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Job Number:	1001004465
Project Number:	08CA37639
File Number:	MC3181
FCC ID:	JLFRX900
Date:	July 29, 2008
Model:	ULTRX900R

## Electromagnetic Compatibility Test Report

For

**Chamberlain Group Inc.**

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Underwriters Laboratories Inc.  
333 Pfingsten Rd.  
Northbrook, IL 60062

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quality service for over 100 years**

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Model Number:  
Client Name:

File #: MC3181  
ULTRX900R  
Chamberlain Group Inc.

Project #: 08CA37639

Page 2 of 30  
FCC ID: JLFRX900

## Test Report Details

Tests Performed By: **Underwriters Laboratories Inc.**  
**333 Pfingsten Rd.**  
**Northbrook, IL 60062**

Tests Performed For: **Chamberlain Group Inc.**  
**845 Larch Av**  
**Elmhurst, IL 60126**

Applicant Contact: **Hank Sieradzki**  
Phone: **(630) 993-6564**  
E-mail: **Hank.Sieradzki@chamberlaingroup.com**

Test Report Date: **July 29, 2008**

Product Type: **Wireless Controler**

Product standards **FCC Part 15, Subpart C, 15.249**  
**RSS-210, Section A2.9**

Model Number: **ULTRX900R**

EUT Category: **Low Power Transmitter**

Testing Start Date: **July 14, 2008**

Date Testing Complete: **July 21, 2008**

**Overall Results: Compliant**

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

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## Report Revision History

Revision Date	Description	Revised By	Revision Reviewed By
None			

## 1.0 GENERAL - Product Description

### 1.1 Equipment Description

The Equipment Under Test (EUT) was 900Mhz low power 4 channel transceiver that when used with other Chamberlain Wireless Products such as the Echo Remote (ERMT), 3 button Station (WPB3LM), Push To Exit (WPB1LM), provides feedback to the user that the ULTRX900R has performed the desired operation.

### 1.2 Device Configuration During Test

#### 1.2.1 Equipment Used During Test:

Use	Product Type	Manufacturer	Model	Comments
EUT	ULTRX900R Transceiver	Chamberlain Group Inc.	ULTRX900R	None

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

Y

#### 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/DC	N	N	None
2	2x C relay output	I/O	Y	N	1 meter long un-terminated wires connected for testing
3	2x open collector transistor output	I/O	Y	N	

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)	Frequency (DC/AC-Hz)	Phases (#)	Comments
1	12 - 24	AC	-	*That input voltage is then regulated to 5VDC. The 5VDC is used to power the Relays, as well as the 3.3VDC regulator, which powers all the electronics.
2	12-24VDC	DC	-	

\* All voltage to the transmitter and digital part of the device is regulated therefore it was considered not necessary to test at multiple voltages.

**1.3 EUT Configurations**

Mode #	Description
1	EUT configured on 80cm table connected in manner simulating normal use.

**1.4 EUT Operation Modes**

Mode #	Description
1	Receiver / Standby Mode
2	Transmit Mode (on individual channels)

**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
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**2.3 Reference Standards**

Standard Number	Standard Name	Standard Date
FCC Part 15, Subpart C, 15.209	Code of Federal Regulations, Part 15, Radio Frequency Devices	2008
RSS-Gen	General Requirements of Information for the Certification of Radiocommunication Equipment.	2007
RSS-210	Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment	2007

**2.4 Results Summary**

Requirement – Test	Result (Compliant / Non-Compliant)*
Conducted Emissions - Mains	Compliant
Radiated Emissions	Compliant
Bandwidth Measurements	Compliant

Test Engineer:



Bartlomiej Mucha (Ext.41216)  
Senior Project Engineer  
International EMC Services  
Conformity Assessment Services-

Reviewer:



Michael A. Ehas(Ext.42351)  
Lead Engineering Associate  
International EMC Services  
Conformity Assessment Services

Any information and documentation involving UL Mark services are provided on behalf of Underwriters Laboratories Inc. (UL) or any authorized licensee of UL.

### 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 C, Radio Frequency Devices
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----- Canada -----

RSS-Gen	General Requirements of Information for the Certification of Radiocommunication Equipment.
RSS-210	Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment

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
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**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, Subpart C (15.207)	
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
<b>Limits - Class B</b>		
Frequency (MHz)	Limit (dB $\mu$ V)	
	Quasi-Peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Supplementary information: None		

**Table 1 Conducted Emissions EUT Configuration Settings**

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1	1	2
Supplementary information: Testing was conducted with step-down transformer.		

**Table 2 Conducted Emissions Test Equipment**

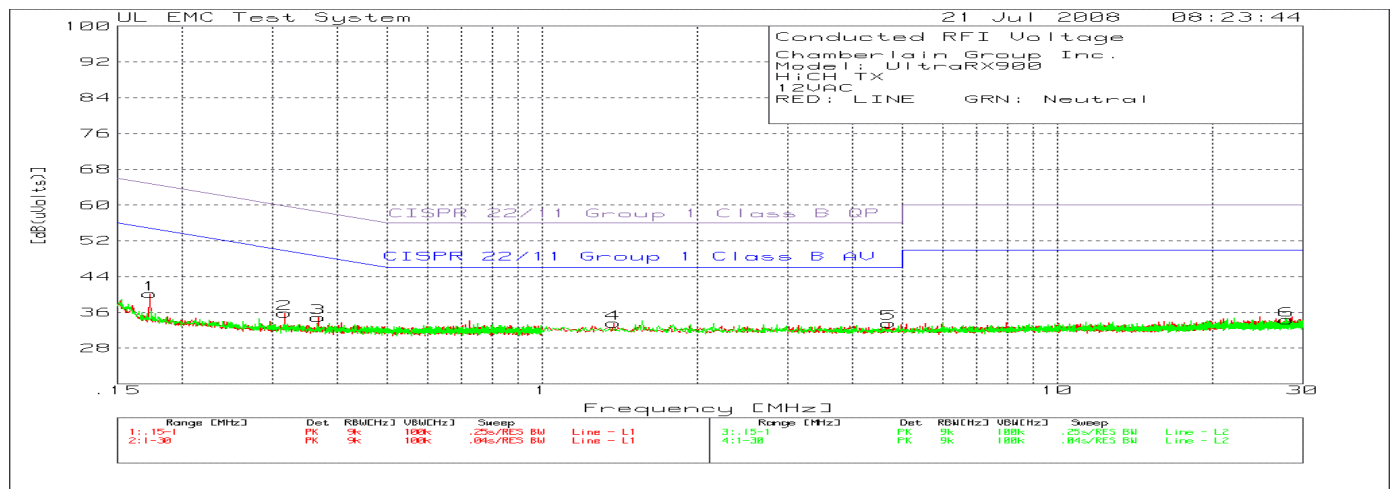
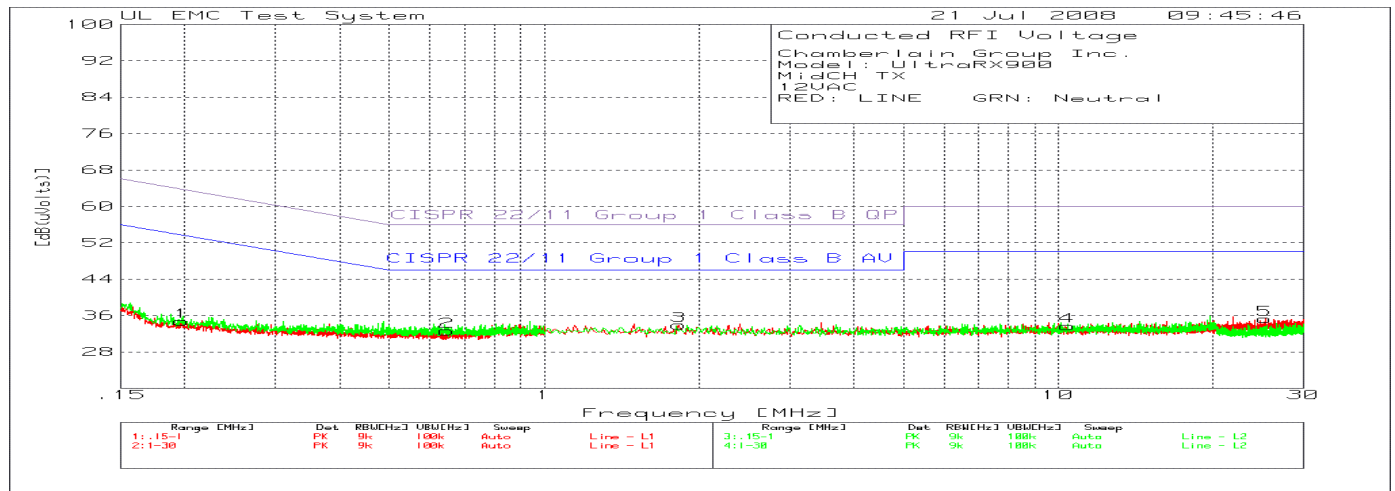
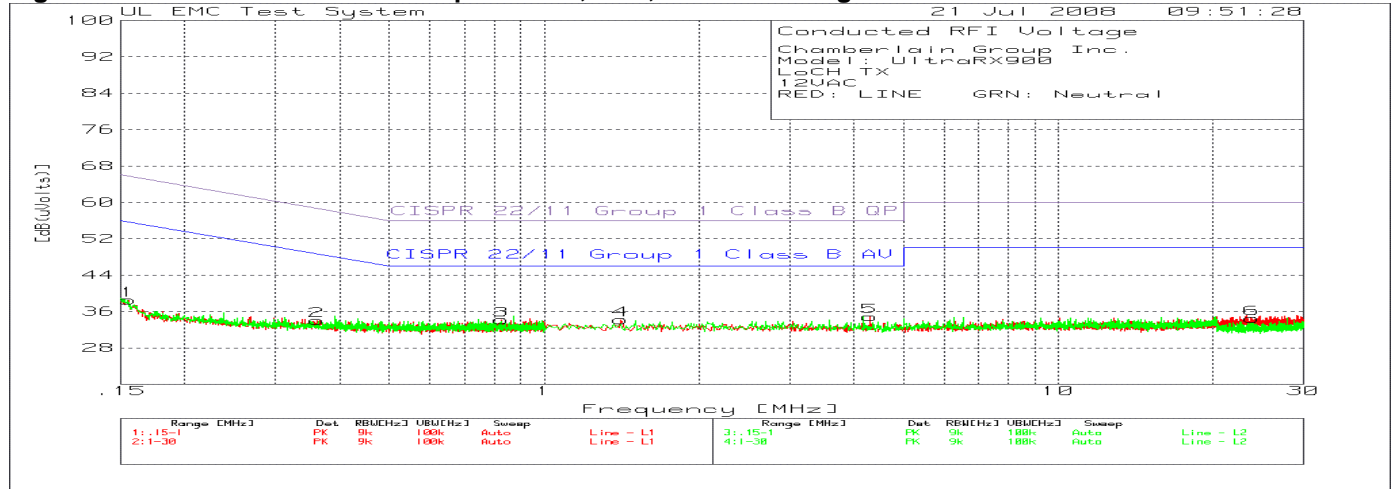
Description	Manufacturer	Model	Identifier
Spectrum Analyzer / Preselector	Agilent	E7405A	EMC4242
Transient Limiter	Electro-Metrics	EM7600-2	EMC4224
LISN - L1	Solar	8602-50-TS-50-N	EMC4052
LISN - L2	Solar	8602-50-TS-50-N	EMC4064



