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

www.ul.com/emc
(847) 272-8800

Job Number:	866546
File Number:	E311681
Project Number:	08NK05588
Date:	11 March 2008
Model:	Phoenix

Electromagnetic Compatibility Test Report

For

Callpod Inc.

Test Report Details

Tests Performed By:	**Underwriters Laboratories Inc.** **333 Pfingsten Rd.** **Northbrook, IL 60062**
Tests Performed For:	**Callpod Inc.** Suite 260 850 W. Jackson Blvd Chicago, IL 60607
Applicant Contact: Phone: E-mail:	**Mr. Lourans Aoraha** **312-829-2680** **laoraha@callpod.com**
Test Report Date:	**11 March 2008**
Product Type:	**Bluetooth Conferencing Device**
Product standards	**47 CFR Part 15.247, Subpart C** **RSS-210**
Model Number:	**Phoenix**
EUT Category:	**Low Power Part 15 Transmitter**
Testing Start Date:	**14 January 2008**
Date Testing Complete:	**25 February 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.

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

Report Directory

Report Revision History

Revision Date	Description	Revised By	Revision Reviewed By
none			

1.0 G E N E R A L - Product Description

1.1 Equipment Description

The Equipment Under Test (EUT) was a BlueTooth Conferencing Device capable of connecting together 5 BlueTooth Headsets and a BlueTooth enabled phone.

1.2 Device Configuration During Test

1.2.1 Equipment Used During Test:

Use	Product Type	Manufacturer	Model	Comments
EUT	Bluetooth Conferencing Device	Callpod Inc.	Phoenix	None
AE	External Power Supply	Callpod Inc.	HK-H1-A06	None

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

1.2.2 Input/Output Ports:

Port #	Name	Type*	Cable Max. >3m (Y/N)	Cable Shielded (Y/N)	Comments
0	Enclosure	N/E	—	—	None
1	Mains	DC	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)	Frequency (DC/AC-Hz)	Phases (#)	Comments
1	120V	AC	1	With External Power Supply
2	3.6V	DC	-	Internal Battery

1.3 EUT Configurations

Mode #	Description
1	Configured in Semi-Anechoic chamber on 80cm non-conductive support
2	Configured on test bench connected to S/A thru coaxial cable

1.4 EUT Operation Modes

Mode #	Description
1	*Transmitting
2	Receiving
3	Charging

*All measurements were done with the EUT power setting as follow: EXT=148, INT=48. All final radiated and conducted spurious emissions were conducted with dh5 modulation. This modulation has the highest power level and highest spurious emissions were recorded with this modulation in place.

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

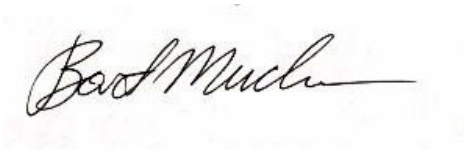
Standard Number	Standard Name	Standard Date
FCC Part 15, Subpart C	Code of Federal Regulations, Part 15, Radio Frequency Devices	2007
RSS-210, Issue 7	Low-Power Licence-Exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment	June 2007
RSS-Gen, Issue 2	General Requirements and Information for the Certification of Radiocommunication Equipment	June 2007

*In addition to the above standards, FCC DA 00-705, Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems was used.

2.4 Results Summary

Requirement – Test	Requirement – Test	Result (Compliant / Non-Compliant)*
Conducted Emissions	47 CFR Part 15.207 RSS-Gen 7.2.2	Compliant
Carrier Frequency Separation	47 CFR Part 15.247(a)(1) RSS-210 A8.1(b)	Compliant
20dB Bandwidth	47 CFR Part 15.247(a)(1) RSS-210 A8.1(a)	Compliant
Number of Hopping Frequency	47 CFR Part 15.247(a)(1)(iii) RSS-210 A8.1(d)	Compliant
Dwell Time	47 CFR Part 15.247(a)(1)(iii) RSS-210 A8.1(d)	Compliant
Maximum Peak Output Power	47 CFR Part 15.247(b)(1) RSS-210 A8.4(2)	Compliant
Band Edge Compliance	47 CFR Part 15.247(d) RSS-210 A8.5	Compliant
Spurious Emissions	47 CFR Part 15.247(d) RSS-210 A8.5 RSS-Gen 7.2.1 and 7.2.3	Compliant
99% Occupied Bandwidth	RSS-Gen 4.6.1	Compliant

Test Engineer:



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

Reviewer:

Jack Steiner (Ext.42307)
Section Manager
International EMC Services
Conformity Assessment 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 and C, Radio Frequency Devices

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

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	FCC Part 15, Subpart C, 15.207 RSS-Gen 7.2.2	
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	1, 2, 3

Supplementary information: None

Table 2 Conducted Emissions Test Equipment

Description	Manufacturer	Model	Identifier
Spectrum Analyzer / Preselector	Advantest	R3361D / R3551	EMC4259
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 (Transceiver and Charging)

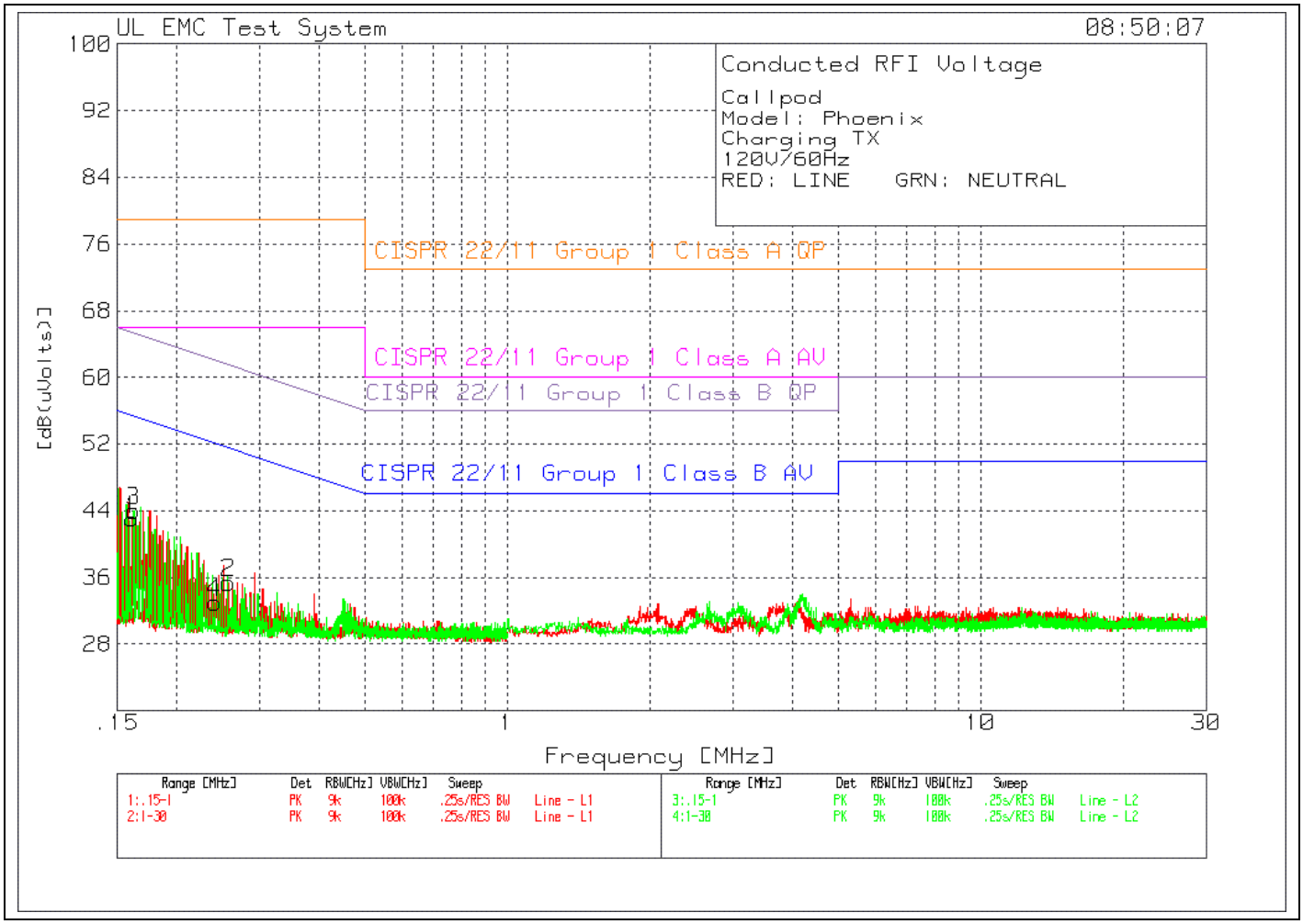


Table 3 Conducted Emissions Data Points

Callpod
Model: Phoenix
Charging TX
120V/60Hz
RED: LINE GRN: NEUTRAL

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level [dB(uVolts)]	Limit:1	2	3	4	5	6
Line											
1	.16137	31.3 pk	10.1	1.6	43	79	66	65.4	55.4	-	-
				Margin [dB]		-36	-23	-22.4	-12.4	-	-
2	.25796	24.5 pk	10.1	.8	35.4	79	66	61.5	51.5	-	-
				Margin [dB]		-43.6	-30.6	-26.1	-16.1	-	-
Neutral											
3	.16289	32.2 pk	10.1	1.7	44	79	66	65.3	55.3	-	-
				Margin [dB]		-35	-22	-21.3	-11.3	-	-
4	.24173	22 pk	10.1	.9	33	79	66	62	52	-	-
				Margin [dB]		-46	-33	-29	-19	-	-

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
qp - Quasi-Peak detector
av - Average detector

Quasi-peak or Average measurements were considered not necessary.

4.2 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. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.
Basic Standard	47 CFR Part 15.247(a)(1) RSS-210, A8.1(b)

Table 4 Carrier Frequency Separation Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
2	2	1
Supplementary information: Separation frequencies were measured for each channel and then averaged.		

Table 5 Carrier Frequency Separation Test Equipment

Test Equipment Used			
Description	Manufacturer	Model	Identifier
Spectrum Analyzer	Agilent	E7405A	EMC4242
Attenuator	Pasternek	10dB	None

Table 6 Carrier Frequency Separation Results

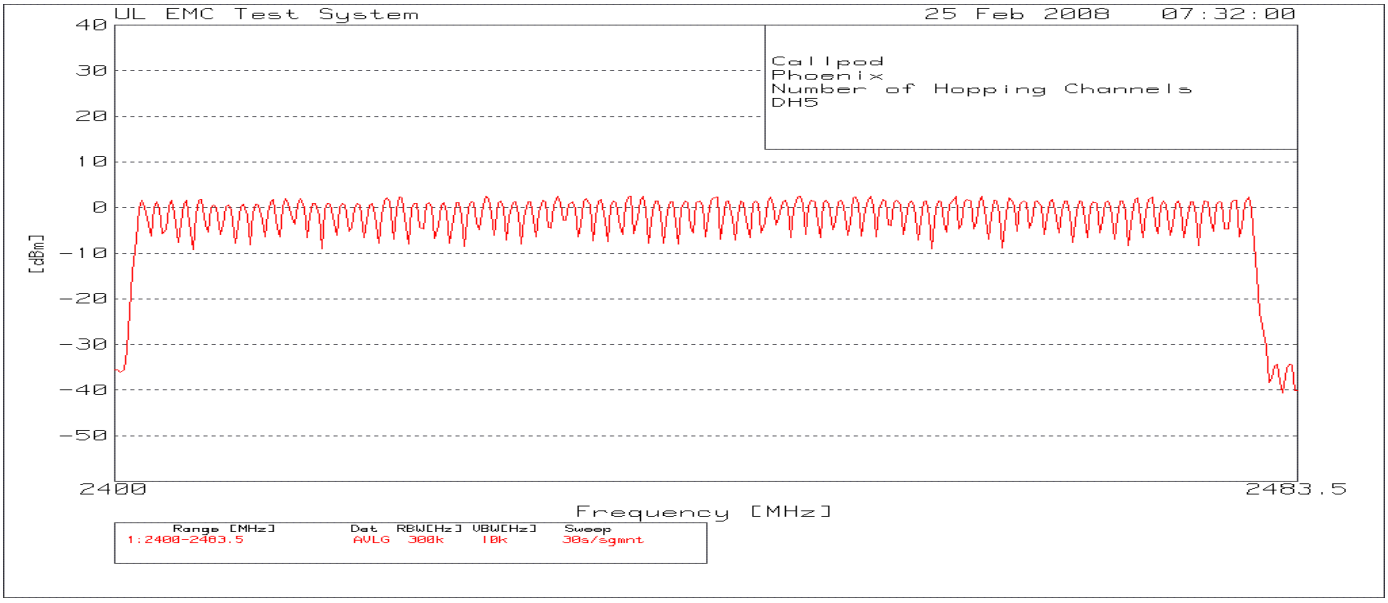
Mode	Channel	Carrier Frequency Separation Limit	Average Separation
DH1, DH3, DH5	All Channels	Minimum 20dB BW or 2/3 of the 20dB BW	*1.000 MHz
Inqury	Between CH6 and CH7	Minimum 20dB BW or 2/3 of the 20dB BW	16.908 MHz
Inquiry	All Other Channels	Minimum 20dB BW or 2/3 of the 20dB BW	*2.004MHz

*Every peak from the scan was selected and frequency separation was determined.

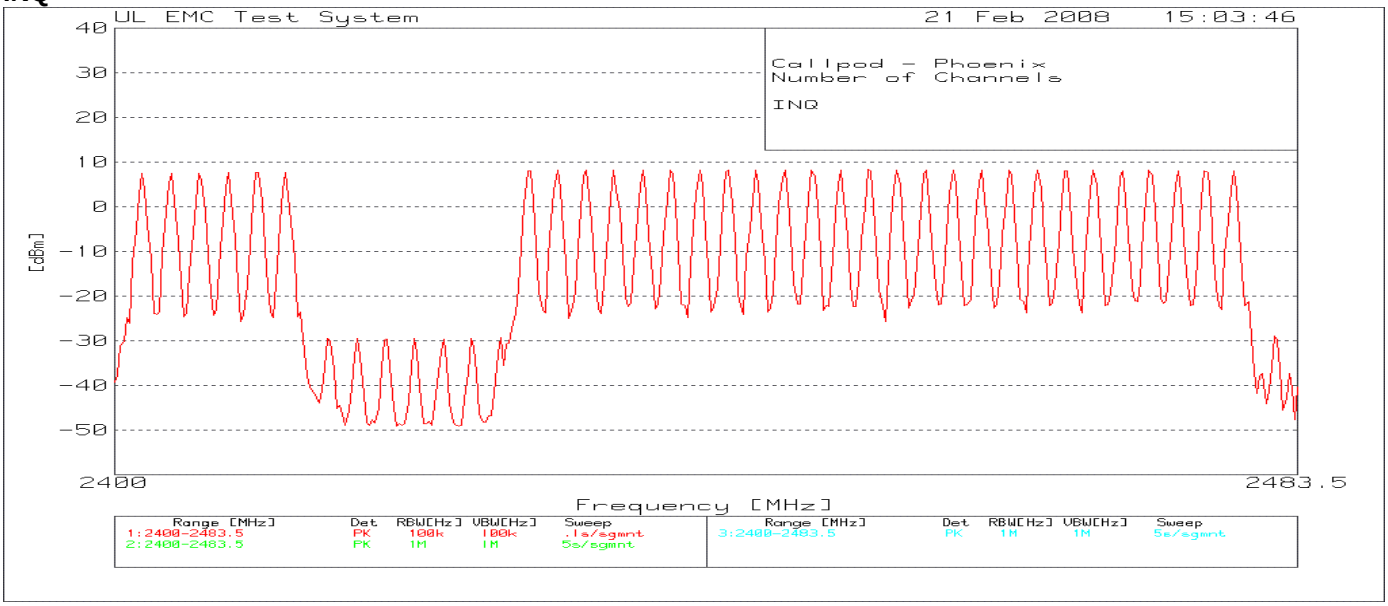
Figure 3 Test Setup for Carrier Frequency Separation

Figure 4 Carrier Frequency Separation Graphs

DH5



INQ



4.3 Test Conditions and Results – 20dB Bandwidth

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. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.
Basic Standard	47 CFR Part 15.247(a)(1) RSS-210, A8.1(b)

Table 7 20dB Bandwidth Configuration Settings

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

Table 8 20dB Bandwidth Test Equipment

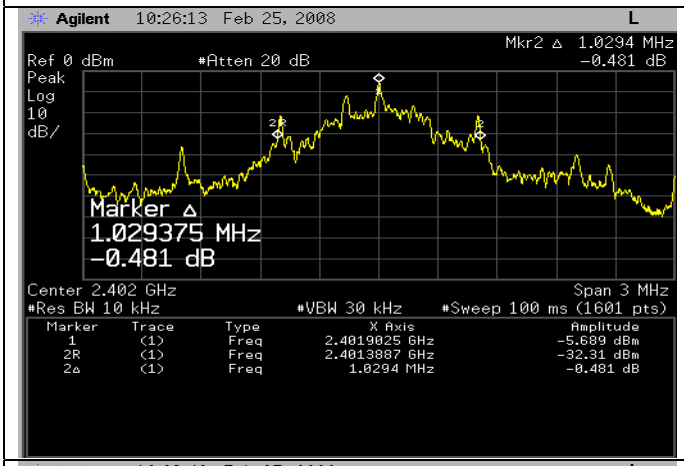
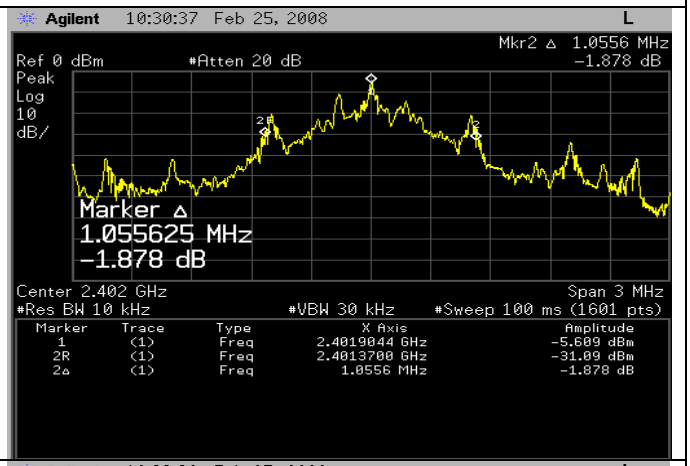
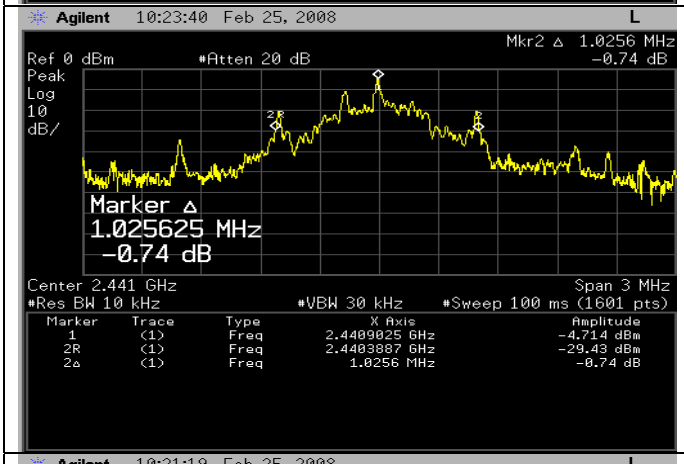
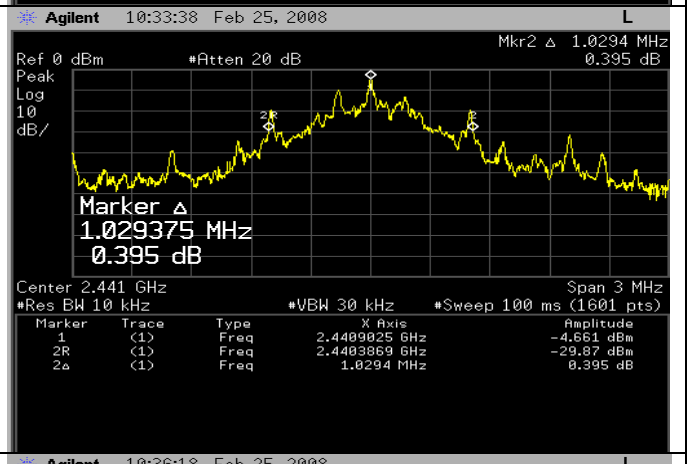
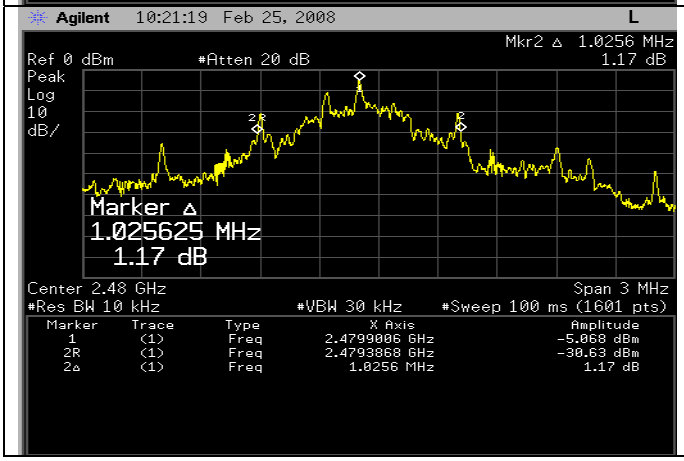
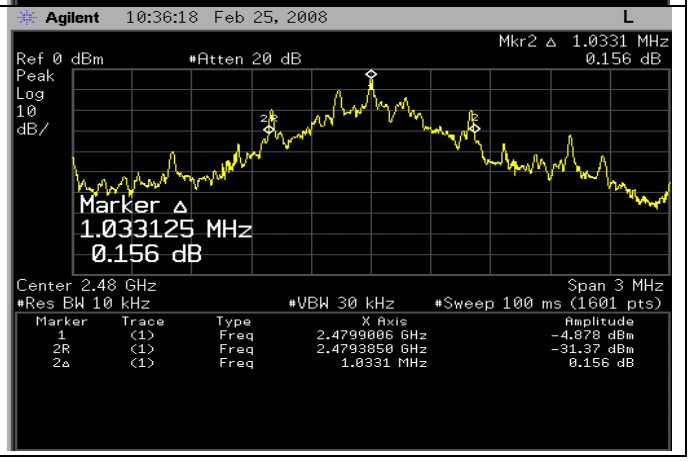
Description	Manufacturer	Model	Identifier
Spectrum Analyzer	Agilent	E7405A	EMC4242
Attenuator	Pasternek	10dB	None

