

## Errata

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**Quick Reference Guide**

**HP 8590 EM Series EMC Analyzer**



**HP Part No. 5963-2929**  
**Printed in USA August 1995**

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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.

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## 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

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# Getting Acquainted with the EMC Analyzer

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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.

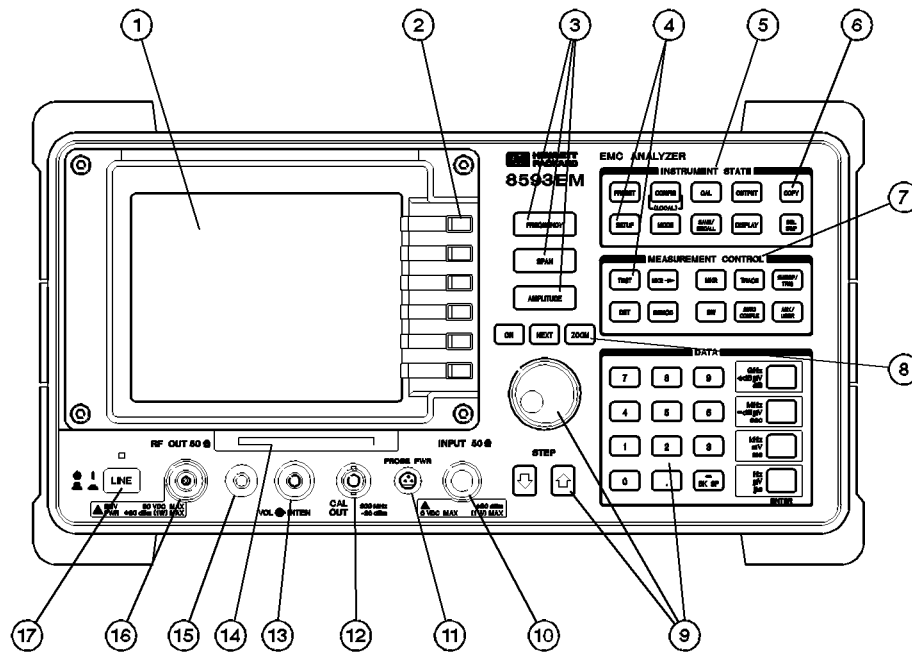


**Figure 1-1. Front-Panel Feature Overview**

- 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.

---

|                |                                                                                                                                                                            |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Caution</b> | 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.

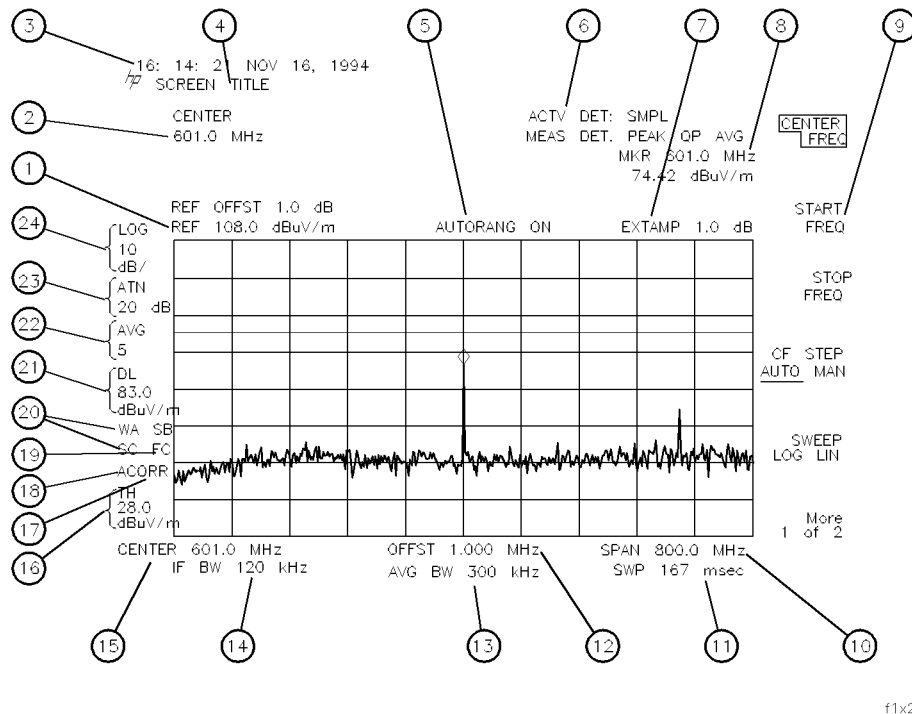


**Figure 1-2. EMC Analyzer Screen Annotation**

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**

| <b>Item</b> | <b>Feature</b>                  | <b>Item</b> | <b>Feature</b>         |
|-------------|---------------------------------|-------------|------------------------|
| 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**

| <b>Trace Mode</b>              | <b>Trigger Mode</b>               | <b>Sweep Mode</b> |
|--------------------------------|-----------------------------------|-------------------|
| 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 50Ω 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.

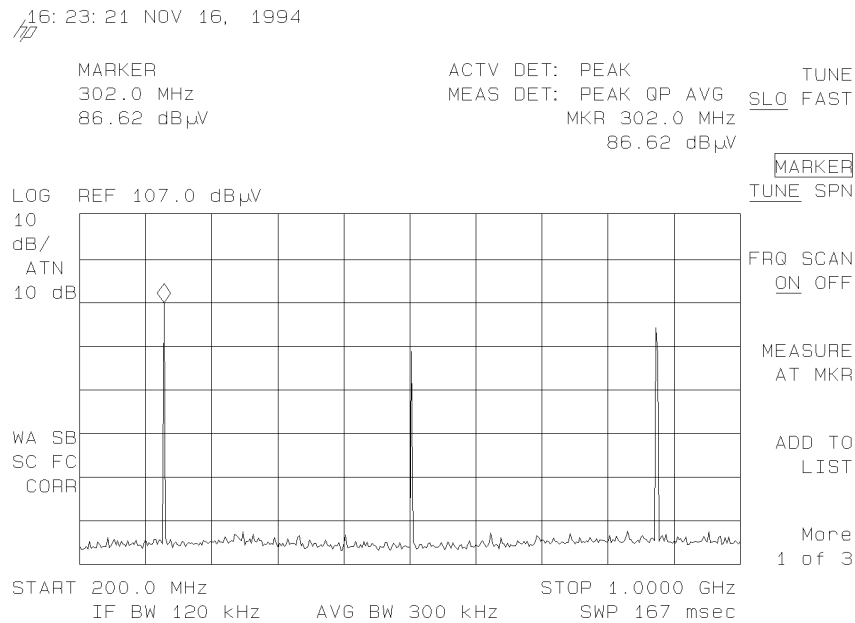


**Figure 1-3. Placing the Marker on a Signal**

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.

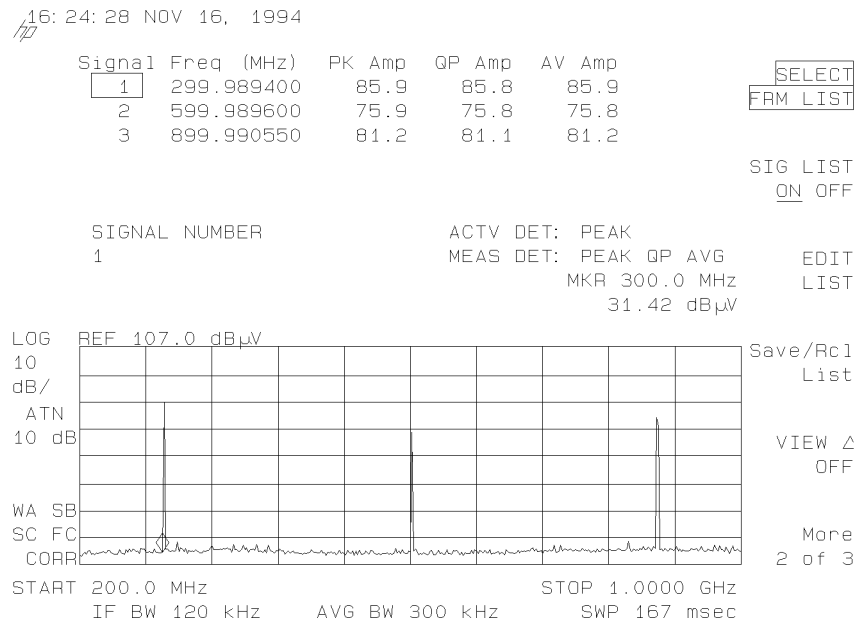


**Figure 1-4. Displaying a List on the Screen**

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.

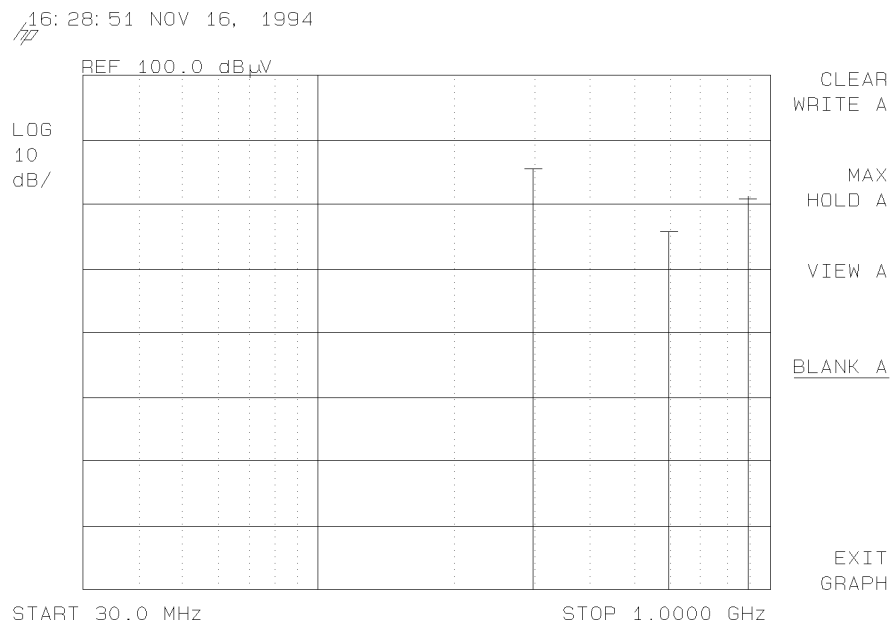


**Figure 1-5. Displaying the List as a Log Graph**

**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.

---

|             |                                                                                                                                                                                                                                                    |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Note</b> | 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. |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

---

### Self-Calibration Routines

Perform the following steps to self-calibrate the instrument:

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

---

|                |                                                                                                                                                                                                               |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Caution</b> | To avoid losing the data when the EMC analyzer is turned off, press <b>CAL STORE</b> . <b>CAL STORE</b> stores the cal data in the area of EMC analyzer memory that is saved when the analyzer is turned off. |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

---

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.

---

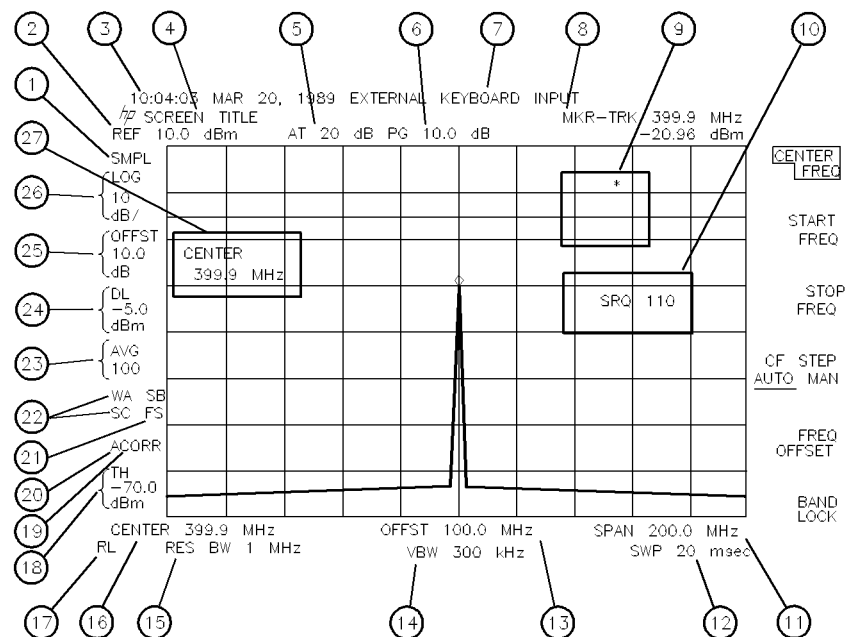
|             |                                                                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Note</b> | Since the <b>CAL TRK GEN</b> routine uses the absolute amplitude level of the EMC analyzer, the EMC analyzer amplitude should be calibrated prior to using <b>CAL TRK GEN</b> . |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

---

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.



pu17de

**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**

| <b>Trace Mode</b>              | <b>Trigger Mode</b>               | <b>Sweep Mode</b> |
|--------------------------------|-----------------------------------|-------------------|
| 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> ) |                   |

