

5 C's of IoT Solutions

CATALOG



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Introduction

Designing and testing multifaceted IoT devices and systems

The continued growth of the IoT industry has been transformative across all industries, from consumer, healthcare, automotive, industrial, to the smart city. IoT deployments have diversified, extending from consumer to mission-critical applications for public safety, emergency response, industrial automation, and autonomous vehicles.

While IoT devices offer great convenience, having large numbers in a small space brings a new level of complexity in terms of design, test, performance monitoring, and security. As a design engineer, system architect, or device manufacturer, you will face challenges in deploying reliable and secure IoT.

Want to learn more?



You will need to address the 5 C challenges across the IoT device lifecycle



Connectivity ensures that your IoT devices connect to other IoT devices, the cloud, and the world around them.



Continuity requires that your IoT devices have extended battery life to do their jobs.



Compliance requires that your IoT devices adhere to global regulations.



Coexistence ensures that your IoT devices work harmoniously in crowded IoT environments.



Cybersecurity safeguards your data from cyberthreats.

IoT Connectivity Test

If you manufacture IoT devices for mission-critical applications, implementing the right RF tests is essential to avoid product failures or recalls that could damage your brand. Traditional test methods using a “golden radio” or “companion devices” are simple and cost-effective. However, these methods only cover limited criteria, and you may miss critical defects.

Keysight is ready to help you tackle the challenges in connectivity test today. From driving down the cost-of-test to speeding development to deliver robust, reliable IoT devices, Keysight has the solutions to cover your needs.

Want to learn more?



X8711A IoT device functional test solution

Detect manufacturing defects confidently and affordably with **Keysight's X8711A IoT device functional test solution**. This signaling test solution enables over-the-air and conducted testing of IoT devices and covers the most commonly used radio formats such as *Bluetooth*® Low Energy, WLAN, and ZigBee®. The X8711A comes with automation software and an RF shield enclosure that allows you to obtain accurate transmitter power and receiver Packet Error Rate (PER) measurement values in seconds.

- Test IoT devices in actual operation modes and in final form.
- Simplify NPI test development with ready-to-use measurement suites.
- Maximize manufacturing throughput and accelerate time-to-market.

Learn more about other IoT connectivity test solutions

[Keysight X-Series spectrum analyzers](#)

[Keysight X-Series signal generators](#)

[Keysight E6640A EXM wireless test set](#)

[Ixia IoT](#)



[Get a Quote >](#)

X8711A IoT Device Functional Test Solution



IoT Continuity Test

In mission-critical applications, failure of an IoT device battery is not an option. Finding the optimal balance between battery protocol and software functionality to get reliable performance and service life requires an in-depth understanding of battery life and current drain that traditional measurement techniques cannot provide.

Keysight holds current and power measurement technology patents and a wealth of experience in making these measurements. Explore the hardware and software test solutions that today's engineers trust to innovate designs to extend battery life.

Want to learn more?



CX3300A Series Current Waveform Analyzer

[Get a Quote >](#)



CX3300A Series device current waveform analyzer

The **Keysight CX3300A Series current waveform analyzer** is an all-in-one measurement and analysis solution to solve your power rail, power delivery network, and power integrity challenges. Specifically built for low-power IoT devices and chip characterization, it measures the industry's lowest current with maximum bandwidth.

The CX3300A Series makes achieving mission-critical power and current consumption reductions possible by precisely measuring previously unmeasurable wideband low-level current waveforms.

- Covers sleep to active mode with a single measurement.
- Provides excellent visibility of the dynamic current waveform in sleep mode by using ultra-low noise current sensors.
- Enables estimation of power consumption by capturing the voltage waveform of a device under test.
- Gives greater insight with built-in analysis tools designed to improve characterization and debug efficiency without requiring external analysis tools.
- Identify and analyze intermittent anomalous signals and events with anomalous waveform analytics, a machine learning technology.

Learn more about other IoT continuity test solutions

- [Keysight X8712A IoT device battery life optimization solution](#)
- [KS833A2A PathWave Event-Based Power Analysis Software](#)
- [Keysight N6705C DC power analyzer](#)

IoT Compliance and Coexistence Testing

Compliance is about making sure your IoT devices adhere to the radio standards and global regulatory requirements before market entry. Coexistence testing, on the other hand, is the only way to accurately evaluate your device's ability to maintain its Functional Wireless Performance (FWP) in the presence of intended and unintended (interfering) signals. Design engineers often scramble to meet a tight product introduction timeline to ensure a seamless release to the global market, while complying with the latest regulations. Frequent updates to the regulations also further add to the complexity.

Keysight's compliance and coexistence testing solutions enable you to design and develop products that can withstand the rigors of the real world with confidence.

Want to learn more?



