

「Using the PCR-WE2 Series for Power Line Troubleshooting」

Avionic Equipment Measurements & the Effects of Power Line Noise

Avionic equipment is tested to ensure that airborne electrical devices are working properly. The test processes and parameters used vary greatly depending on the purpose of the device. Confirmation tests utilize a line (threshold) to determine a PASS or FAIL.



When conducting these type of measurements, noise can often cause problems. Noise does not only make it difficult to confirm equipment characteristics, but can even render equipment measurements virtually impossible.

Measurement Noise from Power Line

Sometimes noise can be attributed to the power line. There are various factors that cause noise emissions in the power line when making measurements, with the most common being distortion waveforms and ripple waveforms.



Waveforms distorted

Ripple Waveform



Waveforms with imposed harmonics

How to Verify & Eliminate Noise Problems

There are many cases where using a filter or reactor to remove excess elements from waveforms similar to the pictures on the left can effectively improve measurements. However this is not the case for certain wireless instruments that are measured for different purposes. In such cases, it is unlikely that the harmonics affecting the measured amplitude are responsible for the distortion, but rather a **phase error in the power supply line**. It is also important to consider even-order harmonics causing "**horizontal waveform distortion.**"

Using a programmable AC power supply is a very effective solution for troubleshooting root causes of power line noise. Below is the general procedure:



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