Test Equipment Solutions Ltd specialise in the second user sale, rental and distribution of quality test & measurement (T&M) equipment. We stock all major equipment types such as spectrum analyzers, signal generators, oscilloscopes, power meters, logic analysers etc from all the major suppliers such as Agilent, Tektronix, Anritsu and Rohde & Schwarz.

We are focused at the professional end of the marketplace, primarily working with customers for whom high performance, quality and service are key, whilst realising the cost savings that second user equipment offers. As such, we fully test & refurbish equipment in our in-house, traceable Lab. Items are supplied with manuals, accessories and typically a full no-quibble 2 year warranty. Our staff have extensive backgrounds in T&M, totalling over 150 years of combined experience, which enables us to deliver industry-leading service and support. We endeavour to be customer focused in every way right down to the detail, such as offering free delivery on sales, covering the cost of warranty returns BOTH ways (plus supplying a loan unit, if available) and supplying a free business tool with every order.

As well as the headline benefit of cost saving, second user offers shorter lead times, higher reliability and multivendor solutions. Rental, of course, is ideal for shorter term needs and offers fast delivery, flexibility, try-before-you-buy, zero capital expenditure, lower risk and off balance sheet accounting. Both second user and rental improve the key business measure of Return On Capital Employed.

We are based near Heathrow Airport in the UK from where we supply test equipment worldwide. Our facility incorporates Sales, Support, Admin, Logistics and our own in-house Lab.

All products supplied by Test Equipment Solutions include:

- No-quibble parts & labour warranty (we provide transport for UK mainland addresses).
- Free loan equipment during warranty repair, if available.
- Full electrical, mechanical and safety refurbishment in our in-house Lab.
- Certificate of Conformance (calibration available on request).
- Manuals and accessories required for normal operation.
- Free insured delivery to your UK mainland address (sales).
- Support from our team of seasoned Test & Measurement engineers.
- ISO9001 quality assurance.

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Web: www.TestEquipmentHQ.com
The Giga-tronics 8650A Series Universal Power Meters have the extensive measurement capabilities and unique features required to test today’s sophisticated communications systems faster and more accurately.

**TDMA**

The 8650A can automatically measure the average power of pulse modulated signals or pulse signals that are amplitude modulated during the pulse ‘on’ period — such as TDMA signals.

Using the exclusive Burst Average Power mode (BAP), the average power reading in the pulse burst is automatically measured between the 3 dB points. Therefore, the duty cycle can change in time without affecting the accuracy of the meter reading. This method eliminates the need to manually set time gating, which can add errors if the gate is not set accurately.

**GSM**

The Time Gating feature of the 8650A lets you program...
a measurement start time and duration to measure the average power during a specific time period of a GSM burst signal. The graphic display provides visual feedback if you prefer to set the gate manually. And, of course, there is the ability to use the TTL signal for automatically setting the time gate control.

**CDMA**
The 8650A has the wide, 80 dB single sensor dynamic range required for CDMA signal open-loop tests, the speed you need to quickly measure power during closed-loop tests, and the 10 MHz bandwidth needed to test third-generation CDMA signals.

**INSTANTANEOUS PEAK POWER**
You can also measure the instantaneous peak power level of a pulse modulated signal with the 8650A.

A built-in delay line lets you trigger a few nanoseconds ahead of the pulse for rising edge measurements. While a built-in time base gives you sample delay control up to 100 ms after the trigger point with 0.5 ns resolution. And you can view the profile and see the exact measurement point on the pulse.

**MAXIMUM PEAK POWER**
The peak hold feature of the 8650A lets you display the highest instantaneous power measured from the time the feature is enabled until it is reset.

The display value tracks the measured value only when it is rising to a new maximum; when the measured value falls, the display value holds at the maximum.
The Features to do the Job
Faster, Easier and More Accurately

**CREST FACTOR**
The crest factor capability of the 8650A displays the ratio of the maximum peak power (peak hold) measurement to the average power measurement (in dB) from the time the feature is enabled until it is reset.

