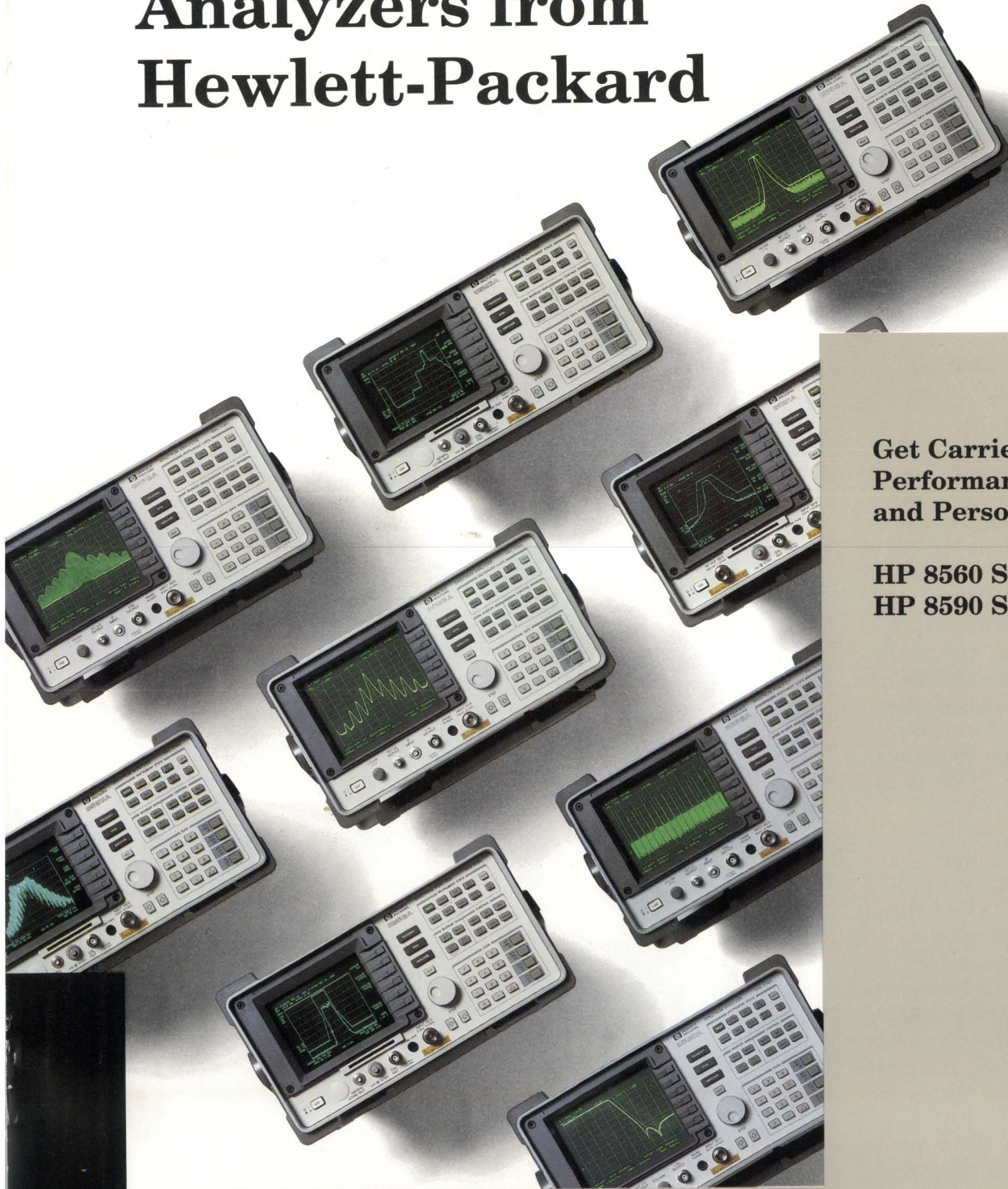


# Portable Spectrum Analyzers from Hewlett-Packard



**Get Carried Away with  
Performance, Precision,  
and Personality...**

**HP 8560 Series  
HP 8590 Series**



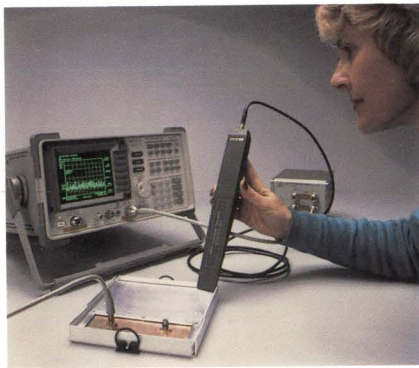
## The Widest Selection of Portable Spectrum Analyzers

Versatile and compact, HP's "go anywhere, fit anywhere" analyzers set new standards for performance and ease of use. Compare their features. If you're looking for a portable spectrum analyzer that meets your specific application, you're on the right track with HP.

### *Economy....*

#### **HP 8590B and 8592B**

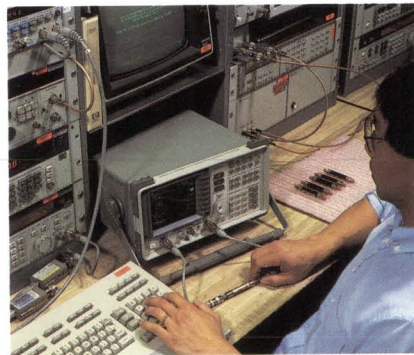
- Low price
- Sturdy and lightweight
- Measurement personalities



### *Performance....*

#### **HP 8591A and 8593A**

- Frequency accurate
- Sturdy and lightweight
