



**FCC CFR47 PART 15 SUBPART C  
CLASS II PERMISSIVE CHANGE  
CERTIFICATION TEST REPORT**

**FOR**

**WIRELESS USB ADAPTER**

**MODEL NUMBER: CUSTOM DWL-AG132**

**FCC ID: STJ80411396001**

**REPORT NUMBER: 07U10885-1**

**ISSUE DATE: MARCH 12, 2007**

*Prepared for*  
**HOSPIRA, INC.**  
**755 JARVIS DRIVE**  
**MORGAN HILL, CA 95037, USA**

*Prepared by*  
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**NVLAP LAB CODE 200065-0**

Revision History

Rev.	Issue Date	Revisions	Revised By
--	03/12/07	Initial Issue	T. C.

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## 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** HOSPIRA, INC.  
755 JARVIS DRIVE  
MORGAN HILL, CA 95037, USA

**EUT DESCRIPTION:** WIRELESS USB ADAPTER

**MODEL:** CUSTOM DWL-AG132

**SERIAL NUMBER:** 0650A1004350

**DATE TESTED:** FEBRUARY 23 - MARCH 01, 2007

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART C	NO NON-COMPLIANCE NOTED

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:

Tested By:



THU CHAN  
EMC SUPERVISOR  
COMPLIANCE CERTIFICATION SERVICES

THANH NGUYEN  
EMC ENGINEER  
COMPLIANCE CERTIFICATION SERVICES

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2 and FCC CFR 47 Part 15.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

### 4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 200 MHz	+/- 3.3 dB
Radiated Emission, 200 to 1000 MHz	+4.5 / -2.9 dB
Radiated Emission, 1000 to 2000 MHz	+4.5 / -2.9 dB
Power Line Conducted Emission	+/- 2.9 dB

Uncertainty figures are valid to a confidence level of 95%.

## **5. EQUIPMENT UNDER TEST**

### **5.1. DESCRIPTION OF EUT**

The EUT is an 802.11 a/b/g wireless upgrade module for Hospira Infusion Systems.

### **5.2. DESCRIPTION OF CLASS II CHANGE**

The change filed under this application is adding a new antenna and modified by replacing on-board chip antenna with an RF connector, added 5.5GHz new band, and removed plastic cover.

### **5.3. DESCRIPTION OF AVAILABLE ANTENNAS**

The antenna type is surface mount PIFA omni-directional antenna with a maximum gain of 4.5dBi.

### **5.4. SOFTWARE AND FIRMWARE**

The EUT driver software installed in the host support equipment during testing was AR5523, Version 1.0.1.0.

The test utility software used during testing was Art Software Revision 5.3, Build #24

### **5.5. WORST-CASE CONFIGURATION AND MODE**

The worst-case channel is determined as the channel with the highest output power. The highest measured output power were at high channel for both b and g mode and mid channel for a mode 5.8GHz Band.

The worst-case data rate for this channel is determined to be 1 Mb/s for b mode and 6 Mb/s for g and a modes base on previous experience with WLAN product design architectures.

The worst-case configuration has been evaluated the EUT @ Y-position.

## 5.6. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Dell	Latitude D610	F5673A02	DoC
AC Adapter	Dell	AA22850	CN-OT2357162914AF04LC	DoC

