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Job Number:	1001532345
Project Number:	12CA41805
File Number:	MC16433
Date:	August 13, 2012
Model:	CCW Sensor

Electromagnetic Compatibility Test Report

For

Philips Lighting Electronics N. A.

Test Report Details

Tests Performed By:	**UL LLC** **333 Pfingsten Rd.** **Northbrook, IL 60062**
Tests Performed For:	**Philips Lighting Electronics N. A.** **10275 West Higgins Road** **Rosemont, IL 60018**
Applicant Contact: Phone: E-mail:	**Richard Haring** **(847) 390-5195** **richard.haring@philips.com**
Test Report Date:	**August 13, 2012**
Product Type:	**Wireless Device**
Product standards	**FCC Part 15, Subpart C, 15.247**
Model Number:	**CCW Sensor**
EUT Category:	**Lighting Products**
Testing Start Date:	**July 20, 2012**
Date Testing Complete:	**August 7, 2012**
Overall Results:	**Compliant**

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

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

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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) is a battery operated wall mount IR motion sensor with 2.4GHz ZigBee Radio.

1.2 Device Configuration During Test

1.2.1 Equipment Used During Test:

Use	Product Type	Manufacturer	Model	Comments
EUT	Motion Sensor	Philips Lighting Electronics N. A.	CCW Sensor	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	-	-	3.6V Battery Only
2	Antenna	-	-	-	EUT employs two antennas connected to PCB switch. EUT will never transmit simultaneously on both antennas at the same time. Radiated Spurious emissions testing was conducted on both antennas. Antenna port conducted emissions were only conducted on single antenna. Because of symmetrical layout and design it was considered not necessary to test both antennas.

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 EUT Internal Operating Frequencies:

Frequency (MHz)	Description
32	Local Oscillator

1.2.4 Power Interface:

Mode # /Rated	Voltage (V)	Current (A)	Power (W)	Frequency (DC/AC-Hz)	Phases (#)	Comments
1	3.6	-	-	DC		Internal Battery Only

1.3 EUT Configurations

Mode #	Description
1	Device was configured in 10m semi-anechoic chamber on non-conductive 80cm support.
2	Device was configured on test bench connected to measuring device via attenuator and coaxial cable. Only single antenna port was tested. See section 1.2.2 for justification.

1.4 EUT Operation Modes

Mode #	Description
1	EUT set to receive on middle channel (8).
2	EUT set to transmit on either low, middle or high channel on either antenna 0 or 1.

1.5 Rational for EUT Configuration

Mode #	Description
1	The selected EUT configuration was chosen to maximize emissions

2.0 Summary

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

2.1 Deviations from standard test methods

None

2.2 Device Modifications Necessary for Compliance

None

2.3 Reference Standards

Standard Number	Standard Name	Standard Date
FCC Part 15, Subpart C, 15.247	Code of Federal Regulations, Part 15, Radio Frequency Devices	2012
RSS-210	Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment	Issue 8

2.4 Results Summary

Requirement – Test	Result (Compliant / Non-Compliant)*
Line Conducted Emissions	*
Radiated Emissions (Receiver / Digital)	Compliant
Spurious Emissions (Antenna Conducted and Radiated)	Compliant
Band Edge Compliance (Antenna Conducted and Radiated)	Compliant
Bandwidth – 6dB	Compliant
Peak Power	Compliant
Power Spectral Density	Compliant
Bandwidth – 99% power	**
* Test Not applicable, EUT is battery operated only. ** Data only for reporting purpose	

Test Engineer:

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Staff Engineer
International EMC Services
Conformity Assessment Services

Reviewer:

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

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (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 ----------

47 CFR, Part 15	Radio Frequency Devices

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

RSS-210	Licence-exempt Radio Apparatus (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

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

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

4.1 Test Conditions and Results – RADIATED EMISSIONS Receiver / Digital Mode

Test Description	Measurements were made in a 10-meter semi-anechoic chamber that complies to CISPR 16/ANSI C63.4:2003. Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 10-meter or 3-meter as noted. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in both horizontal and vertical polarities. Final measurements (quasi-peak or average as noted) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4-meters. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable.	
Basic Standard	FCC Part 15, Subpart B	
UL LPG	80-EM-S0029	
	Frequency range	Measurement Point
Fully configured sample scanned over the following frequency range	30MHz – 5GHz	(10 meter or 3 meter)

Limits - Class A

Frequency (MHz)	Limit (dBµV/m)	
	Quasi-Peak	Average
30-88	39.08	NA
88-216	43.52	NA
216-960	46.44	NA
960-1000	49.54	NA
Above 1GHz	NA	60 (at 3-meter)

Limits - Class B

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

Supplementary information: None

Table 1 Radiated Emissions EUT Configuration Settings

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

Table 2 Radiated Emissions Test Equipment

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMI Test Receiver	Rohde & Schwarz	ESU	EMC4323	20111228	20121231
Bicon Antenna	Chase	VBA6106A	EMC4078	20120117	20130131
Log-P Antenna	Chase	UPA6109	EMC4258	20110927	20120928
Spectrum Analyzer	Rhode & Schwarz	FSEK	EMC4182	20111227	20121231
Antenna Array	UL	BOMS	EMC4276	20111227	20121231

Figure 1 Radiated Emissions Graph 30MHz – 1GHz, RX CH8, Ant 0

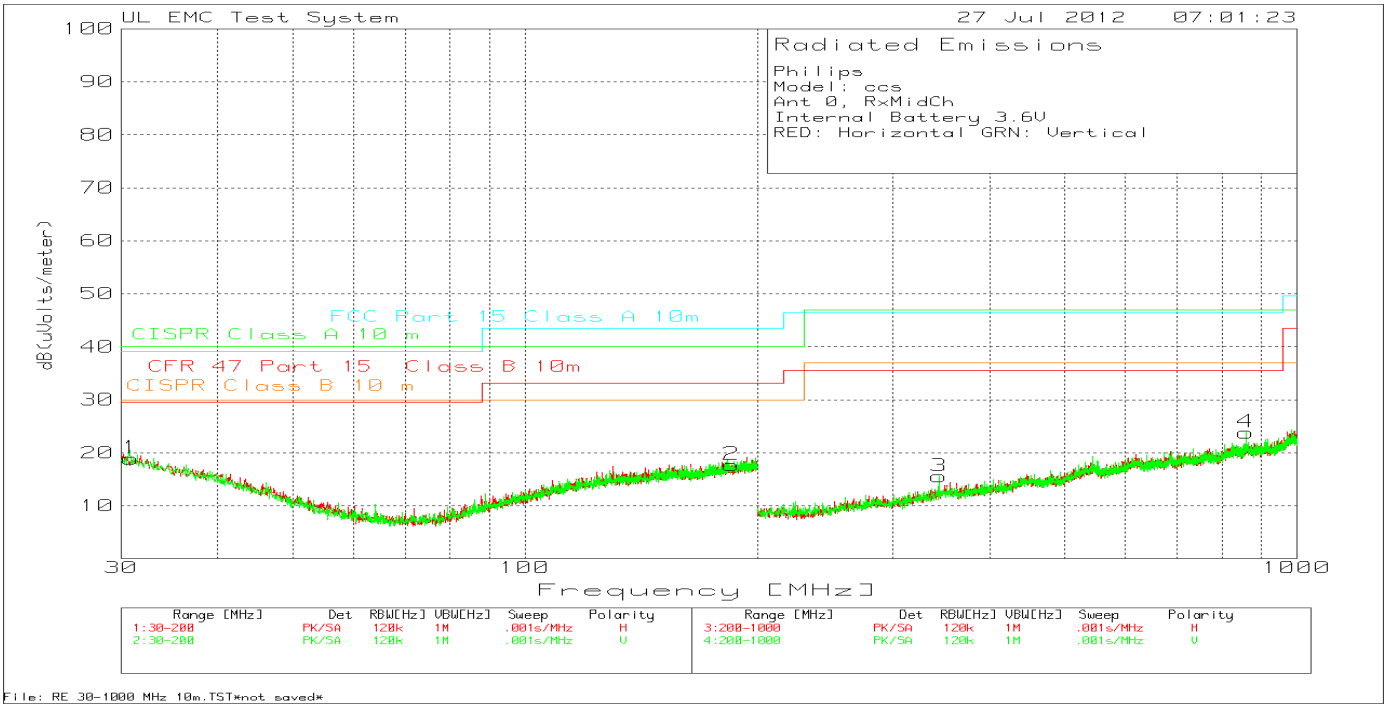


Figure 2 Radiated Emissions Graph 30MHz – 1GHz, RX CH8, Ant 1

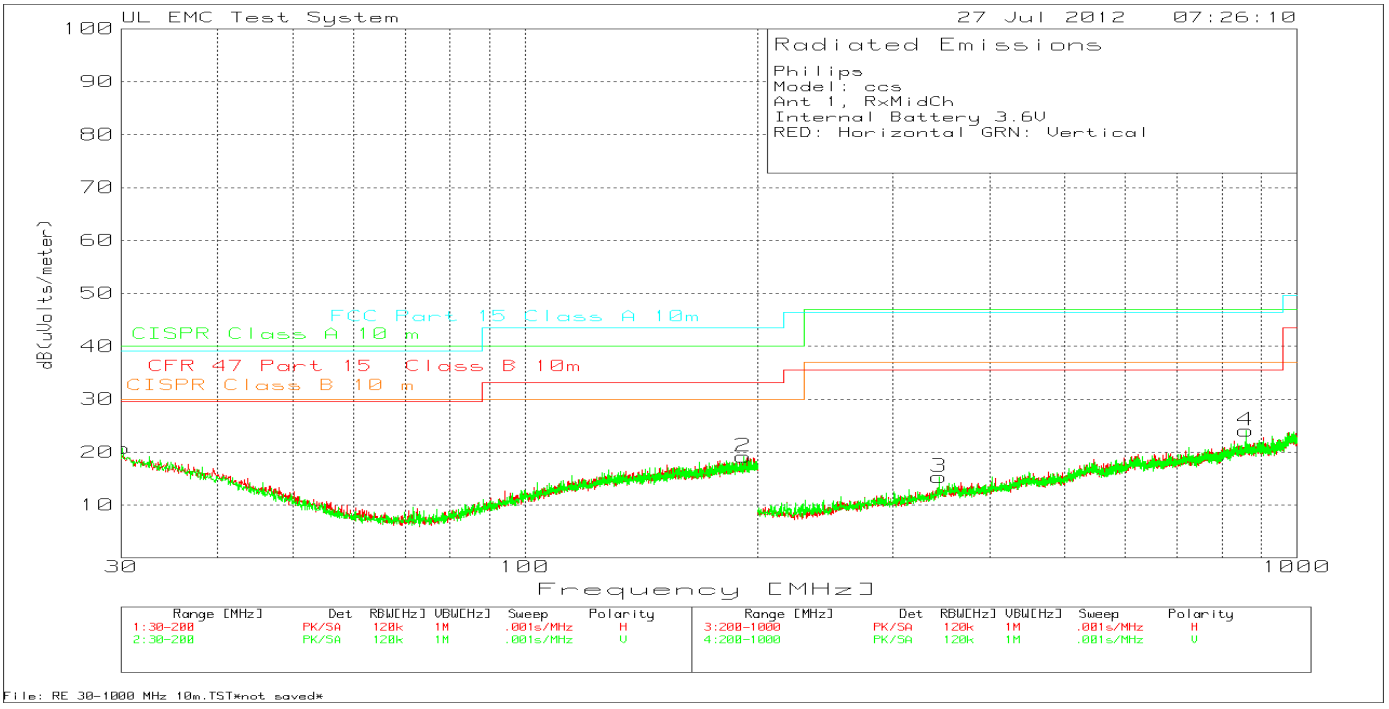


Figure 3 Radiated Emissions Graph 1GHz – 13GHz, RX CH8, Ant 0

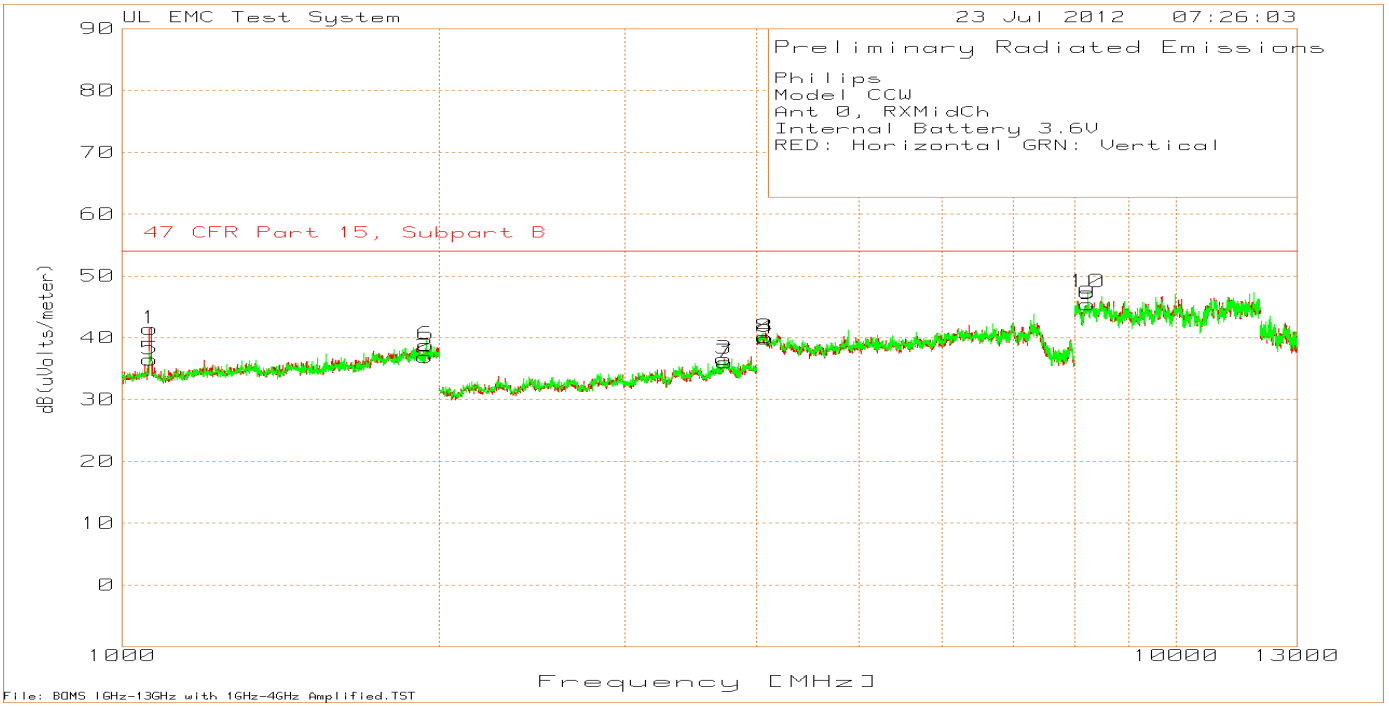
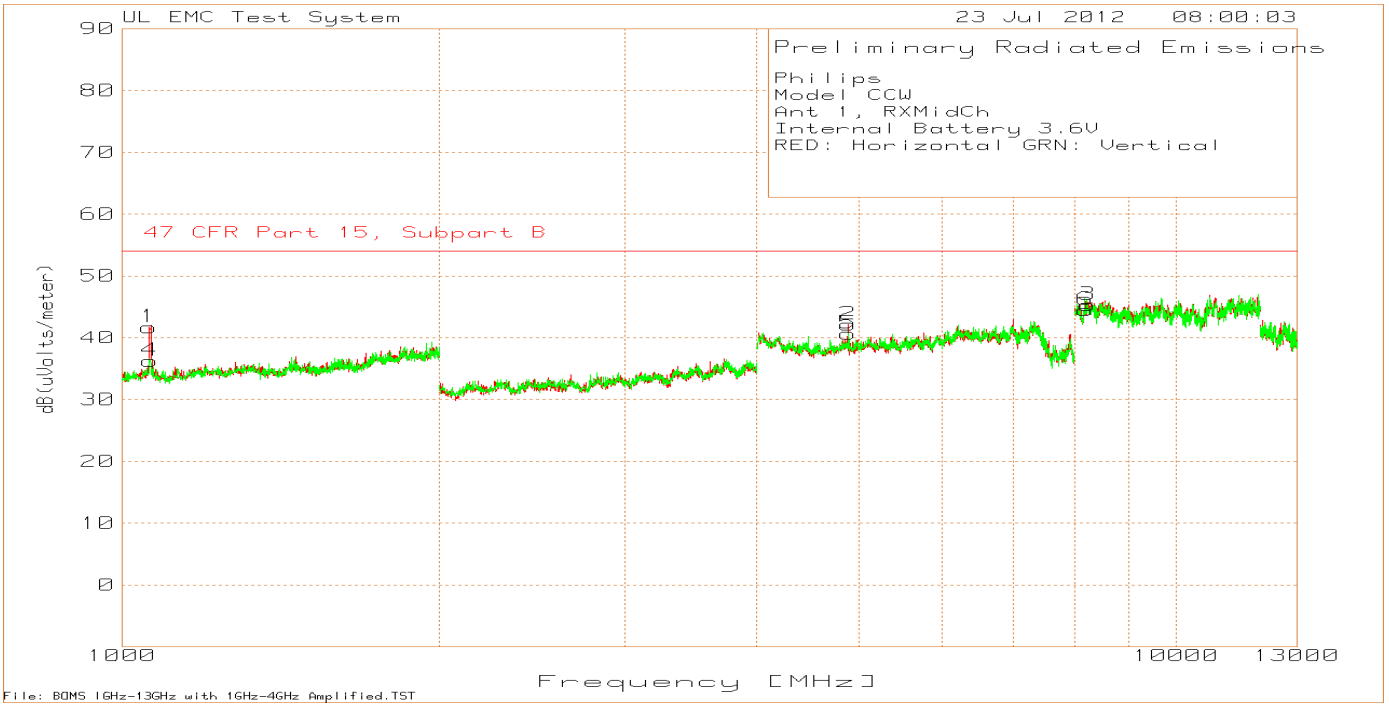


Figure 4 Radiated Emissions Graph 1GHz – 13GHz, RX CH8, Ant 1



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

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

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

Limits (Antenna Conducted)

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

Limits (Radiated – Restricted Bands Only)

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

Supplementary information: In frequency range 30MHz-1GHz there were no emissions from the transmitter.

Table 3 SPURIOUS EMISSIONS EUT Configuration Settings

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

Table 4 SPURIOUS CONDUCTED EMISSIONS Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	Agilent	PXA	EMC4360	20120515	20130515
Attenuator w/ Cable	-	-	None	*N/A	N/A
* Cable and attenuator ware characterized at the time of testing					

Table 5 SPURIOUS RADIATED EMISSIONS Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMI Test Receiver	Rohde & Schwarz	ESU	EMC4323	20111228	20121231
Bicon Antenna	Chase	VBA6106A	EMC4078	20120117	20130131
Log-P Antenna	Chase	UPA6109	EMC4258	20110927	20120928
Spectrum Analyzer	Rhode & Schwarz	FSEK	EMC4182	20111227	20121231
Antenna Array	UL	BOMS	EMC4276	20111227	20121231

Figure 5 30MHz-25GHz Antenna Port 0 Spurious Emissions Plots TX Mode, Low Channel.

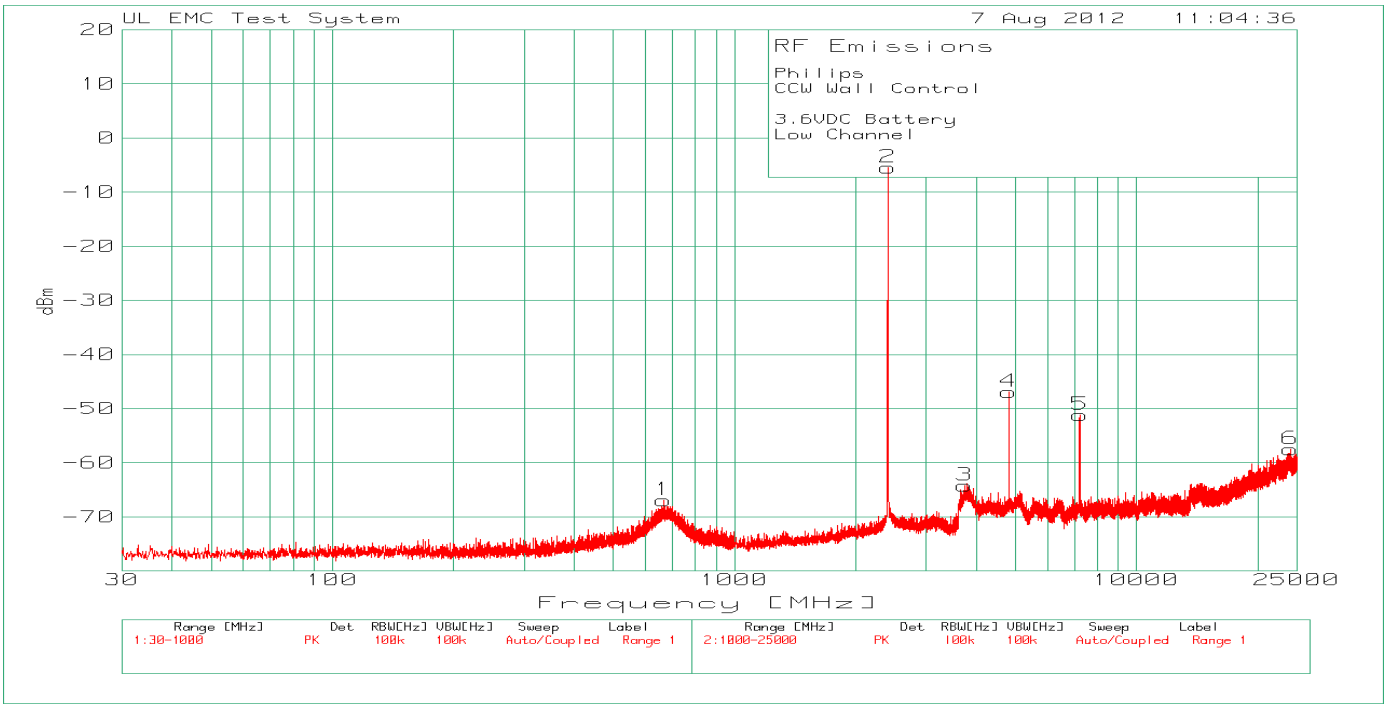


Table 6 Antenna Port Conducted Spurious Emissions 30MHz - 25GHz, Low Channel

Philips CCW Wall Control 3.6VDC Battery Low Channel						
Marker No.	Test Frequency MHz	Meter Reading	Detector	dBuV to dBm (dB)	Path Loss with Attenuator dB	Level dBm
1	667.9443	30.09	PK	-107	10	-66.91
2	2404.654	91.31	PK	-107	10.3	-5.39
3	3732.381	32.19	PK	-107	10.6	-64.21
4	4810.348	49.36	PK	-107	10.7	-46.94
5	7216.043	44.76	PK	-107	11.1	-51.14
6	24095.866	33.79	PK	-107	15.7	-57.51
PK - Peak detector						

Figure 6 30MHz-25GHz Antenna Port 0 Spurious Emissions Plots TX Mode Middle Channel.

