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Job Number:	1001373785
Project Number:	11CA23097A
File Number:	MC3181
Date:	October 14, 2011
Model:	001D7545

Electromagnetic Compatibility Test Report

For

Chamberlain Group Inc.

Test Report Details

Tests Performed By:	**Underwriters Laboratories Inc. 333 Pfingsten Rd. Northbrook, IL 60062**
Tests Performed For:	**Chamberlain Group Inc. 845 Larch Ave. Elmhurst, IL 60126**
Applicant Contact: Phone: E-mail:	**Cindy Schaaf (630) 516-6711 cschaaf@chamberlain.com**
Test Report Date: Rev1 Date	**14 October 2011 22 November 2011**
Product Type:	**Linear Actuator Gate Operator with 900MHz FHSS Transceiver**
Product standards	**FCC Part 15.247, Subpart C, RSS-210, RSS-Gen**
Model Number:	**001D7545**
EUT Category:	**Frequency Hopping Spread Spectrum Transceiver**
Testing Start Date:	**04 October 2011**
Date Testing Complete:	**12 October 2011**
Overall Results:	**Compliant**

Underwriters Laboratories Inc. reports apply only to the specific samples tested under stated test conditions. All samples tested were in good operating condition throughout the entire test program. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. Underwriters Laboratories Inc. shall have no liability for any deductions, inferences or generalizations drawn by the client or others from Underwriters Laboratories Inc. issued reports. This report shall not be used to claim, constitute or imply product certification, approval, or endorsement by NVLAP, NIST, A2LA, or any agency of the US government.

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Report Directory

Report Revision History

Revision Date	Description	Revised By	Revision Reviewed By
Rev1 22NOV2011	Editorial Changes per manufacturer request	BM	MF

1.0 G E N E R A L - Product Description

1.1 Equipment Description

The Equipment Under Test (EUT) is model LA500 linear actuator gate operator with 900MHz FHSS transceiver and multiple frequency receiver. The EUT runs on 120Vac or 240Vac, toroid transformer with battery backup or battery run utilizing a trickle charge DPI transformer.

1.2 Device Configuration During Test

1.2.1 Equipment Used During Test:

Use	Product Type	Manufacturer	Model	Comments
EUT	Gate Operator w/ Transceiver	Chamberlain	LA500	Plastic Enclosure
EUT	Gate Operator w/ Transceiver	Chamberlain	LA500	Metal Enclosure
AE	Gate Operator Arms	Chamberlain Group Inc.	LA500	Two
AE	Photo Eyes	Chamberlain Group Inc.	1A5034-1, -2	-

Note: **EUT** - Equipment Under Test, **AE** - Auxiliary/Associated Equipment, or **SIM** - Simulator (Not Subjected to Test)

1.2.2 Input/Output Ports:

Port #	Name	Type*	Cable Max. >3m (Y/N)	Cable Shielded (Y/N)	Comments
0	Enclosure	N/E	-	-	None
1	AC Input	AC	N	N	None
2	Antenna	TP	-	-	In plastic enclosure antenna is attached directly to port on the board. In metal enclosure antenna is attached via short 10” 75 Ohm coax to outside of the box.

Note:
AC = AC Power Port DC = DC Power Port N/E = Non-Electrical
I/O = Signal Input or Output Port (Not Involved in Process Control)
TP = Telecommunication Ports

1.2.3 Power Interface:

Mode # /Rated	Voltage (V)	Current (A)	Power (W)	Frequency (DC/AC-Hz)	Phases (#)	Comments
1	120	-	-	AC-60	1	w/ Plug In Supply
2	120	-	-	AC-60	1	w/ Toroid Transformer Supply
3	24	-	-	DC	-	Battery

1.3 EUT Configurations

Mode #	Description
1	EUT setup on 80cm (+/- 20cm) support with accessories attached connected to AC
2	EUT setup on test bench with antenna port connected directly to Spectrum Analyzer via attenuator and cable, connected to AC
3*	EUT setup on test bench with antenna port connected directly to Spectrum Analyzer via attenuator and cable, battery mode.
* Only Peak Power Measurement was conducted in that configuration. Because there was no difference in output power it was considered not necessary to do any other measurements in battery mode.	

1.4 EUT Operation Modes

Mode #	Description
1	EUT transmitting continuously with modulation on either low, middle or high channels.
2	EUT transmitting continuously with modulation in hopping mode.
3	EUT in RX Hopping mode.

2.0 Summary

The tests listed in the Summary of Testing section of this report have been performed and the results recorded by Underwriters Laboratories Inc. in accordance with the procedures stated in each test requirement and specification. The applicant determined the list of tests performed were applicable to the Equipment Under Test. As a result, the subject product has been verified to comply or not comply as noted in the Summary of Testing with each test specification. The test results relate only to the items tested.

2.1 Deviations from standard test methods

None

2.2 Device Modifications Necessary for Compliance

None

2.3 Reference Standards

Product is considered Class A per Part 15, Subpart B

Standard Number	Standard Name	Standard Date
FCC Part 15, Subpart B & 15.247	Code of Federal Regulations, Part 15, Radio Frequency Devices	2010
RSS-210, Issue 8	License-Exempt Radio Apparatus (All Frequency Bands): Category I Equipment	December 2010
RSS-Gen, Issue 3	General Requirements and Information for the Certification of Certification of Radio Apparatus	December 2010

2.4 Results Summary

Requirement – Test	References	Result (Compliant / Non-Compliant)*
Conducted Emissions - Mains	47 CFR Part 15.107, 15.207 RSS-Gen 7.2.4	Compliant
Radiated Emissions - Digital	47 CFR Part 15.209 RSS-Gen 7.2.3	Compliant
Spurious Emissions (Antenna Conducted and Radiated)	47 CFR Part 15.247(d) RSS-210, A8.5 RSS-Gen 7.2.5	Compliant
Bandedge Compliance	47 CFR Part 15.247(d) RSS-210, A8.5	Compliant
Carrier Frequency Separation	47 CFR Part 15.247(a)(1) RSS-210, A8.1(b)	Compliant
Number of Hopping Frequency	47 CFR Part 15.247(a)(1)(i) RSS-210, A8.1(c)	Compliant
Dwell Time	47 CFR Part 15.247(a)(1)(i) RSS-210, A8.1(c)	Compliant
20dB Bandwidth	47 CFR Part 15.247(a)(2) RSS-210, A8.1(a)	Compliant
Maximum Peak Output Power	47 CFR Part 15.247(b)(2) RSS-210, A8.4(1)	Compliant
99% Occupied Bandwidth	RSS-Gen, 4.6.1	Data only

Test Engineer:

Bart Mucha (41216)
Staff Engineer
International EMC Services
Conformity Assessment Services-

Reviewer:

Michael Ferrer(Ext.41312)
Senior Project Engineer
International EMC Services
Conformity Assessment Services

3.0 Calibration of Equipment Used for Measurement

All test equipment and test accessories are calibrated on a regular basis. The maximum time between calibrations is one year or the manufacturers' recommendation, whichever is less.

All test equipment calibrations are traceable to the National Institute of Standards and Technology (NIST); therefore, all test data recorded in this report is traceable to NIST.

4.0 EMISSIONS TEST RESULTS

The emissions tests were performed according to following regulations:

---------- United States ----------

Code of Federal Regulations Title 47	Part 15, Subpart B, Radio Frequency Devices

---------- Canada ----------

Industry Canada	Spectrum Management and Telecommunications Radio Standards Specifications

Unless specified otherwise in the individual Methods, the tests shall be conducted under the following ambient conditions. Confirmation of these conditions shall be verified at the time the test is conducted.

Ambient Temperature, °C	22.5 ± 2.5	Relative Humidity, %	45 ± 15	Barometric Pressure, mBar	950 ± 150

Sample Calculations
Radiated Field Strength and Conducted Emissions data contained within this report is calculated on the following basis:

Field Strength (dBuV/m) = Meter Reading (dBuV) + AF (dB/m) - Gain (dB) + Cable Loss (dB)
Conducted Voltage (dBuV) = Meter Reading (dBuV) + Cable Loss (dB) + LISN IL (dB)
Conducted Current (dBuA) = Meter Reading (dBuV) + Cable Loss (dB) - Transducer Factor (dBohms)

4.1 Test Conditions and Results – MAINS TERMINAL – CONDUCTED EMISSIONS (TX)

Test Description	Measurements were made on a ground plane. All power was connected to the system through Artificial Mains Network (AMN). Conducted voltage measurements on mains lines were made at the output of the AMN.

Basic Standard	47 CFR Part 15.107, 15.207 RSS-Gen 7.2.4	
UL LPG	80-EM-S0026	
	Frequency range on each side of line	Measurement Point
Fully configured sample scanned over the following frequency range	150kHz to 30MHz	Mains

Limits - Class B

Frequency (MHz)	Limit (dBµV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

Supplementary information: None

Table 1 Conducted Emissions EUT Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1, 2	1	2

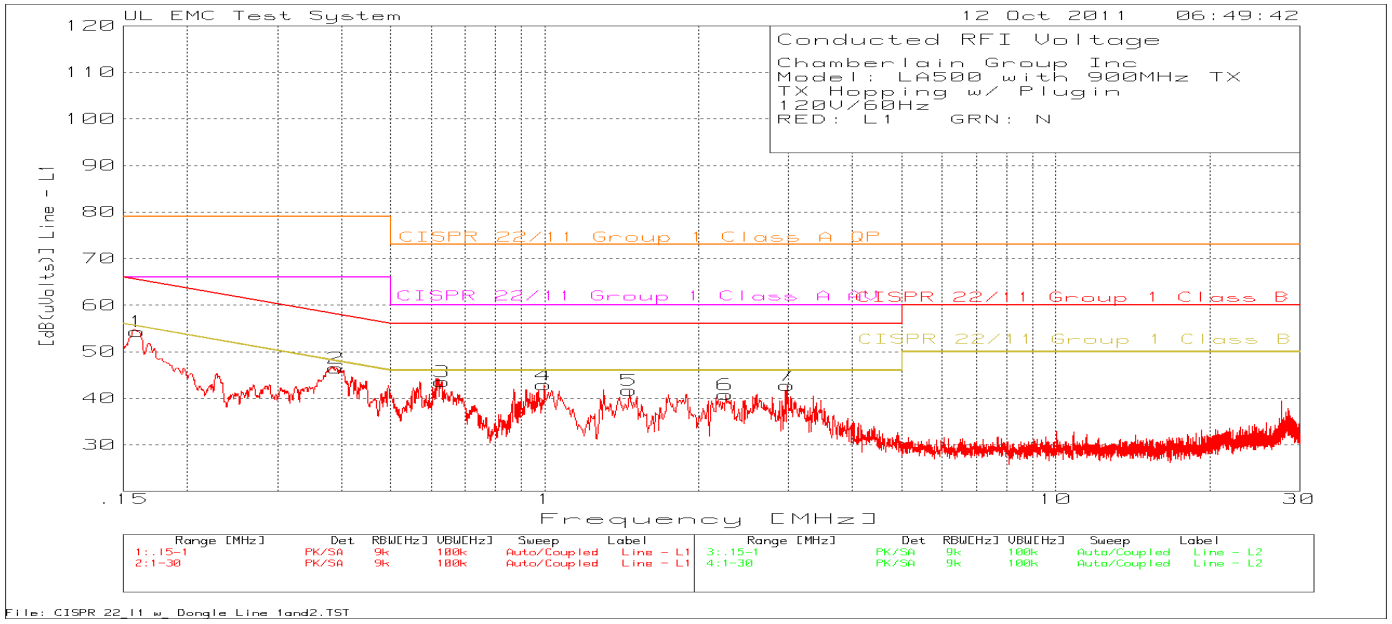
Supplementary information: None

Table 2 Conducted Emissions Test Equipment

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC4328	Dec 29 2010	Dec 29 2011
Transient Limiter	Electro-Metrics	EM7600-2	EMC4224	N/A	N/A
HighPass Filter	Solar Electronics	2803-150	885551	N/A	N/A
Attenuator	HP	8494B	2831A00838	N/A	N/A
LISN - L1	Solar	8602-50-TS-50-N	EMC4052	Jan 6 2011	Jan 6 2012
LISN - L2	Solar	8602-50-TS-50-N	EMC4064	Jan 6 2011	Jan 6 2012
FILE USED FOR TESTING					
CISPR 22_11 w_ Dongle Line 1and2.TST					

Figure 1 Test Setup for Conducted Emissions

Figure 2 Conducted Emissions Graph – TX All Channels Hopping (PlugIn Supply)



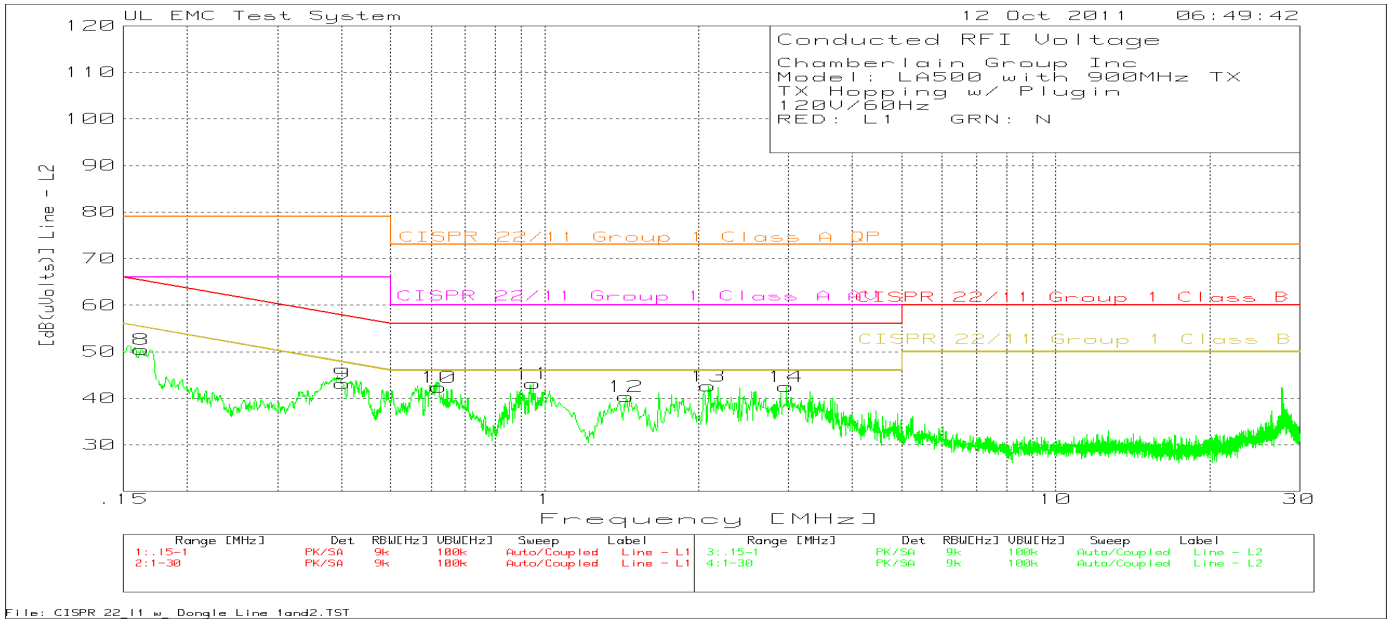


Table 3 Conducted Emissions Data Points – TX All Channels Hopping (PlugIn Supply)

Chamberlain Group Inc
Model: LA500 with 900MHz TX
TX Hopping w/ Plugin
120V/60Hz
RED: L1 GRN: N

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Transducer Factor [dB]	Gain/Loss Factor [dB]	Level [dB(uVolts)]	Limit:1	2	3	4	5	6
Line - L1											
1	.15977	39.93 PK	1.7	12.7	54.33	79	66	65.5	55.5	-	-
				Margin [dB]		-24.67	-11.67	-11.17	-1.17	-	-
2	.39128	35.2 PK	.5	10.8	46.5	79	66	58	48	-	-
				Margin [dB]		-32.5	-19.5	-11.5	-1.5	-	-
3	.62916	32.7 PK	.3	10.6	43.6	73	60	56	46	-	-
				Margin [dB]		-29.4	-16.4	-12.4	-2.4	-	-
4	.9966	32.04 PK	.2	10.6	42.84	73	60	56	46	-	-
				Margin [dB]		-30.16	-17.16	-13.16	-3.16	-	-
5	1.46365	30.87 PK	.2	10.6	41.67	73	60	56	46	-	-
				Margin [dB]		-31.33	-18.33	-14.33	-4.33	-	-
6	2.26056	29.98 PK	.2	10.6	40.78	73	60	56	46	-	-
				Margin [dB]		-32.22	-19.22	-15.22	-5.22	-	-
7	2.98501	32.02 PK	.2	10.6	42.82	73	60	56	46	-	-
				Margin [dB]		-30.18	-17.18	-13.18	-3.18	-	-
Line - L2											
8	.16274	36.19 PK	1.7	12.6	50.49	79	66	65.3	55.3	-	-
				Margin [dB]		-28.51	-15.51	-14.81	-4.81	-	-
9	.40317	31.72 PK	.5	10.9	43.12	79	66	57.8	47.8	-	-
				Margin [dB]		-35.88	-22.88	-14.68	-4.68	-	-
10	.62109	31.4 PK	.3	10.7	42.4	73	60	56	46	-	-
				Margin [dB]		-30.6	-17.6	-13.6	-3.6	-	-
11	.94903	32.26 PK	.2	10.7	43.16	73	60	56	46	-	-
				Margin [dB]		-29.84	-16.84	-12.84	-2.84	-	-
12	1.44192	29.54 PK	.1	10.7	40.34	73	60	56	46	-	-
				Margin [dB]		-32.66	-19.66	-15.66	-5.66	-	-
13	2.08669	31.88 PK	.1	10.7	42.68	73	60	56	46	-	-
				Margin [dB]		-30.32	-17.32	-13.32	-3.32	-	-
14	2.97052	31.69 PK	.1	10.7	42.49	73	60	56	46	-	-
				Margin [dB]		-30.51	-17.51	-13.51	-3.51	-	-

LIMIT 1: CISPR 22/11 Group 1 Class A QP
LIMIT 2: CISPR 22/11 Group 1 Class A AV
LIMIT 3: CISPR 22/11 Group 1 Class B QP
LIMIT 4: CISPR 22/11 Group 1 Class B AV

Test Frequency [MHz]	Meter Reading [dB(uV)]	Transducer Factor [dB]	Gain/Loss Factor [dB]	Level [dB(uVolts)]	Limit:1	2	3	4	5	6
Line - L1										
.16132	35.04 QP	1.7	12.6	49.34	79	66	65.4	55.4	-	-
			Margin [dB]:		-29.66	-16.66	-16.06	-6.06	-	-
.39006	32.93 QP	.5	10.8	44.23	79	66	58.06	48.06	-	-
			Margin [dB]:		-34.77	-21.77	-13.83	-3.83	-	-
.62983	25.3 QP	.3	10.6	36.2	73	60	56	46	-	-
			Margin [dB]:		-36.8	-23.8	-19.8	-9.8	-	-
.99622	25.83 QP	.2	10.6	36.63	73	60	56	46	-	-
			Margin [dB]:		-36.37	-23.37	-19.37	-9.37	-	-
1.47076	25.01 QP	.2	10.6	35.81	73	60	56	46	-	-
			Margin [dB]:		-37.19	-24.19	-20.19	-10.19	-	-
2.24258	24.18 QP	.2	10.6	34.98	73	60	56	46	-	-
			Margin [dB]:		-38.02	-25.02	-21.02	-11.02	-	-
3.01488	22.48 QP	.2	10.6	33.28	73	60	56	46	-	-
			Margin [dB]:		-39.72	-26.72	-22.72	-12.72	-	-
Line - L2										
.16161	32.05 QP	1.7	12.7	46.45	79	66	65.38	55.38	-	-
			Margin [dB]:		-32.55	-19.55	-18.93	-8.93	-	-
.40214	28.18 QP	.5	10.9	39.58	79	66	57.81	47.81	-	-
			Margin [dB]:		-39.42	-26.42	-18.23	-8.23	-	-
.62123	24.22 QP	.3	10.7	35.22	73	60	56	46	-	-
			Margin [dB]:		-37.78	-24.78	-20.78	-10.78	-	-
.94994	23.84 QP	.2	10.7	34.74	73	60	56	46	-	-
			Margin [dB]:		-38.26	-25.26	-21.26	-11.26	-	-
1.45094	24.84 QP	.1	10.7	35.64	73	60	56	46	-	-
			Margin [dB]:		-37.36	-24.36	-20.36	-10.36	-	-
2.07978	23.65 QP	.1	10.7	34.45	73	60	56	46	-	-
			Margin [dB]:		-38.55	-25.55	-21.55	-11.55	-	-
2.9857	23.27 QP	.1	10.7	34.07	73	60	56	46	-	-
			Margin [dB]:		-38.93	-25.93	-21.93	-11.93	-	-

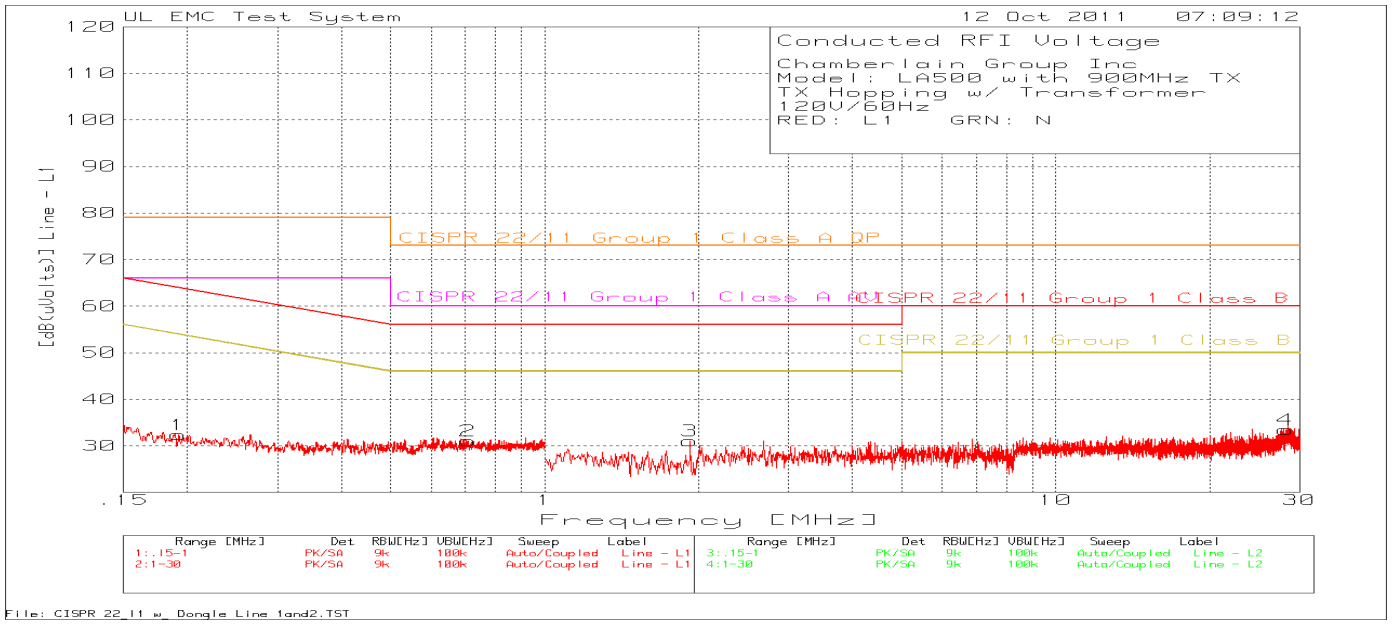
Test Frequency [MHz]	Meter Reading [dB(uV)]	Transducer Factor [dB]	Gain/Loss Factor [dB]	Level [dB(uVolts)]	Limit:1	2	3	4	5	6
Line - L1										
.16132	31.63 Av	1.7	12.6	45.93	79	66	65.4	55.4	-	-
			Margin [dB]:		-33.07	-20.07	-19.47	-9.47	-	-
.39006	33.27 Av	.5	10.8	44.57	79	66	58.06	48.06	-	-
			Margin [dB]:		-34.43	-21.43	-13.49	-3.49	-	-
.62983	21.52 Av	.3	10.6	32.42	73	60	56	46	-	-
			Margin [dB]:		-40.58	-27.58	-23.58	-13.58	-	-
.99622	20.64 Av	.2	10.6	31.44	73	60	56	46	-	-
			Margin [dB]:		-41.56	-28.56	-24.56	-14.56	-	-
1.47076	18.71 Av	.2	10.6	29.51	73	60	56	46	-	-
			Margin [dB]:		-43.49	-30.49	-26.49	-16.49	-	-
2.24258	19.65 Av	.2	10.6	30.45	73	60	56	46	-	-
			Margin [dB]:		-42.55	-29.55	-25.55	-15.55	-	-
3.01488	16.51 Av	.2	10.6	27.31	73	60	56	46	-	-
			Margin [dB]:		-45.69	-32.69	-28.69	-18.69	-	-
Line - L2										
.16161	26.92 Av	1.7	12.7	41.32	79	66	65.38	55.38	-	-
			Margin [dB]:		-37.68	-24.68	-24.06	-14.06	-	-
.40214	26.25 Av	.5	10.9	37.65	79	66	57.81	47.81	-	-
			Margin [dB]:		-41.35	-28.35	-20.16	-10.16	-	-
.62123	18.98 Av	.3	10.7	29.98	73	60	56	46	-	-
			Margin [dB]:		-43.02	-30.02	-26.02	-16.02	-	-
.94994	18.07 Av	.2	10.7	28.97	73	60	56	46	-	-
			Margin [dB]:		-44.03	-31.03	-27.03	-17.03	-	-
1.45094	19.6 Av	.1	10.7	30.4	73	60	56	46	-	-
			Margin [dB]:		-42.6	-29.6	-25.6	-15.6	-	-
2.07978	13 Av	.1	10.7	23.8	73	60	56	46	-	-
			Margin [dB]:		-49.2	-36.2	-32.2	-22.2	-	-
2.9857	16.2 Av	.1	10.7	27	73	60	56	46	-	-
			Margin [dB]:		-46	-33	-29	-19	-	-

NOTE: "+" - Indicates an emission level in excess of the applicable limit (s).

