SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

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I. ELECTRICAL

Valid to: March 31, 2019 Certificate Number: 0591.06

In recognition of the successful completion of the A2LA evaluation process (including an assessment of the organization's compliance with A2LA's EPA ENERGY STAR® Accreditation Program [1] requirements), accreditation is granted to this laboratory to perform the following tests EMC, Telecom, Environmental Simulation and Safety tests:

Test Technology:	**Test Method(s) [2, 3]:**
EMC	
Radiated and Conducted Emissions (*up to 40 GHz*)	47 CFR, FCC Part 15 B (using ANSI C63.4:2014) and 47 CFR, FCC Part 18 (using MP-5:1986); Industry Canada ICES-001; ICES-003; EN 55032; CISPR 32; AS/NZS CISPR 32; KN 32 EN 55022; CISPR 22; AS/NZS CISPR 22; KN 22; CISPR 11; EN 55011; KN 11; EN 55014-1 (*excluding measurements for clicks*); KN 14-1; VCCI V-3 (*up to 6 GHz*); VCCI V-4; VCCI-CISPR 32; ASMI CNS 13763-1; AS/NZS 1044 (*Appliances only*); IMDA TS EMC; CNS 13438 (*up to 6 GHz*); TCVN 7189 (2009)
Harmonics and Flicker	IEC/EN 61000-3-2; IEC/EN 61000-3-3
Immunity	EN/IEC 61000-4-2; KN 61000-4-2; EN/IEC 61000-4-3; KN 61000-4-3; EN/IEC 61000-4-4; KN 61000-4-4; EN/IEC 61000-4-5; KN 61000-4-5; EN/IEC 61000-4-6; KN 61000-4-6; EN/IEC 61000-4-8; KN 61000-4-8; EN/IEC 61000-4-11; KN 61000-4-11

Test Technology:	**Test Method(s) [2, 3]:**
Family Product or Industry Specific Specifications	IEC/EN/KN 61000-6-1; IEC/EN/KN 61000-6-2; IEC/EN/KN 61000-6-3; IEC/EN/KN 61000-6-4; ETSI 300 132-2; ETSI EN 300 386; Telcordia GR-1089; IEC/EN/KN 60601-1-2; IEC/EN 61850-3; IEC/EN/KN 60601-2-2, -3, -18, -20, -21, -22, -24, -25, -26, -27, -30, -32, -34, -35, -38, -39, -40, -41, -46; IEC/EN 61326-1; IEC/EN 61326-2-1; IEC/EN 61326-2-2; IEC/EN 61326-2-3; IEC/EN 61326-2-4; IEC/EN 61326-2-5; IEC/EN 55103-1; IEC/EN 55103-2; IEC/EN 55103-3; IEC/EN 55103-4; EN 50130-4; IEC/EN 50491-1; IEC/EN 50491-2; IEC/EN 50491-3; IEC/EN 50121-1; IEC/EN 50121-2; IEC/EN 50121-3-1; IEC/EN 50121-3-2; IEC/EN 50121-4; IEC/EN 50121-5; EN 55024; CISPR 24; KN 13; KN 19; KN 20; KN 24; KN 35; EN/KN 60945; EN 61131-2; IMDA TS EMC, Issue 1, Rev. 1 (Mar. 2000); ISO 7637-1; ISO 7637-2
Intentional Radiators (*Using ANSI C63.4:2014, ANSI C63.10:2013 up to 40 GHz; excluding HAC and SAR unless otherwise noted*)	47 CFR, FCC Parts 2 and 11; 47 CFR, FCC Parts 15 B, C, E, F, G; 47 CFR, FCC Part 18 (using MP-5:1986); RSS-GEN; RSS-210; RSS-220; RSS-247; RSS-310; ETSI EN 300 220-2; ETSI EN 300 330-2; ETSI EN 300 440-2; ETSI EN 300 328; ETSI EN 302 195-1; ETSI EN 302 195-2; ETSI EN 302 208; ETSI EN 302 291-1; ETSI EN 302 291-2 ETSI EN 301 489 Series -1 through -35; ETSI EN 301 489 Series -50, -51

