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Job Number:	1001358989
Project Number:	11CA14755B
File Number:	MC16433
Date:	May 19, 2011
Model:	LRM1743/00 & LRM1760/00

Electromagnetic Compatibility Test Report

For

Philips Lighting Electronics N. A.

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Job #: 1001358989 File #: MC16433 Project #: 11CA14755B
Model Number: LRM1743/00 & LRM1760/00
Client Name: Philips Lighting Electronics N. A.

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Test Report Details

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

Tests Performed For: **Philips Lighting Electronics N. A.
10275 West Higgins Road
Rosemont, IL 60018**

Applicant Contact: **Richard Haring**
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E-mail: **richard.haring@philips.com**

Test Report Date: **May 19, 2011**

Product Type: **Wireless Wall Switch**

Product standards **FCC Part 15, Subpart B**

Model Number: **LRM1743/00 & LRM1760/00**

EUT Category: **Lighting Products**

Testing Start Date: **March 29, 2011**

Date Testing Complete: **April 28, 2011**

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, NIST, A2LA, or any agency of the US government.

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Report Revision History

Revision Date	Description	Revised By	Revision Reviewed By
None			

1.0 GENERAL - Product Description

1.1 Equipment Description

The model LRA1743/xx and model LRM1760/xx sensors are remote, ceiling-mounted, and are lithium battery-powered (Class 2) devices. The model LRA1743/xx function is to detect the movement (occupancy) only; the model LRM1760/xx detects the movement as well as daylight levels.

1.2 Device Configuration During Test

1.2.1 Equipment Used During Test:

Use	Product Type	Manufacturer	Model	Comments
EUT	Light / Motion Sensor	Philips Lighting Electronics N. A.	LRM1743/00 LRM1760/00	None

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

1.2.2 Input/Output Ports:

Port #	Name	Type*	Cable Max. >3m (Y/N)	Cable Shielded (Y/N)	Comments
0	Enclosure	N/E	—	—	None
1	Mains	AC	Y	N	None
2	Antenna	-	N	N	None

Note:
 AC = AC Power Port DC = DC Power Port N/E = Non-Electrical
 I/O = Signal Input or Output Port (Not Involved in Process Control)
 TP = Telecommunication Ports

1.2.3 Power Interface:

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

1.3 EUT Configurations

Mode #	Description
1	EUT was configured on 80cm Styrofoam with cable routed vertically into a power source.
2	EUT was configured on bench top with it's RF output connected directly into a measuring device (Oscilloscope or Spectrum Analyzer)

1.4 EUT Operation Modes

Mode #	Description
1	EUT was set to continuously transmit on a single channel with full output power.
2	EUT was set to receive on a single channel. This is also considered as standby mode.

2.0 **Summary**

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

2.1 **Deviations from standard test methods**

None

2.2 **Device Modifications Necessary for Compliance**

None

2.3 Reference Standards

Product is considered Class A per Part 15, Subpart B

Standard Number	Standard Name	Standard Date
FCC Part 15, Subpart B & 15.247	Code of Federal Regulations, Part 15, Radio Frequency Devices	2010
RSS-210, Issue 8	License-Exempt Radio Apparatus (All Frequency Bands): Category I Equipment	December 2010
RSS-Gen, Issue 3	General Requirements and Information for the Certification of Certification of Radio Apparatus	December 2010

2.4 Results Summary

Requirement – Test	References	Result (Compliant / Non-Compliant)*
Radiated Emissions - Digital	47 CFR Part 15.209 RSS-Gen 7.2.3	Compliant
Spurious Emissions (Antenna Conducted and Radiated)	47 CFR Part 15.247(d) RSS-210, A8.5 RSS-Gen 7.2.5	Compliant
Bandedge Compliance	47 CFR Part 15.247(d) RSS-210, A8.5	Compliant
Duty Cycle and Duty Cycle Factor	47 CFR Part 15.35(c) RSS-Gen 4.5	Compliant
6dB Bandwidth	47 CFR Part 15.247(a)(2) RSS-210, A8.2(a)	Compliant
Peak Power	47 CFR Part 15.247(b)(3) RSS-210, A8.4(4)	Compliant
Power Spectral Density	47 CFR Part 15.247(e) RSS-210, A8.2(b)	Compliant
99% Occupied Bandwidth	RSS-Gen, 4.6.1	Compliant

Test Engineer:



Reviewer:



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

3.0 Calibration of Equipment Used for Measurement

All test equipment and test accessories are calibrated on a regular basis. The maximum time between calibrations is one year or the manufacturers' recommendation, whichever is less.

All test equipment calibrations are traceable to the National Institute of Standards and Technology (NIST); therefore, all test data recorded in this report is traceable to NIST.

4.0 EMISSIONS TEST RESULTS

The emissions tests were performed according to following regulations:

----- United States -----

Code of Federal Regulations Title 47	Part 15, Subpart B, Radio Frequency Devices
--------------------------------------	---

----- Canada -----

Industry Canada	Spectrum Management and Telecommunications Radio Standards Specifications
-----------------	--

Unless specified otherwise in the individual Methods, the tests shall be conducted under the following ambient conditions. Confirmation of these conditions shall be verified at the time the test is conducted.

Ambient Temperature, °C	22.5 ± 2.5	Relative Humidity, %	45 ± 15	Barometric Pressure, mBar	950 ± 150
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Measurement Uncertainty

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

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 Mode

Test Description	Measurements were made in a 10-meter semi-anechoic chamber that complies to CISPR 16/ANSI C63.4. Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 10-meter or 3-meter as noted. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in both horizontal and vertical polarities. Final measurements (quasi-peak or average as noted) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4-meters. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable.	
Basic Standard	FCC Part 15, Subpart B	
UL LPG	80-EM-S0029	
	Frequency range	Measurement Point
Fully configured sample scanned over the following frequency range	30MHz – 25GHz	(10 meter or 3 meter)
Limits - Class A		
Frequency (MHz)	Limit (dB μ V/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 (dB μ V/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: In receive mode / digital mode measurements are only required up to 12.5GHz, however testing was conducted to 25GHz.		

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

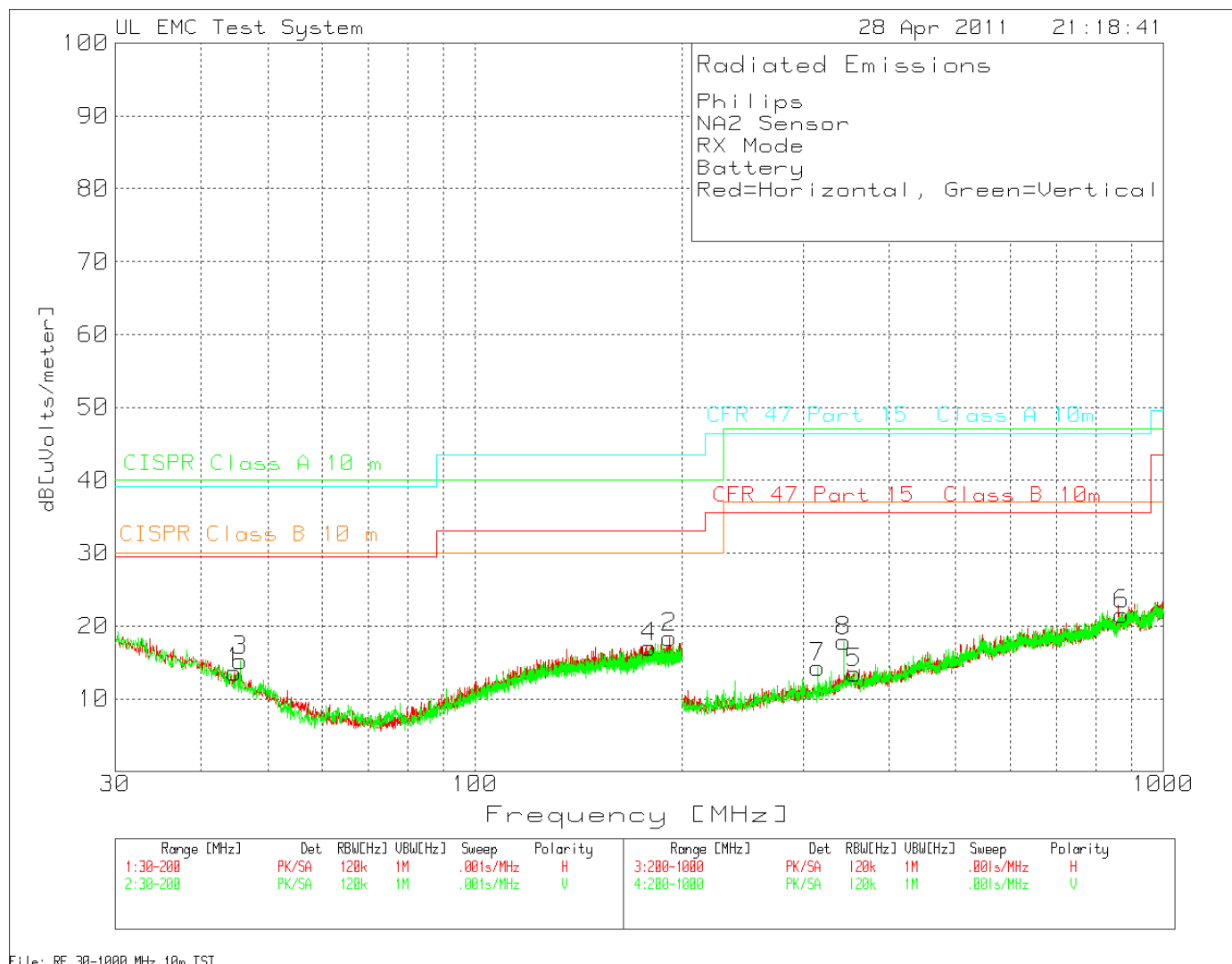
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMI Test Receiver	Rohde & Schwarz	ESU	EMC4323	Dec. 30, 2010	Dec. 31, 2011
Bicon Antenna	Chase	VBA6106A	EMC4078	Dec. 2, 2010	Dec. 31, 2011
Log-P Antenna	Chase	UPA6109	EMC4313	June 1, 2010	June, 30, 2011
Spectrum Analyzer	Rhode & Schwarz	FSEK	EMC4182	Dec. 28, 2010	Dec. 30, 2011
Antenna Array	UL	BOMS	EMC4276	Oct. 21, 2010	Oct. 21, 2011

Figure 1 Test setup for Radiated Emissions



EUT was placed on the edge of the 80cm support. The edge of the 80cm support was placed directly over the center of the turn table.

Figure 2 Radiated Emissions Graph 30MHz – 1GHz



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Table 3 Radiated Emissions Data Points 30MHz – 1GHz

Philips

NA2 Sensor

RX Mode

Battery

Red=Horizontal, Green=Vertical

Test	Meter	Gain/Loss	Transducer	Level	Limit:1	2	3	4	5	6
No.	Frequency	Reading	Factor	Factor	dB[uVolts/meter]					
	[MHz]	[dB(uV)]	[dB]	[dB]						
=====										
Bicon Horizontal 30 - 200MHz -----										
1	44.6977	31.72 PK	-30.3	12.2	13.62	40	30	39.1	29.6	-
		Height:99 Horz		Margin [dB]		-26.38	-16.38	-25.48	-15.98	-
2	192.099	32.45 PK	-29.9	15.9	18.45	40	30	43.5	33.1	-
		Height:250 Horz		Margin [dB]		-21.55	-11.55	-25.05	-14.65	-
Bicon Vertical 30 - 200MHz -----										
3	45.5472	33.6 PK	-30.3	11.9	15.2	40	30	39.1	29.6	-
		Height:100 Vert		Margin [dB]		-24.8	-14.8	-23.9	-14.4	-
4	179.2704	31.14 PK	-29.8	15.7	17.04	40	30	43.5	33.1	-
		Height:100 Vert		Margin [dB]		-22.96	-12.96	-26.46	-16.06	-
LogP Horizontal 200 - 1000MHz -----										
5	355.8961	31 PK	-32.4	14.9	13.5	47	37	46.4	35.6	-
		Height:400 Horz		Margin [dB]		-33.5	-23.5	-32.9	-22.1	-
6	870.2199	30.34 PK	-31.5	22.7	21.54	47	37	46.4	35.6	-
		Height:300 Horz		Margin [dB]		-25.46	-15.46	-24.86	-14.06	-
LogP Vertical 200 - 1000MHz -----										
7	314.8568	33.66 PK	-32.7	13.4	14.36	47	37	46.4	35.6	-
		Height:100 Vert		Margin [dB]		-32.64	-22.64	-32.04	-21.24	-
8	343.6376	35.62 PK	-32.5	14.8	17.92	47	37	46.4	35.6	-
		Height:100 Vert		Margin [dB]		-29.08	-19.08	-28.48	-17.68	-

LIMIT 1: CISPR Class A 10 m

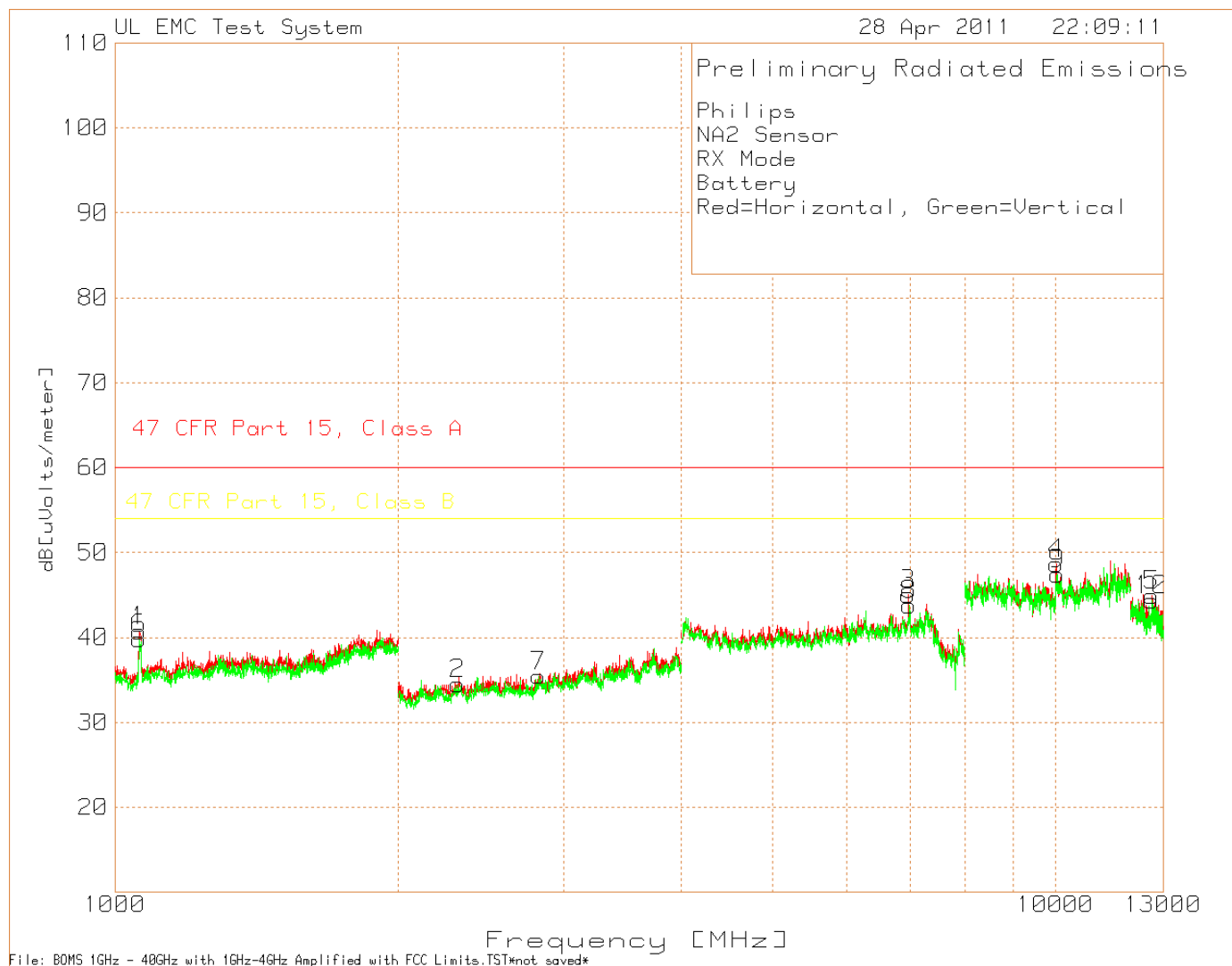
LIMIT 2: CISPR Class B 10 m

LIMIT 3: CFR 47 Part 15 Class A 10m

LIMIT 4: CFR 47 Part 15 Class B 10m

PK - Peak detector

Figure 3 Radiated Emissions Graph 1GHz – 13GHz



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 Client Name: Philips Lighting Electronics N. A.

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Table 4 Radiated Emissions Data Points 30MHz – 1GHz

Philips												
NA2 Sensor												
RX Mode												
Battery												
Red=Horizontal, Green=Vertical												
Marker	Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1[dB]	Limit 2	Margin 2[dB]	Height [cm]	Polarity
Number	Frequency	Reading	Type	Factor	Factor	dB[uVolts/meter]						
	[MHz]	[dB(uV)]		[dB]	[dB]							
1	1061.061	73.17	PK	-56.39	24	40.78	60	-19.22	54	-13.22	150	Horz
2	2312.312	63.48	PK	-50.71	21.7	34.47	60	-25.53	54	-19.53	100	Horz
3	6974.975	61.05	PK	-45.21	29.2	45.04	60	-14.96	54	-8.96	150	Horz
4	10022.022	59.36	PK	-47.11	36.4	48.65	60	-11.35	54	-5.35	100	Horz
5	12659.319	47.74	PK	-42.26	39.5	44.98	60	-15.02	54	-9.02	99	Horz
6	1062.062	72.16	PK	-56.37	24	39.79	60	-20.21	54	-14.21	150	Vert
7	2822.823	63.15	PK	-49.98	22.3	35.47	60	-24.53	54	-18.53	101	Vert
8	6990.991	59.6	PK	-45.06	29.3	43.84	60	-16.16	54	-10.16	150	Vert
9	10030.03	58.36	PK	-47.34	36.4	47.42	60	-12.58	54	-6.58	100	Vert
10	12659.319	47.08	PK	-42.26	39.5	44.32	60	-15.68	54	-9.68	100	Vert
LIMIT 1: 47 CFR Part 15, Class A												
LIMIT 2: 47 CFR Part 15, Class B												
PK - Peak detector												

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

Test Description	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section15.205(c)).		
Basic Standard	47 CFR Part 15.247(d) RSS-210, A8.5 RSS-GEN 7.2.5		
	Frequency range	Measurement Point	
Fully configured sample scanned over the following frequency range	30MHz – 1GHz	10 meter distance and / or antenna port	
Fully configured sample scanned over the following frequency range	1GHz – 25GHz	3 meter distance and / or antenna port	
Limits (Antenna Conducted)			
All emissions must be 20dB below the level of the fundamental frequency.			
Limits (Radiated – Restricted Bands Only)			
Frequency (MHz)	Limit (dBμV/m)		
	Quasi-Peak	Average	
	General Emissions	Fundamental	Spurious
30 – 88	29.54	-	-
88 – 216	33.06	-	-
216-960	35.56	-	-
960-1000	43.52	-	-
1,000-25,000	-	-	54
Supplementary information: Below 1GHz, spectrum was checked. All emissions related to the transmitter below 1GHz are not in the restricted band therefore only antenna conducted limits apply (20dB below the peak level of the fundamental).			

