

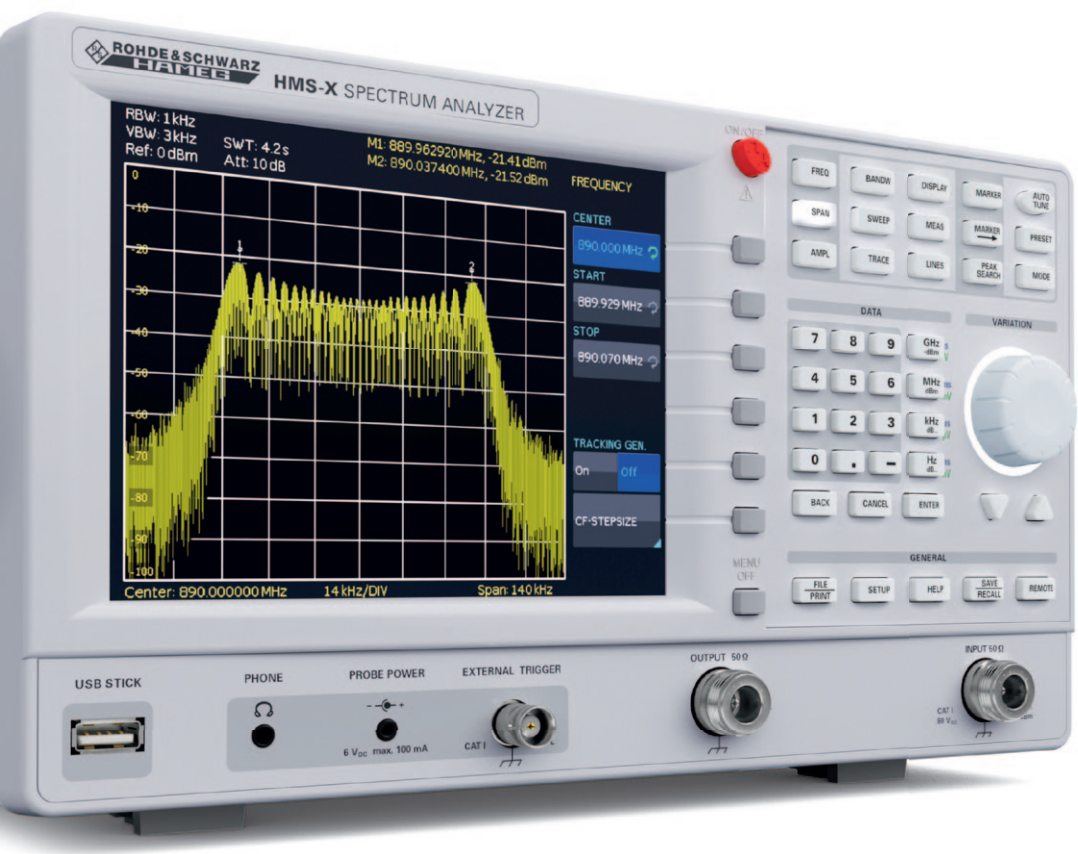
Spectrum Analyzer

1.6 GHz | 3 GHz
HMS-X

HAMEG®
Instruments
A Rohde & Schwarz Company



1 Basic Unit + 3 Options



Key facts

- Frequency range: 100 kHz to 1.6 GHz/3 GHz*¹
- Spectral purity greater than -100 dBc/Hz (at 100 kHz)
- SWEEP from 20 ms to 1000 s
- Detectors: auto-, min-/max.-peak, sample, RMS, average, quasi-peak*²
- Miscellaneous marker/ Δ marker and peak functions
- Tracking generator*³
 - Frequency range: 5 MHz to 1.6 GHz/3 GHz*¹
 - Output level: -20 dBm to 0 dBm
- Directly export data to USB flash drive, RS-232/USB dual interface for remote control
- Fanless design and fast boot time