The crest factor capability operates in the same manner as the peak hold capability: the display value holds at the maximum until it is reset.

**INCREDIBLE SPEED AND STATISTICAL ANALYSIS**
No other meter delivers the measurement speed available from the 8650A.

Achieve over 1,750 readings per second over GPIB.

Or use our exclusive fast buffered mode to further reduce processor overhead and capture over 26,000 readings per second.

Incredible speed for CW and modulated measurements results from an asynchronous sampling rate of 2.5 to 5 MHz, that minimizes the aliasing effects of signals to produce faster average power measurements.

And the 8650A features a wide variety of statistical power measurement analysis, to evaluate communications system efficiency.

**BURST START AND END EXCLUDE**
The exclusive burst start and end exclude capabilities of the 8650A allow you to exclude the beginning or end of a burst when measuring the average burst power.

Masking the beginning or the end of a burst signal, in order to exclude overshoot or other distortions, can be desirable or even required for certain types of power measurements.
Unrivaled Accuracy and Built-In Calibration

Giga-tronics uses diode sensors exclusively to provide speed, range, capability and accuracy unavailable from any other power meter.

**ACCURACY OVER A 90 dB RANGE**

Giga-tronics has solved the problem that limited the use of diode sensors to below -20 dBm — the ‘square law’ region — by utilizing a patented built-in power sweep calibration system.

The power sweep calibrator uses a 50 MHz amplitude controlled oscillator to step from -30 to +20 dBm in 1 dB increments. Each step is set using an internal thermistor — the standard for accuracy and traceability.

Giga-tronics gives you thermistor accuracy plus diode speed for measuring signals over a full 90 dB power range.

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**BUILT-IN FREQUENCY RESPONSE CALIBRATION**

Configuring the meter for measurements is easy with calibration factors programmed into the sensor.

When the measurement frequency is entered, the meter automatically applies the correct calibration factor from the sensor EEPROM. And the meter automatically reads a new set of cal factors when a sensor is changed.

This avoids the chance of measurement error from using invalid calibration factors when you change sensors, or from forgetting to enter new calibration factors. You not only avoid measurement errors; you also save yourself test time.

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An EEPROM in all Giga-tronics sensors automatically applies the correct cal factor, so you save time and avoid measurement errors.
Giga-tronics power meter architecture provides for a broad choice of functional sensors. Just by changing a sensor, you can measure CW power, pulse power, and the peak and average power of TDMA, GSM and CDMA signals faster, more accurately, and over a wider range.

**The Fastest CW Measurements**
Giga-tronics 80300A Series CW Power Sensors let you measure CW power from 10 MHz to 40 GHz at more than 1,750 readings per second over GPIB.

Measure up to 90 dB with a single sensor, and select from a variety of high power sensors, up to 50 W.

**Pulse Power Measurements**
Attach a Giga-tronics 80350A Series Peak Power Sensor to an 8650A meter and directly measure the instantaneous peak power level of a pulse modulated signal.

Use the ‘sample delay’ function to set the desired measurement point on the waveform. And an external scope can be used to view the profile and see the exact measurement point on the pulse.
MODULATED POWER MEASUREMENTS

The Giga-tronics 80400A Series Modulated Power Sensors let you measure the average power of amplitude modulated, burst modulated and other complex modulated signals — such as TDMA signals — at bandwidths up to 40 kHz.

The Giga-tronics 80600A Series Modulated Power Sensors provide bandwidth up to 1.5 MHz to measure the peak and average power of CDMA signals.