## 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

|                                       |                                                                                                                                                                                                         |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>% AM</b>                           | determines the percent of amplitude modulation of the largest displayed signal and its two sidebands.                                                                                                   |
| <b><math>\mu\text{A/m}</math></b>     | selects $\mu\text{A/m}$ as the transducer conversion units for the antenna amplitude-correction factors using magnetic field units.                                                                     |
| <b><math>\mu\text{V/m}</math></b>     | selects $\mu\text{V/m}$ as the transducer conversion units for the antenna amplitude-correction factors using electric field units.                                                                     |
| <b>0-2.9 GHz</b><br><b>BAND 0</b>     | 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> |
| <b>2.75-6.5 GHz</b><br><b>BAND 1</b>  | 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>                                    |
| <b>12.4-19.4 GHz</b><br><b>BAND 3</b> | 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>                                                                 |
| <b>19.1-22 GHz</b><br><b>BAND 4</b>   | 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<br>EMI BW   | allows a 6 dB IF bandwidth of 120 kHz.                                                                                                                                                  |
| 150 kHz<br>– 30 MHz | presets the instrument to the predefined CISPR band B settings for EMC measurements.                                                                                                    |
| 200 Hz<br>EMI BW    | allows a 6 dB IF bandwidth of 200 Hz.                                                                                                                                                   |
| 200 MHz<br>– 1 GHz  | presets the receiver to the predefined settings for EMC measurements.                                                                                                                   |
| 30 MHz<br>– 300 MHz | presets the receiver to the predefined settings for EMC measurements.                                                                                                                   |
| 3 dB<br>POINTS      | initiates an automatic 3 dB bandwidth measurement on the highest peak displayed on screen.                                                                                              |
| 3rd ORD<br>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<br>POINTS      | initiates an automatic 6 dB bandwidth measurement on the highest peak displayed on the screen.                                                                                          |
| 6.0-12.8<br>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.<br><i>HP 8593EM, and HP 8596EM only.</i>                                |
| 9 kHz<br>EMI BW     | allows a 6 dB IF bandwidth of 9 kHz.                                                                                                                                                    |
| 9 kHz<br>– 150 kHz  | presets the instrument to the predefined CISPR band A settings for EMC measurements.                                                                                                    |
| 99%<br>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<br>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. *EMC analyzer mode only.*

ALC  
INT EXT

activates internal (INT) leveling or external (EXT) leveling. Only available in EMC Analyzer measurement mode. *HP 8593EM, HP 8594EM, HP 8595EM, or HP 8596EM with Option 010 only.*

ALC MTR  
INT XTAL

activates the automatic leveling control (ALC) functions for internal (INT) leveling or external (XTAL or MTR) leveling. *HP 8591EM with Option 010 only.*

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<br>Units      | accesses a menu to select the desired amplitude units. Amplitude units can be selected by pressing, dBm, dBmV, dBuV, Volts, or Watts.                                                                                                                                                                     |
| ANALOG+<br>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<br>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<br>ON OFF  | turns the screen annotation on and off when accessed using the <b>DISPLAY</b> key. When accessed using the <b>OUTPUT</b> key, turns on and off the printing of the annotation.                                                                                                                            |
| ANTENNA<br>→ 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 <b>ENTER</b> . The antenna data is then saved to a card.              |
| Antenna<br>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<br>ON OFF   | turns on or off antenna amplitude-correction factors.                                                                                                                                                                                                                                                     |
| Antenna<br>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<br>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

|                    |                                                                                                                                                                                                                                                                                                                                         |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Caution</b>     | 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.                                                                                                                                      |
| <b>Note</b>        | 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<br>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<br>ALL        | couples the following functions:<br>intermediate frequency bandwidth<br>average video bandwidth<br>attenuation<br>sweep time<br>center-frequency step<br>average-video-bandwidth to intermediate-frequency-bandwidth ratio.                                                                                                             |
| AUTO CAL<br>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-<br>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<br>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<br>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<br>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<br>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<br>BW RATIO   | determines the automatic setting of averaging (video) bandwidth by multiplying the parameter by the intermediate frequency (IF) bandwidth.<br><br>Ratio values other than the values in the 1, 3, 10 sequence are rounded to the nearest permissible value.                                                                                                              |
| AVG BW<br>AUTO MAN  | specifies the averaging bandwidth, which is a post-detection, low-pass filter.<br><br>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<br>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>B → C</b>           | exchanges trace B and trace C. Trace B is set to the view mode.                                                                                                                                                                                                                                                                                           |
| <b>Band Lock</b>       | accesses the harmonic band menu and the band lock function. <i>HP 8593EM, HP 8595EM, and HP 8596EM only.</i>                                                                                                                                                                                                                                              |
| <b>BAUD RATE</b>       | allows you to set the data transmission speed. <i>Option 043 only.</i>                                                                                                                                                                                                                                                                                    |
| <b>BLANK A</b>         | stores the amplitude data for trace A and removes it from the screen.                                                                                                                                                                                                                                                                                     |
| <b>BLANK B</b>         | stores the amplitude data for trace B and removes it from the screen.                                                                                                                                                                                                                                                                                     |
| <b>BLANK C</b>         | stores the amplitude data for trace C and removes it from the screen.                                                                                                                                                                                                                                                                                     |
| <b>BLANK CARD</b>      | deletes all the files from the memory card.                                                                                                                                                                                                                                                                                                               |
| <b>BND LOCK ON OFF</b> | 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>                                                                                                                                                               |
| <b>(BW)</b>            | activates the IF bandwidth function and accesses the softkeys that control the bandwidth functions.                                                                                                                                                                                                                                                       |
| <b>CABLE → CARD</b>    | saves <i>cable</i> amplitude-correction factors to a card. To save <i>card</i> amplitude-correction factors press, <b>CARD → CARD . REGISTER #</b> and <b>PREFIX=</b> are displayed on the screen. Use the data keys to enter the desired register number then press <b>(ENTER)</b> . The <i>cable</i> amplitude-correction data is then saved to a card. |
| <b>Cable Factors</b>   | 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.                                                                                                                                                                                      |
| <b>CABLE ON OFF</b>    | turns on or off cable amplitude correction factors.                                                                                                                                                                                                                                                                                                       |
| <b>(CAL)</b>           | accesses the softkey menus used for the self-calibration, service-diagnostics, and service-calibration functions.                                                                                                                                                                                                                                         |
| <b>CAL AMPTD</b>       | initiates an amplitude self-calibration routine.                                                                                                                                                                                                                                                                                                          |
| <b>Cal At Time</b>     | accesses a menu to set the time of an automatic calibration.                                                                                                                                                                                                                                                                                              |

|                      |                                                                                                                                                                                                         |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CAL<br>CISPR BW      | performs the portion of the amplitude calibration where the CISPR 6 dB bandwidths are calibrated.                                                                                                       |
| CAL<br>FETCH         | retrieves stored self-calibration correction factors from the previous CAL STORE.                                                                                                                       |
| CAL<br>FREQ          | initiates a frequency self-calibration routine.                                                                                                                                                         |
| CAL FREQ<br>& AMPTD  | initiates both the frequency and amplitude self-calibration routines.                                                                                                                                   |
| CAL<br>STORE         | stores the correction factors from the last calibration.                                                                                                                                                |
| CAL<br>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<br>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<br>Config       | accesses the softkey menu that allows you to catalog, format, and delete data from a memory card.                                                                                                       |
| CATALOG<br>ALL       | catalogs all the programs and variables stored in analyzer memory.                                                                                                                                      |
| CATALOG<br>CARD      | displays a catalog of the items stored on the memory card.                                                                                                                                              |
| Catalog<br>Internal  | accesses a menu that has the cataloging functions for analyzer memory.                                                                                                                                  |
| CATALOG<br>PREFIX    | catalogs all of the saved data with the specified prefix from either the memory card or the analyzer memory.                                                                                            |
| CATALOG<br>REGISTER  | displays the status of state and trace registers in analyzer memory.                                                                                                                                    |
| CATALOG<br>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<br>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<br>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<br>ON OFF   | turns the internal comb generator on or off. <i>HP 8593EM, and HP 8596EM only.</i>                                                                                                                                                                                                                                                                             |
| COMPLMNT<br>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<br>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<br>PRNT PLT | changes between a printer and plotter.                                                                                                                                                                                                                                                                                                                         |
| COPY<br>SCREEN       | sends a copy of the current display to the printer specified by Printer Config or the plotter specified by Plotter Config.                                                                                                                                                                                                                                     |
| CORRECT<br>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.*

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**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 $\mu$ V**

changes the amplitude units to dB $\mu$ 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<br>SYNC    | restores the factory default values of the horizontal and vertical synchronization constants for the rear panel MONITOR output.                                                                                                                                                                                                                                |
| Define<br>List     | accesses a menu that specifies what elements of a table are output to the printer when <code>OUTPUT REPORT</code> 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<br>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 <code>LOG ON OFF</code> and <code>LIN ON OFF</code> can be used when outputting to a plotter. The report is generated by <code>OUTPUT REPORT</code> . |
| DELETE<br>ALL SIGS | deletes all signals from the signal list. <i>EMC analyzer mode only.</i>                                                                                                                                                                                                                                                                                       |
| DELETE<br>FACTORS  | deletes all amplitude-correction factors for the current amplitude-correction (antenna, cable, or other) table.                                                                                                                                                                                                                                                |
| DELETE<br>FILE     | allows you to delete an item from analyzer memory or a file from the memory card.                                                                                                                                                                                                                                                                              |
| DELETE<br>LIMIT    | deletes the selected limit-line table.                                                                                                                                                                                                                                                                                                                         |
| DELETE<br>MARKED   | deletes all marked signals from the signal list. Signals can be marked using <code>MARK ALL SIGNALS</code> , <code>MARK SIGNAL</code> , and <code>Selectv Mark</code> .                                                                                                                                                                                        |
| DELETE<br>POINT    | deletes an amplitude-correction factor that was previously selected by <code>SELECT POINT</code> .                                                                                                                                                                                                                                                             |
| DELETE<br>SEGMENT  | deletes the limit-line entry for the selected segment number.                                                                                                                                                                                                                                                                                                  |
| DELETE<br>SIGNAL   | deletes the current highlighted signal from the signal list. <i>EMC analyzer mode only.</i>                                                                                                                                                                                                                                                                    |
| Delete<br>Signals  | accesses a menu which deletes one or more signals from the signal list.                                                                                                                                                                                                                                                                                        |

## 2-12 EMC Analyzer Functions

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

## 2-14 EMC Analyzer Functions

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<br>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<br>MEM CARD   | allows you to dispose of any data or programs stored on the memory card by formatting it.                                                                                                                                                                                                                                                                                           |
| ERASE<br>STATEALL   | allows you to purge all the user state registers 1 through 9.                                                                                                                                                                                                                                                                                                                       |
| ERASE<br>TRACEALL   | allows you to purge all the user trace registers 0 through TRCMEM.                                                                                                                                                                                                                                                                                                                  |
| EXECUTE<br>TITLE    | executes the programming commands displayed in the screen title area of the EMC analyzer.                                                                                                                                                                                                                                                                                           |
| EXIT<br>CATALOG     | returns the analyzer to the state it was in before the current catalog function was invoked.                                                                                                                                                                                                                                                                                        |
| EXIT<br>EDIT        | exits the annotation editor.                                                                                                                                                                                                                                                                                                                                                        |
| EXIT<br>GRAPH       | exits the <code>SAVE LIN GRAPH</code> or <code>SAVE LOG GRAPH</code> report graph functions.                                                                                                                                                                                                                                                                                        |
| EXIT<br>MEASURE     | exits the <code>MEAS STEPPED</code> function.                                                                                                                                                                                                                                                                                                                                       |
| EXIT<br>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<br>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. *EMC analyzer mode only.*

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. *All except Option 703.*

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 (*HP 8591EM, HP 8593EM, and HP 8595EM only*).

|                    |                                                                                                                                                                                                                                                                                                        |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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<br>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<br>PRINTER  | selects a black and white printer.                                                                                                                                                                                                                                                                     |
| HP B&W<br>DJ540    | selects a black and white printer. Use this function if you have a black and white HP DeskJet printer. Available under the <b>Config</b> key.                                                                                                                                                          |
| IF BW<br>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<br>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<br>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<br>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<br>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<br>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 <b>INPUT Z 50Ω 75Ω</b> or by entering 50 or 75 using the data keys. |
| INTERNAL<br>→ STATE | recalls the saved analyzer state from the selected state register.                                                                                                                                                                                                                                                                                                           |
| Internal<br>→ 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<br>SPAN        | changes the frequency span of the instrument to the previous span setting.                                                                                                                                                                                                                                                                                                   |
| LIMIT #<br>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<br>Lines      | accesses the limit-line menus under the <b>DISPLAY</b> key and <b>SETUP</b> key.                                                                                                                                                                                                                                                                                             |
| LIMIT<br>LINES      | stores or recalls the current limit-line tables in analyzer memory.                                                                                                                                                                                                                                                                                                          |
| LIMITS<br>→ CARD    | saves the current limit-line data to a card.                                                                                                                                                                                                                                                                                                                                 |

LIMITS  
FIX REL

allows you to choose fixed or relative type of limit lines.  
*Spectrum analyzer mode only.*

LIMITS  
FRQ TIME

selects whether limit lines will be entered using frequency or sweep time to define the segments. *Spectrum analyzer mode only.*

