



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

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ELECTRICAL (EMC)

Valid to: October 31, 2018

Certificate Number: 1983.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following Electromagnetic Compatibility, Bluetooth, Radio & Wireless, and Specific Absorption Rate (SAR) tests:

Tests:

Standards*:

Emissions

Radiated & Conducted

CFR 47 FCC Parts 2, 15 (using ANSI C63.4-2014),
and 18 (using MP-5-1986);
CISPR 25 (*excluding clause 5*);
ICES 001; ICES 002; ICES 003; ICES 004;
ICES 005; ICES 006;
VCCI V-3 (*up to 6 GHz*);
72/245/EWG; ECE R10

Immunity

Electrostatic Discharge (ESD)

EN 61000-4-2; IEC 61000-4-2

Radiated Immunity

EN 61000-4-3; IEC 61000-4-3;
ECE R10; ISO 11452-2

Electrical Fast Transient/Burst

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

Surge Immunity

EN 61000-4-5; IEC 61000-4-5

Conducted Immunity

EN 61000-4-6; IEC 61000-4-6

Power Frequency Magnetic Field Immunity

EN 61000-4-8;
IEC 61000-4-8 (*excluding short duration mode*)

Voltage Dips, Short Interruptions, and Line
Voltage Variations

EN 61000-4-11; IEC 61000-4-11

Ring Wave

EN 61000-4-12; IEC 61000-4-12

Tests:

Standards*:

Immunity (cont.)

Harmonics and Interharmonics	EN 61000-4-13; IEC 61000-4-13
Voltage Fluctuation	EN 61000-4-14; IEC 61000-4-14
Conducted, Common Mode Disturbances	EN 61000-4-16; IEC 61000-4-16
Damped Oscillatory Wave	EN 61000-4-18; IEC 61000-4-18
Variation of Power Frequency	EN 61000-4-28; IEC 61000-4-28
Voltage Dips, Short Interruptions, and Voltage Variations	EN 61000-4-29; IEC 61000-4-29
Transient Immunity on Supply Lines and Non-Supply Lines	ISO 7637-2; ISO 7637-3
Bulk Current Injection	ISO 11452-4

EMC Product Specific Standards

RTCA/DO-160 D/E/F/G
(sections 15, 16, 17, 18, 19, 20, 21, 22, and 25);
EN 50121-3-2

Bluetooth

Bluetooth RF, Protocol and Profile Conformance Profile Interoperability	Bluetooth Core and Profile Specifications; Bluetooth Test Specifications (including EDR)
Bluetooth RF, Low Energy	RF Conformance for Bluetooth Low Energy

SAR


EN 50383 (*excluding clause 6*); IEEE C95.3;
RF Radiation Exposure, KDB 865664,
KDB 447498 (using IEEE 1528-2013);
RSS 102; EN 50566

Exposure to Electromagnetic Fields

IEC 62493

Radio, Wireless

47 CFR Parts 2 (including SAR and MPE), 15 C/D/E;
CFR 47 FCC Parts 2, 20, 22, 24, 25, 27, 73, 74, 80,
87, 90, 95, 96, 97, 101,
KDB 971168 (using ANSI/TIA 603-D (2010));
ANSI/TIA 603-E (2016);
ANSI/TIA-102.CAAA-D/E;
CFR 47 FCC Part 20 (using KDB 935210);
RSS GEN; RSS 111; RSS 112; RSS 117; RSS 119;
RSS 123; RSS 125; RSS 127; RSS 130; RSS 131;
RSS 132; RSS 133; RSS 134; RSS 135; RSS 137;
RSS 139; RSS 141; RSS 142; RSS 170; RSS 181;
RSS 182; RSS 191; RSS 192; RSS 194; RSS 195;



Tests:

Radio, Wireless (cont.)

