UL LLC
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Northbrook, IL 60062

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Order Number:	10124726
Project Number:	13N16549
Date:	December 2, 2013
Model:	821LM

Electromagnetic Compatibility Test Report

For

Chamberlain Group Inc.

Test Report Details

Tests Performed By:	**UL LLC** **333 Pfingsten Rd.** **Northbrook, IL 60062**
Tests Performed For:	**Chamberlain Group Inc.** **845 Larch Av**
Applicant Contact: Phone: E-mail:	**Hank Sieradzki** **(630) 993-6564** **Hank.Sieradzki@chamberlaingroup.com**
Test Report Date:	**December 2, 2013**
Product Type:	**Multi Mode Multi Frequency Garage Door Operator Transmitter (Class II Permissive Change)**
Product standards	**47 CFR Part 15, Subpart C, RSS-210, RSS-Gen**
Model Number:	**821LM**
EUT Category:	**Wireless Device**
Testing Start Date:	**November 16, 2013**
Date Testing Complete:	**November 22, 2013**
Overall Results:	**Compliant**

UL LLC 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. UL LLC shall have no liability for any deductions, inferences or generalizations drawn by the client or others from UL LLC issued reports. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

This report may contain test results that are not covered by the NVLAP or A2LA accreditation. The scope of accreditation is limited to the specific tests that are listed on the NVLAP and/or A2LA websites referenced at the end of this report.

Report Directory

Report Revision History

Revision Date	Description	Revised By	Revision Reviewed By
-	-	-	-

1.0 G E N E R A L - Product Description

1.1 Equipment Description

The Equipment Under Test was a garage door gateway capable of controlling various garage door openers via multi frequency periodic transmitters and via Chamberlain FHSS 900MHz radio. In addition is equipped with WiFi and BT LE module allowing connection to mobile devices and control via internet.
Minor software modifications were done to 315MHz code D and 372.5MHz Keelog resulting in wider transmit bandwidth witch required C2PC (Class II Permissive Change) filing.

1.2 Device Configuration During Test

1.2.1 Equipment Used During Test:

Use	Product Type	Manufacturer	Model	Comments
EUT	Garage Door Controller	Chamberlain Group Inc.	821LM	None
AE	Power Supply	Generic	GEO101a-075100W	none

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	Mains	AC	N	N	AC-DC adapter

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 - 60Hz	1	AC to DC adapter

1.3 EUT Configurations

Config #	Description
1	EUT was setup on 80 cm support, connected to power source and set to transmit in specific mode.
2	EUT was placed on bench top, connected to power. Near field antenna was used to conduct measurements.

1.4 EUT Operation Modes

Mode #	Description
2	EUT set to transmit continuously on 315MHz
9	EUT set to transmit continuously on 372.5MHz
* Above mode numbers are actual mode numbers specified by manufacturer. Modes 1 thru XX are not listed as there is not software change associated with those.	

1.5 Rational for EUT Configuration

Rationale #	Description
1	It is possible to mount the EUT either in ceiling mount configuration or wall mount configuration. During original testing it was determined that the worst case emissions were observed when EUT is installed in wall mount configuration. All radiated emissions testing for C2PC was conducted in wall mount orientation.

2.0 Summary

The tests listed in the Summary of Testing section of this report have been performed and the results recorded by UL LLC 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

Standard Number	Standard Name	Standard Date
RSS-210	Spectrum Management and Telecommunications Radio Standards Specification License-exempt Radio Apparatus (All Frequency Bands): Category I Equipment	Issue 8
RSS-Gen	Spectrum Management and Telecommunications Radio Standards Specification General Requirements and Information for the Certification of Radio Apparatus	Issue 3
47 CFR Part 15, Subpart C	Radio Frequency Devices	2012

2.4 Results Summary

Requirement – Test	Results
Mains Terminal – Conducted Emissions	N/A for C2PC
Digital Radiated Emissions	N/A for C2PC
Radiated Spurious Emissions	Compliant
Cease Operation	N/A for C2PC
Pulse Train / Duty Cycle	N/A for C2PC
20dB Bandwidth	Compliant
99% Power Bandwidth	Compliant

Test Engineer:

Bartlomiej Mucha (Ext.41216)
WiSE Staff Engineer
Wireless, Interoperability, payment Security, & EMC
Verification Services

Reviewer:

Michael Ferrer(Ext.41312)
WiSE Project Lead
Wireless, Interoperability, payment Security, & EMC
Verification 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:

---------- US ----------
47 CFR Part 15

---------- Canada ----------
RSS-210 and RSS-Gen

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)

Measurement Uncertainty

Test	Range	Equipment	Uncertainty k=2
Radiated Emissions	30-200MHz	Bicon 3m Horz	3.30dB
Radiated Emissions	30-130MHz	Bicon 3m Vert	4.84dB
Radiated Emissions	130-200MHz	Bicon 3m Vert	4.94dB
Radiated Emissions	200-1000MHz	LogP 3m Horz	3.46dB
Radiated Emissions	200-1000MHz	LogP 3m Vert	4.98dB
Radiated Emissions	1-6GHz	Horn	5.02dB

4.1 Mode 2 315MHz

4.1.1 Test Conditions and Results – Fundamental and Harmonics Radiated Emissions

Test Description	Measurements were made in a 10-meter semi-anechoic chamber that complies to CISPR 16/ANSI C63.4:2003. 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, 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. Below 1GHz RBW=120kHz / VBW=1MHz. Above 1GHz RBW=1MHz/VBW=3MHz.

Basic Standard	47 CFR Part 15.231, RSS-210 A1.1	
	Frequency range	Measurement Point
Fully configured sample scanned over the following frequency range	30 MHz – 1GHz	(3m distance)
	1GHz – 4GHz	(3m distance)

Limits

Frequency (MHz)	Limit (dBµV/m)	
	Fundamental AV Limit	Non-Restricted Spurious Harmonics AV
315	75.62	55.62
	All Other Emissions including Harmonics in restricted bands	
30MHz – 88MHz	40.00	
88MHz – 216MHz	43.52	
216MHz – 960MHz	46.02	
960MHz – 4,000MHz	54.00	

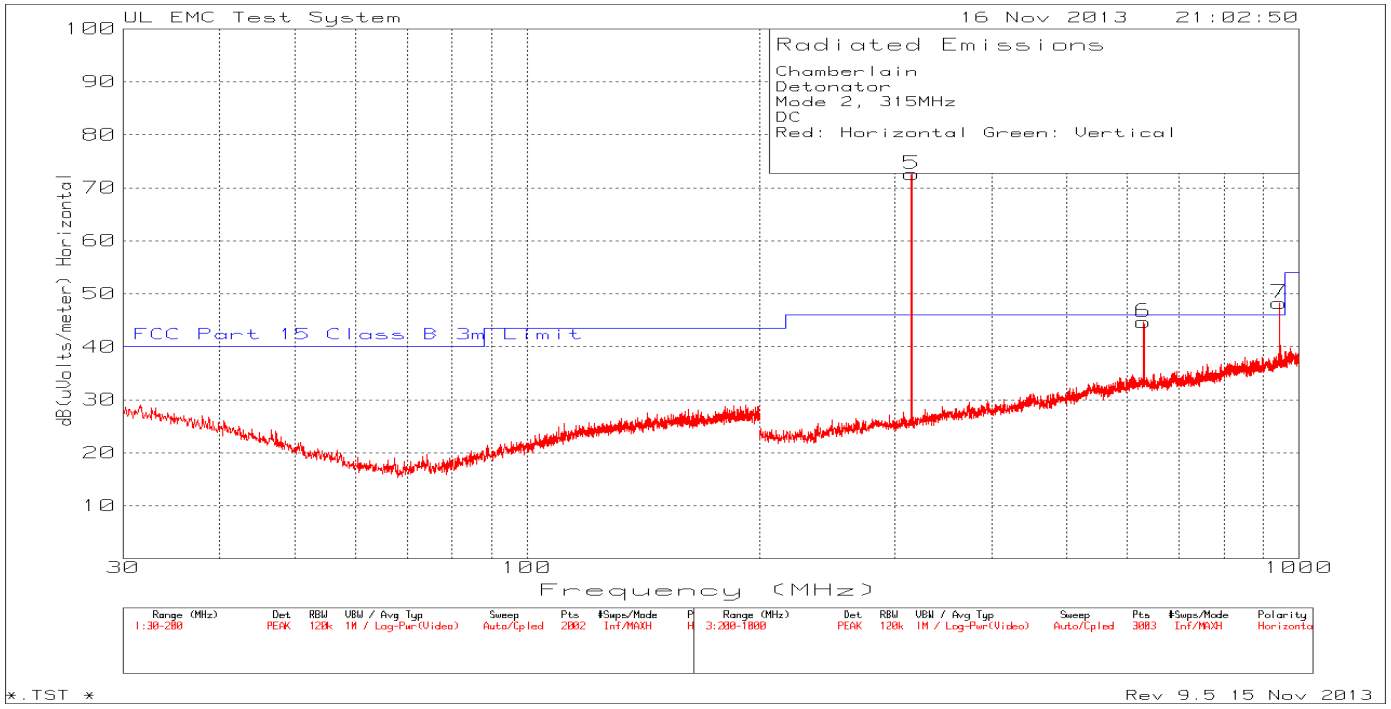
Supplementary information: Spurious limits are only applied against products of the transmitter. All other emissions must meet the general limits. All emissions below 1GHz were maximized. Above 1GHz only emissions within 6dB of the limit were maximized. Emissions that do not contain azimuth data, their level is based on pre-scan data.

