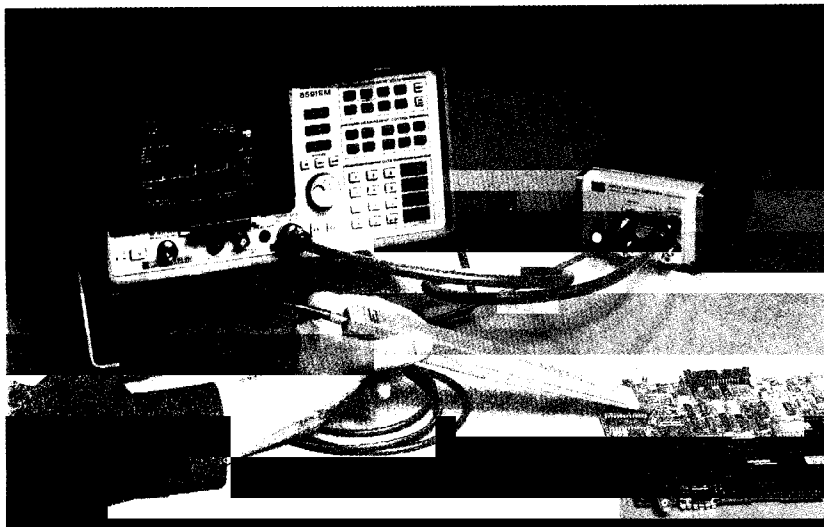


Various Models



HP can show you how to design for electromagnetic capability.

### HP 11950X EMC Design Course

"Designing for EMC" is a custom course for engineers who face issues of electromagnetic compatibility. Emphasis is placed on evaluating and solving EMC problems early in the design phase of a product, rather than during final EMC compliance testing. Expert instruction and many demonstrations provide EMC fundamentals, methods of measuring EMC, and principles of incorporating proven EMC design into products.

The course covers the following topics: overview of EMC design, non-conducted coupling, common impedance coupling, radiation from digital circuits, cables, advanced cables, conducted emissions, susceptibility, electrostatic discharge, shielding and diagnostics. The 11-chapter handbook used in the class becomes a permanent reference.

The HP 11950X EMC design course is offered at a fixed fee at the site of your choice. For more information, contact your local HP sales office (listed on page 582).

### HP 11940A and 11941A Close-Field Probes and HP 11945A Close-Field Probe Set

These handheld probes are designed to measure magnetic-field radiation from surface currents, slots, cables, and ICs for EMC diagnostic and troubleshooting measurements. Their unique design results in a high level of electric-field rejection. This significantly reduces errors, thus allowing calibrated and repeatable measurements.

The HP 11941A operates from 9 kHz to 30 MHz, the HP 11940A, from 30 MHz to 1 GHz. Five antenna factors appear on each probe for calculating absolute magnetic-field strength (dB $\mu$ A/m) from the dB $\mu$ V reading of a spectrum analyzer. Each probe is calibrated and comes with a 2-meter RG-223 coaxial cable, and SMA(f)-to-type-N(m) adapter, and an SMA(f)-to-BNC(m) adapter.

The close field probe set includes both the HP 11940A and 11941A probes for full coverage from 9 kHz to 1 GHz. Option E51 adds the HP 11909A preamplifier, a 36-inch (914-mm) type-N cable, and a carrying bag for storage and protection of the entire set.

### HP 11961A EMI Measurement Software

The HP 11961A EMI measurement software is used with the HP 8590EM series EMC analyzers. The software performs peak, quasi-peak, and average measurements on up to 100 selected signals and sorts and stores the results for report development. The measurements are compared to supplied limits or your own limits. Measurements are corrected for antenna factors, cable loss, and amplifier gains. The software also controls the HP 11960A RF preselector which is used to reduce RF overloading of the EMC analyzer's first mixer.

### HP 85878A EMI Report Generator

Link the power of the HP 8590EM series EMC analyzer or HP 8546A/42E EMI receivers to your PC. The advanced features of the HP 85878A enables you to capture and archive measurement results from your EMC

analyzer or EMI receiver including the screen, measurement list, log graph, linear graph, correction factors, instrument settings, limit lines and trace information. These items can be cut and pasted, dragged and dropped, or exported to develop comprehensive reports. Using the Word for Windows 7.0 bookmark feature, you can develop reports automatically. Four report templates are supplied.

