Quick Reference Guide

HP 8590 E-Series and L-Series Spectrum Analyzer

HEWLETT PACKARD

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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 *HP 8590 E-Series and L-Series Spectrum Analyzers User's Guide, HP 8590 E-Series and L-Series Spectrum Analyzers and HP 8591C Cable TV Analyzer Programmer's Guide,* or Calibration Guide for your specific instrument.

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 key 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.

General Safety Considerations

Caution — *Caution* denotes a hazard. I call attention to a procedure that, if not correctly performed or adhered to, could result in damage to or destruction of the instrument. Do not proceed beyond a *caution* note until the indicated conditions are fully understood and met.

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.

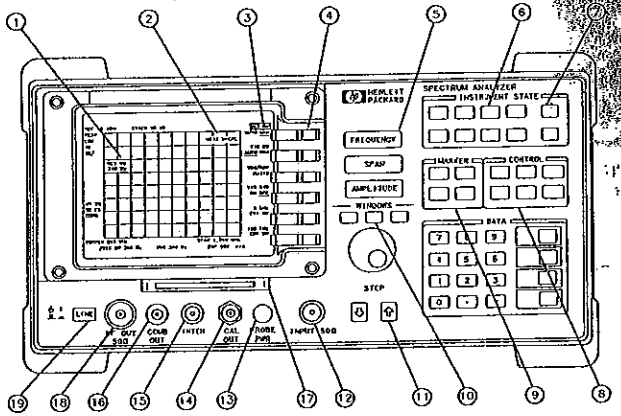

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Figure 1-1. Front-Panel Feature Overview

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 PRNT CONFIG, and COPY DEV PRNT PLT before pressing (COPY). *Option 041 or 043 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 **WINDOWS** functions turn on the windows display mode. They allow switching between windows and control the zone span and location. *For the HP 8590 E-Series spectrum analyzers.*

(HOLD) key deactivates an active function, *For the HP 8590 L-Series spectrum analyzers.* (On the HP 8590 E-Series spectrum analyzers the "hold" function is available as the HOLD softkey under (DISPLAY).

11 **DATA** keys, **STEP** keys and **knob** allow you to change the numeric value of an active function.

12 **INPUT 50Ω** is the signal input for the spectrum analyzer. (INPUT 75Ω is the signal input for a 75Ω 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.

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

14 **CAL OUT** provides a calibration signal of 300 MHz at −20 dBm. (The calibration signal amplitude for a 75Ω analyzer is 29 dBmV.)

15 **VOL-INTEN** or **INTENSITY.**

The **VOL-INTEN** knob changes the brightness of the screen display, and the volume of the speaker if Option 102, 103, or 110 are installed. *For the HP 8590 E-Series spectrum analyzers.*

The **INTENSITY** knob changes the brightness of the screen display. *For the HP 8590 L-Series spectrum analyzers.*

16 **100 MHz COMB OUT** supplies a 100 MHz signal with harmonics up to 22 GHz for use as a reference signal. *For the HP 8592L, HP 8593E, and HP 8596E only.*

17 **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 8591E, HP 8593E, HP 8594E, HP 8595E, and HP 8596E. It is available for the HP 8590L and HP 8592L as Option 003.

18 **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.)

19 [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.

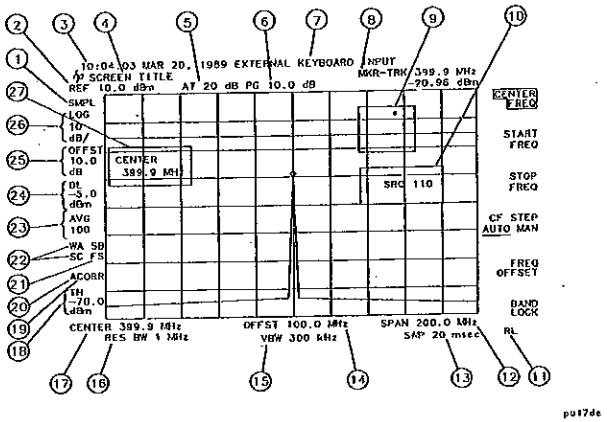

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Figure 1-2. Screen Annotation

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").

The WINDOWS display mode splits the screen into two separate displays. Only one of these displays is active at a time. The currently active window will have a solid line around the graticule rather than a broken line. The complete annotation is not available for each window because of space limitations.

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	18	threshold
6	preamplifier gain	19	correction factors on
7	external keyboard entry	20	amplitude correction factors on
8	marker or signal track readout	21	trigger
9	measurement-uncalibrated or function-in-progress messages	22	trace mode
10	service request	23	video average
11	remote operation	24	display line
12	frequency span or stop frequency	25	amplitude offset
13	sweep time	26	amplitude scale
		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.

   75Ω input 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 8590 Series Spectrum Analyzer with the center frequency set to 300 MHz. Spectrum analyzers with different frequency ranges will default to different frequency spans.

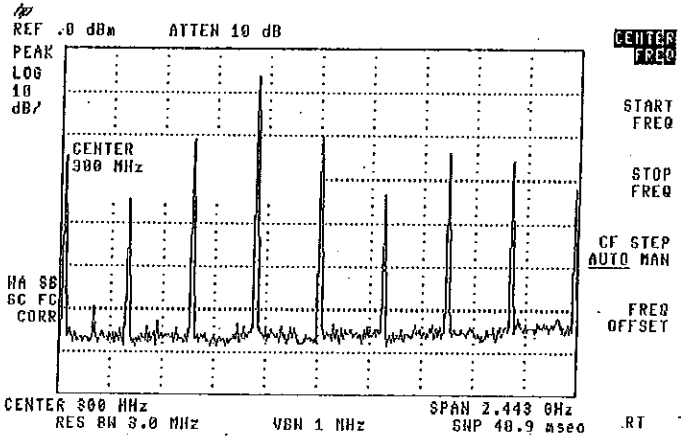


Figure 1-3. Center Frequency Set to 300 MHz

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).

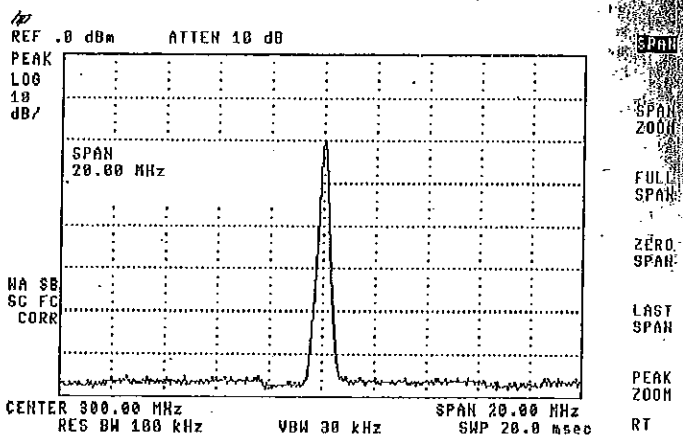


Figure 1-4. Frequency Span Reduced to 20 MHz

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.

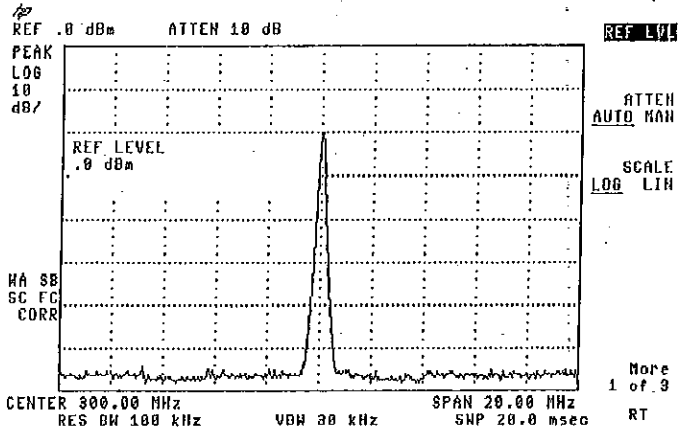


Figure 1-5. Setting the Amplitude

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.

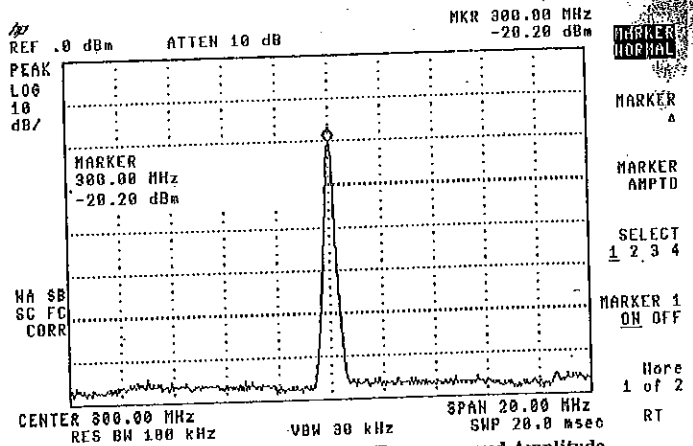


Figure 1-6. Marker Reads Out Frequency and Amplitude

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 5 minutes to finish (9 minutes with Option 130), 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 4, 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 4, More 2 of 4, 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 *HP 8590 E-Series and L-Series Spectrum Analyzers User's Guide*.

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 4, More 2 of 4, 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 *HP 8590 E-Series and L-Series Spectrum Analyzers User's Guide*. 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.

Analyzer Functions

`% AM ON OFF`
determines the percent of amplitude modulation of the largest displayed signal and its two sidebands.

`0 - 2.9 GHz BAND 0`
For HP 8592L, HP 8593E, HP 8595E, and HP 8596E only.
locks onto harmonic band 0. Harmonic band 0 uses low-pass filtering instead of bandpass preselection. It has a specified tuning range of 0 to 2.9 GHz.

`2.75 - 6.5 BAND 1`
For HP 8592L, HP 8593E, HP 8595E, and HP 8596E only.
locks onto harmonic band 1. Harmonic band 1 is preselected and has a specified tuning range of 2.75 GHz to 6.5 GHz.

`6.0 - 12.8 BAND 2`
For HP 8592L, HP 8593E, and HP 8596E only.
locks onto harmonic band 2. Harmonic band 2 is preselected and has a specified tuning range of 6.0 to 12.8 GHz.

`12.4 - 19.4 BAND 3`
For HP 8592L and HP 8593E only.
locks onto harmonic band 3. Harmonic band 3 is preselected and has a specified tuning range of 12.4 to 19.4 GHz.

`19.1 - 22 BAND 4`
For HP 8592L and HP 8593E only.
locks onto harmonic band 4. Harmonic band 4 is preselected and has a specified tuning range of 19.1 to 22 GHz.

`9 kHz EMI BW`
allows a 6 dB resolution bandwidth of 9 kHz.

120 kHz EM1 BW
allows a 6 dB resolution bandwidth of 120 kHz.

200 Hz EM1 BW
For Option 130 only.
allows a 6 dB resolution bandwidth of 200 Hz.

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

A-B=>A ON OFF
when ON is underlined, subtracts the data in trace B from the measured data in trace A.

A=>C
copies trace A into trace C.

ABCDEF
accesses the softkey menu for selecting screen title characters A through F.

ABORT
allows you to exit the correct-to-comb routine if you do not wish to add an offset frequency. *HP 8592L only.*

ACCEPT QP DATA
For Option 103 only.
displays the quasi-peak amplitude value of the marker.

ACP GRAPH ON OFF
calculates and displays a graph of the adjacent channel power (ACP) ratio as a function of channel spacing.

ADJ CHAN POWER
measures the power leakage into the adjacent channels and calculates the adjacent channel power ratio of both the upper and lower channels, with respect to the total power.

ADJ CHAN PWR EXTD
measures the power leakage into the adjacent channels and calculates the adjacent channel power ratio of both the upper and lower channels, with respect to the reference channel. **ADJ CHAN POWER EXTD** has an extended dynamic range compared with **ADJ CHAN POWER**.

ALC INT EXT
For HP 8593E, HP 8594E, HP 8595E, or HP 8596E with Option 010 only.
activates internal (INT) leveling or external (EXT) leveling.

ALC INT XTAL MTR
For HP 8590L or HP 8591E with Option 010 or 011 only.
activates the automatic leveling control (ALC) function for internal (INT) leveling or external (XTAL or MTR) leveling.

ALL DLP CARD
Requires Option 003 for an HP 8590L or HP 8592L.
saves all the downloadable programs and key definitions that are in analyzer memory onto the memory card. If the downloadable program was stored using a prefix, the file name for the downloadable program consists of d(prefix)_(register number). If no prefix was specified, the data is stored with the file name d_(register number).

AMP COR
accessed by (CAL). **AMP COR** accesses the menus for entering and editing the current amplitude-correction factors.

AMP COR
stores the current amplitude-correction factors table, when accessed by (SAVE), in analyzer memory or on the memory card. When accessed by (RECALL), **AMP COR** recalls the amplitude-correction factors table from either analyzer memory or the memory card.

AMP COR ON OFF
turns the current amplitude-correction factors on and off.

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

Ampltd Units
accesses the softkeys that change the amplitude units.

ANALOG+ ON OFF
For the HP 8591E, HP 8593E, HP 8594E, HP 8595E, or HP 8596E only. Requires Option 101 or 301.
turns on the analog+ display mode. This is a digital implementation of an analog display, combining the advantages of both types of displays.

ANALYZER ADDRESS
Option 041 only.
allows you to set the HP-IB address of the analyzer. The analyzer address is set to 18 by pressing **DEFAULT CONFIG**.

ANNOTATN ON OFF
turns the screen annotation on and off.

APND CAT ITEM
For Options 041 and 043 only.
starts the DLP editor function and allows the highlighted item from the catalog of analyzer memory to be appended to the end of the item that is currently in the analyzer's DLP editor memory.

Caution To prevent damage to the input mixer, the power level at the input mixer must not exceed +30 dBm. To prevent signal compression, power at the input to the input mixer must be kept below −10 dBm.

Note To protect the mixer from possible damage, 0 dB RF attenuation (no input power reduction to the mixer) can be selected only from the number/units keypad.

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

AUTO ALL — couples the following functions: resolution bandwidth, video bandwidth, attenuation, sweep time, center-frequency step, video bandwidth, and video-bandwidth to resolution-bandwidth ratio.

AUTO COUPLE — accesses the softkey menu of functions that can be coupled. (Coupled functions are functions that are linked: if one function is changed, the other function is changed.)

AUTO QP AT MKR — *For Option 103 only.* executes a quasi-peak routine.

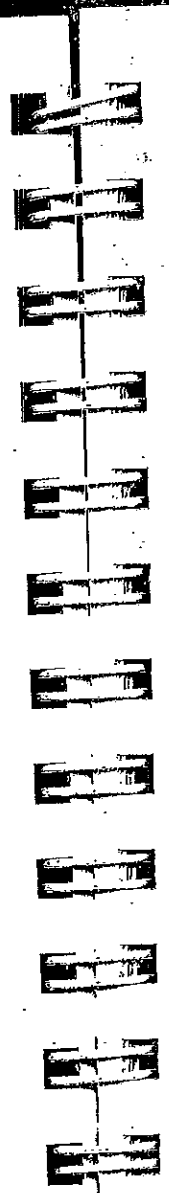
AUX COMB GENERATOR — accesses the softkey menu used to control the auxiliary outputs and input.

AUX CTRL — accesses the softkey menu used for control of the auxiliary interface connector, accesses the comb generator function *HP 8592L, HP 8593E, and HP 8596E only.* Accesses demodulation functions *Options 102 or 103*, and it accesses tracking generator functions for *Options 010 and 011.*

B → C — copies trace B into trace C.

B ↔ C — exchanges trace B and trace C. Trace B is set to the view mode.

B − DL → B — subtracts the display line from trace B and places the result in trace B.



BAND LOCK — *For HP 8592L, HP 8593E, HP 8595E, and HP 8596E only.* accesses the harmonic band menu and the band lock function.

BAUD RATE — *Option 043 (RS-232 and parallel interface) only.* allows you to set the data transmission speed.

BLANK A — stores the amplitude data for trace A and removes it from the screen.

BLANK B — stores the amplitude data for trace B and removes it from the screen.

BLANK C — stores the amplitude data for trace C and removes it from the screen.

BLANK CARD — *Requires Option 003 for an HP 8590L or HP 8592L.* deletes all the files from the memory card.

BND LOCK ON OFF — *For HP 8592L, HP 8593E, HP 8595E, and HP 8596E only.* underlining ON locks the analyzer to the lowest frequency band (local oscillator harmonic number) containing the correct center frequency.

BW — activates the resolution bandwidth function and accesses the softkeys that control the bandwidth functions.

CAL — accesses the softkey menus used for the self-calibration, service-diagnostics, and service-calibration functions.

CAL AMPTD — initiates an amplitude self-calibration routine.

CAL FETCH — retrieves stored self-calibration correction factors from the previous CAL STORE.

CAL FREQ — initiates a frequency self-calibration routine.

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

CAL STORE — stores the correction factors from the last calibration.

CAL TRK GEN — *Option 010 or 011 only.* performs absolute amplitude, vernier, and tracking peak

self-calibration routines. Connect the tracking generator output to the analyzer input.

CAL YTF

For HP 8592L, HP 8593E, HP 8595E, and HP 8596E only. generates the best slope and offset adjustment to calibrate the YIG-tuned filter (YTF) for each harmonic band. Connect COMB OUT to the analyzer input.

CARD CONFIG

Requires Option 003 for an HP 8590L or HP 8592L. accesses the softkey menu that allows you to catalog, format, and delete data from a memory card.

CARD DISPLAY

Requires Option 003 for an HP 8590L or HP 8592L. recalls into analyzer memory a display image saved on the memory card.

CARD DLP

Requires Option 003 for an HP 8590L or HP 8592L. recalls into the analyzer memory a downloadable program (DLP) saved on the memory card.

CARD STATE

Requires Option 003 for an HP 8590L or HP 8592L. recalls into analyzer memory a state saved on the memory card.

CARD TRACE

Requires Option 003 for an HP 8590L or HP 8592L. recalls into analyzer memory a trace saved on the memory card. Limit lines and amplitude correction factors can also be recalled.

CATALOG ALL

catalogs all the programs and variables stored in analyzer memory.

CATALOG AMP COR

Requires Option 003 for an HP 8590L or HP 8592L. catalogs the amplitude correction factor files that are on the memory card.

CATALOG CARD

Requires Option 003 for an HP 8590L or HP 8592L. accesses a menu with the cataloging functions for the memory card.

CATALOG CARD

Requires Option 003 for an HP 8590L or HP 8592L. displays a catalog of the items stored on the memory card.

CATALOG DISPLAY

Requires Option 003 for an HP 8590L or HP 8592L. catalogs all of the display images that are on the memory card.

CATALOG DLP

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

CATALOG INTERNAL

accesses a menu that has the cataloging functions for analyzer memory.

CATALOG LMT LINE

Requires Option 003 for an HP 8590L or HP 8592L. catalogs the limit-lines on the memory card.

CATALOG ON EVENT

displays the "on event" programming commands and their status. These commands include:

- ONEOS
- ONSWP
- TRMATH
- ONCYCLE
- ONDELAY
- ONMKR
- ONSRQ
- ONTIME

CATALOG PREFIX

catalogs all of the saved data with the specified prefix from either the memory card or the analyzer memory.

CATALOG REGISTERS

displays the status of state and trace registers in analyzer memory.

CATALOG STATES

Requires Option 003 for an HP 8590L or HP 8592L. catalogs all of the states stored on the memory card.

CATALOG TRACES

Requires Option 003 for an HP 8590L or HP 8592L. catalogs all of the traces stored on the memory card.

CATALOG VARIABLES

catalogs all of the variables saved in analyzer memory.

CENTER FREQ

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

CF STEP AUTO MAN

changes the step size for the center frequency function.

Change Prefix

allows you to enter a prefix that can be used for saving and recalling data to and from the memory card, and for cataloging by the prefix.

Change Title

allows you to write a 53-character screen title across the top of the screen.

CHANNEL BANDWIDTH

allows the user to enter the channel bandwidth to set up the analyzer when using the measurement functions under the Power Menu key.

CHANNEL POWER

measures the power in the channel bandwidth specified by the user.

CHANNEL SPACING

allows the user to enter the channel spacing to set up the analyzer when using the measurement functions under the Power Menu key.

CLEAR

clears the current screen title or prefix.

CLEAR PARAM

Option 105 only. Option 101 is recommended.
clears all of the pulse parameters in the gate utility.

CLEAR QP DATA

For Option 103 only.
clears the displayed quasi-peak amplitude and quasi-peak marker (represented by a diode symbol) from the analyzer screen.

CLEAR WRITE A

erases any data previously stored in trace A and continuously displays any signals during the sweep of the analyzer.

CLEAR WRITE B

erases any data previously stored in trace B and continuously displays any signals detected during the sweep of the analyzer.

CLEAR WRITE C

erases any data previously stored in trace C and continuously displays any signals detected during the sweep of the analyzer.

CNT RES: AUTO MAN

allows the resolution of the marker counter to be selected manually or auto-coupled.

CNTL A: 0 or 1

makes the auxiliary-interface control line A output high or low (TTL).

CNTL B: 0 or 1

makes the auxiliary-interface control line B output high or low (TTL).

CNTL C: 0 or 1

makes the auxiliary-interface control line C output high or low (TTL).

CNTL D: 0 or 1

makes the auxiliary-interface control line D output high or low (TTL).

COMB GEN: ON OFF

For HP 8592L, HP 8593E, and HP 8596E only.
turns the internal comb generator on or off.

CONT TEST

initiates a variety of tests to check the major functions of the analyzer.

CONFIG

accesses the softkey menu used for printer and plotter configurations, the time and date display functions, changing the current prefix, memory card configuration functions, disposing of user-defined variables and programs from analyzer memory, changing the analyzer address or the baud rate, displaying the installed options on screen, and changing the format of the MONITOR output. Pressing CONFIG places the analyzer in the local mode and clears any SQR error messages from the screen.

CONT MEAS

sets the functions in the Power Menu so that they make the measurement at the end of every sweep.

CONTINUOUS FFT

initializes the Fast Fourier Transform (FFT) function, puts the analyzer in continuous sweep and performs an FFT at the end of each sweep.

COPY

Option 041 or 043 only.
initiates an output of the screen data, without an external controller, to a previously specified graphics printer or plotter. The printer or plotter must have already been selected using CONFIG and either Plot Config or Print Config. Use COPY DEV: PRNT PLT to choose between printing and plotting.

COPY DEV: PRNT PLT

Option 041 or 043 only.
changes between a printer and plotter.

CORRECT ON OFF

When ON is underlined, correction factors are used and CORR appears on the display. When OFF is underlined, correction factors are not used.

COUPLE AC DC

For HP 8594E, HP 8595E, or HP 8596E only.
allows you to select alternating-current (AC) or direct-current (DC) coupling at the spectrum analyzer input.

OPT RBW ON OFF

Option 105 only. Option 101 is recommended.
automatically selects the optimum resolution bandwidth for an unmodulated pulse if the pulse width has been entered.

GPL SWP ON OFF

Option 105 only. Option 101 is recommended.
automatically selects the optimum sweep time if the pulse repetition interval has been entered.

GPL VBW ON OFF

Option 105 only. Option 101 is recommended.
automatically selects the optimum video bandwidth if the gate length has been entered.

GRT HORZ POSITION

changes the horizontal position of the signal on the analyzer display. Press **CAL STORE** if you want the analyzer to use this position permanently.

GRT VERT POSITION

changes the vertical position of the signal on the analyzer display. Press **CAL STORE** if you want the analyzer to use this position permanently.

DATEMODE MDY DMY

changes the display of the date from a month-day-year format to a day-month-year format.

dBm

changes the amplitude units to dBm for the current setting (log or linear).

dBmV

changes the amplitude units to dBmV for the current setting (log or linear).

dBµV

changes the amplitude units to dBµV for the current setting (log or linear).

DEFAULT CAL DATA

accesses the factory-default correction factors. See the *HP 8590 E-Series and L-Series Spectrum Analyzers User's Guide*, Chapter 7, for more information.

DEFAULT CONFIG

resets the analyzer configuration to the state it was in when it was originally shipped from the factory and performs an instrument preset.

DEFAULT SYNC

restores the factory default values of the horizontal and vertical synchronization constants for the rear panel MONITOR output.

DEFINE GATE COUPLING

Option 105 only. Option 101 is recommended.
accesses the time gate utility menu for coupling spectrum analyzer settings to the input pulsed signal parameters.

DEFINE GATE

Option 105 only. Option 101 is recommended.
accesses the menu for turning on and defining the gate, from within the time gate utility.

Define Time

Option 105 only. Option 101 is recommended.
accesses the menu for manipulating the time domain window in the gate utility.

DELETE FILE

allows you to delete an item from analyzer memory or a file from the memory card.

DELETE POINT

deletes an amplitude-correction factor that was previously selected by **SELECT POINT**.

DELETE SEGMENT

deletes the limit-line entry for the selected segment number.

Demod

Option 102 or 103 only.
accesses the softkeys controlling demodulation functions, speaker volume, squelch level, FM gain, and dwell time.

DEMOD AM/FM

Option 102 or 103 only.
allows selection of amplitude (AM) or frequency (FM) demodulation.

DEMOD ON OFF

Option 102 or 103 only.
turns the AM or FM demodulation on and off.

DESKJET 310/850C

selects the HP DeskJet 310 or 550C for color printing. Use this function if you have one of these color printers. This softkey can be accessed by pressing (CONFIG), then **Set Color Printer**.

DESKJET 540J

selects the HP DeskJet 540 for color printing. Use this function if you have this color printer. This softkey can be accessed by pressing (CONFIG), then **Set Color Printer**.

DETECTOR PK-RPEAK

selects between positive peak, sample, and negative peak detection. Negative peak detection is only available with Option 101.

DETECTOR SMPL/PK

selects between positive peak detection and sample detection.

(DISPLAY)

accesses softkeys that include the **MORE** softkey and limit line functions, activate the display line softkey, threshold and analog+ display softkeys. It also allows title and prefix entry, as well as control of the display graticule and screen annotation.

DISPLAY TO CARD

Requires Option 008 for the HP 8590L or HP 8592L.
saves the current analyzer display image on the memory card for viewing or copying later.

DISPLAY CNTL A

displays the status of the auxiliary connector input (control line I) on the analyzer screen (high = 1 or low = 0, in TTL).

Disposes User Mem

accesses the softkeys ERASE MEM CARD, ERASE DLP MEM, ERASE STATE MEM, ERASE TRACE MEM, and ERASE MEM ALL.