Test Technology:	**Test Method(s) [2, 3]:**
Intentional Radiators (cont.)	Technical Requirements for Telecommunications Terminal Equipment (RRA Public Notification 2015-24), Conformity Assessment Procedure for Telecommunications Terminal Equipment (RRA Announce 2015-104), Standard Test Procedure on the Technical Requirements for Telecommunications Terminal Equipment (RRA Public Notification 2012-17), Regulations on Radio Equipment (MSIP Public Notification 2015-89), Unlicensed Radio Equipment Established Without Notice (MSIP Public Notification 2015-91), Technical Requirements for the Human Protection against Electromagnetic Waves (MSIP Public Notification 2015-18), Technical Requirements for Measurement and Test Procedure of Specific Absorption Rate (SAR) (RRA Public Notification 2015-23), Technical Requirements for Measurement of Electromagnetic Field Strength (RRA Public Notification 2014-2), Conformity Assessment Procedure of Radio Equipment (RRA Announce 2015-81); KS X 3123; Regulations on Radio Equipment (Enforcement Decree of MSIT NO. 1, Jul 26, 2017); Unlicensed Radio Equipment Established Without Notice (MSIT Public Notification 2017-10, Sep 1, 2017); Technical Requirements for the Human Protection against Electromagnetic Waves (MSIT Public Notification 2017-7, Aug 24, 2017); Technical Requirements for Measurement and Test Procedure of Specific Absorption Rate (RRA Public Notification 2017-8, Aug 28, 2017); Technical Requirements of the Other Service Radio Equipment for Simple radio station, Space station and Earth station (RRA Public Notification 2017-8, Aug 28, 2017); Technical Requirements for Measurement of Electromagnetic Field Strength (RRA Public Notification 2017-7, Aug 4, 2017); Equipment to be subject of Test Procedure for Electromagnetic Field Strength and Specific Absorption Rate (MSIT Public Notification 2017-7, Aug 24, 2017); KN 301 489-1 through -32; AS/NZS 4268; B1: Specified Radio Equipment specified in Article 38-2-2, Paragraph 1, item 1 of the Radio Law; B2: Specified Radio Equipment specified in Article 38-2-2, paragraph 1, item 2 of the Radio Law; B3: Specified Radio Equipment Specified in Article 38-2-2, Paragraph 1, Item 3 of the Radio Law; LP0002

Test Technology:	**Test Method(s) [2, 3]:**
Product Safety [4]	CSA C22.2 No. 205; 16 CFR 1505; IEC/EN 60950-1 [4] (*except as noted in table 1*); UL 60950-1; CSA C22.2 No. 60950-1; UL/CSA/IEC/EN 60950-22; IEC/EN 61010-1 [4] (*except as noted in table 2*); UL 61010-1; CSA C22.2 No. 61010-1; IEC/EN/UL 61010-2-010; CSA C22.2 No. 61010-2-010; IEC/EN/UL 61010-2-032; CSA C22.2 No. 61010-2-032; IEC/EN/UL 61010-2-051; CSA C22.2 No. 61010-2-051; IEC/EN/UL 61010-2-061; CSA C22.2 No. 61010-2-061; IEC/EN/UL 61010-2-081; CSA C22.2 No. 61010-2-081; IEC/EN/UL 61010-2-101; CSA C22.2 No. 61010-2-101 IEC/EN 60601-1[4] (*except as noted in table 3*); ANSI/AAMI ES60601-1; CSA C22.2 No. 60601-1; IEC/EN/UL 60601-1-1; CSA C22.2 No. 60601-1-1; IEC/EN/UL 60601-1-4; CSA C22.2 No. 60601-1-4; IEC/EN/UL 60601-1-6; CSA C22.2 No. 60601-1-6; IEC/EN/UL 60601-1-8; CSA C22.2 No. 60601-1-8; IEC/EN/UL 60601-1-11; CSA C22.2 No. 60601-1-11; IEC/EN/UL 60601-2-2; CSA C22.2 No. 60601-2-2; IEC/EN/UL 60601-2-3; CSA C22.2 No. 60601-2-3; IEC/EN/UL 60601-2-4; CSA C22.2 No. 60601-2-4; IEC/EN/UL 60601-2-10; CSA C22.2 No. 60601-2-10; IEC/EN/UL 60601-2-18; CSA C22.2 No. 60601-2-18; IEC/EN/UL 60601-2-22; CSA C22.2 No. 60601-2-22; IEC/EN/UL 60601-2-23; CSA C22.2 No. 60601-2-23; IEC/EN/UL 60601-2-25; CSA C22.2 No. 60601-2-25; IEC/EN/UL 60601-2-26; CSA C22.2 No. 60601-2-26; IEC/EN/UL 60601-2-27; CSA C22.2 No. 60601-2-27; IEC/EN/UL 60601-2-34; CSA C22.2 No. 60601-2-34; IEC/EN/UL 60601-2-35; CSA C22.2 No. 60601-2-35; IEC/EN/UL 60601-2-36; CSA C22.2 No. 60601-2-36; IEC/EN/UL 60601-2-38; CSA C22.2 No. 60601-2-38; IEC/EN/UL 60601-2-40; CSA C22.2 No. 60601-2-40; IEC/EN/UL 60601-2-49; CSA C22.2 No. 60601-2-49; IEC/EN/UL 60601-2-52; CSA C22.2 No. 60601-2-52; IEC/EN/UL 60601-2-57; CSA C22.2 No. 60601-2-57; UL/CSA/EN/IEC 62368-1; ULC 60839-11-1

