



Policies and Procedures for CTIA Authorized Testing Laboratories

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1. Overview

This document defines the:

- requirements and process for a test lab to become a CTIA Authorized Test Lab (CATL)
- ongoing compliance requirements for CATLs
- procedures CATLs shall follow when using CTIA Test Plans

2. Laboratory Authorization Process

2.1. Overview

CATL authorization consists of the following main steps:

- Meeting any program-specific requirements, as defined in Section 3 of this document
- Receiving accreditation under ISO/IEC 17025, “*General Requirements for the Competence of Testing and Calibration Laboratories*”, with the scopes of accreditation matching the scopes of certification testing the CATL is authorized to conduct
- Undergoing either an on-site audit by a CTIA-appointed Subject Matter Expert (SME) or an off-site audit by a CTIA-appointed CATL Review Committee. The option depends on the scope of authorization.

The following scopes require on-site audits by a SME:

- *CTIA Conformance Test Plan for CDMA Wireless Devices*
- *CTIA Conformance Test Plan for LTE Wireless Devices*
- *CTIA Interoperability Test Plan for LTE Wireless Devices*
- *CTIA Speech Performance Test Plan*
- *CTIA Test Plan for Hearing Aid Compatibility*
- *CTIA Test Plan for LTE Carrier Aggregation Interoperability*
- *CTIA Test Plan for Wireless Device Over-the-Air Performance*
- *CTIA/Wi-Fi Alliance Test Plan for RF Performance Evaluation of Wi-Fi Mobile Converged Devices*

The following scopes require off-site audits by a CTIA-appointed CATL Review Committee or a SME:

- *CTIA Battery Life Test Plan*
- *CTIA Bluetooth Compatibility Test Plan*
- *CTIA Certification Requirements for Battery System Compliance to IEEE 1725*
- *CTIA Certification Requirements for Battery System Compliance to IEEE 1625*
- *CTIA Device Hardware Reliability Test Plan*
- *CTIA Test Plan for 2x2 Downlink MIMO and Transmit Diversity Over-the-Air Performance*

- Signing the *CATL License and Service Agreement*
- Paying the annual CATL Administrative Fee

2.2 ISO/IEC 17025 Accreditation

The ISO/IEC 17025 accreditation must be granted by an ILAC (International Laboratory Accreditation Cooperation) member accreditation body. The purpose of this accreditation is: (1) to ensure labs have a quality system and are technically competent to perform certification testing, and (2) to ensure ongoing lab compliance with certification program requirements and industry standards.

The ISO/IEC 17025 accreditation program scopes parallel the CTIA Certification Program test plans and shall be identified on the accreditation certificate as:

- *CTIA Battery Life Test Plan*
- *CTIA Bluetooth Compatibility Test Plan*
- *CTIA Certification Requirements for Battery System Compliance to IEEE 1725*
- *CTIA Certification Requirements for Battery System Compliance to IEEE 1625*
- *CTIA Conformance Test Plan for CDMA Wireless Devices*
- *CTIA Conformance Test Plan for LTE Wireless Devices*
- *CTIA Device Hardware Reliability Test Plan*
- *CTIA Interoperability Test Plan for LTE Wireless Devices*
- *CTIA Test Plan for 2x2 Downlink MIMO and Transmit Diversity Over-the-Air Performance*
- *CTIA Test Plan for Hearing Aid Compatibility*
- *CTIA Test Plan for LTE Carrier Aggregation Interoperability*
- *CTIA Test Plan for Wireless Device Over-the-Air Performance*
- *CTIA Speech Performance Test Plan*
- *CTIA/Wi-Fi Alliance Test Plan for RF Performance Evaluation of Wi-Fi Mobile Converged Devices*

These scopes will not reference the revisions or published dates of the test plans. CTIA will depend on ISO/IEC-17025 §5.4.2 to ensure labs always use the latest revision of the test plans.

The lab must be able to perform all tests in each test plan for the scopes to which it is accredited. If approved by CTIA, any tests the lab is unable to perform itself may be sub-contracted per ISO/IEC

17025 §4.5 guidelines. CTIA may reject a lab's application if the number of testing being outsourced is too high. Proof of such subcontracting agreement shall be provided to CTIA.

2.3. Assessment Process

See appendices of this document for the assessment process specific to each CTIA test plan scope. Laboratories shall contact CTIA at certification@ctia.org to begin the process. CTIA will provide instructions for submitting the application package.

2.4. CATL Authorization Decision

The CTIA Certification Program Compliance Director, along with the SME or CATL Review Committee, will review the findings of the audit and/or the lab's response (i.e., the corrective actions) to any deficiencies found. CATL authorization will be granted after all deficiencies have been addressed and the lab has received accreditation to CTIA's test plan(s) by the accreditation body.

2.5. CATL License and Service Agreement

The *CATL License and Service Agreement* is the legal agreement between CTIA and the CATL. Upon CATL authorization, CTIA will send a *CATL License and Service Agreement* to the lab for execution.