Included data in this section is also for 315MHz and 390MHz. The used duty cycle correction factors are the worst case factors for the frequency in question.

Table 1 Radiated Emissions EUT Configuration Settings

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

Figure 1 Radiated Emissions Graph 30MHz – 1GHz



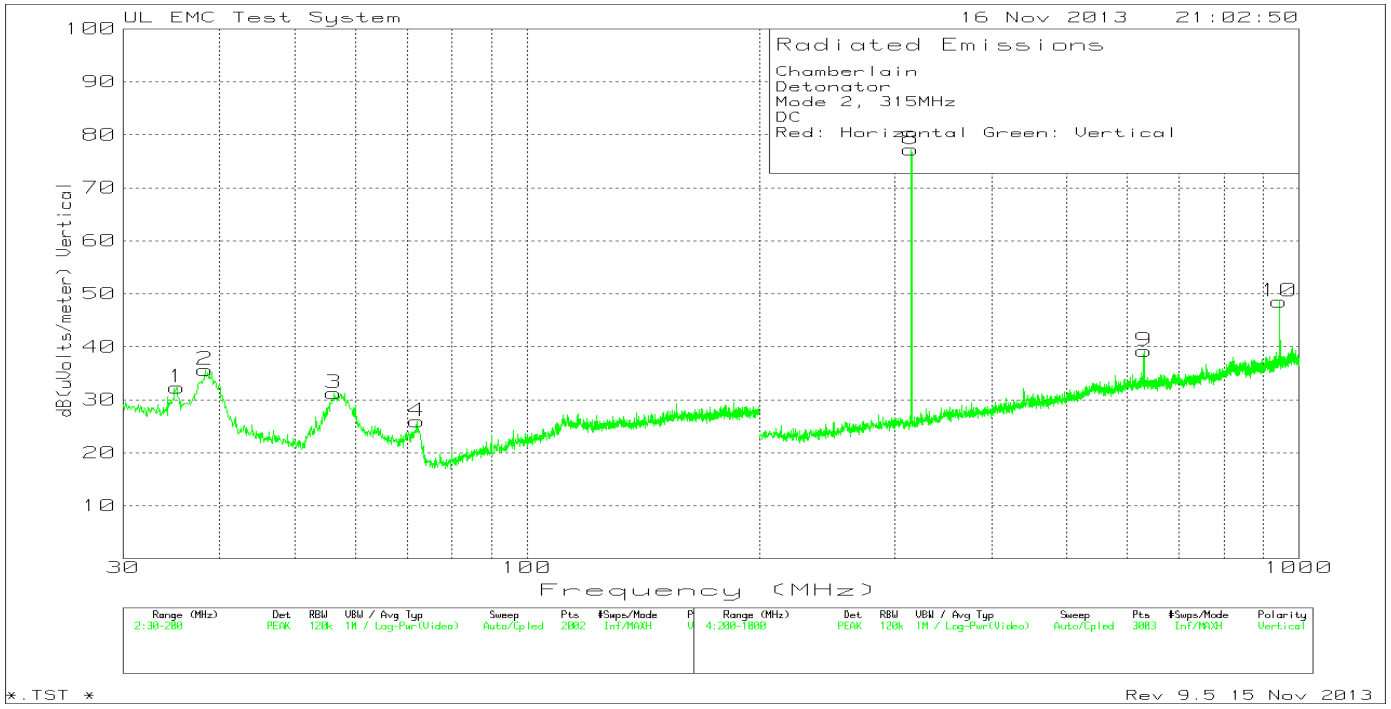
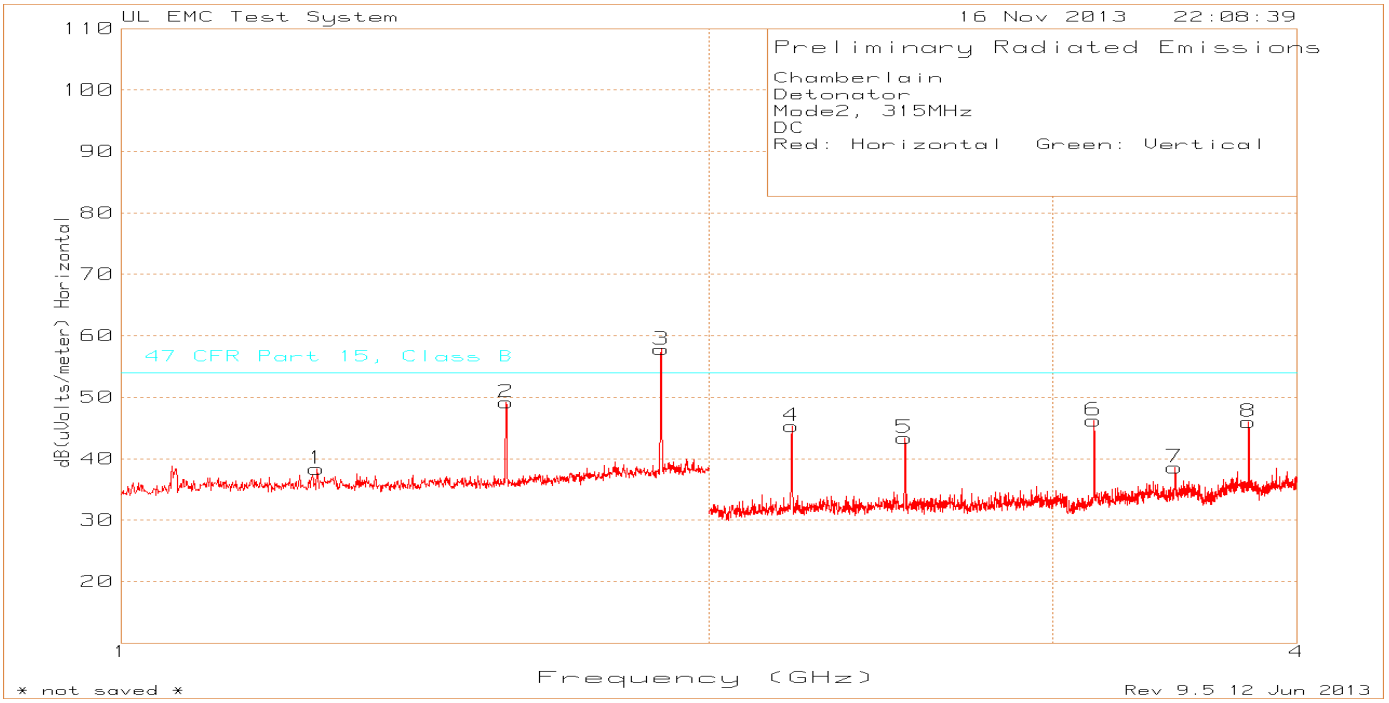