ZA0047A wireless IoT device regulatory test solution

The **Keysight ZA0047A wireless IoT device regulatory test solution** enables you to easily perform compliance or pre-compliance testing based on the latest test cases for ETSI EN300-328 / 301-893, FCC Part 15.247 / 15.407, and Dynamic Frequency Selection (DFS). You can characterize the RF environment and perform the coexistence test with the real-time spectrum analyzer. The flexible and scalable ZA0047A Wireless IoT compliance test solution is an automated test system that meets the latest regulatory requirements.

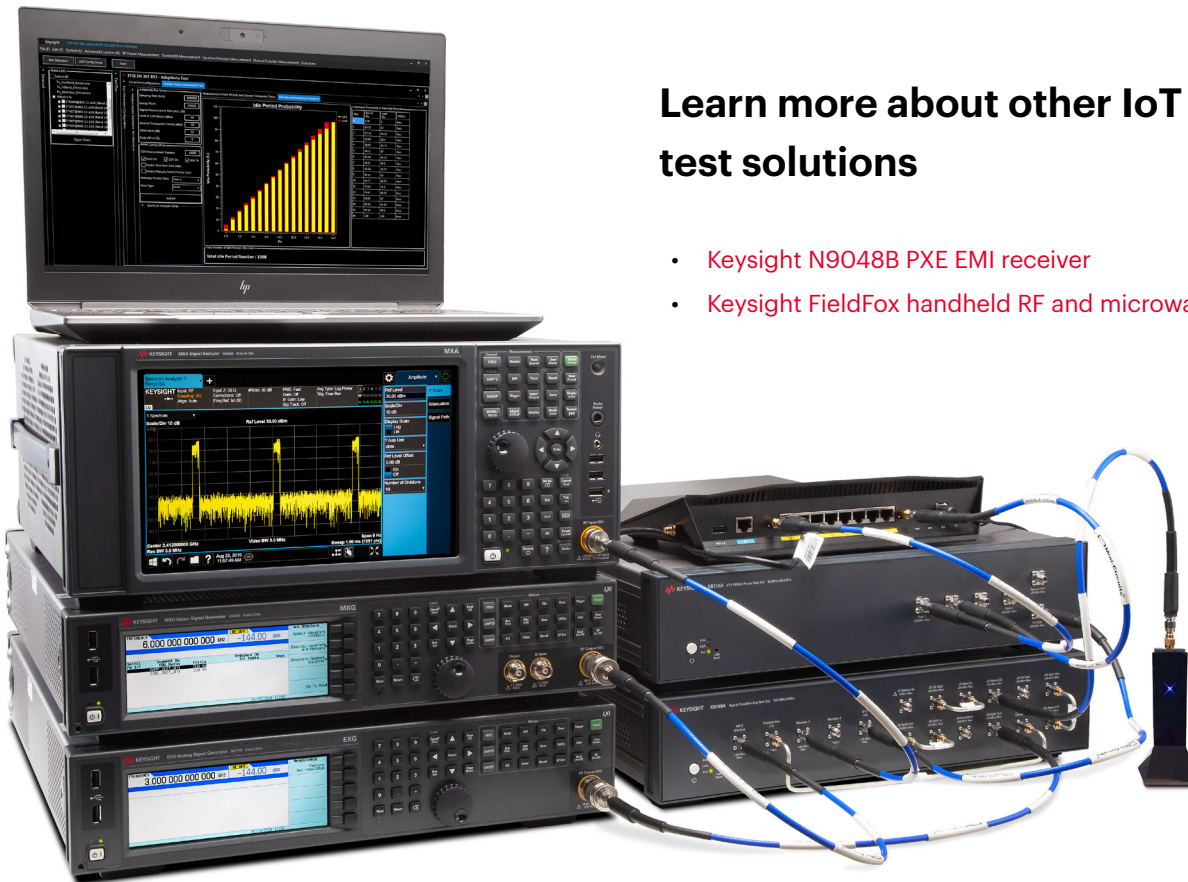
- Covers the latest test cases for wireless regulatory standards — ETSI, FCC, and DFS with dedicated software to ensure compliance.
- Supports various IoT device types, such as frequency-hopping, adaptability, MIMO, and standard radio formats.
- Generates test reports to prove adherence to regulatory standards.

ZA0047A Wireless IoT Device
Regulatory Test Solution

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Learn more about other IoT compliance and coexistence test solutions

- **Keysight N9048B PXE EMI receiver**
- **Keysight FieldFox handheld RF and microwave analyzers**



IoT Cybersecurity Testing

Any connected device has the potential to act as a gateway for hackers to gain access to your network. Businesses must secure their networks with test solutions that can verify the stability, accuracy, and quality of their network and network devices to minimize the risk of a cyberattack. Having 100% visibility to your network traffic can further enhance the network security of your business as it provides intelligence inside network packets to improve the accuracy and efficiency of security and monitoring devices.

