UL LLC
333 Pfingsten Rd.
Northbrook, IL 60062

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

Job Number:	1001499549
Project Number:	12CA21441
File Number:	MC17070
Date:	April 23, 2012
Model:	CMAP Pro

Electromagnetic Compatibility Test Report

For

Med-Tek LLC

Test Report Details

Tests Performed By:	**UL LLC** **333 Pfingsten Rd.** **Northbrook, IL 60062**
Tests Performed For:	**Med-Tek LLC** **2665 South Bayshore Dr.** **Suite 502** **Coconut Grove, FL 33133**
Applicant Contact: Phone: E-mail:	**Martin Rodriquez** **(866) 930-2627** **mrodriguez@med-tek.com**
Test Report Date:	**April 23, 2012**
Product Type:	**Medical with transmitter**
Product standards	**FCC Part 15.27(d)**
Model Number:	**CMAP Pro**
Sample Serial Number:	**Prototype**
EUT Category:	**Medical with transmitter**
Testing Start Date:	**April 13, 2012**
Date Testing Complete:	**April 16, 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.

Report Directory

1.0 G E N E R A L - Product Description 4
1.1 Equipment Description 4
1.2 Equipment Marking Plate 4
1.3 Device Configuration During Test 5
1.3.1 Equipment Used During Test: 5
1.3.2 Input/Output Ports: 5
1.3.3 EUT Internal Operating Frequencies: 6
1.3.4 Power Interface: 6
1.4 EUT Configurations 7
1.5 EUT Operation Modes 7
1.6 Rational for EUT Configuration 7
2.0 Summary 8
2.1 Deviations from standard test methods 8
2.2 Device Modifications Necessary for Compliance 8
2.3 Reference Standards 9
2.4 Results Summary 9
3.0 Calibration of Equipment Used for Measurement 10
4.0 EMISSIONS TEST RESULTS 10
4.1 Test Conditions and Results – RADIATED EMISSIONS 11
4.2 Test Conditions and Results – BAND EDGE COMPLIANCE 29
5.0 IMMUNITY TEST RESULTS 47
Appendix A 48
Accreditations and Authorizations 48

Report Revision History

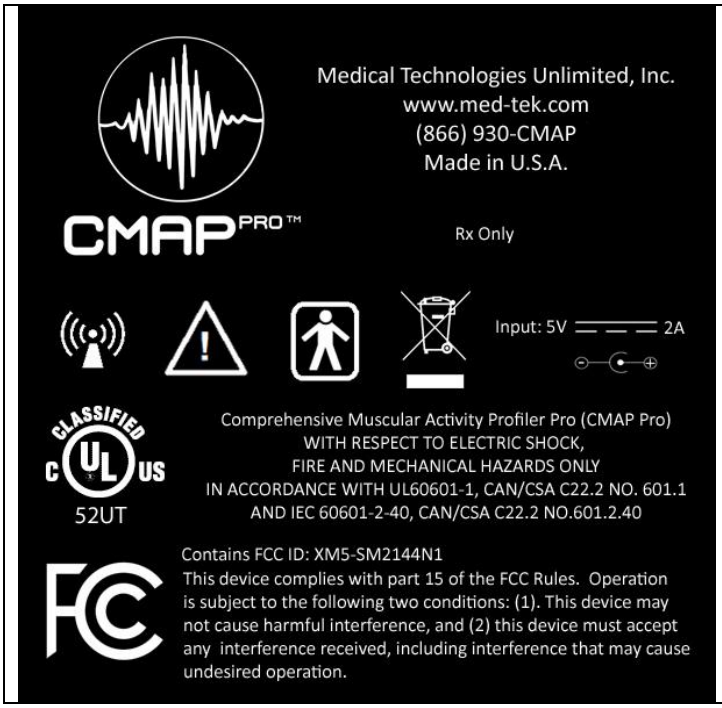
Revision Date	Description	Revised By	Revision Reviewed By
None			

1.0 G E N E R A L - Product Description

1.1 Equipment Description

Medical Equipment containing a 802.11bg modular transmitter. The purpose of this report is to check the Radiated Spurious Emissions due to the modular being placed in a new host. Only Radiated and Bandedge Emissions were performed per the manufacturer request.

1.2 Equipment Marking Plate



1.3 Device Configuration During Test

1.3.1 Equipment Used During Test:

Use	Product Type	Manufacturer	Model	Comments
EUT	Main Unit	MTU	POD	None
AE	Patient grip	MTU	FCE	None
AE	Patient Motion	MTU	ROM	None
AE	Patient sEMG	MTU	EMG	None
Note: **EUT** - Equipment Under Test, **AE** - Auxiliary/Associated Equipment, or **SIM** - Simulator (Not Subjected to Test)				

1.3.2 Input/Output Ports:

Port #	Name	Type*	Cable Max. >3m (Y/N)	Cable Shielded (Y/N)	Comments
0	Enclosure	N/E	—	—	None
1	Mains	AC	N	N	Connects to AC/DC adapter
2	EMG	IO	N	Y	None
3	FCE	IO	N	Y	None
4	MT1/ROM	IO	N	Y	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

1.3.3 EUT Internal Operating Frequencies:

Frequency (MHz)	Description
12	Wifi
12	Microcontroller/CPLD
2400	Wifi transmission

1.3.4 Power Interface:

Mode # /Rated	Voltage (V)	Current (A)	Power (W)	Frequency (DC/AC-Hz)	Phases (#)	Comments
1	Battery Operated	-	-			None

.

1.4 EUT Configurations

Mode #	Description
1	EUT was configured with all cables connected

1.5 EUT Operation Modes

Mode #	Description
1	EUT was set to 11b 1Mbps, 11g 6Mbps. Hi, Mid, Low channel

1.6 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 15.247(d)	Code of Federal Regulations, Part 15, Radio Frequency Devices	2010

2.4 Results Summary

This product is considered Class B

Requirement – Test	Result (Compliant / Non-Compliant)*
Radiated Emissions	Compliant
Bandedge	Compliant

Test Engineer:

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

Reviewer:

Bartlomiej Mucha(Ext.41216)
Staff 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 ----------

Code of Federal Regulations Title 47	Part 15.247(d)

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

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 and 3 meter. 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 15.247(d)	
UL LPG	80-EM-S0029	
	Frequency range	Measurement Point
Fully configured sample scanned over the following frequency range	30MHz – 1GHz	(10 meter measurement distance)
Fully configured sample scanned over the following frequency range	1GHz – 25GHz	(3 meter measurement distance)

Limits - Class B

Frequency (MHz)	Limit (dBµV/m)	
	Quasi-Peak	Average
30 - 88	40	NA
88 - 216	43.5	NA
216 - 960	46	NA
960 - 1000	54	NA
Above 960 (FCC)	NA	54 (at 3-meter)

Supplementary information: Preliminary testing shows Y axis was the worst case configuration. Plots for 30-1000, Limit shown will be QP limit. During Preliminary scan any peaks found within 6dB will be measured using QP detector. Only very close Emissions were repeated for HI and Low channel, otherwise 11bg CH 6 will contain all QP measurements.

Table 1 Radiated Emissions EUT Configuration Settings

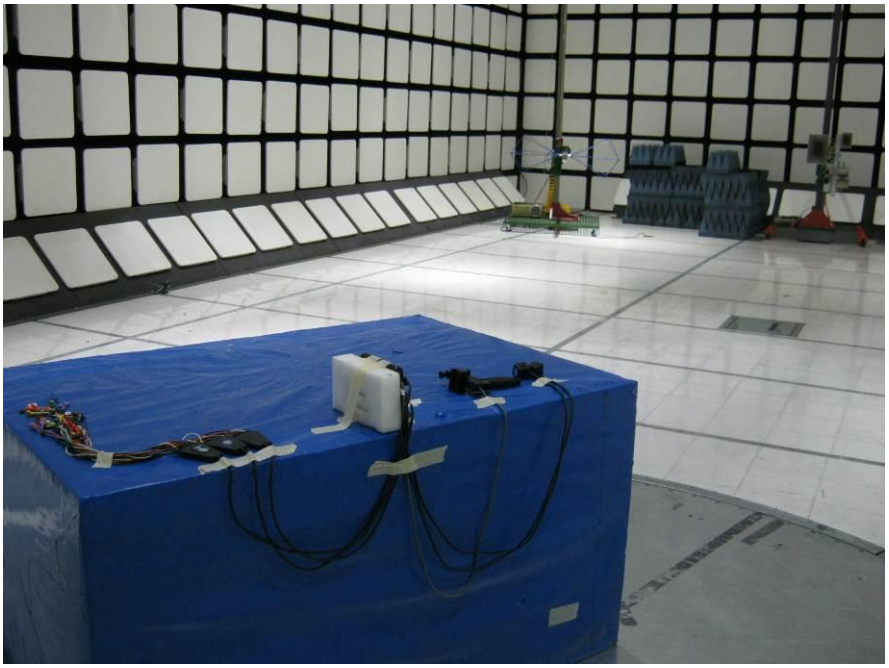
Power Interface Mode #	EUT Configurations Mode #	EUT Operation Mode #
1	1	1
Supplementary information: None		

Table 2 Radiated Emissions Test Equipment

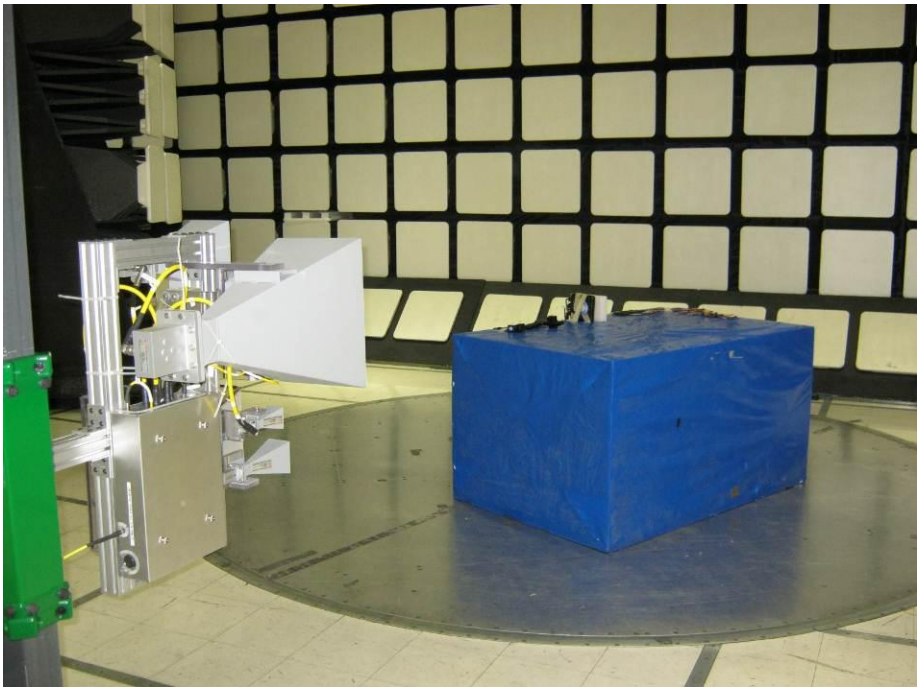
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESU	EMC4323	Dec 28 2011	Dec 31 2012
Bicon Antenna	Chase	VBA6106A	EMC4078	20120117	20130131
Log-P Antenna	Chase	UPA6109	EMC4313	20110929	20120629
Spectrum Analyzer	Rhode & Schwarz	FSEK	EMC4182	20111227	20121231
Antenna Array	UL	BOMS	EMC4276	20111227	20121231

