

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

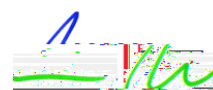
ELEMENT MATERIALS TECHNOLOGY SEATTLE – BOTHELL 120TH
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Bothell, WA 98011
Ms. Renee Walker Phone: 503 844 4066
Renee.walker@element.com

ELECTRICAL

Valid To: June 30, 2025

Certificate Number: 3310.06

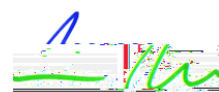
In recognition of the successful completion of the A2LA evaluation process (including an assessment of



Test Technology:

Test Method(s) ^{1,2,3:}

Emissions
Europe



Test Technology:

Test Method(s) ^{1,2,3:}

Emissions

Harmonic Current Emissions

IEC 61000-3-2; EN 61000-3-2;
KS C 9610-3-2; SANS 61000-3-2 Ed. 3.2 (2009);
IEC 61000-3-11 (2017)

Voltage Fluctuations and Flicker

IEC 61000-3-3; EN 61000-3-3;
KS C 9610-3-3; SANS 61000-3-3 Ed. 2 (2009);
IEC 61000-3-12 Ed. 2.0 (2011); EN 61000-3-12 (2011)

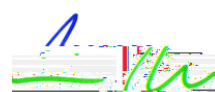
Immunity

Electrostatic Discharge (ESD)

IEC 61000-4-2; EN 61000-4-2;
IEC 61000-4-2 Ed. 2.0 (2008-12);
KS C 9610-4-2; SANS 61000-4-2 Ed. 2 (2009)

Radiated Immunity

IEC 61004-3; EN 61000-4-3;
EN 61000-4-3 (2006) +A1 (2008) +A2 (2010);
KS C 9610-4-3; SANS 61000-4-3 Ed. 3.1 (2008)



Test Technology:

Test Method(s) ^{1,2,3:}

Radio

US (FCC)

47 CFR FCC Part 15, Subpart F/G/H (using ANSI C63.10:2013);
47 CFR FCC Parts 20, 22, 24, 25, 27, 30, 73, 74, 80, 87, 90, 95, 96,
97, and 101 (using ANSI C63.26:2015 and TIA-102.CAAA-E,
ANSI/TIA-603-E); ANSI C63.10:2020; ANSI C63.27:2017;
ANSI C63.27:2021

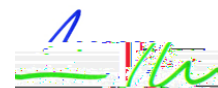
Canada (ISED)

RSS-111; RSS-117; RSS-119; RSS-123; RSS-130; RSS-131;
RSS-132; RSS-133; RSS-134; RSS-139; RSS-140; RSS-142;
RSS-170; RSS-181; RSS-182; RSS-192; RSS-194; RSS-195;
RSS-196; RSS-197; RSS-199; RSS-210; RSS-211; RSS-213;
RSS-216; RSS-220; RSS-222; RSS-236; RSS-238; RSS-243;
RSS-244; RSS-246; RSS-247; RSS-248; RSS-251; RSS-287;
RSS-310; RSS-GEN

Europe

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ETSI EN 300 220-1 V3.1.1 (2017-02);
ETSI EN 300 220-1 V2.4.1 (2012-05);
ETSI EN 300 220-2 V3.1.1 (2017-02);
ETSI EN 300 220-2 V3.2.1 (2018-06);
ETSI EN 300 220-3-1 V2.1.1 (2016-12);
ETSI EN 300 220-3-2 V1.1.1 (2017-02);
ETSI EN 300 220-4 V1.1.1 (2017-02);
ETSI EN 300 328 V2.1.1 (2016-11);
ETSI EN 300 328 V2.2.2 (2019-07);
ETSI EN 300 330 V2.1.1 (2017-02);
ETSI EN 300 422-1 V2.1.1 (2016-09);
ETSI EN 300 422-1 V2.1.2 (2017-01);
ETSI EN 300 422-2 V2.1.1 (2017-02);
ETSI EN 300 422-3 V2.1.1 (2017-02);
ETSI EN 300 422-4 V2.1.1 (2017-05);
ETSI EN 300 440 V2.1.1 (2017-03);
ETSI EN 300 440 V2.2.1 (2018-07);
ETSI EN 301 166 V2.1.1 (2016-11);
ETSI EN 301 357 V2.1.1 (2017-06);
ETSI EN 301 502 V12.5.2 (2017-03);
ETSI EN 301 511 V12.5.1 (2017-03);
ETSI EN 301 511 V12.1.1 (2015-06);
ETSI EN 301 839 V2.1.1 (2016-04);
ETSI EN 301 893 V2.1.1 (2017-05);
ETSI EN 301 908-1 V13.1.1 (2019-11);
ETSI EN 301 908-1 V15.1.1 (2021-09)
ETSI EN 301 908-1 V15.2.1:2023-01;
ETSI EN 301 908-2 V11.1.2 (2017-08);
ETSI EN 301 908-2 V11.1.1 (2016-07);
ETSI EN 301 908-3 V11.1.3 (2017-04);
ETSI EN 301 908-3 V13.1.1 (2019-09);
ETSI EN 301 908-11 V11.1.2 (2017-01);
ETSI EN 301 908-13 V11.1.1 (2016-07);
ETSI EN 301 908-13 V11.1.2 (2017-07);
ETSI EN 301 908-13 V13.2.1 (2022-02);
ETSI EN 301 908-14 V11.1.2 (2017-04)