For a demonstration, visit our web site: <http://www.hp.com/go/EMC>

### HP 11960A RF Preselector

Use the HP 11960A to protect against the effects of overload. Without preselection, out-of-band signals can overload the EMC analyzer causing inaccurate measurements. The preselectors filters are designed to filter out the out-of-band signals, reducing the causes of overload. There are eight filters in the 150 kHz to 30 MHz range for conducted emissions measurements where most of the overload problems occur. In the radiated emissions bands above 30 MHz, a thirty dB gain amplifier is supplied to improve overall measurement sensitivity. A switched ten dB attenuator is supplied in radiated band for quick overload checks.

### HP 119XX Series Antennas

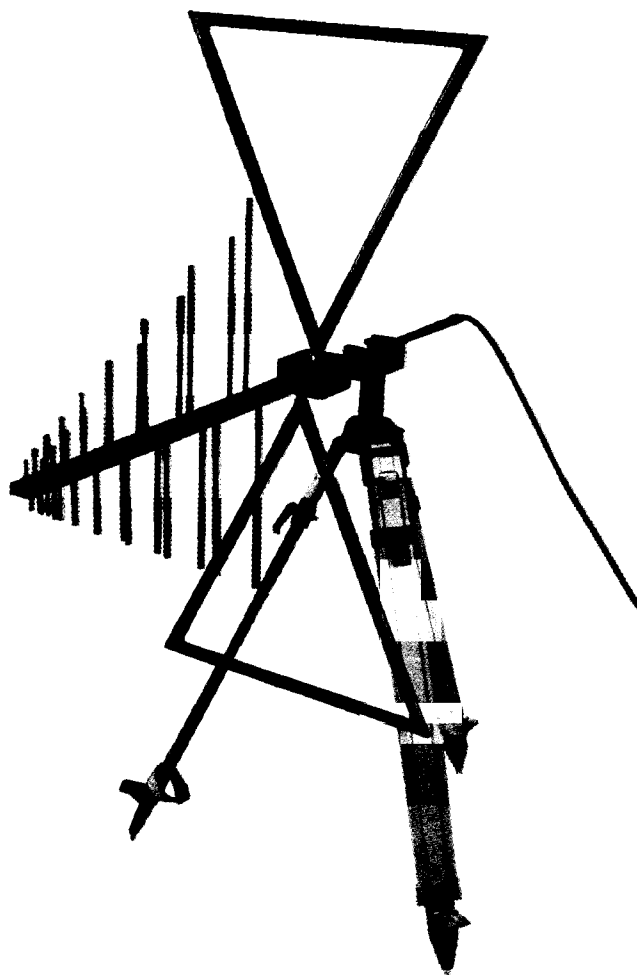
These antennas are individually calibrated and shipped with a calibration certificate showing actual performance data. The series includes the following products:

HP Model		Frequency Range
11955A	Biconical Antenna <sup>1</sup>	30 to 300 MHz
11956A	Log Periodic Antenna <sup>1</sup>	200 MHz to 1 GHz
11966A	Active Loop H-Field Antenna	10 kHz to 30 MHz
11966B	Active Rod E-Field Antenna	100 Hz to 50 MHz
11966C	Biconical Antenna	30 to 300 MHz
11966D	Log Periodic Antenna	200 MHz to 1 GHz
11966E	Double-Ridged Waveguide Horn Antenna	1 to 18 GHz
11966F	Conical Log Spiral Antenna	200 MHz to 1 GHz
11966G	Conical Log Spiral Antenna	1 to 10 GHz
11966H	Dipole Antenna Set	28 MHz to 1 GHz
11966I	Double-Ridged Waveguide Horn Antenna	200 MHz to 2 GHz
11966J	Double-Ridged Waveguide Horn Antenna	18 to 40 GHz
11966K	Magnetic Field Pickup Coil	20 Hz to 50 kHz
11966L	Coax Cable, Type-N	10 m
11966M	Coax Cable, BNC	10 m
11966N	Log Periodic Antenna	200 MHz to 5 GHz
11966P	Broadband Antenna	30 MHz to 1 GHz
11947A	Transient Limiter	9 kHz to 20 MHz

### Key Literature

EMC Accessories Catalog, p/n 5966-1188E  
EMC Precompliance Measurement Systems and Accessories, p/n 5964-6091E

<sup>1</sup> Typical cal factor supplied



HP 11966P Broadband Antenna with 11968K

**HP 11967 Series Current Probes**

This series is designed for MIL-STD-461/462 conducted-emission measurements on power and interconnecting leads. Used with 10  $\mu$ F capacitors, HP p/n 0160-6683.

HP Model	Frequency Range
11967A Current Probe	15 kHz to 50 MHz, dc to 60 Hz powerlines
11967B Current Probe	20 Hz to 2 MHz, dc to 400 Hz powerlines

**HP 11967E Line Impedance Stabilization Network**

This is a single phase, 25 ampere unit used for commercial conducted emissions measurements and meets the requirements for FCC, CISPR and European Norms. The 11967E LISN is supplied with a NEMA power outlet standard or optional SCHUKO, British, and Australian power outlets.