2.6. CATL Logo

The CTIA Authorized Testing Laboratory logo identifies a laboratory as authorized by CTIA to conduct certification testing:



Laboratories licensed by CTIA as CTIA Authorized Testing Laboratories (CATLs) are issued a CATL logo with a unique laboratory identifier number. Digital files for reproduction of the logo may be downloaded from the CTIA certification database.

2.7. Annual Administrative Fee

An annual administrative fee of \$1,500.00 is assessed to each CATL for each authorized location. CTIA will invoice the lab for the fee.

3. Program-Specific Requirements

3.1. Battery Certification Program

Laboratories will be authorized to conduct evaluations to either the CTIA Certification Requirements for Battery System Compliance to IEEE 1725 and/or the CTIA Certification Requirements for Battery System Compliance to IEEE 1625. Personnel shall include one or more auditors who, either individually or as a team, have the following qualifications:

- Relevant technical degree, or equivalent, with at least three (3) years relevant professional work experience and related product knowledge;
- Professional auditor certification (e.g., American Society for Quality or equivalent) or completion of a certified Quality Management System (QMS) Auditor course from a recognized source (e.g. RABQSA or equivalent) and 2 years auditing experience; or 10 years of relevant auditing experience;
- Being free from any internal and external commercial, financial, or other pressures and influences that may adversely affect the quality of his work;
- Experience managing confidential information;
- Experience in auditing Cell and Battery Pack manufacturing sites or equivalent processes;
- Proficiency in reading and writing English language documentation;
- Comprehensive understanding of the CTIA Certification Requirements for Battery System Compliance to IEEE 1725 and/or CTIA Certification Requirements for Battery System Compliance to IEEE 1625, CTIA Battery Program Management Document, IEEE 1725 and/or IEEE 1625 specifications

CATLs shall attend all face-to-face meetings of the CTIA Certification Program Battery Working Group when IEEE 1625/1725 discussions are taking place. Should a CATL fail to meet this requirement, their CATL status shall be revoked for a 12-month period¹. If after 12 months the CATL has attended ALL face-to-face meetings, their CATL status shall be reinstated. Should the CATL fail to meet this requirement a second time, their CATL status shall be revoked and they may re-apply for CATL authorization.

3.2. Battery Life Certification Program

CATLs shall attend all face-to-face meetings of the CTIA Certification Program Battery Life Working Group. Should a CATL fail to meet this requirement, their CATL status shall be revoked for a 12-month period². If after 12 months the CATL has attended ALL face-to-face meetings, their CATL status shall be reinstated. Should the CATL fail to meet this requirement a second time, their CATL status shall be revoked and they may re-apply for CATL authorization.

¹ The CATL Review Committee will consider any extenuating circumstances, brought to its attention by the CATL, causing the failure to meet this requirement and has the sole discretion to impose or waive this penalty.

² The CATL Review Committee will consider any extenuating circumstances, brought to its attention by the CATL, causing the failure to meet this requirement and has the sole discretion to impose or waive this penalty.

3.3. Bluetooth Compatibility Certification Program

Laboratories authorized for *Bluetooth* Compatibility Certification testing shall:

- Be a member of Bluetooth SIG
- Be a member of CTIA³
- Have Bluetooth over-the-air sniffing capabilities (sniffer tool must have a free viewer available to allow product suppliers to read log files)
- Attend all face-to-face meetings of the CTIA Certification Program Bluetooth IOT Working Group and, on a rolling basis, participate in 3 out of the last 5 Working Group conference calls. Should a CATL fail to meet this requirement, their CATL status shall be revoked for a 6-month period⁴. If after 6 months the CATL has attended ALL conference calls and face to face meetings, their CATL status shall be reinstated. Should the CATL fail to meet this requirement a second time, their CATL status shall be revoked and they may re-apply for CATL authorization.
 - Active participation during working group conference calls is expected. Should a CATL fail to respond to an inquiry of them during the call, the meeting summary attendee roster will show the CATL as not attending the call.
 - CATLs may be called upon to assist in validating test cases. This work will be evenly distributed among all CATLs and assigned on a rolling basis through the list of CATLs based on the date of CATL authorization as documented in the CTIA Certification Program Bluetooth IOT Working Group meeting summaries. CATLs are required to accept these assignments.

3.4. CTIA Device Hardware Reliability Test Plan

Laboratories authorized for Device Hardware Reliability Certification testing shall:

- Be a member of CTIA⁵
- Attend all face-to-face meetings of the CTIA Certification Program Device Hardware Reliability Working Group and, on a rolling basis, participate in 3 out of the last 5 Working Group conference calls. Should a CATL fail to meet this requirement, their CATL status shall be revoked for a 6-month period⁶. If after 6 months the CATL has attended ALL conference calls and face to face meetings, their CATL status shall be reinstated. Should the CATL fail to meet this requirement a second time, their CATL status shall be revoked and they may re-apply for CATL authorization.
 - Active participation during working group conference calls is expected. Should a CATL fail to respond to an inquiry of them during the call, the meeting summary attendee roster will show the CATL as not attending the call.