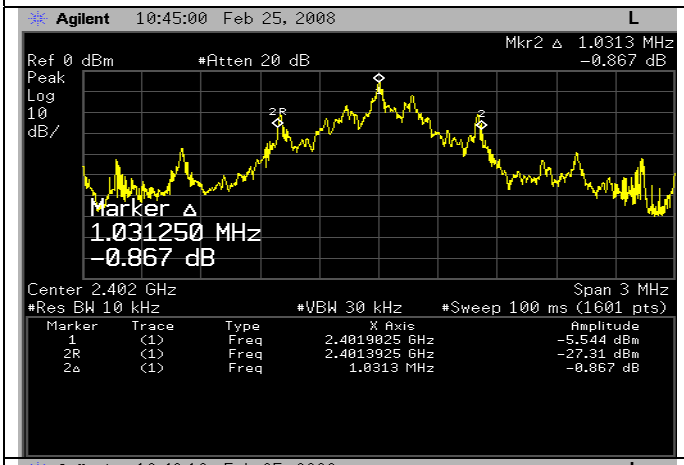
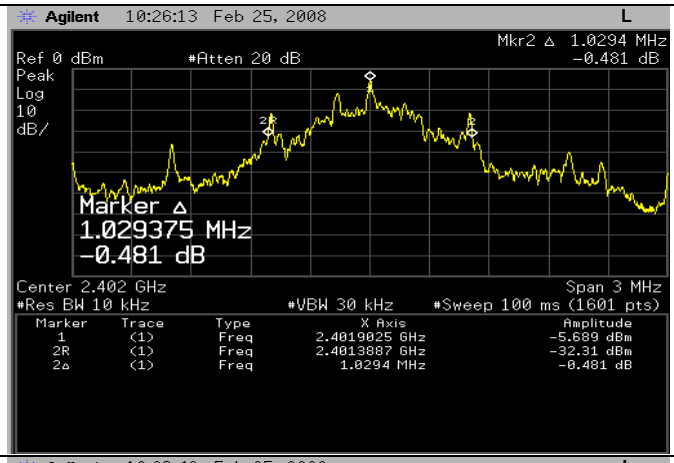
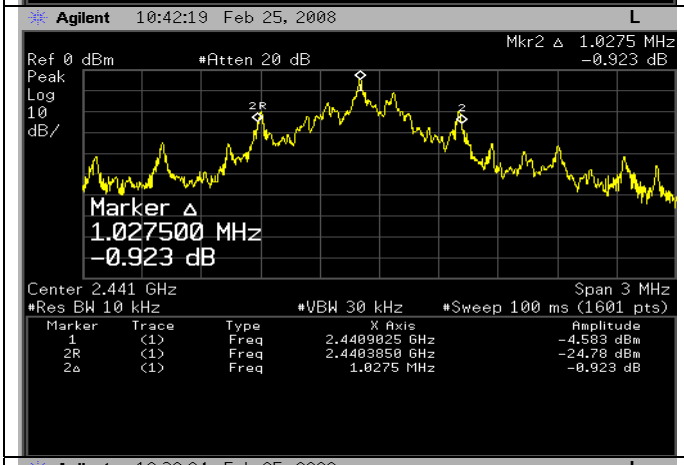
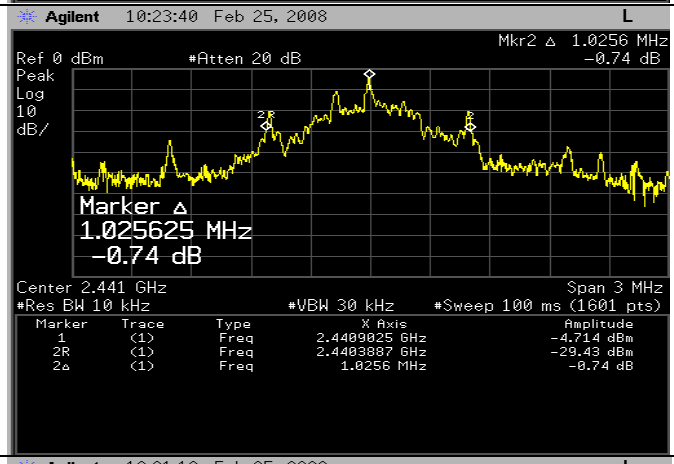
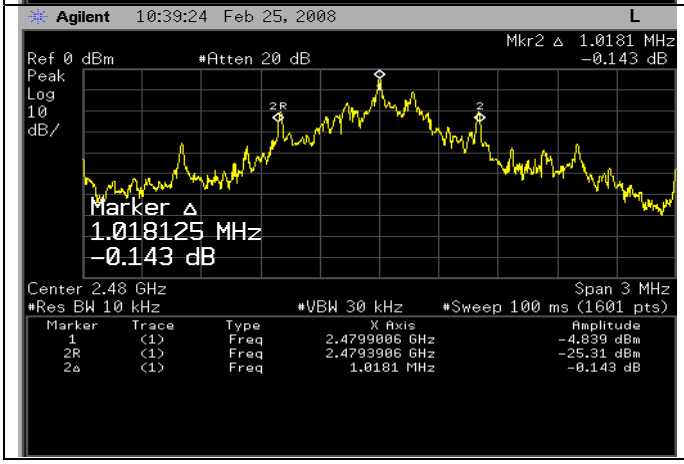
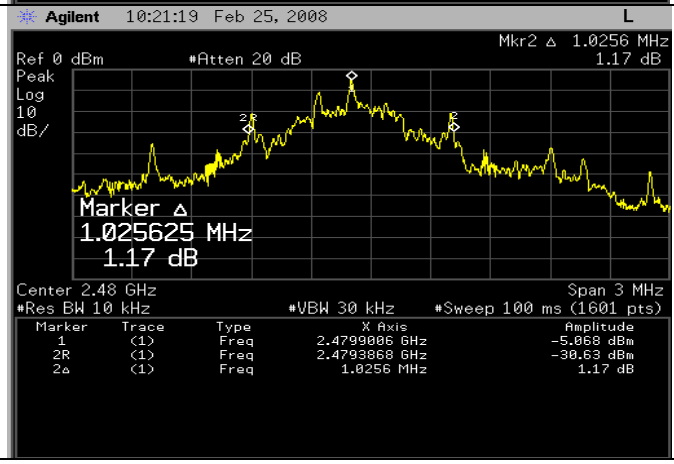
Table 9 20dB Bandwidth Results

Mode	Channel	20dB Bandwidth
DH1	2402 / 2441 / 2479	1.0294 MHz / 1.0256 MHz / 1.0256 MHz
DH3	2402 / 2441 / 2479	1.0556 MHz / 1.0294 MHz / 1.0331 MHz
DH5	2402 / 2441 / 2479	1.0313 MHz / 1.0275 MHz / 1.0181 MHz
Inquary	2402 / 2441 / 2479	615.0kHz / 586.9kHz / 616.9kHz

Figure 5 Test Setup for 20dB Bandwidth

Figure 6 20dB Bandwidth Graphs

DH1	DH3
	
	
	

DH5	INQ
	
	
	

Agilent 10:45:00 Feb 25, 2008
L
Mkr2 Δ 1.0313 MHz
Ref 0 dBm
#Atten 20 dB
−0.867 dB
Peak
Log
10
dB/
Marker Δ
1.031250 MHz
−0.867 dB
Center 2.402 GHz
Span 3 MHz
#Res BW 10 kHz
#VBW 30 kHz
#Sweep 100 ms (1601 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.4019025 GHz −5.544 dBm
2R (1) Freq 2.4013925 GHz −27.31 dBm
2Δ (1) Freq 1.0313 MHz −0.867 dB

Agilent 10:26:13 Feb 25, 2008
L
Mkr2 Δ 1.0294 MHz
Ref 0 dBm
#Atten 20 dB
−0.481 dB
Peak
Log
10
dB/
Marker Δ
1.029375 MHz
−0.481 dB
Center 2.402 GHz
Span 3 MHz
#Res BW 10 kHz
#VBW 30 kHz
#Sweep 100 ms (1601 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.4019025 GHz −5.689 dBm
2R (1) Freq 2.4013887 GHz −32.31 dBm
2Δ (1) Freq 1.0294 MHz −0.481 dB

Agilent 10:42:19 Feb 25, 2008
L
Mkr2 Δ 1.0275 MHz
Ref 0 dBm
#Atten 20 dB
−0.923 dB
Peak
Log
10
dB/
Marker Δ
1.027500 MHz
−0.923 dB
Center 2.441 GHz
Span 3 MHz
#Res BW 10 kHz
#VBW 30 kHz
#Sweep 100 ms (1601 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.4409025 GHz −4.583 dBm
2R (1) Freq 2.4403850 GHz −24.78 dBm
2Δ (1) Freq 1.0275 MHz −0.923 dB

Agilent 10:23:40 Feb 25, 2008
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Ref 0 dBm
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Peak
Log
10
dB/
Marker Δ
1.025625 MHz
−0.74 dB
Center 2.441 GHz
Span 3 MHz
#Res BW 10 kHz
#VBW 30 kHz
#Sweep 100 ms (1601 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.4409025 GHz −4.714 dBm
2R (1) Freq 2.4403887 GHz −29.43 dBm
2Δ (1) Freq 1.0256 MHz −0.74 dB

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−0.143 dB
Peak
Log
10
dB/
Marker Δ
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−0.143 dB
Center 2.48 GHz
Span 3 MHz
#Res BW 10 kHz
#VBW 30 kHz
#Sweep 100 ms (1601 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.4799006 GHz −4.839 dBm
2R (1) Freq 2.4793906 GHz −25.31 dBm
2Δ (1) Freq 1.0181 MHz −0.143 dB

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Mkr2 Δ 1.0256 MHz
Ref 0 dBm
#Atten 20 dB
1.17 dB
Peak
Log
10
dB/
Marker Δ
1.025625 MHz
1.17 dB
Center 2.48 GHz
Span 3 MHz
#Res BW 10 kHz
#VBW 30 kHz
#Sweep 100 ms (1601 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.4799006 GHz −5.068 dBm
2R (1) Freq 2.4793868 GHz −30.63 dBm
2Δ (1) Freq 1.0256 MHz 1.17 dB

4.4 Test Conditions and Results – Number of Hopping Frequencies

Test Description	Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.
Basic Standard	47 CFR Part 15.247(a)(1)(iii) RSS-210, A8.1(d)

Table 10 Number of Hopping Frequencies Configuration Settings

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

Table 11 Number of Hopping Frequencies Test Equipment

Test Equipment Used			
Description	Manufacturer	Model	Identifier
Spectrum Analyzer	Agilent	E7405A	EMC4242
Attenuator	Pasternek	10dB	None

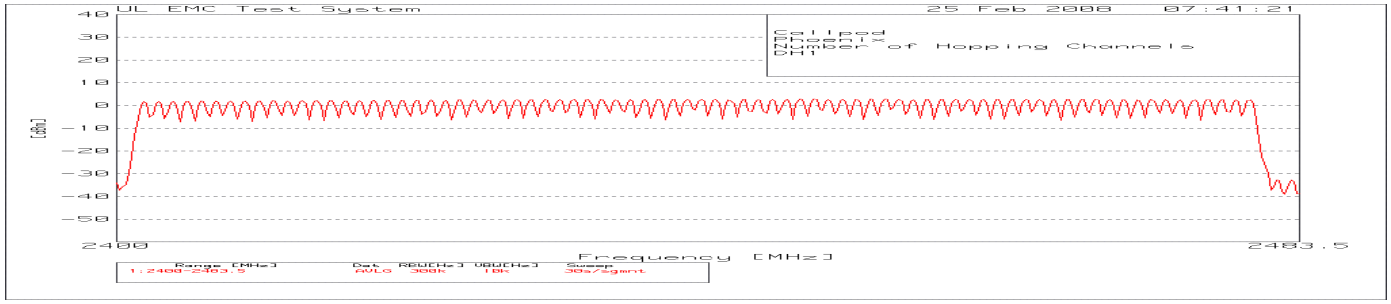
Table 12 Number of Hopping Frequencies Results

Mode	Number of Channels	Minimum Number Required
DH1	79	15
DH3	79	15
DH5	79	15
Inquary	32	15

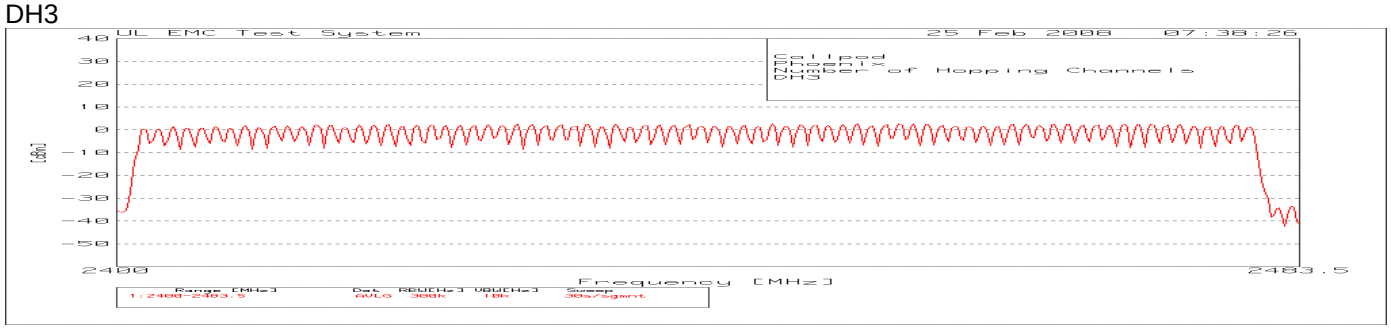
Figure 7 Test Setup for Number of Hopping Frequencies

Figure 8 Number of Hopping Frequencies Graphs

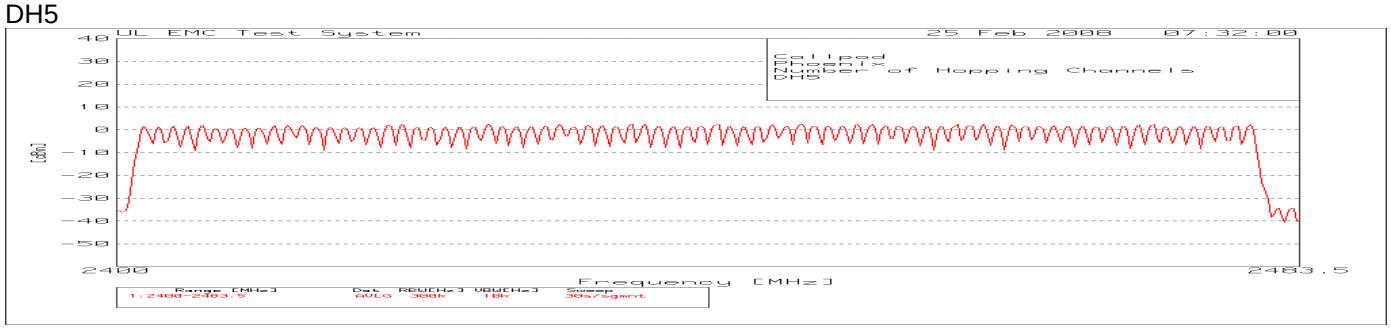
DH1



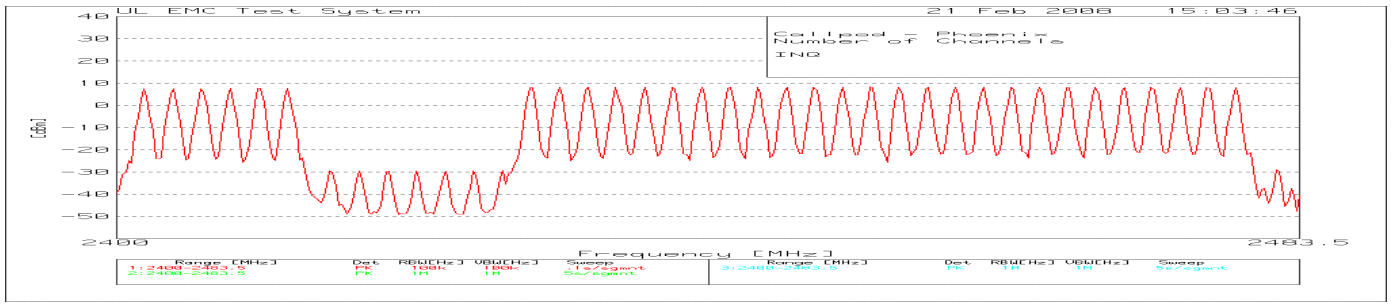
DH3



DH5



INQ



4.5 Test Conditions and Results – Dwell Time

Test Description	Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.
Basic Standard	47 CFR Part 15.247(a)(1)(iii) RSS-210, A8.1(d)

Table 13 Dwell Time Configuration Settings

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

Table 14 Dwell Time Test Equipment

Test Equipment Used			
Description	Manufacturer	Model	Identifier
Spectrum Analyzer	Agilent	E7405A	EMC4242
Attenuator	Pasternek	10dB	None

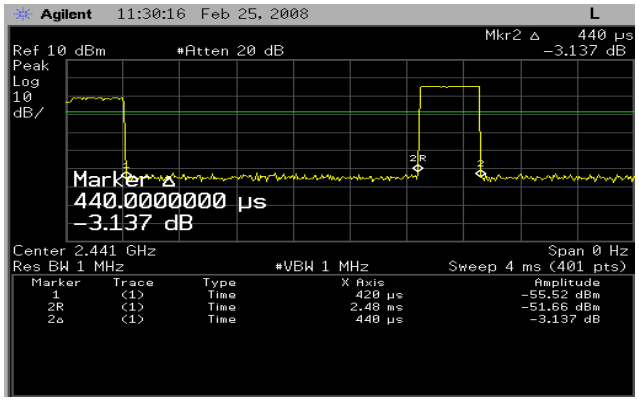
Table 15 Dwell Time Results

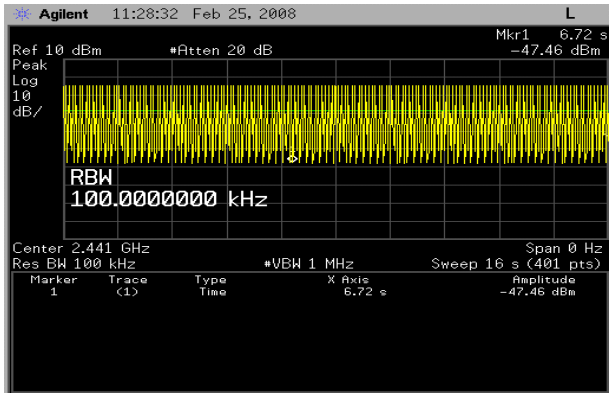
Mode	Number of Channels	Maximum Time Allowed	Measured Dwell Time in 32 sec.	Duty Cycle Factor 20*log(t1/100ms)
DH1	79	0.4 sec within 31.6sec	0.14432 seconds	-66.92dB
DH3	79	0.4 sec within 31.6sec	0.27216 seconds	-61.41dB
DH5	79	0.4 sec within 31.6sec	0.3212 seconds	-59.97dB
Inquary	32	0.4 sec within 12.8sec	0.07679 seconds	-58.32dB

