

Multi¥iew Rece	eiver 🗙 F	СС РЕАК	FCC AVG	× DC ×	Wide BW	X 100kHz	×	•
Ref Level 10 Att Input TRG:VID	2.00 dBµV 0 dB ● SW 1 AC PS	T 50 ms • VBV On Not	NV 100 kHz NV 3 MHz ach Off	SGL			Frequency	/ 390.0000000 MHz
1 Zero Span								O1AP Clrw
100 dBµV								<u>— M1[1] 64.61 dВµV</u> 0 s D2[1] 2 15 dB
90 dBµV								31.6200 ms
80 dBµV								
70 dBµV						D2		
60 dBUV								
	+TRG 58.000 d	Bµ∨						
40 dBUV								
130148 <u>1</u> 7								
20 dBµV						un un tible kästelen lak	dia likk somerlikker	allahara ang behashaiti ayalasha
							din di si si si si	
LF 390.0 MHZ				100.	i pis			5.0 ms/



Input TRG:VID	0	dB = AC	SW PS	/T 1	0 ms Or	s 🖷	VBV	y ch	3 N	/Hz Off	c	, GL							Free	quei	су	39(	0.00	000	000	MH	١z
1 Zero Span 100 dBµV 90 dBµV																	 						<mark>м1[1</mark> D2[1]	0 ] 6	1 AP 4.60 1 140	Clrw ) dBp 0 ,46 (	J∀ JS dB µs
80 dBµV											 -		 	 	 		 			+							
70 dBµV MD2 Ø dBµV	TRO	i 58.	000 c	₿µ∨																							
50 dBµV		<u>.</u>			_			6 S							<u>.</u>	 		-							_	+	-
40 dBµV																		+								_	
30 dBµV																	_	-							_	+	-
20 dBµV						44				1.													141				



MultiView Receiver Ref Level 102.00 dBµ' Att 0 dl	<b>ГСС РЕАК</b> √ ● RB <sup>2</sup> 3 ● SWT 5 ms ● VB <sup>4</sup>	FCC AVG W 100 kHz W 3 MHz	SGL	X Wide BW	X 100kHz	×	uency <b>390.0</b>	• • •
Input 1 AG TRG:VID	C PS On Not	t <b>ch</b> Off						
1 Zero Span 100 dвµv							D2	0 1AP Clrw [1] 1.07 dB 245.00 μs [1] 65.49 dBμV 725.00 μs
80 dBµV								
70 dBµVM1	58.000 dBµV							
50 dBµ∨								
40 dBµV								
30 dвµv								
20 dBµV								
		MANA						





Duty Cycle Factor =  $20 \log \left( \frac{(0.14 * 1 + 0.245 * 44 + 0.49 * 9)msec}{96.92msec} \right) = -16.017 dB$ 



	Test Details
Manufacturer	The Chamberlain Group LLC
Model	Q363LA
S/N	Sample E2
Mode	E-Code Tx @ 433.92MHz
Carrier Frequency	433.92MHz
Deremetere	On time = 15.46msec
Farameters	Word Length = 96.78msec
Duty Cycle Correction Factor	-15.932dB
Notes	None

MultiView <b>Rece</b>	iver 🗙 F		FCC AVG	× DC ×	Wide BW	× 100kHz	×		
Ref Level 10 Att Input TRG:VID	2.00 dBµV 0 dB ● SW 1 AC PS	● RB T 100 ms ● VB On No	W 100 kHz W 3 MHz Atch Off	SGL			Freque	ency <b>433.92</b>	.00000 MHz
1 Zero Span									O1AP Clrw
100 dBµV						2			1] <del>0.04 dB</del> -
									96.7800 ms
90 dBuV								MIL	1] 74.20 dBμV
Contraction of Provide									05
80 dBµV									
		ם הם הם נתובים הפפידי	n n						D2 4000000
70 d6µV	TRG 72,000 d	BµM							
60 d8µV					5	20 pt			
50 dBµV <del></del>									
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40 dBµ∨						2			
30 d6µV						19. 19.			
20 GBUM									
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CF 433.92 MH	Z			1001	pts				10.0 ms/



Mu	levi	w	•		Rec	eive	er.			1000	×		FC	C PE	AK				>	٢	FC	εA	۷G				×		D	с			>	٢	W	/ide	BW				×	0	10	DOkHz		×								٠
•	Rei Att Inp	f Lo : out	eve	el	10	12.	OC	d C 1	Bµ ) d A	V B C	•	SN PS	₩1 5	r 5	50	m O	s i		RB VB No	W	n n	10 3	⊃ k 3 M	Hz Hz Of	z T			S	G	L																Fi	equ	Jer	ncy <b>43</b> 3	3.92	20	000	001	MHz
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90	) dB	μV-	-			*							- 12							- 12														8											0			2		WITI	- 1	17	20 (	0 s
80 M1	) dB	μV-	2																																								12		0			2						
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50	) dB	μΨ-																								ľ				2																								
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30	) dB	μ¥-																																																				
20	) dB	μ¥-									14							1			5 5 6											1											L	h litter and	4	ale to cale state	Au		Jacobila	ul. h	I	Mula	A	Ulana
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CI	- 4:	33.	92	2 N	ЛH	Z																										1	UU	11	pt	S											_	_		_			5.01	ms/



MultiView Reco Ref Level 10	eiver 12.00 dE 0	βμV dB	×	FCC PE	AK O ms	e Ri	X P BW RW	сс аус 100 З Г	kHz MHz	2	×	DC GL	×	W	/ide B\	W		×	100	kHz	>	<	Fn	oau	onc		133 0	20	000		•
Input TRG:VID 1 Zero Span	1	AC	PS		On	N	otch		Off															equ	enc	.y -	ŦJJ. 5	20	01/		rw
100 dBµV																											—D2	[1]-	1.	<del>-2.7</del> ! 40.0	5 dB- 0 µs
90 dBµV																		80										[+]		50 G	0 s
80 dBµV													 	~														-			
м <sup>2</sup> 70 dвµv-		-				-		F									$\square$											F	1		-
60 dBµ∨		G 58.	.000 c	Вµ∨			-	-					 															+	_	-	_
50 dBµ∨																											60. Sa	+			-
40 dBµ∨				<u> </u>									 		<u>.</u>												Sc				_
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MultiView Ref Level Att Input	Receiver X 102.00 dBµV 0 dB • S' 1 AC PS	FCC PEAK RB' WT 5 ms • VB' S On Not	¥ FCC AVG ₩ 100 kHz ₩ 3 MHz tch Off	SGL X	Wide BW	X 100kHz	Frequent	cy 433.9200000 MHz
1 Zero Spa	n							O1AP Clrw
100 dBµ∨——								<u>−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−</u>
90 dBµ∨								245.00 µs
80 dBµ∨	11000				9			
~	TRG 72.000	2 d8µV — — — — — — — — — — — — — — — — — — —						
70 авµ∨								
60 dBµ∨								
50 dBuV								
40 dBµ∨								
30 dвµ∨								
20 dBµ∨								
10 авну -	antikat	A M BAD	that t					
CF 433.92	MHz			1001	pts			500.0 μs/





