SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

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ELECTRICAL

Valid To: February 28, 2017 Certificate Number: 3657.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to the laboratory listed above ***as well as the satellite laboratory location listed below*** for the following tests:

Test Technology:	**Test Method(s):**
Basic Test Method Standards (Emissions):	
Conducted & Radiated	ANSI C63.4-2003; ANSI C63.4-2009, ANSI C63-4-2014; FCC OST MP-5:1986; CISPR 11:2003 + A1:2004 + A2:2006; EN 55011:2007 + A2:2007; CISPR 11:2009-05 + A1:2010-03; EN 55011:2009 + A1:2010; CISPR 12:2007-05 + A1:2009-01 (*excluding tests on Boats, and excluding the Insertion Loss Test Methods detailed in Informative Annex E of CISPR 12*); EN 55012:2007 + A1:2009 (*excluding tests on Boats, and excluding the Insertion Loss Test Methods detailed in Informative Annex E of EN 55012*); CISPR 13:2001 + Corrigendum 1:2002 + A1:2003 + A2:2006; EN 55013:2001 + Corrigendum 1:2002 + A1:2003 + A2:2006; CISPR 13:2009-06; EN 55013:2009; CISPR 14-1:2005 + A1:2008 + A2:2011; EN 55014-1:2006 + A1:2009 + A2:2011; CISPR 22:2005 + A1:2005; EN 55022:2006 + C1:2006 + A1:2007; CISPR 22:2008 + IS1:2009-10 + IS2:2010-03 + IS3:2012-04; EN 55022:2006 + A1:2007 + A2:2010; EN 55022:2010 +AC:2011

Test Technology:	**Test Method(s):**
Harmonic Current	IEC 61000-3-2:2005-11 + A1:2008-03 + A2:2009-02; EN 61000-3-2:2006 + A1:2009-07 + A2:2009-07; IEC 61000-3-2:2014-05
Voltage Fluctuations & Flicker	IEC 61000-3-3:2008; EN 61000-3-3:2008-06; IEC 61000-3-3:2013-05; EN 61000-3-3:2013-05
Conducted Disturbance at Mains Ports (*up to 1 GHz*)	VCCI V-3/2013.04, Annex 1 Clauses 4.1, 5.2, 6.3; VCCI V-3/2014.04, Annex 1 Clauses 4.1, 5.2, 6.3
Conducted Disturbance at Telecom Ports (*up to 1 GHz*)	VCCI V-3/2013.04, Annex 1 Clauses 4.2, 5.2, 6.4, Appendix IV and VCCI V-15/2012.04 Normative Annex 1-4; VCCI V-3/2014.04, Annex 1 Clauses 4.2, 5.2, 6.4, Appendix IV and VCCI V-15/2012.04 Normative Annex 1-4
Radiated Disturbances (*up to 1 GHz*)	VCCI V-3/2013.04, Annex 1 Clauses 4.3.1, 5.3, 6.5.1; VCCI V-3/2014.04, Annex 1 Clauses 4.3.1, 5.3, 6.5.1
Radiated Disturbances (*1 to 6 GHz*)	VCCI V-3/2013.04, Annex 1 Clauses 4.3.2, 5.3, 6.5.2 Appendix VI; VCCI V-3/2014.04, Annex 1 Clauses 4.3.2, 5.3, 6.5.2 Appendix VI
Basic Test Method Standards (Immunity):	
Audio Frequency Common Mode	IEC 61000-2-1:1990; IEC 61000-2-2:2002; EN 61000-2-2:2002
Electrostatic Discharge (ESD)	IEC 61000-4-2:1995 + A1:1998 + A2:2000; EN 61000-4-2:1995 + A1:1998 + A2:2001; IEC 61000-4-2:2008-12; EN 61000-4-2:2009; ISO 10605:2008 + Corrigendum 1:2010
Radiated RF Fields	IEC 61000-4-3:1995 + A1:1998 + A2:2000; IEC 61000-4-3:2002 + A1:2002; EN 61000-4-3:1996 + A1:1998 + A2:2001; EN 61000-4-3:2002 + A1:2002; IEC 61000-4-3:2006-02 + A1:2007-11 + IS1:2008 + A2:2010-03; EN 61000-4-3:2006-02 + A1:2008-02 + IS1:2008 + A2:2010-07
Electrical Fast Transient/Burst	IEC 61000-4-4:1995-01 + A1:2000-11 + A2:2001-07; EN 61000-4-4:1995 + A1:2001 + A2:2001; IEC 61000-4-4:2004-07 + A1:2010-01; EN 61000-4-4:2004 + A1:2010; IEC 6100-4-4:2012-04; EN 61000-4-4:2012-11

