



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

NATIONAL TECHNICAL SYSTEMS (NTS) - LONGMONT
1736 Vista View Drive
Longmont, CO 80504-5242
Mr. Eric Loucks Phone: 870 574 0031

ELECTRICAL

Valid To: February 29, 2020

Certificate Number: 0214.43

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following Electromagnetic Compatibility/Interference (EMC/EMI), Lightning, Transient, Surge, and Product Safety tests:

Test Technology:

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

Emissions

Radiated and Conducted

CFR 47 FCC, Parts 15B (using ANSI C63.4:2014),
and 18 (using MP-5:1986); ANSI C63.4:2009;
CISPR 32, Ed. 1 (2012-01); EN 55032:2012/AC:2013;
AS/NZS CISPR 22 (2002); AS/NZS 3548 (1997);
AS/NZS CISPR 14-1 (2003); IEC/CISPR 14-1, Ed. 4 (2003);
IEC 61000-3-12, Ed. 2.0 (2011); EN 61000-3-12 (2011);
IEC 61000-6-1, Ed. 2 (2005-03); IEC 61000-6-2, Ed. 2.0 (2005-01);
IEC 61000-6-3 (1996); EN 61000-6-3 (2001) + A1 (2004);
EN 61000-6-4 (2007); KN 32:2015 (Annex 11); KN 22; KN 11

Harmonics

IEC 61000-3-2, Ed. 2.2 (2004-11);
IEC 61000-3-2, Ed. 3.0 (2005) + A1 (2008) + A2 (2009);
IEC 61000-3-2, Ed. 4.0 (2014-05)

Flicker

IEC 61000-3-3, Ed. 1.1 (2002-03); EN 61000-3-3 + A1 (2001);
IEC 61000-3-3, Ed. 1.1 (2003) + A2 (2005);
IEC 61000-3-3, Ed. 3.0 (2013-05)

Immunity

Electrostatic Discharge (ESD)

IEC 61000-4-2 (2001); EN 61000-4-2 (2001) + A2 (2001);
EN 61000-4-2 + A1 (1998) + A2 (2001);
IEC 61000-4-2, Ed. 2.0 (2008-12); EN 61000-4-2 (2009-05);
KN 61000-4-2; KN 61000-4-2 (2008-5); KN 61000-4-2 (Annex 1-1)

Radiated

IEC/EN 61000-4-3, Ed. 2.1 (2002) + A1 (2002); EN 61000-4-3;
IEC 61000-4-3 (1995) + A1 (1998) + A2 (2000);
EN 61000-4-3 (2002) + A1 (2002);
IEC 61000-4-3, Ed. 3.0 (2006-02) + A1 (2007) + A2 (2010);
EN 61000-4-3 (2006) + A1 (2008) + A2 (2010);
KN 61000-4-3; KN 61000-4-3 (2008-5); KN 61000-4-3 (Annex 1-2)

(A2LA Cert. No. 0214.43) 10/08/2018

Page 1 of 4

Test Technology:**Test Method(s)^{1,2:}*****Immunity (cont'd)***

Electrical Fast Transient/Burst

IEC 61000-4-4, Ed. 2.0 (2004-07); EN 61000-4-4 (2004);
EN 61000-4-4:2012; IEC 61000-4-4 (2012-04);
KN 61000-4-4; KN 61000-4-4 (2008-5);
KN 61000-4-4 (Annex 1-3)

Surge

IEC 61000-4-5, Ed. 2.0 (2005-11); EN 61000-4-5;
IEC 61000-4-5, Ed. 3.0 (May 2014); BS EN 61000-4-5 (2006);
EN 61000-4-5: 2014; KN 61000-4-5; KN 61000-4-5 (2008-5);
KN 61000-4-5 (Annex 1-4); IEEE C62.41.1 (2002);
IEEE C62.41.2 (2002); IEEE C62.45 (2002)

Conducted

IEC 61000-4-6, Ed. 2.1 (2004); EN 61000-4-6;
EN 61000-4-6 (1996) + A1 (2001);
IEC 61000-4-6, Ed. 2.2 (2006-05); IEC 61000-4-6, Ed. 3.0 (2008);
IEC 61000-4-6, Ed. 4.0 (2013); EN 61000-4-6 (2009);
EN 61000-4-6 (2014); KN 61000-4-6; KN 61000-4-6 (2008-5);
KN 61000-4-6 (Annex 1-5)

Power Frequency Magnetic Field

IEC 61000-4-8 (2001) + A1 (2000);
EN 61000-4-8 (2001) + A1 (2000);
EN 61000-4-8 (1993) + A1 (2001); IEC 61000-4-8 (2009);
EN 61000-4-8:2010; KN 61000-4-8; KN 61000-4-8 (2008-5);
KN 61000-4-8 (Annex 1-6)Voltage Dips, Short
Interruptions, and Voltage
VariationsIEC 61000-4-11, Ed. 2 (2004-03); EN 61000-4-11;
EN 61000-4-11 (1994) + A1 (2001); EN 61000-4-11 (2004);
KN 61000-4-11; KN 61000-4-11 (2008-5);
KN 61000-4-11 (Annex 1-7)***Product Safety***Medical Electrical
EquipmentIEC 60601-1-2, Ed. 3.0 (2007); KN 60601-1-2 (2008-5);
IEC 60601-1-2, Ed. 4, (2014-02); EN 60601-1-2 (2007);
EN 60601-1-2 (2015)***Generic/Product Family Standards
and Industry Standards***

