

Quick Reference Guide

HP 8590 EM Series EMC Analyzer



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Introduction

This guide provides a quick reference for experienced 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 EMC analyzer functions.
- Chapter 3 contains the remote programming commands.
- Appendixes A, B, C, and D contain helpful charts and tables.
- Appendix E contains diagrams of the key menus for the HP 8590 EM Series EMC analyzers.

For additional instrument information, consult the *HP 8590 EM Series EMC Analyzer User's 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 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 EMC analyzer can be damaged easily. When using a line impedance stabilization network (LISN) device with the EMC analyzer, disconnect the analyzer from the LISN device before changing either the switch position on, or the voltage to, the LISN device.
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NOTES

Contents

1. Getting Acquainted with the EMC Analyzer	
Front-Panel Features	1-1
EMC Analyzer Screen Annotation	1-4
Making a Basic Measurement	1-7
Performing Self-Calibration Routines	1-11
Warm-Up Time	1-11
Self-Calibration Routines	1-11
Self-Calibration Routine Problems	1-12
Performing the Tracking Generator Self-Calibration Routine (Option 010)	1-13
Spectrum Analyzer Mode Screen Annotation	1-14
2. EMC Analyzer Functions	
Analyzer Functions	2-1
3. Programming Commands	
Introduction	3-1
How to Use This Chapter	3-1
Notation Conventions	3-2
Syntax Conventions	3-2
Functional Index	3-6
AMPLITUDE	3-6
AUTO COUPLING	3-7
AUXILIARY CONTROL	3-7
BANDWIDTH	3-8
CALIBRATION	3-8
COMMAND TRIGGER	3-9
CONFIGURATION	3-9
DISPLAY	3-10
EMC MEASUREMENTS	3-10
EMC OUTPUT	3-11
FREQUENCY	3-11

GRAPHICS	3-12
INFORMATION	3-12
INPUT and OUTPUT	3-13
LIMIT LINES	3-14
MARKER	3-15
MATH	3-16
MEASURE/USER	3-17
MODE	3-17
OPERATOR ENTRY	3-17
PLOTTER	3-18
PRESET	3-18
PRINTER	3-18
PROGRAM FLOW	3-18
RECALL or SAVE	3-19
SIGNAL LIST	3-19
SPAN	3-20
SWEEP	3-20
SYNCHRONIZATION	3-21
TRACE	3-21
TRACE MATH	3-22
TRIGGER	3-23
USER-DEFINED	3-23
WINDOWS	3-24
Programming Codes	3-25
Characters and Secondary Keywords (Reserved Words) Summary	3-78
A. EMC Analyzer Error Messages	
Error Messages	A-1
Nonrecoverable System Errors	A-15
B. AM, FM, and Pulsed RF Reference Charts	
C. Cross Reference of Programming Command to Key Function	
D. Locating a Softkey	
E. Key Menus	

Index

Figures

1-1. Front-Panel Feature Overview	1-2
1-2. EMC Analyzer Screen Annotation	1-4
1-3. Placing the Marker on a Signal	1-8
1-4. Displaying a List on the Screen	1-9
1-5. Displaying the List as a Log Graph	1-10
1-6. Spectrum Analyzer Mode Screen Annotation	1-14
B-1. Percent Modulation	B-2
B-2. Bessel Null Graph	B-4
B-3. Loss in Sensitivity (Pulsed RF versus CW)	B-5
B-4. IF BW Setting for Pulsed RF Computed from $t_o B = 0.1$	B-6

Tables

1-1. EMC Analyzer Screen Annotation	1-5
1-2. Screen Annotation for Trace, Trigger, and Sweep Modes	1-6
1-3. Spectrum Analyzer Mode Screen Annotation	1-15
1-4. Screen Annotation for Trace, Trigger, and Sweep Modes	1-16
B-1. Determining Amplitude Modulation	B-1
B-2. Carrier and First Sideband Charts for Calibrating Deviation	B-3
C-1. Cross Reference of Programming Command to Key Function	C-1
D-1. Softkey Locations	D-1



1

Getting Acquainted with the EMC Analyzer

This chapter provides an introduction to the EMC analyzer's front-panel features, an explanation of screen annotation, the procedure for making a basic measurement with the EMC analyzer, and the procedure for performing self-calibration routines. The EMC analyzer also supplies a spectrum analyzer operating mode with screen annotation described in "Spectrum Analyzer Mode Screen Annotation" at the end of this chapter.

Front-Panel Features

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

Refer to Figure 1-1.

- 1 **Front-Panel Display** is the area on the front-panel where information is provided to the user. That information includes:
 - Active Function Block area. Functions appearing in this block include, for example, marker, span, center frequency, and reference level.
 - Message Block area. This block is 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 the display is not updated for new settings.
 - Softkey labels. Softkey labels are the annotation on the screen next to the unlabeled keys. Most of the labeled keys on the EMC analyzer's front panel (also called front-panel keys) access menus of related softkeys.
- 2 **Softkeys** are the unlabeled keys next to the screen.

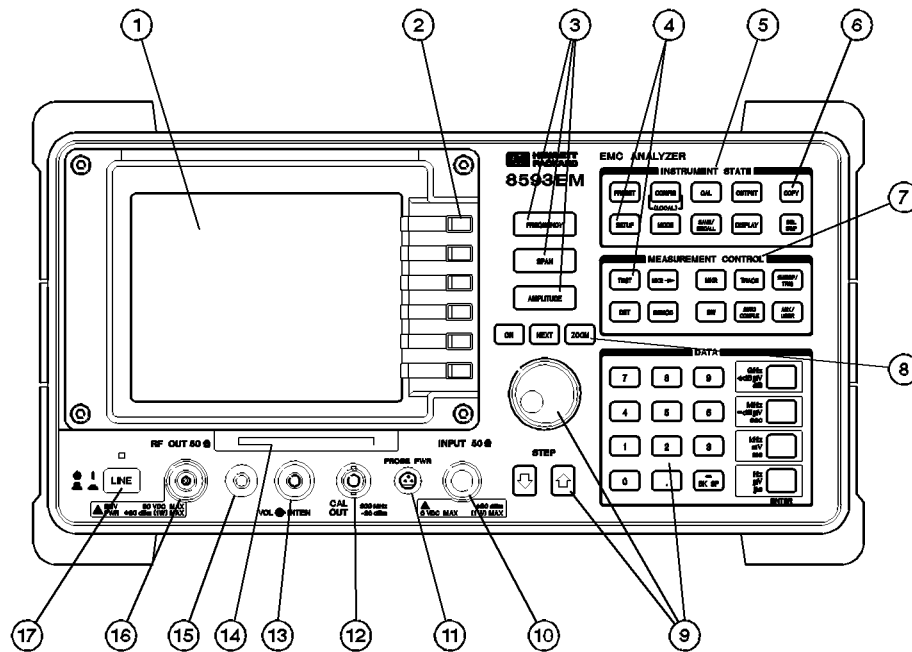


Figure 1-1. Front-Panel Feature Overview

- 3 **FREQUENCY**, **SPAN**, and **AMPLITUDE** are the three large dark-gray keys that activate the primary EMC analyzer tuning functions and access menus of related functions.
- 4 **SETUP** and **TEST** are the dark-gray keys that access menus of functions used to setup the instrument, then make fast and accurate EMC measurements.
- 5 **INSTRUMENT STATE** functions affect the state of the entire EMC analyzer. Self-calibration routines and special-function menus are accessed with these keys. The green **PRESET** key resets the entire EMC analyzer state and can be used as a “panic” button when you wish to return to a known state.
- 6 **COPY** key prints or plots screen data. Use **CONFIG**, **Plot Config** or **Print Config**, and **COPY DEV PRNT PLT** before pressing **COPY**.

1.2 Getting Acquainted with the EMC Analyzer

- 7 **MEASUREMENT CONTROL** functions access menus that allow you to make manual or automated quasi-peak average measurements, adjust the IF bandwidth, adjust the sweep time, store and manipulate trace data, demodulate signals, control the markers, control the instrument display, and make measurements.
- 8 **WINDOWS** functions include: **(ON)** to turn on the windows display mode, **(NEXT)** for switching between windows, and **(ZOOM)** for controlling the zone span and center frequency.
- 9 **DATA** keys, **STEP** keys, and **knob** allow you to change the numeric value of an active function.
- 10 **INPUT 50Ω** is the signal input for the analyzer.

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

- 11 **PROBE PWR** provides the power for an active probe and other accessories.
- 12 **CAL OUT** provides a calibration signal of 300 MHz at 87 dBμV.
- 13 **VOL-INTEN** changes the brightness of the screen display, and the volume of the speaker.
- 14 **Memory card reader** reads from a read-only (ROM) or random access (RAM) memory card. The memory card reader writes to a RAM card.
- 15 **100 MHz COMB OUT** is the output of the comb generator of the HP 8593EM and HP 8596EM EMC analyzers. The output is used to perform a **CAL YTF**.
- 16 **RF OUT 50Ω** is the output for the built-in tracking generator. *Option 010 only.*
- 17 **(LINE)** turns the instrument on or off and performs an instrument check.

EMC Analyzer Screen Annotation

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

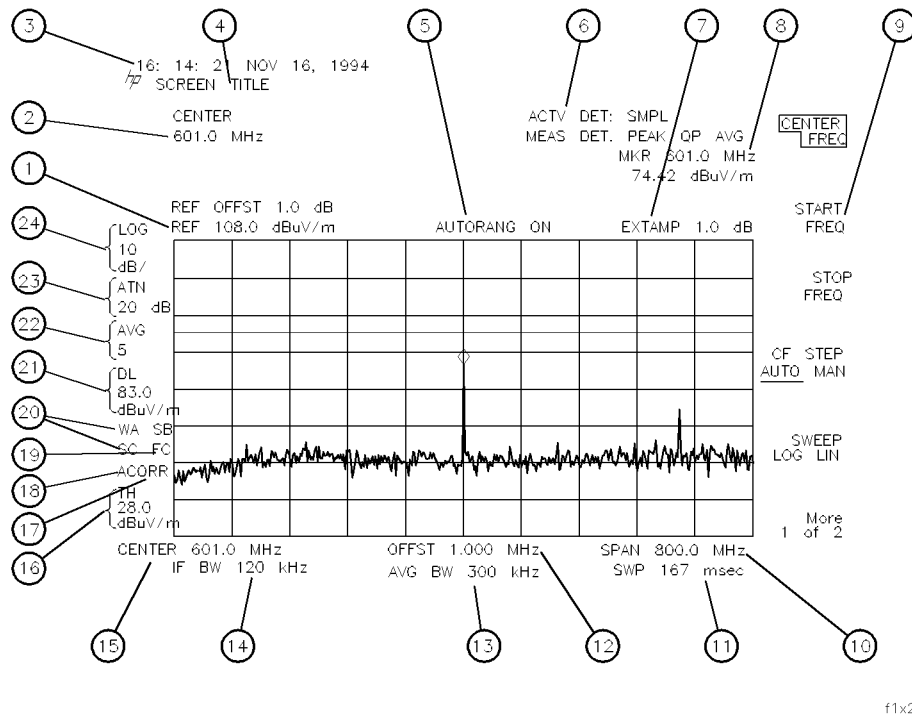


Figure 1-2. EMC Analyzer Screen Annotation

In Figure 1-2, item number 19 refers to the trigger and sweep modes of the EMC analyzer. The first letter (“F”) indicates the EMC analyzer is in free-run trigger mode. The second letter (“S”) indicates the EMC analyzer is in single-sweep mode. (“C”) indicates the EMC analyzer is in continuous-sweep mode.

Item number 20 refers to the trace modes of the EMC analyzer. The first letter (“W”) indicates the EMC analyzer is in clear-write mode. The second letter (“A”) represents 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

1-4 Getting Acquainted with the EMC Analyzer

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. EMC Analyzer Screen Annotation

Item	Feature	Item	Feature
1	reference level	16	threshold
2	active function block	17	corrections factors on
3	time/date and command line	18	amplitude correction
4	screen title		factors on
5	autorange	19	trigger
6	active and measurement detector	20	trace mode
7	external preamp	21	display line
8	marker	22	video average
9	softkeys	23	attenuator setting
10	frequency span or stop	24	amplitude scale
	frequency		
11	sweep time		
12	frequency offset		
13	AVG bandwidth		
14	IF bandwidth		
15	center or stop frequency		

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 (<i>Option 102 only</i>)	

Making a Basic Measurement

Basic measurements simply involve tuning the instrument to place a signal on the screen, then placing a marker on one or more signals, measuring those signals, and moving those signals to a list.

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

Let's begin using the EMC 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. Press **(LINE)** to turn the instrument on, and then press the green **(PRESET)** key.
2. Verify that the start frequency is set to 200 MHz and the stop frequency to 1.0 GHz. If not, the instrument has been configured as a spectrum analyzer. Press **EMC ANALYZER** and proceed with the next step.
3. Connect CAL OUT to the EMC analyzer INPUT 50 Ω connector (on the front panel) using an appropriate BNC cable and a BNC-to-Type N adapter.
Option 026 only: Connect the SMA (m) to SMA (m) cable to the EMC analyzer input with an APC-3.5 connector. Connect the cable to CAL OUT with the BNC-to-SMA adapter.
4. Press **(TEST)**. **MARKER** is now displayed in the active function block, and the **MARKER** softkey label appears in inverse video to indicate that the marker is the active function. Place the marker on a signal by pressing the down **(▼)** keys. Refer to Figure 1-3.

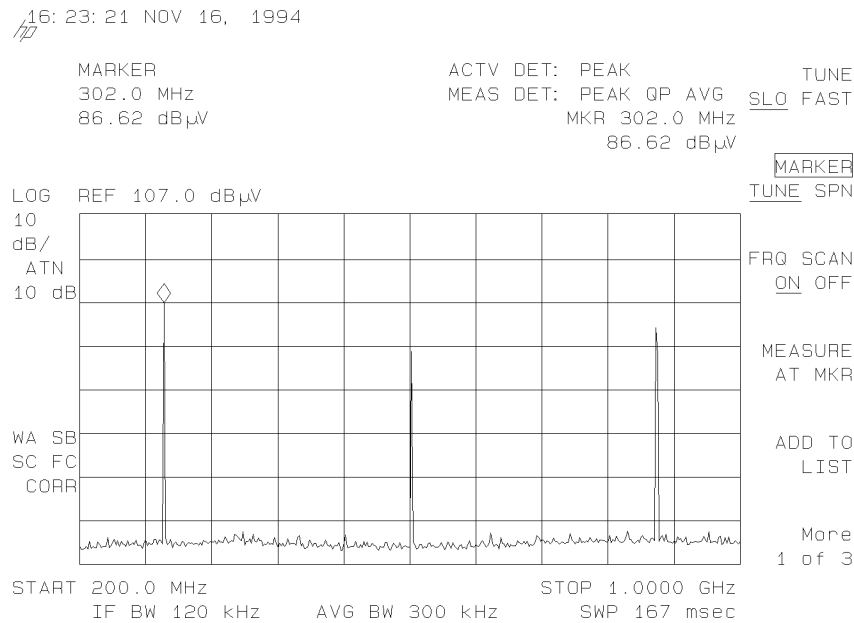


Figure 1-3. Placing the Marker on a Signal

5. Press **MEASURE AT MKR**. In a short time, the measured marker values are displayed in the upper-right corner of the display.
6. Press **ADD TO LIST**. The measure-at-marker results are saved to an internal list. **Signal Added** is now displayed on the screen.
7. Press the up **▲** key one or more times to place the marker on a second signal.
8. Press **MEASURE AT MKR**, then **ADD TO LIST** to add the second signal to the internal list. Repeat the process and place a third signal in the internal list.
9. To display the list on the screen, press **More 1 of 3**, then the **SIG LIST ON OFF** softkey. The measure-at-marker results in the form of a list are displayed on the upper portion of the screen. Refer to Figure 1-4.

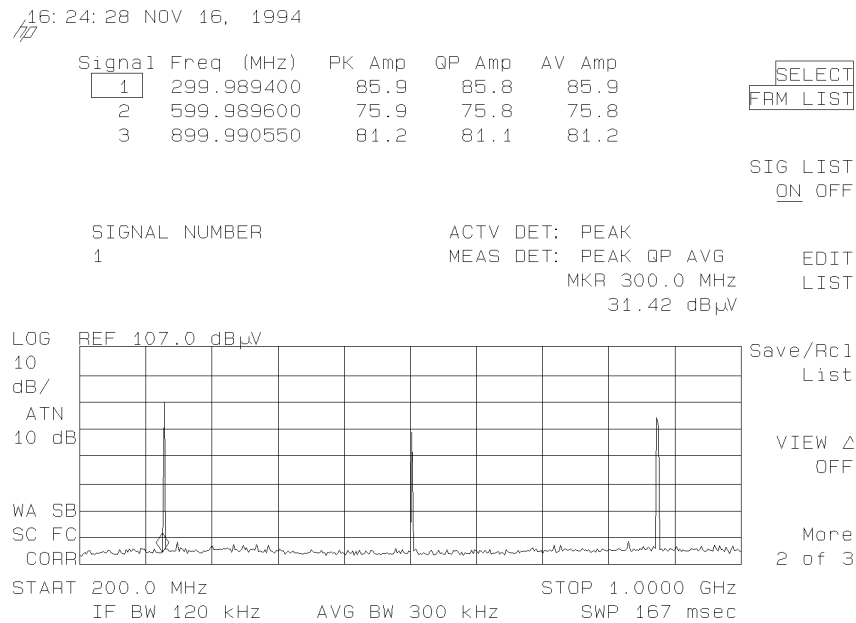


Figure 1-4. Displaying a List on the Screen

10. The list can be graphed on screen in either log or linear frequency scales by pressing the **Save/Rcl List** softkey.
11. Press **SAVE LOG GRAPH** to view the signals in the list on a log graph. To clear the display's active function area, press **(ENTER)** key (front-panel's lower-right corner). Refer to Figure 1-5.

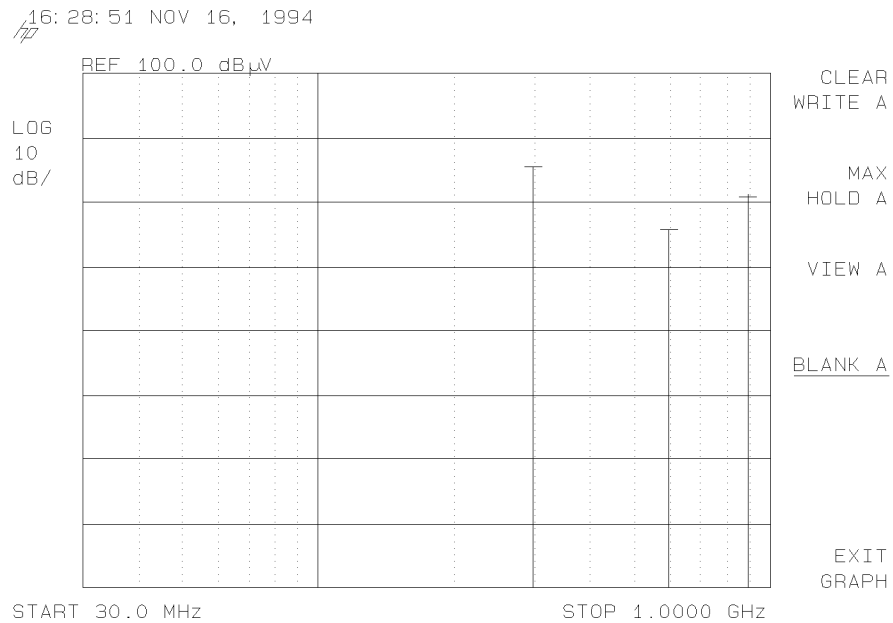


Figure 1-5. Displaying the List as a Log Graph

Note

If the EMC analyzer is connected to either a printer or plotter:

- a. Press the **(COPY)** key to obtain a printed copy of the graph. Changing the configuration may be required, or
- b. Press the **(OUTPUT)** key to access the softkeys that will help you:
 - Define a report.
 - Define a list.
 - Add up to two pages of text using a keyboard.

12. 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 EMC analyzer specifications:

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

Note	Perform the EMC analyzer self-calibration routines only <i>after</i> the EMC analyzer has met the specified warm-up time. Do not attempt to make any calibrated measurements until the EMC analyzer self-calibration routines have been performed.
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Self-Calibration Routines

Perform the following steps to self-calibrate the instrument:

1. Connect the CAL OUT connector to the INPUT 50 Ω connector, using an appropriate cable.
2. Press the following EMC analyzer keys: **CAL**, **CAL FREQ & AMPTD**.

Caution	To avoid losing the data when the EMC analyzer is turned off, press CAL STORE . CAL STORE stores the cal data in the area of EMC analyzer memory that is saved when the analyzer is turned off.
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The frequency and amplitude self-calibration routines take approximately 9 minutes to finish, at which time the correction factors will be stored (when **CAL STORE** is pressed) in the EMC analyzer's memory.

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 EMC analyzer input.
-

Note Using DEFAULT CAL DATA may cause the self-calibration routine to fail (the frequency span error may interfere with the EMC 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 EMC analyzer's *HP 8590 EM Series EMC Analyzer User's Guide*.

Performing the Tracking Generator Self-Calibration Routine (Option 010)

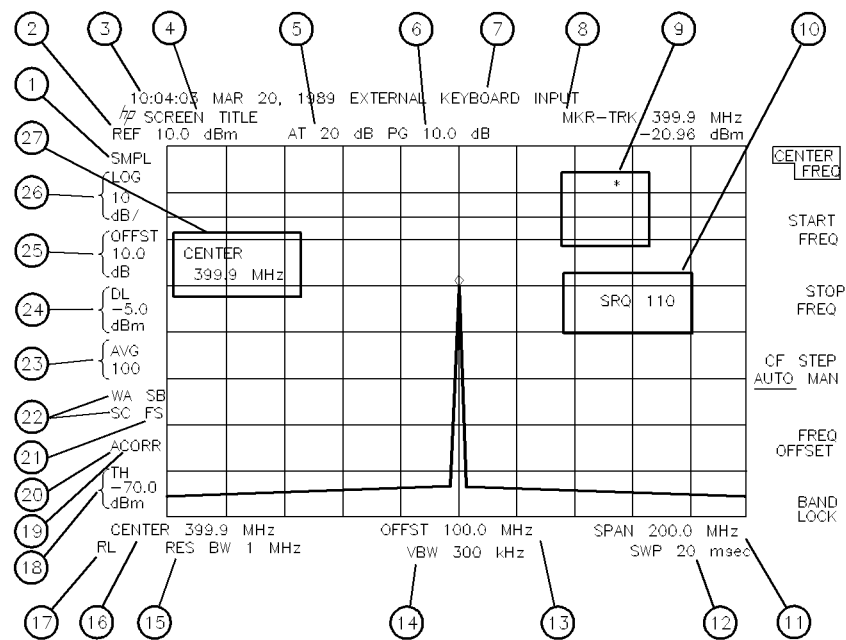
To meet the tracking generator specifications, allow the EMC analyzer to warm up for 30 minutes after being turned on before attempting to make any calibrated measurements. Be sure to calibrate the EMC analyzer and the tracking generator only *after* the EMC analyzer has met operating temperature conditions.

Note	Since the CAL TRK GEN routine uses the absolute amplitude level of the EMC analyzer, the EMC analyzer amplitude should be calibrated prior to using CAL TRK GEN .
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1. To calibrate the tracking generator, connect the tracking generator output to the EMC analyzer input connector, using an appropriate cable.
2. Press the following EMC 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 EMC analyzer input. The cal process will take approximately 30 seconds.
3. Press **[CAL]**, **CAL STORE** to save this data in the area of EMC analyzer memory that is saved when the analyzer is turned off.

Spectrum Analyzer Mode Screen Annotation

Figure 1-6 shows an example of screen annotation as it appears on the screen of the EMC analyzer when in the **SPECTRUM ANALYZER** mode. Instrument modes are changed using the **(MODE)** front-panel key. Table 1-3 lists the screen annotation features numerically and refers to Figure 1-6.



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Figure 1-6. Spectrum Analyzer Mode Screen Annotation

In Figure 1-6, 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 mode. The first letter (“W”) indicates the spectrum analyzer is in clear-write mode. The second letter (“A”) represents 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 1-6, 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 1-3. Spectrum Analyzer Mode Screen Annotation

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

Table 1-4 shows the different screen annotation codes for trace, trigger, and sweep modes.

Table 1-4.
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 (<i>Option 102 only</i>)	

2

EMC 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 EM Series EMC Analyzer 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	determines the percent of amplitude modulation of the largest displayed signal and its two sidebands.
$\mu\text{A/m}$	selects $\mu\text{A/m}$ as the transducer conversion units for the antenna amplitude-correction factors using magnetic field units.
$\mu\text{V/m}$	selects $\mu\text{V/m}$ as the transducer conversion units for the antenna amplitude-correction factors using electric field units.
0-2.9 Gz BAND 0	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. <i>HP 8593EM, HP 8595EM, and HP 8596EM only.</i>
2.75-6.5 BAND 1	locks onto harmonic band 1. Harmonic band 1 is preselected and has a specified tuning range of 2.75 GHz to 6.5 GHz. <i>HP 8593EM, HP 8595EM, and HP 8596EM only.</i>
12.4-19. BAND 3	locks onto harmonic band 3. Harmonic band 3 is preselected and has a specified tuning range of 12.4 to 19.4 GHz. <i>HP 8593EM only.</i>
19.1-22 BAND 4	locks onto harmonic band 4. Harmonic band 4 is preselected and has a specified tuning range of 19.1 to 22 GHz. <i>HP 8593EM only.</i>

120 kHz EMI BW	allows a 6 dB IF bandwidth of 120 kHz.
150 kHz – 30 MHz	presets the instrument to the predefined CISPR band B settings for EMC measurements.
200 Hz EMI BW	allows a 6 dB IF bandwidth of 200 Hz.
200 MHz – 1 GHz	presets the receiver to the predefined settings for EMC measurements.
30 MHz – 300 MHz	presets the receiver to the predefined settings for EMC measurements.
3 dB POINTS	initiates an automatic 3 dB bandwidth measurement on the highest peak displayed on screen.
3rd ORD MEAS	initiates an automatic frequency and amplitude measurement on a third-order product. At least one of the fundamental tones and the third-order product must be displayed on the screen.
6 dB POINTS	initiates an automatic 6 dB bandwidth measurement on the highest peak displayed on the screen.
6.0-12.8 BAND 2	locks onto harmonic band 2. Harmonic band 2 is preselected and has a specified tuning range of 6.0 to 12.8 GHz. <i>HP 8593EM, and HP 8596EM only.</i>
9 kHz EMI BW	allows a 6 dB IF bandwidth of 9 kHz.
9 kHz – 150 kHz	presets the instrument to the predefined CISPR band A settings for EMC measurements.
99% PWR BW	initiates an automatic measurement of the 99% power bandwidth of the largest signal displayed on the screen.
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.

2.2 EMC Analyzer Functions

ABCDEF	accesses the softkey menu for selecting screen title characters A through F.
Abort	allows you to exit from an OUTPUT REPORT or an AUTO-MEASURE.
ADD TO LIST	adds a signal to the internal signal list. The signal added is either for the last MEASURE AT MKR result or the measurement at the marker position after a stepped measurement. <i>EMC analyzer mode only.</i>
ALC INT EXT	activates internal (INT) leveling or external (EXT) leveling. Only available in EMC Analyzer measurement mode. <i>HP 8593EM, HP 8594EM, HP 8595EM, or HP 8596EM with Option 010 only.</i>
ALC MTR INT XTAL	activates the automatic leveling control (ALC) functions for internal (INT) leveling or external (XTAL or MTR) leveling. <i>HP 8591EM with Option 010 only.</i>
ALL DLP → CARD	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	accesses the menus for entering and editing the current amplitude-correction factors. This function is supplied to maintain compatibility with the HP 8590EL Series spectrum analyzers. The EM-series analyzers also include antenna, cable, and other amplitude correction factors.
AMP COR ON OFF	turns the current amplitude-correction factors on and off.
AMPL SCL LOG LIN	specifies whether the limit line is derived from a logarithmic or linear amplitude axis. Underline LIN to set the amplitude axis to linear or LOG to set the amplitude axis to logarithmic.
AMPLITUDE	activates the reference level function and accesses the amplitude menu.

Amptd Units	accesses a menu to select the desired amplitude units. Amplitude units can be selected by pressing, dBm, dBmV, dBuV, Volts, or Watts.
ANALOG+ ON OFF	turns on the analog+ display mode. This is a digital implementation of an analog display, combining the advantages of both types of displays. <i>Requires Option 101 or 301.</i>
ANALYZER ADDRESS	allows you to set the HP-IB address of the instrument. The address is set to 18 by pressing DEFAULT CONFIG. <i>Changes to BAUD RATE for option 043.</i>
ANNOTATN ON OFF	turns the screen annotation on and off when accessed using the DISPLAY key. When accessed using the OUTPUT key, turns on and off the printing of the annotation.
ANTENNA → CARD	saves the current antenna amplitude-correction factors to a card. To save antenna data press, ANTENNA → CARD. REGISTER # and PREFIX= are displayed on the screen. Use the data keys to enter the desired register number then press ENTER . The antenna data is then saved to a card.
Antenna Factors	accesses a menu to turn on, recall, edit, or save antenna amplitude-correction factors. Antenna factors are conversion factors relating field strength to measured voltage.
ANTENNA ON OFF	turns on or off antenna amplitude-correction factors.
Antenna Units	accesses a menu of the transducer conversion units for the antenna-correction factors. This specifies the units of the physical attribute to which an antenna actually responds and which will be indicated on the display for reference level, display line level, threshold level, and marker readouts.
APND CAT ITEM	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.

2-4 EMC Analyzer Functions

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. The instrument input attenuator, which is normally coupled (linked) to the reference level control, reduces the power level of the input signal at the input mixer. The attenuator is recoupled when AUTO is underlined. To set 0 dB, 0 then dB must be entered on the data entry keys.
AUTO ALL	couples the following functions: intermediate frequency bandwidth average video bandwidth attenuation sweep time center-frequency step average-video-bandwidth to intermediate-frequency-bandwidth ratio.
AUTO CAL ON OFF	turns the automatic calibration feature on or off.
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- MEASURE	finds all signals on the display that are above the margin and that meet signal criteria, then makes an EMC measurement using specified detectors. <i>EMC analyzer mode only.</i>
AUTOEXEC ON OFF	enables and disables the automatic loading and execution of the file named "eAUTOEXEC" from a card. When enabled, the instrument, upon a power-up sequence, will search the card for an "eAUTOEXEC" file and if found will load and execute it.

AUTORANG ON OFF	turns the current state of the auto-range function on or off. When on, the auto-range function automatically adjusts RF attenuation or reference level (IF step-gain) in response to either an IF or RF overload condition detected during the previous sweep. <i>RF overload detection is only available when used with an HP 85420E Option 1EM, RF filter section.</i>
Aux Conn Control	accesses the softkey menu used to control the auxiliary outputs and input. <i>Not available when used with an HP 85420E Option 1EM RF filter section.</i>
AUX/USER	accesses the softkey menu used for control of the auxiliary interface connector and user menu. The softkey also accesses the comb generator (<i>HP 8593EM, and HP 8596EM only</i>) and tracking generator functions (<i>Option 010</i>).
AV DWELL TIME	sets the measurement time when the average detector is measured. This key is used in conjunction with MEASURE AT MKR, RE-measure, AUTO-MEASURE, and MEAS STEPPED.
AV/IF BW RATIO	determines the automatic setting of averaging (video) bandwidth by multiplying the parameter by the intermediate frequency (IF) bandwidth. Ratio values other than the values in the 1, 3, 10 sequence are rounded to the nearest permissible value.
AVG BW AUTO MAN	specifies the averaging bandwidth, which is a post-detection, low-pass filter. Frequency values other than the values in the 1, 3, 10 sequence are rounded to the nearest permissible value. Auto couples the AVG BW to the IF BW.
AVG ON OFF	toggles the average detector on and off. When on, the instrument is placed in linear amplitude detection, the detector is turned on, and the system settings are optimized to accurately measure the average amplitudes. <i>All except option 703.</i>
B-DL → B	subtracts the display line from trace B and places the result in trace B. The B-DL → B function is a math operation.
B → C	copies trace B into trace C.

2-6 EMC Analyzer Functions

B — C	exchanges trace B and trace C. Trace B is set to the view mode.
Band Lock	accesses the harmonic band menu and the band lock function. <i>HP 8593EM, HP 8595EM, and HP 8596EM only.</i>
BAUD RATE	allows you to set the data transmission speed. <i>Option 043 only.</i>
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	deletes all the files from the memory card.
BND LOCK ON OFF	underlining ON locks the analyzer to the lowest frequency band (local oscillator harmonic number) containing the correct center frequency. <i>HP 8593EM, HP 8595EM, and HP 8596EM only.</i>
(BW)	activates the IF bandwidth function and accesses the softkeys that control the bandwidth functions.
CABLE → CARD	saves <i>cable</i> amplitude-correction factors to a card. To save <i>card</i> amplitude-correction factors press, CARD → CARD . REGISTER # and PREFIX= are displayed on the screen. Use the data keys to enter the desired register number then press (ENTER) . The <i>cable</i> amplitude-correction data is then saved to a card.
Cable Factors	accesses a menu to turn on, recall, edit, or save cable amplitude-correction factors. Cable factors are conversion factors used to correct for cable insertion loss.
CABLE ON OFF	turns on or off cable amplitude correction factors.
(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 At Time	accesses a menu to set the time of an automatic calibration.