Test Technology:	**Test Method(s):**
Surge	IEC 61000-4-5:1995-02 (*excluding 10/700 surge testing*); IEC 61000-4-5:1995-02 + A1:2000-11 (*excluding 10/700 surge testing*); EN 61000-4-5:1995 + A1:2001 (*excluding 10/700 surge testing*); IEC 61000-4-5:2005-11 (*excluding 10/700 surge testing*); EN 61000-4-5:2006 (*excluding 10/700 surge testing*); IEC 61000-4-5:2014-05 (*excluding 10/700 surge testing*)
RF Common Mode (Conducted)	IEC 61000-4-6:1996-04; IEC 61000-4-6:1996-04 + A1:2000-11; EN 61000-4-6:1996; EN 61000-4-6:1996 + A1:2001 + IS:2004; IEC 61000-4-6:2003; EN 61000-4-6:2003; IEC 61000-4-6:2003 + A1:2004 + A2:2006; EN 61000-4-6:2007 + C1:2007 + IS1:2009;
Power Frequency Magnetic Fields	IEC 61000-4-8:1993-06; EN 61000-4-8:1993-09; IEC 61000-4-8:1993-06 + A1:2000-11; EN 61000-4-8:1993 + A1:2001; IEC 61000-4-8:2009-09; EN 61000-4-8:2010-02
Voltage Dips, Short Interruptions, & Variations	IEC 61000-4-11:1994; EN 61000-4-11:1995; IEC 61000-4-11:1994 + A1:2000; EN 61000-4-11:1994 + A1:2001; IEC 61000-4-11:2004-03; EN 61000-4-11:2004-08
Generic & Product Family Standards	47 U.S. Code of Federal Regulations (47 CFR) FCC Methods, as follows: Part 15 Subpart B (using ANSI C63.4:2003, ANSI C63.4:2009); Part 18 (using FCC OST MP-5:1986); Industry Canada: ICES Standards, as follows: ICES-001 Issue 4; ICES-003 Issue 5; ICES-005 Issue 3; Chinese Taipei CNS 13438 (*up to 6 GHz*) (01 June 2006); EN 300 386 V1.5.1 and V1.6.1 Telcordia GR-1089-CORE Issue 4: June 2006 (*Sections 2, 3.2 [excluding Section 3.2.3.2], 3.3, 4.6.9.1 [per Table 4-6 only], 4.10.5, 4.11, 4.12, & 4.13 only*); Telcordia GR-1089-CORE Issue 5: August 2009 (*Sections 2, 3.2 [excluding Section 3.2.3.2], 3.3, 4.6.9.1 [per Table 4-6 only], 4.10.5, 4.11, 4.12, & 4.13 only*); EN 55032:2012 + AC:2013; EN 50083-2:2006; EN 50083-2:2012; Telcordia GR-1089-CORE Issue 6: May 2011 (*Sections 2 and 3 only*);

Test Technology:	**Test Method(s):**
Generic & Product Family Standards (*Cont.*)	CISPR 32:2012 + Corrigendum 1:2012-03 + Corrigendum 2:2012-08; EN 50121-1:2006; EN 50121-2:2006; EN 50121-3-2:2006; EN 50121-4:2006; EN 50121-5:2006; EN 50270:2006; EN 50293:2000; EN 12015:2004; EN 12016:2004 + A1:2008; EN 12895:2000; EN 13309:2010; ISO 14892:998; EN 14892:2009; ISO 13766:2006; ISO 7637-2:2004 + A1:2008; ISO 7637-2:2011; ISO 7637-3:2007; ISO 11452-2:2004; ISO 11452-7:2003; ISO 11452-8:2007; ISO 11452-10:2009; EN 50130-4:1995 + A1:1998 + A2:2003 + AC:2003; EN 50130-4:2011; EN 55103-1:2009 + A1:2012; EN 55103-2:2009; IEC 60601-1-2:2001-09 + A1:2004-09 (Edition 2.1) (*EMC Requirements only*); EN 60601-1-2:2001 + A1:2006 (Edition 2.1) (*EMC Requirements only*); IEC 60601-1-2:2007-03 (3rd Edition) (*EMC Requirements only*); EN 60601-1-2:2007 (3rd Edition) (*EMC Requirements only*); IEC 60601-1-2:2014-22 (4th Edition); IEC 60870-2-1:1995; EN 60870-2-1:1996; IEC 60945:2002 + C1:2008 (*Clauses 9, 10, 11.2, 12.2, & 12.3 only*); EN 60945:2002 + C1:2008 (*Clauses 9, 10, 11.2, 12.2, & 12.3 only*); IEC 60974-10:2007-08; EN 60974-10:2007; IEC 62135-2:2007; EN 62135-2:2008; IEC 61000-3-3:2008; EN 61000-3-3:2008-06; IEC 61000-3-2:2005-11 + A1:2008-03 + A2:2009-02; IEC 61000-3-2:2014-05; EN 61000-3-2:2006 + A1:2009-07 + A2:2009-07;