DONE

Option 105 only. Option 101 is recommended.
exits the pulse parameter entry menus in the gate utility assigning the current marker value to be the value of the parameter being entered.

DSP LINE ON OFF

activates an adjustable horizontal line that is used as a visual reference line.

DWELL TIME

Option 102 or 103 only.
sets the dwell time for the marker pause, during which demodulation can take place in nonzero span sweeps.

EDGE POL POS NEG

Option 105 only. Option 101 is recommanded.
determines whether the gate triggers on the positive-going or negative-going edge of the signal at the GATE TRIGGER INPUT.

EDIT Amp Corr

allows you to edit the current amplitude-correction factors table.

EDIT CAT ITEM

For Options 041 and 043 only.
starts the DLP editor function and loads the highlighted item from the catalog of analyzer user memory to be displayed and edited.

Edit done

When accessed from the amplitude-correction menu, the amplitude-correction factors table is erased from the analyzer's screen and the amplitude-correction menu is restored on-screen. When accessed from the change prefix menu, Edit Done erases the prefix from the analyzer's screen and restores the previous menu.

EDIT DONE

erases the limit-line table from the analyzer's screen and restores the menu accessed by the Limit Lines softkey.

EDIT FAST

For Options 041 and 043 only.
starts the DLP editor function and allows the most recent item that was being edited, in the DLP editor buffer, to be accessed again.

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 Upr/Lwr

allows you to view or edit the upper and lower limit-line tables simultaneously.

Edit Upr/Low

allows you to view or edit the upper and lower limit-line tables simultaneously.

Edit Upper

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

EDIT UPR/LWR

selects upper or lower limit-line tables. It switches to the limit-line table that is not currently being edited.

EDITOR

For Options 041 and 043 only.
accesses the menu of downloadable program (DLP) editor keys.

EMI BW Menu

accesses the functions that set the spectrum analyzer resolution bandwidth to the values required for electromagnetic interference (EMI) testing. (200 Hz EMI BW *is only available with Option 130.*)

(ENTER)

Pressing (Hz/μV/μs) which is also the ENTER key, terminates and enters into the spectrum analyzer a numerical value.

ENTER PRI

Option 105 only. Option 101 is recommended.
accesses the menu for entering the value of the pulse repetition interval (PRI).

ENTER REF EDGE

Option 105 only. Option 101 is recommended.
accesses the menu used to define the edge of the pulse that will be used as the time reference.

ENTER WIDTH

Option 105 only. Option 101 is recommended.
accesses the menu for entering the value of the pulse width.

ERASE DLP MEM

allows you to dispose of the DLPs, all traces defined by TRDEF, and all VARDEF variables that are in spectrum analyzer memory.

ERASE MEM ALL

allows you to purge all user state registers, all user trace registers, all mode registers, all one-button traces, the editor buffer, all DLP memory, and all microprocessor stack data.

Note

ERASE MEM ALL ignores the state of the SAV LOCK. So, even if STATES and TRACES are locked, they will still be erased by ERASE MEM ALL.

ERASE MEM CARD

allows you to dispose of any data or programs stored on the memory card by formatting it.

ERASE STATE ALL

allows you to purge all the user state registers 1 through 9.

ERASE TRACE ALL

allows you to purge all the user trace registers 0 through TRCMEM.

EP LQ570 SNP GRC

sets the screen dump to be compatible with an Epson LQ-570 compatible printer.

EPLMX80 SNP GRC

sets the screen dump to be compatible with an Epson MX80 compatible printer.

EXECUTE TITLE

executes a programming command displayed in the screen title area of the spectrum analyzer.

EXIT CATALOG

returns the analyzer to the state it was in before the current catalog function was invoked.

EXIT SHOW

removes the screen annotation left after pressing SHOW OPTIONS.

EXIT UTILITY

Option 105 only. Option 101 is recommended.
exits the gate utility returning to the gate control menu. The spectrum analyzer is returned to normal operation.

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 volts.

EXTERNAL PREAMPG

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

FFT MARKERS

if the FFT mode is already active, pressing FFT MARKERS only activates the FFT markers. If the FFT mode is not active, then the FFT marker will be activated and the FFT annotation will be displayed but an FFT will not be performed.

FFT Menu

accesses the menu of keys to initiate and evaluate a Fourier transform of the spectrum analyzer's displayed data.

FFT OFF

exits the FFT mode and menus, returning the analyzer to normal operation.

FFT STOP FREQ

allows the user to enter the stop frequency for the desired FFT span.

FLAT

draws a zero-slope line between the coordinate point of the current segment and the coordinate point of the next segment.

FM GAIN

Option 102 or 103 only.
adjusts the FM deviation display. The top graticule is the positive deviation set by FM GAIN. The bottom graticule is the negative deviation set by FM GAIN.

FORMAT CARD

For HP 8590L and HP 8592L must have Option 003.
formats a 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

allows the user to input a frequency offset value that is added to the frequency readout, to account for frequency conversions external to the spectrum analyzer.

FREQUENCY

activates the center-frequency or start-frequency function and accesses the menu that has the frequency functions.

FULL SPAN

changes the analyzer span to full span. *For an HP 8592L, HP 8593E, HP 8595E, and HP 8596E only:* span can be limited if harmonic band lock (BNDLOCK ON OFF) is set to ON.

Gate Control

Option 105 only. Option 101 is recommended.
accesses the menu of gate control functions and the entrance to the gate utility menus.

GATE CTL EDGE/LEVEL

Option 105 only. Option 101 is recommended.
determines if the gate is enabled on the edge of the trigger input or on a threshold level of the input signal.

GATE DELAY

Option 105 only. Option 101 is recommended.
sets the duration of the delay after an edge trigger before the gate switch closes.

GATE LENGTH

Option 105 only. Option 101 is recommended.
sets the duration of the gate.

GATE ON OFF

Option 105 only. Option 101 is recommended.
turns on or off the gate for Option 105, the time-gated spectrum analyzer capability.

GATE VIEW/SETUP

Option 105 only. Option 101 is recommended.
accesses the softkey functions used for Option 105, the time-gated spectrum analyzer capability. It creates related time domain and frequency domain windows to set up the time gate and make measurements.

GRAPH

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

GRAT ON OFF

turns the screen graticule on and off.

GRPH MKR ON OFF

turns the graph marker ON or OFF for adjacent channel and channel power measurements.

HOLD

deactivates the active function and blanks the active function text from the display. *Not available for HP 8590L and HP 8592L.*

HP B&W PRINTER

Option 041 or 043 only.
selects a black and white printer.

HP B&W DJ540

Option 041 or 043 only.
selects a black and white printer. Use this function if you have a black and white HP DeskJet 540 printer. Press SET DEV PRINTER and then select the HP B&W PRINTER softkey. Start printing by pressing COPY DEV PRNT PLTR (PRNT) and (COPY).

INPUT Z 50Ω 75Ω

adjusts the voltage readout by 1.76 dB to correct for the difference between voltage and power measurements in a 75Ω system versus a 50Ω system.

INTERNAL CARD

Requires Option 003 for an HP 8590L or HP 8592L.
selects between analyzer memory and the memory card for the save and recall functions.

INTERNAL STATE

recalls the saved analyzer state from the selected state register.

Internal Trace

accesses a softkey menu that allows you to either select the trace in which the trace data is to be recalled, recall the current limit-line tables, or recall amplitude correction factors.

LAST SPAN

changes the analyzer's frequency span to the previous span setting.

LINE MENU

accesses the limit-line menus under the (DISPLAY) key.

LIMIT LINES

stores or recalls the current limit-line tables in analyzer memory or on the memory card.

LIMITS FIX/REL

allows you to choose fixed or relative type of limit lines.

LIMITS FREQ/TIME

selects whether limit lines will be entered using frequency or sweep time to define the segments.

LINE

activates the trigger condition that allows the next sweep to be synchronized with the next cycle of the line voltage.

LMT DISP ON AUTO

controls when the limit lines are displayed. If LMT DISP is set to AUTO, the limit lines are only displayed when LMT TEST ON OFF is set to ON.

LMT TEST ON OFF

turns the limit-line testing and (if LMT DISP AUTO is selected) turns the display of the limit lines on and off.

LOAD FILE

loads a file from the memory card into analyzer memory.

(LOCAL)

places the analyzer in the local mode and enables front-panel control.

Main Menu

Option 105 only. Option 101 is recommended.
returns to the main gate utility menu from within the gate utility.

MAN TUNE ΔF MKR

Option 103 only.
performs a subset of the routine executed by pressing AUTO QPK MKR and then displays a menu of quasi-peak softkeys.

MAN TRK ADJUST

Option 010 or 011 only.
allows the user to adjust the frequency of the tracking-generator oscillator manually.

MARKER # ON OFF

turns the selected marker on or off. One of the four markers must first be selected by the SELECT MARKER key.

MARKER ΔA

activates a second marker at the position of the first marker and indicates the frequency and amplitude differences between the two markers.

MARKER 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.

MARKER ALL OFF

turns off all of the markers.

MARKER AMPTD

keeps the active marker at the requested amplitude on the screen. Once activated, the marker remains at the amplitude selected even if the signal frequency is changed.

MARKER AUTO FFT

functions exactly like the CONTINUOUS FFT key, if the analyzer is already in zero span. If the analyzer is not in zero span it activates a marker which must be placed on the signal that will have an FFT performed on it and MARKER AUTO FFT must be pressed again.

MARKER CF

changes the 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.

MARKER FFT STOP

changes the FFT stop frequency to whatever the current value of the FFT marker frequency is.

MARKER MID CORR

changes the frequency at the middle of the FFT display to whatever the current value of the FFT marker frequency is.

MARKER MINIMUM

moves the active marker to the minimum detected amplitude value.

MARKER NORM PK

For Option 103 only.
provides a function similar to a normal marker when making quasi-peak measurements.

MARKER NORMAL

activates a single frequency marker at the center frequency on the active trace.

MARKERS ON

Option 105 only. Option 101 is recommended.
activates a marker in the gate utility.

MARKER PK-PK

finds and displays the frequency and amplitude differences between the highest and lowest trace points.

MARKER REF LVL

changes the analyzer settings so that the amplitude at the active marker becomes the reference level.

MARKER START

changes the start frequency so that it is equal to the frequency of the active marker.

MARKER STOP

changes the stop frequency so that it is equal to the frequency of the active marker.

MAX HOLD A

maintains the maximum level for each trace point of trace A.

MAX HOLD B

maintains the maximum level for each trace point of trace B.

MAX MXR LVL

lets you change the maximum input mixer level in 10 dB steps.

MEAS OFF

turns off the measurement functions under the Power Menu key and restores the analyzer to the state prior to initiating the power measurement.

MEAS/USER

switches between the User Menu and the menu containing the built-in measurement routines.

MEM LOCKED

indicates that the SAV LOCK function is set to ON.

MIN HOLD C — maintains the minimum level for each trace point of trace C.

MK COUNT ON OFF — turns on the marker counter when ON is underlined.

MK NOISE ON OFF — reads out the average noise level, referenced to a 1 Hz noise power bandwidth, at the marker position.

MK PAUSE ON OFF — stops the analyzer sweep at the marker position for the duration of the dwell time.

MK READ FREQ TIME — selects the marker readout to be displayed in signal frequency, sweep time, the inverse of the sweep time, or the period which is the inverse of the frequency.

MK TABLE ON OFF — provides a list of the four available markers which is updated at the end of each sweep or when a marker is used.

MK TRACE AUTO A B C — assigns a marker to a trace.

MK TRACK ON OFF — moves the signal that is nearest to the active marker to the center of the screen and keeps the signal there.

(MKR) — accesses the marker control softkeys which select the type and number of markers and turn them on and off.

(MKR →) — accesses the softkeys used for the transfer of marker information directly into other functions.

(MKR FCTN) — accesses the marker function softkeys.

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

(MODE) — changes the softkey menus for the spectrum-analyzer mode and other modes of operation.

N DB PTS ON OFF — automatically places two markers at points N dB from the highest point on the highest displayed signal, and determines the frequency difference between the two markers.

NEW EDIT — *For Options 041 and 043 only.*
starts the DLP editor function, clearing the DLP editor memory to create a new item.

(NEXT) — *For HP 8591E, HP 8593E, HP 8594E, HP 8595E, or HP 8596E only.*
switches the active window between the two displayed windows.

NEXT PEAK — places the marker on the next highest peak. (Also see the PEAK EXCURSN and THRESHLD ON OFF softkey descriptions.)

NEXT PK LEFT — moves the marker to the next peak to the left of the current marker.

NEXT PK RIGHT — moves the marker to the next peak to the right of the current marker.

NORMLIZE ON OFF — subtracts trace B from trace A and adds the result to the display line. The result is displayed in trace A.

NORMLIZE POSITION — displays the display line and makes the display line function active. The trace data is normalized with respect to the display line even if the value of the display line is changed.

NO USER MENU — is displayed if key number 1 has not been defined by the user.

NTSC — *Options 101 and 102, or Option 301 only.*
allows you to trigger on the NTSC video format.

OCC BW % POWER — allows the user to enter the percent of the power desired when using the occupied bandwidth measurement under the POWER MENU key.

OCCUPIED BANDWDTH — integrates the power of the displayed spectrum and puts markers at the frequencies containing a selected percent of the power.

(ON) — *For HP 8591E, HP 8593E, HP 8594E, HP 8595E, or HP 8596E only.*
activates the windows display mode and accesses the menu of window zone functions.

PAINTJET PRINTER — *Option 041 or 043 only.*
selects a color printer.

PAL — *Options 101 and 102, or Option 301 only.*
allows you to trigger on the PAL video format.

PAL-M

Options 101 and 102, or Option 301 only.
allows you to trigger on the PAL-M video format.

PARAM AUTO MAN

lets you choose between automatically or manually setting the parameters used for the measurement functions under the Power Menu key.

PEAK EXCURSN

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

Peak Menu

accesses the same softkeys that are available when (PEAK SEARCH) is pressed.

(PEAK SEARCH)

automatically places a marker on the highest amplitude of a trace, displays the marker's amplitude and frequency.

PEAK ZOOM

finds the highest displayed signal and narrows the span to a value selected by the user.

PK MODE > DL NRM

select which peaks will be listed in the peak table to include all peaks, or to exclude the peaks that are either above or below the display line.

PK SORT FRQ AMP

switches the peak table sorting routine between listing the peaks in order by descending amplitude or by ascending frequency.

PK TABLE ON OFF

Option 041 or 043 only.
displays a list, of up to ten signal peaks, that is updated at the end of each sweep.

PLOT COPIES

accesses the menu used to address the plotter and to select plotter options.

PLOTTER ADDRESS

Option 041 only.
changes the HP-IB address of the plotter.

PLT LOC

Option 041 or 043 only.
selects the position of the plotter output.

PLT MENU ON OFF

Option 041 or 043 only.
allows the softkey labels to be plotted along with the analyzer display.

PLT PORT CONFIG

Option 041 or 043 only.
accesses the menus used by Option 041 (HP-IB and Parallel Interface) and Option 043 (RS-232 and Parallel Interface) to select plotter options. See the (COPY) key for more information.
Front-Panel Key Access: (CONFIG)

PLT PORT HPIB PAR

Option 041 only.
allows you to select between HP-IB or parallel plotter ports.

PLT PORT SER PAR

Option 043 only.
allows you to select between serial or parallel plotter ports. The BAUD RATE softkey appears in this menu only when serial is selected.

PLTS/PG 1 2 4

Option 041 or 043 only.
allows you to plot a full-page, half-page, or quarter-page output.

PLT TO LJET ON OFF

Option 041 or 043 only.
allows you to plot a full-page, half-page, or quarter-page output to an HP LaserJet printer.

POINT

specifies a limit value for one coordinate point, so that a POINT segment specifies a limit value for a single frequency or time.

Power Menu

accesses functions which make transmitter power measurements.

POWER ON LAST

determines the state of the spectrum analyzer when the spectrum analyzer is powered on.

PRESEL DEFAULT

For HP 8592L, HP 8593E, HP 8595E, and HP 8596E only.
enables default preselector data for bands 1 through 4, to allow maximum frequency response without peaking the preselector. The CAL YTF routine should be performed before pressing PRESEL DEFAULT.

PRESEL PEAK

For HP 8592L, HP 8593E, HP 8595E, or HP 8596E only.
optimally centers the preselector on a given signal for the most accurate measurement of amplitude.

(PRESET)

provides a convenient starting point for making most measurements. The instrument preset function performs a processor test, but does not affect CAL data. Pressing (PRESET) clears both the input and output buffers. Amplitude-correction factors and limit-line testing is turned off.

PRESET SPECTRUM

allows the spectrum-analyzer mode only to be preset. Other operating modes will not be affected.

PRINTER CONFIG

Option 041 or 043 only.
accesses the softkey functions that are used to address the printer, select a black and white print or a color print and reset the printer.

PRINTER ADDRESS

Option 041 only.
allows you to change the HP-IB address of the printer.

PRINTER SETUP

Option 041 or 043 only.
resets the printer, sets the printer to 60 lines per page, and skips line perforations.

PRN PORT CONFIG

Option 041 or 043 only.
accesses the menus used by Option 041 (HP-IB and Parallel Interface) and Option 043 (RS-232 and Parallel Interface) to select printer options. See the (COPY) key for more information.
Front-Panel Key Access: (CONFIG)

PRN PORT HPIB PAR

Option 041 only.
allows you to select between HP-IB or parallel printer ports.

PRN PORT SER PAR

Option 043 only.
allows you to select between serial or parallel printer ports. The BAUD RATE softkey appears in this menu only when serial is selected.

PRT MENU ON OFF

Option 041 or 043 only.
allows the softkey labels to be printed along with the analyzer display.

Pulse Param

Option 105 only. Option 101 is recommended.
accesses the gate utility menus for entering the pulse parameters: reference edge, pulse width, and pulse repetition interval.

PURGE AMP COR

clears the current amplitude-correction factors table.

PWRGRAPH ON OFF

turns the channel power graph ON or OFF. With the PWRGRAPH ON, the channel powergraph is calculated and displayed and the numeric results are not displayed.

PURGE LIMITS

clears the current limit-line table from analyzer memory.

PWR SWP ON OFF

For HP 8590L and HP 8591E with Option 010 or 011. HP 8593E, HP 8594E, HP 8595E, and HP 8596E with Option 010.
activates or deactivates the power-sweep function, which sweeps the output power of the tracking generator over the selected power-sweep range.

QP ADJ ON OFF

amplifies the video signal ten times (20 dB) in order to make an accurate measurement of a low quasi-peak signal.

Quasi Peak

Option 103 only.
accesses the menu of quasi-peak softkey functions and, if there is not an on-screen marker, places a marker on the highest on-screen signal.

(RECALL)

accesses softkey menus that allow you to recall data from the memory card or analyzer memory.

RECALL AMP COR

recalls an amplitude-correction factors table from the current mass-storage device (analyzer memory or memory card).

RECALL LIMIT

recalls limit-line tables from the current mass-storage device (analyzer memory or memory card).

REF LVL

allows the reference level to be changed.

REF LVL OFFSET

adds an offset value to the displayed reference level.

RES BW AUTO MAN

changes the analyzer's 3 dB resolution bandwidth. To recouple the resolution bandwidth, press RES BW AUTO MAN so that AUTO is underlined. The resolution bandwidth can be changed using the step keys, the knob, or the numeric keypad.

RETURN

Option 103 only.
returns the analyzer to the settings that were present when MAN QP PAL MKR was pressed, displays the quasi-peak amplitude value and the quasi-peak marker if ACCEPT QP DATA was pressed.

RPG TITLE

provides additional characters for the Change Title function.

SAV LOOK ON OFF

locks all the current internal state and trace registers against further data storage.

SAVE — accesses softkey menus that allow you to store state data, trace data, limit-line tables, and amplitude-correction factors on a memory card or in analyzer memory.

SAVE AMP COR — saves the current amplitude-correction factors table to the current mass-storage device (analyzer memory or memory card).

SAVE EDIT — *For Options 041 and 043 only.* passes the text from the DLP editor memory through the parser to execute as analyzer commands.

SAVE LIMIT — saves the current limit-line tables in the current mass-storage device (analyzer memory or memory card).

SCALE LOG-LIN — scales the vertical graticule divisions in logarithmic units when LOG is underlined, or in linear mode.

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

SELECT 1 2 3 4 — selects one of the four possible markers.

SELECT AMPLITUDE — allows you to enter the amplitude value for the displayed limit-line segment or the current amplitude-correction point.

SELECT DELTAMPL — allows you to enter the delta amplitude value to create an upper and lower limit-line segment.

SELECT FREQ — allows you to enter the frequency value for a limit-line segment or for an amplitude-correction point.

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

SELECT MID AMPL — allows you to enter the middle amplitude value to create upper and lower limit-line segments.

SELECT POINT — allows you to create or edit an amplitude-correction factor data point.

SELECT PREFIX — allows you to select an already existing prefix of a cataloged file and changes the current prefix to this selected prefix.

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

SELECT TIME — allows you to enter the time value for a limit-line segment. The time value is with respect to the analyzer's sweep time.

SELECT TYPE — accesses the softkey menu used to select the limit-line type of line.

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

Service Cal — accesses several service calibration functions. The service calibration functions are designed for service use only. More detailed descriptions of the service functions are available in the service documentation. Service documentation can be obtained by ordering Option 915 through your HP Sales and Service office.

Service Diag — accesses several service diagnostic functions. The service diagnostic functions are designed for service use only. More detailed descriptions of the service diagnostic functions are available in the service documentation. Service documentation can be obtained by ordering Option 915 through your HP Sales and Service office.

Set B&W Printer — accesses the softkeys for setting up black and white HP and Epson compatible printers.

Set Color Printer — accesses the softkey for setting up color printers.

SET DATE — allows you to set the date of the real-time clock.

SET TIME — allows you to set the time of the real-time clock.

Setup — accesses the menu used to set up parameters specific to the power measurements.

SGL SWP — changes the sweep control to single sweep if the analyzer is in the continuous sweep mode.

SHOW OPTIONS — displays the number and description of the options installed in your analyzer, the instrument model number of the analyzer,

the last five digits of the analyzer's serial number, and the firmware revision.

SIGNAL ID: ON — activates an FFT marker that must be put on a signal to verify that it is not being displayed at the wrong frequency due to aliasing.

SINGLE FFT — initializes the fast Fourier transform (FFT) function.

SINGLE MEAS — sets the functions in the Power Menu so that they make the measurement on a single sweep.

SLOPE — draws a straight line between the coordinate point of the current segment and the coordinate point of the next segment.

(SPAN) or SPAN — activates the SPAN function and accesses the frequency-span functions.

SPAN ZOOM — finds the highest signal peak on-screen and activates the span function.

SPEAKER ON OFF — *Option 102, 103, or 301 only.* turns the internal speaker on and off.

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

SQUELCH — *Option 102, 103, or 301 only.* adjusts the squelch level. The squelch level mutes weak signals and passes strong signals.

SRC ATTN MAN AUTO — *Option 010 or 011 only. (Not available with HP 8590L.)* allows you to select between automatic and manual adjustment of the tracking generator's switching attenuator.

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

SRC PWR ON OFF — *Option 010 or 011 only.* activates or deactivates the output power of the tracking generator (SRC).

SRC PWR STP SIZE — *Option 010 or 011 only.* allows the user to set the step size of the source-power level, source-power offset, and power-sweep range functions.

START FREQ — sets the frequency at the left side of the graticule.

STATE →CARD — *Requires Option 003 for the HP 8590L or HP 8592L.* saves the current analyzer state on the memory card.

STATE →INTRNL — saves the current analyzer state in the selected state register.

STOP FREQ — sets the frequency at the right side of the graticule.

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

(SWEEP) — accesses the sweep-time menu and accesses the sweep-time softkey functions.

SWEEP CONT SGL — switches the analyzer between the continuous-sweep mode and the single-sweep mode.

SWEEP DELAY — *Option 105 only. Option 101 is recommended.* delays the start of sweep with respect to the gate trigger edge in the time domain window of the gate utility.

SWP CPLG SR SA — *Option 010 or 011 only.* selects stimulus-response (SR) or spectrum-analyzer (SA) auto-coupled sweep time.

SWP TIME AUTO MAN — selects the length of time in which the analyzer sweeps the displayed frequency span.

SYNC CORD FV TRIG — *Options 101 and 102, or Option 301 only.* provides sweep triggering on the selected line of a video picture field and accesses the softkey menu used to select the line number of the video picture field and the type of video picture frame.

SYNC NRM NTSC — changes the rear panel MONITOR output between normal synchronization constants or the NTSC video compatible format.

SYNC NRM PAL — changes the rear panel MONITOR output between normal synchronization constants or the PAL video compatible format.

WINDOW RES BW

Option 105 only. Option 101 is recommended.
changes the resolution bandwidth in the time domain window of the gate utility.

WINDOW SWP TIME

Option 105 only. Option 101 is recommended.
changes the sweep time in the time domain window of the gate utility and re-scales the gate markers.

TABLE ABS/DELTA

switches the marker table between the normal marker formats and the delta display line format.

THRESHOLD ON OFF

sets a lower boundary to the active trace. The threshold line "clips" signals that appear below the line when this function is on.

TIME DATE

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

TIMEDATE ON OFF

turns the display of the real-time clock on and off.

TOI ON OFF

finds the third-order intercept of the two highest amplitude signals and the two associated distortion products.

TRACE

accesses the trace softkeys that allow you to store and manipulate trace information.

TRACE A B C

selects the softkey menu used for trace A, trace B, or trace C functions.

TRACE A

sets up trace A for recalling previously-saved trace data into trace A or saving trace data from trace A.

TRACE B

sets up trace B for recalling previously-saved trace data into trace B or saving trace data from trace B.

TRACE C

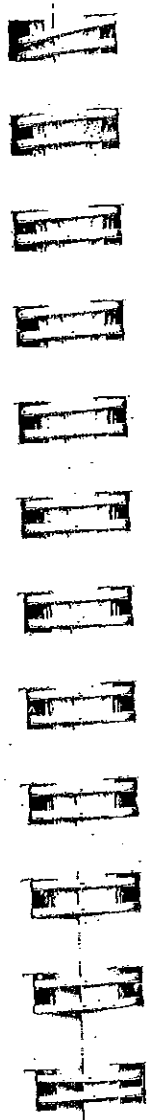
sets up trace C for recalling previously-saved trace data into trace C or saving trace data from trace C.

TRACE DATA

begins the process used to save trace data, limit-line tables, or amplitude-correction factors on the memory card.

TRACE ITEM

accesses a softkey menu that allows you to select the item to be stored in analyzer memory.