Figure 1 Test setup for Radiated Emissions

30-1000MHz



1-25GHz



Y-axis

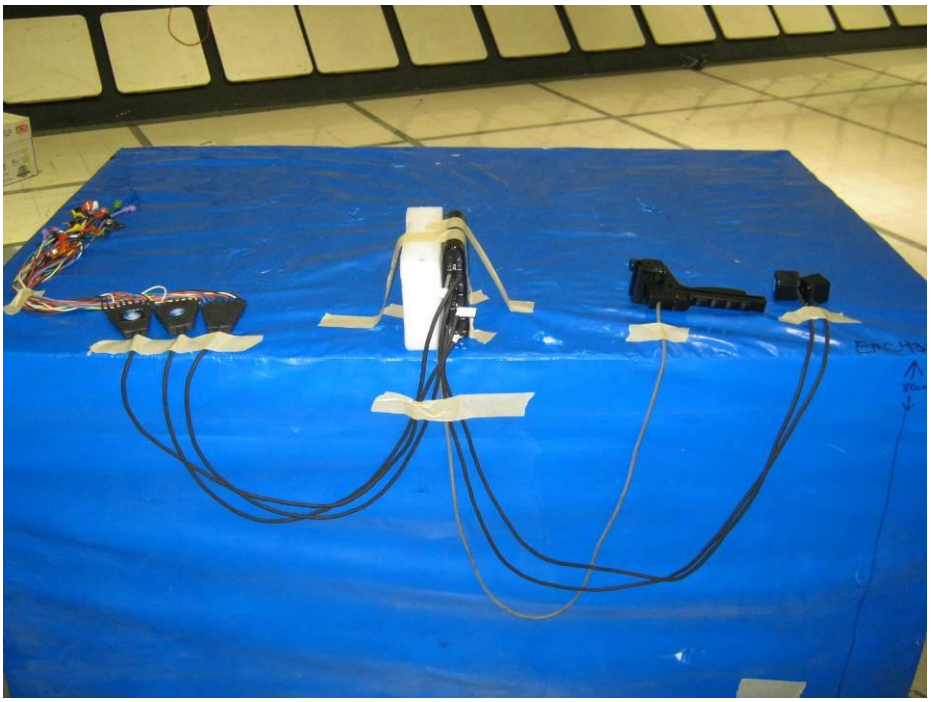
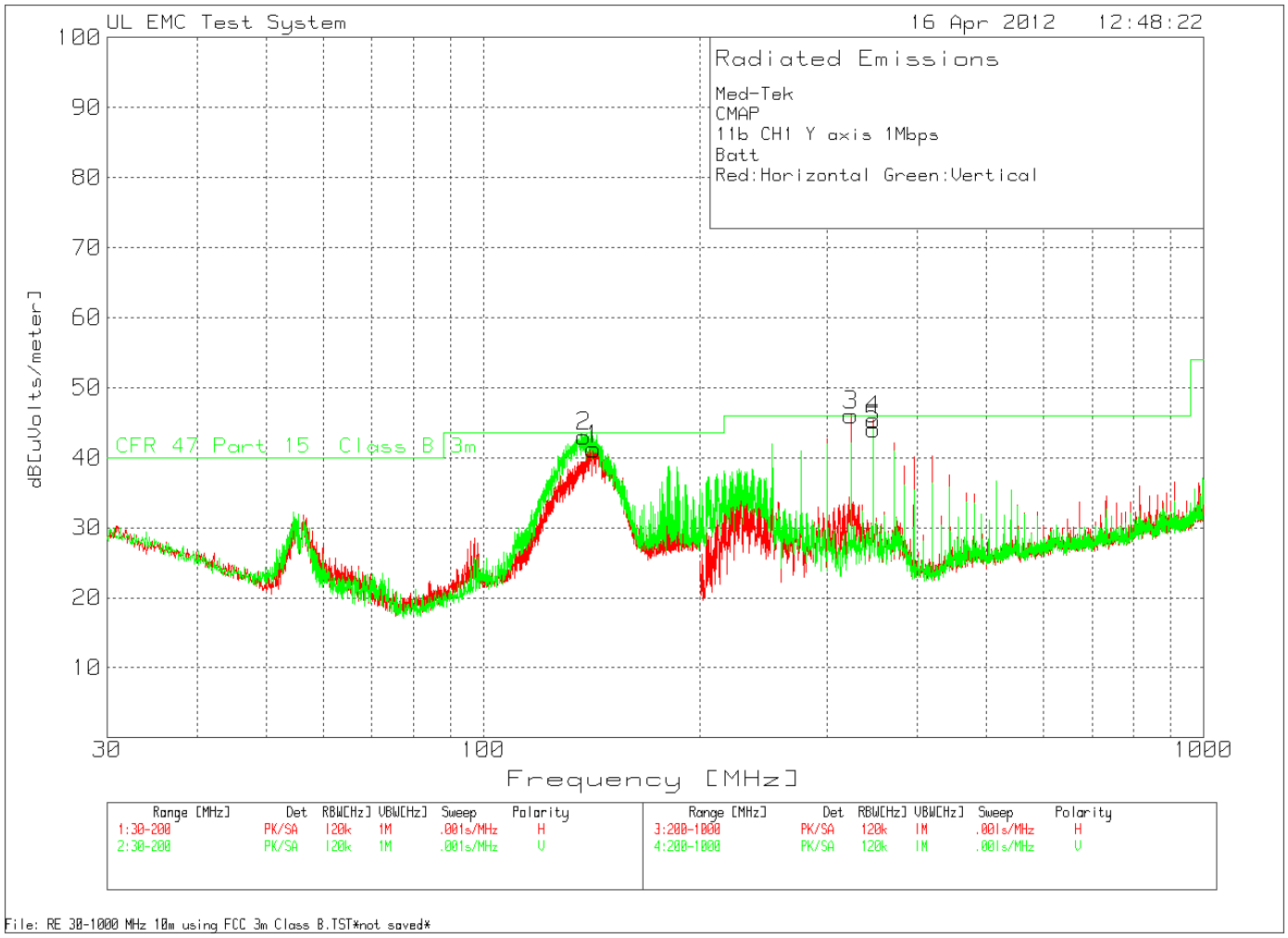


Figure 2 Radiated Emissions Graph



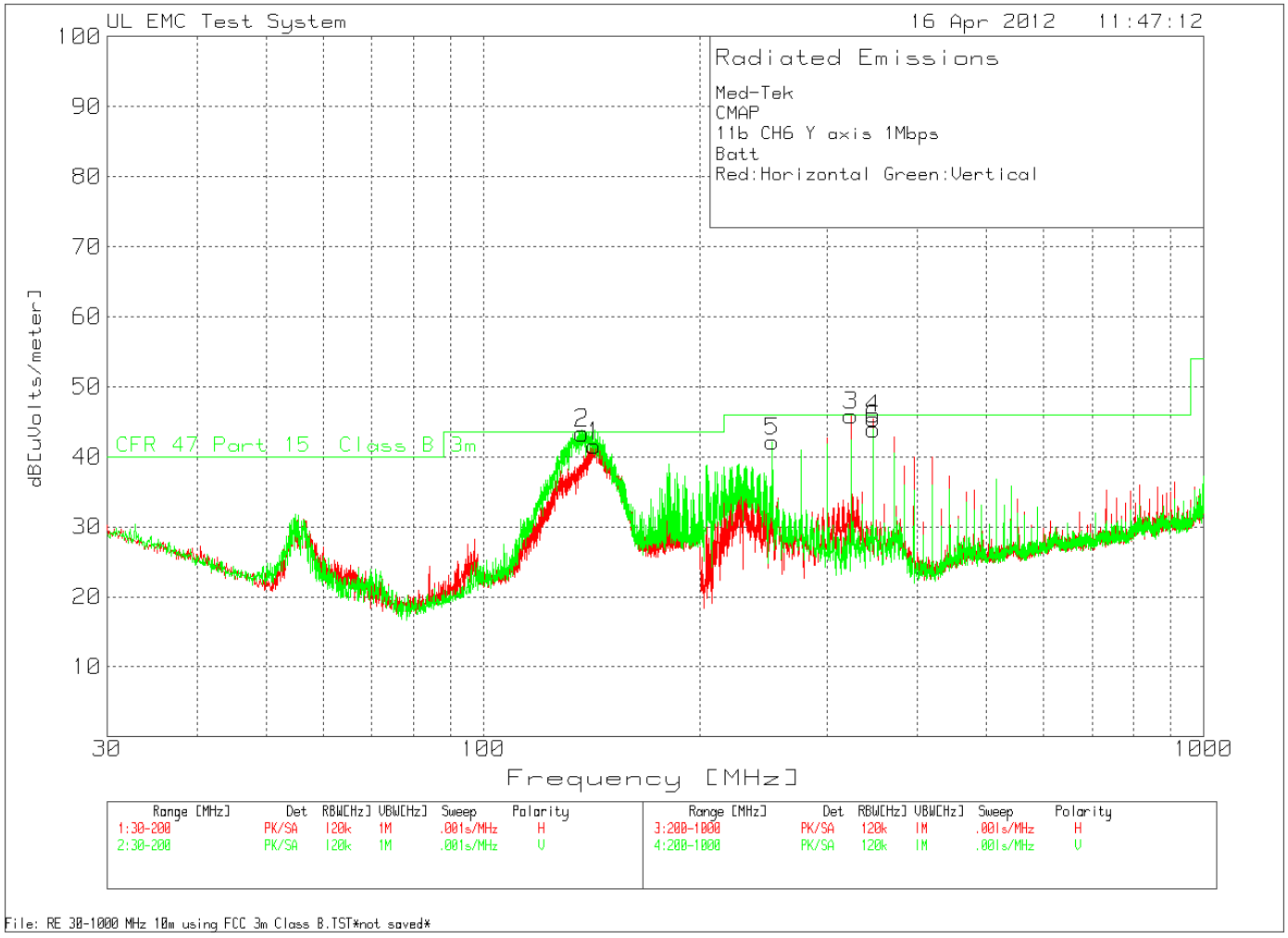
Med-Tek
CMAP
11b CH1 Y axis 1Mbps
Batt
Red:Horizontal Green:Vertical

Test Frequency	Meter Reading	Detector	Antenna Factor	Gain/Loss Factor	10m to 3m [dB]	dB[uVolts/meter]	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
142.2289	45.72	PK	14.4	-29.4	10.5	41.22	43.5	-2.28	400	Horz
137.8111	47.74	PK	14.2	-29.4	10.5	43.04	43.5	-0.46	99	Vert
323.9174	54.66	PK	13.6	-32.7	10.5	46.06	46	0.06	299	Horz
347.9014	52.58	PK	14.7	-32.4	10.5	45.38	46	-0.62	299	Horz
347.9014	51.3	PK	14.7	-32.4	10.5	44.1	46	-1.9	99	Vert

Test Frequency	Meter Reading	Detector	Antenna Factor	Gain/Loss Factor	10m to 3m [dB]	dB[uVolts/meter]	CFR 47 Part 15 Class B 3m	Margin	Azimuth [Degs]	Height [cm]	Polarity
323.9904	54.34	QP	13.6	-32.7	10.46	45.74	46	-0.3	109	282	Horz
347.9904	53.22	QP	14.7	-32.4	10.46	45.98	46	-0.02	116	217	Horz

