operating and Service Manual.

Chapter 4

ADAPTING THE 8750A TO A NETWORK ANALYZER

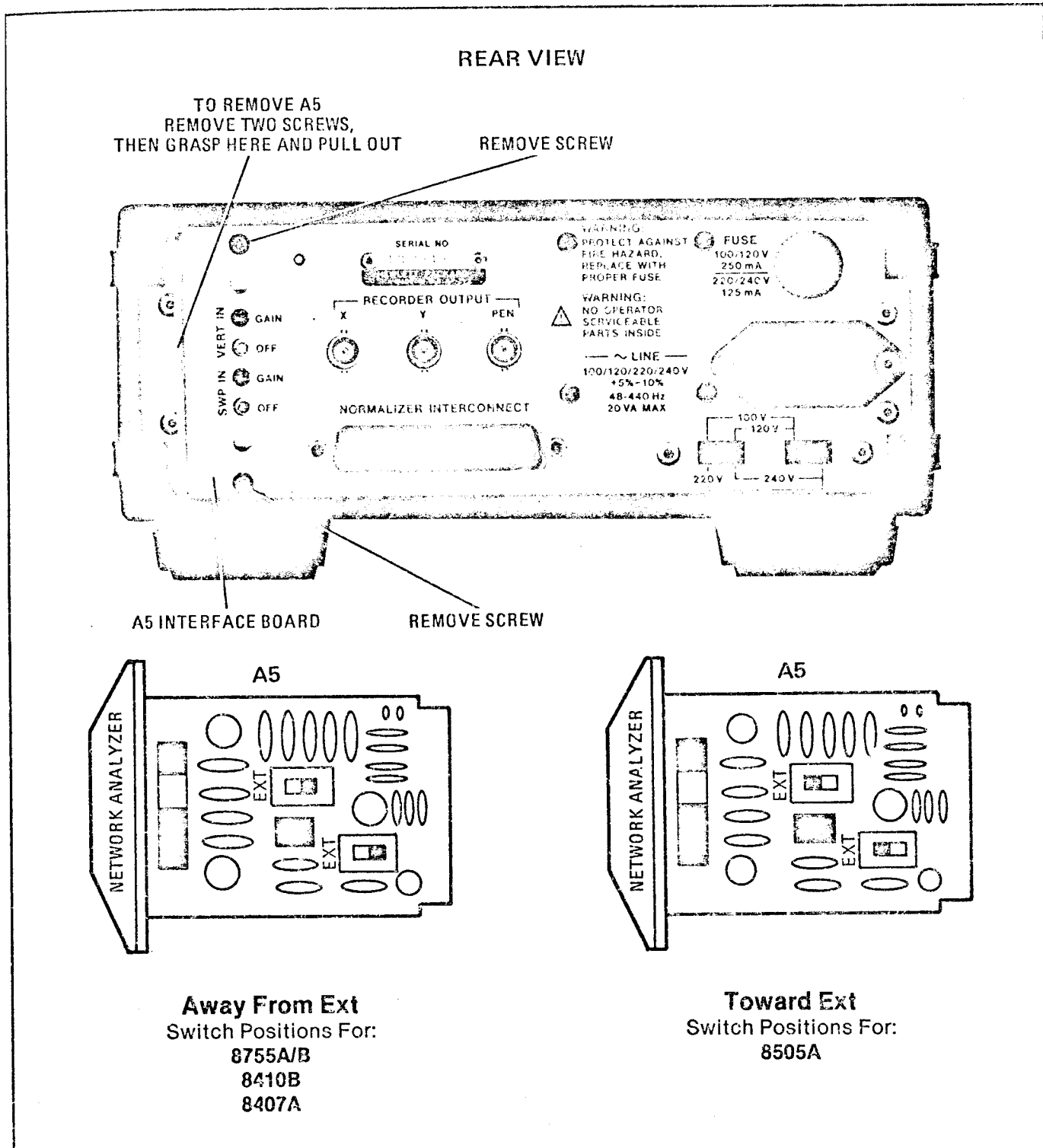
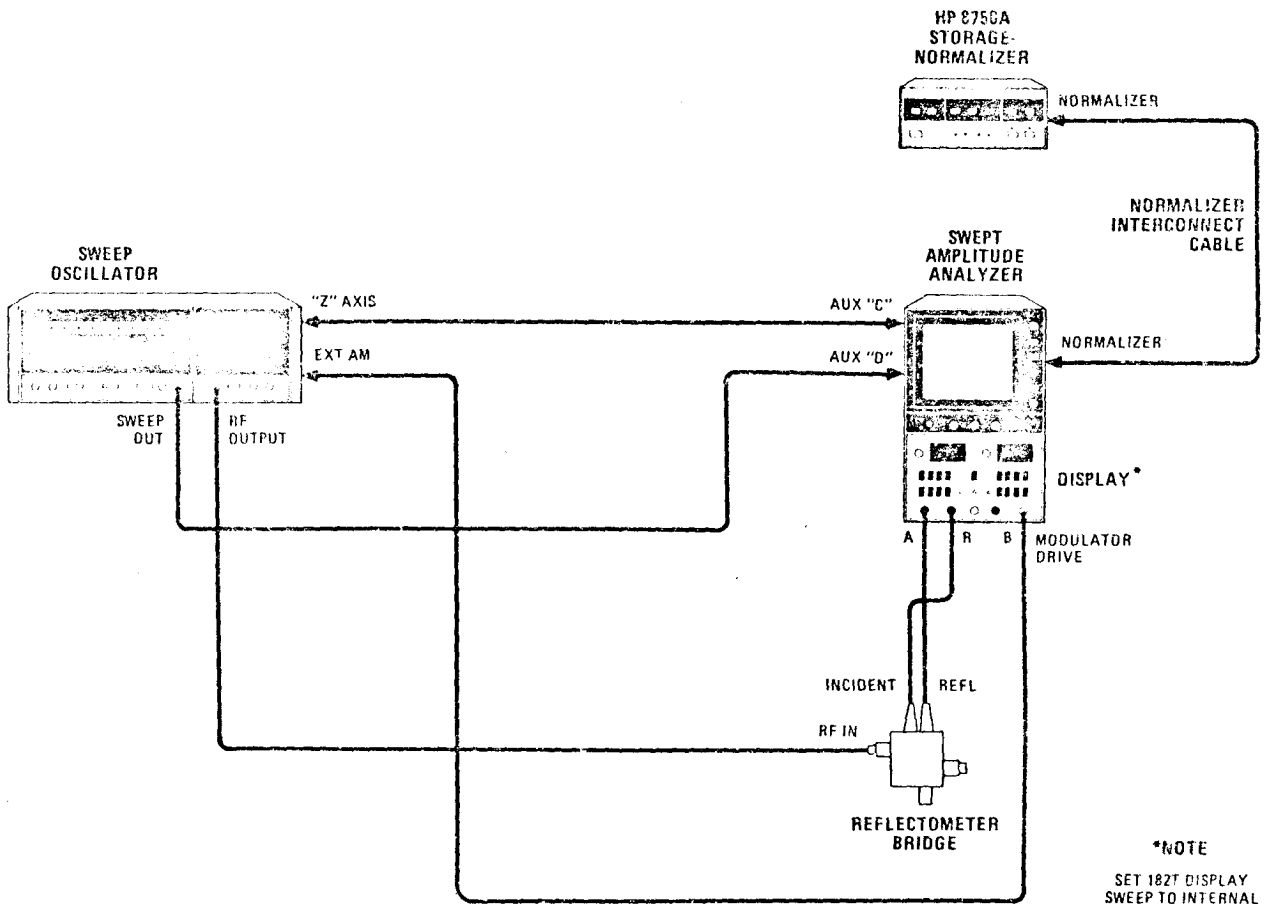


Figure 3. 8750A Network Analyzer Interface Board Switch Positions



Equipment:

Sweep Oscillator	8620A/B/C
RF Plug-In	86290A*
Reflectometer Bridge	11666A
Network Analyzer	8755A/B**
Display	182T***
Storage Normalizer	8750A
Normalizer Interconnect Cable	08750-60008 or 08750-60034

NOTE

On the A11 PC board inside of the 8755A/B set Blanking Polarity Switch to POS when using 8620A/B/C Sweep Oscillator. The A11 PC board is at the rear of the 8755A/B.

* Any RF Plug-In in the .04-16.0 GHz range can be substituted for the 86290A.

** 8755A Analyzers must be modified for use with 8750A Storage-Normalizer. Refer to Service Note P-08755-60027.

*** 182T Displays (Serial Prefix 1520A and below) must be modified for use with 8750A Storage-Normalizer. Refer to Service Note P-08750-60024. A 180TR Display may be substituted for the 182T. 180TR Displays (Serial Prefix 1640A and below) must be modified for use with 8750A Storage-Normalizer. Refer to Service Note P-08750-60025.

Figure 4. 8755A/B Swept Amplitude Analyzer/182T or 180TR Display with 8620A/B/C Sweep Oscillator and 8750A Typical Test Setup

Adapting the 8750A to the 8755A/B Swept Amplitude Analyzer/ 182T or 180TR Display with 8620A/B/C Sweep Oscillator

Preliminary Procedures

- a. Make sure the ac power cable is disconnected from the 8750A, then remove the Network Analyzer Interface Board Assembly from the 8750A.
- b. On the Network Analyzer Interface Board, set the two slide switches away from EXT as shown in Figure 3 on page 7. Then plug the board into its socket through the slot in the 8750A rear panel.
- c. Connect the system instruments into the test setup shown in Figure 4.
- d. Turn on the ac line power to the equipment in the test setup. On the 8750A, the **NETWORK ANALYZER** indicator (LED) should light.
- e. On the 8750A, press **BYPASS**.
- f. Set the Sweep Oscillator for FULL SWEEP. On the 8620A/B/C set the rear panel DISPLAY BLANKING switch to ON.

NOTE

CHANNEL 1 on the 8755B is CHANNEL A on the 8755A. CHANNEL 2 on the 8755B is CHANNEL B on the 8755A. DISPLAY REFERENCE POSITION pushbutton and slotted adjustment on the 8755B are labeled DISPLAY POSITION on the 8755A.

- g. On the 8755A/B Swept Amplitude Analyzer, set the controls as follows:

CHANNEL 1

Press DISPLAY REFERENCE POSITION pushbutton. Then place the trace on the center graticule line using the DISPLAY REFERENCE POSITION Adjustment (slotted control next to DISPLAY REFERENCE POSITION pushbutton).

CHANNEL 2

Turn off channel 2 trace by pressing any CHANNEL 2 DISPLAY pushbutton part way in and popping all the pushbuttons out.

CHAPTER 4

- h. On the 182T Display, adjust the **HORIZONTAL POSITION** control to center the trace horizontally on the CRT. If the two ends of the trace are not on the edge graticule lines, the 8755A/B horizontal sweep gain must be adjusted as follows. Remove the 8755A/B from the display. On the 8755A/B Normalizer Interface Board A11, near the inside rear of the instrument, check that the Blanking Polarity switch is at the POS position. Adjust **HORZ ADJ** control on A11 for correct horizontal width on CRT. Clockwise increases trace width. This adjustment must be done by trial and error since the adjustment is made with the instrument removed. Each time the 8755A/B is reinstalled, readjust the display **HORIZONTAL POSITION** control to center the trace. Repeat adjustment until both ends of the trace are over the edge graticule lines.
- i. (Omit this step if your sweep oscillator does not have intensity marker capability.) Set the sweep oscillator for **INTENSITY** markers. As shown in Figure 6A, set the **START** Marker one graticule line to the right of the far left graticule line. Set the **STOP** Marker one graticule line to the left of the far right graticule line. Adjust the **CW** marker off screen.

8750A Display Outputs Adjustments

- j. On the 8750A, press **CH 1**, then **INPUT**. If necessary, readjust the display intensity. There should be a trace on the display CRT. If there is not, set the four 8750A front panel **DISPLAY ADJUST** controls, and the four slotted adjustments on the Network Analyzer Interface Board (plugged into 8750A rear panel) to mid-range.

NOTE

When using the 86222B RF Plug-in, and you wish to use the crystal marker feature after you have adapted the 8750A to the system, the 8750A front panel **DISPLAY OUTPUTS** horizontal controls will have to be adjusted as follows. With the 8750A in the **INPUT** mode, adjust **HORIZ POSN** so that the CRT trace starts one-half minor division in from the far left graticule line. Then adjust **HORIZ GAIN** so that the CRT trace ends on the far right graticule line. You may now skip step k.

- k. At the 8750A front panel, adjust **HORIZ POSN** and **HORIZ GAIN** so the trace fills the CRT. Do not try to match the stored trace to the trace displayed in the **BYPASS** mode.
- l. On the 8750A, press **BYPASS**. Then on the 8755A/B adjust **DISPLAY REFERENCE POSITION** Adjustment clockwise to move the CRT trace well off the top of the display graticule.
- m. On the 8750A, press **STORE INPUT**. Make sure the **STORE INPUT** indicator (LED) turns off, then press **INPUT-MEM**. The trace should now be a horizontal straight line containing amplitude (pulse) markers. Place this trace on the center graticule line with the 8750A **VERT POSN** control.
- n. On the 8750A, press **INPUT** and adjust **VERT GAIN** so the CRT trace is just above the top graticule line. Press **BYPASS** and move the trace to the center graticule line using 8755A/B **DISPLAY REFERENCE POSITION** Adjustment. Do not try to match the stored and bypass traces.

8750A Network Analyzer Interface Adjustments

- o. On the 8750A, press **INPUT**. Adjust **VERT IN OFF** (Vertical Input Offset) on the Network Analyzer Interface Board (plugged into the 8750A rear panel) for a trace on the CRT center graticule line.
- p. On 8750A, press **BYPASS**. On the 8755A/B adjust **DISPLAY REFERENCE POSITION** Adjustment to place the CRT trace three graticule lines above the center graticule line (see Figure 5A).

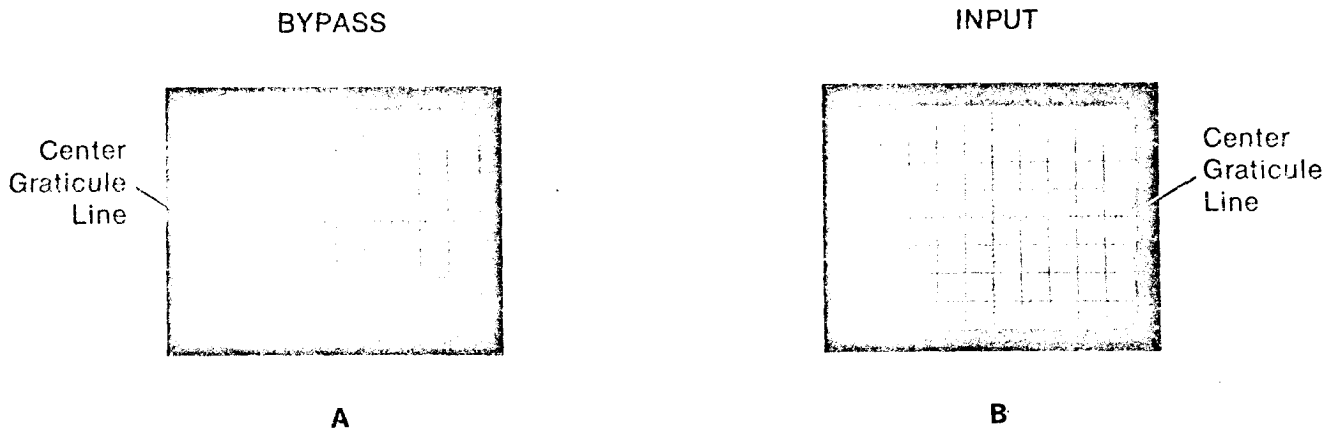


Figure 5. **VERT IN GAIN** (Vertical Input Gain) Adjustment

- q. On the 8750A, press **INPUT**. Then on the Network Analyzer Interface Board (plugged into 8750A rear panel), adjust **VERT IN GAIN** (Vertical Input Gain) to place the CRT trace on the third graticule line above the center graticule line. (See also Figure 5B). Press **BYPASS** and adjust the trace back to the center graticule line. Repeat steps o through q until the vertical position of the CRT trace is the same in both the **INPUT** and **BYPASS** mode.
- r. If your sweep oscillator has z-axis intensity marker capability, verify that the intensity markers are adjusted in accordance with step i above (see also Figure 6A). Then proceed to step s.

