

Analyze your radar signals with wideband power sensors

High sampling rate and automatic pulse analysis make the R&S®NRP-Z8x wideband power sensors ideal for time-domain analysis of radar pulses.



The R&S®NRP-Z8x wideband power sensors analyze radar signals with high time resolution up to 44 GHz.

Your task

Installation, service, manufacturing and R&D of radar equipment require power measurements. Analysis of the power envelope is especially important. Pulse parameters such as peak and top power, rise and fall times, pulse width and pulse period need to be measured with high accuracy and speed.

The aim is to accurately reconstruct the pulse shape of the radar signal in the time domain. This can only be accomplished if the power detector is able to follow the rapidly changing signal envelope. For example, the rising and falling edges of a radar pulse must be depicted realistically in the nanosecond scale over a large dynamic range.

T & M solution

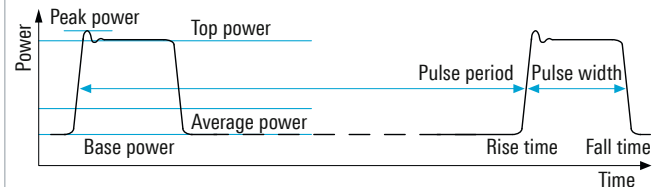
The R&S®NRP-Z8x wideband power sensors are perfect for analyzing pulsed and/or modulated signals. Due to their high sampling rate of 80 Msample/s, the power envelope of radar pulses can be reconstructed with a time resolution of 12.5 ns. By applying equivalent time sampling techniques and interpolation, the effective time resolution can be increased by two orders of magnitude. In addition, the sensors' automatic pulse analysis function makes it possible to measure 15 important pulse parameters automatically, which significantly simplifies and speeds up testing.

The wideband power sensor family currently consists of the R&S®NRP-Z81 sensor with N connector for frequencies up to 18 GHz and the R&S®NRP-Z85/R&S®NRP-Z86 sensors with 2.92 mm/2.4 mm connectors respectively for frequencies up to 44 GHz.

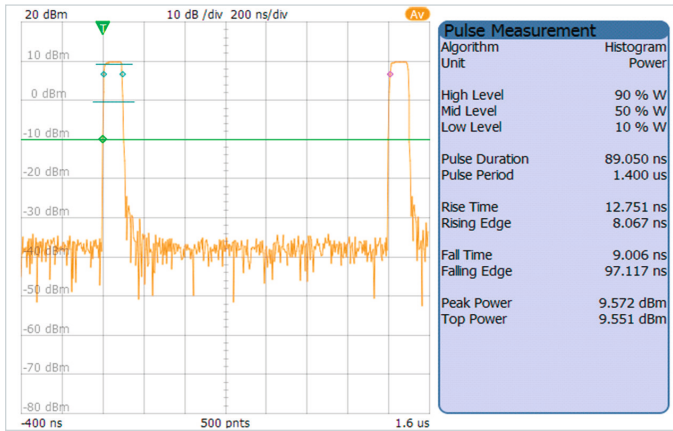
With a video bandwidth of 30 MHz, the sensors can analyze radar pulses with pulse widths as narrow as 50 ns. The sensors feature short measurement times and high dynamic range with a lower measurement limit of -47 dBm for power envelope measurements and -60 dBm for average power measurements.

The sensors do not have to be attached to a specific base unit. They can be controlled by the R&S®NRP2 base unit, diverse Rohde & Schwarz instruments and via USB from a PC. The R&S®Power Viewer Plus PC software and the even more powerful R&S®NRPV virtual power meter software provide easy-to-use graphical user interfaces for sensor control and display of the measurements.

Key pulse parameters



The R&S®NRP-Z8x sensors greatly simplify analysis of pulsed radar signals. In the trace measurement mode, the envelope power of the signal is displayed as a function of time. In addition, the automatic pulse analysis function delivers numeric results for the most important power and time parameters. The automatic analysis is extremely fast and straightforward. It is also possible to perform gated measurements and statistical analyses (CCDF, PDF).



Display of the measured envelope power of a pulsed signal versus time, with parameters of the automatic pulse analysis.

