



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

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ELECTRICAL

Valid To: September 30, 2024

Certificate Number: 3350.01

In recognition of the successful completion of the A2LA evaluation process accreditation is granted to this laboratory for the Bluetooth testing on Information Technology Equipment (ITE), Bluetooth devices, and NFC devices:

| <b><u>Test Technology:</u></b>                               | <b><u>Test Method(s) <sup>1</sup>:</u></b>                             |
|--|--|
| <b><i>Near Field Communications (NFC)</i></b>                |  |
| NFC Forum Digital Protocol                                   | NFC Forum Test Cases for Digital Protocol                              |
| NFC Forum Type 1 Tag Operation                               | NFC Forum Test Cases for Type 1 Tag Operation                          |
| NFC Forum Test Cases for Type 2 Tag and Type 2 Tag Operation | NFC Forum Test Cases for Type 2 Tag and Type 2 Tag Operation           |
| NFC Forum Test Cases for Type 3 Tag and Type 3 Tag Operation | NFC Forum Test Cases for Type 3 Tag and Type 3 Tag Operation           |
| NFC Forum Type 4 Tag and Type 4 Tag Operation                | NFC Forum Test Cases for Type 4 Tag and Type 4 Tag Operation           |
| NFC Forum Type 5 Tag and Type 5 Tag Operation                | NFC Forum Test Cases for Type 5 Tag and Type 5 Tag Operation           |
| NFC Forum Tag Performance                                    | NFC Forum Test Cases for Tag Performance                               |
| NFC Forum Analog   | NFC Forum Test Cases for Analog  |
| NFC Forum Simple NDEF Exchange Protocol (SNEP Protocol)      | NFC Forum Test Cases for Simple NDEF Exchange Protocol (SNEP Protocol) |

| <b><u>Test Technology:</u></b>                          | <b><u>Test Method(s) <sup>1</sup>:</u></b>  |
|---|---|
| <b><i>Near Field Communications (NFC) (cont.)</i></b>   |   |
| NFC Forum Logical Link Control Protocol (LLCP Protocol) | NFC Forum Test Cases for Logical Link Control Protocol (LLCP Protocol)  |
| NFC Forum Wireless Charging                             | NFC Forum Test Cases for Wireless Charging  |
| UICC-based NFC IOP                                      | GSMA TS.27 - NFC Handset Testbook   |
| <b><i>CCC Digital Key Testing</i></b>                   |   |
| CCC Digital Key E2E IoP Testing                         | CCC Digital Key Interoperability Test Specification   |
| <b><i>Bluetooth</i></b>                                 |   |
| Bluetooth Radio and Protocol Conformance Testing        | <p>RF:1: Vol 2 Part A Radio Specification, in the Test Suite RF.TS, which includes receiver and transmitter tests for Bluetooth Basic Rate (BR) and Enhanced Data Rate (EDR), EDR2 and EDR3.</p> <p>RF-PHY1:</p> <ul style="list-style-type: none"> <li>(a) Vol. 6, Part A, Physical Layer Specification, in the Test Suite RF – PHY.TS which includes receiver and transmitter tests for LE 1 Mb/s with:</li> <li>(b) fixed 37 bytes packet payload length, and</li> <li>(c) packet length extensions ( packet payload length ranges from 37 bytes to 255 bytes)</li> </ul> <p>RF-PHY2: Vol. 6, Part A, Physical Layer Specification, in the Test Suite RF – PHY.TS which includes receiver and transmitter tests for</p> <ul style="list-style-type: none"> <li>(a) 20 dBm Higher Output Power RF - PHY</li> <li>(b) LE 2Mb/s</li> <li>(c) Coded PHY (125 kb/s or 500 kb/s)</li> <li>(d) Stable Modulation Index</li> <li>(e) All required testing capabilities associated with the RF – PHY:1 test scope option</li> </ul> <p>RF-PHY3: Vol. 6, Part A, Physical Layer Specification, in the Test Suite RF – PHY.TS which includes receiver and transmitter tests for</p> <ul style="list-style-type: none"> <li>(a) AoA/AoD (IQ Samples Coherency AoD/AoA Receiver, IQ Sample Dynamic Range AoD/AoA Receiver)</li> <li>(b) All required testing capabilities associated with the RF – PHY:2 test scope option</li> </ul> |