CAL CISPR BW	performs the portion of the amplitude calibration where the CISPR 6 dB bandwidths are calibrated.
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	performs absolute amplitude, vernier, and tracking peak self-calibration routines. Connect the tracking generator output to the analyzer input. <i>Option 010 only.</i>
CAL YTF	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. <i>HP 8593EM, HP 8595EM, and HP 8596EM only.</i>
Card Config	accesses the softkey menu that allows you to catalog, format, and delete data from a memory card.
CATALOG ALL	catalogs all the programs and variables stored in analyzer memory.
CATALOG CARD	displays a catalog of the items stored on the memory card.
Catalog Internal	accesses a menu that has the cataloging functions for analyzer memory.
CATALOG PREFIX	catalogs all of the saved data with the specified prefix from either the memory card or the analyzer memory.
CATALOG REGISTER	displays the status of state and trace registers in analyzer memory.
CATALOG VARIABLES	catalogs all of the variables saved in analyzer memory.

2-8 EMC Analyzer Functions

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 when using the step keys.

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.

CLEAR
ANNOTATN

clears the annotation editor of all text.

CLEAR
MARK

clears the mark from a signal on the signal list. *EMC analyzer mode only.*

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 during the sweep of the analyzer.

CLEAR
WRITE C

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

CLR ALL
MARKS

clears the mark from all signals in the signal list. *EMC analyzer mode only.*

CNT RES
AUTO MAN

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

CNTL A
0 1

makes the auxiliary-interface control line A output high or low (TTL). *Not available when the HP 85420E Option 1EM RF filter section is in use.*

CNTL B
0 1

makes the auxiliary-interface control line B output high or low (TTL). *Not available when the HP 85420E Option 1EM RF filter section is in use.*

CNTL C 0 1	makes the auxiliary-interface control line C output high or low (TTL). <i>Not available when the HP 85420E Option 1EM RF filter section in use.</i>
CNTL D 0 1	makes the auxiliary-interface control line D output high or low (TTL). <i>Not available when the HP 85420E Option 1EM RF filter section in use.</i>
COMB GEN ON OFF	turns the internal comb generator on or off. <i>HP 8593EM, and HP 8596EM only.</i>
COMPLMNT MARKS	complements all marked signals in the signal list. For example, if all the even numbered signals in the signal list are marked, pressing COMPLMNT MARKS , with mark all odd numbered signals instead.
CONF TEST	initiates a variety of tests to check the major functions of the EMC analyzer.
CONFIG	accesses the softkey menu used for printer and plotter configurations, time and date display functions, 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.
COPY	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	changes between a printer and plotter.
COPY SCREEN	sends a copy of the current display to the printer specified by Printer Config or the plotter specified by Plotter Config.
CORRECT ON OFF	controls use of some correction factors. When ON is underlined, factory correction factors are used and CORR appears on the display. When OFF is underlined, correction factors are not used. This key is located under the CAL key.

**Correctn
Factors**

accesses a menu of correction factors used to create, edit, and view antenna, cable, and other amplitude-correction factors. This key is located under the **SETUP** key.

**CORRECTN
ON OFF**

turns antenna, cable, or other amplitude-correction factors on or off.

**COUPLE
AC DC**

specifies alternating-current (AC) or direct-current (DC) coupling at the instrument input. Selecting ac coupling blocks any dc voltage at the instrument input; however, the ac coupling also decreases the frequency range of the instrument. The input coupling is set to ac by an instrument preset.

Amplitude specifications apply only when coupling is set to DC. *HP 8594EM, HP 8595EM, or HP 8596EM only.*

CAUTION

Do not use dc coupling if there is any dc voltage at the instrument input.

**CRT 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.

**CRT 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 (logarithmic or linear).

dBmV

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

dB μ V

changes the amplitude units to dB μ V for the current setting (logarithmic or linear).

**DEFAULT
CAL DATA**

accesses the factory-default correction factors.

**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 List	accesses a menu that specifies what elements of a table are output to the printer when OUTPUT REPORT is executed. If any of the elements are set to on, they will be included as part of the list portion of the report.
Define Report	accesses a menu which specifies what elements of a report are output to the printer or the plotter. If any of the elements are set to on, they will be sent to the printer followed by a form feed. Only LOG ON OFF and LIN ON OFF can be used when outputting to a plotter. The report is generated by OUTPUT REPORT .
DELETE ALL SIGS	deletes all signals from the signal list. <i>EMC analyzer mode only.</i>
DELETE FACTORS	deletes all amplitude-correction factors for the current amplitude-correction (antenna, cable, or other) table.
DELETE FILE	allows you to delete an item from analyzer memory or a file from the memory card.
DELETE LIMIT	deletes the selected limit-line table.
DELETE MARKED	deletes all marked signals from the signal list. Signals can be marked using MARK ALL SIGNALS , MARK SIGNAL , and Selectv Mark .
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.
DELETE SIGNAL	deletes the current highlighted signal from the signal list. <i>EMC analyzer mode only.</i>
Delete Signals	accesses a menu which deletes one or more signals from the signal list.

DELTA
MEAS

accesses the MKR menu and turns on a delta marker.

DEM0D

accesses the softkeys controlling demodulation functions, speaker volume, squelch level, FM gain, and dwell time. *All except Option 703.*

DEM0D
AM FM

allows selection of amplitude (AM) or frequency (FM) demodulation. *All except Option 703.*

DEM0D
ON OFF

turns the AM or FM demodulation on and off. *All except Option 703.*

DESKJET
310/550C

selects either the HP DeskJet 310 or 550C for color printing. Use this function if you have one of these printers. Available under the Config key.

DESKJET
540

selects the HP DeskJet 540C for color printing. Use this function if you have this color printer. Available under the Config key.

DET

accesses a menu which offers a selection of quasi-peak and average detector functions.

DETECTOR
PK QP AV

turns automatic measuring on or off for the peak, quasi-peak, and average detectors. Available under the SETUP key.

DETECTOR
PK SP NG

selects between positive peak, sample, and negative peak detection. The NG (negative) peak detection is available for Option 101.

DETECTOR
SMP PK

selects between positive peak detection and sample detection. The NEG (negative) detector is available for Options 101, 102, and 301. Available under the DET Key.

DISPLAY

accesses softkeys that include the HOLD 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
→ CARD

saves the current analyzer display image on the memory card for viewing later.

DISPLAY
CNTL I

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

Dispose User Mem	accesses the softkeys <code>ERASE MEM CARD</code> , <code>ERASE DLP MEM</code> , <code>ERASE STATEALL</code> , and <code>ERASE TRACEALL</code> .
DSP LINE ON OFF	activates an adjustable horizontal line that is used as a visual reference line.
DWELL TIME	sets the dwell time for the marker pause, during which demodulation can take place in nonzero span sweeps. <i>All except Option 703.</i>
EDIT AMP COR	accesses a menu to edit amplitude-correction factors.
EDIT ANNOTATN	accesses the annotation editor. The annotation editor allows entry of up to 1500 characters of text using an external keyboard. The annotation text can be stored to a card or printed using <code>OUTPUT REPORT</code> .
EDIT ANTENNA	accesses a menu used to edit antenna amplitude-correction factors.
EDIT CABLE	accesses a menu used to edit cable amplitude-correction factors.
EDIT CAT ITEM	starts the DLP editor functions and transfers the highlighted items from the catalog of analyzer memory to the editor buffer.
EDIT DONE	erases the limit-line table from the analyzer's screen when accessed from the limit-line menu, and restores the menu accessed by the <code>Limit 1</code> , <code>Limit 2</code> , or <code>Limit Lines</code> softkeys. When accessed from the amplitude-correction menu, the amplitude-correction factors table is erased from the analyzer's screen.
EDIT LAST	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. <i>Spectrum analyzer mode only.</i>
EDIT LIMIT	allows you to edit the current limit-line tables. <i>EMC analyzer mode only.</i>

EDIT
LIST

accesses a menu to edit signal list functions. *EMC analyzer mode only.*

EDIT
LOWER

allows you to view or edit the lower limit-line table. Up to 30 entries are allowed for the lower limit-line table. With the lower limit-line table format, the coordinates for the lower limit-line are specified, but none are specified for the upper limit line. Even if upper limit-line values exist or the values had been entered as an upper and lower limit-line table, the lower limit-line values are treated as a separate table from the upper limit-line values. The lower limit-line entries can have independent frequency (or time) and amplitude coordinates from upper limit-line table entries. *Spectrum analyzer mode only.*

EDIT
MID/DELT

allows you to view or edit the mid-point and delta limit-line tables simultaneously. *Spectrum analyzer mode only.*

EDIT
OTHER

accesses the menu used to edit correction factors for devices other than antennas and cables.

EDIT
UP/LOW

allows you to view or edit the upper and lower limit-line tables simultaneously. *Spectrum analyzer mode only.*

EDIT
UPPER

allows you to view or edit the upper limit-line table. *Spectrum analyzer mode only.*

EDIT
UPR LWR

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

Editor

accesses the menu of downloadable program (DLP) editor keys.

EMC
ANALYZER

selects the EMC analyzer instrument mode of operation.

(ENTER)

enters a numerical value that has been entered from the front panel using the keypad, step keys or knob.

EP LQ570
SML LRG

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

EP MX80
SML LRG

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

ERASE DLP MEM	allows you to dispose of the DLPs, all traces defined by TRDEF, and all VARDEF variables that are in EMC analyzer memory.
ERASE MEM CARD	allows you to dispose of any data or programs stored on the memory card by formatting it.
ERASE STATEALL	allows you to purge all the user state registers 1 through 9.
ERASE TRACEALL	allows you to purge all the user trace registers 0 through TRCMEM.
EXECUTE TITLE	executes the programming commands displayed in the screen title area of the EMC analyzer.
EXIT CATALOG	returns the analyzer to the state it was in before the current catalog function was invoked.
EXIT EDIT	exits the annotation editor.
EXIT GRAPH	exits the <code>SAVE LIN GRAPH</code> or <code>SAVE LOG GRAPH</code> report graph functions.
EXIT MEASURE	exits the <code>MEAS STEPPED</code> function.
EXIT SHOW	clears the instrument configuration information from the screen written by the <code>SHW INST CONFIG</code> function.
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. The external trigger signal must be a 0 V to +5 V TTL signal.
EXTERNAL PREAMPG	adds a positive or negative preamplifier gain value, which is subtracted from the displayed signal. <code>EXTERNAL PREAMPG</code> is similar to the <code>REF LVL OFFSET</code> ; however, with the <code>EXTERNAL PREAMPG</code> , the attenuation may be changed depending on the preamplifier gain entered. The preamplifier gain value is not affected by an instrument preset.

FAST STP ON OFF	determines how stepped measurements are made. When fast step is on and a limit-line margin is on and the peak detector amplitude is below the margin, no other detectors are measured. If the peak amplitude is above the margin, any other selected detector is also measured. <i>EMC analyzer mode only.</i>
FFT MEAS	activates a discrete fast Fourier transform based on the current setup.
FLAT	draws a zero-slope line between the coordinate point of the current segment and the coordinate point of the next segment.
FM GAIN	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. <i>All except Option 703.</i>
FORMAT CARD	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 EMC analyzer.
FREQ SCL LOG LIN	specifies whether the limit line is derived from a logarithmic or linear frequency axis. Underline LIN to set the frequency axis to linear or LOG to set the frequency axis to logarithmic.
FREQ STEP	sets the size of the frequency step for stepped measurements.
FREQUENCY	activates the center-frequency or start-frequency function and accesses the menu that has the frequency functions.
FRQ SCAN ON OFF	reduces the signal span at the marker to zero span by performing an automatic zoom. When FREQ SCAN ON OFF is off, the instrument is restored to its previous setting with the exception of the marker which is placed at the same frequency as the zero scan (span) frequency.
FULL SPAN	changes the instrument span to full span. The span can be limited if harmonic band lock (BND LOCK ON OFF) is set to ON (<i>HP 8591EM, HP 8593EM, and HP 8595EM only</i>).

Gauss	selects gauss as the transducer conversion units for the antenna amplitude-correction factors.
GHIJKL	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.
HOLD	deactivates the active function and blanks the active function text from the display. No data can be accidentally entered using the knob, step keys, or data keys. Activating another function will turn off the hold function.
HP B&W PRINTER	selects a black and white printer.
HP B&W DJ540	selects a black and white printer. Use this function if you have a black and white HP DeskJet printer. Available under the Config key.
IF BW AUTO MAN	specifies the intermediate frequency bandwidth. When MAN is underlined, the coupling between center frequency (EMC analyzer mode) and sweep time (spectrum analyzer mode) and intermediate frequency bandwidth is disabled. When AUTO is underlined, coupling is re-established.
INPT LCK ON OFF	limits tuning to values within the currently selected input path. For example, when input lock is on, and a stop frequency is selected out of the range of the currently selected input path, the actual stop frequency used will be the highest possible value allowed by the selected input path.
Input	accesses a menu to specify the input signal routing path through the HP 85420E Option 1EM RF filter section and allows switching the 300 MHz calibrator signal so that it is routed to the RF input of the instrument. <i>Available only when used with an HP 85420E Option 1EM RF filter section.</i>
INPUT 1 9k-50M	specifies the 9 kHz to 50 MHz input path (INPUT 1) as the signal routing path of the HP 85420E Option 1EM RF filter section. <i>Available only when used with an HP 85420E Option 1EM RF filter section.</i>

INPUT 2 20M-2.9G	specifies the 20 MHz to 2.9 GHz input path (INPUT 2) as the signal routing path of the HP 85420E Option 1EM RF filter section. <i>Available only when used with an HP 85420E Option 1EM RF filter section.</i>
INPUT 2 BYPASS	specifies the bypass input path (INPUT 2) as the signal routing path of the HP 85420E Option 1EM RF filter section. <i>Available only when used with an HP 85420E Option 1EM RF filter section.</i>
INPUT Z 50Ω 75Ω	sets the input impedance for voltage-to-power conversions. The impedance you select is for computational purposes only, since the actual impedance of 50Ω is set by internal hardware. The preset value can be changed by using a service function. Select the computational input impedance by pressing INPUT Z 50Ω 75Ω or by entering 50 or 75 using the data keys.
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.
LAST SPAN	changes the frequency span of the instrument to the previous span setting.
LIMIT # ON OFF	displays limit line # (#= number) when ON is underlined. # can be 1 or 2. <i>EMC analyzer mode only.</i>
Limit 1	accesses the menu for displaying, testing, deleting, and editing of limit 1 and its corresponding margin.
Limit 2	accesses the menu for displaying, testing, deleting, and editing of limit 2 and its corresponding margin.
Limit Lines	accesses the limit-line menus under the DISPLAY key and SETUP key.
LIMIT LINES	stores or recalls the current limit-line tables in analyzer memory.
LIMITS → CARD	saves the current limit-line data to a card.

LIMITS FIX REL	allows you to choose fixed or relative type of limit lines. <i>Spectrum analyzer mode only.</i>
LIMITS FRQ TIME	selects whether limit lines will be entered using frequency or sweep time to define the segments. <i>Spectrum analyzer mode only.</i>
LIN ON OFF	turns on or off the generation of a linear graph of the signal list. The linear graph is sent to the printer or plotter when OUTPUT REPORT is executed.
LIN CHCK ON OFF	turns on or off the linearity check, which modifies the input RF attenuation to determine if a measured signal level is undergoing compression.
LINE	powers up the instrument.
LINE	activates the trigger condition that allows the next sweep to be synchronized with the next cycle of the line voltage.
LIST → CARD	saves the current signal list to a card.
LIST ON OFF	that enables or disables the generation of a tabular listing of a signal list. The listing is sent to a printer when OUTPUT REPORT is executed.
LMT DISP Y N AUTO	displays any portion of the limit lines that are currently within the display boundary of the spectrum analyzer. If Y (yes) is underlined the limit lines are displayed. If N (no) is underlined they are not displayed. If AUTO is underlined, the display of the limit lines is dependent on the limit test function. The limit lines will be displayed while the limit test function is turned on, otherwise they will be turned off. <i>Spectrum analyzer mode only.</i>
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. <i>Spectrum analyzer mode only.</i>
LOAD FILE	loads a file from the memory card into EMC analyzer memory.

(LOCAL)	places the analyzer in the local mode and enables front-panel control.
LOG ON OFF	turns on or off the generation of a logarithmic graph of the signal list. The logarithmic graph is sent to the printer or plotter when OUTPUT REPORT is executed.
LOGF SPD STD FAST	selects between optimizing the frequency accuracy or minimizing the scan time in log sweep. When “STD” is selected the frequency accuracy of the sweep is optimized. When “FAST” is selected the scan time of the sweep is minimized.
MAN TRK ADJUST	allows the user to adjust the frequency of the tracking-generator oscillator manually. <i>Option 010 only.</i>
MARGIN # ON OFF	sets the amplitude (in negative decibels) and display state for limit margin 1 or 2. The limit margin is a fixed amplitude relative to the limit line. <i>EMC analyzer mode only.</i>
MARK ALL DUPLICAT	marks all signals which match their frequency with another signal in the signal list. <i>EMC analyzer mode only.</i>
MARK ALL SIGNALS	marks all signals in the signal list. <i>EMC analyzer mode only.</i>
MARK LWR DUPLICAT	marks all duplicate frequency signals in the list that are lower in peak amplitude. <i>EMC analyzer mode only.</i>
MARK SIGNAL	marks the highlighted signal in the signal list. <i>EMC analyzer mode only.</i>
MARK TO END	marks all signals, after the highlighted signal, to the end of the list. <i>EMC analyzer mode only.</i>
MARKER	activates a single marker used to read out individual steps after a stepped measurement.
MARKER Δ	activates a second marker at the position of the first marker and indicates the frequency and amplitude differences between the two markers.
MARKER → CF	changes the instrument 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 # ON OFF	turns the selected marker on or off. One of the four markers must first be selected by the SELECT 1 2 3 4 key.
MARKER → REF LVL	changes the instrument settings so that the amplitude at the active marker becomes the reference level.
MARKER ALL OFF	turns off all of the markers, including markers used for marker track and demodulation. Marker annotation is also removed.
MARKER AMPTD	keeps the active marker at the requested amplitude on the screen.
MARKER NORMAL	activates a single frequency marker at the center frequency on the active trace if an onscreen marker is not already displayed.
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 → HIGH	places the marker on the highest peak.
MARKER → MINIMUM	moves the active marker to the minimum detected amplitude value.
MARKER → PK-PK	finds and displays the frequency and amplitude differences between the highest and lowest trace points.
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.
MARKER TUNE SPN	makes the marker the active function and modifies the behavior of the marker positioning functionality of the instrument when accessed through the data keys, knob, or stepkeys.
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.

2-22 EMC Analyzer Functions

MAX/MIN
ON OFF

causes the analyzer to put trace B into max-hold mode and trace C into min-hold mode (trace A is active). When used with MAX/MIN VIEW, this function lets you discriminate between narrowband and broadband signals. Turning on this function turns off NORM A/B ON OFF.

MAX/MIN
VIEW

allows the user to view the MAX/MIN ON OFF function. All traces stop sweeping and the maximum and the minimum signals are displayed on the CRT. This key only appears when MAX/MIN ON is selected.

MAX MXR
LVL

lets you change the maximum input mixer level in 10 dB steps from -10 dBm to -100 dBm. The mixer level is equal to the reference level minus the attenuator setting. As the reference level changes, the input attenuator setting is changed to keep the power levels less than the selected level at the input mixer. Pressing (PRESET) resets the maximum input mixer level to -10 dBm.

MEAS
SNG CONT

sets the stepped measurements for either single or continuous step mode.

MEAS
STEPPED

initiates a stepped measurement. The stepped measurement is taken between the specified start and stop frequencies in conjunction with the selected step size (FREQ STEP), step type (STEP LOG LIN), and step mode (MEAS SNG CONT). *EMC analyzer mode only.*

MEASURE
AT MKR

makes a measurement, using specified detectors, with the marker position as the measurement frequency. *EMC analyzer mode only.*

Measure
Detector

accesses a menu to select detectors for automatic measurements or the measurement time of the specified detectors.

MEM
LOCKED

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

MIN
HOLD C

updates trace C with the minimum level detected.

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
F T I P

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 TRACE
AUTO ABC

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. Markers are diamond-shaped characters that identify points of traces and allow the traces to be manipulated and controlled on the screen. During manual operation, four markers may appear on the display simultaneously; only one can be controlled at a time. The marker that is controlled is called the “active” marker. Pressing (MKR) activates the MARKER NORMAL softkey.

(MKR →)

accesses a menu of marker-to-functions such as,

MARKER → CF

MARKER → REF LVL

MARKER → CF STEP

MARKER → MINIMUM

MARKER → START

MARKER → STOP

MARKER → PK-PK

MARKER Δ SPAN

MNOPQR

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

MODE

changes the softkey menus for the EMC analyzer and spectrum-analyzer modes of operation.

**NEW
EDIT**

starts the DLP editor function, clearing the DLP editor memory to create a new item in the 2500 byte DLP editor memory. The item will not be in the user memory of the instrument until it is processed by the **SAVE EDIT** softkey. The DLP editor memory buffer remains intact when the instrument is preset and when it is powered off.

NEXT

switches the active window between the two displayed windows.

**NEXT
PAGE**

pages through **SHOW SETUP** screens.

**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.

**NORM A/B
ON OFF**

normalizes the input signal of the contents of trace B. Turning off this function turns off **MAX/MIN ON OFF**.

**NO
CONVERSN**

specifies that no conversion units are used for the antenna amplitude-correction factors.

**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
Menus**

displays if no user menus have been defined by the user.

NTSC

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

ON

activates the windows display mode and accesses the menu of window zone functions.

OTHER
→ CARD

saves *other* two-port amplitude-correction factors to a card. To save *other* amplitude-correction factors press, OTHER → CARD . REGISTER # and PREFIX= are displayed on the screen. Use the data keys to enter the desired register number then press (ENTER). The *other* two-port amplitude-correction data is then saved to a card.

Other
Factors

accesses a menu to turn on, recall, edit, or save *other* amplitude-correction factors for any two-port device, excluding antenna and cable factors, placed between the antenna and the instrument.

OTHER
ON OFF

turns on or off *other* two-port amplitude-correction factors, excluding antenna and cable factors, placed between the antenna and the instrument.

(OUTPUT)

accesses a menu to output reports to a plotter or a printer, or send a copy of the current display to the printer or plotter.

OUTPUT
REPORT

outputs a report to the specified plotter or printer.

OVL D
ON OFF

enables or disables RF and IF overload status. *RF overload detection is only available when used with an HP 85420E Option 1EM RF filter section.*

PAINTJET
PRINTER

selects a color printer.

PAL

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

PAL-M

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

PEAK
EXCURSN

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

PK DWELL
TIME

sets the measurement time when the peak detector is measured. This key is used in conjunction with MEASURE AT MKR , Re-measure , AUTO-MEASURE , and MEAS STEPPED .

PK-PK MEAS	initiates an automatic measurement of the frequency and amplitude differences of the highest and lowest signals displayed on the screen. Pressing PK-PK MEAS performs a routine that is similar to MARKER Δ and then moving the second marker to the lowest detected signal.
Plot Config	accesses the menu used to address the plotter and to select plotter options.
PLOTTER ADDRESS	changes the HP-IB address of the plotter. <i>Except Option 043.</i>
PLT_ _ LOC_ _	selects the position of the plotter output.
PLT MENU ON OFF	allows the softkey labels to be plotted along with the analyzer display.
Plt Port Config	access the menus used to select plotter options. See COPY for more information.
PLT PORT HPIB PAR	allows the selection between HP-IB or parallel plotter ports. <i>Except for Option 043.</i>
PLT PORT SER PAR	allows the selection between serial or parallel plotter ports. BAUD RATE appears in this menu only when serial is selected. <i>Option 043 only.</i>
PLTS/PG 1 2 4	allows you to plot a full-page, half-page, or quarter-page output.
PLT—LJT ON OFF	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 ON IP LAST	determines the state of the EMC analyzer when the analyzer is powered on for bands 1 through 4.
PREAMP ON OFF	switches the system preamplifier in and out of the input path. The softkey acts as an on or off toggle switch. Not available when INPUT Z bypass is selected. <i>Available only when used with an HP 85420E Option 1EM RF filter section.</i>

PRESEL DEFAULT	enables default preselector data to allow maximum frequency response without peaking the preselector. The CAL YTF routine should be performed before pressing PRESEL DEFAULT. <i>HP 8593EM, HP 8595EM, and HP 8596EM only.</i>
PRESEL PEAK	optimally centers the preselector on a given signal for the most accurate measurement of amplitude. The maximum response found for the frequency at the marker determines the future adjustment values that will be provided to the preselector. <i>HP 8593EM, HP 8595EM, and HP 8596EM only.</i>
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.
Print Config	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	allows you to change the HP-IB address of the printer. <i>Except for Option 043.</i>
PRINTER SETUP	resets the printer, sets the printer to 60 lines per page, and skips line perforations. This function enables you to obtain up to two printouts per page. The printer paper should be at the top of the form before using this function.
Prn Port Config	accesses the menus used to select printer options. See COPY for more information.
PRN PORT HPIB PAR	allows the selection between HP-IB or parallel printer ports. <i>Except for Option 043.</i>
PRN PORT SER PAR	allows the selection between serial or parallel printer ports. BAUD RATE appears in this menu only when serial is selected. <i>Option 043 only.</i>
PRT MENU ON OFF	allows the softkey labels to be printed along with the analyzer display.
pTesla	selects pTesla as the transducer conversion units for the antenna amplitude-correction factors.

PURGE
AMP COR

clears the current amplitude-correction table from internal memory.

PURGE
LIMITS

clears the current limit-line table from internal memory.
Spectrum analyzer mode only.

PWR SWP
ON OFF

activates or deactivates the power-sweep function, which sweeps the output power of the tracking generator over the selected power-sweep range. *Option 010 only.*

QP
ON OFF

toggles the quasi-peak detector on and off. When on, the instrument is placed in linear amplitude detection, the detector is turned on, and the system settings are optimized to accurately measure the quasi-peak amplitudes. *All except Option 703.*

QP DWELL
TIME

sets the measurement time when the quasi-peak detector is measured. This key is used in conjunction with MEASURE AT MKR , Re-measure , AUTO-MEASURE , and MEAS STEPPED .

QP/AVG
10X OFF

turns off the linear 10X gain stage in the quasi-peak and average detector signal path. *All except Option 703.*

RECALL
AMP COR

recalls an amplitude-correction factors table from the memory card.

RECALL
ANTENNA

recalls antenna-correction factors from a card. To recall antenna-correction data press, RECALL ANTENNA use the step keys or knob to highlight the desired file, then press LOAD FILE .

RECALL
CABLE

recalls cable-correction factors from a card. To recall cable factors press, RECALL CABLE use the step keys or knob to highlight the desired file, then press LOAD FILE .

Recall
Card

accesses a menu to recall instrument setups, signals lists, states, traces, display images, limit-line tables, and amplitude-correction factors from a card.

RECALL
DISPLAY

recalls display images from a card.

RECALL DLP	recalls a DLP from the memory card.
Recall Internal	accesses a menu to recall states, traces, and limit-line tables from internal memory.
RECALL LIMITS	recalls limit-line tables from the memory card.
RECALL LIST	recalls signal lists from a card. To recall a signal list press, RECALL LIST use the step keys or knob to highlight the desired file, then press LOAD FILE .
RECALL OTHER	recalls <i>other</i> two-port device factors from a card. To recall <i>other</i> data press, RECALL OTHER use the step keys or knob to highlight the desired file, then press LOAD FILE .
RECALL SETUP	recalls instrument setups from a card. To recall an instrument setup press, RECALL SETUP use the step keys or knob to highlight the desired file, then press LOAD FILE .
RECALL STATE	recalls, into analyzer memory, a state saved on the memory card.
RECALL TRACE	recalls traces from a card. To recall a trace press, RECALL TRACE use the step keys or knob to highlight the desired file, then press LOAD FILE .
REF LVL	allows the reference level to be changed. This function is activated when (AMPLITUDE) is pressed. The reference level is the amplitude power or voltage represented by the top graticule line on the screen. Changing the value of the reference level changes the absolute amplitude level (in dB μ V) of the top graticule line. The reference level can be changed using the data keys, knob, or step keys.

REF LVL
OFFSET

adds an offset value to the displayed reference level. Offsets are entered by using the data keys. Entering an offset does not affect the trace or the attenuation value. Reference-level offsets are used when gain or loss occurs between a device under test and the instrument input.

REMEAS
ALL SIGS

remeasures all signals in the signal list. To remeasure each signal the algorithm spans down on the signal using the initial frequency listed in the table. When zero span is reached, up to three detectors can be used to measure the signal. These detectors are selected using DETECTOR PK QP AV . *EMC analyzer mode only.*

REMEAS
MARKED

remeasures marked signals in the signal list. To remeasure each signal the algorithm spans down on the signal using the initial frequency listed in the table. When zero span is reached, up to three detectors can be used to measure the signal. These detectors are selected using DETECTOR PK QP AV . *EMC analyzer mode only.*

REMEAS
SIGNAL

remeasures the signal specified in the signal list. To remeasure each signal the algorithm spans down on the signal using the initial frequency listed in the table. When zero span is reached, up to three detectors can be used to measure the signal. These detectors are selected using DETECTOR PK QP AV . *EMC analyzer mode only.*

Re-
measure

accesses a menu that remeasures one or more signals in the signal list.

RESTART

restarts a stepped measurement. The stepped measurement is taken between the specified start and stop frequencies in conjunction with the selected step size (FREQ STEP), step type (STEP LOG LIN) and step mode (MEAS SNG CONT).

RPG
TITLE

provides additional characters for the Change Title function.

SAVE
AMP COR

saves antenna amplitude-correction factors to a card.

SAVE ANTENNA	saves antenna amplitude-correction data to a card. To save antenna data press, SAVE ANTENNA . REGISTER # and PREFIX= are displayed on the screen. Use the data keys to enter the desired register number then press (ENTER) . The antenna data is then saved to a card.
SAVE AUTOEXEC	saves the current setup to a file named "eAUTOEXEC" on the card. See AUTOEXEC ON OFF .
SAVE CABLE	saves cable amplitude-correction data to a card.
Save Card	accesses a menu to save instrument setups, signals lists, states, traces, display images, limit-line tables, and amplitude-correction factors to a card.
SAVE EDIT	passes the text from the DLP editor memory through the parser to execute as instrument commands. If the text (commands) is a valid user-defined function, it passes through the parser and into the instrument user memory. It will replace an existing user defined function of the same name.
Save Internal	accesses a menu to save states, traces, and limit-line tables to internal instrument memory.
SAVE LIMITS	saves the current limit-line tables to a card.
SAVE LIN GRAPH	draws an EMC report graph on the display. SAVE LIN GRAPH draws a full-screen graticule, linear frequency-axis with limited annotation. The display image can then be saved to a card. <i>EMC analyzer mode only.</i>
SAVE LIST	saves the current signal list to a card. <i>EMC analyzer mode only.</i>
SAV LOCK ON OFF	locks all the current internal state and trace registers against further data storage.
SAVE LOG GRAPH	draws an EMC report graph on the display. SAVE LOG GRAPH draws a full-screen graticule, logarithmic frequency-axis with limited annotation. The display image can then be saved to a card. <i>EMC analyzer mode only.</i>
SAVE OTHER	saves <i>other</i> two-port amplitude-correction factors to a card.

2-32 EMC Analyzer Functions

Save/Rcl
List

accesses a menu used to save and recall signal lists.
Save/Rcl List also draws report graphs on the display. *EMC analyzer mode only.*

SAVE
SETUP

saves the current setup to a card.

SAVE/RECALL

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

SCALE
LOG LIN

scales the vertical graticule divisions in logarithmic units when LOG is underlined. When LOG is the active function, the logarithmic units per division can be changed. Values may range from 0.1 to 20 dB per division. When LIN is underlined, the vertical scale is in linear mode which has a range of 1 kW to 1 pW. The reference-level value is set to the top of the screen and the bottom graticule becomes zero volts. (Each division of the graticule is one-eighth of the reference level in volts.)

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
AMPLITUD

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

Select
Axis

accesses a menu which allows the selection of the frequency and the amplitude scales for the limit line to be either logarithmic or linear.

SELECT
DLT AMPL

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
FRM LIST

controls the cursor position in the signal list. *EMC analyzer mode only.*

SELECT
LWR AMPL

enters the amplitude value for the lower limit-line segment. *Spectrum analyzer mode only.*

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 sweep time. *Spectrum analyzer mode only.*

Select
Type

accesses the softkey menu used to select the limit-line type of segment.

SELECT
UPR AMPL

enters the amplitude value for the upper limit-line segment. *Spectrum analyzer mode only.*

Selectv
Mark

accesses a menu that marks one or more signals on the signal list. *EMC analyzer mode only.*

Softkey that accesses a menu that marks one or more signals on the signal list.

