Signal Analyzers

Spectrum Analyzers, Portable

- Frequency range of 9 kHz to 1.5 GHz
- Frequency accuracy of ± 2.0 kHz at 1 GHz (without temperature)
- 5 minute warmup
- Rugged, portable package follows you from lab, to factory, to field

HP ESA-L1500A

HP ESA-L1500A 1.5 GHz Portable Spectrum Analyzer

HP introduces the ESA-L1500A, our new, low-cost, fully synthesized spectrum analyzer. Now get quick and accurate results every time, at an affordable price. It has the performance of a high-quality spectrum analyzer and the rugged ease of use expected in a field instrument.

Fast measurements
The HP ESA-L1500A gives you a rapid display update rate and state-of-the-art 5 ms sweep time that reduces test time and increases throughput.

Accurate results
The phase-locked synthesizer adds stability and repeatability to frequency measurements, and the automatic background alignment offers continuous calibration. Plus, you'll have specified performance only 5 minutes after power-up.

Reliable operation
Increase your manufacturing up-time: costly repairs can be avoided with the automatic input overload protection, and the use of component integration reduces the probability of failure.

Rugged packaging and construction
Ideal for field environments, the HP ESA-L1500A has a sealed front panel, louvered air vents and side-mounted fan to protect the instrument in a wide range of weather conditions. Rubber-encased front and rear frames resist the rigors of transportation.

Easy to use
The combination hard key/soft key front panel offers simple operation for basic measurements while providing access to sophisticated features. In addition, testing is simplified with built-in limit lines and pass/fail messages.

Low cost
All this at a very affordable price.

PC Software for the HP ESA-L1500A
The new HP BenchLink Spectrum Analyzer PC software provides an easy-to-use communications link between your PC and the HP ESA-L1500A spectrum analyzer. Taking full advantage of the Windows® interface, you can easily transfer screen images or trace data via HP-IB or RS-232 interfaces, thereby making it easy to capture, analyze and document measurement results in your PC. For more information, see page 231.

Specifications

Frequency
Frequency Range
50 ohms: 9 kHz to 1.5 GHz
75 ohms (Option 1DP): 1 MHz to 1.5 GHz
Frequency Reference
Aging: ± 2 x 10^{-6}/year
Settability: ± 0.5 x 10^{-6}
Temperature Stability: ± 5 x 10^{-6}
Frequency Readout Accuracy
(Start, Stop, Center, Marker): ± (frequency readout x frequency reference error[1] + span accuracy +20% of RBW)
Marker Frequency Counter
Resolution: Selectable from 1 Hz to 100 kHz
Accuracy: ± (marker frequency x frequency reference error[1] + counter resolution)
Frequency Span
Range: 0 Hz (zero span), 100 Hz to 1.5 GHz
Resolution: Four digits or 2 Hz, whichever is greater
Accuracy: ± 1% of span
Sweep Time
Range: 5 ms to 2000 s
Accuracy (5 ms to 2000s): ± 1%
Sweep Trigger: Free Run, Single, Line, Video, External
Resolution Bandwidth
Range (–3 dB width): 1 kHz to 3 MHz, in 1-3-10 sequence. 5 MHz, characteristic
Accuracy (1 kHz to 3 MHz RBW): ± 20%
Shape (1 kHz to 3 MHz RBW): Approximately Gaussian shape
Selectivity (1 kHz to 3 MHz RBW) (60 dB/3 dB bandwidth ratio) < 15:1, characteristic
Video Bandwidth (–3 dB)
Range: 30 Hz to 1 MHz in 1-3-10 sequence. 3 MHz, characteris
Stability (noise sidebands, offset from CW signal with 1 kHz RBW, 30 Hz VBW and sample detector)
≥ 10 kHz: ≤ –90 dBc/Hz
≥ 20 kHz: ≤ –98 dBc/Hz
≥ 30 kHz: ≤ –102 dBc/Hz
≥ 100 kHz: ≤ –112 dBc/Hz
Residual FM
1 kHz RBW, 1 kHz VBW: ≤ 100 Hz peak-to-peak in 100 ms
System-Related Sidebands, offset from CW signal:
≥ 30 kHz: ≤ –65 dBc

Amplitude

Measurement Range
50 ohms: –120 dBm to +30 dBm
75 ohms (Option 1DP): –65 dBmV to +72 dBmV
Input Attenuator Range: 0 to 60 dB, in 5 dB steps
Maximum Safe Input Level (Input attenuator setting ≥ 15 dB)
Average Continuous Power: +30 dBm (1 W); +72 dBmV (0.2 W) for 75 Ω (Option 1DP)
Peak Pulse Power: +30 dBm (1 W); +72 dBmV (0.2 W) for 75 Ω (Option 1DP)
dc: 100 Vdc
1 dB Gain Compression: Total power at input mixer[2]: 0 dBm; 75 Ω (Option 1DP): +54 dBmV
Displayed Average Noise Level (Input terminated, 0 dB attenuation, 30 Hz VBW, sample detector, 1 kHz RBW)
400 kHz to 1 MHz: ≤ –116 dBm
1 MHz to 500 MHz: ≤ –120 dBm
500 MHz to 1.2 GHz: ≤ –116 dBm
1.2 GHz to 1.5 GHz: ≤ –113 dBm
75 Ω (Option 1DP):
1 MHz to 500 MHz: ≤ –65 dBmV
500 MHz to 1 GHz: ≤ –61 dBmV
1 GHz to 1.5 GHz: ≤ –55 dBmV
Display Range
Log Scale: 0 to –85 dB from reference level is calibrated; 0.1, 0.2, 0.5 dB/division and 1 to 20 dB/division in 1 dB steps; ten divisions displayed
Linear Scale: ten divisions
Scale Units: dBm, dBmV, dBμV, V, and W
Frequency Response (Relative to 50 MHz, 9 kHz to 1.5 GHz)
10 dB attenuation
20 to 30° C: ± 0.75 dB
0 to 55° C: ± 1.0 dB
0 dB, 5 dB, 15 to 60 dB atten.: ± 1.0 dB, characteristic
Input Attenuation Switching Uncertainty at 50 MHz
0 dB to 5 dB attenuation: ± 0.3 dB
10 dB attenuation: Reference
15 dB attenuation: ± 0.3 dB
20 to 60 dB attenuation: ± (0.1 dB + 0.01 x attenuator setting)