If your sweep oscillator does not have z-axis intensity marker capability, proceed to step u.

CHAPTER 4

- s. On the 8750A, press **INPUT**. Then, on the Network Analyzer Interface Board (plugged into 8750A rear panel), adjust **SWP IN OFF** (Sweep Input Offset) to center the **START** marker pulse on the first graticule line to the right of the far left graticule line (see Figure 6B).

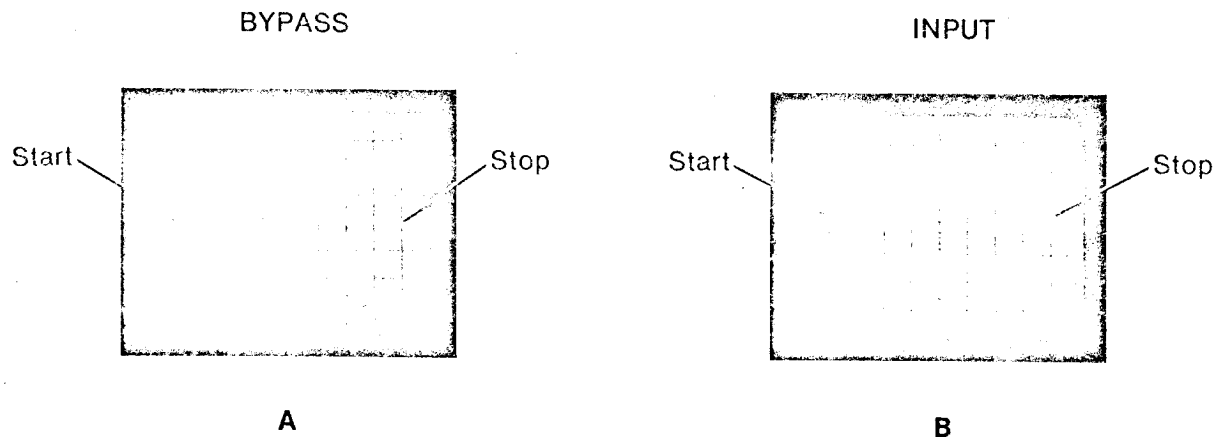


Figure 6. Adjustment of START/STOP Markers

- t. At the Network Analyzer Interface Board (plugged into 8750A rear panel), adjust **SWP IN GAIN** (Sweep Input Gain) to center the **STOP** marker pulse on the first graticule line to the left of the far right graticule line. You may have to readjust the Interface Board **SWP IN OFF** to keep the **START** marker on its assigned graticule line. The purpose of these adjustments is to make the pulse-shaped markers of the **INPUT** mode appear at the same horizontal positions as the intensity-dot markers of the **BYPASS** mode. Proceed to step x.
- u. If the sweep oscillator does not have z-axis intensity marker capability, the system can still be calibrated by using the response of a frequency sensitive test device such as a bandpass filter or wave as a frequency indicator. For instance, as described below in steps v and w, the skirts of a bandpass filter can be used in place of markers by adjusting the sweep width in **BYPASS** mode so the filter skirts cross the center horizontal graticule line one graticule line to the right of the far left graticule line and one graticule line to the left of the far right graticule line. See Figure 7.
- v. On the 8750A, press **INPUT**. Then, on the Network Analyzer Interface Board (plugged into 8750A rear panel), adjust **SWP IN OFF** (Sweep Input Offset) to place the filter skirt on the first graticule line to the right of the far left graticule line as in Figure 7.
- w. At the Network Analyzer Interface Board, adjust **SWP IN GAIN** (Sweep Input Gain) to place the other filter skirt on the first graticule line to the left of the far right graticule line as shown in Figure 7. You may have to readjust the Interface Board **SWP IN OFF** to keep the left filter skirt on its assigned graticule line. The purpose of these adjustments is to make the horizontal position of the bandpass filter the same in the **INPUT** mode as it was in the **BYPASS** mode. Proceed to step x.

- x. The 8750A is now matched to the 8755A/B Swept Amplitude Analyzer. For a functional test of the 8750A main features proceed page 39.

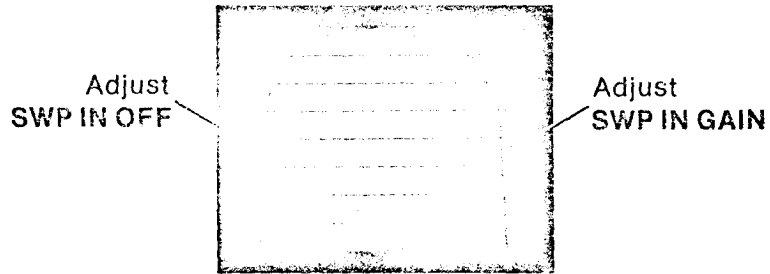
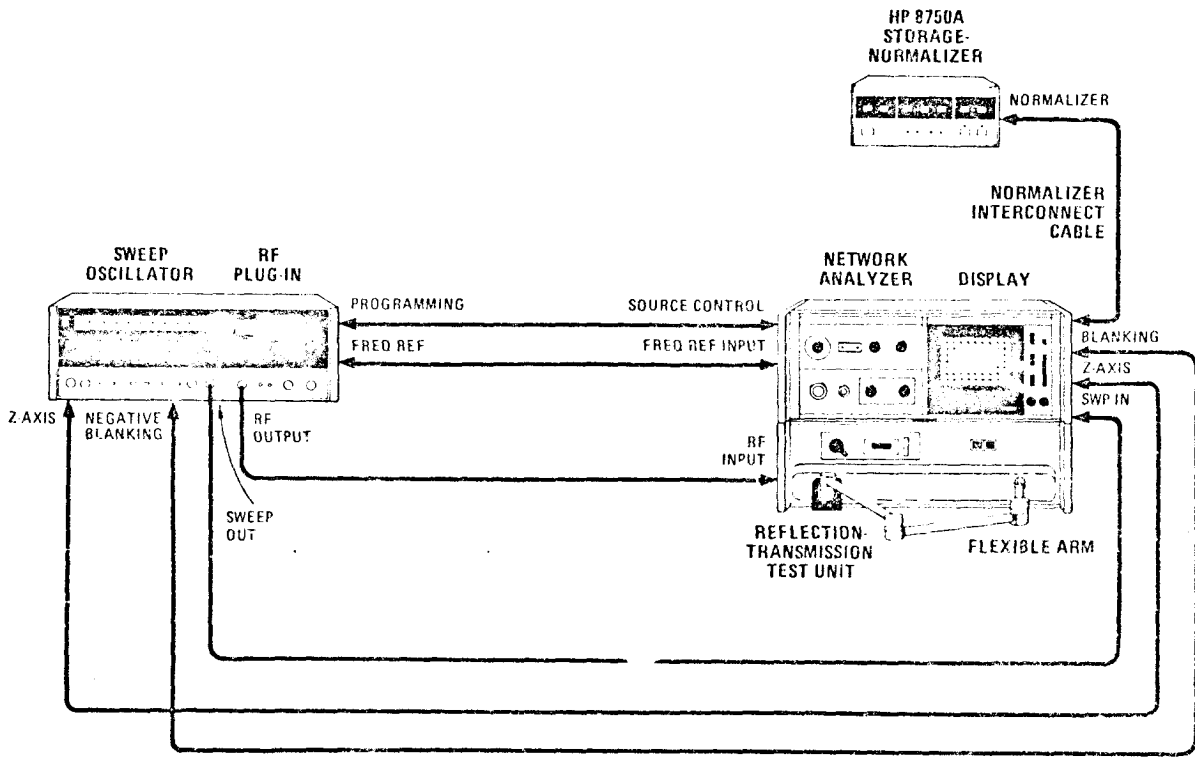


Figure 7. Adjustment of SWP IN OFF and SWP IN GAIN Using a Bandpass Filter



Equipment:

Sweep Oscillator	8620A/C
RF Plug-In	86290A*
Network Analyzer	8410B
Phase-Magnitude Display	8412A**
Reflection-Transmission Test Unit/2.0 To 12.4 GHz	8743A
Flexible Arm	11605A
Storage-Normalizer	8750A
Normalizer Interconnect Cable	08750-60008 or 08750-60034

NOTE

- * Any RF Plug-In in the 2.0-12.4 GHz range can be substituted for the 86290A.
- ** 8412A Displays (Serial Prefix 1625A and below) must be modified for use with the 8750A Storage-Normalizer. Refer to Service Note 8412A-6.

Figure 8. 8410B/8412A Network Analyzer with 8620A/C Sweep Oscillator and 8750A Typical Test Setup

Adapting the 8750A to the 8410B/8412A Network Analyzer with 8620A/C Sweep Oscillator

Preliminary Procedures

- a. Make sure the ac power cable is disconnected from the 8750A, then remove the Network Analyzer Interface Board Assembly from the 8750A.
- b. On the Network Analyzer Interface Board, set the slide switches away from EXT (see Figure 3 on page 7). Then plug the board into its socket through the slot in the 8750A rear panel.
- c. Connect the system equipment as shown in the test setup in Figure 8.
- d. Turn on the ac line power to the equipment in the test setup. On the 8750A, the **NETWORK ANALYZER** indicator (LED) should light.
- e. On the 8750A, press **BYPASS**.
- f. On the 8743A Reflection/Transmission Test Unit, set the FUNCTION switch to TRANSMISSION and connect a through section (HP 11605A Flexible Arm, for example) between the UNKNOWN port and the TRANSMISSION RETURN port. (If you're using the reflection mode, place a shorting plug on the UNKNOWN port and delete the through section.)
- g. Set the sweep oscillator for FULL SWEEP on a band that provides a reasonably flat trace (at 10 dB/division) on the center horizontal graticule line of the phase-magnitude display. On the 8620A/C, set the rear panel DISPLAY BLANKING switch on ON.
- h. On the Network Analyzer (8410B/8412A), set FREQ RANGE (GHz) switch to AUTO and adjust SWEEP STABILITY for a stable trace.
- i. Set the Network Analyzer controls for a magnitude display at 10 dB/DIV. Then, using the TEST CHANNEL GAIN (dB) and AMPLITUDE VERNIER, position the trace on the center graticule line. Adjust the 8412A HORIZONTAL GAIN and POSITION controls so the trace fills the CRT.
- j. (Omit this step if your Sweep Oscillator does not have intensity marker capability.) Set the sweep oscillator for INTENSITY markers. As shown in Figure 10A, set the START marker one graticule line to the right of the far left graticule line. Set the STOP marker one graticule line to the left of the far right graticule line. Adjust the CW marker off the CRT screen.

8750A Display Outputs Adjustments

- k. On the 8750A, press **CH 1**, then **INPUT**. If necessary, readjust the display intensity. There should be a trace on the display CRT. If there is not, set the four 8750A front panel **DISPLAY ADJUST** controls, and the four slotted adjustments on the Network Analyzer Interface Board (plugged into 8750A rear panel) to mid-range.

NOTE

When using the 86222B RF Plug-in, and you wish to use the crystal marker feature after you have adapted the 8750A to the system, the 8750A front panel **DISPLAY OUTPUTS** horizontal controls will have to be adjusted as follows. With the 8750A in the **INPUT** mode, adjust **HORIZ POSN** so the the CRT trace starts one-half minor division in from the far left graticule line. Then adjust **HORIZ GAIN** so that the CRT trace ends on the far right graticule line. You may now skip step l.

- l. At the 8750A front panel, adjust **HORIZ POSN** and **HORIZ GAIN** so the trace fills the CRT. Do not try to match the stored trace to the trace displayed in the **BYPASS** mode.
- m. On the 8750A, press **BYPASS**. Then on the 8410B, adjust the **TEST CHANNEL GAIN** (dB) so the CRT trace is well above the top graticule line. (You may have to increase the 8412A resolution at this point.)
- n. On the 8750A, press **STORE INPUT**. Make sure the **STORE INPUT** indicator (LED) turns off, then press **INPUT-MEM** . The trace should now be a horizontal straight line containing amplitude (pulse) marker(s). Place this trace on the center graticule line with the 8750A **VERT POSN** control.
- o. On the 8750A, press **INPUT** and adjust the **VERT GAIN** so the CRT trace is just above the top graticule line. Press **BYPASS** and adjust the trace to the center graticule line. Do not try to match the stored and bypass traces.

8750A Network Analyzer Interface Adjustments

- p. On the 8750A, press **INPUT**. Adjust **VERT IN OFF** (Vertical Input Offset) on the Network Analyzer Interface Board (plugged into 8750A rear panel) for a trace on the CRT center graticule line.

- q. On 8750A, press **BYPASS** . On the Network Analyzer, adjust **TEST CHANNEL GAIN** (dB) to place the CRT trace three graticule lines above the center graticule line (see Figure 9A).

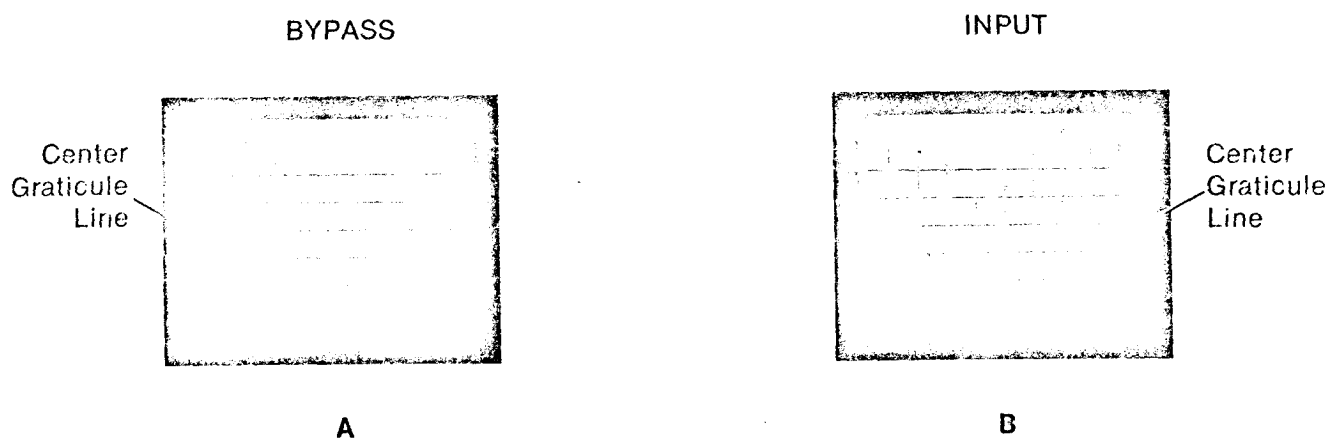


Figure 9. **VERT IN GAIN** (Vertical Input Gain) Adjustment

- r. On the 8750A, press **INPUT**. Then, on the Network Analyzer Interface Board (plugged into 8750A rear panel), adjust **VERT IN GAIN** (Vertical Input Gain) to place the CRT trace on the third graticule line above the center graticule line (See Figure 9B). Press **BYPASS** and adjust the trace back to the center graticule line. Repeat steps p through r until the vertical position of the CRT trace is the same in both the **INPUT** and **BYPASS** mode.

- s. If your sweep oscillator has z-axis intensity marker capability, verify that the intensity markers are adjusted in accordance with step j above (see also Figure 10A). Then proceed to step t.

If your sweep oscillator does not have z-axis intensity marker capability, proceed to step v.

- t. On the 8750A, press **INPUT**. Then, on the Network Analyzer Interface Board (plugged into 8750A rear panel), adjust **SWP IN OFF** (Sweep Input Offset) to center the **START** marker pulse on the first graticule line to the right of the far left graticule line (see Figure 10B).