- Wide choice of options
- Measurement personalities



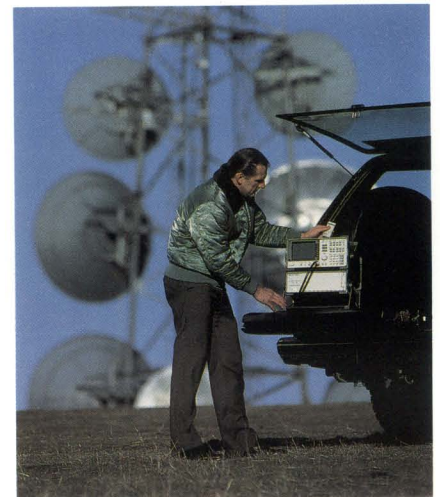
### *High Performance....*

#### **HP 8560A, 8561B, 8562A/B, and 8563A**

- Operates in temperature and environmental extremes
- Meets MIL-T-28800C Class 3 standards
- Wide frequency range
- Narrow digital resolution bandwidths
- Frequency accurate
- Serviceability with test and adjustment module
- Auto-execute, measurement personalities, and trace storage with mass memory module
- Specified pulsed-signal measurement accuracy

### *Important Features Found in All HP Portables....*

- Easy to use
- Quality and reliability
- HP-IB (IEEE-488) programmability
- Built-in firmware provides high-level functions, trace math, limit lines, fast Fourier transform, trace storage, and time/date stamping
- HP service support and documentation