³ For membership information, see <http://www.ctia.org/membership/>

⁴ The CATL Review Committee will consider any extenuating circumstances, brought to its attention by the CATL, causing the failure to meet this requirement and has the sole discretion to impose or waive this penalty.

⁵ For membership information, see <http://www.ctia.org/membership/>

⁶ The CATL Review Committee will consider any extenuating circumstances, brought to its attention by the CATL, causing the failure to meet this requirement and has the sole discretion to impose or waive this penalty.

3.5. CTIA Test Plan for Wireless Device Over-the-Air Performance

Laboratories authorized for Wireless Device Over-the-Air Performance testing shall conduct at least one OTA test per year, as evidenced by a certification request in CTIA's certification database. This may be a CTIA Certification Request, a PTCRB Certification Request or a Non-Certification Test Request (see Section 5 of this document).

- This requirement is applicable for each calendar year and to each authorized location. For newly authorized CATLs, this requirement is applicable for the calendar year following authorization.
- Should a CATL fail to meet this requirement, their CATL status shall be revoked. The CATL may request re-authorization by contacting CTIA and providing a timeframe (of no greater than 6 months) for when a test report will be uploaded to CTIA's certification database. The re-authorization may require an assessment per Appendix J of this document if new revisions to the test plan have been published during the inactivity period. Should the CATL fail to meet this requirement a second time, their CATL status shall be permanently revoked.

4. On-Going Compliance Requirements

4.1. ISO/IEC 17025 Accreditation

CATLs shall maintain their ISO/IEC 17025 accreditation to the CTIA test plan scopes to which they are accredited.

4.2. Program-Specific Compliance Requirements

CATLs shall maintain compliance with the requirements in Section 3 of this document, as applicable.

4.3. CATL License and Service Agreement

The *CATL License and Service Agreement* is renewed on January 1 of each year. CTIA will send the CATL a new agreement each year and the CATL shall execute the agreement.

4.4. Annual Administrative Fee

Along with the renewal of the *CATL License and Service Agreement*, CTIA will invoice the CATL for the annual administrative fee of \$1,500.00 for each authorized location. The CATL shall pay this fee.

4.5. Notification of Personnel Changes

CATLs shall inform CTIA of any changes in key personnel involved with the certification program (e.g., project/test manager, lead auditor for battery certification scope). These changes will be reviewed by CTIA and, as applicable, the CATL Review Committee.

4.6. Inter-Laboratory Comparison Testing

On a periodic basis, CTIA may conduct inter-laboratory comparison testing within a given testing scope. Samples will be circulated among labs, and measurements will be taken and submitted to CTIA for analysis. Data outliers will be investigated and addressed. Investigations may require re-testing by the lab, updating of the lab's test procedures, or, if the lab is found to be in non-compliance of the CATL requirements, suspension or revocation of the lab's CATL status.

5. Use of CTIA Test Plans

5.1. General

As noted in the copyright statement on each of CTIA's certification test plans, only CATLs are permitted to use the test plans for commercial testing purposes. No other test labs are permitted to use these test plans.

The test plans may not be altered or reproduced in any way without prior permission from CTIA. No portions of the test plans may be used in other documents without prior permission from CTIA.

CATLs shall refer to the *CATL License and Service Agreement* for the terms and conditions under which the certification test plans may be used.

For CTIA/PTCRB certification, the test plans must be run in their entirety. No tests shall be omitted. The only exception to this rule is in cases where no testing is required, but the vendor requests the CATL to run portions of a test plan; in this case, the CATL shall prominently place an explanation on the cover of the test report.

5.2. Applicable Version

Unless otherwise specified in the applicable certification program management document, the latest revision of the test plan, at the time the request is submitted via the certification database, shall be used.

5.3. Pre-Certification Testing

Use of CTIA certification test plans for pre-certification testing is permitted under the following conditions. The CATL shall inform CTIA of the vendor name and model name/number of the device to be tested by sending an e-mail to certification@ctia.org. The CATL shall prominently label on the cover of the test report: "Pre-Certification Test Report. For [vendor name] internal use only." There is no CTIA certification fee for pre-certification testing. Within a reasonable period of time, the vendor is expected to submit a certification request following the procedures in the appropriate certification program management document.

5.4. Certification Testing

Certification testing is associated with a certification request in the CTIA or PTCRB certification database. The CATL will receive a certification request via the CTIA or PTCRB certification database and shall upload test results to that database.

5.5. Non-Certification Testing

Use of CTIA certification test plans for purposes outside of CTIA or PTCRB Certification must be pre-approved by CTIA. The CATL shall submit a request via CTIA's certification database at <https://cpo.ctia.org/> by selecting Non-Certification Testing, Submit Request. If approved, the CATL shall prominently label on the cover of the test report: "Test run with permission from CTIA. Device was not submitted for CTIA Certification". CTIA will invoice the CATL for the appropriate license fee as described in Exhibit B (CATL License Fee Schedule) of the *CATL License and Service Agreement*.

