

Understanding Phase Noise

A Simple 5-Step Process to Understanding What Phase Noise Is

Spectral Density

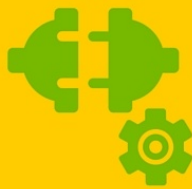
- ✓ A measure of a signal's power intensity in the frequency domain.
- ✓ Characterizes the amplitude versus frequency content of a random signal.

STEP 01



Signal Power Spectral Density

On a XY table, a collection of Spectral Density points at each desired frequency point. For example, at every 1 Hz.



STEP 02

Noise Power Spectral Density

- ✓ The collection of Signal Power Spectral Density points only in the Upper Side Band (Single right Side Band)
- ✓ Any frequency in the Upper Side Band is noise

STEP 03



SSB Noise Density

When we combine the entire single (right) side band with the Noise Power Spectral Density.



STEP 04

Phase Noise

We can spot 'Jitter' when looking at the time domain of the SSB Noise Density,

Jitter = Phase Fluctuations

Phase Fluctuations
=
Phase Noise

STEP 05