PK - Peak detector
QP - Quasi-Peak detector

Figure 3 Radiated Emissions Graph



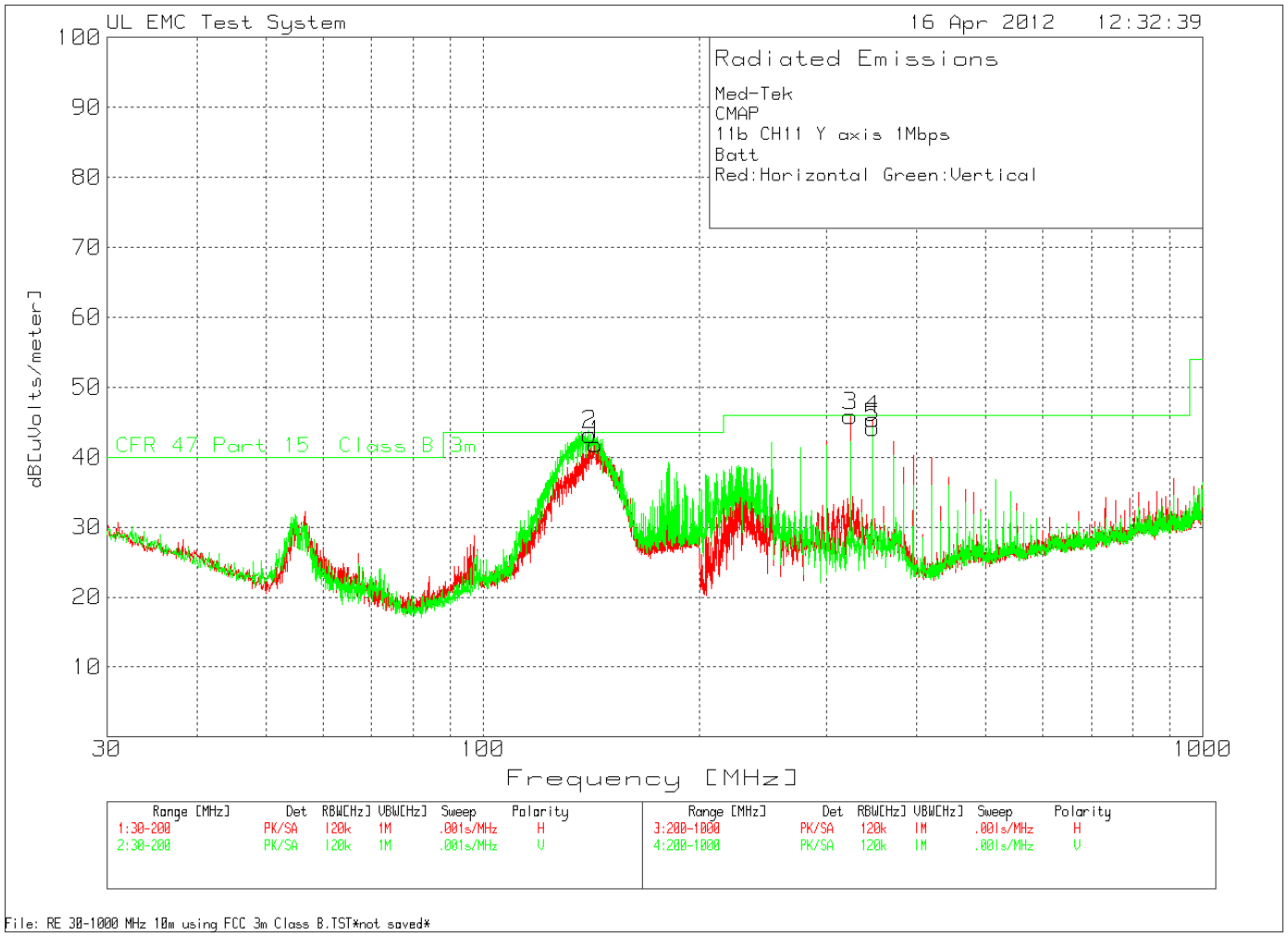
Med-Tek
CMAP
11b CH6 Y axis 1Mbps
Batt
Red:Horizontal Green:Vertical

Test Frequency	Meter Reading	Detector	Antenna Factor	Gain/Loss Factor	10m to 3m [dB]	dB[uVolts/meter]	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
142.5687	46.04	PK	14.4	-29.4	10.5	41.54	43.5	-1.96	399	Horz
137.2164	48.06	PK	14.2	-29.4	10.5	43.36	43.5	-0.14	99	Vert
323.9174	54.48	PK	13.6	-32.7	10.5	45.88	46	-0.12	299	Horz
347.9014	52.65	PK	14.7	-32.4	10.5	45.45	46	-0.55	299	Horz
251.9654	52.85	PK	11.9	-33.1	10.5	42.15	46	-3.85	99	Vert
347.9014	51.14	PK	14.7	-32.4	10.5	43.94	46	-2.06	99	Vert

Test Frequency	Meter Reading	Detector	Antenna Factor	Gain/Loss Factor	10m to 3m [dB]	dB[uVolts/meter]	CFR 47 Part 15 Class B 3m	Margin	Azimuth [Degs]	Height [cm]	Polarity
140.7869	44.65	QP	14.3	-29.4	10.5	40.05	43.5	-3.45	270	397	Horz
136.9326	46.67	QP	14.2	-29.4	10.5	41.97	43.5	-1.53	99	100	Vert
347.9888	52.66	QP	14.7	-32.4	10.5	45.46	46	-0.54	103	216	Horz
323.992	54.43	QP	13.6	-32.7	10.5	45.83	46	-0.17	106	273	Horz
347.9888	50.29	QP	14.7	-32.4	10.5	43.09	46	-2.91	253	100	Vert
251.9913	52.7	QP	11.9	-33.1	10.5	42	46	-4	225	103	Vert

PK - Peak detector
QP - Quasi-Peak detector

Figure 4 Radiated Emissions Graph



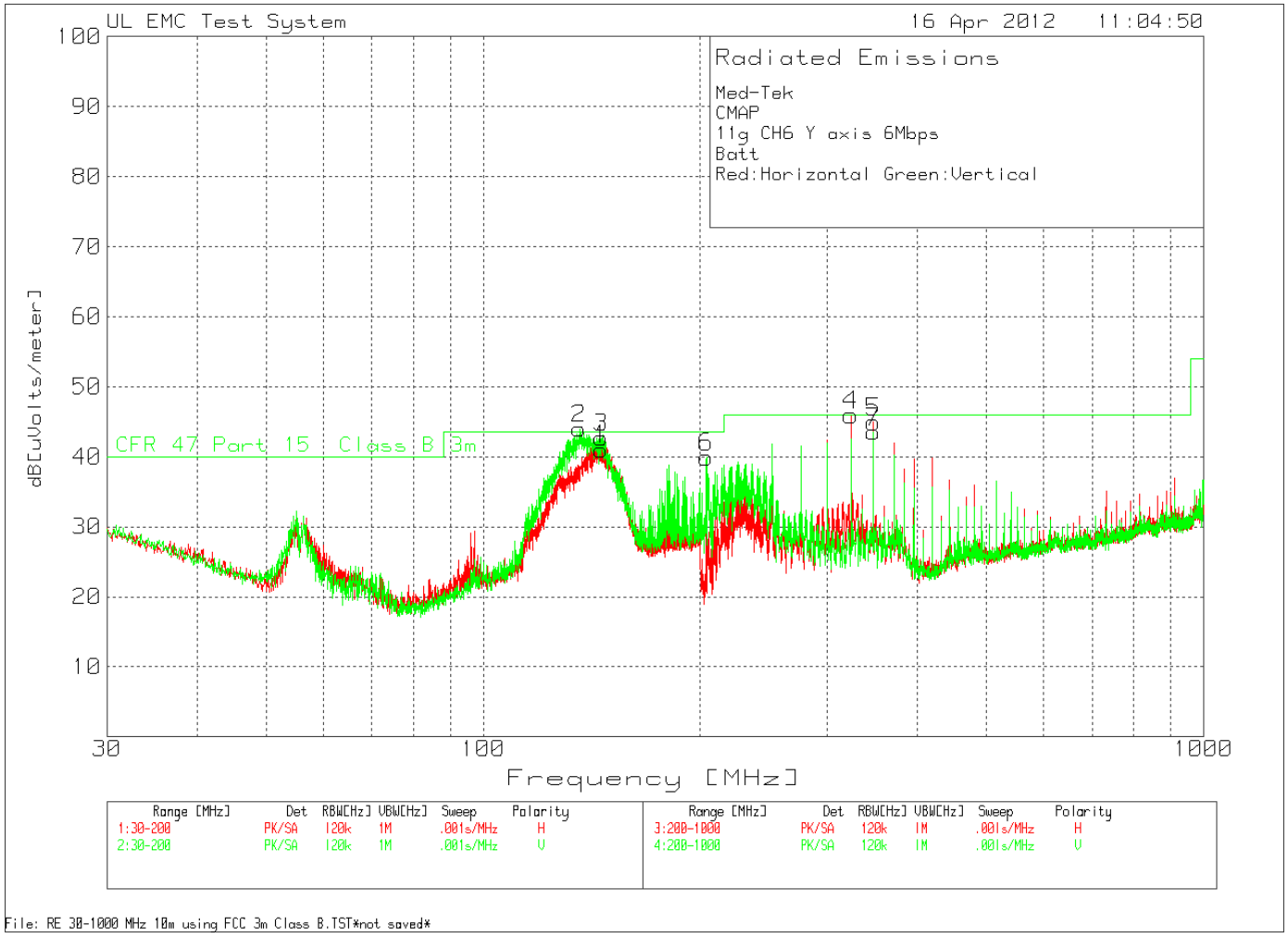
Med-Tek
CMAP
11b CH11 Y axis
1Mbps
Batt
Red:Horizontal Green:Vertical

Test Frequency	Meter Reading	Detector	Antenna Factor	Gain/Loss Factor	10m to 3m [dB]	dB[uVolts/meter]	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
143.4183	46.33	PK	14.4	-29.4	10.5	41.83	43.5	-1.67	400	Horz
140.7846	47.84	PK	14.3	-29.4	10.5	43.24	43.5	-0.26	99	Vert
323.9174	54.45	PK	13.6	-32.7	10.5	45.85	46	-0.15	299	Horz
347.9014	52.59	PK	14.7	-32.4	10.5	45.39	46	-0.61	299	Horz
347.9014	51.39	PK	14.7	-32.4	10.5	44.19	46	-1.81	99	Vert

Test Frequency	Meter Reading	Detector	Antenna Factor	Gain/Loss Factor	10m to 3m [dB]	dB[uVolts/meter]	CFR 47 Part 15 Class B 3m	Margin	Azimuth [Degs]	Height [cm]	Polarity
323.9888	54.58	QP	13.6	-32.7	10.46	45.94	46	-0.06	101	274	Horz
347.9888	53	QP	14.7	-32.4	10.46	45.76	46	-0.24	115	218	Horz

PK - Peak detector
QP - Quasi-Peak detector

Figure 5 Radiated Emissions Graph



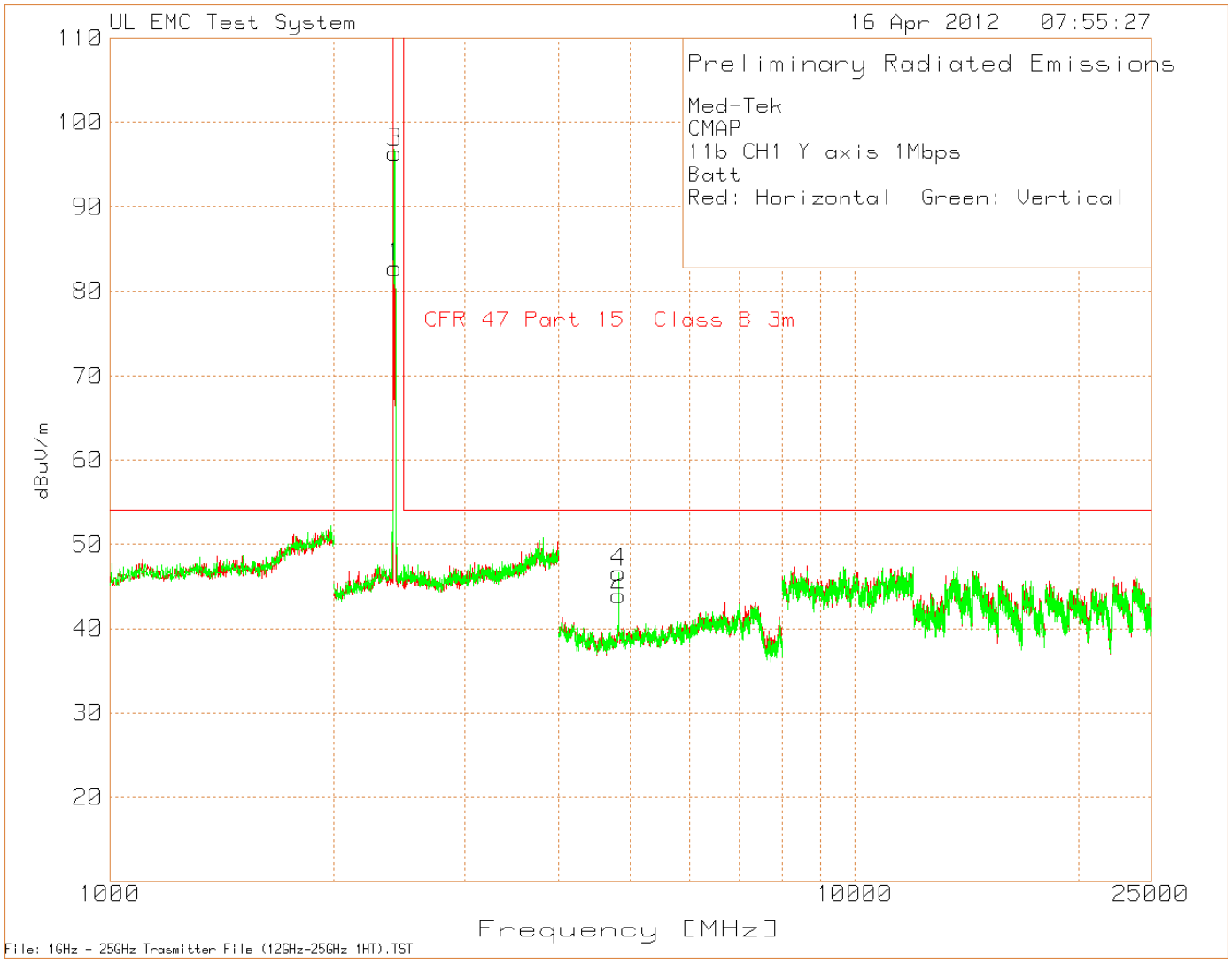
Med-Tek
CMAP
11g CH6 Y axis 6Mbps
Batt
Red:Horizontal Green:Vertical

