Radar Products

PN9002 Pulse to Pulse Radar Stability Test Set

The PN9002 integrates all the needed hardware and software to test a two port module for amplitude and phase stability. The PN9002 acts as a "micro-Radar" providing pulsed signals to the DUT and analyzing the received pulses.

It easily covers 400 MHz to 18 GHz in a scalable concept that can be extended in the future. The heritage from the PN9000 product line guarantees the lowest noise floor available. The dynamic range reaches -79 dBc typical (-76 dBc guaranteed) in stability integration over the bandwidth of the "equivalent receiver".

The PN9002 system enables measurements of amplitude and phase stability of RADAR pulses with an unprecedented dynamic range.

Time Domain Measurements

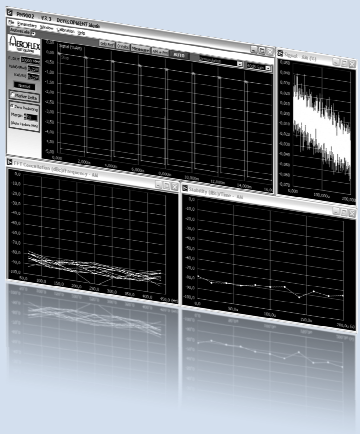
The system demodulates all Phase and AM variations. It works like a Phase and Amplitude oscilloscope. For either pulse to pulse or intra-pulse analysis, the PN9002 computes Phase and AM RMS value, peak to peak, drift ,etc

Frequency Domain Measurements

On time domain the system adds a FFT analyzer and computes the cancellation factor and stability into user defined Doppler filters with control over the integration bandwidth. The PN9002 presents a full automatic process: designed for R&D and manufacturing measurements.

The PN9002 is a UNIQUE instrument on the market. Based on the heritage of the PN9000 product line, it is a stand-alone system, fully compliant to radar stability measurements.

- ✓ Simple and Fast Measurements
- ✓ Complete Frequency Coverage
- ✓ Versatile Modular Architecture
- ✓ NIST Traceable Accuracy
- ✓



The user interface provides

- ✓ Full control of the system, pulse analysis and generation
- ✓ Open/Save measurements, export to spreadsheet
- ✓ Automated measurement procedures

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SPECIFICATIONS

DUT Input / Output Frequency Range
2 to 18 GHz, Option 0.4 to 18 GHz

Max available Level to DUT Input
13 dBm ±2 dBm (PN9002 output)

DUT required Output Level
0 dBm to 2.5 dBm (PN9002 Input)

DUT power supply synchronization
Option, TTL

Clock Output for Synchronization
TTL 50 MHz

Resolution
20 ns or 200 ns clock
2 Msamples memory base

Minimum pulse width
200 ns

Maximum pulse width
500 µs (20 ns resolution)
2 ms (200 ns resolution)

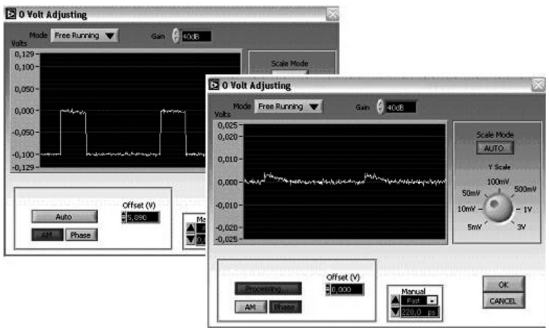
Sampling clock frequency
up to 50 MHz

Residual System Noise
-76 dBc cancellation guaranteed
-79 dBc typical
*-76 dBc stability guaranteed (9 mdeg RMS or 0.016% AM RMS)**
*-79 dBc typical (6.5 mdeg RMS or 0.011% AM RMS)**

