Quick Reference Guide

HP 8590 Series Spectrum Analyzer

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Introduction

This guide provides a quick reference for experienced spectrum analyzer users.

Chapter 1 summarizes the front-panel features, and tells how to make a basic measurement and how to perform the self-calibration routines. Chapter 2 contains brief descriptions of the spectrum analyzer functions. Chapter 3 contains the remote programming codes. Appendixes A, B, C, and D contain helpful charts and tables. Appendix E contains diagrams of the key menus for the HP 8590 Series spectrum analyzers.

For additional instrument information, consult the Installation and Verification Manual, Operation Manual, or Programming Manual.

Guide Terms and Conventions

The six keys along the right side of the display are called softkeys. Their labels are displayed on the screen. The softkeys appear in shaded boxes in this guide. An example of a softkey is `REF LVL`. The labeled keys that are on the front panel of the spectrum analyzer are called front-panel keys. Pressing a front panel changes the softkey labels or initiates functions. The front-panel keys appear in unshaded boxes in this guide. An example of a front-panel key is FREQUENCY.

Caution

The input of the spectrum analyzer can be damaged easily. When using a line impedance stabilization network (LISN) device with the spectrum analyzer, disconnect the spectrum analyzer from the LISN device before changing either the switch position on, or the voltage to, the LISN device.

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Getting Acquainted with the Spectrum Analyzer

This chapter provides an introduction to the spectrum analyzer's front-panel features, an explanation of screen annotation, the procedure for making a basic measurement with the spectrum analyzer, and the procedure for performing self-calibration routines.

Front-Panel Features

The following section provides a brief description of front-panel features.

Refer to Figure 1-1.

1 **Active function block** is the space on the screen that indicates the active function. Most functions appearing in this block can be changed with the knob, step keys, or number keypad.

2 **Message block** is the space on the screen where MEAS UNCAL and the asterisk (*) appear. If one or more functions are manually set (uncoupled), and the amplitude or frequency becomes uncalibrated, MEAS UNCAL appears. (Press [AUTO COUPLE], then AUTO ALL, to recouple functions.) The asterisk indicates that a function is in progress.

3 **Softkey labels** are the annotation on the screen next to the unlabeled keys. Most of the labeled keys on the spectrum analyzer's front panel (also called front-panel keys) access menus of related softkeys.

4 **Softkeys** are the unlabeled keys next to the screen.

5 [FREQUENCY], [SPAN], and [AMPLITUDE] are the three large dark-gray keys that activate the primary spectrum analyzer functions and access menus of related functions.

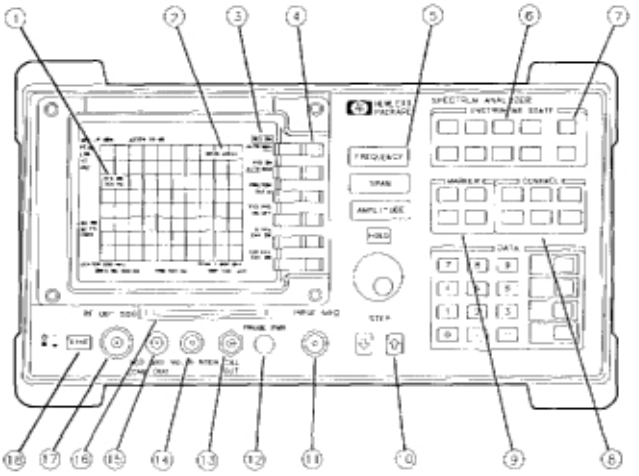


Figure 1-1. Front-Panel Overview

6 **INSTRUMENT STATE** functions affect the state of the entire spectrum analyzer. Self-calibration routines and special-function menus are accessed with these keys. The green (PRESET) key resets the entire spectrum analyzer state and can be used as a "panic" button when you wish to return to a known state.

7 (COPY) key prints or plots screen data. Use (CONFIG), `PLOT CONFIG` or `PRINT CONFIG`, and `COPY DEV PRNT PLT` before pressing (COPY). *Option 021 or 023 only.*

8 **CONTROL** functions access menus that allow you to adjust the resolution bandwidth, adjust the sweep time, store and manipulate trace data, and control the instrument display.

9 **MARKER** functions control the markers, read out frequencies and amplitudes along the spectrum-analyzer trace, automatically locate the

signals of highest amplitude, and keep a signal at the marker position in the center of the screen.

10 **DATA** keys, **STEP** keys and **knob** allow you to change the numeric value of an active function. (HOLD) deactivates an active function.

11 **INPUT 50Ω** is the signal input for the spectrum analyzer. (INPUT 75Ω is the signal input for an Option 001 or 011 spectrum analyzer.)

Caution

Excessive signal input will damage the spectrum analyzer input attenuator and the input mixer. The maximum power that the spectrum analyzer can tolerate appears on the front panel.

12 **PROBE PWR** provides the power for an active probe and other accessories.

13 **CAL OUT** provides a calibration signal of 300 MHz at −20 dBm. (The calibration signal amplitude for an Option 001 or 011 is 29 dBmV.)

14 **VOL-INTEN** or **INTENSITY**. The VOL-INTEN knob changes the brightness of the screen display and, if Option 102 or 103 is installed in the spectrum analyzer, the volume of the speaker. *For the HP 8591A, HP 8593A, HP 8594A, or HP 8595A only.*

The **INTENSITY** knob changes the brightness of the screen display. *For the HP 8590B or HP 8592B only.*

15 **100 MHz COMB OUT** supplies a 100 MHz signal with harmonics up to 22 GHz for use as a reference signal. *For the HP 8592B, HP 8593A, and HP 8595A only.*

16 **Memory card reader** reads from a read-only (ROM) or random access (RAM) memory card. The memory card reader writes to a RAM card. The memory card reader is standard with the HP 8591A, HP 8593A, HP 8594A, and HP 8595A. It is available for the HP 8590B and HP 8592B as Option 003.

17 **RF OUT 50Ω** is the output for the built-in tracking generator. *Option 010 only.* (RF OUT 75Ω is the tracking generator output for Option 011.)

18 (LINE) turns the instrument on or off and performs an instrument check.

Screen Annotation

Figure 1-2 shows an example of screen annotation as it appears on the screen of the spectrum analyzer. Table 1-1 lists the screen annotation features numerically and refers to Figure 1-2.

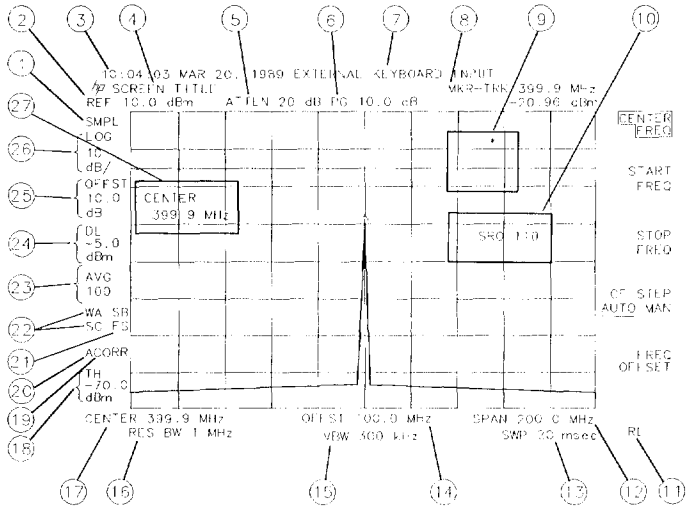


Figure 1-2. Screen Annotation

In Figure 1-2, item number 21 refers to the trigger and sweep modes of the spectrum analyzer. The first letter ("F") indicates the spectrum analyzer is in free-run trigger mode. The second letter ("S") indicates the spectrum analyzer is in single-sweep mode.

Item number 22 refers to the trace modes of the spectrum analyzer. The first letter ("W") indicates the spectrum analyzer is in clear-write mode. The

second letter is "A," representing trace A. The next two letters ("SB") indicate the store-blank mode ("S") for trace B ("B"). The trace mode annotation for trace C is displayed under the trace mode annotation of trace A. In Figure 1-2, the trace C trace mode is "SC," indicating trace C ("C") is in the store-blank mode ("S").

Table 1-1. Screen Annotation

Item	Feature	Item	Feature
1	detector mode	14	frequency offset
2	reference level	15	video bandwidth
3	time and date display	16	resolution bandwidth
4	screen title	17	center frequency or start frequency
5	RF attenuation		
6	preamplifier gain	18	threshold
7	external keyboard entry	19	correction factors on
8	marker or signal track readout	20	amplitude correction factors on
9	measurement-uncalibrated or function-in-progress messages	21	trigger
		22	trace mode
10	service request	23	video average
11	remote operation	24	display line
12	frequency span or stop frequency	25	amplitude offset
		26	amplitude scale
13	sweep time	27	active function block

Table 1-2 shows the different screen annotation codes for trace, trigger, and sweep modes.

Table 1-2.
Screen Annotation for Trace, Trigger, and Sweep Modes

Trace Mode	Trigger Mode	Sweep Mode
W = clear-write (traces A/B/C)	F = free run	C = continuous
M = maximum hold (traces A/B)	L = line	S = single sweep
M = minimum hold (trace C)	V = video	
V = view (traces A/B/C)	E = external	
S = store-blank (traces A/B/C)	T = TV *(Option 102 only)*	

Making a Basic Measurement

Basic measurements simply involve tuning the instrument to place a signal on the screen, then measuring the frequency and amplitude of the signal.

Caution

Do not exceed the maximum input power that is printed on the front panel of the spectrum analyzer.

Let's begin using the spectrum analyzer by measuring an input signal. Since the 300 MHz calibration signal (CAL OUT) is readily available, we will use it as our input signal.

1. Turn the instrument on and press the green (PRESET) key.
2. Connect CAL OUT to the spectrum analyzer INPUT 50Ω connector (on the front panel) using an appropriate BNC cable and a BNC-to-Type-N adapter.

   Option 001 or 011 only: Use a 75Ω cable to connect CAL OUT to the INPUT 75Ω connector.

   Option 026 only: Connect the SMA (m) to SMA (m) cable to the spectrum analyzer input with an APC-3.5 connector. Connect the cable to CAL OUT with the BNC-to-SMA adapter.

3. Set the center frequency.

   Press (FREQUENCY). CENTER appears on the left side of the screen, indicating that the center frequency function is active. The CENTER FREQ softkey label appears in inverse video to indicate that center frequency is the active function. The space on the screen where CENTER appears is called the active function block. Functions appearing in this block are active: their values can be changed with the knob, step keys, or number and units keypad. Set the center frequency to 300 MHz by pressing 300 (MHz). The knob and step keys can also be used to set the center frequency.

Figure 1-3 shows the screen display of an HP 8593A Spectrum Analyzer with the center frequency set to 300 MHz. An HP 8590 Series spectrum analyzer with a narrower frequency range than the HP 8593A displays a narrower frequency span.

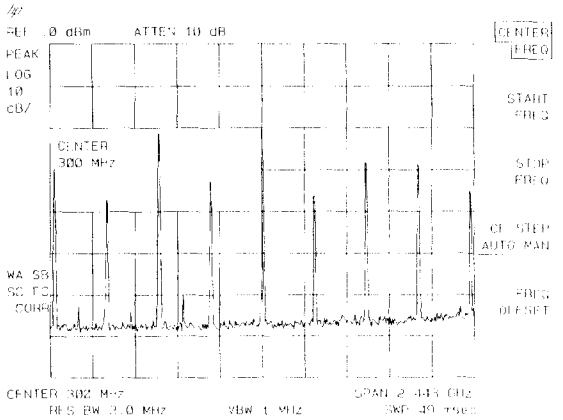


Figure 1-3. Center Frequency Set to 300 MHz

4. Set the span.

   Press (SPAN). **SPAN** is now displayed in the active function block, and the **SPAN** softkey label appears in inverse video to indicate that span is the active function. Reduce the span to 20 MHz by pressing the down key, (▼), or 20 (MHz).

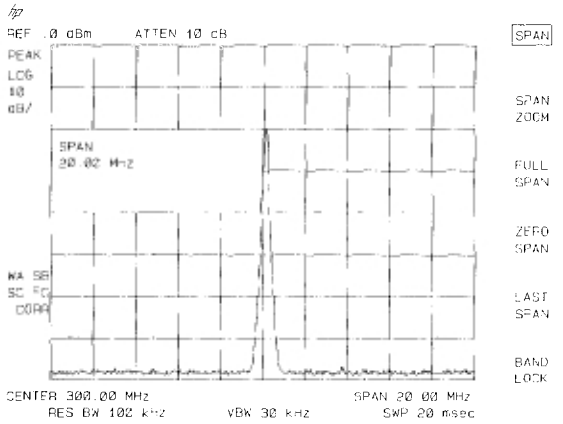


Figure 1-4. Frequency Span Reduced to 20 MHz

5. Set the amplitude.

   When the peak of a signal does not appear on the screen, it may be necessary to adjust the amplitude level on the screen. Press (AMPLITUDE). The message `REF LEVEL .0 dBm` appears in the active function block, and the `REF LVL` softkey label appears in inverse video to indicate that the reference level is the active function. The reference level is the top graticule line on the display and is set to 0.0 dBm. Changing the value of the reference level changes the amplitude level of the top graticule line.

   If desired, use the reference level function to place the signal peak on the screen using the knob, step keys, or number and units keypad.

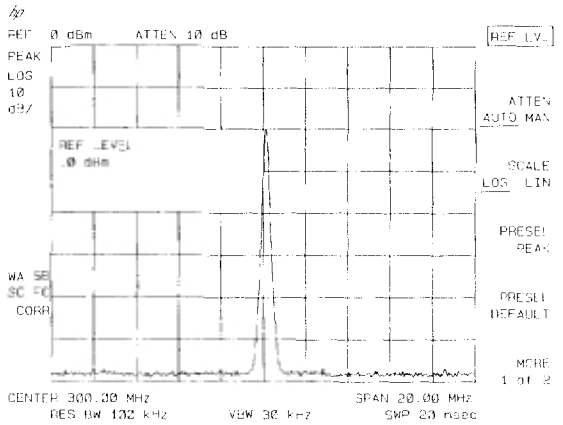


Figure 1-5. Setting the Amplitude

6. Activate the marker.

   You can place a diamond-shaped marker on the signal peak to find the signal's frequency and amplitude.

   To activate a marker, press (MKR) (located in the MARKER section of the front panel). The **MARKER NORMAL** softkey label appears in inverse video to show that the marker is the active function. Turn the knob to place the marker at the signal peak.

   You can also use (PEAK SEARCH), which automatically places a marker at the highest point on the trace.

   Readouts of marker amplitude and frequency appear in both the active function block and in the upper-right corner of the display. Look at the marker readout to determine the amplitude of the signal.

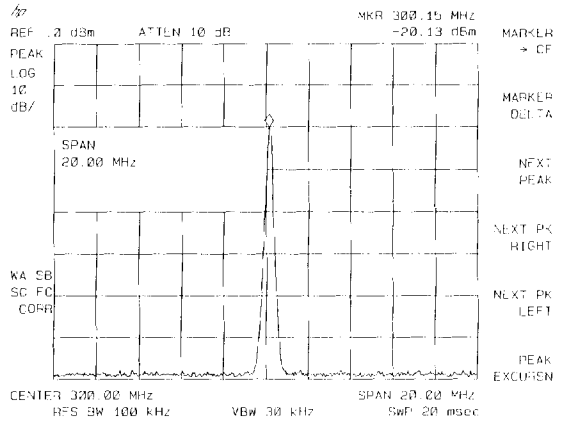


Figure 1-6. Marker Reads Out Frequency and Amplitude

Many measurements require only these steps. To return the instrument to a known state, press (PRESET).

Performing Self-Calibration Routines

The self-calibration routines add offsets, called correction factors, to internal circuitry. The addition of the correction factors is required to meet frequency and amplitude specifications.

Warm-Up Time

To meet spectrum analyzer specifications:

1. The spectrum analyzer should be stored at a constant temperature, within the operating temperature range, for at least 2 hours.
2. Turn on the spectrum analyzer and allow the spectrum analyzer to warm up for 30 minutes.

Note

Perform the spectrum analyzer self-calibration routines only *after* the spectrum analyzer has met the specified warm-up time. Do not attempt to make any calibrated measurements until the spectrum analyzer self-calibration routines have been performed.

Self-Calibration Routines

The spectrum analyzer frequency and amplitude self-calibration routines are accessed by `CAL FREQ & AMPTD`.

Perform the following steps to self-calibrate the instrument:

1. Connect the CAL OUT connector to the INPUT 50Ω connector, using an appropriate cable. *Option 001 or 011 only:* Use a 75Ω cable to connect CAL OUT to the INPUT 75Ω connector.
2. Press the following spectrum analyzer keys: (CAL), `CAL FREQ & AMPTD`.

   The frequency and amplitude self-calibration routines take approximately 9 minutes to finish, at which time the correction factors will be stored in the spectrum analyzer's memory but the data is lost when the spectrum analyzer is turned off.
3. To avoid losing the data when the spectrum analyzer is turned off, press `CAL STORE`. `CAL STORE` stores the data in the area of spectrum analyzer memory that is saved when the spectrum analyzer is turned off.

The frequency and amplitude self-calibration functions can be done separately by using `CAL FREQ` or `CAL AMPTD` instead of `CAL FREQ & AMPTD`.

Note

If CAL FREQ and CAL AMPTD self-calibration routines are used, the CAL FREQ routine should always be performed before the CAL AMPTD routine.

Interrupting the CAL AMPTD , CAL FREQ , or CAL FREQ & AMPTD self-calibration routines may result in corrupt data stored in RAM. (If this occurs, rerun the CAL FREQ & AMPTD routine.)

When the self-calibration routines have successfully finished, CORR (corrected) appears on the left side of the screen.

Self-Calibration Routine Problems

If the correction data has been corrupted or is obviously inaccurate, use CAL FETCH to retrieve the correction data that has previously been saved. To retrieve correction factor data, press (CAL), MORE 1 of 3 , CAL FETCH . If the fetched correction data is corrupt, the following procedure can be used to set the correction data back to predetermined values:

1. Press (FREQUENCY), −37 (Hz), (CAL), MORE 1 of 3 , MORE 2 of 3 , DEFAULT CAL DATA .
2. Perform the CAL FREQ and CAL AMPTD routines, or the CAL FREQ & AMPTD routine. Be sure CAL OUT is connected to the spectrum analyzer input.

Note

Using DEFAULT CAL DATA may cause the self-calibration routine to fail (the frequency span error may interfere with the spectrum analyzer routine that locates the 300 MHz calibration signal). If this occurs, press (FREQUENCY), −37 (Hz), before performing the CAL FREQ routine, or the CAL FREQ & AMPTD routine.

If the self-calibration routines cannot be performed, see the spectrum analyzer's Operation Manual.

Performing the Tracking Generator Self-Calibration Routine Option 010 or 011 Only

To meet the tracking generator specifications, allow the spectrum analyzer to warm up for 30 minutes after being turned on before attempting to make any calibrated measurements. Be sure to calibrate the spectrum analyzer and the tracking generator only *after* the spectrum analyzer has met operating temperature conditions.

Note

Since the `CAL TRK GEN` routine uses the absolute amplitude level of the spectrum analyzer, the spectrum analyzer amplitude should be calibrated prior to using `CAL TRK GEN`.

1. To calibrate the tracking generator, connect the tracking generator output to the spectrum analyzer input connector, using an appropriate cable.
2. Press the following spectrum analyzer keys: (CAL), `MORE 1 of 3`, `MORE 2 of 3`, `CAL TRK GEN`. `TG SIGNAL NOT FOUND` will be displayed if the tracking generator output is not connected to the spectrum analyzer input.
3. Press `CAL STORE` to save this data in the area of spectrum analyzer memory that is saved when the spectrum analyzer is turned off.

2

Spectrum Analyzer Functions

This section lists the softkey and front-panel functions in alphabetical order. Next to each key label is a brief description of its function. For more detailed descriptions, refer to the spectrum analyzer Operation Manual. All softkeys are shown in the menu diagram in Appendix E of this guide. The functions accessed by `SERVICE DIAG` and `SERVICE CAL` are not included in this listing.

`% AM` determines the percentage of amplitude modulation. This function finds the amplitude difference between the two highest peaks on the screen and computes the percent of modulation for the calculated dB difference. (See Figure B-1 for the AM percentage chart.)

`0-2.9 Gz BAND 0` locks onto harmonic band 0. Harmonic band 0 is unpreselected and has a frequency range from −0.9214 Hz to 2.9214 GHz. *HP 8592B, HP 8593A, or HP 8595A only.*

`2.75-6.4 BAND 1` locks onto harmonic band 1. Harmonic band 1 is preselected and has a frequency range from 2.6786 GHz to 6.4786 GHz. *HP 8592B or HP 8593A only.*

`2.75-6.5 BAND 1` locks onto harmonic band 1. Harmonic band 1 is preselected and has a frequency range from 2.6786 GHz to 6.5086 GHz. *HP 8595A only.*

`3 dB POINTS` finds the bandwidth of the signal at the 3 dB power level.

`3rd ORD MEAS` finds the third-order product and measures the frequency and amplitude differences relative to the fundamental signal.

`6.0-12.8 BAND 2` locks onto harmonic band 2. Harmonic band 2 is preselected and has a frequency range from 5.6786 GHz to 12.8786 GHz. *HP 8592B or HP 8593A only.*

`6 dB POINTS` finds the bandwidth of the signal at the 6 dB power level.

9 kHz EMI BW selects the 9 kHz resolution bandwidth at the 6 dB power level.

12.4-19. BAND 3 locks onto harmonic band 3. Harmonic band 3 is preselected and has a frequency range from 8.6786 GHz to 19.4786 GHz. *HP 8592B or HP 8593A only.*

19.1-22 BAND 4 locks onto harmonic band 4. Harmonic band 4 is preselected and has a frequency range from 11.6786 GHz to 22.0 GHz. *HP 8592B or HP 8593A only.*

99% PWR BW computes the power of all signal responses and returns the bandwidth under which 99% of total power is found.

120 kHz EMI BW selects the 120 kHz resolution bandwidth at the 6 dB power level.

A <- -> B exchanges the contents of the trace A register with the trace B register and puts traces A and B in view mode.

A-B -> A ON OFF subtracts trace B from trace A and places the result in trace A.

ABCDEF accesses the softkey menu used for selecting either the screen title or the prefix characters A through F.

ABORT exits the correct-to-comb routine. *HP 8592B only.*

A -> C moves trace A into trace C.

ALC INT EXT activates either the internal (INT) leveling or the external (EXT) leveling. *HP 8593A, HP 8594A, or HP 8595A with Option 010 only.*

ALC MTR INT XTAL activates either the internal (INT) leveling or the external (XTAL or MTR) leveling. *HP 8590B or HP 8591A with Option 010 or 011 only.*

ALL DLP -> CARD saves all the programs that are in spectrum analyzer memory on a RAM card, using the specified prefix. *HP 8590B or HP 8592B requires Option 003.*

AMP COR, when accessed by (MEAS/USER), accesses the menus for the controlling the current amplitude correction factors. When accessed by (SAVE)

or (RECALL), AMP COR saves or recalls amplitude correction factors from either spectrum analyzer memory or a RAM card.

AMP COR ON OFF turns the current table of amplitude correction factors on or off.

(AMPLITUDE) accesses the amplitude menu and makes the reference level the active function.

AMPTD UNITS accesses the softkeys that allow you to change amplitude units: dBm, dBmV, dBuV, Volts, Watts.

ANALYZER ADDRESS allows you to change the spectrum analyzer's HP-IB address. *Option 021 only.*

ANNOTATN ON OFF turns the screen annotation on and off. Softkey labels are not affected by this function.

ATTEN AUTO MAN sets the input attenuation (in 10 dB increments).

AUTO ALL automatically couples all functions that can be auto-coupled: resolution bandwidth, video bandwidth, attenuation, sweep time, center-frequency step, video bandwidth, and the ratio of video bandwidth to resolution bandwidth.

(AUTO COUPLE) accesses the auto-couple softkeys: AUTO ALL, RES BW AUTO MAN, VID BW AUTO MAN, ATTEN AUTO MAN, SWP TIME AUTO MAN, and CF STEP AUTO MAN.

AUX CONN CONTROL accesses the softkey menu that controls the input and outputs of the auxiliary interface connector.

(AUX CTRL) accesses the softkey menu that is used to control of the auxiliary interface connector. *For the HP 8592B, HP 8593A, or HP 8595A:* (AUX CTRL) also accesses the comb generator function. *For Option 102 or 103:* (AUX CTRL) also accesses the demodulation functions.

B & W PRINTER allows you to specify a black and white print. Printing is started by pressing COPY DEV PRNT PLT (PRNT should be underlined), (COPY). *Option 021 or 023 only.*

`BAND LOCK` accesses the harmonic band menu. *HP 8592B, HP 8593A, or HP 8595A only.*

`BAUD RATE` allows you to change the baud rate. *Option 023 only.*

`B -> C` moves trace B into trace C.

`B <- -> C` exchanges trace B and trace C.

`B-DL -> B` subtracts the display line from trace B and places the result into trace B.

`BLANK A` stops taking amplitude data for trace A and makes trace A invisible.

`BLANK B` stops taking amplitude data for trace B and makes trace B invisible.

`BLANK C` stops taking amplitude data for trace C and makes trace C invisible.