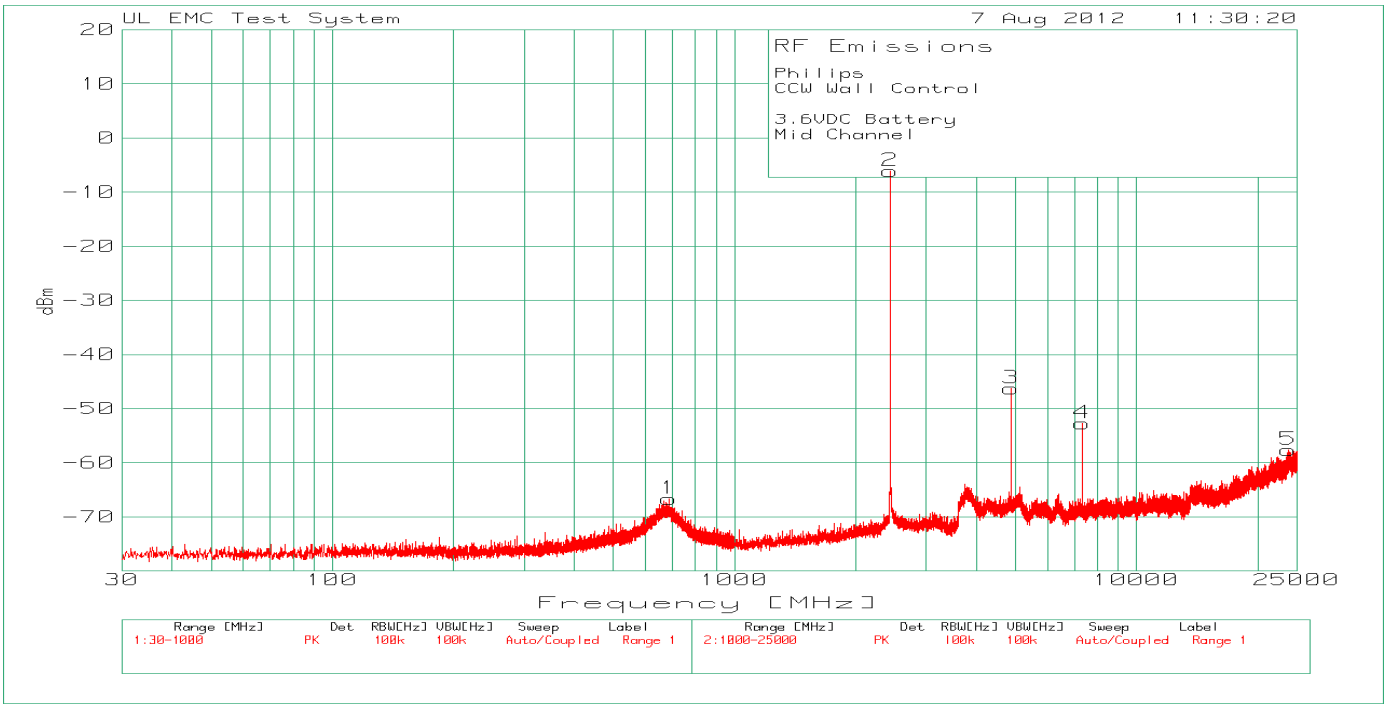


Table 7 Antenna Port Conducted Spurious Emissions 30MHz - 25GHz, Middle Channel

Philips CCW Wall Control 3.6VDC Battery Mid Channel						
Marker No.	Test Frequency MHz	Meter Reading	Detector	dBuV to dBm (dB)	Path Loss with Attenuator dB	Level dBm
1	686.7216	30.31	PK	-107	10	-66.69
2	2439.62	90.57	PK	-107	10.3	-6.13
3	4880.281	50.08	PK	-107	10.7	-46.22
4	7320.942	43.19	PK	-107	11.1	-52.71
5	23885.07	33.71	PK	-107	15.7	-57.59
PK - Peak detector						

Figure 7 30MHz-25GHz Antenna Port Spurious Emissions Plots TX Mode High Channel.

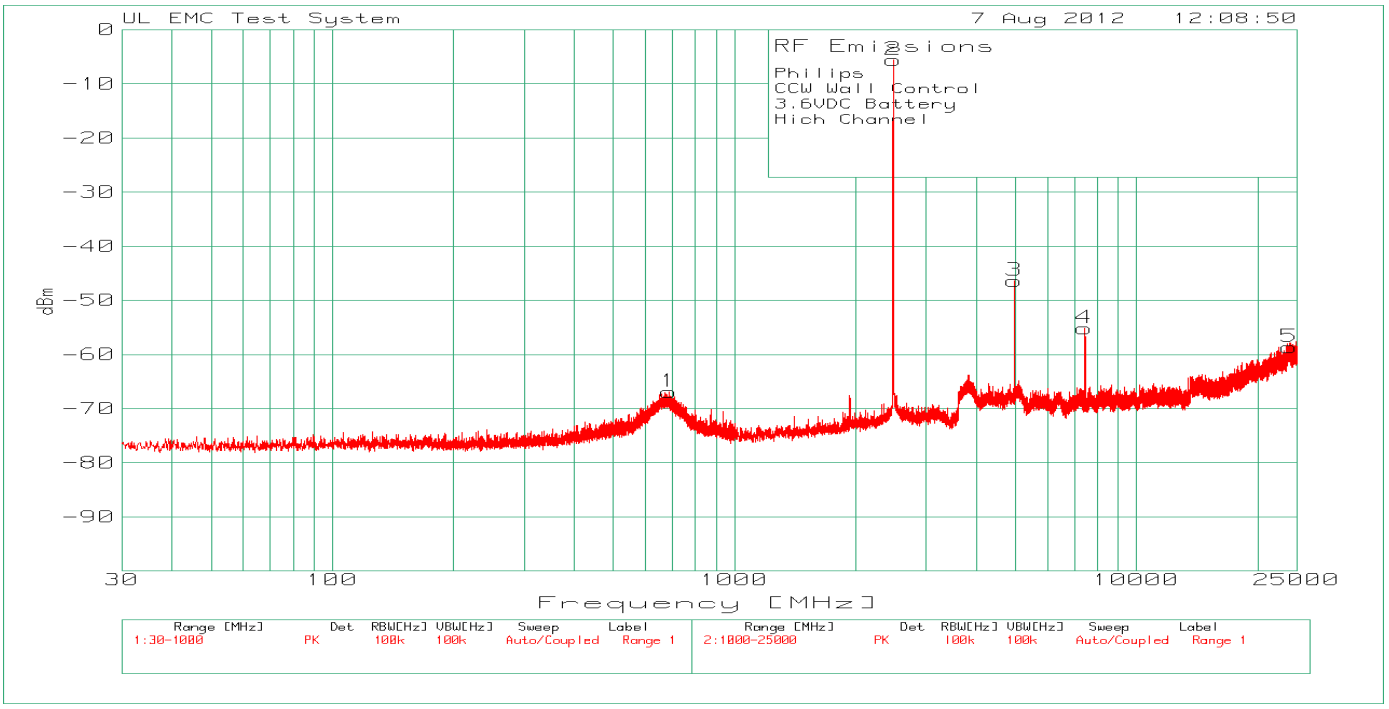
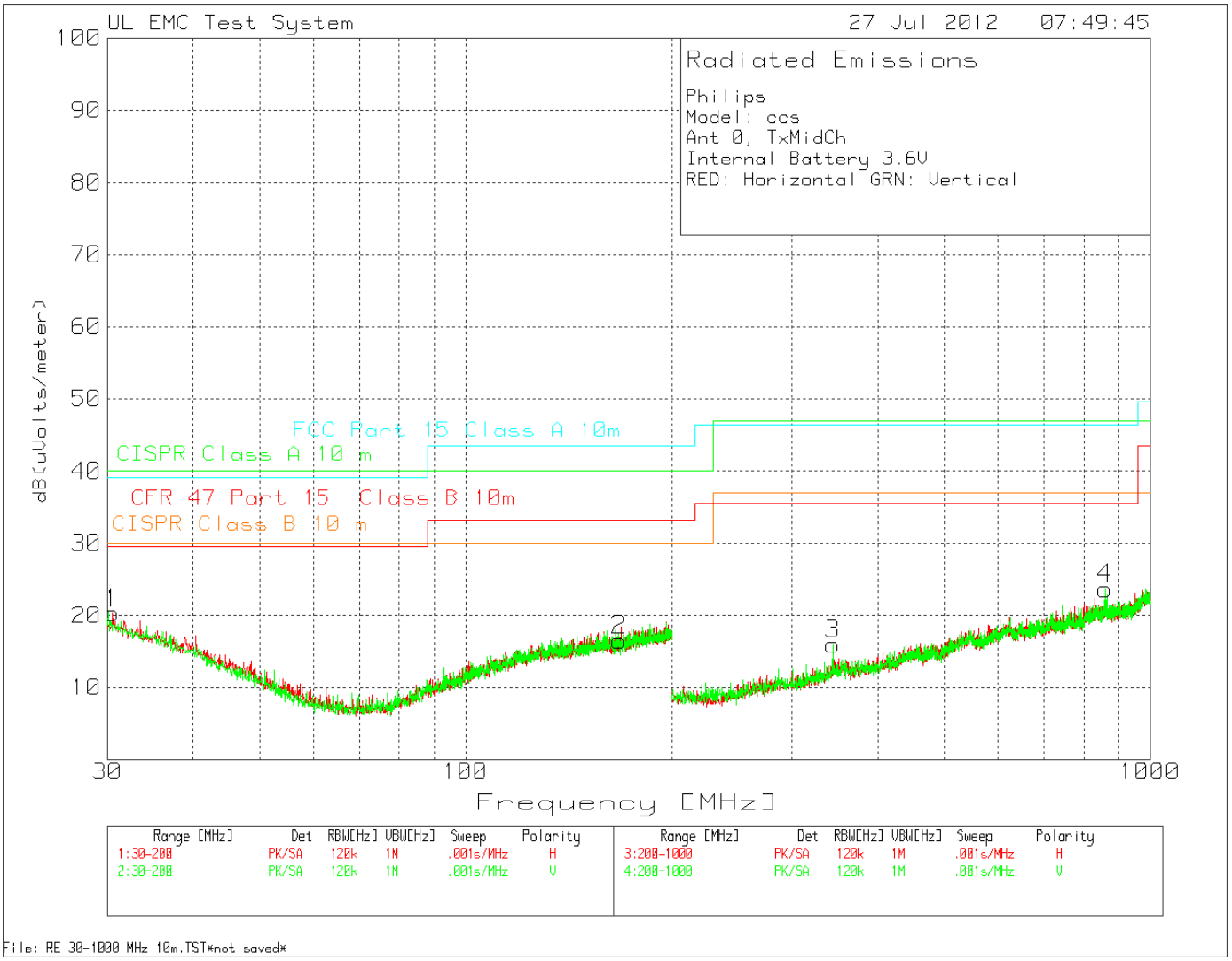


Table 8 Antenna Port Conducted Spurious Emissions 30MHz - 25GHz, High Channel

Philips CCW Wall Control 3.6VDC Battery Hich Channel						
Marker No.	Test Frequency	Meter Reading	Detector	dBuV to dBm (dB)	Path Loss with Attenuator dB	Level dBm
1	688.2965	30.06	PK	-107	10	-66.94
2	2479.582	91.17	PK	-107	10.3	-5.53
3	4960.205	49.95	PK	-107	10.7	-46.35
4	7437.83	40.71	PK	-107	11.1	-55.19
5	23974.98	32.61	PK	-107	15.7	-58.69
PK - Peak detector						

Figure 8 Radiated Spurious Emissions below 1GHz, Middle Channel, Antenna 0



No emissions recorded, data included for reference only

Figure 9 Radiated Spurious Emissions above 1GHz, Low Channel, Antenna 0

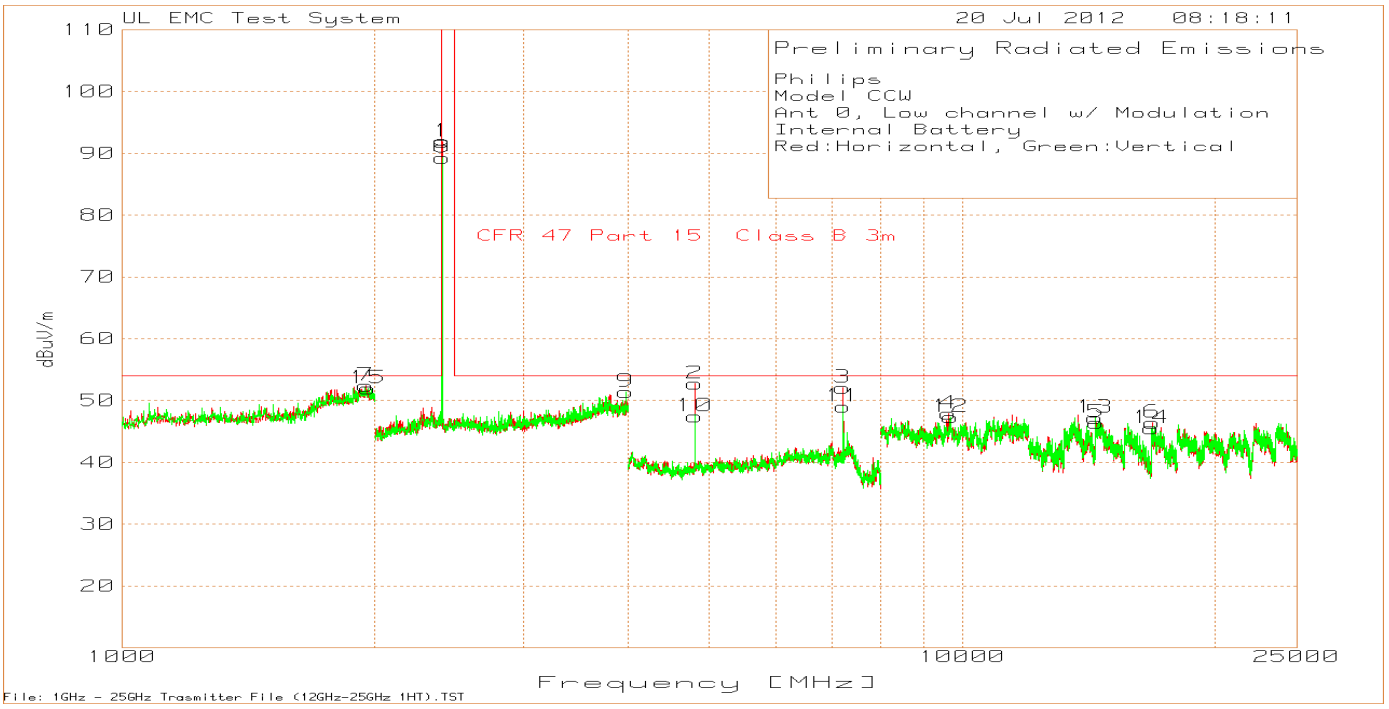


Table 9 Radiated Spurious Emissions above 1GHz, Low Channel, Antenna 0

Philips
Model CCW
Ant 0, Low channel w/ Modulation
Internal Battery
Red:Horizontal, Green:Vertical

Marker No.	Test Frequency	Meter Reading dBuV	Detector	Antenna Factor dB	Path Loss Gain Factor dB	Level dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
7	1949.9	21.23	PK	27.4	3.83	52.46	-	-	150	Horz
1	2404.404	65.91	PK	21.8	4.18	91.89	-	-	100	Horz
2	4811.207	76.36	PK	27.7	-51.35	52.71	54	-1.29	100	Horz
3	7215.477	70.07	PK	29.8	-47.82	52.05	54	-1.95	100	Horz
4	9617.078	61.42	PK	36.4	-49.91	47.91	54	-6.09	150	Horz
5	14439.376	46.18	PK	39.8	-39.51	46.47	54	-7.53	99	Horz
6	16818.727	47.09	PK	40.1	-40.78	46.41	54	-7.59	99	Horz
15	1961.924	20.77	PK	27.5	3.74	52.01	-	-	101	Vert
8	2404.404	63.34	PK	21.8	4.18	89.32	-	-	102	Vert
9	3981.982	21.95	PK	24.3	5.11	51.36	54	-2.64	102	Vert
10	4811.207	71.1	PK	27.7	-51.35	47.45	54	-6.55	150	Vert
11	7218.145	66.86	PK	29.8	-47.68	48.98	54	-5.02	102	Vert
12	9673.115	59.65	PK	36.4	-48.67	47.38	54	-6.62	101	Vert
13	14405.762	46.68	PK	39.8	-39.25	47.23	54	-6.77	100	Vert
14	16811.525	46.28	PK	40.1	-40.83	45.55	54	-8.45	100	Vert

Test Frequency	Meter Reading dBuV	Detector	Antenna Factor dB	Path Loss Gain Factor dB	Level dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Azimuth [Degs]	Height [cm]	Polarity
4810.8617	77.23	PK	27.7	-51.35	53.58	74	-20.42	233	101	Horz
4808.9529	70.94	LnAv	27.7	-51.36	47.28	54	-6.72	233	101	Horz
7213.2916	70.39	PK	29.8	-47.72	52.47	74	-21.53	241	100	Horz
7216.2074	63.35	LnAv	29.8	-47.79	45.36	54	-8.64	241	100	Horz
7213.2074	71.56	PK	29.8	-47.72	53.64	74	-20.36	119	101	Vert
7216.1112	63.89	LnAv	29.8	-47.8	45.89	54	-8.11	119	101	Vert

All other Harmonics fell below -6db of the limit, Therefore not required for manual measurement
PK - Peak detector
LnAv - Linear Average detector

Figure 10 Radiated Spurious Emissions above 1GHz, Middle Channel, Antenna 0

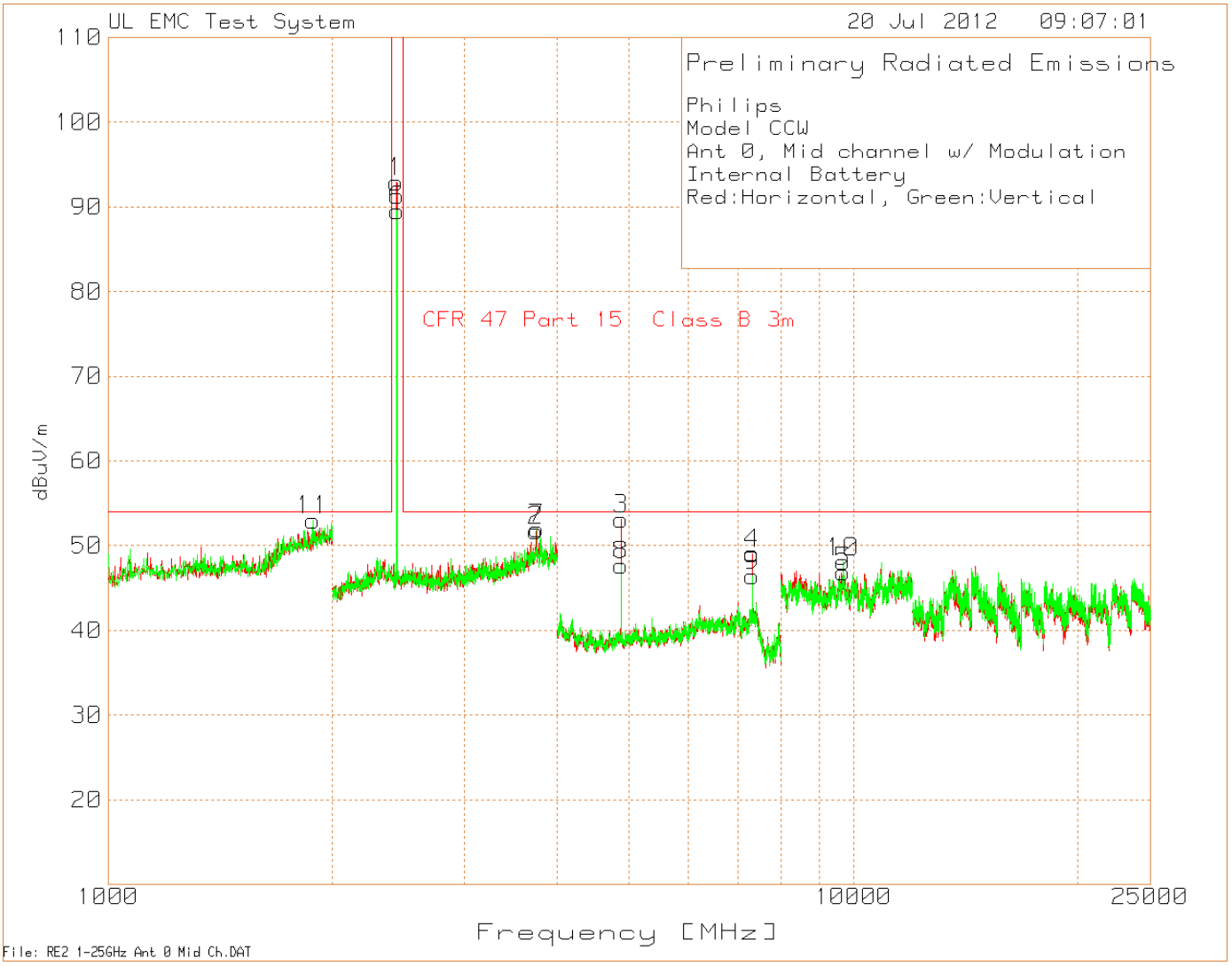


Table 10 Radiated Spurious Emissions above 1GHz, Middle Channel, Antenna 0

Philips
Model CCW
Ant 0, Mid channel w/ Modulation
Internal Battery
Red:Horizontal, Green:Vertical