**Figure 1 Test Setup for Conducted Emissions**

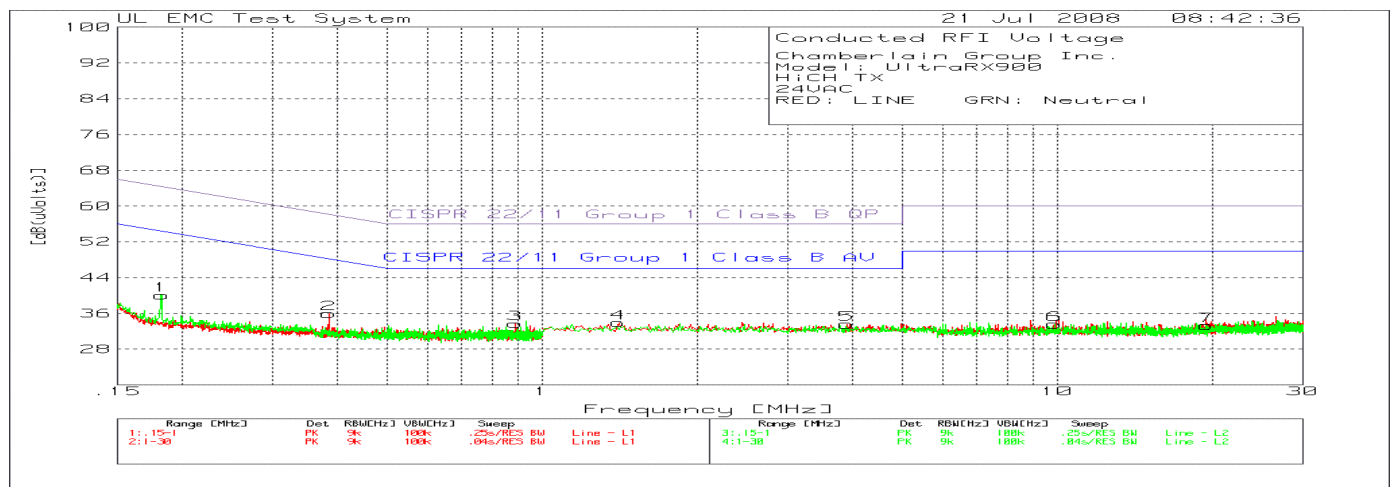
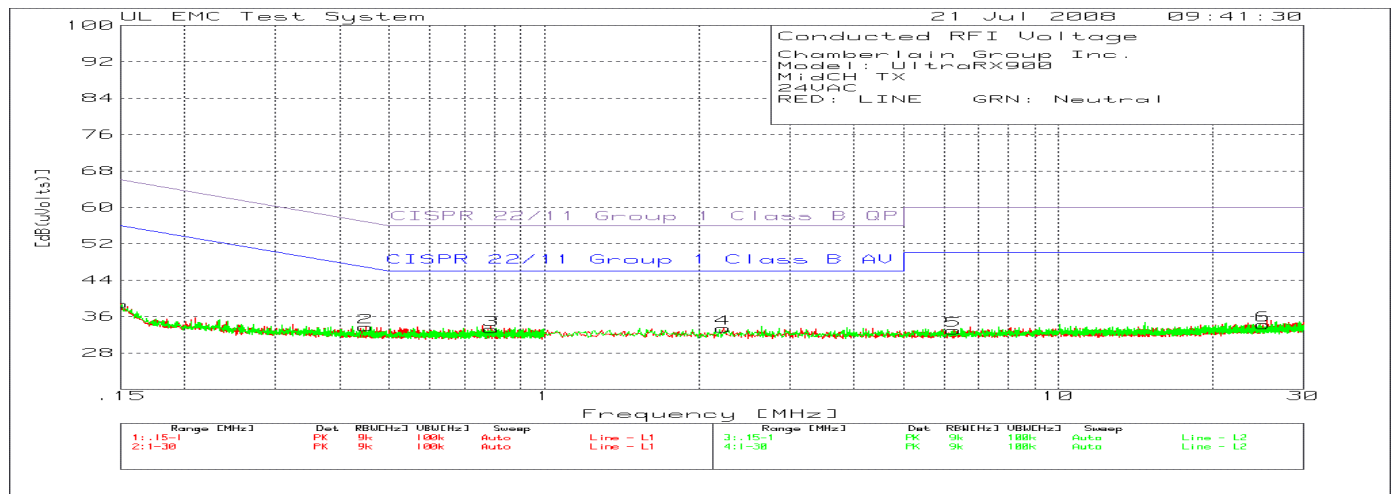
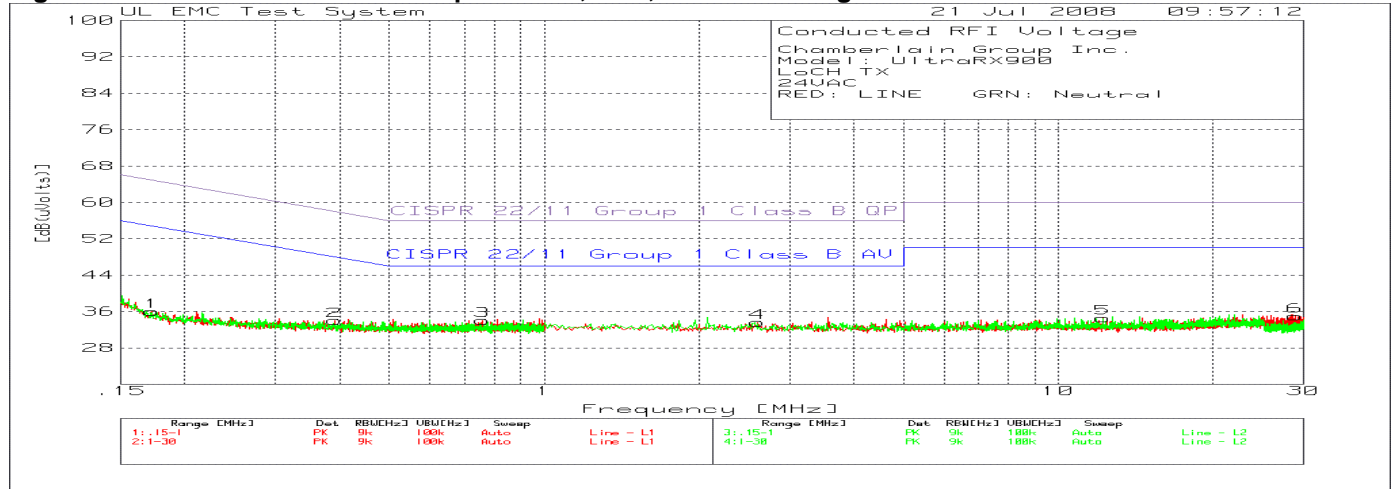


Figure 2 Conducted Emissions Graph 12VAC, Low, Middle and High Channels



No emissions were recorded close to the limit.

Figure 3 Conducted Emissions Graph 24VAC, Low, Middle and High Channels



No emissions were recorded close to the limit.