`BLANK CARD` removes all of the files from a RAM card. *HP 8590B or HP 8592B requires Option 003.*

`BND LOCK ON OFF` locks the spectrum analyzer onto a selected frequency band. *HP 8592B, HP 8593A, or HP 8595A only.*

(BW) accesses the bandwidth control menu and activates the resolution bandwidth function.

(CAL) activates the self-calibration menu.

Note

Ensure that CAL OUT is connected to the spectrum analyzer input before pressing `CAL FREQ` , `CAL AMPTD` , or `CAL FREQ & AMPTD` .

`CAL AMPTD` initiates an amplitude self-calibration routine.

`CAL FETCH` retrieves stored correction factors.

`CAL FREQ` initiates a frequency self-calibration routine.

`CAL FREQ & AMPTD` initiates both the frequency and the amplitude self-calibration routines.

`CAL STORE` allows you to save correction factors in the area of spectrum analyzer memory that is accessed when the spectrum analyzer is powered up. Correction factors are stored in the temporary area of memory until `CAL STORE` is pressed. Use `CAL FETCH` to retrieve stored correction factors.

Note

Connect the tracking generator output to the spectrum analyzer input before pressing `CAL TRK GEN` .

`CAL TRK GEN` performs absolute amplitude, vernier, and tracking peak self-calibration routines for the internal tracking generator. *Option 010 or 011 only.*

Note

Connect COMB OUT to the spectrum analyzer input before using CAL YTF.

`CAL YTF` generates the best slope and offset adjustment for each harmonic band. *HP 8592B, HP 8593A, or HP 8595A only.*

`CARD CONFIG` accesses the softkey menu that catalogs, formats, or erases a RAM card. *HP 8590B or HP 8592B requires Option 003.*

`CARD -> DLP` allows you to retrieve a previously saved program from a memory card. *HP 8590B or HP 8592B requires Option 003.*

`CARD -> STATE` allows you to retrieve a previously saved state from a RAM card. *HP 8590B or HP 8592B requires Option 003.*

`CARD -> TRACE` allows you to retrieve a previously saved trace, limit-line tables, or amplitude correction factors from a RAM card. *HP 8590B or HP 8592B requires Option 003.*

`CATALOG ALL` , if analyzer memory is selected, catalogs all programs and variables loaded into spectrum analyzer memory. `CATALOG ALL` , if the

memory card is selected, catalogs all programs, traces, states, limit-line files, and amplitude correction factor files saved on the memory card.

CATALOG AMP COR catalogs the amplitude correction factor files that are on the memory card. *HP 8590B or HP 8592B requires Option 003.*

CATALOG CARD accesses the softkey menus for the memory card catalog options. *HP 8590B or HP 8592B requires Option 003.*

CATALOG DLP catalogs all of the DLPs (downloadable programs) that are in spectrum analyzer memory or on a memory card.

CATALOG INTRNL accesses a menu that contains softkeys used for the functions for cataloging spectrum analyzer memory.

CATALOG LMT LINE catalogs the limit-line files that are on the memory card. *HP 8590B or HP 8592B requires Option 003.*

CATALOG ON EVENT displays the "on event" programming commands (ONEOS, ONSWP, TRMATH, ONCYCLE, ONDELAY, ONMKR, ONSRQ, ONTIME) and their status.

CATALOG PREFIX catalogs all of the saved data that have the specified prefix.

CATALOG REGISTER displays the status of state and trace registers stored in spectrum analyzer memory.

CATALOG STATES catalogs all of the saved states that are on the memory card. *HP 8590B or HP 8592B requires Option 003.*

CATALOG TRACES catalogs all of the saved traces that are on the memory card. *HP 8590B or HP 8592B requires Option 003.*

CATALOG VARIABLS catalogs all of the variables that are in spectrum analyzer memory.

CENTER FREQ activates the center-frequency function to allow the selection of the frequency that will be at the center of the screen.

CF STEP AUTO MAN activates the step size for the center-frequency function.

CHANGE PREFIX accesses the softkeys that allow you to change the current prefix. The prefix is used creating the file name for states, traces, amplitude

correction factor files, limit-line tables, and downloadable programs for storage and retrieval from a RAM card.

CHANGE TITLE accesses the softkeys that allow you to change the screen title.

CLEAR clears either the current prefix or the screen title.

CLEAR OFFSET clears the frequency offset used during the correct-to-comb routine. *HP 8592B only.*

CLEAR WRITE A erases any data that was previously stored in trace A and then continuously displays any signals that are detected during sweeps across the frequency range of the spectrum analyzer.

CLEAR WRITE B erases any data that was previously stored in trace B and then continuously displays any signals that are detected during sweeps across the frequency range of the spectrum analyzer.

CLEAR WRITE C erases any data that was previously stored in trace C and then continuously displays any signals that are detected during sweeps across the frequency range of the spectrum analyzer.

CNTL A 0 1 sets the auxiliary-interface control line A output either high or low.

CNTL B 0 1 sets the auxiliary-interface control line B output either high or low.

CNTL C 0 1 sets the auxiliary-interface control line C output either high or low.

CNTL D 0 1 sets the auxiliary-interface control line D output either high or low.

CNT RES AUTO MAN allows the counter resolution to be either changed manually or auto-coupled. *HP 8591A, HP 8593A, HP 8594A, or HP 8595A only.*

COMB GEN ON OFF turns the comb generator on and off. *HP 8592B, HP 8593A, or HP 8595A only.*

CONFIG accesses the softkey menus that are used for configuring the printer and plotter, setting the time and date, and displaying the options that are

installed in the spectrum analyzer. If the spectrum analyzer is in remote mode, pressing (CONFIG) places the spectrum analyzer in local mode.

CONF TEST performs a self-test by cycling through the spectrum analyzer's major functions.

CONTINUE changes the frequency offset to match frequency of the marker and exits the correct-to-comb routine. *HP 8592B only.*

(COPY) initiates a print or plot of the screen data to the previously selected graphics printer or plotter. The printer or plotter must have been addressed by using **PLOT CONFIG** (for a plot), or **PRINT CONFIG** (for a print). Use **COPY DEV PRNT PLT** to choose between a printer or a plotter output. *Option 021 or 023 only.*

COPY DEV PRNT PLT allows you to choose between copying to a printer or to a plotter. *Option 021 or 023 only.*

CORRECT ON OFF turns on or off the use of some correction factors.

CORRECT TO COMB accesses the correct-to-comb menu. Using the correct-to-comb functions can increase frequency accuracy because of the frequency accuracy of the comb generator. *HP 8592B only.*

Caution

Do not use dc coupling if there is any dc voltage at the input of the spectrum analyzer.

COUPLE AC DC allows you to select alternating-current (AC) or direct-current (DC) coupling at the spectrum analyzer input. *HP 8594A or HP 8595A only.*

CRT HORZ POSITION changes the horizontal position of the signal on the spectrum analyzer's display. (Use **CAL STORE** to save the display's horizontal and vertical position in spectrum analyzer memory.)

CRT VERT POSITION changes the vertical position of the signal on the spectrum analyzer's display. (Use **CAL STORE** to save the display's horizontal and vertical position in spectrum analyzer memory.)

DATEMODE MDY DMY allows you to display the real-time clock's date in month-day-year or day-month-year format.

dBm changes the amplitude units to dBm for the current amplitude scale.

dBmV changes the amplitude units to dBmV for the current amplitude scale.

dBuV changes the amplitude units to dBμV for the current amplitude scale.

DEFAULT CAL DATA allows you to use predetermined correction data. See "Self-Calibration Routine Problems" in Chapter 1 for more information.

DEFAULT CONFIG resets all user configuration settings to their default values.

DELETE FILE deletes the selected file from a RAM card or from spectrum analyzer memory.

DELETE POINT deletes the amplitude correction factor selected by **SELECT POINT**.

DELETE SEGMENT deletes the limit-line segment selected by **SELECT SEGMENT**.

DELTA MEAS finds and displays both the frequency and the amplitude differences between the two highest amplitude signals.

DEMOD accesses the AM or FM demodulation functions. *Option 102 or 103 only.*

DEMOD AM FM allows you to choose between amplitude (AM) or frequency (FM) demodulation. *Option 102 or 103 only.*

DEMOD ON OFF allows you to turn the amplitude or frequency demodulation on or off. *Option 102 or 103 only.*

DETECTOR SAMPL PK selects sample or positive peak detection.

(DISPLAY) accesses softkeys that are used to activate the display line and threshold, allow title entry, and control the graticule and screen annotation.

DISPLAY CNTL I displays the status of auxiliary interface control line I on the spectrum analyzer screen.

DISPOSE USER MEM purges all downloadable programs (DLPs), user-defined key definitions, user-defined traces, and user-defined variables from the spectrum analyzer memory. See the *HP 8590 Series Programming Manual* for more information about user-defined key definitions (KEYDEF), user-defined traces (TRDEF), and user-defined variables (VARDEF).

DSP LINE ON OFF activates an adjustable horizontal line that is used as a visual reference line.

DWELL TIME sets the dwell time for the marker pause, during which demodulation takes place in nonzero span sweeps. *Option 102 or 103 only.*

EDGE POL POS NEG determines whether the gate triggers on the positive-going or negative-going edge of the signal that is at the GATE TRIGGER INPUT rear-panel connector. *Option 105 only.*

EDIT AMP COR allows you to edit the current amplitude correction factor table.

EDIT DONE, when accessed from the Amplitude Correction (AMP COR) menu, erases the amplitude correction factors table from the spectrum analyzer's screen and restores the menu that was accessed by **AMP COR**. Use **EDIT DONE** when all the amplitude correction factors have been entered.

When accessed from the limit-line menu, **EDIT DONE** erases the limit-line table from the spectrum analyzer's screen and restores the menu accessed by **LIMIT LINES**. Use **EDIT DONE** when all of the limit-line values have been entered.

EDIT LIMIT allows you to edit the current limit-line tables.

EDIT LOWER allows you to view or edit the lower limit-line table.

EDIT MID/DELT allows you to view or edit the upper and lower limit-line tables by entering a mid-amplitude value and an amplitude deviation.

EDIT UP/LOW allows you to view or edit the upper and lower limit-line table.

EDIT UPPER allows you to view or edit the upper limit-line table.

EDIT UPR LWR allows you to switch between the upper and the lower limit-line tables.

EXIT CATALOG returns the spectrum analyzer to the state it was in before the catalog operation.

EXIT SHOW blanks the screen annotation that was left by **SHOW OPTIONS**.

EXTERNAL activates the trigger condition that allows the next sweep to start when an external voltage (connected to EXT TRIG INPUT on the rear panel) passes through approximately 1.5 V. The external trigger signal must be a 0 V to +5 V TTL signal.

EXT PREAMP adds a positive or negative preamplifier gain value, which is subtracted from the displayed signal.

FFT MEAS uses a fast Fourier transform function to transform zero span data into the frequency domain.

FLAT draws a zero-slope line between the coordinate point of the current segment and the coordinate point of the next segment, producing limit-line values equal in amplitude for all frequencies between the two points. If the amplitude values of the two segments differ, the limit-line "steps" to the value of the second segment.

FM GAIN sets the FM gain. FM gain limits the frequency deviation of the signal from the top of the spectrum analyzer screen to the bottom of the spectrum analyzer screen. *Option 102 or 103 only.*

FORMAT CARD formats a RAM card in logical interchange format (LIF).

FREE RUN activates the trigger condition that allows the next sweep to start as soon as possible after the last sweep.

FREQ OFFSET adds an offset value to the frequency readout to account for pre-spectrum analyzer frequency conversions. Offset entries are added to all frequency readouts, including marker, start frequency, and stop frequency.

(FREQUENCY) activates the center frequency or start frequency functions and accesses the frequency softkey menu.

FULL SPAN changes the spectrum analyzer's frequency span to full span (if possible). *HP 8592B, HP 8593A, or HP 8595A only:* The frequency span setting of **FULL SPAN** is limited when using harmonic band lock.

GATE CTL EDGE LVL determines whether the gate triggers on the edge (EDGE) of the trigger input or on the level of the trigger input. If the gate control is set to edge, the edge of the trigger input triggers the timer for the gate delay. When the gate control is set to level (LVL), the gate follows the trigger input. *Option 105 only.*

GATE DELAY sets the delay length before the gating occurs. *Option 105 only.*

GATE LENGTH sets the gate length during which gating occurs. *Option 105 only.*

GATE MENU accesses the softkeys used for Option 105: **GATE DELAY**, **GATE LENGTH**, **GATE CTL EDGE LVL**, and **EDGE POL POS NEG**. *Option 105 only.*

GATE ON OFF turns gating on or off. *Option 105 only.*

GHIJKL accesses the softkey menu for selecting either the screen title or the prefix characters G through L.

GRAT ON OFF turns the screen graticule on or off.

INPUT Z 50 75 sets the input impedance for power-to-voltage conversions. The impedance selected is for computational purposes only, since the actual impedance is set by internal hardware.

INTRNL CRD allows you to catalog, save, or retrieve data or programs from internal memory or memory card.

INTRNL -> STATE recalls the saved spectrum analyzer state from the selected state register (valid state register numbers are 1 through 9). State register 9 contains a previous state, state register 0 contains the current state.

INTRNL -> TRACE accesses the softkey menu used for recalling a trace into trace A, trace B, or trace C, recalling limit-line tables, or recalling amplitude correction factor files.

LAST SPAN changes the spectrum analyzer's frequency span to the previous span setting.

LIMIT LINES, when accessed by (MEAS/USER), accesses the limit-line menus. When accessed by (SAVE) or (RECALL), **LIMIT LINES** stores or recalls the current limit-line tables in spectrum analyzer trace memory or on the memory card.

LIMITS FIX REL selects either the fixed or the relative type of limit lines.

LIMITEST ON OFF turns the limit-line testing on or off.

LINE activates the trigger condition that allows the next sweep to start when the line voltage passes through zero, becoming positive.

LOAD FILE loads the selected file from the memory card. When accessed through **CATALOG REGISTER**, **LOAD FILE** loads the previously saved trace or state register data.

MAN TRK ADJUST allows the user to use the step keys or knob to adjust the frequency of the tracking-generator oscillator. *Option 010 or 011 only.*

MARKER AMPTD keeps the active marker at a selected amplitude on the screen once the marker has been positioned. Once activated, the marker remains at the same amplitude even if the signal frequency is changed. If no signal is detected at that amplitude, the marker searches for the signal closest to the amplitude value.

MARKER -> CF changes the spectrum analyzer settings so that the frequency at the marker becomes the center frequency.

MARKER -> CF STEP changes the center-frequency step size to match the value of the active marker. If marker delta is active, the step size will be set to the difference between the frequencies of the markers.

MARKER DELTA activates a second marker at the position of the active marker. The amplitude and frequency of the first marker are fixed, and the second marker can be manipulated.

MARKER NORMAL activates a single marker at the center frequency of the active trace.

MARKER -> REF LVL changes the spectrum analyzer settings so that the amplitude at the active marker becomes the reference level.

MARKERS OFF turns off all markers, including signal track. **MARKERS OFF** also removes marker annotation.

MAX HOLD A updates each trace point of trace A with the maximum level detected at each point during successive sweeps.

MAX HOLD B updates each trace point of trace B with the maximum level detected at each point during successive sweeps.

MAX MXR LEVEL lets you change the maximum input-mixer level (in 10 dB steps).

(MEAS/USER) accesses the softkey menus used for special functions and the user menu.

MIN HOLD C updates each trace point of trace C with the minimum level detected at each point during successive sweeps.

MINIMUM -> MARKER moves the marker to the minimum value detected.

MKNOISE ON OFF reads out the average noise level, in reference to a 1 Hz noise power bandwidth, at the marker position.

MKPAUSE ON OFF stops the spectrum analyzer sweep at the marker position for 0.002 to 100 seconds.

(MKR) accesses the softkey menu that contains basic marker functions and activates the marker.

(MKR ->) accesses the softkey menus used for the transfer of marker information directly into other functions.

MKR CNT ON OFF turns the marker counter on or off. *HP 8591A, HP 8593A, HP 8594A, or HP 8595A only.*

MKR Δ -> SPAN sets the start and stop frequencies to the values of the delta markers. The start and stop frequencies will not be set if the delta marker is off.

MNOPQR accesses the softkey menu used for selecting either the screen title or the prefix characters M through R.

(MODE) accesses a menu that allows the selection of the spectrum analyzer mode, other modes of operation (if available), and **PRESET SPECTRUM**.

NEW LIMIT clears the current limit-line table.

NEXT PEAK places the marker on the next highest peak above the threshold. The threshold level is set by **THRESHLD ON OFF**.

NEXT PK LEFT moves the marker to the next peak to the left of the current marker. The peak must be above the threshold.

NEXT PK RIGHT moves the marker to the next peak to the right of the current marker. The peak must be above the threshold.

NORMLIZE ON OFF subtracts trace B from trace A and adds the result to the display line. The result is displayed in trace A. The trace data is normalized with respect to the display line even if the value of the display line is changed.

NORMLIZE POSITION turns on the display line.

NO USER MENU is displayed if no user-defined keys have been defined for menu 1.

NTSC triggers on the NTSC video format. *Options 101 and 102, or Option 301 only.*

PAINTJET PRINTER allows you to select a color print (when an HP PaintJet printer is connected to the spectrum analyzer). *Option 021 or 023 only.*

PAL triggers on the PAL video formats. *Options 101 and 102, or Option 301 only.*

PAL-M triggers on the PAL-M video formats. *Options 101 and 102, or Option 301 only.*

PEAK EXCURSN sets the minimum amplitude variation of signals that the marker can identify as a peak.

PEAK MENU accesses the peak search softkey menu.

PEAK SEARCH places a marker on the highest amplitude of a trace, and displays the marker's amplitude and frequency. *HP 8592B only.*

(PEAK SEARCH) places a marker on the highest amplitude of a trace, displays the marker's amplitude and frequency, and accesses the peak search softkey menu.

PK-PK MEAS finds and displays the frequency and amplitude differences between the highest and lowest signals.

PLOT CONFIG accesses the softkey menu that is used to address the plotter and to select from plotter options. *Option 021 or 023 only.*

PLOTTER ADDRESS allows you to select the HP-IB address of the plotter. *Option 021 or 023 only.*

PLT__LOC__ allows you to select the location (on the page) of a plotter output. (This key appears only if two or four plots per page are selected using PLTS/PG 1 2 4.) *Option 021 or 023 only.*

PLTS/PG 1 2 4 allows you to choose a full-page, half-page, or quarter-page plot size. *Option 021 or 023 only.*

POINT specifies a limit value for the coordinate point and out-of-range values for the rest of the limit-line segment.

POWER ON IP LAST determines the state that the spectrum analyzer will be in when the spectrum analyzer is powered on. If POWER ON IP LAST is set to IP (IP is underlined), the state of the spectrum analyzer is the same as it is after (PRESET) is pressed. If POWER ON IP LAST is set to LAST (LAST is underlined), the state the spectrum analyzer was in when it was powered off is recalled.

PRESEL DEFAULT provides a swept flatness response without preselector peaking. PRESEL DEFAULT uses the correction factors generated from the CAL YTF self-calibration routine. *HP 8592B, HP 8593A, or HP 8595A only.*

Note

Preselector peak operates in the preselected bands (bands 1 to 4) only.

`PRESEL PEAK` automatically adjusts the preselector to maximize the amplitude at the position of the marker. *HP 8592B, HP 8593A, or HP 8595A only.*

(PRESET) returns the spectrum analyzer to a known state, accesses the softkey menu of available spectrum analyzer modes, and performs a processor test. PRESET does not affect the correction factors. PRESET also clears both the input and output buffers, and turns off the amplitude correction factors and the limit-line testing.

`PRESET SPECTRUM` allows only the spectrum analyzer mode to be preset; it will not affect the other operating modes. `PRESET SPECTRUM` provides a convenient starting point for most measurements; it performs a subset of the functions that (PRESET) performs. Refer to the Operation Manual for a list of the functions that `PRESET SPECTRUM` performs.

`PRINT CONFIG` accesses the softkey menu that is used to address the printer and select from either a black and white print or a color print. (A color print requires an HP PaintJet printer.) *Option 021 or 023 only.*

`PRINTER ADDRESS` allows you to select the HP-IB address of the printer. *Option 021 only.*

`PRINTER SETUP` resets the printer, sets the lines per page to 60, and sets the printer to skip page perforations. *Option 021 or 023 only.*

`PRT MENU ON OFF` allows the softkey labels to be printed when you are using (COPY) to print the display. *Option 021 or 023 only.*

`PURGE AMP COR` clears the current amplitude correction factors from spectrum analyzer memory.

`PURGE LIMITS` clears the current limit-line table from spectrum analyzer memory.

PWR SWP ON OFF activates (when ON is underlined) or deactivates (when OFF is underlined) the power-sweep function, where the output power of the tracking generator is swept over the chosen power-sweep range. *Option 010 or 011 only.*

(RECALL) accesses the softkey menus that is used to recall data from either the spectrum analyzer memory or a memory card.

RECALL AMP COR allows you to recall a table of amplitude correction factors from the current mass storage device (spectrum analyzer memory or memory card).

RECALL LIMIT allows you to recall limit-line tables from the current mass storage device (spectrum analyzer memory or memory card).

REF LVL changes the value of the reference level.

REF LVL OFFSET adds an offset value to the displayed reference level.

RES BW AUTO MAN allows you to either manually select the spectrum analyzer's 3 dB bandwidth or automatically recouple it.

RPG TITLE provides lowercase letters, numbers, Greek letters, and punctuation symbols for the screen title. When all desired characters have been entered, press (HOLD) to exit.

(SAVE) accesses the menu that is used to store data in the spectrum analyzer's memory or RAM card.

SAVE AMP COR allows you to save a table of amplitude correction factors from the current mass storage device (spectrum analyzer memory or RAM card).

SAVE LIMIT allows you to save the current limit-line tables into the current mass storage device (spectrum analyzer memory or RAM card).

SAV LOCK ON OFF protects the contents of the current state and trace registers from being overwritten. When **SAV LOCK ON OFF** is ON, the softkey labels for **STATE -> INTRNL** and **TRACE -> INTRNL** change to **MEM LOCKED**.

SCALE LOG LIN sets the vertical scale to either log or linear and, when in log setting, activates log scale per division.

SECAM-L triggers on the SECAM-L video formats. *Options 101 and 102, or Option 301 only.*

SELECT AMPLITUD (from the Amplitude Correction menu) allows you to enter or edit the amplitude value for an amplitude correction factor. When accessed from the Limit-Line menu, **SELECT AMPLITUD** allows you to enter or edit the amplitude value for the displayed (upper or lower) limit-line segment.

SELECT DLT AMPL allows you to enter the delta amplitude value. The mid-amplitude value and the delta amplitude value create the upper and lower limit-line table entries.

SELECT FREQ (from the Amplitude Correction menu) allows you to enter or edit the frequency for an amplitude correction factor. When accessed from the Limit-Line menu, **SELECT FREQ** allows you to enter the frequency value for a limit-line segment.

SELECT LWR AMPL allows you to enter the amplitude value for the lower limit-line segment.

SELECT MID AMPL allows you to enter the mid-amplitude value. The mid-amplitude value and the delta amplitude value create the upper and lower limit-line table entries.

SELECT POINT allows you to create or edit an amplitude correction factor.

SELECT PREFX changes the current prefix to the prefix of the selected file.

SELECT SEGMENT allows you to create or edit a limit-line segment.

SELECT TYPE accesses the softkey menu that is used for selecting the type of limit line: a flat line (**FLAT**), a sloped line (**SLOPE**), or a point (**POINT**).

SELECT UPR AMPL allows you to enter the amplitude value for the upper limit-line segment.

SERVICE CAL accesses several service calibration functions (which are not listed in this guide). The service calibration functions are designed for service use only. Descriptions of the service functions are available in the service documentation. You can order the service documentation (Option 915) through your HP Sales and Service office.

SERVICE DIAG accesses several service diagnostic functions (which are not listed in this guide). The service diagnostic functions are designed for service use only. Descriptions of the service diagnostic functions are available in the service documentation. You can order the service documentation (Option 915) through your HP Sales and Service office.

SET DATE sets the date of the spectrum analyzer's real-time clock.

SET TIME sets the time of the spectrum analyzer's real-time clock.

(SGL SWP) activates the single-sweep mode and sets up a sweep for the next trigger.

SHOW OPTIONS displays the installed instrument options. Pressing SHOW OPTIONS changes the softkey label to EXIT SHOW. Press EXIT SHOW to clear the screen of the SHOW OPTIONS annotation.

(SIGNAL TRACK) moves the signal that has an active marker to the center of the screen and then fixes the signal peak there.

SLOPE draws a straight line between the coordinate point of the current segment and the coordinate point of the next segment, producing limit-line values for all frequencies between the two points.

SPAN activates the span function and changes the frequency range symmetrically about the center frequency.

(SPAN) activates the span function and accesses the span softkey menu.

SPAN ZOOM activates the signal tracking function if there is an on-screen marker present. If a marker is not present, SPAN ZOOM places a marker on the highest signal peak and then activates signal tracking. Any subsequent changes to the span occur with the signal tracked to center screen.

SPEAKER ON OFF turns the internal speaker on or off. *Option 102 or 103 only.*

SPECTRUM ANALYZER sets the spectrum analyzer to the spectrum analyzer operating mode and accesses the **PRESET SPECTRUM** softkey.

