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Job Number:	1001373946
Project Number:	11CA23108
File Number:	MC3181
Date:	June 15, 2011
Model:	001D7549
FCC ID:	HBW7549

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:	**June 15, 2011**
Product Type:	**Communication Interface Short Range Transceiver**
Product standards	**FCC Part 15, Subpart C**
Model Number:	**001D7549**
EUT Category:	**Frequency Hopping Spread Spectrum Transceiver**
Testing Start Date:	**May 16, 2011**
Date Testing Complete:	**June 13, 2011**
Overall Results:	**Compliant**

Report Directory

Report Revision History

Revision Date	Description	Revised By	Revision Reviewed By
None			

1.0 G E N E R A L - Product Description

1.1 Equipment Description

The Internet Gateway, Assembly 001D7549, is a 900MHz accessory that is the communication interface between a garage door operator, commercial door operator, gate operator, light control appliance, etc and a computer or smartphone over the internet. The Internet Gateway can provide the status of a Garage Door Operator (GDO) or operate the GDO from a remote location. It operates on 902-928MHz frequency band and is a bidirectional system which can transmit and receive using single antenna. It operates in frequency hopping mode transmitting on 50 channels in 902-928MHz band. Normally the Internet Gateway is constantly scanning in receive mode between all 50 high band frequencies. The gateway device is connected to the home's router through ethernet cable.

1.2 Device Configuration During Test

1.2.1 Equipment Used During Test:

Use	Product Type	Manufacturer	Model	Comments
EUT	Communication Interface Transceiver	Chamberlain Group Inc.	001D7549	None
EUT	AC Adaptor	Flying Power	FYAD7 5-5-UL	None
SIM	Laptop	Lenovo	T410	Used to ping EUT
SIM	Router	Cisco	E2000	Used to ping EUT
SIM	Router	D-Link	DI-624	Used to ping EUT

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	Y	N	None
2	Antenna	-	N	N	None
3	Ethernet	TP	N	N	None

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	None

1.3 Block Diagram:

The diagram below illustrates the configuration of the equipment above

See Block Diagram Exhibit.

1.4 EUT Configurations

Mode #	Description
1	EUT was configured on 80cm wooden table and connected to LISNs.
2	EUT was configured on 80cm Styrofoam with AC Adaptor routed vertically into a power source.
3	EUT was configured on bench top with its RF output connected directly into a measuring device.
4	EUT was configured on 80cm wooden table and connected to LISNs. An Ethernet cable was connected from the EUT to a Router
5	EUT was configured on 80cm Styrofoam with AC Adaptor routed vertically into a power source. An Ethernet cable was connected from the EUT to a Router

1.5 EUT Operation Modes

Mode #	Description
1	EUT was set to continuously transmit on a single channel with full output power.
2	EUT was set to receive on all channels while the Ethernet port was active being pinged by a computer through the router. This is also considered as standby mode.
3	EUT was set to continuously transmit on all channels in 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	Compliant

Test Engineer:

Reviewer:

Vahan Pilibosian (Ext.42319)
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International EMC Services
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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

Measurement Uncertainty

Test	Uncertainty, k=2
Conducted Emissions	0.3 dB(k=2)
Radiated Emissions	1.2 dB (k=2)

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

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	1 and 4	2 and 3

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

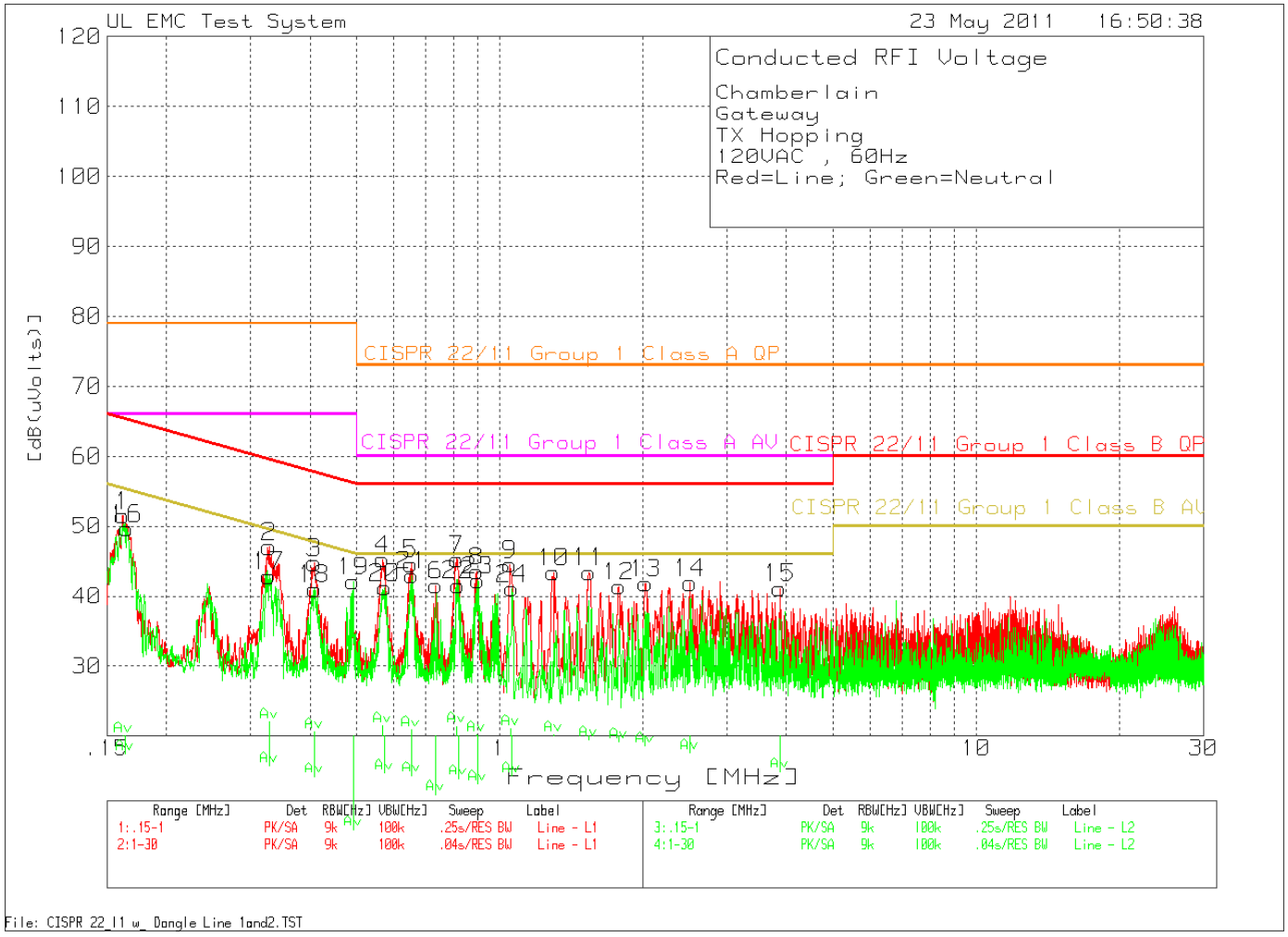


Table 3 Conducted Emissions Data Points – TX All Channels Hopping

Chamberlain
Gateway
TX Hopping
120VAC , 60Hz
Red=Line; Green=Neutral

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 .15 - 1MHz											
1	.16189	37.22 PK	1.7	12.6	51.52	79	66	65.4	55.4	-	-
				Margin [dB]		-27.48	-14.48	-13.88	-3.88	-	-
2	.32837	35.65 PK	.6	10.8	47.05	79	66	59.5	49.5	-	-
				Margin [dB]		-31.95	-18.95	-12.45	-2.45	-	-
3	.40842	33.57 PK	.5	10.7	44.77	79	66	57.7	47.7	-	-
				Margin [dB]		-34.23	-21.23	-12.93	-2.93	-	-
4	.56789	34.36 PK	.3	10.6	45.26	73	60	56	46	-	-
				Margin [dB]		-27.74	-14.74	-10.74	-.74	-	-
5	.65219	33.7 PK	.3	10.6	44.6	73	60	56	46	-	-
				Margin [dB]		-28.4	-15.4	-11.4	-1.4	-	-
6	.73415	30.63 PK	.3	10.6	41.53	73	60	56	46	-	-
				Margin [dB]		-31.47	-18.47	-14.47	-4.47	-	-
7	.81505	34.42 PK	.2	10.6	45.22	73	60	56	46	-	-
				Margin [dB]		-27.78	-14.78	-10.78	-.78	-	-
8	.89532	32.74 PK	.2	10.6	43.54	73	60	56	46	-	-
				Margin [dB]		-29.46	-16.46	-12.46	-2.46	-	-
Line - L1 1 - 30MHz											
9	1.05071	33.7 PK	.2	10.6	44.5	73	60	56	46	-	-
				Margin [dB]		-28.5	-15.5	-11.5	-1.5	-	-
10	1.29699	32.61 PK	.2	10.6	43.41	73	60	56	46	-	-
				Margin [dB]		-29.59	-16.59	-12.59	-2.59	-	-
11	1.53965	32.63 PK	.2	10.6	43.43	73	60	56	46	-	-
				Margin [dB]		-29.57	-16.57	-12.57	-2.57	-	-
12	1.78232	30.58 PK	.2	10.6	41.38	73	60	56	46	-	-
				Margin [dB]		-31.62	-18.62	-14.62	-4.62	-	-
13	2.02498	31.04 PK	.2	10.6	41.84	73	60	56	46	-	-
				Margin [dB]		-31.16	-18.16	-14.16	-4.16	-	-
14	2.5103	31.1 PK	.2	10.6	41.9	73	60	56	46	-	-
				Margin [dB]		-31.1	-18.1	-14.1	-4.1	-	-
15	3.87211	30.24 PK	.2	10.7	41.14	73	60	56	46	-	-
				Margin [dB]		-31.86	-18.86	-14.86	-4.86	-	-
Line - L2 .15 - 1MHz											
16	.16508	35.46 PK	1.7	12.5	49.66	79	66	65.2	55.2	-	-
				Margin [dB]		-29.34	-16.34	-15.54	-5.54	-	-
17	.32815	31.38 PK	.6	10.9	42.88	79	66	59.5	49.5	-	-
				Margin [dB]		-36.12	-23.12	-16.62	-6.62	-	-
18	.40948	29.72 PK	.4	10.9	41.02	79	66	57.7	47.7	-	-
				Margin [dB]		-37.98	-24.98	-16.68	-6.68	-	-
19	.49272	30.9 PK	.4	10.8	42.1	79	66	56.1	46.1	-	-
				Margin [dB]		-36.9	-23.9	-14	-4	-	-
20	.57426	30.21 PK	.3	10.7	41.21	73	60	56	46	-	-
				Margin [dB]		-31.79	-18.79	-14.79	-4.79	-	-
21	.65452	31.99 PK	.3	10.7	42.99	73	60	56	46	-	-
				Margin [dB]		-30.01	-17.01	-13.01	-3.01	-	-
22	.81909	30.67 PK	.2	10.7	41.57	73	60	56	46	-	-
				Margin [dB]		-31.43	-18.43	-14.43	-4.43	-	-
23	.90105	31.35 PK	.2	10.7	42.25	73	60	56	46	-	-
				Margin [dB]		-30.75	-17.75	-13.75	-3.75	-	-
Line - L2 1 - 30MHz											
24	1.06157	30.19 PK	.2	10.7	41.09	73	60	56	46	-	-
				Margin [dB]		-31.91	-18.91	-14.91	-4.91	-	-

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

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 .15 - 1MHz										
.16255	5.85 Av	1.7	12.5	20.05	79	66	65.33	55.33	-	-
			Margin [dB]:		-58.95	-45.95	-45.28	-35.28	-	-
.32903	10.6 Av	.6	10.8	22	79	66	59.48	49.48	-	-
			Margin [dB]:		-57	-44	-37.48	-27.48	-	-
.40824	9.41 Av	.5	10.7	20.61	79	66	57.68	47.68	-	-
			Margin [dB]:		-58.39	-45.39	-37.07	-27.07	-	-
.56888	10.51 Av	.3	10.6	21.41	73	60	56	46	-	-
			Margin [dB]:		-51.59	-38.59	-34.59	-24.59	-	-
.65195	9.96 Av	.3	10.6	20.86	73	60	56	46	-	-
			Margin [dB]:		-52.14	-39.14	-35.14	-25.14	-	-
.73422	.77 Av	.3	10.6	11.67	73	60	56	46	-	-
			Margin [dB]:		-61.33	-48.33	-44.33	-34.33	-	-
.81393	10.6 Av	.2	10.6	21.4	73	60	56	46	-	-
			Margin [dB]:		-51.6	-38.6	-34.6	-24.6	-	-
.89468	9.38 Av	.2	10.6	20.18	73	60	56	46	-	-
			Margin [dB]:		-52.82	-39.82	-35.82	-25.82	-	-
Line - L1 1 - 30MHz										
1.05666	10.25 Av	.2	10.6	21.05	73	60	56	46	-	-
			Margin [dB]:		-51.95	-38.95	-34.95	-24.95	-	-
1.29726	9.4 Av	.2	10.6	20.2	73	60	56	46	-	-
			Margin [dB]:		-52.8	-39.8	-35.8	-25.8	-	-
1.53915	8.68 Av	.2	10.6	19.48	73	60	56	46	-	-
			Margin [dB]:		-53.52	-40.52	-36.52	-26.52	-	-
1.78107	8.37 Av	.2	10.6	19.17	73	60	56	46	-	-
			Margin [dB]:		-53.83	-40.83	-36.83	-26.83	-	-
2.02189	7.76 Av	.2	10.6	18.56	73	60	56	46	-	-
			Margin [dB]:		-54.44	-41.44	-37.44	-27.44	-	-
2.50892	6.78 Av	.2	10.6	17.58	73	60	56	46	-	-
			Margin [dB]:		-55.42	-42.42	-38.42	-28.42	-	-
3.8743	4.03 Av	.2	10.7	14.93	73	60	56	46	-	-
			Margin [dB]:		-58.07	-45.07	-41.07	-31.07	-	-
Line - L2 .15 - 1MHz										
.16379	3.29 Av	1.7	12.5	17.49	79	66	65.27	55.27	-	-
			Margin [dB]:		-61.51	-48.51	-47.78	-37.78	-	-
.32845	4.25 Av	.6	10.9	15.75	79	66	59.49	49.49	-	-
			Margin [dB]:		-63.25	-50.25	-43.74	-33.74	-	-
.40863	2.93 Av	.4	10.9	14.23	79	66	57.68	47.68	-	-
			Margin [dB]:		-64.77	-51.77	-43.45	-33.45	-	-
.4933	-4.57 Av	.4	10.8	6.63	79	66	56.11	46.11	-	-
			Margin [dB]:		-72.37	-59.37	-49.48	-39.48	-	-
.57309	3.7 Av	.3	10.7	14.7	73	60	56	46	-	-
			Margin [dB]:		-58.3	-45.3	-41.3	-31.3	-	-
.654	3.36 Av	.3	10.7	14.36	73	60	56	46	-	-
			Margin [dB]:		-58.64	-45.64	-41.64	-31.64	-	-
.81895	3.02 Av	.2	10.7	13.92	73	60	56	46	-	-
			Margin [dB]:		-59.08	-46.08	-42.08	-32.08	-	-
.90071	2.23 Av	.2	10.7	13.13	73	60	56	46	-	-
			Margin [dB]:		-59.87	-46.87	-42.87	-32.87	-	-
Line - L2 1 - 30MHz										
1.05965	3.41 Av	.2	10.7	14.31	73	60	56	46	-	-
			Margin [dB]:		-58.69	-45.69	-41.69	-31.69	-	-

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
Av - Average detector
File: CISPR 22_11 w_ Dongle Line 1and2.TST

Figure 3 Conducted Emissions Graph – RX All Channels with Ethernet Active

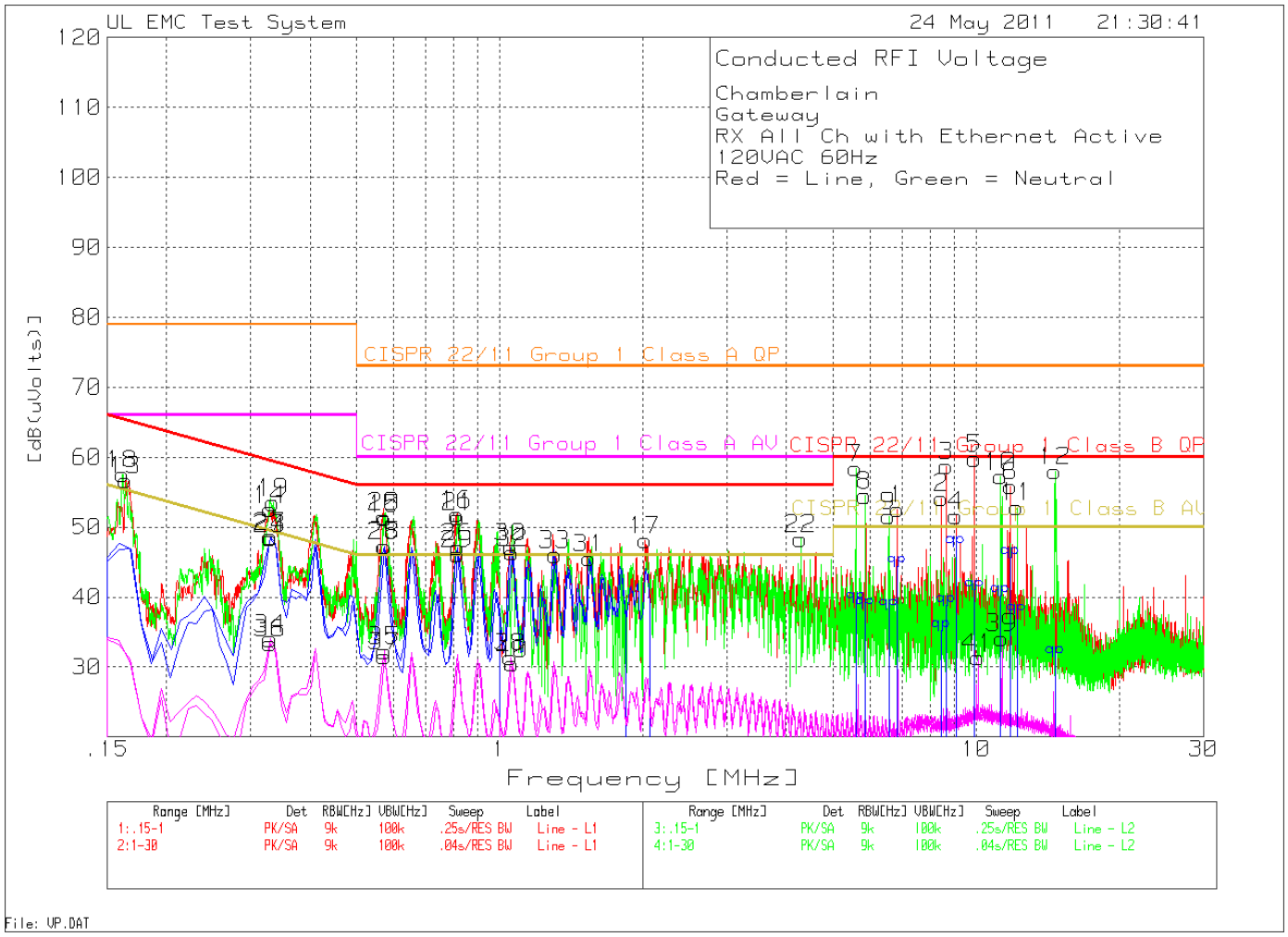


Table 4 Conducted Emissions Data Points – RX All Channels with Ethernet Active

Chamberlain									
Gateway									
RX All Ch with Ethernet Active									
120VAC 60Hz									
Red = Line, Green = Neutral									
Test Frequency	Meter Reading	Detector	Transducer Factor (dB)	Gain/Loss Factor (dB)	[dB(uVolts)]	CISPR 22/11 Group 1 Class B QP	Margin	CISPR 22/11 Group 1 Class B AV	Margin
Line - L1 .15 - 1MHz									
0.16401	42.69	PK	1.6	12.4	56.69	65.3	-8.61	55.3	1.39
0.32922	41.13	PK	0.6	10.8	52.53	59.5	-6.97	49.5	3.03
0.57383	40.34	PK	0.3	10.6	51.24	56	-4.76	46	5.24
0.8125	41.01	PK	0.2	10.6	51.81	56	-4.19	46	5.81
Line - L1 1 - 30MHz									
6.83477	41.45	PK	0.3	10.8	52.55	60	-7.45	50	2.55
8.45735	42.86	PK	0.4	10.9	54.16	60	-5.84	50	4.16
8.65655	47.32	PK	0.5	10.9	58.72	60	-1.28	50	8.72
9.07306	40.11	PK	0.5	11	51.61	60	-8.39	50	1.61
9.92419	48.4	PK	0.4	11	59.8	60	-0.2	50	9.8
11.81117	44.36	PK	0.4	11.1	55.86	60	-4.14	50	5.86
2.02136	37.34	PK	0.2	10.6	48.14	56	-7.86	46	2.14
Line - L2 .15 - 1MHz									
0.16168	43.15	PK	1.7	12.7	57.55	65.4	-7.85	55.4	2.15
0.33474	41.99	PK	0.6	10.9	53.49	59.3	-5.81	49.3	4.19
0.57192	40.46	PK	0.3	10.7	51.46	56	-4.54	46	5.46
0.81718	40.57	PK	0.2	10.7	51.47	56	-4.53	46	5.47
Line - L2 1 - 30MHz									
5.58886	47.33	PK	0.2	10.9	58.43	60	-1.57	50	8.43
5.83877	43.41	PK	0.2	10.9	54.51	60	-5.49	50	4.51
6.55951	40.38	PK	0.2	11	51.58	60	-8.42	50	1.58
11.26427	45.55	PK	0.5	11.2	57.25	60	-2.75	50	7.25
12.18059	41.18	PK	0.5	11.2	52.88	60	-7.12	50	2.88
14.63982	46.31	PK	0.4	11.3	58.01	60	-1.99	50	8.01
4.28138	37.42	PK	0.1	10.8	48.32	56	-7.68	46	2.32
PK - Peak detector									

Chamberlain							
Gateway							
RX All Ch with Ethernet Active							
120VAC 60Hz							
Red = Line, Green = Neutral							
Test Frequency	Meter Reading	Detector	Transducer Factor (dB)	Gain/Loss Factor (dB)	[dB(uVolts)]	CISPR 22/11 Group 1 Class B QP	Margin
Line - L1 .15 - 1MHz							
0.33028	36.98	QP	0.6	10.8	48.38	59.4	-11.02
0.33028	36.98	QP	0.6	10.8	48.38	59.4	-11.02
0.57328	36.4	QP	0.3	10.6	47.3	56	-8.7
0.81628	36.3	QP	0.2	10.6	47.1	56	-8.9
Line - L1 1 - 30MHz							
1.05497	36.32	QP	0.2	10.6	47.12	56	-8.88
1.54097	34.75	QP	0.2	10.6	45.55	56	-10.45
6.826567	33.31	QP	0.3	10.8	44.41	60	-15.59
8.4525	23.89	QP	0.4	10.9	35.19	60	-24.81
8.66258	27.41	QP	0.5	10.9	38.81	60	-21.19
9.062863	35.71	QP	0.5	11	47.21	60	-12.79
9.93318	29.61	QP	0.4	11	41.01	60	-18.99
11.8167	34.15	QP	0.4	11.1	45.65	60	-14.35
Line - L2 .15 - 1MHz							
0.33	37.13	QP	0.6	10.9	48.63	59.5	-10.87
0.573	36.29	QP	0.3	10.7	47.29	56	-8.71
0.816	35.24	QP	0.2	10.7	46.14	56	-9.86
Line - L2 1 - 30MHz							
1.06397	35.47	QP	0.2	10.7	46.37	56	-9.63
1.30697	35.14	QP	0.2	10.7	46.04	56	-9.96
5.59864	28.17	QP	0.2	10.9	39.27	60	-20.73
5.842817	27.33	QP	0.2	10.9	38.43	60	-21.57
6.558393	27.08	QP	0.2	11	38.28	60	-21.72
11.25755	28.53	QP	0.5	11.2	40.23	60	-19.77
12.173867	25.91	QP	0.5	11.2	37.61	60	-22.39
14.6427	19.78	QP	0.4	11.3	31.48	60	-28.52
QP - Quasi-Peak detector							

Chamberlain							
Gateway							
RX All Ch with Ethernet Active							
120VAC 60Hz							
Red = Line, Green = Neutral							
Test Frequency	Meter Reading	Detector	Transducer Factor (dB)	Gain/Loss Factor (dB)	[dB(uVolts)]	CISPR 22/11 Group 1 Class B AV	Margin
Line - L1 .15 - 1MHz							
0.33	22.64	Av	0.6	10.8	34.04	49.5	-15.46
0.573	21.39	Av	0.3	10.6	32.29	46	-13.71
Line - L1 1 - 30MHz							
1.054	20.59	Av	0.2	10.6	31.39	46	-14.61
11.323	22.73	Av	0.4	11	34.13	50	-15.87
Line - L2 .15 - 1MHz							
0.33	21.87	Av	0.6	10.9	33.37	49.5	-16.13
0.573	20.55	Av	0.3	10.7	31.55	46	-14.45
Line - L2 1 - 30MHz							
1.06397	19.58	Av	0.2	10.7	30.48	46	-15.52
10.09097	19.85	Av	0.4	11.1	31.35	50	-18.65
Av - Average detector							

4.1 Test Conditions and Results – RADIATED EMISSIONS Receiver Mode

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	5	2
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	June 1, 2010	June, 30, 2011
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