Duty Cycle Factor =  $20 \log \left( \frac{(0.14 * 1 + 0.245 * 36 + 0.5 * 13)msec}{96.78msec} \right) = -15.932dB$ 



# 22. Spurious Radiated Emissions

	Test Information
Manufacturer	The Chamberlain Group LLC
Product	DeLorean Visor Remote
Model	Q363LA
Serial No	Sample 1
	D-Code Tx @ 315MHz
	D-Code Tx @ 390MHz
Mode	E-Code Tx @ 315MHz
	E-Code Tx @ 390MHz
	E-Code Tx @ 433.92MHz

	Test Setup Details
Setup Format	Tabletop
Height of Support	NA
Type of Test Site	Semi-Anechoic Chamber
Test site used	R29F
Notes	None

Measurement Uncertainty	
Measurement Type	Expanded Measurement Uncertainty
Radiated disturbance (electric field strength on an open area test site or alternative test site) (30 MHz – 1000 MHz)	4.3
Radiated disturbance (electric field strength on an open area test site or alternative test site) (1 GHz – 6 GHz)	3.1
Radiated disturbance (electric field strength on an open area test site or alternative test site) (6 GHz – 18 GHz)	3.2
Radiated disturbance (electric field strength on an open area test site or alternative test site) (18 GHz – 26.5 GHz)	3.3
Radiated disturbance (electric field strength on an open area test site or alternative test site) (26.5 GHz – 40 GHz)	3.4

	Requirements											
The EUT must comply with the requirements of FCC "Code of Federal Regulations Title 47", Part 15, Subpart C, Section 15.205 et seq. as well as the requirements of the RSS-GEN specification Section 8.10.												
Carrier Frequency (MHz)	ubpart C, Section 15.205 et seq. as well as the requirements of the RSS-GEN specification Section 8.10.         Carrier Frequency       Field Strength of Carrier         (MHz)       (µV/m)											
260-470 Above 470	3750 to 12500* 12500	375 to 1250* 1250										
Above 470	12500	1250										



#### Procedures

All tests were performed in a 32ft. x 20ft. x 18ft. hybrid ferrite-tile/anechoic absorber lined test chamber. The walls and ceiling of the shielded chamber are lined with ferrite tiles. Anechoic absorber material is installed over the ferrite tile. The floor of the chamber is used as the ground plane. The chamber complies with ANSI C63.4-2014 for site attenuation.

The shielded enclosure prevents emissions from other sources, such as radio and TV stations from interfering with the measurements. All powerlines and signal lines entering the enclosure pass through filters on the enclosure wall. The powerline filters prevent extraneous signals from entering the enclosure on these leads.

A preliminary radiated emissions test was performed to determine the emission characteristics of the EUT. For the preliminary test, a broadband measuring antenna was positioned at a 3 meter distance from the EUT. The entire frequency range from 30MHz to 4.5GHz was investigated using a peak detector function. The data was then processed by the computer to calculate equivalent field intensity.

The final emission tests were then manually performed over the frequency range of 30MHz to 4.5GHz. Between 30MHz and 1000MHz, a bi-log antenna was used as the pick-up device. The EUT was placed on an 80cm high non-conductive stand. A peak detector with a resolution bandwidth of 100 kHz was used on the spectrum analyzer.

Above 1GHz, a broadband double ridged waveguide antenna was used as the pick-up device. The EUT was placed on an 150cm high non-conductive stand. A peak detector with a resolution bandwidth of 1 MHz was used on the spectrum analyzer.

The peak detected levels were converted to average levels using a duty cycle factor which was computed from the pulse train.

To ensure that maximum or worst case, emission levels were measured, the following steps were taken:

- 1) The EUT was rotated so that all of its sides were exposed to the receiving antenna.
- 2) Since the measuring antenna is linearly polarized, both horizontal and vertical field components were measured.
- 3) The measuring antenna was raised and lowered from 1 to 4 meters for each antenna polarization to maximize the readings.
- 4) For hand-held or body-worn devices, the EUT was rotated through three orthogonal axes to determine which orientation produces the highest emission relative to the limit.

In instances where it was necessary to use a shortened cable between the measuring antenna and the spectrum analyzer and the antenna cannot be raised to 4 meters. The measuring antenna is raised or lowered as much as the cable will allow and the EUT is rotated through all axis to ensure the maximum readings are recorded.



Test Setup for Spurious Radiated Emissions, 30-1000MHz – Antenna Polarization Horizontal Picture removed for short term confidentiality purposes.	Picture removed for short term confidentiality purposes.
Picture removed for short term confidentiality purposes. Test Setup for Spurious Radiated Emissions, 30-1000MHz – Antenna Polarization	Test Setup for Spurious Radiated Emissions, 30-1000MHz – Antenna Polarization
	Picture removed for short term confidentiality purposes. Test Setup for Spurious Radiated Emissions, 30-1000MHz – Antenna Polarization



Picture removed for short term confidentiality purposes.
Test Setup for Spurious Radiated Emissions, Above 1GHz – Antenna Polarization Horizontal
Picture removed for short term confidentiality purposes.
Vertical



Test Details							
Manufacturer The Chamberlain Group LLC							
Model	Q363LA						
S/N	Sample 1						
Mode	D-Code Tx @ 315MHz						
Carrier Frequency	315MHz						
Requirements	Field Strength of Carrier Limit = 6041.7µV/m						
Notes	D Code						
Test Date(s)	November 14, 2024						

