SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

TUV RHEINLAND OF NORTH AMERICA, INC. [1]
1279 Quarry Lane, Suite A
Pleasanton, CA 94566
Mr. David Spencer Phone: (925) 249-9123 ext. 2116
Email: dspencer@us.tuv.com
www.tuv.com

ELECTRICAL

Valid to: July 31, 2019 Certificate Number: 3331.02

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 product safety, radio, telecommunications, and electromagnetic compatibility (EMC) tests:

Test Description:	**Test Method(s) [2,3]:**
Emissions	
Radiated & Conducted *(3m semi-anechoic chamber, up to 40 GHz)*	47 CFR, FCC Part 15B (using ANSI C63.4:2014); ANSI C63.4:2009; 47 CFR, FCC Part 18 (using MP-5:1986); IEC/CISPR 11; EN 55011; KN 11; EN/IEC 55012; CISPR 12; EC/EN 55013; CISPR 13; CISPR 14-1; IEC/EN 55014-1; KN 14-1; CISPR 15; IEC/EN 55015; KN 15; IEC/CISPR 22; EN 55022; AS/NZS CISPR 22:2009 + A1:2010; EN 55032; CISPR 32; KN 32; AS/NZS CISPR 32; ICES-001; ICES-003, Issue 6; VCCI V-3 (*up to 6 GHz*); CNS 13803; CNS 13783-1; TCVN 7189 (2009); JIS C 1806-1; EN 55103-1
Current Harmonics	IEC/EN 61000-3-2
Flicker and Fluctuations	IEC/EN 61000-3-3

Test Description:	**Test Method(s) [2,3]:**
Immunity	
Electrostatic Discharge	IEC 61000-4-2; EN 61000-4-2
Radiated *(20V/m 80% AM modulated @ 6 GHz)*	IEC 61000-4-3; EN 61000-4-3
Electrical Fast Transient / Burst	IEC 61000-4-4; EN 61000-4-4
Surge	IEC 61000-4-5; EN 61000-4-5
Conducted	IEC 61000-4-6; EN 61000-4-6
Power Frequency Magnetic Field	IEC 61000-4-8; EN 61000-4-8
Voltage Dips, Short Interrupts and Voltage Variations	IEC 61000-4-11; IEC 61000-4-11
Ring Wave	IEC 61000-4-12
Generic / Product Specific EMC Standards	EN/IEC 61000-6-1; EN/IEC 61000-6-2; EN/IEC 61000-6-3; EN/IEC 61000-6-4; KN 61000-6-1; KN 61000-6-2; KN 61000-6-3; KN 61000-6-4; IEC/EN 61204-3; EN/IEC 60601-1-2; KN 60601-1-2; EN/IEC 61547; KN 61547; ISO 11451-4; EN/IEC 12895; EN/IEC 13309; EN 12015; EN 12016; EN/ISO 13766; EN/ISO 14982; EN 50121-3-2; EN 50121-2; EN 50121-3-1; EN 50121-4; EN 62233; EN 55103-1; EN 55103-2; EN/IEC 61326-1; EN/IEC 61326-2-6; EN/IEC 61326-3-2; EN/IEC 61800-3; KN 61800-3; CISPR 24; EN 55024; EN 50121-1; EN 50130-4; EN 55103-2; EN 50121-4; EN 50121-3-2; EN/IEC 50155; EN 50270; EN 50293; EN/IEC 55014-2; IEC/CISPR 14-2; KN 14-2; EN 50370-1; EN 50370-2; EN 50361; EN 50364; EN 50371; KN 15; ETSI EN 301 489-1; ETSI EN 301 489-3; ETSI EN 301 489-4; ETSI EN 301 489-5; ETSI EN 301 489-6; ETSI EN 301 489-7; KN 35 (up to 12V/m, *excluding broadcast and TV receivers*);