#### 4.2 Test Conditions and Results – RADIATED EMISSIONS

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 C, 15.209 & 15.249 RSS-210, Section 2.7 and A2.9	
UL LPG	80-EM-S0029	
	Frequency range	Measurement Point
Fully configured sample scanned over the following frequency range	30MHz – 1GHz	10m measurement distance
	1GHz – 10GHz	3m measurement distance
<b>Limits – 902MHz – 928MHz – Fundamental Frequency</b>		
Frequency (MHz)	Limit (dB $\mu$ V/m)	
	Quasi-Peak	Average
902 - 928	83.52	NA
<b>Limits – All Other Emissions including Harmonics</b>		
Frequency (MHz)	Limit (dB $\mu$ V/m)	
	Quasi-Peak	Average
30 - 88	29.54	NA
88 - 216	33.06	NA
216 - 960	35.56	NA
960 – 1,000	43.52	NA
Above 1,000 (FCC)	NA	54
Supplementary information: None		

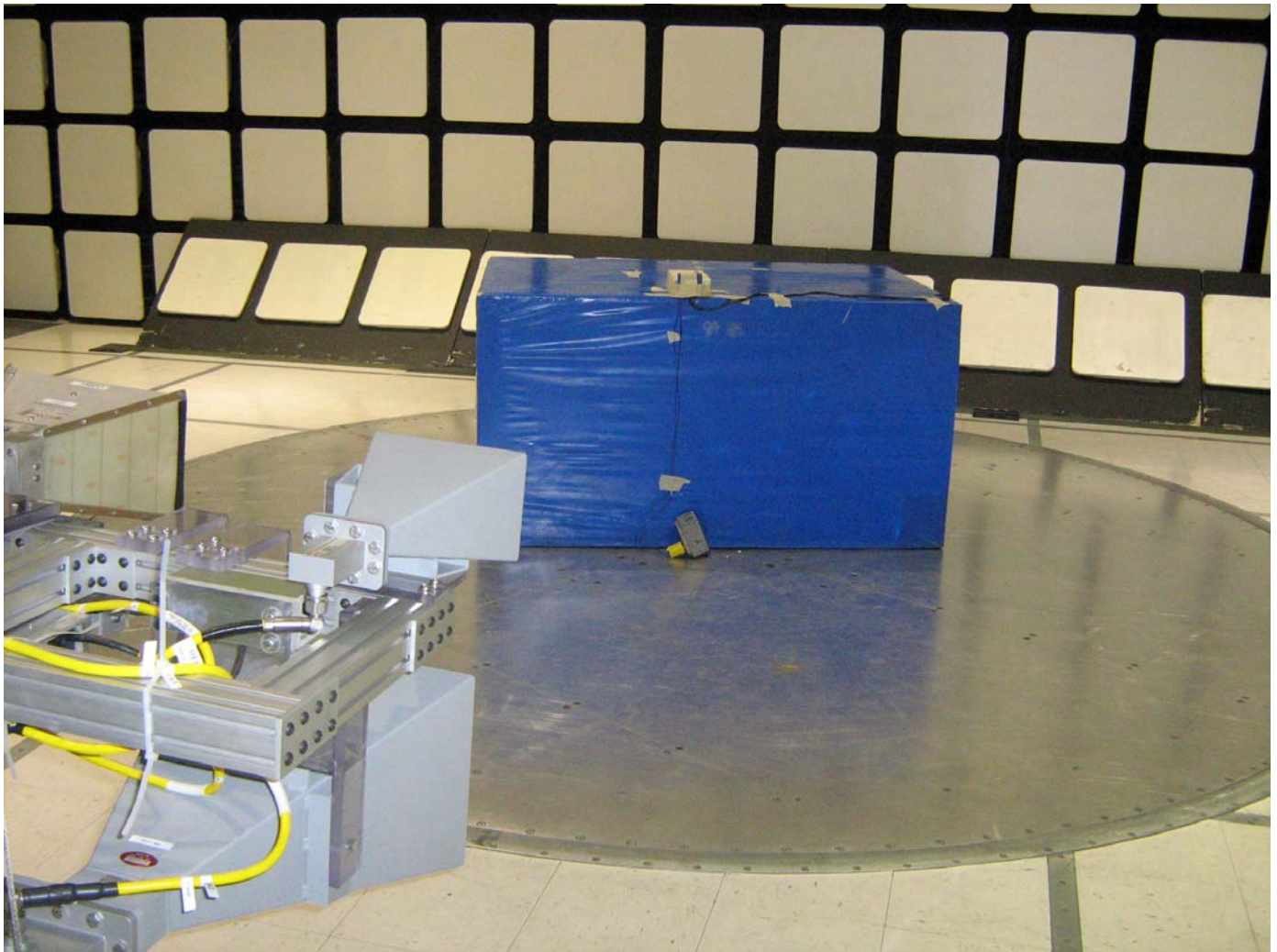
**Table 3 Radiated Emissions EUT Configuration Settings**

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

**Table 4 Radiated Emissions Test Equipment**

Description	Manufacturer	Model	Identifier
Spectrum Analyzer	HP	8566B	EMC4085
Quasi-Peak Detector	HP	85650A	EMC4016
Bicon Antenna	Chase	VBA6106A	EMC4078
Log-P Antenna	Chase	UPA6109	EMC4313
Amplified 1GHz – 10GHz System	UL w/ EMCO Horn Antenna	3117	EMC4293
Spectrum Analyzer	Rhode & Schwartz	FSEK	EMC4182
Antenna Array	UL	BOMS	EMC4276

**Figure 4 Test setup for Radiated Emissions**



**4.2.1 Radiated Emissions – Filed Strength of the Fundamental Frequency**

**Table 5 Fundamental Frequency Data Points**

Low Channel

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
903.1806	69.76 qp	-31.8	22.2	60.16	-	-	-	83.5	-	-
Azimuth: 179		Height:115		Horz		Margin [dB]:		-23.34	-	-
903.1835	75.97 qp	-31.8	22.2	66.37	-	-	-	83.5	-	-
Azimuth: 310		Height:190		Vert		Margin [dB]:		-17.13	-	-

LIMIT 4: CFR 47 Part 15 Class B 10m

pk - Peak detector  
 qp - Quasi-Peak detector  
 av - Average detector

Middle Channel

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
915.6212	68.66 qp	-31.7	22.2	59.16	-	-	-	83.5	-	-
Azimuth: 190		Height:106		Horz		Margin [dB]:		-24.34	-	-
915.6266	75.57 qp	-31.7	22.2	66.07	-	-	-	83.5	-	-
Azimuth: 300		Height:200		Vert		Margin [dB]:		-17.43	-	-

LIMIT 4: CFR 47 Part 15 Class B 10m

pk - Peak detector  
 qp - Quasi-Peak detector  
 av - Average detector

High Channel

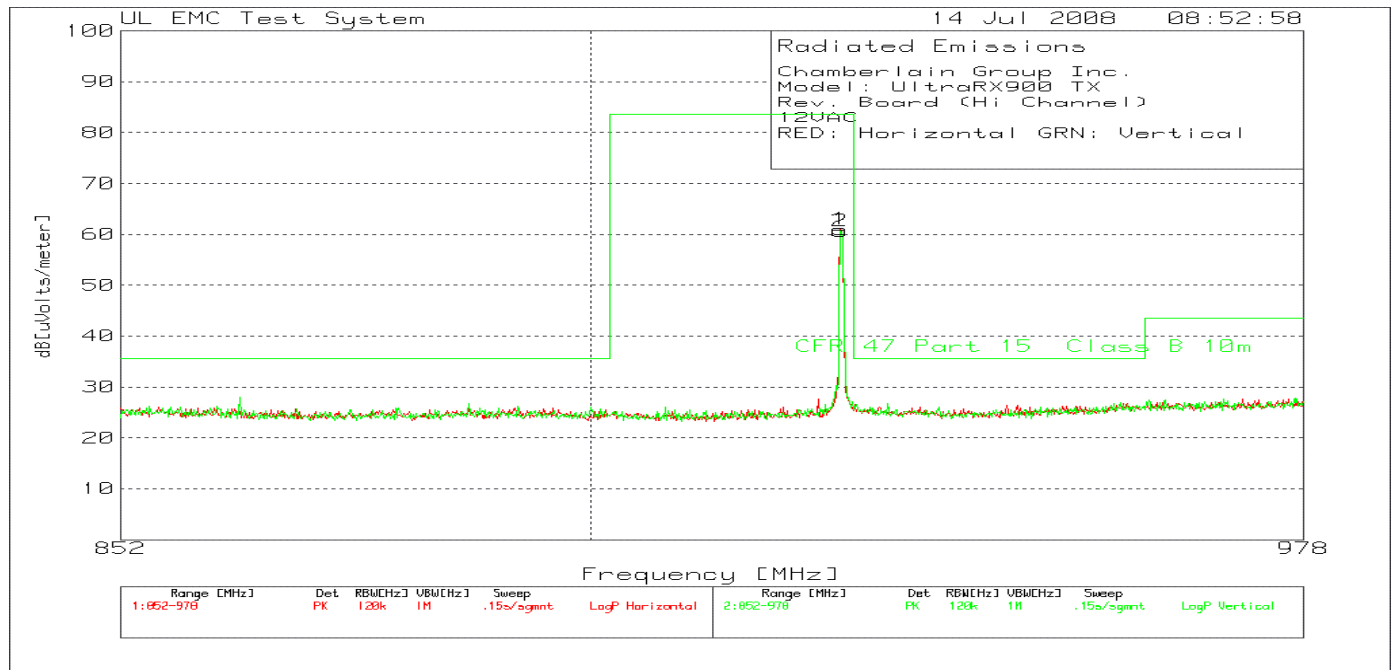
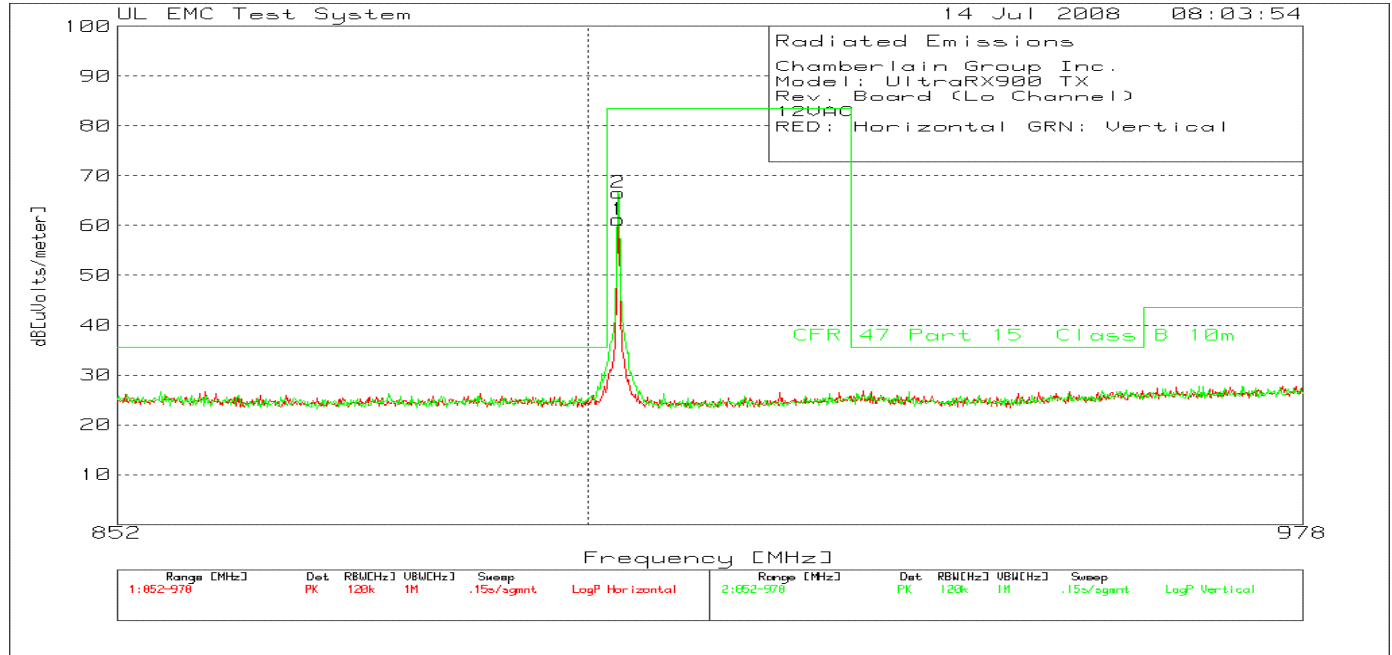
Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	Limit:1	2	3	4	5	6
926.6831	69.43 qp	-31.7	22.9	60.63	-	-	-	83.5	-	-
Azimuth: 181		Height:107		Horz		Margin [dB]:		-22.87	-	-
926.6845	65.38 qp	-31.7	22.9	56.58	-	-	-	83.5	-	-
Azimuth: 171		Height:194		Vert		Margin [dB]:		-26.92	-	-

