

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

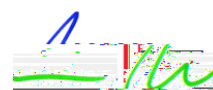
ELEMENT MATERIALS TECHNOLOGY SEATTLE – BOTHELL 120TH
19201 120th Ave. NE, Suite 104
Bothell, WA 98011
Ms. Renee Walker Phone: 503 844 4066
Renee.walker@element.com

ELECTRICAL

Valid To: June 30, 2025

Certificate Number: 3310.06

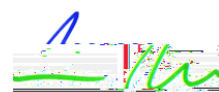
In recognition of the successful completion of the A2LA evaluation process (including an assessment of



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)

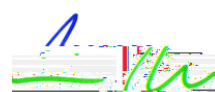
Immunity

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

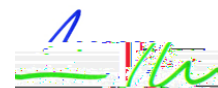
Canada (ISED)

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

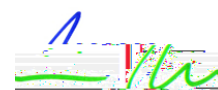
Europe

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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



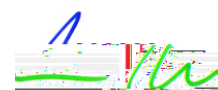
Test Technology:

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 2004.6 (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:}

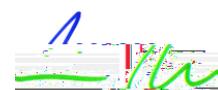
Emissions

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**

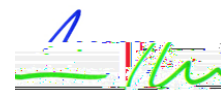
Radio

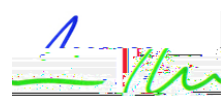
US (FCC)