Table 5 SPURIOUS EMISSIONS EUT Configuration Settings

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

Table 6 SPURIOUS CONDUCTED EMISSIONS Test Equipment

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

Table 7 SPURIOUS RADIATED EMISSIONS Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	Rhode & Schwartz	ESU	EMC4323	Dec. 30, 2010	Dec. 31, 2011
Bicon Antenna	Chase	VBA6106A	EMC4078	Dec. 2, 2010	Dec. 31, 2011
Log-P Antenna	Chase	UPA6109	EMC4313	June 1, 2010	June, 30, 2011
Spectrum Analyzer	Rhode & Schwartz	FSEK	EMC4182	Dec. 28, 2010	Dec. 30, 2011
Antenna Array	UL	BOMS	EMC4276	Oct. 21, 2010	Oct. 21, 2011

Test setup for SPURIOUS EMISSIONS – Antenna conducted



Test setup for SPURIOUS EMISSIONS – Radiated

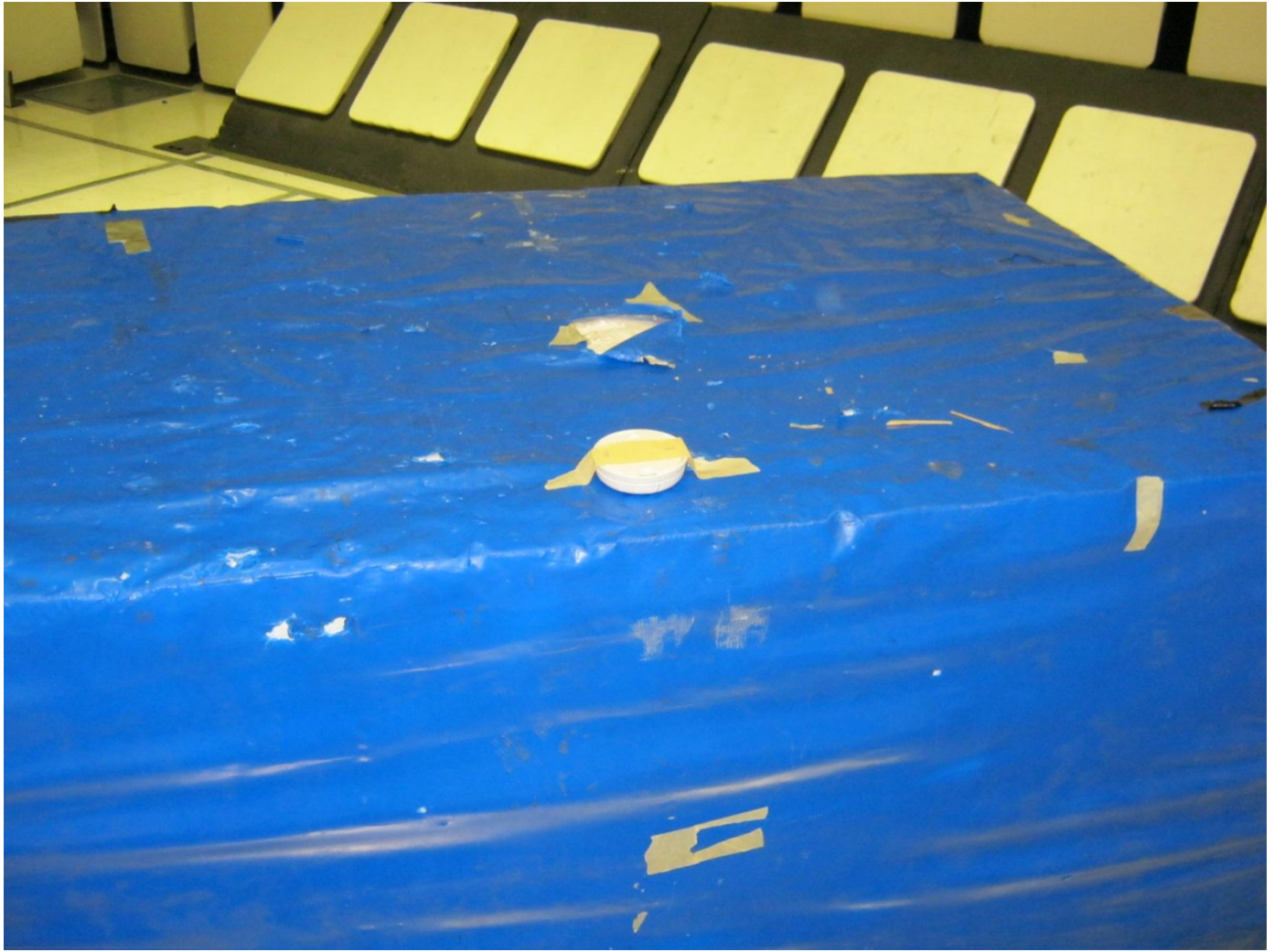
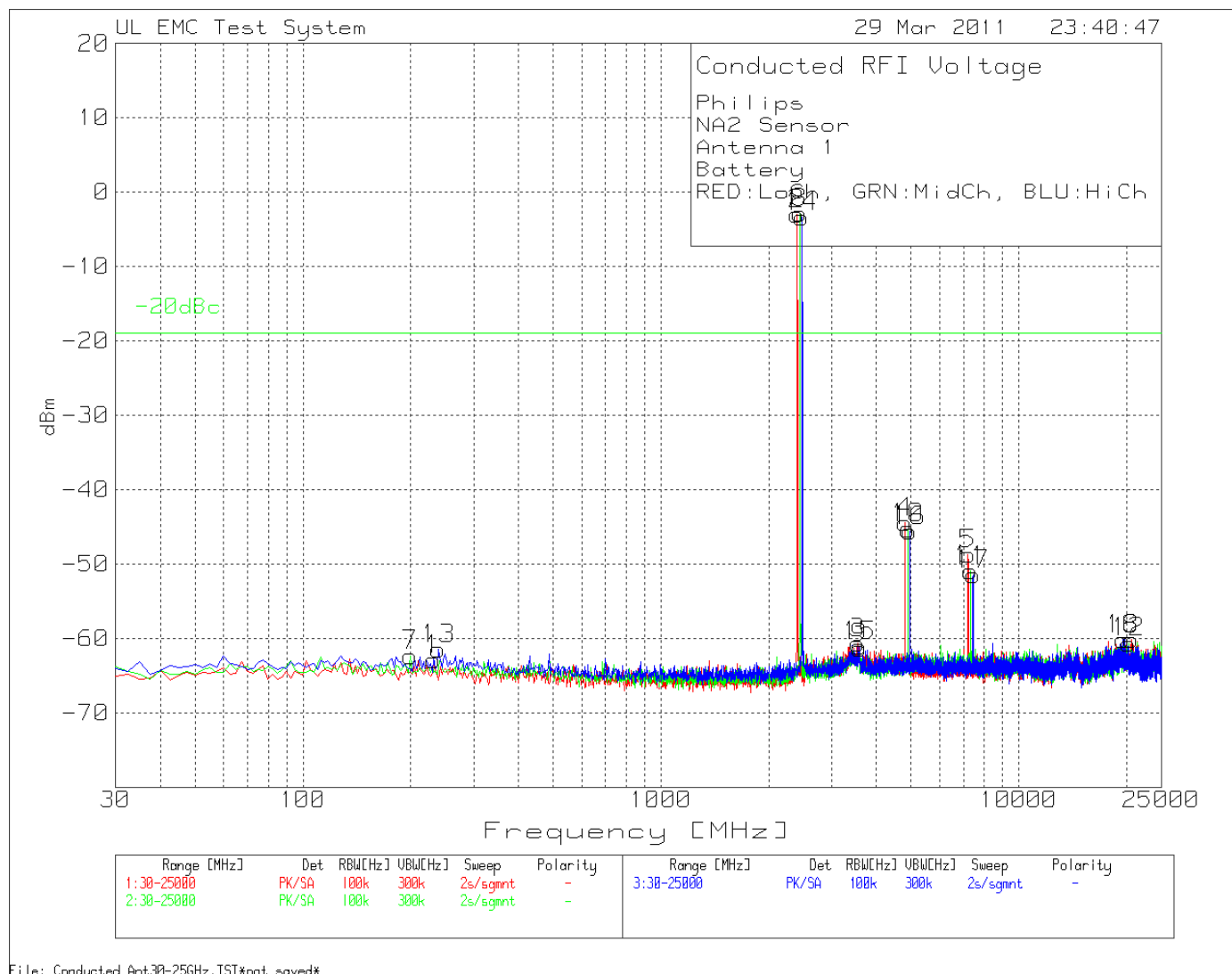


Figure 4 30MHz-25GHz Antenna Port Spurious Emissions Plots TX Mode, Low, Middle and High Channels – Antenna 1



File: Conducted Ant30-25GHz.TST*not saved*
No Emissions recorded within 20dB of the limit.

Table 8 Antenna Port Conducted Spurious Emissions 30MHz-25GHz, Low Channel, Middle Channel and High Channel – Antenna 1

Philips								
NA2 Sensor								
Antenna 1								
Battery								
RED:LoCh, GRN:MidCh, BLU:HiCh								
Marker	Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1[c
Number	Frequency	Reading	Type	Factor	Factor	dBm		
	[MHz]	[dB(uV)]		[dB]	[dB]			
LoCh 30 - 25000MHz								
1	232.0751	34.1	PK	-107	10	-62.9	-19	-43.9
2	2405.006	93.99	PK	-107	10	-3.01	-19	15.99
3	3552.594	36.03	PK	-107	10.3	-60.67	-19	-41.67
4	4807.455	52.34	PK	-107	10.2	-44.46	-19	-25.46
5	7212.399	47.88	PK	-107	10.4	-48.72	-19	-29.72
6	20634.179	35.82	PK	-107	11	-60.18	-19	-41.18
MidCh 30 - 25000MHz								
7	199.6433	34.83	PK	-107	9.9	-62.27	-19	-43.27
8	2444.923	94.04	PK	-107	10.1	-2.86	-19	16.14
9	3587.52	35.51	PK	-107	10.2	-61.29	-19	-42.29
10	4887.287	51.45	PK	-107	10.3	-45.25	-19	-26.25
11	7334.642	45.89	PK	-107	10.2	-50.91	-19	-31.91
12	20309.861	35.32	PK	-107	11.1	-60.58	-19	-41.58
HiCh 30 - 25000MHz								
13	239.5594	35.42	PK	-107	10.1	-61.48	-19	-42.48
14	2479.849	93.53	PK	-107	10.1	-3.37	-19	15.63
15	3582.531	35.75	PK	-107	10.2	-61.05	-19	-42.05
16	4959.635	51.1	PK	-107	10.3	-45.6	-19	-26.6
17	7441.916	45.19	PK	-107	10.4	-51.41	-19	-32.41
18	19566.424	35.5	PK	-107	11.4	-60.1	-19	-41.1
LIMIT 1: -20dBc								
PK - Peak detector								

* - Fundamental frequency, not subject to limit

Figure 5 30MHz-25GHz Antenna Port Spurious Emissions Plots TX Mode, Low, Middle and High Channels – Antenna 2

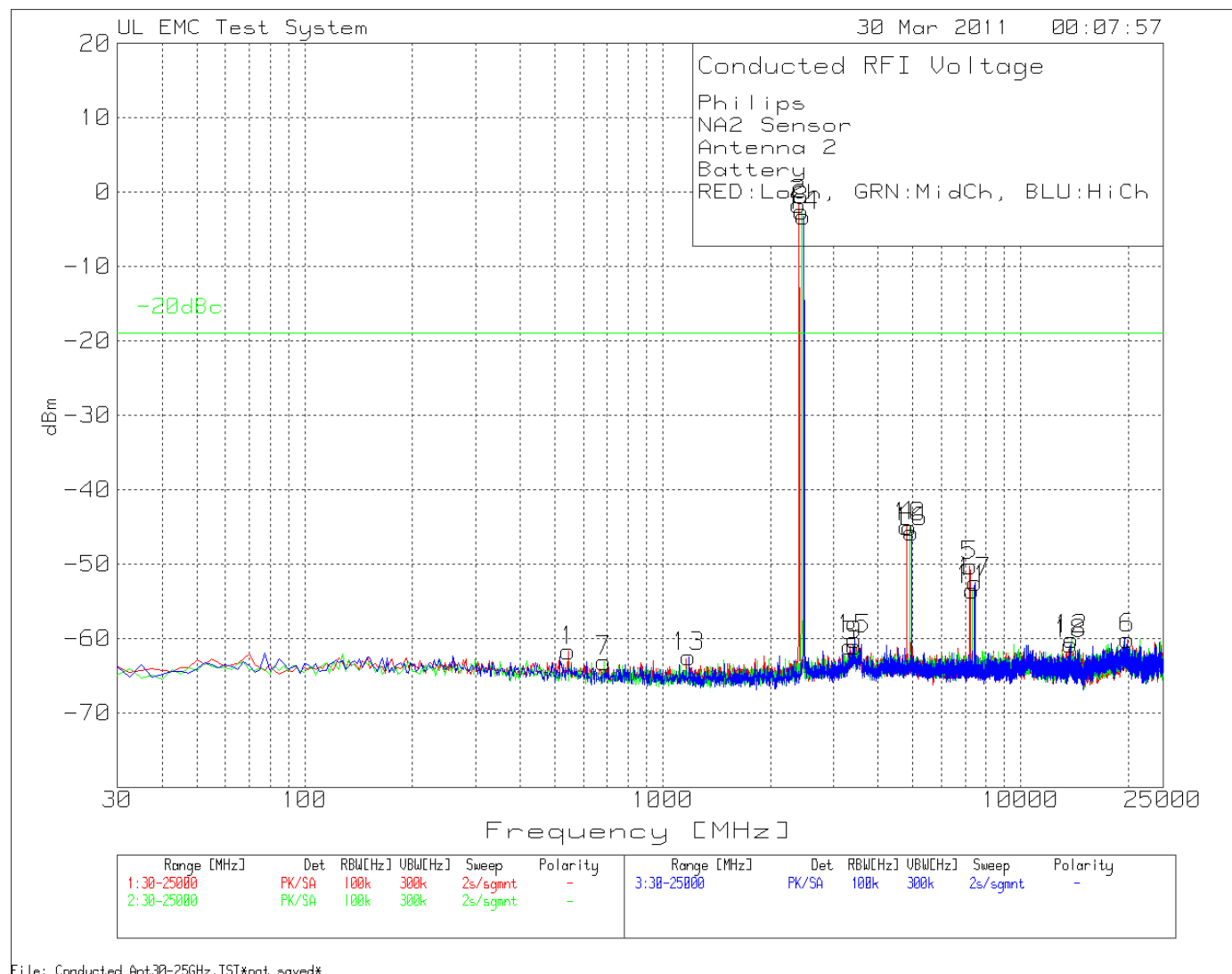


Table 9 Antenna Port Conducted Spurious Emissions 30MHz-25GHz, Low Channel, Middle Channel and High Channel – Antenna 2

Philips								
NA2 Sensor								
Antenna 2								
Battery								
RED:LoCh, GRN:MidCh, BLU:HiCh								
Marker	Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1[dB]
Number	Frequency	Reading	Type	Factor	Factor	dBm		
	[MHz]	[dB(uV)]		[dB]	[dB]			
LoCh 30 - 25000MHz								
1	543.9195	35.31	PK	-107	10	-61.69	-19	-42.69
2	2405.006	95.36	PK	-107	10	-1.64	-19	17.36
3	3340.54	35.82	PK	-107	10.2	-60.98	-19	-41.98
4	4809.95	51.91	PK	-107	10.2	-44.89	-19	-25.89
5	7212.399	46.3	PK	-107	10.4	-50.3	-19	-31.3
6	19905.711	35.34	PK	-107	11.6	-60.06	-19	-41.06
MidCh 30 - 25000MHz								
7	683.6257	33.85	PK	-107	10.1	-63.05	-19	-44.05
8	2444.923	94.35	PK	-107	10.1	-2.55	-19	16.45
9	3435.34	35.62	PK	-107	10.3	-61.08	-19	-42.08
10	4887.287	51.64	PK	-107	10.3	-45.06	-19	-26.06
11	7332.147	43.3	PK	-107	10.2	-53.5	-19	-34.5
12	13910.815	36.35	PK	-107	10.5	-60.15	-19	-41.15
HiCh 30 - 25000MHz								
13	1185.071	34.5	PK	-107	10	-62.5	-19	-43.5
14	2479.849	93.66	PK	-107	10.1	-3.24	-19	15.76
15	3427.856	36.62	PK	-107	10.3	-60.08	-19	-41.08
16	4959.635	50.96	PK	-107	10.3	-45.74	-19	-26.74
17	7441.916	44.18	PK	-107	10.4	-52.42	-19	-33.42
18	13773.604	35.63	PK	-107	10.6	-60.77	-19	-41.77
LIMIT 1: -20dBc								
PK - Peak detector								

* - Fundamental frequency, not subject to limit

Figure 6 Radiated Spurious Emissions below 1GHz, Low Channel – Antenna 1

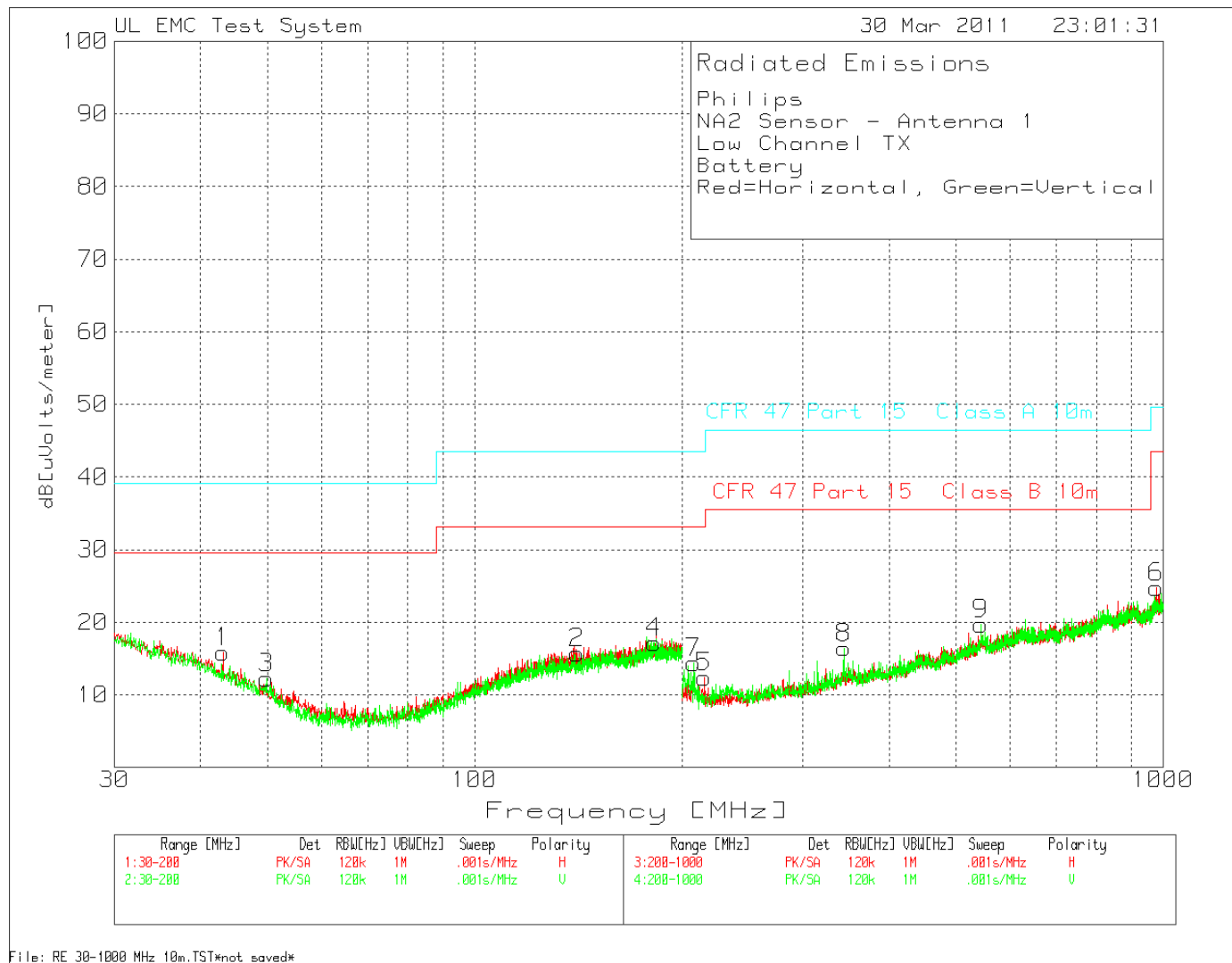
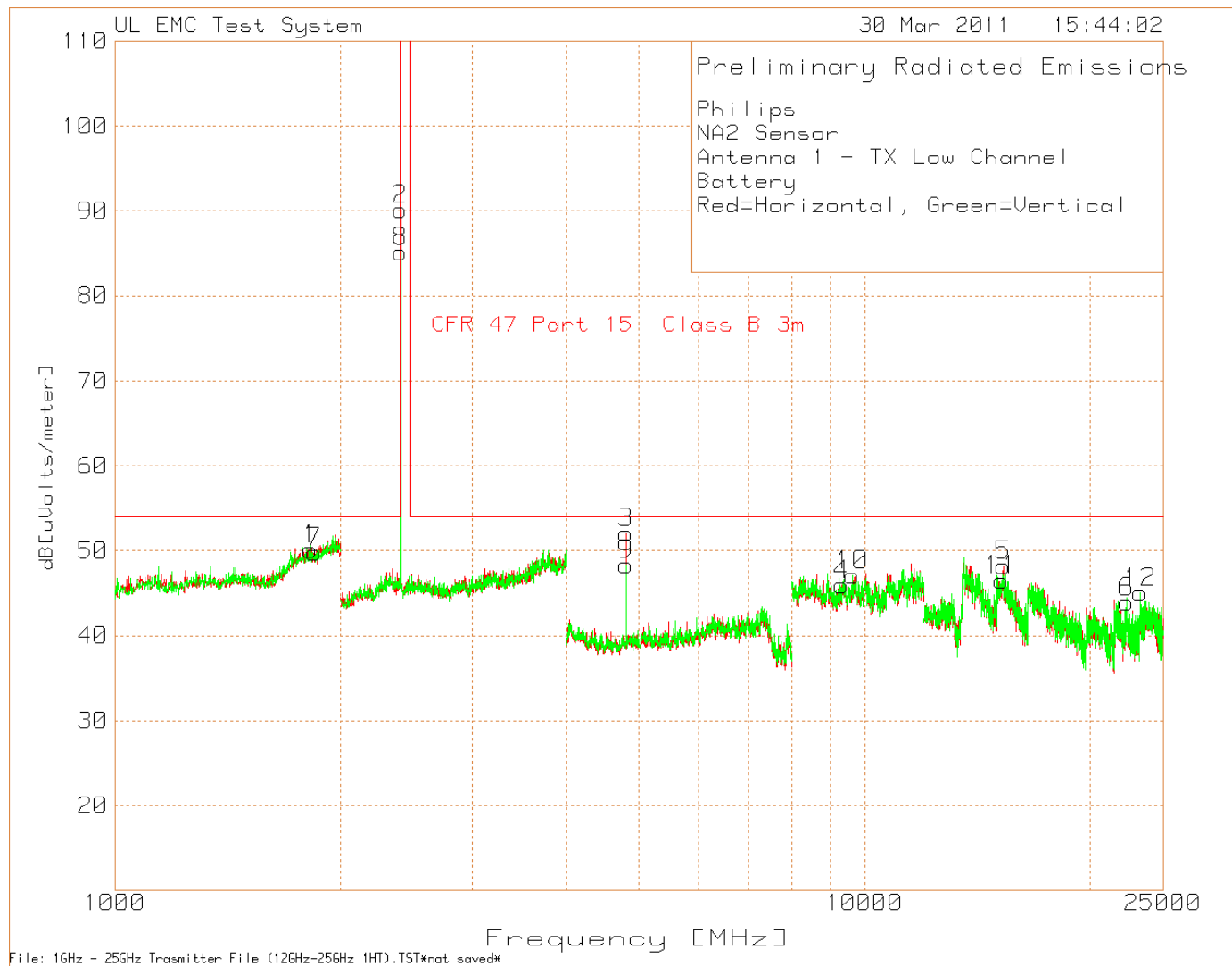


Figure 7 Radiated Spurious Emissions above 1GHz, Low Channel – Antenna 1



Job #: 1001358989 File #: MC16433 Project #: 11CA14755B
 Model Number: LRM1743/00 & LRM1760/00
 Client Name: Philips Lighting Electronics N. A.