Freq. (MHz)	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Duty Cycle (dB)	Total (dBuV/m)	Total (uV/m)	Limit (uV/m)	Margin (dB)
315.000	Н	67.3		1.2	19.3	0.0	-12.7	75.1	5694.2	6041.7	-0.5
315.000	V	47.6		1.2	19.3	0.0	-12.7	55.4	590.1	6041.7	-20.2
630.000	Н	23.7		1.7	25.0	0.0	-12.7	37.8	77.6	604.2	-17.8
630.000	V	20.2		1.7	25.0	0.0	-12.7	34.3	51.8	604.2	-21.3
945.000	Н	24.4		2.1	27.0	0.0	-12.7	40.7	108.7	604.2	-14.9
945.000	V	18.1		2.1	27.0	0.0	-12.7	34.4	52.7	604.2	-21.2
1260.000	Н	59.9		2.5	28.8	-40.5	-12.7	38.1	80.1	604.2	-17.6
1260.000	V	54.1		2.5	28.8	-40.5	-12.7	32.3	41.1	604.2	-23.4
1575.000	Н	71.9		2.7	28.7	-40.0	-12.7	50.6	340.1	500.0	-3.3
1575.000	V	66.1		2.7	28.7	-40.0	-12.7	44.9	175.1	500.0	-9.1
1890.000	Н	58.5		3.0	30.8	-39.7	-12.7	40.0	99.8	604.2	-15.6
1890.000	V	54.9		3.0	30.8	-39.7	-12.7	36.3	65.3	604.2	-19.3
2205.000	Н	57.5		3.3	32.1	-39.6	-12.7	40.6	106.6	500.0	-13.4
2205.000	V	55.2		3.3	32.1	-39.6	-12.7	38.2	81.7	500.0	-15.7
2520.000	Н	57.1		3.5	32.8	-39.6	-12.7	41.0	112.7	604.2	-14.6
2520.000	V	51.9		3.5	32.8	-39.6	-12.7	35.9	62.5	604.2	-19.7
2835.000	Н	52.1	*	3.8	32.6	-39.4	-12.7	36.4	66.4	500.0	-17.5
2835.000	V	52.1	*	3.8	32.6	-39.4	-12.7	36.4	66.4	500.0	-17.5
3150.000	Н	52.6		4.0	33.1	-39.2	-12.7	37.8	77.4	604.2	-17.8
3150.000	V	51.2	*	4.0	33.1	-39.2	-12.7	36.4	66.4	604.2	-19.2



Test Details							
Manufacturer The Chamberlain Group LLC							
Model	Q363LA						
S/N	Sample 1						
Mode	D-Code Tx @ 315MHz						
Carrier Frequency	390MHz						
Requirements	Field Strength of Carrier Limit = 9166.7µV/m						
Notes	D Code						
Test Date(s)	November 14, 2024						

Freq. (MHz)	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Duty Cycle (dB)	Total (dBuV/m)	Total (uV/m)	Limit (uV/m)	Margin (dB)
390.000	Н	57.4		1.3	21.5	0.0	-13.7	66.6	2128.1	9166.7	-12.7
390.000	V	41.8		1.3	21.5	0.0	-13.7	50.9	352.8	9166.7	-28.3
780.000	Н	35.7		1.9	25.9	0.0	-13.7	49.7	305.0	916.7	-9.6
780.000	V	25.9		1.9	25.9	0.0	-13.7	39.9	98.8	916.7	-19.3
1170.000	н	62.6		2.4	28.0	-40.6	-13.7	38.6	84.8	500.0	-15.4
1170.000	V	58.9		2.4	28.0	-40.6	-13.7	34.9	55.5	500.0	-19.1
1560.000	Н	67.6		2.7	28.6	-40.0	-13.7	45.1	180.3	500.0	-8.9
1560.000	V	59.7		2.7	28.6	-40.0	-13.7	37.3	73.4	500.0	-16.7
1950.000	н	62.1		3.0	31.3	-39.6	-13.7	43.0	140.9	916.7	-16.3
1950.000	V	60.9		3.0	31.3	-39.6	-13.7	41.8	123.4	916.7	-17.4
2340.000	н	67.8		3.4	32.5	-39.6	-13.7	50.3	326.4	500.0	-3.7
2340.000	V	63.2		3.4	32.5	-39.6	-13.7	45.7	193.8	500.0	-8.2
2730.000	н	59.1		3.7	32.6	-39.5	-13.7	42.1	127.7	500.0	-11.9
2730.000	V	58.5		3.7	32.6	-39.5	-13.7	41.6	120.1	500.0	-12.4
3120.000	Н	57.2		4.0	33.1	-39.2	-13.7	41.3	115.9	916.7	-18.0
3120.000	V	53.0		4.0	33.1	-39.2	-13.7	37.1	71.6	916.7	-22.2
3510.000	н	55.3	*	4.2	33.3	-38.8	-13.7	40.3	103.5	916.7	-18.9
3510.000	V	50.8	*	4.2	33.3	-38.8	-13.7	35.8	61.3	916.7	-23.5
3900.000	Н	50.5	*	4.4	33.5	-38.9	-13.7	35.8	61.7	500.0	-18.2
3900.000	V	49.9	*	4.4	33.5	-38.9	-13.7	35.3	58.0	500.0	-18.7



Test Details							
Manufacturer The Chamberlain Group LLC							
Model	Q363LA						
S/N	Sample 1						
Mode	D-Code Tx @ 315MHz						
Carrier Frequency	315MHz						
Requirements	Field Strength of Carrier Limit = 6041.7µV/m						
Notes	E Code						
Test Date(s)	November 13, 2024						