SQUELCH allows you to set the squelch threshold by setting the squelch level. Setting the squelch threshold allows strong signals to pass while muting weak signals. *Option 102 or 103 only.*

SRC ATN MAN AUTO allows manual adjustment of the tracking generator switching attenuator. When auto-coupled, **SRC ATN MAN AUTO** automatically adjusts the attenuator to yield the source amplitude level specified by **SRC PWR ON OFF**. *HP 8591A with Option 010 or 011 only.*

SRC PWR OFFSET offsets the displayed power of the source (the tracking generator). *Option 010 or 011 only.*

SRC PWR ON OFF turns the output power of the source (the tracking generator) on or off. *Option 010 or 011 only.*

SRC PWR STP SIZE sets the step size of the source power level, source power offset, and power sweep range functions. *Option 010 or 011 only.*

START FREQ sets the frequency at the left-hand side of the graticule.

STATE -> CARD saves the spectrum analyzer state on a RAM card using the specified prefix. *HP 8590B or HP 8592B requires Option 003.*

STATE -> INTRNL saves the spectrum analyzer state in spectrum analyzer memory.

STOP FREQ sets the frequency at the right-hand side of the graticule.

STUVWX accesses the softkey menu that is used for selecting screen title or prefix characters S through X.

(SWEEP) accesses the Sweep Time menu and activates the sweep time function.

SWEEP CONT SGL selects between continuous-sweep mode or single-sweep mode. Use (SGL SWP) to trigger a sweep in single-sweep mode.

SWP CPLG SR SA selects stimulus-response (SR) or spectrum-analyzer (SA) auto-coupled sweep time. In stimulus-response mode, auto-coupled sweep

times are usually much faster for swept-response measurements. *Option 010 or 011 only.*

SWP TIME AUTO MAN allows you to either change the sweep time manually or automatically recouple it.

THRESHLD ON OFF sets the lower boundary of the active trace. The threshold line "clips" signals that would otherwise appear below the line.

TIMEDATE accesses the softkey menu that is used to set and display the real-time clock.

TIMEDATE ON OFF allows you to turn the display of the real-time clock on or off.

(TRACE) accesses the softkey menus that allow you to store and manipulate trace information.

TRACE A allows you to recall previously saved trace data into trace A or to save trace data from trace A.

TRACE A B C allows you to select functions for trace A, trace B, or trace C.

TRACE B allows you to recall previously saved trace data into trace B or to save trace data from trace B.

TRACE C allows you to recall previously saved trace data into trace C or to save trace data from trace C.

TRACE -> CARD saves the spectrum analyzer trace data, limit-line tables, or amplitude correction factors on a RAM card. The information is saved in a file that has the specified prefix.

TRACE -> INTRNL saves the spectrum analyzer trace data, limit-line tables, or amplitude correction factors in spectrum analyzer memory.

TRACK GEN displays softkey menus for use with a built-in tracking generator. *Option 010 or 011 only.*

TRACKING PEAK activates a routine that automatically adjusts the tracking adjustment to obtain the peak response of the tracking generator. *Option 010 or 011 only.*

(TRIG) accesses the softkey menu that is used for selection of the sweep mode and trigger mode.

TV LINE # selects the line number of the TV frame on which to trigger the sweep for the selected video format. *Options 101 and 102, or Option 301 only.*

TVSTND accesses the softkey menu that is used for triggering on NTSC, PAL, PAL-M, or SECAM-L video formats. *Options 101 and 102, or Option 301 only.*

TV SYNC NEG POS triggers on the negative or positive video format. Most formats use the negative position, SECAM-L uses positive. *Options 101 and 102, or Option 301 only.*

TV TRIG activates the TV trigger mode and accesses the TV Trigger menu. *Options 101 and 102, or Option 301 only.*

TV TRIG EVEN FLD triggers on an even field of an interlaced video picture format. *Options 101 and 102, or Option 301 only.*

TV TRIG ODD FLD triggers on an odd field of an interlaced video picture format. *Options 101 and 102, or Option 301 only.*

TV TRIG VERT INT triggers on a vertical interval (only for noninterlaced video picture formats). *Options 101 and 102, or Option 301 only.*

USER MENU(S) accesses menu 1, which is available for user-defined key functions.

VBW/RBW RATIO allows the selection of the ratio between the video and resolution bandwidths.

VERIFY TIMEBASE allows the time base digital-to-analog converter to be changed to verify that the time base performs to specification. (PRESET) resets the time base to its original value. A pass code is required to access this function. **VERIFY TIMEBASE** does not apply to Option 004 and is not available for *HP 8590B and HP 8592B.*

VID AVG ON OFF initiates a digital averaging routine that averages displayed signals and noise. It does not affect the sweep time, bandwidth, or other analog characteristics of the spectrum analyzer.

VID BW AUTO MAN allows you to change the spectrum analyzer's post-detection filter manually or automatically recouple it. **VID BW AUTO MAN** also auto-couples VBW/RBW RATIO.

VIDEO activates the trigger condition that allows the next sweep to start if the detected RF envelope voltage rises to a level set by the display line.

VIEW A holds the amplitude data in the trace A register so that the trace A register will not be updated as the spectrum analyzer sweeps. If trace A is deactivated with **BLANK A**, the stored data can be retrieved with **VIEW A**.
CLEAR WRITE A or **MAX HOLD A** overwrite the stored data.

VIEW B is the same as **VIEW A**, except that trace B is used.
CLEAR WRITE B or **MAX HOLD B** overwrite the stored data.

VIEW C is the same as **VIEW A**, except that trace C is used.
CLEAR WRITE C or **MIN HOLD C** overwrite the stored data.

Volts changes the amplitude units to volts for the current amplitude scale.

Watts changes the amplitude units to watts for the current amplitude scale.

YZ_# SPC CLEAR accesses the softkey menu that is used for selecting the characters Y, Z, underscore (_), #, space, or for clearing the current prefix or screen title.

ZERO SPAN sets the spectrum analyzer's frequency span to zero.

3

Programming Commands

Introduction

The following pages are a compilation of all current programming commands for the HP 8590 Series spectrum analyzers. More information on each command can be found in the *HP 8590 Series Spectrum Analyzer Programming Manual*. This chapter contain the following sections:

- How to use this chapter.
  - Notation conventions.
  - Syntax conventions.
- The functional index.
- The programming codes.
- The summary of the characters and secondary keywords (reserved words).

How to Use This Chapter

This chapter is intended experienced spectrum analyzer programmers.

To find a programming code that performs a particular function, refer to the "Functional Index," which groups the commands according to function. Once the desired command is found, refer to the alphabetical listing of the programming codes for further keyword definition and syntax information.

For further information on syntax, refer to "Notation Conventions," "Syntax Conventions," and "Characters and Secondary Keywords (Reserved Words) Summary."

Notation Conventions

The following symbols and type styles found in this guide denote the following:

BOLD TYPE	All characters appearing in bold type are key words and must appear exactly as shown.
CAPITAL LETTERS	All characters that are capital letters are secondary keywords and appear within the keyword syntax. They must appear exactly as shown, and their meanings can be found in "Characters and Secondary Keywords (Reserved Words) Summary."
< >	Characters appearing in angular brackets are considered to be elements of the language being defined. Their meanings can be found in the section "Syntax Conventions" unless otherwise specified with the keyword definition.
[ ]	Square brackets indicate that whatever occurs within the brackets is optional.
|	The "|" symbol indicates a choice of exactly one element from a list (for example, <a>|<b> indicates <a> or <b>, but not both).
( )	Parentheses are used to clarify the group from which elements are to be chosen.
_	Indicates that a space must be placed at the indicated location (for example, A_<a> indicates there must be a space between the keyword A and the element <a>).
::=	Defines the element. For example, <a>::=<b><c> indicates that <a> can be replaced by the series of elements <b><c> in any statement where <a> occurs.

Syntax Conventions

`<A-block data field>::=`

#A<length><command list> (use when the length of the command list is known).

<A-block data format>::=

#A<length><command list>.

<character>::=

Sp!"#%&'()+,-/0123456789:;ABCDEFGHIJKL
MNOPQRSTUVWXYZ[\]?-'abcdefghijklmnopqrstuvwxyz

<character string>::=

List of characters.

<command list>::=

Any spectrum analyzer command or list of commands separated by semicolons.

<CR>::=

Carriage return.

<data byte>::=

One 8-bit byte containing numeric or character data.

<delimiter>::=

!|"|$|%|&|'|/|:|=|@

<destination>::=

TRA|TRB|TRC|<user-defined trace>|<user-defined variable>|<predefined variable>|<trace range>.

<display units>::=

Within screen or graticule coordinates. Screen coordinates are (Xmin,Ymin)=(−40,−22), (Xmax,Ymax)=(471,233). Graticule coordinates are (Xmin,Ymin)=(0,0), (Xmax,Ymax)=(400,200).

<EOI>::=

End or identify.

<I-block data field>::=

#I<command list>END; (use when the length of the command list is not known).

<key label>::=

One to eight characters per label line. Use the (|) symbol or blank spaces to separate into two softkey label lines.

<key number>::=

Integer from 1 to 6, 601 to 1200|<trace element>|<predefined function>|<predefined variable>|<user-defined variable>.

<label>::=

A string two to eleven characters long. Choice of characters is A through Z and the underscore (_). The underscore should be used as the second character of the label. Omitting the underscore, or using the underscore in other than the second character in a label, is not recommended.

<length>::=

Two 8-bit bytes specifying the length of the command list.

<LF>::=

Line feed.

<number>::=

Integer number or real number.

<numeric data format>::=

<number><CR><LF><EOI>.

<source>::=

TRA|TRB|TRC|<user-defined trace>|<user-defined variable>|<predefined variable>|<predefined function>|<trace range>|<number>.

<source 1>::=

TRA|TRB|TRC|<user-defined trace>|<user-defined variable>|<predefined variable>|<predefined function>|<trace range>|<number>.

<source 2>::=

TRA|TRB|TRC|<user-defined trace>|<user-defined variable>|<predefined variable>|<predefined function>|<trace range>|<number>.

<string data field>::=

<delimiter><command list><delimiter>.

<trace destination>::=

TRA|TRB|TRC|<user-defined trace>|<trace range>.

<trace element>::=

Any element (point) of trace A, trace B, trace C, or user-defined trace. Trace A, trace B, or trace C can have 1 to 401 elements; a user-defined trace can have 1 to 2047 elements.

<trace range>::=

Any segment of trace A, trace B, trace C, or user-defined trace.

<trace source>::=

TRA|TRB|TRC|<user-defined trace>|<trace range>.

<user-defined function>::=

A string two to eleven characters long defined in the FUNCDEF or ACTDEF declaration.

<user-defined trace>::=

A string two to eleven characters long defined in the TRDEF statement. A user-defined trace can have 1 to 2047 elements.

<user-defined variable>::=

A string two to eleven characters long defined in the VARDEF or ACTDEF declaration.

AMPLITUDE

AT	Specifies input attenuation.
AUNITS	Specifies amplitude units for input, output, and display.
COUPLE	Selects dc coupling or ac coupling.
INZ	Specifies input impedance.
LG	Selects log scale.
LN	Selects linear scale.
ML	Specifies mixer level.
NRL	Normalizes trace data with respect to the reference level.
PREAMPG	Adds a positive or negative preamplifier gain value.
RESETRL	Resets the reference level to instrument preset value.
PP	Performs a preselector peak. *HP 8592B, HP 8593A, or HP 8595A only.*
RL	Specifies reference level.
ROFFSET	Specifies reference level offset.

AUTO COUPLING (AUTO COUPLE)

AUTO	Recouples active function or recouples all functions.

AUXILIARY CONTROL (AUX CTRL)

CNTLA	Turns on or off control line A.
CNTLB	Turns on or off control line B.
CNTLC	Turns on or off control line C.
CNTLD	Turns on or off control line D.
CNTLI	Returns the status of control line I.
COMB	Turns on or off the comb generator. *HP 8592B, HP 8593A, or HP 8595A only.*
DEMOD	Turns the demodulator on or off, selects between AM, FM, and QPD demodulation. *For Option 102, 103, or 301 only.*
FMGAIN	Specifies frequency for FM gain. *For Option 102, 103, or 301 only.*
MEASURE	Determines the type of measurement: signal analysis, stimulus response, or signal normalization. *Option 010 or 011 only.*

NRL	Sets the normalized reference level.
RLPOS	Selects the position of reference level.
SPEAKER	Turns on or off the internal speaker. *For Option 102, 103, or 301 only.*
SQLCH	Sets the squelch level. *For Option 102, 103, or 301 only.*
SRCALC	Selects internal or external leveling for the tracking generator. *Option 010 or 011 only.*
SRCAT	Attenuates the source output level. *Option 010 or 011 for the HP 8591A only.*
SRCNORM	Subtracts trace B from trace A, adds the display line, and sends the result to trace A.
SRCPOFS	Offsets the source power level. *Option 010 or 011 only.*
SRCPSTP	Selects the source-power step size. *Option 010 or 011 only.*
SRCPSWP	Selects sweep range of source output. *Option 010 or 011 only.*
SRCPWR	Selects the source power level. *Option 010 or 011 only.*
SRCTK	Adjusts tracking of source output with spectrum-analyzer sweep. *Option 010 or 011 only.*
SRCTKPK	Adjusts tracking of source output with spectrum analyzer sweep. *Option 010 or 011 only.*
SWPCPL	Selects a stimulus-response (SR) or spectrum-analyzer (SA) auto-coupled sweep time. *Option 010 or 011 only.*

BANDWIDTH (BW)

RB	Specifies resolution bandwidth.
VAVG	Turns on or off video averaging.
VB	Specifies video bandwidth.
VBR	Specifies coupling ratio of video bandwidth to resolution bandwidth.

CALIBRATION (CAL)

CAL	Initiates the specified self-calibration routine.
CNF	Performs the confidence test.
CORREK	Returns a "1" if the correction factors are on.
CRTHPOS	Specifies the spectrum analyzer display's horizontal position.
CRTVPOS	Specifies the spectrum analyzer display's vertical position.

COMMAND TRIGGER

ONCYCLE	Performs command list periodically.
ONDELAY	Performs command list once after a time period.
ONEOS	Performs command list at the end of every sweep.
ONMKR	Performs command list at the marker.
ONSRQ	Performs command list on every service request.
ONSWP	Performs command list at beginning of every sweep.
ONTIME	Performs command list at a specific time.
WAIT	Suspends all spectrum analyzer operation for the specified time duration.

CONFIGURATION (CONFIG)

CAT	Displays directory information from the specified or the current mass storage device.
DATEMODE	Sets the format of the display of the date.
DISPOSE	Deletes user-defined functions.
FORMAT	Formats the memory card. *HP 8590B or HP 8592B requires Option 003.*
HAVE	Returns a "0" if a device or option is not installed in the spectrum analyzer.
POWERON	Selects the state the spectrum analyzer when turned on: IP (instrument preset) or LAST state.
PREFX	Specifies the prefix.
SETDATE	Sets the date of the real-time clock.
SETTIME	Sets the time of the real-time clock.
TIMEDATE	Sets the time and date of the real-time clock.
TIMEDSP	Turns the display of the real-time clock on or off.

DISPLAY

ANNOT	Turns the screen annotation on or off.
DL	Specifies display line level.
DSPLY	Writes the value of a variable on the spectrum analyzer screen.
GRAT	Turns on or off the screen graticule.
HD	Holds or disables data entry and blanks active function.
MENU	Displays specified menu on the spectrum analyzer screen.

PREFX	Specifies the prefix.
TH	Specifies displayed threshold level.
TITLE	Writes text string to the top line of the spectrum analyzer screen.

FREQUENCY

CF	Specifies center frequency.
FA	Specifies start frequency.
FB	Specifies stop frequency.
FOFFSET	Specifies frequency offset.
SS	Specifies center-frequency step size.

GRAPHICS

CLRDSP	Erases user-generated graphics.
DT	Defines label terminator.
GR	Graphs specified *y* values on the spectrum analyzer screen.
LB	Writes text to the spectrum analyzer screen.
PA	Moves pen to specified position.
PD	Places pen down.
PR	Draws vector from last position (plot relative).
PRINT	Prints screen data.
PU	Lifts pen up.
TEXT	Writes text string to screen at current pen position.
TRGRPH	Graphs compressed trace.

INFORMATION

ACTVF	Returns a "0" if the function is not active.
BIT	Returns the state of a bit.
CLS	Clears status byte.
HAVE	Returns a "0" if a device or option is not installed.
ID	Returns the HP model number of the spectrum analyzer.
MDU	Returns the spectrum analyzer's baseline and reference level.
OP	Returns the lower-left and upper-right coordinates of the spectrum analyzer display.
REV	Returns the spectrum analyzer's firmware date.

RQS	Provides service request mask bits that are enabled for service requests.
SER	Returns the serial number of the spectrum analyzer.
SRQ	Sets service request.
STB	Queries status byte.

INPUT and OUTPUT

EE	Enables front-panel number entry.
EK	Enables front-panel knob control.
ENTER	Controls the HP-IB in order to receive data.
EP	Enables parameter entry from front panel.
OA	Returns active function.
OL	Returns learn string.
OUTPUT	Controls the HP-IB in order to send data.
RELHPIB	Releases HP-IB control.
TA	Controls trace A output.
TB	Controls trace B output.
TDF	Selects trace data output format.
TRA	Controls trace data input or output or trace A.
TRB	Controls trace data input or output or trace B.
TRC	Controls trace data input or output or trace C.

LIMIT LINES

LIMIDEL	Deletes all segments in the current limit-line table.
LIMIFAIL	Returns a "0" if the measurement sweep passes.
LIMIHI	Allows a user-specified upper limit line for testing.
LIMILINE	Outputs the current limit-line table definitions.
LIMILO	Allows a user-specified lower limit line for testing.
LIMIMIRROR	Reflects each limit line about the amplitude axis at the largest frequency.
LIMIMODE	Selects type of limit-line table format: upper, lower, upper and lower, or mid and delta.
LIMIREL	Specifies the current limit lines as fixed or relative.
LIMISEG	Adds new segments to the current limit line in the upper limit line or the lower limit line.
LIMITEST	Compares the active trace data with the current limit line.

SEGDEL	Deletes the specified segment from the limit-line tables.
SENTER	Enters the limit-line data in the upper and lower limit-line tables or the mid and delta table.

MARKER

MDS	Specifies measurement data size as byte or word.
MF	Returns marker frequency.
MKA	Specifies amplitude of the active marker.
MKACT	Specifies active marker: 1, 2, 3, or 4.
MKBW	Specifies marker bandwidth.
MKCF	Moves marker frequency into center frequency.
MKCONT	Continues sweep after MKSTOP.
MKD	Moves delta marker to specified position.
MKF	Specifies frequency of active marker.
MKFC	Turns on or off marker frequency count. *HP 8591A, HP 8593A, HP 8594A, or HP 8595A only.*
MKFCR	Sets the marker counter resolution. *HP 8591A, HP 8593A, HP 8594A, or HP 8595A only.*
MKMIN	Moves active marker to minimum signal detected.
MKN	Moves active marker to specified frequency as frequency type marker.
MKNOISE	Returns average value at marker, normalized to 1 Hz bandwidth.
MKOFF	Turns off all markers.
MKP	Places the marker at the given x-axis position.
MKPAUSE	Pauses sweep at marker.
MKPK	Moves active marker to maximum signal detected.
MKPX	Specifies minimum excursion for peak identification.
MKREAD	Selects type of marker readout to be displayed.
MKRL	Sets reference level to marker amplitude.
MKSP	Sets span to marker frequency value.
MKSS	Sets to center-frequency step-size.
MKSTOP	Stops the sweep at the active marker.
MKTRACE	Assigns marker to trace.
MKTRACK	Turns on or off signal tracking.
MKTYPE	Specifies the marker type.
M4	Turns on marker zoom.

MATH (see also Trace Math)

ABS	Calculates the absolute value of the operands.
ADD	Calculates the sum of the operands.
AVG	Averages two trace operands.
BIT	Returns the state of a bit.
CTA	Converts to absolute units.
CTM	Converts to measurement units.
DIV	Returns the result of the division of two operands.
EXP	Calculates the exponential of an operand.
INT	Calculates the integer value of an operand.
LOG	Calculates the log of operand.
MEAN	Returns the mean value of a trace.
MEANTH	Returns the mean value of the trace above the threshold.
MIN	Finds the minimum of two operands.
MINPOS	Finds the x-axis position of the minimum trace value.
MOD	Finds the remainder from division.
MPY	Multiplies two operands.
MXM	Finds the maximum of two operands.
PDA	Finds the probability distribution of the amplitude.
PDF	Finds the probability distribution of frequency.
RMS	Finds the root-mean-square.
SQR	Finds the square root.
STDEV	Finds the standard deviation.
SUB	Subtracts one operand from another.
VARIANCE	Finds the amplitude variance of operand.

MEASURE and USER (MEAS/USER)

AMPCOR	Applies amplitude corrections at specified frequencies.
FFT	Calculates fast Fourier transform.
LIMIDEL	Deletes all segments in limit-line table and presets limit-line settings.
LIMIFAIL	Returns a "0" if the measurement sweep passes.
LIMILINE	Outputs the current limit-line table definitions.
LIMIMIRROR	Reflects the limit line about the amplitude axis at the largest frequency.

LIMIMODE	Selects type of limit-line table format: upper, lower, upper and lower, or mid and delta.
LIMIREL	Specifies the current limit lines as fixed or relative.
LIMISEG	Adds new segments to the current limit line in the upper limit line or the lower limit line.
LIMITEST	Compares the active trace data with the current limit line.
PWRBW	Returns power bandwidth of signal.
SEGDEL	Deletes the specified segment from the limit-line tables.
SENTER	Enters the limit-line data in the upper and lower limit-line tables or the mid and delta table.

MODE

MODE	Returns the operating mode of the spectrum analyzer.

OPERATOR ENTRY

EE	Enables front-panel data number entry.
EK	Enables front-panel knob control.
EP	Enter parameter from front panel.
HD	Holds or disables entry and blanks active function readout.

PLOTTER

PLOT	Plots screen data to previously addressed plotter.

PRESET

IP	Performs an instrument preset.
LF	Performs an instrument preset to the base band (band 0). *HP 8592B or HP 8593A only.*
POWERON	Selects the state that the spectrum analyzer is in when it is turned on: IP (instrument preset) or LAST state.
RESETRL	Resets the reference level to instrument preset value.

PRINTER

PRINT	Prints screen data to previously addressed printer.

PROGRAM FLOW

ABORT	Aborts all user-defined functions.
IF	IF/THEN/ELSE/ENDIF forms a conditional construct.
REPEAT	REPEAT/UNTIL forms a looping construct.
RETURN	Returns from user-defined function.
WAIT	Suspends all spectrum analyzer operation for the specified time duration.

RECALL or SAVE

CAT	Displays directory information from either the specified or current mass storage device.
LOAD	Loads data from the memory card. *HP 8590B or HP 8592B requires Option 003.*
MSI	Defines the mass storage device.
PREFX	Specifies the prefix.
PSTATE	Protects internal state registers.
PURGE	Deletes the file from the current mass storage device.
RCLS	Recalls state from internal state register.
RCLT	Recalls state and trace, limit lines, or amplitude factors from the internal trace register.
SAVES	Saves state in internal state register.
SAVET	Saves state and trace, limit lines, or amplitude factors in the internal trace register.
SAVRCLF	Indicates that a save or recall operation is in progress.
SAVRCLN	Appends number to prefix for save and recall operations.
SAVRCLW	Specifies what is to be saved or recalled.
STOR	Stores item from spectrum analyzer to memory card.

SPAN

FS	Specifies full frequency span.
HN	Returns the harmonic number (band). *HP 8592B, HP 8593A, or HP 8595A only.*
HNLOCK	Locks the tuning band. *HP 8592B, HP 8593A, or HP 8595A only.*
HNUNLK	Unlocks the tuning band. *HP 8592B, HP 8593A, or HP 8595A only.*
LSPAN	Changes the spectrum analyzer's span to the previous span setting.
SP	Specifies frequency span.
SPZOOM	Places marker on highest on-screen signal peak, and turns on the signal track function.

SWEEP

CONTS	Selects continuous-sweep mode.
GATE	Turns on or off the gating. *Option 105 only.*
GATECTL	Selects between the edge and the level trigger mode. *Option 105 only.*
GC	Presets Option 105. *Option 105 only.*
GD	Sets the delay time before gating occurs. *Option 105 only.*
GL	Sets the length of time gating occurs. *Option 105 only.*
GP	Sets the trigger polarity. *Option 105 only.*
ST	Specifies the sweep time.

SYNCHRONIZATION

DONE	Returns a "1" after preceding commands are begun.
TS	Begins a new sweep.

TRACE

AMB	Subtracts trace B from trace A and places the result in trace A.
AMBPL	Subtracts trace B from trace A, adds the display line, and places the result in trace A.
AXB	Exchanges trace A and trace B.
BLANK	Blanks trace.
BML	Subtracts display line from trace B, and places the result in trace B.
BTC	Transfers trace B into trace C.
BXC	Exchanges trace B and trace C.
CLRW	Clear-writes trace.
DET	Specifies detection mode.
IB	Inputs trace B in binary units.
MINH	Updates trace C elements with minimum level detected.
MOV	Moves trace from source to destination.
MXMH	Updates trace elements with maximum level detected.
PKPOS	Returns maximum value of trace.
TA	Returns trace A data.
TB	Returns trace B data.
TRA/TRB /TRC	Controls trace A, trace B, or trace C data input or output.
TRCMEM	Returns the save trace memory capability.
TRDEF	Declares a user-defined trace.
TRDSP	Turns on or off trace display.
TRGRPH	Graphs a compressed trace.
TRPRST	Returns traces to preset state.
TRSTAT	Returns status of traces.
TWNDOW	Specifies trace window for FFT.
VAVG	Turns on or off video averaging.
VIEW	Views trace.

