Agilent
Phase Noise Measurement Personality
ESA-E Series Spectrum Analyzers Option 226

Verifying phase noise performance

Phase noise measurement made simple

The ESA-E series spectrum analyzer is transformed into a phase noise tester with the phase noise measurement personality (Option 226).

The phase noise personality eliminates the time-consuming task of hand-drawing phase noise plots. To measure oscillator phase noise, you no longer need to spend time manually tuning your spectrum analyzer to multiple frequency offsets. You can quickly and easily generate graphs of phase noise (dBc/Hz) versus log offset frequency. See Figure 1.

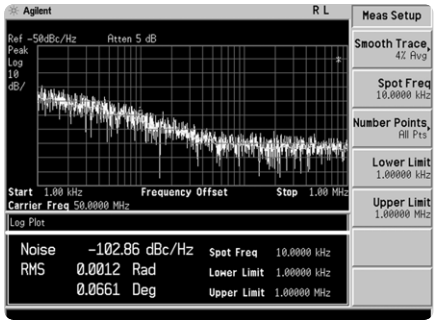


Figure 1. Phase noise graph

Easy, guided measurements

The configuration form, see Figure 2, is part of the phase noise personality. This allows you to customize the key measurement parameters to meet your specific needs. Just use the soft keys and number pad to make any changes you need, then start the measurement.

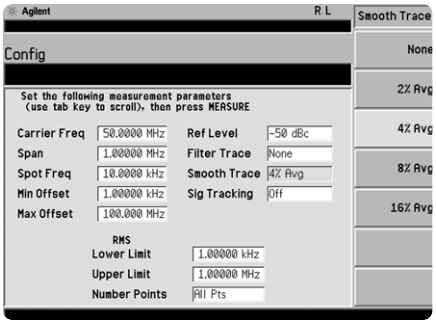


Figure 2. User defined measurements

Direct phase noise readout

Spot frequency can be adjusted to any offset frequency after you make the measurement and the phase noise and RMS value is numerically displayed.

Calculation of RMS noise

RMS phase noise is integrated over a user specified range under the phase noise curve and displayed in radians and degrees.

Track a drifting signal

Signal tracking can be used for log plot measurements to measure a slowly drifting signal. By reacquiring the signal between sweeps the measurement will follow a slowly drifting signal.

Noise reduction capability

Choose the noise reduction technique you prefer; trace smoothing, trace averaging, or video filtering.

Video filtering

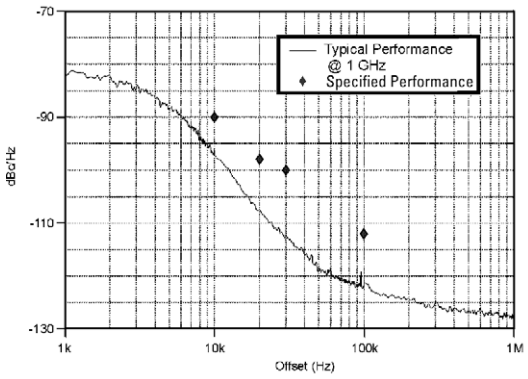
Variable video filtering allows you to control tradeoffs between measurement repeatability and measurement speed.

Technical specifications and characteristics

Specifications shown are based on the operation of the phase noise personality with an Agilent ESA-E series spectrum analyzer.

Measurement modes:	Measure log plot, measure spot frequency
Carrier frequency range:	
E4401B	9 kHz to 1.5 GHz
E4402B	9 kHz to 3.0 GHz , 30 Hz to 3.0 GHz (option UKB)
E4404B	9 kHz to 6.7 GHz , 30 Hz to 6.7 GHz (option UKB)
E4405B	9 kHz to 13.2 GHz , 30 Hz to 13.2 GHz (option UKB)
E4407B	9 kHz to 26.5 GHz
Offset frequency range:	100 Hz to 100 MHz
Maximum number of decades:	5 (whole decades only)
Measurement accuracy :	
Amplitude accuracy	+/-1.6 dB, *characteristic*
Amplitude repeatability	+/- 1 dB, *characteristic*
Filtering:	4 levels available
Smoothing:	2%, 4%, 8%, and 16%
RMS Phase Noise Calculation:	(Calculated over a user specified integration range)
Number of data points used:	All, 1/2, 1/4, or 1/8

System phase noise:



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Product specifications and descriptions in this document subject to change without notice.

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Additional information available

ESA-E Series Brochure
literature number 5968-3278E
ESA-E Series Technical Specifications
literature number 5968-3386E
Portable Spectrum Analyzers Selection Guide
literature number 5968-3413E
ESA-E Series Configuration Guide
literature number 5968-3412E