Test Technology:	**Test Method(s):**
Generic & Product Family Standards *(Cont.)*	IEC 61000-3-3:2013-05; EN 61000-3-3:2013-05; IEC 61000-6-1:2005-03; EN 61000-6-1:2007; IEC 61000-6-2:2005-01; EN 61000-6-2:2005 + AC:2005; IEC 61000-6-3:2006 + A1:2010; EN 61000-6-3:2007 + A1:2011 + AC:2012; IEC 61000-6-4:2006 + A1:2010; EN 61000-6-4:2007 + A1:2011; IEC 61131-2:2007-07; EN 61131-2:2007; IEC 61204-3:2000; IEC 61204-3:2000; IEC 61326-1:2005; EN 61326-1:2006; IEC 61326-1:2012; EN 61326-1:2013; IEC 61326-2-1:2005; EN 61326-2-1:2006; IEC 61326-2-1:2012; EN 61326-2-1:2013; IEC 61326-2-2:2005; EN 61326-2-2:2006; IEC 61326-2-2:2012; EN 61326-2-2:2013; IEC 61326-2-3:2005; EN 61326-2-3:2006; IEC 61326-2-3:2012; EN 61326-2-3:2013; IEC 61326-2-4:2005; EN 61326-2-4:2006; IEC 61326-2-4:2012; EN 61326-2-4:2013; IEC 61326-2-5:2005; EN 61326-2-5:2006; IEC 61326-2-5:2012; EN 61326-2-5:2013; IEC 61800-3:2004 + A1:2011; EN 61800-3:2004 + A1:2012; IEC 62040-2:2005; EN 62040-2:2006 + AC:2006; IEC 62052-11:2003; EN 62052-11:2003; IEC 62052-21:2004; EN 62052-21:2004; IEC 62053-11:2003; EN 62053-11:2003; IEC 62053-21:2003;

Test Technology:	**Test Method(s):**
Generic & Product Family Standards *(Cont.)*	EN 62053-21:2003; IEC 62053-22:2003; EN 62053-22:2003; IEC 62053-23:2003; EN 62053-23:2003; IEC 62054-11:2004; EN 62054-11:2004; IEC 62054-21:2004; EN 62054-21:2004; CISPR 11:2003 + A1:2004 + A2:2006; EN 55011:2007 + A2:2007; CISPR 11:2009-05 + A1:2010-03; EN 55011:2009 + A1:2010; CISPR 12:2007-05 + A1:2009-01 (*excluding tests on Boats, and excluding the Insertion Loss Test Methods detailed in Informative Annex E of CISPR 12*); EN 55012:2007 + A1:2009 (*excluding tests on Boats, and excluding the Insertion Loss Test Methods detailed in Informative Annex E of EN 55012*); CISPR 13:2001 + Corrigendum 1:2002 + A1:2003 + A2:2006; EN 55013:2001 + Corrigendum 1:2002 + A1:2003 + A2:2006; CISPR 13:2009-06; EN 55013:2009; CISPR 14-1:2005 + A1:2008 + A2:2011; EN 55014-1:2006 + A1:2009 + A2:2011; CISPR 14-2:1997 + A1:2001 + A2:2008; EN 55014-2:1997 + A1:2001 + A2:2008; CISPR 22:2005 + A1:2005; EN 55022:2006 + C1:2006 + A1:2007; CISPR 22:2008 + IS1:2009-10 + IS2:2010-03 + IS3:2012-04; EN 55022:2006 + A1:2007 + A2:2010; EN 55022:2010 + AC:2011; CISPR 24:2010; EN 55024:2010; CISPR 32:2012 + Corrigendum 1:2012-03 + Corrigendum 2:2012-08; EN 55032:2012 + AC:2013; IEEE STD C37.90.1-2002; IEEE STD C37.90.1-2012; IEEE STD C37.90.2-2004

RRA Public Notification 2014-8, June 23, 2014; RRA Public Notification 2014-9, June 23, 2014; RRA Announce 2014-37, June 23, 2014; RRA Announce 2014-38, June 23, 2014