TRACE MATH (see also Math)

APB	Adds trace A and trace B and places the result in trace A.
CLRAVG	Restarts video averaging.
COMPRESS	Compresses a trace to the desired length.
CONCAT	Concatenates two traces.
FFT	Calculates fast Fourier transform.
MIRROR	Displays the mirror image of a trace.
PEAKS	Specifies trace peaks.
SMOOTH	Smooths a trace.
SUM	Returns the sum of the amplitudes of the trace elements.
SUMSQR	Returns the sum of the squares of the amplitude of each trace element.
TRMATH	Performs trace math.
XCH	Exchanges traces.

TRIGGER

ONEOS	Performs the command list at the end of sweep.
ONSWP	Performs the command list at beginning of sweep.
SNGLS	Selects single-sweep mode.
TM	Specifies trigger mode.
TS	Begins a new sweep.
TVLINE	Specifies horizontal line of video to trigger on. *Options 101 and 102, or Option 301 only.*
TVSFRM	Specifies type of video frame to trigger on. *Options 101 and 102, or Option 301 only.*
TVSTND	Selects the triggering for NTSC, PAL, PAL-M, and SECAM-L formats. *Options 101 and 102, or Option 301 only.*
TVSYNC	Selects between negative and positive triggering for video frame formats. *Options 101 and 102, or Option 301 only.*

USER-DEFINED

ABORT	Aborts all user-defined functions.
ACTDEF	Defines an active function.
DISPOSE	Deletes user-defined functions.
ERASE	Performs a dispose-all.
FUNCDEF	Defines a function.
KEYCLR	Clears softkeys 1 through 6.
KEYCMD	Defines the function and label of a softkey and updates label whenever a key is pressed.
KEYDEF	Defines a softkey.
KEYENH	Activates inverse video and underlining of a softkey.
KEYEXC	Executes a softkey.
KEYLBL	Relabels a softkey.
MEM	Returns the amount of memory available.
MENU	Displays the softkey menu.
RETURN	Returns from user-defined function.
SAVEMENU	Saves softkeys 1 to 6 in the menu specified.
TRDEF	Declares a user-defined trace.
USTATE	Returns or sends user state.
VARDEF	Declares a user-defined variable.

ABORT;

Stops the execution of all user-defined functions and readies the instrument for the next command received.

ABS_<destination>,<source>;

Places the absolute value of the source values in the destination.

ACTDEF_<function name>(,<delimiter><active function area label><delimiter>,<preset value>,(STEP|NONE|HZ|SEC|DB|DBM|V|ABSHZ|INT),(<delimiter>(<command list>|<user-defined function>)<delimiter>))|?;

Creates a user-defined active function.
<function name>::=2 to 11 ASCII characters representing the function name.
<active function area label>::= ASCII characters representing the label for the active function area.
<preset value>::=<number>|<user-defined variable>.
Query response using <name>: <numeric data format>.
Query response using ACTDEF <function name>: ACTDEF <function name>,!<active function area label>!,<preset value>,(STEP|NONE|HZ|SEC|DB|DBM|V|ABSHZ|INT),<A-block data format><CR><LF><EOI>.

ACTVF_<active function>[?];

Returns a "0" if the given function is not active, a "1" if it is active.
<active function>::= AT|CF|COUPLE|DL|FA|FB|FMGAIN|FOFFSET|GATECTL|GD|GL|GP|INZ|LG|MKA|MKD|MKFCR|MKN|MKPAUSE|MKPX|ML|MODE|NRL|PREAMPG|RB|ROFFSET|RL|RLPOS|SAVRCLN|SETDATE|SETTIME|SP|SQLCH|SRCAT|SRCPOFS|SRCPSTP|SRCPSWP|SRCPWR|SRCTK|SS|ST|TH|TIMEDATE|TVLINE|VAVG|VB|VBR|user-defined active function specified by the ACTDEF command.

ADD_<destination>,<source 1>,<source 2>;

Adds the sources and sends the sum to the destination.

AMB(_(ON|OFF|1|0))|?;

Subtracts trace B from trace A and sends the result to trace A during every sweep of the spectrum analyzer.
Query response: (ON|OFF)<CR><LF><EOI>.

AMBPL(_(ON|OFF|1|0))|?;

Subtracts trace B from trace A, adds the display line value to the difference, and sends the result to trace A during every sweep of the spectrum analyzer.
Query response: (ON|OFF)<CR><LF><EOI>.

AMPCOR(_(<frequency>[HZ|KHZ|MHZ|GHZ],
<amplitude>[DB][,<frequency>[HZ|KHZ|MHZ|GHZ],
<amplitude>[DB]])|(OFF|ON))|?;

Applies amplitude corrections at specified frequencies. Up to 79 frequency and amplitude pairs may be specified in the ampcor command.
<frequency>::=number.
<amplitude>::=number.
Query response: <frequency>,<amplitude><CR> <LF><EOI>.

ANNOT(_(ON|OFF|1|0))|?;

Turns the display annotation on or off.
Query response: (ON|OFF)<CR><LF><EOI>.

APB;

Adds trace A to trace B and sends the result to trace A.

AT(_(<number>[DB])|AUTO|UP|DN|EP))|?;

Specifies the RF input attenuation. Default unit is dB.
Query response: <numeric data format>.

AUNITS(_(DBM|DBMV|DBUV|V|W))|?;

Specifies the amplitude units for input, output, and display for the current amplitude setting (log or linear).
Query response: (DBM|DBMV|DBUV|V|W)<CR><LF><EOI>.

AUTO;

Automatically couples the active functions.

AVG_<destination>,<source>,<ratio>;

Computes the average value of the source and the destination according to the following algorithm: Average = $\frac{((\text{ratio}-1)\times\text{destination})+\text{source}}{\text{ratio}}$

<ratio>::=<number>|<user-defined variable>|<predefined variable>|<predefined function>|<trace element>.

AXB;

Exchanges trace A and trace B.

BIT_<destination>,<source>,<bit number>;

Places the state of the bit ("0" or "1") in the destination.
<destination>::=<user-defined variable>|<predefined variable>|<trace element>.
<source>::=<user-defined variable>|<predefined variable>|<predefined function>|<trace element>|<number>.
<bit number>::=<user-defined variable>|<predefined variable>|<predefined function>|<trace element>|<number>.

BLANK_(TRA|TRB|TRC);

Blanks trace A, trace B, or trace C and stops taking new data into the specified trace.

BML;

Subtracts the display line from trace B and sends the result to trace B.

BTC;

Transfers trace B to trace C.

BXC;

Exchanges trace B and trace C.

CAL_(ON|OFF|STORE|FETCH|FREQ|AMP|ALL|TG|YTF|DISP|DUMP|INIT);

Controls the calibration routine.

CAT_[a|d|l|s|t|reg|prefix|on]*[,INT|CARD];

Returns directory information from either the specified or the current mass storage device. The directory information is returned as ASCII string data. The a, d, l, s, and t parameters denote data types and are used for cataloging the memory card. The a, d, l, s, and t data types represent the following:

a = amplitude correction factors.
d = downloadable program.
l = limit-line tables.
s = instrument state.
t = trace data and instrument state.

Reg, prefix, or on parameters are used for cataloging spectrum analyzer memory only. Reg, prefix, and on represent the following:

reg = catalogs the state and trace registers.
prefix = catalogs the spectrum analyzer memory items by the prefix.
on = catalogs the on-event items in spectrum analyzer memory.

Note that the data type, reg, prefix, or on is followed by the asterisk. The asterisk acts as a wild card. To catalog the memory card contents or all of spectrum analyzer memory, omit the first parameter and use the asterisk. If INT or CARD is not specified, CAT returns directory information from the current mass storage device.

CF(_(<number>[HZ|KHZ|MHZ|GHZ])|UP|DN|EP)|?;

Specifies the center frequency. Default unit is Hz.
Query response: <numeric data format>.

CLRAVG;

Restarts video averaging.

CLRDSP;

Erases user-generated graphics.

CLRW_(TRA|TRB|TRC);

Clears the specified trace and enables trace data acquisition.

CLS;

Clears all status bits.

CNF;

Performs the confidence test.

CNTLA(_(ON|OFF|1|0))|?;

Makes the control line A of the auxiliary interface high or low. CNTLA ON sets control line A high, CNTLA OFF sets the control line low.
Query response: (ON|OFF)<CR><LF><EOI>.

CNTLB(_(ON|OFF|1|0))|?;

Makes the control line B of the auxiliary interface high or low. CNTLB ON sets control line B high, CNTLB OFF sets the control line low.
Query response: (ON|OFF)<CR><LF><EOI>.

CNTLC(_(ON|OFF|1|0))|?;

Makes the control line C of the auxiliary interface high or low. CNTLC ON sets control line C high, CNTLC OFF sets the control line low.
Query response: (ON|OFF)<CR><LF><EOI>.

CNTLD(_(ON|OFF|1|0))|?;

Makes the control line D of the auxiliary interface high or low. CNTLD ON sets control line D high, CNTLD OFF sets the control line low.
Query response: (ON|OFF)<CR><LF><EOI>.

CNTLI[?];

Returns a "1" if pin 5 of the auxiliary interface is high, a "0" if the line is low.

COMB_(ON|OFF|1|0);

Turns the comb generator on or off. *HP 8592B, HP 8593A, or HP 8595A only.*

COMPRESS_<trace destination>,<trace source>,
(AVG|NRM|NEG|POS|SMP|PKAVG|PKPIT);

Compresses the trace source to fill the trace destination according to the specified compression algorithm.

CONCAT_<trace destination>,<source 1>,<source 2>;

Concatenates source 1 and source 2 and sends the new trace array to the destination.

CONTS;

Selects continuous-sweep mode.

CORREK[?];

Returns a "1" if the correction factors are on, a "0" if they are off.
Query response: (0|1)<CR><LF><EOI>.

COUPLE_(AC|DC)|?;

Selects direct-current (dc) coupling or alternating-current (ac) coupling.
HP 8594A or HP 8595A only.
Query response: (AC|DC)<CR><LF><EOI>.

CRTHPOS(_<position>|UP|DN)|?;

Specifies the horizontal position of the spectrum analyzer display.
<position>::=integer from 1 to 34.
Query response: <numeric data format>.

CRTVPOS(_<position>|UP|DN)|?;

Specifies the vertical position of the spectrum analyzer display.
<position>::=integer from 10 to 58.
Query response: <numeric data format>.

CTA_<destination>,<source>;

Converts the source values from measurement units to the current absolute amplitude units and stores this result in the destination.
<destination>::=<user-defined variable>.
<source>::=<user-defined variable>|<number>|<predefined variable>|<predefined function>.

CTM_<destination>,<source>;

Converts the source values to vertical measurement units and places the result in the destination.
<destination>::=<user-defined variable>.
<source>::=<user-defined variable>|<number>.

DATEMODE(_(MDY|DMY))|?;

Allows the display of the real-time clock to be set in month-day-year format or day-month-year format.
Query response: (MDY|DMY)<CR><LF><EOI>.

DEMOD_(AM|FM|QPD|ON|OFF);

Turns the demodulator on or off, and selects between AM or FM demodulation for Option 102, 103, or 301. The QPD parameter is available with 103 only. *Option 102, 103, or 301 only.*

DET(_(POS|SMP|NEG))|?;

Selects the specified spectrum analyzer input detection mode. The NEG detector is available with Option 101. It enables negative peak detection in sweep times of less than or equal to 200 ms.
Query response: (POS|SMP|NEG)<CR><LF><EOI>.

DISPOSE_<operand>;

Allows the user to free user memory that has been allocated previously for user-defined functions. DISPOSE ALL clears all operands.
<operand>::=<user-defined trace>|<user-defined variable>|<user-defined function>|<key number>|ALL|ONCYCLE|ONDELAY|ONEOS|ONMKR|ONSRQ|ONSWP|ONTIME|TRMATH.
<key number>::=1 to 6, 601 to 1200.

DIV_<destination>,<source 1>,<source 2>;

Divides source 1 by source 2 and places the result in the destination.

DL(_(<number>[DB|DM])|AUTO|ON|OFF|UP|DN|EP)|?;

Specifies a display line level that is displayed on the spectrum analyzer display. Default unit is dBm.
Query response: <numeric data format>.

DN;

Reduces the active function by the applicable step size.

DONE[?];

Returns a "1" when all commands in a command string that was entered before DONE have been started.
Query response: 1<CR><LF><EOI>.

DSPLY_<display variable>,<field width>.<decimal places>;

Displays the value of a variable on the spectrum analyzer screen.
<display variable>::=<number>|<user-defined variable><predefined variable>|<predefined function>|<trace element>
<field width>::= an integer number.
<decimal places>::= an integer number.

DT<character>;

Defines any character as the label terminator. The label terminator is used for the LB command.

EE;

Sends values entered by the operator on the spectrum analyzer numeric keypad to the controller.

EK;

Allows data entry with the front-panel knob when the spectrum analyzer is under remote control.

ENTER_<HP-IB address>,(K|B|W),<destination>;

Allows the spectrum analyzer to receive data from other devices on the HP-IB.
<HP-IB address>::= <number>|<user-defined variable>|<predefined variable>|<predefined function>|<trace element>.

K = Free field, ASCII real number format.
B = One byte binary.
W = One word binary (2 bytes).

<destination>::=<trace element>|<user-defined variable>|<predefined variable>.

EP;

Sends values entered by the operator on the spectrum analyzer number keyboard to the current function.

ERASE;

Clears trace B, disposes of the contents of the user memory, resets the internal state registers to the instrument preset state, and presets the spectrum analyzer.

EXP_<destination>,<source>,<scaling factor>;

The exponential of the source is placed in the destination. The EXP command is useful is for converting log values to linear values.
<scaling factor>::=<number>|<user-defined variable>|<predefined variable>|<predefined function>|<trace element>.

FA(_(<number>[HZ|KHZ|MHZ|GHZ])|UP|DN|EP)|?;

Specifies the start frequency. Default unit is Hz.
Query response: <numeric data format>.

FB(_(<number>[HZ|KHZ|MHZ|GHZ])|UP|DN|EP)|?;

Specifies the stop frequency. Default unit is Hz.
Query response: <numeric data format>.

FFT_<trace destination>,<trace source>,<window>;

Performs a forward fast Fourier transform on the trace source and sends the results to the trace destination. Before executing FFT, a trace window must be defined with the TWNDOW command, for proper formatting.
<trace destination>::=TRA|TRB|TRC|<user-defined trace>.
<trace source>::=TRA|TRB|TRC|<user-defined trace>.
<window>::=TRA|TRB|TRC|<user-defined trace>.

FMGAIN(_(<number>[HZ|KHZ|MHZ|GHZ]))|?;

Specifies the full screen range for FM gain. *Option 102, 103, or 301 only.*
Query response: <numeric data format>.

FOFFSET(_(<number>[HZ|KHZ|MHZ|GHZ]))|?;

Specifies the frequency offset for all absolute frequency readouts, such as center frequency. Default unit is Hz.
Query response: <numeric data format>.

FORMAT_<delimiter><label><delimiter>;

Formats a memory card in the logical interchange format (LIF).
<label>::=0 to 6 characters.

FS;

Selects the full frequency span mode of the spectrum analyzer.

FUNCDEF_<label>,(<string data field>|<A-block data field>|<I-block data field>);

Defines a routine consisting of spectrum analyzer commands, assigns the routine a label, and stores the routine and its label in the user memory.

GATE_(ON|OFF|1|0);

Turns the gate on or off. *Option 105 only.*

GATECTL(_(EDGE|LEVEL))|?;

Selects between the edge and the level mode for time-gating. *Option 105 only.*
Query response: (EDGE|LEVEL)<CR><LF><EOI>.

GC;

Presets Option 105, the time-gated spectrum analysis capability. *Option 105 only.*

GD(_(<number>[SC|MS|US])|UP|DN|EP)|?;

Sets the delay time before gating occurs. *Option 105 only.*
Query response: <numeric data format>.

GL(_(<number>[SC|MS|US])|UP|DN|EP)|?;

Sets the time length that the gating occurs. *Option 105 only.*
Query response: <numeric data format>.

GP_(NEG|POS)|?;

Sets the polarity (positive or negative) for the gate trigger. *Option 105 only.*
Query response: (NEG|POS)<CR><LF><EOI>.

GR_<number>[,<number>];

Graphs the given y coordinate by incrementing the x coordinate by 1. The number parameter may be repeated.

GRAT(_(ON|OFF|1|0))|?;

Turns the graticule on or off.
Query response: (ON|OFF)<CR><LF><EOI>.

HAVE_(HPIB|RS232|IO|TG|FMD|CNT|OVEN|TV|FADC|CARD|GATE|BANDS);

Returns a "0" if the specified device is not installed.

HPIB = Option 021.
RS232 = Option 023.
IO = Option 021 or 023.
TG = Option 010 or 011.
FMD = Option 102, 103, or 301.
CNT = Counter lock.
OVEN = Option 004.
TV = Options 101 and 102, or Option 301.
FADC = Option 101 or 301.
CARD = Memory card reader.
GATE = Option 105.
BANDS = The number of frequency bands that the spectrum analyzer has is returned.

HD;

Disables data entry via the spectrum analyzer numeric keypad, knobs, or step keys. The active function readout is blanked, and any active function is deactivated.

HN[?];

Returns the harmonic number of the current harmonic band in which the spectrum analyzer is tuning. HN returns a −1 if in multiband sweep. *HP 8592B, HP 8593A, or HP 8595A only.*
Query response: <numeric data format>.

HNLOCK(_(<number>|ON|OFF|EP))|?;

Forces the spectrum analyzer to use only the selected harmonic. *HP 8592B, HP 8593A, or HP 8595A only.*
Query response: (ON|OFF)<CR><LF><EOI>.

HNUNLK;

Unlocks the harmonic band. *HP 8592B, HP 8593A, or HP 8595A only.*

IB<entry>;

Provides a method for reading or storing values into trace B.
<entry>::=exactly 802, 8-bit binary bytes.

ID[?];

Returns the HP model number of the spectrum analyzer.
Query response: <character string><CR><LF><EOI>. The character string consists of the letters "HP," and the model number.

IF_<operand 1>,(GT|LT|EQ|NE|GE|LE), <operand 2>,**THEN**_<command list>[**ELSE**_<command list>]**ENDIF**;

Compares the first operand to the second operand. If the condition is true, the command list is executed. Otherwise, commands following the next ELSE or ENDIF statements are executed.
<operand 1>::=<number>|<user-defined variable>|<predefined variable>|<predefined function>|<trace element>.
<operand 2>::=<number>|<user-defined variable>|<predefined variable>|<predefined function>|<trace element>.

INT_<destination>,<source>;

Places the greatest integer that is less than or equal to the source value into the destination.

INZ(_(75|50|EP|OA))|?;

Specifies the value of input impedance that is expected at the active input port.
Query response: (50|75)<CR><LF><EOI>.

IP;

Performs an instrument preset.

KEYCLR;

Clears the user definitions for softkeys 1 through 6 (softkeys 1 through 6 are in menu 1).

KEYCMD_<key number>,<key press command string>,<menu label command string>;

Defines the function and label of a softkey, based on a condition. The softkey label is updated whenever a key is pressed.
<key press command string>::=<delimiter><command list><delimiter>.
<menu label command string>::=<delimiter><command list>|<delimiter>.

KEYDEF(_<key number>(,(<string data field>|<user-defined function>),<delimiter><key label><delimiter>)|?;

Assigns a label and user-defined function to a softkey.
Query response: <A-block data format>"<character string>"<CR><LF><EOI>.

KEYENH_<key number>,<delimiter><key label><delimiter>,<inverse video condition>,<move enhancement condition>;

Activates part or all of the key label in the inverse video mode, or moves the underline from one section of the label to another.
<inverse video condition>::=<delimiter><command list><delimiter>.
<move enhancement condition>::=<delimiter><command list><delimiter>.

KEYEXC_<key number>;

Executes the specified defined key.
<key number>::=integer value from 1 to 6, or 601 to 1200.

KEYLBL_<key number>,<delimiter><key label><delimiter>;

Renames a key without changing its function.

LB_<character string><terminator>;

Writes text (label) at the current pen position using alphanumeric characters that have been specified in the character string.
<terminator>::=<character> specified in DT command.

LF;

performs an instrument preset into base band (band 0).

LG(_(<number>[DB|DM])|UP|DN|EP)|?;

Specifies the size of the vertical graticule divisions as logarithmic units without changing the reference level. Default unit is dB.
Query response: <numeric data format>. A query response of zero indicates a linear scale.

LIMIDEL;

Deletes all upper and lower segments in the current limit-line table and presets all limit-line settings.

LIMIFAIL[?];

Returns a "0" if the last measurement sweep is equal to or within the limit-line bounds.
Query response: 0|1|2|3|4<CR><LF><EOI>.

0 indicates the measurement sweep was within the limit-line bounds.
1 indicates the measurement sweep failed the lower limit.
2 indicates the measurement sweep failed the upper limit.
3 indicates the measurement sweep failed both the lower and upper limits.
4 indicates that no test was performed.

LIMIHI_(TRA|TRB|TRC|<trace range>|<user-defined trace>);

Allows you to specify a fixed trace as the upper limit line.

LIMILINE?;

Outputs the current limit-line table definitions.
Query response: LIMIDEL;LIMILINE<number of segments>;
LIMIREL_(ON|OFF);
(SENTER<frequency>,<upper value>,<lower
value>,(SLOPE|FLAT|POINT);)
|(LIMIHALF_(UPPER|LOWER);LIMISEG
<frequency>,<amplitude>,(SLOPE|FLAT|POINT);)
LIMITEST_(ON|OFF);<CR><LF><EOI>.

LIMILO_(TRA|TRB|TRC|<trace range>|<user-defined trace>);

Allows you to specify a fixed trace as the lower limit line.

LIMIMIRROR;

Reflects the current definition about the amplitude axis at the largest frequency in the definition.

LIMIMODE(_(UPPER|LOWER|UPLOW|DELTA))|?;

Determines whether the limit-line entries are treated as upper amplitude values, lower amplitude values, upper and lower amplitude values, or mid amplitude and delta values.
Query response: (UPPER|LOWER|UPLOW|DELTA)<CR><LF><EOI>.

LIMIREL(_(OFF|ON|0|1))|?;

Specifies whether the current limit-lines are fixed or relative.
Query response: (OFF|ON)<CR><LF><EOI>.

LIMISEG_<frequency>,<amplitude>,[FLAT|SLOPE|POINT];

Adds new segments to the current limit-line in the upper limit-line or in the lower limit-line.
<frequency>::=(number[HZ|KHZ|MHZ|GHZ])|<trace
element>|<predefined function>|<predefined variable>|<user-
defined variable>.
<amplitude>::=(number[DB|DM])|<trace element>|<predefined
function>|<predefined variable>|<user-defined variable>.

LIMITEST(_(OFF|ON|O|1))|?;

Compares the active trace data with the current limit-line data.
Query response: (OFF|ON)<CR><LF><EOI>.

LN;

Specifies the vertical graticule divisions as linear units without changing the reference level.

LOAD_<delimiter><character string><delimiter>[,<destination>];

Loads the data from the memory card. Use the destination (TRA, TRB, TRC, or <user-defined trace>) when loading trace data.
<destination>::=TRA|TRB|TRC|<user-defined trace>.

LOG_<destination>,<source>,<scaling factor>;

Takes the logarithm (base 10) of the source, multiplies the result by the scaling factor, then stores it in the destination.
<scaling factor>::=<number>|<trace element>|<predefined function>|<predefined variable>|<user-defined variable>.

LSPAN;

Changes the spectrum analyzer's span to the previous span setting.

MDS(_(B|W))|?;

Formats binary measurements by selecting the measurement data size as an 8-bit byte or a two-byte word.
Query response: (B|W)<CR><LF><EOI>.

MDU[?];

Returns values for the spectrum analyzer's baseline and reference level.
Query response: <number>,<number>,<number>,
<number>,(DBM|DBMV|DBUV|V|W)<CR><LF><EOI>.

MEAN_<trace source>?;

Returns the mean value of a trace in measurement units.
Query response: <numeric data format>.

MEANTH_<trace source>?;

Returns the mean value of a trace above the threshold, in measurement units.
Query response: <numeric data format>.

MEASURE(_(SA|SR|NRM))|?;

Determines what kind of measurements the spectrum analyzer makes: signal analysis, stimulus response, or signal normalization.
Query response: (SA|SR|NRM)<CR><LF><EOI>.

MEM?;

Returns the amount of unused spectrum analyzer memory available for user programs and variables.
Query response: <numeric data format>.

MENU(_<menu number>)|?;

Displays the selected softkey menu on the spectrum analyzer screen. Menu 0 has no softkeys.
<menu number>::=integer value of 1, or 101 to 200.
Query response: <numeric data format>.

MF;

Returns the frequency (or time) of the on-screen active marker.

MIN_<destination>,<source 1>,<source 2>;

Compares the two sources, point by point, and sends the lesser value of each comparison to the destination.

