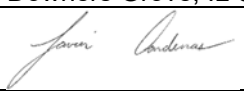
Engineering Test Report No. 2004754-05	
Report Date	December 31, 2020
Manufacturer Name	Chamberlain Group, Inc.
Manufacturer Address	300 Windsor Dr Oak Brook, IL 60523
Model No.	001D9586
Date Received	December 17, 2020
Test Dates	December 17, 2020 to December 23, 2020
Specifications	FCC 47 CFR Part 2.1093 KDB, 447498 D01 OET Bulletin 65:1997 RSS-102
Test Facility	Elite Electronic Engineering, Inc. 1516 Centre Circle, Downers Grove, IL 60515
Signature	
Tested by	Javier Cardenas
Signature	
Approved by	Raymond J. Klouda, Registered Professional Engineer of Illinois – 44894
PO Number	4900072649

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1. Report Revision History

Revision	Date	Description
–	13 JAN 2021	Initial Release of Engineering Test Report No. 2004754-05

2. Introduction

The FCC and Innovation, Science and Economic Development Canada publish standards regarding the evaluation of the RF Exposure hazard of radio communications devices. The standards provide basic restrictions on electromagnetic fields to prevent effects on nervous system functions, whole-body heat stress and heating in tissue at or near the body surface.

2.1. Scope of Tests

This document presents the results of a series of evaluations that were performed on the Chamberlain Group, Inc. Pet Portal Door, Model No. 001D9586, (hereinafter referred to as the Equipment Under Test (EUT)). The EUT was manufactured and submitted for testing by Chamberlain Group, Inc. located in Oak Brook, IL.

2.2. Purpose

The test series was performed to determine if the EUT meets the basic restrictions on power density outlined in FCC “Code of Federal Regulations” Title 47, Part 2, Section 2.1093 and RSS-102.

2.3. Identification of the EUT

The EUT was identified as follows:

EUT Identification	
Product Description	Pet Door
Model/Part No.	001D9586
S/N	Elite3
Radio Access Technology	Bluetooth 802.11b/g/n
Band of Operation	Bluetooth – 2400-2483.5MHz 802.11b/g/n - 2400-2483.5MHz/5GHz

The EUT listed above was used throughout the test series.

3. Modes of Operation

The EUT was evaluated for the following modes of operation:

Mode	Description
Combination 1	- Bluetooth: Ch 37 2402MHz - WiFi: 802.11g Ch6 2437MHz - WiFi: 802.11g Ch11 2462MHz
Combination 2	- Bluetooth: Ch 37 2402MHz - WiFi: 802.11g Ch6 2437MHz - WiFi: 802.11n20 Ch153 5765MHz

4. Test Specifications

The tests were performed to selected portions of, and in accordance with the FCC "Code of Federal Regulations" Title 47 Part 15, Subpart C, Section 15.247 test specification(s).

- 47 CFR Parts 1.1310, 2.1091 and 2.1093 Code of Federal Regulations, Title 47, Telecommunications
- KDB 447498 D01 – “RF Exposure Procedures and Equipment Authorization Polices for Mobile and Portable Devices, General RF Exposure Guidance v06”

- OET Bulletin 65 Edition 97-01:1997 – “Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields”

- ANSI/IEEE C95.1:1992 – "Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,"

- ANSI C63.10-2013, “American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices”

- RSS-102, Issue 5 Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands

5. Sample Calculations

The far field power density can be calculated using the following formula:

$$S = \frac{EIRP}{4\pi R^2} \quad (1)$$

where EIRP is in (mW), and R is the evaluation distance (cm).