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## HP 8590B and 8592B

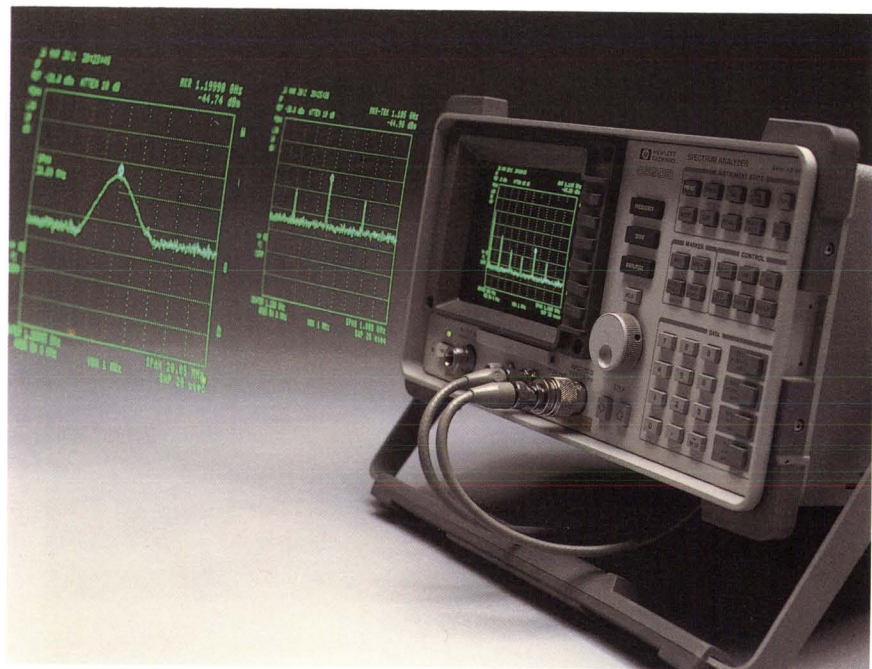
### *Economical, Dependable Performance*

Consider these portables for basic performance at a low price. The HP 8590B provides RF coverage; the HP 8592B gives preselected microwave coverage.

### **One Spectrum Analyzer for Many Applications**

Change your HP portable spectrum analyzer's test capabilities to fit specific measurement needs. An optional memory card reader lets you download HP's cable-television (CATV), digital-radio, or electromagnetic-compatibility (EMC) measurements personalities. Each provides application-specific measurement solutions. Many complex measurements are reduced to a single keystroke! An optional built-in tracking generator provides the HP 8590B with a synchronously swept signal source for stimulus-response measurements. Operating these analyzers requires only minimal training.

Model	Frequency
HP 8590B	9 kHz - 1.8 GHz
HP 8592B	9 kHz - 22 GHz
Option H25	9 kHz - 25 GHz



### **Easy-to-Use Features**

Numerous features assure easy operation and allow you to analyze results at your convenience. Simple, automatic calibration ensures consistent results. Frequency panning lets you quickly reposition signals without repeated sweeps. Synergy between hardkeys and softkeys permits simple and straightforward operation. Internal memory allows 50 traces to be stored. The memory-card reader lets you store even more traces. Time-and-date stamping and direct output to printer or plotter means you can make measurements now and analyze them later.



## HP 8591A and 8593A

### *Performance and a Wide Choice of Options*

Not only do the HP 8591A and 8593A offer improved frequency accuracy and flexibility compared to the HP 8590B and 8592B, they give you wide latitude to add options and upgrades you need for your particular application.

#### **Frequency Accuracy**

When your requirements call for precise frequency measurements, depend on the HP 8591A or the preselected HP 8593A. These frequency-accurate portables come standard with 7.5 ppm frequency reference accuracy. For even better frequency accuracy, an optional precision frequency reference can be installed for marker count accuracy of  $\pm 230$  Hz at 1 GHz or  $\pm 2.3$  kHz at 18 GHz.

#### **Memory Card Reader**

The built-in memory-card reader allows you to load HP's measurements personalities, your custom downloadable programs (DLPs), and measurement data on 32-Kbyte memory cards. Spectrum-analyzer operation becomes simpler, and measurement throughput increases.

A catalog function allows you to determine the exact content of information stored on your memory cards or within internal memory.

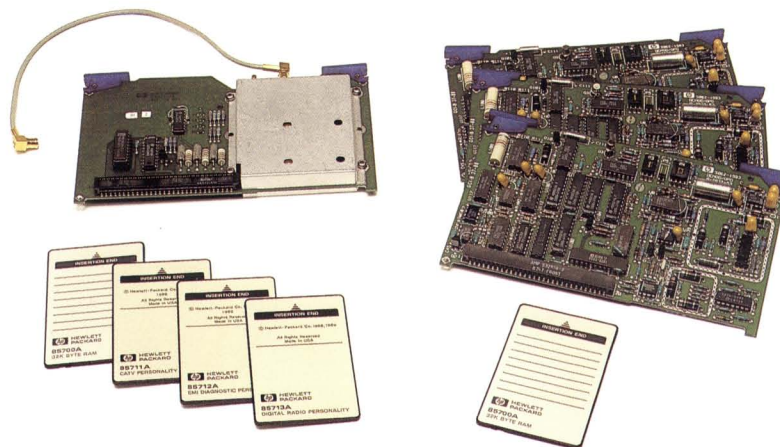
Model	Frequency
HP 8591A	9 kHz - 1.8 GHz
HP 8593A	9 kHz - 22 GHz
Option 026	9 kHz - 26.5 GHz