APPENDIX A: Assessment Process for CTIA Battery Life Test Plan

- 1) The lab shall submit an application package to CTIA consisting of:
 - a) Details demonstrating that the lab meets the CATL requirements defined in this document
 - a) Identification of the accreditation body to be used for ISO/IEC 17025 accreditation
 - If the lab is already accredited by this accreditation body (for other testing scopes), the lab shall inform CTIA of that accreditation body's procedure for expanding the lab's accreditation scope to include the *CTIA Battery Life Test Plan*.
 - If the lab is not already accredited by this accreditation body, the lab shall inform CTIA of the scheduled date of the ISO/IEC 17025 assessment.
 - b) Written test procedures providing specific and detailed hardware, software, laboratory techniques, test methodology, and criteria used during the product evaluation. The test procedures shall include detailed information about the test equipment hardware and software and a step-by-step test execution procedure.
 - c) A set of sample test reports
 - d) An organizational chart
 - e) Acknowledgement of attending four sequential face-to-face meetings of the CTIA Battery Life Working Group. This requirement is at the discretion of the CATL review committee.
 - f) A list of the validated test systems used by the lab
- 2) After reviewing the application package for completeness, CTIA will forward the package to the CATL Review Committee.
- 3) The CATL Review Committee will review the procedures for:
 - Completeness and adequacy of the application
- 4) At the end of the review, the CATL Review Committee will document any deficiencies and identify what the lab must do to resolve each deficiency. CTIA will forward the deficiencies list to the lab.
- 5) The lab shall resolve all deficiencies to the satisfaction of the CATL Review Committee.

APPENDIX B: Assessment Process for CTIA *Bluetooth* Compatibility Test Plan

- 1) The lab shall submit an application package to CTIA consisting of:
 - a) Identification of the accreditation body to be used for ISO/IEC 17025 accreditation
 - If the lab is already accredited by this accreditation body for other testing scopes, the lab shall inform CTIA of that accreditation body's procedure for expanding the lab's accreditation scope to include the *CTIA Conformance Test Plan for LTE Wireless Devices*.
 - If the lab is not already accredited by this accreditation body, the lab shall inform CTIA of the scheduled date of the ISO/IEC 17025 assessment.
 - b) Details demonstrating that the lab meets the CATL Requirements defined in this document
 - c) Company overview, including experience with *Bluetooth* Compatibility testing
 - d) CVs/resumes of personnel who will be involved with the testing, identifying their qualifications and experience
 - e) Very detailed work instructions/procedures demonstrating proficiency in testing to the CTIA test plan
 - f) Indication of whether testing will be performed on a live network or on a network simulator
 - g) Acknowledgement of attending the most recent face-to-face meeting and 3 out of the last 5 conference calls of the CTIA Certification Program Working Group/ Bluetooth IOT Sub-Working Group
- 2) After reviewing the application package for completeness, CTIA will request the candidate CATL to run tests on a pair of current B devices. The lab shall test the devices and return the test results to CTIA.
- 3) CTIA will forward the application package and test results to the CATL Review Committee. There are two operator representatives and two product manufacturer representatives on the committee.
- 4) The CATL Review Committee will review the application.
- 5) CTIA will document any deficiencies found during the review and provide the deficiency list to the lab. The turnaround time from receipt of the application will be approximately two weeks.
- 6) The lab shall resolve all deficiencies to the satisfaction of the CATL Review Committee.

APPENDIX C: Assessment Process for CTIA Certification Requirements for Battery System Compliance to IEEE 1625/1725

- 1) The lab shall submit an application package to CTIA consisting of⁷:
 - a) Details demonstrating that the lab meets the CATL Requirements defined in this document
 - b) Identification of the accreditation body to be used for ISO/IEC 17025 accreditation
 - If the lab is already accredited by this accreditation body (for other testing scopes), the lab shall inform CTIA of that accreditation body's procedure for expanding the lab's accreditation scope to include *the CTIA Certification Requirements for Battery System Compliance to IEEE 1625* and/or *CTIA Certification Requirements for Battery System Compliance to IEEE 1725*.
 - If the lab is not already accredited by this accreditation body, the lab shall inform CTIA of the scheduled date of the ISO/IEC 17025 assessment.
 - c) Written test procedures providing specific and detailed hardware, software, laboratory techniques, test methodology, and criteria used during the product evaluation. The test procedures shall include detailed information about the test equipment hardware and software and a step-by-step test execution procedure.
 - d) A full set of test reports covering all components of a System of the laboratory's choice
 - e) An organizational chart
 - f) Acknowledgement of attending two sequential face-to-face meetings of the CTIA Certification Program Battery Working Group when IEEE 1625/1725 discussions are taking place
- 2) After reviewing the application package for completeness, CTIA will forward the package to the CATL Review Committee. There are two operator representatives, two system vendor representatives, one pack vendor representative and one cell vendor representative on the committee.
- 3) The CATL Review Committee, which meets during the CTIA Certification Program Battery Working Group Meetings⁸, will review the procedures for:
 - Completeness - all required testing is covered in detail
 - Adequacy – the procedures appear to be correct for carrying out the testing required
- 4) At the end of the review, the CATL Review Committee will document any deficiencies and identify what the lab must do to resolve each deficiency. CTIA will forward the deficiencies list to the lab.
- 5) The lab shall resolve all deficiencies to the satisfaction of the CATL Review Committee.

