



CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

Retlif Testing Laboratories

3131 Detwiler Road
Harleysville, PA 19438

Fulfills the requirements of

ISO/IEC 17025:2017

And

**U.S. Federal Communication Commission (FCC) EMC and Telecommunications (EC&T)
Testing Designation Program**

**Recognition of Telecommunications Testing - Innovation, Science, and Economic Development
(ISED) Canada**

**FDA Accreditation Scheme for Conformity Assessment (ASCA) Pilot Program - Basic Safety
and Essential Performance of Medical Electrical Equipment, Medical Electrical Systems, and
Laboratory Medical Equipment**

In the field of

TESTING

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

R. Douglas Leonard Jr., VP, PILR SBU

Expiry Date: 02 September 2022

Certificate Number: L2320.02



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
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).

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

Retlif Testing Laboratories

3131 Detwiler Road
Harleysville, PA 19438

Richard Reitz rreitz@retlif.com

TESTING

Valid to: **September 02, 2022**

Certificate Number: **L2320.02**

Military EMC Methods			
Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Frequency / Range of Test	Key Equipment or Technology
General	MIL-STD-464A,B,C MIL-STD-704A,B,C,D,E,F	-	-
Bonding and Grounding	MIL-STD-1310G,H	-	-
Conducted Emissions, Current	MIL-STD-462, CE01 MIL-STD-462, CE02 MIL-STD-462, CE03 MIL-STD-462, CE04 MIL-STD-462D, CE101 MIL-STD-461E, CE101 MIL-STD-461F, CE101 MIL-STD-461G, CE101	DC to 400 MHz	-
Conducted Emissions, RF Port	MIL-STD-462, CE06 MIL-STD-462D, CE106 MIL-STD-461E, CE106 MIL-STD-461F, CE106 MIL-STD-461G, CE106	10 kHz to 100 GHz	-
Conducted Emissions, Transient	MIL-STD-462, CE07	Time Domain	-
Conducted Emissions, Voltage	MIL-STD-462D, CE102 MIL-STD-461E, CE102 MIL-STD-461F, CE102 MIL-STD-461G, CE102	10 kHz to 1 GHz	-

Military EMC Methods			
Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Frequency / Range of Test	Key Equipment or Technology
Conducted Susceptibility, AF	MIL-STD-462, CS01 MIL-STD-462, CS09 MIL-STD-462D, CS101 MIL-STD-462D, CS109 MIL-STD-461E, CS101 MIL-STD-461E, CS109 MIL-STD-461F, CS101 MIL-STD-461F, CS109 MIL-STD-461G, CS101 MIL-STD-461G, CS109	DC to 250 kHz	-
Conducted Susceptibility, RF	MIL-STD-462, CS02 MIL-STD-462D, CS114 MIL-STD-461E, CS114 MIL-STD-461F, CS114 MIL-STD-461G, CS114	4 kHz to 400 MHz	-
Conducted Susceptibility, RF Port	MIL-STD-462, CS03 MIL-STD-462, CS04 MIL-STD-462, CS05 MIL-STD-462, CS07 MIL-STD-462D, CS103 MIL-STD-462D, CS104 MIL-STD-462D, CS105 MIL-STD-461E, CS103 MIL-STD-461E, CS104 MIL-STD-461E, CS105 MIL-STD-461F, CS103 MIL-STD-461F, CS104 MIL-STD-461F, CS105 MIL-STD-461G, CS103 MIL-STD-461G, CS104 MIL-STD-461G, CS105	30 Hz to 40 GHz	-

Military EMC Methods			
Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Frequency / Range of Test	Key Equipment or Technology
Conducted Susceptibility, Transient	MIL-STD-462, CS06 MIL-STD-462, CS10 MIL-STD-462, CS11 MIL-STD-462, CS12 MIL-STD-462, CS13 MIL-STD-462D, CS115 MIL-STD-462D, CS116 MIL-STD-461E, CS115 MIL-STD-461E, CS116 MIL-STD-461F, CS106 MIL-STD-461F, CS115 MIL-STD-461F, CS116 MIL-STD-461G, CS115 MIL-STD-461G, CS116	CS115: 5 Amperes CS116: 10 Amperes	-
EMP	MIL-STD-462, RS05 MIL-STD-462D, RS105 MIL-STD-461E, RS105 MIL-STD-461F, RS105 MIL-STD-461G, RS105	50,000 V/M	-
ESD	MIL-STD-1686C MIL-STD-461G, CS118	25 kV	-
Lightning	MIL-STD-461G, CS117	Single Stroke, Multiple Stroke and Multiple Burst Waveforms 1, 2, 3, 4, 5A, 6	-
Power Input	MIL-STD-1275A,B,C,D,E MIL-STD-1399, Section 300A MIL-STD-1399, Section 300B MIL-STD-704A-F Utilizing: MIL-HDBK-704-2, SAC101, SAC102, SAC103, SAC104, SAC105, SAC106, SAC107, SAC108, SAC109, SAC110, SAC201, SAC301, SAC302, SAC303, SAC401, SAC601, SAC603	-	-

