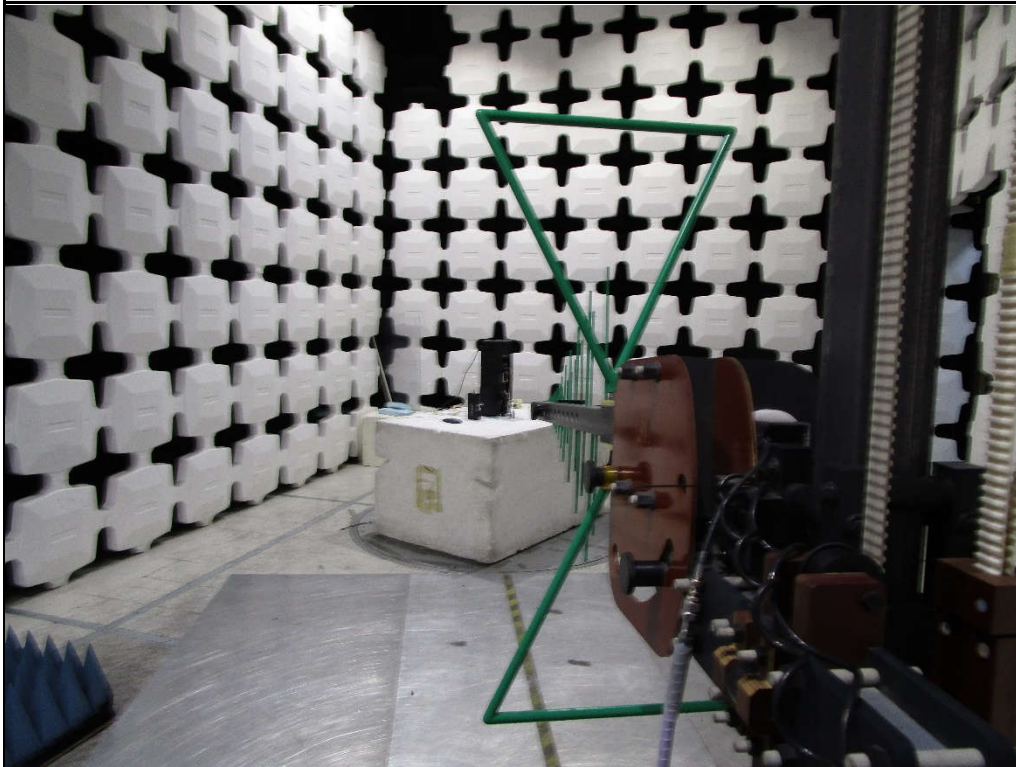
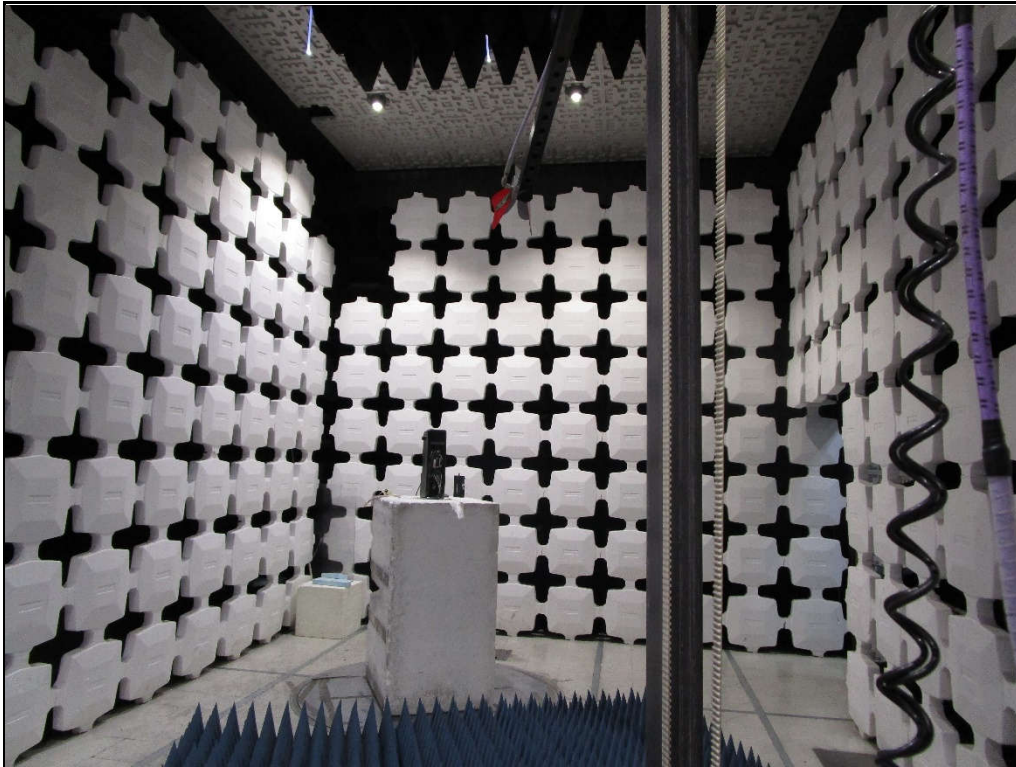