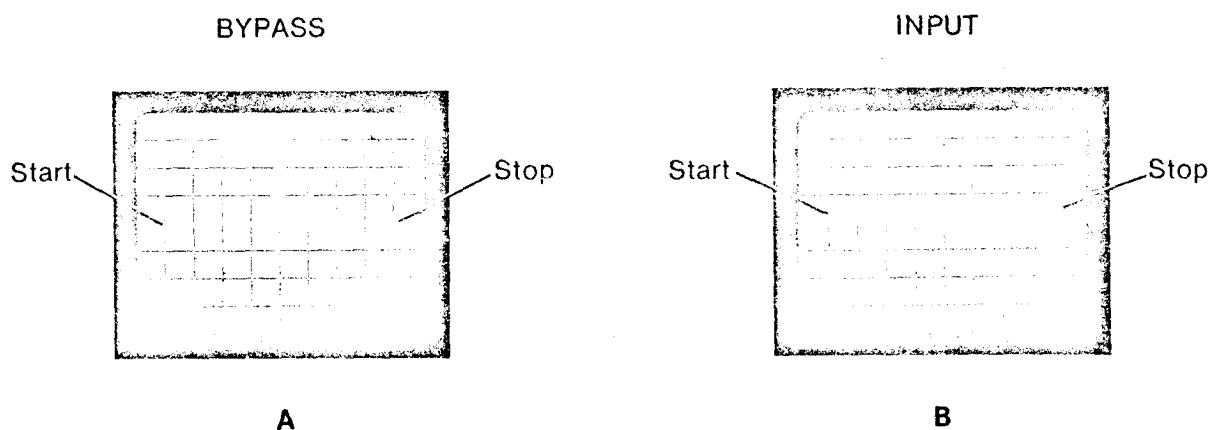


Figure 10. Adjustment of START and STOP Markers

- u. At the Network Analyzer Interface Board (plugged into 8750A rear panel), adjust **SWP IN GAIN** (Sweep Input Gain) to center the STOP marker pulse on the first graticule line to the left of the far right graticule line. You may have to readjust the interface Board **SWP IN OFF** to keep the START marker on its assigned graticule line. The purpose of these adjustments is to make the pulse-shaped markers of the **INPUT** mode appear at the same horizontal positions as the intensity-dot markers of the **BYPASS** mode. Proceed to step y.

- v. If the sweep oscillator does not have z-axis intensity marker capability, the system can still be calibrated by using the response of a frequency sensitive test device such as a bandpass filter or wavemeter, as a frequency indicator. For instance, as described below in step w and x, the skirts of a bandpass filter can be used in place of markers by adjusting the sweep width in **BYPASS** mode so the filter skirts cross the center horizontal graticule line one graticule line to the right of the far left graticule line and one graticule line to the left of the far right graticule line. See Figure 11.

- w. On the 8750A, press **INPUT**. Then, on the Network Analyzer Interface Board (plugged into 8750A rear panel), adjust **SWP IN OFF** (Sweep Input Offset) to place the filter skirt on the first graticule line to the right of the far left graticule line as shown in Figure 11.

- x. At the Network Analyzer Interface Board, adjust **SWP IN GAIN** (Sweep Input Gain) to place the other filter skirt on the first graticule line to the left of the far right graticule line as shown in Figure 11. You may have to readjust the interface Board **SWP IN OFF** to keep the left filter skirt on its assigned graticule line. The purpose of these adjustments is to make the horizontal position of the bandpass filter the same in the **INPUT** mode as it was in the **BYPASS** mode. Proceed to step y.

- y. The 8750A is now matched to the 8410B/8412A Network Analyzer. For a functional test of the 8750A main features proceed to page 39.

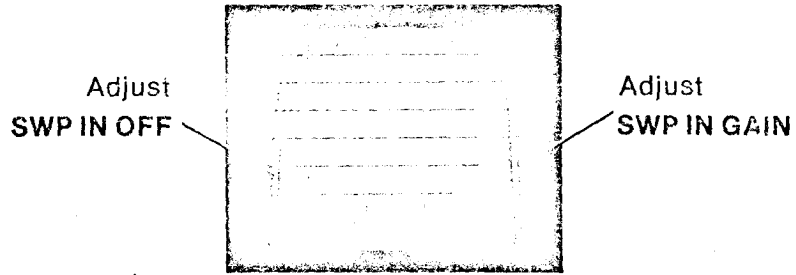
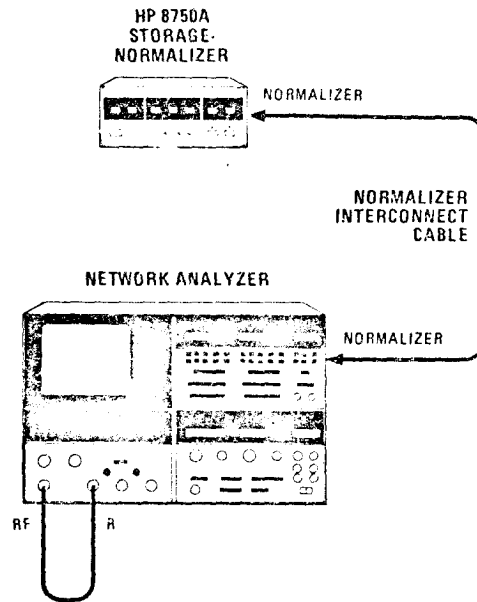


Figure 11. Adjustment of **SWP IN OFF** and **SWP IN GAIN** Using a Bandpass Filter



Equipment:


Network Analyzer	8505A
Storage-Normalizer	8750A
Normalizer Interconnect Cable	08750-60008 or 08750-60034

Figure 12. 8505A Network Analyzer and 8750A Typical Test Set Up.

Adapting the 8750A to the 8505A Network Analyzer

Preliminary Procedures

- a. Make sure the ac power cable is disconnected from the 8750A, then remove the Network Analyzer Interface Board Assembly from the 8750A.
- b. On the Network Analyzer Interface Board, set the slide switches towards EXT (see Figure 3 on page 7). Then plug the board into its socket through the slot in the 8750A rear panel.
- c. Connect the system equipment as shown in the test setup in Figure 12.
- d. Turn on the ac line power to the equipment in the test setup. On the 8750A, the **NETWORK ANALYZER** indicator (LED) should light.
- e. On the 8750A, press **BYPASS**.
- f. On the 8505A Network Analyzer set the controls as follows:

Source Converter	
OUTPUT LEVEL.....	- 10 dBm
OUTPUT LEVEL VERNIER	0 dBm
INPUT LEVEL dBm MAX	- 10 dBm
Frequency Control	
RANGE.....	5 - 1300 MHz
MODE.....	LIN EXPAND
WIDTH.....	CW + - ΔF
SCAN TIME (SEC).....	1 - .01 SEC
SCAN TIME VERNIER.....	CLOCKWISE
TRIGGER	AUTO
MARKERS	2 POSITION
Signal Processor	
CHANNEL 1	
INPUT.....	R
MODE.....	MAG
SCALE/DIV	10 dB
CHANNEL 2	
MODE	OFF
ELECTRICAL LENGTH	
MODE	OFF
DISPLAY	
CH 1 	Adjust for a trace on center horizontal line

On the 8505A, using the MARKER(S) ADJUST controls, position MARKER 1 one graticule line to the right of the far left edge. Position MARKER 2 one graticule line to the left of the far right edge. See Figure 14A.

8750A Display Outputs Adjustments

- g. On the 8750A press **CH 1**, then **INPUT**. If necessary, readjust the display intensity. There should be a trace on the display CRT. If there is not, set the four 8750A front panel **DISPLAY ADJUST** controls, and the four slotted adjustments on the Network Analyzer Interface Board (plugged into 8750A rear panel) to mid-range.
- h. At the 8750A front panel, adjust **HORIZ POSN** and **HORIZ GAIN** so the trace fills the CRT. Do not try to match the stored trace to the trace displayed in the **BYPASS** mode.
- i. On the 8750A, press **STORE INPUT**. Make sure the **STORE INPUT** indicator (LED) turns off, then press **INPUT-MEM**. The trace should now be a horizontal straight line containing amplitude (pulse) markers. Place this trace on the center graticule line with the 8750A **VERT POSN** control.
- j. On the 8750A, press **BYPASS**. Then on the 8505A, adjust the **DISPLAY CH 1** \blacktriangle control so the CRT trace is well above the top graticule line.
- k. On the 8750A, press **INPUT** and adjust the **VERT GAIN** so the CRT trace is just above the top graticule line. Press **BYPASS** and adjust the trace to the center graticule line. Do not try to match the stored and bypass traces.

8750A Network Analyzer Interface Adjustments

- l. On the 8750A, press **INPUT**. Adjust **VERT IN OFF** (Vertical Input Offset) on the Network Analyzer Interface Board (plugged into 8750A rear panel) for a trace on the CRT center graticule line.
- m. On 8750A, press **BYPASS**. On the Network Analyzer, adjust **DISPLAY CH 1** \blacktriangle control to place the CRT trace three graticule lines above the center graticule line (see Figure 13A).

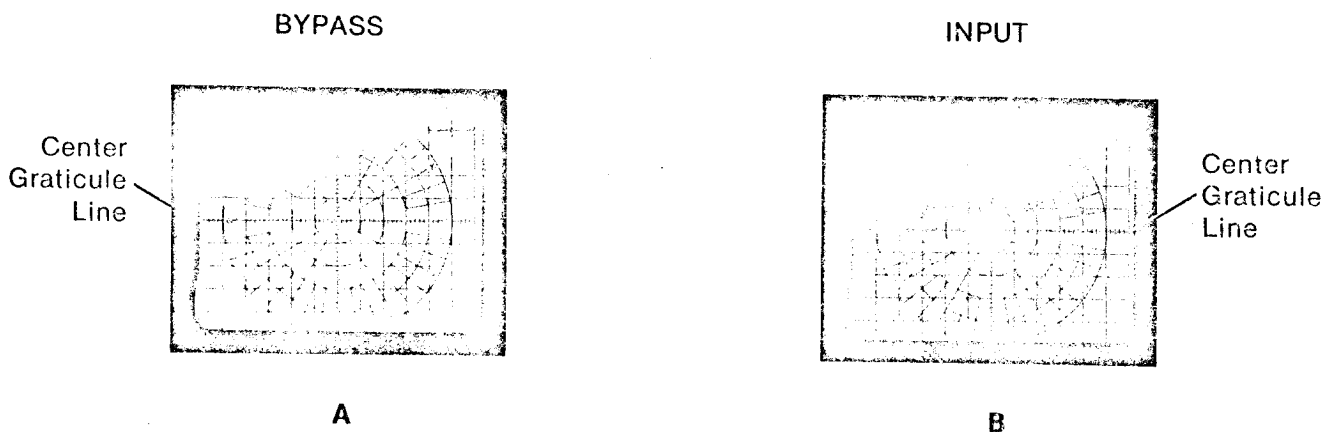


Figure 13. **VERT IN GAIN** (Vertical Input Gain) Adjustment.

- n. On the 8750A, press **INPUT**. Then, on the Network Analyzer Interface Board (plugged into 8750A rear panel), adjust **VERT IN GAIN** (Vertical Input Gain) to place the CRT trace on the third graticule line above the center graticule line (See above Figure 13B). Press **BYPASS** and adjust the trace back to the center graticule line. Repeat steps l through n until the vertical position of the CRT trace is the same in both the **INPUT** and **BYPASS** mode.
- o. Verify that the markers are adjusted in accordance with step f above (see also Figure 14A).
- p. On the 8750A, press **INPUT**. Then, on the Network Analyzer Interface Board (plugged into 8750A rear panel), adjust **SWP IN OFF** (Sweep Input Offset) to center the **MARKER 1** pulse on the first graticule line to the right of the far left graticule line (see Figure 14B).

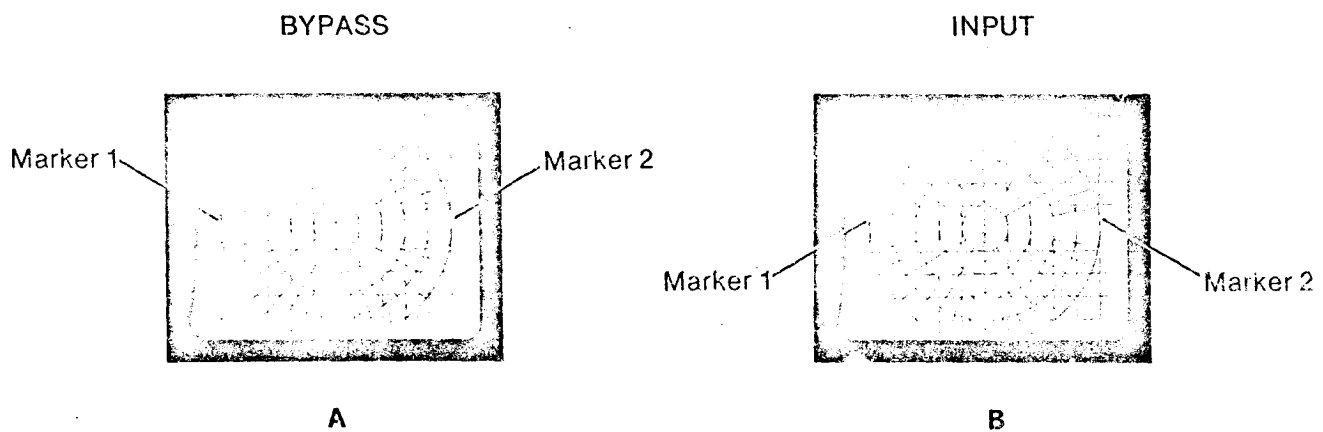
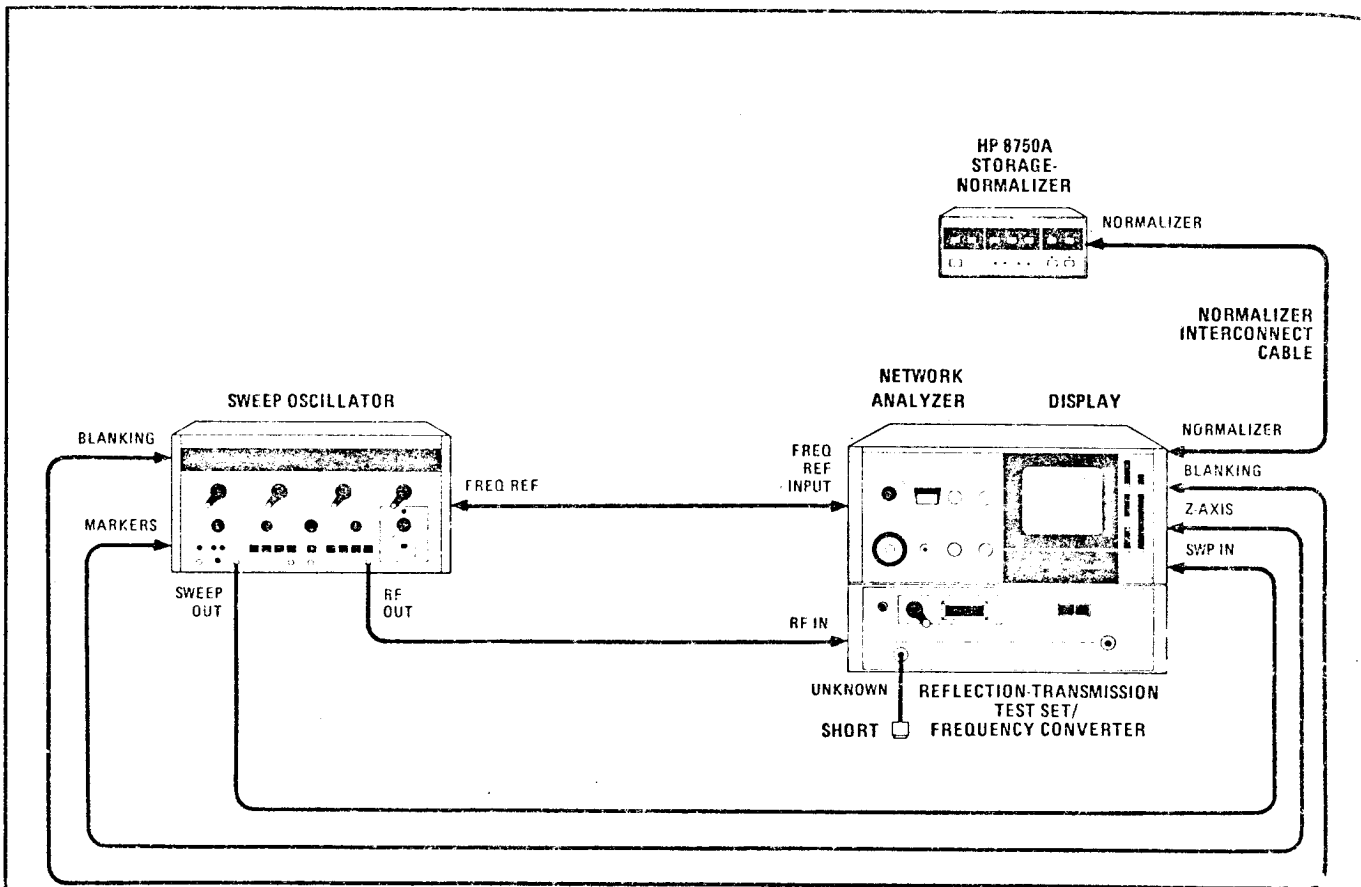


Figure 14. Adjustment of **MARKER 1** and **MARKER 2** Positions

- q. At the Network Analyzer Interface Board (plugged into 8750A rear panel), adjust **SWP IN GAIN** (Sweep Input Gain) to center the **MARKER 2** pulse on the first graticule line to the left of the far right graticule line. You may have to readjust the interface Board **SWP IN OFF** to keep **MARKER 1** on its assigned graticule line. The purpose of these adjustments is to make the pulse-shaped markers of the **INPUT** mode appear at the same horizontal positions as the diamond markers of the **BYPASS** mode.
- r. The 8750A is now matched to the 8505A Network Analyzer. For a functional test of the 8750A main features, proceed to page 39.