Marker No.	Test Frequency	Meter Reading dBuV	Detector	Antenna Factor dB	Path Loss Gain Factor dB	Level dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
1	2438.438	66.87	PK	21.9	4.18	92.95	-	-	100	Horz
2	3747.748	22.06	PK	23.8	5.89	51.75	54	-2.25	100	Horz
3	4877.919	76.61	PK	27.7	-51.16	53.15	54	-0.85	99	Horz
4	7322.215	64.67	PK	30.6	-46.22	49.05	54	-4.95	99	Horz
5	9673.115	59.16	PK	36.4	-48.67	46.89	54	-7.11	100	Horz
11	1881.764	21.91	PK	27.3	3.82	53.03	-	-	100	Vert
6	2440.44	63.4	PK	21.9	4.25	89.55	-	-	100	Vert
7	3757.758	22.38	PK	23.8	5.84	52.02	54	-1.98	100	Vert
8	4880.587	71.17	PK	27.7	-51.25	47.62	54	-6.38	150	Vert
9	7322.215	62.1	PK	30.6	-46.22	46.48	54	-7.52	100	Vert
10	9675.784	60.25	PK	36.4	-48.58	48.07	54	-5.93	150	Vert

Test Frequency	Meter Reading dBuV	Detector	Antenna Factor dB	Path Loss Gain Factor dB	Level dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Azimuth [Degs]	Height [cm]	Polarity
4878.8587	77.23	PK	27.7	-51.19	53.74	74	-20.26	236	100	Horz
4878.9489	71.07	LnAv	27.7	-51.19	47.58	54	-6.42	236	100	Horz
7318.2956	65.93	PK	30.6	-46.26	50.27	74	-23.73	249	100	Horz
7321.3537	57.92	LnAv	30.6	-46.23	42.29	54	-11.71	249	100	Horz

All other harmonics fell below -6db from the limit
PK - Peak detector
LnAv - Linear Average detector

Figure 11 Radiated Spurious Emissions above 1GHz, High Channel, Antenna 0

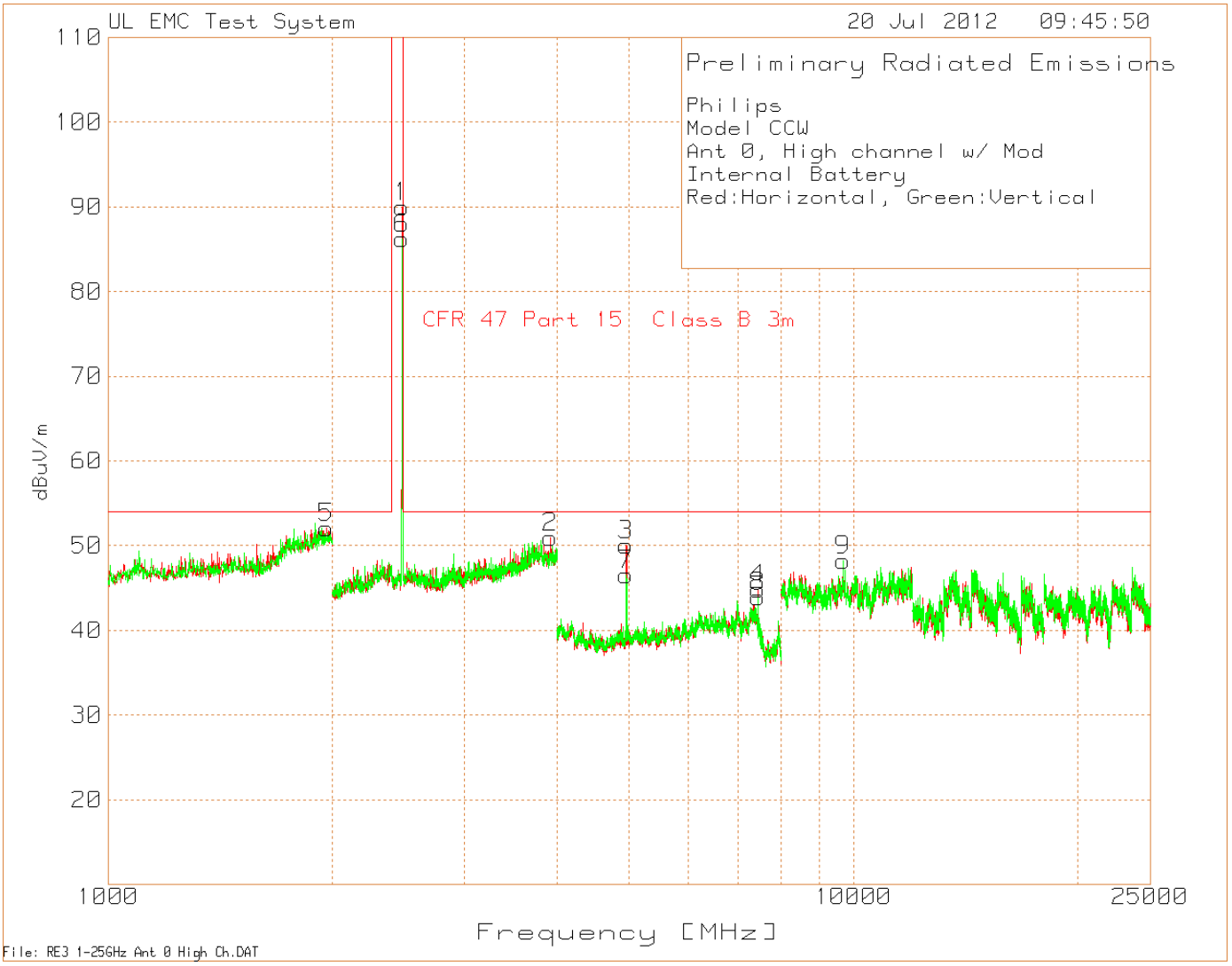


Table 11 Radiated Spurious Emissions above 1GHz, High Channel, Antenna 0

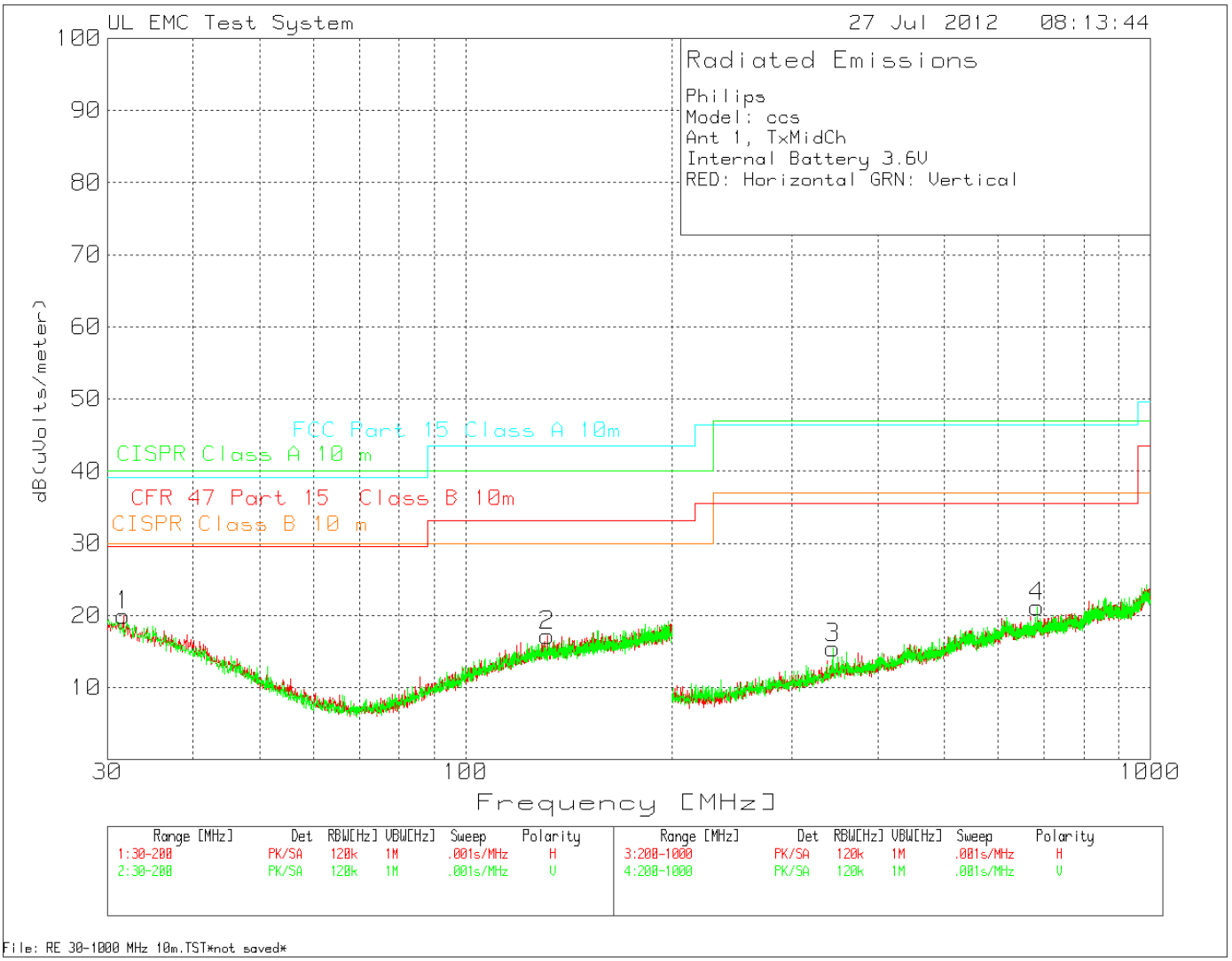
Philips
Model CCW
Ant 0, High channel w/ Mod
Internal Battery
Red:Horizontal, Green:Vertical

Marker No.	Test Frequency	Meter Reading dBuV	Detector	Antenna Factor dB	Path Loss Gain Factor dB	Level dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
5	1961.924	20.84	PK	27.5	3.74	52.08	-	-	101	Horz
1	2478.478	64.24	PK	22	3.77	90.01	-	-	99	Horz
2	3919.92	21.46	PK	23.9	5.59	50.95	54	-3.05	150	Horz
3	4957.972	73.71	PK	27.8	-51.51	50	54	-4	99	Horz
4	7442.295	61.62	PK	30.5	-47.32	44.8	54	-9.2	99	Horz
6	2478.478	60.45	PK	22	3.77	86.22	-	-	102	Vert
7	4957.972	70.25	PK	27.8	-51.51	46.54	54	-7.46	100	Vert
8	7439.626	60.63	PK	30.6	-47.27	43.96	54	-10.04	100	Vert
9	9675.784	60.39	PK	36.4	-48.58	48.21	54	-5.79	150	Vert

Test Frequency	Meter Reading dBuV	Detector	Antenna Factor dB	Path Loss Gain Factor dB	Level dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Azimuth [Degs]	Height [cm]	Polarity
4960.7876	75.17	PK	27.8	-51.45	51.52	74	-22.48	241	100	Horz
4960.8577	68.51	LnAv	27.8	-51.45	44.86	54	-9.14	241	100	Horz

All other Harmonics fell below -6db of the limit or were not present, Therefore not requried for manual measurement.
PK - Peak detector
LnAv - Linear Average detector

Figure 12 Radiated Spurious Emissions below 1GHz, Middle Channel, Antenna 1



No emissions were recorded.

Figure 13 Radiated Spurious Emissions above 1GHz, Low Channel, Antenna 1

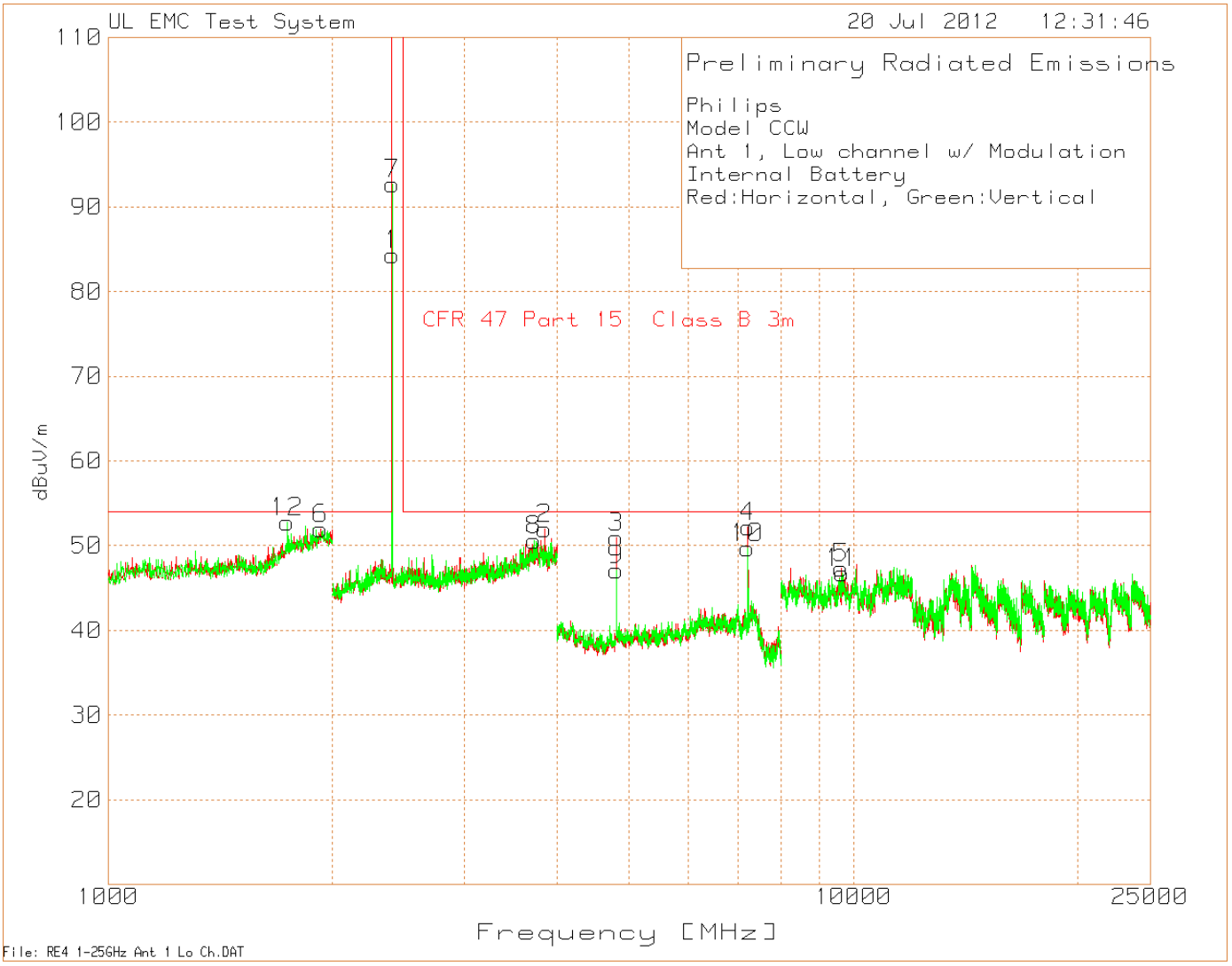


Table 12 Radiated Spurious Emissions above 1GHz, Low Channel, Antenna 1

Philips
Model CCW
Ant 1, Low channel w/ Modulation
Internal Battery
Red:Horizontal, Green:Vertical

Marker No.	Test Frequency	Meter Reading dBuV	Detector	Antenna Factor dB	Path Loss Gain Factor dB	Level dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
6	1929.86	20.64	PK	27.4	3.94	51.98	-	-	100	Horz
1	2404.404	58.33	PK	21.8	4.18	84.31	-	-	100	Horz
2	3853.854	22.78	PK	23.9	5.27	51.95	54	-2.05	100	Horz
3	4811.207	74.6	PK	27.7	-51.35	50.95	54	-3.05	100	Horz
4	7218.145	70.09	PK	29.8	-47.68	52.21	54	-1.79	100	Horz
5	9617.078	60.83	PK	36.4	-49.91	47.32	54	-6.68	150	Horz
12	1739.479	22.54	PK	26.5	3.68	52.72	-	-	150	Vert
7	2404.404	66.74	PK	21.8	4.18	92.72	-	-	100	Vert
8	3727.728	21.65	PK	23.7	5.26	50.61	54	-3.39	100	Vert
9	4811.207	70.74	PK	27.7	-51.35	47.09	54	-6.91	150	Vert
10	7215.477	67.76	PK	29.8	-47.82	49.74	54	-4.26	101	Vert
11	9667.779	59.33	PK	36.4	-48.94	46.79	54	-7.21	100	Vert

Test Frequency	Meter Reading dBuV	Detector	Antenna Factor dB	Path Loss Gain Factor dB	Level dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Azimuth [Degs]	Height [cm]	Polarity
4808.8166	77.07	PK	27.7	-51.36	53.41	74	-20.59	331	103	Horz
4808.9148	70.56	LnAv	27.7	-51.36	46.9	54	-7.1	331	103	Horz
7213.3487	71.56	PK	29.8	-47.73	53.63	74	-20.37	4	100	Horz
7216.1964	64.53	LnAv	29.8	-47.79	46.54	54	-7.46	4	100	Horz
7213.2986	70.45	PK	29.8	-47.72	52.53	74	-21.47	269	103	Vert
7216.1463	62.44	LnAv	29.8	-47.8	44.44	54	-9.56	269	103	Vert

All other Harmonics fell below -6db of the limit or were not present, Therefore not requried for manual measurement.
PK - Peak detector
LnAv - Linear Average detector

Figure 14 Radiated Spurious Emissions above 1GHz, Middle Channel, Antenna 1

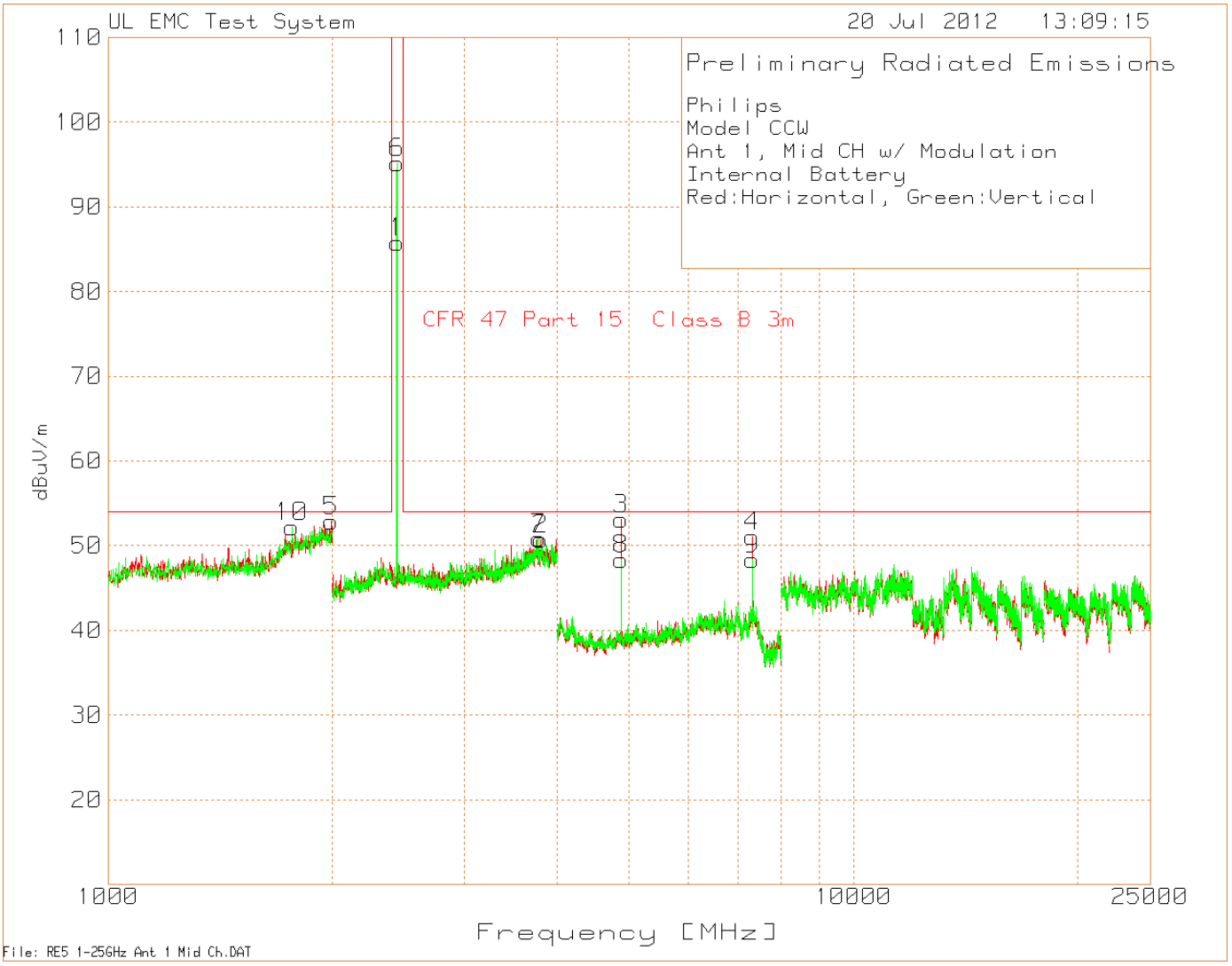


Table 13 Radiated Spurious Emissions above 1GHz, Middle Channel, Antenna 1

Philips
Model CCW
Ant 1, Mid CH w/ Modulation
Internal Battery
Red:Horizontal, Green:Vertical