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Table 10 Radiated Spurious Emissions below 1GHz, Low Channel – Antenna 1

Philips												
NA2 Sensor - Antenna 1												
Low Channel TX												
Battery												
Red=Horizontal, Green=Vertical												
Marker	Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 3	Margin 3[dB]	Limit 4	Margin 4[dB]	Height [cm]	Polarity
Number	Frequency	Reading	Type	Factor	Factor	dB[uVolts/meter]						
	[MHz]	[dB(uV)]		[dB]	[dB]							
Bicon Horizontal 30 - 200MHz												
1	43.0835	33.33	PK	-30.3	12.8	15.83	39.1	-23.27	29.6	-13.77	100	Horz
2	140.9545	31.38	PK	-30	14.4	15.78	43.5	-27.72	33.1	-17.32	400	Horz
Bicon Vertical 30 - 200MHz												
3	49.8801	32.61	PK	-30.3	10	12.31	39.1	-26.79	29.6	-17.29	100	Vert
4	182.4138	31.17	PK	-29.9	15.9	17.17	43.5	-26.33	33.1	-15.93	100	Vert
LogP Horizontal 200 - 1000MHz												
5	215.7229	34.84	PK	-33.3	10.9	12.44	43.5	-31.06	33.1	-20.66	300	Horz
6	977.8814	31.67	PK	-31	24.1	24.77	49.5	-24.73	43.5	-18.73	400	Horz
LogP Vertical 200 - 1000MHz												
7	208.2612	36.59	PK	-33.3	11.1	14.39	43.5	-29.11	33.1	-18.71	100	Vert
8	343.6376	34.15	PK	-32.5	14.8	16.45	46.4	-29.95	35.6	-19.15	100	Vert
9	544.0373	31.9	PK	-31.6	19.4	19.7	46.4	-26.7	35.6	-15.9	402	Vert
LIMIT 3: CFR 47 Part 15 Class A 10m												
LIMIT 4: CFR 47 Part 15 Class B 10m												
PK - Peak detector												

Table 11 Radiated Spurious Emissions above 1GHz, Low Channel – Antenna 1

Philips										
NA2 Sensor										
Antenna 1 - TX Low Channel										
Battery										
Red=Horizontal, Green=Vertical										
Marker	Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1[dB]	Height [cm]	Polarity
Number	Frequency	Reading	Type	Factor	Factor	dB[uVolts/meter]				
	[MHz]	[dB(uV)]		[dB]	[dB]					
1	1823.647	19.41	PK	3.53	27.2	50.14	54	-3.86	150	Horz
2	2404.404	64.1	PK	4.27	21.8	90.17	NA	NA	100	Horz
3	4808.539	75.44	PK	-51.05	27.7	52.09	54	-1.91	150	Horz
4	9315.544	57.97	PK	-48.44	36.4	45.93	54	-8.07	150	Horz
5	15301.651	44.68	PK	-36.45	40	48.23	54	-5.77	100	Horz
6	22370.185	55.66	PK	-52.22	40.5	43.94	54	-10.06	100	Horz
7	1843.687	19.18	PK	3.37	27.3	49.85	54	-4.15	150	Vert
8	2404.404	59.07	PK	4.27	21.8	85.14	NA	NA	100	Vert
9	4808.539	71.7	PK	-51.05	27.7	48.35	54	-5.65	150	Vert
10	9622.415	59.26	PK	-48.59	36.4	47.07	54	-6.93	150	Vert
11	15235.618	44.05	PK	-37.42	39.9	46.53	54	-7.47	100	Vert
12	23287.644	56.29	PK	-51.5	40.3	45.09	54	-8.91	100	Vert
LIMIT 1: CFR 47 Part 15 Class B 3m										
PK - Peak detector										
File: 1GHz - 25GHz Trasmitter File (12GHz-25GHz 1HT).TST*not saved*										

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

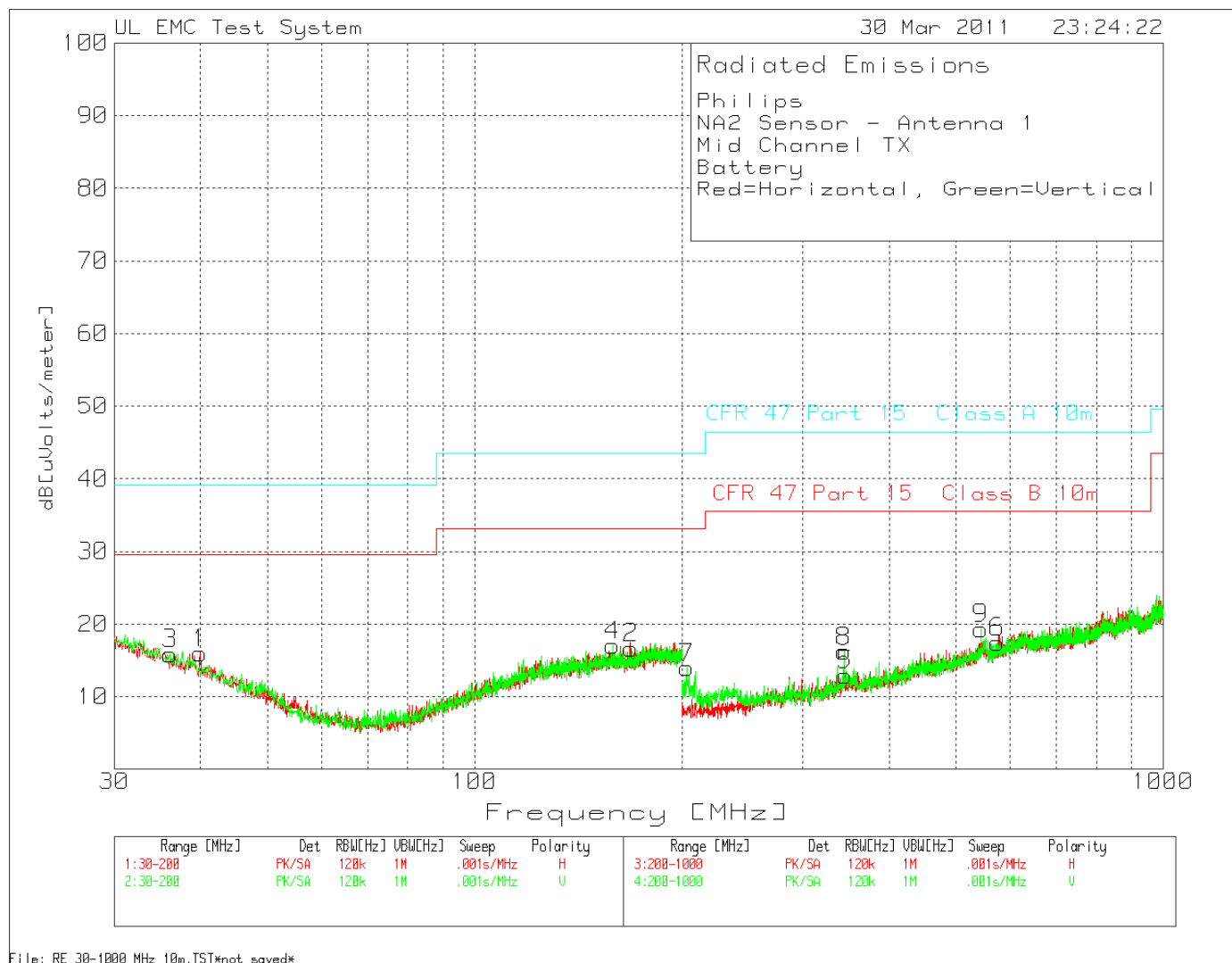


Figure 9 Radiated Spurious Emissions above 1GHz, Middle Channel – Antenna 1

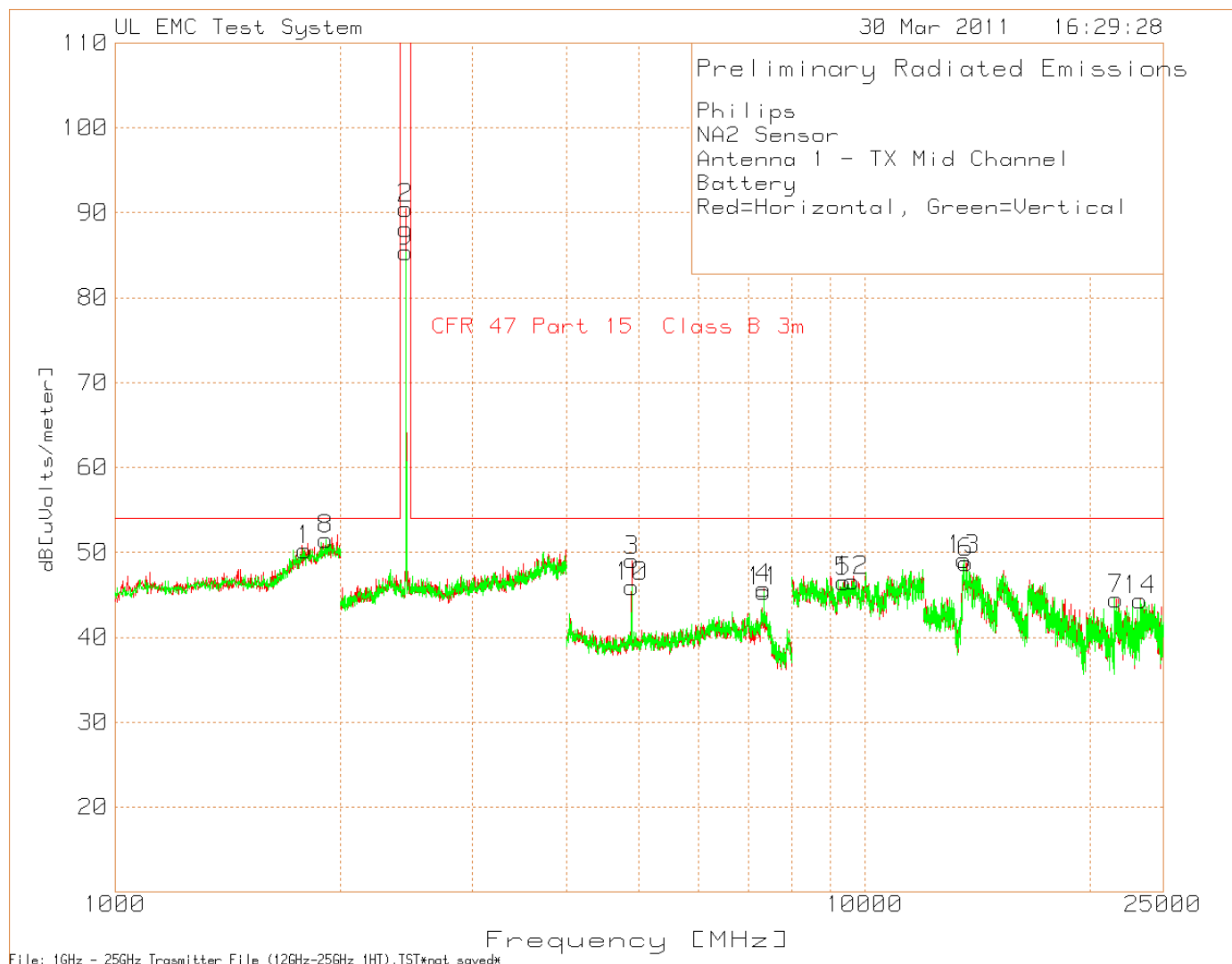


Table 12 Radiated Spurious Emissions below 1GHz, Middle Channel – Antenna 1

Philips												
NA2 Sensor - Antenna 1												
Mid Channel TX												
Battery												
Red=Horizontal, Green=Vertical												
Marker	Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 3	Margin 3[dB]	Limit 4	Margin 4[dB]	Height [cm]	Polarity
Number	Frequency	Reading	Type	Factor	Factor	dB[uVolts/meter]						
	[MHz]	[dB(uV)]		[dB]	[dB]							
1	39.94	32.24	PK	-30.3	14	15.94	39.1	-23.16	29.6	-13.66	100	Horz
2	168.6507	31.39	PK	-29.9	15.2	16.69	43.5	-26.81	33.1	-16.41	100	Horz
3	36.1169	30.69	PK	-30.3	15.5	15.89	39.1	-23.21	29.6	-13.71	100	Vert
4	158.8806	31.9	PK	-30	15.1	17	43.5	-26.5	33.1	-16.1	100	Vert
5	345.7695	30.56	PK	-32.5	14.9	12.96	46.4	-33.44	35.6	-22.64	100	Horz
6	573.8841	29.74	PK	-31.4	19.1	17.44	46.4	-28.96	35.6	-18.16	100	Horz
7	203.1979	35.93	PK	-33.3	11.3	13.93	43.5	-29.57	33.1	-19.17	100	Vert
8	343.6376	33.89	PK	-32.5	14.8	16.19	46.4	-30.21	35.6	-19.41	100	Vert
9	544.0373	31.52	PK	-31.6	19.4	19.32	46.4	-27.08	35.6	-16.28	100	Vert
LIMIT 3: CFR 47 Part 15 Class A 10m												
LIMIT 4: CFR 47 Part 15 Class B 10m												
PK - Peak detector												

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

Philips												
NA2 Sensor												
Antenna 1 - TX Mid Channel												
Battery												
Red=Horizontal, Green=Vertical												
Marker	Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1[dB]	Height [cm]	Polarity		
Number	Frequency	Reading	Type	Factor	Factor	dB[uVolts/meter]						
	[MHz]	[dB(uV)]		[dB]	[dB]							
1	1793.587	19.91	PK	3.39	27	50.3	54	-3.7	100	Horz		
2	2444.444	64.34	PK	4.3	21.9	90.54	NA	NA	100	Horz		
3	4888.592	72.02	PK	-50.65	27.7	49.07	54	-4.93	150	Horz		
4	7338.225	61.14	PK	-46.1	30.7	45.74	54	-8.26	100	Horz		
5	9382.255	59.68	PK	-49.58	36.4	46.5	54	-7.5	150	Horz		
6	13668.834	47.7	PK	-38.69	39.8	48.81	54	-5.19	100	Horz		
7	21669.835	58.86	PK	-54.76	40.4	44.5	54	-9.5	100	Horz		
8	1911.824	20.37	PK	3.52	27.6	51.49	54	-2.51	150	Vert		
9	2444.444	59.21	PK	4.3	21.9	85.41	NA	NA	100	Vert		
10	4888.592	68.92	PK	-50.65	27.7	45.97	54	-8.03	149	Vert		
11	7332.889	60.65	PK	-45.96	30.7	45.39	54	-8.61	149	Vert		
12	9630.42	58.79	PK	-48.56	36.4	46.63	54	-7.37	150	Vert		
13	13560.78	48.01	PK	-38.64	39.8	49.17	54	-4.83	100	Vert		
14	23291.146	55.44	PK	-51.42	40.3	44.32	54	-9.68	100	Vert		
LIMIT 1: CFR 47 Part 15 Class B 3m												
PK - Peak detector												
File: 1GHz - 25GHz Trasmitter File (12GHz-25GHz 1HT).TST*not saved*												

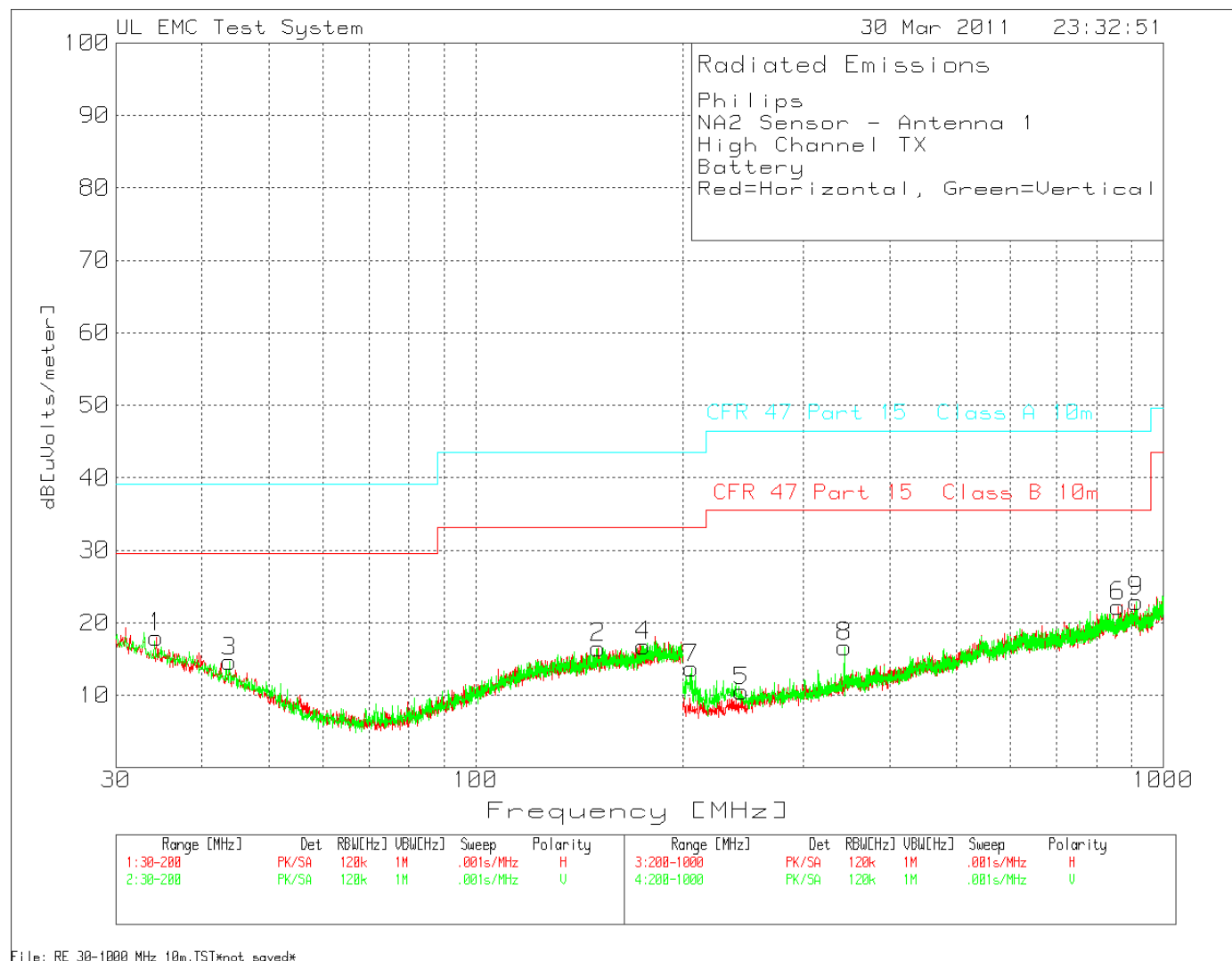


Figure 11 Radiated Spurious Emissions above 1GHz, High Channel – Antenna 1

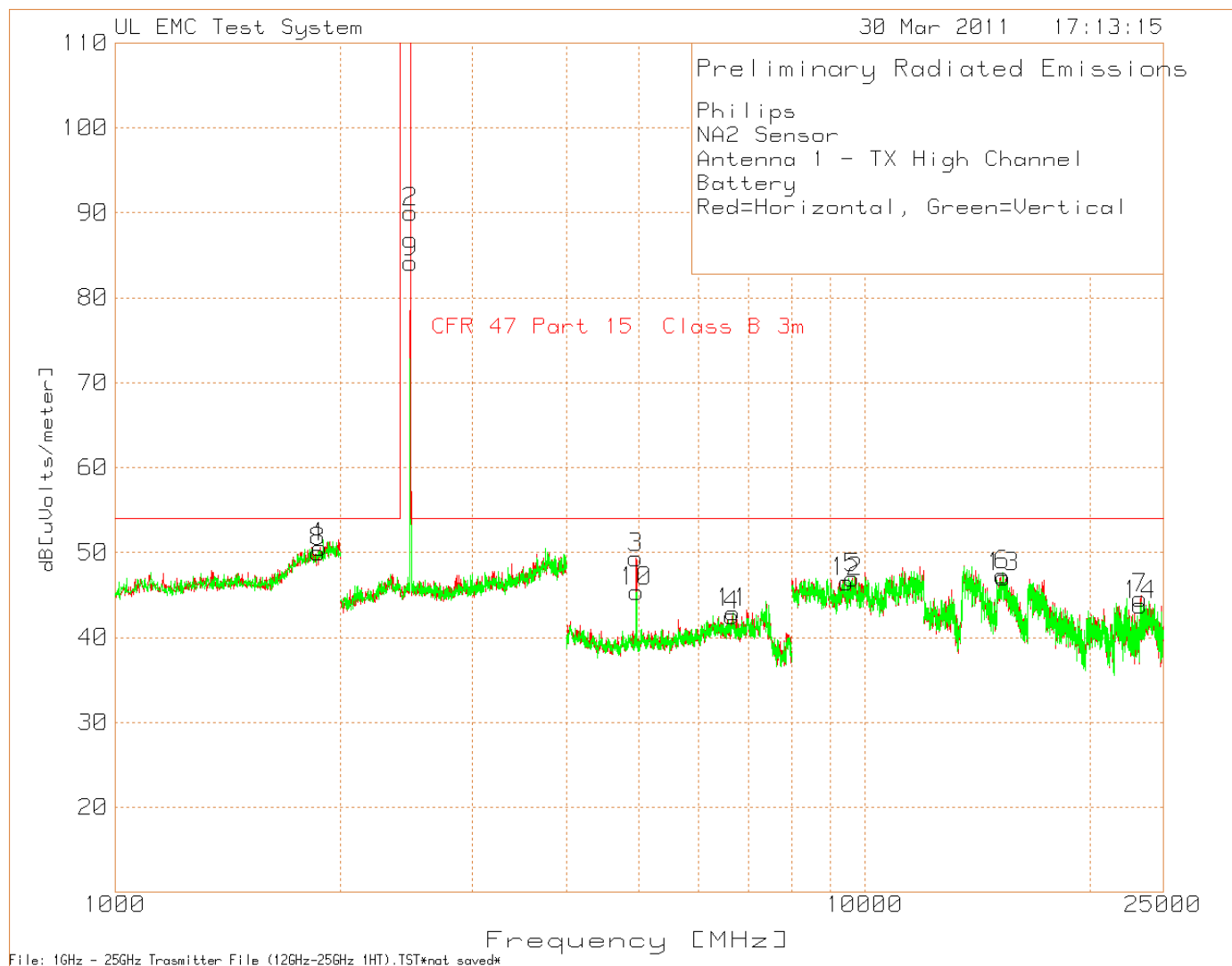


Table 14 Radiated Spurious Emissions below 1GHz, High Channel – Antenna 1

Philips												
NA2 Sensor - Antenna 1												
High Channel TX												
Battery												
Red=Horizontal, Green=Vertical												
Marker	Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 3	Margin 3[dB]	Limit 4	Margin 4[dB]	Height [cm]	Polarity
Number	Frequency	Reading	Type	Factor	Factor	dB[uVolts/meter]						
	[MHz]	[dB(uV)]		[dB]	[dB]							
1	34.3328	32.04	PK	-30.4	16.3	17.94	39.1	-21.16	29.6	-11.66	100	Horz
2	150.5547	31.72	PK	-30	14.8	16.52	43.5	-26.98	33.1	-16.58	100	Horz
3	43.8481	32.5	PK	-30.3	12.4	14.6	39.1	-24.5	29.6	-15	100	Vert
4	175.6172	31.05	PK	-29.8	15.5	16.75	43.5	-26.75	33.1	-16.35	100	Vert
5	243.4377	32.09	PK	-33.1	11.5	10.49	46.4	-35.91	35.6	-25.11	100	Horz
6	859.0273	31.78	PK	-31.6	22.1	22.28	46.4	-24.12	35.6	-13.32	100	Horz
7	205.8628	35.78	PK	-33.3	11.2	13.68	43.5	-29.82	33.1	-19.42	100	Vert
8	343.6376	34.39	PK	-32.5	14.8	16.69	46.4	-29.71	35.6	-18.91	100	Vert
9	913.6576	31.12	PK	-31.5	23.3	22.92	46.4	-23.48	35.6	-12.68	100	Vert
LIMIT 3: CFR 47 Part 15 Class A 10m												
LIMIT 4: CFR 47 Part 15 Class B 10m												
PK - Peak detector												