Figure 2 Radiated Emissions Graph 1GHz – 4GHz



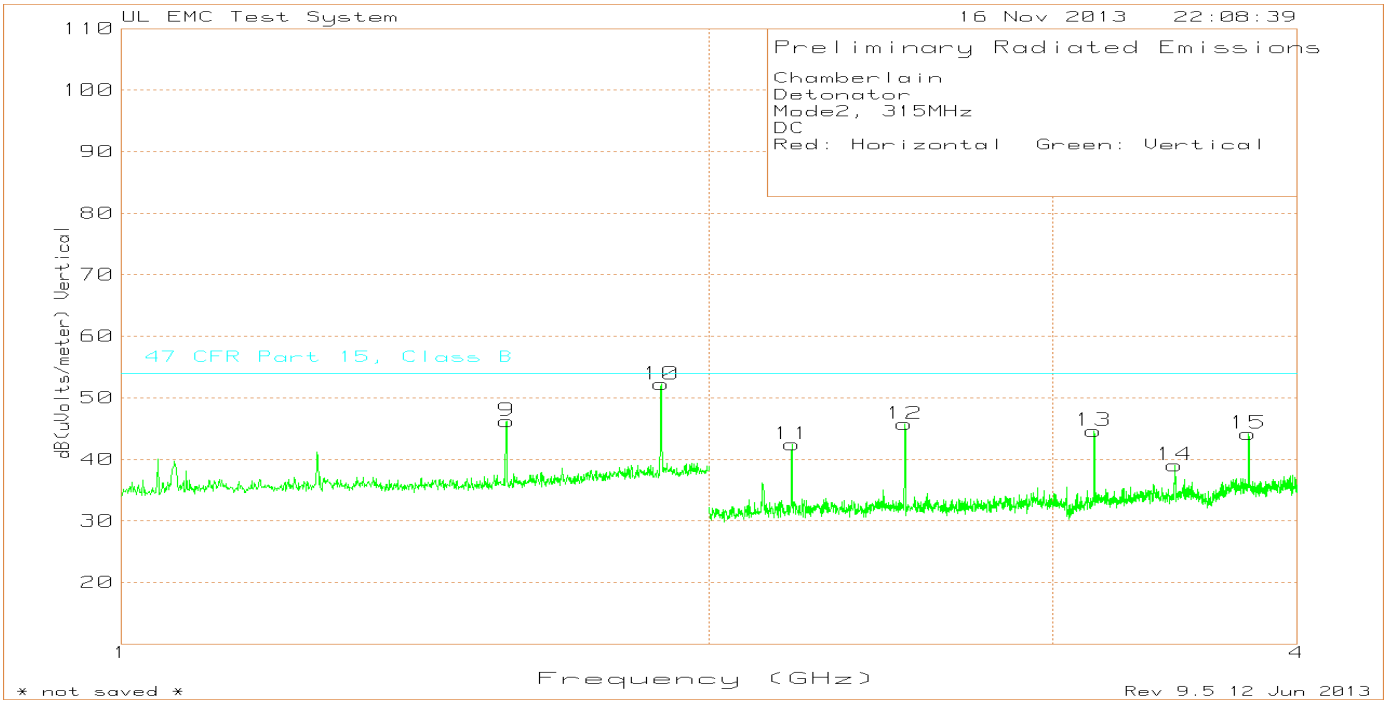


Table 2 Radiated Emissions Data Points

Chamberlain
Detonator
Fundamentals and Harmonics

Test Frequency MHz	Meter Reading dBuV	Detector	AF dB/m	CF dB	Peak Level dBuV/m	DC Factor dB	Average Level dBuV/m	FCC 15.209 Peak Limit dBuV/m	Peak Margin dB	FCC 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
314.8989	58.09	PK	13.8	8.1	79.99	-10.17	69.82	95.62	-15.63	75.62	-5.8	359	101	H
315.0021	58.09	PK	13.8	8.1	79.99	-10.17	69.82	95.62	-15.63	75.62	-5.8	359	101	H
315.103	58.08	PK	13.8	8.1	79.98	-10.17	69.81	95.62	-15.64	75.62	-5.81	359	101	H
314.9	49.9	PK	13.8	8.1	71.8	-10.17	61.63	95.62	-23.82	75.62	-13.99	23	189	V
315.001	49.83	PK	13.8	8.1	71.73	-10.17	61.56	95.62	-23.89	75.62	-14.06	23	189	V
315.1037	49.82	PK	13.8	8.1	71.72	-10.17	61.55	95.62	-23.9	75.62	-14.07	23	189	V
630.0036	15.83	PK	20.4	9.2	45.43	-10.17	35.26	66.02	-20.59	46.02	-10.76	218	130	H
630.0021	14.88	PK	20.4	9.2	44.48	-10.17	34.31	66.02	-21.54	46.02	-11.71	218	101	V
945.0079	15.26	PK	23.7	10.1	49.06	-10.17	38.89	66.02	-16.96	46.02	-7.13	0	155	H
945.0089	20.8	PK	23.7	10.1	54.6	-10.17	44.43	66.02	-11.42	46.02	-1.59	0	115	V

Test Frequency GHz	Meter Reading dBuV	Detector	AF dB/m	CF dB	Peak Level dBuV/m	DC Factor dB	Average Level dBuV/m	FCC 15.209 Peak Limit dBuV/m	Peak Margin dB	FCC 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1.26	68.74	PK	25.1	-55.48	38.36	-10.17	28.19	74	-35.64	54	-25.81	0-360	149	H
1.5749	78.93	PK	25.2	-54.17	49.96	-10.17	39.79	74	-24.04	54	-14.21	0	100	H
1.89	84.58	PK	27.2	-53.13	58.65	-10.17	48.48	74	-15.35	54	-5.52	20	121	H
2.205	75.28	PK	21.8	-51.78	45.3	-10.17	35.13	74	-28.7	54	-18.87	0-360	100	H
2.52	72.46	PK	22.1	-51.18	43.38	-10.17	33.21	74	-30.62	54	-20.79	0-360	100	H
3.149	73.41	PK	22.9	-50.08	46.23	-10.17	36.06	74	-27.77	54	-17.94	0-360	100	H
3.465	65.26	PK	23.5	-50.17	38.59	-10.17	28.42	74	-35.41	54	-25.58	0-360	100	H
3.78	72.71	PK	24	-50.71	46	-10.17	35.83	74	-28	54	-18.17	0-360	100	H
1.576	75.22	PK	25.2	-54.17	46.25	-10.17	36.08	74	-27.75	54	-17.92	0-360	101	V
1.89	77.52	PK	27.2	-53.13	51.59	-10.17	41.42	74	-22.41	54	-12.58	96	180	V
2.206	72.42	PK	21.8	-51.79	42.43	-10.17	32.26	74	-31.57	54	-21.74	0-360	101	V
2.519	74.81	PK	22.1	-51.18	45.73	-10.17	35.56	74	-28.27	54	-18.44	0-360	101	V
3.149	71.82	PK	22.9	-50.08	44.64	-10.17	34.47	74	-29.36	54	-19.53	0-360	149	V
3.464	65.74	PK	23.5	-50.18	39.06	-10.17	28.89	74	-34.94	54	-25.11	0-360	101	V
3.779	70.89	PK	24	-50.7	44.19	-10.17	34.02	74	-29.81	54	-19.98	0-360	101	V

* Data with azimuth marked as 0-360 is based on pre-scan peak data.

