



RF Systems & Synthesizers > Phase Noise Test Sets

**Residual System Standard Features:**

- Test Active Devices
  - Amplifiers, Multipliers, Dividers, etc.
- Test Passive Devices
  - Cables, Filters, Mixers, Splitters, etc.
- Frequencies from 5 MHz to 1.5 GHz
- Noise Floors to <-178 dBc
- Offsets to 100 kHz
- Multi-Function Analog Panel Meter
- Speaker for Noise Monitoring and Troubleshooting
- USB Port Interface for Computer Control of Instrument

**Additional Plug-Ins and Capabilities:**

- Mixer/LPF for Extended Input Frequencies to 12 GHz
- Audio Amplifier for Extended Offset Measurements to 20 MHz
- Voltage Regulator for Clean Auxiliary Power (Front Panel)
- Built-in or External Reference Source

**Other Standard Configurations:**

- Single Channel Absolute Phase Noise Measurement System
- Cross-Correlation Absolute Phase Noise Measurement System

| <b>BPMS-1000-RM Phase Noise Measurement System</b> |  |
|--|--|
| SSB Phase Noise                                    | <-178 dBc/Hz at 10 kHz (Typical @ 100 MHz)                                   |
| Frequency Range                                    | 5 MHz to 1.5 GHz<br>[extended range available]                               |
| Offset Analysis                                    | 1 Hz to 100 kHz<br>[to 20 MHz available]                                     |
| Measurement Accuracy                               | ±1.5 dB (<100 kHz offset)<br>[±2 dB (<20 MHz offset) optional]               |
| Input Signal Level                                 | Application Dependent  |
| Input / Output Connectors                          | SMA female, BNC female   |
| Spurious   | <-110 dBc  |
| Supply Voltage                                     | +18 <sup>-0</sup> / <sub>1</sub> VDC<br>-18 <sup>-1</sup> / <sub>0</sub> VDC |
| Supply Voltage Connector                           | D-subminiature 9 pin connector   |
| Power Consumption                                  | <500 mA @ ±18 VDC ±5%, standard  |
| Operating Temperature                              | 0 to +50°C   |
| Dimensions (w x d x h)                             | 17.625 x 15 x 5.25" (3U)<br>[19" rack mountable]                             |

| <b>BPPS-1000 BluePhase Power Supply</b> |  |
|---|--|
| Supply Voltage                          | 115/230 VAC, 50/60 Hz [selectable]   |
| Output Voltage                          | +18 <sup>-0</sup> / <sub>1</sub> VDC, 1.5A<br>-18 <sup>-1</sup> / <sub>0</sub> VDC, 1.5A |
| Supply Voltage Connector                | D-subminiature 9 pin connector   |
| Operating Temperature                   | 0 to +50°C   |
| Supply Fuse                             | AC: 250V, 1.5 A, slow blow.<br>DC: 250V, 2A, slow blow (internal)                        |
| Dimensions (w x d x h)                  | 9.25 x 11.5 x 5.25" (3U)<br>[half-rack standard; full-rack available]                    |

**Standard Test Equipment Required:**

- Phase Shifter
- Oscilloscope
- FFT Analyzer (for offsets to 100 kHz)
  - Recommend: SR760 (for Single Channel)
- Spectrum Analyzer (for offsets to 20 MHz)

**Optional:**

- Computer with a USB communications port running
  - Microsoft Windows (XP recommended)

**BLUE PHASE 1000™**

**Residual**

**Phase Noise Test Set  
BP-1000-RM**



**Phase Noise Test Set Overview:**

Wenzel Associates BLUE PHASE 1000™ series test set integrates BLUE TOPS™ modules and other ultra low noise components into a manually operated or computer controlled phase noise measurement system. The BLUE PHASE 1000™ test set is modularly constructed, allowing complete flexibility for use in multiple configurations and achieving extremely low noise floors.

