R&S®HZ-14
Probe Set for E and H Near-Field Measurements
Operating Manual

1026.7767.12 – 01

Test and Measurement

Operating Manual

ROHDE&SCHWARZ

Basic Safety Instructions

Always read through and comply with the following safety instructions!

All plants and locations of the Rohde & Schwarz group of companies make every effort to keep the safety standards of our products up to date and to offer our customers the highest possible degree of safety. Our products and the auxiliary equipment they require are designed, built and tested in accordance with the safety standards that apply in each case. Compliance with these standards is continuously monitored by our quality assurance system. The product described here has been designed, built and tested in accordance with the attached EC Certificate of Conformity and has left the manufacturer's plant in a condition fully complying with safety standards. To maintain this condition and to ensure safe operation, you must observe all instructions and warnings provided in this manual. If you have any questions regarding these safety instructions, the Rohde & Schwarz group of companies will be happy to answer them.

Furthermore, it is your responsibility to use the product in an appropriate manner. This product is designed for use solely in industrial and laboratory environments or, if expressly permitted, also in the field and must not be used in any way that may cause personal injury or property damage. You are responsible if the product is used for any intention other than its designated purpose or in disregard of the manufacturer's instructions. The manufacturer shall assume no responsibility for such use of the product.

The product is used for its designated purpose if it is used in accordance with its product documentation and within its performance limits (see data sheet, documentation, the following safety instructions). Using the product requires technical skills and a basic knowledge of English. It is therefore essential that only skilled and specialized staff or thoroughly trained personnel with the required skills be allowed to use the product. If personal safety gear is required for using Rohde & Schwarz products, this will be indicated at the appropriate place in the product documentation. Keep the basic safety instructions and the product documentation in a safe place and pass them on to the subsequent users.

Observing the safety instructions will help prevent personal injury or damage of any kind caused by dangerous situations. Therefore, carefully read through and adhere to the following safety instructions before and when using the product. It is also absolutely essential to observe the additional safety instructions on personal safety, for example, that appear in relevant parts of the product documentation. In these safety instructions, the word "product" refers to all merchandise sold and distributed by the Rohde & Schwarz group of companies, including instruments, systems and all accessories.

Symbols and safety labels

							
Notice, general danger location Observe product documentation	Caution when handling heavy equipment	Danger of electric shock	Warning! Hot surface	PE terminal	Ground	Ground terminal	Be careful when handling electrostatic sensitive devices

					
ON/OFF supply voltage	Standby indication	Direct current (DC)	Alternating current (AC)	Direct/alternating current (DC/AC)	Device fully protected by double (reinforced) insulation

Tags and their meaning

The following signal words are used in the product documentation in order to warn the reader about risks and dangers.

indicates a hazardous situation which, if not avoided, will result in death or serious injury.

indicates a hazardous situation which, if not avoided, could result in death or serious injury.

indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

indicates the possibility of incorrect operation which can result in damage to the product.
In the product documentation, the word ATTENTION is used synonymously.

These tags are in accordance with the standard definition for civil applications in the European Economic Area. Definitions that deviate from the standard definition may also exist in other economic areas or military applications. It is therefore essential to make sure that the tags described here are always used only in connection with the related product documentation and the related product. The use of tags in connection with unrelated products or documentation can result in misinterpretation and in personal injury or material damage.

Operating states and operating positions

The product may be operated only under the operating conditions and in the positions specified by the manufacturer, without the product's ventilation being obstructed. If the manufacturer's specifications are not observed, this can result in electric shock, fire and/or serious personal injury or death. Applicable local or national safety regulations and rules for the prevention of accidents must be observed in all work performed.

1. Unless otherwise specified, the following requirements apply to Rohde & Schwarz products: predefined operating position is always with the housing floor facing down, IP protection 2X, pollution severity 2, overvoltage category 2, use only indoors, max. operating altitude 2000 m above sea level, max. transport altitude 4500 m above sea level. A tolerance of ±10 % shall apply to the nominal voltage and ±5 % to the nominal frequency.
2. Do not place the product on surfaces, vehicles, cabinets or tables that for reasons of weight or stability are unsuitable for this purpose. Always follow the manufacturer's installation instructions when installing the product and fastening it to objects or structures (e.g. walls and shelves). An installation that is not carried out as described in the product documentation could result in personal injury or death.
3. Do not place the product on heat-generating devices such as radiators or fan heaters. The ambient temperature must not exceed the maximum temperature specified in the product documentation or in the data sheet. Product overheating can cause electric shock, fire and/or serious personal injury or death.

Electrical safety

If the information on electrical safety is not observed either at all to the extent necessary, electric shock, fire and/or serious personal injury or death may occur.