Korean EMI Standard:	**Corresponding International Standard:**
Annex 1-1 (KN 16-1-1:2011-12)	CISPR 16-1-1:2010-11
Annex 1-2 (KN 16-1-2:2013-06)	CISPR 16-1-2:2006-08
Annex 1-3 (KN 16-1-3:2013-06)	CISPR 16-1-3:2004-06
Annex 1-4 (KN 16-1-4:2014-6-23)	CISPR 16-1-4:2012-07
Annex 1-5 (KN 16-1-5:2014-6-23)	CISPR 16-1-5:2012-06
Annex 1-6 (KN 16-2-1:2011-12)	CISPR 16-2-1:2010-07
Annex 1-7 (KN 16-2-2:2011-12)	CISPR 16-2-2:2010-07
Annex 1-8 (KN 16-2-3:2011-12)	CISPR 16-2-3
Annex 1-9 (KN 16-2-4:2008-5)	CISPR 16-2-4:2003-11
Annex 1-10 (KN 16-2-5:2013-06)	CISPR 16-2-5:2008-07
Annex 1-11 (KN61000-3-2/61000-3-12:2014-06-23)	IEC 61000-3-2:2009-04 (Ed. 3.2)
Annex 1-12 (KN 61000-3-3/61000-3-11:2014-06-23)	IEC 61000-3-3:2008-06 (Ed. 2.0)
Annex 2 (KN 11:2011-12)	CISPR 11:2010-03
Annex 3 (KN 13:2008-5)	CISPR 13:2006-3
Annex 4 (KN 14-1:2014-6-23)	CISPR 14-1:2011-07
Annex 5 (KN 22)	CISPR 22:2006-03
Annex 9 (KN 15:2011-9.21)	CISPR 15:2009-01
Annex 12 (KN 62040-2:2012-06)	IEC 60240-2:2005-10
Annex 14 (KN 61000-6-3:2012-6)	IEC 61000-6-3:2011-02
Annex 15 (KN 61000-6-4:2012-6)	IEC 61000-6-4:2011-02
Annex 16 (KN 32:2013-06)	CISPR 32:2012-01 (Ed. 1.0)
Annex 18 (KN 61800-3:2014-06-23)	IEC 61800-3:2012-03 (Ed. 2.1)
Annex 8-1 (KN 301-489-01:2012-06)	EN 301 489-1 V1.8.1 : 2008-04
Annex 8-2 (KN 301-489-07:2008-5)	EN 301 489-7 V1.2.1 : 2002-8
Annex 8-3 (KN 301-489-17:2013-06)	EN 301 489-17 V2.2.1 : 2009-05
Annex 8-4 (KN 301-489-24:2008-5)	EN 301 489-24 V1.3.1 : 2005-11
Annex 8-5 (KN 301-489-06)	EN 301 489-6
Annex 8-6 (KN 301-489-13)	EN 301 489-13
Annex 8-7 (KN 301-489-05)	EN 301 489-5
Annex 8-8 (KN 301-489-03)	EN 301 489-3
Annex 8-9 (KN 301-489-09)	EN 301 489-9
Annex 8-11 (KN 301-489-18)	EN 301 489-18
Annex 8-12 (KN 301-489-15)	EN 301 489-15
Annex 8-13 (KN 301-489-02)	EN 301 489-2
Annex 8-14 (KN 301-489-27)	EN 301 489-27
Annex 8-15 (KN 301-489-32)	EN 301 489-32
Annex 8-16 (KN 301-489-20)	EN 301 489-20
Annex 8-17 (KN 60945)	IEC 60945

(Table Continued on the Next Page)

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Korean EMI Standard:	**Corresponding International Standard:**
Annex 1-5 (KN 61000-4-6:2013-06)	IEC 61000-4-6:2008-10
Annex 1-6 (KN 61000-4-8:2013-06)	IEC 61000-4-8:2009-09
Annex 1-7 (KN 61000-4-11:2008-05)	IEC 61000-4-11:2004-03
Annex 1-8 (KN 61000-4-9:2013-06)	IEC 61000-4-9:2001-03
Annex 1-9 (KN 61000-2-2:2014-6-23)	IEC 61000-2-2:2002-03 (Ed. 2.0)
Annex 1-10 (KN 61000-2-4:2014-6-23)	IEC 61000-2-4:2002-06 (Ed. 2.0)
Annex 2 (KN 60601-1-2:2008-05)	IEC 60601-1-2:2004-11
Annex 4 (KN 14-2:2014-6-23)	CISPR 14-2:2008-07
Annex 5 (KN 24:2009-9.30)	CISPR 24:2010-08
Annex 8-1 (KN 301-489-01:2012-06)	EN 301 489-1 V1.8.1 : 2008-04
Annex 8-2 (KN 301-489-07:2008-5)	EN 301 489-7 V1.2.1 : 2002-8
Annex 8-3 (KN 301-489-17:2013-06)	EN 301 489-17 V2.2.1 : 2009-05
Annex 8-4 (KN 301-489-24:2008-5)	EN 301 489-24 V1.3.1 : 2005-11
Annex 8-5 (KN 301-489-06)	EN 301 489-6
Annex 8-6 (KN 301-489-13)	EN 301 489-13
Annex 8-7 (KN 301-489-05)	EN 301 489-5
Annex 8-8 (KN 301-489-03)	EN 301 489-3
Annex 8-9 (KN 301-489-09)	EN 301 489-9
Annex 8-11 (KN 301-489-18)	EN 301 489-18
Annex 8-12 (KN 301-489-15)	EN 301 489-15
Annex 8-13 (KN 301-489-02)	EN 301 489-2
Annex 8-14 (KN 301-489-27)	EN 301 489-27
Annex 8-15 (KN 301-489-32)	EN 301 489-32
Annex 8-16 (KN 301-489-20)	EN 301 489-20
Annex 8-17 (KN 60945)	IEC 60945
Annex 10 (KN 60974-10:2011-06)	IEC 60974-10:2007-08
Annex 11 (KN 61000-6-1:2012-6)	IEC 61000-6-1:2011-09
Annex 12 (KN 62040-2:2012-06)	IEC 60240-2:2005-10
Annex 14 (KN 61000-6-2:2012-6)	IEC 61000-6-2:2011-9
Annex 18 (KN 61800-3:2014-06-23)	IEC 61800-3:2012-03 (Ed. 2.1)

