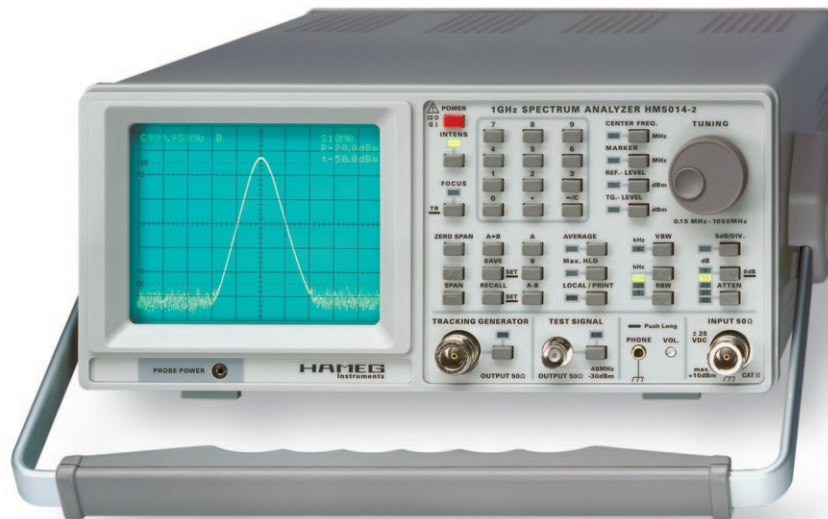
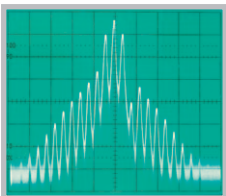


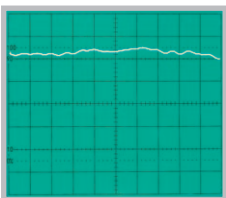
# 1 GHz Spectrum Analyzer HM5014-2



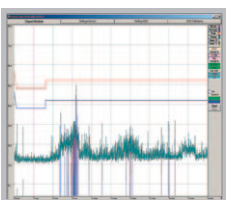
Amplitude-modulated  
RF Signal



Amplifier frequency res-  
ponse measured using a  
tracking generator



Measurement of line-con-  
ducted interference



Frequency range: 150 kHz to 1 GHz

Amplitude measurement range: - 100 dBm to + 10 dBm

Phase Synchronous, Direct Digital frequency Synthesis (DDS)

Resolution bandwidths (RBW): 9 kHz, 120 kHz and 1 MHz

Pre-compliance EMI measurement

Serial interface for documentation and control

Software for documentation included

Additional measurement functions for EMI measurements  
with optional software

Tracking Generator with output amplitude from - 50 dBm  
to + 1 dBm



## 1 GHz Spectrum Analyzer HM5014-2

Valid at 23 °C after a 30 minute warm-up period

### Frequency Characteristics

|                                       |  |
|---------------------------------------|--|
| Frequency Range:                      | 0.15 MHz to 1.050 GHz                              |
| Stability:                            | ± 5 ppm  |
| Ageing:                               | ± 1 ppm/year                                       |
| Frequency Resolution:                 | 1 kHz (6½ digit in readout)                        |
| Center Frequency Range:               | 0 to 1.050 GHz                                     |
| LO Frequency Generation:              | TCXO with DDS (Digital Frequency Synthesis)        |
| Span Setting Range:                   | Zero Span and 1 MHz - 1000 MHz<br>(1-2-5 Sequence) |
| Marker:                               |  |
| Frequency Resolution:                 | 1 kHz, 6½ digit,                                   |
| Amplitude Resolution:                 | 0.4 dB, 3½ digit                                   |
| Resolution Bandwidths<br>(RBW) @ 6dB: | 1 MHz, 120 kHz and 9 kHz                           |
| Video Bandwidth (VBW):                | 4 kHz  |
| Sweep Time<br>(automatic selection):  | 40 ms, 320 ms, 1 s*                                |

