# Green is life

# **EMC Test Catalogue**

freecall 1800 626 500 www.tmgtestequipment.com.au

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#### Accessories

## Instruments HZ560

#### Transient Limiter



The HZ560 Transient Limit protects the input circuits of spectrum analyzers and test receivers. The input of the Transient Limiter is connected via BNC cable to the signal source. The output can be connected directly to the spectrum analyzer.

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#### ROHDE&SCHWARZ MDS-21

#### **Absorbing Clamp**



- R&S MDS-21 for 30 MHz to 1000 MHz Calibrated in accordance with CISPR Publ. 16-1-3 R&S MDS-21 with ball bearing rollers for
- continuous use in automatic measurements
- · Maximum diameter of cable: 20 mm for R&SfiMDS-21 · Clamps can be opened to put in cable to be

tested



#### Antennas

#### AH Systems AK-186

#### 20 Hz to 18 GHz Antenna Kit



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• SAS-510-2 290 MHz - 2000 MHz Log Periodic Antenna SAS-571 700 MHz - 18 GHz Double Ridge Guide Horn Antenna

- SAS-530 160 MHz 500 MHz Dipole Antenna
- SAS-542 20 MHz 330 MHz Biconical Antenna SAS-550-1B 10 KHz - 60 MHz Active Monopole
- Antenna SAS-560 20 Hz - 2 MHz Passive Loop Antenna
- BCP-510 20 Hz 1 MHz Broadband Current Probe •

BCP-511 20 KHz - 100 MHz Broadband Current Probe

- TSC-542 Transit Storage Case
- SAC-18G-3 3 Meter N(m) to N(m) Cable, Low Loss ADP-202 N(f) to BNC(m) Adapter
- ATU-510 Wood Tripod
- AEH-510 Azimuth and Elevation Head
- TCC-510 Tripod Carrying Case

#### AH Systems AK-26

#### 20 Hz to 2 GHz Antenna Kit



- SAS-510-2 290 MHz 2000 MHz Log Periodic Antenna
- SAS-530 160 MHz 500 MHz Dipole Antenna
- SAS-542 20 MHz 330 MHz Biconical Antenna
- SAS-550-1B 10 KHz 60 MHz Active Monopole Antenna
- SAS-560 20 Hz 2 MHz Passive Loop Antenna
- BCP-510 20 Hz 1 MHz Broadband Current Probe
- BCP-511 20 KHz 100 MHz Broadband Current



- Probe • TSC-542 Transit Storage Case
- SAC-213 3 Meter N(m) to N(m) cable
- ADP-202 N(f)to BNC(m) Adapter
- ATU-510 Wood Tripod
  - AEH-510 Azimuth and Elevation Head
  - TCC-510 Tripod Carrying Case

#### ROHDE&SCHWARZ HEPON

#### Active Receiving Dipole, 200 MHz to 1000 MHz



Optimized for very small dimensions. The Active Receiving Dipole R&SHE 202 features a very wide frequency range despite its small dimensions. Its high input sensitivity is the result of optimized matching of the passive antenna structure to the active circuitry. These characteristics allow several passive antennas to be replaced by an Active Receiving Dipole R&S HE202. Similar to a passive antenna with high-grade preamplifiers, the active antenna is highly insensitive to nonlinear distortion. Recommended extras:

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- Power Supply Unit R&S IN115
- Mast Adapter R&S HE202Z1 (for special polarization alignment only)
- RF Cable R&S HE202Z2 (for use together with R&S HE202Z1 only)

#### ROHDE&SCHWARZ HE300

#### Active Directional Antenna, 20 MHz to 7500 MHz



Þ New Refurbished Rental

Portable directional antenna for tracing signal transmitters and interference sources In conjunction with portable receivers (e.g. R&S PR100) the R&S HE300 is used for localizing transmitting and interfering sources. The direction of signal sources is found by pointing the antenna towards the direction of maximum signal voltage. The frequency range from 20 MHz to 7.5 GHz is covered by three exchangeable antenna modules delivered with the R&S HE300. Each of these modules has a distinct directional pattern. The modules do not have to be tuned within their frequency sub-ranges. A fourth module (R&S HE300HF for 9 kHz to 20 MHz) is available as an option. Recommended extras:

- Loop Antenna R&S HE300HF
- Portable Receiver R&S PR100
- Handheld Spectrum Analyzer Family R&S FSH







#### ROHDE&SCHWARZ HE302

#### Active Receiving Dipole, 20 MHz to 500 MHz



Optimized for very small dimensions. The Active Receiving Dipole R&S HE 302 features a very wide frequency range despite its small dimensions. Its high input sensitivity is the result of optimized matching of the passive antenna structure to the active circuitry. These characteristics allow several passive antennas to be replaced by an Active Receiving Dipole R&S HE 302. Similar to a passive antenna with high-grade preamplifiers, the active antenna is highly insensitive to nonlinear distortion. Recommended extras:



 Power Supply Unit R&S IN115 Mast Adapter R&S HE202Z1 (for special

polarization alignment only) RF Cable R&S HE202Z2 (for use together with R&S HE202Z1 only)

#### ROHDE&SCHWARZ HK116

#### Biconical Antenna. 20 MHz to 300 MHz



For radiated emission measurements. The R&S HK 116 is a biconical dipole antenna for linearly polarized waves. The antenna features a wide frequency range, a radiation pattern virtually independent of frequency plus low weight. The R&S HK 116 is individually calibrated in line with ANSI C63.5 and ARP 958 and particularly suitable for radiated emission measurements in EMC test rooms

Recommended extras:



Wooden Tripod R&S HK116

#### ROHDE&SCHWARZ HLOYGE

#### High Gain Log-Periodic, 80 MHz to 3000 MHz



Log-periodic antenna for EMS measurements. The High Gain Log-Periodic Antenna R&S HL 046E offers excellent broadband characteristics, a radiation pattern that is approximately rotation-symmetrical as well as high gain, making it particularly suitable for EMS immunity measurements. In comparison with existing systems, the required field strengths can be achieved with a lower amplifier power. This is due to the high antenna gain. Its small size, wide frequency range and folding mechanism make the antenna ideal for use in test chambers. Recommended extras:



Pneumatic Polarization Control R&S HL046-P

#### ROHDE&SCHWARZ HL050

#### Log-Periodic Antenna, 850 MHz to 26.5 GHz





Log-periodic directional antennas for linear polarization. Due to its broadband characteristics, the Log-Periodic Antenna R&S HL050 is particularly suitable for radiomonitoring and measurements. When used as a feed in reflector antennas, the antenna offers optimum secondary radiation characteristics due to its almost rotation-symmetrical radiation pattern. The R&S HL050 can be used as a separate antenna or as a feed for the Microwave Directional Antenna R&S AC008. The R&S HL050S1 is of identical design and used as a feed for the SHF Directional Antenna Systems R&S AC090 to R&S AC300 Recommended extras:

- Microwave Cable R&S AC008 W2
- Wooden Tripod R&S HZ-1
- Adapter to R&S HZ-1 R&S HL025 Z1

#### ROHDE&SCHWARZ HL223

#### Log-Periodic Antenna, 200 MHz to 1300 MHz



Optimized for radiomonitoring and measurements. Owing to its broadband characteristics and the virtually frequency-independent radiation patterns, the R&S HL223 covers a very wide frequency range. The sturdy construction makes the antenna suitable for stationary and mobile applications. Each antenna is supplied with an individual calibration certificate so that measurements can be performed in addition to monitoring and transmitting applications.

⊳	New
	Refurbished
	Rental

#### ROHDE&SCHWARZ HLOYO

#### Log-Periodic Dipole Antenna, 400 MHz to 3000 MHz



New ►

Rental

Refurbished

For broadband transmission and reception under open-field and laboratory conditions. The R&S HL040 provides broadband transmission and reception in the frequency range 400 MHz to 3000 MHz. Due to its large bandwidth, the antenna covers frequency ranges of various mobile radio systems. The antenna features a high symmetry and low frequency dependence of radiation patterns. Each R&S HL040 is supplied with an individual calibration certificate so that even field-strength and EMC measure-ments can be performed. With the sturdy radome, the antenna can be used under the most adverse weather conditions. Recommended extras:

· Adapter R&S HL025Z1 for Wooden Tripod R&S HZ-1

- Wooden Tripod R&S HZ-1
- Tripod R&S HFU-Z

#### ROHDE&SCHWARZ HL562

#### ULTRALOG Antenna, 30 MHz to 3000 MHz



▶	New
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	Rental

For EMI and EMS measurements. The ULTRALOG R&S HL562 combines the characteristics of a biconical and a log-periodic antenna. The ULTRALOG is mainly used for measuring emissions in the extremely wide frequency range from 30 MHz to 3 GHz without change of the antenna. The log-periodic part of the antenna is V-shaped in order to increase system sensitivity in particular between 500 MHz and 1 GHz. Unlike conventional solutions, this gainincreasing measure allows the compact size of the ULTRALOG to be maintained. Optimized symmetry and matching (VSWR) of the ULTRALOG allow its use in EMS measurements where field strengths of 10 V/m or higher are required. The ULTRALOG is supplied without tripod; the tripod shown is available as an extra. For use with the tripod R&S HL562Z1 a RF cable with a 90° angle connector is needed.