From	Ant	Meter		CBL	Ant	Pre	Duty	Tatal	Total	Limit	Morgin
(MHz)	Pol	(dBuV)	Ambient	(dB)	(dB/m)	(dB)	(dB)	(dBuV/m)	(uV/m)	(uV/m)	(dB)
315.000	Н	68.1		1.2	19.3	0.0	-16.6	72.1	4004.3	6041.7	-3.6
315.000	V	49.1		1.2	19.3	0.0	-16.6	53.0	448.3	6041.7	-22.6
630.000	Н	25.0		1.7	25.0	0.0	-16.6	35.2	57.4	604.2	-20.4
630.000	V	18.2		1.7	25.0	0.0	-16.6	28.4	26.2	604.2	-27.2
945.000	Н	25.7		2.1	27.0	0.0	-16.6	38.2	81.2	604.2	-17.4
945.000	V	17.6		2.1	27.0	0.0	-16.6	30.0	31.7	604.2	-25.6
1260.000	Н	61.9		2.5	28.8	-40.5	-16.6	36.2	64.3	604.2	-19.5
1260.000	V	54.9		2.5	28.8	-40.5	-16.6	29.1	28.4	604.2	-26.5
1575.000	н	73.3		2.7	28.7	-40.0	-16.6	48.1	254.8	500.0	-5.9
1575.000	V	67.8		2.7	28.7	-40.0	-16.6	42.6	134.5	500.0	-11.4
1890.000	Н	59.3		3.0	30.8	-39.7	-16.6	36.8	69.5	604.2	-18.8
1890.000	V	51.9		3.0	30.8	-39.7	-16.6	29.4	29.6	604.2	-26.2
2205.000	Н	57.1		3.3	32.1	-39.6	-16.6	36.2	64.4	500.0	-17.8
2205.000	V	54.2		3.3	32.1	-39.6	-16.6	33.4	46.6	500.0	-20.6
2520.000	Н	52.6		3.5	32.8	-39.6	-16.6	32.6	42.7	604.2	-23.0
2520.000	V	51.4	*	3.5	32.8	-39.6	-16.6	31.4	37.3	604.2	-24.2
2835.000	Н	51.4	*	3.8	32.6	-39.4	-16.6	31.8	38.9	500.0	-22.2
2835.000	V	51.1	*	3.8	32.6	-39.4	-16.6	31.5	37.5	500.0	-22.5
3150.000	Н	53.4		4.0	33.1	-39.2	-16.6	34.7	54.3	604.2	-20.9
3150.000	V	51.4	*	4.0	33.1	-39.2	-16.6	32.7	43.0	604.2	-23.0



Test Details							
Manufacturer The Chamberlain Group LLC							
Model	Q363LA						
S/N	Sample 1						
Mode	D-Code Tx @ 315MHz						
Carrier Frequency	390MHz						
Requirements	Field Strength of Carrier Limit = 9166.7µV/m						
Notes	E Code						
Test Date(s)	November 13, 2024						

Freq. (MHz)	Ant Pol	Meter Reading (dBuV)	Ambient	CBL Fac (dB)	Ant Fac (dB/m)	Pre Amp (dB)	Duty Cycle (dB)	Total (dBuV/m)	Total (uV/m)	Limit (uV/m)	Margin (dB)
390.000	н	57.4		1.3	21.5	0.0	-16.0	64.3	1640.7	9166.7	-14.9
390.000	V	41.7		1.3	21.5	0.0	-16.0	48.6	269.5	9166.7	-30.6
780.000	н	35.8		1.9	25.9	0.0	-16.0	47.5	238.4	916.7	-11.7
780.000	V	26.1		1.9	25.9	0.0	-16.0	37.9	78.2	916.7	-21.4
1170.000	н	62.4		2.4	28.0	-40.6	-16.0	36.1	63.7	500.0	-17.9
1170.000	V	59.3		2.4	28.0	-40.6	-16.0	33.0	44.9	500.0	-20.9
1560.000	н	67.4		2.7	28.6	-40.0	-16.0	42.7	136.1	500.0	-11.3
1560.000	V	58.4		2.7	28.6	-40.0	-16.0	33.6	48.0	500.0	-20.3
1950.000	н	62.0		3.0	31.3	-39.6	-16.0	40.7	107.9	916.7	-18.6
1950.000	V	61.0		3.0	31.3	-39.6	-16.0	39.6	95.5	916.7	-19.6
2340.000	н	68.5		3.4	32.5	-39.6	-16.0	48.7	273.1	500.0	-5.3
2340.000	V	62.6		3.4	32.5	-39.6	-16.0	42.8	138.8	500.0	-11.1
2730.000	н	59.9		3.7	32.6	-39.5	-16.0	40.7	108.2	500.0	-13.3
2730.000	V	57.9		3.7	32.6	-39.5	-16.0	38.7	86.0	500.0	-15.3
3120.000	н	56.6		4.0	33.1	-39.2	-16.0	38.4	83.5	916.7	-20.8
3120.000	V	52.9		4.0	33.1	-39.2	-16.0	34.7	54.5	916.7	-24.5
3510.000	н	53.5		4.2	33.3	-38.8	-16.0	36.2	64.2	916.7	-23.1
3510.000	V	50.6		4.2	33.3	-38.8	-16.0	33.3	46.0	916.7	-26.0
3900.000	н	50.3		4.4	33.5	-38.9	-16.0	33.4	46.6	500.0	-20.6
3900.000	V	49.8	*	4.4	33.5	-38.9	-16.0	32.9	44.0	500.0	-21.1



Test Details							
Manufacturer The Chamberlain Group LLC							
Model	Q363LA						
S/N	Sample 1						
Mode	D-Code Tx @ 315MHz						
Carrier Frequency	433.92MHz						
Requirements	Field Strength of Carrier Limit = 10996.7µV/m						
Notes	E Code						
Test Date(s)	November 13, 2024						

Freq.	Ant	Meter Reading		CBL Fac	Ant Fac	Pre Amp	Duty Cvcle	Total	Total	Limit	Margin
(MHz)	Pol	(dBuV)	Ambient	(dB)	(dB/m)	(dB)	(dB)	(dBuV/m)	(uV/m)	(uV/m)	(dB)
433.920	Н	49.8		1.4	22.2	0.0	-15.9	57.5	748.8	10996.7	-23.3
433.920	V	35.0		1.4	22.2	0.0	-15.9	42.7	135.9	10996.7	-38.2
867.840	Н	35.2		2.0	26.4	0.0	-15.9	47.7	241.8	1099.7	-13.2
867.840	V	26.4		2.0	26.4	0.0	-15.9	38.8	87.3	1099.7	-22.0
1301.760	н	64.6		2.5	28.8	-40.4	-15.9	39.7	96.1	500.0	-14.3
1301.760	V	60.5		2.5	28.8	-40.4	-15.9	35.5	59.5	500.0	-18.5
1735.680	н	74.0		2.9	29.9	-39.8	-15.9	51.0	355.7	1099.7	-9.8
1735.680	V	67.5		2.9	29.9	-39.8	-15.9	44.6	169.3	1099.7	-16.3
2169.600	н	70.6		3.2	31.9	-39.6	-15.9	50.2	322.7	1099.7	-10.6
2169.600	V	69.4		3.2	31.9	-39.6	-15.9	49.0	282.7	1099.7	-11.8
2603.520	н	69.3		3.6	32.7	-39.6	-15.9	50.1	319.2	1099.7	-10.7
2603.520	V	62.3		3.6	32.7	-39.6	-15.9	43.0	141.9	1099.7	-17.8
3037.440	н	58.3		3.9	33.0	-39.3	-15.9	40.0	99.8	1099.7	-20.8
3037.440	V	55.7		3.9	33.0	-39.3	-15.9	37.4	73.8	1099.7	-23.5
3471.360	н	60.3		4.2	33.2	-38.9	-15.9	42.9	139.3	1099.7	-17.9
3471.360	V	54.9		4.2	33.2	-38.9	-15.9	37.5	75.1	1099.7	-23.3
3905.280	н	50.4		4.4	33.6	-38.9	-15.9	33.5	47.5	500.0	-20.4
3905.280	V	50.1		4.4	33.6	-38.9	-15.9	33.2	45.8	500.0	-20.8
4339.200	Н	50.3	*	4.6	33.9	-38.9	-15.9	34.0	50.4	500.0	-19.9
4339.200	V	50.1	*	4.6	33.9	-38.9	-15.9	33.9	49.4	500.0	-20.1



