Reference
EMI Receiver Series

HP 8542E/HP 8546A
EMI Receiver

HP 85422E/HP 85462A
Receiver RF Section
Notice

The information contained in this document is subject to change without notice.

Hewlett-Packard makes no warranty of any kind with regard to this material, including but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Hewlett-Packard shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

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1400 Fountain Grove Parkway, Santa Rosa CA, 95403-1799, USA
Certification

Hewlett-Packard Company certifies that this product met its published specifications at the time of shipment from the factory. Hewlett-Packard further certifies that its calibration measurements are traceable to the United States National Institute of Standards and Technology, to the extent allowed by the Institute’s calibration facility, and to the calibration facilities of other International Standards Organization members.

Regulatory Information

Regulatory information is located in the EMI Receiver Series Reference at the end of Chapter 1, “Specifications and Characteristics.”

Warranty

This Hewlett-Packard instrument product is warranted against defects in material and workmanship for a period of one year from date of shipment. During the warranty period, Hewlett-Packard Company will, at its option, either repair or replace products which prove to be defective.

For warranty service or repair, this product must be returned to a service facility designated by Hewlett-Packard. Buyer shall prepay shipping charges to Hewlett-Packard and Hewlett-Packard shall pay shipping charges to return the product to Buyer. However, Buyer shall pay all shipping charges, duties, and taxes for products returned to Hewlett-Packard from another country.

Hewlett-Packard warrants that its software and firmware designated by Hewlett-Packard for use with an instrument will execute its programming instructions when properly installed on that instrument. Hewlett-Packard does not warrant that the operation of the instrument, or software, or firmware will be uninterrupted or error-free.

Limitation of Warranty

The foregoing warranty shall not apply to defects resulting from improper or inadequate maintenance by Buyer, Buyer-supplied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the product, or improper site preparation or maintenance.

No Other Warranty Is Expressed or Implied. Hewlett-Packard Specifically DISCLAIMS THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Exclusive Remedies

The remedies provided herein are Buyer’s sole and exclusive remedies. Hewlett-Packard shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory.
### Assistance

Product maintenance agreements and other customer assistance agreements are available for Hewlett-Packard products. For any assistance, contact your nearest Hewlett-Packard Sales and Service Office.

### Compliance

This instrument has been designed and tested in accordance with IEC Publication 348, Safety Requirements for Electronic Measuring Apparatus, and has been supplied in a safe condition. The instruction documentation contains information and warnings which must be followed by the user to ensure safe operation and to maintain the instrument in a safe condition.

### Safety Notes

The following safety notes are used throughout this manual. Familiarize yourself with each of the notes and its meaning before operating this instrument.

<table>
<thead>
<tr>
<th>WARNING</th>
<th>Warning denotes a hazard. It calls attention to a procedure which, if not correctly performed or adhered to, could result in injury or loss of life. Do not proceed beyond a warning note until the indicated conditions are fully understood and met.</th>
</tr>
</thead>
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<tr>
<td>CAUTION</td>
<td>Caution denotes a hazard. It calls attention to a procedure that, if not correctly performed or adhered to, would result in damage to or destruction of the instrument. Do not proceed beyond a caution sign until the indicated conditions are fully understood and met.</td>
</tr>
</tbody>
</table>
General Safety Considerations

**WARNING**

- No operator serviceable parts inside. Refer servicing to qualified personnel. To prevent electrical shock, do not remove covers.

- If this instrument is used in a manner not specified by Hewlett-Packard Company, the protection provided by the instrument may be impaired.

- For continued protection against fire hazard, replace line fuse only with same type and rating ([F 5A/250V]). The use of other fuses or material is prohibited.

**CAUTION**

- Before switching on this instrument, make sure that the line voltage selector switch is set to the voltage of the power supply and the correct fuse is installed.

- Always use the three-prong ac power cord supplied with this instrument. Failure to ensure adequate earth grounding by not using this cord may cause instrument damage.

⚠️ The instruction documentation symbol. The product is marked with this symbol when it is necessary for the user to refer to the instructions in the documentation.

**CE**

The CE mark is a registered trademark of the European Community. (If accompanied by a year, it is when the design was proven.)

**ISM1-A**

This is a symbol of an Industrial Scientific and Medical Group 1 Class A product.

**CSA**

The CSA mark is a registered trademark of the Canadian Standards Association.

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**Manual Conventions**

**Front-Panel Key**

This represents a key physically located on the instrument.

**Softkey**

This indicates a "softkey," a key whose label is determined by the firmware of the instrument.

**Screen Text**

This indicates text displayed on the instrument's screen.
EMI Receiver Series Documentation Description

The following documents are provided with either the HP 8542E/HP 8546A EMI receiver or the HP 85422E/HP 85462A receiver RF section.

- *Installation and Verification* provides information for installing your instrument, verifying instrument operation, and customer support.

- *User's Guide* describes instrument features and how to make measurements with your EMI receiver or receiver RF section.

- *Reference* provides specifications and characteristics, menu maps, error messages, and key descriptions.

- *Programmer's Guide* provides information on remote control instrument configuration, creating programs, and parameters for each of the programming commands available.
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<td>LOG ON OFF</td>
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SETUP -> DISK

SHOW Δ1 PK QP AV

SHOW Δ2 PK QP AV

SHOW COR ON OFF

SHOW DET PK QP AV

SHOW MKR ON OFF

SHOW SETUP

SHW INST CONFIG

SIG LIST ON OFF

SIGNAL ANALYSIS

Signal Marking

SINGLE

SLOPE

SOFTKEYS

SORT BY AVG AMP

SORT BY FREQ

SORT BY DLTA LIM

SORT BY PK AMP

SORT BY QP AMP

Sort Signals

SPAN or SPAN

SPAN ZOOM

SPEAKER ON OFF

Special Colors

SQUELCH

SRC ATN MAN AUTO

SRC PWR OFFSET

SRC PWR ON OFF

SRC PWR STP SIZE

START FREQ

STATE -> INTRNL

STATUS

STEP LOG LIN

STOP

STOP FREQ

STORE FLATNESS

STOR PWR ON UNITS

STP GAIN ZERO

STUVWX

Sweep

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HP 8542E/HP 85422E Specifications and Characteristics

This chapter contains specifications and characteristics for the HP 8542E EMI receiver and HP 85422E receiver RF section.

The specifications in this chapter apply to all functions autocoupled over the environmental conditions specified. All specifications apply after two hours of storage at a constant temperature within the operating temperature range, after the instrument has been operating for 60 minutes, and after CAL ALL has been run.

Definitions of Terms

The distinction between specifications, characteristics, typical performance, and nominal values is described as follows:

- **Specifications** describe warranted performance.

- **Characteristics** provide useful, but nonwarranted information about the functions and performance of the instrument.

- **Typical Performance**, where listed, is **not** warranted, but indicates performance which most units will exhibit.

- **Nominal Value** is an expected, but **not warranted**, value of the parameter.
General Specifications: HP 8542E EMI Receiver

<table>
<thead>
<tr>
<th>Temperature Range</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating*</td>
<td>0 °C to +55 °C</td>
</tr>
<tr>
<td>Storage</td>
<td>-20 °C to +65 °C</td>
</tr>
</tbody>
</table>
* Disk drive +5 °C to +45 °C

EMI Compatibility
Receiver is in compliance with CISPR Pub. 16.
Receiver radiated and conducted emissions performance is in compliance with CISPR Pub. 11/1990 Group 1 Class B.
Receiver susceptibility performance is in compliance with CISPR Pub. 16 at 3 Vm field strength.

<table>
<thead>
<tr>
<th>Inputs</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Low frequency</td>
<td>Type N, 50 Ω, 9 kHz to 50 MHz</td>
</tr>
<tr>
<td>High frequency</td>
<td>Type N, 50 Ω, 9 kHz to 2.9 GHz</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Detectors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement</td>
<td>Peak, Quasi-Peak, and Average</td>
</tr>
<tr>
<td></td>
<td>Quasi-Peak and Average time constants conform with CISPR Pub. 16.</td>
</tr>
<tr>
<td>Overload</td>
<td>Broadband RF (band 1 and 2 only) and IF</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IF Bandwidths</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement</td>
<td>200 Hz, 8 kHz, and 120 kHz</td>
</tr>
<tr>
<td></td>
<td>(6 dB bandwidths which conform to CISPR Pub. 16)</td>
</tr>
<tr>
<td>Bandwidth Accuracy</td>
<td>1 MHz, 6 dB bandwidth ±10%</td>
</tr>
<tr>
<td>Diagnostic</td>
<td>30 Hz to 300 kHz, 3 dB bandwidths in 1, 3, 10 steps (±20% characteristic), also 3 MHz and 5 MHz. Four-pole synchronously-tuned, approximately Gaussian shape.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Averaging Bandwidths</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30 Hz to 1 MHz in 1, 3, 10 steps (±30% characteristic), and 3 MHz. Post-detection single pole low-pass filters. 1, 3, 10 Hz digital filters with anti-aliasing</td>
</tr>
</tbody>
</table>
### General Specifications: HP 8542E EMI Receiver (continued)

<table>
<thead>
<tr>
<th><strong>Input Attenuator</strong></th>
<th><strong>Range</strong></th>
<th><strong>Linearity Test Attenuator</strong></th>
<th><strong>4 dB</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preamplification</strong></td>
<td><strong>12 dB (Band 1 and 2)</strong></td>
<td><strong>27 dB ±4 dB (Bypass)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Demodulation</strong></td>
<td><strong>AM and FM</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Disk Drive</strong></td>
<td><strong>Internal 3.5 inch disk drive, compatible with 1.44 MByte DOS and LIF format disks</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Input Filter Bandwidths

<table>
<thead>
<tr>
<th><strong>Input Filter Bandwidths</strong></th>
<th><strong>Frequency Range</strong></th>
<th><strong>Filter Type</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>(all 3 dB bandwidths are characteristics)</td>
<td>9 kHz to 74 kHz</td>
<td>fixed</td>
</tr>
<tr>
<td></td>
<td>74 kHz to 108 kHz</td>
<td>fixed</td>
</tr>
<tr>
<td></td>
<td>108 kHz to 325 kHz</td>
<td>fixed</td>
</tr>
<tr>
<td></td>
<td>525 kHz to 1.025 MHz</td>
<td>fixed</td>
</tr>
<tr>
<td></td>
<td>1 MHz to 2 MHz</td>
<td>fixed</td>
</tr>
<tr>
<td></td>
<td>2 MHz to 6 MHz</td>
<td>tunable (20%, 3 dB)</td>
</tr>
<tr>
<td></td>
<td>6 MHz to 17 MHz</td>
<td>tunable (10%, 3 dB)</td>
</tr>
<tr>
<td></td>
<td>17 MHz to 29 MHz</td>
<td>tunable (7%, 3 dB)</td>
</tr>
<tr>
<td></td>
<td>29 MHz to 52 MHz</td>
<td>tunable (8%, 3 dB)</td>
</tr>
<tr>
<td></td>
<td>52 MHz to 98 MHz</td>
<td>tunable (6%, 3 dB)</td>
</tr>
<tr>
<td></td>
<td>98 MHz to 152 MHz</td>
<td>tunable (6%, 3 dB)</td>
</tr>
<tr>
<td></td>
<td>152 MHz to 216 MHz</td>
<td>tunable (6%, 3 dB)</td>
</tr>
<tr>
<td></td>
<td>216 MHz to 330 MHz</td>
<td>tunable (5%, 3 dB)</td>
</tr>
<tr>
<td></td>
<td>330 MHz to 500 MHz</td>
<td>tunable (5%, 3 dB)</td>
</tr>
<tr>
<td></td>
<td>0.5 GHz to 1 GHz</td>
<td>tunable (4%, 3 dB)</td>
</tr>
<tr>
<td></td>
<td>1 GHz to 2.0 GHz</td>
<td>fixed</td>
</tr>
</tbody>
</table>
## General Specifications: HP 8542E EMI Receiver (continued)

| Sweep Time       | 20 ms to 100 s
|------------------|-----------------|
| Range            | Free Run, Single, Line, Video, External
| Sweep Trigger    |                 |

| Audible Noise    | < 5.5 Bel power (ISO8277) |

### Power Requirements

<table>
<thead>
<tr>
<th>State</th>
<th>Receiver RF Section</th>
<th>RF Filter Section</th>
<th>Power consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>On</td>
<td>90 to 132 V rms, 47 to 440 Hz</td>
<td>90 to 132 V rms, 47 to 440 Hz</td>
<td>&lt;500 VA; &lt;180 W</td>
</tr>
<tr>
<td></td>
<td>198 to 264 V rms, 47 to 66 Hz</td>
<td>198 to 264 V rms, 47 to 66 Hz</td>
<td>Power consumption &lt;115 VA; &lt;85 W</td>
</tr>
<tr>
<td>Off</td>
<td>Receiver RF Section</td>
<td></td>
<td>Power consumption &lt;5 W</td>
</tr>
</tbody>
</table>

### Environmental Conditions

<table>
<thead>
<tr>
<th>Environment</th>
<th>Indoor Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altitude</td>
<td>Up to 15,000 feet (4,572 meters)</td>
</tr>
<tr>
<td>Maximum Relative Humidity</td>
<td>80% for temperatures up to 31 °C decreasing linearly to 50% relative humidity at 40 °C.</td>
</tr>
</tbody>
</table>

**INSTALLATION CATEGORY II according to IEC 1010**

**POLLUTION DEGREE 2 according to IEC 664**
# HP 8542E EMI Receiver

## Tuning Specifications

### Tuning Range

<table>
<thead>
<tr>
<th>Band</th>
<th>Frequency Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Band 1</td>
<td>9 kHz to 50 MHz</td>
</tr>
<tr>
<td>Band 2</td>
<td>20 MHz to 2.9 GHz</td>
</tr>
<tr>
<td>Bypass</td>
<td>9 kHz to 2.9 GHz</td>
</tr>
</tbody>
</table>

### Frequency Reference

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aging</td>
<td>± 1 x 10^-7 /year</td>
</tr>
<tr>
<td>Settability</td>
<td>± 1 x 10^-8</td>
</tr>
<tr>
<td>Temperature Stability</td>
<td>± 1 x 10^-8</td>
</tr>
</tbody>
</table>

### Frequency Readout Accuracy

<table>
<thead>
<tr>
<th>Accuracy Formula</th>
<th>Calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>± (Frequency readout x frequency reference error * + span accuracy + 1% of span + 20% of IF bandwidth + 100 Hz) (\dagger)</td>
<td></td>
</tr>
</tbody>
</table>

\(\dagger\) Frequency reference error = (aging rate x period of time since last adjustment + initial achievable accuracy + temperature stability). See frequency characteristics.

### Calibrator

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>300 MHz fundamental</td>
</tr>
<tr>
<td>Accuracy</td>
<td>see frequency reference error*</td>
</tr>
</tbody>
</table>

\(\dagger\) Frequency reference error = (aging rate x period of time since last adjustment + initial achievable accuracy + temperature stability). See frequency characteristics.
Swept Frequency Specifications

<table>
<thead>
<tr>
<th>Frequency Span</th>
<th>Band 1</th>
<th>1 kHz to 50 MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Band 2</td>
<td>1 kHz to 2.9 GHz</td>
<td></td>
</tr>
<tr>
<td>Bypass</td>
<td>1 kHz to 2.9 GHz</td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td>Four digits or 20 Hz, whichever is greater</td>
<td></td>
</tr>
<tr>
<td>Accuracy*</td>
<td>±2 % of Span + 10 Hz</td>
<td></td>
</tr>
<tr>
<td>Span ≤ 10 MHz</td>
<td>±3 % of Span</td>
<td></td>
</tr>
<tr>
<td>Span &gt; 10 MHz</td>
<td>*Sweep time &gt; 75 ms</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stability</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise sidebands*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;10 kHz offset from CW signal</td>
<td>≤−90 dBC/Hz</td>
<td></td>
</tr>
<tr>
<td>&gt;30 kHz offset from CW signal</td>
<td>≤−105 dBC/Hz</td>
<td></td>
</tr>
<tr>
<td>Residual FM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 Hz IF BW, 30 Hz Averaging BW</td>
<td>≤30 Hz pk-pk in 300 ms</td>
<td></td>
</tr>
<tr>
<td>1 kHz IF BW, 1 kHz Averaging BW</td>
<td>≤250 Hz pk-pk in 100 ms</td>
<td></td>
</tr>
<tr>
<td>System Related Sidebands</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;30 kHz offset from CW signal</td>
<td>≤−65 dBC</td>
<td></td>
</tr>
</tbody>
</table>

* 1 kHz IF BW, 30 Hz averaging BW, sample detector.

<table>
<thead>
<tr>
<th>Marker Count Accuracy†</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Spans ≤ 10 MHz</td>
<td>±(marker frequency x frequency reference error* + counter resolution + 100 Hz)</td>
<td></td>
</tr>
<tr>
<td>Frequency Spans &gt; 10 MHz</td>
<td>±(marker frequency x frequency reference error* + counter resolution + 1 kHz)</td>
<td></td>
</tr>
<tr>
<td>Counter Resolution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency Spans ≤ 10 MHz</td>
<td>Selectable from 10 Hz to 100 kHz</td>
<td></td>
</tr>
<tr>
<td>Frequency Spans &gt; 10 MHz</td>
<td>Selectable from 100 Hz to 10kHz</td>
<td></td>
</tr>
</tbody>
</table>

*Frequency reference error – (aging rate x period of time since last adjustment + initial achievable accuracy + temperature stability). See frequency characteristics.
†Marker level to displayed noise level >25 dB, IF Bandwidth/Spans > 0.01, Spans ≤ 300 MHz.
Amplitude Specifications

Amplitude specifications do not apply for negative peak detector mode except as noted in “Amplitude Characteristics.”

<table>
<thead>
<tr>
<th>Amplitude Range</th>
<th>-146 dBm to +30 dBm</th>
<th>-39 dBpV to +137 dBpV</th>
</tr>
</thead>
</table>

**Displayed Average Noise Level**

\( f_o > 400 \text{ kHz} \)

\( f_o < 400 \text{ kHz} \)

(input terminated, 0 dB attenuation, 30 Hz IF BW, 30 Hz Averaging BW, sample detection)

<table>
<thead>
<tr>
<th>Band 1</th>
<th>Band 2</th>
<th>Bypass</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 kHz to 20 MHz to 2.9 GHz</td>
<td>9 kHz to 2.9 GHz</td>
<td></td>
</tr>
<tr>
<td>50 MHz</td>
<td>9 MHz</td>
<td></td>
</tr>
</tbody>
</table>

Preamplifier On

Preamplifier Off

Characteristic Noise Figure

Preamplifier On

Preamplifier Off

Displayed Average Noise Level

\( f_o < 400 \text{ kHz} \)

\( f_o > 400 \text{ kHz} \)

(input terminated, 0 dB attenuation, 30 Hz IF BW, 30 Hz Averaging BW, sample detection)
## Amplitude Specifications (continued)

### Noise Indication in CISPR Bandwidths

(Characteristic)

<table>
<thead>
<tr>
<th></th>
<th>Peak</th>
<th>Quasi-Peak</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 dB input attenuation, 50Ω input termination</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200 Hz (6 dB), 9 kHz to 150 kHz</td>
<td>2 dBμV to -28 dBμV (-105 dBm to -135 dBm)</td>
<td>-7 dBμV to -29 dBμV (-114 dBm to -136 dBm)</td>
<td>-9 dBμV to -31 dBμV (-116 dBm to -138 dBm)</td>
</tr>
<tr>
<td></td>
<td>15 dBμV to -15 dBμV (-92 dBm to -122 dBm)</td>
<td>6 dBμV to -25 dBμV (-101 dBm to -132 dBm)</td>
<td>3 dBμV to -27 dBμV (-104 dBm to -134 dBm)</td>
</tr>
</tbody>
</table>

|                      |                         |                           |                          |
| 9 kHz (6 dB), 150 kHz to 30 MHz | -8 dBμV (-115 dBm) | -15 dBμV (-122 dBm) | -21 dBμV (-128 dBm) |
|                      | -3 dBμV (-110 dBm) | -11 dBμV (-118 dBm) | -18 dBμV (-125 dBm) |

|                      |                          |                          |                          |
| 120 kHz (6 dB), 30 MHz to 1 GHz | 4 dBμV (-103 dBm) | -2 dBμV (-109 dBm) | -10 dBμV (-117 dBm) |
|                      | 9 dBμV (-98 dBm) | 2 dBμV (-105 dBm) | -5 dBμV (-112 dBm) |

### System Amplitude Accuracy

<table>
<thead>
<tr>
<th></th>
<th>Band 1</th>
<th>Band 2</th>
<th>Bypass</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 kHz to 20 MHz</td>
<td>∓6 dB</td>
<td>∓6 dB</td>
<td>∓6 dB</td>
</tr>
<tr>
<td>20 MHz to 2.9 GHz</td>
<td>∓6 dB</td>
<td>∓6 dB</td>
<td>∓6 dB</td>
</tr>
<tr>
<td>2.9 GHz to 2.9 GHz</td>
<td>∓6 dB</td>
<td>∓6 dB</td>
<td>∓6 dB</td>
</tr>
</tbody>
</table>

| Specification† † | ∓2 dB |
| Characteristic† † | ∓1 dB |

† (−10 dBμV + attenuation −(12 − preamplifier gain)) reference level. Use Measure at Marker or linear mode, top 4 gratuities. If using the Measure at Marker function to measure a pulsed signal with a repetition frequency of less than 5 Hz, set the sweep time to greater than or equal to the inverse of the pulse repetition frequency. (Example, to measure a 1 Hz CISPR pulse, set the sweep time to 1 second or greater prior to using the Measure at Marker function.) If IF BW ≤ 300 Hz and signal separation ≤ 4 kHz, also use Linearity Check.

† 20 °C to 30 °C plus the above.
### Amplitude Specifications (continued)

<table>
<thead>
<tr>
<th></th>
<th>Band 1</th>
<th>Band 2</th>
<th>Bypass</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9 kHz to</td>
<td>20 kHz to</td>
<td>9 kHz to</td>
</tr>
<tr>
<td></td>
<td>50 MHz</td>
<td>2.9 GHz</td>
<td>2.9 GHz</td>
</tr>
<tr>
<td><strong>Gain Compression</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specification</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( f_c \geq 10 \text{ MHz} )</td>
<td>(&lt;---------- &lt;0.5 \text{ dB}-----------&gt;)</td>
<td>(&lt;---------- &lt;0.75 \text{ dB}-----------&gt;)</td>
<td>(\text{(Ref. Level)})</td>
</tr>
<tr>
<td>(200 \text{ kHz} \leq f_c &lt; 10 \text{ MHz})</td>
<td>(&lt;---------- &lt;0.5 \text{ dB}-----------&gt;)</td>
<td>(&lt;---------- &lt;0.75 \text{ dB}-----------&gt;)</td>
<td>(\text{(Ref. Level)})</td>
</tr>
<tr>
<td>Characteristic 1 dB Compression Point</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( f_c \geq 10 \text{ MHz} )</td>
<td>(&lt;---------- 77 \text{ dB}_p \text{V}-----------&gt;)</td>
<td>(\text{(-30 dBm)})</td>
<td>(\text{(Ref. Level)})</td>
</tr>
<tr>
<td>Preamp On</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preamp Off</td>
<td>(&lt;---------- 89 \text{ dB}_p \text{V}-----------&gt;)</td>
<td>(\text{(-18 dBm)})</td>
<td>(\text{(Ref. Level)})</td>
</tr>
<tr>
<td>(9 \text{ kHz} &lt; f_c &lt; 10 \text{ MHz})</td>
<td>(72 \text{ dB}_p \text{V})</td>
<td>(\text{(-35 dBm)})</td>
<td>(\text{(Ref. Level)})</td>
</tr>
<tr>
<td>Preamp On</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preamp Off</td>
<td>(&lt;---------- 85 \text{ dB}_p \text{V}-----------&gt;)</td>
<td>(\text{(-22 dBm)})</td>
<td>(\text{(Ref. Level)})</td>
</tr>
</tbody>
</table>

### Third Harmonic Intercept Point**

<table>
<thead>
<tr>
<th></th>
<th>Band 1</th>
<th>Band 2</th>
<th>Bypass</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9 kHz to</td>
<td>20 kHz to</td>
<td>9 kHz to</td>
</tr>
<tr>
<td></td>
<td>50 MHz</td>
<td>2.9 GHz</td>
<td>2.9 GHz</td>
</tr>
<tr>
<td>Characteristic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( f_c \geq 200 \text{ kHz} )</td>
<td>(&lt;---------- 85 \text{ dB}_p \text{V}-----------&gt;)</td>
<td>(&lt;---------- 85 \text{ dB}_p \text{V}-----------&gt;)</td>
<td>(\text{(Ref. Level)})</td>
</tr>
<tr>
<td>Preamp On</td>
<td>(&lt;---------- 97 \text{ dB}_p \text{V}-----------&gt;)</td>
<td>(&lt;---------- 112 \text{ dB}_p \text{V}-----------&gt;)</td>
<td>(\text{(+5 dBm)})</td>
</tr>
<tr>
<td>Preamp Off</td>
<td>(&lt;---------- 92 \text{ dB}_p \text{V}-----------&gt;)</td>
<td>(\text{(-15 dBm)})</td>
<td>(\text{(Ref. Level)})</td>
</tr>
<tr>
<td>Characteristic 1 \text{ dB} Compression Point</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( f_c \geq 10 \text{ MHz} )</td>
<td>(&lt;---------- 101 \text{ dB}_p \text{V}-----------&gt;)</td>
<td>(\text{(-6 dBm)})</td>
<td>(\text{(Ref. Level)})</td>
</tr>
<tr>
<td>Preamp On</td>
<td>(&lt;---------- 89 \text{ dB}_p \text{V}-----------&gt;)</td>
<td>(\text{(-18 dBm)})</td>
<td>(\text{(Ref. Level)})</td>
</tr>
<tr>
<td>Preamp Off</td>
<td>(&lt;---------- 100 \text{ dB}_p \text{V}-----------&gt;)</td>
<td>(\text{(-7 dBm)})</td>
<td>(\text{(Ref. Level)})</td>
</tr>
</tbody>
</table>

*Indicated specification is derived from measured distortion with a total power at the input mixer of \(-10 \text{ dBm}\). Bands 1 and 2: Power at the input mixer – input power – input attenuation – 15 dB = preamplifier gain. Bypass: Power at the input mixer – input power – input attenuation – preamplifier gain. If the IFBW is \(\leq 300 \text{ kHz}\), this applies only if signal separation is \(\geq 4 \text{ kHz}\) and signal amplitudes \(\leq\) Ref. Level \(\pm 10 \text{ dB}\).

** Signal separation \(> 50 \text{ kHz}\). Indicated specification derived from measured distortion products for two \(-30 \text{ dBm} \text{ CW}\) signals at the input.
<table>
<thead>
<tr>
<th>Second Harmonic Intercept Point*</th>
<th>Band 1</th>
<th>Band 2</th>
<th>Bypass</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 kHz ≤ f ≤ 1.8 GHz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preamplifier On</td>
<td>9 kHz</td>
<td>20 MHz</td>
<td>9 kHz</td>
</tr>
<tr>
<td></td>
<td>50 kHz</td>
<td>2.9 GHz</td>
<td></td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.8 GHz ≤ f ≤ 2.9 GHz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preamplifier On</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Characteristic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 kHz ≤ f ≤ 1.8 GHz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preamplifier On</td>
<td>105 dBμV</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-2 dBm)</td>
<td></td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td>105 dBμV</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-2 dBm)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.8 GHz ≤ f ≤ 2.9 GHz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preamplifier On</td>
<td>114 dBμV</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(+7 dBm)</td>
<td></td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td>112 dBμV</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(+5 dBm)</td>
<td></td>
</tr>
</tbody>
</table>

* f is the receiver tune frequency (second harmonic frequency).
† Indicated specification level was derived from measured harmonic levels for a −40 dBm input signal.
### Amplitude Specifications (continued)

<table>
<thead>
<tr>
<th></th>
<th>Band 1</th>
<th>Band 2</th>
<th>Bypass</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9 kHz to 50 MHz</td>
<td>20 MHz to 2.9 GHz</td>
<td>9 kHz to 2.9 GHz</td>
</tr>
<tr>
<td>Other Input Related Spurious</td>
<td>&lt;--- 65 dBc --- &gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual Responses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input terminated, 0 dB attenuation (preamplifier on)</td>
<td>&lt;--- -10 dB V --- &gt;</td>
<td>(-117 dBm)</td>
<td></td>
</tr>
<tr>
<td>&gt;30 kHz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;30 kHz</td>
<td>&lt;--- -2 dB V --- &gt;</td>
<td>(-108 dBm)</td>
<td></td>
</tr>
<tr>
<td>Maximum Safe Input Level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Continuous Power</td>
<td>&lt;--- 30 dBm --- &gt;</td>
<td>&lt;--- 30 dBm --- &gt;</td>
<td>(Input atten ≥ 10 dB)</td>
</tr>
<tr>
<td>Peak Pulse Power</td>
<td>2000 W peak for 10 µs &gt;20 dB pulse width &lt;1% duty cycle and &gt; 30 dB input attenuation</td>
<td>100 W for &lt; 10 µs</td>
<td></td>
</tr>
<tr>
<td>DC (Volts)</td>
<td>&lt;--- 0 V --- &gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input VSWR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 dB input attenuation</td>
<td>&lt;--- 2 : 1 --- &gt;</td>
<td>&lt;--- 2.5 : 1 --- &gt;</td>
<td></td>
</tr>
<tr>
<td>≤1.0 GHz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.0 GHz &lt;f&lt;sub&gt;n&lt;/sub&gt; ≤2.9 GHz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 dB input attenuation</td>
<td>&lt;--- 1.2 : 1 --- &gt;</td>
<td>&lt;--- 1.6 : 1 --- &gt;</td>
<td></td>
</tr>
<tr>
<td>≤1.0 GHz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.0 GHz &lt;f&lt;sub&gt;n&lt;/sub&gt; ≤2.9 GHz</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

† 30 kHz offset for -20 dBm tone at the mixer <2.9 GHz, f<sub>n</sub> > 10 MHz. Input mixer power - input power - input attenuation + 16.5 + preamplifier gain.

### Marker Readout Resolution

- 0.05 dB for log scale
- 0.05% of reference level for linear scale
### Amplitude Specifications (continued)

<table>
<thead>
<tr>
<th>Reference Level</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td></td>
</tr>
<tr>
<td>Log Scale</td>
<td>-146 dBm to +30 dBm</td>
</tr>
<tr>
<td>Linear Scale</td>
<td>-126 dBm to +30 dBm</td>
</tr>
<tr>
<td>Resolution</td>
<td></td>
</tr>
<tr>
<td>Log Scale</td>
<td>± 0.01 dB</td>
</tr>
<tr>
<td>Linear Scale</td>
<td>± 0.02% of reference level</td>
</tr>
</tbody>
</table>

| Linear to Log Switching | ± 0.25 dB at reference level |

### Display Scale Fidelity

<table>
<thead>
<tr>
<th>Log Maximum Cumulative*</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3 kHz to 3 MHz IF Bandwidth</td>
<td>±(0.3 dB + 0.01 x dB from Reference level)</td>
</tr>
<tr>
<td>≤ 1 kHz IF Bandwidth</td>
<td>±(0.4 dB + 0.01 x dB from Reference level)</td>
</tr>
<tr>
<td>Log Incremental Accuracy</td>
<td></td>
</tr>
<tr>
<td>0 to −56 dB from Reference Level</td>
<td>±0.4 dB/4 dB</td>
</tr>
<tr>
<td>Linear Accuracy</td>
<td>±3% of Reference Level</td>
</tr>
</tbody>
</table>

* 0 to −86 dB from reference level.

### Relative Quasi-Peak Response to a CISPR Pulse (dB)*

<table>
<thead>
<tr>
<th>Pulse Repetition Frequency (Hz)</th>
<th>120 kHz 6 dB BW</th>
<th>9 kHz 6 dB BW</th>
<th>200 kHz 6 dB BW</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>0.03 GHz to 1 GHz</td>
<td>0.15 MHz to 30 MHz</td>
<td>0 kHz to 150 kHz</td>
</tr>
<tr>
<td>100</td>
<td>+8.0 ±1.0</td>
<td>+4.5 ±1.0</td>
<td>---</td>
</tr>
<tr>
<td>60</td>
<td>0 dB (reference)†</td>
<td>0 dB (reference)†</td>
<td>+4.0 ±1.0</td>
</tr>
<tr>
<td>25</td>
<td>---</td>
<td>---</td>
<td>+3.0 ±1.0</td>
</tr>
<tr>
<td>20</td>
<td>−9.0 ±1.0</td>
<td>−6.5 ±1.0</td>
<td>---</td>
</tr>
<tr>
<td>10</td>
<td>−14.0 ±1.5</td>
<td>−16.0 ±1.5</td>
<td>−4.0 ±1.0</td>
</tr>
<tr>
<td>5</td>
<td>---</td>
<td>---</td>
<td>−7.5 ±1.5</td>
</tr>
<tr>
<td>2</td>
<td>−26.0 ±2.0</td>
<td>−20.5 ±2.0</td>
<td>−13.0 ±2.0</td>
</tr>
<tr>
<td>1</td>
<td>−28.5 ±2.0</td>
<td>−22.5 ±2.0</td>
<td>−17.0 ±2.0</td>
</tr>
<tr>
<td>Isolated Pulse</td>
<td>−31.5 ±2.0</td>
<td>−23.5 ±2.0</td>
<td>−10.0 ±2.0</td>
</tr>
</tbody>
</table>

* Specification applies to a pulsed RF signal with equivalent spectral intensity as called out in CISPR Pub 16, Part 1. (CISPR pulse measurements require either an HP 8542E or HP 8542A EMI receiver and do not apply to either an HP 85422E or HP 85422A receiver RF section.)

† Reference pulse amplitude accuracy relative to the CW signal is <1.5 dB as specified in CISPR pub. 16. CISPR reference pulse: 0.044 μVs for .03 GHz to 1 GHz, 0.316 μVs for .15 MHz to 30 MHz, 13.5 ±1.5 μVs for 9 kHz to 150 kHz.
# Tracking Generator Specifications

All Specifications apply over 0° C to 55° C. The receiver/tracking generator combination will meet its specification after 2 hours of storage at a constant temperature within the operating temperature range, 30 minutes after the combination is turned on, and after CAL ALL, CAL TRK GEN, and TRACKING PEAK have been run.

<table>
<thead>
<tr>
<th>Output Frequency Range</th>
<th>9 kHz to 2.9 GHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warm-up time</td>
<td>30 minutes</td>
</tr>
</tbody>
</table>

## Output Power Level

<table>
<thead>
<tr>
<th>Range</th>
<th>-1 dBm to -66 dBm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>0.1 dB</td>
</tr>
</tbody>
</table>

| Vernier                 | 9 dB              |
|                        |                   |
| Accuracy               |                   |
| (25 °C ±10 °C)         |                   |
| (-20 dBm at 300 MHz, 16 dB attenuation) | ±0.2 dB/dB |
| Incremental Cumulative | ±0.5 dB Total     |

| Output Attenuator Range | 0 to 56 dB in 8 dB steps |

## Output Power Sweep

<table>
<thead>
<tr>
<th>Range</th>
<th>(-10 dBm to -1 dBm) – (source attenuator setting)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>0.1 dB</td>
</tr>
</tbody>
</table>

## Tracking Generator Feedthrough

| 400 kHz to 2.9 GHz     | ≤ -110 dBm |

## Spurious Output (-1 dBm output)

| Harmonic Spurs from 300 kHz to 2.9 GHz | ≤ -25 dBc |
| TG output 300 kHz to 2.9 GHz          |          |

| Non-harmonic Spurs from 300 kHz to 2.9 GHz | ≤ -27 dBc |
| TG output 300 kHz to 2.9 GHz |          |
| TG output 2.0 GHz to 2.9 GHz |          |

| LO Feedthrough          | ≤ -23 dBc |
| LO frequency 3.8214 GHz to 6.8214 GHz | ≤ -16 dBm |
# Frequency Characteristics

These are not specifications. Characteristics provide useful but nonwarranted information about instrument performance.

<table>
<thead>
<tr>
<th>Frequency Reference</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aging</td>
<td>$5 \times 10^{-30}$ day, 7 day average after being powered on for seven days</td>
</tr>
<tr>
<td>Warm-up</td>
<td>$1 \times 10^{-8}$ after 30 minutes on</td>
</tr>
<tr>
<td>Initial Achievable Accuracy</td>
<td>$\pm 2.2 \times 10^{-8}$ after being powered on for 24 hours</td>
</tr>
</tbody>
</table>

**Stability**

- Drift (after warm-up at stabilized temperature)
  - Frequency spans ≤ 10 Mliz, free run trigger
  - <2 kHz/minute of sweep time

Drift occurs only while receiver is sweeping frequency. Additional drift occurs when using Line, Video, or External trigger while waiting for the appropriate trigger.
**Amplitude Characteristics**

These are not specifications. Characteristics provide useful but nonwarranted information about instrument performance.

### Input Attenuator Uncertainty

<table>
<thead>
<tr>
<th>Attenuator Setting (Bypass)</th>
<th>0 dB</th>
<th>10 dB</th>
<th>20 dB</th>
<th>30 dB</th>
<th>40 dB</th>
<th>50 dB</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>± 0.2 dB</td>
<td>Reference</td>
<td>± 0.4 dB</td>
<td>± 0.5 dB</td>
<td>± 0.7 dB</td>
<td>± 0.8 dB</td>
</tr>
</tbody>
</table>

10 dB Step Uncertainty
(attenuator setting 10 to 50 dB)

Repeatability

± 0.05 dB

### FM Demodulation

<table>
<thead>
<tr>
<th>Input Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preamplifier Off</td>
</tr>
</tbody>
</table>

> (−75 dBm + attenuator setting)

<table>
<thead>
<tr>
<th>Signal Level</th>
</tr>
</thead>
</table>

0 to −30 dB below reference level

<table>
<thead>
<tr>
<th>FM Offset</th>
</tr>
</thead>
</table>

400 Hz nominal

<table>
<thead>
<tr>
<th>FM Deviation (FM GAIN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
</tr>
<tr>
<td>1 kHz/volt nominal</td>
</tr>
</tbody>
</table>

| Range |
| 10 kHz/volt to 1 MHz/volt |

| Bandwidth |
| FM Deviation ÷ 2 |

| FM Linearity |
| ≤ 1% of FM deviation + 200 Hz |
# Tracking Generator Characteristics

<table>
<thead>
<tr>
<th>Output Flatness</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(referenced to 300 MHz, -20 dBm)</td>
<td></td>
</tr>
<tr>
<td>Frequency &gt; 10 MHz</td>
<td>±2 dB</td>
</tr>
<tr>
<td>Frequency ≤10 MHz</td>
<td>±3 dB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output Power Level</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Absolute Accuracy</td>
<td>±0.75 dB</td>
</tr>
<tr>
<td>(-20 dBm at 300 MHz)</td>
<td></td>
</tr>
<tr>
<td>(25 °C ±10 °C)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tracking Drift</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Usable in a 1 kHz IF Bandwidth after a 5 minute warm-up</td>
<td>1.5 kHz/5 minutes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RF Power Off Residuals</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>9 kHz to 2.9 GHz</td>
<td>&lt; -120 dBm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dynamic Range</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(Difference between maximum power out and tracking generator feedthrough)</td>
<td>&gt; 109 dB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output Attenuator Repeatability</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>300 kHz to 300 MHz</td>
<td>±0.1 dB</td>
</tr>
<tr>
<td>300 MHz to 2.0 GHz</td>
<td>±0.2 dB</td>
</tr>
<tr>
<td>2.0 GHz to 2.9 GHz</td>
<td>±0.3 dB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output VSWR</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0 dB attenuation</td>
<td>&lt;3.0:1</td>
</tr>
<tr>
<td>8 dB attenuation</td>
<td>&lt;1.5:1</td>
</tr>
</tbody>
</table>
# Physical Characteristics

<table>
<thead>
<tr>
<th>Front Panel Inputs and Outputs</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Frequency Input</td>
<td>Type N female, 50 Ω nominal</td>
</tr>
<tr>
<td>High Frequency Input</td>
<td>Type N female, 50 Ω nominal</td>
</tr>
<tr>
<td>Tracking Generator Output</td>
<td>Type N female, 50 Ω nominal</td>
</tr>
<tr>
<td>Probe Power *</td>
<td></td>
</tr>
<tr>
<td>Voltage / Current</td>
<td>+ 15 Vdc ±7% at 150 mA maximum</td>
</tr>
<tr>
<td></td>
<td>− 12.6 Vdc ±10% at 150 mA maximum</td>
</tr>
<tr>
<td>Earphone Jack</td>
<td>1/8 inch monaural jack</td>
</tr>
</tbody>
</table>

* Total current drawn from the + 15 Vdc on the PROBE POWER and the AUX INTERFACE connectors cannot exceed 150 mA. Total current drawn from the − 12.6 Vdc on the PROBE POWER and the − 15 Vdc on the AUX INTERFACE cannot exceed 150 mA.

<table>
<thead>
<tr>
<th>Rear Panel Inputs and Outputs</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>10 MHz REF OUTPUT</td>
<td></td>
</tr>
<tr>
<td>Connector</td>
<td>BNC female</td>
</tr>
<tr>
<td>Impedance</td>
<td>50 Ω</td>
</tr>
<tr>
<td>Output Amplitude</td>
<td>&gt; 0 dBm</td>
</tr>
<tr>
<td>EXT REF IN</td>
<td></td>
</tr>
<tr>
<td>Connector</td>
<td>BNC female</td>
</tr>
<tr>
<td>Input Amplitude Range</td>
<td>−2 dBm to +10 dBm</td>
</tr>
<tr>
<td>Frequency</td>
<td>10 MHz</td>
</tr>
<tr>
<td>AUX IF OUT</td>
<td></td>
</tr>
<tr>
<td>Connector</td>
<td>BNC female</td>
</tr>
<tr>
<td>Frequency</td>
<td>21.4 MHz</td>
</tr>
<tr>
<td>Amplitude Range</td>
<td>−10 dBm to −60 dBm</td>
</tr>
<tr>
<td>Impedance</td>
<td>50 Ω</td>
</tr>
<tr>
<td>AUX VIDEO OUT</td>
<td></td>
</tr>
<tr>
<td>Connector</td>
<td>BNC female</td>
</tr>
<tr>
<td>Amplitude Range</td>
<td>0 V to 1 V (uncorrected)</td>
</tr>
<tr>
<td>EXT KEYBOARD</td>
<td>Interface compatible with HP part number C1465 Option ABA and most IBM/AT non auto-switching keyboards.</td>
</tr>
<tr>
<td>EXT TRIG INPUT</td>
<td></td>
</tr>
<tr>
<td>Connector</td>
<td>BNC female</td>
</tr>
<tr>
<td>Trigger Level</td>
<td>Positive edge initiates sweep in EXT TRIG mode (TTL)</td>
</tr>
<tr>
<td>LO OUTPUT</td>
<td></td>
</tr>
<tr>
<td>Connector</td>
<td>SMA female (must be terminated in 50 Ω when not used)</td>
</tr>
<tr>
<td>Impedance</td>
<td>50 Ω</td>
</tr>
<tr>
<td>Frequency Range</td>
<td>3.0 GHz to 6.8214 GHz</td>
</tr>
</tbody>
</table>
Physical Characteristics (continued)

<table>
<thead>
<tr>
<th>Rear Panel Inputs and Outputs (continued)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HI-SWEEP IN/OUT</strong></td>
<td></td>
</tr>
<tr>
<td>Receiver RF Section Input/Output</td>
<td>SMA female</td>
</tr>
<tr>
<td>Connector</td>
<td>High - sweep, Low - retrace (TTL)</td>
</tr>
<tr>
<td>Output</td>
<td>Open collector, Low stops sweep</td>
</tr>
<tr>
<td>Input</td>
<td></td>
</tr>
<tr>
<td>RF Filter Section Output</td>
<td>High - sweep, Low - retrace (TTL)</td>
</tr>
<tr>
<td><strong>SWEEP INPUT / OUTPUT</strong></td>
<td></td>
</tr>
<tr>
<td>Receiver RF Section Output</td>
<td>SMA female</td>
</tr>
<tr>
<td>Connector</td>
<td>0 V to + 10 V ramp</td>
</tr>
<tr>
<td>Output</td>
<td></td>
</tr>
<tr>
<td>RF Filter Section Input</td>
<td>SMA female</td>
</tr>
<tr>
<td>Connector</td>
<td>0 V to + 10 V</td>
</tr>
<tr>
<td>Input</td>
<td></td>
</tr>
<tr>
<td><strong>REMOTE INTERFACE</strong></td>
<td></td>
</tr>
<tr>
<td>Receiver RF Section</td>
<td>HP-IB (RS-232 optional)</td>
</tr>
<tr>
<td>RF Filter Section</td>
<td>HP-IB compatible service port</td>
</tr>
<tr>
<td><strong>MONITOR OUTPUT</strong></td>
<td></td>
</tr>
<tr>
<td>R, G, B (composite video on G)</td>
<td></td>
</tr>
<tr>
<td>25 kHz horizontal rate</td>
<td></td>
</tr>
<tr>
<td>60 Hz vertical rate</td>
<td></td>
</tr>
</tbody>
</table>

### AUX INTERFACE
Connector Type: 9-pin subminiature D

<table>
<thead>
<tr>
<th>Pin #</th>
<th>Function</th>
<th>Current</th>
<th>Logic Mode</th>
<th>Serial Bit Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Control A</td>
<td>---</td>
<td>TTL Output Hi/Lo</td>
<td>TTL Output Hi/Lo</td>
</tr>
<tr>
<td>2</td>
<td>Control B</td>
<td>---</td>
<td>TTL Output Hi/Lo</td>
<td>TTL Output Hi/Lo</td>
</tr>
<tr>
<td>3</td>
<td>Control C</td>
<td>---</td>
<td>TTL Output Hi/Lo</td>
<td>TTL Output Hi/Lo</td>
</tr>
<tr>
<td>4</td>
<td>Control D</td>
<td>---</td>
<td>TTL Output Hi/Lo</td>
<td>TTL Output Hi/Lo</td>
</tr>
<tr>
<td>5</td>
<td>Control I</td>
<td>---</td>
<td>TTL Input Hi/Lo</td>
<td>TTL Input Hi/Lo</td>
</tr>
<tr>
<td>6</td>
<td>Gnd</td>
<td>---</td>
<td>Gnd</td>
<td>Gnd</td>
</tr>
<tr>
<td>7</td>
<td>-15 Vdc ± 7%</td>
<td>150 ma</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>8</td>
<td>-5 Vdc ± 5%</td>
<td>150 ma</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>9</td>
<td>+15 Vdc ± 5%</td>
<td>150 ma</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

* Total current drawn from the +15 Vdc on the PROBE POWER and the AUX INTERFACE cannot exceed 150 mA. Total current drawn from the −12.6 Vdc on the PROBE POWER and the −15 Vdc on the AUX INTERFACE cannot exceed 150 mA.

### WEIGHT

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receiver RF Section</td>
<td>62.5 lb</td>
</tr>
<tr>
<td>RF Filter Section</td>
<td>46 lb</td>
</tr>
</tbody>
</table>
Figure 1-1. HP 8542E EMI Receiver Dimensions
## General Specifications: HP 85422E Receiver RF Section

The specifications in this section apply to all functions autocoupled over the environmental conditions specified. All specifications apply after two hours of storage at a constant temperature within the operating temperature range, after the instrument has been operating for 60 minutes, and after CAL ALL has been run.

<table>
<thead>
<tr>
<th>Temperature Range</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating*</td>
<td>0 °C to +55 °C</td>
</tr>
<tr>
<td>Storage</td>
<td>−20 °C to +65 °C</td>
</tr>
</tbody>
</table>

* Disk drive +5 °C to +45 °C

### EMI Compatibility

Receiver RF section radiated and conducted emissions performance is in compliance with CISPR Pub. 11/1990 Group 1 Class B. Receiver RF section susceptibility is in compliance with CISPR Pub. 16 at 3 V/m.

### Inputs

| Type | N, 50 Ω, 9 kHz to 2.9 GHz |

### Detectors

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Peak, Quasi-Peak, and Average.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Quasi-Peak and Average time constants conform with CISPR Pub.16.</td>
</tr>
<tr>
<td>Overload</td>
<td>IF</td>
</tr>
</tbody>
</table>

### IF Bandwidths

| Measurement                  | 200 Hz, 9 kHz, and 120 kHz |
|-------------------------------| (6 dB bandwidths which conform to CISPR Pub.16) |
| Bandwidth Accuracy            | 1 MHz, 6 dB bandwidth ±10% |
| Diagnostic                    | 30 Hz to 300 kHz, 3 dB bandwidths in 1,3,10 steps (±20% characteristic), also 3 MHz and 5 MHz. Four-pole synchronously-tuned, approximately Gaussian shape. |

### Averaging Bandwidths

| 30 Hz to 1 MHz in 1,3,10 steps (±30% characteristic), and 3 MHz. Post-detection single pole low-pass filters. |
| 1,3,10 Hz digital filters with anti-aliasing |

### Input Attenuator

| Range | 0 to 70 dB in 10 dB steps |

### Preamplification

| 27 dB ±1.5 dB ≤500 MHz, ±4 dB >500 MHz |

### Demodulation

| AM and FM |
**General Specifications: HP 85422E Receiver RF Section (continued)**

<table>
<thead>
<tr>
<th>Sweep Time</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Range</strong></td>
<td>20 ms to 100 s</td>
</tr>
<tr>
<td><strong>Accuracy</strong></td>
<td>±3%</td>
</tr>
<tr>
<td><strong>Sweep Trigger</strong></td>
<td>Free Run, Single, Line, Video, External</td>
</tr>
</tbody>
</table>

| Disk Drive                     | Internal 3.5 inch disk drive, compatible with 1.44 MByte        |
|                                | DOS and LIF format disks                                       |

| Audible Noise                  | <5.5 Bel power (ISODP 7779)                                    |

| Power Requirements             |                                                                  |
| On                             | 90 to 132 V rms, 47 to 440 Hz                                   |
|                                | 198 to 264 V rms, 47 to 66 Hz                                   |
|                                | Power consumption <500 VA; <180 W                              |
| Off                            | Power consumption <5 W                                         |

| Environmental Conditions       |                                                                  |
| Environment                   | Indoor Use                                                      |
| Altitude                      | Up to 15,600 feet (4,572 meters)                                |
| Maximum Relative Humidity     | 80% for temperatures up to 31 °C decreasing linearly to 50%    |
|                               | relative humidity at 40 °C                                     |
| INSTALLATION CATEGORY II      |                                                                  |
| POLLUTION DEGREE 2            |                                                                  |
| according to IEC 1010         |                                                                  |
| according to IEC 664          |                                                                  |
# Tuning Specifications

<table>
<thead>
<tr>
<th>Tuning Range</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Coupled</td>
<td>9 kHz to 2.8 GHz</td>
</tr>
<tr>
<td>AC Coupled</td>
<td>100 kHz to 2.8 GHz</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Frequency Reference</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Aging</td>
<td>± 1 x 10&lt;sup&gt;-7&lt;/sup&gt; /year</td>
</tr>
<tr>
<td>Stability</td>
<td>± 1 x 10&lt;sup&gt;-8&lt;/sup&gt;</td>
</tr>
<tr>
<td>Temperature Stability</td>
<td>± 1 x 10&lt;sup&gt;-8&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Frequency Readout Accuracy</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>± (Frequency readout x frequency reference error * + span accuracy + 1% of span + 20% of IF Bandwidth + 100 Hz)</td>
</tr>
</tbody>
</table>

*Frequency reference error = (aging rate x period of time since last adjustment + initial achievable accuracy + temperature stability). See frequency characteristics.

†See “Drift” under “Stability” in frequency characteristics.

<table>
<thead>
<tr>
<th>Calibrator</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>500 MHz fundamental</td>
</tr>
<tr>
<td>Accuracy</td>
<td>see frequency reference error*</td>
</tr>
</tbody>
</table>

*Frequency reference error = (aging rate x period of time since last adjustment + initial achievable accuracy + temperature stability). See frequency characteristics.
# Swept Frequency Specifications

<table>
<thead>
<tr>
<th>Frequency Span</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>1 kHz to 2.0 GHz</td>
</tr>
<tr>
<td>Resolution</td>
<td>Four digits or 20 Hz, whichever is greater</td>
</tr>
<tr>
<td>Accuracy</td>
<td></td>
</tr>
<tr>
<td>Span ≤ 10 MHz</td>
<td>±2% of span + 10 Hz</td>
</tr>
<tr>
<td>Span &gt; 10 MHz</td>
<td>±3% of span</td>
</tr>
</tbody>
</table>

## Stability

<table>
<thead>
<tr>
<th>Noise sidebands*</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>≥10 kHz offset from CW signal</td>
<td>≤−90 dBc/Hz</td>
</tr>
<tr>
<td>≥30 kHz offset from CW signal</td>
<td>≤−105 dBc/Hz</td>
</tr>
</tbody>
</table>

| Residual FM                         |             |
| 30 Hz IF BW, 30 Hz Averaging BW     | ≤30 Hz pk-pk in 300 ms |
| 1 kHz IF BW, 1 kHz Averaging BW     | ≤250 Hz pk-pk in 100 ms |

| System Related Sidebands            | ≤−65 dBc    |
| ≥30 kHz offset from CW signal       |             |

*1 kHz IF BW, 30 Hz averaging BW, sample detector.

## Marker Count Accuracy†

| Frequency Spans ≤ 10 MHz            | ±(marker frequency \* frequency reference error* + counter resolution + 100 kHz) |
| Frequency Spans > 10 MHz            | ±(marker frequency \* frequency reference error* + counter resolution + 1 kHz) |
| Counter Resolution                  |             |
| Frequency Spans ≤ 10 MHz            | Selectable from 10 Hz to 100 kHz |
| Frequency Spans > 10 MHz            | Selectable from 100 Hz to 100 kHz |

*Frequency reference error = (aging rate \* period of time since last adjustment + initial achievable accuracy + temperature stability). See frequency characteristics.
†Marker level to displayed noise level ≥25 dB, IF Bandwidth/ Span ≥ 0.01, Span ≤ 300 MHz.
Amplitude Specifications

Amplitude specifications do not apply for negative peak detector mode except as noted in “Amplitude Characteristics.”