#### **Options Flexibility**

To let you choose from a variety of options, circuit cards are installed in a cardcage to provide additional measurement capability. All card options are retrofittable, so the options you need are always available. Circuit-card options include:

- AM/FM demodulator speaker to let you view and hear the demodulated signal.
- TV sync trigger to let you select any line of the TV field for measurement.
- Fast time-domain sweep to allow zero-span sweep rates to 20 $\mu$ s.
- Quasi-peak detector for EMC testing.

And of course, all the features that make the HP 8590B and 8592B so easy to use are also found in these frequency-accurate portables.

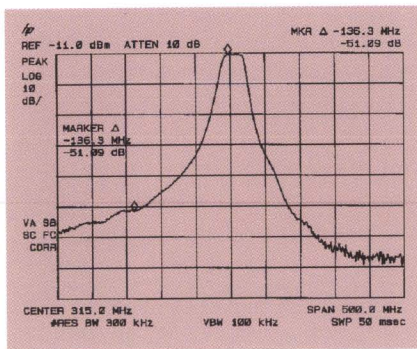


# It's Your Option

- *Tracking generator*
- *Memory card reader*
- *Measurement personalities and more....*

## Component Testing

Options for the HP 8590B and 8591A include a 1.8-GHz built-in tracking generator for insertion-loss, frequency-response, and return-loss measurements. 100 dB of dynamic range ensures that you can test a wide variety of components.

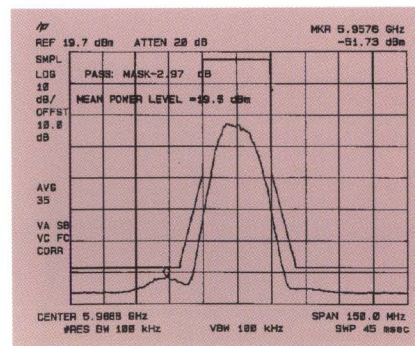
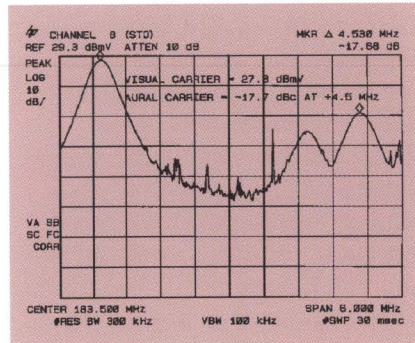


## EMC Analyzer

Two powerful, low-cost electromagnetic compatibility design systems are based on the HP 8591A. The HP 84100A EMC design development system includes the analyzer, close-field probes, and application information. This system provides a basic EMC measurement system for characterizing and troubleshooting new product designs. The HP 84110A pre-production evaluation system adds quasi-peak detection to the features above, allowing EMC pre-compliance testing from design up to, but not including, formal compliance testing.

## CATV Analyzer

The HP 85711A CATV measurements personality turns your portable into a CATV analyzer to facilitate headend testing, proof-of-performance measurements, and trunk maintenance. Measure carrier-to-noise and video modulation quickly and easily. The carrier-level function captures the peak power without guesswork. Tuning-configuration keys simplify channel selection.