1. Prior to switching on the product, always ensure that the nominal voltage setting on the product matches the nominal voltage of the AC supply network. If a different voltage is to be set, the power fuse of the product may have to be changed accordingly.
2. In the case of products of safety class I with movable power cord and connector, operation is permitted only on sockets with an earthing contact and protective earth connection.
3. Intentionally breaking the protective earth connection either in the feed line or in the product itself is not permitted. Doing so can result in the danger of an electric shock from the product. If extension cords or connector strips are implemented, they must be checked on a regular basis to ensure that they are safe to use.
4. If the product does not have a power switch for disconnection from the AC supply network, the plug of the connecting cable is regarded as the disconnecting device. In such cases, always ensure that the power plug is easily reachable and accessible at all times (corresponding to the length of connecting cable, approx. 2 m). Functional or electronic switches are not suitable for providing disconnection from the AC supply network. If products without power switches are integrated into racks or systems, a disconnecting device must be provided at the system level.
5. Never use the product if the power cable is damaged. Check the power cable on a regular basis to ensure that it is in proper operating condition. By taking appropriate safety measures and carefully laying the power cable, you can ensure that the cable will not be damaged and that no one can be hurt by, for example, tripping over the cable or suffering an electric shock.
6. The product may be operated only from TN/TT supply networks fused with max. 16 A (higher fuse only after consulting with the Rohde & Schwarz group of companies).
7. Do not insert the plug into sockets that are dusty or dirty. Insert the plug firmly and all the way into the socket. Otherwise, sparks that result in fire and/or injuries may occur.
8. Do not overload any sockets, extension cords or connector strips; doing so can cause fire or electric shocks.
9. For measurements in circuits with voltages V_{rms} > 30 V, suitable measures (e.g. appropriate measuring equipment, fusing, current limiting, electrical separation, insulation) should be taken to avoid any hazards.
10. Ensure that the connections with information technology equipment, e.g. PCs or other industrial computers, comply with the IEC60950-1/EN60950-1 or IEC61010-1/EN 61010-1 standards that apply in each case.
11. Unless expressly permitted, never remove the cover or any part of the housing while the product is in operation. Doing so will expose circuits and components and can lead to injuries, fire or damage to the product.
12. If a product is to be permanently installed, the connection between the PE terminal on site and the product's PE conductor must be made first before any other connection is made. The product may be installed and connected only by a licensed electrician.
13. For permanently installed equipment without built-in fuses, circuit breakers or similar protective devices, the supply circuit must be fused in such a way that anyone who has access to the product, as well as the product itself, is adequately protected from injury or damage.

14. Use suitable overvoltage protection to ensure that no overvoltage (such as that caused by a bolt of lightning) can reach the product. Otherwise, the person operating the product will be exposed to the danger of an electric shock.
15. Any object that is not designed to be placed in the openings of the housing must not be used for this purpose. Doing so can cause short circuits inside the product and/or electric shocks, fire or injuries.
16. Unless specified otherwise, products are not liquid-proof (see also section "Operating states and operating positions", item 1. Therefore, the equipment must be protected against penetration by liquids. If the necessary precautions are not taken, the user may suffer electric shock or the product itself may be damaged, which can also lead to personal injury.
17. Never use the product under conditions in which condensation has formed or can form in or on the product, e.g. if the product has been moved from a cold to a warm environment. Penetration by water increases the risk of electric shock.
18. Prior to cleaning the product, disconnect it completely from the power supply (e.g. AC supply network or battery). Use a soft, non-linting cloth to clean the product. Never use chemical cleaning agents such as alcohol, acetone or diluents for cellulose lacquers.

Operation

1. Operating the products requires special training and intense concentration. Make sure that persons who use the products are physically, mentally and emotionally fit enough to do so; otherwise, injuries or material damage may occur. It is the responsibility of the employer/operator to select suitable personnel for operating the products.
2. Before you move or transport the product, read and observe the section titled "Transport".
3. As with all industrially manufactured goods, the use of substances that induce an allergic reaction (allergens) such as nickel cannot be generally excluded. If you develop an allergic reaction (such as a skin rash, frequent sneezing, red eyes or respiratory difficulties) when using a Rohde & Schwarz product, consult a physician immediately to determine the cause and to prevent health problems or stress.
4. Before you start processing the product mechanically and/or thermally, or before you take it apart, be sure to read and pay special attention to the section titled "Waste disposal", item 1.
5. Depending on the function, certain products such as RF radio equipment can produce an elevated level of electromagnetic radiation. Considering that unborn babies require increased protection, pregnant women must be protected by appropriate measures. Persons with pacemakers may also be exposed to risks from electromagnetic radiation. The employer/operator must evaluate workplaces where there is a special risk of exposure to radiation and, if necessary, take measures to avert the potential danger.
6. Should a fire occur, the product may release hazardous substances (gases, fluids, etc.) that can cause health problems. Therefore, suitable measures must be taken, e.g. protective masks and protective clothing must be worn.
7. If a laser product (e.g. a CD/DVD drive) is integrated into a Rohde & Schwarz product, absolutely no other settings or functions may be used as described in the product documentation. The objective is to prevent personal injury (e.g. due to laser beams).