PK - Peak detector
QP - Quasi-Peak detector
Av - average detection

LIMIT 1: CISPR 22/11 Group 1 Class A QP
LIMIT 2: CISPR 22/11 Group 1 Class A AV
LIMIT 3: CISPR 22/11 Group 1 Class B QP
LIMIT 4: CISPR 22/11 Group 1 Class B AV

Figure 3 Conducted Emissions Graph – TX All Channels Hopping (Transformer Supply)



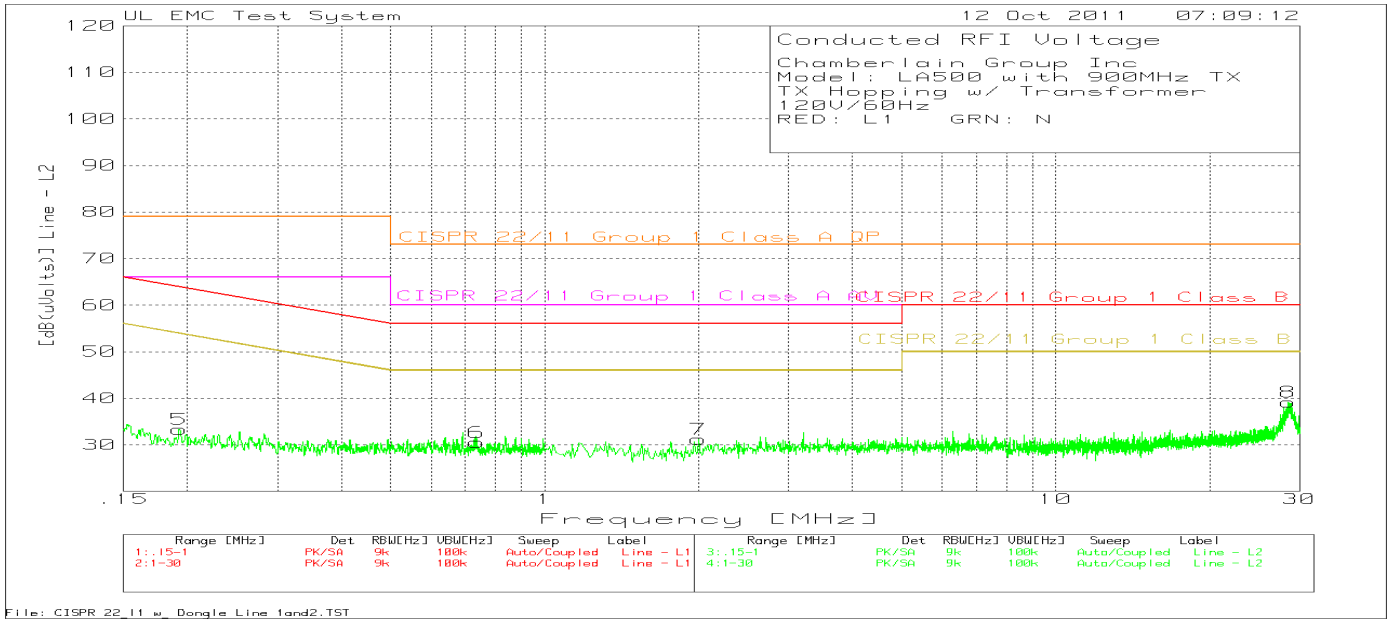


Table 4 Conducted Emissions Data Points – TX All Channels Hopping (Transformer Supply)

Chamberlain Group Inc
Model: LA500 with 900MHz TX
TX Hopping w/ Transformer
120V/60Hz
RED: L1 GRN: N

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Transducer Factor [dB]	Gain/Loss Factor [dB]	Level [dB(uVolts)]	Limit:1	2	3	4	5	6
Line - L1											
1	.19248	19.55 PK	1.3	11.5	32.35	79	66	63.9	53.9	-	-
				Margin [dB]		-46.65	-33.65	-31.55	-21.55	-	-
2	.70966	20.16 PK	.3	10.6	31.06	73	60	56	46	-	-
				Margin [dB]		-41.94	-28.94	-24.94	-14.94	-	-
3	1.92731	20.3 PK	.2	10.6	31.1	73	60	56	46	-	-
				Margin [dB]		-41.9	-28.9	-24.9	-14.9	-	-
4	28.1961	20.76 PK	.8	11.9	33.46	73	60	60	50	-	-
				Margin [dB]		-39.54	-26.54	-26.54	-16.54	-	-
Line - L2											
5	.1929	20.48 PK	1.3	11.6	33.38	79	66	63.9	53.9	-	-
				Margin [dB]		-45.62	-32.62	-30.52	-20.52	-	-
6	.73706	19.67 PK	.2	10.7	30.57	73	60	56	46	-	-
				Margin [dB]		-42.43	-29.43	-25.43	-15.43	-	-
7	1.99975	20.38 PK	.1	10.7	31.18	73	60	56	46	-	-
				Margin [dB]		-41.82	-28.82	-24.82	-14.82	-	-
8	28.52211	26.65 PK	.5	12	39.15	73	60	60	50	-	-
				Margin [dB]		-33.85	-20.85	-20.85	-10.85	-	-

LIMIT 1: CISPR 22/11 Group 1 Class A QP
LIMIT 2: CISPR 22/11 Group 1 Class A AV
LIMIT 3: CISPR 22/11 Group 1 Class B QP
LIMIT 4: CISPR 22/11 Group 1 Class B AV

PK - Peak detector

4.2 Test Conditions and Results – RADIATED EMISSIONS (RX)

Test Description	Measurements were made in a 10-meter semi-anechoic chamber that complies to CISPR 16/ANSI C63.4. Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 10-meter or 3-meter as noted. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in both horizontal and vertical polarities. Final measurements (quasi-peak or average as noted) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4-meters. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable.		
Basic Standard	FCC Part 15, Subpart B		
UL LPG	80-EM-S0029		
	Frequency range	Measurement Point	
Fully configured sample scanned over the following frequency range	30MHz – 5GHz	(10 meter or 3 meter)	

Limits - Class B

Frequency (MHz)	Limit (dBµV/m)	
	Quasi-Peak	Average
30-88	29.54	NA
88-216	33.06	NA
216-960	35.56	NA
960-1000	43.52	NA
Above 1GHz	NA	54 (at 3-meter)

Supplementary information: None

Table 5 Radiated Emissions EUT Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1, 2	1	3

Supplementary information: None

Table 6 Radiated Emissions Test Equipment

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMI Test Receiver	Rohde & Schwarz	ESU	EMC4323	Dec. 30, 2010	Dec. 31, 2011
Bicon Antenna	Chase	VBA6106A	EMC4078	Dec. 2, 2010	Dec. 31, 2011
Log-P Antenna	Chase	UPA6109	EMC4313	Jun. 29 2011	Jun 29 2012
Spectrum Analyzer	Rhode & Schwarz	FSEK	EMC4182	Dec. 28, 2010	Dec. 30, 2011
Antenna Array	UL	BOMS	EMC4276	Oct. 21, 2010	Oct. 21, 2011

Figure 4 Test setup for Radiated Emissions

Showing Metal Enclosure

Showing Plastic Enclosure

Figure 5 Radiated Emissions Graph 30MHz – 1GHz (Plastic Box)

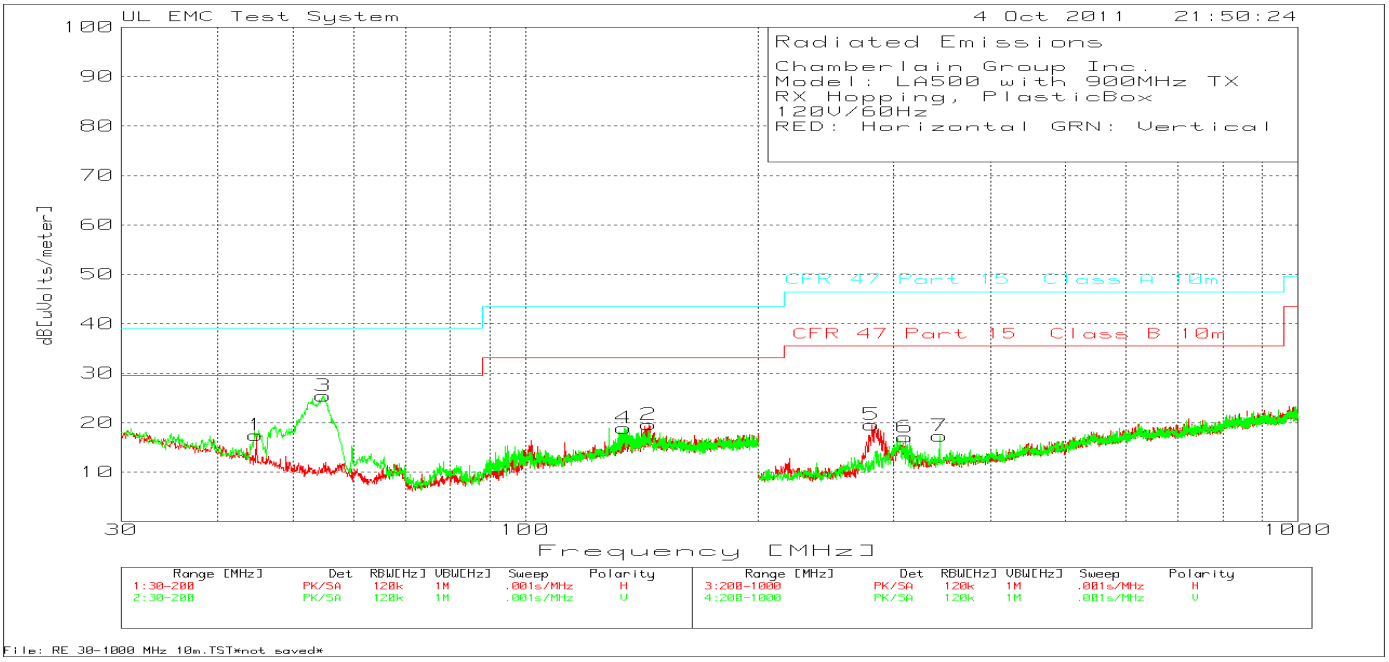


Table 7 Radiated Emissions Data Points 30MHz – 1GHz (Plastic Box)

Chamberlain Group Inc.												
Model: LA500 with 900MHz TX												
RX Hopping, PlasticBox												
120V/60Hz												
RED: Horizontal GRN: Vertical												
Test Frequency	Meter Reading	Detector	Antenna Factor dB	Path Loss/Gain dB	dBuV/m	CFR 47 Part 15 Class A 10m	Margin	CFR 47 Part 15 Class B 10m	Margin	Height [cm]	Polarity	
44.7826	35.6	PK	12.2	-30.3	17.5	39.1	-21.6	29.6	-12.1	400	Horz	
144.6077	35.04	PK	14.6	-30	19.64	43.5	-23.86	33.1	-13.46	400	Horz	
54.8076	47.44	PK	8.2	-30.2	25.44	39.1	-13.66	29.6	-4.16	99	Vert	
134.4128	34.85	PK	14.1	-30	18.95	43.5	-24.55	33.1	-14.15	99	Vert	
281.0127	39.83	PK	12.7	-32.9	19.63	46.4	-26.77	35.6	-15.97	299	Horz	
310.06	36.91	PK	12.9	-32.7	17.11	46.4	-29.29	35.6	-18.49	99	Vert	
343.6376	35.33	PK	14.5	-32.5	17.33	46.4	-29.07	35.6	-18.27	99	Vert	
Test Frequency	Meter Reading	Detector	Atenna Factor dB	Path Loss/Gain Factor dB	dBuV/m	CFR 47 Part 15 Class A 10m	Margin	CFR 47 Part 15 Class B 10m	Margin	Azimuth [Degs]	Height [cm]	Polarity
54.64354	44.01	QP	8.3	-30.2	22.11	39.1	-16.99	29.6	-7.49	1	267	Vert
PK - Peak detector												
QP - Quasi-Peak detector												

Figure 6 Radiated Emissions Graph 1GHz – 10GHz (Plastic Box)

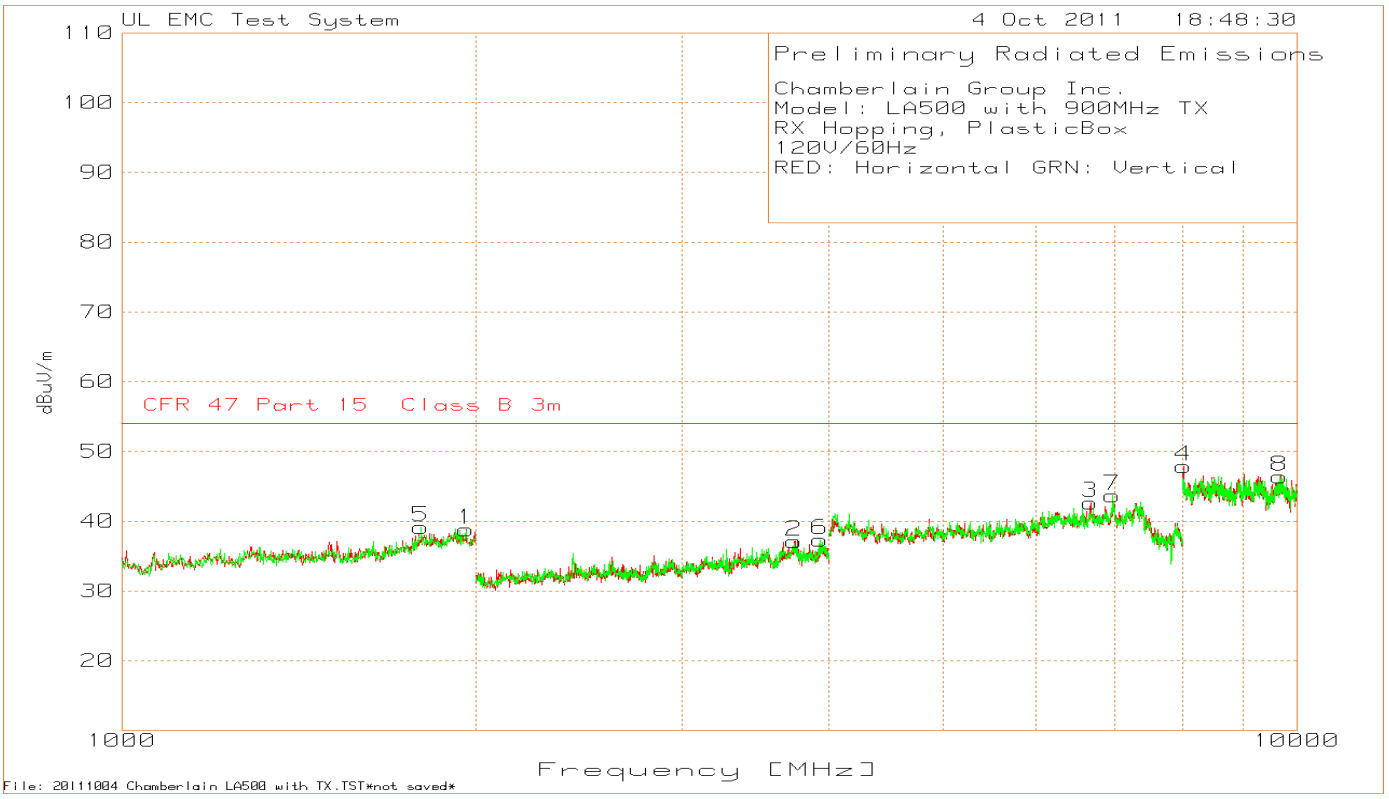


Table 8 Radiated Emissions Data Points 1GHz – 10GHz (Plastic Box)

Chamberlain Group Inc.									
Model: LA500 with 900MHz TX									
RX Normal Board, PlasticBox									
120V/60Hz									
RED: Horizontal GRN: Vertical									
Test Frequency	Meter Reading	Detector	EMCO 3115 s/n 2638 [dB]	BOMS Factor [dB]	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
1827.655	65.03	PK	27.2	-53.59	38.64	54	-15.36	100	Horz
3719.72	62.74	PK	23.6	-49.18	37.16	54	-16.84	100	Horz
6994.995	57.99	PK	29.3	-45.03	42.26	54	-11.74	150	Horz
8526.527	58.18	PK	36.6	-48.52	46.26	54	-7.74	150	Horz
1925.852	64.93	PK	27.6	-53.09	39.44	54	-14.56	100	Vert
3927.928	63.64	PK	24	-50.34	37.3	54	-16.7	100	Vert
6982.983	59.41	PK	29.3	-45.18	43.53	54	-10.47	100	Vert
9331.331	57.9	PK	36.4	-48.54	45.76	54	-8.24	150	Vert
PK - Peak detector									

Figure 7 Radiated Emissions Graph 30MHz – 1GHz (Metal Box)

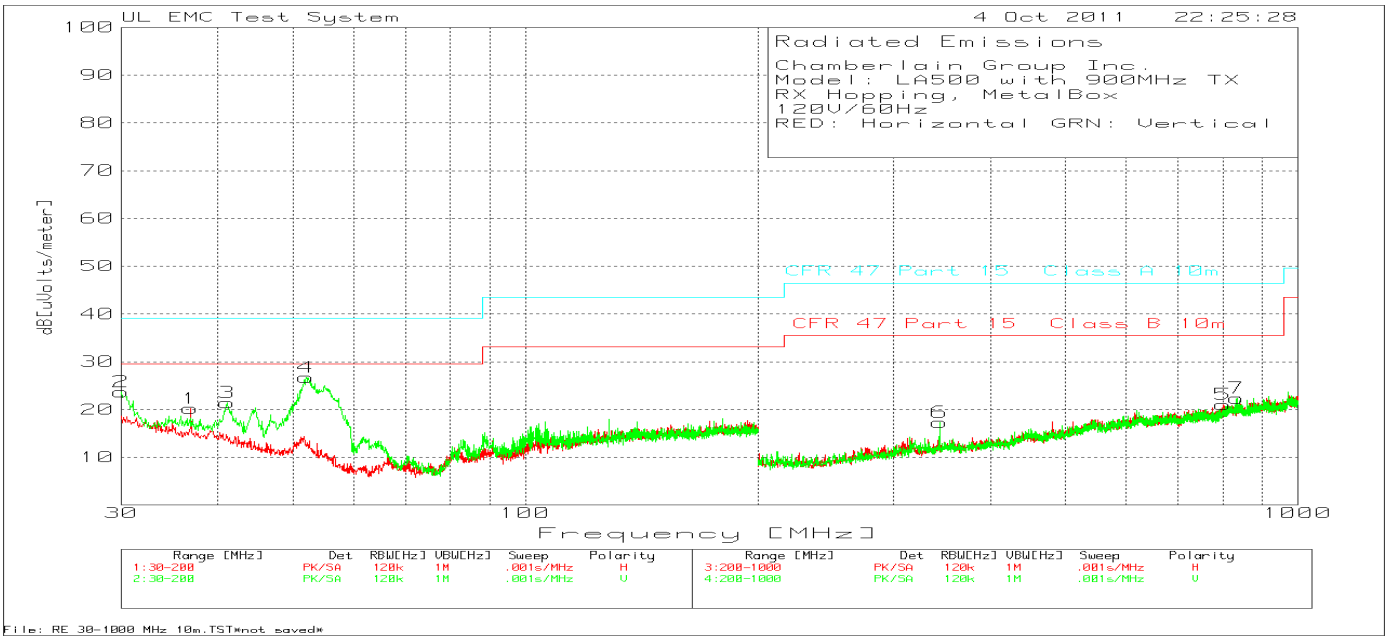


Table 9 Radiated Emissions Data Points 30MHz – 1GHz (Metal Box)

Test Frequency	Meter Reading	Detector	Antenna Factor dB	Path Loss/Gain dB	dBuV/m	CFR 47 Part 15 Class A 10m	Margin	CFR 47 Part 15 Class B 10m	Margin	Height [cm]	Polarity	
36.8816	35.09	PK	15.4	-30.3	20.19	39.1	-18.91	29.6	-9.41	99	Horz	
30	36.16	PK	17.9	-30.4	23.66	39.1	-15.44	29.6	-5.94	99	Vert	
41.1294	38.1	PK	13.6	-30.3	21.4	39.1	-17.7	29.6	-8.2	99	Vert	
52.004	47.8	PK	9.1	-30.2	26.7	39.1	-12.4	29.6	-2.9	99	Vert	
801.999	30.62	PK	21.6	-31.2	21.02	46.4	-25.38	35.6	-14.58	199	Horz	
343.638	35.3	PK	14.5	-32.5	17.3	46.4	-29.1	35.6	-18.3	99	Vert	
833.977	31.51	PK	22.3	-31.4	22.41	46.4	-23.99	35.6	-13.19	99	Vert	
Test Frequency	Meter Reading	Detector	Antenna Factor dB	Path Loss/Gain dB	dBuV/m	CFR 47 Part 15 Class A 10m	Margin	CFR 47 Part 15 Class B 10m	Margin	Azimuth [Degs]	Height [cm]	Polarity
52.2461	43.64	QP	9.1	-30.2	22.54	39.1	-16.56	29.6	-7.06	132	100	Vert
30.0256	31.26	QP	17.9	-30.4	18.76	39.1	-20.34	29.6	-10.84	281	118	Vert
PK - Peak detector												
QP - Quasi-Peak detector												

Figure 8 Radiated Emissions Graph 1GHz – 10GHz (Metal Box)

Table 10 Radiated Emissions Data Points 1GHz – 10GHz (Metal Box)

Test Frequency	Meter Reading	Detector	Antenna Factor dB	Path Loss/Gain dB	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
1893.788	64.84	PK	27.5	-53.13	39.21	54	-14.79	100	Horz
3639.64	63.09	PK	23.3	-49.32	37.07	54	-16.93	100	Horz
7295.295	58.09	PK	30.4	-44.96	43.53	54	-10.47	100	Horz
9237.237	58.7	PK	36.4	-48.67	46.43	54	-7.57	150	Horz
1937.876	65.24	PK	27.6	-53.18	39.66	54	-14.34	100	Vert
3733.734	62.24	PK	23.7	-49.36	36.58	54	-17.42	100	Vert
7287.287	57.36	PK	30.4	-44.84	42.92	54	-11.08	150	Vert
9001.001	59.31	PK	36.1	-48.59	46.82	54	-7.18	150	Vert
PK - Peak detector									

4.3 Test Conditions and Results – SPURIOUS EMISSIONS (Antenna Conducted and Radiated)

Test Description	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section15.205(c)).

