



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

TUV SUD AMERICA INC.¹
1775 Old Highway 8 NW, Suite 104
New Brighton, MN 55112
Mr. Barry Quinlan bquinlan@tuvam.com
Phone: 978-573-2528

ELECTRICAL

Valid To: September 30, 2019

Certificate Number: 2955.11

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory at the location listed above, *as well as the satellite laboratory location listed below*, to perform the following EMC (electromagnetic compatibility) and Telecommunications tests:

Test Technology:

Test Method(s) ^{2,3}:

Emissions

Conducted

FCC 47 CFR, Part 15, Subpart B (using ANSI C63.4:2014);
ANSI C63.4:2014;
CISPR 14-1 (2005+A1:2008+A2:2011, 2016+C1:2016);
EN 55014-1 (2006+A1:2009+A2:2011, 2017); KN 14-1;
AS/NZS CISPR 14.1 (2013); SANS 214-1:2009;
CISPR 22 (2005, 2008); EN 55022 (2010+AC:2011, 2014);
AS/NZS CISPR 22 (2009+A1:2010);
VCCI-V3; CNS 13438 (2006) (*up to 6 GHz*); KN 22;
TCVN 7189:2009 (CISPR 22:2006); SANS 222:2009;
CISPR 32/AC:2013, 2015; EN55032/AC:2013, 2015; KN 32;
AS/NZS CISPR 32 (2013, 2015); VCCI-CISPR 32:2016;
CISPR 11 (2009+A1:2010, 2016); SANS 211:2010;
EN 55011 (2009+A1:2010, 2016+A1:2017);
KN 11; AS/NZS CISPR 11 (2011)

Radiated & Conducted
(*ESA only*)

CISPR 25 (2002, 2008+C1:2009, 2016);
EN 55025

Automotive
(*excluding complete vehicle tests*)

EN 12895 (2000, 2015); EN 13309 (2010);
ISO 13766 (2006); ISO 14982 (1998, 2009);
ISO 7637-1 (2002+A1:2008, 2015);
ISO 7637-2 (1990, 2004, 2008, 2011);
ISO 7637-3 (1995, 2007, 2016);
EN 50498 (2010);
ANSI/SAE EP455 (section 5.16);
97/24/EC; 2015/208/EC;
UN ECE R10.04; UN ECE R10.05; KN 41;
SAE J1113-41 (2006); SAE J1113-42 (2006, 2010);
SAE J1455 (2006, 2011, 2012, 2017);

Test Technology:**Test Method(s) ^{2,3}:*****Emissions (cont.)***

Automotive (cont.)
(excluding complete vehicle tests)

JDQ 53.3 (sections 8 & 9); JDQ 202; JDQ 203;
CLAAS CN 050215;
Harley Davidson EG812-22613;
Harley Davidson EG812-22614;
NHTSA-2013-0058 (section D test, RFI/EMI Tests);
CSTT-HVC-TR-114, CSTT-HVC-TR-150, CSA Z627-16;
EN 50436-1; Volvo STD 515-0003;
CAT EC-42;
Daimler MBN 10284-4;
PACCAR CPP0191; PACCAR CPP0193

Avionic

RTCA/DO-160D (section 21);
RTCA/DO-160E (sections 21.3 & 21.4);
RTCA/DO-160F (sections 21.4 & 21.5);
RTCA/DO-160G (sections 21.4 & 21.5);
Boeing D6-16050-4; Boeing D6-16050-5;
Boeing 787B3-0147