Equipment:

RF Plug-In	8694B*
Sweep Oscillator	8690B
Network Analyzer	8410B
Phase-Magnitude Display	8412A**
Reflection-Transmission Test Unit	8743A
Frequency Converter	11605A
Storage-Normalizer	8750A
Normalizer Interconnect Cable	08750-60008 or 08750-60034

NOTE

* Any RF Plug-In in the 2.0-12.4 GHz range can be substituted for the 8694B.

** 8412A Displays (Serial Prefix 1625A and below) must be modified for use with the 8750A Storage-Normalizer. Refer to Service Note 8412A-G.

Figure 15. 8410B/8412A Network Analyzer with 8690B Sweep Oscillator and 8750A Typical Test Set Up

Adapting the 8750A to the 8410B/8412A Network Analyzer with 8690B Sweep Oscillator

Preliminary Procedures

- a. Make sure the ac power cable is disconnected from the 8750A, then remove the Network Analyzer Interface Board Assembly from the 8750A.
- b. On the Network Analyzer Interface Board, set the slide switches away from EXT (see Figure 3 on page 7). Then plug the board into its socket through the slot in the 8750A rear panel.
- c. Connect the equipment as shown in the test setup in Figure 15.
- d. Turn on the ac line power to the equipment in the test setup. On the 8750A, the **NETWORK ANALYZER** indicator (LED) should light.
- e. On the 8750A, press **BYPASS**.
- f. On the 8743A Reflection/Transmission Test Set, set the function switch for **REFLECTION**.
- g. On the 8690A/B, set the controls as follows:

SWEEP SELECTOR	.....	AUTO
SWEEP TIME	.....	.1 – .01 SEC
SWEEP TIME VERNIER	.....	Counterclockwise
FUNCTION	.....	START/STOP
AMPLITUDE MODE	.....	MARKER 1/MARKER 2
BLANKING (rear panel)	.....	ON

Adjust **POWER LEVEL** so that **REF CHAN LEVEL INDICATOR** on 8410B is **MIDRANGE**. Using the 8690A/B **START/STOP** controls set the oscillator on a band which provides a reasonably flat trace (at 10 dB/DIV) on the CRT display. On the 8690A/B, adjust the **MARKERS AMP** slotted control until the amplitude markers become intensity dot markers.

- h. On the 8410B/8412A Network Analyzer, set the controls as follows:

FREQ RANGE	.....	8.0 – 16.0 GHz (or range of RF Plug-in being used)
SWEEP STABILITY	.....	Adjust for a stable trace
MODE	.....	AMPL
AMPL dB/DIV	.....	10 dB/DIV

Adjust 8412A **HORIZ POSITION** and **HORIZ GAIN** so the CRT trace fills the display graticule. On the 8410B, using **TEST CHANNEL GAIN** and **AMPL VERNIER**, position the CRT trace on the center graticule line.

- i. On the 8412A, decrease CRT intensity enough so only the intensity markers are visible. Using 8690A/B **MARKER 1** control position the first marker one graticule line to right of the far left graticule line. Using 8690A/B **MARKER 2** control, position the second marker one graticule line to the left of the far right graticule line. See Figure 17A.

8750A Display Outputs Adjustments

- j. On the 8750A, press **CH 1** and **INPUT**. If necessary, readjust the Network Analyzer display intensity. There should be a trace on the display CRT. If there is not, set the four 8750A front panel **DISPLAY**

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ADJUST controls, and the four slotted adjustments on the Network Analyzer Interface Board (plugged into 8750A rear panel) to mid-range.

- k. At the 8750A front panel, adjust **HORIZ POSN** so the CRT trace starts one minor division to the right of the far left graticule line. Adjust front panel **HORIZ GAIN** so the CRT trace ends on the far right graticule line. These adjustments of the horizontal controls are adjusted like this to allow proper adjustment of the sweep interface adjustments later on. Repeated adjustments may be necessary to ensure that the trace starts one minor division to the right of the far left graticule line and ends on the far right graticule line. Do not try to match stored and bypass traces.

NOTE

If the **STORE INPUT** indicator (LED) stays lit for more than one sweep or continuously, this may mean that **SWP IN OFF** (Sweep Input Offset) is misadjusted or too near its threshold. To correct this problem, adjust **SWP IN OFF** until the **STORE INPUT** indicator (LED) goes off.

- l. On the 8750A, press **STORE INPUT**. Make sure the **STORE INPUT** indicator (LED) turns off, then press **INPUT-MEM**. The trace should now be a horizontal straight line containing amplitude (pulse) markers. Place this trace on the center graticule line with the 8750A **VERT POSN** control.
- m. On the 8750A, press **BYPASS**. Then on the 8410B, adjust the **TEST CHANNEL GAIN** (dB) so the CRT trace is well above the top graticule line. (You may have to increase the 8412A resolution at this point.)
- n. On the 8750A, press **INPUT** and adjust the **VERT GAIN** so the CRT trace is just above the top graticule line. Press **BYPASS** and adjust the trace to the center graticule line. Do not try to match the stored and bypass traces.

8750A Network Analyzer Interface Adjustments

- o. On the 8750A, press **INPUT**. Adjust **VERT IN OFF** (Vertical Input Offset) on the Network Analyzer Interface Board (plugged into 8750A rear panel) for a trace on the CRT center graticule line.
- p. On 8750A, press **BYPASS**. On the Network Analyzer, adjust **TEST CHANNEL GAIN** (dB) to place the CRT trace three graticule lines above the center graticule line (see Figure 16A).

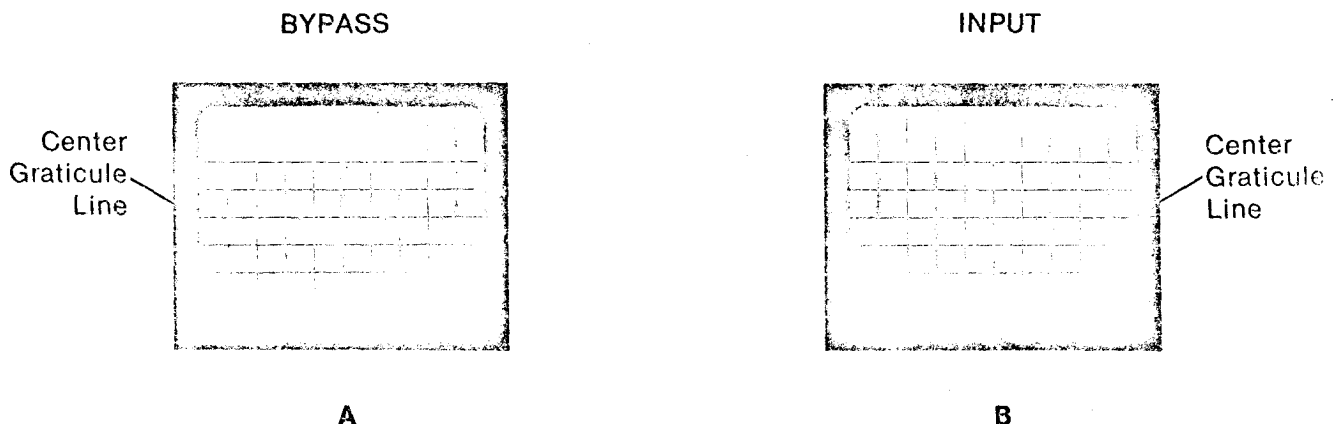


Figure 16. **VERT IN GAIN** (Vertical Input Gain) Adjustment.

- q. On the 8750A, press **INPUT**. Then, on the Network Analyzer Interface Board (plugged into the 8750A rear panel), adjust **VERT IN GAIN** (Vertical Input Gain) to place the CRT trace on the third graticule line above the center graticule line (See Figure 16B). Press **BYPASS** and adjust the trace back to the center graticule line. Repeat steps o through q until the vertical position of the CRT trace is the same in both the **INPUT** and **BYPASS** mode.
- r. Verify that the markers are adjusted in accordance with step i above (see also Figure 17A). Then proceed to step s.
- s. On the 8750A, press **INPUT**. Then, on the Network Analyzer Interface Board (plugged into 8750A rear panel), adjust **SWP IN OFF** (Sweep Input Offset) to center the **MARKER 1** pulse on the first graticule line to the right of the far left graticule line (see Figure 17B).

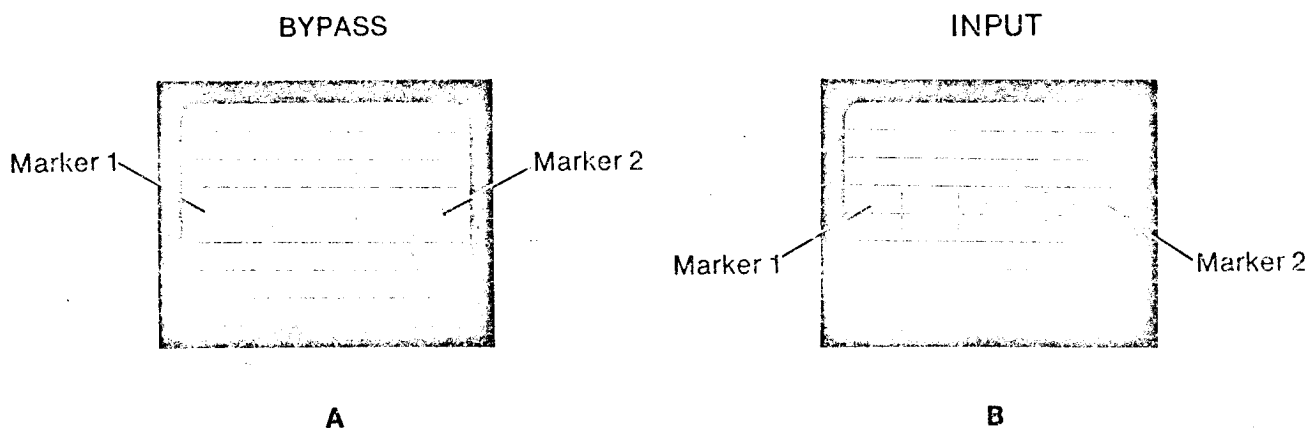
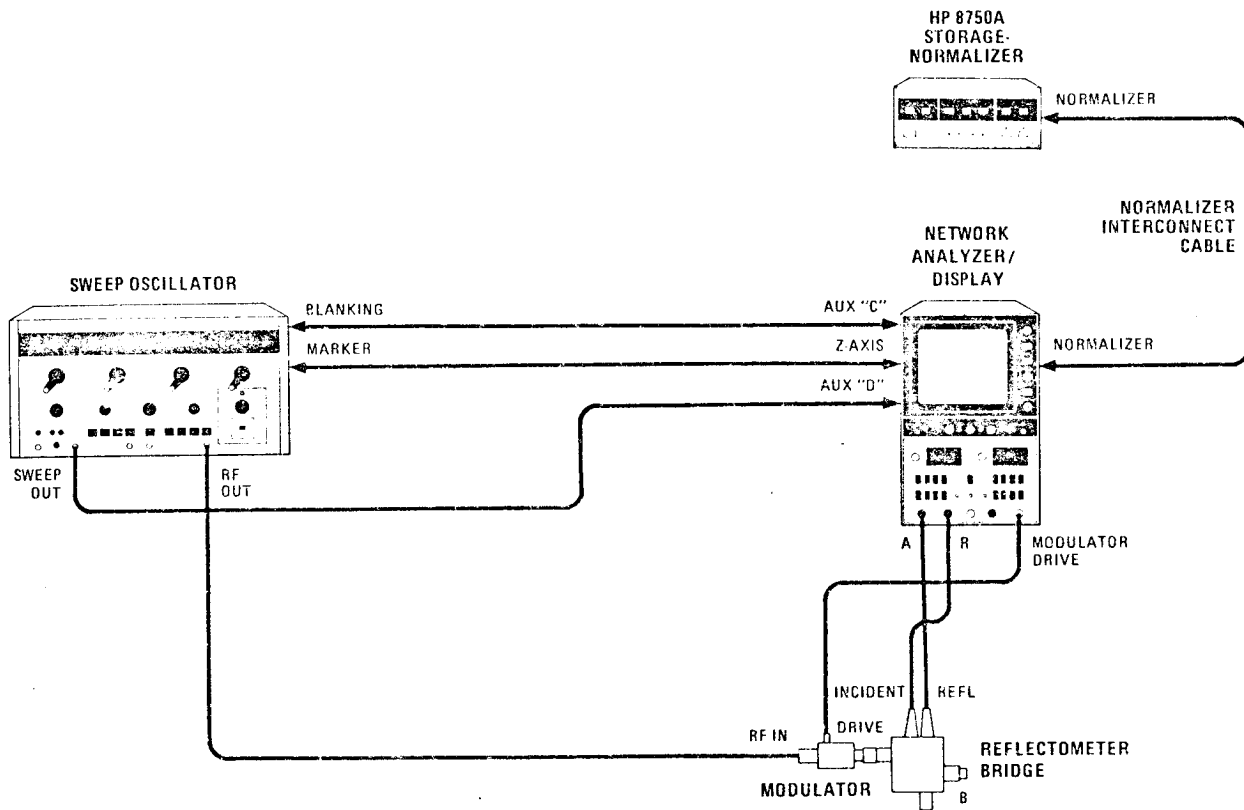


Figure 17. Adjustment of **MARKER 1** and **MARKER 2** Positions.

- t. At the Network Analyzer Interface Board (plugged into 8750A rear panel), adjust **SWP IN GAIN** (Sweep Input Gain) to center the **MARKER 2** pulse on the first graticule line to the left of the far right graticule line. You may have to readjust the Interface Board **SWP IN OFF** to keep **MARKER 1** on its assigned graticule line. The purpose of these adjustments is to make the pulse-shaped markers of the **INPUT** mode appear at the same horizontal positions as the intensity dot markers of the **BYPASS** mode.
- u. The 8750A is now matched to the 8410B/8412A Network Analyzer. For a functional test of the 8750A main features proceed to page 39.



Equipment:

RF Plug-in	8694B*
Sweep Oscillator	8690B
Reflectometer Bridge	11666A
Modulator	11665A/B
Network Analyzer	8755A/B**
Display Mainframe	182T***
Storage-Normalizer	8750A
Normalizer Interconnect Cable	08750-60008 or 08750-60034

NOTE

On the A11 PC board inside of 8755B, set BLANKING POLARITY switch to NEG. The A11 PC board is at the rear of the 8755B.

* Any RF Plug-In in the .04-18.0 GHz range can be substituted for the 8694B.

** 8755A Analyzers must be modified for use with the 8750A Storage-Normalizer. Refer to Service Note P-08755-80027.

*** 182T Displays (Serial Prefix 1529A and below) must be modified for use with 8750A Storage-Normalizer. Refer to Service Note P-08750-60024. A 180TR Display may be substituted for 182T. 180TR Displays (Serial Prefix 1640A and below) must be modified for use with 8750A. Refer to Service Note P-08750-60025.

Figure 18. 8755A/B Swept Amplitude Analyzer/182T Display with 8690B Sweep Oscillator and 8750A Typical Test Set Up

Adapting the 8750A to the 8755A/B Swept Amplitude Analyzer/ 182T or 180TR Display with 8690B Sweep Oscillator

PRELIMINARY PROCEDURES

- a. Make sure the ac power cable is disconnected from the 8750A, then remove the Network Analyzer Interface Board Assembly from the 8750A.
- b. On the Network Analyzer Interface Board, set the two slide switches away from EXT as shown in Figure 3 on page 7. Then plug the board into its socket through the slot in the 8750A rear panel.
- c. Connect the instruments into the test setup shown in Figure 18.
- d. Turn on the ac line power to the equipment in the test setup. On the 8750A, the **NETWORK ANALYZER** indicator (LED) should light.
- e. On the 8750A, press **BYPASS**.
- f. On the 8690A/B, set the controls as follows:

SWEEP SELECTOR.....	AUTO
SWEEP TIME	1 - .1 SEC
SWEEP TIME VERNIER	CCW
FUNCTION	START/STOP

Adjust the POWER LEVEL for a stable trace.