Basic Standard	47 CFR Part 15.247(d) RSS-210, A8.5 RSS-Gen 7.2.5	
	Frequency range	Measurement Point
Fully configured sample scanned over the following frequency range	30MHz – 1GHz	10 meter distance and / or antenna port
Fully configured sample scanned over the following frequency range	1GHz – 10GHz	3 meter distance and / or antenna port

Limits (Antenna Conducted)

All emissions must be 20dB below the level of the fundamental frequency.

Limits (Radiated – Restricted Bands Only)

Frequency (MHz)	Limit (dBµV/m)		
	Quasi-Peak	Average	
	General Emissions	Fundamental	Spurious
30 – 88	29.54	-	-
88 – 216	33.06	-	-
216-960	35.56	-	-
960-1000	43.52	-	-
1,000-25,000	-	-	54

Supplementary information: Below 1GHz, spectrum was checked. All emissions related to the transmitter below 1GHz are not in the restricted band therefore only antenna conducted limits apply (20dB below the peak level of the fundamental).

Table 11 SPURIOUS EMISSIONS EUT Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1, 2	1, 2	1
Supplementary information: None		

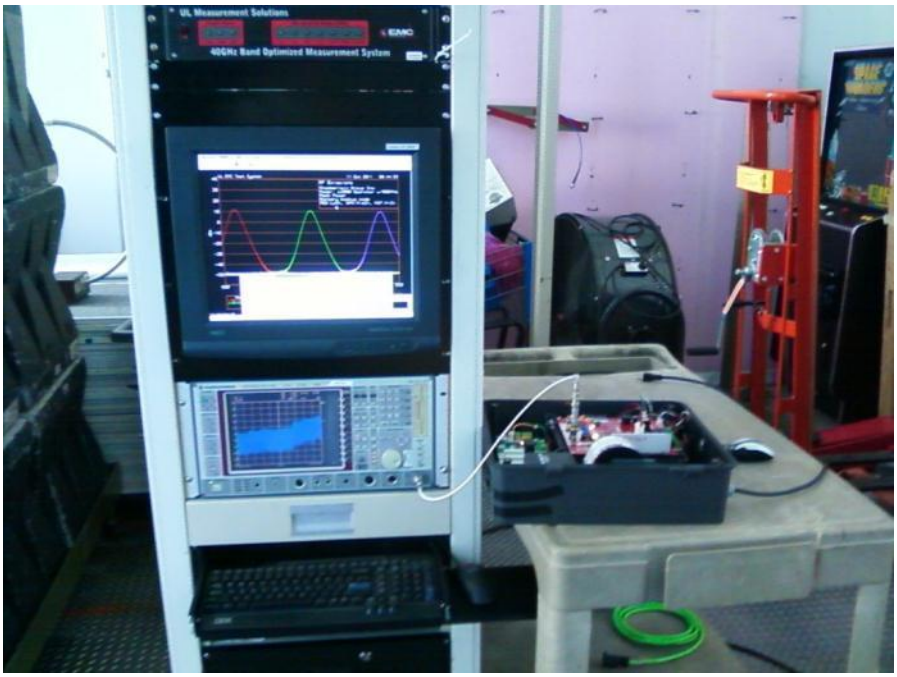
Table 12 SPURIOUS CONDUCTED EMISSIONS Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	Rhode & Schwartz	FSEK	EMC4182	28DEC2010	31DEC2011
Attenuator/ w/ Cable	-	-	None	N/A	N/A

Table 13 SPURIOUS RADIATED EMISSIONS Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	Rhode & Schwartz	ESU	EMC4323	Dec. 30, 2010	Dec. 31, 2011
Bicon Antenna	Chase	VBA6106A	EMC4078	Dec. 2, 2010	Dec. 31, 2011
Log-P Antenna	Chase	UPA6109	EMC4313	Jun 29 2011	Jun 29 2012
Spectrum Analyzer	Rhode & Schwartz	FSEK	EMC4182	Dec. 28, 2010	Dec. 30, 2011
Antenna Array	UL	BOMS	EMC4276	Oct. 21, 2010	Oct. 21, 2011

Test setup for SPURIOUS EMISSIONS – Antenna conducted



Test setup for SPURIOUS EMISSIONS – Radiated

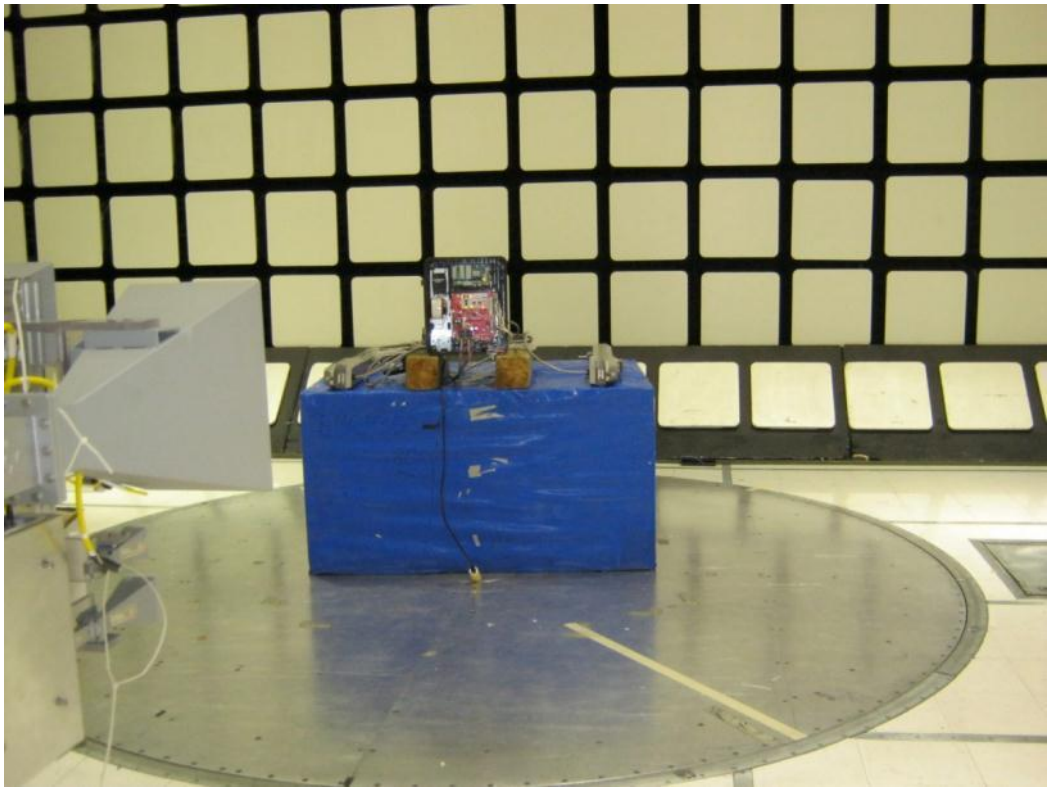


Figure 9 30MHz-10GHz Antenna Port Spurious Emissions Plots - Low Channel

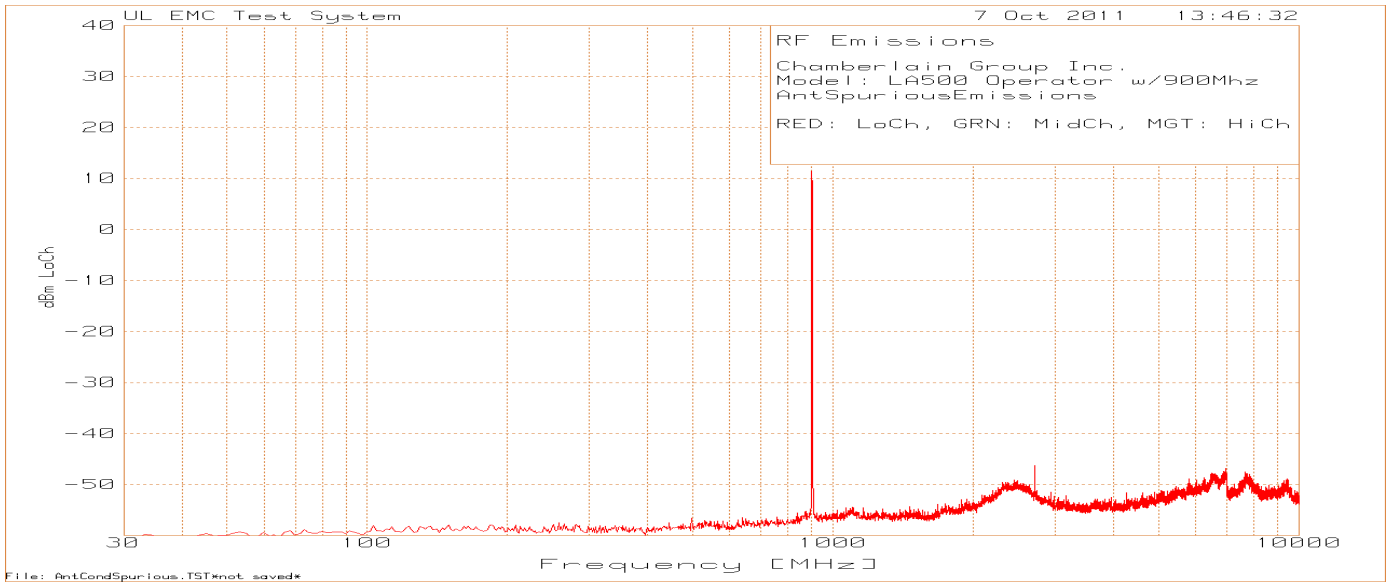


Figure 10 30MHz-10GHz Antenna Port Spurious Emissions Plots – Mid Channel

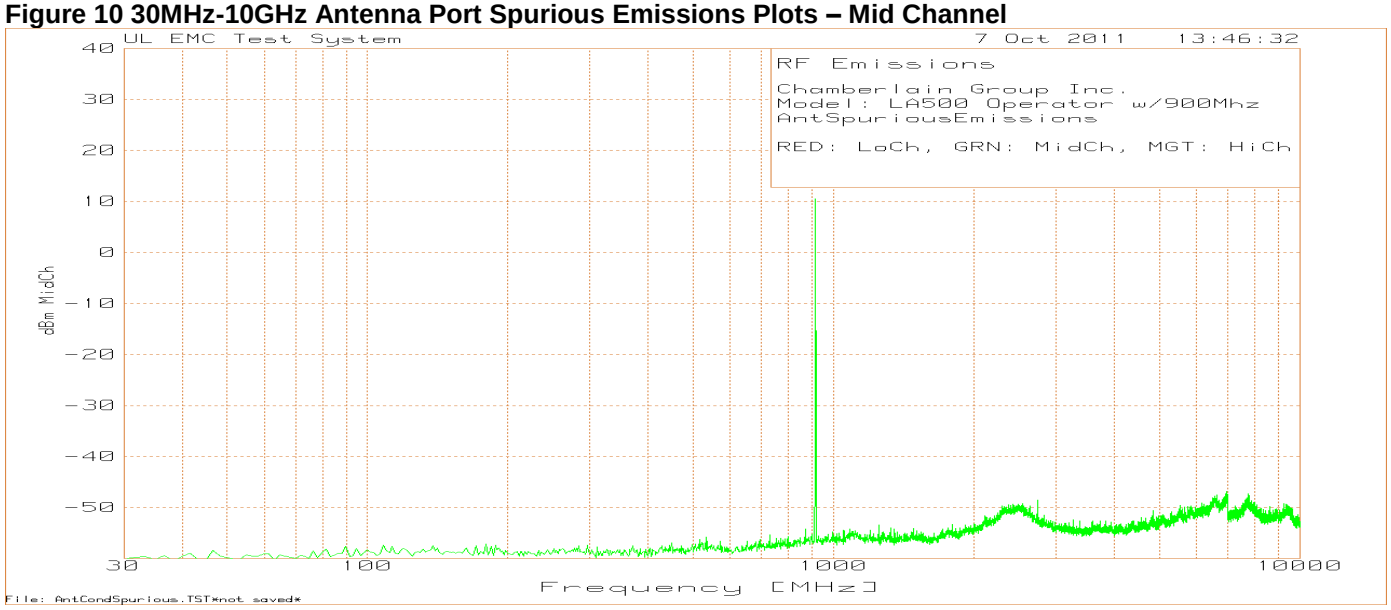


Figure 11 30MHz-10GHz Antenna Port Spurious Emissions Plots - High Channel

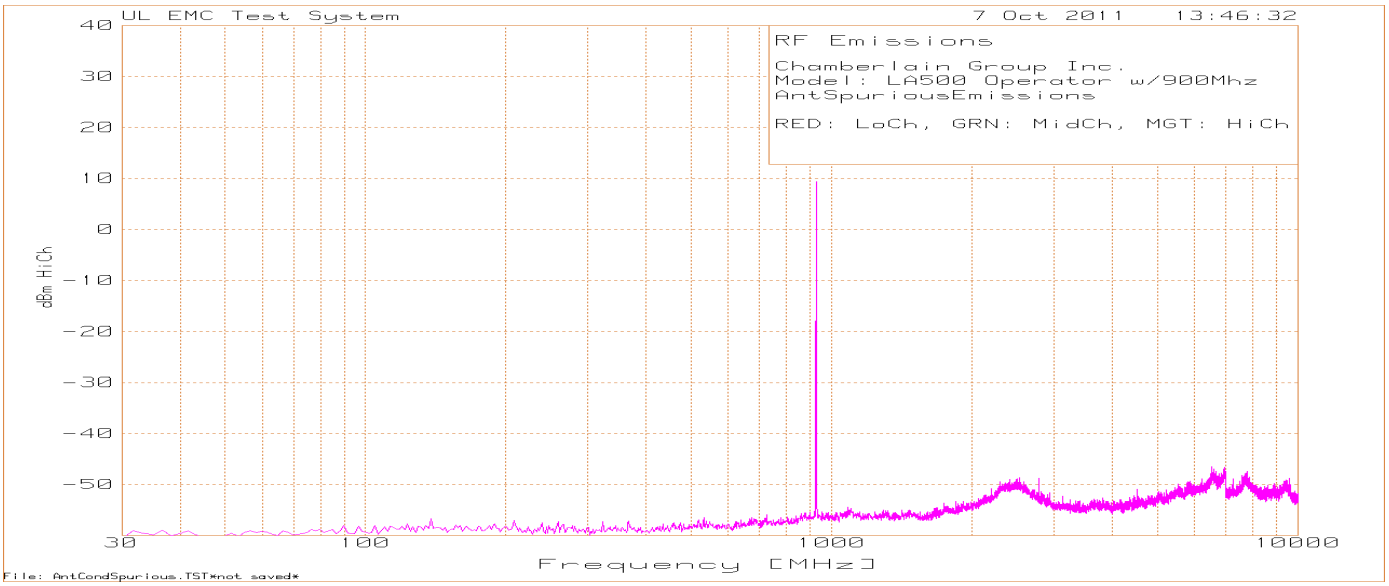


Table 14 Antenna Port Conducted Spurious Emissions 30MHz - 10GHz – Data Points

Chamberlain Group Inc.						
Model: LA500 Operator w/900Mhz						
AntSpuriousEmissions						
RED: LoCh, GRN: MidCh, MGT: HiCh						
Test Frequency	Meter Reading	Detector	dBuV to dBm	Path Loss dB [dB]	Level dBm	Comments
LoCh 30 - 10000MHz						
902.8585	107.16	PK	-107	11.3	11.46	Fundamental, Low Channel
2705.729	45.59	PK	-107	15.2	-46.21	
MidCh 30 - 10000MHz						
914.154	106.28	PK	-107	11.2	10.48	Fundamental, Middle Channel
2743.954	43.5	PK	-107	15	-48.5	
HiCh 30 - 10000MHz						
925.7876	105.32	PK	-107	11.1	9.42	Fundamental, High Channel
2780.517	43.84	PK	-107	14.4	-48.76	
6546.481	45.99	PK	-107	14.5	-46.51	
6963.629	46.15	PK	-107	14.2	-46.65	
7801.249	43.1	PK	-107	16.5	-47.4	
9434.939	41.8	PK	-107	16.1	-49.1	
PK - Peak detector						

Figure 12 Radiated Spurious Emissions below 1GHz, Hopping (Plastic Enclosure)

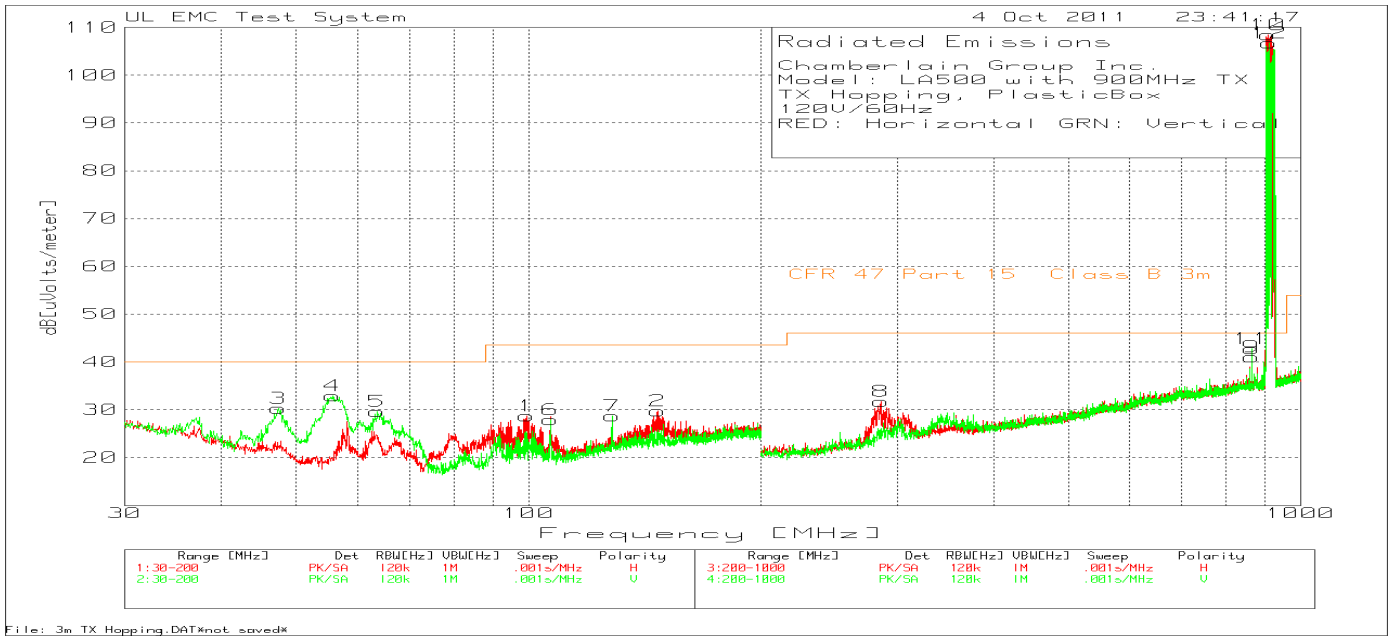


Figure 13 Radiated Spurious Emissions below 1GHz, Hopping (Metal Enclosure)