4.1.2 Test Conditions and Results – 20dB / 99% Bandwidth

Test Description	Measurements were made in the laboratory environment. A Dipole (or equivalent) antenna tuned to the transmit frequency was attached to the input of a spectrum analyzer. The device was operated and the spectrum analyzer resolution bandwidth set per the appropriate standard.
Basic Standard	47 CFR Part 15.231, RSS-210 A1.1.3
Occupied Bandwidth Limits	
No wider than 0.25% of the center frequency for devices operating between 70MHz and 900MHz.	
315MHz – 0.7875MHz	

Table 3 Occupied Bandwidth Configuration Settings

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

Table 4 Occupied Bandwidth Spectrum Analyzer Settings

Occupied Bandwidth Requirements		
RBW / VBW Setting – 10kHz/30kHz or larger	dBc	%
Requirement	**-20**	**99**
Results for 315MHz	249.10kHz	236.22kHz
Supplementary information: None		

Figure 3 20dB Bandwidth Graphs

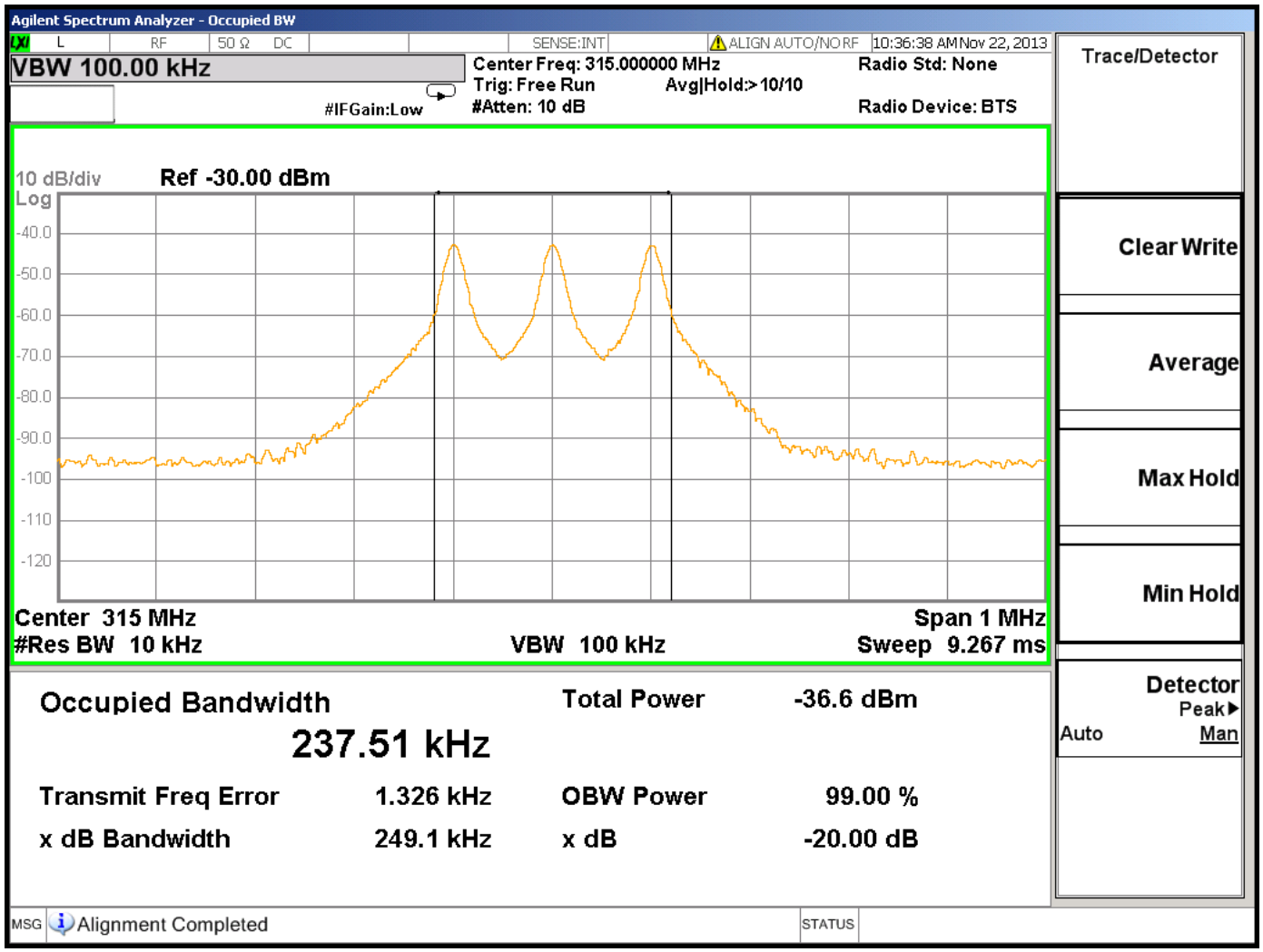
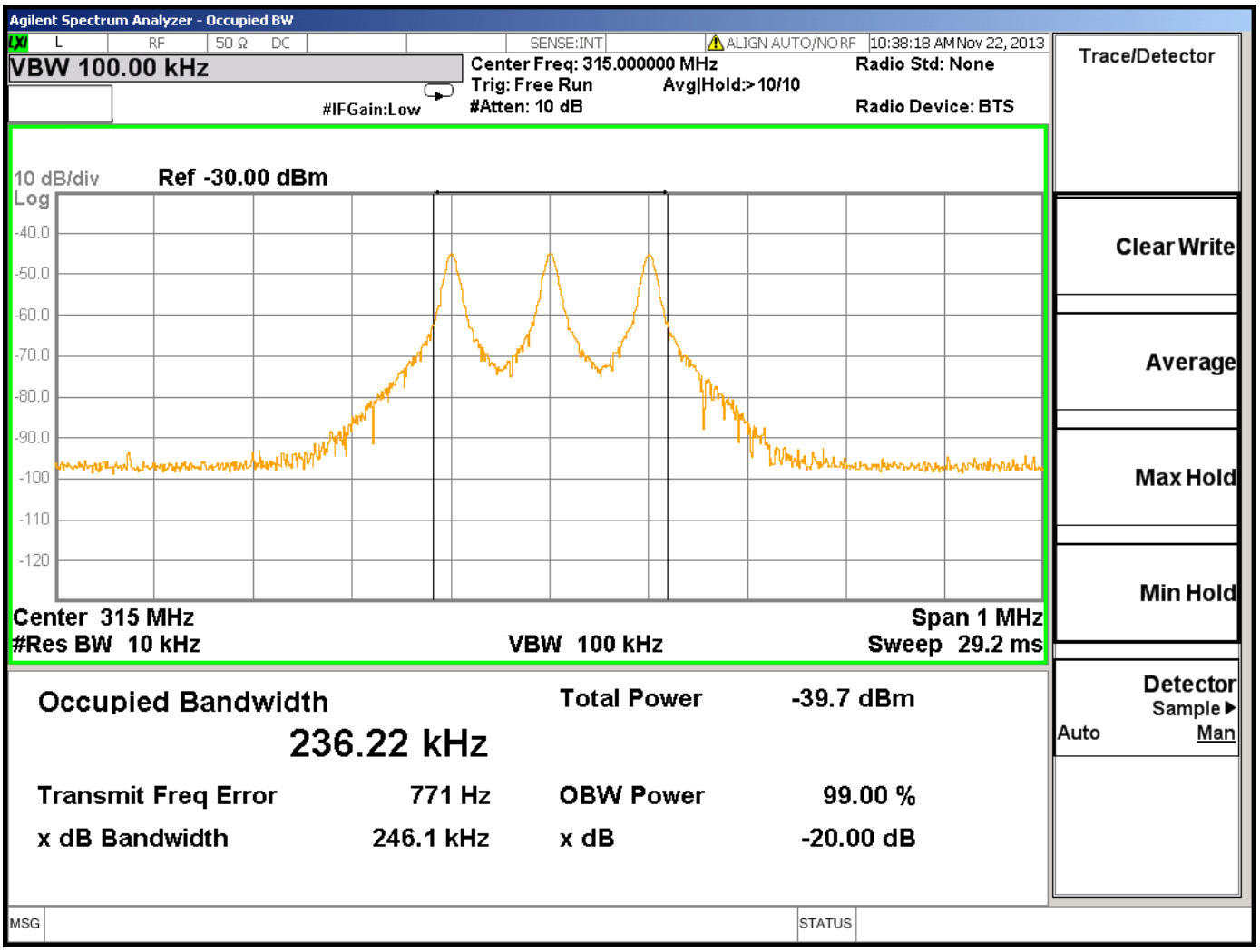


Figure 4 99% Power Bandwidth Graphs



4.2 Mode 9 372.5MHz

4.2.1 Test Conditions and Results – Fundamental and Harmonics Radiated Emissions

Test Description	Measurements were made in a 10-meter semi-anechoic chamber that complies to CISPR 16/ANSI C63.4:2003. 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, 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. Below 1GHz RBW=120kHz / VBW=1MHz. Above 1GHz RBW=1MHz/VBW=3MHz.		
Basic Standard	47 CFR Part 15.231, RSS-210 A1.1		
	Frequency range	Measurement Point	
Fully configured sample scanned over the following frequency range	30 MHz – 1GHz	(3m distance)	
	1GHz – 4GHz	(3m distance)	