Repair and service

1. The product may be opened only by authorized, specially trained personnel. Before any work is performed on the product or before the product is opened, it must be disconnected from the AC supply network. Otherwise, personnel will be exposed to the risk of an electric shock.
2. Adjustments, replacement of parts, maintenance and repair may be performed only by electrical experts authorized by Rohde & Schwarz. Only original parts may be used for replacing parts relevant to safety (e.g. power switches, power transformers, fuses). A safety test must always be performed after parts relevant to safety have been replaced (visual inspection, PE conductor test, insulation resistance measurement, leakage current measurement, functional test). This helps ensure the continued safety of the product.

Batteries and rechargeable batteries/cells

If the information regarding batteries and rechargeable batteries/cells is not observed either at all or to the extent necessary, product users may be exposed to the risk of explosions, fire and/or serious personal injury, and, in some cases, death. Batteries and rechargeable batteries with alkaline electrolytes (e.g. lithium cells) must be handled in accordance with the EN 62133 standard.

1. Cells must not be taken apart or crushed.
2. Cells or batteries must not be exposed to heat or fire. Storage in direct sunlight must be avoided. Keep cells and batteries clean and dry. Clean soiled connectors using a dry, clean cloth.
3. Cells or batteries must not be short-circuited. Cells or batteries must not be stored in a box or in a drawer where they can short-circuit each other, or where they can be short-circuited by other conductive materials. Cells and batteries must not be removed from their original packaging until they are ready to be used.
4. Keep cells and batteries out of the hands of children. If a cell or a battery has been swallowed, seek medical aid immediately.
5. Cells and batteries must not be exposed to any mechanical shocks that are stronger than permitted.
6. If a cell develops a leak, the fluid must not be allowed to come into contact with the skin or eyes. If contact occurs, wash the affected area with plenty of water and seek medical aid.
7. Improperly replacing or charging cells or batteries that contain alkaline electrolytes (e.g. lithium cells) can cause explosions. Replace cells or batteries only with the matching Rohde & Schwarz type (see parts list) in order to ensure the safety of the product.
8. Cells and batteries must be recycled and kept separate from residual waste. Rechargeable batteries and normal batteries that contain lead, mercury or cadmium are hazardous waste. Observe the national regulations regarding waste disposal and recycling.

Transport

1. The product may be very heavy. Therefore, the product must be handled with care. In some cases, the user may require a suitable means of lifting or moving the product (e.g. with a lift-truck) to avoid back or other physical injuries.

2. Handles on the products are designed exclusively to enable personnel to transport the product. It is therefore not permissible to use handles to fasten the product to or on transport equipment such as cranes, fork lifts, wagons, etc. The user is responsible for securely fastening the products to or on the means of transport or lifting. Observe the safety regulations of the manufacturer of the means of transport or lifting. Noncompliance can result in personal injury or material damage.
3. If you use the product in a vehicle, it is the sole responsibility of the driver to drive the vehicle safely and properly. The manufacturer assumes no responsibility for accidents or collisions. Never use the product in a moving vehicle if doing so could distract the driver of the vehicle. Adequately secure the product in the vehicle to prevent injuries or other damage in the event of an accident.

Waste disposal

1. If products or their components are mechanically and/or thermally processed in a manner that goes beyond their intended use, hazardous substances (heavy-metal dust such as lead, beryllium, nickel) may be released. For this reason, the product may only be disassembled by specially trained personnel. Improper disassembly may be hazardous to your health. National waste disposal regulations must be observed.
2. If handling the product releases hazardous substances or fuels that must be disposed of in a special way, e.g. coolants or engine oils that must be replenished regularly, the safety instructions of the manufacturer of the hazardous substances or fuels and the applicable regional waste disposal regulations must be observed. Also observe the relevant safety instructions in the product documentation. The improper disposal of hazardous substances or fuels can cause health problems and lead to environmental damage.

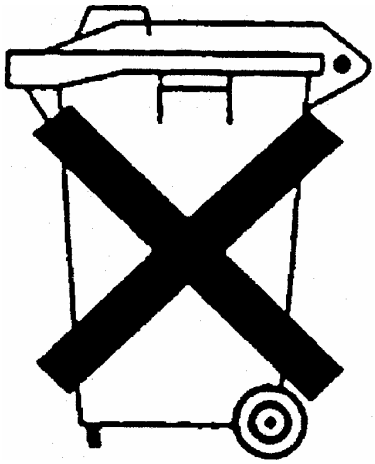
Kundeninformation zur Batterieverordnung (BattV)

Dieses Gerät enthält eine schadstoffhaltige Batterie. Diese darf nicht mit dem Hausmüll entsorgt werden.

Nach Ende der Lebensdauer darf die Entsorgung nur über eine Rohde&Schwarz-Kundendienststelle oder eine geeignete Sammelstelle erfolgen.