Table 15 Radiated Spurious Emissions above 1GHz, High Channel – Antenna 1

Philips										
NA2 Sensor										
Antenna 1 - TX High Channel										
Battery										
Red=Horizontal, Green=Vertical										
Marker	Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1[dB]	Height [cm]	Polarity
Number	Frequency	Reading	Type	Factor	Factor	dB[uVolts/meter]				
	[MHz]	[dB(uV)]		[dB]	[dB]					
1 - 2GHz 1000 - 2000MHz										
1	1879.76	19.48	PK	3.6	27.5	50.58	54	-3.42	100	Horz
2 - 4GHz 2000 - 4000MHz										
2	2478.478	64.11	PK	3.96	22	90.07	NA	NA	100	Horz
4 - 8GHz 4000 - 8000MHz										
3	4957.972	72.14	PK	-50.59	27.8	49.35	54	-4.65	150	Horz
4	6655.103	59.64	PK	-45.95	28.9	42.59	54	-11.41	150	Horz
8 - 12GHz 8000 - 12000MHz										
5	9627.752	59.03	PK	-48.43	36.4	47	54	-7	150	Horz
12 - 18GHz 12000 - 18000MHz										
6	15265.633	44.06	PK	-36.79	40	47.27	54	-6.73	100	Horz
18-26.5GHz 18000 - 25000MHz										
7	23291.146	55.73	PK	-51.42	40.3	44.61	54	-9.39	100	Horz
1 - 2GHz 1000 - 2000MHz										
8	1867.735	19.08	PK	3.51	27.4	49.99	54	-4.01	150	Vert
2 - 4GHz 2000 - 4000MHz										
9	2480.48	58.24	PK	3.93	22	84.17	NA	NA	100	Vert
4 - 8GHz 4000 - 8000MHz										
10	4960.64	68.21	PK	-50.58	27.8	45.43	54	-8.57	150	Vert
11	6681.788	59.62	PK	-45.57	28.9	42.95	54	-11.05	150	Vert
8 - 12GHz 8000 - 12000MHz										
12	9475.65	60.82	PK	-50.69	36.4	46.53	54	-7.47	150	Vert
12 - 18GHz 12000 - 18000MHz										
13	15304.652	43.58	PK	-36.47	40	47.11	54	-6.89	100	Vert
18-26.5GHz 18000 - 25000MHz										
14	23291.146	54.9	PK	-51.42	40.3	43.78	54	-10.22	100	Vert
LIMIT 1: CFR 47 Part 15 Class B 3m										
PK - Peak detector										
File: 1GHz - 25GHz Trsmitter File (12GHz-25GHz 1HT).TST*not saved*										

Figure 12 Radiated Spurious Emissions below 1GHz, Low Channel – Antenna 2

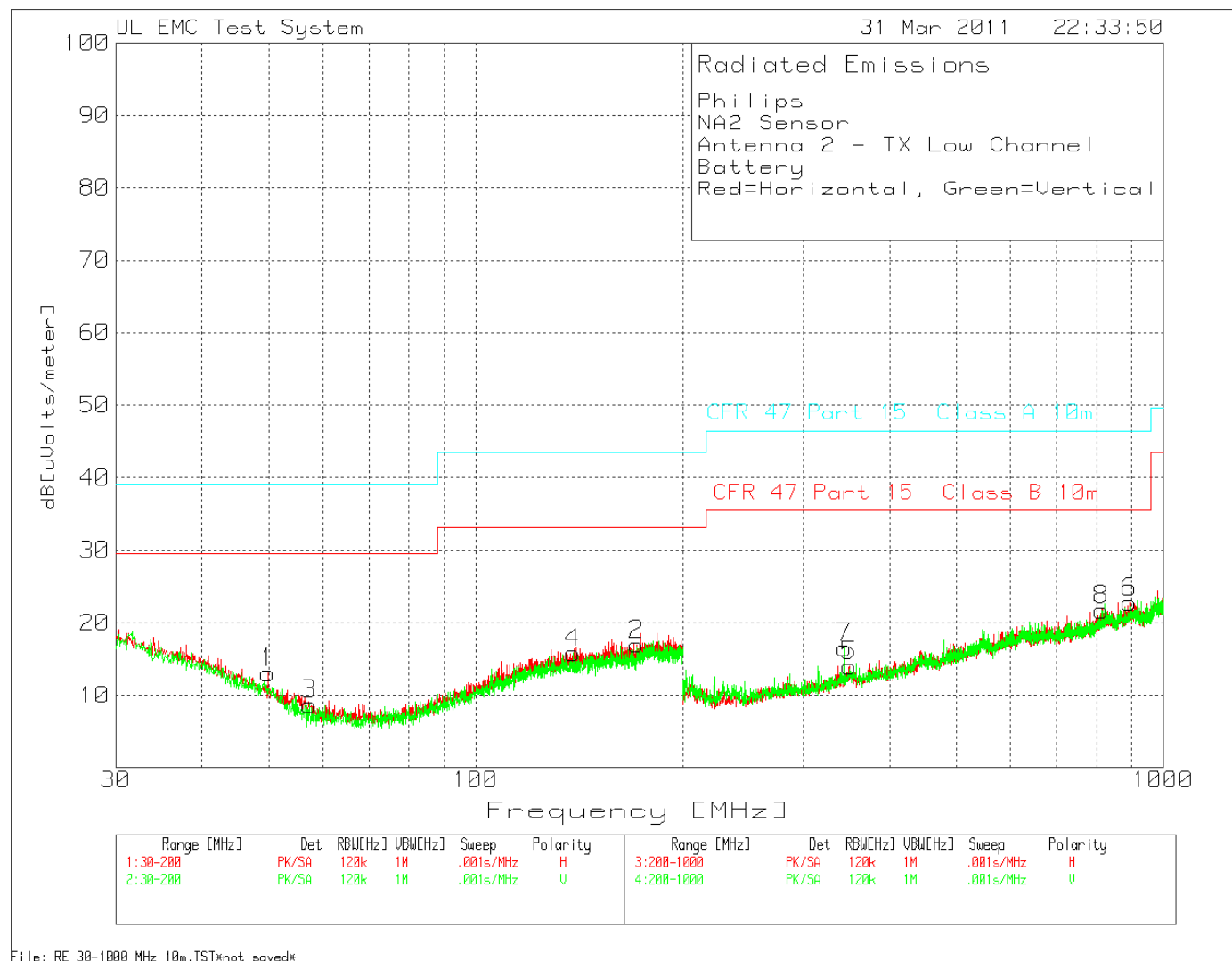


Figure 13 Radiated Spurious Emissions above 1GHz, Low Channel – Antenna 2

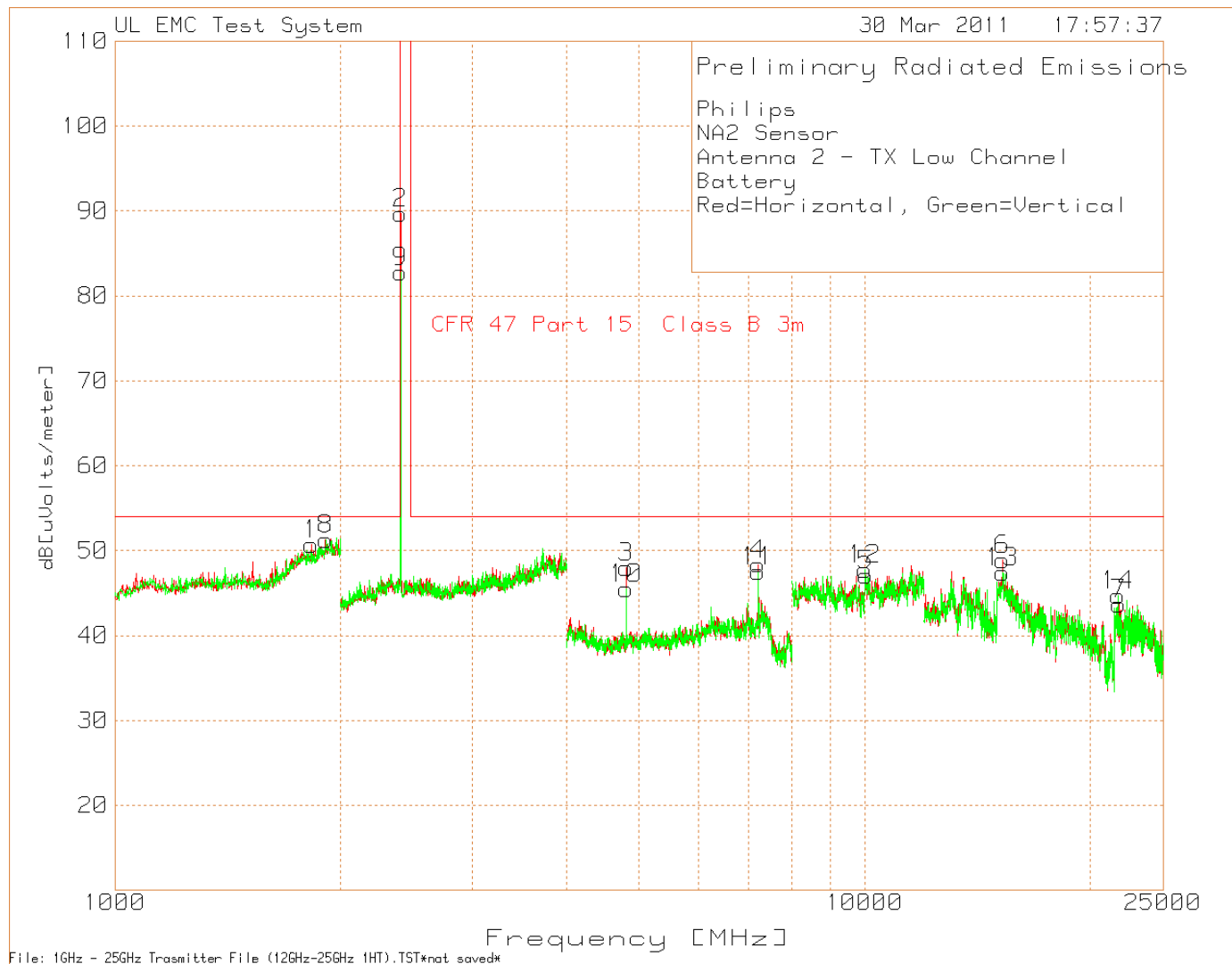


Table 16 Radiated Spurious Emissions below 1GHz, Low Channel – Antenna 2

Philips												
NA2 Sensor												
Antenna 2 - TX Low Channel												
Battery												
Red=Horizontal, Green=Vertical												
Marker	Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 3	Margin 3[dB]	Limit 4	Margin 4[dB]	Height [cm]	Polarity
Number	Frequency	Reading	Type	Factor	Factor	dB[uVolts/meter]						
	[MHz]	[dB(uV)]		[dB]	[dB]							
1	49.8801	33.4	PK	-30.3	10	13.1	39.1	-26	29.6	-16.5	250	Horz
2	171.3693	31.58	PK	-29.9	15.3	16.98	43.5	-26.52	33.1	-16.12	399	Horz
3	57.2714	31.49	PK	-30.2	7.4	8.69	39.1	-30.41	29.6	-20.91	100	Vert
4	138.7456	31.41	PK	-30	14.4	15.81	43.5	-27.69	33.1	-17.29	100	Vert
5	349.2338	31.2	PK	-32.3	15.1	14	46.4	-32.4	35.6	-21.6	100	Horz
6	894.2039	31.27	PK	-31.7	23.2	22.77	46.4	-23.63	35.6	-12.83	100	Horz
7	343.6376	34.19	PK	-32.5	14.8	16.49	46.4	-29.91	35.6	-19.11	102	Vert
8	814.5237	30.86	PK	-31.5	22.4	21.76	46.4	-24.64	35.6	-13.84	202	Vert
LIMIT 3: CFR 47 Part 15 Class A 10m												
LIMIT 4: CFR 47 Part 15 Class B 10m												
PK - Peak detector												

Table 17 Radiated Spurious Emissions above 1GHz, Low Channel – Antenna 2

Philips												
NA2 Sensor												
Antenna 2 - TX Low Channel												
Battery												
Red=Horizontal, Green=Vertical												
Marker	Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1[dB]	Height [cm]	Polarity		
Number	Frequency	Reading	Type	Factor	Factor	dB[uVolts/meter]						
	[MHz]	[dB(uV)]		[dB]	[dB]							
1	1827.655	19.92	PK	3.55	27.2	50.67	54	-3.33	150	Horz		
2	2404.404	63.61	PK	4.27	21.8	89.68	NA	NA	100	Horz		
3	4808.539	71.38	PK	-51.05	27.7	48.03	54	-5.97	150	Horz		
4	7218.145	65.21	PK	-46.62	29.8	48.39	54	-5.61	100	Horz		
5	10030.03	58.02	PK	-47.34	36.4	47.08	54	-6.92	100	Horz		
6	15261.261	45.95	PK	-37.05	40	48.9	54	-5.1	100	Horz		
7	21853.854	57.25	PK	-53.95	40.4	43.7	54	-10.3	100	Horz		
8	1911.824	20.16	PK	3.52	27.6	51.28	54	-2.72	100	Vert		
9	2404.404	56.73	PK	4.27	21.8	82.8	NA	NA	100	Vert		
10	4808.539	68.85	PK	-51.05	27.7	45.5	54	-8.5	100	Vert		
11	7215.477	64.37	PK	-46.63	29.8	47.54	54	-6.46	150	Vert		
12	10022.022	58.53	PK	-47.11	36.4	47.82	54	-6.18	100	Vert		
13	15279.279	43.93	PK	-36.52	40	47.41	54	-6.59	100	Vert		
14	21748.749	58.4	PK	-54.13	40.4	44.67	54	-9.33	100	Vert		
LIMIT 1: CFR 47 Part 15 Class B 3m												
PK - Peak detector												
File: 1GHz - 25GHz Trasmitter File (12GHz-25GHz 1HT).TST*not saved*												

Figure 14 Radiated Spurious Emissions below 1GHz, Middle Channel – Antenna 2

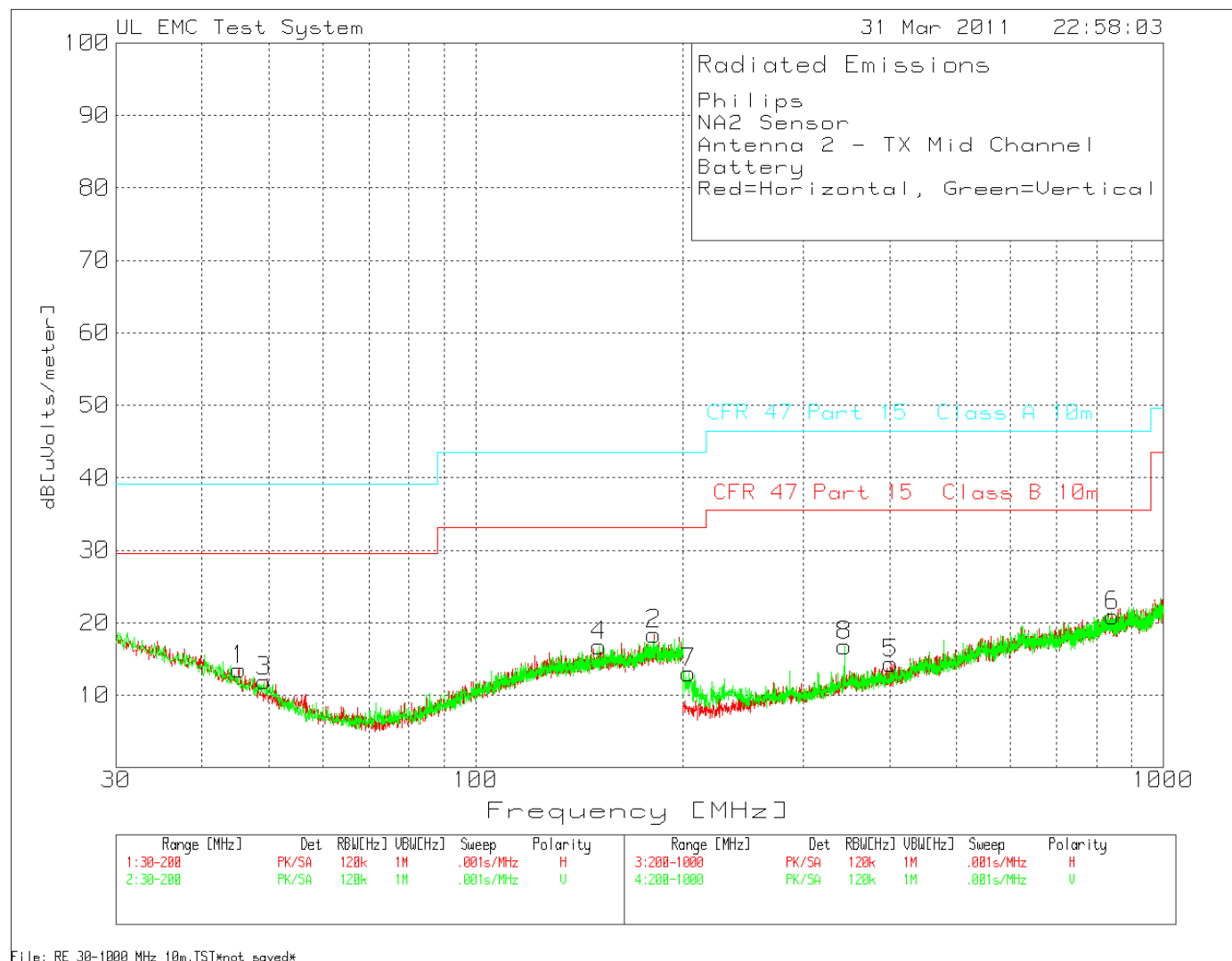


Figure 15 Radiated Spurious Emissions above 1GHz, Middle Channel – Antenna 2

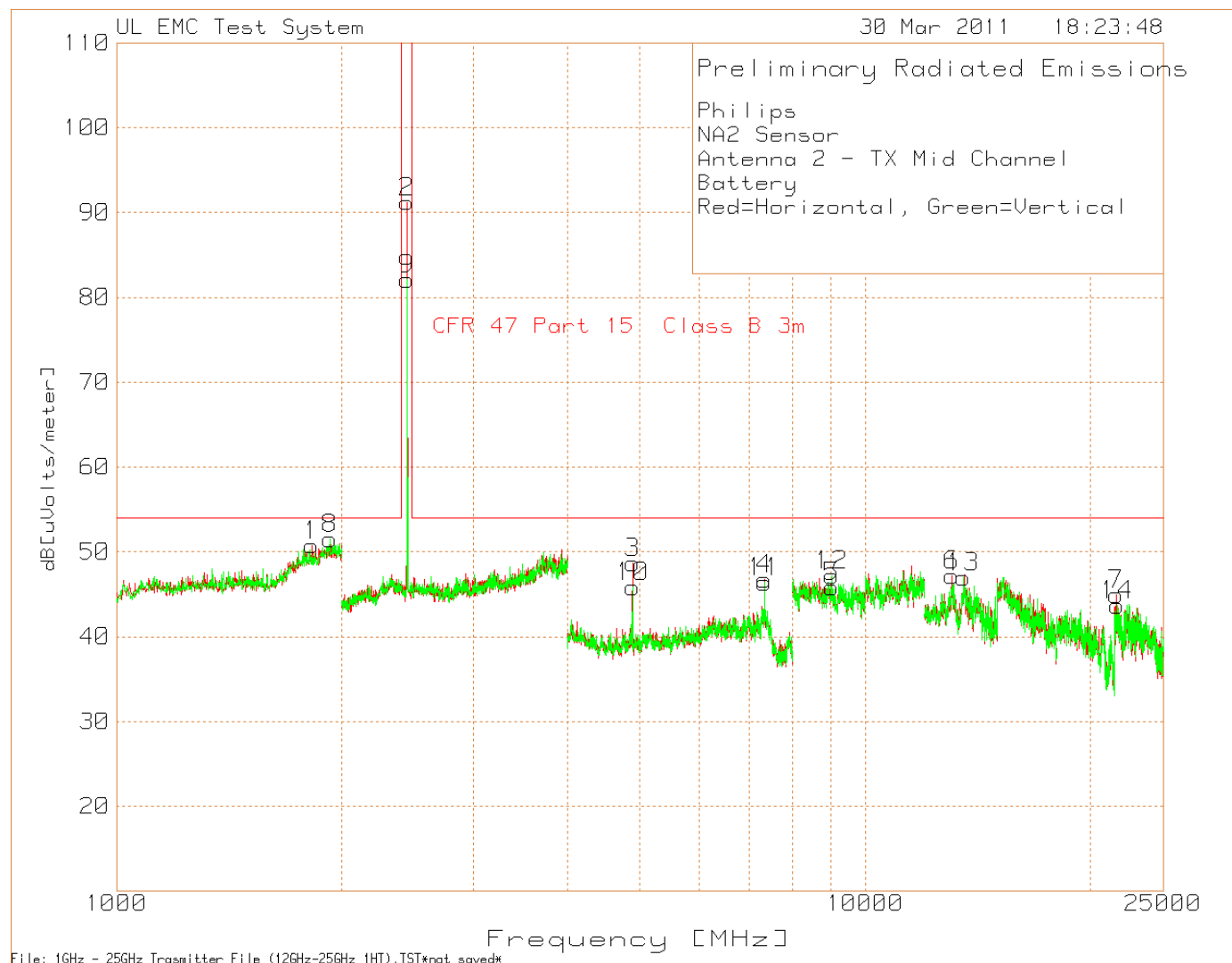


Table 18 Radiated Spurious Emissions below 1GHz, Middle Channel – Antenna 2

Philips												
NA2 Sensor												
Antenna 2 - TX Mid Channel												
Battery												
Red=Horizontal, Green=Vertical												
Marker	Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 3	Margin 3[dB]	Limit 4	Margin 4[dB]	Height [cm]	Polarity
Number	Frequency	Reading	Type	Factor	Factor	dB[uVolts/meter]						
	[MHz]	[dB(uV)]		[dB]	[dB]							
1	45.2924	31.83	PK	-30.3	12	13.53	39.1	-25.57	29.6	-16.07	100	Horz
2	181.904	32.41	PK	-29.9	15.9	18.41	43.5	-25.09	33.1	-14.69	100	Horz
3	49.2004	31.83	PK	-30.3	10.4	11.93	39.1	-27.17	29.6	-17.67	100	Vert
4	151.1494	31.95	PK	-30	14.8	16.75	43.5	-26.75	33.1	-16.35	100	Vert
5	401.7322	31.04	PK	-32.3	15.6	14.34	46.4	-32.06	35.6	-21.26	102	Horz
6	844.6369	30.25	PK	-31.5	22.2	20.95	46.4	-25.45	35.6	-14.65	102	Horz
7	204.2638	35.14	PK	-33.3	11.2	13.04	43.5	-30.46	33.1	-20.06	102	Vert
8	343.6376	34.53	PK	-32.5	14.8	16.83	46.4	-29.57	35.6	-18.77	102	Vert
LIMIT 3: CFR 47 Part 15 Class A 10m												
LIMIT 4: CFR 47 Part 15 Class B 10m												
PK - Peak detector												