Figure 9 Test Setup for Dwell Time

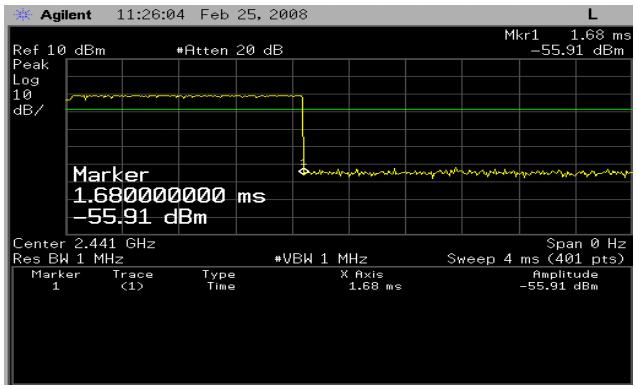
Figure 10 Dwell Time Graphs

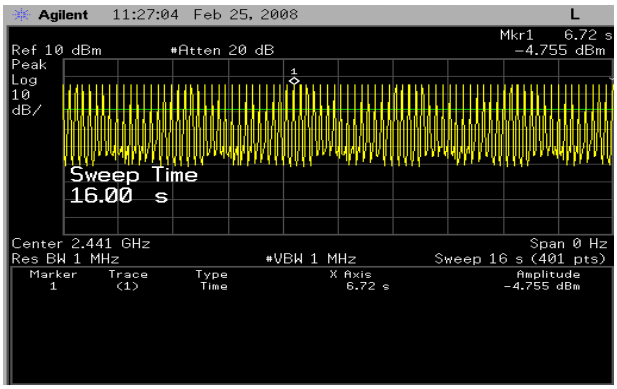
DH1



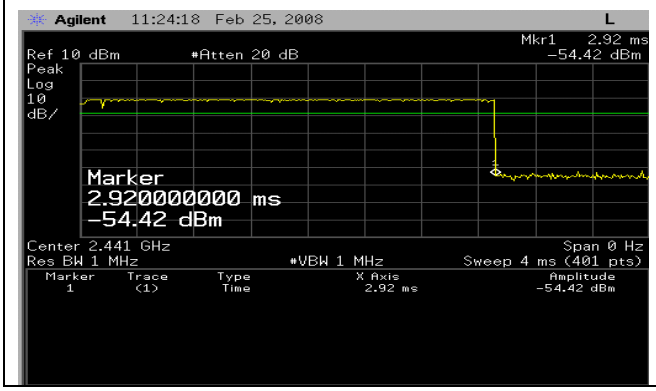


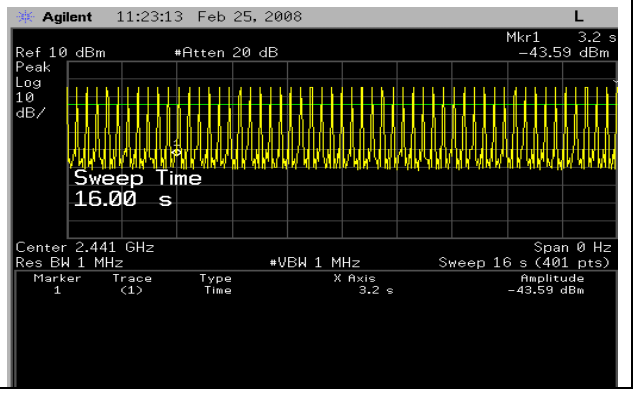
DH3





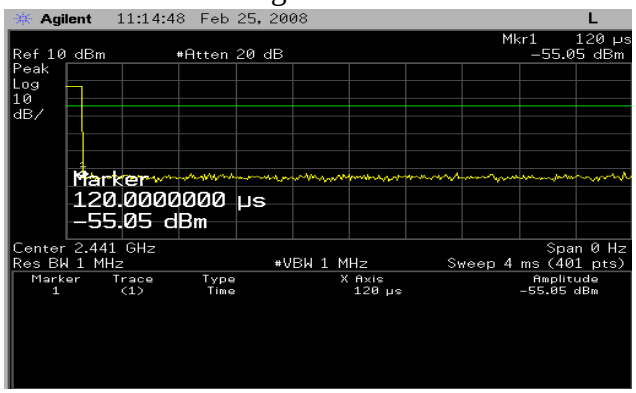
DH5



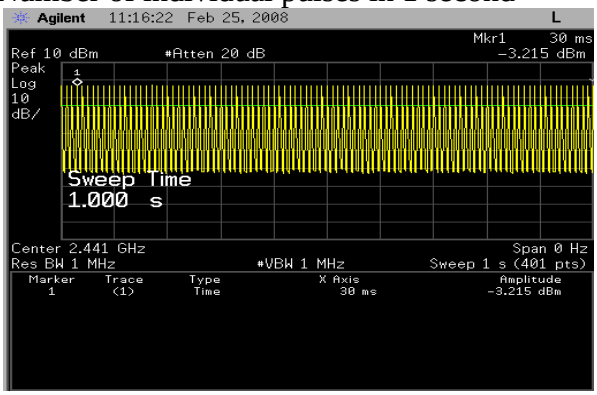


Inquiry

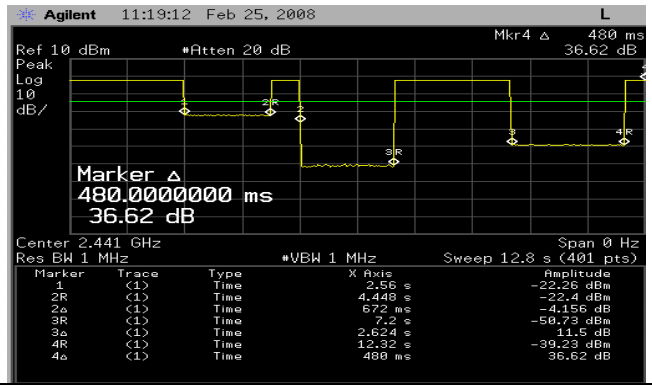
Individual Pulse Length



Number of individual pulses in 1 second



Pulse burst duration in 12.8 seconds



4.6 Test Conditions and Results – Maximum Peak Output Power

Test Description	For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.	
Basic Standard	47 CFR Part 15.247(b)(1) RSS-210, A8.4(2)	
	Frequency range	Measurement Point
Fully configured sample scanned over the following frequency range	2400MHz – 2483.5MHz	Antenna Conducted
Limits		
Frequency (MHz)	Limit mW	
	Peak	
2400 – 2483.5	125 (20.97dBm)	
Supplementary information: None		

Table 16 Maximum Peak Output Power EUT Configuration Settings

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

Table 17 Maximum Peak Output Power Test Equipment

Description	Manufacturer	Model	Identifier
Spectrum Analyzer	Agilent	E7405A	EMC4242
Attenuator	Pasternek	10dB	None

Figure 11 Test setup for Maximum Peak Output Power

Figure 12 Maximum Peak Output Power Graph

Table 18 Maximum Peak Output Power Emissions Data Points

DH1

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level [dBm]	Limit:1	2	3	4	5	6
1	2402.088	101.26 pk	10.7	-107	4.96	-	-	-	-	-	-
				Margin [dB]		-	-	-	-	-	-
2	2441.019	102.19 pk	10.8	-107	5.99	-	-	-	-	-	-
				Margin [dB]		-	-	-	-	-	-
3	2479.743	101.96 pk	10.8	-107	5.76	-	-	-	-	-	-
				Margin [dB]		-	-	-	-	-	-

DH3

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level [dBm]	Limit:1	2	3	4	5	6
1	2402.088	101.34 pk	10.7	-107	5.04	-	-	-	-	-	-
				Margin [dB]		-	-	-	-	-	-
2	2441.019	102.17 pk	10.8	-107	5.97	-	-	-	-	-	-
				Margin [dB]		-	-	-	-	-	-
3	2479.743	101.97 pk	10.8	-107	5.77	-	-	-	-	-	-
				Margin [dB]		-	-	-	-	-	-

DH5

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level [dBm]	Limit:1	2	3	4	5	6
1	2401.879	101.27 pk	10.7	-107	4.97	-	-	-	-	-	-
				Margin [dB]		-	-	-	-	-	-
2	2441.124	102.18 pk	10.8	-107	5.98	-	-	-	-	-	-
				Margin [dB]		-	-	-	-	-	-
3	2479.743	101.96 pk	10.8	-107	5.76	-	-	-	-	-	-
				Margin [dB]		-	-	-	-	-	-

INQ

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level [dBm]	Limit:1	2	3	4	5	6
1	2401.879	102.71 pk	10.7	-107	6.41	-	-	-	-	-	-
				Margin [dB]		-	-	-	-	-	-
15	2441.124	104 pk	10.8	-107	7.8	-	-	-	-	-	-
				Margin [dB]		-	-	-	-	-	-
32	2478.908	103.3 pk	10.8	-107	7.1	-	-	-	-	-	-
				Margin [dB]		-	-	-	-	-	-

pk - Peak detector

4.7 Test [BD8]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	2.350GHz – 2.5335GHz	Antenna Conducted
	2.3GHz – 2.5835GHz	3 meter measurement distance

Limits

Frequency (MHz)	Limits	
	Antenna Conducted - 20dB below the fundamental	Radiated – Peak 20dB below the fundamental and Average must meet the general limit in restricted bands.
Below 2.4GHz and Above 2.4835GHz	Aprox. –10dBm (See Data Table Below)	54dBuV/m

Supplementary information: Spurious limits are only applied against products of the transmitter. All other emissions must meet the general limits. Portable transmitters are to be checked in 3 orthogonal axis.

Table 19 Band Edge Compliance EUT Configuration Settings

Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
2	1, 2	1
Supplementary information: Based on Radiated Emissions scans for the transmitter, no significant differences in the level of unwanted emissions were recorded therefore for band-edge scans and measurements only radio 1 was tested.		

Table 20 Band Edge Compliance Test Equipment

Description	Manufacturer	Model	Identifier
Spectrum Analyzer	Rhode & Schwartz	FSEK	EMC4182
Antenna Array	UL	BOMS	EMC4276
Spectrum Analyzer	Agilent	E7405A	EMC4242
Attenuator	Pasternek	10dB	None

Figure 13 Test setup for Band Edge Compliance - Conducted

Figure 14 Test setup for Band Edge Compliance – Radiated

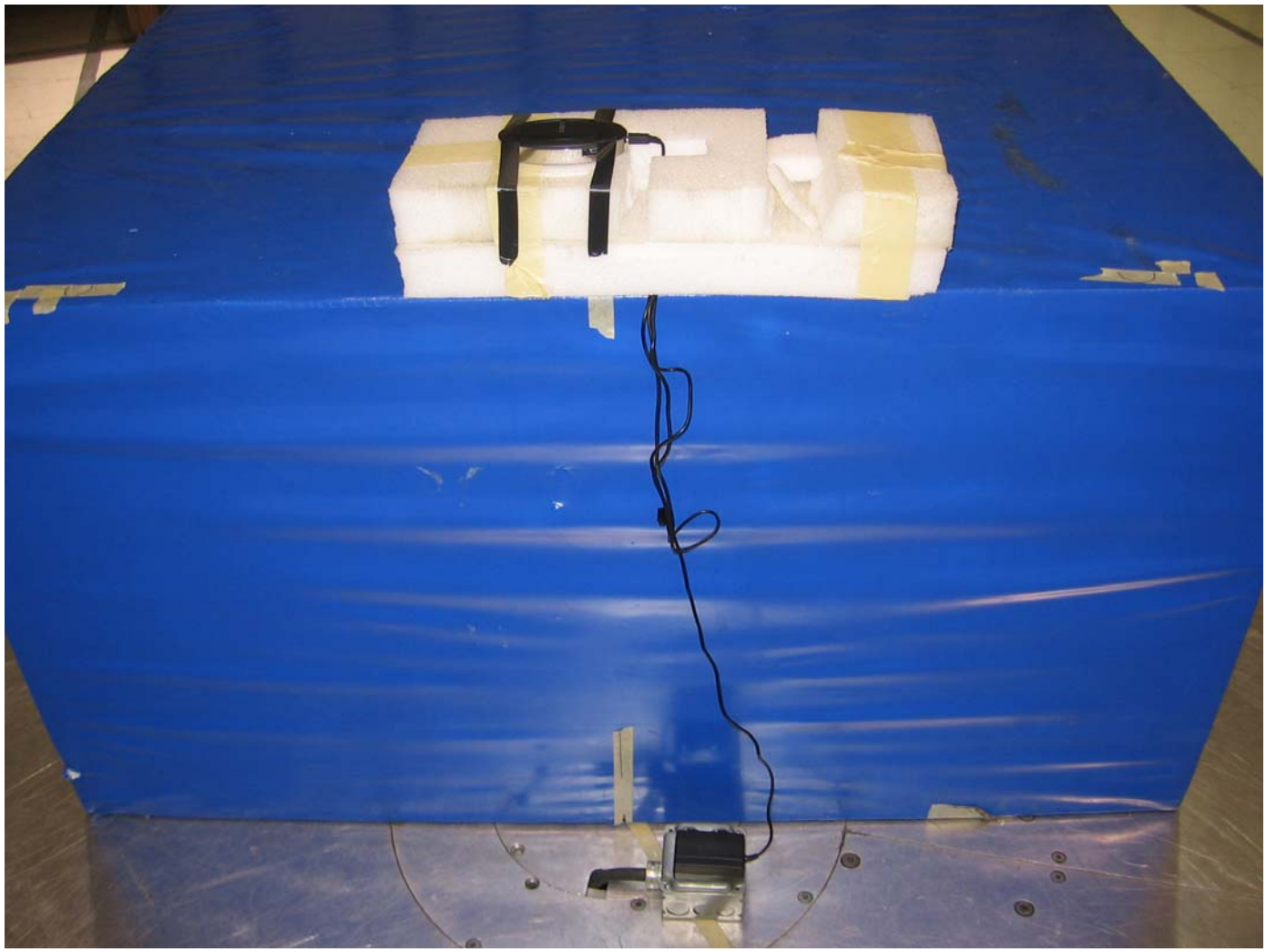
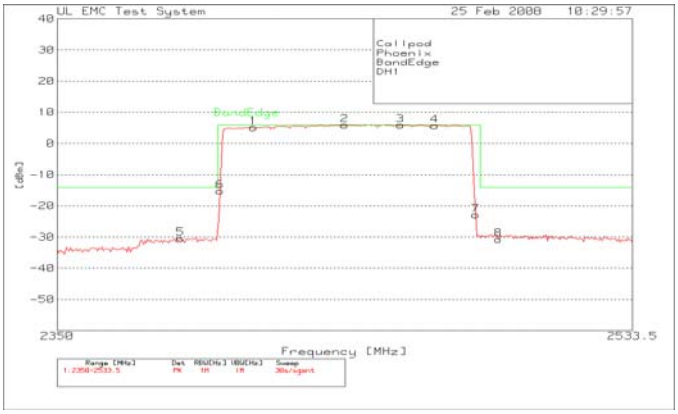
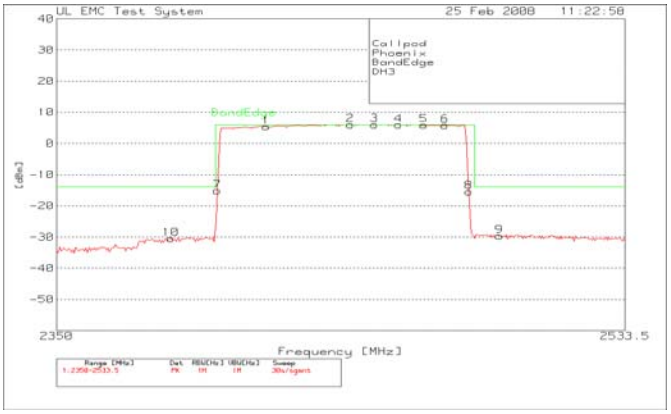


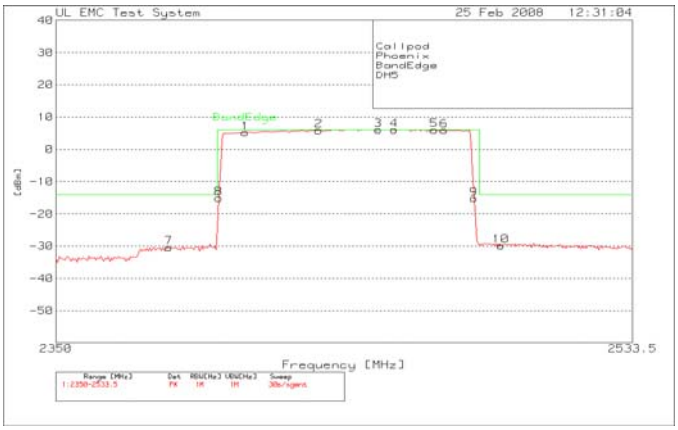
Figure 15 Conducted Band Edge Compliance Graph



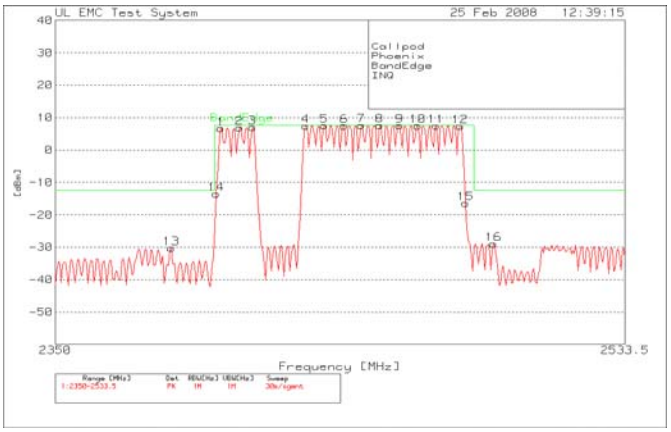
DH1



DH3



DH5



INQ

Table 21 Band Edge Compliance Data Points

DH1

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level [dBm]
1	2411.014	101.48 pk	10.7	-107	5.18
				Margin [dB]	
2	2439.915	102.1 pk	10.8	-107	5.9
				Margin [dB]	
3	2457.806	102.1 pk	10.8	-107	5.9
				Margin [dB]	
4	2468.816	101.98 pk	10.8	-107	5.78
				Margin [dB]	
5	2388.076	65.85 pk	10.7	-107	-30.45
				Margin [dB]	
6	2400.463	81.09 pk	10.7	-107	-15.21
				Margin [dB]	
7	2482.12	73.3 pk	10.8	-107	-22.9
				Margin [dB]	
8	2489.46	65.52 pk	10.8	-107	-30.68
				Margin [dB]	

LIMIT 1: BandEdge
pk - Peak detector

DH3

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level [dBm]
1	2416.06	101.74 pk	10.7	-107	5.44
				Margin [dB]	
2	2443.126	102.21 pk	10.8	-107	6.01
				Margin [dB]	
3	2450.925	102.23 pk	10.8	-107	6.03
				Margin [dB]	
4	2458.724	102.18 pk	10.8	-107	5.98
				Margin [dB]	
5	2466.981	102.1 pk	10.8	-107	5.9
				Margin [dB]	
6	2473.863	102.04 pk	10.8	-107	5.84
				Margin [dB]	
7	2400.463	81.18 pk	10.7	-107	-15.12
				Margin [dB]	
8	2481.661	80.78 pk	10.8	-107	-15.42
				Margin [dB]	
9	2491.754	66.52 pk	10.8	-107	-29.68
				Margin [dB]	
10	2385.783	65.82 pk	10.7	-107	-30.48
				Margin [dB]	

LIMIT 1: BandEdge
pk - Peak detector

DH5

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level [dBm]
1	2408.72	101.5 pk	10.7	-107	5.2
				Margin [dB]	
2	2431.887	102.19 pk	10.7	-107	5.89
				Margin [dB]	
3	2450.925	102.26 pk	10.8	-107	6.06
				Margin [dB]	
4	2455.971	102.25 pk	10.8	-107	6.05
				Margin [dB]	
5	2468.816	102.18 pk	10.8	-107	5.98
				Margin [dB]	
6	2472.028	102.12 pk	10.8	-107	5.92
				Margin [dB]	
7	2384.865	65.96 pk	10.7	-107	-30.34
				Margin [dB]	
8	2400.463	81.2 pk	10.7	-107	-15.1
				Margin [dB]	
9	2481.661	80.98 pk	10.8	-107	-15.22
				Margin [dB]	
10	2490.378	66.36 pk	10.8	-107	-29.84
				Margin [dB]	