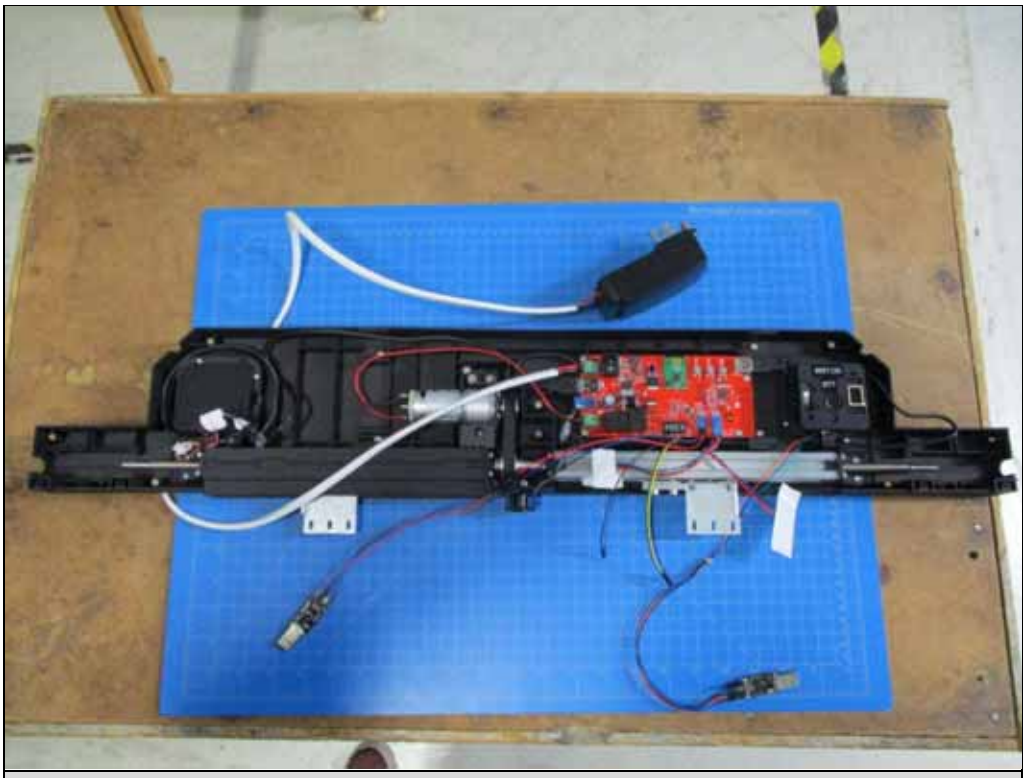
A minimum separation distance can be calculated using the following formulas

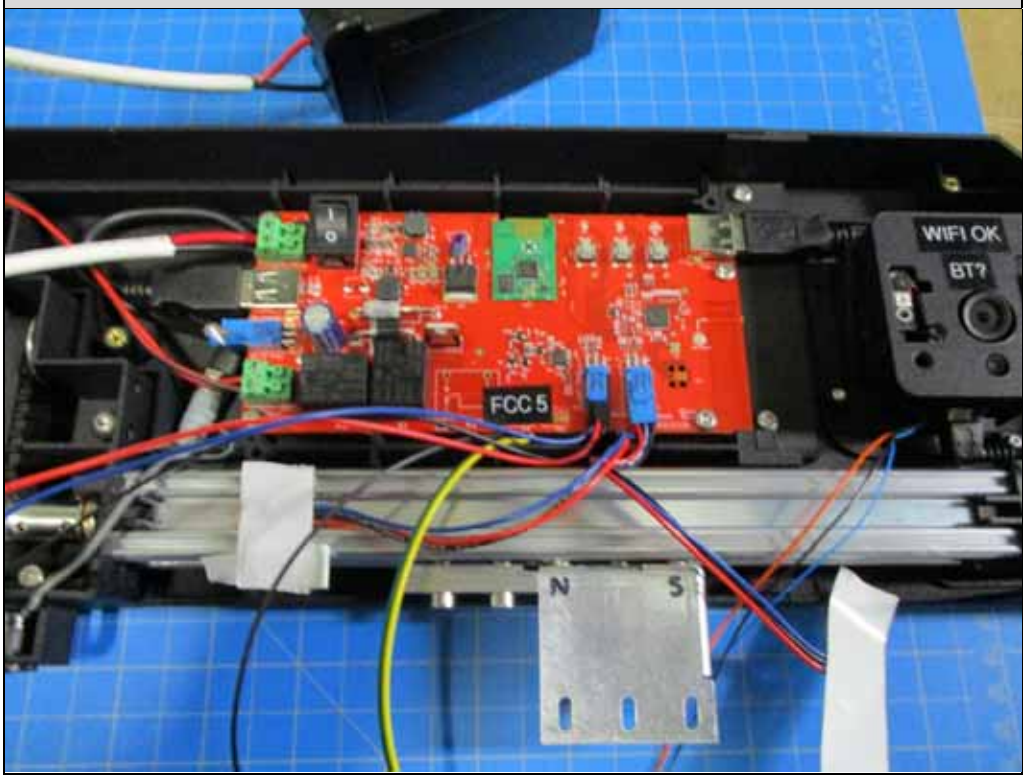
$$Minimum\ Seperation\ Distance = \sqrt{\frac{EIRP}{4\pi(Power\ Density\ Limit)}} \quad (2)$$

6. Statement of Conformity

The Chamberlain Group, Inc. Pet Portal Door, Model 001D9586 is in compliance with the FCC, Innovation, Science and Economic Development Canada, European Union and Australia/New Zealand requirements for RF Exposure at a minimum separation distance of 0.2m.

