

### 10.3 Test Scope Accreditation



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

Element Materials Technology Morgan Hill <sup>1</sup>  
 (formerly PCTEST)  
 382 Piercy Road  
 San Jose, CA 95138  
 RJ Ortanez Phone: 410 290 6652  
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ELECTRICAL

Valid to: May 31, 2024

Certificate Number: 2041.02

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory at the location listed above, *as well as the satellite laboratory locations listed below* <sup>2</sup>, to perform the following EMC, SAR, HAC, RF, Conformance, Protocol, and OTA testing of wireless devices:

**Test Technology:**

**Test Method(s) <sup>1</sup>:**

CBRS/Winnforum

CBRSA-TS-9001 CBRS Alliance OnGo Certification Test Plans;  
 WINNF-TS-0122 Winnforum CBRS CBSD Test Specification

OTA

CTIA Test Plan for Wireless Device Over-the-Air Performance;  
 CTIA Test Plan for 2x2 Downlink MIMO and Transmit Diversity Over-the-Air Performance;  
 PTCRB NAPRD.03; PTCRB PPMD; OTA Carrier Aggregation;  
 VZW OTA Radiated Performance for CDMA & LTE Multimode Devices;  
 VZW 5G NR FR1 RF OTA Test Plan, VZW Location Determination Test Plan; VZW LTE LBS Performance Test Plan; VZW LTE Over the Air Radiated Performance Test Plan; T-Mobile Radiated Performance TRD;  
 AT&T 13340 OTA;  
 USCC CDMA Over The Air Radiated Test Plan;  
 USCC LTE Over The Air Radiated Test Plan;  
 CTIA Test Plan for RF Performance Evaluation of Wi-Fi Mobile Converged Devices;  
 GSMA TS.24 Operator Acceptance Values for Device Antenna Performance;  
 3GPP TS 34.114 Technical Specification UE/MS OTA Antenna Performance;  
 3GPP TS 37.544 Technical Specification UTRA & E-UTRA UE OTA Antenna Performance;  
 3GPP TS 38.521 NR UE Conformance Specification; Radio Transmission and Reception

<sup>2</sup> *This accreditation covers testing performed at the main laboratory listed above, and the following satellite laboratory listed below:*

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5202 Presidents Court, Suite 220 | Frederick, MD 21703-8515 | Phone: 301 644 3248 | Fax: 240 454 9449 | www.A2LA.org

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18855 Adams Court  
 Building AM1, AM2  
 Morgan Hill, CA 95037

**Test Technology:**

**Test Method(s) 1:**

**Emissions**

Radiated and Conducted  
 (3m semi-anechoic chambers)

CFR 47 FCC Part 15, Subpart B (using ANSI C63.4:2014);  
 CFR 47 FCC Part 18 (using MP-5:1986);  
 IEC/CISPR 11; EN 55011; KS C 9811;  
 CISPR 14-1 (excluding click and power disturbance);  
 IEC/EN 55014-1; KS C 9814-1;  
 CISPR 15; IEC/EN 55015; IEC/CISPR 22; IEC/EN 55022;  
 IEC/EN 55032; CISPR 32; EN 55103-1; KS C 9832;  
 AS/NZS CISPR 11; AS/NZS CISPR 32; ICES-001; ICES-003;  
 ICES-005;  
 VCCI V-3; VCCI-CISPR 32 (up to 6 GHz); CNS 13803;  
 CNS 13783-1; CNS 13438; CNS 15936 (up to 6 GHz);  
 TCVN 7189 (2009)

Harmonic Current

IEC 61000-3-2; EN 61000-3-2; KS C 9610-3-2

Flicker and Fluctuations

IEC 61000-3-3; EN 61000-3-3; KS C 9610-3-3

**Immunity**

Electrostatic Discharge (ESD)