Limits

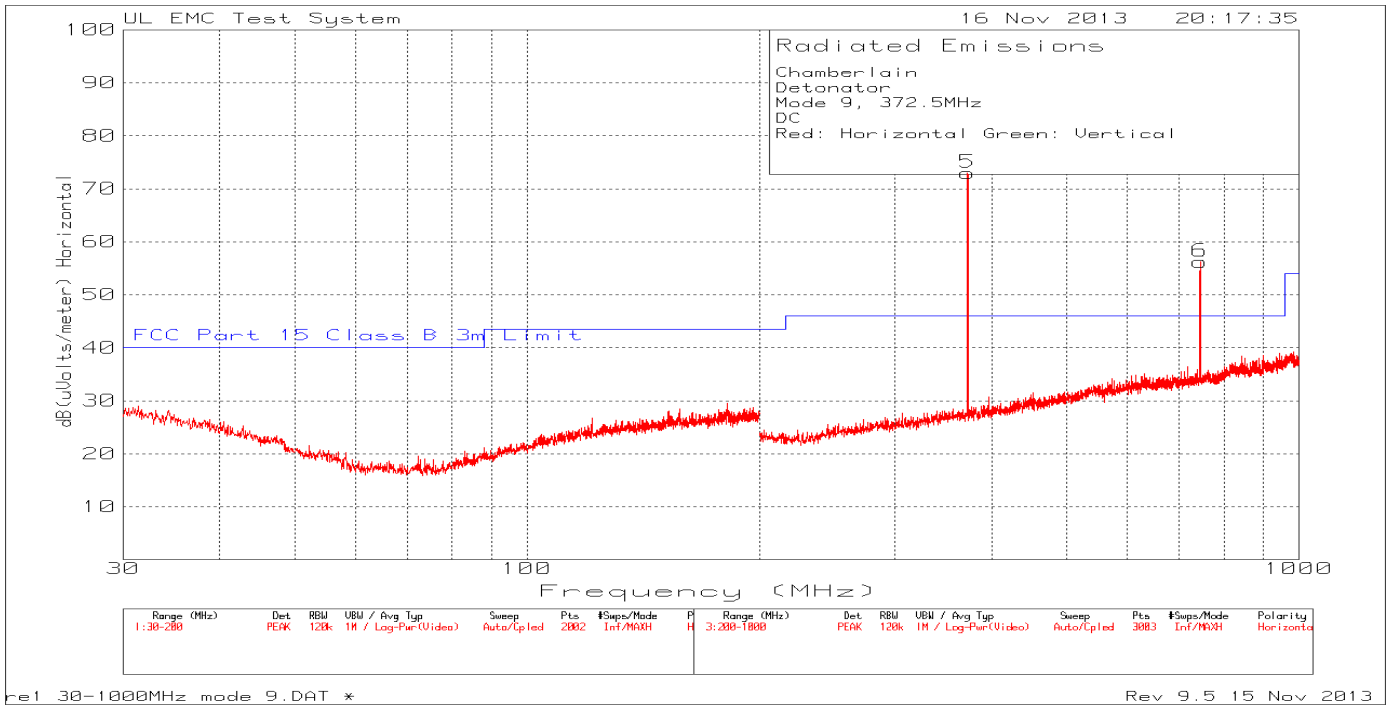
Frequency (MHz)	Limit (dBµV/m)	
	Fundamental AV Limit	Non-Restricted Spurious Harmonics AV
372.5	78.52	58.52
	All Other Emissions including Harmonics in restricted bands	
30MHz – 88MHz	40.00	
88MHz – 216MHz	43.52	
216MHz – 960MHz	46.02	
960MHz – 4,000MHz	54.00	

Supplementary information: Spurious limits are only applied against products of the transmitter. All other emissions must meet the general limits. All emissions below 1GHz were maximized. Above 1GHz only emissions within 6dB of the limit were maximized. Emissions that do not contain azimuth data, their level is based on pre-scan data.

Table 5 Radiated Emissions EUT Configuration Settings

Power Interface Mode	EUT Configurations Mode	EUT Operation Mode
1	1	9
Supplementary information: None		

Figure 5 Radiated Emissions Graph 30MHz – 1GHz



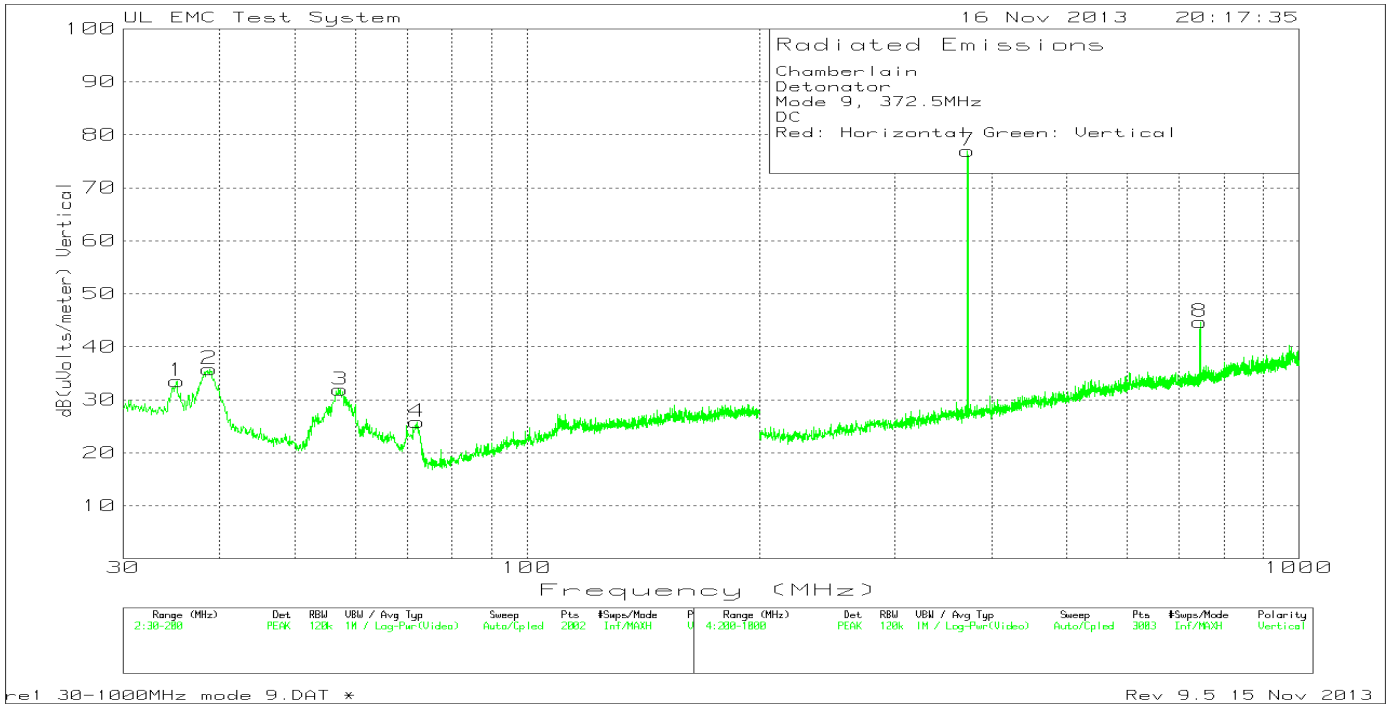
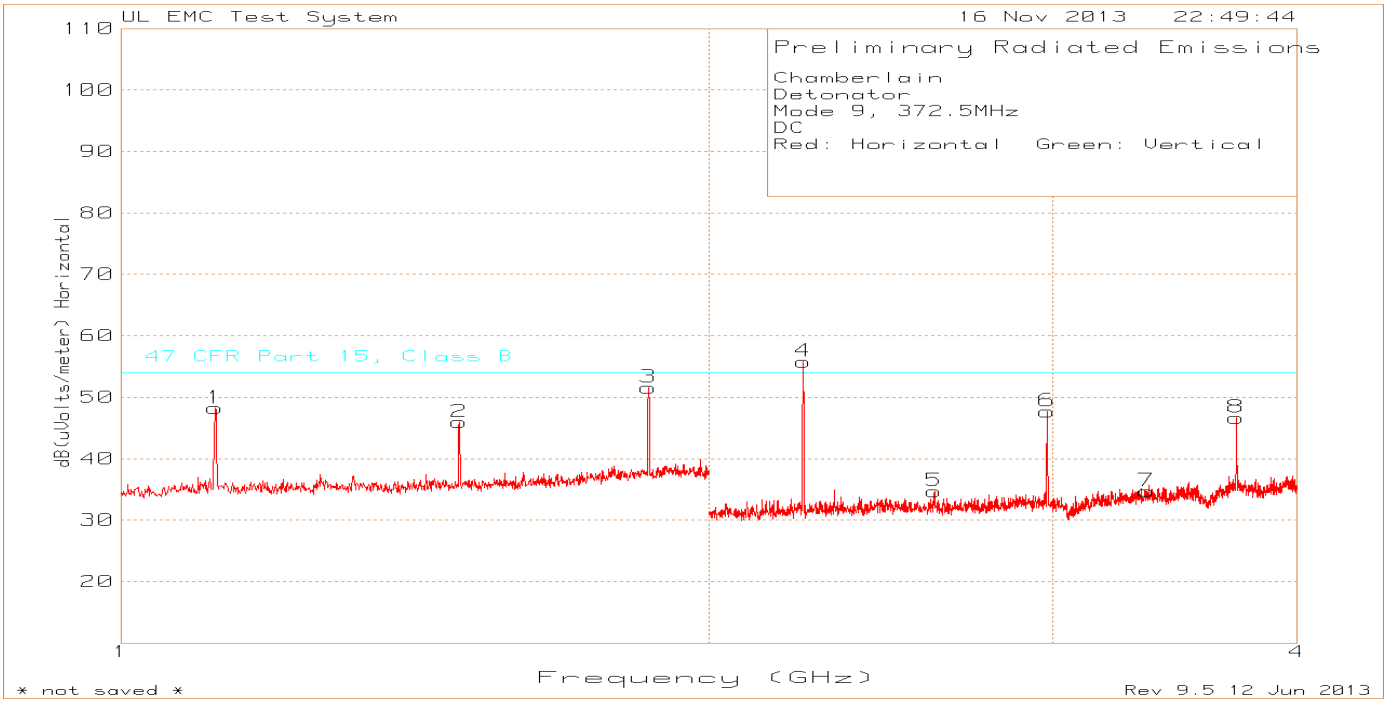


