



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

NEBRASKA CENTER FOR EXCELLENCE IN ELECTRONICS

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ELECTRICAL

Valid to: May 31, 2024

Certificate Number 1953.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following electromagnetic compatibility tests:

Test Technology:

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

Emissions

*Unintentional Radiators
Radiated and Conducted
(Up to 220 GHz)*

47 CFR, FCC Part 15, Subpart B (using ANSI C63.4-2014);
47 CFR, FCC Part 18 (using MP-5:1986);
CISPR 11; EN 55011; AS/NZS CISPR 11; KS C 9811;
CISPR 12; EN 55012; CAN/CSA-CISPR 12-10;
CISPR 14-1; EN 55014-1 (Excluding Clicks);
CISPR 15; EN 55015;
CISPR 22; EN 55022; AS/NZS CISPR 22 (2002);
SANS 222; CISPR 32; EN 55032; KS C 9832;
AS/NZS 4771; AS/NZS 4268; AS/NZS CISPR 32
CNS 13438 (Up to 6 GHz);
GB 9254 (1998); GB 17625.1 (2003);
VCCI V-3-2011 (Up to 6 GHz); VCCI V-32;
VCCI-CISPR 32:2016

Current Harmonics

IEC 61000-3-2; EN 61000-3-2; AS/NZS 61000.3.2; KS 9610-3-2

Voltage Fluctuations and Flicker

IEC 61000-3-3; EN 61000-3-3; AS/NZS 61000.3.3; KS 9610-3-2

Magnetic Fields

IATA DGR Section 3.9.2.2 and PI953

Immunity

Electrostatic Discharge (ESD)

IEC 61000-4-2; EN 61000-4-2; KS C 9610-4-2;
AS/NZS 61000.4.2; SANS 61000-4-2; ISO 10605

Radio Frequency, Radiated
(80 MHz to 6 GHz, 10 V/m)

IEC 61000-4-3; EN 61000-4-3; KS C 9610-4-3;
AS/NZS 61000.4.3; SANS 61000-4-3; ISO 11452-1

Test Technology:**Test Method(s) ^{1,2}:*****Immunity (Cont.)***

Electrical Fast Transient / Burst	IEC 61000-4-4; EN 61000-4-4; KS C 9610-4-4; AS/NZS 61000.4.4; SANS 61000-4-4
Surge Immunity	IEC 61000-4-5; EN 61000-4-5; KS C 9610-4-5; AS/NZS 61000.4.5; SANS 61000-4-5
Radio Frequency, Conducted	IEC 61000-4-6; EN 61000-4-6; KS C 9610-4-6; AS/NZS 61000.4.6; SANS 61000-4-6; ISO 11452-4
Power Line Magnetic Field	IEC 61000-4-8; EN 61000-4-8; KS C 9610-4-8; AS/NZS 61000.4.8; SANS 61000-4-8
Voltage Dips and Fluctuations	IEC 61000-4-11; EN 61000-4-11; KS C 9610-4-11; AS/NZS 61000.4.11
Pulse Magnetic Field	IEC 61000-4-9; SANS 61000-4-9; KS C 9610-4-9
Ring Wave	IEC 61000-4-12
Radio Frequency Conducted (0 Hz to 150 kHz, 10Vrms)	IEC 61000-4-16
Radio Frequency, Radiated with Stripline (80 MHz to 400 MHz, 200V/m)	ISO 11452-5

***Transmitters and Receivers
(Up to 220 GHz)***

Unlicensed Transmitters	47 CFR, FCC Part 15, Subpart C; ANSI C63.10-2013
U-NII without DFS Intentional Radiators	47 CFR, FCC Part 15, Subpart E; ANSI C63.10-2013
Licensed Transmitters (up to 40 GHz)	47 CFR, FCC Part 15, Subpart F; ANSI C63.10-2013
Commercial Mobile Services (FCC Licensed Radio Service Equipment)	47 CFR FCC Part 22, 24, 25, 27 (Below 3 GHz); ANSI C63.26-2015; ANSI/TIA-603-D/E-2016
General Mobile Radio Services (FCC Licensed Radio Service Equipment)	47 CFR FCC Part 22, 90, 95, 97, 101 (below 3 GHz); ANSI C63.26-2015; ANSI/TIA-603-D/E-2016
Maritime and Aviation Radio Services (FCC Licensed Radio Service Equipment)	47 CFR FCC Part 80 and Part 87; ANSI C63.26-2015; ANSI/TIA-603-D/E-2016

Test Technology:**Test Method(s) ^{1,2}:*****Transmitters and Receivers
(up to 220 GHz) (Cont.)***

Microwave and Millimeter Wave
Bands Radio Services (FCC Licensed
Radio Service Equipment)

