

Spectrum Analyzer

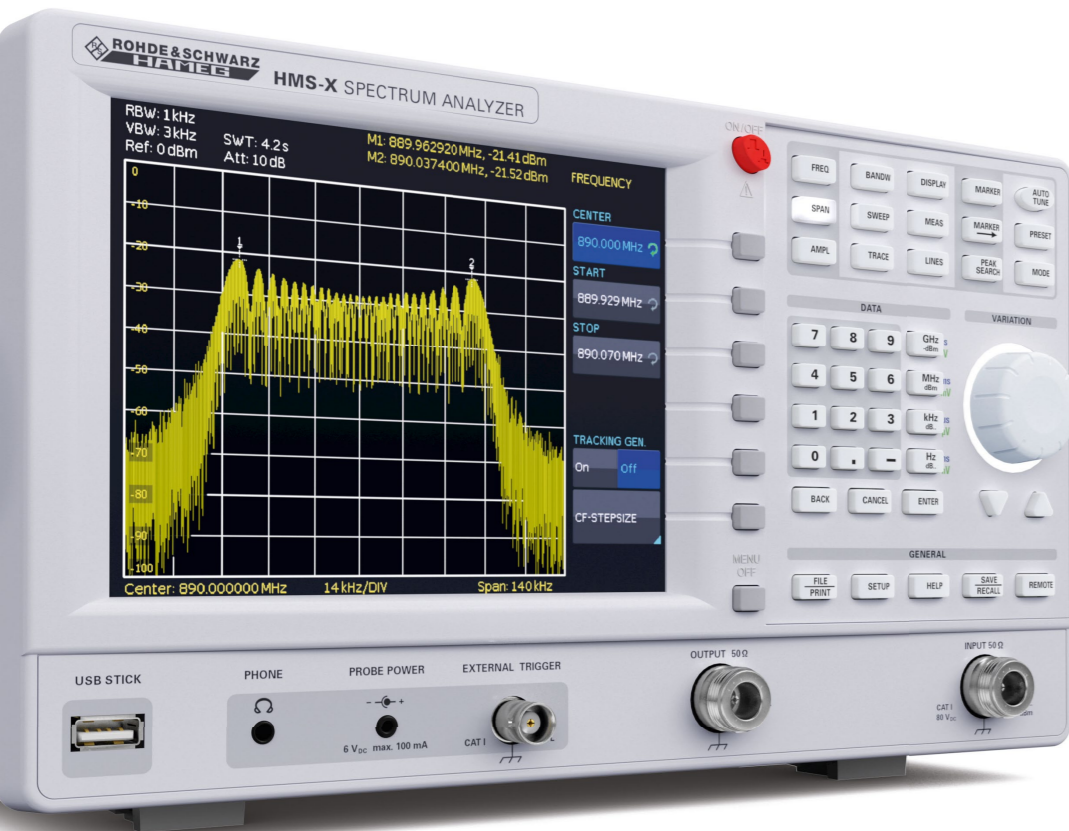
1.6 GHz | 3 GHz

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/Δmarker 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

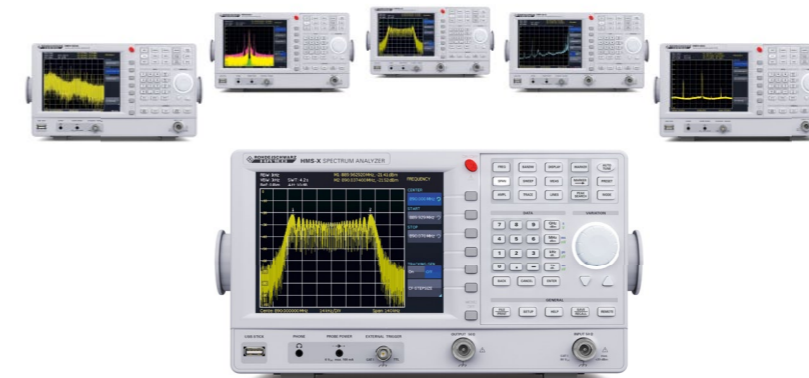
You can create your HMS spectrum analyzer by combining a basic unit with any of three available options. In case of growing requirements, upgrade vouchers allow you to upgrade your instruments with all options at any point in time.