Harmonics

IEC/EN 61000-3-2; IEC/EN 61000-3-12;
SANS 61000-3-2:2009

Voltage Flicker / Fluctuations

IEC/EN 61000-3-3; IEC/EN 61000-3-11;
SANS 61000-3-3:2009

Immunity

ESD

IEC 61000-4-2 (2008); EN 61000-4-2; KN 61000-4-2;
SANS 61000-4-2:2009

Radiated Immunity

IEC 61000-4-3 (2006+A1:2007+A2:2010);
EN 61000-4-3; KN 61000-4-3; SANS 61000-4-3:2008

EFT/Burst

IEC 61000-4-4 (2004+A1:2010, 2012);
EN 61000-4-4; KN 61000-4-4; SANS 61000-4-4:2011

Surge

IEC 61000-4-5 (2005+AC:2009, 2014+A1:2017, 2017);
EN 61000-4-5; KN 61000-4-5; SANS 61000-4-5:2006

Conducted Immunity

IEC 61000-4-6 (2008, 2013+AC:2015);
EN 61000-4-6; KN 61000-4-6; SANS 61000-4-6:2008

Magnetic Field Immunity

IEC 61000-4-8 (2009);
EN 61000-4-8; KN 61000-4-8; SANS 61000-4-8:2009

Pulse Magnetic Field
Immunity

IEC 61000-4-9 (2001, 2016);
EN 61000-4-9; KN 61000-4-9

Damped Oscillatory
Magnetic Field Immunity

IEC 61000-4-10; EN 61000-4-10

Voltage Dips, Shorts, Variations

IEC 61000-4-11 (2004+A1:2017, 2017);
EN 61000-4-11; KN 61000-4-11; SANS 61000-4-11:2004

Test Technology:**Test Method(s) ^{2,3}:*****Immunity (cont.)***

Ring Wave Immunity	IEC 61000-4-12 (2006); EN 61000-4-12
Harmonics and Interharmonics	IEC 61000-4-13; EN 61000-4-13
Voltage Fluctuation Immunity	IEC 61000-4-14; EN 61000-4-14
Common Mode Disturbance – Conducted Immunity from 0 to 150 kHz	IEC 61000-4-16 (2011); EN 61000-4-16
Ripple on D.C Input Ports Immunity	IEC 61000-4-17; EN 61000-4-17
Damped Oscillatory Wave	IEC 61000-4-18; EN 61000-4-18
Power Frequency Variation Immunity	IEC 61000-4-28; EN 61000-4-28
Voltage Dips, Shorts, Variations on D.C. Input Ports	IEC 61000-4-29; EN 61000-4-29
Automotive	ISO 10605 (2001, 2008+AC:2010+A1:2014); ISO 11452-1 (2005+A1:2008; 2015); ISO 11452-2 (2004); ISO 11452-4 (2005, 2011); ISO 11452-5 (2002); ISO 11452-7 (2003+A1:2013); ISO 11452-8 (2007, 2015); ISO 11452-10; ISO 16750-1; ISO 16750-2; EN 12895 (2000, 2015); EN 13309 (2010); ISO 13766 (2006); ISO 14982 (1998, 2009); EN ISO 14982 (2009); ISO 7637-1 (2002+A1:2008, 2015); ISO 7637-2 (1990, 2004+A1:2008, 2011); ISO 7637-3 (1995, 2007, 2016); EN 50498 (2010); SAE J1113-1 (2006, 2012, 2013) (<i>excluding aircraft</i>); SAE J1113-2 (2004, 2010) (<i>excluding aircraft</i>); SAE J1113-3 (2006, 2010); SAE J1113-4 (2004, 2014); SAE J1113-11 (2006, 2007, 2012); SAE J1113-12 (2006); SAE J1113-13 (2004, 2015); SAE J1113-21 (2005, 2013); SAE J1113-22 (2003, 2010); SAE J1113-26; SAE J1113-41 (2006); SAE J1113-42 (2006, 2010); SAE J1455 (2006, 2011, 2012, 2017); ANSI/SAE EP455 (sections 5.10, 5.11, 5.12, & 5.16); 97/24/EC; 2015/208/EC; UN ECE R10.04; UN ECE R10.05; KN 41; JDQ 53.3 (sections 8 & 9); JDQ 202; JDQ 203; CLAAS CN 050215; Harley Davidson EG812-22613; Harley Davidson EG812-22614;

Test Technology:

Test Method(s) ^{2,3}:

Immunity (cont.)