Safety Regulations for Batteries (according to BattV)

This equipment houses a battery containing harmful substances that must not be disposed of as normal household waste.



After its useful life, the battery may only be disposed of at a Rohde & Schwarz service center or at a suitable depot.

Normas de Seguridad para Baterías (Según BattV)

Este equipo lleva una batería que contiene sustancias perjudiciales, que no se debe desechar en los contenedores de basura domésticos.

Después de la vida útil, la batería sólo se podrá eliminar en un centro de servicio de Rohde & Schwarz o en un depósito apropiado.

Consignes de sécurité pour batteries (selon BattV)

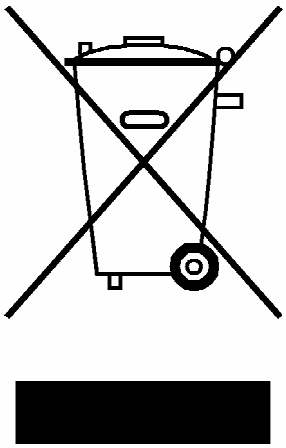
Cet appareil est équipé d'une pile comprenant des substances nocives. Ne jamais la jeter dans une poubelle pour ordures ménagéres.

Une pile usagée doit uniquement être éliminée par un centre de service client de Rohde & Schwarz ou peut être collectée pour être traitée spécialement comme déchets dangereux.

Customer Information Regarding Product Disposal

The German Electrical and Electronic Equipment (ElektroG) Act is an implementation of the following EC directives:

- 2002/96/EC on waste electrical and electronic equipment (WEEE) and
- 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS).



Product labeling in accordance with EN 50419

Once the lifetime of a product has ended, this product must not be disposed of in the standard domestic refuse. Even disposal via the municipal collection points for waste electrical and electronic equipment is not permitted.

Rohde & Schwarz GmbH & Co. KG has developed a disposal concept for the environmental-friendly disposal or recycling of waste material and fully assumes its obligation as a producer to take back and dispose of electrical and electronic waste in accordance with the ElektroG Act.

Please contact your local service representative to dispose of the product.

ROHDE&SCHWARZ

Qualitätszertifikat
Certificate of quality
Certificat de qualité

Certified Quality System
ISO 9001

Certified Environmental System
ISO 14001

Sehr geehrter Kunde,
Sie haben sich für den Kauf eines Rohde&Schwarz-Produktes entschieden. Hiermit erhalten Sie ein nach modernsten Fertigungsmethoden hergestelltes Produkt. Es wurde nach den Regeln unseres Qualitätsmanagementsystems entwickelt, gefertigt und geprüft. Das Rohde&Schwarz-Qualitätsmanagementsystem ist u.a. nach ISO 9001 und ISO 14001 zertifiziert.

Der Umwelt verpflichtet
- Energie-effiziente, RoHS-konforme Produkte
- Kontinuierliche Weiterentwicklung nachhaltiger Umweltkonzepte
- ISO 14001-zertifiziertes Umweltmanagementsystem

Dear Customer,
You have decided to buy a Rohde&Schwarz product. You are thus assured of receiving a product that is manufactured using the most modern methods available. This product was developed, manufactured and tested in compliance with our quality management system standards. The Rohde&Schwarz quality management system is certified according to standards such as ISO 9001 and ISO 14001.

Environmental commitment
- Energy-efficient products
- Continuous improvement in environmental sustainability
- ISO 14001-certified environmental management system

Cher client,
Vous avez choisi d'acheter un produit Rohde&Schwarz. Vous disposez donc d'un produit fabriqué d'après les méthodes les plus avancées. Le développement, la fabrication et les tests respectent nos normes de gestion qualité. Le système de gestion qualité de Rohde&Schwarz a été homologué, entre autres, conformément aux normes ISO 9001 et ISO 14001.

Engagement écologique
- Produits à efficience énergétique
- Amélioration continue de la durabilité environnementale
- Système de gestion de l'environnement certifié selon ISO 14001

ROHDE&SCHWARZ

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Customer Support

Technical support – where and when you need it

For quick, expert help with any Rohde & Schwarz equipment, contact one of our Customer Support Centers. A team of highly qualified engineers provides telephone support and will work with you to find a solution to your query on any aspect of the operation, programming or applications of Rohde & Schwarz equipment.

Up-to-date information and upgrades

To keep your instrument up-to-date and to be informed about new application notes related to your instrument, please send an e-mail to the Customer Support Center stating your instrument and your wish. We will take care that you will get the right information.

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Contents

1 Introduction

The near field EMC probes have been designed to measure localized magnetic and electric fields from 9 kHz to over 1 GHz, for diagnosing and trouble shooting EMC problems.

The two passive magnetic probes can be directly connected to a measuring receiver or spectrum analyzer; with the active electric probe obtaining power via the RF cable using the probe power adaptor.