<table>
<thead>
<tr>
<th>Amplitude Range</th>
<th>$-146 \text{ dBm to } +30 \text{ dBm}$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$-39 \text{ dBm to } +137 \text{ dBm}$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Displayed Average Noise Level</th>
<th>$f_a &gt; 400 \text{ kHz}$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(input terminated, 0 dB attenuation, 30 Hz IF BW, 30 Hz Averaging BW, sample detection)</td>
</tr>
<tr>
<td>Preamplifier On</td>
<td>$-146 \text{ dBm} \leq -39 \text{ dBm}$</td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td>$-125 \text{ dBm} \leq -18 \text{ dBm}$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Characteristic Noise Figure</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Preamplifier On</td>
<td>$8 \text{ dB}$</td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td>$24 \text{ dB}$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Displayed Average Noise Level</th>
<th>$f_a &lt; 400 \text{ kHz}$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(input terminated, 0 dB attenuation, 30 Hz IF BW, 30 Hz Averaging BW, sample detection)</td>
</tr>
</tbody>
</table>

![Graph showing noise level vs frequency]
### Amplitude Specifications (continued)

**Gain Compression**

<table>
<thead>
<tr>
<th>Specification</th>
<th>value</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f_o &gt; 10 \text{ MHz} )</td>
<td>&lt;0.5 dB</td>
</tr>
<tr>
<td>( 200 \text{ kHz} \leq f_o \leq 10 \text{ MHz} )</td>
<td>&lt;0.75 dB</td>
</tr>
</tbody>
</table>

Characteristic 1 dB Compression Point

<table>
<thead>
<tr>
<th>( f_o &gt; 10 \text{ MHz} )</th>
<th>value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preamp On</td>
<td>75 dBV (-32 dBm)</td>
</tr>
<tr>
<td>Preamp Off</td>
<td>102 dBV (-5 dBm)</td>
</tr>
<tr>
<td>( 9 \text{ kHz} \leq f_o \leq 10 \text{ MHz} )</td>
<td>value</td>
</tr>
<tr>
<td>Preamp On</td>
<td>68 dBV (-30 dBm)</td>
</tr>
<tr>
<td>Preamp Off</td>
<td>95 dBV (-12 dBm)</td>
</tr>
</tbody>
</table>

* Specifications derived from distortion measurements using a two-tone compression test with frequency offset of 30 MHz and -10 dBm total signal power at the input mixer. Total power at first mixer = input power - input attenu + preamp gain. If BW \( \leq 300 \text{ Hz} \), this applies only if signal separation \( \geq 4 \text{ kHz} \) and signal amplitudes \( \leq \) Reference Level + 10 dB.

---

**Third Order Intercept Point**

<table>
<thead>
<tr>
<th>Specification</th>
<th>value</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f_o &gt; 200 \text{ kHz} )</td>
<td>value</td>
</tr>
<tr>
<td>Preamp On</td>
<td>85 dBV (-22 dBm)</td>
</tr>
<tr>
<td>Preamp Off</td>
<td>112 dBV (+5 dBm)</td>
</tr>
</tbody>
</table>

Characteristic Third Order Intercept

<table>
<thead>
<tr>
<th>( f_o &gt; 10 \text{ MHz} )</th>
<th>value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preamp On</td>
<td>89 dBV (-18 dBm)</td>
</tr>
<tr>
<td>Preamp Off</td>
<td>118 dBV (+11 dBm)</td>
</tr>
<tr>
<td>( 9 \text{ kHz} \leq f_o \leq 10 \text{ MHz} )</td>
<td>value</td>
</tr>
<tr>
<td>Preamp On</td>
<td>87 dBV (-20 dBm)</td>
</tr>
<tr>
<td>Preamp Off</td>
<td>115 dBV (+8 dBm)</td>
</tr>
</tbody>
</table>

† Indicated specification was derived from a -70 dBc distortion product level with two -30 dBm CW signals at the first mixer and 50 kHz separation. Input mixer power = input power - input attenuation + preamp gain.

---

**Second Harmonic Intercept**

<table>
<thead>
<tr>
<th>( f_o &gt; 200 \text{ kHz} )</th>
<th>value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preamp On</td>
<td>100 dBV (-9 dBm)</td>
</tr>
<tr>
<td>Preamp Off</td>
<td>134 dBV (+27 dBm)</td>
</tr>
</tbody>
</table>

Characteristic Second Order Intercept

<table>
<thead>
<tr>
<th>( f_o &gt; 500 \text{ MHz} )</th>
<th>value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preamp On</td>
<td>113 dBV (+8 dBm)</td>
</tr>
<tr>
<td>( 9 \text{ kHz} \leq f_o \leq 500 \text{ MHz} )</td>
<td>value</td>
</tr>
<tr>
<td>Preamp Off</td>
<td>168 dBV (+1 dBm)</td>
</tr>
<tr>
<td>Preamp Off</td>
<td>144 dBV (+37 dBm)</td>
</tr>
</tbody>
</table>

* The indicated specification level was derived from a measured harmonic level of \(-67 \text{ dBc}\) and a -40 dBm CW signal at the input mixer. Input mixer power = input power - input attenuation + preamp gain.
### Amplitude Specifications (continued)

<table>
<thead>
<tr>
<th>Other Input Related Spurious</th>
<th>(-65) dBc</th>
</tr>
</thead>
</table>

30 kHz offset for \(-20\) dBm tone at the mixer \(\leq 2.9\) GHz, \(f_o > 10\) MHz. Input mixer power = input power – input attenuation + preamp gain.

<table>
<thead>
<tr>
<th>Residual Responses</th>
<th>(-8) dBmV ((-115) dBm)</th>
<th>(+2) dBmV ((-105) dBm)</th>
</tr>
</thead>
</table>

Input terminated, \(0\) dB attenuation, preamplifier on

<table>
<thead>
<tr>
<th>Maximum Safe Input Level</th>
<th>(+30) dBm (with (10) dB input attenuation)</th>
</tr>
</thead>
</table>

Average Continuous Power

9 kHz to 2.9 GHz

Peak Pulse Power

Preamplifier Off

\(+50\) dBm (100 W) for 10 \(\mu s\) pulse width and, 1% duty cycle, input atten \(\geq 30\) dB

DC

\(0\) V (dc coupled)

\(50\) V (ac coupled)

<table>
<thead>
<tr>
<th>Calibrator Output</th>
<th>(-20) dBm (\pm 0.4) dB</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Calibration Repeatability*</th>
<th>(\pm 0.15) dB</th>
</tr>
</thead>
</table>

*Repeatability in the measured absolute amplitude of the CAL OUT signal at the reference settings after CAL FREQ and CAL AMP TD self-calibration. Absolute amplitude reference settings are: \(-20\) dB reference level; \(10\) dB input attenuation; 300 MHz center frequency; 9 kHz IF BW; 800 Hz averaging BW; linear scale; 50 kHz span; coupled sweep time; reference level positioned at the top graticule; corrections on; and sample detection.

<table>
<thead>
<tr>
<th>Display Range</th>
<th>0 to (-60) dB from Reference Level is calibrated</th>
</tr>
</thead>
</table>

Log Scale

0.1, 0.2, 0.5 dB/division and 1 to \(20\) dB/division in 1dB steps; eight divisions displayed

Linear Scale

Eight divisions

Scale Units

dBm, dBmV, dBmV, V, W

<table>
<thead>
<tr>
<th>Marker Readout Resolution</th>
<th>0.05 dB for log scale</th>
</tr>
</thead>
</table>

0.05% of reference level for linear scale
Amplitude Specifications (continued)

<table>
<thead>
<tr>
<th>Reference Level</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Range</strong></td>
<td></td>
</tr>
<tr>
<td>Log Scale</td>
<td>−146 dBm to +30 dBm</td>
</tr>
<tr>
<td>Linear Scale</td>
<td>−126 dBm to +30 dBm</td>
</tr>
<tr>
<td><strong>Resolution</strong></td>
<td></td>
</tr>
<tr>
<td>Log Scale</td>
<td>±0.01 dB</td>
</tr>
<tr>
<td>Linear Scale</td>
<td>±0.12% of Reference Level</td>
</tr>
</tbody>
</table>

**Accuracy**

<table>
<thead>
<tr>
<th>Range</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 dBm to −59.9 dBm</td>
<td>±(0.3 dB + 0.01 x dB from −20 dBm)</td>
</tr>
<tr>
<td>−60 dBm and below</td>
<td>±(0.6 dB + 0.01 x dB from −20 dBm)</td>
</tr>
<tr>
<td>1 kHz to 3 MHz IF BW</td>
<td>±(0.7 dB + 0.01 x dB from −20 dBm)</td>
</tr>
</tbody>
</table>

*Referenced to −20 dBm reference level, 10 dB input attenuation, at a single frequency, in a fixed IF BW with preamplifier off. With preamplifier on, subtract preamplifier gain from all reference levels.

| Linear to Log Switching      | ±0.25 dB at reference level |

<table>
<thead>
<tr>
<th>Display Scale Fidelity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Log Maximum Cumulative</strong></td>
<td></td>
</tr>
<tr>
<td>(0 to −66 dB from Reference Level)</td>
<td></td>
</tr>
<tr>
<td>3 kHz to 3 MHz IF Bandwidth</td>
<td>±(0.3 dB + 0.01 x dB from Reference Level)</td>
</tr>
<tr>
<td>≤ 1 kHz IF Bandwidth</td>
<td>±(0.4 dB + 0.01 x dB from Reference Level)</td>
</tr>
<tr>
<td><strong>Log Incremental Accuracy</strong></td>
<td></td>
</tr>
<tr>
<td>(0 to −56 dB from Reference Level)</td>
<td>±0.4 dB/4 dB</td>
</tr>
<tr>
<td><strong>Linear Accuracy</strong></td>
<td>±3% of Reference Level</td>
</tr>
</tbody>
</table>

**IF Bandwidth Switching Uncertainty**

(at Reference Level, referenced to 3 kHz IF BW)

<table>
<thead>
<tr>
<th>IF BW</th>
<th>Absolute*</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 kHz to 3 MHz</td>
<td>±0.4 dB</td>
</tr>
<tr>
<td>1 kHz</td>
<td>±0.5 dB</td>
</tr>
<tr>
<td>30 Hz to 300 Hz</td>
<td>±0.6 dB</td>
</tr>
</tbody>
</table>

**Flatness**

(dc coupled, 10 dB input attenuation)

<table>
<thead>
<tr>
<th>Frequency Range</th>
<th>Absolute*</th>
<th>Relative†</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 kHz to 2.9 GHz</td>
<td>±3.0 dB</td>
<td>±2.0 dB</td>
</tr>
<tr>
<td>Preamplifier On</td>
<td>±3.0 dB</td>
<td>±2.0 dB</td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td>±1.5 dB</td>
<td>±1.0 dB</td>
</tr>
</tbody>
</table>

*Referenced to 300 MHz Calibrator
†Referenced to midpoint between highest and lowest frequency response deviations.
## Tracking Generator Specifications

All Specifications apply over 0° C to 55° C. The receiver/tracking generator combination will meet its specification after 2 hours of storage at a constant temperature within the operating temperature range, 30 minutes after the combination is turned on, and after CAL ALL, CAL TRK GEN, and TRACKING PEAK have been run.

<table>
<thead>
<tr>
<th>Output Frequency Range</th>
<th>9 kHz to 2.9 GHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warm-up time</td>
<td>30 minutes</td>
</tr>
<tr>
<td>Output Power Level</td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>−1 dBm to −66 dBm</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.1 dB</td>
</tr>
<tr>
<td>Absolute Accuracy</td>
<td>±0.75 dB</td>
</tr>
<tr>
<td>(−20 dBm at 300 MHz)</td>
<td></td>
</tr>
<tr>
<td>(25 °C ±10 °C)</td>
<td></td>
</tr>
<tr>
<td>Vernier</td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>9 dB</td>
</tr>
<tr>
<td>Accuracy</td>
<td></td>
</tr>
<tr>
<td>(25 °C ±10 °C)</td>
<td></td>
</tr>
<tr>
<td>(−20 dBm at 300 MHz; 16 dB attenuation)</td>
<td>±0.2 dB/dB</td>
</tr>
<tr>
<td>Incremental Cumulative</td>
<td>±0.5 dB Total</td>
</tr>
<tr>
<td>Output Attenuator Range</td>
<td>0 to 56 dB in 8 dB steps</td>
</tr>
<tr>
<td>Output Power Sweep</td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>(−10 dBm to −1 dBm) − (source attenuator setting)</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.1 dB</td>
</tr>
<tr>
<td>Output Flatness</td>
<td>(referenced to 300 MHz, −20 dBm)</td>
</tr>
<tr>
<td>Frequency &gt; 10 MHz</td>
<td>±2 dB</td>
</tr>
<tr>
<td>Frequency ≤10 MHz</td>
<td>±3 dB</td>
</tr>
<tr>
<td>Tracking Generator Feedthrough</td>
<td></td>
</tr>
<tr>
<td>400 kHz to 2.9 GHz</td>
<td>≤ −110 dBm</td>
</tr>
</tbody>
</table>
## Tracking Generator Specifications (continued)

<table>
<thead>
<tr>
<th><strong>Spurious Output (−1 dBm output)</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Harmonic Spurs from 300 kHz to 2.9 GHz</strong></td>
<td></td>
</tr>
<tr>
<td>TG output 300 kHz to 2.9 GHz</td>
<td>≤ −25 dBc</td>
</tr>
<tr>
<td><strong>Non-harmonic Spurs from 300 kHz to 2.9 GHz</strong></td>
<td></td>
</tr>
<tr>
<td>TG output 300 kHz to 2.0 GHz</td>
<td>≤ −27 dBc</td>
</tr>
<tr>
<td>TG output 2.0 GHz to 2.9 GHz</td>
<td>≤ −28 dBc</td>
</tr>
<tr>
<td><strong>LO Feedthrough</strong></td>
<td></td>
</tr>
<tr>
<td>LO frequency 3.8214 GHz to 6.8214 GHz</td>
<td>≤ −16 dBm</td>
</tr>
</tbody>
</table>
Frequency Characteristics

These are not specifications. Characteristics provide useful but nonwarranted information about instrument performance.

<table>
<thead>
<tr>
<th>Frequency Reference</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aging</td>
<td>$5 \times 10^{-30}$ per day, 7 day average after being powered on for seven days</td>
</tr>
<tr>
<td>Warm-up</td>
<td>$1 \times 10^{-8}$ after 30 minutes on</td>
</tr>
<tr>
<td>Initial Achievable Accuracy</td>
<td>$\pm 2.2 \times 10^{-8}$ after being powered on for 24 hours</td>
</tr>
</tbody>
</table>

Stability

<table>
<thead>
<tr>
<th>Stability</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drift (after warm-up at stabilized temperature)</td>
<td>$&lt; 2$ kHz/minute of sweep time</td>
</tr>
<tr>
<td>Frequency spans $\leq 10$ Mhz, free run trigger</td>
<td></td>
</tr>
</tbody>
</table>

Drift occurs only while receiver is sweeping frequency. Additional drift occurs when using Line, Video, or External trigger while waiting for the appropriate trigger.
# HP 85422E Receiver RF Section

## Amplitude Characteristics

These are not specifications. Characteristics provide useful but nonwarranted information about instrument performance.

### Input Attenuator Uncertainty

<table>
<thead>
<tr>
<th>Attenuator Setting</th>
<th>± dB</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 dB</td>
<td>± 0.2 dB</td>
</tr>
<tr>
<td>10 dB</td>
<td>Reference</td>
</tr>
<tr>
<td>20 dB</td>
<td>± 0.4 dB</td>
</tr>
<tr>
<td>30 dB</td>
<td>± 0.5 dB</td>
</tr>
<tr>
<td>40 dB</td>
<td>± 0.7 dB</td>
</tr>
<tr>
<td>50 dB</td>
<td>± 0.8 dB</td>
</tr>
<tr>
<td>60 dB</td>
<td>± 1.0 dB</td>
</tr>
<tr>
<td>70 dB</td>
<td>± 1.0 dB</td>
</tr>
</tbody>
</table>

| 10 dB Step Uncertainty (attenuator setting 10 to 70 dB) | ± 0.8 dB |

| Repeatability | ± 0.65 dB |

### AC Coupled Insertion Loss *

<table>
<thead>
<tr>
<th>Frequency Range</th>
<th>Insertion Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 kHz to 300 kHz</td>
<td>0.7 dB</td>
</tr>
<tr>
<td>300 kHz to 1 MHz</td>
<td>0.2 dB</td>
</tr>
<tr>
<td>1 MHz to 100 MHz</td>
<td>0.07 dB</td>
</tr>
<tr>
<td>100 MHz to 2.9 GHz</td>
<td>0.05 dB + (0.06 x F) dB</td>
</tr>
</tbody>
</table>

* Referenced to dc coupled mode.
† F = frequency in GHz.

### Marker Readout Resolution

(digitizing resolution)

<table>
<thead>
<tr>
<th>Scale</th>
<th>± dB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Scale</td>
<td>± 0.31 dB</td>
</tr>
<tr>
<td>Linear Scale</td>
<td></td>
</tr>
<tr>
<td>Frequency ≤ 1 GHz</td>
<td>± 0.59 % of Reference Level</td>
</tr>
<tr>
<td>Frequency ≥ 1 GHz</td>
<td>± 1.03 % of Reference Level</td>
</tr>
</tbody>
</table>
## Amplitude Characteristics (continued)

<table>
<thead>
<tr>
<th>FM Demodulation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input Level</strong></td>
<td>$\geq (-60 \text{ dBm} + \text{ attenuator setting})$</td>
</tr>
<tr>
<td><strong>Signal Level</strong></td>
<td>0 to $-30 \text{ dB below reference level}$</td>
</tr>
<tr>
<td><strong>FM Offset</strong></td>
<td>400 Hz nominal</td>
</tr>
<tr>
<td><strong>FM Deviation (FM GAIN)</strong></td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td>1 kHz/volt nominal</td>
</tr>
<tr>
<td>Range</td>
<td>10 kHz/volt to 1 MHz/volt</td>
</tr>
<tr>
<td><strong>Bandwidth (6 dB)</strong></td>
<td>$\text{FM Deviation} \div 2$</td>
</tr>
<tr>
<td><strong>FM Linearity</strong></td>
<td>$\leq 1% \text{ of FM deviation } + 200 \text{ Hz}$</td>
</tr>
</tbody>
</table>
### Tracking Generator Characteristics

<table>
<thead>
<tr>
<th>Tracking Drift</th>
<th>1.5 kHz/5 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usable in a 1 kHz IF Bandwidth after a 5 minute warm-up</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RF Power Off Residuals</th>
<th>&lt; -120 dBm</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 kHz to 2.9 GHz</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dynamic Range</th>
<th>&gt; 169 dB</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Difference between maximum power out and tracking generator feedthrough)</td>
<td></td>
</tr>
</tbody>
</table>

| Output Attenuator Repeatability | | |
|---------------------------------|----------------|
| 300 kHz to 300 MHz | ±0.1 dB |
| 300 MHz to 2.0 GHz | ±0.2 dB |
| 2.0 GHz to 2.9 GHz | ±0.3 dB |

| Output VSWR | | |
|--------------|----------------|
| 0 dB attenuation | < 3.6:1 |
| 8 dB attenuation | < 1.5:1 |
# Physical Characteristics

## Front Panel Inputs and Outputs

<table>
<thead>
<tr>
<th>Input</th>
<th>Type N female, 50 Ω nominal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calibrator Output</td>
<td>Type N female, 50 Ω nominal</td>
</tr>
<tr>
<td>Tracking Generator Output</td>
<td>Type N female, 50 Ω nominal</td>
</tr>
</tbody>
</table>
| Probe Power* Voltage / Current | +15 Vdc ±7% at 150 mA max.  
|                        | −12.6 Vdc ±10% at 150 mA max. |
| Earphone Jack      | 1/8 inch monaural jack        |
| External ALC        | Negative Detector            |

*Total current drawn from the +15 Vdc on the PROBE POWER and the AUX INTERFACE connectors cannot exceed 150 mA. Total current draw from the −12.6 Vdc on the PROBE POWER and the −15 Vdc on the AUX INTERFACE connectors cannot exceed 150 mA.

## Rear Panel Inputs and Outputs

<table>
<thead>
<tr>
<th>10 MHz REF OUTPUT Connector</th>
<th>BNC female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impedance</td>
<td>50 Ω</td>
</tr>
<tr>
<td>Output Amplitude</td>
<td>&gt;0 dBm</td>
</tr>
<tr>
<td>EXT REF IN Connector</td>
<td>BNC female</td>
</tr>
<tr>
<td>Input Amplitude Range</td>
<td>−2 dBm to +10 dBm</td>
</tr>
<tr>
<td>Frequency</td>
<td>10 MHz</td>
</tr>
<tr>
<td>AUX IF OUT Connector</td>
<td>BNC female</td>
</tr>
<tr>
<td>Frequency</td>
<td>21.4 MHz</td>
</tr>
<tr>
<td>Amplitude Range</td>
<td>−10 dBm to −60 dBm</td>
</tr>
<tr>
<td>Impedance</td>
<td>50 Ω</td>
</tr>
<tr>
<td>AUX VIDEO OUT Connector</td>
<td>BNC female</td>
</tr>
<tr>
<td>Amplitude Range</td>
<td>0 to 1 V (uncorrected)</td>
</tr>
</tbody>
</table>
**Physical Characteristics (continued)**

<table>
<thead>
<tr>
<th>Rear Panel Inputs and Outputs (continued)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EXT KEYBOARD</strong></td>
<td>Interface compatible with HP part number C1465 Option ARA and most IBM/AT non auto-switching keyboards.</td>
</tr>
<tr>
<td><strong>EXT TRIG INPUT</strong></td>
<td>BNC female</td>
</tr>
<tr>
<td>Connector</td>
<td>Positive edge initiates sweep in EXT TRIG mode (TTL)</td>
</tr>
<tr>
<td>Trigger Level</td>
<td></td>
</tr>
<tr>
<td><strong>LO OUTPUT</strong></td>
<td>SMA female (must be terminated in 50 Ω when not used)</td>
</tr>
<tr>
<td>Connector</td>
<td>50 Ω</td>
</tr>
<tr>
<td>Impedance</td>
<td>3.0 to 6.8214 GHz</td>
</tr>
<tr>
<td>Frequency Range</td>
<td></td>
</tr>
<tr>
<td><strong>HI-SWEEP IN/OUT (input/output 85422E)</strong></td>
<td>SMA female</td>
</tr>
<tr>
<td>Connector</td>
<td>High – sweep, Low – retrace (TTL)</td>
</tr>
<tr>
<td>Output</td>
<td>Open collector, low stops sweep</td>
</tr>
<tr>
<td><strong>SWEEP INPUT / OUTPUT (output 85422E)</strong></td>
<td>SMA female</td>
</tr>
<tr>
<td>Connector</td>
<td>0 to + 10 V ramp</td>
</tr>
<tr>
<td>Output</td>
<td></td>
</tr>
<tr>
<td><strong>REMOTE INTERFACE (85422E)</strong></td>
<td>HP-IB (RS-232 optional)</td>
</tr>
<tr>
<td><strong>MONITOR OUTPUT</strong></td>
<td>R, G, B (composite video on G)</td>
</tr>
<tr>
<td></td>
<td>25 kHz horizontal rate</td>
</tr>
<tr>
<td></td>
<td>60 Hz vertical rate</td>
</tr>
</tbody>
</table>

**AUX INTERFACE**

Connector Type: 9-pin subminiature D

<table>
<thead>
<tr>
<th>Pin #</th>
<th>Function</th>
<th>Current</th>
<th>Logic Mode</th>
<th>Serial Bit Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Control A</td>
<td>---</td>
<td>TTL Output Hi/Lo</td>
<td>TTL Output Hi/Lo</td>
</tr>
<tr>
<td>2</td>
<td>Control B</td>
<td>---</td>
<td>TTL Output Hi/Lo</td>
<td>TTL Output Hi/Lo</td>
</tr>
<tr>
<td>3</td>
<td>Control C</td>
<td>---</td>
<td>TTL Output Hi/Lo</td>
<td>TTL Output Hi/Lo</td>
</tr>
<tr>
<td>4</td>
<td>Control D</td>
<td>---</td>
<td>TTL Output Hi/Lo</td>
<td>TTL Output Hi/Lo</td>
</tr>
<tr>
<td>5</td>
<td>Control I</td>
<td>---</td>
<td>TTL Input Hi/Lo</td>
<td>TTL Input Hi/Lo</td>
</tr>
<tr>
<td>6</td>
<td>Gnd</td>
<td>---</td>
<td>Gnd</td>
<td>Gnd</td>
</tr>
<tr>
<td>7*</td>
<td>-15 Vdc ±7%</td>
<td>150 ma</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>8*</td>
<td>+5 Vdc ±5%</td>
<td>150 ma</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>9*</td>
<td>+15 Vdc ±5%</td>
<td>150 ma</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

* Total current drawn from the +15 Vdc on the PROBE POWER and the AUX INTERFACE cannot exceed 150 mA. Total current drawn from the −12.6 Vdc on the PROBE POWER and the −15 Vdc on the AUX INTERFACE cannot exceed 150 mA.

**WEIGHT**

| Receiver RF Section | 62.5 lb. |

---

*HP 85422E* HP 85422E Specifications and Characteristics 1-35
Figure 1-2. HP 85422E Receiver RF Section Dimensions
Regulatory Information

The information on the following page applies to the HP 8542E EMI receiver and HP 85422E receiver RF section.
# DECLARATION OF CONFORMITY

according to ISO/IEC Guide 22 and EN 45014

<table>
<thead>
<tr>
<th>Manufacturer's Name:</th>
<th>Hewlett-Packard Co.</th>
</tr>
</thead>
</table>
| Manufacturer's Address: | Santa Rosa Systems Division  
1400 Fountaingrove Parkway  
Santa Rosa, CA 95403-1799  
USA |
| declares that the product | |
| **Product Name:** | EMI Receiver |
| **Model Number:** | HP 8542E, HP 85420E, HP 85422E, HP 8546A, HP 85460A, HP 85462A |
| **Product Options:** | This declaration covers all options of the above product. |

conforms to the following Product specifications:

**Safety:** IEC 1010-1:1990+A1 / EN 61010-1:1993  
CAN/CSA-C22.2 No. 1010.1-92

**EMC:**  
CISPR 11:1990/EN 55011:1991  Group 1, Class B  
IEC 801-2:1984/EN 50082-1:1992  4 kV CD, 8 kV AD  
IEC 801-3:1984/EN 50082-1:1992  3 V/m, 27-500 MHz  
IEC 801-4:1988/EN 50082-1:1992  0.5 kV Sig. Lines, 1 kV Power Lines

**Supplementary Information:**

The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC.

Santa Rosa, California, USA 11 Sept 1995  
Dixon Browder/Quality Manager

---

European Contact: Your local Hewlett-Packard Sales and Service Office or Hewlett-Packard GmbH, Department ZQ/Standards Europe, Herrenberger Strasse 130, D-71034 Böblingen, Germany (FAX +49-7031-14-3143)
Notice for Germany: Noise Declaration

LpA < 70 dB
am Arbeitsplatz (operator position)
normaler Betrieb (normal position)
nach DIN 45635 T. 19 (per ISO 7779)
HP 8546A/HP 85462A Specifications and Characteristics

This chapter contains specifications and characteristics for the HP 8546A EMI receiver and HP 85462A receiver RF section.

The specifications in this chapter apply to all functions autocoupled over the environmental conditions specified. All specifications apply after two hours of storage at a constant temperature within the operating temperature range, after the instrument has been operating for 60 minutes, and after CAL ALL and CAL YIF have been run.

Definitions of Terms

The distinction between specifications, characteristics, typical performance, and nominal values is described as follows:

- **Specifications** describe warranted performance.
- **Characteristics** provide useful, but nonwarranted information about the functions and performance of the instrument.
- **Typical Performance**, where listed, is not warranted, but indicates performance which most units will exhibit.
- **Nominal Value** is an expected, but not warranted, value of the parameter.
# HP 8546A EMI Receiver

## General Specifications: HP 8546A EMI Receiver

<table>
<thead>
<tr>
<th><strong>Temperature Range</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating*</td>
</tr>
<tr>
<td>0 °C to +55 °C</td>
</tr>
<tr>
<td>Storage</td>
</tr>
<tr>
<td>-20 °C to +65 °C</td>
</tr>
</tbody>
</table>

* Disk drive +5 °C to +45 °C

## EMI Compatibility

Receiver is in compliance with CISPR Pub. 16.
Receiver radiated and conducted emissions performance is in compliance with CISPR Pub. 11/1990 Group 1 Class B
Receiver susceptibility performance is in compliance with CISPR Pub. 16 at 3 Vm field strength.

## Inputs

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Low frequency</td>
<td>Type N, 50 Ω, 9 kHz to 50 MHz</td>
</tr>
<tr>
<td>High frequency</td>
<td>Type N, 50 Ω, 9 kHz to 6.5 GHz</td>
</tr>
</tbody>
</table>

## Detectors

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement</td>
</tr>
<tr>
<td>Penk, Quasi-Peak, and Average</td>
</tr>
<tr>
<td>Quasi-Peak and Average time constants conform with CISPR Pub. 16.</td>
</tr>
<tr>
<td>Overload</td>
</tr>
<tr>
<td>Broadband RF (band 1 and 2 only) and IF</td>
</tr>
</tbody>
</table>

## IF Bandwidths

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement</td>
</tr>
<tr>
<td>200 Hz, 9 kHz, and 120 kHz</td>
</tr>
<tr>
<td>(6 dB bandwidths which conform to CISPR Pub. 16)</td>
</tr>
<tr>
<td>Bandwidth Accuracy</td>
</tr>
<tr>
<td>1 MHz, 6 dB bandwidth ±10%</td>
</tr>
<tr>
<td>Diagnostic</td>
</tr>
<tr>
<td>30 Hz to 300 kHz, 3 dB bandwidths in 1, 3, 10 steps (±20% characteristic), also 3 MHz and 5 MHz. Four-pole synchronously-tuned, approximately Gaussian shape.</td>
</tr>
</tbody>
</table>

## Averaging Bandwidths

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>30 Hz to 1 MHz in 1, 3, 10 steps (±30% characteristic), and 3 MHz. Post-detection single pole low-pass filters. 1, 3, 10 Hz digital filters with anti-aliasing</td>
</tr>
</tbody>
</table>
### General Specifications: HP 8546A EMI Receiver (continued)

<table>
<thead>
<tr>
<th>Input Attenuator</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linearity Test Attenuator</td>
<td>0 to 50 dB</td>
</tr>
<tr>
<td></td>
<td>4 dB</td>
</tr>
</tbody>
</table>

| Preamplification | 12 dB (Band 1 and 2) |
|                 | 27 dB ±4 dB (Bypass) |

<table>
<thead>
<tr>
<th>Demodulation</th>
<th>AM and FM</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Disk Drive</th>
<th>Internal 3.5 inch disk drive, compatible with 1.44 MByte DOS and LIF format disks</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Input Filter Bandwidths</th>
<th>Frequency Range</th>
<th>Filter Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>(all 3 dB bandwidths are characteristics)</td>
<td>9 kHz to 74 kHz</td>
<td>fixed</td>
</tr>
<tr>
<td></td>
<td>74 kHz to 188 kHz</td>
<td>fixed</td>
</tr>
<tr>
<td></td>
<td>188 kHz to 525 kHz</td>
<td>fixed</td>
</tr>
<tr>
<td></td>
<td>525 kHz to 1025 kHz</td>
<td>fixed</td>
</tr>
<tr>
<td></td>
<td>1 MHz to 2 MHz</td>
<td>fixed</td>
</tr>
<tr>
<td></td>
<td>2 MHz to 6 MHz</td>
<td>tunable (20%, 3 dB)</td>
</tr>
<tr>
<td></td>
<td>6 MHz to 17 MHz</td>
<td>tunable (10%, 3 dB)</td>
</tr>
<tr>
<td></td>
<td>17 MHz to 29 MHz</td>
<td>tunable (7%, 3 dB)</td>
</tr>
<tr>
<td></td>
<td>29 MHz to 52 MHz</td>
<td>tunable (8%, 3 dB)</td>
</tr>
<tr>
<td></td>
<td>52 MHz to 98 MHz</td>
<td>tunable (6%, 3 dB)</td>
</tr>
<tr>
<td></td>
<td>98 MHz to 152 MHz</td>
<td>tunable (6%, 3 dB)</td>
</tr>
<tr>
<td></td>
<td>152 MHz to 216 MHz</td>
<td>tunable (6%, 3 dB)</td>
</tr>
<tr>
<td></td>
<td>216 MHz to 330 MHz</td>
<td>tunable (5%, 3 dB)</td>
</tr>
<tr>
<td></td>
<td>330 MHz to 500 MHz</td>
<td>tunable (5%, 3 dB)</td>
</tr>
<tr>
<td></td>
<td>6.5 GHz to 1 GHz</td>
<td>tunable (4%, 3 dB)</td>
</tr>
<tr>
<td></td>
<td>1 GHz to 2.9 GHz</td>
<td>fixed</td>
</tr>
<tr>
<td></td>
<td>1 GHz to 6.5 GHz</td>
<td>fixed</td>
</tr>
</tbody>
</table>
## General Specifications: HP 8546A EMI Receiver (continued)

<table>
<thead>
<tr>
<th>Sweep Time</th>
<th>20 ms to 100 s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>Free Run, Single, Line, Video, External</td>
</tr>
</tbody>
</table>

| Audible Noise            | <5.5 Bel power (ISODP 7770)          |

<table>
<thead>
<tr>
<th>Power Requirements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>On</td>
<td>Receiver RF Section</td>
</tr>
<tr>
<td></td>
<td>90 to 132 V rms, 47 to 440 Hz</td>
</tr>
<tr>
<td></td>
<td>198 to 264 V rms, 47 to 66 Hz</td>
</tr>
<tr>
<td></td>
<td>Power consumption &lt;500 VA; &lt;180 W</td>
</tr>
<tr>
<td>RF Filter Section</td>
<td>90 to 132 V rms, 47 to 440 Hz</td>
</tr>
<tr>
<td></td>
<td>198 to 264 V rms, 47 to 66 Hz</td>
</tr>
<tr>
<td></td>
<td>Power consumption &lt;115 VA; &lt;85 W</td>
</tr>
<tr>
<td>Off</td>
<td>Receiver RF Section</td>
</tr>
<tr>
<td></td>
<td>Power consumption &lt;5 W</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental Conditions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
<td>Indoor Use</td>
</tr>
<tr>
<td>Altitude</td>
<td>Up to 15,000 feet (4,572 meters)</td>
</tr>
<tr>
<td>Maximum Relative Humidity</td>
<td>80% for temperatures up to 31 °C decreasing linearly to 50% relative humidity at 40 °C.</td>
</tr>
</tbody>
</table>

INSTALLATION CATEGORY II according to IEC 1010
POLLUTION DEGREE 2 according to IEC 664
## Tuning Specifications

| Tuning Range |  
|--------------|--------------------------------------------------|
| Band 1       | 9 kHz to 50 MHz                                  |
| Band 2       | 20 MHz to 2.9 GHz                                 |
| Band 3       | 1 GHz to 6.5 GHz                                  |
| Bypass       | 9 kHz to 6.5 GHz                                  |

| Frequency Reference |  
|---------------------|--------------------------------------------------|
| Aging               | \( \pm 1 \times 10^{-7} \) /year                 |
| Stability           | \( \pm 1 \times 10^{-8} \)                        |
| Temperature Stability | \( \pm 1 \times 10^{-8} \)                        |

| Frequency Readout Accuracy |  
|----------------------------|--------------------------------------------------|
|                            | \( \pm (\text{frequency readout} \times \text{frequency reference error*} + \text{span accuracy} + 1\% \text{ of span} + 20\% \text{ of IF Bandwidth} + 100 \text{ Hz}) \)† |

*Frequency reference error – (aging rate x period of time since last adjustment + initial achievable accuracy + temperature stability). See frequency characteristics.

†See “Drift” under “Stability” in frequency characteristics.

| Calibrator |  
|------------|--------------------------------------------------|
| Frequency  | 300 MHz fundamental                              |
| Accuracy   | see frequency reference error*                   |

*Frequency reference error – (aging rate x period of time since last adjustment + initial achievable accuracy + temperature stability). See frequency characteristics.
## Swept Frequency Specifications

<table>
<thead>
<tr>
<th>Frequency Span</th>
<th>Band 1</th>
<th>Band 2</th>
<th>Band 3</th>
<th>Bypass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>1 kHz to 50 MHz</td>
<td>1 kHz to 2.9 GHz</td>
<td>1 kHz to 5.5 GHz</td>
<td>1 kHz to 6.5 GHz</td>
</tr>
</tbody>
</table>

| Resolution              |                  |                  |                  | Four digits or 20 Hz, whichever is greater |

<table>
<thead>
<tr>
<th>Accuracy*</th>
<th>Bands 1 and 2</th>
<th>Band 3 and Bypass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Span ≤ 10 MHz</td>
<td>±2% of Span + 10 Hz</td>
<td>±4% of Span</td>
</tr>
<tr>
<td>Span &gt; 10 MHz</td>
<td>±3% of Span</td>
<td>±6% of Span</td>
</tr>
</tbody>
</table>

*Sweep time > 75 ms

### Stability

<table>
<thead>
<tr>
<th>Noise sidebands*</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;10 kHz offset from CW signal</td>
<td>≤−90 dBc/Hz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;30 kHz offset from CW signal</td>
<td>≤−105 dBc/Hz</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Residual FM</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>30 Hz IF BW, 30 Hz Averaging BW</td>
<td>≤30 Hz pk-pk in 300 ms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 kHz IF BW, 1 kHz Averaging BW</td>
<td>≤250 Hz pk-pk in 100 ms</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Related Sidebands</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;30 kHz offset from CW signal</td>
<td>≤−65 dBc</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* 1 kHz IF BW, 30 Hz averaging BW, sample detector.

### Marker Count Accuracy†

<table>
<thead>
<tr>
<th>Frequency Spans ≤ 10 MHz</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>±(marker frequency x frequency reference error* + counter resolution + 100 Hz)</td>
<td></td>
</tr>
<tr>
<td>Frequency Spans &gt; 10 MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counter Resolution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency Spans ≤ 10 MHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency Spans &gt; 10 MHz</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Selectable from 10 Hz to 100 kHz

Selectable from 100 Hz to 100 kHz

*Frequency reference error = (frequency x period of time since last adjustment + initial achievable accuracy + temperature stability). See frequency characteristics.

†Marker level to displayed noise level ≥ 25 dB, IF Bandwidth/Span ≥ 0.01, Span ≤ 200 MHz.
Amplitude Specifications

Amplitude specifications do not apply for negative peak detector mode except as noted in “Amplitude Characteristics.”

<table>
<thead>
<tr>
<th>Amplitude Range</th>
<th>−146 dBm to +30 dBm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>−39 dBµV to +137 dBµV</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Displayed Average Noise Level</th>
<th>Band 1</th>
<th>Band 2</th>
<th>Band 3</th>
<th>Bypass</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f_o &gt; 400 ) kHz</td>
<td>9 kHz to 20 MHz to</td>
<td>1 GHz to</td>
<td>9 kHz to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>50 MHz</td>
<td>2.0 GHz</td>
<td>6.5 GHz</td>
<td>6.5 GHz</td>
</tr>
</tbody>
</table>

(input terminated, 0 dB attenuation, 30 Hz IF BW, 30 Hz Averaging BW, sample detection)

- Preamplifier On
  - \( <--- \leq -39 \) dBµV \( ---> \)
  - \(-146 \) dBm
  - \(-144 \) dBm

- Preamplifier Off
  - \( <--- \leq -31 \) dBµV \( ---> \)
  - \(-138 \) dBm
  - \(-123 \) dBm

Characteristic Noise Figure

- Preamplifier On
  - \( <------ \) 10 dB \( -----> \)
  - 8 dB

- Preamplifier Off
  - \( <------- \) 14 dB \( -------> \)
  - 24 dB

<table>
<thead>
<tr>
<th>Displayed Average Noise Level</th>
<th>Band 1</th>
<th>Band 2</th>
<th>Band 3</th>
<th>Bypass</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f_o &lt; 400 ) kHz</td>
<td>9 kHz to 20 MHz to</td>
<td>1 GHz to</td>
<td>9 kHz to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>50 MHz</td>
<td>2.0 GHz</td>
<td>6.5 GHz</td>
<td>6.5 GHz</td>
</tr>
</tbody>
</table>

(input terminated, 0 dB attenuation, 30 Hz IF BW, 30 Hz Averaging BW, sample detection)
## Amplitude Specifications (continued)

<table>
<thead>
<tr>
<th>Noise Indication in CISPR Bandwidths (Characteristic)</th>
<th>Peak</th>
<th>Quasi-Peak</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 dB input attenuation, 50Ω input termination</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200 Hz (6 dB), 9 kHz to 150 kHz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preamplifier On</td>
<td>2 dBµV to -28 dBµV</td>
<td>-7 dBµV to -29 dBµV</td>
<td>-9 dBµV to -31 dBµV</td>
</tr>
<tr>
<td></td>
<td>(-105 dBm to -135 dBm)</td>
<td>(-114 dBm to -136 dBm)</td>
<td>(-116 dBm to -138 dBm)</td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td>15 dBµV to -15 dBµV</td>
<td>6 dBµV to -25 dBµV</td>
<td>3 dBµV to -27 dBµV</td>
</tr>
<tr>
<td></td>
<td>(-92 dBm to -122 dBm)</td>
<td>(-101 dBm to -132 dBm)</td>
<td>(-104 dBm to -134 dBm)</td>
</tr>
<tr>
<td>9 kHz (6 dB), 150 kHz to 30 MHz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preamplifier On</td>
<td>-8 dBµV</td>
<td>-15 dBµV</td>
<td>-21 dBµV</td>
</tr>
<tr>
<td></td>
<td>(-115 dBm)</td>
<td>(-122 dBm)</td>
<td>(-128 dBm)</td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td>-3 dBµV</td>
<td>-11 dBµV</td>
<td>-18 dBµV</td>
</tr>
<tr>
<td></td>
<td>(-110 dBm)</td>
<td>(-118 dBm)</td>
<td>(-125 dBm)</td>
</tr>
<tr>
<td>120 kHz (6 dB), 30 MHz to 1 GHz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preamplifier On</td>
<td>4 dBµV</td>
<td>-2 dBµV</td>
<td>-10 dBµV</td>
</tr>
<tr>
<td></td>
<td>(-103 dBm)</td>
<td>(-109 dBm)</td>
<td>(-117 dBm)</td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td>9 dBµV</td>
<td>2 dBµV</td>
<td>-5 dBµV</td>
</tr>
<tr>
<td></td>
<td>(-98 dBm)</td>
<td>(-105 dBm)</td>
<td>(-112 dBm)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Amplitude Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specification†</td>
</tr>
<tr>
<td>Characteristic‡</td>
</tr>
</tbody>
</table>

† >(-10 dBµV + attenuation -(12 - preamplifier gain)) reference level. Use Measure at Marker or linear mode, top 4 graticules. If using the Measure at Marker function to measure a pulsed signal with a repetition frequency of less than 5 Hz, set the sweep time to be greater than or equal to the inverse of the pulse repetition frequency. (For example, to measure a 1 Hz CISPR pulse, set the sweep time to 1 second or greater prior to using the Measure at Marker function.) If IFBW ≤ 300 Hz and signal separation ≤ 4 kHz, also use Linearity Check.

‡ 20 °C to 30 °C plus the above. (Plus YIG filter peaked, Band 3 only.)
### Amplitude Specifications (continued)

<table>
<thead>
<tr>
<th></th>
<th>Band 1</th>
<th>Band 2</th>
<th>Band 3</th>
<th>Bypass</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9 kHz to</td>
<td>2.0 MHz to</td>
<td>1 GHz to</td>
<td>9 kHz to</td>
</tr>
<tr>
<td></td>
<td>50 MHz</td>
<td>2.0 GHz</td>
<td>6.5 GHz</td>
<td>6.5 GHz</td>
</tr>
<tr>
<td><strong>Gain Compression</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specification</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( f_a \geq 10 \text{ MHz} )</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(&lt;---------- &lt;0.5 \text{ dB} ) )</td>
<td>(&lt;---------- &lt;0.75 \text{ dB} ) )</td>
<td>(-30 \text{ dBm})</td>
<td>(-30 \text{ dBm})</td>
</tr>
<tr>
<td>(200 \text{ kHz} &lt; f_a &lt; 10 \text{ MHz} )</td>
<td>(&lt;---------- &lt;77 \text{ dB}_{pV} ) )</td>
<td>(-18 \text{ dBm})</td>
<td>(-5 \text{ dBm})</td>
<td>(-5 \text{ dBm})</td>
</tr>
<tr>
<td>Characteristic 1 dB Compression Point</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( f_a \geq 10 \text{ MHz} )</td>
<td>(-30 \text{ dBm})</td>
<td>(-35 \text{ dBm})</td>
<td>(-22 \text{ dBm})</td>
<td>(-22 \text{ dBm})</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Third Harmonic Intercept Point</strong></td>
<td>(-10 \text{ dBm})</td>
<td>(-5 \text{ dBm})</td>
<td>(-5 \text{ dBm})</td>
<td>(-5 \text{ dBm})</td>
</tr>
<tr>
<td>Specification</td>
<td>(-10 \text{ dBm})</td>
<td>(-5 \text{ dBm})</td>
<td>(-5 \text{ dBm})</td>
<td>(-5 \text{ dBm})</td>
</tr>
<tr>
<td>( f_a \geq 200 \text{ kHz} )</td>
<td>(-22 \text{ dBm})</td>
<td>(-22 \text{ dBm})</td>
<td>(-22 \text{ dBm})</td>
<td>(-22 \text{ dBm})</td>
</tr>
<tr>
<td></td>
<td>(-22 \text{ dBm})</td>
<td>(-22 \text{ dBm})</td>
<td>(-22 \text{ dBm})</td>
<td>(-22 \text{ dBm})</td>
</tr>
<tr>
<td>Characteristic</td>
<td>(-10 \text{ dBm})</td>
<td>(-5 \text{ dBm})</td>
<td>(-5 \text{ dBm})</td>
<td>(-5 \text{ dBm})</td>
</tr>
<tr>
<td>( f_a \geq 10 \text{ MHz} )</td>
<td>(-15 \text{ dBm})</td>
<td>(-15 \text{ dBm})</td>
<td>(-15 \text{ dBm})</td>
<td>(-15 \text{ dBm})</td>
</tr>
<tr>
<td></td>
<td>(-15 \text{ dBm})</td>
<td>(-15 \text{ dBm})</td>
<td>(-15 \text{ dBm})</td>
<td>(-15 \text{ dBm})</td>
</tr>
<tr>
<td></td>
<td>(-6 \text{ dBm})</td>
<td>(-6 \text{ dBm})</td>
<td>(-6 \text{ dBm})</td>
<td>(-6 \text{ dBm})</td>
</tr>
<tr>
<td>(9 \text{ kHz} &lt; f_a &lt; 10 \text{ MHz} )</td>
<td>(-18 \text{ dBm})</td>
<td>(-18 \text{ dBm})</td>
<td>(-18 \text{ dBm})</td>
<td>(-18 \text{ dBm})</td>
</tr>
<tr>
<td></td>
<td>(-18 \text{ dBm})</td>
<td>(-18 \text{ dBm})</td>
<td>(-18 \text{ dBm})</td>
<td>(-18 \text{ dBm})</td>
</tr>
<tr>
<td></td>
<td>(-7 \text{ dBm})</td>
<td>(-7 \text{ dBm})</td>
<td>(-7 \text{ dBm})</td>
<td>(-7 \text{ dBm})</td>
</tr>
</tbody>
</table>

*Indicated specification is derived from measured distortion with a total power at the input mixer of \(-10 \text{ dBm}\). Bands 1 and 2: Power at the input mixer – input power – input attenuation + 15 dB + preamplifier gain. Band 3 and Bypass: Power at the input mixer – input power – input attenuation + preamplifier gain. If the IF BW is \(< 500 \text{ kHz}\), this applies only if signal separation is \(\geq 4 \text{ kHz}\) and signal amplitudes \(\leq \text{Ref. Level} - 10 \text{ dB}\). **Signal separation \(\geq 50 \text{ kHz}\). Indicated specification derived from measured distortion products for two –30 dBm CW signals at the input.
## Amplitude Specifications (continued)

<table>
<thead>
<tr>
<th>Specification</th>
<th>Band 1</th>
<th>Band 2</th>
<th>Band 3</th>
<th>Bypass</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 kHz ≤ f ≤ 1.8 GHz, &gt; 2.9 GHz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preamplifier On</td>
<td>&lt;———116 dBµV———&gt;</td>
<td></td>
<td>100 dBµV</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(+ 3 dBm)</td>
<td></td>
<td>(-7 dBm)</td>
<td></td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td>&lt;———122 dBµV———&gt;</td>
<td></td>
<td>134 dBµV</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(+ 15 dBm)</td>
<td></td>
<td>(+27 dBm)</td>
<td></td>
</tr>
<tr>
<td>1.8 GHz ≤ f ≤ 2.9 GHz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preamplifier On</td>
<td>105 dBµV</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-2 dBm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td>105 dBµV</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-2 dBm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Characteristic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 kHz ≤ f ≤ 1.8 GHz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preamplifier On</td>
<td>&lt;———127 dBµV———&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(+20 dBm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td>&lt;———137 dBµV———&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(+30 dBm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.8 GHz ≤ f ≤ 2.9 GHz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preamplifier On</td>
<td>114 dBµV</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(+7 dBm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td>112 dBµV</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(+5 dBm)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* f is the receiver tune frequency (second harmonic frequency).
† Indicated specification level was derived from measured harmonic levels for a -40 dBm input signal.
### Amplitude Specifications (continued)

<table>
<thead>
<tr>
<th></th>
<th>Band 1</th>
<th>Band 2</th>
<th>Band 3</th>
<th>Bypass</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9 kHz to</td>
<td>20 MHz to</td>
<td>1 GHz to</td>
<td>9 kHz to</td>
</tr>
<tr>
<td></td>
<td>50 MHz</td>
<td>2.0 GHz</td>
<td>6.5 GHz</td>
<td></td>
</tr>
<tr>
<td>Other Input Related Spurious</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual Responses</td>
<td></td>
<td>&lt;------</td>
<td>&lt;------</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-65 dBc</td>
<td>-65 dBc</td>
<td></td>
</tr>
<tr>
<td>Input terminated, 0 dB attenuation (preamplifier on)</td>
<td>&lt;------</td>
<td>&lt; -10 dBV</td>
<td>&lt; -10 dBV</td>
<td></td>
</tr>
<tr>
<td>&gt;30 kHz</td>
<td></td>
<td></td>
<td>(-117 dBm)</td>
<td></td>
</tr>
<tr>
<td>&lt;30 kHz</td>
<td></td>
<td>&lt; -2 dBV</td>
<td>(-169 dBm)</td>
<td></td>
</tr>
<tr>
<td>Maximum Safe Input Level</td>
<td>&lt;------ + 30 dBm------&gt;</td>
<td>&lt;------ + 30 dBm------&gt;</td>
<td>(Input atten ≥ 10 dB)</td>
<td></td>
</tr>
<tr>
<td>Average Continuous Power</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak Pulse Power</td>
<td>2000 W peak</td>
<td>100 W for &lt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>for 10 μs</td>
<td>10 μs pulse</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>20 dB input</td>
<td>duty cycle and</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>attenuation</td>
<td>&gt;30 dB input</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 dB input</td>
<td>attenuation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>attenuation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC (Volts)</td>
<td>&lt;------</td>
<td>0 V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input VSWR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 dB input attenuation</td>
<td>&lt;------</td>
<td>2 : 1</td>
<td>3 : 1*</td>
<td></td>
</tr>
<tr>
<td>≤1.0 GHz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥1.0 GHz &lt; f_i ≤2.9 GHz</td>
<td>&lt;------</td>
<td>2.5 : 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 dB input attenuation</td>
<td>&lt;------</td>
<td>2 : 1*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤1.0 GHz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥1.0 GHz &lt; f_i ≤2.9 GHz</td>
<td>&lt;------</td>
<td>1.6 : 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

† 30 kHz offset for −20 dBm tone at the mixer ≤6.5 GHz, f_i > 10 MHz. Input mixer power − input power − input attenuation + 16.5 + preamplifier gain.

* Characteristic only.

<table>
<thead>
<tr>
<th>Marker Readout Resolution</th>
<th>0.05 dB for log scale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.05% of reference level for linear scale</td>
</tr>
</tbody>
</table>
### Amplitude Specifications (continued)

<table>
<thead>
<tr>
<th>Reference Level</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range Log Scale</td>
<td>-146 dBm to +30 dBm</td>
</tr>
<tr>
<td>Linear Scale</td>
<td>-126 dBm to +30 dBm</td>
</tr>
</tbody>
</table>

**Resolution**

| Resolution Log Scale | ± 0.01 dB |
| Linear Scale         | ± 0.02 % of reference level |

**Linear to Log Switching**

<table>
<thead>
<tr>
<th>Display Scale Fidelity</th>
<th>± 0.25 dB at reference level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Maximum Cumulative*</td>
<td></td>
</tr>
<tr>
<td>3 kHz to 3 MHz IF Bandwidth</td>
<td>±(0.3 dB + 0.01 x dB from Reference level)</td>
</tr>
<tr>
<td>≤ 1 kHz IF Bandwidth</td>
<td>±(0.4 dB + 0.01 x dB from Reference level)</td>
</tr>
</tbody>
</table>

**Log Incremental Accuracy**

| 0 to -56 dB from Reference Level | ± 0.4 dB/4 dB |
| (0 to -54 dB, Band 3 only)      |                |

**Linear Accuracy**

| ± 3 % of Reference Level |

* 0 to -66 dB from reference level, 0 to -64 dB Band 3 only.

<table>
<thead>
<tr>
<th>Relative Quasi-Peak Response to a CISPR Pulse (dB)*</th>
<th>Frequency Bands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse Repetition Frequency (Hz)</td>
<td>120 kHz 6 dB BW</td>
</tr>
<tr>
<td>1000</td>
<td>0.03 GHz to 1 GHz</td>
</tr>
<tr>
<td>100</td>
<td>0 dB (reference)†</td>
</tr>
<tr>
<td>60</td>
<td>0 dB (reference)†</td>
</tr>
<tr>
<td>25</td>
<td>0 dB (reference)†</td>
</tr>
<tr>
<td>20</td>
<td>0 dB (reference)†</td>
</tr>
<tr>
<td>10</td>
<td>-14.0 ±1.5</td>
</tr>
<tr>
<td>5</td>
<td>-26.0 ±2.0</td>
</tr>
<tr>
<td>2</td>
<td>-28.5 ±2.0</td>
</tr>
<tr>
<td>1</td>
<td>-31.5 ±2.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Isolated Pulse</th>
</tr>
</thead>
<tbody>
<tr>
<td>-31.5 ±2.0</td>
</tr>
</tbody>
</table>

---

* Specification applies to a pulsed RF signal with equivalent spectral intensity as called out in CISPR Pub 16, Part 1. (CISPR pulse measurements require either an HP 8542E or HP 8546A EMI receiver and do not apply to either an HP 85422E or HP 85462A receiver RF section.)

† Reference pulse amplitude accuracy relative to the CW signal is <1.5 dB as specified in CISPR pub. 16. CISPR reference pulse: 0.644 μVs for 0.03 GHz to 1 GHz, 0.316 μVs for 0.15 MHz to 30 MHz, 13.5 ±1.5 μVs for 9 kHz to 150 kHz.
# Tracking Generator Specifications

All Specifications apply over 0° C to 55° C. The receiver/tracking generator combination will meet its specification after 2 hours of storage at a constant temperature within the operating temperature range, 30 minutes after the combination is turned on, and after CAL ALL, CAL TRK GEN, and TRACKING PEAK have been run.