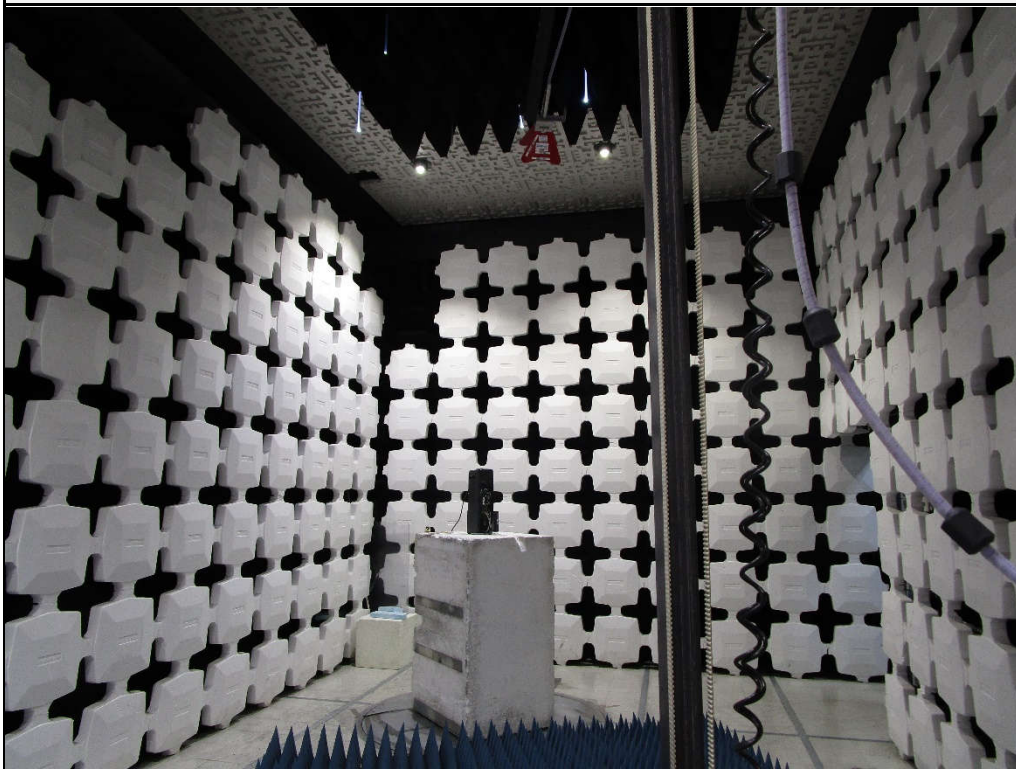
Test Setup for Spurious Radiated Emissions, 30MHz – 1GHz – Antenna Polarization Horizontal



Test Setup for Spurious Radiated Emissions, 30MHz – 1GHz – Antenna Polarization Vertical



Test Setup for Spurious Radiated Emissions, Above 1GHz – Antenna Polarization Horizontal



Test Setup for Spurious Radiated Emissions, Above 1GHz – Antenna Polarization Vertical