Test Frequency	Meter Reading	Detector	Antenna Factor	Gain/Loss Factor	10m to 3m [dB]	dB[uVolts/meter]	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
145.7971	45.43	PK	14.5	-29.4	10.5	41.03	43.5	-2.47	400	Horz
135.942	48.7	PK	14.2	-29.4	10.5	44	43.5	0.5	99	Vert
145.8821	47.13	PK	14.5	-29.4	10.5	42.73	43.5	-0.77	99	Vert
323.9174	54.56	PK	13.6	-32.7	10.5	45.96	46	-0.04	300	Horz
347.9014	52.15	PK	14.7	-32.4	10.5	44.95	46	-1.05	300	Horz
203.9973	51.95	PK	10.9	-33.4	10.5	39.95	43.5	-3.55	99	Vert
347.9014	50.74	PK	14.7	-32.4	10.5	43.54	46	-2.46	99	Vert

Test Frequency	Meter Reading	Detector	Antenna Factor	Gain/Loss Factor	10m to 3m [dB]	dB[uVolts/meter]	CFR 47 Part 15 Class B 3m	Margin	Azimuth [Degs]	Height [cm]	Polarity
147.4844	43.84	QP	14.5	-29.4	10.5	39.44	43.5	-4.06	267	400	Horz
136.9376	46.77	QP	14.2	-29.4	10.5	42.07	43.5	-1.43	87	102	Vert
146.659	45.07	QP	14.5	-29.4	10.5	40.67	43.5	-2.83	82	105	Vert
347.9984	52.52	QP	14.7	-32.4	10.5	45.32	46	-0.68	116	249	Horz
323.9888	54.16	QP	13.6	-32.7	10.5	45.56	46	-0.44	109	297	Horz
203.9936	51.21	QP	10.9	-33.4	10.5	39.21	43.5	-4.29	338	101	Vert
347.992	50.43	QP	14.7	-32.4	10.5	43.23	46	-2.77	238	100	Vert

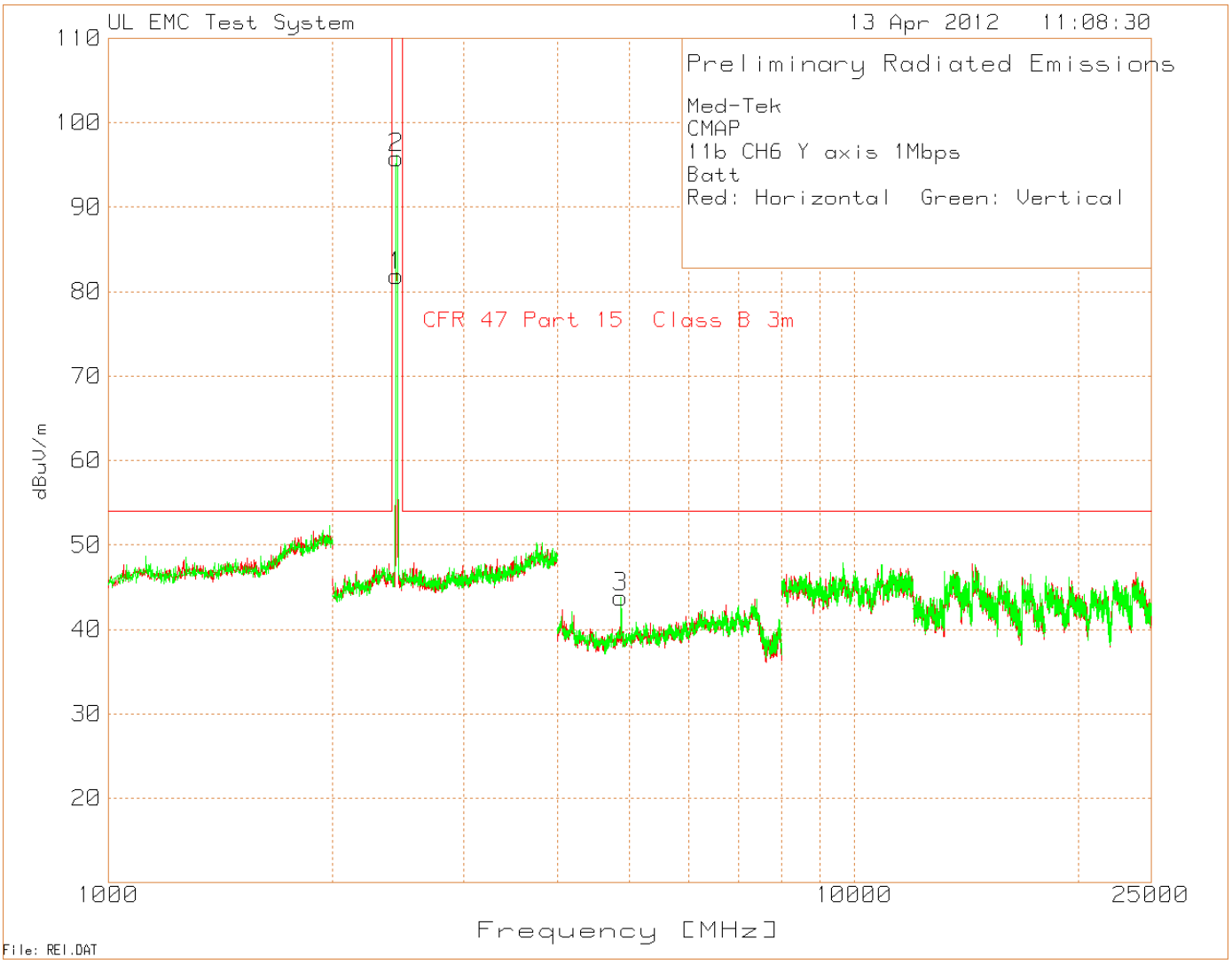
PK - Peak detector
QP - Quasi-Peak detector

Figure 6 Radiated Emissions Graph



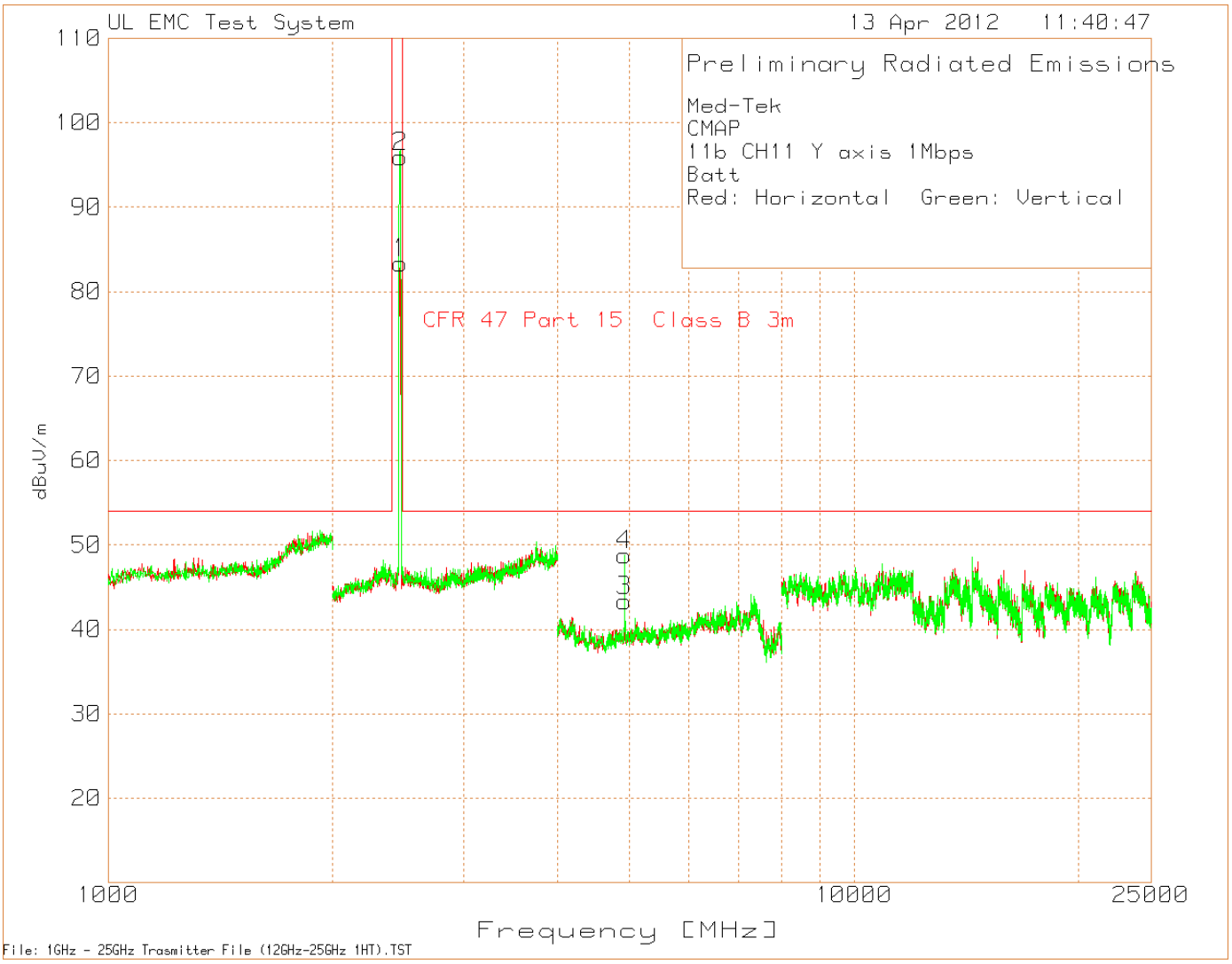
See Table 3 for any emissions found within 6dB of the limit