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. *Spectrum analyzer mode only.*

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. *Spectrum analyzer mode only.*

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. *Option 010 only.*

**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. *EMC analyzer mode only.*

**MARK ALL**  
**DUPLICAT**

marks all signals which match their frequency with another signal in the signal list. *EMC analyzer mode only.*

**MARK ALL**  
**SIGNALS**

marks all signals in the signal list. *EMC analyzer mode only.*

**MARK LWR**  
**DUPLICAT**

marks all duplicate frequency signals in the list that are lower in peak amplitude. *EMC analyzer mode only.*

**MARK**  
**SIGNAL**

marks the highlighted signal in the signal list. *EMC analyzer mode only.*

**MARK TO**  
**END**

marks all signals, after the highlighted signal, to the end of the list. *EMC analyzer mode only.*

**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<br>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<br>Config       | accesses the menu used to address the plotter and to select plotter options.                                                                                                                                                                                                 |
| PLOTTER<br>ADDRESS   | changes the HP-IB address of the plotter. <i>Except Option 043.</i>                                                                                                                                                                                                          |
| PLT_ _<br>LOC_ _     | selects the position of the plotter output.                                                                                                                                                                                                                                  |
| PLT MENU<br>ON OFF   | allows the softkey labels to be plotted along with the analyzer display.                                                                                                                                                                                                     |
| Plt Port<br>Config   | access the menus used to select plotter options. See <b>COPY</b> for more information.                                                                                                                                                                                       |
| PLT PORT<br>HPIB PAR | allows the selection between HP-IB or parallel plotter ports. <i>Except for Option 043.</i>                                                                                                                                                                                  |
| PLT PORT<br>SER PAR  | allows the selection between serial or parallel plotter ports. <b>BAUD RATE</b> appears in this menu only when serial is selected. <i>Option 043 only.</i>                                                                                                                   |
| PLTS/PG<br>1 2 4     | allows you to plot a full-page, half-page, or quarter-page output.                                                                                                                                                                                                           |
| PLT—LJT<br>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<br>IP LAST  | determines the state of the EMC analyzer when the analyzer is powered on for bands 1 through 4.                                                                                                                                                                              |
| PREAMP<br>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 <b>INPUT Z</b> bypass is selected. <i>Available only when used with an HP 85420E Option 1EM RF filter section.</i>                         |

|                      |                                                                                                                                                                                                                                                                                                      |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PRESEL<br>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.<br><i>HP 8593EM, HP 8595EM, and HP 8596EM only.</i>                                                                    |
| PRESEL<br>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.<br><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<br>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<br>ADDRESS   | allows you to change the HP-IB address of the printer. <i>Except for Option 043.</i>                                                                                                                                                                                                                 |
| PRINTER<br>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<br>Config   | accesses the menus used to select printer options. See COPY for more information.                                                                                                                                                                                                                    |
| PRN PORT<br>HPIB PAR | allows the selection between HP-IB or parallel printer ports.<br><i>Except for Option 043.</i>                                                                                                                                                                                                       |
| PRN PORT<br>SER PAR  | allows the selection between serial or parallel printer ports.<br>BAUD RATE appears in this menu only when serial is selected.<br><i>Option 043 only.</i>                                                                                                                                            |
| PRT MENU<br>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<br>DLP      | recalls a DLP from the memory card.                                                                                                                                                                                                                                                                                                                                                                                       |
| Recall<br>Internal | accesses a menu to recall states, traces, and limit-line tables from internal memory.                                                                                                                                                                                                                                                                                                                                     |
| RECALL<br>LIMITS   | recalls limit-line tables from the memory card.                                                                                                                                                                                                                                                                                                                                                                           |
| RECALL<br>LIST     | recalls signal lists from a card. To recall a signal list press, <b>RECALL LIST</b> use the step keys or knob to highlight the desired file, then press <b>LOAD FILE</b> .                                                                                                                                                                                                                                                |
| RECALL<br>OTHER    | recalls <i>other</i> two-port device factors from a card. To recall <i>other</i> data press, <b>RECALL OTHER</b> use the step keys or knob to highlight the desired file, then press <b>LOAD FILE</b> .                                                                                                                                                                                                                   |
| RECALL<br>SETUP    | recalls instrument setups from a card. To recall an instrument setup press, <b>RECALL SETUP</b> use the step keys or knob to highlight the desired file, then press <b>LOAD FILE</b> .                                                                                                                                                                                                                                    |
| RECALL<br>STATE    | recalls, into analyzer memory, a state saved on the memory card.                                                                                                                                                                                                                                                                                                                                                          |
| RECALL<br>TRACE    | recalls traces from a card. To recall a trace press, <b>RECALL TRACE</b> use the step keys or knob to highlight the desired file, then press <b>LOAD FILE</b> .                                                                                                                                                                                                                                                           |
| REF LVL            | allows the reference level to be changed. This function is activated when <b>(AMPLITUDE)</b> 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 $\mu$ 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<br>ANTENNA    | saves antenna amplitude-correction data to a card. To save antenna data press, <b>SAVE ANTENNA</b> . REGISTER # and PREFIX= are displayed on the screen. Use the data keys to enter the desired register number then press <b>(ENTER)</b> . The antenna data is then saved to a card.           |
| SAVE<br>AUTOEXEC   | saves the current setup to a file named "eAUTOEXEC"on the card. See <b>AUTOEXEC ON OFF</b> .                                                                                                                                                                                                    |
| SAVE<br>CABLE      | saves cable amplitude-correction data to a card.                                                                                                                                                                                                                                                |
| Save<br>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<br>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<br>Internal   | accesses a menu to save states, traces, and limit-line tables to internal instrument memory.                                                                                                                                                                                                    |
| SAVE<br>LIMITS     | saves the current limit-line tables to a card.                                                                                                                                                                                                                                                  |
| SAVE LIN<br>GRAPH  | draws an EMC report graph on the display. <b>SAVE LIN GRAPH</b> 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<br>LIST       | saves the current signal list to a card. <i>EMC analyzer mode only.</i>                                                                                                                                                                                                                         |
| SAV LOCK<br>ON OFF | locks all the current internal state and trace registers against further data storage.                                                                                                                                                                                                          |
| SAVE LOG<br>GRAPH  | draws an EMC report graph on the display. <b>SAVE LOG GRAPH</b> 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<br>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.

## 2-34 EMC Analyzer Functions

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<br>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<br>SETUP       | shows current settings of the instrument on the display. <b>SHOW SETUP</b> consists of four pages of information, including existing filenames, correction-factor data, limit-line data, frequency settings, trace settings, and so on.                                                                                                                                    |
| SHW INST<br>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<br>ON OFF  | turns on or off the signal list viewing functions. <i>EMC analyzer mode only.</i>                                                                                                                                                                                                                                                                                          |
| Signal<br>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<br>DELT LIM | sorts the internal signal list by delta from limit line. This list is sorted in descending order. The <b>VIEW Δ OFF</b> softkeys select which limit and which detector to compare to the limit. <i>EMC analyzer mode only.</i>                                                                                                                                             |
| SORT BY<br>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<br>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<br>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<br>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<br>Signals     | accesses a menu to sort the internal signal list based on the softkey selected. <i>EMC analyzer mode only.</i>                                                                                                                                                                                                                                                             |

|                                    |                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SPAN</b> or <b>SPAN</b>         | activates the SPAN function and accesses the frequency-span functions.                                                                                                                                                                                                                                                               |
| <b>SPAN</b><br><b>ZOOM</b>         | 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.                                                                                                                                                       |
| <b>SPEAKER</b><br><b>ON OFF</b>    | turns the internal speaker on and off. <i>All except Option 703.</i>                                                                                                                                                                                                                                                                 |
| <b>SPECTRUM</b><br><b>ANALYZER</b> | sets the analyzer to the spectrum analyzer operating mode and accesses the <b>PRESET SPECTRUM</b> softkey function.                                                                                                                                                                                                                  |
| <b>SQUELCH</b>                     | adjusts the squelch level. The squelch level mutes weak signals and passes strong signals. <i>All except Option 703.</i>                                                                                                                                                                                                             |
| <b>SRC ATN</b><br><b>MAN AUTO</b>  | allows you to select between automatic and manual adjustment of the tracking generator's switching attenuator. <i>Option 010 only.</i>                                                                                                                                                                                               |
| <b>SRC PWR</b><br><b>OFFSET</b>    | offsets the displayed power of the tracking generator (SRC). <i>Option 010 only.</i>                                                                                                                                                                                                                                                 |
| <b>SRC PWR</b><br><b>STP SIZE</b>  | 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>                                                                                                                                                                                        |
| <b>SRC PWR</b><br><b>ON OFF</b>    | 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>                                                                                                                                          |
| <b>START</b><br><b>FREQ</b>        | sets the frequency at the left side of the graticule.                                                                                                                                                                                                                                                                                |
| <b>STATE</b><br><b>→ CARD</b>      | saves the current analyzer state on the memory card.                                                                                                                                                                                                                                                                                 |
| <b>STATE</b><br><b>→ INTRNL</b>    | saves the current analyzer state in the selected state register.                                                                                                                                                                                                                                                                     |
| <b>STEP</b><br><b>LOG LIN</b>      | selects either a logarithmic or linear stepped measurement. The stepped measurement is initiated using the <b>MEAS STEPPED</b> softkey under the <b>TEST</b> key and taken between the specified start and stop frequencies in conjunction with the selected step size ( <b>FREQ STEP</b> ), and step mode ( <b>MEAS SNG CONT</b> ). |

|                      |                                                                                                                                                                                              |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| STOP                 | stops a stepped measurement.                                                                                                                                                                 |
| STOP<br>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<br>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<br>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<br>SR SA    | selects a stimulus-response (SR) or spectrum analyzer (SA) auto-coupled sweep time.                                                                                                          |
| SWP TIME<br>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<br>NTSC     | changes the rear panel MONITOR output between normal synchronization constants or the NTSC video compatible format.                                                                          |
| SYNC NRM<br>PAL      | changes the rear panel MONITOR output between normal synchronization constants or the PAL video compatible format.                                                                           |
| TABLE<br>ADDRESS     | changes the HP-IB address of an automated turntable.                                                                                                                                         |
| TABLE<br>CCW STOP    | starts the turntable moving in a counter-clockwise direction, or stops the turntable from moving. <i>EMC analyzer mode only.</i>                                                             |
| TABLE<br>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<br>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.                                                           |

## 2-38 EMC Analyzer Functions

|                    |                                                                                                           |
|--------------------|-----------------------------------------------------------------------------------------------------------|
| Time<br>Date       | accesses the softkey menu used to set and display the real-time clock.                                    |
| TIMEDATE<br>ON OFF | turns the display of the real-time clock on and off.                                                      |
| TOWER<br>ADDRESS   | changes the HP-IB address of an automated tower.                                                          |
| TOWER<br>DN STOP   | starts the tower moving down or stops the tower from moving.<br><i>EMC analyzer mode only.</i>            |
| Tower<br>Turntbl   | accesses the menu of tower and turntable softkey functions.<br><i>EMC analyzer mode only.</i>             |
| TOWER<br>UP STOP   | starts the tower moving up or stops the tower from moving.<br><i>EMC analyzer mode only.</i>              |
| TOWER<br>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<br>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<br>VW OFF  | allows the viewing or blanking of Trace B. Only available with <b>NORM A/B ON OFF</b> 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<br>→ Card    | begins the process used to save trace data or limit-line tables on the memory card.                       |
| Trace<br>→ Intrnl  | accesses a softkey menu that allows you to select the item to be stored in analyzer memory.               |

|                     |                                                                                                                                                                                                                                                                                                       |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Track<br>Gen        | displays softkey menus for use with a built-in tracking generator. <i>Option 010 only.</i>                                                                                                                                                                                                            |
| TRACKING<br>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<br>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.<br><br>For marker positioning, the knob changes the marker position by four times the normal rate (FAST). |
| TV<br>LINE #        | selects the line number of the video picture field. <i>Options 101 and 102, or Option 301 only.</i>                                                                                                                                                                                                   |
| TV<br>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<br>NEG POS  | selects the polarity of the modulation of the video format. <i>Options 101 and 102, or Option 301 only.</i>                                                                                                                                                                                           |
| TV<br>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<br>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<br>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<br>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<br>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.

## 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:

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

## Syntax Conventions

<A-block data field>::=

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

### 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> ) |

### 3-10 Programming Commands

|             |                                                                                                                          |
|-------------|--------------------------------------------------------------------------------------------------------------------------|
| 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                                                                                         |
| SWEEPTYPE   | 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. |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## **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<br>PLTPRT | initiates output of the EMC analyzer display to a plotter<br>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<br>PRNPRT<br>PRNTADRS | initiates output of the EMC analyzer display to a printer<br>selects which port to output printer data from the analyzer<br>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                                            |
| SWEEPTYPE   | 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**(**\_**(OFF|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**(**\_**(AC|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>|**\_**(UP|DN)|?);

Specifies the horizontal position of the EMC analyzer display.