Test Technology:	**Test Method(s):**
Wireless and Radio Standards	47 U.S. Code of Federal Regulations (47 CFR) FCC Methods, as follows: Part 15 Subpart C (using ANSI C63.10-2013 Methods); Part 15 Subpart E (using ANSI C63.10-2013 Methods); Part 15 Subpart F (using ANSI C63.10-2013 Methods); Part 22 (using FCC KDB Methods); Part 24 (using FCC KDB Methods); Part 26 (using FCC KDB Methods); Part 27 (using FCC KDB Methods); Part 80 (using FCC KDB Methods); Part 87 (using FCC KDB Methods); Part 90 (using EIA/TIA-603 and FCC KDB Methods); Part 95 (using ANSI C63.10-2013 Methods); Part 97 (using EIA/TIA-603 and FCC KDB Methods); Part 101 (using EIA/TIA-603 Methods) Industry Canada RSS Standards, as follows: RSS-Gen Issue 3 and NOTICE 2012-DRS0126; RSS-111 Issue–5; RSS-112 Issue 1; RSS-117 Issue 2; RSS-119 Issue 11; RSS-123 Issue 2; RSS-125 Issue 2 Revision 1; RSS-127 Issue 1; RSS-130 Issue 1; RSS-131 Issue 2; RSS-132 Issue 3; RSS-133 Issue 6; RSS-134 Issue 1 Revision 1; RSS-135 Issue 2; RSS-137 Issue 2; RSS-139 Issue 2; RSS-141 Issue 2; RSS-142 Issue 5; RSS-170 Issue 2; RSS-181 Issue 1 with Amendment dated July 31, 1987; RSS-182 Issue 5; RSS-191 Issue 3; RSS-192 Issue 3; RSS-194 Issue 1; RSS-195 Issue 2; RSS-196 Issue 1; RSS-197 Issue 1; RSS-210 Issue 8, RSS-213 Issue 2; RSS-215 Issue 2; RSS-236 Issue 1; RSS-238 Issue 1; RSS-243 Issue 3;

Test Technology:	**Test Method(s):**
Wireless and Radio Standards (*Cont.*)	RSS-244 Issue 1; RSS-287 Issue 2; RSS-288 Issue 1; RSS-310 Issue 3 ETSI Standards, as follows: EN 300 086-1 V1.3.1; EN 300 086-2 V1.2.1 and V1.3.1; EN 300 113-1 V1.5.1, and V1.6.1; EN 300 113-2 V1.5.1; EN 300 219-1 V1.2.1; EN 300 219-2 V1.1.1; EN 300 220-1 V2.4.1; EN 300 220-2 V2.4.1; EN 300 220-3 V1.1.1; EN 300 224-1 V1.3.1; EN 300 224-2 V1.1.1; EN 300 296-1 V1.4.1; EN 300 296-2 V1.2.1; EN 300 328 V1.7.1; EN 300 328 V1.8.1; EN 300 330-1 V1.7.1; EN 300 330-2 V1.5.1; EN 300 373-1 V1.3.5; EN 300 373-2 V1.2.1; EN 300 373-3 V1.2.1; EN 300 390-1 V1.2.1; EN 300 390-2 V1.1.1; EN 300 440-1 V1.6.1; EN 300 440-2 V1.4.1; EN 300 422-1 V1.3.2; EN 300 422-2 V1.3.1; EN 300 433-1 V1.1.3; EN 300 433-2 V1.3.1; EN 300 471-1 V1.2.1; EN 300 471-2 V1.1.1; ETS 300 487:1996 + A1:1997; EN 300 674-1 V1.2.1; EN 300 674-2-1 V1.1.1; EN 300 674-2-2 V1.1.1; EN 300 676-1V1.4.1; EN 300 676-2 V1.5.1; EN 300 718-1: V1.2.1; EN 300 718-2 V1.1.1; EN 300 718-3 V1.2.1; EN 300 720-1V1.3.2; EN 300 720-2 V1.2.1; EN 300 761-1 V1.2.1; EN 300 761-2 V1.1.1; EN 301 166-1 V1.3.2; EN 301 166-2 V1.2.3;

Test Technology:	**Test Method(s):**
Wireless and Radio Standards (*Cont.*)	EN 301 178-1 V1.3.1; EN 301 178-2 V1.2.2; EN 301 357-1 V1.4.1; EN 301 357-2 V1.4.1; EN 301 426 V1.2.1; EN 301 427 V1.2.1; EN 301 428 V1.3.1; EN 301 430 V1.1.1; EN 301 441 V1.1.1; EN 301 442 V1.2.1 EN 301 443 V1.3.1; EN 301 444 V1.1.1, V1.2.1 and V1.2.2; EN 301 447 V1.1.1; EN 301 459 V1.4.1; EN 301 489-01 V1.9.2; EN 301 489-02 V1.3.1; EN 301 489-03 V1.4.1; EN301 489-03 V1.6.1; EN 301 489-04 V2.1.1; EN 301 489-05 V1.3.1; EN 301 489-06 V1.3.1; EN 301 489-07 V1.3.1; EN 301 489-08 V1.2.1; EN 301 489-09 V1.4.1; EN 301 489-10 V1.3.1, EN 301 489-11 V1.3.1, EN 301 489-12 V2.2.2; EN 301 489-13 V1.2.1; EN 301 489-14 V1.2.1; EN 301 489-15 V1.2.1; EN 301 489-16 V1.2.1; EN 301 489-17 V2.2.1; EN 301 489-18 V1.3.1; EN 301 489-19 V1.2.1; EN 301 489-20 V1.2.1; EN 301 489-22 V1.3.1; EN 301 489-23 V1.5.1; EN 301 489-24 V1.5.1; EN 301 489-25 V2.3.2; EN 301 489-26 V2.3.2; EN 301 489-27 V1.1.1; EN 301 489-28 V1.1.1; EN 301 489-29 V1.1.1; EN 301 489-31 V1.1.1; EN 301 489-32 V1.1.1; EN 301 489-33 V1.1.1; EN 301 489-34 V1.1.1; EN 301 489-34 V1.3.1; EN 301 489-34 V1.4.1; EN 301 489-50 V1.2.1;