Test Technology:

Test Method(s) ^{1,2,3:}

Radio

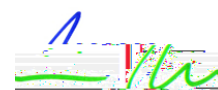
Europe

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ETSI EN 301 908-14 V13.1.1 (2019-09);
ETSI EN 301 908-14 V15.1.1 (2021-09);
ETSI EN 301 908-15 V11.1.2 (2017-01);
ETSI EN 301 908-15 V15.1.1 (2020-01);
ETSI EN 302 195 V2.1.1 (2016-06);
ETSI EN 302 208 V3.1.1 (2016-11);
ETSI EN 302 208 V3.3.1 (2020-05);
ETSI EN 302 537 V2.1.1 (2016-10);
ETSI EN 303 413 V1.1.1 (2017-06);
ETSI EN 303 413 V1.2.1 (2021-04);
ETSI EN 303 417 V1.1.1 (2017-09);
ETSI EN 301 489-1 V2.1.1 (2017-02);
ETSI EN 301 489-1 V2.2.3 (2019-11);
ETSI EN 301 489-3 V2.1.1 (2019-03);
ETSI EN 301 489-3 V1.6.1 (2013-08);
ETSI EN 301 489-3 V2.3.2 (2023-01);
ETSI EN 301 489-5 V2.1.1 (2016-11);
ETSI EN 301 489-6 V2.1.1 (2016-11);
ETSI EN 301 489-6 V2.2.1 (2019-04);
ETSI EN 301 489-8 V1.2.1 (2002-08);
ETSI EN 301 489-9 V1.4.1 (2007-11);
ETSI EN 301 489-9 V2.1.1 (2019-04);
ETSI EN 301 489-17 V3.1.1 (2017-02);
ETSI EN 301 489-17 V3.2.4 (2020-09);
ETSI EN 301 489-19 V2.1.1 (2019-04);
ETSI EN 301 489-19 v2.2.1 (2022-09);
ETSI EN 301 489-23 V1.5.1 (2011-11); ETSI EN 301 489-6 V2.1.1 ..3 (S)1.7 (1)29



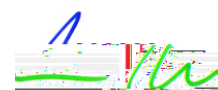
Test Technology:

Radio

Hong Kong

Test Method(s) ^{1,2,3:}

HKCA 1002, Issue 6 (January 2008);
HKCA 1007, Issue 5 (March 2012);
HKCA 1008, Issue 4 (November 2013);
HKCA 1010, Issue 1 (June 2003);
HKCA 1015, Issue 4 (February 2003);
HKCA 1020, Issue 7 (November 2011);
HKCA 1033, Issue 7 (March 2012);
HKCA 1034, Issue 3 (October 2009);
HKCA 1035, Issue 7 (May 2016);
HKCA 1039, Issue 6 (June 2015);
HKCA 1039, Issue 6 (June 2015);
HKCA 1039, Issue 5 (June 2013);
HKCA 1041, Issue 1 (February 2003);
HKCA 1042, Issue 2 (February 2003);
HKCA 1043, Issue 4 (June 2008);
HKCA 1044, Issue 1 (February 2003);
HKCA 1046, Issue 3 (September 2008);
HKCA 1048, Issue 2 (June 2008);
HKCA 1049, Issue 1 (April 204.6 (K)ueCA 1044, Issue;



Test Technology:

Test Method(s) ^{1,2,3:}

Radio

Korea (.)