Automotive

NHTSA-2013-0058 (section D test RFI/EMI Tests);
CSTT-HVC-TR-114; CSTT-HVC-TR-150; CSA Z627-16;
EN 50436-1;
Volvo STD 515-0003;
CAT EC-42;
Daimler MBN 10284-4;
PACCAR CPP0016; PACCAR CPP0190;
PACCAR CS0013; PACCAR CTS0019

Medical

AAMI Pacemaker Standard: Labelling Requirements,
Performance Requirements, and Terminology for Implantable
Artificial Cardiac Pacemakers, August 1975
(FDA Contract No. 223-74-5083);
EMCU_W09.30E; EMCU_W09.31E;
EMCU_W09.32E; EMCU_W09.33E;
EMCU_W09.34E; EMCU_W09.35E

Avionic ⁴

RTCA/DO-160D (sections 15, 16, 17, 18, 19, 20, 22, & 25);
RTCA/DO-160E (sections 15, 16, 17, 18, 19, 20, 22, & 25);
RTCA/DO-160F (sections 15, 16, 17, 18, 19, 20, 22, & 25);
RTCA/DO-160G (sections 15, 16, 17, 18, 19, 20, 22, & 25);
Boeing D6-16050-4; Boeing D6-16050-5; Boeing 787B3-0147

***Generic/Product Family Standards
and Industry Standards***

(excluding Radiated Emissions)

IEC 61000-6-1 (2005, 2016); EN 61000-6-1 (2007);
KN 61000-6-1;
IEC 61000-6-2 (2005, 2016); EN 61000-6-2 (2005);
KN 61000-6-2;
IEC 61000-6-3 (2006+A1:2010, 2011);
EN 61000-6-3 (2007/A1:2011/AC:2012); KN 61000-6-3;
AS/NZS 61000.6.3 (2007); AS/NZS 61000.6.3 (2012);
IEC 61000-6-4; EN 61000-6-4;
KN 61000-6-4;
AS/NZS 61000.6.4 (2007); AS/NZS 61000.6.4 (2012);
EN 50130-4 (2011);
EN 55103-2 (2009);
EN 50270 (2006, 2015);
EN 50293 (2012);
IEC 61326-1 (2012);
EN 61326-1 (2013);
IEC/EN 61326-2-1; IEC/EN 61326-2-6;
IEC/EN 60730-1 (sections 23 & 26);
IEC/EN 60730-2-9 (sections 23 & 26);
IEC/EN 60730-2-13 (sections 23 & 26);
IEC/EN 60730-2-14 (sections 23 & 26);
IEC/EN/KN 60601-1-2 (2007+AC:2010);
IEC 60601-1-2 (2014); EN 60601-1-2 (2015);
EN 60601-2-24 (1998, 2015) (section 36);
IEC 61131-2 (2007, 2017) (sections 8 & 9);
EN 61131-2 (2007) (sections 8 & 9);
IEC 60118-13 (2011, 2016);
EN 60118-13 (2011);
EN ISO 11608-1 (section 11);



Test Technology:

***Generic/Product Family Standards
and Industry Standards (cont.)***
(excluding Radiated Emissions)

Test Method(s) ^{2,3}:

IEC/EN/KN 60945 (section 10);
EN 55014-2;
CISPR 14-2 (2015); KN 14-2; SANS 214-2:2009;
CISPR 24 (2010+C1:2011+A1:2015, 2015);
EN 55024 (2010+A1:2015); KN 24; SANS 224:2010;
IEC CISPR 35 (2016); KN 35;
EN 50121-1; EN 50121-3-1; EN 50121-3-2;
IEC/EN 60947-1; IEC/EN 60947-2; IEC/EN 60947-4-1;
IEC/EN 60947-4-3; IEC/EN 60947-5-2;
ANSI/AAMI PC69 (2000, 2007) (sections 4.8 & 4.9);
TCVN 7317:2003 (CISPR 24:1997);
ETSI EN 301 489-1; ETSI EN 301 489-3;
ETSI EN 301 489-7; ETSI EN 301 489-17;
ETSI EN 301 489-24; ETSI EN 301 489-27;
ETSI EN 301 489-31;
ANSI C63.19;
ANSI C12.1 (2008, 2014) (section 4.7.3.12.1);
EN 45502-1 (section 27); EN 45502-2-1 (section 27);
EN 45502-2-3 (section 27);
ISO 14708-3 (section 27);
IEC/EN/KN 61800-3;
IEC/EN 60947-4-3;
NEMA TS2 (sections 2.1.6, 2.1.7, & 2.1.8);
KN 301 489-1, -3, -7, -17, -24, -27, -31;
CAN/CSA-C22.2 NO. 60601-1-2:08 (R2014);
CAN/CSA-C22.2 NO. 60601-1-2:16
Collateral Standard: Electromagnetic compatibility