Recommended extras:

• Movable Tripod R&S HL562Z1

#### ROHDE&SCHWARZ HM020

#### Triple-Loop Antenna, 9 kHz to 30 MHz



Van Veen/Bergervoet System: Fully automatic measurement of magnetic field strength. The R&S HM020 allows fully automatic measurements of the magnetic field strength in the X, Y and Z planes of a centrally placed EUT. The antenna operates according to the van Veen/Bergervoet principle. Measurements are fully automatic and controlled by a test receiver or controller. Recommended extras:

Refurbished

- Basic Pedestal R&S HM020Z1
- Adapter Pedestal R&S HM020Z2
- Calibration Dipole R&S HM020Z3
- Control Unit R&S BG020

#### ROHDE&SCHWARZ HM525

#### Active H-Field Measurement Antenna, 100 Hz to 30 MHz





extremely high sensitivity. The Measurement Antenna R&S HM525 is a loop antenna. The voltage at its output is proportional to the amplitude of the alternating magnetic field that is present. Overview measurements are performed in the broadband mode, which covers the entire frequency range from 100 Hz to 30 MHz. To obtain maximum sensitivity, the antenna can be locally or remotely switched to the subrange mode. In this case the frequency range is divided into five subranges with different amplifier concepts in the active antenna part. For a function check, the antenna is individually calibrated by comparison and comes with a calibration certificate. Recommended extras:

Measurement of alternating magnetic fields with

- Pedestal R&S HM525Z1
- Control Unit R&S GS525
- Set of Fiber-optic Cables R&S GS525K1
- Junction Unit R&S GX525
- Cabinet for Junction Unit R&S KK524
- Integration R&S AM524-K

#### ROHDE&SCHWARZ HZ-12

#### Precision Halfwaue Dipole Set, 30 MHz to 300 MHz



Antenna calibration, critical cases of field-strength measurement and the testing of antenna-calibration and field-strength measurement sites require special measures for establishing test standards. At both the balanced and unbalanced sides of the balun, Dipoles R&S HZ-12 and R&S HZ-13 contain attenuators which ensure broadband stabilization of the matching and define the total power attenuation between the dipoles and the 50 ohm termination. As a consequence, a pair of dipoles coupled head to head will always have an exactly calibrated attenuation. Dipole Sets R&S HZ-12 and R&S HZ-13 provide high precision for:



- antenna calibration
- field-strength measurement and
- site attenuation measurement

Halfwave dipoles are especially important in the VHF/UHF range because they show the same radiation pattern at all frequencies. This is due to the fact that the dipoles are tuned to 0.5 lambda and have characteristics which can be defined exactly if the elements are sufficiently thin.

#### ROHDE&SCHWARZ HZ-13

#### Precision Halfwave Dipole Set, 30 MHz to 1000 MHz



Antenna calibration, critical cases of field-strength measurement and the testing of antenna-calibration and field-strength measurement sites require special measures for establishing test standards. At both the balanced and unbalanced sides of the balun, Dipoles R&S HZ-12 and R&S HZ-13 contain attenuators which ensure broadband stabilization of the matching and define the total power attenuation between the dipoles and the 50 ohm termination. As a consequence, a pair of dipoles coupled head to head will always have an exactly calibrated attenuation. Dipole Sets R&S HZ-12 and R&S HZ-13 provide high precision for:



antenna calibration

- field-strength measurement and
- site attenuation measurement

Halfwave dipoles are especially important in the VHF/UHF range because they show the same radiation pattern at all frequencies. This is due to the fact that the dipoles are tuned to 0.5 lambda and have characteristics which can be defined exactly if the elements are sufficiently thin.

#### **Calibrated Attenuator Sets**

#### Weinschel WAS-18

Calibrated Attenuator Sets, DC-18 GHz, 30dB, 5W, Precision N



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#### Digital Oscilloscopes < 2 GHz

#### ROHDE&SCHWARZ RTM1052

#### 500 MHz, 2 channel, Digital Oscilloscope



Due to their excellent measurement properties and wide variety of practical functions, the R&SfiRTM oscilloscopes facilitate daily work, whether in product development or service. Their compact dimensions, simple operation and brilliant display make them the first choice for everyday test and measurement tasks.

⊳	New
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	Rental

- · Finding signal faults quickly and effectively • Tools for fast signal analysis
- Smart operating concept
  - Reliable results for stringent demands Triggering and decoding of serial protocols

#### ROHDE&SCHWARZ RTM1054

#### 500 MHz, 4 channel, Digital Oscilloscope



Due to their excellent measurement properties and wide variety of practical functions, the R&SfiRTM oscilloscopes facilitate daily work, whether in product development or service. Their compact dimensions, simple operation and brilliant display make them the first choice for everyday test and measurement tasks.

€	New
	Refurbished
	Rental

- · Finding signal faults quickly and effectively
- Tools for fast signal analysis Smart operating concept
  - Reliable results for stringent demands
- Triggering and decoding of serial protocols

#### ROHDE&SCHWARZ RT01012

#### 1 GHz, 2 channel, Digital Oscilloscope



New Þ

> Refurbished Rental

The R&SfiRTO oscilloscopes combine excellent signal fidelity, high acquisition rate and the world's first realtime digital trigger system with a compact device format in the 1 GHz class. They offer hardwareaccelerated measurement and analysis functions.

- Find signal faults fast
- Hardware-accelerated analysis
- Highly accurate digital trigger system
- New ease of operation
  - Convincing accuracy

#### ROHDE&SCHWARZ RT01014

#### 1 GHz, 4 channel, Digital Oscilloscope





The R&SfiRTO oscilloscopes combine excellent signal fidelity, high acquisition rate and the world's first realtime digital trigger system with a compact device format in the 1 GHz class. They offer hardwareaccelerated measurement and analysis functions.

- Find signal faults fast
- Hardware-accelerated analysis
- Highly accurate digital trigger system

#### Digital Oscilloscopes 2GHz - 6GHz

#### ROHDE&SCHWARZ RT01022

#### 2 GHz, 2 channel, Digital Oscilloscope





Rental

The R&SfiRTO oscilloscopes combine excellent signal fidelity, high acquisition rate and the world's first realtime digital trigger system with a compact device format in the 2 GHz class. They offer hardwareaccelerated measurement and analysis functions.

- Find signal faults fast
- Hardware-accelerated analysis
- Highly accurate digital trigger system
- New ease of operation
- Convincing accuracy

- - New ease of operation
  - Convincing accuracy

#### ROHDE&SCHWARZ RT01024

#### 2 GHz, 4 channel, Digital Oscilloscope



New

Rental

Refurbished

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The R&SfiRTO oscilloscopes combine excellent signal fidelity, high acquisition rate and the world's first realtime digital trigger system with a compact device format in the 2 GHz class. They offer hardwareaccelerated measurement and analysis functions.

Find signal faults fast

- Hardware-accelerated analysis
- Highly accurate digital trigger system New ease of operation
- Convincing accuracy

## HAEFELY /// Onyx30

#### 30 kU ESD Simulator



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#### 30 kV

- Touchscreen interface
- Meets all latest standard requirements
- Modular (exchangeable R/C network)
- Smart key function
- Automatic polarity switching Remote control

- Multilingual menus
  - Self test / verification
  - Contact discharge current flow detection

#### Schaffner NSG 438

#### 30 kU ESD Simulator



The NSG 438 system generates discharge pulses of 200V to 30kV, in both air discharge and contact discharge operation, and sets the industry standard for ease-of-use with all test controls on the pistol. The new instrument fulfills the requirements of all known ESD commercial, telecom, military and automotive standards including the IEC, ANSI, SAE, ISO and MIL standards. Each R-C network is individually tested and certified to be compliant with the relevant standard.



HAEFELY PEFT 4010

#### EFT/Burst generator, 100U - 4.8kU



The PEFT 4010 is a complete stand-alone EFT/Burst generator designed to meet the requirements of IEC/EN 61000-4-4 edition 1 & 2. It covers a voltage range from 100V to 4.8kV, and has an integrated 16A single phase CDN. Depending on your test requirements, we offer a number of options and accessories to fully cover your needs, these include three phase 32A and 100A CDNs, capacitive coupling clamps, verification equipment, and various other valuable accessories necessary for a complete EFT test setup.

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#### Thermo-Keytek MZ-15/EC

#### **ESD Simulator**



ESD simulator. 15kV Air Discharge, 8kV Contact Discharge with 150pF/330 Ohm discharge network. Complete with True-ESD air discharge tip (TPA-1), air discharge IEC ball tip (TPA-2), contact discharge tip (TPC-2A), battery charger and soft carry case.