NOTE

CHANNEL 1 on the 8755B is **CHANNEL A** on the 8755A. **CHANNEL 2** on the 8755B **CHANNEL B** is on the 8755A. **DISPLAY REFERENCE POSITION** pushbutton and slotted adjustment on 8755B are labeled **DISPLAY POSITION** on the 8755A.

- g. On the 8755A/B, set the controls as follows:

CHANNEL 1

Press **DISPLAY REFERENCE POSITION** pushbutton. Then place the trace on the center graticule line using the **DISPLAY REFERENCE POSITION Adjustment** (slotted control next to **DISPLAY REFERENCE POSITION** pushbutton).

CHANNEL 2

Turn off channel 2 trace by pressing any **CHANNEL 2 DISPLAY** pushbutton part way in to pop all the pushbuttons out.

- h. On the 192T Display, adjust the HORIZONTAL POSITION control to center trace horizontally on the CRT. If the two ends of the trace are not on the edge graticule lines, the 8755A/B horizontal sweep gain must be adjusted as follows. Remove the 8755A/B from the display. On the Normalizer Interface Board A11, near the inside rear of 8755A/B, check that the Blanking Polarity switch is at the NEG position. Adjust the HORZ ADJ control on A11 for correct horizontal width on the CRT. Clockwise increases trace width. This adjustment must be done by trial and error since the adjustment is made with the instrument removed. Each time the 8755A/B is reinstalled, readjust the display HORIZONTAL POSITION control to center the trace. Repeat adjustment until both ends of the trace are just over the edge graticule lines.

8750A Display Outputs Adjustments

- i. On the 8750A, press **CH 1** and **INPUT**. If necessary, readjust the Network Analyzer display intensity. There should be a trace on the display CRT. If there is not, set the four 8750A front panel **DISPLAY ADJUST** controls, and the four slotted adjustments on the Network Analyzer Interface Board (plugged into 8750A rear panel) to mid-range.
- j. On the 8750A, adjust **HORIZ POSN** so the CRT trace starts one minor division to the right of the far left graticule line. Adjust **HORIZ GAIN** so that the CRT trace will end on the far right graticule line. These adjustments of the horizontal controls are adjusted like this to allow proper adjustment of the sweep interface adjustments later on. Repeated adjustments may be necessary to ensure the trace starts one minor division to the right of the far left graticule line and ends on the far right graticule line. Do not try to match stored and bypass traces.

NOTE

If the **STORE INPUT** indicator (LED) stays lit for more than one sweep or continuously, this may mean **SWP IN OFF** (sweep input offset) is misadjusted or too near its threshold. To correct this problem adjust **SWP IN OFF** until the **STORE INPUT** indicator (LED) turns off.

- k. On the 8750A, press **STORE INPUT**. Make sure the **STORE INPUT** indicator (LED) turns off, then press **INPUT-MEM**. The trace should now be a horizontal straight line. Place this trace on the center graticule line with the 8750A **VERT POSN** control.
- l. On the 8750A, press **BYPASS**. Then on the 8755A/B move the display trace well above the top graticule line using the **DISPLAY REFERENCE POSITION** Adjustment.

On the 8750A, press **INPUT** and adjust **VERT GAIN** so the CRT trace is just above the top graticule line. Press **BYPASS** and move the trace to the center graticule line using 8755A/B **DISPLAY REFERENCE POSITION** Adjustment. Do not try to match the stored and bypass traces.

8750A Network Analyzer Interface Adjustments

- n. On the 8750A, press **INPUT**. Adjust **VERT IN OFF** (Vertical Input Offset) on the Network Analyzer interface Board (plug into 8750A rear panel) for a trace on the CRT center graticule line.
- o. On the 8750A, press **BYPASS**. On the Network Analyzer, adjust **DISPLAY REFERENCE POSITION** Adjustment to place the CRT trace three graticule lines above the center graticule line (see Figure 19A).

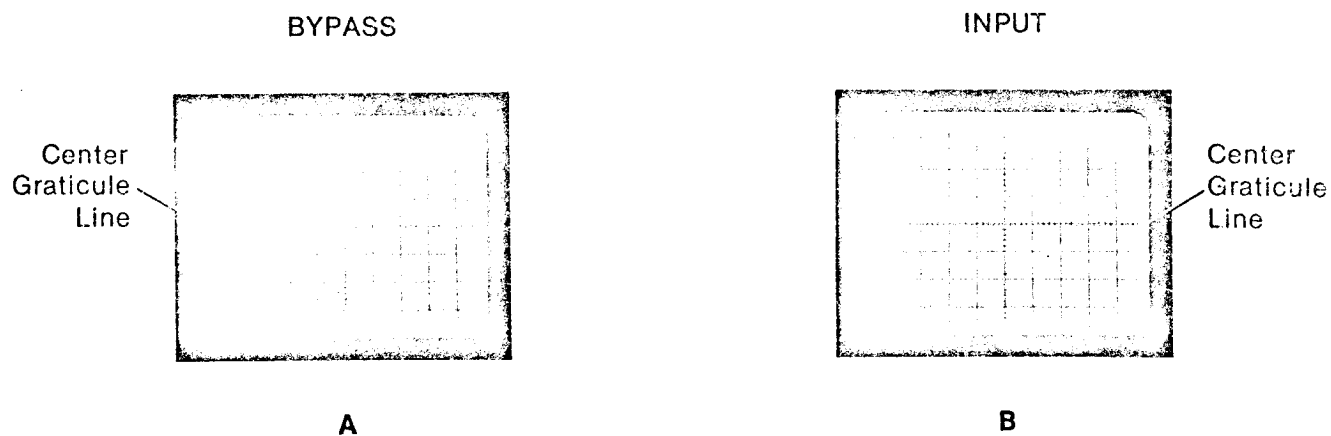


Figure 19. **VERT IN GAIN** (Vertical Input Gain) Adjustment

- p. On the 8750A, press **INPUT**. Then, on the Network Analyzer Interface Board (plugged into 8750A rear panel), adjust **VERT IN GAIN** (Vertical Input Gain) to place the CRT trace on the third graticule line above the center graticule line (See Figure 19B). Press **BYPASS** and adjust the trace back to the center graticule line. Repeat steps o through p until the vertical position of the CRT trace is the same in both the **INPUT** and **BYPASS** modes.

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- q. On the 8755A/B, press DISPLAY R. Using REFERENCE LEVEL dB(or OFFSET dB) thumbwheels, adjust the trace to center screen (at 10 dB/DIV).
- r. On the 8690A/B, adjust the START/STOP frequency controls for a reasonably flat trace. On the 8690A/B press MARKER 1 and MARKER 2. Adjust MARKER AMP (slotted control) for sharp and stable markers. Using the START/STOP MARKER position controls place the center of the markers one line in from the far left and right edges of the graticule (see Figure 20A).
- s. On the 8750A, press INPUT. Then, on the Network Analyzer Interface Board (plugged into 8750A rear panel), Adjust SWP IN OFF (Sweep Input Offset) to center the MARKER 1 pulse on the first graticule line to the right of the far left graticule line (see Figure 20B).

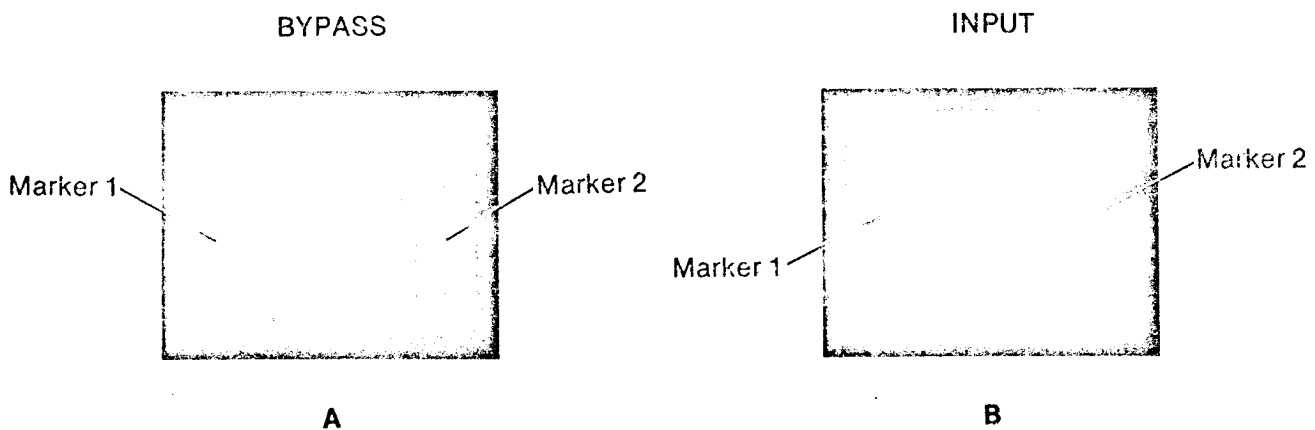
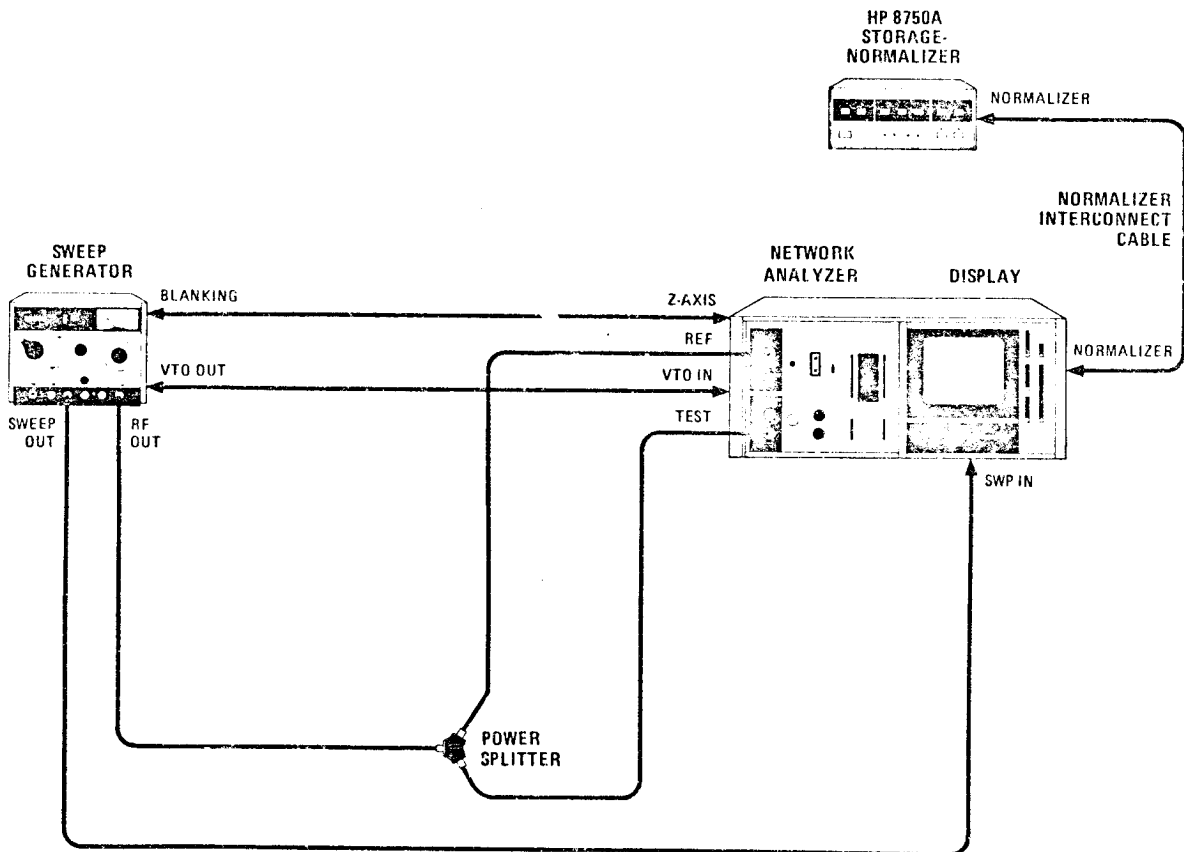


Figure 20. Adjustment of MARKER 1 and MARKER 2 Positions

- t. At the Network Analyzer Interface Board (plugged into 8750A rear panel), adjust SWP IN GAIN (Sweep Input Gain) to center the MARKER 2 pulse on the first graticule line to the left of the far right graticule line. You may have to readjust the interface Board SWP IN OFF to keep MARKER 1 on its

assigned graticule line. The purpose of these adjustments is to make the pulse-shaped markers of the **INPUT** mode appear at the same horizontal positions as the markers of the **BYPASS** mode.

- u. The 8750A is now matched to the 8410B/8412A Network Analyzer. For a functional test of the 8750A main features proceed to page 39.



Equipment:

Sweep Generator	8601A
Network Analyzer	8407A
Display Plug-in	8412A*
Power Splitter	11652-60019
Storage-Normalizer	8750A
Normalizer-Interconnect Cable	08750-60008 or 08750-60034

NOTE

* 8412A Displays (Serial Prefix 1625A and below) must be modified for use with 8750A Storage-Normalizer. Refer to Service Note 8412A-6.

Figure 21. 8407A/8412A Network Analyzer with 8601A Sweep Generator and 8750A Typical Test Set Up

Adapting the 8750A to the 8407A/8412A Network Analyzer with 8601A Sweep Generator

Preliminary Procedures

- a. Make sure the ac power cable is disconnected from the 8750A, then remove the Network Analyzer Interface Board Assembly from the 8750A.
- b. On the Network Analyzer Interface Board, set the two slide switches away from EXT as shown in Figure 3 on page 7. Then plug the board into its socket through the slot in the 8750A rear panel.
- c. Connect the instruments into the test setup shown in Figure 21.
- d. Turn on the ac line power to the equipment in the test setup. On the 8750A, the **NETWORK ANALYZER** indicator (LED) should light.
- e. On the 8750A, press **BYPASS**.
- f. On the 8407A, set the controls as follows:

REF CHAN LEV ADJ	Mid-position
AMPLITUDE VERNIER	Counter clockwise
DISPLAY REFERENCE (slide switches)	Adjust both 10 dB and 1 dB switches 4 switch positions from top
DISPLAY REFERENCE CAL	Adjust both 10 dB and 1 dB thumbwheels until 0 dB readings appear in DISPLAY REFERENCE window

- g. On the 8601A set the controls as follows:

OUTPUT LEVEL	- 30 dBm
OUTPUT LEVEL Vernier	Adjust until 8407A REF CHAN LEV indicator is mid-range
1 kHz MOD	OFF
SWEEP	SYM
RANGE	110 MHz
RF Blanking and CRYSTAL CAL (rear panel)	ON
CRYSTAL CAL (front panel)	ON
SWEEP MODE	FAST-FREE
Manual-Sweep Speed Control	Full Clockwise
FREQUENCY	Approx. 52.5 MHz
SYM SWEEP WIDTH	10 MHz (Black)
SYM SWEEP WIDTH Vernier	Full clockwise

CHAPTER 4

- h. On the 8412A set the controls as follows:

MODE AMPL (Blue)
AMPL dB/DIV 10 dB
HORIZ POSITION and HORIZ GAIN Adjust so trace fills the
graticule

- i. On 8601A, adjust Manual/Sweep Speed control counter clockwise until marker shapes are sharp and stable. Adjust FREQUENCY tuning control until markers are symmetrical about the center vertical line of the graticule. Adjust SYM SWEEP WIDTH Vernier counter clockwise to position the markers one graticule line in from the left and right edges. Repeat adjusting FREQUENCY and SYM SWEEP WIDTH Vernier until markers are in correct positions (See Figure 23A).

8750A Display Outputs Adjustments

- j. On the 8750A, press **CH 1** then **INPUT**. If necessary, readjust the Network Analyzer display intensity. There should be a trace on the display CRT. If there is not, set the four 8750A front panel **DISPLAY ADJUST** controls, and the four slotted adjustments on the Network Analyzer Interface Board (plugged into 8750A rear panel) to mid-range.
- k. At the 8750A front panel, adjust **HORIZ POSN** and **HORIZ GAIN** so the trace fills the CRT. Do not try to match the stored trace to the trace displayed in the **BYPASS** mode.