**HP 11967D Line Impedance Stabilization Network**

Used for commercial conducted measurements. Maximum current 10 amps. Includes options for NEMA, SCHUKO and British power outlet connectors.

**HP 11968 Series Positioning Devices**

This series includes manually-operated antenna masts and turntables.

HP Model	Description
11968B	Manually-operated antenna-positioning mast
11968C	Non-metallic antenna tripod; minimizes unwanted reflections in the test environment
11968E	Manually-operated turntable

**HP 11729-60014 Low-Noise Preamplifier**

This amplifier provides the sensitivity needed for MIL-STD-461C CE-06 receiver/transmitter key-up testing. Frequency range is 10 Hz to 25 MHz.

**HP 11909A Preamplifier**

Improve receiver, EMC analyzer or spectrum analyzer sensitivity for more accurate radiated emissions measurements. This amplifier has 32 dB gain with a 1.8 dB noise figure. This amplifier is ideal for use with the HP 11940A and 11941A close field probes to detect low level signals from and device-under-test. Frequency range is 9 kHz to 1 GHz.

**HP 8449B Microwave Preamplifier**

This high-gain, low-noise preamplifier adds sensitivity for MIL-STD radiated measurements. Frequency range is 1 to 26.5 GHz (see page 302).

**Ordering Information**

Ordering Information	Price
HP 11950X "Designing for EMC" Course (per site)	\$13,700
HP 11940A Close-Field Probe, 30 MHz to 1 GHz	\$795
HP 11941A Close-Field Probe, 9 kHz to 30 MHz	\$795
HP 11945A Close-Field Probe Set, 9 kHz to 1 GHz	\$1,380
Opt 001 Rotary Joints	+\$840
Opt 003 Delete Cables and Adapters (2 sets)	-\$215
Opt E51 Add HP 11909A Preamplifier Carrying Bag, 36-in Type-N Cable	+\$2,730
HP 11947A Transient Limiter, 9 kHz to 200 MHz	\$560
HP 11955A Biconical Antenna*	\$1,000
HP 11956C Log Periodic Antenna*	\$1,300
HP 11960A RF Preselector	\$8,500
HP 11961A EMI Software	\$3,200
HP 11966A Active Loop H-Field Antenna, 10 kHz to 30 MHz	\$2,795
HP 11966B Active Rod E-Field Antenna, 100 to 50 MHz	\$2,450
HP 11966C Biconical Antenna, 30 to 300 MHz	\$1,820
HP 11966D Log Periodic Antenna, 200 MHz to 1 GHz	\$2,115
HP 11966E Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	\$3,640
HP 11966F Conical Log Spiral Antenna, 200 MHz to 1 GHz	\$2,180
HP 11966G Conical Log Spiral Antenna, 1 to 10 GHz	\$2,175
HP 11966H Dipole Antenna Set, 28 MHz to 1 GHz	\$4,250
HP 11966I Double-Ridged Waveguide Horn Antenna, 200 MHz to 2 GHz	\$7,170
HP 11966J Double-Ridged Waveguide Horn Antenna 18 to 40 GHz	\$4,960
HP 11966K Magnetic Field Pickup Coil, 20 Hz to 50 kHz	\$740
HP 11966L Coax Cable, Type-N	\$265
HP 11966M Coax Cable, BNC	\$240
HP 11966N Log Periodic Antenna, 200 MHz to 5 GHz	\$4,190
HP 11966P Broadband Antenna, 30 MHz to 1 GHz	\$4,525
HP 11967A Current Probe, 15 kHz to 50 MHz	\$1,375
HP 11967B Current Probe, 20 Hz to 2 MHz	\$1,490
HP 11967E 25 amp Line Impedance Stabilization Network	\$4,240
HP 11967D LISN NEMA Connector	\$1120
Opt 001 SCHUKO Connector	\$0
Opt 002 British Connector	\$0
HP 11968B Manual Antenna-Positioning Mast	\$3,360
HP 11968C Antenna Tripod	\$845
HP 11968K Rugged Tripod	\$1,500
HP 11968E Manual Equipment-Testing Turntable	\$2,185
11729-60014 Low-Noise Preamplifier, 10 Hz to 25 MHz	\$525
HP 11909A Preamplifier, 9 kHz to 1 GHz	\$2,785
HP 8449B Microwave Preamplifier, 1 to 26.5 GHz	\$8,320
HP 85878A Report Generator	\$995

\*Typical antenna factors supplied