IEC 61000-4-2; EN 61000-4-2; KS C 9610-4-2

Radiated Immunity

IEC 61000-4-3; EN 61000-4-3; KS C 9610-4-3

Electrical Fast Transient/Burst

IEC 61000-4-4; EN 61000-4-4; KS C 9610-4-4

Surge Immunity

IEC 61000-4-5; EN 61000-4-5; KS C 9610-4-5

Conducted Immunity

IEC 61000-4-6; EN 61000-4-6; KS C 9610-4-6

Power Frequency Magnetic  
 Field Immunity

IEC 61000-4-8; EN 61000-4-8; KS C 9610-4-8

Voltage Dips, Short Interrupts,  
 and Line Voltage Variations

IEC 61000-4-11; EN 61000-4-11; KS C 9610-4-11

Harmonics and Inter-harmonics

IEC 61000-4-13; EN 61000-4-13

Voltage Fluctuations

IEC 61000-4-14; EN 61000-4-14

Voltage Frequency Variations

IEC 61000-4-28; EN 61000-4-28

Voltage Dips, Short Interrupts and  
 Voltage Variations on DC Input Power  
 Port

IEC 61000-4-29; EN 61000-4-29

**Automotive EMC**

CISPR 25

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**Test Technology:**

**Generic or Product Specific EMC Standards**

**Test Method(s) <sup>1</sup>:**

EN/IEC 61000-6-1; EN/IEC 61000-6-2; EN/IEC 61000-6-3; EN/IEC 61000-6-4; KS C 9610-6-1; KS C 9610-6-2; KS C 9610-6-3; KS C 9610-6-4; IEC/EN 61204-3; EN/IEC 61547; KS C 9547; EN 62233; EN 55103-2; EN/IEC 61800-3; KS C 9800-3; CISPR 24; EN 55024; EN 50121-1; EN 50130-4; EN 50121-4; EN 50121-3-2; EN/IEC 50155; EN 50270; EN 50293; EN/IEC 55014-2; IEC/CISPR 14-2; IEC/EN 61326-1; IEC/EN 61326-2-1; IEC/EN 61326-3-1; IEC/EN 61326-3-2; IEC/EN 60601-1-2; KS C IEC 60601-1-2; TCVN 7317:2003; TCVN 7189:2009; TCVN 7317:2003

**EMC for Radio Equipment and Services**

ETSI EN 301 489-1; ETSI EN 301 489-3; ETSI EN 301 489-4; ETSI EN 301 489-5; ETSI EN 301 489-6; ETSI EN 301 489-7; ETSI EN 301 489-8; ETSI EN 301 489-9; ETSI EN 301 489-10; ETSI EN 301 489-12; ETSI EN 301 489-15; ETSI EN 301 489-16; ETSI EN 301 489-17; ETSI EN 301 489-18; ETSI EN 301 489-19; ETSI EN 301 489-20; ETSI EN 301 489-23; ETSI EN 301 489-24; ETSI EN 301 489-25; ETSI EN 301 489-26; ETSI EN 301 489-31; ETSI EN 301 489-33; ETSI EN 301 489-50; ETSI EN 301 489-52; ETSI EN 300 386; KS X 3124; KS X 3125; KN 301 489-07; KS X 3126

**Radio**

US/FCC

47 CFR, FCC Parts 15B/C/D/E/F/G/H (using ANSI C63.4:2014, ANSI C63.10:2013, ANSI C63.10:2020; ANSI C63.17:2013 and/or FCC KDB 905462 D02 (v02)); 47 CFR Parts 2, 11, 20, 21, 22, 24, 25, 27, 30, 73, 74, 80, 87, 90, 95, 96, 97, and 101 (using ANSI/TIA-603-D, ANSI/TIA-603-E, TIA-102.CAAA-E, ANSI C63.26:2015); CFR 47 Part 90 (using ANSI/TIA-603-D, ANSI/TIA 603-E)