NOTE

If the **STORE INPUT** indicator (LED) stays lit for more than one sweep or continuously, this may mean **SWP IN OFF** (sweep input offset) is misadjusted or too near its threshold. To correct this problem adjust **SWP IN OFF** until the **STORE INPUT** indicator (LED) turn off.

- l. On the 8750A, press **STORE INPUT**. Make sure the **STORE INPUT** indicator (LED) turns off, then press **INPUT-MEM**. The trace should now be a horizontal straight line containing markers. Place this trace on the center graticule line with the 8750A **VERT POSN** control.
- m. On the 8750A, press **BYPASS**. Then on the 8407A/8412A adjust the CRT trace so it is well above the top graticule line, using the **DISPLAY REFERENCE** slide switches (you may have to increase 8412A resolution at this point).
- n. On the 8750A, press **INPUT** and adjust **VERT GAIN** so the trace is just above the top graticule line. Press **BYPASS** and move the trace to the center graticule line. Do not try to match the stored and bypass traces.

8750A Network Analyzer Interface Adjustments

- o. On the 8750A, press **INPUT**. Adjust **VERT IN OFF** (Vertical Input Offset) on the Network Analyzer Interface Board (plugged into 8750A rear panel) for a trace on the CRT center graticule line.
- p. On 8750A, press **BYPASS**. On the Network Analyzer, adjust **DISPLAY REFERENCE** slide switches to place the CRT trace three graticule lines above the center graticule line (see Figure 22A).

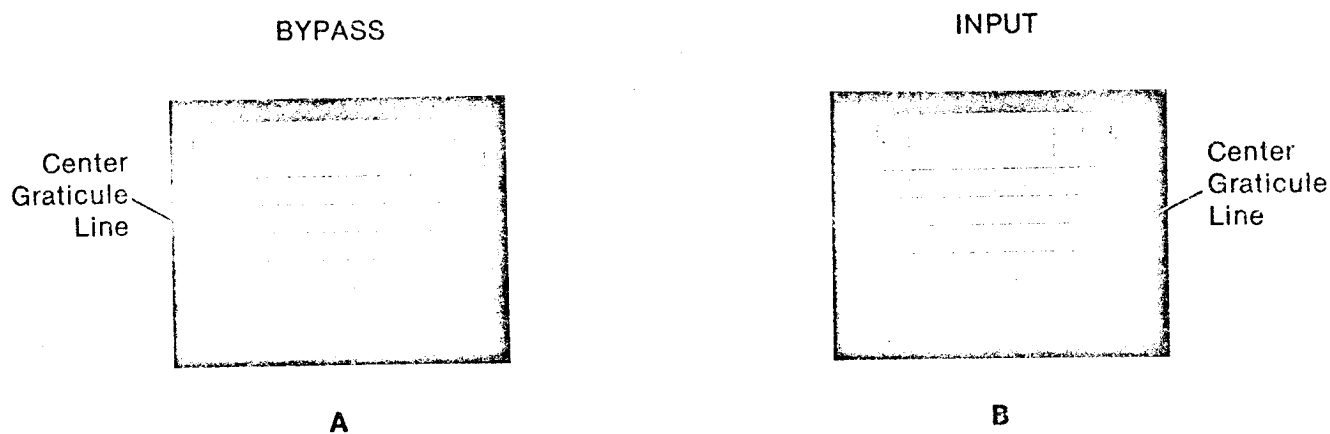


Figure 22. **VERT IN GAIN** (Vertical Input Gain) Adjustment

- q. On the 8750A, press **INPUT**. Then, on the Network Analyzer Interface Board (plugged into 8750A rear panel), adjust **VERT IN GAIN** (Vertical Input Gain) to place the CRT trace on the third graticule line above the center graticule line (See Figure 22B). Press **BYPASS** and adjust the trace back to the center graticule line. Repeat steps o through q until the vertical position of the trace is the same in both the **INPUT** and **BYPASS** modes.
- r. On the 8601A readjust the markers to the correct positions (as you did in step i).
- s. On 8750A, press **INPUT**. Then, adjust rear panel **SWEEP IN OFF** (Sweep Input Offset) to place the center of the left marker one graticule line to the right of the far left graticule line (See Figure 23B).

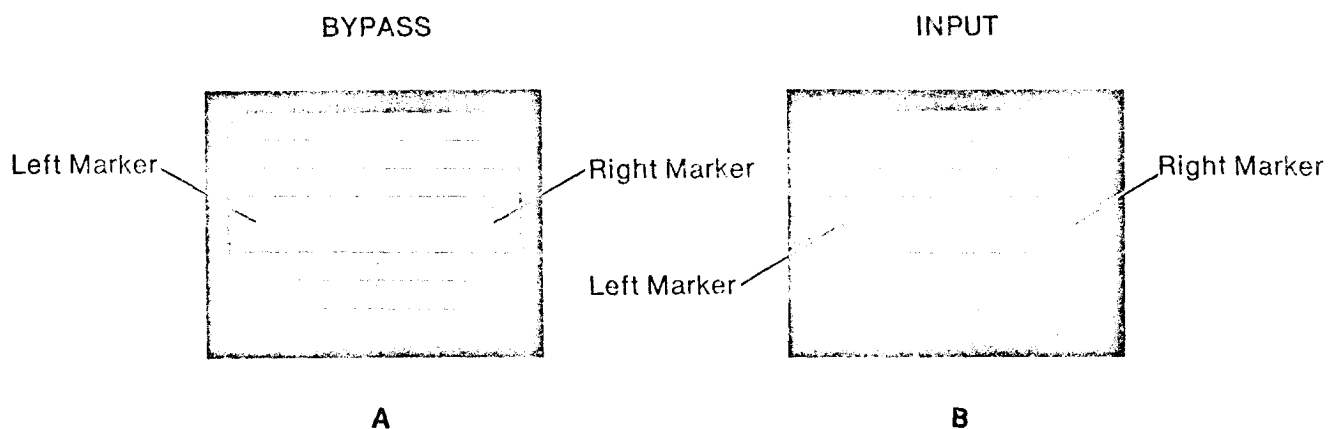


Figure 23. Adjustment of the Marker Positions

- t. On the 8750A, adjust rear panel **SWP IN GAIN** (Sweep Input Gain) to place the center of the right marker one graticule line to the left of far right graticule line. Press **BYPASS** . Repeat steps r through t until the **INPUT** and **BYPASS** traces are the same.

- u. The 8750A is now matched to the 8407A/8412A Network Analyzer. For a functional test of 8750A main features proceed to page 39.

Functional Test of 8750A Main Features with a Network Analyzer

NOTE

Before you do the functional test, you must have matched the 8750A to your Network Analyzer in accordance with the procedures given above.

The following procedure tests the main functions of the 8750A in a network analyzer measurement system. This test may be used by receiving personnel for incoming inspection, or by the operator as an operational check.

Set Up Channel 1 for Display

- a. On the 8750A, press **CH 1** and **INPUT**.
- b. On the 8755A/B:
 - Turn Channel (1 or A) on (R)
 - Turn Channel 2 (or B) off

On the 8505A:

 - Turn Channel 1 (R) on
 - Turn Channel 2 off

On the 8410B/8412A:

 - Turn on **AMPLITUDE** Mode

On the 8407A/8412A:

 - Turn on **AMPLITUDE** mode
- c. On the Network Analyzer adjust the **REFERENCE LEVEL** (or **TEST CHANNEL GAIN**) as necessary to display the trace on CRT.

Store Channel 1 and Recall It From Memory

- d. On the 8750A, press **CH 1**, **INPUT**, and **STORE INPUT**. This sequence stores the Channel 1 trace in the 8750A reference memory.
- e. On the 8750A, after the **STORE INPUT** lamp turns off, press **RECALL**. The stored Channel 1 signal should appear as a steady trace.
- f. On the Network Analyzer change the display mode. Note that the Channel 1 trace on the CRT does not change. Return to the original mode.

Display Channel 1 Input Signal Minus Channel 1 Stored Signal

- g. On the 8750A, press **INPUT-MEM**. Adjust the Network Analyzer as necessary to enable you to observe the CRT trace. The trace should be a nearly straight line. The straight-line appearance of this trace is produced by subtracting the Channel 1 trace stored in the memory from the input signal. Since the stored signal and the input signal have (or should have) identical characteristics, the two signals effectively cancel each other and the result is as if there were no signal at all. If the sweep rate of the sweep oscillator is slow enough, you should be able to detect the signal updating.

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HOLD Channel 1 Signal Trace on CRT

- h. On the 8750A, press **HOLD**. Note that the signal on the CRT is held steady to facilitate its being photographed or more closely observed.

Setup Channel 2 for Display

- i. On the 8750A, press **CH 2**, then **INPUT**.
- j. On the 8755A/B:

CHANNEL 1 (or A) off
CHANNEL 2 (or B) on (R)

On the 8505A:

CHANNEL 1 off
CHANNEL 2 on (R)

On the 8410B/8412A:

Turn on PHASE mode

On the 8407A/8412A:

Turn on PHASE mode

- k. On the Network Analyzer adjust the Reference Level (or Test Channel Gain) to display the Channel 2 trace on the CRT.

Store Channel 2 and Recall it from Memory

- l. On 8750A, press **CH 2**, **INPUT**, and **STORE INPUT**. This sequence stores the Channel 2 trace in the 8750A reference memory.
- m. On the 8750A, wait for the **STORE INPUT** lamp to turn off, then press **RECALL**. The stored Channel 2 signal should appear as a steady trace.
- n. On the Network Analyzer change the display mode. Note that the Channel 2 trace on the CRT does not change. Return to the original mode.

Display Channel 2 Input Signal Minus Channel 2 Stored Signal

- o. On the 8750A, press **INPUT-MEM**. Adjust the Network Analyzer **REFERENCE LEVEL** (or **TEST CHANNEL GAIN**) as necessary to enable you to observe the trace on the CRT. The trace should be a nearly straight line. The reason for this is explained above in step g.

Hold Channel 2 Signal Trace on CRT

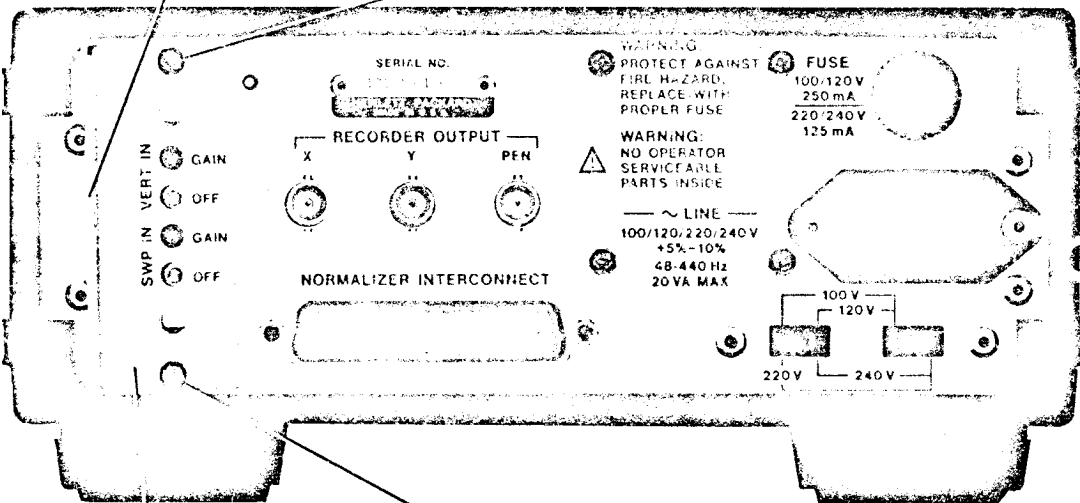
- p. On the 8750A, press **HOLD**. Note that the signal on the CRT is held steady to facilitate its being photographed or more closely observed (same as the Channel 1 trace in step h). If you wish to do so, you can put both channels into **HOLD** simultaneously. First press **CH 1** and **HOLD**, then press **CH 2** and **HOLD**. You must have Channel 1 (or A) or the **AMPLITUDE** mode on the Network Analyzer turned on in order to do this. You cannot, however, store both channels at the same time.

CHAPTER 5 ADAPTING THE 8750A TO A SPECTRUM ANALYZER

REAR VIEW

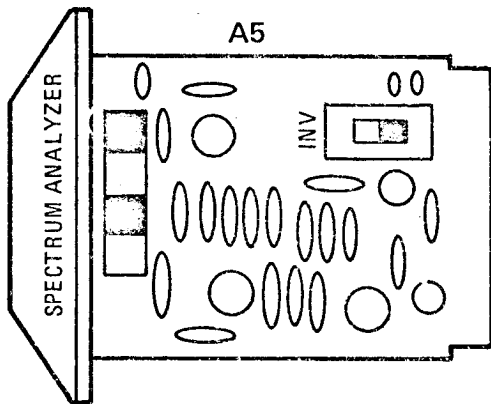
TO REMOVE A5
REMOVE TWO SCREWS,
THEN GRASP HERE AND PULL OUT

REMOVE SCREW



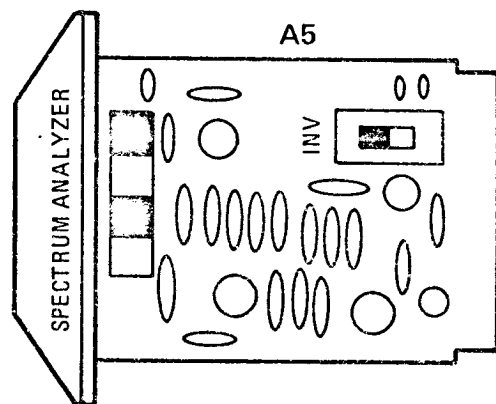
A5 INTERFACE BOARD

REMOVE SCREW



**For Use With 8558B, 8557A,
or 8565A Spectrum Analyzers**

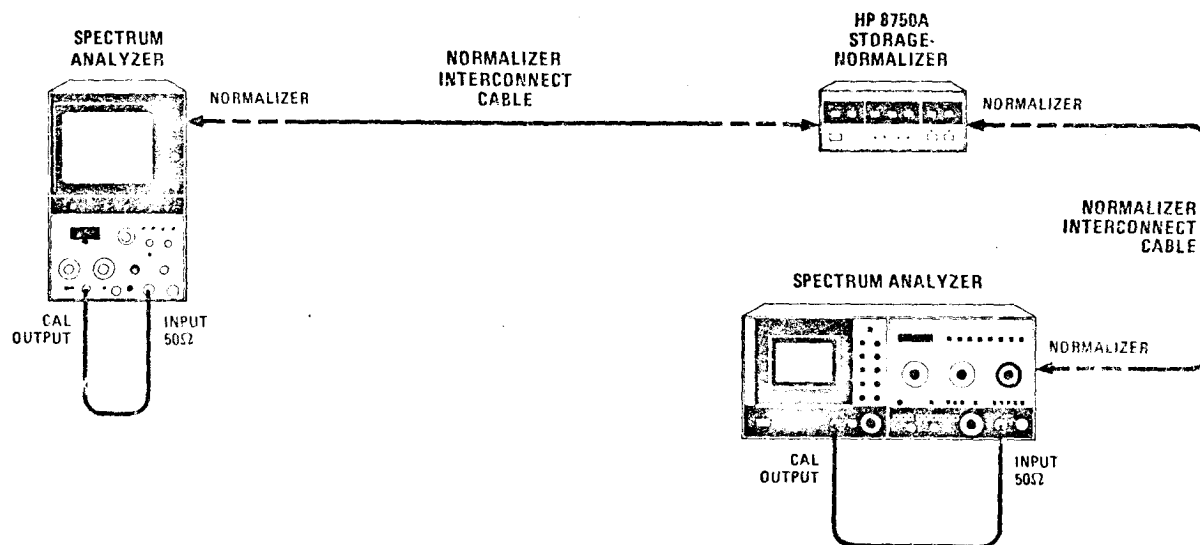
On A5 Board Assembly, set switch away from INV (inverted) as shown above.



**For Use With 140 Series
Spectrum Analyzer and
External Scope (Option 001)**

On A5 Board Assembly, set switch to INV (inverted) as shown above.