## EFT, Burst and Surge Generators

### HAEFELY MECOMPACTY

#### **Compact Immunity Tester**



The ECOMPACT4 is an ultra compact immunity tester that performs all the most commonly used transient immunity tests, including Surge, EFT, Dips/Interrupts, and AC/Surge Magnetic Field. The simplified user interface provides quick selection of tests and test levels, and even lets you change test parameters "on the fly" while running a test.



## HAEFELY PESD 3010

#### Electrostatic Discharge Simulator, 30kU



- Unique CONTACT mode discharge detector Pre-programmed IEC test levels
- Automatic polarity switching available Fast'n'easy set-up procedure
- Unique integrated self test function
- Reduces operator fatigue and workload

#### New P Refurbished Rental

### HAEFELY PEFT 8010

#### EFT/Burst generator, 1000U - 7.3kU



The PEFT 8010 is a complete stand-alone EFT/Burst generator designed to meet the requirements of IEC/EN 61000-4-4 edition 1 & 2. It covers a voltage range from 1000V to 7.3kV, and has an integrated 16A single phase CDN. Depending on your test requirements, we offer a number of options and accessories to fully cover your needs, these include three phase 32A and 100A CDNs, capacitive coupling clamps, verification equipment,

New Þ Refurbished Rental

and various other valuable accessories necessary for a complete EFT test setup.

## HAEFELY COUPLER 4

16A Three-Phase Coupling/Decoupling Network for SURGE & EFT Testing



- Built according to IEC/EN 61000-4-4 Ed. 1 & 2 and IEC/EN 610004-5 Ed. 1 & 2 • EUT voltage up to 440V/250V AC
- EUT current up to 16A per phase Test level max. 4.2kV / 2 .1kA
- · Fully automatic test routines

lacksquare	New
	Refurbished
	Rental

## HAEFELY ESD Uerification Set

#### **ESD Uerification Set**



Built according to IEC/EN 61000-4-2 Verification/calibration of ESD generators (PESD 1610, PESD 3010) up to 30 kV 2 ohms fully compliant Pellegrini target 6 dB and 20 dB attenuators Required cables included Supplied with detailed application note Optional 4GHz version available acc. CDV 77B/563



## наегецу/// Опух16

#### 16 kU ESD Simulator



Rental

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#### • 16 kV

- Touchscreen interface
- Meets all latest standard requirements
- Modular (exchangeable R/C network)
- Smart key function
- Automatic polarity switching
- Remote control
- Multilingual menus

New Refurbished

- Self test / verification Contact discharge current flow detection

#### Schaffner NSG 435

#### 16 kU ESD Simulator



Preset IEC 801-2 levels, built-in discharge adapter, positive/negative 330 ohm/150 pF network, +/-16.5 kV with pulse counter. Available with PC control option. Includes test finger for air and contact discharge.



#### **EMI Test Receivers**

#### ROHDE&SCHWARZ ESL3

#### EMI Test Receiver, 9 kHz to 3 GHz



New P

Rental

Refurbished

The R&S ESL EMI test receiver combines two instruments in one, measuring EMC disturbances in accordance with the latest standards and also serving as a full-featured spectrum analyser for diverse lab applications. The R&SfiESL is the ideal instrument for small budgets.

Frequency range from 9 kHz to 3 GHz First-ever combination of an EMI test receiver

and spectrum analyser in the economy class All major functions of an advanced EMI test

receiver, including fully automated test sequences Weighting detectors: max./min. peak, average, RMS, quasi-peak as well as average with meter time constant and rms-average in accordance with the latest version of CISPR 16-1-1

· Compact, lightweight instrument, can be batterypowered for mobile applications

**EMI Test Receivers** 

6



#### ROHDE&SCHWARZ ESC

#### EMI Test Receiver, 9 kHz to 3 GHz



Pedestal R&S HM52571

The EMI Test Receiver R&S ESCI is a addition to the tried-and-tested family of top-class EMI test receivers from Rohde & Schwarz based on a spectrum analyzer platform.

The R&S ESCI measures electromagnetic emissions in

full compliance with CISPR 16-1-1 and in line with all

civil EMC standards and covers a frequency range

New Þ Refurbished Rental

Excellent RF characteristics:

from 9 kHz to 3 GHz.

- Total measurement uncertainty < 1 dB
- Displayed average noise level (DANL) typ. 155 dBm
- 1 dB compression point +5 dBm
- Pulse-protected RF input
- Preselection filters
- Built-in 20 dB preamplifier
- Outstanding performance:
- Programmable scan table with up to 10 subranges
- Internal test routines for automated or
- interactive preview & final EMI measurements
- Evaluation functions for prescan, data reduction (peak list) and final measurement
- Spectrum analyzer
- Fast ACP measurements
- Time domain analysis (recording time > 2 h)

#### Versatile use:

- Diverse IF filters (EMI, 3 dB, channel, RRC, FFT)
- Battery or AC supply operation
- Remote control operation
- PC-compatible screenshots
- Windows XP printer support
- USB interface
- Storable instrument settings

#### ROHDE&SCHWARZ FSL6

#### EMI Test Receiver, 9 kHz to 6 GHz



The R&S ESL EMI test receiver combines two instruments in one, measuring EMC disturbances in accordance with the latest standards and also serving as a full-featured spectrum analyser for diverse lab applications. The R&SfiESL is the ideal instrument for small budgets.



 Frequency range from 9 kHz to 6 GHz covering almost all commercial EMC standards

 First-ever combination of an EMI test receiver and spectrum analyser in the economy class All major functions of an advanced EMI test

receiver, including fully automated test sequences • Weighting detectors: max./min. peak, average, RMS, quasi-peak as well as average with meter time

constant and rms-average in accordance with the latest version of CISPR 16-1-1

Compact, lightweight instrument, can be batterypowered for mobile applications

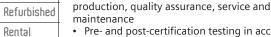
#### ROHDE&SCHWARZ ESPIZ

#### EMI Test Receiver, 9 kHz to 7 GHz



The R&S ESPI7 test receiver implement many benefits of the Rohde & Schwarz full-compliance EM test receivers for the precompliance class. When equipped with option R&S ESPI-K50, the test receivers can be used to measure the field-strength profiles of radio communications and broadcast networks.

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Pre- and post-certification testing in accordance with all civil EMI standards

- Fast and easy interference testing in mobile use Evaluation of field-strength coverage at very
- high measurement rates

Use as spectrum analyzer, including with selective input

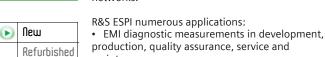
R&S ESPI â€" outstanding performance: • Low measurement uncertainty (<1.5 dB in receiver mode)

- Preselection filters and built-in 20 dB
- preamplifier (option)

Unprecedented measurement speed

- (measurement times from 100  $(\mu s)$ )
- Low noise level (NF = 12 dB with preamplifier)
- Programmable scan tables with up to 10
- subranges
- Predefined limit lines and correction factors
- Transducer factors and transducer sets
- Autoranging and overload detection
- Spectrum analyzer
- Built-in AF demodulator and loudspeaker
- USB interface, WinXP embedded
- Bright 21 cm TFT color display
- Battery or AC supply operation

#### Available in 3 and 7 GHz versions.



#### ROHDE&SCHWARZ FSUB

#### EMI Test Receiver, 20 Hz to 8 GHz



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The R&S ESU is a new family of CISPR16-1-1compliant EMI test receivers that meet all civil and military standards for electromagnetic interference measurements. The new FFT-based time-domain scan allows users to perform overview measurements up to 150 times faster than on previous EMI test receivers. The R&S ESU also features automatic and interactive measurement functions, realtime IF analysis and parallel detectors including the new CISPR-RMS detector.

Performance features:

- Frequency ranges from 20 Hz to 8/26.5/40 GHz Excellent RF characteristics
- Very low measurement uncertainty
- Full compliance with CISPR 16-1-1 standard
- All commercial and military standards met

#### Measurement speed:

- · Extremely short total measurement times with time-domain scan (FFT) option
- · Fast overview measurements in analyzer mode (sweep time min. 2.5 ms)
- Receiver mode with parallel realtime IF analysis Fast time-domain analysis (resolution starting at
- 10 ' $\mu$ s, monitoring time >2 h)
- Remote control via GPIB and LAN (Ethernet)

Innovative engineering:

- All EMC detectors incl. CISPR-AV and CISPR-RMS • Fully automatic measurements (preview/final
- measurement) • Integrated report generator (PDF, HTML, RTF file format)
- · Windows XP, USB interfaces e.g. for memory stick
- Removable hard disk (flash card) optional

#### Available in 8, 26 and 40 GHz versions.

#### **Environmental Test Chamber**

#### ROHDE&SCHWARZ R-LINE

#### **R-Line Compact Test Chamber**



- · Measurement of RF performance and radiated emissions at an early stage • Measurement accuracy as high as in an anechoic
- chamber at significantly reduced investments in equipment and infrastructure Compact and versatile
- · Efficient through automated measurements and the use of turnkey solutions



#### **General Purpose Amplifiers**

#### ENI / Electronics and Innovation (E&I) 1020L

#### RF amplifier, 10kHz to 5MHz, 200W



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The 1020L Amplifier is a rugged source of RF power for ultrasonics, induction heating and laser modulation as well as plasma applications. It is a totally solid state solution employing RF DMoS FETs in the power amplification stages, offering simultaneous forward and reverse power readouts, and RS232 port for data collection. The 1020L reflects E&I's commitment to reliable and robust RF power.Flexible Operation:The 1020L produces 200 Watts of quasi linear class AB power over a frequency range of 10 KHz to 5 MHz, with a nominal power gain of 53 dB (+/-1dB). Operation over the entire frequency range is possible without the need for any switching.

