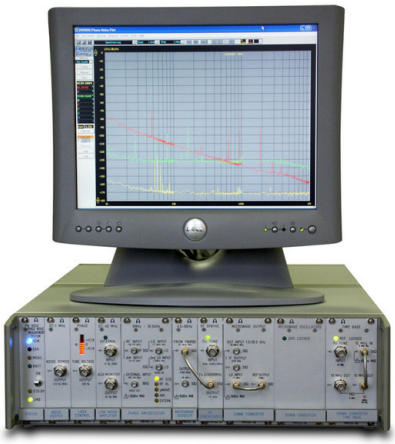
Carrier Quality Analyzer

PN9000 Test System



Modular design provides the flexibility to simply, automatically and quickly measure and plot:

- Phase noise
- AM noise
- Added noise
- Jitter
- Allan variance
- Integrated power and spurii

Of almost any device from 2 MHz to 140 GHz.

These include:

. Crystal oscillators, OCXO, TCXO

. Stable sources, synthesizers, PDROs

. Radar systems and other pulse systems, TDMA

. Unstable sources, VCOs, DROs

. Multiport devices, amplifiers, mixers, Up/Down convertors

SPECIFICATIONS

Input Frequency Measurement Range

2 MHz to 1.8 GHz Options up to 140 GHz

Offset Measurement Range

0.01 Hz to 1 MHz, Option to 40 MHz

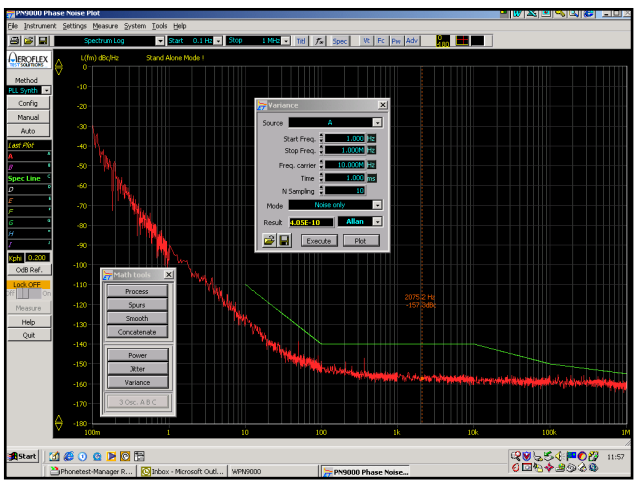
PN9500 0.01 Hz to 500 MHz

Accuracy

+/-2 dB to 1 MHz offset, +/- 3 dB to 40 MHz offset

Residual System Noise (dBc/Hz)

Offset from Carrier	*Standard*	*High Level*	*Microwave*
1 Hz	*-130*	*-140*	*-120*
10 Hz	*-140*	*-150*	*-130*
100 Hz	*-150*	*-160*	*-140*
1 kHz	*-160*	*-170*	*-150*
10 kHz and above	*-170*	*-178*	*-160*



MAIN OPTIONS

PN9100 *Internal low noise reference signal generator, 2 MHz to 4.5 GHz, options to 18 GHz, usable to 40 GHz*

PN9718 *Internal 20 and 100 ns Delay Line, 250 MHz to 2 GHz. Used to measure unstable sources. Other frequencies can be measured using downconverters.*

PN9276 *Internal microwave downconverter, 1.7 to 18 GHz, 26.5 to 40 GHz*

PN9511 *Internal Ultra Low Noise 10 MHz VCOXCO. Other frequencies available. Enables testing of oven or other low noise crystal oscillators.*

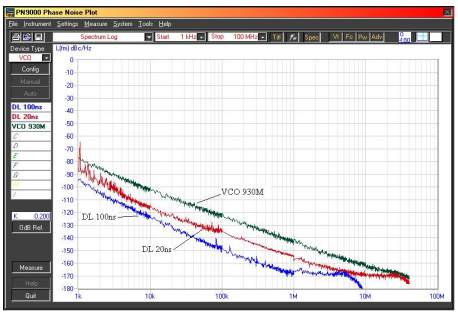
PN9841 *Internal Added Noise Phase Shifter and Splitter, 2 to 18 GHz. Used to measure phase noise on Amplifiers and/or Radar systems.*

PN9692 *-HR ATE and high speed option*

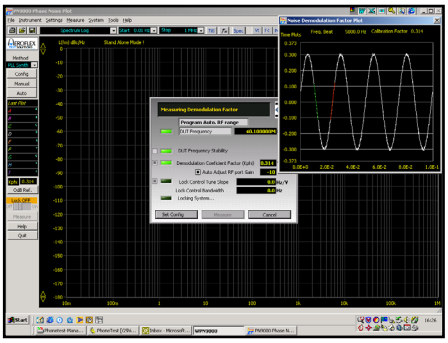
Many other options available as standard. Also custom modules to suit your application.

The PN9000 overcomes all of the problems associated with trying to measure phase noise with any Spectrum Analyzer:

- *Can measure very close to Carrier (0.01 Hz away).*
- *Can distinguish between PM and AM noise, and measure both separately.*
- *Ensures you are not measuring the Spectrum Analyzer's LO phase noise (noise cancellation does not fully resolve this).*
- *Has an extremely low residual noise floor (-178 dBc/Hz).*
- *Can use any low noise signal generator as the reference LO (as long as it has GPIB/RS232 control and an external FM input).*
- *Can measure unstable devices.*
- *Can measure multiport devices.*

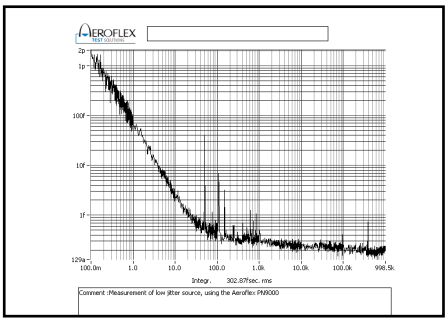


The upper plot shows a real 930 MHz GSM VCO. It shows that the residual noise is low enough to measure "state of the art" new generation VCOs.

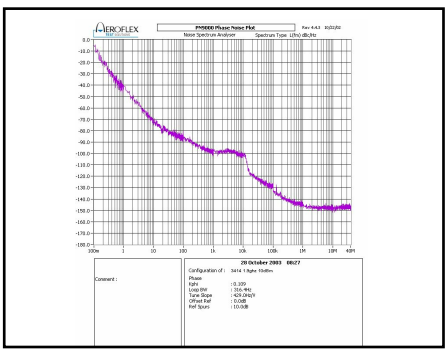


Automatic setup and calibration simplifies operation, reduces test time and the likelihood of measurement errors.

Manual setup and calibration available to those who wish to use it.



Jitter plots can be generated with user defined jitter masks. RMS and peak measurements down to 1 femto second.



Phase Noise plots can be saved as plots for further analysis, or as BMPs or JPEGS.

Post measurement analysis; spurii table with user determinable limits. Limit lines, 10 markers, Jitter measurements/plots to femto-second resolution. Smoothing, variance, Allan, true, modified, TV AR. Process, trace A + trace B etc. All of the above, and more, can be done away from the system, on your own PC, with the supplied software.

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