Figure 7 Radiated Emissions Graph



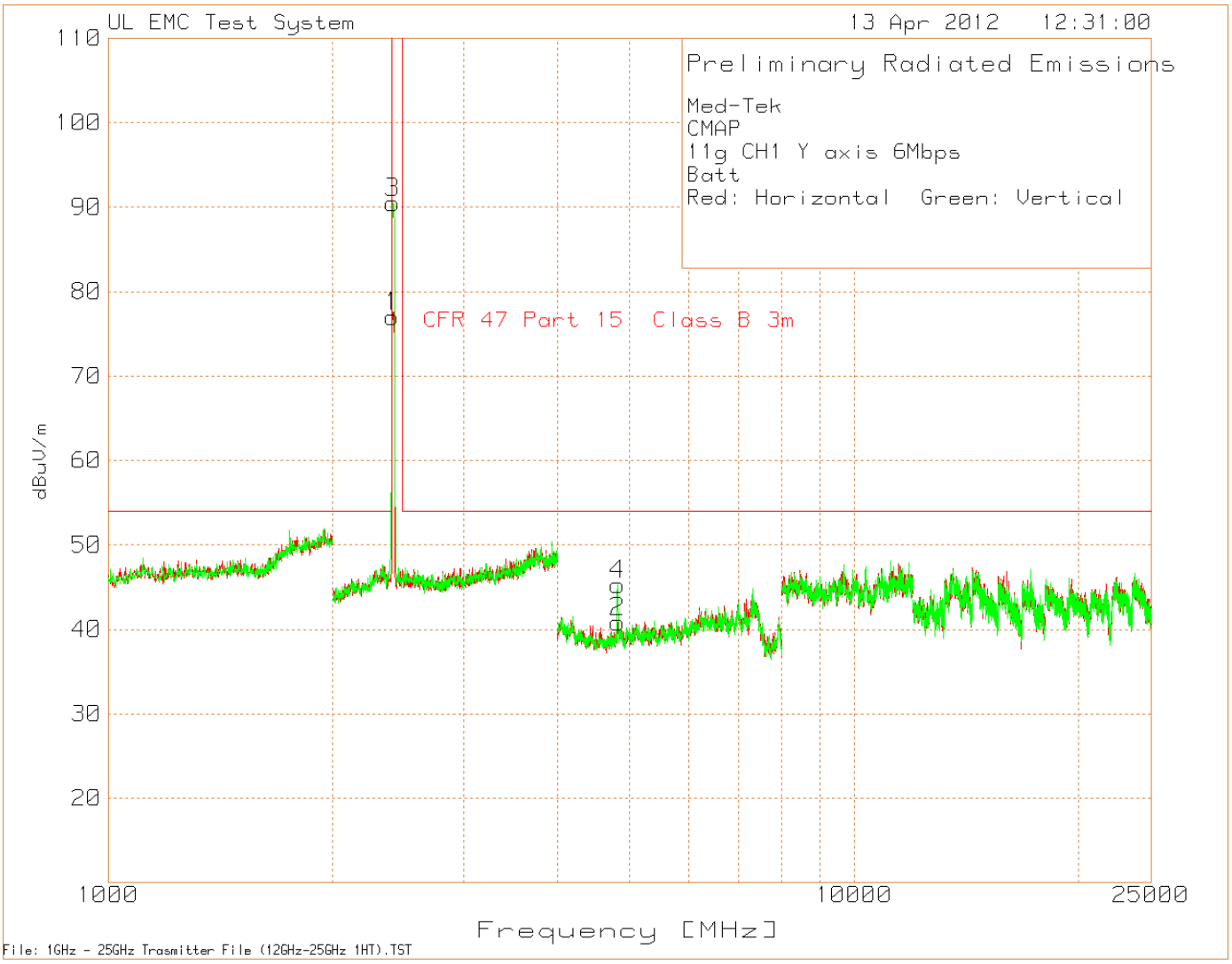
See Table 3 for any emissions found within 6dB of the limit

Figure 8 Radiated Emissions Graph



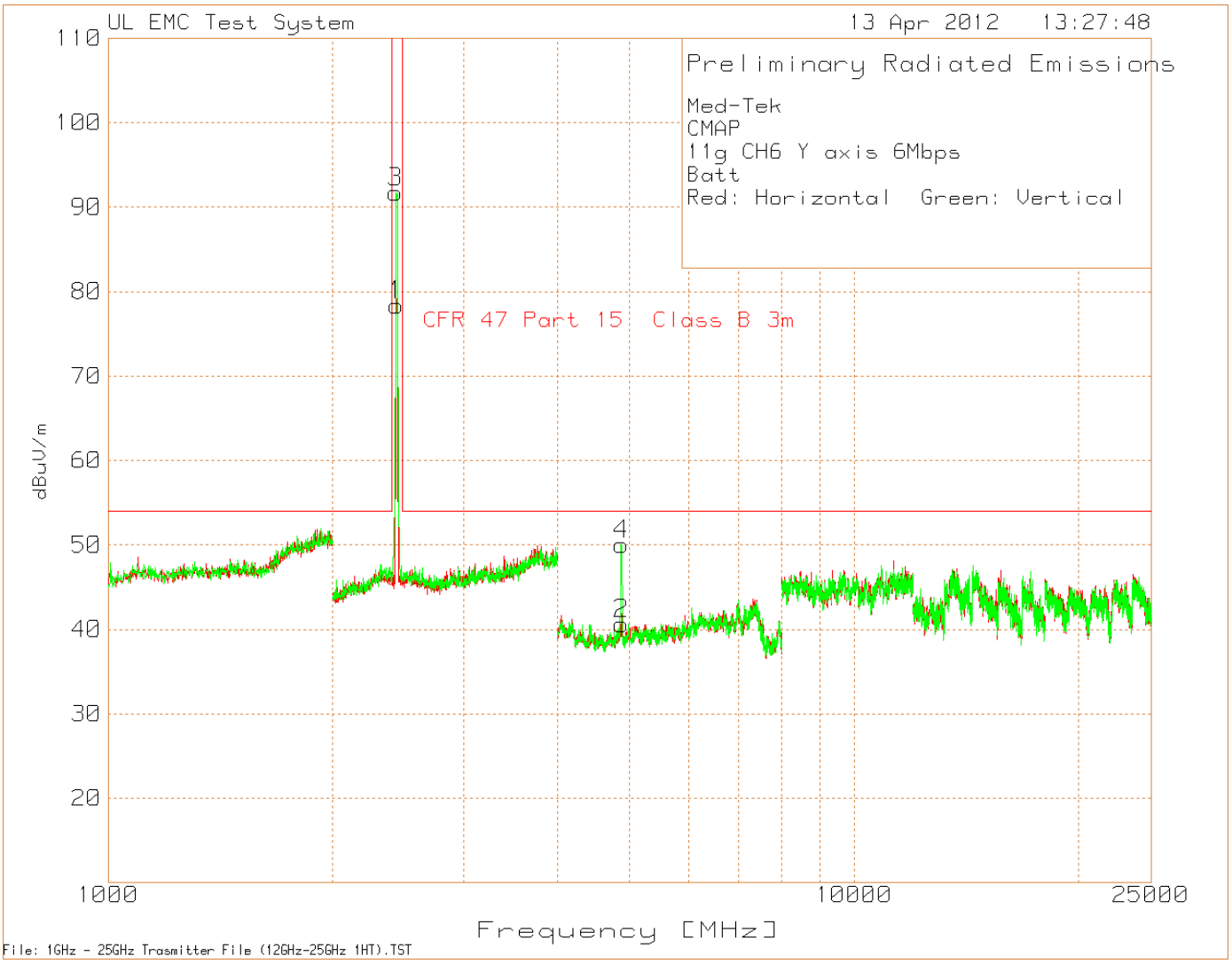
See Table 3 for any emissions found within 6dB of the limit

Figure 9 Radiated Emissions Graph



See Table 3 for any emissions found within 6dB of the limit

Figure 10 Radiated Emissions Graph



See Table 3 for any emissions found within 6dB of the limit

Figure 11 Radiated Emissions Graph

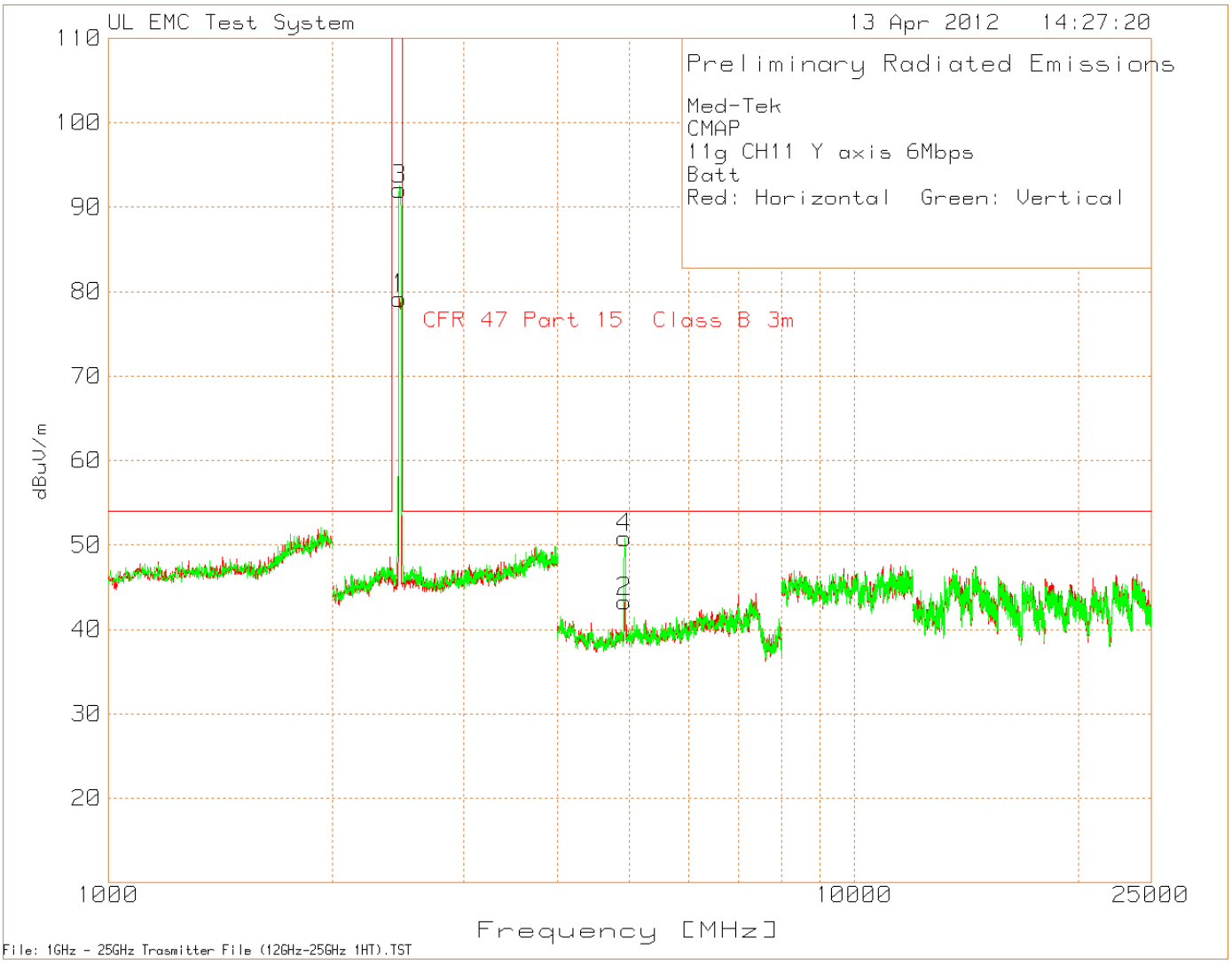


Table 3 Radiated Emissions Data Points

Med-Tek
CMAP
Batt
Red: Peak Green: AV

Test Frequency	Meter Reading	Detector	Antenna Factor	BOMS Factor [dB]	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Azimuth [Degs]	Height [cm]	Polarity
CH11 11b										
4924.0371	74.53	PK	27.8	-51.83	50.5	74	-23.5	146	107	Vert
4924.0571	72	LnAv	27.8	-51.83	47.97	54	-6.03	146	107	Vert
CH11 11g										
4921.8036	75.86	PK	27.8	-51.88	51.78	74	-22.22	125	109	Vert
4924.1283	59	LnAv	27.8	-51.83	34.97	54	-19.03	125	109	Vert
CH6 11g										
4872.511	74.46	PK	27.7	-51.18	50.98	74	-23.02	115	119	Vert
4875.978	55.38	LnAv	27.7	-51.17	31.91	54	-22.09	115	119	Vert

PK - Peak detector
Av - Average detector

4.2 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	Radiated

Limits	
Measurement Type	
Radiated	Radiated only required if emissions are in the restricted band
Supplementary information: None	

Table 4 Band Edge Compliance EUT Configuration Settings

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

Table 5 Band Edge Compliance Test Equipment

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due Date
Spectrum Analyzer	Rhode & Schwarz	FSEK	EMC4182	20111227	20121231
Antenna Array	UL	BOMS	EMC4276	20111227	20121231