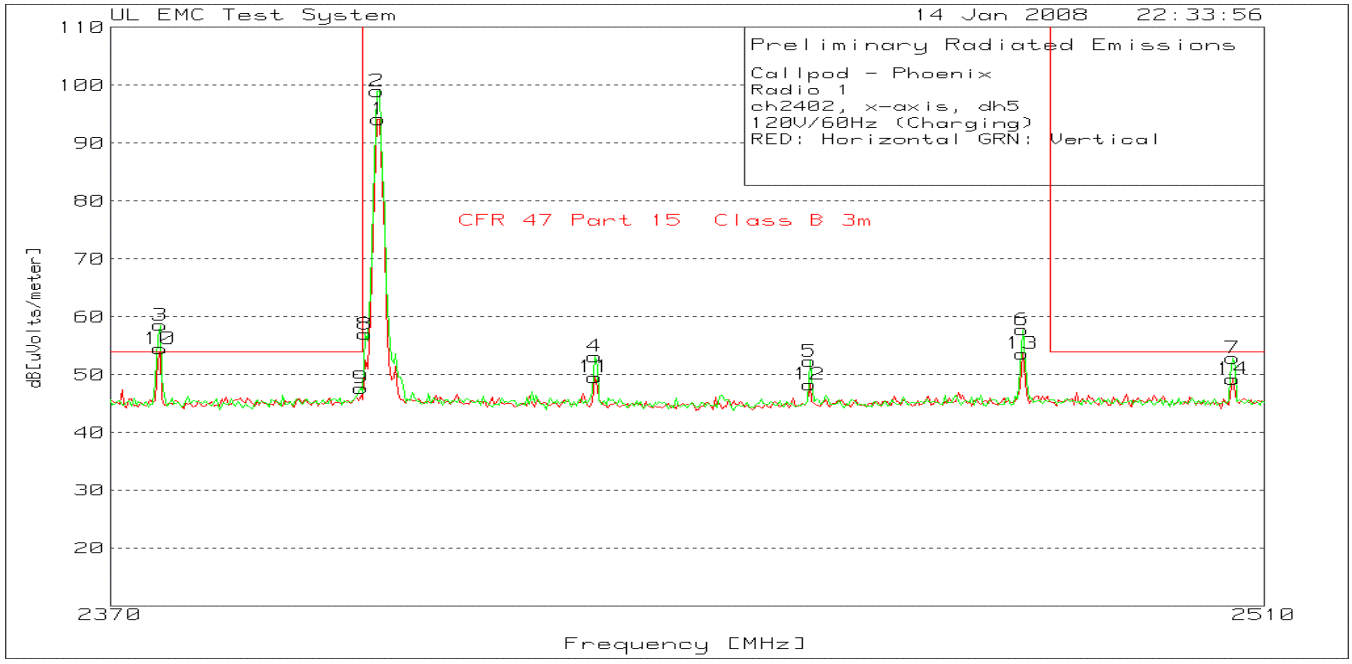
LIMIT 1: BandEdge
pk - Peak detector

INQ

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level [dBm]
1	2401.839	102.96 pk	10.7	-107	6.66
				Margin [dB]	
2	2407.803	103.22 pk	10.7	-107	6.92
				Margin [dB]	
3	2411.931	103.35 pk	10.7	-107	7.05
				Margin [dB]	
4	2428.905	103.75 pk	10.7	-107	7.45
				Margin [dB]	
5	2434.869	103.83 pk	10.7	-107	7.53
				Margin [dB]	
6	2441.291	103.72 pk	10.8	-107	7.52
				Margin [dB]	
7	2446.796	103.85 pk	10.8	-107	7.65
				Margin [dB]	
8	2452.76	103.79 pk	10.8	-107	7.59
				Margin [dB]	
9	2459.183	103.74 pk	10.8	-107	7.54
				Margin [dB]	
10	2465.146	103.7 pk	10.8	-107	7.5
				Margin [dB]	
11	2471.11	103.67 pk	10.8	-107	7.47
				Margin [dB]	
12	2478.909	103.57 pk	10.8	-107	7.37
				Margin [dB]	
13	2386.241	66.07 pk	10.7	-107	-30.23
				Margin [dB]	
14	2400.463	82.8 pk	10.7	-107	-13.5
				Margin [dB]	
15	2480.744	79.82 pk	10.8	-107	-16.38
				Margin [dB]	
16	2489.919	67.26 pk	10.8	-107	-28.94
				Margin [dB]	

LIMIT 1: BandEdge
pk - Peak detector

Figure 16 Radiated Band Edge Compliance Graph X-Axis



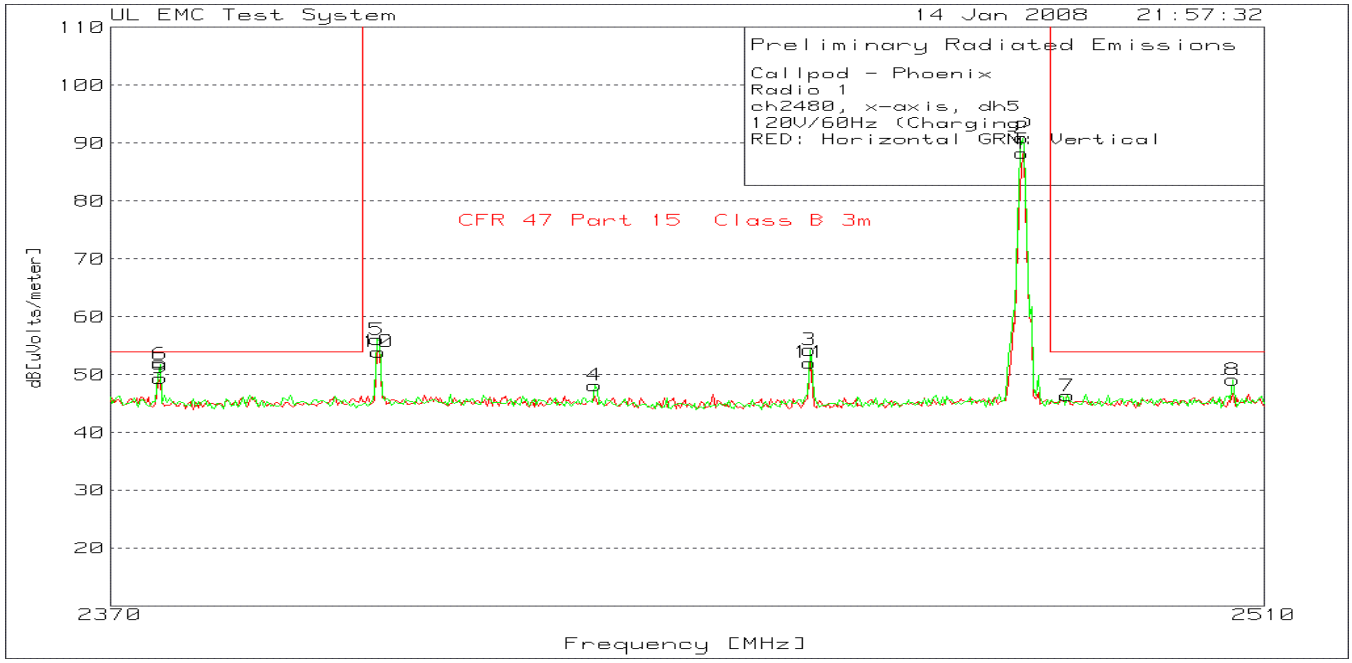


Table 22 Radiated Band Edge Compliance Data Points X-Axis

Radio 1
ch2402, x-axis, dh5
120V/60Hz (Charging)
RED: Horizontal GRN: Vertical

Marker Number	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit 1	Margin 1 [dB]	Duty Cycle Correction	Limit 2	Margin 2 [dB]	Height [cm]	Polarity
1	2401.844	68.05	pk	4.3	21.8	94.15	-	-	-	-	-	149	Horz
10	2375.892	28.92	pk	3.74	21.8	54.46	74	-19.54	-59.57	54	-59.11	149	Horz
11	2427.796	23.42	pk	4.21	21.9	49.53	-	-	-	-	-	100	Horz
12	2453.888	22.34	pk	3.95	22	48.29	-	-	-	-	-	100	Horz
13	2479.98	27.52	pk	4.11	22	53.63	-	-	-	-	-	149	Horz
14	2506.072	23.22	pk	3.9	22.1	49.22	74	-24.78	-59.57	54	-64.35	100	Horz
2	2401.703	72.89	pk	4.3	21.8	98.99	-	-	-	-	-	150	Vert
3	2375.892	32.98	pk	3.74	21.8	58.52	74	-15.48	-59.57	54	-55.05	150	Vert
4	2427.796	27.02	pk	4.21	21.9	53.13	-	-	-	-	-	150	Vert
5	2453.888	26.38	pk	3.95	22	52.33	-	-	-	-	-	150	Vert
6	2479.98	31.66	pk	4.11	22	57.77	-	-	-	-	-	150	Vert
7	2506.072	26.88	pk	3.9	22.1	52.88	74	-21.12	-59.57	54	-60.69	150	Vert
8	2400.301	30.93	pk	4.26	21.8	56.99	-	-	-	-	-	100	Vert
9	2399.739	21.63	pk	4.24	21.8	47.67	74	-26.33	-59.57	54	-65.9	150	Vert

LIMIT 1: CFR 47 Part 15.247 Peak Limit
LIMIT 2: CFR 47 Part 15.247 AV Spurious Limit
pk - Peak detector

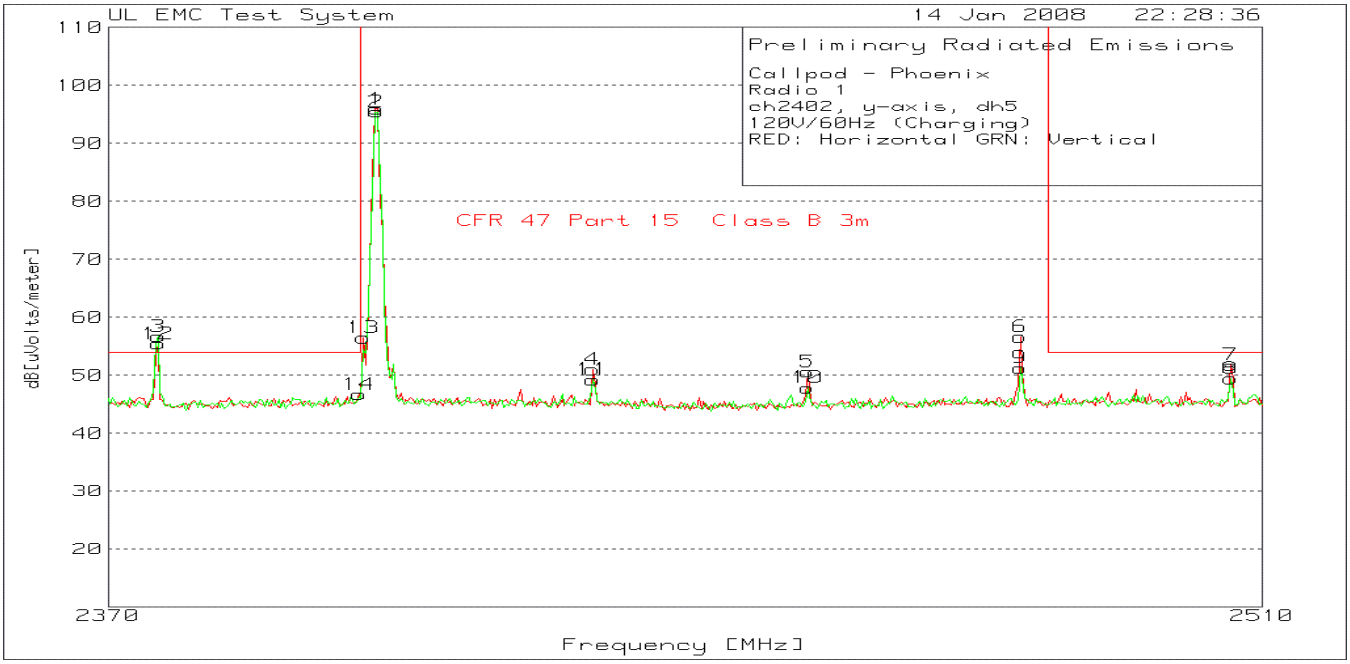
Radio 1
ch2480, x-axis, dh5
120V/60Hz (Charging)
RED: Horizontal GRN: Vertical

Marker Number	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit 1	Margin 1 [dB]	Duty Cycle Correction	Limit 2	Margin 2 [dB]	Height [cm]	Polarity
1	2479.98	62.11	pk	4.11	22	88.22	-	-	-	-	-	100	Horz
9	2375.892	23.87	pk	3.74	21.8	49.41	74	-24.59	-59.57	54	-64.16	149	Horz
10	2401.844	27.81	pk	4.3	21.8	53.91	-	-	-	-	-	100	Horz
11	2453.888	26.09	pk	3.95	22	52.04	-	-	-	-	-	100	Horz
2	2479.98	64.79	pk	4.11	22	90.9	-	-	-	-	-	150	Vert
3	2453.888	28.34	pk	3.95	22	54.29	-	-	-	-	-	150	Vert
4	2427.796	22.03	pk	4.21	21.9	48.14	-	-	-	-	-	100	Vert
5	2401.703	29.98	pk	4.3	21.8	56.08	-	-	-	-	-	150	Vert
6	2375.892	26.28	pk	3.74	21.8	51.82	74	-22.18	-59.57	54	-61.75	100	Vert
7	2485.591	20.24	pk	4.04	22.1	46.38	74	-27.62	-59.57	54	-67.19	100	Vert
8	2506.072	23.11	pk	3.9	22.1	49.11	74	-24.89	-59.57	54	-64.46	150	Vert

LIMIT 1: CFR 47 Part 15.247 Peak Limit
LIMIT 2: CFR 47 Part 15.247 AV Spurious Limit
pk - Peak detector

All out of band emissions marked were found to be product of the transmitter therefore per DA-0705 the duty cycle correction factor was applied. Actual average measurements were considered not necessary.

Figure 17 Radiated Band Edge Compliance Graph Y-Axis



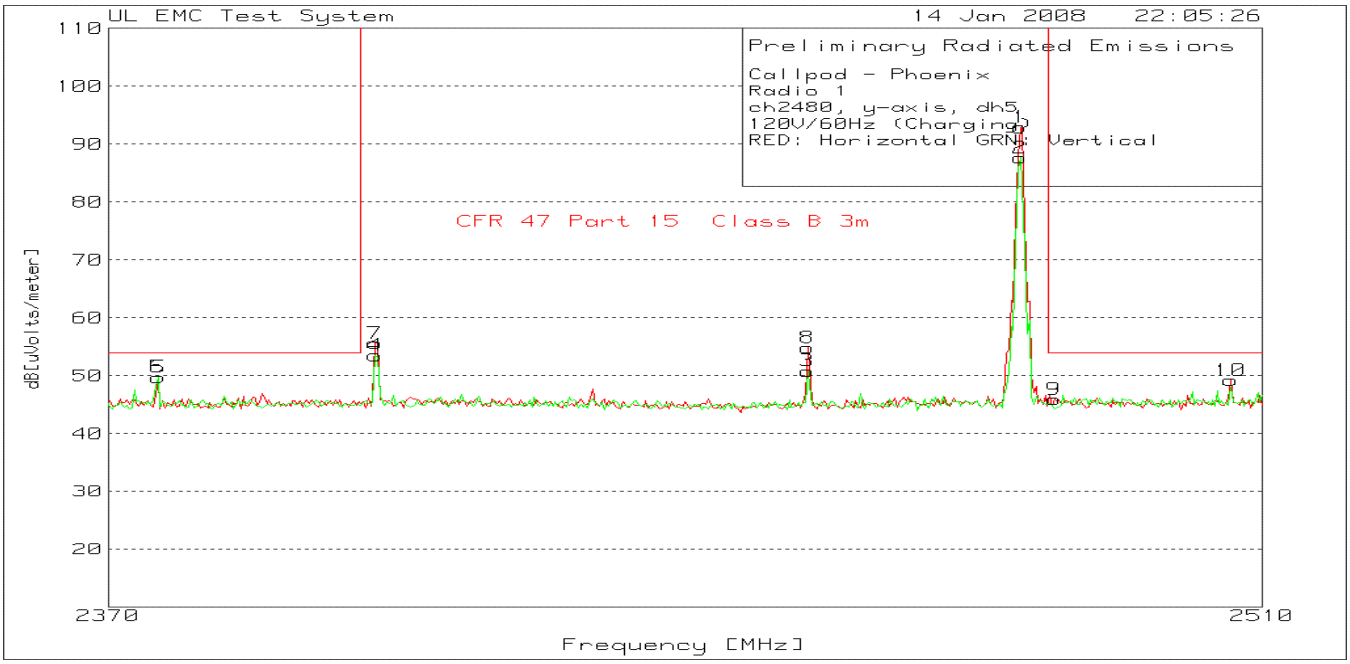


Table 23 Radiated Band Edge Compliance Data Points Y-Axis

Radio 1
ch2402, y-axis, dh5
120V/60Hz (Charging)
RED: Horizontal GRN: Vertical

Marker Number	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit 1	Margin 1 [dB]	Duty Cycle Correction	Limit 2	Margin 2 [dB]	Height [cm]	Polarity
1	2401.844	69.82	pk	4.3	21.8	95.92	-	-	-	-	-	100	Horz
4	2427.796	24.9	pk	4.21	21.9	51.01	-	-	-	-	-	100	Horz
5	2453.888	24.63	pk	3.95	22	50.58	-	-	-	-	-	100	Horz
6	2479.98	30.53	pk	4.11	22	56.64	-	-	-	-	-	100	Horz
7	2506.072	25.75	pk	3.9	22.1	51.75	74	-22.25	59.57	54	-61.82	100	Horz
12	2375.892	29.9	pk	3.74	21.8	55.44	74	-18.56	59.57	54	-58.13	100	Horz
13	2400.301	30.4	pk	4.26	21.8	56.46	-	-	-	-	-	100	Horz
14	2399.739	20.65	pk	4.24	21.8	46.69	74	-27.31	59.57	54	-66.88	100	Horz
2	2401.844	69.31	pk	4.3	21.8	95.41	-	-	-	-	-	150	Vert
3	2375.892	31.16	pk	3.74	21.8	56.7	74	-17.3	59.57	54	-56.87	150	Vert
8	2506.072	23.43	pk	3.9	22.1	49.43	74	-24.57	59.57	54	-64.27	150	Vert
9	2479.98	25.14	pk	4.11	22	51.25	-	-	-	-	-	150	Vert
10	2453.888	21.88	pk	3.95	22	47.83	-	-	-	-	-	100	Vert
11	2427.796	23.1	pk	4.21	21.9	49.21	-	-	-	-	-	150	Vert

LIMIT 1: CFR 47 Part 15.247 Peak Limit
LIMIT 2: CFR 47 Part 15.247 AV Spurious Limit
pk - Peak detector

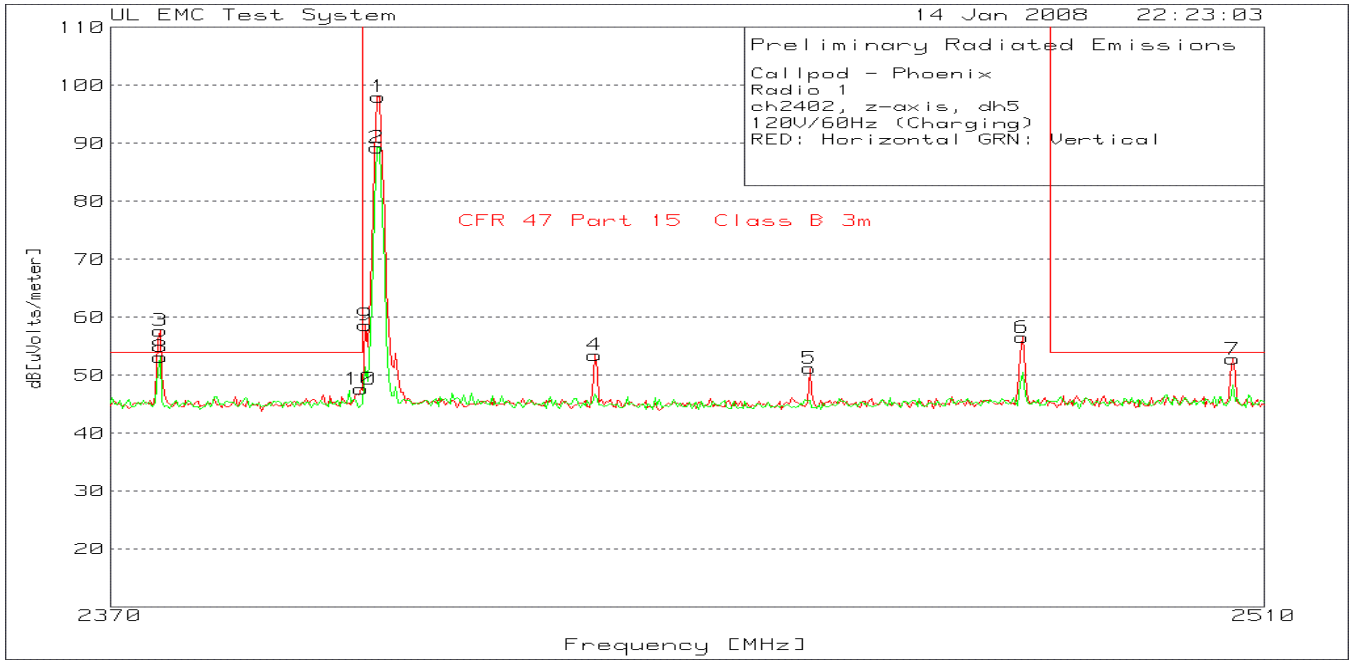
Radio 1
ch2480, y-axis, dh5
120V/60Hz (Charging)
RED: Horizontal GRN: Vertical

Marker Number	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit 1	Margin 1 [dB]	Duty Cycle Correction	Limit 2	Margin 2 [dB]	Height [cm]	Polarity
1	2479.98	66.76	pk	4.11	22	92.87	-	-	-	-	-	100	Horz
6	2375.892	24.16	pk	3.74	21.8	49.7	74	-24.3	59.57	54	-63.87	100	Horz
7	2401.703	29.51	pk	4.3	21.8	55.61	-	-	-	-	-	100	Horz
8	2453.888	28.87	pk	3.95	22	54.82	-	-	-	-	-	100	Horz
9	2484.188	19.78	pk	4.04	22.1	45.92	74	-28.08	59.57	54	-67.65	150	Horz
10	2506.072	23.18	pk	3.9	22.1	49.18	74	-24.82	59.57	54	-64.39	100	Horz
2	2479.98	61.52	pk	4.11	22	87.63	-	-	-	-	-	150	Vert
3	2453.888	24.83	pk	3.95	22	50.78	-	-	-	-	-	150	Vert
4	2401.703	27.4	pk	4.3	21.8	53.5	-	-	-	-	-	150	Vert
5	2375.892	24.17	pk	3.74	21.8	49.71	74	-24.29	59.57	54	-63.86	150	Vert

LIMIT 1: CFR 47 Part 15.247 Peak Limit
LIMIT 2: CFR 47 Part 15.247 AV Spurious Limit
pk - Peak detector

All out of band emissions marked were found to be product of the transmitter therefore per DA-0705 the duty cycle correction factor was applied. Actual average measurements were considered not necessary.