<table>
<thead>
<tr>
<th>Output Frequency Range</th>
<th>9 kHz to 2.9 GHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warm-up time</td>
<td>30 minutes</td>
</tr>
</tbody>
</table>

### Output Power Level

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1 dBm to -66 dBm</td>
<td>0.1 dB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vernier</th>
<th>9 dB</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Range</th>
<th>Accuracy (25 °C ±10 °C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(-20 dBm at 300 MHz, 16 dB attenuation)</td>
<td>±0.2 dB/dB</td>
</tr>
</tbody>
</table>

| Incremental Cumulative     | ±0.5 dB Total |

| Output Attenuator Range    | 0 to 56 dB in 8 dB steps |

### Output Power Sweep

<table>
<thead>
<tr>
<th>Range</th>
<th>(-10 dBm to -1 dBm) - (source attenuator setting)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>0.1 dB</td>
</tr>
</tbody>
</table>

### Tracking Generator Feedthrough

| 400 kHz to 2.9 GHz          | ≤ –110 dBm |

### Spurious Output (−1 dBm output)

<table>
<thead>
<tr>
<th>Harmonic Spur from 300 kHz to 2.9 GHz</th>
<th>≤ –25 dBc</th>
</tr>
</thead>
<tbody>
<tr>
<td>TG output 300 kHz to 2.9 GHz</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-harmonic Spur from 300 kHz to 2.9 GHz</th>
<th>≤ –27 dBc</th>
</tr>
</thead>
<tbody>
<tr>
<td>TG output 300 kHz to 2.9 GHz</td>
<td></td>
</tr>
<tr>
<td>TG output 2.0 GHz to 2.9 GHz</td>
<td>≤ –23 dBc</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LO Feedthrough</th>
<th>≤ –16 dBm</th>
</tr>
</thead>
<tbody>
<tr>
<td>LO frequency 3.8214 GHz to 6.8214 GHz</td>
<td></td>
</tr>
</tbody>
</table>
# Frequency Characteristics

These are not specifications. Characteristics provide useful but nonwarranted information about instrument performance.

<table>
<thead>
<tr>
<th>Frequency Reference</th>
<th>5 x 10^{-30}/day, 7 day average after being powered on for seven days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aging</td>
<td>1 x 10^{-8} after 30 minutes on</td>
</tr>
<tr>
<td>Warm-up</td>
<td>±2.2 x 10^{-8} after being powered on for 24 hours</td>
</tr>
</tbody>
</table>

## Stability

<table>
<thead>
<tr>
<th>Drift (after warm-up at stabilized temperature)</th>
<th>&lt;2 kHz/minute of sweep time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency spans ≤ 10 Mhz, free run trigger</td>
<td></td>
</tr>
</tbody>
</table>

Drift occurs only while receiver is sweeping frequency. Additional drift occurs when using Line, Video, or External trigger while waiting for the appropriate trigger.
Amplitude Characteristics

These are not specifications. Characteristics provide useful but nonwarranted information about instrument performance.

<table>
<thead>
<tr>
<th>Input Attenuator Uncertainty</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Attenuator Setting (Band 3 and Bypass)</td>
<td></td>
</tr>
<tr>
<td>0 dB</td>
<td>± 0.2 dB</td>
</tr>
<tr>
<td>10 dB</td>
<td>Reference</td>
</tr>
<tr>
<td>20 dB</td>
<td>± 0.4 dB</td>
</tr>
<tr>
<td>30 dB</td>
<td>± 0.5 dB</td>
</tr>
<tr>
<td>40 dB</td>
<td>± 0.7 dB</td>
</tr>
<tr>
<td>50 dB</td>
<td>± 0.8 dB</td>
</tr>
<tr>
<td>10 dB Step Uncertainty</td>
<td>± 0.8 dBdB</td>
</tr>
<tr>
<td>(attenuator setting 10 to 50 dB)</td>
<td></td>
</tr>
<tr>
<td>Repeatability</td>
<td>± 0.05 dB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unpeaked Frequency Response (dc coupled)</th>
<th>Absolute*</th>
<th>Relative†</th>
</tr>
</thead>
<tbody>
<tr>
<td>(without preselector peaking, span ≤50 MHz, 10 dB input attenuation, Band 3 and Bypass only)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.75 to 6.5 GHz</td>
<td>± 3 dB</td>
<td>± 1 dB</td>
</tr>
<tr>
<td>Preamplifier On</td>
<td>± 3 dB</td>
<td>± 1 dB</td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td>± 2 dB</td>
<td>± 1 dB</td>
</tr>
</tbody>
</table>

* Referenced to 300 MHz CAL OUT.
† Referenced to midpoint between highest and lowest frequency response deviations

FM Demodulation

<table>
<thead>
<tr>
<th>Input Level</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Preamplifier Off</td>
<td>&gt;(-75 dBm + attenuator setting)</td>
</tr>
<tr>
<td>Signal Level</td>
<td>0 to -30 dB below reference level</td>
</tr>
<tr>
<td>FM Offset</td>
<td>400 Hz nominal</td>
</tr>
<tr>
<td>FM Deviation (FM GAIN)</td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td>1 kHz/volt nominal</td>
</tr>
<tr>
<td>Range</td>
<td>10 kHz/volt to 1 MHz/volt</td>
</tr>
<tr>
<td>Bandwidth</td>
<td>FM Deviation ÷ 2</td>
</tr>
<tr>
<td>FM Linearity</td>
<td>≤1% of FM deviation + 200 Hz</td>
</tr>
</tbody>
</table>

HP 8546A/HP 85462A Specifications and Characteristics 2:15
# Tracking Generator Characteristics

<table>
<thead>
<tr>
<th>Output Flatness</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(referenced to 300 MHz, −20 dBm)</td>
<td></td>
</tr>
<tr>
<td>Frequency &gt; 10 MHz</td>
<td>±2 dB</td>
</tr>
<tr>
<td>Frequency ≤ 10 MHz</td>
<td>±3 dB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output Power Level</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Absolute Accuracy</td>
<td>±0.75 dB</td>
</tr>
<tr>
<td>(−20 dBM at 300 MHz)</td>
<td></td>
</tr>
<tr>
<td>(25 °C ±10 °C)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tracking Drift</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Usable in a 1 kHz IF Bandwidth after a 5 minute warm-up</td>
<td>1.5 kHz/5 minutes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RF Power Off Residuals</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>9 kHz to 2.9 GHz</td>
<td>&lt; −120 dBm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dynamic Range</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(Difference between maximum power out and tracking generator feedthrough)</td>
<td>&gt; 109 dB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output Attenuator Repeatability</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>300 kHz to 300 MHz</td>
<td>±0.1 dB</td>
</tr>
<tr>
<td>300 MHz to 2.0 GHz</td>
<td>±0.2 dB</td>
</tr>
<tr>
<td>2.0 GHz to 2.9 GHz</td>
<td>±0.3 dB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output VSWR</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0 dB attenuation</td>
<td>&lt;3.0:1</td>
</tr>
<tr>
<td>8 dB attenuation</td>
<td>&lt;1.5:1</td>
</tr>
</tbody>
</table>
# Physical Characteristics

## Front Panel Inputs and Outputs

<table>
<thead>
<tr>
<th>Input/Output</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Frequency Input</td>
<td>Type N female, 50 Ω nominal</td>
</tr>
<tr>
<td>High Frequency Input</td>
<td>Type N female, 50 Ω nominal</td>
</tr>
<tr>
<td>Tracking Generator Output</td>
<td>Type N female, 50 Ω nominal</td>
</tr>
<tr>
<td>Probe Power*</td>
<td>+15 Vdc ±7% at 150 mA maximum</td>
</tr>
<tr>
<td><strong>Voltage / Current</strong></td>
<td>−12.6 Vdc ±10% at 150 mA maximum</td>
</tr>
<tr>
<td>Earphone Jack</td>
<td>1/8 inch monaural jack</td>
</tr>
</tbody>
</table>

*Total current drawn from the +15 Vdc on the PROBE POWER and the AUX INTERFACE connectors cannot exceed 150 mA. Total current drawn from the −12.6 Vdc on the PROBE POWER and the −15 Vdc on the AUX INTERFACE cannot exceed 150 mA.

## Rear Panel Inputs and Outputs

<table>
<thead>
<tr>
<th>Input/Output</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 MHz REF OUTPUT</td>
<td>BNC female</td>
</tr>
<tr>
<td>Connector</td>
<td>50 Ω</td>
</tr>
<tr>
<td>Output Amplitude</td>
<td>&gt; 0 dBm</td>
</tr>
<tr>
<td>EXT REF IN</td>
<td>BNC female</td>
</tr>
<tr>
<td>Connector</td>
<td>−2 dBm to +10 dBm</td>
</tr>
<tr>
<td>Frequency</td>
<td>10 MHz</td>
</tr>
<tr>
<td>AUX IF OUT</td>
<td>BNC female</td>
</tr>
<tr>
<td>Connector</td>
<td>21.4 MHz</td>
</tr>
<tr>
<td>Frequency</td>
<td>−10 dBm to −60 dBm</td>
</tr>
<tr>
<td>impedance</td>
<td>50 Ω</td>
</tr>
<tr>
<td>AUX VIDEO OUTPUT</td>
<td>BNC female</td>
</tr>
<tr>
<td>Connector</td>
<td>0 V to 1 V (uncorrected)</td>
</tr>
<tr>
<td>EXT KEYBOARD</td>
<td>Interface compatible with HP part number C1405 Option ABA and most IBM/AT non auto-switching keyboards.</td>
</tr>
<tr>
<td>EXT TRIG INPUT</td>
<td>BNC female</td>
</tr>
<tr>
<td>Connector</td>
<td>Positive edge initiates sweep in EXT TRIG mode (TTL)</td>
</tr>
<tr>
<td>LO OUTPUT</td>
<td>SMA female (must be terminated in 50 Ω when not used)</td>
</tr>
<tr>
<td>Connector</td>
<td>50 Ω</td>
</tr>
<tr>
<td>Frequency</td>
<td>3.0 GHz to 6.8214 GHz</td>
</tr>
</tbody>
</table>
**Physical Characteristics (continued)**

<table>
<thead>
<tr>
<th>Rear Panel Inputs and Outputs (continued)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HI-SWEEP IN/OUT</strong></td>
<td></td>
</tr>
<tr>
<td>Receiver RF Section Input/Output</td>
<td></td>
</tr>
<tr>
<td>Connector</td>
<td>SMA female</td>
</tr>
<tr>
<td>Output</td>
<td>High-sweep, Low - retrace (TTL)</td>
</tr>
<tr>
<td>Input</td>
<td>Open collector, Low stops sweep</td>
</tr>
<tr>
<td>RF Filter Section Output</td>
<td>High-sweep, Low - retrace (TTL)</td>
</tr>
<tr>
<td><strong>SWEEP INPUT / OUTPUT</strong></td>
<td></td>
</tr>
<tr>
<td>Receiver RF Section Output</td>
<td></td>
</tr>
<tr>
<td>Connector</td>
<td>SMA female</td>
</tr>
<tr>
<td>Output</td>
<td>0 V to +10 V ramp</td>
</tr>
<tr>
<td>RF Filter Section Input</td>
<td></td>
</tr>
<tr>
<td>Connector</td>
<td>SMA female</td>
</tr>
<tr>
<td>Input</td>
<td>0 V to +10 V</td>
</tr>
<tr>
<td><strong>REMOTE INTERFACE</strong></td>
<td></td>
</tr>
<tr>
<td>Receiver RF Section</td>
<td>HP-1B (RS-232 optional)</td>
</tr>
<tr>
<td>RF Filter Section</td>
<td>HP-1B compatible service port</td>
</tr>
<tr>
<td><strong>MONITOR OUTPUT</strong></td>
<td></td>
</tr>
<tr>
<td>R, G, B (composite video on G)</td>
<td></td>
</tr>
<tr>
<td>25 kHz horizontal rate</td>
<td></td>
</tr>
<tr>
<td>60 Hz vertical rate</td>
<td></td>
</tr>
</tbody>
</table>

**AUX INTERFACE**
Connector Type: 9-pin subminiature D  
Connector Pinout:

<table>
<thead>
<tr>
<th>Pin #</th>
<th>Function</th>
<th>Current</th>
<th>Logic Mode</th>
<th>Serial Bit Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Control A</td>
<td>—</td>
<td>TTL Output Hi/Lo</td>
<td>TTL Output Hi/Lo</td>
</tr>
<tr>
<td>2</td>
<td>Control B</td>
<td>—</td>
<td>TTL Output Hi/Lo</td>
<td>TTL Output Hi/Lo</td>
</tr>
<tr>
<td>3</td>
<td>Control C</td>
<td>—</td>
<td>TTL Output Hi/Lo</td>
<td>TTL Output Hi/Lo</td>
</tr>
<tr>
<td>4</td>
<td>Control D</td>
<td>—</td>
<td>TTL Output Hi/Lo</td>
<td>Strobe</td>
</tr>
<tr>
<td>5</td>
<td>Control I</td>
<td>—</td>
<td>TTL Input Hi/Lo</td>
<td>Serial Data</td>
</tr>
<tr>
<td>6</td>
<td>Gnd</td>
<td>—</td>
<td>Gnd</td>
<td>Gnd</td>
</tr>
<tr>
<td>7*</td>
<td>-15 Vdc ±7%</td>
<td>150 ma</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>8*</td>
<td>+5 Vdc ±5%</td>
<td>150 ma</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>9*</td>
<td>+15 Vdc ±5%</td>
<td>150 ma</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

* Total current drawn from the +15 Vdc on the PROBE POWER and the AUX INTERFACE cannot exceed 150 mA. Total current drawn from the -12.6 Vdc on the PROBE POWER and the -15 Vdc on the AUX INTERFACE cannot exceed 150 mA.

**WEIGHT**

| Receiver RF Section | 62.5 lb |
| RF Filter Section   | 46 lb |
Figure 2-1. HP 8546A EMI Receiver Dimensions
General Specifications: HP 85462A Receiver RF Section

The specifications in this section apply to all functions autocoupled over the environmental conditions specified. All specifications apply after two hours of storage at a constant temperature within the operating temperature range, after the instrument has been operating for 60 minutes, and after CAL ALL and CAL YTF have been run.

<table>
<thead>
<tr>
<th>Temperature Range</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating*</td>
<td>0 °C to +55 °C</td>
</tr>
<tr>
<td>Storage</td>
<td>-20 °C to +65 °C</td>
</tr>
</tbody>
</table>
* Disk drive +5 °C to +45 °C

EMI Compatibility
Receiver RF section radiated and conducted emissions performance is in compliance with CISPR Pub. 11/1990 Group 1 Class B. Receiver RF section susceptibility is in compliance with CISPR Pub. 16 at 3 Vm.

Inputs
Type N, 50 Ω, 9 kHz to 6.5 GHz

Detectors
Measurement
Peak, Quasi-Peak, and Average.
Quasi-Peak and Average time constants conform with CISPR Pub.16.

Overload
IF

IF Bandwidths
Measurement
200 Hz, 9 kHz, and 120 kHz
6 dB bandwidths which conform to CISPR Pub.16

Bandwidth Accuracy
1 MHz, 6 dB bandwidth ±10%

Diagnostic
30 Hz to 300 kHz, 3 dB bandwidths in 1,3,10 steps (±20% characteristic), also 3 MHz and 5 MHz. Four-pole synchronously-tuned, approximately Gaussian shape.

Averaging Bandwidths
30 Hz to 1 MHz in 1,3,10 steps (±20% characteristic), and 3 MHz. Post-detection single pole low-pass filters. 1,3,10 Hz digital filters with anti-aliasing

Input Attenuator
Range
0 to 70 dB in 10 dB steps

Preamplification
27 dB ±1.5 dB ≤500 MHz, ±4 dB ≥500 MHz

Demodulation
AM and FM
# HP 85462A Receiver RF Section

## General Specifications: HP 85462A Receiver RF Section (continued)

<table>
<thead>
<tr>
<th><strong>Sweep Time</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Range</strong></td>
<td>20 ms to 100 s</td>
</tr>
<tr>
<td><strong>Accuracy</strong></td>
<td>± 3%</td>
</tr>
<tr>
<td><strong>Sweep Trigger</strong></td>
<td>Free Run, Single, Line, Video, External</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Disk Drive</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Internal 3.5 inch disk drive, compatible with 1.44 MByte DOS and LIF format disks</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Audible Noise</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>&lt; 5.5 Belts power (ISO/DIN 7779)</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Power Requirements</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>On</strong></td>
<td>90 to 132 V rms, 47 to 440 Hz</td>
</tr>
<tr>
<td></td>
<td>198 to 264 V rms, 47 to 66 Hz</td>
</tr>
<tr>
<td></td>
<td>Power consumption &lt;500 VA; &lt;180 W</td>
</tr>
<tr>
<td><strong>Off</strong></td>
<td>Power consumption &lt;5 W</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Environmental Conditions</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environment</strong></td>
<td>Indoor Use</td>
</tr>
<tr>
<td><strong>Altitude</strong></td>
<td>Up to 15,000 feet (4,572 meters)</td>
</tr>
<tr>
<td><strong>Maximum Relative Humidity</strong></td>
<td>80% for temperatures up to 31 °C decreasing linearly to 50% relative humidity at 40 °C</td>
</tr>
<tr>
<td><strong>INSTALLATION CATEGORY II according to IEC 1010</strong></td>
<td></td>
</tr>
<tr>
<td><strong>POLLUTION DEGREE 2 according to IEC 664</strong></td>
<td></td>
</tr>
</tbody>
</table>
# Tuning Specifications

<table>
<thead>
<tr>
<th>Tuning Range</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Coupled</td>
<td>9 kHz to 6.5 GHz</td>
</tr>
<tr>
<td>AC Coupled</td>
<td>100 kHz to 6.5 GHz</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Frequency Reference</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Aging</td>
<td>± 1 x 10^-7 /year</td>
</tr>
<tr>
<td>Settability</td>
<td>± 1 x 10^-8</td>
</tr>
<tr>
<td>Temperature Stability</td>
<td>± 1 x 10^-8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Frequency Readout Accuracy</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>± (frequency readout x frequency reference error * + span accuracy + 1% of span + 26% of IF Bandwidth + 100 Hz)</td>
<td></td>
</tr>
</tbody>
</table>

*Frequency reference error – (aging rate x period of time since last adjustment + initial achievable accuracy + temperature stability). See frequency characteristics.

†See “Drift” under “Stability” in frequency characteristics.

<table>
<thead>
<tr>
<th>Calibrator</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>300 MHz fundamental</td>
</tr>
<tr>
<td>Accuracy</td>
<td>see frequency reference error*</td>
</tr>
</tbody>
</table>

*Frequency reference error – (aging rate x period of time since last adjustment + initial achievable accuracy + temperature stability). See frequency characteristics.
**Swept Frequency Specifications**

<table>
<thead>
<tr>
<th><strong>Frequency Span</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>1 kHz to 6.5 GHz</td>
</tr>
<tr>
<td>Resolution</td>
<td>Four digits or 20 Hz, whichever is greater</td>
</tr>
<tr>
<td>Accuracy (single mixing band spans)</td>
<td></td>
</tr>
<tr>
<td>Span ≤ 10 MHz</td>
<td>±2% of span + 10 Hz</td>
</tr>
<tr>
<td>Span &gt; 10 MHz</td>
<td>±3% of span</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Stability</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise sidebands*</td>
<td></td>
</tr>
<tr>
<td>&gt;10 kHz offset from CW signal</td>
<td>≤−90 dBc/Hz</td>
</tr>
<tr>
<td>&gt;30 kHz offset from CW signal</td>
<td>≤−105 dBc/Hz</td>
</tr>
<tr>
<td>Residual F.M.</td>
<td></td>
</tr>
<tr>
<td>30 Hz IF BW, 30 Hz Averaging BW</td>
<td>≤20 Hz pk-pk in 300 ms</td>
</tr>
<tr>
<td>1 kHz IF BW, 1 kHz Averaging BW</td>
<td>≤250 Hz pk-pk in 100 ms</td>
</tr>
<tr>
<td>System Related Sidebands</td>
<td></td>
</tr>
<tr>
<td>&gt;30 kHz offset from CW signal</td>
<td>≤−65 dBc</td>
</tr>
</tbody>
</table>

*1 kHz IF BW, 30 Hz averaging BW, sample detector.

<table>
<thead>
<tr>
<th><strong>Marker Count Accuracy†</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Spans ≤ 10 MHz</td>
<td>±(marker frequency x frequency reference error* + counter resolution + 100 Hz)</td>
</tr>
<tr>
<td>Frequency Spans &gt; 10 MHz</td>
<td>±(marker frequency x frequency reference error* + counter resolution + 1 kHz)</td>
</tr>
<tr>
<td>Counter Resolution</td>
<td></td>
</tr>
<tr>
<td>Frequency Spans ≤ 10 MHz</td>
<td>Selectable from 10 Hz to 100 kHz</td>
</tr>
<tr>
<td>Frequency Spans &gt; 10 MHz</td>
<td>Selectable from 100 Hz to 100 kHz</td>
</tr>
</tbody>
</table>

*Frequency reference error = (aging rate x period of time since last adjustment + initial achievable accuracy + temperature stability). See frequency characteristics.
†Marker level to displayed noise level >25 dB, IF Bandwidth/Span ≥ 0.01, Span ≤ 300 MHz.
Amplitude Specifications

Amplitude specifications do not apply for negative peak detector mode except as noted in “Amplitude Characteristics.”

<table>
<thead>
<tr>
<th>Amplitude Range</th>
<th>–146 dBm to +30 dBm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>–39 dBµV to +137 dBµV</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Displayed Average Noise Level</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$f_n &gt; 400$ kHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(input terminated, 0 dB attenuation, 30 Hz IF BW, 30 Hz Averaging BW, sample detection)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preamplifier On</td>
<td>–146 dBm ($\leq –39$ dBµV)</td>
<td></td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td>–125 dBm ($\leq –18$ dBµV)</td>
<td></td>
</tr>
<tr>
<td>Characteristic Noise Figure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preamplifier On</td>
<td>8 dB</td>
<td></td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td>24 dB</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Displayed Average Noise Level</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$f_n &lt; 400$ kHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(input terminated, 0 dB attenuation, 30 Hz IF BW, 30 Hz Averaging BW, sample detection)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

![Graph showing noise levels with and without preamplifier]
### Amplitude Specifications (continued)

<table>
<thead>
<tr>
<th>Gain Compression*</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Specification</td>
<td>&lt;0.5 dB</td>
</tr>
<tr>
<td>$f_o &gt; 10$ MHz</td>
<td>200 kHz $\leq f_o \leq 10$ MHz</td>
</tr>
<tr>
<td>Characteristic 1 dB Compression Point</td>
<td></td>
</tr>
<tr>
<td>$f_o &gt; 10$ MHz</td>
<td>75 dB$_m V$ ($-32$ dBm)</td>
</tr>
<tr>
<td>Preamplifier On</td>
<td>102 dB$_m V$ ($-5$ dBm)</td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td>68 dB$_m V$ ($-32$ dBm)</td>
</tr>
<tr>
<td>9 kHz $\leq f_o \leq 10$ MHz</td>
<td></td>
</tr>
<tr>
<td>Preamplifier On</td>
<td>95 dB$_m V$ ($-32$ dBm)</td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td></td>
</tr>
</tbody>
</table>

* Specifications derived from distortion measurements using a two-tone compression test with frequency offset of 30 MHz and $-10$ dBm total signal power at the input mixer. Total power at first mixer = input power $-$ input attenuation $-$ preamp gain. If BW $\leq 300$ Hz, this applies only if signal separation $\geq 4$ kHz and signal amplitudes $\leq$ Reference Level $+ 10$ dB.

<table>
<thead>
<tr>
<th>Third Order Intercept Point†</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Specification</td>
<td></td>
</tr>
<tr>
<td>$f_o &gt; 200$ kHz</td>
<td></td>
</tr>
<tr>
<td>Preamplifier On</td>
<td>85 dB$_m V$ ($-22$ dBm)</td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td>112 dB$_m V$ ($+5$ dBm)</td>
</tr>
<tr>
<td>Characteristic Third Order Intercept</td>
<td></td>
</tr>
<tr>
<td>$f_o &gt; 10$ MHz</td>
<td></td>
</tr>
<tr>
<td>Preamplifier On</td>
<td>89 dB$_m V$ ($-18$ dBm)</td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td>118 dB$_m V$ ($+11$ dBm)</td>
</tr>
<tr>
<td>9 kHz $\leq f_o \leq 10$ MHz</td>
<td></td>
</tr>
<tr>
<td>Preamplifier On</td>
<td>87 dB$_m V$ ($-20$ dBm)</td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td>115 dB$_m V$ ($+8$ dBm)</td>
</tr>
</tbody>
</table>

† Indicated specification was derived from a $-70$ dBc distortion product level with two $-30$ dBm CW signals at the first mixer and 50 kHz separation. Input mixer power = input power $-$ input attenuation $-$ preamp gain.

<table>
<thead>
<tr>
<th>Second Harmonic Intercept*</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$f_o &gt; 200$ kHz</td>
<td></td>
</tr>
<tr>
<td>Preamplifier On</td>
<td>100 dB$_m V$ ($-9$ dBm)</td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td>134 dB$_m V$ ($+27$ dBm)</td>
</tr>
<tr>
<td>Characteristic Second Order Intercept</td>
<td></td>
</tr>
<tr>
<td>$f_o &gt; 500$ MHz</td>
<td></td>
</tr>
<tr>
<td>Preamplifier On</td>
<td>115 dB$_m V$ ($+8$ dBm)</td>
</tr>
<tr>
<td>9 kHz $\leq f_o \leq 500$ MHz</td>
<td></td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td>168 dB$_m V$ ($+1$ dBm)</td>
</tr>
<tr>
<td></td>
<td>144 dB$_m V$ ($+37$ dBm)</td>
</tr>
</tbody>
</table>

* The indicated specification level was derived from a measured harmonic level of $<-67$ dBc and $-40$ dBm CW signal at the input mixer. Input mixer power = input power $-$ input attenuation $-$ preamp gain.
### Amplitude Specifications (continued)

<table>
<thead>
<tr>
<th>Other Input Related Spurious</th>
<th>−65 dBc</th>
</tr>
</thead>
</table>

30 kHz offset for −20 dBm tone at the mixer ≤2.9 GHz, \( f_o > 10 \) MHz.
Input mixer power − input power − input attenuation = preamp gain.

<table>
<thead>
<tr>
<th>Residual Responses</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Input terminated, 0 dB attenuation, preamplifier on</td>
<td></td>
</tr>
<tr>
<td>150 kHz to 6.5 GHz</td>
<td>−8 dBmV (−115 dBm)</td>
</tr>
<tr>
<td>9 kHz to 150 kHz</td>
<td>+2 dBmV (−105 dBm)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maximum Safe Input Level</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Continuous Power</td>
<td></td>
</tr>
<tr>
<td>9 kHz to 2.9 GHz</td>
<td>+30 dBm</td>
</tr>
<tr>
<td>2.9 GHz to 6.5 GHz</td>
<td>+30 dBm (with 10 dB input attenuation)</td>
</tr>
<tr>
<td>Peak Pulse Power</td>
<td></td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td>+50 dBm (100 W) for 10 µs pulse width and, 1% duty cycle, input atten ≥ 30 dB</td>
</tr>
<tr>
<td>DC</td>
<td>0 V (dc coupled)</td>
</tr>
<tr>
<td></td>
<td>50 V (ac coupled)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Calibrator Output</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Amplitude</td>
<td>−20 dBm ± 0.4 dB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Calibration Repeatability *</th>
<th>±0.15 dB</th>
</tr>
</thead>
</table>

*Repeatability in the measured absolute amplitude of the CAL OUT signal at the reference settings after CAL FREQ and CAL AMPTD self-calibration. Absolute amplitude reference settings are: −20 dB reference level; 10 dB input attenuation; 300 MHz center frequency; 3 kHz IF BW; 300 Hz averaging BW; linear scale; 50 kHz span; coupled sweep time; reference level positioned at the top graticule; corrections on; and sample detection.

<table>
<thead>
<tr>
<th>Display Range</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Scale</td>
<td>0 to −66 dB from Reference Level is calibrated</td>
</tr>
<tr>
<td></td>
<td>0.1, 0.2, 0.5 dB/division and 1 to 20 dB/division in 1 dB steps; eight divisions displayed</td>
</tr>
<tr>
<td>Linear Scale</td>
<td>8 divisions</td>
</tr>
<tr>
<td>Scale Units</td>
<td>dBm, dBmV, dBµV, V, W</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Marker Readout Resolution</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.05 dB for log scale</td>
<td></td>
</tr>
<tr>
<td>0.05% of reference level for linear scale</td>
<td></td>
</tr>
</tbody>
</table>
Amplitude Specifications (continued)

<table>
<thead>
<tr>
<th>Reference Level</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td></td>
</tr>
<tr>
<td>Log Scale</td>
<td>-146 dBm to +30 dBm</td>
</tr>
<tr>
<td>Linear Scale</td>
<td>-126 dBm to +30 dBm</td>
</tr>
<tr>
<td>Resolution</td>
<td></td>
</tr>
<tr>
<td>Log Scale</td>
<td>±0.01 dB</td>
</tr>
<tr>
<td>Linear Scale</td>
<td>±0.12% of Reference Level</td>
</tr>
<tr>
<td>Accuracy*</td>
<td></td>
</tr>
<tr>
<td>0 dBm to -59.9 dBm</td>
<td>±(0.3 dB + 0.01 x dB from -20 dBm)</td>
</tr>
<tr>
<td>-60 dBm and below</td>
<td>±(0.6 dB + 0.01 x dB from -20 dBm)</td>
</tr>
<tr>
<td>1 kHz to 3 MHz IF BW</td>
<td>±(0.7 dB + 0.01 x dB from -20 dBm)</td>
</tr>
<tr>
<td>30 Hz to 300 Hz IF BW</td>
<td></td>
</tr>
</tbody>
</table>

* Referenced to -20 dBm reference level, 10 dB input attenuation, at a single frequency, in a fixed IF BW with preamplifier off. With preamplifier on, subtract preamplifier gain from all reference levels.

| Linear to Log Switching                              | ±0.25 dB at reference level     |

<table>
<thead>
<tr>
<th>Display Scale Fidelity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Maximum Cumulative</td>
<td></td>
</tr>
<tr>
<td>(0 to -66 dB from Reference Level)</td>
<td></td>
</tr>
<tr>
<td>3 kHz to 3 MHz IF Bandwidth</td>
<td>±(0.3 dB + 0.01 x dB from Reference Level)</td>
</tr>
<tr>
<td>≤ 1 kHz IF Bandwidth</td>
<td>±(0.4 dB + 0.01 x dB from Reference Level)</td>
</tr>
<tr>
<td>Log Incremental Accuracy</td>
<td>±0.4 dB/4 dB</td>
</tr>
<tr>
<td>(0 to -56 dB from Reference Level)</td>
<td></td>
</tr>
<tr>
<td>Linear Accuracy</td>
<td>±3% of Reference Level</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IF Bandwidth Switching Uncertainty</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(at Reference Level, referenced to 3 kHz IF BW)</td>
<td></td>
</tr>
<tr>
<td>3 kHz to 3 MHz</td>
<td>±0.4 dB</td>
</tr>
<tr>
<td>1 kHz</td>
<td>±0.5 dB</td>
</tr>
<tr>
<td>30 Hz to 300 Hz</td>
<td>±0.6 dB</td>
</tr>
<tr>
<td>Flatness</td>
<td>Absolute*</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>(dc coupled, 10 dB input attenuation)</td>
<td></td>
</tr>
<tr>
<td>9 kHz to 2.9 GHz</td>
<td></td>
</tr>
<tr>
<td>Preamplifier On</td>
<td>±3.0 dB</td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td>±1.5 dB</td>
</tr>
<tr>
<td>2.9 GHz to 6.5 GHz (preselector peaked)</td>
<td></td>
</tr>
<tr>
<td>Preamplifier On</td>
<td>±2.5 dB</td>
</tr>
<tr>
<td>Preamplifier Off</td>
<td>±2.0 dB</td>
</tr>
</tbody>
</table>

* Referenced to 300 MHz Calibrator.
† Referenced to midpoint between highest and lowest frequency response deviations.
### Tracking Generator Specifications

All Specifications apply over 0° C to 55° C. The receiver/tracking generator combination will meet its specification after 2 hours of storage at a constant temperature within the operating temperature range, 30 minutes after the combination is turned on, and after CAL ALL, CAL TRK GEN, and TRACKING PEAK have been run.

<table>
<thead>
<tr>
<th>Output Frequency Range</th>
<th>9 kHz to 2.9 GHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warm-up time</td>
<td>30 minutes</td>
</tr>
</tbody>
</table>

#### Output Power Level

<table>
<thead>
<tr>
<th>Range</th>
<th>-1 dBm to -66 dBm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>0.1 dB</td>
</tr>
<tr>
<td>Absolute Accuracy</td>
<td>±0.75 dB</td>
</tr>
</tbody>
</table>

-20 dBm at 300 MHz

25 °C ±10 °C

<table>
<thead>
<tr>
<th>Vernier</th>
<th>9 dB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td></td>
</tr>
</tbody>
</table>

(25 °C ±10 °C)

(−20 dBm at 300 MHz, 16 dB attenuation)

Incremental Cumulative

±0.2 dB/dB

±0.5 dB Total

Output Attenuator Range

0 to 56 dB in 8 dB steps

#### Output Power Sweep

<table>
<thead>
<tr>
<th>Range</th>
<th>(-10 dBm to −1 dBm) – (source attenuator setting)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>0.1 dB</td>
</tr>
</tbody>
</table>

#### Output Flatness

(referenced to 300 MHz, −20 dBm)

<table>
<thead>
<tr>
<th>Frequency &gt; 10 MHz</th>
<th>±2 dB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency ≤10 MHz</td>
<td>±3 dB</td>
</tr>
</tbody>
</table>

#### Tracking Generator Feedthrough

400 kHz to 2.9 GHz

≤ −110 dBm
## Tracking Generator Specifications (continued)

<table>
<thead>
<tr>
<th>Spurious Output (−1 dBm output)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Harmonic Spurs from 300 kHz to 2.9 GHz</td>
<td>≤ −25 dBc</td>
</tr>
<tr>
<td>TG output 300 kHz to 2.9 GHz</td>
<td></td>
</tr>
<tr>
<td>Non-harmonic Spurs from 300 kHz to 2.9 GHz</td>
<td>≤ −27 dBc</td>
</tr>
<tr>
<td>TG output 300 kHz to 2.0 GHz</td>
<td>≤ −23 dBc</td>
</tr>
<tr>
<td>TG output 2.0 GHz to 2.9 GHz</td>
<td></td>
</tr>
<tr>
<td>LO Feedthrough</td>
<td></td>
</tr>
<tr>
<td>LO frequency 3.8214 GHz to 6.8214 GHz</td>
<td>≤ −16 dBm</td>
</tr>
</tbody>
</table>
Frequency Characteristics

These are not specifications. Characteristics provide useful but nonwarranted information about instrument performance.

<table>
<thead>
<tr>
<th>Frequency Reference</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Aging</td>
<td>$5 \times 10^{-9}/\text{day}$. 7 day average after being powered on for seven days</td>
</tr>
<tr>
<td>Warm-up</td>
<td>$1 \times 10^{-8}$ after 30 minutes on</td>
</tr>
<tr>
<td>Initial Achievable Accuracy</td>
<td>$\pm 2.2 \times 10^{-8}$ after being powered on for 24 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stability</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Drift (after warm-up at stabilized temperature)</td>
<td>$&lt; 2 \text{ kHz/minute}$ of sweep time</td>
</tr>
<tr>
<td>Frequency spans $\leq 10 \text{ MHz}$, free run trigger</td>
<td></td>
</tr>
</tbody>
</table>

Drift occurs only while receiver is sweeping frequency. Additional drift occurs when using Line, Video, or External trigger while waiting for the appropriate trigger.
**Amplitude Characteristics**

These are not specifications. Characteristics provide useful but nonwarranted information about instrument performance.

### Input Attenuator Uncertainty

<table>
<thead>
<tr>
<th>Attenuator Setting</th>
<th>± 0.2 dB</th>
<th>0 dB</th>
<th>± 0.4 dB</th>
<th>10 dB</th>
<th>± 0.5 dB</th>
<th>20 dB</th>
<th>± 0.7 dB</th>
<th>30 dB</th>
<th>± 0.8 dB</th>
<th>40 dB</th>
<th>± 1.0 dB</th>
<th>50 dB</th>
<th>± 1.0 dB</th>
<th>60 dB</th>
</tr>
</thead>
</table>

### 10 dB Step Uncertainty

(Attenuator setting 10 to 70 dB)

| ± 0.8 dB |

| ± 0.05 dB |

### Unpeaked Frequency Response (dc coupled)

(without preselector peaking, span ≤ 50 MHz, 10 dB input attenuation)

<table>
<thead>
<tr>
<th>Frequency Range</th>
<th>Absolute*</th>
<th>Relative†</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.75 to 6.5 GHz</td>
<td>± 3 dB</td>
<td>± 1 dB</td>
</tr>
<tr>
<td>Preamp Off</td>
<td>± 2 dB</td>
<td>± 1 dB</td>
</tr>
</tbody>
</table>

* Referenced to 300 MHz CAL OUT.
† Referenced to midpoint between highest and lowest frequency response deviations.

### AC Coupled Insertion Loss†

<table>
<thead>
<tr>
<th>Frequency Range</th>
<th>Insertion Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 kHz to 300 kHz</td>
<td>0.7 dB</td>
</tr>
<tr>
<td>300 kHz to 1 MHz</td>
<td>0.2 dB</td>
</tr>
<tr>
<td>1 MHz to 100 MHz</td>
<td>0.07 dB</td>
</tr>
<tr>
<td>100 MHz to 2.9 GHz</td>
<td>0.05 dB + (0.06 × F)** dB</td>
</tr>
<tr>
<td>2.9 GHz to 6.5 GHz</td>
<td>0.05 dB + (0.13 × F)** dB</td>
</tr>
</tbody>
</table>

† Referenced to dc coupled mode.

** F – Frequency in GHz.

### Marker Readout Resolution

(digitizing resolution)

<table>
<thead>
<tr>
<th>Scale</th>
<th>± 0.31 dB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Scale</td>
<td></td>
</tr>
<tr>
<td>Linear Scale</td>
<td></td>
</tr>
<tr>
<td>Frequency ≤ 1 GHz</td>
<td>± 0.50 % of Reference Level</td>
</tr>
<tr>
<td>Frequency ≥ 1 GHz</td>
<td>± 1.03 % of Reference Level</td>
</tr>
</tbody>
</table>
# HP 85462A Receiver RF Section

## Amplitude Characteristics (continued)

<table>
<thead>
<tr>
<th>FM Demodulation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Level</td>
<td>( &gt;(-60 \text{ dBm} + \text{ attenuator setting}) )</td>
</tr>
<tr>
<td>Signal Level</td>
<td>0 to (-30 \text{ dB below reference level} )</td>
</tr>
<tr>
<td>FM Offset</td>
<td>400 Hz nominal</td>
</tr>
<tr>
<td>FM Deviation (FM GAIN)</td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td>1 kHz/volt nominal</td>
</tr>
<tr>
<td>Range</td>
<td>10 kHz/volt to 1 MHz/volt</td>
</tr>
<tr>
<td>Bandwidth (6 dB)</td>
<td>FM Deviation ( \div 2 )</td>
</tr>
<tr>
<td>FM Linearity</td>
<td>( \leq 1% \text{ of FM deviation} + 200 \text{ Hz} )</td>
</tr>
</tbody>
</table>
# Tracking Generator Characteristics

<table>
<thead>
<tr>
<th>Tracking Drift</th>
<th>1.5 kHz/5 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Useable in a 1 kHz IF Bandwidth after a 5 minute warm-up</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RF Power Off Residuals</th>
<th>&lt; -120 dBm</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 kHz to 2.9 GHz</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dynamic Range</th>
<th>&gt; 109 dB</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Difference between maximum power out and tracking generator feedthrough)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output Attenuator Repeatability</th>
<th>±0.1 dB</th>
</tr>
</thead>
<tbody>
<tr>
<td>300 kHz to 300 MHz</td>
<td></td>
</tr>
<tr>
<td>300 MHz to 2.6 GHz</td>
<td>±0.2 dB</td>
</tr>
<tr>
<td>2.0 GHz to 2.9 GHz</td>
<td>±0.3 dB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output VSWR</th>
<th>&lt; 3:0:1</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 dB attenuation</td>
<td></td>
</tr>
<tr>
<td>8 dB attenuation</td>
<td>&lt; 1.5:1</td>
</tr>
</tbody>
</table>
# HP 85462A Receiver RF Section

## Physical Characteristics

### Front Panel Inputs and Outputs

<table>
<thead>
<tr>
<th>Input</th>
<th>Type N female, 50 Ω nominal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calibrator Output</td>
<td>Type N female, 50 Ω nominal</td>
</tr>
<tr>
<td>Tracking Generator Output</td>
<td>Type N female, 50 Ω nominal</td>
</tr>
<tr>
<td>Probe Power*</td>
<td></td>
</tr>
<tr>
<td>Voltage / Current</td>
<td>+15 Vdc ±7% at 150 mA max.</td>
</tr>
<tr>
<td></td>
<td>−12.6 Vdc ±10% at 150 mA max.</td>
</tr>
<tr>
<td>Earphone Jack</td>
<td>1/8 inch monaural jack</td>
</tr>
<tr>
<td>External ALC</td>
<td>Negative Detector</td>
</tr>
</tbody>
</table>

*Total current drawn from the +15 Vdc on the PROBE POWER and the AUX INTERFACE connectors cannot exceed 150 mA. Total current draw from the −12.6 Vdc on the PROBE POWER and the −15 Vdc on the AUX INTERFACE connectors cannot exceed 150 mA.

### Rear Panel Inputs and Outputs

<table>
<thead>
<tr>
<th>10 MHz REF OUTPUT</th>
<th>BNC female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector</td>
<td>50 Ω</td>
</tr>
<tr>
<td>Output Amplitude</td>
<td>&gt;0 dBm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EXT REF IN</th>
<th>BNC female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector</td>
<td></td>
</tr>
<tr>
<td>Input Amplitude Range</td>
<td>−2 dBm to +10 dBm</td>
</tr>
<tr>
<td>Frequency</td>
<td>10 MHz</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AUX IF OUT</th>
<th>BNC female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>21.4 MHz</td>
</tr>
<tr>
<td>Amplitude Range</td>
<td>−10 dBm to −60 dBm</td>
</tr>
<tr>
<td>Impedance</td>
<td>50 Ω</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AUX VIDEO OUT</th>
<th>BNC female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector</td>
<td></td>
</tr>
<tr>
<td>Amplitude Range</td>
<td>0 to 1 V (uncorrected)</td>
</tr>
</tbody>
</table>
Physical Characteristics (continued)

Rear Panel Inputs and Outputs (continued)

<table>
<thead>
<tr>
<th>Function</th>
<th>Current</th>
<th>Logic Mode</th>
<th>Serial Bit Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control A</td>
<td>150 mA</td>
<td>TTL Output Hi/Lo</td>
<td>TTL Output Hi/Lo</td>
</tr>
<tr>
<td>Control B</td>
<td>150 mA</td>
<td>TTL Output Hi/Lo</td>
<td>TTL Output Hi/Lo</td>
</tr>
<tr>
<td>Control C</td>
<td>150 mA</td>
<td>TTL Output Hi/Lo</td>
<td>TTL Output Hi/Lo</td>
</tr>
<tr>
<td>Control D</td>
<td>150 mA</td>
<td>TTL Output Hi/Lo</td>
<td>TTL Output Hi/Lo</td>
</tr>
<tr>
<td>Control I</td>
<td>150 mA</td>
<td>TTL Input Hi/Lo</td>
<td>TTL Input Hi/Lo</td>
</tr>
</tbody>
</table>

REMOTE INTERFACE (85462A)

HP-IB (RS-232 optional)

MOONITOR OUTPUT

R, G, B (composite video on G)
25 kHz horizontal rate
60 Hz vertical rate

AUX INTERFACE

Connector Type: 9-pin subminiature D

Connector Pinout:

<table>
<thead>
<tr>
<th>Pin #</th>
<th>Function</th>
<th>Current</th>
<th>Logic Mode</th>
<th>Serial Bit Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Control A</td>
<td>---</td>
<td>TTL Output Hi/Lo</td>
<td>TTL Output Hi/Lo</td>
</tr>
<tr>
<td>2</td>
<td>Control B</td>
<td>---</td>
<td>TTL Output Hi/Lo</td>
<td>TTL Output Hi/Lo</td>
</tr>
<tr>
<td>3</td>
<td>Control C</td>
<td>---</td>
<td>TTL Output Hi/Lo</td>
<td>TTL Output Hi/Lo</td>
</tr>
<tr>
<td>4</td>
<td>Control D</td>
<td>---</td>
<td>TTL Output Hi/Lo</td>
<td>TTL Output Hi/Lo</td>
</tr>
<tr>
<td>5</td>
<td>Control I</td>
<td>---</td>
<td>TTL Input Hi/Lo</td>
<td>TTL Input Hi/Lo</td>
</tr>
<tr>
<td>6</td>
<td>Gnd</td>
<td>---</td>
<td>Gnd</td>
<td>Gnd</td>
</tr>
<tr>
<td>7*</td>
<td>-15 Vdc ±7%</td>
<td>150 mA</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>8*</td>
<td>+5 Vdc ±5%</td>
<td>150 mA</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>9*</td>
<td>+15 Vdc ±5%</td>
<td>150 mA</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

* Total current drawn from the +15 Vdc on the PROBE POWER and the AUX INTERFACE cannot exceed 150 mA. Total current drawn from the -12.6 Vdc on the PROBE POWER and the -15 Vdc on the AUX INTERFACE cannot exceed 150 mA.

WEIGHT

Receiver RF Section 62.5 lb.
Figure 2-2. HP 85462A Receiver RF Section Dimensions
Regulatory Information

The information on the following page applies to the HP 8546A EMI receiver and HP 85462A receiver RF section.
DECLARATION OF CONFORMITY
according to ISO/IEC Guide 22 and EN 45014

Manufacturer's Name: Hewlett-Packard Co.

Manufacturer's Address: Santa Rosa Systems Division
1400 Fountaingrove Parkway
Santa Rosa, CA 95403-1799
USA

declares that the product

Product Name: EMI Receiver

Model Number: HP 8542E, HP 85420E, HP 85422E,
HP 8546A, HP 85460A, HP 85462A

Product Options: This declaration covers all options of the
above product.

conforms to the following Product specifications:

CAN/CSA-C22.2 No. 1010.1-92

EMC: CISPR 11:1990/EN 55011:1991 Group 1, Class B
IEC 801-2:1984/EN 50082-1:1992 4 kV CD, 8 kV AD
IEC 801-3:1984/EN 50082-1:1992 3 V/m, 27-500 MHz
IEC 801-4:1988/EN 50082-1:1992 0.5 kV Sig. Lines, 1 kV Power Lines

Supplementary Information:

The product herewith complies with the requirements of the Low Voltage Directive
73/23/EEC and the EMC Directive 89/336/EEC.

Santa Rosa, California, USA 11 Sept 1995

Dixon Browder/Quality Manager
Notice for Germany: Noise Declaration

LpA < 70 dB
am Arbeitsplatz (operator position)
normaler Betrieb (normal position)
nach DIN 45635 T. 19 (per ISO 7779)
Key Menus

This chapter contains the key menu diagrams for the EMI receiver and receiver RF section. Each diagram is arranged alphabetically according to the front-panel key name.

User Defined Keys

The top two softkeys are user-definable keys that remain the same regardless of the key menu selected. The default softkey definitions are:

- **Last Hrd**: Key Menu toggles between the lowest level accessed on the last two hardkey menus selected. ( toggles between the lowest level menu accessed by the last two hardkeys previously selected?)

- **SPAN**: duplicates the SPAN softkey located under the SPAN key.

To define a user-definable softkey, use the **DEFINE USER KEY** on the third page of the SETUP menus. For more information on the user-defined keys, refer to Chapter 12, “User-Definable Softkeys” of the **EMI Receiver Series User’s Guide**.
**AMPLITUDE**

REF_LVL  
ATTENUATION_AUTO_MAN  
SCALE_LOG_LIN  
DUAL_DISPLAY_ON_OFF  
PRESEL_PEAK  
More 1 of 3  

PRESEL_DEFAULT  
MAX_MXR_LVL  
Amplitude  
EXTERNAL_PREFILTER  
INPUT_Z_50_75  
More 2 of 3  

dBm  
dBmV  
dBUV  
Volts  
Watts  
Previous_Menu  

REF_LVL_OFFSET  
COUPLE_AC_DC  
More 3 of 3  

*Available only for an HP 85460A or an HP 85462A.*

**AUTO COUPLE**

AUTO_ALL  
IF_BAND_AUTO_MAN  
AVG_BW_AUTO_MAN  
ATTENUATION_AUTO_MAN  
SWEEP_TIME_AUTO_MAN  
OF_STEP_AUTO_MAN  

*autocoup*
**Auto Range**

**Aux Ctrl**
- Aux Conn Control
  - CNTL A 0 1 *
  - CNTL B 0 1 *
  - CNTL C 0 1 *
  - CNTL D 0 1 *
  - DISPLAY CNTL I *

* Available only for a standalone receiver RF section.

**Average**

**BW**
- 120 Hz EMI BW
- 9 kHz EMI BW
- 200 Hz EMI BW
- IF BW AUTO MAN
- AVG BW AUTO MAN
- More 1 of 2

- AV/IF BW RATIO
- VID AVG ON OFF
- More 2 of 2

**Key Menus** 3-3
When pressed, softkey changes to EXIT SHOW.

† With Option 023, softkey is BAUD RATE.
DISPLAY hardkey—in RECEIVER mode only

The DISPLAY hardkey has different Limit Lines softkey menus between the receiver and signal analysis modes.

Key Menus 3-7
DISPLAY hardkey-in SIGNAL ANALYSIS mode only
The DISPLAY hardkey has different Limit Lines softkey menus between the receiver and signal analysis modes.

**DISPLAY**

- **HOLD**
  - DSP LINE ON OFF
  - Change Title
  - Display Config

- **INTENSITY**
  - Bright
  - Adjust Color
  - Test Patterns
  - Previous Menu

- **HALF FILL**
  - HI VOLT TEST
  - GEO DST TEST
  - LINEARITY
  - FULL WHITE

- **PALETTE BARS**
  - GRAY SCALE
  - COLOR BARS
  - BLACK LEVEL
  - WHITE DOTS

- **VERT LINES**
  - MORE LINES
  - BLACK FILL
  - WHITE FILL

- **GREEN FILL**
  - BLUE FILL
  - GRID

- **RECALL LIMIT**
  - Change Title
  - LMT DSP Y N AUTO
  - LMT TEST ON OFF
  - Edit Limit

- **LIMITS PRO TIME**
  - EDIT UPPER
  - EDIT LOWER
  - EDIT UP/LOW
  - EDIT MD/DLX

- **BACKGROUND**
  - GRATUITY
  - TRACE A
  - TRACE B

- **MARKERS**
  - SOFTKEYS
  - STATUS

- **LIMITS FIX REL**
  - SELECT SEGMENT
  - DELETE SEGMENT
  - EDIT DONE
  - PURGE LIMITS

- **OPAT ON OFF**
  - ANNOTATION ON OFF
  - THRESHOLD ON OFF
  - Change Prefix

- **LIMIT LINES**
  - YZ # Spc Clear

- **SELECT SEGMENT**
  - SELECT FREQ
  - SELECT AMPLITUDE

- **SELECT SEGMENT**
  - SELECT FREQ
  - SELECT XXX AMPL

- **HUE**
  - SATURATION
  - LUMINOSITY
  - HSL RGB
  - UNDO

* Softkey is blanked when accessed from the Change Title softkey.
† Specifies amplitude for UPR LWR or MD DLX limit lines, respectively.
FREQUENCY

CENTER FREQ
START FREQ
STOP FREQ
CF STEP AUTO MAN
Sweep LOG LIN
More 1 of 2

FREQ OFFSET
Band Lock†
LOGF SPD STD FAST
INPT LCK ON OFF†
More 2 of 2

0-2.8 Gz BAND 0†
2.75-6.5 BAND 1†
END LOCK ON OFF†
Previous Menu

* Available only for an EMI receiver.
† Available only for an HP 8546A or an HP 85462A.

INPUT

INPUT 1 9k–50M*
INPUT 2 20M–2.9G *
INPUT 2 1–6.5G†
INPUT 2 BYPASS *
VIEW CAL ON OFF

* Available only for an EMI receiver.
† Available only for an HP 8546A.

LINEARITY CHECK
**MEAS/USER**

User Menus
- FFT MEAS *
- 3 dB POINTS
- 6 dB POINTS

More 1 of 2

No User Menu

* Available only when LIN is selected for the SWEEP LOG LIN softkey.

**PEAK SEARCH**

- 99% PWR BW
- 5 AM
- 3rd ORD MEAS
- DELTA MEAS
- PK-PK MEAS

More 2 of 2

**MKR**

MARKER NORMAL
MARKER Δ
MARKER AMPTO
SELECT 1 2 3 4
MARKER 1 ON OFF

More 1 of 2

MK TRACE AUTO ABC
MK READ F T I P
MARKER ALL OFF
MARKER 2 of 2
MKR ->

MARKER -> CF
MARKER -> REF LVL
MARKER -> CF STEP
MARKER Δ SPAN
MARKER -> MINIMUM
More 1 of 2

MARKER -> START
MARKER -> STOP
MARKER -> PK-PK
Peak Menu
More 2 of 2

PEAK SEARCH

MARKER FUNCTION

MK TRACK ON OFF
MK COUNT ON OFF
MK NOISE ON OFF
MK PAUSE ON OFF
More 1 of 2

CNT RES AUTO MAN
DSP LINE ON OFF
More 2 of 2

MODE

EMI RECEIVER†
SIGNAL ANALYSIS†

SETUP *

* Only occurs when switching from signal analysis mode to receiver mode.
† When EMI RECEIVER mode is active, pressing the MODE hardkey twice displays the softkey PRESET RECEIVER.
‡ When SIGNAL ANALYSIS mode is active, pressing the MODE hardkey twice displays the softkey PRESET SPECTRUM.
* Changes to MEM LOCKED when SAV LOCK is on.
SETUP hardkey—in RECEIVER mode only

The SETUP hardkey has different Limit Lines softkey menus between the receiver and signal analysis modes.

---

**SETUP**

- **RECALL SETUP**
  9 kHz — 150 kHz
  150 kHz — 30 MHz
  30 MHz — 300 MHz
  300 MHz — 1 GHz

- **RECALL LIMITS**
  Previous Menu

- **DELETE LIMIT**
  Previous Menu

- **LIMIT # ON OFF**
  Previous Menu

- **MARGIN # ON OFF**
  Previous Menu

- **LMT TEST ON OFF**
  Previous Menu

- **DELETE LIMIT**
  Previous Menu

- **SELECT SEGMENT**
  Previous Menu

- **SELECT FREQUENCY**
  Previous Menu

- **SELECT AMPLITUDE**
  Previous Menu

- **SELECT TYPE**
  Previous Menu

- **EDIT LIMIT**
  Previous Menu

- **ANTENNA ON OFF**
  Previous Menu

- **RECALL ANTENNA**
  Previous Menu

- **EDIT ANTENNA**
  Previous Menu

- **SAVE ANTENNA**
  Previous Menu

- **CABLE ON OFF**
  Previous Menu

- **RECALL CABLE**
  Previous Menu

- **EDIT CABLE**
  Previous Menu

- **SAVE CABLE**
  Previous Menu

- **OTHER ON OFF**
  Previous Menu

- **RECALL OTHER**
  Previous Menu

- **EDIT OTHER**
  Previous Menu

- **SAVE OTHER**
  Previous Menu

- **LOAD FILE**
  Previous Menu

- **DELETE FILE**
  Previous Menu

- **SELECT PREFIX**
  Previous Menu

- **EXIT CATALOG**
  Previous Menu

- **CURRENT ON OFF**
  Previous Menu

- **RECANTENNA ON OFF**
  Previous Menu

---

**DEFINE USER KEY**

- POWER ON IP LAST
- PREAMP ON OFF
- AUTORANG ON OFF
- OLD ON OFF

- Last IP Key Menu:
  Previous Menu

---

**OTHER**

- **ABCD/EF**
- **GHIJKL**
- **MNOPQR**
- **STUVWX**

- **Y/Z/SPEC CLEAR**
  Previous Menu

---

**INPUT**

- **INPUT 1** 9 kHz — 50 MHz
- **INPUT 2** 20 MHz — 2.9 GHz
- **INPUT 3** 2.1 MHz
- **INPUT 4** 6.5 kHz
- **INPUT 5** 1.6 kHz
- **INPUT 6** 650 Hz

- **INPUT 7** 65 Hz
- **INPUT 8** 6.5 Hz

---

**NO CONVERSION**

- **DETECTOR PK OP AV**
- **PK Dwell Time**
- **Dwell Time**
- **AV Dwell Time**

---

*Available only for an HP 8546A or an HP 85463A.
† Changes to the last hardkey menu accessed prior to pushing the SETUP hardkey.
‡ Available only when EDIT ANTENNA is selected.
SETUP hardkey—in SIGNAL ANALYSIS mode only

The SETUP hardkey has different Limit Lines softkey menus between the receiver and signal analysis modes.