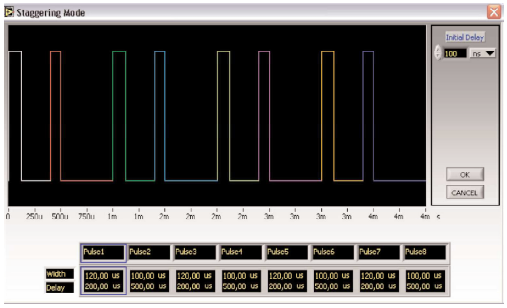
System Accuracy
+/- 2 dB

Instantaneous Bandwidth
20 MHz max (digital adjustable Bessel filter)

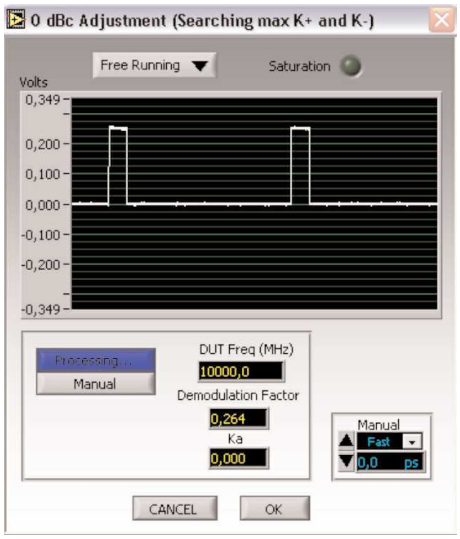
** Within a receiver bandwidth of 20 MHz, AC coupled, on a monotonous pulse pattern.*



Amplitude/Phase Adjustment



Signal definition



O dBc Adjustment

Pulse Modulator SPECIFICATIONS

Non-Reflective Modulator Rise/Fall Time
10 ns

ON/OFF Ratio
80 dB

Stability
Included in residual system noise floor

Pattern Generator SPECIFICATIONS

Rise/Fall Time
10 ns

Minimum pulse width
200 ns

Output level
TTL, 50 Ω

Time resolution
20 ns

Software SPECIFICATIONS

Details	Description
Operating System	Microsoft Windows XP pro
File management	Open / Save plots and configuration
Printing utility	Print plots or acceptance report
FFT Windows	Hanning, Hamming, Blackmann, etc…
Time domain processing	Standard deviation, RMS, peak to *peak, multiple interpolations*
Automated functions	Simple 0 dB adjustment by different methods, phase and amplitude measurement sequence
Built-in modes	Standard pulse burst or Stagger pattern (Stagger not compatible with FFTs) Full feature access or restrict "acceptance only mode"

Function CONFIGURATION

Generator rack includes:
Internal low phase noise synthesizer
Pattern generator
Pulse modulator

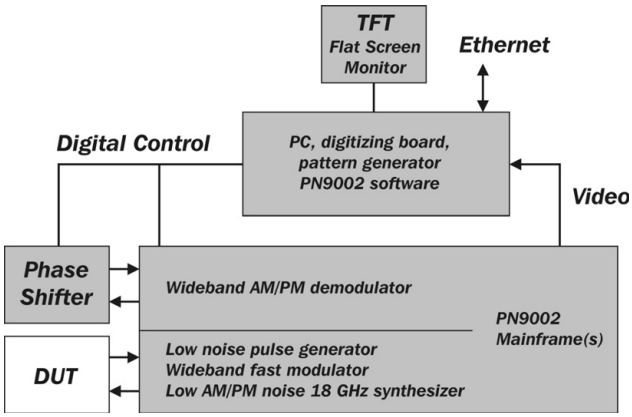
Analyzer rack includes:
Added noise module
Phase/AM detector
Video shifter, LNA amplifier
Signal processing module

Programmable phase shifter

Control Unit includes:
Display, keyboard and mouse
Pattern generator
Digitizer

Mechanical CONFIGURATION

2 Chassis 13.3 x 46 x 35 cm
System Controller (PC) with internal specific boards
Software tunable phase shifter



Mechanical Configuration