Test Details	
Manufacturer	Chamberlain Group, LLC.
EUT	Residential Jackshaft Opener
Model No.	RJOA MPP
Serial No.	Radiated Sample 2
Test	Peak Measurements in the Restricted Bands
Mode	Transmit at 902.25MHz
Date Tested	December 2, 2022 through December 5, 2022
Notes	

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Total dBuV/m at 3m	Total uV/m at 3 m	Limit uV/m at 3 m	Margin (dB)
2706.75	H	57.0		2.8	33.4	-40.2	53.0	448.0	5000.0	-21.0
2706.75	V	55.7		2.8	33.4	-40.2	51.7	385.7	5000.0	-22.3
3609.00	H	62.5		3.2	34.6	-39.5	60.8	1098.8	5000.0	-13.2
3609.00	V	59.4		3.2	34.6	-39.5	57.7	769.0	5000.0	-16.3
4511.25	H	51.7		3.6	35.9	-39.6	51.6	380.5	5000.0	-22.4
4511.25	V	51.2		3.6	35.9	-39.6	51.1	359.2	5000.0	-22.9
5413.50	H	53.9		3.9	36.6	-39.5	54.9	556.8	5000.0	-19.1
5413.50	V	53.1		3.9	36.6	-39.5	54.1	507.8	5000.0	-19.9
8120.25	H	48.8	Ambient	4.9	38.3	-39.6	52.4	417.6	5000.0	-21.6
8120.25	V	48.8	Ambient	4.9	38.3	-39.6	52.4	417.6	5000.0	-21.6
9022.50	H	47.8	Ambient	4.9	38.6	-39.4	52.0	396.3	5000.0	-22.0
9022.50	V	48.0	Ambient	4.9	38.6	-39.4	52.2	405.5	5000.0	-21.8

Test Details	
Manufacturer	Chamberlain Group, LLC.
EUT	Residential Jackshaft Opener
Model No.	RJOA MPP
Serial No.	Radiated Sample 2
Test	Average Measurements in the Restricted Bands
Mode	Transmit at 902.25MHz
Date Tested	December 2, 2022 through December 5, 2022
Notes	

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Duty Cycle (dB)	Average Total dBuV/m at 3m	Average Total uV/m at 3 m	Average Limit uV/m at 3 m	Margin (dB)
2706.75	H	57.00		2.8	33.4	-40.2	-37.9	15.2	5.7	500.0	-38.8
2706.75	V	55.7		2.8	33.4	-40.2	-37.9	13.9	4.9	500.0	-40.1
3609.00	H	62.5		3.2	34.6	-39.5	-37.9	22.9	14.0	500.0	-31.0
3609.00	V	59.4		3.2	34.6	-39.5	-37.9	19.8	9.8	500.0	-34.1
4511.25	H	51.7		3.6	35.9	-39.6	-37.9	13.7	4.9	500.0	-40.2
4511.25	V	51.2		3.6	35.9	-39.6	-37.9	13.2	4.6	500.0	-40.7
5413.50	H	53.9		3.9	36.6	-39.5	-37.9	17.0	7.1	500.0	-36.9
5413.50	V	53.1		3.9	36.6	-39.5	-37.9	16.2	6.5	500.0	-37.7
8120.25	H			4.9	38.3	-39.6	-37.9	-34.3	0.0	500.0	-88.2
8120.25	V	48.8	Ambient	4.9	38.3	-39.6	-37.9	14.5	5.3	500.0	-39.4
9022.50	H	47.8	Ambient	4.9	38.6	-39.4	-37.9	14.1	5.1	500.0	-39.9
9022.50	V	48.0	Ambient	4.9	38.6	-39.4	-37.9	14.3	5.2	500.0	-39.7

Test Details	
Manufacturer	Chamberlain Group, LLC.
EUT	Residential Jackshaft Opener
Model No.	RJOA MPP
Serial No.	Radiated Sample 2
Test	Peak Measurements in the Non-Restricted Bands
Mode	Transmit at 902.25MHz
Date Tested	December 2, 2022 through December 5, 2022
Notes	