MINH_TRC;

Updates each trace C element with the minimum level detected.

MINPOS_<trace source>[?];

Returns a value that is the x-axis position (in <display units>) of the minimum amplitude value in trace A, trace B, trace C, or user-defined trace.

MIRROR_<trace destination>,<trace source>;

Moves the mirror image of the source trace into the destination trace.

MKA(_(<number>|UP|DN|EP|AUTO))|?;

Specifies the amplitude of the active marker (in the current amplitude units). When queried, MKA returns the marker amplitude independent of marker type.
Query response: <numeric data format>.

MKACT(_(1|2|3|4))|?;

Establishes the active marker. The active marker becomes marker number 1 after the MKACT command.
Query response: (1|2|3|4)<CR><LF><EOI>.

MKBW_<number>[?];

Returns the bandwidth at either the specified power level relative to an on-screen marker or to the signal peak if no on-screen marker is present.

MKCF;

Sets the center frequency equal to the marker frequency and moves the marker to the center of the screen.

MKCONT;

Continues sweeping from the marker after the marker has been stopped. (See MKSTOP.)

MKD(_(<number>[HZ|KHZ|MHZ|GHZ])|UP|DN|EP);

Places a second marker at the specified frequency away from the active marker. Frequency value may be positive or negative. Default unit is Hz.

MKF(_(<number>[HZ|KHZ|MHZ|GHZ])|EP|UP|DN)|?;

Specifies the frequency of the active marker. Default unit is Hz.
Query response: <numeric data format>.

MKFC_(ON|OFF|1|0);

Turns the marker frequency counter on or off. *HP 8591A, HP 8593A, HP 8594A, or HP 8595A only.*

MKFCR(_<number>[HZ|KHZ|MHZ|GHZ])|UP|DN)|?;

Sets the resolution of the marker counter. *HP 8591A, HP 8593A, HP 8594A, or HP 8595A only.*
Query response: <numeric data format>.

MKMIN;

Moves the active marker to the minimum value detected.

MKN(_(<number>[HZ|KHZ|MHZ|GHZ])|UP|DN|EP)|?;

Activates and moves the marker to the specified frequency.
Query response: <numeric data format>.

MKNOISE(_(ON|OFF|1|0))|?;

Returns the average value of 32 buckets around the marker, compensated for detection mode, and normalized to a 1 Hz bandwidth.
Query response: (ON|OFF)<CR><LF><EOI>.

MKOFF[_ALL];

Turns off either the active marker or, if the ALL parameter is specified, all of the markers.

MKP(_(<number>|<trace element>|<predefined function>|<predefined variable>|<user-defined variable>))|?;

Moves the active marker to the given x-coordinate.
Query response: <numeric data format>.

MKPAUSE(_(<number>SC|MS|US)|UP|DN|EP|OA|AUTO)|?;

Pauses the sweep at the active marker for the duration of the delay period.
Query response: <numeric data format>.

MKPK[_(HI|NH|NR|NL)];

Positions the active marker on signal peaks.

MKPX(_(<number>[DB])|UP|DN|EP)|?;

Specifies the minimum signal excursion for peak identification. Default unit is dB.
Query response: <numeric data format>.

MKREAD(_(FRQ|PER|SWT|IST|FFT))|?;

Selects the type of active trace information to be displayed by the spectrum analyzer marker readout.
Query response: (FRQ|PER|SWT|IST|FFT)<CR><LF><EOI>.

MKRL;

Sets reference level to the same level as the active marker amplitude.

MKSP;

Sets the values of the start and stop frequencies to the same values as the delta markers.

MKSS;

Sets the center-frequency step-size to be the same as the marker frequency (or frequency difference, if delta markers are used).

MKSTOP;

Stops the sweep at the active marker.

MKTRACE(_(TRA|TRB|TRC))|?;

Moves the active marker to the corresponding position on another trace.
Query response: (TRA|TRB|TRC)<CR><LF><EOI>.

MKTRACK(_(ON|OFF|1|0))|?;

Turns the marker signal track on or off.
Query response: (ON|OFF)<CR><LF><EOI>.

MKTYPE(_(PSN|FIXED|AMP|DELTA))|?;

Specifies the type of active marker to be used.
Query response: (PSN|FIXED|AMP)<CR><LF><EOI>.

ML(_(<number>[DB|DM])|EP|UP|DN)|?;

Specifies the maximum signal level that is applied to the input mixer for a signal that is equal to or below the reference level.
Query response: <numeric data format>.

MOD_<destination>,<source 1>,<source 2>;

Places the modulo (remainder) of the division of source 1 by source 2 in the destination.

MODE?;

Returns a "0" if the mode of operation is spectrum analysis. A number other that "0" is returned if the operating mode is other than spectrum analysis.

Query response: <numeric data format>.

MOV_<destination>,<source>;

Copies the source into the destination.

MPY_<destination>,<source 1>,<source 2>;

Multiplies the sources, point by point, and sends the result to the destination.

MSI(_(CARD|INT))|?;

Specifies the current mass storage device (memory card or spectrum analyzer memory).
Query response: (CARD|INT)<CR><LF><EOI>.

MXM_<destination>,<source 1>,<source 2>;

Compares source 1 and source 2, point by point, and sends the greater value of each comparison to the destination.

MXMH_(TRA|TRB);

Updates the selected trace with the maximum level detected at each frequency (maximum hold).

M4(_(<number>[HZ|KHZ|MHZ|GHZ])|UP|DN|EP|AUTO)|?;

Moves the active marker to the specified frequency. Stepping up or down changes the frequency span. Default unit is Hz.
Query response: <numeric data format>.

NRL(_(<number>[DB])|EP)|?;

Sets the normalized trace data with respect to the display line.
Query response: <numeric data format>.

OA;

Returns the active function value.

OL;

Returns the coded instrument state information to the controller in 202 8-bit bytes.

ONCYCLE(_<time value>,<string data field>)|?;

ONCYCLE periodically executes either the string data field or the "command string" in the string data field.
<time value>::=<number>|<user-defined variable> in seconds.
Query response: <time value>,<A-block data format>
<CR><LF><EOI>.

ONDELAY(_<time value>,<string data field>)|?;

Executes the string data field after the time value has elapsed.
<time value>::=<number>|<user-defined variable> in seconds.
Query response: <time value>,<A-block data format>
<CR><LF><EOI>. The time value represents the time left until event occurs.

ONEOS(_<string data field>|<A-block data field>|<I-block data field>)|?;

Executes the contents of the data field after the end of sweep. The string data field should not include the take-sweep command (TS).
Query response: <A-block data format><CR><LF><EOI>.

ONMKR(_<string data field>)|?;

Performs the string data field when the sweep reaches the marker position.
Query response: <A-block data format><CR><LF><EOI>.

ONSRQ(_<string data field>)|?;

Executes the string data field whenever a service request occurs.
Query response: <A-block data format><CR><LF><EOI>.

ONSWP(_<string data field>|<A-block data field>|<I-block data field>)|?;

Executes the string data field at the beginning of the sweep. The string data field should not include the take-sweep command (TS).
Query response: <A-block data format><CR><LF><EOI>.

ONTIME(_<time value>,<string data field>)|?;

Executes the string data field at the specified time.
<time value>::=<number>|<user-defined variable> in YYMMDDHHMMSS format.
Query response: digits representing YYMMDDHHMMSS, <A-block data format><CR><LF><EOI>.

OP[?];

Returns parameter values P1 and P2, which represent the dimensions of the lower-left and upper-right spectrum analyzer display, when the display is to be used as a graphics plotter.
Query response: −40,−22,471,233<CR><LF><EOI>.

OUTPUT[_<address>,(K|B|KC|KL|F<field width>.<decimal places>),<output data>;

Allows the spectrum analyzer to send data to other devices on the HP-IB.
<address>::=<number>|<predefined function>|<predefined variable>|<user-defined variable>|<trace element>.

K = Free field, ASCII real number format.
B = Free field, in a single 8-bit byte.
KC = One byte binary.
KL = One word (2 bytes) binary.
F = Outputs an ASCII number that has the field width and decimal places specified.

<field width>::= integer number.
<decimal places>::= integer number.

<output data>::=(<predefined function>|<predefined variable>|<user-defined variable>|<trace element>)|(<delimiter><data byte><delimiter>)|<A-block data field>|<I-block data field>.

PA[_(PU|PD)]_<X coordinate>,<Y coordinate>;

Draws vectors to the specified x and y coordinates. PU and PD determine whether the vectors are displayed. The x,y coordinate pairs may be repeated.
<x coordinate>::=positive integer in <display units>.
<y coordinate>::=positive integer in <display units>.

PD;

Instructs the spectrum analyzer to plot vectors on the spectrum analyzer screen until a PU command is received.

PDA_<trace destination>,<trace source>,<resolution>;

Replaces the destination trace with the amplitude distribution function of the source trace.
<trace destination>::=TRA|TRB|TRC|<user-defined trace>.
<trace source>::=TRA|TRB|TRC|<user-defined trace>.
<resolution>::=<number><user-defined variable>|<predefined function>|<trace element>.

PDF_<trace destination>,<trace source>;

Increments an element of the destination trace whenever the corresponding element of the source trace exceeds a threshold. This is useful for constructing a frequency probability density function.
<trace destination>::=TRA|TRB|TRC|<user-defined trace>.
<trace source>::=TRA|TRB|TRC|<user-defined trace>.

PEAKS_<trace destination>,<trace source>, (AMP|FRQ)?;

Sorts the signal peaks that are in the source trace by amplitude or frequency and then returns the number of peaks found to the controller. PEAKS also sends the sorted results to the destination trace.
Query response: <numeric data format>.

PKPOS_<trace source>[?];

Returns the x-axis position of the maximum value of the trace.

PLOT[_<P1x value>,<P1y value>,<P2x value>,<P2y value>];

Initiates a plotter output of the screen data to the remote interface. With the appropriate HP-IB commands, the HP-IB can be configured to route the data to an external plotter.
<P1x value>::=<P1y value>::=<number> that represents plotter dependent values that specify the lower-left plotter dimension.
<P2x value>::=<P2y value>::=<number> that represents plotter dependent values that specify the upper-right plotter dimension.

POWERON(_(IP|LAST))|?;

Selects the state that the spectrum analyzer will be in when it is turned on: the IP state (same state as when an instrument preset command is given) or last state (the state the spectrum analyzer was in when it was turned off).
Query response: (IP|LAST)<CR><LF><EOI>.

PP;

Peaks the preselector. *HP 8592B, HP 8593A, or HP 8595A only.*

PR_[(PU|PD)]_<X coordinate>,<Y coordinate>;

Specifies a new plot location on the spectrum analyzer screen relative to its current coordinates. The x, y coordinate pair may be repeated.
<x coordinate>::=positive integer in <display units>.
<y coordinate>::=positive integer in <display units>.

PREAMPG(_(<number>[DB])|EP)|?;

Adds or subtracts the preamplifier gain from the displayed signal.
Query response: <numeric data format>.

PREFX_<delimiter><prefix><delimiter>;

Specifies or changes the prefix used in save and recall operations.
<prefix>::=0 to 6 characters, A through Z and the underscore (the underscore cannot be the first character of the prefix)

PRINT[_(BW|COLOR|0|1)];

Initiates an output of the screen data to the remote interface. With appropriate HP-IB commands, the HP-IB can be configured to route the data to an external printer. PRINT, PRINT0, or PRINT BW outputs the screen data in monochrome format. PRINT1 or PRINT COLOR outputs the screen data in HP PaintJet printer format.

PSTATE(_(ON|OFF|1|0))|?;

This command protects the state registers from being changed.
Query response: (ON|OFF)<CR><LF><EOI>.

PU;

Instructs the spectrum analyzer not to plot vectors on the spectrum analyzer screen until a PD is received.

PURGE_<delimiter><file name><delimiter>;

Deletes the file name from the current mass storage device.
<file name>::=a valid file name.

PWRBW_<trace source>,<percentage>?;

Computes the combined power of all signal responses in the source and returns the bandwidth that contains the specified percentage of the total power. Positions markers at both the beginning and the end of the interval.
<percentage>::=<number>|<user-defined variable>|<predefined variable>|<predefined function>|<trace element>.
Query response: <numeric data format>.

RB(_(<number>[HZ|KHZ|MHZ|GHZ])|UP|DN|EP|AUTO)|?;

Specifies the resolution bandwidth. Default unit is Hz.
Query response: <numeric data format>.

RCLS_<number>;

Recalls the previously saved state stored in registers 1 through 9.
<number>::=1|2|3|4|5|6|7|8|9.

RCLT_<trace destination>,<trace register>;

Recalls previously saved trace data and the corresponding instrument state when trace data is recalled. Recalls limit-line data or amplitude correction factors (but not the trace or state data) when LIMILINE or AMPCOR is used.
<trace destination>::=TRA|TRB|TRC|LIMILINE|AMPCOR|<user-defined trace>|<trace range>.
<trace register>::=integer from 0 to TRCMEM − 1.

RELHPIB;

Discontinues spectrum analyzer control of HP-IB. *Option 021 only.*

REPEAT_<command list>**UNTIL**_<flow operand1>, {GT|LT|EQ|NE|GE|LE}, <flow operand2>;

REPEAT and UNTIL commands form a looping construct.
<flow operand1>::=<number>|<user-defined variable>|<predefined variable>|<trace element>.
<flow operand2>::=<number>|<user-defined variable>|<predefined variable>|<trace element>.

RESETRL;

Resets the reference level to its instrument preset value.

RETURN;

Stops the operation of a current user-defined command and returns program operation to the same point that the operation was at when the user-defined function was called.

REV[?];

Returns the firmware revision number of the spectrum analyzer being used.
Query response: <number><CR><LF><EOI>. The number is in the YYMMDD format.

RL(_(<number>[DB|DM])|UP|DN|EP)|?;

Specifies the amplitude value of the reference level.
Query response: <numeric data format>.

RLPOS(_(<number>|OA|EP|DN|UP))|?;

Selects the position of reference level.
Query response: <numeric data format>.

RMS_<trace source>?;

Returns the root mean square value of the trace, in measurement units.
Query response: <numeric data format>.

ROFFSET(_(<number>[DB])|EP)|?;

Offsets all amplitude readouts without affecting the trace.
Query response: <numeric data format>.

RQS(_<number>)|?;

Sets a bit mask for service requests.
<number>::=ASCII decimal number 0 through 62.
Query response: <numeric data format>. (Returns the decimal weighing of the status byte bits that are enabled during a service request.)

SAVEMENU_<menu number>;

Saves menu 1 under the menu number given.
<menu number>::=integer value of 1, or 101 to 200.

SAVES_<state register>;

Saves the current state of the spectrum analyzer in the specified state register.
<state register>::=1|2|3|4|5|6|7|8.

SAVET_<trace source>,<trace register>;

Saves trace data, limit-line data, or amplitude correction factors in the selected register.
<trace source>::=TRA|TRB|TRC|LIMILINE|AMPCOR| <user-defined trace>|<trace range>.
<trace register>::=integer from 0 to TRCMEM − 1.

SAVRCLF_(SAVE|RECALL);

Specifies whether a save or recall operation is to be executed.

SAVRCLN_(<register number>|EP);

Appends number to prefix for save and recall operations.
<register number>::=integer number.

SAVRCLW_(TRA|TRB|TRC|DLP|STATE|LIMILINE|AMPCOR);

Specifies the data to be transferred --trace A, trace B, trace C, downloadable program, state, limit-line values, or amplitude correction factors.

SEGDEL[_<segment number>];

Deletes the specified segment from the limit-line tables.
<segment number>::=<number>|<user-defined variable>.

SENTER_<frequency>,<upper or mid value>,<lower or delta value>,<segment type>;

Enters the limit-line data in either the upper and lower limit-line table, or the mid and delta table as chosen by LIMIMODE.
<frequency>::=(<number>[HZ |KHZ|MHZ|GHZ])|<user-defined variable><predefined variable>|<trace element>
<upper or mid value>::=(<number>[DB|DM])|<user-defined variable>|<predefined variable>|<trace element>
<lower or delta value>::=(<number>[DB|DM])|<user-defined variable>|<predefined variable>|<trace element>
<segment type>::=SLOPE|FLAT|POINT.

SER[?];

Returns the last 5 digits of the serial number of the spectrum analyzer.
Query response: <numeric data format>.

SETDATE(_<date>)|?;

Sets the date of the real-time clock of the spectrum analyzer.
<date>::=<number> in the YYMMDD format.
Query response: <numeric data format> representing YYMMDD.

SETTIME(_<time>)|?;

Sets the time of the real-time clock of the spectrum analyzer.
<time>::= <number> in the HHMMSS format.
Query response: <numeric data format> representing HHMMSS.

SMOOTH_<trace source>,<number of points>;

Smooths the specified trace according to the number of points specified for the running average.
<number of points>::=<number>|<trace element>|<predefined function>|<predefined variable> |<user-defined variable>.

SNGLS;

Selects the single-sweep mode.

SP(_(<number>[HZ|KHZ|MHZ|GHZ])|UP|DN|EP)|?;

Changes the total displayed frequency range symmetrically about the center frequency.
Query response: <numeric data format>.

SPEAKER_(OFF|ON|0|1);

Turns the internal speaker on or off. *Option 102, 103, or 301 only.*

SPZOOM;

Places a marker on the highest on-screen signal (if an on-screen marker is not present), turns on the signal track function, and activates the span function.

SQLCH(_<number>)|?;

Sets the squelch threshold by setting the squelch level.
Query response: <numeric data format>.

SQR_<destination>,<source>;

Computes the square root of the source and sends the result to the destination.

SRCALC(_(INT|XTAL|MTR|EXT))|?;

Selects internal or external leveling for use with the built-in tracking generator.
Option 010 or 011 for the HP 8590B or HP 8591A: Use INT for internal leveling, XTAL for external leveling, MTR for external leveling with an HP meter.
Option 010 for the HP 8593A, HP 8594A, or HP 8595A: Use INT for internal leveling, EXT for external leveling.
Query response: (INT|XTAL|MTR|EXT)<CR><LF><EOI>.

SRCAT(_(<number>[DB])|EP|DN|UP|AUTO|ON)|?;

Attenuates the source output level. *HP 8591A with Option 010 or 011 only.*
Query response: <numeric data format>.

SRCNORM(_(OFF|ON|0|1))|?;

Subtracts trace B from trace A, adds the display line value to the difference, and sends the result to trace A during every sweep of the spectrum analyzer.
Query response: (ON|OFF)<CR><LF><EOI>.

SRCPOFS(_(<number>[DB])|EP|DN|UP)|?;

Offsets the source power level. *Option 010 or 011 only.*
Query response: <numeric data format>.

SRCPSTP(_(<number>[DB])|EP|DN|UP|AUTO)|?;

Selects the source-power step size. *Option 010 or 011 only.*
Query response: <numeric data format>.

SRCPSWP(_(<number>[DB])|OA|EP|DN|UP|OFF|ON)|?;

Selects sweep range of source output. *Option 010 or 011 only.*
Query response: <numeric data format>.

SRCPWR(_(<number>[DB])|OA|EP|DN|UP|OFF|ON)|?;

Selects the source power level. *Option 010 or 011 only.*
Query response: <numeric data format>.

SRCTK(_(<number>)|OA|EP|DN|UP)|?;

Adjusts tracking of source output with spectrum-analyzer sweep. *Option 010 or 011 only.*
Query response: <numeric data format>.

SRCTKPK;

Adjusts the tracking of source output with spectrum-analyzer sweep.

SRQ_<number>;

Used by an external controller to simulate service requests to the spectrum analyzer.
<number>::=integer from 2 to 126.

SS(_(<number>[HZ|KHZ|MHZ|GHZ])|UP|DN|EP|AUTO)|?;

Sets the center frequency step size. Default unit is Hz.
Query response: <numeric data format>.

ST(_(<number>[SC|MS|US])|OA|UP|DN|EP|AUTO)|?;

Specifies the time in that the spectrum analyzer sweeps the displayed frequency range.
Query response: <numeric data format>.

STB?;

Returns the decimal equivalent of the bits that are set in the status byte.
Query response: <numeric data format>.

STDEV_<trace source>?;

Returns the standard deviation of the specified trace amplitude.
Query response: <numeric data format>.

STOR_<file type>,<delimiter><file name><delimiter>[,<source>];

Stores an individual function on the memory card. Use trace A, trace B, trace C, or user-defined trace when storing trace data. Use an asterisk as the source parameter when storing downloadable programs. If the file name is omitted, a file name is created.
<file type>::=a|d|l|s|t. The a, d, l, s, and t parameters represent the data types as follows:

a = amplitude correction factors.
d = downloadable program.
l = limit-line tables.
s = state.
t = trace.

<file name>::=1 to 6 characters. The first character should specify the file type.
<source>::=TRA|TRB|TRC|<user-defined trace>|<user-defined variable>|[<prefix>]*|<key number>[,<key number>].

<prefix>::=A valid prefix.

SUB_<destination>,<source 1>,<source 2>;

Subtracts source 2 from source 1, point by point, and sends the difference to the destination.

SUM_<trace source>?;

Returns the sum of the amplitudes of each trace element, in measurement units.
Query response: <numeric data format>.

SUMSQR_(TRA|TRB|TRC|<user-defined trace>|<trace range>)?;

Returns the sum of the squares of the amplitude of each trace element, in measurement units.
Query response: <numeric data format>.

SWPCPL(_(SA|SR|OA))|?;

Selects either a stimulus-response (SR) or spectrum-analyzer (SA) auto-coupled sweep time. *Option 010 or 011 only.*
Query response: (SA|SR)<CR><LF><EOI>.

TA;

Transfers the 401 amplitude values of trace A to the controller.

TB;

Transfers the 401 amplitude values of trace B to the controller.

TDF(_(A|B|I|M|P))|?;

Formats trace information for return to the controller.

TDF A = returns data as an A-block data field.
TDF B = enables binary format.
TDF I = returns I-block data field.
TDF M = returns values in <display units>.
TDF P = returns absolute measurement units.

Query response: (A|B|I|M|P)<CR><LF><EOI>.

TEXT_<delimiter><character string><delimiter>;

Writes text on the spectrum analyzer screen at the current pen location.

TH(_(<number>[DB|DM])|UP|DN|EP|AUTO)|?;

Clips signal responses below the specified threshold level. Default unit is dBm. Default level is nine major divisions below the reference level.
Query response: <numeric data format>.

TIMEDATE(_<time date value>)|?;

Sets the time and date for the spectrum analyzer's real-time clock, in the YYMMDDHHMMSS format.
<time date value>::=<number> in the YYMMDDHHMMSS format.
Query response: <number><CR><LF><EOI> in the YYMMDDHHMMSS format.

TIMEDSP(_(ON|OFF|1|0))|?;

Enables the display of the time and date on the spectrum analyzer screen.
Query response: (ON|OFF)<CR><LF><EOI>.

TITLE_<delimiter><character string><delimiter>;

Allows entry of a screen title.

TM(_(FREE|VID|LINE|EXT|TV))|?;

Implements the selected trigger mode. TV trigger is available for Options 101 and 102, or Option 301 only.
Query response: (FREE|VID|LINE|EXT|TV)<CR><LF><EOI>.

TRA((<number>[,<number>])| <A-block data field> |<I-block data field>)|?;

Provides a method for returning or storing trace values.
Query response: ((<number>[,<number>])|<A-block data format>|<I-block data format>|<data byte>[<data byte>]END)<CR><LF><EOI>.

TRB

Same format and query response as TRA except TRB is used.

TRC

Same format and query response as TRA except TRC is used.

TRCMEM[?];

Returns the total number of registers available for SAVET and RCLT.
Query response: <numeric data format>.

TRDEF_<label>(?|(,<trace length>));

Creates a user-defined trace.
<trace length>::=<user-defined variable>|<predefined variable>|<predefined function>|<trace element>|<number>
Query response: <numeric data format>.

TRDSP_(TRA|TRB|TRC),(ON|OFF|1|0);

Controls the display of trace A, B, or C without clearing the trace (measurements can still be taken).

TRGRPH_<address>,<x position>,<y position>,<expanding factor>,<trace source>;

Displays a compressed (see "COMPRESS") trace anywhere on the spectrum analyzer display. The *x* and *y* positions orient the trace positions.
<address>::=integer.
<x position>::=integer from 0 to 4000.
<y position>::=integer from 0 to 8000.
<expanding factor>::=integer from 0 to 100.
<trace source>::=TRA|TRB|TRC|<user-defined trace>.

TRMATH(_<string data field>|<A-block data field>|<I-block data field>)|?;

Executes the specified trace math or user-operator commands at the end of a sweep. All spectrum analyzer commands except TS are allowed.
Query response: <A-block data format><CR><LF><EOI>.

TRPRST;

Sets trace operations to their preset values.

TRSTAT?;

Returns the status of traces A, B, and C to the controller.
Query response: (CLRW|BLANK|VIEW|MXMH|MINH)(A|B|C)<CR><LF><EOI>.

TS;

Starts and completes one full sweep before the next command is executed.

TVLINE(_(<line number>|UP|DN|EP))|?;

Sets the line number of the horizontal line of video on which to trigger. *Options 101 and 102, or Option 301 only.*
<line number>::=integer from 1 to 1021.
Query response: <numeric data format>.

TVSFRM(_(BOTH|EVEN|ODD|VERTICAL))|?;

Selects the type of video frame to trigger on. *Options 101 and 102, or Option 301 only.*
Query response: (EVEN|ODD|VERTICAL)<CR><LF><EOI>.