Marker No.	Test Frequency	Meter Reading dBuV	Detector	Antenna Factor dB	Path Loss Gain Factor dB	Level dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
5	1993.988	21.41	PK	27.5	3.96	52.87	-	-	100	Horz
1	2440.44	59.61	PK	21.9	4.25	85.76	-	-	100	Horz
2	3803.804	21.04	PK	24.1	5.64	50.78	54	-3.22	100	Horz
3	4877.919	76.6	PK	27.7	-51.16	53.14	54	-0.86	100	Horz
4	7322.215	66.64	PK	30.6	-46.22	51.02	54	-2.98	100	Horz
10	1765.531	21.86	PK	26.7	3.64	52.2	-	-	100	Vert
6	2440.44	68.98	PK	21.9	4.25	95.13	-	-	100	Vert
7	3779.78	21.74	PK	24	5.09	50.83	54	-3.17	100	Vert
8	4877.919	71.81	PK	27.7	-51.16	48.35	54	-5.65	101	Vert
9	7322.215	63.92	PK	30.6	-46.22	48.3	54	-5.7	101	Vert

Test Frequency	Meter Reading dBuV	Detector	Antenna Factor dB	Path Loss Gain Factor dB	Level dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Azimuth [Degs]	Height [cm]	Polarity
4878.8347	77.95	PK	27.7	-51.18	54.47	74	-19.53	331	101	Horz
4878.9048	71.91	LnAv	27.7	-51.19	48.42	54	-5.58	331	101	Horz
4878.7766	73.28	PK	27.7	-51.18	49.8	74	-24.2	133	113	Vert
4878.9028	65.84	LnAv	27.7	-51.19	42.35	54	-11.65	133	113	Vert
7318.2335	68.94	PK	30.6	-46.26	53.28	74	-20.72	13	100	Horz
7321.2776	60.77	LnAv	30.6	-46.23	45.14	54	-8.86	13	100	Horz
7318.4198	66.92	PK	30.6	-46.26	51.26	74	-22.74	71	102	Vert
7321.2956	58.11	LnAv	30.6	-46.23	42.48	54	-11.52	71	102	Vert

PK - Peak detector
LnAv - Linear Average detector

Figure 15 Radiated Spurious Emissions above 1GHz, High Channel, Antenna 1

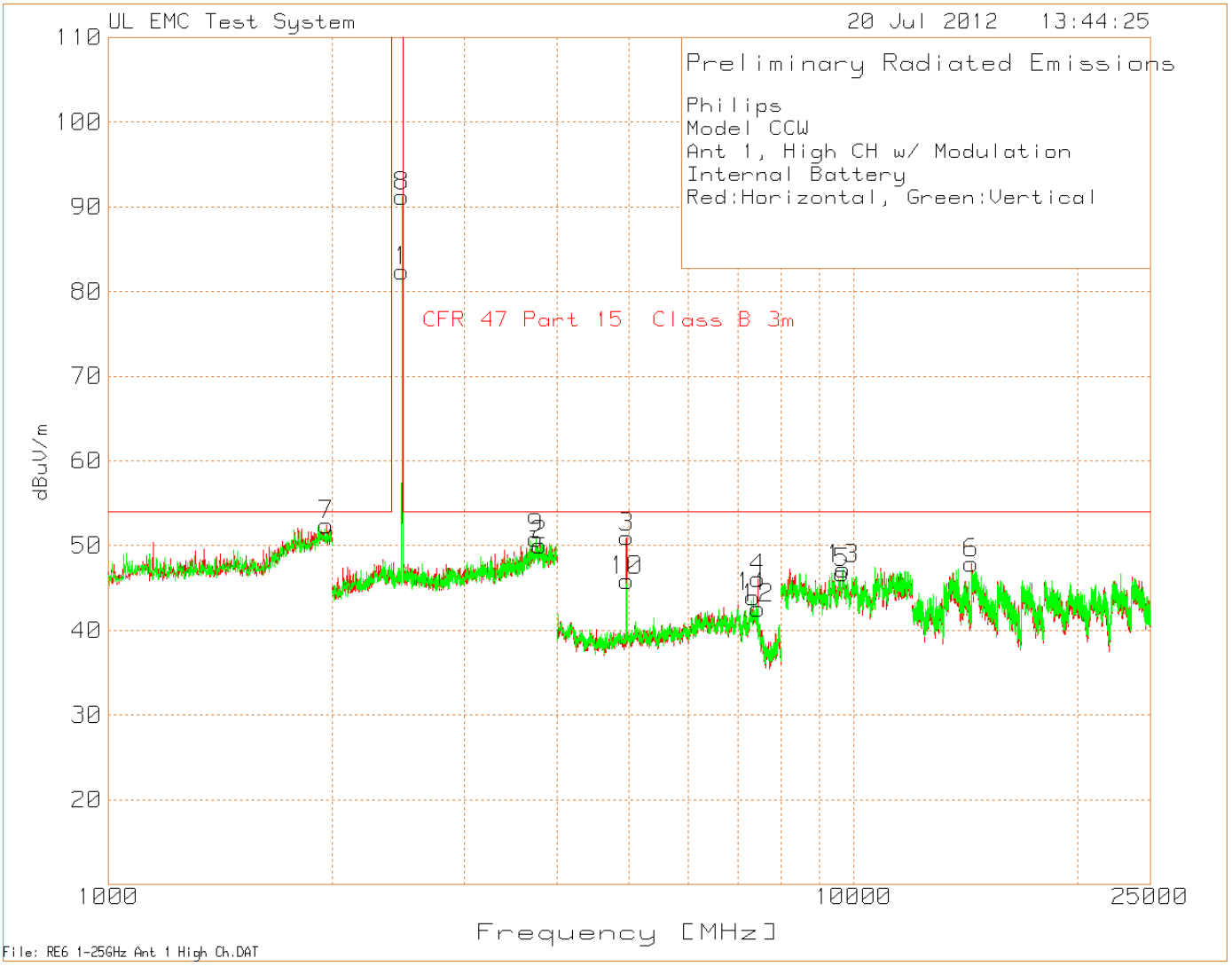


Table 14 Radiated Spurious Emissions above 1GHz, High Channel, Antenna 1

Philips
Model CCW
Ant 1, High CH w/ Modulation
Internal Battery
Red:Horizontal, Green:Vertical

Marker No.	Test Frequency	Meter Reading dBuV	Detector	Antenna Factor dB	Path Loss Gain Factor dB	Level dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
7	1961.924	21.22	PK	27.5	3.74	52.46	-	-	100	Horz
1	2478.478	56.58	PK	22	3.77	82.35	-	-	100	Horz
2	3791.792	20.71	PK	24.1	5.27	50.08	54	-3.92	100	Horz
3	4960.64	74.66	PK	27.8	-51.45	51.01	54	-2.99	99	Horz
4	7442.295	62.9	PK	30.5	-47.32	46.08	54	-7.92	99	Horz
5	9670.447	59.09	PK	36.4	-48.75	46.74	54	-7.26	150	Horz
6	14415.366	47.74	PK	39.8	-39.68	47.86	54	-6.14	100	Horz
8	2478.478	65.48	PK	22	3.77	91.25	-	-	100	Vert
9	3751.752	21.06	PK	23.8	6	50.86	54	-3.14	150	Vert
10	4960.64	69.47	PK	27.8	-51.45	45.82	54	-8.18	101	Vert
11	7332.889	59.58	PK	30.7	-46.31	43.97	54	-10.03	101	Vert
12	7442.295	59.39	PK	30.5	-47.32	42.57	54	-11.43	101	Vert
13	9675.784	59.4	PK	36.4	-48.58	47.22	54	-6.78	150	Vert

Test Frequency	Meter Reading dBuV	Detector	Antenna Factor dB	Path Loss Gain Factor dB	Level dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Azimuth [Degs]	Height [cm]	Polarity
4958.7846	75.91	PK	27.8	-51.49	52.22	54	-1.78	332	100	Horz
4960.7906	69.42	LnAv	27.8	-51.45	45.77	54	-8.23	332	100	Horz

All other Harmonics fell below -6db of the limit or were not present, Therefore not requried for manual measurement.
PK - Peak detector
LnAv - Linear Average detector

4.3 Test Conditions and Results – BAND EDGE COMPLIANCE

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

Basic Standard	47 CFR Part 15.247(d) RSS-210, A8.5	
	Frequency range	Measurement Point
Fully configured sample scanned over the following frequency range	2400MHz – 2483.5MHz	Antenna Conducted and Radiated

Limits	
Measurement Type	
Conducted	Antenna Conducted – 20dB below the fundamental
Radiated	Must meet the restricted band limit adjacent to the bandedge.
Supplementary information: None	

Table 15 Band Edge Compliance EUT Configuration Settings

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

Table 16 RADIATED EMISSIONS Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMI Test Receiver	Rohde & Schwarz	ESU	EMC4323	20111228	20121231
Bicon Antenna	Chase	VBA6106A	EMC4078	20120117	20130131
Log-P Antenna	Chase	UPA6109	EMC4258	20110927	20120928
Spectrum Analyzer	Rhode & Schwarz	FSEK	EMC4182	20111227	20121231
Antenna Array	UL	BOMS	EMC4276	20111227	20121231

Table 17 CONDUCTED EMISSIONS Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	Agilent	PXA	EMC4360	20120515	20130515
Attenuator w/ Cable	-	-	None	*N/A	N/A
* Cable and attenuator ware characterized at the time of testing					

Figure 16 Antenna Conducted Band Edge Compliance Graph – Low Channel

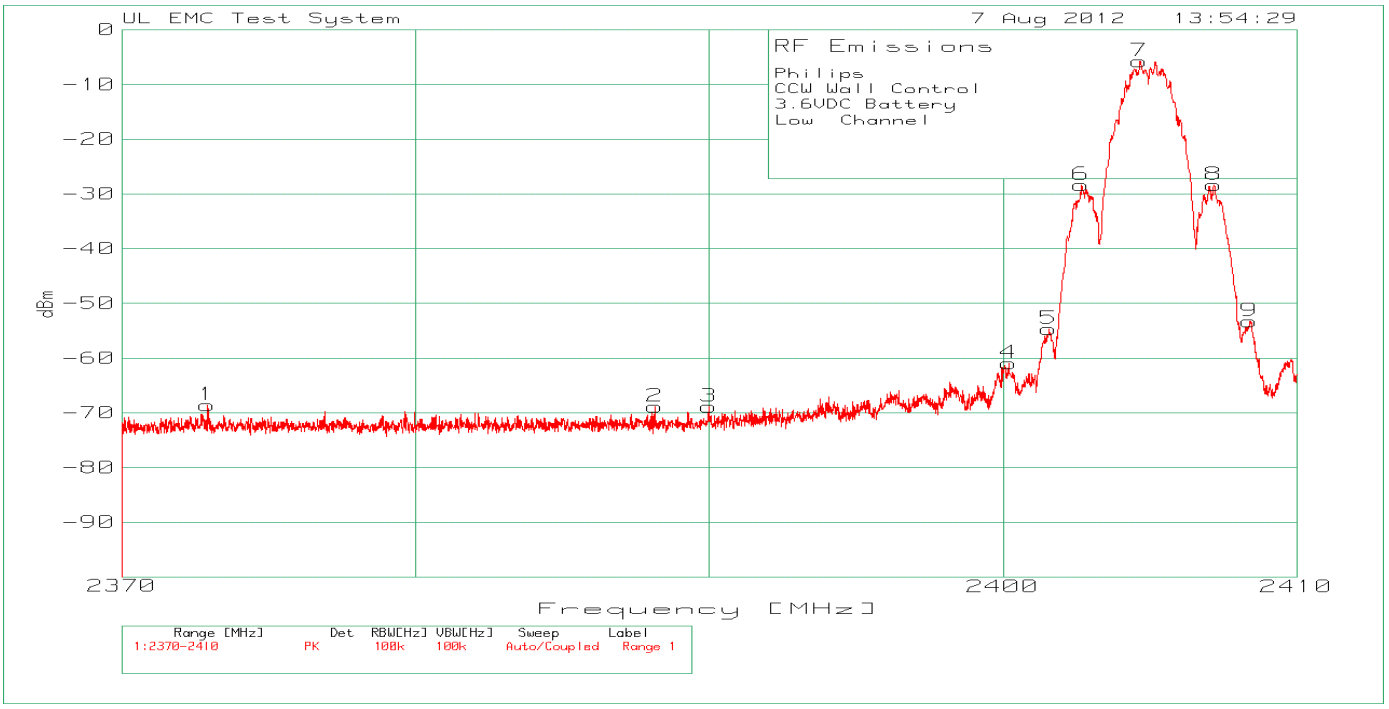


Table 18 Antenna Conducted Band Edge Compliance Graph – Low Channel

Philips CCW Wall Control 3.6VDC Battery Low Channel						
Marker No.	Test Frequency MHz	Meter Reading dBuV	Detector	dBuV to dBm (dB)	AntPortCalbe SilverCable with Attn(dB)	Level dBm
1	2372.918	28.08	PK	-107	10.3	-68.62
2	2388.146	27.79	PK	-107	10.3	-68.91
3	2389.985	27.82	PK	-107	10.3	-68.88
4	2400.197	35.76	PK	-107	10.3	-60.94
5	2401.556	42.07	PK	-107	10.3	-54.63
6	2402.671	68.3	PK	-107	10.3	-28.4
7	2404.664	90.9	PK	-107	10.3	-5.8
8	2407.182	68.35	PK	-107	10.3	-28.35
9	2408.411	43.45	PK	-107	10.3	-53.25
PK - Peak detector						

Figure 17 Antenna Conducted Band Edge Compliance Graph – High Channel

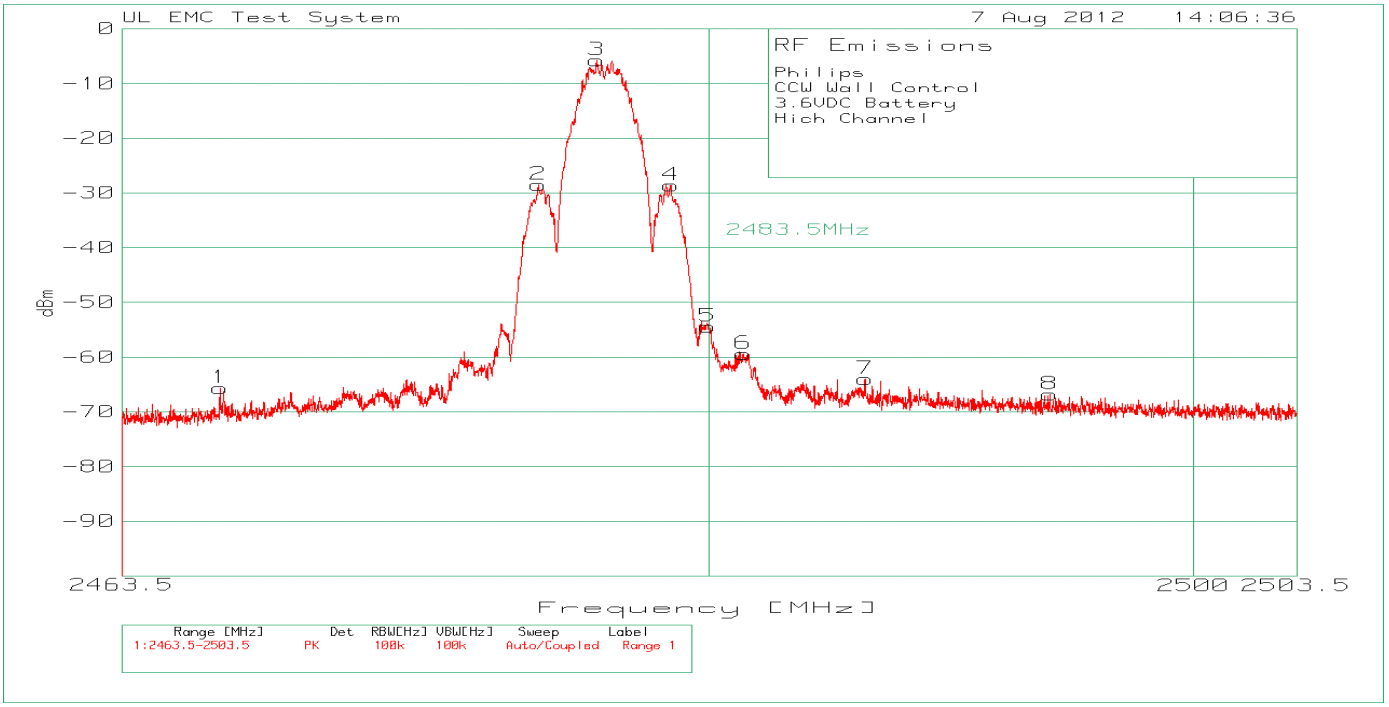


Table 19 Antenna Conducted Band Edge Compliance Graph – High Channel

Philips CCW Wall Control 3.6VDC Battery Hich Channel						
Marker No.	Test Frequency MHz	Meter Reading dBuV	Detector	dBuV to dBm (dB)	AntPortCalbe SilverCable with Attn (dB)	Level dBm
1	2466.847	30.96	PK	-107	10.4	-65.64
2	2477.679	68.24	PK	-107	10.3	-28.46
3	2479.658	90.89	PK	-107	10.3	-5.81
4	2482.186	68.14	PK	-107	10.3	-28.56
5	2483.465	42.32	PK	-107	10.3	-54.38
6	2484.674	37.34	PK	-107	10.3	-59.36
7	2488.801	32.66	PK	-107	10.3	-64.04
8	2495.086	29.88	PK	-107	10.3	-66.82
PK - Peak detector						

Figure 18 Radiated Band Edge Compliance Graph – Ant 0, Low Channel, Horizontal

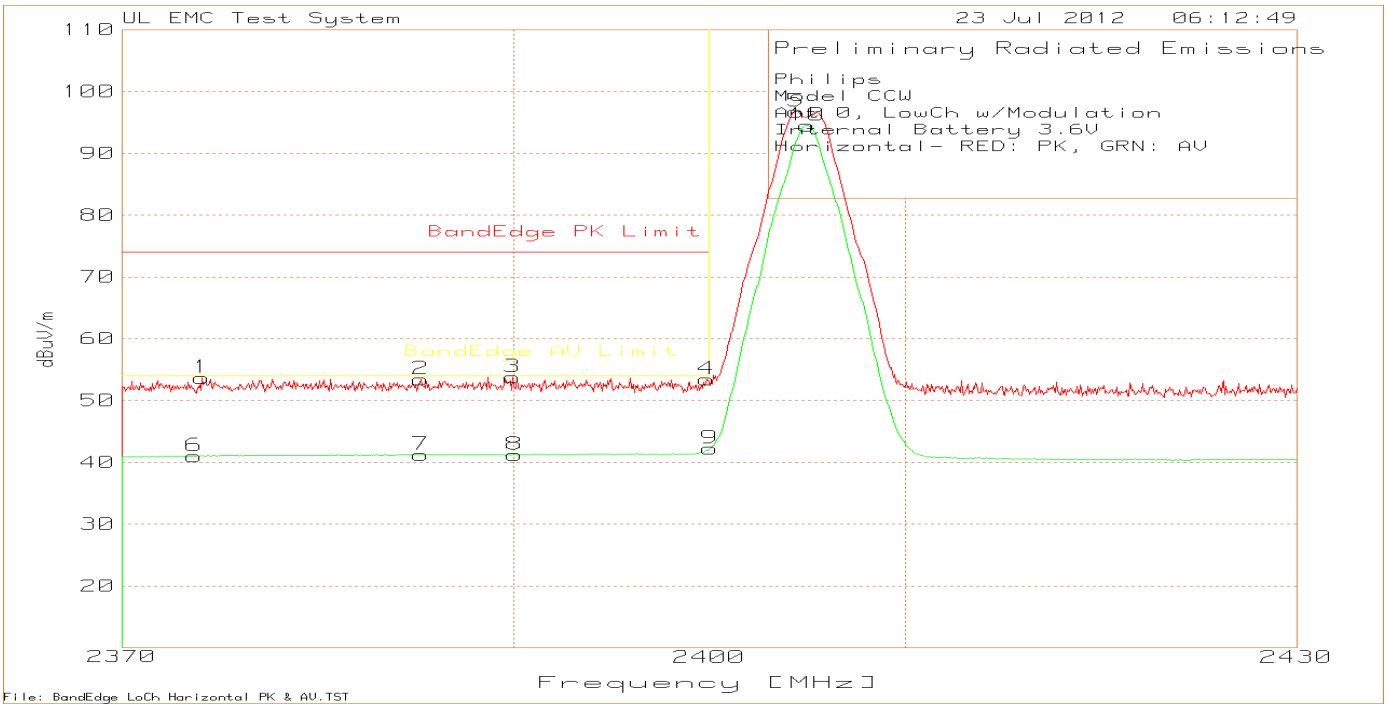


Table 20 Radiated Band Edge Compliance Graph – Ant 0, Low Channel, Horizontal

Philips
Model CCW
Ant 0, LowCh w/Modulation
Internal Battery 3.6V
Horizontal- RED: PK, GRN: AV

Marker No.	Test Frequency MHz	Meter Reading dBuV	Detector	Antenna Factor	Path Loss Gain dB	Level dBuV/m	Limit dBuV/m	Margin dB	Height [cm]	Polarity
1	2374.084	27.74	PK	21.8	4.1	53.64	74	-20.36	150	Horz
2	2385.255	27.24	PK	21.8	4.4	53.44	74	-20.56	100	Horz
3	2389.94	27.51	PK	21.8	4.48	53.79	74	-20.21	100	Horz
4	2399.85	27.32	PK	21.8	4.31	53.43	74	-20.57	100	Horz
5	2404.474	70.76	PK	21.8	4.17	96.73	-	-	100	Horz
6	2373.724	15.12	AV	21.8	4.09	41.01	54	-12.99	150	Horz
7	2385.255	15.01	AV	21.8	4.4	41.21	54	-12.79	100	Horz
8	2390.09	14.96	AV	21.8	4.48	41.24	54	-12.76	100	Horz
9	2400.03	16.16	AV	21.8	4.31	42.27	-	-	100	Horz
10	2404.985	68.57	AV	21.8	4.16	94.53	-	-	100	Horz