Test setup for Band Edge Compliance

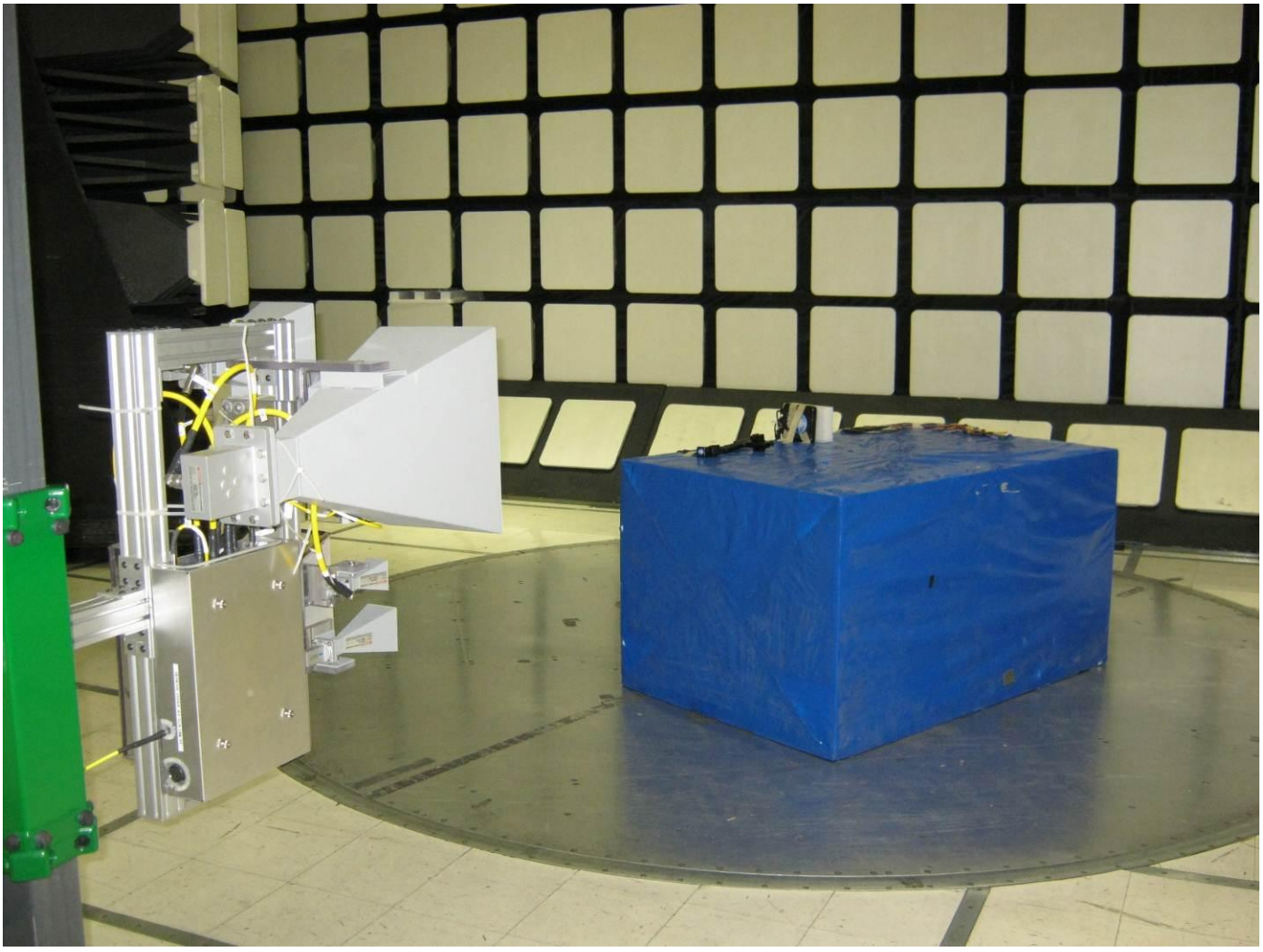
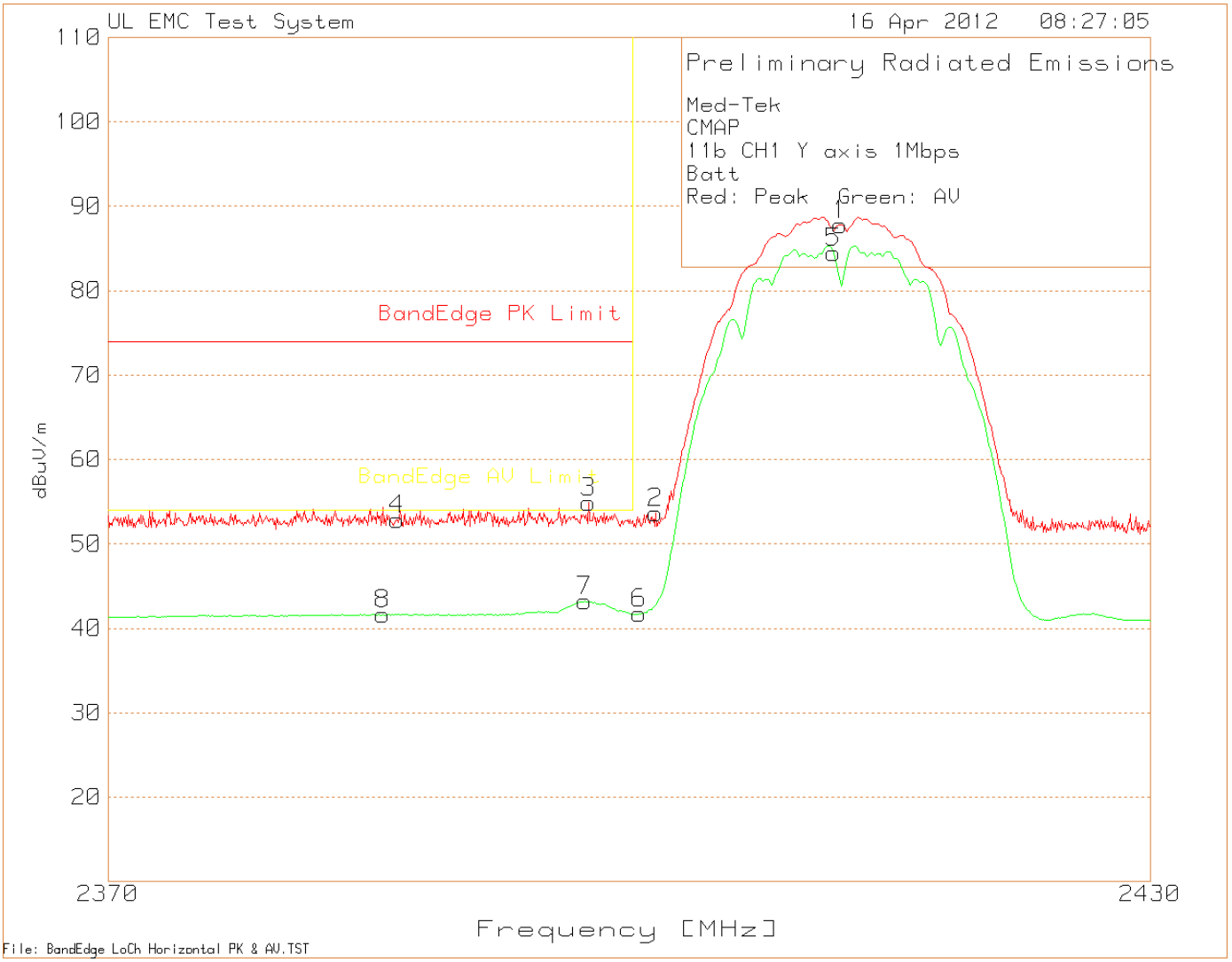


Figure 12 Radiated Emissions Band Edge Compliance Graph

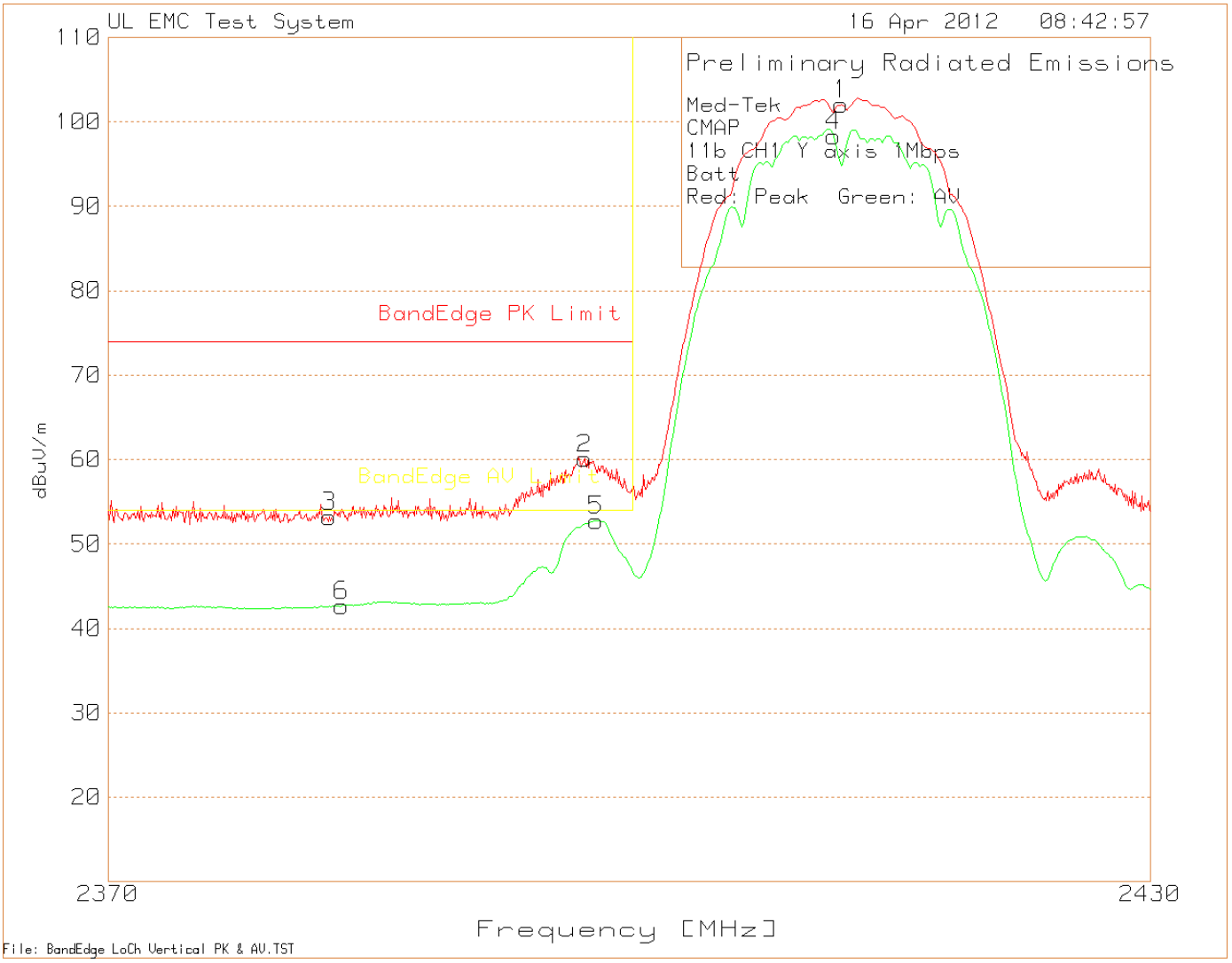


Med-Tek
CMAP
11b CH1 Y axis 1Mbps
Batt
Red: Peak Green: AV

Peak 2370 - 2430MHz

Test Frequency	Meter Reading	Detector	Antenna Factor	BOMS Factor [dB]	dBuV/m	BandEdge PK Limit	Margin	BandEdge AV Limit	Margin	Height [cm]	Polarity
2411.982	62.12	PK	21.8	3.89	87.81	-	-	-	-	100	Horz
2401.351	27.54	PK	21.8	4.28	53.62	-	-	-	-	100	Horz
2397.508	28.71	PK	21.8	4.37	54.88	74	-19.12	-	-	100	Horz
2386.517	26.7	PK	21.8	4.42	52.92	74	-21.08	-	-	150	Horz
2411.622	58.75	AV	21.8	3.9	84.45	-	-	-	-	99	Horz
2400.39	15.62	AV	21.8	4.3	41.72	-	-	-	-	99	Horz
2397.267	17.03	AV	21.8	4.38	43.21	-	-	54	-10.79	99	Horz
2385.676	15.4	AV	21.8	4.41	41.61	-	-	54	-12.39	99	Horz