The low noise preamplifier provided is used with the magnetic probes to increase their sensitivity and because of their low power requirements, this and the electric probe can be conveniently powered from the probe power outlet of most R&S Test Receivers and Spectrum Analyzers.

The probe test jig can be used with a known signal source to verify the performance of the two magnetic probes.

Fig. 1 Parts of R&S HZ-14

The near-field probe set comprises:

- Magnetic probe 9 kHz to 30 MHz
- Magnetic probe 30 MHz to 1 GHz
- Electric probe 9 kHz to 1 GHz
- Probe power adapter for electric probe
- Preamplifier 9 kHz to 1 GHz for magnetic probes
- Probe test jig
- RF Cable
- 2 power cables for connection on R&S Test Receivers and Spectrum Analyzers
- Carrying Case

Near-field Magnetic Probes

The near-field magnetic probes are passive. Any magnetic field (H) whose magnitude varies with time and which passes through the end face of the probe tip generates a voltage at the probe output.

Near-field Electric Probe

The near-field electric probe is an active probe with power supplied via the RF cable. The probe power adapter includes an acoustic overload warning. The pointed tip of this probe makes it especially useful for exactly locating sources of interference.

Probe Test jig

The probe test jig is used with a measuring receiver or spectrum analyzer and tracking generator to verify that a magnetic probe has not been damaged in use.

Immunity Testing

Both magnetic probes being passive are bi-directional, i.e. power may be applied to the probe connector to enable the sensing head to induce currents into conductors for localized immunity testing.

2 Operation

2.1 Magnetic Field Probes

Any changing current in a conductor will cause a small amount of power to be radiated, it being in effect a transmitting antenna. The amount of power radiated is a function of the magnitude of the current and the dimensions of the conductor compared to the frequency of the current. Other conductors in a piece of equipment act as receiving antennas and have a current induced in them by the radiating conductor. This can upset the operation of the equipment and where the radiation is very strong other instruments can be affected.

EMC (Electro Magnetic Compatibility) is the situation where instruments operating in close proximity do not adversely affect each other, i.e. they are compatible with each other. Various international regulations exist governing the permitted levels of radiated emissions and methods of measurement. The probes are not intended to verify compliance with these regulations; however, they do allow selected areas of different items of equipment to be compared, and also aid in the tracing of any abnormal levels of radiation.

Important Notes:

1) When using any of the probes in the set for comparative measurements care should be taken to obtain repeatable results, i.e. the probe orientation in space should be the same for each measurement.
2) To correctly measure fields, the magnetic field probes must be orientated for maximum coupling with the magnetic field, i.e. the end face of the probe top is perpendicular to the magnetic field. When using the 30 MHz to 1 GHz probe to measure a concentric magnetic field (the magnetic field around a current carrying cable is concentric) or to measure any magnetic field whose flux lines have a high spatial gradient, a difference in output (2 dB nominally) will be observed between the two probe orientations. Correct orientation of the probe is the one where the type label is facing away from the cable.
3) The magnetic probes suppress at their outputs any electric field coupling to them. However, this suppression of electric field coupling is not infinite and therefore care should be taken when measuring magnetic fields in an environment where very high electric fields exist.
4) Typical antenna factors [dB (|H|/|V|)] are supplied for the magnetic field probes. These antenna factors (AF) are frequency dependent for both probes, and are supplied to enable the calculation of the magnetic field (|H|) linking the probe tip from the output voltage (|V|) of the probe, e.g.

   |H| [dB(A/m)] = |U| (dBV) +AF [dB (|H|/|U|)]

   or

   |H| [dB(µA/m)] = |U| (dBµV) +AF [dB (|H|/|U|)]

Care should be taken when applying the antenna factors (AF) to magnetic field measurements, for example use of the supplied antenna factors will be invalid in the following cases:

- The magnetic field is not uniform over the whole area of the end face of the probe.
- The magnetic field is not perpendicular to the end face of the probe.

Table 1 Antenna factor for low-frequency magnetic probe (typical)

9 kHz	89 dB [(µA/m)/µV]
100 kHz	70 dB [(µA/m)/µV]
1 MHz	52 dB [(µA/m)/µV]
10 MHz	43 dB [(µA/m)/µV]
30 MHz	42 dB [(µA/m)/µV]

Fig. 2 Antenna factor for magnetic probe 9 kHz to 30 MHz (typical)