LIMIT 4: CFR 47 Part 15 Class B 10m

pk - Peak detector  
 qp - Quasi-Peak detector  
 av - Average detector

### 4.2.2 Radiated Emissions – Band Edge Compliance

Figure 5 Band Edge Emissions Graphs



**Table 6 Band Edge Emissions Data Points**

Low Channel

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]							
903.1806	69.76 qp	-31.8	22.2	60.16	-	-	-	83.5	-	-
Azimuth: 179 Height:115 Horz					Margin [dB]:	-	-	-23.34	-	-
902	17.02 qp	-31.8	22.3	7.52	-	-	-	35.5	-	-
Azimuth: 179 Height:115 Horz					Margin [dB]:	-	-	-27.98	-	-
903.1835	75.97 qp	-31.8	22.2	66.37	-	-	-	83.5	-	-
Azimuth: 310 Height:190 Vert					Margin [dB]:	-	-	-17.13	-	-
902	24.02 qp	-31.8	22.3	14.52	-	-	-	35.5	-	-
Azimuth: 310 Height:190 Vert					Margin [dB]:	-	-	-20.98	-	-

LIMIT 4: CFR 47 Part 15 Class B 10m

pk - Peak detector  
 qp - Quasi-Peak detector  
 av - Average detector

High Channel

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]							
926.6831	69.43 qp	-31.7	22.9	60.63	-	-	-	83.5	-	-
Azimuth: 181 Height:107 Horz					Margin [dB]:	-	-	-22.87	-	-
928	17.02 qp	-31.5	23	8.52	-	-	-	35.5	-	-
Azimuth: 181 Height:107 Horz					Margin [dB]:	-	-	-26.98	-	-
926.6845	65.38 qp	-31.7	22.9	56.58	-	-	-	83.5	-	-
Azimuth: 171 Height:194 Vert					Margin [dB]:	-	-	-26.92	-	-
928	13.02 qp	-31.5	23	4.52	-	-	-	35.5	-	-
Azimuth: 171 Height:194 Vert					Margin [dB]:	-	-	-30.98	-	-

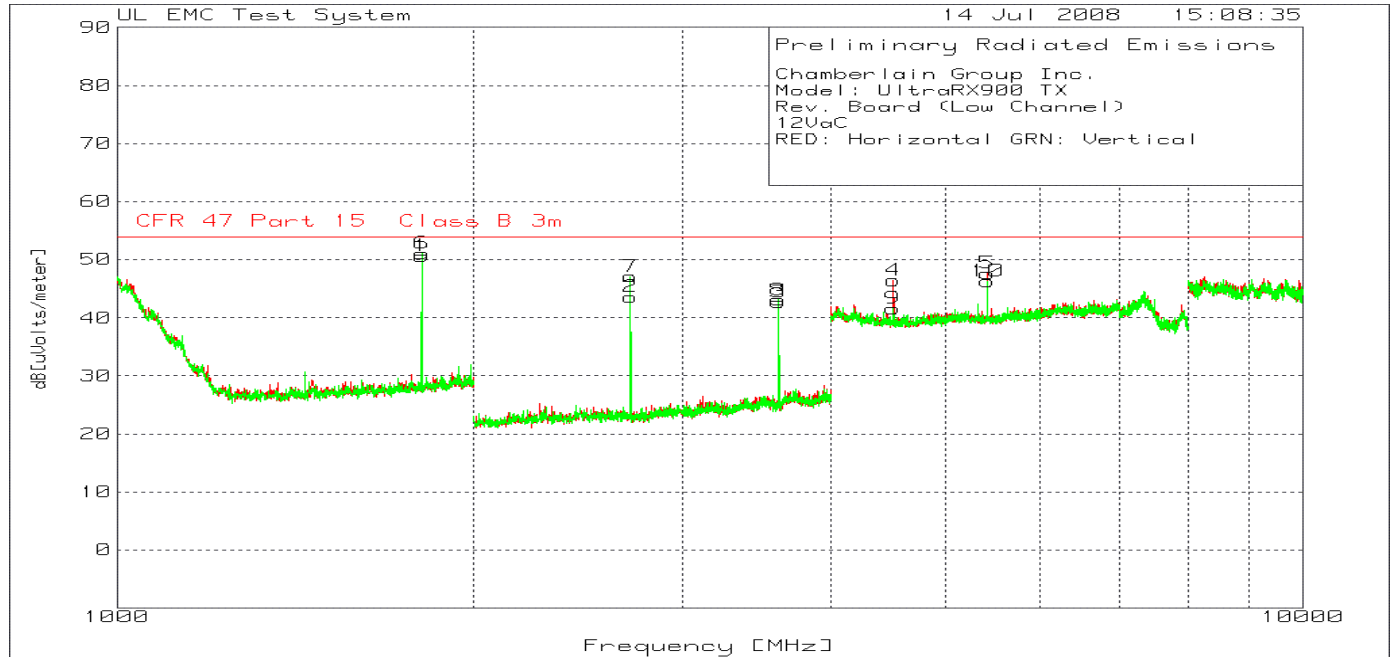
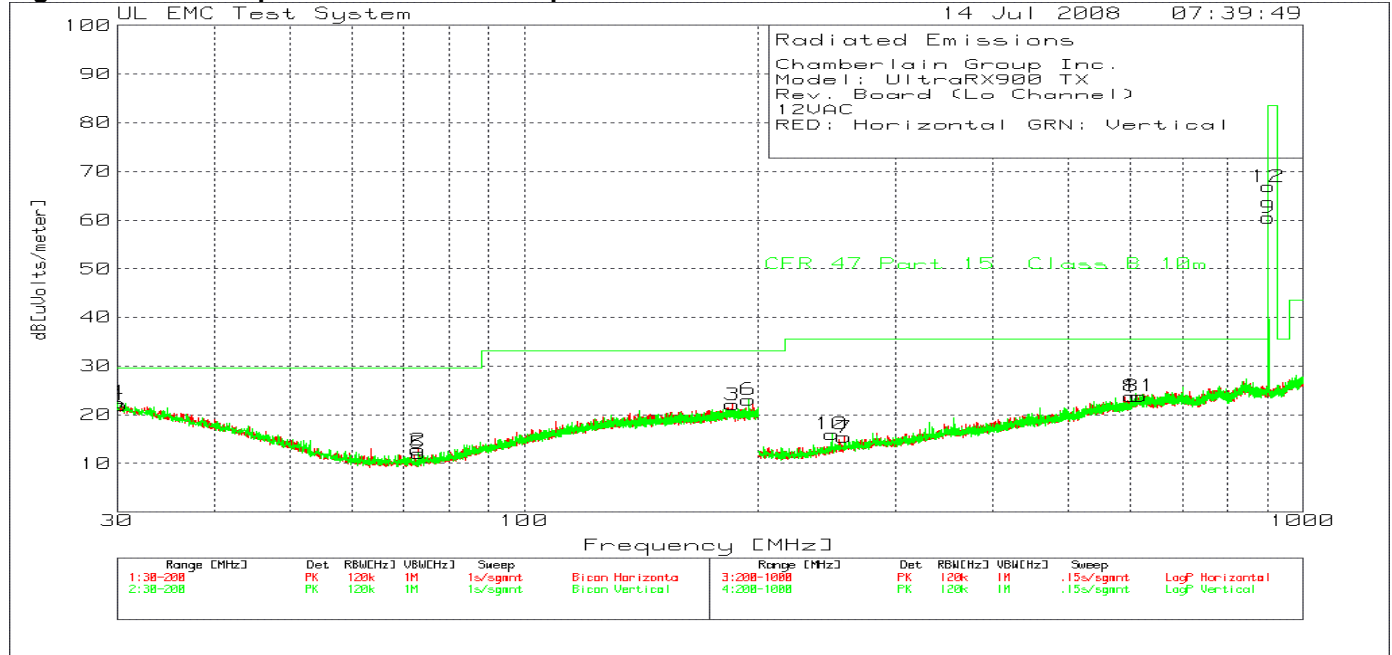
LIMIT 4: CFR 47 Part 15 Class B 10m

pk - Peak detector  
 qp - Quasi-Peak detector  
 av - Average detector



### 4.2.3 Radiated Emissions – Low Channel Spurious Emissions

#### Figure 6 Radiated Spurious Emissions Graphs



Only peaks within 6dB of the margin need to be measured.