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Peak Total dBuV/m at 3m	Peak Total uV/m at 3 m	Peak Limit uV/m at 3 m	Margin (dB)
902.25	H	84.4		1.5	26.5	0.0	112.4	418018.7	NA	NA
902.25	V	82.1		1.5	26.5	0.0	110.1	320771.5	NA	NA
1804.50	H	70.6		2.2	31.5	-40.1	64.2	1622.2	41801.9	-28.2
1804.50	V	71.9		2.2	31.5	-40.1	65.5	1884.1	41801.9	-26.9
6315.75	H	60.3		4.3	38.1	-39.6	63.1	1431.4	41801.9	-29.3
6315.75	V	59.6		4.3	38.1	-39.6	62.4	1320.5	41801.9	-30.0
7218.00	H	52.8		4.6	38.4	-39.7	56.2	644.0	41801.9	-36.2
7218.00	V	45.9		4.6	38.4	-39.7	49.3	291.0	41801.9	-43.1

Test Details	
Manufacturer	Chamberlain Group, LLC.
EUT	Residential Jackshaft Opener
Model No.	RJOA MPP
Serial No.	Radiated Sample 2
Test	Peak Measurements in the Restricted Bands
Mode	Transmit at 914.75MHz
Date Tested	December 2, 2022 through December 5, 2022
Notes	

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Peak Total dBuV/m at 3m	Peak Total uV/m at 3 m	Peak Limit uV/m at 3 m	Margin (dB)
2744.25	H	56.3		2.8	33.2	-40.2	52.1	404.7	5000.0	-21.8
2744.25	V	53.7		2.8	33.2	-40.2	49.5	300.0	5000.0	-24.4
3659.00	H	61.6		3.3	34.8	-39.5	60.1	1013.0	5000.0	-13.9
3659.00	V	60.9		3.3	34.8	-39.5	59.4	934.6	5000.0	-14.6
4573.75	H	49.6	Ambient	3.6	36.4	-39.7	49.9	311.6	5000.0	-24.1
4573.75	V	49.6	Ambient	3.6	36.4	-39.7	49.9	311.6	5000.0	-24.1
7318.00	H	51.2		4.7	38.2	-39.6	54.4	527.8	5000.0	-19.5
7318.00	V	49.1	Ambient	4.7	38.2	-39.6	52.3	414.5	5000.0	-21.6
8232.75	H	48.4	Ambient	4.9	38.4	-39.5	52.2	407.4	5000.0	-21.8
8232.75	V	48.0	Ambient	4.9	38.4	-39.5	51.8	389.0	5000.0	-22.2
9147.50	H	48.4	Ambient	5.0	38.7	-39.4	52.7	433.1	5000.0	-21.2
9147.50	V	48.3	Ambient	5.0	38.7	-39.4	52.6	428.2	5000.0	-21.3

Test Details	
Manufacturer	Chamberlain Group, LLC.
EUT	Residential Jackshaft Opener
Model No.	RJOA MPP
Serial No.	Radiated Sample 2
Test	Average Measurements in the Restricted Bands
Mode	Transmit at 914.75MHz
Date Tested	December 2, 2022 through December 5, 2022
Notes	

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Duty Cycle (dB)	Average Total dBuV/m at 3m	Average Total uV/m at 3 m	Average Limit uV/m at 3 m	Margin (dB)
2744.25	H	56.30		2.8	33.2	-40.2	-37.9	14.3	5.2	500.0	-39.7
2744.25	V	53.7		2.8	33.2	-40.2	-37.9	11.7	3.8	500.0	-42.3
3659.00	H	61.6		3.3	34.8	-39.5	-37.9	22.2	12.9	500.0	-31.7
3659.00	V	60.9		3.3	34.8	-39.5	-37.9	21.5	11.9	500.0	-32.4
4573.75	H	49.6	Ambient	3.6	36.4	-39.7	-37.9	12.0	4.0	500.0	-42.0
4573.75	V			3.6	36.4	-39.7	-37.9	-37.6	0.0	500.0	-91.6
7318.00	H	51.2		4.7	38.2	-39.6	-37.9	16.6	6.7	500.0	-37.4
7318.00	V	49.1	Ambient	4.7	38.2	-39.6	-37.9	14.5	5.3	500.0	-39.5
8232.75	H	48.4	Ambient	4.9	38.4	-39.5	-37.9	14.3	5.2	500.0	-39.6
8232.75	V	48.0	Ambient	4.9	38.4	-39.5	-37.9	13.9	5.0	500.0	-40.0
9147.50	H	48.4	Ambient	5.0	38.7	-39.4	-37.9	14.9	5.5	500.0	-39.1
9147.50	V			5.0	38.7	-39.4	-37.9	-33.5	0.0	500.0	-87.5