Test Description:	**Test Method(s) [2,3]:**
Generic / Product Specific EMC Standards (cont.)	ETSI EN 301 489-8; ETSI EN 301 489-9; ETSI EN 301 489-10; ETSI EN 301 489-12; ETSI EN 301 489-15; ETSI EN 301 489-16; ETSI EN 301 489-17; ETSI EN 301 489-18; ETSI EN 301 489-19; ETSI EN 301 489-20; ETSI EN 301 489-23; ETSI EN 301 489-24; ETSI EN 301 489-25; ETSI EN 301 489-26; ETSI EN 301489-52; ETSI TS 134 124; ETSI TS 136 124; ETSI EN 300 386 V1.5.1/ V1.6.1; KN 301 489-01; KN 301 489-03; KN 301 489-07; KN 301 489-17
Radio Communications *(up to 40 GHz) (excluding SAR & HAC)*	
Australia / New Zealand	AS/NZS 4268:2017 ACMA Radiocommunications (Short Range Devices) Standard 2004
Unlicensed Radio - FCC	CFR 47, FCC Part 2; 47 CFR, FCC Part 15, Subpart C (using ANSI C63.10:2013); 47 CFR, FCC Part 15, Subpart D (using ANSI C63.17:2013); 47 CFR, FCC Part 15, Subpart E (using ANSI C63.10:2013 and FCC KDB 905462 D02 (v01)); ANSI C63.4:2009 and 2014
Licensed Radio - FCC	CFR 47, FCC Part 2; CFR 47, FCC Parts 22, 24, 25, 27, 74, 80, 87, 90, 95, 97, 101 (using ANSI/TIA-603-D)
Canada	Radio Scope 1 RSS-Gen; RSS-102; RSS-210; RSS-213; RSS-215; RSS-216; RSS-220; RSS-236; RSS-238; RSS-243; RSS-244; RSS-247; RSS-251; RSS-287; RSS-288; RSS 310 Radio Scope 2 RSS-Gen; RSS-102; RSS-112; RSS-130; RSS-132; RSS-133; RSS-134; RSS-139; RSS-170 Radio Scope 3 RSS-Gen; RSS-102; RSS-111; RSS-119; RSS-123; RSS-125; RSS-127; RSS-131; RSS-135; RSS-137; RSS-197; RSS-199 Radio Scope 4 RSS-Gen; RSS-102; RSS-117; RSS-141; RSS-181; RSS-182 Radio Scope 5 RSS-Gen; RSS-102; RSS-142; RSS-191; RSS-192; RSS-194; RSS-195; RSS-196
Europe (EU)	ETSI EN 300 220-1; ETSI EN 300 220-2; ETSI EN 300 220-3; ETSI EN 300 220-4; ETSI EN 300 330-1; ETSI EN 300 330-2;

Test Description:	**Test Method(s) [2,3]:**
Radio Communications (cont.)	
Europe (EU)	ETSI EN 300 440-1; ETSI EN 300 440-2; ETSI EN 302 208-1; ETSI EN 302 208-2; ETSI EN 300 113-1; ETSI EN 300 113-2; ETSI EN 300 133-1; ETSI EN 300 133-2; ETSI EN 300 328; ETSI EN 300 422-2; ETSI EN 301 839-1; ETSI EN 301 839-2; ETSI EN 301 893; ETSI EN 302 502
Hong Kong	HKCA 1039; HKCA 1041; HKCA 1042; HKCA 1049
Singapore	IMDA TS SRD; IMDA TS UWB
Taiwan	DGT LP0002; DGT LP0001
Japan	ARIB Standard STD-T66; ARIB Standard STD-T67; ARIB Standard STD-T70; STD-T71, STD-T82, STD-T90, STD-T106, STD-T107, STD-T108
Vietnam	QCVN 54:2011/BTTTT; QCVN 55:2011/BTTTT
ZigBee	Zigbee 3.0; ZigBee IEEE 802.15.4 PHY/MAC; ZCP ZigBee PRO Network 2015 R21; ZigBee Green Power Basic; ZigBee Smart Energy 1.2b; ZigBee Smart Energy 1.2a; ZigBee Smart Energy 1.1b; ZigBee Home Automation 1.2.1; ZigBee Light Link 1.0; ZigBee Retail Services 1.0; ZigBee Building Automation 1.0
WiFi	Wi-Fi Alliance 802.11 with WPA2, WPA, and WEP System Interoperability Test Plan with ASD Test Engine for IEEE 802.11a, b, & g Devices; Wi-Fi Alliance Wi-Fi 802.11n System Interoperability Test Plan; Wi-Fi Alliance WMM System Interoperability Test Plan; Wi-Fi Alliance WMM Power Save System Interoperability Test Plan; Wi-Fi Alliance Wi-Fi WPS Test Plan; Wi-Fi Alliance Protected Management Frames; Wi-Fi Alliance Miracast; Wi-Fi Alliance Tunnel Direct Link Setup; Wi-Fi Alliance Passpoint; Wi-Fi Alliance Wi-Fi Direct; Wi-Fi Alliance 802.11 a/b/g interoperability, including WPA/WPA2-PSK, WPA/WPA2-Enterprise, and WEP security; Wi-Fi Alliance Wi-Fi Multimedia "WMM" interoperability; Wi-Fi Alliance 802.11n, including legacy a/b/g and WMM interoperability;