Radio Tests

(RF Conducted Measurements only)

ETSI EN 300 220-3; ETSI EN 300 330-2; ETSI EN 300 440-2;
ETSI EN 300 328 (V1.8.1, V1.9.1, V2.1.1 - *excluding
adaptivity testing*);
ETSI EN 301 511 (V9.0.2, V12.1.1, V12.5.1 - clauses 4.2.16
and 4.2.17);
ETSI EN 301 839-2 (V1.3.1); ETSI EN 302 195-2 (V1.1.1);
ETSI EN 301 908-1 (V6.2.1, V7.1.1, V11.1.1; clause 4.2.2);
ARIB STD-T66 (V2.1, V3.7);
HKCA 1002, Issue 6; HKCA 1003, Issue 4;
HKCA 1007, Issue 5; HKCA 1008, Issue 4;
HKCA 1033, Issue 7; HKCA 1035, Issue 7;
HKCA 1039, Issue 6; HKCA 1042, Issue 2;
HKCA 1043, Issue 4; HKCA 1044, Issue 1;
HKCA 1048, Issue 2; HKCA 1049, Issue 1;
HKCA 1052, Issue 2; HKCA 1054, Issue 1;
HKCA 1057, Issue 1; HKCA 1061, Issue 1;
IMDA TS LMR, Issue 1, (2016);
IMDA TS SRD, Issue 1, (2016);
IMDA TS CMT, Issue 1 Rev 1 (2017);
IMDA TS UWB, Issue 1, (2016);
IMDA TS WBA, Issue 1, (2016);
LP0002 (2011, 2016);

Test Technology:

Radio Tests (cont.)
(RF Conducted Measurements only)

Test Method(s) ^{2,3}:

QCVN 11:2010/BTTTT; QCVN 12:2015/BTTTT;
QCVN 13:2010/BTTTT; QCVN 15:2015/BTTTT;
QCVN 18:2014/BTTTT; QCVN 54:2011/BTTTT;
QCVN 55:2011/BTTTT;
PLMN01 (2007, 2012); RTTE01 (2007);
AS/NZS 4268 (2012+A1:2013, 2017);
RSS-210 (Issue 8) (*excluding DFS testing*);
RSS-210 (Issue 9) (*excluding DFS testing*);
RSS-GEN; RSS-247;
FCC 47 CFR, Part 15, Subpart C (using ANSI C63.10:2013)

Military

Emissions & Immunity

MIL-STD-462 (methods CE01, CE02, CE03, CE04, CE07,
CS01, CS02, CS06, CS09, RE01, RE02, RS01, RS02,
RS03², RS06);
MIL-STD-462D (methods CE101, CE102, CE106, CS101,
CS109, CS114, CS115, CS116, RE101, RE102, RS101,
RS103);
MIL-STD-461E (methods CE101, CE102, CE106, CS101,
CS103, CS104, CS109, CS114, CS115, CS116, RE101,
RE102, RE103, RS101, RS103);
MIL-STD-461F (methods CE101, CE102, CE106, CS101,
CS103, CS104, CS109, CS114, CS115, CS116, RE101,
RE102, RS101, RS103);
MIL-STD-461G (methods CE101, CE102, CE106, CS101,
CS103, CS104, CS109, CS114, CS115, CS116, CS117,
CS118, RE101, RE102, RS101, RS103);
MIL-STD-1275D

Test Technology:

Product Safety Tests ⁵

Test Method(s) ^{2,3:}

EXCLUDED MEASUREMENTS in Product Safety:

Abrasion Resistance Test
Bottom Fire Enclosure (Hot Flaming Oil)
Cathode Ray Tubes
Concentration of Flammable Vapors
CRT Strength
Hand-Transmitted Vibration
High Vacuum Devices
Human Exposure to UV Radiation
Integrated Circuit (IC) Current Limiters
Ionizing Radiation
Laser (including laser diodes)
Light Emitting Diodes (LEDs)
Mandrel Test
Materials Group Classification
Microwave Radiation
Partial Discharge Test
Pressure Vessels
Prevention of Electrostatic Charges
Resistance to Environmental Stress
Softening Temperature (ISO 306)
Tracking Index CTI
Ultrasonic Pressure
UV Radiation
Oscillating Hoop IP Test
Dust Test
Shock and Vibration Test
Oxygen Bomb Test
Altitude Test

Measurement Equipment

IEC 61010-1; EN 61010-1; UL 61010-1;
CAN/CSA C22.2 No. 61010-1;
IEC 61010-2-010; EN 61010-2-010; UL 61010-2-010;
CAN/CSA C22.2 No. 61010-2-010;
IEC 61010-2-030; EN 61010-2-030; UL 61010-2-010;
CAN/CSA C22.2 No. 61010-2-030;
IEC 61010-2-081; EN 61010-2-081; UL 61010-2-081;
CAN/CSA C22.2 No. 61010.2.081;
IEC 61010-2-101; EN 61010-2-101; UL 61010-2-101;
CAN/CSA C22.2 No. 61010.2.101

Office Equipment

IEC 60950-1; EN 60950-1; UL 60950-1;
CAN/CSA C22.2 No. 60950-1; AS/NZS 60950.1;
IEC 62368-1; EN 62368-1; UL 62368-1;
CAN/CSA C22.2 No. 62368-1

Audio Visual Equipment

IEC 60065; EN 60065; UL 60065;
CAN/CSA C22.2 60065; AS/NZS 60065

Test Technology:

Test Method(s) ^{2,3}:

Product Safety Tests ⁵ (cont.)

Household Appliances

IEC 60335-1; EN 60335-1; UL 60335-1;
CAN/CSA C22.2 No. 60335-1; AS/NZS 60335-1;
IEC 60335-2-3; EN 60335-2-3; UL 60335-2-3;
CAN/CSA-E60335-2-3; AS/NZS 60335-2-3;
IEC 60335-2-8; EN 60335-2-8; UL 60335-2-8;
CAN/CSA-E60335-2-8; AS/NZS 60335-2-8

Medical Equipment

IEC/EN/CSA/AAMI 60601-1 (ed.3.1);
IEC/EN/CSA/AAMI/JIS 60601-1 (ed.3);
IEC/EN/CSA/UL 60601-1 (ed.2);
IEC/EN/CSA/UL 60601-1 (ed.2), Amd.1;
IEC/EN/CSA/UL 60601-1 (ed.2), Amd.2;
IEC/EN/CSA 60601-1-1 (ed.2);
IEC/EN/CSA 60601-1-4 (ed.1);
IEC/EN/CSA 60601-1-4 (ed.1), Amd.1;
IEC/EN/CSA 60601-1-6 (ed.1);
IEC/EN/CSA 60601-1-6 (ed.2);
IEC/EN/CSA 60601-1-6 (ed.3);
IEC/EN/CSA 60601-1-6 (ed.3), Amd.1;
IEC/EN/CSA 60601-1-8 (ed.1), Amd.1;
IEC/EN/CSA 60601-1-8 (ed.2);
IEC/EN/CSA 60601-1-8 (ed.2), Amd.1;
IEC/EN/CSA 60601-1-10 (ed.1)
IEC/EN/CSA 60601-1-10 (ed.1), Amd.1;
IEC/EN/CSA 60601-1-11 (ed.1);
IEC/EN/CSA/AAMI 60601-1-11 (ed.2);
IEC/EN/CSA 60601-1-12 (ed.1);
IEC/EN/CSA 60601-2-10 (ed.2);
IEC/EN/CSA 60601-2-10 (ed.2), Amd.1;
IEC/EN/CSA 60601-2-18 (ed.2);
IEC/EN/CSA 60601-2-18 (ed.2), Amd.1;
IEC/EN/CSA 60601-2-18 (ed.3);
IEC/EN/CSA 60601-2-31 (ed.2);
IEC/EN/CSA 60601-2-31 (ed.2), Amd.1;
IEC/EN/CSA 60601-2-34 (ed.2);
IEC/EN/CSA 60601-2-34 (ed.3);
IEC/EN/CSA/AAMI 62304 (ed.1);
IEC/EN/CSA/AAMI 62366 (ed.1);
IEC/EN/CSA/AAMI 62366 (ed.1), Amd.1