**Table 7 Radiated Spurious Emissions Data Points**

Chamberlain Group Inc.  
 Model: UltraRX900 TX  
 Rev. Board (Low Channel)  
 12VaC

RED: Horizontal GRN: Vertical

No.	Frequency [MHz]	Test Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	Limit:1	2	3	4	5	6
1	1806.807	77.35 pk	-53.42	26.7	50.63	54	-	-	-	-	-
		Height:100 Horz		Margin [dB]		-3.37	-	-	-	-	-
2	2709.807	72.73 pk	-51.24	22.1	43.59	54	-	-	-	-	-
		Height:101 Horz		Margin [dB]		-10.41	-	-	-	-	-
3	3613.075	70.4 pk	-50.92	23.2	42.68	54	-	-	-	-	-
		Height:101 Horz		Margin [dB]		-11.32	-	-	-	-	-
4	4516.258	71.14 pk	-52.48	27.8	46.46	54	-	-	-	-	-
		Height:101 Horz		Margin [dB]		-7.54	-	-	-	-	-
5	5420.71	69.79 pk	-50.15	28	47.64	54	-	-	-	-	-
		Height:101 Horz		Margin [dB]		-6.36	-	-	-	-	-
6	1806.807	77.79 pk	-53.42	26.7	51.07	54	-	-	-	-	-
		Height:150 Vert		Margin [dB]		-2.93	-	-	-	-	-
7	2709.807	76.25 pk	-51.24	22.1	47.11	54	-	-	-	-	-
		Height:101 Vert		Margin [dB]		-6.89	-	-	-	-	-
8	3613.075	70.81 pk	-50.92	23.2	43.09	54	-	-	-	-	-
		Height:150 Vert		Margin [dB]		-10.91	-	-	-	-	-
9	4514.257	66.27 pk	-52.48	27.8	41.59	54	-	-	-	-	-
		Height:100 Vert		Margin [dB]		-12.41	-	-	-	-	-
10	5420.71	68.43 pk	-50.15	28	46.28	54	-	-	-	-	-
		Height:150 Vert		Margin [dB]		-7.72	-	-	-	-	-

LIMIT 1: CFR 47 Part 15 Class B 3m

Chamberlain Group Inc.  
 Model: UltraRX900 TX  
 Rev. Board (Low Channel)  
 12VaC

RED: Horizontal GRN: Vertical

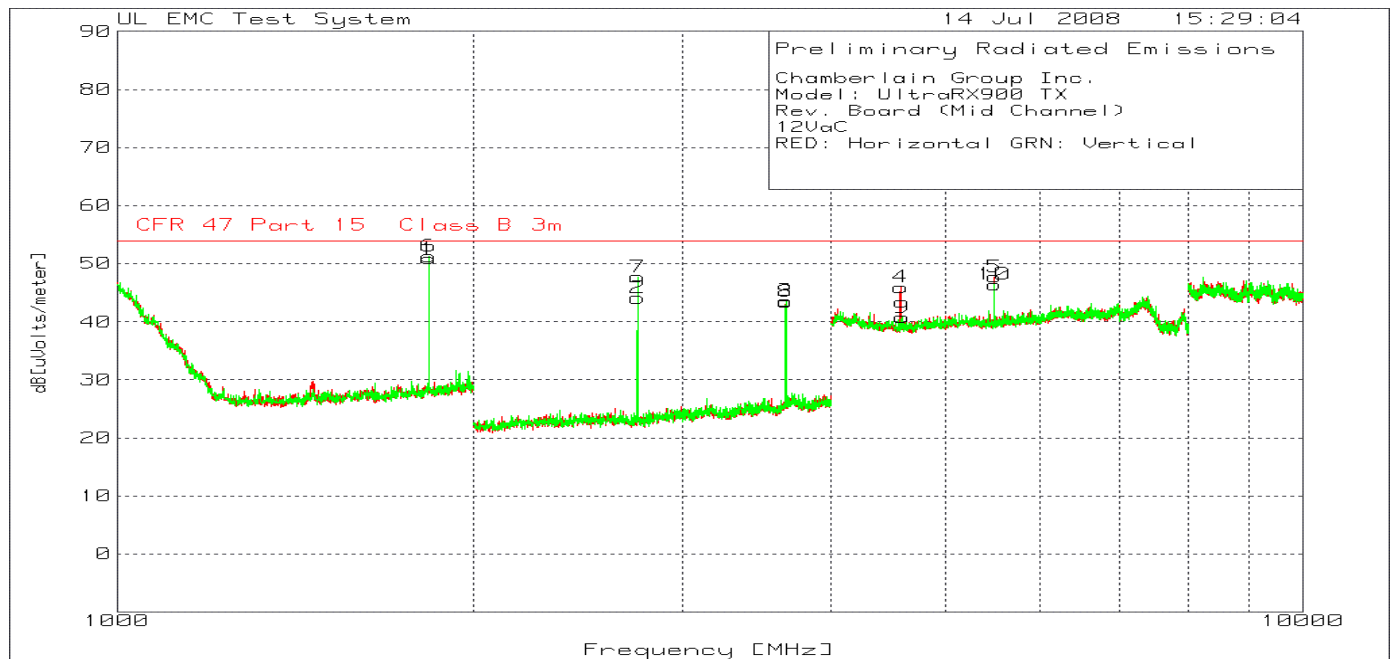
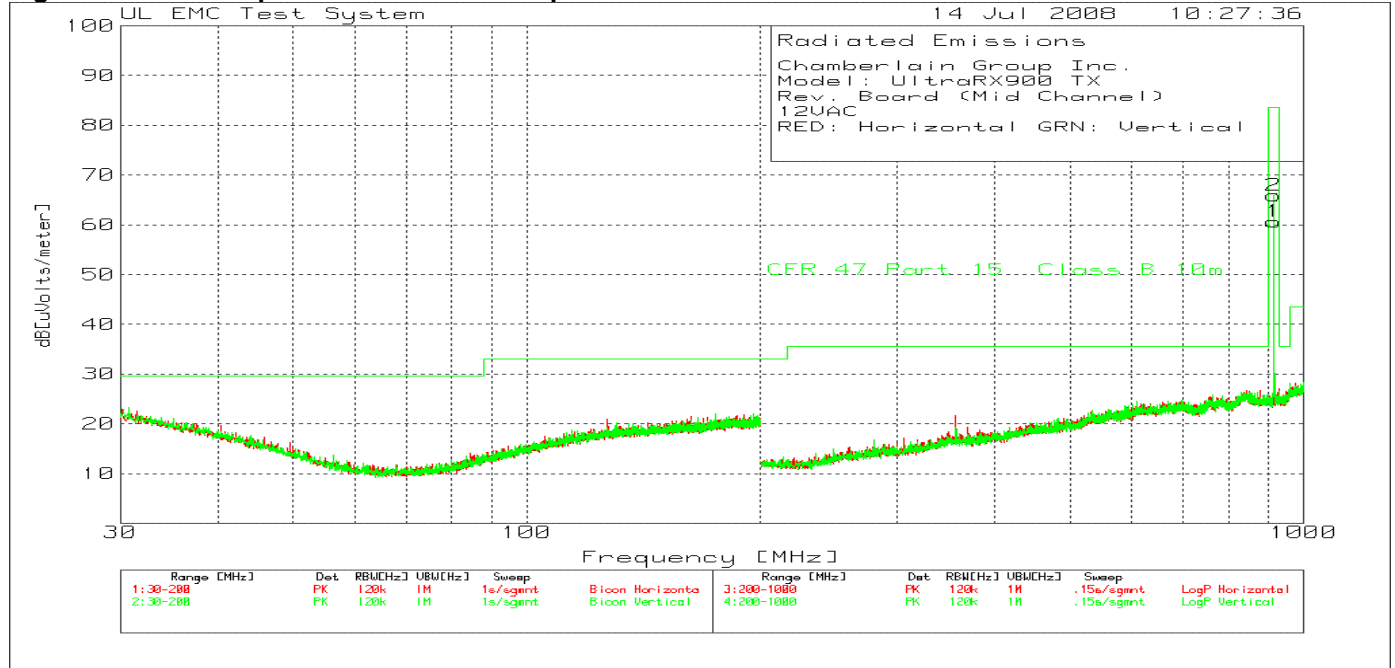
Frequency [MHz]	Test Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	Limit:1	2	3	4	5	6
1806.6323	79.38 pk	-53.42	26.7	52.66	54	-	-	-	-	-
	Azimuth: 215	Height:104 Horz		Margin [dB]:		-1.34	-	-	-	-
1806.6283	77.32 av	-53.42	26.7	50.6	54	-	-	-	-	-
	Azimuth: 215	Height:104 Horz		Margin [dB]:		-3.4	-	-	-	-
1806.4078	78.04 pk	-53.42	26.7	51.32	54	-	-	-	-	-
	Azimuth: 149	Height:103 Vert		Margin [dB]:		-2.68	-	-	-	-
1806.6202	75.73 av	-53.42	26.7	49.01	54	-	-	-	-	-
	Azimuth: 149	Height:103 Vert		Margin [dB]:		-4.99	-	-	-	-

LIMIT 1: CFR 47 Part 15 Class B 3m

pk - Peak detector  
 qp - Quasi-Peak detector  
 av - Average detector

### 4.2.4 Radiated Emissions – Middle Channel Spurious Emissions

Figure 7 Radiated Spurious Emissions Graphs



Only peaks within 6dB of the margin need to be measured.