7. Photographs of EUT





8. Limits and Requirements

8.1. As mandated by the FCC

If it is determined that the product is categorically exempt from RF exposure evaluation based on the criteria listed in 1.1307(b)(1), no further investigation need be performed.

The recorded power density at distance of 0.2m from the RF source, as specified by ANSI/IEEE C95.1-1992, shall not exceed the values documented in FCC 47 CFR Part 1.1310(e). If it is determined that the resulting power density does not meet the basic restrictions, a separation distance must be measured or calculated such that the basic restrictions are met.

In environments where the possibility of simultaneous exposure to fields on different frequencies exists, the exposure shall be considered to be additive. The fraction of the recommended limit incurred within each frequency should be determined, and the sum of all fractional contributions should not exceed 1.0. The following formula shall apply:

$$\sum_{i=1}^{n} \frac{S_1}{S_{L,1}} + \frac{S_2}{S_{L,2}} + \frac{S_3}{S_{L,3}} + \cdots \frac{S_n}{S_{L,n}} \leq 1 \qquad (3)$$

where:
S is the measured/calculated power density;
S_L is the MPE limit.

Per 1.1310(e), the following restrictions on electromagnetic fields apply:

Limits for Occupational/Controlled Exposure			
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)
0.3 - 3.0	614	1.63	*100
3.0 – 30	1842 / f	4.89 / f	*900 / f^2
30 – 300	61.4	0.163	1.0
300 – 1,500	—	—	f / 300
1,500 – 100,000	—	—	5
Limits for General/Uncontrolled Exposure			
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)
0.3 – 1.34	614	1.63	*100
1.34 – 30	842 / f	2.19 / f	*180 / f^2
30 – 300	27.5	0.073	0.2
300 – 1,500	—	—	f / 1500
1,500 – 100,000	—	—	1.0
f – Frequency in MHz * – Plane wave Equivalent Power Density			

8.2. As mandated by the Innovation, Science and Economic Development Canada

If it is found that the EUT meets the low power exclusion level criteria listed in RSS-102 Section 2.5.2, no further investigation need be performed.

The recorded power density at distance of 0.2m from the RF source, as specified by ANSI/IEEE C95.1-1992, shall not exceed the values documented in RSS-102. If it is determined that the resulting power density does not meet the basic restrictions, a separation distance must be measured or calculated such that the basic restrictions are met.

In environments where the possibility of simultaneous exposure to fields on different frequencies exists, the exposure shall be considered to be additive. The fraction of the recommended limit incurred within each frequency should be determined, and the sum of all fractional contributions should not exceed 1.0. The following formula(s) shall apply:

$$\sum_{i=1}^{n} \frac{S_{C,1}}{S_{L,1}} + \frac{S_{C,2}}{S_{L,2}} + \frac{S_{C,3}}{S_{L,3}} + \cdots \frac{S_{C,n}}{S_{L,n}} \leq 1 \qquad (4)$$

where:
S_C is the measured/calculated power density;
S_L is the RF exposure limit.

Per RSS-102 Section 4, the following restrictions on electromagnetic fields apply:

Limits for Occupational/Controlled Exposure			
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (W/m^2)
1 – 10	—	1.6 / f	—
1.29 – 10	193 / $f^{0.5}$	—	—
10 – 20	61.4	0.163	10
20 – 48	129.8 / $f^{0.25}$	0.3444 / $f^{0.25}$	44.72 / $f^{0.5}$
48 – 100	49.33	0.1309	6.455
100 – 6000	15.60 $f^{0.25}$	0.04138 $f^{0.25}$	0.6455 $f^{0.5}$
6000 – 15000	137	0.364	50
15000 – 150000	137	0.364	50
150000 – 300000	0.354 $f^{0.5}$	9.40×10^{-4} $f^{0.5}$	3.33×10^{-4} f
Limits for General/Uncontrolled Exposure			
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (W/m^2)
0.1 – 10	—	0.73 / f	—
1.1 – 10	87 / $f^{0.5}$	—	—
10 – 20	27.46	0.0728	2
20 – 48	58.07 / $f^{0.25}$	0.1540 / $f^{0.25}$	8.944 / $f^{.05}$
48 – 300	22.06	0.05852	1.291
300 – 6000	3.142 $f^{0.3417}$	0.008335 $f^{0.3417}$	0.02619 $f^{0.6834}$
6000 – 15000	61.4	0.163	10
15000 – 150000	61.4	0.163	10
150000 – 300000	0.158 $f^{0.5}$	4.21×10^{-4} $f^{0.5}$	6.67×10^{-5} f
f – Frequency in MHz			

9. Assessment Results

9.1. Evaluation Results Relevant to the Requirements of the FCC

Combination 1

The Power Density was calculated for the worst case with a 100% transmitter duty cycle.

