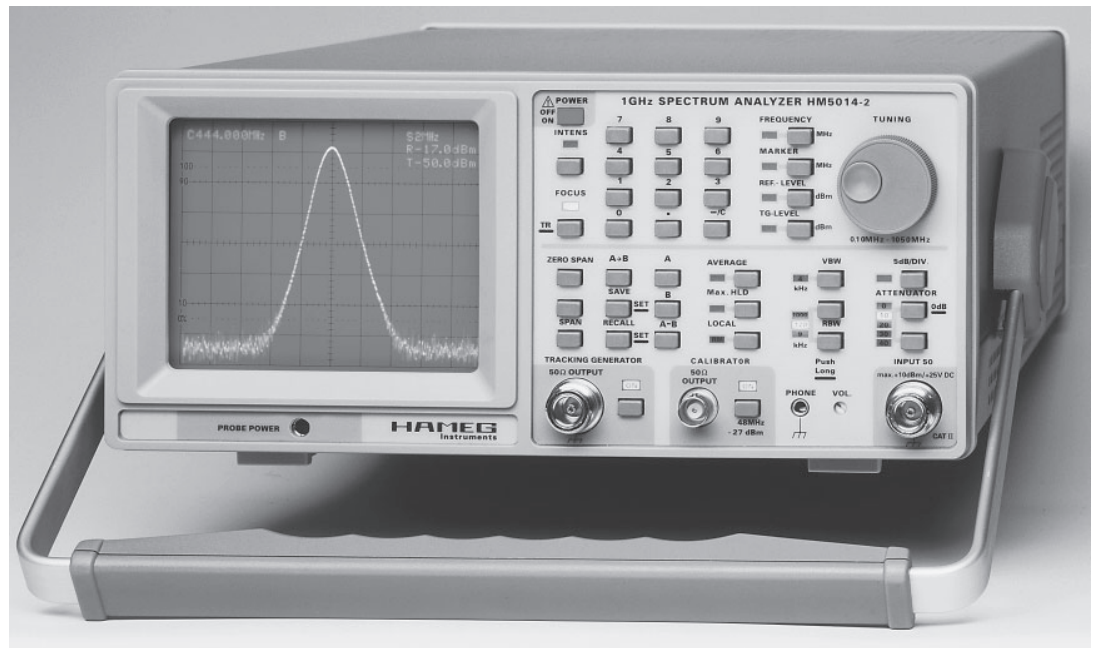


# Spectrum Analyzer HM 5012-2 and HM 5014-2



- Frequency Range from 150 kHz to 1050 MHz
- Amplitude Range from -100 dBm to +10 dBm, 80 dB On-Screen
- Phase-Locked Direct Digital Synthesis (DDS)
- Keypad Entry for Precise and Repeatable Frequency Setting
- TCXO High Stability Reference Oscillator
- Resolution Bandwidth 9 kHz, 120 kHz, 1 MHz
- Remote controlled via RS-232 Interface

## Technical Characteristics

The usable frequency range of the new spectrum analyzer **HM 5012-2** and **HM 5014-2** is from **150 kHz to above 1 GHz**. The available resolution bandwidths are **9 kHz, 120 kHz** and **1 MHz**. The high stability frequency generation is based on a phase-locked direct digital synthesizer (DDS) with a **TCXO-base oscillator**, resulting in improved accuracy, stability and repeatability. Frequency values are set via a new integrated front panel keypad or by means of a rotary dial. All other functions are set in the same manner.

The frequency spectra is digitized and stored in **real time** and displayed with a resolution of **2000** sample points over the entire screen. The dynamic range of the analyzer display is 80dB max. The screen will also display all selected frequency settings and the marker results, other parameters are indicated with LEDs. Other unique features of this spectrum analyzer are the extensive **EMC** measurement capabilities. EMI pre-compliance measurement including average, max. hold and quasi-peak detection is an important application use.