#### ENI / Electronics and Innovation (E&I) 1040L

#### RF amplifier, 10kHz to 5MHz, 400W



The 1040L RF amplifier provides 400 watts from 10KHz - 5 MHz. It is a quasi linear class AB design. It has a nominal 55 dB gain. The unit sits in a standard 19" rack mount 3U high. It has an intergral power supply capable of operation at 115 or 220 VAC, 50-60 Hz.

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#### ENI / Electronics and Innovation (E&I) 1140LA

#### RF amplifier, 9kHz to 250kHz, 1000W



The 1140 LA RF amplifier delivers in excess of 1,000 watts over the frequency range of 9 - 250 KHz. It operates on a class AB mode and utilizes rugged RF MoS FETs in the RF amplification stages. It has a full four port coupler in the out put facilitating the simultaneous display of forward and reflected power. With 55 dB gain over the specified frequency range and will operate up to 1 MHz with lower gain.

►	New
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	Rental

#### ENI / Electronics and Innovation (E&I) 1240LA

#### RF amplifier, 10kHz to 1MHz, 2000W



New

Rental

Refurbished

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The 1240LA Amplifier is a rugged source of RF power for ultrasonics, induction heating and laser modulation as well as plasma applications. It is a totally solid state solution employing RF DMoS FETs in the power amplification stages, offering simultaneous forward and reverse power readouts, and an RS232 port for data collection. The 1240LA reflects E&I's commitment to reliable and robust RF power.Flexible Operation:The 1240LA produces 2000 Watts of quasi linear class AB power over a frequency range of 20 KHz to 1 MHz, with a nominal power gain of 58 dB (+/-2dB). Operation over the entire frequency range is possible without the need for any switching.

#### ENI / Electronics and Innovation (E&I) 240L

#### RF amplifier, 10kHz to 1MHz, 2000W



The 240L Amplifier is a rugged source of RF power suitable for applications in ultrasonics, laser modulation, EMI, plasma equipment and general labortory testing applications. The 240L produces 40 Watts of class A linear power output over the entire frequency range from 10 KHz to 12 MHz. It has very low harmonic distortion along with low IMD products. Operation over the band is achieved without the need for any band switching or indeed any adjustments. The power gain is rated at 50 dB with a typical gain flatness of +*l*-1.5 dB



#### ENI / Electronics and Innovation (E&I) 2100L

#### RF amplifier, 10kHz to 12MHz, 100W





The 2100L Amplifier is a rugged source of RF power, useful for ultrasonics, laser modulation, RFI/EMI, plasma equipment and general laboratory applications. The 2100L represents E&I's commitment to providing RF power amplifiers of the highest quality, durability and ruggedness. E&I's 2100L surpasses the perfromance specifications of the ENI 2100L FlexibilityThe 2100L produces 100 Watts of class A linear power output over the entire frequency range from 10 KHz to 12 MHz. It has very low harmonic distortion along with low IMD products. Operation over the band is achieved without the need for any band switching or indeed any adjustments. The power gain is rated at 50 dB with a typical gain flatness of +/- 1.5 dB.The 2100L is compatible with most signal generators, frequency synthesizers, sweep generators and other laboratory signal sources. It accurately reproduces all waveforms within its power and frequency ranges: AM. FM, SSB, pulsed and other complex modulation schemes.RuggednessThe 2100L is built to withstand a 13 dBm input (1.0 Volt RMS) for any VSWR load condition. The internal switched mode power supply is very conservatively rated, in order to facilitate operation over a large range of line conditions and temperatures. The forced air cooling provides for low internal temperatures, providing long term reliability. The RF power is delivered by rugged DMoS FETs, de-rated to provide for excellent MTBF figures.

#### ENI / Electronics and Innovation (E&I) 2200L

#### RF amplifier, 10kHz to 12MHz, 200W





The 2200L Amplifier is a rugged source of RF power, useful for ultrasonics, laser modulation, RFI/EMI, plasma equipment and general laboratory applications. The 2200L represents E&I's commitment to providing RF power amplifiers of the highest quality, durability and ruggedness.FlexibilityThe 2200L produces 200 Watts of class A linear power output over the entire frequency range from 10 KHz to 12 MHz. It has very low harmonic distortion along with low IMD products. Operation over the band is achieved without the need for any band switching or indeed any adjustments. The power gain is rated at 53 dB with a typical gain flatness of +/- 1.5 dBThe 2200L is compatible with most signal generators, frequency synthesizers, sweep generators and other laboratory signal sources. It accurately reproduces al waveforms within its power and frequency ranges: AM. FM, SSB, pulsed and other complex modulation schemes.RuggednessThe 2200L is built to withstand a 13 dBm input (1.0 Volt RMS) for any VSWR load condition. The internal switched mode power supply is very conservatively rated, in order tc facilitate operation over a large range of line conditions and temperatures. The forced air cooling provides for low internal temperatures, providing long term reliability. The RF power is delivered by rugged DMoS FETs, de-rated to provide for excellent MTBF figures.

#### ENI / Electronics and Innovation (E&I) 325LA

#### RF amplifier, 250kHz to 150MHz, 25W





The 325LA Amplifier is a rugged source of RF power for HF and VHF transmitters, RFI / EMI testing, plasma equipment and general laboratory applications. Utilizing solid state ruggedized MosFet devices it features an internal RMS power meter and concurrently displays both forward and reverse power.FlexibilityThe 325LA produces 25 Watts of Class A linear power over the frequency range of 250 KHz to 150 MHz with low harmonic distortion. Operation over the entire frequency band is possible without the need for any switching, it is true instantaneous bandwidth. The unit is rated at 50 dB gain with a typical gain flatness of +/- 1.5 dBRuggednessThe 325LA is a rugged amplifier built to withstand an input of +13 dBm (1.0V RMS) for all output load conditions including shorts and open circuits. The unit amplifies inputs of AM, FM SSB, TV and all complex modulation forms with <-23 dBc harmonic distortion and low spurious content.

#### ENI / Electronics and Innovation (E&I) 350L

#### RF amplifier, 250kHz to 150MHz, 50W



The 350L Amplifier is a rugged source of RF power, useful for RFI/EMI, HF and VHF transmitters, plasma equipment, nuclear accelerators and general laboratory applications. The 350L represents E&I's commitment to providing RF power amplifiers of the highest quality, durability and



ruggedness.FLEXIBILITY:The 350L produces 50 Watts of class A linear power output over the entire frequency range from 250 KHz to 150 MHz.It has very low harmonic distortion along with low IMD products. Operation over the band is achieved without theneed for any band switching or indeed any adjustments. The power gain is rated at 50 dB with a typical gain flatness of +/- 1.5 dBThe 350L is compatible with most signal generators, frequency synthesizers, sweep generators and other laboratory signal sources. It accurately reproduces all waveforms within its power and frequency ranges: AM. FM, SSB, pulsed and other complex modulation schemes.RUGGEDNESS:The 350L is built to withstand a 13 dBm input (1.0 Volt RMS) for any VSWR load condition. The internal switched mode power supplyis very conservatively rated, in order to facilitate operation over a large range of line conditions and temperatures. The forced air cooling provides for low internal temperatures, providing long term reliability. The RF power is delivered by ruggedDMoS FETs, de-rated to provide for excellent MTBF figures.

#### ENI / Electronics and Innovation (E&I) 3100L

#### RF amplifier, 250kHz to 150MHz, 100W



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The 3100L Amplifier is a rugged source of RF power, useful for RFI/EMI, HF and VHF transmitters, plasma equipment, nuclear accelerators and general laboratory applications. The 3100L represents E&I's commitment to providing RF power amplifiers of the highest guality, durability and

ruggedness.FlexibilityThe 3100L produces 100 Watts of class A linear power output over the entire frequency range from 250 KHz to 150 MHz. It has very low harmonic distortion along with low IMD products. Operation over the band is achieved without the need for any band switching or indeed any adjustments. The power gain is rated at 50 dB with a typical gain flatness of +/- 1.5 dBThe 3100L is compatible with most signal generators, frequency synthesizers, sweep generators and other laboratory signal sources. It accurately reproduces all waveforms within its power and frequency ranges: AM. FM, SSB, pulsed and other complex modulation schemes.RuggednessThe 3100L is built to withstand a 13 dBm input (1.0 Volt RMS) for any VSWR load condition. The internal switched mode power supply is very conservatively rated, in order to facilitate operation over a large range of line conditions and temperatures. The forced air cooling provides for low internal temperatures, providing long term reliability. The RF power is delivered by rugged DMoS FETs, de-rated to provide for excellent MTBF figures.