TRACK GEN

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

TRACKING PEAK

Option 010 or 011 only.
activates a routine that automatically adjusts the tracking adjustment to obtain the peak response of the tracking generator on the spectrum-analyzer display.

TRIG

accesses softkeys that let you select the sweep mode and trigger mode.

TRIG MKR DLY ON OFF

Option 105 only. Option 101 is recommended.
activates a marker which indicates the time from the gate trigger to the current marker position.

TV LINE #

Options 101 and 102, or Option 301 only.
selects the line number of the video picture field.

TV SYNC NEG POS

Options 101 and 102, or Option 301 only.
selects the polarity of the modulation of the video format.

TV TRIG EVEN FLD

Options 101 and 102, or Option 301 only.
selects an even video field of an interlaced video format to trigger on.

TV TRIG ODD FLD

Options 101 and 102, or Option 301 only.
selects an odd video field of an interlaced video format to trigger on.

TV TRIG VERT LINE

Options 101 and 102, or Option 301 only.
selects a vertical interval to trigger on. Triggering occurs on the next pulse edge.

TV Standard

Options 101 and 102, or Option 301 only.
allows the analyzer to trigger on NTSC, PAL, PAL-M, or SECAM-L video formats.

UPDATE TIME/FREQ

Option 105 only. Option 101 is recommended.
switches between the time domain and frequency domain windows in the gate utility.

User Menus

accesses a menu available for your use for user-defined programs and key functions.

VBW/ARBW RATIO

selects 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 softkey function is not available for spectrum analyzers with Option 004 nor with HP 8590L Option 713.

VID AVG ON OFF
initiates a digital averaging routine that averages displayed signals and noise.

VID BW AUTO MAN
For Option 130 only.
changes the analyzer's post-detection filter from 30 Hz to 3 MHz in a 1, 3, 10 sequence.

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 and displays the amplitude data that is in the trace A register.

VIEW B
holds and displays the amplitude data that is in the trace B register.

VIEW C
holds and displays the amplitude data that is in the trace C register.

Volts
changes the amplitude units to volts.

Watts
changes the amplitude units to watts.

WINDOWS OFF
For HP 8591E, HP 8593E, HP 8594E, HP 8595E, or HP 8596E only.
turns off the windows display mode and returns to the normal full-sized instrument display.

X Y Z SPACE CLEAR
accesses the softkey menu used for selecting the characters Y, Z, underscore (_), #, space, or for clearing the screen title.

ZERO MARKER
Option 105 only. Option 101 is recommended.
zeros the value of the delta marker to establish a new reference.

ZERO SPAN
changes the frequency span to zero and turns off marker track if it is on.

ZONE CENTER
For HP 8591E, HP 8593E, HP 8594E, HP 8595E, or HP 8596E only.
allows the zone markers to be moved in frequency without changing the zone span.

ZONE PK→LEFT
For HP 8591E, HP 8593E, HP 8594E, HP 8595E, or HP 8596E only.
searches for the next frequency peak outside and to the left of the zone markers on the upper window trace and then moves the zone so that it is centered around the new peak.

ZONE PK→RIGHT
For HP 8591E, HP 8593E, HP 8594E, HP 8595E, or HP 8596E only.
searches for the next frequency peak outside and to the right of the zone markers on the upper window trace and then moves the zone so that it is centered around the new peak.

ZONE SPAN
For HP 8591E, HP 8593E, HP 8594E, HP 8595E, or HP 8596E only.
allows the span of the zone markers to be changed without changing the center frequency.

(ZOOM)
For HP 8591E, HP 8593E, HP 8594E, HP 8595E, or HP 8596E only.
switches between the split-screen windows display and a full size display of the window that is currently active.

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 E-Series and L-Series Spectrum Analyzers and HP 8591C Cable TV Analyzer Programmer's Guide.* This chapter contains the following sections:

- How to Use This Chapter
  - Notation Conventions
  - Syntax Conventions
- Functional Index
- Programming Codes
- The summary of the characters and secondary keywords (reserved words)

How to Use This Chapter

This chapter is intended for 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.
{ }	Braces indicates that whatever occurs within the braces can be included zero or more times..

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>::=

(<number> 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.

Functional Index

AMPLITUDE

AT	Specifies RF input attenuation.
AUNITS	Specifies amplitude units for input, output, and display.
COUPLE	Selects direct-current (dc) coupling or alternating-current (ac) coupling. *HP 8594E, HP 8595E, or HP 8596E only.*
INZ	Specifies the value of input impedance expected at the active input port.
LG	Specifies the vertical graticule divisions as logarithmic units, without changing the reference level.
LN	Specifies the vertical graticule divisions as linear units, without changing the reference level.
ML	Specifies the maximum signal level that is applied to the input mixer for a signal that is equal to or below the reference level.
NRL	Sets the normalized reference level.
PP	Performs a preselector peak. *HP 8592L, HP 8593E, HP 8595E, or HP 8596E only.*
PREAMPG	Subtracts a positive or negative preamplifier gain value from the displayed signal.
RESETRL	Resets the reference level to its instrument preset level.
RL	Specifies the amplitude value of the reference level.
ROFFSET	Offsets all amplitude readouts without affecting the trace.

AUTO COUPLING

AUTO	Couples the active functions automatically.

AUXILIARY CONTROL

CNTLA	Sets the control line A of the auxiliary interface high or low.
CNTLB	Sets the control line B of the auxiliary interface high or low.
CNTLC	Sets the control line C of the auxiliary interface high or low.
CNTLD	Sets the control line D of the auxiliary interface high or low.
CNTLI	Returns a "1" when the interface control line I of the auxiliary interface is high, and "0" if the line is low.
COMB	Turns on or off the comb generator. *HP 8592L, HP 8593E, or HP 8596E only.*
DEMOD	Turns the demodulator on or off, and selects between AM, FM, or quasi-peak demodulation. *Option 102, 103, or 301 only.*
FMGAIN	Sets the total FM frequency deviation for full screen demodulation. *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. *Option 102, 103, or 301 only.*
SQLCH	Sets the squelch level. *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 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 readout. *Option 010 or 011 only.*
SRCPSTP	Selects the source-power step size. *Option 010 or 011 only.*
SRCPSWP	Selects sweep range of the 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 or spectrum-analyzer auto-coupled sweep time. *Option 010 or 011 only.*

BANDWIDTH

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

CALIBRATION

AMPCOR	Applies amplitude corrections at specified frequencies.
AMPLEN	Returns the number of frequency-amplitude correction factors that have been entered.
CAL	Initiates self-calibration routines.
CNF	Performs the confidence test.
CORREK	Returns a "1" if the correction factors are on, a "0" if they are off.
CRTHPOS	Specifies the horizontal position of the text and graticule on the spectrum analyzer's display.
CRTVPOS	Specifies the vertical position of the text and graticule on the spectrum analyzer's display.

COMMAND TRIGGER

ONCYCLE	Executes the list of spectrum analyzer commands periodically.
ONDELAY	Executes the list of spectrum analyzer commands after the time value has elapsed.
ONEOS	Executes the list of spectrum analyzer commands after the end of the sweep.
ONMKR	Performs the list of spectrum analyzer commands when the sweep reaches the marker position.
ONMKRU	Executes the list of spectrum analyzer commands whenever the value or the units of the active marker are changed.
ONPWRUP	Executes the list of spectrum analyzer commands once on power up.
ONSRQ	Executes the list of spectrum analyzer commands whenever a service request occurs.
ONSWP	Executes the list of spectrum analyzer commands at the beginning of the sweep.
ONTIME	Executes the list of spectrum analyzer commands at the specified time.
WAIT	Suspends all spectrum analyzer operation for the specified time duration.

CONFIGURATION

BAUDRATE	Specifies the baud rate of a spectrum analyzer with Option 023 installed in it.
CAT	Returns the catalog information of either spectrum analyzer memory or the memory card.
DATEMODE	Sets the format for displaying the real-time clock.
DISPOSE	Frees spectrum analyzer memory that was previously allocated for user-defined operands.
FORMAT	Formats the memory card. *HP 8590L or HP 8592L requires Option 003.*

PLTPRT	Directs the plotter output to HP-IB or parallel ports for Option 041. Directs the plotter output to RS-232 or parallel ports for Option 043.
POWERON	Selects the spectrum analyzer's power on state.
PREFX	Specifies or changes the prefix used in save and recall operations.
PRNPRT	Directs the printer output to HP-IB or parallel ports for Option 041. Directs the printer output to RS-232 or parallel ports for Option 043.
SETDATE	Sets the date of the real-time clock.
SETTIME	Sets the time of the real-time clock.
SYNCMODE	Selects either the horizontal and vertical synchronizing constants, or the synchronization rate for the internal monitor of the spectrum analyzer and the video signal that is output to the MONITOR OUTPUT connector.
TIMEDATE	Sets the time and date of the real-time clock.
TIMEDSP	Turns on or off the display of the real-time clock.

DISPLAY

ANLGPLUS	Turns on or off the Analog+ display mode. *Option 101 or 301 only.*
ANNOT	Turns on or off the screen annotation.
DA	Accesses the current address of the display list.
DL	Defines the level of the display line in the active amplitude units and displays the display line on the spectrum analyzer screen.
DOTDENS	Sets the dot density value in the Analog+ display mode. *Option 101 or 301 only.*
DSPLY	Displays the value of a variable on the spectrum analyzer screen.
GRAT	Turns on or off the graticule.

HD	Disables data entry via the spectrum analyzer numeric keypad, knob, or step keys.
PREFX	Specifies the prefix.
TH	Clips signal responses below the threshold level.
TITLE	Allows entry of a screen title.

FREQUENCY

CF	Specifies center frequency.
FA	Specifies the start frequency.
FB	Specifies the stop frequency.
FOFFSET	Specifies the frequency offset for all absolute frequency readouts such as center frequency.
SS	Specifies center-frequency step size.

GRAPHICS

CLRBOX	Clears a rectangular area on the spectrum analyzer display.
CLRDSP	Erases user-generated graphics and text.
DA	Accesses the current address of the display list.
DRAWBOX	Draws a rectangular box on the spectrum analyzer display.
DT	Defines any character as a label terminator.
GETPLOT	Initiates output of the spectrum analyzer display to a plotter.
GETPRNT	Initiates output of the spectrum analyzer display to a printer.
GR	Graphs the given y coordinate while incrementing the x coordinate by 1.
LB	Writes text at the current pen position.
PA	Moves the pen to a vector location on the spectrum analyzer screen relative to the reference coordinates (0,0).
PD	Instructs the spectrum analyzer to plot vectors on the spectrum analyzer screen until a PU command is received.

PR	Moves the pen to a new plot location on the spectrum analyzer screen relative to the current coordinates in display units.
PRINT	Prints screen data.
PRNTADRS	Allows you to set the HP-IB address of the printer.
PU	Instructs the spectrum analyzer not to plot vectors on the spectrum analyzer screen until a PD command is received.
TEXT	Writes text on the spectrum analyzer screen at the current pen position.
TRGRPH	Graphs a compressed trace.

INFORMATION

ACTVF	Returns a "0" if the given function is not active, a "1" if it is active.
BIT	Places the state of a bit in the destination.
BITF	Returns the state of a bit.
CLS	Clears all status bits.
HAVE	Returns a "0" if a device or option is not installed.
ID	Returns the spectrum analyzer model number.
MDU	Returns values for the spectrum analyzer's baseline and reference level.
OP	Returns the coordinates of the lower-left and upper-right corners of the spectrum analyzer display.
PARSTAT	Returns parallel port status.
PWRUPTIME	Returns the number of milliseconds that have elapsed since the spectrum analyzer was turned on.
REV	Returns the date code of the firmware revision number in YYMMDD format.
RQS	Sets a bit mask for service requests.
SER	Returns the serial number suffix of the spectrum analyzer.
SRQ	The SRQ command is used by an external controller to simulate interrupts from the spectrum analyzer.

STB	Returns to the controller the decimal equivalent of the status byte.

INPUT and OUTPUT

EE	Sends the controller the values entered on the spectrum analyzer numeric keypad by the operator.
EK	Allows data entry with the front-panel knob when the spectrum analyzer is under remote control.
ENTER	Allows the spectrum analyzer to receive data from other devices on the HP-IB.
EP	Sends values entered on the spectrum analyzer number keyboard to the present active function value.
OA	Returns the value of the active function.
OL	Transmits information to the controller that describes the state of the spectrum analyzer when the OL command is executed.
OUTPUT	Allows the spectrum analyzer to send data to other devices on the HP-IB.
RELHPIB	Releases spectrum analyzer control of the HP-IB.
TA	Returns trace A amplitude values from the spectrum analyzer to the controller.
TB	Transfers trace B amplitude values from the spectrum analyzer to the controller.
TDF	Formats trace information for return to the controller.
TRA TRB TRC	Controls trace data input or output.

LIMIT LINES

LIMIDEL	Deletes all segments in the current limit-line table.
LIMIDISP	Controls when the limit line (or limit lines) are displayed.
LIMIFAIL	Returns a "0" if the last measurement sweep of trace A is equal to or within the limit-line bounds.

LIMIFT	Selects how the limit-line segments are placed on the spectrum analyzer display: according to frequency, or according to the sweep time setting of the spectrum analyzer.
LIMIHI	Allows you to specify a fixed trace as the upper limit line.
LIMILINE	Outputs the current limit-line table definitions.
LIMILO	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 or the largest sweep time in the definition.
LIMIMODE	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.
LIMIREL	Specifies the current limit lines as fixed or relative.
LIMISEG	Adds new segments to the current frequency limit line in either the upper limit line or the lower limit line.
LIMISEGT	Adds new segments to the current sweep time limit line in either the upper limit line or the lower limit line.
LIMITEST	Compares trace A with the current limit-line data.
SEGDEL	Deletes the specified segment from the limit-line tables.
SENTER	Enters the limit-line data in either the upper and lower limit-line tables or the mid and delta table for limit lines based on frequency.
SENTERT	Enters the limit-line data in either the upper and lower limit-line table or the mid and delta table for limit lines based on sweep time.

MARKER

MDS	Specifies measurement data size as byte or word.
MF	Returns the frequency (or time) of the on-screen active marker.
MKA	Specifies amplitude of the active marker.
MKACT	Specifies the active marker.
MKACTV	Makes the current active marker the active function.

MKBW	Returns the bandwidth at the specified power level relative to an on-screen marker (if present) or 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	Resumes the sweep after execution of a MKSTOP command.
MKD	Activates the delta marker.
MKDLMODE	Selects if the marker amplitude values are shown as relative to the reference level or relative to the display line.
MKF	Specifies the frequency value of the active marker.
MKFC	Turns on or off marker frequency counter.
MKFCR	Sets the resolution of the marker frequency counter.
MKMIN	Moves active marker to minimum signal detected.
MKN	Activates and moves the marker to the specified frequency.
MKNOISE	Displays the average noise level at the marker.
MKOFF	Turns off either the active marker or all the markers.
MKP	Places the active marker at the given x-coordinate.
MKPAUSE	Pauses the sweep at the active marker for the duration of the delay period.
MKPK	Positions the active marker on a signal peak.
MKPX	Specifies the minimum signal excursion for the spectrum analyzer's internal peak-identification routine.
MKREAD	Selects the type of active trace information displayed by the spectrum analyzer marker readout.
MKRL	Sets the reference level to the amplitude value of the active marker.
MKSP	Sets the start and stop frequencies to the values of the delta markers.
MKSS	Sets the center-frequency step-size to the marker frequency.
MKSTOP	Stops the sweep at the active marker.
MKTBL	Turns on or off the marker table.

MKTRACE	Moves the active marker to a corresponding position in trace A, trace B, or trace C.
MKTRACK	Moves the signal with an active marker to the center of the spectrum analyzer display and keeps the signal peak at center screen.
MKTYPE	Changes the type of the current active marker.
M4	Activates a single marker on the trace and enables the knob to change the position of the marker. The active function is then set to span.
PKDLMODE	Selects the signal peaks that are displayed in the peak table.
PKRES	Returns the x-axis coordinates of the peaks in the peak table.
PKSORT	Selects how the signal peaks listed in the peak table are sorted.
PKTBL	Turns on or off the peak table.

MATH

ABS	Places the absolute value of the source values in the destination.
ADD	Adds the sources and sends the sum to the destination.
AVG	Averages the source and the destination.
BIT	Returns the state of a bit.
BITF	Returns the state of a bit.
CTA	Converts the source values from measurement units to the current absolute amplitude units and stores the result in the destination.
CTM	Converts the source values to measurement units and places the result in the destination.
DIV	Divides source 1 by source 2 and places the result in the destination.
EXP	Places the exponential of the source in the destination.
INT	Places the greatest integer that is less than or equal to the source value into the destination.

LOG	Takes the logarithm (base 10) of the source, multiplies the result by the scaling factor, then stores it in the destination.
MEAN	Returns the mean value of the given trace in measurement units.
MEANTH	Returns the mean value of the given trace above the threshold, in measurement units.
MIN	Compares source 1 and 2, point by point, and stores the lesser of the two in the destination.
MINPOS	Returns a value, which is the x-axis position (in display units) of the minimum amplitude value in trace A, trace B, trace C, or user-defined trace.
MOD	Stores the remainder from the division of source 1 by source 2 in the destination.
MPY	Multiplies the sources, point by point, and places the results in the destination.
MXM	Compares source 1 and source 2, point by point, sending the greater value of each comparison to the destination.
PDA	Sums the probability distribution of amplitude in the destination trace with the amplitude distribution function of the source trace.
PDF	Increments an element of the destination trace whenever the corresponding element of the source trace exceeds a threshold.
RMS	Returns the root mean square value of the trace in measurement units.
SQR	Places the square root of the source into the destination.
STDEV	Returns the standard deviation of the trace amplitude in measurement units.
SUB	Subtracts source 2 from source 1, point by point, and sends the difference to the destination.
VARIANCE	Returns the amplitude variance of the specified trace, in measurement units.

MEASURE/USER

ACP	Performs the adjacent channel power measurement.
ACPBW	Allows you to specify the channel bandwidth used for the adjacent channel power (ACP), adjacent channel power extended (ACPE), and channel power (CHP) measurements.
ACPCONTM	Changes the spectrum analyzer's sweep mode to continuous sweep, and then performs the previous power measurement at the end of every sweep.
ACPE	Performs the adjacent channel power extended measurement.
ACPGR	Determines if the adjacent channel power (ACP) graph function is enabled or disabled.
ACPGRAPH	Computes and displays an adjacent channel power (ACP) graph.
ACPMK	Determines if the graph marker function is enabled or disabled for the adjacent channel power (ACP) graph.
ACPPAR	Determines if the spectrum analyzer settings used for the adjacent channel power (ACP), adjacent channel power extended (ACPE), channel power (CHP), or occupied bandwidth (OBW) measurement are set manually or automatically.
ACPSNGLM	Changes the spectrum analyzer's sweep mode to single sweep, performs a take sweep (TS), and then performs the previous power measurement.
ACPSP	Allows you to specify the frequency spacing between channels.
CHP	Performs the channel power measurement.
CHPGR	Determines if the channel power graph function is enabled or disabled.
FFT	Performs a discrete Fast Fourier Transform on the source trace array and stores the result in the destination array.
FFTAUTO	Performs a Fast Fourier Transform (FFT) on the signal on which the marker is placed.
FFTCLIP	Indicates if the FFT results are valid.
FFTCONTS	Performs a Fast Fourier Transform (FFT) continuously on the current signal.

FFTMKR	Activates the FFT markers and displays the FFT annotation on the spectrum analyzer display.
FFTMM	Changes the FFT midscreen frequency of the spectrum analyzer to the frequency of the FFT marker.
FFTMS	Changes the FFT stop frequency of the spectrum analyzer to the frequency of the FFT marker.
FFTOFF	Exits the Fast Fourier Transform (FFT) measurement and FFT settings.
FFTPCTAM	Turns on or off the percent AM measurement.
FFTPCTAMR	Returns the percent of amplitude modulation.
FFTSNGLS	Changes the spectrum analyzer's sweep mode to single sweep mode (if necessary), and then performs a Fast Fourier Transform (FFT) on trace A.
FFTSTAT	Returns the status of the spectrum analyzer's FFT measurement functions.
FFTSTOP	Sets the FFT stop frequency of the FFT measurement.
MEASOFF	Turns off the current measurement and clears the display.
NDB	Specifies the distance (in dB) from the signal peak for the N dB points measurement (NDBPNT).
NDBPNT	Turns on or off the N dB points measurement.
NDBPNTR	Returns the bandwidth measured by the N dB points measurement (NDBPT).
OBW	Performs the occupied bandwidth measurement using the value for occupied bandwidth percent (OBWPCT).
OBWPCT	Specifies the percent of total power that is to be used in calculating the occupied bandwidth (OBW).
PCTAM	Turns on or off the percent AM measurement.
PCTAMR	Returns the percent AM measured by the percent AM measurement (PCTAM).
PWRBW	Computes the bandwidth around the trace center, which includes signals whose total power is a specified percentage of the total trace signal power.

TOI	Turns on or off the third-order intermodulation (TOI) measurement.
TOIR	Returns the highest third-order intermodulation product measured by the third-order intermodulation measurement (TOI).

MODE

MODE	Returns a "0" if the mode of operation is spectrum analysis. A number other than "0" is returned if the operating mode (also called "personality") is other than spectrum analysis.

OPERATOR ENTRY

DN	Reduces the active function by the applicable step size.
EE	Enables front-panel number entry.
EK	Enables front-panel knob control.
EP	Enter parameter from front panel.
HD	Holds or disables entry and blanks active function readout.
UP	Increases the active function by the applicable step size.

PLOTTER

GETPLOT	Initiates output of the spectrum analyzer display to a plotter. GETPLOT is meant to be used within a downloadable program.
PLOT	Initiates output of the spectrum analyzer display to a plotter.

PRESET

IP	Performs an instrument preset.
LF	Performs an instrument preset to the base band (band 0). *HP 8592L, HP 8593E, HP 8595E, or HP 8596E only.*
POWERON	Selects the state the spectrum analyzer will be in when it is turned on: IP (instrument preset) or LAST state.
RESETRL	Resets the reference level to instrument preset value.

PRINTER

GETPRNT	Initiates output of the spectrum analyzer display to a printer. GETPRNT is meant to be used within a downloadable program.
PRINT	Initiates output of the spectrum analyzer display to a printer.

PROGRAM FLOW

ABORT	Stops the execution all user-defined functions and readies the instrument for the next command received.
IF	IF/THEN/ELSE/ENDIF forms a decision and branching construct.
REPEAT	REPEAT/UNTIL forms a looping construct.
RETURN	Stops the operation of a user-defined command and returns program operation to the point where the user-defined function was called.
WAIT	Suspends all spectrum analyzer operation for the specified time duration.

RECALL or SAVE

CAT	Displays directory information from either the specified or the current mass storage device.
LOAD	Loads a file from the memory card. *HP 8590L or HP 8592L requires Option 003.*
MSI	Allows you to specify the current mass storage device.
PREFX	Specifies the prefix.
PSTATE	Protects all of the spectrum analyzer's user state and trace registers from being changed.
PURGE	Deletes the specified file from the current mass storage device.
RCLS	Recalls spectrum analyzer state data from one of the nine state registers in spectrum analyzer memory.
RCLT	Recalls previously saved trace data, amplitude factors, or limit-line data from the trace registers in spectrum analyzer memory.

SAVES	Saves the currently displayed instrument state in spectrum analyzer memory.
SAVET	Saves the selected trace data and state information, amplitude correction factors, or limit-line tables in spectrum analyzer memory.
SAVRCLF	Specifies either a save or recall operation.
SAVRCLN	Specifies the number to append to the prefix for a save or recall operation, and initiates the transfer of data.
SAVRCLW	Specifies the data to be transferred: trace A, trace B, trace C, downloadable program, amplitude correction factors, limit line, or state.
STOR	Stores data on a RAM card. *HP 8590L or HP 8592L requires Option 003.*

SPAN

FS	Sets the frequency span of the spectrum analyzer to full span.
HN	Returns the harmonic number of the current harmonic band in which the spectrum analyzer is tuning. *HP 8592L, HP 8593E, HP 8595E, or HP 8596E only.*
HNLOCK	Forces the spectrum analyzer to use only the selected harmonic band. *HP 8592L, HP 8593E, HP 8595E, or HP 8596E only.*
HNUNLK	Unlocks the harmonic band. *HP 8592L, HP 8593E, HP 8595E, or HP 8596E only.*
LSPAN	Changes the spectrum analyzer's span to the previous span setting.
PKZMOK	Returns a "1" if the peak zoom routine (PKZOOM) found a valid signal, otherwise a "0" is returned.
PKZOOM	Automatically tunes the spectrum analyzer to the signal with the highest amplitude level while narrowing the frequency span to the specified frequency span.
SP	Changes the total displayed frequency range symmetrically about the center frequency.

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.

SWEEP

CONTS	Sets the spectrum analyzer to the continuous sweep mode.
GATE	Turns on or off the time-gating. *Option 105 only.*
GATECTL	Selects between the edge and the level mode for Option 105, the time-gated spectrum analysis capability. *Option 105 only.*
GC	Presets Option 105, the time-gated spectrum analysis capability. *Option 105 only.*
GD	Sets the delay time before the gate opens. *Option 105 only.*
GDRVCLPAR	Clears the pulse parameters for a time-gate measurement by setting the pulse parameters to 0. *Option 105 only.*
GDRVGDEL	For the frequency window only, GDRVGDEL sets the time delay from when the gate trigger occurs to when the gate is opened. *Option 105 only.*
GDRVGLEN	Adjusts the gate length in both the time and frequency windows. *Option 105 only.*
GDRVGT	Turns on or off the gate in the frequency window. *Option 105 only.*
GDRVGTIM	Activates the gate trigger marker, and places it at the given value. *Option 105 only.*
GDRVPRI	Enters the specified value as the pulse repetition interval. *Option 105 only.*
GDRVPWID	Enters the specified value as the pulse width. *Option 105 only.*
GDRVRBW	Couples or uncouples the resolution bandwidth to the specified pulse width. *Option 105 only.*
GDRVREFE	Allows you to enter the position (in time) for a reference edge. *Option 105 only.*
GDRVST	Couples or uncouples the sweep time to the pulse repetition interval. *Option 105 only.*

GDRVSWAP	Makes the window (either the time or frequency window) that is currently not the active window, the active window. *Option 105 only.*
GDRVSWDE	Allows you to specify the delay from the edge of the gate trigger until the sweep is started in the time window. *Option 105 only.*
GDRVSWP	Specifies the sweep time for the time domain window of the gate utility. *Option 105 only.*
GDRVUTIL	Turns on or off the gate utility. *Option 105 only.*
GDRVVBW	Couples or uncouples the video bandwidth to the gate length. *Option 105 only.*
GL	Sets the length of time the gate is open. *Option 105 only.*
GP	Sets the polarity (positive or negative) for the gate trigger. *Option 105 only.*
ST	Specifies the time in which the spectrum analyzer sweeps the displayed frequency range.