Figure 24. 8750A Spectrum Analyzer interface Board



Equipment:

For 8557A or 8558B Spectrum Analyzers:

- Spectrum Analyzer 8557A or 8558B
- Display Mainframe 182T*
- Storage-Normalizer 8750A
- Normalizer Interconnect Cable 08750-60008 or 08750-60034

For 8565A Spectrum Analyzer

- Spectrum Analyzer 8565A
- Storage-Normalizer 8750A
- Normalizer Interconnect Cable 08750-60008 or 08750-60034

NOTE

* 182T Displays (Serial prefix 1529A and below) must be modified for use with 8750A Storage-Normalizer. Refer to Service Note P-08750-60024. A 180TR Display may be substituted for the 182T. 180TR Displays (Serial Prefix 1640A and below) must be modified for use with 8750A Storage-Normalizer. Refer to Service Note P-08750-60025.

Figure 25. 8557A/182T or 8558B/182T or 8565A Spectrum Analyzer and 8750A Typical Test Set Up

Adapting the 8750A to the 8557A/182T, 8558B/182T, or 8565A Spectrum Analyzer

Preliminary Procedures

- a. Make sure the ac power cable is disconnected from the 8750A, then remove the Network Analyzer Interface Board from the back of the 8750A (if it is installed).
- b. On the 8750A:
 1. Locate the Spectrum Analyzer Interface Board supplied with the 8750A (either plugged into rear of 8750A or in 8750A Accessory Bag).
 2. Set the switch on the Spectrum Analyzer Interface Board away from the INV (inverted) position as shown in Figure 24 on page 41. Then plug the Spectrum Analyzer Interface Board into the 8750A rear panel.
- c. Connect the 8557A, 8558B or 8565A Spectrum Analyzer and the 8750A Storage-Normalizer as shown in Figure 25.
- d. Turn on the ac line power to the 8750A and Spectrum Analyzer. On the 8750A, the **SPECTRUM ANALYZER** indicator (LED) should light. On the 8750A set the four front panel **DISPLAY ADJUST** and four rear panel slotted controls to mid-range.
- e. On the 8750A, press the front-panel **BYPASS** pushbutton.
- f.
 1. On the 8557A/182T or 8558B/182T Spectrum Analyzer, set the controls as follows:

REFERENCE LEVEL-OPTIMUM INPUT (push knob in) – 30 dBm (Blue)
 REFERENCE LEVEL (do not push knob in) – 30 dBm (shown in window)
 10 dB/DIV-1 dB/DIV-LINEAR LINEAR
 BASELINE CLIPPER Full Counterclockwise
 VIDEO FILTER Full Counterclockwise
 SWEEP TRIGGER FREE
 SWEEP TIME/DIV AUTO
 FREQ SPAN/DIV 1 MHz
 RESOLUTION BW 1 MHz

2. On the 8565A Spectrum Analyzer, set the controls as follows:

Adjust the 8565A for normal settings. (Normal settings are color coded green).

FREQ BAND01-1.8 GHz
 FREQ SPAN/DIV 1 MHz
 RESOLUTION BANDWIDTH 1 MHz
 INPUT ATTEN (Push knob in) 30 dB
 REFERENCE LEVEL (Do not push knob in) – 10 dBm (shown in window)
 AMPLITUDE SCALE LINEAR

CHAPTER 5

Adjust the **FREQUENCY TUNING** knob to center the signal trace on the CRT. (i.e., so the signal trace crosses the horizontal center graticule equal distances from the center point of the display grid) See Figure 28. Adjust **REFERENCE LEVEL FINE** control so that the top of the signal trace meets with the top graticule line of the display.

- g. For the 8557A or 8558B only, if the extreme ends of the trace are not on the edge graticule lines, the 8557A or 8558B **HORIZ GAIN** (horizontal gain) control on the rear panel must be adjusted as follows. Note the position of the trace, then remove the 8557A or 8558B from the display mainframe. On the rear panel of the 8557A or 8558B, adjust **HORIZ GAIN** control counterclockwise to compress the trace or clockwise to expand the trace. Reinstall the 8557A or 8558B into the display and check the trace. Readjust the **HORIZONTAL POSITION** control on the display to center the trace. The 8557A or 8558B adjustment may have to be done several times to get both ends of the trace over the edge graticule lines.

8750A Display Outputs Adjustments

NOTE

If you are using the 8565A Spectrum Analyzer and the range of the 8750A front panel **HORIZ POSN** and/or **GAIN** adjustments run out, the 8750A Front Panel Assembly will have to be modified. Refer to Service Note 8750A-3/8565A-3.

- h. On the 8750A, press **B**, then **INPUT**. Then adjust the front-panel **HORIZ POSN** and **HORIZ GAIN** controls to place the left end of the trace on the left graticule edge line, and the right end of the trace on the right graticule edge line. If the trace is down off the screen, adjust the 8750A **VERT POSN** and **VERT GAIN** controls as necessary to enable you to see it.
- i. On the 8750A, press **BYPASS**, and readjust the signal trace with the tuning control so that it is centered on the display.
- j. On the 8750A, press **B** then **INPUT**. Press **STORE INPUT**. When **STORE INPUT** indicator (LED) turns off, press **INPUT-MEM**. The CRT trace should appear as shown in Figure 26. Adjust the 8750A **VERT POSN** control to place the CRT trace on the center graticule line. Next, set the 8750A **VERT GAIN** control fully counterclockwise.
- k. On the 8557A, 8558B or 8565A, adjust the **TUNING** control slightly to obtain a trace that flattens at the top and bottom as shown in Figure 27.

- l. Adjust the 8750A **VERT GAIN** control to move both flat cutoff sections of the trace outside the top and bottom of the CRT graticule area (See Figure 27).
- m. On the 8750A, press **BYPASS** and recenter the signal trace on the display.

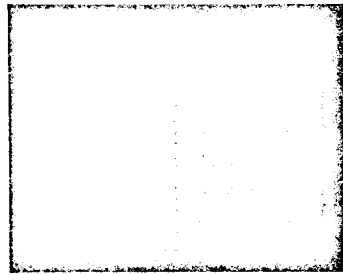


Figure 26. CRT Trace With Front-Panel **VERT POSN** Control Correctly Adjusted

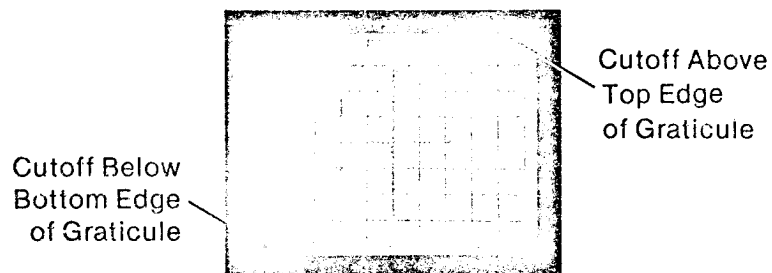


Figure 27. CRT Trace With Front-Panel **VERT GAIN** Control Correctly Adjusted

8750A Spectrum Analyzer Interface Adjustments

- n. On the 8750A, press **B**, then **INPUT**. Adjust rear panel **VERT IN OFF** (Vertical Input Offset) until the bottom of the signal trace meets with the bottom graticule line on the display (See Figure 28 below).

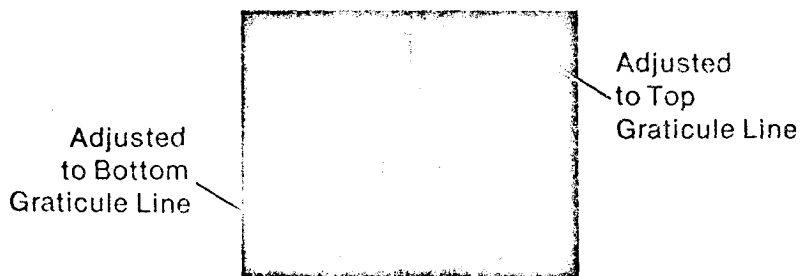
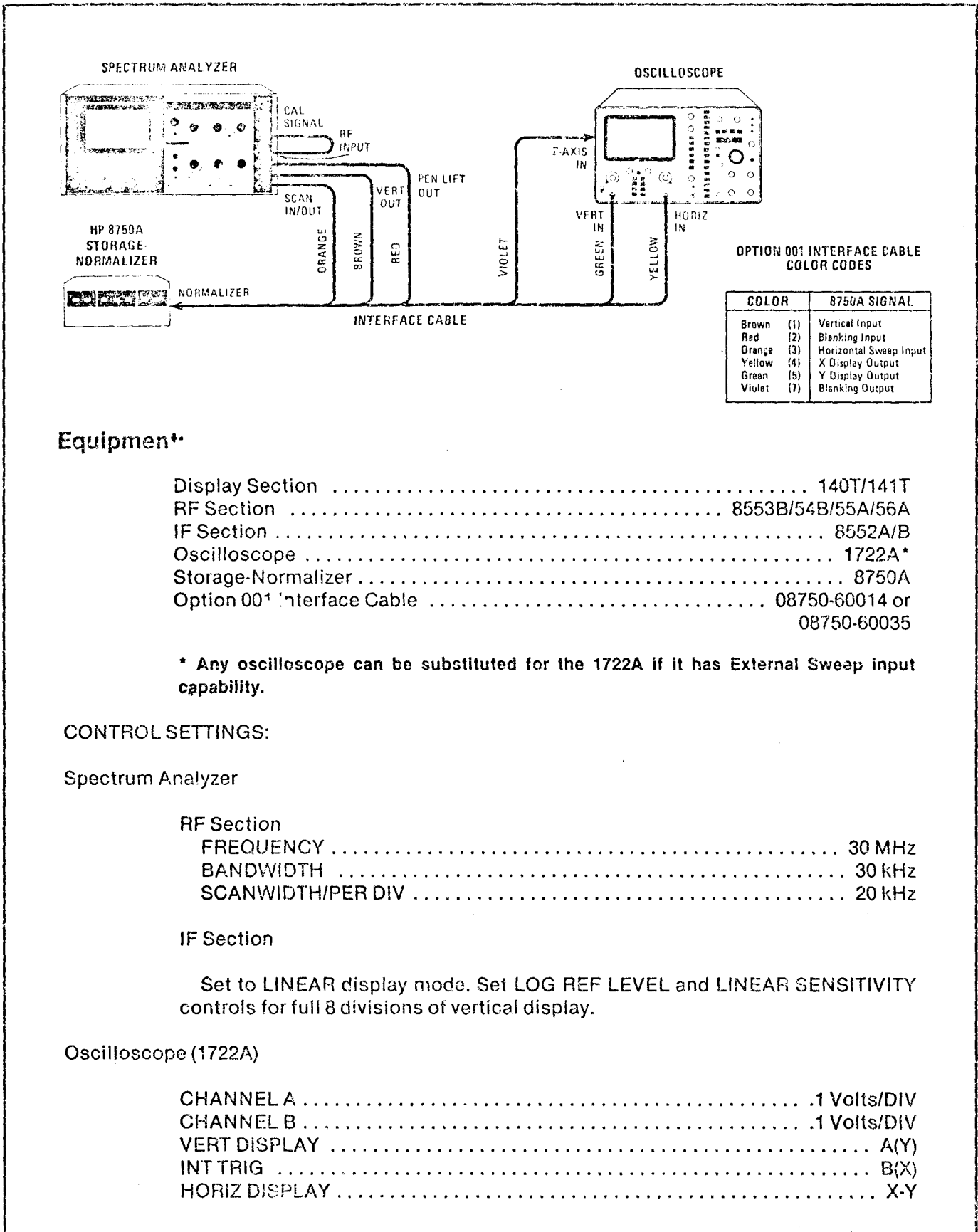


Figure 28. Spectrum Analyzer Calibration Signal used to Adjust 8750A

- o. On the 8750A, adjust rear panel **VERT IN GAIN** (Vertical Input Gain) until the top of the trace meets with the top graticule line of the display (see Figure 28).
- p. Repeat steps n and o until the vertical position and gain does not change between **INPUT** and **BYPASS**.
- q. On the 8750A, press **BYPASS**. If necessary, recenter the trace on the display.
- r. On the 8750A, press **INPUT**. Adjust rear panel **SWP IN OFF** (Sweep Input Offset) until trace is centered (same centering procedure as for the bypass signal) on the display. It may be necessary to switch back to **BYPASS** and recenter the signal, then repeat the above.

- s. On the 8750A, press **BYPASS**. Recenter the signal trace and note where it crosses the center horizontal graticule line. Press **INPUT**. Adjust rear panel **SWP IN GAIN** (Sweep Input Gain) so that the crossings of the center horizontal graticule line are the same as in the **BYPASS** mode. Repeat this step until the two signals are matched.

- t. The 8750A is now matched to the 8557A/182T or 8558B/182T or 8565A Spectrum Analyzer. For a functional test of the 8750A main features proceed to page 53.



Equipment*

- Display Section 140T/141T
- RF Section 8553B/54B/55A/56A
- IF Section 8552A/B
- Oscilloscope 1722A*
- Storage-Normalizer 8750A
- Option 00* Interface Cable 08750-60014 or 08750-60035

* Any oscilloscope can be substituted for the 1722A if it has External Sweep input capability.

CONTROL SETTINGS:

Spectrum Analyzer

RF Section

- FREQUENCY 30 MHz
- BANDWIDTH 30 kHz
- SCANWIDTH/PER DIV 20 kHz

IF Section

Set to LINEAR display mode. Set LOG REF LEVEL and LINEAR SENSITIVITY controls for full 8 divisions of vertical display.

Oscilloscope (1722A)

- CHANNEL A1 Volts/DIV
- CHANNEL B1 Volts/DIV
- VERT DISPLAY A(Y)
- INT TRIG B(X)
- HORIZ DISPLAY X-Y

Figure 29. 140 Series Spectrum Analyzer and 8750A Typical Test Setup

Adapting the 8750A to the 140 Series Spectrum Analyzer and an Oscilloscope

Preliminary Procedures

- a. Make sure the ac power cable is disconnected from the 8750A, then remove the Spectrum Analyzer Interface Board Assembly from the 8750A.
- b. On the Spectrum Analyzer Interface Board, set the slide switch to INV (see Figure 24 on page 41). Then plug the board into its socket through the slot in the 8750A rear panel.
- c. Connect the equipment as shown in the test setup in Figure 29. Set Spectrum Analyzer and oscilloscope controls as listed in the test setup.
- d. Turn on the ac line power to the equipment in the test setup. On the 8750A, the **SPECTRUM ANALYZER** indicator (LED) should light.
- e. On the 8750A, press **B**, then press **INPUT**.
- f. On the 8750A, set the four front panel **DISPLAY ADJUST** controls and the four slotted **SWP IN** and **VERT IN** controls on the Spectrum Analyzer Interface Board (plugged into 8750A rear panel) to mid-range.
- g. On the Spectrum Analyzer, adjust the controls to display the calibration signal trace at the center of the Spectrum Analyzer CRT graticule.
- h. On the oscilloscope, set the X and Y input sensitivities to 0.1V/division and adjust the controls to display the output trace from the 8750A.

NOTE

If the trace on the oscilloscope is erratic on the 8750A, press **A VIEW B**, **B**, then **INPUT**.

8750A Display Output Adjustments

- i. On the 8750A, press **STORE INPUT**, then **INPUT-MEM**. The oscilloscope CRT trace should resemble the trace shown in Figure 30. Adjust the 8750A front panel **VERT POSN** control to place the oscilloscope CRT trace on the center graticule line. If the **VERT POSN** control runs out of range, change the vertical position control on the oscilloscope to bring it into range.

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- j. On the 8750A, press **BYPASS**.
- k. Tune the Spectrum Analyzer to place the calibration signal at the center of the Spectrum Analyzer display.

NOTE

If the **STORE INPUT** indicator (LED) stays lit for more than one sweep or continuously, this may mean that **SWP IN OFF** (Sweep Input Offset) is misadjusted or too near its threshold. To correct this problem, adjust **SWP IN OFF** until the **STORE INPUT** indicator (LED) goes off.

- l. On the 8750A, press **STORE INPUT** then **INPUT-MEM**. The oscilloscope CRT trace should resemble the trace shown in Figure 30. Adjust the 8750A front panel **VERT POSN** control to place the oscilloscope CRT trace on the center graticule line. If the **VERT POSN** control runs out of range, change the vertical position control on the oscilloscope to bring it into range.