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 Colr
Printer

accesses the softkeys for setting up color HP printers.

SET
DATE

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

SET
TIME

allows you , when accessed from **CONFIG**, to set the time of the real-time clock. When accessed from **CAL** allows you to set the time for the Cal at Time feature.

SETTINGS
ON OFF

turns on or off the generation of a tabular listing of current instrument settings. The listing will be sent to the printer when **OUTPUT REPORT** is executed.

SETUP

accesses softkey functions that control the analyzer settings to be used in a measurement, such as frequency range, antenna correction factors, and limit lines.

SETUP
→ CARD

stores the settings of the instrument to the card. This includes: windows and the states and traces associated with them, limit lines, correction factors, and other settings.

SGL SWP

changes the sweep control to single sweep if the analyzer is in the continuous sweep mode. If already in single sweep, another sweep is taken.

SHOW Δ 1
PK QP AV

specifies that any or all of the following are included in the list portion of the report: peak detector delta from limit 1, quasi-peak detector delta from limit 1, or average detector delta from limit 1.

SHOW Δ 2
PK QP AV

specifies that any or all of the following are included in the list portion of the report: peak detector delta from limit 2, quasi-peak detector delta from limit 2, or average detector delta from limit 2.

SHOW COR
ON OFF

specifies the total correction factors are included as part of the list portion of the report. The listing is sent to the printer upon receipt of an **OUTPUT REPORT**.

SHOW DET
PK QP AV

specifies that any or all of the following are included in the list portion of the report: the peak detector amplitude, quasi-peak detector amplitude, and the average detector amplitude. The listing is sent to the printer upon receipt of an **OUTPUT REPORT**.

SHOW MKR ON OFF	specifies marks placed on signals that are marked in the signal list will be included as part of the list portion of the report.
SHOW SETUP	shows current settings of the instrument on the display. SHOW SETUP consists of four pages of information, including existing filenames, correction-factor data, limit-line data, frequency settings, trace settings, and so on.
SHW INST CONFIG	displays information about the configuration of the instrument including; model number, serial number, and the firmware revision date. Also included are the specific devices installed; HP-IB interface, RS-232 interface, tracking generator (TG), quasi-peak detector (QPD), FM demodulator (Demod), precision frequency reference (oven), and narrow bandwidths (NBW).
SIG LIST ON OFF	turns on or off the signal list viewing functions. <i>EMC analyzer mode only.</i>
Signal Marking	accesses a menu to mark one or more signal on the signal list. <i>EMC analyzer mode only.</i>
SLOPE	draws a straight line between the coordinate point of the current segment and the coordinate point of the next segment.
SORT BY DELT LIM	sorts the internal signal list by delta from limit line. This list is sorted in descending order. The VIEW Δ OFF softkeys select which limit and which detector to compare to the limit. <i>EMC analyzer mode only.</i>
SORT BY AVG AMP	sorts the internal signal list by average amplitude. This list is sorted in descending order. <i>EMC analyzer mode only.</i>
SORT BY FREQ	sorts the internal signal list by the frequency of the signals. The list will be sorted in ascending order. <i>EMC analyzer mode only.</i>
SORT BY PK AMP	sorts the internal signal list by peak amplitude. The list will be sorted by descending order. <i>EMC analyzer mode only.</i>
SORT BY QP AMP	sorts the internal signal list by quasi-peak amplitude. The list will be sorted by descending order. <i>EMC analyzer mode only.</i>
Sort Signals	accesses a menu to sort the internal signal list based on the softkey selected. <i>EMC analyzer mode only.</i>

SPAN or SPAN	activates the SPAN function and accesses the frequency-span functions.
SPAN ZOOM	finds the highest signal peak onscreen. If a marker is not already on the peak, it places a marker on it, turns on the marker-track function, and activates the span function.
SPEAKER ON OFF	turns the internal speaker on and off. <i>All except Option 703.</i>
SPECTRUM ANALYZER	sets the analyzer to the spectrum analyzer operating mode and accesses the PRESET SPECTRUM softkey function.
SQUELCH	adjusts the squelch level. The squelch level mutes weak signals and passes strong signals. <i>All except Option 703.</i>
SRC ATN MAN AUTO	allows you to select between automatic and manual adjustment of the tracking generator's switching attenuator. <i>Option 010 only.</i>
SRC PWR OFFSET	offsets the displayed power of the tracking generator (SRC). <i>Option 010 only.</i>
SRC PWR STP SIZE	allows the user to set the step size of the source-power level, source-power offset, and power-sweep range functions. <i>Option 010 only.</i>
SRC PWR ON OFF	activates (ON) or deactivates (OFF) the output power of the tracking generator (SRC). The power level can then be adjusted using the data keys, step keys, or knob. <i>Option 010 only.</i>
START FREQ	sets the frequency at the left side of the graticule.
STATE → CARD	saves the current analyzer state on the memory card.
STATE → INTRNL	saves the current analyzer state in the selected state register.
STEP LOG LIN	selects either a logarithmic or linear stepped measurement. The stepped measurement is initiated using the MEAS STEPPED softkey under the TEST key and taken between the specified start and stop frequencies in conjunction with the selected step size (FREQ STEP), and step mode (MEAS SNG CONT).

STOP	stops a stepped measurement.
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 CONT SGL	switches the instrument between continuous-sweep mode and single-sweep mode. If the instrument is in single-sweep mode, SGL is underlined.
SWEEP LOG LIN	selects between a logarithmic and linear frequency axis.
SWEEP/TRIG	accesses a menu that selects the sweep mode and trigger mode.
SWP CPLG SR SA	selects a 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. AUTO coupled sweep time to selected IF and AVG bandwidths so optimized speed and accuracy is achieved.
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.
TABLE ADDRESS	changes the HP-IB address of an automated turntable.
TABLE CCW STOP	starts the turntable moving in a counter-clockwise direction, or stops the turntable from moving. <i>EMC analyzer mode only.</i>
TABLE CW STOP	starts the turntable moving in a clockwise direction, or stops the turntable from moving. <i>EMC analyzer mode only.</i>
TEST	provides control for measuring signals and manipulating lists of measured signals.
THRESHLD 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.
TOWER ADDRESS	changes the HP-IB address of an automated tower.
TOWER DN STOP	starts the tower moving down or stops the tower from moving. <i>EMC analyzer mode only.</i>
Tower Turntbl	accesses the menu of tower and turntable softkey functions. <i>EMC analyzer mode only.</i>
TOWER UP STOP	starts the tower moving up or stops the tower from moving. <i>EMC analyzer mode only.</i>
TOWER VERT HOR	positions the tower either horizontally or vertically. <i>EMC analyzer mode only.</i>
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 B VW OFF	allows the viewing or blanking of Trace B. Only available with NORM A/B ON OFF set to ON.
TRACE C	sets up trace C for recalling previously-saved trace data into trace C or saving trace data from trace C.
Trace → Card	begins the process used to save trace data or limit-line tables on the memory card.
Trace → Intrnl	accesses a softkey menu that allows you to select the item to be stored in analyzer memory.

Track Gen	displays softkey menus for use with a built-in tracking generator. <i>Option 010 only.</i>
TRACKING PEAK	activates a routine that automatically adjusts the tracking adjustment to obtain the peak response of the tracking generator on the EMC analyzer display. <i>Option 010 only.</i>
Trigger	accesses softkeys that let you select the trigger mode.
TUNE SLO FAST	makes center frequency the active function and, when FAST is underlined, increases the speed of the marker positioning and center frequency tuning functionality of the knob and step keys. For marker positioning, the knob changes the marker position by four times the normal rate (FAST).
TV LINE #	selects the line number of the video picture field. <i>Options 101 and 102, or Option 301 only.</i>
TV Standard	allows the analyzer to trigger on NTSC, PAL, PAL-M, or SECAM-L video formats. <i>Options 101 and 102, or Option 301 only.</i>
TV SYNC NEG POS	selects the polarity of the modulation of the video format. <i>Options 101 and 102, or Option 301 only.</i>
TV TRIG	provides sweep triggering on the selected line of a video picture field. <i>Options 101 and 102, or Option 301 only.</i>
TV TRIG EVEN FLD	selects an even video field of an interlaced video format to trigger on. <i>Options 101 and 102, or Option 301 only.</i>
TV TRIG ODD FLD	selects an odd video field of an interlaced video format to trigger on. <i>Options 101 and 102, or Option 301 only.</i>
TV TRIG VERT INT	selects a vertical interval to trigger on. Triggering occurs on the next pulse edge. <i>Options 101 and 102, or Option 301 only.</i>
User Menus	accesses a menu available for your use for user-defined programs and key functions.

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 EMC analyzers with Option 004.

VID AVG
ON OFF

initiates a digital averaging routine that averages displayed signals and noise.

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 Δ
OFF

selects which delta from the limit-line table is viewed by the display signal list.

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.

VIEW CAL
ON OFF

switches the 300 MHz calibrator signal so that it is routed internally to the input of the instrument. *Available only when used with an HP 85420E Option 1EM RF filter section.*

VIEW
PK QP AV

toggles between the different detection modes, peak (PK), quasi-peak (QP), and average (AV). This function is only active if **QP ON OFF** or **AVG ON OFF** have been selected.

VIEW PK QP AV does not affect any other settings except the selected detector. *All except Option 703.*

Volts

changes the amplitude units to volts.

Watts

changes the amplitude units to watts.

WINDOWS
OFF

turns off the windows display mode and returns to the normal full-sized instrument display.

YZ_# Spc
Clear

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

ZERO
SPAN

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

ZONE
CENTER

allows the zone markers to be moved in frequency without changing the zone span.

ZONE
PK LEFT

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

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

allows the span of the zone markers to be changed without changing the center frequency.

ZOOM

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 EM Series EMC analyzers. This chapter contains the following sections:

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

How to Use This Chapter

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> indicates <a> or , 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>::= <c> indicates that <a> can be replaced by the series of elements <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)

3.2 Programming Commands

<A-block data format>::=
 #A<length><command list>

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

<character string>::=
 List of characters

<command list>::=
 Any EMC 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>::=

3.4 Programming Commands

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

ARNG	turns the autorange function on or off
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 (<i>HP 8594EM, HP 8595EM, or HP 8596EM only.</i>)
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
OVLD	enables or disables overload detection
PREAMP	switches the HP 85420E option 1EM preamplifier in and out of the input path
PREAMPG	subtracts a positive or negative preamplifier gain value from the displayed signal
PP	performs a preselector peak (<i>HP 8593EM, HP 8595EM, or HP 8596EM only.</i>)
RANGE	puts highest signal on display close to the reference level
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
UNRANGE	restores reference level to the value set prior to RANGE command
XUNITS	selects the transducer conversion units for the AMPCOR correction factors

AUTO COUPLING

AUTO couples the active functions automatically

AUXILIARY CONTROL

BYPASS	switches in and out of the bypass input path (<i>accessible only if the HP 85420E Option 1EM RF filter section is present.</i>)
CNTLA	sets the control line A of the auxiliary interface high or low (<i>Not accessible if the HP 85420E Option 1EM RF filter section is present.</i>)
CNTLB	sets the control line B of the auxiliary interface high or low (<i>Not accessible if the HP 85420E Option 1EM RF filter section is present.</i>)
CNTLC	sets the control line C of the auxiliary interface high or low (<i>Not accessible if the HP 85420E Option 1EM RF filter section is present.</i>)
CNTLD	sets the control line D of the auxiliary interface high or low (<i>Not accessible if the HP 85420E Option 1EM RF filter section is present.</i>)
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 (<i>HP 8593EM, or HP 8596EM only.</i>)
DEMOD	turns the demodulator on or off, and selects between AM, FM, or quasi-peak demodulation (<i>All except Option 703.</i>)
FMGAIN	sets the total FM frequency deviation for full screen demodulation (<i>All except Option 703.</i>)
MEASURE	determines the type of measurement: signal analysis, stimulus response, or signal normalization (<i>Option 010 only.</i>)
NRL	sets the normalized reference level
RFIN	specifies signal path through the RF filter section (<i>accessible only if the HP 85420E Option 1EM RF filter section is present.</i>)
RFINLK	enables or disables tuning limits based on RF filter section input (<i>accessible only if the HP 85420E Option 1EM RF filter section is present.</i>)
RLPOS	selects the position of reference level

SPEAKER	turns on or off the internal speaker (<i>All except Option 703.</i>)
SQLCH	sets the squelch level (<i>All except Option 703.</i>)
SRCALC	selects internal or external leveling for the tracking generator (<i>Option 010 only.</i>)
SRCAT	attenuates the source output level (<i>Option 010 only.</i>)
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 (<i>Option 010 only.</i>)
SRCPSTP	selects the source-power step size (<i>Option 010 only.</i>)
SRCPSWP	selects sweep range of the source output (<i>Option 010 only.</i>)
SRCPWR	selects the source power level (<i>Option 010 only.</i>)
SRCTK	adjusts tracking of source output with EMC analyzer sweep (<i>Option 010 only.</i>)
SRCTKPK	adjusts tracking of source output with EMC analyzer sweep (<i>Option 010 only.</i>)
SWPCPL	selects a stimulus-response or EMC analyzer auto-coupled sweep time (<i>Option 010 only.</i>)

BANDWIDTH

AVBW	specifies the averaging (video) bandwidth
IFBW	specifies the IF (resolution) bandwidth
RB	specifies the resolution bandwidth (alternate to IFBW)
VAVG	turns on or off video averaging
VB	specifies the video bandwidth (alternate to AVBW)
VBR	specifies coupling ratio of video (averaging) bandwidth to resolution (IF) bandwidth

CALIBRATION

AMPCOR	applies amplitude corrections at specified frequencies
AMPLN	returns the number of frequency-amplitude correction factors that have been entered
AUTOCAL	returns the status of the EMC analyzer automatic calibration feature
CAL	initiates self-calibration routines
CALTIME	allows you to set the time of day of an automatic calibration
CNF	performs the confidence test

3-8 Programming Commands

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 EMC analyzer’s display
CRTVPOS	specifies the vertical position of the text and graticule on the EMC analyzer’s display

COMMAND TRIGGER

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

CONFIGURATION

BAUDRATE	specifies the baud rate of a EMC analyzer.
CAT	returns the catalog information of either EMC analyzer memory or the memory card
DATEMODE	sets the format for displaying the real-time clock
DISPOSE	frees EMC analyzer memory that was previously allocated for user-defined operands
FORMAT	formats the memory card
LINCHK	determines whether a measured signal is undergoing compression
PLTPRT	selects which port to output plotter data from the analyzer

POWERON	selects the EMC analyzer's power on state
PREFIX	specifies or changes the prefix used in save and recall operations
PRNPRT	selects which port to output printer data from the analyzer
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 EMC 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 (<i>Option 101 or 301 only.</i>)
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 EMC analyzer screen
DOTDENS	sets the dot density value in the analog+ display mode (<i>Option 101 or 301 only.</i>)
DSPLY	displays the value of a variable on the EMC analyzer screen
GRAT	turns on or off the graticule
HD	disables data entry via the EMC analyzer numeric keypad, knob, or step keys
PREFIX	specifies the prefix
TH	clips signal responses below the threshold level
SHOWSETUP	shows the setup on the display
TITLE	allows entry of a screen title

EMC MEASUREMENTS

AUTOAVG	turns on and off the automatic measuring of the average detector (<i>All except Option 703.</i>)
AUTOQPD	turns on and off the automatic measuring of the quasi-peak detector (<i>All except Option 703.</i>)

MEASALLSIGS	finds signals on the display, then makes an EMC measurement
MEASAVG	makes a measurement with peak and average detectors (<i>All except Option 703.</i>)
MEASFREQ	makes a measurement at the specified frequency
MEASPEAK	makes a measurement using the peak detector
MEASQPD	makes a measurement using the quasi-peak detector (<i>All except Option 703.</i>)
MEASRESULT	sends the results of the last EMC measurement to the controller
MEASSIG	makes a measurement using specified detectors
MEASTIMEAVG	sets the average detector measurement time (<i>All except Option 703.</i>)
MEASTIMEPK	sets the peak detector measurement time
MEASTIMEQPD	sets the quasi-peak detector measurement time (<i>All except Option 703.</i>)
MEASWITHPP	automatically peaks the preselector before making an EMC measurement (<i>HP 8593EM, HP 8595EM, or HP 8596EM only.</i>)
REMEASSIG	remeasures one or more signals in the signal list

EMC OUTPUT

RPTDEF	specifies which report elements are output to a printer or plotter
TBLDEF	specifies which elements of a table are output to the printer

FREQUENCY

CF	specifies center frequency
FA	specifies the start frequency
FB	specifies the stop frequency
LOGSWEEPSPD	optimizes the frequency accuracy (standard) or minimizes the scan time (fast) when the LOG frequency sweep type is activated
FOFFSET	specifies the frequency offset for all absolute frequency readouts such as center frequency
SS	specifies center-frequency step size
SWEETYPE	selects either logarithmic or linear frequency axis

GRAPHICS

CLRBOX	clears a rectangular area on the EMC 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 EMC analyzer display
DT	defines any character as a label terminator
GETPLOT	initiates output of the EMC analyzer display to a plotter
GETPRNT	initiates output of the EMC 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 EMC analyzer screen relative to the reference coordinates (0,0)
PD	instructs the EMC analyzer to plot vectors on the EMC analyzer screen until a PU command is received
PR	moves the pen to a new plot location on the EMC 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 EMC analyzer not to plot vectors on the EMC analyzer screen until a PD command is received
TEXT	writes text on the EMC 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 EMC analyzer model number
MDU	returns values for the EMC analyzer's baseline and reference level
OP	returns the coordinates of the lower-left and upper-right corners of the EMC analyzer display
PARSTAT	reports the status of the printer connected to the parallel port

PWRUPTIME	returns the number of milliseconds that have elapsed since the EMC 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 EMC analyzer
SRQ	the SRQ command is used by an external controller to simulate interrupts from the EMC 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 EMC analyzer numeric keypad by the operator
EK	allows data entry with the front-panel knob when the EMC analyzer is under remote control
ENTER	allows the EMC analyzer to receive data from other devices on the HP-IB
EP	sends values entered on the EMC 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 EMC analyzer when the OL command is executed
OUTPUT	allows the EMC analyzer to send data to other devices via remote or parallel ports
RELHPIB	releases EMC analyzer control of the HP-IB
TA	returns trace A amplitude values from the EMC analyzer to the controller
TB	transfers trace B amplitude values from the EMC analyzer to the controller
TDF	formats trace information for return to the controller
TRA TRB TRC	controls trace data input or output

LIMIT LINES

LIMIAMPSCCL	specifies the limit-line amplitude definition as logarithmic or linear
LIMIDEL	deletes all segments in the current limit-line table
LIMIDEFNTYP	defines a limit-line type as SA or EMC
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
LIMIFRQSCL	specifies the limit-line frequency axis definition as logarithmic or linear
LIMIFT	selects how the limit-line segments are placed on the EMC analyzer display: according to frequency, or according to the sweep time setting of the EMC analyzer
LIMIHI	allows you to specify a fixed trace as the upper limit line
LIMILINE	outputs the current limit-line table definitions
LIMILINESTA	displays the selected limit line
LIMILO	allows you to specify a fixed trace as the lower limit line
LIMIMARGAMP	sets the amplitude in negative dB for the limit margin
LIMIMARGSTA	displays the selected limit margin
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
LIMINUM	selects limit-line number 1 or 2 and its corresponding margin
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
SENER	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
SENER	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

FASTMRKR	increases the RPG speed of the 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
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 EMC analyzer's internal peak-identification routine
MKREAD	selects the type of active trace information displayed by the EMC 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
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 EMC 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.
RCVRMRKR	modifies the behavior of the instrument's marker functionality so that it can retune the instrument

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

FFT	performs a discrete fast Fourier transform on the source trace array and stores the result in the destination array
PWRBW	computes the bandwidth around the trace center

MODE

MODE	returns a “0” if the mode of operation is EMC analyzer or spectrum analyzer. A number other than “0” is returned if the operating mode (also called “personality”) is other than EMC analyzer or spectrum analyzer.
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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 EMC analyzer display to a plotter. GETPLOT is meant to be used within a downloadable program.
PLOT PLTPRT	initiates output of the EMC analyzer display to a plotter selects which port to output plotter data from the analyzer

PRESET

IP	performs an instrument preset
LF	performs an instrument preset to the base band (band 0) (<i>HP 8593EM, HP 8595EM, or HP 8596EM only.</i>)
POWERON	selects the state the EMC 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 EMC analyzer display to a printer. GETPRNT is meant to be used within a downloadable program.
PRINT PRNPRT PRNTADRS	initiates output of the EMC analyzer display to a printer selects which port to output printer data from the analyzer sets the HP-IB address of the 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 EMC analyzer operation for the specified time duration

RECALL or SAVE

AUTOEXEC	loads and executes a file called “eAUTOEXEC” on powerup
CAT	displays directory information from either the specified or the current mass storage device
LOAD	loads a file from the memory card
MSI	allows you to specify the current mass storage device
PREFX	specifies or changes the prefix used in save and recall operations
PSTATE	protects all of the EMC analyzer’s user state and trace registers from being changed
PURGE	deletes the specified file from the current mass storage device
RCLS	recalls EMC analyzer state data from one of the nine state registers in the analyzer’s memory
RCLT	recalls previously saved trace data, amplitude factors, or limit-line data from the trace registers in EMC analyzer memory
SAVES	saves the currently displayed instrument state in EMC analyzer memory
SAVET	saves the selected trace data and state information or limit-line tables in EMC 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

SIGNAL LIST

EDITANNOT	enters the annotation editor
EXITANNOT	exits the annotation editor
REMEASSIG	remeasures one or more signals in the signal list
SIGADD	adds a signal to internal signal list
SIGDEL	deletes one or more signals from the signal list
SIGDLTVIEW	selects which delta is viewed on the display signal list
SIGGRAPH	draws an EMC report graph on display
SIGLEN	queries current number of signals in the signal list
SIGLIST	turns on or off signal list viewing and editing functions

SIGMARK	marks one or more signals on the signal list
SIGPOS	controls the cursor position in the signal list
SIGRESULT	sends contents of an entry in the signal list to the controller
SIGSORT	sorts internal signal list
SIGUNMARK	unmarks one or more signals on the signal list

SPAN

FS	sets the frequency span of the EMC analyzer to full span
HN	returns the harmonic number of the current harmonic band in which the EMC analyzer is tuning (<i>HP 8593EM, HP 8595EM, or HP 8596EM only.</i>)
HNLOCK	forces the EMC analyzer to use only the selected harmonic band (<i>HP 8593EM, HP 8595EM, or HP 8596EM only.</i>)
HNUNLK	unlocks the harmonic band (<i>HP 8593EM, HP 8595EM, or HP 8596EM only.</i>)
LSPAN	changes the EMC analyzer's span to the previous span setting
RECZOOM	zooms in on a signal at the marker by decreasing the span in steps, keeping the signal on screen, until zero span is reached. If no marker is present, one is placed on the highest signal before the zoom begins.
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 EMC analyzer to the continuous sweep mode
LOGSWEEPSPD	optimizes the frequency accuracy (standard) or minimizes the scan time (fast) when the LOG frequency sweep type is activated
ST	specifies the time in which the EMC analyzer sweeps the displayed frequency range
SWEETYPE	selects either logarithmic or linear frequency axis

SYNCHRONIZATION

DONE	allows you to determine when the EMC 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 EMC 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 EMC 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
CLRWF	clears the specified trace and enables trace data acquisition
DET	selects the EMC analyzer detection mode
IB	provides a method for putting values into trace B
MAXMIN	places trace B in max-hold mode and trace C in min-hold mode. Alternate sweeps use the peak and sample detector.
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	performs a discrete fast Fourier transform on the source trace array and stores the result in the destination array
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	smooths 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 EMC 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 (<i>Options 101 and 102, or Option 301 only.</i>)
TVSFRM	specifies type of video frame to trigger on (<i>Options 101 and 102, or Option 301 only.</i>)
TVSTND	selects the triggering for NTSC, PAL, PAL-M, and SECAM-L formats (<i>Options 101 and 102, or Option 301 only.</i>)
TVSYNC	selects between negative and positive triggering for video frame formats (<i>Options 101 and 102, or Option 301 only.</i>)

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 EMC analyzer to the instrument preset state
FUNCDEF	defines a routine consisting of EMC analyzer commands, assigns the routine a label, and stores the routine and its label in 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 EMC analyzer memory available
MENU	selects and displays the softkey menus on the EMC 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 EMC 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 EMC 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.

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

Creates a user-defined active function.

<function name>::=2 to 11 ASCII characters representing the function name.

<active function area label>::= ASCII characters representing the label for the active function area.

<preset value>::=(<number>|<user-defined variable>).

Query response using <name>: <numeric data format>

Query response using ACTDEF <function name>: ACTDEF

<function name>,<active function area label>,<preset value>,(STEP|NONE|HZ|SEC|DB|DBM|V|ABSHZ|INT),<A-block data format><CR><LF><EOI>

ACTVF_<active function>[?];

Returns a "0" if the given function is not active, a "1" if it is active.

<active function>::= AT|BAUDRATE|CF|COUPLE|CRTHPOS|CRTVPOS|DA|DET|DL|DOTDENS|FA|FB|FMGAIN|MEASTIMEAVG|MEASTIMEPK|MEASTIMEQPD|SIGPOS|GP|INZ|LG|MKA|MKD|MKFC|MKFCR|MKN|MKPAUSE|MKPX|ML|MODE|MSI|M4|NDB|NRL|PREAMP|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 EMC 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 EMC analyzer.

Query response: (ON|OFF)<CR><LF><EOI>

AMPCOR__((ANTENNA|CABLE|OTHER|USER)(,|_) (<frequency>[(HZ|KHZ|MHZ|GHZ|KZ|MZ|GZ)](,|_)<amplitude>[DB]){,<frequency>[(HZ|KHZ|MHZ|GHZ|KZ|MZ|GZ)](,|_)<amplitude>[DB]}|(,|_)(LOG|LIN))((ON|OFF|?)|ALL((,|_)(ON|OFF|?)));

Compensates for frequency-dependent amplitude variations at the receiver input.

AMPCOR consists of three independent sets of correction data. The four data sets are: ANTENNA, CABLE, OTHER, and USER. Each data set may be turned on or off independently and the entire AMPCOR system may be turned on or off.

Query response: <frequency>, <amplitude>{, <frequency>, <amplitude>}<CR>, <LF>, <EOI>

AMPLEN(_(ANTENNA|CABLE|OTHER|ALL)?|?);

Returns the number of frequency-amplitude correction factors that have been entered. The absolute value of the number that AMPLEN? returns is the number of frequency-amplitude correction factors that have been entered. If no amplitude correction factors have been entered, AMPLEN? returns a 0.

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.

ARNG($_{-}$ (ON|OFF)| $_{-}$ (1|0)?);

Allows the user to enable, disable, or query the current state of the instrument's auto-range function. When enabled, the auto-range function automatically adjusts RF attenuation or reference level (IF step-gain) in response to either an IF or RF overload condition detected during the previous sweep. *RF load detection only available when used with the HP 85420E Option 1EM RF filter section.*

Query response: (ON|OFF)<CR><LF><EOI>

AT($_{-}$ <number>[DB]| $_{-}$ (EP|DN|UP|AUTO|CPL|UNCPL)?);

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>

(<active function> $_{-}$)**AUTO**;

Automatically couples the active functions. <active function>::=

(AT|AVBW|DL|IFBW|MKA|MKD|MKF|MKFCR|MKN|SRCPSTP|
SRCPSWP|SRCPWR|SS|ST|TH|VAVG|VB|VBR)

AUTOAVG($_{-}$ (ON|OFF)| $_{-}$ (1|0)?);

Turns on and off automatic measuring of the average detector. This affects which detectors are measured using the **MEAS STEPPED** softkey or during the MEASFREQ, MEASSIG, REMEASSIG and MEASALLSIGS commands.

Query response: (ON|OFF)<CR><LF><EOI>

AUTOCAL[?];

Returns the status of the EMC analyzer automatic calibration feature. A "0" is returned if an automatic calibration is disabled, a "1" is returned if auto cal is enabled.

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

AUTOEXEC($_{-}$ (ON|OFF)| $_{-}$ (1|0)?);

Enables and disables the automatic loading and execution of the file named "eAUTOEXEC" from a memory card. When enabled, the instrument, upon a power-up sequence, will search the memory card for an "eAUTOEXEC" file and if found will load and execute it.

Query response: (ON|OFF)<CR><LF><EOI>

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

Turns on and off automatic measuring of the quasi-peak detector. This affects which detectors are measured during the MEASSIG, REMEASSIG, and MEASALLSIGS commands.

Query response: (ON|OFF)<CR><LF><EOI>

AVBW([_]<number>[(HZ|KHZ|MHZ|GHZ|KZ|MZ|GZ)]_EP|DN|UP|AUTO)|?);

Specifies the average (video) bandwidth, which is a post-detection, low-pass filter. The resolution bandwidth, video bandwidth, and sweep time are normally coupled to the span. Executing AVBW uncouples average video bandwidth from resolution bandwidth (it does nothing to the sweep-time, resolution-bandwidth, and span coupling). Executing AUTO recouples average video bandwidth to the resolution bandwidth.

Frequency values other than the values in the 1, 3, 10 sequence are rounded to the nearest permissible value.

Query response: <numeric data format>

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

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

<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 EMC analyzer.

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>;

3-28 Programming Commands

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.

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

Switches in and out of the bypass input path for INPUT 2 of the optional RF filter section. *BYPASS is only available when used with the HP 85420E Option 1EM RF filter section.*

Query response: (ON|OFF)<CR><LF><EOI>

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

Controls the calibration functions.

CALTIME([_]<hhmmss>);

Allows you to set the time of day that an automatic calibration of the instrument or system will execute. The CALTIME command will not enable or disable the AUTOCAL function. Where <hhmmss> stands for the hour (24 hour clock), minutes, and seconds when the cal is to be performed.

CAT_[(a|c|d|e|g|i|l|n|o|s|t|reg|prefix|on)]*[_](INT|CARD)];

Returns directory information from the specified mass storage device. The g, n, c, o, and e parameters denote data types and are used for cataloging the memory card. The g, n, c, o, and e data types represent the following:

a = amplitude correction factor data.

c = cable correction factors.

d = downloadable program.
 e = all information.
 g = signal list.
 i = display image.
 l = limit-line table.
 n = antenna correction factors.
 o = other correction factors.
 s = instrument state.
 t = trace data and instrument state.

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

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

CLRAVG;

Restarts video averaging.

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

Clears a rectangular area from x1,y1 to x2,y2 on the EMC 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.

3-30 Programming Commands

CLRW_(TRA|TRB|TRC);

Clears the specified trace and enables trace data acquisition.

CLS;

Clears all status bits.

CMDERRQ;

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

CNF;

Performs the confidence test.

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. *Not accessible if the HP 85420E Option 1EM RF filter section is present.*

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. *Not accessible if the HP 85420E Option 1EM RF filter section is present.*

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. *Not accessible if the HP 85420E Option 1EM RF filter section is present.*

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. *Not accessible if the HP 85420E Option 1EM RF filter section is present.*

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($_{-}(\text{OFF}|\text{ON})|_{-}(0|1)?$);

Turns the comb generator on or off. *HP 8593EM, or HP 8596EM only.*

Query response: (ON|OFF)<CR><LF><EOI>

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($_{-}(\text{AC}|\text{DC})|?$);

Selects direct-current (dc) coupling or alternating-current (ac) coupling.

HP 8594EM, HP 8595EM, or HP 8596EM only.

Query response: (AC|DC)<CR><LF><EOI>

CRTHPOS($_{-}$ <number> $_{-}(\text{UP}|\text{DN})|?$);

Specifies the horizontal position of the EMC analyzer display.

<position>::=integer from 1 to 34.

Query response: <numeric data format>

CRTVPOS($_{-}$ <number> $_{-}(\text{UP}|\text{DN})|?$);

Specifies the vertical position of the EMC 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>).

3-32 Programming Commands

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. *All except Option 703.*

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

Selects the type of instrument detection (positive-peak, sample, quasi-peak, negative, or average) and accesses service-diagnostic detection functions.

The negative (NEG) detector is available with Option 101 or 103 only.

- POS enables positive-peak detection, which displays the maximum video signal detected over a number of instantaneous samples for a particular frequency.
- NEG enables negative peak detection in sweep times of less than or equal to zoom.
- SMP enables sample detection, which uses the instantaneous video signal value. Video averaging and noise-level markers, when activated, activate sample detection automatically.
- QPD switches the active detector to the quasi-peak detector.
- AVG switches the active detector to the average detector.

Query response: (POS|SMP|QPD|AVG)<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 EMC 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 EMC 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 EMC 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 EMC 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.

EDITANNOT_(NEW|LAST|DUMP|LIST);

Enters the annotation editor (NEW or LAST) or sends the contents of the annotation buffer to a printer (LIST) or to a controller (DUMP). The NEW parameter clears the annotation editor of all text.

EE;

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

EK;

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

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

Allows the EMC 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 EMC 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 EMC analyzer.