PK - Peak detector
Av - Average detector


UL EMC Test System
16 Apr 2012 08:42:57
Preliminary Radiated Emissions
Med-Tek
CMAP
11b CH1 Y axis 1Mbps
Batt
Red: Peak Green: AV
BandEdge PK Limit
BandEdge AV Limit
dBuV/m
110
100
90
80
70
60
50
40
30
20
2370
2430
Frequency [MHz]
File: BandEdge LoCh Vertical PK & AV.TST

Med-Tek
CMAP
11b CH1 Y axis 1Mbps
Batt
Red: Peak Green: AV

Peak 2370 - 2430MHz

Test Frequency	Meter Reading	Detector	Antenna Factor	BOMS Factor [dB]	dBuV/m	BandEdge PK Limit	Margin	BandEdge AV Limit	Margin	Height [cm]	Polarity
2412.042	76.33	PK	21.8	3.89	102.02	-	-	-	-	99	Vert
2397.267	33.89	PK	21.8	4.38	60.07	-	-	-	-	99	Vert
2382.613	27.08	PK	21.8	4.35	53.23	74	-20.77	-	-	150	Vert
2411.622	72.57	AV	21.8	3.9	98.27	-	-	-	-	101	Vert
2397.928	26.64	AV	21.8	4.36	52.8	-	-	-	-	101	Vert
2383.333	16.55	AV	21.8	4.37	42.72	-	-	54	-11.28	101	Vert

PK - Peak detector
Av - Average detector

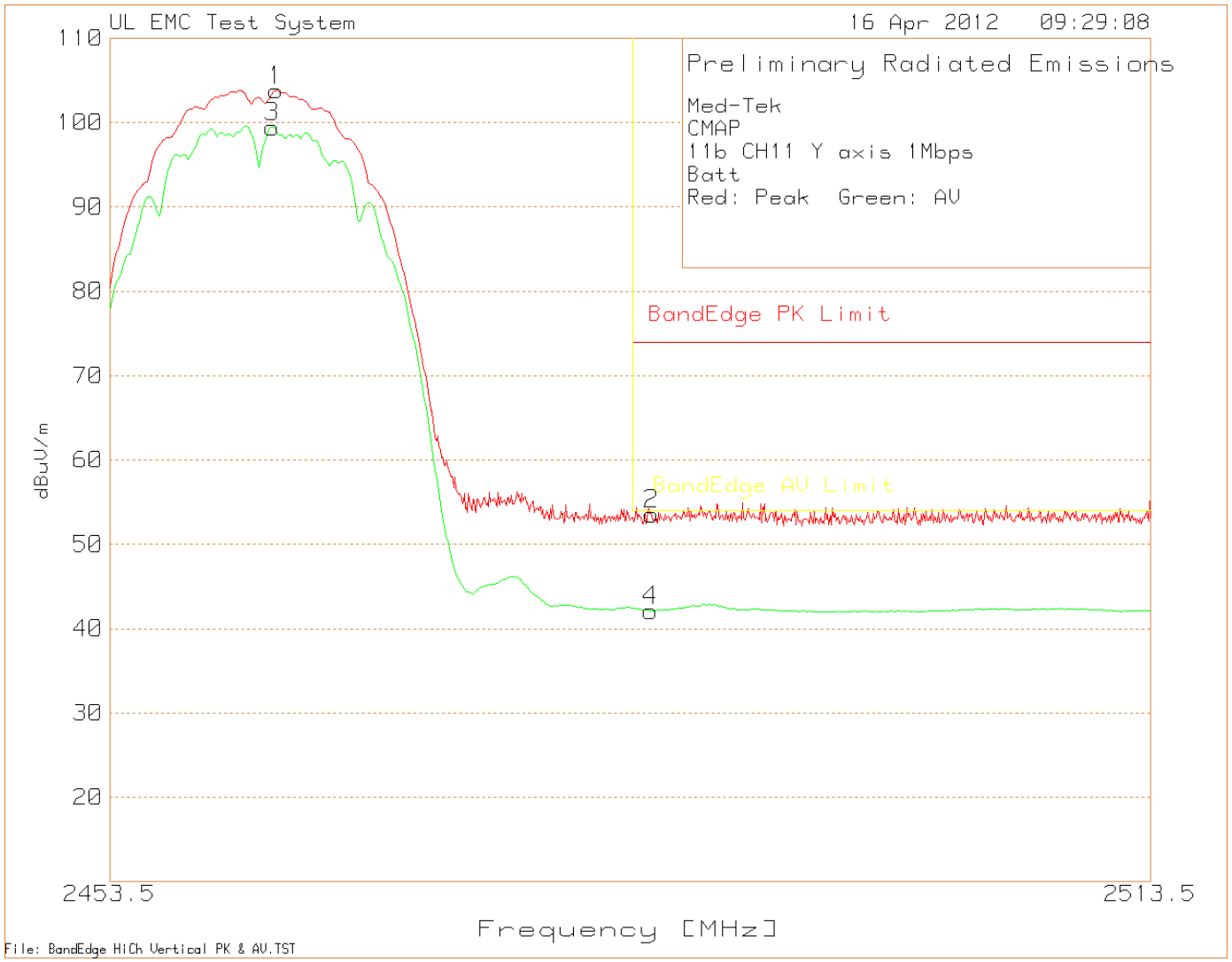
High Channel

Med-Tek
CMAP
11b CH11 Y axis 1Mbps
Batt
Red: Peak Green: AV

Peak 2370 - 2430MHz

Test Frequency	Meter Reading	Detector	Antenna Factor	BOMS Factor [dB]	dBuV/m	BandEdge PK Limit	Margin	BandEdge AV Limit	Margin	Height [cm]	Polarity
2462.929	64.6	PK	22	4.08	90.68	-	-	-	-	100	Horz
2484.311	27.51	PK	22.1	3.77	53.38	74	-20.62	-	-	100	Horz
2462.929	60.04	AV	22	4.08	86.12	-	-	-	-	99	Horz
2484.311	15.17	AV	22.1	3.77	41.04	-	-	54	-12.96	99	Horz

PK - Peak detector
Av - Average detector


UL EMC Test System
16 Apr 2012 09:29:08
Preliminary Radiated Emissions
Med-Tek
CMAP
11b CH11 Y axis 1Mbps
Batt
Red: Peak Green: AV
BandEdge PK Limit
BandEdge AV Limit
1
3
2
4
110
100
90
80
70
60
50
40
30
20
dBuV/m
2453.5
2513.5
Frequency [MHz]
File: BandEdge HiCh Vertical PK & AV.TST

Med-Tek
CMAP
11b CH11 Y axis 1Mbps
Batt
Red: Peak Green: AV

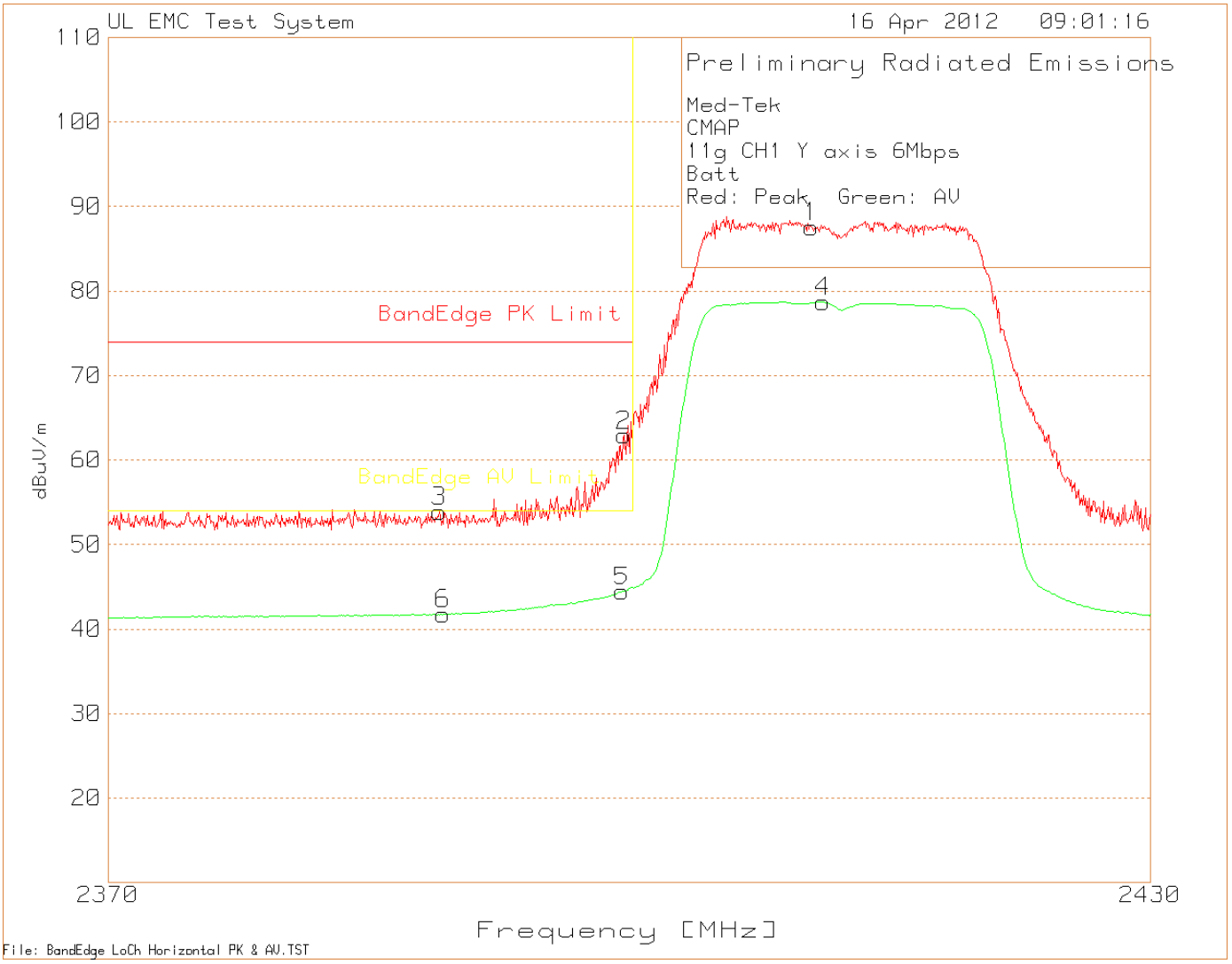
Peak 2370 - 2430MHz

Test Frequency	Meter Reading	Detector	Antenna Factor	BOMS Factor [dB]	dBuV/m	BandEdge PK Limit	Margin	BandEdge AV Limit	Margin	Height [cm]	Polarity
2462.989	77.73	PK	22	4.08	103.81	-	-	-	-	102	Vert
2484.551	27.66	PK	22.1	3.77	53.53	74	-20.47	-	-	102	Vert
2462.779	73.39	AV	22	4.08	99.47	-	-	-	-	101	Vert
2484.521	16.26	AV	22.1	3.77	42.13	-	-	54	-11.87	101	Vert