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

Query response: <numeric data format>

**CRTVPOS**(**\_**<number>|**\_**(UP|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)

### 3-38 Programming Commands

- 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)]|-(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**(**\_**(**LIN**|**LOG**)|**\_**)(**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**(**\_**(**SA**|**EMC**)|**\_**)(**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**(**\_**(**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**(**\_**(**LIN**|**LOG**)|**\_**)(**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: LIMIDFNFTYP\_EMI;LIMILINE<number of segments>;LIMIREL\_OFF;<limit line> {<limit line>}<CR><LF><EOI> <limit line>::= LIMINUM\_(LIMIT\_1|LIMIT\_2);LIMIDEL;LIMIDFNFTYP\_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>}, {<span>}, {<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)]|?)|?);
$$\mathbf{PA}_{-[(PD|PU)][-]\langle x \text{ coordinate} \rangle, [-]\langle y \text{ coordinate} \rangle \{, [(PD|PU)][-]\langle x \text{ coordinate} \rangle, [-]\langle y \text{ coordinate} \rangle \};$$
**PARSTAT;**

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.

## Programming Commands 3-57

**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.

**RCVRMRKR\_ (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

### 3-62 Programming Commands

**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 though 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**[(<sub>-</sub><number>|<sub>-</sub>(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**\_<sub>-</sub>(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**\_<sub>-</sub>(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>}, {<span>}, {<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>

**SRC TK**([\_]<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>

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## 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)                                        |

|                |                                                                             |
|----------------|-----------------------------------------------------------------------------|
| l              | Limit line                                                                  |
| LAST           | Last state                                                                  |
| LE             | Less than or equal to                                                       |
| LEVEL          | Level gating                                                                |
| LIMILINE       | Limit line                                                                  |
| LINE           | Line trigger                                                                |
| LOAD15         | Loads the values for the horizontal and vertical position of the 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                                                                    |

### 3-80 Programming Commands

|          |                                       |
|----------|---------------------------------------|
| 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                      |



## EMC Analyzer Error Messages

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### 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).

#### $\phi$ 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.  $\phi$  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)

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## 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<br>Below Carrier (dB) | Sideband Level<br>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                                  |                                      |              |

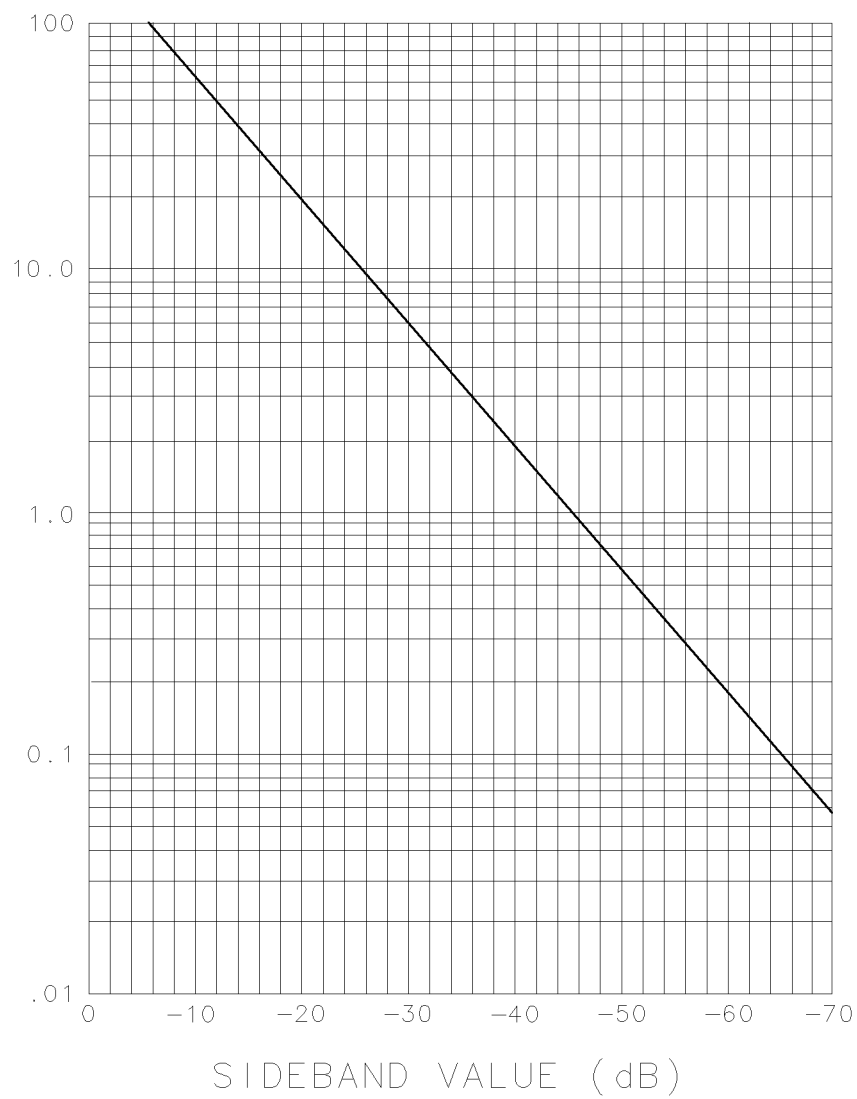
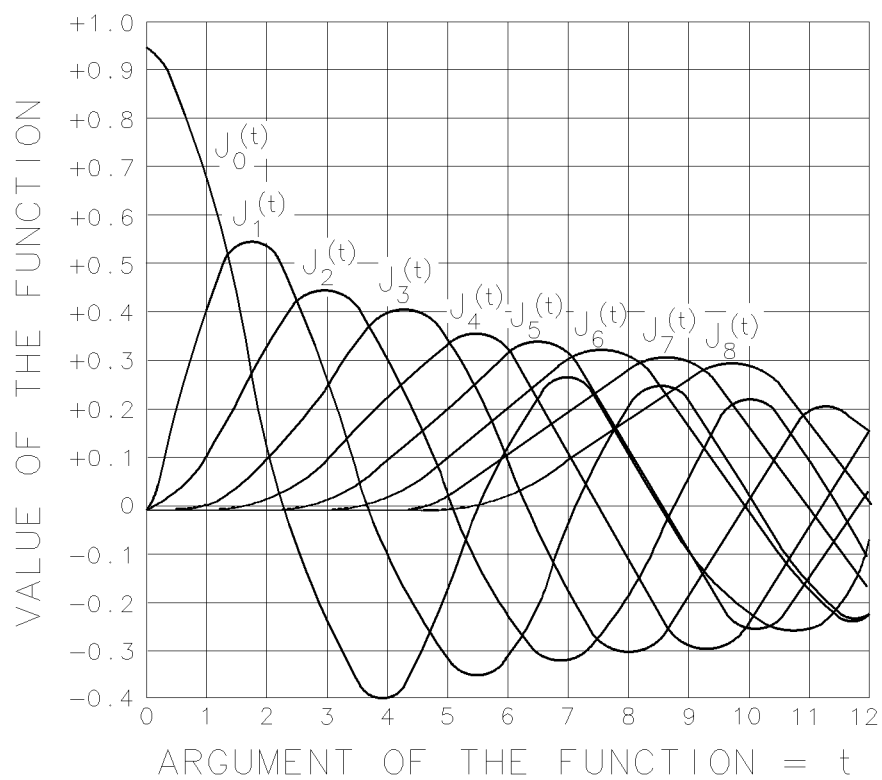


**Figure B-1. Percent Modulation**

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

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

| <b>Carrier Bessel<br/>NULL Order</b> | <b><math>t^* = \Delta F/f</math></b> | <b>First Sideband</b> | <b><math>t^* = \Delta F/f</math></b> |
|--------------------------------------|--------------------------------------|-----------------------|--------------------------------------|
| 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**

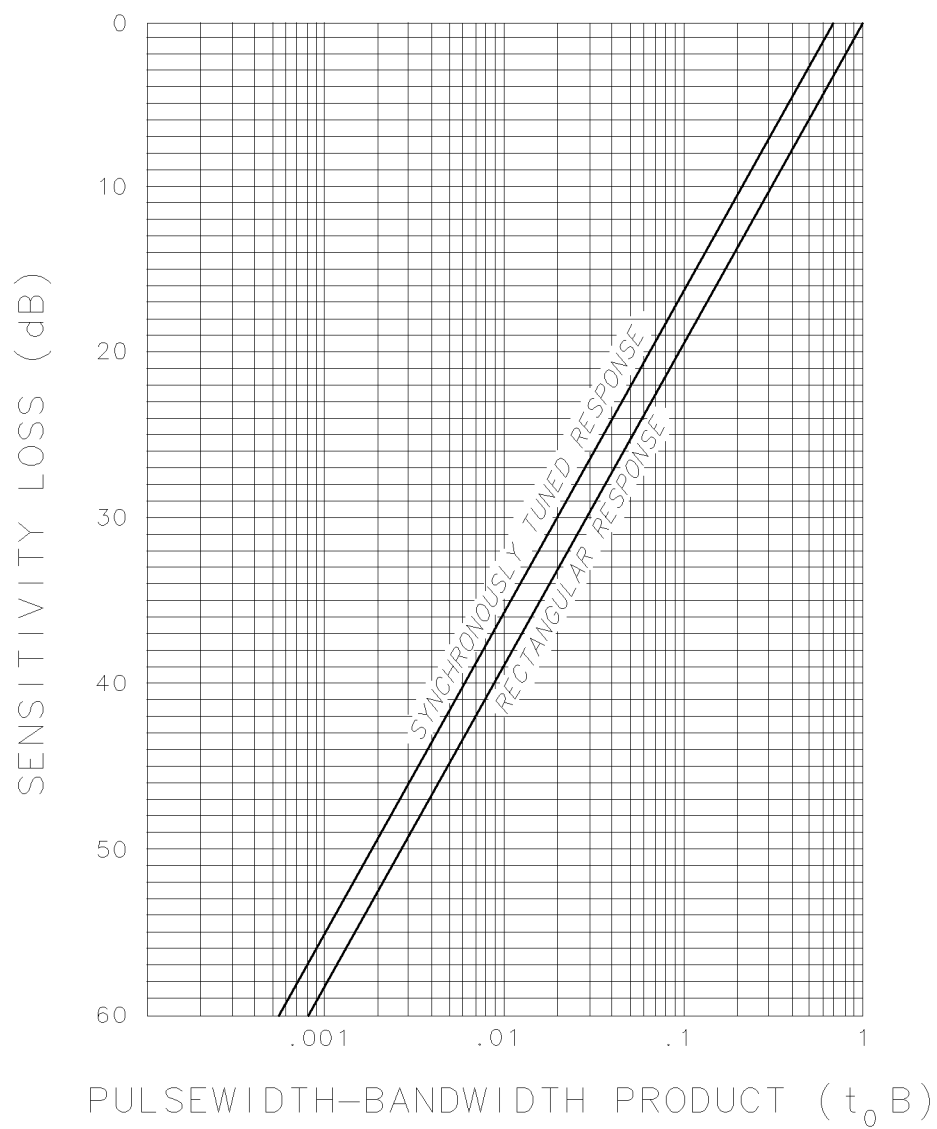


**Figure B-3. Loss in Sensitivity (Pulsed RF versus CW)**

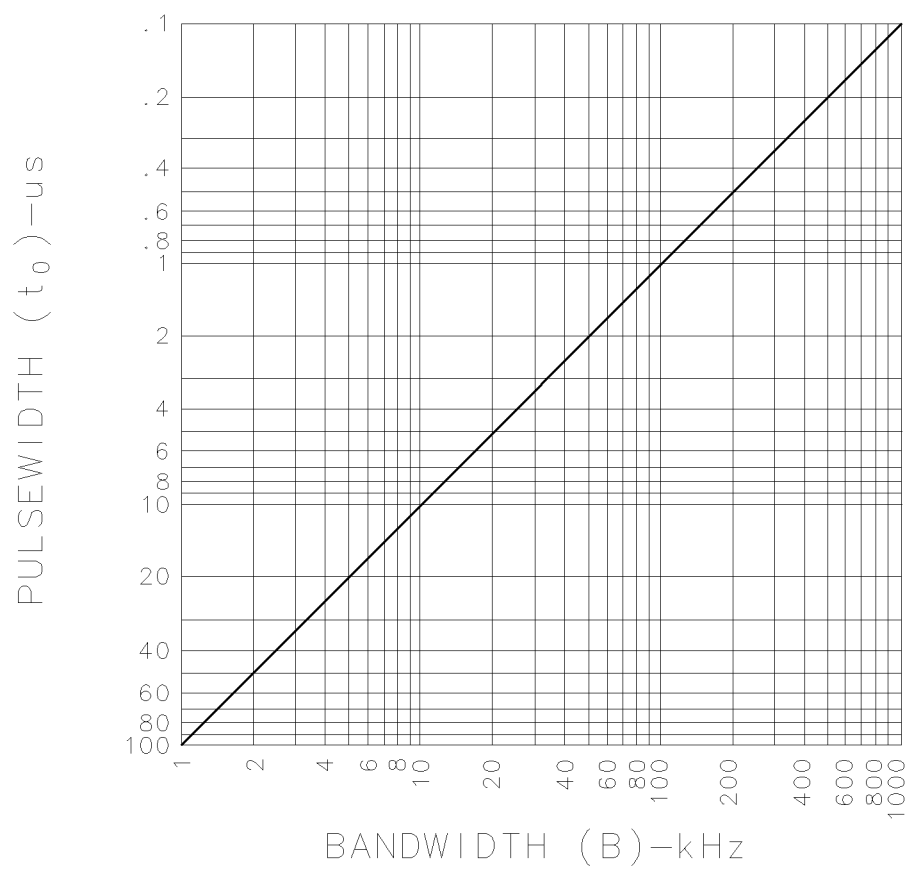


**Figure B-4. IF BW Setting for Pulsed RF Computed from  $t_0 B = 0.1$**

## **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<br>Plus Display Line | NORMLIZE ON OFF or<br>NORM A/B ON OFF |
| AMPCOR   | Amplitude Correction                       | Correctn Factors                      |
| AMPLEN   | Amplitude Correction<br>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<br>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                     | <u>CAL</u> calibration functions                       |
| CALTIME  | Calibration Time                | SET TIME                                               |
| CAT      | Catalog                         | Catalog Internal ,<br>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 ,<br>CLEAR WRITE B , or<br>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)**

| <b>Command</b> | <b>Name</b>                        | <b>Key</b>                 |
|----------------|------------------------------------|----------------------------|
| 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           |
| DEMOD          | Demodulation                       | DEMOD ON OFF , DEMOD AM FM |