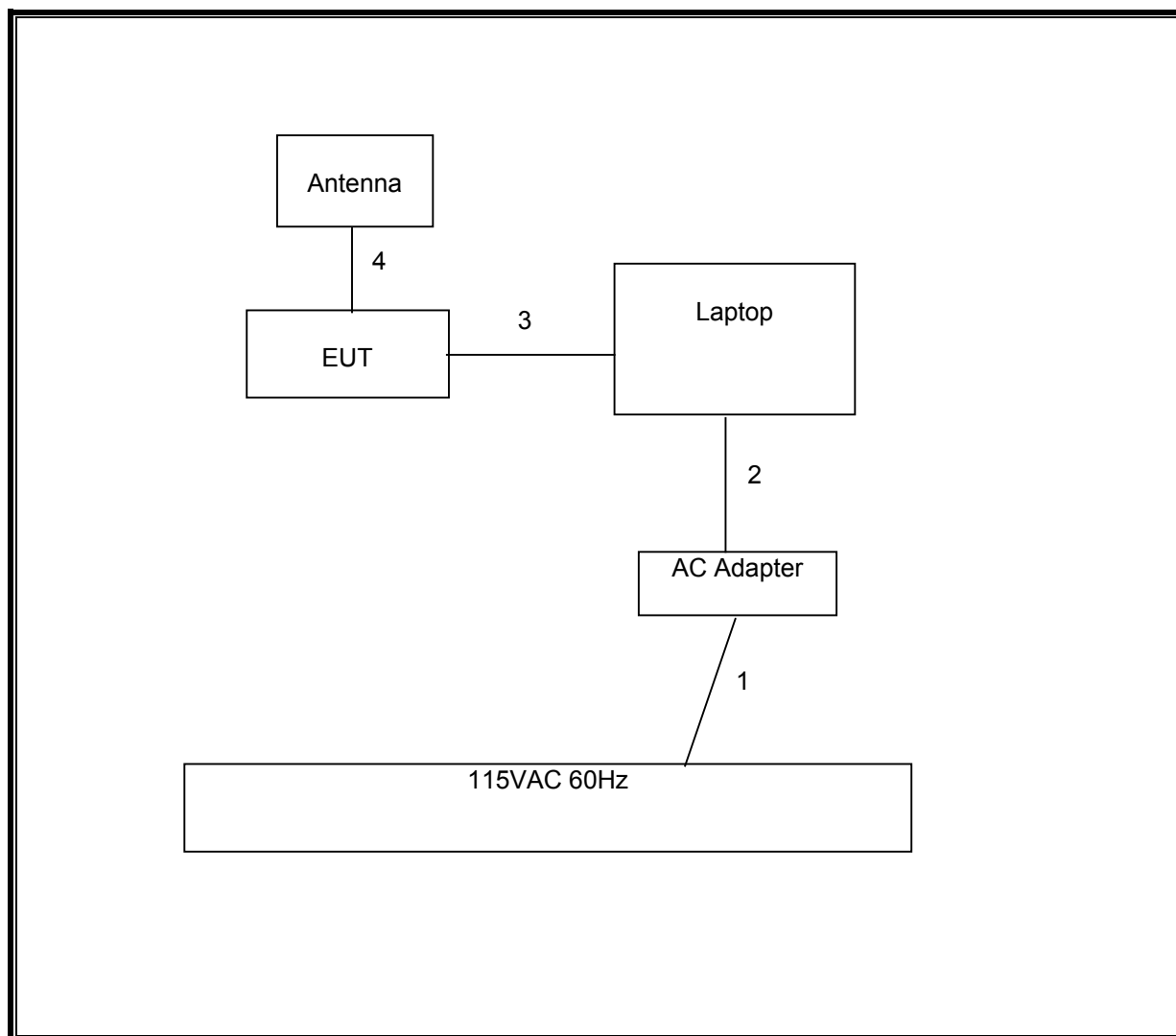
### I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US 115V	Un-shielded	2m	N/A
2	DC	1	DC	Un-shielded	2m	N/A
3	USB	1	Dougle	Un-shielded	2m	N/A
4	RF	1	Antenna	Un-shielded	0.1m	N/A