The measurement can be triggered either by an external signal or by the measurement signal itself (internal triggering). The internal trigger signal of a sensor can be output e.g. to trigger other sensors via the R&S®NRP2 base unit or the R&S®NRP-Z5 USB sensor hub. This makes it possible to synchronize multiple measurements executed in parallel at different points in the radar system. In addition even triggered measurements of signals exhibiting low power levels can be obtained.

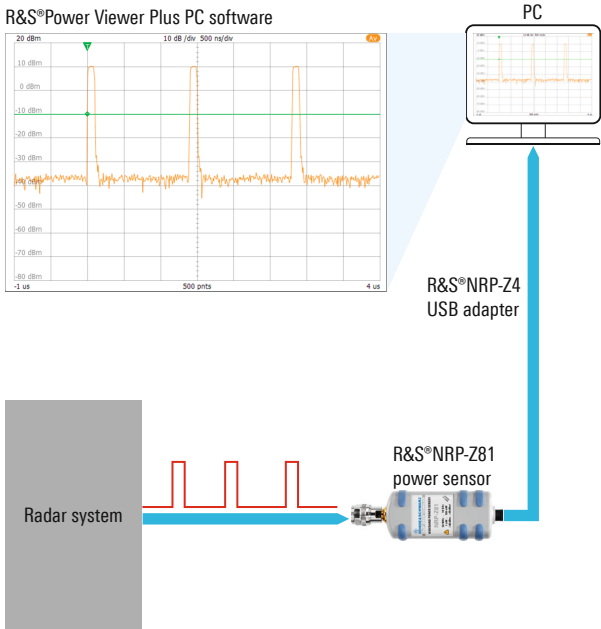
The combination of high-speed continuous sampling and powerful digital signal processing enables the R&S®NRP-Z8x sensors to perform high-resolution measurements of signals with any type of modulation. The R&S®NRP-Z8x wideband power sensors implement state-of-the-art technology for present and future measurement tasks and are unrivaled in functionality, size and price. The sensors are the optimum choice for measurements on pulsed signals of RF and microwave radars.

See also

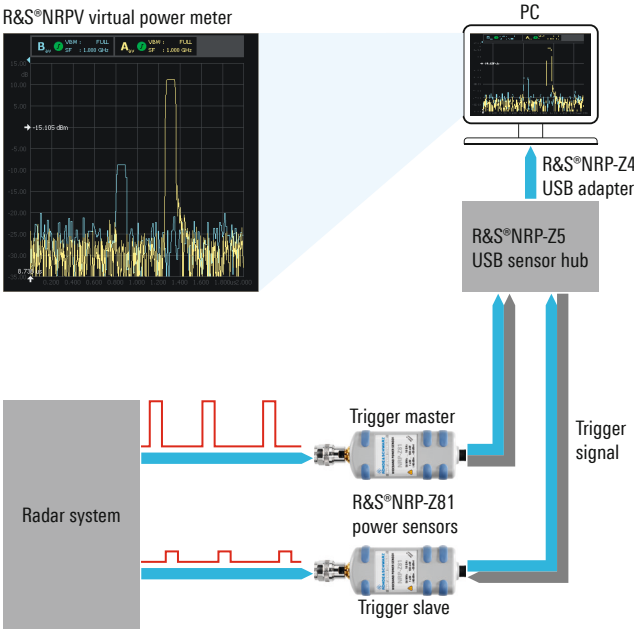
www.rohde-schwarz.com/product/nrpz81
www.rohde-schwarz.com/product/nrpz85
www.rohde-schwarz.com/product/nrpz86

Application examples

Trace measurement with USB-controlled sensor



Master sensor triggers slave sensor for synchronized measurement



Rohde & Schwarz GmbH & Co. KG

Europe, Africa, Middle East | +49 89 4129 12345
 customersupport@rohde-schwarz.com
 North America | 1 888 TEST RSA (1 888 837 87 72)
 customer.support@rsa.rohde-schwarz.com
 Latin America | +1 410 910 79 88 | customersupport.la@rohde-schwarz.com
 Asia/Pacific | +65 65 13 04 88 | customersupport.asia@rohde-schwarz.com
 China | +86 800 810 8228/+86 400 650 5896
 customersupport.china@rohde-schwarz.com
 www.rohde-schwarz.com

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