And the Giga-tronics 80701A Modulated Power Sensor operating with the 8650A power meter, provides system bandwidth up to 10 MHz to measure the peak and average power of wide band, third-generation CDMA signals over an 80 dB range.
Displays of Intelligence

SEE FOR YOURSELF
The 8650A incorporates a 3.72” wide by 2.15” high Liquid Crystal Display (LCD) with 240 x 120 dot resolution, 0.38 mm dot pitch, and Cold Cathode Fluorescent Lamp (CCFL) back light for maximum detail and optimum viewing.

The large display lets you see more information. And the display works in tandem with the meter controls to let you view menu selections and see your input data as you enter it.

You can view calibration information, select a standard mode, setup and recall pre-configured, custom modes, and set measurement points and durations.

Each sensor uses an EEPROM to store values of cal factor. Entering the measurement frequency automatically calls up the correct cal factor. If the measurement frequency is between cal factor points, the meter automatically enters an interpolated value.

A volts per frequency input is available to set the cal factor when connected to an RF source. As the source frequency is modified the V/F output will automatically set the power meter to the correct cal factor, thereby eliminating the need for manual input.

Peak (Pulse) power sensors can be set to the desired measurement point of a pulse signal. The trigger point can be set using an internal power level or a TTL signal.

Recall setup can be used to pre-configure measurement modes for later use. Full descriptive details help to clearly identify the settings before recall.

The graphic display provides visual feedback as you set the measurement start time and duration of the time gate to measure the average power during a specific time period.

An extensive list of help panels provide assistance in setting up special features and guidance in making the measurement.
View the mean power and standard deviation of the modulated signal over a time period of interest. Standard deviation offers an alternative descriptive analysis of the power variation when compared to the traditional crest factor.

**STATISTICAL ANALYSIS**

Excessive cost can prove as detrimental to the success of communications equipment as inadequate performance. The 8650A provides a range of statistical power measurement analysis features that help you optimize your designs to prevent inadequate performance due to under design or excessive cost due to over design.

These features include crest factor, standard deviation, strip chart, CDF/CCDF, and histogram, and they let you view and thoroughly analyze the power signal over a selected period of time.

Combined, they make the 8650A the most advanced power meter available for communications systems design.
### Giga-tronics Bridge Selection Guide

<table>
<thead>
<tr>
<th>Frequency Range/Power Range</th>
<th>Maximum Power</th>
<th>Power Linearity</th>
<th>Input</th>
<th>Test Port</th>
<th>Directivity</th>
<th>Weight</th>
<th>VSWR</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 MHz to 18 GHz</td>
<td>+27 dBm (10.5 W)</td>
<td>-35 to +10 dBm: ±0.05 dB</td>
<td>Type K(f)</td>
<td>50Ω</td>
<td>38 dB</td>
<td>0.340 kg</td>
<td>&lt; 1.17: 0.01 - 8 GHz</td>
</tr>
<tr>
<td>10 MHz to 26.5 GHz</td>
<td>+27 dBm (10.5 W)</td>
<td>-35 to +10 dBm: ±0.05 dB</td>
<td>Type K(f)</td>
<td>50Ω</td>
<td>40 dB</td>
<td>0.340 kg</td>
<td>&lt; 1.13: 0.01 - 8 GHz</td>
</tr>
<tr>
<td>10 MHz to 40 GHz</td>
<td>+27 dBm (10.5 W)</td>
<td>-35 to +10 dBm: ±0.05 dB</td>
<td>Type K(f)</td>
<td>50Ω</td>
<td>35 dB</td>
<td>0.340 kg</td>
<td>&lt; 1.22: 0.01 - 8 GHz</td>
</tr>
</tbody>
</table>