Figure 6 Radiated Emissions Graph 1GHz – 4GHz



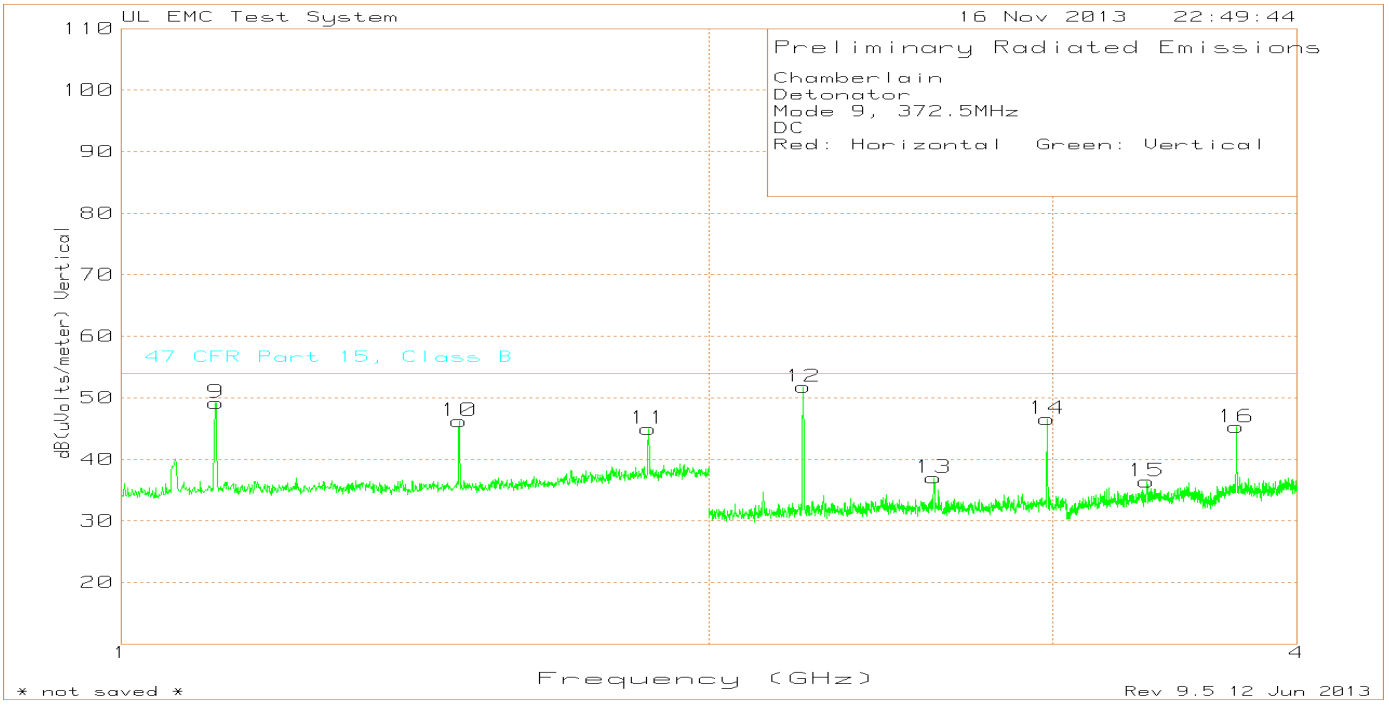


Table 6 Radiated Emissions Data Points

Chamberlain
Detonator
Fundamentals and Harmonics

Test Frequency MHz	Meter Reading dBuV	Detector	AF dB/m	CF dB	Peak Level dBuV/m	DC Factor dB	Average Level dBuV/m	FCC 15.209 Peak Limit dBuV/m	Peak Margin dB	FCC 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
372.4013	55.81	PK	15.6	8.4	79.81	-12.35	67.46	98.52	-18.71	78.52	-11.06	158	101	H
372.5004	55.79	PK	15.6	8.4	79.79	-12.35	67.44	98.52	-18.73	78.52	-11.08	158	101	H
372.6009	55.78	PK	15.6	8.4	79.78	-12.35	67.43	98.52	-18.74	78.52	-11.09	158	101	H
372.4004	50.45	PK	15.6	8.4	74.45	-12.35	62.1	98.52	-24.07	78.52	-16.42	269	119	V
372.4991	50.44	PK	15.6	8.4	74.44	-12.35	62.09	98.52	-24.08	78.52	-16.43	269	119	V
372.6018	50.38	PK	15.6	8.4	74.38	-12.35	62.03	98.52	-24.14	78.52	-16.49	269	119	V
745.0039	23.9	PK	21.5	9.6	55	-12.35	42.65	66.02	-11.02	46.02	-3.37	194	108	H
744.9984	21.77	PK	21.5	9.6	52.87	-12.35	40.52	66.02	-13.15	46.02	-5.5	183	235	V