#### ENI / Electronics and Innovation (E&I) 3200L

#### RF amplifier, 250kHz to 120MHz, 200W





The 3200L Amplifier is a rugged source of RF power, useful for RFI/EMI, HF and VHF transmitters, plasma equipment, nuclear accelerators and general laboratory applications. The 3200L represents E&I's commitment to providing RF power amplifiers of the highest quality, durability and

ruggedness.FlexibilityThe 3200L produces 200 Watts of class A linear power output over the entire frequency range from 250 KHz to 120 MHz. It has very low harmonic distortion along with low IMD products. Operation over the band is achieved without the need for any band switching or indeed any adjustments. The power gain is rated at 53 dB with a typical gain flatness of +/- 1.5 dBThe 3200L is compatible with most signal generators, frequency synthesizers, sweep generators and other laboratory signal sources. It accurately reproduces al waveforms within its power and frequency ranges: AM. FM, SSB, pulsed and other complex modulation schemes.RuggednessThe 3200L is built to withstand a 13 dBm input (1.0 Volt RMS) for any VSWR load condition. The internal switched mode power supply is very conservatively rated, in order tc facilitate operation over a large range of line conditions and temperatures. The forced air cooling provides for low internal temperatures, providing long term reliability. The RF power is delivered by rugged DMoS FETs, de-rated to provide for excellent MTBF figures.

#### ENI / Electronics and Innovation (E&I) 403LA

#### RF amplifier, 150kHz to 300MHz, 3W





The 403LA Broadband Amplifier is a rugged source of RF power suitable for a variety of UHF signal distribution and general laboratory applications. It is a compact fully solid state design. It features lowlevel intermodulation distortion and inherent protection against short and open circuit loads. The 403 LA amplifies the inputs of AM, FM, SSB, pulse and other complex modulations within its output and bandwidth capability. E&I's 403LA surpasses the performance specifications of the ENI 403LAFlexible OperationThe 403LA produces 3 Watts of Class A linear output power over a frequency range of 150 KHz to 300 MHz with a nominal gain of 37 dB (+/-1dB). In order to provide exceptionally low levels of IMD, highly linear RF devices are used, with feedback, in the driver and output amplifier stages. All harmonics are more than 25 dB below the fundamental frequency at 2.7 Watts Pout.Rugged DesignAn integral power supply allows for operation directly from an input of 115/230 V single phase. Both the power supply and the forced air cooling are conservatively designed for operation over a wide temperature range.

#### ENI / Electronics and Innovation (E&I) 411LA

#### RF amplifier, 150kHz to 300MHz, 10W



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The 411LA Amplifier is a rugged source of RF power for HF and VHF transmitters, RFI / EMI testing, plasma equipment and general laboratory applications. Utilizing solid state ruggedized MosFet devices it features an internal RMS power meter and concurrently displays both forward and reverse power.The 411LA produces 10 Watts of Class A linear power over the frequency range of 150 KHz to 300 MHz with low harmonic distortion. Operation over the entire frequency band is possible without the need for any switching, it is true instantaneous bandwidth. The unit is rated at 40 dB gain with a typical gain flatness of +/- 2.5 dBThe 411LA is a rugged amplifier built to withstand an input of +13 dBm (1.0V RMS) for all output load conditions including shorts and open circuits. The unit amplifies inputs of AM, FM SSB, TV and all complex modulation forms with <-22 dBc harmonic distortion and low spurious content.

#### ENI / Electronics and Innovation (E&I) A075

#### RF amplifier, 300kHz to 35MHz, 75W



The A075 Amplifier is a rugged source of RF power, useful for ultrasonics, HF transmitters, RFI/EMI, plasma equipment and general laboratory applications. The A075 represents E&I's commitment to providing RF power amplifiers of the highest guality, durability and

ruggedness.FLEXIBILITY: The A075 produces 75 Watts of class A linear power output over the entire

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frequency range from 300 KHz to 35 MHz. It has very low harmonic distortion along with low IMD products.Operation over the band is achieved without the need for any band switching or indeed any adjustments. The power gain is rated at 50 dB with a typical gain flatness of +/- 1.5 dBThe A075 is compatible with most signal generators, frequency synthesizers, sweep generators and other laboratory signal sources. It accurately reproduces all waveforms within its power and frequency ranges: AM. FM, SSB, pulsed and other complex modulation schemes.RUGGEDNESS:The A075 is built to withstand a 13 dBm input (1.0 Volt RMS) for any VSWR load condition. The internal switched mode power supply is very conservatively rated, in order to facilitateoperation over a large range of line conditions and temperatures. The forced air coolingprovides for low internal temperatures, providing long term reliability. The RF power isdelivered by rugged DMoS FETs, de-rated to provide for excellent MTBF.

#### ENI / Electronics and Innovation (E&I) A150

#### RF amplifier, 300kHz to 35MHz, 150W



The A150 Amplifier is a rugged source of RF power useful for ultrasonics, HF transimitters, RFI/EMI, plasma equipment and general laboratory applications. It delivers 150 Watts of RF power, with 53 dB of power gain over a frequency form 300 KHz to 35 MHz. It has very low harmonic distortion along with low IMD products. Operation over the band is is achieved without the need for any band switching or indeed and adjustments.

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#### ENI / Electronics and Innovation (E&I) A300

#### RF amplifier, 300kHz to 35MHz, 300W



The A300 Amplifier is a rugged source of RF power useful for ultrasonics, HF transimitters, RFI/EMI, plasma equipment and general laboratory applications. It delivers 300 Watts of RF power, with 53 dB of power gain over a frequency form 300 KHz to 35 MHz. It has very low harmonic distortion along with low IMD products. Operation over the band is is achieved without the need for any band switching or indeed and adjustments.

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#### ENI / Electronics and Innovation (E&I) A500

#### RF amplifier, 300kHz to 35MHz, 500W



The A500 Amplifier is a rugged source of RF power useful for ultrasonics, HF transimitters, RFI/EMI, plasma equipment and general laboratory applications. It delivers 500 Watts of RF power, with 55 dB of power gain over a frequency form 300 KHz to 35 MHz. It has very low harmonic distortion along with low IMD products. Operation over the band is is achieved without the need for any band switching or indeed and adjustments.



#### Agilent / HP 11909A

#### Amplifier 9 kHz to 1 GHz



The Agilent 11909A amplifier improves receiver and spectrum analyser sensitivity. It is ideally suited for use with the Agilent 11940A and Agilent 11941A close-field probes to detect low-level emissions from a device under test. Radiated emissions from measurements using a spectrum analyser and antenna are improved by the increased sensitivity that this unit offers.



• Ideally suited for use with the Agilent 11940A and 11941A close-field probes

- Excellent noise figure (1.8 dB typ.) and gain (32 dB typ.) thereby improving test system sensitivity
- Enables detection of low-level emissions from a device under test
- Improves radiated emission measurements using a spectrum analyser and antenna

#### Agilent / HP 8449B

#### Microwave Preamplifier, 1 GHz to 26.5 GHz



Microwave Preamplifier, 1 to 26.5 GHz . Sensitivity for MIL-STD radiated measurements. Noise Figure: 1.0-12.5 GHz - 8.5dB; 12.5-22.0 GHz - 12.5dB; 22.0-26.5 GHz - 14.5dB. Minimum Gain: 23.5dB. Gain Flatness: 1.0-26.5 GHz - +/-4.5dB; 2.0-22.0 GHZ +/-3.5dB. Connector Type: ACP - 3.5 male.

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#### ENI / Electronics and Innovation (E&I) 503L

Broadband Power Amplifier, 2 - 510 MHz, 3W



The 503L Broadband Amplifier is a rugged source of RF power suitable for a variety of UHF signal distribution and general laboratory applications. It is a compact fully solid state design. It features low-level intermodulation distortion and inherent protection against short and open circuit loads. The 503L amplifies the inputs of AM, FM, SSB, pulse and other complex modulations within its output and bandwidth capability.



The 503L produces over 3 Watts of Class A linear output power over a frequency range of 2 to 510 MHz with a nominal gain of 40 dB (+/-2.0dB). In order to provide exceptionally low levels of IMD, highly linear RF devices are used, with feedback, in the driver and output amplifier stages. All harmonics are more than 18 dB below the fundamental frequency at 3 Watts Pout.

#### ENI / Electronics and Innovation (E&I) 525LA

#### RF Power Amp. 1.0 MHz - 500 MHz; 25W



The 525LA is a class A power amplifier. The 525LA is designed for RFI/EMI applications as well as general laboratory purposes. The 525LA delivers low distortion amplification over the entire useful frequency range.