EPA ENERGY STAR®
Testing / Energy Efficiency

Computers	ENERGY STAR® Program Requirements Product Specification for Computers; Eligibility Criteria Version 6.1 Rev. March-2016; EPRI Generalized Test Protocol for Calculating the Energy Efficiency of Internal AC-DC and DC-DC Power Supplies (for products that have internal, multi-output, or single output with integral cooling power supplies)
Data Center Storage	ENERGY STAR ® Program Requirements for Data Center Storage; Eligibility Criteria Version 1.0 Rev. March-2014; SNIA Emerald Power Efficiency Measurement Specification v2.0.2
Enterprise Servers	ENERGY STAR® Program Requirements Product Specification for Computer Servers Eligibility Criteria Version 2.1; Test Method: ENERGY STAR Test Method for Computer Servers (Rev. April-2016); SERT: SERT™ Tool V1.1.1 released Jan 29, 2016; EPRI Generalized Test Protocol for Calculating the Energy Efficiency of Internal AC-DC and DC-DC Power Supplies. www.efficientpowersupplies.org
Large Network Equipment	ENERGY STAR Product Specification for Large Network Equipment Version 1.0; ENERGY STAR Test Method for Large Network Equipment (December 2015)
Household Electrical Appliances: Measurement of Standby Power	IEC 62301; EN 50564
External AC-DC and AC-AC power supplies – Determination of no-load power and average efficiency of active modes	EN 50563
Test Method for Calculating the Energy Efficiency of Single-Voltage External AC-DC and AC-AC Power Supplies	CSA C381.1-08
Imaging Equipment, Internal Power Supplies	EPRI Generalized Test Protocol for Calculating the Energy Efficiency of Internal Ac-Dc and Dc-Dc Power Supplies at www.efficientpowersupplies.org
Verizon NEBSTM Compliance: Energy Efficiency Requirements for Telecommunications Equipment	VZ.TPR.9205 Issue 5, October 2011
Energy Efficiency for Telecommunication Equipment: Methodology for Measurement and Reporting – General Requirements	ATIS-0600015.2013

EPA ENERGY STAR®	
Testing / Energy Efficiency	
Energy Efficiency for Telecommunications Equipment: Methodology for Measurement and Reporting – Server Requirements	ATIS-0600015.01.2014
Energy Efficiency for Telecommunications Equipment: Methodology for Measurement & Reporting – Transport Requirements	ATIS-0600015.02.2016
Energy Efficiency for Telecommunications Equipment: Methodology for Measurement & Reporting – Router and Ethernet Switch Products	ATIS-0600015.03.2013
Energy Efficiency for Telecommunications Equipment: Methodology for Measurement and Reporting DC Power Plant – Rectifier Requirements	ATIS-0600015.04.2010

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.1:

Rule Subpart/Technology	**Test Method**	**Maximum Frequency**
Unintentional Radiators Part 15B	ANSI C63.4:2014	40000 MHz
Industrial, Scientific, and Medical Equipment Part 18	FCC MP-5 (February 1986)	40000 MHz
Intentional Radiators Part 15C	ANSI C63.10:2013	40000 MHz
U-NIII without DFS Intentional Radiators Part 15E	ANSI C63.10:2013	40000 MHz
UWB Intentional Radiators Part 15F	ANSI C63.10:2013	40000 MHz
BPL Intentional Radiators Part 15G	ANSI C63.10:2013	40000 MHz

[4] Exclusion Tables:

Table #1: Clauses excluded from IEC/EN 60950-1

Standard	Clause	Test
60950-1		
	2.10.4	Comparative tracking index measurements
	2.10.5.4	Partial discharge test (on semiconductors)
	2.10.8.4	Abrasion resistance test
	3.2.5.1	Flexing test of AC power supply cords
	4.2.8	CRT tests
	4.3.12	Flammable liquid measurement
	4.3.13.2	Ionizing radiation
	4.3.13.3	Tests after UV exposure on material
	4.3.13.4	Human exposure to UV radiation
	4.3.13.5	Laser radiation
	4.6.2	Hot flaming oil
	Annex AA	Mandrel test

Table #2: Clauses excluded from IEC/EN 61010-1

Standard	Clause	Test
61010-1		
	6.7.1.2	Test equipment for tracking index
	10.5.3	Insulating materials
	11.6	Specially protected equipment (IP rated)
	2.2.1	Ionizing radiation
	12.3	UV Radiation
	12.4	Microwave Radiation
	12.6	Laser sources
	13.3	High vacuum devices
	14.9	Transient over voltage

Table #3: Clauses excluded from IEC/EN 60601-1

Standard	Clause	Test
60601-1		
	8.5.5.1	Defibrillation protection
	8.5.5.2	Energy reduction test
	8.8.4.2	Resistance to environmental stress
	8.9.1.7	Material groups classification
	9.5.2	Cathode ray tubes
	9.6.3	Hand-transmitted vibration
	10.1	X-radiation
	10.4	Lasers and light emitting diodes (LEDs)
	11.2	Fire prevention
	11.3	Constructional requirements for fire enclosures
	11.6.5	Ingress of water or particulate matter
	15.4.2	Temperature and overload control devices
	15.4.3.4	Lithium batteries
	15.4.7.3	Entry of liquids
	G	Protection against hazards of ignition of flammable anaesthetic mixtures
	G.4.3	Prevention of electrostatic charges
	L	Insulated winding wires for use without interleaved insulation

II. MECHANICAL

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

Test Technology:	**Test Method(s)[2]:**
Explosive Atmosphere	
	UL/CSA/EN/IEC 60079-0:2011 (Excluding Group I and Group II Small Component Ignition Test, Surface Resistance Test at 30 %RH, Verification of Ratings of Ventilating Fans, IP5X, IP6X, Resistance to Light, Resistance to Group I Chemical Agents – Electrical Equipment, Alternative Qualification of Elastomeric Sealing O-rings)
	UL/CSA/EN/IEC 60079-1:2014
	UL/CSA/EN/IEC 60079-2:2014
	UL/CSA/EN/IEC 60079-5:2007
	UL/CSA/EN/IEC 60079-6:2015
	UL/CSA/EN/IEC 60079-7:2015
	UL/CSA/EN/IEC 60079-11:2011
	UL/CSA/EN/IEC 60079-14:2013
	UL/CSA/EN/IEC 60079-15:2010 (Excluding Tests for Enclosed Break Devices/Non Incendive Components, Test for Screw Lampholders, Test for Starter Holders for Luminaires, Tests for Electronic Starts for Tublar Fluorescent Lamps/Ingitors for High Pressure Sodium or Metal Halide Lamps, Ignition Tests for Large or High Voltage Machines, Mechanical Shock Test for Batteries)
	UL/CSA/EN/IEC 60079-18:2014
	UL/CSA/EN/IEC 60079-26:2014 (ia and ma only)
	UL/CSA/EN/IEC 60079-28:2015 (op pr only by assessment)
	UL/CSA/EN/IEC 60079-31:2013
	UL/CSA/EN/IEC 80079-36:2016
	UL/CSA/EN/IEC 80079-37:2016

On the following product types: Electrical Apparatus for Explosive Gas and Dust Atmospheres

[1] A2LA provides accreditation to the U.S. EPA's *Conditions and Criteria for Recognition of Laboratories for the ENERGY STAR Program* by verifying an organization's compliance to A2LA document *R222 - Specific Requirements - EPA ENERGY STAR Accreditation Program* and to the related test methods listed above.

Accreditation by A2LA does not infer Recognition by the EPA for ENERGY STAR testing. Please verify this organization's recognition status by using the EPA's searchable database, located at http://www.energystar.gov/index.cfm?fuseaction=recognized_bodies_list.show_RCB_search_form

[2] When the date, revision or edition of a test method standard is not identified on the scope of accreditation, the laboratory is required 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.

[3] *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.*