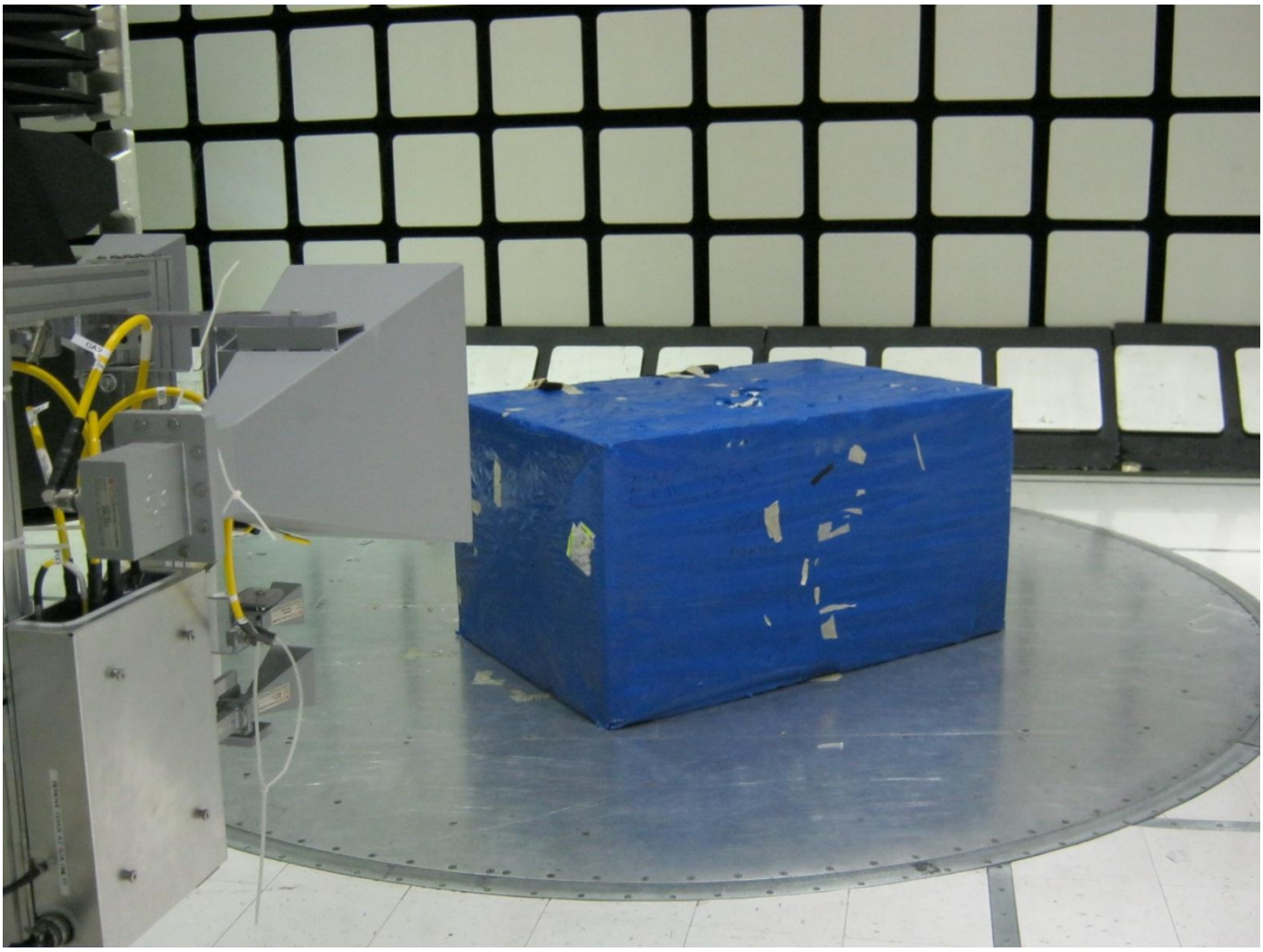


Figure 5 Radiated Emissions Graph 30MHz – 1GHz

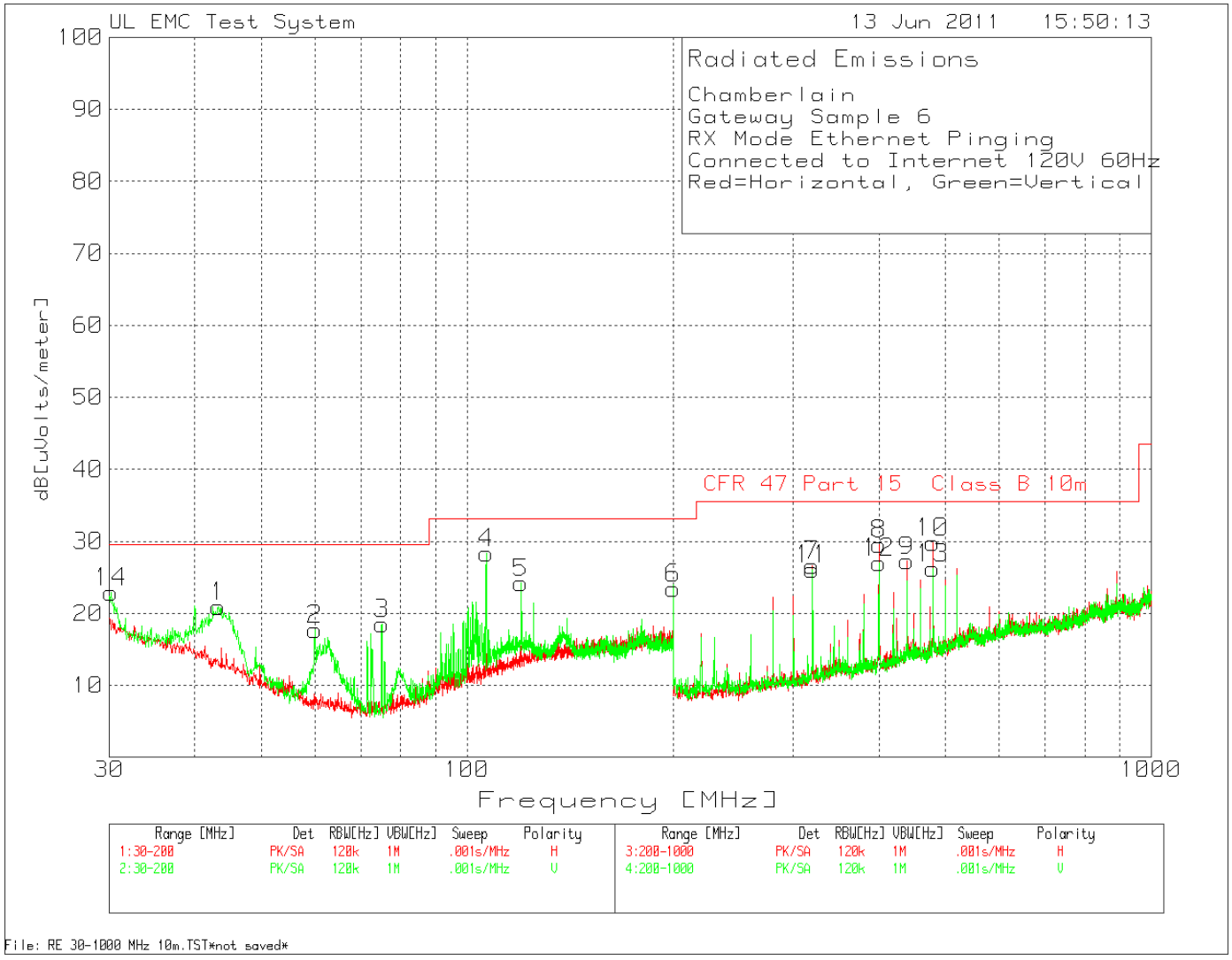


Table 7 Radiated Emissions Data Points 30MHz – 1GHz

Chamberlain										
Gateway Sample 6										
RX Mode Ethernet Pinging										
Connected to Internet 120V 60Hz										
Red=Horizontal, Green=Vertical										
Bicon Vertical 30 - 200MHz										
Test Frequency	Meter Reading	Detector	VBA6106A SN1246 EMC4078 Bicon [dB]	West 30-200MHz with Miteq [dB]	dB[uVolts/meter]	CFR 47 Part 15 Class B 10m	Margin	Height [cm]	Polarity	
43.2534	38.52	PK	12.7	-30.3	20.92	29.6	-8.68	99	Vert	
59.905	41.12	PK	6.8	-30.2	17.72	29.6	-11.88	99	Vert	
75.0275	42.24	PK	6.5	-30.2	18.54	29.6	-11.06	99	Vert	
106.7166	46.73	PK	11.5	-29.9	28.33	33.1	-4.77	99	Vert	
120.055	40.97	PK	13.2	-30	24.17	33.1	-8.93	99	Vert	
200	37.16	PK	16	-29.7	23.46	33.1	-9.64	99	Vert	
30.1699	35.36	PK	17.9	-30.4	22.86	29.6	-6.74	99	Vert	
LogP Horizontal 200 - 1000MHz										
Test Frequency	Meter Reading	Detector	UPA6109 SN24423 06-1-10 10M H [dB]	East 200-1000MHz with Miteq [dB]	dB[uVolts/meter]	CFR 47 Part 15 Class B 10m	Margin	Height [cm]	Polarity	
319.9201	45.68	PK	13.6	-32.7	26.58	35.6	-9.02	200	Horz	
399.8668	46.29	PK	15.5	-32.2	29.59	35.6	-6.01	299	Horz	
440.1066	42.33	PK	16.8	-31.9	27.23	35.6	-8.37	200	Horz	
480.0799	44.22	PK	17.4	-31.8	29.82	35.6	-5.78	200	Horz	
LogP Vertical 200 - 1000MHz										
Test Frequency	Meter Reading	Detector	UPA6109 SN24423 06-1-10 10M H [dB]	East 200-1000MHz with Miteq [dB]	dB[uVolts/meter]	CFR 47 Part 15 Class B 10m	Margin	Height [cm]	Polarity	
319.9201	45.23	PK	13.6	-32.7	26.13	35.6	-9.47	400	Vert	
399.8668	43.75	PK	15.5	-32.2	27.05	35.6	-8.55	400	Vert	
480.0799	40.63	PK	17.4	-31.8	26.23	35.6	-9.37	99	Vert	
Bicon Vertical 30 - 200MHz										
Test Frequency	Meter Reading	Detector	VBA6106A SN1246 EMC4078 Bicon [dB]	West 30-200MHz with Miteq [dB]	dB[uVolts/meter]	CFR 47 Part 15 Class B 10m	Margin	Azimuth [Degs]	Height [cm]	Polarity
106.645305	44.19	QP	11.5	-29.9	25.79	33.1	-7.31	297	100	Vert
LogP Horizontal 200 - 1000MHz										
Test Frequency	Meter Reading	Detector	UPA6109 SN24423 06-1-10 10M H [dB]	East 200-1000MHz with Miteq [dB]	dB[uVolts/meter]	CFR 47 Part 15 Class B 10m	Margin	Azimuth [Degs]	Height [cm]	Polarity
479.964077	44.27	QP	17.4	-31.8	29.87	35.6	-5.73	24	224	Horz
PK - Peak detector										
QP - Quasi-Peak detector										
File: RE 30-1000 MHz 10m.TST*not saved*										

Figure 6 Radiated Emissions Graph 1GHz – 5GHz

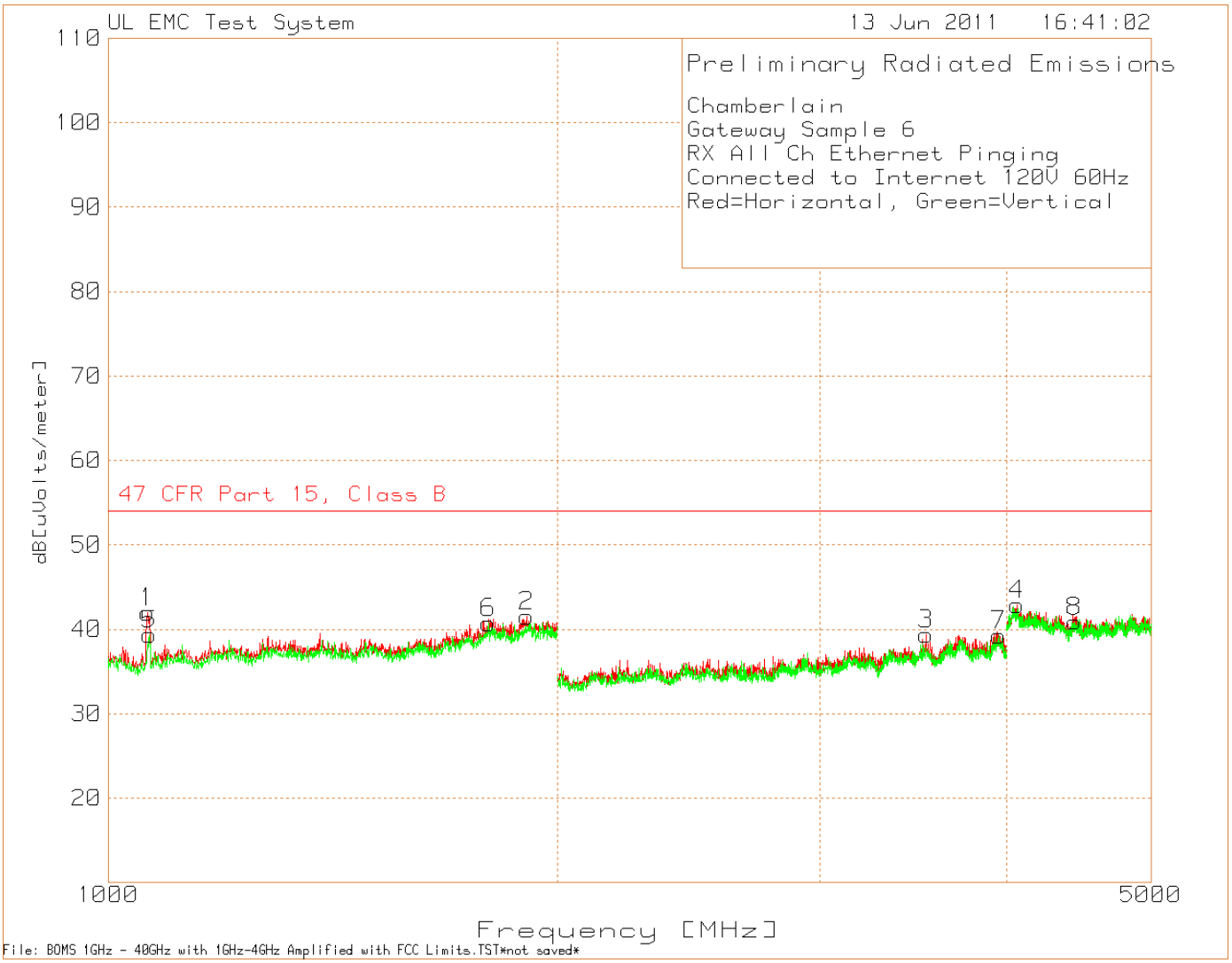


Table 8 Radiated Emissions Data Points 1GHz – 5GHz

Chamberlain									
Gateway Sample 6									
RX All Ch Ethernet Pinging									
Connected to Internet 120V 60Hz									
Red=Horizontal, Green=Vertical									
1 - 2GHz 1000 - 2000MHz									
Test Frequency	Meter Reading	Detector	EMCO 3115 s/n 2638 [dB]	BOMS Factor [dB]	dB[uVolts/meter]	47 CFR Part 15, Class B	Margin	Height [cm]	Polarity
1063.063	74.3	PK	24	-56.36	41.94	54	-12.06	99	Horz
1907.908	66.97	PK	27.6	-53.03	41.54	54	-12.46	150	Horz
2 - 4GHz 2000 - 4000MHz									
Test Frequency	Meter Reading	Detector	EMCO3161-02 S/N 99061052 3m UL [dB]	BOMS Factor [dB]	dB[uVolts/meter]	47 CFR Part 15, Class B	Margin	Height [cm]	Polarity
3534.356	64.89	PK	23.4	-48.87	39.42	54	-14.58	200	Horz
4 - 8GHz 4000 - 5000MHz									
Test Frequency	Meter Reading	Detector	EMCO 3161-03 S/N 99051041 UL [dB]	BOMS Factor [dB]	dB[uVolts/meter]	47 CFR Part 15, Class B	Margin	Height [cm]	Polarity
4065.065	65.16	PK	28.4	-50.65	42.91	54	-11.09	100	Horz
1 - 2GHz 1000 - 2000MHz									
Test Frequency	Meter Reading	Detector	EMCO 3115 s/n 2638 [dB]	BOMS Factor [dB]	dB[uVolts/meter]	47 CFR Part 15, Class B	Margin	Height [cm]	Polarity
1066.066	71.61	PK	24	-56.28	39.33	54	-14.67	100	Vert
1797.798	67.4	PK	27	-53.61	40.79	54	-13.21	100	Vert
2 - 4GHz 2000 - 4000MHz									
Test Frequency	Meter Reading	Detector	EMCO3161-02 S/N 99061052 3m UL [dB]	BOMS Factor [dB]	dB[uVolts/meter]	47 CFR Part 15, Class B	Margin	Height [cm]	Polarity
3953.302	65.2	PK	24.1	-50.02	39.28	54	-14.72	100	Vert
4 - 8GHz 4000 - 5000MHz									
Test Frequency	Meter Reading	Detector	EMCO 3161-03 S/N 99051041 UL [dB]	BOMS Factor [dB]	dB[uVolts/meter]	47 CFR Part 15, Class B	Margin	Height [cm]	Polarity
4447.447	64.64	PK	27.9	-51.63	40.91	54	-13.09	100	Vert
PK - Peak detector									
File: BOMS 1GHz - 40GHz with 1GHz-4GHz Amplified with FCC Limits.TST*not saved*									

4.2 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 9 SPURIOUS EMISSIONS EUT Configuration Settings

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

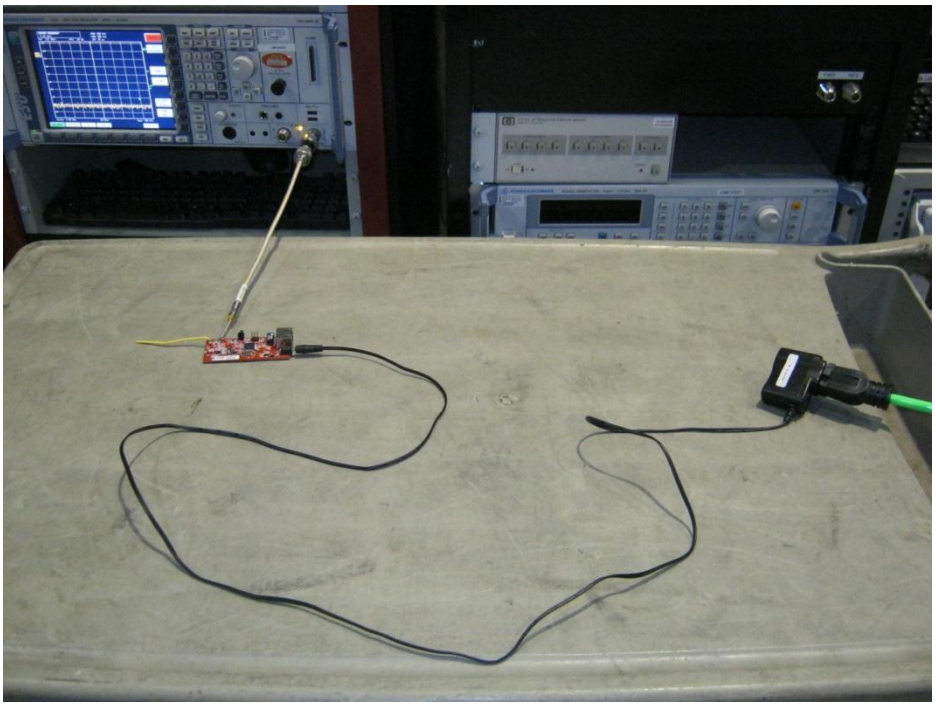
Table 10 SPURIOUS CONDUCTED EMISSIONS Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	Rhode & Schwartz	ESU	EMC4323	Dec. 30, 2010	Dec. 31, 2011
Attenuator w/ Cable	Mini Circuits	BW-N10W5	None	N/A	N/A

Table 11 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	June 1, 2010	June, 30, 2011
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

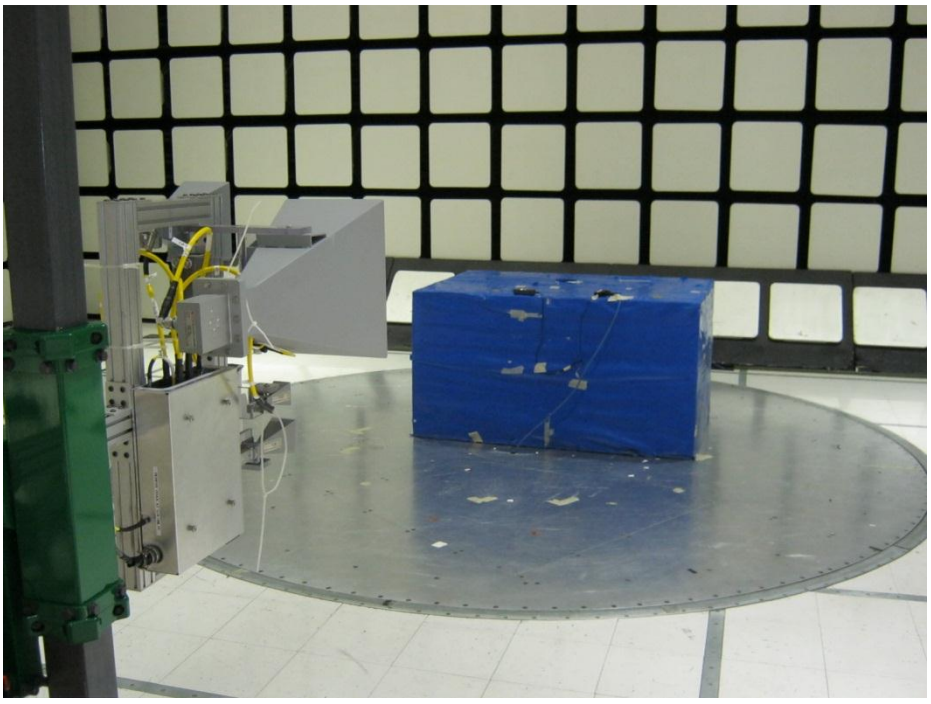


Figure 7 30MHz-1GHz Antenna Port Spurious Emissions Plots - Low Channel

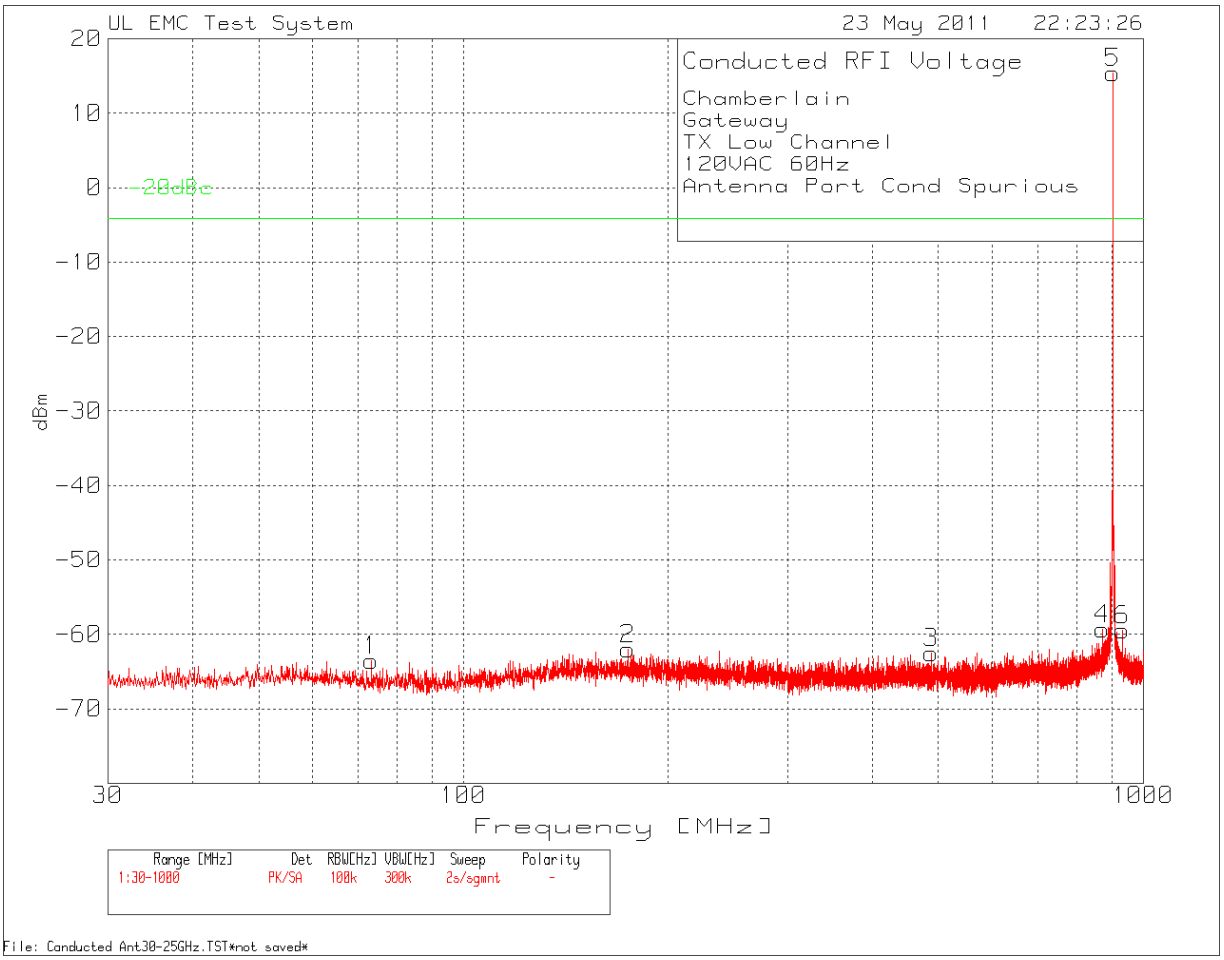


Table 12 Antenna Port Conducted Spurious Emissions 30MHz - 1GHz - Low Channel

Chamberlain
Gateway
TX Low Channel
120VAC 60Hz
Antenna Port Cond Spurious

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dBm	Limit:1	2	3	4	5	6
Range 1 30 - 1000MHz											
1	73.2231	33.49 PK	-107	10	-63.51	-4.2	-	-	-	-	-
				Margin [dB]		-59.31	-	-	-	-	-
2	174.497	35.02 PK	-107	10	-61.98	-4.2	-	-	-	-	-
				Margin [dB]		-57.78	-	-	-	-	-
3	488.7851	34.51 PK	-107	10	-62.49	-4.2	-	-	-	-	-
				Margin [dB]		-58.29	-	-	-	-	-
4	872.269	37.61 PK	-107	10	-59.39	-4.2	-	-	-	-	-
				Margin [dB]		-55.19	-	-	-	-	-
5	902.3119	112.34 PK	-107	10	15.34	N/A	-	-	-	-	-
				Margin [dB]		N/A	-	-	-	-	-
6	932.258	37.49 PK	-107	10.1	-59.41	-4.2	-	-	-	-	-
				Margin [dB]		-55.21	-	-	-	-	-

LIMIT 1: -20dBc
PK - Peak detector
File: Conducted Ant30-25GHz.TST*not saved*

Figure 8 1-10GHz Antenna Port Spurious Emissions Plots - Low Channel

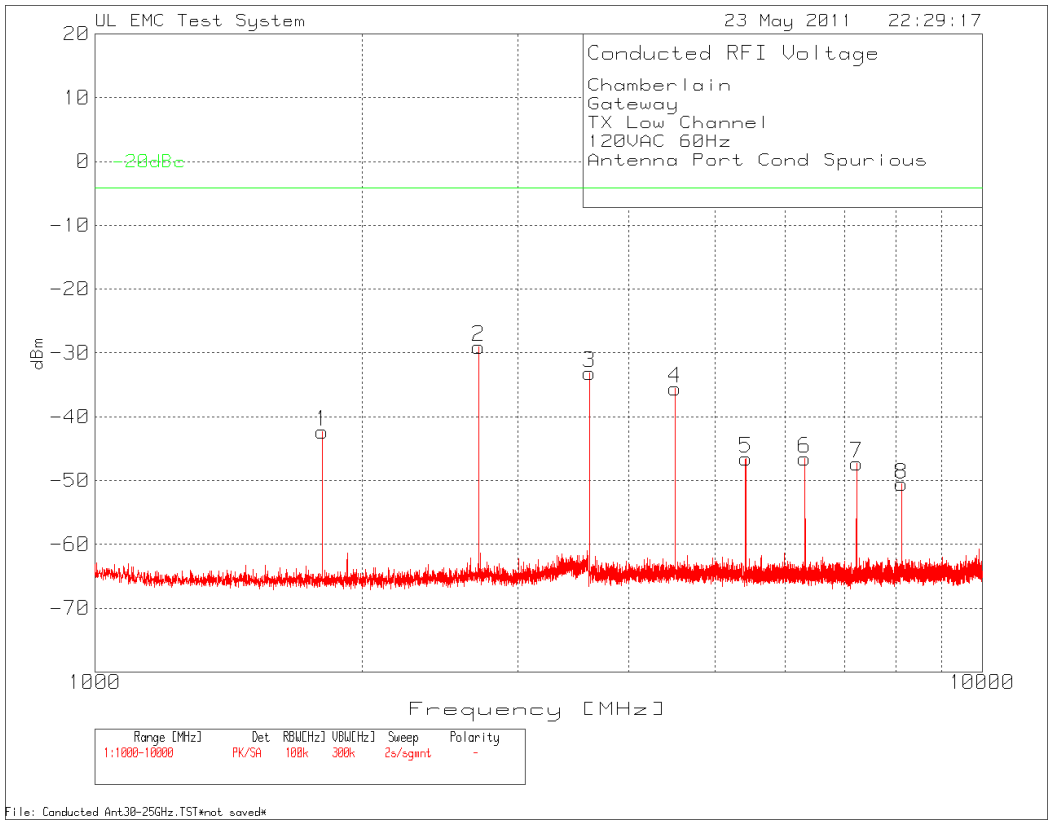


Table 13 Antenna Port Conducted Spurious Emissions 1-10GHz - Low Channel

Chamberlain
Gateway
TX Low Channel
120VAC 60Hz
Antenna Port Cond Spurious

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dBm	Limit:1	2	3	4	5	6
Range 1 1000 - 10000MHz											
1	1803.877	54.62 PK	-107	10.1	-42.28	-4.2	-	-	-	-	-
				Margin [dB]		-38.08	-	-	-	-	-
2	2706.664	67.86 PK	-107	10.1	-29.04	-4.2	-	-	-	-	-
				Margin [dB]		-24.84	-	-	-	-	-
3	3609.451	63.7 PK	-107	10.2	-33.1	-4.2	-	-	-	-	-
				Margin [dB]		-28.9	-	-	-	-	-
4	4511.34	61.11 PK	-107	10.3	-35.59	-4.2	-	-	-	-	-
				Margin [dB]		-31.39	-	-	-	-	-
5	5414.127	50.33 PK	-107	10.1	-46.57	-4.2	-	-	-	-	-
				Margin [dB]		-42.37	-	-	-	-	-
6	6316.016	50.33 PK	-107	10.1	-46.57	-4.2	-	-	-	-	-
				Margin [dB]		-42.37	-	-	-	-	-
7	7217.904	49.4 PK	-107	10.3	-47.3	-4.2	-	-	-	-	-
				Margin [dB]		-43.1	-	-	-	-	-
8	8120.691	45.92 PK	-107	10.5	-50.58	-4.2	-	-	-	-	-
				Margin [dB]		-46.38	-	-	-	-	-