PK - Peak detector
Av - Average detector

Figure 13 Radiated Emissions Band Edge Compliance Graph

Low Channel

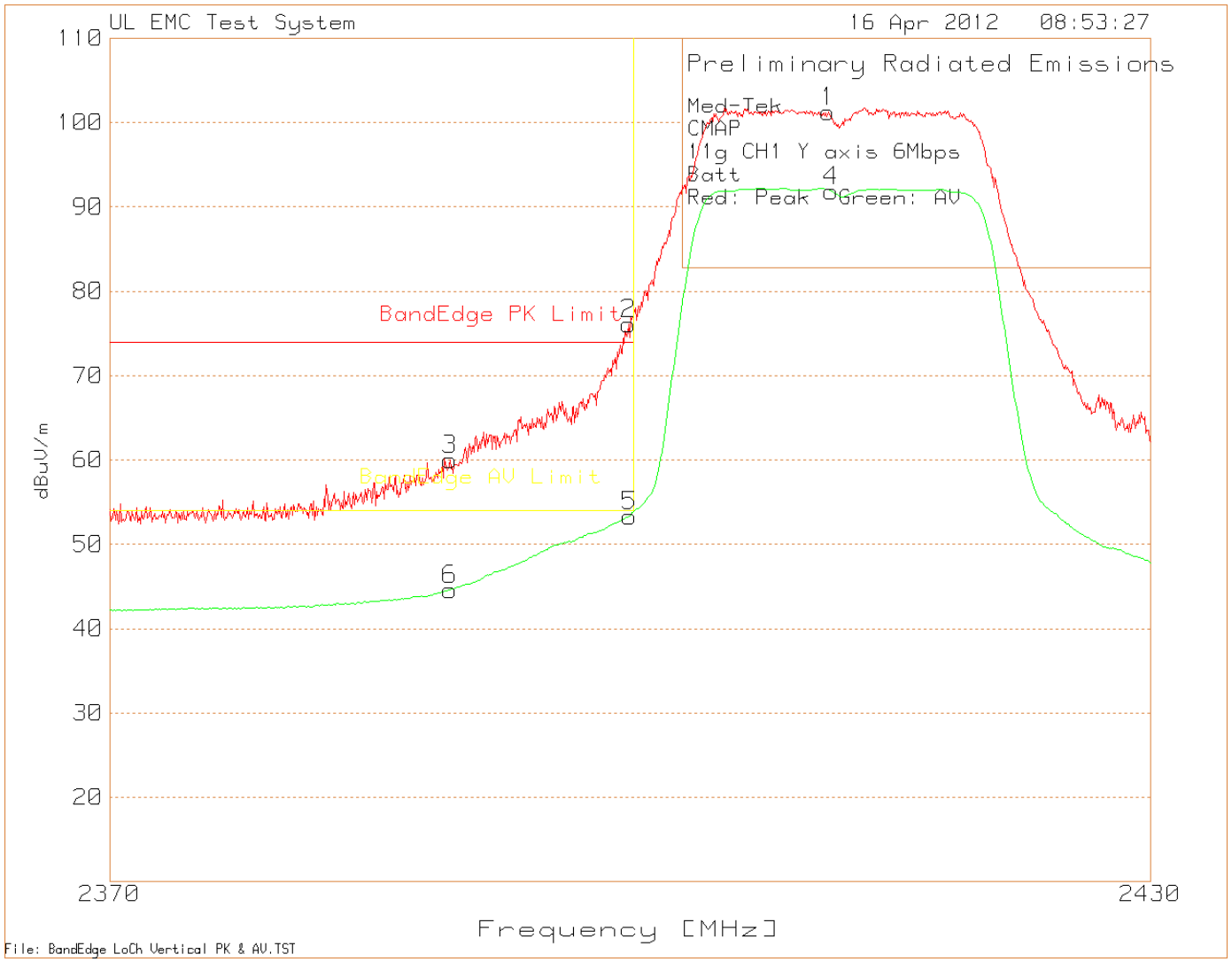


Med-Tek
CMAP
11g CH1 Y axis 6Mbps
Batt
Red: Peak Green: AV

Peak 2370 - 2430MHz

Test Frequency	Meter Reading	Detector	Antenna Factor	BOMS Factor [dB]	dBuV/m	BandEdge PK Limit	Margin	BandEdge AV Limit	Margin	Height [cm]	Polarity
2410.36	61.81	PK	21.8	3.95	87.56	-	-	-	-	99	Horz
2399.55	36.78	PK	21.8	4.32	62.9	-	-	-	-	99	Horz
2388.919	27.64	PK	21.8	4.46	53.9	74	-20.1	-	-	150	Horz
2411.021	52.95	AV	21.8	3.93	78.68	-	-	-	-	99	Horz
2399.429	18.3	AV	21.8	4.33	44.43	-	-	-	-	99	Horz
2389.159	15.53	AV	21.8	4.47	41.8	-	-	54	-12.2	99	Horz

PK - Peak detector
Av - Average detector


UL EMC Test System
16 Apr 2012 08:53:27
Preliminary Radiated Emissions
Med-Tek
CMAP
1/1g CH1 Y axis 6Mbps
Batt
Red: Peak Green: AV
BandEdge PK Limit
BandEdge AV Limit
dBuV/m
110
100
90
80
70
60
50
40
30
20
2370
2430
Frequency [MHz]
File: BandEdge LoCh Vertical PK & AV.TST

Med-Tek
CMAP
11g CH1 Y axis 6Mbps
Batt
Red: Peak Green: AV

Peak 2370 - 2430MHz

Test Frequency	Meter Reading	Detector	Antenna Factor	BOMS Factor [dB]	dBuV/m	BandEdge PK Limit	Margin	BandEdge AV Limit	Margin	Height [cm]	Polarity
2411.261	75.52	PK	21.8	3.92	101.24	-	-	-	-	101	Vert
2399.73	50.01	PK	21.8	4.32	76.13	-	-	-	-	101	Vert
2389.459	33.76	PK	21.8	4.47	60.03	74	-13.97	-	-	101	Vert
2411.441	66.18	AV	21.8	3.91	91.89	-	-	-	-	100	Vert
2399.79	27.25	AV	21.8	4.32	53.37	-	-	-	-	100	Vert
2389.459	18.34	AV	21.8	4.47	44.61	-	-	54	-9.39	100	Vert

PK - Peak detector
Av - Average detector

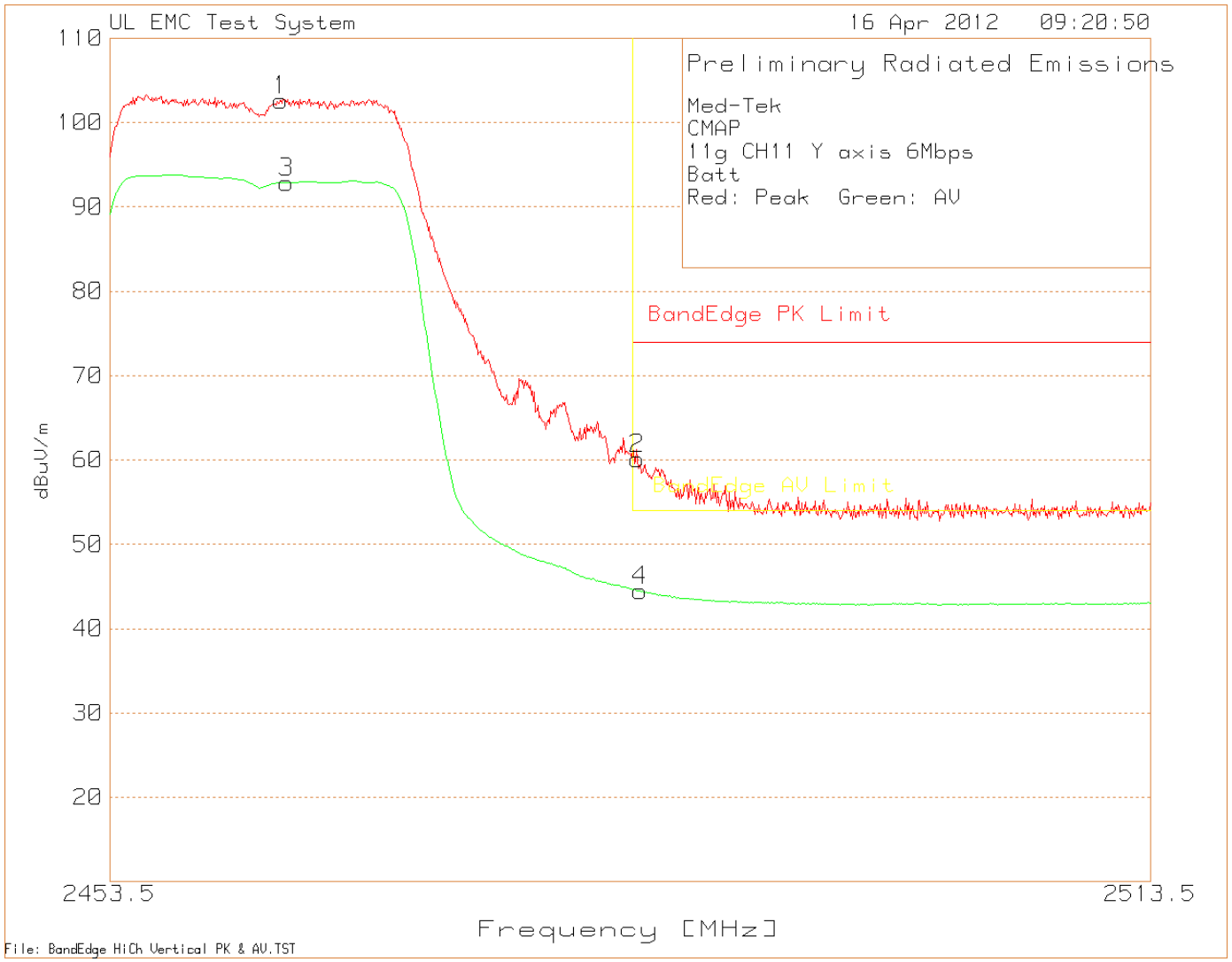

UL EMC Test System
16 Apr 2012 09:08:57
Preliminary Radiated Emissions
Med-Tek
CMAP
11g CH11 Y axis 6Mbps
Batt
Red: Peak Green: AV
BandEdge PK Limit
BandEdge AV Limit
dBuV/m
110
100
90
80
70
60
50
40
30
20
2453.5
2513.5
Frequency [MHz]
File: BandEdge HiCh Horizontal PK & AV.TST

Med-Tek
CMAP
11g CH11 Y axis 6Mbps
Batt
Red: Peak Green: AV

Peak 2370 - 2430MHz

Test Frequency	Meter Reading	Detector	Antenna Factor	BOMS Factor [dB]	dBuV/m	BandEdge PK Limit	Margin	BandEdge AV Limit	Margin	Height [cm]	Polarity
2462.209	62.09	PK	22	4.1	88.19	-	-	-	-	99	Horz
2484.311	27.38	PK	22.1	3.77	53.25	74	-20.75	-	-	99	Horz
2462.869	53.58	AV	22	4.08	79.66	-	-	-	-	99	Horz
2484.311	15.33	AV	22.1	3.77	41.2	-	-	54	-12.8	99	Horz

PK - Peak detector
Av - Average detector


UL EMC Test System
16 Apr 2012 09:20:50
Preliminary Radiated Emissions
Med-Tek
CMAP
11g CH11 Y axis 6Mbps
Batt
Red: Peak Green: AV
BandEdge PK Limit
BandEdge AV Limit
110
100
90
80
70
60
50
40
30
20
dBuV/m
2453.5
2513.5
Frequency [MHz]
File: BandEdge HiCh Vertical PK & AV.TST

Med-Tek
CMAP
11g CH11 Y axis 6Mbps
Batt
Red: Peak Green: AV

Peak 2370 - 2430MHz

Test Frequency	Meter Reading	Detector	Antenna Factor	BOMS Factor [dB]	dBuV/m	BandEdge PK Limit	Margin	BandEdge AV Limit	Margin	Height [cm]	Polarity
2463.29	76.57	PK	22	4.07	102.64	-	-	-	-	101	Vert
2483.77	34.22	PK	22.1	3.77	60.09	74	-13.91	-	-	101	Vert
2463.59	66.82	AV	22	4.06	92.88	-	-	-	-	101	Vert
2483.89	18.59	AV	22.1	3.77	44.46	-	-	54	-9.54	101	Vert

PK - Peak detector
Av - Average detector

5.0 IMMUNITY TEST RESULTS

The immunity tests were not performed nor were required per 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/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 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 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