EXITANNOT[_]<number>;

Exits from the annotation editor. The parameter specifies which menu to display on the screen and make active.

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

Converts log values to linear values. The exponential of the source is placed in the destination.

<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>

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

Increases the speed of the marker positioning and center frequency tuning functionality of the knob and step keys. For marker positioning, there is no effect unless RCVMRKR is also on. With FASTMRKR ON, the knob changes the marker position by four times the normal rate. For center frequency, regardless of the RCVMRKR setting, with FASTMRKR ON, the knob tuning is eight times the normal rate.

Query response: (ON|OFF)<CR><LF><EOI>

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

Specifies the stop frequency. Default unit is Hz.

Query response: <numeric data format>

FFT<destination>,<source>,<window>;

Performs a discrete fast Fourier transform on the source trace array and stores the result in the destination array. FFT weights the source trace with the function in the window trace. The transform is computed and the results are placed in the destination trace. <destination>::=(TRA|TRB|TRC|<user-defined trace>)

. <source>::=(TRA|TRB|TRC|<user-defined trace>).

<window>::=(TRA|TRB|TRC|<user-defined trace>).

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

Specifies the full screen range for FM gain. *All except Option 703.*

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 EMC analyzer.

FUNCDEF[_<label>,(<string data field>|<A-block data field>|<I-block data field>);

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

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

Initiates output of the EMC 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|DJ540BW|DJ540CLR)][_](0|1|2|3|4|5|6|7|8));

Initiates output of the EMC 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 HP DeskJet color. GETPRNT7 or DJ540BW outputs the screen data in HP DeskJet 540 monochrome. GETPRNT8 or DJ540CLR outputs the screen data in HP DeskJet 540 color.

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|FADC|CARD|BANDS|NBW)[?];

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

- HPIB = HP-IB interface, or HP-IB and parallel interface
- HPIBA = HP-IB interface
- HPIBB = HP-IB and parallel interface
- RS232 = RS-232 interface or RS-232 and parallel interface (Option 043)
- RS232A = RS-232 interface
- RS232B = RS-232 and parallel interface (Option 043)
- IO = Either the HP-IB interface, RS-232 interface, or parallel interface
- TG = Tracking generator (Option 010)
- FMD = FM demodulator (Options 102 or 301)
- QPD = Quasi-peak detector
- CNT = Counter-lock
- OVEN = Precision frequency reference (Option 004)
- TV = TV synch trigger (Options 102 or 301)
- FADC = Fast ADC (Options 101 or 301)

- CARD = Memory card reader
- BANDS = Returns the number of frequency bands that the EMC analyzer has
- NBW = Narrow bandwidths

Query Response: <numeric data format>

HD;

Disables data entry via the EMC 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 EMC analyzer is tuning. HN returns a -1 if in multiband sweep. *HP 8593EM, HP 8595EM, or HP 8596EM only.*

Query response: <numeric data format>

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

Forces the EMC analyzer to use only the selected harmonic. *HP 8593EM, HP 8595EM, or HP 8596EM only.*

Query response: (ON|OFF)<CR><LF><EOI>

HNUNLK;

Unlocks the harmonic band. *HP 8593EM, HP 8595EM, or HP 8596EM 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 EMC 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>).

IFBW([_]<number>[(HZ|KHZ|MHZ|GHZ|KZ|MZ|GZ)][_](EP|DN|UP|AUTO)|?);

Specifies the intermediate frequency bandwidth.

Query response: <numeric data format>

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 8593EM, HP 8595EM, or HP 8596EM only.*

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

Specifies the size of the vertical graticule divisions as logarithmic units without changing the reference level. Default unit is dB. A query response of zero indicates a linear scale.

Query response: <numeric data format>

LIMIAMPSC_L(_L(LIN|LOG)|_L[(0|1)]?);

Specifies whether the limit line is derived from a logarithmic or linear amplitude axis. Use LIN or 0 to set the amplitude axis to linear and LOG or 1 to set the amplitude axis to logarithmic. The LIMINUM command must be issued prior to issuing the LIMIAMPSC command.

Query response: (LIN|LOG)<CR><LF><EOI>

LIMIDEFNTYP(_L(SA|EMC)|_L[(0|1)]?);

Defines limit line type. Use SA or 0 to set limit-line type to spectrum analyzer. Use EMC or 1 to set limit-line type to EMC analyzer.

Query response: (SA|EMC)<CR><LF><EOI>

LIMIDEL;

In spectrum analyzer mode, deletes all upper and lower segments in the current limit-line table and presets all limit-line settings. In EMC analyzer mode deletes the selected limit line table (LIMINUM).

LIMIDISP(_L(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.

LIMIFRQSCL(_L(LIN|LOG)|_L[(0|1)]?);

Specifies whether the limit line is derived from a logarithmic or linear frequency axis. Use LIN or 0 to set the frequency axis to linear and LOG or 1 to set the frequency axis to logarithmic. The LIMINUM command must be issued prior to issuing the LIMIFRQSCL command.

Query response: (LIN|LOG)<CR><LF><EOI>

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

Selects how the limit-line segments are defined: according to frequency, or according to the sweep time setting of the EMC 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 or limit 1.

LIMILINE?;

Outputs the current limit-line table definitions.

Spectrum analyzer query response: LIMIDEL;LIMILINE<number of segments>;LIMIREL_(ON|OFF); <segment> {<segment>}LIMITEST_(ON|OFF);LIMIDISP_(AUTO|ON|OFF); <CR>, <LF>, <EOI> <segment>::=((SENDER|SENTERT)(<frequency> |<time>), <upper value>, <lower value>, (SLOPE|FLAT|POINT);|LIMIHALL_(UPPER|LOWER); (LIMISEG|LIMISEGT) (<frequency>|<time>),<amplitude>,(SLOPE|FLAT|POINT);)

EMC analyzer query response: LIMIDFNNTYP_EMI;LIMILINE<number of segments>;LIMIREL_OFF;<limit line> {<limit line>}<CR><LF><EOI> <limit line>::= LIMINUM_(LIMIT_1|LIMIT_2);LIMIDEL;LIMIDFNNTYP_EMI; LIMIFRQSCL_(LIN|LOG);LIMIAMPSCCL_(LIN|LOG);<segment>{<segment>} LIMIMARGAMP<amplitude>DB;HD;LIMIMARGSTA_(ON|OFF);LIMILINESTA _ (ON|OFF);LIMITEST_(ON|OFF); <segment>::= LIMISEG<frequency>,<amplitude>DB,(SLOPE|FLAT|POINT);

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

Displays the selected limit line. Setting LIMILINESTA to off disables the display of the selected limit line. Setting LIMILINESTA to on enables the display of the selected limit line. The LIMINUM command must be issued to select the limit line prior to issuing the LIMILINESTA command.

Query response: (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 or limit 2.

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

Sets the amplitude (in negative decibels) for the limit margin. The limit margin is a fixed amplitude relative to the limit line. The LIMINUM command must be issued to select the limit margin prior to issuing the LIMIMARGAMP command and a limit line must be defined for limit margin to be active.

Query response: <numeric data format>

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

Displays the selected limit margin. Setting LIMIMARGSTA to 0 or OFF disables the display of the selected limit margin. Setting LIMIMARGSTA to 1 or ON enables the display of the selected limit margin. The LIMINUM command must be issued to select the limit margin prior to issuing the LIMIMARGSTA command.

Query response: (ON|OFF)<CR><LF><EOI>

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>

LIMINUM(_(LIMIT_1|LIMIT_2)|?);

Selects limit-line number 1 or 2 and its corresponding margin. This command must be issued prior to issuing any of the related commands listed above.

Query response: (LIMIT_1|LIMIT_2)<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>

LINCHK(_**(ON|OFF)**)?);

Modifies the input RF attenuation to allow the user to determine if a measured signal level is undergoing compression. The LINCHK command is designed to be used with the Marker subsystem in order to measure a specific signal level at different RF attenuation values.

Query response: **(ON|OFF)**<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.
 <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>).

LOGSWEEPSPD(_(FAST|STD)|?);

Sets the log sweep speed to fast or standard whenever the LOG frequency sweep type is active. LOGSWEEPSPD is only in effect when the instrument is operating in the log frequency sweep mode, as set by the SWEETYPE command. It has no effect when a linear frequency sweep is active.
 Query response: (FAST|STD)<CR><LF><EOI>

LSPAN;

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

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>

MAXMIN(_(ON|OFF|VIEW)|?);

Causes the analyzer to put trace B into max-hold mode and trace C into min-hold mode (trace A is active). As the analyzer sweeps, the maximum and minimum signal levels are stored in traces B and C. Alternate sweeps use the peak and sample detector. While the maximum and minimum level for narrowband signals remain the same, broadband signals have different maximum and minimum levels. The results may also be viewed. When in VIEW, all traces stop sweeping and the maximum or minimum signals are displayed on the CRT.

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

- 0 indicates OFF.
- 1 indicates ON.
- 2 indicates VIEW.

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 EMC 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>

MEASALLSIGS;

Finds all signals on the display and makes an EMC measurement using specified detectors. Each signal is tuned to in sequence, the span is reduced in steps to zero span, and a maximum of three detectors are measured. The detectors used are chosen using AUTOAVG, and AUTOQPD commands. Measurement time is determined by MEASTIMEPK, MEASTIMEQPD, and MEASTIMEAVG commands. After each signal is measured it is added to the signal list.

MEASAVG;

Makes a measurement with the peak and average detectors, using the marker position as the measurement frequency. It spans down on the signal located at the marker, then in zero span, measures the average detector using the measurement time set by the MEASTIMEAVG command. The result of the measurement can be obtained using the MEASRESULT command. *All except Option 703.*

MEASFREQ[_]<number>[(HZ|KHZ|MHZ|GHZ|KZ|MZ|GZ)];

Makes a measurement by tuning directly to the specified frequency in zero span. Then, it measures the detectors specified by AUTOQPD and AUTOAVG commands. Measurement time is determined by MEASTIMEPK, MEASTIMEQPD, AND MEASTIMEAVG commands. The result of the measurement can be obtained by using the MEASRESULT command.

MEASPEAK;

Makes a measurement using the peak detector with the marker position as the measurement frequency. First, it spans down on the signal located at the marker, then in zero span, measures the peak detector using the measurement time set by the MEASTIMEPK command. The result of the measurement can be obtained by using the MEASRESULT command.

MEASQPD;

Makes a measurement with the peak and quasi-peak detector using the marker position as the measurement frequency. First, it spans down on the signal located at the marker, then in zero span, measures the quasi-peak detector using the measurement time set by the MEASTIMEQPD command. The result of the measurement can be obtained by using the MEASRESULT command. *All except Option 703.*

MEASRESULT[?];

Sends the results of the last EMC measurement to the controller. The measurements are performed using MEASSIG, REMEASSIG, MEASPEAK, MEASQPD, or MEASAVG commands and their corresponding front-panel keys (if any). If no measurement has been performed, an ASCII NULL with EOI asserted is sent.

Query response: <frequency>, {<peak amplitude>}, {<QP amplitude>}, {<avg amplitude>}, {<reserved>}, {<reserved>}, {<total AMP COR>}, {}, {<reserved>}<CR><LF><EOI>

MEASSIG;

Makes a measurement using specified detectors with the marker position as the measurement frequency. The detectors used are chosen from the AUTOAVG and AUTOQPD commands. The result of the measurement can be obtained by using the MEASRESULT command.

MEASTIMEAVG([-]<number>[(US|MS|SC)]|_EP|?);

Sets the measurement time when the average detector is measured in conjunction with MEASAVG, MEASSIG, MEASFREQ, MEASALLSIGS, and REMEASSIG commands. *All except Option 703.*

Query response: <numeric data format>

MEASTIMEPK([-]<number>[(US|MS|SC)]|_EP|?);

Sets the measurement time when the peak detector is measured in conjunction with MEASPEAK, MEASSIG, MEASFREQ, MEASALLSIGS, and REMEASSIG commands.

Query response: <numeric data format>

MEASTIMEQPD([-]<number>[(US|MS|SC)]|_EP|?);

Sets the measurement time when the quasi-peak detector is measured in conjunction with MEASQPD, MEASSIG, MEASFREQ, MEASALLSIGS, and REMEASSIG commands.

Query response: <numeric data format>

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

Determines what kind of measurements the EMC analyzer makes: signal analysis (SA), stimulus response (SR), or signal normalization (NRM).

Query response: (SA|SR|NRM)<CR><LF><EOI>

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

Automatically peaks the preselector, for signals above 2.75 GHz, prior to making an EMC measurement. The EMC measurements affected are: Measure At Marker, Stepped Measurements, Signal List Remeasure, and Auto Measure. With MEASWITHPP ON, a Preselector Peak (PP) is done prior to measuring with any of the three detectors. With MEASWITHPP OFF, no preselector peak is done. *HP 8593EM, HP 8595EM, or HP 8596EM only.*
Query response: (ON|OFF)<CR><LF><EOI>

MEM?;

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

MENU(_<number>|?);

Displays the selected softkey menu on the EMC 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: <numeric data format>. 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: <numeric data format>

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.

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.

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.

Query response: <numeric data format>

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 EMC 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 EMC analysis. A number other than "0" is returned if the operating mode is other than EMC analyzer. 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 EMC 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.

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: <numeric data format>

Query response depends on the setting of TDF and MDS.

OL[?];

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

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

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

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. The time value represents the time left until event occurs.

<time value>::=<number>|<user-defined variable> in seconds.

Query response: <time value>,<A-block data format><CR><LF><EOI>

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 EMC 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 EMC 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 EMC analyzer display.

Query response: -40,-22,471,233<CR><LF><EOI>

OUTPUT_<address>,<format>,<output data>

Allows the EMC analyzer to send data to other devices on the 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.

OVLD(_(OFF|ON|[(A|B|C)]|?)|?);

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>.

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.

PD;

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

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

Replaces the destination trace with the amplitude distribution function of the source trace.

<trace destination>::=(TRA|TRB|TRC|<user-defined trace>).

<trace source>::=(TRA|TRB|TRC|<user-defined trace>).

<resolution>::=(<number>|<user-defined variable>|<predefined function>|<trace element>).

PDF_<trace destination>,<trace source>;

Increments an element of the destination trace whenever the corresponding element of the source trace exceeds a threshold. This is useful for constructing a frequency probability density function.

<trace destination>::=(TRA|TRB|TRC|<user-defined trace>).

<trace source>::=(TRA|TRB|TRC|<user-defined trace>).

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

Sorts the signal peaks that are in the source trace by amplitude or frequency and then returns the number of peaks found to the controller. PEAKS also sends the sorted results to the destination trace.

Query response: <numeric data format>

PKPOS_<trace source>[?];

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

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.

- 0 = HP-IB port
- 1 = serial port
- 2 = parallel port
- 3 = serial port for Option 043
- 4 = parallel port

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

Selects the state that the EMC 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 EMC analyzer was in when it was turned off).

Query response: (IP|LAST)<CR><LF><EOI>

PP;

Peaks the preselector. *HP 8593EM, HP 8595EM, or HP 8596EM only.*

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

Specifies a new plot location on the EMC analyzer screen relative to its current coordinates.

<x coordinate>::= positive integer in **<display units>**.

<y coordinate>::= positive integer in **<display units>**.

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

Switches the system preamplifier in and out of the input path.

Query response: (ON|OFF)<CR><LR><EOI>

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|DJCOLOR|EXPDJCLR))[_](0|1|2|3|4|5|6|7|8|9));

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 PRNPRT0 for an HP-IB port.

- 0 = HP-IB port
- 1 = serial port
- 2 = parallel port
- 3 = serial port for Option 043
- 4 = parallel port

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>

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>

PU;

Instructs the EMC analyzer not to plot vectors on the EMC 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.

PWRUPTIME;

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

Query response: <numeric data format>

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

Turns on or off the linear 10x gain stage in the quasi-peak and average detector signal path.

RANGE[_](PK|QP|AV);

Puts the highest signal on the display close to the reference level. The parameter specifies whether the range is for the peak, quasi-peak, or average detector. For the peak detector, reference level is adjusted until the highest signal over the current frequency range is on the display. For the quasi-peak and average detectors, the quasi-peak/average gain stage is adjusted as necessary. The old reference level is saved away until a matching UNRANGE command is given. RANGE QP and RANGE AV require the detector to be selected and the amplitude scale to be linear.

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

Specifies the resolution (IF) 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.

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

Modifies the behavior of the instrument's marker positioning functionality when accessed through the front-panel numeric keypad, knob, or step-keys.

Query response: (ON|OFF)<CR><LF><EOI>

RECZOOM[_(OFF|ON0|[_](0|1)?)];

Zooms in on an signal at the marker by decreasing the span in steps, keeping the signal on screen, until zero span is reached. If no marker is present, one is placed on the highest signal before the zoom begins.

Query response: (OFF|ON)<CR><LF><EOI>

RELHPIB;

Discontinues EMC analyzer control of HP-IB.

REMEASSIG[_(<number>|ALL|MARKED)];

Remeasures one or more signals in the signal list. If there is no parameter given, the signal at the signal list cursor will be remeasured. A number parameter specifies the signal number to be remeasured. An ALL parameter specifies that all signals in the list will be remeasured. A MARKED parameter specifies that only those signals marked will be remeasured. To remeasure each signal the algorithm spans down on the signal using the initial frequency listed in the table. When zero span is reached, up to three detectors can be used to measure the signal. These detectors are selected using the AUTOAVG and AUTOQPD commands.

REPEAT<command list>**UNTIL**<flow operand1>,(GT|LT|EQ|NE|GE|LE),<flow operand2>;

Forms a looping construct. All commands following the REPEAT command are executed until the comparison specified after the UNTIL command is true.

<flow operand1>::=(<number>|<user-defined variable>|<predefined variable>|<trace element>).

<flow operand2>::=(<number>|<user-defined variable>|<predefined variable>|<trace element>).

The following are used for comparing the operands:

GT Greater than

LT Less than

LE Less than or equal to

GE Greater than or equal to

EQ Equal to

NE Not equal to

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 EMC analyzer being used.
Query response: <numeric data format> The number is in the YYMMDD format.

RFIN(**_**(**LF**|**LFCAL**|**HF**|**HFCAL**|**HFBYP**|**HFCALBYP**)**|?**);

Specifies the input signal routing path through the RF Filter section.

Query response:

(**LF**|**LFCAL**|**HF**|**HFCAL**|**HFBYP**|**HFCALBYP**|**NONE**)<CR><LF><EOI>

RFINLK(**_**(**OFF**|**ON**)**|_**(**0**|**1**)**|?**);

Selects if frequency tuning is limited to values within the currently selected input path. For example, if RFINLK is ON, and a stop frequency is selected out of the range of the currently selected input path, the actual stop frequency used will be the highest possible value allowed by the selected input path. This command is only valid when the RF filter section is present.

Query response: (**ON**|**OFF**)<CR><LF><EOI>

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>

RPTDEF_(ANNOT|LOG|LIN|TABLE|SETUP)_(OFF|ON);

Specifies which elements of a report are output to the printer or the plotter. If any of the elements are set to on, they will be sent to the printer followed by a form feed. The sequence sent is: ANNOT, LOG, LIN, TABLE, SETUP. Only LOG and LIN can be sent to the plotter. The report is generated by **OUTPUT REPORT**.

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 EMC 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|ANTENNA|CABLE|OTHER|ALL|SIGNAL);

Specifies the data to be transferred—trace A, trace B, trace C, downloadable program, state, limit-line values, or antenna amplitude correction factors, cable correction factors, orther correction factors, setups, or signals lists.

SEGDEL[_<segment number>];

Deletes the specified segment from the limit-line tables.

<segment number>::=(<number>|<user-defined variable>).

SENDER<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 EMC analyzer.

Query response: <numeric data format> Represents serial number.

SETDATE([_]<date>|?);

Sets the date of the real-time clock of the EMC 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 EMC analyzer.

<time>::=<number> in the HHMMSS format.

Query response: <numeric data format>, representing HHMMSS.

SHOWSETUP_(0|1|2|3|4);

Shows the current settings of the instrument on the display. This includes existing filenames, correction-factor data, limit-line data, frequency settings, trace data, and so on. SHOWSETUP consists of four pages of information. SHOWSETUP 1 displays the first page, SHOWSETUP 2 displays the second page, and so on. A SHOWSETUP of 0 turns the setup display OFF.

SIGADD;

Adds a signal to the internal signal list. The signal must have been previously measured using the MEASAVG, MEASSIG, MEASFREQ, MEASQPD, or MEASPEAK commands.

SIGDEL[(₋<number>|₋(ALL|MARKED))];

Deletes one or more signals from the signal list. If there is no parameter given, the signal at the cursor will be deleted. An integer parameter specifies a signal number to delete from the list. An ALL parameter deletes all signals from the list. A MARKED parameter deletes only those signals that are marked from the list.

SIGDLTAVIEW_₋(NONE|PKLX|PKLY|QPLX|QPLY|AVLX|AVLY)|?);

Selects which delta from the limit-line table is viewed by the display signal list. The choices are:

- peak to limit 1 (PKLX)
- peak to limit 2 (PKLY)
- quasi-peak to limit 1 (QPLX)
- quasi-peak to limit 2 (QPLY)
- average to limit 1 (AVLX)
- average to limit 2 (AVLY)

Query response: (NONE|PKLX|PKLY|QPLX|QPLY|AVLX|AVLY)<CR><LF><EOI>

SIGGRAPH_₋(OFF|LOG|LIN);

Draws an EMC report graph on the display. The graph can either be on a logarithmic or a linear scale.

SIGGRAPH LOG or LIN draws a full screen graticule, either logarithmic or linear frequency axis with limited annotation. On the graticule, drop lines for peak amplitude signals with cross-bars for quasi-peak and average amplitude readings are drawn. The start and stop frequencies are defined based on the frequencies in the signal list.

SIGLEN[?];

Queries the current number of signals in the signal list.

Query response: <numeric data format>

SIGLIST(-(OFF|ON)|[-](0|1)|?);

Turns on or off the signal list viewing and editing functions.

Query response: (ON|OFF)<CR><LF><EOI>

SIGMARK[-(ALL|COMP|DUP|LOWER|HIGHEST|BELOW|<number>)];

Marks one or more signals on the signal list. If there is no parameter specified, the signal at the cursor will be marked (see SIGPOS command).

An integer parameter specifies a signal number in the list to be marked.

An ALL parameter specifies all signals in the list will be marked. A COMP parameter compliments all marked signals in the list. A DUP parameter marks all signals that are duplicated in the list. A LOWER parameter marks all duplicate signals in the list that are lower in peak amplitude. A HIGHEST parameter marks the ten highest signals in the list. A BELOW parameter marks all signals below the signal currently pointed to in the signal list.

SIGPOS([-<number>|-(EP|DN|UP)|?);

Controls and queries the cursor position in the signal list.

Query response: <numeric data format>

SIGRESULT[?];

Sends the contents of an entry in the signal list to the controller. The signal entry which is sent is determined by first issuing the SIGPOS command. If the signal list is empty or the SIGPOS is outside the range of the signals within the list, an ASCII NULL with EOI asserted

Query response: <frequency>, {<peak amplitude>}, {<QP amplitude>}, {<avg amplitude>}, {<reserved>}, {<reserved>}, {<total AMP COR>}, {<signal marked>}, {}, {<reserved>}<CR><LF><EOI>

SIGSORT_(FREQ|PEAK|QP|AVG|PKL|PKLY|QPLX|QPLY|AVLX|AVLY);

Sorts the internal signal list based on the field selected by the parameter.

The fields to chose from are:

- frequency of the signals (FREQ)
- peak amplitude (PEAK)
- quasi-peak amplitude (QP)
- average amplitude (AVG)
- peak delta from limit 1 (PKLX)

- peak delta from limit 2 (PLKY)
- qp delta from limit 1 (QPLX)
- qp delta from limit 2 (QPLY)
- average delta from limit 1 (AVLX)
- average delta from limit 2 (AVLY)

For the FREQ parameter, the list will be sorted in ascending order. For all other parameters, the list will be sorted in descending order.

SIGUNMARK[_(<number>|ALL)];

Unmarks one or more signals on the signal list. If there is no parameter selected, the signal at the cursor will be unmarked (see SIGPOS command). An integer parameter specifies a signal number to be unmarked from the signal list. An ALL parameter unmarks all signals in the signal list.

SMOOTH[_<trace source>,<number of points>];

Smooths the specified trace according to the number of points specified for the running average.

<number of points>::=(<number>|<trace element>|<predefined function>|<predefined variable>|<user-defined variable>).

SNGLS;

Selects the single-sweep mode.

SP[_<number>[(HZ|KHZ|MHZ|GHZ)]|_<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. *All except Option 703.*

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 for the HP 8591EM Use INT for internal leveling, XTAL for external leveling, MTR for external leveling with an HP meter.

Option 010 for the HP 8593EM, HP 8594EM, HP 8595EM, or HP 8596EM: 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 only.*

Query response: <numeric data format>

SRCNORM([_](OFF|ON)|[_](O|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 EMC analyzer.

Query response: (ON|OFF)<CR><LF><EOI>

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

Offsets the source power level. *Option 010 only.*

Query response: <numeric data format>

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

Selects the source-power step size. *Option 010 only.*

Query response: <numeric data format>

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

Selects sweep range of source output. *Option 010 only.*

Query response: <numeric data format>

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

Selects the source power level. *Option 010 only.*

Query response: <numeric data format>

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

Adjusts tracking of source output with EMC analyzer sweep. *Option 010 only.*

Query response: <numeric data format>

SRCTKPK;

Adjusts the tracking of source output with EMC analyzer sweep. *Option 010 only.*

SRQ_<number>;

Used by an external controller to simulate service requests to the EMC 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 EMC 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.

The <file type> can be an a, c, d, e, g, i, l, n, o, s, or t. The <file type> parameters represent the following:

- a = amplitude correction factor data.
- c = cable correction factors.
- d = downloadable program.
- e = all information.
- g = signal list.
- i = display image.
- l = limit-line table.

n = antenna correction factors.
 o = other correction factors.
 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>

SWEEPTYPE(_(LIN|LOG)|?);

Selects the frequency axis stimulus and graticule display. When LIN is selected, the frequency axis is linear. When LOG is selected, the frequency axis is logarithmic.

Query response: (LOG|LIN)<CR><LF><EOI>

SWITCHAVG;

Turns on and off the average detector and adjusts system gains for maximum accuracy. Because of the slow charge and discharge characteristics of this detector, it is best used in a fixed tuned (zero span) fashion or in narrow spans. All except Option 703.

SWITCHQP;

Turns on and off the quasi-peak detector and adjusts system gains for maximum accuracy. Because of the slow charge and discharge characteristics of this detector, it is best used in a fixed tuned (zero span) fashion or in narrow spans. All except Option 703.

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

Selects either a stimulus-response (SR) or EMC analyzer (SA) auto-coupled sweep time. *Option 010 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 EMC analyzer and the video signal that is output to the MONITOR OUTPUT connector on the rear panel of the EMC analyzer.

TA[?];

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

Query response: <numeric data format>

Query response depends on the setting of TDF and MDS.

TB[?];

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

Query response: <numeric data format>

Query response depends on the setting of TDF and MDS.

TBLDEF_(MARK|DETPK|DAPK|DBPK|DETQP|DAQP|DBQP|DETAV|DAAV|DBAV|COR)_(OFF|ON);

Specifies which elements of a table are output to the printer upon receipt of **OUTPUT REPORT**. If any of the elements are set to on, they will be included as part of the list portion of the report. Each element will be its own labeled column. The sequence of columns is: signal marked (MARK), peak detector (DETPK), peak delta from limit 1 (DAPK), peak delta from limit 2 (DBPK), quasi-peak detector (DBQP), average detector (DETAV), average delta from limit 1 (DAAV), average delta from limit 2 (DBAV), and total correction factors (COR).

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>

3-72 Programming Commands

TEXT<delimiter><character string><delimiter>;

Writes text on the EMC 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 EMC analyzer's real-time clock, in the YYMMDDHHMMSS format.

<time date value>::=<number> in the YYMMDDHHMMSS format.

Query response: <numeric data format>, in the YYMMDDHHMMSS format.

TIMEDSP(-(OFF|ON)|[-](0|1)|?);

Enables the display of the time and date on the EMC 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>

(**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 EMC 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 EMC 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.

- **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.

UNRANGE_(PK|QP|AVG);

Restores the reference level, to the value that was set, prior to the last matching RANGE command.

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 EMC 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 EMC 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 EMC analyzer

display, or display both the upper and lower windows on the EMC analyzer display.

XCH <destination>, <destination>;

Exchanges the contents of the two parameters.

XUNITS_(NONE|UVM|UAM|PT|G);

Selects the transducer conversion units for the AMPCOR antenna correction factors. This specifies the units of the physical attribute to which an antenna actually responds and which will be indicated on the display for reference level, display line level, threshold level, and marker readouts.

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
,	Comma (ASCII code 44)
*	Asterisk (used as a wildcard)
;	Semicolon (ASCII code 59)
?	Returns a query response containing the value or state of the associated parameter.
0	Off (command argument)
1	On (command argument)
50	50Ω
75	75Ω
A	Amp (unit) or A-block data field
a	Amplitude correction factors
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
c	Cable amplitude correction factors
CARD	Memory card
CNT	Counter-lock
COLOR	Color
CPL	Couple
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
e	Setup file
EDGE	Triggers on the edge of the trigger input
EP	Pauses program for data entry from analyzer front panel
EQ	Equal to
EVEN	Even video frame
EXT	External trigger
FADC	Fast analog-to-digital converter (ADC)
FETCH	Fetch
FIXED	Fixed
FLAT	Flat
FLATTOP	Flat top filter window
FM	Frequency modulation
FMD	Frequency modulation demodulator
FMV	Frequency modulation detection
FREE	Free run
FREQ or FRQ	Frequency
G	Gauss
g	Signal list file
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" and "LF" terminator
KHZ	Kilohertz (unit)
KL	Free field ASCII format with "CR" and "END" terminator
KZ	Kilohertz (unit)

I	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 instrument
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)
n	Antenna amplitude correction factors
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
o	Other amplitude correction factors
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
PT	pico Tesla
RECALL	Recall operation
RS232	RS-232 interface
s	State file
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)
UAM	Microamps per meter
UNCPL	Uncouple
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)
UVM	Microvolts per meter
UW	Microwatt (unit)
V	Volts (unit)
VERTICAL	Vertical triggering
VID	Video trigger
W	Watts or word (for MDS command)
XTAL	Crystal
YTF	YIG-tuned filter



A

EMC Analyzer Error Messages

Error Messages

The EMC 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 EMC analyzer hardware is probably broken.
- User-created error messages appear when the EMC 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 EMC 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 EMC 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 EMC 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 PREAMPG**. 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 AMPTD or 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 EMC 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 8595EM cannot find a harmonic of the 300 MHz calibration signal. If this happens, ensure that the CAL OUT connector is connected to the EMC 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 EMC 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 EMC analyzer input connectors are connected with an appropriate cable. If the calibration signal is connected to the EMC 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 8595EM) or 100 MHz COMB OUT connector (for the HP 8593EM or HP 8596EM) is connected to the EMC analyzer input, then perform the CAL YTF routine again. (U) and (H)

CAL: ZERO FAIL

The EMC 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 BYPASS Input 1

An attempt was made to execute the BYPASS command while the signal path is routed through INPUT 1 of the RF filter section. Only INPUT 2 of the RF filter section can be bypassed. *Requires the HP 85420E Option 1EM RF filter section.*

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)

Comb harmonic at _ _ _ GHz NOT found

Indicates that the CAL YTF routine for the EMC 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 8593EM or HP 8596EM) or the CAL OUT connector (for an HP 8595EM) is connected to the EMC 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 EMC analyzer input. The comb generator is available with the HP 8593EM or HP 8596EM only. (U) and (H)

CMD ERR: _ _ _

The specified programming command is not recognized by the EMC analyzer. Press **ANNOTATN ON OFF** to clear. (U)

A-4 EMC Analyzer Error Messages

CONF TEST FAIL

Indicates that the confidence test failed. If this happens, ensure that the CAL OUT connector is connected to the EMC 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 85712B EMC measurement personality) in the EMC analyzer's memory have been deleted. If the message is continuously displayed at power up, it may indicate a hardware failure. See the EMC analyzer's Service Guide for more information. (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 EMC 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 EMC analyzer mode. You can use the **MODE** key to select the EMC 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)

INTERNAL LOCKED

The EMC 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: 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. (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: 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. (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 EMC 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 EMC 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 EMC 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 EMC analyzer.) To use the EMC 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. (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 EMC 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 than 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 EMC 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 EMC analyzer may have a hardware failure. See the EMC analyzer's service guide (option 915) 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 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 TWINDOW programming command. (U)

LOST SIGNAL

For the HP 8593EM or HP 8596EM, this message indicates that the cable from the 100 MHz COMB OUT connector to the EMC analyzer input is defective or has become disconnected during the CAL YTF routine. For the HP 8595EM, 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 EMC analyzer input when performing the CAL YTF routine. (U)

LO UNLVL

Indicates that the EMC 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 is 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**, **AUTO ALL**. (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 EMC analyzer memory. If this message appears, use **ERASE DLP MEM** and then load the user-defined item or downloadable program into EMC 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 EMC 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 EMC 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)

RCVR Limits not allowed in SA mode

This error is encountered when an attempt is made to enable limit-line display, limit-margin display, or limit testing of limits defined in Receiver mode when the instrument is operating in Signal Analysis mode. To correct the problem, either purge the limits or switch to Receiver mode. (U)

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)

Required option not installed

Some EMC analyzer functions require that an option be installed in the EMC analyzer. See the description for the function in the *HP 8590 EM Series EMC Analyzer 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 Filter Section Absent

This message is displayed if the bypass command is executed when the RF filter section is not connected to, or is not communicating with, the EMC analyzer. (U) and (H)

RFFS Error: COMMAND

The RF filter section has received a command that it does not recognize. Assure that there is no cable connected to the RF filter section Service Bus interface. If the condition persists, and there is no cable connected to the RF filter section Service Bus interface, contact your HP representative. *Requires the HP 85420E Option 1EM RF filter section.* (U)

RFFS Error: HARDWARE

The RF filter section has experienced a hardware failure. If the condition persists after presetting the instrument or cycling power, contact your HP representative. *Requires the HP 85420E Option 1EM RF filter section.* (H)

RFFS Error: TIMEOUT

Communication failure between the EMC analyzer; and the RF filter section. Check power to the RF filter section and check that the AUX interface cable is properly connected between both instruments. *Requires the HP 85420E Option 1EM RF filter section.* (U) (H)

RFFS Service Bus Active

This message appears in the active function area of the EMC analyzer; display when an external controller communicates with the RF filter section via the RF filter section Service Bus interface. *Requires the HP 85420E Option 1EM RF filter section.* (H)

RF PRESEL ERROR

Indicates that the preselector peak routine cannot be performed. *Requires the HP 85420E Option 1EM RF filter section.* (H)

RF PRESEL TIMEOUT

Indicates that the preselector peak routine cannot be performed. *Requires the HP 85420E Option 1EM RF filter section.*(H)

SA Limits not allowed in RCVR mode

This error is encountered when an attempt is made to enable limit-line display, limit-margin display, or limit testing of limits defined in spectrum analyzer mode when the instrument is operating in EMC analyzer mode. To correct the problem, either delete the limits or switch to spectrum analyzer mode. (U)

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)

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 EM Series EMC Analyzer 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 SP NG`. (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 EMC 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 EMC 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 EM Series EMC Analyzer User's Guide* for more information. (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 `CLEAR WRITE A` or `VIEW A` 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 EMC 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 8593EM, HP 8595EM, or HP 8596EM, CAL YTF routine needs to be performed also. (U)

VID-BW FAIL

Indicates the video bandwidths have failed. (H)

YTF is not available

The YTF is only available for the HP 8593EM, HP 8595EM, and HP 8596EM.
(U)

Nonrecoverable System Errors

Certain situations can create error conditions from which the main processor cannot recover. In the event that the processor detects a nonrecoverable error, the instrument will be initialized, the display will be blanked, and special error messages will be written to the display.