LIMIT 1: -20dBc
PK - Peak detector
File: Conducted Ant30-25GHz.TST*not saved*

Figure 9 30MHz-1GHz Antenna Port Spurious Emissions Plots - Mid Channel

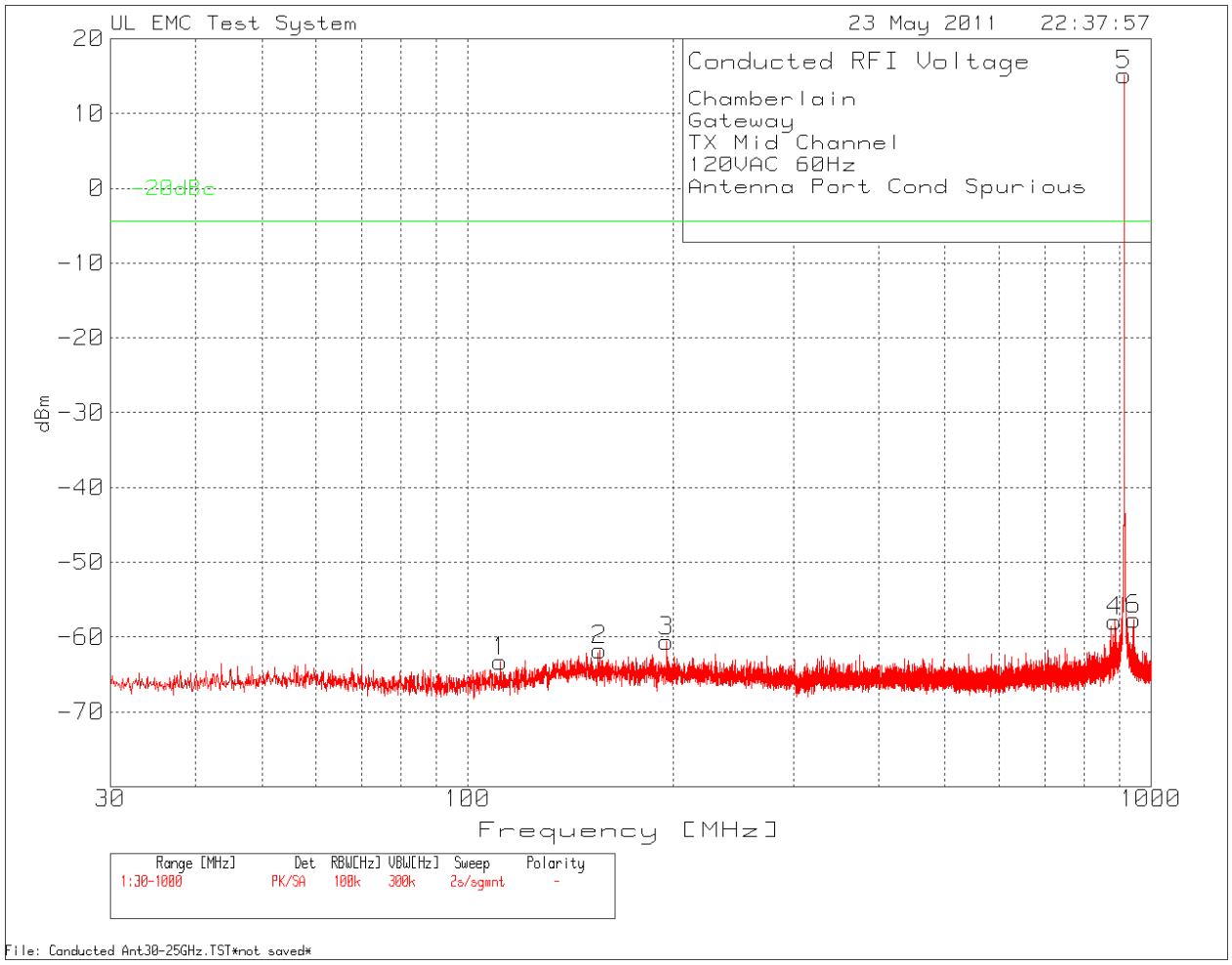


Table 14 Antenna Port Conducted Spurious Emissions 30MHz - 1GHz - Mid Channel

Chamberlain
Gateway
TX Mid Channel
120VAC 60Hz
Antenna Port Cond Spurious

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dBm	Limit:1	2	3	4	5	6
Range 1 30 - 1000MHz											
1	111.7944	33.8 PK	-107	9.9	-63.3	-4.4	-	-	-	-	-
				Margin [dB]		-58.9	-	-	-	-	-
2	155.9866	35.3 PK	-107	10	-61.7	-4.4	-	-	-	-	-
				Margin [dB]		-57.3	-	-	-	-	-
3	195.8178	36.35 PK	-107	10	-60.65	-4.4	-	-	-	-	-
				Margin [dB]		-56.25	-	-	-	-	-
4	884.8676	39.08 PK	-107	10	-57.92	-4.4	-	-	-	-	-
				Margin [dB]		-53.52	-	-	-	-	-
5	914.7652	112.09 PK	-107	10.1	15.19	N/A	-	-	-	-	-
				Margin [dB]		N/A	-	-	-	-	-
6	944.6628	39.19 PK	-107	10.1	-57.71	-4.4	-	-	-	-	-
				Margin [dB]		-53.31	-	-	-	-	-

LIMIT 1: -20dBc
PK - Peak detector
File: Conducted Ant30-25GHz.TST*not saved*

Figure 10 1-10GHz Antenna Port Spurious Emissions Plots - Mid Channel

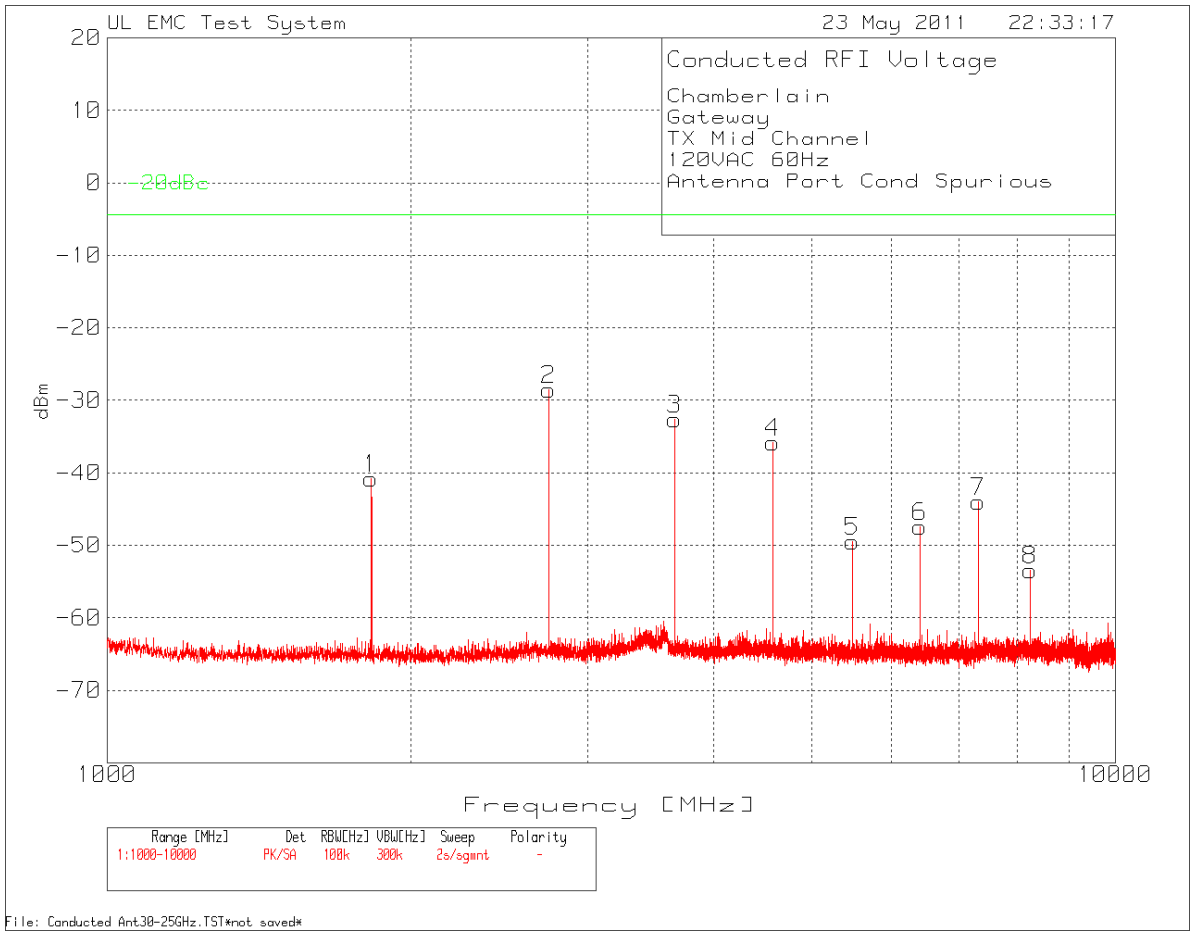


Table 15 Antenna Port Conducted Spurious Emissions 1-10GHz - Mid Channel

Chamberlain
Gateway
TX Mid Channel
120VAC 60Hz
Antenna Port Cond Spurious

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dBm	Limit:1	2	3	4	5	6
Range 1 1000 - 10000MHz											
1	1829.054	56.1 PK	-107	10.1	-40.8	-4.4	-	-	-	-	-
				Margin [dB]		-36.4	-	-	-	-	-
2	2744.43	68.39 PK	-107	10.1	-28.51	-4.4	-	-	-	-	-
				Margin [dB]		-24.11	-	-	-	-	-
3	3658.907	64.21 PK	-107	10.2	-32.59	-4.4	-	-	-	-	-
				Margin [dB]		-28.19	-	-	-	-	-
4	4573.384	60.93 PK	-107	10.3	-35.77	-4.4	-	-	-	-	-
				Margin [dB]		-31.37	-	-	-	-	-
5	5488.76	47.27 PK	-107	10.2	-49.53	-4.4	-	-	-	-	-
				Margin [dB]		-45.13	-	-	-	-	-
6	6404.136	49.41 PK	-107	10.2	-47.39	-4.4	-	-	-	-	-
				Margin [dB]		-42.99	-	-	-	-	-
7	7317.714	52.69 PK	-107	10.3	-44.01	-4.4	-	-	-	-	-
				Margin [dB]		-39.61	-	-	-	-	-
8	8232.191	43.2 PK	-107	10.4	-53.4	-4.4	-	-	-	-	-
				Margin [dB]		-49	-	-	-	-	-

LIMIT 1: -20dBc
PK - Peak detector
File: Conducted Ant30-25GHz.TST*not saved*

Figure 11 30MHz-1GHz Antenna Port Spurious Emissions Plots - High Channel

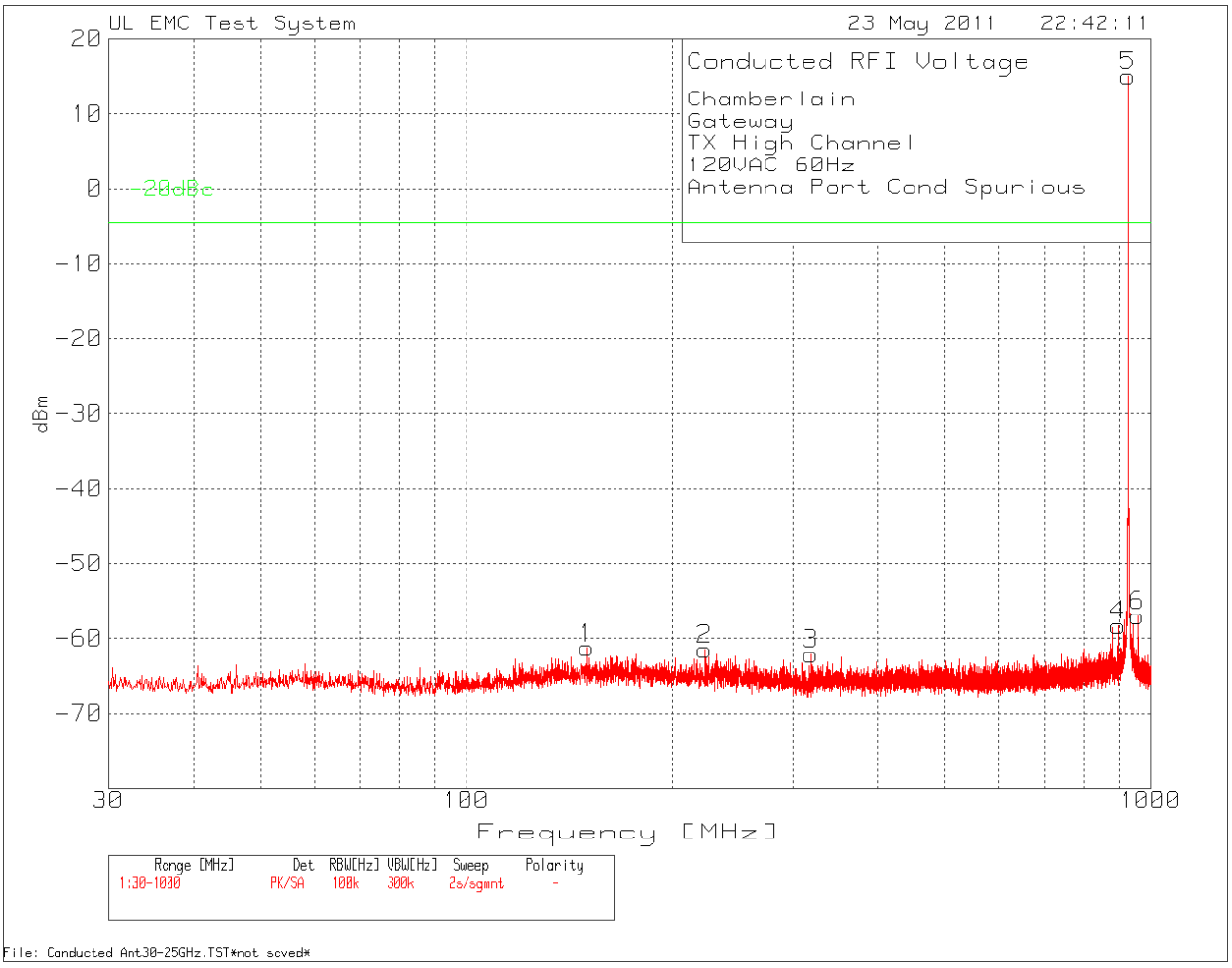


Table 16 Antenna Port Conducted Spurious Emissions 30MHz - 1GHz - High Channel

Chamberlain
Gateway
TX High Channel
120VAC 60Hz
Antenna Port Cond Spurious

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dBm	Limit:1	2	3	4	5	6
Range 1 30 - 1000MHz ----------											
1	150.0749	35.69 PK	-107	10	-61.31	-4.6	-	-	-	-	-
				Margin [dB]		-56.71	-	-	-	-	-
2	223.4379	35.54 PK	-107	10	-61.46	-4.6	-	-	-	-	-
				Margin [dB]		-56.86	-	-	-	-	-
3	318.9939	34.9 PK	-107	10	-62.1	-4.6	-	-	-	-	-
				Margin [dB]		-57.5	-	-	-	-	-
4	896.7879	38.73 PK	-107	10	-58.27	-4.6	-	-	-	-	-
				Margin [dB]		-53.67	-	-	-	-	-
5	926.8309	111.92 PK	-107	10.1	15.02	N/A	-	-	-	-	-
				Margin [dB]		N/A	-	-	-	-	-
6	956.7769	39.98 PK	-107	10	-57.02	-4.6	-	-	-	-	-
				Margin [dB]		-52.42	-	-	-	-	-

LIMIT 1: -20dBc
PK - Peak detector
File: Conducted Ant30-25GHz.TST*not saved*

Figure 12 1-10GHz Antenna Port Spurious Emissions Plots - High Channel

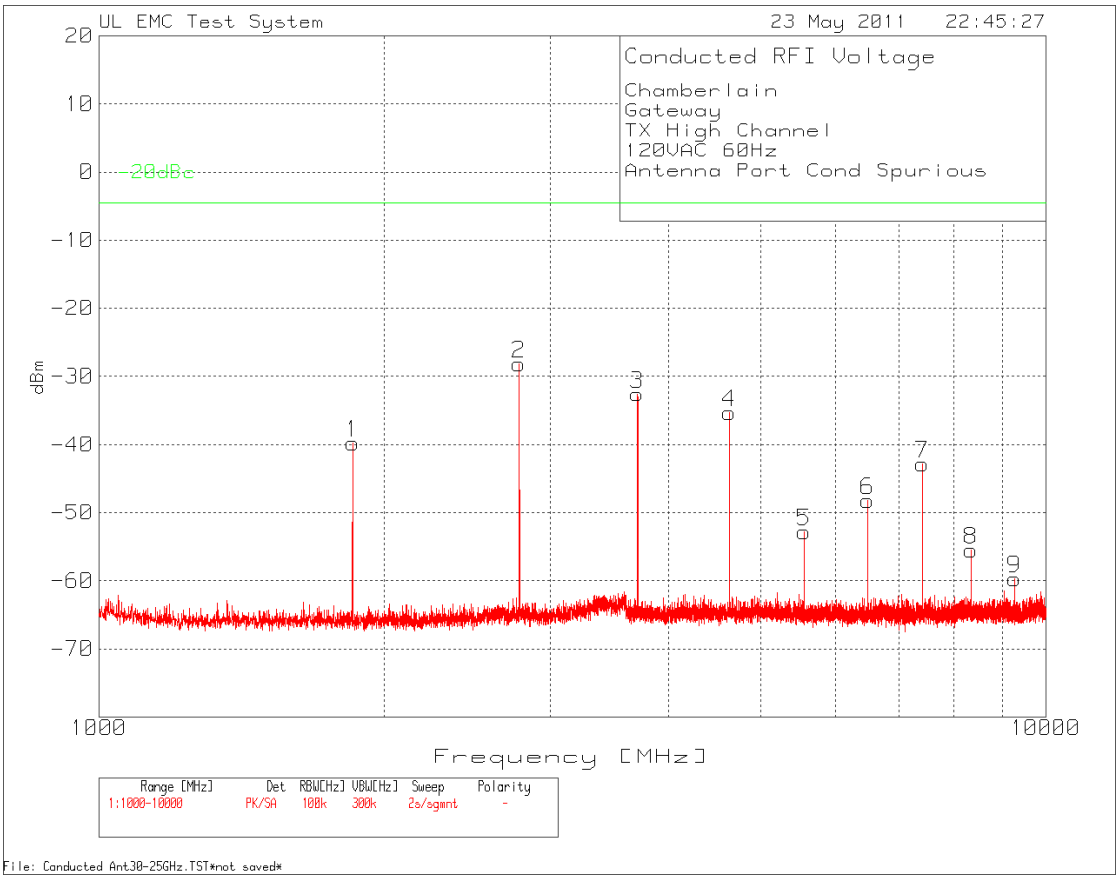


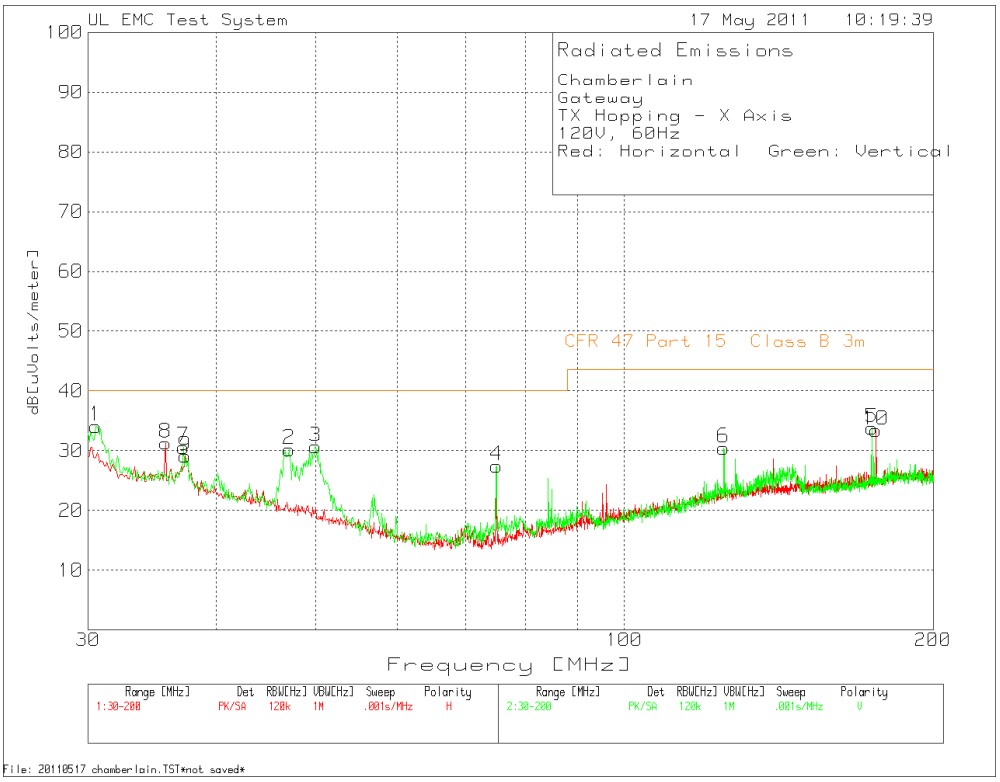
Table 17 Antenna Port Conducted Spurious Emissions 1-10GHz - High Channel

Chamberlain
Gateway
TX High Channel
120VAC 60Hz
Antenna Port Cond Spurious

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dBm	Limit:1	2	3	4	5	6
Range 1 1000 - 10000MHz											
1	1853.332	57.16 PK	-107	10.1	-39.74	-4.6	-	-	-	-	-
				Margin [dB]		-35.14	-	-	-	-	-
2	2779.498	68.59 PK	-107	10.2	-28.21	-4.6	-	-	-	-	-
				Margin [dB]		-23.61	-	-	-	-	-
3	3706.564	64.13 PK	-107	10.3	-32.57	-4.6	-	-	-	-	-
				Margin [dB]		-27.97	-	-	-	-	-
4	4633.63	61.5 PK	-107	10.2	-35.3	-4.6	-	-	-	-	-
				Margin [dB]		-30.7	-	-	-	-	-
5	5559.796	44.05 PK	-107	10.1	-52.85	-4.6	-	-	-	-	-
				Margin [dB]		-48.25	-	-	-	-	-
6	6486.862	48.62 PK	-107	10.2	-48.18	-4.6	-	-	-	-	-
				Margin [dB]		-43.58	-	-	-	-	-
7	7413.927	53.8 PK	-107	10.3	-42.9	-4.6	-	-	-	-	-
				Margin [dB]		-38.3	-	-	-	-	-
8	8340.993	40.95 PK	-107	10.5	-55.55	-4.6	-	-	-	-	-
				Margin [dB]		-50.95	-	-	-	-	-
9	9267.16	37.01 PK	-107	10.3	-59.69	-4.6	-	-	-	-	-
				Margin [dB]		-55.09	-	-	-	-	-

LIMIT 1: -20dBc
PK - Peak detector
File: Conducted Ant30-25GHz.TST*not saved*

Figure 13 Radiated Spurious Emissions below 1GHz, Hopping X-axis



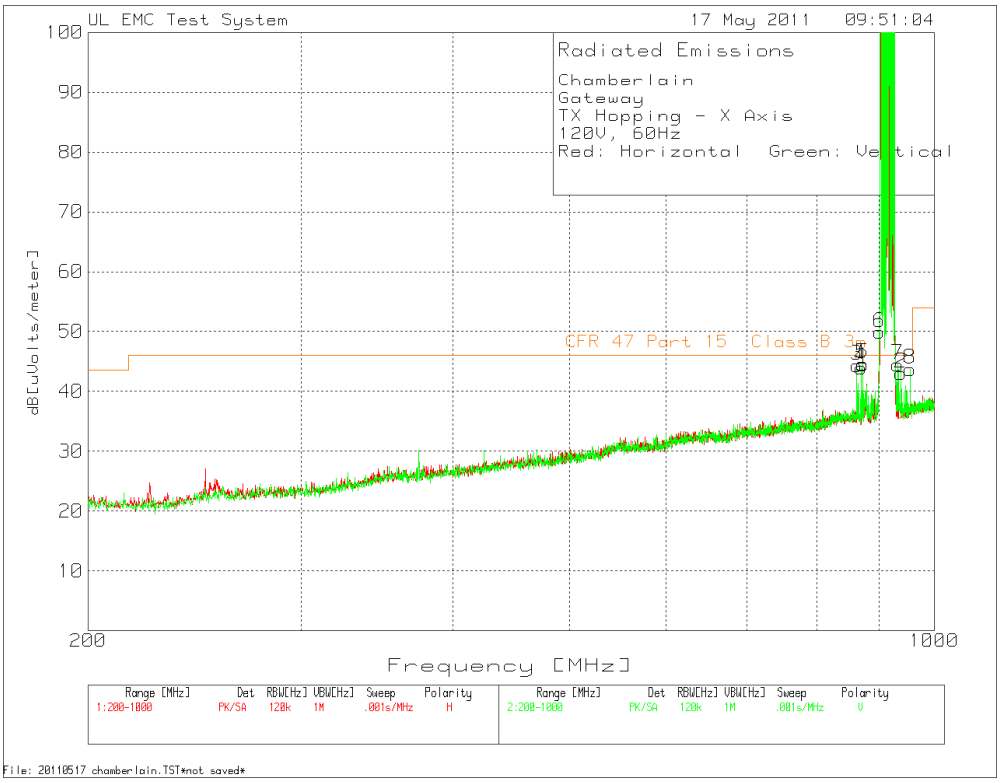


Table 18 Radiated Spurious Emissions below 1GHz, Hopping X-axis

None of the spurious emissions detected above the noise floors in frequency range of 200MHz – 1GHz are in the restricted band therefore final radiated emission measurements were not required.