⁷ The package shall be submitted at least three weeks before the next CATL Review Committee meeting in order to be reviewed during that meeting

⁸ All representatives are required to be in attendance to review the applications. If a representative cannot be in attendance, that representative must appoint another representative from a like organization.

APPENDIX D: Assessment Process for CTIA Conformance Test Plan for CDMA Wireless Devices

- 1) The lab shall submit an application package to CTIA consisting of:
 - a) Identification of the accreditation body to be used for ISO/IEC 17025 accreditation.
 - If the lab is already accredited by this accreditation body for other testing scopes, the lab shall inform CTIA of that accreditation body's procedure for expanding the lab's accreditation scope to include the *CTIA Conformance Test Plan for CDMA Wireless Devices*.
 - If the lab is not already accredited by this accreditation body, the lab shall inform CTIA of the scheduled date of the ISO/IEC 17025 assessment.
 - b) Detailed written test procedures for conducting testing to the CTIA test plan. These procedures will be reviewed by the SME for:
 - Completeness - all required testing for the certification testing scope is covered in detail
 - Adequacy – the procedures appear to be correct for carrying out the testing required in the certification testing scope
 - c) A test report template
 - 2) CTIA will assign a SME to review the above documentation and to conduct the on-site SME audit.
 - 3) CTIA will work with the lab to schedule the on-site SME audit after the documentation review is complete.
 - 4) The SME and the CTIA Certification Program Compliance Director will conduct the on-site SME audit.
 - The lab shall pay the travel expenses for these two individuals, including airfare (business class for international travel) and hotel accommodations.
 - CTIA will invoice the lab for the estimated travel expenses and the lab shall pay these expenses prior to the on-site SME audit.
 - CTIA will reimburse the lab for any unused travel expenses after completion of the audit.
 - 5) At the end of the on-site audit, the SME will document any deficiencies identified during the audit, including deficiencies corrected during the audit. This document will also identify what the lab must do to resolve each deficiency. The lab shall sign the document, indicating its agreement.
 - 6) The lab shall resolve any deficiencies identified during the SME audit and provide evidence to the SME for verification.
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APPENDIX E: Assessment Process for CTIA Conformance Test Plan for LTE Wireless Devices

- 1) The lab shall submit an application package to CTIA consisting of:
 - a) Identification of the accreditation body to be used for ISO/IEC 17025 accreditation
 - If the lab is already accredited by this accreditation body for other testing scopes, the lab shall inform CTIA of that accreditation body's procedure for expanding the lab's accreditation scope to include the *CTIA Conformance Test Plan for LTE Wireless Devices*.
 - If the lab is not already accredited by this accreditation body, the lab shall inform CTIA of the scheduled date of the ISO/IEC 17025 assessment.
 - b) Detailed written test procedures for conducting testing to the CTIA test plan. These procedures will be reviewed by the SME for:
 - Completeness - all required testing for the certification testing scope is covered in detail
 - Adequacy – the procedures appear to be correct for carrying out the testing required in the certification testing scope
 - c) A test report template
 - 2) CTIA will assign a SME to review the above documentation and to conduct the on-site SME audit.
 - 3) CTIA will work with the lab to schedule the on-site SME audit after the documentation review is complete.
 - 4) The SME and the CTIA Certification Program Compliance Director will conduct the on-site SME audit.
 - The lab shall pay the travel expenses for these two individuals, including airfare (business class for international travel) and hotel accommodations.
 - CTIA will invoice the lab for the estimated travel expenses and the lab shall pay these expenses prior to the on-site SME audit.
 - CTIA will reimburse the lab for any unused travel expenses after completion of the audit.
 - 5) At the end of the on-site audit, the SME will document any deficiencies identified during the audit, including deficiencies corrected during the audit. This document will also identify what the lab must do to resolve each deficiency. The lab shall sign the document, indicating its agreement.
 - 6) The lab shall resolve any deficiencies identified during the SME audit and provide evidence to the SME for verification.
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APPENDIX F: Assessment Process for CTIA Device Hardware Reliability Test Plan

- 1)** The lab shall submit an application package to CTIA consisting of:
 - a) Identification of the accreditation body to be used for ISO/IEC 17025 accreditation
 - If the lab is already accredited by this accreditation body for other testing scopes, the lab shall inform CTIA of that accreditation body's procedure for expanding the lab's accreditation scope to include the *CTIA Conformance Test Plan for LTE Wireless Devices*.
 - If the lab is not already accredited by this accreditation body, the lab shall inform CTIA of the scheduled date of the ISO/IEC 17025 assessment.
 - c) Details demonstrating that the lab meets the CATL Requirements defined in this document
 - d) CVs/resumes of personnel who will be involved with the testing, identifying their qualifications and experience
 - e) Very detailed work instructions/procedures demonstrating proficiency in testing to the CTIA test plan
 - f) Acknowledgement of attending the most recent face-to-face meeting and 3 out of the last 5 conference calls of the CTIA Certification Program Working Group/Device Hardware Reliability Sub-Working Group
- 2)** CTIA will forward the application package and test results to the CATL Review Committee. There are four operator representatives on the committee.
- 3)** The CATL Review Committee will review the application.
- 4)** CTIA will document any deficiencies found during the review and provide the deficiency list to the lab. The turnaround time from receipt of the application will be approximately two weeks.
- 5)** The lab shall resolve all deficiencies to the satisfaction of the CATL Review Committee.