| <b><u>Test Technology:</u></b>                               | <b><u>Test Method(s) <sup>1</sup>:</u></b>  |
|--|---|
| Bluetooth Radio and Protocol Conformance Testing<br>(cont.)  | <p>LE Protocols:1:</p> <ul style="list-style-type: none"> <li>(a) Vol 6 Part B Link Layer (LL) Specification, in the Test Suite LL.TS</li> <li>(c) Vol 2 Part E Host Controller Interface (HCI) Specification, including the LE-only and BR/EDR/LE HCI tests in the Test Suite HCI.TS</li> </ul> <p>LE Protocols:2:</p> <ul style="list-style-type: none"> <li>(a) Vol 6 Part G Isochronous Adaption Layer (IAL) Specification, in the Test Suite IAL.TS (Isochronous Adaption Layer)</li> <li>(b) All required testing capabilities associated with the LE Protocols:1 test scope option</li> </ul> <p>Host Layers: Layers above HCI in the Bluetooth SIG adopted Core Specifications</p> <p>Traditional Profiles and Protocols: Bluetooth SIG adopted Profile and Protocol Specifications external to the Core in the Profile TCRL</p> <p>GATT-Based Profile &amp; Services: Bluetooth SIG adopted Profile and Service Specifications operating over the GATT architecture in the GATT based TCRL</p> <p>Mesh Profile &amp; Mesh Models: Bluetooth SIG adopted Mesh Profile and Mesh Model Specifications in the MESH-MMDL TCRL</p> |
| <b><i>Field Trials and Interoperability <sup>2</sup></i></b> |   |
| GSM, UMTS, LTE, and 5G                                       | GSM Association Official Document;<br>TS.11 – Device Field and Lab Test Guidelines  |
|  | GSM Association Official Document;<br>TS.40 – Miot Field and Lab Test Cases   |
|  | GSM Association Official Document;<br>TS.42: Multi SIM Devices Requirements Test Cases  |
|  | MultiFire Alliance;<br>MFA TS MF.501 Interoperability Test Specification  |

| <b><u>Test Technology:</u></b> | <b><u>Test Method(s) <sup>1</sup>:</u></b>  |
|--------------------------------|---|
|                                |   |
| <b><i>Connected Car</i></b>    |   |
| Conformance Protocol           | IEEE Std 802.11;<br>Wireless LAN Medium Access Control (MAC)<br>and Physical Layer (PHY) Specifications   |
|                                | IEEE Std 1609.2;<br>IEEE Standard for Wireless Access in Vehicular<br>Environments – Security Services for Applications<br>and Management Messages; |
|                                | IEEE Std 1609.3;<br>IEEE Standard for Wireless Access in Vehicular<br>Environments (WAVE) – Networking Services;                                    |
|                                | IEEE Std 1609.4;<br>IEEE Standard for Wireless Access in Vehicular<br>Environments (WAVE) – Multi-Channel Operation                                 |
| Conformance Protocol ITS-G5    | TS 102 859 Conformance Test Specifications for<br>Transmission of IP Packets over GeoNetworking (GN6)   |
|                                | TS 102 868 Conformance Test Specification for<br>Co-operative Awareness Messages (CAM)  |
|                                | TS 102 869 Conformance Test specification for<br>Decentralized Environmental Notification Messages<br>(DENM)  |
|                                | TS 102 870 Conformance Test Specifications for<br>GeoNetworking Basic Transport Protocol (BTP)  |
|                                | TS 102 871 Conformance Test Specifications for<br>GeoNetworking ITS-G5 (GN)   |
|                                | TS 103 191 Conformance Test Specifications for Signal<br>Phase and Timing (SPAT) and Map (MAP)  |
|                                | TS 103 096 Conformance Test Specification for<br>TS 102 867 and TS 102 941 Security Testing   |