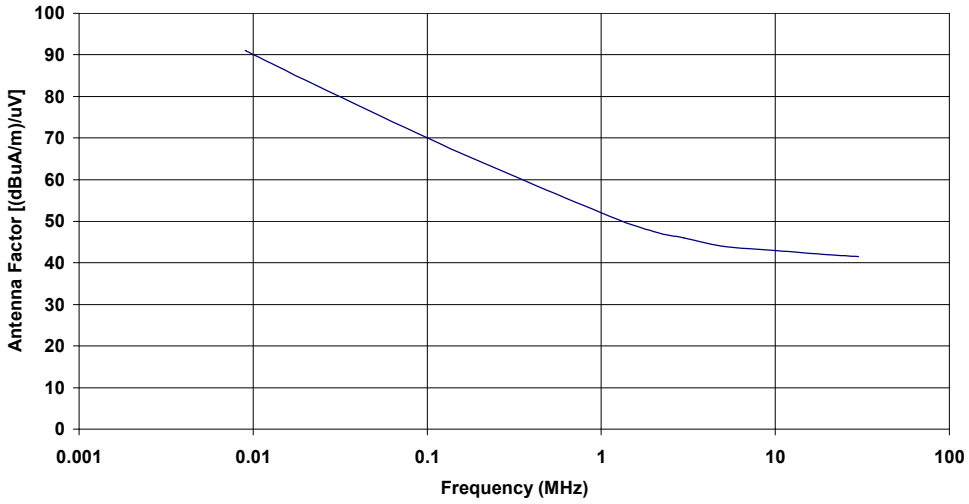
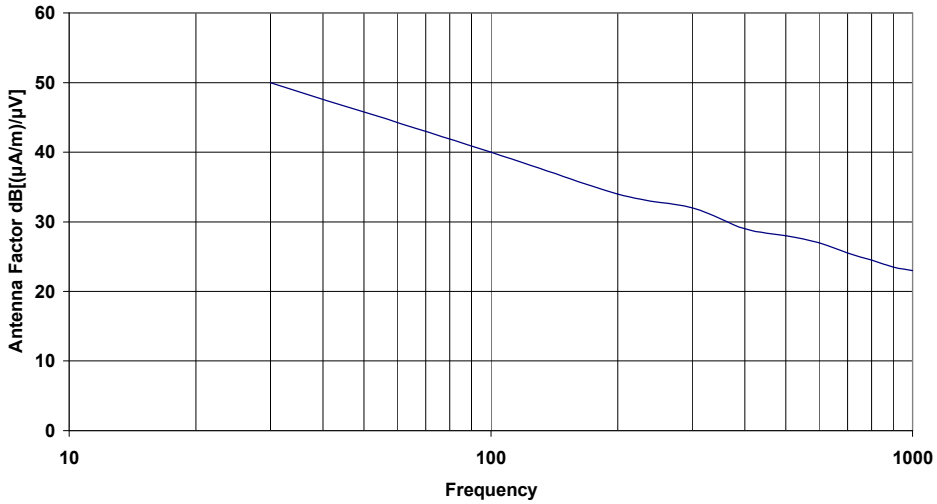


Table 2 Antenna factor for high-frequency magnetic probe (typical)

30 MHz	50 dB [(µA/m)/µV]
50 MHz	46 dB [(µA/m)/µV]
100 MHz	40 dB [(µA/m)/µV]
200 MHz	34 dB [(µA/m)/µV]
500 MHz	28 dB [(µA/m)/µV]
850 MHz	24 dB [(µA/m)/µV]
1000 MHz	23 dB [(µA/m)/µV]

Fig. 3 Antenna factor for magnetic probe 30 MHz to 1000 MHz (typical)



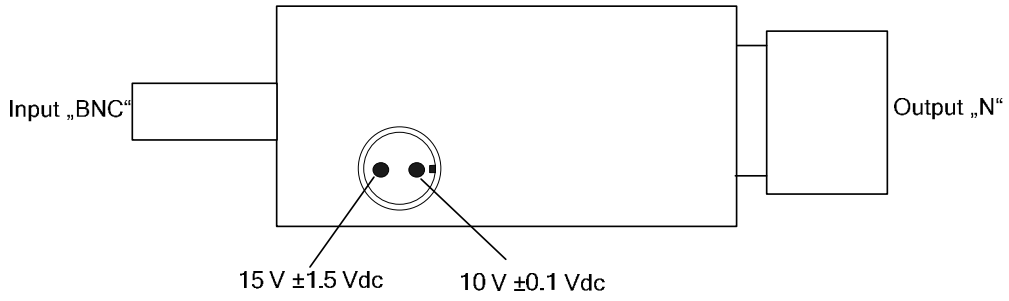
2.2 Preamplifier for Magnetic Probes

For many applications the output level of the magnetic probes will be adequate for driving the measuring equipment; however, when measuring very small fields some form of amplification may be required. The preamplifier provides low noise amplification over the range 9 kHz to 1 GHz.

The preamplifier for magnetic probes has a wide dynamic range and with its 1 dB compression point of 8 dBm it can be used as a general purpose amplifier, but at all times, the maximum signal input level of +10 dBm must be strictly observed (limit of safe operation). The probes must be used without the amplifier if higher signal levels are to be measured.