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#### ENI / Electronics and Innouation (E&I) 550L

#### RF Power Amplifier 1.5 MHz - 400 MHz, 50Watts



The 550L Broadband Power Amplifier is an extremely wideband high power solid state, Class A linear amplifier. Rated at 50 W from 1.5 to 400MHz, the unit can provide over 100 watts from 1.5 to 220MHz. The flat 50 dB gain allows the unit to provide maximum output when driven by any standard signal or sweep generator. The untra linear design capability insures faithful reproduction of the output waveform for AM, FM, SSB, TV, pulse or other complex modulations with all harmonic distortion greater than 25 dB below the fundamental at full rated power.

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#### ENI / Electronics and Innovation (E&I) 603L

#### Broadband Power Amplifier, 0.8 - 1000 MHz, 3W



The 603L Broadband Power Amplifier is an ultra wideband, class A, solid state amplifier that is capable of delivering over 3 watts of power with a flat frequency response from 800kHz to 1GHz. It will accept CW, AM, FM, SSB, pulse, wideband sweep and other complex modulations. Gain is 40 dB nominal. Gain variation is 71.5 dB maximum. Input/Output impedance is 50-ohms.



#### Line Impedance Stabilization Networks

## Instruments HM6050-2D

Line Impedance Stabilization Network, 9 kHz–30 MHz (CISPR 16), max. 16 A  $\,$ 



- Measurement of line-conducted interference within the range from 9 kHZ to 30 MHz (CISPR 16)
- Transient limiter (add-on)
- Manual simulation

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## Measuring Receivers

#### ROHDE&SCHWARZ FSMR26

#### Measuring Receiver, 20 Hz to 26.5 GHz



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The Measuring Receiver R&S FSMR is a one-box solution for calibrating RF-level and analog modulation parameters of signal generators as well as attenuation.

Functions combined in one instrument:

- High precision level calibrator Modulation Analyzer for AM/FM/PM
- Audio Analyzer with THD and SINAD
- Support for NRP power sensors for absolute power measurements

High-performance spectrum analyzer

Functions and properties tailored to the needs of calibration labs:

- Very high level stability over time
- Easy-to-use, with complete operation control
- from the R&S FSMR front panel
- Traceable calibration
- Documented calibration procedure

- Specifications equal to or exceeding the HP 8902 with option 050  $\,$ 

Available in 3, 25, 43 and 50 GHz versions.

#### **Microwave Amplifiers**

#### Agilent / HP 8447D

#### Amplifier, 100 kHz - 1.3 GHz



The Agilent 8447D is a low-noise, high gain amplifier used to improve the sensitivity of counters, spectrum analysers, RF voltmeters, EMI meters, power meters and other devices. They will also increase the maximum power available from a signal generator or sweeper.



#### Agilent / HP 8447E

#### RF Amplifier, 100 kHz to 1.3 GHz



The 8447E Amplifier is solid-state offering improved reliability. The 8447E operates at a frequency range of 100 kHz to 1.3 GHz. Designed into a small, lightweight package, this broadband amplifier provides low noise, wide bandwidth, flat frequency response, and low distortion. Response of 75 kHz to 1.4 GHz with 3 dB bandwidth and 22 dB gain.

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	Rental

#### Agilent / HP 8447F

#### Preamplifier and Power Amplifier



Combines the 8447D Preamplifier and 8447E Power Amplifier into a single package. 100 kHz to 1.3 GHz, 12.5 dBm power output, 22 dB gain, two channels

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#### **Near-field probes**

## Instruments HZ530

#### EMU Near-field probe Set up to 1 GHz (3 pieces)



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The HZ530 Probe Set consists of 3 active broadband
probes for EMC diagnosis. The probes are designed
for connection to a HAMEG spectrum analyzer and
have an impedance of 50 ? at the coaxial output.
The probes can be powered by the spectrum
analyzer or batteries. The slim format ensures easy
access to the test object even in confined test
environments.The H-field probe sends a voltage
that is proportional to the magnetic field strength to
the spectrum analyzer. This makes it possible to
localize sources of interference with relatively high
precision.The high-impedance probe is a high-ohm
unit used to determine radio frequency interference
levels on individual contacts or printed circuit board
conductors.The E-field probe is the most sensitive of
the three probes. It can be used to assess the total
effect of shielding and filtering in a tested unit.

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## Instruments HZ540

#### EMU Near-field probe set to 3 GHz



The HZ540/550 are the ideal toolkits for the investigation of RF electromagnetic fields. They are indispensable for EMI pre-compliance testing during product development, prior to third party testing. The sets include 3 or 5 hand-held probes with built-in preamplifier covering the frequency range from <1 MHz to approx. 3000 MHz.

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	Rental

The probes of the basic set HZ540 include one magnetic field probe, one electric field probe, and a high impedance probe. In addition to the HZ550 features an optional  $\mu$ -magnetic field probe and a passive radiation probe. All probe outputs are matched to the 50  $\Omega$  inputs of spectrum analyzers or RF-receivers.

## Instruments HZ540L

#### EMU Near-field probe set to 3 GHz



The HZ540/550 are the ideal toolkits for the investigation of RF electromagnetic fields. They are indispensable for EMI pre-compliance testing during product development, prior to third party testing. The sets include 3 or 5 hand-held probes with built-in preamplifier covering the frequency range from <1 MHz to approx. 3000 MHz.



The probes of the basic set HZ540 include one magnetic field probe, one electric field probe, and a high impedance probe. In addition to the HZ550 features an optional  $\mu$ -magnetic field probe and a passive radiation probe. All probe outputs are matched to the 50  $\Omega$  inputs of spectrum analyzers or RF-receivers.

## Instruments HZ550

#### Extended EMU Near-field probe set to 3 GHz



The HZ540/550 are the ideal toolkits for the investigation of RF electromagnetic fields. They are indispensable for EMI pre-compliance testing during product development, prior to third party testing. The sets include 3 or 5 hand-held probes with built-in preamplifier covering the frequency range from <1 MHz to approx. 3000 MHz.



The probes of the basic set HZ540 include one magnetic field probe, one electric field probe, and a high impedance probe. In addition to the HZ550 features an optional  $\mu$ -magnetic field probe and a passive radiation probe. All probe outputs are matched to the 50  $\Omega$  inputs of spectrum analyzers or RF-receivers.

## Instruments HZ550L

#### Extended EMU Near-field probe set to 3 GHz



The HZ540/550 are the ideal toolkits for the investigation of RF electromagnetic fields. They are indispensable for EMI pre-compliance testing during product development, prior to third party testing. The sets include 3 or 5 hand-held probes with built-in preamplifier covering the frequency range from <1 MHz to approx. 3000 MHz.



The probes of the basic set HZ540 include one magnetic field probe, one electric field probe, and a high impedance probe. In addition to the HZ550 features an optional  $\mu$ -magnetic field probe and a passive radiation probe. All probe outputs are matched to the 50  $\Omega$  inputs of spectrum analyzers or RF-receivers.

#### Agilent / HP 11940A

#### Close Field Probe, 30 MHz to 1 GHz



New

Rental

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Refurbished

The Agilent 11940A is a hand-held probe specially designed to measure magnetic field radiation from surface currents, slots, cable, and ICs for EMC diagnostic and troubleshooting measurements. Its unique design results in a high level of electric field rejection. This significantly reduces errors allowing calibrated and repeatable measurements. Each probe is calibrated and comes with a two-meter, RG-223 coaxial cable, an SMA (f) to Type-N (m) adapter, and an SMA (f) to BNC (m) adapter. Features:Measures magnetic field radiation from

surface currents, slots, cables and ICsHigh level of electric field rejectionAllows calibrated and repeatable measurements

#### Agilent / HP 11941A

#### Close Field Probe, 9 kHz - 30 MHz



The Agilent 11941A is a hand-held probe specially designed to measure magnetic field radiation from surface currents, slots, cable, and ICs for EMC diagnostic and troubleshooting measurements. Its unique design results in a high level of electric field rejection. This significantly reduces errors allowing calibrated and repeatable measurements. Each probe is calibrated and comes with a two-meter, RG-223 coaxial cable, an SMA (f) to Type-N (m) adapter, and an SMA (f) to BNC (m) adapter.

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• Measures magnetic field radiation from surface currents, slots, cables and ICs

High level of electric field rejection

Allows calibrated and repeatable measurements

#### Agilent / HP 11945A

#### Close-Field Probe Set, 9 kHz to 1 GHz

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The Agilent 11945A close-field probe set includes both the 11940A and 11941A probes to provide full coverage from 9 kHz to 1 GHz. This set provides a powerful measurement tool for electrical and mechanical designers who want to search for and eliminate sources of interference from their products early in the design process. Option E51 adds the Agilent 11909A preamplifier, a 36 inch (914 mm) Type-N cable and a carrying bag to store and protect the entire set of probes, preamplifier, and cables. FeaturesMeasurement tool for electrical and mechanical designers Searches for sources of interference from their products early in the design

#### **Network / Spectrum Analyser Accessories**

#### Agilent / HP 10833A

#### HP-IB Cable, 1 Metre



HP-IB Cable, 1 Metre



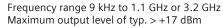
Also available in 1, 2, 3, 4, 5, 6, and 8 metre lengths.