Test Technology:	**Test Method(s):**
Wireless and Radio Standards (*Cont.*)	EN 301 681 V1.4.1; EN 301 721 V1.2.1; EN 301 783-1 V1.2.1; EN 301 783-2 V1.2.1; EN 301 839-1 V1.3.1; EN 301 839-2 V1.3.1; EN 301 840-1 V1.1.1; EN 301 840-2 V1.1.1; EN 301 843-1 V1.3.1; EN 301 843-2 V1.2.1; EN 301 843-4 V1.2.1; EN 301 843-5 V1.1.1; EN 301 843-6 V1.1.1 ETSI Standards, as follows: EN 301 893 V1.6.1 and V1.7.1; EN 301 929-1 V1.2.1; EN 301 929-2 V1.2.1; EN 302 065-1 V1.3.1; EN 302 065-2 V1.2.1, EN 302 186 V1.1.1; EN 302 194 V1.1.2; EN 302 208-1 V1.4.1; EN 302 208-2 V1.4.1 EN 302 217-1 V1.3.1 and V2.00; EN 302 217-2-1 V1.2.1; EN 302 217-2-2 V1.4.1 and V2.1.1; EN 302 217-3 V1.3.1 and V2.1.1; EN 302 217-4-1 V1.4.1; EN 302 217-4-2 V1.5.1; EN 302 248 V1.1.2; EN 301 288-1 V1.6.1; EN 302 288-2 V1.6.1; EN 302 291-2 V1.1.1; EN 302 291-2 V1.1.1; EN 302 326-1 V1.2.1; EN 302 326-2 V1.2.2; EN 302 326-3 V1.3.1; EN 302 340 V1.1.1; EN 302 488 V1.1.1; EN 302 502 V1.2.1; EN 302 536-1 V1.1.1; EN 302 536-2 V1.1.1; EN 302 537-1 V1.1.2; EN 302 537-2 V1.1.2; EN 302 608 V1.1.1; EN 302 609 V1.1.1; EN 302 617-1 V1.1.1; EN 302 617-2 V1.1.1; EN 302 858-1 V1.1.1; EN 302 858-2 V1.2.1;

Test Technology:	**Test Method(s):**
Wireless and Radio Standards (*Cont.*)	Singapore IDA Standards, as follows: IDA TS LMR Issue 1 Revision 2 (Feb 2011); IDA TS SRD Issue 1 Revision 7 (April 2013) Hong Kong Telecommunications Authority Standards, as follows: HKTA 1039 Issue 5 (June 2013); HKTA 1042 Issue 2 (Feb 2003); HKTA 1049 Issue 1 (April 2005) National Communications Commission (NCC) [*formerly the Directorate General of Telecommunications (DGT)]* – Chinese Taipei Standards, as follows: C-IS2031-0 (IS 2031 – 0) Revision Date: July 20, 2007; C-IS2034-1 (IS2034 -1) Revision Date: December 25, 2007; LP 0002 (Revision date June 28, 2011); RTTE01 (Revision date July 20, 2007) Australia / New Zealand Standards, as follows: AS/NZS 4268:2012; AS/NZS 4771:2000 (incorporating Amendment 1) Japan Radio Law Standards (Article 2, Paragraph 1, Items) – as follows: Item 19 = 2.4 GHz Wideband Communications; Item 19-2 = 2.4 GHz WLAN - High Channel; Item 19-3 = 5 GHz WLAN; Item 19-5 = 4.9 GHz WLAN; Item 19-6 = 4.9 GHz WLAN; Item 19-9 = 4.9 GHz WLAN; Item 19-10 = 4.9 GHz WLAN
MIL-STD-461 A/B/C Tests, per the following MIL-STD-462 *[including Notice 1, Notice 2, Notice 3 (EL), Interim Notice 4, Interim Notice 5, and Notice 6 (USAF)]* Test Methods	CE01; CS01; RE01; RS01; UM03; CE03; CS02; RE02; RS02; UM04; CE06; CS06; RE03; RS03; UM05; CE07; CS09; CS10; CS11 *Note: RS03 Test Capability limited to a maximum of 10 V/m at 1 meter distance from 10 kHz to 18 GHz*
MIL-STD-461 D/E Tests, per the following MIL-STD-462D and MIL-STD-461E Test Methods	CE101; CS101; RE101; RS101; CE102; CS109; RE102; RS103; CE106; CS114; RE103; CS115; CS116 *Note 1: CS114 test capability limited to a maximum of Curve 4 from 10 kHz to 400 MHz.* *Note 2: RS103 test capability limited to a maximum of 10 V/m at 1 meter distance, from 10 kHz to 18 GHz.*