Test Frequency MHz	Meter Reading dBuV	Detector	AF dB/m	CF dB	Peak Level dBuV/m	DC Factor dB	Average Level dBuV/m	FCC 15.209 Peak Limit dBuV/m	Peak Margin dB	FCC 15.209 Average Limit dBuV/m	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1.1175	79.98	PK	24.9	-55.82	49.06	-12.35	36.71	74	-24.94	54	-17.29	30	141	H
1.49	75.35	PK	25.2	-54.59	45.96	-12.35	33.61	74	-28.04	54	-20.39	0-360	100	H
1.8625	79.99	PK	27.1	-53.36	53.73	-12.35	41.38	74	-20.27	54	-12.62	11	123	H
2.235	86.37	PK	21.8	-51.79	56.38	-12.35	44.03	74	-17.62	54	-9.97	37	100	H
2.609	63.46	PK	22.3	-51.03	34.73	-12.35	22.38	74	-39.27	54	-31.62	0-360	100	H
2.98	75.16	PK	22.5	-49.97	47.69	-12.35	35.34	74	-26.31	54	-18.66	0-360	100	H
3.353	61.36	PK	23.1	-49.7	34.76	-12.35	22.41	74	-39.24	54	-31.59	0-360	100	H
3.725	72.37	PK	23.7	-49.38	46.69	-12.35	34.34	74	-27.31	54	-19.66	0-360	100	H
1.1178	81.25	PK	24.9	-55.83	50.32	-12.35	37.97	74	-23.68	54	-16.03	167	100	V
1.49	75.64	PK	25.2	-54.59	46.25	-12.35	33.9	74	-27.75	54	-20.1	0-360	101	V
1.862	71.27	PK	27.1	-53.37	45	-12.35	32.65	74	-29	54	-21.35	0-360	149	V
2.235	82.62	PK	21.8	-51.79	52.63	-12.35	40.28	74	-21.37	54	-13.72	29	100	V
2.6075	65.77	PK	22.3	-51.03	37.04	-12.35	24.69	74	-36.96	54	-29.31	0-360	101	V
2.981	74.04	PK	22.5	-49.97	46.57	-12.35	34.22	74	-27.43	54	-19.78	0-360	101	V
3.353	63.06	PK	23.1	-49.7	36.46	-12.35	24.11	74	-37.54	54	-29.89	0-360	101	V
3.725	70.94	PK	23.7	-49.38	45.26	-12.35	32.91	74	-28.74	54	-21.09	0-360	101	V

* Data with azimuth marked as 0-360 is based on pre-scan peak data.

4.2.2 Test Conditions and Results – 20dB / 99% Bandwidth

Test Description	Measurements were made in the laboratory environment. A Dipole (or equivalent) antenna tuned to the transmit frequency was attached to the input of a spectrum analyzer. The device was operated and the spectrum analyzer resolution bandwidth set per the appropriate standard.
Basic Standard	47 CFR Part 15.231, RSS-210 A1.1.3
Occupied Bandwidth Limits	
No wider than 0.25% of the center frequency for devices operating between 70MHz and 900MHz.	
For 372.5MHz: 0.93125MHz Allowed Bandwidth	

Table 7 Occupied Bandwidth Configuration Settings

Power Interface Mode #	EUT Configurations Mode	EUT Operation Mode
1	2	9
Supplementary information: None		

Table 8 Occupied Bandwidth Spectrum Analyzer Settings

Occupied Bandwidth Requirements		
Minimum RBW / VBW Setting – 10kHz/30kHz or larger	dBc	%
Requirement	**-20**	**99**
Results for 372.5MHz	249.70kHz	238.73kHz
Supplementary information: None		