TVSTND(_(NTSC|PALM|PAL|SECAML))|?;

Selects the triggering for NTSC, PAL, PAL-M, or SECAM-L formats. *Options 101 and 102, or Option 301 only.*
Query response: (NTSC|PALM|PAL|SECAML)<CR><LF><EOI>.

TVSYNC_(NEG|POS);

Selects the polarity of video modulation to trigger on. *Options 101 and 102, or Option 301 only.*

TWNDOW_<trace destination>,(UNIFORM|HANNING|FLATTOP);

Formats trace information for fast Fourier analysis (FFT). This user-defined trace should be used as the <window> parameter in the FFT command.

UNIFORM: for FFT of transient signals and random noise. This window has the least frequency uncertainty.
HANNING: offers a compromise between the UNIFORM window and the FLATTOP window.
FLATTOP: for FFT of periodic signals. This window has the least amplitude uncertainty.

UP;

Increases the value of the active function by the applicable step size.

USTATE(_#A<length><character string>)|?;

Transmits information that has been stored in the spectrum analyzer by the user.
Query response: <A-block data format><CR><LF><EOI>.

VARDEF_<label>,<preset value>;

Defines a variable name and assigns an initial value to it. IP reassigns the initial value to the variable name.
<preset value>::=<trace element>|<predefined function>|<predefined variable>|<user-defined variable>|<number>.

VARIANCE_<trace source>?;

Returns the amplitude variable of the selected trace, in measurement units.

VAVG(_<number>|ON|OFF)|?;

Turns the video averaging on or off.
<number>::=represents the maximum number of sweeps executed for averaging. Default length is 100.
Query response: <numeric data format>.

VB(_(<number>[HZ|KHZ|MHZ|GHZ])|UP|DN|EP|AUTO)|?;

Specifies the video bandwidth of the post-detection filter.
Query response: <numeric data format>.

VBR(_<number>|UP|DN|EP|OA)|?;

Specifies the value that is multiplied by the resolution bandwidth to determine the automatic setting of video bandwidth.
Query response: <numeric data format>.

VIEW_(TRA|TRB|TRC);

Displays trace A, trace B, or trace C, and stops taking new data into the viewed trace.

WAIT(_(<number>[SC|MS])|<predefined variable>|<predefined function>|<user-defined variable>|<trace element>;

Suspends all spectrum analyzer operation for the specified time duration.

XCH_<destination>,<destination>;

Exchanges the contents of the two parameters.

Characters and Secondary Keywords (Reserved Words) Summary

Element	Description
a	Amplitude correction factors.
A	Amp (unit) or A-block data field.
ABSHZ	Absolute Hz (unit).
AC	Alternating current.
ALL	All.
AM	Amplitude modulation. *Option 102, 103, or 301 only.*
AMP	Amplitude.
AMPCOR	Amplitude correction.
AUTO	Auto couple.
AVG	Average.
B	8-bit byte or binary format.
BOTH	Both odd and even frames trigger. *Options 101 and 102, or Option 301 only.*
BW	Black and white.
CARD	Memory card.
COLOR	Color.
CNT	Counter-lock. *HP 8591A, HP 8593A, HP 8594A, or HP 8595A only.*
d	Downloadable programs.
DB	Decibel (unit).
DBM	Absolute decibel milliwatt (unit).
DBMV	Decibel millivolt (unit).
DBUV	Decibel microvolt (unit).
DC	Direct current.
DELTA	Delta.
DISP	Display.
DLP	Downloadable program.
DM	Absolute decibel milliwatt (unit).
DMY	Day, month, year format.
DN	Decreases parameter one step size.
EDGE	Triggers on the edge of the trigger input. *Option 105 only.*
EP	Pauses program for data entry from spectrum analyzer front panel.
EQ	Equal to.

EVEN	Even video frame. *Options 101 and 102, or Option 301 only.*
EXT	External trigger.
FADC	Fast analog-to-digital converter (ADC). *Option 101 only.*
FETCH	Fetch.
FIXED	Fixed.
FFT	Fast Fourier transform.
FLAT	Flat.
FLATTOP	Flat top filter window.
FMD	Frequency modulation demodulator. *Option 102, 103, or 301 only.*
FM	Frequency modulation. *Option 102, 103, or 301 only.*
FMV	Frequency modulation detection. *Option 102, 103, or 301 only.*
FREE	Free run.
FREQ	Frequency.
FRQ	Frequency.
GATE	Gate. *Option 105 only.*
GE	Greater than or equal to.
GHZ	Gigahertz (unit).
GT	Greater than.
GZ	Gigahertz (unit).
HANNING	Hanning filter window.
HI	Highest.
HPIB	HP-IB. *Option 021 only.*
HZ	Hertz (unit).
I	I-block data field.
INIT	Initialize.
INT	Internal or integer.
IP	Instrument preset.
IST	Inverse sweep time.
K	Free field ASCII format with no terminator.
KC	Free field ASCII format with "CR" and "LF" terminator.
KHZ	Kilohertz (unit).
KL	Free field ASCII format with "CR" and "END" terminator.
KZ	Kilohertz (unit).
L	Limit line.

LAST	Last state.
LE	Less than or equal to.
LEVEL	Level gating. *Option 105 only.*
LIMILINE	Limit line.
LINE	Line trigger.
LOWER	Lower limit line.
LT	Less than.
M	Measurement units.
MA	Milliamp (unit).
MDY	Month, day, year format.
MHZ	Megahertz (unit).
MS	Millisecond (unit).
MTR	Meter.
MV	Millivolts (unit).
MW	Milliwatt (unit).
MZ	Megahertz (unit).
NE	Not equal to.
NEG	Negative.
NH	Next highest peak.
NL	Next peak left.
NONE	No units.
NR	Next peak right.
NRM	Normal.
NTSC	NTSC video format.
OA	Output amplitude.
ODD	Odd video frame trigger. *Options 101 and 102, or Option 301 only.*
OFF	Turns off function.
ON	Turns on function.
P	Parameter units.
PAL	PAL video format.
PALM	PAL-M video format.
PER	Period.
PKAVG	Peak average.
PKPIT	Peak pit.
POINT	Point.
POS	Positive.
PSN	Position.

RECALL	Recall operation.
RS232	RS-232 interface. *Option 023 only.*
s	State.
SA	Signal analysis.
SAVE	Save operation.
SC	Seconds (unit).
SECAML	SECAM-L video format.
SLOPE	Slope.
SMP	Sample detection mode.
SR	Stimulus response.
STATE	State register.
STEP	Step key ability.
STORE	Store.
SWT	Sweep time.
t	Trace.
TG	Tracking generator.
TRA	Trace A.
TRB	Trace B.
TRC	Trace C.
TV	TV trigger. *Options 101 and 102, or Option 301 only.*
UA	Microamp (unit).
UNIFORM	Uniform filter window.
UP	Increases the parameter one step size.
UPLOW	Upper and lower limit lines.
UPPER	Upper limit line.
US	Microseconds (unit).
UV	Microvolts (unit).
UW	Microwatt (unit).
V	Volts (unit).
VERTICAL	Vertical triggering. *Options 101 and 102, or Option 301 only.*
VID	Video trigger.
W	Watts or word (for MDS command).
YTF	YIG-tuned filter.
XTAL	Crystal.
*	Asterisk (used as a wildcard).
;	Semicolon (ASCII code 59).
,	Comma (ASCII code 44).

0	Off (command argument).
1	On (command argument).
50	50Ω.
75	75Ω.
?	Returns a query response containing the value or state of the associated parameter. The query response is followed by a carriage-return and a line-feed.

A

Spectrum Analyzer Error Messages

The spectrum analyzer can generate various messages that appear on its screen during operation to indicate a problem.

There are three types of messages: hardware error messages (H), user-created error messages (U), and informational messages (M).

- Hardware error messages indicate the spectrum analyzer hardware is probably broken. Refer to Chapter 5 in the Installation and Verification Manual for more information.
- User-created error messages appear when the spectrum analyzer is used incorrectly. They are usually generated during remote operation (entering programming commands using either a controller or the external keyboard).
- Informational messages indicate the spectrum analyzer's progress within a specific procedure.

The messages are listed in alphabetical order on the following pages; each message is defined, and its type is indicated by an (H), (U), or (M).

ADC-GND FAIL
Indicates a failure in the processor. (H)

ADC-TIME FAIL
Indicates a failure in the processor. (H)

ADC-2V FAIL
Indicates a failure in the processor. (H)

CAL:_ _ _
During the self-calibration routine, messages may appear on the display indicating the routine is progressing: SWEEP, FREQ, SPAN, AMPTD, FM GAIN + OFFSET, 3dB BW, ATTEN, LOG AMP, PEAKING, or YTF.

FREQ UNCAL appears briefly during the CAL FREQ self-calibration routine. This is normal and does not indicate a problem. (M)

CAL: DATA NOT STORED
CAL AMP NEEDED
The correction factors are corrupt and cannot be stored. Perform the CAL FREQ & AMPTD routine. This message also sets SRQ 110. (U) and (H)

CAL: cannot execute CALAMP
enter: 0 dB PREAMP GAIN
The preamp gain should be set to 0 dB before the CAL AMPTD routine is performed. The preamp gain is set by using **EXT PREAMP**. This message also sets SRQ 110. (U) and (H)

CAL: FM SPAN SENS FAIL
The spectrum analyzer could not set the span sensitivity of the FM coil. This message also sets SRQ 110. (H)

CAL: GAIN FAIL
Indicates the signal amplitude is too low during the CAL AMPTD routine. This message also sets SRQ 110. (H)

CAL: LOST COMB SIGNAL
Indicates the amplitude of the comb generator signal is insufficient to complete the CAL YTF self-calibration routine. Be sure to use a low-loss cable (SMA-to-Type N cable) to connect the comb generator output to the spectrum analyzer input before using **CAL YTF**. (U) and (H)

CAL: NO YTF IN 8590/1
The CAL YTF programming command is not available for the HP 8590B, HP 8591A, or HP 8594A. (U)

CAL: NO YTO AVAILABLE
The CAL DLY programming command is no longer necessary. (U)

CAL: PASSCODE NEEDED
Indicates that the function cannot be accessed without the pass code. (M)

CAL: RES BW AMPL FAIL
The relative insertion loss of the resolution bandwidth is incorrect. This message also sets SRQ 110. (H)

CAL SIGNAL NOT FOUND
Indicates the calibration signal (CAL OUT) cannot be found. Check that the CAL OUT and the spectrum analyzer input connectors are connected with an appropriate cable. If the calibration signal is connected to the spectrum analyzer input but cannot be found, press (FREQUENCY), −37 (Hz) before performing the CAL FREQ or CAL FREQ & AMPTD self-calibration routines. This message also sets SRQ 110. (U) and (H)

CAL: SPAN SENS FAIL
The self-calibration span sensitivity routine failed. This message also sets SRQ 110. (H)

CAL: USING DEFAULT DATA
Indicates that the calibration data is corrupt and the default correction factors are being used. Interruption of the self-calibration routines or an error can cause this problem. (M)

COMB SIGNAL NOT FOUND
The comb signal cannot be found. Check that 100 MHz COMB OUT is connected to the spectrum analyzer input. The comb generator is available with the HP 8592B, HP 8593A, or HP 8595A only. (U) and (H)

COMMAND ERROR:_ _ _
The specified programming command is not recognized by the spectrum analyzer. (U)

CONFLICT TABLE OVERFLOW
Indicates that too many two-letter compatible commands have been used. See the table containing a summary of compatible commands in the Programming Manual for information about substituting alternate commands for two-letter compatible commands. (U)

CONF TEST FAIL
Indicates that the confidence test failed. This message also sets SRQ 110. (H)

DECR SPAN
Indicates the resolution bandwidth to span ratio is too small to use the marker count function. Check the span and bandwidth settings. (U)

FAIL:_ _ _
An error was discovered during the power-up check. The 4-digit by 10-digit

code indicates the type of error. Error codes are described in the spectrum analyzer Service Manual. (H).

FREQ UNCAL
Indicates a YTO-tuning failure. This may occur when using default correction factors. Performing the CAL FREQ routine may eliminate the failure. It does not indicate a problem if the FREQ UNCAL message appears briefly during the CAL FREQ routine or when the frequency value is changed. (U) and (H)

INTRNL LOCKED
The spectrum analyzer's internal trace and state registers have been locked. To unlock the trace or state registers, press **SAV LOCK ON OFF** so that OFF is underlined. For remote operation, use PSTATE OFF. (U)

INVALID ACTDEF: _ _ _
The specified ACTDEF name is not valid. See the ACTDEF programming command. (U)

INVALID AMPCOR: FREQ
For the AMPCOR command, the frequency data must be in increasing order. See the AMPCOR programming command. (U)

INVALID AUNITS:_ _ _
The amplitude units are not valid. See the AUNITS programming command. (U)

INVALID BLOCK FORMAT: IF STATEMENT
An invalid block format appeared within the IF statement. (U)

INVALID CARD: DIRECTORY
Indicates the memory card has not been formatted. (U)

INVALID CARD: NO CARD
Indicates a memory card has not been inserted. (U)

INVALID CARD
Indicates one of the following conditions: a card reader is not installed, the memory card is write-protected, the memory card is a read-only card, or a memory card has not been inserted. This message can also occur if remote programming commands for the memory card capability are executed with an HP 8590B or HP 8592B that does not have an Option 003. (U)

INVALID CARD: TYPE
Indicates one of the following conditions: a card reader is not installed, the memory card is write-protected, the memory card is a read-only card, or a memory card has not been inserted. This message can also occur if remote programming commands for the memory card capability are executed with an HP 8590B or HP 8592B that does not have an Option 003. (U)

INVALID CHECKSUM: USTATE
The user-defined state does not follow the expected format. (U)

INVALID COMPARE OPERATOR
An IF/THEN or REPEAT/UNTIL routine is improperly constructed. Specifically, the IF or UNTIL operands are incorrect. (U)

INVALID ENTER FORMAT
The enter format is not valid. See the appropriate programming command description to determine the correct format. (U)

INVALID FILE: NO ROOM
Indicates that there is not enough available space on the memory card to store the data. (U)

INVALID FILENAME _ _ _
Indicates the specified file name is invalid. A file name is invalid if it is omitted, the first letter of the file name is not alphabetic, or the specified file type does not match the type of file. See the SAVRCLW or STOR programming command for more information on file type. (U)

INVALID HP-IB ADDRESS/OPERATION
An HP-IB operation was aborted due to an incorrect address or invalid operation. Check that there is only one controller (the spectrum analyzer) connected to the printer. (U)

INVALID HP-IB OPERATION REN TRUE
The HP-IB operation is not allowed. (This is usually caused by trying to print or plot when a controller is on the interface bus.) (U)

INVALID ITEM:_ _ _
Indicates an invalid parameter has been used in a programming command. (U)

INVALID KEYLBL: _ _ _
Indicates that the specified key label contains too many characters. A key label is limited to 8 characters per label line. (U)

INVALID KEYNAME:_ _ _
The specified key name is not allowed. (The key name may have conflicted with a spectrum analyzer programming command.) Use an underscore as the second character in the key name, or avoid beginning the key name with the following pairs of letters: LB, OA, OL, TA, TB, TR, MA, MF, TS, OT, and DR. (U)

INVALID OUTPUT FORMAT
The output format is not valid. See the appropriate programming command description to determine the correct format. (U)

INVALID REGISTER NUMBER
The specified trace register number is invalid. (U)

INVALID REPEAT MEM OVFL
Memory overflow occurred due to a REPEAT routine. This occurs if the repeat statements are too long. (U)

INVALID REPEAT NEST LEVEL
The nesting level in the REPEAT routine is improperly constructed. This can occur if too many REPEAT routines are nested. (U)

INVALID RS-232 ADDRESS/OPERATION
An RS-232 operation was aborted due to an incorrect address or invalid operation. (U)

INVALID SAVE REG
Data has not been saved in the specified state or trace register, or the data is corrupt. (U)

INVALID SCR MOVE
Indicates the spectrum analyzer's battery may have failed. See the spectrum analyzer's Service Manual for more information. (U)

INVALID STORE DEST: _ _ _
The specified destination field is invalid. (U)

INVALID SYMTAB ENTRY: SYMTAB OVERFLOW
Indicates that there is a symbol table overflow. This message can occur if

there are too many user-defined items (functions, variables, key definitions) or downloadable programs in spectrum analyzer memory. Use `DELETE FILE` or `DISPOSE USER MEM` to delete unnecessary items. This message can also occur when the processor board has failed. See the spectrum analyzer's Service Manual for more information. (U)

INVALID TRACE: _ _ _
The specified trace is invalid. (U)

INVALID TRACE NAME: _ _ _
The specified trace name is not allowed. Use an underscore as the second character in the trace name, or avoid beginning the trace name with the following pairs of letters: LB, OA, OL, TA, TB, TR, MA, MF, TS, OT, and DR. (U)

INVALID TRIGGER MODE: _ _ _
The specified trigger mode is invalid. See the TM programming command. (U)

INVALID VALUE PARAMETER: _ _ _
The specified value parameter is invalid. (U)

INVALID VARDEF: _ _ _
The specified variable name is not allowed. Use an underscore as the second character in the variable label, or avoid beginning the variable label with the following pairs of letters: LB, OA, OL, TA, TB, TR, MA, MF, TS, OT, and DR. (U)

INVALID WINDOW TYPE: _ _ _
The specified window is invalid. See the TWNDOW programming command. (U)

MEAS UNCAL
The measurement is uncalibrated. Check the sweep time, span, and bandwidth settings. (U)

NO CARD FOUND
Indicates that the memory card is not inserted. (U)

NO COUNTERLOCK AVAILABLE
The MKFC and MKFCR programming commands are available for the HP 8591A, HP 8593A, HP 8594A, or HP 8595A only. (U)

OVEN COLD
Indicates that the spectrum analyzer has been powered up for less than 5 minutes. (Option 004 only.) (M)

PARAMETER ERROR: _ _ _
The specified parameter is not recognized by the spectrum analyzer. See the appropriate programming command description to determine the correct parameters. (U)

POS-PK FAIL
Indicates the positive-peak detector has failed. (H)

RES-BW SHAPE FAIL
Indicates the 3 dB bandwidth is not within specifications. (H)

REF UNLOCK
Indicates that the frequency reference is not locked to the external reference input. Check that the 10 MHz REF OUT connector is connected to the EXT REF IN connector, or that an external 10 MHz reference source is connect to the EXT REF IN connector (when using an external reference). (M) and (H)

RES-BW NOISE FAIL
Indicates the noise floor level is too high at the indicated bandwidth. (H)

SAMPLE FAIL
Indicates the sample detector has failed. (H)

SOFTKEY OVFL
Softkey nesting exceeds the maximum number of levels. (U)

SRQ _ _ _
The specified service request is active. Service requests are a form of informational message and are explained in the Operation Manual for the spectrum analyzer. (M)

STEP GAIN/ATTEN FAIL
Indicates the step gain has failed. (H)

SYMTAB EMPTY
Indicates that the amount of memory that user-defined items (functions, variables, key definitions) or downloadable programs require has exceeded the available spectrum analyzer memory. If **SYMTAB EMPTY** appears, the items in the spectrum analyzer's user memory have been deleted. If this happens, you need to reload any user-defined items and downloadable programs back into spectrum analyzer memory, but make sure that there is enough available spectrum analyzer memory. If necessary, delete any unnecessary downloadable programs from spectrum analyzer memory before loading another downloadable program. The amount of spectrum analyzer memory used and the amount of spectrum analyzer memory available can be displayed by using **CATALOG INTRNL** . See CATALOG INTRNL in the Operating Manual for more information about displaying the amount of analyzer memory available. (U)

TABLE FULL
Indicates the upper or lower table of limit lines contains the maximum number of entries allowed. Additional entries to the table are ignored. (U)

TG SIGNAL NOT FOUND
Indicates the tracking generator output signal cannot be found. Check that the tracking generator output (RF OUT 50Ω or RF OUT 75Ω) is connected to the spectrum analyzer input connector with an appropriate cable. (U)

TG UNLVL
Indicates that the source power is set higher or lower than the spectrum analyzer can provide. See "Stimulus-Response Measurements" in the Operating Manual for more information.

UNDF KEY
A softkey referred to is not recognized by the spectrum analyzer. (U)

VID-BW FAIL
Indicates the video bandwidths have failed. (II)

B

AM, FM, and Pulsed RF Reference Charts

This appendix contains charts and graphs that are helpful when you are performing amplitude modulation, frequency modulation, or pulsed RF measurements.

Modulation information can easily be determined from the carrier signal and a sideband.

The difference in amplitude between the two signals can be used to determine percent of modulation. Markers read the frequency difference between the two signals, which is equal to the modulating frequency. The following table and graph help you to determine amplitude modulation information.

Table B-1. Determining Amplitude Modulation

% Modulation	Sideband Level Below Carrier (dB)	Sideband Level Below Carrier (dB)	% Modulation
1	46	10	63
2	40	20	20
10	26	30	6.3
20	20	40	2.0
30	16.5	50	0.63
40	14	60	0.2
12	60	70	0.063
70	9.1	80	0.02
80	7.9		
90	6.9		
100	6.0		

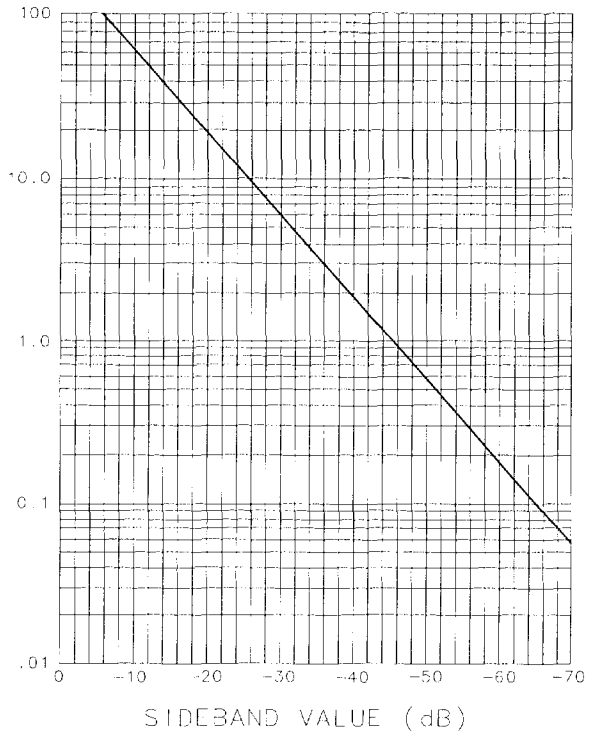


Figure B-1. Percent Modulation

Table B-2.
Carrier and First Sideband Charts for Calibrating Deviation

Carrier Bessel NULL Order	t* = ΔF/f	First Sideband	t* = ΔF/f
1st	2.4048	1st	3.83
2nd	5.5201	2nd	7.02
3rd	8.6531	3rd	10.17
4th	11.7915	4th	13.32
5th	14.9309	5th	16.47
6th	18.0711	6th	19.62
7th	21.2116	7th	22.76
8th	24.3525	8th	25.90
9th	27.4935	9th	29.05
10th	30.6346		
* t=modulation index			

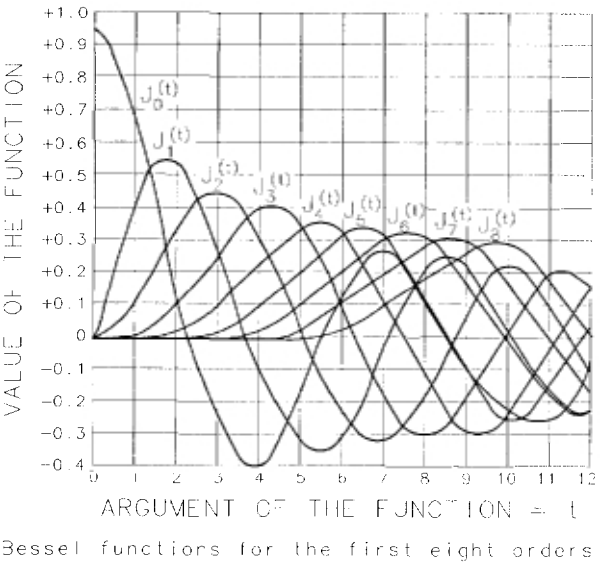


Figure B-2. Bessel Null Graph

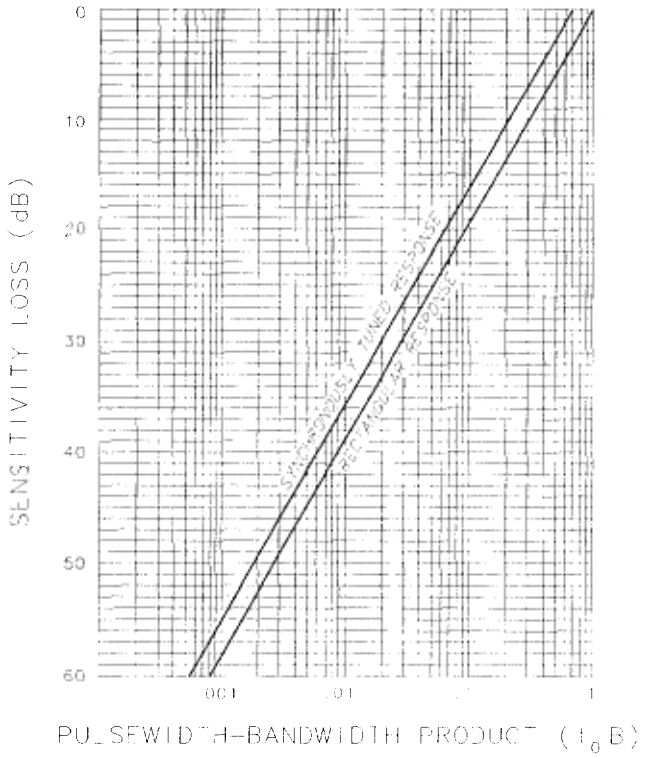


Figure B-3. Loss in Sensitivity (Pulsed RF versus CW)

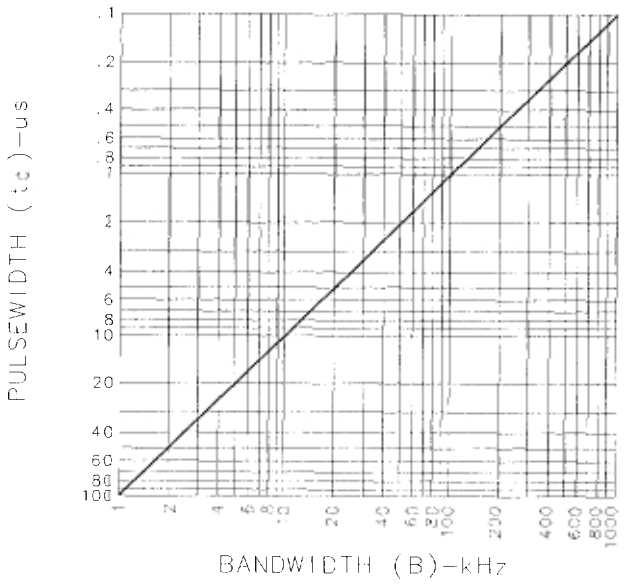


Figure B-4. RES BW Setting for Pulsed RF Computed from $t_0B = 0.1$

C

Cross Reference of Programming Command to Key Function

This appendix lists the programming commands alphabetically. Use the "Key" column to identify the command that is similar to front-panel or softkey function.