### Giga-tronics Peak Power Sensor Selection Guide

<table>
<thead>
<tr>
<th>Frequency Range/Power Range</th>
<th>Maximum Power</th>
<th>Power Linearity</th>
<th>RF Connector</th>
<th>Length</th>
<th>Diameter</th>
<th>Weight</th>
<th>VSWR</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 MHz to 18 GHz</td>
<td>+27 dBm (200 W)</td>
<td>-20 to +20 dBm: ±0.1 dB</td>
<td>Type N(m)</td>
<td>50Ω</td>
<td>114.5 mm</td>
<td>32 mm</td>
<td>0.18 kg</td>
</tr>
<tr>
<td>10 MHz to 26.5 GHz</td>
<td>+27 dBm (200 W)</td>
<td>-20 to +20 dBm: ±0.1 dB</td>
<td>Type K(m)</td>
<td>50Ω</td>
<td>114.5 mm</td>
<td>32 mm</td>
<td>0.18 kg</td>
</tr>
<tr>
<td>10 MHz to 40 GHz</td>
<td>+27 dBm (200 W)</td>
<td>-20 to +20 dBm: ±0.1 dB</td>
<td>Type K(m)</td>
<td>50Ω</td>
<td>114.5 mm</td>
<td>32 mm</td>
<td>0.18 kg</td>
</tr>
</tbody>
</table>

### Giga-tronics CW Power Sensor Selection Guide

<table>
<thead>
<tr>
<th>Frequency Range/Power Range</th>
<th>Maximum Power</th>
<th>Power Linearity</th>
<th>RF Connector</th>
<th>Length</th>
<th>Diameter</th>
<th>Weight</th>
<th>VSWR</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 MHz to 18 GHz</td>
<td>+27 dBm (800 mW)</td>
<td>-64 to -46 dBm: ±0.05 dB</td>
<td>Type K(m)</td>
<td>50Ω</td>
<td>127 mm</td>
<td>32 mm</td>
<td>0.23 kg</td>
</tr>
<tr>
<td>10 MHz to 40 GHz</td>
<td>+30 dBm (1 W)</td>
<td>-60 to -40 dBm: ±0.05 dB</td>
<td>Type K(m)</td>
<td>50Ω</td>
<td>110 mm</td>
<td>32 mm</td>
<td>0.23 kg</td>
</tr>
<tr>
<td>20 MHz Peak Power Sensor 6,7</td>
<td>+44 dBm (25 W)</td>
<td>-60 to -40 dBm: ±0.05 dB</td>
<td>Type K(m)</td>
<td>50Ω</td>
<td>110 mm</td>
<td>32 mm</td>
<td>0.23 kg</td>
</tr>
</tbody>
</table>

### Giga-tronics 25 W Peak Power Sensor 6,7

<table>
<thead>
<tr>
<th>Frequency Range/Power Range</th>
<th>Maximum Power</th>
<th>Power Linearity</th>
<th>RF Connector</th>
<th>Length</th>
<th>Diameter</th>
<th>Weight</th>
<th>VSWR</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 MHz to 18 GHz</td>
<td>+27 dBm (200 W)</td>
<td>-20 to +20 dBm: ±0.1 dB</td>
<td>Type N(m)</td>
<td>50Ω</td>
<td>165 mm</td>
<td>37 mm</td>
<td>0.3 kg</td>
</tr>
<tr>
<td>10 MHz to 26.5 GHz</td>
<td>+27 dBm (200 W)</td>
<td>-20 to +20 dBm: ±0.1 dB</td>
<td>Type K(m)</td>
<td>50Ω</td>
<td>165 mm</td>
<td>37 mm</td>
<td>0.3 kg</td>
</tr>
<tr>
<td>10 MHz to 40 GHz</td>
<td>+27 dBm (200 W)</td>
<td>-20 to +20 dBm: ±0.1 dB</td>
<td>Type K(m)</td>
<td>50Ω</td>
<td>230 mm</td>
<td>37 mm</td>
<td>0.3 kg</td>
</tr>
</tbody>
</table>