- **LOAD FILE**
- **DELETE FILE**
- **SELECT PREFIX**
- **EXIT CATALOG**

**RECALL SETUP**
- 9 kHz - 150 kHz
- 150 kHz - 30 MHz
- 30 MHz - 300 MHz
- 200 MHz - 1 GHz

**RECALL LIMIT**
- **SAVE LIMIT**
- **CHANGE LIMIT**
- **LIMIT DISP Y N AUTO**
- **LIMIT TEST ON OFF**

**CORRECT ON OFF**
- **RECALL FACTORS**
- **OTHER FACTORS**

**NEXT PAGE**
- **PREVIOUS MENU**

**CORRECT FACTORS**
- **INST SETUP**
- **SAVE SETUP**

**LIMIT LINES**
- **CORRECT FACTORS**
- **INST SETUP**
- **SAVE SETUP**

**DEFINE USER KEY**
- **POWER ON LAST**
- **AUTODECO ON OFF**
- **CHANGE TITLE**
- **LAST FREQ KEY MENU**

**LOAD**
- **DELETE**
- **SELECT PREFIX**
- **EXIT CATALOG**

**LIMITS FREQ TIME**
- **EDIT UPPER**
- **EDIT LOWER**
- **EDIT UP/LOW**
- **EDIT MD/DEL**

**SELECT SEGMENT**
- **SELECT FREQ**
- **SELECT AMPLITUDE**
- **SELECT TYPE**
- **EDIT UP LIMIT**

**SELECT SEGMENT**
- **SELECT FREQ**
- **SELECT XXX AMPLITUDE**
- **SELECT XXX AMPLITUDE**
- **EDIT UP LIMIT**

**LOAD FILE**
- **DELETE FILE**
- **SELECT PREFIX**
- **EXIT CATALOG**

**CABLE ON OFF**
- **RECALL CABLE**
- **EDIT CABLE**
- **SAVE CABLE**

**OTHER ON OFF**
- **RECALL OTHER**
- **EDIT OTHER**
- **SAVE OTHER**

**DEFINE POINT**
- **DELETE FACTORS**
- **FREQ SEL LOG LIN**
- **Antenna Units**

**DETECTORS**
- **Gauss**
- **uv/m**
- **uk/m**
- **NO CONV/PSN**

**INPUT 1**
- **INPUT 2**
- **INPUT 3**
- **INPUT 4**

**STEP LOG LIN**
- **FREQ STEP**
- **FAST STEP ON OFF**

**PREVIOUS MENU**

* Available only for an EMI receiver.
† Changes to the last hardkey menu accessed prior to pushing the SETUP hardkey.
‡ Available only when EDIT ANTENNA is selected.
§ Available only for an HP 8546A.

---

**Key Menus** 3:17
**SINGLE**

**SPAN**

SPAN
SPAN ZOOM
FULL SPAN
ZERO SPAN
LAST SPAN

**SWEEP**

SWP TIME AUTO MAN
SWEEP CONT SCL

SWEEP LOG LIN
LOOP SPD STD FAST *

*Available only when LOG is selected for the SWEEP LOG LIN softkey.*
TEST hardkey-in RECEIVER mode only

TEST

TUNE SLO FAST
MARKER TUNE SPN
FRO SCAN ON OFF
MEASURE AT MKR †
ADD TO LIST §
More 1 of 3

SELECT FRM LIST
Sort Signals
Delete Signals
Re-measure
Signal Marking
Previous Menu

SORT BY FREQ
SORT BY PK AMP
SORT BY OP AMP
SORT BY AVG AMP
SORT BY DLTA Lim II
Previous Menu

SELECT FRM LIST
REMEAS SIGNAL
REMEAS ALL SIGS
REMEAS MARKED
DETECTOR PK OP AV
Previous Menu

MARK SIGNAL
CLEAR MARK
MARK ALL SIGNS
CLR ALL MARKS
Selectv Mark
Previous Menu

MARK TO END
MARK ALL DUPLICAT
MARK LWR DUPLICAT
COMPLIMENT MARKS
DELETE MARKED
Previous Menu

LOAD FILE
DELETE FILE
SELECT PREFIX
EXIT CATALOG
Previous Menu

SAVE LIST
RECALL LIST
SAVE LIN GRAPH
SAVE LOG GRAPH
Previous Menu

EXIT GRAPH

STOP

RESTART
MARKER
ADD TO LIST
FREQ STEP
MEAS SNG CONT
EXIT MEASURE

ABORT

* Available when SIG LIST is ON.
† Each time this softkey is pressed, it changes sequentially as follows:
   VIEW PK ∆ UM 1
   VIEW PK ∆ UM 2
   VIEW OP ∆ UM 1
   VIEW OP ∆ UM 2
   VIEW AVG ∆ UM 1
   VIEW AVG ∆ UM 2
   VIEW ∆ OFF

‡ In signal analysis mode, softkey is VIEW PK OP AV.
§ In signal analysis mode, softkey is OP/AVG 10X OFF.
II Only appears when VIEW ∆ OFF is pressed.
(with Trace A selected)

TRACE

CLEAR WRITE A
MAX HOLD A *
VIEW A
BLANK A
Trace A B C
More 1 of 3

VID AXI ON OFF
DETECTOR SMP PK
NORMALIZE ON OFF
NORMALIZE POSITION
A <-> B
More 2 of 3

A-B -> A ON OFF
B-DL -> B
B <-> C
A -> C
B -> C
More 3 of 3

* With Trace C selected, softkey changes
to MIN HOLD C.

TRACK GEN

SCR PWR ON OFF
TRACKING PEAK
MAN TRK ADJUST
PWR SWP ON OFF *
SRC ATN MAN AUTO
More 1 of 2

SCR PWR STP SIZE
SCR PWR OFFSET
ALC INT EXT
SWP CPLG SR RECV
More 2 of 2

* Available only when LIN is selected for the
SWEEP LOG LIN softkey.
CTRL
ZONE CENTER
ZONE SPAN
ZONE PK RIGHT
ZONE PK LEFT
PEAK EXCURSION
WINDOWS OFF

NEXT
(If windows are on, activates alternate windows.)

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

This chapter describes functions and controls of the instrument. The front-panel keys and softkey functions are listed alphabetically followed by a complete and detailed description.

Brief descriptions for service functions have also been included in this chapter. However, for more detailed descriptions and information about the use of each function, refer to the respective service guide for your instrument. A listing of all service calibration and service diagnostic functions has been provided in the following “Service Functions” section.

All softkeys and their relationship to the front-panel keys are shown in Chapter 3.
Service Functions

Two types of functions are available for service use only:

- Service calibration functions.
- Service diagnostic functions.

These service functions are designed for service use only. However, brief descriptions for each function are provided in this chapter.

Service Calibration Functions

Service Cal accesses the following service calibration softkeys:

- CAL MXR
- CAL TIMEBASE
- EDIT FLATNESS
- EDIT PA FLATNESS
- EXECUTE TITLE
- EXIT
- Flatness Data
- IDNUM
- INIT FLT
- SET ATTN ERROR
- STOR PWR ON UNITS
- STORE FLATNESS

Service Diagnostic Functions

Service Diag accesses the following diagnostic softkeys:

- LOCK ON OFF
- +10V REF DETECTOR
- -10V REF DETECTOR
- 2v REF DETECTOR
- COARSE TUNE DAC
- DACS
- DISPLAY CAL DATA
- Display Sys Data
- DROOP
- FINE TUNE DAC
- FM COIL DRIVE
- FM GAIN
- FM OFFSET
- FM SPAN
- FREQ DIAG
- FREQ DISC NORM OFF
- GND REF DETECTOR
- IF GAINS
- MAIN COIL DR
- MAIN SPAN
- MIXER BIAS DAC
<table>
<thead>
<tr>
<th>Setting</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRESEL DAC</td>
<td></td>
</tr>
<tr>
<td>QP DET ON OFF</td>
<td></td>
</tr>
<tr>
<td>QP GAIN ON OFF</td>
<td></td>
</tr>
<tr>
<td>QPD OFFSET</td>
<td></td>
</tr>
<tr>
<td>QPD RST ON OFF</td>
<td></td>
</tr>
<tr>
<td>STP GAIN ZERO</td>
<td></td>
</tr>
<tr>
<td>SWEEP RAMP</td>
<td></td>
</tr>
<tr>
<td>SWEEP TIME DAC</td>
<td></td>
</tr>
<tr>
<td>X FINE TUNE DAC</td>
<td></td>
</tr>
<tr>
<td>YTF DRIVER</td>
<td></td>
</tr>
<tr>
<td>YTF SPAN</td>
<td></td>
</tr>
<tr>
<td>YTF TUNE COARSE</td>
<td></td>
</tr>
<tr>
<td>YTF TUNE FINE</td>
<td></td>
</tr>
</tbody>
</table>
Key Functions

% AM
Softkey that determines the percent of amplitude modulation of the largest displayed signal and its two sidebands. The sidebands are assumed to be entirely from amplitude modulation. If there are differences in the sideband amplitude, the larger value is used. The measurement runs continuously, reexecuting at the end of each sweep.

All three signal must be displayed. The frequency spacing of the sideband signals must be the same within the span accuracy of the measurement. All of the signals must be greater than the peak excursion above the threshold. The amplitude scale may be either linear or logarithmic.

Key Path

Related Programming Command
none

ϕ LOCK
ON OFF
Softkey that turns off phase locking on the instrument. The counter is turned off so frequency correction is no longer done at the start of each sweep. Turning the phase locking off increases measurement speed, but it decreases frequency accuracy. This is a service diagnostic function and is for service use.

Key Path

Related Programming Command
none
Softkey that selects $\mu$A/m as the transducer conversion units for the antenna amplitude-correction factors.

**Key Path**

```
  More  Correctn  Antenna  EDIT  More
 SETUp   1 of 3   Factors   Factors   ANTENNA   1 of 2
 Antenna
 Units $\mu$A/m
```

**Related Programming Command**

XUNITS

---

Softkey that selects $\mu$V/m as the transducer conversion units for the antenna amplitude-correction factors.

**Key Path**

```
  More  Correctn  Antenna  EDIT  More
 SETUp   1 of 3   Factors   Factors   ANTENNA   1 of 2
 Antenna
 Units $\mu$V/m
```

**Related Programming Command**

XUNITS

---

For an HP 8546A/HP 85462A only.

Softkey that locks onto harmonic Band 0. Once 0–2.9 Gz BAND 0 has been pressed only frequencies and spans that fall within this frequency band may be entered. The span is reduced automatically to accommodate a center frequency specified near the end of the band range.

If a start frequency is entered that is outside of the current band boundaries, it will be set to the nearest band edge instead. If a start frequency that is greater than the current stop frequency is entered, the (possibly modified) start frequency is used for both the start and the stop frequency; therefore, the span will be set to zero. If the start and stop frequencies specify too large a span, they will be modified.

If a stop frequency is entered that is outside of the current band boundaries, it will be set to the nearest band edge instead. If a stop frequency that is less than the current start frequency is entered, the (possibly modified) stop frequency will be used for both the start and stop frequency; therefore, the span will be set to zero.

The span will be modified if necessary to get the center frequency specified without crossing the band edges. The span will be limited as necessary to keep the start and stop frequencies within the band range.
edges without changing the center frequency. The maximum span allowed is 2.904 GHz.

**Note**

For this softkey function to work properly, the corresponding [INPUT] must first be selected.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>Band</th>
<th>0-2.9 Gz</th>
</tr>
</thead>
<tbody>
<tr>
<td>FREQUENCY</td>
<td>1 of 2</td>
<td>Lock</td>
</tr>
</tbody>
</table>

**Related Programming Command**

INLOCK

---

**2V REF DETECTOR**

Softkey that displays the output of the 2 V reference produced on the A16 processor/video assembly as a horizontal line at the top graticule. This is a service diagnostic function and is for service use only.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
<th>2v REF</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALIBRATE</td>
<td>1 of 3</td>
<td>2 of 3</td>
<td>Diag</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

**2.75-6.5 BAND 1**

For an HP 8546A/HP 85462A only.

Softkey that locks onto harmonic Band 1. Once 2.75-6.5 BAND 1 has been pressed only frequencies and spans that fall within this frequency band may be entered. The span is reduced automatically to accommodate a center frequency specified near the end of the band range.

If a start frequency is entered that is outside of the current band boundaries, it will be set to the nearest band edge instead. If a start frequency that is greater than the current stop frequency is entered, the (possibly modified) start frequency is used for both the start and the stop frequency; therefore, the span will be set to zero. If the start and stop frequencies specify too large a span, they will be modified.

If a stop frequency is entered that is outside of the current band boundaries, it will be set to the nearest band edge instead. If a stop frequency that is less than the current start frequency is entered, the (possibly modified) stop frequency will be used for both the start and stop frequency; therefore, the span will be set to zero.

The span will be modified if necessary to get the center frequency specified without crossing the band edges. The span will be limited as necessary to keep the start and stop frequencies within the band
edges without changing the center frequency. The maximum span allowed is 3.6 GHz.

**Note**

For this softkey function to work properly, the corresponding [INPUT] must first be selected.

### Key Path

**FREQUENCY**

More | Band | 2.75-6.5

1 of 2 | Lock | BAND 1

### Related Programming Command

**HINLOCK**

---

**3 dB POINTS**

Softkey that initiates an automatic 3 dB bandwidth measurement on the highest peak displayed on screen.

### Key Path

**MEAS/USER**

3 dB | POINTS

### Related Programming Command

none

---

**3rd ORD MEAS**

Softkey that 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.

### Key Path

**MEAS/USER**

More | 3rd ORD

1 of 2 | MEAS

### Related Programming Command

none
6 dB
POINTS

Softkey that initiates an automatic 6 dB bandwidth measurement on the highest peak displayed on the screen.

**Key Path**

6 dB
MEAS/USER POINTS

**Related Programming Command**

none

---

9 kHz – 150 kHz

Softkey that presets the instrument to the predefined settings:

- **Start frequency:** 9 kHz
- **Stop frequency:** 150 kHz
- **I.F. bandwidth:** 200 Hz
- **Reference level:** 70 dBµV
- **Attenuation:** 10 dB

**Key Path**

9 kHz –
SETUP 150 kHz

**Related Programming Command**

none

---

9 kHz
EMI BW

Softkey that allows a 6 dB intermediate frequency bandwidth of 9 kHz. This bandwidth is useful when performing electromagnetic interference (EMI) measurements.

**Key Path**

9 kHz
BW EMI BW

**Related Programming Command**

none
Softkey that displays the output of the +10 V reference from the analog interface circuit board as a horizontal line at the top of the graticule. This is a service diagnostic function and is for service use only.

**Key Path**
```
CALIBRATE 1 of 3  2 of 3 Diag  More 1 ... More 3
```

**Related Programming Command**
none

---

Softkey that displays the output of the -10 V reference from the analog circuit board as a horizontal line at the bottom graticule. This is a service diagnostic function and is for service use only.

**Key Path**
```
CALIBRATE 1 of 3  2 of 3 Diag  More 1 ... More 3
```

**Related Programming Command**
none

---

Softkey that presets the receiver to the predefined settings:

- **Start frequency:** 30 MHz
- **Stop frequency:** 300 MHz
- **I.F. bandwidth:** 120 kHz
- **Reference level:** 80 dBµV
- **Attenuation:** 10 dB

**Key Path**
```
SETUP 30 MHz - 300 MHz
```
**Related Programming Command**

none

---

**Softkey that initiates an automatic measurement of the 99% power bandwidth of the largest signal displayed on the screen.**

**Key Path**

(\texttt{MEAS/USER}) 1 of 2 99\% PWR

---

**Related Programming Command**

none

---

**Softkey that allows a 6 dB intermediate frequency bandwidth of 120 kHz. This bandwidth is useful when performing electromagnetic interference (EMI) measurements.**

**Key Path**

120 kHz

---

**Related Programming Command**

none

---

**Softkey that presets the instrument to the predefined settings:**

- Start frequency: 150 kHz
- Stop frequency: 30 MHz
- I.F. bandwidth: 9 kHz
- Reference level: 75 dB\(\mu\)V
- Attenuation: 10 dB

**Key Path**

150 kHz - 30 MHz

**Related Programming Command**

none
**200 Hz EMI BW**

Softkey that allows a 6 dB intermediate frequency bandwidth of 200 Hz. This bandwidth is useful when performing electromagnetic interference (EMI) measurements.

**Key Path**

```
200 Hz
(BW) EMI BW
```

**Related Programming Command**

none

---

**200 MHz - 1 GHz**

Softkey that presets the instrument to the predefined settings:

- **Start frequency**: 200 MHz
- **Stop frequency**: 1 GHz
- **I.F. bandwidth**: 120 kHz
- **Reference level**: 80 dBμV
- **Attenuation**: 10 dB

**Key Path**

```
200 MHz -
(SETUP) 1 GHz
```

**Related Programming Command**

none

---

**A<-->B**

Softkey that exchanges the contents of the trace A register with the trace B register and puts trace A in view mode.

**Key Path**

```
More
(TRACE) 1 of 3 A<-->B
```

**Related Programming Command**

AXB
A–B \rightarrow A

Softkey that when ON is underlined, subtracts the data in trace B from the measured data in trace A. A minus sign (−) appears between the trace A status and the trace B status in the screen annotation while the function is active.

To deactivate this function, press A–B \rightarrow A ON OFF so that OFF is underlined. The A–B \rightarrow A and B–DL \rightarrow B functions are math functions. Unlike operations on dBm units, math functions operate on measurement units. Measurement units are used to format trace data for data within the graticule limits. The displayed amplitude of each element falls on one of 8000 vertical points with the value of 8000 being equal to the reference level. For log scale data, each point is equal to 0.01 dB. The peak of a signal equal to −10 dBm, or one division below the reference level, is equal to 7000 measurement units (8000 − 1000 = 7000). In linear mode, each point has a resolution of [reference level in volts/8000].

For example, if trace A contains amplitude values of −10 dBm and trace B contains amplitude values of −40 dBm, the result of the A–B \rightarrow A function would be −10.004 dBm if dBm units were used. Since measurement units are used for the A–B \rightarrow A function, the result of A–B \rightarrow A is −50 dBm (−10 dBm = 7000 measurement units, −40 dBm = 4000 measurement units; the result is 3000 measurement units, which is equal to −50 dBm).

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>A–B \rightarrow A</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRACE 1 of 3</td>
<td>2 of 3</td>
<td>ON OFF</td>
</tr>
</tbody>
</table>

**Related Programming Command**

AMB

---

A \rightarrow C

Softkey that copies trace A into trace C.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRACE 1 of 3</td>
<td>2 of 3</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none
**ABCDEF** Softkey that accesses the softkey menu for selecting screen title characters A through F.

**Key Access**

(CONFIG, (DISPLAY), (RECALL), (SAVE), or (SETUP))

**Related Programming Command**

none

---

**ABORT** Softkey that exits the Auto Measure function.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>AUTO-</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEST</td>
<td>1 of 3</td>
<td>2 of 3</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

**ACTIVE** Softkey that displays the current settings of the display subsystem’s color editor.

**Key Path**

<table>
<thead>
<tr>
<th>Display</th>
<th>Adjust</th>
<th>Edit</th>
<th>More</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>Config</td>
<td>Color</td>
<td>Colors 1 of 3</td>
</tr>
</tbody>
</table>

**Related Programming Command**

SETGC

---

**ADD TO LIST** Softkey that 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.

**Key Path**

<table>
<thead>
<tr>
<th>ADD TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEST</td>
</tr>
<tr>
<td>LIST</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>MEAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEST</td>
<td>1 of 3</td>
<td>2 of 3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>MEAS</th>
<th>FREQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEST</td>
<td>1 of 3</td>
<td>2 of 3</td>
<td>STEPPED</td>
</tr>
</tbody>
</table>
Related Programming Command
SIGADD

Softkey that accesses a menu used to adjust the color editor display subsystem.

Key Path
Display | Adjust | Config | Color

Related Programming Command
SETC

Softkey that activates the advisory portion of the display screen for color editing.

Key Path
Display | Adjust | Edit | More | Config | Color | Colors | 1 of 3 | ADVISORY

Related Programming Command
SETC

Softkey that activates internal (INT) leveling or external (EXT) leveling.

Key Path
More | ALC | TRACK GEN | 1 of 2 | INT | EXT

Related Programming Command
SRCALC
SOFTKEY that 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.

**Key Path**

**Receiver mode**

**DISPLAY** 1 of 2 Lines ... LIMIT Type Axis

**Signal analysis mode**

**DISPLAY** 1 of 2 Lines Limit ... Type Axis

**SETUP** 1 of 3 Lines Limit ... Type Axis

* Either Limit 1 or Limit 2 can be used to complete the key path.

† Any of the following can be used to complete the key path:

EDIT UPPER, EDIT LOWER, EDIT UP/LOW, or EDIT MID/DLT.

**Related Programming Command**

LIMIAMPSCL

**Related Programming Command**

none
Softkey that accesses a menu to select the desired amplitude units. Amplitude units can be selected by pressing, dBm, dBmV, dBuV, Volts, or Watts.

**Key Path**

![AMPLITUDE] More | Amptd
1 of 3 Units

**Related Programming Command**

AUNITS

---

Softkey that activates the annotation portion of the display screen for color editing.

**Key Path**

![DISPLAY] Display | Adjust | Edit | More
Config | Color | Colors | 1 of 3 ANNOTATN

**Related Programming Command**

SETC

---

As accessed from **DISPLAY**.

Softkey that turns the screen annotation on or off. However, softkey annotation will remain on the screen. The screen annotation may not be required for prints or plots, or during remote operation. Refer to the **HOLD** softkey description regarding softkey annotation.

As accessed from **OUTPUT**.

Softkey that turns on or off the generation of a tabular listing of the screen annotation. The listing will be sent to the printer when **OUTPUT REPORT** is executed.

**Key Path**

![DISPLAY] More | ANNOTATN
1 of 2 ON OFF
Define | ANNOTATN
![OUTPUT] Report | ON OFF
Related Programming Command
ANNOT

ANTENNA -> DISK
Softkey that saves the current antenna amplitude-correction factors to a floppy disk. To save antenna data press, ANTENNA -> DISK. REGISTER # and PREFIX= are displayed on the screen. Use the data keys to enter the desired register number then press ENTER. The message Saving to :FILENAME is displayed. The antenna data has now been saved to a disk.

Key Path
Save                   ANTENNA
(SAVE) Disk            -> DISK

Related Programming Command
none

Antenna Factors
Softkey that 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.

Key Path
More                  Correctn Antenna
(SETUP) 1 of 3 Factors Factors

Related Programming Command
AMPCOR

ANTENNA ON OFF
Softkey that turns on or off antenna amplitude-correction factors.

Key Path
More                  Correctn Antenna     ANTENNA
(SETUP) 4 of 3 Factors Factors     ON OFF

Related Programming Command
AMPCOR
**Antenna Units**

Softkey that 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.

**Key Path**

```
More  Correctn Antenna  EDIT  More
|SETUP| 1 of 3 | Factors | Factors | ANTENNA | 1 of 2 |
```

**Related Programming Command**

XUNITS

---

**APND CAT ITEM**

Softkey that starts the DLP editor function and allows the highlighted item from the catalog of instrument memory to be added to the end of the item that is currently in the DLP editor memory of the instrument. If the item to be added will not fit in the available memory space, it will not be appended.

**Key Path**

```
Recall  Catalog  APND
|RECALL| Internal | Internal | ... | Editor | CAT ITEM |
```

```
Save  Catalog  APND
|SAVE| Internal | Internal | ... | Editor | CAT ITEM |
```

" Any of the following can be used to complete the key path:

- `CATALOG ALL`
- `CATALOG PREFIX`
- `CATALOG VARIABLES`

**Related Programming Command**

none

---

**ATTEN AUTO MAN**

Softkey that 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.

**Key Path**

```
AMPLITUDE
|ATTEN| AUTO | MAN |
```
CAUTION

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

- To protect the mixer from possible damage, 0 dB RF attenuation (no input power reduction to the mixer) can be selected only from the data keys.

Related Programming Command

AT

AUTO ALL

Softkey that couples the following functions:
- intermediate frequency bandwidth
- average video bandwidth
- attenuation
- sweep time
- center-frequency step
- average video bandwidth
- average-video-bandwidth to intermediate-frequency-bandwidth ratio.

Key Path

AUTO

Related Programming Command

AUTO

AUTO CAL ON OFF

Softkey that turns the automatic calibration feature of the EMI receiver on or off.

Key Path

Cal At AUTO CAL

CALIBRATE Time ON OFF
Related Programming Command

AUTO CAL

AUTO COUPLE

Hardkey that 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.) The functions that can be auto-coupled are listed below:

- Intermediate frequency bandwidth couples to span.
- Average video bandwidth couples to intermediate frequency bandwidth when the instrument has a average-video-bandwidth to intermediate-frequency-bandwidth ratio of 0.3.
- Sweep time couples to span, intermediate frequency bandwidth, and average video bandwidth.
- RF attenuation couples to reference level.
- Center frequency step size couples to 10% of span.

During normal operation, the sweep time, intermediate frequency bandwidth, and average video bandwidth are coupled to yield optimum performance. If any of these functions becomes uncoupled (that is, is manually set), a “#” will appear next to the screen annotation representing the function on the screen.

If one or more function(s) is manually set so that the amplitude or frequency becomes uncalibrated, MEAS UNCAL appears on the top right-side of the graticule.

Recouple a single function by pressing the function label (to activate the function), and pressing the function again so that AUTO is underlined.

Pressing AUTO COUPLE, AUTO ALL couples all coupled functions listed.

Related Programming Command

none

AUTO-MEASURE

Softkey that finds all signals on the display and makes an EMI 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 selected using DETECTOR PK QP AV. Measurement time is determined by selecting AV DWELL TIME, PK DWELL TIME, or QP DWELL TIME. After each signal is measured it is added to the signal list. If a limit margin is on, only signals above the margin are measured and added to the list.
Key Path

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>AUTO-</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEST</td>
<td>1 of 3</td>
<td>2 of 3</td>
</tr>
</tbody>
</table>

Related Programming Command

MEASALLSIGS

AUTO RANGE

Hardkey that 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.

Auto range requires overload detection capability. The RF filter section must be present (and not in a bypass state) for RF overload detection. IF overload detection does not require the RF filter section.

When on, auto range automatically enables overload detection. When disabled, auto range does not disable overload detection.

Related Programming Command

ARNG

AUTOEXEC

ON OFF

Softkey that enables and disables the automatic loading and execution of the file named "AUTOEXEC.DLP" from a DOS disk ("dAUTOEXEC" from a LIF disk). When enabled, the instrument, upon a power-up sequence, will search the disk for an "AUTOEXEC" file and if found will load and execute it.

Key Path

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>AUTOEXEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3</td>
<td>2 of 3</td>
</tr>
</tbody>
</table>

Related Programming Command

none

AUTO RANG

ON OFF

Softkey that 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.

Auto range requires overload detection capability. The RF filter section must be present (and not in a bypass state) for RF overload detection. IF overload detection does not require the RF filter section.

When on, auto range automatically enables overload detection. When disabled, auto range does not disable overload detection.
Key Path

Available only for a standalone receiver RF section.

Softkey that accesses the menu used to control the auxiliary outputs and input. The auxiliary outputs are controlled by pressing CNTL A 0 1, CNTL B 0 1, CNTL C 0 1, and CNTL D 0 1. The status of the auxiliary input (control line I), can be displayed on the screen with DISPLAY CNTL I.

Related Programming Command
none

Aux Conn Control

Hardkey that accesses the softkey menu used for control of the auxiliary interface connector.

Related Programming Command
none

AV DWELL TIME

Softkey that 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.

Key Path

Related Programming Command
MEASTIMEAVG
Hardkey that toggles the average detector on and off. When on, the instrument is placed in linear amplitude detection, the average detector is turned on, and the system settings are optimized to accurately measure average amplitude.

Related Programming Command

none

Softkey that specifies the averaging bandwidth, which is a post-detection, low-pass filter. The intermediate frequency bandwidth, average video bandwidth, and sweep time are normally coupled to the span. Selecting MAN uncouples the average video bandwidth from intermediate frequency bandwidth (it does nothing to the sweep time and span coupling). Selecting AUTO recouples average video bandwidth to the intermediate frequency bandwidth.

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

Key Path

Related Programming Command

AVBW, VB

Softkey that determines the automatic setting of average video bandwidth by multiplying the parameter by the intermediate frequency bandwidth. Ratio values other than the values in the 1, 3, 10 sequence are rounded to the nearest permissible value.

Key Path

Related Programming Command

VBR
**B → C**  
Softkey that moves trace B into trace C, then stops updating trace C by placing it in the view mode. Trace B is unchanged by BTC. Trace B must contain a complete sweep of measurement information.

**Key Path**

```
<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRACE 1 of 3</td>
<td>2 of 3</td>
</tr>
</tbody>
</table>
```

**Related Programming Command**

BTC

---

**B ↔ C**  
Softkey that exchanges the contents of trace B with trace C and puts trace B in view mode.

**Key Path**

```
<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRACE 1 of 3</td>
<td>2 of 3</td>
</tr>
</tbody>
</table>
```

**Related Programming Command**

BXC

---

**B-DL → B**  
Softkey that subtracts the display line from trace B and places the result in trace B. The B-DL → B function is a math operation. See the A-B → A ON OFF softkey description for information about math operations.

**Key Path**

```
<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRACE 1 of 3</td>
<td>2 of 3</td>
</tr>
</tbody>
</table>
```

**Related Programming Command**

BML

---

**BACKGRND**  
Softkey that activates the background of the display screen for color editing.

**Key Path**

```
<table>
<thead>
<tr>
<th>Display</th>
<th>Adjust</th>
<th>Edit</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>Config</td>
<td>Color</td>
</tr>
</tbody>
</table>
```
**Related Programming Command**

SETC

---

**Band Lock**

*For an HP 8546A/HP 85462A only.*

Softkey that accesses the harmonic band menu and the band lock function. Selecting a harmonic band causes the instrument to lock onto the specified harmonic band and automatically select the settings shown in Table 4-1.

### Table 4-1.

**Center Frequency and Span Settings for Harmonic Bands**

<table>
<thead>
<tr>
<th>Softkey</th>
<th>Center Frequency</th>
<th>Span</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2.9 GHz BAND 0</td>
<td>1.46 GHz</td>
<td>2.865 GHz</td>
<td>Low-pass filtered, first harmonic mixing</td>
</tr>
<tr>
<td>2.75-6.5 BAND 1</td>
<td>4.638 GHz</td>
<td>3.6 GHz</td>
<td>Preselected, first harmonic mixing</td>
</tr>
</tbody>
</table>

**BND LOCK ON OFF** locks the instrument onto a selected frequency band (local oscillator harmonic number). When only one frequency band is being swept the corresponding softkey will be underlined, even if band lock is off.

---

**Note**

For this softkey function to work properly, the corresponding [INPUT] must first be selected.

---

**Key Path**

(MORE) Band

(FREQUENCY) 1 of 2 Lock

---

**Related Programming Command**

HNL0CK

---

**BAUD RATE**

Softkey that specifies the baud rate of an instrument with the RS-232 interface installed.

---

**Note**

The RS-232 interface is only available with Option 023.

---

**Key Path**

(MORE) BAUD

(CONFIG) 1 of 3 RATE
Related Programming Command
BAUDRATE

BLACK FILL
Softkey that replaces the standard display screen with a black box. This is one of 18 test patterns that can be used for display-troubleshooting and screen-alignment procedures.

Key Path

<table>
<thead>
<tr>
<th>Display</th>
<th>Test</th>
<th>More</th>
<th>More</th>
<th>BLACK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Config</td>
<td>Patterns</td>
<td>1 of 4</td>
<td>2 of 4</td>
<td>FILL</td>
</tr>
</tbody>
</table>

Related Programming Command
none

BLACK LEVEL
Softkey that replaces the standard display screen with four color bars overlayed on a black background. This is one of 18 test patterns that can be used for display-troubleshooting and screen-alignment procedures.

Key Path

<table>
<thead>
<tr>
<th>Display</th>
<th>Test</th>
<th>More</th>
<th>BLACK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Config</td>
<td>Patterns</td>
<td>1 of 4</td>
<td>LEVEL</td>
</tr>
</tbody>
</table>

Related Programming Command
none

BLANK A
Softkey that stores the amplitude data for trace A and removes it from the screen. The trace A register will not be updated as the instrument sweeps.

Key Path

| TRACE | BLANK A |

Related Programming Command
BLANK
**BLANK B**

Softkey that stores the amplitude data for trace B and removes it from the screen. The trace B register will not be updated as the instrument sweeps.

**Key Path**

```
TRACE BLANK B
```

**Related Programming Command**

BLANK

---

**BLANK C**

Softkey that stores the amplitude data for trace C and removes it from the screen. The trace C register will not be updated as the instrument sweeps.

**Key Path**

```
TRACE BLANK C
```

**Related Programming Command**

BLANK

---

**BLUE**

Softkey that changes the intensity of the blue portion of the primary light source output for the display annotation, traces, graticule, and so on.

**Key Path**

```
Display Adjust Edit HSL
DISPLAY Config Color Colors ... RGB BLUE
```

**Related Programming Command**

none

---

**BLUE FILL**

Softkey that replaces the standard display screen with a blue box. This is one of 18 test patterns that can be used for display-troubleshooting and screen-alignment procedures.

**Key Path**

```
Display Test More More More BLUE
DISPLAY Config Patterns 1 of 4 2 of 4 3 of 4 FILL
```
**Related Programming Command**

none

---

**BND LOCK**

For an HP 8546A/HP 85462A only.

Softkey that when ON is underlined, the instrument is locked to the lowest frequency band (local oscillator harmonic number) containing the correct center frequency. Start and stop frequencies will be changed if necessary. Executing a band lock limits the tuning range to the selected harmonic number. Selecting the softkeys for either band 0 or band 1 turns on the band lock function automatically.

If the start frequency is well within a lower band, turning band lock off will result in a multiband sweep. If a specific band had been selected prior to changing to a multiband sweep, the softkey label of the selected band will no longer be underlined indicating that it is not selected. Sweep of a single band is indicated if the softkey label of the selected band is underlined.

---

**Note**

Before changing the frequency range to another harmonic band, unlock the band by pressing BND LOCK ON OFF so that OFF is underlined.

---

**Key Path**

More Band BND LOCK

(FREQUENCY) 1 of 2 Lock ON OFF

**Related Programming Command**

HNLOCK, HNUNLK

---

**BRIGHT**

Softkey that changes the brightness or luminance of the display. The brightness level is shown on the top left-hand side of the screen. Use the knob or step keys to adjust the brightness level.

---

**Key Path**

Display

(DISPLAY) Config BRIGHT

**Related Programming Command**

none
Hardkey that activates the intermediate frequency bandwidth function and accesses the softkeys that control the bandwidth functions: 120 kHz EMI BW, 9 kHz EMI BW, 200 Hz EMI BW, IF BW AUTO MAN, AVG BW AUTO MAN, AV/IF BW RATIO, and VID AVG ON OFF. (Also see the IF BW AUTO MAN softkey description.)

Related Programming Command
none

Softkey that saves cable amplitude-correction data to a floppy disk. To save cable data press, CABLE -> DISK. REGISTER # and PREFIX= are displayed on the screen. Use the data keys to enter the desired register number then press [ENTER]. The message Saving to :FILENAME is displayed. The cable data has now been saved to a disk.

Key Path

```
  Save  More  CABLE
   SAVE  Disk  1 of 2  --> DISK
```

Related Programming Command
none

Softkey that 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.

Key Path

```
  More  Correctn  Cable
   SETUP  1 of 3  Factors  Factors
```

Related Programming Command
AMPCOR
Softkey that turns on or off cable amplitude correction factors.

**Key Path**

SETUP 1 of 3 Factors Factors CABLE ON OFF

**Related Programming Command**

AMPCOR

---

Softkey that performs a calibration only on the HP 85422E receiver RF section when configured as an HP 8542E EMI receiver.

**Key Path**

CALIBRATE 1 of 3 85422

**Related Programming Command**

CAL

---

Softkey that performs a calibration only on the HP 85462A receiver RF section when configured as an HP 8546A EMI receiver.

**Key Path**

CALIBRATE 1 of 3 85462

**Related Programming Command**

CAL

---

Softkey that initiates frequency and amplitude correction routines.

**Key Path**

CALIBRATE CAL ALL

**Related Programming Command**

CAL
CAL AMP

Available only for a standalone receiver RF section. Softkey that initiates the amplitude correction routine.

Key Path

More CAL

CALIBRATE 1 of 3 AMP

Related Programming Command
CAL

Cal At Time

Softkey that accesses a menu to set the time of an automatic calibration.

Key Path

Cal

CALIBRATE At Time

Related Programming Command
CAL

CAL CHECK

Hardkey that checks the calibration of the 300 MHz input.

Related Programming Command
CALCHECK

CAL FETCH

Softkey that retrieves stored self-calibration correction factors from the last calibration saved using CAL STORE.

Key Path

CAL CALIBRATE FETCH

Related Programming Command
CAL
**Available only for a standalone receiver RF section.**

Softkey that initiates the frequency correction routine.

**Key Path**

```
More  CAL
   CALIBRATE  1 of 3  FREQ
```

**Related Programming Command**

```
CAL
```

---

**Hardkey that accesses menus used for the self-calibration, service-diagnostics, and service-calibration functions.**

**Related Programming Command**

```
none
```

---

**Softkey that calibrates the conducted measurement band of the instrument, 9 kHz to 50 MHz, for amplitude flatness through each filter.**

**Key Path**

```
More  CAL
   CALIBRATE  1 of 3  INPUT 1
```

**Related Programming Command**

```
CAL
```

---

**Softkey that calibrates the radiated measurement band of the instrument, 20 MHz to 2.9 GHz, for amplitude flatness through each filter.**

**Key Path**

```
More  CAL
   CALIBRATE  1 of 3  INPUT 2
```

**Related Programming Command**

```
CAL
```
**CAL MXR**

For an HP 8546A/HP 85462A only.

Softkey that adjusts the bias-current DAC setting for the optimum displayed-signal amplitude using the 300 MHz CAL OUT signal. This is a service calibration function and is for service use only.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALIBRATE</td>
<td>1 of 3</td>
<td>2 of 3</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

**CAL STORE**

Softkey that stores the correction factors from the last calibration. The stored correction factors are automatically retrieved when the instrument is turned on. If correction factors are not stored, they will be retained only until the instrument is turned off. See the description for the CAL FETCH softkey.

**Key Path**

<table>
<thead>
<tr>
<th>CAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALIBRATE</td>
</tr>
</tbody>
</table>

**Related Programming Command**

CAL

---

**CAL TIMEBASE**

Softkey that changes the setting of the 10 MHz reference (standard timebase) DAC that is located on the A25 counter lock assembly. This is a service calibration function and is for service use only.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALIBRATE</td>
<td>1 of 3</td>
<td>2 of 3</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none
Softkey that performs absolute amplitude, and vernier self-calibration routines. The instrument should be amplitude calibrated by pressing CAL AMP prior to using the CAL TRK GEN function. Connect the tracking generator output to the instrument input before pressing CAL TRK GEN.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>CAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALIBRATE 1 of 3</td>
<td>2 of 3</td>
<td>TRK GEN</td>
</tr>
</tbody>
</table>

**Related Programming Command**

CAL

---

**CAL YTF**

For an HP 8546A/HP 85462A only.

Softkey that generates the best slope and offset adjustment to calibrate the YIG-tuned filter (YTF) for each harmonic band. The self-calibration routine, CAL ALL should be performed before running the CAL YTF routine.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>CAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALIBRATE 1 of 3</td>
<td>2 of 3</td>
<td>YTF</td>
</tr>
</tbody>
</table>

**Related Programming Command**

CAL

---

**CATALOG ALL**

Softkey that catalogs all the programs and variables stored in instrument memory. Press CATALOG REGISTER to catalog states, traces, and limit-line tables, saved in instrument memory.

**Key Path**

<table>
<thead>
<tr>
<th>Recall</th>
<th>Catalog</th>
<th>CATALOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>RECALL Internal Internal ALL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Save</td>
<td>Catalog</td>
<td>CATALOG</td>
</tr>
<tr>
<td>SAVE Internal Internal ALL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Related Programming Command**

none
CATALOG DISK

Softkey that catalogs the floppy disk. Existing data on the floppy disk will be displayed if the disk has been formatted. If the disk has not been formatted the following message will be displayed:

Cannot read disk drive. Please verify drive door is closed and that disk is formatted and error free.

When cataloging a floppy disk, you can specify the type of information to be cataloged, in either LIF or DOS format.

Key Path

<table>
<thead>
<tr>
<th>Config</th>
<th>Disk</th>
<th>CATALOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recall</td>
<td>Disk</td>
<td>DISK</td>
</tr>
<tr>
<td>Save</td>
<td>Disk</td>
<td>DISK</td>
</tr>
</tbody>
</table>

Related Programming Command

CAT

Catalog Internal

Softkey that accesses a menu of cataloging functions for instrument memory: CATALOG ALL, CATALOG REGISTER, CATALOG VARIABLES, and CATALOG PREFIX. Each catalog function displays catalog information. The catalog contains information about the data stored in internal memory. See Figure 4-1 and Table 4-2.

Figure 4-1. Internal Memory Catalog Information
Table 4-2. Internal Memory Catalog Information*

<table>
<thead>
<tr>
<th>Callout Number</th>
<th>Description of Items in Figure 4-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Name of the catalog source.</td>
</tr>
<tr>
<td>2</td>
<td>Bytes of internal memory used.</td>
</tr>
<tr>
<td>3</td>
<td>Total bytes of internal memory available.</td>
</tr>
<tr>
<td>4</td>
<td>Bytes used by item.</td>
</tr>
<tr>
<td>5</td>
<td>Name of item.</td>
</tr>
</tbody>
</table>

* This table is not applicable when using CATALOG REGISTER.

Unlike saving to the floppy disk, data is saved as an item in internal memory.

Use the step keys or knob to view different sections of the directory, then press LOAD FILE to select a file. The selected file is highlighted in inverse video.

Each of the catalog softkey functions access the menu that has the DELETE FILE function. Use DELETE FILE to delete the item from internal memory.

Pressing CATALOG REGISTER allows access to the LOAD FILE function. Use LOAD FILE to load a state or trace from internal memory. Do not use LOAD FILE to load limit-line table and amplitude-correction factor items.

Also see the CATALOG ALL and CATALOG VARIABLES softkey descriptions.

**Key Path**

```
Recall     Catalog
(RECALL) Internal    Internal

Save      Catalog
(SAVE) Internal    Internal
```

**Related Programming Command**

CAT
Softkey that catalogs all of the saved data, that has the specified prefix, that is either on the floppy disk or in internal memory. The entire prefix does not have to be specified. For example, if you want to catalog all the files beginning with the prefix S, specify S as the prefix, using the change prefix function, then select CATALOG PREFIX. Prefixed items can be saved in internal memory by either loading in from a floppy disk or using remote programming commands to define them.

**Key Path**

<table>
<thead>
<tr>
<th>Recall</th>
<th>Catalog</th>
<th>CATALOG</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Internal</td>
<td>Internal</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

Softkey that displays the status of state and trace registers in internal memory. States 1 through 8 are displayed with the center frequency (denoted by CF) and span (denoted by SP). The status of trace registers 0 to the maximum number of traces is displayed also. If a trace, limit-line table, or amplitude correction factors have been saved in the trace register, the screen title (denoted by “TR:”) is displayed, otherwise UNUSED is displayed. If the screen title length allows, or if no title is saved with the trace, the time and date are displayed. To load the contents of the state or trace register into internal memory, use the knob or step keys to select the register and press LOAD FILE. The DELETE FILE key can be used to delete a state or trace register from internal memory.

**Note**

Do not use LOAD FILE to load the contents of a trace register containing limit-line tables or amplitude-correction factors.

---

**Key Path**

<table>
<thead>
<tr>
<th>Recall</th>
<th>Catalog</th>
<th>CATALOG</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Internal</td>
<td>Internal</td>
</tr>
</tbody>
</table>

**Related Programming Commands**

none
CATALOG VARIABLES

Softkey that catalogs all of the variables saved in internal memory. Variables can be saved in internal memory by loading in a downloadable program from the floppy disk or defining a function using remote programming commands (VARDEF or TRDEF).

Note

Variables beginning with an underscore are used by the instrument firmware. Modifying these is not recommended and may give unexpected results.

Key Path

<table>
<thead>
<tr>
<th>Recall</th>
<th>Catalog</th>
<th>CATALOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal</td>
<td>Internal</td>
<td>VARIABLES</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Save</th>
<th>Catalog</th>
<th>CATALOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal</td>
<td>Internal</td>
<td>VARIABLES</td>
</tr>
</tbody>
</table>

Related Programming Command

none

CENTER FREQ

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

Key Path

| CENTER | FREQ |

Related Programming Command

CF

CF STEP AUTO MAN

Softkey that changes the step size for the center frequency function. Once a step size has been selected and the center frequency function is activated, the step keys change center frequency by the step-size value. The step size function is useful for finding harmonics and sidebands beyond the current frequency span of the instrument. When auto-coupled, the center frequency step size is set to one graticule (10 percent of the span).

Key Path

<table>
<thead>
<tr>
<th>CF STEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTO COUPLE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CF STEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>FREQ</td>
</tr>
</tbody>
</table>
Related Programming Command

SS

Softkey that allows you to enter a prefix that can be used for saving and recalling data to and from the floppy disk, and for cataloging by the prefix. The prefix can be from one to seven characters long. The longer the prefix, the shorter the register number must be. The total length of the prefix and register number cannot exceed eight characters. The prefix can be any character; however, the underscore should not be the first character of the prefix. Pressing Change Prefix accesses a menu containing the letters of the alphabet, the underscore symbol (_), the number symbol (#), a space, and the clear function. To select a character, press the softkey that displays the group of characters that contains the desired character. The softkey menu changes to allow you to select an individual character. If you make a mistake, press (SK SY) to space back over the incorrect character. Additional characters are available by pressing More 1 of 2. Numbers may be selected with the data keys.

A prefix can be cleared with the clear function. Press [CONFIG] or [DISPLAY], Change Prefix, YZ # Spc Clear, Clear to clear the current prefix. The current prefix is blanked by pressing DEFAULT [CONFIG].

Key Path

More Change

[CONFIG] 1 of 3 Prefix

More Change

[DISPLAY] 1 of 2 Prefix

Recall Catalog Change

[RECALL] Internal Internal Prefix

Change

[SAVE] Prefix

Save Catalog Change

[SAVE] Internal Internal Prefix

Related Programming Command

PREFIX
Softkey that allows you to write a 53-character screen title across the top of the screen. The marker readout may interfere with the last 26 characters. The markers can be turned off by pressing <code>[MARK]</code>, <code>More 1 of 2</code>, and <code>MARKER ALL OFF</code>. Pressing <code>Change Title</code> accesses the softkey menus that contain the available characters and symbols. A programming command can be entered in the screen title area. It can then be executed from the front panel by pressing <code>EXECUTE TITLE</code>.

The screen title will remain on the screen until either <code>Change Title</code> is pressed again or a trace is recalled that was saved with a screen title. A screen title can also be cleared by using the <code>Clear</code> function. Press <code>[DISPLAY]</code>, <code>Change Title</code>, <code>YZ_# Spc Clear</code>, <code>Clear</code> to clear the current screen title.

Pressing <code>Change Title</code> accesses a menu containing the letters of the alphabet, the underscore symbol (_), the number symbol (#), a space, and the <code>Clear</code> softkey. To select a character, press the softkey that displays the group of characters that contains the desired character. The softkey menu changes to allow you to select an individual character. If you make a mistake, press <code>[BK SP]</code> to space back over the incorrect character. Additional characters are available by pressing <code>More 1 of 2</code>. Numbers may be selected by using the data keys.

**Key Path**

**Receiver Mode**

<code>Change</code><br><code>[DISPLAY]</code> <code>Title</code>


**Signal Analysis Mode**

<code>More</code> <code>Limit</code> <code>Change</code><br><code>[DISPLAY] 1 of 2</code> <code>Lines</code> <code>Title</code>


**Related Programming Command**

**TITLE**
Softkey that clears the annotation editor of all text.

**Key Path**

```
<table>
<thead>
<tr>
<th></th>
<th>Edit</th>
<th>Clear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output</td>
<td>ANNOTATE</td>
<td>ANNOTATE</td>
</tr>
</tbody>
</table>
```

**Related Programming Command**

none

---

Softkey that clears the mark from a signal on the signal list.

**Key Path**

```
<table>
<thead>
<tr>
<th>More</th>
<th>Edit</th>
<th>Signal</th>
<th>Clear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test</td>
<td>1 of 3</td>
<td>LIST</td>
<td>MARK</td>
</tr>
</tbody>
</table>
```

**Related Programming Command**

SIGUNMARK

---

Softkey that erases any data previously stored in trace A and continuously displays any signals during the sweep of the instrument. This function is activated at power on and by pressing [Preset].

Changing the trace mode of trace C to clear write or minimum hold can change the trace mode of trace A. If trace A is in clear-write mode or maximum-hold mode when trace C is changed to clear write or minimum hold, the trace mode of trace A is changed to store blank. The following table shows the trace mode of trace A before and after changing trace C to clear-write or minimum-hold trace mode.

<table>
<thead>
<tr>
<th>Trace Mode of Trace A Before</th>
<th>Trace Mode of Trace A After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear write</td>
<td>Store blank</td>
</tr>
<tr>
<td>Maximum hold</td>
<td>Store blank</td>
</tr>
<tr>
<td>View</td>
<td>View</td>
</tr>
</tbody>
</table>

Changing the trace mode of trace A to clear write or maximum hold can change the trace mode of trace C. If trace C is in clear-write mode when trace A is changed to clear write or minimum hold, the trace mode of trace C is changed to minimum hold.

<table>
<thead>
<tr>
<th>Trace Mode of Trace C Before</th>
<th>Trace Mode of Trace C After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear write</td>
<td>Minimum hold</td>
</tr>
<tr>
<td>Minimum hold</td>
<td>Minimum hold</td>
</tr>
<tr>
<td>View</td>
<td>View</td>
</tr>
</tbody>
</table>
Key Path

CLEAR
TRACE WRITE A

Related Programming Command
CLRW

**CLEAR WRITE B**

Softkey that erases any data previously stored in trace B and continuously displays any signals detected during the sweep of the instrument. This function is activated at power on and by pressing [PRESET].

Changing the trace mode of trace C to clear write or minimum hold can change the trace mode of trace B. If trace B is in clear-write mode or maximum-hold mode when trace C is changed to clear write or minimum hold, the trace mode of trace B is changed to store blank.

The following table shows the trace mode of trace B before and after changing trace C to clear-write or minimum-hold trace mode.

<table>
<thead>
<tr>
<th>Trace Mode of Trace B Before</th>
<th>Trace Mode of Trace B After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear write</td>
<td>Store blank</td>
</tr>
<tr>
<td>Maximum hold</td>
<td>Store blank</td>
</tr>
<tr>
<td>View</td>
<td>View</td>
</tr>
</tbody>
</table>

Changing the trace mode of trace B to clear write or maximum hold can change the trace mode of trace C. If trace C is in clear-write mode when trace B is changed to clear write or minimum hold, the trace mode of trace C is changed to minimum hold.

<table>
<thead>
<tr>
<th>Trace Mode of Trace C Before</th>
<th>Trace Mode of Trace C After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear write</td>
<td>Minimum hold</td>
</tr>
<tr>
<td>Minimum hold</td>
<td>Minimum hold</td>
</tr>
<tr>
<td>View</td>
<td>View</td>
</tr>
</tbody>
</table>

Key Path

CLEAR
TRACE WRITE B

Related Programming Command
CLRW
Softkey that erases any data previously stored in trace C and continuously displays any signals detected during the sweep of the instrument. This function is activated at power on and by pressing [PRESET].

Changing the trace mode of trace C to clear write or minimum hold can change the trace mode of trace A and trace B. If trace A or trace B is in clear-write mode or maximum-hold mode when trace C is changed to clear write or minimum hold, the trace mode of trace A or trace B is changed to store blank. The following table shows the trace mode of trace A or trace B before and after changing trace C to clear-write or minimum-hold trace mode.

<table>
<thead>
<tr>
<th>Trace Mode of Trace A or B Before</th>
<th>Trace Mode of Trace A or B After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear write</td>
<td>Store blank</td>
</tr>
<tr>
<td>Maximum hold</td>
<td>Store blank</td>
</tr>
<tr>
<td>View</td>
<td>View</td>
</tr>
</tbody>
</table>

If you want to use trace A or trace B in the clear-write or maximum-hold mode and do not want trace C to blank it, use minimum-hold or view-trace mode for trace C.

**Key Path**

CLEAR

TRACE WRITE C

**Related Programming Command**

CLRW

---

Softkey that clears all signals in the signal list.

**Key Path**

More EDIT Signal CLR ALL

TEST 1 of 3 LIST Marking MARKS

**Related Programming Command**

SIGUNMARK

---

*Key Dictionary Reference 4-43*
Available only for a standalone receiver RF section.

Softkey that makes the auxiliary-interface control line A output high or low (TTL). This line can be used to control any external drive that takes a TTL input.

Key Path

<table>
<thead>
<tr>
<th>Aux Conn</th>
<th>CNTL A</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUX CTRL</td>
<td>Control</td>
</tr>
<tr>
<td>0 1</td>
<td></td>
</tr>
</tbody>
</table>

Related Programming Command
CNTLA

Available only for a standalone receiver RF section.

Softkey that makes the auxiliary-interface control line B output high or low (TTL). This line can be used to control any external drive that takes a TTL input.

Key Path

<table>
<thead>
<tr>
<th>Aux Conn</th>
<th>CNTL B</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUX CTRL</td>
<td>Control</td>
</tr>
<tr>
<td>0 1</td>
<td></td>
</tr>
</tbody>
</table>

Related Programming Command
CNTLB

Available only for a standalone receiver RF section.

Softkey that makes the auxiliary-interface control line C output high or low (TTL). This line can be used to control any external drive that takes a TTL input.