■ 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 1.6 GHz to 3 GHz 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.

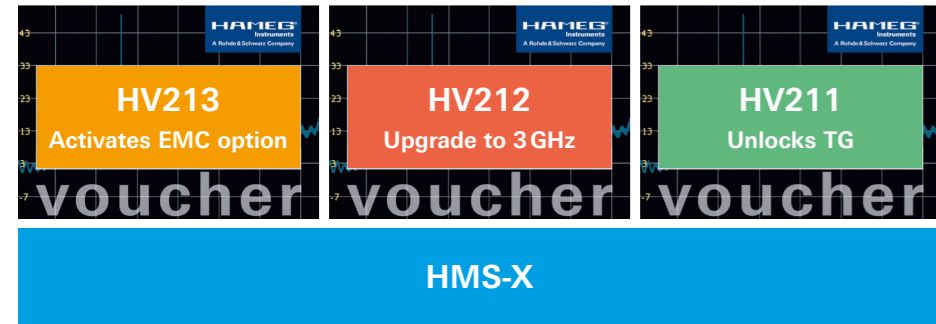
HMS previous models	HMS-X
HMS1000E	HMS-X
HMS1000	HMS-X + EMC*
HMS1010	HMS-X + EMC* + TG
HMS3000	HMS-X + EMC* + 3G
HMS3010	HMS-X + EMC* + 3G + TG

* 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 HME Explorer 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 EMC-SET1

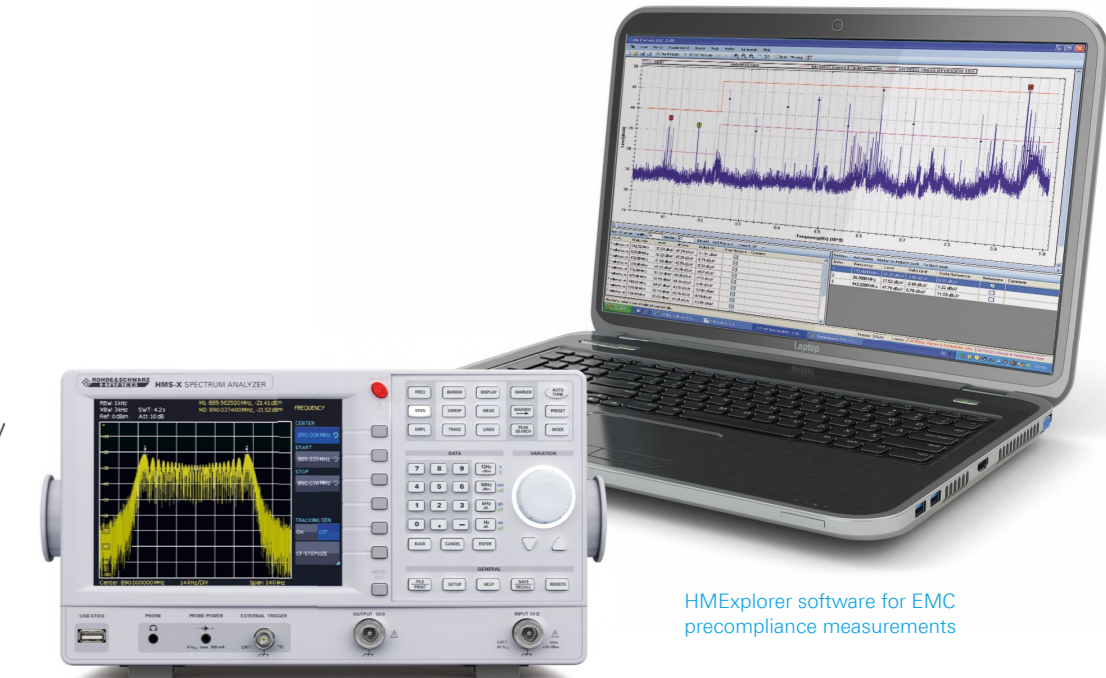
- ▮ Spectrum analyzer HMS-X incl. HMS-EMC option
- ▮ Probe set HZ530
- ▮ Line impedance stabilization network (LISN) HM6050-2
- ▮ HME Explorer software