Military EMC Methods			
Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Frequency / Range of Test	Key Equipment or Technology
Power Input	<p>MIL-HDBK-704-3, TAC101, TAC102, TAC103, TAC104, TAC105, TAC106, TAC107, TAC108, TAC109, TAC110, TAC201, TAC301, TAC302, TAC303, TAC401, TAC601, TAC602, TAC603</p> <p>MIL-HDBK-704-4, SVF101, SVF102, SVF104, SVF105, SVF106, SVF107, SVF108, SVF109, SVF110, SVF201, SVF301, SVF302, SVF303, SVF401, SVF601, SVF603</p> <p>MIL-HDBK-704-5, TVF101, TVF102, TVF103, TVF104, TVF105, TVF106, TVF107, TVF108, TVF109, TVF110, TVF201, TVF301, TVF302, TVF303, TVF401, TVF601, TVF602, TVF603</p> <p>MIL-HDBK-704-6, SXF101, SXF102, SXF104, SXF105, SXF106, SXF107, SXF108, SXF109, SXF110, SXF201, SXF301, SXF302, SXF303, SXF401, SXF601, SXF603</p> <p>MIL-HDBK-704-7, HDC101, HDC102, HDC103, HDC104, HDC105, HDC201, HDC301, HDC302, HDC303, HDC401, HDC501, HDC601, HDC602</p> <p>MIL-HDBK-704-8, LDC101, LDC102, LDC103, LDC104, LDC105, LDC201, LDC301, LDC302, LDC401, LDC501, LDC601, LDC602</p>	-	-

Military EMC Methods			
Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Frequency / Range of Test	Key Equipment or Technology
Radiated Emissions, E-Field	MIL-STD-462, RE02 MIL-STD-462, RE04 MIL-STD-462D, RE102 MIL-STD-461E, RE102 MIL-STD-461F, RE102 MIL-STD-461G, RE102	10 kHz to 40 GHz	-
Radiated Emissions, H-Field	MIL-STD-462, RE01 MIL-STD-462D, RE101 MIL-STD-461E, RE101 MIL-STD-461F, RE101 MIL-STD-461G, RE101	30 Hz to 150 kHz	-
Radiated Emissions, RF Spurious	MIL-STD-462, RE03 MIL-STD-461E, RE103 MIL-STD-461F, RE103 MIL-STD-461G, RE103	10 kHz to 40 GHz	-
Radiated Susceptibility, E-Field	MIL-STD-462, RS03 MIL-STD-462D, RS103 MIL-STD-461E, RS103 MIL-STD-461F, RS103 MIL-STD-461G, RS103	10 kHz to 40 GHz	-
Radiated Susceptibility, H-Field	DOD-STD-1399, (NAVY) - Section 070 MIL-STD-1399, Section 070 MIL-STD-461E, RS101 MIL-STD-461F, RS101 MIL-STD-461G, RS101 MIL-STD-462, RS01 MIL-STD-462, RS02 MIL-STD-462, RS06 MIL-STD-462D, RS101	DC to 250 kHz	-



ANSI National Accreditation Board

Commercial Aviation EMC Methods			
Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Frequency / Range of Test	Key Equipment or Technology
Magnetic Effects	RTCA/DO-160A,B,C,D,E,F,G, Section 15 ABD01001.2 Rev E,F,G Section 3.4.1	DC	-
Power Input	RTCA/DO-160A,B,C,D,E,F,G, Section 16 D6-16050-4 Rev C,D,F Section 7.5.3	-	-
Conducted Susceptibility, Transient	RTCA/DO-160A,B,C,D,E,F,G, Section 17 D6-16050-4 Rev C,D,F Section 7.5.1 ABD01001.2 Rev E,F,G Section 3.4.2	600 Volts	-
Conducted Susceptibility, AF	RTCA/DO-160A,B,C,D,E,F,G, Section 18 D6-16050-4 Rev C,D,F Section 7.2 ABD01001.2 Rev E,F,G Section 3.4.3	DC to 250 kHz	-
Radiated Susceptibility, H-Field	RTCA/DO-160A,B,C,D,E,F,G, Section 19 D6-16050-4 Rev C,D,F D6-16050-5 Rev A,B,C Section 7.2, 7.5 ABD01001.2 Rev E,F,G Section 3.4.4	DC to 250 kHz	-
Conducted Susceptibility, RF	RTCA/DO-160A,B,C,D,E,F,G, Section 20 D6-16050-4 Rev C,D,F D6-16050-5 Rev A,B,C Section 7.3 ABD01001.2 Rev E,F,G Section 3.3.2	10 kHz to 400 MHz	-
Radiated Susceptibility, E-Field	RTCA/DO-160A,B,C,D,E,F,G, Section 20 D6-16050-4 Rev C,D,F D6-16050-5 Rev A,B,C Section 7.3 ABD01001.2 Rev E,F,G Section 3.3.3, 3.3.4	150 kHz to 40 GHz	-