### TEST SETUP

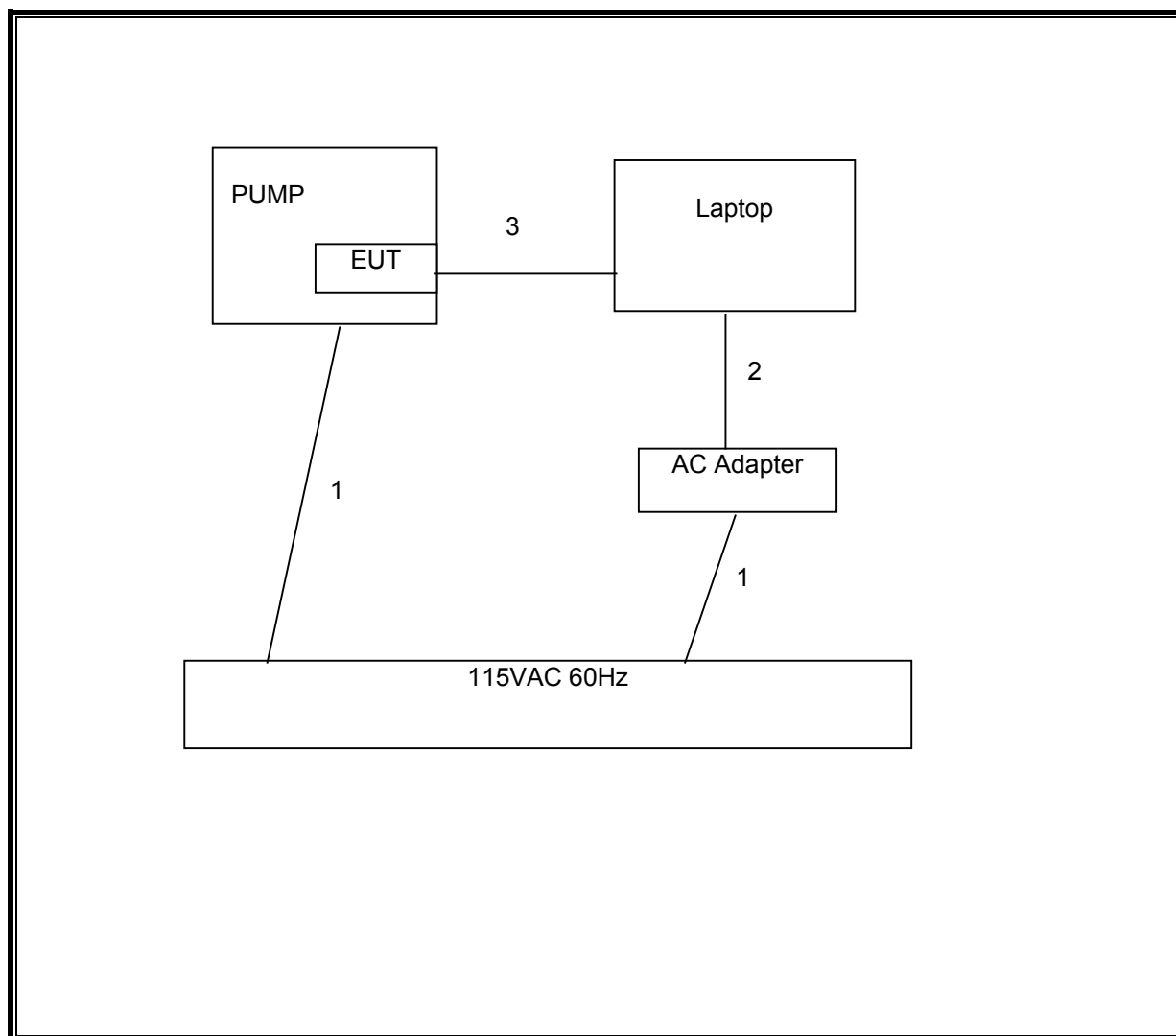
The EUT with external antenna is connected to a laptop via a USB cable during the tests. Test software exercised the radio card.

**SETUP DIAGRAM FOR TESTS (EUT MODULE WITH EXTERNAL ANTENNA)**





**SETUP DIAGRAM FOR TESTS (EUT MODULE INSIDE THE PUMP)**



## 6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	Cal Due
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	2238	4/22/2007
Preamplifier, 1 ~ 26.5 GHz	Agilent / HP	8449B	3008A00369	8/17/2007
Antenna, Horn 18 ~ 26 GHz	ARA	MWH-1826/B	1049	9/12/2007
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent / HP	E4446A	MY43360112	5/3/2007
Peak Power Meter	Agilent / HP	E4416A	GB41291160	12/2/2007
Peak / Average Power Sensor	Agilent	E9327A	US40440755	12/2/2007
Quasi-Peak Adaptor	Agilent / HP	85650A	2521A01038	1/11/2008
SA Display Section 3	Agilent / HP	85662A	2314A04793	12/17/2007
SA RF Section, 1.5 GHz	Agilent / HP	85680A	2314A02604	3/17/2008
Preamplifier, 1300 MHz	Agilent / HP	8447D	1937A02062	1/23/2008
Antenna, Bilog 30 MHz ~ 2 Ghz	Sunol Sciences	JB1	A121003	9/3/2007
7.6 GHz High Pass Filter	Micro Tronics	HPM13350	1	N/A
4.0 High Pass Filter	Micro Tronics	HPM13351	3	N/A

## 7. LIMITS AND RESULTS

### 7.1. CHANNEL TESTS FOR THE 2400 TO 2483.5 MHz BAND

#### 7.1.1. AVERAGE POWER

##### AVERAGE POWER LIMIT

None; for reporting purposes only.