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

| <b>Command</b> | <b>Name</b>              | <b>Key</b>       |
|----------------|--------------------------|------------------|
| 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        |

**C-4 Cross Reference of Programming Command to Key Function**

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

| <b>Command</b> | <b>Name</b>                         | <b>Key</b>                                    |
|----------------|-------------------------------------|-----------------------------------------------|
| FUNCDEF        | Define Function                     |                                               |
| GETPLOT        | Get Plot                            | <b>COPY</b>                                   |
| GETPRNT        | Get Print                           | <b>COPY</b>                                   |
| GR             | Graph                               |                                               |
| GRAT           | Graticule                           | <b>GRAT ON OFF</b>                            |
| HAVE           | Have                                |                                               |
| HD             | Hold Data Entry                     | <b>HOLD</b>                                   |
| HN             | Harmonic Number                     |                                               |
| HNLOCK         | Harmonic Number Lock                | <b>Band Lock or</b><br><b>BND LOCK ON OFF</b> |
| HNUNLK         | Unlock Harmonic Number              | <b>BND LOCK ON OFF</b>                        |
| IB             | Input B                             |                                               |
| ID             | Identify                            |                                               |
| IF             | IF THEN ELSE ENDIF                  |                                               |
| IFBW           | Intermediate Frequency<br>Bandwidth | <b>IF BW AUTO MAN</b>                         |
| INT            | Integer                             |                                               |
| INZ            | Input Impedance                     | <b>INPUT Z 50Ω 75Ω</b>                        |
| IP             | Instrument Preset                   | <b>PRESET</b>                                 |
| 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         | <b>SCALE LOG LIN</b>                          |
| LIMIAMPSC      | Limit-Line Amplitude Scale          | <b>AMPL SCL LOG LIN</b>                       |

**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 ,<br>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<br>LIMIT 2 ON OFF                               |
| LIMILO      | Load Lower Limit From a Trace |                                                                   |
| LIMIMARGAMP | Limit-Margin Amplitude        | MARGIN 1 ON OFF or<br>MARGIN 2 ON OFF                             |
| LIMIMARSTA  | Limit-Margin State            | MARGIN 1 ON OFF or<br>MARGIN 2 ON OFF                             |
| LIMIMIRROR  | Mirror Limit Line             |                                                                   |
| LIMIMODE    | Limit-Line Entry Mode         | EDIT UPPER ,<br>EDIT LOWER ,<br>EDIT UP/LOW , or<br>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)**

| <b>Command</b> | <b>Name</b>                             | <b>Key</b>        |
|----------------|-----------------------------------------|-------------------|
| 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)**

| <b>Command</b> | <b>Name</b>                   | <b>Key</b>        |
|----------------|-------------------------------|-------------------|
| 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)**

| <b>Command</b> | <b>Name</b>               | <b>Key</b>                                                            |
|----------------|---------------------------|-----------------------------------------------------------------------|
| MKP            | Marker Position           |                                                                       |
| MKPAUSE        | Marker Pause              | MK PAUSE ON OFF                                                       |
| MKPK           | Marker Peak               | NEXT PEAK ,<br>NEXT PK RIGHT ,<br>NEXT PK LEFT , or<br>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 $\Delta$ -> 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 ,<br>MARKER NORMAL , or<br>MARKER $\Delta$               |
| MKTYPE         | Marker Type               | MARKER AMPTD                                                          |
| ML             | Mixer Level               | MAX MXR LVL                                                           |
| MOD            | Modulo                    |                                                                       |
| MODE           | Mode                      | EMC ANALYZER or<br>SPECTRUM ANALYZER                                  |
| MOV            | Move                      |                                                                       |
| MPY            | Multiply                  |                                                                       |
| MSI            | Mass Storage Is           | Save Card ,<br>Recall Card ,<br>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                                  | <span style="border: 1px solid black; border-radius: 5px; padding: 2px;">COPY</span> (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                                  | <span style="border: 1px solid black; padding: 0 2px;">COPY</span> (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<br>QP GAIN ON OFF                                               |
| RANGE     | Range                                  |                                                                                   |
| RB        | Resolution Bandwidth<br>(IF Bandwidth) | 9 kHz EMI BW ,<br>IF BW AUTO MAN ,<br>120 kHz EMI BW , or<br>200 Hz EMI BW        |
| RCLS      | Recall State                           | INTERNAL -> STATE                                                                 |
| RCLT      | Recall Trace                           | The softkeys accessed by<br>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<br>Input 2 20M - 2.9G<br>Input 2 BYPASS<br>VIEW CAL ON OFF<br>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<br>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<br>Frequency Limit Lines  |                                                                                                |
| SENTERT  | Segment Entry for Sweep<br>Time Limit Lines |                                                                                                |
| SER      | Serial Number                               |                                                                                                |

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

| <b>Command</b> | <b>Name</b>        | <b>Key</b>                                                                                                                                    |
|----------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| 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 ,<br>DELETE ALL SIGS , or<br>DELETE MARKED                                                                                      |
| SIGDLTAVIEW    | Signal Delta View  | VIEW Δ OFF ,<br>VIEW PK Δ LIM 1 ,<br>VIEW PK Δ LIM 2 ,<br>VIEW QP Δ LIM 1 ,<br>VIEW QP Δ LIM 2 ,<br>VIEW AV Δ LIM 1 , or<br>VIEW AV Δ LIM 2 , |
| SIGGRAPH       | Signal Graph       | SAVE LOG GRAPH and<br>SAVE LIN GRAPH                                                                                                          |
| SIGLIN         | Signal List Length |                                                                                                                                               |
| SIGLIST        | Signal List        | SIG LIST ON OFF                                                                                                                               |
| SIGMARK        | Signal Mark        | MARK SIGNAL ,<br>MARK ALL SIGNALS ,<br>MARK TO END ,<br>MARK ALL DUPLICAT ,<br>MARK LWR DUPLICAT , or<br>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<br>SORT BY PK AMP ,<br>SORT BY QP ,<br>SORT BY AVG , or<br>SORT BY DLTA LIM , |
| SIGUNMARK | Signal Unmark                   | CLEAR MARK or<br>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<br>ALC MTR INT XTAL                                                         |
| SRCAT     | Source Attenuator               | SRC ATN MAN AUTO                                                                           |
| SRCNORM   | Source Normalization            | NORMLIZE ON OFF or<br>NORM A/B ON OFF                                                      |
| SRCPOFS   | Source Power Offset             | SRC PWR OFFSET                                                                             |
| SRCPSTP   | Source Power-Level<br>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 ,<br>SAVE LIMITS ,<br>SAVE ANTENNA ,<br>SAVE CABLE , or<br>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 ,<br>DEFAULT SYNC ,<br>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 ,<br>EXTERNAL , or TV TRIG                                  |
| TRA TRB TRC | Trace Data Input<br>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 ,<br>TV TRIG EVEN FLD , or<br>TV TRIG VERT INT                      |
| TVSTND      | TV Standard                    | NTSC , PAL-M ,<br>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)**

| <b>Command</b> | <b>Name</b>                     | <b>Key</b>                                                                  |
|----------------|---------------------------------|-----------------------------------------------------------------------------|
| 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<br>AVG BW AUTO MAN ,                                     |
| VBR            | Video Bandwidth Ratio           | VBW/RBW RATIO or<br>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 ,<br>$\mu\text{V/m}$ , $\mu\text{A/m}$ , or<br>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<br>DISPLAY, CAL,<br>or SETUP (SA mode) |
| + - < > = .  | CONFIG, SAVE/RECALL<br>DISPLAY, CAL,<br>or SETUP (SA mode) |
| / ? \ [ ]    | CONFIG, SAVE/RECALL<br>DISPLAY, CAL,<br>or SETUP (SA mode) |
| @ # \$ % & * | CONFIG, SAVE/RECALL<br>DISPLAY, CAL,<br>or SETUP (SA mode) |
| ( LP         | CONFIG, SAVE/RECALL<br>DISPLAY, CAL,<br>or SETUP (SA mode) |

**Table D-1. Softkey Locations (continued)**

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

## D-2 Locating a Softkey

**Table D-1. Softkey Locations (continued)**

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

**Table D-1. Softkey Locations (continued)**

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

**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),<br>(DISPLAY), (CAL),<br>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]<br>[DISPLAY], [CAL],<br>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,<br>or SAVE/RECALL |
| Change Title      | CAL, DISPLAY,<br>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   | <b>AUX/USER</b>                                                                                  |
| COMPLMNT MARKS    | <b>TEST</b>                                                                                      |
| CONF TEST         | <b>CAL</b>                                                                                       |
| COPY DEV PRNT PLT | <b>CONFIG</b>                                                                                    |
| COPY SCREEN       | <b>OUTPUT</b>                                                                                    |
| CORRECT ON OFF    | <b>CAL</b>                                                                                       |
| Correctn Factors  | <b>SETUP</b>                                                                                     |
| CORRECTN ON OFF   | <b>SETUP</b>                                                                                     |
| COUPLE AC DC      | <b>AMPLITUDE</b>                                                                                 |
| CRT HORZ POSITION | <b>CAL</b>                                                                                       |
| CRT VERT POSITION | <b>CAL</b>                                                                                       |
| D                 | <b>CONFIG</b> , <b>SAVE/RECALL</b><br><b>DISPLAY</b> , <b>CAL</b> ,<br>or <b>SETUP</b> (SA mode) |
| DACS              | <b>CAL</b>                                                                                       |
| DATEMODE MDY DMY  | <b>CONFIG</b>                                                                                    |
| dB $\mu$ V        | <b>AMPLITUDE</b>                                                                                 |
| dBm               | <b>AMPLITUDE</b>                                                                                 |
| dBmV              | <b>AMPLITUDE</b>                                                                                 |
| DEFAULT CAL DATA  | <b>CAL</b>                                                                                       |
| DEFAULT CONFIG    | <b>CONFIG</b>                                                                                    |
| DEFAULT SYNC      | <b>CONFIG</b>                                                                                    |
| Define List       | <b>OUTPUT</b>                                                                                    |
| Define Report     | <b>OUTPUT</b>                                                                                    |
| DELETE ALL SIGS   | <b>TEST</b>                                                                                      |
| DELETE FACTORS    | <b>SETUP</b>                                                                                     |

**Table D-1. Softkey Locations (continued)**

| Softkey           | Front-Panel Access Key                                               |
|-------------------|----------------------------------------------------------------------|
| DELETE FILE       | [DISPLAY], [SAVE/RECALL],<br>[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]<br>[DISPLAY], [CAL],<br>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                                         |

**D-12 Locating a Softkey**

**Table D-1. Softkey Locations (continued)**

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

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

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

**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<br>DISPLAY, CAL,<br>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<br>DISPLAY, CAL,<br>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]<br>[DISPLAY], [CAL],<br>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<br>DISPLAY, CAL,<br>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,<br>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),<br>or (SETUP) (SA mode)                            |
| S               | (CONFIG), (SAVE/RECALL)<br>(DISPLAY), (CAL),<br>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 AMPLITUD  | (CAL), (DISPLAY),<br>or (SETUP)                 |
| Select Axis      | (DISPLAY) or (SETUP)                            |
| SELECT FREQ      | (CAL), (DISPLAY),<br>or (SETUP)                 |
| SELECT FRM LIST  | (TEST)                                          |
| SELECT POINT     | (CAL) or (SETUP)                                |
| SELECT PREFIX    | (DISPLAY), (SAVE/RECALL),<br>(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    | <b>SAVE/RECALL</b>                                                                               |
| SHOW Δ 1 PK QP AV | <b>OUTPUT</b>                                                                                    |
| SHOW Δ 2 PK QP AV | <b>OUTPUT</b>                                                                                    |
| SHOW COR ON OFF   | <b>OUTPUT</b>                                                                                    |
| SHOW DET PK QP AV | <b>OUTPUT</b>                                                                                    |
| SHOW MRK ON OFF   | <b>OUTPUT</b>                                                                                    |
| SHOW SETUP        | <b>SETUP</b>                                                                                     |
| SHW INST CONFIG   | <b>CONFIG</b>                                                                                    |
| SIG LIST ON OFF   | <b>TEST</b>                                                                                      |
| Signal Marking    | <b>TEST</b>                                                                                      |
| SLOPE             | <b>DISPLAY</b> or <b>SETUP</b>                                                                   |
| SORT BY DLTA LIM  | <b>TEST</b>                                                                                      |
| SORT BY AVG AMP   | <b>TEST</b>                                                                                      |
| SORT BY FREQ      | <b>TEST</b>                                                                                      |
| SORT BY PK AMP    | <b>TEST</b>                                                                                      |
| SORT BY QP AMP    | <b>TEST</b>                                                                                      |
| Sort Signals      | <b>TEST</b>                                                                                      |
| SPACE             | <b>CONFIG</b> , <b>SAVE/RECALL</b><br><b>DISPLAY</b> , <b>CAL</b> ,<br>or <b>SETUP</b> (SA mode) |
| SPAN ZOOM         | <b>SPAN</b>                                                                                      |
| SPAN              | <b>SPAN</b>                                                                                      |
| SPEAKER ON OFF    | <b>DEMODO</b>                                                                                    |
| SPECTRUM ANALYZER | <b>MODE</b>                                                                                      |
| SQUELCH           | <b>DEMODO</b>                                                                                    |