SYNCHRONIZATION

DONE	Allows you to determine when the spectrum analyzer has started to execute all commands prior to and including DONE.
TS	Starts and completes one full sweep before the next command is executed.

TRACE

AMB	Subtracts trace B from trace A and sends the result to trace A during every sweep of the spectrum analyzer.
AMBPL	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.
AXB	Exchanges trace A and trace B.
BLANK	Blanks trace A, trace B, or trace C and stops taking new data into the specified 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	Clears the specified trace and enables trace data acquisition.
DET	Selects the spectrum analyzer detection mode.
IB	Provides a method for putting values into trace B.
MERGE	Merges the source trace into the specified area of the destination trace.
MINH	Updates trace C elements with minimum level detected.
MOV	Copies the source values into the destination.
MXMH	Updates trace elements with maximum level detected.
PKPOS	Returns a value, which is the index of the maximum value in trace A, trace B, trace C, or user-defined trace.
TA	Returns trace A data.
TB	Returns trace B data.
TRA TRB TRC	Controls trace data input and output.
TRCMEM	Returns a nonnegative integer that indicates the total number of trace registers available for SAVET and RCLT.
TRDEF	Creates a user-defined trace.
TRDSP	Turns on or off the display of trace A, B, or C without clearing the trace.
TRGRPH	Displays a compressed trace on the analyzer display.
TRPRST	Sets the trace operations to their preset values.
TRSTAT	Returns the status of traces A, B, and C: clear write, blank, view, minimum hold, or maximum hold.
TWNDOW	Creates a window trace array for the Fast Fourier Transform (FFT) function.
VAVG	Enables the video-averaging function, which averages trace points to smooth the displayed trace.

VIEW	Displays trace A, trace B, or trace C, and stops taking new data into the viewed trace.

TRACE MATH

APB	Adds trace A to trace B and sends the result to trace A.
CLRAVG	Restarts video averaging.
COMPRESS	Reduces the number of trace elements while retaining the relative frequency and amplitude characteristics of the trace data.
CONCAT	Combines two traces.
FFT	Calculates Fast Fourier Transform.
LINFILL	Fills linear interpolated data into the specified trace data points of a destination trace.
MIRROR	Displays the mirror image of a trace.
PEAKS	Sorts signal peaks by frequency or amplitude, stores the results in the destination trace, and returns the number of peaks found.
SMOOTH	Smoothes the trace according to the number of points specified for the running average.
SUM	Returns the sum of the amplitudes of the trace elements in measurement units.
SUMSQR	Returns the sum of the squares of the amplitude of each trace element.
TRMATH	Executes a list of spectrum analyzer commands at the end of each sweep.
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	Sets the line number of the horizontal line of video on which to trigger. *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	Creates a user-defined active function.
DISPOSE	Deletes user-defined functions.
ERASE	Clears trace A and trace B, disposes of the contents of the user memory, and resets the state registers and the spectrum analyzer to the instrument preset state.
FUNCDEF	Defines a routine consisting of spectrum analyzer commands, assigns the routine a label, and stores the routine and its label in spectrum analyzer memory.
KEYCLR	Clears softkeys 1 through 6.
KEYCMD	Allows you define the function and label of a softkey. The softkey label is updated whenever a softkey is pressed.
KEYDEF	Assigns a label and user-defined function to a softkey.
KEYENH	Allows you to activate inverse video mode or underline part or all of the softkey label.
KEYEXC	Executes the specified, previously defined softkey.
KEYLBL	Relabels a softkey without changing its function.
MEM	Returns the amount of spectrum analyzer memory available.

MENU	Selects and displays the softkey menus on the spectrum analyzer screen.
RETURN	Returns from a user-defined function.
SAVEMENU	Saves menu 1 under the specified menu number.
TRDEF	Declares a user-defined trace.
USTATE	Transmits information that has been stored in the spectrum analyzer by the user.
VARDEF	Creates a user-defined variable and assigns it a value.

WINDOWS

WINNEXT	Makes the window that is currently not the active window, active.
WINOFF	Turns off the windows display.
WINON	Activates the windows display mode.
WINZOOM	Expands the size of the active window so that it fills the entire spectrum analyzer display.
ZMKCNTR	Positions the zone marker at the specified frequency.
ZMKPNL	Places the zone marker at the next signal peak that is left of the zone marker's current position.
ZMKPNR	Places the zone marker at the next signal peak that is right of the zone marker's current position.
ZMKSPAN	Allows you to change the width of the zone marker.

Programming Codes

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.

ACP;

Performs the adjacent channel power measurement.

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

Allows you to specify the channel bandwidth used for the adjacent channel power (ACP), adjacent channel power extended (ACPE), and channel power (CHP) measurements.
Query response: <numeric data format>.

ACPCONTM;

Changes the spectrum analyzer's sweep mode to continuous sweep, and then performs the previous power measurement (occupied bandwidth, adjacent channel, or channel power) at the end of every sweep.

ACPE;

Performs the adjacent channel power extended measurement.

ACPGR;([_](−1|1)|?);

Determines if the adjacent channel power (ACP) graph function is enabled or disabled.

ACPGRAPH;([_](−1|1)|?);

Performs the adjacent channel power (ACP) graph.

ACPMK;

Determines if the graph marker function is enabled or disabled for the adjacent channel power (ACP) graph or channel power graph.

ACPPAR([_](0|1)|?);

Determines if the spectrum analyzer settings used for the adjacent channel power (ACP), adjacent channel power extended (ACPE), channel power (CHP), or occupied bandwidth (OBW) measurement are set manually or automatically. If ACPPAR is set to 0, the spectrum analyzer settings are set manually. If ACPPAR is set to 1, the spectrum analyzer settings are set automatically.
Query response: (0|1)<CR><LF><EOI>..

ACPSNGLM;

Changes the spectrum analyzer's sweep mode to single sweep, performs a take sweep (TS), and then performs the previous power measurement (occupied bandwidth, adjacent channel, adjacent channel extended, or channel power).

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

Allows you to specify the frequency spacing between channels.
Query response: <numeric data format>.

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>::=ACPBW|ACPSP|AT|BAUDRATE|CF|COUPLE|
CRTHPOS|CRTVPOS|DA|DET|DL|DOTDENS|FA|FB|FFTSTOP|FMGAIN|
FOFFSET|GATECTL|GD|GL|GP|INZ|LG|MKA|MKD|MKFC|MKFCR|MKN|
MKPAUSE|MKPX|ML|MODE|MSI|M4|NDB|NRL|PREAMPG|PRNTADRS|RB|
RCLS|ROFFSET|RL|RLPOS|SAVES|SAVRCLN|SETDATE|SETTIME|SP|SQLCH|
SRCALC|SRCAT|SRCPOFS|SRCPSTP|SRCPSWP|SRCPWR|SRCTK|SWPCPL|
SS|ST|TH| TIMEDATE|TVSYNC|TVLINE|VAVG|VB|VBR|ZMKSPAN|ZMKCNTR|
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>{,<frequency>,<amplitude>}<CR><LF>
<EOI>.

AMPLEN?;

Returns the number of frequency-amplitude correction factors that have been entered.
Query response: <numeric data format>.

ANLGPLUS(_(ON|OFF)|[_](1|0)|?);

Turns on or off the Analog+ display mode. *Option 101 or 301 only.*
Query response: (ON|OFF)<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.

BAUDRATE([_]<number>|_EP|?);

Specifies the baud rate of a spectrum analyzer with Option 023 (the RS-232 interface) installed in it.
Query response: <numeric data format>.

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>).

BITF_<source>,<bit number>;

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

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|i|l|s|t|reg|prefix|on)]*[,(INT|CARD)];

Returns directory information from the specified mass storage device. The a, d, i, l, s, and t parameters denote data types and are used for cataloging the memory card. The a, d, i, l, s, and t data types represent the following:

a = amplitude correction factor data.
d = downloadable program.
i = display image file.
l = limit-line table.
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 only 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>.

CHP;

Performs the channel power measurement.

CHPGR;([_](−1|1)|?);

Determines if the channel power graph function is enabled or disabled.

CLRAVG;

Restarts video averaging.

CLRBOX[_]<x1>,<y1>,<x2>,<y2>[,(A|T)];

Clears a rectangular area from x1,y1 to x2,y2 on the spectrum analyzer display. You can specify whether the annotation or the traces are to be cleared by specifying an "A" for the annotation plane or a "T" for the trace plane. If you do not specify the annotation or trace plane, both the annotation and trace planes are cleared.
<x1>::=positive integer in <display units>.
<y1>::=positive integer in <display units>.
<x2>::=positive integer in <display units>.
<y2>::=positive integer in <display units>.

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.

CMDERRQ;

Returns a list of illegal commands to the remote port, then clears all illegal commands from the spectrum analyzer.

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

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(_(OFF|ON)|[_](0|1)|?);

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(_(OFF|ON)|[_](0|1)|?);

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(_(OFF|ON)|[_](0|1)|?);

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.
Query Response: (0|1)<CR><LR><EOI>.

COMB(_(OFF|ON)|[_](0|1));

Turns the comb generator on or off. *HP 8592L, HP 8593E, or HP 8596E 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 8594E, HP 8595E, or HP 8596E only.*
Query response: (AC|DC)<CR><LF><EOI>.

CRTHPOS([_]<number>|_(UP|DN)|?);

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

CRTVPOS([_]<number>|_(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 the 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>).

DA([_]<number>|?);

Accesses the current address of the display list.
Query response: <numeric data format>.

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 Option 103 only. *Option 102, 103, or 301 only.*

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

Selects the specified spectrum analyzer input detection mode. The negative (NEG) detector is available with Option 101 or 301 only. The negative detector enables negative peak detection in sweep times of less than or equal to 200 ms.
Query response: (POS|SMP|NEG)<CR><LF><EOI>.

DISPOSE_(ALL|ONCYCLE|ONDELAY|ONEOS|ONMKR|ONMKRU|ONSRQ|ONPWRUP|ONSWP |ONTIME|TRMATH|<user-defined trace>|<user-defined variable>|<user-defined function>|<key number>);

Frees spectrum analyzer memory that has been allocated previously for user-defined functions. DISPOSE ALL clears all operands.
<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|EP|DN|UP|OFF|ON)|?);

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>.

DOTDENS([_]<number>|?);

Sets the dot density value in the Analog+ display mode. *Option 101 or 301 only.*
Query response: <numeric data format>.

DRAWBOX[_]<x1>,<y1>,<x2>,<y2>,<x thickness>,<y thickness>;

Draws a rectangular box from x1,y1 to x2,y2 on the spectrum analyzer display. The parameters x thickness and y thickness allows you to specify the thickness of the borders that enclose the box.
<x1>::=positive integer in <display units>.
<y1>::=positive integer in <display units>.
<x2>::=positive integer in <display units>.
<y2>::=positive integer in <display units>.
<x thickness>::=positive integer in <display units>.
<y thickness>::=positive integer in <display units>.

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 traces A and 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)]|_(EP|DN|UP)|?);

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

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

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

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

Performs a Fast Fourier Transform on the trace source and sends the results to the trace destination. Before executing FFT, <window> must be defined with the TWNDOW command.
<trace destination>::=(TRA|TRB|TRC|<user-defined trace>).
<trace source>::=(TRA|TRB|TRC|<user-defined trace>).
<window>::=(TRA|TRB|TRC|<user-defined trace>).

FFTAUTO;

Performs a Fast Fourier Transform (FFT) on the signal on which the marker is placed.

FFTCLIP?;

Indicates if the FFT results are valid. If the input trace (trace A) has been clipped and the FFT results are not valid, a "0" is returned. If the input trace is not clipped, a "1" is returned.
Query response: (0|1)<CR><LR><EOI>.

FFTCONTS;

Performs a Fast Fourier Transform (FFT) continuously on the current signal.

FFTMKR;

Activates the FFT markers and displays the FFT annotation on the spectrum analyzer display.

FFTMM;

Changes the FFT midscreen frequency of the spectrum analyzer to the frequency of the FFT marker.

FFTMS;

Changes the FFT stop frequency of the spectrum analyzer to the frequency of the FFT marker.

FFTOFF;

Exits the fast Fourier transform (FFT) measurement and FFT settings.

FFTPCTAM[([_](0|1)|?)];

Turns on or off the percent AM measurement. Executing FFTPCTAM 0 turns off the percent AM measurement, executing FFTPCTAM 1 turns on the percent AM measurement.
Query response: <numeric data format>.

FFTPCTAMR?;

Returns the percent of amplitude modulation (AM).
Query response: <numeric data format>.

FFTSNGLS;

Changes the spectrum analyzer's sweep mode to single sweep mode (if necessary), and then performs a fast Fourier transform (FFT) on trace A.

FFTSTAT?;

Returns the status of the spectrum analyzer's FFT measurement functions. FFTSTAT returns either a "0," a "1," or a "2" as follows:

0 = The spectrum analyzer is not performing an FFT measurement.
1 = The spectrum analyzer is performing an FFT measurement.
2 = The spectrum analyzer is not performing an FFT measurement but the FFT markers and FFT annotation are on.

Query response: (0|1|2)<CR><LF><EOI>.

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

Sets the FFT stop frequency of the FFT measurement.
Query response: <numeric data format>.

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(_(OFF|ON)|[_](0|1));

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

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

GDRVCLPAR;

Clears the pulse parameters (pulse width, pulse repetition interval, and reference edge) for a time-gate measurement by setting the pulse parameters to 0. *Option 105 required, Option 101 or 301 recommended.*

GDRVGDEL[([_]<number>[(US|MS|SC)]|?)];

For the frequency window only, GDRVGDEL sets the time delay from when the gate trigger occurs to when the gate is opened. *Option 105 required, Option 101 or 301 recommended.*
Query response: <numeric data format>.

GDRVGLEN[([_]<number>[(US|MS|SC)]|?)];

Adjusts the gate length in both the time and frequency windows. *Option 105 required, Option 101 or 301 recommended.*
Query response: <numeric data format>.

GDRVGT([_](0|1)|?);

Turns on or off the gate in the frequency window. Executing GDRVGT 0 turns off the gate, executing GDRVGT 1 turns on the gate. *Option 105 required, Option 101 or 301 recommended.*
Query response: (0|1)<CR><LR><EOI>.

GDRVGTIM[([_]<number>[(US|MS|SC)]|?)];

Activates the gate trigger marker, and then places it at the given value in the time window. *Option 105 required, Option 101 or 301 recommended.*
Query response: <numeric data format>.

GDRVPRI[([_]<number>[(US|MS|SC)]|?)];

Enters the specified value as the pulse repetition interval. *Option 105 required, Option 101 or 301 recommended.*
Query response: <numeric data format>.

GDRVPWID[([_]<number>[(US|MS|SC)]|?)];

Enters the specified value as the pulse width. *Option 105 required, Option 101 or 301 recommended.*
Query response: <numeric data format>.

GDRVRBW([_](0|1)|?);

Couples or uncouples the resolution bandwidth to the specified pulse width. Executing GDRVRBW 0 uncouples the resolution bandwidth to the specified pulse width, executing GDRVRBW 1 couples it. *Option 105 required, Option 101 or 301 recommended.*
Query response: (0|1)<CR><LF><EOI>.

GDRVREFE[([_]<number>[(US|MS|SC)]|?)];

Allows you to enter the position (in time) for a reference edge. *Option 105 required, Option 101 or 301 recommended.*
Query response: <numeric data format>.

GDRVST([_](0|1)|?);

Couples or uncouples the sweep time to the pulse repetition interval. Executing GDRVST 0 uncouples the sweep time and the pulse repetition interval, executing GDRVST 1 couples it. *Option 105 required, Option 101 or 301 recommended.*
Query response: (0|1)<CR><LF><EOI>.

GDRVSWAP;

Makes the window (either the time or frequency window) that is currently not the active window, the active window. *Option 105 required, Option 101 or 301 recommended.*

GDRVSWDE[([_]<number>[(US|MS|SC)]|?)];

Allows you to specify the delay from the edge of the gate trigger until the sweep is started in the time window. *Option 105 required, Option 101 or 301 recommended.*
Query response: <numeric data format>.

GDRVSWP[([_]<number>[(US|MS|SC)]|?)];

Specifies the sweep time for the time domain window for the gate utility. *Option 105 required, Option 101 or 301 recommended.*
Query response: <numeric data format>.

GDRVUTIL([_](0|1)|?);

Turns on or off the gate utility. Executing GDRVUTIL 0 turns off the gate utility, executing GDRVUTIL 1 turns on the gate utility. *Option 105 required, Option 101 or 301 recommended.*
Query response: (0|1)<CR><LF><EOI>.

GDRVVBW([_](0|1)|?);

Couples or uncouples the video bandwidth to the gate length. Executing GDRVVBW 0 uncouples the video bandwidth to the gate length, executing GDRVVBW 1 couples the video bandwidth to the gate length. *Option 105 required, Option 101 or 301 recommended.*
Query response: (0|1)<CR><LF><EOI>.

GETPLOT[[_]<x1>,<y1>,<x2>,<y2>];

Initiates output of the spectrum analyzer display to a plotter. GETPLOT is meant to be used within a downloadable program.
<x1>::=positive integer in <display units>.
<y1>::=positive integer in <display units>.
<x2>::=positive integer in <display units>.
<y2>::=positive integer in <display units>.

GETPRNT[(_(BW|COLOR|MX80SM|MX80LG|LQ570SM|LQ570LG|DJCOLOR|DJ540BWDJ540CLR)|[_](0|1|2|3|4|5|6|7|8))|;|

GETPRNT is meant to be used within a downloadable program. It initiates output of the spectrum analyzer display to a printer. GETPRNT, GETPRNT0, or GETPRNT BW outputs the screen data in monochrome format. GETPRNT1 or GETPRNT COLOR outputs the screen data in HP PaintJet printer format. GETPRNT2 or GETPRNT MX80SM outputs the screen data in Epson MX80 small format. GETPRNT3 or GETPRNT MX80LG outputs the screen data in Epson MX80 large format. GETPRNT4 or GETPRNT LQ570SM outputs the screen data in Epson LQ570 small format. GETPRNT5 or GETPRNT LQ570LG outputs the screen data in Epson LQ570 large format. GETPRNT6 or DJCOLOR outputs the screen data in DeskJet color. GETPRNT7 or DJ640BW outputs the screen data in DeskJet 640 monochrome. GETPRNT8 or DJ540CLR outputs the screen data in DeskJet 540 color.

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 while incrementing the x coordinate by 1.

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

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

HAVE_(HPIB|HPIBA|HPIBB|RS232|RS232A|RS232B|IO|TG|FMD|QPD|CNT|OVEN|TV|TVPICT|FADC|CARD|GATE|BANDS|NBW)[?];

Returns a "0" if the specified device is not installed. The HAVE parameters correspond to the following devices:

HPIB = HP-IB interface, Option 021 or HP-IB and parallel interface, Option 041.
HPIBA = HP-IB interface, Option 021.
HPIBB = HP-IB and parallel interface, Option 041.
RS232 = RS-232 interface, Option 023, or RS-232 and parallel interface, Option 043.
RS232A = RS-232 interface, Option 023.
RS232B = RS-232 and parallel interface, Option 043.
IO = Either the HP-IB interface (Option 021), RS-232 interface (Option 023), or parallel (Option 024).
TG = Tracking generator, Option 010 or 011.
FMD = FM demodulator, Option 102, 103, or 301.
QPD = Quasi-peak detector, Option 103.
CNT = Counter-lock. (The frequency counter is not available for HP 8590L Option 013.)
OVEN = Precision frequency reference, Option 004.
TV = TV synch trigger, Option 102 or 301.
TVPICT = TV picture on analyzer display, Option 180.
FADC = Fast ADC, Option 101 or 301.
CARD = Memory card reader. (The memory card reader is available for the HP 8590L or HP 8592L as Option 003. The memory card reader is standard for the HP 8591E, HP 8593E, HP 8594E, HP 8595E, or HP 8596E.)
GATE A = Time-gated spectrum analyzer capability, Option 105. (Option card)
GATE B = Time-gated spectrum analyzer capability, Option 105. (Gate circuitry enabled on the CPU board)
BANDS = Returns the number of frequency bands that the spectrum analyzer has.
NBW = Narrow bandwidths, Option 130.

Query Response: <numeric data format>.

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 8592L, HP 8593E, HP 8595E, or HP 8596E only.
Query response: <numeric data format>.

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

Forces the spectrum analyzer to use only the selected harmonic. *HP 8592L, HP 8593E, HP 8595E, or HP 8596E only.*
Query response: (ON|OFF)<CR><LF><EOI>.

HNUNLK;

Unlocks the harmonic band. *HP 8592L, HP 8593E, HP 8595E, or HP 8596E 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>|<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). *HP 8592L, HP 8593E, HP 8595E, or HP 8596E only.*

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

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.

LIMIDISP(_(ON|OFF|AUTO|UPPER|LOWER)|?);

Controls when the limit lines are displayed.
Query response: (ON|OFF|AUTO|UPPER|LOWER)<CR><LF><EOI>.

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.

LIMIFT(_(TIME|FREQ)|?);

Selects how the limit-line segments are defined: according to frequency, or according to the sweep time setting of the spectrum analyzer.
Query response: (TIME|FREQ)<CR><LF><EOI>.

LIMIHL_(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|SENTERT)(<frequency>|<time>),<upper value>,<lower value>,(SLOPE|FLAT|POINT);)|(LIMIHALF_(UPPER|LOWER);(LIMISEG|LIMISEGT)(<frequency>|<time>),<amplitude>,(SLOPE|FLAT|POINT);)LIMITEST_(ON|OFF);LIMIDISP_(AUTO|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 (for a limit line based on frequency) or the largest sweep time (for a limit line based on the sweep time) in the limit-line 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 frequency limit line in either the upper limit line or 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>).

LIMISEGT_<time>,<amplitude>,[(FLAT|SLOPE|POINT)];

Adds new segments to the current sweep time limit line in either the upper limit line or the lower limit line.
<time>::=(<number>[(US|MS|SC)]|<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)|[_](0|1)|?);

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

LINFILL_<destination trace>,<starting value>,<number of elements>,<ending value>;

Fills linear interpolated data into the specified trace data points of a destination trace. LINFILL uses the value of the starting value and the ending value to calculate the linear interpolation data (the values for ending value should be in measurement units). <number of elements> allows you to specify the number trace data points that are "filled in" with linear interpolation data. The number of elements field includes the starting element.
<destination trace>::=(TRA|TRB|TRC|<user-defined trace>).
<starting value>::=(<number>|<predefined variable>|<user-defined variable>|<predefined function>|<trace element>).
<number of elements>::=(<number>|<predefined variable>|<user-defined variable>|<predefined function>|<trace element>).
<ending value>::=(<number>|<predefined variable>|<user-defined variable>|<predefined function>|<trace element>).

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. *HP 8590L or HP 8592L requires Option 003.*
<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 (B) or a two-byte word (W).
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 (SA), stimulus response (SR), or signal normalization (NRM).
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(_<number>|?);

Displays the selected softkey menu on the spectrum analyzer screen.
<menu number>::=integer value of 1, or 101 to 200.
Query response: <numeric data format>.

MERGE_<destination trace>,<destination start>,<destination end>,<source trace>,<source start>;

Merges the source trace into the specified area of the destination trace.
<destination trace>::=<trace source>.
<destination start>::=(<number>|<predefined variable>|<user-defined variable>|<predefined function>|<trace element>).
<destination end>::=(<number>|<predefined variable>|<user-defined variable>|<predefined function>|<trace element>).
<source trace>::=<trace source>.
<source start>::=(<number>|<predefined variable>|<user-defined variable>|<predefined function>|<trace element>).

MF[?];

Returns the frequency (or time) of the on-screen active marker.
Query response depends on the setting of TDF and MDS.

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.
Query response: <numeric data format>.

MIRROR_<trace destination>,<trace source>;

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

MKA([_]<number>|_(EP|DN|UP|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>.

MKACTV;

Makes the current active marker the active function.

MKBW_<number>[?];

Returns the bandwidth at the specified power level relative to an on-screen marker (if present) or the signal peak (if no on-screen marker is present).
Query response: <numeric data format>.

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)]|_(EP|DN|UP))];

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

MKDLMODE([_](0|1)|?);

When the marker table is turned on, MKDLMODE selects if the marker amplitude values are shown as relative to the reference level (normal mode) or relative to the display line (delta mode). If MKDLMODE is set to 0, the marker amplitude values will be relative to the reference level. If MKDLMODE is set to 1, the marker amplitude values will be relative to the display line.
Query response: (0|1)<CR><LR><EOI>.

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

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

MKFC(_(OFF|ON)|[_](0|1));

Turns on or off the marker frequency counter.

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

Sets the resolution of the marker frequency counter. *Not available for the HP 8590L Option 713.*
Query response: <numeric data format>.

MKMIN;

Moves the active marker to the minimum value detected.

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

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

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

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(_<x coordinate>|?);

Moves the active marker to the given x-coordinate.
<x coordinate>::=(<number>|<predefined variable>|<user-defined variable>|<predefined function>|<trace element>).
Query response: <numeric data format>.

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

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]|_(EP|DN|UP)|?);

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

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

Selects the type of active trace information to be displayed by the spectrum analyzer marker readout. The MKREAD parameters are as follows:

FRQ is marker frequency.
SWT is sweep time.
IST is inverse sweep time.
PER is period.
FFT is fast Fourier transform readout.

Query response: (FRQ|SWT|IST|PER|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(_(OFF|ON)|[_](0|1)|?);

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

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

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

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

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)|?);

Allows you to specify the current mass storage device as the spectrum analyzer memory (INT) or a memory card (CARD).
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.

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

NDB(_-<number>|?);

Specifies the distance (in dB) from the signal peak for the N dB points measurement (NDBPNT).
Query response: <numeric data format>.

NDBPNT([_](0|1)|?);

Turns on or off the N dB points measurement. Executing NDBPNT 0 turns off the N dB points measurement, executing NDBPNT 1 turns on the N dB points measurement.
Query response: (0|1)<CR><LR><EOI>.

NDBPNTR?;

Returns the bandwidth measured by the N dB points measurement (NDBPT).
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[?];

Sends the value of the active function to the controller.
Query response depends on the setting of TDF and MDS.