Test Details	
Manufacturer	Chamberlain Group, LLC.
EUT	Residential Jackshaft Opener
Model No.	RJOA MPP
Serial No.	Radiated Sample 2
Test	Peak Measurements in the Non-Restricted Bands
Mode	Transmit at 914.75MHz
Date Tested	December 2, 2022 through December 5, 2022
Notes	

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Peak Total dBuV/m at 3m	Peak Total uV/m at 3 m	Peak Limit uV/m at 3 m	Margin (dB)
914.75	H	82.3		1.6	26.3	0.0	110.2	322552.0	NA	NA
914.75	V	81.9		1.6	26.3	0.0	109.8	308034.7	NA	NA
1829.50	H	72.5		2.2	31.7	-40.1	66.3	2068.3	32255.2	-23.9
1829.50	V	74.1		2.2	31.7	-40.1	67.9	2486.6	32255.2	-22.3
5488.50	H	55.8		3.9	36.7	-39.4	57.0	710.8	32255.2	-33.1
5488.50	V	53.9		3.9	36.7	-39.4	55.1	571.2	32255.2	-35.0
6403.25	H	61.1		4.3	38.0	-39.5	63.8	1556.7	32255.2	-26.3
6403.25	V	56.8		4.3	38.0	-39.5	59.5	948.9	32255.2	-30.6



Test Details	
Manufacturer	Chamberlain Group, LLC.
EUT	Residential Jackshaft Opener
Model No.	RJOA MPP
Serial No.	Radiated Sample 2
Test	Peak Measurements in the Restricted Bands
Mode	Transmit at 926.75MHz
Date Tested	December 2, 2022 through December 5, 2022
Notes	

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Peak Total dBuV/m at 3m	Peak Total uV/m at 3 m	Peak Limit uV/m at 3 m	Margin (dB)
2780.25	H	55.6		2.8	32.9	-40.1	51.2	364.6	5000.0	-22.7
2780.25	V	53.6		2.8	32.9	-40.1	49.2	289.6	5000.0	-24.7
3707.00	H	58.8		3.3	34.4	-39.5	57.0	710.3	5000.0	-17.0
3707.00	V	58.8		3.3	34.4	-39.5	57.0	710.3	5000.0	-17.0
4633.75	H	49.8	Ambient	3.6	36.7	-39.6	50.5	334.6	5000.0	-23.5
4633.75	V	49.1	Ambient	3.6	36.7	-39.6	49.8	308.7	5000.0	-24.2
7414.00	H	49.9	Ambient	4.7	38.0	-39.6	53.1	449.5	5000.0	-20.9
7414.00	V	48.0	Ambient	4.7	38.0	-39.6	51.2	361.2	5000.0	-22.8
8340.75	H	48.7	Ambient	4.9	38.3	-39.5	52.5	422.9	5000.0	-21.5
8340.75	V	48.8	Ambient	4.9	38.3	-39.5	52.6	427.8	5000.0	-21.4

Test Details	
Manufacturer	Chamberlain Group, LLC.
EUT	Residential Jackshaft Opener
Model No.	RJOA MPP
Serial No.	Radiated Sample 2
Test	Average Measurements in the Restricted Bands
Mode	Transmit at 926.75MHz
Date Tested	December 2, 2022 through December 5, 2022
Notes	