Test Description:	**Test Method(s) [2,3]:**
Radio Communications (cont.)	
WiFi (cont.)	Wi-Fi Alliance 802.11ac Interoperability; Wi-Fi Alliance Wi-Fi Protected Setup "WPS" version 1.0; Wi-Fi Alliance Wi-Fi Protected Setup "WPS" version 2.0; Wi-Fi Alliance Protected Management Frames; Wi-Fi Alliance Passpoint "Hotspot2.0" release 1; Wi-Fi Alliance Passpoint "Hotspot2.0" release 2; Wi-Fi Alliance WMM-Powersave; Wi-Fi Alliance WMM-Admission Control; Wi-Fi Alliance Voice Enterprise; Wi-Fi Alliance Wi-Fi Direct "P2P"; Wi-Fi Alliance Wi-Fi Display "Miracast" interoperability; Wi-Fi Alliance Wi-Fi Direct Services; Wi-Fi Alliance Tunneled Direct Link Setup
Product Safety	
Information Technology	EN/IEC/CSA/UL 60950-1; EN/IEC/CSA/UL 60950-21; EN/IEC/CSA/UL 60950-23; EN/IEC 62040; IEC/UL 62368
Audio/Video	EN/IEC/CSA/UL 60065
Lab, Test & Measurement	IEC/EN/CSA/UL 61010-1; IEC/EN/CSA 61010-2-010; IEC/EN/CSA 61010-2-020; IEC/EN/CSA 61010-2-081; IEC/EN/CSA 61010-2-101
Laser	IEC/EN 60825-1
Household	EN/IEC/CSA/UL 60335-1; General Requirements EN/IEC/CSA 60335-2-2; Vacuum Cleaners and Water Suction Cleaning EN/IEC/CSA/UL 60335-2-8; Shavers, Hair Clippers EN/IEC/CSA 60335-2-9; Grills, Toasters and Similar Equipment EN/IEC/CSA 60335-2-10; Floor Treatment and Wet Scrubbing Machines EN/IEC/CSA 60335-2-14; Kitchen Appliances EN/IEC/CSA 60335-2-15; Appliances for Heating Liquids EN/IEC/CSA 60335-2-23; Appliances for Skin or Hair Care EN/IEC/CSA 60335-2-28; Sewing Machines EN/IEC/CSA 60335-2-29; Battery Chargers EN/IEC/CSA 60335-2-30; Room Heaters EN/IEC/CSA 60335-2-32; Massage Appliances EN/IEC/CSA 60335-2-41; Pumps EN/IEC/CSA 60335-2-42; Commercial Forced Convection Ovens, Steam Cookers and Steam-Convection Ovens