## Signal Generators < 6GHz

#### ROHDE&SCHWARZ SMC100A

#### Signal Generator 9 kHz to 1.1 GHz or 3.2 GHz





- Optional high-stability reference oscillator
- Analog modulation modes (AM/FM/ $\phi$ M/pulse) integrated as standard
- Integrated overvoltage protection
- Wear-free electronic attenuator
- Minimized total cost of ownership



#### Software

#### Agilent / HP E7415A

#### E7415A EMI measurement software



The Agilent E7415A software package has everything you need to perform radiated and conducted emissions measurements and test your product. Simply select the regulation you would like to test and the software will automatically set the bandwidths, limit lines, and transducer factors required for you test. In addition, you can easily customize the setup libraries to meet your own specific needs. Once the tests are run you can use your PC to capture, analyze, compare your data as well as create and generate test reports.

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#### ROHDE&SCHWARZ EMC32

#### EMC Measurement Software



The EMC Measurement Software R&S EMC32 runs on 32-bit operating systems from Microsoft and offers a common user interface for electromagnetic interference (EMI) and electromagnetic susceptibility (EMS) measurements. The software is a modern and powerful tool for controlling and monitoring Rohde&Schwarz EMI test receivers and EMC test systems. It guarantees reliable collection, evaluation and documentation of measurement results.



Thanks to its comprehensive and extremely flexible configuration capabilities and its open software structure, R&S EMC32 can be used for all EMI and EMS measurements in line with commercial and military standards.

#### Spectrum Analysers ~ 1GHz - 3GHz

#### Aduantest R4131A

#### Spectrum Analyser, 10 kHz - 3.5 Ghz



- Excellent Skirt Characteristics: -80 dBc
- Built-In AFC Function (D Type) Save/Recall Functions, Including Waveforms
- Auto-Recall Function

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#### Agilent / HP E7402A

#### 30 Hz to 3.0 GHz EMC Standard Analyser



The EMC standard analyser offers you the best value with more productivity options built-in, and guarantees the fast delivery. Radiated emissions: When combined with a broadband antenna, the E7402A provides the capabilities to check for radiated emissions coming from your DUT. This is best done in an area that is free from reflective objects such as an open area or EMI chamber.

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Conducted emissions: Test for noise or interference placed on power or data lines by coupling the E7402A instrument to the power or data line through a line impedance stabilization network (LISN) device or absorbing clamp. Diagnostics and problem isolation: If you have an emissions problem, you can use the E7402A with an 11940A or 11941A close field probe to isolate and diagnose the source of the problem.

#### Spectrum Analysers ~ 3GHz - 13GHz

#### ROHDE&SCHWARZ FSCG

#### Spectrum Analyzer, 9 kHz to 6 GHz



The R&SfiFSC is a compact, cost-efficient solution that offers all essential features of a professional spectrum analyzer with Rohde & Schwarz quality. It covers a wide range of applications from simple development tasks to production, or can be used for training RF professionals. Moreover, it is ideal for applications in service or maintenance. The R&SfiFSC features a wealth of functions for simplifying and speeding up the development and testing of RF products. Its good RF characteristics and its high measurement accuracy help to ensure reliable and



reproducible measurement results.

Available in 3 and 6 GHz versions.

#### ROHDE&SCHWARZ FSER30

#### High Performance Spectrum Analyzer, 20 Hz – 3.5 GHz



The FSE spectrum analyzers from Rohde & Schwarz have been optimized both for general-purpose measurements and meeting the stringent requirements of testing advanced digital communication systems. High measurement speed, future-proof modular design and excellent characteristics put the analyzers right at the top of today's market - at an attractive price.



#### Spectrum Analysers > 13GHz

#### Agilent / HP E7405A

#### EMC Standard Analyser, 30 Hz to 26.5 GHz





Early evaluation of your design's EMI performance is essential for a successful product. The E7405A EMC standard analyser provides the capabilities you need in an analyser to make in-house EMI precompliance testing a reality. The EMC standard analyser offers you the best value with more productivity options built-in, and guarantees the fast delivery. Radiated emissions When combined with a broadband antenna, the E7405A provides the capabilities to check for radiated emissions coming from your DUT. This is best done in an area that is free from reflective objects such as an open area or EMI chamber. Conducted emissions Test for noise or interference placed on power or data lines by coupling the E7405A instrument to the power or data line through a line impedance stabilization network (LISN) device or absorbing clamp. Diagnostics and problem isolationIf you have an emissions problem, you can use the E7405A with an 11940A or 11941A close field probe to isolate and diagnose the source of the problem.

#### Spectrum Analysers 1GHz - 3GHz

## Instruments HMS3010

#### 3 GHz Spectrum Analyzer



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- Frequency range 100kHz...3GHz
- Amplitude measurement range -114...+20dBm DANL -135dBm with Preamp. Option HO3011
- Sweep time 20ms...1000s Resolution bandwidth 100Hz...1MHz in 1–3 steps, 200kHz (-3dB) additional 200Hz, 9kHz,
- 120kHz, 1MHz (-6dB)
- Spectral purity < -100dBc/Hz (@100kHz)
- Video bandwidth 10Hz...1MHz in 1–3 steps Tracking Generator -20dBm/0dBm
- Integrated AM and FM demodulator (int. speaker)
- Detectors: Auto-, min-, max-peak, sample, RMS, quasi-peak
- 8 Marker with delta marker, miscellaneous peak functions
- Crisp 16.5cm (6.5") TFT VGA display, DVI output • 3 x USB for mass-storage, printer and remote
- control, optional IEEE-488 (GPIB) or Ethernet/USB Interface

The 84110EM Pre-Production Evaluation System has

everything you need to perform radiated and

#### Agilent / HP 84115EM

#### 3GHz EMC Test System



The Agilent 84115EM has everything you need to perform radiated- and conducted-emissions measurements from 30Hz to 3GHz and test your product to the major commercial regulatory agencies' requirements. Limits for the FCC, ENs, ANZ, BSMI and VFG are available on disk to load directly into the EMC analyzer, or you can recall from the EMI measurement software included with the system. Develop your own limits and store them on a disk using the EMC analyzer's internal disk drive.





- Included as default options
- E7402A EMC standard analyzer, 30 Hz to 3.0 GHz
- 11945A Close field probe set
- 11968C Antenna tripod
- 11966L 10m type N cable
- E7415A EMI measurement software
- 11947A Transient Limiter with high-pass filter
- 11967D Line Impedance Stabilization Network, NEMA

#### Agilent / HP 8591EM

#### 9 kHz to 1.8 GHz EMC Analyser



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The Agilent 8591EM is a stand-alone, automated EMC precompliance analyser that reduces the time it takes to find, measure and document radiated and conducted EMI emissions. It belongs to the 8590EM series of EMC analysers, which do not require an external computer and automation software to perform automated EMC measurements. With an upper frequency of 1.8 GHz, the 8591EM can perform precompliance tests on products with clock frequencies up to 108 MHz. The 8591EM has two modes of operation: EMI analysis and spectrum analysis. With the press of a key, this analyser converts from EMC analyser to full-function spectrum analyser for use in a wide variety of non-EMC applications. Based on our highly versatile Agilent 8590 E-series spectrum analysers, this EMC analyser simplifies the EMC measurement process with fully integrated automation features.

#### **Test Systems**

#### Agilent / HP 84110EM

#### EMC Pre-Production Evaluation System 9 kHz-1.8 GHz

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	everything you need to perform radiated and
18	conducted emissions measurements on your
	product. The unit is based on the 8591EM which
	contains a quasi-peak adapter and dual I/O ports (HP-
	IB and parallel). The system also includes 11955A
	Biconical Antenna and 11956A Log Periodic
	Antenna, 11968C Tripod, 11966L 10-meter cable,
	11967D Line Impedance Stabilization Network,
	11947A Transient Limiter and 11945A Option E51
	Close Field Probe Kit. Also included is the 85878A
ned	Report Generator software, a 256 KB RAM card and a
	ROM card with regulatory limits and transducer

## Instruments EMC-PCS1

#### EMC Precompliance Set 1(1GHz)



The EMI pre compliance Set from HAMEG consist of all necessary instruments and software to measure typical EMI problems. It includes the modern spectrum analyzer HMS1000, the Line Impedance Stabilization Network HM6050-2 the HZ530 probe set and the HM EMC PreCom software for Windows.