*¹ with HMS-3G (HV212) option

*² with HMS-EMC (HV213) option

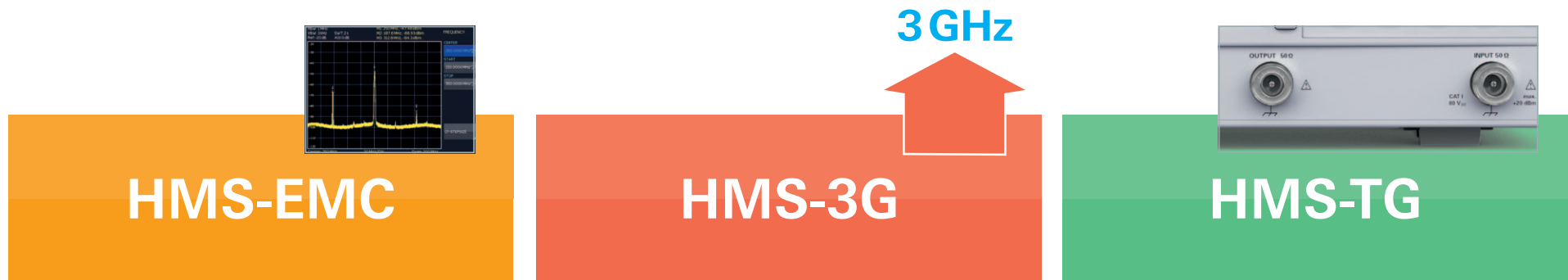
*³ with HMS-TG (HV211) option



| Model overview: | HMS-X with EMC option | HMS-X basic unit |
|-----------------------------|---|----------------------------------|
| Amplitude measurement range | -114 dBm to +20 dBm | -104 dBm to +20 dBm |
| DANL | typ. -135 dBm | typ. -104 dBm |
| Resolution bandwidth | 100 Hz to 1 MHz, 200 kHz (-3 dB), 200 Hz, 9 kHz, 120 kHz, 1 MHz (-6 dB) | 10 kHz to 1 MHz, 200 kHz (-3 dB) |
| Video bandwidth | 10 Hz to 1 MHz | 1 kHz to 1 MHz |

Your HMS-X Spectrum Analyzer

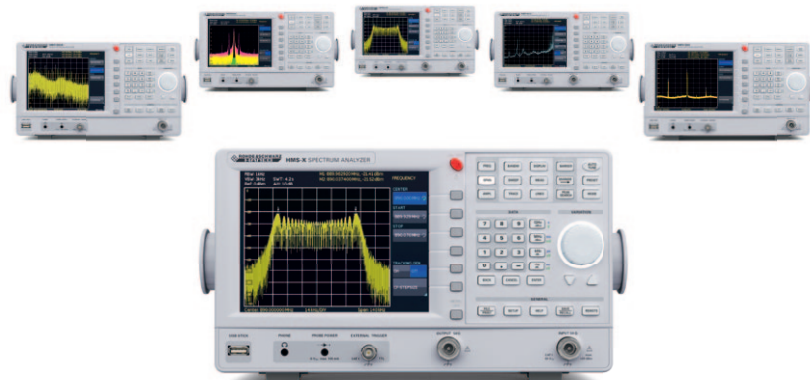
You can create your HMS spectrum analyzer by combining a basic unit with any of three available options. In case of growing requirements, upgrade vouchers allow you to upgrade your instruments with all options at any point in time.



■ This option activates all the functions that are required for EMC precompliance measurements. The preamplifier option has been integrated into the new HMS-EMC option.

■ The frequency range is increased from 1.6GHz to 3GHz with this option.

■ This option activates the tracking generator in the instrument.



We have used the first-class hardware from our largest HMS spectrum analyzer and developed a new and flexible instrument concept. It can be individually configured, combined and upgraded for your applications.