3 GHz EMC-SET2

Differences to SET1:

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



Spectrum analyzer HMS-X

HME Explorer software for EMC precompliance measurements



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



1 GHz probe set HZ530

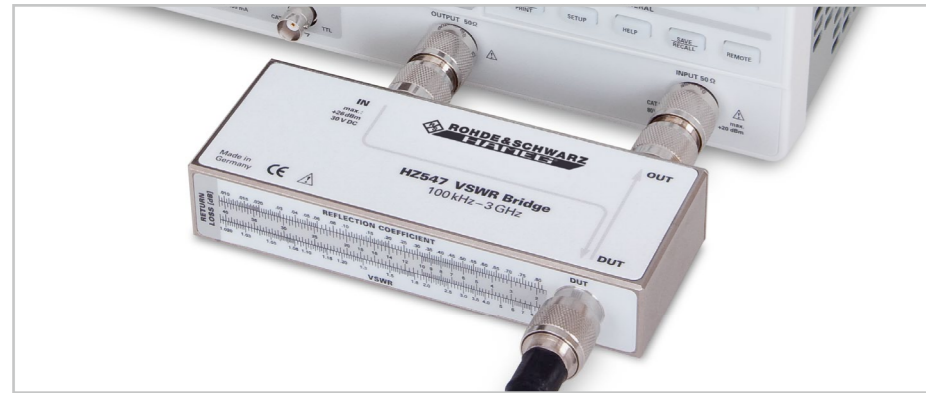


3 GHz probe set HZ540 (fig. similar)

Recommended Accessories

3 GHz 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 3 GHz 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)

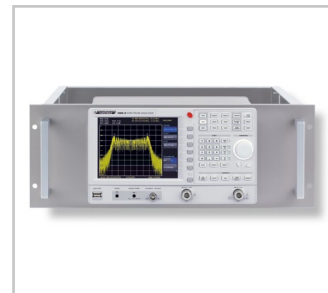


Alternative version HZ540L | HZ550L

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

HZ46

4 RU 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 1 GHz



Spectrum analyzer HMS-X Firmware: ≥ 2.022

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

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

DANL (Displayed average noise level):	
(RBW 10kHz, VBW 1kHz, ref. level ≤-30dBm 10MHz to 1.6GHz/3GHz ¹)	-95dBm, typ. -104dBm
(RBW 100Hz, VBW 10Hz, Ref. Level ≤-30dBm 10MHz to 1.6GHz/3GHz ¹)	-115dBm ² , typ. -135dBm ²
Preamp. deactivated	typ. -124dBm ²
Inherent spurious:	
(ref. level ≤-20dBm, f >30MHz, RBW ≤100kHz)	<-80dBm
Input related spurious:	
(Mixer level ≤-40dBm, carrier offset >1MHz)	-70dBc typ.
(2 to 3GHz)	-55dBc ¹
2nd harmonic receive frequency:	
(mixer level -40dBm)	-60dBc typ.
Level display:	
Reference level	-80 to +20dBm in 1dB steps
Display range	100dB, 50dB, 20dB, 10dB
	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:	<1.5dB, typ. 0.5dB
(ref. level -50dBm, 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	50Ω
VSWR (10MHz to 1.6GHz/3GHz ¹)	<1.5 typ.
Output tracking generator ³ :	N socket
Output impedance	50Ω
Frequency range	5MHz to 1.6GHz/3GHz ¹
Output level	-20 to 0dBm, in 1dB steps