Table C-1.
Cross Reference of Programming Command to Key Function

Command	Name	Key
ABORT	Abort	
ABS	Absolute	
ACTDEF	Active Function	
ACTVF	Active Function	
ADD	Add	
AMB	Trace A Minus Trace B	A - B -> A ON OFF
AMBPL	Trace A Minus Trace B Plus Display Line	NORMLIZE ON OFF
AMPCOR	Amplitude Correction	
ANNOT	Annotation	ANNOTATN ON OFF
APB	Trace A Plus Trace B	
AT	Attenuation	ATTEN AUTO MAN
AUNITS	Amplitude Units	AMPTD UNITS
AUTO	Auto Couple	AUTO ALL
AVG	Average	
AXB	Exchange Trace A and Trace B	A <--> B
BIT	Bit	

Table C-1.
Cross Reference of Programming Command to Key Function
(continued)

Command	Name	Key
BLANK	Blank Trace	BLANK A , BLANK B , BLANK C
BML	Trace B Minus Display Line	B - DL -> B
BTC	Transfer Trace B to Trace C	B -> C
BXC	Trace B Exchange Trace C	B <--> C
CAL	Calibration	(CAL) calibration functions
CAT	Catalog	CATALOG CARD , CATALOG INTRNL
CF	Center Frequency	CENTER FREQ
CLRAVG	Clear Average	
CLRDSP	Clear Display	
CLRW	Clear Write	CLEAR WRITE A , CLEAR WRITE B , CLEAR WRITE C
CLS	Clear Status Byte	
CNF	Confidence Test	CONF TEST
CNTLA	Auxiliary Control Line A	CNTL A 0 1
CNTLB	Auxiliary Control Line B	CNTL B 0 1
CNTLC	Auxiliary Control Line C	CNTL C 0 1
CNTLD	Auxiliary Control Line D	CNTL D 0 1
CNTLI	Auxiliary Control Line Input	DISPLAY CNTL I
COMB	Comb	COMB GEN ON OFF
COMPRESS	Compress Trace	
CONCAT	Concatenate	
CONTS	Continuous Sweep	SWEEP CONT SGL (when CONT is underlined)
CORREK	Correction Factors On	
COUPLE	Couple	COUPLE AC DC

Table C-1.
Cross Reference of Programming Command to Key Function
(continued)

Command	Name	Key
CRTHPOS	Horizontal Position of CRT Display	CRT HORZ POSITION
CRTVPOS	Vertical Position of CRT Display	CRT VERT POSITION
CTA	Convert to Absolute Units	
CTM	Convert to Measurement Units	
DATEMODE	Date Mode	DATEMODE MDY DMY
DEMOD	Demodulation	DEMOD ON OFF , DEMOD AM FM
DET	Detection Mode	DETECTOR SAMPL PK
DISPOSE	Dispose	DISPOSE USER MEM
DIV	Divide	
DL	Display Line	DSP LINE ON OFF
DN	Down	
DONE	Done	
DSPLY	Display	
DT	Define Terminator	
EE	Enable Entry	
EK	Enable Knob	
ENTER	Enter From HP-IB	
EP	Enter Parameter Function	
ERASE	Erase	
EXP	Exponent	
FA	Start Frequency	START FREQ
FB	Stop Frequency	STOP FREQ
FFT	Fast Fourier Transform	FFT MEAS
FMGAIN	FM Gain	FM GAIN
FOFFSET	Frequency Offset	FREQ OFFSET
FORMAT	Format Card	FORMAT CARD
FS	Full Span	FULL SPAN

Table C-1.
Cross Reference of Programming Command to Key Function
(continued)

Command	Name	Key
FUNCDEF	Define Function	
GATE	Gate	GATE ON OFF
GATECTL	Gate Control	GATE CTL EDGE LVL
GC	Gate Preset	
GD	Gate Delay	GATE DELAY
GL	Gate Length	GATE LENGTH
GP	Gate Polarity	GATE POL POS NEG
GR	Graph	
GRAT	Graticule	GRAT ON OFF
HAVE	Have	
HD	Hold	(HOLD)
HN	Harmonic Number	
HNLOCK	Harmonic Lock Number	Band selection accessed by BAND LOCK
HNUNLK	Unlock Harmonic Number	BND LOCK ON OFF (when OFF is underlined)
IB	Input B	
ID	Identify	
IF	If Then Else Endif	
INT	Integer	
INZ	Input Impedance	INPUT Z 50 75
IP	Instrument Preset	(PRESET)
KEYCLR	Key Clear	
KEYCMD	Key Command	
KEYDEF	Key Define	
KEYENH	Key Enhance	
KEYEXC	Key Execute	
KEYLBL	Key Label	
LB	Label	

Table C-1.
Cross Reference of Programming Command to Key Function
(continued)

Command	Name	Key
LF	Base Band Instrument Preset	
LG	Logarithmic Scale	SCALE LOG LIN (when LOG is underlined)
LIMIDEL	Delete Limit-Line Table	PURGE LIMITS, NEW LIMIT
LIMIFAIL	Limits Failed	
LIMIHI	Upper Limit	
LIMILINE	Limit Line Commands	SAVE LIMIT
LIMILO	Lower Limit	
LIMIMIRROR	Mirror Limit Line	
LIMIMODE	Limit-Line Entry Mode	EDIT UPPER, EDIT LOWER, EDIT UP/LOW, EDIT MID/DELT
LIMIREL	Relative Limit Lines	LIMITS FIX REL
LIMISEG	Enter Limit-Line Segment	SELECT SEGMENT, SELECT AMPLITUD
LIMITEST	Enable Limit Line Testing	LIMITEST ON OFF
LN	Linear Scale	SCALE LOG LIN (when LIN is underlined)
LOAD	Load	LOAD FILE
LOG	Logarithm	
LSPAN	Last Span	LAST SPAN
M4	Marker Zoom	
MA	Marker Amplitude Output	
MDS	Measurement Data Size	
MDU	Measurement Data Units	
MEAN	Trace Mean	
MEANTH	Trace Mean Above Threshold	
MEASURE		
MEM	Memory Available	
MENU	Menu	

Table C-1.
Cross Reference of Programming Command to Key Function
(continued)

Command	Name	Key
MF	Marker Frequency Output	
MIN	Minimum	
MINH	Minimum Hold	MIN HOLD C
MINPOS	Minimum Position	
MIRROR	Mirror Image	
MKA	Marker Amplitude	
MKACT	Activate Marker	
MKBW	Marker Bandwidth	
MKCF	Marker to Center Frequency	MARKER -> CF
MKCONT	Marker Continue	
MKD	Marker Delta	MARKER DELTA
MKF	Marker Frequency	
MKFC	Marker Counter	MKR CNT ON OFF
MKFCR	Marker Counter Resolution	CNT RES AUTO MAN
MKMIN	Marker Minimum	MINIMUM -> MARKER
MKN	Marker Normal	MARKER NORMAL
MKNOISE	Marker Noise	MKNOISE ON OFF
MKOFF	Marker Off	MARKERS OFF
MKP	Marker Position	
MKPAUSE	Marker Pause	MKPAUSE ON OFF
MKPK	Marker Peak	(PEAK SEARCH), NEXT PEAK, NEXT PK RIGHT, NEXT PK LEFT
MKPX	Marker Peak Excursion	PEAK EXCURSN
MKREAD	Marker Readout	
MKRL	Marker to Reference Level	MARKER -> REF LVL
MKSP	Marker to Span	MKR Δ -> SPAN
MKSS	Marker to Step Size	MARKER -> CF STEP

Table C-1.
Cross Reference of Programming Command to Key Function
(continued)

Command	Name	Key
MKSTOP	Marker Stop	
MKTRACE	Marker Trace	
MKTRACK	Marker Track	(SIGNAL TRACK)
MKTYPE	Marker Type	MARKER AMPTD
ML	Mixer Level	MAX MXR LEVEL
MOD	Modulo	
MODE	Mode	SPECTRUM ANALYZER
MOV	Move	
MPY	Multiply	
MSI	Mass Storage Is	INTRNL CRD
MXM	Maximum	
MXMH	Maximum Hold	MAX HOLD A, MAX HOLD B
NRL	Normalized Reference Level	
OA	Output Active Function Value	
OL	Output Learn String	
ONCYCLE	On Cycle	
ONDELAY	On Delay	
ONEOS	On End of Sweep	
ONMKR	On Marker	
ONSRQ	On SRQ	
ONSWP	On Sweep	
ONTIME	On Time	
OP	Output Parameter	
OUTPUT	Output to HP-IB	
PA	Plot Absolute	
PD	Pen Down	
PDA	Probability Distribution of Amplitude	

Table C-1.
Cross Reference of Programming Command to Key Function
(continued)

Command	Name	Key
PDF	Probability Distribution of Frequency	
PEAKS	Peaks	
PKPOS	Peak Position	
PLOT	Plot	(COPY) (when a plotter is selected)
POWERON	Power-On State	POWER ON IP LAST
PP	Preselector Peak	PRESEL PEAK
PR	Plot Relative	
PREAMPG	External Preamplifier Gain	EXT PREAMP
PREFX	Prefix	CHANGE PREFIX
PRINT	Print	(COPY) (when a printer is selected)
PSTATE	Protect State	SAV LOCK ON OFF
PU	Pen Up	
PURGE	Purge File	DELETE FILE
PWRBW	Power Bandwidth	99% PWR BW
RB	Resolution Bandwidth	RES BW AUTO MAN , 9 kHz EMI BW , 120 kHz EMI BW
RCLS	Recall State	INTRNL -> STATE
RCLT	Recall Trace	INTRNL -> TRACE
RELHPIB	Release HP-IB	
REPEAT	Repeat Until	
RESETRL		
RETURN	Return	
REV	Revision	
RL	Reference Level	REF LVL
RLPOS	Reference-Level Position	

Table C-1.
Cross Reference of Programming Command to Key Function
(continued)

Command	Name	Key
RMS	Root Mean Square Value	
ROFFSET	Reference Level Offset	REF LVL OFFSET
RQS	Service Request Mask	
SAVEMENU	Save Menu	
SAVES	Saves State	STATE -> INTRNL
SAVET	Save Trace	INTRNL -> STATE
SAVRCLF	Save or Recall Flag	(SAVE) or (RECALL)
SAVRCLN	Save or Recall Number	
SAVRCLW	Save or Recall Data	STATE -> INTRNL, TRACE -> INTRNL
SEGDEL	Segment Delete	DELETE SEGMENT
SENTER	Segment Entry	EDIT UP/LOW, EDIT MID/DELTA
SER	Serial Number	SHOW OPTIONS
SETDATE	Set Date	SET DATE
SETTIME	Set Time	SET TIME
SMOOTH	Smooth Trace	
SNGLS	Single Sweep	(SGL SWP), SWEEP CONT SGL
SP	Span	SPAN
SPEAKER	Speaker	SPEAKER ON OFF
SPZOOM	Span Zoom	SPAN ZOOM
SQLCH	Squelch	SQUELCH
SQR	Square Root	
SRCALC	Source Leveling Control	ALC MTR INT XTAL, ALC INT EXT
SRCAT	Source Attenuator	SRC ATN MAN AUTO
SRCNORM	Source Normalization	
SRCPOFS	Source Power Offset	SRC PWR OFFSET

Table C-1.
Cross Reference of Programming Command to Key Function
(continued)

Command	Name	Key
SRCPSTP	Source Power-Level Step Size	SRC PWR STP SIZE
SRCPSWP	Source Power Sweep	PWR SWP ON OFF
SRCPWR	Source Power	SRC PWR ON OFF
SRCTK	Source Tracking	MAN TRK ADJUST
SRCTKPK	Source Tracking Peak	TRACKING PEAK
SRQ	Force Service Request	
SS	Center Frequency Step Size	CF STEP AUTO MAN
ST	Sweep Time	SWP TIME AUTO MAN
STB	Status Byte Query	
STDEV	Standard Deviation of Trace Amplitudes	
STOR	Store	STATE -> CARD, TRACE -> CARD, ALL DLP -> CARD
SUB	Subtract	
SUM	Sum of Trace Amplitudes	
SUMSQR	Sum of Squared Trace Amplitude	
SWPCPL	Force Service Request	SWP CPLG SR SA
TA	Transfer A	
TB	Transfer B	
TDF	Trace Data Format	
TEXT	Text	
TH	Threshold	THRESHLD ON OFF
TIMEDATE	Time Date	
TIMEDSP	Time Display	TIMEDATE ON OFF
TITLE	Title	CHANGE TITLE
TM	Trigger Mode	(TRIG) functions
TRA	Trace Data Input/Output	

Table C-1.
Cross Reference of Programming Command to Key Function
(continued)

Command	Name	Key
TRB	Trace Data Input/Output	
TRC	Trace Data Input/Output	
TRCMEM	Trace Memory	
TRDEF	Trace Define	
TRDSP	Trace Display	
TRGRPH	Trace Graph	
TRMATH	Trace Math	
TRPRST	Trace Preset	
TRSTAT	Trace Status	
TS	Take Sweep	(SGL SWP)
TVLINE	TV Line	TV LINE #
TVSFRM	TV Frame	TV TRIG ODD FLD , TV TRIG EVEN FLD , TV TRIG VERT INT
TVSTND	TV Standard	TVSTND
TVSYNC	TV Sync	TV SYNC NEG POS
TWNDOW	Trace Window	
UP	Up	
USTATE	User State	
VARDEF	Variable Definition	
VARIANCE	Variance of Trace Amplitudes	
VAVG	Video Average	VID AVG ON OFF
VB	Video Bandwidth	VID BW AUTO MAN
VBR	Video Bandwidth Ratio	VBW/RBW RATIO
VIEW	View Trace	VIEW A , VIEW B , VIEW C
WAIT	Wait	
XCH	Exchange	

D

Locating a Softkey

Use this appendix to locate a softkey. For each softkey listed, a corresponding front-panel key is listed. Pressing the front-panel key accesses the menu containing the desired softkey.

Table D-1. Softkey Locations

Softkey Functions	Front-Panel Key Access
% AM	MEAS/USER
0-2.9 Gz BAND 0	SPAN
2.75-6.4 BAND 1	SPAN
2.75-6.5 BAND 1	SPAN
3 dB POINTS	MEAS/USER
3rd ORD MEAS	MEAS/USER
6.0-12.8 BAND 2	SPAN
6 dB POINTS	MEAS/USER
9 kHz EMI BW	BW
12.4-19. BAND 3	SPAN
19.1-22 BAND 4	SPAN
99% PWR BW	MEAS/USER
120 kHz EMI BW	BW

Table D-1. Softkey Locations (continued)

Softkey Functions	Front-Panel Key Access
A <--> B	TRACE
A – B -> A ON OFF	TRACE
ABCDEF	CONFIG, DISPLAY, or MEAS/USER
ABORT	AUX CTRL
A -> C	TRACE
ALC INT EXT	AUX CTRL
ALC MTR INT XTAL	AUX CTRL
ALL DLP -> CARD	SAVE
AMP COR	MEAS/USER, RECALL, or SAVE
AMP COR ON OFF	MEAS/USER
AMPTD UNITS	AMPLITUDE
ANALYZER ADDRESS	CONFIG
ANNOTATN ON OFF	DISPLAY
ATTEN AUTO MAN	AMPLITUDE or AUTO COUPLE
AUTO ALL	AUTO COUPLE
AUX CONN CONTROL	AUX CTRL
B & W PRINTER	CONFIG
BAND LOCK	SPAN
BAUD RATE	CONFIG
B -> C	TRACE
B <--> C	TRACE
B – DL -> B	TRACE
BLANK A	TRACE
BLANK B	TRACE
BLANK C	TRACE

Table D-1. Softkey Locations (continued)

Softkey Functions	Front-Panel Key Access
BLANK CARD	CONFIG
BND LOCK ON OFF	SPAN
CAL AMPTD	CAL
CAL FETCH	CAL
CAL FREQ	CAL
CAL FREQ & AMPTD	CAL
CAL MXR	CAL
CAL STORE	CAL
CAL TIMEBASE	CAL
CAL TRK GEN	CAL
CAL YTF	CAL
CARD CONFIG	CONFIG
CARD -> DLP	RECALL
CARD -> STATE	RECALL
CARD -> TRACE	RECALL
CATALOG ALL	RECALL or SAVE
CATALOG AMP COR	RECALL or SAVE
CATALOG CARD	RECALL or SAVE
CATALOG DLP	RECALL or SAVE
CATALOG INTRNL	RECALL or SAVE
CATALOG LMT LINE	RECALL or SAVE
CATALOG ON EVENT	RECALL or SAVE
CATALOG PREFIX	RECALL or SAVE
CATALOG REGISTER	RECALL or SAVE
CATALOG STATES	RECALL or SAVE
CATALOG TRACES	RECALL or SAVE

Table D-1. Softkey Locations (continued)

Softkey Functions	Front-Panel Key Access
CATALOG VARIABLS	(RECALL) or (SAVE)
CENTER FREQ	(FREQUENCY)
CF STEP AUTO MAN	(AUTO COUPLE) or (FREQUENCY)
CHANGE PREFIX	(CONFIG) or (DISPLAY)
CHANGE TITLE	(DISPLAY) or (MEAS/USER)
CLEAR	(CONFIG), (DISPLAY), or (MEAS/USER)
CLEAR OFFSET	(AUX CTRL)
CLEAR WRITE A	(TRACE)
CLEAR WRITE B	(TRACE)
CLEAR WRITE C	(TRACE)
CNTL A 0 1	(AUX CTRL)
CNTL B 0 1	(AUX CTRL)
CNTL C 0 1	(AUX CTRL)
CNTL D 0 1	(AUX CTRL)
CNT RES AUTO MAN	(MKR)
COMB GEN ON OFF	(AUX CTRL)
CONF TEST	(CAL)
CONTINUE	(AUX CTRL)
COPY DEV PRNT PLT	(CONFIG)
CORRECT ON OFF	(CAL)
CORRECT TO COMB	(AUX CTRL)
COUPLE AC DC	(AMPLITUDE)
CRT HORZ POSITION	(CAL)
CRT VERT POSITION	(CAL)
DATEMODE MDY DMY	(CONFIG)

Table D-1. Softkey Locations (continued)

Softkey Functions	Front-Panel Key Access
dBm	AMPLITUDE
dBmV	AMPLITUDE
dBuV	AMPLITUDE
DEFAULT CAL DATA	CAL
DEFAULT CONFIG	CONFIG
DELETE FILE	RECALL or SAVE
DELETE POINT	MEAS/USER
DELETE SEGMENT	MEAS/USER
DELTA MEAS	MEAS/USER
DEMOD	AUX CTRL
DEMOD AM FM	AUX CTRL
DEMOD ON OFF	AUX CTRL
DETECTOR SAMPL PK	TRACE
DISPLAY CNTL I	AUX CTRL
DISPOSE USER MEM	CONFIG
DSP LINE ON OFF	DISPLAY
DWELL TIME	AUX CTRL
EDGE POL POS NEG	SWEEP
EDIT AMP COR	MEAS/USER
EDIT DONE	MEAS/USER
EDIT FLATNESS	CAL
EDIT LIMIT	MEAS/USER
EDIT LOWER	MEAS/USER
EDIT MID/DELT	MEAS/USER
EDIT UP/LOW	MEAS/USER
EDIT UPPER	MEAS/USER

Table D-1. Softkey Locations (continued)

Softkey Functions	Front-Panel Key Access
EDIT UPR LWR	MEAS/USER
EXECUTE TITLE	CAL
EXIT	CAL
EXIT CATALOG	RECALL or SAVE
EXIT SHOW	CONFIG
EXTERNAL	TRIG
EXT PREAMP	AMPLITUDE
FFT MEAS	MEAS/USER
FLAT	MEAS/USER
FLATNESS DATA	CAL
FM GAIN	AUX CTRL
FORMAT CARD	CONFIG
FREE RUN	TRIG
FREQ OFFSET	FREQUENCY
FULL SPAN	SPAN
GATE CTL EDGE LVL	SWEEP
GATE DELAY	SWEEP
GATE LENGTH	SWEEP
GATE MENU	SWEEP
GATE ON OFF	SWEEP
GHIJKL	CONFIG, DISPLAY, or MEAS/USER
GRAT ON OFF	DISPLAY
INPUT Z 50 75	AMPLITUDE
INTRNL CRD	RECALL or SAVE
INTRNL -> STATE	RECALL

Table D-1. Softkey Locations (continued)

Softkey Functions	Front-Panel Key Access
INTRNL -> TRACE	RECALL
LAST SPAN	SPAN
LIMIT LINES	MEAS/USER, SAVE or RECALL
LIMITEST ON OFF	MEAS/USER
LIMITS FIX REL	MEAS/USER
LINE	TRIG
LOAD FILE	RECALL or SAVE
MAN TRK ADJUST	AUX CTRL
MARKER AMPTD	MKR
MARKER -> CF	MKR -> or PEAK SEARCH
MARKER -> CF STEP	MKR ->
MARKER DELTA	MKR or PEAK SEARCH
MARKER NORMAL	MKR
MARKER -> REF LVL	MKR ->
MARKERS OFF	MKR
MAX HOLD A	TRACE
MAX HOLD B	TRACE
MAX MXR LEVEL	AMPLITUDE
MIN HOLD C	TRACE
MINIMUM -> MARKER	MKR ->
MKNOISE ON OFF	MKR
MKPAUSE ON OFF	MKR
MKR CNT ON OFF	MKR
MKR Δ -> SPAN	MKR ->
MNOPQR	CONFIG, DISPLAY, or MEAS/USER

Table D-1. Softkey Locations (continued)

Softkey Functions	Front-Panel Key Access
NEW LIMIT	[MEAS/USER]
NEXT PEAK	[MKR ->] or [PEAK SEARCH]
NEXT PK LEFT	[MKR ->], [PEAK SEARCH], or [AUX CTRL]
NEXT PK RIGHT	[MKR ->], [PEAK SEARCH], or [AUX CTRL]
NORMLIZE ON OFF	[TRACE]
NORMLIZE POSITION	[TRACE]
NO USER MENU	[MEAS/USER]
NTSC	[TRIG]
PAINTJET PRINTER	[CONFIG]
PAL	[TRIG]
PAL-M	[TRIG]
PEAK EXCURSN	[MKR ->] or [PEAK SEARCH]
PEAK MENU	[MKR ->]
PEAK SEARCH	[AUX CTRL]
PK-PK MEAS	[MKR] or [MEAS/USER]
PLOT CONFIG	[CONFIG]
PLOTTER ADDRESS	[CONFIG]
PLT _ _ LOC _ _	[CONFIG]
PLTS/PG 1 2 4	[CONFIG]
POINT	[MEAS/USER]
POWER ON IP LAST	[CONFIG]
PRESEL DEFAULT	[AMPLITUDE]
PRESEL PEAK	[AMPLITUDE]
PRESET SPECTRUM	[MODE] or [PRESET]
PRINT CONFIG	[CONFIG]

Table D-1. Softkey Locations (continued)