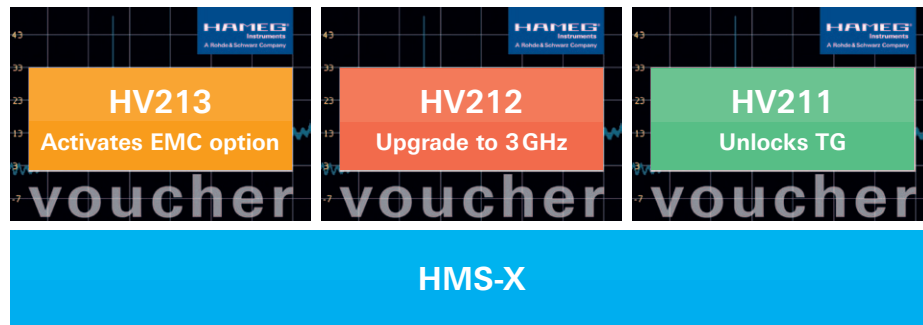
| HMS previous models | HMS-X |
|---------------------|------------------------|
| HMS1000E | HMS-X |
| HMS1000 | HMS-X + EMC* |
| HMS1010 | HMS-X + EMC* + TG |
| HMS3000 | HMS-X + EMC* + 3G |
| HMS3010 | HMS-X + EMC* + 3G + TG |

* The preamplifier function is an integral part of the HMS-EMC option

Upgrade at any time

You can easily upgrade all three available options at any later point in time with option upgrade vouchers available at your dealer.

The voucher number and the serial number of your HMS-X instrument enable you to generate the respective licence key directly on our web page <http://voucher.hameg.com>.



| HMS-X options | Option code* ¹ | Voucher code* ² |
|------------------------------------|---------------------------|----------------------------|
| EMC option incl. preamplifier | HMS-EMC | HV213 |
| Bandwidth upgrade to 3 GHz | HMS-3G | HV212 |
| Unlock built-in tracking generator | HMS-TG | HV211 |

*¹ available only with purchase of HMS-X basic unit

*² activate HMS-X options at any time after purchase of HMS-X basic unit

EMC Precompliance

Not only do unexpected results in test labs during EMC compliance measurements translate into extra costs, quite often they also cause a substantial delay for your project. HAMEG offers effective and cost-efficient tools for EMC precompliance measurements which allow you to successfully prevent possible surprises before the actual onset of a problem.

Our HMExplorer software for your EMC measurements is included with every HMS-X spectrum analyzer with activated EMC option.

EMC precompliance sets

HAMEG offers product sets for your EMC precompliance measurements, which include all necessary instruments to analyse typical EMC problems. Depending on your requirements, you can choose between a 1 GHz and a 3 GHz combination.

1 GHz HMS-SET1

- Spectrum analyzer HMS-X incl. HMS-EMC option
- Probe set HZ530
- Line impedance stabilization network (LISN) HM6050-2
- HMExplorer software

HMS-X

HMS-EMC

3GHz HMS-SET2

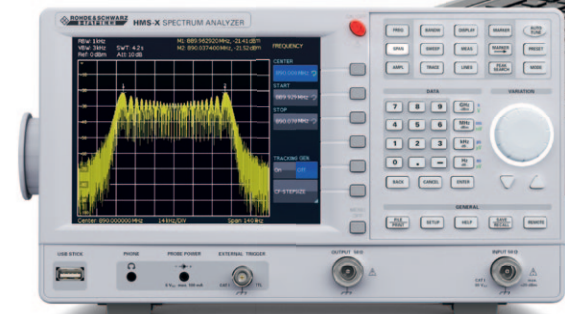
Differences to SET1:

- HMS-3G option additional
- 3GHz probe set HZ540 instead of HZ530

HMS-X

HMS-EMC

HMS-3G



Spectrum analyzer HMS-X



HMExplorer software for EMC precompliance measurements



Line impedance stabilization network for line conducted measurements LISN HM6050-2



1 GHz probe set HZ530



3 GHz probe set HZ540 (fig. similar)

Recommended Accessories

3GHz VSWR bridge HZ547

This unit is used to measure the voltage standing wave ratio (VSWR) and reflection coefficient of a device under test with an impedance of 50Ω. Typical test devices include attenuators, terminations, frequency switches, amplifiers, cables and mixers.