RRA Announce 2015-81 (Sep. 30, 2015), Korean only;
RRA Announce 2015-135 (Jan. 05, 2016);
RRA Notice 2017-7, Korean only (Aug. 04, 2017);
RRA Public Notification 2015-23 (Nov. 18 2015);
RRA Public Notification 2017-8 (Aug. 28 2017);
RRA Public Notification 2011-24 (Dec. 23, 2011);
RRA Announce 2012-21, Korean only (Jun. 28, 2012);
RRA 2013-3 and 2013-24, (Jun. 17, 2013), Korean only;
RRA 2014-8 and RRA 2014-37 (Jun. 23, 2014);
RRA Public Notification 2015-27 (Dec. 03 2015);
RRA Announce 2015-110 (Dec. 03, 2015);
RRA Public Notification 2016-26 (Dec. 19 2016);
RRA Announce 2016-79 (Dec. 19 2016);
RRA Public Notification 2017-19 (Dec. 28, 2017);
RRA Announce 2017-71 (Dec. 28, 2017);
Technical Requirements for Measurement of Electromagnetic Field Strength (RRA Public Notification 2021-22, Nov 29, 2021)

Australia / New Zealand

AS/NZS 4268 (2017); AS/NZS 4268 (2012) +A1 (2013);
AS/NZS 4268:2017 + A1:2021;
Radiocommunications Equipment (General) Rules 2021 – Schedule 4 EME standard using measurement method AS/NZS 2772.2;
Radiocommunications Equipment (General) Rules 2021 – Schedule 5, Part 15, Short Range Equipment Standard using test method AS/NZS 4268; AS/NZS 2772.2:2016/Amdt 1:2018

Taiwan

LP0002 (2020); IS2019 (2020); RTTE01 (2020)

Singapore

IDA TS CMT Issue 1 (June 2011);
IDA TS LMR Issue 1 Rev 5 (June 2014);
IDA TS LMR Issue 1 Rev 4 (June 2011);
IDA TS SRD Issue 1 Rev 6 (May 2011);
IDA TS SRD Issue 1 Rev 7 (April 2013);
IDA TS UWB Issue 1 Rev 1 (May 2011);
IDA TS WBA Issue 1 Rev 1 (May 2011);
IDA TS WBA Issue 1 Rev 2 (November 2012);
IMDA TS CMT (July 2017);
IMDA TS CMT (September 2020);
IMDA TS LMR Issue 1 (October 2016);
IMDA TS SRD Issue 1 (October 2016);
IMDA TS UWB Issue 1 (October 2016);
IMDA TS WBA Issue 1 (October 2016);
IS 2019-0 (September 1998);
IMDA TS CMT Issue 1 Rev 2, Sept 2020

Test Technology:

Test Method(s) ^{1, 2, 3:}

Radio

Vietnam

QCVN 11:2010/BTTTT;
QCVN 12:2015/BTTTT;
QCVN 13:2010/BTTTT;
QCVN 15:2015/BTTTT;
QCVN 16:2018/BTTTT;
QCVN 18 (2022):BTTTT;
QCVN 41:2011/BTTTT;
QCVN 41:2016/BTTTT;
QCVN 42:2011/BTTTT;
QCVN 54:2020/BTTTT;
QCVN 55:2011/BTTTT;
QCVN 65:2013/BTTTT;
QCVN 73:2013/BTTTT;
QCVN 74:2020/BTTTT;
QCVN 75:2013/BTTTT;
QCVN 76:2013/BTTTT;
QCVN 88:2015/BTTTT;
QCVN 91:2015/BTTTT;
QCVN 94:2015/BTTTT;
QCVN 95:2015/BTTTT;
QCVN 96:2015/BTTTT;
QCVN 99:2015/BTTTT;
QCVN 103:2016/BTTTT;
QCVN 110:2017/BTTTT;
QCVN 111:2017/BTTTT;
QCVN 112:2017/BTTTT;
QCVN 117:2020/BTTTT;
QCVN 118:2018/BTTTT

