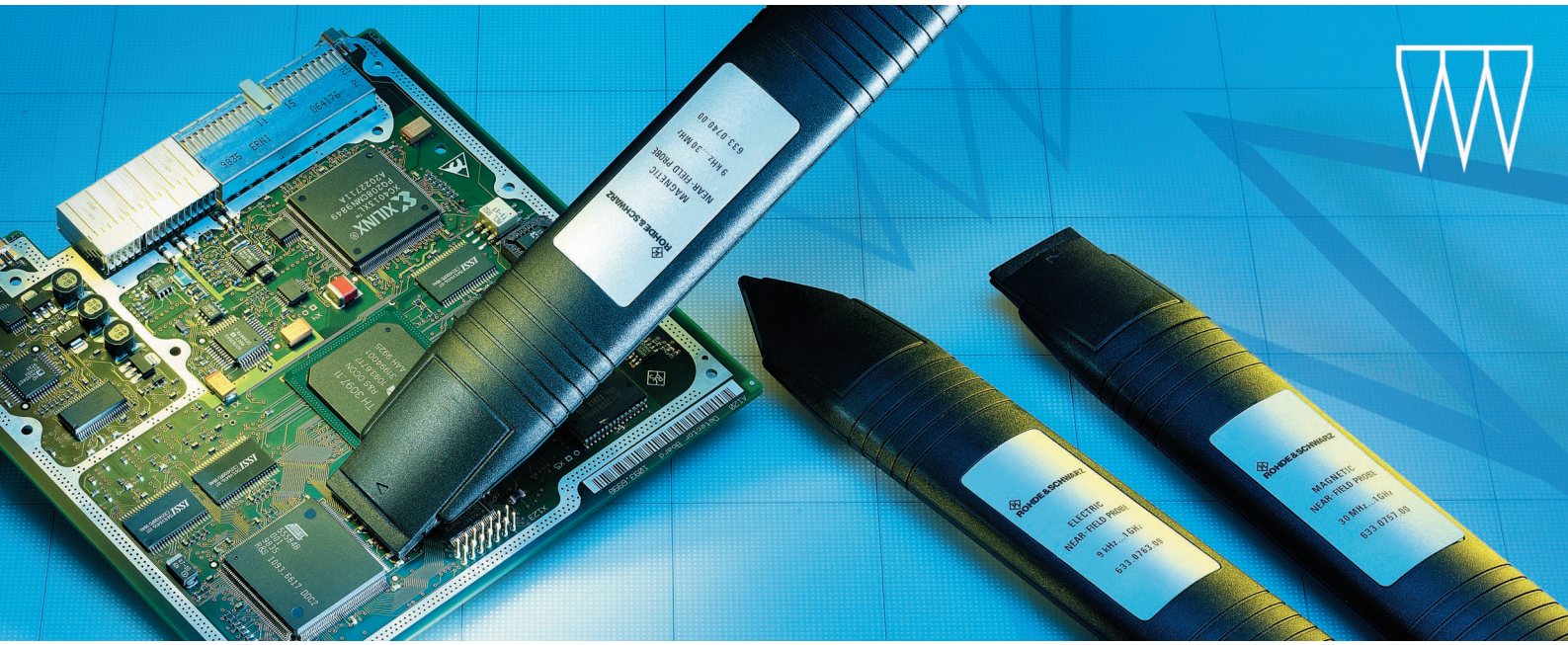


Detecting EMC trouble spots with HZ-14

Probe set for E and H near-field measurements

- 9 kHz to 1 GHz
- Two H-field probes
- E-field probe with built-in preamplifier
- Preamplifier for H-field probes
- Test jig for H-field probes

- Locating radiated-emission sources
- Determining spots sensitive to EMI
- Assessing interference field strength in the far field
- Measuring shielding and filter effectiveness

- Identifying defective components
- Evaluating near-field impedance

ROHDE&SCHWARZ

The near-field probe set comes in a handy transit case accommodating all parts of the set and providing effective protection during transportation

Uses

Probe Set HZ-14 for E and H near-field measurements is a tool for EMC trouble spot detection and diagnosis. The probe set enables the identification and elimination of EMI sources, as well as the detection of spots sensitive to EMI at an early stage of product development, thus reducing the time to market. HZ-14 is mainly used in the diagnosis of radiated emissions from printed circuit boards, ICs, cables, leakage spots in shielded enclosures, and similar sources of electromagnetic interference. Since the H-field probes are passive when operated without a preamplifier, they can also be used to find EMI- sensitive components and modules forming part of units or printed circuit boards. HZ-14 is a convenient tool for testing the effectiveness of RFI suppression measures or the shielding provided by various types of enclosures and designs.

Characteristics

The probe set covers the frequency range 9 kHz to 1 GHz. It comprises the following components:

- two passive H-field probes (electrically shielded compact loops)
- one active E-field probe and one 30 dB preamplifier for the H-field probes
- one test jig for H-field probes

The probes were ergonomically designed for easy handling. The small size of the probe tips facilitates the localization of radiated-emission sources. The E-field probe operates on DC power supplied via a power adapter.

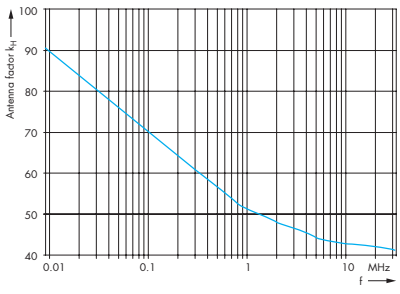
This probe with its preamplifier can be powered from all Rohde&Schwarz test receivers and spectrum analyzers.

