

# High Accuracy Power Sensor

## PSN50

### Introduction

The High Accuracy Power Sensor is the latest addition to Anritsu’s handheld products. It is 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 the MT8222A BTS Master and MS272XB Spectrum Master products with the USB interface. The RS-232 serial port is used to connect to the S331D, S332D, MS2711D, MT8212B products.

### Key Features and Benefits

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.



# 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:

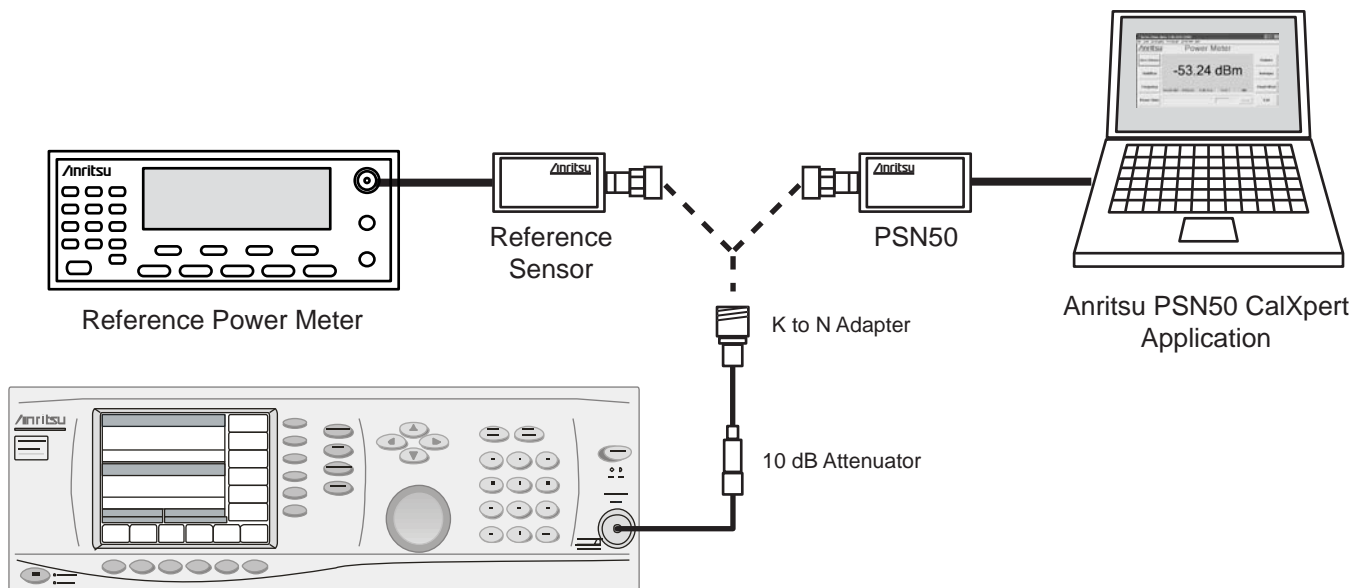
- Perform range connection characterization
- Upload the new range connection characterization data into the sensor
- Upload 50 MHz sensitivity calibration and calibration factor data into the sensor\*
- Provide a report of new and old calibration data

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 as follows:
  1. 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)
  2. Microsoft® Windows Vista® (32-bit only), Windows XP or Windows 2000
  3. Microsoft® .NET 3.5
  4. 100 MB hard-disk free space
  5. Display resolution 1024 × 768
  6. USB 2.0 full speed (compatible with USB 1.0 and 1.1) interface
  7. 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)



Synthesizer

Typical Equipment Setup for Range Connection Characterization

## Specifications

### Sensor:

Measurement Range: -30 to +20 dBm

Frequency Range: 50 MHz to 6 GHz

Input Connector: Type N, male, 50  $\Omega$

Max Input Without Damage: +33 dBm,  $\pm$  25 VDC

Input Return Loss: 50 MHz to 2 GHz:  $\geq$  26 dB  
2 GHz to 6 GHz:  $\geq$  20 dB

### Accuracy:

Total RSS Measurement Uncertainty (0 °C to 50 °C):  $\pm$  0.16 dB\*

Noise: 20 nW max

Zero Set: 20 nW

Zero Drift: 10 nW max\*\*

Sensor Linearity:  $\pm$ 0.13 dB max

Instrumentation Accuracy: 0.00 dB

Sensor Cal Factor Uncertainty:  $\pm$ 0.06 dB

Temperature Compensation:  $\pm$ 0.06 dB max

Continuous digital modulation uncertainty: + 0.06 dB (+17 to +20 dBm)

### System:

Measurement Resolution: 0.01 dB

Offset Range:  $\pm$  60dB

### Power Requirements (External power required for S331D, S332D, MS2711D, MT8212B)

Supply Voltage: 8 to 18 Vdc

Supply Current: < 100 mA

### Interfaces:

RS-232 Serial Interface (S331D, S332D, MS2711D, MT8212B)

Mini-B USB: (MT8222A, MS2721B, MS2723B, MS2724B)

\* Excludes mismatch errors.

Excludes noise, zero set, zero drift for levels < -20 dBm.

Excludes digital modulation uncertainty between +17 and +20 dBm.

\*\* After 30 min warm-up

## Ordering Information

Note: PSN50 sensor sold separately.

Anritsu P/N	Description
PSN50	High Accuracy Power Sensor, 50 MHz to 6 GHz
MT8222A-019	High Accuracy Power Meter MT8222A
MS2721B-019	High Accuracy Power Meter MS2721B
MS2723B-019	High Accuracy Power Meter MS2723B
MS2724B-019	High Accuracy Power Meter MS2724B
S33XD/19	High Accuracy Power Meter S331D/S332D
MS2711D/19	High Accuracy Power Meter MS2711D
MT8200/19	High Accuracy Power Meter MT8212B
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™
<b>Upgrade Path for Existing MT8212B, S33XD, MS2711D, and MT8222A Customers</b>	
ND66441	High Accuracy Power Meter Software Retrofit Kit for S33XD
ND66446	High Accuracy Power Meter Software Retrofit Kit for MS2711D
ND66444	High Accuracy Power Meter Software Retrofit Kit for MT8212B
MT8222A-219	High Accuracy Power Meter Software Retrofit Kit for MT8222A

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