The following is a sample nonrecoverable system error message display.

System Error 4, HP 859XEM, SN 4			
09:15:20 FEB 8, 1995, Rev: 950208			
SR: 0000	PC: 00FFB370	00FF6F1E:	00009300
D0: 00000000	A0: 00FFB238	00FF6F22:	00000000
D1: 00000000	A1: 00FF803E	00FF6F26:	00000000
D2: 00FFB238	A2: 00FF803C	00FF6F2A:	00FF803E
D3: 00FF803E	A3: 00FFB2FE	00FF6F2E:	000031B1
D4: 00008E7D	A4: 00FFB2F4	00FF6F32:	0004065E
D5: 00FF80E8	A5: 00FC6948	00FF6F36:	0004EDES
D6: 00FFB39A	A6: FFFFFFFE	00FF6F3A:	00FF8000
D7: 00FFB392	A7: 00FF6F1E	00FF6F3E:	00FF88AE
		00FF6F42:	00FF87E0
		00FF6F46:	00FFB03C
		00FF6F4A:	000C9AEA
		00FF6F4E:	00FF8890
		00FF6F52:	040800FF
		00FF6F56:	000900FF
		00FF6F5A:	B23A0000
WARNING: Config Settings Defaulted			
Press COPY to print error report and			
advise your local HP representative			
Press PRESET to resume operation			

When a nonrecoverable error message is displayed, the instrument will only respond to the front-panel COPY and PRESET keys. If you have a printer configured and connected to the instrument, and if no remote controller is currently connected to the I/O port through which the printer is connected, you can generate a hardcopy of the diagnostic part of the error message by pressing the front-panel COPY key.

In order to resume instrument operation following a nonrecoverable system error, press the front-panel PRESET key. The instrument will resume operation from its preset state.

Among the conditions which can contribute to the occurrence of a nonrecoverable system error are:

- Hardware failure of the main processor
- Hardware failure of system memory available to the main processor
- Errors in the primary system control program
- Attempted execution of unsupported system commands

Nonrecoverable system errors may occur when attempting to load an improper file type into the machine. For example, loading a file with an incorrect format into a limit line or amplitude correction table may generate this error.

If nonrecoverable system errors occur regularly, contact your HP representative.

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		

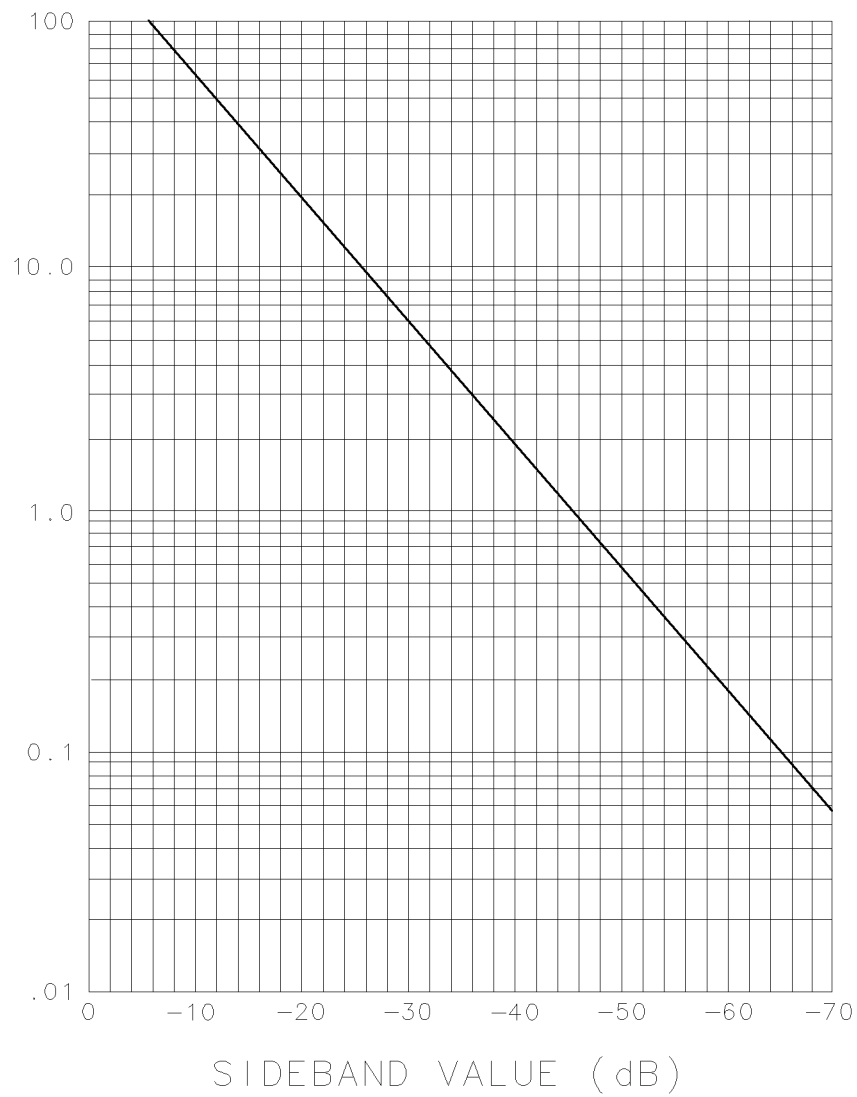
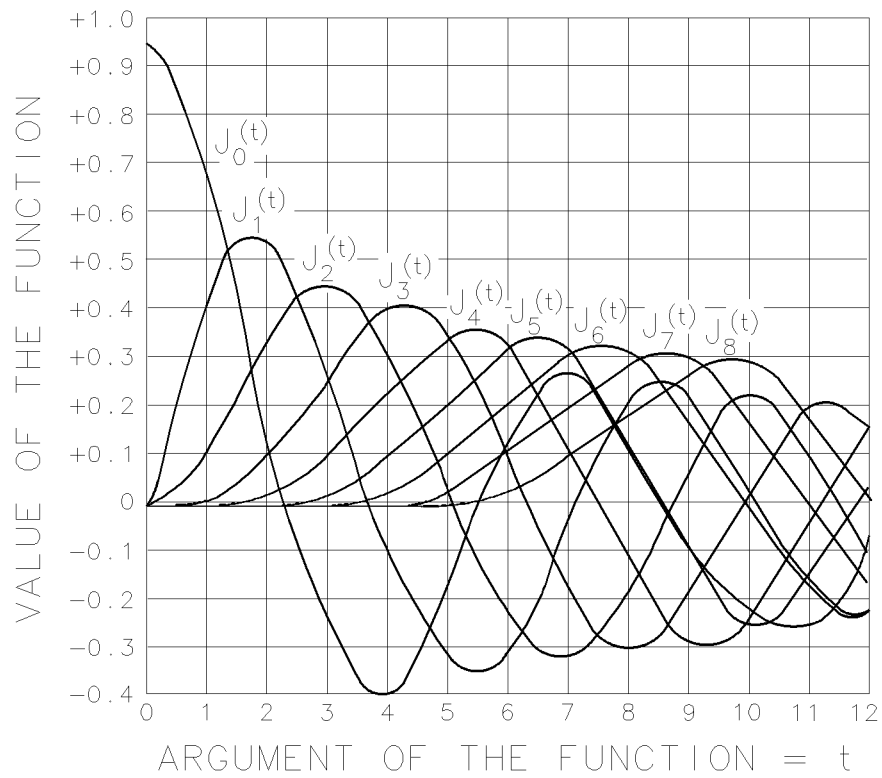


Figure B-1. Percent Modulation

B-2 AM, FM, and Pulsed RF Reference Charts

Table B-2.
Carrier and First Sideband Charts for Calibrating Deviation

Carrier Bessel NULL Order	$t^* = \Delta F/f$	First Sideband	$t^* = \Delta F/f$
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			



Bessel functions for the first eight orders

Figure B-2. Bessel Null Graph

B-4 AM, FM, and Pulsed RF Reference Charts

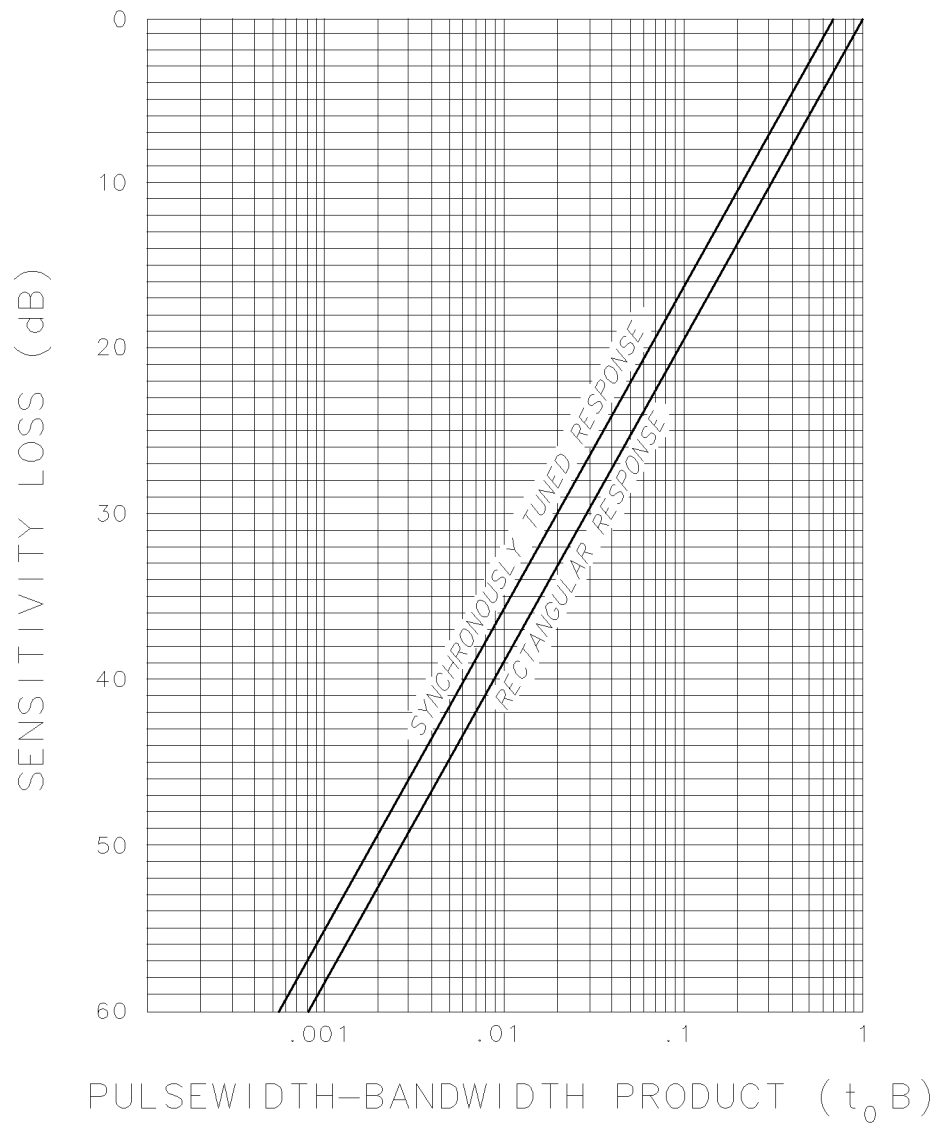


Figure B-3. Loss in Sensitivity (Pulsed RF versus CW)

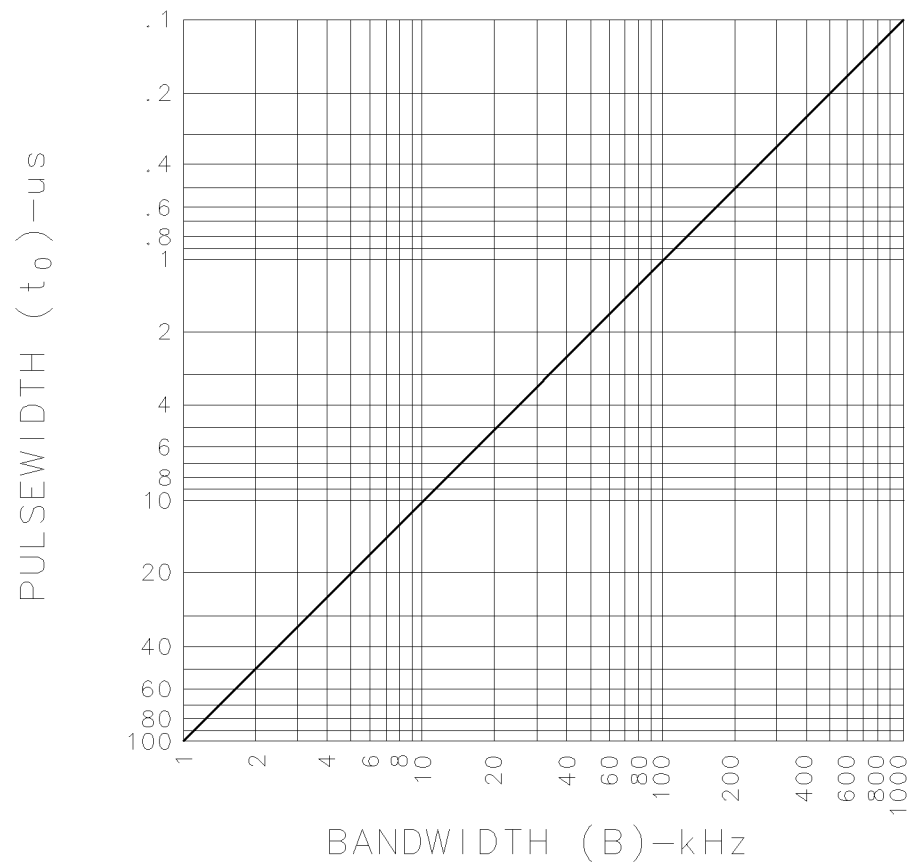


Figure B-4. IF BW Setting for Pulsed RF Computed from $t_0 B = 0.1$

B-6 AM, FM, and Pulsed RF Reference Charts

C

Cross Reference of Programming Command to Key Function

This appendix lists the programming commands alphabetically. Use the “Key” column to identify the command that is similar to front-panel or softkey function.

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

Command	Name	Key
ABORT	Abort	
ABS	Absolute	
ACTDEF	Active Function Definition	
ACTVF	Active Function	
ADD	Add	
AMB	Trace A Minus Trace B	A - B -> A ON OFF
AMBPL	Trace A Minus Trace B Plus Display Line	NORMLIZE ON OFF or NORM A/B ON OFF
AMPCOR	Amplitude Correction	Correctn Factors
AMPLEN	Amplitude Correction Length	
ANLGPLUS	Analog Plus	ANALOG+ ON OFF
ANNOT	Annotation	ANNOTATN ON OFF
APB	Trace A Plus Trace B	
ARNG	Auto Range	AUTORANGE ON OFF
AT	Attenuation	ATTEN AUTO MAN
AUNITS	Amplitude Units	Amptd Units
AUTO	Auto Couple	AUTO ALL
AUTOAVG	Auto Average	DETECTOR PK QP AV

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

Command	Name	Key
AUTOCAL	Automatic Calibration	AUTO CAL ON OFF
AUTOEXEC	Automatic Execution	AUTOEXEC ON OFF
AUTOQPD	Quasi-Peak Detector	DETECTOR PK QP AV
AVBW	Average Video Bandwidth	AVG BW AUTO MAN
AVG	Average	
AXB	Exchange Trace A and Trace B	A <--> B
BAUDRATE	Baud Rate	BAUD RATE
BIT	Bit	
BITF	Bit Flag	
BLANK	Blank Trace	BLANK A , BLANK B , BLANK C
BML	Trace B Minus Display Line	B - DL -> B
BTC	Transfer Trace B to Trace C	B -> C
BXC	Trace B Exchange Trace C	B <--> C
BYPASS	Bypass Path	INPUT 2 BYPASS
CAL	Calibration	CAL calibration functions
CALTIME	Calibration Time	SET TIME
CAT	Catalog	Catalog Internal , CATALOG CARD
CF	Center Frequency	CENTER FREQ
CLRAVG	Clear Average	VID AVG ON OFF
CLRBOX	Clear Box	
CLRDSP	Clear Display	
CLRW	Clear Write	CLEAR WRITE A , CLEAR WRITE B , or CLEAR WRITE C

C-2 Cross Reference of Programming Command to Key Function

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

Command	Name	Key
CLS	Clear Status Byte	
CMDERRQ	Clears Illegal Commands	
CNF	Confidence Test	CONF TEST
CNTLA	Auxiliary Interface	CNTL A 0 1
	Control Line A	
CNTLB	Auxiliary Interface	CNTL B 0 1
	Control Line B	
CNTLC	Auxiliary Interface	CNTL C 0 1
	Control Line C	
CNTLD	Auxiliary Interface	CNTL D 0 1
	Control Line D	
CNTLI	Auxiliary Interface	DISPLAY CNTL I
	Control Line Input	
COMB	Comb	COMB GEN ON OFF
COMPRESS	Compress Trace	
CONCAT	Concatenate	
CONTS	Continuous Sweep	SWEEP CONT SGL
CORREK	Correction Factors On	CORRECT ON OFF
COUPLE	Couple	
CRTHPOS	Horizontal Position of CRT Display	CRT HORZ POSITION
CRTVPOS	Vertical Position of CRT Display	CRT VERT POSITION
CTA	Convert to Absolute Units	
CTM	Convert to Measurement Units	
DA	Display Address	
DATEMODE	Date Mode	DATEMODE MDY DMY
DEMOMD	Demodulation	DEMOMD ON OFF , DEMOMD AM FM

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

Command	Name	Key
DET	Detection Mode	DETECTOR SMP PK
DISPOSE	Dispose	Dispose User Mem
DIV	Divide	
DL	Display Line	DSP LINE ON OFF
DN	Down	▼
DONE	Done	
DOTDENS	Dot Density	ANALOG+ ON OFF
DRAWBOX	Draw Box	
DSPLY	Display	
DT	Define Terminator	
EDITANNOT	Edit Annotation	EDIT ANNOTATN
EE	Enable Entry	
EK	Enable Knob	
ENTER	Enter From HP-IB	
EP	Enter Parameter Function	
ERASE	Erase	
EXITANNOT	Exit Annotation	EXIT EDIT
EXP	Exponent	
FA	Start Frequency	START FREQ
FASTMRKR	Fast Marker	TUNE SLO FAST
FB	Stop Frequency	STOP FREQ
FFT	Fast Fourier Transform	FFT MEAS
FMGAIN	FM Gain	FM GAIN
FOFFSET	Frequency Offset	FREQ OFFSET
FORMAT	Format Card	FORMAT CARD
FS	Full Span	FULL SPAN

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

Command	Name	Key
FUNCDEF	Define Function	
GETPLOT	Get Plot	COPY
GETPRNT	Get Print	COPY
GR	Graph	
GRAT	Graticule	GRAT ON OFF
HAVE	Have	
HD	Hold Data Entry	HOLD
HN	Harmonic Number	
HNLOCK	Harmonic Number Lock	Band Lock or BND LOCK ON OFF
HNUNLK	Unlock Harmonic Number	BND LOCK ON OFF
IB	Input B	
ID	Identify	
IF	IF THEN ELSE ENDIF	
IFBW	Intermediate Frequency Bandwidth	IF BW AUTO MAN
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 Amplitude Scale	SCALE LOG LIN
LIMIAMPSC	Limit-Line Amplitude Scale	AMPL SCL LOG LIN

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

Command	Name	Key
LIMIDEFNTYP	Limit-Line Type Definition	
LIMIDEL	Delete Limit-Line Table	PURGE LIMITS , DELETE LIMITS
LIMIDISP	Limit Line Display	LMT DISP Y N AUTO
LIMIFAIL	Limits Failed	LMT TEST ON OFF
LIMIFRQSCL	Limit-Line Frequency Scale	FREQ SCL LOG LIN
LIMIFT	Select Frequency or Time	LIMITS FRQ TIME
	Limit Line	
LIMIHI	Load Upper Limit From a Trace	
LIMILINE	Output Limit Line Definition	
LIMILINESTA	Limit-Line State	LIMIT 1 ON OFF or LIMIT 2 ON OFF
LIMILO	Load Lower Limit From a Trace	
LIMIMARGAMP	Limit-Margin Amplitude	MARGIN 1 ON OFF or MARGIN 2 ON OFF
LIMIMARSTA	Limit-Margin State	MARGIN 1 ON OFF or MARGIN 2 ON OFF
LIMIMIRROR	Mirror Limit Line	
LIMIMODE	Limit-Line Entry Mode	EDIT UPPER , EDIT LOWER , EDIT UP/LOW , or EDIT MID/DELT
LIMINUM	Limit-Line Number	Limit 1 Limit 2
LIMIREL	Relative Limit Lines	LIMITS FIX REL

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

Command	Name	Key
LIMISEG	Enter Limit-Line Segment for Frequency	
LIMISEGT	Enter Limit-Line Segment for Sweep Time	
LIMITEST	Enable Limit Line Testing	LMT TEST ON OFF
LINCHK	Linearity Check	LIN CHK ON OFF
LINFILL	Line Fill	
LN	Linear Amplitude Scale	SCALE LOG LIN
LOAD	Load	LOAD FILE
LOG	Logarithm	
LOGSWEEPSPD	Log Sweep Speed	LOGF SPD STD FAST
LSPAN	Last Span	LAST SPAN
M4	Marker Zoom	
MAXMIN	Maximum Minimum Hold	MAX/MIN ON OFF
MDS	Measurement Data Size	
MDU	Measurement Data Units	
MEAN	Trace Mean	
MEANTH	Trace Mean Above Threshold	
MEASALLSIGS	Measure All Signals	AUTO-MEASURE
MEASAVG	Measure Average	
MEASFREQ	Measure Frequency	
MEASPEAK	Measure Peak	
MEASQPD	Measure Quasi-Peak	
MEASRESULT	Measure Result	
MEASSIG	Measure Signal	MEASURE AT MKR
MEASTIMEAVG	Measure Time Average	AV DWELL TIME
MEASTIMEPK	Measure Time Peak	PK DWELL TIME

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

Command	Name	Key
MEASTIMEQPD	Measure Time Quasi-Peak	QP DWELL TIME
MEASURE	Measure Mode	
MEASSWETHPP	Measure With Preselector Peak	
MEM	Memory Available	
MENU	Menu	
MERGE	Merge Two Traces	
MF	Marker Frequency Output	
MIN	Minimum	
MINH	Minimum Hold	MIN HOLD C
MINPOS	Minimum Position	
MIRROR	Mirror Image	
MKA	Marker Amplitude	MARKER AMPTD
MKACT	Activate Marker	SELECT 1 2 3 4
MKACTV	Marker As the Active Function	MARKER NORMAL
MKBW	Marker Bandwidth	
MKCF	Marker to Center Frequency	MARKER -> CF
MKCONT	Marker Continue	
MKD	Marker Delta	MARKER Δ
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

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

Command	Name	Key
MKP	Marker Position	
MKPAUSE	Marker Pause	MK PAUSE ON OFF
MKPK	Marker Peak	NEXT PEAK , NEXT PK RIGHT , NEXT PK LEFT , or MARKER ->PK-PK
MKPX	Marker Peak Excursion	PEAK EXCURSN
MKREAD	Marker Readout	MK READ F T I P
MKRL	Marker to Reference Level	MARKER -> REF LVL
MKSP	Marker to Span	MARKER Δ -> SPAN
MKSS	Marker to Step Size	MARKER -> CF STEP
MKSTOP	Marker Stop	MARKER -> STOP
MKTRACE	Marker Trace	MK TRACE AUTO ABC
MKTRACK	Marker Track	MARKER AMPTD , MARKER NORMAL , or MARKER Δ
MKTYPE	Marker Type	MARKER AMPTD
ML	Mixer Level	MAX MXR LVL
MOD	Modulo	
MODE	Mode	EMC ANALYZER or SPECTRUM ANALYZER
MOV	Move	
MPY	Multiply	
MSI	Mass Storage Is	Save Card , Recall Card , Save Internal , or

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

Command	Name	Key
		Recall Internal
MXM	Maximum	
MXMH	Maximum Hold	MAX HOLD A , MAX HOLD B
NRL	Normalized Reference Level	
OA	Output Active Function Value	
OL	Output Learn String	
ONCYCLE	On Cycle	
ONDELAY	On Delay	
ONEOS	On End of Sweep	
ONMKR	On Marker	
ONMKRU	On Marker Units	
ONPWRUP	On Power Up	
ONSRQ	On Service Request	
ONSWP	On Sweep	
ONTIME	On Time	
OP	Output Parameter	
OUTPUT	Output to HP-IB	
OVLD	Overload	OVLD ON OFF
PA	Plot Absolute	
PARSTAT	Parallel Status	
PD	Pen Down	
PDA	Probability Distribution of Amplitude	
PDF	Probability Distribution of Frequency	
PEAKS	Peaks	
PKPOS	Peak Position	
PLOT	Plot	COPY (to a plotter)
PLOTADRS	Plotter Address	PLOTTER ADDRESS
PLTPRT	Plot Port	

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

Command	Name	Key
POWERON	Power-On State	POWER ON IP LAST
PP	Preselector Peak	PRESEL PEAK
PR	Plot Relative	
PREAMP	Preamplifier	PREAMP ON OFF
PREAMPG	External Preamplifier Gain	EXTERNAL PREAMPG
PREFX	Prefix	Change Prefix
PRINT	Print	COPY (to a printer)
PRNPRT	Print Port	
PRNTADRS	Printer Address	PRINTER ADDRESS
PSTATE	Protect State	SAV LOCK ON OFF
PU	Pen Up	
PURGE	Purge File	DELETE FILE
PWRBW	Power Bandwidth	99% PWR BW
PWRUPTIME	Power Up Time	
QPGAIN	Quasi-Peak Gain	QP/AVG 10X OFF or QP GAIN ON OFF
RANGE	Range	
RB	Resolution Bandwidth (IF Bandwidth)	9 kHz EMI BW , IF BW AUTO MAN , 120 kHz EMI BW , or 200 Hz EMI BW
RCLS	Recall State	INTERNAL -> STATE
RCLT	Recall Trace	The softkeys accessed by Internal -> Trace
RCVRMRKR	Receiver Marker Position	MARKER TUNE SPAN
RECZOOM	Receiver Marker Zoom	FRQ SCAN ON OFF
REPEAT	Repeat Until	

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

Command	Name	Key
RESETRL	Reset Reference Level	
RETURN	Return	
REV	Revision	
RFIN	RF Input Signal	Input 1 9k - 50M Input 2 20M - 2.9G Input 2 BYPASS VIEW CAL ON OFF INPT LCK ON OFF
RFINLK	RF Input Lock	REF LVL
RL	Reference Level	
RLPOS	Reference-Level Position	
RMS	Root Mean Square Value	
ROFFSET	Reference Level Offset	REF LVL OFFSET
RPTDEF	Report Definition	Define Report
RQS	Service Request Mask	
SAVEMENU	Save Menu	
SAVES	Save State	STATE -> INTRNL
SAVET	Save Trace	The softkeys accessed by Trace -> Intrnl
SAVRCLF	Save or Recall Flag	(SAVE) or (RECALL)
SAVRCLN	Save or Recall Number	
SAVRCLW	Save or Recall Data	
SEGDEL	Segment Delete	DELETE SEGMENT
SENER	Segment Entry for Frequency Limit Lines	
SENTERT	Segment Entry for Sweep Time Limit Lines	
SER	Serial Number	

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

Command	Name	Key
SETDATE	Set Date	SET DATE
SETTIME	Set Time	SET TIME
SHOWSETUP	Show Set Up	SHOW SETUP
SIGADD	Signal Add	ADD TO LIST
SIGDEL	Signal Delete	DELETE SIGNAL , DELETE ALL SIGS , or DELETE MARKED
SIGDLTAVIEW	Signal Delta View	VIEW Δ OFF , VIEW PK Δ LIM 1 , VIEW PK Δ LIM 2 , VIEW QP Δ LIM 1 , VIEW QP Δ LIM 2 , VIEW AV Δ LIM 1 , or VIEW AV Δ LIM 2 ,
SIGGRAPH	Signal Graph	SAVE LOG GRAPH and SAVE LIN GRAPH
SIGLIN	Signal List Length	
SIGLIST	Signal List	SIG LIST ON OFF
SIGMARK	Signal Mark	MARK SIGNAL , MARK ALL SIGNALS , MARK TO END , MARK ALL DUPLICAT , MARK LWR DUPLICAT , or COMPLMT MARKS ,
SIGPOS	Signal Position	SELECT FRM LIST

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

Command	Name	Key
SIGRESULT	Signal Result	
SIGSORT	Signal Sort	SORT BY FREQ SORT BY PK AMP , SORT BY QP , SORT BY AVG , or SORT BY DLTA LIM ,
SIGUNMARK	Signal Unmark	CLEAR MARK or CLR ALL MARKS
SMOOTH	Smooth Trace	
SNGLS	Single Sweep	(SGL SWP), SWEEP CONT SGL
SP	Span	SPAN
SPEAKER	Speaker	SPEAKER ON OFF
SPZOOM	Span Zoom	SPAN ZOOM
SQLCH	Squelch	SQUELCH
SQR	Square Root	
SRCALC	Source Leveling Control	ALC INT EXT or ALC MTR INT XTAL
SRCAT	Source Attenuator	SRC ATN MAN AUTO
SRCNORM	Source Normalization	NORMLIZE ON OFF or NORM A/B ON OFF
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

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

Command	Name	Key
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	Save Card , SAVE LIMITS , SAVE ANTENNA , SAVE CABLE , or SAVE OTHER
SUB	Subtract	
SUM	Sum of Trace Amplitudes	
SUMSQR	Sum of Squared Trace Amplitudes	
SWPCPL	Sweep Couple	SWP CPLG SR SA
SWEEPTYPE	Sweep Type	SWEEP LOG LIN
SWITCHAVG	Switch Average	AVG ON OFF
SWITCHQPD	Switch Quasi-Peak	QP ON OFF
SYNCMODE	Synchronize Mode	SYNC NRM NTSC , DEFAULT SYNC , SYNC NRM PAL
TA	Transfer A	
TB	Transfer B	
TBLDEF	Table Definition	Define List
TDF	Trace Data Format	

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

Command	Name	Key
TEXT	Text	
TH	Threshold	THRESHLD ON OFF
TIMEDATE	Time Date	
TIMEDSP	Time Display	TIMEDATE ON OFF
TITLE	Title	Change Title
TM	Trigger Mode	FREE RUN , LINE , VIDEO , EXTERNAL , or TV TRIG
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 , or TV TRIG VERT INT
TVSTND	TV Standard	NTSC , PAL-M , PAL , or SECAM-L
TVSYNC	TV Sync	TV SYNC NEG POS
TWNDOW	Trace Window	
UNRANGE	UnRange	
UP	Up	

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

Command	Name	Key
USTATE	User State	
VARDEF	Variable Definition	
VARIANCE	Variance of Trace Amplitudes	
VAVG	Video Average	VID AVG ON OFF
VB	Video Bandwidth	VID BW AUTO MAN or AVG BW AUTO MAN ,
VBR	Video Bandwidth Ratio	VBW/RBW RATIO or AV/IF BW 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	
XUNITS	Transducer Conversion Units	pTesla , Gauss , $\mu\text{V/m}$, $\mu\text{A/m}$, or NO CONVERSION
ZMKCNTR	Zone Marker at Center Frequency	ZONE CENTER
ZMKPKNL	Zone Marker for Next Left Peak	ZONE PK LEFT
ZMKPKNR	Zone Marker for Next Right Peak	ZONE PK RIGHT
ZMKSPAN	Zone Marker Span	ZONE SPAN

NOTES

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. The reference to “SA mode” in the table refers to the EMC analyzer’s spectrum analyzer mode.

