



# 5115A

## High-Performance Phase Noise and Allan Deviation Test Set

### KEY FEATURES/BENEFITS

- Simultaneous Phase Noise and Allan Deviation Measurements
- 1 - 30 MHz Frequency Range
- Measurement Results Displayed within Seconds: No External Data Processing Required
- Industry Leading Accuracy ( $\pm 1.0$  dB)
- Supports Measurements with Input and Reference at Different Frequencies
- Cost Effective Solution
- Allan Deviation Measurements (to over 300 Days)
- Phase Noise Measurements as Close as 0.1 mHz from the Carrier
- No Measurement Calibration Required: Saves Time
- Real-time Noise Floor Displayed
- Intuitive Remote Network Management and Data Acquisition
- Easy to Use Graphical User Interface
- Phase Noise Measurements Down to  $-147$  dBc/Hz

### ACCURATE, COST EFFECTIVE MEASUREMENTS IN SECONDS

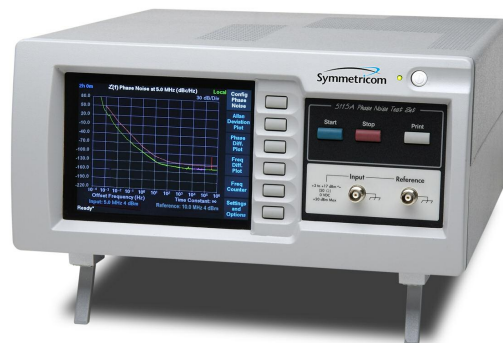
Making accurate phase noise and Allan deviation measurements has never been easier or more cost effective. The all-digital 5115A High-Performance Phase Noise and Allan Deviation (ADEV) Test Set transforms the way these measurements are made. Traditional analog measurement instruments require an external phase-lock loop, turning these types of measurements into a complicated and costly endeavor. Compare this to the innovative 5115A, which makes fast yet accurate single sideband (SSB) phase noise and ADEV measurements at the click of a button, all at a fraction of the cost of alternative solutions.

Symmetricom's 5115A is the easiest to use phase noise and ADEV test set in the world: simply connect the device under test (DUT) and a reference signal (which can be at a different frequency than the DUT) and press the 5115A's green **Start** button. Seconds later valid measurement data appears on the unit's high resolution display. With the all-digital 5115A, tedious multi-step configuration and calibration routines are no longer required.

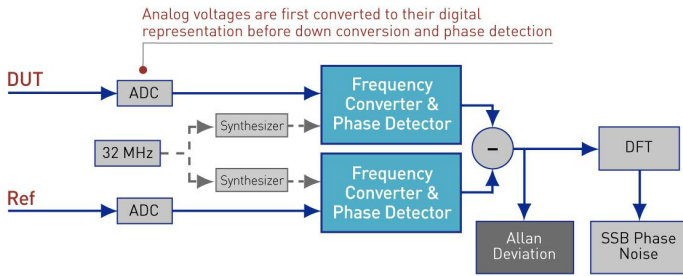
The 5115A leverages the extensive knowledge and experience obtained by Symmetricom during the development of the industry standard for ADEV measurements, the 5110A. In addition to ADEV measurement capability, the next generation 5115A provides phase noise measurement accuracy to previously impossible levels of  $\pm 1.0$  dB. This combined with the superb phase noise and ADEV measurement floor means that with the 5115A you can characterize references more accurately than ever before.

Symmetricom's mastery of phase noise and ADEV measurement techniques as well as recent advances in high speed, low noise analog to digital converters, has allowed the combination of multiple measurement tools to be integrated into a single, one box solution. This enables the 5115A to make more accurate measurements while remaining cost effective.

The 5115A brings a paradigm shift to the way that phase noise and ADEV measurements are made. With the 5115A, measurements that used to be complicated and costly are now faster, easier, more accurate and more cost effective in both R&D and production environments.



5115A High-Performance Phase Noise and Allan Deviation Test Set



5115A Block Diagram

## BENEFITS OF AN ALL-DIGITAL TEST SET

The 5115A combines sophisticated timing technologies into a single, advanced measurement instrument containing Symmetricom's patented phase measurement algorithm. As is shown in the *5115A Block Diagram* above, upon entry to the 5115A the DUT and reference signals are immediately converted to their digital representations. This allows the 5115A to make accurate measurements without the need for an external phase-lock loop, enabling calibration-free measurements. Additionally, the all-digital 5115A does not require that the frequency of the reference be the same as the DUT.

## FUTUREPROOFED TEST SET

If future measurement requirements change such that the 5115A's phase noise and ADEV floor no longer meet your needs, the 5115A can be upgraded for even better performance. A quick factory upgrade converts the 5115A into a 5120A, improving the phase noise floor by up to 28 dB. For further information on the 5120A's specifications please see this unit's datasheet.

## 5115A Specifications

### PERFORMANCE

- Input frequency range: 1-30 MHz (sinewave)
- Allan deviation: <math>1E-14</math> at 1 sec (0.5 Hz bandwidth)

### Phase Noise Specifications

- Measurement accuracy:  $\pm 1.0$  dB
- Offset frequency range: 0.1 mHz to 1 MHz
- System noise floor (for 10 MHz input):

Offset	$\mathcal{L}(f)$ Phase Noise
1 Hz	-133 dBc/Hz
10 Hz	-143 dBc/Hz
$\geq 100$ Hz	-147 dBc/Hz

### ELECTRICAL SPECIFICATIONS

- Input signal level: -3 to 17 dBm
- Input impedance: 50 $\Omega$
- Input connectors: TNC (supplied with two BNC adapters)

### MECHANICAL & ENVIRONMENTAL SPECIFICATIONS

- Size: 34 cm x 17 cm x 44 cm (13" x 7" x 17")
- Power: 100-240 VAC, 50-60 Hz, 40W (max), IEC 320 connector, power switch.
- Operating temperature: 15°C to 40°C
- Storage temperature: -25°C to 55°C
- Unit weight alone: 9 kg (19 lbs)
- Shipping package weight: 12 kg (25 lbs)

### OPTIONS

- Rack Mount Tray Kit (Option 001)

### UPGRADES

- Factory Upgradeable to 5120A - For Improved Noise Floor

### PRODUCT INCLUDES

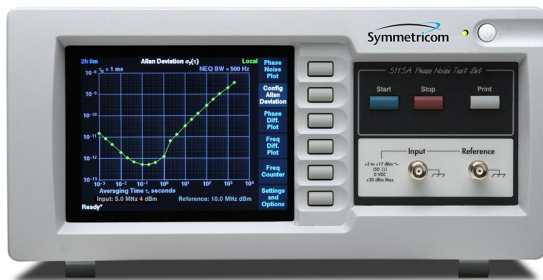
5115A Test Set, 2 TNC-BNC adapters, manual (on CD) and power cord. One-year warranty.

### FRONT PANEL

- Display: Sharp, high-resolution 640x480 RGB LCD
- Buttons: 6 SoftKeys, Start, Stop, Print, Power
- TNC (2x): Input, Reference (3 - 17 dBm)
- LED: Power

### REAR PANEL

- USB (2x): Supports mouse, keyboard and select PostScript-compatible printer connections
- Network: RJ-45 10/100BaseT Ethernet



**SYMMETRICOM, INC.**  
 2300 Orchard Parkway  
 San Jose, California  
 95131-1017  
 tel: 408.433.0910  
 fax: 408.428.7896  
 info@symmetricom.com  
 www.symmetricom.com