Key Path

<table>
<thead>
<tr>
<th>Aux Conn</th>
<th>CNTL C</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUX CTRL</td>
<td>Control</td>
</tr>
<tr>
<td>0 1</td>
<td></td>
</tr>
</tbody>
</table>

Related Programming Command
CNTLC
**CNTL.D**

*Available only for a standalone receiver RF section.*

Softkey that makes the auxiliary-interface control line D output high or low (TTL). This line can be used to control any external drive that takes a TTL input.

**Key Path**

<table>
<thead>
<tr>
<th>Key Path Description</th>
<th>Control Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aux Conn</td>
<td>CNTL.D</td>
</tr>
<tr>
<td><strong>AUX CTRL</strong></td>
<td><strong>Control</strong> 0 1</td>
</tr>
</tbody>
</table>

**Related Programming Command**

CNTLD

---

**COARSE TUNE DAC**

Softkey that displays the analog output of the YTO coarse-tune DAC located on the A7 analog interface assembly. This is a service diagnostic function and is for service use only.

**Key Path**

<table>
<thead>
<tr>
<th>Key Path Description</th>
<th>Control Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>More</td>
<td>More</td>
</tr>
<tr>
<td><strong>More 1</strong></td>
<td><strong>More 2</strong></td>
</tr>
<tr>
<td><strong>CALIBRATE</strong></td>
<td>1 of 3 2 of 3 Diag</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

**COLOR BARS**

Softkey that replaces the standard display screen with a color bars. This is one of 18 test patterns that can be used for display-troubleshooting and screen-alignment procedures.

**Key Path**

<table>
<thead>
<tr>
<th>Key Path Description</th>
<th>Control Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display</td>
<td>Test</td>
</tr>
<tr>
<td><strong>DISPLAY</strong></td>
<td><strong>Config</strong> Patterns 1 of 4</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none
COLOR MONOCHRM

Softkey that specifies either a color print when COLOR is underlined or a black and white print when MONOCHRM is underlined. This function is used when a color printer is connected to the output port.

Key Path

<table>
<thead>
<tr>
<th>Print</th>
<th>Print</th>
<th>COLOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>(CONFIG) Config</td>
<td>Options</td>
<td>MONOCHRM</td>
</tr>
</tbody>
</table>

Related Programming Command

none

COMPLMNT MARKS

Softkey that 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.

Key Path

<table>
<thead>
<tr>
<th>More</th>
<th>EDIT</th>
<th>Signal</th>
<th>Selectv</th>
<th>COMPLMNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>(TEST) 1 of 3 LIST Marking Mark MARKS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Related Programming Command

SIGMARK

CONFIG

Hardkey that accesses the menu used for printer and plotter configurations, time and date display functions, changing the current prefix, floppy disk configuration functions, disposing of user-defined variables and programs from internal memory, changing the instrument address or the baud rate, displaying the installed options on screen, and changing the format of the MONITOR output. Pressing (CONFIG) after the instrument has been placed in the remote mode places the instrument in the local mode and enables front-panel control. During remote operation, an R appears in the lower-right corner of the screen indicating remote mode. Pressing (CONFIG) removes the R annotation from the lower-right corner.

Related Programming Command

none
Softkey that sets the specified printer type then exits the menu.

**Key Path**

```
Print  Printer  Config
    CONFIG  Config  Type  Done
```

**Related Programming Command**

none

---

Hardkey that initiates an output of the screen data, without an external controller, to a previously specified graphics printer or plotter. Refer to the programmer's guide for detailed information about printing and plotting.

The printer or plotter must have already been selected using \texttt{CONFIG} and either \texttt{Plot Config} (for a plotter) or \texttt{Print Config} (for a printer). To obtain a print, press \texttt{COPY}, \texttt{COPY DEV PRNT PLT} (so that PRNT is underlined), then \texttt{Print Config}.

If the instrument is connected to an HP PaintJet printer and you want a color printout, press \texttt{Printer Type, More 1 of 3}, \texttt{PAINTJET PRINTER}. If the instrument is connected to an HP PaintJet printer and you want a black and white printout, press \texttt{Print Options} then, \texttt{COLOR MONOCHRM} so that MONOCHRM is underlined. The paintjet printer's mode switches must be set correctly for use with the instrument. The switch settings are indicated in Table 4-3. If the switch settings are changed, the printer must be turned off and then back on after they are changed. More Thinkjet printer information can be found in the programmer's guide.

**Table 4-3. Setting of Thinkjet Printer Mode Switches**

<table>
<thead>
<tr>
<th>Switch Number</th>
<th>Setting</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>down</td>
<td>Printer performs a carriage return only.</td>
</tr>
<tr>
<td>2</td>
<td>down</td>
<td>Printer performs a line feed only.</td>
</tr>
<tr>
<td>3</td>
<td>up</td>
<td>Sets the printer to skip paper perforations.</td>
</tr>
<tr>
<td>4</td>
<td>down</td>
<td>Sets the printer for a paper length of 11 inches.</td>
</tr>
<tr>
<td>5</td>
<td>down</td>
<td>Sets the printer to HP MODE.</td>
</tr>
<tr>
<td>6</td>
<td>up</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>down</td>
<td>Sets the printer to USASCII.</td>
</tr>
<tr>
<td>8</td>
<td>down</td>
<td></td>
</tr>
</tbody>
</table>

If you want the softkey labels to be printed with the instrument display printout when using \texttt{COPY}, press \texttt{PRT MENU ON OFF} so that ON is underlined.
Press (COPY) and the process will begin. The screen remains frozen (no further sweeps taken) until the data transfer to the printer is complete. The instrument works with many Hewlett-Packard printers.

The plotting process is similar to the printing process. On the spectrum analyzer, press [CONFIG]. Plot Config. For Option 023, use BAUD RATE to change the baud rate of the instrument, if necessary.

With PLTS/PG 1 2 4, you can choose a full-page, half-page, or quarter-page plot. Press PLTS/PG 1 2 4 to underline the number of plots per page desired. If two or four plots per page are chosen, a softkey function is displayed that allows you to select the location of the plotter output on the paper. If two plots per page are selected, PLT [ ] LOC _ _ is displayed. If four plots per page are selected, PLT [ ] LOC _ _ is displayed. Press the softkey until the rectangular marker is in the desired section of the softkey label. The upper and lower sections of the softkey label graphically represent the position of the page where the plotter output will be located.

**Note**

The HP 7470A plotter does not support two plots per page output, you can select one or four plots per page, but not two plots per page.

For a multipen plotter, the pens of the plotter draw the different components of the screen as follows:

<table>
<thead>
<tr>
<th>Pen Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Draws trace A, the active function, markers, display line, and softkeys.</td>
</tr>
<tr>
<td>2</td>
<td>Draws limit 2, status and error messages.</td>
</tr>
<tr>
<td>3</td>
<td>Draws limit 1 and the annotation.</td>
</tr>
<tr>
<td>4</td>
<td>Draws the graticule.</td>
</tr>
<tr>
<td>5</td>
<td>Draws trace C.</td>
</tr>
<tr>
<td>6</td>
<td>Draws trace B.</td>
</tr>
</tbody>
</table>

To plot, press Previous Menu, COPY DEV PRINT PLT (PLT should be underlined), and COPY.

Printing is usually faster than plotting, but plotting provides higher resolution output. The instrument works with plotters such as the HP 7440A.

Figure 4-2 shows the rear view of a typical printer and instrument configuration.
Figure 4-2. Connecting a Printer to the Instrument

Note
Printing and plotting require an optional interface. Generally, instruments with an HP-IB interface set the plotter address to 5 and the printer address to 1. Instruments with an RS-232 interface must have the baud rate set to match the baud rate of the printer or plotter being used. The programmer's guide that comes with the optional interfaces details the different interfaces. Refer to the programmers guide for more information about printing and plotting.

Related Programming Commands
PLOT, PRINT

COPY DEV
PRNT PLT

Softkey that changes between a printer and plotter. For example, if you have been printing and want to do a plot, press COPY DEV PRNT PLT to underline PLT before pressing COPY.

Key Path
COPY DEV
CONFIG PRNT PLT

Related Programming Command
none
Softkey that sends a copy of the current display to the printer specified by Printer Type.

Key Path

Related Programming Command
none

Softkey that controls use of some correction factors. When ON is underlined, correction factors are used and CORR appears on the left hand-side of the display. When OFF is underlined, correction factors are not used. Turning the correction factors off degrades amplitude accuracy.

Note
Correction factors must be on for the instrument to meet its specified performance.

Key Path

Related Programming Command
CAL

Softkey that accesses a menu of correction factors used to create, edit, and view antenna, cable, and other amplitude-correction factors.

Key Path

Related Programming Command
AMPCOR
CORRECTN
ON OFF

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

Key Path

More More CORRECTN
SETUP 1 of 3 Factors ON OFF

Related Programming Command
CORREK

COUPLE
AC DC

Softkey that 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.

CAUTION

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

Key Path

More More COUPLE
AMPLITUDE 1 of 3 2 of 3 AC DC

Related Programming Command
COUPLE

CNT RES
AUTO MAN

Softkey that sets the resolution of the marker frequency counter. When AUTO is underlined, the marker counter resolution is set to 6 kHz. When MAN is underlined, the marker counter resolution can be set manually from 1 Hz to 100 kHz.

Key Path

More CNT RES
MARKER FUNCTION 1 of 2 AUTO MAN

Related Programming Command
MKFCR
Hardkey that activates the windows display mode and accesses the menu of window zone functions. The windows display function splits the screen into two separate displays. Only one of these displays is active at a time. The currently active window will have a highlighted line around the graticule. The WINDOWS (NEXT) key will switch the active display between the upper and lower windows. The instrument state of the active window can be changed without affecting the state of the inactive window. The complete annotation is not displayed for each window because of space limitations.

When the windows display mode is first turned on, the top window will contain an inactive copy of the previous full display. The lower window will be active and will display a subset of the frequency span of the upper window. The displayed span, or zone, of the lower window will be indicated on the upper window by two vertical lines called zone markers. The zone can be moved and changed using the zone keys which are accessed by pressing the WINDOWS (CTRL) key. Changing the span or center frequency of the lower window will change the corresponding zone markers on the upper window.

Most functions can be used from within the windows display mode. Some functions, like editing limit lines and showing the options, require a full-sized display. They will temporarily exit the windows display format. When the function is finished the instrument will return to a windows display. Other functions will permanently exit the windows display and it will be necessary to restart the windows display mode by pressing WINDOWS (CTRL). See Table 4-4.

Limit lines can be displayed and tested within the windows display mode. Viewing and testing must be turned on independently in each window. The current limit lines will be common to both windows.

SAVE and RECALL do not save the windows display mode. If the windows display mode is being used, the save state function saves the state of the currently active window. The recall state function recalls the stored state into the currently active window. See the STATE -> INTRNL softkey description for more information about saving the display.

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calibration Functions</td>
<td>self-calibration routines</td>
</tr>
<tr>
<td>Dispose User Memory</td>
<td>deletes user's items from instrument memory</td>
</tr>
<tr>
<td>Instrument Preset</td>
<td>returns instrument to preset state</td>
</tr>
</tbody>
</table>

## Table 4-4.

### Functions Which Exit The Windows Display Format

**Related Programming Command**

WINON
**DACS**

Available only for a standalone receiver RF section.

Softkey that changes the DAC numbers of the span, DAC YTO coarse-tune, DAC YTO fine-tune, and YTO FM tune DAC located on the A7 analog interface assembly. This is a service diagnostic function and is for service use only.

**Key Path**

```
CALIBRATE

DACS
```

**Related Programming Command**

none

---

**DATEMODE**

MDY  DMY

Softkey that changes the display of the date from a month-day-year format to a day-month-year format. It is set to a month-day-year format by pressing DEFAULT CONFIG.

**Key Path**

```
CONFIG

DATEMODE
```

**Related Programming Command**

DATEMODE

---

**dBm**

Softkey that changes the amplitude units to dBm for the current setting (logarithmic or linear).

**Key Path**

```
AMPLITUDE

dBm
```

**Related Programming Command**

none
**dBmV**
Softkey that changes the amplitude units to dBmV for the current setting (logarithmic or linear).

**Key Path**

```
More | Amptd
-----|-------
AMPLITUDE 1 of 3 Units dBmV
```

**Related Programming Command**

none

---

**dBμV**
Softkey that changes the amplitude units to dBμV for the current setting (logarithmic or linear).

**Key Path**

```
More | Amptd
-----|-------
AMPLITUDE 1 of 3 Units dBμV
```

**Related Programming Command**

none

---

**DEFAULT CAL DATA**
Softkey that accesses the factory-default correction factors. A special pass code is required for use. If the message *Self cal needed* appears when DEFAULT CAL DATA is pressed, the CAL FREQ and CAL AMP routines need to be run. CAL ALL must be run to ensure specifications. (If the maximum frequency of interest is higher than 3 GHz, the CAL YTF routine must also be run.) The calibration results must then be saved by pressing CAL STORE.

**Key Path**

```
More | More | DEFAULT
-----|------|-------
CALIBRATE 1 of 3 2 of 3 CAL DATA
```

**Related Programming Command**

CAL
**DEFAULT COLORS**

Softkey that sets all the display screen attributes to the factory-defined colors. To change the color elements, refer to Edit Colors.

**Key Path**

DISPLAY  Config  Color  COLORS

**Related Programming Command**

SETC

---

**DEFAULT CONFIG**

Softkey that resets the instrument configuration to the state it was in when it was originally shipped from the factory then performs an instrument preset. See Table 4-5 for the default user-configuration values set by pressing DEFAULT CONFIG.

**Table 4-5. Default Configuration Values**

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Default Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analyzer address(^1)</td>
<td>18</td>
</tr>
<tr>
<td>Copy device</td>
<td>printer</td>
</tr>
<tr>
<td>CRT position (Horizontal and Vertical)</td>
<td>16, 48</td>
</tr>
<tr>
<td>Printer address (Option 023)</td>
<td>1</td>
</tr>
<tr>
<td>Plotter address (Option 023)</td>
<td>5</td>
</tr>
<tr>
<td>Baud rate (Option 023)</td>
<td>1200</td>
</tr>
<tr>
<td>External preamp</td>
<td>0 dB</td>
</tr>
<tr>
<td>Save lock (internal states or traces)</td>
<td>Off</td>
</tr>
<tr>
<td>Printer</td>
<td>black and white printer</td>
</tr>
<tr>
<td>Print menu</td>
<td>on</td>
</tr>
<tr>
<td>Plots per page</td>
<td>1</td>
</tr>
<tr>
<td>Time/date display</td>
<td>on</td>
</tr>
<tr>
<td>Date mode</td>
<td>month-day-year format</td>
</tr>
<tr>
<td>Prefix</td>
<td>(blank)</td>
</tr>
<tr>
<td>Analyzer state at power on</td>
<td>Instrument preset</td>
</tr>
</tbody>
</table>

\(^1\) Signal analysis mode only.

**Key Path**

CONFIG 1 of 3 CONFIG

**Related Programming Command**

none
Define List

Softkey that accesses a menu that specifies what elements of a table are output to the printer when OUTPUT REPORT is executed. If any of the elements are set to on, they will be included as part of the list portion of the report.

Key Path

Related Programming Command
TBLDEF

Define Report

Softkey that accesses a menu which specifies what elements of a report are output to the printer or the plotter. If any of the elements are set to on, they will be sent to the printer followed by a form feed. Only LOG ON OFF and LIN ON OFF can be used when outputting to a plotter. The report is generated by OUTPUT REPORT.

Key Path

Related Programming Command
RPTDEF

DEFINE USER KEY

Softkey that sets the instrument in a mode for redefining a user-defined key. It freezes the display and presents instructions in the active function area. The mode is exited by pressing one of the two user-defined keys.

Key Path

Related Programming Command
UDKDEFINE, UDKSET
**DELETE ALL SIGS**

Softkey that deletes all signals from the signal list.

**Key Path**

![Key Path Diagram]

**Related Programming Command**

SIGDEL

---

**DELETE FACTORS**

Softkey that deletes all antenna, cable, or other amplitude-correction factors.

**Key Path**

![Key Path Diagram]

**Related Programming Command**

none

---

**DELETE FILE**

Softkey that deletes an item from internal memory or a file from the floppy disk. Use the step keys to view different sections of the directory and use the knob to select the file or item to delete. Pressing DELETE FILE causes a message to appear on the screen: If you are sure, press key again to purge data. Press DELETE FILE again if you want to delete the memory item.

**Note**

Deleting items beginning with an underscore from the instrument is not recommended and may have unexpected results. Items beginning with an underscore are used by the instrument.
Key Path

<table>
<thead>
<tr>
<th>Recalling</th>
<th>Command</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>Recall</code></td>
<td>Disk</td>
<td><code>DELETE</code></td>
</tr>
<tr>
<td><code>RECALL</code></td>
<td>Disk</td>
<td><code>FILE</code></td>
</tr>
<tr>
<td><code>Recall</code></td>
<td>More</td>
<td><code>DELETE</code></td>
</tr>
<tr>
<td><code>RECALL</code></td>
<td>Disk</td>
<td><code>...</code></td>
</tr>
<tr>
<td><code>Recall</code></td>
<td>Catalog</td>
<td><code>DELETE</code></td>
</tr>
<tr>
<td><code>RECALL</code></td>
<td>Internal</td>
<td><code>FILE</code></td>
</tr>
<tr>
<td><code>Save</code></td>
<td>Catalog</td>
<td><code>DELETE</code></td>
</tr>
<tr>
<td><code>SAVE</code></td>
<td>Disk</td>
<td><code>FILE</code></td>
</tr>
<tr>
<td><code>Save</code></td>
<td>Internal</td>
<td><code>FILE</code></td>
</tr>
<tr>
<td><code>SAVE</code></td>
<td>Disk</td>
<td><code>FILE</code></td>
</tr>
<tr>
<td><code>RECALL</code></td>
<td>DELETE</td>
<td></td>
</tr>
<tr>
<td><code>SETUP</code></td>
<td>DELETE</td>
<td></td>
</tr>
<tr>
<td><code>SETUP</code></td>
<td>FILE</td>
<td></td>
</tr>
<tr>
<td><code>More</code></td>
<td>Correctn</td>
<td><code>DELETE</code></td>
</tr>
<tr>
<td><code>SETUP</code></td>
<td>1 of 3</td>
<td><code>FILE</code></td>
</tr>
<tr>
<td><code>More</code></td>
<td>Save/Rcl</td>
<td><code>DELETE</code></td>
</tr>
<tr>
<td><code>TEST</code></td>
<td>1 of 3</td>
<td><code>FILE</code></td>
</tr>
</tbody>
</table>

Receiver mode only

<table>
<thead>
<tr>
<th>Command</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>More</code></td>
<td>Limit</td>
</tr>
<tr>
<td><code>DISPLAY</code></td>
<td>1 of 2</td>
</tr>
<tr>
<td><code>Lines</code></td>
<td><code>LIMITS</code></td>
</tr>
<tr>
<td><code>FILE</code></td>
<td></td>
</tr>
</tbody>
</table>

Any of the following can be used to complete the key path:
- `CATALOG DISK`, `RECALL SETUP`, `RECALL LIST`,
- `RECALL LIMITS`, or `RECALL ANTENNA`.

† Any of the following can be used to complete the key path:
- `RECALL CABLE`, `RECALL OTHER`, or `RECALL TRACE`.

§ Any of the following can be used to complete the key path:
- `CATALOG ALL`, `CATALOG REGISTER`, `CATALOG VARIABLES`,
- or `CATALOG PREFIX`.

‖ Any of the following groups of softkeys can be used to complete the key path:
- `Antenna Factors`, `EDIT ANTENNA`, or `Cable Factors`, `EDIT CABLE`,
- or `Other Factors`, `EDIT OTHER`.

Related Programming Command

`PURGE`
**DELETE LIMIT**  
*Receiver mode only.*
Softkey that deletes the selected limit-line table.

**Key Path**

```
DISPLAY  More  LIMIT    DELETE
   1 of 2 Lines ...  LIMIT
```

```
SETUP    More  LIMIT    DELETE
   1 of 3 Lines ...  LIMIT
```

* Either Limit 1 or Limit 2 can be used to complete the key path.

**Related Programming Command**

LIMDEL

---

**DELETE MARKED**
Softkey that deletes all marked signals from the signal list. Signals can be marked using MARK ALL SIGNALS, MARK SIGNAL, and Selectv Mark.

**Key Path**

```
TEST  More  EDIT  Delete  DELETE
   1 of 3 LIST  Signals  MARKED
```

**Related Programming Command**

SIGDEL, SIGMARK

---

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

**Key Path**

```
SETUP  More  Correctn  Antenna  EDIT  More
   1 of 3 Factors  Factors  ANTENNA  1 of 2
```

```
DELETE  More  Correctn  Cable  EDIT  More  DELETE
   1 of 3 Factors  Factors  CABLE  1 of 2  POINT
```

```
SETUP  More  Correctn  Other  EDIT  More  DELETE
   1 of 3 Factors  Factors  OTHER  1 of 2  POINT
```
Related Programming Command

none

![DELETE SEGMENT]

Softkey that deletes the limit-line entry for the selected segment number. Use the knob or step keys to highlight the segment number to be deleted, then press DELETE SEGMENT.

Key Path

Receiver Mode

<table>
<thead>
<tr>
<th>DISPLAY</th>
<th>1 of 2</th>
<th>More</th>
<th>Limit</th>
<th>...</th>
<th>EDIT</th>
<th>More</th>
<th>Delete</th>
<th>SEGMENT</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>SETUP</th>
<th>1 of 3</th>
<th>More</th>
<th>Limit</th>
<th>...</th>
<th>EDIT</th>
<th>More</th>
<th>Delete</th>
<th>SEGMENT</th>
</tr>
</thead>
</table>

* Either Limit 1 or Limit 2 can be used to complete the key path.

Signal Analysis Mode

<table>
<thead>
<tr>
<th>DISPLAY</th>
<th>1 of 2</th>
<th>More</th>
<th>Limit</th>
<th>Edit</th>
<th>...</th>
<th>More</th>
<th>Delete</th>
<th>SEGMENT</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>SETUP</th>
<th>1 of 3</th>
<th>More</th>
<th>Limit</th>
<th>Edit</th>
<th>...</th>
<th>More</th>
<th>Delete</th>
<th>SEGMENT</th>
</tr>
</thead>
</table>

* Any of the following can be used to complete the key path:
EDIT UPPER, EDIT LOWER, EDIT UP/LOW, or EDIT MID/DELT.

Related Programming Command

SEGDEL

---

![DELETE SIGNAL]

Softkey that deletes the signal located at the cursor from the signal list.

Key Path

<table>
<thead>
<tr>
<th>TEST</th>
<th>1 of 3</th>
<th>More</th>
<th>Edit</th>
<th>Delete</th>
<th>Delete</th>
</tr>
</thead>
</table>

Related Programming Command

SIGDEL
Delete Signals
Softkey that accesses a menu which deletes one or more signals from the signal list.

Key Path
[TEST] 1 of 3 LIST Signals

Related Programming Command
SIGDEL

DELTA MEAS
Softkey that accesses the (PEAK SEARCH) menu. See (PEAK SEARCH) for more information.

Key Path
[Meas/User] 1 of 2 MEAS

Related Programming Command
none

DEMOD AM FM
Softkey that allows selection of amplitude (AM) or frequency (FM) demodulation.

Activating AM detection turns off FM demodulation (if it is on). When the frequency span is greater than 0 Hz, a 30 kHz intermediate frequency bandwidth is used during demodulation, regardless of the screen annotation.

Turning FM demodulation on turns off AM demodulation (if it is on). When the frequency span is greater than 0 Hz, a 100 kHz bandwidth is used during the demodulation, regardless of the screen annotation. When the span is equal to 0 Hz, the displayed bandwidth is used.

Key Path
[SELECT] AM FM

Related Programming Command
none
Softkey that turns the AM or FM demodulation on and off. If the instrument is in a nonzero span, a marker is placed at center screen if an onscreen marker is not already present. The marker pause is changed to equal the current dwell time value. Demodulation takes place on any signal that is indicated by the marker position during the marker pause. There is no change to the display during marker pause, but the demodulation signal is present on the AUX VIDEO OUT. Also see the SPEAKER ON OFF softkey description.

Pressing DEMOD ON OFF selects the sample peak detector for AM demodulation, the FMOV detector for FM demodulation. If the instrument is in zero span, demodulation is done continuously, with or without an onscreen marker.

**Key Path**

```
SELECT DEMOD
```

**Related Programming Command**

```
DEMOD
```

**DESKJET**

Softkey that specifies DeskJet as the printer connected to the output port.

**Key Path**

```
Print Printer More
Config Type 1 of 3 DESKJET
```

**Related Programming Command**

```
PRNTTYPE
```

**DESKJET 500**

Softkey that specifies DeskJet 500 as the printer connected to the output port.

**Key Path**

```
Print Printer More DESKJET
Config Type 1 of 3 500
```

**Related Programming Command**

```
PRNTTYPE
```
**DESKJET 500C**

Softkey that specifies DeskJet 500C as the printer connected to the output port.

**Key Path**

<table>
<thead>
<tr>
<th>Print</th>
<th>Printer</th>
<th>More</th>
<th>DESKJET</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONFIG</td>
<td>Config</td>
<td>Type</td>
<td>1 of 3</td>
</tr>
</tbody>
</table>

**Related Programming Command**

PRNTTYPE

---

**DESKJET 550C**

Softkey that specifies DeskJet 550C as the printer connected to the output port.

**Key Path**

<table>
<thead>
<tr>
<th>Print</th>
<th>Printer</th>
<th>More</th>
<th>DESKJET</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONFIG</td>
<td>Config</td>
<td>Type</td>
<td>1 of 3</td>
</tr>
</tbody>
</table>

**Related Programming Command**

PRNTTYPE

---

**DETECTOR PK QP AV**

Softkey that turns automatic measuring on or off for the peak, quasi-peak, and average detectors. Underline the desired detector or detectors by pressing DETECTOR PK QP AV.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>Inst</th>
<th>Measure</th>
<th>DETECTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3</td>
<td>Setup</td>
<td>Detector</td>
</tr>
</tbody>
</table>

**Related Programming Command**

AUTOAVG, AUTOQPD
Softkey that selects either positive peak detection or sample detection. When sample detection is selected, SMPL appears in the upper-right corner of the screen. In sample mode, the instantaneous signal value at the present display point is placed in memory. Sample detection is activated automatically for noise level markers, during video averaging, and for FFT measurements.

When positive peak detection is selected, PEAK appears in the upper-right corner of the screen. Positive peak detection obtains the maximum video signal between the last display point and the present display point and stores this value in the trace memory address. Positive peak detection is selected at power on and by pressing [PRESET].

**Key Path**

```
More DETECTOR
(TRACE) 1 of 3 SMP PK
```

**Related Programming Command**

DET

---

Softkey that accesses a menu to format a 3.5 inch double-sided floppy disk in either LIF or DOS format. Disk Config also accesses the Catalog Disk and Protect functions.

**Key Path**

```
Disk Config
(CONFIG) Config
```

**Related Programming Command**

none

---

Hardkey that activates the display line, hold, and threshold functions. It controls the display of the graticule and screen annotation, and provides for title and prefix entries. [DISPLAY] also accesses display configuration capabilities such as color adjustments and test pattern selections.

**Related Programming Command**

none
DISPLAY -> DISK

Softkey that saves display images to a floppy disk. To save display images press, DISPLAY -> DISK. REGISTER # and PREFIX= are displayed on the screen. Use the data keys to enter the desired register number then press (ENTER). The message Saving to :FILENAME is displayed. The display image has now been saved to a disk. For a DOS file system, the file is a standard *BMP file which can be used in many windows applications.

Key Path

SAVE Disk 1 of 2 -> DISK

Related Programming Command

none

DISPLAY CAL DATA

Softkey that displays the current correction-factor data generated by the frequency and amplitude self-calibration routines. This is a service diagnostic function and is for service use only.

Key Path

CALIBRATE 1 of 3 2 of 3 Diag 1 of 2 -> DISK

Related Programming Command

none

DISPLAY CNTL I

Available only for a standalone receiver RF section.

Softkey that displays the status of the auxiliary connector input (control line I) onscreen (high = 1 or low = 0, in TTL).

Key Path

AUX CTRL Control DISPLAY

Related Programming Command

CNTL I
Display Config
Softkey that accesses a menu that includes adjust color and test pattern menus along with softkeys to adjust the intensity and brightness of your display.

Key Path
Display

Related Programming Command
none

Display Sys Data
Softkey that accesses a menu to display system calibration data for input 1. These keys are for service use only.

Key Path
More More Service Display
CALIBRATE 1 of 3 2 of 3 Diagnostic Sys Data

Related Programming Command
none

DISPOSE USER KEY
Softkey that frees internal memory that was previously allocated for the user-defined keys and reverts the keys to their factory definitions.

Key Path
More Dispose DISPOSE
CONFIG 1 of 3 User Mem USER KEY

Related Programming Command
DISPOSE

Dispose User Mem
Softkey that accesses a menu to dispose of all the user programs and variables that are in internal memory.

Note
Use \DELETE\ FILE to selectively delete stored programs or variables from internal memory.

Using \DISPOSE\ USER MEM may change the printer or plotter configuration. Pressing \DISPOSE\ USER MEM sets the printer output to print a black and white print by selecting \COLOR\ MONOHRM, sets the copy device to print when \COPY\ DEV PRNT PLT has PRNT
underlined, and sets the print menu to on when PRT MENU ON OFF has ON underlined. Use Print Config to change any of these functions.

**Key Path**

```plaintext
<table>
<thead>
<tr>
<th>More</th>
<th>Dispose</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONFIG</td>
<td>1 of 3</td>
</tr>
</tbody>
</table>
```

**Related Programming Command**

DISPOSE

* * *

**DROOP**

Softkey that disables the reset of the peak detector on the A16 processor/video assembly after each analog-to-digital conversion. This is a service diagnostic function and is for service use only.

**Key Path**

```plaintext
<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALIBRATE</td>
<td>1 of 3</td>
<td>2 of 3</td>
</tr>
</tbody>
</table>
```

**Related Programming Command**

none

* * *

**DSP LINE**

ON OFF

Softkey that activates an adjustable horizontal line that is used as a visual reference line. The line, which can be used for trace arithmetic, has amplitude values that correspond to its vertical position when compared to the reference level. The value of the display line appears in the active function block and on the left side of the screen. The display line can be adjusted using the step keys, knob, or data keys. To deactivate the display line, press DSP LINE ON OFF so that OFF is underlined. (Also see the VIDEO softkey description.)

**Key Path**

```plaintext
<table>
<thead>
<tr>
<th>DSP LINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
</tr>
</tbody>
</table>
```

```plaintext
<table>
<thead>
<tr>
<th>More</th>
<th>DSP LINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MARKER FUNCTION</td>
<td>1 of 2</td>
</tr>
</tbody>
</table>
```

```plaintext
<table>
<thead>
<tr>
<th>More</th>
<th>DSP LINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEAK SEARCH</td>
<td>1 of 2</td>
</tr>
</tbody>
</table>
```
Related Programming Command
DL

**Dwell Time**
Softkey that sets the dwell time for marker pause, during which demodulation can take place in nonzero span sweeps. The dwell time can be set from 2 milliseconds to 100 seconds.

**Key Path**
SELECT TIME

**Related Programming Command**
none

**Edit Annotation**
Softkey that accesses the annotation editor. The annotation editor allows entry of up to 1500 characters of text using an external keyboard. The annotation text can be stored to a disk or printed using OUTPUT REPORT.

**Key Path**
EDIT ANNOTATN

**Related Programming Command**
EDITANNOT

**Edit Antenna**
Softkey that accesses a menu used to edit antenna amplitude-correction factors.

**Key Path**
SETUP 1 of 3 Factors Factors ANTEENA

**Related Programming Command**
AMPCOR
EDIT CABLE

Softkey that accesses a menu used to edit cable amplitude-correction factors.

Key Path

<table>
<thead>
<tr>
<th>More</th>
<th>Correctn</th>
<th>Cable</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3</td>
<td>Factors</td>
<td>Factors</td>
</tr>
</tbody>
</table>

Related Programming Command

AMPCOR

EDIT CAT ITEM

Softkey that starts the DLP editor function and loads the highlighted item from the catalog of instrument memory to be displayed and edited. It copies the item into the instruments internal DLP editor memory which is a 2500 byte memory buffer. If an item is edited, the new edited version will not be overwritten in the internal memory until it is processed by the SAVE EDIT softkey.

Key Path

<table>
<thead>
<tr>
<th>Recall</th>
<th>Catalog</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>RECALL</td>
<td>Internal</td>
<td>Internal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Save</th>
<th>Catalog</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAVE</td>
<td>Internal</td>
<td>Internal</td>
</tr>
</tbody>
</table>

* Any of the following can be used to complete the key path:
  - CATALOG ALL, CATALOG VARIABLES, or CAT PREFIX.

Related Programming Command

none

Edit Colors

Softkey that accesses a menu to change the display screen colors.

Key Path

<table>
<thead>
<tr>
<th>Display</th>
<th>Adjust</th>
<th>Edit</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>Config</td>
<td>Color</td>
</tr>
</tbody>
</table>

Related Programming Command

SETC
Softkey that can be accessed through the amplitude-correction, menu
the limit-line menu, and the change prefix menu. When accessed
from the amplitude-correction menu, the amplitude-correction factors
table is erased from the screen and the amplitude-correction menu
is restored onscreen. When accessed from the limit-line menu, the
limit-line table is erased from the screen and the limit-line menu is
restored onscreen. Use EDIT DONE when all the amplitude-correction
factors have been entered.

When accessed from the change prefix menu, EDIT DONE erases
the prefix from the screen and restores the previous menu. Use
EDIT DONE when prefix characters have all been entered.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>Change</th>
<th>More</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>(CONFIG)</td>
<td>1 of 3 Prefix</td>
<td>1 of 2</td>
<td>DONE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Change</th>
<th>More</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>(DISPLAY)</td>
<td>1 of 2 Prefix</td>
<td>1 of 2</td>
<td>DONE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recall</th>
<th>Catalog</th>
<th>Change</th>
<th>More</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>(RECALL)</td>
<td>Internal Internal</td>
<td>Prefix</td>
<td>1 of 2</td>
<td>DONE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Save</th>
<th>Catalog</th>
<th>Change</th>
<th>More</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>(SAVE)</td>
<td>Internal Internal</td>
<td>Prefix</td>
<td>1 of 2</td>
<td>DONE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Change</th>
<th>More</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>(SAVE)</td>
<td>Prefix</td>
<td>1 of 2</td>
</tr>
</tbody>
</table>

**Receiver Mode**

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>EDIT</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>(DISPLAY)</td>
<td>1 of 2 Lines</td>
<td>... * LIMIT</td>
<td>DONE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Change</th>
<th>More</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>(DISPLAY)</td>
<td>1 of 2 Prefix</td>
<td>1 of 2</td>
<td>DONE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>Edit</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>(SETUP)</td>
<td>1 of 3 Lines</td>
<td>... * limit</td>
<td>DONE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Correctn</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>(SETUP)</td>
<td>1 of 3 Factors</td>
<td>... † DONE</td>
</tr>
</tbody>
</table>

**Signal Analysis Mode**

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>Edit</th>
<th>More</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>(DISPLAY)</td>
<td>1 of 2 Lines Limit</td>
<td>... § 1 of 2</td>
<td>DONE</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>Edit</th>
<th>More</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>(SETUP)</td>
<td>1 of 3 Lines Limit</td>
<td>... § 1 of 2</td>
<td>DONE</td>
<td></td>
</tr>
</tbody>
</table>

* Either Limit 1 or Limit 2 can be used to complete the key path.
† Any of the following groups of softkeys can be used to complete the key path:
  Antenna Factors: EDIT ANTENNA, or Cable Factors: EDIT CABLE, or Other Factors: EDIT OTHER.

§ Any of the following can be used to complete the key path:
  EDIT UPPER, EDIT LOWER, EDIT UP/LOW, or EDIT MID/DLT.

**Related Programming Command**

*none*

---

**EDIT FLATNESS**

Softkey that allows flatness-correction constants to be viewed or modified. This is a service calibration function and is for service use only.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
<th>Flatness</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALIBRATE</td>
<td>1 of 3</td>
<td>2 of 3</td>
<td>Cal</td>
<td>Data</td>
</tr>
</tbody>
</table>

**Related Programming Command**

*none*

---

**EDIT LAST**

Softkey that starts the DLP editor function and allows the most recent item that was being edited, in the DLP editor buffer, to be accessed again. 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 remains intact when the instrument is preset and when it is powered off.

**Key Path**

<table>
<thead>
<tr>
<th>Recall</th>
<th>Catalog</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>RECALL</td>
<td>Internal</td>
<td>Internal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EDIT</td>
</tr>
<tr>
<td>Save</td>
<td>Catalog</td>
<td>EDIT</td>
</tr>
<tr>
<td>SAVE</td>
<td>Internal</td>
<td>Internal</td>
</tr>
</tbody>
</table>

" Any of the following can be used to complete the key path:
  CATALOG ALL, CATALOG VARIABLES, or CATALOG PREFIX.

**Related Programming Command**

*none*
**Edit Limit**  
*Signal analysis mode only.*

Softkey that allows you to edit the current limit-line tables by accessing *Edit Upper, Edit Lower, Edit Up/Lo*, and *Edit Mid/De*. Use PURGE LIMITS under any of the above edit menus to dispose of the current limit-line table.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>Edit</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>1 of 2 Lines</td>
<td>Limit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>Edit</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3 Lines</td>
<td>Limit</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

**EDIT LIMIT**  
*Receiver mode only.*

Softkey that allows you to edit the current limit-line tables for limit line 1 or limit line 2. Use *DELETE LIMITS* under this menu to dispose of the current limit-line table.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>1 of 2 Lines</td>
<td>... LIMIT</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3 Lines</td>
<td>... LIMIT</td>
</tr>
</tbody>
</table>

* Either Limit 1 or Limit 2 can be used to complete the key path.

**Related Programming Command**

none

---

**EDIT LIST**

Softkey that accesses a menu to edit signal marking functions.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEST</td>
<td>1 of 3 LIST</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none
Signal analysis mode only.

Softkey that 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.

Key Path

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>Edit</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>1 of 2 Lines</td>
<td>Limit</td>
<td>LOWER</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>Edit</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3 Lines</td>
<td>Limit</td>
<td>LOWER</td>
</tr>
</tbody>
</table>

Related Programming Command

LIMIMODE

Signal analysis mode only.

Softkey that allows you to view or edit the upper and lower limit-line tables simultaneously. These tables are edited by entering a middle amplitude value and an amplitude deviation. Up to 30 entries are allowed for the upper and lower limit-line tables. Like the upper and lower limit-line table format, the mid/delta limit-line table format provides a means of specifying the upper and lower limit lines at the same time. Unlike the upper and lower table format, the amplitude values are specified as a middle amplitude value with a delta (the upper and lower limit lines are drawn equal positive and negative distance from the middle amplitude).

With the mid/delta format the frequency (or time), and the middle amplitude plus the delta comprise the upper limit line; the frequency (or time), and the middle amplitude minus the delta comprise the lower limit line. The difference between the mid/delta and the upper/lower format is the way the amplitude values are entered; the frequency (time) coordinate begins a segment regardless of the format chosen. The mid/delta format can be used if the upper and lower limit lines are symmetrical with respect to the amplitude axis. An upper and lower amplitude component are specified for every frequency (or time) component.
Key Path

More Limit Edit EDIT
(DISPLAY) 1 of 2 Lines Limit MID/DELT

More Limit Edit EDIT
(SETUP) 1 of 3 Lines Limit MID/DELT

Related Programming Command
LIMIMODE

EDIT OTHER
Softkey that accesses the ampcor editor to edit correction factors for devices other than antennas and cables.

Key Path

More Correctn Other EDIT
(SETUP) 1 of 3 Factors Factors OTHER

Related Programming Command
AMPCOR

EDIT PA
FLATNESS
Softkey that allows the service center or factory to view the preamp on flatness data of the instrument.

Note
The service password must be entered to execute this command.

Key Path

More More Service Flatness EDIT PA
(CALIBRATE) 1 of 3 2 of 3 Cal Data FLATNESS

Related Programming Command
none

Signal analysis mode only.
Softkey that allows you to view or edit the upper and lower limit-line tables simultaneously. Up to 30 entries are allowed for the upper and lower limit-line tables. With the upper and lower limit-line table format, the upper and lower limit-lines can be entered at the same time.

With the upper and lower limit-line format, the frequency (or time), upper amplitude, and lower amplitude are specified. The frequency (or time) and upper amplitude value comprise the coordinate point.
for the upper limit line, the frequency (or time) and lower amplitude value comprise the coordinate point for the lower limit line. It is not necessary to specify both an upper and lower amplitude component for every frequency (or time) component.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>Edit</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>1 of 2 Lines Limit UP/Low</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>Edit</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3 Lines Limit UP/Low</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Related Programming Command**

LIMIMODE

---

**Signal analysis mode only.**

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

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>Edit</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>1 of 2 Lines Limit UPPER</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>Edit</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3 Lines Limit UPPPER</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Related Programming Command**

LIMIMODE

---

**Signal analysis mode only.**

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

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>Edit</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>1 of 2 Lines Limit ... UPR LWR</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>Edit</th>
<th>EDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3 Lines Limit ... UPR LWR</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Related Programming Command
none

**Editor**

Softkey that accesses the menu of down loadable program (DLP) editor softkeys. Programming commands can be used to write a program to control the instrument. The built-in DLP editor uses the instrument rather than an external computer to create, view, or edit programs. These programs can then be sent to the command parser of the instrument, which is similar to outputting them to the instrument from an external computer.

**Key Path**

```
(Recall)        (Catalog)            Editor
Internal       Internal             ...
```

```
(Save)         (Catalog)           Editor
Internal       Internal            ...
```

" Any of the following can be used to complete the key path.

```
CATALOG ALL, CATALOG VARIABLES, or CATALOG PREFIX.
```

Related Programming Command
none

**EMI RECEIVER**

Softkey that configures the instrument as an EMI receiver.

**Key Path**

```
(Mode)        RECEIVER
EMI
```

Related Programming Command
none
## EPSON MX
Softkey that specifies EPSON MX as the printer connected to the output port.

<table>
<thead>
<tr>
<th>Key Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>Print</td>
</tr>
<tr>
<td>CONFIG</td>
</tr>
</tbody>
</table>

### Related Programming Command

PRNTYPE

## ERASE STATEALL
Softkey that disposes of any or all user-defined variables.

<table>
<thead>
<tr>
<th>Key Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>More</td>
</tr>
<tr>
<td>CONFIG</td>
</tr>
</tbody>
</table>

### Related Programming Command

none

## ERASE TRACEALL
Softkey that disposes of any or all user-defined traces.

<table>
<thead>
<tr>
<th>Key Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>More</td>
</tr>
<tr>
<td>CONFIG</td>
</tr>
</tbody>
</table>

### Related Programming Command

none

## ERRORS
Softkey that activates the error portion of the display screen for color editing.

<table>
<thead>
<tr>
<th>Key Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display</td>
</tr>
<tr>
<td>DISPLAY</td>
</tr>
</tbody>
</table>

### Related Programming Command

SETC
**EXECUTE TITLE**

Softkey that executes a programming command displayed in the screen title area of the instrument. The **Change Title** function can be used to print programming commands in the screen title area of the display. The commands can then be executed from the front panel of the instrument, without an external computer, by pressing the **EXECUTE TITLE** softkey.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
<th>EXECUTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALIBRATE</td>
<td>1 of 3</td>
<td>2 of 3</td>
<td>Cal</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

**EXIT**

Softkey that exits the **EDIT FLATNESS** menu. This is a service calibration function and is designed for service use only.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
<th>Flatness</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALIBRATE</td>
<td>1 of 3</td>
<td>2 of 3</td>
<td>Cal</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

**EXIT CATALOG**

Softkey that returns the instrument to the state it was in before the current catalog function was invoked. It clears the catalog display and returns to a normal display.

**Key Path**

**Receiver Mode**

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>RECALL</th>
<th>EXIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>1 of 2</td>
<td>Lines</td>
<td>LIMITS</td>
</tr>
</tbody>
</table>

**Signal Analysis Mode**

<table>
<thead>
<tr>
<th>Recall</th>
<th>EXIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>RECALL</td>
<td>Disk</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recall</th>
<th>More</th>
<th>EXIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>RECALL</td>
<td>Disk</td>
<td>1 of 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recall</th>
<th>Catalog</th>
<th>EXIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>RECALL</td>
<td>Internal</td>
<td>Internal</td>
</tr>
</tbody>
</table>
Related Programming Command
none

EXIT
Softkey that exits the annotation editor.

EDIT
Key Path

Related Programming Command
EXITANNOT
Related Programming Command
SIGGRAPH

EXIT
LAST CAL
Softkey that exits the LAST CAL menu.

Key Path

More  EXIT
CALIBRATE  1 of 3 Last Cal  LAST CAL

Related Programming Code
none

EXIT
MEASURE
Softkey that exits the MEAS STEPPED menu.

Key Path

More  More  MEAS  EXIT
TEST  1 of 3  2 of 3  STEPPED  MEASURE

More  More  MEAS  EXIT
TEST  1 of 3  2 of 3  STEPPED  STOP  MEASURE

More  More  MEAS  FREQ  EXIT
TEST  1 of 3  2 of 3  STEPPED  STEP  MEASURE

Related Programming Command
none

EXIT
SHOW
Softkey that exits the SHW INST CONFIG function.

Key Path

More  More  SHW INST  EXIT
CONFIG  1 of 3  2 of 3  CONFIG  SHOW

Related Programming Command
HAVE, ID, REF, SER
**EXTERNAL**

Softkey that 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.

**Key Path**

(TRIG) EXTERNAL

**Related Programming Command**

TM

---

**EXTERNAL PREAMP**

Softkey that adds a positive or negative preamplifier gain value, which is subtracted from the displayed signal. EXTERNAL PREAMP is similar to the REF LVL OFFSET; however, with the EXTERNAL PREAMP, the attenuation may be changed depending on the preamplifier gain entered. A preamplifier gain offset is used for measurements that require an external preamplifier or long cables. The offset is subtracted from the amplitude readout so that the displayed signal level represents the signal level at the input of the preamplifier. The preamplifier gain offset is displayed at the top left hand-side of the screen and is removed by entering zero. The preamplifier gain offset is entered using the data keys. Press CAL STORE if you want the instrument to use the current preamplifier gain offset when power is turned on. Preamplifier gain offset is set to zero when DEFAULT CONFIG is pressed. The preamplifier gain value is not affected by an instrument preset.

**Key Path**

More EXTERNAL

(AMPLITUDE) 1 of 3 PREAMP

**Related Programming Command**

PREAMP

---

**FAST STOP**

Softkey that determines how stepped measurements are made. When OFF is selected, the MEAS STEPPED softkey performs a stepped measurement between the specified start and stop frequencies in increments set by the FREQ STEP softkey measuring all the selected detectors to the full accuracy of the instrument. When ON is selected and a limit margin is on (MARGIN # ON OFF), only the steps where the peak amplitude exceeds the limit margin are measured using the selected detectors. Using this softkey under normal conditions results in faster measurements due to the limited number of signals being measured.
**Key Path**

<table>
<thead>
<tr>
<th>TEST</th>
<th>More</th>
<th>More</th>
<th>FAST STP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 of 3</td>
<td>2 of 3</td>
<td>ON</td>
<td>OFF</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SETUP</th>
<th>More</th>
<th>FAST STP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 of 3</td>
<td></td>
<td>ON</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

**FFT MEAS**

This softkey is only available when LIN is selected for the SWEEP LOG LIN softkey.

Softkey that activates a discrete fast Fourier transform based on the current setup. For additional information refer to Chapter 6, Making EMI Diagnostic Measurements, in the EMI Receiver Series User’s Guide.

**Key Path**

| MEAS/USER | FFT MEAS |

**Related Programming Command**

FFT

---

**FINE TUNE DAC**

Softkey that displays the output of the YTO fine-tune DAC, which is produced on the A7 analog interface assembly. This is a service diagnostic function and is for service use only.

**Key Path**

<table>
<thead>
<tr>
<th>CALIBRATE</th>
<th>More</th>
<th>More</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 of 3</td>
<td>2 of 3</td>
<td>Diag</td>
<td>More 1 ... More 3</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none
FLAT

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

**Key Path**

**Receiver Mode**

- **DISPLAY**
  - More  Limit  EDIT  Select
  - 1 of 2  Lines  ...  LIMIT  Type  FLAT

- **SETUP**
  - More  Limit  EDIT  Select
  - 1 of 3  Lines  ...  LIMIT  Type  FLAT

**Signal Analysis Mode**

- **DISPLAY**
  - More  Limit  Edit  Select
  - 1 of 2  Lines  Limit  ...  Type  FLAT

- **SETUP**
  - More  Limit  Edit  Select
  - 1 of 3  Lines  Limit  ...  Type  FLAT

" Either Limit 1 or Limit 2 can be used to complete the key path.

† Any of the following can be used to complete the key path:
  - EDIT UPPER, EDIT LOWER, EDIT UP/LOW, or EDIT MID/DEL.

**Related Programming Command**

none

---

**Flatness Data**

Softkey that accesses a menu used to view or edit the flatness-correction constants. This is a service calibration function and is for service use only.

**Key Path**

- **CALIBRATE**
  - More  More  Service  Flatness  Data
  - 1 of 3  2 of 3  Cal  Data

**Related Programming Command**

none
**FM COIL DRIVE**

Softkey that displays the output of the FM coil driver produced on the A7 analog interface assembly. This is a service diagnostic function and is for service use only.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
<th>FM COIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALIBRATE</td>
<td>1 of 3</td>
<td>2 of 3</td>
<td>Diag</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

**FM GAIN**

Softkey that adjusts the FM deviation display. The center graticule represents zero deviation. The top graticule is the positive deviation set by FM GAIN. The bottom graticule is the negative deviation set by FM GAIN. The range for FM gain is from 3 kHz to 1.175 MHz. The default value is 100 kHz. This is a service calibration function and is for service use only.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALIBRATE</td>
<td>1 of 3</td>
<td>2 of 3</td>
</tr>
</tbody>
</table>

**Related Programming Command**

FMGAIN

---

**FM OFFSET**

Softkey that adjusts the horizontal trace for center-screen with no modulation on the carrier. This is a service diagnostic function and is for service use only.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALIBRATE</td>
<td>1 of 3</td>
<td>2 of 3</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none
**FM SPAN**

Softkey that displays the FM_SPAN signal from the span dividers on the A7 Analog Interface assembly. This is a service diagnostic function and is for service use only.

**Key Path**

| CALIBRATE | More 1 of 3 | More 2 of 3 | Service | More | FM SPAN |

**Related Programming Command**

none

---

**FORMAT DOS DISK**

Softkey that formats a 3.5 inch double-sided floppy disk in DOS format.

A DOS filename consists of:

- prefix (optional)
- register number (required)
- file type descriptor (automatically supplied)

A DOS filename is defined as:

prefix = register #.file type descriptor
for example “PREFIX3.SIG”

The filename, excluding the extension, cannot exceed eight characters. The file type descriptor is a three letter extension such as, “SIG” for a signal list.

**Key Path**

<table>
<thead>
<tr>
<th>Disk</th>
<th>FORMAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Config</td>
<td>DOS DISK</td>
</tr>
</tbody>
</table>

**Related Programming Command**

FORMAT

---

**FORMAT LIF DISK**

Softkey that formats a 3.5 inch double-sided floppy disk in LIF format.

A LIF filename is defined as:

file type descriptor = prefix.register number
for example, “tPREFIX_3”

The filename cannot exceed eight characters. The file type descriptor is a single character preceding the prefix such as, “t” for a trace.
Key Path

Related Programming Command
FORMAT

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

Key Path

Related Programming Command
TM

FREQ DIAG
Softkey that displays, in real-time, frequency diagnostic information for the local oscillator section. This is a service diagnostic function and is for service use only.

Key Path

Related Programming Command
none

FRQ DISC
NORM OFF
Softkey that indicates the status of the frequency discriminator as a function of LO span. This is a service diagnostic function and is for service use only.

Key Path
Related Programming Command
none

FREQ OFFSET

Softkey that inputs a frequency offset value that is added to the frequency readout, to account for frequency conversions external to the instrument. Offset entries are added to all frequency readouts including marker, start frequency, and stop frequency. Entering an offset does not affect the trace. Offsets are not added to the span. Frequency offsets are entered using the data keys.

When a frequency offset is entered, its value is displayed on the top left side of the screen. To eliminate an offset, press FREQ OFFSET and 0 (ENTER). Pressing FREQ OFFSET also sets the offset to zero.

Key Path

<table>
<thead>
<tr>
<th>More</th>
<th>FREQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>(FREQUENCY) 1 of 2</td>
<td>OFFSET</td>
</tr>
</tbody>
</table>

Related Programming Command
FOFFSET

FREQ SCL LOG LIN

Softkey that 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.

Key Path

Receiver mode

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>EDIT</th>
<th>Select</th>
<th>Select</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY 1 of 2 Lines ...</td>
<td>LIMIT</td>
<td>Type</td>
<td>Axis</td>
<td></td>
</tr>
<tr>
<td>AMPL SCL</td>
<td>LOG LIN</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>EDIT</th>
<th>Select</th>
<th>Select</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP 1 of 3 Lines ...</td>
<td>LIMIT</td>
<td>Type</td>
<td>Axis</td>
<td></td>
</tr>
<tr>
<td>FREQ SCL</td>
<td>LOG LIN</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Signal analysis mode

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>Edit</th>
<th>Select</th>
<th>Select</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY 1 of 2 Lines Limit ...</td>
<td>Type</td>
<td>Axis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FREQ SCL</td>
<td>LOG LIN</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
"Either Limit 1 or Limit 2 can be used to complete the key path.

† Any of the following can be used to complete the key path:
EDIT UPPER, EDIT LOWER, EDIT UP/LOW, or EDIT MID/DELT.

Related Programming Command
LIMIFRQSCL

FREQ
STEP
Softkey that sets the size of the frequency step for stepped measurements.

Key Path

Related Programming Command
none

FREQUENCY
Hardkey that activates the center-frequency or start-frequency function and accesses a menu of other frequency functions. The center frequency or start frequency value appears below the graticule on the screen.

Although the instrument allows entry of frequencies greater than the specified frequency range, using frequencies greater than the frequency span of the instrument is not recommended.

Note
When changing both the center frequency and the span, change the frequency first since the span can be limited by the frequency value.
Related Programming Command
none

FRQ SCAN
ON OFF

Softkey that reduces the signal span at the marker to zero span by performing an automatic zoom. When FRQ 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.

Key Path

FRQ SCAN
TEST ON OFF

Related Programming Command
none

FULL SPAN

Softkey that changes the instrument span to full span. The span can be limited if harmonic band lock (BND LOCK ON OFF) is set to ON.

Key Path

FULL SPAN

Related Programming Command
FS

FULL WHITE

Softkey that replaces the standard display screen with a full-sized white box. This is one of 18 test patterns that can be used for display-troubleshooting and screen-alignment procedures.

Key Path

Display Test FULL
DISPLAY Config Patterns WHITE

Related Programming Command
none
Softkey that selects gauss as the transducer conversion units for the antenna amplitude-correction factors.