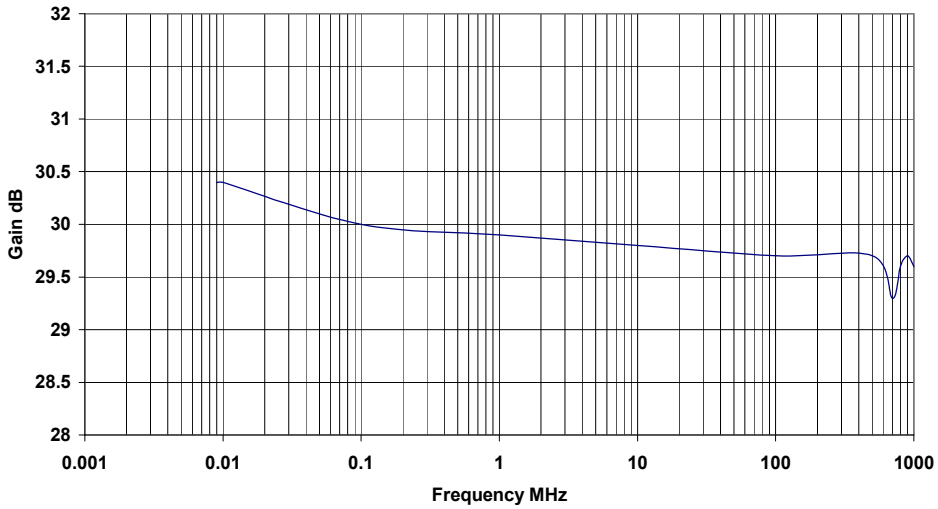
The preamplifier can be conveniently powered from the probe power outlet of most R&S Test Receivers and Spectrum Analyzers.

Fig. 4 Preamplifier for magnetic probes



For precise measurements the typical frequency response as shown Fig. 5 have to be used.

Fig. 5 Gain of preamplifier for magnetic probes (typical)



Many currents encountered in equipment are impulsive, that is to say that some of the time the current is very low or even nothing at all, and for very short periods of time it may rise to a very high value. These, short duration, pulse signals can be very difficult to measure and, depending on the settings of the measuring equipment, it might not be immediately apparent that they exist. If they are of sufficiently high level they may cause malfunction of the measuring equipment, including the preamplifier, and cause erroneous readings of any low level signals which exist at the same time. Therefore, care must be taken when making impulsive measurements as very high signal levels may be present.

2.3 Electric Probe

Unlike the magnetic probes, the electric probe sensing element is a point sensor and is not affected by probe orientation. The pointed end of this probe makes it easy to precisely locate sources of radiation.

To achieve a high sensitivity an amplifier is built into the probe tip. Power for this is provided by the probe power adapter, which contains an acoustic overload warning. Although the input of the probe amplifier is diode protected, care must always be exercised not to subject the probe tip to static discharges.

Table 3 Antenna factor for electric probes (typical)

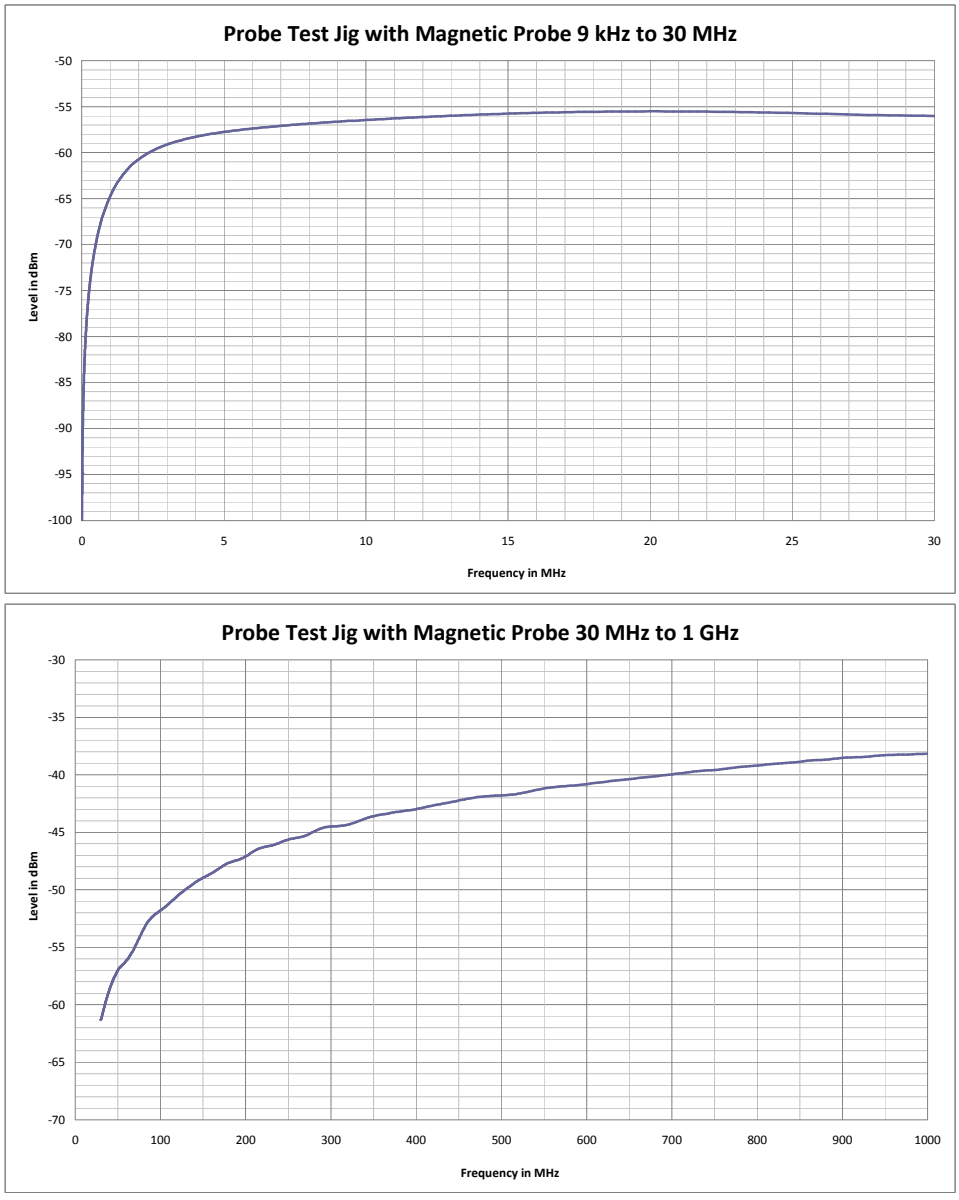
9 kHz to 1 GHz	67dB [(µV/m)/µV]