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 15.101-15.103 (FCC) 15.107-15.109 (FCC) 15.111-15.113 (FCC) 15.115-15.117 (FCC) 15.119-15.121 (FCC) 15.123-15.125 (FCC) 15.127-15.129 (FCC) 15.131-15.133 (FCC) 15.135-15.137 (FCC) 15.139-15.141 (FCC) 15.143-15.145 (FCC) 15.147-15.149 (FCC) 15.151-15.153 (FCC) 15.155-15.157 (FCC) 15.159-15.161 (FCC) 15.163-15.165 (FCC) 15.167-15.169 (FCC) 15.171-15.173 (FCC) 15.175-15.177 (FCC) 15.179-15.181 (FCC) 15.183-15.185 (FCC) 15.187-15.189 (FCC) 15.191-15.193 (FCC) 15.195-15.197 (FCC) 15.199-15.201 (FCC) 15.203-15.205 (FCC) 15.207-15.209 (FCC) 15.211-15.213 (FCC) 15.215-15.217 (FCC) 15.219-15.221 (FCC) 15.223-15.225 (FCC) 15.227-15.229 (FCC) 15.231-15.233 (FCC) 15.235-15.237 (FCC) 15.239-15.241 (FCC) 15.243-15.245 (FCC) 15.247-15.249 (FCC) 15.251-15.253 (FCC) 15.255-15.257 (FCC) 15.259-15.261 (FCC) 15.263-15.265 (FCC) 15.267-15.269 (FCC) 15.271-15.273 (FCC) 15.275-15.277 (FCC) 15.279-15.281 (FCC) 15.283-15.285 (FCC) 15.287-15.289 (FCC) 15.291-15.293 (FCC) 15.295-15.297 (FCC) 15.299-15.301 (FCC) 15.303-15.305 (FCC) 15.307-15.309 (FCC) 15.311-15.313 (FCC) 15.315-15.317 (FCC) 15.319-15.321 (FCC) 15.323-15.325 (FCC) 15.327-15.329 (FCC) 15.331-15.333 (FCC) 15.335-15.337 (FCC) 15.339-15.341 (FCC) 15.343-15.345 (FCC) 15.347-15.349 (FCC) 15.351-15.353 (FCC) 15.355-15.357 (FCC) 15.359-15.361 (FCC) 15.363-15.365 (FCC) 15.367-15.369 (FCC) 15.371-15.373 (FCC) 15.375-15.377 (FCC) 15.379-15.381 (FCC) 15.383-15.385 (FCC) 15.387-15.389 (FCC) 15.391-15.393 (FCC) 15.395-15.397 (FCC) 15.399-15.401 (FCC) 15.403-15.405 (FCC) 15.407-15.409 (FCC) 15.411-15.413 (FCC) 15.415-15.417 (FCC) 15.419-15.421 (FCC) 15.423-15.425 (FCC) 15.427-15.429 (FCC) 15.431-15.433 (FCC) 15.435-15.437 (FCC) 15.439-15.441 (FCC) 15.443-15.445 (FCC) 15.447-15.449 (FCC) 15.451-15.453 (FCC) 15.455-15.457 (FCC) 15.459-15.461 (FCC) 15.463-15.465 (FCC) 15.467-15.469 (FCC) 15.471-15.473 (FCC) 15.475-15.477 (FCC) 15.479-15.481 (FCC) 15.483-15.485 (FCC) 15.487-15.489 (FCC) 15.491-15.493 (FCC) 15.495-15.497 (FCC) 15.499-15.501 (FCC) 15.503-15.505 (FCC) 15.507-15.509 (FCC) 15.511-15.513 (FCC) 15.515-15.517 (FCC) 15.519-15.521 (FCC) 15.523-15.525 (FCC) 15.527-15.529 (FCC) 15.531-15.533 (FCC) 15.535-15.537 (FCC) 15.539-15.541 (FCC) 15.543-15.545 (FCC) 15.547-15.549 (FCC) 15.551-15.553 (FCC) 15.555-15.557 (FCC) 15.559-15.561 (FCC) 15.563-15.565 (FCC) 15.567-15.569 (FCC) 15.571-15.573 (FCC) 15.575-15.577 (FCC) 15.579-15.581 (FCC) 15.583-15.585 (FCC) 15.587-15.589 (FCC) 15.591-15.593 (FCC) 15.595-15.597 (FCC) 15.599-15.601 (FCC) 15.603-15.605 (FCC) 15.607-15.609 (FCC) 15.611-15.613 (FCC) 15.615-15.617 (FCC) 15.619-15.621 (FCC) 15.623-15.625 (FCC) 15.627-15.629 (FCC) 15.631-15.633 (FCC) 15.635-15.637 (FCC) 15.639-15.641 (FCC) 15.643-15.645 (FCC) 15.647-15.649 (FCC) 15.651-15.653 (FCC) 15.655-15.657 (FCC) 15.659-15.661 (FCC) 15.663-15.665 (FCC) 15.667-15.669 (FCC) 15.671-15.673 (FCC) 15.675-15.677 (FCC) 15.679-15.681 (FCC) 15.683-15.685 (FCC) 15.687-15.689 (FCC) 15.691-15.693 (FCC) 15.695-15.697 (FCC) 15.699-15.701 (FCC) 15.703-15.705 (FCC) 15.707-15.709 (FCC) 15.711-15.713 (FCC) 15.715-15.717 (FCC) 15.719-15.721 (FCC) 15.723-15.725 (FCC) 15.727-15.729 (FCC) 15.731-15.733 (FCC) 15.735-15.737 (FCC) 15.739-15.741 (FCC) 15.743-15.745 (FCC) 15.747-15.749 (FCC) 15.751-15.753 (FCC) 15.755-15.757 (FCC) 15.759-15.761 (FCC) 15.763-15.765 (FCC) 15.767-15.769 (FCC) 15.771-15.773 (FCC) 15.775-15.777 (FCC) 15.779-15.781 (FCC) 15.783-15.785 (FCC) 15.787-15.789 (FCC) 15.791-15.793 (FCC) 15.795-15.797 (FCC) 15.799-15.801 (FCC) 15.803-15.805 (FCC) 15.807-15.809 (FCC) 15.811-15.813 (FCC) 15.815-15.817 (FCC) 15.819-15.821 (FCC) 15.823-15.825 (FCC) 15.827-15.829 (FCC) 15.831-15.833 (FCC) 15.835-15.837 (FCC) 15.839-15.841 (FCC) 15.843-15.845 (FCC) 15.847-15.849 (FCC) 15.851-15.853 (FCC) 15.855-15.857 (FCC) 15.859-15.861 (FCC) 15.863-15.865 (FCC) 15.867-15.869 (FCC) 15.871-15.873 (FCC) 15.875-15.877 (FCC) 15.879-15.881 (FCC) 15.883-15.885 (FCC) 15.887-15.889 (FCC) 15.891-15.893 (FCC) 15.895-15.897 (FCC) 15.899-15.901 (FCC) 15.903-15.905 (FCC) 15.907-15.909 (FCC) 15.911-15.913 (FCC) 15.915-15.917 (FCC) 15.919-15.921 (FCC) 15.923-15.925 (FCC) 15.927-15.929 (FCC) 15.931-15.933 (FCC) 15.935-15.937 (FCC) 15.939-15.941 (FCC) 15.943-15.945 (FCC) 15.947-15.949 (FCC) 15.951-15.953 (FCC) 15.955-15.957 (FCC) 15.959-15.961 (FCC) 15.963-15.965 (FCC) 15.967-15.969 (FCC) 15.971-15.973 (FCC) 15.975-15.977 (FCC) 15.979-15.981 (FCC) 15.983-15.985 (FCC) 15.987-15.989 (FCC) 15.991-15.993 (FCC) 15.995-15.997 (FCC) 15.999-16.001 (FCC)





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:

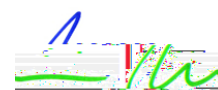
with all requirements of A2LA

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.





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