**Key Path**

<table>
<thead>
<tr>
<th>SETUP</th>
<th>More</th>
<th>Correctn</th>
<th>Antenna</th>
<th>RECALL</th>
<th>More</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 of 3</td>
<td>Factors</td>
<td>Factors</td>
<td>ANTENNA 1 of 2</td>
<td></td>
</tr>
</tbody>
</table>

**Antenna Units**

**Gauss**

**Related Programming Command**

XUNITS

---

Softkey that replaces the standard display screen with a geometric distortion test pattern. This is one of 18 test patterns that can be used for display-troubleshooting and screen-alignment procedures.

**Key Path**

<table>
<thead>
<tr>
<th>DISPLAY</th>
<th>More</th>
<th>Test</th>
<th>GEO DST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Config</td>
<td>1 of 3</td>
<td>Patterns</td>
<td>TEST</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

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

**Key Access**

(SET, CONFIG, DISPLAY, RECALL, SAVE), or (SETUP)

**Related Programming Command**

none

---

Softkey that displays the output of the analog-ground reference produced on the A16 processor/video assembly. This is a service diagnostic function and is for service use only.

**Key Path**

<table>
<thead>
<tr>
<th>CALIBRATE</th>
<th>More</th>
<th>More</th>
<th>Service</th>
<th>GND REF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 of 3</td>
<td>2 of 3</td>
<td>Diag</td>
<td>More 1</td>
<td>DETECTOR</td>
</tr>
</tbody>
</table>
Related Programming Command
none

Softkey that turns the screen graticule on and off. This is helpful when alternative graphics are drawn on the screen through a remote controller and during plotting, when a graticule is not required.

Key Path

Related Programming Command
GRAT

Softkey that activates the graticule portion of the display screen for color editing.

Key Path

Related Programming Command
SETC

Softkey that replaces the standard display screen with a test pattern. This is one of 18 test patterns that can be used for display-troubleshooting and screen-alignment procedures.

Key Path

Related Programming Command
none
GREEN
Softkey that changes the intensity of the green portion of the primary light source output for the display annotation, traces, graticule, and so on.

Key Path

<table>
<thead>
<tr>
<th>Display</th>
<th>Adjust</th>
<th>Edit</th>
<th>HSL</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>Config</td>
<td>Color</td>
<td>Colors</td>
</tr>
<tr>
<td>RGB</td>
<td>GREEN</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Related Programming Command
none

GREEN FILL
Softkey that replaces the standard display screen with a green box. This is one of 18 test patterns that can be used for display-troubleshooting and screen-alignment procedures.

Key Path

<table>
<thead>
<tr>
<th>DISPLAY</th>
<th>Config</th>
<th>Patterns</th>
<th>More</th>
<th>More</th>
<th>More</th>
</tr>
</thead>
<tbody>
<tr>
<td>GREEN</td>
<td>FILL</td>
<td>1 of 4</td>
<td>2 of 4</td>
<td>3 of 4</td>
<td></td>
</tr>
</tbody>
</table>

Related Programming Command
none

GRID
Softkey that replaces the standard display screen with a grid pattern. This is one of 18 test patterns that can be used for display-troubleshooting and screen-alignment procedures.

Key Path

<table>
<thead>
<tr>
<th>DISPLAY</th>
<th>Config</th>
<th>Patterns</th>
<th>More</th>
<th>More</th>
<th>More</th>
<th>More</th>
</tr>
</thead>
<tbody>
<tr>
<td>GREEN</td>
<td>FILL</td>
<td>1 of 4</td>
<td>2 of 4</td>
<td>3 of 4</td>
<td>GRID</td>
<td></td>
</tr>
</tbody>
</table>

Related Programming Command
none
**HALF FILL**

Softkey that replaces the standard display screen with half white screen. This is one of 18 test patterns that can be used for display-troubleshooting and screen-alignment procedures.

**Key Path**

<table>
<thead>
<tr>
<th>Display</th>
<th>Test</th>
<th>HALF</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Config</td>
<td>Patterns</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

**HI VOLT TEST**

Softkey that replaces the standard display screen with a high voltage regulation test pattern. This is one of 18 test patterns that can be used for display-troubleshooting and screen-alignment procedures.

**Key Path**

<table>
<thead>
<tr>
<th>Display</th>
<th>Test</th>
<th>HI VOLT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Config</td>
<td>Patterns</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

**HOLD**

Softkey that 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.

**Key Path**

<table>
<thead>
<tr>
<th>Display</th>
<th>HOLD</th>
</tr>
</thead>
</table>

**Related Programming Command**

HD

---

**HORIZ LINES**

Softkey that replaces the standard display screen with a horizontal lines. This is one of 18 test patterns that can be used for display-troubleshooting and screen-alignment procedures.

**Key Path**

<table>
<thead>
<tr>
<th>Display</th>
<th>Test</th>
<th>More</th>
<th>More</th>
<th>HORIZ</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Config</td>
<td>Patterns</td>
<td>1 of 4</td>
<td>2 of 4</td>
</tr>
</tbody>
</table>
Related Programming Command
none

Softkey that accesses a menu to select one of the following: red, green, or blue (the three primary light sources that make up any color), hue (the pure color), saturation (the ratio of the pure color mixed with white), or luminosity (the brightness-per-unit area). When RGB is underlined, the softkeys RED, GREEN, and BLUE will be displayed. When HSL is underlined, the softkeys HUE, SATURATION, and LUMINOSITY will be displayed.

Key Path

<table>
<thead>
<tr>
<th>Display</th>
<th>Adjust</th>
<th>Edit</th>
<th>HSL</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>Config</td>
<td>Color</td>
<td>Colors</td>
</tr>
</tbody>
</table>

Related Programming Command
SETC

Softkey that changes the hue (pure color) of the specified portion of the display annotation.

Key Path

<table>
<thead>
<tr>
<th>Display</th>
<th>Adjust</th>
<th>Edit</th>
<th>HSL</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>Config</td>
<td>Color</td>
<td>Colors</td>
</tr>
</tbody>
</table>

Related Programming Command
SETC

Softkey that is used when the instrument is powered on the first time. It inputs the instrument model number and option information. This is a service calibration function and is for service use only.

Key Path

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
<th>Flatness</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALIBRATE</td>
<td>1 of 3</td>
<td>2 of 3</td>
<td>Cal</td>
</tr>
</tbody>
</table>

Related Programming Command
none
Softkey that specifies the intermediate frequency bandwidth. When MAN is underlined, the coupling between sweep time and intermediate frequency bandwidth is disabled. When AUTO is underlined, coupling is reestablished.

**Key Path**

| CALIBRATE | More | More | Service | IF BW MAN |

**Related Programming Command**

IFBW, RB

---

Softkey that displays the gain setting of the following: RF Attenuation, 3rd Conv DAC, 21.4 Gain, Cal Attenuation, Lin Gain, and NBW Gain. This is a service calibration function and is for service use only.

**Key Path**

| CALIBRATE | More | More | Service | IF GAINS |

**Related Programming Command**

none

---

Softkey that is used when the instrument is powered on for the first time. It sets the defaults for instrument flatness including the start and stop frequencies and the step size. All of the correction values are set to zero. This is a service calibration function and is for service use only.

**Key Path**

| CALIBRATE | More | More | Service | Flatness | INIT FLT |

**Related Programming Command**

none
Available only for an EMI receiver:

Softkey that 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.

**Key Path**

```
More  INPT LCK
(FREQUENCY)  1 of 2  ON  OFF
```

**Related Programming Command**

RFLINLK

---

Hardkey that accesses a menu to specify the input signal routing path through the RF filter section.

**Related Programming Command**

RFIN

---

Softkey that accesses a menu that allows switching the 300 MHz calibrator signal so that it is routed to the RF input of the instrument.

**Key Path**

```
More  Inst
(SHOT)  1 of 3  Setup  Input
```

**Related Programming Command**

none

---

Softkey that displays the filter calibration data for input 1. This is a service calibration function and is for service use only.

**Key Path**

```
More  More  Service  Display
(CALIBRATE)  1 of 3  2 of 3  Diag  Sys Data  INPUT 1
```

**Related Programming Command**

none
INPUT 1
9k-50M

Softkey that specifies the 9 kHz to 50 MHz input path (INPUT 1) as the signal routing path of the RF filter section.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
<th>Display</th>
<th>INPUT 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>[CALIBRATE] 1 of 3</td>
<td>2 of 3</td>
<td>Diag</td>
<td>Sys Data</td>
<td>PREAMP</td>
</tr>
</tbody>
</table>

**Related Programming Command**

RFIN

---

INPUT 1
PREAMP

Softkey that displays the calibration data for input 1, with the preamplifier on. This is a service calibration function and is for service use only.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
<th>Display</th>
<th>INPUT 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>[CALIBRATE] 1 of 3</td>
<td>2 of 3</td>
<td>Diag</td>
<td>Sys Data</td>
<td>PREAMP</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

INPUT 2

Softkey that is for service use only.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
<th>Display</th>
<th>INPUT 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>[CALIBRATE] 1 of 3</td>
<td>2 of 3</td>
<td>Diag</td>
<td>Sys Data</td>
<td>INPUT 2</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

INPUT 2
20M-2.9G

Softkey that specifies the 20 MHz to 2.9 GHz input path (INPUT 2) as the signal routing path of the RF filter section.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
<th>Display</th>
<th>INPUT 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>[CALIBRATE] 1 of 3</td>
<td>Setup</td>
<td>Input</td>
<td>20M-2.9G</td>
<td></td>
</tr>
</tbody>
</table>
Related Programming Command
RFIN

For an HP 8546A/HP 85462A only.
Softkey that specifies the 1 MHz to 6.5 GHz input path (INPUT 2) as the signal routing path of the HP 85420E/HP 85460A RF filter section.

Key Path

```
INPUT 2
1-6.5G
```

Related Programming Command
RFIN

INPUT 2
BYPASS
Softkey that specifies the bypass input path (INPUT 2) as the signal routing path of the HP 85420E/HP 85460A RF filter section.

Key Path

```
INPUT 2
BYPASS
```

Related Programming Command
BYPASS, RFIN

INPUT 2
PREAMP
Softkey that is for service use only.

Key Path

```
CALIBRATE
1 of 3 2 of 3 Diag Sys Data PREAMP
```

Related Programming Command
none
Softkey that sets the input impedance for voltage-to-power conversions. The impedance you select is for computational purposes only, since the actual impedance of 50Ω is set by internal hardware. The preset value can be changed by using a service function. Select the computational input impedance by pressing [INPUT Z 50Ω 75Ω] or by entering 50 or 75 using the data keys.

**Key Path**

```
AMPLITUDE More INPUT Z
1 of 3 50Ω 75Ω
```

**Related Programming Command**

INZ

---

Softkey that accesses a menu which sets up the instrument for making EMI measurements.

**Key Path**

```
More Inst
SETUP 1 of 3 Setup
```

**Related Programming Command**

none

---

Softkey that changes the intensity or contrast of the display. The intensity level is shown on the top left-hand side of the screen. Use the knob or step keys to adjust the intensity level.

**Key Path**

```
Config Display INTENSITY

DISPLAY INTENSITY
```

**Related Programming Command**

none
INTERNAL

-> STATE

Softkey that recalls the saved instrument state from the selected state register. To recall a state, press INTERNAL -> STATE and use the data keys to enter a state register number (valid state register numbers are 1 through 9). State register 9 contains a previous state; state register 0 contains the current state. If windows are being used, the instrument state can only be recalled into the active window.

Key Path

(RECALL) Internal -> STATE

Related Programming Command

RCLS

Internal

-> Trace

Softkey that accesses a menu that allows you to either; select the trace in which the trace data is to be recalled (trace A, trace B, or trace C), or recall the current limit-line tables. When recalling a trace, select the trace in which the trace data is to be recalled, enter the trace register number, and press (ENTER). If windows are being used, only the trace of the active window can be recalled.

When recalling a limit-line table, press LIMIT LINES, enter the trace register number, and press (ENTER). Valid trace register numbers are 0 through the maximum register number. The maximum register number is the number displayed after MAX REG # = during a save or recall operation. If a screen title is present, it is recalled with the trace data (but not with the limit-line table). If the screen title does not exceed 34 characters, the time and date when the data was stored will also be displayed. INVALID SAVEREG is displayed if data has not been stored in the trace register.

Key Path

(RECALL) Internal -> Trace

Related Programming Command

RCLT
LASERJET Softkey that specifies an HP LaserJet as the printer connected to the output port.

**Key Path**

<table>
<thead>
<tr>
<th>Print</th>
<th>Printer Type</th>
<th>LASERJET</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONFIG</td>
<td>Config</td>
<td>II</td>
</tr>
</tbody>
</table>

**Related Programming Command**

PRNTTYPE

---

LASERJET II Softkey that specifies an HP LaserJet II as the printer connected to the output port.

**Key Path**

<table>
<thead>
<tr>
<th>Print</th>
<th>Printer Type</th>
<th>LASERJET</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONFIG</td>
<td>Config</td>
<td>II</td>
</tr>
</tbody>
</table>

**Related Programming Command**

PRNTTYPE

---

LASERJET III Softkey that specifies an HP LaserJet III as the printer connected to the output port.

**Key Path**

<table>
<thead>
<tr>
<th>Print</th>
<th>Printer Type</th>
<th>LASERJET</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONFIG</td>
<td>Config</td>
<td>III</td>
</tr>
</tbody>
</table>

**Related Programming Command**

PRNTTYPE

---

Last Cal Available only for an EMI receiver:
Softkey that displays the date of the last calibration for both the receiver RF section and the RF filter section.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>Last</th>
<th>Cal</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALIBRATE</td>
<td>1 of 3</td>
<td>Cal</td>
</tr>
</tbody>
</table>
Related Programming Command
none

Last Hrd Key Menu
Softkey that changes the menu to the last hardkey menu that was active. This provides quick access between two separate hardkey menus.

Key Path

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Last Hrd</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3</td>
<td>2 of 3</td>
</tr>
</tbody>
</table>

Related Programming Command
LASTKEYMENU

LAST SPAN
Softkey that changes the frequency span of the instrument to the previous span setting.

Key Path

<table>
<thead>
<tr>
<th>LAST</th>
<th>SPAN</th>
</tr>
</thead>
</table>

Related Programming Command
LSPAN

Limit 1
Receiver mode only.
Softkey that accesses the menu for displaying, testing, deleting, and editing of limit 1 and its corresponding margin.

Key Path

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>1 of 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3</td>
</tr>
</tbody>
</table>

Related Programming Command
LIMINUM
**LIMIT 1**

**Receiver mode only.**
Softkey that displays limit line 1 when ON is underlined.

**Key Path**

```
DISPLAY  More  Limit  LIMIT 1
         1 of 2 Lines  Limit 1 ON OFF
```

```
SETUP  More  Limit  LIMIT 1
       1 of 3 Lines  Limit 1 ON OFF
```

**Related Programming Command**

LIMILINESTA

---

**Limit 2**

**Receiver mode only.**
Softkey that accesses a menu for displaying, testing, deleting, and editing of limit 2 and its corresponding margin.

**Key Path**

```
DISPLAY  More  Limit  Limit 2
         1 of 2 Lines  Limit 2
```

```
SETUP  More  Limit  Limit 2
       1 of 3 Lines  Limit 2
```

**Related Programming Command**

LIMIMUM

---

**LIMIT 2**

**Receiver mode only.**
Softkey that displays limit line 2 when ON is underlined.

**Key Path**

```
DISPLAY  More  Limit  LIMIT 2
         1 of 2 Lines  Limit 2 ON OFF
```

```
SETUP  More  Limit  LIMIT 2
       1 of 3 Lines  Limit 2 ON OFF
```

**Related Programming Command**

LIMILINESTA

---
**LIMIT LINE 1**

Softkey that activates the limit line 1 portion of the display screen for color editing.

**Key Path**

```
Display  Adjust  Edit  More  LIMIT
(DISPLAY)  Config  Color  Colors  1 of 3  LINE 1
```

**Related Programming Command**

SETC

---

**Limit Lines**

Softkey that accesses the limit-line menus.

**Key Path**

```
More  Limit
(DISPLAY)  1 of 2  Lines

More  Limit
(SETUP)  1 of 3  Lines
```

**Related Programming Command**

none

---

**LIMIT LINES**

Softkey that saves or recalls limit-line tables in a trace register to or from a floppy disk or internal memory.

When accessed by [SAVE], the current limit-line table is stored to a trace register in internal memory or on a floppy disk. To save a limit-line table press, LIMIT LINES. REGISTER # and PREFIX= are displayed on the screen. Use the data keys to enter the desired register number then press [ENTER]. The message Saving to :FILENAME is displayed. The limit-line table has now been saved to a disk.

When accessed by [RECALL], the limit-line table will be recalled from a trace register in internal memory. To recall a limit-line table press, LIMIT LINES, use the step keys or knob to highlight the desired file then press LOAD FILE.

**Key Path**

```
Recall  Internal  LIMIT
(RECALL)  Internal  Trace  LINES

Save  Trace  LIMIT
(SAVE)  Internal  -> INTRNL  LINES

Save  More  Trace  LIMIT
(SAVE)  Disk  1 of 2  -> Disk  LINES
```
Related Programming Command
none

LIMITS -> DISK
Softkey that saves the current limit-line data to a floppy disk. To save a limit line press, LIMITS -> DISK. REGISTER # and PREFIX are displayed on the screen. Use the data keys to enter the desired register number then press (ENTER). The message Saving to :FILENAME is displayed. The limit line has now been saved to a disk.

Key Path
SAVE LIMITS
(SAVE Disk -> DISK

Related Programming Command
none

LIMITS FIX REL
Signal analysis mode only.
Softkey that allows you to choose fixed or relative type of limit lines. The fixed (FIX) type uses the current limit line as a reference with fixed frequency and amplitude values. The relative (REL) setting causes the current limit-line value to be relative to the displayed center frequency and reference-level amplitude values. When limit lines are specified with time, rather than frequency, the relative setting only affects the amplitude values. The current amplitude values will be relative to the displayed reference-level amplitude, but the time values will always start at the left edge of the graticule.

As an example, assume you have a frequency limit line. If the limit line is specified as fixed, entering a limit-line segment with a frequency coordinate of 300 MHz displays the limit-line segment at 300 MHz. If the same limit-line table is specified as relative, it is displayed relative to the center frequency and reference level of the instrument. If the center frequency is at 1.2 GHz, a relative limit-line segment with a frequency coordinate of 300 MHz will display the limit-line segment at 1.5 GHz. If the amplitude component of the relative limit-line segment is –10 dB, then –10 dB is added to the reference level value to obtain the amplitude of the given component (reference level offset included).

RELATIVE is displayed in the limit-line table when the limit-line type is relative; FIXED is displayed when limit-line type is fixed.

A limit line entered as fixed may be changed to relative, and one entered as relative may be changed to fixed. When changing between fixed and relative limit-lines, the frequency and amplitude values in the limit-line table change so that the limit line remains in the same position for the current frequency and amplitude settings of the
instrument. If a time and amplitude limit line is used, the amplitude values change but the time values remain the same.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>Edit</th>
<th>More</th>
<th>LIMITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>1 of 2 Lines Limit</td>
<td>...</td>
<td>1 of 2 FIX REL</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>Edit</th>
<th>More</th>
<th>LIMITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3 Lines Limit</td>
<td>...</td>
<td>1 of 2 FIX REL</td>
<td></td>
</tr>
</tbody>
</table>

* Any of the following can be used to complete the key path:
  
  EDIT UPPER, EDIT LOWER, EDIT UP/LOW, or EDIT MID/DELT.

**Related Programming Command**

LIMIREL

---

**LIMITS**

*Signal analysis mode only.*

Softkey that selects whether limit lines will be entered using frequency or sweep time to define the segments. Limit lines can be created by the user to test trace data. They can be specified as a table of limit-line segments of amplitude versus frequency, or of amplitude versus time. Time values are evaluated with respect to the spectrum analyzer sweep time. A time value of zero corresponds to the start of the sweep, which is the left edge of the graticule.

Switching the limit line definition between frequency and time will erase the current limit-line table. The message If you are sure, press key again to purge data will appear. Press LIMITS FRQ TIME again to purge the limit-line table and switch between frequency and time.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>Edit</th>
<th>LIMITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>1 of 2 Lines Limit</td>
<td>FRQ TIME</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>Edit</th>
<th>LIMITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3 Lines Limit</td>
<td>FRQ TIME</td>
<td></td>
</tr>
</tbody>
</table>

**Related Programming Command**

LIMIFT
**LINE**

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

**Key Path**

```
*TRG* LINE
```

**Related Programming Command**

`TM`

---

**LINEARITY**

Softkey that replaces the standard display screen with a linearity test pattern. This is one of 18 test patterns that can be used for display-troubleshooting and screen-alignment procedures.

**Key Path**

```
Display Test

(DISPLAY) Config Patterns LINEARITY
```

**Related Programming Command**

`none`

---

**LINEARITY CHECK**

Hardkey that modifies the input RF attenuation to determine if a measured signal level is undergoing compression. **LINEARITY CHECK** is designed to be used with the Marker Subsystem in order to measure a specific signal level at different RF attenuation values.

**Related Programming Command**

`LINCHK`

---

**LIN**

Softkey that 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.

**Key Path**

```
Define LIN

(OUTPUT) Report ON OFF
```

**Related Programming Command**

`RPTDEF`
**LIST -> DISK**

Softkey that saves the current signal list to a floppy disk. To save a signal list press, LIST -> DISK. REGISTER # and PREFIX= are displayed on the screen. Use the data keys to enter the desired register number then press (ENTER). The message Saving to :FILENAME is displayed. The signal list has now been saved to a disk.

**Key Path**

```
Save LIST
```

```
SAVE Disk -> DISK
```

**Related Programming Command**

none

---

**LIST ON OFF**

Softkey 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.

**Key Path**

```
Define LIST
```

```
OUTPUT Report ON OFF
```

**Related Programming Command**

RPTDEF

---

**LMT DISP Y N AUTO**

*Signal analysis mode only.*

Softkey that 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.

**Key Path**

```
More Limit LMT DISP
```

```
DISPLAY 1 of 2 Lines Y N AUTO
```

```
More Limit LMT DISP
```

```
SETUP 1 of 3 Lines Y N AUTO
```

**Related Programming Command**

LIMIDISP
Softkey that turns the limit-line testing and (if LMT DISP AUTO is selected) turns the display of the limit lines on and off. When limit-line testing is enabled, every measurement sweep of trace A is compared to the limit lines.

**Key Path**

**Receiver Mode**

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>LMT TEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>1 of 2 Lines</td>
<td>&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>LMT TEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3 Lines</td>
<td>&quot;</td>
</tr>
</tbody>
</table>

* Either Limit 1 or Limit 2 can be used to complete the key path.

**Signal Analysis Mode**

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>LMT TEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>1 of 2 Lines</td>
<td>ON OFF</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>LMT TEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3 Lines</td>
<td>ON OFF</td>
</tr>
</tbody>
</table>

**Related Programming Command**

LIMIFAIL, LIMITEST

---

**LOAD FILE**

Softkey that loads a file from the disk in the disk drive or a register into instrument memory.

Use the step keys or knob to view sections of the directory, then press LOAD FILE to select the highlighted file or register.

**Note**

Use of the LOAD FILE softkey is not recommended for recalling limit-line tables or amplitude-correction factors stored in internal memory.

**Key Path**

<table>
<thead>
<tr>
<th>Recall</th>
<th>LOAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>RECALL</td>
<td>Disk</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recall</th>
<th>More</th>
<th>LOAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>RECALL</td>
<td>Disk</td>
<td>1 of 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recall</th>
<th>Catalog</th>
<th>Catalog</th>
<th>LOAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>RECALL</td>
<td>Internal</td>
<td>Internal</td>
<td>Register</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Save</th>
<th>CATALOG</th>
<th>LOAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAVE</td>
<td>Disk</td>
<td>DISK</td>
</tr>
</tbody>
</table>
Save    Catalog    CATALOG    LOAD
(\texttt{SAVE}) Internal    Internal    REGISTER    FILE

RECALL    LOAD
(\texttt{SETUP}) SETUP    FILE

More Correctn    LOAD
(\texttt{SETUP}) 1 of 3 Factor    ... § FILE

More    Save/Rcl    RECALL    LOAD
(\texttt{TEST}) 1 of 3 List    LIST    FILE

" Any of the following can be used to complete the key path:
\texttt{CATALOG DISK}, \texttt{RECALL SETUP}, \texttt{RECALL LIST}, \texttt{RECALL LIMITS},
or \texttt{RECALL ANTEENA}.

† Any of the following can be used to complete the key path:
\texttt{RECALL CABLE}, \texttt{RECALL OTHER}, or \texttt{RECALL TRACE}.

§ Any of the following groups of softkeys can be used to complete the key path:
Antenna Factors \texttt{RECALL ANTEENA}, or Cable Factors \texttt{RECALL CABLE},
or Other Factors \texttt{RECALL OTHER}.

\textit{Receiver Mode}

More    Limit    RECALL    LOAD
(\texttt{DISPLAY}) 1 of 2 Lines    LIMITS    FILE

More    Limit    RECALL    LOAD
(\texttt{SETUP}) 1 of 3 Lines    LIMITS    FILE

\textbf{Related Programming Command}

LOAD

\textbf{(LOCAL)}

Pressing \texttt{CONFIG} (LOCAL) after the instrument has been placed in the remote mode places the instrument in the local mode and enables front-panel control. During remote operation, "R" appears in the lower-right corner of the screen indicating remote and talk. A "T" or "L" may appear during remote operation, indicating talk or listen.

Pressing the \texttt{CONFIG} key removes the "R" symbol in the lower-right corner.
Softkey that 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.

**Key Path**

Define LOG

OUTPUT Report ON OFF

**Related Programming Command**

RPTDEF

---

**LOGF SPD**: This softkey is only available when LOG is selected for the sweep softkey.

Softkey that selects between optimizing the frequency accuracy or minimizing the scan time. When “STD” is selected the frequency accuracy of the sweep is optimized. When “FAST” is selected the scan time of the sweep is minimized.

**Note**

Selecting the LOGF SPD STD FAST function has an effect on the minimum sweep time selected by the SWEEP TIME AUTO MAN function. The minimum sweep time is less than or equal to the minimum sweep time when SWEEP TIME AUTO MAN (AUTO) is selected.

**Key Path**

More LOGF SPD

FREQUENCY 1 of 2 STD FAST

LOGF SPD

SWEEP STD FAST

**Related Programming Command**

LOGSWEEPSPD

---

**LUMINOSITY**

Softkey that changes the luminosity (the brightness-per-unit area) of the specified portion of the display annotation.

**Key Path**

Display Adjust Edit HSL LUMINOSITY

DISPLAY Config Color Colors ... RGB OSITY
**Related Programming Command**

SETC

---

**Main COIL DR**

Softkey that displays the output produced by the main-coil driver on the A7 analog interface assembly. This is a service diagnostic function and is for service use only.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
<th>MAIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALIBRATE</td>
<td>1 of 3</td>
<td>2 of 3</td>
<td>Diag</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

**Main SPAN**

Softkey that displays the main-coil-span signal, MC_SPAN, from the span dividers on the A7 analog interface assembly. This is a service diagnostic function and is for service use only.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
<th>MAIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALIBRATE</td>
<td>1 of 3</td>
<td>2 of 3</td>
<td>Diag</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

**MAN TRK ADJUST**

Softkey that allows the user to adjust the frequency of the tracking-generator oscillator manually using the step keys or knob. The tracking adjust is tuned to maximize the amplitude of the trace.

Tracking error occurs when the output frequency of the tracking generator is not exactly matched to the input frequency of the instrument. The resulting mixing product from the instrument input mixer is not at the center of the IF bandwidth. Any tracking errors may be compensated for by manually adjusting the oscillator of the tracking generator, or by performing an automatic tracking routine, which is initiated by pressing **TRACKING PEAK**.

**Key Path**

<table>
<thead>
<tr>
<th>MAN TRK</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRACK GEN ADJUST</td>
</tr>
</tbody>
</table>
**Related Programming Command**

SRCTK

---

**MARGIN 1**

<table>
<thead>
<tr>
<th>ON</th>
<th>OFF</th>
</tr>
</thead>
</table>

Softkey that sets the amplitude (in negative decibels) and display state for limit margin 1. The limit margin is a fixed amplitude relative to the limit line.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>MARGIN 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>(DISPLAY) 1 of 2 Lines Limit 1 ON OFF</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>MARGIN 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>(SETUP) 1 of 3 Lines Limit 1 ON OFF</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Related Programming Command**

LIMIMARGAMP, LIMIMARGSTA

---

**MARGIN 2**

<table>
<thead>
<tr>
<th>ON</th>
<th>OFF</th>
</tr>
</thead>
</table>

Softkey that sets the amplitude (in negative decibels) and display state for limit margin 2. The limit margin is a fixed amplitude relative to the limit line.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>MARGIN 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>(DISPLAY) 1 of 2 Lines Limit 2 ON OFF</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>MARGIN 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>(SETUP) 1 of 3 Lines Limit 2 ON OFF</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Related Programming Command**

LIMIMARGAMP, LIMIMARGSTA

---

**MARK ALL**

<table>
<thead>
<tr>
<th>DUPLICAT</th>
</tr>
</thead>
</table>

Softkey that marks all identical signals in the signal list.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>EDIT Signal Selectv MARK ALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>(TEST) 1 of 3 LIST Marking Mark DUPLICAT</td>
<td></td>
</tr>
</tbody>
</table>

**Related Programming Command**

SIGMARK

---
<table>
<thead>
<tr>
<th>Case</th>
<th>Description</th>
<th>Key Path</th>
<th>Related Programming Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>MARK ALL SIGNALS</td>
<td>Softkey that marks all signals in the signal list.</td>
<td><strong>More</strong></td>
<td>EDIT</td>
</tr>
<tr>
<td>MARK LWR DUPLICAT</td>
<td>Softkey that marks all duplicate signals in the list that are lower in peak amplitude.</td>
<td><strong>More</strong></td>
<td>EDIT</td>
</tr>
<tr>
<td>MARK SIGNAL</td>
<td>Softkey that marks the highlighted signal in the signal list.</td>
<td><strong>More</strong></td>
<td>EDIT</td>
</tr>
<tr>
<td>MARK TO END</td>
<td>Softkey that marks all signals, after the highlighted signal, to the end of the list.</td>
<td><strong>More</strong></td>
<td>EDIT</td>
</tr>
</tbody>
</table>
MARKER

Softkey that activates a single marker at the center frequency on the active trace if an onscreen marker is not already displayed. If there is an onscreen marker, a frequency marker is enabled at the position of the first marker. Use the knob and data keys to position the marker. When a measurement point is selected with the marker, the frequency and the selected detectors (peak, quasi-peak, and average detectors) are displayed in the marker box.

Key Path

<table>
<thead>
<tr>
<th>Test</th>
<th>More</th>
<th>More</th>
<th>MEAS</th>
<th>1 of 3</th>
<th>2 of 3</th>
<th>STEPPED</th>
<th>STOP</th>
<th>MARKER</th>
</tr>
</thead>
</table>

Related Programming Command

none

MARKER A

Softkey that activates a second marker at the position of the first marker. (If no marker is present, two markers appear at the center of the display.) The amplitude and frequency of the first marker is fixed, and the second marker is under your control. Annotation in the active function block and in the upper-right corner of the screen indicates the frequency and amplitude differences between the two markers. The display mode must not be changed between log and linear while using a delta marker.

Note

If there are already four markers when MARKER A is pressed, a nonactive marker disappears, the active marker becomes a reference marker, and the delta marker becomes the active marker.

Key Path

<table>
<thead>
<tr>
<th>Mkr</th>
<th>MARKER A</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEAK SEARCH</td>
<td>MARKER A</td>
</tr>
</tbody>
</table>

Related Programming Command

MKD
**MARKER ΔSPAN**

Softkey that 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.

**Key Path**

\[
\text{MARKER} \rightarrow \text{ΔSPAN}
\]

**Related Programming Command**

MKSP

**MARKER ➔ CF**

Softkey that changes the instrument settings so that the frequency at the marker becomes the center frequency.

**Key Path**

\[
\text{MARKER} \rightarrow \text{CF} \rightarrow \text{MARKER}
\]

**PEAK SEARCH ➔ CF**

**Related Programming Command**

MKCF

**MARKER ➔ CF STEP**

Softkey that changes the center-frequency step size to match the value of the active marker. Press (FREQUENCY) then CF STEP AUTO MAN to view the step size. If marker delta is active, the step size will be set to the frequency difference between the markers.

**Key Path**

\[
\text{MARKER} \rightarrow \text{CF STEP}
\]

**Related Programming Command**

MKSS
**MARKER→MINIMUM**

Softkey that moves the active marker to the minimum detected amplitude value.

**Key Path**

\[
\text{MARKER→MINIMUM}
\]

**Related Programming Command**

MKMIN

**MARKER→PK-PK**

Softkey that finds and displays the frequency and amplitude differences between the highest and lowest trace points. Pressing \text{MARKER→PK-PK} performs the routine similar to pressing the following keys: \text{(PEAK SEARCH)}, \text{MARKER A}, \text{and} \text{MARKER→MINIMUM}.

**Key Path**

\[
\text{More MARKER MKR→1 of 2→PK-PK}
\]

**Related Programming Command**

MKPK

**MARKER→REF LVL**

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

**Key Path**

\[
\text{MARKER MKR→→REF LVL}
\]

**Related Programming Command**

MKRL
MARKER

\rightarrow START

Softkey that changes the start frequency so that it is equal to the frequency of the active marker. This moves the active marker to the left edge of the display.

**Key Path**

\[ \text{More} \rightarrow \text{MARKER} \rightarrow \text{START} \]

**Related Programming Command**

none

MARKER

\rightarrow STOP

Softkey that changes the stop frequency so that it is equal to the frequency of the active marker. This moves the active marker to the right edge of the display.

**Key Path**

\[ \text{More} \rightarrow \text{MARKER} \rightarrow \text{STOP} \]

**Related Programming Command**

MKSTOP

MARKER 1

ON OFF

Softkey that makes marker 1 the active marker. If there is more than one marker displayed on the display, marker 1 must be made active before it can be manipulated.

**Key Path**

\[ \text{MARKER 1} \rightarrow \text{ON OFF} \]

**Related Programming Command**

MKACTV

MARKER 2

ON OFF

Softkey that makes marker 2 the active marker. If there is more than one marker displayed on the display, marker 2 must be made active before it can be manipulated.

**Key Path**

\[ \text{MARKER 2} \rightarrow \text{ON OFF} \]
Related Programming Command
MKACTV

MARKER 3
ON OFF
Softkey that makes marker 3 the active marker. If there is more than one marker displayed on the display, marker 3 must be made active before it can be manipulated.

Key Path

MARKER 3
(MKR) ON OFF

Related Programming Command
MKACTV

MARKER 4
ON OFF
Softkey that makes marker 4 the active marker. If there is more than one marker displayed on the display, marker 4 must be made active before it can be manipulated.

Key Path

MARKER 4
(MKR) ON OFF

Related Programming Command
MKACTV

MARKER
ALL OFF
Softkey that turns off all of the markers, including markers used for marker track and demodulation. Marker annotation is also removed.

Key Path

MARKER
(MKR) 1 of 2 ALL OFF

Related Programming Command
MKOFF
Softkey that keeps the active marker at the requested amplitude on the screen. Once activated, the marker remains at the amplitude selected by the step keys, knob, or data keys, even if the signal frequency is changed. The marker will be placed on the signal furthest left at that amplitude. If no signal exists at that amplitude, it will be placed above the highest signal amplitude (or below the lowest trace element if it is below all trace elements). When marker delta is active in addition to marker amplitude, the behavior of the active marker is useful for measuring signal bandwidths. For example, place a marker 20 dB below the peak of a signal, press MARKER Δ, MARKER AMPTD. The marker readout shows the 20 dB bandwidth.

**Key Path**

MARKER

MARKER AMPTD

**Related Programming Command**

MKA, MKTYPE

MARKER FUNCTION

Hardkey that accesses the marker function softkeys. These softkeys can be used to access the marker table and to turn on marker functions for tracking the signal and counting its frequency. Noise markers and the marker pause are also accessed under MARKER FUNCTION.

**Related Programming Command**

none

MARKER NORMAL

Softkey that activates a single frequency marker at the center frequency on the active trace if an onscreen marker is not already displayed. If there is an onscreen marker before the MARKER NORMAL function is enabled, a frequency marker is enabled at the position of the first marker. Use the data controls to position the marker. Annotation in the active function block and in the upper-right corner indicates the frequency and amplitude of the marker. The marker stays on the trace at the horizontal screen position where it was left unless MK TRACK ON OFF, MARKER AMPTD, or a "marker to" softkey function (such as MARKER ->CF, MARKER ->REF LVL, MARKER ->CF STEP, MARKER Δ ->SPAN, or MARKER -> MINIMUM) is selected. Pressing MARKER NORMAL turns off the marker-delta function.
**Key Path**

<table>
<thead>
<tr>
<th>Marker</th>
<th>Normal</th>
</tr>
</thead>
</table>

**Related Programming Command**

MKN

---

**MARKERS**

Softkey that activates the markers portion of the display screen for color editing.

**Key Path**

<table>
<thead>
<tr>
<th>Display</th>
<th>Adjust</th>
<th>Edit</th>
<th>More</th>
<th>More</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display</td>
<td>Config</td>
<td>Colors</td>
<td>Colors</td>
<td>1 of 3</td>
</tr>
</tbody>
</table>

**Related Programming Command**

SETC

---

**MARKER TUNE SPN**

Softkey that modifies the behavior of the marker positioning functionality of the instrument when accessed through the data keys, knob, or stepkeys.

When **MARKER TUNE SPN** is activated and TUNE is underlined:

- Data key input, positions frequency and time markers at the specified numeric frequency input, tuning the instrument to the specified frequency if necessary. Numeric key-pad input terminators are “Hz, kHz, MHz, or GHz.”

- Knob input, repositions the marker position as a function of frequency, tuning the instrument to its specified frequency if the knob input places the marker position beyond the limits of the current span.

- Step-key input:
  - Zero-span, steps the marker to the edge of the display and resets the instrument on succeeding step-key presses.

  - Non-zero span, positions the marker at the next peak left ((.Angle)) or next peak right ((Angle)) by one half of the intermediate frequency bandwidth. If no signals exist, the marker is positioned at the left edge ((Angle)) or the right edge ((Angle)) of the display. If the marker is already at the edge of the display, subsequent steps return the instrument by a step equal to the size of the current span.
**Key Path**

MARKER

**Related Programming Command**
RCVRMRKR

**MAX HOLD A**
Softkey that maintains the maximum level for each trace point of trace A and updates each trace point if a new maximum level is detected in successive sweeps.

**Key Path**

MAX

**Related Programming Command**
MXMH

**MAX HOLD B**
Softkey that maintains the maximum level for each trace point of trace B and updates each trace point if a new maximum level is detected in successive sweeps.

**Key Path**

MAX

**Related Programming Command**
MXMH

**MAX MXR LVL**
Softkey that 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.

**Key Path**

More  MAX MXR

**Related Programming Command**
MXMH

**AMPLITUDE** 1 of 3 LVL
**Related Programming Command**

ML

---

**Softkey that sets the stepped measurements for either single or continuous sweep mode.**

**Key Path**

```
  More  More  MEAS  MEAS
TEST  1 of 3  2 of 3 STEPPED SNG CONT
```

---

**Related Programming Command**

none

---

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

**Key Path**

```
  More  More  MEAS
TEST  1 of 3  2 of 3 STEPPED
```

---

**Related Programming Command**

none

---

**Hardkey that switches between the User Menu and the menu containing FFT MEAS, 3 dB POINTS, 6 dB POINTS, 99% PWR PW, % AM, 3rd ORD MEAS, DELTA MEAS, and PK-PK MEAS. If no keys have been defined in the user menu, No User Menu is displayed.**
### MEASURE AT MKR

**Softkey that makes a measurement, using specified detectors, with the marker position as the measurement frequency.**

**Note**

When the selected bandwidth is a non-CISPR bandwidth the message, Non-CISPR bandwidth being used, press CONTINUE to resume or press USE CISPR to change, is displayed.

### Key Path

<table>
<thead>
<tr>
<th>MEASURE</th>
<th>TEST</th>
<th>AT MKR</th>
</tr>
</thead>
</table>

### Related Programming Command

**MEASSIG**

### Measure Detector

**Softkey that accesses a menu to select automatic measuring or the measurement time of the specified detectors.**

### Key Path

<table>
<thead>
<tr>
<th>More</th>
<th>Inst</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3</td>
<td>Setup Detector</td>
</tr>
</tbody>
</table>

### Related Programming Command

**none**

### MEM LOCKED

**Softkey available only when SAV LOCK ON OFF is on.**

Softkey that locks all the current internal state and trace registers against further data storage. With the state and trace memory locked, the **STATE -> INTRNL** and **Trace -> Intrnl** softkey functions are no longer accessible; **MEM LOCKED** is displayed instead. Pressing **DEFAULT CONFIG** or **PRESET** sets **SAV LOCK ON OFF** to **OFF**.

**Note**

When **SAV LOCK ON OFF** is set to **ON**, none of the state registers can be overwritten, including state register nine. The instrument automatically updates state register nine with the last state unless the save lock function is on.
Related Programming Command

PSTATE

Softkey that updates trace C with the minimum level detected.

Key Path

MIN
HOLD C

Related Programming Command

MINH

MIXER BIAS DAC

For an HP 8546A/HP 85462A only.
Softkey that displays the output of the mixer-bias DAC from the
first-converter driver on the A7 analog interface assembly. This is a
service diagnostic function and is for service use only.

Key Path

CALIBRATE More More Service
1 of 3 2 of 3 Diag More 1 ... More 5
MIXER
BIAS DAC

Related Programming Command

none

MK COUNT ON OFF

Softkey that turns on the marker counter when ON is underlined.
If no marker is active before MK COUNT ON OFF is pressed, a
marker is activated at center screen. Press MK COUNT ON OFF
(so that OFF is underlined), to turn the marker counter off. Press
CNT RES AUTO MAN to change the marker counter resolution to an
uncoupled value.

An (*) may appear in the upper right of the display along with the
message Marker Count. The ratio of the intermediate frequency
bandwidth to span must be greater than 0.01 for the marker count
function to work properly. Reduce Span appears on screen if the
bandwidth to span ratio is less than 0.01. The function will count the
largest signal in a 300 Hz bandwidth even if a narrower bandwidth
setting is used.
Key Path

MK COUNT

MARKER FUNCTION

ON OFF

Related Programming Command

MKFC

MK NOISE

ON OFF

Softkey that reads out the average noise level, referenced to a 1 Hz noise power bandwidth, at the marker position. If no marker is present, a marker appears at the center of the screen. The root-mean-square noise level, normalized to a 1 Hz noise power bandwidth, is read out. The sample detector is activated.

Key Path

MK NOISE

MARKER FUNCTION

ON OFF

Related Programming Command

MKNOISE

MK PAUSE

ON OFF

Softkey that stops the instrument sweep at the marker position for the duration of the dwell time. The dwell time can be set from 2 milliseconds to 100 seconds.

Key Path

MK PAUSE

MARKER FUNCTION

ON OFF

Related Programming Command

MKPAUSE

MK

Hardkey that 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 MK activates the MARKER NORMAL softkey.
Related Programming Command
none

MKR ->

Hardkey that 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 △ SPAN

Related Programming Command
none

MK READ
F T I P

Softkey that 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. When the instrument is in zero span the frequency type readout cannot be selected.

Key Path

MK READ

Related Programming Command
MKREAD

MK TRACE
AUTO ABC

Softkey that assigns a marker to a trace. Pressing MK TRACE AUTO ABC will activate a marker on trace A if there are no markers turned on. If a marker is currently active, press MK TRACE AUTO ABC until A, B, or C are underlined. The active marker will be moved to the selected trace.

Selecting the auto mode will move the marker to the trace that is automatically selected. The selection order is to first look for a trace in the clear-write mode, in trace A, then trace B, then trace C. If no traces are currently being written, it will select a trace in the view-store mode, again in the order of trace A, B, then C.
Key Path

MK TRACK

ON OFF

Related Programming Command

MKTRACE

Softkey that moves the signal that is nearest to the active marker to the center of the screen and keeps the signal there. MKR-TRK or CNTR-TRK appears in the upper-right corner of the display. An (*) may appear in the upper-right corner of the display while the instrument is verifying that it has the correct signal.

Pressing MK TRACK ON OFF, PRESET, MARKER NORMAL, or MARKER ALL OFF turns off the marker-track function.

When marker track is on and the span is reduced, an automatic zoom is performed: the span is reduced in steps so that the signal remains at the center of the screen. If the span is zero, marker track cannot be activated.

Key Path

MARKER FUNCTION

ON OFF

Related Programming Command

MKTRACK

Softkey that accesses a menu for selecting screen title or prefix characters M through R.

Key Access

CAL, CONFIG, DISPLAY, RECALL, $AVE, or SETUP

Related Programming Command

none
Hardkey that accesses the menu for selecting EMI RECEIVER or SIGNAL ANALYSIS modes of operation.

**Related Programming Command**

none

---

**MONO-COLOR**

Softkey that sets the screen display to green monochrome. The monochrome display is uses different shades of green for each green value. This is especially useful for driving external monochrome monitors from the green video output.

**Key Path**

<table>
<thead>
<tr>
<th>Display</th>
<th>Adjust</th>
<th>Special MONO-</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>Config</td>
<td>Color Colors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CHROME</td>
</tr>
</tbody>
</table>

**Related Programming Command**

SETC

---

**NEW EDIT**

Softkey that 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.

**Key Path**

<table>
<thead>
<tr>
<th>Recall</th>
<th>Catalog</th>
<th>NEW</th>
</tr>
</thead>
<tbody>
<tr>
<td>RECALL</td>
<td>Internal Internal ...</td>
<td>Editor EDIT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Save</td>
<td>Catalog</td>
<td>NEW</td>
</tr>
<tr>
<td>SAVE</td>
<td>Internal Internal ...</td>
<td>Editor EDIT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Any of the following can be used to complete the key path:
  - CATALOG ALL, CATALOG VARIABLES, or CATALOG PREFIX.

**Related Programming Command**

none
Hardkey that selects the upper or lower window as the active window. When the windows display mode is activated, there will be two windows displayed on the screen. Only one of the windows is active (the active window will have a highlighted line around the graticule). Pressing NEXT consecutively, will toggle between the two windows.

**Related Programming Command**

WINNEXT

---

Softkey that displays the next page of the instrument setup. For example, if you are currently viewing page 2 of the instrument setup pressing NEXT PAGE will display page 3 of the instrument setup.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>SHOW</th>
<th>NEXT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3</td>
<td>SETUP PAGE</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

Softkey that moves the active marker to the next signal peak of higher amplitude. The signal peak must exceed the threshold value. (Also see the PEAK EXCURSN and THRESHLD ON OFF softkey descriptions.)

**Key Path**

| NEXT |
| PEAK SEARCH | PEAK |

**Related Programming Command**

MKPK

---

Softkey that moves the marker to the next peak left of the current marker. The signal peak must exceed the threshold value. If there is no peak to the left, the marker will not move. (Also see the PEAK EXCURSN and THRESHLD ON OFF softkey descriptions.)

**Key Path**

| NEXT PK |
| PEAK SEARCH | LEFT |
Related Programming Command
MKPK

**NEXT PK RIGHT**
Softkey that moves the marker to the next peak right of the current marker. The signal peak must exceed the threshold value. If there is no peak to the right, the marker will not move. (Also see the PEAK EXCURSN and THRESHLD ON OFF softkey descriptions.)

**Key Path**

**Related Programming Command**
MKPK

**NO CONVERSN**
Softkey that specifies that no conversion units are used for the antenna amplitude-correction factors.

**Key Path**

**Related Programming Command**
XUNITS

**No User Menus**
Softkey that is displayed if no user menus have been defined by the user.

**Key Path**

**Related Programming Command**
none
Softkey that subtracts trace B from trace A and adds the result to the display line. The result is displayed in trace A. The trace data is normalized with respect to the display line even if the value of the display line is changed. This function is executed on all subsequent sweeps until it is turned off. A minus sign (−) appears between the trace A status and the trace B status in the screen annotation while the function is active. To turn off the normalize function, press \texttt{NORMALIZE ON OFF} so that OFF is underlined.

The normalize function is useful for applying correction data to a trace. For example, store a measurement sweep of the response of a system in trace B. Trace A can be used to measure the response of the system after a device is added. Set \texttt{NORMALIZE ON OFF} to ON to subtract the system response from the response of the device under test, to characterize the response of a device under test.

**Key Path**

\begin{verbatim}
More  NORMALIZE
\end{verbatim}

**Related Programming Command**

\texttt{AMBPL}

---

Softkey that 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.

**Key Path**

\begin{verbatim}
More  NORMALIZE
\end{verbatim}

**Related Programming Command**

\texttt{none}

---

Hardkey that turns the AM or FM demodulation on and off. If the instrument is in a nonzero span, a marker is placed at center screen if an onscreen marker is not already present. The marker pause is changed to equal the current dwell time value. Demodulation takes place on any signal that is indicated by the marker position during the marker pause. There is no change to the display during marker pause, but the demodulation signal is present on the AUX VIDEO OUT. Also see the \texttt{SPEAKER ON/OFF} softkey description.

Pressing \texttt{ON/OFF} selects the sample peak detector for AM demodulation, the FMV detectors for FM demodulation. If the instrument is in zero span, demodulation is done continuously, with or without an onscreen marker.
Related Programming Command

DEMOD

**OPTICAL FILTER** Softkey that selects a vision enhanced mode where an optical filter is used to accommodate the use of protective goggles when viewing lasers.

**Key Path**

- Display
- Adjust
- Special
- OPTICAL

**Related Programming Command**

SETC

**OTHER -> DISK** Softkey that saves other two-port amplitude-correction factors to a disk. To save other amplitude-correction factors press, OTHER -> DISK. REGISTER # and PREFIX= are displayed on the screen. Use the data keys to enter the desired register number then press [ENTER]. The message Saving to :FILENAME is displayed. The other two-port amplitude-correction data has now been saved to a disk.

**Key Path**

- Save
- More
- OTHER

**Related Programming Command**

none

**Other Factors** Softkey that 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.

**Key Path**

- More
- Correctn
- Other

**Related Programming Command**

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

**Key Path**

```
[SETUP] 1 of 3 Factors Factors ON OFF
```

**Related Programming Command**

AMPCOR

---

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

**Related Programming Command**

none

---

Softkey that outputs a report to the specified plotter or printer.

**Key Path**

```
OUTPUT REPORT
```

**Related Programming Command**

none

---

Softkey that enables or disables RF and IF overload status.

**Key Path**

```
AMPLITUDE ON OFF
```

```
SETUP 1 of 3 Setup ON OFF
```

**Related Programming Command**

OVL.D
PAINTJET

Softkey that specifies an HP PaintJet as the printer connected to the output port.

**Key Path**

<table>
<thead>
<tr>
<th>Print</th>
<th>Printer</th>
<th>More</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONFIG</td>
<td>Config</td>
<td>Type</td>
</tr>
<tr>
<td>1 of 3</td>
<td>PAINTJET</td>
<td></td>
</tr>
</tbody>
</table>

**Related Programming Command**

PRNTTYPE

PALETTE BARS

Softkey that replaces the standard display screen with palette bars. This is one of 18 test patterns that can be used for display-troubleshooting and screen-alignment procedures.

**Key Path**

<table>
<thead>
<tr>
<th>Display</th>
<th>Test</th>
<th>More</th>
<th>PALETTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>Config</td>
<td>Patterns</td>
<td>1 of 4</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

PEAK EXCURSN

Softkey that sets the minimum amplitude variation of signals that the marker can identify as a peak. If a value of 10 dB is selected, the marker moves only to peaks that rise and fall more than 10 dB above the threshold line (or the noise floor of the display). Pressing [PRESET] or turning on power resets the excursion to 6 dB, and the threshold to 70 dB below the reference level.

**Note**

When a peak has a lump on its skirt that is the peak-exursion value above the threshold, the lump is considered a peak in its own right only if it has a peak excursion drop on both sides. Two peaks that are so close that only a valley divides them are not differentiated if the valley is not the peak-exursion value deep.

When the peak excursion value is less than 6 dB, the marker-peak functions may not recognize signals less than 6 dB above the noise floor. To correct this, when measuring signals near the noise floor, the excursion value can be reduced even further. To prevent the marker from identifying noise as signals, reduce the noise floor variance to a value less than the peak-exursion value by reducing the average video bandwidth or by using video averaging.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>PEAK</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEAK SEARCH</td>
<td>1 of 2</td>
</tr>
</tbody>
</table>

Key Dictionary Reference 4-135
Related Programming Command
MKPX

Peak Menu
Softkey that accesses the softkeys that are available when (PEAK SEARCH) is pressed (see the key description for (PEAK SEARCH) below). Pressing Peak Menu instead of (PEAK SEARCH) allows you to use the peak-search functions without initiating a new peak search.

Key Path

Related Programming Command
none

PEAK SEARCH
Hardkey that automatically places a marker on the highest amplitude of a trace, and displays the amplitude and frequency of the marker. It also accesses the menus of marker peak functions.

Related Programming Command
MKPK

PK Dwell TIME
Softkey that 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.

Key Path

Related Programming Command
MEASTIMEPK
PK-PK MEAS

Softkey that 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.

Key Path

More PK-PK

MEAS/USER 1 of 2 MEAS

Related Programming Command

none

-------

Plot Config

Softkey that accesses the menu used to address the plotter and to select plotter options. See the COPY key for more information.

Key Path

Plot

CONFIG Config

Related Programming Command

none

-------

PLOTTER ADDRESS

Softkey that changes the HP-IB address of the plotter. The plotter address is set to 5 when DEFAULT CONFIG is pressed.

Key Path

Plot PLOTTER

CONFIG Config ADDRESS

Related Programming Command

none
Softkey that allows the softkey labels to be plotted along with the display. This function operates when the (COPY) key is used in a plot configuration. The plot menu function is set to on when DEFAULT CONFIG is pressed.

**Key Path**

```
Plot  PLT MENU
  [CONFIG]  Config  ON OFF
```

**Related Programming Command**

none

---

Softkey that allows you to choose a full-page, half-page, or quarter-page plot. Press PLTS/PG 1 2 4 to underline the number of plots per page desired. If two or four plots per page are chosen, a softkey function is displayed that allows you to select the location of the plotter output on the paper. If two plots per page are selected, [ ] LOC _ _ is displayed. If four plots per page are selected, [] _LOC _ _ is displayed. Press the softkey until the rectangular marker is in the desired section of the softkey label. The upper and lower sections of the softkey label graphically represent the position of the page where the plotter output will be located.

**Note**

The HP 7470A plotter does not support two plots per page output, you can select one or four plots per page.

**Key Path**

```
Plot  PLTS/PG
  [CONFIG]  Config  1 2 4
```

**Related Programming Command**

none

---

Softkey that specifies a limit value for one coordinate point, so that a point segment specifies a limit value for a single frequency. (For signal analysis mode only, the point segment can specify a limit value for time also.) The point segment type is generally used as the last segment in the limit-line table. However, if the last segment in the table is not of the point segment type, an implicit point is automatically added at the right-hand side of the screen.
Key Path

Receiver Mode

More  Limit  EDIT  Select
DISPLAY  1 of 2 Lines ...  LIMIT  Type  POINT

More  Limit  EDIT  Select
SETUP  1 of 3 Lines ...  LIMIT  Type  POINT

Signal Analysis Mode

More  Limit  Edit  Select
DISPLAY  1 of 2 Lines  Limit ...  Type  POINT

More  Limit  Edit  Select
SETUP  1 of 3 Lines  Limit ...  Type  POINT

* Either Limit 1 or Limit 2 can be used to complete the key path.