For the precise evaluation of the signals, a marker is provided that will give an **on screen readout** for amplitude and frequency. An additional advantage is that newly acquired signals can be compared with the content of the **stored reference**. Complicated and frequently used set ups can be saved by use of the **Save/Recall** function.

## HM 5014-2 with Tracking-Generator

The Model **HM 5014-2** includes a **tracking generator** that can be used to evaluate the frequency characteristics of 2 port devices, such as band pass filters. Frequency Range is from **150 kHz** to

**1050 MHz**. Output level is selectable in **0.2 dB** steps (keypad or rotary dial) from **-50 dBm** to **+1 dBm**.

## The Interface

The Analyzers are supplied with an **RS-232** interface for PC communication and printout via PC. The optional HZ70 **opto-isolator** with fiber optic cable is available to isolate the spectrum analyzer from interference effects and ground loops.

## The Software AS100E

The new HAMEG Spectrum Analyzer PC software provides an **easy to use communication link** between a PC and the instrument via RS-232 interface. The software is compatible with **Windows® 9x, ME, NT4.0, 2000** and **XP**. Analysis and documentation on a PC are easy tasks.

## The software base version includes:

- Numeric indication of measurement values
- Average and peak values with corresponding cursor
- Storage of reference spectra for comparison
- Freely definable limit lines
- Indication of above-limit signals
- Data storage in MS-Access
- B/W or color printouts of spectra and comments for all printers supported by Windows®
- Automatic EMC measurements
- Correction factors for antennas and amplifiers

## EMC Software extension:

Evaluation of emissions from other devices/sources and quasi-peak detection. This feature is available against a registration fee.

## Specifications HM 5012-2 / HM 5014-2 (Reference Temperature 23°C ±2°C)

Frequency	
<b>Frequency Range:</b>	0.15 MHz to 1050MHz
<b>Stability:</b>	±5ppm
<b>Ageing:</b>	±1ppm/year
<b>Display Resolution (Readout):</b>	1kHz (6½ -Digit)
<b>Center Frequency Range:</b>	0 MHz - 1050 MHz
<b>Frequency Generation:</b>	TCXO with DDS
<b>Span:</b>	Zero span and 1MHz to 1000MHz in steps of 1-2-5
<b>Marker: Resolution (Frequency)</b>	1KHz, 6½ -Digit
<b>Resolution (Amplitude)</b>	0.4dB, 3½ -Digit
<b>Resolution Bandwidth, RBW (6dB):</b>	9kHz, 120kHz and 1MHz
<b>Video Bandwidth, VBW:</b>	4kHz
<b>Sweep time (autom. Selection):</b>	40ms, 320ms, 1s*

Amplitude (Marker related) 150kHz - 1GHz	
<b>Measurement Range:</b>	-100dBm to +10dBm
<b>Scaling:</b>	10dB/div., 5dB/div.
<b>Display Range:</b>	80dB (@ 10dB/div.) 40dB (@ 5dB/div.)
<b>Frequency response</b> (@10dB Attn., Zero Span, RBW 1MHz, -20dBm Signal):	±3dB
<b>Display CRT, Units:</b>	8 x10, logarithmic, dBm
<b>Input Attenuator Range:</b>	0 - 40dB, 10dB steps
<b>Attenuator Accuracy rel. to 10dB:</b>	±2dB
<b>Maximum Safe Input Level (continuous):</b>	
Attenuator setting 40dB:	+20dBm (0,1W)
Attenuator setting 0dB:	+10dBm
DC max:	±25 V
<b>Reference Level Variation:</b>	-99.6dBm to+10dBm
<b>Reference Level Accuracy</b> (rel. to 500MHz, 10dB Attn., Zero Span, RBW 1MHz):	±1dB
<b>Min. Average Noise Level:</b>	-100dBm (9kHz RBW)
<b>Intermodulation (3rd Order):</b> (2 Signals, -27 dBm each, Frequency distance>3MHz)	better than 75dBc
<b>Harmonic Distortion</b> (2nd at input level -27dBm, ATTN 0dB, Frequency distance>3MHz)	better than 75dBc
<b>Resolution Bandwidth Amplitude Error</b> (rel. to RBW 1MHz, Zero Span):	±1dB
<b>Digitising Error:</b>	±1 Digit (0.4dB) @ 10dB/div. (Average mode)