Radio Access Technology	*f* Transmit Frequency (MHz)	EIRP (dBm)	EIRP (mW)
Bluetooth	2402.00	10.30	10.72
802.11g	2437.00	16.20	41.69
802.11g	2462.00	26.75	473.15

Assessment Results Relevant to Occupational/Controlled Exposure Limits					
Radio Access Technology	*f* Transmit Frequency (MHz)	S_C Calculated Power Density (mW/cm2)	MPE Limit (mW/cm2)	S_C:MPE Ratio	Sum of S:MPE Ratios
Bluetooth	2402.00	0.00213	5.00	0.00043	0.02091
802.11g	2437.00	0.00829	5.00	0.00166	
802.11g	2462.00	0.09413	5.00	0.01883	

Assessment Results Relevant to General/Uncontrolled Exposure Limits					
Radio Access Technology	*f* Transmit Frequency (MHz)	S_C Calculated Power Density (mW/cm2)	MPE Limit (mW/cm2)	S_C:MPE Ratio	Sum of S:MPE Ratios
Bluetooth	2402.00	0.00213	1.00	0.00213	0.10456
802.11g	2437.00	0.00829	1.00	0.00829	
802.11g	2462.00	0.09413	1.00	0.09413	

The sum of calculated power density to MPE limit ratios for all the transmitters at 0.2m is ≤ 1 therefore meeting the RF exposure requirements of the FCC.

Combination 2

The Power Density was calculated for the worst case with a 100% transmitter duty cycle.

Radio Access Technology	*f* Transmit Frequency (MHz)	EIRP (dBm)	EIRP (mW)
Bluetooth	2402.00	10.30	10.72
802.11g	2437.00	16.20	41.69
802.11n	5765.00	19.48	88.72

Assessment Results Relevant to Occupational/Controlled Exposure Limits					
Radio Access Technology	*f* Transmit Frequency (MHz)	S_C Calculated Power Density (mW/cm2)	MPE Limit (mW/cm2)	S_C:MPE Ratio	Sum of S:MPE Ratios
Bluetooth	2402.00	0.00213	5.00	0.00043	0.00561
802.11g	2437.00	0.00829	5.00	0.00166	
802.11n	5765.00	0.01765	5.00	0.00353	

Assessment Results Relevant to General/Uncontrolled Exposure Limits					
Radio Access Technology	*f* Transmit Frequency (MHz)	S_C Calculated Power Density (mW/cm2)	MPE Limit (mW/cm2)	S_C:MPE Ratio	Sum of S:MPE Ratios
Bluetooth	2402.00	0.00213	1.00	0.00213	0.02807
802.11g	2437.00	0.00829	1.00	0.00829	
802.11n	5765.00	0.01765	1.00	0.01765	

The sum of calculated power density to MPE limit ratios for all the transmitters at 0.2m is ≤ 1 therefore meeting the RF exposure requirements of the FCC.

9.2. Evaluation Results Relevant to the Requirements of the ISED

Combination 1

The Power Density was calculated for the worst case with a 100% transmitter duty cycle.

Radio Access Technology	*f* Transmit Frequency (MHz)	EIRP (dBm)	EIRP (W)
Bluetooth	2402	10.3	0.010715193
802.11g	2437	16.2	0.041686938
802.11ng	2462	26.75	0.473151259

Assessment Results Relevant to Occupational/Controlled Exposure Limits					
Radio Access Technology	*f* Transmit Frequency (MHz)	S_C Calculated Power Density (W/m^2)	S_L Power Density Limit (W/m^2)	S_C:S_L Ratio	Sum of S_C:S_L Ratios
Bluetooth	2402	0.02132	31.64	0.00067	0.03267
802.11g	2437	0.08293	31.87	0.00260	
802.11ng	2462	0.94130	32.03	0.02939	

Assessment Results Relevant to General/Uncontrolled Exposure Limits					
Radio Access Technology	*f* Transmit Frequency (MHz)	S_C Calculated Power Density (W/m^2)	S_L Power Density Limit (W/m^2)	S_C:S_L Ratio	Sum of S_C:S_L Ratios
Bluetooth	2402	0.02132	5.35	0.00398	0.19231
802.11g	2437	0.08293	5.40	0.01535	
802.11ng	2462	0.94130	5.44	0.17298	

The sum of calculated power density to exposure limit ratios for all the transmitters at 0.2m is ≤ 1 therefore meeting the RF exposure requirements of the ISED.