Figure 7 20dB Bandwidth Graphs

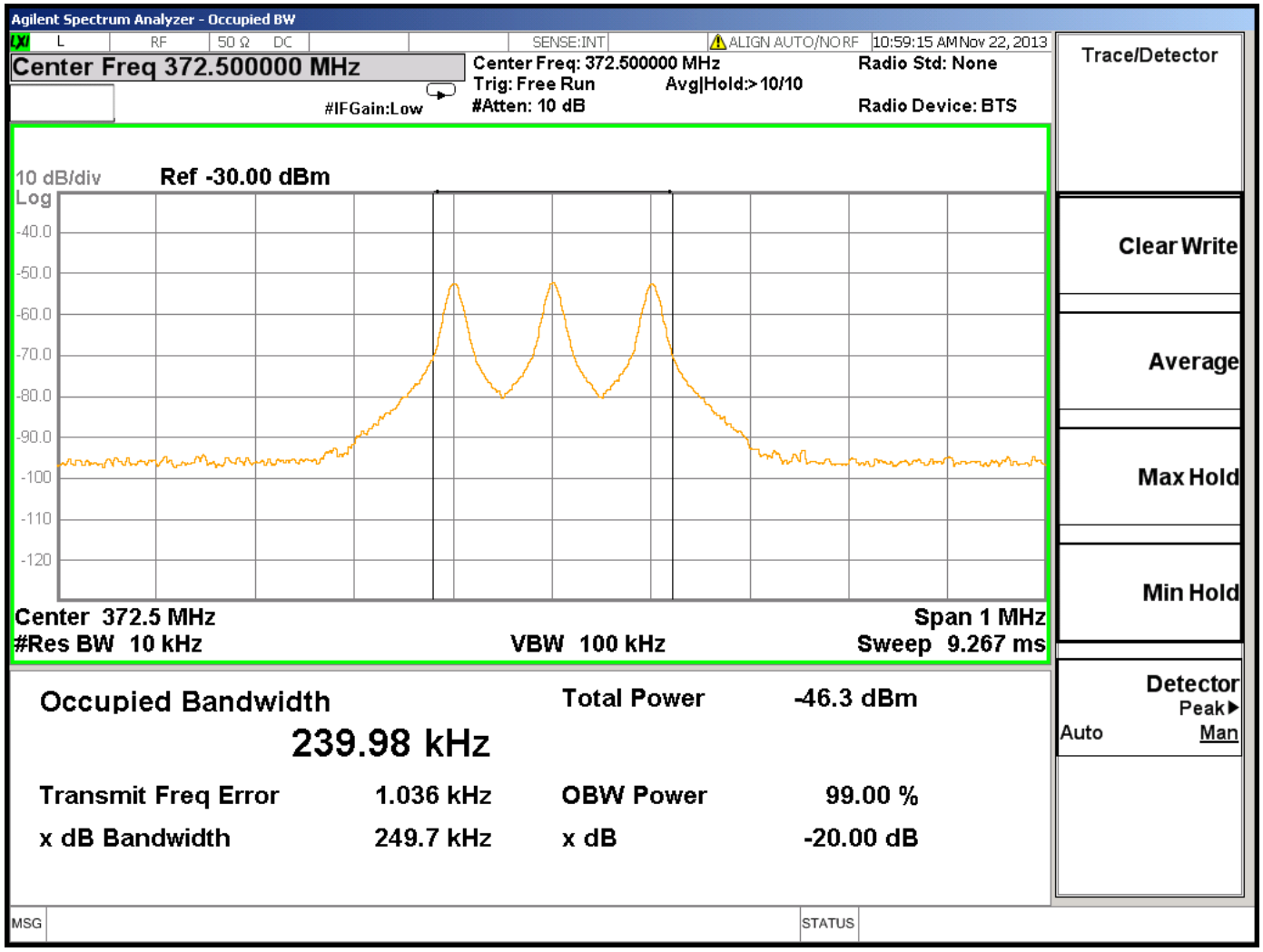
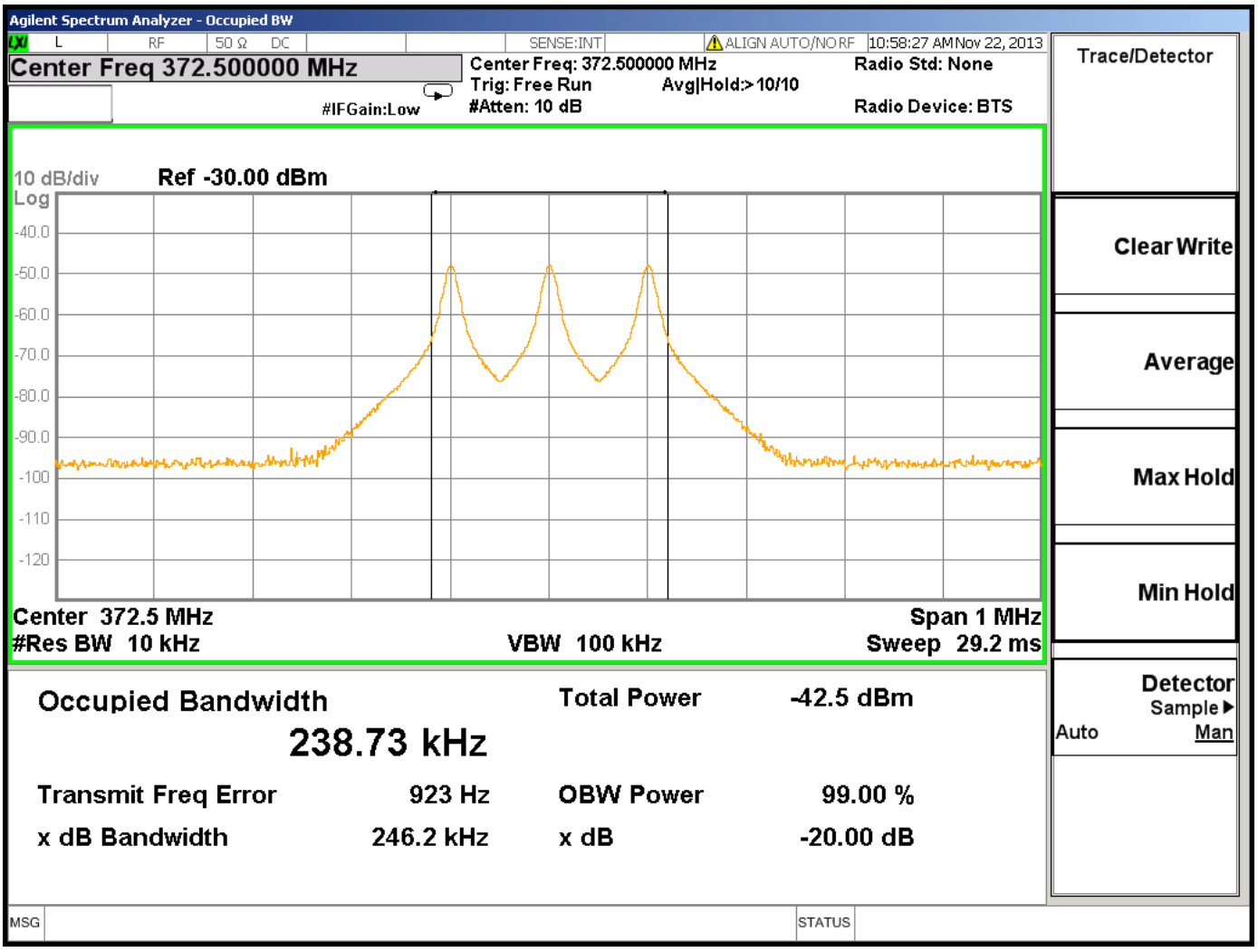
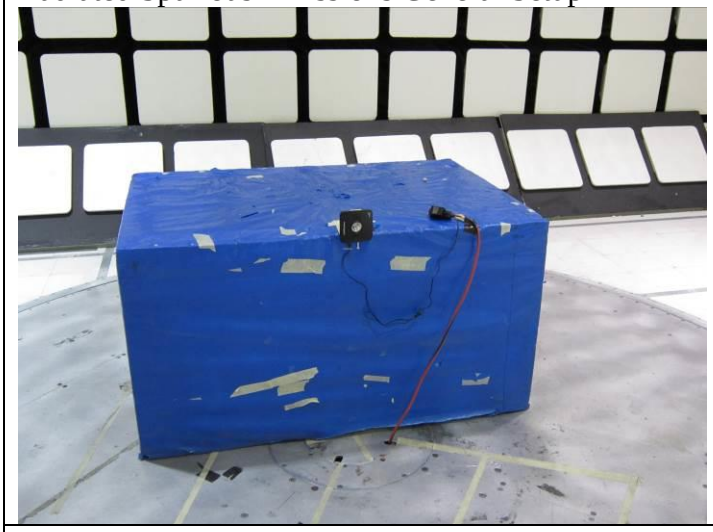
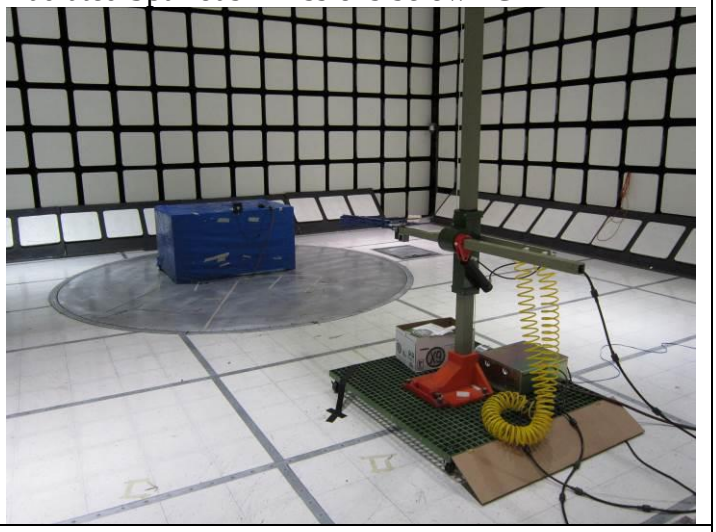
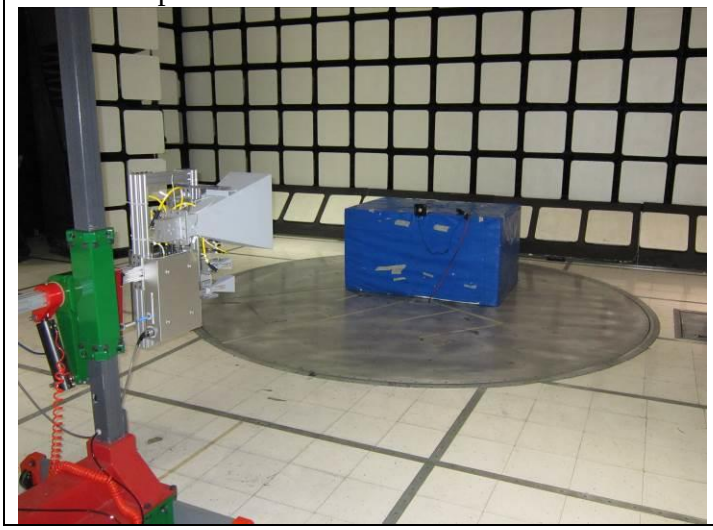
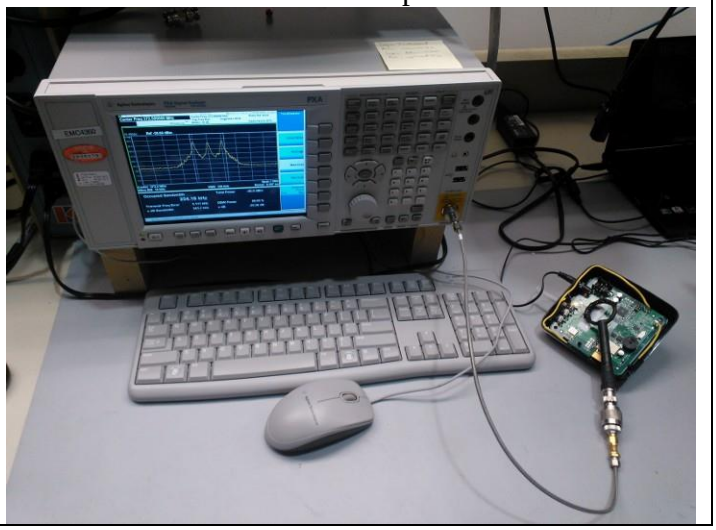


Figure 8 99% Power Bandwidth Graph



Appendix A

Test Setup Photos

Radiated Spurious Emissions General Setup 	Radiated Spurious Emissions below 1GHz 
Radiated Spurious Emissions above 1GHz 	Near Field Measurements Setup 

Appendix B

Test Equipment

Radiated Emissions – 10-Meter Chamber

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESU	EMC4323	20121227	20131231
Bicon Antenna	Chase	VBA6106A	EMC4078	20130213	20140228
Log-P Antenna	Chase	UPA6109	EMC4313	20131003	20141003
Spectrum Analyzer	Agilent	E4446A	s/n MY45300099	20130129	20150129
Antenna Array	UL	BOMS 1GHz-40GHz	EMC4276	20111227	20131231

Antenna Port / Near Field Conducted Emissions

Description	Manufacturer	Model	Identifier	Cal Date	Cal Due Date
Spectrum analyzer	Agilent	PXA	EMC4360	20121226	20131226
Generic Near Field Antenna	-	-	-	N/A	N/A

Appendix C

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/standards/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 2180A

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.: A0140.

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 2004/108/EC, Annex III (2-3). 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