Commercial Aviation EMC Methods			
Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Frequency / Range of Test	Key Equipment or Technology
Conducted Emissions, Current	RTCA/DO-160A,B,C,D,E,F,G, Section 21 D6-16050-4 Rev C,D,F Section 8.3.2, 8.4 D6-16050-5 Rev A,B,C Section 8.1,8.2.1 ABD01001.2 Rev E,F,G Section 3.4.5	DC to 400 MHz	-
Conducted Emissions, Transient	D6-16050-4 Rev D,F Section 8.1,8.3.1 D6-16050-5 Rev A,B,C Section 8.1	Time Domain	-
Radiated Emissions	RTCA/DO-160A,B,C,D,E,F,G, Section 21 D6-16050-4 Rev C,D,F Section 8.4 D6-16050-5 Rev A,B,C Section 8.2.2 ABD01001.2 Rev E,F,G Section 3.4.5	150 kHz to 40 GHz	-
Lightning	RTCA/DO-160A,B,C,D,E,F,G, Section 22 D6-16050-4 Rev C,D,F D6-16050-5 Rev A,B,C Section 7.4 ABD01001.2 Rev E,F,G Section 3.2	Single Stroke, Multiple Stroke and Multiple Burst Waveforms: 1,2 ,3 ,4 ,5A ,5B, 6 Levels: 1 through 5	-
ESD	RTCA/DO-160A,B,C,D,E,F,G, Section 25 D6-16050-4 Rev C,D,F D6-16050-5 Rev A,B,C Section 7.1 ABD01001.2 Rev E,F,G Section 3.5	25 kV	-

Product Family EMC Standards			
Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Electromagnetic Compatibility Emissions & Immunity	ETSI EN 300 386 V1.6.1	Electromagnetic Compatibility and Radio Spectrum Matters (ERM): Telecommunication Network Equipment; Electromagnetic Compatibility (EMC) Requirements	-
	ETSI EN 301 489-1 V1.9.2: 2011	Radio Equipment	-
	CISPR 11 ED 4.0: 2003 IEC/CISPR 11 ED 5.0: 2009 + A1: 2010 IEC/CISPR 11 ED 5.1: 2010 IEC/CISPR 11 ED 6.0: 2015 IEC/CISPR 11 ED 6.1: 2016 EN 55011: 2009 +A1: 2010 ICES-001 Issue 4: 2006- Updated Nov 2014	Industrial, Scientific and Medical Equipment	-
	EN 55014-2:1997 + A1:2001 + A2:2008 EN 55014-1:2006 + A1:2009 + A2:2011 EN 55014-2: 2015 IEC/CISPR 14-1 ED 5.0: 2005 IEC/CISPR 14-1 ED 6.0: 2016 + ISH1: 2017 IEC/CISPR 14-2 ED 2.0: 2015	Household Appliances, Electric Tools and Similar Apparatus	-
	EN 55015: 2013 ICES-005 Issue 5, December 2018	Lightning Equipment	-
	IEC/CISPR 22, Edition 5:2005-04 EN 55022:2006 + A1:2007 EN 55022: 2010 + AC: 2011 EN 55024: 2010 ICES-003 Issue 6: 2016 Updated Apr 2017	Information Technology Equipment	-
	IEC/CISPR 25: 2002 IEC/CISPR 25: 2008 IEC/CISPR 25: 2016 IEC/CISPR 12 ED 6.1:2009	Automotive Components	-

Product Family EMC Standards			
Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Electromagnetic Compatibility Emissions & Immunity	EN 55032: 2012 + AC: 2013 IEC/CISPR 32 ED 2.0: 2015 VCCI-CISPR 32: 2016 AS/NZS CISPR 32: 2015 + A1:2020	Multimedia Equipment	-
	EN/CISPR 55035: 2017	Multimedia Equipment	-
	EN 50083-2: 2012 +A1:2015	Cable Networks for Television Signals, Sound Signals and Interactive Services	-
	EN 50121-1: 2006 + AC:2008 EN 50121-1: 2017 IEC 62236-1: 2018	Railway Applications	-
	EN 50121-2:2006 + AC:2008 EN 50121-2: 2017 IEC 62236-2: 2018	Railway Applications – Whole Railway System	-
	EN 50121-3-1:2006 + AC:2008 EN 50121-3-1: 2017 IEC 62236-3-1: 2018	Railway Applications – Rolling Stock – Train and Complete Vehicle	-
	EN 50121-3-2:2006 + AC:2008 EN 50121-3-2: 2016 IEC 62236-3-2: 2018	Railway Applications – Rolling Stock - Apparatus	-
	EN 50121-4:2006 + AC:2008 EN 50121-4: 2016 IEC 62236-4: 2018	Railway Applications – Signaling and Telecommunications Apparatus	-
	EN 50121-5:2006 + AC:2008 EN 50121-5: 2017 IEC 62236-5: 2018	Railway Applications – Fixed Power Supply Installations and Apparatus	-
	EN 50130-4: 2011	Fire, Intruder Hold Up, CCTV, Access Control and Social Alarm Systems	-
	EN 50498:2010	Aftermarket Electronic Equipment in Vehicles	-
	EN 55103-1: 2009 + A1: 2012 EN 55103-2: 2009	Audio, video, audio-visual and entertainment lighting control apparatus for professional use	-
	EN 60034-1: 2010/AC: 2010	Rotating Machines	-