**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,<br>DISPLAY, SAVE/RECALL,<br>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)<br>(DISPLAY), (CAL),<br>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<br>DISPLAY, CAL,<br>or SETUP (SA mode) |
| User Menus       | AUX/USER                                                   |
| V                | CONFIG, SAVE/RECALL<br>DISPLAY, CAL,<br>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          | <b>TRACE</b> or <b>TEST</b>                                                                        |
| VIEW B          | <b>TRACE</b> or <b>TEST</b>                                                                        |
| VIEW C          | <b>TRACE</b> or <b>TEST</b>                                                                        |
| VIEW CAL ON OFF | <b>SETUP</b>                                                                                       |
| VIEW PK QP AV   | <b>DET</b> or <b>TEST</b>                                                                          |
| Volts           | <b>AMPLITUDE</b>                                                                                   |
| W               | <b>CONFIG</b> , <b>SAVE/RECALL</b><br><b>DISPLAY</b> , <b>CAL</b> ,<br>or <b>SETUP</b> (SA mode)   |
| Watts           | <b>AMPLITUDE</b>                                                                                   |
| WINDOWS OFF     | <b>ON</b>                                                                                          |
| X               | <b>CONFIG</b> , <b>SAVE/RECALL</b><br><b>DISPLAY</b> , <b>CAL</b> ,<br>or <b>SETUP</b> (SA mode)   |
| X FINE TUNE DAC | <b>CAL</b>                                                                                         |
| Y               | <b>CONFIG</b> , <b>SAVE/RECALL</b><br><b>DISPLAY</b> , <b>CAL</b> ,<br>or <b>SETUP</b> (SA mode)   |
| YTF DRIVER      | <b>CAL</b>                                                                                         |
| YTF SPAN        | <b>CAL</b>                                                                                         |
| YTF TUNE COURSE | <b>CAL</b>                                                                                         |
| YTF TUNE FINE   | <b>CAL</b>                                                                                         |
| YZ_# Spc Clear  | <b>CAL</b> , <b>CONFIG</b> ,<br><b>DISPLAY</b> , <b>SAVE/RECALL</b> ,<br>or <b>SETUP</b> (SA mode) |

**Table D-1. Softkey Locations (continued)**

| Softkey       | Front-Panel<br>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



## Key Menus

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

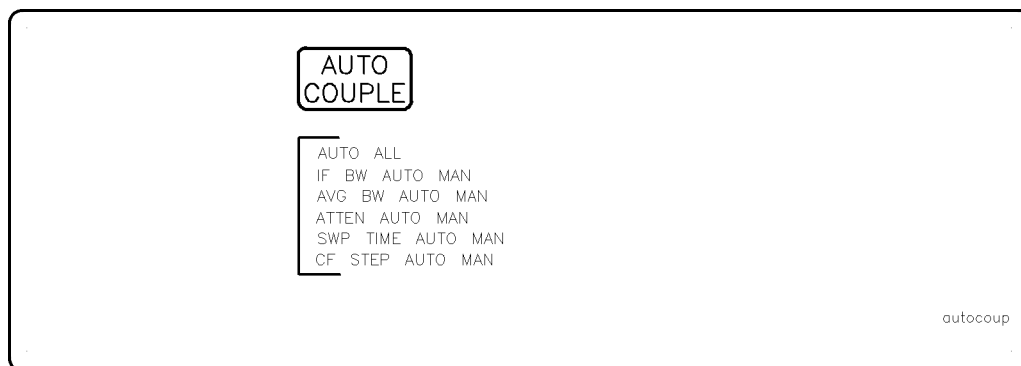
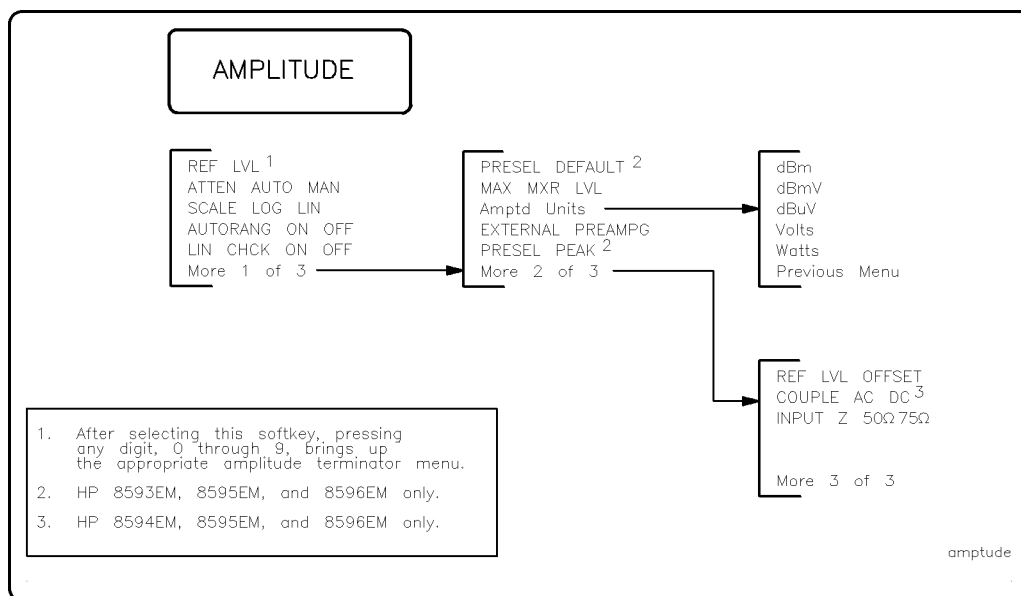
- HP 8591EM
- HP 8593EM
- HP 8594EM
- HP 8595EM
- HP 8596EM

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

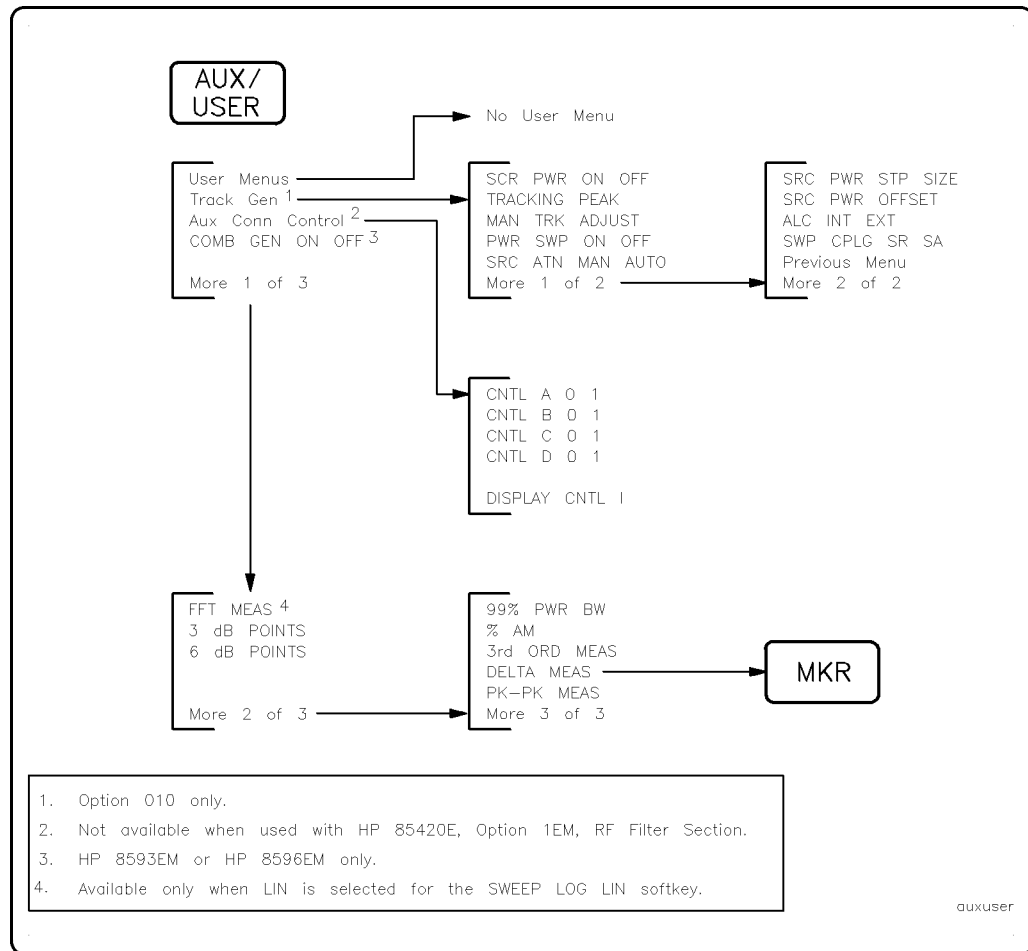
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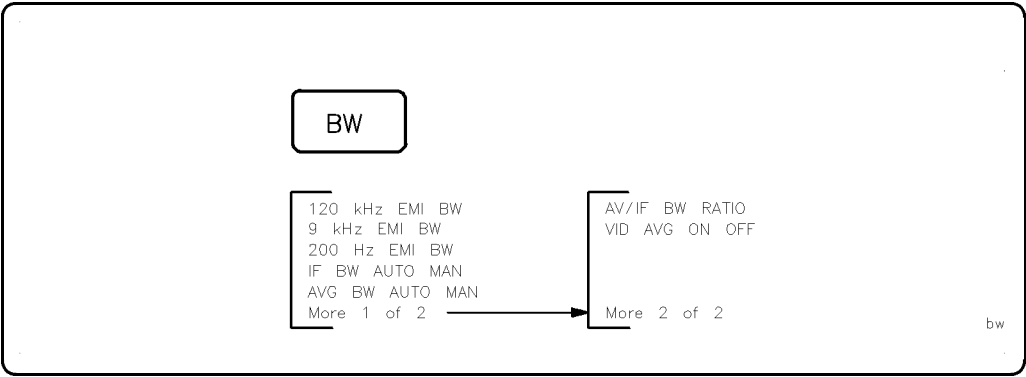
|             |                                                                                                             |
|-------------|-------------------------------------------------------------------------------------------------------------|
| <b>Note</b> | Some of the softkeys in the key menus are model or option specific and may not appear on your EMC analyzer. |
|-------------|-------------------------------------------------------------------------------------------------------------|