Table 19 Radiated Spurious Emissions above 1GHz, Middle Channel – Antenna 2

Philips												
NA2 Sensor												
Antenna 2 - TX Mid Channel												
Battery												
Red=Horizontal, Green=Vertical												
Marker	Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1[dB]	Height [cm]	Polarity		
Number	Frequency	Reading	Type	Factor	Factor	dB[uVolts/meter]						
	[MHz]	[dB(uV)]		[dB]	[dB]							
1	1823.647	20.04	PK	3.53	27.2	50.77	54	-3.23	100	Horz		
2	2444.444	65.03	PK	4.3	21.9	91.23	NA	NA	100	Horz		
3	4891.261	71.71	PK	-50.71	27.7	48.7	54	-5.3	150	Horz		
4	7338.225	62.18	PK	-46.1	30.7	46.78	54	-7.22	100	Horz		
5	9029.029	58.31	PK	-48.52	36.1	45.89	54	-8.11	150	Horz		
6	13063.063	47.58	PK	-40.16	39.8	47.22	54	-6.78	100	Horz		
7	21657.658	58.96	PK	-54.47	40.4	44.89	54	-9.11	100	Horz		
8	1927.856	20.3	PK	3.58	27.6	51.48	54	-2.52	100	Vert		
9	2444.444	55.87	PK	4.3	21.9	82.07	NA	NA	100	Vert		
10	4888.592	68.83	PK	-50.65	27.7	45.88	54	-8.12	150	Vert		
11	7338.225	61.86	PK	-46.1	30.7	46.46	54	-7.54	150	Vert		
12	9013.013	59.44	PK	-48.37	36.1	47.17	54	-6.83	100	Vert		
13	13543.544	46.45	PK	-39.29	39.8	46.96	54	-7.04	100	Vert		
14	21741.742	57.87	PK	-54.58	40.4	43.69	54	-10.31	100	Vert		
LIMIT 1: CFR 47 Part 15 Class B 3m												
PK - Peak detector												
File: 1GHz - 25GHz Trasmmitter File (12GHz-25GHz 1HT).TST*not saved*												

Figure 16 Radiated Spurious Emissions below 1GHz, High Channel – Antenna 2

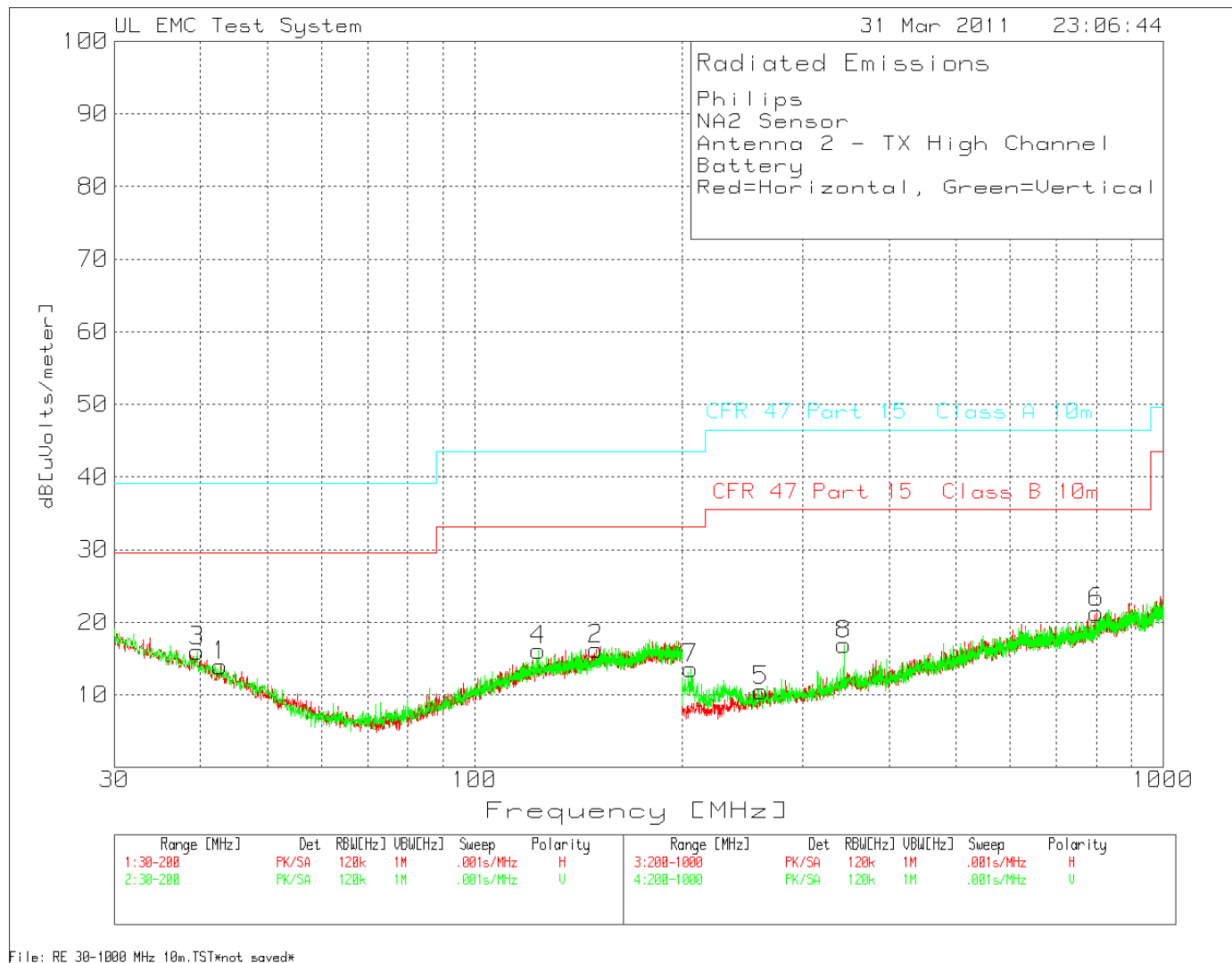


Figure 17 Radiated Spurious Emissions above 1GHz, High Channel – Antenna 2

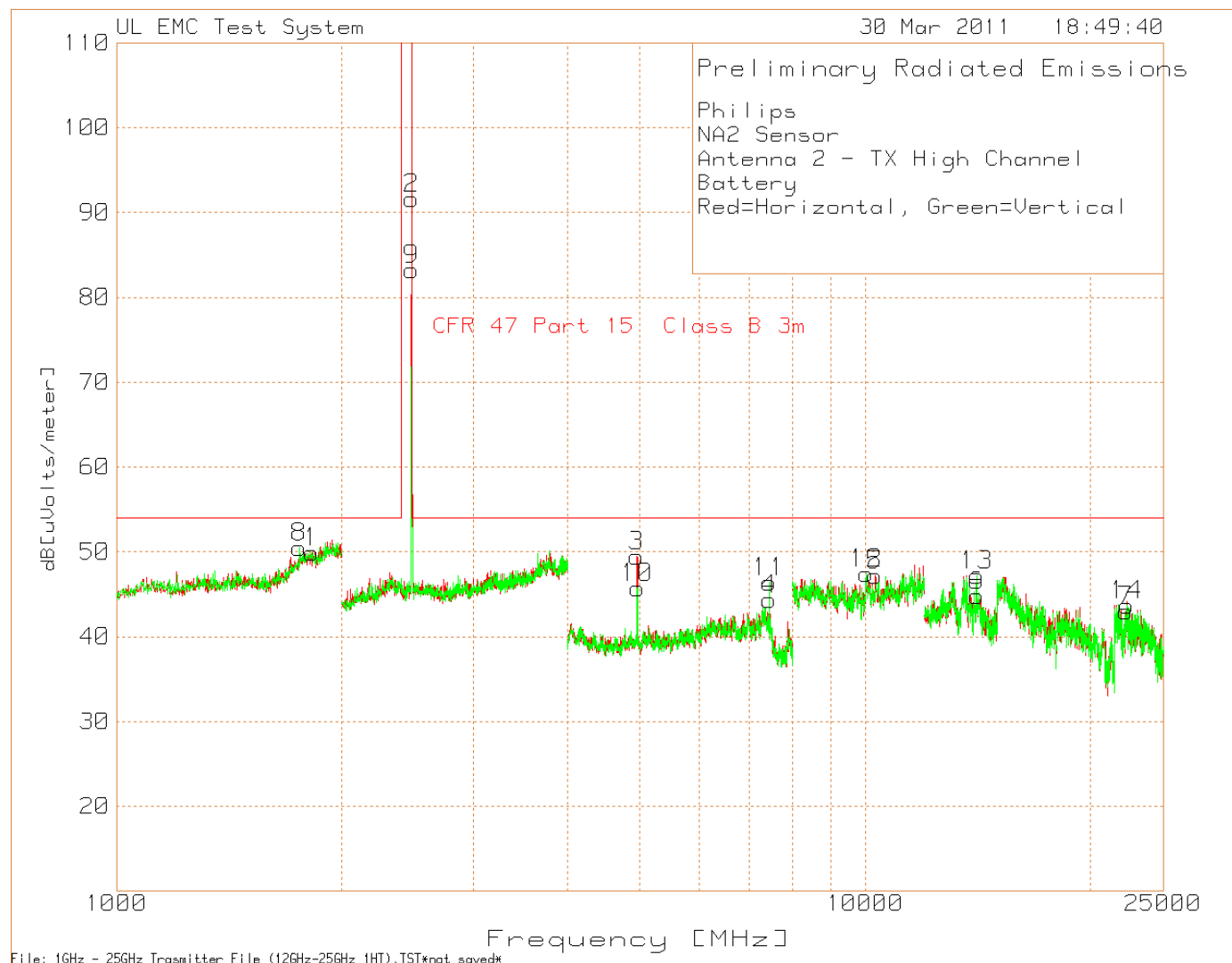


Table 20 Radiated Spurious Emissions below 1GHz, High Channel – Antenna 2

Philips												
NA2 Sensor												
Antenna 2 - TX High Channel												
Battery												
Red=Horizontal, Green=Vertical												
Marker	Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 3	Margin 3[dB]	Limit 4	Margin 4[dB]	Height [cm]	Polarity
Number	Frequency	Reading	Type	Factor	Factor	dB[uVolts/meter]						
	[MHz]	[dB(uV)]		[dB]	[dB]							
1	42.7436	31.26	PK	-30.3	13	13.96	39.1	-25.14	29.6	-15.64	100	Horz
2	150.045	31.48	PK	-30	14.8	16.28	43.5	-27.22	33.1	-16.82	100	Horz
3	39.5152	31.98	PK	-30.3	14.3	15.98	39.1	-23.12	29.6	-13.62	100	Vert
4	123.8781	32.5	PK	-30	13.6	16.1	43.5	-27.4	33.1	-17	100	Vert
5	260.7595	31.1	PK	-33	12.4	10.5	46.4	-35.9	35.6	-25.1	102	Horz
6	801.9987	30.74	PK	-31.2	21.8	21.34	46.4	-25.06	35.6	-14.26	102	Horz
7	205.8628	35.66	PK	-33.3	11.2	13.56	43.5	-29.94	33.1	-19.54	102	Vert
8	343.6376	34.57	PK	-32.5	14.8	16.87	46.4	-29.53	35.6	-18.73	102	Vert
LIMIT 3: CFR 47 Part 15 Class A 10m												
LIMIT 4: CFR 47 Part 15 Class B 10m												
PK - Peak detector												

Table 21 Radiated Spurious Emissions above 1GHz, High Channel – Antenna 2

Philips												
NA2 Sensor												
Antenna 2 - TX High Channel												
Battery												
Red=Horizontal, Green=Vertical												
Marker	Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1[dB]	Height [cm]	Polarity		
Number	Frequency	Reading	Type	Factor	Factor	dB[uVolts/meter]						
	[MHz]	[dB(uV)]		[dB]	[dB]							
1	1821.643	19.23	PK	3.53	27.2	49.96	54	-4.04	150	Horz		
2	2478.478	65.71	PK	3.96	22	91.67	NA	NA	150	Horz		
3	4957.972	72.23	PK	-50.59	27.8	49.44	54	-4.56	150	Horz		
4	7439.626	60.67	PK	-46.88	30.6	44.39	54	-9.61	100	Horz		
5	10322.322	58.57	PK	-47.53	36.2	47.24	54	-6.76	100	Horz		
6	14090.09	42.05	PK	-37.18	39.9	44.77	54	-9.23	100	Horz		
7	22274.274	55.73	PK	-53.22	40.5	43.01	54	-10.99	100	Horz		
8	1757.515	20.53	PK	3.36	26.6	50.49	54	-3.51	150	Vert		
9	2480.48	57.36	PK	3.93	22	83.29	NA	NA	100	Vert		
10	4960.64	68.56	PK	-50.58	27.8	45.78	54	-8.22	150	Vert		
11	7439.626	62.67	PK	-46.88	30.6	46.39	54	-7.61	100	Vert		
12	10026.026	58.25	PK	-47.22	36.4	47.43	54	-6.57	100	Vert		
13	14084.084	44.39	PK	-37.11	39.9	47.18	54	-6.82	100	Vert		
14	22365.365	55.08	PK	-51.92	40.5	43.66	54	-10.34	100	Vert		
LIMIT 1: CFR 47 Part 15 Class B 3m												
PK - Peak detector												
File: 1GHz - 25GHz Trasmmitter File (12GHz-25GHz 1HT).TST*not saved*												

4.3 Test Conditions and Results – BAND EDGE COMPLIANCE

Test Description	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section15.205(c)).	
Basic Standard		47 CFR Part 15.247(d) RSS-210, A8.5
	Frequency range	Measurement Point
Fully configured sample scanned over the following frequency range	2400MHz – 2483.5MHz	Antenna Conducted
Limits		
Measurement Type		
Conducted	Antenna Conducted – 20dB below the fundamental	
Radiated	Must meet the restricted band limit adjacent to the bandedge.	
Supplementary information: Only Antenna Conducted Measurements required. No restricted bands close to the allocated frequency band.		

Table 22 Band Edge Compliance EUT Configuration Settings

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

Table 23 Bandedge CONDUCTED EMISSIONS Test Equipment

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

Table 24 Bandedge RADIATED EMISSIONS Test Equipment

Test Equipment Used					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	Rhode & Schwartz	ESU	EMC4323	Dec. 30, 2010	Dec. 31, 2011
Bicon Antenna	Chase	VBA6106A	EMC4078	Dec. 2, 2010	Dec. 31, 2011
Log-P Antenna	Chase	UPA6109	EMC4313	June 1, 2010	June, 30, 2011
Spectrum Analyzer	Rhode & Schwartz	FSEK	EMC4182	Dec. 28, 2010	Dec. 30, 2011
Antenna Array	UL	BOMS	EMC4276	Oct. 21, 2010	Oct. 21, 2011

Figure 18 Test setup for Band Edge Compliance – Conducted

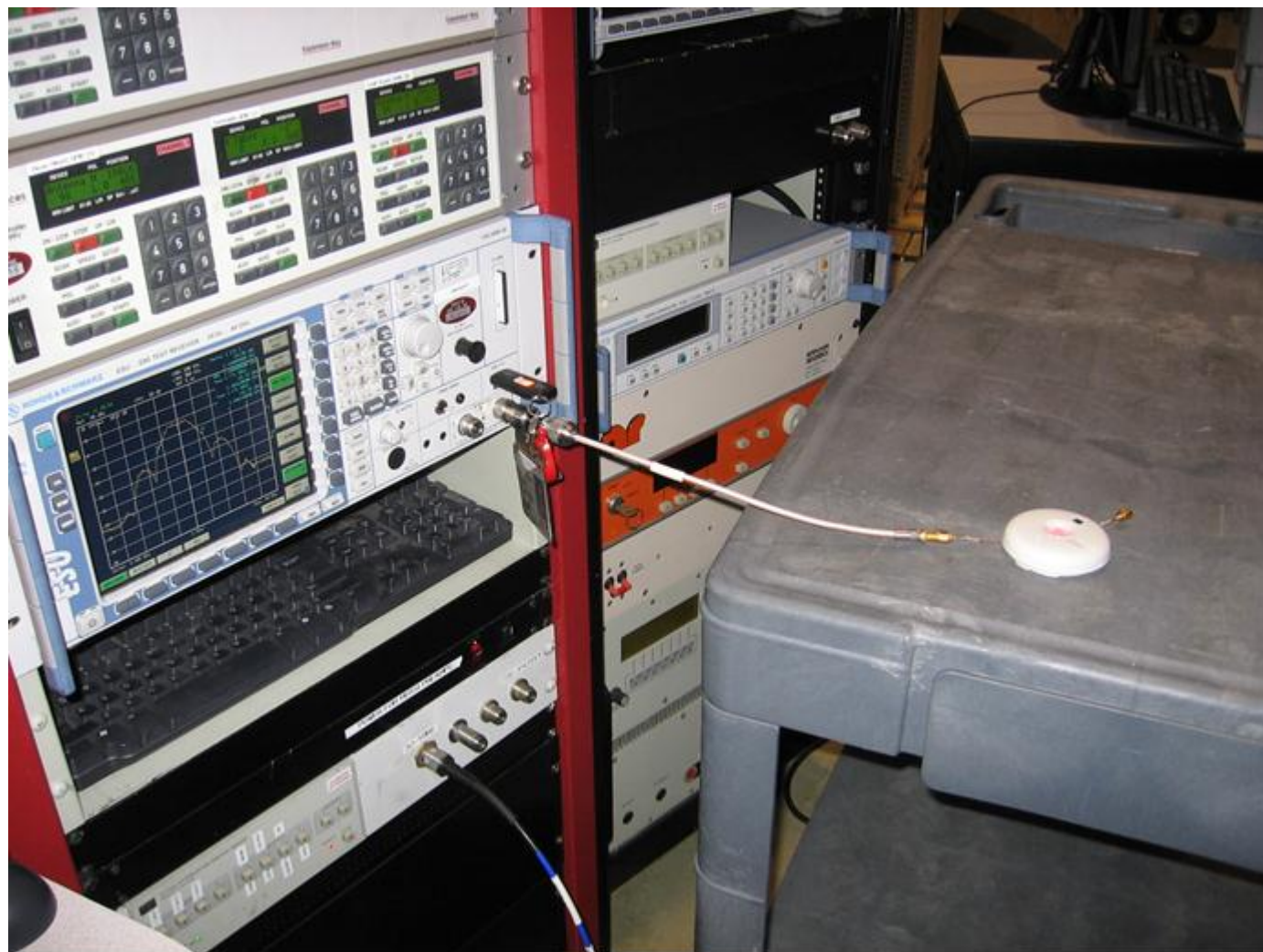
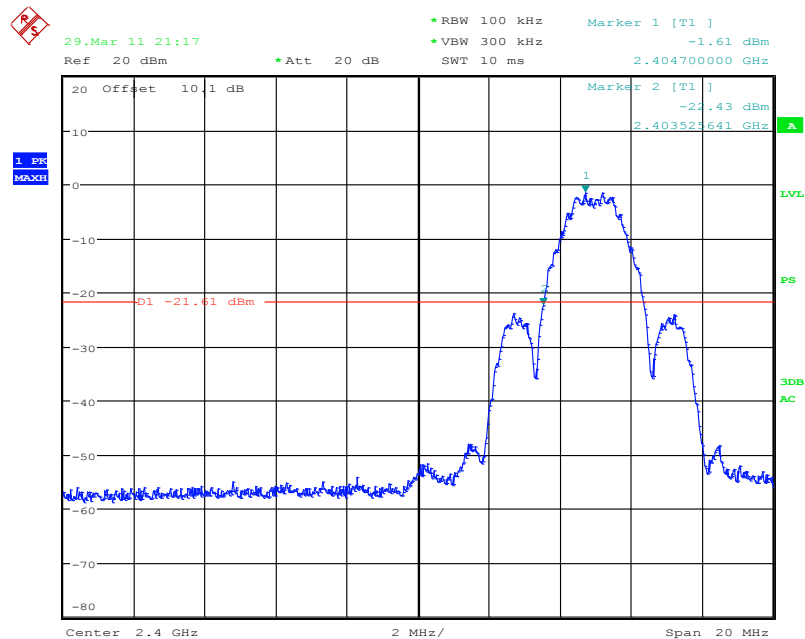