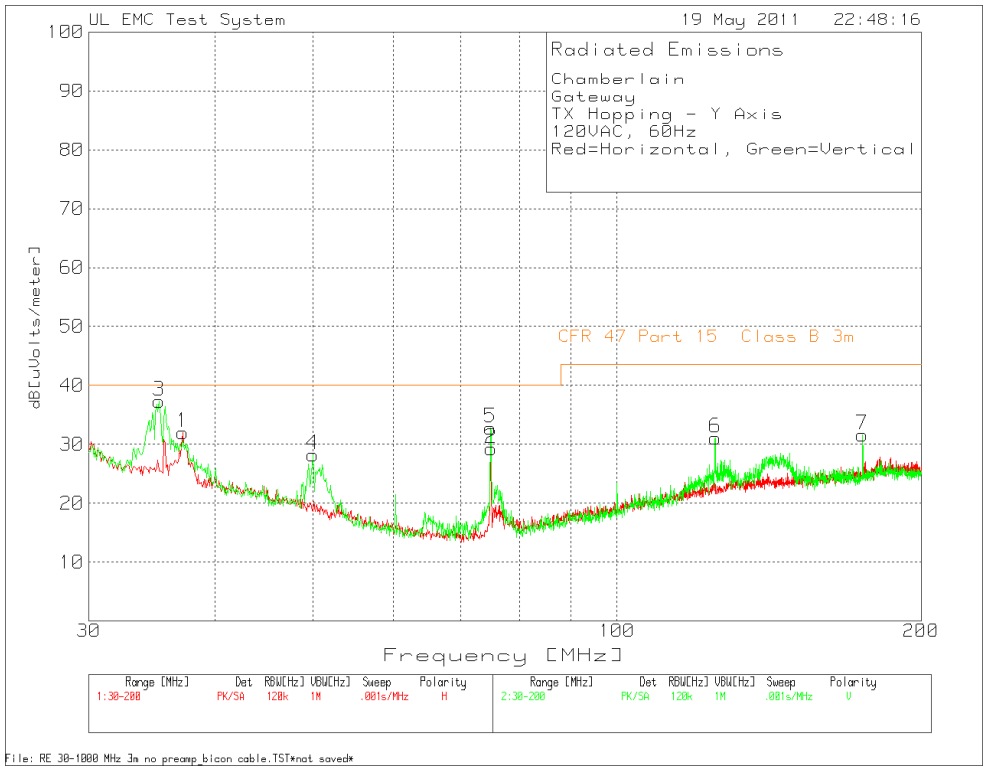
Chamberlain
Gateway
TX Hopping - X Axis
120V, 60Hz
Red: Horizontal Green: Vertical

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	Limit:1	2	3	4	5	6
Bicon Horizonta 30 - 200MHz											
8	35.6922	14.48 PK	.7	16.1	31.28	-	40	-	-	-	-
		Height:401 Horz		Margin [dB]		-	-8.72	-	-	-	-
9	37.3063	12.78 PK	.7	15.6	29.08	-	40	-	-	-	-
		Height:401 Horz		Margin [dB]		-	-10.92	-	-	-	-
10	175.957	16.48 PK	1.6	15.3	33.38	-	43.5	-	-	-	-
		Height:201 Horz		Margin [dB]		-	-10.12	-	-	-	-
Bicon Vertical 30 - 200MHz											
1	30.5097	14.95 PK	.6	18.5	34.05	-	40	-	-	-	-
		Height:100 Vert		Margin [dB]		-	-5.95	-	-	-	-
2	47.0765	17.58 PK	.8	11.8	30.18	-	40	-	-	-	-
		Height:100 Vert		Margin [dB]		-	-9.82	-	-	-	-
3	49.965	19.44 PK	.8	10.4	30.64	-	40	-	-	-	-
		Height:100 Vert		Margin [dB]		-	-9.36	-	-	-	-
4	75.0275	20.44 PK	1	6	27.44	-	40	-	-	-	-
		Height:100 Vert		Margin [dB]		-	-12.56	-	-	-	-
5	174.1729	17.07 PK	1.5	15.2	33.77	-	43.5	-	-	-	-
		Height:100 Vert		Margin [dB]		-	-9.73	-	-	-	-
6	124.9825	15.64 PK	1.3	13.5	30.44	-	43.5	-	-	-	-
		Height:100 Vert		Margin [dB]		-	-13.06	-	-	-	-
7	37.1364	14.14 PK	.7	15.7	30.54	-	40	-	-	-	-
		Height:201 Vert		Margin [dB]		-	-9.46	-	-	-	-

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	Limit:1	2	3	4	5	6
LogP Horizontal 200 - 1000MHz											
1	872.6183	17.81 PK	3.8	22.9	44.51	-	74	-	-	-	-
		Height:401 Horz		Margin [dB]		-	-29.49	-	-	-	-
2	938.974	15.78 PK	3.9	23.4	43.08	-	74	-	-	-	-
		Height:201 Horz		Margin [dB]		-	-30.92	-	-	-	-
LogP Vertical 200 - 1000MHz											
3	863.2911	17.63 PK	3.7	23	44.33	-	74	-	-	-	-
		Height:301 Vert		Margin [dB]		-	-29.67	-	-	-	-
4	870.2199	17.22 PK	3.7	23	43.92	-	74	-	-	-	-
		Height:301 Vert		Margin [dB]		-	-30.08	-	-	-	-
5	872.6183	17.9 PK	3.8	22.9	44.6	-	74	-	-	-	-
		Height:100 Vert		Margin [dB]		-	-31.4	-	-	-	-
6	901.1326	23.07 PK	3.8	23	49.87	-	74	-	-	-	-
		Height:200 Vert		Margin [dB]		-	-24.13	-	-	-	-
7	933.3777	17.21 PK	3.9	23.4	44.51	-	74	-	-	-	-
		Height:100 Vert		Margin [dB]		-	-29.49	-	-	-	-
8	955.7628	15.88 PK	4	23.8	43.68	-	74	-	-	-	-
		Height:100 Vert		Margin [dB]		-	-30.32	-	-	-	-

LIMIT 2: CFR 47 Part 15 Class B 3m
PK - Peak detector
File: 20110517 chamberlain.TST*not saved*

Figure 14 Radiated Spurious Emissions below 1GHz, Hopping Y-axis



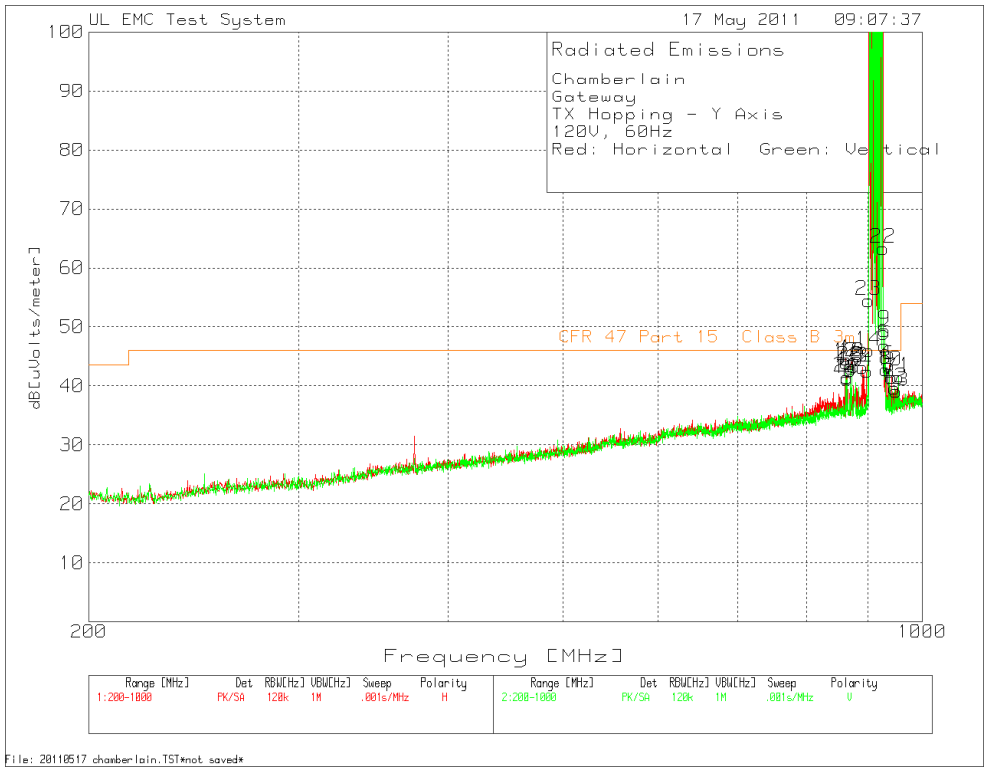


Table 19 Radiated Spurious Emissions below 1GHz, Hopping Y-axis

None of the spurious emissions detected above the noise floors in frequency range of 200MHz – 1GHz are in the restricted band therefore final radiated emission measurements were not required.

```
Chamberlain
 Gateway
 TX Hopping - Y Axis
 120VAC, 60Hz
 Red=Horizontal, Green=Vertical
      Test     Meter     Gain/Loss  Transducer  Level  Limit:1      2       3       4       5       6
No. Frequency  Reading    Factor     Factor  dB[uVolts/meter]
     [MHz]     [dB(uV)]     [dB]      [dB]
=============================================================================================================
Bicon Horizonta 30 - 200MHz ---------------------------------------------------
1  37.1364      15.65 PK     .7        15.7      32.05     -      40        -       -       -       -
                 Height:401 Horz     Margin [dB]           -      -7.95     -       -       -       -
2  75.0275      22.31 PK     1         6         29.31     -      40        -       -       -       -
                 Height:301 Horz     Margin [dB]           -      -10.69    -       -       -       -

Bicon Vertical 30 - 200MHz ----------------------------------------------------
3  35.1824      20.1 PK      .7        16.5      37.3      -      40        -       -       -       -
                 Height:100 Vert     Margin [dB]           -      -2.7      -       -       -       -
4  49.965       16.99 PK     .8        10.4      28.19     -      40        -       -       -       -
                 Height:100 Vert     Margin [dB]           -      -11.81    -       -       -       -
5  74.9425      25.8 PK      1         6         32.8      -      40        -       -       -       -
                 Height:100 Vert     Margin [dB]           -      -7.2      -       -       -       -
6  125.0675     16.27 PK     1.3       13.5      31.07     -      43.5      -       -       -       -
                 Height:100 Vert     Margin [dB]           -      -12.43    -       -       -       -
7  175.0225     14.73 PK     1.6       15.3      31.63     -      43.5      -       -       -       -
                 Height:100 Vert     Margin [dB]           -      -11.87    -       -       -       -

  Test     Meter     Gain/Loss  Transducer  Level  Limit:1      2       3       4       5       6
Frequency  Reading    Factor     Factor  dB[uVolts/meter]
 [MHz]     [dB(uV)]     [dB]      [dB]
=============================================================================================================
Bicon Vertical 30 - 200MHz
35.0789    12.2 QP       .7        16.5      29.4      -      40        -       -       -       -
Azimuth: 97   Height:100 Vert         Margin [dB]:      -      -10.6     -       -       -       -

LIMIT 2: CFR 47 Part 15  Class B 3m
PK - Peak detector
QP - Quasi-Peak detector
File: RE 30-1000 MHz 3m no preamp_bicon cable.TST*not saved*
```

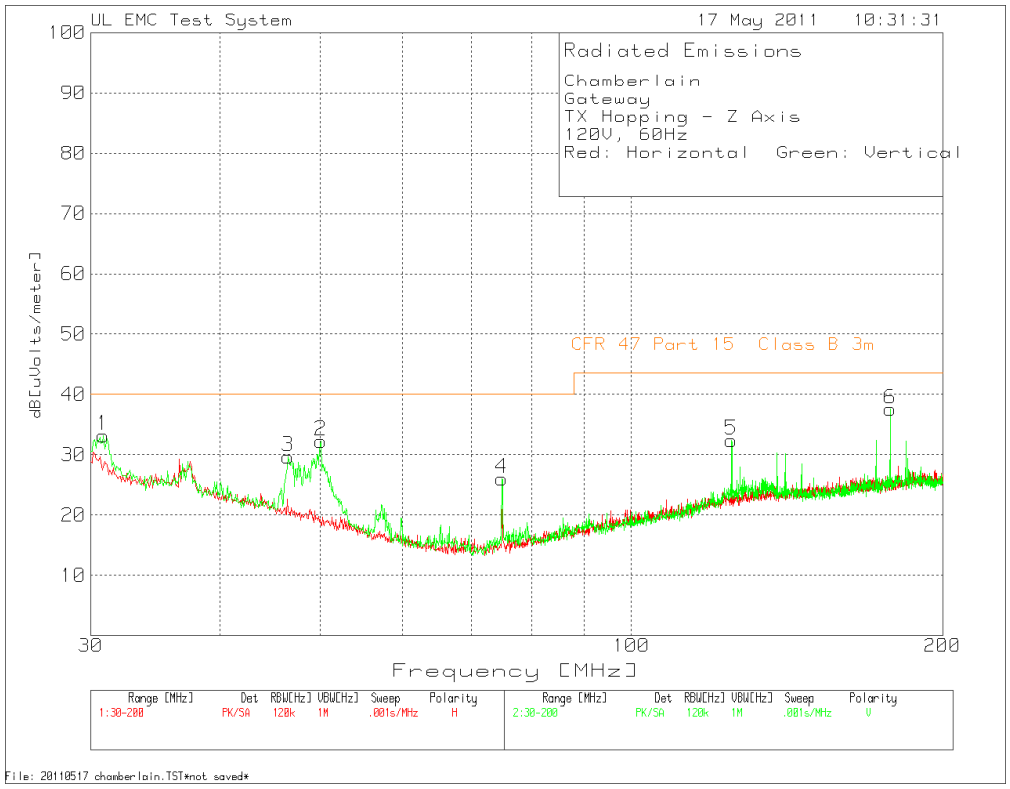
None of the spurious emissions detected above the noise floors in frequency range of 200MHz – 1GHz are in the restricted band therefore final radiated emission measurements were not required.

Chamberlain
Gateway
TX Hopping - Y Axis
120V, 60Hz
Red: Horizontal Green: Vertical

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	Limit:1	2	3	4	5	6
LogP Horizontal 200 - 1000MHz ----------											
1	863.2911	17.84 PK	3.7	23	44.54	-	74	-	-	-	-
		Height:200 Horz		Margin [dB]		-	-29.46	-	-	-	-
2	872.6183	17.34 PK	3.8	22.9	44.04	-	74	-	-	-	-
		Height:301 Horz		Margin [dB]		-	-29.96	-	-	-	-
3	891.8055	16.47 PK	3.8	22.9	43.17	-	74	-	-	-	-
		Height:99 Horz		Margin [dB]		-	-30.83	-	-	-	-
4	899.0007	15.66 PK	3.8	23	42.46	-	74	-	-	-	-
		Height:99 Horz		Margin [dB]		-	-31.54	-	-	-	-
5	930.1799	19.6 PK	3.9	23.3	46.8	-	74	-	-	-	-
		Height:99 Horz		Margin [dB]		-	-27.2	-	-	-	-
6	938.974	16.21 PK	3.9	23.4	43.51	-	74	-	-	-	-
		Height:99 Horz		Margin [dB]		-	-30.49	-	-	-	-
7	942.9714	14.04 PK	3.9	23.5	41.44	-	74	-	-	-	-
		Height:99 Horz		Margin [dB]		-	-32.56	-	-	-	-
8	932.3118	15.55 PK	3.9	23.3	42.75	-	74	-	-	-	-
		Height:99 Horz		Margin [dB]		-	-31.25	-	-	-	-
19	872.6183	17.34 PK	3.8	22.9	44.04	-	74	-	-	-	-
		Height:301 Horz		Margin [dB]		-	-29.96	-	-	-	-
20	870.2199	16.69 PK	3.7	23	43.39	-	74	-	-	-	-
		Height:200 Horz		Margin [dB]		-	-30.61	-	-	-	-
21	865.4231	14.65 PK	3.8	23	41.45	-	74	-	-	-	-
		Height:99 Horz		Margin [dB]		-	-32.55	-	-	-	-
23	901.932	27.64 PK	3.8	23	54.44	-	74	-	-	-	-
		Height:200 Horz		Margin [dB]		-	-19.56	-	-	-	-
LogP Vertical 200 - 1000MHz ----------											
9	930.4464	22.18 PK	3.9	23.3	49.38	-	74	-	-	-	-
		Height:100 Vert		Margin [dB]		-	-24.62	-	-	-	-
10	939.2405	15.19 PK	3.9	23.4	42.49	-	74	-	-	-	-
		Height:100 Vert		Margin [dB]		-	-31.51	-	-	-	-
11	955.2298	13.71 PK	4	23.8	41.51	-	74	-	-	-	-
		Height:100 Vert		Margin [dB]		-	-32.49	-	-	-	-
12	948.8341	12.1 PK	4	23.6	39.7	-	74	-	-	-	-
		Height:100 Vert		Margin [dB]		-	-34.3	-	-	-	-
13	950.6995	11.49 PK	4	23.6	39.09	-	74	-	-	-	-
		Height:100 Vert		Margin [dB]		-	-34.91	-	-	-	-
14	901.3991	19.17 PK	3.8	23	45.97	-	74	-	-	-	-
		Height:300 Vert		Margin [dB]		-	-28.03	-	-	-	-
15	872.6183	16.31 PK	3.8	22.9	43.01	-	74	-	-	-	-
		Height:201 Vert		Margin [dB]		-	-30.99	-	-	-	-
16	870.2199	15.89 PK	3.7	23	42.59	-	74	-	-	-	-
		Height:300 Vert		Margin [dB]		-	-31.41	-	-	-	-
17	863.2911	17.26 PK	3.7	23	43.96	-	74	-	-	-	-
		Height:100 Vert		Margin [dB]		-	-30.04	-	-	-	-
18	864.8901	14.4 PK	3.8	23	41.2	-	74	-	-	-	-
		Height:201 Vert		Margin [dB]		-	-32.8	-	-	-	-

LIMIT 2: CFR 47 Part 15 Class B 3m
PK - Peak detector
File: 20110517 chamberlain.TST*not saved*

Figure 15 Radiated Spurious Emissions below 1GHz, Hopping Z-axis



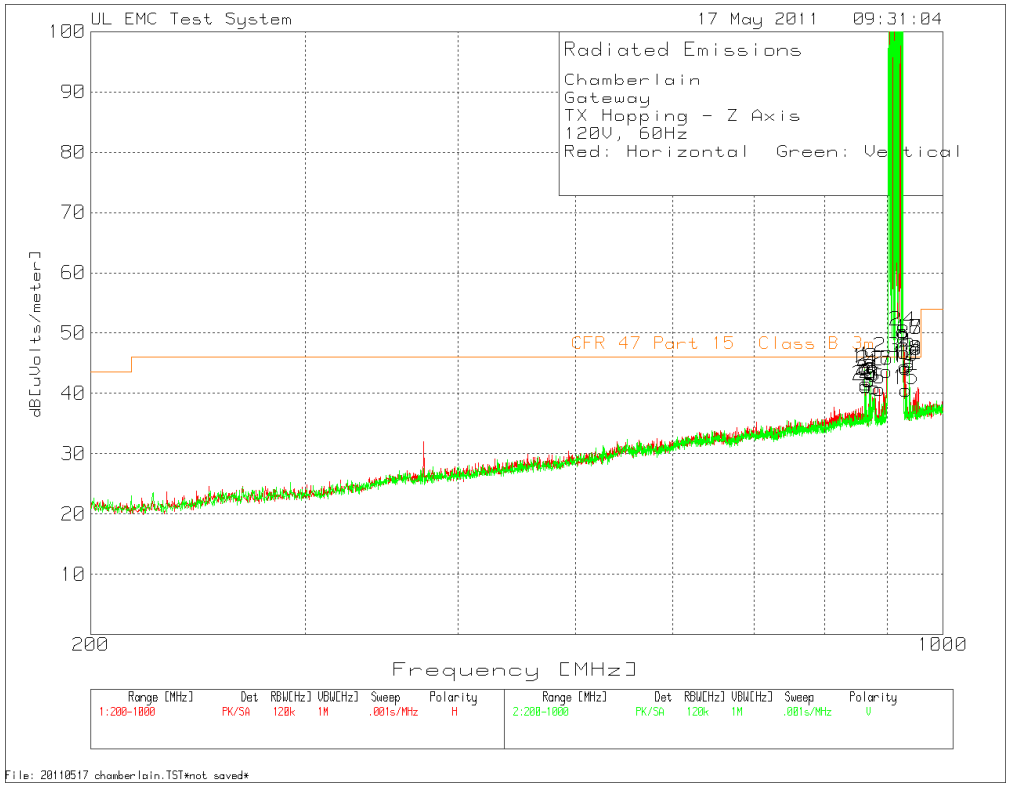


Table 20 Radiated Spurious Emissions below 1GHz, Hopping Z-axis

None of the spurious emissions detected above the noise floors in frequency range of 200MHz – 1GHz are in the restricted band therefore final radiated emission measurements were not required.

Chamberlain
Gateway
TX Hopping - Z Axis
120V, 60Hz
Red: Horizontal Green: Vertical

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	Limit:1	2	3	4	5	6
Bicon Vertical 30 - 200MHz											
1	30.8496	14.21 PK	.6	18.4	33.21	-	40	-	-	-	-
		Height:100 Vert		Margin [dB]		-	-6.79	-	-	-	-
2	50.05	21.1 PK	.8	10.4	32.3	-	40	-	-	-	-
		Height:100 Vert		Margin [dB]		-	-7.7	-	-	-	-
3	46.5667	16.95 PK	.8	11.9	29.65	-	40	-	-	-	-
		Height:100 Vert		Margin [dB]		-	-10.35	-	-	-	-
4	74.9425	19.01 PK	1	6	26.01	-	40	-	-	-	-
		Height:100 Vert		Margin [dB]		-	-13.99	-	-	-	-
5	124.9825	17.6 PK	1.3	13.5	32.4	-	43.5	-	-	-	-
		Height:100 Vert		Margin [dB]		-	-11.1	-	-	-	-
6	177.996	20.53 PK	1.6	15.4	37.53	-	43.5	-	-	-	-
		Height:100 Vert		Margin [dB]		-	-5.97	-	-	-	-

LIMIT 2: CFR 47 Part 15 Class B 3m
PK - Peak detector
File: 20110517 chamberlain.TST*not saved*

None of the spurious emissions detected above the noise floors in frequency range of 200MHz – 1GHz are in the restricted band therefore final radiated emission measurements were not required.

Chamberlain
Gateway
TX Hopping - Z Axis
120V, 60Hz
Red: Horizontal Green: Vertical

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	Limit:1	2	3	4	5	6
LogP Horizontal 200 - 1000MHz ----------											
1	863.2911	17.63 PK	3.7	23	44.33	-	74	-	-	-	-
		Height:301 Horz	Margin [dB]			-	-29.67	-	-	-	-
2	864.8901	14.77 PK	3.8	23	41.57	-	74	-	-	-	-
		Height:100 Horz	Margin [dB]			-	-32.43	-	-	-	-
3	870.2199	15.6 PK	3.7	23	42.3	-	74	-	-	-	-
		Height:301 Horz	Margin [dB]			-	-31.7	-	-	-	-
4	872.6183	16.55 PK	3.8	22.9	43.25	-	74	-	-	-	-
		Height:100 Horz	Margin [dB]			-	-30.75	-	-	-	-
5	879.547	14.2 PK	3.9	22.9	41	-	74	-	-	-	-
		Height:100 Horz	Margin [dB]			-	-33	-	-	-	-
6	887.0087	13.97 PK	3.8	22.9	40.67	-	74	-	-	-	-
		Height:100 Horz	Margin [dB]			-	-33.33	-	-	-	-
7	899.8001	16.95 PK	3.8	23	43.75	-	74	-	-	-	-
		Height:100 Horz	Margin [dB]			-	-30.25	-	-	-	-
8	928.3145	20.96 PK	3.8	23.3	48.06	-	74	-	-	-	-
		Height:400 Horz	Margin [dB]			-	-29.94	-	-	-	-
9	930.4464	19.58 PK	3.9	23.3	46.78	-	74	-	-	-	-
		Height:400 Horz	Margin [dB]			-	-27.22	-	-	-	-
10	931.7788	17.26 PK	3.9	23.3	44.46	-	74	-	-	-	-
		Height:100 Horz	Margin [dB]			-	-29.54	-	-	-	-
11	932.3118	17.05 PK	3.9	23.3	44.25	-	74	-	-	-	-
		Height:100 Horz	Margin [dB]			-	-29.75	-	-	-	-
12	939.2405	17.43 PK	3.9	23.4	44.73	-	74	-	-	-	-
		Height:400 Horz	Margin [dB]			-	-29.27	-	-	-	-
LogP Vertical 200 - 1000MHz ----------											
13	938.441	21.58 PK	3.9	23.4	48.88	-	74	-	-	-	-
		Height:100 Vert	Margin [dB]			-	-25.12	-	-	-	-
14	939.2405	18.09 PK	3.9	23.4	45.39	-	74	-	-	-	-
		Height:301 Vert	Margin [dB]			-	-28.61	-	-	-	-
15	933.3777	13.28 PK	3.9	23.4	40.58	-	74	-	-	-	-
		Height:100 Vert	Margin [dB]			-	-33.42	-	-	-	-
16	938.441	21.58 PK	3.9	23.4	48.88	-	74	-	-	-	-
		Height:100 Vert	Margin [dB]			-	-25.12	-	-	-	-
17	863.2911	17.43 PK	3.7	23	44.13	-	74	-	-	-	-
		Height:100 Vert	Margin [dB]			-	-29.87	-	-	-	-
18	865.4231	14.48 PK	3.8	23	41.28	-	74	-	-	-	-
		Height:100 Vert	Margin [dB]			-	-32.72	-	-	-	-
19	870.2199	15.48 PK	3.7	23	42.18	-	74	-	-	-	-
		Height:100 Vert	Margin [dB]			-	-31.82	-	-	-	-
20	872.6183	16.97 PK	3.8	22.9	43.67	-	74	-	-	-	-
		Height:100 Vert	Margin [dB]			-	-30.33	-	-	-	-
21	900.8661	19.13 PK	3.8	23	45.93	-	74	-	-	-	-
		Height:201 Vert	Margin [dB]			-	-28.07	-	-	-	-

LIMIT 2: CFR 47 Part 15 Class B 3m
PK - Peak detector
File: 20110517 chamberlain.TST*not saved*

Figure 16 Radiated Spurious Emissions above 1GHz, Low Channel X-axis

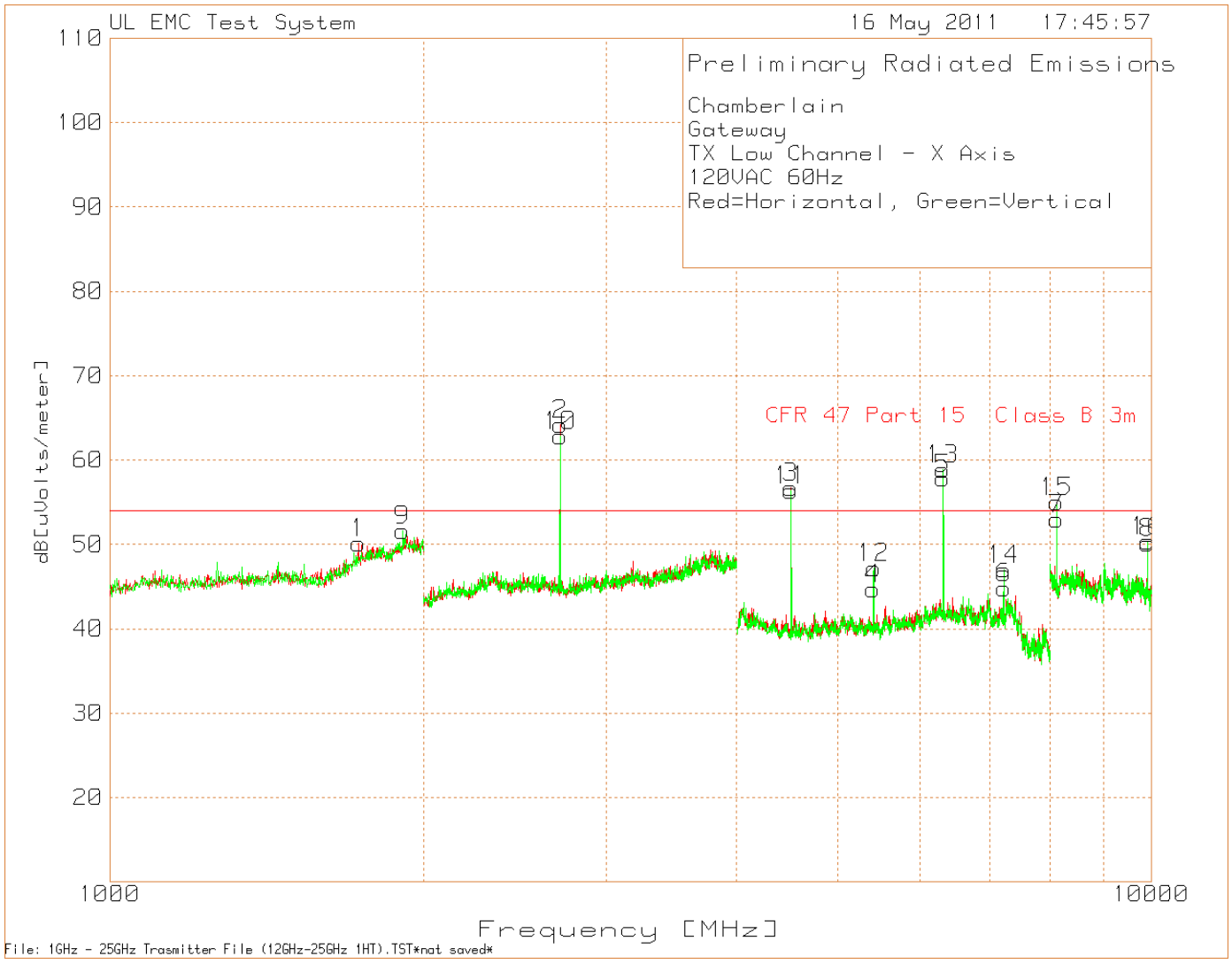


Table 21 Radiated Spurious Emissions above 1GHz, Low Channel X-axis

Chamberlain												
Gateway												
TX Low Channel - X Axis												
120VAC 60Hz												
Red=Horizontal, Green=Vertical												
Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1	Height [cm]	Polarity			
Frequency	Reading	Type	Factor	Factor	dB[uVolts/		[dB]					
[MHz]	[dB(uV)]		[dB]	[dB]	meter]							
1733.467	20.51	PK	3.36	26.3	50.17	74	-23.83	100	Horz			
5411.608	66.88	PK	-50.03	27.9	44.75	74	-29.25	99	Horz			
6316.211	76.44	PK	-47.84	29.2	57.8	74	-16.2	99	Horz			
7218.145	61.66	PK	-46.62	29.8	44.84	74	-29.16	99	Horz			
9925.926	62.94	PK	-49.17	36.4	50.17	74	-23.83	150	Horz			
1911.824	20.52	PK	3.52	27.6	51.64	74	-22.36	100	Vert			
5414.276	69.25	PK	-49.98	27.9	47.17	74	-26.83	100	Vert			
6316.211	77.53	PK	-47.84	29.2	58.89	74	-15.11	100	Vert			
7218.145	63.85	PK	-46.62	29.8	47.03	74	-26.97	100	Vert			
9925.926	63.15	PK	-49.17	36.4	50.38	74	-23.62	150	Vert			
Restricted Band Final Measurements												
Test	Meter	Detector	Gain/Loss	Transducer	Level	Duty Cycle	Level with	Limit 1	Margin 1[dB]	Azimuth	Height [cm]	Polarity
Frequency	Reading	Type	Factor	Factor	dB[uVolts/	Correction	Correction			[degs]		
[MHz]	[dB(uV)]		[dB]	[dB]	meter]	[dB]	dB[uVolts/meter]					
2706.6219	43.09	PK	4.16	22.1	69.35	n/a	n/a	74	-4.65	127	110	Horz
2706.7722	34.47	LnAv	4.16	22.1	60.73	-37.562	23.168	54	-30.832	127	110	Horz
2706.5735	42.27	PK	4.16	22.1	68.53	n/a	n/a	74	-5.47	88	109	Vert
2706.7599	33.9	LnAv	4.16	22.1	60.16	-37.562	22.598	54	-31.402	88	109	Vert
4511.0139	79.79	PK	-52.12	27.8	55.47	n/a	n/a	74	-18.53	136	102	Horz
4511.2484	70.97	LnAv	-52.11	27.8	46.66	-37.562	9.098	54	-44.902	136	102	Horz
4511.4878	82.24	PK	-52.1	27.8	57.94	n/a	n/a	74	-16.06	3	100	Vert
4511.2353	73.48	LnAv	-52.11	27.8	49.17	-37.562	11.608	54	-42.392	3	100	Vert
8120.5721	69.87	PK	-49.12	36.2	56.95	n/a	n/a	74	-17.05	43	100	Horz
8120.1934	58.97	LnAv	-49.11	36.2	46.06	-37.562	8.498	54	-45.502	43	100	Horz
8120.4729	70.39	PK	-49.11	36.2	57.48	n/a	n/a	74	-16.52	120	135	Vert
8120.1543	59.51	LnAv	-49.11	36.2	46.6	-37.562	9.038	54	-44.962	120	135	Vert
LIMIT 1: CFR 47 Part 15 Class B 3m												
PK - Peak detector												
LnAv - Linear Average detector												
File: 1GHz - 25GHz Trasmitter File (12GHz-25GHz 1HT).TST*not saved*												