Inputs / Outputs	
<b>Signal Input:</b>	N-Connector
<b>Input Impedance:</b>	50Ω
<b>Tracking Generator Out (HM5014)</b>	N-Connector
<b>Output Impedance:</b>	50Ω
<b>Test Signal Output</b>	BNC (F)
<b>Output Impedance:</b>	50Ω
<b>Frequency:</b>	48MHz
<b>Level:</b>	-30dBm ±2dB
<b>Probe Power:</b>	6V (Near field probes)
<b>VSWR:</b>	ATTN ≥10dB typ. 1.5 : 1
<b>Audio Output (Phone):</b>	3.5 mm Ø jack
<b>RS-232 Interface:</b>	9 pol. / Sub-D

Functions	
<b>Num. Keypad:</b>	Center Frequency, Reference and Tracking Generator Level
<b>Rotary Dial:</b>	Center Frequency, Reference and Tracking Generator Level, Marker
<b>Max. Hold Detection:</b>	Peak Detection
<b>Quasi-Peak Detection:</b>	with software AS100E
<b>Average:</b>	Mean value measurement
<b>SAVE/RECALL</b>	10 set-up settings
<b>AM-Demodulator</b>	Ear Phones

Tracking Generator (HM5014-2 only)	
<b>Output Frequency Range:</b>	150kHz to 1050MHz
<b>Output Level:</b>	-50dBm to +1dBm
<b>Frequency Response:</b>	
+1 dBm to -10 dBm	±3dB
-10,2 dBm to -50 dBm	±4dB
<b>Spurious Outputs:</b>	better than 20dBc

General Data	
<b>Temperature Range:</b>	Operating: 10 °C - 40 °C
<b>Power Requirements:</b>	105 - 250 V~, 50/60 Hz
<b>Power Consumption</b>	
<b>HM 5012-2:</b>	approx. 30 W
<b>HM 5014-2:</b>	approx. 35 W
<b>Protective System:</b>	Safety Class I (IEC 1010-1/EN61010-1)
<b>Dimensions (W x H x D):</b>	285 x 125 x 380 mm
<b>Cabinet, Weight:</b>	Lockable tilt handle, approx.6kg

Accessories supplied:	
Instruction Manual, Power Cord, PC-Software on CDR	

Optional Accessories:	
Opto-Interface HZ 70, Sniffer Probes HZ 530, Transient Limiter HZ 560, Line Impedance Stabilization Network HM 6050-2, VSWR Measuring Bridge HZ 541	

## Accessories



### HZ 560 Transient-Limiter

The transient limiter **HZ 560** protects a spectrum analyzer input from damage caused by high level transients from line impedance stabilization networks during EMC testing for conducted emissions. The transient limiter can withstand inputs as high as 2W of average power. The built in high pass filter helps reduce 50/60 Hz line feed through. The use of this limiter is strongly recommended when measuring with a Line Impedance Stabilization Network.

Specifications	
<b>Frequency Range:</b>	150kHz to 30MHz
<b>Insertion loss:</b>	10dB (+1.5 / -0.5dB)
below 1kHz	>90 dB
over 100MHz	>50 dB
<b>Max. Input level:</b>	Continuous 2W (+33dBm)
DC-voltage	±50V DC
<b>VSWR:</b>	1.5:1 or better
<b>Connectors:</b>	BNC (input and output)
<b>Dimensions (W x H x D):</b>	32 x 67 x 32 mm