

# CX3300A Anomalous Waveform Analytics

Quickly Capture and Analyze Anomalous Signals in the Current and Voltage Waveform Data Exceeding a Terabyte



## Capturing Signal Anomalies in Waveforms

Engineers need to acquire additional measurement data to validate their design to ensure the reliability of IoT connected devices. It is critical to analyze the extensive amount of data quickly, determine the signal anomalies to troubleshoot, debug, and conduct the failure analysis.

# Anomalous Waveform Analytics

Anomalous waveform analytics software is a machine learning technology embedded in the Keysight CX3300A waveform analyzer. It helps you to capture repetitive voltage and current waveform exceeding a terabyte. You can immediately identify and analyze intermittent anomalous signals and events in the waveform that are not possible by manual analysis (Figure 1).

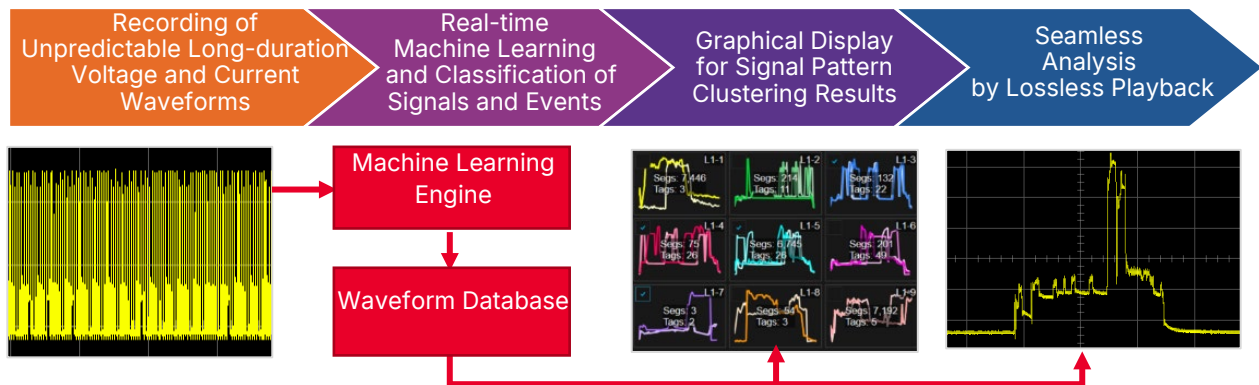


Figure 1. Overview of anomalous waveform analytics and its capabilities

## Applications

### Hardware Trojan Detection for Cybersecurity

A hardware Trojan is a malicious modification of the circuitry in an integrated circuit. The introduction of hardware Trojans can occur in each phase of the supply chain.

CX3300A's anomalous waveform analytics can classify the typical and anomaly waveforms by detecting the difference in the device's current waveform (Figure 2). It can identify in seconds 0.1% of 35 signal anomalies from a duration of 30 minutes of waveform data for more than 35,000 signals.

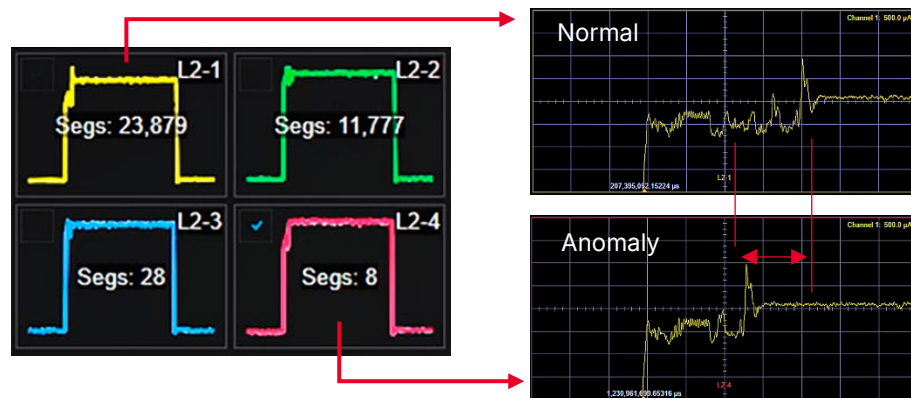


Figure 2. The CX3300A detects and classifies the delta of the waveform

In addition to hardware Trojan detection, the following applications will help you with

- IoT chipset design validation of cyclic sleep and active operation
- Power management optimization for microprocessor design
- Power Management IC (PMIC) power rail characterization for battery-powered devices
- Switching device failure analysis for mechanical relay troubleshooting



## Conclusion

The CX3300A's anomalous waveform analytics feature captures and analyzes anomalies in your waveform. Unlike the traditional oscilloscope with a limited memory depth, the CX3300A can capture waveforms up to 100 hours without a time lag. It can accelerate the IoT connected device characterization and validation, debugging and troubleshooting, and optimization. The CX3300A features a wide dynamic range and bandwidth, low noise, voltage, and current measurement sensitivity, and more.

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