Figure 17 Radiated Spurious Emissions above 1GHz, Low Channel Y-axis

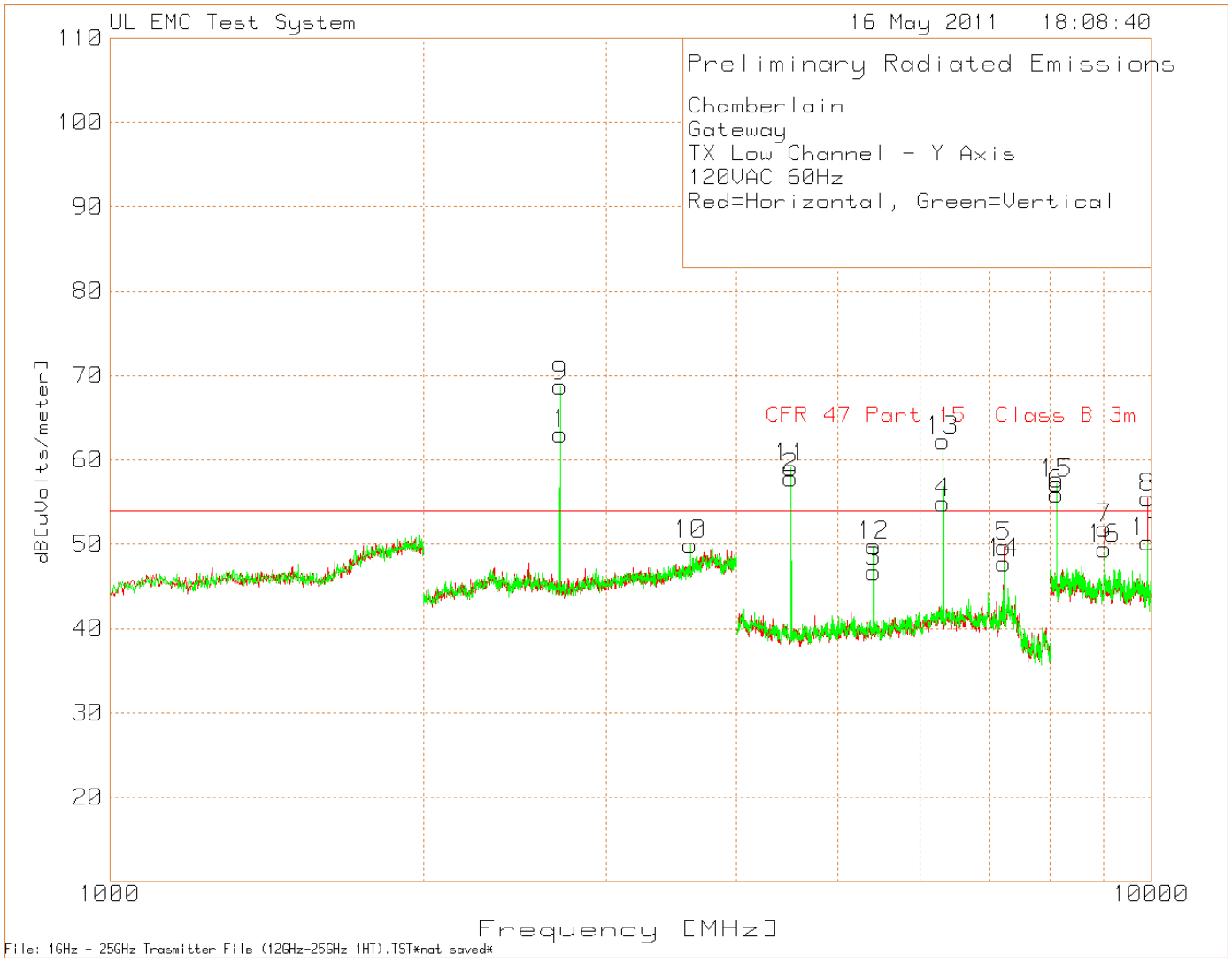


Table 22 Radiated Spurious Emissions above 1GHz, Low Channel Y-axis

Chamberlain												
Gateway												
TX Low Channel - Y Axis												
120VAC 60Hz												
Red=Horizontal, Green=Vertical												
Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1	Height	Polarity			
Frequency	Reading	Type	Factor	Factor	dB[uVolts		[dB]	[cm]				
[MHz]	[dB(uV)]		[dB]	[dB]	/meter]							
5414.276	68.8	PK	-49.98	27.9	46.72	74	-27.28	99	Horz			
6316.211	73.56	PK	-47.84	29.2	54.92	74	-19.08	99	Horz			
7218.145	66.51	PK	-46.62	29.8	49.69	74	-24.31	99	Horz			
9023.023	64.25	PK	-48.52	36.1	51.83	74	-22.17	100	Horz			
9925.926	68.2	PK	-49.17	36.4	55.43	74	-18.57	100	Horz			
3609.61	21.49	PK	5.22	23.2	49.91	74	-24.09	101	Vert			
5414.276	71.88	PK	-49.98	27.9	49.8	74	-24.2	100	Vert			
6316.211	80.87	PK	-47.84	29.2	62.23	74	-11.77	100	Vert			
7218.145	64.64	PK	-46.62	29.8	47.82	74	-26.18	100	Vert			
9023.023	61.9	PK	-48.52	36.1	49.48	74	-24.52	101	Vert			
9925.926	63.01	PK	-49.17	36.4	50.24	74	-23.76	101	Vert			
Restricted Band Final Measurements												
Test	Meter	Detector	Gain/Loss	Transducer	Level	Duty Cycle	Level with	Limit 1	Margin 1	Azimuth	Height	Polarity
Frequency	Reading	Type	Factor	Factor	dB[uVolts	Correction	Correction		[dB]	[degs]	[cm]	
[MHz]	[dB(uV)]		[dB]	[dB]	/meter]	[dB]	dB[uVolts/meter]					
2706.8988	39.87	PK	4.16	22.1	66.13	n/a	n/a	74	-7.87	271	109	Horz
2706.7545	31.26	LnAv	4.16	22.1	57.52	-37.562	19.958	54	-34.042	271	109	Horz
2706.7004	43.96	PK	4.16	22.1	70.22	n/a	n/a	74	-3.78	95	110	Vert
2706.7665	35.54	LnAv	4.16	22.1	61.8	-37.562	24.238	54	-29.762	95	110	Vert
4511.1794	82.39	PK	-52.11	27.8	58.08	n/a	n/a	74	-15.92	75	111	Horz
4511.2335	73.66	LnAv	-52.11	27.8	49.35	-37.562	11.788	54	-42.212	75	111	Horz
4511.3928	82.9	PK	-52.1	27.8	58.6	n/a	n/a	74	-15.4	24	100	Vert
4511.2365	74.1	LnAv	-52.11	27.8	49.79	-37.562	12.228	54	-41.772	24	100	Vert
8120.0491	71.96	PK	-49.1	36.2	59.06	n/a	n/a	74	-14.94	94	119	Vert
8120.1393	61.45	LnAv	-49.11	36.2	48.54	-37.562	10.978	54	-43.022	94	119	Vert
8119.8988	72.09	PK	-49.1	36.2	59.19	n/a	n/a	74	-14.81	50	111	Horz
8120.1874	61.56	LnAv	-49.11	36.2	48.65	-37.562	11.088	54	-42.912	50	111	Horz
LIMIT 1: CFR 47 Part 15 Class B 3m												
PK - Peak detector												
LnAv - Linear Average detector												
File: 1GHz - 25GHz Trasmitter File (12GHz-25GHz 1HT).TST*not saved*												

Figure 18 Radiated Spurious Emissions above 1GHz, Low Channel Z-axis

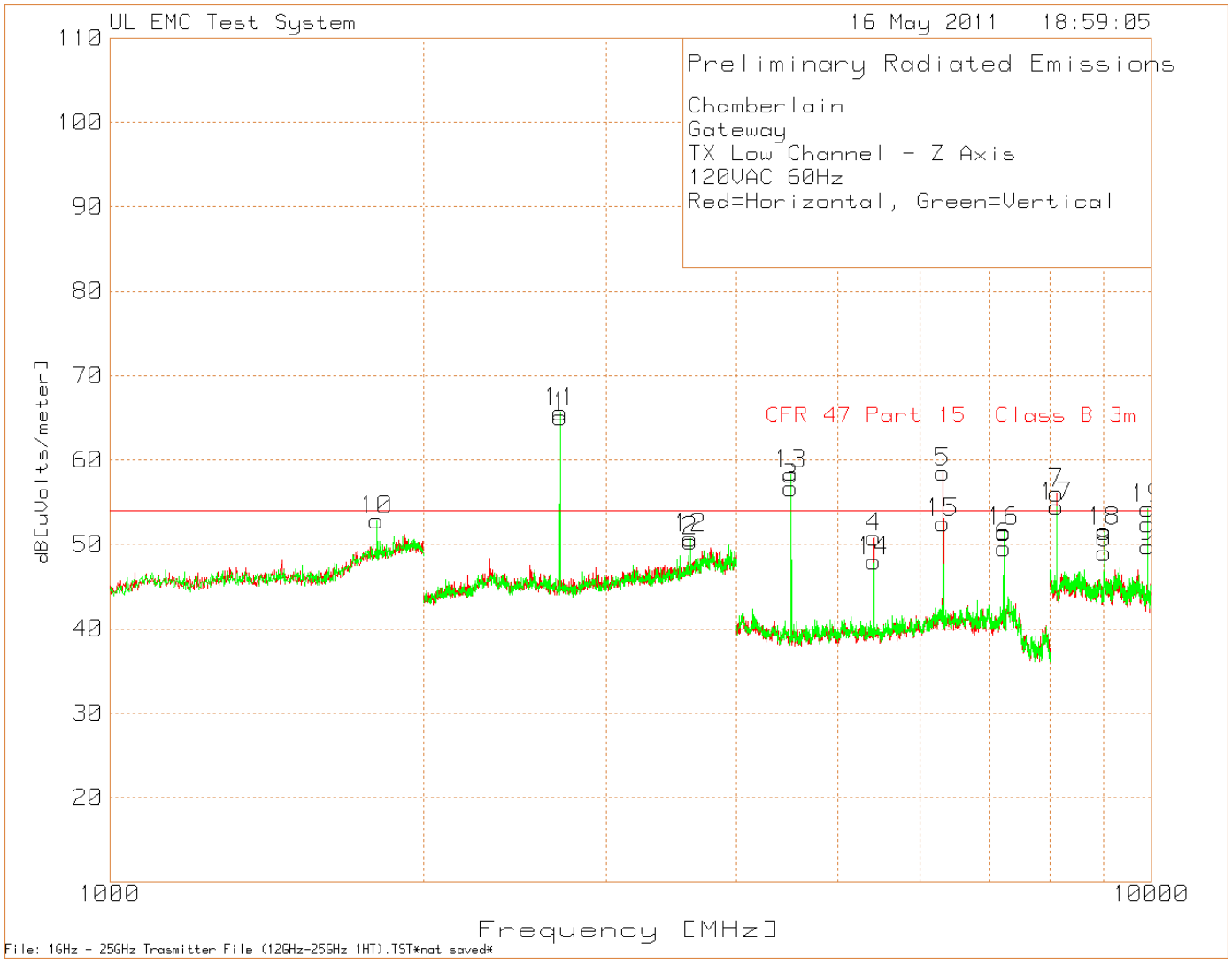


Table 23 Radiated Spurious Emissions above 1GHz, Low Channel Z-axis

Chamberlain												
Gateway												
TX Low Channel - Z Axis												
120VAC 60Hz												
Red=Horizontal, Green=Vertical												
Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1	Height	Polarity			
Frequency	Reading	Type	Factor	Factor	dB[uVolts		[dB]	[cm]				
[MHz]	[dB(uV)]		[dB]	[dB]	/meter]							
5414.276	72.91	PK	-49.98	27.9	50.83	74	-23.17	100	Horz			
6316.211	77.13	PK	-47.84	29.2	58.49	74	-15.51	100	Horz			
7218.145	66.42	PK	-46.62	29.8	49.6	74	-24.4	100	Horz			
9023.023	61.38	PK	-48.52	36.1	48.96	74	-25.04	100	Horz			
9925.926	62.52	PK	-49.17	36.4	49.75	74	-24.25	100	Horz			
1805.611	22.29	PK	3.45	27.1	52.84	74	-21.16	150	Vert			
5414.276	70.05	PK	-49.98	27.9	47.97	74	-26.03	100	Vert			
6316.211	71.16	PK	-47.84	29.2	52.52	74	-21.48	100	Vert			
7218.145	68.36	PK	-46.62	29.8	51.54	74	-22.46	100	Vert			
9023.023	63.88	PK	-48.52	36.1	51.46	74	-22.54	100	Vert			
9925.926	67.03	PK	-49.17	36.4	54.26	74	-19.74	100	Vert			
Restricted Band Final Measurements												
Test	Meter	Detector	Gain/Loss	Transducer	Level	Duty Cycle	Level with	Limit 1	Margin 1	Azimuth	Height	Polarity
Frequency	Reading	Type	Factor	Factor	dB[uVolts	Correction	Correction		[dB]	[degs]	[cm]	
[MHz]	[dB(uV)]		[dB]	[dB]	/meter]	[dB]	dB[uVolts/meter]					
2706.5471	40.53	PK	4.16	22.1	66.79	n/a	n/a	74	-7.21	218	103	Vert
2706.7575	31.73	LnAv	4.16	22.1	57.99	-37.562	20.428	54	-33.572	218	103	Vert
2706.7425	41.61	PK	4.16	22.1	67.87	n/a	n/a	74	-6.13	78	101	Horz
2706.7605	33.11	LnAv	4.16	22.1	59.37	-37.562	21.808	54	-32.192	78	101	Horz
3609.2826	28.29	PK	5.22	23.2	56.71	n/a	n/a	74	-17.29	50	103	Horz
3608.988	16.34	LnAv	5.22	23.2	44.76	-37.562	7.198	54	-46.802	50	103	Horz
3608.7114	27.86	PK	5.22	23.2	56.28	n/a	n/a	74	-17.72	92	122	Vert
3608.9098	15.51	LnAv	5.22	23.2	43.93	-37.562	6.368	54	-47.632	92	122	Vert
4511.1613	80.01	PK	-52.11	27.8	55.7	n/a	n/a	74	-18.3	61	116	Horz
4511.2335	71.07	LnAv	-52.11	27.8	46.76	-37.562	9.198	54	-44.802	61	116	Horz
4511.4739	83.71	PK	-52.1	27.8	59.41	n/a	n/a	74	-14.59	77	116	Vert
4511.2395	74.91	LnAv	-52.11	27.8	50.6	-37.562	13.038	54	-40.962	77	116	Vert
8120.2315	71.74	PK	-49.11	36.2	58.83	n/a	n/a	74	-15.17	69	107	Horz
8120.1653	61.41	LnAv	-49.11	36.2	48.5	-37.562	10.938	54	-43.062	69	107	Horz
8119.7295	69.35	PK	-49.1	36.2	56.45	n/a	n/a	74	-17.55	83	100	Vert
8120.1924	58.22	LnAv	-49.11	36.2	45.31	-37.562	7.748	54	-46.252	83	100	Vert
LIMIT 1: CFR 47 Part 15 Class B 3m												
PK - Peak detector												
LnAv - Linear Average detector												
File: 1GHz - 25GHz Trasmitter File (12GHz-25GHz 1HT).TST*not saved*												

Figure 19 Radiated Spurious Emissions above 1GHz, Mid Channel X-axis

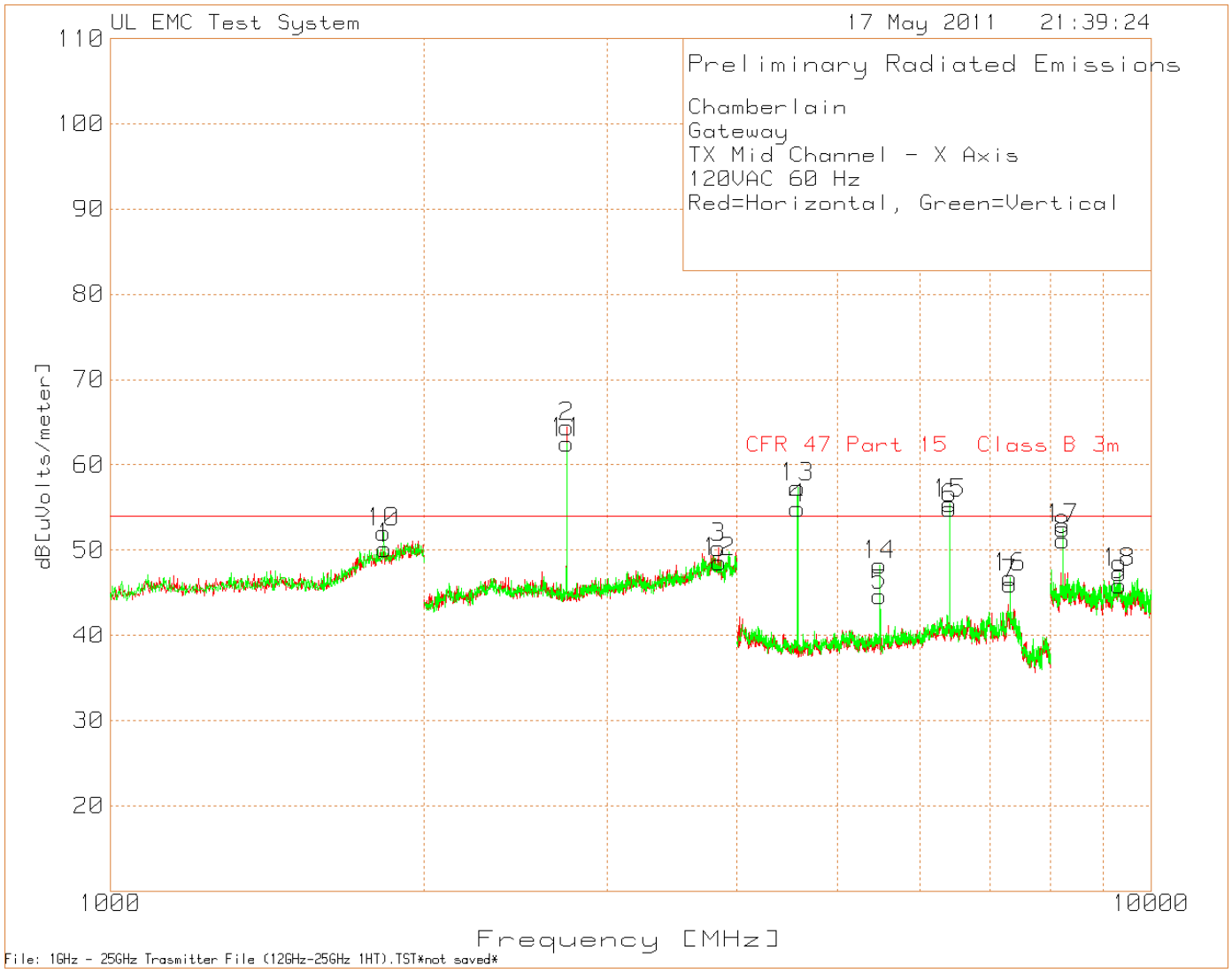


Table 24 Radiated Spurious Emissions above 1GHz, Mid Channel X-axis

Chamberlain												
Gateway												
TX Mid Channel - X Axis												
120VAC 60 Hz												
Red=Horizontal, Green=Vertical												
Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1	Height	Polarity			
Frequency	Reading	Type	Factor	Factor	dB[uVolts		[dB]	[cm]				
[MHz]	[dB(uV)]		[dB]	[dB]	/meter]							
1833.667	19.51	PK	3.48	27.2	50.19	74	-23.81	100	Horz			
3835.836	20.95	PK	5.28	24	50.23	74	-23.77	150	Horz			
5488.993	66.48	PK	-49.9	28.1	44.68	74	-29.32	100	Horz			
6404.27	72.97	PK	-47.26	29.2	54.91	74	-19.09	100	Horz			
7319.546	61.11	PK	-45.74	30.6	45.97	74	-28.03	100	Horz			
9333.333	58.1	PK	-48.63	36.4	45.87	74	-28.13	150	Horz			
1829.659	21.35	PK	3.54	27.2	52.09	74	-21.91	100	Vert			
3847.848	18.91	PK	5.68	24	48.59	74	-25.41	100	Vert			
5488.993	70.01	PK	-49.9	28.1	48.21	74	-25.79	100	Vert			
6404.27	73.53	PK	-47.26	29.2	55.47	74	-18.53	100	Vert			
7319.546	61.89	PK	-45.74	30.6	46.75	74	-27.25	100	Vert			
9321.321	59.41	PK	-48.46	36.4	47.35	74	-26.65	150	Vert			
Restricted Band Final Measurements												
Test	Meter	Detector	Gain/Loss	Transducer	Level	Duty Cycle	Level with	Limit 1	Margin 1	Azimuth	Height	Polarity
Frequency	Reading	Type	Factor	Factor	dB[uVolts	Correction	Correction		[dB]	[degs]	[cm]	
[MHz]	[dB(uV)]		[dB]	[dB]	/meter]	[dB]	dB[uVolts/meter]					
2744.1503	39.8	PK	4.12	22.1	66.02	n/a	n/a	74	-7.98	5	136	Vert
2744.2886	31.1	LnAV	4.12	22.1	57.32	-37.595	19.725	54	-34.275	5	136	Vert
2744.2014	38.49	PK	4.12	22.1	64.71	n/a	n/a	74	-9.29	322	107	Horz
2744.2675	29.68	LnAV	4.12	22.1	55.9	-37.595	18.305	54	-35.695	322	107	Horz
4573.5747	79.74	PK	-51.67	27.7	55.77	n/a	n/a	74	-18.23	154	108	Horz
4573.7611	70.77	LnAV	-51.68	27.7	46.79	-37.595	9.195	54	-44.805	154	112	Horz
4574.0316	80.98	PK	-51.69	27.7	56.99	n/a	n/a	74	-17.01	176	105	Vert
4573.6829	72.25	LnAV	-51.68	27.7	48.27	-37.595	10.675	54	-43.325	176	105	Vert
8232.2615	69.83	PK	-47.98	36.4	58.25	n/a	n/a	74	-15.75	18	111	Vert
8232.6463	59	LnAv	-47.99	36.4	47.41	-37.595	9.815	54	-44.185	18	111	Vert
8233.1393	67.36	PK	-48	36.4	55.76	n/a	n/a	74	-18.24	325	105	Horz
8232.6643	55.87	LnAv	-47.99	36.4	44.28	-37.595	6.685	54	-47.315	325	105	Horz
LIMIT 1: CFR 47 Part 15 Class B 3m												
PK - Peak detector												
LnAv - Linear Average detector												
File: 1GHz - 25GHz Trasmitter File (12GHz-25GHz 1HT).TST*not saved*												