### Amplitude Characteristics (Marker Related) 150 kHz – 1 GHz

|   |   |
|---|---|
| Measurement Range:  | -100 dBm to +10 dBm   |
| Scaling:  | 10 dB/div., 5 dB/div.   |
| Display Range:  | 80 dB (10 dB/div.),<br>40 dB (5 dB/div.)  |
| Amplitude Frequency Response (at 10 dB Attn., Zero Span and RBW<br>1 MHz, Signal – 20 dBm): | ± 3 dB  |
| Display (CRT):  | 8 x 10 division   |
| Amplitude Scale:  | logarithmic   |
| Display units:  | dBm   |
| Input Attenuator Range:   | 0 - 40 dB (10 dB increments)  |
| Input Attenuator Accuracy<br>rel. to 10 dB:   | ± 2 dB  |
| Max. Input Level (continuous)   |   |
| 40 dB attenuation:  | +20 dBm (0.1 W)   |
| 0 dB attenuation:   | +10 dBm   |
| Max. DC Voltage:  | ± 25 V  |
| Max. Reference Level:   | +10 dBm   |
| Reference Level Accuracy rel. to 500 MHz, 10 dB Attn., Zero Span and<br>RBW 1 MHz:          | ± 1 dB  |
| Min. Average Noise Level:   | approx. -100 dBm (RBW 9 kHz)  |
| Intermodulation Ratio<br>(3 <sup>rd</sup> Order):   | typical > 75 dBc (2 Signals: 200 MHz,<br>203 MHz, – 3 dB below Reference Level) |
| Harmonic Distortion Ratio<br>(2 <sup>nd</sup> harm.):                                       | typical > 75 dBc<br>(200 MHz, Reference Level)                                  |
| Bandwidth Dependent Amplitude Error rel. to RBW 1 MHz and Zero<br>Span:                     | ± 1 dB  |
| Digitization Error:   | ± 1 digit (0.4 dB) at 10 dB/div. scaling<br>(Average, Zero Span)                |

### Inputs / Outputs

|                                       |                          |
|---------------------------------------|--------------------------|
| Measuring Input:                      | N socket                 |
| Input Impedance:                      | 50 Ω                     |
| VSWR: (Attn. ≥ 10 dB)                 | typ. 1.5:1               |
| Tracking Generator Output (HM5014-2): | N-socket                 |
| Output Impedance:                     | 50 Ω                     |
| Test Signal Output:                   | BNC socket               |
| Frequency, Level:                     | 48 MHz, -30 dBm (± 2 dB) |
| Supply Voltage for Probes (HZ 530):   | 6 V DC                   |
| Audio Output (phone):                 | 3.5 mm Ø jack            |
| RS-232 Interface:                     | 9-pin / Sub-D            |

### Functions

|                         |  |
|-------------------------|--|
| Keyboard Input:         | Center Frequency, Reference Level,<br>Tracking Generator Level         |
| Rotary Encoder Input:   | Center Frequency, Reference Level, Marker,<br>Tracking Generator Level |
| Max. Hold Detection:    | Peak Value Acquisition   |
| Quasi-Peak Detection: * | Quasi-Peak Valuation   |
| Average:                | Mean Value Acquisition   |
| Ref. Spectrum Memory:   | 2 k x 8 bit  |
| SAVE / RECALL:          | Save and Recall of 10 Instrument Settings                              |
| AM demodulation         | for audio  |
| LOCAL:                  | RS-232 Remote Control OFF  |
| Readout:                | Display of various Measurement<br>Parameters                           |

### Tracking Generator

|                                       |                       |
|---------------------------------------|-----------------------|
| Frequency Range:                      | 0.15 MHz to 1.050 GHz |
| Output Level:                         | -50 dBm to +1 dBm     |
| Frequency Response (0.15 MHz – 1 GHz) |                       |
| +1 dBm to -10 dBm:                    | ± 3 dB                |
| -10.2 dBm to -50 dBm:                 | ± 4 dB                |
| Digitization Error:                   | ± 1 digit (0.4 dB)    |
| Spurious Outputs:                     | better than 20 dBc    |

### General information

|                         |  |
|-------------------------|--|
| CRT:                    | D14-363GY, 8 x 10 cm with internal graticule |
| Acceleration Voltage:   | approx. 2 kV                                 |
| Trace Rotation:         | adjustable on front panel                    |
| Ambient Temperature:    | 10° C to 40° C                               |
| Power Supply:           | 105-253 V, 50/60 Hz ± 10 %, CAT II           |
| Power Consumption:      | approx. 35 W at 230 V/50 Hz                  |
| Safety Class:           | Safety Class I [EN61010-1]                   |
| Dimensions (W x H x D): | 285 x 125 x 380 mm                           |
| Weight:                 | approx. 6.5 kg                               |

\*) in combination with software AS100E only

**Accessories supplied:** Line Cord, Operators Manual, HZ21 Adapter Plug (N-plug with BNC socket) and Software for Windows on CD-ROM

#### Optional accessories:

HZ70 (27-0070-0000) Opto-Interface (with optical fiber cable)  
HZ520 (17-0520-0000) Antenna  
HZ530 (27-0530-0100) Near Field Probe Set for EMI Diagnosis

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