OBW;

Performs the occupied bandwidth measurement using the value for occupied bandwidth percent (OBWPCT). For example, if OBWPCT is set to 99 percent, OBW determines the 99 percent power bandwidth.

OBWPCT([_]<number>|?);

Specifies the percent of total power that is to be used in calculating the occupied bandwidth (OBW).
Query response: <numeric data format>.

OL[?];

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

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

ONCYCLE periodically executes the string data field. <time value> indicates how often the ONCYCLE command is executed.
<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>.

ONMKRU(_<delimiter><command list><delimiter>|?);

Executes the list of spectrum analyzer commands whenever the value or the units of the active marker are changed.
Query response: <A-block data format><CR><LF><EOI>.

ONPWRUP;(_<delimiter><command list><delimiter>|?);

Executes the list of spectrum analyzer commands once on power up.

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 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>,<format>,<output data>

Allows the spectrum analyzer to send data to other devices on HP-IB, RS-232, or parallel interfaces.
<address>::=([_]<number>|_(<predefined variable>|<user-defined variable>|<predefined function>|<trace element>))
<format>::=(K|B|KC|KL|F<field width>.<decimal places>[C]). The <format> parameters represent the following:

K = Outputs in free-field ASCII format with no terminator.
B = Outputs in a free-field format with no terminator, but in a single 8-bit byte.
KC = Outputs in free-field ASCII with carriage return and line feed terminator.
KL = Outputs in free-field ASCII with line feed and an EOI terminator.
F = Outputs an ASCII number with the field width and decimal places specified. If a "C" follows the number representing decimal places, a carriage return and line feed will terminate the output.

<field width>::=integer number.
<decimal places>::=integer number.
<output data>::=((<predefined variable>|<user-defined variable>|<predefined function>|<trace element>|<delimiter>({<data byte>}|<delimiter><delimiter>)<delimiter>|<A-block data field>);|<I-block data field>)

PA_[(PD|PU)][_]<x coordinate>(,|_)<y coordinate>{,[(PD|PU)][_]<x coordinate>(,|_)<y coordinate>};

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

PARSTAT;

Returns a number representing the parallel status bit.
For Option 024:

Bit 0 = 1 = printer busy
Bit 1 = 1 = paper end
Bit 2 = 1 = select (on line)
Bit 3 = 0 = printer error
Bit 4 = 1 = byte out ff set by ACK
Bit 5 = ACK line low = printer has accepted byte, ACK line high = printer has not accepted byte.

For Option 041 and 043:

Bit 0 = ignore
Bit 1 = ignore
Bit 2 = ignore
Bit 3 = 0 = printer error
Bit 4 = 1 = select (on line)
Bit 5 = 1 = paper end
Bit 6 = ACK line low = printer has accepted byte, ACK line high = printer has not accepted byte
Bit 7 = 0 =printer busy = 1 = printer not busy.

PCTAM([_](0|1)|?);

Turns on or off the percent AM measurement. Executing PCTAM 0 turns off the percent AM measurement, executing PCTAM 1 turns on the percent AM measurement.
Query response: (0|1)<CR><LR><EOI>.

PCTAMR?;

Returns the percent AM measured by the percent AM measurement (PCTAM).
Query response: <numeric data format>.

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>.

PKDLMODE([_](−1|0|1)|?);

Selects the signal peaks that are displayed in the peak table. The signal peaks can be selected as follows: all the signal peaks (0), only the signal peaks that are above the display line (1), or only the peaks that are below the display line (−1).
Query response: (-1|0|1)<CR><LF><EOI>.

PKPOS_<trace source>[?];

Returns the x-axis position of the maximum value of the trace.
Query response: <numeric data format>.

PKRES[<number>]?;

PKRES returns the x-axis coordinates of the peaks in the peak table. <number>::=a number from 1 to 10. <number> allows you to specify a peak within the peak table. You do not have to specify <number>, but if you do specify <number>, the number should be enclosed in brackets. For example, "PKRES [1]?;".
Query response: <number>{,<number>}<CR><LF><EOI>.

PKSORT([_](0|1)|?);

Selects how the signal peaks listed in the peak table are sorted: by decreasing amplitude or by ascending frequency. Executing PKSORT 0 sorts the peaks by decreasing amplitude; executing PKSORT 1 sorts the peaks by ascending frequency.
Query response: (0|1)<CR><LR><EOI>.

PKTBL([_](0|1)|?);

Turns on or off the peak table. Executing PKTBL 0 turns off the peak table, executing PKTBL 1 turns on the peak table.
Query response: (0|1)<CR><LR><EOI>.

PKZMOK?;

Returns a "1" if the peak zoom routine (PKZOOM) found a valid signal, otherwise a "0" is returned.
Query response: (0|1)<CR><LR><EOI>.

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

Automatically tunes the spectrum analyzer to the signal with the highest amplitude level while narrowing the frequency span to the specified frequency span.
Query response: <numeric data format>.

PLOT[[_]<x1>,<y1>,<x2>,<y2>];

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.
<x1>::=<y1>::=<number> that represents plotter dependent values that specify the lower-left plotter dimension.
<x2>::=<y2>::=<number> that represents plotter dependent values that specify the upper-right plotter dimension.

PLTPRT(_<number>|?);

Setting the plot port to a port inconsistent with the installed hardware option is ignored. Select PLTPRT 0 for an HP-IB port for either an Option 021 or Option 041.
0 = HP-IB port for Option 021 or Option 041
1 = serial port for Option 023
2 = parallel port for Option 024
3 = serial port for Option 043
4 = parallel port for Option 041 or Option 043

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 8592L, HP 8593E, HP 8595E, or HP 8596E only.*

PR_[(PD|PU)][_]<x coordinate>(,|_)<y coordinate>{,[(PD|PU)][_]<x coordinate>(,|_)<y coordinate>};

Specifies a new plot location on the spectrum analyzer screen relative to its current coordinates.
<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|EXPBW|EXPCLR|MX80SM|MX80LG|LQ570SM|LQ570LG)|[_](0|1|2|3|4|5|6|7))];

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.

PRNPRT(_<number>|?);

Setting the print port to a port inconsistent with the installed hardware option is ignored. Select PRNPRT 0 for an HP-IB port for either an Option 021 or Option 041.
0 = HP-IB port for Option 021 or Option 041
1 = serial port for Option 023
2 = parallel port for Option 024
3 = serial port for Option 043
4 = parallel port for Option 041 or Option 043

PRNTADRS(_<number>|?);

Allows you to set the HP-IB address of the printer.
Query response: <numeric data format>.

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

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>.

PWRUPTIME;

Returns the number of milliseconds that have elapsed since the spectrum analyzer was turned on.

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

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

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

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 the upper and lower limit-line table or the mid and delta table for limit lines based on frequency.
<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).

SENTERT_<time>,<upper or mid value>,<lower or delta value>,<segment type>;

Enters the limit-line data in the upper and lower limit-line table or the mid and delta table for limit lines based on sweep time.
<time>::=(<number>[(US|MS|SC)])|<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>;

Smoothes 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)]|␣(EP|DN|UP)|?);

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 8590L or HP 8591E: Use INT for internal leveling, XTAL for external leveling, MTR for external leveling with an HP meter.
Option 010 for the HP 8593E, HP 8594E, HP 8595E, or HP 8596E: 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. *Option 010 or 011 only. Not available for HP 8590L.*
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]|␣(EP|DN|UP|OFF|ON|OA)|?);

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

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

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

SRCTK([␣]<number>[DB]|␣(EP|DN|UP|OA)|?);

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)]|_(EP|DN|UP|AUTO)|?);

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

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

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 trace amplitudes in the specified trace.
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. *HP 8590L or HP 8592L requires Option 003.*
The <file type> can be an a, d, i, l, s, or t. The <file type> parameters represent the following:

a = amplitude correction factor data.
d = downloadable program.
i = display image file.
l = limit-line table.
s = instrument state.
t = trace data and instrument state.

<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_<trace source>?;

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>.

SYNCMODE_(NORMAL|NTSC15|PAL15|LOAD15);

Selects either the horizontal and vertical synchronizing constants, or the synchronization rate for both the internal monitor of the spectrum analyzer and the video signal that is output to the MONITOR OUTPUT connector on the rear panel of the spectrum analyzer.

TA[?];

Transfers the 401 amplitude values of trace A to the controller.
Query response depends on the setting of TDF and MDS.

TB[?];

Transfers the 401 amplitude values of trace B to the controller.
Query response depends on the setting of TDF and MDS.

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)]|_(AUTO|EP|DN|UP)|?);

Clips signal responses below the specified threshold level. Default unit is dBm. Default level is seven 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(_(OFF|ON)|[_](0|1)|?);

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: free (FREE), video (VID), line (LINE), external (EXT), or television (TV). TV trigger is available with Options 101 and 102, or Option 301 only.
Query response: (FREE|VID|LINE|EXT|TV)<CR><LF><EOI>.

TOI([_](0|1)|?);

Turns on or off the third-order intermodulation (TOI) measurement. Executing TOI 0 turns off the measurement, executing TOI 1 turns on the measurement.
Query response: (0|1)<CR><LR><EOI>.

TOIR?;

Returns the intercept point for the highest third-order intermodulation product measured by the third-order intermodulation measurement (TOI).
Query response: <numeric data format>.

(TRA|TRB|TRC)((<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>.

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: (BLANK|CLRW|VIEW|MXMH)A;(BLANK|CLRW|VIEW|MXMH)B;(BLANK|CLRW|VIEW|MINH)C;<CR><LF><EOI>.

TS;

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

TVLINE([_]<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(_(EVEN|ODD|BOTH|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). The TWNDOW command should be used to specify the <window> parameter for 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-block data field>|?);

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.
Query response: <numeric data format>.

VAVG([_]<number>|_(ON|OFF)|?);

Turns on or off the video averaging.
<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)]|_(EP|DN|UP|AUTO)|?);

Specifies the video bandwidth of the post-detection filter.
Query response: <numeric data format>.

VBR([_]<number>|_(EP|DN|UP|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>[(MS|SC)]|_(<predefined variable>|<user-defined variable>|<predefined function>|<trace element>));

Suspends all spectrum analyzer operation for the specified time duration.

WINNEXT;

When using the windows display mode, you can use WINNEXT to select the upper or lower window as the active window.

WINOFF;

Turns off the windows display mode.

WINON;

Activates the windows display mode and the zone marker.

WINZOOM;

When using the windows display mode, you can use WINZOOM to either expand the size of the active window so that it fills the entire spectrum analyzer display, or display both the upper and lower windows on the spectrum analyzer display.

XCH_<destination>,<destination>;

Exchanges the contents of the two parameters.

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

Positions the zone marker at the specified frequency.
Query response: <numeric data format>.

ZMKPKNL;

Places the zone marker at the next signal peak that is left of the zone marker's current position.

ZMKPKNR;

Places the zone marker at the next peak to the right of the zone marker's current position.

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

Allows you to change the width of the zone marker.
Query response: <numeric data format>.

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.
AMP	Amplitude.
AMPCOR	Amplitude correction.
AUTO	Auto couple or set to automatic.
AVG	Average.
B	8-bit byte or binary format.
BOTH	Both odd and even frames trigger.
BW	Black and white.
CARD	Memory card.
CNT	Counter-lock.
COLOR	Color.
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.
DUMP	Dump.
EDGE	Triggers on the edge of the trigger input.
EP	Pauses program for data entry from spectrum analyzer front panel.
EQ	Equal to.
EVEN	Even video frame.
EXT	External trigger.
FADC	Fast analog-to-digital converter (ADC).
FETCH	Fetch.

FFT	Fast Fourier transform.
FIXED	Fixed.
FLAT	Flat.
FLATTOP	Flat top filter window.
FMD	Frequency modulation demodulator.
FM	Frequency modulation.
FMV	Frequency modulation detection.
FREE	Free run.
FREQ or FRQ	Frequency.
GATE	Gate.
GE	Greater than or equal to.
GHZ	Gigahertz (unit).
GT	Greater than.
GZ	Gigahertz (unit).
HANNING	Hanning filter window.
HI	Highest.
HPIB	HP-IB.
HZ	Hertz (unit).
I	I-block data field.
i	Display image file.
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" an "LF" terminator.
KHZ	Kilohertz (unit).
KL	Free field ASCII format with "CR" an "END" terminator.
KZ	Kilohertz (unit).
l	Limit line.
LAST	Last state.
LE	Less than or equal to.
LEVEL	Level gating.
LIMILINE	Limit line.
LINE	Line trigger.
LOAD15	Loads the values for the horizontal and vertical position of the spectrum analyzer.
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 or NORMAL	Normal.
NTSC or NTSC15	NTSC video format.
OA	Output amplitude.
ODD	Odd video frame trigger.
OFF	Turns off function.
ON	Turns on function.
P	Parameter units.
PAL or PAL15	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.
s	State.
SA	Signal analysis.
SAVE	Save operation.
SC	Seconds (unit).
SECAML	SECAM-L video format.
SLOPE	Slope.
SMP	Sample detection mode.
SP	Space.
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.
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.
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/line-feed.

A

Spectrum Analyzer Error Messages

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 9 in the *HP 8590 E-Series and L-Series Spectrum Analyzers User's Guide* 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 provide information indicating 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).

ϕ LOCK OFF
Indicates slow YTO tuning. This message may appear if the spectrum analyzer is using default correction factors. If this message appears constantly, perform the CAL FREQ routine to try to eliminate this message. ϕ LOCK OFF appears briefly during the CAL FREQ routine, during instrument preset, or when the frequency value is changed; this is normal and does not indicate a problem. (U) and (H)

ADC-2V FAIL
Indicates a hardware failure. (H)

ADC-GND FAIL
Indicates a hardware failure. (H)

ADC-TIME FAIL
Indicates a hardware failure. (H) and (U)

CAL:_ _ _
During the self-calibration routine, messages may appear on the display to indicate how the calibration routines are progressing. For example, `sweep`, `freq`, `span`, `MC delay`, `FM coil`, and `atten` can appear on the spectrum analyzer display. ϕ `LOCK OFF` appears briefly during the CAL FREQ self-calibration routine; this is normal and does not indicate a problem. (M)

CAL:_ _ _ : done Press CAL STORE to save
Indicates that the self-calibration routine is finished and that you should press CAL STORE. (M)

CAL: cannot execute CALAMP enter: 0 dB PREAMP GAIN
The preamplifier gain should be set to 0 dB before the CAL AMPTD routine is performed. The preamplifier gain is set by using EXTERNAL PREAMPS. This message also sets SRQ 110. (U)

CAL: DATA NOT STORED CAL AMP NEEDED
The correction factors are corrupt and cannot be stored. You need to perform the CAL FREQ & AMPTD routine before trying to store the correction factors. This message also sets SRQ 110. (U)

CAL: FM SPAN SENS FAIL
The spectrum analyzer could not set up span sensitivity of the FM coil. (H)

CAL: GAIN FAIL
Indicates the signal amplitude is too low during the CAL AMPTD routine. This message also sets SRQ 110. (H)

Cal harmonic >= 5.7 GHz NOT found
Indicates that the CAL YTF routine for an HP 8595E cannot find a harmonic of the 300 MHz calibration signal. If this happens, ensure that the CAL OUT connector is connected to the spectrum analyzer input, perform the CAL FREQ & AMPTD routine, and then perform the CAL YTF routine again. (U) and (H)

CAL: MAIN COIL SENSE FAIL
The spectrum analyzer could not set up span sensitivity of the main coil. If this message appears, press FREQUENCY, −37, Hz, CAL, More 1 of 4, More 2 of 4, DEFAULT CAL DATA, and perform the CAL FREQ routine again. (H)

CAL: NBW 200 Hz notch amp failed
Indicates that the 200 Hz resolution bandwidth is not the correct shape for the calibration routine. (H)

CAL: NBW 200 Hz notch failed
Indicates that the 200 Hz resolution bandwidth is not the correct shape for the calibration routine. (H)

CAL: NBW 200 Hz width failed
Indicates that the 200 Hz resolution bandwidth is not the correct bandwidth for the calibration routine. (H)

CAL: NBW gain failed
Indicates that one of the resolution bandwidths is not the correct amplitude for the calibration routine. (H)

CAL: NBW width failed
Indicates that one of the resolution bandwidths is not the correct width for the calibration routine. (H)

CAL: PASSCODE NEEDED
Indicates that the function cannot be accessed without the pass code. For the DEFAULT CAL DATA function, enter the passcode by pressing FREQUENCY, −37, Hz. (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, CAL, More 1 of 4, More 2 of 4, DEFAULT CAL DATA. If the calibration signal still cannot be found, press FREQUENCY, −37, Hz and perform 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)

CAL YTF FAILED
Indicates that the CAL YTF routine could not be successfully completed. If this message appears, ensure that the CAL OUT connector (for the HP 8595E) or 100 MHz COMB OUT connector (for the HP 8592L, HP 8593E, or HP 8596E) is connected to the spectrum analyzer input, perform the CAL FREQ & AMPTD routine, and then perform the CAL YTF routine again. (U) and (H)

CAL: ZERO FAIL
The spectrum analyzer could not set up the tuning sensitivity of the main coil. If this message appears, press FREQUENCY, −37, Hz, CAL, MORE 1 of 4, MORE 2 of 4, DEFAULT CAL DATA, and perform the CAL FREQ routine again. (H)

Cannot engage phase lock with current CAL FREQ data
Indicates that the CAL FREQ routine needs to be performed before phase locking can be turned on. (U)

Cannot reach N dB points
Indicates that the number of dB specified for the N dB PTS function is greater than the distance of the signal peak from the spectrum analyzer noise floor or peak threshold. (U)

Check trigger input
Indicates that the spectrum analyzer needs an external trigger signal to use the time-gating functions. Before using the time-gating functions, you should ensure there is a trigger pulse connected to the GATE TRIGGER INPUT connector on the rear panel of spectrum analyzer and that the GATE OUTPUT is connected the EXT TRIG INPUT connector. (U)

Comb harmonic at _ _ _ GHz NOT found
Indicates that the CAL YTF routine for the spectrum analyzer cannot find a harmonic of the comb generator at frequency displayed. If this happens, ensure that the 100 MHz COMB OUT connector (for an HP 8592L, HP 8593E, or HP 8596E) or the CAL OUT connector (for an HP 8595E) is connected to the spectrum analyzer input with a low-loss, short cable before the CAL YTF routine is performed. (U) and (H)

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 8592L, HP 8593E, or HP 8596E only. (U) and (H)

CMD ERR:_ _ _
The specified programming command is not recognized by the spectrum analyzer. Press ANNOTATN ON OFF to clear. (U)

CONF TEST FAIL
Indicates that the confidence test failed. If this happens, ensure that the CAL OUT connector is connected to the spectrum analyzer input, perform the CAL FREQ & AMPTD routine, and then perform the confidence test again. This message also sets SRQ 110. (H) and (U)

EMPTY DLP MEM
Indicates that the user-defined items (user-defined functions, user-defined variables, user-defined traces, user-defined softkeys) and any personalities (for example, the HP 85716A CATV System Monitor Personality) in the spectrum analyzer's memory have been deleted. If the message is continuously displayed at power up, it may indicate a hardware failure. See the spectrum analyzer's Service Guide for more information. (U)

Factory dlp, not editable
Indicates that the downloadable program or variable that you have selected is used by a "personality" and cannot be edited. A personality is a program that is manufactured by Hewlett-Packard and is available for use with the HP 8590 Series spectrum analyzer. An example of a personality is the HP 85716A CATV system monitor personality. (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's service guide. (H)

File type incompatible
Indicates that the selected file is not a display image file. The file name for a display image file is always preceded by an "I." (U)

FREQ UNCAL
If the FREQ UNCAL message appears constantly, it indicates a YTO-tuning error. If this message appears constantly, perform the CAL FREQ routine. FREQ UNCAL appears briefly during the CAL FREQ routine; this is normal and does not indicate a problem. (U) and (H) (U) and (H)

Function not available in current Mode
Indicates that the function that you have selected can only be used with the spectrum analyzer mode. You can use the (MODE) key to select the spectrum analyzer mode. (U)

Function not available with analog display
Indicates that the function that you have selected is not compatible with the Analog+ display mode. To use the function, you must first turn off the Analog+ display mode with ANALOG+ ON/OFF. (U)

Gate card not calibrated
This message can indicate that either the CAL AMPTD routine need to be performed before the time-gating functions can be used, or that something was connected to the GATE TRIGGER INPUT connector during the CAL AMPTD or CAL FREQ & AMPTD routines. If your spectrum analyzer has an Option 105 installed in it, you should ensure that nothing is connected to the GATE TRIGGER INPUT connector when the CAL AMPTD or CAL FREQ & AMPTD routines are performed. (U) and (H)

INTERNAL 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 entered in increasing order. See the description for the AMPCOR programming command for more information. (U)

INVALID BLOCK FORMAT: IF STATEMENT
An invalid block format appeared within the IF statement. See the description for the IF THEN ELSE ENDIF programming command for more information. (U)

INVALID CARD
Indicates one of the following conditions: a card reader is not installed, the memory card is write-protected (check the position of the switch on the memory card), the memory card is a read-only memory (ROM) 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 8590L or HP 8592L that does not have an Option 003. (U)

INVALID CARD: BAD MEDIA
Indicates the formatting routine (FORMAT CARD) for the memory card could not be completed. See the description for INVALID CARD above for more information about the possible causes of this message. (U) and (H)

INVALID CARD: DATA ERROR
Indicates the data could not be retrieved from the memory card. (U) and (H)

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: TYPE
Indicates one of the following conditions: a card reader is not installed, the memory card is write-protected (check the position of the switch on the memory card), the memory card is a read-only memory (ROM) 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 8590L or HP 8592L 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 DET: FM or TV option only
Indicates that the selected detector cannot be used until the appropriate option is installed in the spectrum analyzer. (U)

INVALID ENTER FORMAT
The enter format is not valid. See the appropriate programming command description to determine the correct format. (U)

INVALID <file name> NOT FOUND
Indicates that the specified file could not be loaded into spectrum analyzer memory or purged from memory because the file name cannot be found. (U)

INVALID FILENAME _ _ _
Indicates the specified file name is invalid. A file name is invalid if there is no file name specified, if the first letter of the file name is not alphabetic, or if the specified file type does not match the type of file. See the description SAVRCLW or STOR programming command for more information. (U)

INVALID FILE: NO ROOM
Indicates that there is insufficient space available on the memory card to store the data. (U)

INVALID HP-IB ADRS/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 or plotter. (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 with the spectrum analyzer.) To use the spectrum analyzer print or plot functions, you must disconnect any other controllers on the HP-IB. If you are using programming commands to print or plot, you can use an HP BASIC command instead of disconnecting the controller. See the *HP 8590 E-Series and L-Series Spectrum Analyzers and HP 8591C Cable TV Analyzer Programmer's Guide* for more information. (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 printable 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.) To avoid this problem, 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 RANGE: Stop < Start
Indicates that the first trace element specified for a range of trace elements is larger that ending trace element. When specifying a trace range the starting element must be less than the ending element. For example, TRA[2,300] is legal but TRA[300,2] is not. (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 can occur if there is not enough spectrum analyzer memory for the REPEAT UNTIL declaration, or if the REPEAT UNTIL declaration exceeds 2047 characters. (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. When used within a downloadable program (DLP), the maximum number of REPEAT UNTIL statements that can be nested is 20. (U)

INVALID RS-232 ADRS/OPERATION
An RS-232 operation was aborted due to an 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 SCRMOVE
Indicates the spectrum analyzer may have a hardware failure. See the spectrum analyzer's Service Guide for more information. (H)

INVALID START INDEX
Indicates that the first trace element specified for a range of trace elements is not within the trace range of the specified trace. (U)

INVALID STOP INDEX
Indicates that the ending trace element specified for a range of trace elements is not within the trace range of the specified trace. (U)

INVALID STORE DEST: _ _ _
The specified destination field is invalid. (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 TRACENAME: _ _ _
Indicates the specified trace could not be saved because the trace name is not allowed. To avoid this problem, 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 VALUE PARAMETER: _ _ _
The specified value parameter is invalid. (U)

INVALID VARDEF: _ _ _
The specified variable name is not allowed. To avoid this problem, 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 description for the TWNDOW programming command. (U)

LOST SIGNAL
For the HP 8592L, HP 8593E, or HP 8596E, this message indicates that the cable from the 100 MHz COMB OUT connector to the spectrum analyzer input is defective or has become disconnected during the CAL YTF routine. For the HP 8595E, this message indicates that the cable from the CAL OUT connector is defective or has been disconnected during the CAL YTF routine. Be sure to use a short, low-loss cable to connect the signal to the spectrum analyzer input when performing the CAL YTF routine. (U)

LO UNLVL
Indicates that the spectrum analyzer's local oscillator distribution amplifier is not functioning properly. (H)

Marker Count Reduce SPAN
Indicates the resolution bandwidth to span ratio is too small to use the marker count function. Check the span and resolution bandwidth settings. (U)

Marker Count Widen RES BW
Indicates that the current resolution bandwidth setting is too narrow to use with the marker counter function. The marker counter function can be in narrow resolution bandwidths (bandwidths that are less than 1 kHz) with the following procedure:

1. Place the marker on the desired signal.
2. Increase the resolution bandwidth to 1 kHz and verify the marker is on the signal peak.
3. If the marker in on the signal peak, the marker count function can be used in either the 1 kHz resolution bandwidth or the original narrow resolution bandwidth setting. If the marker is not on the signal peak, it should be moved to the signal peak and the marker counter function should not be used with a resolution bandwidth setting of less than 1 kHz. (U)

MEAS UNCAL
The measurement is uncalibrated. Check the sweep time, span, and bandwidth settings, or press (AUTO COUPLE), AUTOALL. (U)

MEMORY OVERFLOW:ERASE DLP MEM and reload
This message indicates that too many user-defined items (functions, variables, key definitions), or downloadable programs have been loaded into spectrum analyzer memory. If this message appears, use ERASE DLP MEM and then load the user-defined item or downloadable program into spectrum analyzer memory. (U)

No card found
Indicates that the memory card is not inserted. (U)

No points defined
Indicates the specified limit line or amplitude correction function cannot be performed because no limit line segments or amplitude correction factors have been defined. (U)

OVEN COLD
Indicates that the spectrum analyzer has been powered up for less than 5 minutes. (The actual temperature of the precision frequency oven is not measured.) (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)

PASSCODE NEEDED
Indicates that the function cannot be accessed without the pass code. (U)

POS-PK FAIL
Indicates the positive-peak detector has failed. (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, when using an external reference, that an external 10 MHz reference source of sufficient amplitude is connect to the EXT REF IN connector. (U) and (H)