Figure 20 Radiated Spurious Emissions above 1GHz, Mid Channel Y-axis

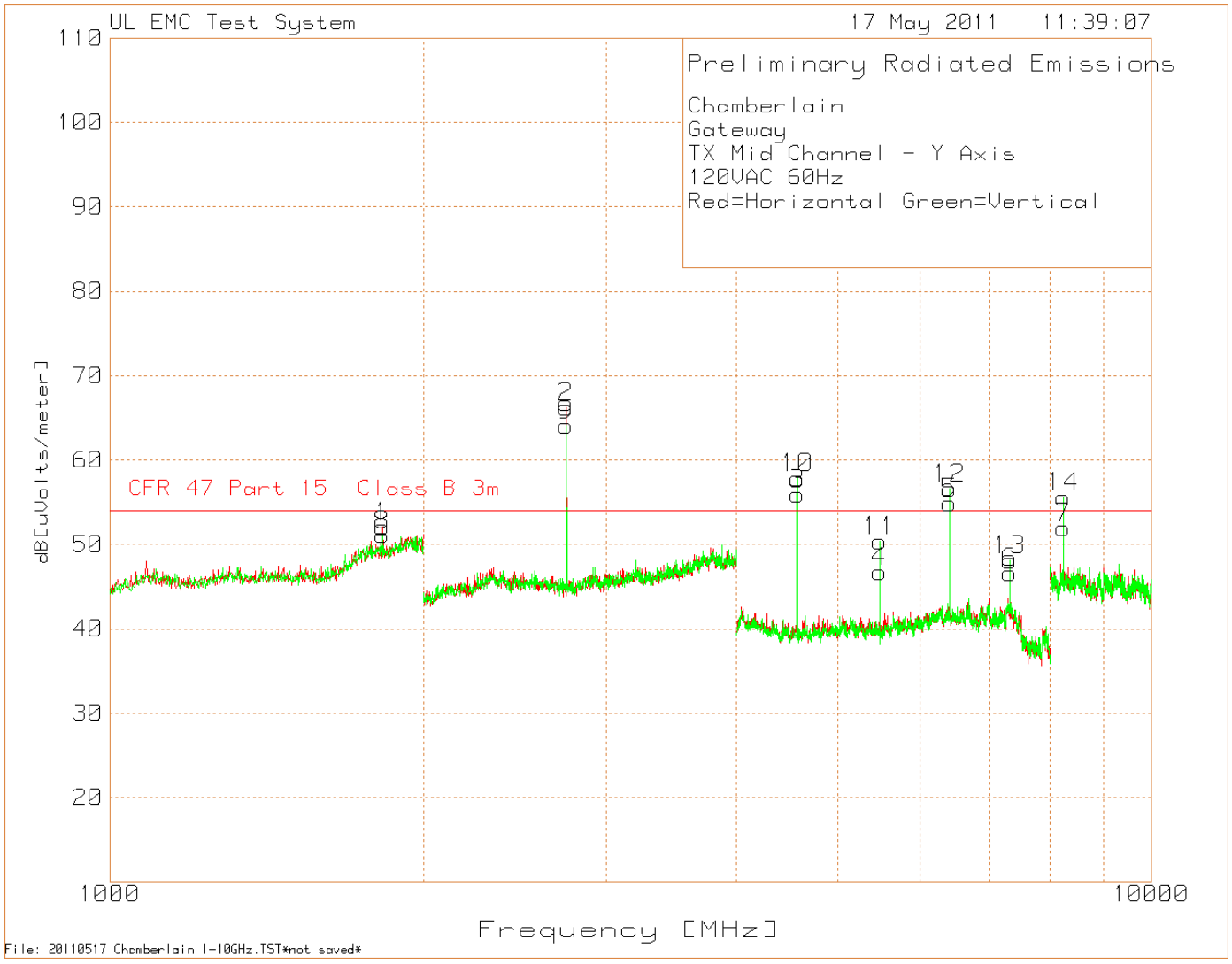


Table 25 Radiated Spurious Emissions above 1GHz, Mid Channel Y-axis

Chamberlain												
Gateway												
TX Mid Channel - Y Axis												
120VAC 60Hz												
Red=Horizontal Green=Vertical												
Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1	Height	Polarity			
Frequency	Reading	Type	Factor	Factor	dB[uVolts		[dB]	[cm]				
[MHz]	[dB(uV)]		[dB]	[dB]	/meter]							
1829.659	21.38	PK	3.54	27.2	52.12	74	-21.88	100	Horz			
5488.993	68.59	PK	-49.9	28.1	46.79	74	-27.21	100	Horz			
6404.27	73.01	PK	-47.26	29.2	54.95	74	-19.05	100	Horz			
7319.546	61.75	PK	-45.74	30.6	46.61	74	-27.39	100	Horz			
1829.659	20.37	PK	3.54	27.2	51.11	74	-22.89	150	Vert			
5488.993	72.22	PK	-49.9	28.1	50.42	74	-23.58	100	Vert			
6404.27	74.62	PK	-47.26	29.2	56.56	74	-17.44	100	Vert			
7319.546	63.24	PK	-45.74	30.6	48.1	74	-25.9	100	Vert			
Restricted Band Final Measurements												
Test	Meter	Detector	Gain/Loss	Transducer	Level	Duty Cycle	Level with	Limit 1	Margin 1	Azimuth	Height	Polarity
Frequency	Reading	Type	Factor	Factor	dB[uVolts	Correction	Correction		[dB]	[degs]	[cm]	
[MHz]	[dB(uV)]		[dB]	[dB]	/meter]	[dB]	dB[uVolts/meter]					
2744.1353	41.36	PK	4.12	22.1	67.58	n/a	n/a	74	-6.42	50	109	Horz
2744.2615	32.96	LnAv	4.12	22.1	59.18	-37.595	21.585	54	-32.415	50	109	Horz
2744.2675	29.25	LnAv	4.12	22.1	55.47	-37.595	17.875	54	-36.125	279	118	Vert
2744.478	37.95	PK	4.12	22.1	64.17	n/a	n/a	74	-9.83	279	118	Vert
4573.6348	81.63	PK	-51.68	27.7	57.65	n/a	n/a	74	-16.35	289	112	Vert
4573.7731	72.79	LnAv	-51.68	27.7	48.81	-37.595	11.215	54	-42.785	289	112	Vert
4573.737	79	PK	-51.68	27.7	55.02	n/a	n/a	74	-18.98	65	105	Horz
4573.7851	70.07	LnAv	-51.68	27.7	46.09	-37.595	8.495	54	-45.505	65	105	Horz
8232.3818	72.37	PK	-47.99	36.4	60.78	n/a	n/a	74	-13.22	332	110	Horz
8232.6703	61.91	LnAv	-47.99	36.4	50.32	-37.595	12.725	54	-41.275	332	110	Horz
8232.2375	71.01	PK	-47.98	36.4	59.43	n/a	n/a	74	-14.57	20	125	Vert
8232.6703	60.37	LnAv	-47.99	36.4	48.78	-37.595	11.185	54	-42.815	20	125	Vert
LIMIT 1: CFR 47 Part 15 Class B 3m												
PK - Peak detector												
LnAv - Linear Average detector												
File: 1GHz - 25GHz Trasmitter File (12GHz-25GHz 1HT).TST*not saved*												

Figure 21 Radiated Spurious Emissions above 1GHz, Mid Channel Z-axis

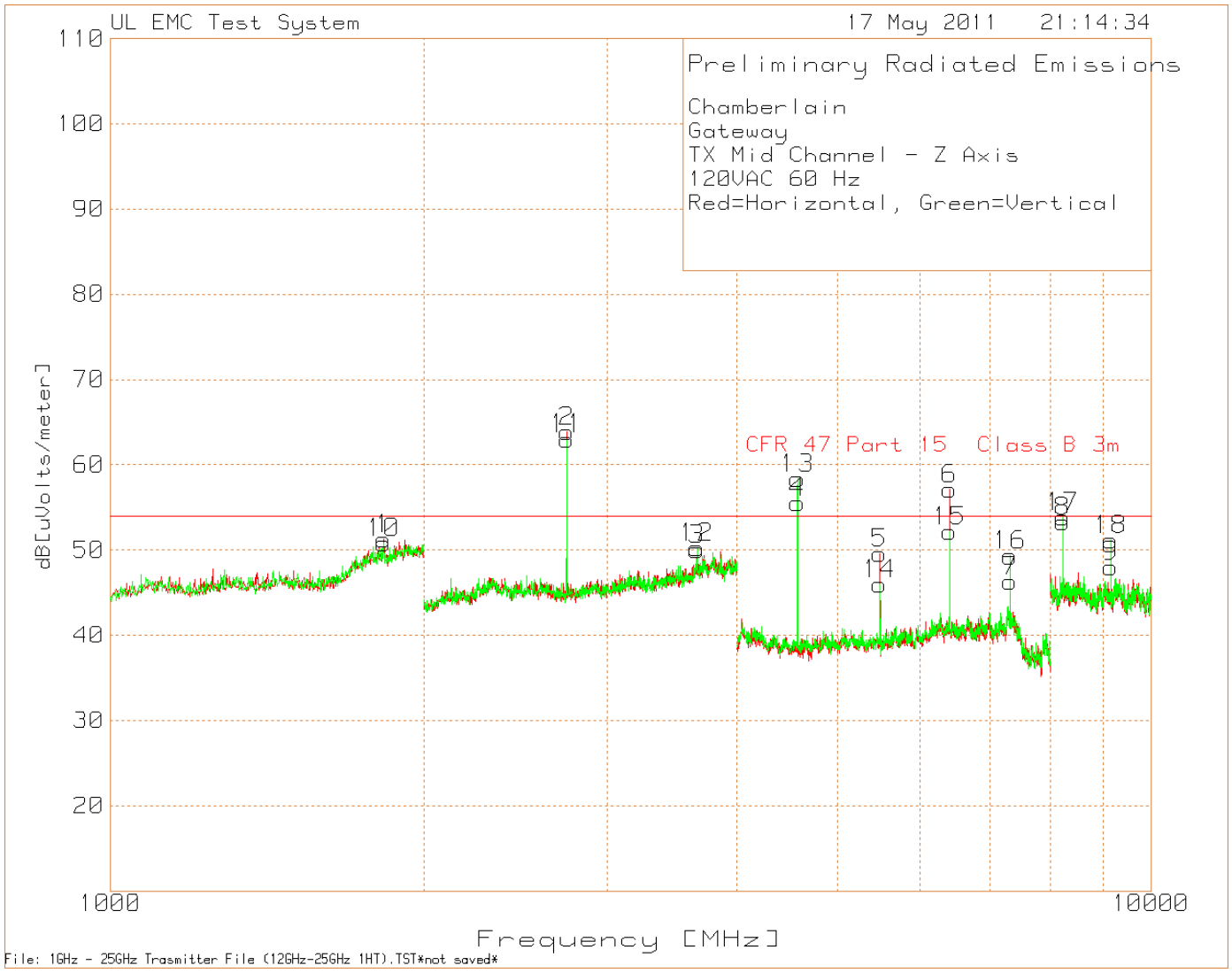


Table 26 Radiated Spurious Emissions above 1GHz, Mid Channel Z-axis

Chamberlain												
Gateway												
TX Mid Channel - Z Axis												
120VAC 60 Hz												
Red=Horizontal, Green=Vertical												
Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1	Height	Polarity			
Frequency	Reading	Type	Factor	Factor	dB[uVolts		[dB]	[cm]				
[MHz]	[dB(uV)]		[dB]	[dB]	/meter]							
1829.659	20.49	PK	3.54	27.2	51.23	74	-22.77	100	Horz			
3659.66	21.02	PK	5.64	23.4	50.06	74	-23.94	100	Horz			
5488.993	71.35	PK	-49.9	28.1	49.55	74	-24.45	100	Horz			
6404.27	75.19	PK	-47.26	29.2	57.13	74	-16.87	100	Horz			
7319.546	61.43	PK	-45.74	30.6	46.29	74	-27.71	100	Horz			
9147.147	62	PK	-50.25	36.3	48.05	74	-25.95	100	Horz			
1829.659	20.09	PK	3.54	27.2	50.83	74	-23.17	150	Vert			
3659.66	21.2	PK	5.64	23.4	50.24	74	-23.76	100	Vert			
5488.993	67.78	PK	-49.9	28.1	45.98	74	-28.02	100	Vert			
6404.27	70.24	PK	-47.26	29.2	52.18	74	-21.82	100	Vert			
7319.546	64.44	PK	-45.74	30.6	49.3	74	-24.7	100	Vert			
9149.149	65.16	PK	-50.31	36.3	51.15	74	-22.85	100	Vert			
Restricted Band Final Measurements												
Test	Meter	Detector	Gain/Loss	Transducer	Level	Duty Cycle	Level with	Limit 1	Margin 1	Azimuth	Height	Polarity
Frequency	Reading	Type	Factor	Factor	dB[uVolts	Correction	Correction		[dB]	[degs]	[cm]	
[MHz]	[dB(uV)]		[dB]	[dB]	/meter]	[dB]	dB[uVolts/meter]					
2744.0476	38.09	PK	4.12	22.1	64.31	n/a	n/a	74	-9.69	229	108	Horz
2744.264	29.42	LnAV	4.12	22.1	55.64	-37.595	18.045	54	-35.955	229	108	Horz
2744.0777	41.7	PK	4.12	22.1	67.92	n/a	n/a	74	-6.08	345	116	Vert
2744.264	33.32	LnAV	4.12	22.1	59.54	-37.595	21.945	54	-32.055	345	116	Vert
4573.9956	81.34	PK	-51.69	27.7	57.32	n/a	n/a	74	-16.68	19	107	Vert
4573.7491	72.54	LnAV	-51.68	27.7	48.56	-37.595	10.965	54	-43.035	19	107	Vert
4574.0016	81.65	PK	-51.69	27.7	57.66	n/a	n/a	74	-16.34	31	108	Horz
4573.7611	72.96	LnAV	-51.68	27.7	48.98	-37.595	11.385	54	-42.615	31	108	Horz
8233.0251	69.72	PK	-47.99	36.4	58.13	n/a	n/a	74	-15.87	139	139	Vert
8232.6463	58.27	LnAv	-47.99	36.4	46.68	-37.595	9.085	54	-44.915	139	139	Vert
8233.2806	70.87	PK	-48	36.4	59.27	n/a	n/a	74	-14.73	330	105	Horz
8232.6583	59.95	LnAv	-47.99	36.4	48.36	-37.595	10.765	54	-43.235	330	105	Horz
LIMIT 1: CFR 47 Part 15 Class B 3m												
PK - Peak detector												
LnAv - Linear Average detector												
File: 1GHz - 25GHz Trasmitter File (12GHz-25GHz 1HT).TST*not saved*												

Figure 22 Radiated Spurious Emissions above 1GHz, High Channel X-axis

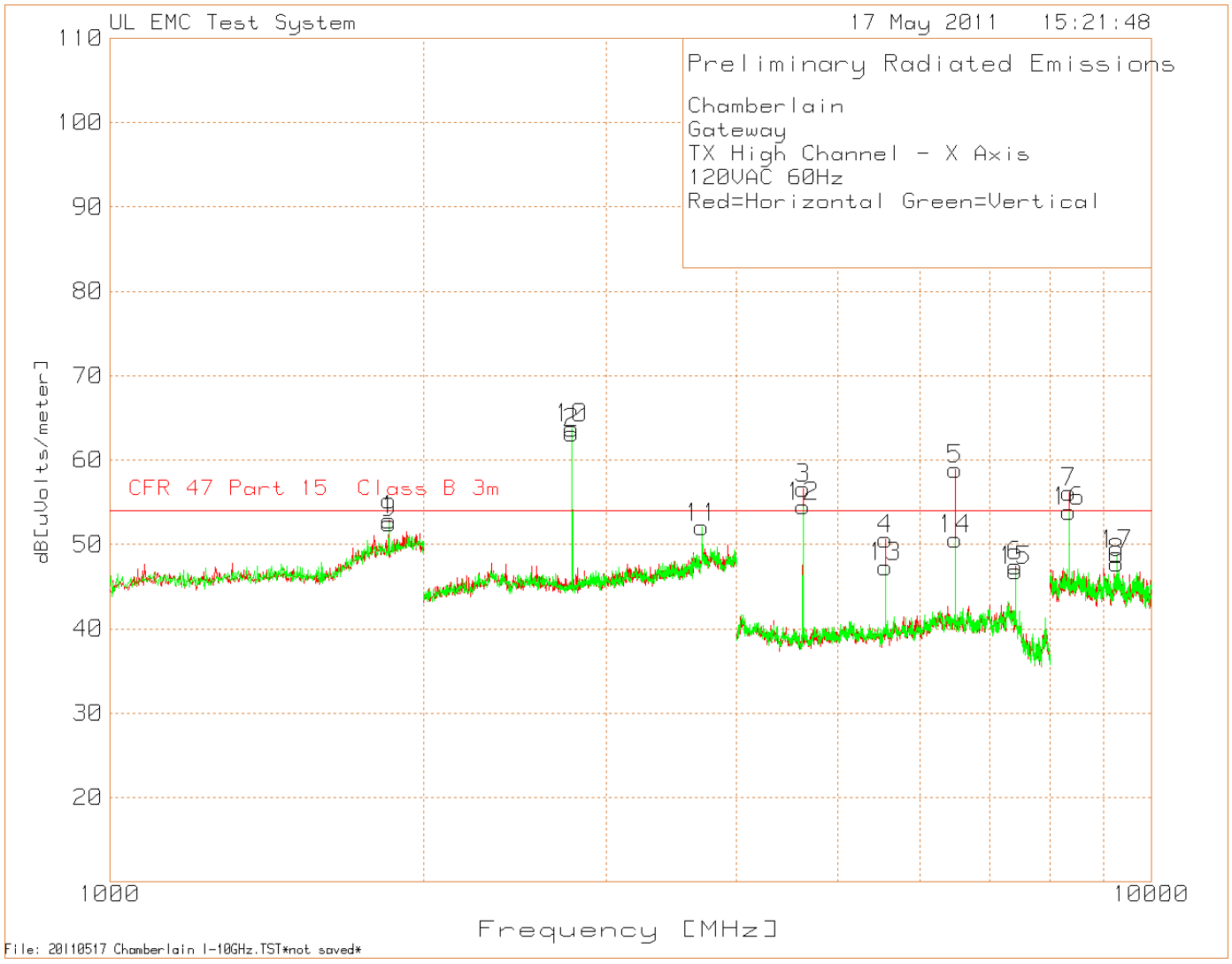


Table 27 Radiated Spurious Emissions above 1GHz, High Channel X-axis

Chamberlain												
Gateway												
TX High Channel - X Axis												
120VAC 60Hz												
Red=Horizontal Green=Vertical												
Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1	Height	Polarity			
Frequency	Reading	Type	Factor	Factor	dB[uVolts		[dB]	[cm]				
[MHz]	[dB(uV)]		[dB]	[dB]	/meter]							
1853.707	22.2	PK	3.35	27.3	52.85	74	-21.15	150	Horz			
5561.041	71.84	PK	-49.58	28.3	50.56	74	-23.44	99	Horz			
6486.991	77.41	PK	-47.59	29.1	58.92	74	-15.08	99	Horz			
7415.61	63.2	PK	-46.79	31	47.41	74	-26.59	99	Horz			
9269.269	60.11	PK	-48.78	36.4	47.73	74	-26.27	150	Horz			
1853.707	21.93	PK	3.35	27.3	52.58	74	-21.42	150	Vert			
5561.041	68.6	PK	-49.58	28.3	47.32	74	-26.68	99	Vert			
6486.991	69.12	PK	-47.59	29.1	50.63	74	-23.37	99	Vert			
7415.61	62.68	PK	-46.79	31	46.89	74	-27.11	99	Vert			
9269.269	61.19	PK	-48.78	36.4	48.81	74	-25.19	100	Vert			
Restricted Band Final Measurements												
Test	Meter	Detector	Gain/Loss	Transducer	Level	Duty Cycle	Level with	Limit 1	Margin 1	Azimuth	Height	Polarity
Frequency	Reading	Type	Factor	Factor	dB[uVolts	Correction	Correction		[dB]	[degs]	[cm]	
[MHz]	[dB(uV)]		[dB]	[dB]	/meter]	[dB]	dB[uVolts/meter]					
2780.1273	41.59	PK	4.2	22.2	67.99	n/a	n/a	74	-6.01	48	105	Horz
2780.2535	32.99	LnAv	4.2	22.2	59.39	-37.628	21.762	54	-32.238	48	105	Horz
2780.1393	38.89	PK	4.2	22.2	65.29	n/a	n/a	74	-8.71	298	110	Vert
2780.2475	30.06	LnAv	4.2	22.2	56.46	-37.628	18.832	54	-35.168	298	110	Vert
3707.1453	27.02	PK	5.76	23.5	56.28	n/a	n/a	74	-17.72	129	113	Vert
3707.0611	14.71	LnAv	5.75	23.5	43.96	-37.628	6.332	54	-47.668	129	113	Vert
3707.1543	26.5	PK	5.76	23.5	55.76	n/a	n/a	74	-18.24	19	127	Horz
3707.0341	13.87	LnAv	5.75	23.5	43.12	-37.628	5.492	54	-48.508	19	127	Horz
4633.9729	79.99	PK	-51.53	27.7	56.16	n/a	n/a	74	-17.84	66	100	Horz
4633.7204	71.18	LnAv	-51.54	27.7	47.34	-37.628	9.712	54	-44.288	66	100	Horz
4633.5341	82.44	PK	-51.54	27.7	58.6	n/a	n/a	74	-15.4	286	100	Vert
4633.7325	73.73	LnAv	-51.54	27.7	49.89	-37.628	12.262	54	-41.738	286	100	Vert
8340.3377	69.09	PK	-49.27	36.5	56.32	n/a	n/a	74	-17.68	282	111	Horz
8340.6503	58.18	LnAv	-49.28	36.5	45.4	-37.628	7.772	54	-46.228	282	111	Horz
8340.2685	69.45	PK	-49.27	36.5	56.68	n/a	n/a	74	-17.32	28	110	Vert
8340.6593	58.76	LnAv	-49.28	36.5	45.98	-37.628	8.352	54	-45.648	28	110	Vert
LIMIT 1: CFR 47 Part 15 Class B 3m												
PK - Peak detector												
LnAv - Linear average detector												
File: 1GHz - 25GHz Trasmitter File (12GHz-25GHz 1HT).TST*not saved*												

Figure 23 Radiated Spurious Emissions above 1GHz, High Channel Y-axis

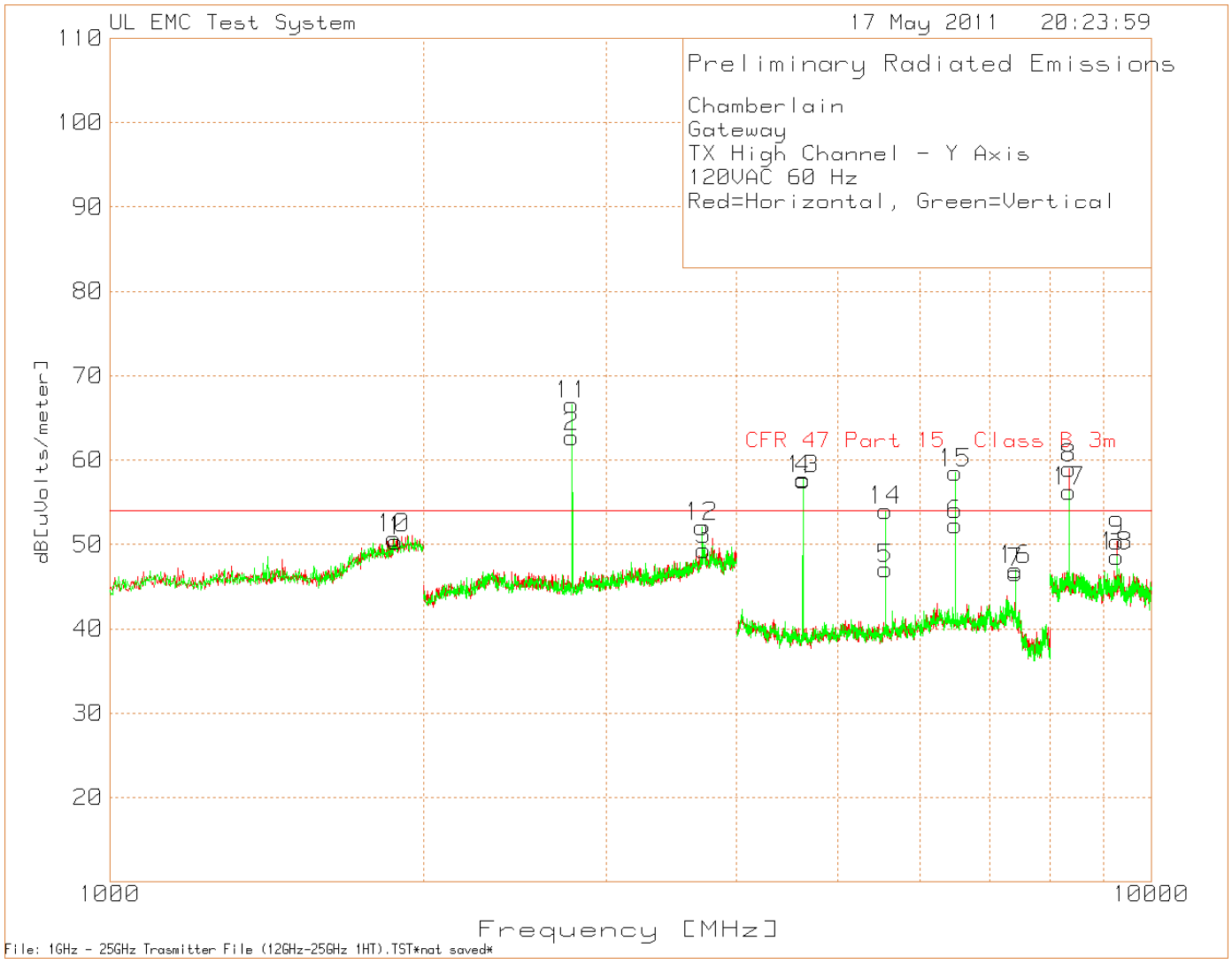


Table 28 Radiated Spurious Emissions above 1GHz, High Channel Y-axis

Chamberlain												
Gateway												
TX High Channel - Y Axis												
120VAC 60 Hz												
Red=Horizontal, Green=Vertical												
Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1	Height	Polarity			
Frequency	Reading	Type	Factor	Factor	dB[uVolts		[dB]	[cm]				
[MHz]	[dB(uV)]		[dB]	[dB]	/meter]							
1881.764	19.29	PK	3.61	27.5	50.4	74	-23.6	150	Horz			
5561.041	68.4	PK	-49.58	28.3	47.12	74	-26.88	100	Horz			
6486.991	70.81	PK	-47.59	29.1	52.32	74	-21.68	100	Horz			
7415.61	62.38	PK	-46.79	31	46.59	74	-27.41	100	Horz			
9267.267	62.75	PK	-48.81	36.4	50.34	74	-23.66	100	Horz			
1873.747	19.71	PK	3.57	27.4	50.68	74	-23.32	100	Vert			
5561.041	75.28	PK	-49.58	28.3	54	74	-20	100	Vert			
6486.991	76.97	PK	-47.59	29.1	58.48	74	-15.52	100	Vert			
7415.61	62.8	PK	-46.79	31	47.01	74	-26.99	100	Vert			
9267.267	61	PK	-48.81	36.4	48.59	74	-25.41	100	Vert			
Restricted Band Final Measurement												
Test	Meter	Detector	Gain/Loss	Transducer	Level	Duty Cycle	Level with	Limit 1	Margin 1	Azimuth	Height	Polarity
Frequency	Reading	Type	Factor	Factor	dB[uVolts	Correction	Correction		[dB]	[degs]	[cm]	
[MHz]	[dB(uV)]		[dB]	[dB]	/meter]	[dB]	dB[uVolts/meter]					
2780.1152	38.33	PK	4.2	22.2	64.73	n/a	n/a	74	-9.27	46	102	Horz
2780.2655	29.5	LnAv	4.2	22.2	55.9	-37.628	18.272	54	-35.728	46	102	Horz
2780.1092	41.36	PK	4.2	22.2	67.76	n/a	n/a	74	-6.24	340	113	Vert
2780.2595	32.76	LnAv	4.2	22.2	59.16	-37.628	21.532	54	-32.468	340	113	Vert
3706.8196	27.86	PK	5.75	23.5	57.11	n/a	n/a	74	-16.89	9	100	Horz
3706.994	15.87	LnAv	5.75	23.5	45.12	-37.628	7.492	54	-46.508	9	100	Horz
3706.8327	30.78	PK	5.75	23.5	60.03	n/a	n/a	74	-13.97	360	107	Vert
3707.019	19.79	LnAv	5.75	23.5	49.04	-37.628	11.412	54	-42.588	360	107	Vert
4633.5802	83.13	PK	-51.54	27.7	59.29	n/a	n/a	74	-14.71	44	107	Horz
4633.7425	74.16	LnAv	-51.54	27.7	50.32	-37.628	12.692	54	-41.308	44	107	Horz
4633.983	83.06	PK	-51.53	27.7	59.23	n/a	n/a	74	-14.77	341	109	Vert
4633.7605	74.33	LnAv	-51.53	27.7	50.5	-37.628	12.872	54	-41.128	341	109	Vert
8341.0471	73.83	PK	-49.29	36.5	61.04	n/a	n/a	74	-12.96	334	103	Horz
8340.6804	63.5	LnAv	-49.28	36.5	50.72	-37.628	13.092	54	-40.908	334	103	Horz
8340.3437	72.45	PK	-49.27	36.5	59.68	n/a	n/a	74	-14.32	21	101	Vert
8340.6864	61.92	LnAv	-49.28	36.5	49.14	-37.628	11.512	54	-42.488	21	101	Vert
LIMIT 1: CFR 47 Part 15 Class B 3m												
PK - Peak detector												
LnAv - Linear Average detector												
File: 1GHz - 25GHz Trasmitter File (12GHz-25GHz 1HT).TST*not saved*												