APPENDIX G: Assessment Process for CTIA Interoperability Test Plan for LTE Wireless Devices and CTIA Test Plan for LTE Carrier Aggregation Interoperability

- 1) The lab shall submit an application package to CTIA consisting of:
 - a) Identification of the accreditation body to be used for ISO/IEC 17025 accreditation
 - If the lab is already accredited by this accreditation body for other testing scopes, the lab shall inform CTIA of that accreditation body's procedure for expanding the lab's accreditation scope to include the *CTIA Interoperability Test Plan for LTE Wireless Devices and CTIA Test Plan for LTE Carrier Aggregation Interoperability*.
 - If the lab is not already accredited by this accreditation body, the lab shall inform CTIA of the scheduled date of the ISO/IEC 17025 assessment.
 - b) Detailed written test procedures for conducting testing to the CTIA test plan. These procedures will be reviewed by the SME for:
 - Completeness - all required testing for the certification testing scope is covered in detail
 - Adequacy – the procedures appear to be correct for carrying out the testing required in the certification testing scope
 - c) A test report template
 - 2) CTIA will assign a SME to review the above documentation and to conduct the on-site SME audit.
 - 3) CTIA will work with the lab to schedule the on-site SME audit after the documentation review is complete.
 - 4) The SME and the CTIA Certification Program Compliance Director will conduct the on-site SME audit.
 - The lab shall pay the travel expenses for these two individuals, including airfare (business class for international travel) and hotel accommodations.
 - CTIA will invoice the lab for the estimated travel expenses and the lab shall pay these expenses prior to the on-site SME audit.
 - CTIA will reimburse the lab for any unused travel expenses after completion of the audit.
 - 5) At the end of the on-site audit, the SME will document any deficiencies identified during the audit, including deficiencies corrected during the audit. This document will also identify what the lab must do to resolve each deficiency. The lab shall sign the document, indicating its agreement.
 - 6) The lab shall resolve any deficiencies identified during the SME audit and provide evidence to the SME for verification.
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APPENDIX H: Assessment Process for CTIA Test Plan for 2x2 Downlink MIMO and Transmit Diversity Over-the-Air Performance

- 1)** The lab shall submit an application package to CTIA consisting of:
 - a) Identification of the accreditation body to be used for ISO/IEC 17025 accreditation.
 - If the lab is already accredited by this accreditation body for other testing scopes, the lab shall inform CTIA of that accreditation body's procedure for expanding the lab's accreditation scope to include the *CTIA Test Plan for 2x2 Downlink MIMO and Transmit Diversity Over-the-Air Performance*.
 - If the lab is not already accredited by this accreditation body, the lab shall inform CTIA of the scheduled date of the ISO/IEC 17025 assessment.
 - b) Detailed written test procedures for conducting testing to the CTIA test plan. These procedures will be reviewed by the SME for:
 - Completeness - all required testing for the certification testing scope is covered in detail
 - Adequacy – the procedures appear to be correct for carrying out the testing required in the certification testing scope
 - c) A test report template
 - d) CTIA Measurement Uncertainty Spreadsheet fully populated and ripple test procedures/results
 - e) Other documents required by *Laboratory Assessment and Validation Requirements Document for CTIA Test Plan for 2x2 Downlink MIMO and Transmit Diversity Over-the-Air Performance*
- 2)** CTIA will assign a SME to review the above documentation.
- 3)** The SME will document any deficiencies identified during the off-site audit. This document will also identify what the lab must do to resolve each deficiency.
- 4)** The lab shall resolve any deficiencies identified by the SME

