Keysight Technologies
Things to Know to Achieve Optimum Power Measurement Speed and Accuracy
Using Keysight power meters and sensors

Application Brief

Introduction

When you need to maximize power measurement speeds, knowing three key items can make a significant difference. These items include understanding your test signal, equipment, and which measurement technique to use.

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Know Your Test Signal

Knowing the expected power level measurement of the test signal helps you determine what can be done to improve test speed. For example, for low power test signals that fall very low in the power sensor dynamic range, little can be done to improve speed because the noise at that level requires iterations of measurements be averaged to achieve an accurate reading. You also need to know the power type such as CW, average, or peak power of any type of signal (AM, FM, or modulated signal) that needs to be measured. The signal bandwidth of a modulated signal (such as GSM, WiMAX™, WLAN, and LTE) requires the power meter/sensor support video band bandwidth (BW) in order to measure the peak and peak-to-average of the signal. For more details, refer to the Keysight Technologies, Inc. application note *4 Steps for Making Better Power Measurements.*

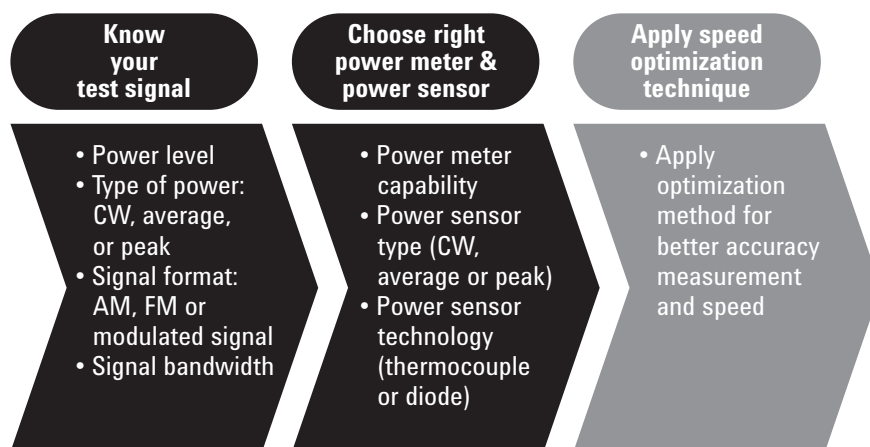## Choose the Right Power Meter and Power Sensor

Knowing the signal characteristics will help you choose the power meter or power sensor that is best suited to the application. You may also need to know the power meter's capability, the type of power sensor, and the technology it needs to measure the signal. For more details refer to the Keysight application note, *Choosing the Right Power Meter and Sensor.*

Apply Speed Optimization Techniques

Once the power meter or sensor is selected, you may find it useful to read the application note, *Practices to Optimize Power Meter/Sensor Measurement Speed and Shorten Test Times.* This application note outlines tips for using power meters and power sensors to achieve faster test times without compromising the measurement accuracy. Alternatively, you can refer to relevant Keysight documents such as a specific power meter's or sensor's User Guide for additional information on speed and accuracy specific to the device.

Conclusion

Figure 1 summarizes the three key elements to maximize power measurement speeds using power meters/sensors.

Know your test signal	Choose right power meter & power sensor	Apply speed optimization technique
• Power level • Type of power: CW, average, or peak • Signal format: AM, FM or modulated signal • Signal bandwidth	• Power meter capability • Power sensor type (CW, average or peak) • Power sensor technology (thermocouple or diode)	• Apply optimization method for better accuracy measurement and speed

References

• *4 Steps for Making Better Power Measurement,* application note, literature number 5965-8167E

• *Choosing the Right Power Meter and Sensor,* application note, literature number 5968-7150E

• *Practices to Optimize Power Meter/Sensor Measurement Speed and Shorten Test Times,* application note, literature number 5990-8471EN

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