Combination 2

The Power Density was calculated for the worst case with a 100% transmitter duty cycle.

Radio Access Technology	*f* Transmit Frequency (MHz)	EIRP (dBm)	EIRP (W)
Bluetooth	2402	10.3	0.010715193
802.11g	2437	16.2	0.041686938
802.11n	5765	19.48	0.088715601

Assessment Results Relevant to Occupational/Controlled Exposure Limits					
Radio Access Technology	*f* Transmit Frequency (MHz)	S_C Calculated Power Density (W/m^2)	S_L Power Density Limit (W/m^2)	S_C:S_L Ratio	Sum of S_C:S_L Ratios
Bluetooth	2402	0.02132	31.64	0.00067	0.00688
802.11g	2437	0.08293	31.87	0.00260	
802.11n	5765	0.17649	49.01	0.00360	

Assessment Results Relevant to General/Uncontrolled Exposure Limits					
Radio Access Technology	*f* Transmit Frequency (MHz)	S_C Calculated Power Density (W/m^2)	S_L Power Density Limit (W/m^2)	S_C:S_L Ratio	Sum of S_C:S_L Ratios
Bluetooth	2402	0.02132	5.35	0.00398	0.03746
802.11g	2437	0.08293	5.40	0.01535	
802.11n	5765	0.17649	9.73	0.01813	

The sum of calculated power density to exposure limit ratios for all the transmitters at 0.2m is ≤ 1 therefore meeting the RF exposure requirements of the ISED.

10. Scope of Accreditation

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

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ELECTRICAL

Valid to: June 30, 2021 Certificate Number: 1786.01

In recognition of the successful completion of the A2LA Accreditation Program evaluation process, accreditation is granted to this laboratory to perform the following automotive electromagnetic compatibility and other electrical tests:

Test Technology:	Test Method(s)[1]:
Transient Immunity	ISO 7637-2 (including emissions); ISO 7637-3; ISO 16750-2:2012, Sections 4.6.3 and 4.6.4; CS-11979, Section 6.4; CS.00054, Section 5.9; EMC-CS-2009.1 (CI220); FMC1278 (CI220, CI221, CI222); GMW 3097, Section 3.5; SAE J1113-11; SAE J1113-12
Electrostatic Discharge (ESD)	ISO 10605 (2001, 2008); CS-11979 Section 7.0; CS.00054, Section 5.10; EMC-CS-2009.1 (CI 280); FMC1278 (CI280); SAE J1113-13; GMW 3097 Section 3.6
Conducted Emissions	CISPR 25 (2002, 2008), Sections 6.2 and 6.3; CISPR 25 (2016), Sections 6.3 and 6.4; CS-11979, Section 5.1; CS.00054, Sections 5.6.1 and 5.6.2; GMW 3097, Section 3.3.2; EMC-CS-2009.1 (CE 420); FMC1278 (CE420, CE421)
Radiated Emissions Anechoic	CISPR 25 (2002, 2008), Section 6.4; CISPR 25 (2016), Section 6.5; CS-11979, Section 5.3; CS.00054, Section 5.6.3; GMW 3097, Section 3.3.1; EMC-CS-2009.1 (RE 310); FMC1278 (RE310)
Vehicle Radiated Emissions	CISPR 12; ICES-002

Test Technology:	Test Method(s)[1]:
Bulk Current Injection (BCI)	ISO 11452-4; CS-11979, Section 6.1; CS.00054, Section 5.8.1; GMW 3097, Section 3.4.1; SAE J1113-4; EMC-CS-2009.1 (RI112); FMC1278 (RI112)
Bulk Current Injections (BCI) *(Closed Loop Method)*	ISO 11452-4; SAE J1113-4
Radiated Immunity Anechoic *(Including Radar Pulse)*	ISO 11452-2; ISO 11452-5; CS-11979, Section 6.2; CS.00054, Section 5.8.2; GMW 3097, Section 3.4.2; EMC-CS-2009.1 (RI114); FMC1278 (RI114); SAE J1113-21
Radiated Immunity Magnetic Field	ISO 11452-8
Radiated Immunity Reverb	ISO/IEC 61000-4-21; GMW 3097, Section 3.4.3; EMC-CS-2009.1 (RI114); FMC1278 (RI114); ISO 11452-11
Radiated Immunity *(Portable Transmitters)*	ISO 11452-9; EMC-CS-2009.1 (RI115); FMC1278 (RI115)
Vehicle Radiated Immunity (ALSE)	ISO 11451-2
Electrical Loads	ISO 16750-2, Sections 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9, 4.11, and 4.12
Dielectric Withstand Voltage	MIL-STD-202, Method 301; EIA-364-20D
Insulation Resistance	MIL-STD-202, Method 302; SAE/USCAR-2, Revision 6, Section 5.5.1; EIA-364-21D
Contact Resistance	MIL-STD-202, Method 307; SAE/USCAR-2, Revision 6, Section 5.3.1; EIA/ECA-364-23C; USCAR21-3 Section 4.5.3
DC Resistance	MIL-STD-202, Method 303
Contact Chatter	MIL-STD-202, Method 310; SAE/USCAR-2, Revision 6, Section 5.1.9
Voltage Drop	SAE/USCAR-2, Revision 6, Section 5.3.2; USCAR21-3 Section 4.5.6