##### TEST PROCEDURE

The transmitter output is connected to a power meter.

##### RESULTS

No non-compliance noted:

The cable assembly insertion loss of 11 dB (including 10 dB pad and 1 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

##### 802.11b Mode

Channel	Frequency (MHz)	Power (dBm)
Low	2412	17.30
Middle	2437	17.50
High	2462	17.60

##### 802.11g Mode

Channel	Frequency (MHz)	Power (dBm)
Low	2412	17.40
Middle	2437	17.30
High	2462	17.50

## 7.2. CHANNEL TESTS FOR THE 5725 TO 5825 MHz BAND

### 7.2.1. AVERAGE POWER

#### AVERAGE POWER LIMIT

None; for reporting purposes only.

#### TEST PROCEDURE

The transmitter output is connected to a power meter.

#### RESULTS

No non-compliance noted:

The cable assembly insertion loss of 11.5 dB (including 10 dB pad and 1.5 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

802.11a Mode

Channel	Frequency (MHz)	Average Power (dBm)
Low	5745	19.20
Middle	5785	18.50
High	5825	18.40

### 7.3. RADIATED EMISSIONS

#### LIMITS

§15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
<sup>1</sup> 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	( <sup>2</sup> )
13.36 - 13.41			

<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

<sup>2</sup> Above 38.6

§15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

§15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

\*\* Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

## **TEST PROCEDURE**

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

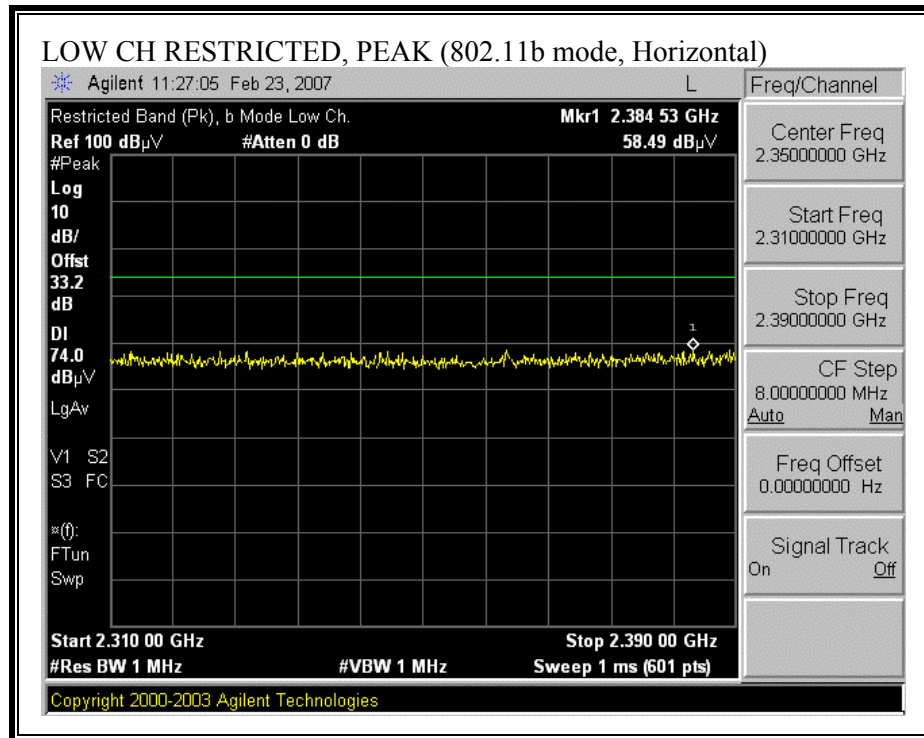
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each 5 GHz band.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