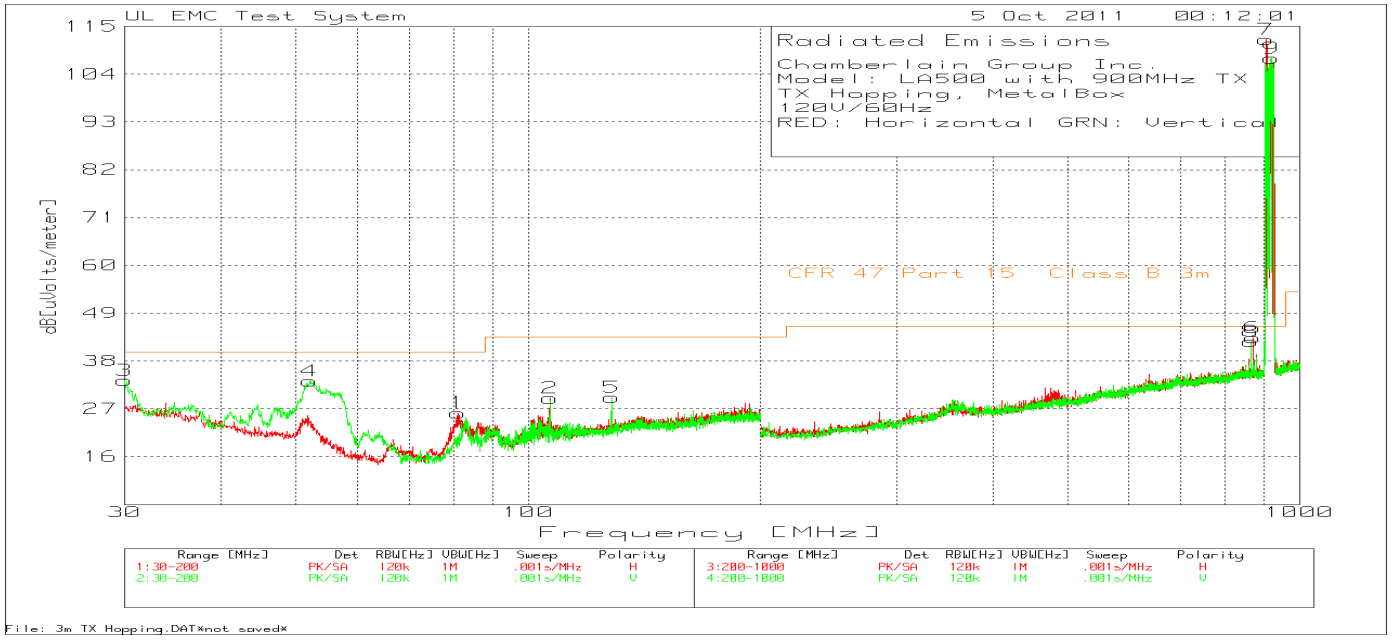


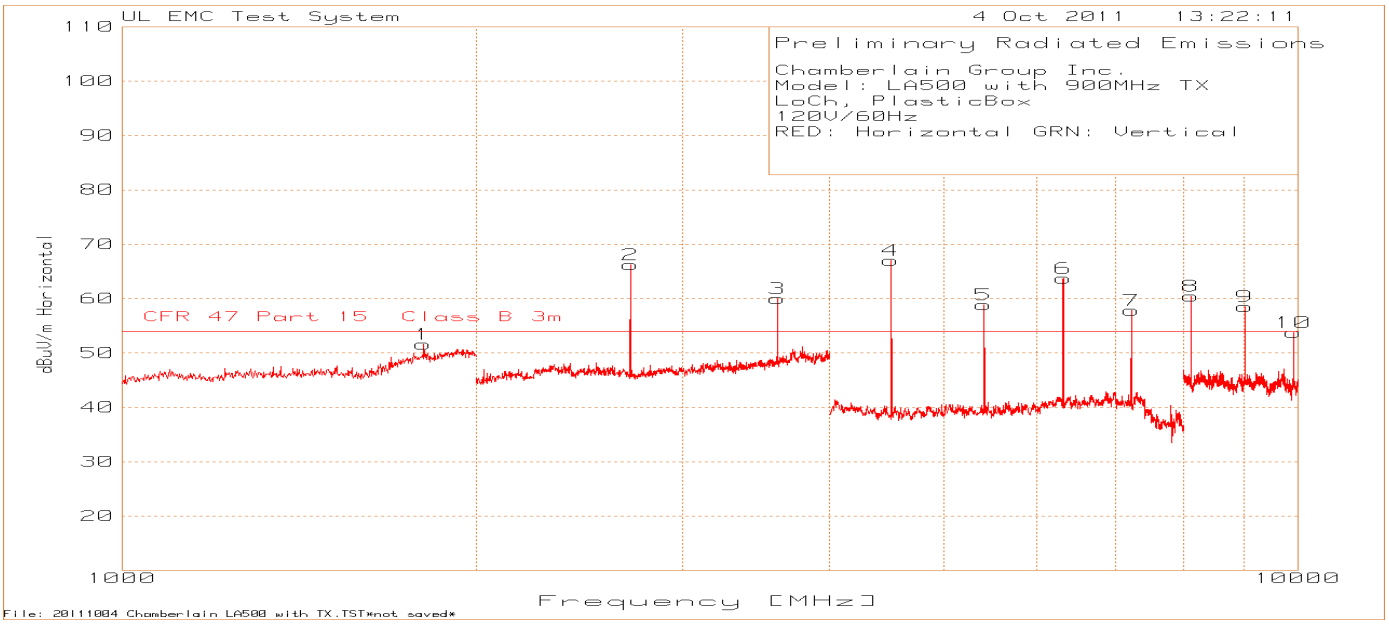
Table 15 Radiated Spurious Emissions below 1GHz, Hopping (Plastic Enclosure)

Chamberlain Group Inc.										
Model: LA500 with 900MHz TX										
TX Hopping, PlasticBox										
120V/60Hz										
RED: Horizontal GRN: Vertical										
Test Frequency	Meter Reading	Detector	Antenna Factor dB	Path Loss dB	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity	
99.4103	17.43	PK	10.2	1.1	28.73	43.5	-14.77	201	Horz	
147.2414	13.85	PK	14.5	1.4	29.75	43.5	-13.75	201	Horz	
47.4163	17.86	PK	11.6	0.8	30.26	40	-9.74	100	Vert	
55.6572	23.66	PK	8.4	0.8	32.86	40	-7.14	100	Vert	
63.6432	22.76	PK	6	0.9	29.66	40	-10.34	100	Vert	
106.8016	15.38	PK	11.3	1.2	27.88	43.5	-15.62	100	Vert	
128.2109	13.7	PK	13.7	1.3	28.7	43.5	-14.8	100	Vert	
285.8095	16.39	PK	13.4	2	31.79	46	-14.21	100	Horz	
865.4231	14.31	PK	22.9	3.8	41.01	46	-4.99	200	Horz	
906.7288	81.59	PK	23.1	3.8	108.49	46	62.49	200	Horz	
865.6895	16.09	PK	22.9	3.8	42.79	46	-3.21	97	Vert	
911.7921	79.9	PK	23	3.8	106.7	46	60.7	97	Vert	
Test Frequency	Meter Reading	Detector	Antenna Factor dB	Path Loss dB	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Azimuth [Degs]	Height [cm]	Polarity
865.437	14.95	QP	22.9	3.8	41.65	46	-4.35	34	216	Horz
865.4389	14.71	QP	22.9	3.8	41.41	46	-4.59	170	100	Vert
PK - Peak detector										
QP - Quasi-Peak detector										

Figure 14 Radiated Spurious Emissions below 1GHz, Hopping (Metal Enclosure)

Chamberlain Group Inc.										
Model: LA500 with 900MHz TX										
TX Hopping, MetalBox										
120V/60Hz										
RED: Horizontal GRN: Vertical										
Test Frequency	Meter Reading	Detector	Antenna Factor dB	Path Loss dB	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity	
80.9745	17.89	PK	7.2	1	26.09	40	-13.91	201	Horz	
106.7166	17.02	PK	11.2	1.2	29.42	43.5	-14.08	300	Horz	
30	14.33	PK	18.6	0.6	33.53	40	-6.47	99	Vert	
52.089	22.87	PK	9.7	0.8	33.37	40	-6.63	99	Vert	
128.2959	14.54	PK	13.8	1.3	29.64	43.5	-13.86	99	Vert	
870.4863	16.79	PK	22.9	3.7	43.39	46	-2.61	99	Horz	
905.3964	85.03	PK	23.1	3.8	111.93	46	65.93	99	Horz	
865.6895	15.78	PK	22.9	3.8	42.48	46	-3.52	99	Vert	
919.5203	80.7	PK	23.2	3.8	107.7	46	61.7	201	Vert	
Test Frequency	Meter Reading	Detector	Antenna Factor dB	Path Loss dB	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Azimuth [Degs]	Height [cm]	Polarity
865.4362	15.68	QP	22.9	3.8	42.38	46	-3.62	70	390	Horz
865.4372	16.23	QP	22.9	3.8	42.93	46	-3.07	294	103	Vert
PK - Peak detector										
QP - Quasi-Peak detector										

Figure 15 Radiated Spurious Emissions above 1GHz, Low Channel (Plastic Enclosure)



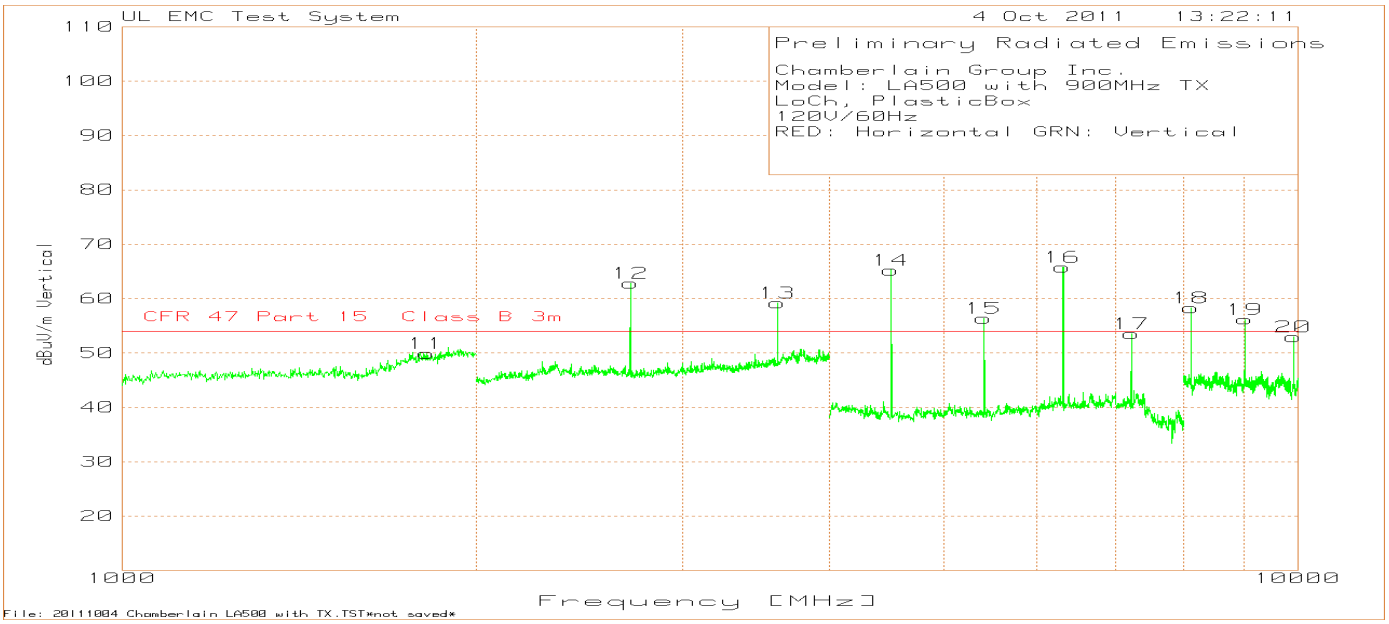
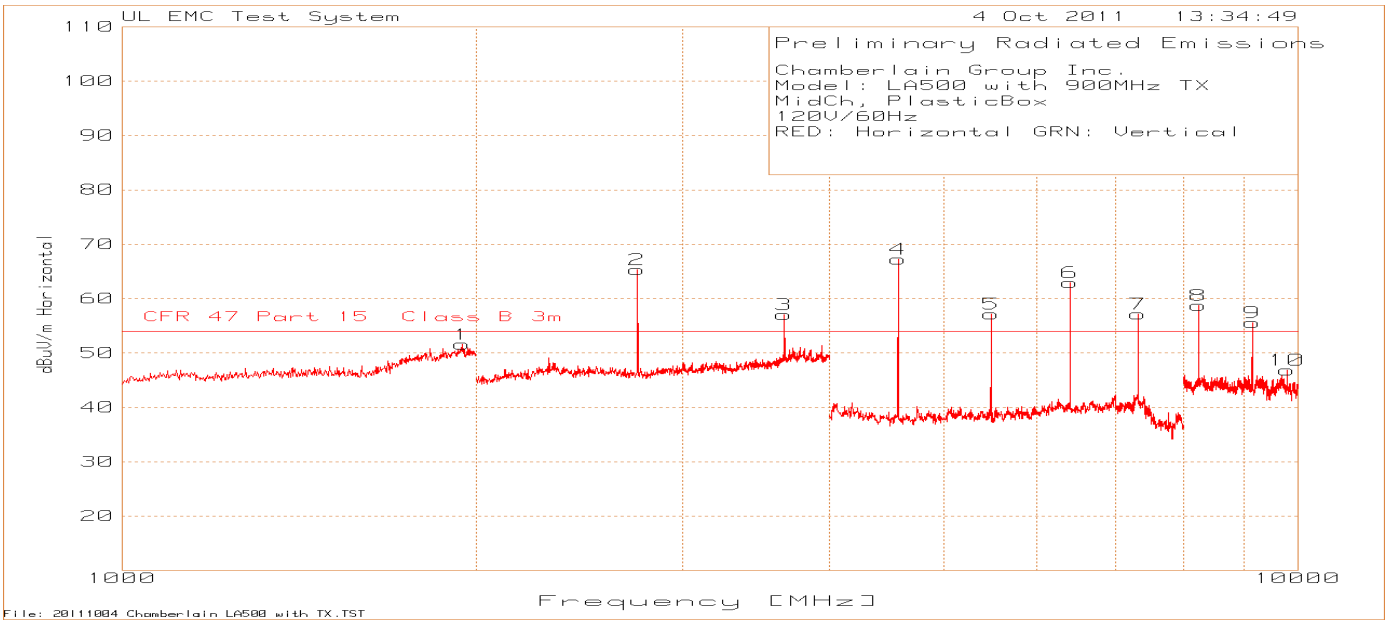


Table 16 Radiated Spurious Emissions above 1GHz, Low Channel (Plastic Enclosure)

Chamberlain Group Inc.											
Model: LA500 with 900MHz TX											
LoCh, PlasticBox											
120V/60Hz											
RED: Horizontal GRN: Vertical											
Test Frequency	Meter Reading	Detector	Antenna Factor dB	Path Loss/Gain Factor dB	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	DC Factor dB	Margin with DC Factor	Height [cm]	Polarity
1805.611	21.1	PK	27.1	3.45	51.65	54	-2.35	-37.7	-40.05	100	Horz
2706.707	40	PK	22.1	4.16	66.26	54	12.26	-37.7	-25.44	100	Horz
3609.61	31.59	PK	23.2	5.22	60.01	54	6.01	-37.7	-31.69	100	Horz
4512.513	91.31	PK	27.8	-52.06	67.05	54	13.05	-37.7	-24.65	100	Horz
5413.413	80.96	PK	27.9	-50	58.86	54	4.86	-37.7	-32.84	100	Horz
6318.318	82.44	PK	29.2	-47.87	63.77	54	9.77	-37.7	-27.93	100	Horz
7219.219	74.71	PK	29.8	-46.61	57.9	54	3.9	-37.7	-33.8	100	Horz
8120.12	73.33	PK	36.2	-49.11	60.42	54	6.42	-37.7	-31.28	100	Horz
9023.023	70.92	PK	36.1	-48.52	58.5	54	4.5	-37.7	-33.2	150	Horz
9925.926	66.53	PK	36.4	-49.17	53.76	54	-0.24	-37.7	-37.94	100	Horz
1815.631	19.36	PK	27.1	3.5	49.96	54	-4.04	-37.7	-41.74	150	Vert
2706.707	36.58	PK	22.1	4.16	62.84	54	8.84	-37.7	-28.86	150	Vert
3609.61	30.77	PK	23.2	5.22	59.19	54	5.19	-37.7	-32.51	150	Vert
4508.509	89.67	PK	27.8	-52.2	65.27	54	11.27	-37.7	-26.43	100	Vert
5413.413	78.48	PK	27.9	-50	56.38	54	2.38	-37.7	-35.32	100	Vert
6314.314	84.45	PK	29.2	-47.81	65.84	54	11.84	-37.7	-25.86	100	Vert
7219.219	70.31	PK	29.8	-46.61	53.5	54	-0.5	-37.7	-38.2	100	Vert
8120.12	71.19	PK	36.2	-49.11	58.28	54	4.28	-37.7	-33.42	150	Vert
9023.023	68.63	PK	36.1	-48.52	56.21	54	2.21	-37.7	-35.49	100	Vert
9925.926	65.74	PK	36.4	-49.17	52.97	54	-1.03	-37.7	-38.73	100	Vert
PK - Peak detector											

* EUT is designed to transmit very short, infrequent packets of data thus resulting in very large duty cycle. Because of the duty cycle being so large it was considered not necessary to perform measurements with VBW reduced to 10Hz and duty cycle factor was applied directly to peak measurements.

Figure 16 Radiated Spurious Emissions above 1GHz, Middle Channel (Plastic Enclosure)



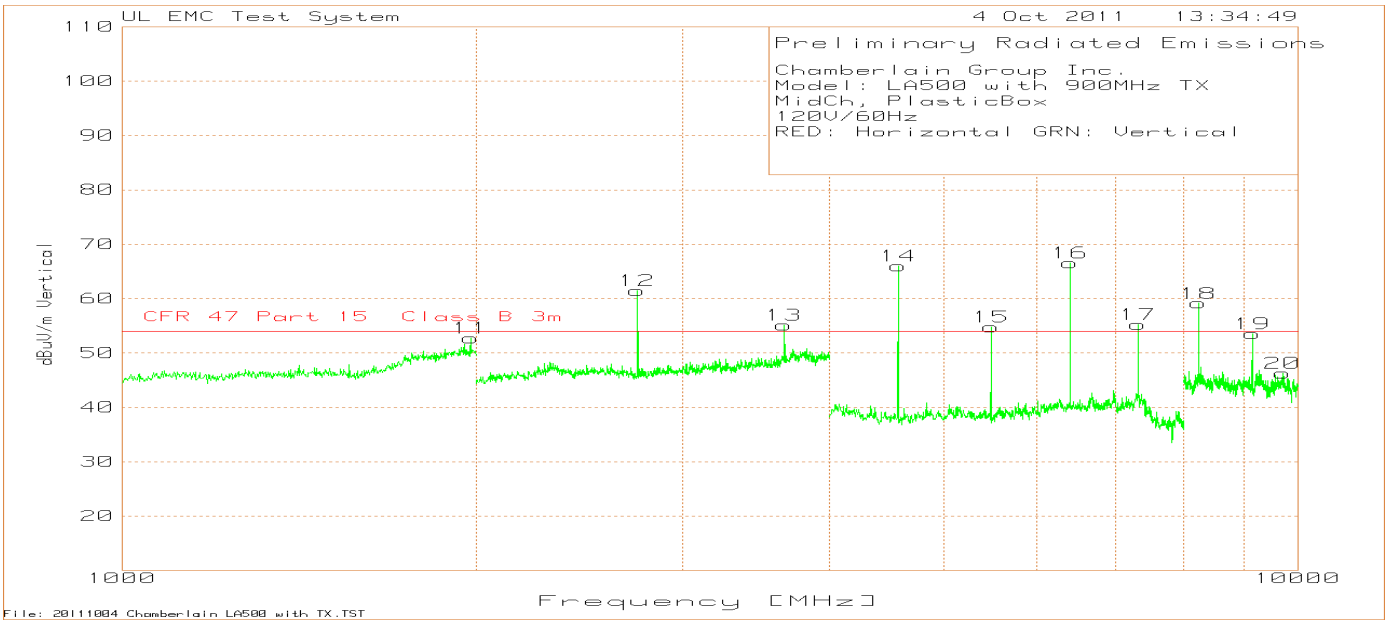
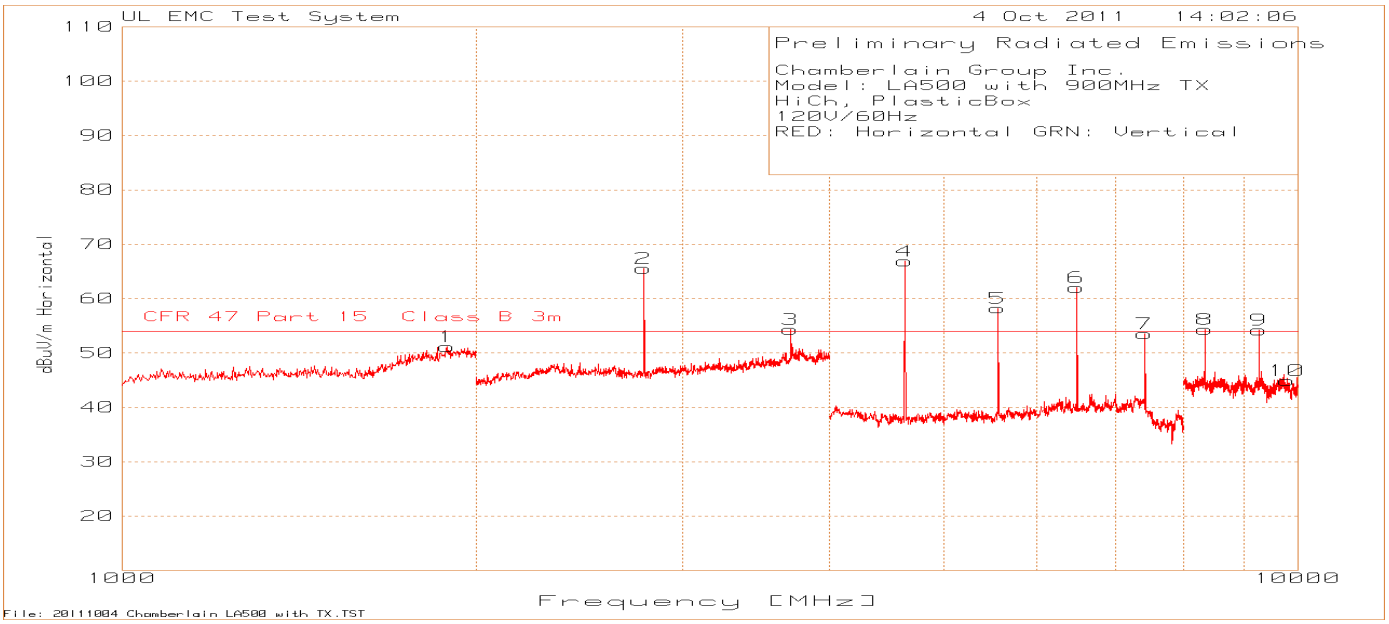


Table 17 Radiated Spurious Emissions above 1GHz, Middle Channel (Plastic Enclosure)

Chamberlain Group Inc.											
Model: LA500 with 900MHz TX											
MidCh, PlasticBox											
120V/60Hz											
RED: Horizontal GRN: Vertical											
Test Frequency	Meter Reading	Detector	EMCO 3115 s/n 2638 [dB]	BOMS Factor [dB]	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	DC Factor dB	Margin with DC Factor dB	Height [cm]	Polarity
1947.896	20.55	PK	27.5	3.52	51.57	54	-2.43	-37.7	-40.13	150	Horz
2744.745	39.09	PK	22.1	4.13	65.32	54	11.32	-37.7	-26.38	100	Horz
3659.66	28.03	PK	23.4	5.64	57.07	54	3.07	-37.7	-34.63	100	Horz
4572.573	91.18	PK	27.7	-51.63	67.25	54	13.25	-37.7	-24.45	100	Horz
5489.489	78.98	PK	28.1	-49.93	57.15	54	3.15	-37.7	-34.55	100	Horz
6402.402	80.95	PK	29.2	-47.18	62.97	54	8.97	-37.7	-28.73	100	Horz
7319.319	72.27	PK	30.6	-45.73	57.14	54	3.14	-37.7	-34.56	100	Horz
8232.232	70.37	PK	36.4	-47.98	58.79	54	4.79	-37.7	-32.91	100	Horz
9147.147	69.5	PK	36.3	-50.25	55.55	54	1.55	-37.7	-36.15	150	Horz
9795.796	59.69	PK	36.4	-49.27	46.82	54	-7.18	-37.7	-44.88	100	Horz
1979.96	21.53	PK	27.5	3.7	52.73	54	-1.27	-37.7	-38.97	100	Vert
2744.745	35.22	PK	22.1	4.13	61.45	54	7.45	-37.7	-30.25	150	Vert
3659.66	26.14	PK	23.4	5.64	55.18	54	1.18	-37.7	-36.52	150	Vert
4572.573	89.93	PK	27.7	-51.63	66	54	12	-37.7	-25.7	100	Vert
5489.489	76.58	PK	28.1	-49.93	54.75	54	0.75	-37.7	-36.95	100	Vert
6402.402	84.58	PK	29.2	-47.18	66.6	54	12.6	-37.7	-25.1	100	Vert
7319.319	70.39	PK	30.6	-45.73	55.26	54	1.26	-37.7	-36.44	150	Vert
8232.232	70.74	PK	36.4	-47.98	59.16	54	5.16	-37.7	-32.54	150	Vert
9147.147	67.45	PK	36.3	-50.25	53.5	54	-0.5	-37.7	-38.2	100	Vert
9707.708	58.05	PK	36.4	-48.2	46.25	54	-7.75	-37.7	-45.45	100	Vert
PK - Peak detector											

* EUT is designed to transmit very short, infrequent packets of data thus resulting in very large duty cycle. Because of the duty cycle being so large it was considered not necessary to perform measurements with VBW reduced to 10Hz and duty cycle factor was applied directly to peak measurements.