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Duty Cycle (dB)	Average Total dBuV/m at 3m	Average Total uV/m at 3 m	Average Limit uV/m at 3 m	Margin (dB)
2780.25	H	55.60		2.8	32.9	-40.1	-37.9	13.4	4.7	500.0	-40.6
2780.25	V	53.6		2.8	32.9	-40.1	-37.9	11.4	3.7	500.0	-42.6
3707.00	H	58.8		3.3	34.4	-39.5	-37.9	19.2	9.1	500.0	-34.8
3707.00	V	58.8		3.3	34.4	-39.5	-37.9	19.2	9.1	500.0	-34.8
4633.75	H	49.5	Ambient	3.6	36.7	-39.6	-37.9	12.3	4.1	500.0	-41.7
4633.75	V	49.1	Ambient	3.6	36.7	-39.6	-37.9	11.9	3.9	500.0	-42.1
7414.00	H	49.9	Ambient	4.7	38.0	-39.6	-37.9	15.2	5.7	500.0	-38.8
7414.00	V	48.0	Ambient	4.7	38.0	-39.6	-37.9	13.3	4.6	500.0	-40.7
8340.75	H	48.7	Ambient	4.9	38.3	-39.5	-37.9	14.7	5.4	500.0	-39.3
8340.75	V			4.9	38.3	-39.5	-37.9	-34.0	0.0	500.0	-88.0

Test Details	
Manufacturer	Chamberlain Group, LLC.
EUT	Residential Jackshaft Opener
Model No.	RJOA MPP
Serial No.	Radiated Sample 2
Test	Peak Measurements in the Non-Restricted Bands
Mode	Transmit at 926.75MHz
Date Tested	December 2, 2022 through December 5, 2022
Notes	

Freq. MHz	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Peak Total dBuV/m at 3m	Peak Total uV/m at 3 m	Peak Limit uV/m at 3 m	Margin (dB)
926.75	H	82.3		1.6	26.7	0.0	110.5	335942.9	NA	NA
926.75	V	81.2		1.6	26.7	0.0	109.4	295982.1	NA	NA
1853.50	H	73.5		2.3	31.9	-40.1	67.5	2384.2	33594.3	-23.0
1853.50	V	75.3		2.3	31.9	-40.1	69.3	2933.2	33594.3	-21.2
5560.50	H	62.9		4.0	37.1	-39.4	64.6	1690.8	33594.3	-26.0
5560.50	V	60.7		4.0	37.1	-39.4	62.4	1312.5	33594.3	-28.2
6487.25	H	52.3		4.3	38.1	-39.5	55.3	580.7	33594.3	-35.2
6487.25	V	48.3		4.3	38.1	-39.5	51.3	366.4	33594.3	-39.2
9267.50	H	39.4	Ambient	5.0	38.8	-39.4	43.9	157.2	33594.3	-46.6
9267.50	V	38.1	Ambient	5.0	38.8	-39.4	42.6	135.3	33594.3	-47.9

## 33. Scope of Accreditation

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

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## ELECTRICAL

Valid To: June 30, 2023

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) <sup>1</sup>:*****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;  
ECE Regulation 10.06 Annex 10

***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);

(A2LA Cert. No. 1786.01) Revised 08/08/2022

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<b><u>Test Technology:</u></b>	<b><u>Test Method(s) <sup>1</sup>:</u></b>
<i>Vehicle Radiated Emissions</i>	CISPR 12; CISPR 36; ICES-002; ECE Regulation 10.06 Annex 5
<i>Bulk Current Injection (BCI)</i>	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); ECE Regulation 10.06 Annex 9
<i>Radiated Immunity Anechoic (Including Radar Pulse)</i>	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; ECE Regulation 10.06 Annex 9
<i>Radiated Immunity Magnetic Field</i>	ISO 11452-8
<i>Radiated Immunity Reverb</i>	ISO/IEC 61000-4-21; GMW 3097, Section 3.4.3; EMC-CS-2009.1 (RI114); FMC1278 (RI114); ISO 11452-11
<i>Radiated Immunity (Portable Transmitters)</i>	ISO 11452-9; EMC-CS-2009.1 (RI115); FMC1278 (RI115)
<i>Vehicle Radiated Immunity (ALSE)</i>	ISO 11451-2; ECE Regulation 10.06 Annex 6
<i>Vehicle Product Specific EMC Standards</i>	EN 14982; EN ISO 13309; ISO 13766; EN 50498; EC Regulation No. 2015/208; EN 55012
<i>Electrical Loads</i>	ISO 16750-2
<b>Emissions</b> 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; KS C 9811; CNS 13803 (1997, 2003); CISPR 14-1; EN 55014-1; AS/NZS CISPR 14.1; CISPR 16-2-1 (2008); CISPR 16-2-1; KS C 9814-1; 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; KS C 9832; KN 32; ECE Regulation 10.06 Annex 7 (Broadband) ECE Regulation 10.06 Annex 8 (Narrowband) ECE Regulation 10.06 Annex 14 (Conducted)