Test Technology:	Test Method(s)[1]:
Emissions	
Radiated and Conducted (3m Semi-anechoic chamber, up to 40 GHz)	47 CFR, FCC Part 15 B (using ANSI C63.4:2014); 47 CFR, FCC Part 18 (using FCC MP-5:1986); ICES-001; ICES-003; ICES-005; IEC/CISPR 11, Ed. 4.1 (2004-06); AS/NZS CISPR 11 (2004); IEC/CISPR 11 Ed 5 (2009-05) + A1 (2010); KN 11 (2008-5) with RRL Notice No. 2008-3 (May 20, 2008); CISPR 11; EN 55011; KN 11; CNS 13803 (1997, 2003); CISPR 14-1; EN 55014-1; AS/NZS CISPR 14.1; KN 14-1; IEC/CISPR 22 (1997); EN 55022 (1998) + A1(2000); EN 55022 (1998) + A1(2000) + A2(2003); EN 55022 (2006); IEC/CISPR 22 (2008-09); AS/NZS CISPR 22 (2004); AS/NZS CISPR 22, 3rd Edition (2006); KN 22 (up to 6 GHz); CNS 13438 (up to 6 GHz); VCCI V-3 (up to 6 GHz); CISPR 32; EN 55032; KN 32
Current Harmonics	IEC 61000-3-2; EN 61000-3-2; KN 61000-3-2
Flicker and Fluctuations	IEC 61000-3-3; EN 61000-3-3; KN 61000-3-3
Immunity	
Electrostatic Discharge	IEC 61000-4-2, Ed. 1.2 (2001); IEC 61000-4-2 (1995) + A1(1998) + A2(2000); EN 61000-4-2 (1995); EN 61000-4-2 (2009-05); KN 61000-4-2 (2008-5); RRL Notice No. 2008-4 (May 20, 2008); IEC 61000-4-2; EN 61000-4-2; KN 61000-4-2; IEEE C37.90.3 2001
Radiated Immunity	IEC 61000-4-3 (1995) + A1(1998) + A2(2000); IEC 61000-4-3, Ed. 3.0 (2006-02); IEC 61000-4-3, Ed. 3.2 (2010); KN 61000-4-3 (2008-5); RRL Notice No. 2008-4 (May 20, 2008); IEC 61000-4-3; EN 61000-4-3; KN 61000-4-3; IEEE C37.90.2 2004
Electrical Fast Transient/Burst	IEC 61000-4-4, Ed. 2.0 (2004-07); IEC 61000-4-4, Ed. 2.1 (2011); IEC 61000-4-4 (1995) + A1(2000) + A2(2001); KN 61000-4-4 (2008-5); RRL Notice No. 2008-5 (May 20, 2008); IEC 61000-4-4; EN 61000-4-4; KN 61000-4-4
Surge	IEC 61000-4-5 (1995) + A1(2000); IEC 61000-4-5, Ed 1.1 (2005-11); EN 61000-4-5 (1995) + A1(2001); KN 61000-4-5 (2008-5); RRL Notice No. 2008-4 (May 20, 2008); IEC 61000-4-5; EN 61000-4-5; KN 61000-4-5; IEEE C37.90.1 2012