## 23. Occupied Bandwidth Measurements

Test Information			
Manufacturer The Chamberlain Group LLC			
Product	DeLorean Visor Remote		
Model	Q363LA		
Serial No	Sample E2		
	Sample E4		
	D-Code Tx @ 315MHz		
	D-Code Tx @ 390MHz		
Mode	E-Code Tx @ 315MHz		
	E-Code Tx @ 390MHz		
	E-Code Tx @ 433.92MHz		

Test Setup Details			
Setup Format Tabletop			
Height of Support	NA		
Type of Test Site	Workbench		
Test site used	Elite Work Bench		
Notes	None		

#### Requirements

FCC 15.231(c):

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

RSS-210, Annex A, Section A.1.3:

The occupied bandwidth (99% Bandwidth) of momentarily operated devices shall be less than or equal to 0.25% of the center frequency for devices operating between 70 MHz and 900 MHz. For devices operating above 900 MHz, the occupied bandwidth shall be less than or equal to 0.5% of the center frequency.

Procedures

The EUT was placed on an 80cm high non-conductive stand. The unit was set to transmit continuously. With an antenna positioned nearby, occupied bandwidth emissions were displayed on the spectrum analyzer. The resolution bandwidth was set to 10kHz and span was set to 2MHz. A screen capture was taken of the frequency spectrum near the carrier using a screen dump function on the spectrum analyzer.



Test Details		
Manufacturer	The Chamberlain Group LLC	
Model	Q363LA	
S/N	Sample E4	
Mode	D-Code Tx @ 315MHz	
Carrier Frequency	315MHz	
Parameters	20dB BW = 51.90kHz	
Notes	D Code	

MultiView	Receiver	× Spe	ctrum	× Spectrum	1 2 X				
Ref Level 8.04	4 dBm Offset 0 dB SWT	20.04 dB • RBV 2 ms VBV	V 10 kHz V 10 kHz Mo	de Sweep			Freau	ency 315.00	000000 MHz
Input 1 Frequency St	1 AC PS	On Not	ch Off					,	1Dk Max
I Frequency St	weep							M1[1]	-3.85 dBm
					6				314.99800 MHz
0 dBm-		-		M	1				
-10 dBm		¢				*			
-20 dBm-				7	12				
- 30 dBm					X				
So dom									
10.10									
-40 dBm		2					3		
					. C 3				
-50 dBm				8	8	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			
			1						
-60 dBm				0	0			12	
nm	mm	ma					$\gamma \sim$	mm	A AA
-70 dBm		mum		8	0		how		when he are
- 80 dBm		2		8	0				
oo ubiii						V2 315	Size Mina		
		V1 314. A 788	506 N#32. 000 kHz						
-90 dBm		2	1001 pt		2(				Enon 2.0 MUT
2 Marker Table			1001 pt	•	20	0.0 KHZ/			3pan 2.0 MHZ
Type Ref	Trc	X-Value		Y-Value		Function		Function R	esult
M1	1	314.998 MH	z	-3.85 dBm	ndB		4	20.0	dB
T1	1	314.972 MH	z	-23.85 dBm	ndB down	BW		51.90 k	Hz
T2	1	315.024 MH	Z	-23.80 dBm	Q Factor			606	3.7

Frequency	Lower Bandwidth Frequency	Lower Bandwidth Frequency Limit	Upper Bandwidth Frequency	Upper Bandwidth Frequency Limit
(MHz)	(MHz)	(MHz)	(MHz)	(MHz)
315	314.972	314.60625	315.024	315.39375



Test Details		
Manufacturer	The Chamberlain Group LLC	
Model	Q363LA	
S/N	Sample E4	
Mode	D-Code Tx @ 315MHz	
Carrier Frequency	315MHz	
Parameters	99% BW = 113.588kHz	
Notes	D Code	

MultiView	Receiver	X Spe	ctrum	× Spectrum	12 X				•
Att Input	0 dB SWT 1 AC PS	2 ms VBV On Not	V 10 kHz Mo ch Off	<b>de</b> Sweep			Frequ	iency 315.00	00000 MH
L Occupied Bai	ndwidth								●1Pk Max
								M1[1]	-3.90 dBn
0 dBm				M	1	-			14.99800 MH
- 10 dBm									
10 000									
20 dBm		e.		t l				3	
30 dBm		5		TI	12	5			
40 dBm									
						$\sim$			
50 dBm		AAA	1	2	К.	1			
60 dBm	10,000			0	0		2	$0 \rightarrow 0 \rightarrow 0$	MAAM
70 dBm	Vann- a						ham		w VV
00 JP									
80 dBm						v	2		
90 dBm		1	/1	8	6	-			
CF 315.0 MHz		<u>.</u>	1001 pt	S	20	00.0 kHz/			Span 2.0 MHz
Marker Table	Bay an				4				
Type Ref	Trc	X-Value		Y-Value		Function		Function Re	esult
M1	1	314.998 M	HZ	-3.90 dBm	Occ Bw	ntrold	1	13.58/698/	4/ KHZ
	1	315 05507 N		-31.34 dBm	Occ Bw Ce	Offect		-825 4849	4313 MHZ

Frequency	Lower Bandwidth	Lower Bandwidth	Upper Bandwidth	Upper Bandwidth Frequency Limit
(MHz)	(MHz)	(MHz)	(MHz)	(MHz)
315	314.94238	314.60625	315.05597	315.39375



Test Details		
Manufacturer	The Chamberlain Group LLC	
Model	Q363LA	
S/N	Sample E4	
Mode	D-Code Tx @ 390MHz	
Carrier Frequency	390MHz	
Parameters	20dB BW = 53.90kHz	
Notes	D Code	