Test Technology:	**Test Method(s):**
MIL-STD-461F Tests, per the following MIL-STD-461F Test Methods	CE101; CS101; RE101; RS101; CE102; CS106; RE102; RS103; CE106; CS109; RE103; CS114; CS115; CS116 *Note 1: CS106 Test Capability is provided using the Solar Type 8282-1 Transient Pulse Generator, which may, in some cases, result in over-testing.* *Note 2: CS114 Test Capability is limited to a maximum of Curve 4 from 10 kHz to 400 MHz* *Note 3: RS103 Test Capability is limited to 10 V/m at 1 metre distance from 10 kHz to 18 GHz.*
MIL-STD-704F *(dated 12 March 2004)*, per the following Test Methods	28 VDC Power Test Methods specified in MIL-HDBK-704-1 (dated 9 April 2004) and MIL-HDBK-704-8 (dated 9 April 2004); Single Phase 115 VAC 60 Hz Power Test Methods specified in MIL-HDBK-704-1 (dated 9 April 2004) and MIL-HDBK-704-6 (dated 9 April 2004)
DEF STAN 59-41 Part 3 Section 3 Issue 1 *(dated 16 May 2003)* Tests, per the following DEF STAN 59-41 Part 3 Section 3 Test Methods	DCE01.3; DCS01.3; DRE01.3; DRS01.3; DCE02.3; DCS02.3; DRE02.3; DRS02.3 (Standard Method) DCE03.3; DCS03.3; DCS05.3; DCS06.3; DCS10.3; DCS12.3 *Note 1: DCS05.3 Test Capability is limited to the frequencies and levels stated for "Switching Simulation – All Land and Sea Systems Equipment".* *Note 2: DCS06.3 Test Capability is limited to the levels stated for 24 VDC powered equipment, and to the levels stated for equipment powered from either single phase 115 V/60 Hz, or, single phase 115 V/400 Hz, or, single phase 240 VAC /50 Hz.* *Note 3: DCS12.3 Test Capability is limited to the levels stated for 24 VDC powered equipment, and to the levels stated for equipment powered from either single phase 115 V/60 Hz, or, single phase 115 V/400 Hz.* *Note 4: DRS02.3 Test Capability is limited to 10 V/m at 1 metre distance from 10 kHz to 18 GHz.*

Test Technology:	**Test Method(s):**
DEF STAN 59-411 Part 3 Section 3 Issue 1 Amdt 1 (*dated 16 May 2003*) Tests, per the following DEF STAN 59-411 Part 3 Section 3 Amdt 1 Test Methods	DCE01.B; DCS01.B;DRE01.B; DRS01.B; DCE02.B; DCS02.B; DRE02.B; DRS02.B (Standard Method); DCE03.B; DCS03.B; DRS03.B; DCS05.B; DCS06.B; DCS10.B; DCS12.B *Note 1: DCS05.B Test Capability is limited to the frequencies and levels stated for "Switching Simulation – All Land and Sea Systems Equipment".* *Note 2: DCS06.B Test Capability is limited to the levels stated for 24 VDC powered equipment, and to the levels stated for equipment powered from either single phase 115 V/60 Hz, or, single phase 115 V/400 Hz, or, single phase 240 VAC /50 Hz.* *Note 3: DCS12.B Test Capability is limited to the levels stated for 24 VDC powered equipment, and to the levels stated for equipment powered from either single phase 115 V/60 Hz,or single phase 115 V/400 Hz.* *Note 4: DRS02.B Test Capability is limited to 10 V/m at 1 metre distance from 10 kHz to 18 GHz.*
RTCA/DO-160D (Including Changes 1, 2, and 3)	Section 15: Magnetic Effect; Section 16: Power Input, *[excluding AC-Powered Equipment in Category A(WF)]*; Section 17: Voltage Spike; Section 18: Audio Frequency Conducted Susceptibility-Power Inputs; Section 19: Induced Signal Susceptibility; Section 20: Radio Frequency Susceptibility [Radiated & Conducted] *[excluding all Reverberation Chamber Test procedures]* *Note: Radiated Susceptibility Test capability limited to Category S and Category T Equipment*; Section 21: Emission of Radio Frequency Energy [Radiated & Conducted]; Section 22: Lightning Induced Transients *Note 1: Pin Injection: Test Levels 1, 2, and 3 only*; *Note 2: Cable Bundle Injection: Single Stroke Tests only, at Test Levels 1, 2, & 3 only*; Section 25: ESD