Product Family EMC Standards			
Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Electromagnetic Compatibility Emissions & Immunity	EN 60255-26: 2013 + AC:2013 IEC 60255-26: 2013-05	Measuring Relays and Protection Equipment	-
	IEC 60601-1-2: ED 3.0: 2007 IEC 60601-1-2: ED 4.0: 2014 EN 60601-1-2: ED 3.0: 2007 EN 60601-1-2: ED 4.0: 2014	Medical Electrical Equipment	-
	EN 60945: 2002	Maritime Navigation and Radio communication Equipment and Systems	-
	EN 60974-10: 2014	Arc Welding Equipment	-
	EN 61000-6-1: 2007 EN 61000-6-3: 2007+ A1: 2011+AC: 2012 AS/NZS 61000.6.3: 2021	Generic Standard for Residential, Commercial and Light Industrial Environments	-
	EN 61000-6-2: 2005 + AC: 2005 EN 61000-6-4: 2007 + A1: 2011 AS/NZS 61000.6.4: 2020	Generic Standard for Industrial Environments	-
	EN 61000-6-5:2015 + AC: 2018	Electromagnetic Compatibility (EMC) Part 6-5: Generic Standards – Immunity for Equipment Used in Power Station and Substation Environment	-
	IEC 61326-1:2005-12 IEC 61326-1, Ed. 2.0:2012 EN 61326-1:2013	Electrical Equipment for Measurement, Control and Laboratory Use	-
	EN 62040-2: 2006 +AC: 2006	Uninterruptible Power Systems (UPS)	-
	MTA-NYCT EMC Standard for non-third rail powered work cars, Rev. 1.0	Railway Applications	-
	MTA-NYCT AC Train EMC Standards, Rev. 2.0	Railway Applications	-
	MTA-NYCT AC Train EMC Standards, Rev. 2.0	Railway Applications	-
	NYCT Specification Section 16ES	Railway Applications	-
	NYCT Specification Section 1N	Railway Applications	-

Product Family EMC Standards			
Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Electromagnetic Compatibility Emissions & Immunity	OIML R-76-1: 2006	Non-Automatic Weighing Systems	-
	ABS Rules for Building and Classing Steel Vessels: 2019	Maritime Equipment	-
	Lloyd's Register LR Type Approval Test Specification #1: March 2019	Maritime Equipment	-
	IEC 60092-504, Edition 4.0, 2016-19 Test No. 3, 4a, 4b, 5, 13, 14, 15, 16, 17, 18, 19 & 20	Maritime Equipment	-
	International Association of Classification Societies, Test Specifications for Type Approval E10, Rev 7, Oct 2018	Maritime Equipment	-
	ISO 7176-21: 2009 ANSI/RESNA WC-2: 2009	Electrically Powered Wheelchairs, Scooters and Battery Chargers	-
	ISO 7637-1: 2015 ISO 7637-2: 2011 ISO 7637-3: 2016 ISO 11451-1:2015 ISO 11452-1:2015 ISO 16750-1:2018 ISO 16750-2:2012 SAE J1113-1: 2006 SAE J1113-1: 2013 SAE J1113-1:2018	Road Vehicles	-
	ISO 13766: 2006 ISO 13766-1: 2018 ISO 13766-2:2018	Earth-Moving and Building and Construction Machinery	-

Commercial EMC Methods			
Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Frequency / Range of Test	Key Equipment or Technology
Conducted Emissions, Transient	IEC/CISPR 16-2-1: 2014 IEC/CISPR 25:2016 IEC/CISPR 25, Ed. 1:1995-09 IEC/CISPR 25, 2 nd Ed.:2002-08 IEC/CISPR 25, Ed. 3.0:2008-03 IEC/CISPR 22, Edition 5:2005-04 SAE J1113-42: 2010	Time Domain	-
Conducted Emissions, Current	IEC/CISPR 16-2-1: 2014 IEC/CISPR 25:2016 IEC/CISPR 25, Ed. 1:1995-09 IEC/CISPR 25, 2 nd Ed.:2002-08 IEC/CISPR 25, Ed. 3.0:2008-03 IEC/CISPR 22, Edition 5:2005-04 EN 55022:2006 IEC/CISPR 22, Ed. 6.0:2008-09, EN 61000-3-2: 2014 IEC 61000-3-2, Ed. 4.0:2014-05 IEC 61000-3-2, Ed. 3.0:2005-11 IEC 61000-3-2, Ed. 3.0:2005 +A1:2008 + A2:2009 IEC 61000-3-2, Ed. 3.2:2009 EN 61000-3-3: 2013 IEC 61000-3-3:2013 +A1:2017 IEC 61000-3-11: 2017 IEC 61000-3-11: 2000-08 EN 61000-3-11: 2000 IEC 61000-3-12: 2004 EN 61000-3-12: 2011 IEC 61000-3-12: 2011-05 UMTA-MA-06-0153-87-2 UMTA-MA-06-0153-85-8	9 kHz to 30 MHz	-