Canada/ISED

RSS-111; RSS-112; RSS-117; RSS-119; RSS-123; RSS-125; RSS-127; RSS-130; RSS-131; RSS-132; RSS-133; RSS-134; RSS-135; RSS-137; RSS-139; RSS-140; RSS-141; RSS-142; RSS-170; RSS-181; RSS-182; RSS-191; RSS-192; RSS-194; RSS-195; RSS-196; RSS-197; RSS-199; RSS-210; RSS-211; RSS-213; RSS-215; RSS-216; RSS-220; RSS-222; RSS-236; RSS-238; RSS-243; RSS-244; RSS-246; RSS-247; RSS-248; RSS-251; RSS-252; RSS-287; RSS-288; RSS-310; RSS-Gen

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**Test Technology:**

**Test Method(s) <sup>1</sup>:**

EU

EN 301 126-1; EN 301 390; EN 301 751;  
 EN 302 217-2-2; EN 302 217-2; EN 302 217-3;  
 EN 302 326-2; EN 300 224; EN 300 224-2;  
 EN 300 341; EN 300 113; EN 301 166;  
 EN 300 390; EN 300 471-1; EN 300 471-2; EN 300 330;  
 EN 300 220-2; EN 300 220-3-1; EN 300 220-3-2; EN 300 220-4;  
 EN 300 440; EN 300 440-2; EN 300 440-4;  
 EN 300 328; EN 302 536-2; EN 302 571;  
 EN 305 550-1; EN 305 550-2;  
 EN 303 687; EN 301 893;  
 EN 302 502; EN 301 559; EN 301 598;  
 EN 302 544-1; EN 302 544-2;  
 EN 301 091-1; EN 301 091-2;  
 EN 302 208; EN 302 291-1; EN 302 291-2;  
 EN 303 204; EN 302 065-1; EN 302 065-2; EN 302 065-3;  
 EN 302 065-4; EN 303 413; EN 303 417;  
 EN 302 567;  
 EN 300 433; EN 301 502; EN 301 511;  
 EN 301 908-1; EN 301 908-2; EN 301 908-3;  
 EN 301 908-10; EN 301 908-11; EN 301 908-12;  
 EN 301 908-13; EN 301 908-14; EN 301 908-15;  
 EN 301 908-16; EN 301 908-17; EN 301 908-18;  
 EN 301 908-19; EN 301 908-20; EN 301 908-21; EN 301 908-22

Korea

Ordinance of MSIT No. 63, Dec 24, 2020;  
 MSIT Public Notification 2021-86, Nov 29, 2021;  
 KS X 3123 Conformity Assessment Test Methods for Radio  
 Equipment;  
 KS X 3142;  
 RRA Public Notification 2019-3, Mar 4, 2019;  
 RRA Public Notification 2021-15, Oct 12, 2021;  
 KS X 3074, (RRA Public Notification 2020- 6, Sep 25, 2020);  
 RRA Public Notification 2021-3, Feb 8, 2021;  
 MSIT Public Notification 2019-4, Jan 16, 2019;  
 RRA Public Notification 2019-1, Jan 17, 2019

Hong Kong

HKCA 1035; HKCA 1039; HKCA 1042; HKCA 1043;  
 HKCA 1049; HKCA 1053; HKCA 1054; HKCA 1056;  
 HKCA 1057; HKCA 1061; HKCA 1080

Singapore

IMDA TS WBA (October 2016); IMDA TS SRD (Apr 2018);  
 IMDA TS LMR (October 2016); IMDA TS CMT (Sep 2020);  
 IMDA TS UWB (October 2016)

Taiwan

DGT C-IS2031-0 (2020); DGT C-IS2034-0 (2020);  
 PLMN01 (2020); PLMN02 (2020); PLMN08 (2020);  
 PLMN09 (2020); DGT LP0001 (2020); DGT LP0002 (2020);  
 RTTE01 (2020); CNS 13438; CNS 15936 (2016) (up to 6 GHz)