Table D-1. Softkey Locations

Softkey	Front-Panel Access Key
< > ' , ; :	(CONFIG), (SAVE/RECALL) (DISPLAY), (CAL), or (SETUP) (SA mode)
+ - < > = .	(CONFIG), (SAVE/RECALL) (DISPLAY), (CAL), or (SETUP) (SA mode)
/ ? \ []	(CONFIG), (SAVE/RECALL) (DISPLAY), (CAL), or (SETUP) (SA mode)
@ # \$ % & *	(CONFIG), (SAVE/RECALL) (DISPLAY), (CAL), or (SETUP) (SA mode)
(LP	(CONFIG), (SAVE/RECALL) (DISPLAY), (CAL), or (SETUP) (SA mode)

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
) RP	CONFIG, SAVE/RECALL DISPLAY, CAL, or SETUP (SA mode)
' APOST	CONFIG, SAVE/RECALL DISPLAY, CAL, or SETUP (SA mode)
, COMMA	CONFIG, SAVE/RECALL DISPLAY, CAL, or SETUP (SA mode)
; SEMI	CONFIG, SAVE/RECALL DISPLAY, CAL, or SETUP (SA mode)
+ ADD	CONFIG, SAVE/RECALL DISPLAY, CAL, or SETUP (SA mode)
- SUB	CONFIG, SAVE/RECALL DISPLAY, CAL, or SETUP (SA mode)
< LT	CONFIG, SAVE/RECALL DISPLAY, CAL, or SETUP (SA mode)
> GT	CONFIG, SAVE/RECALL DISPLAY, CAL, or SETUP (SA mode)
= EQ	CONFIG, SAVE/RECALL DISPLAY, CAL,

D-2 Locating a Softkey

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
. PERIOD	or SETUP (SA mode) CONFIG , SAVE/RECALL DISPLAY , CAL ,
/ DIV	or SETUP (SA mode) CONFIG , SAVE/RECALL DISPLAY , CAL ,
?	or SETUP (SA mode) CONFIG , SAVE/RECALL DISPLAY , CAL ,
\	or SETUP (SA mode) CONFIG , SAVE/RECALL DISPLAY , CAL ,
[LB	or SETUP (SA mode) CONFIG , SAVE/RECALL DISPLAY , CAL ,
] RB	or SETUP (SA mode) CONFIG , SAVE/RECALL DISPLAY , CAL ,
@ AT	or SETUP (SA mode) CONFIG , SAVE/RECALL DISPLAY , CAL ,
#	or SETUP (SA mode) CONFIG , SAVE/RECALL DISPLAY , CAL ,
\$	or SETUP (SA mode) CONFIG , SAVE/RECALL DISPLAY , CAL ,
	or SETUP (SA mode)

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
%	CONFIG, SAVE/RECALL DISPLAY, CAL, or SETUP (SA mode)
&	CONFIG, SAVE/RECALL DISPLAY, CAL, or SETUP (SA mode)
*	CONFIG, SAVE/RECALL DISPLAY, CAL, or SETUP (SA mode)
% AM	AUX/USER
μ A/m	SETUP
μ V/m	SETUP
ϕ LOCK ON OFF	CAL
+10V REF DETECTOR	CAL
-10V REF DETECTOR	CAL
0-2.9 Gz BAND 0	FREQUENCY
12.4-19 BAND 3	FREQUENCY
120 kHz EMI BW	BW
150 kHz -30 MHz	SETUP
19.1-22 BAND 4	FREQUENCY
2.75-6.5 BAND 1	FREQUENCY
200 Hz EMI BW	BW
200 MHz -1 GHz	SETUP
2v REF DETECTOR	CAL

D-4 Locating a Softkey

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
30 MHz – 300 MHz	SETUP
3rd ORD MEAS	AUX/USER
3 dB Points	AUX/USER
6.0-12.8 BAND 2	FREQUENCY
6 dB POINTS	AUX/USER
9 kHz – 150 kHz	SETUP
9 kHz EMI BW	BW
99% PWR BW	AUX/USER
A	CONFIG , SAVE/RECALL DISPLAY , CAL , or SETUP (SA mode)
A-B -> A ON OFF	TRACE
A -> C	TRACE
A <--> B	TRACE
ABCDEF	CAL , CONFIG , DISPLAY , SETUP (SA mode), or SAVE/RECALL
Abort	TEST or OUTPUT
ADD TO LIST	TEST
ALC INT EXT	AUX/USER
ALC MTR INT XTAL	AUX/USER
ALC TEST	CAL
ALL DLP --> CARD	SAVE/RECALL
AMP COR ON OFF	CAL
Amp Cor	CAL
AMPL SCL LOG LIN	DISPLAY or SETUP
Amptd Units	AMPLITUDE

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
ANALOG+ ON OFF	(DISPLAY)
ANALYZER ADDRESS	(CONFIG)
ANNOTATN ON OFF	(DISPLAY) or (OUTPUT)
ANTENNA --> CARD	(SAVE/RECALL)
Antenna Factors	(SETUP)
ANTENNA ON OFF	(SETUP)
Antenna Units	(SETUP)
APND CAT ITEM	(SAVE/RECALL)
ATTEN AUTO MAN	(AMPLITUDE) or (AUTO COUPLE)
AUTO ALL	(AUTO COUPLE)
AUTO CAL ON OFF	(CAL)
AUTO-MEASURE	(TEST)
AUTOEXEC ON OFF	(SETUP)
AUTORANG ON OFF	(AMPLITUDE) or (SETUP)
AUX B	(CAL)
Aux Conn Control	(AUX/USER)
AV DWELL TIME	(SETUP)
AV/IF BW RATIO	(BW)
AVG BW AUTO MAN	(BW) or (AUTO COUPLE)
AVG ON OFF	(DET)
B	(CONFIG), (SAVE/RECALL), (DISPLAY), (CAL), or (SETUP) (SA mode)
B - DL --> B	(TRACE)
B --> C	(TRACE)
B <---> C	(TRACE)

D-6 Locating a Softkey

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
Band Lock	FREQUENCY
BAUD RATE	CONFIG
BINARY SPAN	CAL
BLANK A	TRACE or TEST
BLANK B	TRACE
BLANK C	TRACE
BLANK CARD	CONFIG
BND LOCK ON OFF	FREQUENCY
C	CONFIG , SAVE/RECALL DISPLAY , CAL , or SETUP (SA mode)
CABLE --> CARD	SAVE/RECALL
Cable Factors	SETUP
CABLE ON OFF	SETUP
CAL AMPTD	CAL
Cal At Time	CAL
CAL CISPR BW	CAL
CAL FETCH	CAL
CAL FREQ & AMPTD	CAL
CAL FREQ	CAL
CAL MXR	CAL
CAL STORE	CAL
CAL TIMEBASE	CAL
CAL TRK GEN	CAL
CAL YTF	CAL

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
Card Config	CONFIG
CATALOG ALL	SAVE/RECALL
CATALOG CARD	CONFIG or SAVE/RECALL
Catalog Internal	SAVE/RECALL
CATALOG PREFIX	SAVE/RECALL
CATALOG REGISTER	SAVE/RECALL
CATALOG VARIABLES	SAVE/RECALL
CENTER FREQ	FREQUENCY
CF STEP AUTO MAN	AUTO COUPLE or FREQUENCY
Change Prefix	CONFIG, DISPLAY, or SAVE/RECALL
Change Title	CAL, DISPLAY, or SETUP
CLEAR ANNOTATN	OUTPUT
CLEAR MARK	TEST
CLEAR WRITE A	TRACE or TEST
CLEAR WRITE B	TRACE
CLEAR WRITE C	TRACE
CLR ALL MARKS	TEST
CNT RES AUTO MAN	MKR
CNTL A 0 1	AUX/USER
CNTL B 0 1	AUX/USER
CNTL C 0 1	AUX/USER
CNTL D 0 1	AUX/USER
COARSE TUNE DAC	CAL

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
COMB GEN ON OFF	AUX/USER
COMPLMNT MARKS	TEST
CONF TEST	CAL
COPY DEV PRNT PLT	CONFIG
COPY SCREEN	OUTPUT
CORRECT ON OFF	CAL
Correctn Factors	SETUP
CORRECTN ON OFF	SETUP
COUPLE AC DC	AMPLITUDE
CRT HORZ POSITION	CAL
CRT VERT POSITION	CAL
D	CONFIG , SAVE/RECALL DISPLAY , CAL , or SETUP (SA mode)
DACS	CAL
DATEMODE MDY DMY	CONFIG
dB μ V	AMPLITUDE
dBm	AMPLITUDE
dBmV	AMPLITUDE
DEFAULT CAL DATA	CAL
DEFAULT CONFIG	CONFIG
DEFAULT SYNC	CONFIG
Define List	OUTPUT
Define Report	OUTPUT
DELETE ALL SIGS	TEST
DELETE FACTORS	SETUP

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
DELETE FILE	DISPLAY , SAVE/RECALL , SETUP , or TEST
DELETE LIMIT	DISPLAY or SETUP
DELETE MARKED	TEST
DELETE POINT	CAL or SETUP
DELETE SEGMENT	DISPLAY or SETUP
DELETE SIGNAL	TEST
Delete Signals	TEST
DELTA MEAS	AUX/USER
DEMOD AM FM	DEMOD
DEMOD ON OFF	DEMOD
DESKJET 310/550C	CONFIG
DESKJET 540	CONFIG
DETECTOR PK QP AV	SETUP or TEST
DETECTOR PK SP NG	DET or TRACE
DETECTOR SMP PK	DET or TRACE
DISPLAY --> CARD	SAVE/RECALL
DISPLAY CAL DATA	CAL
DISPLAY CNTL I	AUX/USER
Dispose User Mem	CONFIG
DR00P	CAL
DSP LINE ON OFF	DISPLAY or MKR -->
DWELL TIME	DEMOD
E	CONFIG , SAVE/RECALL DISPLAY , CAL , or SETUP (SA mode)
EDIT AMP COR	CAL

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
EDIT ANNOTATN	OUTPUT
EDIT ANTENNA	SETUP
EDIT CABLE	SETUP
EDIT CAT ITEM	SAVE/RECALL
EDIT DONE	CONFIG , DISPLAY , CAL , SAVE/RECALL , or SETUP
EDIT FLATNESS	CAL
EDIT LAST	SAVE/RECALL
EDIT LIMIT	DISPLAY or SETUP
Edit Limit	DISPLAY or SETUP (SA mode)
EDIT LIST	TEST
EDIT LOWER	DISPLAY or SETUP
EDIT MID/DELT	DISPLAY or SETUP (SA mode)
EDIT OTHER	SETUP
EDIT UP/LOW	DISPLAY or SETUP (SA mode)
EDIT UPPER	DISPLAY or SETUP (SA mode)
EDIT UPR LWR	SETUP or DISPLAY (SA mode)
Editor	SAVE/RECALL
EMC ANALYZER	MODE
EP LQ570 SML LRG	CONFIG
EP MX80 SML LRG	CONFIG
ERASE DLP MEM	CONFIG
ERASE MEM CARD	CONFIG
ERASE STATEALL	CONFIG
ERASE TRACEALL	CONFIG
EXECUTE TITLE	CAL

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
EXIT	CAL
EXIT CATALOG	DISPLAY, SAVE/RECALL, SETUP, or TEST
EXIT EDIT	OUTPUT
EXIT GRAPH	TEST
EXIT MEASURE	TEST
EXIT SHOW	CONFIG
EXTERNAL PREAMPG	AMPLITUDE
EXTERNAL	SWEEP/TRIG
F	CONFIG, SAVE/RECALL, DISPLAY, CAL, or SETUP (SA mode)
FAST STP ON OFF	SETUP or TEST
FFT MEAS	AUX/USER
FINE TUNE DAC	CAL
FLAT	DISPLAY or SETUP
Flatness Data	CAL
FM COIL DRIVE	CAL
FM GAIN	CAL or DEMOD
FM OFFSET	CAL
FM SPAN	CAL
FORMAT CARD	CONFIG
FREE RUN	SWEEP/TRIG
FREQ DIAG	CAL
FREQ OFFSET	FREQUENCY
FREQ SCL LOG LIN	DISPLAY or SETUP
FREQ STEP	TEST or SETUP

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
FRQ DISC NORM OFF	CAL
FRQ SCAN ON OFF	TEST
FULL SPAN	SPAN
G	CONFIG , SAVE/RECALL
Gauss	DISPLAY , CAL , or SETUP (SA mode)
GHIJKL	SETUP
	CAL , CONFIG , DISPLAY , SAVE/RECALL , or SETUP (SA mode)
GND REF DETECTOR	CAL
GRAT ON OFF	DISPLAY
H	CONFIG , SAVE/RECALL
	DISPLAY , CAL , or SETUP (SA mode)
HOLD	DISPLAY
HP B&W DJ540	CONFIG
HP B&W PRINTER	CONFIG
I	CONFIG , SAVE/RECALL
	DISPLAY , CAL , or SETUP (SA mode)
IDNUM	CAL
IF BW AUTO MAN	AUTO COUPLE or BW
IF GAINS	CAL
INIT FLT	CAL
INPT LCK ON OFF	FREQUENCY

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
INPUT 1 9k-50M	SETUP
INPUT 2 20M-2.9G	SETUP
INPUT 2 BYPASS	SETUP
INPUT Z 50Ω 75Ω	AMPLITUDE
Input	SETUP
INTERNAL --> STATE	SAVE/RECALL
Internal --> Trace	SAVE/RECALL
J	CONFIG , SAVE/RECALL DISPLAY , CAL , or SETUP (SA mode)
K	CONFIG , SAVE/RECALL DISPLAY , CAL , or SETUP (SA mode)
L	CONFIG , SAVE/RECALL DISPLAY , CAL , or SETUP (SA mode)
LAST SPAN	SPAN
LIMIT 1 ON OFF	DISPLAY or SETUP
LIMIT 2 ON OFF	DISPLAY or SETUP
Limit 1	DISPLAY or SETUP
Limit 2	DISPLAY or SETUP
Limit Lines	DISPLAY or SETUP
LIMIT LINES	SAVE/RECALL
LIMITS --> CARD	SAVE/RECALL
LIMITS FIX REL	DISPLAY or SETUP (SA mode)

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
LIMITS FRQ TIME	DISPLAY or SETUP (SA mode)
LIN CHCK ON OFF	AMPLITUDE or TEST
LIN ON OFF	OUTPUT
LINE	SWEEP/TRIG
LIST --> CARD	SAVE/RECALL
LIST ON OFF	OUTPUT
LMT DISP Y N AUTO	DISPLAY or SETUP (SA mode)
LMT TEST ON OFF	DISPLAY or SETUP
LOAD FILE	DISPLAY , SAVE/RECALL , SETUP , or TEST
LOG ON OFF	OUTPUT
LOGF SPD STD FAST M	FREQUENCY or SWEEP/TRIG CONFIG , SAVE/RECALL DISPLAY , CAL , or SETUP (SA mode)
MAIN COIL DR	CAL
MAIN SPAN	CAL
MAN TRK ADJUST	AUX/USER
MARGIN 1 ON OFF	DISPLAY or SETUP
MARGIN 2 ON OFF	DISPLAY or SETUP
MARK ALL DUPLICAT	TEST
MARK ALL SIGNALS	TEST
MARK LWR DUPLICAT	TEST
MARK SIGNAL	TEST

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
MARK TO END	TEST
MARKER 1 ON OFF	MKR
MARKER 2 ON OFF	MKR
MARKER 3 ON OFF	MKR
MARKER 4 ON OFF	MKR
MARKER Δ SPAN	MKR -->
MARKER Δ	MKR --> or MKR
MARKER --> CF STEP	MKR -->
MARKER --> CF	MKR -->
MARKER --> HIGH	MKR -->
MARKER --> MINIMUM	MKR -->
MARKER --> PK-PK	MKR -->
MARKER --> REF LVL	MKR -->
MARKER --> START	MKR -->
MARKER --> STOP	MKR -->
MARKER ALL OFF	MKR
MARKER AMPTD	MKR
MARKER NORMAL	MKR
MARKER TUNE SPN	TEST
MARKER	TEST
MAX HOLD A	TEST or TRACE
MAX HOLD B	TRACE
MAX MXR LVL	AMPLITUDE
MAX/MIN ON OFF	TRACE
MAX/MIN VIEW	TRACE

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
MEAS SNG CONT	TEST
MEAS STEPPED	TEST
MEASURE AT MKR	TEST
Measure Detector	SETUP
MEM LOCKED	SAVE/RECALL or CONFIG
MIN HOLD C	TRACE
MIXER BIAS DAC	CAL
MK COUNT ON OFF	MKR
MK NOISE ON OFF	MKR
MK PAUSE ON OFF	MKR
MK READ F T I P	MKR
MK TRACE AUTO ABC	MKR
MK TRACK ON OFF	MKR
MNOPQR	CAL , CONFIG , DISPLAY , SAVE/RECALL or SETUP (SA mode)
N	CONFIG , SAVE/RECALL DISPLAY , CAL , or SETUP (SA mode)
NEW EDIT	SAVE/RECALL
NEXT PAGE	SETUP
NEXT PEAK	MKR -->
NEXT PK LEFT	MKR -->
NEXT PK RIGHT	MKR -->
NO CONVERSN	SETUP
No User Menus	AUX/USER
NORM A/B ON OFF	TRACE

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
NORMLIZE ON OFF	TRACE
NORMLIZE POSITION	TRACE
NTSC	SWEEP/TRIG
0	CONFIG, SAVE/RECALL
	DISPLAY, CAL,
	or SETUP (SA mode)
OTHER --> CARD	SAVE/RECALL
Other Factors	SETUP
OTHER ON OFF	SETUP
OUTPUT REPORT	OUTPUT
OVL D ON OFF	SETUP
P	CONFIG, SAVE/RECALL
	DISPLAY, CAL,
	or SETUP (SA mode)
PAINTJET PRINTER	CONFIG
PAL-M	SWEEP/TRIG
PAL	SWEEP/TRIG
PEAK EXCURSN	MKR --> or ON
PK-PK MEAS	AUX/USER
PK DWELL TIME	SETUP
Plot Config	CONFIG
PLOTTER ADDRESS	CONFIG
PLT-->LJT ON OFF	CONFIG
PLT MENU ON OFF	CONFIG
PLT_ _LOC_ _	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
POINT	DISPLAY or SETUP
POWER ON IP LAST	CONFIG or SETUP
PREAMP OM OFF	SETUP
PRESEL DAC	CAL
PRESEL DEFAULT	AMPLITUDE
PRESEL PEAK	AMPLITUDE
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
pTesla	SETUP
PURGE AMP COR	CAL
PURGE LIMITS	DISPLAY or SETUP (SA mode)
PWR SWP ON OFF	AUX/USER
Q	CONFIG , SAVE/RECALL DISPLAY , CAL , or SETUP (SA mode)
QP DET ON OFF	CAL
QP DWELL TIME	SETUP
QP GAIN ON OFF	CAL

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
QP ON OFF	DET
QP/AVG 10X OFF	DET
QPD OFFSET	CAL
QPD RST ON OFF	CAL
R	CONFIG , SAVE/RECALL DISPLAY , CAL , or SETUP (SA mode)
RECALL AMP COR	CAL
RECALL ANTENNA	SAVE/RECALL or SETUP
RECALL CABLE	SAVE/RECALL or SETUP
Recall Card	SAVE/RECALL
RECALL DISPLAY	SAVE/RECALL
RECALL DLP	SAVE/RECALL
Recall Internal	SAVE/RECALL
RECALL LIMITS	DISPLAY , SAVE/RECALL , or SETUP
RECALL LIST	SAVE/RECALL or TEST
RECALL OTHER	SAVE/RECALL or SETUP
RECALL SETUP	SAVE/RECALL or SETUP
RECALL STATE	SAVE/RECALL
RECALL TRACE	SAVE/RECALL
REF LVL OFFSET	AMPLITUDE
REF LVL	AMPLITUDE
REMEAS ALL SIGS	TEST
REMEAS MARKED	TEST
REMEAS SIGNAL	TEST

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
Re-measure	TEST
RESTART	TEST
RPG TITLE	CAL , DISPLAY , or SETUP (SA mode)
S	CONFIG , SAVE/RECALL DISPLAY , CAL , or SETUP (SA mode)
SAVE AMP COR	CAL
SAVE ANTENNA	SETUP
SAVE AUTOEXEC	SETUP
SAVE CABLE	SETUP
Save Card	SAVE/RECALL
SAVE EDIT	SAVE/RECALL
Save Internal	SAVE/RECALL
SAVE LIMITS	DISPLAY or SETUP
SAVE LIN GRAPH	TEST
SAVE LIST	TEST
SAVE LOG GRAPH	TEST
SAVE OTHER	SETUP
SAVE SETUP	SETUP
Save/Rcl List	TEST
SAV LOCK ON OFF	SAVE/RECALL
SCALE LOG LIN	AMPLITUDE
SECAM-L	SWEEP/TRIG

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
SELECT 1 2 3 4	(MKR)
SELECT AMPLITUDE	(CAL), (DISPLAY), or (SETUP)
Select Axis	(DISPLAY) or (SETUP)
SELECT FREQ	(CAL), (DISPLAY), or (SETUP)
SELECT FRM LIST	(TEST)
SELECT POINT	(CAL) or (SETUP)
SELECT PREFIX	(DISPLAY), (SAVE/RECALL), (SETUP), or (TEST)
SELECT SEGMENT	(DISPLAY) or (SETUP)
SELECT TIME	(SETUP) (SA mode)
Select Type	(DISPLAY) or (SETUP)
SELECT DLT AMPL	(DISPLAY) or (SETUP) (SA mode)
SELECT LWR AMPL	(DISPLAY) or (SETUP) (SA mode)
SELECT MID AMPL	(DISPLAY) or (SETUP) (SA mode)
SELECT UPR AMPL	(DISPLAY) or (SETUP) (SA mode)
Selectv Mark	(TEST)
Service Cal	(CAL)
Service Diag	(CAL)
SET ATTN ERROR	(CAL)
Set B&W Printer	(CONFIG)
Set Colr Printer	(CONFIG)
SET DATE	(CONFIG)
SET TIME	(CAL) or (CONFIG)
SETTINGS ON OFF	(OUTPUT)

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
SETUP --> CARD	SAVE/RECALL
SHOW Δ 1 PK QP AV	OUTPUT
SHOW Δ 2 PK QP AV	OUTPUT
SHOW COR ON OFF	OUTPUT
SHOW DET PK QP AV	OUTPUT
SHOW MRK ON OFF	OUTPUT
SHOW SETUP	SETUP
SHW INST CONFIG	CONFIG
SIG LIST ON OFF	TEST
Signal Marking	TEST
SLOPE	DISPLAY or SETUP
SORT BY DLTA LIM	TEST
SORT BY AVG AMP	TEST
SORT BY FREQ	TEST
SORT BY PK AMP	TEST
SORT BY QP AMP	TEST
Sort Signals	TEST
SPACE	CONFIG , SAVE/RECALL DISPLAY , CAL , or SETUP (SA mode)
SPAN ZOOM	SPAN
SPAN	SPAN
SPEAKER ON OFF	DEMODO
SPECTRUM ANALYZER	MODE
SQUELCH	DEMODO

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
SRC ATN MAN AUTO	AUX/USER
SRC OFFSET	AUX/USER
SRC PWR ON OFF	AUX/USER
SRC PWR STP SIZE	AUX/USER
START FREQ	FREQUENCY
STATE --> CARD	SAVE/RECALL
STATE --> INTRNL	SAVE/RECALL
STEP LOG LIN	SETUP
STOP FREQ	FREQUENCY
STOP	TEST
STORE FLATNESS	CAL
STOR PWR ON UNITS	CAL
STP GAIN ZERO	CAL
STUVWX	CAL , CONFIG , DISPLAY , SAVE/RECALL , or SETUP (SA mode)
SWEEP CONT SGL	SWEEP/TRIG
SWEEP LOG LIN	FREQUENCY or SWEEP/TRIG
SWEEP RAMP	CAL
SWEEP TIME DAC	CAL
SWP CPLG SR SA	AUX/USER
SWP TIME AUTO MAN	AUTO COUPLE or SWEEP/TRIG
SYNC NRM NTSC	CONFIG
SYNC NRM PAL	CONFIG

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
T	(CONFIG), (SAVE/RECALL) (DISPLAY), (CAL), or (SETUP) (SA mode)
TABLE ADDRESS	(SETUP)
TABLE CCW STOP	(TEST)
TABLE CW STOP	(TEST)
THRESHLD ON OFF	(DISPLAY)
Time Date	(CONFIG)
TIMEDATE ON OFF	(CONFIG)
TOWER ADDRESS	(SETUP)
TOWER DN STOP	(TEST)
TOWER UP STOP	(TEST)
TOWER VERT HOR	(TEST)
Tower/Turntbl	(TEST)
Trace --> Card	(SAVE/RECALL)
Trace --> Intrnl	(SAVE/RECALL)
TRACE A B C	(TRACE)
TRACE A	(SAVE/RECALL)
TRACE B VW OFF	(TRACE)
TRACE B	(SAVE/RECALL)
TRACE C	(SAVE/RECALL)
Track Gen	(AUX/USER)
TRACKING PEAK	(AUX/USER)
Trigger	(SWEEP/TRIG)
TUNE SLO FAST	(TEST)

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
TV LINE #	[SWEEP/TRIG]
TV Standard	[SWEEP/TRIG]
TV SYNC NEG POS	[SWEEP/TRIG]
TV TRIG EVEN FLD	[SWEEP/TRIG]
TV TRIG ODD FLD	[SWEEP/TRIG]
TV TRIG VERT INT	[SWEEP/TRIG]
TV TRIG	[SWEEP/TRIG]
U	[CONFIG], [SAVE/RECALL] [DISPLAY], [CAL], or [SETUP] (SA mode)
User Menus	[AUX/USER]
V	[CONFIG], [SAVE/RECALL] [DISPLAY], [CAL], or [SETUP] (SA mode)
VERIFY TIMEBASE	[CAL]
VID AVG ON OFF	[BW] or [TRACE]
VIDEO	[SWEEP/TRIG]
VIEW Δ OFF	[TEST]
VIEW PK Δ LIM 1	[TEST]
VIEW PK Δ LIM 2	[TEST]
VIEW QP Δ LIM 1	[TEST]
VIEW QP Δ LIM 2	[TEST]
VIEW AVG Δ LIM 1	[TEST]
VIEW AVG Δ LIM 2	[TEST]

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
VIEW A	TRACE or TEST
VIEW B	TRACE or TEST
VIEW C	TRACE or TEST
VIEW CAL ON OFF	SETUP
VIEW PK QP AV	DET or TEST
Volts	AMPLITUDE
W	CONFIG , SAVE/RECALL DISPLAY , CAL , or SETUP (SA mode)
Watts	AMPLITUDE
WINDOWS OFF	ON
X	CONFIG , SAVE/RECALL DISPLAY , CAL , or SETUP (SA mode)
X FINE TUNE DAC	CAL
Y	CONFIG , SAVE/RECALL DISPLAY , CAL , or SETUP (SA mode)
YTF DRIVER	CAL
YTF SPAN	CAL
YTF TUNE COURSE	CAL
YTF TUNE FINE	CAL
YZ_# Spc Clear	CAL , CONFIG , DISPLAY , SAVE/RECALL , or SETUP (SA mode)

Table D-1. Softkey Locations (continued)

Softkey	Front-Panel Access Key
Z	CONFIG, SAVE/RECALL
	DISPLAY, CAL,
	or SETUP (SA mode)
ZERO SPAN	SPAN
ZONE CENTER	ON
ZONE PK LEFT	ON
ZONE PK RIGHT	ON
ZONE SPAN	ON

NOTES



E

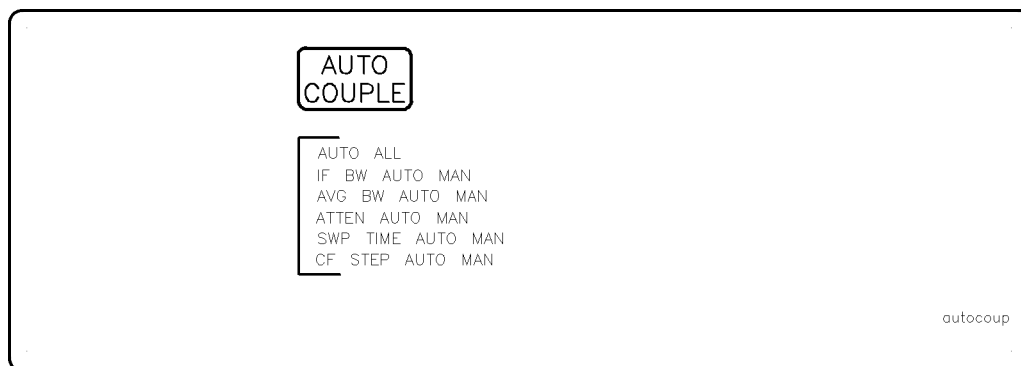
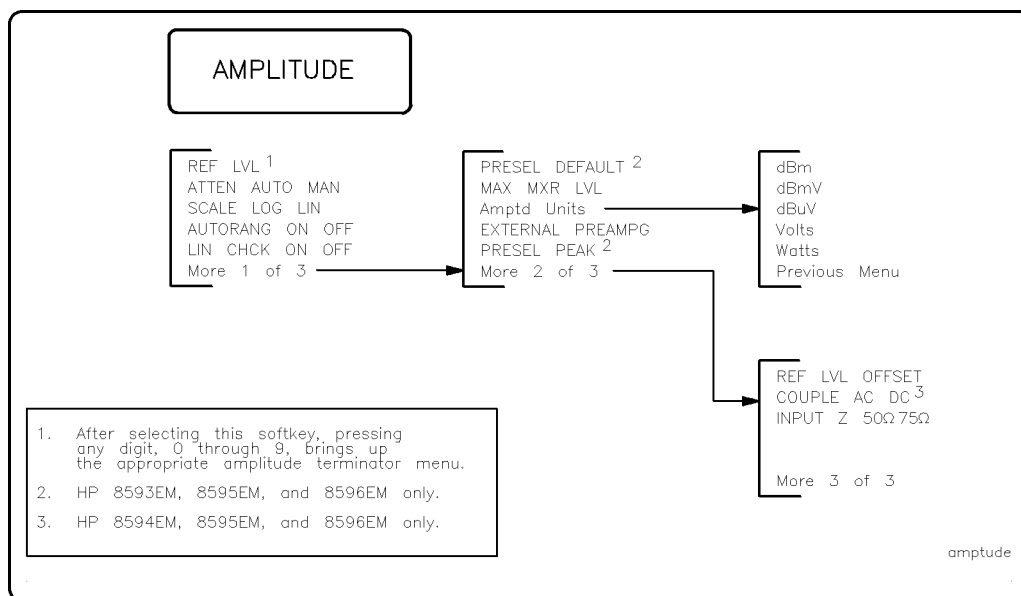
Key Menus