Commercial EMC Methods			
Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Frequency / Range of Test	Key Equipment or Technology
Conducted Emissions, Voltage	IEC/CISPR 16-2-1: 2014 EN 55011:2009 + A1:2010 EN 55014-1:2006 + A1:2009 + A2:2011 EN 55022:2006 + A1:2007 EN 55022:2010 + AC:2011 EN 55032:2012 + AC:2013 EN 55032:2012-05 ANSI C63.4:2014 ANSI C63.4:2003 IEC/CISPR 25:2016 IEC 61000-3-3 Ed.2.0:2008 IEC 61000-3-3 Ed.3.0:2013-05 UMTA-MA-06-0153-87-2 UMTA-MA-06-0153-85-8	9 kHz to 30 MHz	-
Conducted Immunity, AF	ISO 11452-10:2009 SAE J1113-2: 1996 SAE J1113-2: 2004 SAE J1113-2: 2010 IEC 61000-4-16: Ed. 2.0: 2015 IEC 61000-4-17 Ed. 1.2: 2009	DC to 250 kHz	-
Conducted Immunity, RF	IEC 61000-4-6, Ed. 2.0:2003-05 IEC 61000-4-6, Ed. 2.1:2004 IEC 61000-4-6, Ed. 2.2:2006 IEC 61000-4-6, Ed. 3.0:2008 IEC 61000-4-6, Ed. 4.0:2013 IEC 61000-4-6:1996 EN 61000-4-6:2009 ISO 11452-4: 2011 ISO 11452-4:2020 ISO 11452-7:2003 + A1:2013 SAE J1113-3: 2006 SAE J1113-3: 2010 SAE J1113-4: 2004 SAE J1113-4: 2014 SAE J1113-4:2020	9 kHz to 400 MHz	-

Commercial EMC Methods			
Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Frequency / Range of Test	Key Equipment or Technology
EFT/Chattering Relay	IEC 61000-4-4, Ed. 2.0:2004-07 EN 61000-4-4:2004 + A1:2010 IEC 61000-4-4:1995 IEC 61000-4-4, Ed. 2.1:2011 IEC 61000-4-4:2012-04 SAE J1113-12: 2006 SAE J1113-12: 2017	4 kV	-
ESD	IEC 61000-4-2, Ed. 2.0:2008-12 EN 61000-4-2:2009-05 ISO 10605:2008 + A1:2014 SAE J1113-13: 2004 SAE J1113-13: 2015	25 kV	-
Power Input	IEC 61000-4-11:2004 + A1:2017 EN 61000-4-11:2004 IEC 61000-4-11:2004 IEC 61000-4-11:1994 IEC 61000-4-11:2020 IEC 61000-4-29: 2000 IEC 61000-4-34: 2005 + A1: 2009	-	-
Radiated Emissions, E-Field	IEC/CISPR 16-2-3: 2016 EN 55011 EN 55012:2007 + A1:2009 EN 55014-1:2006 + A1:2009 + A2:2011 EN 55022:2006 + A1:2007 EN 55022:2010 + AC:2011 EN 55032:2012 + AC:2013 EN 55032:2012-05 ANSI C63.4: 2014 SAE J1113-41: 2006 UMTA-MA-06-0153-85-11	10 kHz to 40 GHz	-

Commercial EMC Methods			
Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Frequency / Range of Test	Key Equipment or Technology
Radiated Immunity, E-Field	IEC 61000-4-3:1995 IEC 61000-4-3, Ed. 3.0:2006-02 EN 61000-4-3:2006 + A1:2008 + A2:2010 IEC 61000-4-3, Ed. 3.1:2008-04 IEC 61000-4-3, Ed. 3.2:2010 ISO 11451-2: 2015 ISO 11451-3: 2015 ISO 11452-2: 2004 ISO 11452-2:2019 ISO 11452-3: 2016 ISO 11452-5:2002 ISO 11452-9:2012 SAE J1113-21: 2005 SAE J1113-21: 2013 SAE J1113-23: 2002 SAE J1113-24: 2010 SAE J1113-26: 2006 SAE J1113-26: 2014	10 kHz to 18 GHz	-
Radiated Immunity, H-Field	IEC 61000-4-8:1993 IEC 61000-4-8:2009 IEC 61000-4-9: 2016 IEC 61000-4-10: 2016 ISO 11452-8:2015 SAE J1113-22: 2003 SAE J1113-22: 2010	DC to 250 kHz	-
Surge/Transients	IEC 61000-4-5, Ed. 3.0: 2014 + A1:2017 IEC 61000-4-5, Ed. 2.0:2005-11 IEC 61000-4-5, Ed. 1.1:2005-11 EN 61000-4-5: 2006 IEC 61000-4-5:1995 IEC 61000-4-12: 2017 SAE J1113-11: 2006 SAE J1113-11: 2011 SAE J1113-11: 2012 SAE J1113-11: 2017 SAE J1113-11:2018	6 kV	-

Product Family Radio Standards			
Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Radio Parameters	ETSI EN 300 220-1 V3.1.1: 2017 ETSI EN 300 220-2 V3.1.1: 2017 AS/NZS 4268:2017	Short Range Devices, 25 to 1000 MHz	-
	ETSI EN 302 208 V3.1.1: 2017	RFID	-
	ETSI EN 300 328 V2.1.1: 2016	Wide Band Transmission Systems, 2.4 GHz ISM Band	-
	ETSI EN 300 330 V2.1.1: 2017 AS/NZS 4268:2017	Short Range Devices, 9 kHz to 30 MHz	-
	ETSI EN 300 440 V2.1.1: 2017 AS/NZS 4268:2017	Short Range Devices, 1 to 40 GHz	-