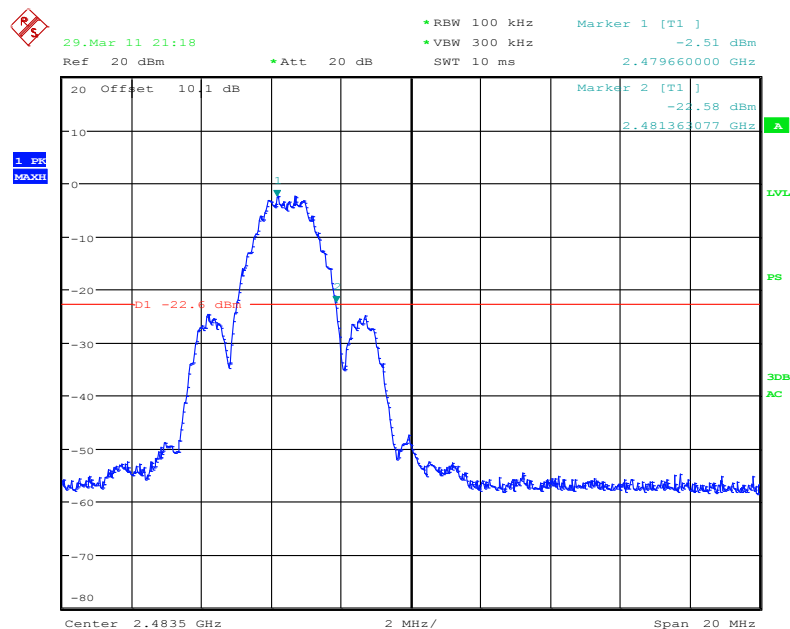
Figure 19 Test setup for Band Edge Compliance – Radiated



Figure 20 Antenna Conducted Band Edge Compliance Graph – Antenna 1

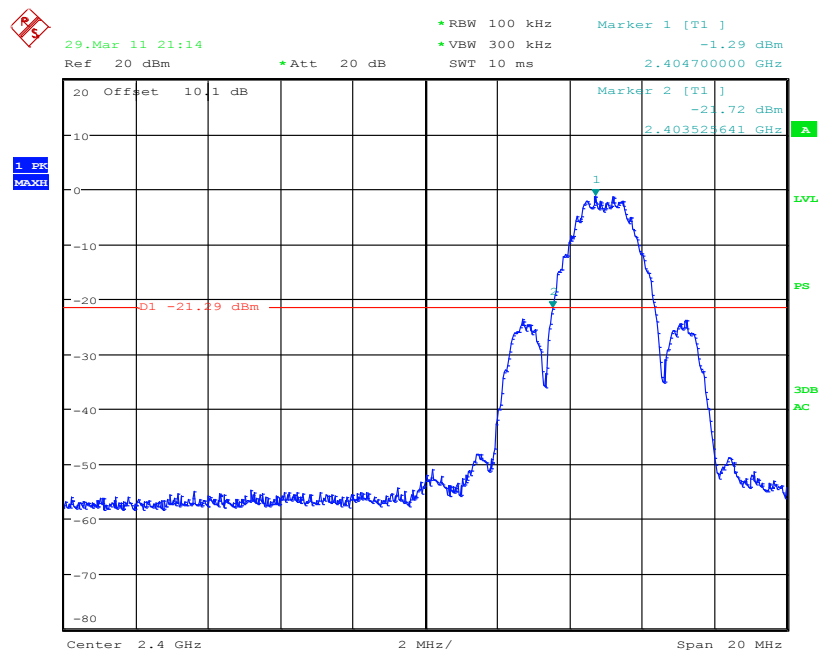


Date: 29.MAR.2011 21:17:09

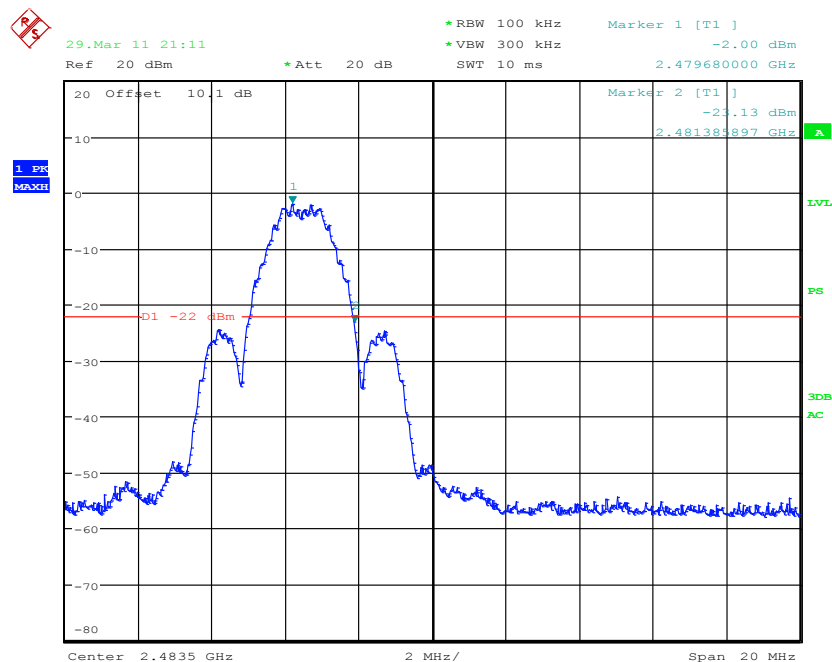


Date: 29.MAR.2011 21:18:55

Figure 21 Antenna Conducted Band Edge Compliance Graph – Antenna 2



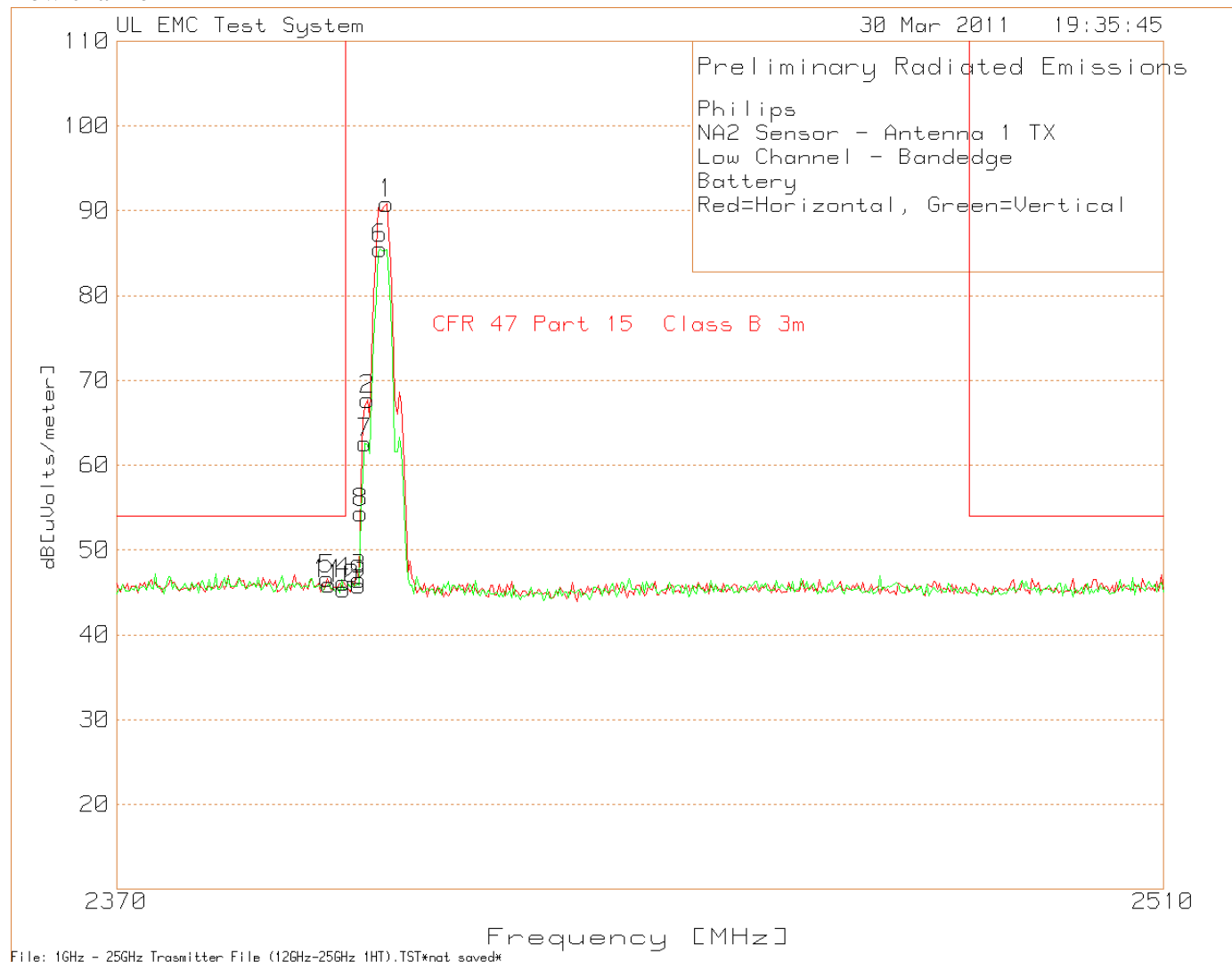
Date: 29.MAR.2011 21:14:09



Date: 29.MAR.2011 21:11:25

Figure 22 Radiated Band Edge Compliance Graph – Antenna 1

Low channel



High Channel



Table 25 Radiated Band Edge Compliance Data Points – Antenna 1

Low Channel

Philips										
NA2 Sensor - Antenna 1 TX										
Low Channel - Bandedge										
Battery										
Red=Horizontal, Green=Vertical										
Marker	Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1[dB]	Height [cm]	Polarity
Number	Frequency	Reading	Type	Factor	Factor	dB[uVolts/meter]				
	[MHz]	[dB(uV)]		[dB]	[dB]					
2 - 4GHz 2370 - 2510MHz										
1	2405.351	64.76	PK	4.25	21.8	90.81	NA	NA	100	Horz
2	2402.826	41.65	PK	4.31	21.8	67.76	NA	NA	100	Horz
3	2401.703	20.37	PK	4.33	21.8	46.5	NA	NA	100	Horz
4	2399.739	19.99	PK	4.38	21.8	46.17	54	-7.83	150	Horz
5	2397.495	20.35	PK	4.43	21.8	46.58	54	-7.42	150	Horz
2 - 4GHz 2370 - 2510MHz										
6	2404.509	59.4	PK	4.27	21.8	85.47	NA	NA	100	Vert
7	2402.545	36.5	PK	4.31	21.8	62.61	NA	NA	100	Vert
8	2401.984	28.21	PK	4.33	21.8	54.34	NA	NA	100	Vert
9	2401.703	19.68	PK	4.33	21.8	45.81	NA	NA	100	Vert
10	2399.739	19.17	PK	4.38	21.8	45.35	54	-8.65	150	Vert
11	2397.776	19.69	PK	4.43	21.8	45.92	54	-8.08	100	Vert
LIMIT 1: CFR 47 Part 15 Class B 3m										
PK - Peak detector										
File: 1GHz - 25GHz Trasmitter File (12GHz-25GHz 1HT).TST*not saved*										

Job #: 1001358989 File #: MC16433 Project #: 11CA14755B
 Model Number: LRM1743/00 & LRM1760/00
 Client Name: Philips Lighting Electronics N. A.

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High Channel

Philips										
NA2 Sensor - Antenna 1 TX										
High Channel - Bandedge										
Battery										
Red=Horizontal, Green=Vertical										
Marker	Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1[dB]	Height [cm]	Polarity
Number	Frequency	Reading	Type	Factor	Factor	dB[uVolts/meter]				
	[MHz]	[dB(uV)]		[dB]	[dB]					
2 - 4GHz 2370 - 2510MHz										
1	2480.261	64.24	PK	3.93	22	90.17	NA	NA	100	Horz
2	2482.224	41.76	PK	3.91	22	67.67	NA	NA	100	Horz
3	2483.066	25.55	PK	3.9	22	51.45	NA	NA	100	Horz
4	2483.627	21.09	PK	3.89	22.1	47.08	54	-6.92	100	Horz
5	2488.397	20.32	PK	3.84	22.1	46.26	54	-7.74	150	Horz
2 - 4GHz 2370 - 2510MHz										
6	2480.261	58.87	PK	3.93	22	84.8	NA	NA	100	Vert
7	2482.224	36.09	PK	3.91	22	62	NA	NA	100	Vert
8	2483.066	21.58	PK	3.9	22	47.48	NA	NA	100	Vert
9	2483.627	19.8	PK	3.89	22.1	45.79	54	-8.21	100	Vert
10	2489.238	19.98	PK	3.84	22.1	45.92	54	-8.08	100	Vert
LIMIT 1: CFR 47 Part 15 Class B 3m										
PK - Peak detector										
File: 1GHz - 25GHz Trasmitter File (12GHz-25GHz 1HT).TST*not saved*										

Figure 23 Radiated Band Edge Compliance Graph – Antenna 2

Low channel



High Channel

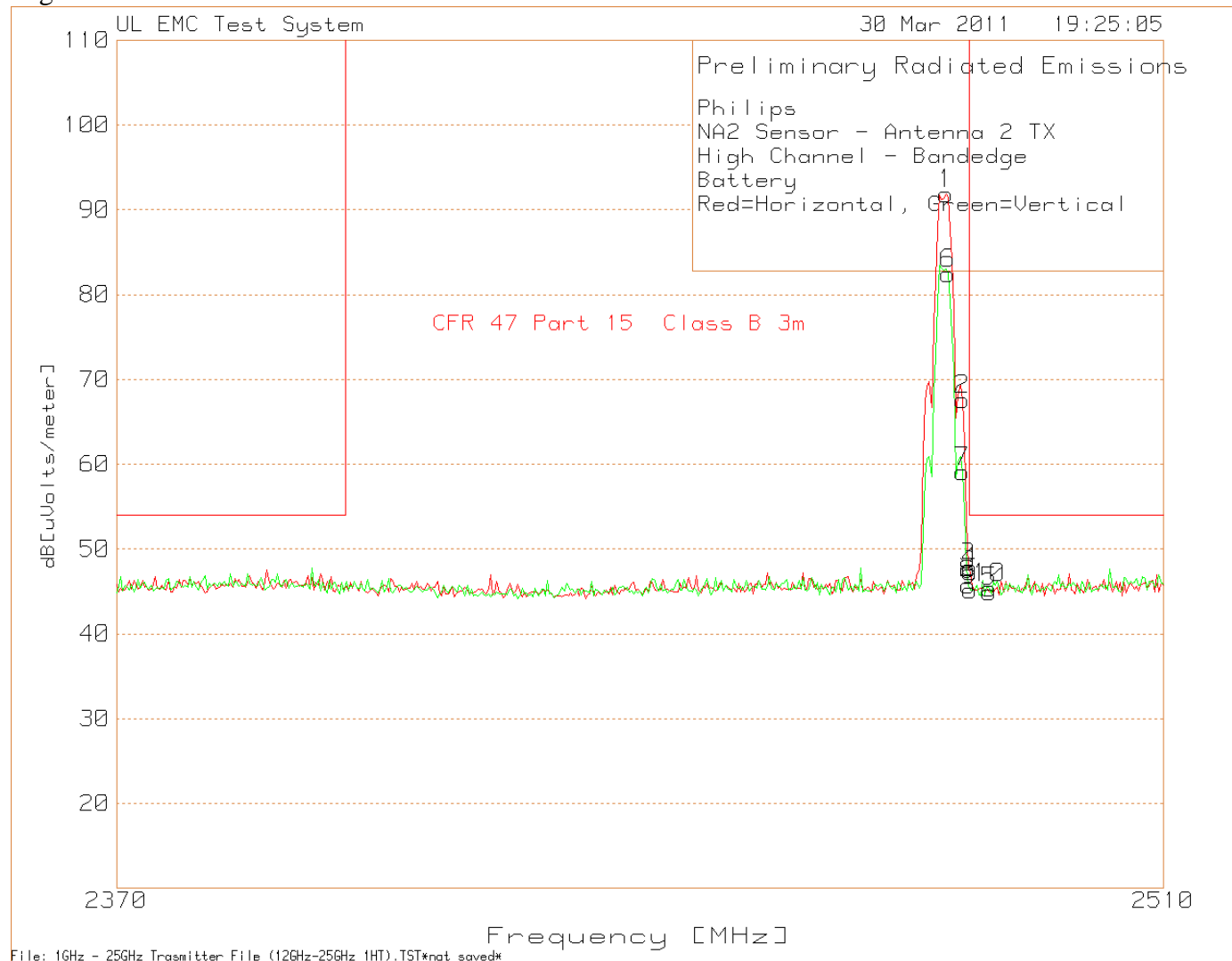


Table 26 Radiated Band Edge Compliance Data Points – Antenna 2

Low Channel

Philips										
NA2 Sensor - Antenna 2 TX										
Low Channel - Bandedge										
Battery										
Red=Horizontal, Green=Vertical										
Marker	Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1[dB]	Height [cm]	Polarity
Number	Frequency	Reading	Type	Factor	Factor	dB[uVolts/meter]				
	[MHz]	[dB(uV)]		[dB]	[dB]					
2 - 4GHz 2370 - 2510MHz										
1	2404.509	63.99	PK	4.27	21.8	90.06	NA	NA	100	Horz
2	2402.545	40.29	PK	4.31	21.8	66.4	NA	NA	100	Horz
3	2401.703	20.87	PK	4.33	21.8	47	NA	NA	100	Horz
4	2400.02	19.88	PK	4.37	21.8	46.05	NA	NA	100	Horz
5	2399.739	19.04	PK	4.38	21.8	45.22	54	-8.78	100	Horz
6	2394.689	19.66	PK	4.5	21.8	45.96	54	-8.04	100	Horz
2 - 4GHz 2370 - 2510MHz										
7	2404.509	56.99	PK	4.27	21.8	83.06	NA	NA	100	Vert
8	2402.826	34.83	PK	4.31	21.8	60.94	NA	NA	100	Vert
9	2401.703	19.6	PK	4.33	21.8	45.73	NA	NA	100	Vert
10	2400.02	19.01	PK	4.37	21.8	45.18	NA	NA	150	Vert
11	2399.739	19.04	PK	4.38	21.8	45.22	54	-8.78	150	Vert
12	2394.128	20.32	PK	4.51	21.8	46.63	54	-7.37	150	Vert
LIMIT 1: CFR 47 Part 15 Class B 3m										
PK - Peak detector										
File: 1GHz - 25GHz Trasmitter File (12GHz-25GHz 1HT).TST*not saved*										

Job #: 1001358989 File #: MC16433 Project #: 11CA14755B
 Model Number: LRM1743/00 & LRM1760/00
 Client Name: Philips Lighting Electronics N. A.

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High Channel

Philips										
NA2 Sensor - Antenna 2 TX										
High Channel - Bandedge										
Battery										
Red=Horizontal, Green=Vertical										
Marker	Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1[dB]	Height [cm]	Polarity
Number	Frequency	Reading	Type	Factor	Factor	dB[uVolts/meter]				
	[MHz]	[dB(uV)]		[dB]	[dB]					
2 - 4GHz 2370 - 2510MHz										
1	2480.261	65.9	PK	3.93	22	91.83	NA	NA	100	Horz
2	2482.505	41.75	PK	3.9	22	67.65	NA	NA	150	Horz
3	2483.347	21.78	PK	3.89	22.1	47.77	NA	NA	100	Horz
4	2483.627	21.29	PK	3.89	22.1	47.28	54	-6.72	100	Horz
5	2486.152	18.96	PK	3.85	22.1	44.91	54	-9.09	150	Horz
2 - 4GHz 2370 - 2510MHz										
6	2480.541	56.52	PK	3.93	22	82.45	NA	NA	100	Vert
7	2482.505	33.18	PK	3.9	22	59.08	NA	NA	100	Vert
8	2483.347	19.73	PK	3.89	22.1	45.72	NA	NA	150	Vert
9	2483.627	19.22	PK	3.89	22.1	45.21	54	-8.79	100	Vert
10	2486.152	19.46	PK	3.85	22.1	45.41	54	-8.59	150	Vert
LIMIT 1: CFR 47 Part 15 Class B 3m										
PK - Peak detector										
File: 1GHz - 25GHz Trasmitter File (12GHz-25GHz 1HT).TST*not saved*										

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 27 6dB Bandwidth Configuration Settings

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

Table 28 6dB Bandwidth Test Equipment

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

Table 29 6dB Bandwidth Results

Mode	Channel	6dB Bandwidth
TX – Antenna 1	Low	1.61MHz
	Middle	1.60MHz
	High	1.61MHz
TX – Antenna 2	Low	1.61MHz
	Middle	1.61MHz
	High	1.60MHz