Industry Standards

UL 22; UL 73; UL 197; UL 250; UL 291; UL 325; UL 399;
UL 471; UL 499; UL 507; UL 508; UL 508A; UL 508C;
UL 588; UL 751; UL 763; UL 778; UL 859; UL 873; UL 935;
UL 963; UL 979; UL 982; UL 987; UL 998; UL 1004-1;
UL 1004-2; UL 1004-4; UL 1012; UL 1017; UL 1026;
UL 1082; UL 1236;; UL 1278; UL 1310; UL 1431; UL 1450;
UL 1563; UL 1573; UL 1598; UL 1647; UL 1740; UL 1741;
UL 1778; UL 1838; UL 1993; UL 1995; UL 2111; UL 2200;
UL 5085-1; UL 5085-3

¹ This accreditation covers testing performed at the main laboratory listed above, and the satellite laboratory listed below:

19333 Wild Mountain Road
Taylors Falls, MN 55084
Mr. Barry Quinlan bquinlan@tuvam.com
Phone: 978-573-2528

Test Technology:

Test Method(s) ^{2,3}:

Emissions

Radiated & Conducted

FCC 47 CFR, Part 15, Subpart B (using ANSI C63.4:2014);
ANSI C63.4:2014;
CISPR 22 (2005, 2008); EN 55022 (2010+AC:2011, 2014);
KN 22; AS/NZS CISPR 22 (2009+A1:2010); SANS 222:2009;
VCCI-V3 (*up to 6 GHz*); CNS 13438 (2006) (*up to 6 GHz*);
CISPR 32 (2012+AC:2012+AC:2013, 2015);
EN55032 (2012+AC:2012+AC:2013, 2015); KN 32;
AS/NZS CISPR 32 (2013, 2015); VCCI-CISPR 32:2016;
CISPR 14-1 (2005+A1:2008+A2:2011, 2016+C1:2016);
EN 55014-1 (2006+A1:2009+A2:2011, 2017); KN 14-1;
AS/NZS CISPR 14.1 (2013); SANS 214-1;
CISPR 12 (2007+A1:2009); EN 55012 (2007+A1:2009);
AS/NZS CISPR 12 (2013); SANS 212:2009;
TCVN 7189:2009 (CISPR 22:2006);
FCC 47 CFR, Part 18 (using OST-MP:1986);
CISPR 11 (2009+A1:2010, 2016);
EN 55011 (2009+A1:2010, 2016+A1:2017);
KN 11; AS/NZS CISPR 11 (2011); SANS 211:2010;
EN 61326-1 (2013); IEC 61326-1 (2012);
EN 61326-2-1 (2013); IEC 61326-2-1 (2012);
ICES-001 (Issue 4); ICES-002 (Issue 6); ICES-003 (Issue 6)