Standards*:

RSS 196; RSS 197; RSS 199; RSS 210; RSS 211;
RSS 213; RSS 215; RSS 216; RSS 220; RSS 222;
RSS 236; RSS 238; RSS 243; RSS 244; RSS 247;
RSS 251; RSS 287; RSS 288; RSS 310;
ARIB STD-T66; ARIB STD-T71; ARIB STD-T90;
TELEC T-241;
47 CFR 47 FCC Part 15, KDB 789033,
KDB 905462 (using ANSI C63.10-2013);
47 CFR 47 FCC Part 15 (using ANSI C63.17-2013);
ANSI C63.26-2015

***Mobile Communication
(excluding protocol conformance testing)***

GSM: TS 51.010-01
UMTS: TS 34.124
LTE: TS 36.124

OTA Testing

OTA: CTIA Test Plan for Wireless Over-the-Air
Performance (Free Space only)

Broadcasting¹

BETS 1; BETS 3; BETS 4; BETS 5; BETS 6;
BETS 7; BETS 8; BETS 9; BETS 11

On the following products or types of products:

Information Technology Equipment (ITE), Industrial, Scientific and Medical Equipment (ISM), Automotive
Equipment, Telecommunications Equipment

*Note: 3m and 10m semi-anechoic chambers and OATS (10m)

¹ Field testing service is available for this type of testing and this laboratory meets A2LA R104 – *General Requirements: Accreditation of Field Testing and Field Calibration Laboratories* for these tests.

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:

Rule Subpart/Technology	Test Method	Maximum Frequency
Unintentional Radiators Part 15B	ANSI C63.4:2014	40 GHz
Industrial, Scientific, and Medical Equipment Part 18	FCC MP-5 (February 1986)	40 GHz
Intentional Radiators Part 15C	ANSI C63.10:2013	40 GHz



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:

Rule Subpart/Technology	Test Method	Maximum Frequency
Unlicensed Personal Communication Systems Devices Part 15D	ANSI C63.17:2013	40 GHz
U-NIII without DFS Intentional Radiators Part 15E	ANSI C63.10:2013	40 GHz
U-NIII with DFS Intentional Radiators Part 15E	ANSI C63.10:2013; FCC KDB 789033	40 GHz
UWB Intentional Radiators (FCC Part 15, Subpart F), Ultra-wideband Operation	ANSI C63.10:2013	40 GHz
BPL Intentional Radiators (FCC Part 15, Subpart G), Access Broadband Over Power Line (Access BPL)	ANSI C63.10:2013	40 GHz
White Space Device Intentional Radiators (FCC Part 15, Subpart H), White Space Devices	ANSI C63.10:2013	40 GHz
Commercial Mobile Services (FCC Licensed Radio Service Equipment) Parts 22 (cellular), 24, 25 (non-microwave), and 27	ANSI/TIA-603-D; TIA-102.CAAA-D	40 GHz
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	40 GHz
Citizens Broadband Radio Services (FCC Licensed Radio Service Equipment) Part 96	ANSI/TIA-603-D; TIA-102.CAAA-D	40 GHz
Maritime and Aviation Radio Services Parts 80 and 87	ANSI/TIA-603-D	40 GHz
Microwave and Millimeter Bands Radio Services Parts 25, 74, 90 (90Y, 90Z, DSRC), and 101	ANSI/TIA-603-D; TIA-102.CAAA-D	40 GHz



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:

Rule Subpart/Technology	Test Method	Maximum Frequency
Broadcast Radio Services Parts 73 and 74 (non-microwave) RF Exposure	ANSI/TIA-603-D; TIA-102.CAAA-D	40 GHz
Devices Subject to SAR Requirements	IEEE Std 1528:2013	6 GHz
Signal Boosters (Part 20), Wideband Consumer signal boosters, Provider-specific signal boosters, Industrial signal boosters	FCC KDB 935210 D03 (v04) FCC KDB 935210 D04 (v02) FCC KDB 935210 D05 (v01r01)	40 GHz