**Test Technology:**

**Test Method(s) <sup>1</sup>:**

**Emissions (cont'd)**

Cellular Radiated Spurious Emissions

ETSI TS 151 010-1 GSM; 3GPP TS 51.010-1, Sec 12;  
ETSI TS 134 124 UMTS; 3GPP TS 34.124;  
ETSI TS 136 124 LTE; E-UTRA; 3GPP TS 36.124

Current Harmonics

IEC 61000-3-2; EN 61000-3-2; KN 61000-3-2;  
KS C 9610-3-2; ECE Regulation 10.06 Annex 11

Flicker and Fluctuations

IEC 61000-3-3; EN 61000-3-3; KN 61000-3-3;  
KS C 9610-3-3; ECE Regulation 10.06 Annex 12

**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;  
KS C 9610-4-2; 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;  
KS C 9610-4-3; 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;  
KS C 9610-4-4; ECE Regulation 10.06 Annex 15

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;  
KS C 9610-4-5;  
IEEE C37.90.1 2012; IEEE STD C62.41.2 2002;  
ECE Regulation 10.06 Annex 16

**Test Technology:**

**Test Method(s) <sup>1</sup>:**

**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; KS C 9610-4-6

Power Frequency Magnetic Field  
Immunity (*Down to 3 A/m*)

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; KS C 9610-4-8

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;  
KS C 9610-4-11

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;  
IEEE STD C62.41.2 2002

Generic and Product Specific EMC  
Standards

IEC/EN 61000-6-1; AS/NZS 61000-6-1; KN 61000-6-1;  
KS C 9610-6-1; IEC/EN 61000-6-2; AS/NZS 61000-6-2;  
KN 61000-6-2; KS C 9610-6-2; IEC/EN 61000-6-3;  
AS/NZS 61000-6-3; KN 61000-6-3; KS C 9610-6-3;  
IEC/EN 61000-6-4; AS/NZS 61000-6-4; KN 61000-6-4;  
KS C 9610-6-4; EN 50130-4; EN 61326-1; EN 50121-3-2;  
EN 12895; EN 50270; EN 50491-1; EN 50491-2; EN 50491-3;  
EN 55015; EN 60730-1; EN 60945; IEC 60533;  
EN 61326-2-6; EN 61800-3; IEC/CISPR 14-2; EN 55014-2;  
AS/NZS CISPR 14.2; KN 14-2; KS C 9814-2;  
IEC/CISPR 24; AS/NZS CISPR 24; EN 55024; KN 24;  
IEC/CISPR 35; AS/NZS CISPR 35; EN 55035; KN 35;  
KS C 9835; 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 301 489-20

**Test Technology:****Test Method(s) <sup>1</sup>:*****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 300 220-3-1; ETSI EN 300 220-3-2;  
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 303 413; ETSI EN 302 502;  
EN 303 340; EN 303 345-2; EN 303 345-3; EN 303 345-4

***Canadian Radio Tests***

RSS-102 (RF Exposure Evaluation <sup>MEAS</sup>);  
RSS-102 (Nerve Stimulation <sup>MEAS</sup>) (5Hz to 400kHz);  
SPR-002; 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-247; RSS-248;  
RSS-251; RSS-252; RSS-287; RSS-288; RSS-310; RSS-GEN

***Mexico Radio Tests***

IFT-008-2015; NOM-208-SCFI-2016

***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 (July 15, 2020)

***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; KS X 3124; KS X 3125;  
KS X 3130; KS X 3126; KS X 3129

***Vietnam Radio Test Standards***

QCVN 47:2015/BTTTT; QCVN 54:2020/BTTTT;  
QCVN 55:2011/BTTTT; QCVN 65:2013/BTTTT;  
QCVN 73:2013/BTTTT; QCVN 74:2020/BTTTT;  
QCVN 112:2017/BTTTT; QCVN 117:2020/BTTTT

