CTIA Certification Device Hardware Reliability Program

The CTIA Certification Device Hardware Reliability (DHR) program utilizes modern mobile device reliability testing techniques to enhance upstream quality for device manufacturers, network operators, and consumers.

THE PROGRAM'S STRATEGY IS TWOFOLD:

01 Implement a contemporary approach to lifecycle testing, incorporating artificial aging and failure mode analysis to establish a predictive field performance model for mobile devices.

02 Harness existing reliability work and data sources to prepare for future mobile technologies.

Program Benefits for Network Operators

The CTIA Certification Device Hardware Reliability program enables network operators to reduce in-house validation expenses by adopting the DHR test plan as a foundation for their device acceptance process.

The core value of the DHR test plan lies in its predictive capability. By introducing accelerated lifecycle testing techniques alongside field performance insights, it becomes possible to develop predictive field performance models. This methodology streamlines the standardization of field failure rates, subsequently lowering reverse logistics costs throughout the industry and enhancing quality for consumers.

The DHR test procedures yield dividends for operators by anticipating potential field problems, including pre-launch issue identification. This proactive approach aids network operators in decreasing device insurance claims and return rates.

The CTIA Certification test plan is a dynamic document that undergoes frequent updates to align with the evolving needs of the wireless industry. Our working group is composed of network operators, manufacturers, test labs, and other key stakeholders to ensure the integration of the latest technologies and industry best practices into the DHR test plan. Leveraging these industry standards eliminates the need for operators to develop their own individual standards and helps them keep pace with the ever-changing wireless landscape.
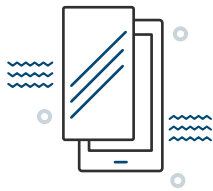
Device Hardware Reliability Test Cases

Leading industry experts in materials science have contributed test methods aimed at assisting manufacturers in enhancing the durability of handset glass. These methods have been integrated into the program's rough surface drop test. Moreover, the CTIA Certification DHR tests encompass the following:

- Physical Shock: Tumble/Barrel Test
- Water Ingress
- Temperature & Humidity
- Hardness/Scratch Resistance Testing
- PCBA Inspection

Test cases under development:

- Smooth Surface Drop Test

Program Benefits for Manufacturers

Device manufacturers can employ the DHR test plan to predict the behavior of their devices under various physical conditions using accepted industry methodologies for device durability testing. Parallel use of the DHR test cases with their own mechanical simulations helps manufacturers validate their numerical models. The outcome is devices that meet the wireless industry's established reliability criteria, resulting in superior products for consumers.

Anticipating Global Trends

The DHR test plan is swiftly becoming the de facto industry standard for the U.S. market. The test cases and standards outlined in the test plan have been developed by industry experts familiar with the correlation between test methods and end-user experiences. The CTIA Certification Device Hardware Reliability Working Group monitors global standards to ensure the CTIA Certification test plan aligns with requirements worldwide, given that devices are typically sold across multiple regions and must comply with these global standards.

The test methods embraced by operators and manufacturers, integrated into the DHR program, have proven prescient. Stakeholders can observe technological advancements over recent years through several of these tests. Anonymized in-field performance data discussed during DHR Working Group meetings offers valuable insights into future challenges.

Get a Seat at the Table

The CTIA Certification's Device Hardware Reliability Working Group establishes uniform inspection criteria and methods, failure definitions, and ongoing reliability test methodologies. The working group also leverages available field performance data to calibrate test methods for measuring the efficacy of the DHR test plan.

Do you want to contribute to developing future CTIA Certification device hardware reliability standards?

Contact CTIA Certification at cpwg@ctiacertification.org to learn more about joining the Device Hardware Reliability Working Group.