2.4 Probe Test jig

The probe test jig is used with a spectrum analyzer or measuring receiver and tracking generator to verify that the magnetic probes have not been damaged in use. Connect the probe test jig, label side up, to the output of the tracking generator and the probe to the input of the spectrum analyzer or measuring receiver and insert the probe fully into the probe test jig. Of the two ways to insert the probe the one with the maximum output should be used.

With the tracking generator output set to -10 dBm and the spectrum analyzer or measuring receiver set as appropriate, a plot similar to Fig. 6 should be displayed. Typically, the plot should be within 3 dB of those shown, large changes, e.g. 10 dB or more, indicate a damaged probe.

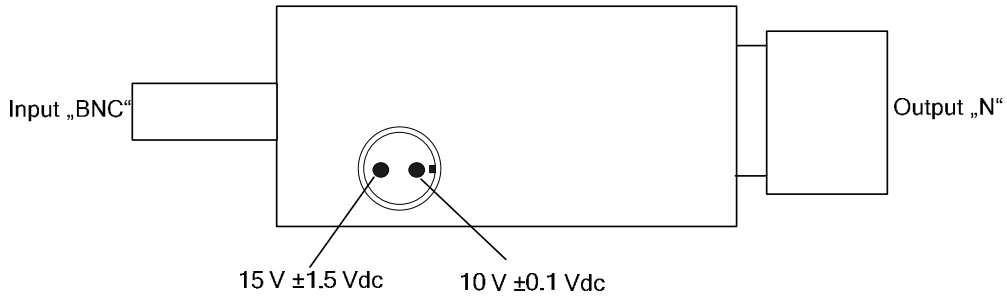
Fig. 6 Typical frequency response measured with the probe test jig



2.5 Probe Power Adapter for Electric Probe

The probe power adapter is used to power the electric probe. It can be conveniently powered from the probe power outlet of most R&S Test Receivers and Spectrum Analyzers.

Fig. 7 Probe power adapter for electric probe



3 Maintenance

The near-field probes including the accessories does not require special maintenance. Users need only take care to keep the equipment clean and protect the components against mechanical damage.

Users are not permitted to modify the probes or its accessories.

Clean the probe housing using a dry cloth. For heavy dirt, use a damp cloth with a mild, non-abrasive household cleanser if necessary. Do not let liquid enter the housing of the probes or the adapters. No chemicals may be used for cleaning purposes.

3.1 Spare Parts

For the probe set for E and H near-field measurements R&S HZ-14 the following spare parts are available:

0633.0740.00	Magnetic Near-Field Probe 9 kHz…30 MHz
0633.0757.00	Magnetic Near-Field Probe 30 MHz…1 GHz
0633.0763.00	Electric Near-Field Probe 9 kHz…1 GHz
1313.1968.00	Pre-Amplifier for Magnetic Near-Field Probes
0633.0786.00	Probe Power Adapter
0633.0792.00	Probe Test Jig
0633.0805.00	RF Cable, BNC-SMA, 50 Ω, 1,5 m
0633.0811.00	Power Cable, Tuchel-Lemosa, 0,8 m
1303.2684.00	Power Cable, Probe Connector FSP-Lemosa, 0,8 m
1313.1974.00	Case with Inlay
1026.7767.12-01	Operating Manual