Harmonics

IEC/EN 61000-3-2; IEC/EN 61000-3-12; SANS 61000-3-2:2009

Voltage Flicker / Fluctuations

IEC/EN 61000-3-3; IEC/EN 61000-3-11; SANS 61000-3-3:2009

Immunity

ESD

IEC 61000-4-2 (2001, 2008); EN 61000-4-2;
KN 61000-4-2; SANS 61000-4-2:2009

Radiated Immunity

IEC 61000-4-3 (2002, 2006+A1:2007+A2:2010, 2010);
EN 61000-4-3; KN 61000-4-3; SANS 61000-4-3:2008

EFT/Burst

IEC 61000-4-4
(1995+A1:2000+A2:2001, 2004+A1:2010, 2012);
EN 61000-4-4; KN 61000-4-4; SANS 61000-4-4:2011

Surge

IEC 61000-4-5 (2001, 2005+AC:2009, 2014+A1:2017, 2017);
EN 61000-4-5; KN 61000-4-5; SANS 61000-4-5:2006

Test Technology:**Test Method(s) ^{2,3}:*****Immunity (cont.)***

Conducted Immunity	IEC 61000-4-6 (2003, 2006, 2008, 2013+AC:2015); EN 61000-4-6; KN 61000-4-6; SANS 61000-4-6:2008
Magnetic Field Immunity	IEC 61000-4-8 (2001, 2009); EN 61000-4-8; KN 61000-4-8; SANS 61000-4-8:2009
Pulse Magnetic Field Immunity	IEC 61000-4-9 (2001, 2016); KN 61000-4-9
Voltage Dips, Shorts, Variations	IEC 61000-4-11 (2001, 2004+A1:2017, 2017); EN 61000-4-11; KN 61000-4-11; IEC/EN/KN 61000-4-34; SANS 61000-4-11:2004

***Generic/Product Family Standards
and Industry Standards***

IEC 61000-6-1 (2005, 2016); EN 61000-6-1 (2001, 2007);
KN 61000-6-1; AS/NZS 61000.6.1 (2006);
IEC 61000-6-2 (2005, 2016); EN 61000-6-2 (2005);
KN 61000-6-2; AS/NZS 61000.6.2 (2006);
IEC 61000-6-3 (2006+A1:2010, 2011);
EN 61000-6-3 (2007+A1:2011+AC:2012); KN 61000-6-3;
AS/NZS 61000.6.3 (2007); AS/NZS 61000.6.3 (2012);
IEC 61000-6-4; EN 61000-6-4;
KN 61000-6-4;
AS/NZS 61000.6.4 (2007); AS/NZS 61000.6.4 (2012);
EN 50130-4 (2011); EN 55103-2 (2009);
EN 50270 (2006, 2015); EN 50293 (2012);
EN 61326-1 (2013); IEC 61326-1 (2012);
IEC/EN 61326-2-1;
IEC/EN 61326-2-6;
IEC/EN 60730-1 (sections 23 & 26);
IEC/EN 60730-2-9 (sections 23 & 26);
IEC/EN 60730-2-13 (sections 23 & 26);
IEC/EN 60730-2-14 (sections 23 & 26);
IEC/EN/KN 60601-1-2 (2007+AC:2010);
IEC 60601-1-2 (2014); EN 60601-1-2 (2015);
EN 60601-2-24 (1998, 2015) (section 36);
IEC 61131-2 (2007, 2017) (sections 8 & 9);
EN 61131-2 (2007) (sections 8 & 9);
IEC 60118-13 (2005, 2011, 2016); EN 60118-13 (2011);
EN ISO 11608-1 (section 11);
IEC/EN/KN 60945 (section 10);
EN 55014-2;
CISPR 14-2 (2008, 2015); KN 14-2; SANS 214-2:2009;
CISPR 24 (2010+C1:2011+A1:2015, 2015);
EN 55024 (2010+A1:2015); KN 24; SANS 224:2010;
IEC CISPR 35 (2016); KN 35;
EN 50121-1; EN 50121-3-1; EN 50121-3-2;
IEC/EN 60947-1; IEC/EN 60947-2; IEC/EN 60947-4-1;
IEC/EN 60947-4-3; IEC/EN 60947-5-2;
TCVN 7317:2003 (CISPR 24:1997);
ETSI EN 301 489-1; ETSI EN 301 489-3; ETSI EN 301 489-7;
ETSI EN 301 489-17; ETSI EN 301 489-24;
ETSI EN 301 489-27; ETSI EN 301 489-31;