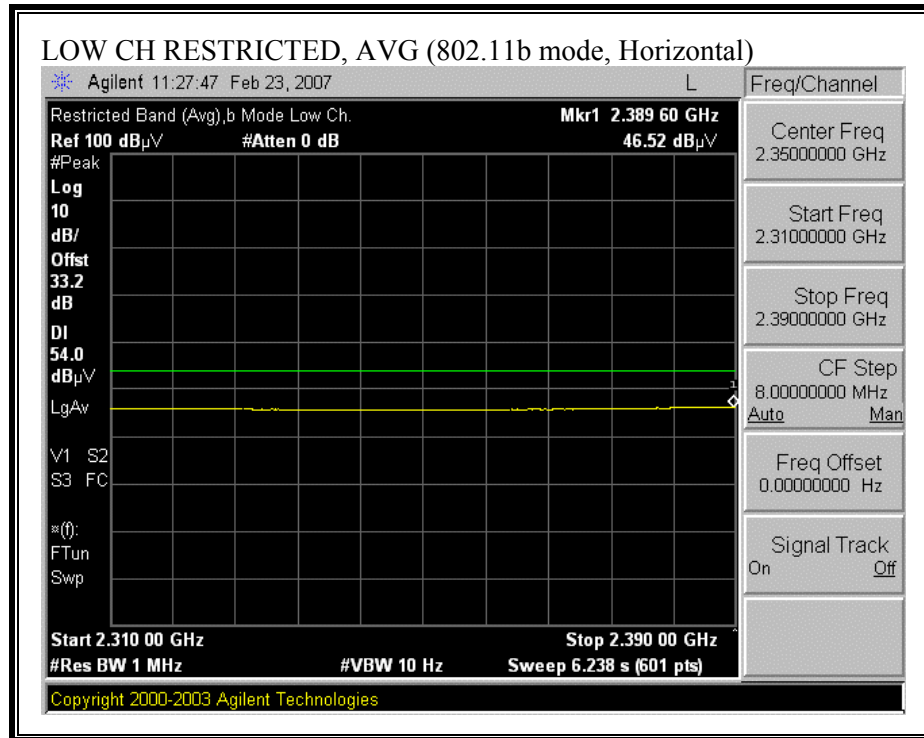
### 7.3.1. TRANSMITTER ABOVE 1 GHz FOR 2400 TO 2483.5 MHz BAND

#### EUT MODULE WITH EXTERNAL ANTENNA

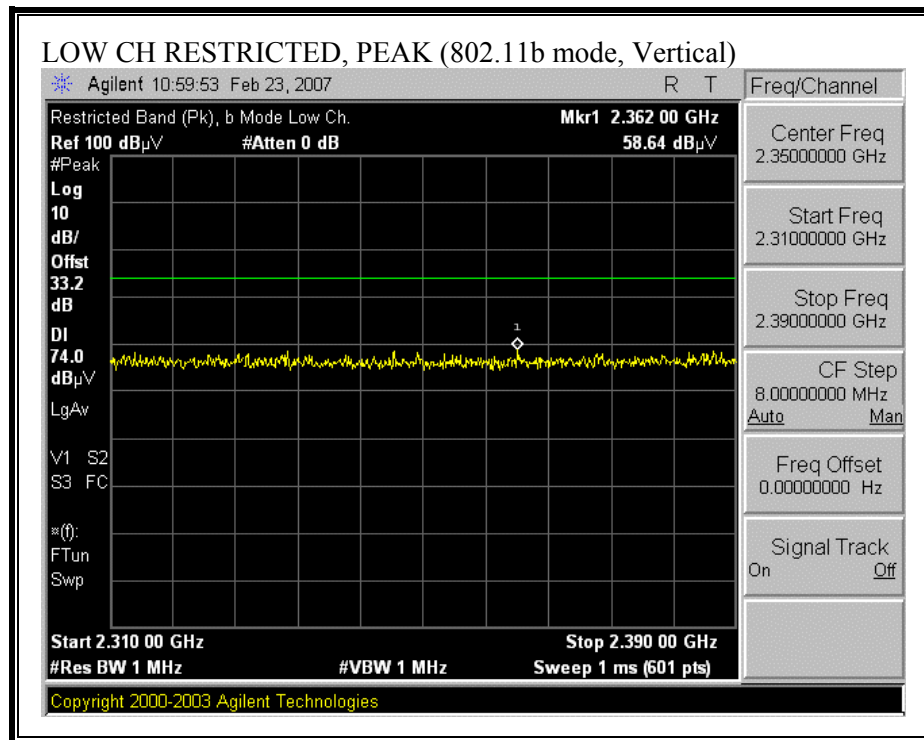
#### RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, HORIZONTAL)