Figure 17 Radiated Spurious Emissions above 1GHz, High Channel (Plastic Enclosure)



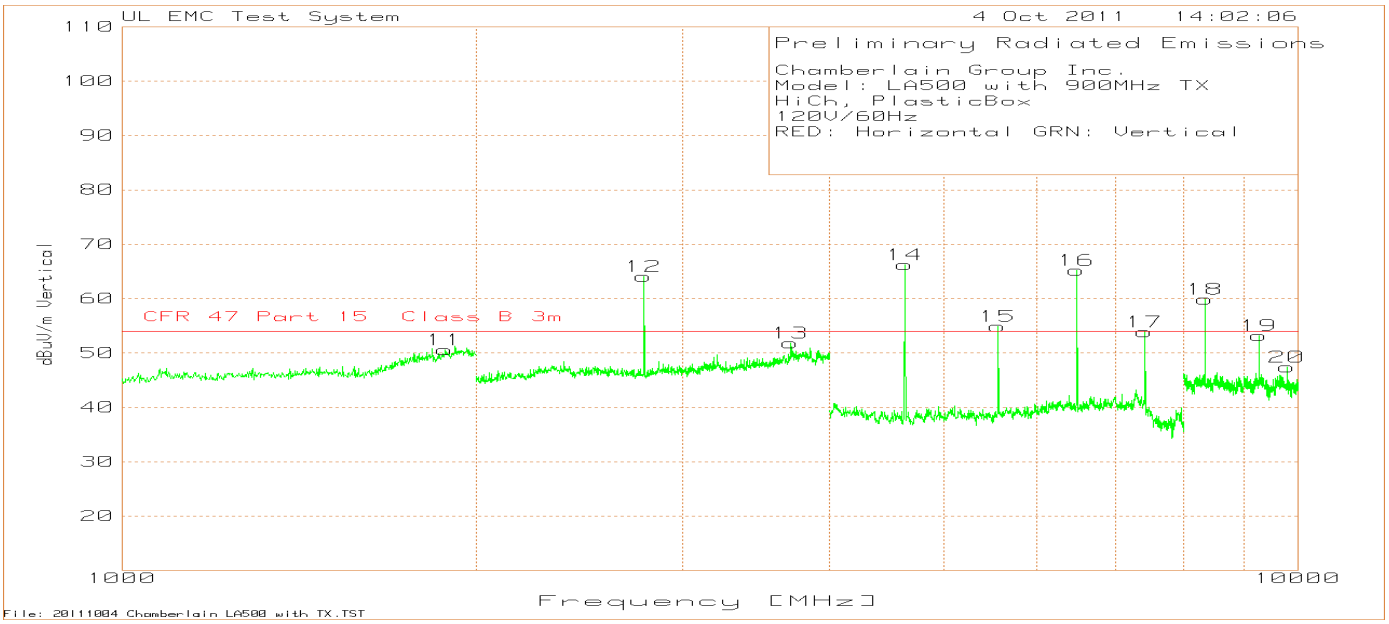
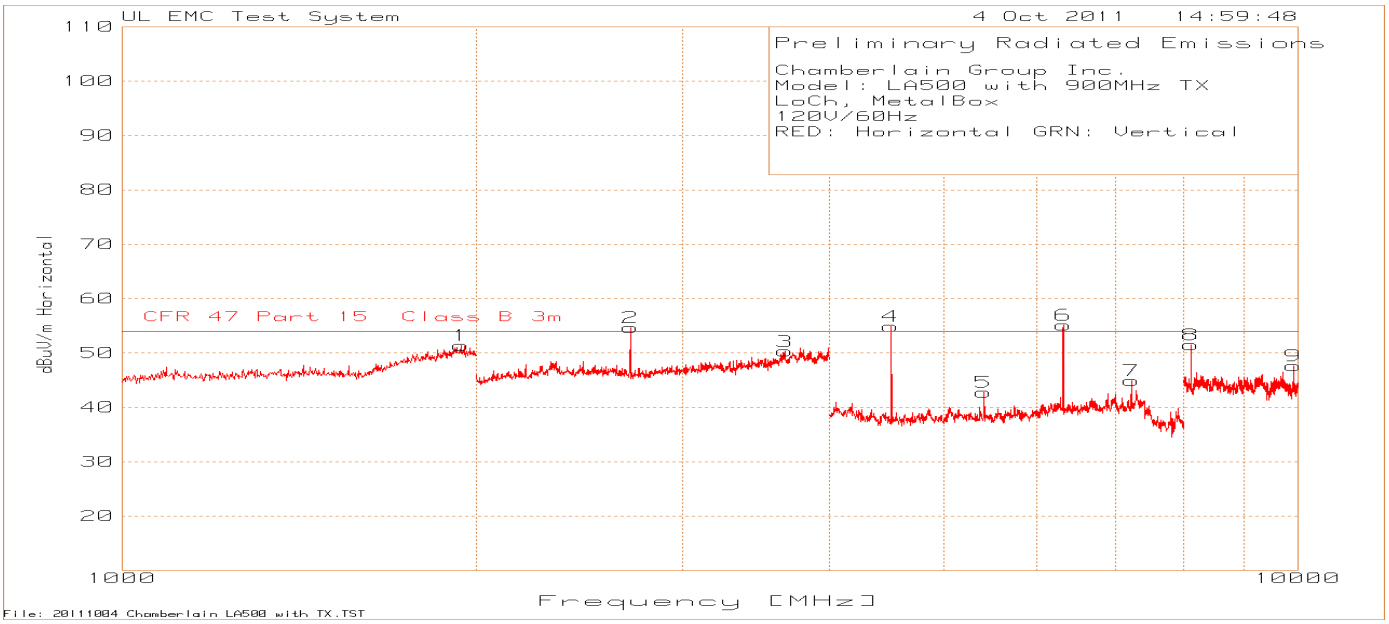


Table 18 Radiated Spurious Emissions above 1GHz, High Channel (Plastic Enclosure)

Chamberlain Group Inc.											
Model: LA500 with 900MHz TX											
HiCh, PlasticBox											
120V/60Hz											
RED: Horizontal GRN: Vertical											
Test Frequency	Meter Reading	Detector	Antenna Factor dB	Path Loss/Gain dB	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	DC Factor dB	Margin with DC Factor	Height [cm]	Polarity
1891.784	20.11	PK	27.5	3.52	51.13	54	-2.87	-37.7	-40.57	100	Horz
2780.781	39.14	PK	22.2	4.19	65.53	54	11.53	-37.7	-26.17	100	Horz
3707.708	25.07	PK	23.5	5.77	54.34	54	0.34	-37.7	-37.36	100	Horz
4632.633	90.74	PK	27.7	-51.57	66.87	54	12.87	-37.7	-24.83	100	Horz
5561.562	79.54	PK	28.3	-49.59	58.25	54	4.25	-37.7	-33.45	100	Horz
6486.486	80.57	PK	29.1	-47.58	62.09	54	8.09	-37.7	-29.61	100	Horz
7415.415	69.36	PK	31	-46.79	53.57	54	-0.43	-37.7	-38.13	100	Horz
8340.34	67.12	PK	36.5	-49.27	54.35	54	0.35	-37.7	-37.35	150	Horz
9269.269	66.6	PK	36.4	-48.78	54.22	54	0.22	-37.7	-37.48	150	Horz
9801.802	57.79	PK	36.4	-49.24	44.95	54	-9.05	-37.7	-46.75	150	Horz
1883.768	19.52	PK	27.5	3.59	50.61	54	-3.39	-37.7	-41.09	150	Vert
2780.781	37.67	PK	22.2	4.19	64.06	54	10.06	-37.7	-27.64	150	Vert
3707.708	22.59	PK	23.5	5.77	51.86	54	-2.14	-37.7	-39.84	100	Vert
4632.633	90.09	PK	27.7	-51.57	66.22	54	12.22	-37.7	-25.48	100	Vert
5561.562	76.25	PK	28.3	-49.59	54.96	54	0.96	-37.7	-36.74	100	Vert
6486.486	83.75	PK	29.1	-47.58	65.27	54	11.27	-37.7	-26.43	100	Vert
7415.415	69.63	PK	31	-46.79	53.84	54	-0.16	-37.7	-37.86	100	Vert
8340.34	72.69	PK	36.5	-49.27	59.92	54	5.92	-37.7	-31.78	150	Vert
9267.267	65.6	PK	36.4	-48.81	53.19	54	-0.81	-37.7	-38.51	150	Vert
9803.804	60.34	PK	36.4	-49.26	47.48	54	-6.52	-37.7	-44.22	100	Vert
PK - Peak detector											

* EUT is designed to transmit very short, infrequent packets of data thus resulting in very large duty cycle. Because of the duty cycle being so large it was considered not necessary to perform measurements with VBW reduced to 10Hz and duty cycle factor was applied directly to peak measurements.

Figure 18 Radiated Spurious Emissions above 1GHz, Low Channel (Metal Enclosure)



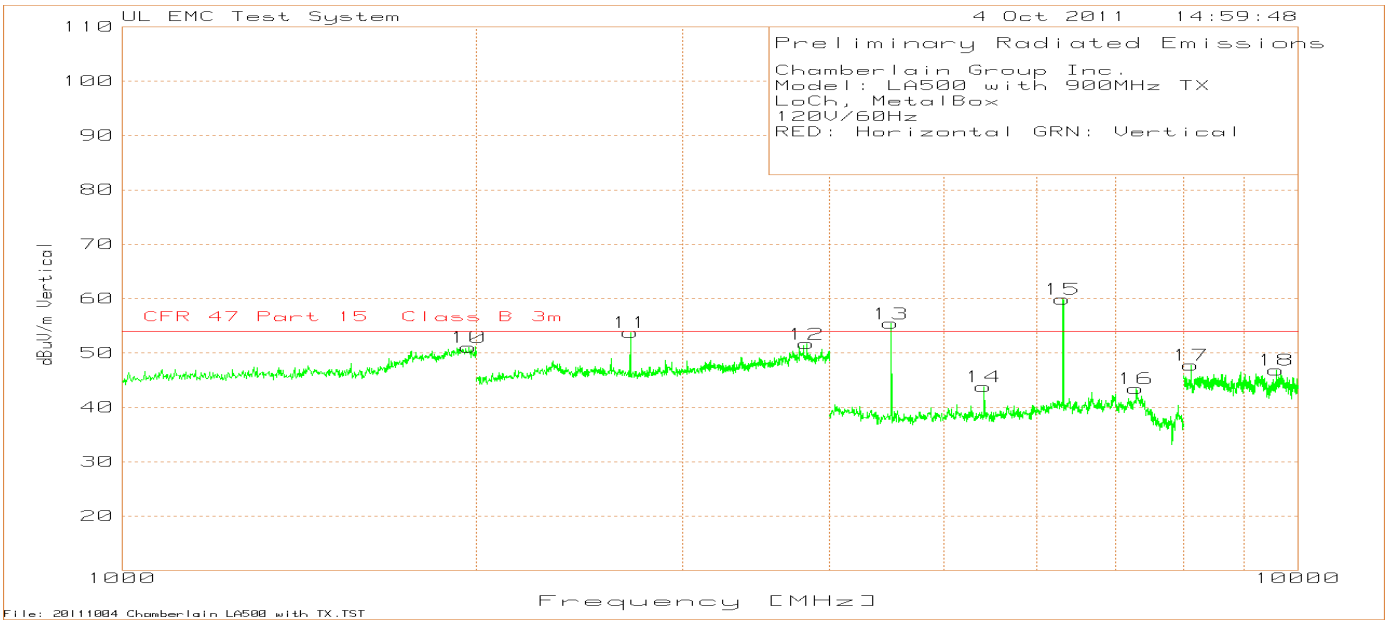
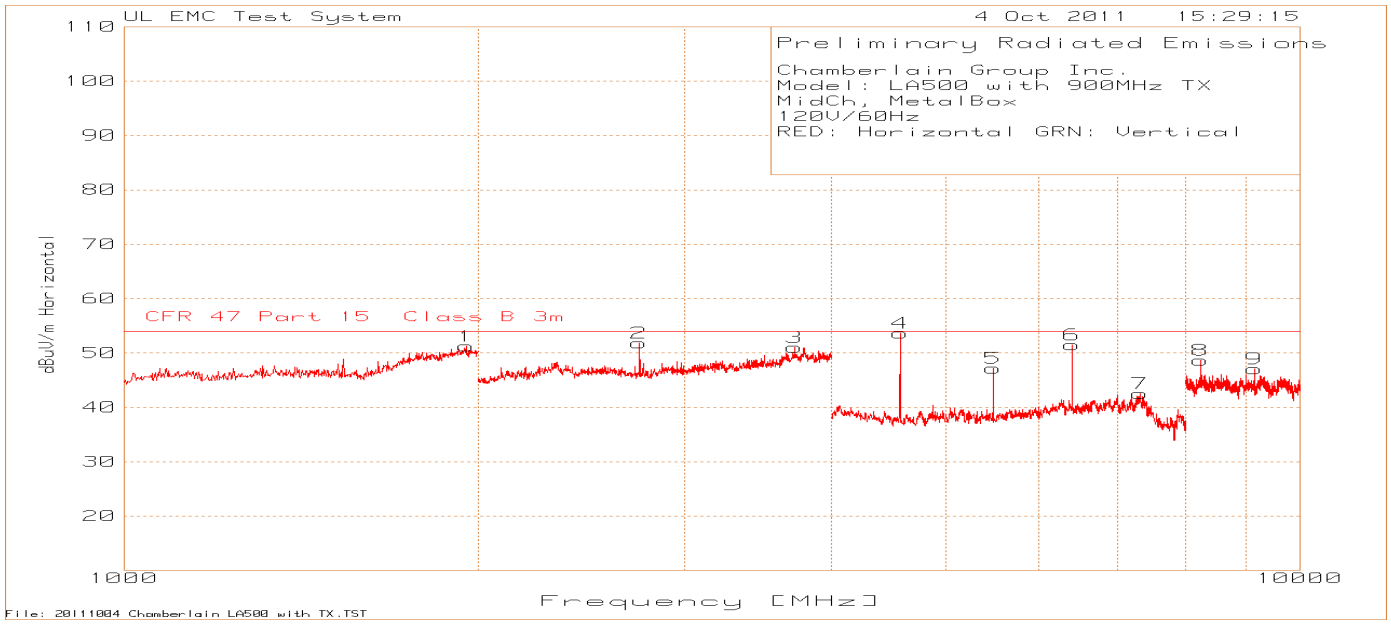


Table 19 Radiated Spurious Emissions above 1GHz, Low Channel (Metal Enclosure)

Chamberlain Group Inc.											
Model: LA500 with 900MHz TX											
LoCh, MetalBox											
120V/60Hz											
RED: Horizontal GRN: Vertical											
Test Frequency	Meter Reading	Detector	Antenna Factor dB	Gain / Loss Factor dB	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	DC Factor dB	Margin with DC Factor dB	Height [cm]	Polarity
1941.884	20.4	PK	27.5	3.54	51.44	54	-2.56	-37.7	-40.26	150	Horz
2706.707	28.45	PK	22.1	4.16	54.71	54	0.71	-37.7	-36.99	100	Horz
3665.666	21.47	PK	23.4	5.45	50.32	54	-3.68	-37.7	-41.38	150	Horz
4512.513	79.15	PK	27.8	-52.06	54.89	54	0.89	-37.7	-36.81	100	Horz
5413.413	64.86	PK	27.9	-50	42.76	54	-11.24	-37.7	-48.94	150	Horz
6318.318	73.81	PK	29.2	-47.87	55.14	54	1.14	-37.7	-36.56	100	Horz
7219.219	61.79	PK	29.8	-46.61	44.98	54	-9.02	-37.7	-46.72	100	Horz
8120.12	64.41	PK	36.2	-49.11	51.5	54	-2.5	-37.7	-40.2	150	Horz
9925.926	60.38	PK	36.4	-49.17	47.61	54	-6.39	-37.7	-44.09	150	Horz
1973.948	19.91	PK	27.5	3.63	51.04	54	-2.96	-37.7	-40.66	150	Vert
2706.707	27.52	PK	22.1	4.16	53.78	54	-0.22	-37.7	-37.92	100	Vert
3821.822	22.37	PK	24	5.31	51.68	54	-2.32	-37.7	-40.02	100	Vert
4512.513	79.68	PK	27.8	-52.06	55.42	54	1.42	-37.7	-36.28	100	Vert
5413.413	65.91	PK	27.9	-50	43.81	54	-10.19	-37.7	-47.89	150	Vert
6314.314	78.49	PK	29.2	-47.81	59.88	54	5.88	-37.7	-31.82	150	Vert
7291.291	57.89	PK	30.4	-44.8	43.49	54	-10.51	-37.7	-48.21	100	Vert
8120.12	60.73	PK	36.2	-49.11	47.82	54	-6.18	-37.7	-43.88	150	Vert
9595.596	59.5	PK	36.4	-49.06	46.84	54	-7.16	-37.7	-44.86	150	Vert
PK - Peak detector											

* EUT is designed to transmit very short, infrequent packets of data thus resulting in very large duty cycle. Because of the duty cycle being so large it was considered not necessary to perform measurements with VBW reduced to 10Hz and duty cycle factor was applied directly to peak measurements.

Figure 19 Radiated Spurious Emissions above 1GHz, Mid Channel (Metal Enclosure)



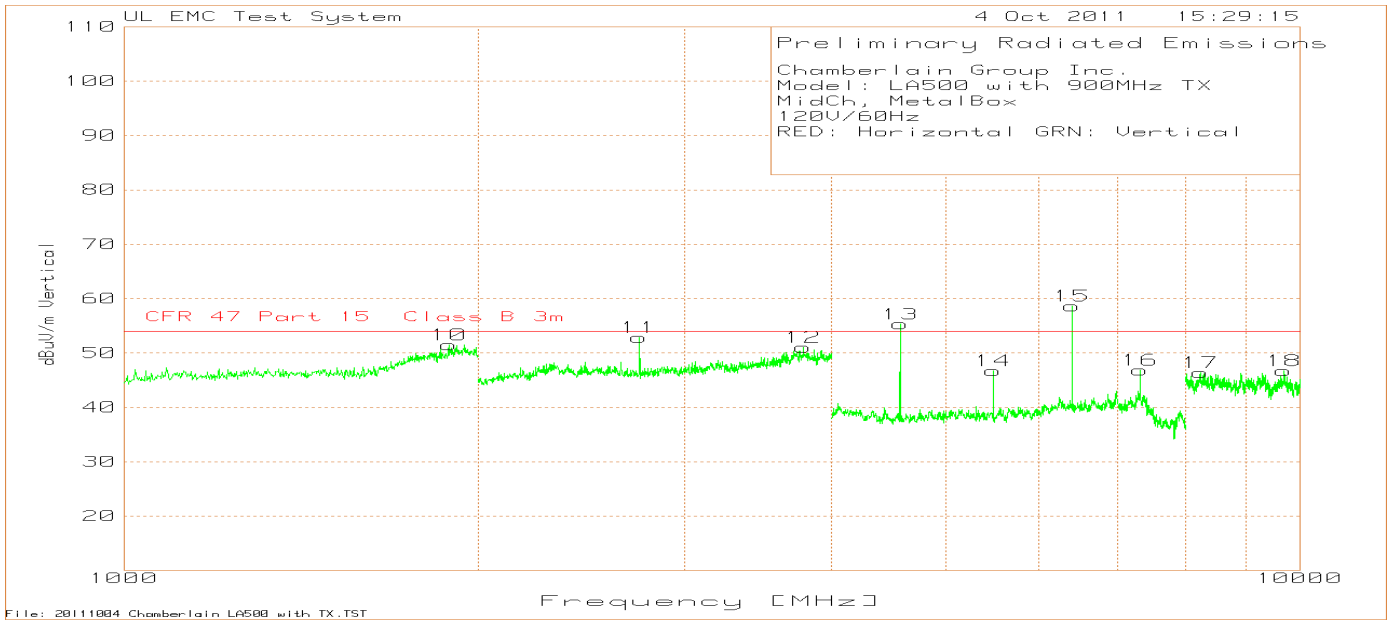
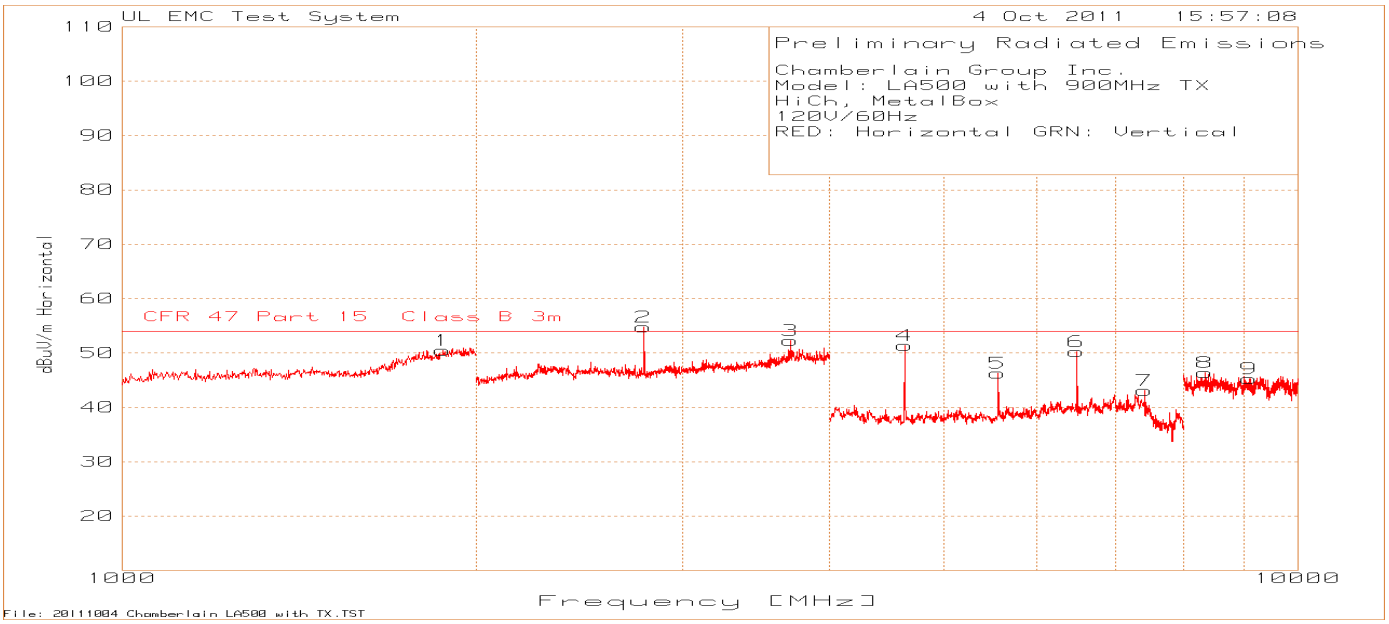


Table 20 Radiated Spurious Emissions above 1GHz, Mid Channel (Metal Enclosure)

Chamberlain Group Inc.											
Model: LA500 with 900MHz TX											
MidCh, MetalBox											
120V/60Hz											
RED: Horizontal GRN: Vertical											
Test Frequency	Meter Reading	Detector	Antenna Factor dB	Gain / Loss Factor dB	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	DC Factor dB	Margin dB	Height [cm]	Polarity
1955.912	20.28	PK	27.5	3.45	51.23	54	-2.77	-37.7	-40.47	150	Horz
2744.745	25.59	PK	22.1	4.13	51.82	54	-2.18	-37.7	-39.88	150	Horz
3719.72	21.34	PK	23.6	6.07	51.01	54	-2.99	-37.7	-40.69	100	Horz
4572.573	77.64	PK	27.7	-51.63	53.71	54	-0.29	-37.7	-37.99	150	Horz
5489.489	69.08	PK	28.1	-49.93	47.25	54	-6.75	-37.7	-44.45	100	Horz
6402.402	69.54	PK	29.2	-47.18	51.56	54	-2.44	-37.7	-40.14	100	Horz
7319.319	57.68	PK	30.6	-45.73	42.55	54	-11.45	-37.7	-49.15	100	Horz
8232.232	60.29	PK	36.4	-47.98	48.71	54	-5.29	-37.7	-42.99	100	Horz
9149.149	61.11	PK	36.3	-50.31	47.1	54	-6.9	-37.7	-44.6	150	Horz
1889.78	20.48	PK	27.5	3.53	51.51	54	-2.49	-37.7	-40.19	150	Vert
2744.745	26.66	PK	22.1	4.13	52.89	54	-1.11	-37.7	-38.81	150	Vert
3781.782	21.32	PK	24	5.77	51.09	54	-2.91	-37.7	-40.61	150	Vert
4572.573	79.24	PK	27.7	-51.63	55.31	54	1.31	-37.7	-36.39	150	Vert
5489.489	68.61	PK	28.1	-49.93	46.78	54	-7.22	-37.7	-44.92	150	Vert
6402.402	76.6	PK	29.2	-47.18	58.62	54	4.62	-37.7	-33.08	150	Vert
7319.319	61.96	PK	30.6	-45.73	46.83	54	-7.17	-37.7	-44.87	150	Vert
8232.232	58.02	PK	36.4	-47.98	46.44	54	-7.56	-37.7	-45.26	150	Vert
9703.704	58.54	PK	36.4	-48.16	46.78	54	-7.22	-37.7	-44.92	150	Vert
PK - Peak detector											

* EUT is designed to transmit very short, infrequent packets of data thus resulting in very large duty cycle. Because of the duty cycle being so large it was considered not necessary to perform measurements with VBW reduced to 10Hz and duty cycle factor was applied directly to peak measurements.