Test Technology:	Test Method(s)[1]:
Immunity (cont'd)	
Conducted Immunity	IEC 61000-4-6 (1996) + A1(2000); IEC 61000-4-6, Ed 2.0 (2006-05); IEC 61000-4-6 Ed. 3.0 (2008); KN 61000-4-6 (2008-5); RRL Notice No. 2008-4 (May 20, 2008); EN 61000-4-6 (1996) + A1(2001); IEC 61000-4-6; EN 61000-4-6; KN 61000-4-6
Power Frequency Magnetic Field Immunity	IEC 61000-4-8 (1993) + A1(2000); IEC 61000-4-8 (2009); EN 61000-4-8 (1994) + A1(2000); KN 61000-4-8 (2008-5); RRL Notice No. 2008-4 (May 20, 2008); IEC 61000-4-8; EN 61000-4-8; KN 61000-4-8
Voltage Dips, Short Interrupts, and Line Voltage Variations	IEC 61000-4-11, Ed. 2 (2004-03); KN 61000-4-11 (2008-5); RRL Notice No. 2008-4 (May 20, 2008); IEC 61000-4-11; EN 61000-4-11; KN 61000-4-11
Ring Wave	IEC 61000-4-12, Ed. 2 (2006-09); EN 61000-4-12:2006; IEC 61000-4-12; EN 61000-4-12; KN 61000-4-12
Generic and Product Specific EMC Standards	IEC/EN 61000-6-1; AS/NZS 61000-6-1; KN 61000-6-1; IEC/EN 61000-6-2; AS/NZS 61000-6-2; KN 61000-6-2; IEC/EN 61000-6-3; AS/NZS 61000-6-3; KN 61000-6-3; IEC/EN 61000-6-4; AS/NZS 61000-6-4; KN 61000-6-4; EN 50130-4; IEC 61326-1; IEC/CISPR 14-2; EN 55014-2; AS/NZS CISPR 14.2; KN 14-2; IEC/CISPR 24; AS/NZS CISPR 24; EN 55024; KN 24; IEC 60601-1-2; JIS T0601-1-2
TxRx EMC Requirements	EN 301 489-1; EN 301 489-3; EN 301 489-9; EN 301 489-17; EN 301 489-19; EN 301 489-52;
European Radio Test Standards	ETSI EN 300 086-1; ETSI EN 300 086-2; ETSI EN 300 113-1; ETSI EN 300 113-2; ETSI EN 300 220-1; ETSI EN 300 220-2; ETSI EN 300 330-1; ETSI EN 300 330-2; ETSI EN 300 440-1; ETSI EN 300 440-2; ETSI EN 300 422-1; ETSI EN 300 422-2; ETSI EN 300 328; ETSI EN 301 893; ETSI EN 301 511; ETSI EN 301 908-1; ETSI EN 908-2; ETSI EN 908-13; ETSI EN 301 413; ETSI EN 302 502

Test Technology:	Test Method(s)[1]:
Canadian Radio Tests	RSS-102 (RF Exposure Evaluation only); 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-140; RSS-141; RSS-142; RSS-170; RSS-181; RSS-182; RSS-191; RSS-192; RSS-194; RSS-195; 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-246; RSS-247; RSS-251; RSS-252; RSS-287; RSS-288; RSS-310; RSS-GEN
Mexico Radio Tests	IFT-008; NOM-208-SCFI
Japan Radio Tests	Radio Law No. 131, Ordinance of MPT No. 37, 1981, MIC Notification No. 88:2004, Table No. 22-11; ARIB STD-T66, Regulation 18
Taiwan Radio Tests	LP-0002
Australia/New Zealand Radio Tests	AS/NZS 4268; Radiocommunications (Short Range Devices) Standard (2014)
Hong Kong Radio Tests	HKCA 1039 Issue 6; HKCA 1042; HKCA 1033 Issue 7; HKCA 1061; HKCA 1008; HKCA 1043; HKCA 1057; HKCA 1073
Korean Radio Test Standards	KN 301 489-1; KN 301 489-3; KN 301 489-9; KN 301 489-17; KN 301 489-52
Unlicensed Radio Frequency Devices *(3 Meter Semi-Anechoic Room)*	47 CFR FCC Part 15C, 15D, 15E, 15F, 15G, 15H (using ANSI C63.10:2013, ANSI C63.17:2013 and FCC KDB 905462 D02 (v02))
Licensed Radio Service Equipment	47 CFR FCC Parts 20, 22, 24, 25, 27, 30, 73, 74, 80, 87, 90, 95, 96, 97, 101; ANSI/TIA-603-E; TIA-102.CAAA-E; ANSI C63.26:2015;
OTA (Over the Air) Performance GSM, GPRS, EGPRS UMTS (W-CDMA) LTE including CAT M1 A-GPS for UMTS/GSM LTS A-GPS, A-GLONASS, SIB8/SIB16 Large Device/Laptop/Tablet Testing Integrated Device Testing WiFi 802.11 a/b/g/n/ac	CTIA Test Plan for Wireless Device Over-the-Air Performance (Method for Measurement for Radiated Power and Receiver Performance) V3.8.2; CTIA Test Plan for RF Performance Evaluation of WiFi Mobile Converged Devices V2.1.0

