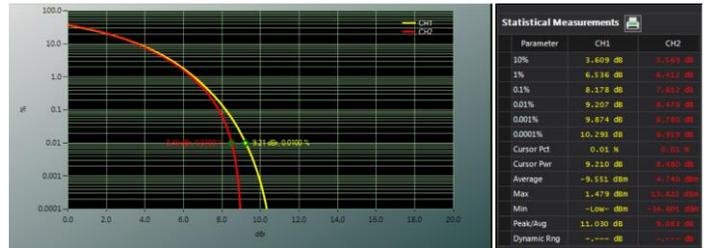


# Measuring Amplifier Compression with USB Peak Power Sensors

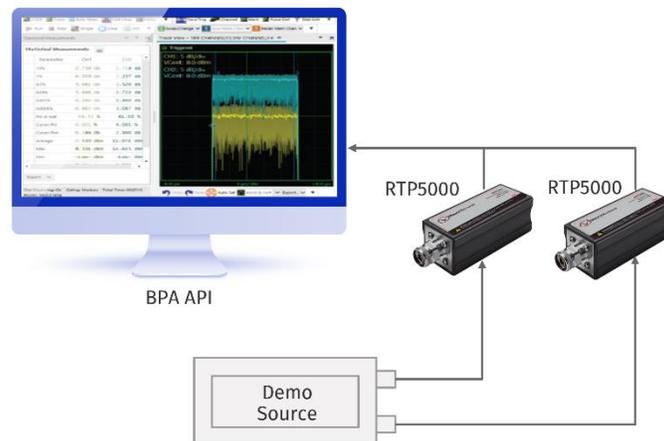
RF amplifiers must handle signals with varying peak-to-average power levels while maintaining consistent gain. As signal peaks increase, compression can occur, impacting signal quality and system performance. The complementary cumulative distribution function (CCDF) is a statistical measurement used to measure peak power excursions and evaluate how an amplifier responds to these level changes.



CCDF plot comparing peak-to-average power behavior of amplifier input and output signals with associated statistical measurements.

In this demonstration, the Maury Microwave RTP5000 real-time peak power sensors and BPA application evaluate the gain and compression behavior of an RF amplifier. The BPA software captures CCDF data from the RTP5000 sensors to compare the peak-to-average behavior of the amplifier input and output signals. Using the CCDF display, users can select any desired probability point, based on system requirements, to measure the peak-to-average ratio (crest factor). By comparing the input and output curves at this point, the 1 dB compression point (P1dB) can be identified, indicating the transition from linear operation to amplifier compression and signal distortion.

## Demo Setup



## Target Users

Target users include RF design engineers, test engineers, and system integrators evaluating amplifier performance in satellite communication systems.

# Product Overview

## RTP5000 Series Real-Time Peak Power Sensors

Providing the highest video bandwidth and fastest rise times, RTP5000 peak USB power sensors with Real-Time Power Processing™ deliver 100,000 measurements per second, no gaps in signal acquisition and zero measurement latency. Combining this performance with automatic pulse measurements, CCDF and crest factor statistical analysis, multi-channel capabilities, and documentation tools, RTP5000 peak power sensors are the ideal instrument for fast, accurate and reliable RF power measurements.

### KEY SPECIFICATIONS AND FEATURES:

- Accurate automated pulse measurements
- Crest factor, CCDF, and statistical measurements
- Industry-leading video bandwidth (195 MHz), rise time (3 ns), measurement speed (100,000 per second), and time resolution (100 ps)
- Synchronized multi-channel measurements

## BPA Software

The BPA software is a Windows-based software package that provides control and readout of the RTP5000 and RTP4000 series power sensors. It is an easy-to-use program that provides both time and statistical domain views of power waveforms with variable peak hold and persistence views. Power measurements are supported using automated pulse and statistical measurements, power level and timing markers

### KEY SPECIFICATIONS AND FEATURES:

- Meter and trace view
- Envelope, maximum, and minimum displays
- Automated measurements and automated marker measurements
- Multi-pulse measurements
- CCDF and statistical measurements

## More Resources

Visit [maurymw.com/info/satellite-2026](http://maurymw.com/info/satellite-2026) to learn more about Maury solutions.

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