Test Technology:	**Test Method(s):**
RTCA/DO-160E	Section 15: Magnetic Effect; Section 16: Power Input *[excluding AC-Powered Equipment in Category A(WF)]*; Section 17: Voltage Spike; Section 18: Audio Frequency Conducted Susceptibility-Power Inputs *[excluding AC-Powered Equipment in Categories R(WF) and K(WF)]*; Section 19: Induced Signal Susceptibility *[excluding AC-Powered Equipment in Categories CW, ZW, AW, and, BW]*; Section 20: Radio Frequency Susceptibility [Radiated & Conducted] *[excluding all Reverberation Chamber Test procedures]*; *Note: Radiated Susceptibility Test capability limited to Category S and Category T Equipment.* Section 21: Emission of Radio Frequency Energy [Radiated & Conducted]; Section 22: Lightning Induced Transients *Note 1: Pin Injection: Test Levels 1, 2, and 3 only* *Note 2: Cable Bundle Injection: Single Stroke Tests only, at Test Levels 1, 2, & 3 only*; Section 25: ESD
RTCA/DO-160F	Section 15: Magnetic Effect; Section 16: Power Input *[excluding all Three-phase AC-Powered Equipment, and AC-Powered Equipment in Category A(WF), and 270 VDC-Powered Equipment]*; Section 17: Voltage Spike; Section 18: Audio Frequency Conducted Susceptibility-Power Inputs (Closed Circuit Test) *[excluding AC-Powered Equipment in Categories R(WF) and K(WF) and 270 VDC-Powered Equipment]*; Section 19: Induced Signal Susceptibility*[excluding AC-Powered Equipment in Categories CW, ZW, AW, & BW]*; Section 20: Radio Frequency Susceptibility [Radiated & Conducted] *[excluding all Reverberation Chamber Test procedures]* *Note: Radiated Susceptibility Test capability limited to Category S and Category T Equipment*; Section 21: Emission of Radio Frequency Energy [Radiated & Conducted]; Section 22: Lightning Induced Transients *Note 1: Pin Injection: Test Levels 1, 2, and 3 only;*

Test Technology:	**Test Method(s):**
RTCA/DO-160F (Cont.)	*Note 2: Cable Bundle Injection: Single Stroke Tests only, at Test Levels 1, 2, & 3 only*; Section 25: ESD
RTCA/DO-160G	Section 15: Magnetic Effect; Section 16: Power Input *[excluding all Three-phase AC-Powered Equipment, and AC-Powered Equipment in Category A(WF), and 270 VDC-Powered Equipment]*; Section 17: Voltage Spike; Section 18: Audio Frequency Conducted Susceptibility-Power Inputs (Closed Circuit Test) *[excluding AC-Powered Equipment in Categories R(WF) and K(WF) and 270 VDC-Powered Equipment]*; Section 19: Induced Signal Susceptibility *[excluding AC-Powered Equipment in Categories CW, ZW, AW, and, BW]*; Section 20: Radio Frequency Susceptibility [Radiated & Conducted] *[excluding all Reverberation Chamber Test procedures]* *Note: Radiated Susceptibility Test capability limited to Category S and Category T Equipment*; Section 21: Emission of Radio Frequency Energy [Radiated & Conducted]; Section 22: Lightning Induced Transients *Note 1: Pin Injection: Test Levels 1, 2, and 3 only* *Note 2: Cable Bundle Injection: Single Stroke Tests only, at Test Levels 1, 2, & 3 only*; Section 25: ESD

[1]*This accreditation covers testing performed at the main laboratory listed above, and the satellite laboratory listed below.*

UBC Malcolm Knapp Research Forest,
QAI Laboratories EMC Test Facility,
14500 Silver Valley Road
Maple Ridge, B.C. V4R 2R3
Canada

Test Technology:	**Test Method:**
Wireless and Radio Standards *(Emissions)*	FCC Part 15 Subpart C 15.231, 15.247, and 12.205 (using ANSI C63.4:2003, ANSI C63.4:2009); EN 301 489-01 V1.9.2; EN 300 328 V1.8.1; RSS-210

On the following systems and products:

Wireless/radio devices and electromechanical and electronic equipment for: information technology (ITE); industrial, scientific, and medical (ISM) applications; residential service; household appliances, small tools and similar apparatus; receivers; licensed and unlicensed transmitters/transceivers; UPS systems; alarm/security systems; central office telephone equipment; heavy industrial equipment; marine equipment; consumer audio/video equipment; professional audio/video equipment; arc welders; PLC controllers; lifts, escalators and passenger conveyers; land vehicles and electrical subassemblies/components for: commercial and military land vehicles, commercial aircraft, military and naval ships, submarines and small craft, commercial ships, yachts and small craft; and, scientific and laboratory apparatus.

American Association for Laboratory Accreditation

Accredited Laboratory

A2LA has accredited

QAI LABORATORIES, INC.

Everett, WA

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009*).

Presented this 29th day of December 2014.

President & CEO
For the Accreditation Council
Certificate Number 3657.01
Valid to February 28, 2017

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