† Any of the following can be used to complete the key path:
   EDIT UPPER, EDIT LOWER, EDIT UP/LOW, or EDIT MID/DELT.

Related Programming Command

none

POWER ON

IP LAST

Softkey that determines the state of the instrument when the instrument is powered on. If the POWER ON function is set to IP, the state of the instrument is the same as it is after (PRESSET) is pressed, when the instrument is powered on. If the POWER ON function is set to LAST, then the state of the instrument was left in when it was powered off is recalled.

The setting (IP or LAST) of the POWER ON function is not changed by pressing (PRESSET). Use the POWER ON IP LAST softkey function to change the setting of the instrument state which is recalled at power on. Limit lines are not recalled when the instrument is powered up.

Note

If you have a downloadable program or “personality” installed in internal memory, the following changes apply to the operation of the POWER ON function: When using a downloadable program or personality, the last state of the personality is not recalled. We recommend that if you are using a downloadable program or personality, you set POWER ON IP LAST to IP. If POWER ON IP LAST is set to LAST, you must press (PRESSET) whenever you power on the instrument.

Key Path

More  More  POWER ON
CONFIG  1 of 3  2 of 3  IP LAST
Related Programming Command

POWERON

PREAMP

Hardkey that switches the system preamplifier in and out of the input path. PREAMP acts as an on or off toggle switch. This key performs the same function as the PREAMP ON OFF softkey.

PREAMP ON OFF

Softkey that switches the system preamplifier in and out of the input path.

When the preamplifier is on:

The receiver RF section with RF filter section adds 12 dB of gain to the path of either INPUT 1 (9 kHz to 50 MHz) or INPUT 2 (20 MHz to 2.9 GHz).

The EMI receiver and standalone receiver RF section adds 27 dB of gain to either the path of INPUT 2 (1 GHz to 6.5 GHz) or the bypass path of INPUT 2.

Note

INPUT 2 (1 GHz to 6.5 GHz) is available only for the HP 8546A EMI receiver or the HP 85462A receiver RF section.

When the RF filter section is present in the system, the following input path selections set the preamplifier as follows:

- INPUT 1 (9 kHz to 50 MHz): PREAMP OFF
- INPUT 2 (20 MHz to 2.9 GHz): PREAMP OFF
- INPUT 2 (1 GHz to 6.5 GHz): PREAMP ON
- INPUT 2 bypass: PREAMP OFF

Key Path

Related Programming Command

PREAMP
For an HP 8546A/HP 85462A only.

Softkey that peaks the YTF preselector by allowing the user to manually adjust the YTF fine-tune DAC. This is a service diagnostic function and is for service use only.

**Key Path**

<table>
<thead>
<tr>
<th></th>
<th>More</th>
<th>More</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALIBRATE</td>
<td>1 of 3</td>
<td>2 of 3</td>
<td>Diag</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

For an HP 8546A/HP 85462A only.

Softkey that enables default preselector data to allow maximum frequency response without peaking the preselector. The CAL YTF routine should be performed before pressing PRESEL DEFAULT.

**Key Path**

<table>
<thead>
<tr>
<th></th>
<th>More</th>
<th>PRESEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMPLITUDE</td>
<td>1 of 3</td>
<td>DEFAULT</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

For an HP 8546A/HP 85462A only.

Softkey that 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.

**Key Path**

<table>
<thead>
<tr>
<th></th>
<th>PRESEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMPLITUDE</td>
<td>PEAK</td>
</tr>
</tbody>
</table>

**Related Programming Command**

PP
Hardkey that provides a convenient starting point for making most measurements. Pressing \textit{(PRES\textsc{et})} displays softkeys used for accessing the operating modes available for your instrument. See Table 4-6 and Table 4-7 for the conditions established by pressing \textit{(PRES\textsc{et})}.

The instrument preset function performs a processor test, but does not affect CAL data. Pressing \textit{(PRES\textsc{et})} clears both the input and output buffers, but does not clear trace B. The amplitude values of trace C are set to the reference level. Amplitude-correction factors are turned off. Limit-line testing is turned off, but the limit-line tables remain in internal memory. The status byte is set to 0. Instrument preset affects all operating modes. (See the key description for \textit{MODE} for more information about other operating modes.)

\textbf{Note}

Turning the instrument on performs an instrument preset. Turning on the instrument also fetches CAL data; completes a processor test; clears trace B, trace C, and both the input and output buffers; turns off amplitude correction factors; turns off limit-line testing; and sets the status byte to 0. The last state of the instrument (before it was switched off) is recalled, unless instrument preset has been set by the power on function.
### Table 4-6.
**Preset Conditions for Receiver Mode of Operation**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>A → B → A</td>
<td>off</td>
</tr>
<tr>
<td>Amplitude correction factors</td>
<td>off</td>
</tr>
<tr>
<td>Amplitude units</td>
<td>default values</td>
</tr>
<tr>
<td>Annotation and graticule display</td>
<td>on</td>
</tr>
<tr>
<td>Attenuation</td>
<td>10 dB (auto-coupled)</td>
</tr>
<tr>
<td>Average bandwidth</td>
<td>1 MHz (auto-coupled)</td>
</tr>
<tr>
<td>AV/IFBW ratio</td>
<td>0.3</td>
</tr>
<tr>
<td>Center frequency</td>
<td>600 MHz</td>
</tr>
<tr>
<td>CF step size</td>
<td>100 MHz</td>
</tr>
<tr>
<td>Coupled functions</td>
<td>all set to AUTO</td>
</tr>
<tr>
<td>Coupling</td>
<td>AC</td>
</tr>
<tr>
<td>Detector</td>
<td>positive peak</td>
</tr>
<tr>
<td>Display line level</td>
<td>2.5 graticule divisions below reference level, display off</td>
</tr>
<tr>
<td>Frequency offset</td>
<td>0 Hz</td>
</tr>
<tr>
<td>Intermediate frequency bandwidth</td>
<td>120 kHz (auto-coupled)</td>
</tr>
<tr>
<td>Limit-line testing</td>
<td>off</td>
</tr>
<tr>
<td>Log scale</td>
<td>10 dB/division</td>
</tr>
<tr>
<td>Marker counter</td>
<td>off</td>
</tr>
<tr>
<td>Marker counter resolution</td>
<td>auto-coupled</td>
</tr>
<tr>
<td>Markers</td>
<td>off</td>
</tr>
<tr>
<td>Mixer level</td>
<td>−10 dBm</td>
</tr>
<tr>
<td>Operating mode</td>
<td>receiver</td>
</tr>
<tr>
<td>Preselector peak</td>
<td>reset</td>
</tr>
<tr>
<td>Reference level</td>
<td>92 dB/µV in power-on units</td>
</tr>
<tr>
<td>Reference level offset</td>
<td>0 dB</td>
</tr>
<tr>
<td>Reference level position</td>
<td>top (8th) graticule</td>
</tr>
<tr>
<td>Span</td>
<td>6.5 GHz</td>
</tr>
<tr>
<td>SHQ mask</td>
<td>octal 50</td>
</tr>
<tr>
<td>Start Frequency</td>
<td>200 MHz</td>
</tr>
<tr>
<td>Stop Frequency</td>
<td>1 GHz</td>
</tr>
<tr>
<td>State registers 1-8</td>
<td>unaffected</td>
</tr>
<tr>
<td>Sweep</td>
<td>continuous</td>
</tr>
<tr>
<td>Threshold level</td>
<td>one graticule above baseline, display off</td>
</tr>
<tr>
<td>Title</td>
<td>cleared</td>
</tr>
<tr>
<td>Trace A</td>
<td>clear-write</td>
</tr>
<tr>
<td>Trace B</td>
<td>store-blank</td>
</tr>
<tr>
<td>Trace C</td>
<td>store-blank, at reference level</td>
</tr>
<tr>
<td>Trace registers</td>
<td>unaffected</td>
</tr>
<tr>
<td>Trigger</td>
<td>free run</td>
</tr>
<tr>
<td>Video averaging</td>
<td>off</td>
</tr>
</tbody>
</table>
Table 4-7.
Preset Conditions for Signal Analysis Mode of Operation

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A → B → A</td>
<td>off</td>
</tr>
<tr>
<td>Amplitude correction factors</td>
<td>off</td>
</tr>
<tr>
<td>Amplitude units</td>
<td>default values</td>
</tr>
<tr>
<td>Annotation and graticule display</td>
<td>on</td>
</tr>
<tr>
<td>Attenuation</td>
<td>10 dB (auto-coupled)</td>
</tr>
<tr>
<td>Average bandwidth</td>
<td>1 MHz (auto-coupled)</td>
</tr>
<tr>
<td>AV/BW ratio</td>
<td>0.3</td>
</tr>
<tr>
<td>Center frequency</td>
<td>3.25 GHz</td>
</tr>
<tr>
<td>CF step size</td>
<td>100 MHz</td>
</tr>
<tr>
<td>Coupled functions</td>
<td>all set to AUTO</td>
</tr>
<tr>
<td>Coupling</td>
<td>AC</td>
</tr>
<tr>
<td>Detector</td>
<td>positive peak</td>
</tr>
<tr>
<td>Display line level</td>
<td>2.5 graticule divisions below reference level, display off</td>
</tr>
<tr>
<td>Frequency offset</td>
<td>0 Hz</td>
</tr>
<tr>
<td>Limit-line testing</td>
<td>off</td>
</tr>
<tr>
<td>LIMHI and LIMO</td>
<td>cleared</td>
</tr>
<tr>
<td>Log scale</td>
<td>10 dB/division</td>
</tr>
<tr>
<td>Marker counter</td>
<td>off</td>
</tr>
<tr>
<td>Marker counter resolution</td>
<td>auto-coupled</td>
</tr>
<tr>
<td>Markers</td>
<td>off</td>
</tr>
<tr>
<td>Mixer level</td>
<td>−10 dBm</td>
</tr>
<tr>
<td>Operating mode</td>
<td>signal analysis</td>
</tr>
<tr>
<td>Preselector peak</td>
<td>reset</td>
</tr>
<tr>
<td>Reference level</td>
<td>0 dB in power-on units</td>
</tr>
<tr>
<td>Reference level offset</td>
<td>0 dB</td>
</tr>
<tr>
<td>Reference level position</td>
<td>top (8th) graticule</td>
</tr>
<tr>
<td>Resolution bandwidth</td>
<td>3 MHz (auto coupled)</td>
</tr>
<tr>
<td>Span</td>
<td>800 MHz GHz</td>
</tr>
<tr>
<td>S/N mask</td>
<td>octal 50</td>
</tr>
<tr>
<td>Start Frequency</td>
<td>0 Hz</td>
</tr>
<tr>
<td>Stop Frequency</td>
<td>6.5 GHz</td>
</tr>
<tr>
<td>State registers 1–8</td>
<td>unaffected</td>
</tr>
<tr>
<td>Sweep</td>
<td>continuous</td>
</tr>
<tr>
<td>Threshold level</td>
<td>one graticule above baseline, display off</td>
</tr>
<tr>
<td>Title</td>
<td>cleared</td>
</tr>
<tr>
<td>Trace A</td>
<td>clear-write</td>
</tr>
<tr>
<td>Trace B</td>
<td>store-blank</td>
</tr>
<tr>
<td>Trace C</td>
<td>store-blank, at reference level</td>
</tr>
<tr>
<td>Trace registers</td>
<td>unaffected</td>
</tr>
<tr>
<td>Trigger</td>
<td>free run</td>
</tr>
<tr>
<td>Video averaging</td>
<td>off</td>
</tr>
<tr>
<td>Video bandwidth</td>
<td>120 kHz</td>
</tr>
</tbody>
</table>
Related Programming Command

**PRES**

**SET REPL**

Softkey that allows the receiver mode only to be preset. Table 4-8 lists the conditions affected by the preset receiver function. Other operating modes will not be affected. See the description of the [MODE] key.

### Table 4-8. Preset Receiver Conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A – B · A</td>
<td>off</td>
</tr>
<tr>
<td>Annotation and graticule</td>
<td>on</td>
</tr>
<tr>
<td>Attenuation</td>
<td>coupled</td>
</tr>
<tr>
<td>Average video bandwidth</td>
<td>300 kHz (coupled)</td>
</tr>
<tr>
<td>AV/IFBW ratio</td>
<td>0.3</td>
</tr>
<tr>
<td>Center frequency</td>
<td>1.46 GHz</td>
</tr>
<tr>
<td>Center frequency step size</td>
<td>100 MHz</td>
</tr>
<tr>
<td>Coupled functions</td>
<td>all set to AUTO</td>
</tr>
<tr>
<td>Coupling</td>
<td>AC</td>
</tr>
<tr>
<td>Detector</td>
<td>positive peak</td>
</tr>
<tr>
<td>Display line</td>
<td>off</td>
</tr>
<tr>
<td>Frequency offset</td>
<td>0 Hz</td>
</tr>
<tr>
<td>Harmonic lock</td>
<td>off</td>
</tr>
<tr>
<td>IF Bandwidth</td>
<td>120 kHz (coupled)</td>
</tr>
<tr>
<td>Limit-line testing</td>
<td>off</td>
</tr>
<tr>
<td>Marker counter</td>
<td>off</td>
</tr>
<tr>
<td>Marker counter resolution</td>
<td>6 kHz (auto-coupled)</td>
</tr>
<tr>
<td>Markers</td>
<td>off</td>
</tr>
<tr>
<td>Reference level</td>
<td>92 dB V in power-on units</td>
</tr>
<tr>
<td>Reference level offset</td>
<td>-15 dBm</td>
</tr>
<tr>
<td>Reference level position</td>
<td>top (5th graticule)</td>
</tr>
<tr>
<td>Scale</td>
<td>10 dB/div</td>
</tr>
<tr>
<td>Span</td>
<td>2.88 MHz</td>
</tr>
<tr>
<td>Start Frequency</td>
<td>20 MHz</td>
</tr>
<tr>
<td>Stop Frequency</td>
<td>2.9 GHz</td>
</tr>
<tr>
<td>State registers 1–8</td>
<td>unaffected</td>
</tr>
<tr>
<td>Sweep</td>
<td>continuous</td>
</tr>
<tr>
<td>Sweep time</td>
<td>2.70 s (auto-coupled)</td>
</tr>
<tr>
<td>Threshold</td>
<td>off</td>
</tr>
<tr>
<td>Trace A</td>
<td>clear write</td>
</tr>
<tr>
<td>Trace B</td>
<td>store-blank</td>
</tr>
<tr>
<td>Trace C</td>
<td>store-blank</td>
</tr>
<tr>
<td>Trace math</td>
<td>cleared</td>
</tr>
<tr>
<td>Trace registers</td>
<td>unaffected</td>
</tr>
<tr>
<td>Trigger</td>
<td>free</td>
</tr>
<tr>
<td>Video averaging</td>
<td>off</td>
</tr>
</tbody>
</table>
Key Path

$(\text{MODE}) \text{ PRESET RECEIVER}$, when the instrument mode of operation is receiver and the $(\text{MODE})$ hardkey is pressed twice.

Related Programming Command

none

---

**PRESET SPECTRUM**

Softkey that allows the signal analysis mode only to be preset. Table 4-9 lists the conditions affected by the preset spectrum function. Other operating modes will not be affected. See the description of the $(\text{MODE})$ key.
### Table 4-9. Preset Spectrum Conditions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A → B: A -&gt; A</td>
<td>off</td>
</tr>
<tr>
<td>Annotation and graticule</td>
<td>on</td>
</tr>
<tr>
<td>Attenuation</td>
<td>10 dB (coupled)</td>
</tr>
<tr>
<td>AV: IF BW ratio</td>
<td>6.3</td>
</tr>
<tr>
<td>Center frequency</td>
<td>3.25 GHz</td>
</tr>
<tr>
<td>Center frequency step size</td>
<td>100 MHz</td>
</tr>
<tr>
<td>Coupled functions</td>
<td>all set to AUTO</td>
</tr>
<tr>
<td>Coupling</td>
<td>AC</td>
</tr>
<tr>
<td>Detector</td>
<td>positive peak</td>
</tr>
<tr>
<td>Display line</td>
<td>off</td>
</tr>
<tr>
<td>Frequency offset</td>
<td>6 Hz</td>
</tr>
<tr>
<td>Harmonic lock</td>
<td>off</td>
</tr>
<tr>
<td>Limit-line testing</td>
<td>off</td>
</tr>
<tr>
<td>Marker counter</td>
<td>off</td>
</tr>
<tr>
<td>Marker counter resolution</td>
<td>2 kHz (auto-coupled)</td>
</tr>
<tr>
<td>Markers</td>
<td>off</td>
</tr>
<tr>
<td>Reference level</td>
<td>6 dBm in power on units</td>
</tr>
<tr>
<td>Reference level offset</td>
<td>107 dB/µV</td>
</tr>
<tr>
<td>Reference level position</td>
<td>top (8th graticule)</td>
</tr>
<tr>
<td>Resolution bandwidth</td>
<td>3 MHz (coupled)</td>
</tr>
<tr>
<td>Scale</td>
<td>log 10 dB/div</td>
</tr>
<tr>
<td>Span</td>
<td>6.5 GHz</td>
</tr>
<tr>
<td>Start Frequency</td>
<td>0 Hz</td>
</tr>
<tr>
<td>Stop Frequency</td>
<td>6.5 GHz</td>
</tr>
<tr>
<td>State registers 1—8</td>
<td>unaffected</td>
</tr>
<tr>
<td>Sweep</td>
<td>continuous</td>
</tr>
<tr>
<td>Sweep time</td>
<td>150 ms (auto-coupled)</td>
</tr>
<tr>
<td>Threshold</td>
<td>off</td>
</tr>
<tr>
<td>Trace A</td>
<td>clear write</td>
</tr>
<tr>
<td>Trace B</td>
<td>store-blank</td>
</tr>
<tr>
<td>Trace C</td>
<td>store-blank</td>
</tr>
<tr>
<td>Trace math</td>
<td>cleared</td>
</tr>
<tr>
<td>Trace registers</td>
<td>unaffected</td>
</tr>
<tr>
<td>Trigger</td>
<td>free</td>
</tr>
<tr>
<td>Video averaging</td>
<td>off</td>
</tr>
<tr>
<td>Video bandwidth</td>
<td>1 MHz (coupled)</td>
</tr>
</tbody>
</table>

### Key Path

\[\text{MODE PRESET SPECTRUM}\], when the instrument mode of operation is receiver and the \(\text{MODE}\) hardkey is pressed twice

### Related Programming Command

none
Print Config
Softkey that accesses a menu used to address the printer, select a black and white print or a color print (a color print requires either an HP PaintJet, HP DeskJet 500C, or HP DeskJet 550C printer), and reset the printer. See the \textit{COPY} key for more information.

**Key Path**

\texttt{Print Config Config}

**Related Programming Command**

none

Print Options
Softkey that accesses a menu of print options such as: prints per page, low or high resolution, and color or black and white prints.

**Key Path**

\texttt{Print Print Config Config Options}

**Related Programming Command**

none

PRINTER ADDRESS
Softkey that changes the HP-IB address of the printer. The printer address is set to 1 by pressing \texttt{DEFAULT Config}.

**Key Path**

\texttt{Print PRINT Config ADDRESS}

**Related Programming Command**

PRNTADRS

PRINTER SETUP
Softkey that 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.

**Key Path**

\texttt{Print PRINT Config Setup}
**Related Programming Command**

none

---

**Printer Type**

Softkey that access a menu to specify what type of printer is connected to the output port.

**Key Path**

```
<table>
<thead>
<tr>
<th>Print</th>
<th>Printer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Config</td>
<td>Config</td>
</tr>
</tbody>
</table>
```

**Related Programming Command**

PRNTTYPE

---

**PROTECT ON OFF**

Softkey that selects whether files on a floppy disk can be silently overwritten in the event that a file by the same name already exists on the medium.

When ON is underlined, an error message will appear if you try to overwrite a file that already exists.

**Key Path**

```
<table>
<thead>
<tr>
<th>Disk</th>
<th>PROTECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Config</td>
<td>Config</td>
</tr>
</tbody>
</table>
```

**Related Programming Command**

PROTECT

---

**PRN/PG 1 2**

Softkey that specifies the number of prints per page for printing.

**Note**

On some printers 1 print per page will generate a full page printout, other printers are unaffected by the prints per page setting.

**Key Path**

```
<table>
<thead>
<tr>
<th>Print</th>
<th>Print</th>
<th>PRN/PG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Config</td>
<td>Config</td>
<td>Options</td>
</tr>
</tbody>
</table>
```

**Related Programming Command**

PRNTPPG

---
Softkey that allows the softkey labels to be printed along with the display. This function operates when the COPY key is used in a print configuration. The print menu function is set to ON when DEFAULT CONFIG is pressed.

**Key Path**

<table>
<thead>
<tr>
<th>Print</th>
<th>Print</th>
<th>PRT MENU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Config</td>
<td>Options</td>
<td>ON OFF</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

Softkey that selects pTesla as the transducer conversion units for the antenna amplitude-correction factors.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>Correct</th>
<th>Antenna</th>
<th>EDIT</th>
<th>More</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3</td>
<td>Factors</td>
<td>Factors</td>
<td>ANTE民族文化</td>
</tr>
</tbody>
</table>

**Units** pTesla

**Related Programming Command**

XUNITS

---

**Signal analysis mode only.**

Softkey that clears the current limit-line table from internal memory. Pressing PURGE LIMITS displays the message: If you are sure, press key again to purge data. Press PURGE LIMITS again if you wish to clear the current limit-line table. Press SAVE LIMIT to save the current limit-line table, and then press PURGE LIMITS to clear the current limit-line table.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>Edit</th>
<th>More</th>
<th>PURGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>1 of 2</td>
<td>Lines</td>
<td>Limit</td>
<td>...</td>
</tr>
<tr>
<td>SETUP</td>
<td>1 of 3</td>
<td>Lines</td>
<td>Limit</td>
<td>...</td>
</tr>
</tbody>
</table>

* Any of the following can be used to complete the key path:
  EDIT UPPER, EDIT LOWER, EDIT UP/LOW, or EDIT MID/DLT.
Related Programming Command
LIMIDEL

This soft key is only available when LIN is selected for the SWEEP LOG LIN soft key.

Softkey that activates (ON) or deactivates (OFF) the power-sweep function, which sweeps the output power of the tracking generator over the selected power-sweep range. The value of the power-sweep range is displayed in the active-function block when PWR SWP ON OFF is turned on. The available power-sweep range is a function of the source attenuator setting. For power sweeps, press SRC ATN MAN AUTO until (MAN) is underlined so the instrument source attenuator is manually set (decoupled).

For a given source attenuation setting, the maximum specified power-sweep range is shown in Table 4-10.

<table>
<thead>
<tr>
<th>Attenuator Setting</th>
<th>Power Sweep Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 dB</td>
<td>-1 to -10</td>
</tr>
<tr>
<td>8 dB</td>
<td>-10.1 to -18</td>
</tr>
<tr>
<td>16 dB</td>
<td>-18.1 to -26</td>
</tr>
<tr>
<td>24 dB</td>
<td>-26.1 to -34</td>
</tr>
<tr>
<td>32 dB</td>
<td>-34.1 to -42</td>
</tr>
<tr>
<td>40 dB</td>
<td>-42.1 to -50</td>
</tr>
<tr>
<td>48 dB</td>
<td>-50.1 to -58</td>
</tr>
<tr>
<td>56 dB</td>
<td>-58.1 to -66</td>
</tr>
</tbody>
</table>

The output power of the tracking generator is swept with the sweep voltage of the instrument. The output power is always swept from the source power setting to a higher power setting (negative source power sweep values are not allowed). Refer to the calibration guide for your instrument for more information regarding source power and source attenuation relationships.

Power-sweep measurements are particularly useful in making gain compression measurements or output power versus frequency measurements.

Key Path

Related Programming Command
SRCPSWP
This key is only active if either \textbf{QUASI-PEAK} or \textbf{AVERAGE} is used first.

Softkey that turns off the linear 10X gain stage in the quasi-peak and average detector signal path.

\textbf{Key Path}

\begin{center}
\begin{tabular}{cccc}
More & More & \textbf{QP/AVG} & \\
\textbf{TEST} & 1 of 3 & 2 of 3 & 10X OFF
\end{tabular}
\end{center}

\textbf{Related Programming Command}

\textbf{QPGAIN}

---

Softkey that turns the quasi-peak detector on and off. This is a service diagnostic function and is for service use only.

\textbf{Key Path}

\begin{center}
\begin{tabular}{cccc}
More & More & Service & \\
\textbf{CALIBRATE} & 1 of 3 & 2 of 3 & Diag \textbf{More 1} \ldots \textbf{More 6}\\
\textbf{QP DET} & \textbf{ON OFF}
\end{tabular}
\end{center}

\textbf{Related Programming Command}

none

---

Softkey that sets the measurement time when the quasi-peak detector is measured. This key is used in conjunction with \textbf{MEASURE AT MKR}, \textbf{RE-measure}, \textbf{AUTO-MEASURE}, and \textbf{MEAS STEPPED}.

\textbf{Key Path}

\begin{center}
\begin{tabular}{cccc}
More & Inst & Measure & \textbf{QP DWELL} & \\
\textbf{SETUP} & 1 of 3 & Setup & Detector \textbf{TIME}
\end{tabular}
\end{center}

\textbf{Related Programming Command}

\textbf{MEASTIMEQPD}
**QP GAIN**

Softkey that amplifies the video signal ten times (20 dB). This is a service diagnostic function and is for service use only.

**Key Path**

| QP GAIN | ON OFF |

| CALIBRATE | More 1 of 3 | More 2 of 3 | Service | More 1 ... | More 6 |

**Related Programming Command**

none

---

**QPD OFFSET**

Softkey that sets the offset of the quasi-peak detector. This is a service diagnostic function and is for service use only.

**Key Path**

| QPD OFFSET | ON OFF |

| CALIBRATE | More 1 of 3 | More 2 of 3 | Service | More 1 ... | More 6 |

**Related Programming Command**

none

---

**QPD RST**

Softkey that discharges and resets the quasi-peak detector. This is a service diagnostic function and is for service use only.

**Key Path**

| QPD RST | ON OFF |

| CALIBRATE | More 1 of 3 | More 2 of 3 | Service | More 1 ... | More 6 |

**Related Programming Command**

none
**QUASI-PeAK**

Hardkey that 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.

**Related Programming Command**

none

---

**QUIETJET**

Softkey that specifies QuietJet as the printer connected to the output port.

**Key Path**

<table>
<thead>
<tr>
<th>Print</th>
<th>Printer</th>
<th>More</th>
<th>More</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONFIG</td>
<td>Config</td>
<td>Type</td>
<td>1 of 3</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

**RECALL**

Hardkey that accesses softkey menus that allow you to recall data from the floppy disk or internal memory. When Recall Internal is selected, states, traces, and limit-line tables can be recalled from internal memory. When Recall Disk is selected, states, traces, limit-line tables, and amplitude-correction factors, display images, setups, and lists can be recalled from the floppy disk.

In addition, pressing **RECALL** accesses the cataloging functions used to catalog the saved data that is in internal memory or on the floppy disk.

**Related Programming Command**

SAVRCLF

---

**RECALL ANTENNA**

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

**Key Path**

<table>
<thead>
<tr>
<th>Recall</th>
<th>RECALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>RECALL</td>
<td>Disk</td>
</tr>
</tbody>
</table>

---
**Related Programming Command**
AMPCOR

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

**Key Path**

```
RECALL  More  RECALL
   Disk   1 of 2  CABLE
```

**Related Programming Command**
AMPCOR

**RECALL COLORS**
Software that recalls previously saved display palettes (the color definitions for the features on the display) from the recall number specified. To recall a display palette press, RECALL COLORS the message RECALL COLOR (1-4) will be displayed on the top left-hand side of the display. Use the data keys to select the desired recall register.

**Key Path**

```
Display  Adjust  RECALL
   Config  Color  COLORS
```

**Related Programming Command**
RCLC

**Recall Disk**
Software that accesses a menu to recall instrument setups, signals lists, states, traces, display images, limit-line tables, and amplitude-correction factors from a floppy disk.

**Key Path**

```
Recall
   Disk
```

**Related Programming Command**
none
**Recall Internal**

Softkey that accesses a menu to recall states, traces, and limit-line tables from internal memory.

**Key Path**

```
Recall
(RECALL) Internal
```

**Related Programming Command**

none

---

**RECALL LIMITS**

Softkey that recalls limit-line tables from a floppy disk. To recall a limit-line table press, RECALL LIMITS, use the step keys or knob to highlight the desired file, then press LOAD FILE.

**Key Path**

```
More Limit RECALL
(DISPLAY) 1 of 2 Lines LIMITS

Recall RECALL
(RECALL) Disk LIMITS

More Limit RECALL
(SETUP) 1 of 3 Lines LIMITS
```

**Related Programming Command**

none

---

**RECALL LIST**

Softkey that recalls signal lists from a floppy disk. To recall a signal list press, RECALL LIST, use the step keys or knob to highlight the desired file, then press LOAD FILE.

**Key Path**

```
Recall RECALL
(RECALL) Disk LIST

More Save/Rcl RECALL
(SEL) 1 of 3 List LIST
```

**Related Programming Command**

none
Softkey that recalls other two-port device factors from a floppy disk. To recall other data press, **RECALL OTHER** use the step keys or knob to highlight the desired file, then press **LOAD FILE**.

**Key Path**

<table>
<thead>
<tr>
<th>Recall</th>
<th>More</th>
<th>RECALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>(RECALL) Disk</td>
<td>1 of 2</td>
<td>OTHER</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Correctn</th>
<th>Other</th>
<th>RECALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>(SETUP) 1 of 3 Factors</td>
<td>Factors</td>
<td>OTHER</td>
<td></td>
</tr>
</tbody>
</table>

**Related Programming Command**

AMPCOR

---

Softkey that recalls instrument setups from a floppy disk. To recall an instrument setup press, **RECALL SETUP** use the step keys or knob to highlight the desired file, then press **LOAD FILE**.

**Key Path**

<table>
<thead>
<tr>
<th>Recall</th>
<th>RECALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>(RECALL) Disk</td>
<td>SETUP</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recall</th>
<th>Setup</th>
</tr>
</thead>
<tbody>
<tr>
<td>(SETUP) Setup</td>
<td></td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

Softkey that recalls traces from a floppy disk. To recall a trace press, **RECALL TRACE** use the step keys or knob to highlight the desired file, then press **LOAD FILE**.

**Key Path**

<table>
<thead>
<tr>
<th>Recall</th>
<th>More</th>
<th>RECALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>(RECALL) Disk</td>
<td>1 of 2</td>
<td>TRACE</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none
Softkey that allows you to set the HP-IB address of the instrument. The address is set to 18 by pressing DEFAULT CONFIG.

Key Path

<table>
<thead>
<tr>
<th>More</th>
<th>RECEIVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONFIG</td>
<td>1 of 3 ADDRESS</td>
</tr>
</tbody>
</table>

Related Programming Command
none

Softkey that changes the intensity of the red portion of the primary light source output for the display annotation, trace, graticule, and so on.

Key Path

<table>
<thead>
<tr>
<th>Display</th>
<th>Adjust</th>
<th>Edit</th>
<th>HSL</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>Config</td>
<td>Color</td>
<td>Colors</td>
</tr>
</tbody>
</table>

Related Programming Command
none

Softkey that replaces the standard display screen with a red box. This is one of 18 test patterns that can be used for display-troubleshooting and screen-alignment procedures.

Key Path

<table>
<thead>
<tr>
<th>Display</th>
<th>Test</th>
<th>More</th>
<th>More</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>Config</td>
<td>Patterns</td>
<td>1 of 4</td>
</tr>
</tbody>
</table>

Related Programming Command
none

Softkey that allows the reference level to be changed. This function is activated when AMPLITUDE is pressed. The reference level is the amplitude power or voltage represented by the top graticule line on the screen. Changing the value of the reference level changes the absolute amplitude level (in dBuV) of the top graticule line. The reference level can be changed using the data keys, knob, or step keys.
Key Path

\texttt{AMPLITUDE \textbar{} REF LVL}

Related Programming Command

RL.

\begin{tabular}{|c|c|c|c|}
\hline
\texttt{REF LVL} & \texttt{OFFSET} & \\
\hline
\end{tabular}

Softkey that 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. Thus, the signal level measured by the instrument is the level at the input of an external amplitude-conversion device. When an amplitude offset is entered, its value is displayed on the top left-side of the screen. To eliminate an offset, press \texttt{REF LVL OFFSET}, \(0\texttt{ \textminus dBm}\) or \(0\texttt{ \textplus dBm}\). Pressing \texttt{PRESET} also sets the offset to zero. See also the \texttt{EXTERNAL PREAMPG} softkey description.

Key Path

\begin{tabular}{|c|c|c|c|c|}
\hline
More & More & More & \texttt{REF LVL} & \\
\hline
\texttt{AMPLITUDE} & 1 of 2 & 2 of 3 & \texttt{OFFSET} & \\
\hline
\end{tabular}

Related Programming Command

ROFFSET

\begin{tabular}{|c|c|c|c|}
\hline
\texttt{REMEAS} & \texttt{ALL SIGS} & \\
\hline
\end{tabular}

Softkey that 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 \texttt{DETECTOR PK, QP, AV}.

Key Path

\begin{tabular}{|c|c|c|c|}
\hline
More & \texttt{EDIT Re-} & \texttt{REMEAS} & \\
\hline
\texttt{TEST} & 1 of 3 & LIST measure & \texttt{ALL SIGS} & \\
\hline
\end{tabular}

Related Programming Command

REMEASSIG
Softkey that 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.

**Key Path**

```
More   EDIT R----- RMEAS
       TEST   1 of 3 LIST measure MARKED
```

**Related Programming Command**

REMEASSIG

---

Softkey that 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.

**Key Path**

```
More   EDIT R----- RMEAS
       TEST   1 of 3 LIST measure SIGNAL
```

**Related Programming Command**

REMEASSIG

---

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

**Key Path**

```
More   EDIT R-----
       TEST   1 of 3 LIST measure
```

**Related Programming Command**

REMEASSIG
Softkey that sets the resolution of subsequent prints to low or high resolution. High resolution shows more detail, but takes a longer time to print. Print resolution and print speed will vary with the printer type. Refer to the specific printer manual for more information.

**Key Path**

```
CONFIG  Print  Print  RESOLTN
        Config  Options  LOW HIGH
```

**Related Programming Command**

PRNTRES

---

Softkey that 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).

**Key Path**

```
TEST  More  More  MEAS
       1 of 3  2 of 3  STEPPED  STOP  RESTART
```

```
TEST  More  More  MEAS  FREQ
       1 of 3  2 of 3  STEPPED  STEP  RESTART
```

**Related Programming Command**

none

---

Softkey that changes the saturation (the ratio of pure color mixed with white) of the specified portion of the display annotation.

**Key Path**

```
DISPLAY  Display  Adjust  Edit  HSL  SATURAT-
         Config  Color  Colors  ...  RGB  ATION
```

**Related Programming Command**

SETC
Hardkey that accesses menus that allow you to store state data, trace data, and limit-line tables in internal memory. The SAVE function also allows you to save instrument setups, state data, trace data, limit-line tables, amplitude-correction factors, signal lists, and display images on the floppy disk. In addition, pressing **SAVE** accesses the menus used to catalog the saved data in internal memory or on the floppy disk.

Saving state data saves the instrument settings, but not the trace data. Saving trace data saves both the trace data and the state data. Display images can only be saved to or recalled from the floppy disk.

States and traces are saved in internal memory even if the instrument is turned off or **[PRESET]** is pressed. Eight internal state registers and many trace and limit-line registers are available for the user. The **Catalog Internal** softkey is used to access the catalog functions.

**Related Programming Command**

SAVRCLF

---

**SAVE**

**ANTENNA**

Softkey that saves antenna amplitude-correction data to a floppy disk. To save antenna data press, **SAVE** **ANTENNA**. REGISTER # and PREFIX= are displayed on the screen. Use the data keys to enter the desired register number then press **(ENTER)**. The message Saving to : FILENAME is displayed. The antenna data has now been saved to a disk.

**Key Path**

```plaintext
SETUP  More  Correctn  Antenna  SAVE  
       1 of 3   Factors   Factors   ANTENNA
```

**Related Programming Command**

AMPCOR

---

**SAVE**

**CABLE**

Softkey that saves cable amplitude-correction data to a floppy disk. To save cable data press, **SAVE** **CABLE**. REGISTER # and PREFIX= are displayed on the screen. Use the data keys to enter the desired register number then press **(ENTER)**. The message Saving to : FILENAME is displayed. The cable data has now been saved to a disk.

**Key Path**

```plaintext
SETUP  More  Correctn  Cable  SAVE  
       1 of 3   Factors   Factors   CABLE
```
Related Programming Command
AMPCOR

SAVE COLORS
Softkey that saves a display palette (the color definitions for the features on the display) to the save number specified. To save a display palette press, SAVE COLORS the message SAVE COLORS (1-4) will be displayed at the top left-hand side of the display. Use the data keys to select the desired register to save to.

Key Path
Display  Adjust  SAVE
Config  Color  COLORS

Related Programming Command
SAVEC

Save Disk
Softkey that accesses a menu to save instrument setups, signals lists, states, traces, display images, limit-line tables, and amplitude-correction factors to a floppy disk.

Key Path
Save
Disk

Related Programming Command
none

SAVE EDIT
Softkey that 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.

Key Path
Recall  Catalog
Internal  Internal  ... *  Editor  EDIT

Save  Catalog
Internal  Internal  ... *  Editor  EDIT

* Any of the following can be used to complete the key path:
CATALOG ALL, CATALOG VARIABLES, or CATALOG PREFIX.
Related Programming Command
none

Save Internal

Softkey that accesses a menu to save states, traces, and limit-line tables to internal instrument memory.

Key Path

Save Internal

Related Programming Command
none

SAVE LIMITS

Softkey that saves the current limit-line table to a floppy disk.
To save a limit-line table press, SAVE LIMITS. REGISTER # and PREFIX= are displayed on the screen. Use the data keys to enter the desired register number then press (ENTER). The message Saving to :FILENAME is displayed. The limit-line table has now been saved to a disk.

Key Path

More Limit SAVE
DISPLAY 1 of 2 Lines LIMITS

More Limit SAVE
SETUP 1 of 3 Lines LIMITS

Related Programming Command
none

SAVE LIN GRAPH

Softkey that draws an EMI report graph on the display.
SAVE LIN GRAPH draws a full-screen graticule, linear frequency-axis with limited annotation. Drop lines for peak amplitude signals with cross-bars for quasi-peak and average amplitude readings are drawn on the graticule. The quasi-peak cross-bar is the same color as trace B (default is blue) and the average cross-bar is the same color as trace C (default is magenta). The start and stop frequencies are defined based on the frequencies in the signal list.

Key Path

More Save/Rcl SAVE LIN
TEST 1 of 3 List GRAPH
Related Programming Command
SIGGRAPH

SAVE LIST

Softkey that saves the current signal list to a floppy disk. To save a signal list press, SAVE LIST, REGISTER # and PREFIX= are displayed on the screen. Use the data keys to enter the desired register number then press (ENTER). The message Saving to: FILENAME is displayed. The signal list has now been saved to a disk.

CAUTION

When saving internal data and signal lists are displayed, disk warning messages do not appear. Therefore it is recommended that you verify that a file has been saved before clearing the data from your display.

For example, before saving signal list data, make sure that your disk is not write protected. To verify that the file was saved, press RECALL LIST to catalog signal lists that have been saved to the disk, then check that the correct file was saved by inspecting the file name, date, and time stamp.

Key Path

More  Save/Rcl  SAVE
(1 of 3) List  LIST

Related Programming Command
none

SAVE LOG GRAPH

Softkey that draws an EMI report graph on the display. SAVE LOG GRAPH draws a full-screen graticule, logarithmic frequency-axis with limited annotation. Drop lines for peak amplitude signals with cross-bars for quasi-peak and average amplitude readings are drawn on the graticule. The quasi-peak cross-bar is the same color as trace B (default is blue) and the average cross-bar is the same color as trace C (default is magenta). The start and stop frequencies are defined based on the frequencies in the signal list.

Key Path

More  Save/Rcl  SAVE LOG
(1 of 3) List  GRAPH

Related Programming Command
SIGGRAPH
Softkey that saves other two-port amplitude-correction factors to a floppy disk. To save other amplitude-correction factors press, SAVE OTHER. REGISTER # and PREFIX= are displayed on the screen. Use the data keys to enter the desired register number then press ENTER. The message Saving to :FILENAME is displayed. Other two-port amplitude-correction data has now been saved to a disk.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>Correctn</th>
<th>Other</th>
<th>SAVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3</td>
<td>Factors</td>
<td>Factors</td>
</tr>
</tbody>
</table>

**Related Programming Command**

AMPCOR

---

Softkey that accesses a menu used to save and recall signal lists. Save/Rcl List also draws report graphs on the display.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>Save/Rcl</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEST</td>
<td>1 of 3</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

Softkey that saves the current setup to a floppy disk. To save a setup press, SAVE SETUP. REGISTER # and PREFIX= are displayed on the screen. Use the data keys to enter the desired register number then press ENTER. The message Saving to :FILENAME is displayed. The setup has now been saved to a disk.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>SAVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none
**SAV LOCK ON OFF** Softkey that locks all the current internal state and trace registers against further data storage, when ON is underlined. With the state and trace memory locked, the **STATE -> INTRNL** and **Trace -> Intrnl** softkey functions are no longer accessible; the **MEM LOCKED** softkey function is displayed instead. Pressing **DEFAULT CONFIG** or **(PRESET)** sets **SAV LOCK ON OFF** to OFF.

**Note** When **SAV LOCK ON OFF** is set to ON, none of the state registers can be overwritten, including state register nine. The instrument automatically updates state register nine with the last state unless the save lock function is on.

**Key Path**

```plaintext
Save   SAV LOCK
(SAVE)  Internal   ON OFF
```

**Related Programming Command**

PSTATE

---

**SCALE LOG LIN** Softkey that 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.)

Pressing **SCALE LOG LIN** always sets the units specified for the current amplitude scale. Pressing **(PRESET)** or powering on the instrument sets the default units.

**Key Path**

```plaintext
SCALE
(AMPLITUDE) LOG LIN
```

**Related Programming Command**

LG, LN
Hardkey that directly accesses the menus that selects AM or FM demodulation, FM gain, dwell time, and squelch levels.

Related Programming Command
none

Softkey that selects one of the four possible markers. A marker can be turned on once it is selected. A marker that has already been turned on will become active when it is selected. If a marker has already been turned on and assigned to a specific trace it will become active on that trace and the MK TRACE AUTO ABC softkey will have the appropriate trace letter underlined.

Key Path

SELECT
1 2 3 4

Related Programming Command
MKACT

Softkey that enters either the amplitude value for the displayed (upper or lower) limit-line segment or the amplitude value for the current amplitude-correction point. Enter the amplitude value for the selected frequency (or time, for signal analysis mode only) by using the data keys. Change an amplitude value by using the step keys or the knob. Press [MK SF] to correct errors.

Key Path

More Correctn SELECT
SETUP 1 of 3 Factors ... AMPLITUDE

Receiver mode

More Limit EDIT SELECT
DISPLAY 1 of 2 Lines ... LIMIT AMPLITUDE

More Limit EDIT SELECT
SETUP 1 of 3 Lines ... LIMIT AMPLITUDE

Signal analysis mode

More Limit Edit SELECT
DISPLAY 1 of 2 Lines Limit ... AMPLITUDE

More Limit Edit SELECT
SETUP 1 of 3 Lines Limit ... AMPLITUDE
* Any of the following group of softkeys can be used to complete the key path:
  * Antenna Factors, EDIT ANTENNA, or Cable Factors, EDIT CABLE
  * or Other Factors, EDIT OTHER.

† Either Limit 1 or Limit 2 can be used to complete the key path.

§ Either EDIT UPPER, or EDIT LOWER can be used to complete the key path.

**Related Programming Command**

AMPCOR, LIMSEG

---

**Select Axis**

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

**Key Path**

DISPLAY

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>ED</th>
<th>Select</th>
<th>Select</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 of 2 Lines ...</td>
<td>LIMIT</td>
<td>Type</td>
<td>Axis</td>
<td></td>
</tr>
</tbody>
</table>

SETup

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>ED</th>
<th>Select</th>
<th>Select</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 of 3 Lines ...</td>
<td>LIMIT</td>
<td>Type</td>
<td>Axis</td>
<td></td>
</tr>
</tbody>
</table>

* Either Limit 1 or Limit 2 can be used to complete the key path.

**Related Programming Command**

none

---

**SELECT DELT AMP**

Softkey that sets the delta amplitude value for a segment of a mid/delta type of limit line. Press [BK SP] to correct errors.

**Key Path**

DISPLAY

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>Edit</th>
<th>ED</th>
<th>SELECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 of 2 Lines</td>
<td>Limit</td>
<td>MID/DEL</td>
<td>DELT AMP</td>
<td></td>
</tr>
</tbody>
</table>

SETup

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>Edit</th>
<th>ED</th>
<th>SELECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 of 3 Lines</td>
<td>Limit</td>
<td>MID/DEL</td>
<td>DELT AMP</td>
<td></td>
</tr>
</tbody>
</table>

**Related Programming Command**

none
SELECT FREQ

Softkey that enters the frequency value for a limit-line segment or for an amplitude-correction point. Enter the frequency value for the frequency by using the data keys. Change the frequency value by using the step keys or the knob. Press [BR SP] to correct errors.

A frequency coordinate must always be specified for either limit lines or amplitude-correction factors.

Note

Limit-line data is sorted in frequency order in the limit-line table. The sorting occurs after you have entered the frequency and at least one amplitude value.

For amplitude-correction factors, only two entries with the same frequency are valid. Only the first and last points of a series with the same frequency values are used; the middle points are ignored.

Amplitude-correction data is sorted in the table by frequency. The sorting occurs immediately after you have entered the frequency value via the front panel.

Key Path

Receiver mode

<table>
<thead>
<tr>
<th>More</th>
<th>Correctn</th>
<th>SELECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3 Factors ...</td>
<td>FREQ</td>
</tr>
</tbody>
</table>

Signal analysis mode

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>Edit</th>
<th>SELECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>1 of 2 Lines ...</td>
<td>FREQ</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Limit</th>
<th>Edit</th>
<th>SELECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3 Lines ...</td>
<td>FREQ</td>
<td></td>
</tr>
</tbody>
</table>

* Any of the following groups of softkeys can be used to complete the key path:
  - Antenna Factors, EDIT ANTENNA, or Cable Factors, EDIT CABLE
  - or Other Factors, EDIT OTHER.

† Either Limit 1 or Limit 2 can be used to complete the key path.

§ Any of the following keys can be used to complete the key path:
  - EDIT UPPER, EDIT LOWER, EDIT UP/Low or EDIT MID/DEL.

Related Programming Command

AMPCOR, LIMISEG
### SELECT FRM LIST

Softkey that controls the cursor position in the signal list.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>Select</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(TEST)</strong></td>
<td>1 of 3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Edit  Select</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(TEST)</strong></td>
<td>1 of 3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Edit Sort Select</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(TEST)</strong></td>
<td>1 of 3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Edit Delete Select</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(TEST)</strong></td>
<td>1 of 3</td>
</tr>
</tbody>
</table>

**Related Programming Command**

SIGPOS

---

### SELECT LWR AMPL

*Signal analysis mode only.*

Softkey that enters the amplitude value for the lower limit-line segment. Enter the amplitude value for the selected frequency or time by using the knob or data keys. Press **BK SP** to correct errors.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>Limit Edit EDIT SELECT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(DISPLAY)</strong></td>
<td>1 of 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Limit Edit EDIT SELECT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(SETUP)</strong></td>
<td>1 of 3</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

### SELECT MID AMPL

*Signal analysis mode only.*

Softkey that enters the amplitude value for the middle of the limit-line segment. Enter the amplitude value for the selected frequency or time by using the knob or data keys. Press **BK SP** to correct errors.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>Limit Edit EDIT SELECT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(DISPLAY)</strong></td>
<td>1 of 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Limit Edit EDIT SELECT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(SETUP)</strong></td>
<td>1 of 3</td>
</tr>
</tbody>
</table>
Related Programming Command

none

**SELECT POINT**
Softkey that creates or edits an amplitude-correction factor data point. Enter the point number to be created or edited by using the data keys, then press [ENTER]. Press [BKSP] to correct errors.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>Correctn</th>
<th>Antenna</th>
<th>Edit</th>
<th>SELECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3</td>
<td>Factors</td>
<td>Factors</td>
<td>Antenna</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Correctn</th>
<th>Cable</th>
<th>Edit</th>
<th>SELECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3</td>
<td>Factors</td>
<td>Factors</td>
<td>Cable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>Correctn</th>
<th>Other</th>
<th>Edit</th>
<th>SELECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3</td>
<td>Factors</td>
<td>Factors</td>
<td>Other</td>
</tr>
</tbody>
</table>

Related Programming Command

AMPCOR

**SELECT PREFIX**
Softkey that allows you to select an already existing prefix of a cataloged file and changes the current prefix to this selected prefix. This provides a convenient method for saving and recalling data to and from the floppy disk and for cataloging by the prefix. Use either the knob or step keys to select the file.

**Key Path**

<table>
<thead>
<tr>
<th>Recall</th>
<th>SELECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disk</td>
<td>PREFIX</td>
</tr>
<tr>
<td>[RECALL]</td>
<td>...</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recall</th>
<th>More</th>
<th>SELECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disk</td>
<td>1 of 2</td>
<td>PREFIX</td>
</tr>
<tr>
<td>[RECALL]</td>
<td>...</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recall</th>
<th>Catalog</th>
<th>SELECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal</td>
<td>Internal</td>
<td>PREFIX</td>
</tr>
<tr>
<td>[RECALL]</td>
<td>...</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Save</th>
<th>CATALOG</th>
<th>SELECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disk</td>
<td>DISK</td>
<td>PREFIX</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Save</th>
<th>Catalog</th>
<th>SELECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal</td>
<td>Internal</td>
<td>PREFIX</td>
</tr>
<tr>
<td>[SAVE]</td>
<td>...</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RECALL</th>
<th>SELECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>[RECALL]</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SETUP</th>
<th>PREFIX</th>
</tr>
</thead>
<tbody>
<tr>
<td>More</td>
<td>Correctn</td>
</tr>
<tr>
<td>SETUP</td>
<td>1 of 3</td>
</tr>
<tr>
<td>[SETUP]</td>
<td></td>
</tr>
</tbody>
</table>
Any of the following keys can be used to complete the key path:
CATALOG DISK, RECALL SETUP, RECALL LIST, RECALL LIMITS, or RECALL ANTEenna.

† Any of the following keys can be used to complete the key path:
RECALL CABLE, RECALL OTHER, or RECALL TRACE.

‡ Any of the following keys can be used to complete the key path:
CATALOG ALL, CATALOG VARIABLES, or CATALOG PREFIX.

§ Any of the following keys can be used to complete the key path:
CATALOG ALL, CATALOG REGISTER, CATALOG VARIABLES
or CATALOG PREFIX.

∥ Any of the following groups of softkeys can be used to complete the key path:
Antenna Factors, EDIT ANTEenna, or Cable Factors, EDIT CABLE
or Other Factors, EDIT OTHER.

Related Programming Command

none

**SELECT SEGMENT**

Softkey that creates or edits a limit-line segment. Limit lines are created by entering frequency (or time) and amplitude values into a limit-line table. The frequency (or time, for signal analysis mode only) and amplitude values specify a coordinate point from which a limit-line segment is drawn. The coordinate point is the lowest frequency or time point of the line segment. Limit lines are constructed from left to right. To select a segment, press SELECT SEGMENT, enter the segment number you wish to specify, then press a units key.

Up to 30 segments can be specified per limit-line table.
Key Path

**Signal analysis mode**

```
More Limit Edit SELECT
(DISP) 1 of 2 Lines ... * LIMIT Type SEGMENT

More Limit EDIT SELECT
(SET) 1 of 3 Lines ... * LIMIT SEGMENT

More Limit EDIT More SELECT
(SET) 1 of 3 Lines ... * LIMIT 1 of 2 SEGMENT

More Limit EDIT Select SELECT
(SET) 1 of 3 Lines ... * LIMIT Type SEGMENT
```

* Either Limit 1 or Limit 2 can be used to complete the key path.

† Any of the following can be used to complete the key path:

- EDIT UPPER, EDIT LOWER, EDIT UP/LOW, or EDIT MID/DLT.

Related Programming Command

none

---

Select Type

Softkey that accesses the menu used to select the limit-line type of line. Press FLAT to select a flat line, press SLOPE to select a sloped line, or press POINT to select a point.