47 CFR FCC Parts 25, 30, 74, 90, 95, 101;
ANSI C63.26-2015; ANSI/TIA-603-D/E-2016

***Military Standards
MIL-STD***

MIL-STD 461F/G;
RE101, RE102, CE102; CS101, CS116, RS101;
RTCA/DO-160F, Section 21; RTCA/DO-160F, Section 15

***Canada
(Excluding DFS)***

ICES-001, ICES-002, ICES-003, ICES-005;
RSS-GEN; RSS-102 Measurement (RF Exp.); RSS-111; RSS-117;
RSS-119; RSS-123; RSS-125; RSS-127; RSS-131; RSS-135;
RSS-137; RSS-141; RSS-142;
RSS-170; RSS-181; RSS-182; RSS-192; RSS-194; RSS-197;
RSS-210; RSS-216; RSS-220; RSS-222; RSS-236;
RSS-244; RSS-247; RSS-251

Australia/New Zealand

AS/NZS 4771; AS/NZS 4268; AS/NZS 4768-1; AS/NZS 4768-2;
AS/NZS 4768-3

Japan

Japan Radio Tests Radio Law No. 131, Ordinance of MPT No. 37,
1981, MIC Notification No. 88:2004, Table No. 22-11;
ARIB STD-T66, Regulation 18

Radio Communication

ETSI EN 300 328; ETSI EN 300 683 (*Excluding DFS*);
ETSI EN 300 220-2;
ETIS EN 300 330;
ETSI EN 300 440-1; ETSI EN 300 440-2;
ETSI EN 300 113-1;
ETSI EN 301 908-1; ETSI EN 301 908-13

Product Standards

Immunity, Household Appliances,
and Electric Tools

EN 55014-2; CISPR 14-2

Sound and Television Broadcast
Receivers and Associated
Equipment, Immunity

EN 55020; CISPR 20

Emissions, Information
Technology Equipment

EN 55022; CISPR 22; AS/NZS CISPR 22

Immunity, Information Technology
Equipment

EN 55024; CISPR 24; KN 24; AS/NZS CISPR 24

Automotive

EN 55025; CISPR 25 (Section 6.2, 6.3, and 6.5 only)

Test Technology:**Test Method(s) ^{1,2}:*****Product Standards (Cont.)***

Immunity, Multimedia Equipment	EN 55035; CISPR 35; KS C 9835
Emissions, Multimedia Equipment	EN 55032; CISPR 32; KS C 9835; AS/NZS CISPR 32
Electrical and Electronic Installation in Ships – EMC	IEC 60533; KS C IEC 60533
Agriculture and Forestry Machinery	EN 14982; ISO 14982 (<i>Excluding power transients</i>)
Earth-Moving Machinery	EN 13766; ISO 13766 (<i>Emissions and ESD only</i>)
Immunity Requirements for Components of Fire, Intruder, and Social Alarms	EN 50130-4
Medical Electrical Equipment	IEC 60601-1-2; EN 60601-1-2
Electrical Equipment for Measurement, Control, and Laboratory Use	IEC 61326-1; EN 61326-1
Requirement for EMC Unprotected Area	IEC 61326-2-1; EN 61326-2-1
Requirements for Transducers with Integrated or Remote Signal Conditioning	IEC 61326-2-3; EN 61326-2-3
Generic Immunity for Residential, Commercial, and Light Industrial	IEC 61000-6-1; EN 61000-6-1; AS/NZS 61000.6.1; KS C 9610-6-1
Generic Immunity for Industrial Environments	IEC 61000-6-2; EN 61000-6-2; AS/NZS 61000.6.2; KS C 9610-6-2
Generic Emissions for Residential, Commercial, and Light Industrial	IEC 61000-6-3; EN 61000-6-3; AS/NZS 61000.6.3; KS C 9610-6-3
Generic Emissions for Industrial Environments	IEC 61000-6-4; EN 61000-6-4; AS/NZS 61000.6.4; KS C 9610-6-4

Test Technology:

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

Product Standards (Cont.)

