Wireless Telecom Group

Holzworth Low Phase Noise Synthesizers And Real-Time Phase Noise Analyzers

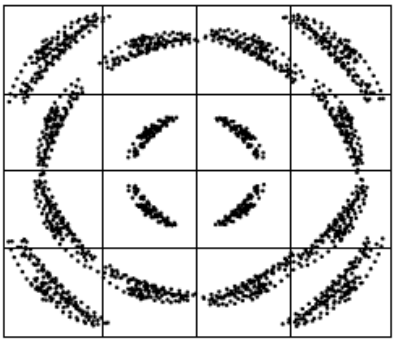
HA7063A

HSY9000A

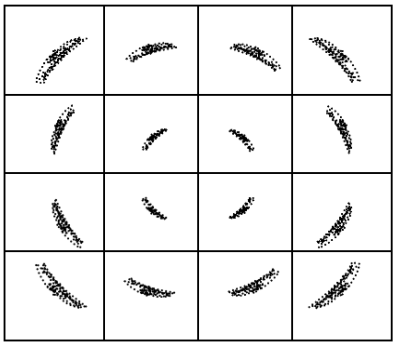
HA7062D

Demonstration:

Today's communication systems (e.g., **5G** and **Wi-Fi**) utilize high order modulation to achieve fast data rates. However, symbol errors can slow the data flow. When symbol errors exist, one potential source is poor phase noise of system local oscillators (LOs). To troubleshoot, engineers can utilize low phase noise synthesizers as an LO substitute or measure the LO's phase noise. This demonstration highlights the capabilities of the **Holzworth HSY9000A** series of multi-channel RF synthesizers with the ULN ultra-low phase noise option and the **Holzworth HA7062D** series of real-time phase noise analyzers used in conjunction with a **Holzworth HA7063A** 50 GHz downconverter.



16 QAM Modulation with a Poor Phase Noise LO



16 QAM Modulation with a Low Phase Noise LO

Target Users:

Target users include design engineers and technicians engaged in design, verification, and troubleshooting of RF and microwave communication systems.

Product Overview:

HSY9000A Series of Multi-Channel RF Synthesizers

The HSY Series RF synthesizers offer industry-leading phase noise and spectral purity as a multichannel CW signal source. The compact 1U chassis allows from 1 to 4 independently tunable channels (frequency / phase offset / amplitude) to optimize channel density within test system racks where space is limited. Application-specific frequency options can be configured to cover combinations of 10 MHz to 3 GHz, 6 GHz, 12 GHz, 24 GHz, and 40 GHz. Each broadband channel output provides accurate power levels from as low as -110 dBm up to as much as +18 dBm. Holzworth's unique multi-loop architecture provides the ultimate in frequency accuracy, channel-to-channel stability, and phase coherency.

Key Specifications and Features:
- Fully independently tunable channels
- 12 GHz Phase Noise: -124 dBc/Hz (10 kHz offset)
- 24 GHz Phase Noise: -118 dBc/Hz (10 kHz offset)
- 40 GHz Phase Noise: -114 dBc/Hz (10 kHz offset)
- Phase coherent channels for the ultimate in channel-to channel stability

Holzworth HA7062D series of Real-Time Phase Noise Analyzers

HA7062D Real-Time Phase Noise Analyzers offer fast measurements, proven accuracy, high reliability, ease of automation and ultimate configuration flexibility. The real-time engine covers the full measurement bandwidth with extremely fast measurement speeds to reduce product development time and optimizes ATE manufacturing throughput.

Key Specifications and Features:
- DUT Input: 10 MHz-26 GHz (optional to 40 GHz)
- Measurement bandwidth: 0.1 Hz to 100 MHz offsets
- Automated absolute and additive (residual) measurements
- Real-time cross correlation
- Only analyzer available that allows actual noise floor measurement

HA7063A 50 GHz Downconverter

The HA7063A 50 GHz Downconverter is a heterodyne downconversion system that is designed to seamlessly integrate with Holzworth's real-time phase noise analysis products as an ANSI-z540 calibrated frequency extension. The HA7063A provides for both absolute and residual (additive) measurements to 50GHz, making it the only solution available on the market for taking accurate additive phase noise measurements at frequencies of greater than 18GHz, without using external mixers.

About Holzworth Instrumentation:

Holzworth Instrumentation is a leader in high-performance phase noise analyzers and signal generators for test and measurement solutions in government, commercial, and academic environments. Optimized for ultra-low phase noise performance, Holzworth products offer fast switching speeds, spectral purity, accuracy, and high reliability while meeting stringent performance specifications in a unique form factor. The Holzworth product portfolio includes real-time phase noise analyzers, broadband RF and microwave synthesizers, frequency dividers, amplifiers, downconverters, phase detectors, and phase shifters.

More Resources:
- **HSY9000A:** https://holzworth.com/products/rf-synthesizers/hsy-series
- **HA7062D:** https://holzworth.com/products/phase-noise-analyzers/ha7062d
- **HA7063A:** https://holzworth.com/products/phase-noise-analyzers/ha7063a