Radio Test Methods			
Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Frequency / Range of Test	Key Equipment or Technology
Audio Tests	TIA-603-D, 2.1.10 Audio Frequency Response TIA-603-D, 2.1.11 Hum and Noise TIA-603-D, 2.1.12 Audio Distortion TIA-603-D, 2.1.13 Audio Squelch TIA-603-D, 2.1.14 Squelch Blocking TIA-603-D, 2.1.20 Acoustic Audio Output TIA-603-D, 2.2.3 Modulation Limiting TIA-603-D, 2.2.5 Audio Sensitivity TIA-603-D, 2.2.6 Audio Frequency Response TIA-603-D, 2.2.7 Audio Distortion TIA-603-D, 2.2.8 FM Hum and Noise TIA-603-D, 2.2.9 AM Hum and Noise TIA-603-D, 2.2.10 Acoustic Microphone TIA-603-D, 2.2.15 Audio Low Pass Filter Response TIA-603-D, 2.2.16 Intermodulation Attenuation	-	-
Conducted Emissions, Voltage	ANSI C63.10, 6.2:2013 AC Line Conducted TIA-603-D, 2.1.3 Power Line Conducted	9 kHz to 30 MHz	-

Radio Test Methods			
Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Frequency / Range of Test	Key Equipment or Technology
Timing	TIA-603-D, 2.1.15 Receiver Attack Time TIA-603-D, 2.1.16 Receiver Closing Time TIA-603-D, 2.1.22 Receiver Opening Time TIA-603-D, 2.2.4 Carrier attack Time	-	-
Receiver, Adjacent Channel Sensitivity	TIA-603-D, 2.1.6 Adjacent Channel Rejection	10 kHz to 40 GHz	-
Receiver, Blocking	TIA-603-D, 2.1.8 Spurious Response Rejection TIA-603-D, 2.1.9 Intermodulation Rejection TIA-603-D, 2.1.18 Impulse Blanking ETSI EN 300 220 V3.1.1, 4.4.2 Receiver Blocking TIA-603-D, 2.1.21 Blocking Rejection	10 kHz to 40 GHz	-
Receiver, Sensitivity	TIA-603-D, 2.1.5 Signal Bandwidth TIA-603-D, 2.1.17 Audio Sensitivity ETSI EN 300 220 V3.1.1, 4.4.1 Receiver Sensitivity TIA-603-D, 2.1.19 Average Radiation Sensitivity	10 kHz to 40 GHz	-
Receiver, Spurious Radiation	TIA-603-D, 2.1.1 Radiated Spurious Output Power TIA-603-D, 2.1.2 Conducted Spurious Output Power	10 kHz to 40 GHz	-
Specialized	TIA-603-D, 2.1.4 Reference Sensitivity ETSI EN 300 220 V3.1.1, 4.3.9 Adaptive Power Control ETSI EN 300 220 V3.1.1, 4.3.6 TX Transient ETSI EN 300 220 V3.1.1, 4.3.11 TX Short Term ETSI EN 300 220 V3.1.1, 4.5.2 Clear Channel ETSI EN 300 220 V3.1.1, 4.5.3 Polite Spectrum ETSI EN 300 220 V3.1.1, 4.5.4 Adaptive Freq TIA-603-D, 2.2.18 Transmitter Stability in VSWR	-	-
Transmitter, Adjacent Channel Power	ANSI C63.10, 6.10:2013 Band Edge TIA-603-D, 2.1.7 Offset Channel Selectivity ETSI EN 300 220 V3.1.1, 4.3.7 Adjacent Channel Power TIA-603-D, 2.2.14 Adjacent Channel Power TIA-603-D, 2.2.19 Transient Frequency Behavior	10 kHz to 40 GHz	-

Radio Test Methods			
Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Frequency / Range of Test	Key Equipment or Technology
Transmitter, DSS, Spectral Density	ETSI EN 300 220 V3.1.1, 4.3.2 ERP Spectral Dens ANSI C63.10, 11.10 PSD	10 kHz to 40 GHz	-
Transmitter, Duty Cycle	ETSI EN 300 220 V3.1.1, 4.3.3 Duty Cycle ANSI C63.10, 11.6:2013 DTS Duty Cycle	-	-
FHSS	ETSI EN 300 220 V3.1.1, 4.3.10 FHSS	-	-
Operating Frequency	ETSI EN 300 220 V3.1.1, 4.2.1 Operating Frequency	10 kHz to 40 GHz	-
Transmitter, Frequency Stability, Temperature	ANSI C63.10, 6.8:2013 Frequency Stability, Tempe TIA-603-D, 2.2.2 Carrier Frequency Stability, Temp	10 kHz to 40 GHz	-
Transmitter, Frequency Stability, Voltage	ANSI C63.10, 6.9:2013 Frequency Stability, Voltage ETSI EN 300 220 V3.1.1, 4.3.8 Low Voltage TIA-603-D, 2.2.2 Carrier Frequency Stability, Voltage	10 kHz to 40 GHz	-
Transmitter, Modulation Bandwidth	ANSI C63.10, 11.8:2013 DTS Bandwidth ANSI C63.10, 11.13:2013 Band Edge ETSI EN 300 220 V3.1.1, 4.3.4 OBW TIA-603-D, 2.2.11 Sideband Spectrum	-	-
Transmitter, RF Power Output, Conducted	ANSI C63.10, 11.9:2013 Fundamental Output Power TIA-603-D, 2.2 .1 Conducted Carrier Power	10 kHz to 40 GHz	-
Transmitter, RF Power output, EIRP	ETSI EN 300 220 V3.1.1, 4.3.1 Operating Freq TIA-603-D, 2.2.17 Radiated Output Power	10 kHz to 40 GHz	-
Transmitter, Unwanted Emissions	ANSI C63.10, 6.4:2013, < 30 MHz ANSI C63.10, 6.5:2013 Radiated Emissions, 30 to 1000 MHz ANSI C63.10, 6.6:2013 Radiated Emissions, > 1 GHz ANSI C63.10, 6.7:2013 Antenna Conducted ANSI C63.10, 11.11:2013 Non- Restricted Bands ANSI C63.10, 11.12:2013 Restricted Bands TIA-603-D, 2.2.12 Radiated Spurious TIA-603-D, 2.2.13 Conducted Spurious ETSI EN 300 220, V3.1.1, 4.2.2 Spurious ETSI EN 300 220, V3.1.1, 4.3.5 OOB	10 kHz to 40 GHz	-