PK - Peak detector
Av - Average detector

Figure 19 Radiated Band Edge Compliance Graph – Ant 0, Low Channel, Vertical

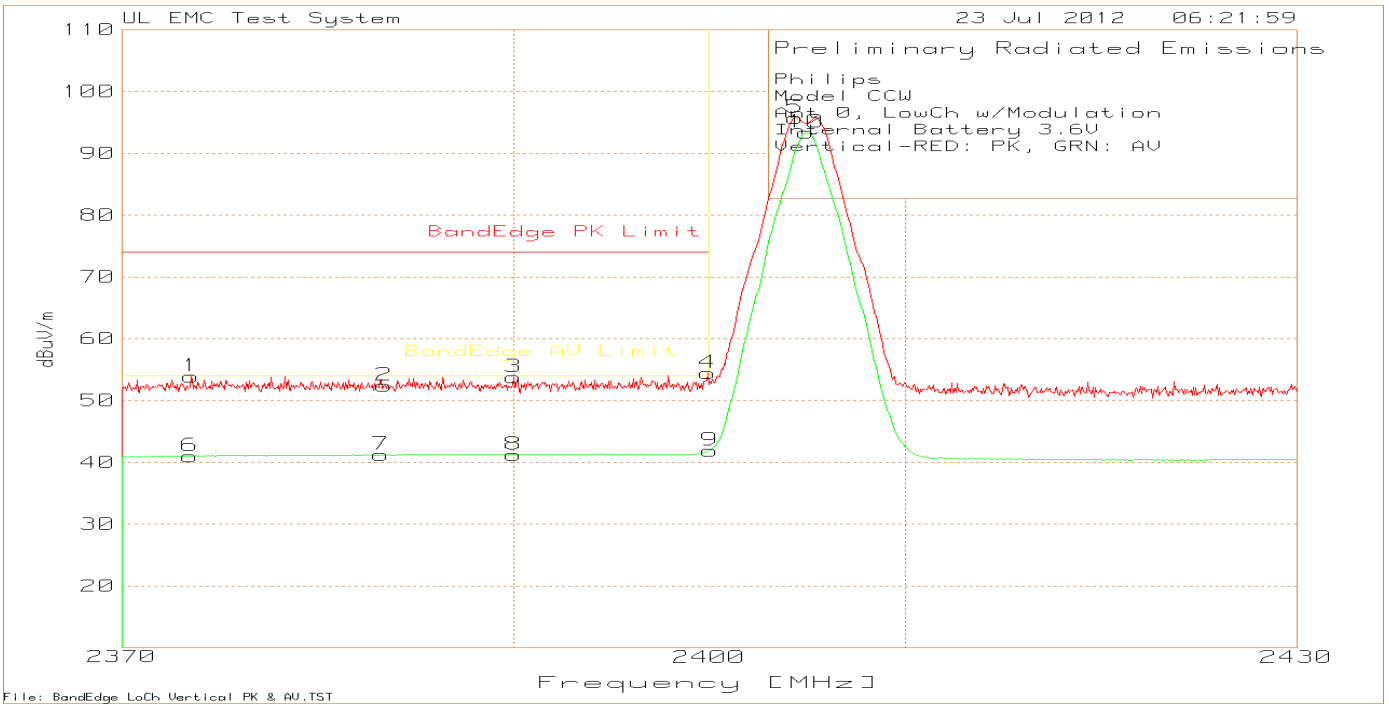


Table 21 Radiated Band Edge Compliance Graph – Ant 0, Low Channel, Vertical

Philips
Model CCW
Ant 0, LowCh w/Modulation
Internal Battery 3.6V
Vertical-RED: PK, GRN: AV

Marker No.	Test Frequency MHz	Meter Reading dBuV	Detector	Antenna Factor	Path Loss Gain dB	Level dBuV/m	BandEdge PK Limit	Margin	Height [cm]	Polarity
1	2373.544	28.07	PK	21.8	4.08	53.95	74	-20.05	150	Vert
2	2383.393	26.27	PK	21.8	4.37	52.44	74	-21.56	150	Vert
3	2390	27.54	PK	21.8	4.48	53.82	74	-20.18	100	Vert
4	2399.91	28.3	PK	21.8	4.31	54.41	74	-19.59	100	Vert
5	2404.384	69.79	PK	21.8	4.18	95.77	-	-	100	Vert
6	2373.483	15.16	AV	21.8	4.08	41.04	54	-12.96	101	Vert
7	2383.213	15.02	AV	21.8	4.36	41.18	54	-12.82	150	Vert
8	2390	14.92	AV	21.8	4.48	41.2	54	-12.8	101	Vert
9	2400.03	15.85	AV	21.8	4.31	41.96	-	-	101	Vert
10	2404.955	67.36	AV	21.8	4.16	93.32	-	-	101	Vert

PK - Peak detector
Av - Average detector

Figure 20 Radiated Band Edge Compliance Graph – Ant 1, Low Channel, Horizontal

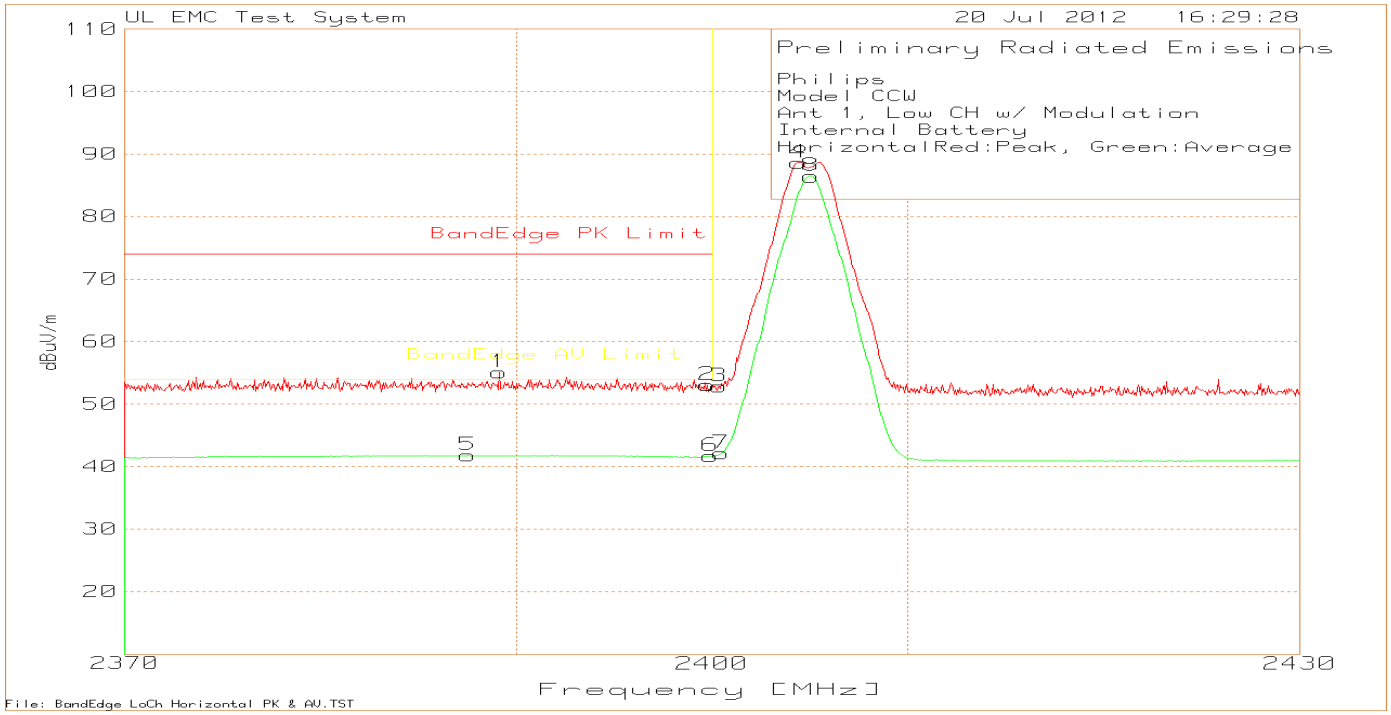


Table 22 Radiated Band Edge Compliance Graph – Ant 1, Low Channel, Horizontal

Philips
Model CCW
Ant 1, Low CH w/ Modulation
Internal Battery
HorizontalRed:Peak, Green:Average

Marker No.	Test Frequency MHz	Meter Reading dBuV	Detector	Antenna Factor	Path Loss Gain dB	Level dBuV/m	BandEdge PK Limit	Margin	Height [cm]	Polarity
1	2389.099	28.82	PK	21.8	4.46	55.08	74	-18.92	150	Horz
2	2399.73	26.98	PK	21.8	4.32	53.1	74	-20.9	150	Horz
3	2400.33	26.74	PK	21.8	4.3	52.84	-	-	100	Horz
4	2404.414	62.69	PK	21.8	4.18	88.67	-	-	100	Horz
5	2387.538	15.54	AV	21.8	4.44	41.78	54	-12.22	150	Horz
6	2399.91	15.57	AV	21.8	4.31	41.68	54	-12.32	100	Horz
7	2400.45	16.04	AV	21.8	4.3	42.14	-	-	100	Horz
8	2405.075	60.49	AV	21.8	4.15	86.44	-	-	100	Horz

PK - Peak detector
Av - Average detector

Figure 21 Radiated Band Edge Compliance Graph – Ant 1, Low Channel, Vertical

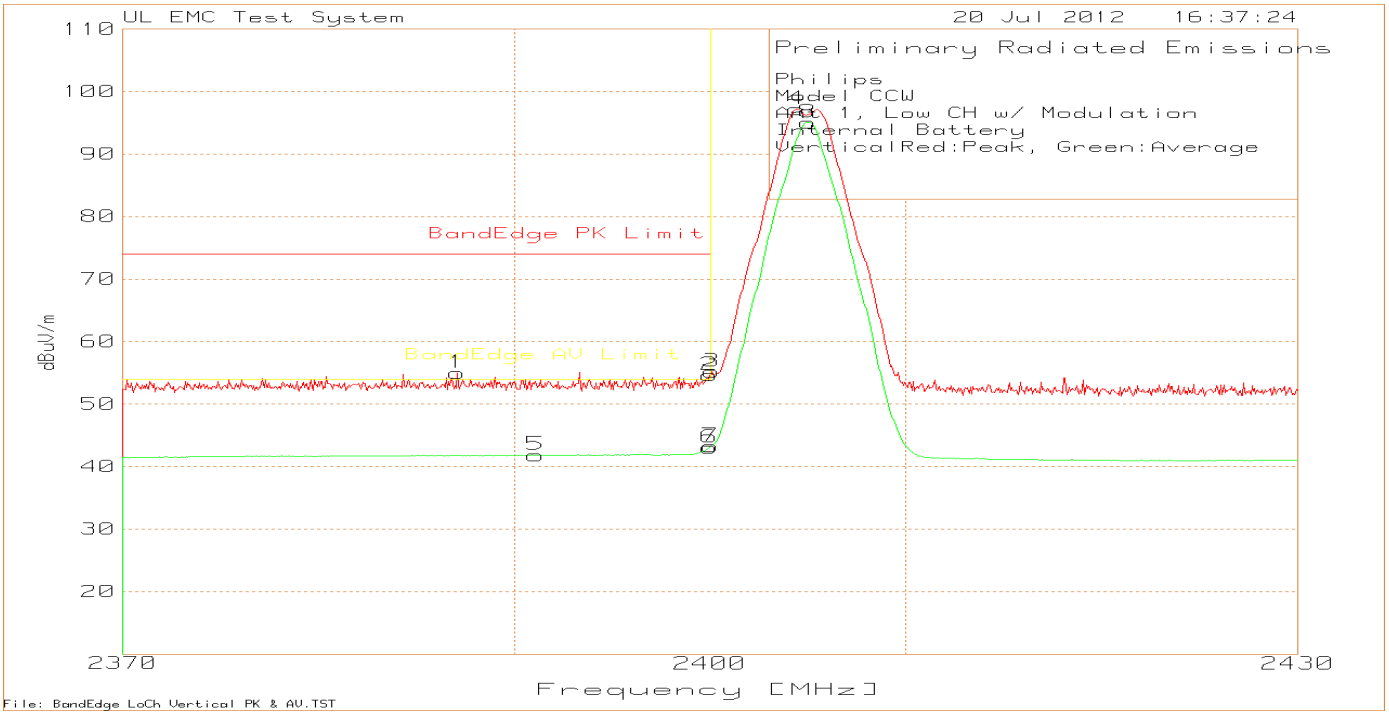


Table 23 Radiated Band Edge Compliance Graph – Ant 1, Low Channel, Vertical

Philips
Model CCW
Ant 1, Low CH w/ Modulation
Internal Battery
VerticalRed:Peak, Green:Average

Marker No.	Test Frequency MHz	Meter Reading dBuV	Detector	Antenna Factor	Path Loss Gain dB	Level dBuV/m	BandEdge Limit	Margin	Height [cm]	Polarity
1	2387.057	28.76	PK	21.8	4.43	54.99	74	-19.01	150	Vert
2	2399.97	28.56	PK	21.8	4.31	54.67	74	-19.33	100	Vert
3	2400.09	29.05	PK	21.8	4.31	55.16	-	-	100	Vert
4	2404.414	71.19	PK	21.8	4.18	97.17	-	-	100	Vert
5	2391.081	15.56	AV	21.8	4.5	41.86	54	-12.14	100	Vert
6	2399.97	16.94	AV	21.8	4.31	43.05	54	-10.95	100	Vert
7	2400.03	17.18	AV	21.8	4.31	43.29	-	-	100	Vert
8	2404.985	69.11	AV	21.8	4.16	95.07	-	-	100	Vert

PK - Peak detector
Av - Average detector

Figure 22 Radiated Band Edge Compliance Graph – Ant 0, High Channel, Horizontal

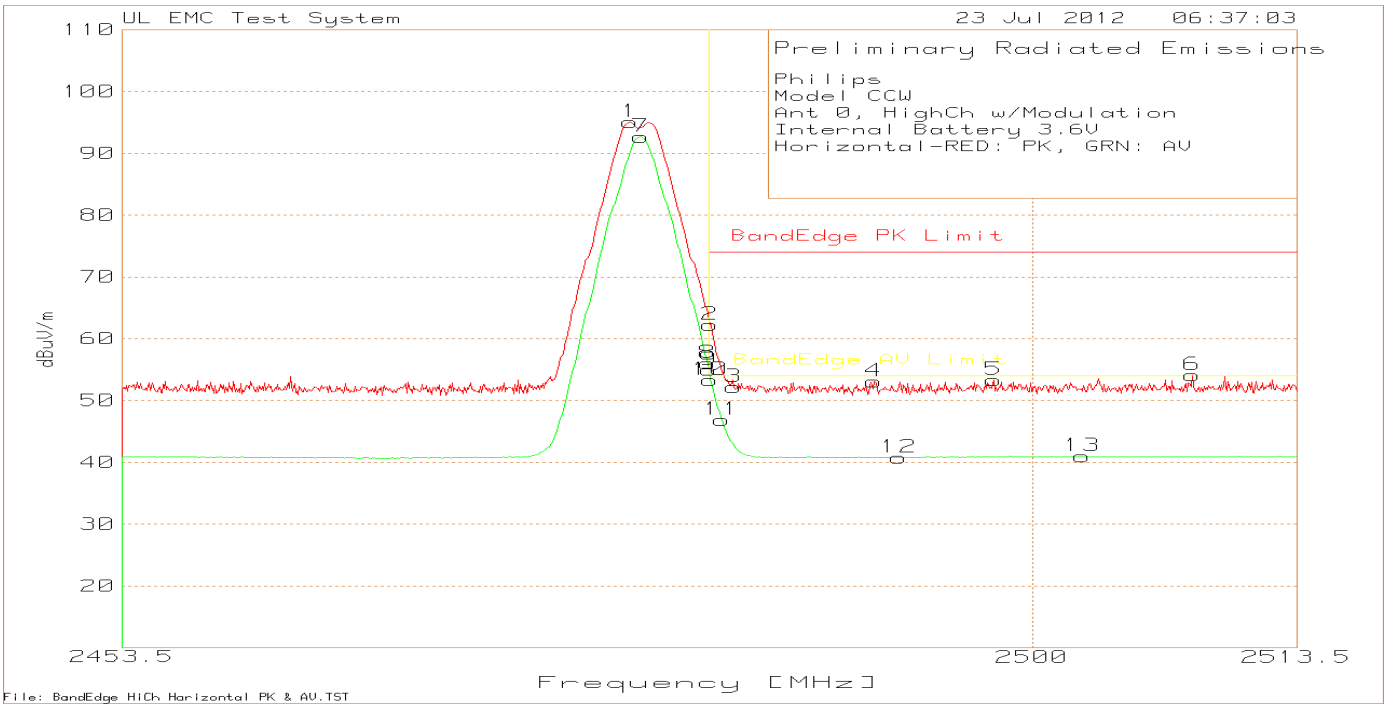


Table 24 Radiated Band Edge Compliance Data - Ant 0, High Channel, Horizontal

Philips
Model CCW
Ant 0, HighCh w/Modulation
Internal Battery 3.6V
Horizontal-RED: PK, GRN: AV

Marker No.	Test Frequency MHz	Meter Reading dBuV	Detector	Antenna Factor	Path Loss Gain dB	Level dBuV/m	BandEdge Limit	Margin	Height [cm]	Polarity
1	2479.446	69.26	PK	22	3.77	95.03	-	-	100	Horz
2	2483.53	36.43	PK	22.1	3.77	62.3	74	-11.7	100	Horz
3	2484.731	26.32	PK	22.1	3.77	52.19	74	-21.81	100	Horz
4	2491.938	27.12	PK	22.1	3.84	53.06	74	-20.94	100	Horz
5	2498.005	27.26	PK	22.1	3.93	53.29	74	-20.71	150	Horz
6	2508.155	28.1	PK	22.1	3.9	54.1	74	-19.9	150	Horz
7	2479.986	66.87	AV	22	3.77	92.64	-	-	99	Horz
8	2483.41	30.14	AV	22.1	3.77	56.01	-	-	99	Horz
9	2483.47	29.1	AV	22.1	3.77	54.97	-	-	99	Horz
10	2483.53	27.48	AV	22.1	3.77	53.35	54	-0.65	99	Horz
11	2484.131	21.06	AV	22.1	3.77	46.93	54	-7.07	99	Horz
12	2493.2	14.86	AV	22.1	3.86	40.82	54	-13.18	99	Horz
13	2502.569	14.96	AV	22.1	3.92	40.98	54	-13.02	99	Horz

PK - Peak detector
Av - Average detector

Table 25 Radiated Band Edge Compliance Data – Maximized Measurements & Delta Marker – Ant 0, High Channel, Horizontal

Philips
Model CCW
Ant 0, HighCh w/Modulation
Internal Battery 3.6V
Vertical-RED: PK, GRN: AV
Maximized Measurements

Test Frequency	Meter Reading dBuV	Detector	Antenna Factor dB	Path Loss Gain dB	Level dBuV/m	Azimuth [Degs]	Height [cm]	Polarity	Notes
2479.3888	69.15	PK	22	3.77	94.92	262	100	Horz	-
2483.5	38.22	PK	22.1	3.77	64.09	262	100	Horz	-
2483.5	30.04	LnAv	22.1	3.77	55.91*	262	100	Horz	-
* See Delta-Marker Data below									
Delta-Marker Data									
2479.4218	69.38	PK	22	3.77	95.15	262	100	Horz	1
2479.983	67.12	LnAv	22	3.77	92.89	262	100	Horz	2
2480.1834	66.04	PK	22	3.77	91.81	262	100	Horz	3
2483.51	21.7	PK	22.1	3.77	47.57	262	100	Horz	4

Notes:
1 - PK Level Fundamental
2 - AV Level Fundamental
3 - PK Fundamental 100kHz RBW 10MHz Span
4 - PK BandEdge 100kHz RBW 10MHz Span
PK - Peak detector
LnAv - Linear Average Detector

Delta between Fundamental and Band Edge: 44.24dB
Peak Level at Band Edge (PK Fund – Delta): **50.91dBuV/m**
Average Level at Band Edge (AV Fund – Delta): **48.65dBuV/m**