Figure 24 Radiated Spurious Emissions above 1GHz, High Channel Z-axis

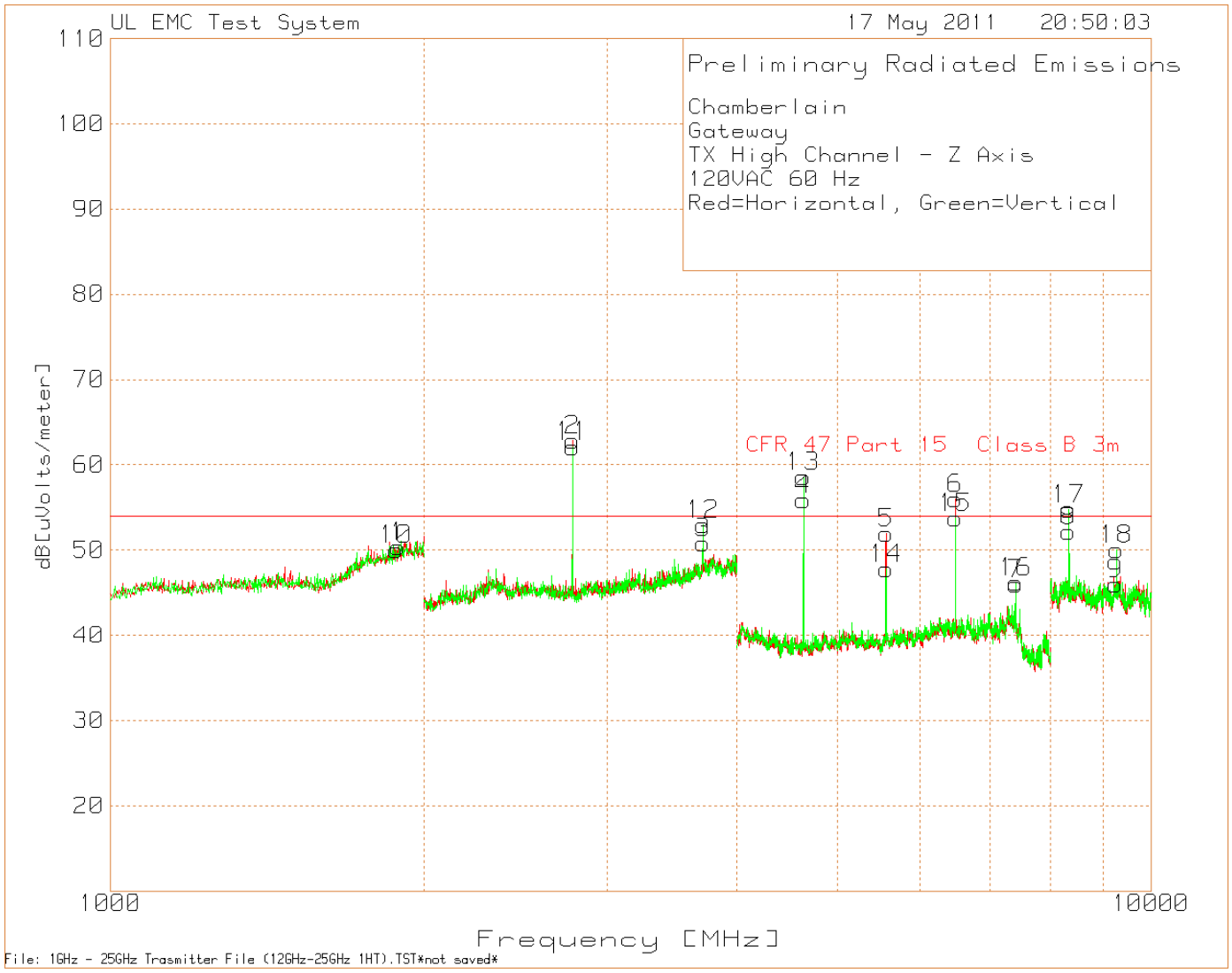


Table 29 Radiated Spurious Emissions above 1GHz, High Channel Z-axis

Chamberlain												
Gateway												
TX High Channel - Z Axis												
120VAC 60 Hz												
Red=Horizontal, Green=Vertical												
Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1	Height	Polarity			
Frequency	Reading	Type	Factor	Factor	dB[uVolts		[dB]	[cm]				
[MHz]	[dB(uV)]		[dB]	[dB]	/meter]							
1889.78	19.32	PK	3.53	27.5	50.35	74	-23.65	150	Horz			
5561.041	73.22	PK	-49.58	28.3	51.94	74	-22.06	100	Horz			
6486.991	74.47	PK	-47.59	29.1	55.98	74	-18.02	100	Horz			
7415.61	61.73	PK	-46.79	31	45.94	74	-28.06	100	Horz			
9243.243	58.26	PK	-48.7	36.4	45.96	74	-28.04	100	Horz			
1881.764	18.92	PK	3.61	27.5	50.03	74	-23.97	100	Vert			
5561.041	69.06	PK	-49.58	28.3	47.78	74	-26.22	102	Vert			
6486.991	72.21	PK	-47.59	29.1	53.72	74	-20.28	102	Vert			
7415.61	62.03	PK	-46.79	31	46.24	74	-27.76	102	Vert			
9269.269	62.42	PK	-48.78	36.4	50.04	74	-23.96	100	Vert			
Restricted Band Final Measurements												
Test	Meter	Detector	Gain/Loss	Transducer	Level	Duty Cycle	Level with	Limit 1	Margin 1	Azimuth	Height	Polarity
Frequency	Reading	Type	Factor	Factor	dB[uVolts	Correction	Correction		[dB]	[degs]	[cm]	
[MHz]	[dB(uV)]		[dB]	[dB]	/meter]	[dB]	dB[uVolts/meter]					
2780.2275	38.42	PK	4.2	22.2	64.82	n/a	n/a	74	-9.18	15	101	Horz
2780.2515	29.51	LnAv	4.2	22.2	55.91	-37.628	18.282	54	-35.718	15	101	Horz
2780.3206	40.1	PK	4.2	22.2	66.5	n/a	n/a	74	-7.5	175	104	Vert
2780.2545	31.42	LnAv	4.2	22.2	57.82	-37.628	20.192	54	-33.808	175	104	Vert
3706.6393	29.93	PK	5.74	23.5	59.17	n/a	n/a	74	-14.83	352	117	Vert
3707.006	18.73	LnAv	5.75	23.5	47.98	-37.628	10.352	54	-43.648	352	117	Vert
3706.7896	28.76	PK	5.75	23.5	58.01	n/a	n/a	74	-15.99	0	102	Horz
3706.994	16.87	LnAv	5.75	23.5	46.12	-37.628	8.492	54	-45.508	0	102	Horz
4634.0451	82.67	PK	-51.53	27.7	58.84	n/a	n/a	74	-15.16	344	100	Horz
4633.7445	73.95	LnAv	-51.54	27.7	50.11	-37.628	12.482	54	-41.518	344	100	Horz
4633.6964	84.2	PK	-51.54	27.7	60.36	n/a	n/a	74	-13.64	7	100	Vert
4633.7445	75.6	LnAv	-51.54	27.7	51.76	-37.628	14.132	54	-39.868	7	100	Vert
8341.1493	68.46	PK	-49.29	36.5	55.67	n/a	n/a	74	-18.33	227	100	Vert
8340.6864	57.13	LnAv	-49.28	36.5	44.35	-37.628	6.722	54	-47.278	227	100	Vert
8340.3257	69.37	PK	-49.27	36.5	56.6	n/a	n/a	74	-17.4	347	104	Horz
8340.6924	58.45	LnAv	-49.28	36.5	45.67	-37.628	8.042	54	-45.958	347	104	Horz
LIMIT 1: CFR 47 Part 15 Class B 3m												
PK - Peak detector												
LnAv - Linear Average detector												
File: 1GHz - 25GHz Trasmitter File (12GHz-25GHz 1HT).TST*not saved*												

4.3 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 30 Band Edge Compliance EUT Configuration Settings

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

Table 31 Bandedge CONDUCTED 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
Attenuator w/ Cable	Mini Circuits	BW-N10W5	None	N/A	N/A

Figure 25 Test setup for Band Edge Compliance

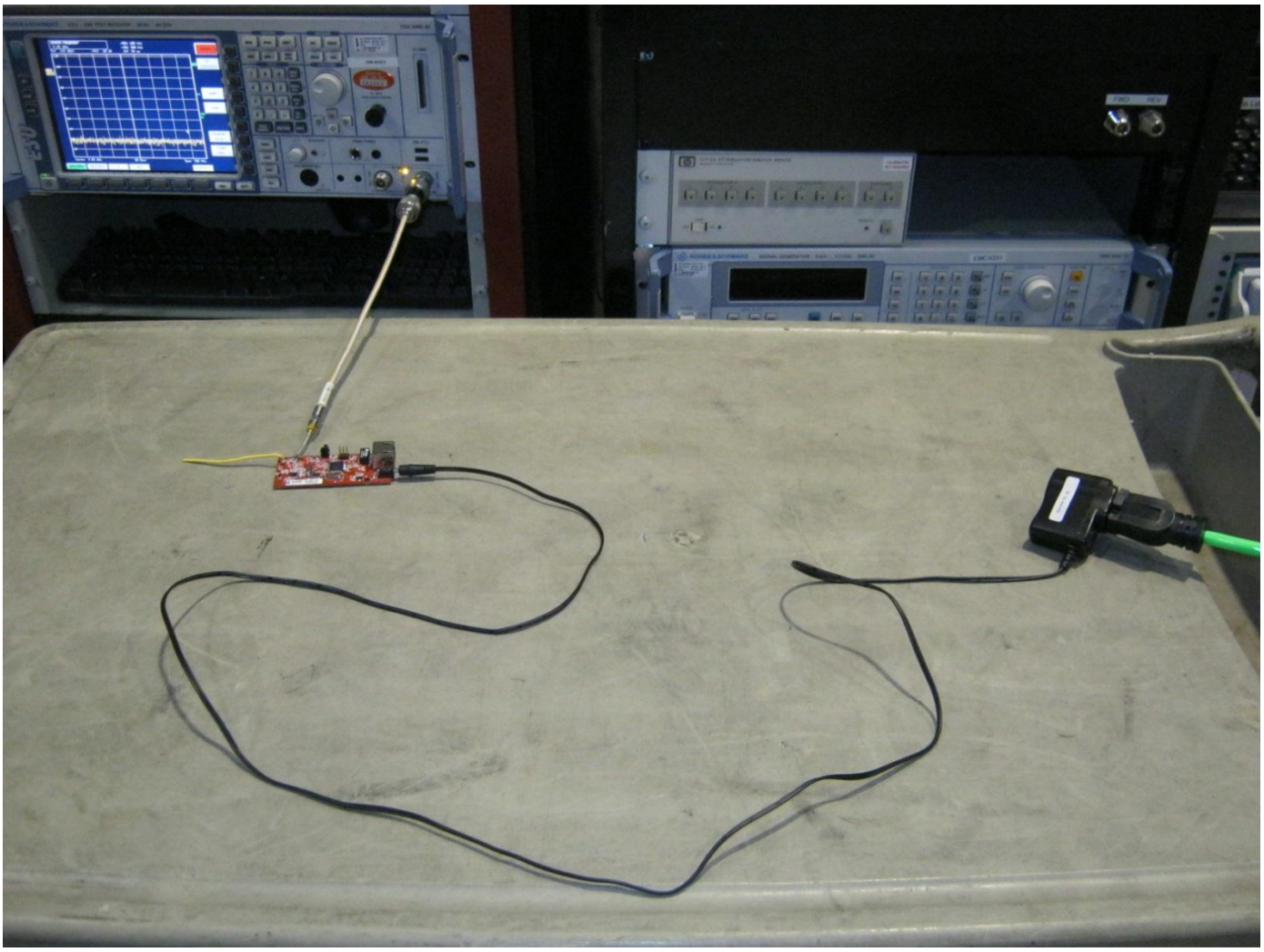
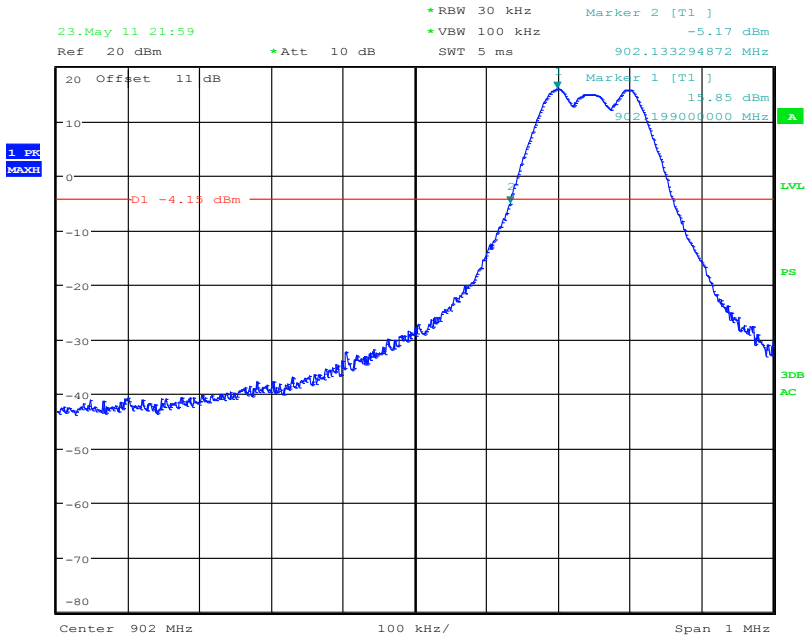
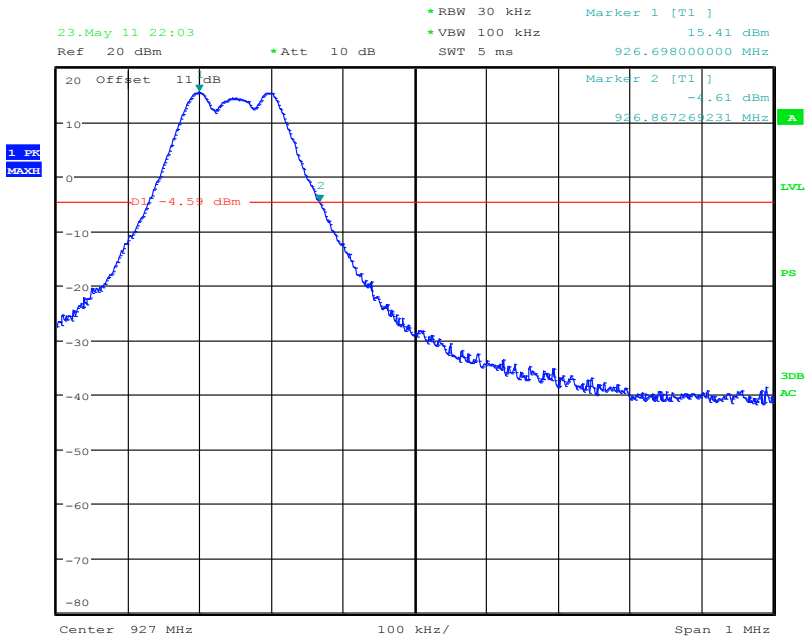


Figure 26 Antenna Conducted Band Edge Compliance Graph – Single Channel

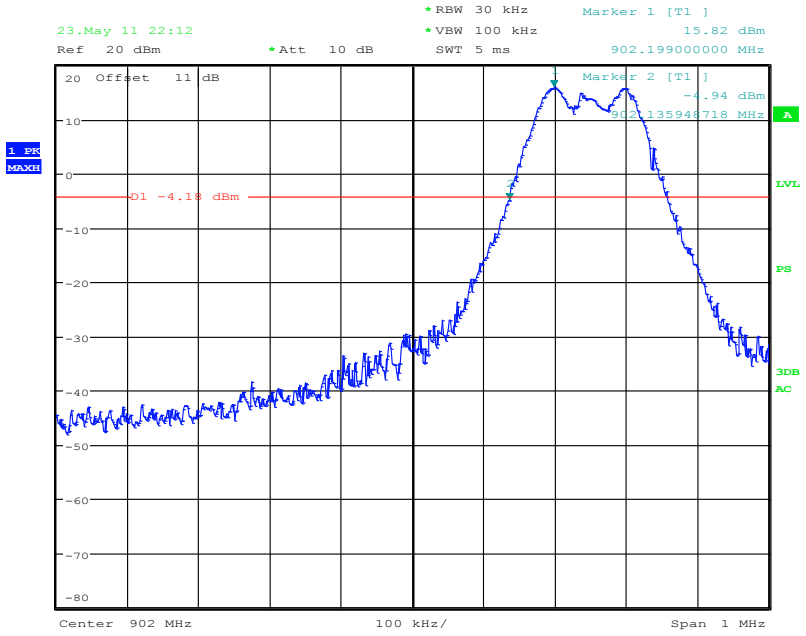


Date: 23.MAY.2011 21:59:33



Date: 23.MAY.2011 22:03:16

Figure 27 Antenna Conducted Band Edge Compliance Graph – Hopping



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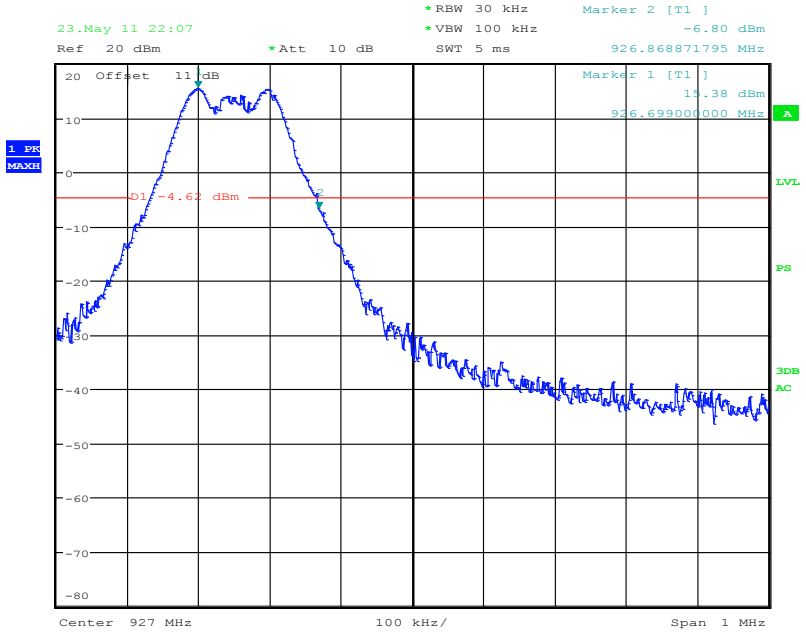


Date: 23.MAY.2011 22:07:52

4.4 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 32 Carrier Frequency Separation Configuration Settings

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

Table 33 Carrier Frequency Separation 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
Attenuator w/ Cable	Mini Circuits	BW-N10W5	None	N/A	N/A

Table 34 Carrier Frequency Separation Results

Mode	Channel	Carrier Frequency Separation Limit	Channel Separation
TX Hopping	Middle	> 20dB Bandwidth (aprx. 160kHz)	599kHz

Figure 28 Test Setup for Carrier Frequency Separation

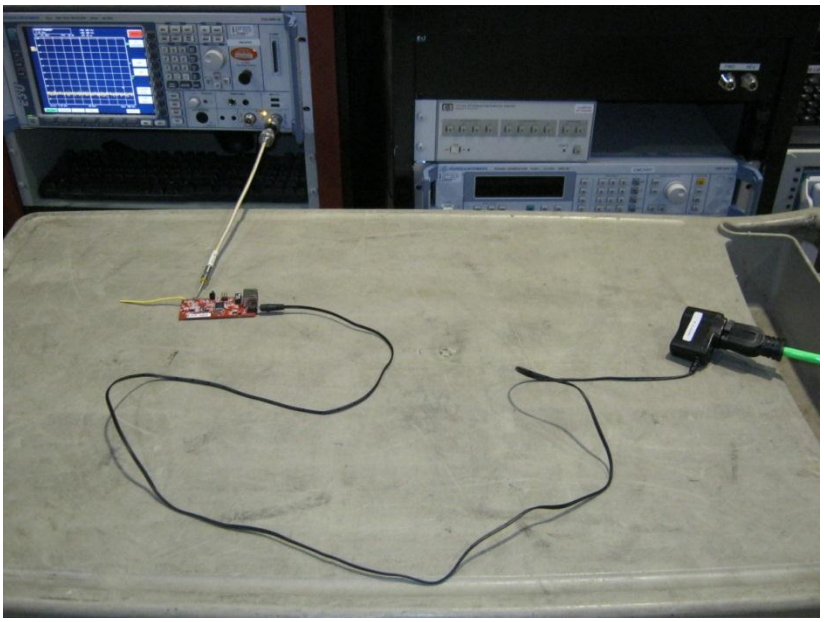
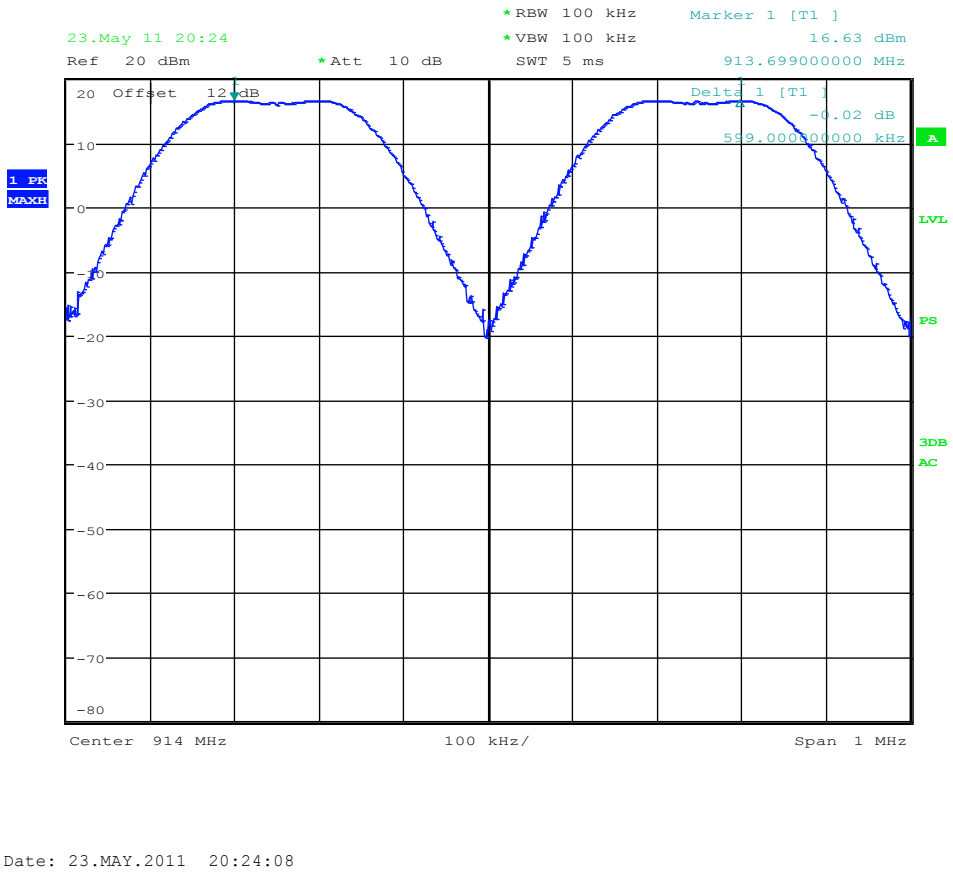


Figure 29 Carrier Frequency Separation Graph



4.5 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 35 Number of Hopping Frequencies Configuration Settings

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

Table 36 Number of Hopping Frequencies 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
Attenuator w/ Cable	Mini Circuits	BW-N10W5	None	N/A	N/A

Table 37 Number of Hopping Frequencies Results

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

Figure 30 Test Setup for Number of Hopping Frequencies

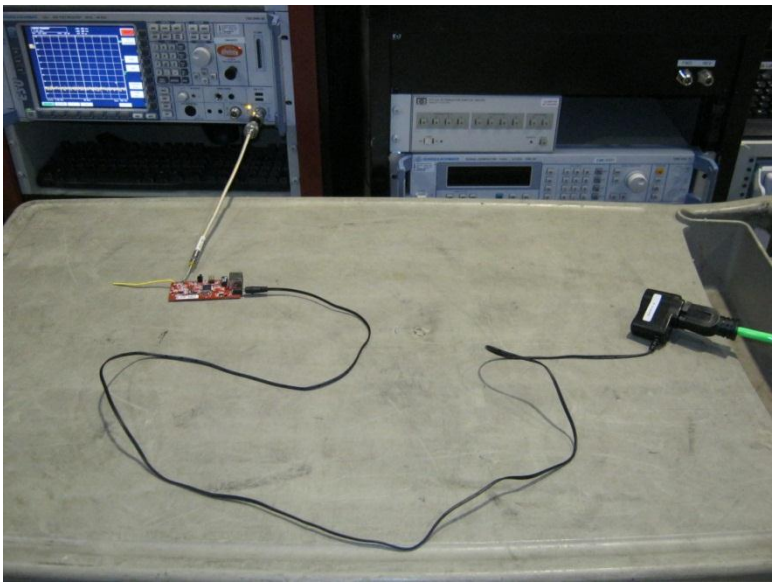
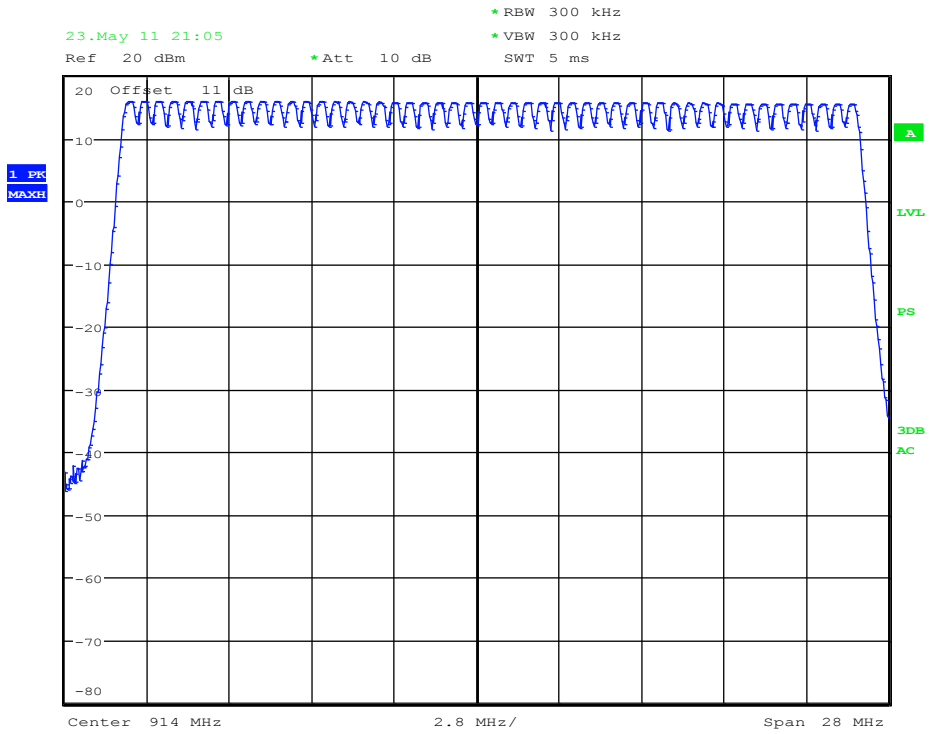


Figure 31 Number of Hopping Frequencies Graphs



Date: 23.MAY.2011 21:05:50

4.6 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 38 Dwell Time Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1	3	3
Supplementary information: Duty cycle also measured/calculated for use in radiated spurious measurements		

Table 39 Dwell Time 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
Attenuator w/ Cable	Mini Circuits	BW-N10W5	None	N/A	N/A

Table 40 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 41 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	1.324	-37.562dB
TX Hopping Middle Channel	1	1.319	-37.595dB
TX Hopping High Channel	1	1.314	-37.628dB