### Giga-tronics 50 W Peak Power Sensor 6,7

<table>
<thead>
<tr>
<th>Frequency Range/Power Range</th>
<th>Maximum Power</th>
<th>Power Linearity</th>
<th>RF Connector</th>
<th>Length</th>
<th>Diameter</th>
<th>Weight</th>
<th>VSWR</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 MHz to 18 GHz</td>
<td>+27 dBm (450 mW)</td>
<td>-60 to -40 dBm: ±0.05 dB</td>
<td>Type K(m)</td>
<td>50Ω</td>
<td>280 mm</td>
<td>37 mm</td>
<td>0.3 kg</td>
</tr>
<tr>
<td>10 MHz to 26.5 GHz</td>
<td>+27 dBm (450 mW)</td>
<td>-60 to -40 dBm: ±0.05 dB</td>
<td>Type K(m)</td>
<td>50Ω</td>
<td>280 mm</td>
<td>37 mm</td>
<td>0.3 kg</td>
</tr>
<tr>
<td>10 MHz to 40 GHz</td>
<td>+27 dBm (450 mW)</td>
<td>-60 to -40 dBm: ±0.05 dB</td>
<td>Type K(m)</td>
<td>50Ω</td>
<td>280 mm</td>
<td>37 mm</td>
<td>0.3 kg</td>
</tr>
</tbody>
</table>

### Giga-tronics 5 W Peak Power Sensor 6,7

<table>
<thead>
<tr>
<th>Frequency Range/Power Range</th>
<th>Maximum Power</th>
<th>Power Linearity</th>
<th>RF Connector</th>
<th>Length</th>
<th>Diameter</th>
<th>Weight</th>
<th>VSWR</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 MHz to 18 GHz</td>
<td>+27 dBm (450 mW)</td>
<td>-60 to -40 dBm: ±0.05 dB</td>
<td>Type K(m)</td>
<td>50Ω</td>
<td>280 mm</td>
<td>37 mm</td>
<td>0.3 kg</td>
</tr>
<tr>
<td>10 MHz to 26.5 GHz</td>
<td>+27 dBm (450 mW)</td>
<td>-60 to -40 dBm: ±0.05 dB</td>
<td>Type K(m)</td>
<td>50Ω</td>
<td>280 mm</td>
<td>37 mm</td>
<td>0.3 kg</td>
</tr>
<tr>
<td>10 MHz to 40 GHz</td>
<td>+27 dBm (450 mW)</td>
<td>-60 to -40 dBm: ±0.05 dB</td>
<td>Type K(m)</td>
<td>50Ω</td>
<td>280 mm</td>
<td>37 mm</td>
<td>0.3 kg</td>
</tr>
</tbody>
</table>
### Giga-tronics Modulation Power Sensor Selection Guide (f < 40 kHz)

<table>
<thead>
<tr>
<th>Frequency Range/Power Range</th>
<th>Maximum Power</th>
<th>Power Linearity&lt;sup&gt;1&lt;/sup&gt; (Frequency &gt; 8 GHz)</th>
<th>RF Connector</th>
<th>Length</th>
<th>Diameter</th>
<th>Weight</th>
<th>VSWR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>200 mW Modulation Power Sensors</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80401A 10 MHz to 18 GHz</td>
<td>+23 dBm (200 mW)</td>
<td>-67 to -20 dBm: ±0.00 dB</td>
<td>Type N(m)</td>
<td>50Ω</td>
<td>32 mm</td>
<td>0.18 kg</td>
<td>1.04</td>
</tr>
<tr>
<td>80402A 10 MHz to 18 GHz</td>
<td>+23 dBm (200 mW)</td>
<td>-67 to -20 dBm: ±0.00 dB</td>
<td>APC-7</td>
<td>50Ω</td>
<td>32 mm</td>
<td>0.18 kg</td>
<td>1.04</td>
</tr>
<tr>
<td><strong>Low VSWR Modulation Power Sensor</strong></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80501A 10 MHz to 18 GHz</td>
<td>+29 dBm (800 mW)</td>
<td>-64 to -14 dBm: ±0.00 dB</td>
<td>Type K(m)</td>
<td>50Ω</td>
<td>32 mm</td>
<td>0.23 kg</td>
<td>1.13</td>
</tr>
</tbody>
</table>