Australia

AS/NZS 4268:2017

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**Test Technology:**

**Test Method(s) <sup>1</sup>:**

Vietnam

QCVN 11:2010/BTTTT; QCVN 14:2010/BTTTT;  
 QCVN 15:2015/BTTTT; QCVN 16:2010/BTTTT;  
 QCVN 18:2014/BTTTT;  
 QCVN 23:2011/BTTTT; QCVN 25:2011/BTTTT;  
 QCVN 41:2011/BTTTT; QCVN 42:2011/BTTTT;  
 QCVN 43:2011/BTTTT; QCVN 44:2011/BTTTT;  
 QCVN 45:2011/BTTTT; QCVN 46:2011/BTTTT;  
 QCVN 48:2011/BTTTT; QCVN 49:2011/BTTTT;  
 QCVN 54:2011/BTTTT; QCVN 55:2011/BTTTT;  
 QCVN 65:2013/BTTTT; QCVN 66:2013/BTTTT;  
 QCVN 53:2011/BTTTT; QCVN 73:2013/BTTTT;  
 QCVN 74:2013/BTTTT;  
 QCVN 95:2015/BTTTT; QCVN 96:2015/BTTTT

Japan

(Specified Radio Equipment Article 38-2-2, paragraph 1), Item 1 of Radio Law;  
 (Specified Radio Equipment Article 38-2-2, paragraph 1), Item 2 of Radio Law;  
 (Specified Radio Equipment Article 38-2-2, paragraph 1), Item 3 of Radio Law;  
 ARIB Standard STD-T29; STD-T53; STD-T56; STD-T57;  
 STD-T64; STD-T66; STD-T70; STD-T71; STD-T81; STD-T90;  
 STD-T106; STD-T107; STD-T108

Mexico

NOM-084-SCT1-2002; NOM-088/2-SCT1-2002;  
 IFT-008-2015; NOM-208-SCFI-2016;  
 NOM-EM-016-SCFI-2015

**RF Exposure / SAR (Specific Absorption Rate)**

IEEE 1528-2013; EN IEC/IEEE 62209-1528:2021;  
 RSS-102 Measurements (RF Exposure, SAR, LPD and NS);  
 SPR-001; SPR-002; SPR-003; SPR-004;  
 IEEE C95.3-2021; EN 50566-2017; EN 50360-2017;  
 EN 62209-1:2016; EN 62209-3: 2019; EN 62209-2:2010/A1:2019;  
 IEC 62209-1 2<sup>nd</sup> Edition 2016; IEC 62209-2:2010;  
 IEC 62209-3:2019; IEC PAS 63083:2017; EN 50401:2017;  
 IEC PAS 63184:2021; EN 50385:2017; EN 62311:2020;  
 EN 62232:2017; IEC 62232:2017; EN 62311:2008;  
 IEC 62311:2019; IEC 62311:2020; IEC TR 62630:2010;  
 IEC 62209-2 AMD 1; EN 62479:2010; IEC 62479:2010;  
 EN 50663:2017; IEC/IEEE 62209-1528:2020;  
 IEC/IEEE 63195-1:2022; AS/NZS 2772.2:2016;  
 Australian Communications Authority Radio Communications (Electromagnetic Radiation – Human Exposure) Standard 2014;  
 ANSI/IEEE C95.1-2005; ANSI/IEEE C95.1-1992;  
 ANSI/IEEE C95.3-2002; ANSI/IEEE C95.3.1-2010;  
 ANSI/IEEE C95.1:2019; ICNIRP (100KHz-300GHz):2020;  
 IEC TR 63170:2018;  
 RRA Public Notification 2018-18, December 7, 2018

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**Test Technology:**

**Hearing Aid Compatibility**

CBRS/Winnforum

SunSpec Alliance

**Test Method(s)<sup>1</sup>:**

ANSI C63.19:2011; ANSI C63.19:2019;  
CTIA Test Plan for Hearing Aid Compatibility; RSS-HAC  
CBRSA-TS-9001 CBRS Alliance OnGo Certification Test Plan;  
WINNF-TS-0122 Winnforum CBRS CBSD Test Specification

SunSpec – CSIP (Common Smart Inverter Profile) Conformance  
Test Procedures;  
SunSpec – Advanced Function Inverter Test Lab Specification;  
SunSpec – UL1741 Supplement SA/Rule 21 Implementation  
Guide;  
IEEE 2030.5-2018 Smart Energy Profile Application Protocol

<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.