Figure 18 Radiated Band Edge Compliance Graph Z-Axis



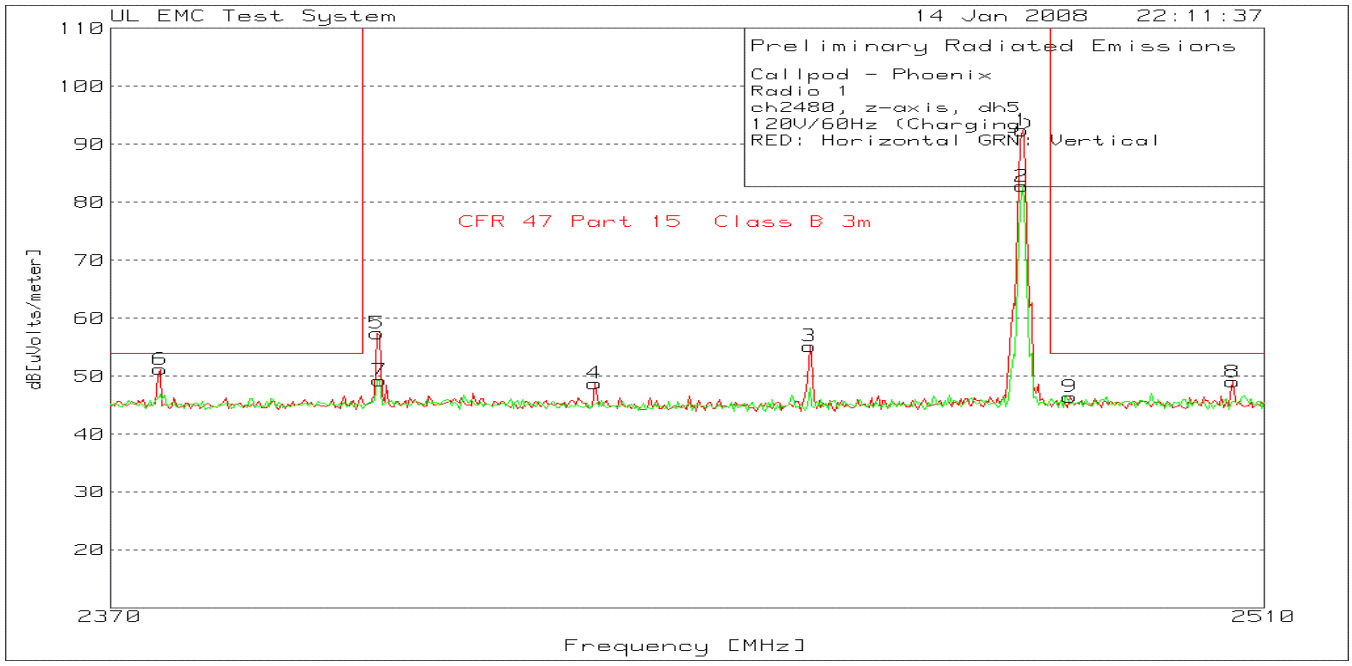


Table 24 Radiated Band Edge Compliance Data Points Z-Axis

Radio 1
ch2402, z-axis, dh5
120V/60Hz (Charging)
RED: Horizontal GRN: Vertical

Marker Number	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit 1	Margin 1 [dB]	Duty Cycle Correction	Limit 2	Margin 2 [dB]	Height [cm]	Polarity
1	2401.844	71.91	pk	4.3	21.8	98.01	-	-	-	-	-	100	Horz
3	2375.892	32.15	pk	3.74	21.8	57.69	74	-16.31	59.57	54	-55.88	100	Horz
4	2427.796	27.33	pk	4.21	21.9	53.44	-	-	-	-	-	100	Horz
5	2453.888	25.25	pk	3.95	22	51.2	-	-	-	-	-	100	Horz
6	2479.98	30.43	pk	4.11	22	56.54	-	-	-	-	-	100	Horz
7	2506.072	26.78	pk	3.9	22.1	52.78	74	-21.22	59.57	54	-60.79	100	Horz
9	2400.301	32.55	pk	4.26	21.8	58.61	-	-	-	-	-	100	Horz
10	2399.739	21.59	pk	4.24	21.8	47.63	74	-26.37	59.57	54	65.94	100	Horz
2	2401.703	63.17	pk	4.3	21.8	89.27	-	-	-	-	-	100	Vert
8	2375.892	27.58	pk	3.74	21.8	53.12	74	-20.88	59.57	54	-60.45	100	Vert

LIMIT 1: CFR 47 Part 15.247 Peak Limit
LIMIT 2: CFR 47 Part 15.247 AV Spurious Limit
pk - Peak detector

Radio 1
ch2480, z-axis, dh5
120V/60Hz (Charging)
RED: Horizontal GRN: Vertical

Marker Number	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit 1	Margin 1 [dB]	Duty Cycle Correction	Limit 2	Margin 2 [dB]	Height [cm]	Polarity
1	2479.98	66.31	pk	4.11	22	92.42	-	-	-	-	-	100	Horz
3	2453.888	29.2	pk	3.95	22	55.15	-	-	-	-	-	100	Horz
4	2427.796	22.63	pk	4.21	21.9	48.74	-	-	-	-	-	100	Horz
5	2401.703	31.29	pk	4.3	21.8	57.39	-	-	-	-	-	100	Horz
6	2375.892	25.65	pk	3.74	21.8	51.19	74	-22.81	59.57	54	-62.38	100	Horz
8	2506.072	23.04	pk	3.9	22.1	49.04	74	-24.96	59.57	54	-64.53	100	Horz
9	2485.872	20.29	pk	4.04	22.1	46.43	74	-27.57	59.57	54	-67.14	150	Horz
2	2479.98	56.65	pk	4.11	22	82.76	-	-	-	-	-	100	Vert
7	2401.984	23.13	pk	4.3	21.8	49.23	-	-	-	-	-	100	Vert

LIMIT 1: CFR 47 Part 15.247 Peak Limit
LIMIT 2: CFR 47 Part 15.247 AV Spurious Limit
pk - Peak detector

All out of band emissions marked were found to be product of the transmitter therefore per DA-0705 the duty cycle correction factor was applied. Actual average measurements were considered not necessary.

4.8 Test Conditions and Results – SPURIOUS EMISSIONS – Radiated and Conducted

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 7.2.1 and 7.2.3	
	Frequency range	Measurement Point
Fully configured sample scanned over the following frequency range	30MHz – 1GHz	(10 meter measurement distance)
Fully configured sample scanned over the following frequency range	1GHz – 25GHz	(3 meter measurement distance)

Limits

Frequency (MHz)	Limit (dBµV/m)		
	Quasi-Peak	Peak	Average
	General Emissions	Harmonics / Radio Spurious	Harmonics / Spurious
30 – 88	29.54	-	-
88 – 216	33.06	-	-
216 - 960	35.56	-	
960 – 1000	43.52	-	
1,000 - 25,000	-	74	54

Supplementary information: Spurious limits are only applied against products of the transmitter. All other emissions must meet the general limits. Portable transmitters are to be checked in 3 orthogonal axis. The EUT contains three radios. All radios were tested and no differences in the frequencies and levels of emissions were detected. Provided data consists of all scans for Radio 1 and reference scans for Radio 2 and Radio 3.

Table 25 SPURIOUS EMISSIONS EUT Configuration Settings

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

Table 26 SPURIOUS EMISSIONS Test Equipment

Description	Manufacturer	Model	Identifier
Spectrum Analyzer	HP	8566B	EMC4085
Quasi-Peak Detector	HP	85650A	EMC4016
Bicon Antenna	Electro-Metrics	EM6912A	EMC4070
Log-P Antenna	Chase	UPA6109	EMC4258
Spectrum Analyzer	Rhode & Schwartz	FSEK	EMC4182
Antenna Array	UL	BOMS	EMC4276

Description	Manufacturer	Model	Identifier
Spectrum Analyzer	Rhode & Schwartz	FSEK	EMC4182
Antenna Array	UL	BOMS	EMC4276
Spectrum Analyzer	Agilent	E7405A	EMC4242
Attenuator	Pasternek	10dB	None

Figure 19 Test setup for SPURIOUS EMISSIONS

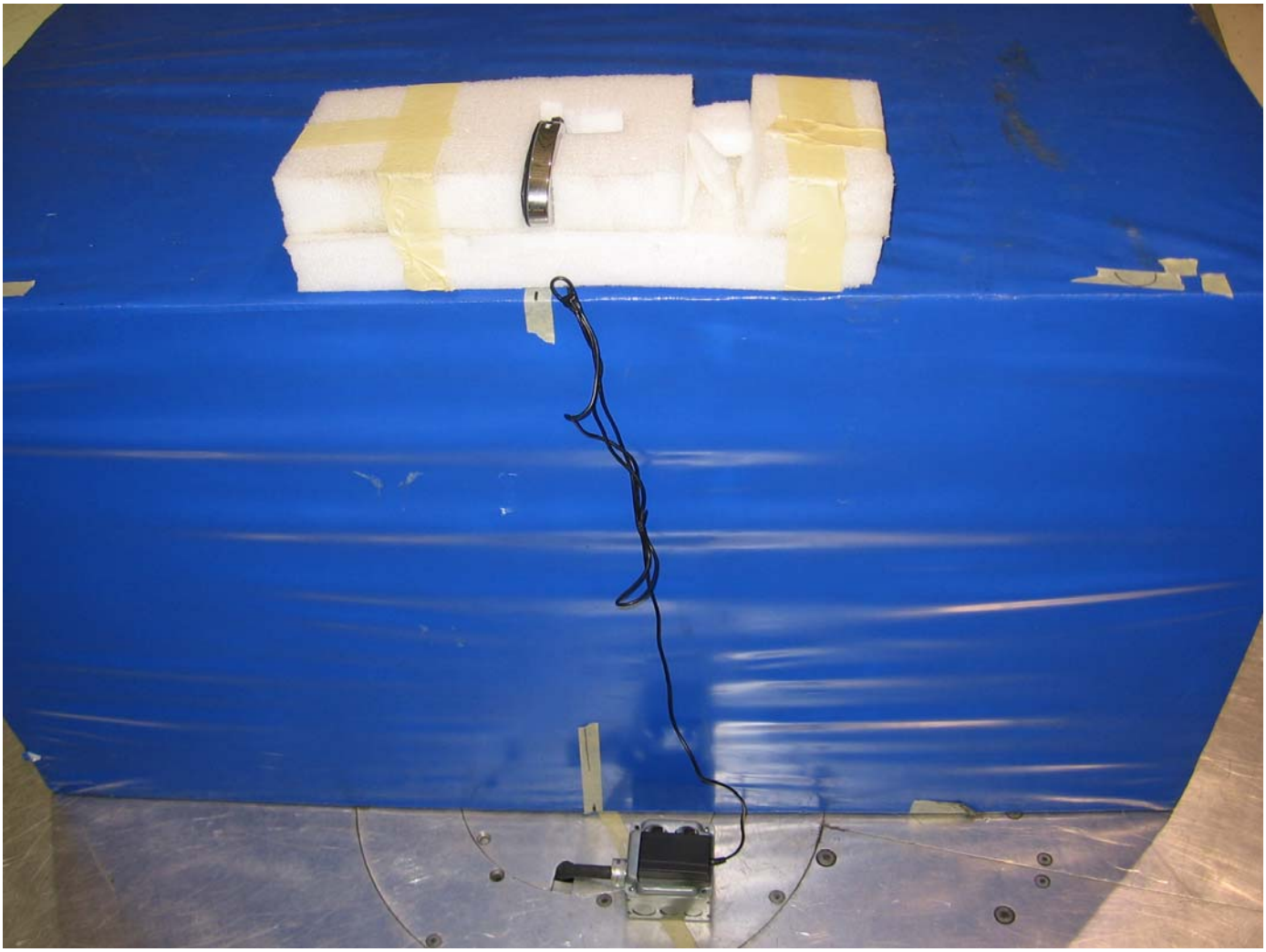


Figure 20 SPURIOUS Emissions Graph – X-Axis – 30MHz – 1GHz

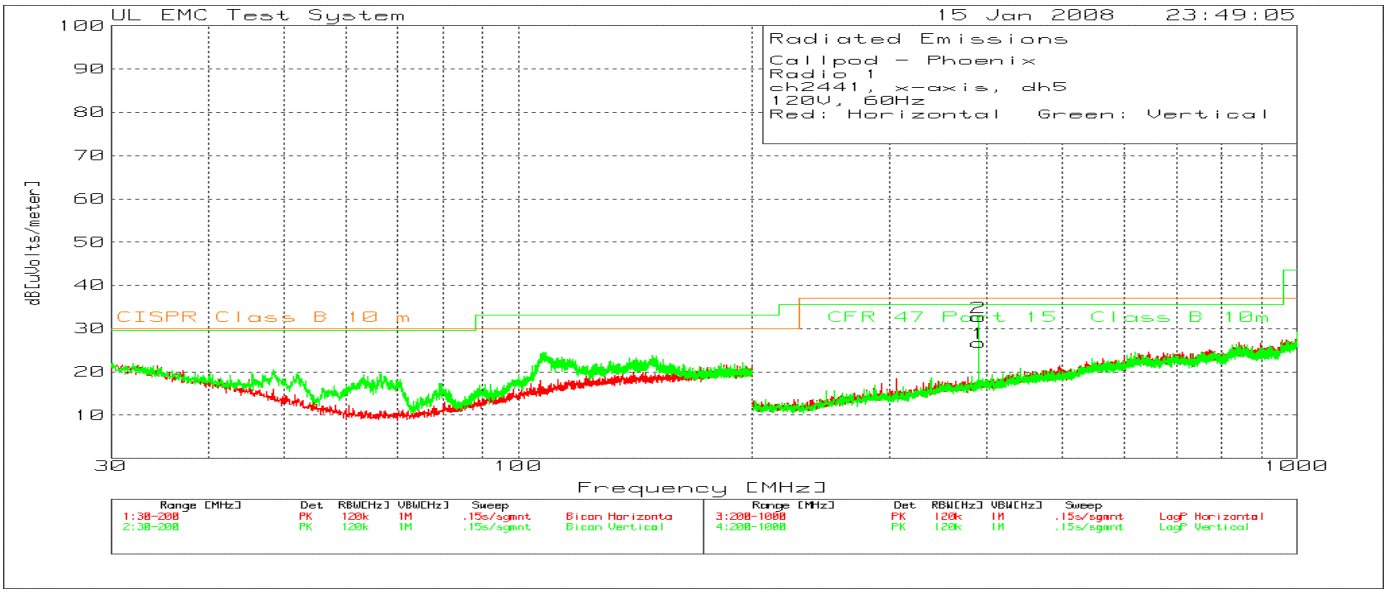


Table 27 SPURIOUS Emissions Graph – X-Axis – 30MHz – 1GHz

Callpod - Phoenix
Radio 1
ch2441, x-axis, dh5
120V, 60Hz
Red: Horizontal Green: Vertical

Marker Number	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit 1	Margin 1[dB]	Limit 2	Margin 2[dB]	Azimuth [degs]	Height [cm]	Polarity
1	390.657	43.7	pk	-32.2	15.2	26.7	35.6	-8.9	37	-10.3	308	200	Horz
2	390.657	49.7	pk	-32.2	15.2	32.7	35.6	-2.9	37	-4.3	144	101	Vert

LIMIT 1: CFR 47 Part 15 Class B 10m
LIMIT 2: CISPR Class B 10 m

Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	Limit 1	Margin 1[dB]	Limit 2	Margin 2[dB]	Azimuth [degs]	Height [cm]	Polarity
389.9878	48.93	qp	-32.2	15.2	31.93	35.6	-3.67	37	-5.07	270	104	Vert

LIMIT 1: CFR 47 Part 15 Class B 10m
LIMIT 2: CISPR Class B 10 m

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

Figure 21 SPURIOUS Emissions Graph – Y-Axis – 30MHz – 1GHz

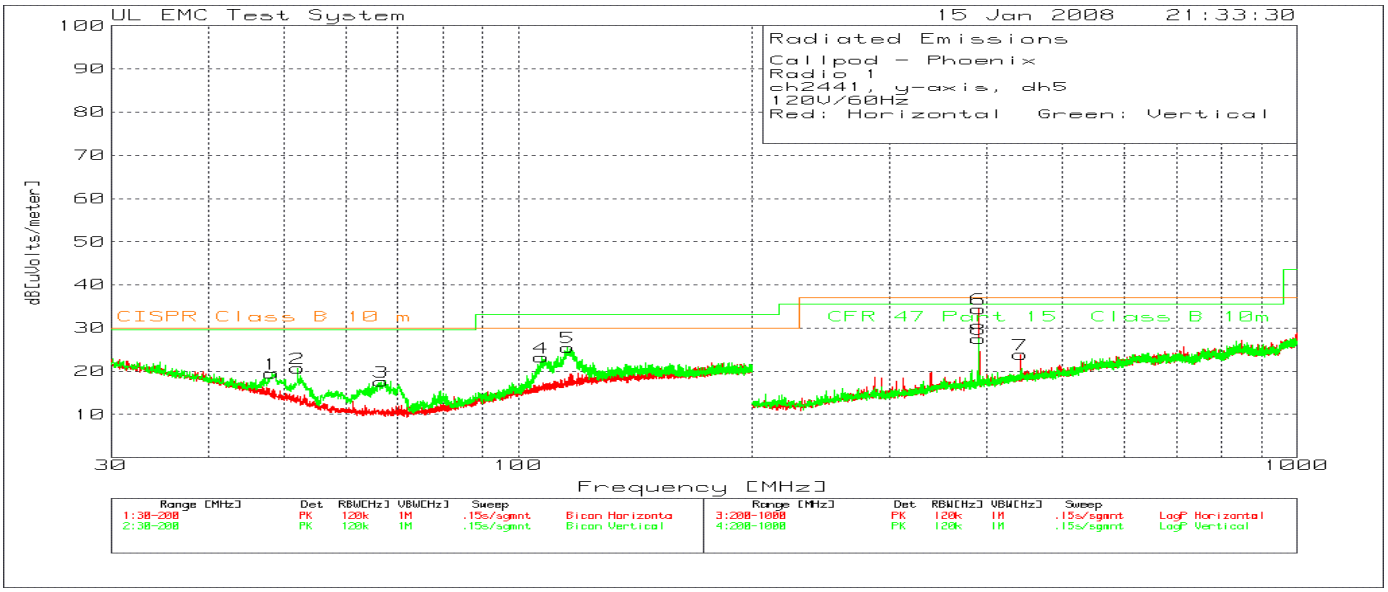


Table 28 SPURIOUS Emissions Graph – X-Axis – 30MHz – 1GHz

Marker Number	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit 1	Margin 1 [dB]	Limit 2	Margin 2 [dB]	Azimuth [degs]	Height [cm]	Polarity
1	48.2188	39	pk	-30.2	10.7	19.5	29.6	-10.1	30	-10.5	205	100	Vert
2	52.0834	41.7	pk	-30.2	9.2	20.7	29.6	-8.9	30	-9.3	11	100	Vert
3	66.7349	41.6	pk	-30.2	6.2	17.6	29.6	-12	30	-12.4	170	399	Vert
4	107.0797	41.6	pk	-30	11.6	23.2	33.1	-9.9	30	-6.8	147	100	Vert
5	115.8281	42.7	pk	-30	12.8	25.5	33.1	-7.6	30	-4.5	142	100	Vert
6	390.657	51.4	pk	-32.2	15.2	34.4	35.6	-1.2	37	-2.6	216	200	Horz
7	442.0185	39.3	pk	-32.1	16.7	23.9	35.6	-11.7	37	-13.1	145	200	Horz
8	390.657	44.5	pk	-32.2	15.2	27.5	35.6	-8.1	37	-9.5	240	101	Vert

Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit 1	Margin 1[dB]	Limit 2	Margin 2[dB]	Azimuth [degs]	Height [cm]	Polarity
115.715	38.95	qp	-30	12.8	21.75	33.1	-11.35	30	-8.25	107	102	Vert
108.087	37.13	qp	-30	11.8	18.93	33.1	-14.17	30	-11.07	72	101	Vert
389.9845	50.92	qp	-32.2	15.2	33.92	35.6	-1.68	37	-3.08	292	202	Horz
389.9864	42.74	qp	-32.2	15.2	25.74	35.6	-9.86	37	-11.26	68	106	Vert

LIMIT 1: CFR 47 Part 15 Class B 10m
LIMIT 2: CISPR Class B 10 m

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

Figure 22 SPURIOUS Emissions Graph – Z-Axis – 30MHz – 1GHz

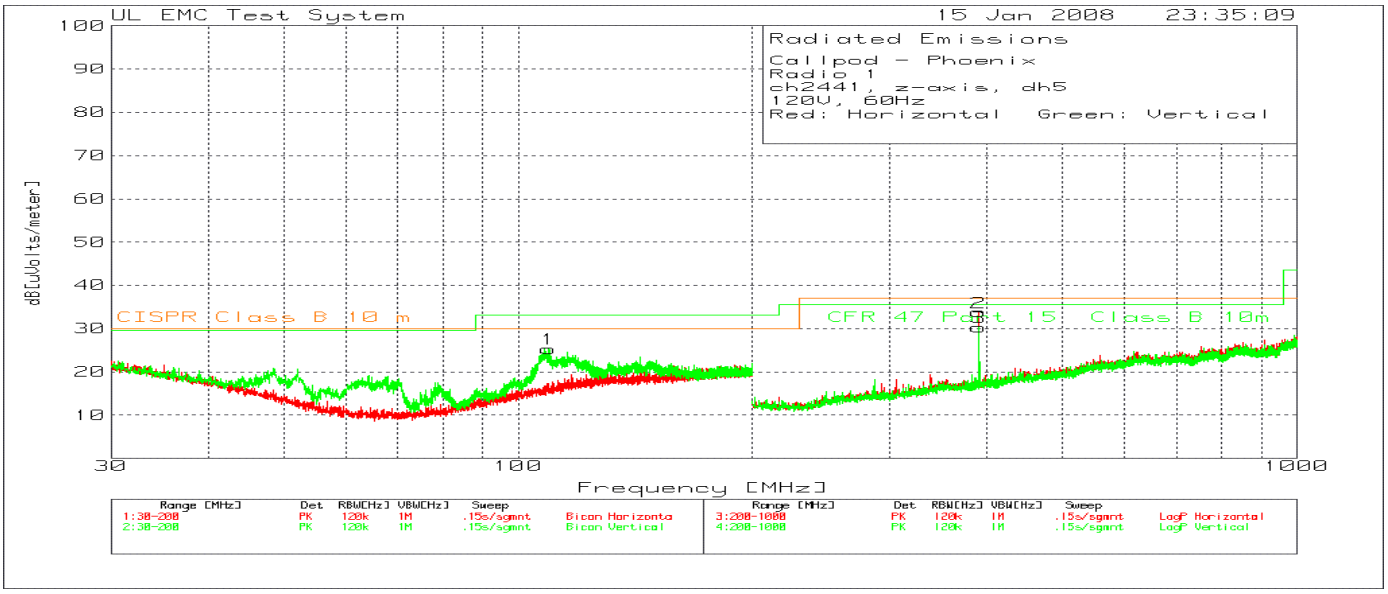


Table 29 SPURIOUS Emissions Graph – X-Axis – 30MHz – 1GHz

Marker Number	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit 1	Margin 1[dB]	Limit 2	Margin 2[dB]	Azimuth [degs]	Height [cm]	Polarity
1	109.4154	43.3	pk	-30	12	25.3	33.1	-7.8	30	-4.7	80	100	Vert
2	390.657	50.8	pk	-32.2	15.2	33.8	35.6	-1.8	37	-3.2	29	202	Horz
3	390.657	47.3	pk	-32.2	15.2	30.3	35.6	-5.3	37	-6.7	269	100	Vert

LIMIT 1: CFR 47 Part 15 Class B 10m
LIMIT 2: CISPR Class B 10 m

Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit 1	Margin 1[dB]	Limit 2	Margin 2[dB]	Azimuth [degs]	Height [cm]	Polarity
389.9888	50.9	qp	-32.2	15.2	33.9	35.6	-1.7	37	-3.1	294	214	Horz

LIMIT 1: CFR 47 Part 15 Class B 10m
LIMIT 2: CISPR Class B 10 m

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

Figure 23 SPURIOUS Emissions Graph – 1GHz – 25GHz, X-Axis, Low Channel, Radio 1

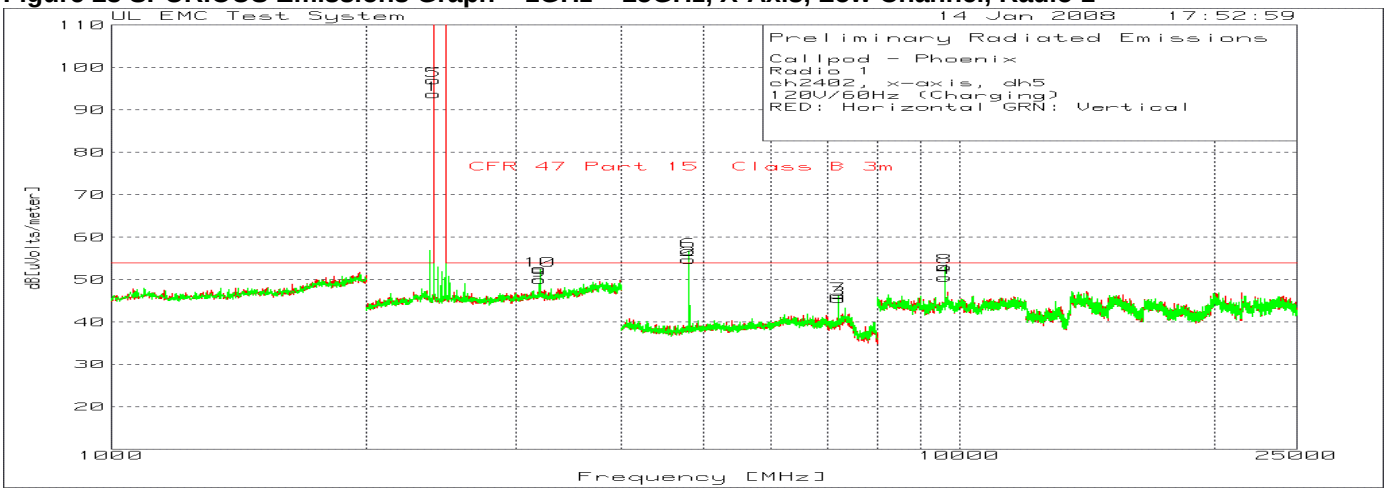


Figure 24 SPURIOUS Emissions Graph – 1GHz – 25GHz, Y-Axis, Low Channel, Radio 1

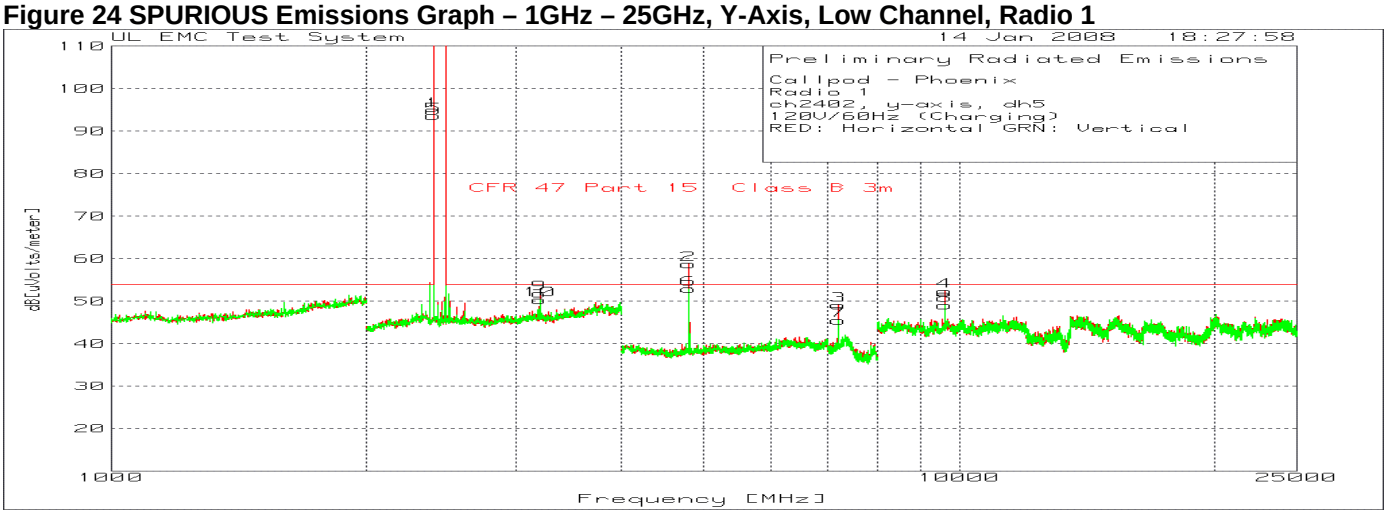


Figure 25 SPURIOUS Emissions Graph – 1GHz – 25GHz, Z-Axis, Low Channel, Radio 1

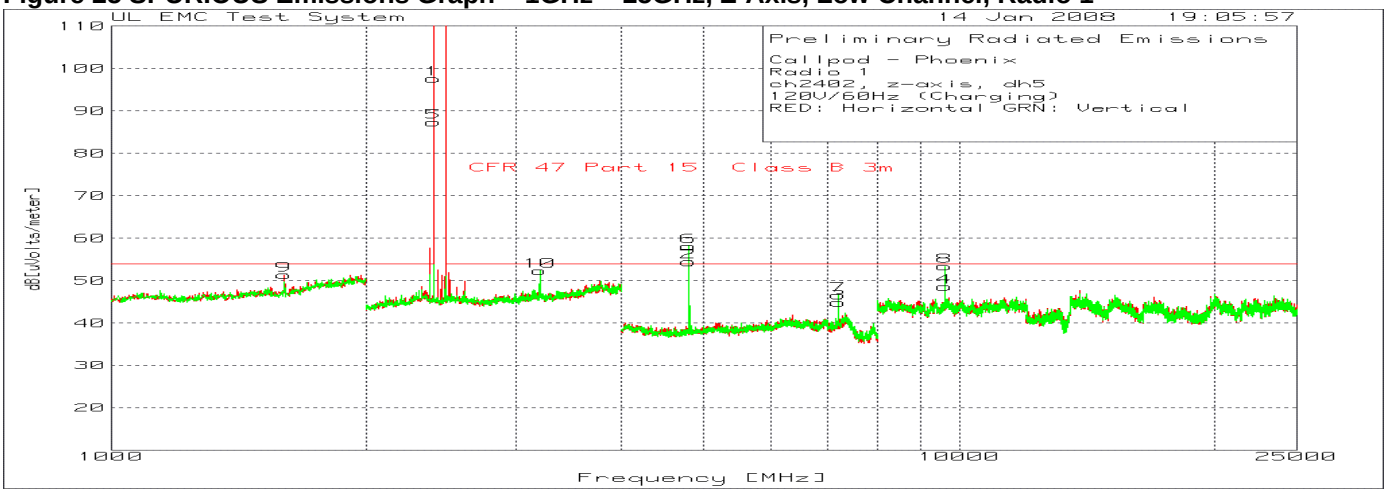


Table 30 SPURIOUS Emissions Data – 1GHz – 25GHz, X-Axis, Low Channel, Radio 1

Marker Number / Type	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit 1	Margin 1[dB]	Height [cm]	Polarity
1 – IB	2400.4	67.66	pk	4.26	21.8	93.72	-	-	150	Horz
9 – HR	3203.203	22.1	pk	4.68	23.2	49.98	54	-4.02	100	Horz
HR	3203.007	18.15	av	4.67	23.2	46.02	54	-7.98	103	horz
2 – HR	4803.202	78.46	pk	-51.43	27.7	54.73	54	.73	100	Horz
3 – HR	7207.472	62.56	pk	-46.92	29.8	45.44	54	-8.56	100	Horz
4 – HR	9609.073	64.34	pk	-50.26	36.4	50.48	54	-3.52	150	Horz
5 – IB	2400.4	70.94	pk	4.26	21.8	97	-	-	149	Vert
10- HR	3203.203	24.44	pk	4.68	23.2	52.32	54	-1.68	149	Vert
HR	3203.2214	20.45	av	4.68	23.2	48.33	54	-5.67	103	vert
6 – HR	4803.202	80.5	pk	-51.43	27.7	56.77	54	2.77	100	Vert
7 – HR	7207.472	63.48	pk	-46.92	29.8	46.36	54	-7.64	150	Vert
8 - HR	9606.404	66.93	pk	-50.27	36.4	53.06	54	-.94	150	Vert

Table 31 SPURIOUS Emissions Data – 1GHz – 25GHz, Y-Axis, Low Channel, Radio 1

Marker Number	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit 1	Margin 1[dB]	Height [cm]	Polarity
1 – IB	2400.4	68.84	pk	4.26	21.8	94.9	-	-	100	Horz
9 – HR	3203.203	23.92	pk	4.68	23.2	51.8	54	-2.2	100	Horz
2 – HR	4803.202	82.46	pk	-51.43	27.7	58.73	54	4.73	100	Horz
3 – HR	7207.472	66.21	pk	-46.92	29.8	49.09	54	-4.91	100	Horz
4 – HR	9606.404	66.21	pk	-50.27	36.4	52.34	54	-1.66	100	Horz
5 - IB	2400.4	67.62	pk	4.26	21.8	93.68	-	-	150	Vert
10- HR	3203.203	22.44	pk	4.68	23.2	50.32	54	-3.68	150	Vert
6 – HR	4803.202	76.65	pk	-51.43	27.7	52.92	54	-1.08	149	Vert
7 – HR	7207.472	62.59	pk	-46.92	29.8	45.47	54	-8.53	100	Vert
8 - HR	9609.073	62.9	pk	-50.26	36.4	49.04	54	-4.96	100	Vert

Table 32 SPURIOUS Emissions Data – 1GHz – 25GHz, Z-Axis, Low Channel, Radio 1

Marker Number	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit 1	Margin 1[dB]	Height [cm]	Polarity
9 – OT	1601.202	22.11	pk	3.43	25.8	51.34	54	-2.66	100	Horz
OT	1601.5902	18.54	av	3.42	25.8	47.76	54	-6.24	100	horz
1 – IB	2400.4	71.53	pk	4.26	21.8	97.59	-	-	100	Horz
2 – HR	4803.202	78.18	pk	-51.43	27.7	54.45	54	.45	100	Horz
3 – HR	7207.472	61.95	pk	-46.92	29.8	44.83	54	-9.17	100	Horz
4 – HR	9609.073	62.41	pk	-50.26	36.4	48.55	54	-5.45	150	Horz
5 – IB	2400.4	61.31	pk	4.26	21.8	87.37	-	-	100	Vert
10- HR	3203.203	24.45	pk	4.68	23.2	52.33	54	-1.67	150	Vert
6 – HR	4803.202	81.83	pk	-51.43	27.7	58.1	54	4.1	100	Vert
7 – HR	7207.472	63.72	pk	-46.92	29.8	46.6	54	-7.4	100	Vert
8 - HR	9606.404	67.25	pk	-50.27	36.4	53.38	54	-.62	150	Vert

IB – In-Band Emissions | **OT** – Other Emissions non transmitter | **HR** – Harmonics and Product of Transmitter
LIMIT 1: CFR 47 Part 15 Class B 3m
pk – peak measurement
av – average measurement

All points labelled HR meet the peak limit of the emissions. Average measurements were considered not necessary. Per DA-0705 the duty cycle correction factor was calculated (59.57dB) and when applied to peak data it reduces the level well below the limit.

Figure 26 SPURIOUS Emissions Graph – 1GHz – 25GHz, X-Axis, Mid Channel, Radio 1

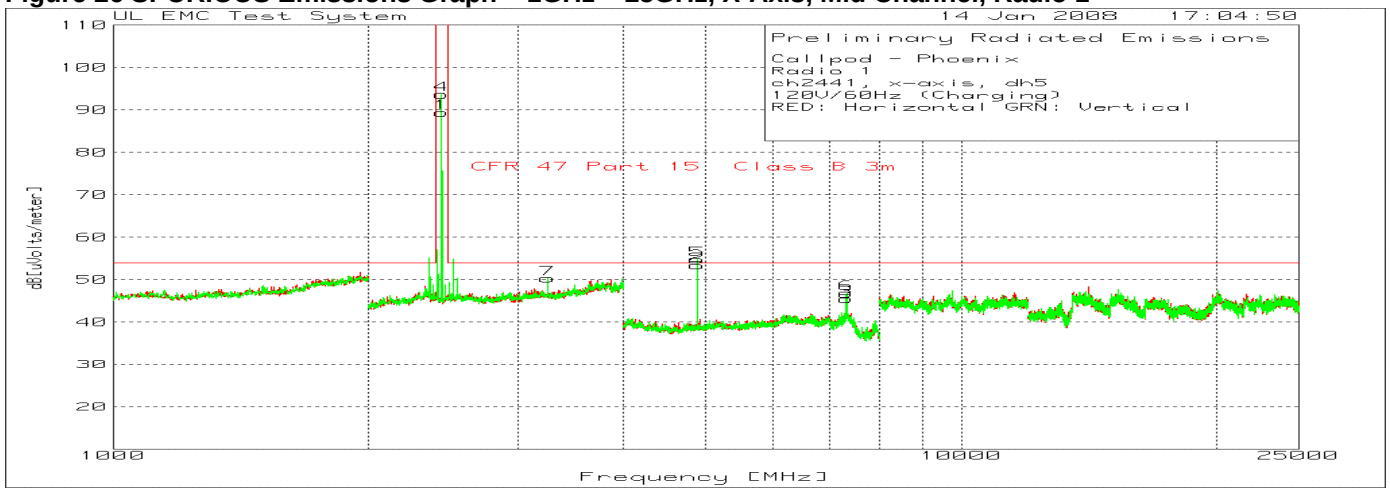


Figure 27 SPURIOUS Emissions Graph – 1GHz – 25GHz, Y-Axis, Mid Channel, Radio 1

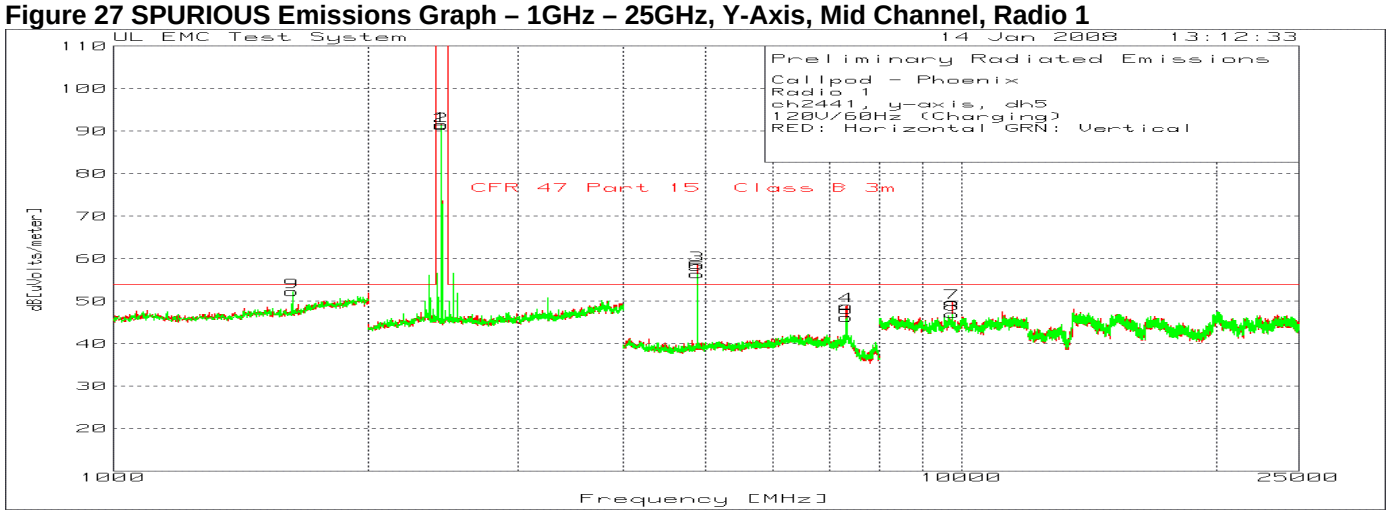


Figure 28 SPURIOUS Emissions Graph – 1GHz – 25GHz, Z-Axis, Mid Channel, Radio 1

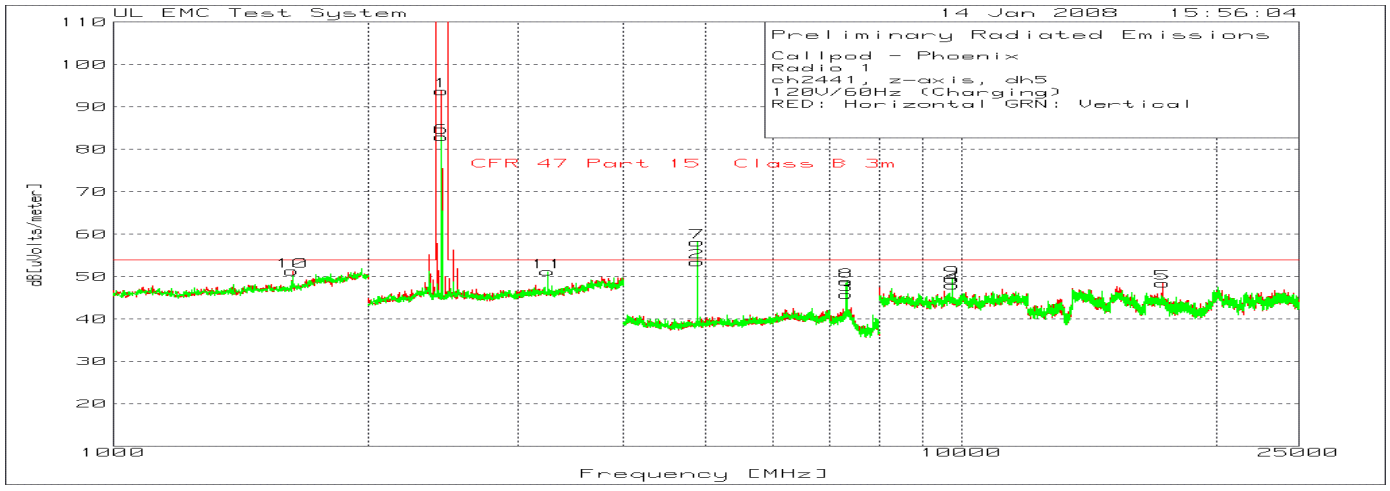


Table 33 SPURIOUS Emissions Data – 1GHz – 25GHz, X-Axis, Mid Channel, Radio 1

Marker Number	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit 1	Margin 1[dB]	Height [cm]	Polarity
1 IB	2440.44	63.66	pk	3.85	21.9	89.41	-	-	100	Horz
2 HR	4880.587	76.81	pk	-51.13	27.7	53.38	54	-.62	100	Horz
3 HR	7322.215	61.28	pk	-46.4	30.6	45.48	54	-8.52	100	Horz
4 IB	2440.44	67.9	pk	3.85	21.9	93.65	-	-	149	Vert
7 HR	3255.255	22.98	pk	4.41	22.9	50.29	54	-3.71	149	Vert
5 HR	4880.587	78.2	pk	-51.13	27.7	54.77	54	.77	150	Vert
6 HR	7324.883	62.57	pk	-46.39	30.6	46.78	54	-7.22	100	Vert