APPENDIX I: Assessment Process for CTIA Test Plan for Hearing Aid Compatibility

- 1) The lab shall submit an application package to CTIA consisting of:
 - a) Identification of the accreditation body to be used for ISO/IEC 17025 accreditation
 - If the lab is already accredited by this accreditation body for other testing scopes, the lab shall inform CTIA of that accreditation body's procedure for expanding the lab's accreditation scope to include the *CTIA Test Plan for Hearing Aid Compatibility*.
 - If the lab is not already accredited by this accreditation body, the lab shall inform CTIA of the scheduled date of the ISO/IEC 17025 assessment.
 - b) Detailed written test procedures for conducting testing to the CTIA test plan. These procedures will be reviewed by the SME for:
 - Completeness - all required testing for the certification testing scope is covered in detail
 - Adequacy – the procedures appear to be correct for carrying out the testing required in the certification testing scope
 - c) A test report template.
- 2) CTIA will assign a SME to review the above documentation and to conduct the on-site SME audit.
- 3) CTIA will work with the lab to schedule the on-site SME audit after the documentation review is complete.
- 4) The SME and the CTIA Certification Program Compliance Director will conduct the on-site SME audit.
 - The lab shall pay the travel expenses for these two individuals, including airfare (business class for international travel) and hotel accommodations.
 - CTIA will invoice the lab for the estimated travel expenses and the lab shall pay these expenses prior to the on-site SME audit.
 - CTIA will reimburse the lab for any unused travel expenses after completion of the audit.
- 5) At the end of the audit, the SME will document any deficiencies identified during the audit that were not resolved during the audit. This document will also identify what the lab must do to resolve each deficiency. The lab shall sign the document, indicating its agreement.
- 6) The lab shall resolve any deficiencies identified during the SME audit.

APPENDIX J: Assessment Process for CTIA Test Plan for Wireless Device Over-the-Air Performance

- 1) The lab shall submit an application package to CTIA consisting of:
 - d) Identification of the accreditation body to be used for ISO/IEC 17025 accreditation.
 - If the lab is already accredited by this accreditation body for other testing scopes, the lab shall inform CTIA of that accreditation body's procedure for expanding the lab's accreditation scope to include the *CTIA Test Plan for Wireless Device Over-the-Air Performance*
 - If the lab is not already accredited by this accreditation body, the lab shall inform CTIA of the scheduled date of the ISO/IEC 17025 assessment
 - e) Detailed written test procedures for conducting testing to the CTIA test plan. These procedures will be reviewed by the SME for:
 - Completeness - all required testing for the certification testing scope is covered in detail
 - Adequacy – the procedures appear to be correct for carrying out the testing required in the certification testing scope
 - f) A test report template
 - g) CTIA Measurement Uncertainty Spreadsheet fully populated and ripple test procedures/results
 - 2) CTIA will assign a SME to review the above documentation and to conduct the on-site SME audit.
 - 3) CTIA will work with the lab to schedule the on-site SME audit after the documentation review is complete.
 - 4) The SME and the CTIA Certification Program Compliance Director will conduct the on-site SME audit.
 - The lab shall pay the travel expenses for these two individuals, including airfare (business class for international travel) and hotel accommodations.
 - CTIA will invoice the lab for the estimated travel expenses plus SME audit fee and the lab shall pay these expenses prior to the on-site SME audit.
 - CTIA will reimburse the lab for any unused travel expenses after completion of the audit.
 - 5) At the end of the audit, the SME will document any deficiencies identified during the audit, including deficiencies corrected during the audit. This document will also identify what the lab must do to resolve each deficiency. The lab shall sign the document, indicating its agreement.
 - 6) The lab shall resolve any deficiencies identified during the SME audit.
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APPENDIX K: Assessment Process for CTIA Speech Performance Test Plan

- 1) The lab shall submit an application package to CTIA consisting of:
 - a) Identification of the accreditation body to be used for ISO/IEC 17025 accreditation
 - If the lab is already accredited by this accreditation body for other testing scopes, the lab shall inform CTIA of that accreditation body's procedure for expanding the lab's accreditation scope to include the *CTIA Speech Performance Test Plan*.
 - If the lab is not already accredited by this accreditation body, the lab shall inform CTIA of the scheduled date of the ISO/IEC 17025 assessment.

- b) Detailed list of test equipment used for conducting testing to the CTIA test plan, in the following format:

Equipment Type	Equipment Make and Model	HW Rev	SW/FW Rev	Comments

- c) Detailed written test procedures for conducting testing to the CTIA test plan. These procedures will be reviewed by the SME for:
 - Completeness - all required testing for the certification testing scope is covered in detail
 - Adequacy – the procedures appear to be correct for carrying out the testing required in the certification testing scope
 - d) Test reports for three devices that CTIA will send to the lab
 - e) Results for Appendix 1 (Verification Method for Background Noise Simulation) of the CTIA test plan

- 2) CTIA will assign a SME to review the above documentation and to conduct the on-site SME audit.
- 3) CTIA will work with the lab to schedule the on-site SME audit after the documentation review is complete.
- 4) The SME and the CTIA Certification Program Compliance Director will conduct the on-site SME audit.

- The lab shall pay the travel expenses for these two individuals, including airfare (business class for international travel) and hotel accommodations.
 - CTIA will invoice the lab for the estimated travel expenses and the lab shall pay these expenses prior to the on-site SME audit.
 - CTIA will reimburse the lab for any unused travel expenses after completion of the audit.
- 5)** At the end of the on-site audit, the SME will document any deficiencies identified during the audit, including deficiencies corrected during the audit. This document will also identify what the lab must do to resolve each deficiency. The lab shall sign the document, indicating its agreement.
- 6)** The lab shall resolve any deficiencies identified during the SME audit and provide evidence to the SME for verification.