Figure 20 Radiated Spurious Emissions above 1GHz, High Channel (Metal Enclosure)



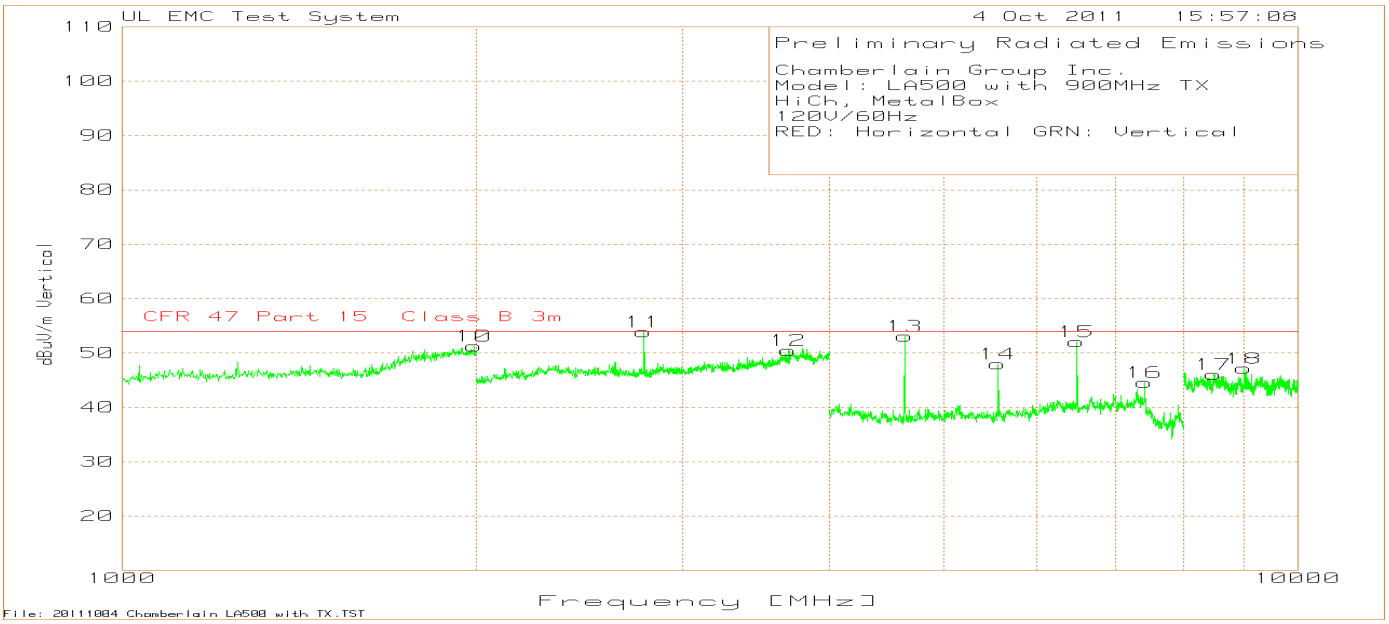


Table 21 Radiated Spurious Emissions above 1GHz, High Channel (Metal Enclosure)

Chamberlain Group Inc.											
Model: LA500 with 900MHz TX											
HiCh, MetalBox											
120V/60Hz											
RED: Horizontal GRN: Vertical											
Test Frequency	Meter Reading	Detector	Antenna Facotor dB	Gain / Loss Factor dB	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	DC Factor dB	Margin with DC Factor dB	Height [cm]	Polarity
1875.752	19.54	PK	27.4	3.58	50.52	54	-3.48	-37.7	-41.18	100	Horz
2780.781	28.39	PK	22.2	4.19	54.78	54	0.78	-37.7	-36.92	100	Horz
3707.708	23.07	PK	23.5	5.77	52.34	54	-1.66	-37.7	-39.36	100	Horz
4632.633	75.22	PK	27.7	-51.57	51.35	54	-2.65	-37.7	-40.35	150	Horz
5561.562	67.59	PK	28.3	-49.59	46.3	54	-7.7	-37.7	-45.4	100	Horz
6486.486	68.71	PK	29.1	-47.58	50.23	54	-3.77	-37.7	-41.47	100	Horz
7415.415	58.96	PK	31	-46.79	43.17	54	-10.83	-37.7	-48.53	100	Horz
8340.34	59.21	PK	36.5	-49.27	46.44	54	-7.56	-37.7	-45.26	100	Horz
9091.091	58.6	PK	36.2	-49.49	45.31	54	-8.69	-37.7	-46.39	150	Horz
1993.988	20.12	PK	27.5	3.65	51.27	54	-2.73	-37.7	-40.43	150	Vert
2780.781	27.54	PK	22.2	4.19	53.93	54	-0.07	-37.7	-37.77	150	Vert
3687.688	21.86	PK	23.5	5.11	50.47	54	-3.53	-37.7	-41.23	150	Vert
4632.633	76.99	PK	27.7	-51.57	53.12	54	-0.88	-37.7	-38.58	100	Vert
5561.562	69.29	PK	28.3	-49.59	48	54	-6	-37.7	-43.7	150	Vert
6486.486	70.57	PK	29.1	-47.58	52.09	54	-1.91	-37.7	-39.61	100	Vert
7415.415	60.38	PK	31	-46.79	44.59	54	-9.41	-37.7	-47.11	150	Vert
8482.482	58.28	PK	36.7	-48.86	46.12	54	-7.88	-37.7	-45.58	150	Vert
9003.003	59.59	PK	36.1	-48.54	47.15	54	-6.85	-37.7	-44.55	150	Vert
PK - Peak detector											

* EUT is designed to transmit very short, infrequent packets of data thus resulting in very large duty cycle. Because of the duty cycle being so large it was considered not necessary to perform measurements with VBW reduced to 10Hz and duty cycle factor was applied directly to peak measurements.

4.4 Test Conditions and Results – BAND EDGE COMPLIANCE

Test Description	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section15.205(c)).

Basic Standard	47 CFR Part 15.247(d) RSS-210, A8.5	
	Frequency range	Measurement Point
Fully configured sample scanned over the following frequency range	902MHz –928MHz	Antenna Conducted

Limits	
Measurement Type	
Conducted	Antenna Conducted – 20dB below the fundamental
Supplementary information: Only Antenna Conducted Measurements required. No restricted bands close to the allocated frequency band.	

Table 22 Band Edge Compliance EUT Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1	2	1, 2
Supplementary information: None		

Table 23 Bandedge CONDUCTED EMISSIONS Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	Rhode & Schwartz	FSEK	EMC4182	28DEC2010	31DEC2011
Attenuator w/ Cable	-	-	None	N/A	N/A

Figure 21 Test setup for Band Edge Compliance

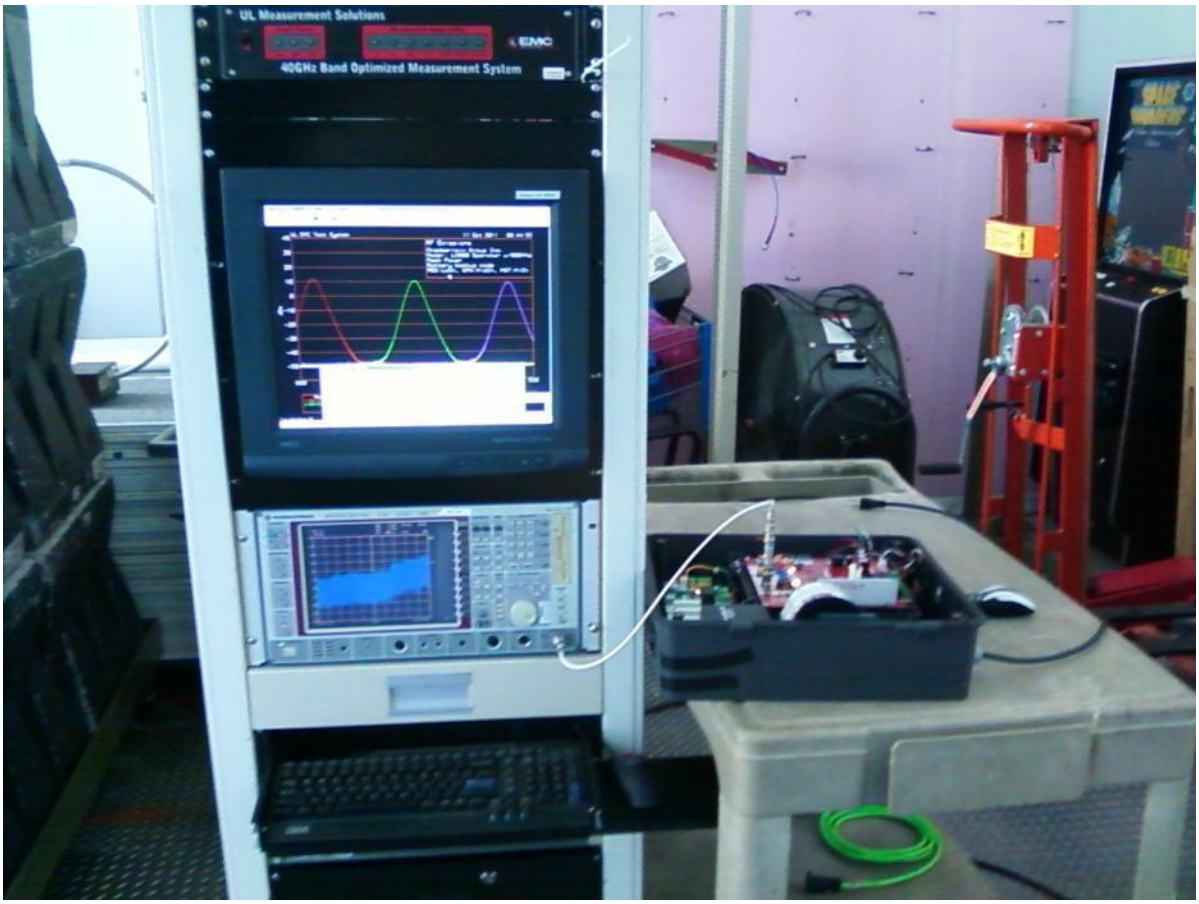


Figure 22 Antenna Conducted Band Edge Compliance Graph – Single Channel

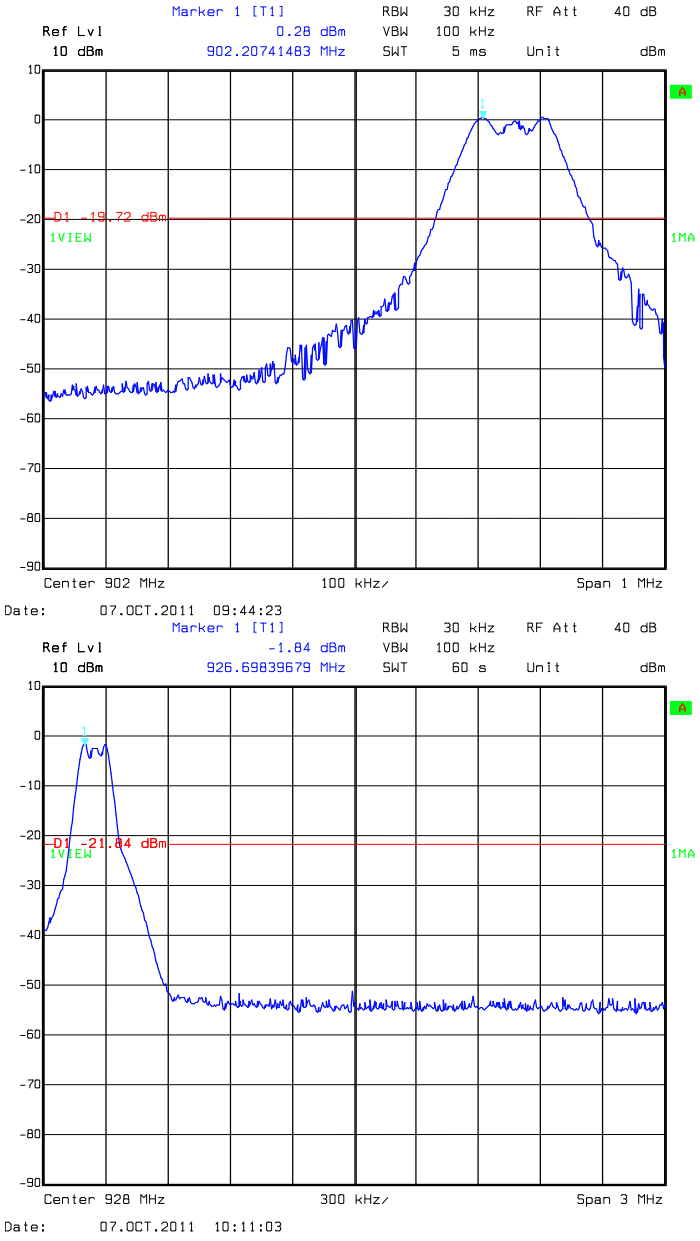
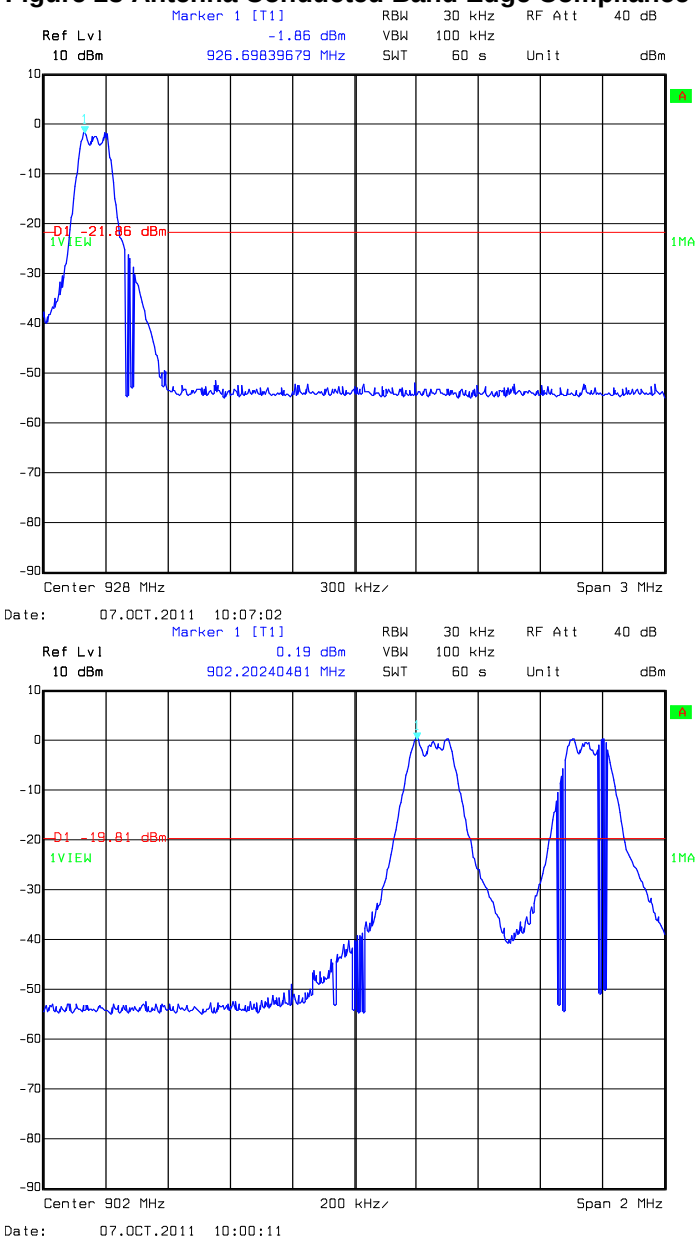


Figure 23 Antenna Conducted Band Edge Compliance Graph – Hopping



4.5 Test Conditions and Results – CARRIER FREQUENCY SEPARATION

Test Description	Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.
Basic Standard	47 CFR Part 15.247(a)(1) RSS-210, A8.1(B)

Table 24 Carrier Frequency Separation Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1	2	2
Supplementary information: None		

Table 25 Carrier Frequency Separation Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	Rhode & Schwartz	FSEK	EMC4182	28DEC2010	31DEC2011
Attenuator w/ Cable	-	-	None	N/A	N/A

Table 26 Carrier Frequency Separation Results

Mode	Channel	Carrier Frequency Separation Limit	Channel Separation
TX Hopping	Low, Mid, High	> 20dB Bandwidth (aprx. 160kHz)	500kHz

Figure 24 Test Setup for Carrier Frequency Separation

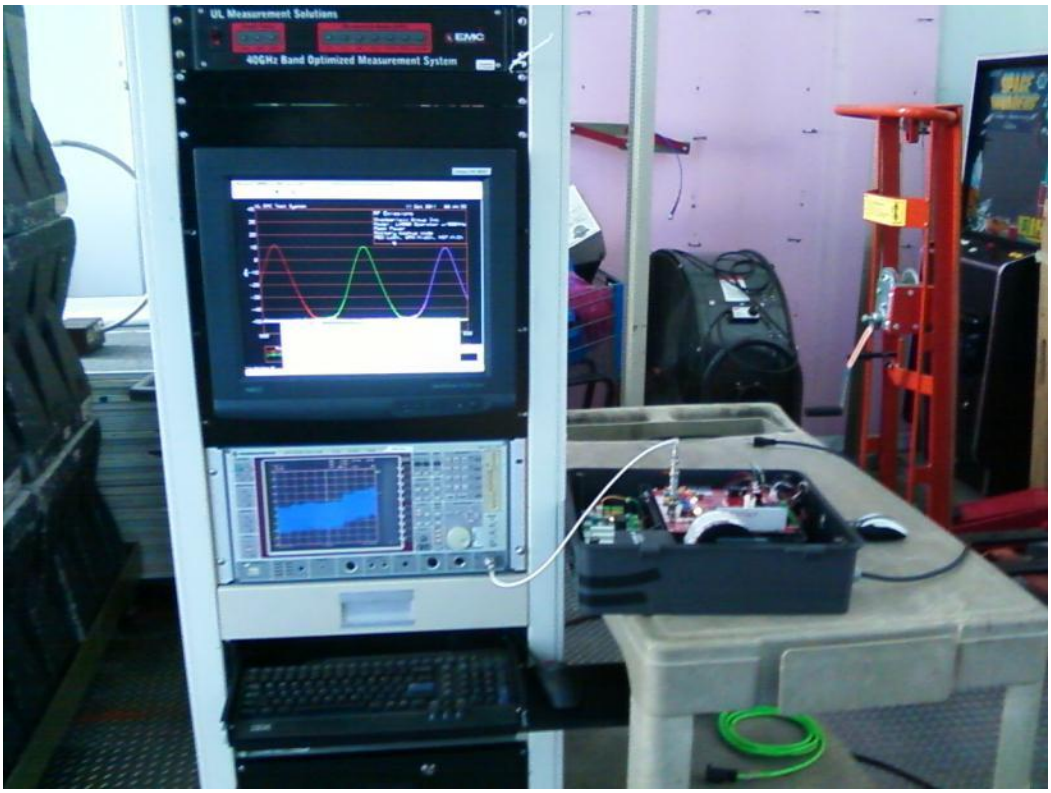


Figure 25 Carrier Frequency Separation Graph

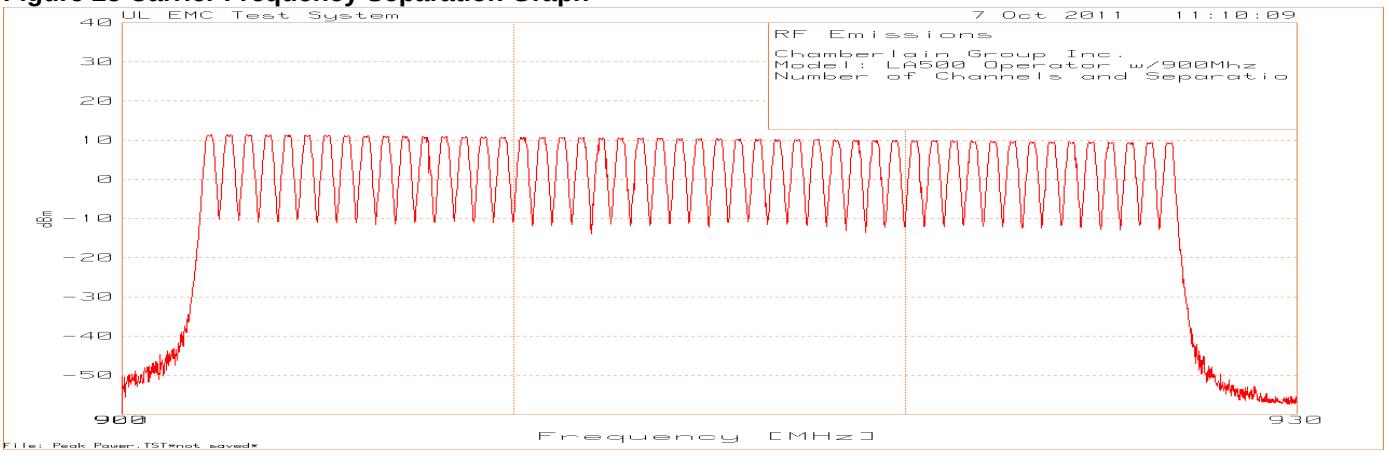


Table 27 Carrier Frequency List with separation

Test Frequency MHz	Channel sparation MHz	Test Frequency MHz	Channel sparation MHz	Test Frequency MHz	Channel sparation MHz
902.2407		912.2491	0.5052	922.2474	0.4901
902.7409	0.5002	912.7442	0.4951	922.7476	0.5002
903.2411	0.5002	913.2444	0.5002	923.2477	0.5001
903.7513	0.5102	913.7546	0.5102	923.7479	0.5002
904.2414	0.4901	914.2447	0.4901	924.2481	0.5002
904.7416	0.5002	914.7549	0.5102	924.7382	0.4901
905.2417	0.5001	915.2451	0.4902	925.2484	0.5102
905.7419	0.5002	915.7553	0.5102	925.7586	0.5102
906.2421	0.5002	916.2404	0.4851	926.2488	0.4902
906.7422	0.5001	916.7456	0.5052	926.7489	0.5001
907.2424	0.5002	917.2457	0.5001		
907.7526	0.5102	917.7459	0.5002		
908.2427	0.4901	918.2561	0.5102		
908.7429	0.5002	918.7563	0.5002		
909.2431	0.5002	919.2464	0.4901		
909.7432	0.5001	919.7566	0.5102		
910.2534	0.5102	920.2467	0.4901		
910.7536	0.5002	920.7569	0.5102		
911.2388	0.4852	921.2521	0.4952		
911.7439	0.5051	921.7573	0.5052		

