

Anritsu envision : ensure

High Accuracy Power Sensor

PSN50

50 MHz to 6 GHz



Introduction

The High Accuracy Power Sensors are the latest addition to Anritsu's handheld products. They are designed to provide field users with a practical power sensor solution for base station testing by delivering bench top accuracy to the field environment. The 50 MHz to 6 GHz PSN50 sensor delivers true RMS measurements from -30 to +20 dBm, enabling users to make accurate measurements for both CW and digitally modulated signals such as GSM/GPRS/EDGE, CDMA/EV-DO, WCDMA/HSDPA, and WiMAX. The sensor connects to BTS Master and Spectrum Master products with the USB interface. The RS-232 serial port is used to connect to legacy handheld products.

Key Features and Highlights

- 50 MHz to 6 GHz Frequency Range
Accurate measurements over a wide frequency range.
- -30 to +20 dBm Dynamic Range
True RMS measurements over a 50 dB Dynamic Range enabling users to make accurate CW and modulated power measurements. Important for service providers. A small error in power can have a significant impact on coverage area.
- Cal Factor Correction
Improve overall accuracy by correcting for efficiency and mismatch losses.
- Zero
Remove noise and improve overall accuracy for low level signals (< -20 dBm)
- Averaging
Apply averaging to signals with high variation.
- Max Hold
Displays the maximum value of the non-averaged data. Good for frequency hopping signals.
- Limit Setup
Turns on limits and setup PASS/FAIL criteria for the measurements. The results are color coded: Green-Pass, Red-Fail
- Dual Display
View Power readings linearly in Watt and logarithmically in dBm without selecting the units.
- Offset Compensation
Remove any attenuators connected to the sensor.

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Definitions

Specifications	All specifications and characteristics apply under the following conditions, unless otherwise stated:
Temperature Range	Over the 23 °C ± 5 °C temperature range.
Warm-Up Time	After 30 minutes of warm-up time, where the instrument is left in the ON state.
Uncertainty	A coverage factor of x1 is applied to the measurement uncertainties to facilitate comparison with other industry handheld analyzers.
Calibration Cycle	Calibration is within the recommended 12 month period (residual specifications also require calibration kit calibration cycle adherence.)
	All specifications subject to change without notice. For the most current data sheet, please visit the Anritsu web site: www.anritsu.com

PSN50 Specifications

Sensor

Measurement Range	-30 to +20 dBm
Frequency Range	50 MHz to 6 GHz
Input Connector	Type N, male, 50 Ω
Max Input Without Damage	+33 dBm, ± 25 VDC
Input Return Loss	50 MHz to 2 GHz: ≥ 26 dB 2 GHz to 6 GHz: ≥ 20 dB

Accuracy

Total RSS Measurement Uncertainty	± 0.16 dB (0 °C to 50 °C) Excludes mismatch errors, noise, zero set, zero drift for levels < -20 dBm, and digital modulation uncertainty between +17 and +20 dBm.
Noise	20 nW max
Zero Set	20 nW
Zero Drift	10 nW max (After 30 min warm-up)
Sensor Linearity	±0.13 dB max
Sensor Cal Factor Uncertainty	±0.06 dB
Temperature Compensation	±0.06 dB max
Continuous digital modulation uncertainty	+ 0.06 dB (+17 to +20 dBm)

System

Measurement Resolution	0.01 dB
Offset Range	± 60 dB

Power Requirements (required when using RS-232 interface)

Supply Voltage	8 to 18 Vdc
Supply Current	< 100 mA

Interfaces

RS-232	Serial Interface
Mini-B USB	USB 2.0 compatible

Ordering Information

Part Number Description

PSN50	High Accuracy Power Sensor, 50 MHz to 6 GHz
3-1010-122	Attenuator (Bi-directional), 20 dB, 5 Watt, DC to 12.4 GHz, N(m) to N(f)
3-1010-123	Attenuator (Bi-directional), 30 dB, 50 Watt, DC to 8.5 GHz, N(m) to N(f)
3-1010-124	Attenuator (Bi-directional), 40 dB, 100 Watt, DC to 8.5 GHz, N(m) to N(f)
2300-534	PSN50 CalXpert™
41KA-10	10 dB Fixed Attenuator
34NFK50	K to N Adapter

PSN50 CalXpert™

Software Application for Calibrating PSN50 Power Sensors

PSN50 CalXpert™ is a calibration wizard that guides you through the range connection test and performs the necessary operations to upload calibration data into the power sensor. It provides a convenient way to:

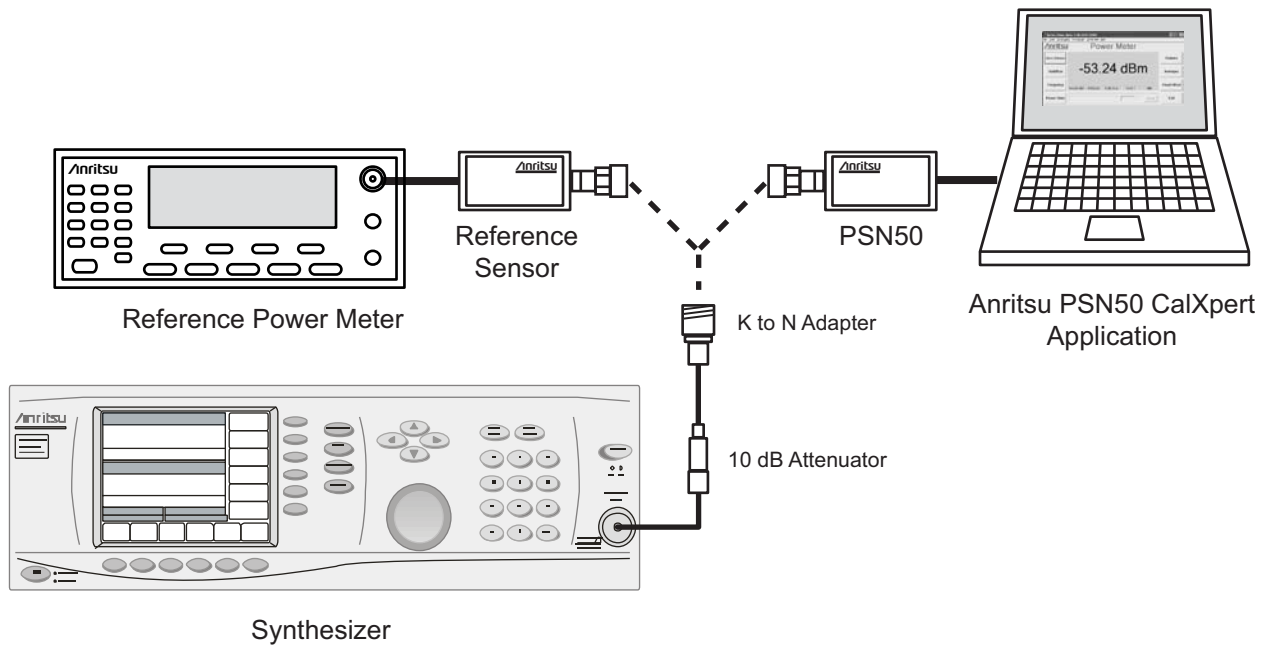
- Perform range connection characterization
- Upload the new range connection characterization data into the sensor
- Upload 50 MHz sensitivity calibration and calibration factor data into the sensor*
- Provide a report of new and old calibration data

As a precaution, PSN50 CalXpert™ will also retain a file of the old calibration data that the user can restore to the sensor using PSN50 CalXpert™ if required.

*PSN50 CalXpert does not control the full suite of equipment to obtain sensitivity calibration and calibration factor data – it is assumed that users have access to an appropriately equipped calibration lab to obtain this data. PSN50 CalXpert can be used with a PC to read the responses of the power sensor during the gathering of calibration factor and sensitivity data.

Equipment Requirements For performing range connection characterization and to upload calibration data into the sensor.

Computer equipped	Intel® Pentium® III with 1 GB RAM or Intel® Pentium® IV with 512 MB RAM, or equivalent (Intel® Pentium® IV with 1 GB RAM recommended) Microsoft® Windows Vista® (32-bit only), Windows XP or Windows 2000 Microsoft® .NET 3.5 100 MB hard-disk free space Display resolution 1024 × 768 USB 2.0 full speed (compatible with USB 1.0 and 1.1) interface CD-ROM drive
Synthesizer	50 MHz to 6 GHz, +15 dBm minimum (Anritsu MG3690 Series)
Reference Power Meter and Sensor	Absolute power accuracy better than 0.5 dB (Anritsu MA24106A or ML2437A, with MA2442D)
10 dB Fixed Attenuator	1.25 SWR from 50 MHz to 6 GHz (Anritsu 41KA-10)
K to N Adapter	Anritsu 34NFK50



Typical Equipment Setup for Range Connection Characterization