APPENDIX L: Assessment Process for CTIA/Wi-Fi Alliance Test Plan for RF Performance Evaluation of Wi-Fi Mobile Converged Devices

- 1) The lab shall have already completed an on-site audit for testing to the CTIA Test Plan for Wireless Device Over-the-Air Performance. If desired, the lab may request a single on-site audit for both the *CTIA Test Plan for Wireless Device Over-the-Air Performance* and the *CTIA/Wi-Fi Alliance Test Plan for RF Performance Evaluation of Wi-Fi Mobile Converged Devices*.
- 2) The lab shall submit an application package to CTIA consisting of:
 - a) Identification of the accreditation body to be used for ISO/IEC 17025 accreditation.
 - If the lab is already accredited by this accreditation body for other testing scopes, the lab shall inform CTIA of that accreditation body's procedure for expanding the lab's accreditation scope to include the CTIA/Wi-Fi Alliance Test Plan for RF Performance Evaluation of Wi-Fi Mobile Converged Devices. Include a copy of the certificate showing the *CTIA Test Plan for Wireless Device Over-the-Air Performance* and the *CTIA/Wi-Fi Alliance Test Plan for RF Performance Evaluation of Wi-Fi Mobile Converged Devices*, if available.
 - If the lab is not already accredited by this accreditation body, the lab shall inform CTIA of the scheduled date of the ISO/IEC 17025 assessment
 - b) Detailed written test procedures for conducting testing to the CTIAWFA test plan. These procedures will be reviewed by the SME for:
 - Completeness - all required testing for the certification testing scope is covered in detail
 - Adequacy – the procedures appear to be correct for carrying out the testing required in the certification testing scope
 - c) A full test report on a device of the laboratory's choice. The test report will be reviewed for completeness per the test report requirements in the test plan. Please make this report generic. Do not include device specifics in the report (provide a redacted report).
 - d) CTIA Measurement Uncertainty Spreadsheet fully populated and ripple test procedures/results.
 - e) Very detailed equipment specifications.
 - f) Very detailed software descriptions.
- 3) CTIA will assign a SME to review the above documentation and to conduct the on-site SME audit.
- 4) CTIA will work with the lab to schedule the on-site SME audit after the documentation review is complete.
- 5) The SME will conduct the on-site SME audit.

- The lab shall pay the travel expenses for the SME, including airfare (business class for international travel) and hotel accommodations, and a SME audit fee according to the quote provided by the SME.
 - CTIA will invoice the lab for the estimated travel expenses plus SME audit fee and the lab shall pay these expenses prior to the on-site SME audit.
 - CTIA will reimburse the lab for any unused travel expenses and SME audit fee after completion of the audit.
- 6)** At the end of the audit, the SME will document any deficiencies identified during the audit, including deficiencies corrected during the audit. This document will also identify what the lab must do to resolve each deficiency. The lab shall sign the document, indicating its agreement.
- 7)** The lab shall resolve any deficiencies identified during the SME audit.

APPENDIX M: Change History

Date	Version	Description of Changes
January 2012	1.0	<ul style="list-style-type: none"> • First Release
June 2012	1.1	<ul style="list-style-type: none"> • Updated program-specific requirements for Battery Certification Program to include meeting attendance requirements • Updated assessment process for CTIA <i>Bluetooth</i> Compatibility Test Plan to include meeting attendance requirements
November 2013	1.2	<ul style="list-style-type: none"> • Added program-specific requirements for CTIA Test Plan for Wireless Device Over-the-Air Performance
December 2014	1.3	<ul style="list-style-type: none"> • Added requirements for CTIA Speech Performance Test Plan • Updated name of CTIA CDMA Wireless Device Test Plan • Updated program-specific requirements for Battery Certification Program • Updated program-specific requirements for <i>Bluetooth</i> Compatibility Certification Program • Clarified that the annual CATL administrative fee applies to each authorized location • Updated Use of CTIA Test Plans section • Updated Assessment Process for CTIA Certification Requirements for Battery System Compliance to IEEE 1625/1725
August 2015	1.4	<ul style="list-style-type: none"> • Added requirements for Conformance Test Plan for LTE Wireless Devices • Updated name of Conformance Test Plan for CDMA Wireless Devices • Updated name of Interoperability Test Plan for LTE Wireless Devices • Updated Use of CTIA Test Plans section - Certification Testing
November 2015	1.5	<ul style="list-style-type: none"> • Added requirements for Device Hardware Reliability Test Plan • Clarified that subcontracting of tests applies only to the Battery Certification Program and to the Test Plan for Wireless Device Over-the-Air Performance.
July 2016	1.6	<ul style="list-style-type: none"> • Added program-specific requirements for Battery Life Test Plan • Added assessment process for Test Plan for 2x2 Downlink MIMO and Transmit Diversity Over-the-Air Performance • Added assessment process for Battery Life Test Plan • Added assessment process for Test Plan for LTE Carrier Aggregation Interoperability • Added accreditation body identification requirement to all assessment processes • Updated CTIA logo and CATL logo