Maritime navigation and radiocommunication equipment and systems - General requirements - Methods of testing and required test results

IEC 60945; EN 60945; KS X 3140

Equipment for General Lighting Purposes

EN 61547; IEC 61547

EMC Standard for Satellite Earth Stations and Systems (SES); Global Navigation Satellite System (GNSS) Receivers; Radio equipment operating in the 164 MHz to 1 300 MHz and 1 559 MHz to 1 610 MHz frequency bands

ETSI EN 303 413

EMC standard for Satellite Earth Stations and Systems (SES); Harmonized Standard for Mobile Earth Stations (MES), including handheld earth stations, for Satellite Personal Communications Networks (S-PCN) operating in the 1,6 GHz/2,4 GHz frequency band under the Mobile Satellite Service (MSS)

ETSI EN 300 441

EMC Standard for SRD Operating on Frequencies Between 9 kHz and 25 GHz

ETSI EN 300 683 (*Excluding section 9.6*)

EMC Standard for Radio Equipment and Services; Part 1 – Common Technical Requirements

ETSI EN 301 489-1; ETSI EN 301 489-3; ETSI EN 301 489-17; ETSI EN 301 489-5; ETSI EN 301 489-6; ETSI EN 301 489-19; ETSI EN 301 489-20; ETSI EN 301 489-52; KS X 3124; KS X 3126; KS X 3127; KS X 3128; KS X 3139; KS X 3129;

EAC Voluntary Voting System Guidelines (2015), Vol. 1 Section 4.1.2.4-12; Vol. 2 Section 8

Product Safety

Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use

EN 61010-1; IEC 61010-1; UL61010-1; CAN/CSA C22.2 No. 61010-1

Test Technology:

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

Product Safety (Cont.)

Particular Requirements for
Electrical Equipment for the
Heating of Materials

EN 61010-2-010; IEC 61010-2-010

Exclusions:

6.7.1.3 – Tracking Index

Measurements,

9.3.1/14.7 – Flammability Testing,

10.5.3 – Vicat Testing,

11.7 – Fluid Pressure and leakage,

12.2 – Ionizing Radiation

12.3 – UV Radiation,

12.4 – Microwave Radiation,

12.5.2 – Ultrasonic Pressure

Particular Requirements for
Automatic and Semi-automatic
Laboratory Equipment for Analysis
and Other Purposes

EN 61010-2-081; IEC 61010-2-081

Information Technology
Equipment – Safety

EN 60950-1; IEC 60950-1; ANSI/UL 60950-1;
CAN/CSAC22.2 No. 60950-1-07

Exclusions:

4.3.13 – Ionizing Radiation,

4.7.3 – Materials Tests

Safety of machinery - Electrical
equipment of machines

IEC 60204-1

Audio/video, information, and
communication technology
equipment - Part 1: Safety
requirements

IEC 62368-1; AS/NZS 62368-1

*Household and Similar Electrical
Appliances – Safety*

EN 60335-1; IEC 60335-1; UL60335-1;
CAN/CSA C22.2 No. 60335-1

Exclusions:

Clause 21.1 – Spring Hammer Test

Clause 23.3 – Wire Flexing Test

*Clause 25.14 – Supply Cord Flexing
Test*

Clause 30 – Material Tests

Ingress Protection, up to IP67

IEC 60529

¹ 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*.

² The laboratory is only accredited for testing activities outlined within the test methods listed above. Reference to any other activity within these standards, such as risk management or risk assessment, does not fall within the laboratory's accredited capabilities

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 ³:

Rule Subpart/Technology	Test Method	Maximum Frequency (MHz)
<u>Unintentional Radiators</u> Part 15B	ANSI C63.4-2014	220000
<u>Industrial, Scientific, and Medical Equipment</u> Part 18	FCC MP-5 (February 1986)	220000
<u>Intentional Radiators</u> Part 15C	ANSI C63.10-2013	325000
<u>U-NII without DFS Intentional Radiators</u> Part 15E	ANSI C63.10-2013	325000
<u>UWB Intentional Radiators</u> Part 15F	ANSI C63.10-2013	220000
<u>Commercial Mobile Services (FCC Licensed Radio Service Equipment)</u> Part 22 (cellular), Part 24, Part 25 (below 3 GHz), Part 27	ANSI C63.26-2015; ANSI/TIA-603-/E-2016	220000
<u>General Mobile Radio Services (FCC Licensed Radio Service Equipment)</u> Part 22 (non-cellular), Part 90 (below 3 GHz), Part 95, Part 97 (below 3 GHz), Part 101 (below 3 GHz)	ANSI C63.26-2015; ANSI/TIA-603-E-2016	325000
<u>Maritime and Aviation Radio Services</u> Part 80, Part 87	ANSI C63.26-2015; ANSI/TIA-603-E-2016	220000

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 ³:

Rule Subpart/Technology	Test Method	Maximum Frequency (MHz)
<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 C63.26-2015; ANSI/TIA-603-/E-2016	220000

³Accreditation 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.



Accredited Laboratory

A2LA has accredited

NEBRASKA CENTER FOR EXCELLENCE IN ELECTRONICS

Lincoln, NE

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 27th day of September 2022.

A blue ink signature of the Vice President of Accreditation Services.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1953.01
Valid to May 31, 2024

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