3GHz VSWR bridge for HMS-X, option HMS-TG required, option HMS-3G recommended

Near-field probe set 3GHz HZ540 | HZ550

Near field probe set for comparative measurements with built-in preamplifier covering frequency ranges from 1 MHz to 3GHz, designed for the 50Ω N-connectors of the HMS-X:

- E-field probe
- H-field probe
- High impedance probe
- μH-field probe (HZ550)
- Radiation probe (HZ550)

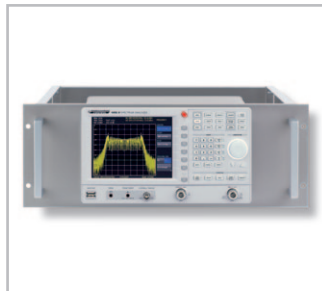
Alternative version HZ540L | HZ550L

Same specification as HZ540 | HZ550, but with low capacitance probe instead of high impedance probe



HZ46

4RU 19" rackmount kit



HZ99

Carrying case for protection and transport



HO730

Ethernet/USB dual interface card



HO740

Interface IEEE-488 (GPIB), galvanically isolated



HZ530

Near-field probe set 1GHz



Spectrum analyzer HMS-X

Firmware: ≥ 2.022

| Frequency | |
|---|---|
| Frequency range: | 100 kHz to 1.6 GHz |
| | 100 kHz to 3 GHz ¹ |
| Temperature stability: | ±2 ppm (0 to 30 °C) |
| Aging: | ±1 ppm/year |
| Frequency counter ² : | |
| Resolution | 1 Hz |
| Accuracy | ±(Frequency x tolerance of reference) |
| Span setting range: | 0 Hz (zero span) and 100 Hz to 1.6 GHz |
| Basic unit | 0 Hz (zero span) and 100 Hz to 3 GHz ¹ |
| Spectral purity, SSB phase noise: | |
| 30 kHz from carrier (500 MHz, +20 to 30 °C) | <-85 dBc/Hz ² |
| 100 kHz from carrier (500 MHz, +20 to 30 °C) | <-100 dBc/Hz |
| 1 MHz from carrier (500 MHz, +20 to 30 °C) | <-120 dBc/Hz |
| Sweep time: | |
| Span = 0 Hz | 2 ms to 100 s |
| Span > 0 Hz | 20 ms to 1000 s, min. 20 ms/600 MHz |
| Resolution bandwidths (-3 dB): | 10 kHz to 1 MHz in 1–3 steps, 200 kHz 100 Hz to 1 MHz in 1–3 steps, 200 kHz ² |
| Tolerance | |
| ≤300 kHz | ±5 % typ. |
| 1 MHz | ±10 % typ. |
| Resolution bandwidths (-6 dB): | 200 Hz, 9 kHz, 120 kHz, 1 MHz ² |
| Video bandwidths: | 1 kHz to 1 MHz in 1–3 steps 10 Hz to 1 MHz in 1–3 steps ² |

| Amplitude | |
|--|---|
| Display range: | Average noise level displayed up to +20 dBm |
| Amplitude measurement range: | Typ. -104 to +20 dBm Typ. -114 to +20 dBm ² |
| Max. permissible DC at HF input: | 80 V |
| Max. power at HF input: | 20 dBm, 30 dBm for max. 3 min. |
| Intermodulation free range: | |
| TOI products, 2 x -20 dBm (-10 dBm ref. level) | 66 dB typ. (typ. +13 dBm third-order intercept) |
| (at distance between signals ≤2 MHz) | 60 dB typ. (+10 dBm TOI) |
| (at distance between signals >2 MHz) | 66 dB typ. (typ. +13 dBm TOI) |

