



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

Retlif Testing Laboratories

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TESTING

Valid to: September 2, 2019

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		

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, 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
	ETSI EN 301 489-1 V1.9.2: 2011	Radio Equipment	
Electromagnetic Compatibility Emissions & Immunity	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 IEC/CISPR 12 ED 6.1: 2009 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 4: 2015	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 Agreement of VCCI V-3: 2015.04	Information Technology Equipment	
	IEC/CISPR 25: 2002 IEC/CISPR 25: 2008 IEC/CISPR 25: 2016	Automotive Components	
	EN 55032: 2012 + AC: 2013 IEC/CISPR 32 ED 2.0: 2015 VCCI-CISPR 32: 2016	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 510121-1: 2017 IEC 62236-1: 2018	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	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	
	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	



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 61000-6-1: 2007 EN 61000-6-3: 2007+ A1: 2011+AC: 2012	Generic Standard for Residential, Commercial and Light Industrial Environments	
	EN 61000-6-2: 2005 + AC: 2005 EN 61000-6-4: 2007 + A1: 2011	Generic Standard for Industrial Environments	
Electromagnetic Compatibility Emissions & Immunity	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	
	OIML R-76-1: 2006	Non-Automatic Weighing Systems	
	ABS Rules for Building and Classing Steel Vessels: 2018	Maritime Equipment	
	Lloyd's Register LR Type Approval Test Specification #1: 2015	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 16750-1:2006 ISO 16750-2:2012 SAE J1113-1: 2006 SAE J1113-1: 2013	Road Vehicles	



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
	ISO 13766: 2006 ISO 13766-1: 2018 ISO 13766-2:2108	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 <sup>nd</sup> 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, Transient	IEC/CISPR 16-2-1: 2014 IEC/CISPR 25:2016 IEC/CISPR 25, Ed. 1:1995-09 IEC/CISPR 25, 2 <sup>nd</sup> 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, 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	DC to 250 kHz	



Commercial EMC Methods			
Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Frequency / Range of Test	Key Equipment or Technology
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 IEC 61000-4-16: Ed. 2.0: 2015 IEC 61000-4-17 Ed. 1.2: 2009 ISO 11452-4: 2011 ISO 11452-7:2003 + A1:2013 SAE J1113-3: 2006 SAE J1113-3: 2010 SAE J1113-4: 2004 SAE J1113-4: 2014	9 kHz to 230 MHz	
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 61000-4-29: 2000 IEC 61000-4-34: 2005 + A1: 2009		



Commercial 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	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	
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 11452-3: 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	





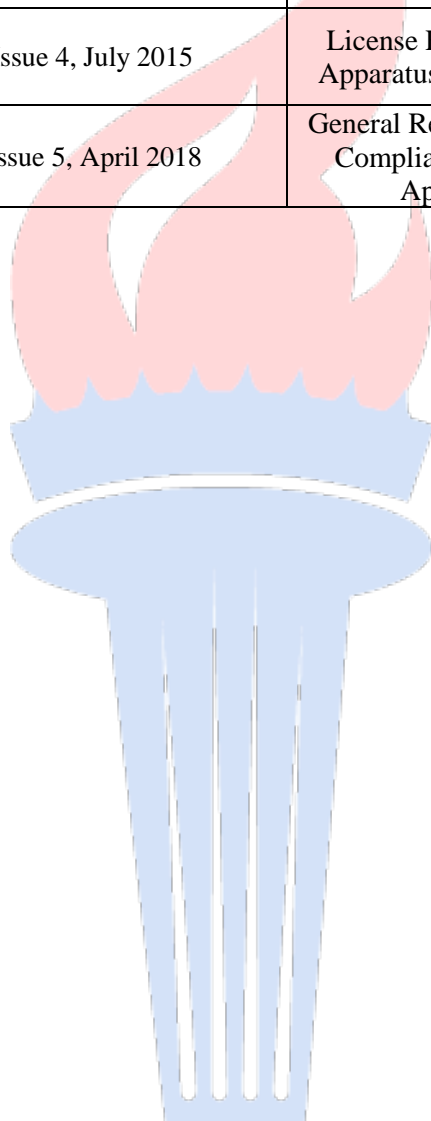
Commercial EMC Methods			
Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Frequency / Range of Test	Key Equipment or Technology
Surge/Transients	IEC 61000-4-5, Ed. 3.0: 2014 + A1:2017 IEC 61000-4-5, Ed. 2.0:2005-11 IEC 61000-4-5,Ed. 1.1:2005-11 EN 61000-4-5: 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	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	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	Short Range Devices, 9 kHz to 30 MHz	
	ETSI EN 300 440 V2.1.1: 2017	Short Range Devices, 1 to 40 GHz	
	RSS-102, Issue 5, March 2015, (RF)	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	





<b>Product Family Radio Standards</b>			
<b>Specific Tests and/or Properties Measured</b>	<b>Specification, Standard, Method, or Test Technique</b>	<b>Items, Materials or Product Tested</b>	<b>Key Equipment or Technology</b>
	RSS-210 Issue 9, August 2016, Amendment November 2017	License Exempt Radio Apparatus – Category I	
	RSS-247, Issue 2, Feb 2017, Updated March 2017	Digital Transmissions Systems, Frequency Hopping Systems and LE-LAN	
	RSS-310, Issue 4, July 2015	License Exempt Radio Apparatus – Category II	
	RSS-Gen, Issue 5, April 2018	General Requirements for Compliance of Radio Apparatus	





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		
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	



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



Radio Test Methods			
Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Frequency / Range of Test	Key Equipment or Technology
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 DoC and certification approval procedures			
FCC Accredited Laboratory Scope	Test Method(s)	Max Assessed Frequency	Supporting FCC Guidance
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	40 GHz	KDB Publication 789033
General Mobile Radio Services (FCC Licensed Radio Service Equipment) Part 22 (non-cellular) Part 90 (non-microwave) Part 95 Part 97 (below 3 GHz) Part 101 (below 3 GHz)	ANSI/TIA-603-E [1] or TIA-102.CAAA-E-2016 [1] 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 [1] 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 (M, DSRC, Y, Z) Part 95 (M and L) Part 101	ANSI/TIA-603-E [1] or TIA-102.CAAA-E-2016 [1] or ANSI C63.26-2015	71.25 GHz	KDB Publication 653005

<b>Testing performed in support of FCC DoC and certification approval procedures</b>			
<b>FCC Accredited Laboratory Scope</b>	<b>Test Method(s)</b>	<b>Max Assessed Frequency</b>	<b>Supporting FCC Guidance</b>
Broadcast Radio Services (FCC Licensed Radio Service Equipment) Part 73 Part 74 (below 3 GHz)	ANSI/TIA-603-E [1] or TIA-102.CAAA-E-2016 [1] 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	40 GHz	KDB Publication 935210 D03, D04, and D05 [2]

Note:

1. ANSI/TIA-603-D-2010 or ANSI/TIA-102.CAAA-D-2013 may be used until March of 2020.
2. 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).
3. This scope is formatted as part of a single document including Certificate of Accreditation No. L2320.03.



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Vice President