Test Technology:**Test Method(s) ^{2,3}:*****Generic/Product Family Standards and Industry Standards (cont.)***

KN 301 489-1, -3, -7, -17, -24, -27, -31;
CAN/CSA-C22.2 NO. 60601-1-2:08 (R2014);
CAN/CSA-C22.2 NO. 60601-1-2:16
Collateral standard: Electromagnetic compatibility

Automotive

ISO 10605 (2001, 2008+AC:2010+A1:2014);
ISO 11451-1; ISO 11451-2; ISO 11451-4;
EN 12895 (2000; 2015);
EN 13309 (2010);
ISO 13766 (2006);
ISO 14982 (2009); EN ISO 14982 (2009);
ISO 7637-1 (2002+A1:2008, 2015);
ISO 7637-2 (1990, 2004+A1:2008, 2011);
97/24/EC; 2015/208/EC; 2009/64/EC;
UN ECE R10.04; UN ECE R10.05; KN 41

Radio Tests

EN 300 220-1; EN 300 220-2; EN 300 220-3-1; EN 300 220-3-2;
EN 300 220-4; EN 300 328 (Limited to RSE); EN 300 330;
EN 300 440; EN 303 417; EN 301 893 (Limited to RSE);
EN 301 839; EN 302 502 (Limited to RSE);
EN 301 908-1 (clause 4.2.2);
EN 301 511 (clauses 4.2.16 and 4.2.17);
ARIB STD-T66 (V2.1, V3.7);
IMDA TS SRD, Issue 1 (2016);
LP0002 (2011, 2016);
AS/NZS 4268 (2012+A1:2013, 2017);
RSS-Gen; RSS-102 (*excluding SAR*); RSS-210; RSS-216;
RSS-243; RSS-244; RSS-247; RSS-310;
47 CFR, FCC Part 15, Subparts C and E
(using ANSI C63.10:2013);
47 CFR FCC Part 22, 24, 95, 97, and 101
(using ANSI/TIA-603-D; TIA-102.CAAA-D);
ANSI C63.4:2014;
ANSI C63.26:2015

² When the date, revision or edition of a test method standard is not identified on the scope of accreditation, the laboratory is expected to be competent in the use of the current version within one year of the date of publication of the standard test method., per part C., Section 1 of A2LA R101 - *General Requirements- Accreditation of ISO-IEC 17025 Laboratories*.

³ The laboratory is only accredited for testing activities outlined within the test methods listed above. Reference to any other activity within these standards, such as risk management or risk assessment, does not fall within the laboratory's accredited capabilities.

⁴ Laboratory utilizes RADHAZ procedures for high level testing.

⁵ Field testing services are available for this test and this laboratory meets A2LA R104 – General Requirements: Accreditation of Field Testing and Field Calibration Laboratories for this test.

Testing Activities Performed in Support of FCC Declaration of Conformity and Certification in Accordance with 47 Code of Federal Regulations and FCC KDB 974614, Appendix A, Table A.1 ⁶:

Unintentional Radiators Part 15B	ANSI C63.4:2014	40000 MHz
Industrial, Scientific, and Medical Equipment Part 18	FCC MP-5 (February 1986)	40000 MHz
Intentional Radiators Part 15C	ANSI C63.10:2013	40000 MHz
U-NIII without DFS Intentional Radiators Part 15E	ANSI C63.10:2013	40000 MHz
General Mobile Radio Services (FCC Licensed Radio Service Equipment) Parts 22 (non-cellular), 90 (non-microwave), 95, 97, and 101 (non-microwave)	ANSI/TIA-603-D; TIA-102.CAAA-D	40000 MHz

⁶ Accreditation does not imply acceptance to the FCC equipment authorization program. Please see the FCC website (<https://apps.fcc.gov/oetcf/eas/>) for a listing of FCC approved laboratories.



Accredited Laboratory

A2LA has accredited

TUV SUD AMERICA INC.

New Brighton, MN

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 5th day of January 2018.

A handwritten signature in black ink, written over a horizontal line.

President and CEO
For the Accreditation Council
Certificate Number 2955.11
Valid to September 30, 2019

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