### Giga-tronics Modulation Power Sensor Selection Guide (f < 1.5 MHz)

<table>
<thead>
<tr>
<th>Frequency Range/Power Range</th>
<th>Maximum Power</th>
<th>Power Linearity&lt;sup&gt;1&lt;/sup&gt; (Frequency &gt; 8 GHz)</th>
<th>RF Connector</th>
<th>Length</th>
<th>Diameter</th>
<th>Weight</th>
<th>VSWR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>200 mW Modulation Power Sensors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80501A 10 MHz to 18 GHz</td>
<td>+23 dBm (200 mW)</td>
<td>-67 to -20 dBm: ±0.00 dB</td>
<td>Type N(m)</td>
<td>50Ω</td>
<td>32 mm</td>
<td>0.23 kg</td>
<td>1.13</td>
</tr>
<tr>
<td>80502A 10 MHz to 18 GHz</td>
<td>+23 dBm (200 mW)</td>
<td>-67 to -20 dBm: ±0.00 dB</td>
<td>APC-7</td>
<td>50Ω</td>
<td>32 mm</td>
<td>0.23 kg</td>
<td>1.13</td>
</tr>
<tr>
<td><strong>5 W Modulation Power Sensor</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80601A 10 MHz to 18 GHz</td>
<td>+37 dBm (5 W)</td>
<td>-47 to 0 dBm: ±0.00 dB</td>
<td>Type N(m)</td>
<td>50Ω</td>
<td>32 mm</td>
<td>0.3 kg</td>
<td>1.25</td>
</tr>
</tbody>
</table>

### Giga-tronics Modulation Power Sensor Selection Guide (f < 10 MHz)

<table>
<thead>
<tr>
<th>Frequency Range/Power Range</th>
<th>Maximum Power</th>
<th>Power Linearity&lt;sup&gt;1&lt;/sup&gt; (Frequency &gt; 8 GHz)</th>
<th>RF Connector</th>
<th>Length</th>
<th>Diameter</th>
<th>Weight</th>
<th>VSWR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>200 mW Modulation Power Sensor</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80701A (Requires Option 12)</td>
<td>+23 dBm (200 mW)</td>
<td>-67 to -20 dBm: ±0.00 dB</td>
<td>Type N(m)</td>
<td>50Ω</td>
<td>32 mm</td>
<td>0.23 kg</td>
<td>1.13</td>
</tr>
<tr>
<td><strong>200 mW Low VSWR Modulation Power Sensor</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80801A 10 MHz to 18 GHz</td>
<td>+23 dBm (200 mW)</td>
<td>-67 to -20 dBm: ±0.00 dB</td>
<td>Type K(m)</td>
<td>50Ω</td>
<td>32 mm</td>
<td>0.23 kg</td>
<td>1.13</td>
</tr>
</tbody>
</table>

### Giga-tronics True RMS Sensors Selection Guide (f > 1.5 MHz)

<table>
<thead>
<tr>
<th>Frequency Range/Power Range</th>
<th>Maximum Power</th>
<th>Power Linearity&lt;sup&gt;1&lt;/sup&gt; (Frequency &gt; 8 GHz)</th>
<th>RF Connector</th>
<th>Length</th>
<th>Diameter</th>
<th>Weight</th>
<th>VSWR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>True RMS Sensors (-30 dBm to +20 dBm)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80330A 10 MHz to 18 GHz</td>
<td>+33 dBm (2 W)</td>
<td>-30 to +20 dBm: ±0.00 dB</td>
<td>Type K(m)</td>
<td>50Ω</td>
<td>32 mm</td>
<td>0.27 kg</td>
<td>1.13</td>
</tr>
</tbody>
</table>