Test Description:	**Test Method(s) [2,3]:**
Household (cont.)	EN/IEC/CSA 60335-2-43; Clothes Dryers and Towel Rails EN/IEC/CSA 60335-2-44; Ironers EN/IEC/CSA 60335-2-45; Portable Heating Tools and Similar Equipment EN/IEC/CSA 60335-2-52; Oral Hygiene Appliances EN/IEC/CSA 60335-2-60; Whirlpool Baths EN/IEC/CSA 60335-2-64; Commercial Electric Kitchen Machines EN/IEC/CSA 60335-2-65; Air Cleaning Appliances EN/IEC/CSA 60335-2-75; Commercial Dispensing Appliances and Vending EN/IEC/CSA 60335-2-80; Fans EN/IEC/CSA 60335-2-81; Foot Warmers and Heating Mats EN/IEC/CSA 60335-2-82; Amusement Machines and Personal Service Machines EN/IEC/CSA 60335-2-84; Toilets EN/IEC/CSA 60335-2-95; Drives for Vertically Moving Garage Doors EN/IEC/CSA 60335-2-97; Drives for Rolling Shutters, Awnings, Blinds
Medical [3]	IEC 60601-1-2; KN 60601-1-2; EN 60601-1-2; EN 60601-2-2; IEC 60601-1 (Ed. 2); IEC 60601-1 (Ed. 3); IEC 60601-1-1 (Medical electrical systems); IEC 60601-1-4 (PEMS); IEC 60601-1-6 (Usability); IEC 60601-1-11 (Home Healthcare); IEC 60601-2-2 (High frequency surgical equipment); IEC 60601-2-4 (Cardiac defibrillators); IEC 60601-2-5 (Ultrasonic physiotherapy equipment); IEC 60601-2-6 (Microwave therapy equipment); IEC 60601-2-10 (Nerve and muscle stimulators); IEC 60601-2-11 (Gamma beam therapy equipment); IEC 60601-2-12 (Lung ventilators; Critical care ventilators); IEC 60601-2-13 (Anaesthetic systems); IEC 60601-2-16 (Haemodialysis, haemodiafiltration, and haemofiltration equipment); IEC 60601-2-17 (Automatically-controlled brachytherapy afterloading equipment); IEC 60601-2-18 (Endoscopic equipment); IEC 60601-2-19 (Baby incubators); IEC 60601-2-20 (Transport incubators); IEC 60601-2-21 (Infant radiant warmers); IEC 60601-2-22 (Diagnostic and therapeutic laser equipment); IEC 60601-2-23 (Transcutaneous partial pressure monitoring equipment); IEC 60601-2-24 (Infusion pumps and controllers); IEC 60601-2-25 (Electrocardiographs); IEC 60601-2-26 (Electroencephalographs); IEC 60601-2-27 (Electrocardiographic monitoring equipment); IEC 60601-2-28 (X-ray source assemblies and X-ray tube assemblies for medical diagnosis); IEC 60601-2-30 (Automatic cycling non-invasive blood pressure monitoring equipment);

Test Description:	**Test Method(s) [2,3]:**
Product Safety (cont.)	
Medical [3] *(cont.)*	IEC 60601-2-34 (Direct blood pressure monitoring equipment); IEC 60601-2-35 (Blankets, pads and mattresses intended for heating); IEC 60601-2-36 (Equipment for extra-corporeally induced lithotripsy); IEC 60601-2-37 (Ultrasonic medical diagnostic and monitoring equipment); IEC 60601-2-38 (Electrically operated hospital beds); IEC 60601-2-39 (Peritoneal dialysis equipment); IEC 60601-2-40 (Electromyographs and evoked response equipment); IEC 60601-2-41 (Surgical luminaires and luminaires for diagnosis); IEC 60601-2-43 (X-ray equipment for interventional procedures); IEC 60601-2-44 (X-ray equipment for computed tomography); IEC 60601-2-45 (Mammographic x-ray equipment and mammographic stereotactic devices); IEC 60601-2-46 (Operating tables); IEC 60601-2-47 (Ambulatory electrocardiographic systems); IEC 60601-2-49 (Multifunction patient monitoring equipment); IEC 60601-2-50 (Infant phototherapy equipment); IEC 60601-2-51 (Recording and analysing single channel and multichannel electrocardiographs); IEC 60601-2-54 (Particular requirements for the basic safety and essential performance of X-ray equipment for radiography and radioscopy); IEC 60601-2-62 (High intensity therapeutic ultrasound (hitu) equipment); IEC 60601-2-63 (Dental extra-oral x-ray equipment); IEC 60601-2-64 (Light ion beam medical electrical equipment); IEC 60601-2-65 (Dental intra-oral x-ray equipment); IEC 60601-2-66 (Particular requirements for the basic safety and essential performance of hearing instruments and hearing instrument systems); IEC 60601-2-68 (X-ray-based image-guided radiotherapy equipment for use with electron accelerators, light ion beam therapy equipment and radionuclide beam therapy equipment); IEC 60601-2-52 (Medical Beds); IEC 60601-2-57 (Non-laser Light Source eq.); IEC 80601-2-30 (Automated Non-invasive BP); IEC 80601-2-58 (Vitrectomy)

The below tests are performed using the above Product Safety standards:

- Input current / Power Input
- Durability of Markings
- Access to Live Parts
- Energy Hazards
- Capacitance Discharge
- TNV Circuits, Limits, Connections Voltages Generated Externally
- SELV Circuits
- Torque
- Telecommunication Network Separation and Protection
- Limited Current Circuits, Values
- Steady Force Test
- Drop Test
- Stress Relief
- Wall or Ceiling Mounted Equipment
- Handles and Manual Controls
- Battery Overcharge/Discharge and Reverse Current Measurements
- Spillage Tests
- Protection against Hazardous Moving Parts
- Thermal Requirements / Ball Pressure Test
- Temperature Rise
- Resistance to Abnormal Heat

- Limited Power Sources
- Resistances of Earthing Conductors
- GND Continuity Test
- Humidity Conditioning
- Creepage Distances, Clearances
- Working Voltage
- Thermal Cycling and Thermal Aging
- Mechanical Strength / Impact
- Enclosed and Sealed Parts
- Touch Current and Protective Conductor Current / Leakage
- Dielectric Strength / Hipot
- Component Failure and Abnormal Operation
- Power Supply Output/transformer/accessible Connector Overload
- Voltage Surge / Impulse
- Stability
- Sound Pressure Level
- Resistance to Fire

Test Description:	**Test Method(s) [2,3]:**
Energy Efficiency	IEC/EN 62301; CAN/CSA C381.1-08; CAN/CSA C802.2

EPA ENERGY STAR Testing

Product Family Guidelines:	**Supporting Test Method(s):**
Computers	ENERGY STAR Program Requirements for Computers, Version 6.1; IEC 62301; EPRI Generalized Test Protocol for Calculating the Energy Efficiency of Internal Ac-Dc and Dc-Dc Power Supplies
Enterprise Servers	ENERGY STAR Program Requirements for Computer Servers, Version 2.0; IEC 62301; EPRI Generalized Test Protocol for Calculating the Energy Efficiency of Internal Ac-Dc and Dc-Dc Power Supplies
Small Network Equipment	ENERGY STAR Program Requirements for Small Network Equipment, Version 1.0; ENERGY STAR Test Method for Small Network Equipment, Rev. Oct 2014
Data Center Storage	ENERGY STAR Program Requirements for Data Center Storage, Version 6.0; ENERGY STAR Test Method for Data Center Storage Equipment, Rev. Mar 2014
Imaging Equipment	ENERGY STAR Program Requirements for Imaging Equipment, Version 2.0; IEC 62301
Uninterruptable Power Supplies	ENERGY STAR Program Requirements for Uninterruptable Power Supplies, Version 1.0
Displays	ENERGY STAR Program Requirements for Displays, Version 6.0
Televisions	ENERGY STAR Program Requirements for Televisions, Version 6.1
Audio/Video Equipment	ENERGY STAR Program Requirements for Audio/Video Equipment, Version 3.0

The below tests are performed using the above EPA Energy Star methods:

- Voltage	- Current
- Luminance	

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

Test Description:	**Test Method(s) [2,3]:**
Emissions	
Radiated & Conducted *(10m semi-anechoic chamber, up to 40 GHz)*	47 CFR, FCC Part 15B (using ANSI C63.4:2014); ANSI C63.4:2009; 47 CFR, FCC Part 18 (using MP-5:1986); IEC/CISPR 11; EN 55011; KN 11; EN/IEC 55012; CISPR 12; EC/EN 55013; CISPR 13; CNS 13439 (Only associated equipment without antenna connection); CISPR 14-1; IEC/EN 55014-1; KN 14-1; CISPR 15; IEC/EN 55015; KN 15; IEC/CISPR 22; EN 55022; AS/NZS CISPR 22:2009 + A1:2010; EN 55032; CISPR 32; KN 32; AS/NZS CISPR 32; ICES-001; ICES-003, Issue 6; VCCI V-3 (*up to 6 GHz*); CNS 13803; CNS 13783-1; CNS 13438 (*up to 6 GHz*); CNS 13439; TCVN 7189 (2009); JIS C 1806-1
Current Harmonics	IEC/EN 61000-3-2
Flicker and Fluctuations	IEC/EN 61000-3-3
Immunity	
Electrostatic Discharge	IEC 61000-4-2; EN 61000-4-2
Radiated *(20V/m 80% AM modulated @ 6 GHz)*	IEC 61000-4-3; EN 61000-4-3
Electrical Fast Transient / Burst	IEC 61000-4-4; EN 61000-4-4
Surge	IEC 61000-4-5; EN 61000-4-5
Conducted	IEC 61000-4-6; EN 61000-4-6
Power Frequency Magnetic Field	IEC 61000-4-8; EN 61000-4-8
Voltage Dips, Short Interrupts, and Voltage Variations	IEC 61000-4-11; IEC 61000-4-11
Ring Wave	IEC 61000-4-12