| <b><u>Test Technology:</u></b>   | <b><u>Test Method(s) <sup>1</sup>:</u></b>  |
|--|---|
| RF Testing   | ETSI EN 302 571 Intelligent Transport Systems (ITS);<br>Radiocommunications Equipment Operating in the<br>5 855 MHz to 5 925 MHz Frequency Band;<br>Harmonised Standard covering the Essential<br>Requirements of Article 3.2 of Directive 2014/53/EU |
| <b><i>eCall <sup>2</sup></i></b>   |   |
| eCall Conformance Testing<br>(excluding crash test as applicable)          | EVS-EN 16454;<br>ETSI TS 103 412;<br>ETSI TS 126 269;<br>Commission Delegated Regulation (EU) 2017/79<br>(Annex I, II, III, IV, VI, VII, & VIII);<br>GOST 33467; GOST 33470;<br>R144 (ECE-TRANS-WP29-2017-132e);<br>UAE.S 5019_2018                   |
| <b><i>Mobile Communications</i></b>  |   |
| <i>Communication Devices with GSM/GPRS/EDGE Interface:</i>                 |   |
| RF (Conducted only) and Layer 1:<br>Protocol                               | 3GPP TS 51.010-1;<br>ETSI EN 301 511;<br>ETSI TS 151.010-1  |
| <i>Communication Devices with UMTS Interface:</i>                          |   |
| RF Testing<br>(using the Reference Specification:<br>3GPP TS 34.108)       | 3GPP TS 34.121-1;<br>ETSI TS 134 121-1;<br>ETSI EN 301 908-2  |
| Protocol Testing<br>(using the Reference Specification:<br>3GPP TS 34.108) | 3GPP TS 34.123-1;<br>ETSI TS 134 123-1  |
| <i>Communication Devices with LTE Interface:</i>                           |   |
| RF Testing<br>(using the Reference Specification:<br>3GPP TS 36.508)       | 3GPP TS 36.521-1;<br>ETSI TS 136 521-1;<br>3GPP TS 36.521-3;<br>ETSI TS 136 521-3;<br>ETSI EN 301 908-13  |
| Protocol Testing<br>(using the Reference Specification:                    | 3GPP TS 36.523-1;<br>ETSI TS 136 523-1  |

| <b><u>Test Technology:</u></b>  | <b><u>Test Method(s) <sup>1</sup>:</u></b>   |
|---|--|
| 3GPP TS 36.508)   |  |
| <b><i>Mobile Communications (cont.)</i></b>   |  |
| <i>Communication Devices with 5G FR1 Interface:</i>   |  |
| RF Testing<br>(using the Reference Specification:<br>3GPP TS 38.508)                            | 3GPP TS 38.521-1;<br>ETSI TS 138 521-1;<br>3GPP TS 38.521-3;<br>ETSI TS 138 521-3;<br>3GPP TS 138 521-4;<br>ETSI TS 138 521-4;<br>3GPP TS 38.533;<br>ETSI TS 138.533 |
|   |  |
| Protocol Testing<br>(using the Reference Specification:<br>3GPP TS 38.508-1)                    | 3GPP TS 38.523-1;<br>ETSI TS 138 523-1   |
| <i>Communication Devices with UICC Interface:</i>   |  |
| RSP Testing   | GSM Association - Official Document SGP.23 –<br>RSP Test Specification   |
| <b>Electrical SIM Testing</b><br>(using the Reference Specification:<br><b>ETSI TS 102 221)</b> | ETSI TS 102 230-1  |
| <i>Communication Devices with Application Enablers Interface:</i>                               |  |
| AT-Command Testing  | AT-Command. Test Specification Covering RFT 77;<br>3GPP TS 27.005; 3GPP TS 27.007  |
| Data Throughput Testing   | 3GPP TR 37.901   |
| <b><i>Wireless Communications</i></b>   |  |
| <i>Communication Devices with WLAN Interface:</i>   |  |
| Interoperability Testing  | Wi-Fi Alliance Certification Program According to the<br>ATL Accreditation: <a href="https://www.wi-fi.org/AT4-wireless">https://www.wi-fi.org/AT4-wireless</a>      |