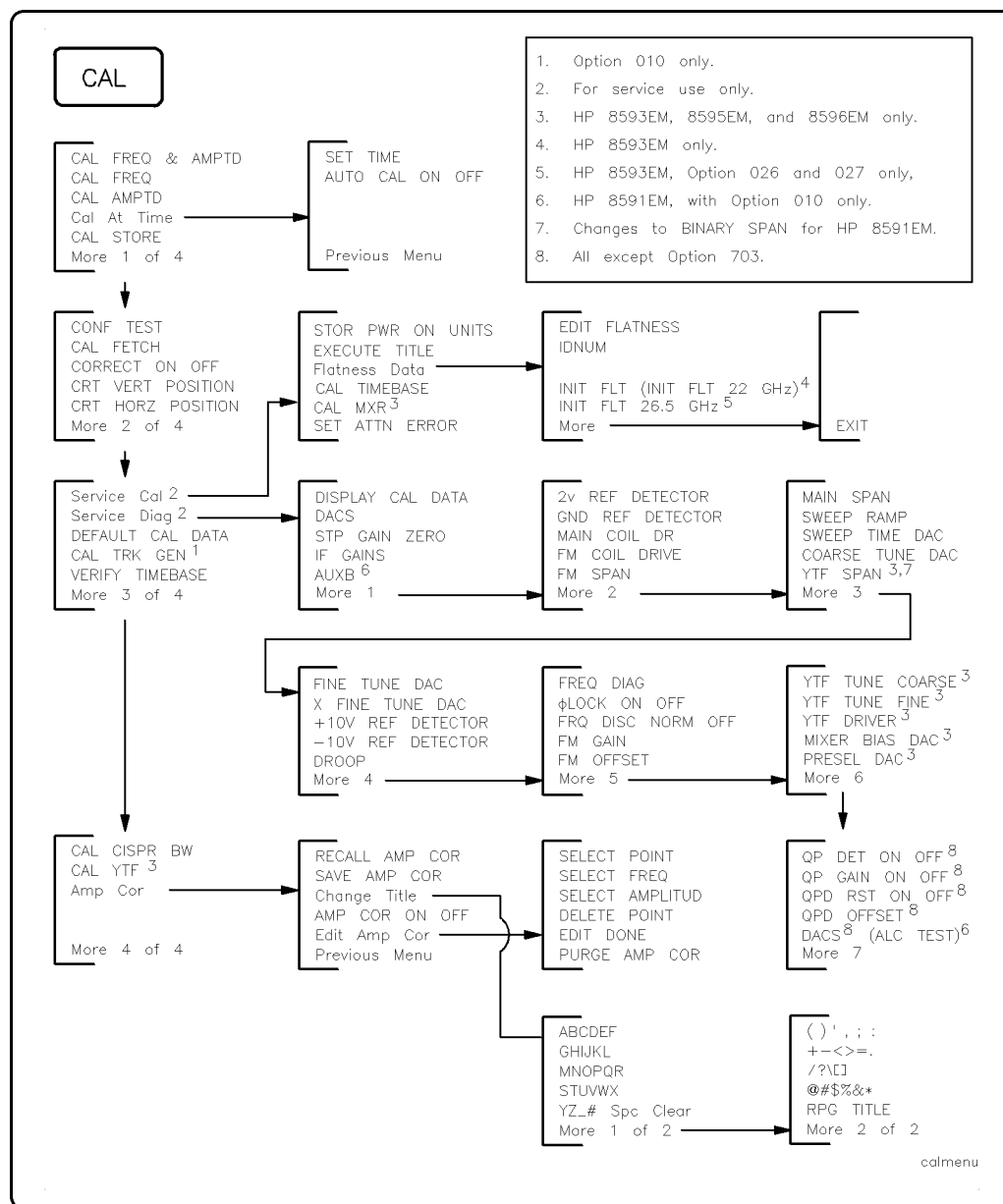
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## E-2 Key Menus

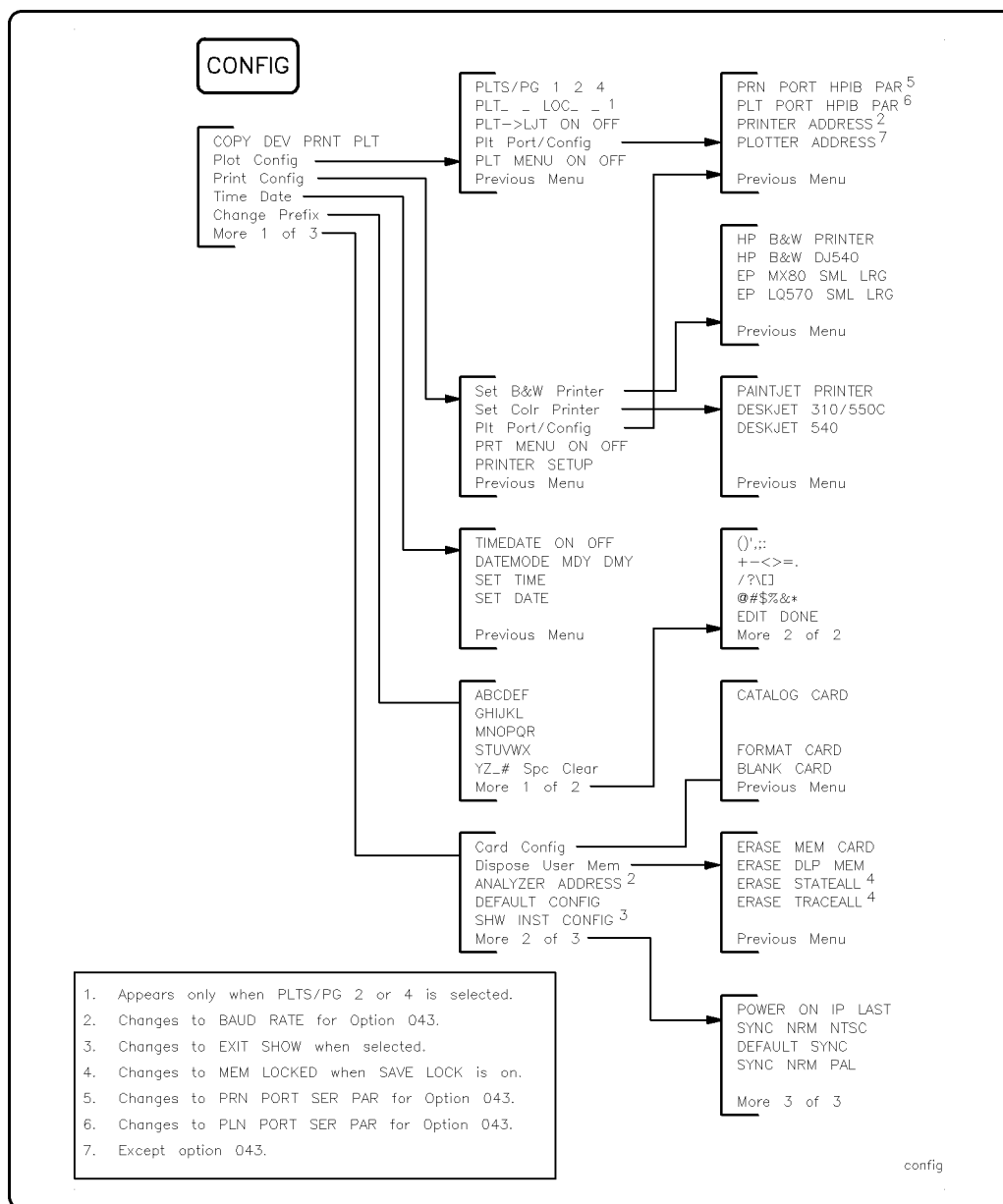






1. Option 010 only.
2. For service use only.
3. HP 8593EM, 8595EM, and 8596EM only.
4. HP 8593EM only.
5. HP 8593EM, Option 026 and 027 only.
6. HP 8591EM, with Option 010 only.
7. Changes to BINARY SPAN for HP 8591EM.
8. All except Option 703.

calmenu



## E-6 Key Menus

COPY

copymenu

DEMOD <sup>1</sup>

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

1. All except Option 703.

demod

DET

QP ON OFF <sup>1</sup>  
AVG ON OFF <sup>1</sup>  
VIEW PK QP AV <sup>1</sup>  
QP/AVG 10X OFF <sup>1</sup>  
DETECTOR SMP PK <sup>2</sup>

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

det

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

## HOLD

ABCDEF  
 GHIJKL  
 MNOPQR  
 STUVWX  
 YZ\_# Spc Clear  
 More 1 of 2

SELECT SEGMENT  
SLOPE  
FLAT  
POINT  
Select Axis \_\_\_\_\_  
Previous Menu

```

SELECT SEGMENT
SELECT FREQ
SELECT AMPLITUDE
Select Type —
EDIT DONE
More 1 of 2

```

LOAD FILE

Limit 1 \_\_\_\_\_  
Limit 2 \_\_\_\_\_  
RECALL LIMITS -  
SAVE LIMITS  
Previous Menu

More 2 of 2

```

ABCDEF
GHIJKL
MNOPQR
STUVWX
YZ_# Spc Clear
More 1 of 2 _

```

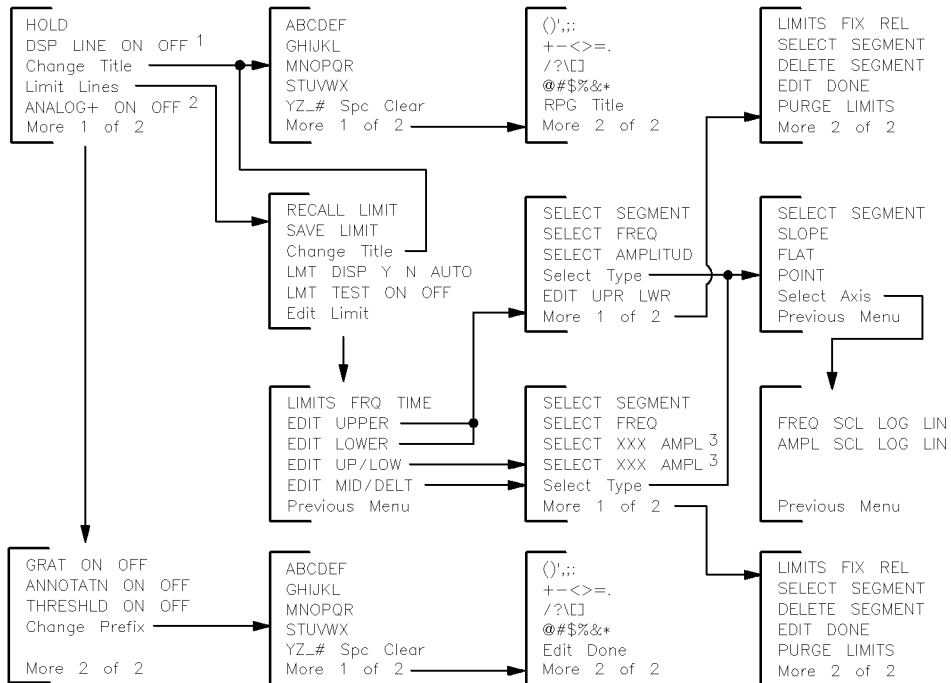
()',;:  
+-<>=,  
/?\[  
@#\$\$%&\*  
Edit Done  
More 2 of 2

- displayr

## DISPLAY hardkey—in SPECTRUM ANALYZER mode only

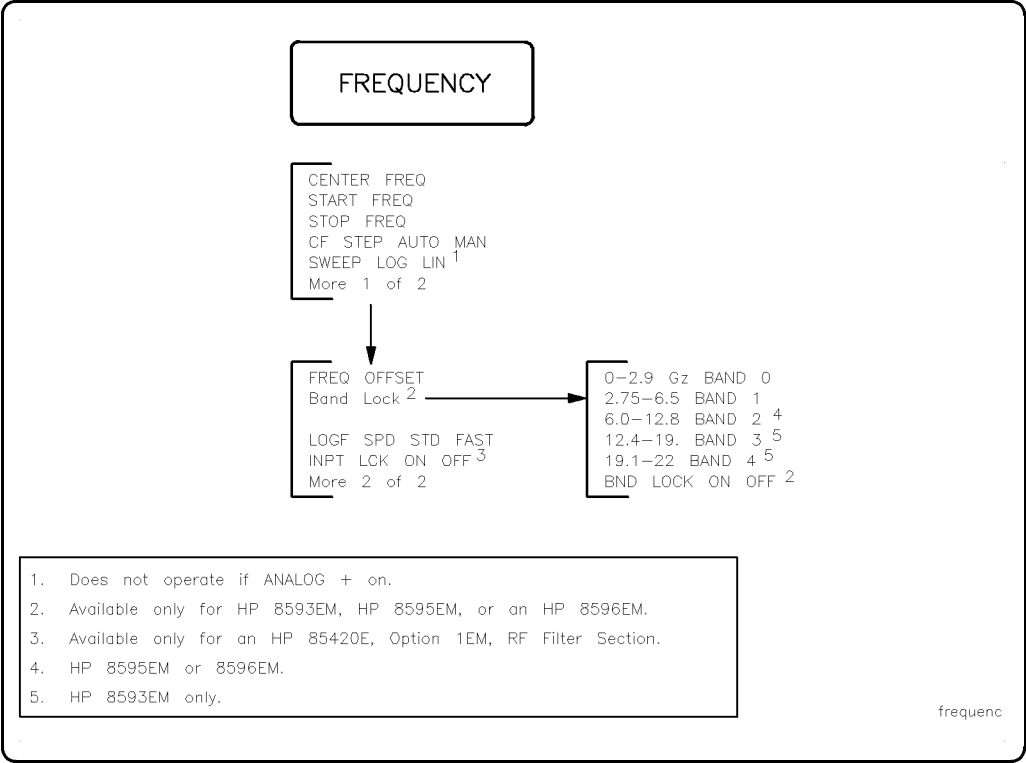
The DISPLAY hardkey has different Limit Lines softkey menus between the EMC analyzer and spectrum analyzer modes.