Test Description:	**Test Method(s) [2,3]:**
Generic / Product Specific EMC Standards	EN/IEC 61000-6-1; EN/IEC 61000-6-2; EN/IEC 61000-6-3; EN/IEC 61000-6-4; KN 61000-6-1; KN 61000-6-2; KN 61000-6-3; KN 61000-6-4; IEC/EN 61204-3; EN/IEC 60601-1-2; KN 60601-1-2; EN/IEC 61547; KN 61547; ISO 11451-4; EN/IEC 12895; EN/IEC 13309; EN 12015; EN 12016; EN/ISO 13766; EN/ISO 14982; EN 50121-3-2; EN 50121-2; EN 50121-3-1; EN 50121-4; EN 62233; EN 55103-1; EN 55103-2; EN/IEC 61326-1; EN/IEC 61326-2-6; EN/IEC 61326-3-2; EN/IEC 61800-3; KN 61800-3; CISPR 24; EN 55024; EN 50121-1; EN 50130-4; EN 55103-2; EN 50121-4; EN 50121-3-2; EN/IEC 50155; EN 50270; EN 50293; EN/IEC 55014-2; IEC/CISPR 14-2; KN 14-2; EN 50370-1; EN 50370-2; EN 50361; EN 50364; EN 50371; KN 15; KN 35 (up to 12V/m, *excluding broadcast and TV receivers*)
Generic / Product Specific EMC Standards (cont.)	ETSI EN 301 489-1; ETSI EN 301 489-3; ETSI EN 301 489-4; ETSI EN 301 489-5; ETSI EN 301 489-6; ETSI EN 301 489-7; ETSI EN 301 489-8; ETSI EN 301 489-9; ETSI EN 301 489-10; ETSI EN 301 489-12; ETSI EN 301 489-15; ETSI EN 301 489-16; ETSI EN 301 489-17; ETSI EN 301 489-18; ETSI EN 301 489-19; ETSI EN 301 489-20; ETSI EN 301 489-23; ETSI EN 301 489-24; ETSI EN 301 489-25; ETSI EN 301 489-26; ETSI EN 301489-52; ETSI TS 134 124; ETSI TS 136 124; ETSI EN 300 386 V1.5.1/ V1.6.1; KN 301 489-01; KN 301 489-03; KN 301 489-07; KN 301 489-17
Radio Communications *(up to 40 GHz) (excluding HAC)*	
Australia / New Zealand	AS/NZS 4268:2017 ACMA Radiocommunications (Short Range Devices) Standard 2004
Unlicensed Radio - FCC	CFR 47, FCC Part 2; 47 CFR, FCC Part 15, Subpart C (using ANSI C63.10:2013); 47 CFR, FCC Part 15, Subpart D (using ANSI C63.17:2013); 47 CFR, FCC Part 15, Subpart E (using ANSI C63.10:2013 and FCC KDB 905462 D02 (v01)); ANSI C63.10:2013