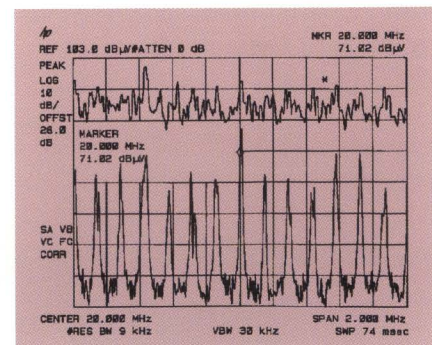


## Memory Card Reader

The memory-card reader lets you incorporate HP's measurements personalities, store your own measurement routines, and store your measurement results. The reader is optional in the HP 8590B and 8592B (standard in the HP 8591A and 8593A).

## Digital Radio Analyzer

The HP 85713A digital-radio measurements personality includes built-in agency masks that facilitate testing to transmission specifications of the USA, UK, and FRG. Generate up to 11 custom masks for your specific measurement needs. Perform mean-power-level measurements on the modulated spectrum of the digital-radio signal. Make absolute or relative mean-power measurements by selecting the appropriate mask.





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## HP 8560A, 8561B, 8562A/B, 8563A

*Highest-Performance  
Portables in a  
MIL-Rugged Package*

Model	Frequency
HP 8560A	50 Hz - 2.9 GHz
HP 8561B	50 Hz - 6.5 GHz
HP 8562A/B <sup>1</sup>	9 kHz - 22 GHz
HP 8563A	9 kHz - 22 GHz
Option 026 <sup>2</sup>	9 kHz - 26.5 GHz

From RF to microwave, HP's rugged and portable spectrum analyzers provide outstanding performance and a wide choice in frequency coverage.

**Rugged for Field Service**  
Engineered to meet all MIL-T-28800C requirements, including temperature, pulse shock, and transit drop, these analyzers perform in extreme environmental conditions. Don't hesitate to take them into the toughest terrain--they can withstand 30 g's of shock. Take them into any climate--these analyzers are warmed up and running in only five minutes, fully meeting their specifications in ambient temperatures from -10°C to +55°C.

### **Narrow Digital Resolution Bandwidths with Fast Sweeps**

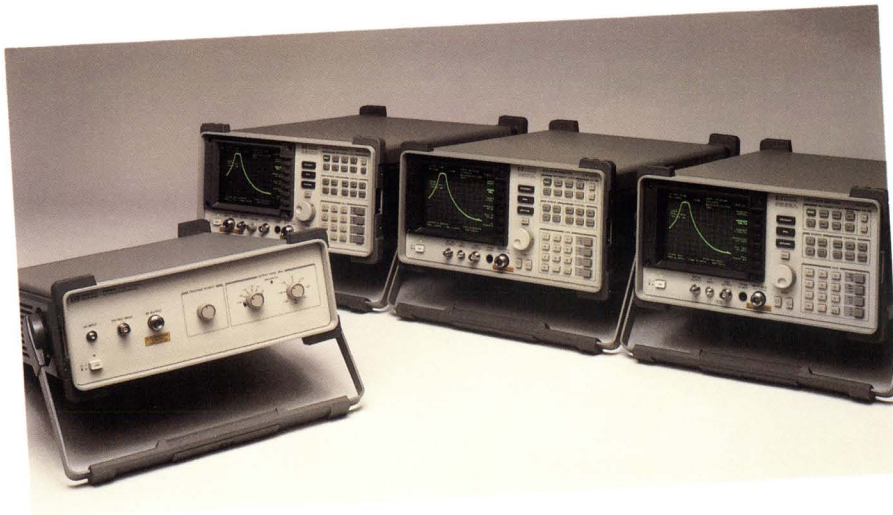
For fast, accurate measurements of closely spaced signals, the HP 8560A, 8561B, and 8563A feature digital 10-, 30-, and 100-Hz resolution bandwidths. Using these narrow bandwidths, the analyzer sweeps up to 20 times faster than is possible using conventional analog filters. Their narrow 5:1 shape factor improves selectivity, so you can resolve closely spaced signals of different amplitudes. And you'll have a full 100-dB on-screen calibrated range available when using the narrow digital bandwidths.