### 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

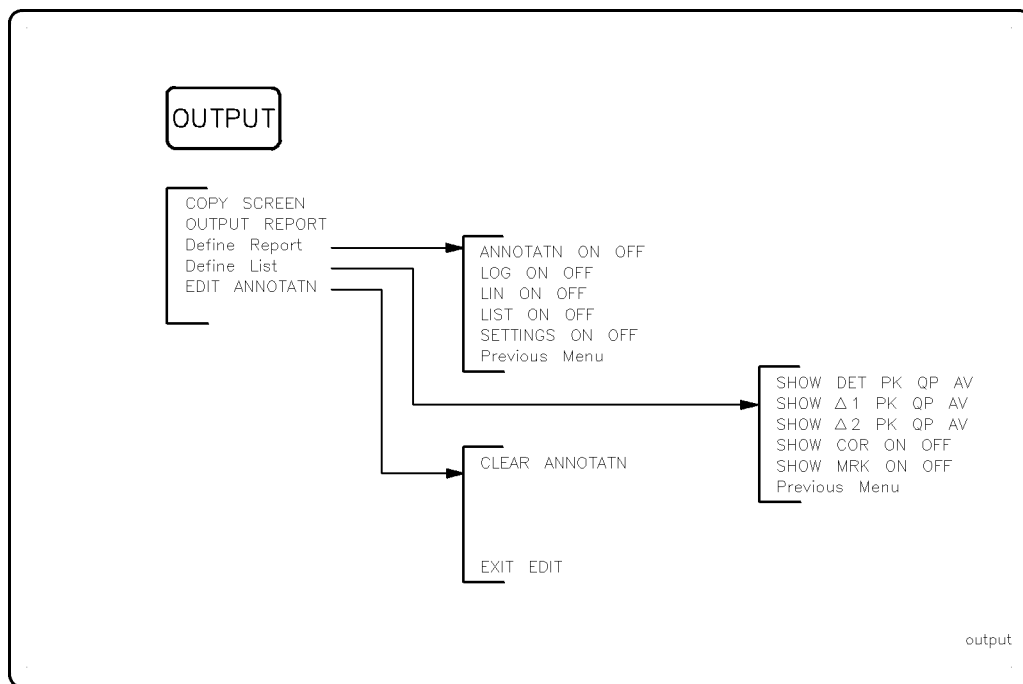
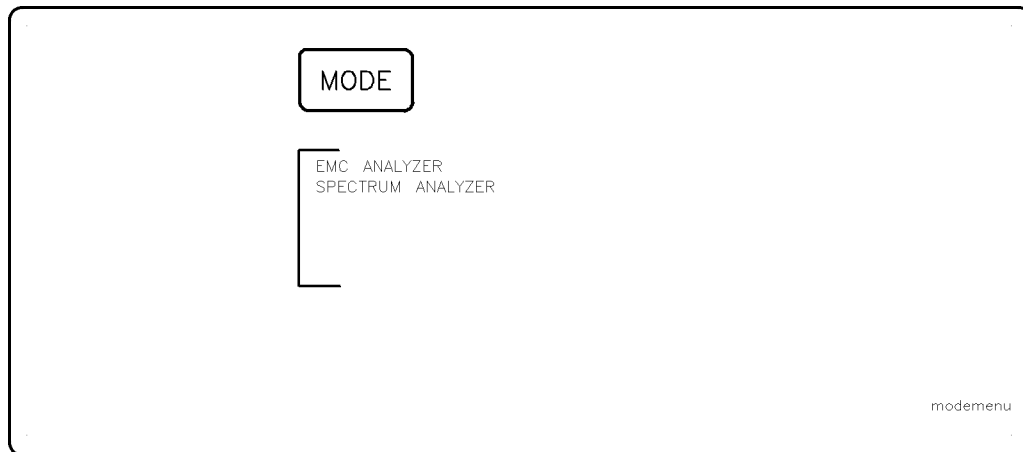
## MKR->

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

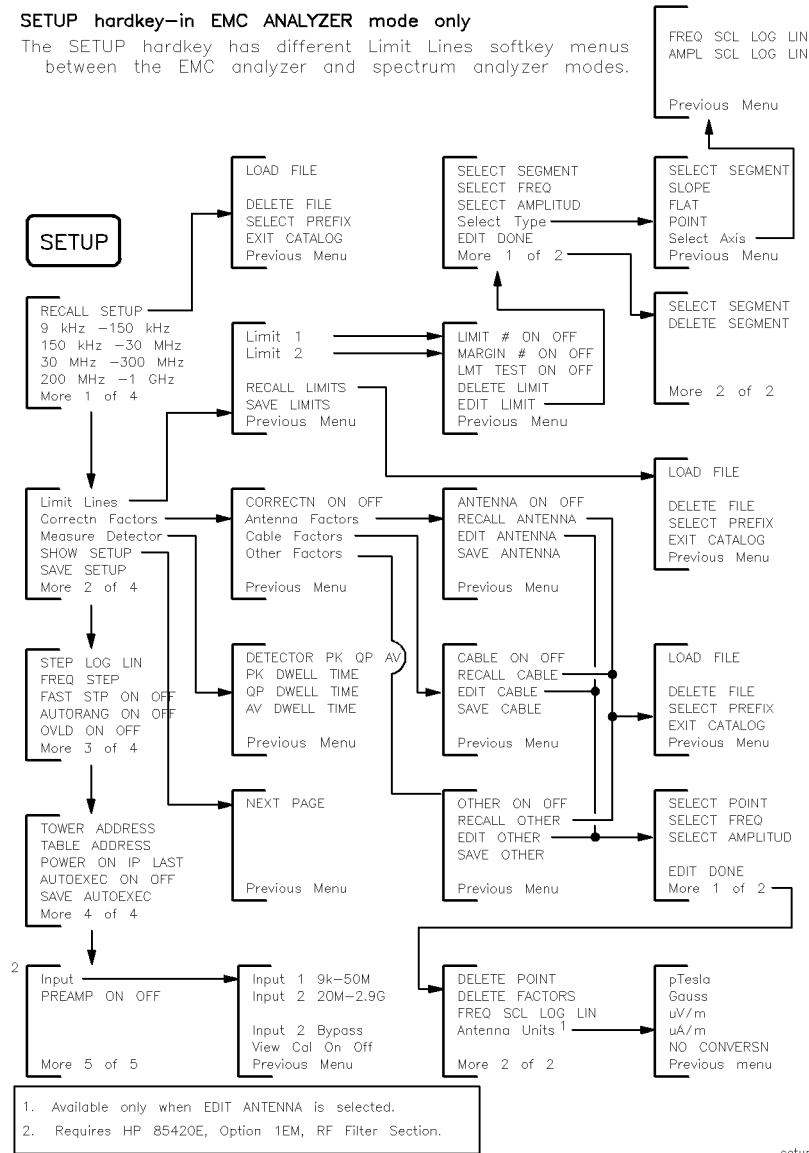


## E-12 Key Menus



# **SETUP hardkey—in EMC ANALYZER mode only**

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

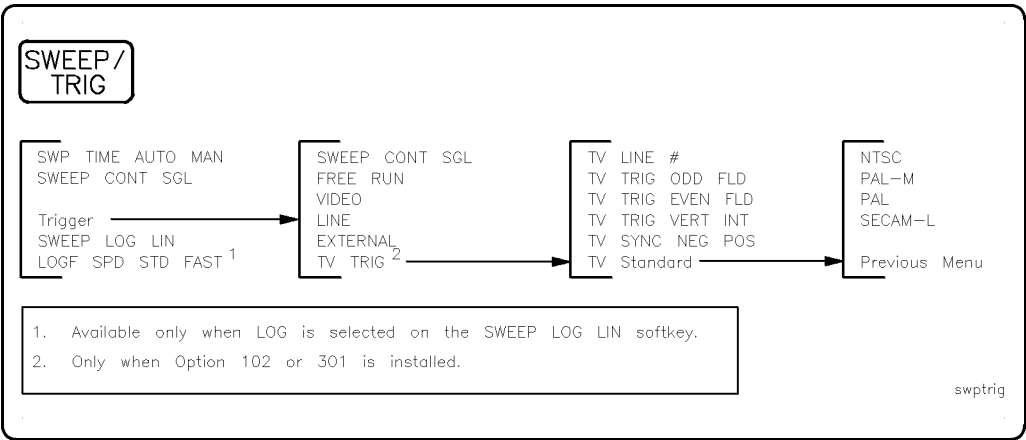
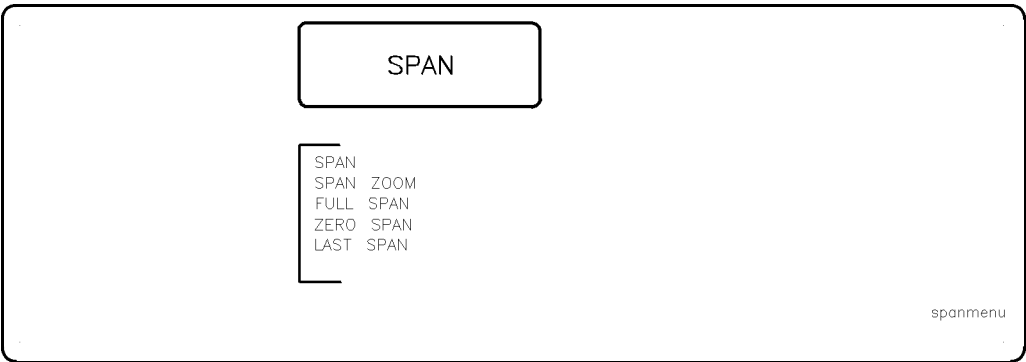


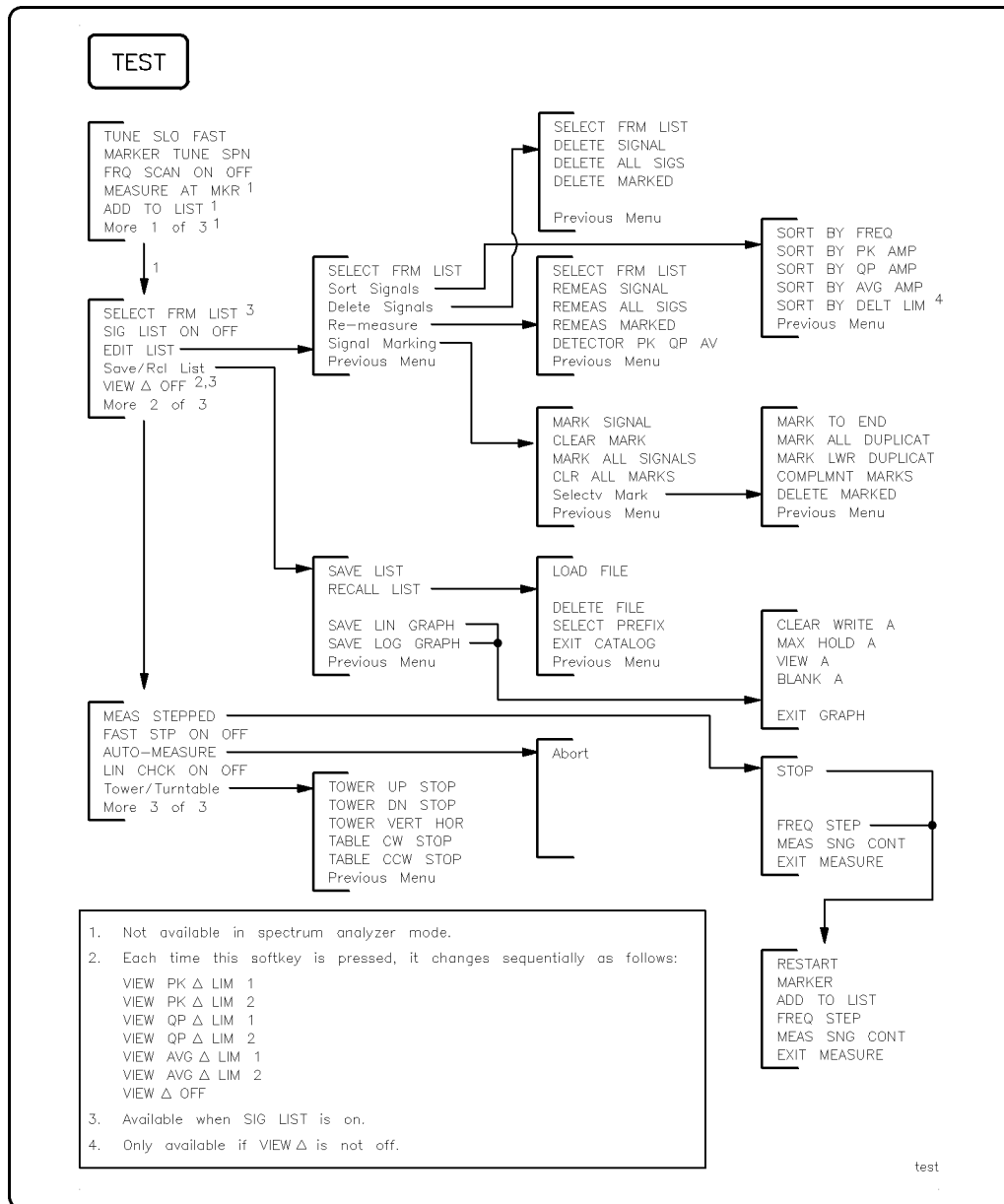
setupr

## **E-14 Key Menus**

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







TRACE

CLEAR WRITE A<sup>1</sup>  
MAX HOLD A<sup>2</sup>  
VIEW A<sup>1</sup>  
BLANK A<sup>1</sup>  
TRACE A B C  
More 1 of 4

NORM A/B ON OFF  
TRACE B VW OFF<sup>3</sup>  
  
MAX/MIN ON OFF  
MAX/MIN VIEW<sup>4</sup>  
More 2 of 4

VID AVG ON OFF  
DETECTOR SMP PK<sup>5</sup>  
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

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