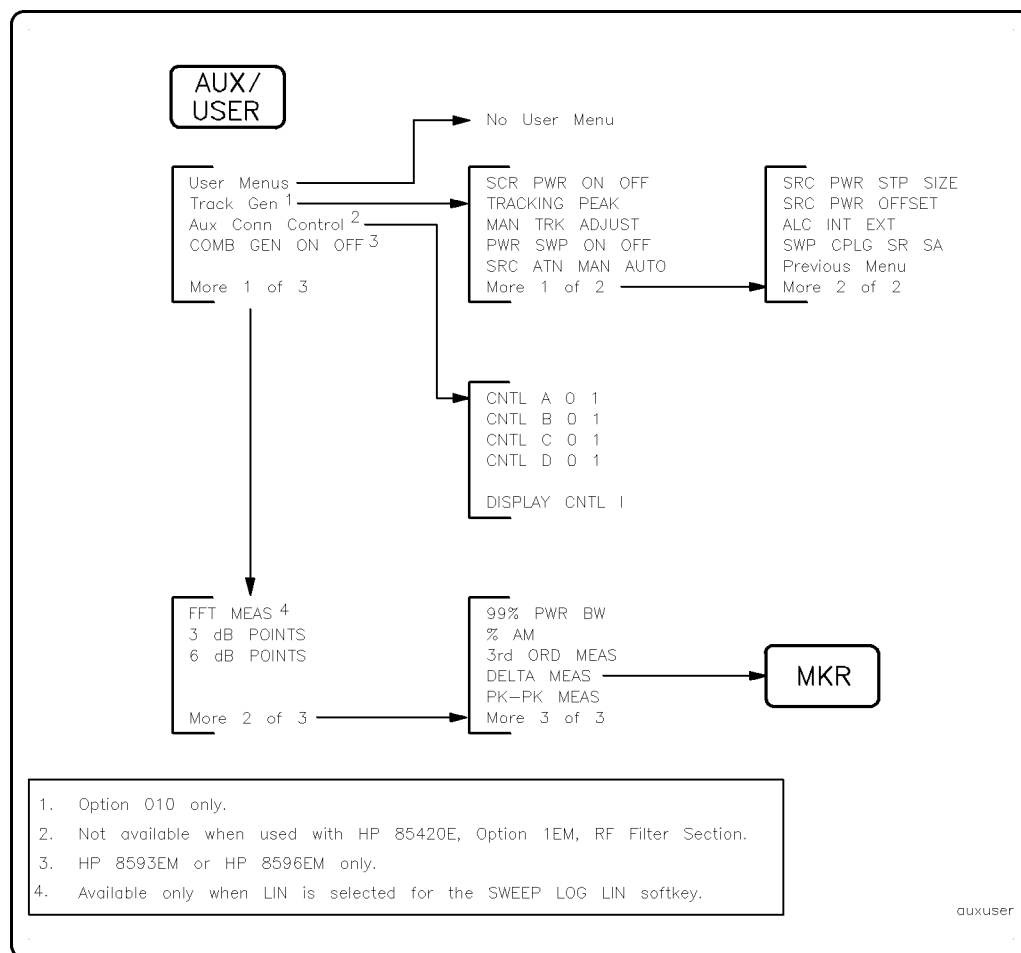
This chapter contains the key menu diagrams for the HP 8590 EM Series EMC analyzers. The menus are documented for the:

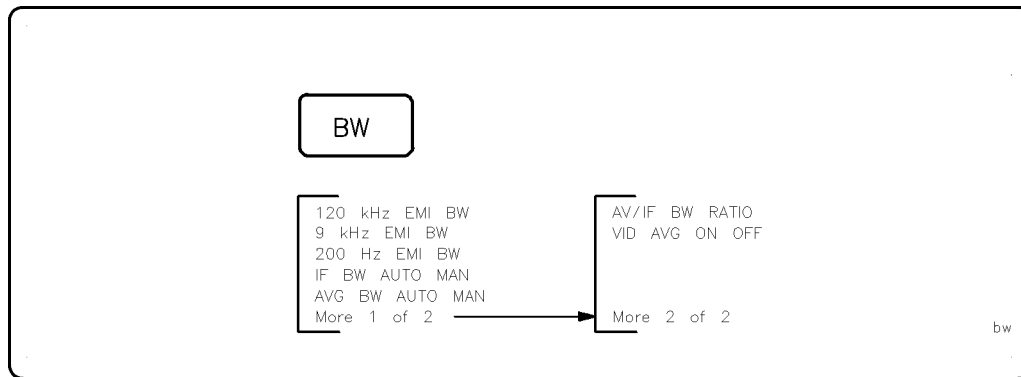
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- HP 8593EM
- HP 8594EM
- HP 8595EM
- HP 8596EM

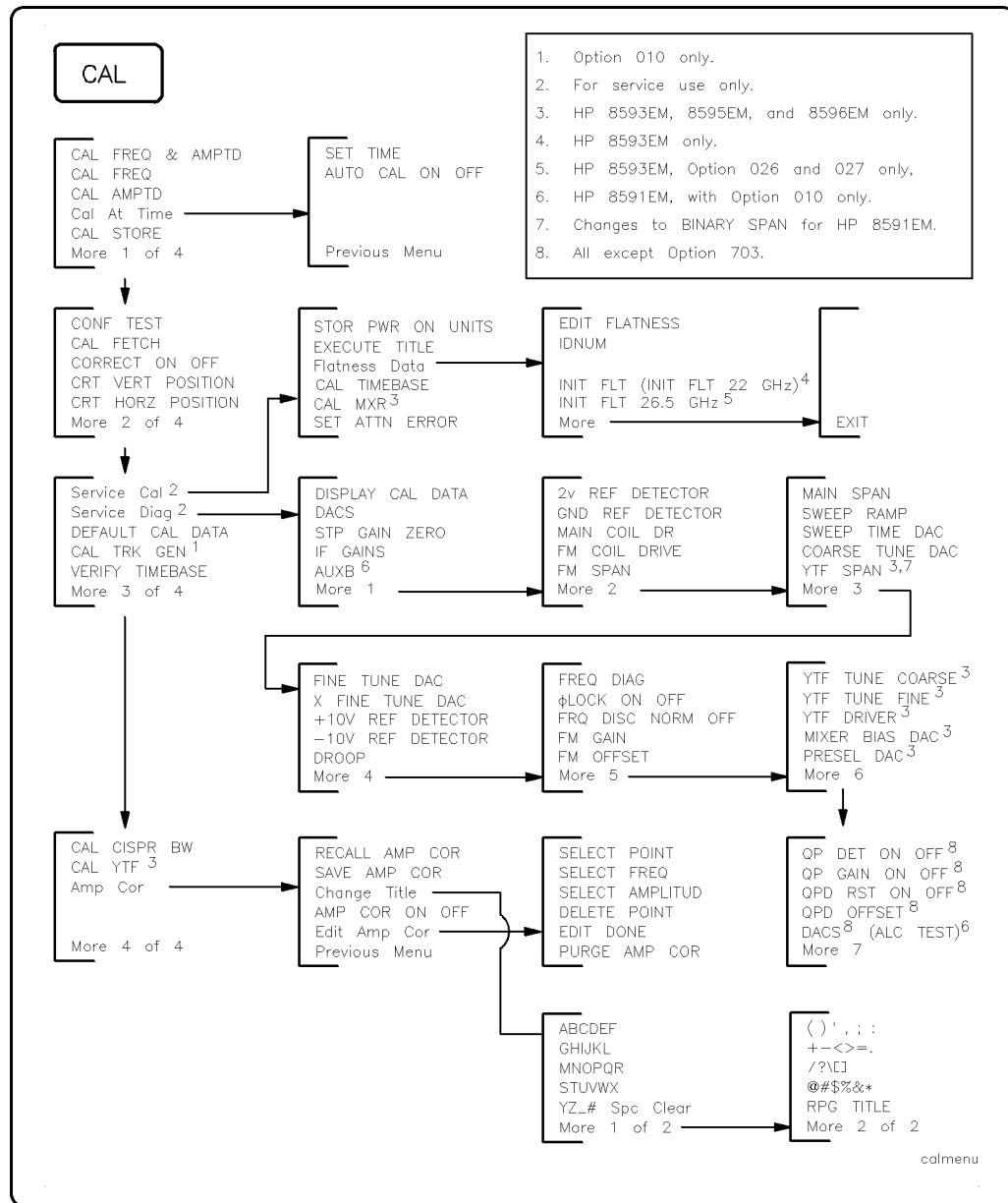
Each front-panel key is listed alphabetically. The softkeys accessed by a front-panel key are shown below the front-panel key.

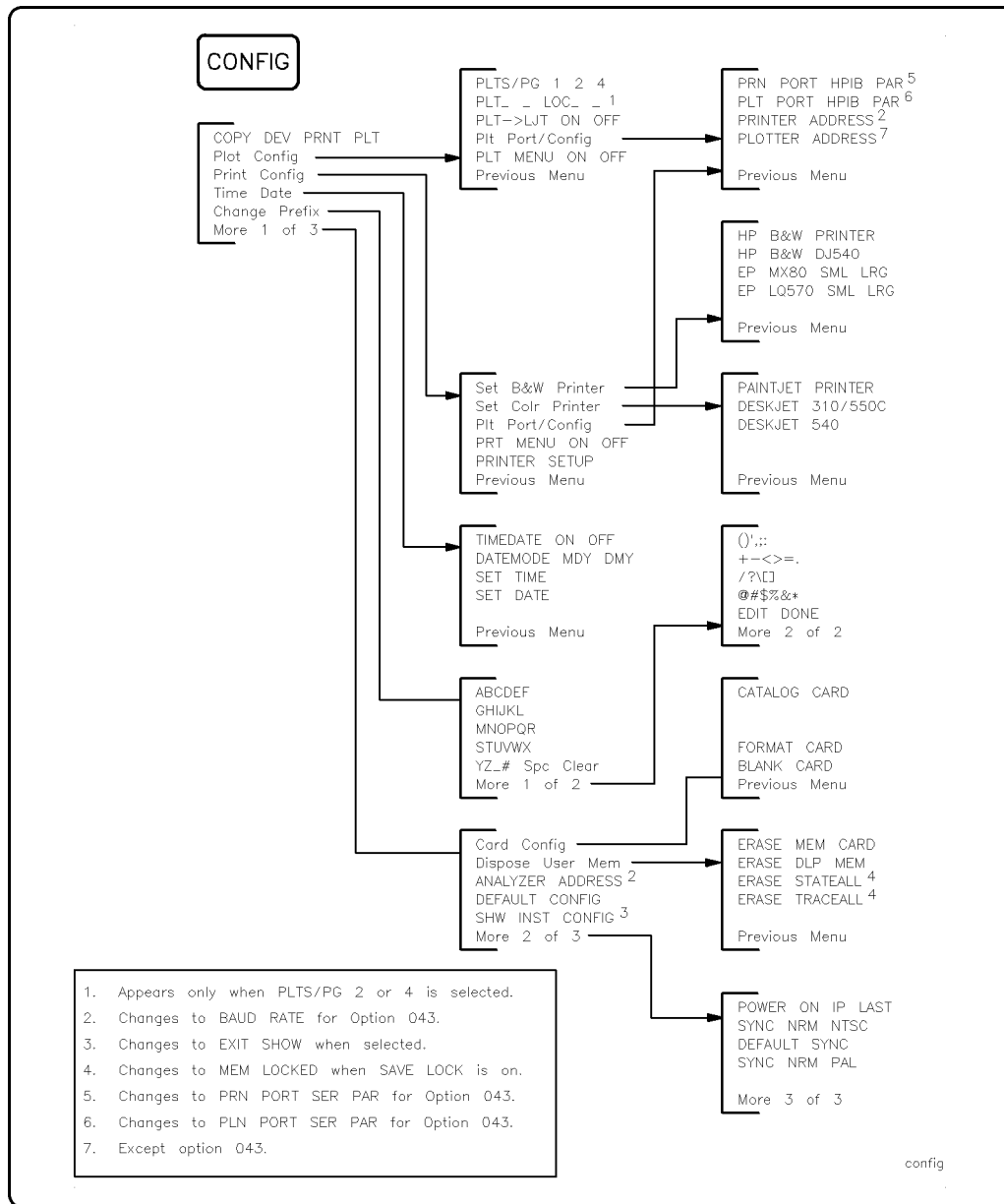
Note	Some of the softkeys in the key menus are model or option specific and may not appear on your EMC analyzer.
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E-6 Key Menus

COPY

copymenu

DEMOD¹

DEMOD ON OFF
DEMOD AM FM
SPEAKER ON OFF
SQUELCH
FM GAIN
DWELL TIME

1. All except Option 703.

demod

DET

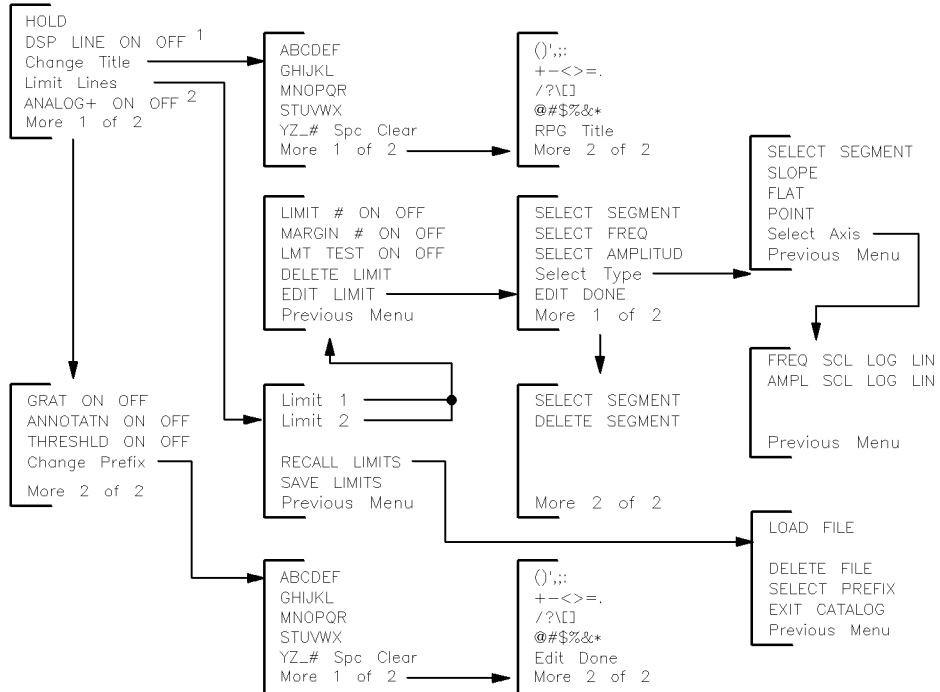
QP ON OFF¹
AVG ON OFF¹
VIEW PK QP AV¹
QP/AVG 10X OFF¹
DETECTOR SMP PK²

1. All except Option 703.
2. Changes to DETECTOR PK SP NG when Option 101 or 301 is installed.

det

DISPLAY hardkey—in EMC ANALYZER mode only

The DISPLAY hardkey has different Limit Lines softkey menus between the EMC analyzer and spectrum analyzer modes.

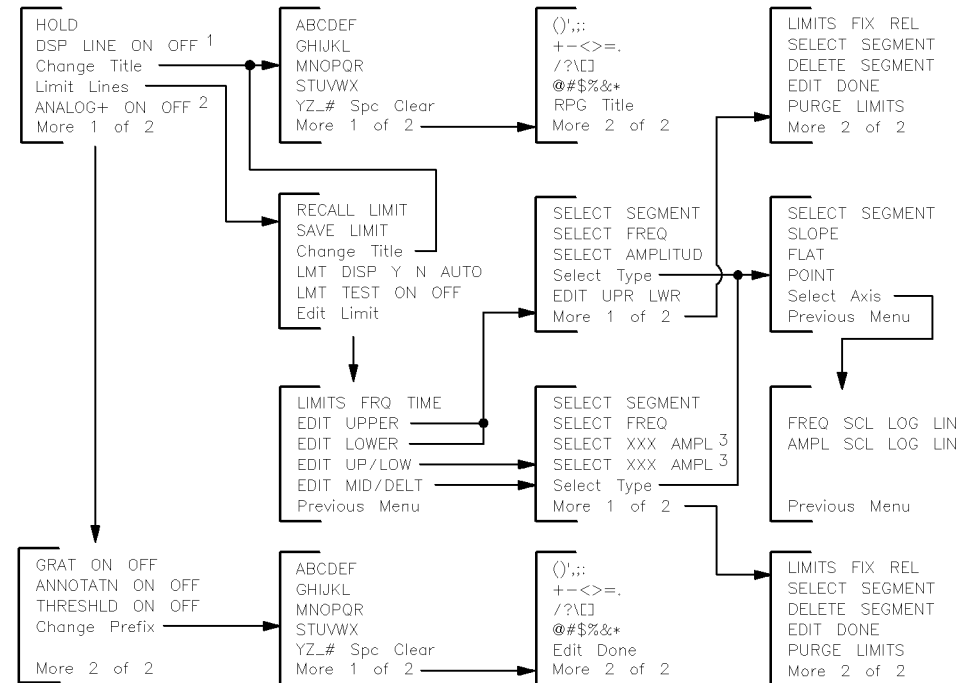
DISPLAY

1. After selecting this softkey, pressing any digit, 0 through 9, brings up the appropriate amplitude terminator menu.
2. Does not operate if SWEEP LOG is selected. Requires Option 101 or 301.

displayr

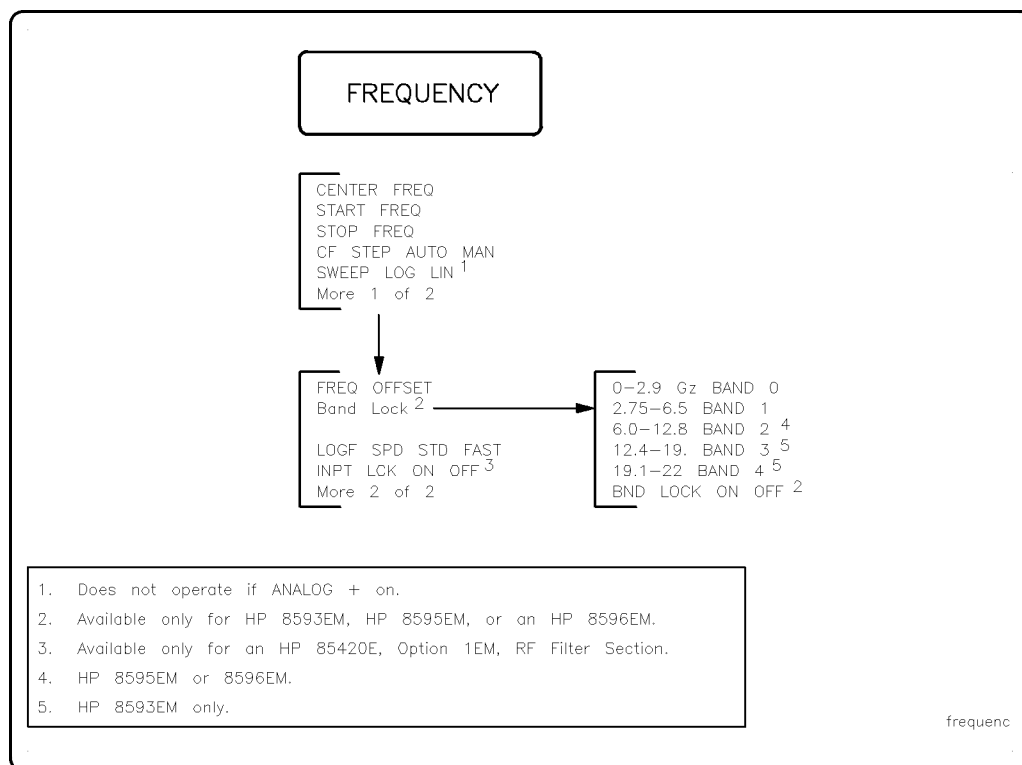
DISPLAY hardkey—in SPECTRUM ANALYZER mode only

The DISPLAY hardkey has different Limit Lines softkey menus between the EMC analyzer and spectrum analyzer modes.

DISPLAY

1. After selecting this softkey, pressing any digit, 0 through 9, brings up the appropriate amplitude terminator menu.
2. Does not operate if SWEEP LOG is selected. Requires Option 101 or 301.
3. Specifies amplitude for UPR LWR or MID DLT limit lines, respectively.

displays



MKR

MARKER NORMAL
 MARKER Δ
 MARKER AMPTD ¹
 SELECT 1 2 3 4
 MARKER # ON OFF
 More 1 of 3

MK TRACK ON OFF
 MK COUNT ON OFF
 MK TRACE AUTO ABC
 MK READ F T I P
 MARKER ALL OFF
 More 2 of 3

MK NOISE ON OFF
 MK PAUSE ON OFF
 CNT RES AUTO MAN
 More 3 of 3

1. After selecting this softkey, pressing any digit, 0 through 9, brings up the appropriate amplitude terminator menu.

mkr

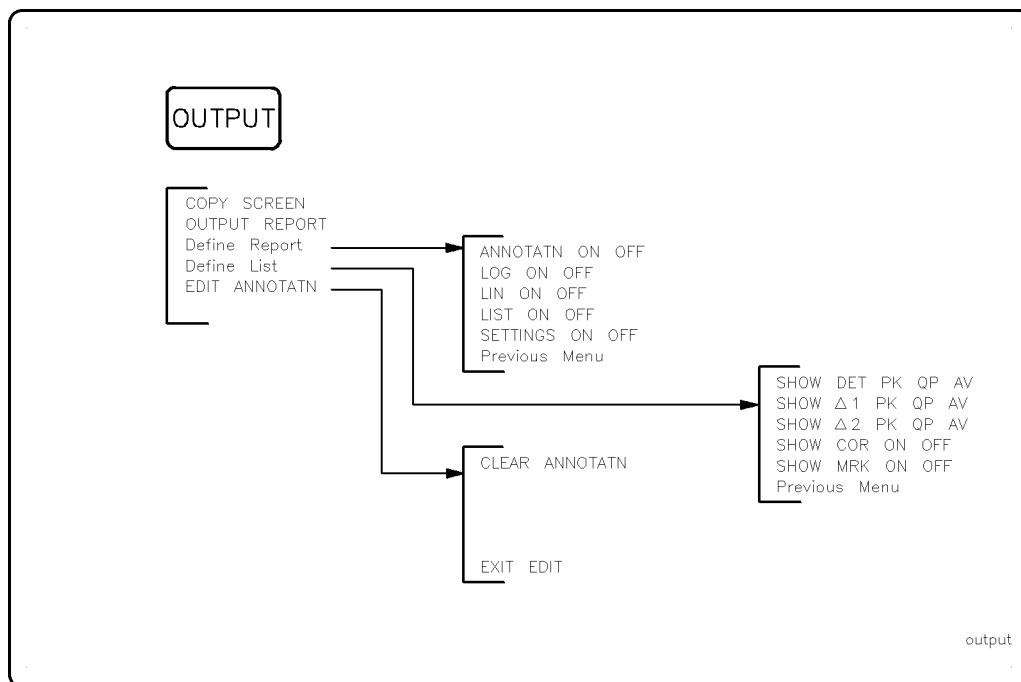
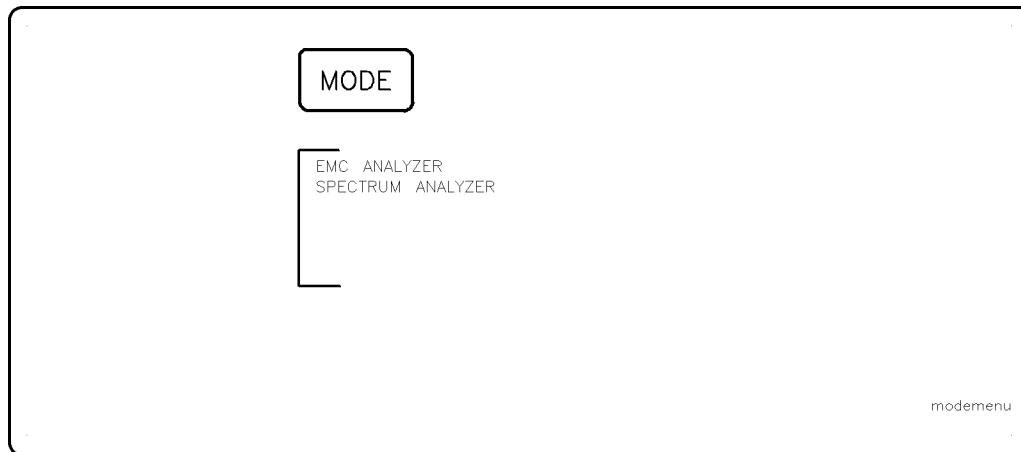
MKR->

MARKER -> HIGH
 MARKER -> CF
 NEXT PEAK
 NEXT PK RIGHT
 NEXT PK LEFT
 More 1 of 3

PEAK EXCURSN
 MARKER -> REF LVL
 MARKER -> CF STEP
 MARKER -> MINIMUM
 MARKER -> PK-PK
 More 2 of 3

MARKER -> START
 MARKER -> STOP
 MARKER Δ
 MARKER Δ SPAN
 DSP LINE ON OFF
 More 3 of 3

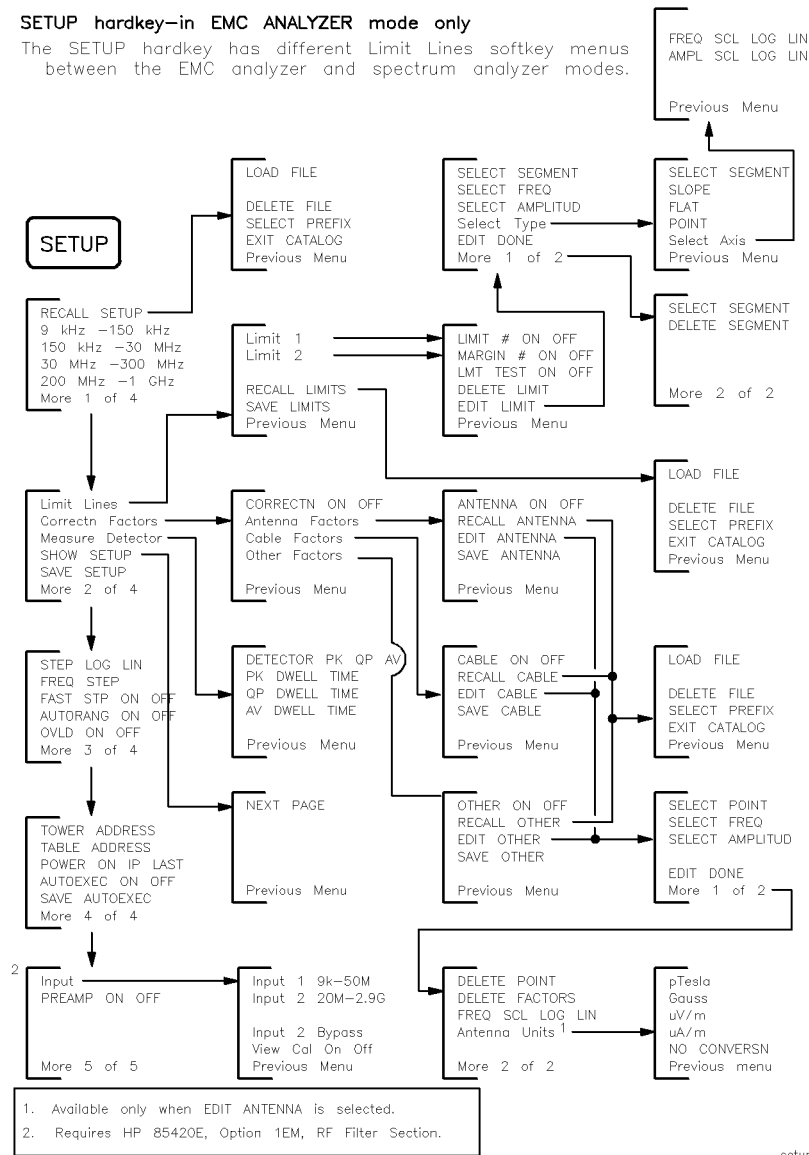
mkrright

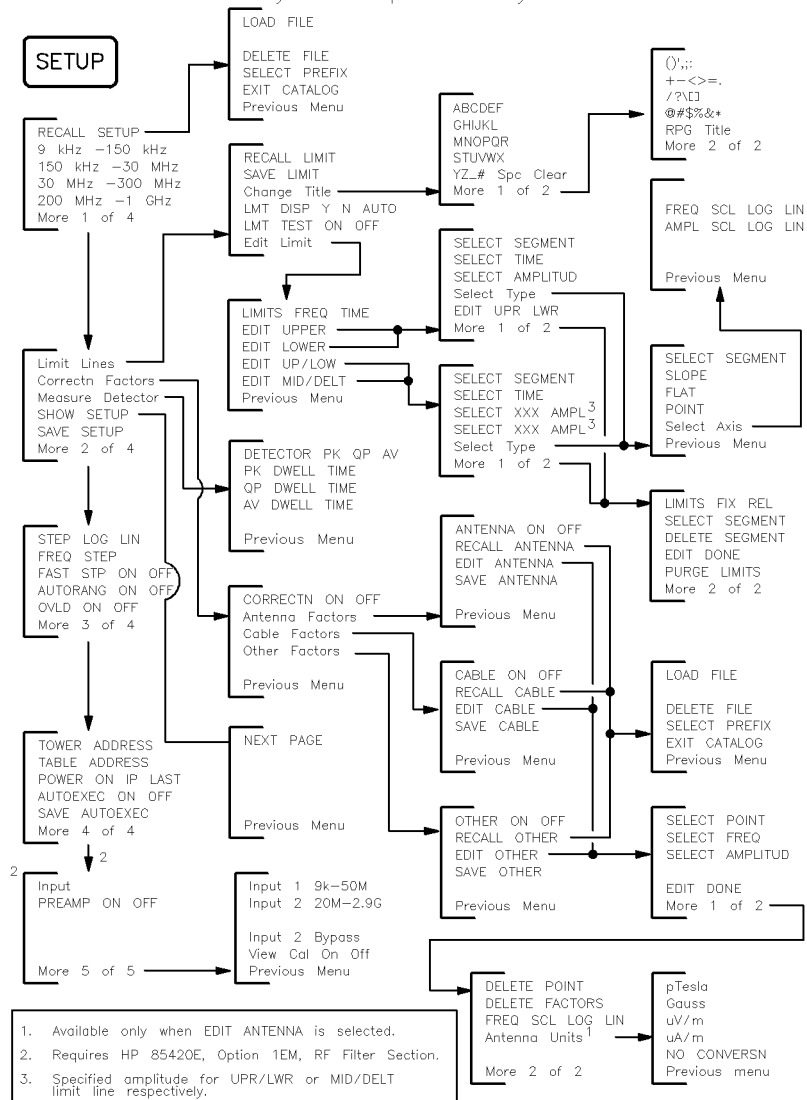


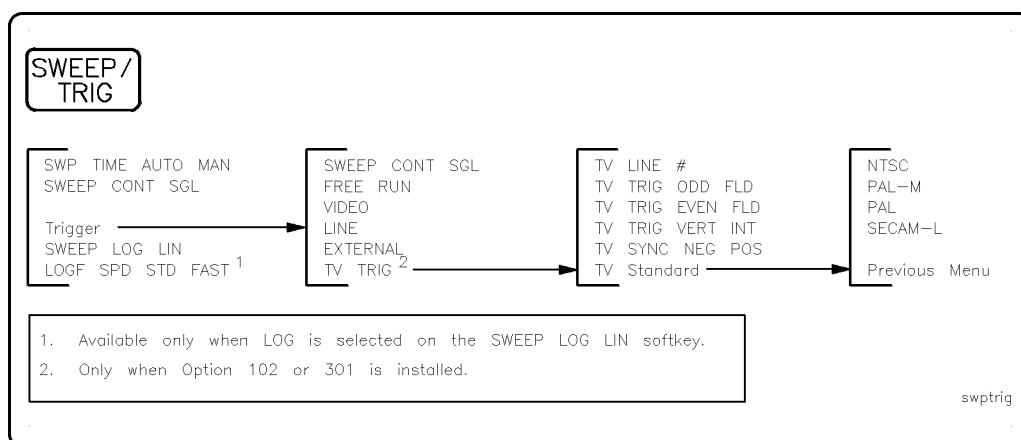
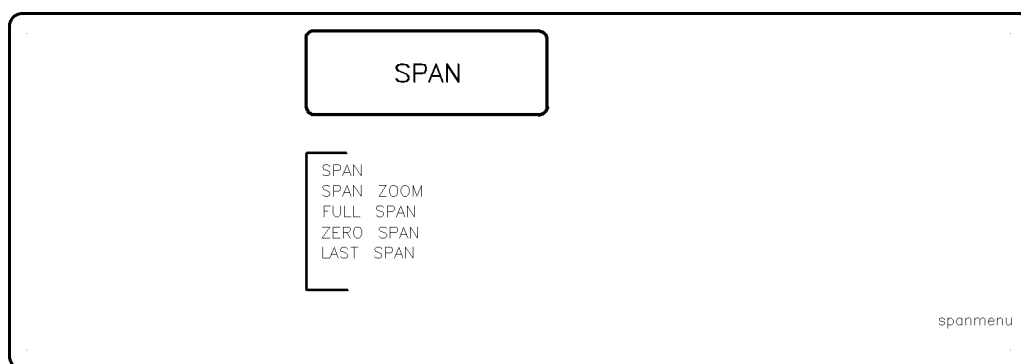


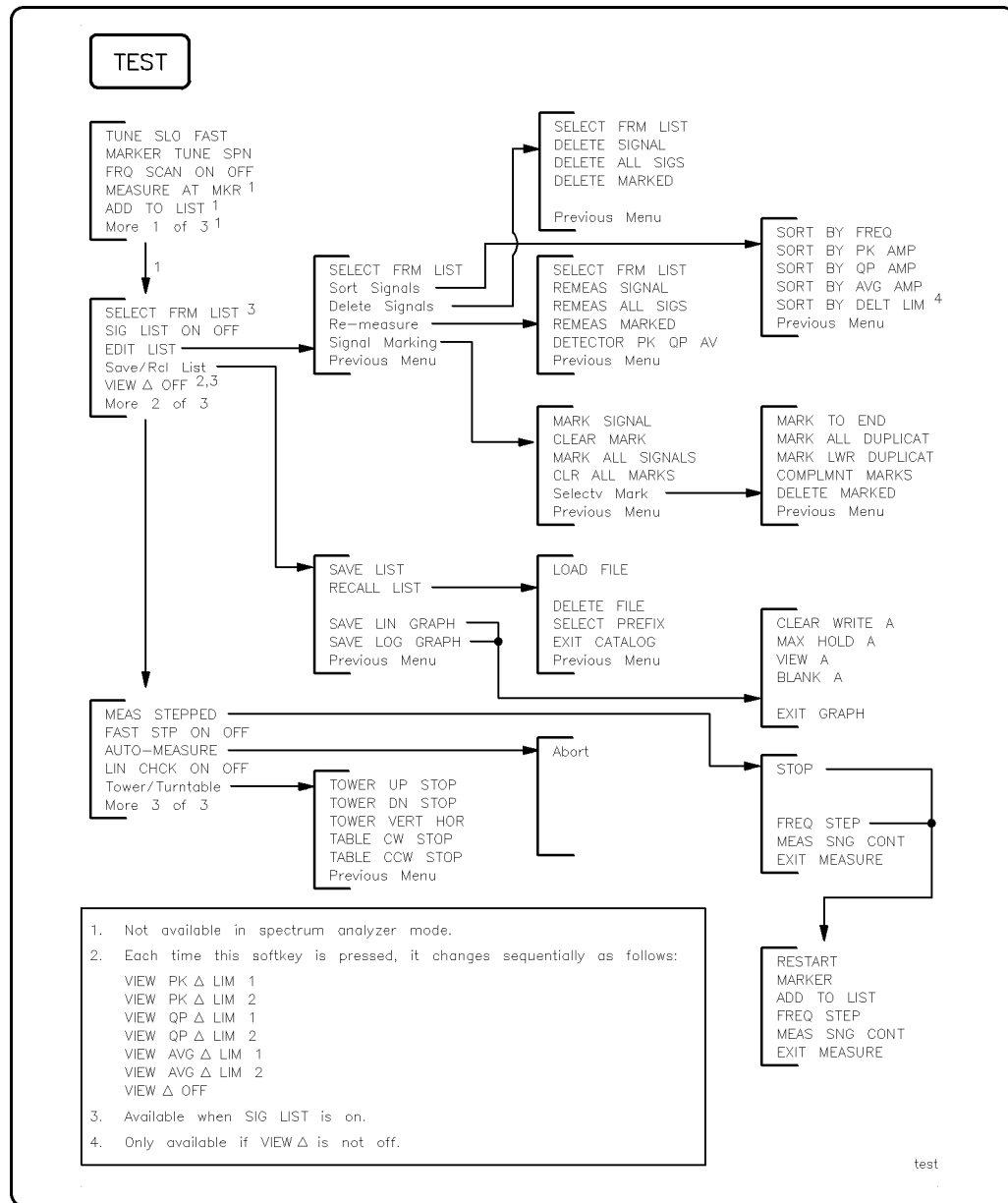
SETUP hardkey—in EMC ANALYZER mode only

The SETUP hardkey has different Limit Lines softkey menus between the EMC analyzer and spectrum analyzer modes.