| | |
|--|--|
| DANL (Displayed average noise level): | |
| (RBW 10 kHz, VBW 1 kHz, ref. level ≤-30 dBm 10 MHz to 1.6 GHz/3 GHz ¹) | -95 dBm, typ. -104 dBm |
| (RBW 100 Hz, VBW 10 Hz, Ref. Level ≤-30 dBm 10 MHz to 1.6 GHz/3 GHz ¹) | -115 dBm ² , typ. -135 dBm ² |
| Preamp. deactivated | typ. -124 dBm ² |
| Inherent spurious: | |
| (ref. level ≤-20 dBm, f >30 MHz, RBW ≤100 kHz) | <-80 dBm |
| Input related spurious: | |
| (Mixer level ≤-40 dBm, carrier offset >1 MHz) | -70 dBc typ. |
| (2 to 3 GHz) | -55 dBc ¹ |
| 2nd harmonic receive frequency: | |
| (mixer level -40 dBm) | -60 dBc typ. |
| Level display: | |
| Reference level | -80 to +20 dBm in 1 dB steps |
| Display range | 100 dB, 50 dB, 20 dB, 10 dB linear ² |
| Logarithmic display scaling | dBm, dBμV, dBmV |
| Linear display scaling | Percentage of reference level ² |
| Measured curves: | 1 curve and 1 memory curve |
| Trace mathematics: | A-B (curve-stored curve), B-A |
| Detectors: | Auto-, Min-, Max-Peak, Sample, RMS, Average Quasi-Peak ² |
| Failure of level display: | <1.5 dB, typ. 0.5 dB |
| (ref. level -50 dBm, 20 to 30 °C) | |

| Marker/Deltamarker | |
|--------------------|--|
| Number of marker: | 8 |
| Marker functions: | Peak, next peak, minimum, center = marker, frequency, reference level = marker level, all marker on peak |
| Marker displays: | Normal (level, log.), delta marker, noise marker Normal (lin.), (frequency) counter ² |

| Inputs/Outputs | |
|--|-------------------------------------|
| HF Input: | N socket |
| Input impedance | 50 Ω |
| VSWR (10 MHz to 1.6 GHz/3 GHz ¹) | <1.5 typ. |
| Output tracking generator ³ : | N socket |
| Output impedance | 50 Ω |
| Frequency range | 5 MHz to 1.6 GHz/3 GHz ¹ |
| Output level | -20 to 0 dBm, in 1 dB steps |

| | |
|---------------------------------|--------------------------------------|
| Trigger input: | BNC female |
| Trigger voltage | TTL |
| Ext. reference input/output: | BNC females |
| Reference frequency | 10 MHz |
| Essential level (50 Ω) | 10 dBm |
| Supply output for field probes: | 6 Vdc, max. 100 mA (2.5 mm DIN jack) |
| Audio output (Phone): | 3.5 mm DIN jack |
| Demodulation | AM and FM (internal speaker) |