### **Preselected Millimeter Coverage**

Combining the HP 8560 series with the HP 11974 series of external preselected millimeter mixers provides preselected coverage to 75 GHz. Their unprecedented performance lets you make millimeter measurements quickly and easily. All images and multiple responses are removed; you only see true signals on the analyzer CRT. Non-preselected coverage is available to 110 GHz using the HP 11970 external mixers, or to 325 GHz using mixers from other manufacturers.

### **Specified Pulse Response**

These portables easily capture and accurately display short-duration radar pulses. Specified pulse-digitization uncertainty is 1.25 dB and typical repeatability is 0.2 dB. You'll be certain that sweep-to-sweep signal variations are due to the equipment under test, not the analyzer.



<sup>1</sup>The HP 8562B provides non-preselected coverage.

<sup>2</sup>Available for HP 8562A and HP8563A.

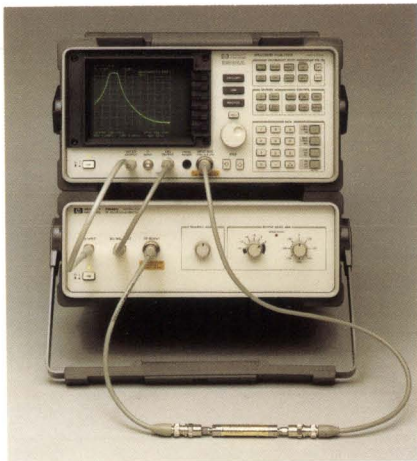


## It's Your Option

- *Tracking generator*
- *Mass memory module*
- *Test and adjustment module and more....*

### Component Testing

The HP 85640A portable tracking generator provides scalar-measurement capability between 300 kHz and 2.9 GHz, perfect for testing and adjusting transmitter components in the field. These spectrum analyzer/tracking generator systems have greater than 100-dB dynamic range and show no spurious responses. The HP 8560A has a 2.9 GHz built-in tracking generator available as an option.



### Test and Adjustment Module.... A New Servicing Approach

The HP 85629B test and adjustment module (TAM) plugs onto the rear panel of HP 8560 series analyzers to automate high-level diagnostics, self-tests, and adjustment procedures. More than 1,000 troubleshooting measurements can be performed.

Readjustments are fast and accurate because the TAM controls internal analyzer settings as well as external test equipment. If you do your own repair, the TAM significantly simplifies troubleshooting, improves turn-around time, and minimizes test-equipment requirements.

### Add Memory and More

The HP 85620A mass memory module provides HP 8560 series analyzers with extra memory and computer capability without a controller. Simply plug the module onto the rear panel of the analyzer.

Create one-button measurement routines with downloadable programs (DLPs) to simplify operation and increase throughput. Store DLPs on memory cards or in the mass memory module's 128 Kbytes of battery-backed RAM, which can also be used to store up to 100 traces with state information.

Streamline your measurement tasks. Limit lines can be easily created and stored, simplifying pass/fail testing. Clock/calendar and automatic save and execute functions let you make measurements at specified times or when specific frequency and amplitude criteria are met. Once you've defined time and limit-line criteria, leave the analyzer to perform its assigned tasks. You'll know that the information you need will be saved just as if you were there.



### Precision Measurements

Achieve additional accuracy with the precision frequency reference. Its addition results in frequency accuracy of 150 Hz at 1 GHz after a 15-minute warmup (1 year aging). This option can be retrofit easily.

### Digital Radio

The HP 85710A digital-radio measurement personality lets you characterize spectral emissions with a compare-to-mask function. It includes five major agency masks for testing to U.S. FCC, UK, and FRG digital-radio specifications and is for use with the HP 8562A/B and 8563A spectrum analyzers. Measurement functions include mean power level, transient-analysis monitoring and frequency-response measurement. You can also store your own custom masks.