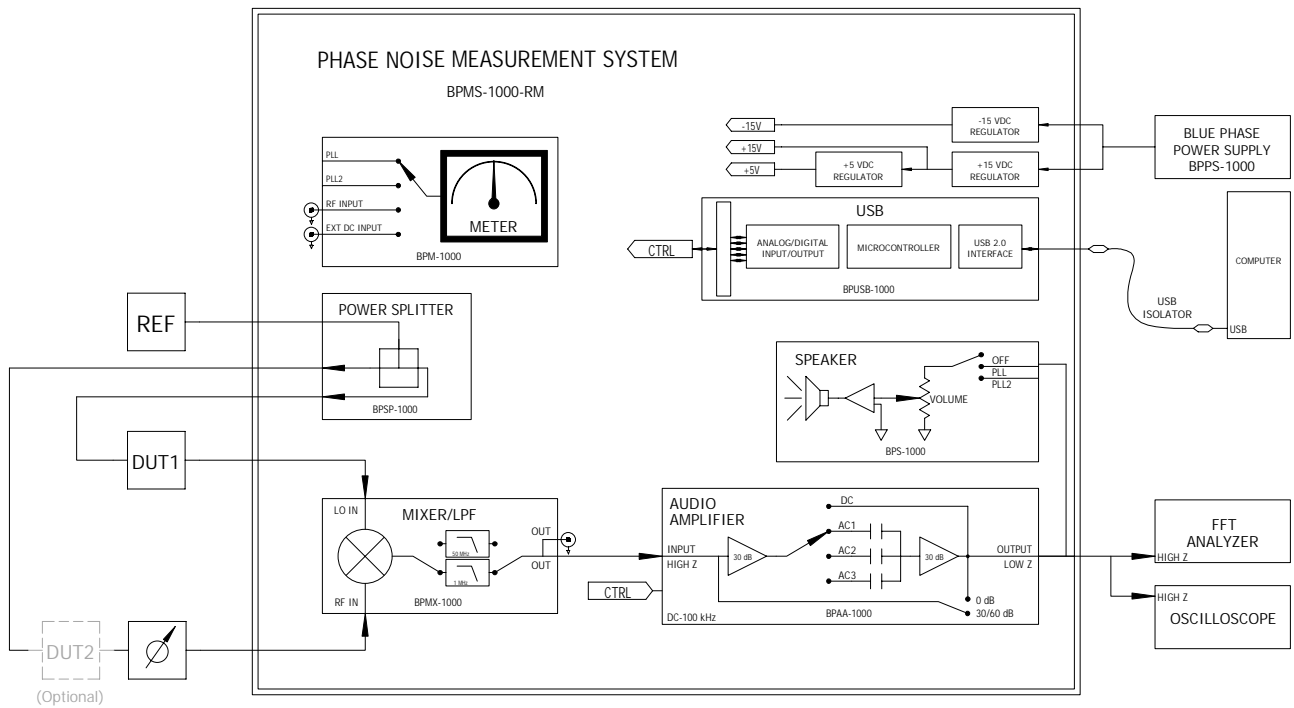
The Residual Phase Noise Test Set (BP-1000-RM) consists of a two chassis configuration. The BPMS-1000-RM is the Residual Phase Noise Measurement System, which is housed in a 5¼" high rack mountable chassis. This unit is powered by the BPPS-1000 Low Noise Power Supply, which is housed in a 5¼" high half-rack or full-rack chassis. The BPMS-1000-RM phase noise measurement system is configured to facilitate the accurate residual (additive) phase noise measurements of active or passive two-port devices such as amplifiers, multipliers, dividers, splitters, cables and filters as well as mixers.

The residual phase noise measurement requires only one frequency source. The signal from this frequency source is first reactively power split. One output of the splitter passes through the device under test (DUT), while the other output passes through a phase shifter. Two DUT's are required for devices that change the frequency (ie. multipliers, dividers, etc.) The phase shifter is adjusted to put these two signals in quadrature at the input to a mixer. The phase noise from the frequency source is coherent at the inputs to the mixer, and therefore, mostly cancelled. The remaining phase noise present at the mixer output is the residual noise from the DUT1 (and DUT2 if present). The measured voltage variations at the mixer output are easily converted to phase noise by correcting for mixer conversion and amplifier gain.



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**BLUE**  
**PHASE** 1000™  
**Residual**  
**Phase Noise Test Set**  
**BP-1000-RM**



RESIDUAL PHASE NOISE TEST CONFIGURATION