Figure 32 Test Setup for Dwell Time

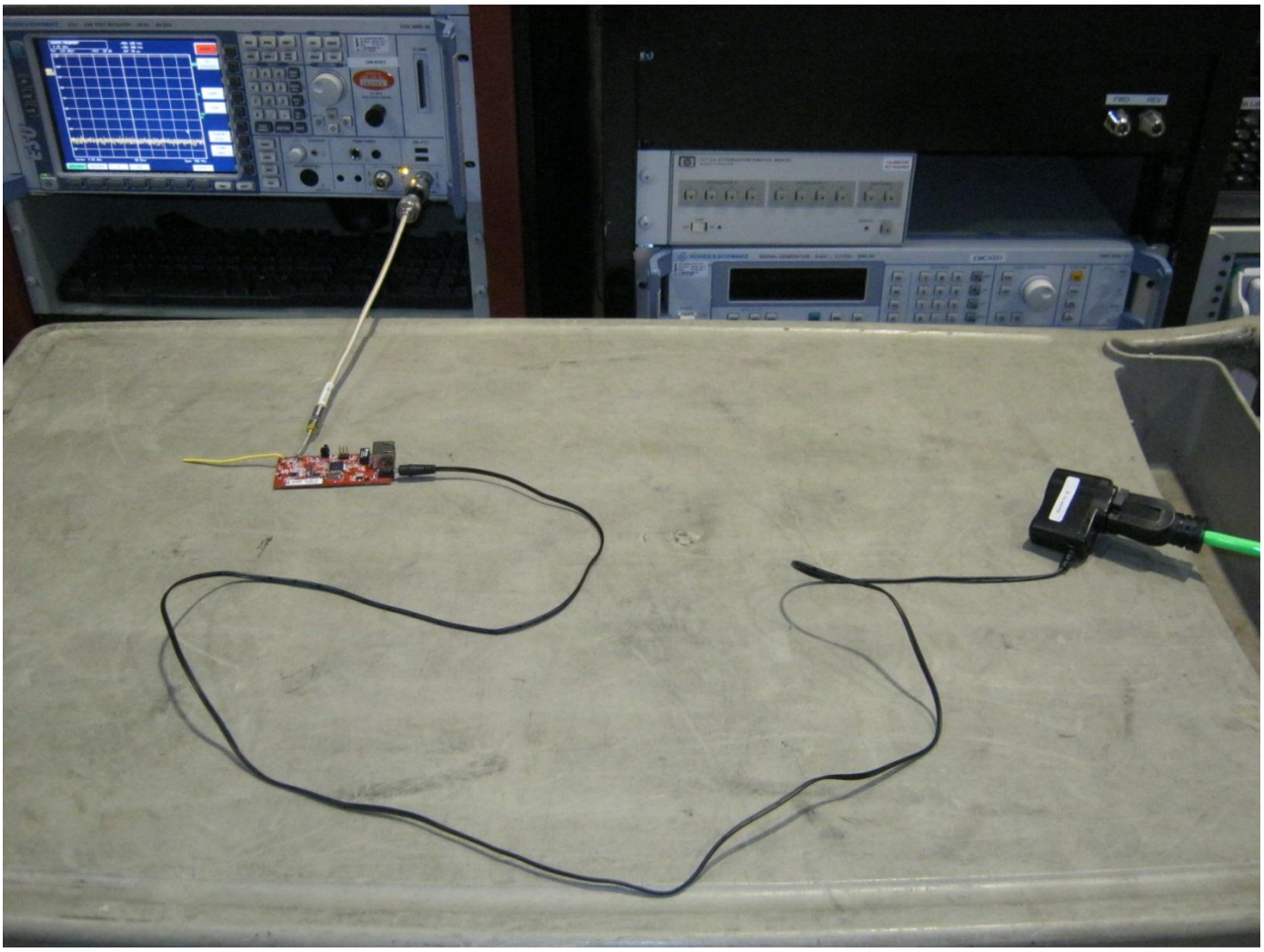
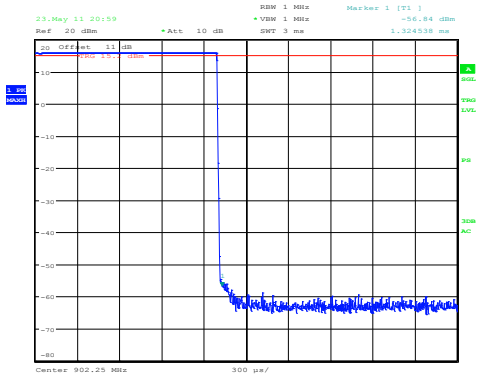


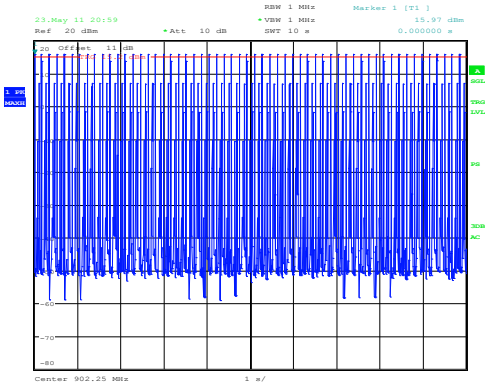
Figure 33 Dwell Time Graphs

Low Channel Dwell Time (1.322mS)



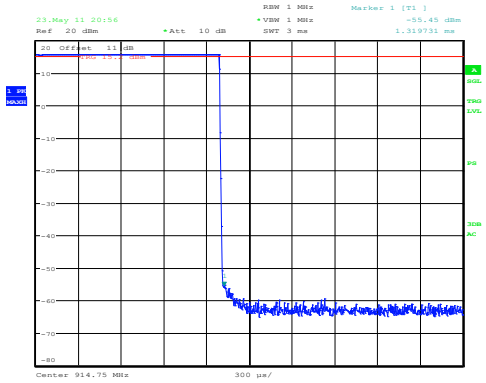
Date: 23.MAY.2011 20:59:11

10s Sweep 1



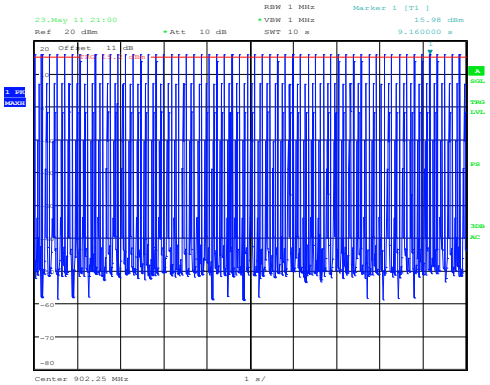
Date: 23.MAY.2011 20:59:52

Middle Channel Dwell Time (1.319mS)



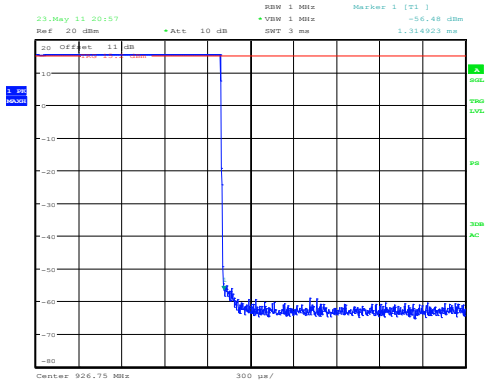
Date: 23.MAY.2011 20:56:22

10s Sweep 2



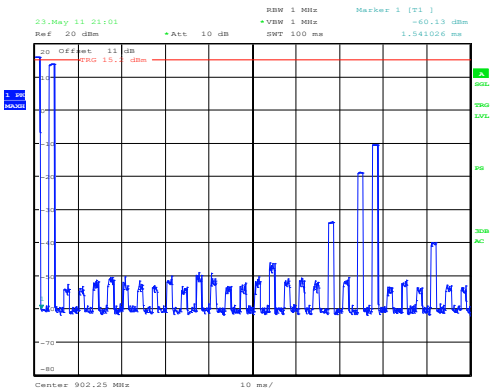
Date: 23.MAY.2011 21:00:19

High Channel Dwell Time (1.313mS)



Date: 23.MAY.2011 20:57:53

100mS Sweep, number of TX



Date: 23.MAY.2011 21:01:43

The 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

4.7 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 42 20dB Bandwidth Configuration Settings

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

Table 43 20dB Bandwidth 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
Attenuator w/ Cable	Mini Circuits	BW-N10W5	None	N/A	N/A

Table 44 20dB Bandwidth Results

Mode	Channel	20dB Bandwidth
TX	Low	224.826kHz
	Middle	228.364kHz
	High	239.182kHz

Test Setup for 20dB Bandwidth

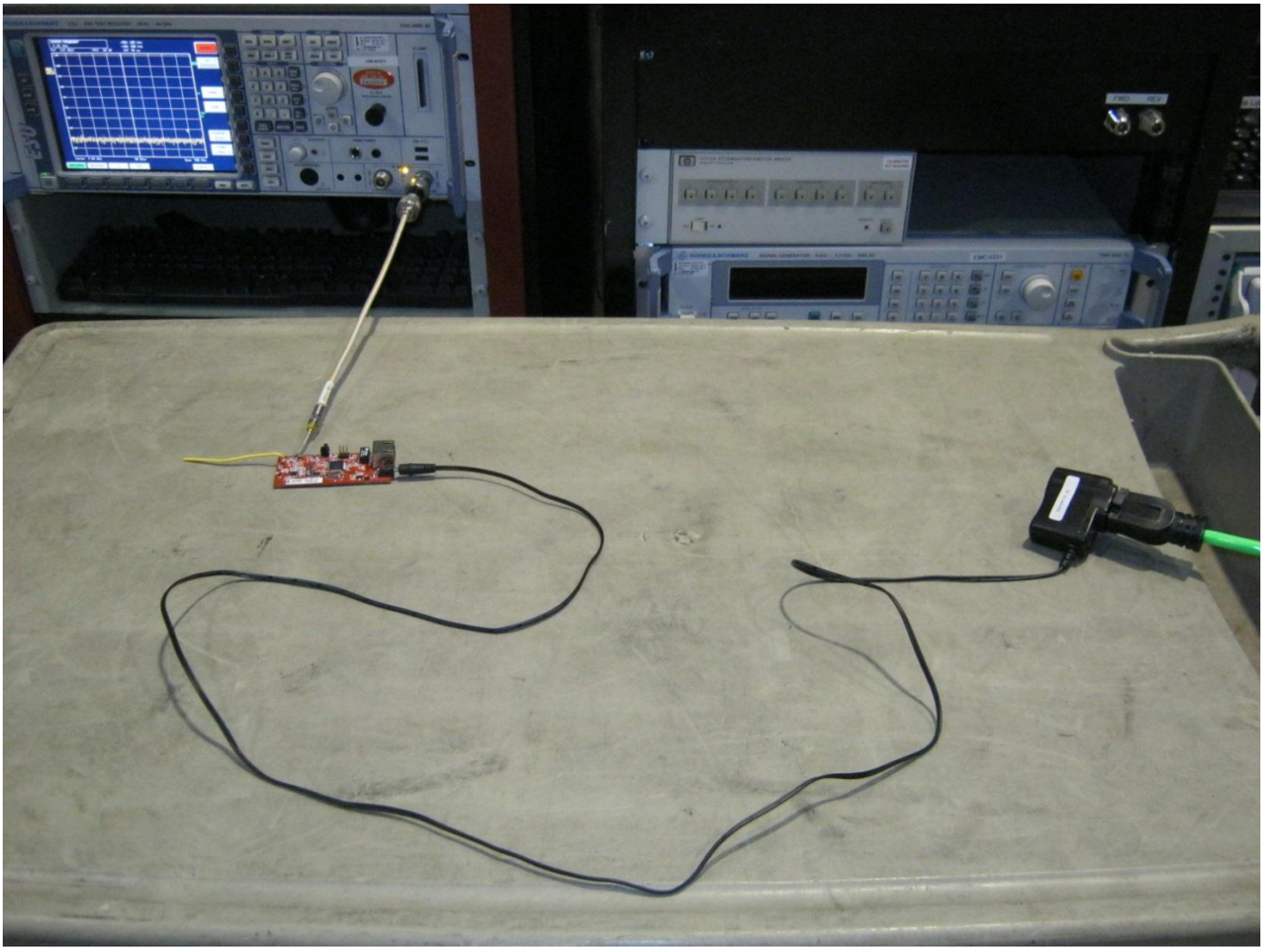
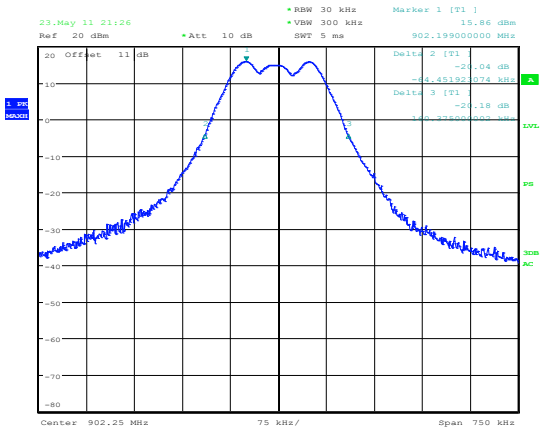


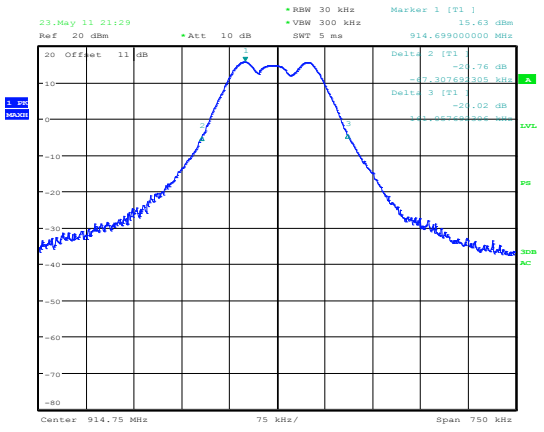
Figure 34 20dB Bandwidth Graphs

Low Channel



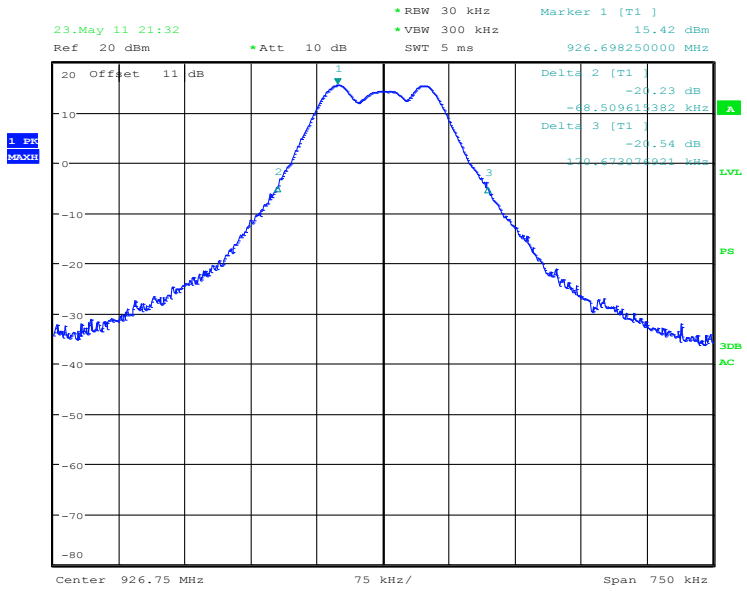
Date: 23.MAY.2011 21:26:09

Middle Channel



Date: 23.MAY.2011 21:29:32

High Channel



Date: 23.MAY.2011 21:32:35

4.8 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 45 Maximum Peak Output Power EUT Configuration Settings

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

Table 46 Maximum Peak Output Power 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
Attenuator w/ Cable	Mini Circuits	BW-N10W5	None	N/A	N/A

Table 47 Maximum Peak Output Power Results

Channel	Limit (dBm)	Power dBm	Power W
Low Channel	30	15.79	0.0379
Middle Channel	30	15.60	0.0363
High Channel	30	15.40	0.0347

Figure 35 Test setup for Maximum Peak Output Power

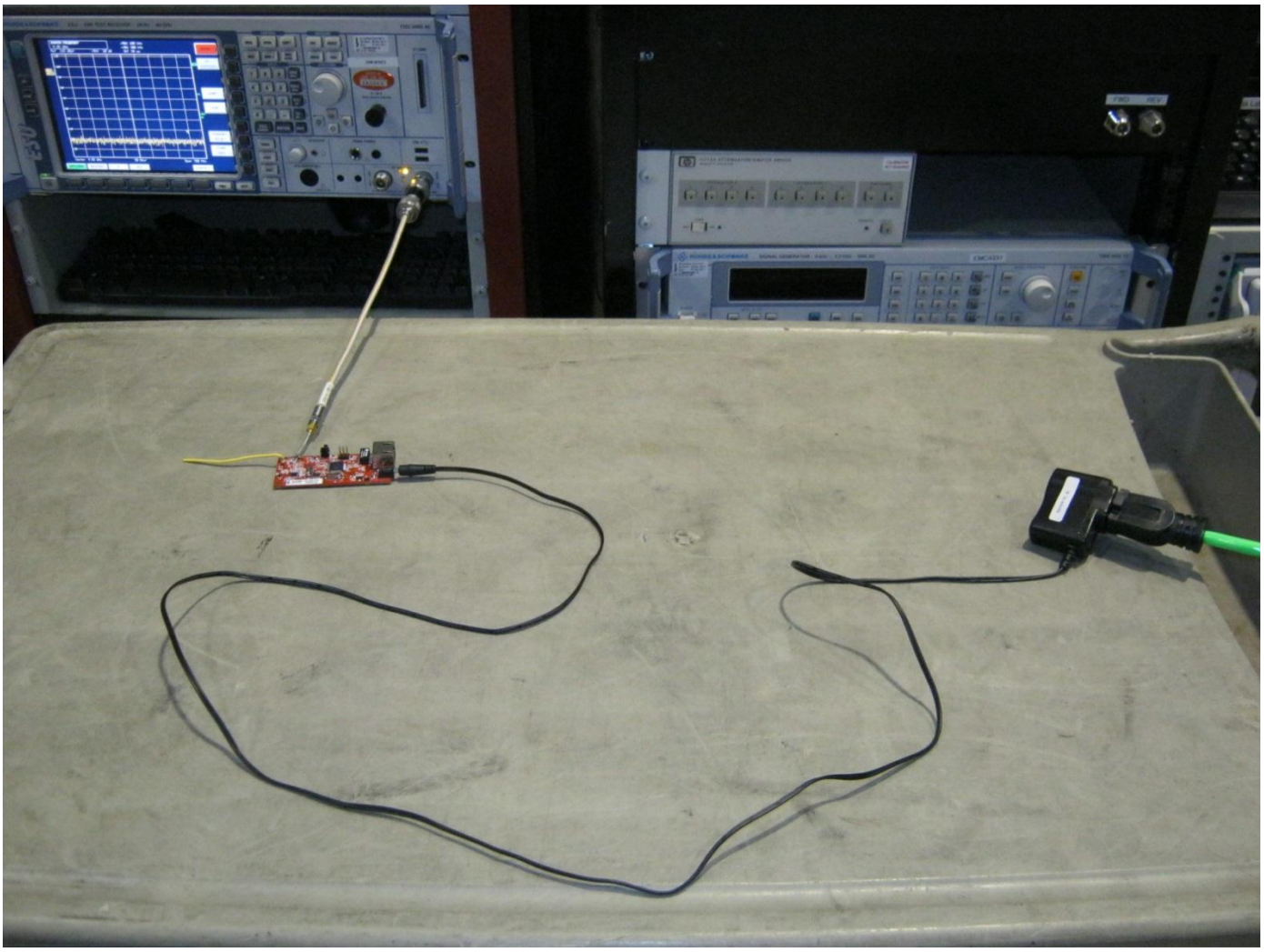
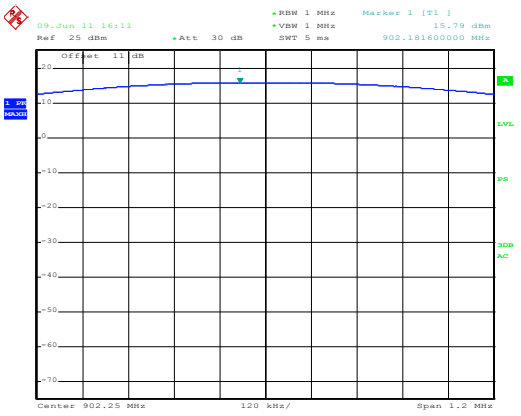


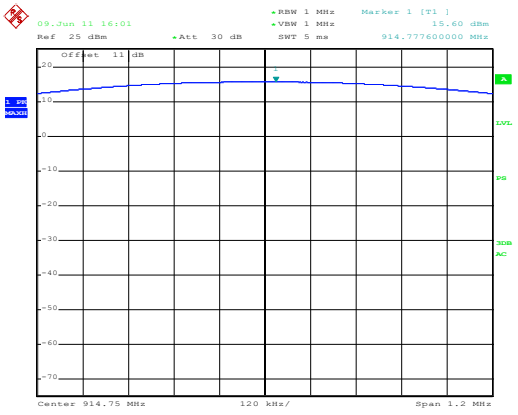
Figure 36 Maximum Peak Output Power Graph

Low Channel



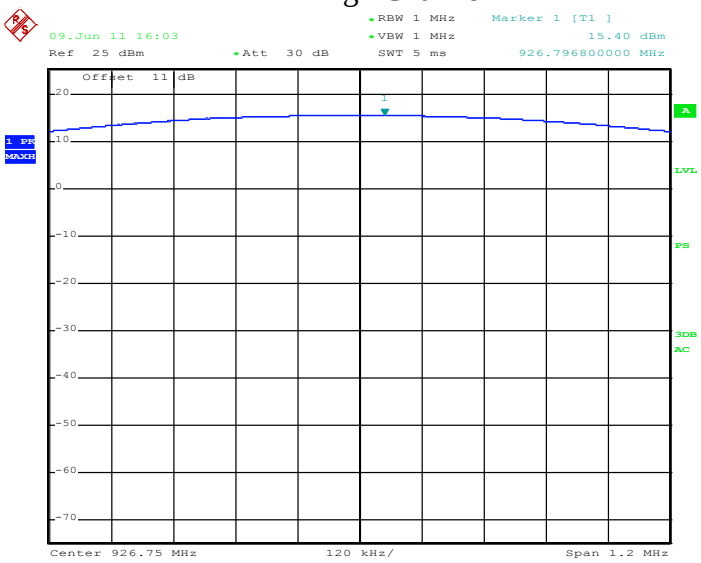
Date: 9.JUN.2011 16:11:53

Middle Channel



Date: 9.JUN.2011 16:01:45

High Channel



Date: 9.JUN.2011 16:03:46

4.9 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 48 99% Power Bandwidth Configuration Settings

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

Table 49 99% Power Bandwidth 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
Attenuator w/ Cable	Mini Circuits	BW-N10W5	None	N/A	N/A

Table 50 99% Power Bandwidth Results

Mode	Channel	99% Power Bandwidth
TX	Low	191.25 kHz
	Middle	192.00 kHz
	High	197.25 kHz

Test Setup for 99% Power Bandwidth

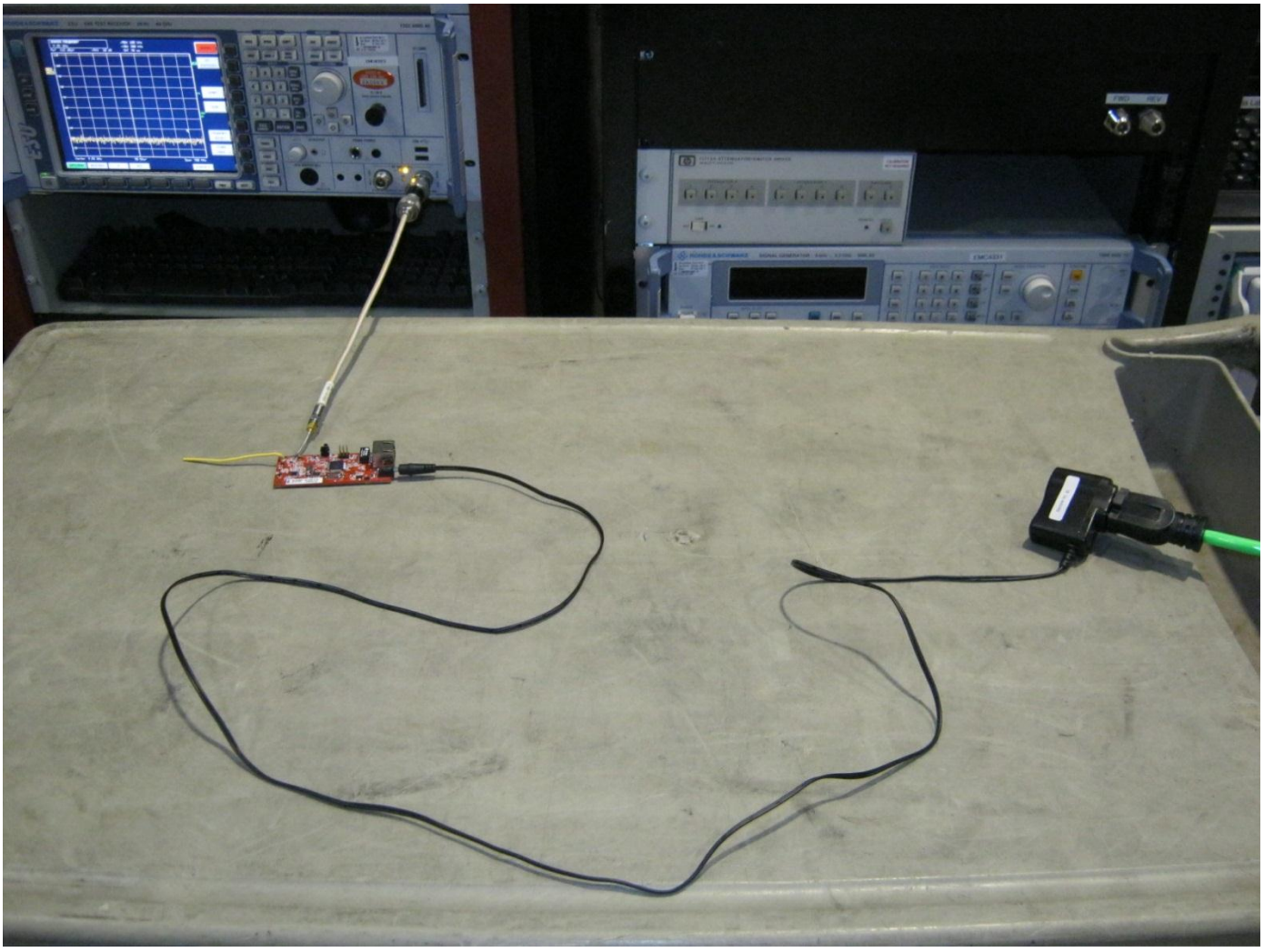
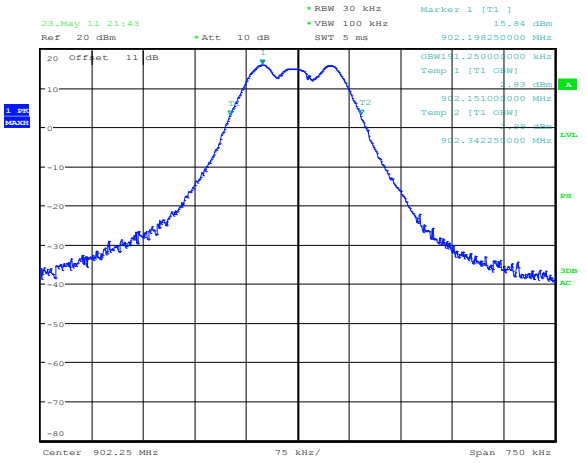


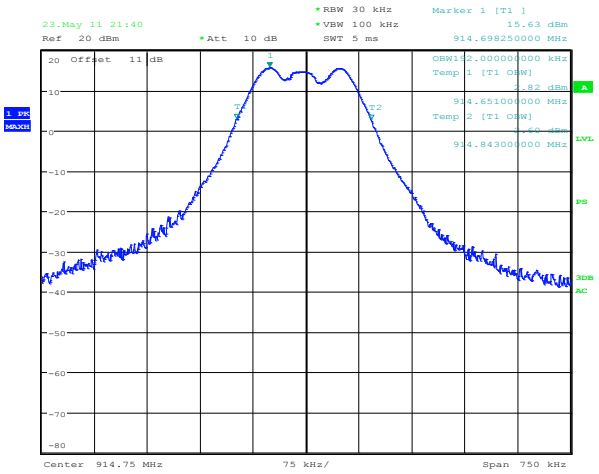
Figure 37 99% Power Bandwidth Graphs

Low Channel



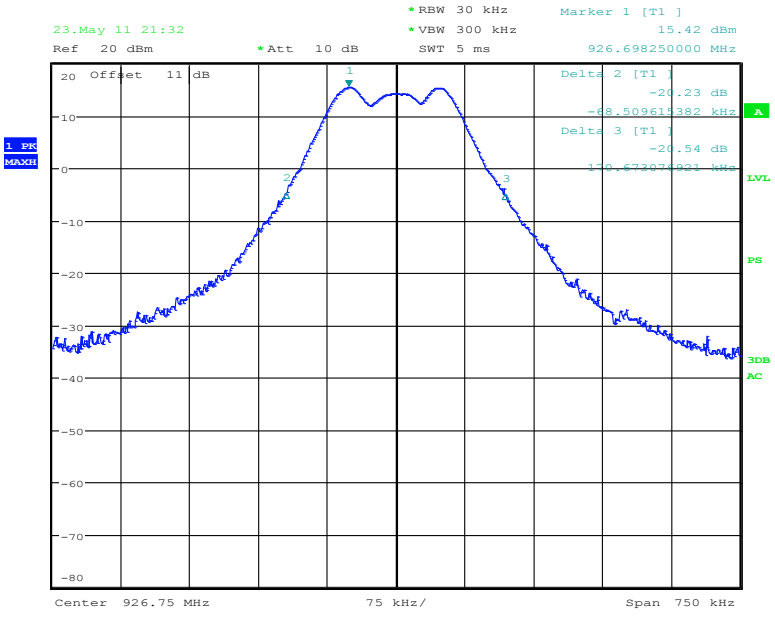
Date: 23.MAY.2011 21:43:05

Middle Channel



Date: 23.MAY.2011 21:40:40

High Channel



Date: 23.MAY.2011 21:32:35

5.0 IMMUNITY TEST RESULTS

Immunity testing was not conducted nor is required by the standard.

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