Figure 23 Radiated Band Edge Compliance Graph – Ant 0, High Channel, Vertical

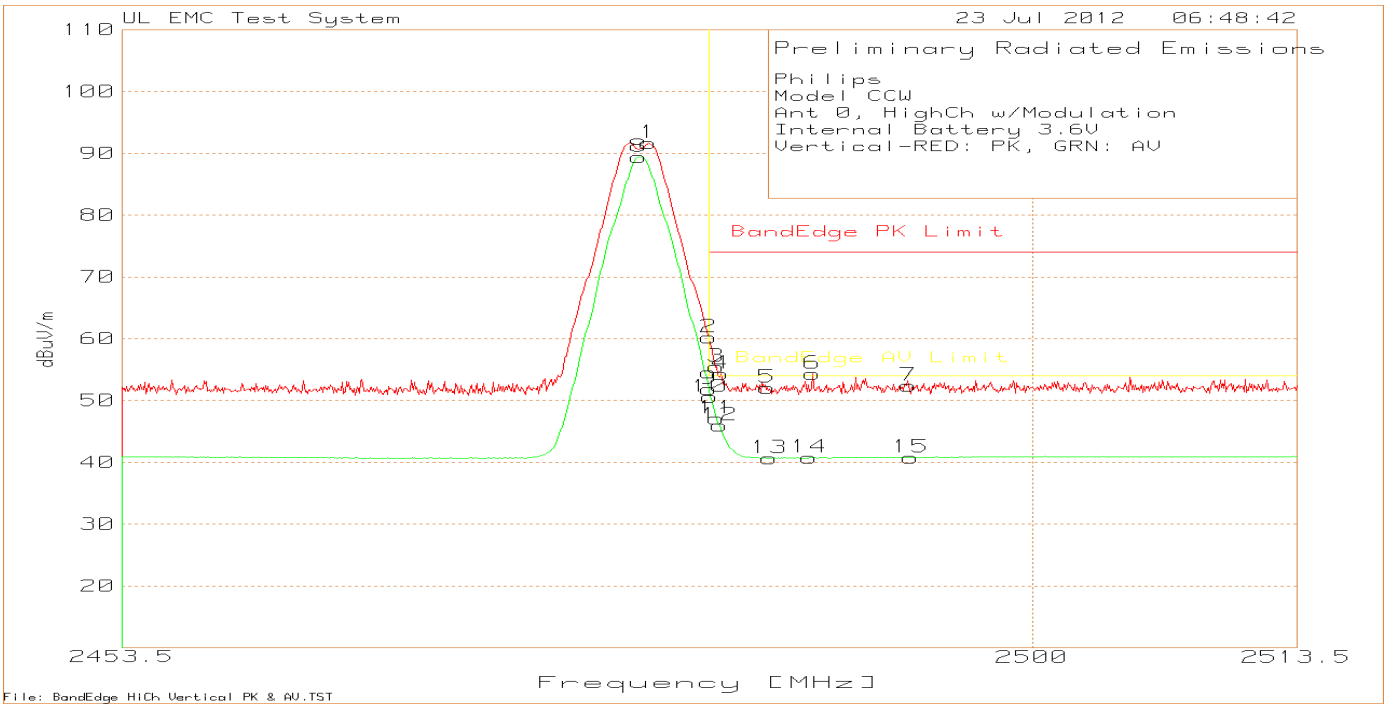


Table 26 Radiated Band Edge Compliance – Ant 0, High Channel, Vertical

Philips
Model CCW
Ant 0, HighCh w/Modulation
Internal Battery 3.6V
Vertical-RED: PK, GRN: AV

Marker No.	Test Frequency	Meter Reading dBuV	Detector	Antenna Factor dB	Path Loss Gain dB	Level dBuV/m	BandEdge PK Limit	Margin	Height [cm]	Polarity
1	2480.407	65.86	PK	22	3.77	91.63	-	-	102	Vert
2	2483.47	34.34	PK	22.1	3.77	60.21	-	-	102	Vert
3	2483.89	29.64	PK	22.1	3.77	55.51	74	-18.49	102	Vert
4	2484.071	28.46	PK	22.1	3.77	54.33	74	-19.67	102	Vert
5	2486.473	26.2	PK	22.1	3.77	52.07	74	-21.93	102	Vert
6	2488.755	28.42	PK	22.1	3.79	54.31	74	-19.69	102	Vert
7	2493.68	26.46	PK	22.1	3.86	52.42	74	-21.58	150	Vert
8	2479.926	63.67	AV	22	3.77	89.44	-	-	100	Vert
9	2483.47	26.02	AV	22.1	3.77	51.89	-	-	100	Vert
10	2483.53	24.69	AV	22.1	3.77	50.56	54	-3.44	100	Vert
11	2483.89	21.27	AV	22.1	3.77	47.14	54	-6.86	100	Vert
12	2484.011	20.1	AV	22.1	3.77	45.97	54	-8.03	100	Vert
13	2486.593	14.84	AV	22.1	3.77	40.71	54	-13.29	100	Vert
14	2488.635	14.88	AV	22.1	3.79	40.77	54	-13.23	100	Vert
15	2493.8	14.83	AV	22.1	3.87	40.8	54	-13.2	100	Vert

PK - Peak detector
Av - Average detector

Table 27 Radiated Band Edge Compliance Data – Delta Marker – Ant 0, High Channel, Vertical

Philips
Model CCW
Ant 0, HighCh w/Modulation
Internal Battery 3.6V
Vertical-RED: PK, GRN: AV

Delta-Marker Data

Test Frequency	Meter Reading dBuV	Detector	Antenna Factor dB	Path Loss Gain dB	Level dBuV/m	Azimuth [Degs]	Height [cm]	Polarity	Notes
2479.402	65.74	PK	22	3.77	91.51	149	100	Vert	1
2479.983	63.51	LnAv	22	3.77	89.28	149	100	Vert	2
2480.183	62.63	PK	22	3.77	88.4	149	100	Vert	3
2483.51	19.23	PK	22.1	3.77	45.1	149	100	Vert	4

Notes:
1 - PK Level Fundamental
2 - AV Level Fundamental
3 - PK Fundamental 100kHz RBW 10MHz Span
4 - PK BandEdge 100kHz RBW 10MHz Span
PK - Peak detector
LnAv - Linear Average Detector

Delta between Fundamental and Band Edge: 43.30dB
Peak Level at Band Edge (PK Fund – Delta): **48.21dBuV/m**
Average Level at Band Edge (AV Fund – Delta): **45.98dBuV/m**

Figure 24 Radiated Band Edge Compliance Graph – Ant 1, High Channel, Horizontal

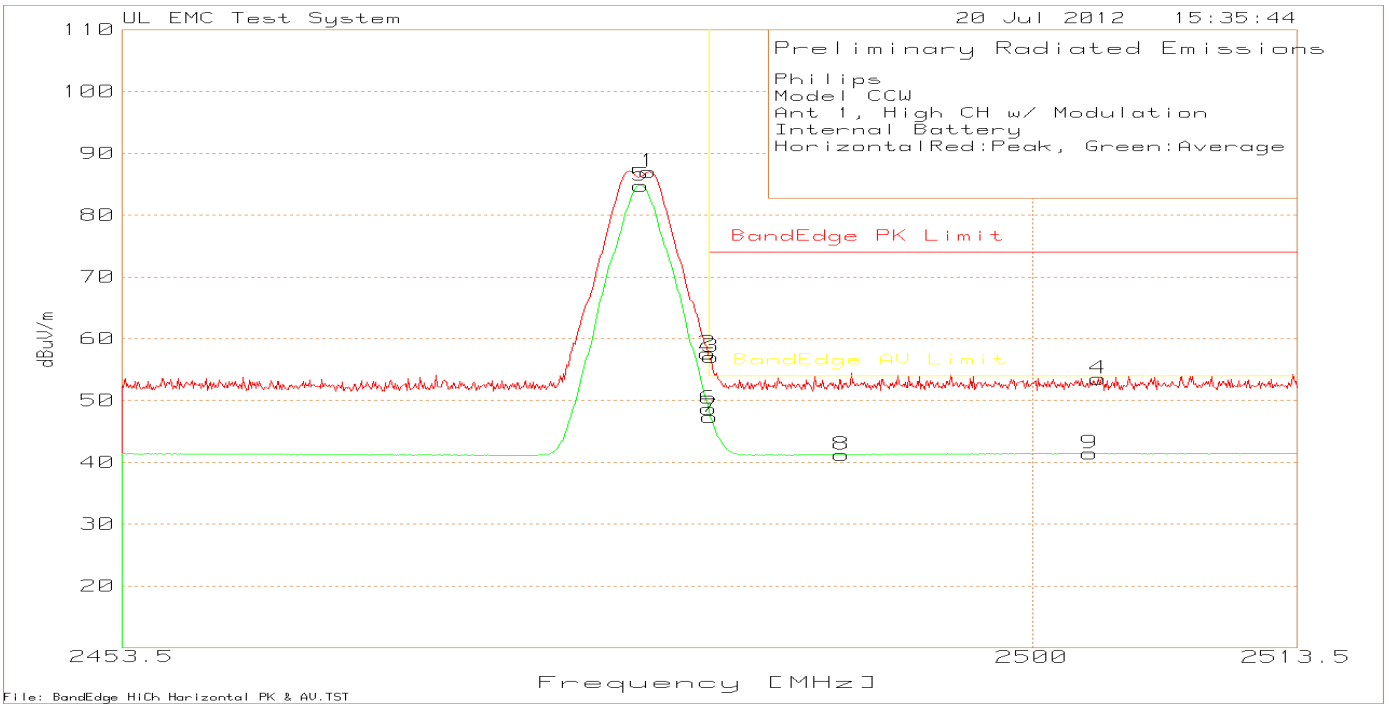


Table 28 Radiated Band Edge Compliance Graph – Ant 1, High Channel, Horizontal

Philips
Model CCW
Ant 1, High CH w/ Modulation
Internal Battery
HorizontalRed:Peak, Green:Average

Marker No.	Test Frequency	Meter Reading dBuV	Detector	Antenna Factor dB	Path Loss Gain dB	Level dBuV/m	Band Edge Limit dBuV/m	Margin	Height [cm]	Polarity
1	2480.407	61.32	PK	22	3.77	87.09	-	-	100	Horz
2	2483.41	31.71	PK	22.1	3.77	57.58	-	-	100	Horz
3	2483.59	31.22	PK	22.1	3.77	57.09	74	-16.91	100	Horz
4	2503.35	27.58	PK	22.1	3.92	53.6	74	-20.4	100	Horz
5	2479.986	59.05	AV	22	3.77	84.82	-	-	100	Horz
6	2483.47	22.79	AV	22.1	3.77	48.66	-	-	100	Horz
7	2483.53	21.48	AV	22.1	3.77	47.35	54	-6.65	100	Horz
8	2490.257	15.34	AV	22.1	3.81	41.25	54	-12.75	150	Horz
9	2502.929	15.43	AV	22.1	3.92	41.45	54	-12.55	100	Horz

PK - Peak detector

Figure 25 Radiated Band Edge Compliance Graph – Ant 1, High Channel, Vertical

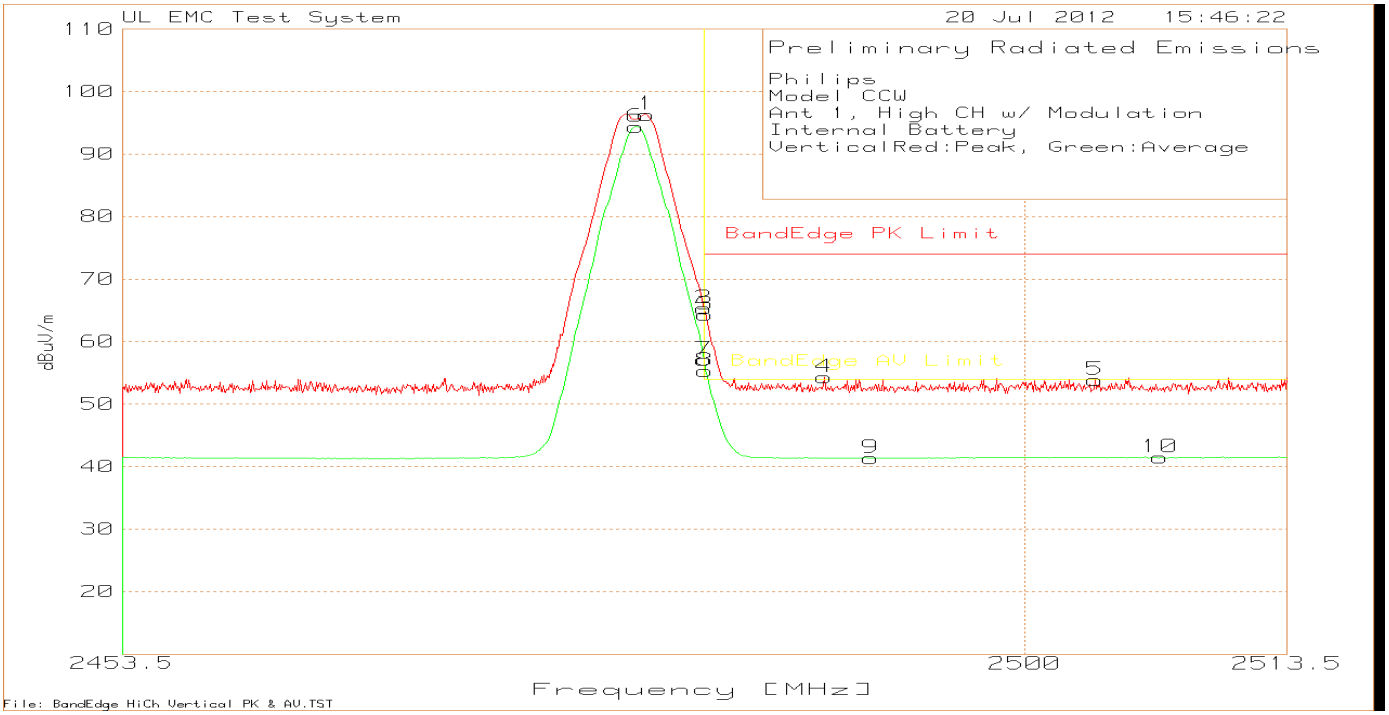


Table 29 Radiated Band Edge Compliance – Ant 1, High Channel, Vertical

Philips
Model CCW
Ant 1, High CH w/ Modulation
Internal Battery
VerticalRed:Peak, Green:Average

Marker No.	Test Frequency	Meter Reading dBuV	Detector	Antenna Factor dB	Path Loss Gain dB	Level dBuV/m	Band Edge Limit	Margin	Height [cm]	Polarity
1	2480.527	70.56	PK	22	3.77	96.33	999	-902.67	100	Vert
2	2483.47	39.5	PK	22.1	3.77	65.37	999	-933.63	100	Vert
3	2483.53	38.44	PK	22.1	3.77	64.31	54	10.31	100	Vert
4	2489.656	28.36	PK	22.1	3.8	54.26	54	0.26	150	Vert
5	2503.59	27.85	PK	22.1	3.92	53.87	54	-0.13	100	Vert
6	2479.986	68.61	AV	22	3.77	94.38	999	-904.62	100	Vert
7	2483.47	31.26	AV	22.1	3.77	57.13	999	-941.87	100	Vert
8	2483.53	29.47	AV	22.1	3.77	55.34	74	-18.66	100	Vert
9	2492.059	15.46	AV	22.1	3.84	41.4	74	-32.6	100	Vert
10	2506.983	15.47	AV	22.1	3.9	41.47	74	-32.53	150	Vert

Test Frequency	Meter Reading dBuV	Detector	Antenna Factor dB	Path Loss Gain dB	Level dBuV/m	Band Edge Limit	Margin	Azimuth [Degs]	Height [cm]	Polarity
2483.5	39.6	PK	22.1	3.77	65.47	74	-8.53	259	122	Vert
2483.5	30.99	LnAv	22.1	3.77	56.86	54	2.86*	259	122	Vert

*See Delta-Marker Data Below
PK - Peak detector
LnAv - Linear Average detector
Av - Average detector

Table 30 Radiated Band Edge Compliance – Ant 1, High Channel, Vertical, Delta-Marker measurements

Philips
Model CCW
Ant 1, HighCh w/Modulation
Internal Battery 3.6V
Vertical RED: PK, GRN: AV

Delta-Marker Data

Test Frequency	Meter Reading dBuV	Detector	Antenna Factor dB	Path Loss Gain dB	Level dBuV/m	Azimuth [Degs]	Height [cm]	Polarity	Notes
2479.432	71.14	PK	22	3.77	96.91	274	121	Vert	1
2479.991	68.94	LnAv	22	3.77	94.71	274	121	Vert	2
2480.203	67.9	PK	22	3.77	93.67	274	121	Vert	3
2483.51	22.03	PK	22.1	3.77	47.9	274	121	Vert	4

Notes:
1 - PK Level Fundamental
2 - AV Level Fundamental
3 - PK Fundamental 100kHz RBW 10MHz Span
4 - PK BandEdge 100kHz RBW 10MHz Span
PK - Peak detector
LnAv - Linear Average Detector

Delta between Fundamental and Band Edge: 45.77dB
Peak Level at Band Edge (PK Fund – Delta): **51.14dBuV/m**
Average Level at Band Edge (AV Fund – Delta): **48.94dBuV/m**

4.4 Test Conditions and Results – 6dB BANDWIDTH

Test Description	Systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.
Basic Standard	47 CFR Part 15.247(a)(2) RSS-210, A8.2(a)

Table 31 6dB Bandwidth Configuration Settings

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

Table 32 6dB Bandwidth Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	Agilent	PXA	EMC4360	20120515	20130515
Attenuator w/ Cable	-	-	None	*N/A	N/A
* Cable and attenuator ware characterized at the time of testing					