**E-14 Key Menus**







TRACE

CLEAR WRITE A¹
MAX HOLD A²
VIEW A¹
BLANK A¹
TRACE A B C
More 1 of 4

NORM A/B ON OFF
TRACE B VW OFF³

MAX/MIN ON OFF
MAX/MIN VIEW⁴
More 2 of 4

VID AVG ON OFF
DETECTOR SMP PK⁵
NORMLIZE ON OFF
NORMLIZE POSITION
A <--> B
More 3 of 4

A-B -> A ON OFF
B-DL -> B
B <--> C
A -> C
B -> C
More 4 of 4

1. Change to B or C when TRACE B or C is selected, respectively.
2. Changes to MAX HOLD B when trace B is selected and to MIN HOLD C when trace C is selected.
3. Only available when NORM A/B ON.
4. Only available when MAX/MIN ON.
5. Changes to DETECTOR PK SP NG for Option 101 or 301 only.

tracem

WINDOWS

ON

ZONE CENTER
ZONE SPAN
ZONE PK RIGHT
ZONE PK LEFT
PEAK EXCURSN
WINDOWS OFF

NEXT

(If windows are on,
activates alternate
windows.)

ZOOM

(Toggles between
split-screen and
full-size display,
if windows are on.)

windows

Index

3

30 MHz - 300 MHz, 2-2
 3 dB POINTS, 2-2
 3rd ORD MEAS, 2-2

6

6 dB POINTS, 2-2

9

99% PWR BW, 2-2
 9 kHz -150 kHz, 2-2

A

ac coupling, 2-11
 active function clearing, 2-18
 addressing printer, 2-28
 address of table, 2-38
 address of tower, 2-39
 ADD TO LIST, 2-3
 alpha characters, 2-18, 2-38, 2-41
 amp cor
 purge, 2-29
 Amp Cor, 2-3
 AMP COR ON OFF, 2-3
 AMPLITUDE, 2-3
 amplitude accuracy, 2-10
 amplitude and frequency self-
 calibration routine, 2-8
 amplitude correction factors
 delete point, 2-12
 edit done, 2-14
 menus, 2-3

on and off, 2-3
 recall table, 2-29
 select amplitude, 2-33
 select frequency, 2-33
 select point, 2-34

amplitude menus, 2-3

amplitude scale, 2-33

amplitude self-calibration, 2-7

amplitude units, 2-4

 dBm, 2-11

 dB μ V, 2-11

 dBmV, 2-11

 Volts, 2-41

 Watts, 2-41

AMPL SCL LOG LIN, 2-3

Amptd Units, 2-4

analog+ display, 2-4

ANALOG+ ON OFF, 2-4

ANALYZER ADDRESS, 2-4

analyzer configuration

 default, 2-11

analyzer memory

 cataloging functions, 2-8

 catalog variables, 2-8

 delete file, 2-12

 erase user programs and variables,
 2-14

 program and variable cataloging,
 2-8

 saving to, 2-39

 state and trace register status, 2-8

ANNOTATN ON OFF, 2-4

Antenna Factors, 2-4
ANTENNA ON OFF, 2-4
ANTENNA → CARD, 2-4
Antenna Units, 2-4
APND CAT ITEM, 2-4
ATTEN AUTO MAN, 2-5
attenuation coupling, 2-5
AUTO ALL, 2-5
auto average, 3-27
AUTOAVG, 3-27
AUTOCAL, 3-27
AUTO CAL ON OFF, 2-5
AUTO COUPLE, 2-5
AUTOEXEC ON OFF, 2-5
automatic calibration, 3-27
AUTO-MEASURE, 2-5
AUTOQPD, 3-28
auto range, 3-27
AUTORANG ON OFF, 2-6
Aux Conn Control, 2-6
auxiliary connector input, 2-13
auxiliary interface
 connector, 2-6
 control line A, 2-9
 control line B, 2-9
 control line C, 2-10
 control line D, 2-10
AUX/USER, 2-6
AVBW, 3-28
AV DWELL TIME, 2-6
average video bandwidth, 3-28
average video bandwidth coupling,
 2-5
averaging, 2-6
AVG BW AUTO MAN, 2-6
AVG ON OFF, 2-6
AV/IF BW RATIO, 2-6

B

Band Lock, 2-7
band locking, 2-7

Index-2

bandwidth functions, 2-7
BAUD RATE, 2-7
BLANK A, 2-7
BLANK B, 2-7
BLANK C, 2-7
BLANK CARD, 2-7
 $B \longleftrightarrow C$, 2-7
 $B-DL \rightarrow B$, 2-6
BND LOCK ON OFF, 2-7
 $B \rightarrow C$, 2-6
BW, 2-7

C

Cable Factors, 2-7
CABLE ON OFF, 2-7
CABLE → CARD, 2-7
CAL, 2-7
CAL AMPTD, 2-7
Cal At Time, 2-7
CAL FETCH, 2-8
CAL FREQ, 2-8
CAL FREQ & AMPTD, 2-8
calibration, 2-7
calibration time, 3-29
CAL STORE, 2-8
CALTIME, 3-29
CAL TRK GEN, 2-8
CAL YTF, 2-8
Card Config, 2-8
CATALOG ALL, 2-8
Catalog Internal, 2-8
CATALOG PREFIX, 2-8
CATALOG REGISTER, 2-8
CATALOG VARIABLES, 2-8
CENTER FREQ, 2-9
center frequency, 2-9
 window zone, 2-42
center-frequency step size, 2-9
CF STEP AUTO MAN, 2-9
Change Prefix, 2-9
Change Title, 2-9

- changing the average video bandwidth
 - AVBW, 3-28
 - changing windows, 2-25
 - characters, 2-18, 2-38, 2-41
 - CLEAR ANNOTATN, 2-9
 - clearing the active function, 2-18
 - CLEAR MARK, 2-9
 - CLEAR WRITE A, 2-9
 - CLEAR WRITE B, 2-9
 - CLEAR WRITE C, 2-9
 - CLR ALL MARKS, 2-9
 - CNTL A 0 1, 2-9
 - CNTL B 0 1, 2-9
 - CNTL C 0 1, 2-10
 - CNTL D 0 1, 2-10
 - CNT RES AUTO MAN, 2-9
 - COMB GEN ON OFF, 2-10
 - COMPLMNT MARKS, 2-10
 - CONFIG, 2-10
 - configuration
 - printer, 2-28
 - CONF TEST, 2-10
 - continuous sweep, 2-38
 - control line A
 - auxiliary interface, 2-9
 - control line B
 - auxiliary interface, 2-9
 - control line C
 - auxiliary interface, 2-10
 - control line D
 - auxiliary interface, 2-10
 - COPY, 2-10
 - COPY DEV PRNT PLT, 2-10
 - COPY SCREEN, 2-10
 - correction factors, 2-10
 - default, 2-11
 - self-calibration, 2-8
 - storing, 2-8
 - Correctn Factors, 2-11
 - CORRECTN ON OFF, 2-11
 - CORRECT ON OFF, 2-10
 - COUPLE AC DC, 2-11
 - coupled functions menu, 2-5
 - coupled sweep time, 2-38
 - coupling
 - ac or dc, 2-11
 - all functions, 2-5
 - creating new programs, 2-25
 - CRT HORZ POSITION, 2-11
 - CRT VERT POSITION, 2-11
- D**
- DATEMODE MDY DMY, 2-11
 - dBm, 2-11
 - dB μ V, 2-11
 - dBmV, 2-11
 - dc coupling, 2-11
 - deactivating the active function,
 - 2-18
 - DEFAULT CAL DATA, 2-11
 - DEFAULT CONFIG, 2-11
 - DEFAULT SYNC, 2-12
 - Define List, 2-12
 - Define Report, 2-12
 - Delete All Signals, 2-12
 - DELETE FACTORS, 2-12
 - DELETE FILE, 2-12
 - delete files from memory card, 2-7
 - DELETE LIMIT, 2-12
 - DELETE MARKED, 2-12
 - DELETE POINT, 2-12
 - DELETE SEGMENT, 2-12
 - DELETE SIGNAL, 2-12
 - Delete Signals, 2-12
 - delta marker, 2-21
 - DELTA MEAS, 2-13
 - DEMODO, 2-13
 - DEMODO AM FM, 2-13
 - DEMODO ON OFF, 2-13
 - demodulation, 2-13
 - AM, 2-13
 - dwelt time, 2-14

- FM, 2-13
- FM gain, 2-17
- on and off, 2-13
- squelch, 2-37
- detection mode
 - positive peak, 2-13
 - sample, 2-13
- DETECTOR PK QP AV, 2-13
- DETECTOR PK SP NG, 2-13
- DETECTOR SMP PK, 2-13
- display
 - analog+, 2-4
- DISPLAY, 2-13
- DISPLAY CNTL I, 2-13
- display line, 2-14
- DISPLAY → CARD, 2-13
- display zone
 - change span, 2-42
 - find left peak, 2-42
 - find right peak, 2-42
 - move center, 2-42
- Dispose User Mem, 2-14
- DLP
 - editor, 2-15
 - recall table, 2-30
- DSP LINE ON OFF, 2-14
- DWELL TIME, 2-14

E

- EDIT AMP COR, 2-14
- EDIT ANNOTATN, 2-14
- EDIT ANTENNA, 2-14
- EDIT CABLE, 2-14
- EDIT CAT ITEM, 2-14
- EDIT DONE, 2-14
- editing
 - DLPs, 2-15
- EDIT LAST, 2-14
- Edit Limit, 2-14
- EDIT LIMIT, 2-14
- EDIT LIST, 2-15

- EDIT LOWER, 2-15
- EDIT\MID/DELT, 2-15
- Editor, 2-15
- EDIT OTHER, 2-15
- EDIT UP/LOW, 2-15
- EDIT UPPER, 2-15
- EDIT UPR LWR, 2-15
- EMC ANALYZER, 2-15, 2-37
- EMC analyzer error messages, A-1
- EMC analyzer state recalled, 2-27
- ENTER, 2-15
- errors, non recoverable, A-15
- EXIT CATALOG, 2-16
- EXIT GRAPH, 2-16
- EXIT MEASURE, 2-16
- EXIT SHOW, 2-16
- expanding a window, 2-42
- EXTERNAL, 2-16
- EXTERNAL PREAMPG, 2-16

F

- fast Fourier transform, 2-17
- fatal errors, A-15
- FFT MEAS, 2-17
- FLAT, 2-17
- FM GAIN, 2-17
- FORMAT CARD, 2-17
- format date, 2-11
- FREE RUN, 2-17
- FREQ OFFSET, 2-17
- FREQ SCL LOG LIN, 2-17
- FREQ STEP, 2-17
- FREQUENCY, 2-17
- frequency and amplitude self-
 - calibration routine, 2-8
- frequency, improving accuracy, 2-21
- frequency offset, 2-17
- frequency self-calibration, 2-8
- frequency span, 2-37
 - changing to full span, 2-17
- FRQ SCAN ON OFF, 2-17

FULL SPAN, 2-17
function coupling, 2-5

G

Gauss, 2-18
GHIJKL, 2-18
GRAT ON OFF, 2-18

H

hardware error messages, A-1
harmonic band menu, 2-7
harmonic band slope and offset adjust, 2-8
harmonic lock, 2-7
highest peak
 finding next, 2-25
highest signal peak, 2-37
HOLD, 2-18
horizontal signal positioning, 2-11
HP 8590 EM Series key menus, E-2
HP Paintjet, 2-26

I

IF BW AUTO MAN, 2-18
informational messages, A-1
INPT LOCK ON OFF, 2-18
Input, 2-18
INPUT 1 9k-50M, 2-18
INPUT 2 20M-2.9G, 2-19
INPUT 2 BYPASS, 2-19
input and output
 auxiliary control, 2-6
input attenuation control, 2-5
input impedance, 2-19
INPUT Z 50 Ω 75 Ω , 2-19
instrument preset, 2-28
intermediate frequency bandwidth
 coupling, 2-5
internal comb generator, 2-10
INTERNAL $\rightarrow$ STATE, 2-19
Internal $\rightarrow$ Trace, 2-19

K

key menus, E-1

L

laserjet plots, 2-27
LAST SPAN, 2-19
LIMIAMPSCCL, 3-42
LIMIFRQSCL, 3-42
LIMILINESTA, 3-43
LIMIMARGAMP, 3-44
LIMIMARGSTA, 3-44
LIMINUM, 3-44
Limit 1, 2-19
Limit 2, 2-19
limit-line amplitude scale, 3-42
limit-line frequency scale, 3-42
limit-line number, 3-44
limit lines
 delete segment, 2-12
 displaying, 2-20
 edit done, 2-14
 edit limit, 2-14
 edit lower table, 2-15
 edit mid/delta amplitude, 2-15
 edit upper and lower tables, 2-15
 edit upper table, 2-15
 fixed and relative, 2-20
 flat type, 2-17
 point, 2-27
 purge, 2-29
 recall table, 2-30
 save table, 2-32
 select amplitude, 2-33
 select delta amplitude, 2-33
 select frequency, 2-33
 select frequency or time, 2-20
 select middle amplitude, 2-34
 select segment, 2-34
 select type, 2-34
 slope type, 2-36
 testing, 2-20

- Limit Lines, 2-19
- LIMIT LINES, 2-19
- limit-line state, 3-43
- limit margin amplitude, 3-44
- limit-margin state, 3-44
- LIMIT # ON OFF, 2-19
- LIMITS FIX REL, 2-20
- LIMITS FRQ TIME, 2-20
- LIMITS → CARD, 2-19
- LIN CHCKON OFF, 2-20
- LINCHK, 3-45
- LINE, 2-20
- linearity check, 3-45
- linear scale, 2-33
- linear sweep, 2-38
- LIN ON OFF, 2-20
- LIST ON OFF, 2-20
- LIST → CARD, 2-20
- LMT DISP Y N AUTO, 2-20
- LMT TEST ON OFF, 2-20
- LOAD FILE, 2-20
- (LOCAL), 2-10, 2-21
- local operation, 2-10, 2-21
- lock harmonic band, 2-7
- lock internal state and trace registers, 2-32
- logarithmic sweep, 2-38
- LOGF SPD, 2-21
- LOG ON OFF, 2-21
- log scale, 2-33
- LOGSWEEPSPD, 3-46
- log sweep speed, 3-46
- lower limit line
 - editing, 2-15
- M**
- MARGIN # ON OFF, 2-21
- MARK ALL DUPLICAT, 2-21
- MARK ALL SIGNALS, 2-21
- marker
 - menu of controls, 2-24
 - selection, 2-33
 - trace selection, 2-24
- MARKER, 2-21
- MARKER ALL OFF, 2-22
- MARKER AMPTD, 2-22
- marker counter, 2-23
 - resolution, 2-9
- marker noise, 2-24
- MARKER NORMAL, 2-22
- marker pause, 2-24
 - dwelt time, 2-14
- marker readout modes, 2-24
- MARKER →CF, 2-21
- MARKER →CF STEP, 2-22
- MARKER →MINIMUM, 2-22
- MARKER →PK-PK, 2-22
- MARKER →REF LVL, 2-22
- MARKER →START, 2-22
- MARKER →STOP, 2-22
- marker tracking, 2-24
- MARKER TUNE SPN, 2-22
- MARKER Δ, 2-21
- MARKER Δ→SPAN, 2-22
- MARK LWR DUPLICAT, 2-21
- MARK SIGNAL, 2-21
- MARK TO END, 2-21
- MAX HOLD A, 2-22
- MAX HOLD B, 2-22
- maximum mixer level, 2-23
- MAX MXR LVL, 2-23
- MEASALLSIGS, 3-48
- MEASAVG, 3-48
- MEASFREQ, 3-48
- MEASPEAK, 3-48
- MEASQPD, 3-48
- MEASRESULT, 3-49
- MEASSIG, 3-49
- MEAS SNG CONT, 2-23
- MEAS STEPPED, 2-23
- MEASTIMEAVG, 3-49
- MEASTIMEPK, 3-49

- MEASTIMEQPD, 3-49
- measure all signals, 3-48
- MEASURE AT MKR, 2-23
- measure average, 3-48
- Measure Detector, 2-23
- measure frequency, 3-48
- measure peak, 3-48
- measure quasi-peak detector, 3-48
- measure result, 3-49
- measure signal, 3-49
- measure time average, 3-49
- measure time peak, 3-49
- measure time quasi-peak detector, 3-49
- measure with preselector peak, 3-50
- MEASWITHPP, 3-50
- memory card
 - card configuration, 2-8
 - cataloging, 2-8
 - delete file, 2-7, 2-12
 - formatting, 2-17
 - program and variable cataloging, 2-8
 - saving states, 2-37
 - saving to memory card, 2-39
- menus, E-1
- menu trees, E-1
- $\mu\text{V/m}$, 2-1
- mid/delta limit line
 - editing amplitude, 2-15
- minimizing scan time, 2-21
- minimum to marker, 2-22
- mixer input level maximum, 2-23
- MK COUNT ON OFF, 2-23
- MK NOISE ON OFF, 2-24
- MK PAUSE ON OFF, 2-24
- MKR, 2-24
- MK READ F T I P, 2-24
- MKR $\rightarrow$, 2-24
- MK TRACE AUTO ABC, 2-24
- MK TRACK ON OFF, 2-24
- MNOPQR, 2-24
- MODE, 2-25
- N**
 - NEW EDIT, 2-25
 - NEXT, 2-25
 - NEXT PAGE, 2-25
 - NEXT PEAK, 2-25
 - NEXT PK LEFT, 2-25
 - NEXT PK RIGHT, 2-25
 - NO CONVERSN, 2-25
 - non recoverable errors, A-15
 - normal marker, 2-22
 - NORMLIZE ON OFF, 2-25
 - NORMLIZE POSITION, 2-25
 - NTSC video format, 2-38
- O**
 - on-screen signal positioning
 - horizontal, 2-11
 - vertical, 2-11
 - operation
 - local, 2-21
 - optimizing frequency accuracy, 2-21
 - Other Factors, 2-26
 - OTHER ON OFF, 2-26
 - OTHER $\rightarrow$ CARD, 2-26
 - OUTPUT, 2-26
 - output power, 2-37
 - OUTPUT REPORT, 2-26
 - output screen data, 2-10
 - OVLD ON OFF, 2-26
- P**
 - PAINTJET PRINTER, 2-26
 - PAL, 2-26
 - PAL-M, 2-26
 - PAL video format, 2-38
 - pass code, 2-11
 - peak
 - next, 2-25

- peak detection mode
 - positive/negative, 2-13
- PEAK EXCURSN, 2-26
- peak response routine, 2-40
- peak search
 - outside of the zone, 2-42
- peak to peak measurement, 2-22
- PK DWELL TIME, 2-26
- PK-PK MEAS, 2-27
- plotter configuration, 2-10
- plotting, 2-10
- plotting to laserjets, 2-27
- PLT MENU\ON OFF, 2-27
- PLTS/PG 1 2 4, 2-27
- POINT, 2-27
- point deletion, 2-12
- positive peak detection mode, 2-13
- POWER ON IP LAST, 2-27
- power-on state of EMC analyzer,
 - 2-27
- PREAMP, 3-59
- preamplifier, 3-59
- preamplifier gain, 2-16
- PREAMP ON OFF, 2-27
- predetermined correction factors,
 - 2-11
- prefix
 - catalog of, 2-8
 - entry, 2-9
 - selection, 2-34
- PRESEL DEFAULT, 2-28
- preselector default, 2-28
- preselector peak, 2-28
- PRESEL PEAK, 2-28
- PRESET, 2-28
- Print Config, 2-28
- PRINTER ADDRESS, 2-28
- printer configuration, 2-10
- PRINTER SETUP, 2-28
- printing, 2-10
 - HP PaintJet, 2-26

- print per page, 3-60
- PRNTPPG, 3-60
- program cataloging, 2-8
- program (DLP) editor, 2-15
- program editing and creating, 2-15
- pTesla, 2-28
- PURGE AMP COR, 2-29
- PURGE LIMITS, 2-29
- PWR SWP ON OFF, 2-29

Q

- QP/AVG 10X OFF, 2-29
- QP DWELL TIME, 2-29
- QPGAIN, 3-61
- QUASI-PEAK, 2-29
- quasi-peak detector, 3-28
- quasi-peak gain, 3-61

R

- range, 3-61
- RANGE, 3-61
- RCVRMRKR, 3-61
- real-time clock, 2-39
 - set date, 2-35
 - set time, 2-35
 - time and date display, 2-39
- RECALL AMP COR, 2-29
- RECALL ANTENNA, 2-29
- RECALL CABLE, 2-29
- Recall Card, 2-29
- RECALL DLP, 2-30
- recalling a trace from analyzer
 - memory, 2-19
- Recall Internal, 2-30
- RECALL LIMITS, 2-30
- RECALL LIST, 2-30
- RECALL OTHER, 2-30
- RECALL SETUP, 2-30
- RECALL TRACE, 2-30
- receiver auto-coupled sweep time,
 - 2-38

receiver marker position, 3-61
 reference level, 2-30
 reference level offset, 2-31
 REF LVL, 2-30
 REF LVL OFFSET, 2-31
 REMEAS ALL SIGS, 2-31
 REMEAS MARKED, 2-31
 REMEASSIG, 3-62
 REMEAS SIGNAL, 2-31
 Re-measure, 2-31
 remeasure signal, 3-62
 remote operation, 2-10
 REPEAT UNTIL, 3-62
 report definition, 3-64
 resolution of marker counter, 2-9
 RESTART, 2-31
 RPG TITLE, 2-31
 RPTDEF, 3-64

S

sample detection mode, 2-13
 SAVE AMP COR, 2-31
 SAVE ANTENNA, 2-32
 SAVE AUTOEXEC, 2-32
 Save Cable, 2-32
 Save Card, 2-32
 save current display, 2-13
 save current state

- memory card, 2-37
- state register, 2-37

 saved analyzer state, 2-19
 SAVE EDIT, 2-32
 Save Internal, 2-32
 SAVE LIMITS, 2-32
 SAVE LIN GRAPH, 2-32
 SAVE LIST, 2-32
 SAVE LOG GRAPH, 2-32
 SAVE OTHER, 2-32
 Save/Rcl\List, 2-33
 SAVE/RECALL, 2-33
 SAVE SETUP, 2-33

saving to a memory card, 2-39
 saving to analyzer memory, 2-39
 SAV LOCK ON OFF, 2-32
 SCALE LOG LIN, 2-33
 scan time, minimizing, 2-21
 screen annotation

- on and off, 2-4

 screen characters, 2-18, 2-24, 2-38, 2-41
 screen data output, 2-10
 screen graticule, 2-18
 screen title, 2-9

- RPG TITLE, 2-31

 SECAM-L, 2-33
 segment deletion, 2-12
 SELECT 1 2 3 4, 2-33
 SELECT AMPLITUD, 2-33
 Select Axis, 2-33
 SELECT DLT AMPL, 2-33
 SELECT FREQ, 2-33
 SELECT FRM LIST, 2-33
 SELECT MID AMPL, 2-34
 SELECT POINT, 2-34
 SELECT PREFIX, 2-34
 SELECT SEGMENT, 2-34
 Select Type, 2-34
 Selectv Mark, 2-34
 self-calibration routines

- amplitude, 2-7
- CAL, 2-7
- correction factors, 2-8
- frequency, 2-8
- frequency and amplitude, 2-8
- tracking generator, 2-8

 Service Cal, 2-34
 Service Diag, 2-34
 SET DATE, 2-35
 SET TIME, 2-35
 SETTINGS ON OFF, 2-35
 setting the average video bandwidth

- AVBW, 3-28

- setup
 - printer, 2-28
- SETUP, 2-35
- SETUP → CARD, 2-35
- SGL SWP, 2-35
- SHOW COR ON OFF, 2-35
- SHOW DET PK QP AV, 2-35
- SHOW MKR ON OFF, 2-36
- show set up, 3-66
- SHOW SETUP, 2-36
- SHOWSETUP, 3-66
- SHOW Δ 1\PK QP AV, 2-35
- SHOW Δ 2\PK QP AV, 2-35
- SHW INST CONFIG, 2-36
- SIGADD, 3-66
- SIGDEL, 3-66
- SIGDLTAVIEW, 3-66
- SIGGRAPH, 3-66
- SIGLEN, 3-67
- SIGLIST, 3-67
- SIG LIST ON OFF, 2-36
- SIGMARK, 3-67
- signal add, 3-66
- signal delete, 3-66
- signal delta view, 3-66
- signal graph, 3-66
- signal list, 3-67
- signal list length, 3-67
- signal mark, 3-67
- Signal Marking, 2-36
- signal peak
 - highest, 2-37
- signal position, 3-67
- signal result, 3-67
- signal sort, 3-67
- signal tracking
 - See also marker tracking, 2-24
- signal unmark, 3-68
- SIGPOS, 3-67
- SIGRESULT, 3-67
- SIGSORT, 3-67
- SIGUNMARK, 3-68
- single sweep, 2-35, 2-38
- SLOPE, 2-36
- softkey locations, E-1
- SORT BY AVG AMP, 2-36
- SORT BY DELT LIM, 2-36
- SORT BY FREQ, 2-36
- SORT BY\PK AMP, 2-36
- SORT BY QP AMP, 2-36
- Sort Signals, 2-36
- source power, 2-37
- space
 - character, 2-41
- span
 - 0 Hz, 2-42
 - LAST SPAN, 2-19
 - window zone, 2-42
- SPAN, 2-37
- SPAN ZOOM, 2-37
- SQUELCH, 2-37
- SRC ATN MAN AUTO, 2-37
- SRC PWR OFFSET, 2-37
- SRC PWR ON OFF, 2-37
- SRC PWR STP SIZE, 2-37
- start and stop frequencies, 2-22
- START FREQ, 2-37
- state of EMC analyzer at power on,
2-27
- state registers
 - locking, 2-32
- STATE → CARD, 2-37
- STATE → INTRNL, 2-37
- STEP LOG LIN, 2-37
- step-size coupling, 2-5
- stimulus response mode, 2-38
- STOP, 2-38
- STOP FREQ, 2-38
- store the correction factors, 2-8
- storing
 - display, 2-13
- STUVWX, 2-38

subtract display line from trace B,
2-6

sweep control

continuous, 2-38

single, 2-35, 2-38

SWEEP CONT SGL, 2-38

SWEEP LOG LIN, 2-38

sweep time, 2-38

sweep time coupling, 2-5

SWEEP/TRIG, 2-38

SWP CPLG SR SA, 2-38

SWP TIME AUTO MAN, 2-38

SYNC NRM NTSC, 2-38

SYNC NRM PAL, 2-38

T

TABLE ADDRESS, 2-38

TEST, 2-38

THRESHLD ON OFF, 2-38

threshold line, 2-38

timebase verification, 2-41

Time Date, 2-39

TIMEDATE ON OFF, 2-39

TOWER ADDRESS, 2-39

trace

blank trace A, 2-7

blank trace B, 2-7

blank trace C, 2-7

B-DL → B, 2-6

clear write trace A, 2-9

clear write trace C, 2-9

move trace B into C, 2-6

view mode, 2-41

TRACE, 2-39

TRACE A, 2-39

TRACE A B C, 2-39

TRACE B, 2-39

TRACE B VW OFF, 2-39

TRACE C, 2-39

trace registers

locking, 2-32

Trace → Card, 2-39

Trace → Intrnl, 2-39

Track Gen, 2-40

tracking generator, 2-40

output power, 2-37

peak response, 2-40

power sweep, 2-29

power sweep range, 2-37

self-calibration, 2-8

source attenuator, 2-37

source power offset, 2-37

source power step size, 2-37

TRACKING PEAK, 2-40

transducer conversion units, 3-77

trigger, 2-40

external, 2-16

free run, 2-17

line, 2-20

video, 2-41

TUNE SLO FAST, 2-40

turning off markers, 2-22

turning off windows display, 2-41

TV LINE #, 2-40

TV SYNC NEG POS, 2-40

TV trig

even field, 2-40

odd field, 2-40

PAL-M video format, 2-26

PAL video format, 2-26

SECAM-L video format, 2-33

TV line number, 2-40

TV sync, 2-40

vertical interval, 2-40

TV TRIG, 2-40

TV TRIG EVEN FLD, 2-40

TV TRIG ODD FLD, 2-40

TV TRIG VERT INT, 2-40

type of limit line, 2-34

U

- underscore
 - character, 2-41
- units, amplitude, 2-4
- unrange, 3-75
- UNRANGE, 3-75
- UNTIL, 3-62
- upper and lower limit lines
 - editing, 2-15
- user-created error messages, A-1
- User Menus, 2-40

V

- variable cataloging, 2-8
- VERIFY TIMEBASE, 2-41
- vertical signal positioning, 2-11
- VHS video output, 2-38
- VID AVG ON OFF, 2-41
- VIDEO, 2-41
- video averaging, 2-41
- VIEW A, 2-41
- VIEW B, 2-41
- VIEW C, 2-41
- VIEW CAL ON OFF, 2-41
- VIEW PK QP AV, 2-41

- VIEW Δ OFF, 2-41

- Volts, 2-41

W

- Watts, 2-41
- windows
 - NEXT, 2-25
 - switching between, 2-25
 - ZOOM, 2-42
- WINDOWS OFF, 2-41

X

- XUNITS, 3-77

Y

- YTF slope and offset adjustment, 2-8
- YZ_# Spc Clear, 2-41

Z

- ZERO SPAN, 2-42
- ZONE CENTER, 2-42
- ZONE PK LEFT, 2-42
- ZONE PK RIGHT, 2-42
- ZONE SPAN, 2-42
- ZOOM, 2-42
- zooming a window, 2-42