Telecommunication

EN 300 386 V1.6.1:2016; EN 300 386 V2.2.0:2020;
AS/CA S042.4:2022; AS/CA S042.5:2022

RF Exposure

RSS-102 measurement (RF Exposure);
IEEE Std C95.3 (2002); IEEE Std C95.3:2021;
EN 50364 (2018) + (2010); EN 50383 (2010); EN 50566 (2017);
EN 50663 (2017); EN 62233 (2008); EN IEC 62311 (2020);
EN 62311 (2008); OET Bulletin 65, Edition 97-01;
ARPANSA RPS S-1 Rev 1; AS/NZS 2772.2:2016 +A1:2018

Test Technology:

Test Method(s) ^{1,2}:

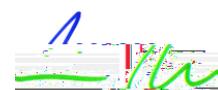
Emissions

Conducted and Radiated (U.S. / Canada	CFR 47, FCC Part 15, Subpart B (using ANSI C63.4-2014); 47 CFR FCC Part 18 (using FCC MP-5:1986); ICES-001 (Issue 5, July 2020); ICES-003 (Issue 7, October 2020)
International	CISPR 11 ED. 6.2 (2019); CISPR 32, Ed. 2.1 (2015) + A1 (2019)
Europe	EN 55032 (2015) + AC (2016); EN 55032:2015 + AC (2016) + A1:2019; EN 55032:2015 + AC:2016-07 + A11:2020 +A1:2020
Harmonic Current Emissions	IEC 61000-3-2; EN 61000-3-2
Voltage Fluctuations and Flicker	IEC 61000-3-3; EN 61000-3-3

Immunity

Electrostatic Discharge (ESD)	IEC 61000-4-2; EN 61000-4-2; IEC 61000-4-2 Ed. 2.0 (2008-12)
Radiated Immunity ()	IEC 61000-4-3; EN 61000-4-3; EN 61000-4-3 (2006) +A1 (2008) +A2 (2010)
Electrical Fast Transient/Burst (EFT)	IEC 61000-4-4; EN 61000-4-4; IEC 61000-4-4 (2012-04) + Ed. 2.0 (2004-07)+A1 (2010)
Surge	IEC 61000-4-5; EN 61000-4-5; IEC 61000-4-5 Ed. 3.1 (2017); EN 61000-4-5 (2014) +A1(2017)
Conducted Immunity	IEC 61000-4-6; EN 61000-4-6; IEC 61000-4-6 Ed. 4.0 (2013); IEC 61000-4-6 Ed. 4 (2008)
Magnetic Field	IEC 61000-4-8; EN 61000-4-8; IEC 61000-4-8 (2009)
Voltage Dips, Short Interruptions, and Voltage Variations	IEC 61000-4-11; EN 61000-4-11; IEC 61000-4-11, Ed. 2.1 (2017); EN 61000-4-11 (2004) +A1 (2017)

Generic / Product Family /



Test Technology:

**Generic / Product Family /
Product Specific Standards**

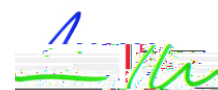
Radio

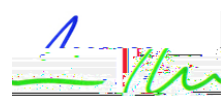
US (FCC)

Test Method(s) ^{1,2}:

ETSI EN 301 489-33 V2.2.1 (2019-04);
ETSI EN 301 489-52 V1.1.2 (2020-12)

47 CFR FCC Part 15.101-15.107 (ETSI EN 301 489-33 V2.2.1 (2019-04); ETSI EN 301 489-52 V1.1.2 (2020-12))





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 ⁴:

Rule Subpart/Technology:	Test Method(s):	Maximum Frequency (MHz):
<u>Broadcast Radio Services</u> Parts 73 and 74 (below 3 GHz)	ANSI/TIA-603-E; TIA-102.CAAA-E; ANSI C63.26:2015	220000 MHz
<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	220000 MHz

⁴Accreditation 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.

Testing Activities performed under the scope of the U.S FDA ASCA Pilot Program Specifications:

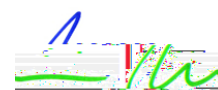
with all requirements of A2LA

published on September 25th, 2020, and in accordance

⁵: Cent (ASmetnda2 (t)quammndauamr

Standards:

⁵ These methods have been assessed by A2LA according to A2LA's FDA ASCA Program requirements. Accreditation by A2LA does not imply FDA ASCA-Accreditation. All ASCA-accreditation decisions for testing laboratory applications are made solely by the FDA, a list of approved laboratories can be found at FDA.gov.





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