**Table 8 Radiated Spurious Emissions Data Points**

Chamberlain Group Inc.  
 Model: UltraRX900 TX  
 Rev. Board (Mid Channel)  
 12VaC  
 RED: Horizontal GRN: Vertical

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	Limit:1	2	3	4	5	6
1	1831.832	77.47 pk	-53.44	26.8	50.83	54	-	-	-	-	-
		Height:103	Horz	Margin [dB]		-3.17	-	-	-	-	-
2	2747.165	73.18 pk	-51.18	22.1	44.1	54	-	-	-	-	-
		Height:101	Horz	Margin [dB]		-9.9	-	-	-	-	-
3	3663.776	69.71 pk	-49.54	23.4	43.57	54	-	-	-	-	-
		Height:101	Horz	Margin [dB]		-10.43	-	-	-	-	-
4	4578.289	70.68 pk	-52.47	27.7	45.91	54	-	-	-	-	-
		Height:100	Horz	Margin [dB]		-8.09	-	-	-	-	-
5	5494.747	69.87 pk	-50.23	28.1	47.74	54	-	-	-	-	-
		Height:100	Horz	Margin [dB]		-6.26	-	-	-	-	-
6	1831.832	77.92 pk	-53.44	26.8	51.28	54	-	-	-	-	-
		Height:101	Vert	Margin [dB]		-2.72	-	-	-	-	-
7	2747.165	76.81 pk	-51.18	22.1	47.73	54	-	-	-	-	-
		Height:101	Vert	Margin [dB]		-6.27	-	-	-	-	-
8	3663.776	69.57 pk	-49.54	23.4	43.43	54	-	-	-	-	-
		Height:150	Vert	Margin [dB]		-10.57	-	-	-	-	-
9	4590.295	65.44 pk	-52.4	27.7	40.74	54	-	-	-	-	-
		Height:149	Vert	Margin [dB]		-13.26	-	-	-	-	-
10	5494.747	68.55 pk	-50.23	28.1	46.42	54	-	-	-	-	-
		Height:101	Vert	Margin [dB]		-7.58	-	-	-	-	-

LIMIT 1: CFR 47 Part 15 Class B 3m

Chamberlain Group Inc.  
 Model: UltraRX900 TX  
 Rev. Board (Mid Channel)  
 12VaC  
 RED: Horizontal GRN: Vertical

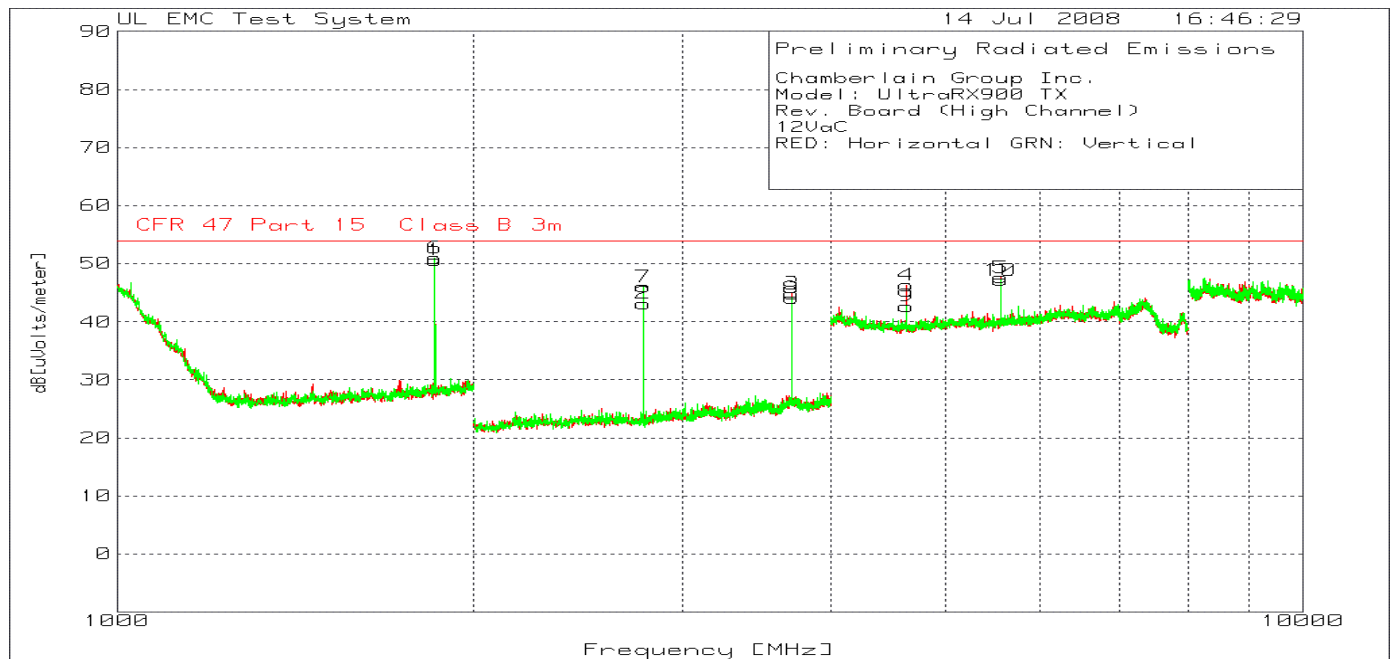
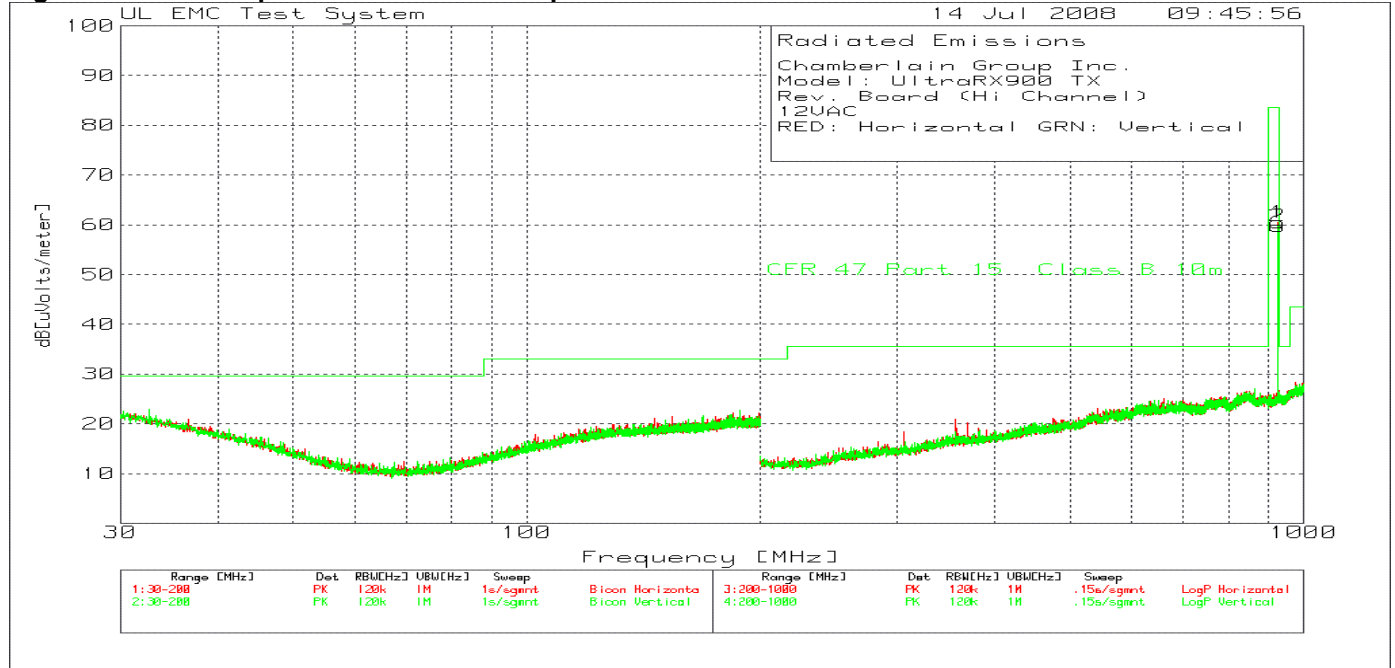
Test	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	Limit:1	2	3	4	5	6
1 - 2GHz 1000 - 2000MHz	1831.6633	79.03 pk	-53.44	26.8	52.39	54	-	-	-	-	-
	Azimuth: 210	Height:100	Horz	Margin [dB]:		-1.61	-	-	-	-	-
	1831.511	77.13 av	-53.44	26.8	50.49	54	-	-	-	-	-
	Azimuth: 210	Height:100	Horz	Margin [dB]:		-3.51	-	-	-	-	-
	1831.3507	78.8 pk	-53.44	26.8	52.16	54	-	-	-	-	-
	Azimuth: 20	Height:100	Vert	Margin [dB]:		-1.84	-	-	-	-	-
	1831.503	76.91 av	-53.44	26.8	50.27	54	-	-	-	-	-
	Azimuth: 20	Height:100	Vert	Margin [dB]:		-3.73	-	-	-	-	-

LIMIT 1: CFR 47 Part 15 Class B 3m

pk - Peak detector  
 qp - Quasi-Peak detector  
 av - Average detector

### 4.2.5 Radiated Emissions – High Channel Spurious Emissions

#### Figure 8 Radiated Spurious Emissions Graphs



Only peaks within 6dB of the margin need to be measured.