Product Safety Standards			
Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Electrical Safety Parameters	EN 61010-1: 2010	Measurement, Control and Laboratory Equipment	-
	EN 60950-1: 2006/A1: 2010/A2: 2013/A12: 2011/AC: 2011/A11: 2009	Information Technology Equipment	-
	EN 62368-1: 2014/AC: 2015	Audio/Video, Information and Communication Technology Equipment	-
	EN 60204-1: 2006/A1: 2009/AC: 2010	Machinery	-

Mechanical			
Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Solar Radiation (Sunshine)	MIL-STD-810, Method 505 MIL-STD-810B, Method 505 MIL-STD-810C, Method 505.1 MIL-STD-810D, Method 505.2 MIL-STD-810E, Method 505.3 MIL-STD-810F, Method 505.4 MIL-STD-810G, Method 505.5 MIL-STD-810G (CH1), Method 505.6 MIL-STD-810H, Method 505.7	0-1120 W/m ² Procedure 1 & 2	Atlas Solar Radiation Simulator

Testing performed in support of FCC approval procedures for certification ²

Type of Device Examples	Scope of Accreditation	Supporting FCC Guidance	Comments/Maximum Frequency Tested
Unintentional Radiators (FCC Part 15, Subpart B)	ANSI C63.4-2014	-	40 GHz

Testing performed in support of FCC approval procedures for certification ²

Type of Device Examples	Scope of Accreditation	Supporting FCC Guidance	Comments/Maximum Frequency Tested
Industrial, Scientific, and Medical Equipment (FCC Part 18) Consumer ISM equipment	FCC MP-5, (February 1986)	-	120 GHz
Intentional Radiators (FCC Part 15, Subpart C)	ANSI C63.10-2013	-	120 GHz
U-NII without DFS Intentional Radiators (FCC Part 15, Subpart E) Unlicensed National Information Infrastructure Devices (U-NII without DFS)	ANSI C63.10-2013	KDB Publication 789033	40 GHz
General Mobile Radio Services (FCC Licensed Radio Service Equipment) [1] Part 22 (non-cellular) Part 90 (below 3 GHz) Part 95 (below 3 GHz) Part 97 (below 3 GHz) Part 101 (below 3 GHz)	ANSI/TIA-603-E or TIA-102.CAAA-E-2016 or ANSI C63.26-2015	-	59.250 GHz
Maritime and Aviation Radio Services (FCC Licensed Radio Service Equipment) Part 80; Part 87	ANSI/TIA-603-E or ANSI C63-26-2015	-	40 GHz
Microwave and Millimeter Bands Radio Services (FCC Licensed Radio Service Equipment) Part 25; Part 30; Part 74 Part 90 (above 3 GHz) Part 95 (above 3 GHz) Part 97 (above 3 GHz); Part 101	ANSI/TIA-603-E or TIA-102.CAAA-E-2016 or ANSI C63.26-2015	KDB Publication 653005	71.25 GHz
Broadcast Radio Services (FCC Licensed Radio Service Equipment) Part 73; Part 74 (below 3 GHz)	ANSI/TIA-603-E or TIA-102.CAAA-E-2016 or ANSI C63.26-2015	-	71.25 GHz

Testing performed in support of FCC approval procedures for certification ²

Type of Device Examples	Scope of Accreditation	Supporting FCC Guidance	Comments/Maximum Frequency Tested
Signal Boosters (Part 20) Wideband Consumer signal boosters Provider-specific signal boosters Industrial signal boosters Signal Boosters (Section 90.219)	ANSI C63.26-2015	KDB Publication 935210 D03, D04, and D05 [1]	40 GHz

Testing to Meet the Requirements for Recognition of Telecommunications Testing – Innovation, Science, and Economic Development (ISED) Canada ¹

Test Method (Standard)	Issue, Date, Amendment	Test Specification(s)	Comments
RSS-GEN	Issue 5, April 2018 Amendment 1, March 2019 Amendment 2, February 2021	General Requirements for Compliance of Radio Apparatus	-
RSS-102	Issue #5 March 2015, Amendment 1, February - 2021	Radio Frequency (RF) Exposure compliance of Radiocommunications Apparatus (All Frequency Bands)	RF Exposure (RF Exp) - Measurement
RSS-119	Issue #12, May 2015	Land Mobile and Fixed Equipment Operating in the Frequency Range (27.41 to 960) MHz	-
RSS-131	Issue #3 January 2017 Updated May 2017	Zone Enhancers	-
RSS-210	Issue #10 December 2019, Amendment April 2020	License-Exempt Radio Apparatus: Category I Equipment	-
RSS-247	Issue #2 February 2017, Note Mar 2017	Digital Transmission Systems (DTS), Frequency Hopping Systems (FHSs) and License-Exempt Local Area Networks (LE-LAN) Devices	Without DFS
RSS-248	Issue #1 Nov 2021	Radio Local Area Network (RLAN) Devices Operating in the (5 925 to 7 125) MHz Band	Per ISED notice 2021-DRS0011
RSS-310	Issue #5, January 2020	License-Exempt Radio Apparatus: Category II Equipment	-
SPR-002	Issue # MMM YYYY	Supplementary Procedure for Assessing compliance with RSS-102 Nerve Stimulation Exposure Limits	-