4.6 Test Conditions and Results – NUMBER OF HOPPING FREQUENCIES

Test Description	For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.
Basic Standard	47 CFR Part 15.247(a)(1)(i) RSS-210, A8.1(C)

Table 28 Number of Hopping Frequencies Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1	2	2
Supplementary information: None		

Table 29 Number of Hopping Frequencies Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	Rhode & Schwartz	FSEK	EMC4182	28DEC2010	31DEC2011
Attenuator w/ Cable	-	-	None	N/A	N/A

Table 30 Number of Hopping Frequencies Results

Mode	Number of Channels	Minimum Number Required
TX, Hopping	50	50

Figure 26 Test Setup for Number of Hopping Frequencies

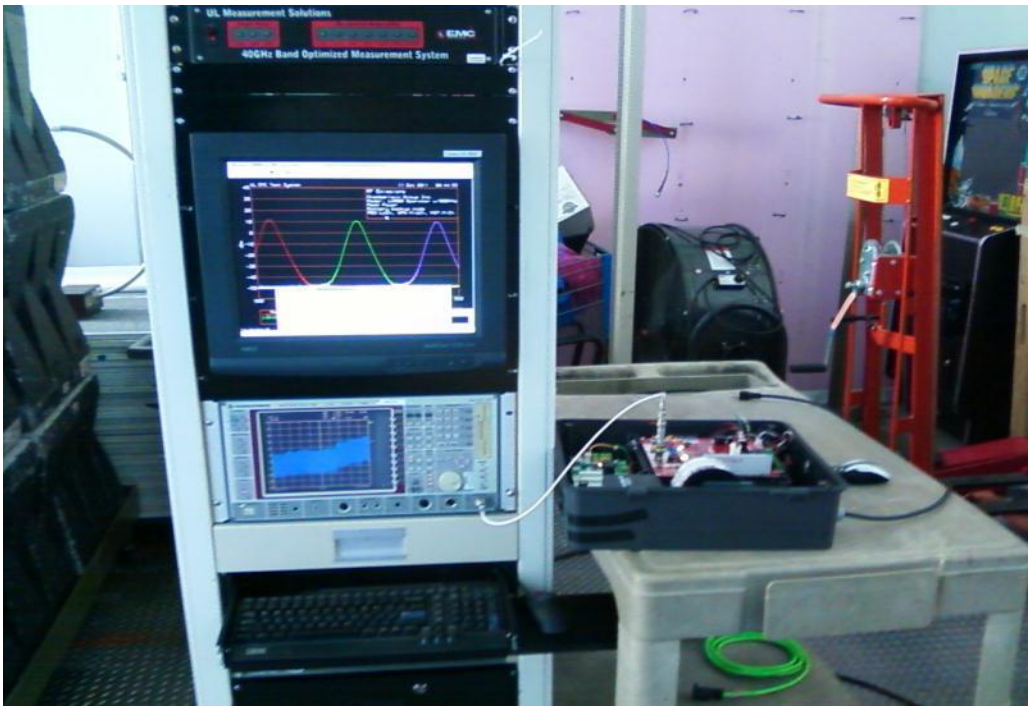
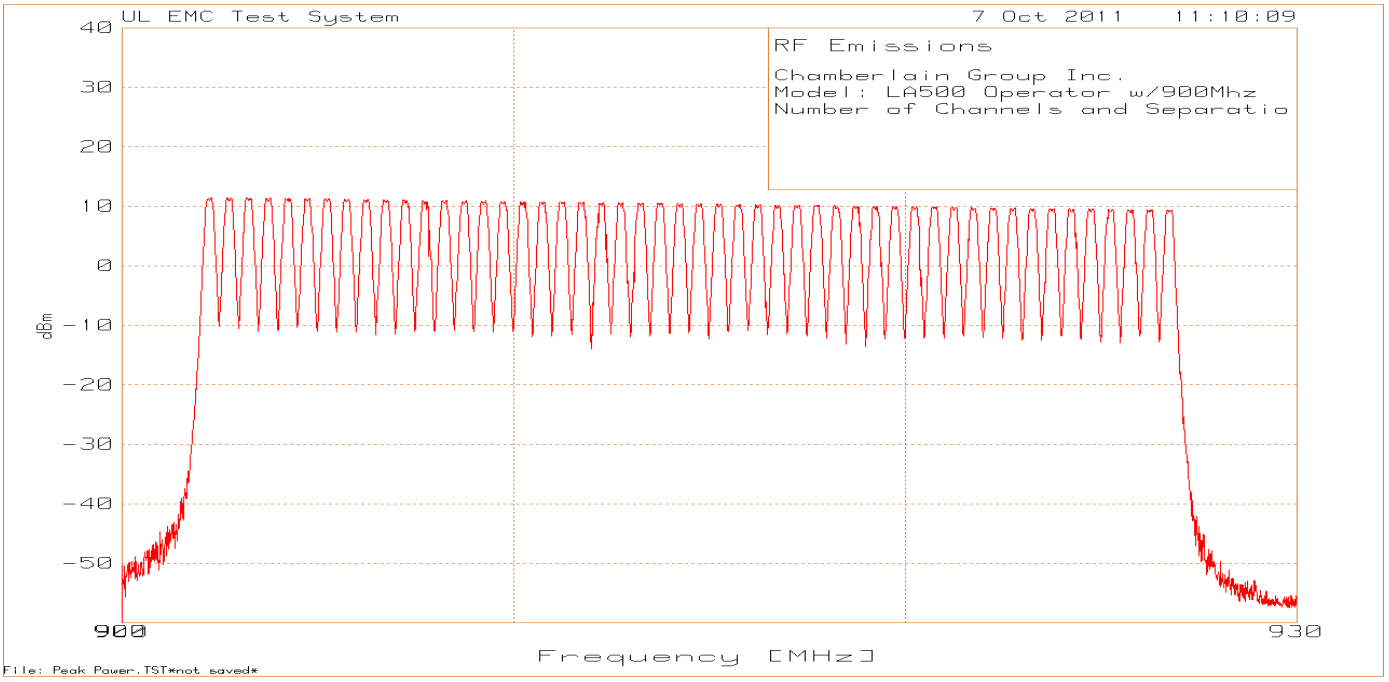


Figure 27 Number of Hopping Frequencies Graphs



4.7 Test Conditions and Results – DWELL TIME and DUTY CYCLE CORRECTION

Test Description	For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.
Basic Standard	47 CFR Part 15.247(a)(1)(i) RSS-210, A8.1(C)

Table 31 Dwell Time Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1	2	2
Supplementary information: Duty cycle also measured/calculated for use in radiated spurious measurements		

Table 32 Dwell Time Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	Rhode & Schwartz	FSEK	EMC4182	28DEC2010	31DEC2011
Attenuator w/ Cable	Mini Circuits	BW-N10W5	None	N/A	N/A

Table 33 Dwell Time Results

Mode	Number of Channels	Maximum Time Allowed in 20s.	Measured Dwell Time in 20s.
TX Hopping Low Channel	50	400mS	152.26
TX Hopping Middle Channel	50	400mS	151.68
TX Hopping High Channel	50	400mS	151.11

Table 34 Duty Cycle Correction Factor

Mode	Number of TX in 100mS	TX Duration in 100mS	Duty Cycle Correction (dB) $20\times\log(\frac{TX(ms)}{100ms})$
TX Hopping Low Channel	1	1.305	-37.7dB

Figure 28 Test Setup for Dwell Time

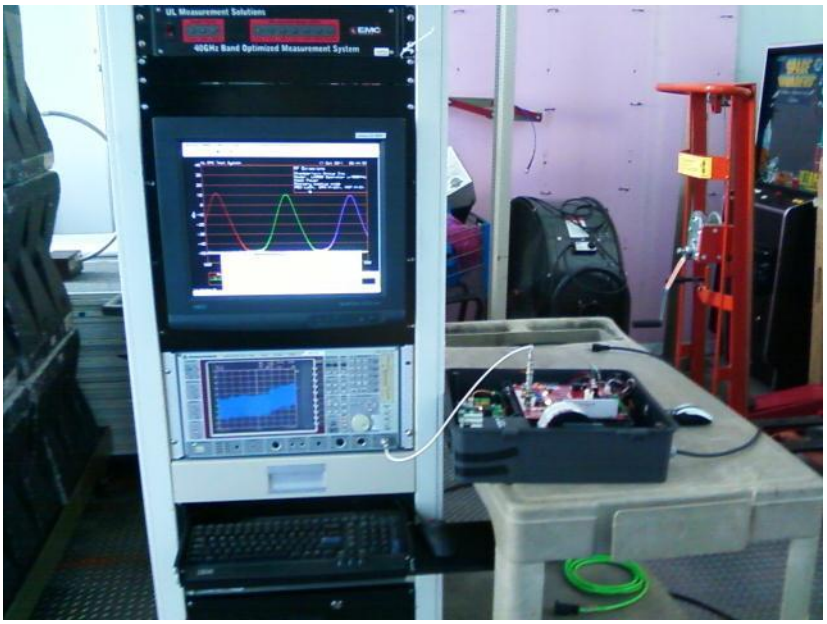
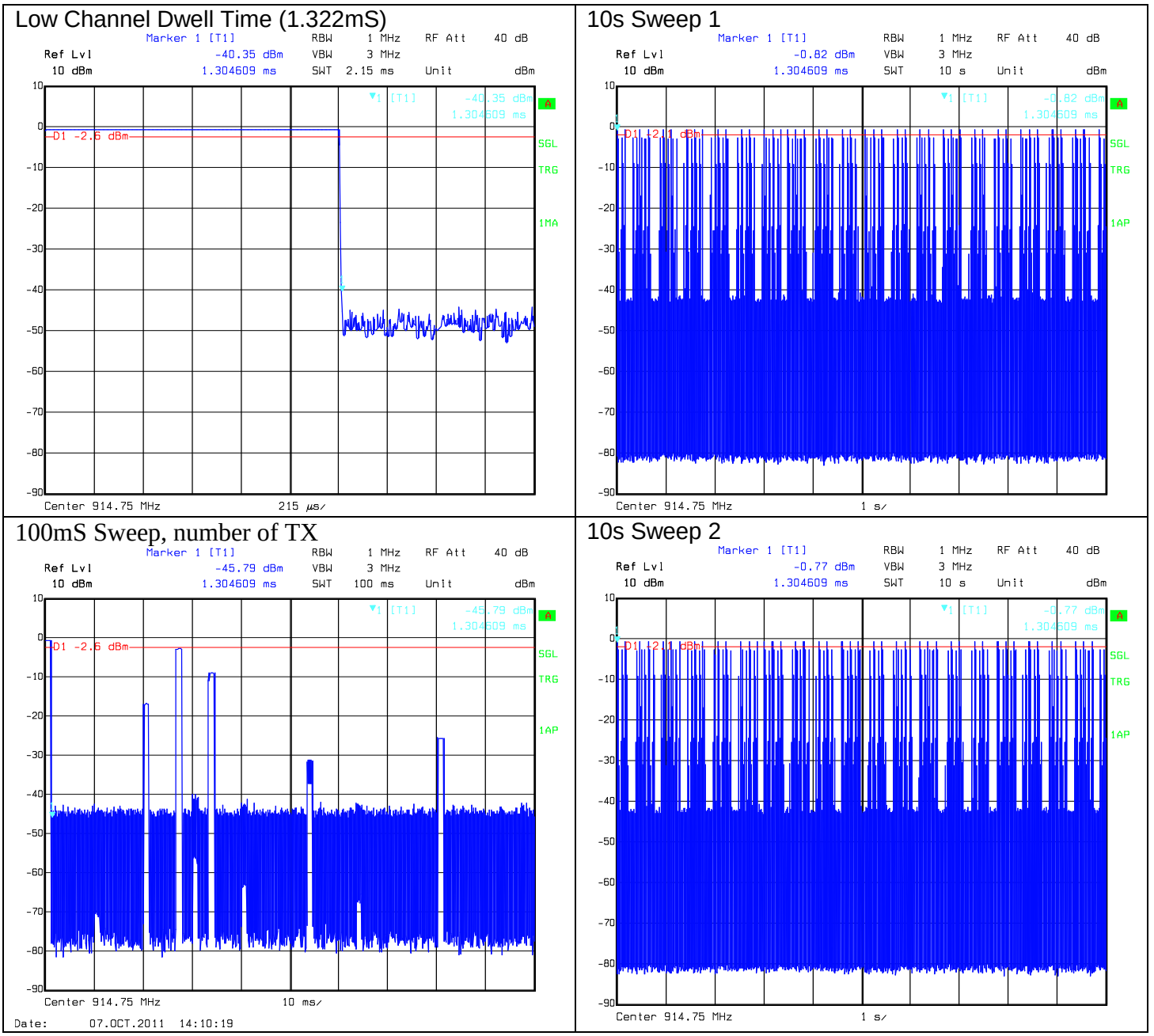


Figure 29 Dwell Time Graphs



The dwell time plot number of transitions plots show only the single channel. It was checked that the number of transitions was the same on other channels do to equal channel use. The total number of transitions counted in 20s is: 115. Total maximum transmit time: 152.26mS within 20s

4.8 Test Conditions and Results – 20dB BANDWIDTH

Test Description	For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.
Basic Standard	47 CFR Part 15.247(a)(2) RSS-210, A8.1(A)

Table 35 20dB Bandwidth Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1	2	1
Supplementary information: None		

Table 36 20dB Bandwidth Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	Rhode & Schwartz	FSEK	EMC4182	28DEC2010	31DEC2011
Attenuator w/ Cable	-	-	None	N/A	N/A

Table 37 20dB Bandwidth Results

Mode	Channel	20dB Bandwidth (kHz)
TX	Low	248.497
	Middle	246.493
	High	240.481

Test Setup for 20dB Bandwidth

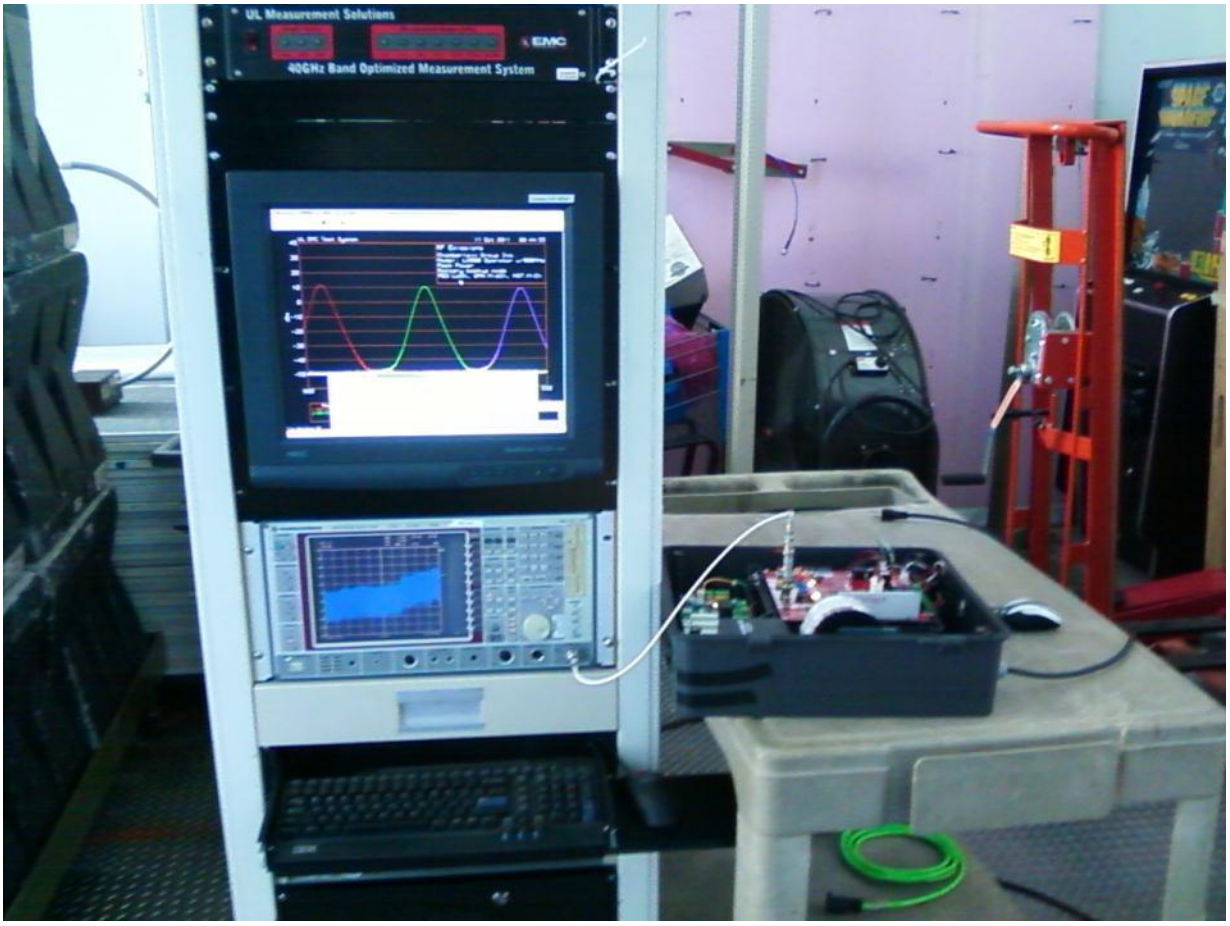
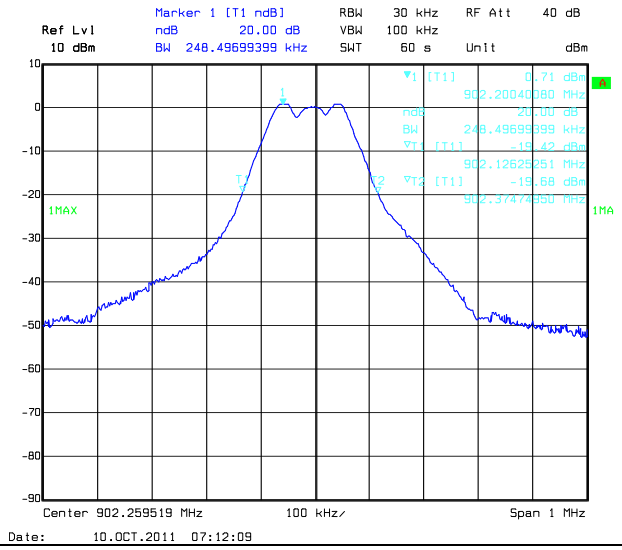
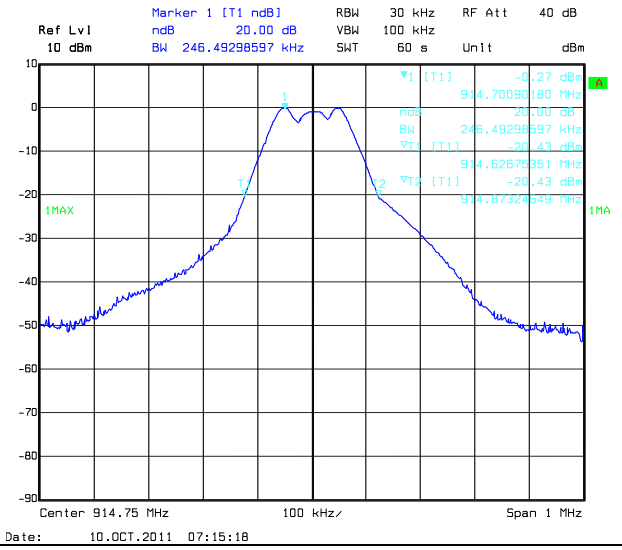


Figure 30 20dB Bandwidth Graphs

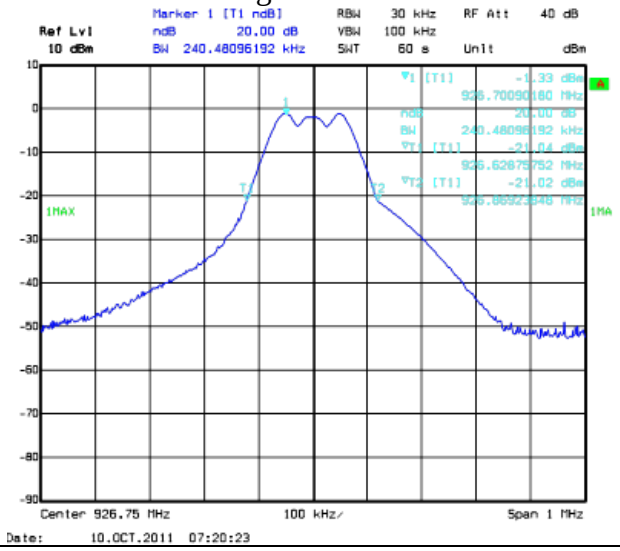
Low Channel



Middle Channel



High Channel



4.9 Test Conditions and Results – MAXIMUM PEAK OUTPUT POWER

Test Description	For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section.	
Basic Standard	47 CFR Part 15.247(b)(2) RSS-210, A8.4(1)	
	Frequency range	Measurement Point
Fully configured sample scanned over the following frequency range	902MHz – 928MHz	Antenna Conducted
Limits		
Frequency (MHz)	Limit mW	
	Peak	
902 - 928	1000 (30dBm – gain of Antenna over 6dBi)	
Supplementary information: None		

Table 38 Maximum Peak Output Power EUT Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1, 3	2, 3	1
Supplementary information: None		

Table 39 Maximum Peak Output Power Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	Rhode & Schwartz	FSEK	EMC4182	28DEC2010	31DEC2011
Attenuator w/ Cable	-	-	None	N/A	N/A