Table 34 SPURIOUS Emissions Data – 1GHz – 25GHz, Y-Axis, Mid Channel, Radio 1

Marker Number	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit 1	Margin 1[dB]	Height [cm]	Polarity
1 IB	2440.44	65.78	pk	3.85	21.9	91.53	-	-	100	Horz
3 HR	4880.587	82.03	pk	-51.13	27.7	58.6	54	4.6	100	Horz
4 HR	7324.883	64.69	pk	-46.39	30.6	48.9	54	-5.1	100	Horz
7 HR	9763.843	63.77	pk	-50.39	36.4	49.78	54	-4.22	100	Horz
9 OT	1627.255	22.8	pk	3.56	25.9	52.26	54	-1.74	100	Vert
OT	1627.5992	21.35	av	3.57	25.9	50.82	54	-3.18	100	vert
2 IB	2440.44	65.52	pk	3.85	21.9	91.27	-	-	100	Vert
5 HR	4880.587	79.77	pk	-51.13	27.7	56.34	54	2.34	100	Vert
6 HR	7324.883	61.93	pk	-46.39	30.6	46.14	54	-7.86	100	Vert
8 HR	9763.843	60.97	pk	-50.39	36.4	46.98	54	-7.02	150	Vert

Table 35 SPURIOUS Emissions Data – 1GHz – 25GHz, Z-Axis, Mid Channel, Radio 1

Marker Number	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit 1	Margin 1[dB]	Height [cm]	Polarity
10 OT	1627.255	21.84	pk	3.56	25.9	51.3	54	-2.7	106	Horz
OT	1627.6222	20.13	av	3.57	25.9	49.6	54	-4.4	129	horz
1 IB	2440.44	68	pk	3.85	21.9	93.75	-	-	100	Horz
2 HR	4880.587	76.91	pk	-51.13	27.7	53.48	54	-.52	100	Horz
3 HR	7324.883	61.58	pk	-46.39	30.6	45.79	54	-8.21	100	Horz
4 HR	9763.843	61.99	pk	-50.39	36.4	48	54	-6	149	Horz
5 HR	17294.647	46.98	pk	-38.74	40.2	48.44	54	-5.56	100	Horz
6 IB	2440.44	57.18	pk	3.85	21.9	82.93	-	-	100	Vert
11 HR	3255.255	23.87	pk	4.41	22.9	51.18	54	-2.82	150	Vert
7 HR	4880.587	81.59	pk	-51.13	27.7	58.16	54	4.16	100	Vert
8 HR	7324.883	64.72	pk	-46.39	30.6	48.93	54	-5.07	100	Vert
9 HR	9763.843	63.42	pk	-50.39	36.4	49.43	54	-4.57	150	Vert

IB – In-Band Emissions | **OT** – Other Emissions non transmitter | **HR** – Harmonics and Product of Transmitter
LIMIT 1: CFR 47 Part 15 Class B 3m
pk – peak measurement
av – average measurement

All points labelled HR meet the peak limit of the emissions. Average measurements were considered not necessary. Per DA-0705 the duty cycle correction factor was calculated (59.57dB) and when applied to peak data it reduces the level well below the limit.

Figure 29 SPURIOUS Emissions Graph – 1GHz – 25GHz, X-Axis, High Channel, Radio 1

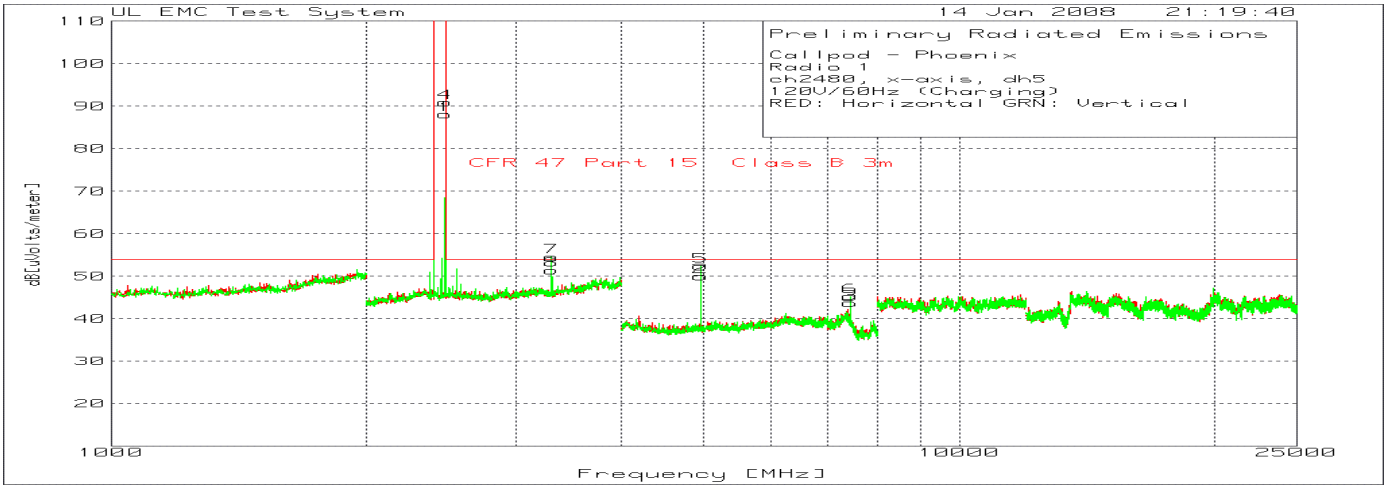


Figure 30 SPURIOUS Emissions Graph – 1GHz – 25GHz, Y-Axis, High Channel, Radio 1

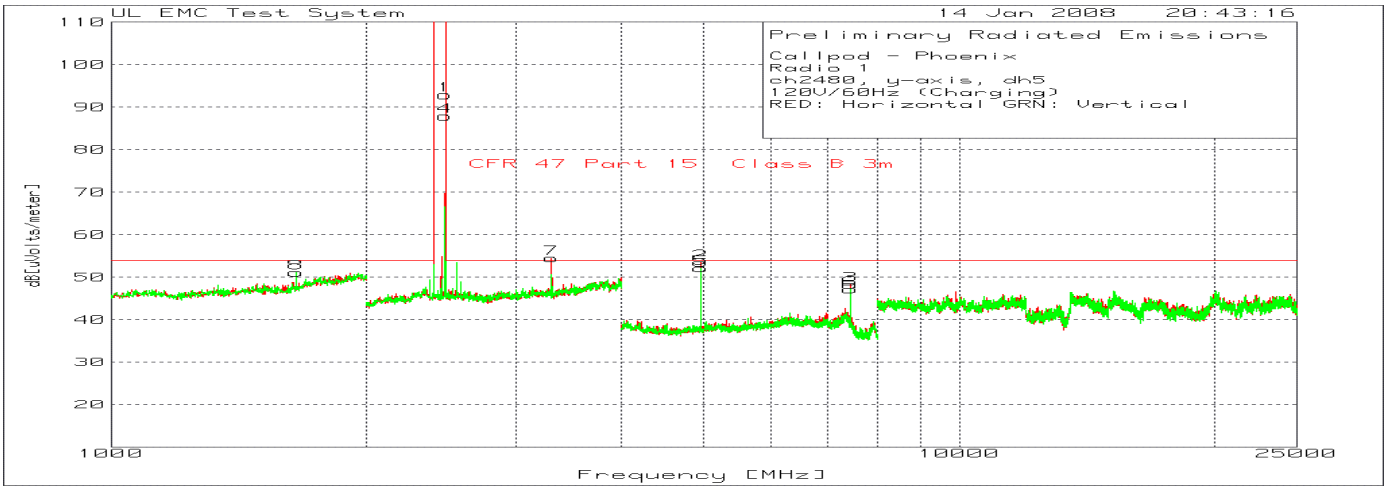


Figure 31 SPURIOUS Emissions Graph – 1GHz – 25GHz, Z-Axis, High Channel, Radio 1

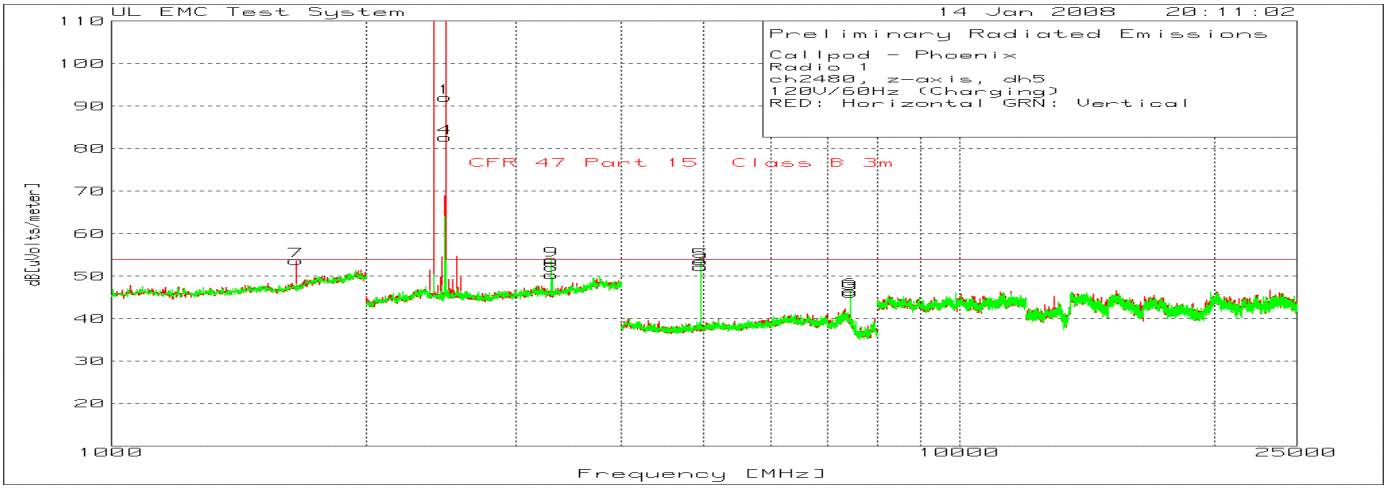


Table 36 SPURIOUS Emissions Data – 1GHz – 25GHz, X-Axis, High Channel, Radio 1

Marker Number	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit 1	Margin 1[dB]	Height [cm]	Polarity
1 IB	2478.478	61.93	pk	4.15	22	88.08	-	-	100	Horz
8 HR	3307.307	24.04	pk	4.58	22.8	51.42	54	-2.58	100	Horz
2 HR	4957.972	73.44	pk	-51.27	27.8	49.97	54	-4.03	100	Horz
3 HR	7439.626	60.4	pk	-47.31	30.6	43.69	54	-10.31	100	Horz
4 IB	2478.478	64.76	pk	4.15	22	90.91	-	-	150	Vert
7 HR	3307.307	27.16	pk	4.58	22.8	54.54	54	.54	150	Vert
5 HR	4960.64	75.86	pk	-51.3	27.8	52.36	54	-1.64	150	Vert
6 HR	7439.626	61.94	pk	-47.31	30.6	45.23	54	-8.77	100	Vert

Table 37 SPURIOUS Emissions Data – 1GHz – 25GHz, Y-Axis, High Channel, Radio 1

Marker Number	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit 1	Margin 1[dB]	Height [cm]	Polarity
1 IB	2478.478	66.72	pk	4.15	22	92.87	-	-	100	Horz
7 HR	3307.307	27.1	pk	4.58	22.8	54.48	54	.48	100	Horz
2 HR	4957.972	76.92	pk	-51.27	27.8	53.45	54	-.55	100	Horz
3 HR	7439.626	64.96	pk	-47.31	30.6	48.25	54	-5.75	100	Horz
8 OT	1653.307	21.62	pk	3.46	26	51.08	54	-2.92	100	Vert
OT	1653.6453	22.44	av	3.45	26	51.89	54	-2.11	100	vert
4 IB	2478.478	61.73	pk	4.15	22	87.88	-	-	150	Vert
5 HR	4960.64	75.64	pk	-51.3	27.8	52.14	54	-1.86	150	Vert
6 HR	7439.626	63.89	pk	-47.31	30.6	47.18	54	-6.82	100	Vert

Table 38 SPURIOUS Emissions Data – 1GHz – 25GHz, Z-Axis, High Channel, Radio 1

Marker Number	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit 1	Margin 1[dB]	Height [cm]	Polarity
7 OT	1653.307	24.19	pk	3.46	26	53.65	54	-.35	100	Horz
OT	1653.6202	21.07	av	3.45	26	50.52	54	-3.48	101	horz
1 IB	2478.478	65.91	pk	4.15	22	92.06	-	-	100	Horz
8 HR	3307.307	22.88	pk	4.58	22.8	50.26	54	-3.74	100	Horz
2 HR	4957.972	75.66	pk	-51.27	27.8	52.19	54	-1.81	100	Horz
3 HR	7442.295	62.79	pk	-47.28	30.5	46.01	54	-7.99	100	Horz
4 IB	2478.478	56.48	pk	4.15	22	82.63	-	-	100	Vert
9 HR	3307.307	26.47	pk	4.58	22.8	53.85	54	-.15	150	Vert
5 HR	4960.64	77.03	pk	-51.3	27.8	53.53	54	-.47	150	Vert
6 HR	7442.295	63.24	pk	-47.28	30.5	46.46	54	-7.54	100	Vert

IB – In-Band Emissions | **OT** – Other Emissions non transmitter | **HR** – Harmonics and Product of Transmitter
LIMIT 1: CFR 47 Part 15 Class B 3m
pk – peak measurement
av – average measurement

All points labelled HR meet the peak limit of the emissions. Average measurements were considered not necessary. Per DA-0705 the duty cycle correction factor was calculated (59.57dB) and when applied to peak data it reduces the level well below the limit.

Figure 32 SPURIOUS Emissions Graph – 1GHz – 25GHz, Y-Axis, Mid Channel, Radio 2

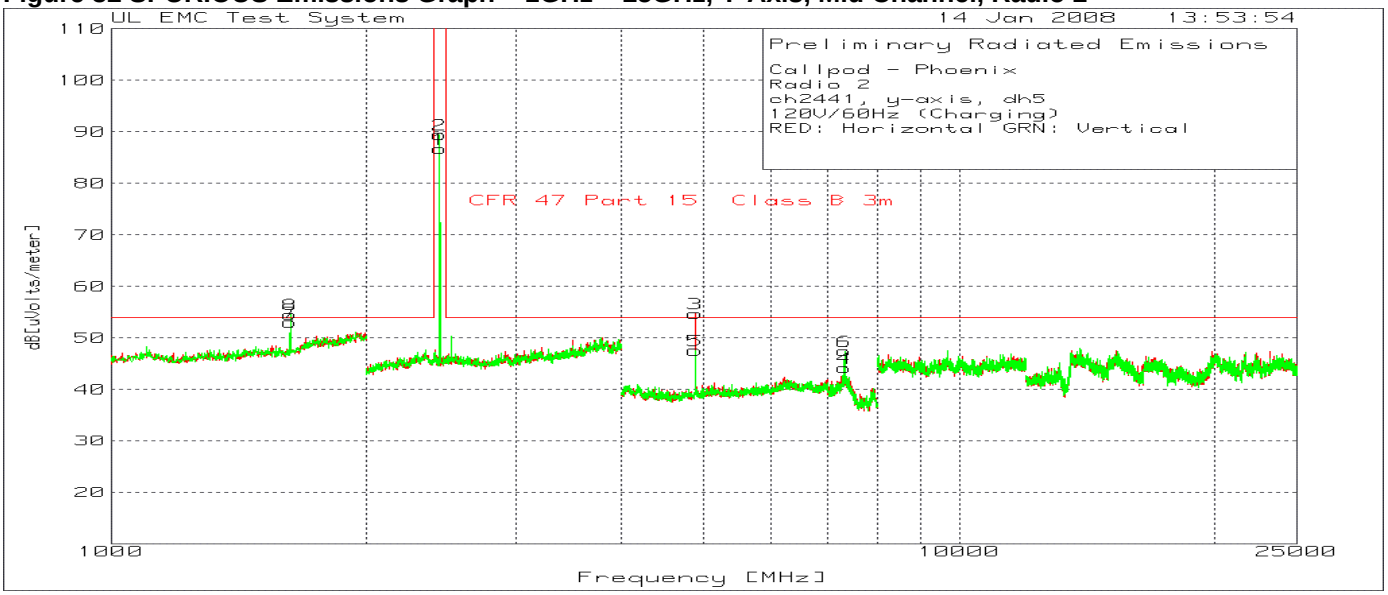


Figure 33 SPURIOUS Emissions Graph – 1GHz – 25GHz, Y-Axis, Mid Channel, Radio 3

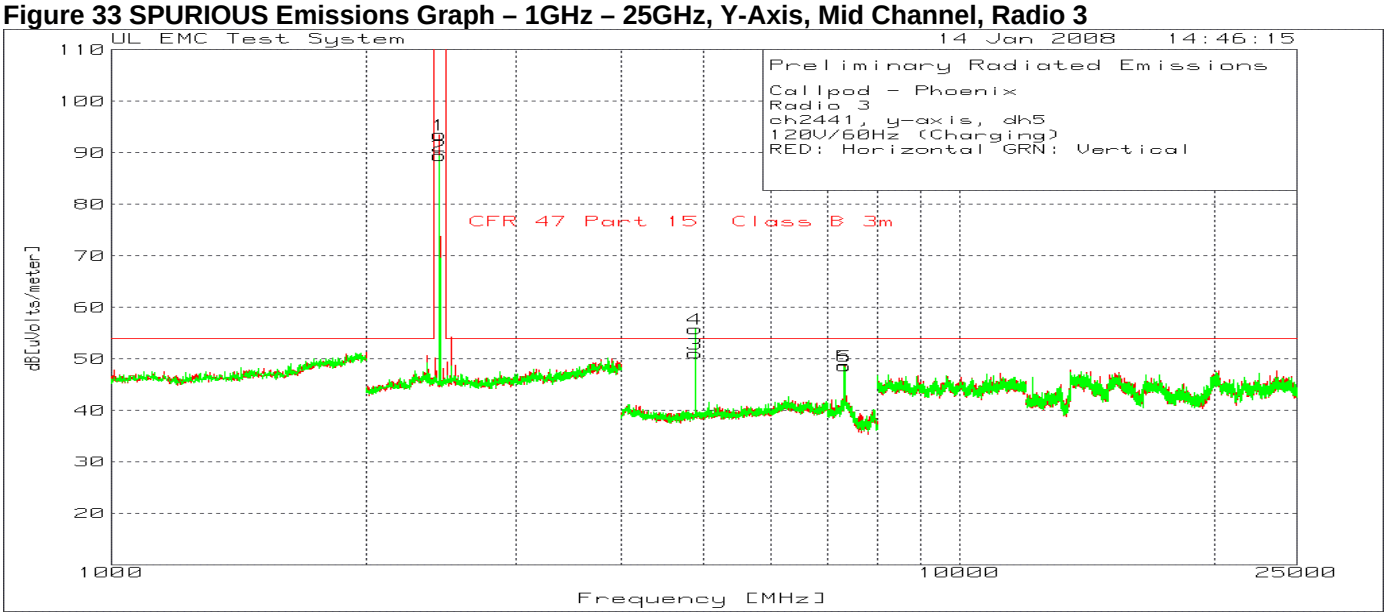


Table 39 SPURIOUS Emissions Data – 1GHz – 25GHz, Y-Axis, Mid Channel, Radio 2

Marker Number	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit 1	Margin 1[dB]	Height [cm]	Polarity
7 OT	1627.255	23.56	pk	3.56	25.9	53.02	54	-.98	150	Horz
OT	1627.6373	21.94	av	3.57	25.9	51.41	54	-2.59	100	Horz
1 IB	2440.44	60.95	pk	3.85	21.9	86.7	-	-	100	Horz
3 HR	4883.256	78.1	pk	-51.1	27.7	54.7	54	.7	100	Horz
4 HR	7324.883	59.95	pk	-46.39	30.6	44.16	54	-9.84	100	Horz
8 OT	1627.255	25.11	pk	3.56	25.9	54.57	54	.57	100	Vert
OT	1627.6403	23.39	av	3.57	25.9	52.86	54	-1.14	106	Vert
2 IB	2440.44	63.69	pk	3.85	21.9	89.44	-	-	100	Vert
5 HR	4880.587	70.99	pk	-51.13	27.7	47.56	54	-6.44	100	Vert
6 HR	7324.883	63.24	pk	-46.39	30.6	47.45	54	-6.55	100	Vert