Meets the Requirements of: ANAB Supplemental Requirements SR 2437 - FDA Accreditation Scheme for Conformity Assessment (ASCA) Pilot Program - Basic Safety and Essential Performance of Medical Electrical Equipment, Medical Electrical Systems, and Laboratory Medical Equipment ⁴

Product Type	Specific Tests or Properties Measured	Specification, Standard Method, or Technique Used	Accredited to Perform the Following Clauses
Medical Electrical Equipment	Electromagnetic Compatibility	IEC 60601-1-2, Ed. 4.0, 2014-02	
Medical Electrical Equipment	Electromagnetic Compatibility	IEC 60601-1-11, Ed. 2.0, 2015-01	Clause 12
Medical Electrical Equipment	Electromagnetic Compatibility	IEC 60601-1-12, Ed. 1.0, 2014-06	Clause 11
Electrocardiographs	Electromagnetic Compatibility	IEC 60601-2-25, Ed. 2.0, 2011-10	Clauses 201.17 & 202
Endoscopic Equipment	Electromagnetic Compatibility	IEC 60601-2-18, Ed. 3.0, 2009-08	Clauses 201.17 & 202
Infant Radiant Warmers	Electromagnetic Compatibility	IEC 60601-2-21, Ed. 2.1, 2016-04	Clauses 201.17 & 202
Infant Transport Incubators	Electromagnetic Compatibility	IEC 60601-2-20, Ed. 2.1, 2016-04	Clauses 201.17 & 202
Infant Incubators	Electromagnetic Compatibility	IEC 60601-2-19, Ed. 2.1, 2016-04	Clauses 201.17 & 202
Ultrasonic Medical Diagnostic and Monitoring Equipment	Electromagnetic Compatibility	IEC 60601-2-37, Ed. 2.1, 2015	Clauses 201.17 & 202
X-Ray Equipment for Computed Tomography	Electromagnetic Compatibility	IEC 60601-2-44, Ed. 3.2, 2016	Clause 201.17
Ambulatory Electrocardiographic Systems	Electromagnetic Compatibility	IEC 60601-2-47, Ed. 2.0, 2012-02	Clauses 201.17 & 202

Meets the Requirements of: ANAB Supplemental Requirements SR 2437 - FDA Accreditation Scheme for Conformity Assessment (ASCA) Pilot Program - Basic Safety and Essential Performance of Medical Electrical Equipment, Medical Electrical Systems, and Laboratory Medical Equipment ⁴

Product Type	Specific Tests or Properties Measured	Specification, Standard Method, or Technique Used	Accredited to Perform the Following Clauses
Medical Beds	Electromagnetic Compatibility	IEC 60601-2-52, Ed. 1.0, 2009-12	Clause 201.17
Nerve and Muscle Stimulators	Electromagnetic Compatibility	IEC 60601-2-10, Ed. 2.1, 2016-04	Clauses 201.17 & 202
Dental Intra-Oral X-Ray Equipment	Electromagnetic Compatibility	IEC 60601-2-65, Ed. 1.1, 2017-05	Clauses 201.17 & 202

Notes:

1. For Signal Boosters (Part 20) accreditation is required for Commercial Mobile Services (FCC Licensed Radio Services Equipment) and for Signal Booster (Section 90.219) accreditation is required for General Mobile Radio Services (FCC Licensed Radio Service Equipment).
2. Meets the requirements of the FCC equipment authorization program as detailed in 47 CFR Part 2 Subpart J as defined in the ANAB SR 2412 U.S. Federal Communication Commission (FCC) EMC and Telecommunications (EC&T) Testing Designation Accreditation Program. Recognition by the FCC can be confirmed by visiting their website <https://apps.fcc.gov/oetcf/eas/reports/TestFirmSearch.cfm>.
3. Testing performed to meet the Requirements for Recognition of Telecommunications Testing – Innovation, Science, and Economic Development (ISED) Canada. Recognition by ISED can be confirmed by visiting their website https://www.ic.gc.ca/eic/site/mra-arm.nsf/eng/h_nj00091.html.
4. Testing to meet the requirements of ANAB Supplemental Requirements SR 2437, FDA Accreditation Scheme for Conformity Assessment (ASCA) Pilot Program – Basic Safety and Essential Performance of Medical Electrical Equipment, Medical Electrical Systems, and Laboratory Medical Equipment. Recognition by the FDA can be confirmed by visiting their website <https://www.fda.gov/medical-devices/standards-and-conformity-assessment-program/asca-accredited-testing-laboratories>.
5. This scope is formatted as part of a single document including Certificate of Accreditation No. L2320.02.



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