



CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

Retlif Testing Laboratories

101 New Boston Road
Goffstown, NH 03045

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: L2320.03



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

101 New Boston Road
Goffstown, NH 03045

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TESTING

Valid to: **September 02, 2022**

Certificate Number: **L2320.03**

| 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 | - |

| 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-STD-1275A,B,C,D,E MIL-STD-1399, Section 300A MIL-STD-1399, Section 300B</p> <p>MIL-STD-704A-F Utilizing:</p> <p>MIL-HDBK-704-2, SAC101, SAC102, SAC103, SAC104, SAC105, SAC106, SAC107, SAC108, SAC109, SAC110, SAC201, SAC301, SAC302, SAC303, SAC401, SAC601, SAC603</p> <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> | | - |

| 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 (cont.) | <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> | | - |
| Radiated Emissions, E-Field | <p>MIL-STD-462, RE02 MIL-STD-462, RE04 MIL-STD-462D, RE102 MIL-STD-461E, RE102 MIL-STD-461F, RE102 MIL-STD-461G, RE102</p> | 10 kHz to 40 GHz | - |
| Radiated Emissions, H-Field | <p>MIL-STD-462, RE01 MIL-STD-462D, RE101 MIL-STD-461E, RE101 MIL-STD-461F, RE101 MIL-STD-461G, RE101</p> | 30 Hz to 150 kHz | - |

| 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, 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 | - |

| 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 | - |

| 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 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 | - |
| 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 | - |

| 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, 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 | - |
| Electromagnetic Compatibility Emissions & Immunity | 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 | - |
| | 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 | - |

| 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 |
| | 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 | - |
| Electromagnetic Compatibility Emissions & Immunity | 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 | - |
| | EN 60255-26: 2013 + AC:2013 IEC 60255-26: 2013-05 | Measuring Relays and Protection Equipment | - |

| 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 |
| | 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 | - |
| | IEC 61326-1:2005-12 IEC 61326-1, Ed. 2.0:2012 EN 61326-1:2013 | Electrical Equipment for Measurement, Control and Laboratory Use | - |
| Electromagnetic Compatibility Emissions & Immunity | 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 | - |
| | 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 | - |
| OIML R-76-1: 2006 | Non-Automatic Weighing Systems | - | |

| 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 |
| | ABS Rules for Building and Classing Steel Vessels: 2019 | Maritime Equipment | - |
| | International Association of Classification Societies, Test Specification for Type Approval E10, Rev. 7, Oct 2018 | 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 | - |
| | ISO 7176-21: 2009 ANSI/RESNA WC-2: 2009 | Electrically Powered Wheelchairs, Scooters and Battery Chargers | - |
| Electromagnetic Compatibility Emissions & Immunity | ISO 7637-1: 2015 ISO 7637-2: 2011 ISO 7637-3: 2016 ISO 11451-1:2015 ISO 11452-1:2015 ISO 16750-1:2006, 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, 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 | - |
| 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 | - |

| 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 | - |
| 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 | - | - |

| Radio Test Methods | | | |
|--|--|----------------------------------|------------------------------------|
| Specific Tests and/or Properties Measured | Specification, Standard, Method, or Test Technique | Frequency / Range of Test | Key Equipment or Technology |
| 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 | - |
| 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 | - | - |

| Radio Test Methods | | | |
|--|--|----------------------------------|------------------------------------|
| Specific Tests and/or Properties Measured | Specification, Standard, Method, or Test Technique | Frequency / Range of Test | Key Equipment or Technology |
| 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 60204-1: 2006/A1: 2009/AC: 2010 | Machinery | - |

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 |
| 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 |

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 |
|--|---|--|-----------------------------------|
| 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 |
| 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 ³

| Test Method (Standard) | Test Specification(s) | Range | Comments |
|--|---|-------|----------|
| RSS-102 (RF Exp), Issue 5, Mar 2015, Amd 1 Feb 2021 | RF Exposure Compliance of Radio Communications Apparatus | - | - |
| RSS-119, Issue 12, May 2015 | Land Mobile 27.41 to 960 MHz | - | - |
| RSS-131, Issue 3, January 2017, Updated May 2017 | Zone Enhancers | - | - |
| RSS-210 Issue 10, Dec 2019, Amd Apr 2020 | License Exempt Radio Apparatus – Category I | - | - |
| RSS-247, Issue 2, Feb 2017, Updated March 2017 (without DFS) | Digital Transmissions Systems, Frequency Hopping Systems and LE-LAN | - | - |
| RSS-310, Issue 5, January 2020 | License Exempt Radio Apparatus – Category II | - | - |

Testing to Meet the Requirements for Recognition of Telecommunications Testing – Innovation, Science, and Economic Development (ISED) Canada³

| Test Method (Standard) | Test Specification(s) | Range | Comments |
|---|--|-------|----------|
| RSS-GEN, Issue 5, Amendment 2, Feb 2021 | General Requirements for Compliance of Radio Apparatus | - | - |

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 Equipment⁴

| 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 |

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 |
|---|---------------------------------------|---|---|
| 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 |
| 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. Testing performed in support of FCC approval procedures for certification.
3. Testing performed to meet the Requirements for Recognition of Telecommunications Testing – Innovation, Science, and Economic Development (ISED) Canada.
4. Testing to meet the requirements of ANAB Supplemental Requirements SR 2435 - 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.
5. This scope is formatted as part of a single document including Certificate of Accreditation No. L2320.03.



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