APPLICATION BRIEF

Secondary Surveillance Radar (SSR) RF Power Measurement Challenges

Design, Verification, Troubleshooting and Maintenance of secondary surveillance radar (e.g. IFF-based radar) has never been more demanding. Proper design and operation of SSR systems can literally mean the difference between life and death. To reduce the possibility of a catastrophic event, federal aviation safety standards, such as those defined by the US Federal Aviation Administration, require transponders to undergo periodic maintenance and calibration. As a result, engineers and technicians have a need for the best analysis tools available whenever and wherever required. In addition, they want to be certain of the measurements they make. All this needs to be done in less time with less money.

Today's Test Challenges:

Need for Better Analysis Tools	• More capable instrumentation allows users to adapt to changing measurement requirements without additional investment. • Reduced rise times, better time resolution, and the ability to measure narrower pulse widths and greater pulse repetition frequencies permit measurement of a wider set of waveforms. • Longer viewing times permits engineers to observe potential variations in waveforms over time (e.g. heating effects). ○ Tools, such as persistence displays, provide visual identification of anomalies over time.
Greater Assurance of Test Results	• Real-time processing acquisition engines ensure no pulses or signal anomalies are missed while processing measurements. • Greater time resolution enables users to see waveform abnormalities that might not otherwise be visible. • Less trigger jitter for more stable measurements.
Faster Time to Results	• Faster measurement times get essential information sooner. • Automated pulse parameter measurements simplify signal characterization and minimizes manual setup errors. • Simple, intuitive software enables less time learning and configuring tools and more time measuring.
Greater Portability of Solutions	• USB sensors are much smaller and lower weight than benchtop solutions and can be powered by a PC. • Unrestricted accessibility of software enables users to get results whenever and wherever they are needed.

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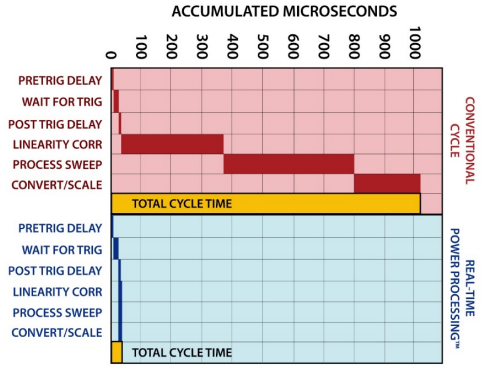
Secondary Surveillance Radar (SSR) RF Power Measurement Challenges

The Boonton RTP5000 series of Real-Time Peak USB Power Sensors addresses challenges faced by engineers and technicians who design, verify, troubleshoot, and maintain secondary surveillance radar (SSR) and Interrogate Friend or Foe (IFF) systems by providing better analysis tools, test result assurance, faster time to results, and portability. The RTP5000 series provides leading-edge performance in a small, lightweight form factor incorporating real-time power processing™ and offering faster rise times, better time resolution, the fastest measurements, and a complementary simple, intuitive graphical user interface.

The value of Real-Time Power Processing™



FEATURE	BENEFIT
Real-Time Power Processing™	Measurements in virtually real-time avoiding missed dropouts or glitches
Industry-leading rise time	< 3 ns vs 13 ns; > 4x faster
Industry-leading video bandwidth	195 MHz vs 30 MHz; >6x wider
Industry-leading time resolution	Equivalent effective sampling provides 100 ps resolution; 10 x better
Wider measurement range	+20 dBm to -60 dBm vs +20 dBm vs -35 dBm; 15 to 25 dB more measurement range
Narrower pulse width measurements	6 ns vs 50 ns; nearly 10x narrower measurement capability
Higher pulse repetition frequency capability	50 MHz vs 10 MHz; 5x higher
Wider trigger range and greater stability	+20 dBm to -38 dBm vs +20 dBm vs -20 dBm; 18 dB more trigger range; < 100 ps trigger jitter
Longer viewing range	Virtually unlimited (memory buffer mode) vs 1 s; > infinitely longer
Faster measurement rates	100,000 measurements (average, peak, and minimum) / s vs 50,000 measurements (single value) / s for limited count
Automated pulse measurements	View 6 pulse parameters on up to 8 channels
More accessible software	Full features standard – no options to purchase; distribute freely to other work stations