The two H-field probes cover frequency ranges from 9 kHz to 30 MHz and 30 MHz to 1000 MHz. They have the directivity of loop antennas, and are electrically shielded so that capacitive coupling is prevented and electrical fields are rejected. Each probe comes with antenna factors to enable the magnetic field strength to be determined for an input impedance of 50 Ω of the test receiver, thus affording high reproducibility of measurements.

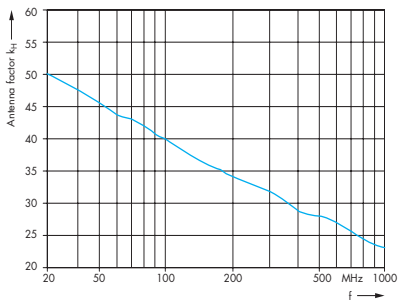
The two H-field probes are passive and can thus be operated bidirectionally, enabling local EMI immunity tests to be performed. It is therefore possible to induce currents into lines and components by applying a known source to the probe input.

The test jig supplied as standard enables functional testing of the H-field probes and a simplified normalization of H-field measurements with the aid of the tracking generators in spectrum analyzers. The test jig contains a terminated stripline shaped to take up H-field probes.

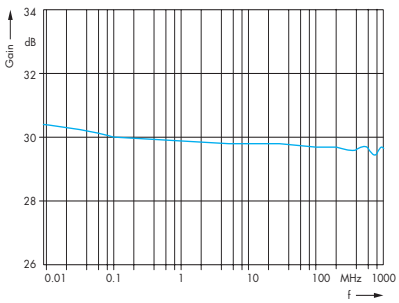
The active E-field probe is designed for omnidirectional signal reception over the entire range of coverage. On approaching a radiation source, the probe is capacitively coupled with the



H-field probe 9 kHz to 30 MHz: antenna factor in dB[(µA/m)/µV] versus frequency



H-field probe 30 MHz to 1000 MHz: antenna factor in dB[(µA/m)/µV] versus frequency



Frequency response of preamplifier

field. The E-field probe is powered from the DC supply of the test receiver.

The 30-dB broadband preamplifier improves the S/N ratio in low-level measurements using H-field probes. Providing a gain of 30 dB in the frequency range from 9 kHz to 1 GHz, it has a noise figure of typically <4 dB and a 1 dB compression point of 0 dBm (output level). High-level signals that might overload the probe and cause measurement errors are signalled by an acoustic alarm. This applies both to CW and pulsed signals.

Complete Probe Set HZ-14 for E and H near-field measurements

Specifications

H-field probe (9 kHz to 30 MHz)

Frequency range	9 kHz to 30 MHz
Usable frequency range	9 kHz to 100 MHz
Max. admissible voltage of uninsulated wire (0 Hz to 120 Hz)	500 V (Vp)
Connector	SMA female
Max. input power (EMS testing)	0.5 W
Dimensions (W x H x D) (including RF connector)	256 mm x 38 mm x 18 mm

H-field probe (30 MHz to 1 GHz)

Frequency range	30 MHz to 1 GHz
Usable frequency range	1 MHz to 2 GHz
Max. admissible voltage of uninsulated wire (0 Hz to 120 Hz)	500 V (Vp)
VSWR	<2
Connector	SMA female
Max. input power (EMS testing)	0.25 W
Dimensions (W x H x D) (including RF connector)	256 mm x 38 mm x 18 mm

E-field probe (9 kHz to 1 GHz)

Frequency range	9 kHz to 1 GHz
Frequency response	±3 dB
Sensitivity	13 mV/V
Antenna factor	67 dB (1/m)
Max. sensing voltage	20 V
Connector	SMA female
Dimensions (W x H x D)	267 mm x 38 mm x 18 mm
Nominal temperature range	0 °C to 45 °C

Power adapter

Required DC voltage (for E-field probe)	10 V ±0.1 V
DC connector	LEMO (2 contacts with screen)
RF input	BNC female
RF output	N male
Dimensions (W x H x D)	103 mm x 26 mm x 27 mm
Nominal temperature range	0 °C to 45 °C

30 dB preamplifier

Frequency range	9 kHz to 1 GHz
Gain	30 dB ±2 dB
Typical	30 dB ±1 dB
RF input	
Connector, impedance, VSWR	BNC female, 50 Ω, <2
RF output	
Connector, impedance, VSWR	N male, 50 Ω, <2
Noise figure	typ. <4 dB
Reverse isolation	typ. 50 dB
Max. output level (with 1 dB compression)	typ. 0 dBm
Max. input level (limit of safe operation)	15 dBm
Max. DC voltage at RF input	16 V
Overload alarm	acoustic, with 1 dB compression
DC connector	LEMO (2 contacts with screen)
Required DC voltage	10 V ±0.1 V
Current drain	<100 mA
Overall dimensions (W x H x D)	103 mm x 26 mm x 27 mm
Weight	0.14 kg
Nominal temperature range	0 °C to 45 °C

Test jig

Connector	N male
Impedance	50 Ω
Max. input level	20 dBm

General data

Dimensions of transit case (W x H x D)	380 mm x 300 mm x 80 mm
Weight (with probe set)	1.7 kg

Ordering information

Probe Set for E and H Near-Field Measurements (9 kHz to 1 GHz)	HZ-14	1026.7744.02

Accessories supplied

Connecting cables for power supply, length: 260 mm, connectors:
LEMO/Tuchel,
LEMO/LEMO
RF connecting cable 50 Ω, length: 1.5 m, connectors:
SMA/BNC

Fax Reply (Probe Set HZ-14)

❑ **Please send me an offer**

❑ **I would like a demo**

❑ **Please call me**

❑ **I would like to receive your free-of-charge CD-ROM catalogs**

Others: _____

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Name: _____

Company/Department: _____

Position: _____

Address: _____

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