Require 1 signal > PEAK EXCURSION above THRESHOLD
Indicates that the N dB PTS routine cannot locate a signal that is high enough to measure. The signal must be greater than the peak excursion above the threshold level to measure. (U)

Require 3 signals > PEAK EXCURSION above THRESHOLD
Indicates that the % AM routine cannot locate three signals that are high enough to measure. The signals must be greater than the peak excursion above the threshold level to measure. (U)

Require 4 signals > PEAK EXCURSION above THRESHOLD
Indicates that the TOI routine cannot locate four signals that are high enough to measure. The signals must be greater than the peak excursion above the threshold level to measure. (U)

Required option not installed Some spectrum analyzer functions require that an option be installed in the spectrum analyzer. See the description for the function in the *HP 8590 E-Series and L-Series Spectrum Analyzers User's Guide* for more information about which option is required. (U)

RES-BW NOISE FAIL
Indicates the noise floor level is incorrect at the indicated bandwidth. (H)

RES-BW SHAPE FAIL
Indicates the 3 dB bandwidth is not within specifications. (H)

RF PRESEL ERROR
Indicates that the preselector peak routine cannot be performed. (H)

RF PRESEL TIMEOUT
Indicates that the preselector peak routine cannot be performed. (H)

SAMPLE FAIL
Indicates the sample detector has failed. (H)

SETUP ERROR
Indicates that the span, channel bandwidth, or channel spacing are not set correctly for the adjacent channel power or channel power measurement. (U)

Signal Not Found
Indicates the PEAK ZOOM routine did not find a valid signal. (U)

SIGNAL CLIPPED
Indicates that the current FFT measurement sweep resulted in a trace that is above the top graticule line on the spectrum analyzer display. If this happens, the input trace (trace A) has been "clipped," and the FFT data is not valid. (U)

Signals do not fit expected % AM pattern
Indicates that the % AM routine cannot perform the percent AM measurement because the on-screen signals do not have the characteristics of a carrier with two sidebands. (U)

Signals do not fit expected TOI pattern
Indicates that the TOI routine cannot perform the third-order intermodulation measurement because the on-screen signals do not have the characteristics of two signals and two distortion products. (U)

SMPLR UNLCK
Indicates that the sampling oscillator circuitry is not functioning properly. If this message appears, check that the external frequency reference is correctly connected to the EXT REF INPUT. (U) and (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 Appendix A of the *HP 8590 E-Series and L-Series Spectrum Analyzers User's Guide*. (M)

STEP GAIN/ATTN FAIL
Indicates the step gain has failed. (H)

Stop at marker not available with negative detection
Indicates that the marker counter cannot be used when negative peak detection is selected. To use the marker counter, turn off negative peak detection with DETECTOR PK SMP NEG. (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
This message can indicate the following: that the source power is set higher or lower than the spectrum analyzer can provide, that the frequency span extends beyond the specified frequency range of the tracking generator, or that the calibration data for the tracking generator is incorrect. See "Stimulus-Response Measurements" in Chapter 4 of the *HP 8590 E-Series and L-Series Spectrum Analyzers User's Guide* for more information. (U)

Too many signal with valid N dB points
Indicates the N dB PTS function has located two or more signals that have amplitudes within the specified dB from the signal peak. If this happens, you should decrease the span of the spectrum analyzer so that only the signal that you want to measure is displayed. (U)

Trace A is not available
Indicates that trace A is in the store-blank mode and cannot be used for limit-line testing. Use MEAS TWO TRACE or MTWOA to change trace A from the store-blank mode to the clear write mode, and then turn on limit-line testing. (U)

UNDF KEY
The softkey number is not recognized by the spectrum analyzer. (U)

USING DEFAULTS self cal needed
Indicates that the current correction factors are the default correction factors and that the CAL FREQ & AMPTD routine needs to be performed. For the HP 8592L, HP 8593E, HP 8595E, or HP 8596E, CAL YTF routine needs to be performed also. (U)

Verify gate trigger input is disconnected before CAL AMPTD
This message is meant to remind you that nothing should be connected to the GATE TRIGGER INPUT connector on the spectrum analyzer's rear panel during the CAL AMPTD routine. (U)

VID-BW FAIL
Indicates the video bandwidths have failed. (H)

Waiting for gate input . . .
Indicates that the spectrum analyzer needs an external trigger signal to use the time-gating functions. Before using the time-gating functions, you should ensure there is a trigger pulse connected to the GATE TRIGGER INPUT connector on the rear panel of spectrum analyzer and that the GATE OUTPUT is connected the EXT TRIG INPUT connector. If you do not want to use the time-gating functions, press [PRESET]. (U)

YTF is not available
The YTF is only available for the HP 8592L, HP 8593E, HP 8595E, and HP 8596E. (U)

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		

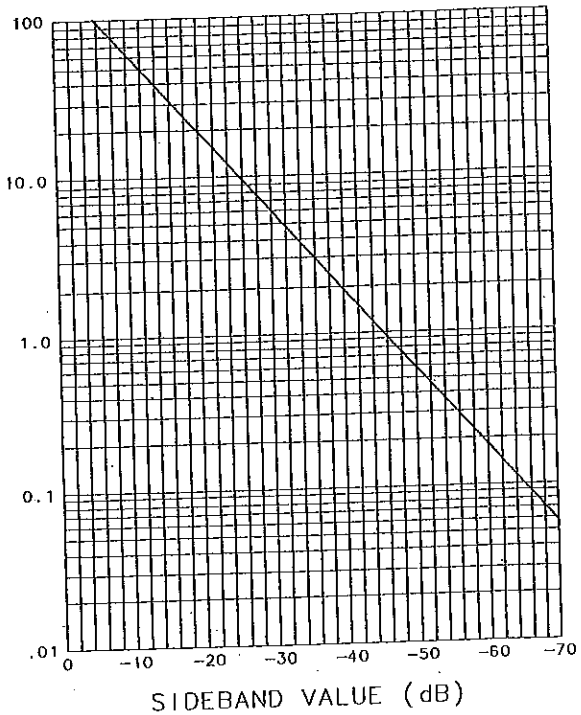


Figure B-1. Percent Modulation

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

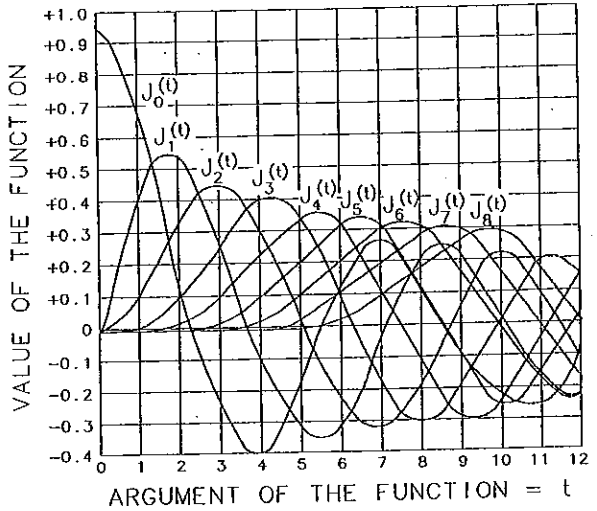


Figure B-2. Bessel Null Graph

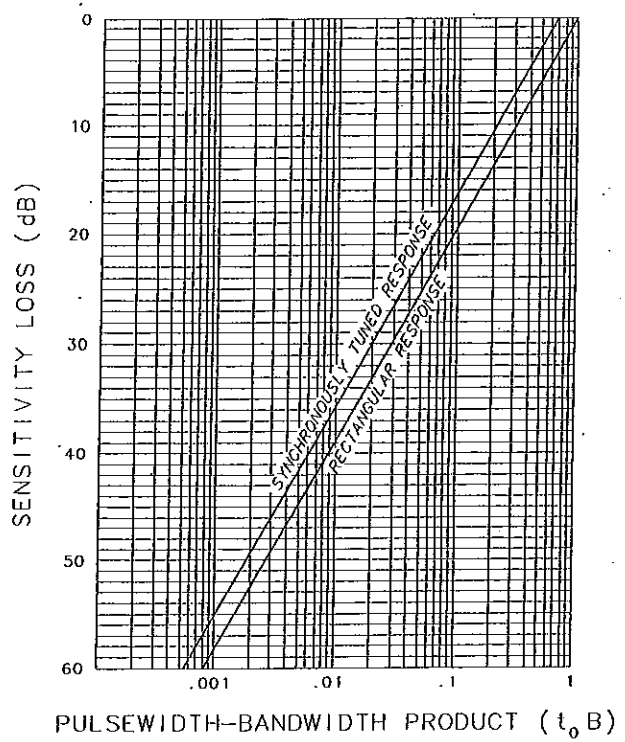


Figure B-3. Loss in Sensitivity (Pulsed RF versus CW)

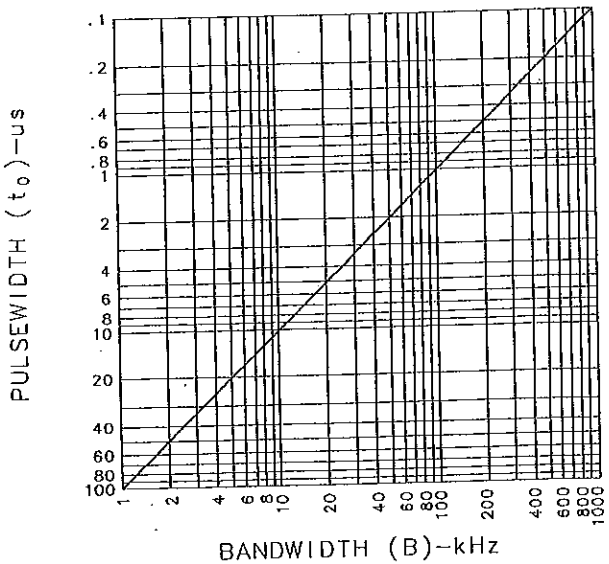


Figure B-4. RES BW Setting for Pulsed RF Computed from $t_oB = 0.1$

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	
ACP	Adjacent Channel Power	ADJ CHAN POWER
ACPBW	Channel Bandwidth	CHANNEL BANDWIDTH
ACPCONTM	Continuous Sweep Measurement	CONT MEAS
ACPE	Adjacent Channel Power Extended	ADJ CHAN PWR EXTED
ACPGRR	Adjacent Channel Power Graph	ACPGRAPH
ACPGRAPH	Adjacent Channel Power Graph	COMPUTE ACPGRAPH
ACPMK	Adjacent Channel Power Marker	
ACPPAR	ACP Manual or Auto	PARAM AUTO MAN
ACPSNGLM	Single Sweep Measurement	SINGLE MEAS
ACPSP	Channel Spacing	CHANNEL SPACING
ACTDEF	Active Function Definition	
ACTVF	Active Function	
ADD	Add	

Table C-1.
Cross Reference of Programming Command to Key Function
(continued)

Command	Name	Key
AMB	Trace A Minus Trace B	A−B, A−B ON OFF
AMBPL	Trace A Minus Trace B Plus Display Line	NORMLZR ON OFF
AMPCOR	Amplitude Correction	AMPCOR functions
AMPLEN	Amplitude Correction Length	
ANLGPLUS	Analog Plus	ANALOG ON OFF
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 ANL
AVG	Average	
AXB	Exchange Trace A and Trace B	A<->B
BAUDRATE	Baud Rate of Spectrum Analyzer	BAUD RATE
BIT	Bit	
BITF	Bit Flag	
BLANK	Blank Trace	BLANK A, BLANK B, BLANK C
BML	Trace B Minus Display Line	B−DL, Y,R
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 INTERNAL, CATALOG CARD
CF	Center Frequency	CNTR FREQ
CHP	Channel Power	CHANNEL POWER

Table C-1.
Cross Reference of Programming Command to Key Function
(continued)

Command	Name	Key
CHPGR	Channel Power Graph	
CLRAVG	Clear Average	VID AVG ON OFF
CLRBOX	Clear Box	
CLRDSP	Clear Display	
CLRW	Clear Write	CLEAR WRITE A, CLEAR WRITE B, CLEAR WRITE C
CLS	Clear Status Byte	
CNF	Confidence Test	KNOW TEST
CNTLA	Auxiliary Interface Control Line A	CNTL A 0 1
CNTLB	Auxiliary Interface Control Line B	CNTL B 0 1
CNTLC	Auxiliary Interface Control Line C	CNTL C 0 1
CNTLD	Auxiliary Interface Control Line D	CNTL D 0 1
CNTLI	Auxiliary Interface Control Line Input	DISPLAY CNTLI
COMB	Comb	COMB GEN ON OFF
COMPRESS	Compress Trace	
CONCAT	Concatenate	
CONTS	Continuous Sweep	SWEEP CONT SGL (CONT is underlined)
CORREK	Correction Factors On	
COUPLE	Couple	COUPLE AC DC
CRTHPOS	Horizontal Position of CRT Display	CRT HORZ POSITION
CRTVPOS	Vertical Position of CRT Display	CRT VERT POSITION

Table C-1.
Cross Reference of Programming Command to Key Function
(continued)

Command	Name	Key
CTA	Convert to Absolute Units	
CTM	Convert to Measurement Units	
DA	Display Address	
DATEMODE	Date Mode	DATEMODE MDY DMY
DEMOD	Demodulation	DEMOD ON OFF, DEMOD AM FM
DET	Detection Mode	DETECTOR POSPEAK, DETECTOR NEGPEAK, or DETECTOR SMPLPK
DISPOSE	Dispose	DISPOSE USER MEM
DIV	Divide	
DL	Display Line	DSPLINE ON OFF
DN	Down	▽
DONE	Done	
DOTDENS	Dot Density	ANALOG ON OFF
DRAWBOX	Draw Box	
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	
FFTAUTO	Marker to Auto FFT	MARKER → AUTO FFT
FFTCLIP	FFT Signal Clipped	

Table C-1.
Cross Reference of Programming Command to Key Function
(continued)

Command	Name	Key
FFTCONTS	FFT Continuous Sweep	CONTINUS FFT
FFTMKR	FFT Markers	FFT MARKERS
FFTMM	FFT Marker to Midscreen	MARKER → MID SCLN
FFTMS	FFT Marker to FFT Stop Frequency	MARKER → FFT STOP
FFTOFF	FFT Off	FFT OFF
FFTPCTAM	FFT Percent Amplitude Modulation	% AM ON OFF (during an FFT measurement)
FFTPCTAMR	FFT Percent Amplitude Modulation Readout	
FFTSNGLS	FFT Single Sweep	SINGLE FFT
FFTSTAT	FFT Status	
FFTSTOP	FFT Stop Frequency	
FMGAIN	FM Gain	FM GAIN
FOFFSET	Frequency Offset	FREQ OFFSET
FORMAT	Format Card	FORMAT CARD
FS	Full Span	FULL SPAN
FUNCDEF	Define Function	
GATE	Gate	GATE ON OFF
GATECTL	Gate Control	GATE CTL EDGE LVL
GC	Gate Preset	PRESET
GD	Gate Delay	GATE DELAY
GDRVCLPAR	Clear Pulse Parameters	CLEAR PARAM
GDRVGDEL	Gate Delay for the Frequency Window	GATE DELAY (when using the gate utility)
GDRVGLEN	Gate Length for the Frequency and Time Windows	GATE LENGTH

Table C-1.
Cross Reference of Programming Command to Key Function
(continued)

Command	Name	Key
GDRVGT	Window Gate Control	GATE ON OFF
GDRVGTIM	Gate Trigger to Marker Position for Time Window	TRIG>MKR ON OFF
GDRVPRI	Pulse Repetition Interval	ENTER PRI
GDRVPWID	Pulse Width	ENTER WIDTH
GDRVRBW	Couple Resolution Bandwidth to Pulse Width	CPL RBW ON OFF
GDRVREFE	Enter Reference Edge	ENTER REF EDGE
GDRVST	Couple Sweep Time to Pulse Repetition Interval	CPL SWP ON OFF
GDRVSWAP	Update the Time or Frequency Window	UPDATE CENTER FREQ
GDRVSWDE	Delay Sweep for Time Window	SWEEP DELAY
GDRVSWP	Sweep Time for the Time Window	FULL WINDOW SWP TIME
GDRVUTIL	Gate Utility	GATE UTILITY
GDRVVBW	Couple Video Bandwidth to Gate Length	CPL VBW ON OFF
GETPLOT	Get Plot	COPY
GETPRNT	Get Print	COPY
GL	Gate Length	GATE LENGTH
GP	Gate Polarity	EDGE POL POS NEG
GR	Graph	
GRAT	Graticule	GRAT ON OFF
HAVE	Have	SHOW OPTIONS
HD	Hold Data Entry	HOLD or HOLD
HN	Harmonic Number	

Table C-1.
Cross Reference of Programming Command to Key Function
(continued)

Command	Name	Key
HNLOCK	Harmonic Number Lock	Band selection accessed by Band Lock or BND LOCK ON OFF
HNUNLK	Unlock Harmonic Number	BND LOCK ON OFF (OFF is underlined)
IB	Input B	
ID	Identify	SHOW OPTIONS
IF	IF THEN ELSE ENDIF	
INT	Integer	
INZ	Input Impedance	INPUT Z 50Ω 75Ω
IP	Instrument Preset	PRESET
KEYCLR	Key Clear	
KEYCMD	Key Command	
KEYDEF	User-Defined Key Definition	
KEYENH	Key Enhance	
KEYEXC	Key Execute	
KEYLBL	Key Label	
LB	Label	
LF	Base Band Instrument Preset	
LG	Logarithmic Scale	SCALE LOG LIN (when LOG is underlined)
LIMIDEL	Delete Limit-Line Table	PURGE LIMITS
LIMIDISP	Limit Line Display	LMT DISP Y N AUTO
LIMIFAIL	Limits Failed	LMT TEST ON OFF
LIMIFT	Select Frequency or Time Limit Line	LIMITS FRQ TIME
LIMIHI	Upper Limit	
LIMILINE	Limit Lines	
LIMILO	Lower Limit	
LIMIMIRROR	Mirror Limit Line	

Table C-1.
Cross Reference of Programming Command to Key Function
(continued)

Command	Name	Key
LIMIMODE	Limit-Line Entry Mode	Edit Upper, Edit Lower, Edit Up/Low, Edit Mid/Delt
LIMIREL	Relative Limit Lines	LIMITS REL/ABS
LIMISEG	Enter Limit-Line Segment for Frequency	Edit Upper, Edit Lower
LIMISEGT	Enter Limit-Line Segment for Sweep Time	Edit Upper, Edit Lower
LIMITEST	Enable Limit Line Testing	LMT TEST ON OFF
LINFILL	Line Fill	
LN	Linear Scale	SCALE LOG/LIN (when LIN is underlined)
LOAD	Load	LOAD FILE
LOG	Logarithm	
LSPAN	Last Span	LAST SPAN
MDS	Measurement Data Size	
MDU	Measurement Data Units	
MEAN	Trace Mean	
MEANTH	Trace Mean Above Threshold	
MEASOFF	Measurement Off	MEAS OFF
MEASURE	Measure Mode	
MEM	Memory Available	
MENU	Menu	
MERGE	Merge Two Traces	
MF	Marker Frequency Output	
MIN	Minimum	
MINH	Minimum Hold	MIN HOLD ON
MINPOS	Minimum Position	
MIRROR	Mirror Image	

Table C-1.
Cross Reference of Programming Command to Key Function
(continued)

Command	Name	Key
MKA	Marker Amplitude	
MKACT	Activate Marker	SELECT 1 2 3 4
MKACTV	Marker As the Active Function	MARKER <Number> ON OFF
MKBW	Marker Bandwidth	N dB PTS ON OFF
MKCF	Marker to Center Frequency	MARKER → CF
MKCONT	Marker Continue	
MKD	Marker Delta	MARKER Δ
MKDLMODE	Marker Delta Display Line Mode	TABLE ΔDL NRM
MKF	Marker Frequency	
MKFC	Marker Counter	MK COUNT ON OFF
MKFCR	Marker Counter Resolution	CNT RES AUTO MAN
MKMIN	Marker Minimum	MARKER → MINIMUM
MKN	Marker Normal	MARKER NORMAL
MKNOISE	Marker Noise	MK NOISE ON OFF
MKOFF	Marker Off	MARKER ALL OFF
MKP	Marker Position	
MKPAUSE	Marker Pause	MK PAUSE ON OFF
MKPK	Marker Peak	(PEAK SEARCH), NEXT PEAK, NEXT PK RIGHT, NEXT PK LEFT, MARKER → PK→FR
MKPX	Marker Peak Excursion	PEAK EXCURSN
MKREAD	Marker Readout	MK READOUT FREQ
MKRL	Marker to Reference Level	MARKER → REF LVL
MKSP	Marker to Span	MARKER Δ → SPAN

Table C-1.
Cross Reference of Programming Command to Key Function
(continued)

Command	Name	Key
MKSS	Marker to Step Size	MARKER→ CF=CH STEP
MKSTOP	Marker Stop	
MKTBL	Marker Table	MK TABLE ON OFF
MKTRACE	Marker Trace	MK TRACE AUTO ABC
MKTRACK	Marker Track	MKTRACK ON OFF
MKTYPE	Marker Type	MARKER TYPE
ML	Mixer Level	MAX MIXER LVL
MOD	Modulo	
MODE	Mode	SPECTRUM ANALYZER
MOV	Move	
MPY	Multiply	
MSI	Mass Storage Is	INTERNAL QUAD
MXM	Maximum	
MXMH	Maximum Hold	MAX HOLD A, MAX HOLD B
M4	Marker Zoom	
NDB	Number of DB	N dB PTS ON OFF
NDBPNT	N dB Points	N dB PTS ON OFF
NDBPNTR	N dB Points Bandwidth	
NRL	Normalized Reference Level	
OA	Output Active Function Value	
OBW	Occupied Bandwidth	OCCUPIED BANDWTH
OBWPCT	Occupied Bandwidth Percent	OCC BW % POWER
OL	Output Learn String	
ONCYCLE	On Cycle	
ONDELAY	On Delay	
ONEOS	On End of Sweep	
ONMKR	On Marker	

Table C-1.
Cross Reference of Programming Command to Key Function
(continued)

Command	Name	Key
ONMKRU	On Marker Units	
ONSRQ	On Service Request	
ONSWP	On Sweep	
ONTIME	On Time	
OP	Output Parameter	
OUTPUT	Output to HP-IB	
PA	Plot Absolute	
PCTAM	Percent AM	%AM ON OFF
PCTAMR	Percent AM Response	
PD	Pen Down	
PDA	Probability Distribution of Amplitude	
PDF	Probability Distribution of Frequency	
PEAKS	Peaks	
PKDLMODE	Peak Table Delta Display Line Mode	PK MODE ΔREL NOM
PKPOS	Peak Position	
PKRES	Peak Result	
PKSORT	Peak Sort	PK SORT ZERO SPAN
PKTBL	Peak Table	PK TABLE ON OFF
PKZMOK	Peak Zoom Okay	
PKZOOM	Peak Zoom	PEAK ZOOM
PLOT	Plot	COPY (to a plotter)
PLTPRT	Plot Port (Option 041)	PLT PORT HDLR PAR
PLTPRT	Plot Port (Option 043)	PLT PORT SER PAR
POWERON	Power-On State	POWER ON IP LAST
PP	Preselector Peak	PRESEL PEAK
PR	Plot Relative	

Table C-1.
Cross Reference of Programming Command to Key Function
(continued)

Command	Name	Key
PRNPRT	Print Port (Option 041)	PRINTPORT HPIB/PARA
PRNPRT	Print Port (Option 043)	PRINTPORT SER/PARA
PREAMPG	External Preamplifier Gain	EXTERNAL PREAMPG
PREFX	Prefix	CHANGE PREFIX
PRINT	Print	(COPY) (to a printer)
PRNTADRS	Printer Address	PRINTER ADDRESS
PSTATE	Protect State	SAV LOCK ON OFF
PU	Pen Up	
PURGE	Purge File	DELETE FILE
PWRBW	Power Bandwidth	
PWRUPTIME	Power Up Time	
RB	Resolution Bandwidth	RES BW AUTO MAN, 3 kHz PULSE, 120 kHz EMI RB, 200 Hz EMI BW
RCLS	Recall State	(INTERNAL) STATE
RCLT	Recall Trace	The softkeys accessed by MARKER→ TRACE
RELHPIB	Release HP-IB	
REPEAT	Repeat Until	
RESETRL	Reset Reference Level	
RETURN	Return	
REV	Revision	SHOW OPTIONS
RL	Reference Level	REF LVL
RLPOS	Reference-Level Position	
RMS	Root Mean Square Value	
ROFFSET	Reference Level Offset	REF LVL OFFSET

Table C-1.
Cross Reference of Programming Command to Key Function
(continued)

Command	Name	Key
RQS	Service Request Mask	
SAVEMENU	Save Menu	
SAVES	Save State	STATE→ SYNTONY
SAVET	Save Trace	The softkeys accessed by TRACE→ SYNTONY
SAVRCLF	Save or Recall Flag	(SAVE) or (RECALL)
SAVRCLN	Save or Recall Number	
SAVRCLW	Save or Recall Data	
SEGDEL	Segment Delete	DELETE SEGMENT
SENTER	Segment Entry for Frequency Limit Lines	EDIT UP/LOW, EDIT MID/DELTA
SENTERT	Segment Entry for Sweep Time Limit Lines	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 (SGL is underlined)
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 or ALC INT PWR
SRCAT	Source Attenuator	SRC ATN MAN AUTO

Table C-1.
Cross Reference of Programming Command to Key Function
(continued)

Command	Name	Key
SRCNORM	Source Normalization	
SRCPOFS	Source Power Offset	SRC PWR OFFSET
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 -> CARD1, TRACE -> CARD, ALL DEP -> CARD1
SUB	Subtract	
SUM	Sum of Trace Amplitudes	
SUMSQR	Sum of Squared Trace Amplitudes	
SWPCPL	Sweep Couple	SWP CPLG AUTO MAN
SYNCMODE	Synchronize Mode	SYNC NRM NTSC, DEFAULT SYNC1, SYNC NRM PAL
TA	Transfer A	
TB	Transfer B	
TDF	Trace Data Format	
TEXT	Text	

Table C-1.
Cross Reference of Programming Command to Key Function
(continued)