# Selection Guide

*HP's Wide Selection of  
Portable Spectrum Analyzers*

Model	Options/Features <sup>1</sup>	Frequency Range					
		0	1.8 GHz	2.9 GHz	6.5 GHz	22 GHz	26.5 GHz
HP 8590B	CATV personality, digital radio personality, EMC personality, built-in tracking generator, memory card reader, EMI RBWs, HP-IB or RS-232 interface.	9 kHz-1.8 GHz					
HP 8592B		9 kHz-22 GHz Opt					
HP 8591A	Frequency accuracy, fast time-domain sweeps, TV sync trigger, AM/FM demodulator speaker, memory card reader; CATV, digital radio, and EMC personalities; built-in tracking generator, quasi-peak detector, EMI RBWs, HP-IB or RS-232 interface.	9 kHz-1.8 GHz					
HP 8593A		9 kHz-22 GHz Opt					
HP 8560A	MIL-rugged, narrow digital RBWs <sup>2</sup> with fast sweep, specified pulse response, preselected millimeter coverage, built-in tracking generator, portable tracking generator, mass memory module, digital radio personality, test and adjustment module, low-frequency extensions, HP-IB.	50 Hz-2.9 GHz					
HP 8561B		50 Hz-6.5 GHz					
HP 8562A		9 kHz-22 GHz Opt					
HP 8562B		9 kHz-22 GHz					
HP 8563A		9 kHz-22 GHz Opt					



**Specification Table<sup>5</sup>**

Frequency Accuracy(+/-) <sup>3</sup>	Resolution Bandwidth Range <sup>4</sup>	Average Noise Level (narrowest RBW)	Optimum Dynamic Range 2nd/3rd Order	Relative frequency response(+/-)	Calibrated Display Range	Amplitude Range	Phase Noise <sup>6</sup>
5 MHz	1 kHz-5 MHz	-115 dBm	70 dB/80 dB	1.0 dB	70 dB	-115 dBm to +30 dBm	-95 dBc/Hz
10 MHz (1.8 MHz w/comb)	1 kHz-5 MHz	-102 dBm	61 dB/71 dB	2.0 dB	70 dB	-102 dBm to +30 dBm	-89 dBc/Hz
2 kHz (210 Hz w/PFR)	1 kHz-5 MHz	-115 dBm	70 dB/80 dB	2.0 dB	70 dB	-115 dBm to +30 dBm	-95 dBc/Hz
20 kHz (1.2 kHz w/PFR)	1 kHz-5 MHz	-102 dBm	61 dB/71 dB	2.0 dB	70 dB	-102 dBm to +30 dBm	-89 dBc/Hz
2 kHz (150 Hz w/PFR)	10 Hz-2 MHz	-130 dBm	81 dB/90 dB	1.0 dB	100 dB <sup>7</sup>	-130 dBm to +30 dBm	-100 dBc/Hz
2 kHz (150 Hz w/PFR)	10 Hz-2 MHz	-130 dBm	81 dB/90 dB	1.0 dB	100 dB <sup>7</sup>	-130 dBm to +30 dBm	-100 dBc/Hz
20 kHz (1 kHz w/PFR)	100 Hz-2 MHz	-110 dBm	100 dB/78 dB	2.0 dB	90 dB	-110 dBm to +30 dBm	-94 dBc/Hz
20 kHz (1 kHz w/PFR)	100 Hz-2 MHz	-110 dBm	100 dB/78 dB	1.5 dB	90 dB	-110 dBm to +30 dBm	-94 dBc/Hz
1 kHz	10 Hz-2 MHz	-120 dBm	105 dB/85 dB	2.0 dB	100 dB <sup>7</sup>	-120 dBm to +30 dBm	-94 dBc/Hz

**Footnotes**

<sup>1</sup>Personalities and options may vary according to model number. Please consult data sheet for details.

<sup>2</sup>HP 8560A, 8561B, and 8563A only.

<sup>3</sup>Accuracy includes 1-year aging. Settability and temperature drift not included.

<sup>4</sup>Listed ranges for HP 8590 series are characteristic.

<sup>5</sup>Data shown here for comparison purposes only. Consult data sheets for more complete specifications. Data for RF analyzers given for CF = 1 GHz. Data for  $\mu$ W analyzers given for CF = 10 GHz.