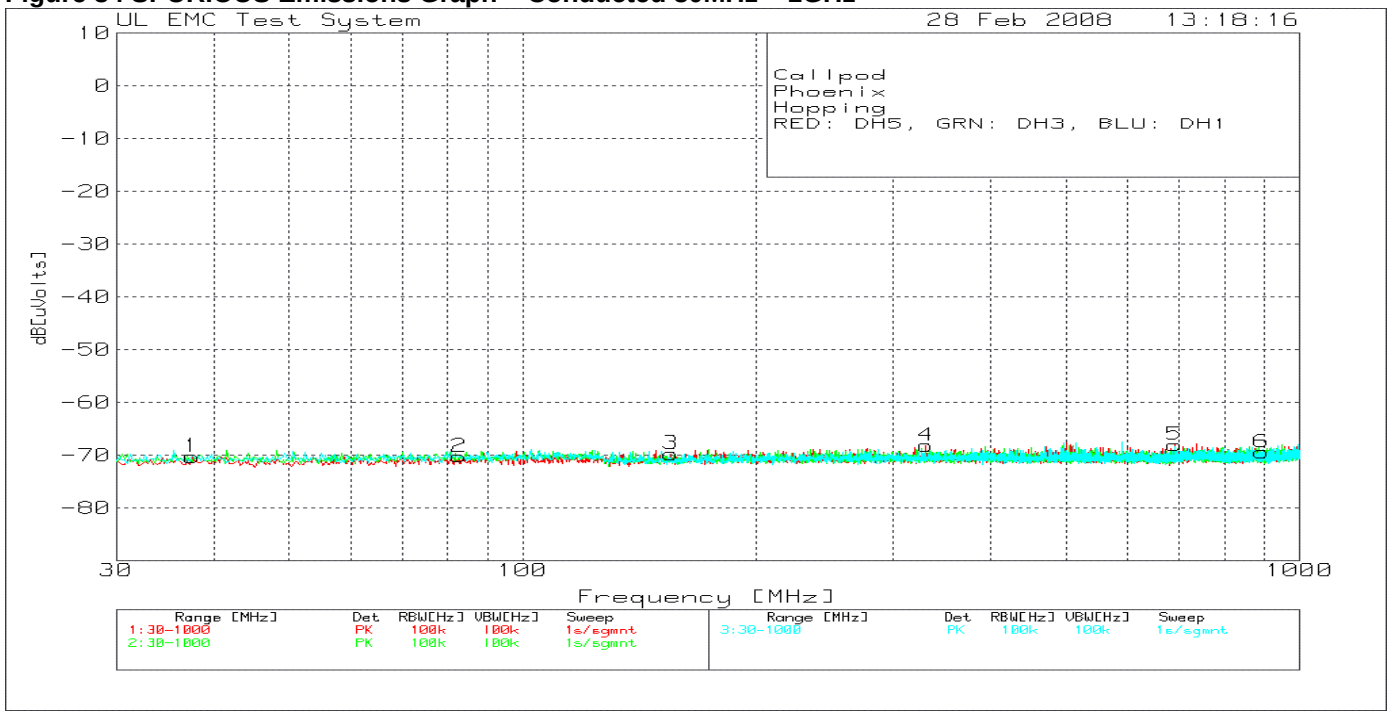
Table 40 SPURIOUS Emissions Data – 1GHz – 25GHz, Y-Axis, Mid Channel, Radio 3

Marker Number	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit 1	Margin 1[dB]	Height [cm]	Polarity
1	2440.44	67.75	pk	3.85	21.9	93.5	-	-	100	Horz
3	4880.587	74.47	pk	-51.13	27.7	51.04	54	-2.96	100	Horz
5	7324.883	64.44	pk	-46.39	30.6	48.65	54	-5.35	100	Horz
2	2440.44	63.7	pk	3.85	21.9	89.45	-	-	100	Vert
4	4880.587	79.25	pk	-51.13	27.7	55.82	54	1.82	100	Vert
6	7322.215	64.4	pk	-46.4	30.6	48.6	54	-5.4	100	Vert

IB – In-Band Emissions | **OT** – Other Emissions non transmitter | **HR** – Harmonics and Product of Transmitter
LIMIT 1: CFR 47 Part 15 Class B 3m
pk – peak measurement
av – average measurement

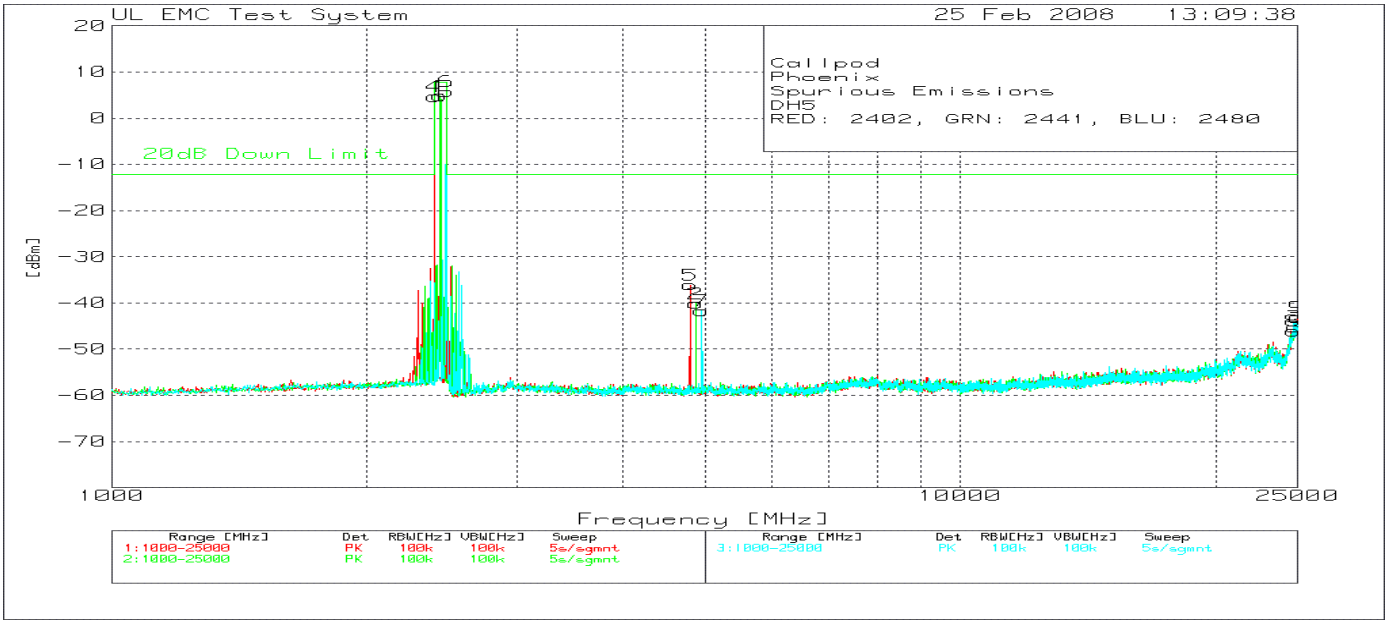
All points labelled HR meet the peak limit of the emissions. Average measurements were considered not necessary. Per DA-0705 the duty cycle correction factor was calculated (59.57dB) and when applied to peak data it reduces the level well below the limit.

Figure 34 SPURIOUS Emissions Graph – Conducted 30MHz – 1GHz



No antenna conducted emissions recorded.

Table 41 SPURIOUS EMISSIONS Data Points (Low, Mid, and High Channels) – Conducted 1GHz – 25GHz



All Spurious Emissions are 20dB or more under the limit.

No.	Test Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level [dBm]	Limit:1	2	3	4	5	6
Low Channel											
4	2399.221	101.02 pk	10.7	-107	4.72	-	-	-	-	-	-
				Margin [dB]		-	-	-	-	-	-
5	4804.832	59.4 pk	11.5	-107	-36.1	-12.1	-	-	-	-	-
				Margin [dB]		-24	-	-	-	-	-
9	24943.882	40.29 pk	23.6	-107	-43.11	-12.1	-	-	-	-	-
				Margin [dB]		-31.01	-	-	-	-	-
Middle Channel											
1	2436.633	101.21 pk	10.7	-107	4.91	-	-	-	-	-	-
				Margin [dB]		-	-	-	-	-	-
2	4879.657	55.6 pk	11.3	-107	-40.1	-12.1	-	-	-	-	-
				Margin [dB]		-28	-	-	-	-	-
3	24779.267	38.94 pk	22.9	-107	-45.16	-12.1	-	-	-	-	-
				Margin [dB]		-33.06	-	-	-	-	-
High Channel											
6	2477.786	101.99 pk	10.8	-107	5.79	-	-	-	-	-	-
				Margin [dB]		-	-	-	-	-	-
7	4958.223	54.2 pk	11.1	-107	-41.7	-12.1	-	-	-	-	-
				Margin [dB]		-29.6	-	-	-	-	-
8	24696.96	38.87 pk	22.1	-107	-46.03	-12.1	-	-	-	-	-
				Margin [dB]		-33.93	-	-	-	-	-

LIMIT 1: 20dB Down Limit

pk - Peak detector

4.9 Test Conditions and Results – Radiated Emissions - Digital

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 below 1GHz and 3 meters above 1GHz. 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	47 CFR Part 15.209 and RSS-Gen 7.2.1 and 7.2.3	
	Frequency range	Measurement Point
Fully configured sample scanned over the following frequency range	30MHz – 1GHz	(10 meter measurement distance)
Fully configured sample scanned over the following frequency range	1GHz – 25GHz	(3 meter measurement distance)

Limits

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

Supplementary information: For Measurements below 1GHz refer to section 4.8.

Table 42 SPURIOUS EMISSIONS EUT Configuration Settings

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

Supplementary information: None

Table 43 SPURIOUS EMISSIONS Test Equipment

Description	Manufacturer	Model	Identifier
Spectrum Analyzer	HP	8566B	EMC4085
Quasi-Peak Detector	HP	85650A	EMC4016
Bicon Antenna	Electro-Metrics	EM6912A	EMC4070
Log-P Antenna	Chase	UPA6109	EMC4258
Spectrum Analyzer	Rhode & Schwartz	FSEK	EMC4182
Antenna Array	UL	BOMS	EMC4276

Figure 35 Test setup for SPURIOUS EMISSIONS

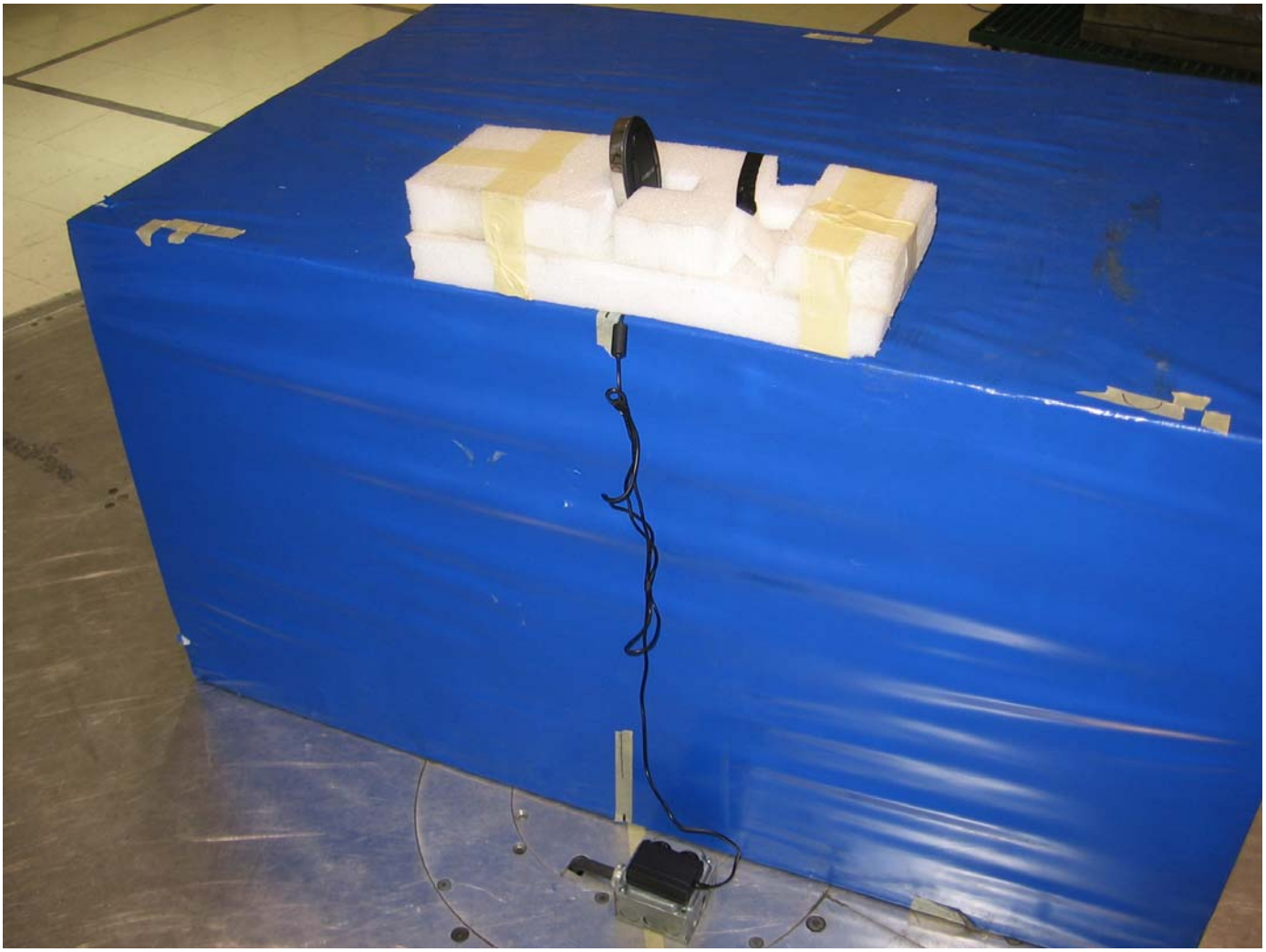
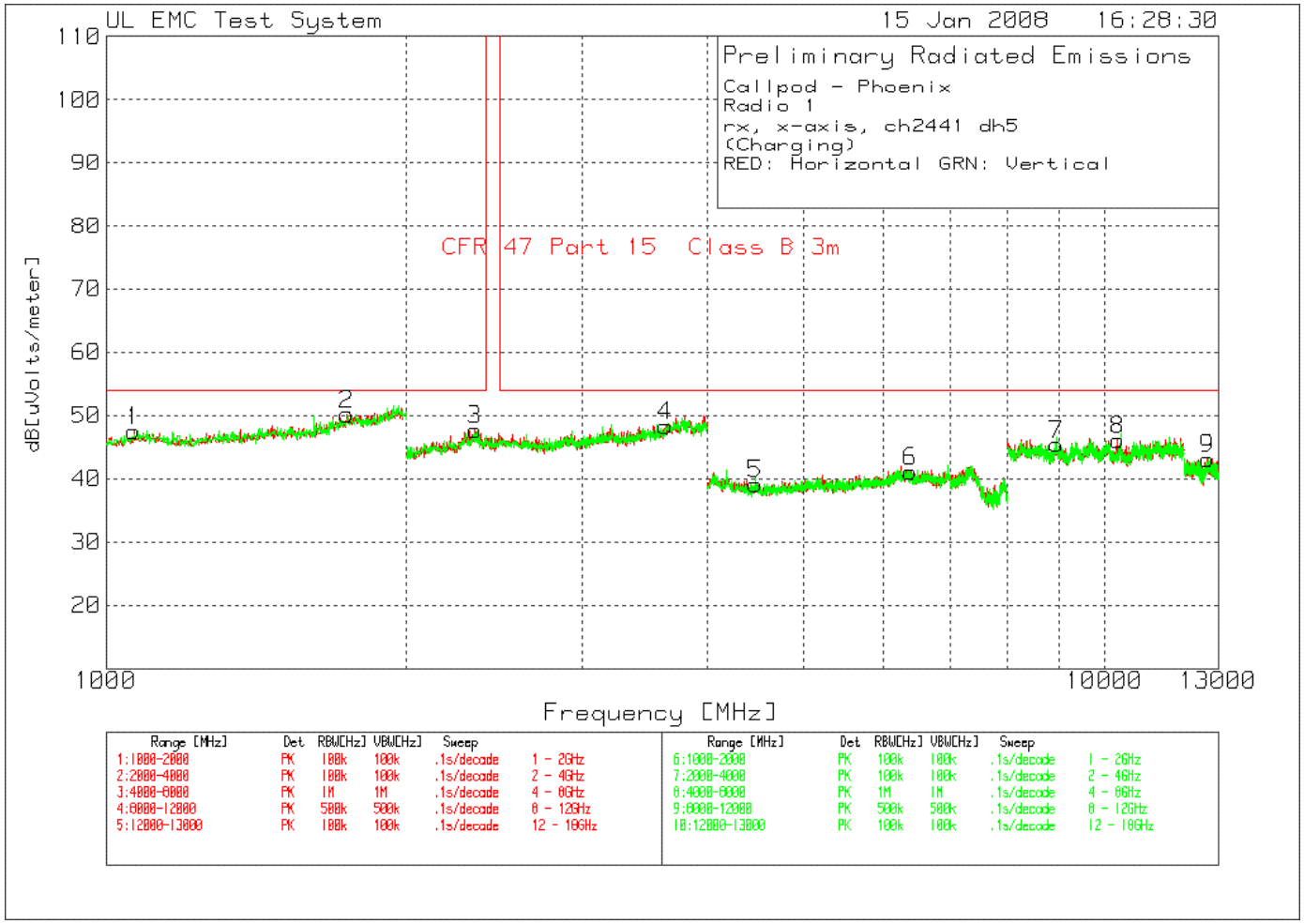


Figure 36 Radiated Emissions Graph



No Emissions were recorded.

4.10 Test Conditions and Results – 99% 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	
UL LPG	None	
	Frequency range	Measurement Point
Fully configured sample scanned over the following frequency range	2400MHz – 2483.5MHz	Antenna Port Conducted
Supplementary information: None		

Table 44 99% Bandwidth EUT Configuration Settings

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

Table 45 99% Bandwidth Test Equipment

Description	Manufacturer	Model	Identifier
Spectrum Analyzer	Agilent	E7405A	EMC4242
Attenuator	Pasternek	10dB	None

Table 46 99% Bandwidth Results

Modulation Mode	99% Bandwidth (Hz)
DH1 2402 / 2441 / 2480	1,025,000 / 1,018,750 / 1,031,250
DH3 2402 / 2441 / 2480	1,025,000 / 1,037,500 / 1,050,000
DH5 2402 / 2441 / 2480	1,031,250 / 1,037,500 / 1,031,250
Inquiry Low / Mid / High	1,002,500 / 998,750 / 992,500
DH5 – all Channels	78,072,500

5.0 IMMUNITY TEST RESULTS

The immunity tests were not performed 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