MultiView	Receiver	× Spe	ctrum	< Spectrum	12 X					
Ref Level 8.0 Att Input	4 dBm Offset 0 dB SWT 1 AC PS	20.04 dB • RBV 2 ms VBV On Not	V 10 kHz V 10 kHz Mo ch Off	de Sweep				Frequenc	y <b>390.0</b>	000000 MHz
1 Frequency Sv	weep									IPk Max
									M1[1]	-10.62 dBm
0 dDm									1	389.99800 MHz
0 dBm										
				M	1					
-10 dBm	-						9 <del>8</del>			
- 20 dBm						~				
Lo dom										
1000 - 1111				TI	T2					
-30 dBm	i.		9	7	7	2				+
				/	X					
-40 dBm					1					
-50 dBm		0	n							
-60 dBm	5	M	M		0	1	1	0	~	
-70 dBm	Mon	m		0	0	9 	hi	m	- mont	mon
-80 dBm		2	<u>.</u>		8			-		0
		Internet and Annual					V2 390 88	B Militz		
00.10		∆ -975.000 kHz			5-	4				
			1001 pt		2					Epop 2 0 MUT
CI 390.0 MILZ			1001 pts	•	2	00.0 KHZ/				3pan 2.0 Pm2
Type Def	Tro	Y-Value		V-Value		Function		_	Function P	ecult
M1	1	389.998 MH	7 -1	0.62 dBm	ndB	unction			20.0	dB
T1	1	389.972 MH	z	-30.69 dBm	ndB down	BW			53.90 k	Hz
T2	1	390.026 MH	z	-31.02 dBm	Q Factor				722	9.4

Frequency	Lower Bandwidth Frequency	Lower Bandwidth Frequency Limit	Upper Bandwidth Frequency	Upper Bandwidth Frequency Limit
(MHZ)	(MHZ)	(MHZ)	(IVIHZ)	(MHZ)
390	389.972	389.51250	390.026	390.48750



Test Details		
Manufacturer	The Chamberlain Group LLC	
Model	Q363LA	
S/N	Sample E4	
Mode	D-Code Tx @ 390MHz	
Carrier Frequency	390MHz	
Parameters	99% BW = 108.828kHz	
Notes	D Code	

MultiView	Receiver	× Spectru	ım 🗙	Spectrum	12 X					-
Ref Level 8.0 Att	0 dB SWT	20.04 dB • RBW 1 2 ms VBW 1	0 kHz 0 kHz <b>Mod</b>	le Sweep				Freque	ency 390.00	000000 MH
1 Occupied Ba	ndwidth	Un Notch	UIT							●1Pk Max
	-								M1[1]	-10.65 dBn
0 dBm		6							1	89.99800 MH
0 dbiii										
-10 dBm				M	1					
-20 dBm						7				
-30 dBm				1	1	3				2
				T1	T2					
-40 dBm					X					
Tarat ganta										
-50 dBm										
-60 dBm	A				0					
$\Lambda$	Mart						2			
·70 dBm	W W	mont					- The	mont	Winny	mm
-80 dBm	2		8		5	s				
								2		
-90 dBm	·	V1				3				
CF 390.0 MHz	1	04 55 45	1001 pts		2	00.0 kHz/	d e			Span 2.0 MHz
2 Marker Tabl	G				44					
Type Ref	Trc	X-Value		Y-Value		Function			Function R	esult
M1	1	389.998 MHz	-1	0.65 dBm	Occ Bw			10	08.8282469	949 kHz
T1 T2	1	389.94436 MHz		-37.82 dBm	Occ Bw Ce	entroid			389.99877	6091 MHz
12	1	390.02319 MHZ		-37.81 aBM	OCC BW Fre	eq Uffset			-1.223	9088/ KHZ

Frequency	Lower Bandwidth Frequency	Lower Bandwidth Frequency Limit	Upper Bandwidth Frequency	Upper Bandwidth Frequency Limit
(MHz)	(MHz)	(MHz)	(MHz)	(MHz)
390	389.94436	389.51250	390.05319	390.48750



Test Details			
Manufacturer	The Chamberlain Group LLC		
Model	Q363LA		
S/N	Sample E2		
Mode	E-Code Tx @ 315MHz		
Carrier Frequency	315MHz		
Parameters	20dB BW = 51.90kHz		
Notes	E Code		

MultiView	Receiver	× Spe	ectrum	×					•
Ref Level 18.0	00 dBm 30 dB • SWT	■ RBW 2 ms ■ VBW	10 kHz 30 kHz Mode	Auto Sweep			Frequ	ency 315 00	
Input	1 AC PS	On Notch	Off	nato on oop			Hequ	iency 313.00	00000 11112
<b>1 Frequency Sv</b>	weep	1							IPk Max
								M1[1]	-4.45 dBm
10 dBm									14.99800 MHz
0 dBm				N	11				
Same and									
-10 dBm					l	7		3	
-20 dBm	ē.	·		TI	12	7			
-30 dBm									
-40 dBm	5	5	J			<			
-50 dBm		6			0				
Α.	5		JV.						
-60 dBm	think	m s						mm	Doon a
70 dBm		mm			0	io in	Vhyme		1 1 May
-80 dBm		V 3 314. 5 788	606, <del>895</del> 2, 000 RHz	r.	8			8	
CF 315.0 MHz	2	2	1001 p	ts	20	00.0 kHz/		<del>.</del>	Span 2.0 MHz
2 Marker Table	3								
Type Ref	Trc	X-Value		Y-Value		Function		Function Re	esult
M1	1	314.998 MH	IZ	-4.45 dBm	ndB	DIM		20.0	dB
	1	314.972 MF 315.024 MF	1Z 17	-24.01 dBm -24.36 dBm	O Factor	BVV		51.90 K	3.7

Frequency	Lower Bandwidth Frequency	Lower Bandwidth Frequency Limit	Upper Bandwidth Frequency	Upper Bandwidth Frequency Limit
(MHz)	(MHz)	(MHz)	(MHz)	(MHz)
315	314.972	314.60625	315.024	315.39375



Test Details			
Manufacturer	The Chamberlain Group LLC		
Model	Q363LA		
S/N	Sample E2		
Mode	E-Code Tx @ 315MHz		
Carrier Frequency	315MHz		
Parameters	99% BW = 107.309kHz		
Notes	E Code		