Secure your IoT devices by testing the underlying security infrastructure. Keysight offers a full suite of dynamic network intelligence solutions for validating your network security configuration, infrastructure, and appliances.

Want to learn more?



BreakingPoint application and security testing

Keysight's BreakingPoint software, together with PerfectStorm ONE, provides device vendors with a platform to fully showcase their product's performance, resiliency, and throughput under real-world traffic loads. BreakingPoint software enables device vendors to validate the security posture of their networks using real applications and a complete range of threat vectors.

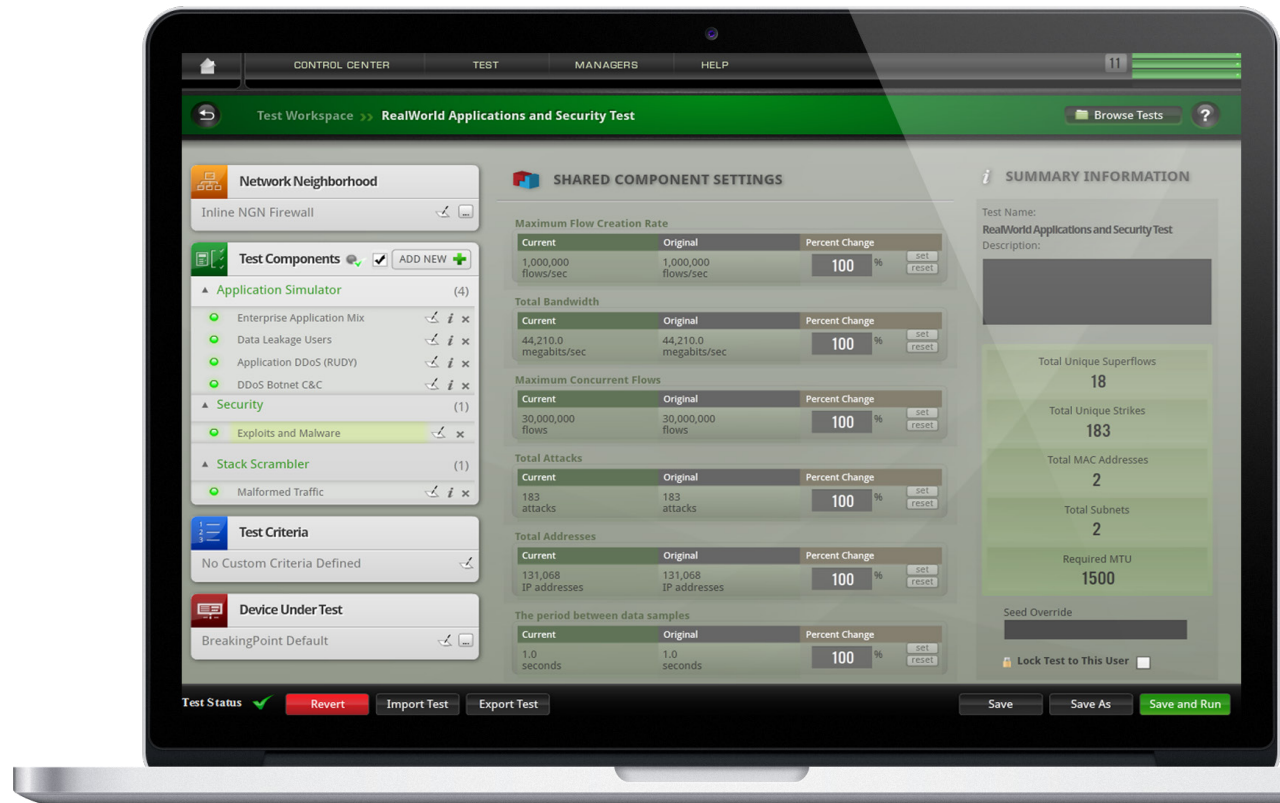
- Find network issues and prepare for the unexpected with the industry's fastest protocol fuzzing capabilities.
- Validate the performance and security resiliency of service provider networks using emulations over 3G/4G/LTE.
- Simulate high-volume traffic with embedded threats and attacks.

BreakingPoint

[Get a Quote >](#)

Read more about other Keysight IoT cybersecurity test solutions

- [BreakingPoint VE](#)
- [PerfectStorm ONE: Application and Security Testing](#)



Keysight Helps Advance Your Mission-Critical IoT

You can count on Keysight as a partner to advance your mission-critical IoT. With more than 70 solutions, Keysight helps you build with confidence, robust and secure IoT products.

For a complete list of IoT design and test solutions, read [Keysight's Design and Test Solutions for the Internet of Things](#) solutions brochure.





Keysight enables innovators to push the boundaries of engineering by quickly solving design, emulation, and test challenges to create the best product experiences. Start your innovation journey at www.keysight.com.

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