### Sensor Calibration Factor Uncertainties

<table>
<thead>
<tr>
<th>Frequency (GHz)</th>
<th>Root Sum of Squares (RSS) Uncertainties&lt;sup&gt;1&lt;/sup&gt; (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.05 0.06 0.07 0.08 0.09 0.10 0.11 0.12 0.13 0.14 0.15 0.16 0.17 0.18 0.19 0.20</td>
<td></td>
</tr>
</tbody>
</table>

<sup>1</sup>The K connector is electrically and mechanically compatible with the APC-3.5 and SMA connectors. Note: Use Type N(m) to SMA/F adapter (part no. 29835) for calibration of power sensors with Type K(m) connectors. <sup>2</sup>Power coefficient equals <0.01 dB/Watt. <sup>3</sup>Power coefficient equals <0.015 dB/Watt. <sup>4</sup>Frequencies above 8 GHz, add power linearity to system linearity. <sup>5</sup>Peak operating range above CW maximum range is limited to <10% duty cycle. <sup>6</sup>Square root of the sum of the individual uncertainties squared (RSS). <sup>7</sup>Cal Factor numbers allow for 3% repeatability when reconnecting an attenuator to a sensor and 3% for attenuation measurement uncertainty and mismatch of sensor/pad combination.
Specifications describe the instrument's warranted performance, and apply when using the 80300A, 80400A, 80600A, and 80700A Series Sensors.

**METER**

**Frequency Range:** 10 MHz to 40 GHz  
**Power Range:** -70 dBm to +47 dBm  
(100 pW to 50 Watt)

**Single Sensor Dynamic Range:**  
- **CW Power Sensors:** 90 dB  
- **Peak (Pulse) Power Sensors:** 40 dB, Peak  
- **Modulation Power Sensors:** 87 dB, CW  
- **80 dB, MAP/BAP**  
- **60 dB, BAP**

**Display Resolution:** User selectable from 1 dB to 0.001 dB in Log mode, and from 1 to 4 digits of display resolution in Linear mode.

**Meter Functions**

**Measurement Modes (Sensors):**  
- **CW (80300A, 80350A, 80400A, 80600A, and 80700A Series)**  
- **Peak (Pulse) Power Sensors:** (80350A, 80400A, 80600A, and 80700A Series)**

**Averaging:** User selectable, auto-averaging or manual from 1-512 readings. Timed averaging from 20 ms to 20 seconds.

**dBB Rel and Offset:** Power display can be offset by -99.999 to +99.999 dB to account for external loss/gain.

**Configuration Storage Registers:** Allows up to 20 front panel setups.

**Power Measurements and Display**

- **Number of Display Lines:** 4
- **Sampling:**  
  - **CW and Modulation Mode:** 2.5 to 5 MHz asynchronous
  - **CW Mode:** ≥ 5 kHz
  - **Modulation Mode:** > 10 MHz
- **Time Gating:**  
  - **Trigger Delay:** 0 to 327 ms
  - **Gate Time:** 10 μs to 327 ms
  - **Holdoff Time:** 0 to 327 ms

**Remote Inputs/Outputs**

- **Connections:**  
  - **8652A Rear Panel Input Connectors**
  - **1 MHz, 50 MHz Switchable Calibrator**
  - **8651A Rear Panel Input Connector**
  - **09 Dual Rack Mount Kit (with assembly instructions)**
  - **07 Side Mounted Carrying Handle**
  - **05 Soft Carrying Case**
  - **03 8651A Rear Panel Sensor and Calibrator Connections**
  - **01 Rack Mount Kit**

**Power Meter Options**

- **8651A Single Input Universal Power Meter** (includes 1 sensor cable)
- **8652A Dual Input Universal Power Meter** (includes 2 sensor cables)

**Accessories**

- One manual, one power cord.

**Power Meters**

- **8651A**
- **8652A**

**Ordering Information**

- **POWER METERS**
  - **POWER METER OPTIONS**
  - **ACCESSORIES**

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