Test Setup for 6dB Bandwidth

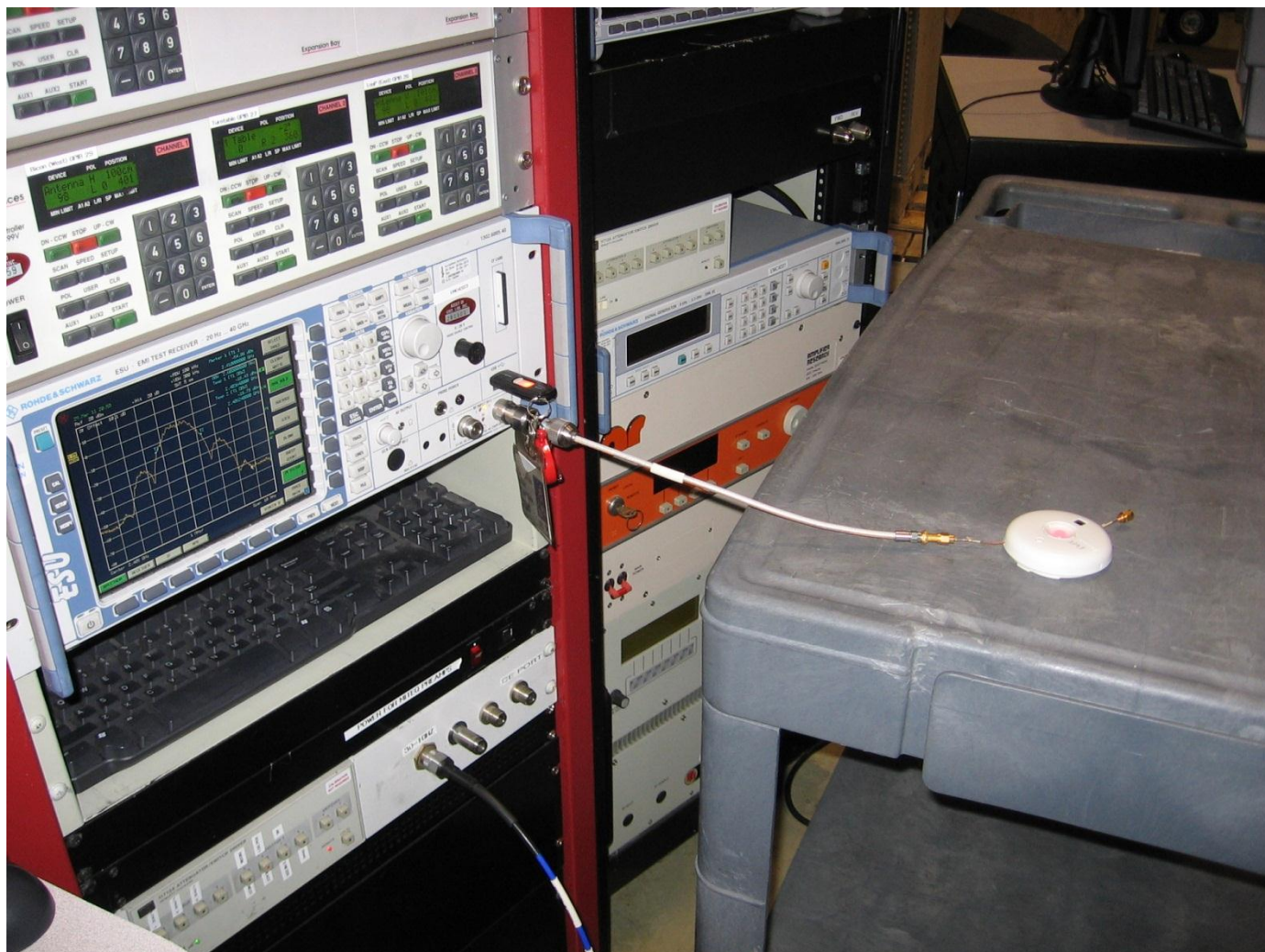


Figure 24 6dB Bandwidth Graphs – Antenna 1

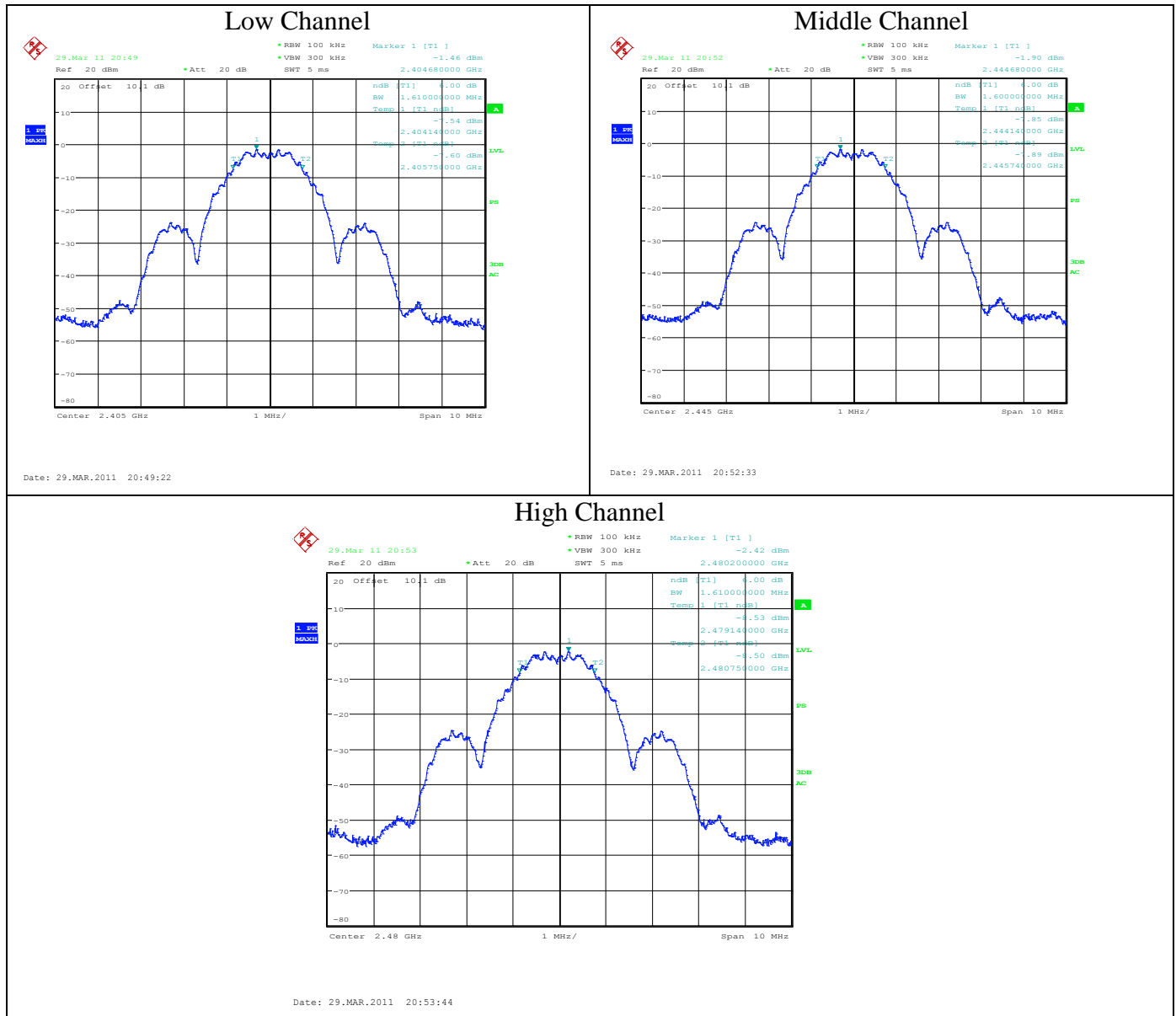
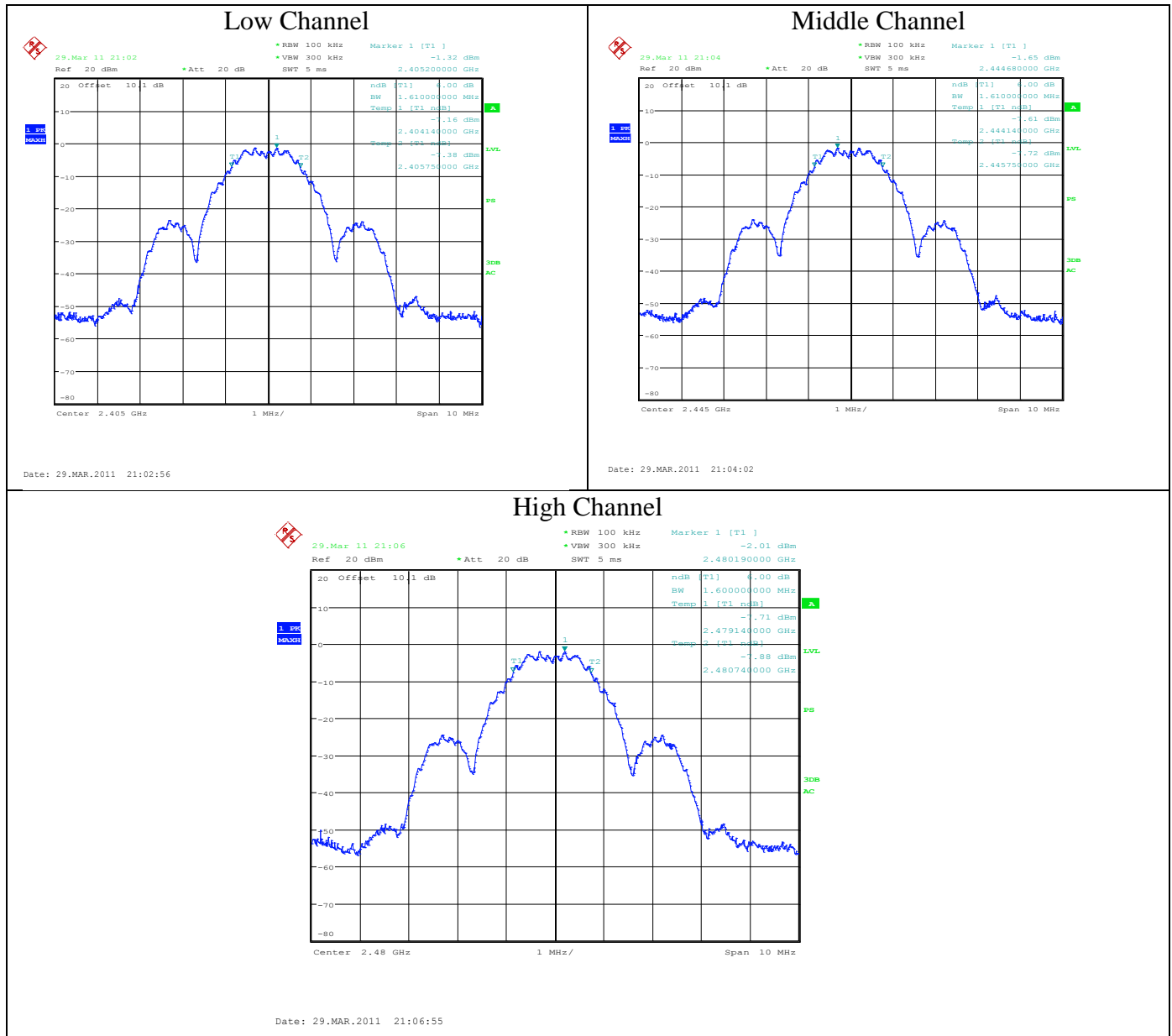


Figure 25 6dB Bandwidth Graphs – Antenna 2



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 30 Maximum Peak Output Power EUT Configuration Settings

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

Table 31 Maximum Peak Output Power Test Equipment

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

Table 32 Maximum Peak Output Power Results

Antenna	Channel	Declared Antenna Gain (dBi)	Limit (dBm)	Power dBm	Power W
1	Low Channel	1.2	30	1.80	0.0015
	Middle Channel	1.5	30	1.45	0.0014
	High Channel	0.9	30	1.08	0.0013
2	Low Channel	1.2	30	2.09	0.0016
	Middle Channel	1.5	30	1.76	0.0015
	High Channel	0.9	30	1.46	0.0014

Figure 26 Test setup for Maximum Peak Output Power

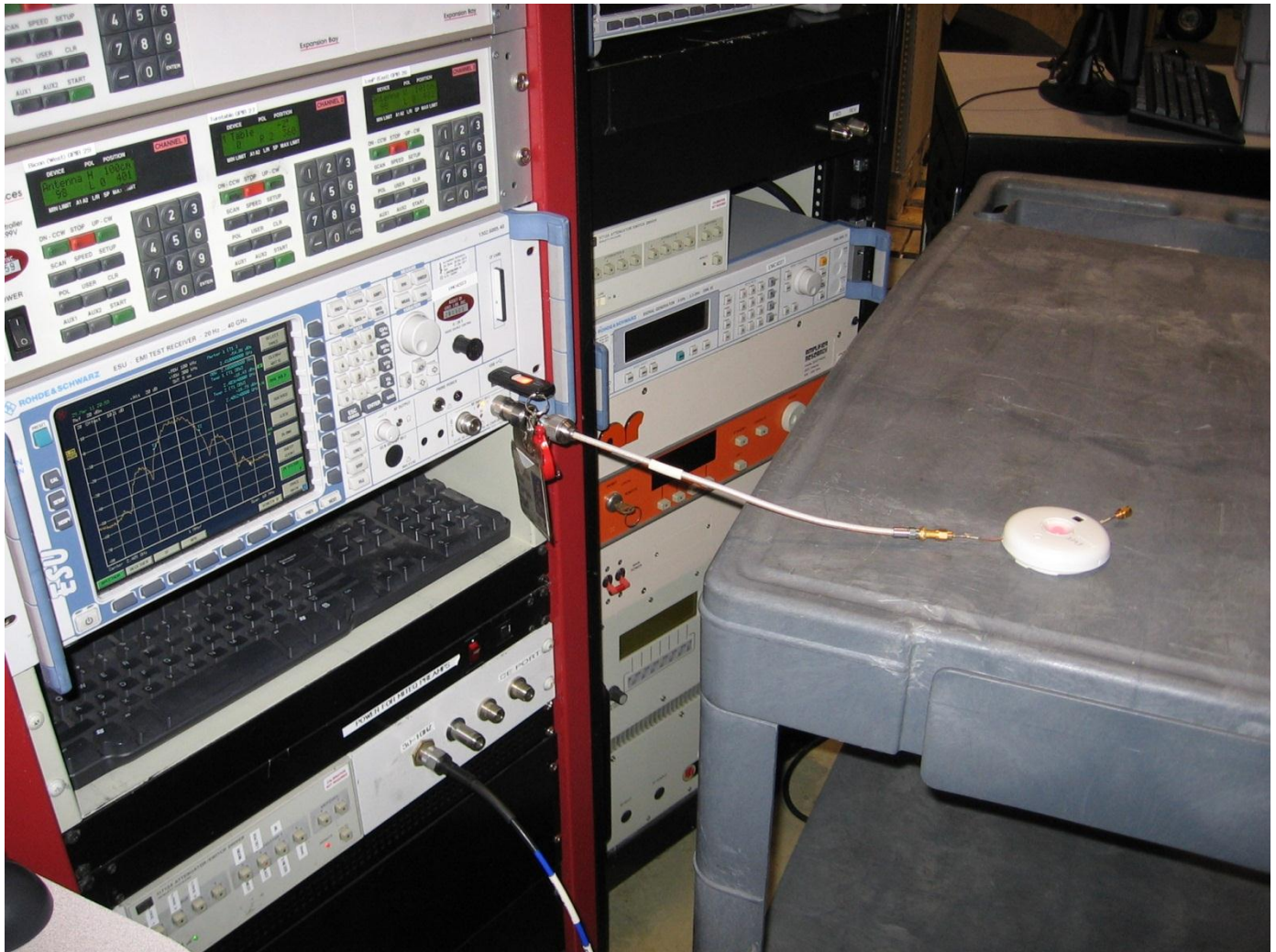


Figure 27 Maximum Peak Output Power Graph – Antenna 1

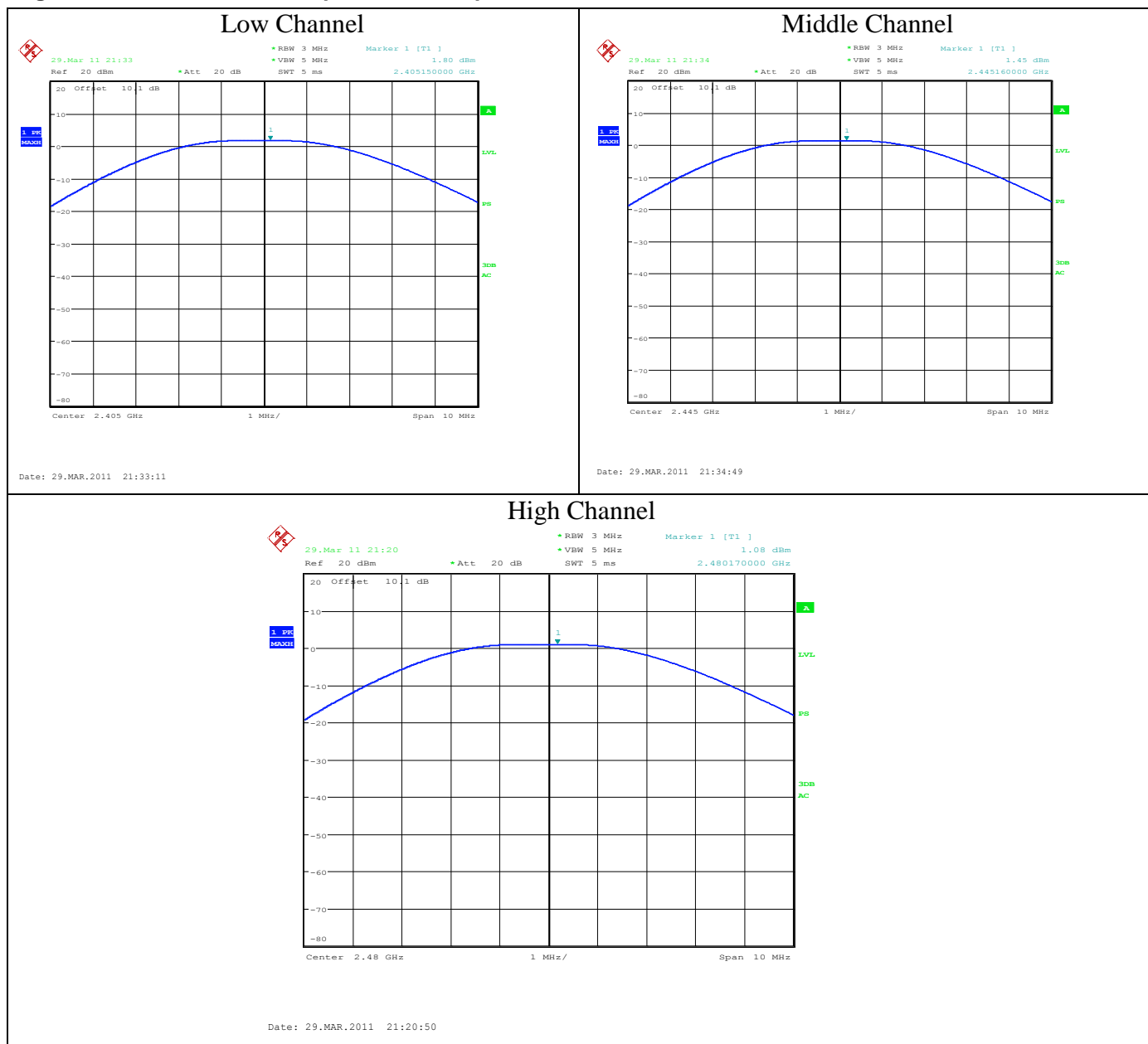
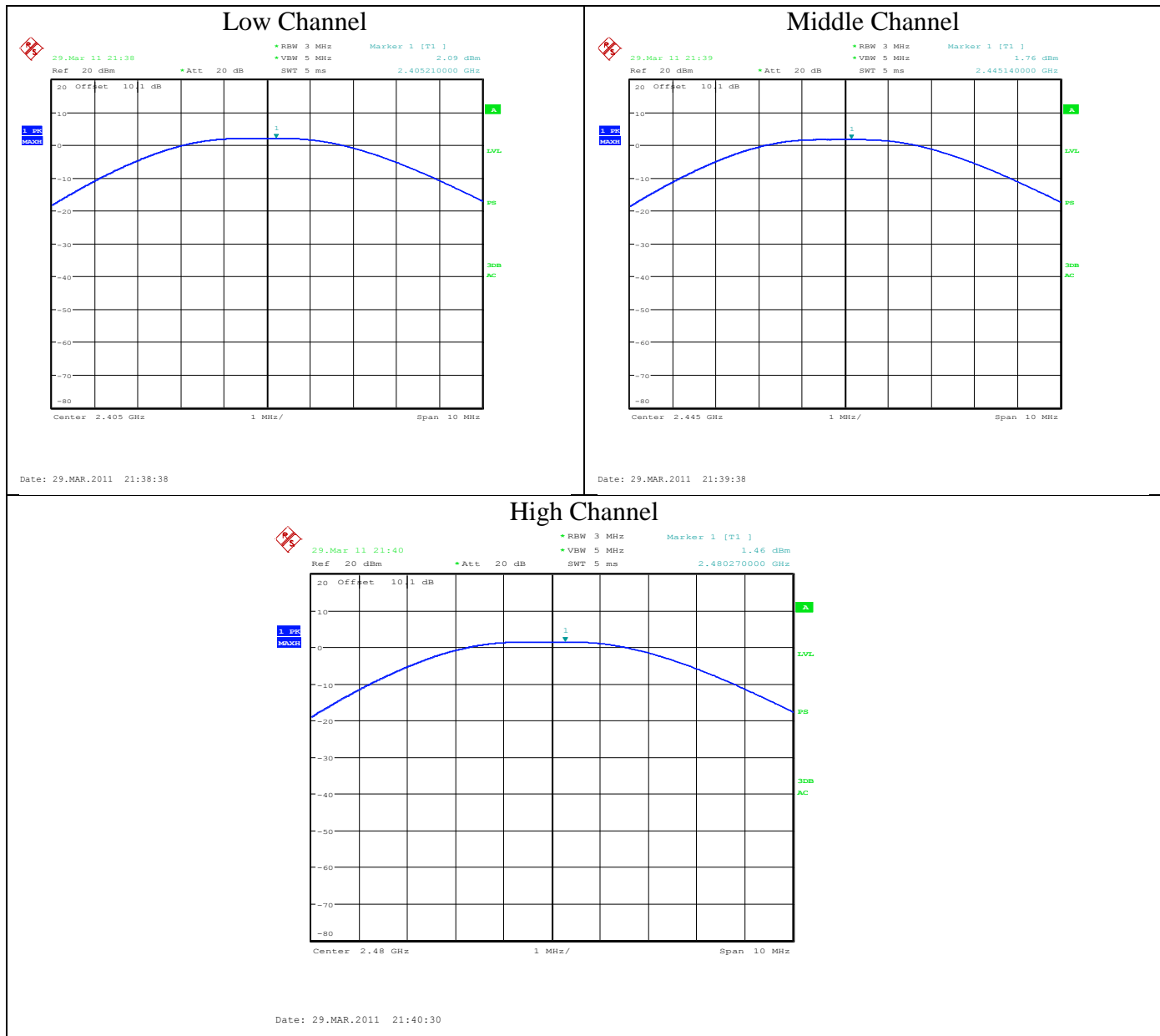


Figure 28 Maximum Peak Output Power Graph – Antenna 2



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: None			

Table 33 Power Spectral Density EUT Configuration Settings

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

Table 34 Power Spectral Density Test Equipment

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

Table 35 Power Spectral Density Power Results

Antenna	Channel	Limit (dBm)	Power Density dBm
1	Low Channel	8	-11.92
	Middle Channel	8	-12.63
	High Channel	8	-13.51
2	Low Channel	8	-12.00
	Middle Channel	8	-12.69
	High Channel	8	-12.55

