NOISE XT

PN9002

Pulse to pulse Radar Stability Test Set

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.

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.

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

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

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.

PN9002 Pulse to Pulse System Test Set

PN9002 Specifications

Parameters	Values
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 13 dBm (PN9002 Input)
DUT power supply synchronization	Option, TTL
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
Sampling clock frequency	-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

Parameters	Values
Non-Reflective Modulator Rise/Fall Time	10 ns
ON / OFF Ratio	80 dB
Stability	Included in residual system noise floor

Pattern Generator Specifications

Parameters	Values
Rise/Fall Time	10 ns
Minimum pulse width	200 ns
Output level	TTL, 50 Ω
Time resolution	20 ns

Function Configuration

| Parameters	Values
Stimulus Section:	Internal low phase noise synthesizer Pulse modulator
Analyzer Section:	Added noise module Phase/AM detector Video shifter, LNA amplifier Anti-aliasing filtering
Controller Unit includes:	PC, Display, keyboard and mouse Pattern generator Digitizer
Programmable phase shifter	625 ps / 20 ns

Software Specifications

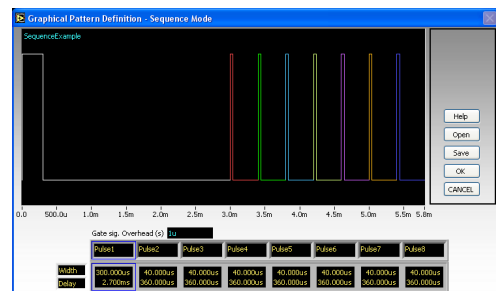| Parameters	Values
Operating System	Microsoft® Windows® XP professional
File management	Open / Save plots and configuration
Printing utility	Print plots or acceptance report
FFT Windows	Hanning, Hamming, Blackmann, etc…
Time domain processing	Standard deviation, RMS, peak to peak, multiple interpolations
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"

Mechanical Configuration

Parameters	Values
Chassis	1 or 2 Chassis 13.3 x 46 x 35 cm
System Controller	System Controller (PC) with internal specific boards Software tunable phase shifter
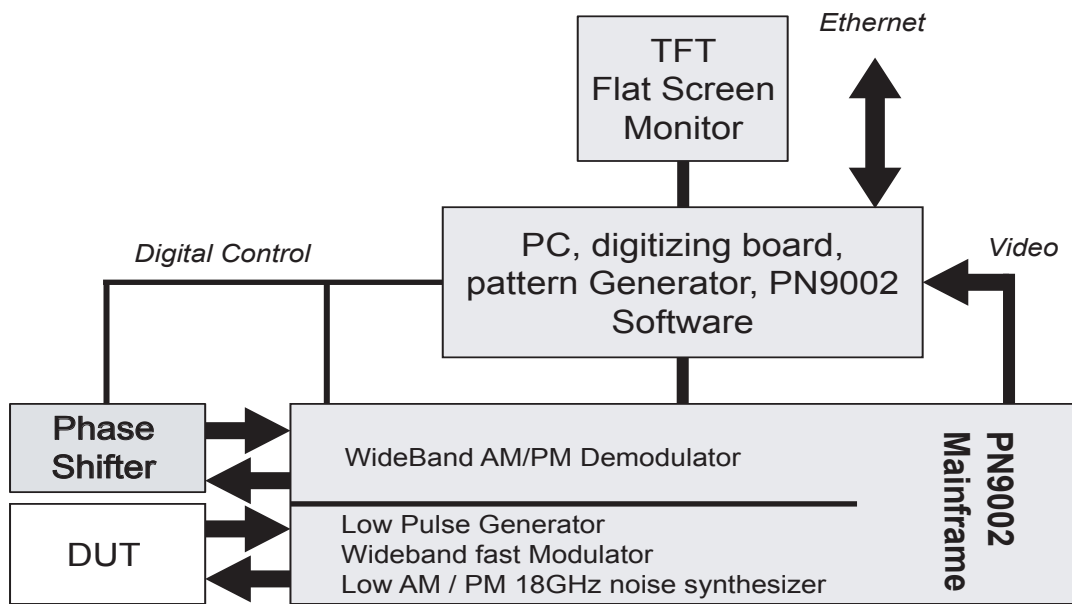
Bloc diagram
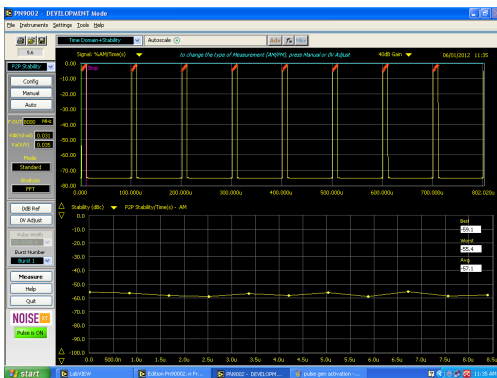
Graphic User Interface

Signal definition