Generic Standards

EN 61326-1: 2013; KN 35: 2015

Information Technology
EquipmentIEC/CISPR 22 (1997); EN 55022 (1998) + A1 (2000);
IEC/CISPR 22 (1993); EN 55022 (1994);
IEC/CISPR 22 (1993); EN 55022 (1994) + A1 (1995) + A2 (1997);
CNS 13438 (1997);
IEC/CISPR 22, Ed. 4 (2003-04); EN 55022 (1998);
IEC/CISPR 22, Ed. 5 (2005); EN 55022 (1998);
IEC/CISPR 22, Ed. 5 (2005) + A1 (2005);
EN 55022 (1998) + A1 (2000) + A2 (2003);

Test Technology:

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

***Generic/Product Family Standards
and Industry Standards (cont'd)***

Information Technology
Equipment (cont'd)

CNS 13438 (2006) (up to 6 GHz);
IEC/CISPR 22, Edition 5.2 (2006-03); EN 55022 (2006);
EN 55022 (2006) + A1 (2007); EN 55022:2010;
IEC/CISPR 22 (2008-09); AS/NZS CISPR 22 (2009);
TCVN 7189:2009 (CISPR 22:2006);
VCCI V-3 (2009.04, 2011.04, 2013.04, 2014.04, 2015.04)
(up to 6 GHz); CISPR 24 Ed 2.0 (2010-08); EN 55024 (2010);
KN 24

Industrial, Scientific, and
Medical (ISM) Equipment

AS/NZS CISPR 11 (2002); IEC/CISPR 11, Ed. 4.1 (2004-06);
AS/NZS CISPR 11 (2004);
IEC/CISPR 11, Ed. 4.1 (2004-06) + A1 (2004);
EN 55011 (1998) + A1 (1999) + A2 (2002);
IEC/CISPR 11 (2003); EN 55011 (1998) + A2(2002);
EN 55011 (2009) + A1 (2010); IEC/CISPR 11 Ed. 5 (2009-05);
CISPR 11 Ed. 5.1 (2010)

Measure

IEC 61326-1 Ed. 2.0 (2013)

Military/Defense

MIL-STD-461F, G Method CE101 (30 Hz to 10 kHz);
MIL-STD-461F, G Method CE102 (10 kHz to 10 MHz);
MIL-STD-461F, G Method CE106 (10 kHz to 40 GHz);
MIL-STD-461F, G Method CS101 (30 Hz to 150 kHz);
MIL-STD-461F, G Method CS106;
MIL-STD-461F, G Method CS114 (10 kHz to 200 MHz);
MIL-STD-461F, G Method CS115;
MIL-STD-461F, G Method CS116 (10 kHz to 100 MHz);
MIL-STD-461F, G Method RE101 (30 Hz to 100 kHz);
MIL-STD-461F, G Method RE102 (10 kHz to 18 GHz);
MIL-STD-461F, G Method RE103 (10 kHz to 40 GHz);
MIL-STD-461F, G Method RS101 (30 Hz to 100 kHz);
MIL-STD-461F, G Method RS103 (2 MHz to 40 GHz);
MIL-STD-704 D, E, F;
MIL-HDBK-704-8 Method LDC101;
MIL-HDBK-704-8 Method LDC102;
MIL-HDBK-704-8 Method LDC103;
MIL-HDBK-704-8 Method LDC104;
MIL-HDBK-704-8 Method LDC105;
MIL-HDBK-704-8 Method LDC201;
MIL-HDBK-704-8 Method LDC301;
MIL-HDBK-704-8 Method LDC302;
MIL-HDBK-704-8 Method LDC401;
MIL-HDBK-704-8 Method LDC501;
MIL-HDBK-704-8 Method LDC601

¹ When the date, revision or edition of a test method standard is not identified on the scope of accreditation, the laboratory is expected to be using the current version within one year of the date of publication, per part C., Section 1 of A2LA R101 - *General Requirements- Accreditation of ISO-IEC 17025 Laboratories*. If a specifier/regulator imposes a different transition period, this will supersede the A2LA one-year implementation period.

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.

On the following types of products:

Telecommunication Equipment, Network Equipment, Industrial and Commercial Equipment, Electronic (Digital) Equipment, Medical, Aerospace, Military. Information Technology Equipment, Multimedia Equipment, Scientific Equipment

Testing Activities Performed in Support of FCC Declaration of Conformity and Certification in Accordance with 47 Code of Federal Regulations and FCC KDB 974614, Appendix A, Table A.1³

Rule Subpart/Technology	Test Method	Maximum Frequency (MHz)
<u>Unintentional Radiators</u> Part 15B	ANSI C63.4:2014	18000
<u>Industrial, Scientific, and Medical Equipment</u> Part 18	FCC MP-5 (February 1986)	18000

³ 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.



Accredited Laboratory

A2LA has accredited

NATIONAL TECHNICAL SYSTEMS (NTS) - LONGMONT

Longmont, CO

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *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 8th day of October 2018.

A handwritten signature in black ink, written over a horizontal line.

President and CEO
For the Accreditation Council
Certificate Number 0214.43
Valid to February 29, 2020

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