**Table 9 Radiated Spurious Emissions Data Points**

Chamberlain Group Inc.  
 Model: UltraRX900 TX  
 Rev. Board (High Channel)  
 12VaC  
 RED: Horizontal GRN: 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
1	1853.854	77.01 pk	-53.32	26.9	50.59	54	-	-	-	-	-
		Height:100	Horz	Margin [dB]		-3.41	-	-	-	-	-
2	2780.52	71.94 pk	-51.02	22.2	43.12	54	-	-	-	-	-
		Height:101	Horz	Margin [dB]		-10.88	-	-	-	-	-
3	3707.805	70.85 pk	-49.54	23.5	44.81	54	-	-	-	-	-
		Height:101	Horz	Margin [dB]		-9.19	-	-	-	-	-
4	4634.317	70.94 pk	-52.34	27.7	46.3	54	-	-	-	-	-
		Height:100	Horz	Margin [dB]		-7.7	-	-	-	-	-
5	5560.78	69.83 pk	-50.52	28.3	47.61	54	-	-	-	-	-
		Height:100	Horz	Margin [dB]		-6.39	-	-	-	-	-
6	1853.854	77.39 pk	-53.32	26.9	50.97	54	-	-	-	-	-
		Height:100	Vert	Margin [dB]		-3.03	-	-	-	-	-
7	2780.52	74.87 pk	-51.02	22.2	46.05	54	-	-	-	-	-
		Height:100	Vert	Margin [dB]		-7.95	-	-	-	-	-
8	3707.805	70.12 pk	-49.54	23.5	44.08	54	-	-	-	-	-
		Height:150	Vert	Margin [dB]		-9.92	-	-	-	-	-
9	4632.316	67.27 pk	-52.32	27.7	42.65	54	-	-	-	-	-
		Height:100	Vert	Margin [dB]		-11.35	-	-	-	-	-
10	5560.78	69.36 pk	-50.52	28.3	47.14	54	-	-	-	-	-
		Height:100	Vert	Margin [dB]		-6.86	-	-	-	-	-

LIMIT 1: CFR 47 Part 15 Class B 3m

Chamberlain Group Inc.  
 Model: UltraRX900 TX  
 Rev. Board (High Channel)  
 12VaC  
 RED: Horizontal GRN: Vertical

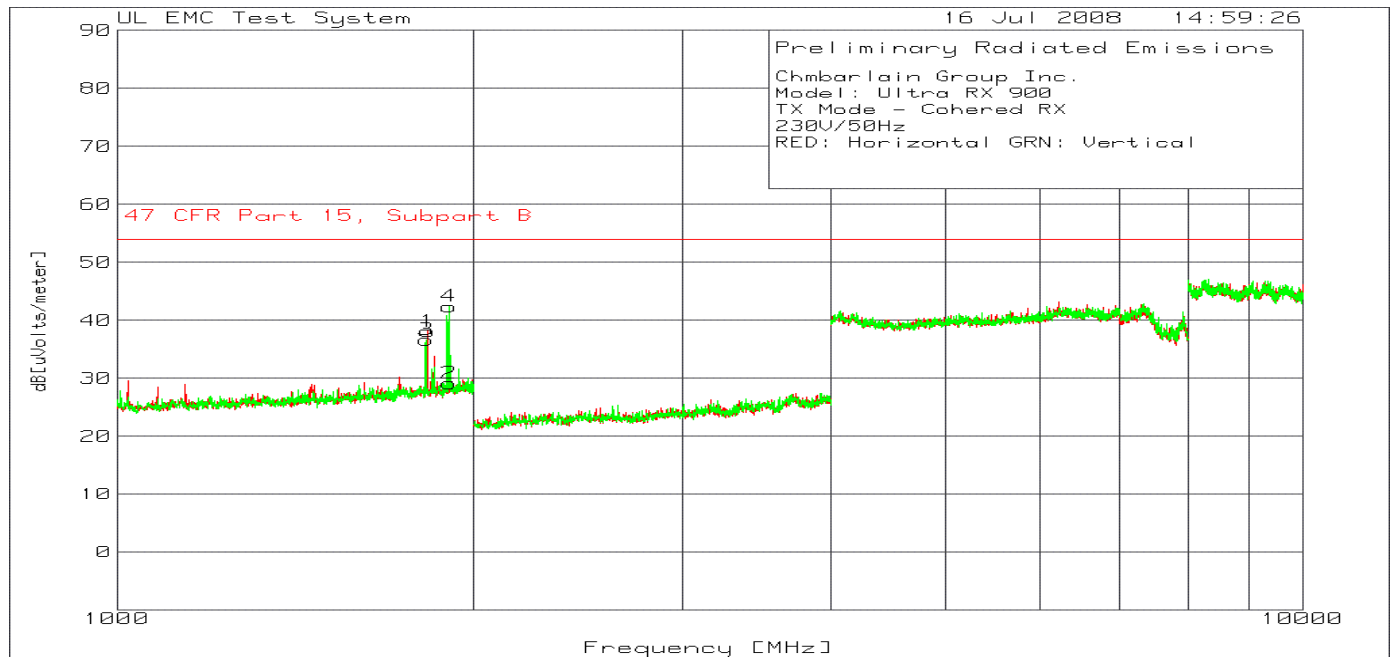
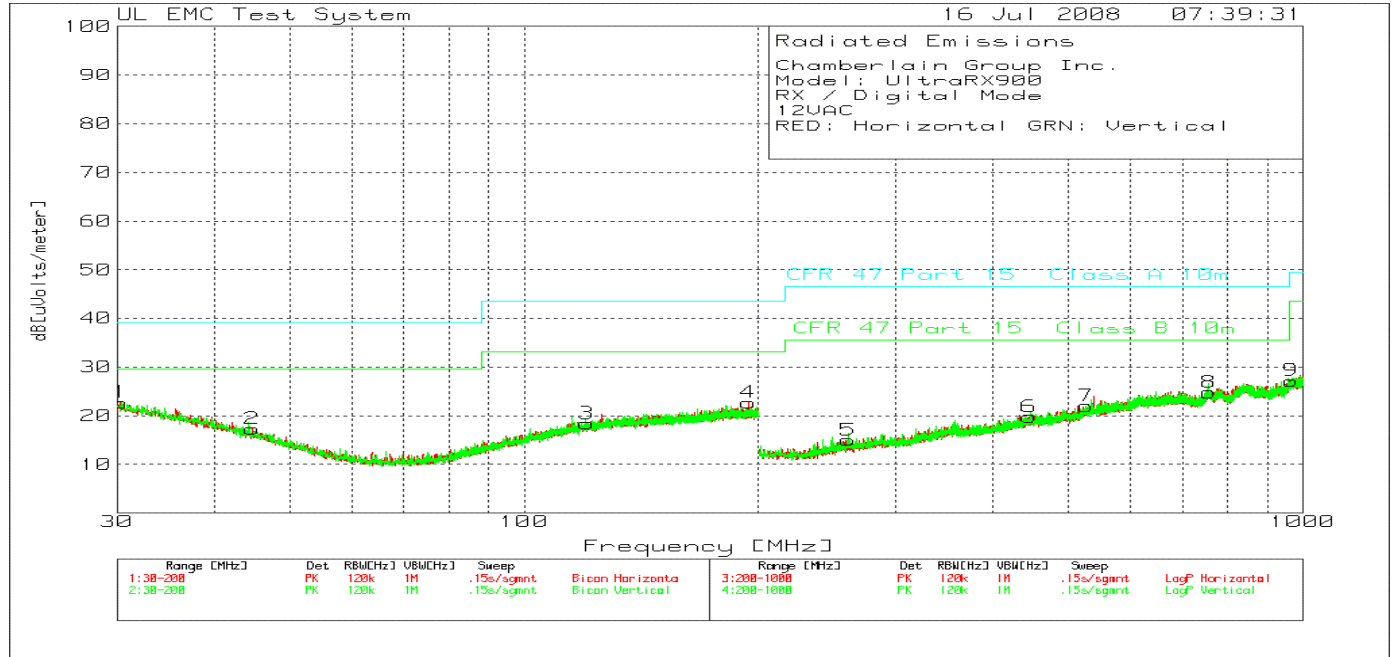
Test	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	Limit:1	2	3	4	5	6
	1853.483	79.31 pk	-53.32	26.9	52.89	54	-	-	-	-	-
	Azimuth: 211	Height:101	Horz	Margin [dB]:		-1.11	-	-	-	-	-
	1853.6593	77.45 av	-53.32	26.9	51.03	54	-	-	-	-	-
	Azimuth: 211	Height:101	Horz	Margin [dB]:		-2.97	-	-	-	-	-
	1853.5631	78.8 pk	-53.32	26.9	52.38	54	-	-	-	-	-
	Azimuth: 343	Height:100	Vert	Margin [dB]:		-1.62	-	-	-	-	-
	1853.6273	76.92 av	-53.32	26.9	50.5	54	-	-	-	-	-
	Azimuth: 343	Height:100	Vert	Margin [dB]:		-3.5	-	-	-	-	-

LIMIT 1: CFR 47 Part 15 Class B 3m

pk - Peak detector  
 qp - Quasi-Peak detector  
 av - Average detector

### 4.2.6 Radiated Emissions – Standby / Receive Mode

#### Figure 9 Radiated Emissions Graph



**Table 10 Radiated Emissions Data Points**

Chmbarlain Group Inc.  
 Model: Ultra RX 900  
 TX Mode - Cohered RX  
 230V/50Hz  
 RED: Horizontal GRN: 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
1	1828.829	11.31 pk	0	26.8	38.11	54	-	-	-	-	-
		Height:101	Horz	Margin [dB]		-15.89	-	-	-	-	-
2	1906.907	2.04 pk	0	27.1	29.14	54	-	-	-	-	-
		Height:101	Horz	Margin [dB]		-24.86	-	-	-	-	-
3	1822.823	9.83 pk	0	26.8	36.63	54	-	-	-	-	-
		Height:150	Vert	Margin [dB]		-17.37	-	-	-	-	-
4	1905.906	15.24 pk	0	27.1	42.34	54	-	-	-	-	-
		Height:200	Vert	Margin [dB]		-11.66	-	-	-	-	-

LIMIT 1: 47 CFR Part 15, Subpart B

pk - Peak detector  
 qp - Quasi-Peak detector  
 av - Average detector



**4.3 Test Conditions and Results – Occupied Bandwidth / 99% Bandwidth**

Test Description	Measurements were made in the laboratory environment. A Dipole (or equivalent) antenna tuned to the transmit frequency was attached to the input of a spectrum analyzer. The device was operated and the spectrum analyzer resolution bandwidth set per the appropriate standard.		
Basic Standard	47 CFR Part 15.215 (c) RSS-Gen Section 4.6		
<b>Occupied Bandwidth / 99% Bandwidth Measurement</b>			
The 20dB down measurement must fit in the allocated band.			