Command	Name	Key
TH	Threshold	THRESHLD ON OFF
TIMEDATE	Time Date	
TIMEDSP	Time Display	TIMEDATE ON OFF
TITLE	Title	CHANGE TITLE
TM	Trigger Mode	FREE RUN, LINE, VIDEO1, EXTERNAL, TV TRIG
TOI	Third-Order Intermodulation Measurement	TOI ON OFF
TOIR	Third-Order Intermodulation Response	
TRA TRB TRC	Trace Data Input and 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	
TVLINE	TV Line	TV LINE #
TVSFRM	TV Frame	TV TRIG ODD FLD, TV TRIG EVEN FLD, TV TRIG VERT FINE
TVSTND	TV Standard	TV STND
TVSYNC	TV Sync	TV SYNC NEG POS
TWNDOW	Trace Window	
UP	Up	▲
USTATE	User State	
VARDEF	Variable Definition	

Table C-1.
Cross Reference of Programming Command to Key Function
(continued)

Command	Name	Key
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	
WINNEXT	Window Next	NEXT
WINOFF	Window Off	WINDOWS OFF
WINON	Window On	ON
WINZOOM	Window Zoom	ZOOM
XCH	Exchange	
ZMKCNTR	Zone Marker at Center Frequency	ZONE CENTER
ZMKPNL	Zone Marker for Next Left Peak	ZONE PK LEFT
ZMKPNR	Zone Marker for Next Right Peak	ZONE PK RIGHT
ZMKSPAN	Zone Marker Span	ZONE SPAN

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	Front-Panel Access Key
AM ON OFF	MEAS/USER
CAL LOCK ON OFF	CAL
LOW REF DETECTOR	CAL
LOW REF DETECTOR	CAL
2V REF DETECTOR	CAL
0-2.9 GHz BAND 0	FREQUENCY
2.7-6.6 GHz BAND 1	FREQUENCY
2.7-6.6 BAND 1	FREQUENCY
6.0-12.6 BAND 2	FREQUENCY
6.0-12.6 BAND 2	FREQUENCY
12.4-19 BAND 3	FREQUENCY
19-22 BAND 4	FREQUENCY
8 kHz RMT BW	BW
130 kHz RMT BW	BW
200 Hz RMT BW	BW

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
A <--> B	(TRACE)
A - B -> A ON OFF	(TRACE)
A -> C	(TRACE)
ABCDEF	(CONFIG), (DISPLAY), (RECALL), or (SAVE)
ABORT	(AUX CTRL)
ACCEPT QP DATA	(AUX CTRL)
ACPGRAPH ON OFF	(MEAS/USER)
ADJ CHAN POWER	(MEAS/USER)
ADJ CHAN PWR extd	(MEAS/USER)
ALC INT EXT	(AUX CTRL)
ALC MTR INT XTAL	(AUX CTRL)
ALC TEST	(CAL)
ALL DLP -> CARD	(SAVE)
Amp Cor	(CAL), (RECALL), or (SAVE)
AMP COR ON OFF	(CAL)
Amptd Units	(AMPLITUDE)
ANALOG+ ON OFF	(DISPLAY)
ANALYZER ADDRESS	(CONFIG)
ANALYZER GAINS	(CAL)
ANNOTATN ON OFF	(DISPLAY)
APND CAL ITEM	(RECALL) or (SAVE)
ATTEN AUTO MAN	(AMPLITUDE) or (AUTO COUPLE)
AUTO ALL	(AUTO COUPLE)
AUTO QP AT MKR	(AUX CTRL)
Aux/Conn Control	(AUX CTRL)

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
AUXB	(CAL)
B -> C	(TRACE)
B <--> C	(TRACE)
B - DL -> B	(TRACE)
Bands Lock	(FREQUENCY)
BAND LOCK ON OFF	(FREQUENCY)
BAUD RATE	(CONFIG)
BINARY SPAN	(CAL)
BLANK A	(TRACE)
BLANK B	(TRACE)
BLANK C	(TRACE)
BLANK CARD	(CONFIG)
BND LOCK ON OFF	(FREQUENCY)
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 -> DISPLAY	(RECALL)
CARD -> DLP	(RECALL)

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
CARD -> STATE	RECALL
CARD -> TRACE	RECALL
CATALOG ALL	RECALL or SAVE
CATALOG ANC COR	RECALL or SAVE
CATALOG CARD	CONFIG, RECALL or SAVE
CATALOG CARD	CONFIG
CATALOG INTERFAM	RECALL or SAVE
CATALOG DIR	RECALL or SAVE
CATALOG MISCCAL	RECALL or SAVE
CATALOG MSTATE	RECALL or SAVE
CATALOG ON EVENT	RECALL or SAVE
CATALOG PRCTIX	RECALL or SAVE
CATALOG REGISTER	RECALL or SAVE
CATALOG STATE	RECALL or SAVE
CATALOG TRACE	RECALL or SAVE
CATALOG VARIABLE	RECALL or SAVE
CENTER FREQ	CONFIG, FREQUENCY, or AUX CTRL
CF STEP AUTO MAN	AUTO COUPLE or FREQUENCY
Change Prefix	CONFIG, DISPLAY, RECALL, or SAVE
Change Title	DISPLAY, CAL, RECALL or SAVE
CHANNEL BANDWIDTH	MEAS/USER
CHANNEL POWER	MEAS/USER
CHANNEL SPACING	MEAS/USER

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
CLEAR	CONFIG, DISPLAY, RECALL, or SAVE
CLEAR OFFSET	AUX CTRL
CLEAR PARAM	SWEEP
CLEAR SR DATA	AUX CTRL
CLEAR WRITE A	TRACE
CLEAR WRITE B	TRACE
CLEAR WRITE C	TRACE
CNT RES AUTO MAN	MKR FCTN
CNTL A 0/1	AUX CTRL
CNTL A 0/1	AUX CTRL
CNTL C 0/1	AUX CTRL
CNTL D 0/1	AUX CTRL
COARSE TUNE DAC	CAL
COMPLETION ON/OFF	AUX CTRL
CONF TEST	CAL
CONT MEAS	MEAS/USER
CONTINUE	AUX CTRL
CONTINUS ZERO	MEAS/USER
COPY DIAG PRNT SLCT	CONFIG
CORRECTION ON/OFF	CAL
CORRECTIONS ON/OFF	AUX CTRL
COUPLE AC DC	AMPLITUDE
CRT RBW ON OFF	AUTO COUPLE

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
CPD SWP ON OFF	AUTO COUPLE
CPL VBW ON OFF	AUTO COUPLE
CRT HORZ POSITION	CAL
CRT VERT POSITION	CAL
DACS	CAL
DATEMODE MDY DMY	CONFIG
dBm	AMPLITUDE
dBmV	AMPLITUDE
dBuV	AMPLITUDE
DEFAULT CAL DATA	CAL
DEFAULT CONFIG	CONFIG
DEFAULT SYNC	CONFIG
Define Coupling	SWEEP
Define Gate	SWEEP
Define Trig	SWEEP
DELETE FILE	SAVE or RECALL
DELETE POINT	CAL
DELETE SEGMENT	DISPLAY
Demod	AUX CTRL
DESKJET 310/500C	CONFIG
DESKJET 540	CONFIG
DEMOD AM FM	AUX CTRL
DEMOD ON OFF	AUX CTRL
DETECTOR PK SP NG	TRACE
DETECTOR SMP SPZ	TRACE
DISPLAY CAL DATA	CAL

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
DISPLAY TO CARD	SAVE
DISPLAY CNTL 1	AUX CTRL
DISPOSE USER MEM	CONFIG
DONE	SWEEP
DROOP	CAL
DSP LINE ON OFF	DISPLAY
DWELL TIME	AUX CTRL
EDGE POL POS NEG	SWEEP
Edit Amplcor	CAL
EDIT CAL TEM	SAVE or RECALL
Edit Done	SAVE, RECALL, or CAL
EDIT DONE	DISPLAY
EDIT FLATNESS	CAL
EDIT LAST	SAVE or RECALL
Edit Line	DISPLAY
Edit Limit	DISPLAY
Edit Mid/Delt	DISPLAY
Edit Up/Low	DISPLAY
Edit Upper	DISPLAY
Editor	SAVE or RECALL
(ENTER)	Hz/μV/μs
ERASE DLP MEM	CONFIG
ERASE MEM ALL	CONFIG
ERASE MEM CARD	CONFIG
ERASE STATE/ALL	CONFIG
ERASE TRACE/ALL	CONFIG

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
EP LQ570 SML LRG	(CONFIG)
EP MX80 SML LRG	(CONFIG)
ENTER PRI	(SWEEP)
ENTER REF EDGE	(SWEEP)
ENTER WIDTH	(SWEEP)
EXECUTE TITLE	(CAL)
EXIT	(CAL)
Exit Catalog	(RECALL) or (SAVE)
EXIT SHOW	(CONFIG)
EXIT UTILITY	(SWEEP)
EXTERNAL	(TRIG)
EXTERNAL PREAMPG	(AMPLITUDE)
FFT MARKERS	(MEAS/USER)
FFT Menu	(MEAS/USER)
FFT OFF	(MEAS/USER)
FFT STOP FREQ	(MEAS/USER)
FINE TUNE DAC	(CAL)
FLAT	(DISPLAY)
Flatness Data	(CAL)
FM COIL DRIVE	(CAL)
FM GAIN	(AUX CTRL) or (CAL)
FM OFFSET	(CAL)
FM SPAN	(CAL)
FORMAT CARD	(CONFIG)
FREE RUN	(TRIG)

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
FREQ DIAG	(CAL)
FREQ DISC NORM OFF	(CAL)
FREQ OFFSET	(FREQUENCY)
FULL SPAN	(SPAN)
Gate Control	(SWEEP)
GATE CTL EDGE LVL	(SWEEP)
GATE DELAY	(SWEEP)
GATE LENGTH	(SWEEP)
GATE ON OFF	(SWEEP)
GATE Utility	(SWEEP)
GHIJKL	(CONFIG), (DISPLAY), (RECALL), or (SAVE)
GND REF DETECTOR	(CAL)
GRAT ON OFF	(DISPLAY)
GRPH MKR ON OFF	(MEAS/USER)
HOLD	(DISPLAY)
HP B&W PRINTER	(CONFIG)
HP B&W DJ540	(CONFIG)
IDNUM	(CAL)
INIT FLT	(CAL)
INPUT Z 50Ω 75Ω	(AMPLITUDE)
INTERNAL CARD	(RECALL) or (SAVE)
INTERNAL -> STATE	(RECALL)
Internal -> Trace	(RECALL)
LAST SPAN	(SPAN)
Limit Lines	(DISPLAY), (RECALL), or (SAVE)

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
LIMITS FIX REL	DISPLAY
LIMITS FRQ TIME	DISPLAY
LINE	TRIG
LMT LINE Y N AUTO	DISPLAY
LMT TEST ON OFF	DISPLAY
LOAD CELL	SAVE or RECALL
(LOCAL)	CONFIG
MAIN COUPLING	CAL
MAIN MODE	SWEEP
MAIN SPAN	CAL
MANUAL ATT MKR	AUX CTRL
MAN TRK ADJUST	AUX CTRL
MARKER 1 ON OFF	MKR
MARKER ALL OFF	MKR
MARKER AMPTD	MKR
MARKER ∆ AUTO REF	MEAS/USER
MARKER ∆ OFF	MKR ->
MARKER ∆ SWEEP	MKR ->
MARKER ∆	MKR or PEAK SEARCH
MARKER ∆ SPAN	MKR ->
MARKER FRQ STOP	MEAS/USER
MARKER MID SCRN	MKR -> or MEAS/USER
MARKER MINIMUM	MKR ->
MARKER NORM PK	AUX CTRL

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
MARKER NORMAL	MKR
MARKER ON	SWEEP
MARKER →PK PK	MKR ->
MARKER →PEAK LVL	MKR ->
MARKER →START	MKR ->
MARKER →STOP	MKR ->
MAX HOLD A	TRACE
MAX HOLD B	TRACE
MAX MKR LVL	AMPLITUDE
MEAS OFF	MEAS/USER
MEM LOCKED	RECAL or SAVE
MIN HOLD C	TRACE
MIXER BIAS DAC	CAL
MK COUNT ON OFF	MKR FCTN
MK NOISE ON OFF	MKR FCTN
MK PAUSE ON OFF	MKR FCTN
MK READ ΔFRQ	MKR
MK TABLE ON OFF	MKR FCTN
MK TRACE AUTO TRC	MKR
MK TRACK ON OFF	MKR FCTN
MNOPON	CONFIG, DISPLAY, RECALL, or SAVE
N dB PTS ON OFF	MEAS/USER
NEW BOOT	SAVE or RECALL

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
NEXT PEAK	(PEAK SEARCH)
NEXT PK LEFT	(PEAK SEARCH)
NEXT PK RIGHT	(PEAK SEARCH)
No User Menu	(MEAS/USER)
NORMLIZE ON OFF	(TRACE)
NORMLIZE POSITION	(TRACE)
NTSC	(TRIG)
OCC BW % POWER	(MEAS/USER)
OCCUPIED BANDWDTH	(MEAS/USER)
PAINTJET PRINTER	(CONFIG)
PAL	(TRIG)
PAL-M	(TRIG)
PARAM AUTO MAN	(SWEEP)
PEAK EXCURSN	(PEAK SEARCH)
Peak Menu	(MKR ->)
PEAK SEARCH	(AUX CTRL)
PEAK ZOOM	(SPAN)
PK MODE <> DL NRM	(PEAK SEARCH)
PK SORT FRQ AMP	(PEAK SEARCH)
PK TABLE ON OFF	(PEAK SEARCH)
Plot Config	(CONFIG)
PLOTTER ADDRESS	(CONFIG)
PLT [illegible] LOC [illegible]	(CONFIG)
PLT MENU ON OFF	(CONFIG)
Plt Port Config	(CONFIG)

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
PLT PORT HPIB PAR	(CONFIG)
PLT PORT SER PAR	(CONFIG)
PLTS/PG 1 2 4	(CONFIG)
PLT->LJT ON OFF	(CONFIG)
POINT	(DISPLAY)
Power Menu	(MEAS/USER)
POWER ON IP LAST	(CONFIG)
PRESEL DAC	(CAL)
PRESEL DEFAULT	(AMPLITUDE)
PRESEL PEAK	(AMPLITUDE)
PRESET SPECTRUM	(MODE) or (PRESET)
Print Config	(CONFIG)
PRINTER ADDRESS	(CONFIG)
PRINTER SETUP	(CONFIG)
Prn Port Config	(CONFIG)
PRN PORT HPIB PAR	(CONFIG)
PRN PORT SER PAR	(CONFIG)
PRT MENU ON OFF	(CONFIG)
Pulse Param	(SWEEP)
PURGE AMP COR	(CAL)
PURGE LIMITS	(DISPLAY)
PWR SWP ON OFF	(AUX CTRL)
PWRGRAPH ON OFF	(MEAS/USER)
QP X10 ON OFF	(AUX CTRL)
QP DET ON OFF	(AUX CTRL) or (CAL)

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
PR GAIN ON OFF	CAL
PRD OFFSET	CAL
PRD AST ON OFF	CAL
Pulse Prbe	AUX CTRL
RECALL AMP COR	CAL
RECALL STATE	DISPLAY
REF LVL	AMPLITUDE
REF LVL OFFSET	AMPLITUDE
RES BW AUTO MAN	AUTO COUPLE or BW
RETURN	AUX CTRL
RF ATTDR	DISPLAY or CAL
SAVE LOCK ON OFF	SAVE
SAVE AMP COR	CAL
SAVE EDIT	RECALL or SAVE
SAVE LIMIT	DISPLAY
SCALE/DIVISION	AMPLITUDE
SEGMENT	TRIG
SELECT MARKER	MKR
SELECT AMPLITUDE	DISPLAY or CAL
SELECT DET/AMPL	DISPLAY
SELECT FREQ	DISPLAY or CAL
SELECT PWR AMPL	DISPLAY
SELECT MOD ANLYS	DISPLAY
SELECT POINT	CAL
SELECT PREFIX	RECALL or SAVE
SELECT SEGMENT	DISPLAY

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
SELECT TIME	DISPLAY
SELECT TYPE	DISPLAY
SELECT UPR AMPL	DISPLAY
Service Cat	CAL
Service Diag	CAL
SET ATTN ERROR	CAL
SET GEN PRINTER	CONFIG
SET DATE	CONFIG
SET TIME	CONFIG
SGLPT	MEAS/USER
SHOW OPTIONS	CONFIG
SIGNAL ID	MEAS/USER
SINGLE PT	MEAS/USER
SINGLE MEAS	MEAS/USER
SLOPE	DISPLAY
SPAN	SPAN
SPAN ZOOM	SPAN
SPEAKER ON OFF	AUX CTRL
SPECTRUM ANALYZER	PRESET, or MODE
SQUELCH	AUX CTRL
SRC ATN MAN AUTO	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

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
STATE INTERNAL	SAVE
STOP FREQ	FREQUENCY
STOR PWR ON UNITS	CAL
STR GAIN ZERO	CAL
SUBMIX	CAL, CONFIG, DISPLAY, RECALL, or SAVE
SWEEP CONT SGL	SWEEP or TRIG
SWEEP DELAY	SWEEP
SWEEP RAMP	CAL
SWEEP TIME DAC	CAL
SWR ODEG SR 50	AUX CTRL
SWP TIME AUTO MAN	AUTO COUPLE or SWEEP
SYNC CRD TV TRIG	TRIG
SYNC NRM NTSC	CONFIG
SYNC NRM PAL	CONFIG
T WINDOW REG NUM	SWEEP
T WINDOW SWP TIME	SWEEP
TABLE ADL NRM	MKR FCTN
THRESHLD ON OFF	DISPLAY
TIME DATE	CONFIG
TIMEDATE ON OFF	CONFIG
TOI ON OFF	MEAS/USER
TRACE A B CH	TRACE
TRACE A	RECALL or SAVE
TRACE B	RECALL or SAVE

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
TRACE C	RECALL or SAVE
TRACE SCALE	SAVE
TRACE THERMAL	SAVE
TRACK PEAK	AUX CTRL
TRACKING PEAK	AUX CTRL
TRIG MKR ON OFF	SWEEP
TV LINE #	TRIG
TV Standard	TRIG
TV SYNC NEG POS	TRIG
TV TRIG EVEN FLD	TRIG
TV TRIG ODD FLD	TRIG
TV TRIG VERT INT	TRIG
UPDATE TIMEREG	SWEEP
USER MENUS	MEAS/USER
VBW/RBW RATIO	BW
VERIFY TIMEBASE	CAL
VID AVG ON OFF	BW or TRACE
VID BW AUTO MAN	AUTO COUPLE or BW
VIDEO	TRIG
VIEW A	TRACE
VIEW B	TRACE
VIEW C	TRACE
VOLTS	AMPLITUDE
WINDOWS OFF	WINDOWS ON
YAXIS	AMPLITUDE

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
X TUNE TUNE DAC	CAL
YTF DRIVER	CAL
YTF SPAN	CAL
YTF TUNE COARSE	CAL
YTF TUNE FINE	CAL
YZ Trace Clear	CONFIG, DISPLAY, RECALL, or SAVE
ZERO MARKER	SWEEP
ZERO SPAN	SPAN
ZONE CENTER	WINDOWS ON
ZONE PK LEFT	WINDOWS ON
ZONE PK RIGHT	WINDOWS ON
ZONE SPAN	WINDOWS ON

E

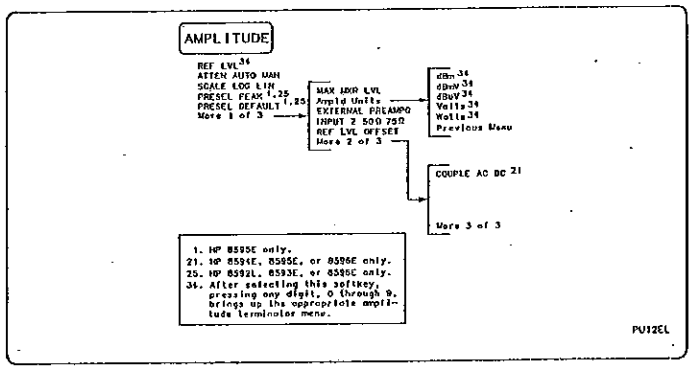
Key Menus

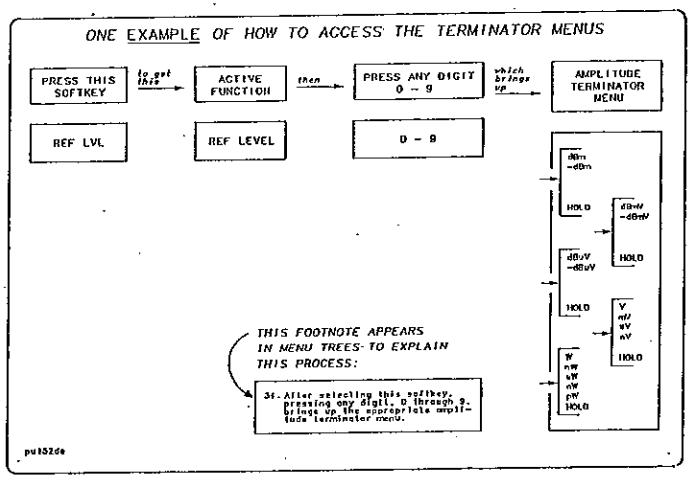
This chapter contains the key menu diagrams for the HP 8590 E-Series and L-Series spectrum analyzers. The menus are documented for the:

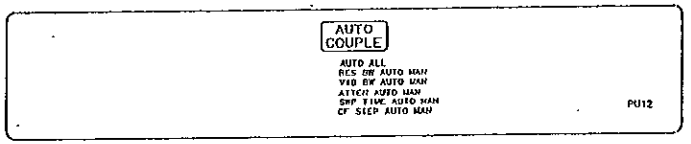
- HP 8590L
- HP 8591E
- HP 8592L
- HP 8593E
- HP 8594E
- HP 8595E
- HP 8596E

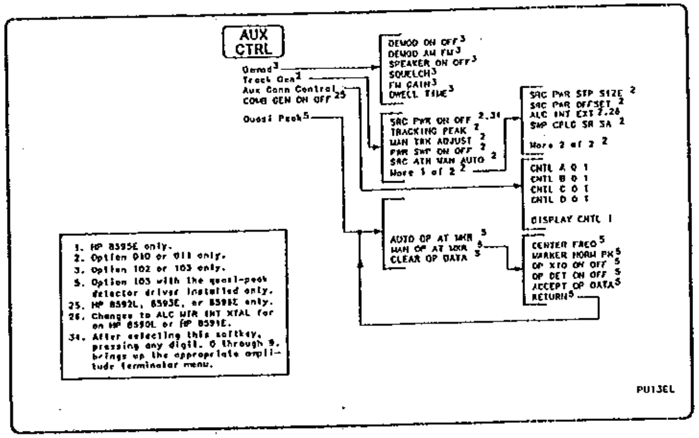
Each front-panel key is listed alphabetically. The softkeys accessed by a front-panel key are shown below the front-panel key.

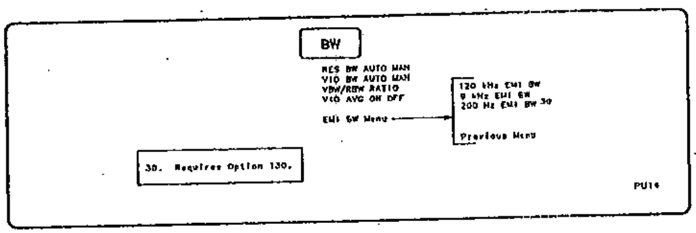
Note Some of the softkeys in the key menus are model or option specific and may not appear on your spectrum analyzer.