Test Technology:	Test Method(s)[1]:
Electrical Measurements and Simulation	
AC Voltage / Current	FAA AC 150/5345-10H
(1mV to 5kV) 60 Hz	FAA AC 150/5345-43J
(0.1V to 250V) up to 500 MHz	FAA AC 150/5345-44K
(1µA to 150A) 60 Hz	FAA AC 150/5345-46E
DC Voltage / Current	FAA AC 150/5345-47C
(1mV to 15-kV) / (1µA to 10A)	FAA EB 67D
Power Factor / Efficiency / Crest Factor	
(Power to 30kW)	
Resistance	
(1mΩ to 4000MΩ)	
Surge	
(Up to 10 kV / 5 kA) (Combination Wave and Ring Wave)	

On the following products and materials:
Telecommunications Terminal Equipment (TTE), Radio Equipment, Network Equipment, Information Technology Equipment (ITE), Automotive Electronic Equipment, Automotive Hybrid Electronic Devices, Maritime Navigation and Radio Communication Equipment and Systems, Vehicles, Boats and Internal Combustion Engine Driven Devices, Automotive, Aviation, and General Lighting Products, Medical Electrical Equipment, Motors, Industrial, Scientific and Medical (ISM) Radio-Frequency Equipment, Household Appliances, Electric Tools, Low-voltage Switchgear and Control gear, Programmable Controllers, Electrical Equipment for Measurement, Control and Laboratory Use, Base Materials, Power and Data Transmission Cables and Connectors

[1] 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 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*.

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[2]

Rule Subpart/Technology	Test Method	Maximum Frequency (MHz)
Unintentional Radiators Part 15B	ANSI C63.4:2014	40000
Industrial, Scientific, and Medical Equipment Part 18	FCC MP-5 (February 1986)	40000
Intentional Radiators Part 15C	ANSI C63.10:2013	40000
Unlicensed Personal Communication Systems Devices Part 15D	ANSI C63.17:2013	40000

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[2]

Rule Subpart/Technology	Test Method	Maximum Frequency (MHz)
U-NII without DFS Intentional Radiators Part 15E	ANSI C63.10:2013	40000
U-NII with DFS Intentional Radiators Part 15E	FCC KDB 905462 D02 (v02)	40000
UWB Intentional Radiators Part 15F	ANSI C63.10:2013	40000
BPL Intentional Radiators Part 15G	ANSI C63.10:2013	40000
White Space Device Intentional Radiators Part 15H	ANSI C63.10:2013	40000
Commercial Mobile Services (FCC Licensed Radio Service Equipment) Parts 22 (cellular), 24, 25 (below 3 GHz), and 27	ANSI/TIA-603-E; TIA-102.CAAA-E; ANSI C63.26:2015	40000
General Mobile Radio Services (FCC Licensed Radio Service Equipment) Parts 22 (non-cellular), 90 (below 3 GHz), 95, 97, and 101 (below 3 GHz)	ANSI/TIA-603-E; TIA-102.CAAA-E; ANSI C63.26:2015	40000
Citizens Broadband Radio Services (FCC Licensed Radio Service Equipment) Part 96	ANSI/TIA-603-E; TIA-102.CAAA-E; ANSI C63.26:2015	40000
Maritime and Aviation Radio Services Parts 80 and 87	ANSI/TIA-603-E; ANSI C63.26:2015	40000
Microwave and Millimeter Bands Radio Services Parts 25, 30, 74, 90 (above 3 GHz), 97 (above 3 GHz), and 101	ANSI/TIA-603-E; TIA-102.CAAA-E; ANSI C63.26:2015	40000
Broadcast Radio Services Parts 73 and 74 (below 3 GHz)	ANSI/TIA-603-E; TIA-102.CAAA-E; ANSI C63.26:2015	40000

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[2]

Rule Subpart/Technology	Test Method	Maximum Frequency (MHz)
Signal Boosters Part 20 (Wideband Consumer Signal Boosters, Provider-specific signal boosters, and Industrial Signal Boosters) Section 90.219	ANSI C63.26:2015	40000

[2]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

ELITE ELECTRONIC ENGINEERING INC.

Downers Grove, IL

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *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 April 2017*).

Presented this 8th day of August 2019.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1786.01
Valid to June 30, 2021

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