MultiView	Receiver	× Speci	trum	×					•
Ref Level 18.	00 dBm 30 dB • SWT 1 AC PS	● RBW 8.68 ms ● VBW On Notch	10 kHz 30 kHz Mod	le Auto Sweep			Frequ	iency 315.00	000000 MHz
1 Occupied Bar	ndwidth	on notai	en.						●1Pk Max
								M1[1]	-4.44 dBm
10 dBm								3	15.00000 MHz
0 dBm									
U UDIII				7					
- 10 dBm									
-20 dBm					1				
					1				
-30 dBm				11/	12				
-40 dBm-		)		1		8			
			- And						
-50 dBm	٨	h	-	0	0	and the second s	ΛA		
60 dPm	/\		P	0	0	~			
	a m ma l'	1 and					My !!	MARAA	
some	An r r in	mann					my hr	w · · · w · ·	monon
- 70 dBm-		1.00							
-80 dBm		V1		8	8	V	2		
CF 315.0 MHz			1001 pt	5	20	00.0 kHz/		1	Span 2.0 MHz
2 Marker Table									
Type Ref	Trc	X-Value		Y-Value		Function		Function R	esult
M1 T1	1	315.0 MH	Z	-4.44 aBm	Occ Bw	ntroid	1	314 00005	251 KHZ
T2	1	315.05271 MH	Z	-31.10 dBm	Occ Bw Ce	a Offset		-944.4060	)10449 Hz

Frequency	Lower Bandwidth Frequency	Lower Bandwidth Frequency Limit	Upper Bandwidth Frequency	Upper Bandwidth Frequency Limit
(MHz)	(MHz)	(MHz)	(MHz)	(MHz)
315	314.9454	314.60625	315.05271	315.39375



Test Details			
Manufacturer	The Chamberlain Group LLC		
Model	Q363LA		
S/N	Sample E2		
Mode	E-Code Tx @ 390MHz		
Carrier Frequency	390MHz		
Parameters	20dB BW = 51.90kHz		
Notes	E Code		



Frequency	Lower Bandwidth Frequency	Lower Bandwidth Frequency Limit	Upper Bandwidth Frequency	Upper Bandwidth Frequency Limit
(MHz)	(MHz)	(MHz)	(MHz)	(MHz)
390	389.972	389.51250	390.024	390.48750



Test Details			
Manufacturer	The Chamberlain Group LLC		
Model	Q363LA		
S/N	Sample E2		
Mode	E-Code Tx @ 390MHz		
Carrier Frequency	390MHz		
Parameters	99% BW = 109.690kHz		
Notes	E Code		



Frequency	Lower Bandwidth Frequency	Lower Bandwidth Frequency Limit	Upper Bandwidth Frequency	Upper Bandwidth Frequency Limit
(MHz)	(MHz)	(MHz)	(MHz)	(MHz)
390	389.94454	389.51250	390.05423	390.48750



Test Details			
Manufacturer	The Chamberlain Group LLC		
Model	Q363LA		
S/N	Sample E2		
Mode	E-Code Tx @ 433.92MHz		
Carrier Frequency	433.92MHz		
Parameters	20dB BW = 53.90kHz		
Notes	E Code		

MultiView	Receiver	X Spe	ectrum	×					•
Ref Level 18.0 Att	00 dBm 30 dB • SWT	RBW 2 ms      VBW	10 kHz 30 kHz Mode	Auto Sweep			Frequ	uency 433.9	200000 MHz
1 Frequency Sy	veen	On Noten	UI						1Pk Max
								M1[1]	-4.00 dBm
10 10-									33.91800 MHz
10 dBm		0	ά <sup>ζ</sup>				1		
0 dBm			1	M	1				
				1					
-10 dBm			2	C		-			
-20 dBm		-	3	Ţ	T2	3		1	
				/					
-30 dBm						a		3	
200 March 10									
-40 dBm			~~~	~	/			3	
FO dBas			$\int \nabla$						
- 50 dBm	5	1	NM	0	2		AA AA		
-60 dBm			8	0	6		1 MARIN	1	2
mmm	mining	mm					1	Low	mmmm
-70 dBm							V2 434 462 N	) Mez	
- 90 dPm	10 A	1.084 MHz		E	s				
CE 433.92 MHz			1001 pt	S	20	00.0 kHz/			Span 2.0 MHz
2 Marker Table									
Type Ref	Trc	X-Value		Y-Value		Function		Function R	esult
M1	1 4	33.918 MH	Z	-4.00 dBm	ndB			20.0	dB
T1	1	433.89 MH	IZ	-24.36 dBm	ndB down	BW		53.90 k	HZ
12	1	433.944 MF	1Z	-23.94 dBm	Q Factor			804	3.0

Frequency	Lower Bandwidth Frequency	Lower Bandwidth Frequency Limit	Upper Bandwidth Frequency	Upper Bandwidth Frequency Limit
(MHz)	(MHz)	(MHz)	(MHz)	(MHz)
433.92	433.89	433.37760	433.944	434.46240



Test Details			
Manufacturer	The Chamberlain Group LLC		
Model	Q363LA		
S/N	Sample E2		
Mode	E-Code Tx @ 433.92MHz		
Carrier Frequency	433.92MHz		
Parameters	99% BW = 107.848kHz		
Notes	E Code		



Frequency	Lower Bandwidth Frequency	Lower Bandwidth Frequency Limit	Upper Bandwidth Frequency	Upper Bandwidth Frequency Limit
(MHz)	(MHz)	(MHz)	(MHz)	(MHz)
433.92	433.86488	433.37760	433.97273	434.46240



### 24. Scope of Accreditation

Valid To: June 30, 2025



#### SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

ELITE ELECTRONIC ENGINEERING, INC. 1516 Centre Circle Downers Grove, IL 60515 Robert Bugielski (QA Manager) Phone: 630 495 9770 ext. 168 Email: rbugielski@elitetest.com Craig Fanning (EMC Lab Manager) Phone: 630 495 9770 ext. 112 Email: cfanning@elitetest.com Brandon Lugo (Automotive Team Leader) Phone: 630 495 9770 ext. 163 Email: blugo@elitetest.com Richard King (FCC/Commercial Team Leader) Phone: 630 495 9770 ext. 123 Email: reking@elitetest.com Website: www.elitetest.com

ELECTRICAL

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 <u>automotive electromagnetic</u> compatibility and other electrical tests:

<u>Test Technology:</u>	Test Method(s) <sup>1</sup> :
Transient Immunity	ISO 7637-2 (including emissions); ISO 7637-3;
(Max Voltage 60ViMax current 100A)	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);
(Up to +/-25kV)	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,
	CE 430, CE440)