Table 40 Maximum Peak Output Power Results

Channel	Limit (dBm)	Power dBm	Power W	Comments
Low Channel	30	11.64	0.01459	AC Mode
Middle Channel	30	10.54	0.01132	
High Channel	30	9.97	0.00993	
Low Channel	30	11.57	0.01435	Battery Mode
Middle Channel	30	10.61	0.01151	
High Channel	30	9.5	0.00891	

Figure 31 Test setup for Maximum Peak Output Power

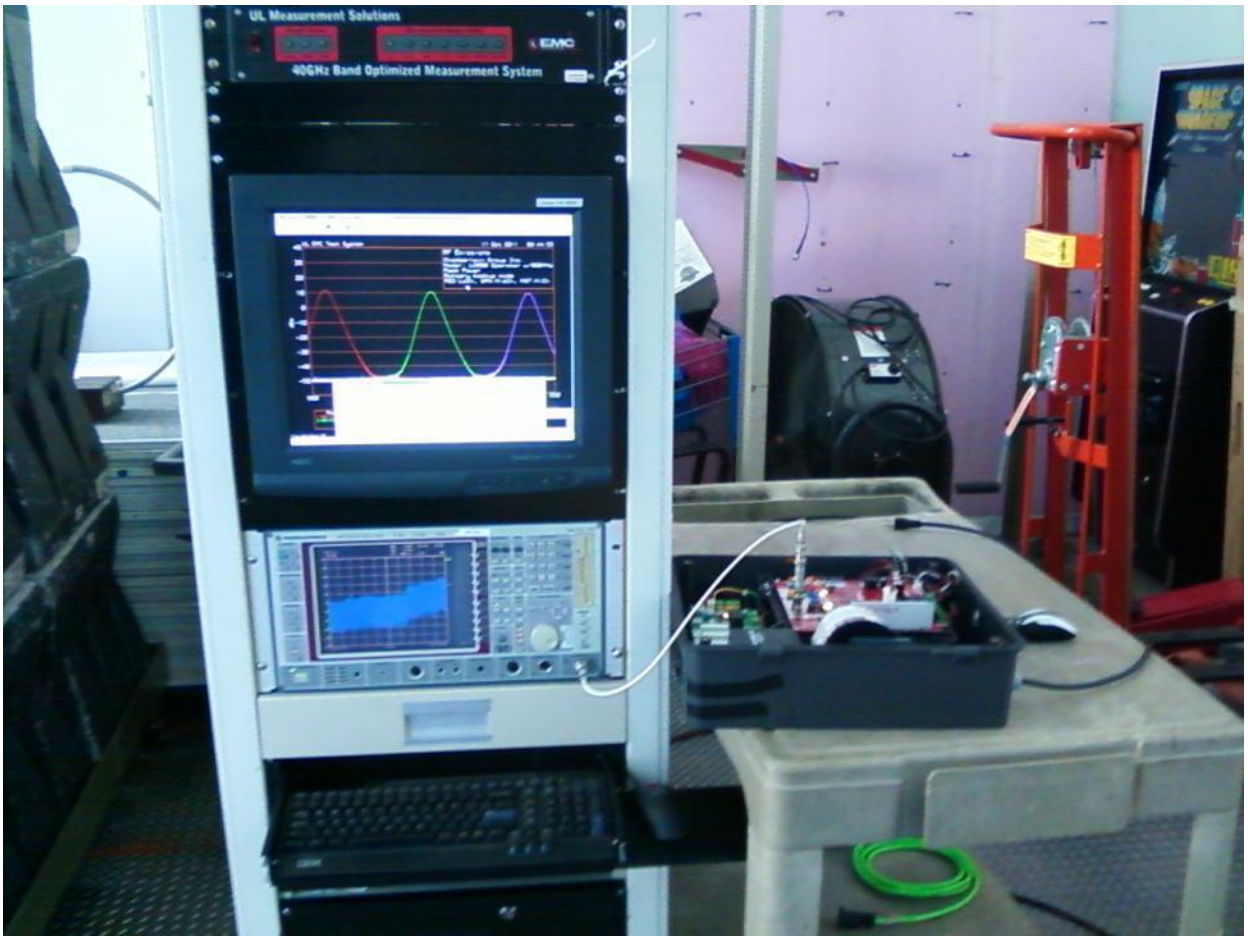
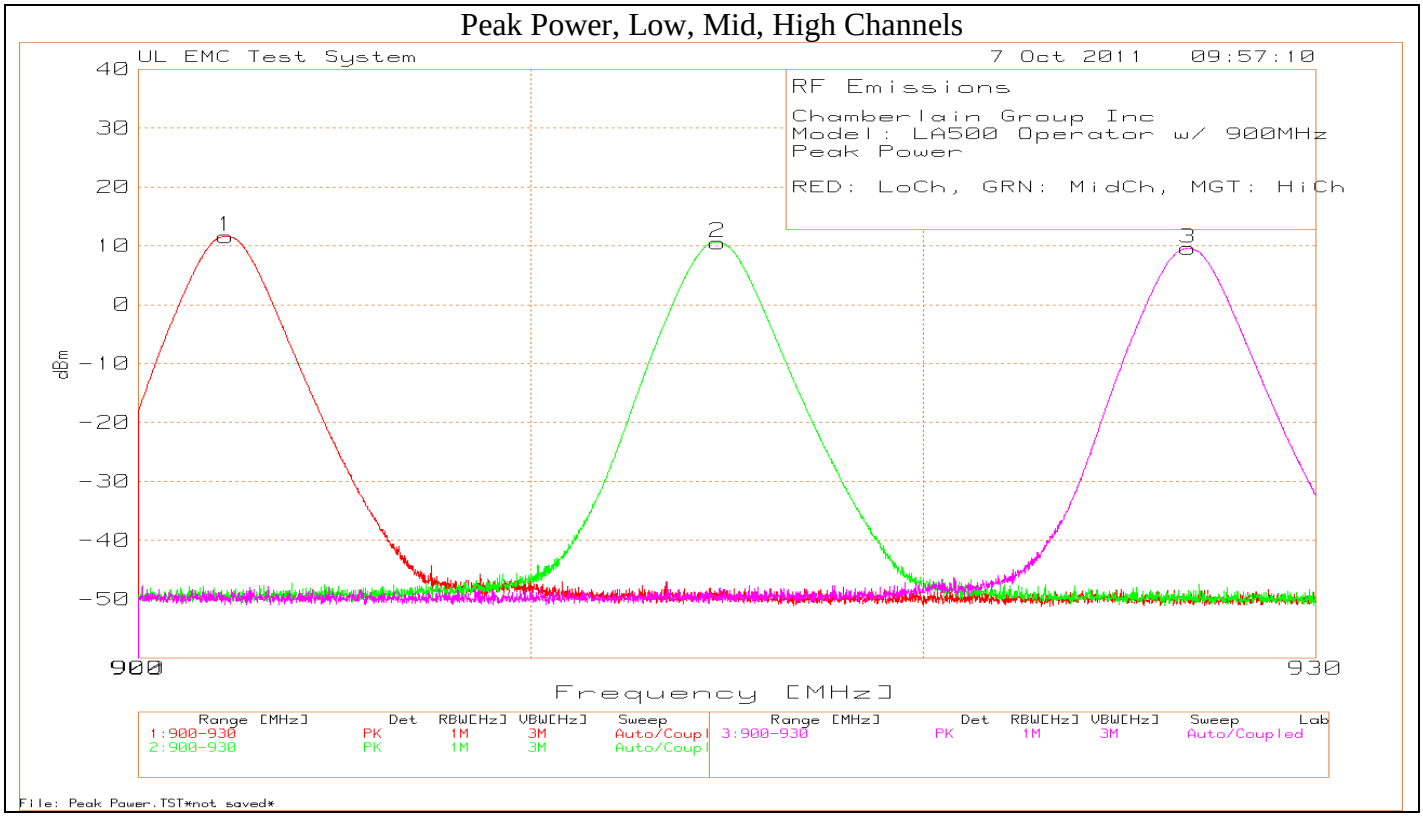
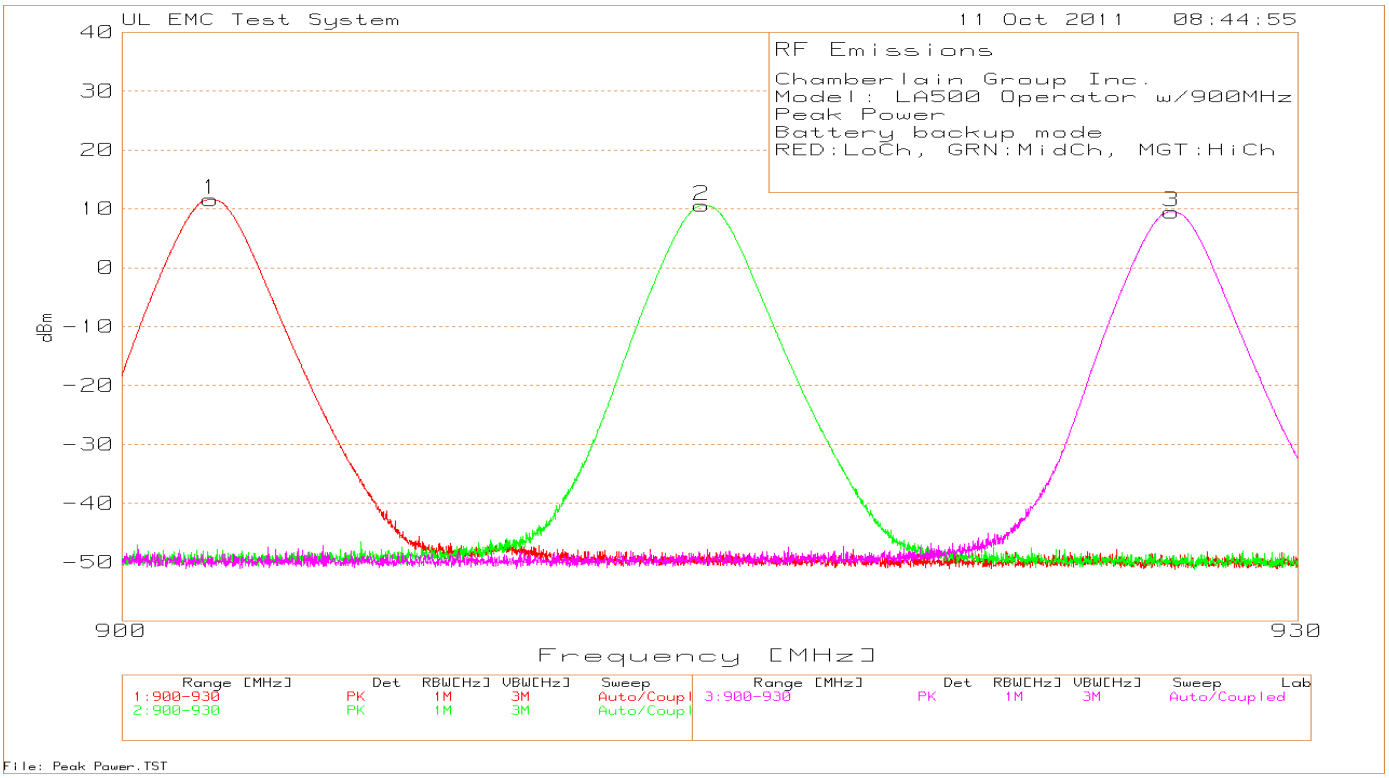


Figure 32 Maximum Peak Output Power Graph (AC Mode)



Test Frequency	Meter Reading	Detector	dBuV to dBm [dB]	Path Loss dB	Level dBm
LowCh 900 - 930MHz					
902.2407	107.34	PK	-107	11.3	11.64
MidCh 900 - 930MHz					
914.7699	106.34	PK	-107	11.2	10.54
HiCh 900 - 930MHz					
926.7639	105.47	PK	-107	11.1	9.57
PK - Peak detector					

Figure 33 Maximum Peak Output Power Graph (Battery Mode)



Test Frequency	Meter Reading	Detector	dBuV to dBm [dB]	Paht Loss [dB]	dBm
Range 1 900 - 930MHz					
902.2458	107.27	PK	-107	11.3	11.57
Range 1 900 - 930MHz					
914.6849	106.41	PK	-107	11.2	10.61
Range 1 900 - 930MHz					
926.7439	105.4	PK	-107	11.1	9.5
PK - Peak detector					

4.10 Test Conditions and Results – 99% Power BANDWIDTH

Test Description	When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.
Basic Standard	RSS-Gen, 4.6.1

Table 41 99% Power Bandwidth Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1	2	1
Supplementary information: None		

Table 42 99% Power Bandwidth Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	Rhode & Schwartz	FSEK	EMC4182	28DEC2010	31DEC2011
Attenuator w/ Cable	-	-	None	N/A	N/A

Table 43 99% Power Bandwidth Results

Mode	Channel	99% Power Bandwidth (kHz)
TX	Low	192.385
	Middle	192.385
	High	178.357

Test Setup for 99% Power Bandwidth

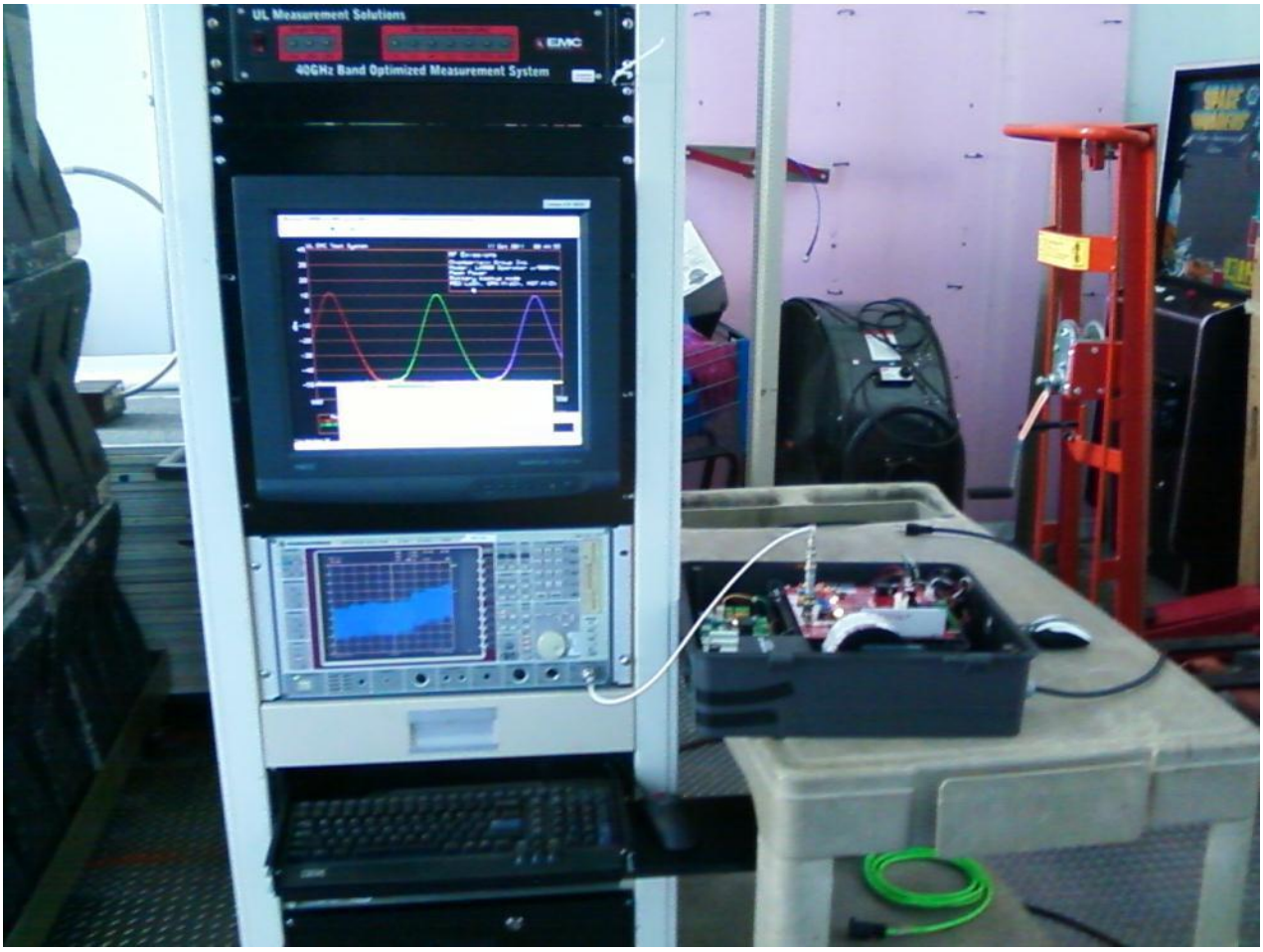
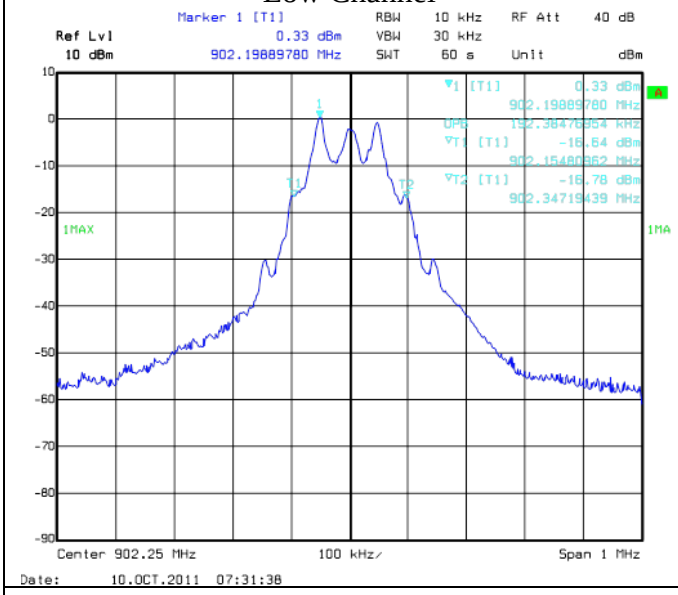
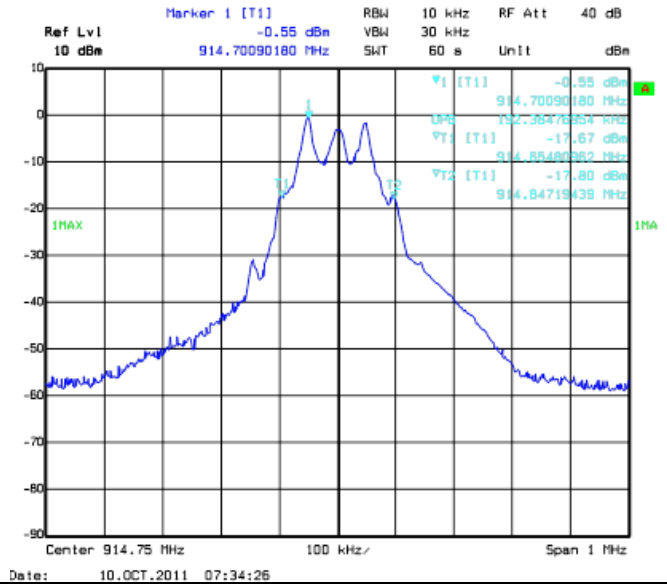


Figure 34 99% Power Bandwidth Graphs

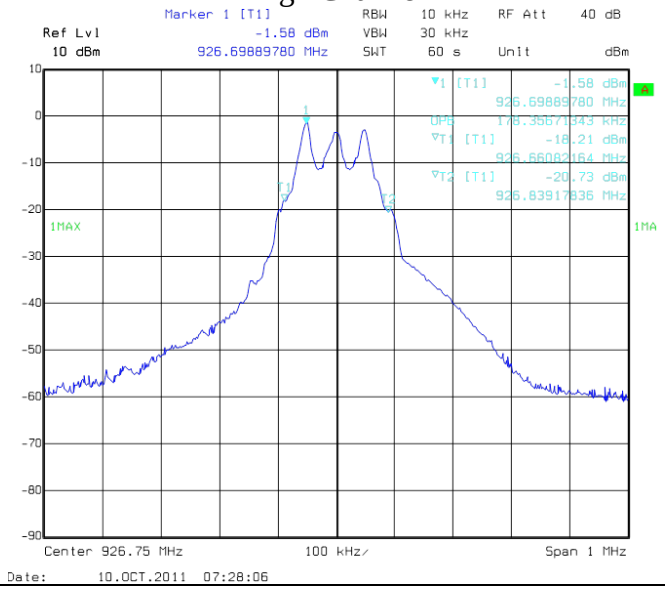
Low Channel



Middle Channel



High Channel



Appendix A

Accreditations and Authorizations

NVLAP Lab code: 100414-0

NVLAP: The National Institute of Standards and Technology (NIST) administers the National Voluntary Laboratory Accreditation Program (NVLAP). NVLAP is comprised of laboratory accreditation programs (LAPs) which are established on the basis of requests and demonstrated need. Each LAP includes specific calibration and/or test standards and related methods and protocols assembled to satisfy the unique needs for accreditation in a field of testing or calibration. NVLAP accredits public and private laboratories based on evaluation of their technical qualifications and competence to carry out specific calibrations or tests. Accreditation criteria are established in accordance with the U.S. Code of Federal Regulations (CFR, Title 15, Part 285), NVLAP Procedures and General Requirements, and encompass the requirements of ISO/IEC 17025. For a full scope listing see http://ts.nist.gov/ts/htdocs/210/214/scopes/1004140.htm

FCC: Details of the measurement facilities used for these tests have been filed with the Federal Communications Commission's Laboratory in Columbia, Maryland (Ref. No. 91044).

Industry Canada Industrie Canada

Industry of Canada: Accredited by Industry Canada for performance of radiated measurements. Our test site complies with RSP 100, Issue 7, Section 3.3. File #: IC 2180

VCCI: Accepted as an Associate Member to the VCCI. The measurement facilities detailed in this test report have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. Registration Nos.: Radiated Emissions R-621, Conducted Emissions C-642.

ICASA: ICASA (Independent Communications Authority of South Africa) has appointed UL as a Designated Test Laboratory to test Telecommunications equipment for type approval in compliance with CISPR 22 to assist in fulfilling its mandate under section 54(1) of the Telecommunications Act, 1996 (Act 103 of 1996).

NIST/CAB: Validated by the European Commission as a U.S. Conformity Assessment Body (CAB) of the U.S.-EU Mutual Recognition Agreement (MRA) for the Electromagnetic Compatibility - Council Directive 89/336/EEC, Article 10 (2). Also validated for the Telecommunication Equipment-Council Directive 99/5/EC, Annex III and IV, Identification Number: 0983.
NIST/CAB: Provisioned to act as a U.S. Conformity Assessment Body (CAB) under Appendix B, Phase I Procedures, of the Asia Pacific Economic Cooperation (APEC) MRA between the American Institute in Taiwan (AIT) and the United States. Our laboratory is considered qualified to test equipment subject to the applicable EMC regulations of the Chinese Taipei Bureau of Standards, Metrology and Inspection (BSMI) which require testing to CNS 13438 (CISPR 22).
NIST/CAB: Recognized by the Infocomm Development Authority of Singapore (IDA) under the Asia Pacific Economic Cooperation Mutual Recognition Agreement (APEC MRA). Our laboratory is provisionally designated to act as a Conformity Assessment Body (CAB) under Appendix B, Phase I Procedures, of the APEC MRA. Our scope of designation includes IDA TS EMC (CISPR 22), IEC 61000-4-2, -4-3, -4-4, -4-5, and -4-6