| <b><u>Test Technology:</u></b>                     | <b><u>Test Method(s) <sup>1</sup>:</u></b>                                    |
|--|---|
|  |   |
| <b><i>Thread Testing</i></b>                       |   |
| Thread Devices                                     | Thread Certification Test Plan;<br>Thread Specification                       |
| <b><i>Cybersecurity Testing</i></b>                |   |
| <i>IoT Devices:</i>                                |   |
| Cybersecurity Testing for IoT Devices <sup>3</sup> | <u>CTIA Cybersecurity Certification Test Plan for IoT Devices</u>             |
| <b><i>Zigbee Testing</i></b>                       |   |
| <i>Zigbee PRO Compliant Platform:</i>              |   |
| IEEE 802.15.4 PHY Testing                          | ZigBee IEEE 802.15.4 Test Specification                                       |
| IEEE 802.15.4 MAC Testing                          | ZigBee IEEE 802.15.4 Test Specification                                       |
| Zigbee PRO Network Testing                         | Zigbee PRO Compliant Platform Test Specification                              |
| <i>Zigbee 3.0 Devices:</i>                         |   |
| Base Device Behavior Testing                       | Base Device Behavior Test Specification                                       |
| Cluster Testing                                    | Cluster Library Specification   |
| <i>Zigbee PRO Green Power:</i>                     |   |
| Zigbee PRO Green Power Testing                     | Zigbee PRO Green Power Feature Test Specification,<br>Basic Functionality Set |
| <b><i>Matter Testing</i></b>                       |   |
| Matter Core Testing                                | Matter Test Plan  |
| Matter Clusters Testing                            | Matter Application Clusters Test Plan   |
| <b><i>Amazon AVS Testing</i></b>                   |   |
| AVS Acoustic Testing                               | Amazon Alexa Acoustic Testing User Guide                                      |
| AVS Functional Testing                             | AVS Functional Testing  |
| AVS User Experience Testing                        | AVS UX Self-Test Checklist  |

| <b><u>Test Technology:</u></b> | <b><u>Test Method(s) <sup>1</sup>:</u></b>  |
|--------------------------------|---|
| AVS Music Testing              | AVS Music Self-Test Checklist   |
| <b><i>LoRa Testing</i></b>     |   |
| LoRA v1.0.2 Protocol Testing   | End Device Certification Requirements for EU 863-870 MHz ISM Band Devices<br><br>End Device Certification Requirements for US And Canada 902-928MHz ISM Band Devices<br><br>End Device Certification Requirements for AS 923MHz ISM Band Devices<br><br>End Device Certification Requirements for India 865-867MHz ISM Band Devices |
| LoRA v1.0.4 Protocol Testing   | End Device Certification Requirements for All Regions   |

<sup>1</sup> When the date, edition, version, etc. is not identified in the scope of accreditation, laboratories may use the version that immediately precedes the current version for a period of one year from the date of publication of the standard measurement method, per part C., Section 1 of A2LA *R101 - General Requirements- Accreditation of ISO-IEC 17025 Laboratories*.

<sup>2</sup> This laboratory performs field testing activities for these tests.

<sup>3</sup> Accreditation to the requirements of the CTIA Certification Test Plan does not imply authorization by the CTIA Certification program. Please see the CTIA website <https://ctiacertification.org/test-labs/> for a listing of Authorized Test Labs (ATLs).





## Accredited Laboratory

A2LA has accredited

**DEKRA TESTING AND CERTIFICATION, S.A.U.**

*Málaga, Spain*

for technical competence in the field of

**Electrical Testing**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).



Presented this 20<sup>th</sup> day of November 2022.

A blue ink signature of Mr. Trace McInturff, written over a horizontal line.

Mr. Trace McInturff, Vice President, Accreditation Services  
For the Accreditation Council  
Certificate Number 3350.01  
Valid to September 30, 2024

*For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.*