Table 33 6dB Bandwidth Results

Mode	Channel	6dB Bandwidth
TX	Low	1.620MHz
	Middle	1.620MHz
	High	1.620MHz

Figure 26 6dB Bandwidth Graphs – Low Channel

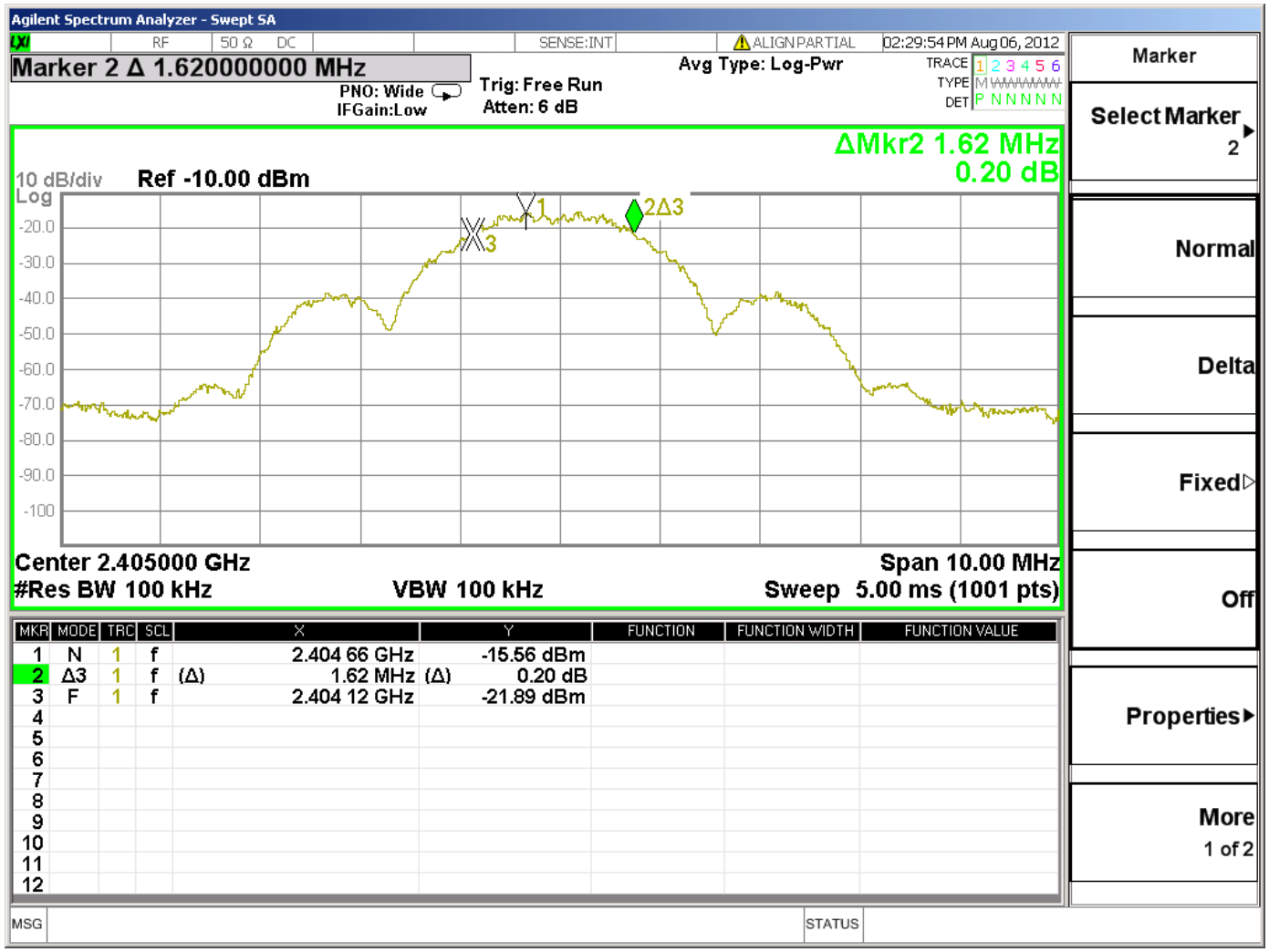


Figure 27 6dB Bandwidth Graphs – Middle Channel

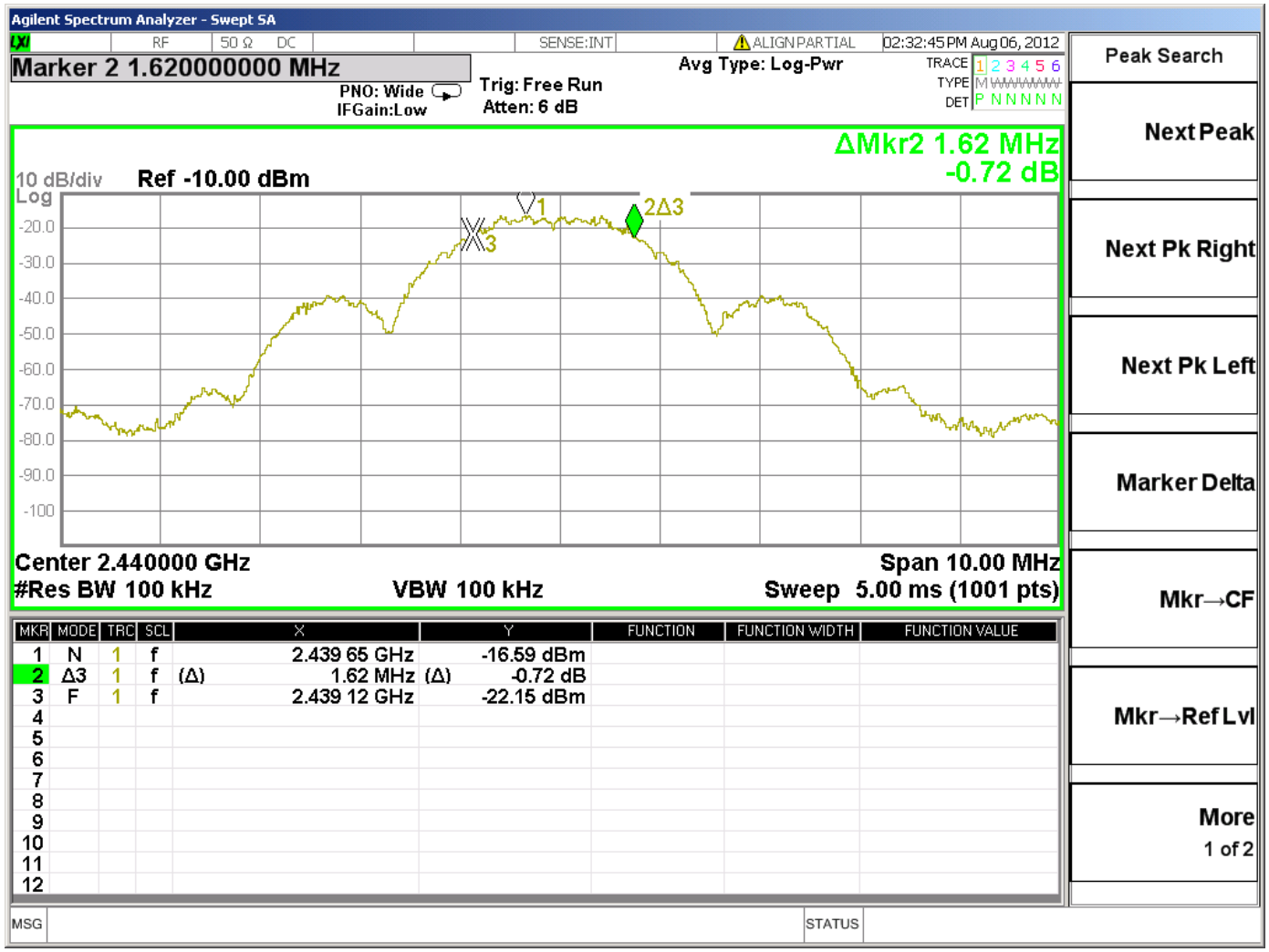
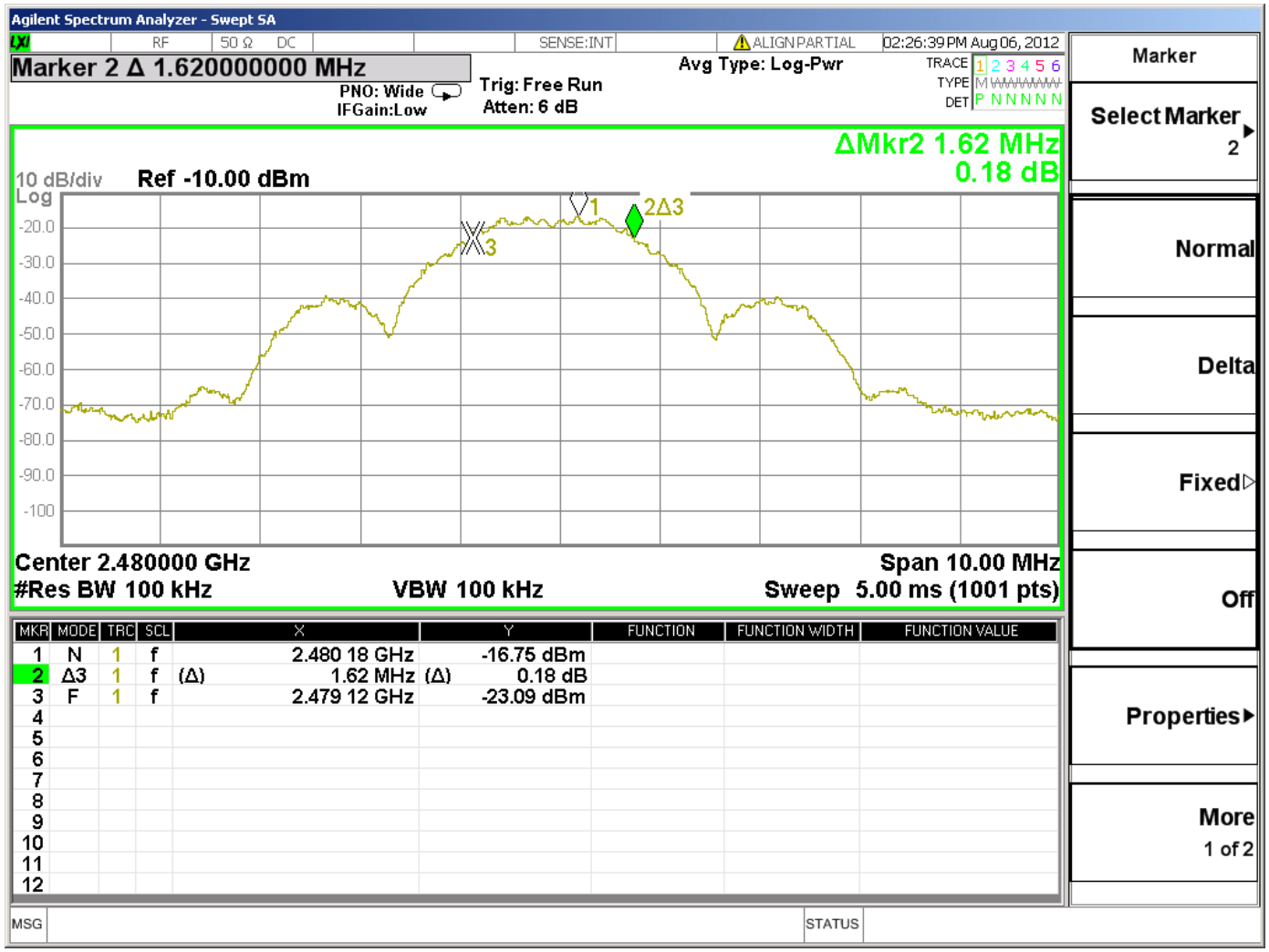


Figure 28 6dB Bandwidth Graphs – High Channel



4.5 Test Conditions and Results – MAXIMUM PEAK OUTPUT POWER

Test Description	For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt.	
Basic Standard	47 CFR Part 15.247(b)(3) RSS-210, A8.4(4)	
	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	1,000	
Supplementary information: None		

Table 34 Maximum Peak Output Power EUT Configuration Settings

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

Table 35 Maximum Peak Output Power Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Power Meter	Agilent	N1912A	EMC4362	20120608	20120630
Peak Power Sensor	Agilent	N1921A	EMC4364	20120517	20130531
Attenuator w/ Cable	-	-	None	*N/A	N/A
* Cable and attenuator ware characterized at the time of testing					

Table 36 Maximum Peak Output Power Results

Channel	Limit (dBm)	Power dBm	Power W
Low Channel	30	-1.50	0.000708
Middle Channel	30	-1.55	0.000700
High Channel	30	-1.60	0.000692

4.6 Test Conditions and Results – POWER SPECTRAL DENSITY

Test Description	For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.	
Basic Standard	47 CFR Part 15.247(e) RSS-210, A8.2(b)	
	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	8dBm (0.00631mW)	
Supplementary information: Per "558074 D01 DTS Meas Gudence DR01", Option 1, PSD was measured with 100kHz RBW and -15.2dB correction factor was applied in **Table 39** below.		

Table 37 Power Spectral Density EUT Configuration Settings

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

Table 38 Power Spectral Density Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	Agilent	PXA	EMC4360	20120515	20130515
Attenuator w/ Cable	-	-	None	*N/A	N/A
* Cable and attenuator ware characterized at the time of testing					

Table 39 Power Spectral Density Power Results

Channel	Limit (dBm)	100kHz to 3kHz Factor dB	Spectral Power Density dBm
Low Channel	8	-15.2	-20.87
Middle Channel	8	-15.2	-20.98
High Channel	8	-15.2	-20.11

Figure 29 Power Spectral Density Graphs – Low Channel

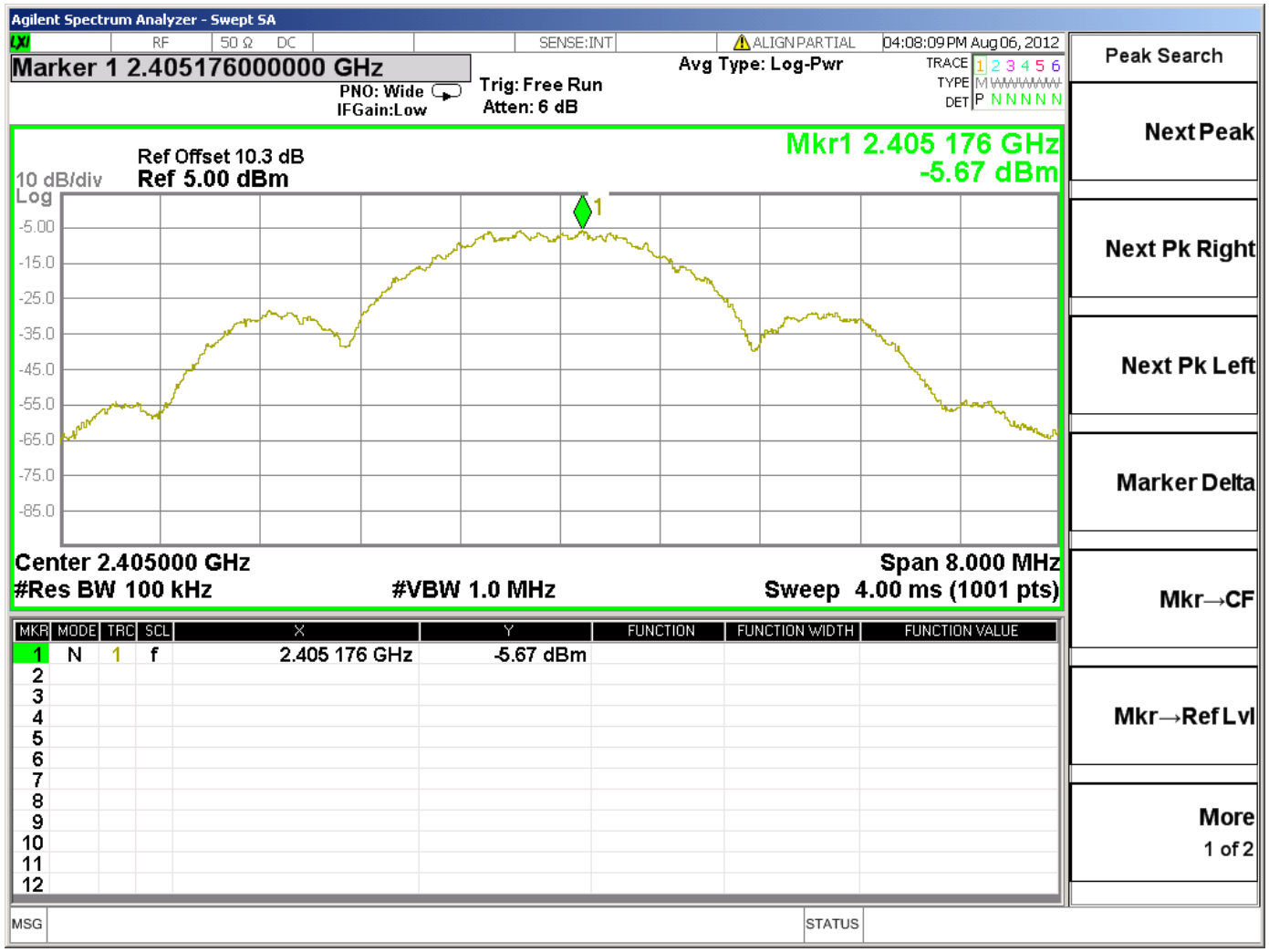
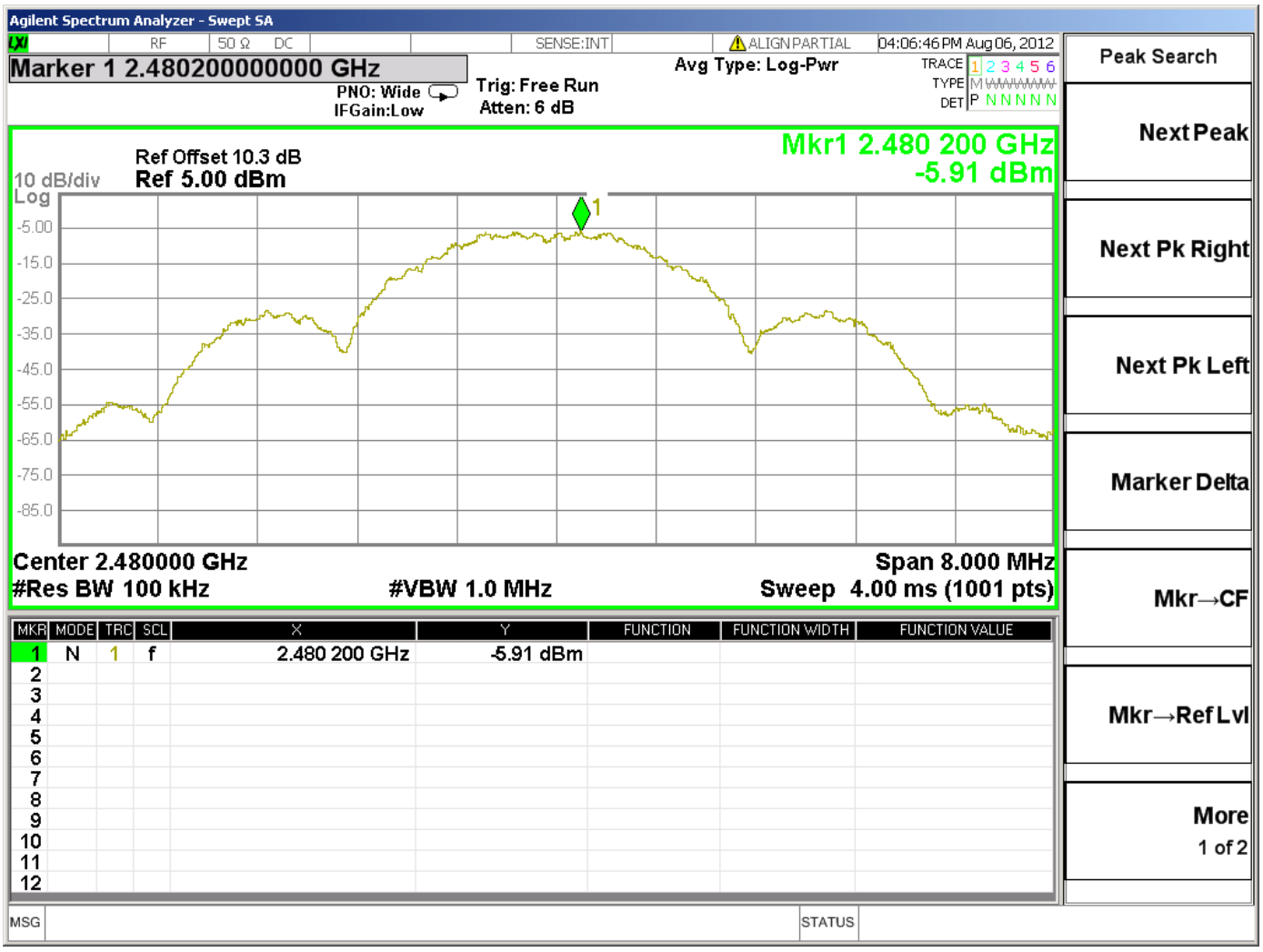


Figure 30 Power Spectral Density Graphs – Middle Channel

Figure 31 Power Spectral Density Graphs – High Channel



4.7 Test Conditions and Results – 99% Power BANDWIDTH

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

Table 40 99% Power Bandwidth Configuration Settings

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

Table 41 99% Power Bandwidth Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	Agilent	PXA	EMC4360	20120515	20130515
Attenuator w/ Cable	-	-	None	*N/A	N/A

Table 42 99% Power Bandwidth Results

Mode	Channel	99% Power Bandwidth
TX	Low	2.5971MHz
	Middle	2.5929MHz
	High	2.5907MHz