**Table 11 Occupied Bandwidth / 99% Bandwidth Configuration Settings**

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

**Table 12 Occupied Bandwidth / 99% Bandwidth Spectrum Analyzer Settings**

Resolution Bandwidth (MHz)	Occupied Bandwidth Requirements	
	dBc	%
0.01	-20	99
Supplementary information: None		

**Table 13 Occupied Bandwidth / 99% Bandwidth Test Equipment**

Test Equipment Used			
Description	Manufacturer	Model	Identifier
Spectrum Analyzer	Rohde & Scharz	ESU	29026/2008
Near Filed Loop Antenna	UL	-	-

**Table 14 Occupied Bandwidth / 99% BW Measurement Results**

Measurement	Low Channel	Middle Channel	High Channel	Low Channel -20dB Frequency	High Channel -20dB Frequency
20dB Bandwidth	317.308kHz	317.308kHz	317.308kHz	903.123kHz	926.942kHz
99% Bandwidth	927.885kHz	644.231kHz	384.615kHz	-	-

**Figure 10 Test Setup for Occupied Bandwidth**

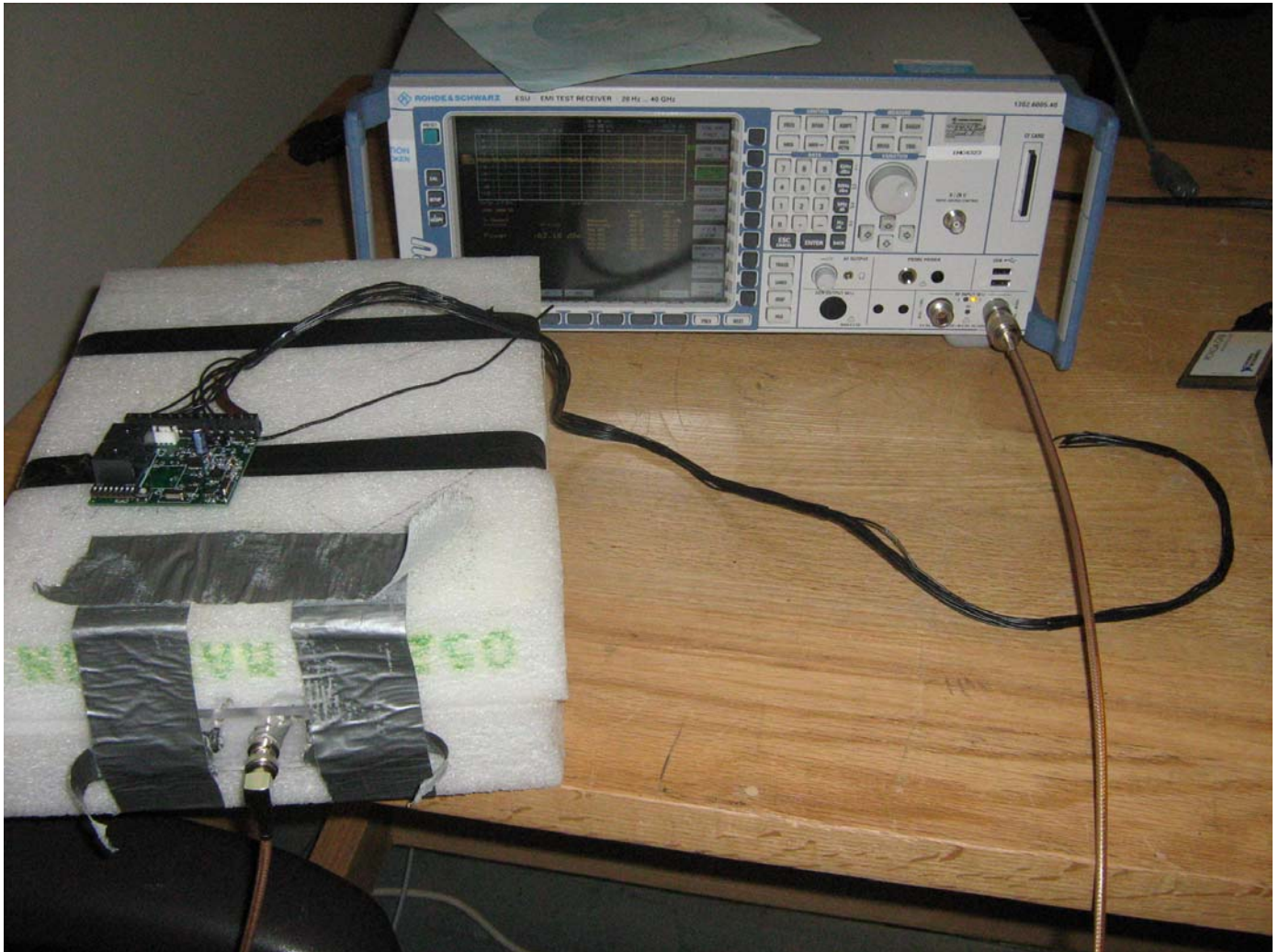
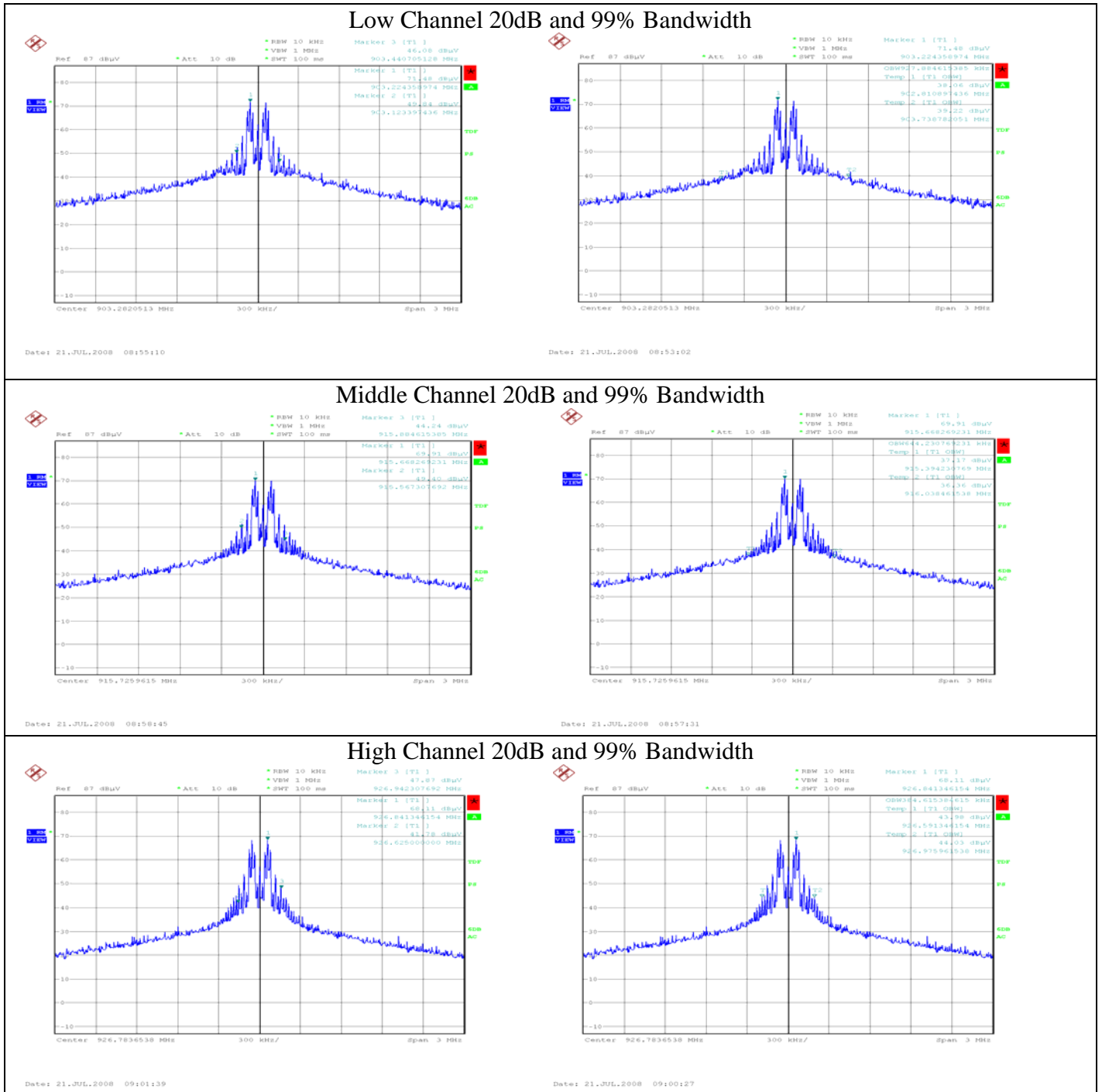


Figure 11 20dB Bandwidth Graph



## 5.0 IMMUNITY TEST RESULTS

Immunity testing was not requested nor required.

## Appendix A

### Accreditations and Authorizations



NVLAP Lab code: 100414-0

NVLAP: Recognized under the National Voluntary Laboratory Accreditation Program (NVLAP) for satisfactory compliance with criteria established in Title 15, Part 285 Code of Federal Regulations. These criteria encompass the requirements of ISO/IEC EN17025 and the relevant requirements of ISO 9002 (ANSI/ASQC Q92-1987) as suppliers of calibration or test results. 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