***Vietnam EMC Test Standards***

QCVN 18:2014/BTTTT; QCVN 86:2019/BTTTT;  
QCVN 96:2015/BTTTT; QCVN 118:2018/BTTTT



**Test Technology:**

**Test Method(s) <sup>1</sup>:**

***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 (using 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/a

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

***Electrical Measurements and  
Simulation***

AC Voltage / Current

(1mV to 5kV) 60 Hz  
(0.1V to 250V) up to 500 MHz  
(1µA to 150A) 60 Hz

FAA AC 150/5345-10H

FAA AC 150/5345-43J

FAA AC 150/5345-44K

DC Voltage / Current

(1mV to 15-kV) / (1µA to 10A)

FAA AC 150/5345-46E

FAA AC 150/5345-47C

Power Factor / Efficiency / Crest Factor

(Power to 30kW)

FAA EB 67D

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

<sup>1</sup> When the date, edition, version, etc. is not identified in the scope of accreditation, laboratories may use the version that immediately precedes the current version for a period of one year from the date of publication of the standard measurement method, per part C., Section 1 of A2LA R101 - *General Requirements- Accreditation of ISO-IEC 17025 Laboratories.*

Testing Activities Performed in Support of FCC Certification in Accordance with 47 Code of Federal Regulations and FCC KDB 974614, Appendix A, Table A.1<sup>2</sup>

<b>Rule Subpart/Technology</b>	<b>Test Method</b>	<b>Maximum Frequency (MHz)</b>
<u>Unintentional Radiators</u> Part 15B	ANSI C63.4:2014	40000
<u>Industrial, Scientific, and Medical Equipment</u> Part 18	FCC MP-5 (February 1986)	40000
<u>Intentional Radiators</u> Part 15C	ANSI C63.10:2013	40000
<u>Unlicensed Personal Communication Systems Devices</u> Part 15D	ANSI C63.17:2013	40000
<u>U-NII without DFS Intentional Radiators</u> Part 15E	ANSI C63.10:2013	40000
<u>U-NII with DFS Intentional Radiators</u> Part 15E	FCC KDB 905462 D02 (v02)	40000
<u>UWB Intentional Radiators</u> Part 15F	ANSI C63.10:2013	40000
<u>BPL Intentional Radiators</u> Part 15G	ANSI C63.10:2013	40000
<u>White Space Device Intentional Radiators</u> Part 15H	ANSI C63.10:2013	40000
<u>Commercial Mobile Services (FCC Licensed Radio Service Equipment)</u> Parts 22 (cellular), 24, 25 (below 3 GHz), and 27	ANSI/TIA-603-E; TIA-102.CAAA-E; ANSI C63.26:2015	40000
<u>General Mobile Radio Services (FCC Licensed Radio Service Equipment)</u> 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
<u>Citizens Broadband Radio Services (FCC Licensed Radio Service Equipment)</u> Part 96	ANSI/TIA-603-E; TIA-102.CAAA-E; ANSI C63.26:2015	40000

Testing Activities Performed in Support of FCC Certification in Accordance with 47 Code of Federal Regulations and FCC KDB 974614, Appendix A, Table A.1<sup>2</sup>

<b>Rule Subpart/Technology</b>	<b>Test Method</b>	<b>Maximum Frequency (MHz)</b>
<u>Maritime and Aviation Radio Services</u> Parts 80 and 87	ANSI/TIA-603-E; ANSI C63.26:2015	40000
<u>Microwave and Millimeter Bands Radio Services</u> 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
<u>Broadcast Radio Services</u> Parts 73 and 74 (below 3 GHz)	ANSI/TIA-603-E; TIA-102.CAAA-E; ANSI C63.26:2015	40000
<u>Signal Boosters</u> Part 20 (Wideband Consumer Signal Boosters, Provider-specific signal boosters, and Industrial Signal Boosters) Section 90.219	ANSI C63.26:2015	40000

<sup>2</sup> 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 19<sup>th</sup> day of May 2021.



Vice President, Accreditation Services  
For the Accreditation Council  
Certificate Number 1786.01  
Valid to June 30, 2023

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