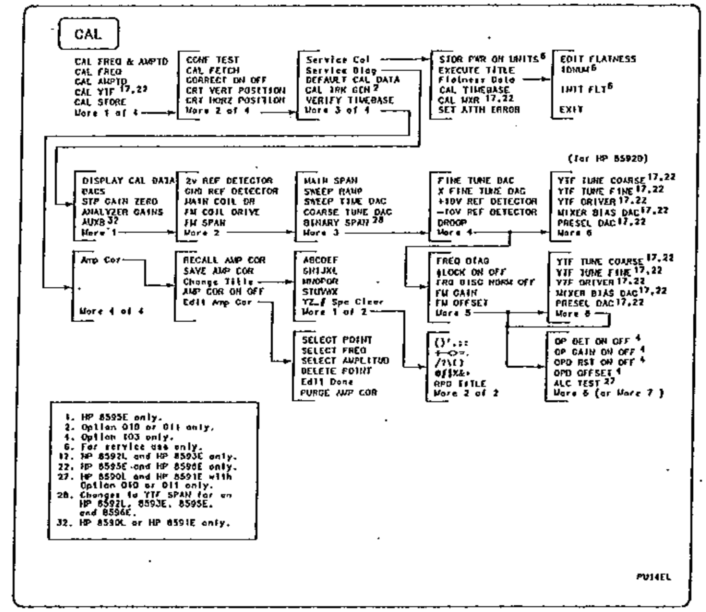

AMPLITUDE
REF LVL[34]
ATTEN AUTO MAN
SCALE LOG LIN
PRESEL PEAK[1,25]
PRESEL DEFAULT[1,25]
More 1 of 3
MAX MKR LVL
Ampld Units
EXTERNAL PREAMPG
INPUT Z 50Ω 75Ω
REF LVL OFFSET
More 2 of 3
dBm[34]
dBmV[34]
dBuV[34]
Volts[34]
Watts[34]
Previous Menu
COUPLE AC DC [21]
More 3 of 3
1. HP 8595E only.
21. HP 8594E, 8595E, or 8596E only.
25. HP 8592L, 8593E, or 8595E only.
34. After selecting this softkey, pressing any digit, 0 through 9, brings up the appropriate amplitude terminator menu.
PU12EL

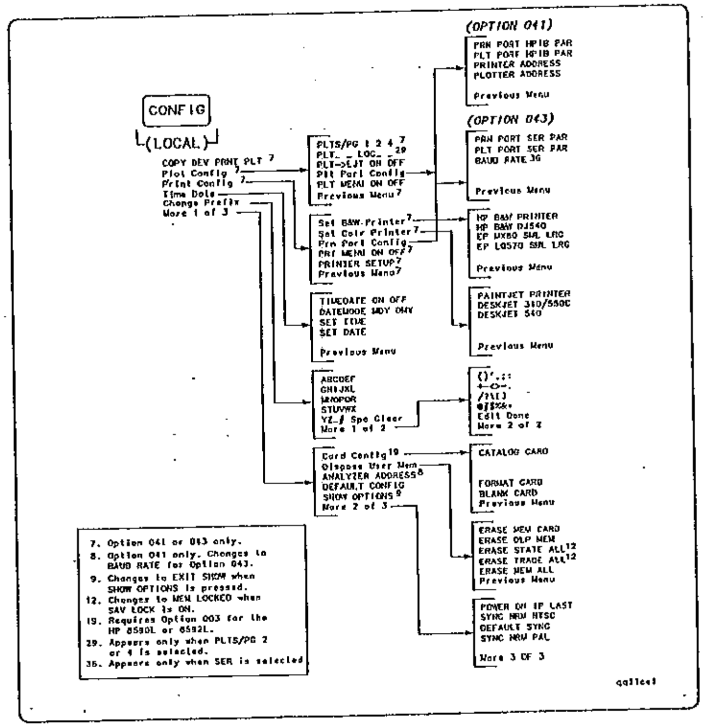

ONE EXAMPLE OF HOW TO ACCESS THE TERMINATOR MENUS
PRESS THIS SOFTKEY
to get this
ACTIVE FUNCTION
then
PRESS ANY DIGIT 0 - 9
which brings up
AMPLITUDE TERMINATOR MENU
REF LVL
REF LEVEL
0 - 9
dBm -dBm
HOLD
dBmV -dBmV
HOLD
dBuV -dBuV
HOLD
V mV uV nV
HOLD
W mW uW nW pW
HOLD
THIS FOOTNOTE APPEARS IN MENU TREES TO EXPLAIN THIS PROCESS:
34. After selecting this softkey, pressing any digit, 0 through 9, brings up the appropriate amplitude terminator menu.
pu152de

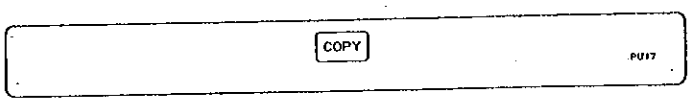

AUTO COUPLE
AUTO ALL
RES BW AUTO MAN
VID BW AUTO MAN
ATTEN AUTO MAN
SWP TIME AUTO MAN
CF STEP AUTO MAN
PU12

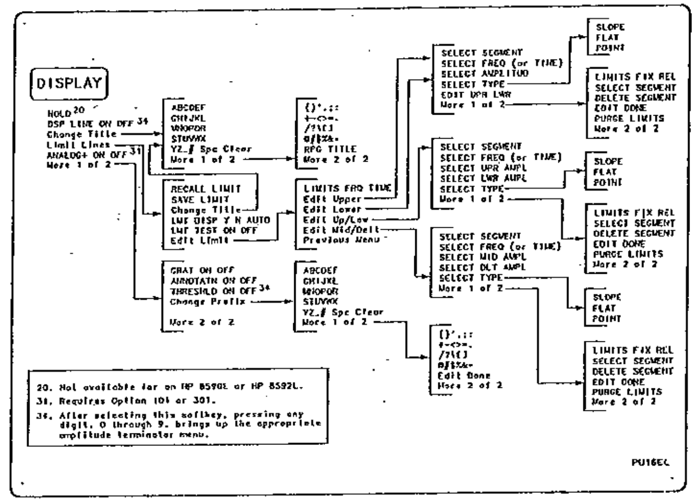

AUX CTRL
Demod 3
Track Gen 2
Aux Conn Control
COMB GEN ON OFF 25
Quasi Peak 5
DEMOD ON OFF 3
DEMOD AM FM 3
SPEAKER ON OFF 3
SQUELCH 3
FM GAIN 3
DWELL TIME 3
SRC PWR ON OFF 2,34
TRACKING PEAK 2
MAN TRK ADJUST 2
PWR SWP ON OFF 2
SRC ATN MAN AUTO 2
More 1 of 2 2
SRC PWR STP SIZE 2
SRC PWR OFFSET 2
ALC INT EXT 2,26
SWP CPLG SR SA 2
More 2 of 2 2
CNTL A 0 1
CNTL B 0 1
CNTL C 0 1
CNTL D 0 1
DISPLAY CNTL I
AUTO QP AT MKR 5
MAN QP AT MKR 5
CLEAR QP DATA 5
CENTER FREQ 5
MARKER NORM PK 5
QP XTO ON OFF 5
QP DET ON OFF 5
ACCEPT QP DATA 5
RETURN 5
1. HP 8595E only.
2. Option 010 or 011 only.
3. Option 102 or 103 only.
5. Option 103 with the quasi-peak detector driver installed only.
25. HP 8592L, 8593E, or 8596E only.
26. Changes to ALC MTR INT XTAL for an HP 8590L or HP 8591E.
34. After selecting this softkey, pressing any digit, 0 through 9, brings up the appropriate amplitude terminator menu.
PU13EL

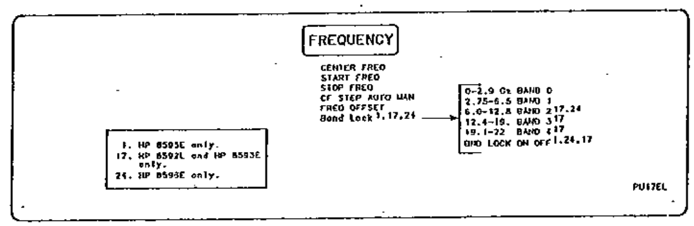

BW
RES BW AUTO MAN
VID BW AUTO MAN
VBW/RBW RATIO
VID AVG ON OFF
EMI BW Menu
120 kHz EMI BW
9 kHz EMI BW
200 Hz EMI BW 30
Previous Menu
30. Requires Option 130.
PU14

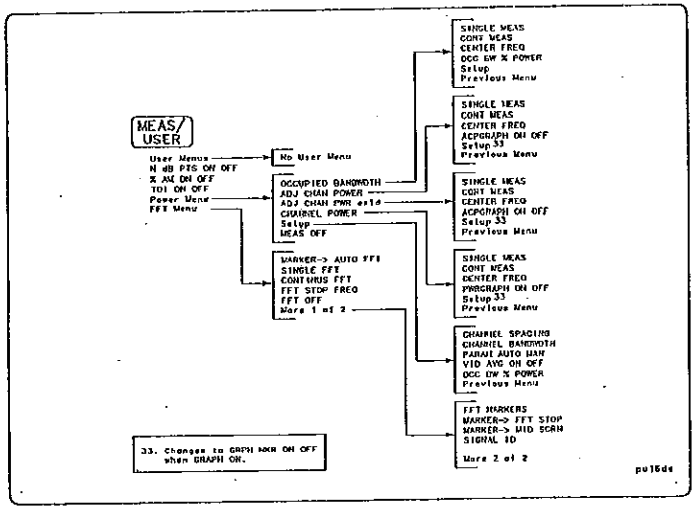

CAL
CAL FREQ & AMPTD
CAL FREQ
CAL AMPTD
CAL YTF 17,22
CAL STORE
More 1 of 4
CONF TEST
CAL FETCH
CORRECT ON OFF
CRT VERT POSITION
CRT HORZ POSITION
More 2 of 4
Service Cal
Service Diag
DEFAULT CAL DATA
CAL TRK GEN 2
VERIFY TIMEBASE
More 3 of 4
STOR PWR ON UNITS 6
EXECUTE TITLE
Flatness Data
CAL TIMEBASE
CAL MXR 17,22
SET ATTN ERROR
EDIT FLATNESS
IDNUM 6
INIT FLT 6
EXIT
(for HP 85920)
DISPLAY CAL DATA
DACS
STP GAIN ZERO
ANALYZER GAINS
AUXB 32
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 28
More 3
FINE TUNE DAC
X FINE TUNE DAC
+10V REF DETECTOR
−10V REF DETECTOR
DROOP
More 4
YTF TUNE COARSE 17,22
YTF TUNE FINE 17,22
YTF DRIVER 17,22
MIXER BIAS DAC 17,22
PRESEL DAC 17,22
More 6
Amp Cor
More 4 of 4
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
FREQ DIAG
LOCK ON OFF
FRQ DISC NORM OFF
FM GAIN
FM OFFSET
More 5
YTF TUNE COARSE 17,22
YTF TUNE FINE 17,22
YTF DRIVER 17,22
MIXER BIAS DAC 17,22
PRESEL DAC 17,22
More 6
SELECT POINT
SELECT FREQ
SELECT AMPLITUD
DELETE POINT
Edit Done
PURGE AMP COR
RPG TITLE
More 2 of 2
QP DET ON OFF 4
QP GAIN ON OFF 4
QPD RST ON OFF 4
QPD OFFSET 4
ALC TEST 27
More 6 (or More 7)
1. HP 8595E only.
2. Option 010 or 011 only.
4. Option 103 only.
6. For service use only.
17. HP 8592L and HP 8593E only.
22. HP 8595E and HP 8596E only.
27. HP 8590L and HP 8591E with Option 010 or 011 only.
28. Changes to YTF SPAN for an HP 8592L, 8593E, 8595E, and 8596E.
32. HP 8590L or HP 8591E only.
PU14EL

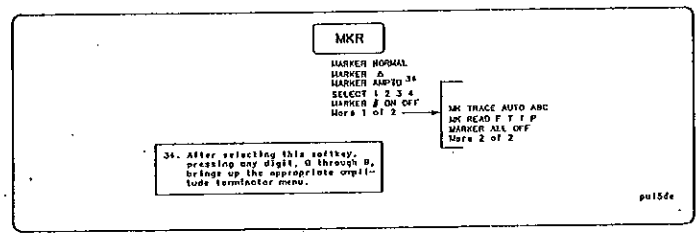

CONFIG
(LOCAL)
COPY DEV PRNT PLT 7
Plot Config 7
Print Config 7
Time Date
Change Prefix
More 1 of 3
PLTS/PG 1 2 4 7
PLT_ _ LOC_ _ 29
PLT->EJT ON OFF
Plt Port Config
PLT MENU ON OFF
Previous Menu 7
Set B&W Printer 7
Set Colr Printer 7
Prn Port Config
PRT MENU ON OFF 7
PRINTER SETUP 7
Previous Menu 7
TIMEDATE ON OFF
DATEMODE MDY DMY
SET TIME
SET DATE
Previous Menu
ABCDEF
GHIJKL
MNOPQR
STUVWX
YZ_# Spc Clear
More 1 of 2
Card Config 19
Dispose User Mem
ANALYZER ADDRESS 8
DEFAULT CONFIG
SHOW OPTIONS 9
More 2 of 3
(OPTION 041)
PRN PORT HPIB PAR
PLT PORT HPIB PAR
PRINTER ADDRESS
PLOTTER ADDRESS
Previous Menu
(OPTION 043)
PRN PORT SER PAR
PLT PORT SER PAR
BAUD RATE 36
Previous Menu
HP B&W PRINTER
HP B&W DJ540
EP MX80 SML LRG
EP LQ570 SML LRG
Previous Menu
PAINTJET PRINTER
DESKJET 310/550C
DESKJET 540
Previous Menu
Edit Done
More 2 of 2
CATALOG CARD
FORMAT CARD
BLANK CARD
Previous Menu
ERASE MEM CARD
ERASE DLP MEM
ERASE STATE ALL 12
ERASE TRACE ALL 12
ERASE MEM ALL
Previous Menu
POWER ON IP LAST
SYNC NRM NTSC
DEFAULT SYNC
SYNC NRM PAL
More 3 OF 3
7. Option 041 or 043 only.
8. Option 041 only. Changes to BAUD RATE for Option 043.
9. Changes to EXIT SHOW when SHOW OPTIONS is pressed.
12. Changes to MEM LOCKED when SAV LOCK is ON.
19. Requires Option 003 for the HP 8590L or 8592L.
29. Appears only when PLTS/PG 2 or 4 is selected.
36. Appears only when SER is selected
qa11ce1

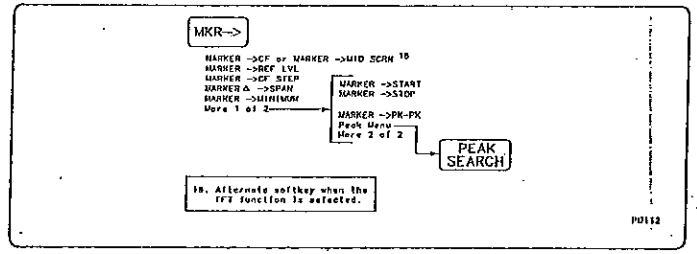

COPY
PU17

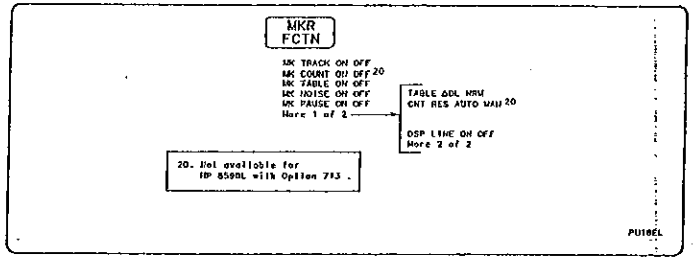

DISPLAY
HOLD 20
DSP LINE ON OFF 34
Change Title
Limit Lines
ANALOG+ ON OFF 31
More 1 of 2
ABCDEF
GHIJKL
MNOPQR
STUVWX
YZ_# Spc Clear
More 1 of 2
RPG TITLE
More 2 of 2
RECALL LIMIT
SAVE LIMIT
Change Title
LMT DISP Y N AUTO
LMT TEST ON OFF
Edit Limit
LIMITS FRQ TIME
Edit Upper
Edit Lower
Edit Up/Low
Edit Mid/Delt
Previous Menu
GRAT ON OFF
ANNOTATN ON OFF
THRESHLD ON OFF 34
Change Prefix
More 2 of 2
SELECT SEGMENT
SELECT FREQ (or TIME)
SELECT AMPLITUD
SELECT TYPE
EDIT UPR LWR
More 1 of 2
SELECT UPR AMPL
SELECT LWR AMPL
SELECT MID AMPL
SELECT DLT AMPL
Edit Done
SLOPE
FLAT
POINT
LIMITS FIX REL
SELECT SEGMENT
DELETE SEGMENT
EDIT DONE
PURGE LIMITS
More 2 of 2
20. Not available for on HP 8590L or HP 8592L.
31. Requires Option 101 or 301.
34. After selecting this softkey, pressing any digit, 0 through 9, brings up the appropriate amplitude terminator menu.
PU16EL

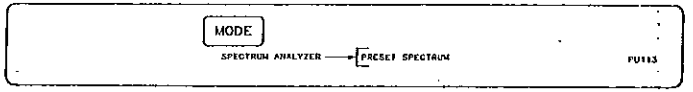

FREQUENCY
CENTER FREQ
START FREQ
STOP FREQ
CF STEP AUTO MAN
FREQ OFFSET
Band Lock 1,17,24
0-2.9 Gz BAND 0
2.75-6.5 BAND 1
6.0-12.8 BAND 2 17,24
12.4-19. BAND 3 17
19.1-22 BAND 4 17
BND LOCK ON OFF 1,24,17
1. HP 8593E only.
17. HP 8592L and HP 8593E only.
24. HP 8593E only.
PU17EL

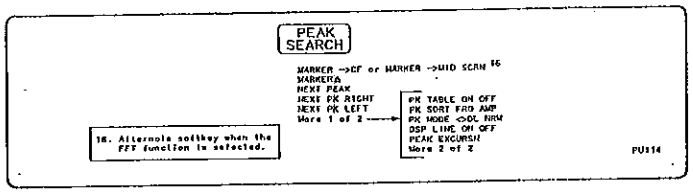

MEAS/
USER
User Menus
N dB PTS ON OFF
% AM ON OFF
TOI ON OFF
Power Menu
FFT Menu
No User Menu
OCCUPIED BANDWDTH
ADJ CHAN POWER
ADJ CHAN PWR w/I
CHANNEL POWER
Setup
MEAS OFF
MARKER-> AUTO FFT
SINGLE FFT
CONTINUS FFT
FFT STOP FREQ
FFT OFF
More 1 of 2
SINGLE MEAS
CONT MEAS
CENTER FREQ
OCC BW % POWER
Setup
Previous Menu
SINGLE MEAS
CONT MEAS
CENTER FREQ
ACPGRAPH ON OFF
Setup 33
Previous Menu
SINGLE MEAS
CONT MEAS
CENTER FREQ
ACPGRAPH ON OFF
Setup 33
Previous Menu
SINGLE MEAS
CONT MEAS
CENTER FREQ
PWRGRAPH ON OFF
Setup 33
Previous Menu
CHANNEL SPACING
CHANNEL BANDWDTH
PARAM AUTO MAN
VID AVG ON OFF
OCC BW % POWER
Previous Menu
FFT MARKERS
MARKER-> FFT STOP
MARKER-> MID SCRN
SIGNAL ID
More 2 of 2
33. Changes to GRPH MKR ON OFF when GRAPH ON.
pu15de

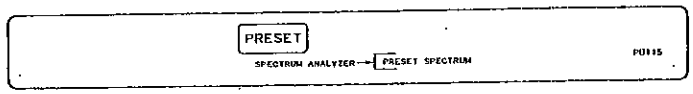

MKR
MARKER NORMAL
MARKER Δ
MARKER AMPTD 34
SELECT 1 2 3 4
MARKER # ON OFF
More 1 of 2
MK TRACE AUTO ABC
MK READ F T T P
MARKER ALL OFF
More 2 of 2
34. After selecting this softkey, pressing any digit, 0 through 9, brings up the appropriate amplitude terminator menu.
pu15de

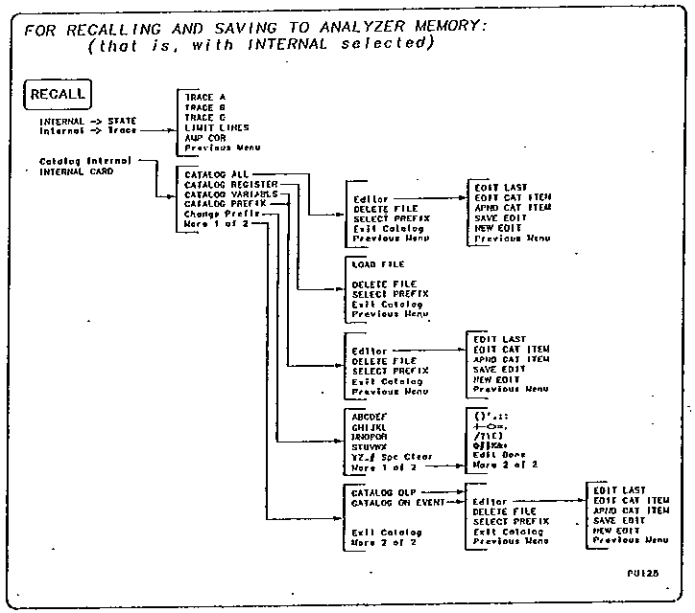

MKR-->
MARKER →CF or MARKER →MID SCRN 18
MARKER →REF LVL
MARKER →CF STEP
MARKER Δ →SPAN
MARKER →MINIMUM
More 1 of 2
MARKER →START
MARKER →STOP
MARKER →PK-PK
Peak Menu
More 2 of 2
PEAK SEARCH
18. Alternate softkey when the FFT function is selected.
PU112


MKR
FCTN
MK TRACK ON OFF
MK COUNT ON OFF 20
MK TABLE ON OFF
MK NOISE ON OFF
MK PAUSE ON OFF
More 1 of 2
TABLE ADL MKR
CNT RES AUTO MAN 20
DSP LINE ON OFF
More 2 of 2
20. Not available for HP 8590L with Option 713 .
PU106L

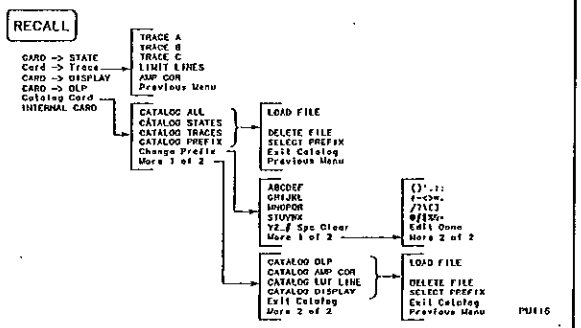

MODE
SPECTRUM ANALYZER
PRESET SPECTRUM
PU113


PEAK SEARCH
MARKER →CF or MARKER →WID SCAN [6]
MARKER Δ
NEXT PEAK
NEXT PK RIGHT
NEXT PK LEFT
More 1 of 2
PK TABLE ON OFF
PK SORT FRQ AMP
PK MODE →DEL MRK
DSP LINE ON OFF
PEAK EXCURSN
More 2 of 2
16. Alternate softkey when the FFT function is selected.
PU114

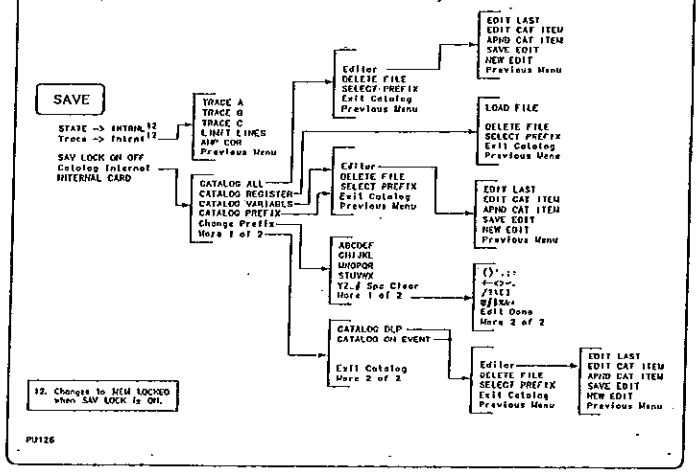

PRESET
SPECTRUM ANALYZER→
PRESET SPECTRUM
PU115


FOR RECALLING AND SAVING TO ANALYZER MEMORY:
(that is, with INTERNAL selected)
REGALL
INTERNAL → STATE
Internal → Trace
TRACE A
TRACE B
TRACE C
LIMIT LINES
AMP COR
Previous Menu
Catalog Internal
INTERNAL CARD
CATALOG ALL
CATALOG REGISTER
CATALOG VARIABLS
CATALOG PREFIX
Change Prefix
More 1 of 2
Editor
DELETE FILE
SELECT PREFIX
Exit Catalog
Previous Menu
EDIT LAST
EDIT CAT ITEM
APND CAT ITEM
SAVE EDIT
NEW EDIT
Previous Menu
LOAD FILE
DELETE FILE
SELECT PREFIX
Exit Catalog
Previous Menu
ABCDEF
GHIJKL
MNOPQR
STUVWX
YZ_# Spc Clear
More 1 of 2
More 2 of 2
CATALOG OLP
CATALOG ON EVENT
Exit Catalog
More 2 of 2
PU125

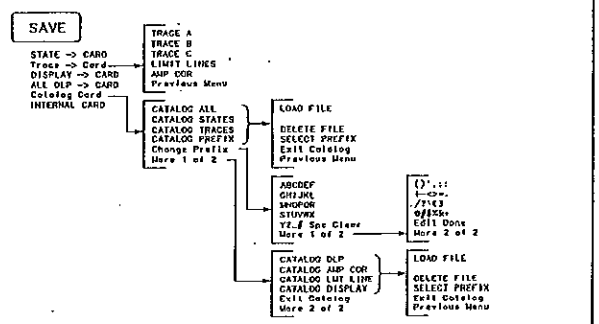
FOR RECALLING AND SAVING TO MEMORY CARD:
(that is, with CARD selected)

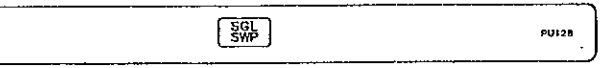


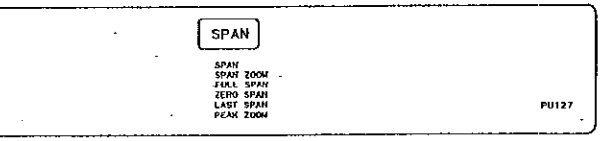
FOR RECALLING AND SAVING TO ANALYZER MEMORY:
(that is, with INTERNAL selected)

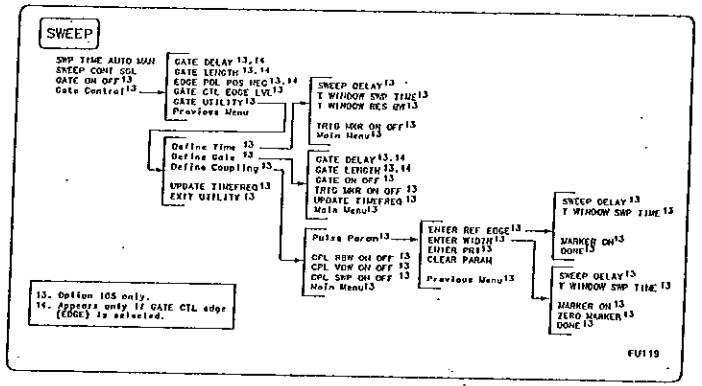


FOR RECALLING AND SAVING TO MEMORY CARD:
(that is, with CARD selected)

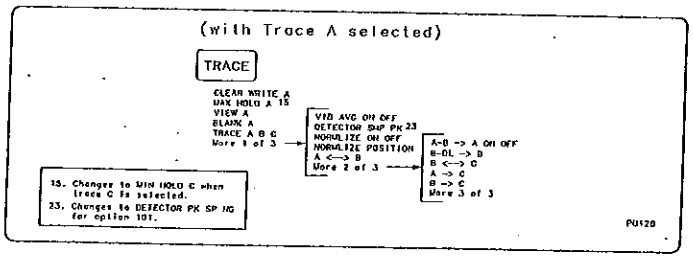


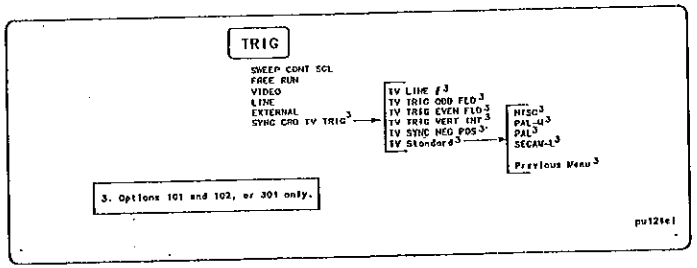


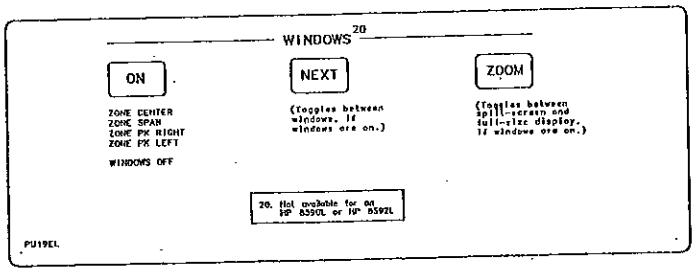




(with Trace A selected)







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