

# Radar Products

## PN9002 Pulse to Pulse Radar Stability Test Set

**AEROFLEX**  
A passion for performance.



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

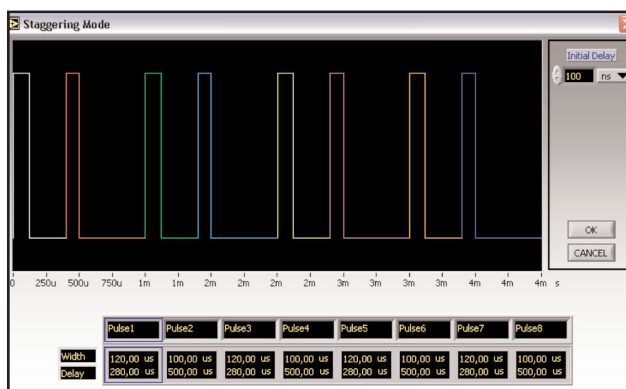
The PN9002 is a UNIQUE instrument on the market. Based on the heritage of the PN9000 product line, it is a stand-alone system, fully compliant to radar stability measurements. It integrates all the needed hardware and software to test a two port module for amplitude and phase stability. The PN9002 acts 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".

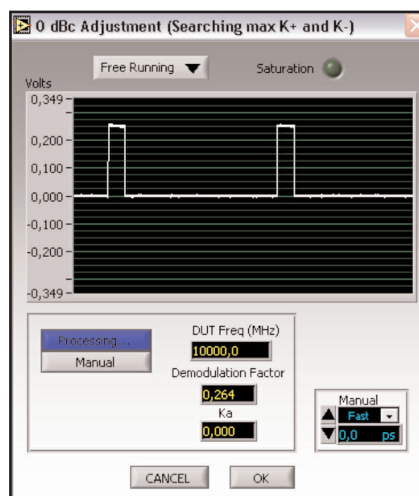
The PN9002 system enables measurements of amplitude and phase stability of RADAR pulses with an unprecedented dynamic range.

### 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 ...



Signal definition



0 dBc Adjustment

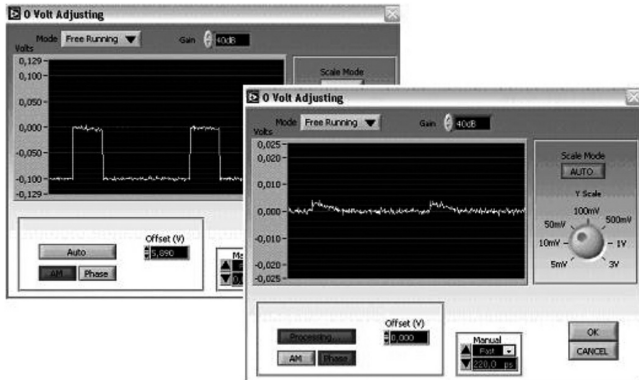
## Frequency Domain Measurements

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.

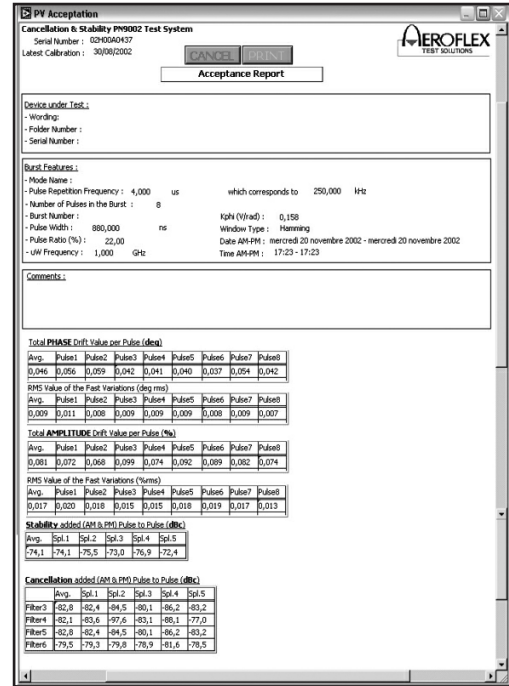
The PN9002 presents a full automatic process: designed for R&D and manufacturing measurements .

The user interface provides

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



Amplitude/Phase Adjustment



## SPECIFICATIONS

### DUT Input / Output Frequency Range

2 to 18 GHz, Option 0.4 to 18 GHz

### Max available Level to DUT Input

13 dBm  $\pm$  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  $\mu$ s (20 ns resolution)  
 2 ms (200 ns resolution)

### Sampling clock frequency

up to 50 MHz

### Residual System Noise

-76 dBc cancellation guaranteed

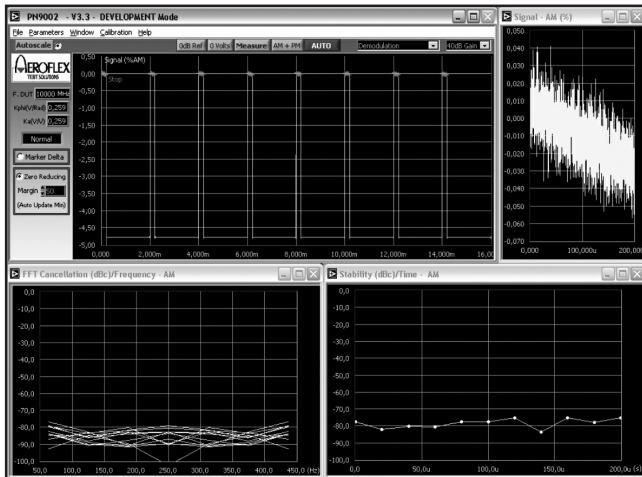
-79 dBc typical

-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.

### 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

- 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:

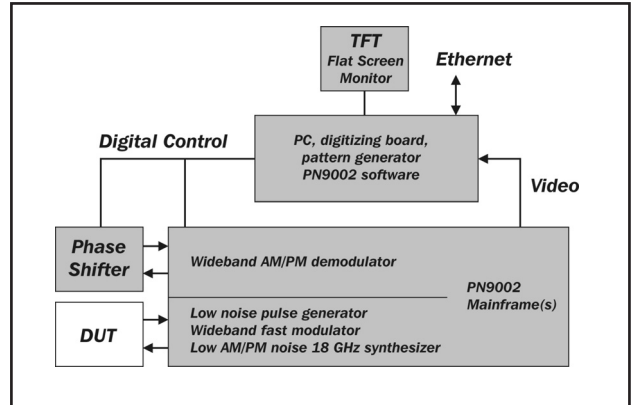
Display, keyboard and mouse

Pattern generator

Digitizer

### MECHANICAL CONFIGURATION

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



Mechanical configuration

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Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven and customer-focused.