Figure 30. CRT Trace With Front-Panel **VERT POSN** Control Correctly Adjusted

- m. On the 8750A, turn the front panel **VERT GAIN** full counterclockwise.
- n. On the Spectrum Analyzer, adjust the **TUNING** control slightly to obtain a trace (on the oscilloscope CRT) that flattens on the top and bottom (see Figure 31).

- o. Adjust the 8750A front panel **VERT GAIN** control so both the top and bottom flat cutoff sections of the oscilloscope trace move outside the CRT graticule area on the top and bottom (see Figure 31).

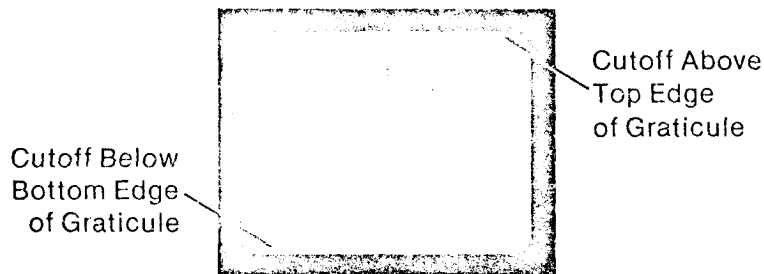


Figure 31. CRT Trace With Front-Panel **VERT GAIN** Control Correctly Adjusted

- p. Tune the Spectrum Analyzer to place the calibration signal at the center of the Spectrum Analyzer CRT display.

8750A Spectrum Analyzer Interface Adjustments.

- q. On the 8750A, press **B** then **INPUT**. At the 8750A rear panel, adjust the **VERT IN OFF** (Vertical Input Offset) control to place the bottom of the oscilloscope CRT trace on the bottom graticule line, and adjust the **VERT IN GAIN** (Vertical Input Gain) control to place the top of the signal trace on the top graticule line (See Figure 32).

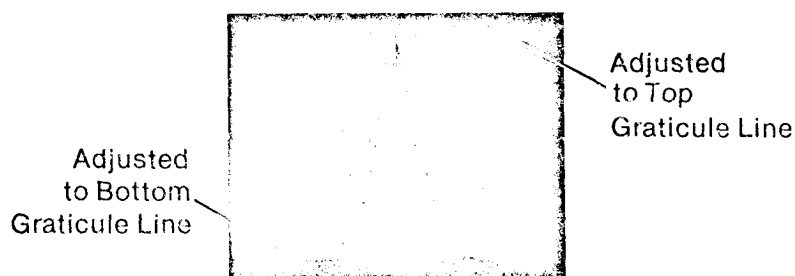


Figure 32. Spectrum Analyzer Calibration Signal Used To Adjust 8750A

CHAPTER 5

- r. Tune the Spectrum Analyzer to place the calibration signal at the center of the Spectrum Analyzer display.
- s. At the 8750A rear panel, adjust the Interface Board **SWP IN OFF** (Sweep Input Offset) to center the signal on the oscilloscope CRT.
- t. On the Spectrum Analyzer, tune the calibration signal to the fourth graticule line to the right of the center line.
- u. At the 8750A rear panel, adjust the Interface Board **SWP IN GAIN** (Sweep Input Gain) control to place the calibration signal on the corresponding fourth graticule line of the oscilloscope CRT display.
- v. Tune the Spectrum Analyzer to place the calibration signal four divisions to the left of the center graticule line. The signal on the oscilloscope CRT should move to the corresponding fourth graticule line. If there is a discrepancy between the signal shown on the Spectrum Analyzer CRT and the oscilloscope CRT, center the Spectrum Analyzer signal display and repeat steps r through v.
- w. The 8750A is now matched to the 140 Series Spectrum Analyzer. For a functional test of the 8750A main features proceed to page 53.

Functional Test of 8750A Main Features with a Spectrum Analyzer

NOTE

Before you do the functional test, you must have matched the 8750A to your Spectrum Analyzer in accordance with the procedures given above.

The following procedure tests the main functions of the 8750A in a Spectrum Analyzer measurement system. This test may be used by receiving personnel for incoming inspection, or by the operator as an operational check.

View a Single Trace

- a. On the 8750A, press **BYPASS**. On the Spectrum Analyzer, adjust the controls to display the calibration signal trace at the center of the CRT graticule.
- b. On the 8750A, press **B** then **INPUT**. This results in a flicker-free trace that is refreshed during each sweep of the Spectrum Analyzer. (The full effect of the flicker-free trace can be more easily observed if the Spectrum Analyzer sweep speed is slowed down to the point where a flickering trace will be produced when the 8750A is in the **BYPASS** mode.)

View an Active Trace with a Fixed Trace

- c. On the 8750A, press **B**, then **INPUT**, then **HOLD**. Next press **A VIEW B** then **INPUT**. On the Spectrum Analyzer, adjust the **TUNING** control. The active trace should be affected by the **TUNING** control; the fixed trace should remain fixed and unaffected by an adjustment of the **TUNING** control. The reason for this is that the last mode the **B** trace was in was **HOLD**. The **B** channel is still operating in the **HOLD** mode, displaying the **B** trace from temporary memory.

Display Two Traces Held Fixed on the CRT

- d. On the 8750A, press **B**, then **INPUT**, then **HOLD**, then **A VIEW B**, then **INPUT**. Adjust the Spectrum Analyzer **TUNING** control slightly to move the active trace away from the fixed trace. then on the 8750A, press **HOLD**. Two traces should be displayed on the CRT from temporary memory. Adjust the **TUNING** control and note that there is no change in the displayed signals.

Display Input Signal Minus the Stored Signal

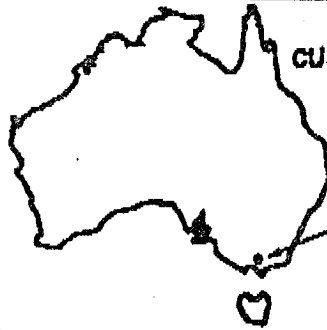
- e. On the 8750A, press **B**, then **INPUT**, then **STORE INPUT**. After **STORE INPUT** indicator (LED) turns off, indicating the full trace has been stored, press **INPUT-MEM**. The displayed trace is the input signal minus the signal just stored in the memory.



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INSTRUMENTS

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FROM: *BRUCE THOMPSON*

PAGES: *6*
(incl this page)

SUBJECT: *8750A*

PROFESSOR,

*HERE IS SOME INFO ON
THE 8750A. I BELIEVE THE CABLE
YOU WANT IS 08750-60035.*

Typical Systems
(See Notes 1 and 2)

Retrofit Requirements
by Serial Number Prefix
(SNP) of Instrument
(See Note 3)

SPECTRUM ANALYZERS (Continued)

8565A Spectrum Analyzer

140T or 141T Display Section with 8552A/B Spectrum Analyzer IF Section plug-in, and one of the following:

- 8553B Spectrum Analyzer RF Section plug-in
- 8554B Spectrum Analyzer RF Section plug-in
- 8555A Spectrum Analyzer RF Section plug-in
- 8556A Spectrum Analyzer LF Section plug-in

8750A is not directly compatible with 140T or 141T. System requires BNC Adapter Cable Assembly, Option 001 or 002, and auxiliary oscilloscope display.

1. All network analyzers listed in this table will interface with the 8750A through the Network Analyzer Interface Board Assembly (standard) supplied with the 8750A. This board contains two switches which are each set to one of two positions to adapt the 8750A to the particular network analyzer in use. Special interface boards, indicated as options, are specifically for interfacing the equipment they are listed with and the 8750A. They do not have any switches that require presetting and, therefore, reduce the possibility of operating problems related to human error.
2. All spectrum analyzers listed in this table interface with the 8750A through the Spectrum Analyzer Interface Board Assembly supplied with the 8750A. The board contains a switch which is set to one of two positions, INV (inverting) or non-inverting, to adapt the 8750A to the output signal polarity of the spectrum analyzer in use.

CONTROL SETTINGS:

Spectrum Analyzer

RF Section
FREQUENCY 30 MHz
BANDWIDTH 30 kHz
SCANWIDTH/PER DIV 20 kHz

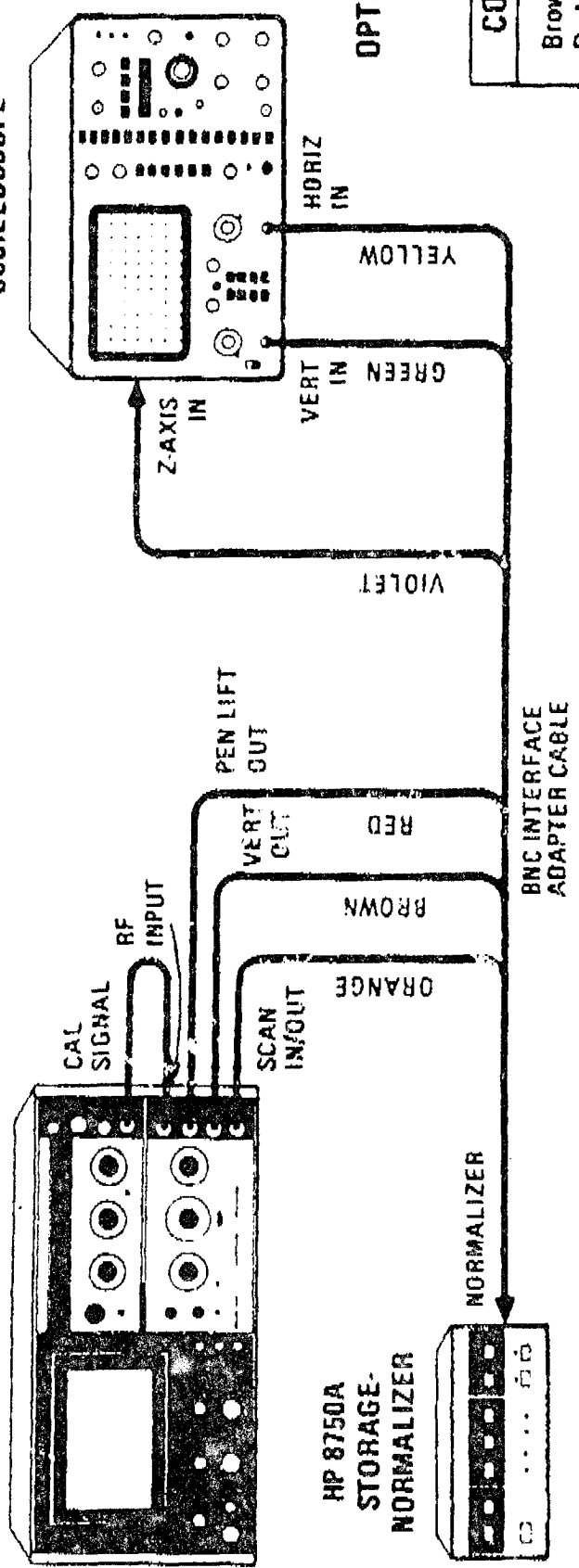
IF Section

Set to LINEAR display mode. Set LOG REF LEVEL and LINEAR SENSITIVITY controls for full 8 divisions of vertical display.

Oscilloscope (1722A)

CHANNEL A 1 Volt/DIV
CHANNEL B 1 Volt/DIV
VERT DISPLAY A(Y)
INT TRIG B(X)
HORIZ DISPLAY X-Y

Figure 3-32. 140 Series Spectrum Analyzer and 8750A Typical Test Setup



OPTION 001 INTERFACE (COLOR CODES)

COLOR	8750A SIG
Brown	(1) Vertical Input
Red	(2) Blanking Input
Orange	(3) Horizontal Swee
Yellow	(4) X Display Outp
Green	(5) Y Display Outp
Violet	(7) Blanking Outpr

Equipment:

- DISPLAY SECTION 140T/141T
- RF Section 8553B/54B/55A/56A
- IF Section 8552A/B
- Oscilloscope 1722A*
- Storage-Normalizer 8750A
- BNC Interface Adapter Cable (Option 001) 08750-60014 or 08750-60035

* Any oscilloscope can be substituted for the 1722A if it has External Sween

NORMALIZER INTERCONNECT CABLE
HP 08750-60034

OPTION 001 BNC
INTERFACE ADAPTER
HP 08750-60035

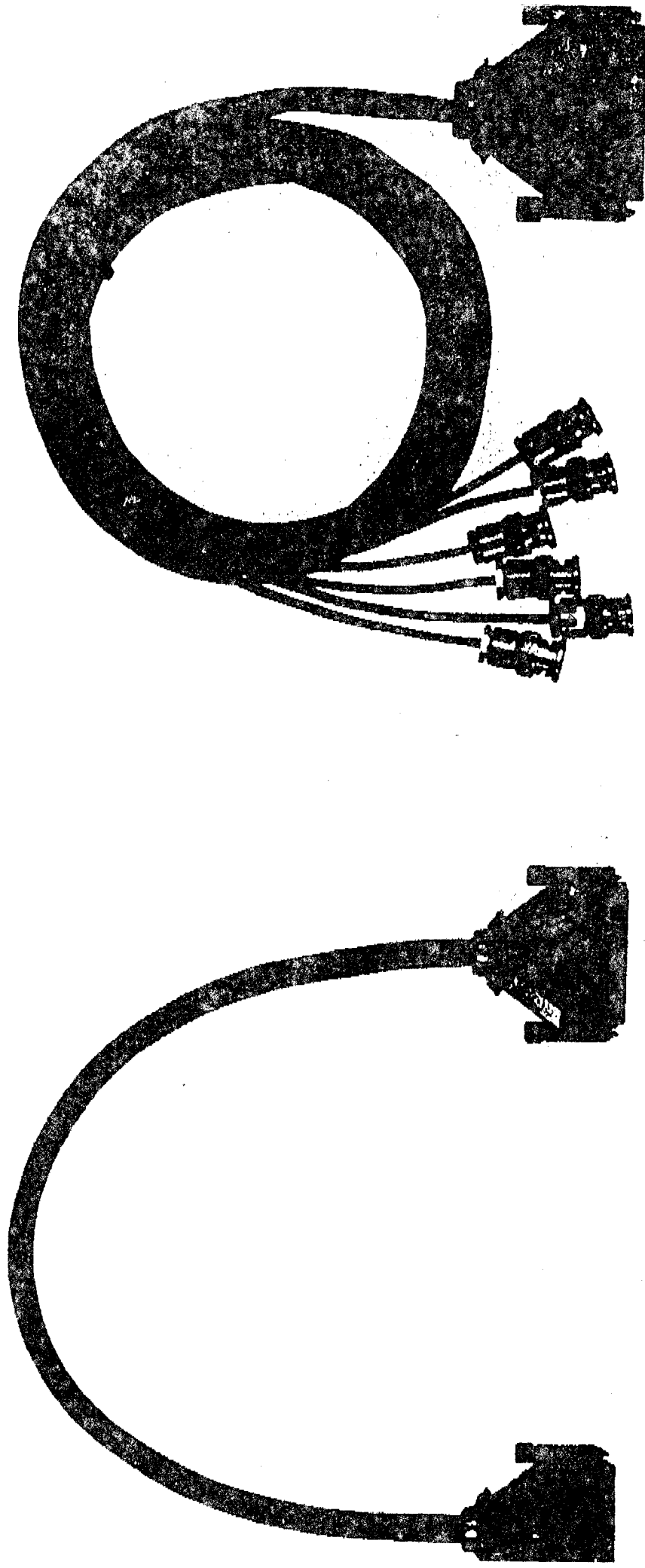


Figure I-1. Model 8750A Storage-Normalizer and Interconnect Cables

1-11. Option 001, BNC Interface Adapter Cable Assembly

1-12. Option 001 deletes the normally supplied Normalizer Interconnect Cable from the 8750A shipment and substitutes the BNC Interface Adapter Cable Assembly, HP Part Number 08750-60035. The optional Interface Adapter Cable Assembly consists of six coaxial cables, each with a male BNC connector on one end, all extending from a single multiple-contact connector which mates with the 8750A's rear-panel **NORMALIZER INTERCONNECT** receptacle. This cable assembly enables the 8750A to be combined with an oscilloscope for operation with spectrum analyzers that employ the HP Model 140T or 141T Display Section as the mainframe for the spectrum analyzer plug-in units.

1-13. Option 002, Standard Interconnect Cable Plus BNC Adapter Cable Assembly

1-14. When 8750A Option 002 is requested, the 8750A shipment includes both the standard Normalizer Interconnect Cable Assembly (HP Part Number 08750-60034), and the BNC Interface Adapter Cable Assembly (HP Part Number 08750-

K4XL's **BAMA**

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