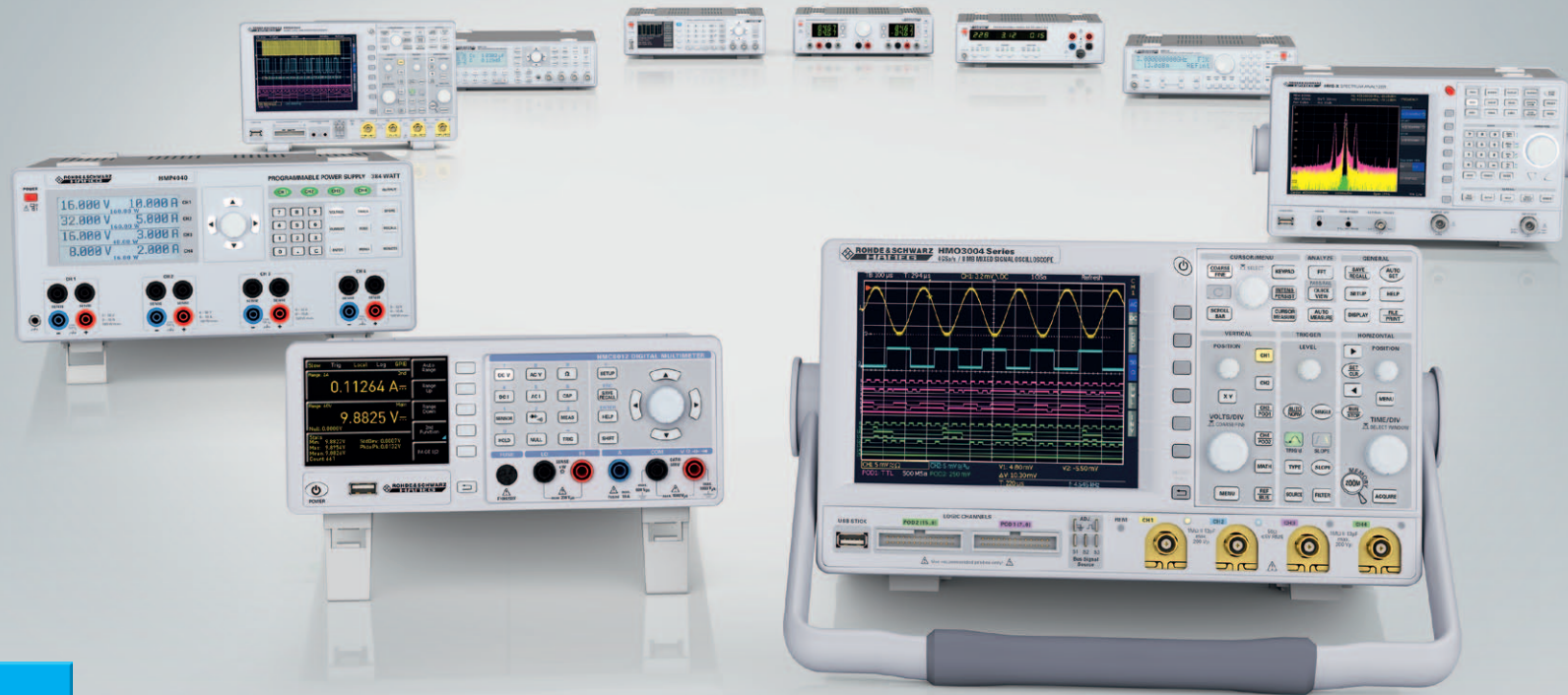
| Miscellaneous | |
|--|---|
| Display: | 16.5 cm (6.5") TFT Color VGA Display |
| Save/Recall memory | 10 complete device settings |
| Trigger | Free run, Single Trigger, external Trigger Video Trigger ² |
| Interfaces: | Dual-Interface USB/RS-232 (HO720), USB-Stick (frontside), USB-Printer (rear side), DVI-D for ext. monitor |
| Power supply: | 105/253 V, 50 to 60 Hz, CAT II |
| Power consumption: | Max. 40 W at 230 V, 50 Hz |
| Protection class: | Safety class I (EN61010-1) |
| Operating temperature: | +5 to +40 °C |
| Storage temperature: | -20 to +70 °C |
| Rel. humidity: | 5 to 80 % (non condensing) |
| Dimensions (W x H x D): | 285 x 175 x 220 mm |
| Weight: | 3.6 kg |
| ¹ with activated HMS-3G option | |
| ² with activated HMS-EMC option | |
| ³ with activated HMS-TG option | |

Accessories supplied:

Line cord, printed operating manual, CD, software

Recommended accessories:

| | |
|-------------|--|
| HO730 | Dual-interface ethernet/USB |
| HO740 | Interface IEEE-488 (GPIB), galvanically isolated |
| HZ530 | Near-field probe set 1 GHz for EMI diagnostics |
| HZ540/550 | Near-field probe set 3 GHz for EMI diagnostics |
| HZ540L/550L | Near-field probe set 3 GHz for EMI diagnostics |
| HZ547 | 3 GHz VSWR bridge for HMS-X incl. HMS-TG option |
| HZ13 | Interface cable (USB) 1.8 m |
| HZ14 | Interface cable (serial) 1:1 |
| HZ21 | Adapter N (plug) - BNC (socket) |
| HZ46 | 4RU 19" rackmount kit |
| HZ72 | GPIB-cable 2 m |
| HZ99 | Carrying case for protection and transport |
| HZ520 | Plug-in antenna with BNC connection |
| HZ525 | 50 Ω-termination, N plug |
| HZ560 | Transient limiter |
| HZ575 | 75/50 Ω converter |



value-instruments.com

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