Test Description:	**Test Method(s) [2,3]:**
Radio Communications (cont.)	
Licensed Radio - FCC	CFR 47, FCC Part 2; CFR 47, FCC Parts 22, 24, 25, 27, 74, 80, 87, 90, 95, 97, 101 (using ANSI/TIA-603-D)
Canada	Radio Scope 1 RSS-Gen; RSS-102; RSS-210; RSS-213; RSS-215; RSS-216; RSS-220; RSS-236; RSS-238; RSS-243; RSS-244; RSS-247; RSS-251; RSS-287; RSS-288; RSS 310 Radio Scope 2 RSS-Gen; RSS-102; RSS-112; RSS-130; RSS-132; RSS-133; RSS-134; RSS-139; RSS-170 Radio Scope 3 RSS-Gen; RSS-102; RSS-111; RSS-119; RSS-123; RSS-125; RSS-127; RSS-131; RSS-135; RSS-137; RSS-197; RSS-199 Radio Scope 4 RSS-Gen; RSS-102; RSS-117; RSS-141; RSS-181; RSS-182 Radio Scope 5 RSS-Gen; RSS-102; RSS-142; RSS-191; RSS-192; RSS-194; RSS-195; RSS-196
Europe (EU)	ETSI EN 300 220-1; ETSI EN 300 220-2; ETSI EN 300 220-3; ETSI EN 300 220-4; ETSI EN 300 330-1; ETSI EN 300 330-2; ETSI EN 300 440-1; ETSI EN 300 440-2; ETSI EN 302 208-1; ETSI EN 302 208-2; ETSI EN 300 113-1; ETSI EN 300 113-2; ETSI EN 300 133-1; ETSI EN 300 133-2; ETSI EN 300 422-2; ETSI EN 301 839-1; ETSI EN 301 839-2; ETSI EN 301 893; ETSI EN 302 502
Hong Kong	HKCA 1039; HKCA 1041; HKCA 1042; HKCA 1049
Singapore	IMDA TS SRD; IMDA TS UWB
Taiwan	DGT LP0002; DGT LP0001
Japan	ARIB Standard STD-T66; ARIB Standard STD-T67; ARIB Standard STD-T70; STD-T71, STD-T82, STD-T90, STD-T106, STD-T107, STD-T108
Vietnam	QCVN 54:2011/BTTTT; QCVN 55:2011/BTTTT

Test Description:	**Test Method(s) [2,3]:**
Cellular Wireless	EN 302 511; EN 301-908-1; EN 301-908-2; EN 301-908-13; CTIA test plan for Wireless Device Over-the-air Performance ver. 3.7; CTIA test plan for Performance Evaluation of Wi-Fi Mobile Converged Devices v. 2.0.3; ETSI TS 134 114 V12.2.0 (2016-11)
SAR	IEC 62209-1; IEC 62209-2; IEEE 1528:2013; IEEE C95.1; IEEE C95.3; IEC 62209-2; EN 62209-2; EN 62311; EN 50360; EN 50364; EN 50566; EN 62479; ARPANSA Radiation Protection Series Publication No. 3; NZS 2772.1; AS/NZS 2772.2; ACMA Radiocommunications (Electromagnetic Radiation - Human Exposure) Standard 2014; ARIB T-56; Technical Requirements for the Human Protection against Electromagnetic Waves (MSIP Public Notification 2015-18, Mar 25, 2015); Technical Requirements for Measurement and Test Procedure of Specific Absorption Rate (SAR) (RRA Public Notification 2015-23, November 18, 2015); Equipment to be subject of Test Procedure for Electromagnetic Field Strength and Specific Absorption Rate (MSIP Public Notification 2016-66, Jun 23, 2016)

Republic of Korea Technical Regulations

Regulations on Radio Equipment (Enforcement decree MSIP No 78);
Unlicensed Radio Equipment Established Without Notice (MSIP Public Notification 2016-127);
Technical Requirements for Radio Equipment for Telecommunication Services
(RRA Public Notification 2016-11);
Conformity Assessment Procedure of Radio Equipment (RRA Announce 2015-135 KS X 3123);
Technical Requirements for Measurement of Electromagnetic Field Strength
(RRA Public Notification 2014-2, Feb 4, 2014)

[2]When the date, revision or edition of a test method standard is not identified on the scope of accreditation, the laboratory is required to be using the current version within one year of the date of publication, 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.

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 [4]:

Rule Subpart/Technology	Test Method	Maximum Frequency
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
Unlicensed Personal Communication Systems Devices Part 15D	ANSI C63.17:2013	40000 MHz
U-NII without DFS Intentional Radiators Part 15E	ANSI C63.10:2013	40000 MHz
U-NII with DFS Intentional Radiators Part 15E	FCC KDB 905462 D02 (v01)	40000 MHz
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	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
RF Exposure Devices Subject to SAR Requirements	IEEE Std 1528:2013	6000 MHz

[4]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 RHEINLAND OF NORTH AMERICA, INC.

Pleasanton, CA

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 6th day of June 2017.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3331.02
Valid to July 31, 2019
Revised May 03, 2019

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