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#### HMS1000:

- 1 GHz Spectrum Analyzer
- Frequency Range 100kHz...1GHz
- Sweep Time 20ms...1000s
- Resolution Bandwidth 1kHz...1MHz in 1–3 Steps, 200kHz (-3dB), additional 9kHz, 120kHz,
- 1MHz (-6dB) • Video Bandwidth 10Hz...1MHz in 1–3 Steps

#### HM6050-2:

Line Impedance Simulation Network

Measurement of Line-conducted Interference within the Range from 9kHz...30MHz (CISPR 16) Switchable Transient Limiter

· Artificial Hand Connector

#### HZ530:

 The HZ530 Probe Set consists of three active broadband probes for EMI diagnosis.

- H-field probe
- High-impedance probe
- E-field probe

#### HM PreCom EMC:

Spectrum Analyzer software HM PreCom EMC to make the EMI pre complicance measurements.( support Standard Interface HO720 RS232/USB and Windows 32 Bit)

## Instruments EMC-PCS3

#### EMC Precompliance Set 3 (3 GHz)



HMS3000: New Þ Refurbished Rental Steps, 200kHz (-3dB), additional 200Hz, 9kHz,

120kHz, 1MHz (-6dB) Video Bandwidth 10Hz...1MHz in 1-3 Steps

#### HM6050-2: Line Impedance Simulation Network

Frequency Range 100kHz...1GHz

Measurement of Line-conducted Interference within the Range from 9kHz...30MHz (CISPR 16) Switchable Transient Limiter

The EMI pre compliance Set from HAMEG consist of

all necessary instruments and software to measure

spectrum analyzer HMS3000, the Line Impedance

Resolution Bandwidth 100Hz...1MHz in 1–3

Stabilization Network HM6050-2, the HZ540 probe set and the HM EMC PreCom software for Windows.

typical EMI problems. It includes the modern

· Artificial Hand Connector

3 GHz Spectrum Analyzer

Sweep Time 20ms...1000s

#### HZ540:

The HZ540 Probe Set consists of three active broadband probes for EMI diagnosis.

- H-field probe
- High-impedance probe
- E-field probe

#### HM PreCom EMC:

Spectrum Analyzer software HM PreCom EMC to make the EMI pre complicance measurements.( support Standard Interface HO720 RS232/USB and Windows 32 Bit)

#### ROHDE&SCHWARZ TS9975

#### EMI Test System



R&S TS9975 EMI test system is used for all EMI measurements of conducted and radiated interference in accordance with different standards

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#### **Unipolar DC Power Supplies**

#### Kepco KLP 10-200-1200

#### DC Power supply, 0-10U, 0-200A, 1200W, 1U



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The KLP is an entirely new laboratory grade power supply in which the voltage/current limits are automatically recalculated, forming a constantpower hyperbolic-shaped boundary between the voltage and current modes. This curve, which replaces the single max-power operating point of conventional power supplies, provides the user with a greatly expanded choice of maximum power voltampere combinations as illustrated in the diagram by points A to B to C. The constant-power limit of the KLP is 1200 watts. In addition to the -1200 KLP Models which have built-in GPIB and RS 232 interfaces, Kepco has now introduced the -1.2K Models which have built-in GPIB and LAN interfaces. The LAN interface is an LXI-approved ethernet-based interface that allows multiple-user access via a standard web browser. Both -1200 and -1.2K KLP models employ Kepco's Hyperbolic Power TM technology for full 1200 watt power over the operating rangeSwitch mode topology for cool, efficient operation GPIB and isolated analog programming standard on all models Built-in RS232 at no extra cost (-1200 Models only) LAN (LXI) control optional (-1.2K Models), replaces standard RS 232 interface 1U panel height at 1200 watts

#### Kepco KLP 20-120-1200

#### DC Power supply, 0-20U, 0-120A, 1200W, 1U





The KLP is an entirely new laboratory grade power supply in which the voltage/current limits are automatically recalculated, forming a constantpower hyperbolic-shaped boundary between the voltage and current modes. This curve, which replaces the single max-power operating point of conventional power supplies, provides the user with a greatly expanded choice of maximum power voltampere combinations as illustrated in the diagram by points A to B to C. The constant-power limit of the KLP is 1200 watts. In addition to the -1200 KLP Models which have built-in GPIB and RS 232 interfaces, Kepco has now introduced the -1.2K Models which have built-in GPIB and LAN interfaces. The LAN interface is an LXI-approved ethernet-based interface that allows multiple-user access via a standard web browser. Both -1200 and -1.2K KLP models employ Kepco's Hyperbolic Power ™ technology for full 1200 watt power over the operating rangeSwitch mode topology for cool, efficient operation GPIB and isolated analog programming standard on all models Built-in RS232 at no extra cost (-1200 Models only) LAN (LXI) control optional (-1.2K Models), replaces standard RS 232 interface 1U panel height at 1200 watts

#### Kepco KLP 36-60-1200

#### DC Power supply, 0–36U, 0–60A, 1200W, 1U





The KLP is an entirely new laboratory grade power supply in which the voltage/current limits are automatically recalculated, forming a constantpower hyperbolic-shaped boundary between the voltage and current modes. This curve, which replaces the single max-power operating point of conventional power supplies, provides the user with a greatly expanded choice of maximum power voltampere combinations as illustrated in the diagram by points A to B to C. The constant-power limit of the KLP is 1200 watts. In addition to the -1200 KLP Models which have built-in GPIB and RS 232 interfaces, Kepco has now introduced the -1.2K Models which have built-in GPIB and LAN interfaces. The LAN interface is an LXI-approved ethernet-based interface that allows multiple-user access via a standard web browser. Both -1200 and -1.2K KLP models employ Kepco's Hyperbolic Power TM technology for full 1200 watt power over the operating rangeSwitch mode topology for cool, efficient operation GPIB and isolated analog programming standard on all models Built-in RS232 at no extra cost (-1200 Models only) LAN (LXI) control optional (-1.2K Models), replaces standard RS 232 interface 1U panel height at 1200 watts

# Product Offering

#### Analysers

Audio Analysers EMC Test Equipment Impedance Analysers Network Analysers < 10GHz Network Analysers > 10GHz Spectrum Analysers < 1GHz Spectrum Analysers > 13GHz Spectrum Analysers 1GHz - 3GHz Spectrum Analysers 3GHz - 13GHz Vector Signal Analysers Waveform & Distortion Analysers

#### **Communications Test**

Bit Error Rate Test Sets (BER, BERT, BERTS) Cable Locators Circuit Transmission Test Sets Fibre Channel Protocol Analysers **Fibre Switches Fusion Splicers ISDN Test Sets** LAN Cable Testers (CAT 5, CAT 6) Multiple Application Platform **Optical Light Sources Optical Loss Kits Optical Power Meters Optical Spectrum Analysers** OTDR Protocol, LAN & WAN Analyser Test Sets Selective Level Meters SONET / SDH Test Sets T-Carrier / PDH Test Sets **USB** Protocol Analysers

#### Counters

**Microwave Counters** Modulation Domain Analysers Universal and Multi-function Counters

#### **Electrical & Industrial Test**

Battery Test Equipment Cable Locator & Fault Finder Circuit Breaker Test Sets Environmental Test Chamber Ground-Resistance Testers High-Potential Testers (Hipot) Infrared Imagers Insulation-Resistance Testers Low-Resistance Ohmmeters **Oil-Test Equipment** Power Factor Test Sets Power Quality / Power Demand Analysers **Power Recorders** Protective Relay Test Sets Transformer Testers

#### General Purpose Test

Detectors, Directional Couplers, Power Spli Fixed Attenuators, Variable Attenuators General Purpose Amplifiers **Microwave Amplifiers** VXI Test Equipment

#### Generators

Data Generators **Digital Vector Generators** Function Generators & Arbitrary Waveform Pulse Generators Signal Generators < 6GHz Signal Generators > 6GHz Sweep Generators

#### Logic Analysers

Digital Oscilloscopes < 2 GHz Logic Analysers- Portable / Stand Alone

#### Meters

**Digital Multimeters** LCR Meters & Resistance Meters Modulation Meters Noise Figure Meters & Noise Sources Power Meters & Power Sensors Sound Level Meters

#### Oscilloscopes

Analog Oscilloscopes Digital Oscilloscopes < 2 GHz Digital Oscilloscopes > 6 GHz Digital Oscilloscopes 2GHz - 6GHz Probes Sampling Scopes & Plug-Ins

#### **Power Sources**

AC Power Supplies & Amplifiers AC/DC Calibrators **Battery Chargers Bipolar Power supplies** DC Power Supplies & Loads

#### Recorders

Data Acquisition Systems Instrumentation Tape Recorders Power Recorders Strip Chart Recorders

#### **Television Test**

Cable Plant Sweep Equipment Measurement Sets Picture Quality Analysers Video & Audio Generators & Analysers Waveform Monitors

#### Wireless Test

Drive Test Equipment SiteMasters / Antennas / Base Station Test Wireless Appliance (Handset) Test









## HMO3524 Oscilloscope HAEFELY

HAMEG

**ECOMPACT 4 Immunity Tester** 

ROHDE & SCHWARZ FSH3 Spectrum Analyser

JDSU 4000 OTDR