Figure 29 Test setup for Power Spectral Density

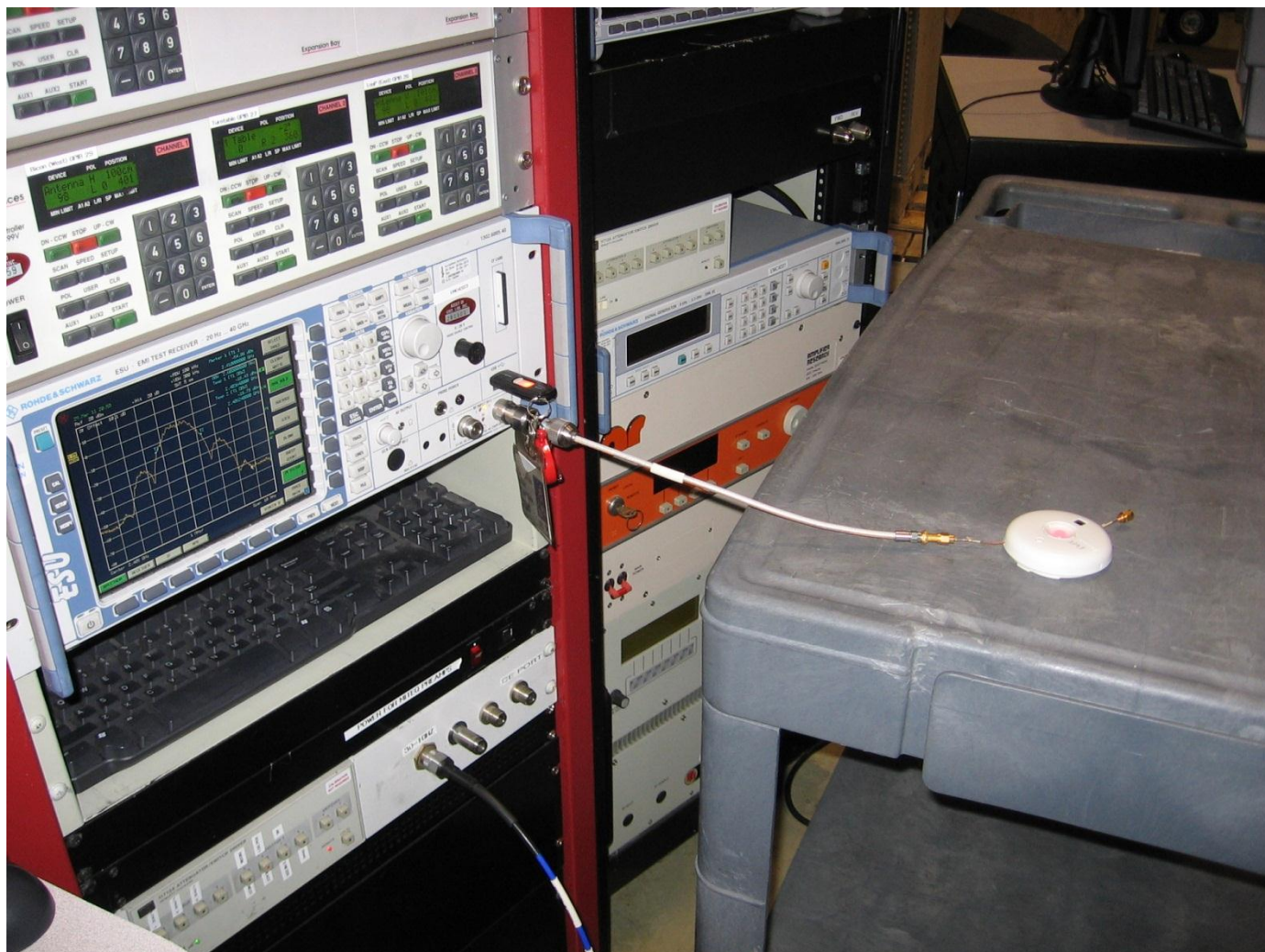


Figure 30 Power Spectral Density Graph – Antenna 1

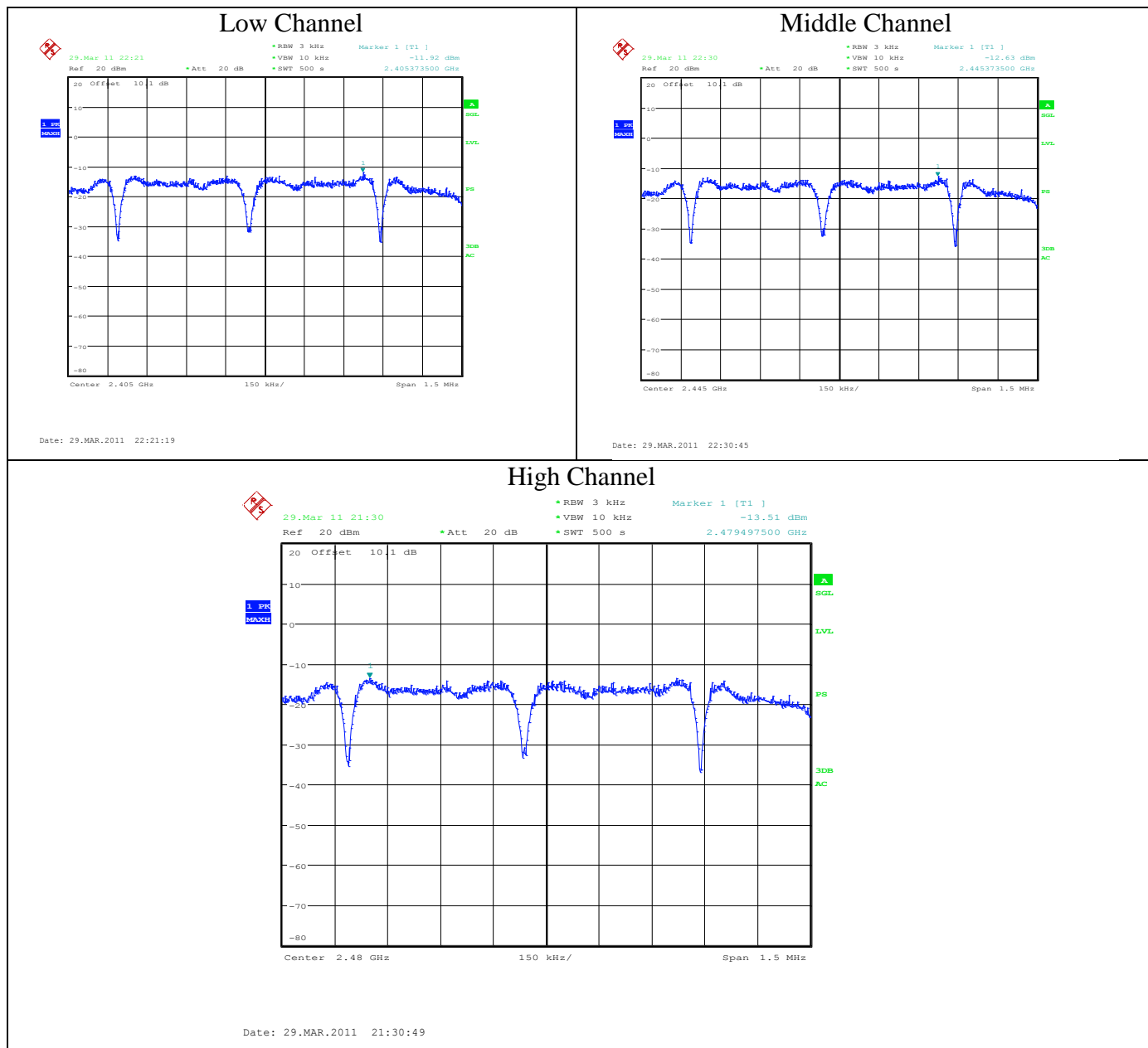
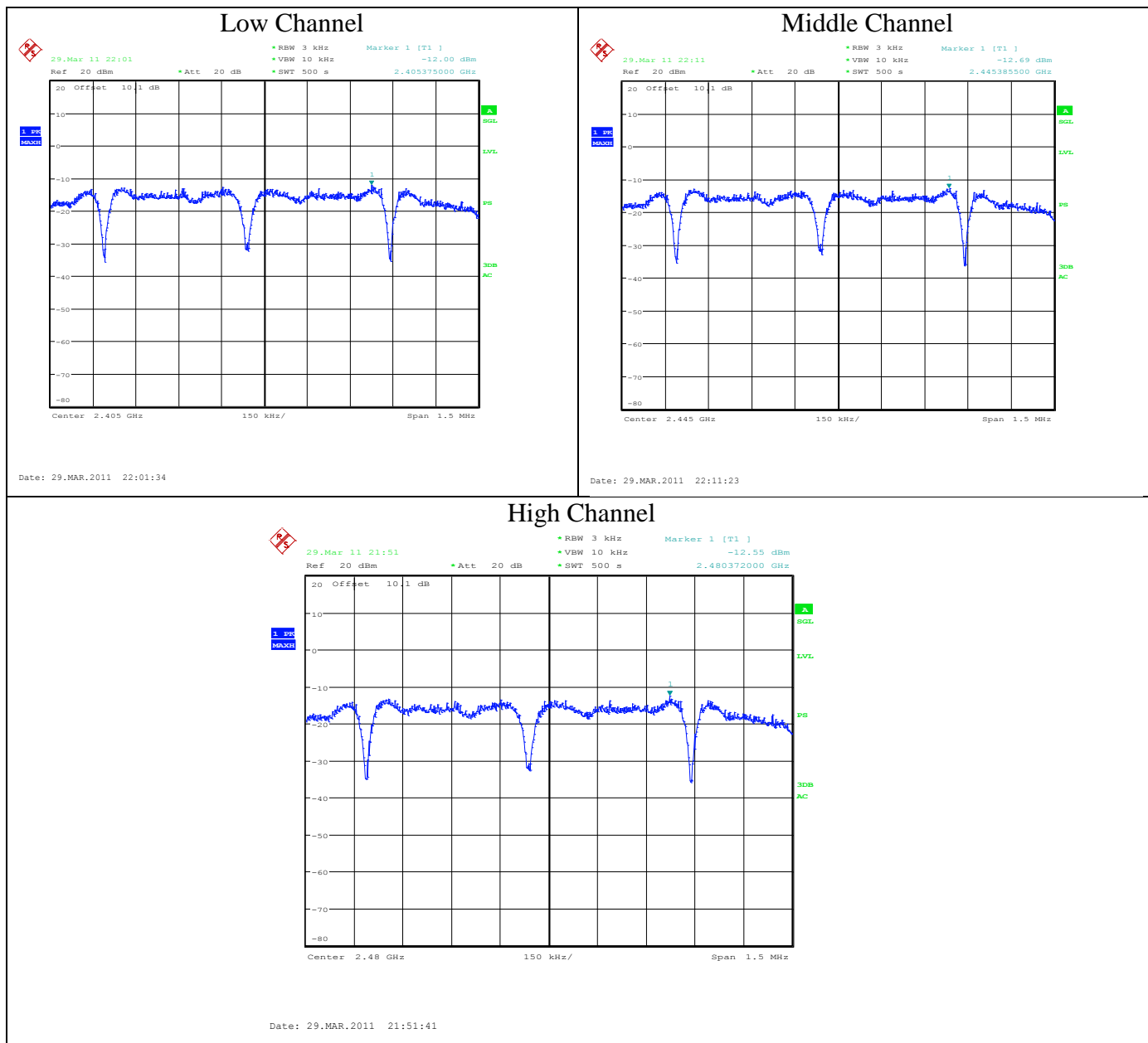


Figure 31 Power Spectral Density Graph – Antenna 2



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 36 99% Power Bandwidth Configuration Settings

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

Table 37 99% Power Bandwidth Test Equipment

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

Table 38 99% Power Bandwidth Results

Mode	Channel	99% Power Bandwidth dBm
TX – Antenna 1	Low	2.61
	Middle	2.61
	High	2.62
TX – Antenna 2	Low	2.61
	Middle	2.61
	High	2.61

Test Setup for 99% Power Bandwidth



Figure 32 99% Power Bandwidth Graphs – Antenna 1

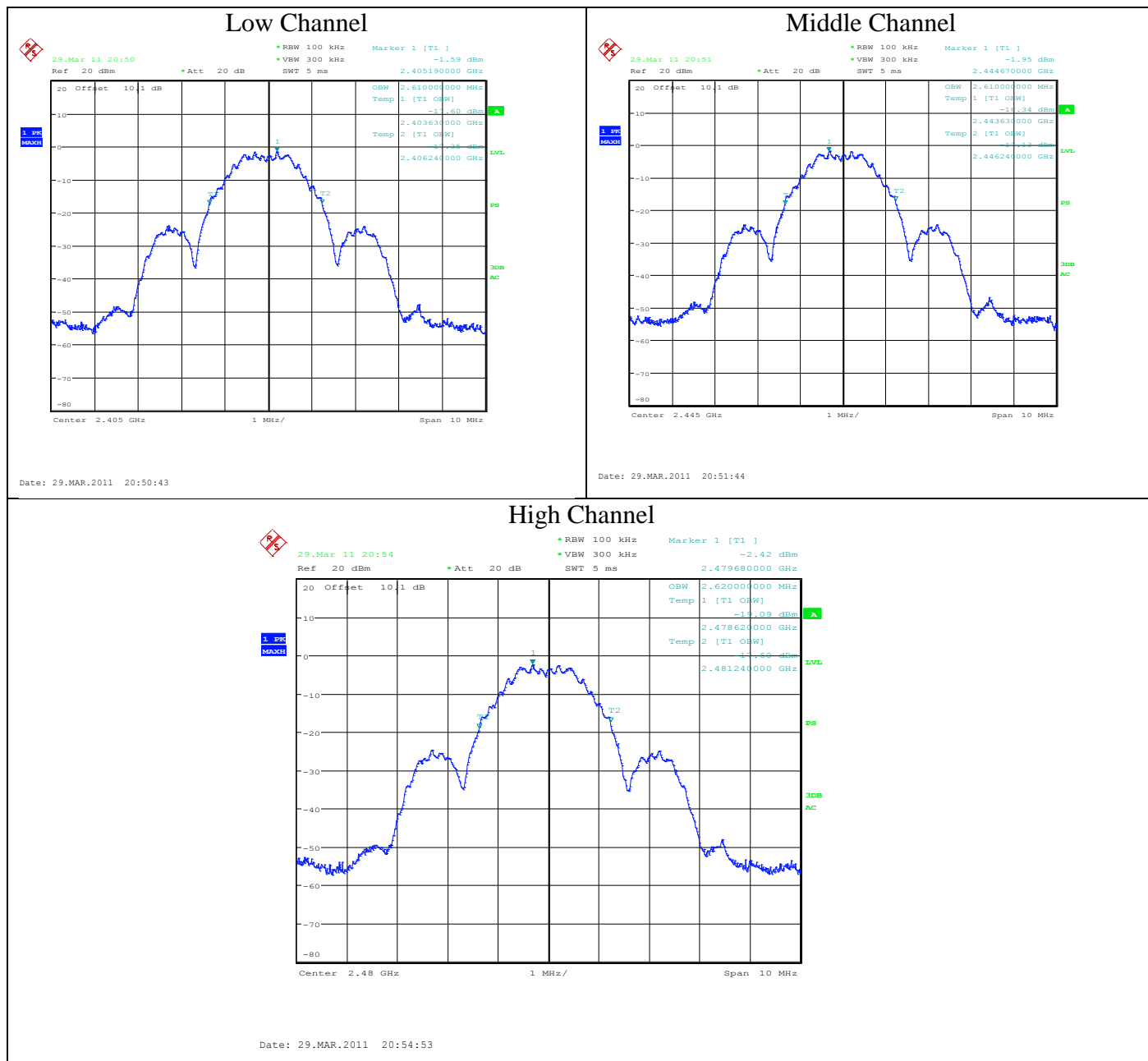
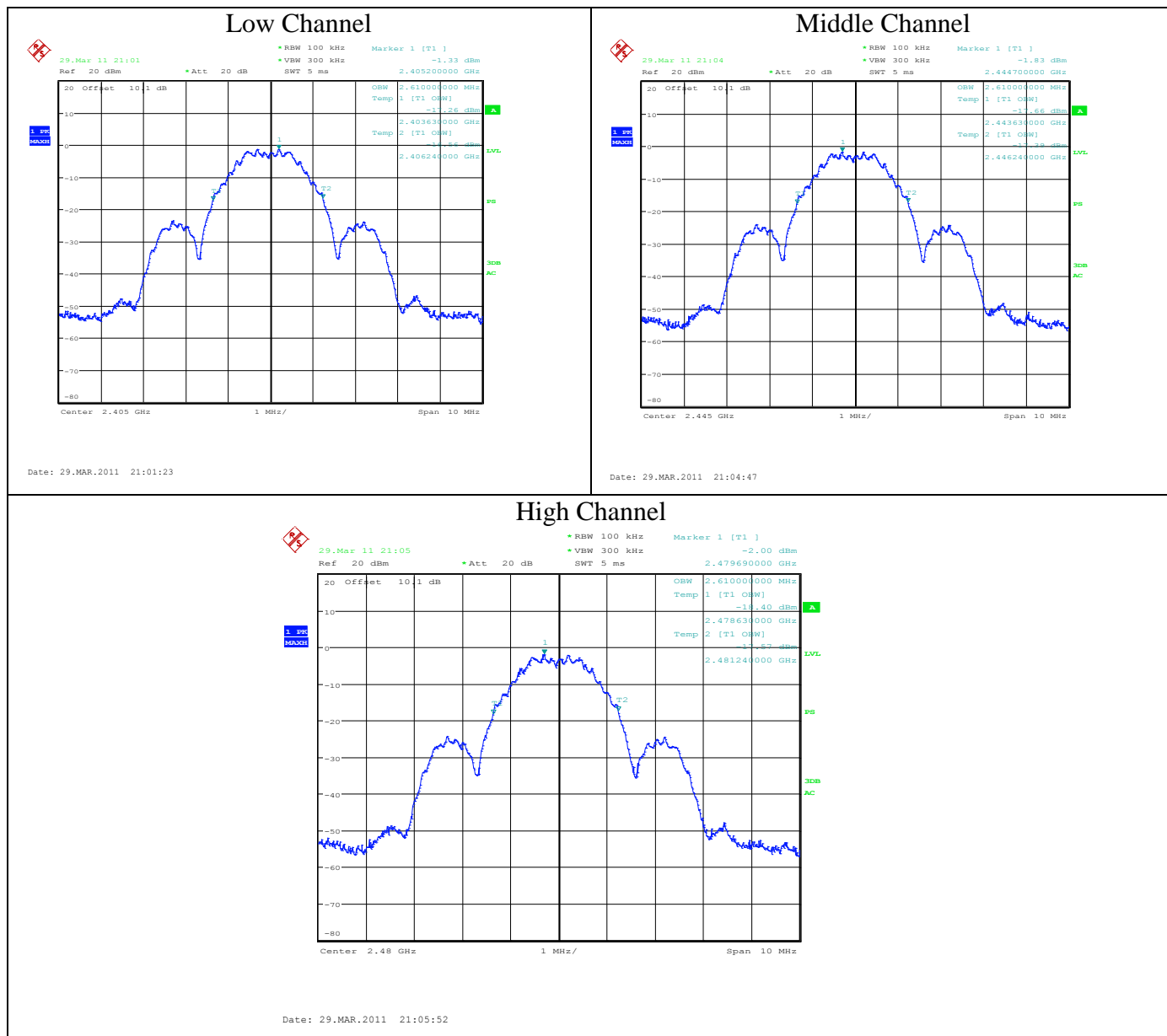


Figure 33 99% Power Bandwidth Graphs – Antenna 2



Job #: 1001358989 File #: MC16433 Project #: 11CA14755B
Model Number: LRM1743/00 & LRM1760/00
Client Name: Philips Lighting Electronics N. A.

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5.0 IMMUNITY TEST RESULTS

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

Appendix A

Accreditations and Authorizations



NVLAP Lab code: 100414-0

NVLAP: The National Institute of Standards and Technology (NIST) administers the National Voluntary Laboratory Accreditation Program (NVLAP). NVLAP is comprised of laboratory accreditation programs (LAPs) which are established on the basis of requests and demonstrated need. Each LAP includes specific calibration and/or test standards and related methods and protocols assembled to satisfy the unique needs for accreditation in a field of testing or calibration. NVLAP accredits public and private laboratories based on evaluation of their technical qualifications and competence to carry out specific calibrations or tests. Accreditation criteria are established in accordance with the U.S. Code of Federal Regulations (CFR, Title 15, Part 285), NVLAP Procedures and General Requirements, and encompass the requirements of ISO/IEC 17025. For a full scope listing see <http://ts.nist.gov/ts/htdocs/210/214/scopes/1004140.htm>



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



Industry Canada Industrie Canada

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



VCCI: Accepted as an Associate Member to the VCCI. The measurement facilities detailed in this test report have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. Registration Nos.: Radiated Emissions R-621, Conducted Emissions C-642.



ICASA: ICASA (Independent Communications Authority of South Africa) has appointed UL as a Designated Test Laboratory to test Telecommunications equipment for type approval in compliance with CISPR 22 to assist in fulfilling its mandate under section 54(1) of the Telecommunications Act, 1996 (Act 103 of 1996).



NIST/CAB: Validated by the European Commission as a U.S. Conformity Assessment Body (CAB) of the U.S.-EU Mutual Recognition Agreement (MRA) for the Electromagnetic Compatibility - Council Directive 89/336/EEC, Article 10 (2). Also validated for the Telecommunication Equipment-Council Directive 99/5/EC, Annex III and IV, Identification Number: 0983.

NIST/CAB: Provisioned to act as a U.S. Conformity Assessment Body (CAB) under Appendix B, Phase I Procedures, of the Asia Pacific Economic Cooperation (APEC) MRA between the American Institute in Taiwan (AIT) and the United States. Our laboratory is considered qualified to test equipment subject to the applicable EMC regulations of the Chinese Taipei Bureau of Standards, Metrology and Inspection (BSMI) which require testing to CNS 13438 (CISPR 22).

NIST/CAB: Recognized by the Infocomm Development Authority of Singapore (IDA) under the Asia Pacific Economic Cooperation Mutual Recognition Agreement (APEC MRA). Our laboratory is provisionally designated to act as a Conformity Assessment Body (CAB) under Appendix B, Phase I Procedures, of the APEC MRA. Our scope of designation includes IDA TS EMC (CISPR 22), IEC 61000-4-2, -4-3, -4-4, -4-5, and -4-6