Softkey Functions	Front-Panel Key Access
PRINTER ADDRESS	CONFIG
PRINTER SETUP	CONFIG
PRT MENU ON OFF	CONFIG
PURGE AMP COR	MEAS/USER
PURGE LIMITS	MEAS/USER
PWR SWP ON OFF	AUX CTRL
RECALL AMP COR	MEAS/USER
RECALL LIMIT	MEAS/USER
REF LVL	AMPLITUDE
REF LVL OFFSET	AMPLITUDE
RES BW AUTO MAN	AUTO COUPLE or BW
RPG TITLE	DISPLAY or MEAS/USER
SAVE AMP COR	MEAS/USER
SAVE LIMIT	MEAS/USER
SAV LOCK ON OFF	SAVE
SCALE LOG LIN	AMPLITUDE
SECAM-L	TRIG
SELECT AMPLITUD	MEAS/USER
SELECT DLT AMPL	MEAS/USER
SELECT FREQ	MEAS/USER
SELECT LWR AMPL	MEAS/USER
SELECT MID AMPL	MEAS/USER
SELECT POINT	MEAS/USER
SELECT PREFX	RECALL or SAVE
SELECT SEGMENT	MEAS/USER
SELECT TYPE	MEAS/USER

Table D-1. Softkey Locations (continued)

Softkey Functions	Front-Panel Key Access
SELECT UPR AMPL	(MEAS/USER)
SERVICE CAL	(CAL)
SERVICE DIAG	(CAL)
SET ATTN ERROR	(CAL)
SET DATE	(CONFIG)
SET TIME	(CONFIG)
SHOW OPTIONS	(CONFIG)
SLOPE	(MEAS/USER)
SPAN	(SPAN)
SPAN ZOOM	(SPAN)
SPEAKER ON OFF	(AUX CTRL)
SPECTRUM ANALYZER	(MODE) or (PRESET)
SQUELCH	(AUX CTRL)
SRC ATN ON OFF	(AUX CTRL)
SRC PWR OFFSET	(AUX CTRL)
SRC PWR ON OFF	(AUX CTRL)
SRC PWR STP SIZE	(AUX CTRL)
START FREQ	(FREQUENCY)
STATE -> CARD	(SAVE)
STATE -> INTRNL	(SAVE)
STOP FREQ	(FREQUENCY)
STUVWX	(CONFIG), (DISPLAY), or (MEAS/USER)
SWEEP CONT SGL	(SWEEP) or (TRIG)
SWP CPLG SR SA	(AUX CTRL)
SWP TIME AUTO MAN	(AUTO COUPLE) or (SWEEP)

Table D-1. Softkey Locations (continued)

Softkey Functions	Front-Panel Key Access
THRESHLD ON OFF	DISPLAY
TIMEDATE	CONFIG
TIMEDATE ON OFF	CONFIG
TRACE A	RECALL or SAVE
TRACE A B C	TRACE
TRACE B	RECALL or SAVE
TRACE C	RECALL or SAVE
TRACE -> CARD	SAVE
TRACE -> INTRNL	SAVE
TRACK GEN	AUX CTRL
TRACKING PEAK	AUX CTRL
TV LINE #	TRIG
TVSTND	TRIG
TV SYNC NEG POS	TRIG
TV TRIG	TRIG
TV TRIG EVEN FLD	TRIG
TV TRIG ODD FLD	TRIG
TV TRIG VERT INT	TRIG
USER MENU(S)	MEAS/USER
VBW/RBW RATIO	BW
VERIFY TIMEBASE	CAL
VID AVG ON OFF	TRACE
VID BW AUTO MAN	AUTO COUPLE or BW
VIDEO	TRIG
VIEW A	TRACE
VIEW B	TRACE

Table D-1. Softkey Locations (continued)

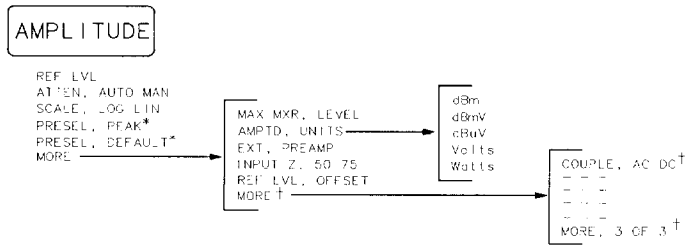
Softkey Functions	Front-Panel Key Access
VIEW C	TRACE
Volts	AMPLITUDE
Watts	AMPLITUDE
YZ_#SPC CLEAR	CONFIG, DISPLAY, or MEAS/USER
ZERO SPAN	SPAN

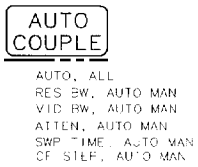
E

HP 8590 Series Spectrum Analyzer Key Menus

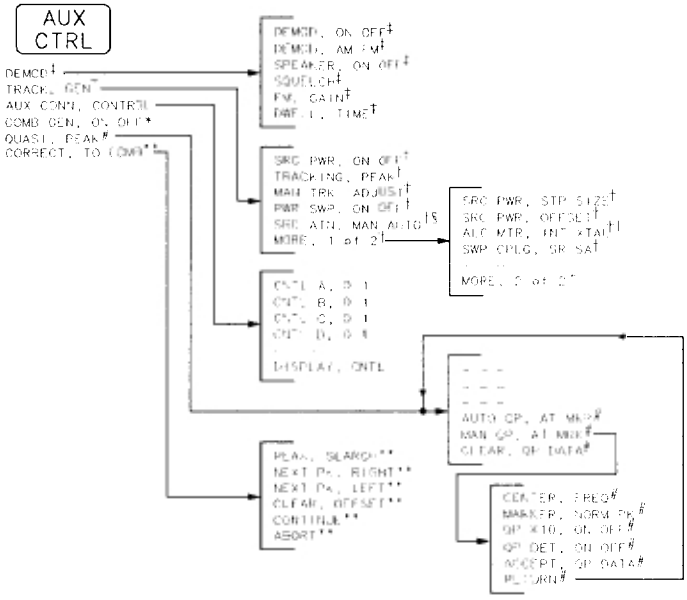
This appendix contains the key menus for the HP 8590 Series spectrum analyzers. All of the HP 8590 Series spectrum analyzers (HP 8590B, HP 8591A, HP 8592B, HP 8593A, HP 8594A, and HP 8595A) are represented in the key menus. Some of the softkeys shown in the key menus are model or option specific; refer to the key menu footnotes below the key menus for more information.

The key menus are arranged alphabetically by the front-panel keys.





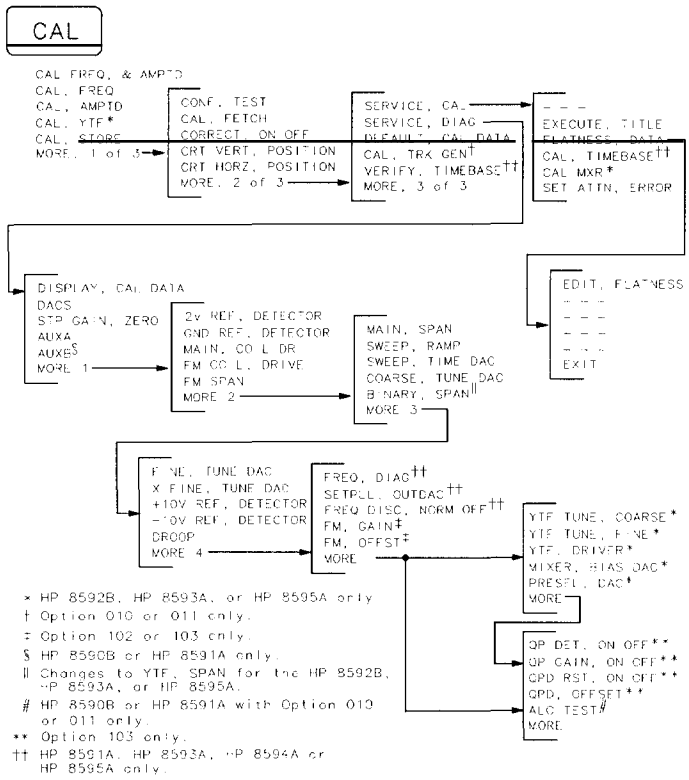
* HP 8592B, HP 8593A, or HP 8595A only
† HP 8594A or HP 8595A only.

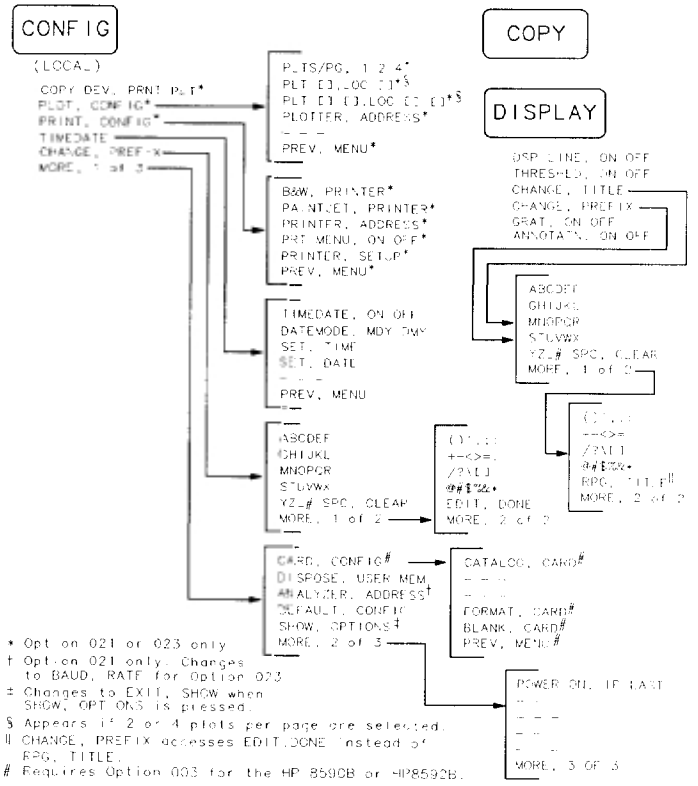


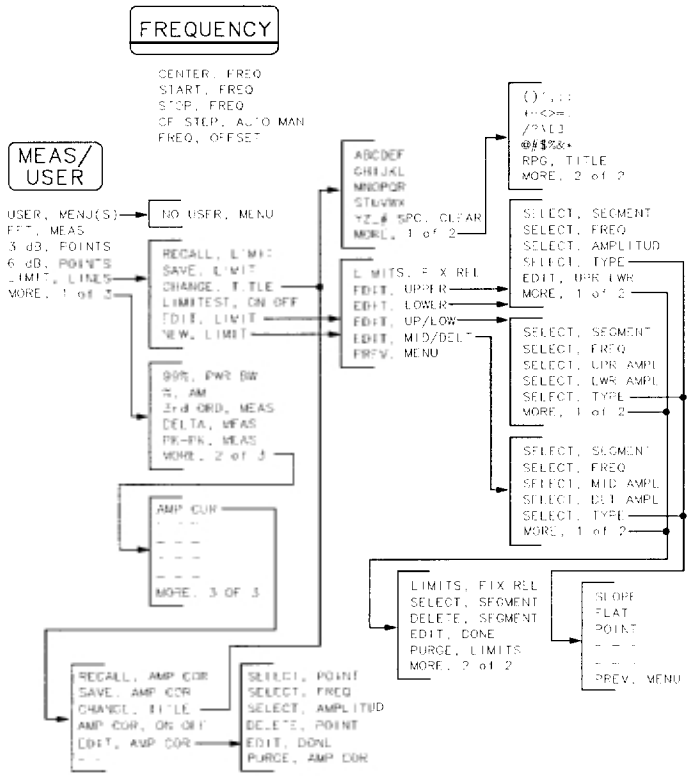
BW

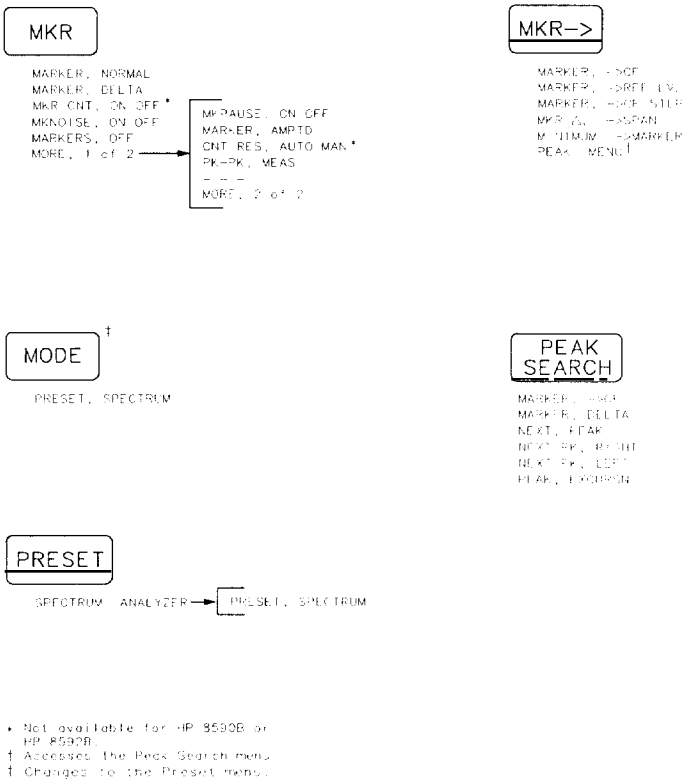
RES BW, AUTO MAN
VID BW, AUTO MAN
VBW/RBW, RAT O
V D AVG, ON OFF
9 kHz, EMI BW
120 kHz, EMI BW

* HP 8592B, HP 8593A, or HP 8595A only.
** Option 010 or 011 only.
† Option 102 or 105 only.
§ HP 8591A only.
‖ Changes to ALC, INT EXT for Option 010 for the HP 8593A, HP 8594A, or HP 8595A.
Option 105 with the quasi-peak detector driver installed.
** For the HP 8592B only.


CAL
CAL FREQ, & AMPTD
CAL, FREQ
CAL, AMPTD
CAL, YTF*
CAL, STORE
MORE, 1 of 3
CONF, TEST
CAL, FETCH
CORRECT, ON OFF
CRT VERT, POSITION
CRT HORZ, POSITION
MORE, 2 of 3
SERVICE, CAL
SERVICE, DIAG
DEFAULT, CAL, DATA
CAL, TRK GEN†
VERIFY, TIMEBASE††
MORE, 3 of 3
- - -
EXECUTE, TITLE
FLATNESS, DATA
CAL, TIMEBASE††
CAL MXR*
SET ATTN, ERROR
DISPLAY, CAL DATA
DACS
STR GAIN, ZERO
AUXA
AUXB§
MORE 1
2v REF, DETECTOR
GND REF, DETECTOR
MAIN, COIL DR
FM COIL, DRIVE
FM SPAN
MORE 2
MAIN, SPAN
SWEEP, RAMP
SWEEP, TIME DAC
COARSE, TUNE DAC
BINARY, SPAN||
MORE 3
EDIT, FLATNESS
- - -
- - -
- - -
- - -
EXIT
FINE, TUNE DAC
X FINE, TUNE DAC
+10V REF, DETECTOR
-10V REF, DETECTOR
DROOP
MORE 4
FREQ, DIAC††
SETPLL, OUTDAC††
FREQ DISC, NORM OFF††
FM, GAIN‡
FM, OFFST‡
MORE
YTF TUNE, COARSE*
YTF TUNE, FINE*
YTF, DRIVER*
MIXER, BIAS DAC*
PRESEL, DAC*
MORE
OP DET, ON OFF**
OP GAIN, ON OFF**
QPD RST, ON OFF**
QPD, OFFSET**
ALC TEST#
MORE
* HP 8592B, HP 8593A, or HP 8595A only
† Option 010 or 011 only.
‡ Option 102 or 103 only.
§ HP 8590B or HP 8591A only.
|| Changes to YTF, SPAN for the HP 8592B, HP 8593A, or HP 8595A.
HP 8590B or HP 8591A with Option 010 or 011 only.
** Option 103 only.
†† HP 8591A, HP 8593A, HP 8594A or HP 8595A only.

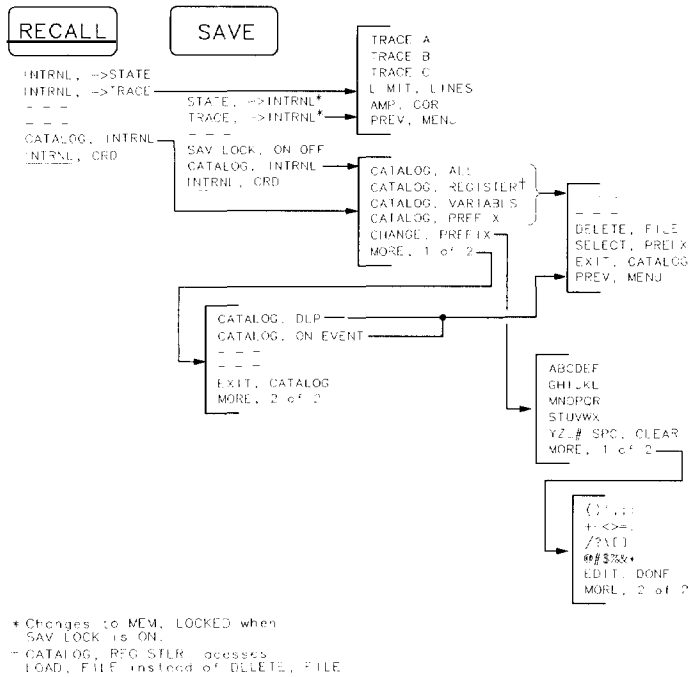

CONFIG
(LOCAL)
COPY DEV, PRNT PLT*
PLOT, CONFIG*
PRINT, CONFIG*
TIMEDATE
CHANGE, PREFIX
MORE, 1 of 3
PLTS/PG, 1 2 4*
PLT [1],LOC [1]*§
PLT [1] [],LOC [] []*§
PLOTTER, ADDRESS*
PREV, MENU*
B&W, PRINTER*
PAINTJET, PRINTER*
PRINTER, ADDRESS*
PRT MENU, ON OFF*
PRINTER, SETUP*
PREV, MENU*
TIMEDATE, ON OFF
DATEMODE, MDY DMY
SET, TIME
SET, DATE
PREV, MENU
ABCDEF
GHIJKL
MNOPQR
STUVWX
YZ_# SPC, CLEAR
MORE, 1 of 2
()',:;
+-<>=.
/?\[]
@#$%&*
EDIT, DONE
MORE, 2 of 2
CARD, CONFIG#
DISPOSE, USER MEM
ANALYZER, ADDRESS†
DEFAULT, CONFIG
SHOW, OPTIONS‡
MORE, 2 of 3
CATALOG, CARD#
FORMAT, CARD#
BLANK, CARD#
PREV, MENU#
POWER ON, IF LAST
MORE, 3 OF 3
COPY
DISPLAY
DSP LINE, ON OFF
THRESHLD, ON OFF
CHANGE, TITLE
CHANGE, PREFIX
GRAT, ON OFF
ANNOTATN, ON OFF
ABCDEF
GHIJKL
MNOPQR
STUVWX
YZ_# SPC, CLEAR
MORE, 1 of 2
()',:;
+-<>=.
/?\[]
@#$%&*
PRG, TITLE‖
MORE, 2 of 2
* Opt on 021 or 023 only
† Opt on 021 only. Changes to BAUD, RATE for Option 023
‡ Changes to EXIT, SHOW when SHOW, OPTIONS is pressed.
§ Appears if 2 or 4 plots per page are selected.
‖ CHANGE, PREFIX accesses EDIT, DONE instead of PRG, TITLE.
Requires Option 003 for the HP 8590B or HP8592B.


FREQUENCY
CENTER, FREQ
START, FREQ
STOP, FREQ
CF STEP, AUTO MAN
FREQ, OFFSET
MEAS/
USER
USER, MENU(S)
OFF, MEAS
3 dB, POINTS
6 dB, POINTS
LIMIT, LINES
MORE, 1 of 3
NO USER, MENU
RECALL, LIMIT
SAVE, LIMIT
CHANGE, TITLE
LIMITEST, ON OFF
EDIT, LIMIT
NEW, LIMIT
99%, PWR BW
%, AM
3rd ORD, MEAS
DELTA, MEAS
PK-PK, MEAS
MORE, 2 of 3
AMP COR
MORE, 3 OF 3
RECALL, AMP COR
SAVE, AMP COR
CHANGE, TITLE
AMP COR, ON OFF
EDIT, AMP COR
ABCDEF
GHIJKL
MNOPQR
STUVWX
YZ_@ SPC, CLEAR
MORE, 1 of 2
LIMITS, FIX REL
EDIT, UPPER
EDIT, LOWER
EDIT, UP/LOW
EDIT, MID/DELT
PREV, MENU
SELECT, POINT
SELECT, FREQ
SELECT, AMPLITUD
DELETE, POINT
EDIT, DONE
PURGE, LIMITS
RPG, TITLE
MORE, 2 of 2
SELECT, SEGMENT
SELECT, FREQ
SELECT, AMPLITUD
SELECT, TYPE
EDIT, UPR LWR
MORE, 1 of 2
SELECT, SEGMENT
SELECT, FREQ
SELECT, UPR AMPL
SELECT, LWR AMPL
SELECT, TYPE
MORE, 1 of 2
SELECT, SEGMENT
SELECT, FREQ
SELECT, MID AMPL
SELECT, DLT AMPL
SELECT, TYPE
MORE, 1 of 2
LIMITS, FIX REL
SELECT, SEGMENT
DELETE, SEGMENT
EDIT, DONE
PURGE, LIMITS
MORE, 2 of 2
SLOPE
FLAT
POINT
PREV, MENU



* Not available for HP 8590B or HP 8592B.
† Accesses the Peak Search menu.
‡ Changes to the Preset menu.

FOR RECALLING AND SAVING TO ANALYZER MEMORY:

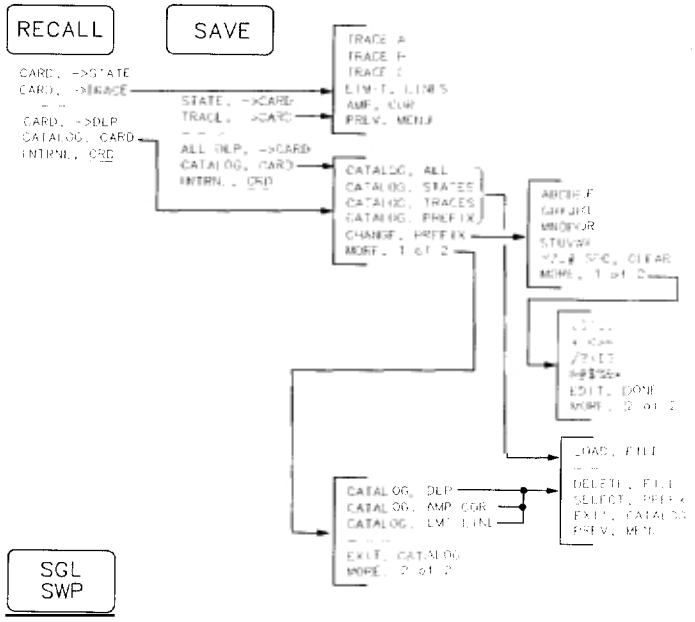


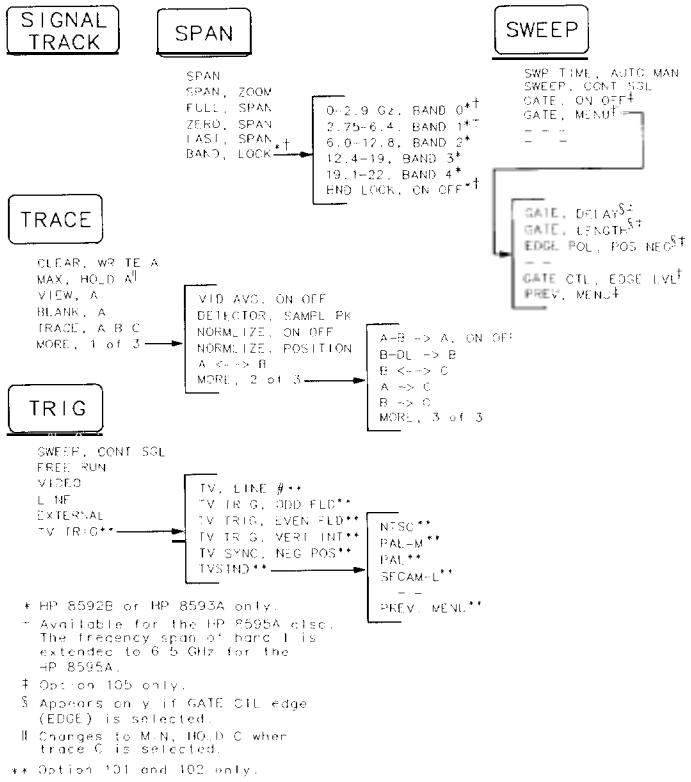
* Changes to MEM, LOCKED when SAV LOCK is ON.

† CATALOG, REG STLR accesses LOAD, FILE instead of DELETE, FILE

FOR RECALLING AND SAVING TO THE MEMORY CARD:

(Requires Option 003 for the HP 8590B or HP 8592B)





* HP 8592B or HP 8593A only.

~ Available for the HP 8595A also. The frequency span of band 1 is extended to 6.5 GHz for the HP 8595A.

‡ Option 105 only.

§ Appears only if GATE CTL edge (EDGE) is selected.

‖ Changes to MAN, HOLD C when trace C is selected.

** Option 101 and 102 only.

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