Figure 32 Power Bandwidth 99% Low Channel

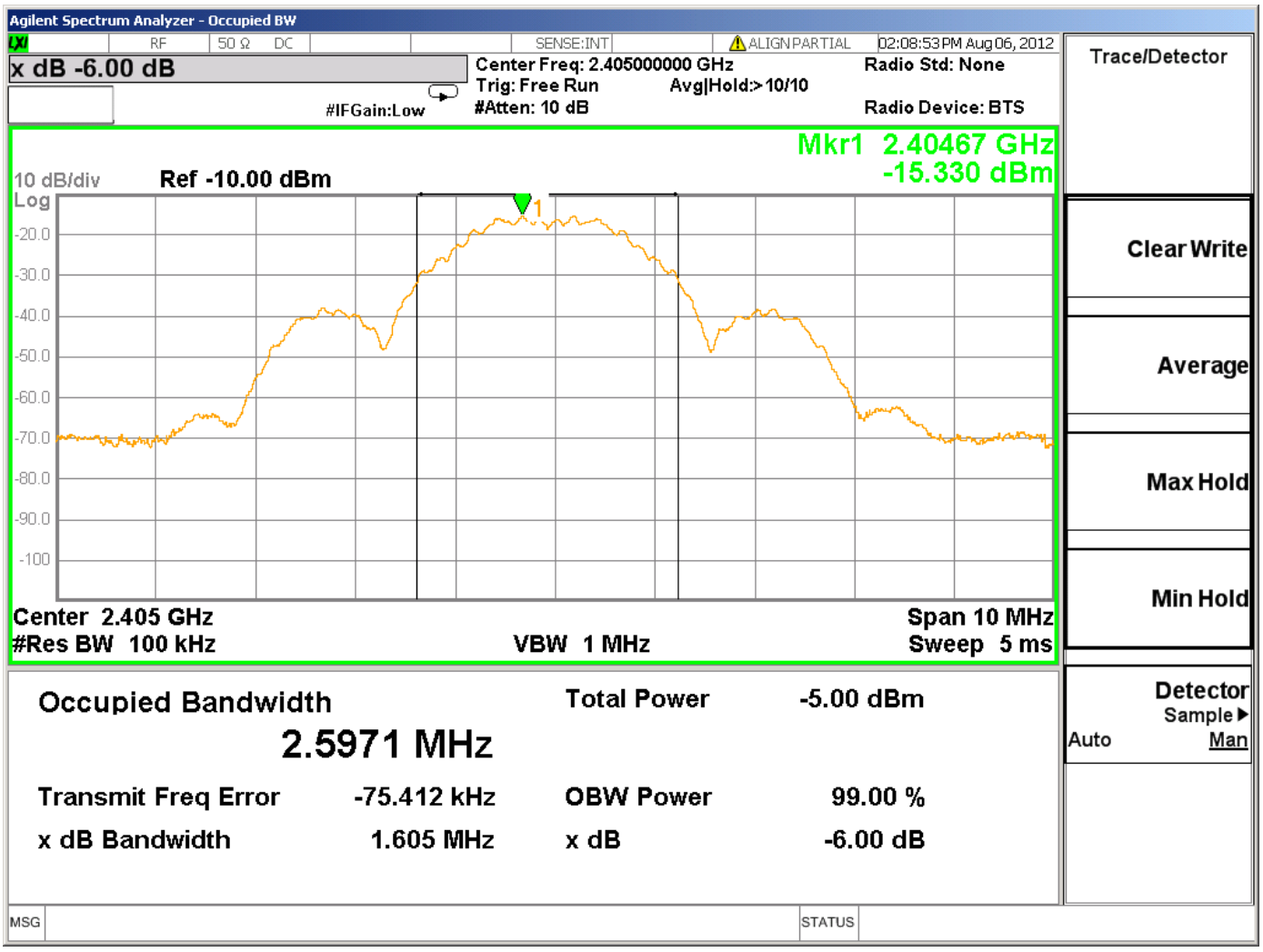


Figure 33 Power Bandwidth 99% Middle Channel

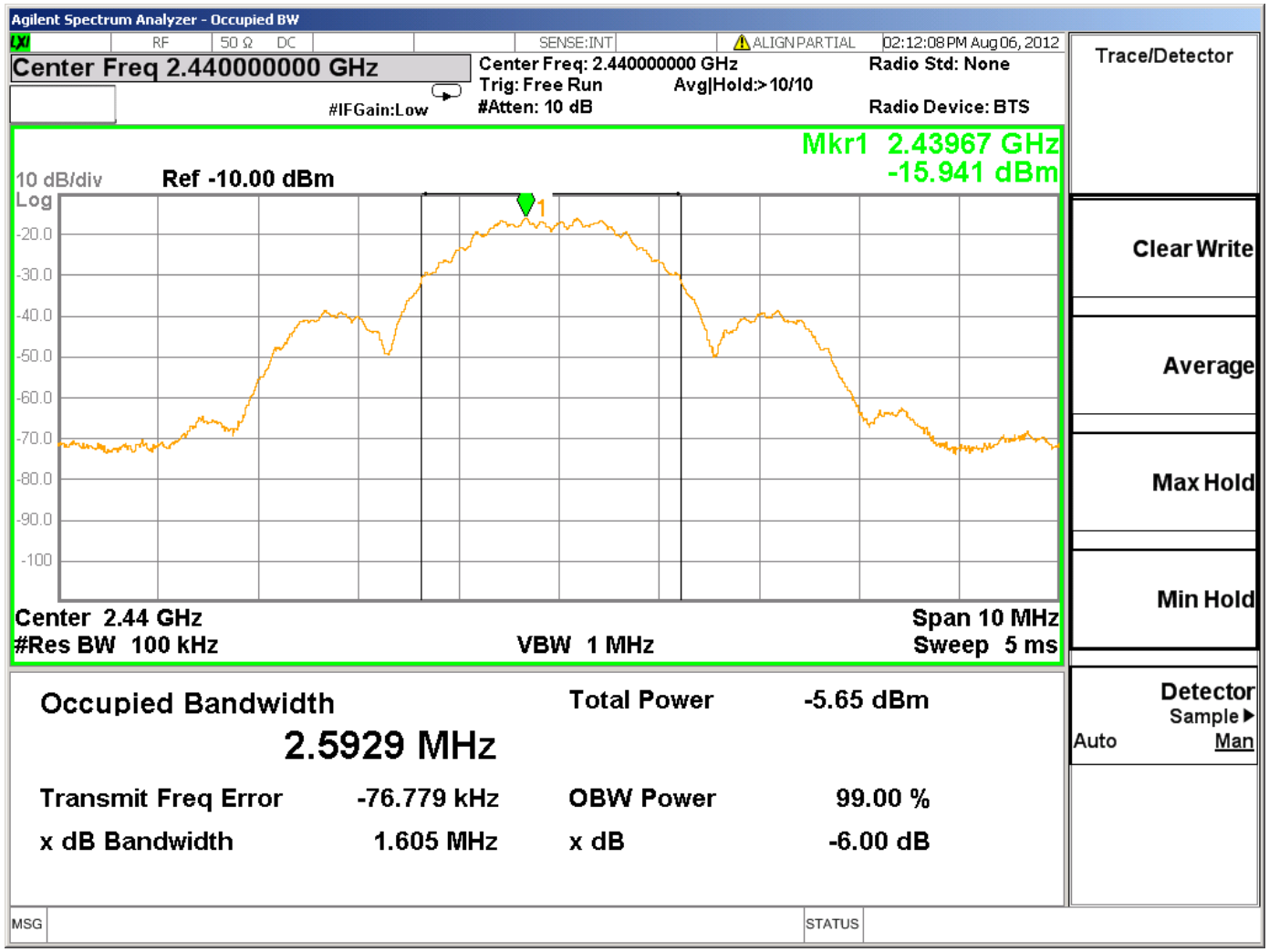
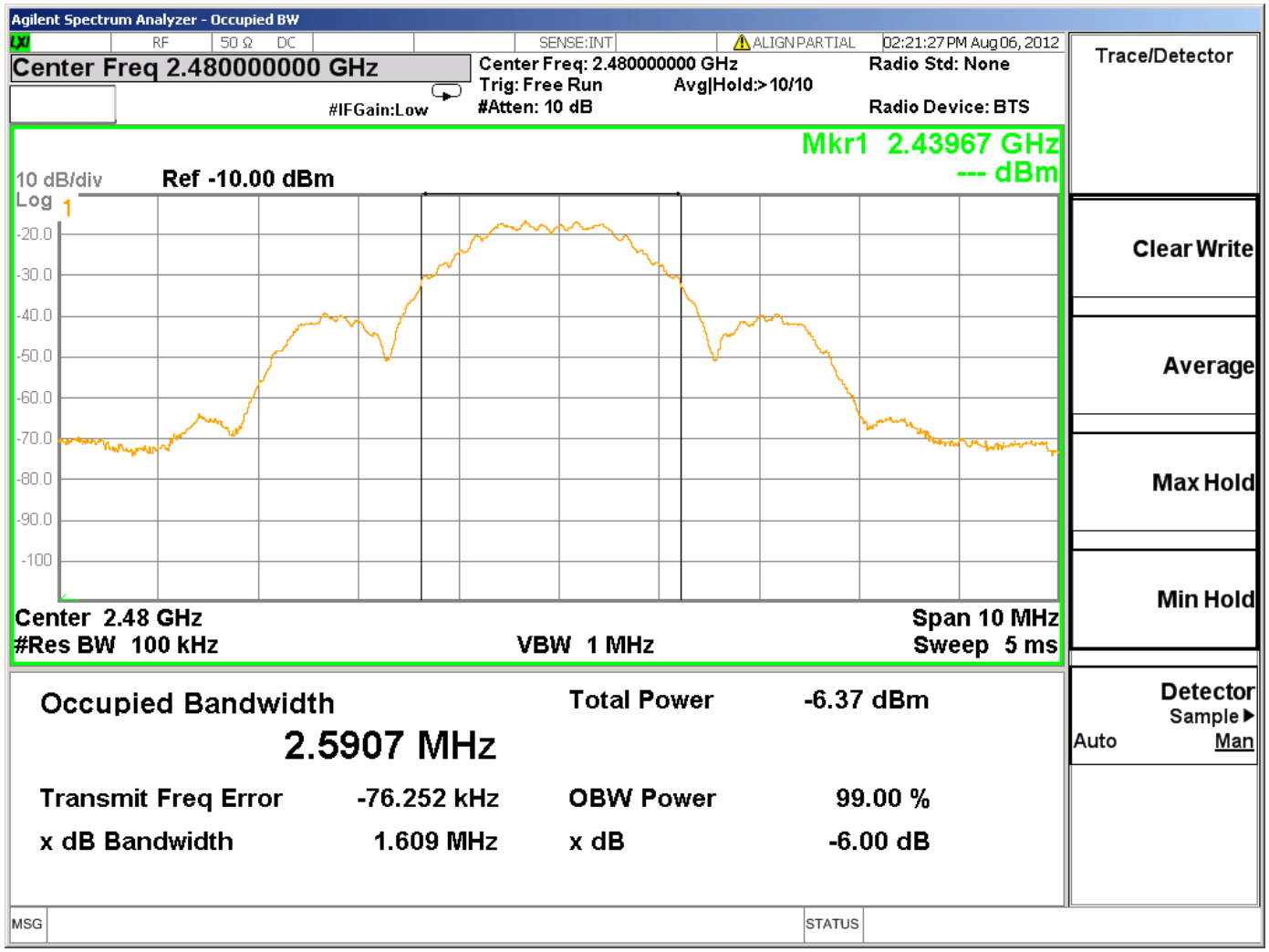


Figure 34 Power Bandwidth 99% High Channel

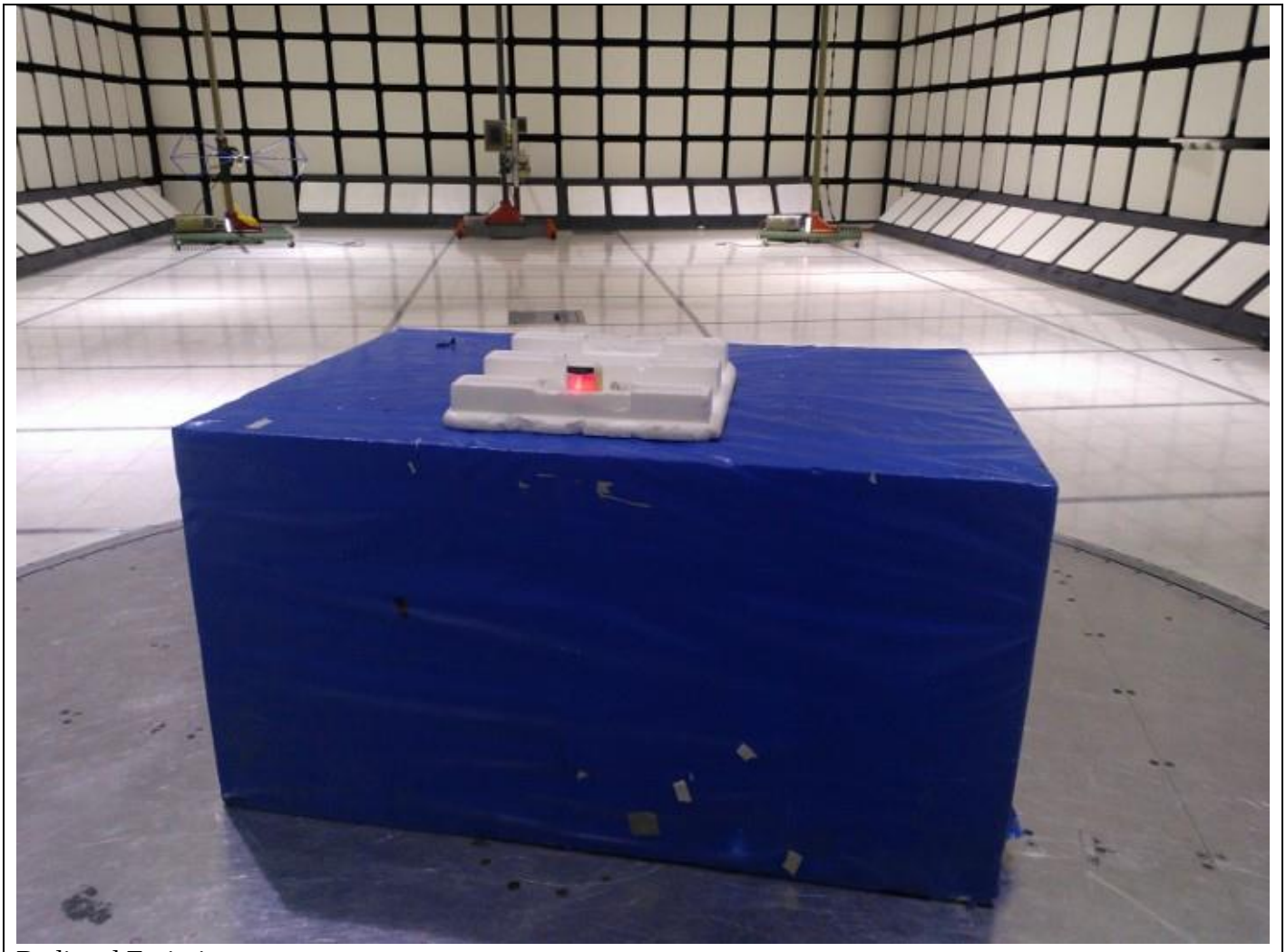


5.0 IMMUNITY TEST RESULTS

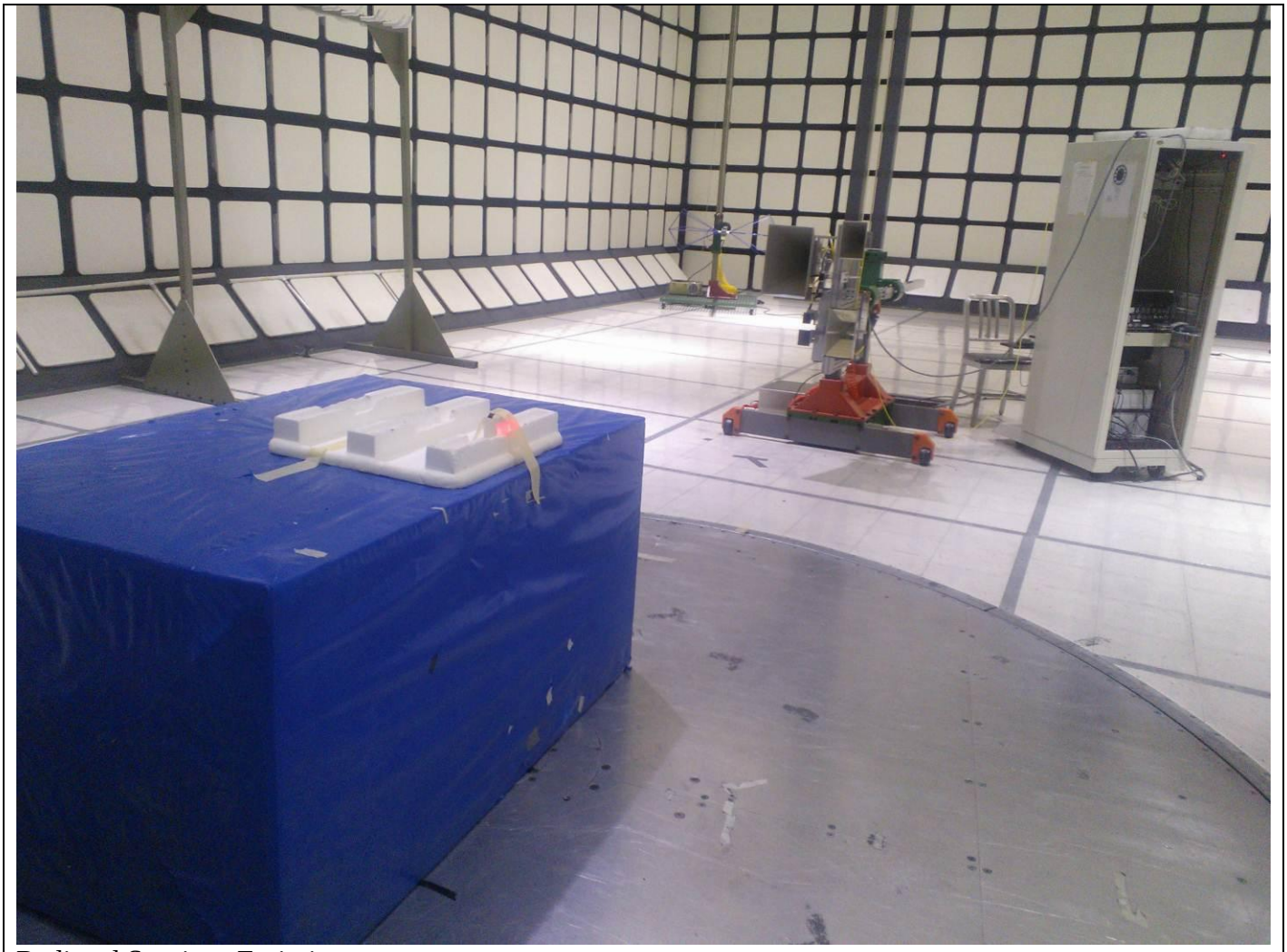
The immunity tests were not performed nor required.

Appendix A

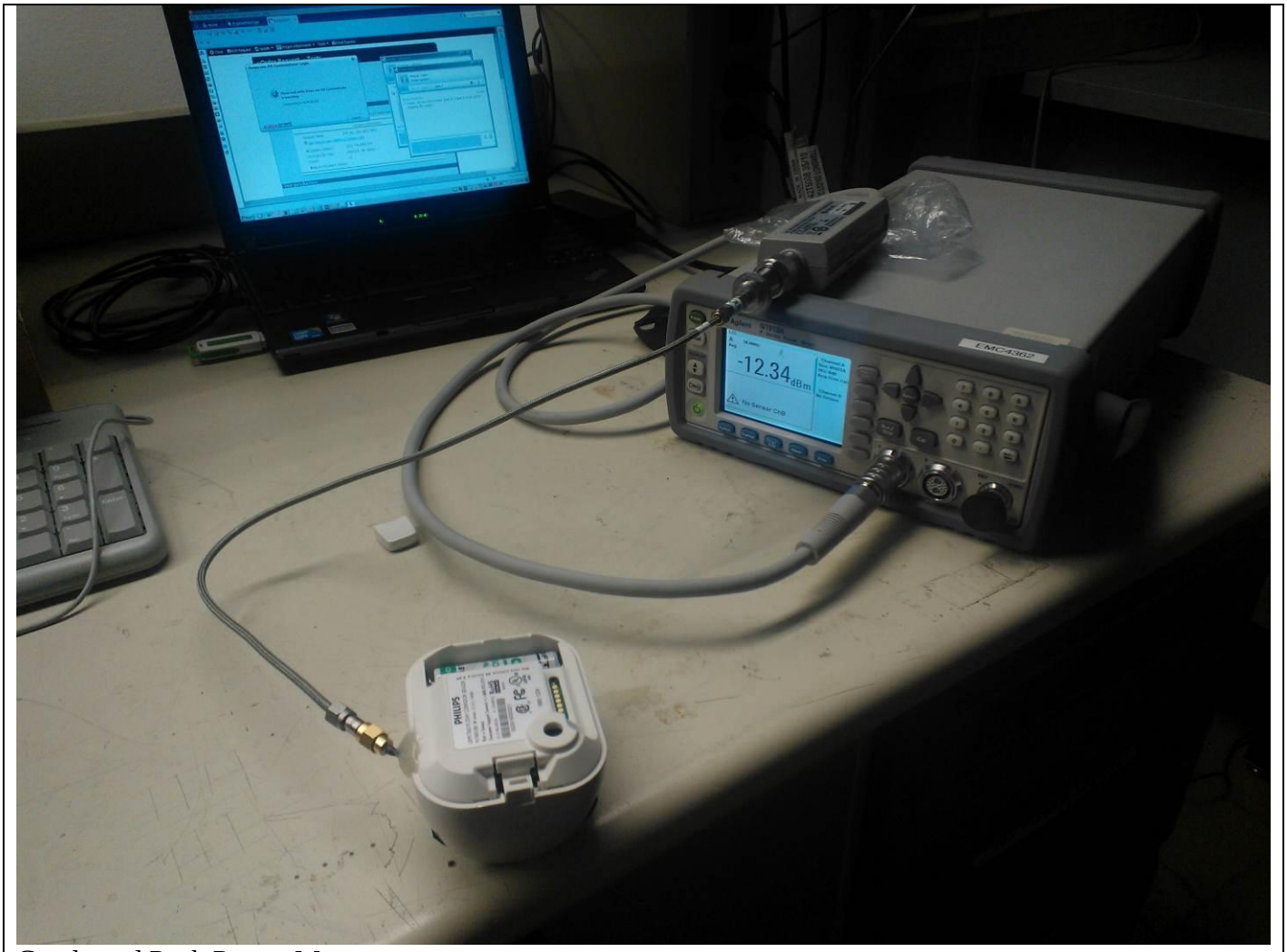
Test Setup Photos



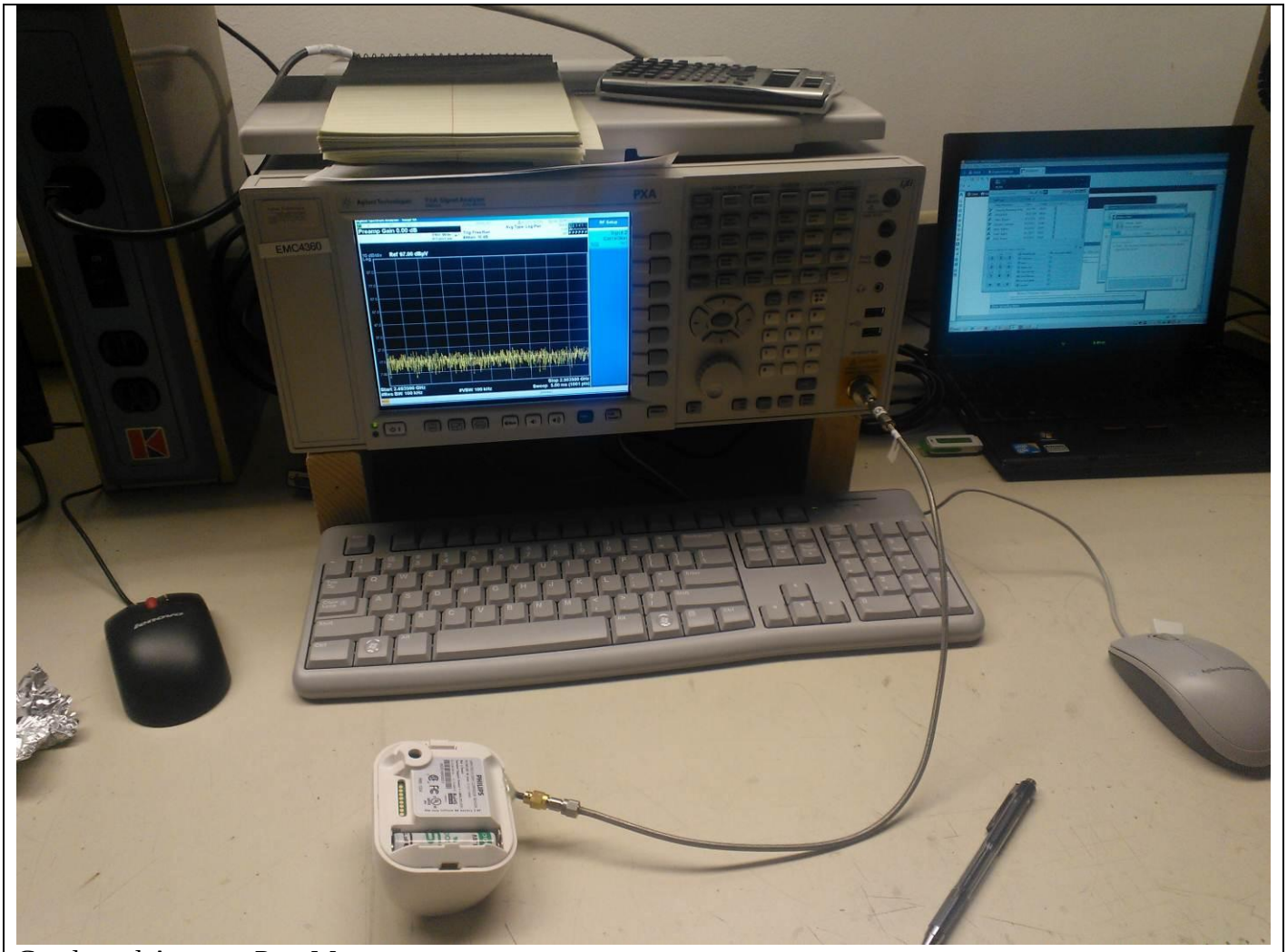
Radiated Emissions



Radiated Spurious Emissions



Conducted Peak Power Measurements



Conducted Antenna Port Measurements

Appendix B

Accreditations and Authorizations

NVLAP Lab code: 100414-0

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

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

Industry Canada Industrie Canada

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

VCCI: Accepted as an Associate Member to the VCCI. The measurement facilities detailed in this test report have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. Registration Nos.: Radiated Emissions R-621 and G-344, 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 2004/108/EC, Annex III (2-3). Also validated for the Telecommunication Equipment-Council Directive 99/5/EC, Annex III and IV, Identification Number: 0983.
NIST/CAB: Provisioned to act as a U.S. Conformity Assessment Body (CAB) under Appendix B, Phase I Procedures, of the Asia Pacific Economic Cooperation (APEC) MRA between the American Institute in Taiwan (AIT) and the United States. Our laboratory is considered qualified to test equipment subject to the applicable EMC regulations of the Chinese Taipei Bureau of Standards, Metrology and Inspection (BSMI) which require testing to CNS 13438 (CISPR 22).
NIST/CAB: Recognized by the Infocomm Development Authority of Singapore (IDA) under the Asia Pacific Economic Cooperation Mutual Recognition Agreement (APEC MRA). Our laboratory is provisionally designated to act as a Conformity Assessment Body (CAB) under Appendix B, Phase I Procedures, of the APEC MRA. Our scope of designation includes IDA TS EMC (CISPR 22), IEC 61000-4-2, -4-3, -4-4, -4-5, and -4-6