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## Universal Power Meters Low Level Performance Check

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### Supplemental Information

This procedure provides a quick-check list for evaluating meter/sensor performance for low-level measurements. It is not intended to verify performance of specifications such as Noise, Temperature Coefficient and Zero Set. For complete verification, please refer to the power meter operation manual.

1. This test is meant to check the low level performance of the meter and sensor. In order to do so, the meter and sensor should first be separated from any external amplifiers, test systems, etc. Turn the meter on and allow stabilization at ambient for 30 minutes. Connect the sensor to the meter but not connected to the test port.
2. **Calibration.** Connect the power sensor to the calibrator port on the power meter and press Zero/Cal.

***NOTE:** During calibration an approximate zero is established for calibration purposes only. This zero is not valid for actual measurements and can limit the measurement range as high as -50 dBm. For proper low-level measurements, the sensor must be zeroed at the test port of the system being tested.*

3. **Zeroing.** Validation of meter and sensor noise floor will be checked using an attenuator or termination. Connect the attenuator or termination to the sensor and allow the unit to stabilize for 3 minutes. The sensor must be thermally stabilized for proper zeroing. If the thermal condition of the sensor varies during the zero procedure, the zero will not be valid.
4. Set averaging to 512 and configure for CW operation. After the unit has thermally stabilized, push the Cal/Zero button.
5. Immediately after zeroing, confirm that the meter reading is at least 3 dB below the minimum CW operating range of the sensor. This checks the noise floor and zero set capabilities of the meter and sensor.
6. **Zero Drift.** Zero Drift is a measure of the change in noise over time. Each family sensor will have a specified expectation of drift over a one-hour period. To confirm, set the meter to linear display (Watts) after verifying noise floor and check that the display does not drift beyond specification over a one-hour period.

Verification for specifications such as noise, zero drift and temperature coefficient of linearity are difficult, time consuming tests. This checklist is useful to quickly determine if there is a catastrophic system failure. Failure to meet the above guidelines is not necessarily an indication of specification failure. Final confirmation of system specification performance is achieved using the verification procedures found in the meter operation manual.