(A2LA Cert. No. 1786.01) 08/15/2023

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5202 Presidents Court, Suite 220 | Frederick, MD 21703-8515 | Phone: 301 644 3248 | Fax: 240 454 9449 | www.A2LA.org



<u>Test Technology:</u>	Test Method(s) <sup>1</sup> :
<b>Radiated Emissions Anechoic</b> (Up to 6GH2)	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, RE320);
Vehicle Radiated Emissions	CISPR 12; CISPR 36; ICES-002; ECE Regulation 10.06 Annex 5
<b>Bulk Current Injection (BC1)</b> (1 to 400MHz 500mA)	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
<b>Radiated Immunity Anechoic</b> (Up to 6GHz and 200V/m) (Including Radar Pulse 600V/m)	ISO 11452-2; 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
Radiated Immunity Magnetic Field	ISO 11452-8; FMC 1278 (RI140)
<b>Radiated Immunity Reverb</b> (360MHz to 6GHz and 100V/m)	ISO/IEC 61000-4-21; GMW 3097, Section 3.4.3; EMC-CS-2009.1 (RI114); FMC1278 (RI114); ISO 11452-11
<b>Radiated Immunity</b> (Portable Transmitters) (Up to 6GHz and 20W)	ISO 11452-9; EMC-CS-2009.1 (RI115); FMC1278 (RI115); GMW 3097, Sec 3.4.4
Vehicle Radiated Immunity (ALSE)	ISO 11451-2; ECE Regulation 10.06 Annex 6
Vehicle Product Specific EMC Standards	EN 14982; EN ISO 13309; ISO 13766; EN 50498; EC Regulation No. 2015/208; EN 55012
Electrical Loads	ISO 16750-2
Stripline	ISO 11452-5
Transverse Electromagnetic (IEM) Cell	ISO 11452-3

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#### <u>Test Technology:</u>

#### <u>Test Method(s)<sup>1</sup>:</u>

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; 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); EN 55022 (1998) + A1(2000); 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 14 (Conducted)
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; IEC 61000-3-12; EN 61000-3-2; KN 61000-3-2; KS C 9610-3-2; ECE Regulation 10.06 Annex 11
Flicker and Fluctuations	ЕС 61000-3-3; ЕС 61000-3-11; 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

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<u>Test Technology:</u>	<u>Test Method(s)<sup>1</sup>:</u>
Immunity (cont'd)	
Electrical Fast Transient/Burst	IEC 61000-4-4, Ed. 2.0 (2004-07);
	TEC 61000-4-4 Ed 2.1 (2011):
	EC (61000-4-4 (1995) + A1(2000) + A2(2001))
	KN 61000-4-4 (2008-5):
	RRL Notice No. 2008-5 (May 20, 2008):
	TEC 61000-4-4: EN 61000-4-4: KN 61000-4-4:
	KS C 9610-4-4; ECE Regulation 10.06 Annex 15
Surge	TEC 61000.4.5 (1995) + $41(2000)$
00160	TEC 61000-4-5 Ed 1 1 (2005-11):
	EN 61000-4-5 (1995) + $41(2001)$
	KN 61000-4-5 (2008-5):
	PRI Natice No. 2008 4 (May 20. 2008):
	TEC 61000 4 5. EN 61000 4 5. VN 61000 4 5.
	NS C 9610 4 5-
	TEFE C37 00 1 2012- TEFE STTD C62 41 2 2002-
	EEE C37.90.1 2012, IEEE 31D C02.41.2 2002,
	ECE Regulation 10.00 Annex 10
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	TEC 61000-4-8 (1993) + A1(2000): TEC 61000-4-8 (2009):
Immunity (Down to $3 A/m$ )	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	TEC 61000-4-11 Ed 2 (2004-03)
Voltage Variations	KN 61000-4-11 (2008-5):
	RRL Notice No. 2008-4 (May 20. 2008)
	TEC 61000-4-11: EN 61000-4-11: KN 61000-4-11:
	KS C 9610-4-11
Ring Wave	TEC 61000-4-12 Ed 2 (2006-09)
	EN 61000-4-12:2006
	TEC 61000-4-12: EN 61000-4-12: KN 61000-4-12:
	TEEE STD C62 41 2 2002

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<u>Test Technology:</u>	<u>Test Method(s)<sup>1</sup>:</u>
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
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 301 893; ETSI EN 301 511; ETSI EN 301 893; 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 measurement (RF Exposure Evaluation); RSS-102 measurement (Nerve Stimulation); 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-137; 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
Jopan 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)
	1

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<u>Test Technology:</u>	Test Method(s) <sup>1</sup> :
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
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)
OIA (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

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<u>Test Technology:</u>	<u>Test Method(s)<sup>1</sup>:</u>
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;
	FAA AC 150/5345-47C;
DC Voltage / Current	FAA EB 67D
(1mV to 15 kV) / (1µA to 10A)	
Power Factor / Efficiency / Crest Factor	
(Power to 30kW)	
Resistance	
$(1\mathbf{m}\Omega \text{ to } 4000\mathbf{M}\Omega)$	

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 (f 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>

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
	1	
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Testing Activities Performed in Support of FCC Certification in Accordance with 47 Code of Federal Regulations and FCC KDB 974614, Appendix A, Table A $1^2$ 

Rule Subpart/Technology	Test Method		Maximum Frequency (MHz)
Unlicensed Personal Communication			
<u>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 D(	)2 (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
White Space Device Intentional Radiators Part 15H	ANSI C63.10:2013		40000
<u>Commercial Mobile Services (FCC Licensed</u> <u>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</u> <u>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</u> <u>Licensed Radio Service Equipment)</u> 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
<u>Microwave and Millimeter Bands Radio</u> <u>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	4	40000
(A2LA Cert. No. 1786.01) 08/15/2023		In	Page 8 of 9



Testing Activities Performed in Support of FCC Certification in Accordance with 47 Code of Federal Regulations and FCC KDB 974614, Appendix A, Table A $1^2$ 

Test Method	Maximum Frequency (MHz)
ANSI/TIA-603-E; TIA-102.CAAA-E; ANSI C63.26:2015	40000
ANSI C63.26:2015	40000
	<b>Test Method</b> ANSI/TIA-603-E; TIA-102.CAAA-E; ANSI C63.26:2015 ANSI C63.26:2015

<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.

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# **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 15th day of August 2023.

Mr. Trace McInturff, Vice President, Accreditation Services For the Accreditation Council Certificate Number 1786.01 Valid to June 30, 2025

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