**Key Path**

**Receiver mode**

```
More Limit EDIT Select
(DISP) 1 of 2 Lines ... * LIMIT Type

More Limit EDIT Select
(SET) 1 of 3 Lines ... * LIMIT Type
```

**Signal analysis mode**

```
Related Programming Command

none

---

**SELECT**

**UPR AMPL**

*Signal Analysis mode only*

Softkey that enters the amplitude value for the upper limit-line segment. Enter the amplitude value for the selected frequency or time by using the knob or data keys. Press [BK SP] to correct errors.

**Key Path**

```
More  Limit  Edit  EDIT  SELECT
DISPLAY 1 of 2 Lines  Limit  UP/Low  UPR AMPL
```

Related Programming Command

none

---

**Selectv Mark**

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

**Key Path**

```
More  EDIT  Signal  Selectv
TEST 1 of 3 LIST  Marking  Mark
```

Related Programming Command

SIGMARK
**Service Cal**

Softkey that accesses several service calibration functions. The service calibration functions are designed for service use only.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALIBRATE</td>
<td>1 of 3</td>
<td>2 of 3</td>
</tr>
</tbody>
</table>

**Related Programming Command**
none

---

**Service Diag**

Softkey that accesses several service diagnostic functions. The service diagnostic functions are designed for service use only.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALIBRATE</td>
<td>1 of 3</td>
<td>2 of 3</td>
</tr>
</tbody>
</table>

**Related Programming Command**
none

---

**SET ATTN ERROR**

Softkey that sets the calibration attenuator-error factors (this is not the same as the input attenuator). This is a service calibration function and is for service use only.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
<th>SET ATTN</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALIBRATE</td>
<td>1 of 3</td>
<td>2 of 3</td>
<td>Cal</td>
</tr>
</tbody>
</table>

**Related Programming Command**
none

---

**SET DATE**

Softkey that allows you to set the date of the real-time clock. To enter the date in the YYMMDD format use the data keys then press **ENTER**. Valid year (YY) values are 00 through 99. Valid month (MM) values are from 01 to 12, and valid day values are from 01 to 31.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>Time</th>
<th>SET</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONFIG</td>
<td>1 of 3</td>
<td>Date</td>
</tr>
</tbody>
</table>
Related Programming Command

**SETTIME**

Softkey that allows you to set the time of the real-time clock. To enter the time in 24 hour, HHMMSS format, use the data keys then press [ENTER]. Valid hour (HH) values are from 00 to 23. Valid minute (MM) and second (SS) values are from 00 to 59.

**Key Path**

![CONFIG] 1 of 3 Date TIME

![CALIBRATE] Time TIME

Related Programming Command

**CALTIME, SETTIME**

**SETTINGS ON OFF**

Softkey that 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.

**Key Path**

![OUTPUT] Report ON OFF

Related Programming Command

none

**SETUP**

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

Related Programming Command

none
**SETUP -> DISK**

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

**Key Path**

```
  Save  SETUP
(save) Disk  ->  DISK
```

**Related Programming Command**

none

---

**SHOW Δ1 PK QP AV**

Softkey that 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.

**Key Path**

```
  Define  SHOW Δ1
(output) List  PK QP AV
```

**Related Programming Command**

TBLDEF

---

**SHOW Δ2 PK QP AV**

Softkey that 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.

**Key Path**

```
  Define  SHOW Δ2
(output) List  PK QP AV
```

**Related Programming Command**

TBLDEF
SHOW COR
ON OFF

Softkey that 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.

Key Path

Define SHOW COR
OUTPUT List ON OFF

Related Programming Command
TBLDEF

SHOW DET
PK QP AV

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

Key Path

Define SHOW DET
OUTPUT List PK QP AV

Related Programming Command
TBLDEF

SHOW MKR
ON OFF

Softkey that specifies signals that are marked in the signal list will be included as part of the list portion of the report.

Key Path

Define SHOW MKR
OUTPUT List ON OFF

Related Programming Command
TBLDEF
SHOW SETUP

Softkey that shows current settings of the instrument on the display. SHOW SETUP consists of four pages of information, including existing filenames, correction-factor data, limit-line data, frequency settings, trace data, and so on. To access each succeeding page of information press NEXT PAGE. To exit, press Previous Menu.

Related Programming Command
SHOWSETUP

SHW INST CONFIG

Softkey that 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), narrow bandwidths (NBW), and additional information about the disk drive (DISK).

Related Programming Command
HAVE, ID, REF, SER

SIG LIST ON OFF

Softkey that turns on or off the signal list viewing and editing functions.

Related Programming Command
SIGLIST
**SIGNAL ANALYSIS**

Softkey that configures the instrument as a signal analyzer.

**Key Path**

SIGNAL

**Related Programming Command**

none

---

**Signal Marking**

Softkey that accesses a menu to mark one or more signal on the signal list.

**Key Path**

More EDIT Signal

LIST Marking

**Related Programming Command**

SIGMARK

---

**SINGLE**

Hardkey that initiates a sweep when in single-sweep mode.

**Related Programming Command**

none

---

**SLOPE**

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

**Key Path**

*Receiver mode*

More Limit * Edit Select

DISPLAY 1 of 2 Lines ... LIMIT Type SLOPE

*Signal analysis mode*

More Limit Edit * Select

DISPLAY 1 of 2 Lines Limit ... Type SLOPE

More Limit Edit * Select

SETUP 1 of 3 Lines Limit ... Type SLOPE
" Either Limit 1 or Limit 2 can be used to complete the key path.

† Any of the following can be used to complete the key path:
EDIT UPPER, EDIT LOWER, EDIT UP/LOW, or EDIT MID/DEL.

**Related Programming Command**

none

**SOFTKEYS**

Softkey that activates the softkey portion of the display screen for color editing.

**Key Path**

<table>
<thead>
<tr>
<th>Display</th>
<th>Adjust</th>
<th>Edit</th>
<th>More</th>
<th>More</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DISPLAY</strong></td>
<td>Config</td>
<td>Color</td>
<td>Colors</td>
<td>1 of 3</td>
</tr>
</tbody>
</table>

**Related Programming Command**

SETC

**SORT BY AVG AMP**

Softkey that sorts the internal signal list by average amplitude. This list is sorted in descending order.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>EDIT</th>
<th>Sort</th>
<th>SORT BY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TEST</strong></td>
<td>1 of 3</td>
<td>LIST</td>
<td>Signals</td>
</tr>
</tbody>
</table>

**Related Programming Command**

SIGSORT

**SORT BY FREQ**

Softkey that sorts the internal signal list by the frequency of the signals. The list will be sorted in ascending order.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>EDIT</th>
<th>Sort</th>
<th>SORT BY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TEST</strong></td>
<td>1 of 3</td>
<td>LIST</td>
<td>Signals</td>
</tr>
</tbody>
</table>

**Related Programming Command**

SIGSORT
This key is only active when VIEW A OFF is pressed first.

Softkey that sorts the internal signal list by delta limits. The list will be sorted in descending order.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>EDIT</th>
<th>Sort</th>
<th>SORT BY</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEST</td>
<td>1 of 3</td>
<td>LIST</td>
<td>Signals</td>
</tr>
</tbody>
</table>

**Related Programming Command**

SIGSORT

---

Softkey that sorts the internal signal list by peak amplitude. The list will be sorted by descending order.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>EDIT</th>
<th>Sort</th>
<th>SORT BY</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEST</td>
<td>1 of 3</td>
<td>LIST</td>
<td>Signals</td>
</tr>
</tbody>
</table>

**Related Programming Command**

SIGSORT

---

Softkey that sorts the internal signal list by quasi-peak amplitude. The list will be sorted by descending order.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>EDIT</th>
<th>Sort</th>
<th>SORT BY</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEST</td>
<td>1 of 3</td>
<td>LIST</td>
<td>Signals</td>
</tr>
</tbody>
</table>

**Related Programming Command**

SIGSORT

---

Softkey that accesses a menu to sort the internal signal list based on the softkey selected. Softkeys available are:

- SORT BY FREQ
- SORT BY PK AMP
- SORT BY QP AMP
- SORT BY AVG AMP
- SORT BY DLTA LIM

SORT BY DLTA LIM is only available when VIEW A OFF is pressed.
Key Path

Hardkey and softkey that activates the SPAN function and accesses the frequency-span functions. Pressing SPAN allows the user to change the frequency range symmetrically about the center frequency. The frequency-span readout describes the total displayed frequency range; to determine frequency span per horizontal graticule division, divide the frequency span by 10.

Key Path

Related Programming Command

SP

Softkey that 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. Pressing SPAN ZOOM performs the routine similar to pressing the following keys: PEAK SEARCH, (MARKER FUNCTION), MK TRACK ON OFF (ON), and SPAN.

Key Path

Related Programming Command

SPZOOM
**SPEAKER**

Softkey that turns the internal speaker on and off. The volume from the speaker is controlled by the front-panel volume control knob and FM GAIN (when using FM demodulation). There is no output from the speaker unless demodulation is turned on. Pressing **PRESET** sets **SPEAKER ON OFF** to ON.

**Key Path**

- **KEY**
  - **SELECT**
  - **SPEAKER**
  - **ON OFF**

**Related Programming Command**

**SPEAKER**

---

**Special Colors**

Softkey that accesses a menu of predefined color schemes designed to enhance viewing under specific situations. These color schemes are Monochrome, Vision Enhance 1 and 2 (for two types of deficient blindness), and Optical Filter (to accommodate the use of protective goggles when viewing lasers).

**Key Path**

- **KEY**
  - **DISPLAY**
  - **Config**
  - **Colors**
  - **SPECIAL**
  - **Colors**

**Related Programming Commands**

**SETC**

---

**SQUELCH**

Softkey that adjusts the squelch level. The squelch level mutes weak signals and passes strong signals. The squelch level affects the audio output only. If the internal speaker is on, audio signals are not output unless the signal strength exceeds the squelch threshold. The squelch level does not affect the rear-panel AUX VIDEO OUT signal. Squelch level is indicated onscreen by the unitless numbers 0 to 100, with 0 being minimum squelch threshold (all signals are passed), and 100 being maximum squelch threshold (no signals are passed). The default squelch value is 0.

**Key Path**

- **SELECT**
  - **SQUELCH**

**Related Programming Command**

**SQLCH**
Softkey that allows you to select between automatic and manual adjustment of the tracking generator's switching attenuator. It can be manually adjusted from 0 to 56 dB in 8 dB steps. When auto-coupled, the SRC ATN function automatically adjusts the attenuator to yield the source amplitude level specified by the SRC PWR ON OFF softkey function. Set SRC ATN MAN AUTO so that MAN is underlined (decoupled) for power sweeps greater than 8 dB.

**Key Path**

SRC ATN

**Related Programming Command**

SRCAT

---

Softkey that offsets the displayed power of the tracking generator (SRC). Offset values may range from -327 dB to +327 dB.

Using the source-power-offset capability of the tracking generator allows you to take system losses or gains into account, thereby displaying the actual power delivered to the device under test.

**Key Path**

More SRC PWR

**Related Programming Command**

SRCPOFS

---

Softkey that 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.

**Key Path**

SRC PWR

**Related Programming Command**

SRCPWR
Softkey that sets the step size of the source-power level, source-power offset, and power-sweep range functions. The step size may be values from −327 dB to 327 dB. The default setting is one vertical scale division.

**Key Path**

```
More  SRC PWR
    TRACK GEN 1 of 2 STP SIZE
```

**Related Programming Command**

`SRCSTP`

---

Softkey that sets the frequency at the left side of the graticule. The left and right sides of the graticule correspond to the start and stop frequencies. When these frequencies are activated, their values are displayed below the graticule in place of center frequency and span.

**Key Path**

```
START  FREQ
    FREQUENCY FREQ
```

**Related Programming Command**

`FA`

---

Softkey that saves the current instrument state in the selected state register. To save the current state, press `STATE -> INTRNL`, and use the data keys to enter a state register number (valid state register numbers are 1 through 8). If windows are being used, only the state of the active window will be saved.

**Key Path**

```
Save  STATE
    SAVE Internal -> INTRNL
```

**Related Programming Command**

`SAVES`
**STATUS**

Softkey that activates the status portion of the display screen for color editing.

**Key Path**

<table>
<thead>
<tr>
<th>Display</th>
<th>Adjust</th>
<th>Edit</th>
<th>More</th>
<th>More</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONFIG</td>
<td>Color</td>
<td>Colors</td>
<td>1 of 3</td>
<td>2 of 3</td>
</tr>
</tbody>
</table>

**Related Programming Command**

SETC

---

**STEP**

**LOG LIN**

Softkey that initiates a logarithmic or linear stepped measurement. The stepped measurement is taken between the specified start and stop frequencies in conjunction with the selected step size (**FREQ_STEP**), and step mode (**MEAS** **SNG** **CONT**). The parameter specified is multiplied by the intermediate frequency bandwidth to determine the actual step size.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>Inst</th>
<th>More</th>
<th>STEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP</td>
<td>1 of 3</td>
<td>Setup</td>
<td>1 of 2</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

**STOP**

Softkey that stops a stepped measurement.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>MEAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEST</td>
<td>1 of 3</td>
<td>2 of 3</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

**STOP**

**FREQ**

Softkey that sets the frequency at the right side of the graticule. The left and right sides of the graticule correspond to the start and stop frequencies. When these frequencies are activated, their values are displayed below the graticule in place of center frequency and span.

**Key Path**

<table>
<thead>
<tr>
<th>STOP</th>
</tr>
</thead>
<tbody>
<tr>
<td>FREQ</td>
</tr>
</tbody>
</table>

4-188  Key Dictionary Reference
**Related Programming Command**

FB

---

**STORE FLATNESS**

This key is only active when either EDIT FLATNESS or EDIT PA FLATNESS are pressed first.

Softkey that stores amplitude versus frequency calibration factors.

**Key Path**

```
<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
<th>Flattness</th>
<th>Store</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calibrate</td>
<td>1 of 3</td>
<td>2 of 3</td>
<td>Cal</td>
<td>Data</td>
</tr>
</tbody>
</table>
```

**Related Programming Commands**

none

---

**STOR PWR ON UNITS**

Softkey that sets the default settings for the units used in the linear and the logarithmic modes when the instrument is powered on.

The settings for the units can be changed during normal instrument operation but they will return to the default settings when the instrument is powered on again. This is a service calibration function.

**Key Path**

```
<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
<th>STOR PWR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calibrate</td>
<td>1 of 3</td>
<td>2 of 3</td>
<td>Cal</td>
</tr>
</tbody>
</table>
```

**Related Programming Command**

none

---

**STP GAIN ZERO**

Softkey that disables the two 20 dB step-gain amplifiers on the A12 amplitude control assembly. This is a service diagnostic function and is for service use only.

**Key Path**

```
<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
<th>STP GAIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calibrate</td>
<td>1 of 3</td>
<td>2 of 3</td>
<td>Diag</td>
</tr>
</tbody>
</table>
```

**Related Programming Command**

none
Softkey that accesses the menu used for selecting screen title or prefix characters S through X.

**Key Access**
(CAL), (CONFIG), (DISPLAY), (RECALL), (SAVE), or (SETUP)

**Related Programming Command**
none

---

Hardkey that accesses the sweep-time menu and the sweep-time softkey functions SWP, TIME AUTO, MAN, and SWEEP CONT SGL.

**Related Programming Command**
CONTS

---

Softkey that switches the instrument between continuous-sweep mode and single-sweep mode. If the instrument is in single-sweep mode, SGL is underlined. Press (SINGLE) to enable a sweep when in single-sweep mode. When continuous-sweep mode is in use, one sweep follows another as soon as it is triggered. Pressing (PRESET) and turning the power on, selects continuous sweep.

**Key Path**

```
Sweep
```

Sweep

```
Sweep
CONT SGL
```

```
TRIG
CONT SGL
```

**Related Programming Command**
CONTS, SNGLS

---

Softkey that selects between a logarithmic and linear frequency axis.

**Key Path**

```
Sweep
```

```
FREQUENCY
LOG LIN
```

```
Sweep
LOG LIN
```
Related Programming Commands

**SWEETYPE**

---

**SWEEP RAMP**

Softkey that displays the RAMP signal from the sweep-ramp generator that is located on the A7 analog interface assembly. This is a service diagnostic function and is for service use only.

**Key Path**

More  More  Service
CALIBRATE  1 of 3  2 of 3  Diag  More 1  More 2

**Related Programming Command**

none

---

**SWEEP TIME DAC**

Softkey that displays the output of the sweep-time DAC (SWP_DAC) from the sweep-ramp generator that is on the A7 analog interface assembly. This is a service diagnostic function and is for service use only.

**Key Path**

More  More  Service
CALIBRATE  1 of 3  2 of 3  Diag  More 1  More 2

**Related Programming Command**

none

---

**SWP CPLG SR RECV**

Softkey that selects stimulus-response (SR) or receiver (RECV) auto-coupled sweep time. In stimulus-response mode, auto-coupled sweep times are usually much faster for swept-response measurements. Stimulus-response auto-coupled sweep times are typically valid in stimulus-response measurements when the frequency span of the instrument is less than 20 times the bandwidth of the device under test.

**Key Path**

More  SWP CPLG
TRACK GEN  1 of 2  SR RECV
Related Programming Command

MEASURE, SWPCPL

Softkey that selects the length of time in which the instrument sweeps the displayed frequency span. In all non-zero frequency spans, the sweep time varies from 20 milliseconds to 100 seconds. In zero frequency span, the fastest sweep time is 15 milliseconds. Reducing the sweep time increases the rate of sweeps. The sweep time can be changed using the step keys, the knob, or the data keys.

Key Path

- SWP TIME
- AUTO COUPLE
- AUTO MAN

Related Programming Command

ST

Hardkey that provides control for measuring signals and manipulating lists of measured signals.

Related Programming Command

none

Test Patterns

Softkey that accesses a menu consisting of 18 test patterns used for display-troubleshooting and screen-alignment procedures.

Key Path

- Display
- Config
- Patterns

Related Programming Command

none
THINKJET

Softkey that specifies ThinkJet as the printer connected to the output port.

**Key Path**

<table>
<thead>
<tr>
<th>Print</th>
<th>Printer</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONFIG</td>
<td>Config</td>
</tr>
<tr>
<td>Type</td>
<td>THINKJET</td>
</tr>
</tbody>
</table>

**Related Programming Command**

PRNTYPE

---

THRESHLD

ON OFF

Softkey that sets a lower boundary to the active trace. The threshold line "clips" signals that appear below the line when this function is on. The boundary is defined in amplitude units that correspond to its vertical position when compared to the reference level.

The value of the threshold appears in the active-function block and on the lower-left side of the screen. The threshold level does not influence the trace memory or marker position. The peaks found by the markers must be at least the peak excursion value above the threshold level. The value of the threshold level can be changed using the step keys, the knob, or the data keys. If a threshold is active, press THRESHLD ON OFF until OFF is selected to turn the threshold display off. The threshold value affects peak searching even when the THRESHLD function is set to off.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>THRESHLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>1 of 2</td>
</tr>
<tr>
<td>ON OFF</td>
<td></td>
</tr>
</tbody>
</table>

**Related Programming Command**

TH

---

Time

Date

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

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONFIG</td>
<td>1 of 3</td>
</tr>
<tr>
<td>Date</td>
<td></td>
</tr>
</tbody>
</table>

**Related Programming Command**

TIMEDATE
Softkey that turns the display of the real-time clock on or off. Pressing DEFAULT CONFIG sets TIMEDATE ON OFF to ON.

Key Path

<table>
<thead>
<tr>
<th>More</th>
<th>Time TIMEDATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>(CONFIG)</td>
<td>1 of 3 Date</td>
</tr>
<tr>
<td>Print Print TIMEDATE</td>
<td></td>
</tr>
<tr>
<td>(CONFIG)</td>
<td>Config Options</td>
</tr>
</tbody>
</table>

Related Programming Command

TIMEDSP

Hardkey that accesses the trace softkeys that store and manipulate trace information. Each trace is comprised of a series of data points that form a register where amplitude information is stored. The instrument updates the information for any active trace with each sweep. If two traces are being written to, they are updated on alternating sweeps.

Related Programming Command

none

Softkey that selects the menu used for trace A, trace B, or trace C functions. Press TRACE A B C until the letter of the desired trace is underlined.

Key Path

TRACE

TRACE A B C

Related Programming Command

none
**As accessed from DISPLAY**

Softkey that activates the trace A portion of the display screen for color editing.

**As accessed from either RECALL or SAVE**

Softkey that saves trace A data to a floppy disk. To save trace A data, press Trace -> Disk, TRACE A. REGISTER # and PREFIX= are displayed on the screen. Use the data keys to enter the desired register number. The message Saving to :FILENAME is displayed. Trace A data has now been saved to a disk.

**Key Path**

<table>
<thead>
<tr>
<th>Display</th>
<th>Adjust</th>
<th>Edit</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>Config</td>
<td>Color</td>
</tr>
<tr>
<td></td>
<td>Colors</td>
<td>TRACE A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recall</th>
<th>Internal</th>
</tr>
</thead>
<tbody>
<tr>
<td>RECALL</td>
<td>Internal</td>
</tr>
<tr>
<td></td>
<td>-&gt; Trace</td>
</tr>
<tr>
<td></td>
<td>TRACE A</td>
</tr>
</tbody>
</table>

**Related Programming Command**

SETC

---

**As accessed from DISPLAY**

Softkey that activates the trace B portion of the display screen for color editing.

**As accessed from either RECALL or SAVE**

Softkey that saves trace B data to a floppy disk. To save trace B data, press Trace -> Disk, TRACE B. REGISTER # and PREFIX= are displayed on the screen. Use the data keys to enter the desired register number. The message Saving to :FILENAME is displayed. Trace B data has now been saved to a disk.

**Key Path**

<table>
<thead>
<tr>
<th>Display</th>
<th>Adjust</th>
<th>Edit</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>Config</td>
<td>Color</td>
</tr>
<tr>
<td></td>
<td>Colors</td>
<td>TRACE B</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recall</th>
<th>Internal</th>
</tr>
</thead>
<tbody>
<tr>
<td>RECALL</td>
<td>Internal</td>
</tr>
<tr>
<td></td>
<td>-&gt; Trace</td>
</tr>
<tr>
<td></td>
<td>TRACE B</td>
</tr>
</tbody>
</table>

**Related Programming Command**

SETB
**Related Programming Command**

**SETC**

---

**TRACE C**

*As accessed from (DISPLAY).*

Softkey that activates the trace C portion of the display screen for color editing.

*As accessed from either (RECALL) or (SAVE).*

Softkey that saves trace C data to a floppy disk. To save trace C data press, Trace -> Disk, press, Trace -> Disk, TRACE C, REGISTER # and PREFIX= are displayed on the screen. Use the data keys to enter the desired register number. The message Saving to :FILENAME is displayed. Trace C data has now been saved to a disk.

**Key Path**

<table>
<thead>
<tr>
<th>DISPLAY</th>
<th>Config</th>
<th>Color</th>
<th>Colors</th>
<th>TRACE C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Recall</td>
<td>Internal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RECALL</td>
<td>Internal -&gt; Trace</td>
<td>TRACE C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Save</td>
<td>More</td>
<td>Trace</td>
<td></td>
</tr>
<tr>
<td>SAVE</td>
<td>Disk 1 of 2 -&gt; Disk</td>
<td>TRACE C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Save</td>
<td>Trace</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAVE</td>
<td>Internal -&gt; Intrnl</td>
<td>TRACE C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Related Programming Command**

**SETC**

---

**Trace**

* -> Disk

Softkey that accesses a menu to select the item to be stored on a floppy disk: the trace to be saved (trace A, trace B, or trace C), or a limit-line table.

**Key Path**

<table>
<thead>
<tr>
<th>SAVE</th>
<th>More</th>
<th>Trace</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAVE</td>
<td>Disk 1 of 2 -&gt; Disk</td>
<td></td>
</tr>
</tbody>
</table>

---

**Related Programming Command**

**none**
Trace
-→ Intrnl

Softkey that accesses a menu to select the item to be stored in internal memory: the trace to be saved (trace A, trace B, or trace C), or a limit-line table. To save a trace, select the trace to be saved, enter the trace-register number, and press (ENTER). To save a limit-line table press, LIMIT LINES, enter the trace-register number, then press (ENTER). Valid trace-register numbers are 0 through the maximum register number. The maximum register number is the number x displayed after MAX REG # = x during a save or recall operation. If a screen title is present, it is saved with the trace data. The time and date that the trace was stored is appended to the screen title. If windows are being used, only the trace of the active window will be saved.

**Key Path**

<table>
<thead>
<tr>
<th>Save</th>
<th>Trace</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAVE</td>
<td>Internal</td>
</tr>
</tbody>
</table>

**Related Programming Command**

SAVET

[TRACK GEN]

Hardkey that accesses a menu that controls the built-in tracking generator.

**Related Programming Command**

none

[TRACK GEN]

[TRACKING PEAK]

Softkey that activates a routine to adjust the tracking adjustment for the peak response of the tracking generator.

**Note**

For tracking peak to function properly, the tracking generator must be connected to the instrument.

Before making a stimulus-response measurement, care must be taken to maximize the tracking adjustment of the tracking generator to ensure maximum available dynamic range.

**Key Path**

[TRACK GEN]

[TRACKING PEAK]

**Related Programming Command**

SRCTKPK
Hardkey that accesses a menu that selects the sweep mode and trigger mode. (Also see “Screen Annotation” in Chapter 1 of the User’s Guide.)

Note

With some delayed trigger functions (for example, external or video triggering), the softkey menu is not updated until after the trigger has occurred.

Related Programming Command

TM

Softkey that makes center frequency the active function and, when FAST is underlined, increases the speed of the marker positioning and center frequency tuning functionality of the knob and step keys.

For marker positioning, the knob changes the marker position by four times the normal rate (FAST).

For center frequency, the knob tuning is eight times the normal rate. (FAST)

Key Path

TUNE
SLO FAST

Related Programming Command

FASTMRKR

Softkey that cancels any changes made in any of the Edit Colors functions.

Key Path

Display | Adjust | Special
| DISPLAY | Config | Colors | Colors | UNDO |

Related Programming Command

none
VERT LINES

Softkey that replaces the standard display screen with a vertical lines. This is one of 18 test patterns that can be used for display-troubleshooting and screen-alignment procedures.

Key Path

<table>
<thead>
<tr>
<th>Display</th>
<th>Test</th>
<th>More</th>
<th>More</th>
<th>VERT</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY</td>
<td>Config</td>
<td>Patterns</td>
<td>1 of 4</td>
<td>2 of 4</td>
</tr>
</tbody>
</table>

Related Programming Command

none

User Menus

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

Key Path

User

Related Programming Command

SRCTKPK

VID AVG ON OFF

Softkey that initiates a digital averaging routine that averages displayed signals and noise. This function does not affect the sweep time, bandwidth, or other analog characteristics of the instrument. Annotation on the left side of the screen indicates the current number of sweeps averaged. The default number of sweeps is 100. Increasing the number of sweeps smooths the trace. To turn off the video averaging function, press VID AVG ON OFF so that OFF is underlined. The number of sweeps can be entered using the data keys.

Key Path

<table>
<thead>
<tr>
<th>More</th>
<th>VID AVG</th>
</tr>
</thead>
<tbody>
<tr>
<td>BW</td>
<td>1 of 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>More</th>
<th>VID AVG</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRACE</td>
<td>1 of 3</td>
</tr>
</tbody>
</table>

Related Programming Command

VAVG, CLR AVG
Softkey that 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. When VIDEO is pressed, the display line appears on the screen. For example, connect the CAL OUT signal to the instrument input, change the trigger mode to video, and lower the display line. The instrument triggers when the display line reaches the noise floor.

**Key Path**

TRIG VIDEO

**Related Programming Command**

TM

---

Softkey that accesses a menu to select which delta from the limit-line table is viewed by the display signal list. Each time this softkey is pressed, it changes sequentially as follows:

- VIEW PK Δ LIM 1
- VIEW PK Δ LIM 2
- VIEW QP Δ LIM 1
- VIEW QP Δ LIM 2
- VIEW AVG Δ LIM 1
- VIEW AVG Δ LIM 2
- VIEW Δ OFF

**Key Path**

More VIEW Δ

TEST 1 of 3 OFF

**Related Programming Command**

SIGDLTVIEW

---

Softkey that holds and displays the amplitude data that is in the trace A register. The trace A register is not updated as the instrument sweeps. If trace A is deactivated by pressing STORE BLANK A, the stored data can be retrieved by pressing VIEW A.

**Key Path**

TRACE VIEW A
Related Programming Command
VIEW

VIEW B
Softkey that holds and displays the amplitude data that is in the trace B register. The trace B register is not updated as the instrument sweeps. If trace B is deactivated by pressing STORE BLANK B, the stored data can be retrieved by pressing VIEW B.

Key Path
(TRACE) VIEW B

Related Programming Command
VIEW

VIEW C
Softkey that holds and displays the amplitude data that is in the trace C register. The trace C register is not updated as the instrument sweeps. If trace C is deactivated by pressing STORE BLANK C, the stored data can be retrieved by pressing VIEW C.

Key Path
(TRACE) VIEW C

Related Programming Command
VIEW

VIEW CAL
ON OFF
Softkey that switches the 300 MHz calibrator signal so that it is routed internally to the input of the instrument or externally to the 300 MHz output of the instrument.

Key Path
(INPUT) VIEW CAL

Related Programming Command
CALSW
**VIEW PK QP AV**

Softkey that toggles between the different detection modes, peak (PK), quasi-peak (QP), and average (AV). This function is only active if **QUASI-PEAK** or **AVERAGE** have been selected. **VIEW PK QP AV** does not affect any other settings except the selected detector.

**Key Path**

<table>
<thead>
<tr>
<th>TEST</th>
<th>More</th>
<th>More</th>
<th>VIEW</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 of 3</td>
<td>2 of 3</td>
<td>PK QP AV</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

**VISION ENHANCE1**

Softkey that sets the display screen to vision enhance. The special colors built into vision enhance 1 and 2 accommodate most color deficient vision problems.

**Key Path**

<table>
<thead>
<tr>
<th>DISPLAY</th>
<th>Adjust</th>
<th>Special</th>
<th>VISION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Config</td>
<td>Color</td>
<td>Colors</td>
<td>ENHANCE1</td>
</tr>
</tbody>
</table>

**Related Programming Command**

SETC

---

**VISION ENHANCE2**

Softkey that sets the display screen to vision enhance. The special colors built into vision enhance 1 and 2 accommodate most color deficient vision problems.

**Key Path**

<table>
<thead>
<tr>
<th>DISPLAY</th>
<th>Adjust</th>
<th>Special</th>
<th>VISION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Config</td>
<td>Color</td>
<td>Colors</td>
<td>ENHANCE2</td>
</tr>
</tbody>
</table>

**Related Programming Command**

SETC
**Volts**
Softkey that changes the amplitude units to volts.

**Key Path**

<table>
<thead>
<tr>
<th>AMPLITUDE</th>
<th>More</th>
<th>Amptd</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 of 3</td>
<td>Units</td>
</tr>
</tbody>
</table>

**Related Programming Command**
none

---

**Watts**
Softkey that changes the amplitude units to watts.

**Key Path**

<table>
<thead>
<tr>
<th>AMPLITUDE</th>
<th>More</th>
<th>Amptd</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 of 3</td>
<td>Units</td>
</tr>
</tbody>
</table>

**Related Programming Command**
none

---

**WHITE DOTS**
Softkey that replaces the standard display screen with white dots. This is one of 18 test patterns that can be used for display-troubleshooting and screen-alignment procedures.

**Key Path**

<table>
<thead>
<tr>
<th>DISPLAY</th>
<th>Test</th>
<th>More</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Config</td>
<td>Patterns</td>
<td>1 of 4</td>
</tr>
</tbody>
</table>

**Related Programming Command**
none

---

**WHITE FILL**
Softkey that replaces the standard display screen with a white box. This is one of 18 test patterns that can be used for display-troubleshooting and screen-alignment procedures.

**Key Path**

<table>
<thead>
<tr>
<th>DISPLAY</th>
<th>Test</th>
<th>More</th>
<th>More</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Config</td>
<td>Patterns</td>
<td>1 of 4</td>
<td>2 of 4</td>
</tr>
</tbody>
</table>

**Related Programming Command**
none
**Windows Off**

Softkey that turns off the windows display mode and returns to the normal full-sized display. The state of the last active window will become the instrument state when the windows display is turned off.

**Key Path**

```
(Ctrl) WINDOWS OFF
```

**Related Programming Command**

WINOFF

---

**X Fine Tune DAC**

Softkey that displays the output of the YTO extra-fine-tune DAC (FM_TUNE) that is on the A7 analog interface assembly. This is a service diagnostic function and is for service use only.

**Key Path**

```
CALIBRATE  1 of 3  2 of 3  Diag  More 1 ...  More 3
```

**Related Programming Command**

none

---

**YTF Driver**

For an HP 8546A/HP 85462A only.

Softkey that displays the output of the sample-and-hold circuit in the YTF span divider and driver located on the A7 analog interface assembly. This is a service diagnostic function and is for service use only.

**Key Path**

```
CALIBRATE  1 of 3  2 of 3  Diag  More 1 ...  More 5
```

**Related Programming Command**

none
**YTF SPAN**  
*For an HP 8546A/HP 85462A only.*  
Softkey that displays a trace of the voltage driving the YTF as it sweeps through the displayed span. This is a service diagnostic function and is for service use only.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
<th>YTF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CALIBRATE</strong></td>
<td>1 of 3</td>
<td>2 of 3</td>
<td>Diag</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

**YTF TUNE COARSE**  
*For an HP 8546A/HP 85462A only.*  
Softkey that displays the output produced by the YTF coarse-tune DAC located on the A7 analog interface assembly. This is a service diagnostic function and is for service use only.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CALIBRATE</strong></td>
<td>1 of 3</td>
<td>2 of 3</td>
</tr>
<tr>
<td>YTF TUNE</td>
<td>Diag</td>
<td>More 1</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none

---

**YTF TUNE FINE**  
*For an HP 8546A/HP 85462A only.*  
Softkey that displays the output produced by the YTF fine-tune DAC located on the A7 analog interface assembly. This is a service diagnostic function and is for service use only.

**Key Path**

<table>
<thead>
<tr>
<th>More</th>
<th>More</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CALIBRATE</strong></td>
<td>1 of 3</td>
<td>2 of 3</td>
</tr>
<tr>
<td>YTF TUNE</td>
<td>Diag</td>
<td>More 1</td>
</tr>
</tbody>
</table>

**Related Programming Command**

none
Softkey that accesses the menu used for selecting the characters Y, Z, underscore (_), #, space, or for clearing the screen title.

**Key Access**

(CAL), (CONFIG), (DISPLAY), (RECALL), (SAVE), or (SETUP)

**Related Programming Command**

none

---

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

**Key Path**

(ZERO)

(SPAN) SPAN

**Related Programming Command**

none

---

Softkey that moves the zone markers in frequency without changing the zone span. The zone markers are vertical lines marking the zone on the upper window. They correspond with the frequency range displayed in the lower window. As the zone markers are moved the center frequency of the lower window is changed but the lower window will not be updated unless it is active.

The zone can be moved beyond the frequency range that is being displayed in the upper window. Its movement is limited to the frequency range of the instrument. The zone markers will be displayed at the edges of the upper window when the zone is moved beyond the displayed frequency range.

**Key Path**

(WINDOWS CTRL CENTER)

**Related Programming Command**

ZMKCNTR
ZONE PK LEFT

Softkey that 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. The zone span is not changed. The center frequency of the lower window changes to reflect the new zone center frequency. The lower window will not be updated until it is made active. If no peak is found the zone will not be moved. A signal must have a 6 dB peak excursion to be identified as a peak signal. The definition of a peak excursion can be changed by selecting PEAK EXCURSN while the upper window is active.

Pressing ZONE PK LEFT will have no effect if the upper window is in zero span.

Key Path

ZONE PK LEFT

Related Programming Command

ZMKPKNL

ZONE PK RIGHT

Softkey that 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. The zone span is not changed. The center frequency of the lower window changes to reflect the new zone center frequency. The lower window will not be updated until it is made active. If no peak is found the zone will not be moved. A signal must have a 6 dB peak excursion to be identified as a peak signal. The definition of a peak excursion can be changed by selecting PEAK EXCURSN while the upper window is active.

Pressing ZONE PK RIGHT will have no effect if the upper window is in zero span.

Key Path

ZONE PK RIGHT

Related Programming Command

ZMKPKNR
Softkey that changes the span of the zone markers without changing the center frequency. The zone markers are vertical lines marking the zone on the upper window. They correspond with the frequency range displayed in the lower window. As the zone markers are moved the span of the lower window is changed but the lower window will not be updated unless it is active.

The zone can be expanded beyond the frequency range that is being displayed in the upper window. Its movement is limited to the frequency range of the instrument. The zone markers will be displayed at the edges of the upper window when the zone is moved beyond the displayed frequency range.

**Key Path**

```
WINDOW (CTRL) ZONE SPAN
```

**Related Programming Command**

ZMKSPAN

---

Hardkey that switches between the split-screen windows display and a full size display of the window that is currently active. Once the ZOOM function is active the NEXT key can be used to switch between the two windows while remaining zoomed (full sized).

**Related Programming Command**

WINZOOM
Error Messages

The instrument 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 instrument hardware is probably broken.
- **User-created error messages** appear when the instrument 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 progress of the instrument 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).

- **LOCK OFF**  
  Indicates slow YTO tuning. This message may appear if the instrument is using default correction factors. If this message appears constantly, perform the self-calibration routine to try to eliminate this message. **LOCK OFF** appears briefly during the self-calibration 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)

- **Bad device type in msdu**  
  An attempt has been made to read a disk that is neither LIF nor DOS format or a communication failure between the main processor and the floppy disk subsystem. If the disk in use is LIF or DOS format, try turning the instrument off, wait a few seconds, then turn the instrument on again. If the condition persists, contact your HP representative. (U) (H)

- **Bad mass storage parameter**  
  May be reported if an attempt is made to read a disk that is neither
LIF nor DOS format. Attempt a catalog operation on the disk or try a different disk. (U)

**Bad mass storage volume label**
May be reported if an attempt is made to read a disk that is neither LIF nor DOS format. Attempt a catalog operation on the disk or try a different disk. (U)

**Bad mass storage volume spec**
May be generated if the user removes media while it is being accessed or if a read or write operation is attempted on unformatted media. Try the operation again or try the operation on media you are sure has been appropriately formatted.

**Cal harmonic >= 5.7 GHz NOT found For an HP 8546A/HP 85462A only.**
Indicates that the CAL YTF routine cannot find a harmonic of the 300 MHz calibration signal. If this happens, perform the CAL FREQ and CAL AMP routines, and then perform the CAL YTF routine again. For the HP 8546A, press CAL ALL then perform the CAL YTF routine again. (U) and (H)

**CAL: MAIN COIL SENSE FAIL**
The instrument could not set up span sensitivity of the main coil. If this message appears, press [FREQUENCY], CENTER FREQ, −37, (F), (CALIBRATE), More 1 of 3, More 2 of 3, DEFAULT CAL DATA, and perform the self-calibration routine again. (H)

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

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

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

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

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

**CAL: PASS CODE NEEDED**
Indicates that the function cannot be accessed without the pass code. For the DEFAULT CAL DATA function, the pass code is setting the center frequency of the instrument to −37 Hz. (M)

**CAL: RES BW AMPL FAIL**
The relative insertion loss of the IF bandwidth is incorrect. This message also sets SRQ 110. (H)

**CAL SIGNAL NOT FOUND**
Indicates the calibration signal cannot be found. Check that
the instrument input connectors are connected properly. If the calibration signal is connected properly but cannot be found, press (FREQUENCY), CENTER FREQ, -37, (H), (CALIBRATE), More 1 of 3, More 2 of 3, DEFAULT CAL DATA. If the calibration signal still cannot be found, press (FREQUENCY), CENTER FREQ, -37, (H) and perform the CAL FREQ and CAL AMP (receiver RF section) or CAL ALL (EMI receiver) 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 For an HP 8546A/HP 85462A only
Indicates that the CAL YTF routine could not be successfully completed. Perform the self-calibration routines, then perform the CAL YTF routine again. (U) and (H)

CAL: ZERO FAIL
The instrument could not set up the tuning sensitivity of the main coil. If this message appears, press (FREQUENCY), CENTER FREQ, -37, (H), (CALIBRATE), More 1 of 3, More 2 of 3, DEFAULT CAL DATA, and perform the self-calibration routines again. (H)

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

Cannot 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.

Checkread error
This error may be due to conflicting disk operations invoked from the front-panel keys and the remote I/O port, or it may indicate that the disk is corrupt. After pressing the "HOLD" key, ([ENTER]), on the front panel, retry the operation. If the operation fails again, check the disk using the catalog function. (U)

COMMAND ERROR: _ _ _
The specified programming command is not recognized by the instrument. (U)

Configuration Error
This error indicates a serious problem in the ability of the instrument to use the floppy disk drive. Try presetting the instrument. If the condition persists, contact your HP representative. (H)
CONF TEST FAIL
Indicates that the confidence test failed. Perform the self-calibration routines, and then perform the confidence test again. This message also sets SRQ 110. (H) and (U)

Directory not empty
Reported if an attempt is made to purge a non-empty directory. Ensure that all files in any directory have been purged or moved before attempting to purge the directory. (U)

Directory overflow
Reported if the disk directory runs out of room. Change the media. (M)

Drive not found or bad address
An attempt has been made to read a disk that is neither LIF nor DOS format or a communications failure between the main processor and the floppy disk subsystem. If the disk in use is LIF or DOS format, try turning the instrument off, wait a few seconds, then turn the instrument on again. If the condition persists, contact your HP representative. (U) (H)

Duplicate file name
Reported if the file system tries to write data to a file that already exists, but did not exist previously. May be due to changing media just before an operation attempts to create a new file. (U)

Duplicate file name, PROTECT is on
Reported if the user attempts to overwrite a previously existing file with PROTECT status set to ON (the default state). Use a different file name, purge the file, or turn off the PROTECT feature. (U)

End of file or buffer found
Reported if an attempt is made to read or write beyond the current file or directory is made. Also reported if an attempt is made to add files to a directory that is already full. Try using a new disk. (U)

End of rec found, random mode
Reported if an attempt is made to read or write beyond the current record being accessed. Try the operation again. (U)

FAIL: _ _ _ _
An error was discovered during the power-up check. The 4-digit by 10-digit code indicates the type of error. (H)

File name is undefined
May be reported if the user changes media immediately before a read operation is attempted on a file of a specific name. Ensure that the file exists on the disk by using the catalog feature. (U)

File not currently assigned
May be generated if the user removes media while it is being accessed. Try the operation again. (U)

File open on target device
May be due to conflicting file operations invoked simultaneously from the front-panel keys and the remote I/O port. Attempt the operation again. (U)
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
The FREQ UNCAL message appearing constantly, indicates a VTO-tuning error. Perform the CAL FREQ (receiver RF section) or CAL ALL (EMI receiver) routines. (U) and (H)

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

HFS disc may be corrupt
This error may be due to conflicting disk operations invoked from the front-panel keys and the remote I/O port, or it may indicate that the disk is corrupt. After pressing the “HOLD” key, [ENTER], on the front panel, retry the operation. If the operation fails again, check the disk using the catalog function. (U)

Improper destination type
Reported if an attempt is made to append data to a file and the file cannot be extended. Try the operation using another disk. (U)

Improper file name
Reported if a file or directory name is specified that in some manner does not conform to file name conventions: too many characters, illegal character in file name, and so on.

Improper file type
Reported in the event that an operation appropriate for a data file is attempted on a directory. Check the contents of the disk using the catalog function. (U)

Improper value or out of range
Indicates an internal error in computing the amount of data to read from the disk or an invalid parameter. This may indicate corrupt media; try a new disk. If the condition persists, contact your HP representative. (H)

Incorrect unit code in msus
An attempt has been made to read a disk that is neither LIF nor DOS format or a communications failure between the main processor and the floppy disk subsystem. If the disk in use is LIF or DOS format, try turning the instrument off, wait a few seconds, then turn the instrument on again. If the condition persists, contact your HP representative. (U) (H)

Incorrect volume code in mvus
An attempt has been made to read a disk that is neither LIF nor DOS format or a communications failure between the main processor and the floppy disk subsystem. If the disk in use is LIF or DOS format, try turning the instrument off, wait a few seconds, then turn the instrument on again. If the condition persists, contact your HP representative. (U) (H)

Insufficient Memory
Indicates a temporary memory overflow condition. Attempt to free
memory that may have been temporarily allocated by performing the following steps:

1. If there is a disk catalog on the display, exit the catalog.
2. Execute the dispose softkeys under Dispose User Mem in the CONFIG menu. (U)

**INTEGER overflow**
Indicates a computation error during disk access. This may indicate corrupt media; try a new disk. If the condition persists, contact your HP representative. (II)

**Internal error**
Indicates a failure of the floppy disk controller or a failure in communications between the main processor and the floppy disk controller. Try turning the instrument off, wait a few seconds, then turn the instrument on again. If the condition persists, contact your HP representative. (II)

**INTERNAL LOCKED**
The internal trace and state registers of the instrument have been locked. To unlock the trace or state registers, press (SAVE), Save Internal, SAV LOCK ON OFF so that OFF is underlined. (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 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 internal 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 commands for more information. (U)

**INVALID FILE: NO ROOM**
Indicates that there is insufficient space available on the floppy disk 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 EMI receiver) 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 instrument.) To use the instrument print or plot functions, you must disconnect any other controllers on the HP-IB. If you are using programming commands to print or plot, you can use an HP
BASIC command instead of disconnecting the controller. See the description for the PRINT command for more information. (U)

**INVALID ITEM: _ _ _**
Indicates an invalid parameter has been used in a programming command. (U)

**INVALID KEYLBL: _ _ _**
Indicates that the specified key label contains too many characters. A key label is limited to 8 printable characters per label line. (U)

**INVALID KEYNAME: _ _ _**
The specified key name is not allowed. (The key name may have conflicted with a instrument programming command.) To avoid this problem, use an underscore as the second character in the key name, or avoid beginning the key name with the following pairs of letters: LB, OA, OL, TA, TB, TR, MA, MF, TS, OT, and DR. (U)

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

**INVALID RANGE: Stop < Start**
Indicates that the first trace element specified for a range of trace elements is larger that ending trace element. When specifying a trace range the starting element must be less than the ending element. For example, TRA[2,300] is legal but TRA[300,2] is not. (U)

**INVALID REGISTER NUMBER**
The specified trace register number is invalid. (U)

**INVALID 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 instrument may have a hardware failure. (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 TRACE: _ _ _**
The specified trace is invalid. (U)

**INVALID VALUE PARAMETER: _ _ _**
The specified value parameter is invalid. (U)

**INVALID WINDOW TYPE: _ _ _**
The specified window is invalid. See the description for the TWNDOW programming command. (U)
LOST SIGNAL
This message indicates that an internal hardware connection problem exists. (I)

LO UNLVL
Indicates that the local oscillator in the EMI receiver distribution amplifier is not functioning properly. (I)

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

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

1. Place the marker on the desired signal.
2. Increase the IF 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 IF bandwidth or the original narrow IF 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 IF bandwidth setting of less than 1 kHz. (U)

Mass storage hardware failure
Indicates a failure of the floppy disk controller or a failure in communications between the main processor and the floppy disk controller. Try turning the instrument off, wait a few seconds, then turn the instrument on again. If the condition persists, contact your HP representative. (I)

Mass storage medium overflow
Reported when a disk has no more room available to write data. Try a new disk. (U)

Mass storage system error
Indicates a failure of the floppy disk controller or a failure in communications between the main processor and the floppy disk controller. Try turning the instrument off, wait a few seconds, then turn the instrument on again. If the condition persists, contact your HP representative.

Mass storage volume not present
An attempt has been made to read a disk that is neither LIF nor DOS format or communications failure between the main processor and the floppy disk subsystem. If the disk in use is LIF or DOS format, try turning the instrument off, wait a few seconds, then turn the instrument on again. If the condition persists, contact your HP representative. (U) (I)

MEAS UNCAL
The measurement is uncalibrated. Check the sweep time, span, and bandwidth settings, or press AUTO COUPLE, AUTO ALL. (U)
Medium changed or not in drive
Reported if disk is removed during disk access cycle. Try the operation without removing the disk. (U)

Medium uninitialized
Indicates that a file operation has been attempted on an uninitialized disk, or on a disk that is neither LIF nor DOS format. Be sure that any disk on which file operations are attempted is properly formatted. The format softkeys, in the CONFIG menu, may be used to format a disk, but any information on the disk will be erased during the formatting process. (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)

Operation failed on some files
Reported if, during a purge operation on a file specifier that contains wildcards, the number of files actually purged does not match the original number of files found that match the file specifier. Check the disk using the catalog function. (U)

Operation not allowed on open file
May be due to conflicting file operations invoked simultaneously from the front-panel keys and the remote I/O port. Attempt the operation again. (U)

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

PARAMETER ERROR: _ _ _
The specified parameter is not recognized by the instrument. 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)

Permission denied
Indicates that a file write-operation was attempted on either a read-only file or on a directory. Check the disk using the catalog function and try the operation on an appropriate file again. (U)

Possibly corrupt file
This error may be due to conflicting disk operations invoked from the front-panel keys and the remote I/O port, or it may indicate that the disk is corrupt. After pressing the “HOLD” key, [ENTER], on the front panel, retry the operation. If the operation fails again, check the disk using the catalog function. (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)

**Read data error**
This error may be due to conflicting disk operations invoked from the front-panel keys and the remote I/O port, or it may indicate that the disk is corrupt. After pressing the “HOLD” key, ([ENTER]), on the front panel, retry the operation. If the operation fails again, check the disk using the catalog function. (U)

**Record address error**
This error may be due to conflicting disk operations invoked from the front-panel keys and the remote I/O port, or it may indicate that the disk is corrupt. After pressing the “HOLD” key, ([ENTER]), on the front panel, retry the operation. If the operation fails again, check the disk using the catalog function. (U)

**Record not found**
This error may be due to conflicting disk operations invoked from the front-panel keys and the remote I/O port, or it may indicate that the disk is corrupt. After pressing the “HOLD” key, ([ENTER]), on the front panel, retry the operation. If the operation fails again, check the disk using the catalog function. (U)

**REF UNLOCK**
Indicates that the frequency reference is not locked to the external reference input. Check that the 10 MHz REF OUTPUT 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 connected to the EXT REF IN connector. (U) and (H)

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

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

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

**Required option not installed**
Some instrument functions require that an option be installed in the instrument. See the description for the function in the User’s Guide for more information about which option is required. (U)

**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 receiver RF section. (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. (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. (H)

**RFFS Error: TIMEOUT**
Communication failure between the receiver RF section 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. (U) (H)

**RFFS Service Bus Active**
This message appears in the active function area of the receiver RF section display when an external controller communicates with the RF filter section via the RF filter section Service Bus interface. (H)

**RF PRESEL ERROR** *For an HP 8546A/HIP 85462A only*
Indicates that the preselector peak routine cannot be performed. (H)

**RF PRESEL TIMEOUT** *For an HP 8546A/HIP 85462A only*
Indicates that the preselector peak routine cannot be performed. (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 Signal Analysis mode when the instrument is operating in Receiver mode. To correct the problem, either delete the limits or switch to Signal Analysis mode. (U)

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

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

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

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

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

**SMPLR UNLK**
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**  
Soft key nesting exceeds the maximum number of levels. (U)

**SRQ - - -**  
The specified service request is active. (M)

**STEP_GAIN/ATIN FAIL**  
Indicates the step gain has failed. (H)

**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. For the receiver RF section, check that the TRACKING GENERATOR OUTPUT is connected to the RF INPUT connector with an appropriate cable. For the EMI receiver, check that the cable between the TRACKING GENERATOR OUTPUT and TRACKING GENERATOR is properly connected. (U)

**TG UNIVL**  
This message can indicate the following: that the source power is set higher or lower than the instrument 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. (U)

**Too many open files**  
This error may be due to conflicting disk operations invoked from the front-panel keys and the remote I/O port, or it may indicate that the disk is corrupt. After pressing the "HOLD" key, [ENTER], on the front panel, retry the operation. If the operation fails again, check the disk using the catalog function. (U)

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

**Trace A is not available**  
Indicates that trace A is in the store-blank mode and cannot be used for limit-line testing. Use 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)

**Unable to replace file**  
Reported if an attempt is made to append data to a file and the file cannot be extended. Try the operation using another disk. (U)

**USING DEFAULTS self cal needed**  
Indicates that the current correction factors are the default correction factors and that the self-calibration routines need to be performed. For either an HP 8546A or an HP 85462A, also perform the CAL YTF self-calibration routine. (U)
**VID-BW FAIL**
Indicates the averaging bandwidths have failed. (H)

**Wildcard matches > 1 item**
An attempt was made to use the wildcard matching character on an operation that requires a specific file name. For example, an attempt to load from a file name that contains a wildcard character. Try the operation using a specific file name. (U)

**Wildcards not allowed**
An attempt was made to use the wildcard matching character on an operation that requires a specific file name. For example, an attempt to load from a file name that contains a wildcard character. Try the operation using a specific file name. (U)

**Write protected**
Indicates that a write operation was attempted on a disk that is write protected. Move the write-protect tab on the floppy disk to the unprotected position, reinsert the disk in the disk drive and attempt the operation again. (U)
Nonrecoverable System Errors

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

The following is a sample nonrecoverable system error message display.

<table>
<thead>
<tr>
<th>System Error 4, HP 8546A, SN 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR: 0600</td>
</tr>
<tr>
<td>D6: 00000000</td>
</tr>
<tr>
<td>D1: 00000000</td>
</tr>
<tr>
<td>D2: 00FFF238</td>
</tr>
<tr>
<td>D3: 00FF803E</td>
</tr>
<tr>
<td>D4: 0000827D</td>
</tr>
<tr>
<td>D5: 00FF8028</td>
</tr>
<tr>
<td>D6: 00FFB39A</td>
</tr>
<tr>
<td>D7: 00FFB392</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

WARNING: Config settings default.
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.
SRQ

Service Requests
This appendix describes the receiver service request (SRQ) capability. A service request is an instrument output that tells the operator or computer that a specific event has taken place in the instrument.

When writing programs, service requests can be used to interrupt the computer program sequence, causing the program to branch to a subroutine. For example, by using service requests, the computer can perform other operations while the receiver is sweeping. When the sweep is completed, the computer can service the receiver by changing the receiver state or reading data from the memory.

Note
Service requests do not work with computers that have an RS-232 interface. Not all service requests are available with some HP-IB computers. Refer to the manuals supplied by your computer’s manufacturer.

When making a service request, the receiver places the I/O interface SRQ line true and the receiver displays SRQ with an octal coded number. Setting the SRQ line true announces to the computer that the receiver requires attention. The computer can then command the receiver to send its “status byte.” The status byte indicates the type of service request. The status byte is the binary equivalent of the octal SRQ number.

Note
If the instrument display annotation has been blanked, the service request notation will not appear.

A serial polling technique must be used by the computer to test for service requests. The receiver does not respond to parallel polling.

A service request can be cleared from the display by doing an instrument preset.

Status Byte Definition
The status byte sent by the receiver determines the nature of the service request. The meaning of each bit of the status byte is explained in Table A-1.
Table A-1. Status Byte Definition

<table>
<thead>
<tr>
<th>Bit</th>
<th>Message</th>
<th>Display Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 (LSB)</td>
<td>Overload Detected</td>
<td>SRQ 101</td>
</tr>
<tr>
<td>1</td>
<td>Unit Key Pressed</td>
<td>SRQ 102</td>
</tr>
<tr>
<td>2</td>
<td>End of sweep</td>
<td>SRQ 104</td>
</tr>
<tr>
<td>3</td>
<td>Hardware broken</td>
<td>SRQ 110</td>
</tr>
<tr>
<td>4</td>
<td>Command complete</td>
<td>SRQ 120</td>
</tr>
<tr>
<td>5</td>
<td>Illegal spectrum analyzer command</td>
<td>SRQ 140</td>
</tr>
<tr>
<td>6</td>
<td>Universal HP-IB service request HP-IB RQS bit</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>Unused</td>
<td>-</td>
</tr>
</tbody>
</table>

The display message is an octal number based on the binary value of the status byte. This octal number always begins with a “1” since this is translated from bit 6, the universal service request bit. The status byte for an illegal receiver command (SRQ 140) is as follows:

<table>
<thead>
<tr>
<th>bit number</th>
<th>7 6</th>
<th>5 4 3</th>
<th>2 1 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>status byte</td>
<td>0 1</td>
<td>1 0 0</td>
<td>0 0 0</td>
</tr>
</tbody>
</table>

This displays the octal equivalent of the status byte binary number: SRQ 140

The octal equivalent is based on the whole binary number: 01100000 (binary) = 140 (octal)

One simple way to determine the octal equivalent of the binary number is to partition the binary number three bits at a time from the least significant bit, and treat each part as a single binary number:

<table>
<thead>
<tr>
<th>binary</th>
<th>0 1</th>
<th>1 0 0</th>
<th>0 0 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>octal</td>
<td>1</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

The decimal equivalent of the octal number is determined as follows:

140 (octal) = 1 × (8) + 4 × (8) + 0 × (8) = 96 (decimal)

More than one service request can be sent at the same time. For example, if an illegal receiver command (SRQ 140) and the end of a sweep (SRQ 104) occurred at the same time, SRQ 144 appears on the receiver display, because both bit 5 and bit 2 are set as shown below:

<table>
<thead>
<tr>
<th>bit number</th>
<th>7 6</th>
<th>5 4 3</th>
<th>2 1 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>status byte</td>
<td>0 1</td>
<td>1 0 0</td>
<td>1 0 0</td>
</tr>
</tbody>
</table>

= SRQ 144
Service Request Activating Commands

With the exceptions of SRQ 101, SRQ 140, and SRQ 110, service requests can only be activated from a computer. (SRQ 101, SRQ 140, and SRQ 110 are activated at instrument preset.) Your programmer's guide describes service request activating commands under RQS and SRQ.
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