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Testing Activities Performed in Support of FCC Certification in Accordance with 47 Code of Federal Regulations and FCC KDB 974614, Appendix A, Table A.1<sup>3</sup>:

<b>Rule Subpart/Technology</b>	<b>Test Method</b>	<b>Maximum Frequency</b>
<u>Unintentional Radiators</u> Part 15B	ANSI C63.4:2014	40 GHz
<u>Industrial, Scientific, and Medical Equipment</u> Part 18	FCC MP-5 (February 1986)	330 GHz
<u>Intentional Radiators</u> Part 15C	ANSI C63.10:2013	330 GHz
<u>Unlicensed Personal Communication Systems Devices</u> Part 15D	ANSI C63.17:2013	40 GHz
<u>U-NII without DFS Intentional Radiators</u> Part 15E	ANSI C63.10:2013	40 GHz
<u>U-NII with DFS Intentional Radiators</u> Part 15E	FCC KDB 905462 D02 (v02)	40 GHz
<u>UWB Intentional Radiators</u> Part 15F	ANSI C63.10:2013	40 GHz
<u>BPL Intentional Radiators</u> Part 15G	ANSI C63.10:2013	40 GHz
<u>White Space Device Intentional Radiators</u> Part 15H	ANSI C63.10:2013	40 GHz
<u>Commercial Mobile Services (FCC Licensed Radio Service Equipment)</u> Parts 22 (cellular), 24, 25 (below 3 GHz), and 27	ANSI/TIA-603-E; TIA-102.CAAA-E or ANSI C63.26:2015	330 GHz
<u>General Mobile Radio Services (FCC Licensed Radio Service Equipment)</u> Parts 22 (non-cellular), 90 (below 3GHz), 95, 97, and 101 (below 3GHz)	ANSI/TIA-603-E; TIA-102.CAAA-E or ANSI C63.26:2015	330 GHz
<u>Citizens Broadband Radio Services (FCC Licensed Radio Service Equipment)</u> Part 96	ANSI/TIA-603-E; TIA-102.CAAA-E or ANSI C63.26:2015	330 GHz

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Testing Activities Performed in Support of FCC Certification in Accordance with 47 Code of Federal Regulations and FCC KDB 974614, Appendix A, Table A.1<sup>3</sup>:

<b>Rule Subpart/Technology</b>	<b>Test Method</b>	<b>Maximum Frequency</b>
<u>Maritime and Aviation Radio Services</u> Parts 80 and 87	ANSI/TIA-603-E; ANSI C63.26:2015	330 GHz
<u>Microwave and Millimeter Bands Radio Services</u> Parts 25, 30, 74, 90 (above 3 GHz), 95 (above 3 GHz), 97 (above 3 GHz), and 101	ANSI/TIA-603-E; TIA-102.CAAA-E or ANSI C63.26:2015	330 GHz
<u>Broadcast Radio Services</u> Parts 73 and 74 (below 3 GHz)	ANSI/TIA-603-E; TIA-102.CAAA-E or ANSI C63.26:2015	330 GHz
<u>RF Exposure</u> Devices Subject to SAR Requirements	IEEE Std 1528:2013	6 GHz
<u>Hearing Aid Compatibility</u> Part 20 (HAC for Commercial Mobile Services)	ANSI C63.19:2011	6 GHz
<u>Signal Boosters</u> Part 20 (Wideband Consumer Signal Boosters, Provider-specific signal boosters, and Industrial Signal Boosters), Section 90.219	ANSI C63.26:2015	330 GHz

<sup>3</sup> Accreditation does not imply acceptance to the FCC equipment authorization program. Please see the FCC website (<https://apps.fcc.gov/oetcf/eas/>) for a listing of FCC approved laboratories.

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