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

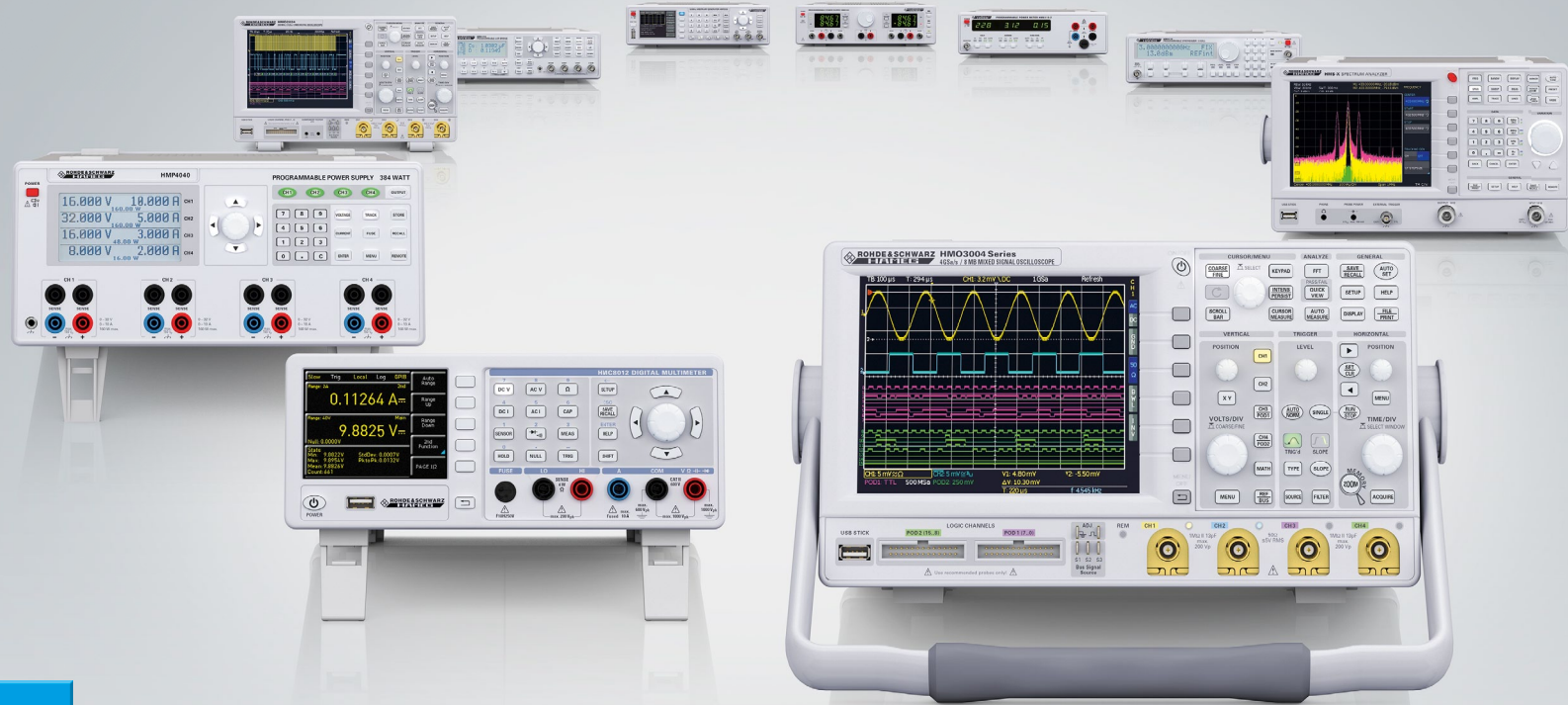
Miscellaneous	
Display:	16.5cm (6.5") TFT Color VGA Display
Save/Recall memory	10 complete device settings
Trigger	Free run, Single Trigger, external Trigger Video Trigger ²
Interfaces:	
	Dual-Interface USB/RS-232 (HO720), USB-Stick (frontside), USB-Printer (rear side), DVI-D for ext. monitor
Power supply:	105/253V, 50 to 60Hz, CAT II
Power consumption:	Max. 40W at 230V, 50Hz
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:	3.6kg

¹ with activated HMS-3G option
² with activated HMS-EMC option
³ with activated HMS-TG option

Accessories included:
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	3GHz VSWR bridge for HMS-X incl. HMS-TG option
HZ13	Interface cable (USB) 1.8m
HZ14	Interface cable (serial) 1:1
HZ21	Adapter N (plug) - BNC (socket)
HZ46	4RU 19" rackmount kit
HZ72	GPIB-cable 2m
HZ99	Carrying case for protection and transport
HZ520	Plug-in antenna with BNC connection
HZ525	50Ω-termination, N plug
HZ560	Transient limiter
HZ575	75/50Ω converter



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