<sup>6</sup>Noise sidebands measured in dBc/Hz at 30 kHz offset.

<sup>7</sup>For 10, 30, 100 Hz resolution bandwidths, otherwise 90 dB.

## Ordering Information<sup>1</sup>

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**Spectrum Analyzer    HP 8560A    HP 8561B    HP 8562A    HP 8562B    HP 8563A**


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 Refer to HP Lit. No.    5954-9132    5954-9133    5952-4858    5952-4858    5952-7038
 

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**Options:**

<b>001</b> Second IF Output	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	included
<b>002</b> Built-in Tracking Generator	<input type="checkbox"/>				
<b>003</b> Precision Freq Ref	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	included
<b>026</b> 26.5 GHz Freq Extension			<input type="checkbox"/>		<input type="checkbox"/>

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**Related Products - Available in all models except as noted.**

**HP 85620A** Mass Memory Module  
**HP 85629A** Test and Adjustment Module  
**HP 85640A** Portable Tracking Generator  
**HP 85700A** 32 Kbyte RAM Memory Card<sup>2</sup>  
**HP 85710A** Digital Radio Measurements Personality<sup>2</sup> (N.A. for HP 8560A, 8561B).  
**HP 85901A** Portable AC Power Source.  
**HP 11945A** Close Field Probe Set  
**HP 8449A** 2-22 GHz Preamplifier  
**HP 11974** Series Preselected Millimeter Mixers<sup>3</sup>  
**HP 11970** Series Harmonic Mixers<sup>3</sup>

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For more information concerning these products contact your local Hewlett-Packard sales representative or sales office.

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**5952-4843**  
**February 1, 1990**

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**Spectrum Analyzer    HP 8590B    HP 8591A    HP 8592B    HP 8593A**


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 Refer to HP Lit. No.    5954-9146    5954-9146    5954-9147    5954-9147
 

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**Options:**

<b>001</b> 75Ω Input	<input type="checkbox"/>	<input type="checkbox"/>		
<b>003</b> Memory Card Reader	<input type="checkbox"/>	included	<input type="checkbox"/>	included
<b>004</b> Precision Freq Ref		<input type="checkbox"/>		<input type="checkbox"/>
<b>010</b> Built-in Tracking Generator (50Ω)	<input type="checkbox"/>	<input type="checkbox"/>		
<b>011</b> Built-in Tracking Generator (75Ω)	<input type="checkbox"/>	<input type="checkbox"/>		
<b>021</b> HP-IB Interface	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>023</b> RS-232 Interface	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>026</b> 26.5 GHz Freq Extension				<input type="checkbox"/>
<b>101</b> Fast Time-Domain Sweeps		<input type="checkbox"/>		<input type="checkbox"/>
<b>102</b> AM/FM Demodulator and TV Sync Trigger Circuitry		<input type="checkbox"/>		<input type="checkbox"/>
<b>103</b> Quasi-Peak Detector/AM-FM Demodulator		<input type="checkbox"/>		<input type="checkbox"/>

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**Related Products - Available in all models except as noted.**

**HP 85700A** 32 Kbyte RAM Memory Card<sup>4</sup>  
**HP 85711A** CATV Measurements Personality<sup>4</sup>  
**HP 85712B** EMC Measurements Personality<sup>4</sup>  
**HP 85713A** Digital Radio Measurements Personality<sup>4</sup> (N.A. for HP 8590B, 8591A)  
**HP 85901A** Portable AC Power Source  
**HP 11945A** Close Field Probe Set  
**HP 11946A** Quasi Peak Adapter/AM-FM Demodulator Upgrade Kit  
 (N.A. for HP 8590B, 8592B)

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<sup>1</sup> For complete options information see "HP 8560 and 8590 Series Spectrum Analyzers and Accessories" (Lit. No. 5954-9145).

<sup>2</sup> HP 85620A required

<sup>3</sup> HP 8660A Opt 002 will not support external mixers.

<sup>4</sup> Option 003 (memory card reader) on the HP 8590B and 8592B required.