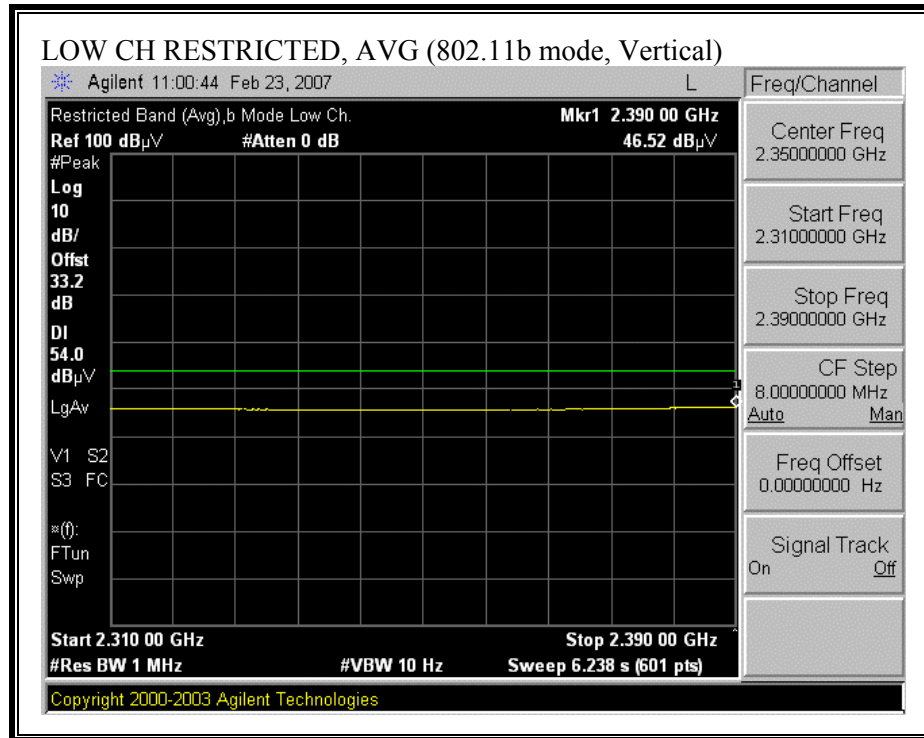




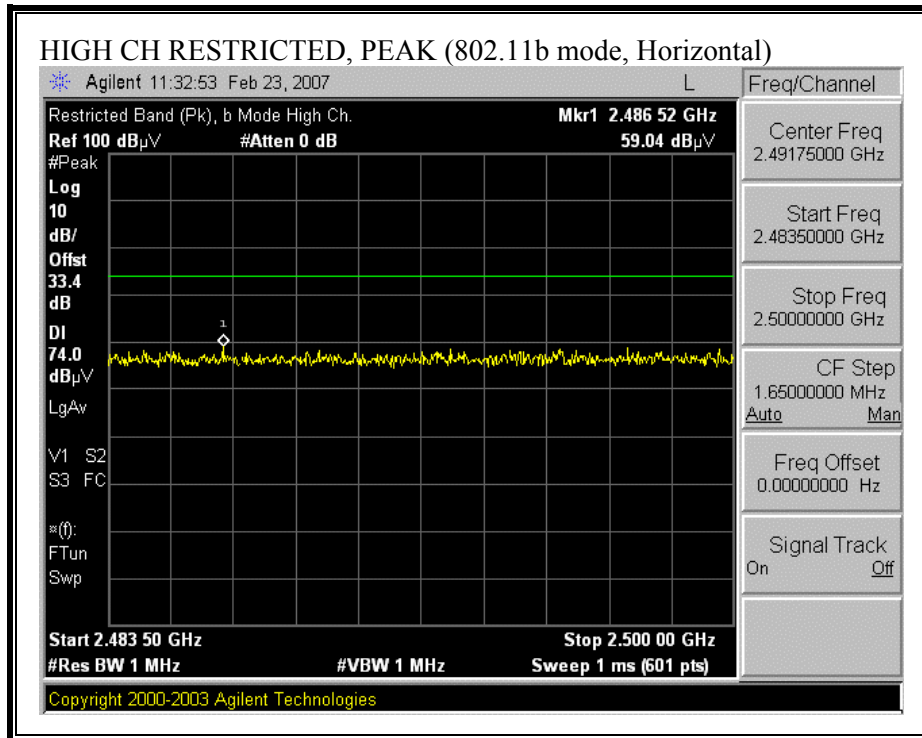


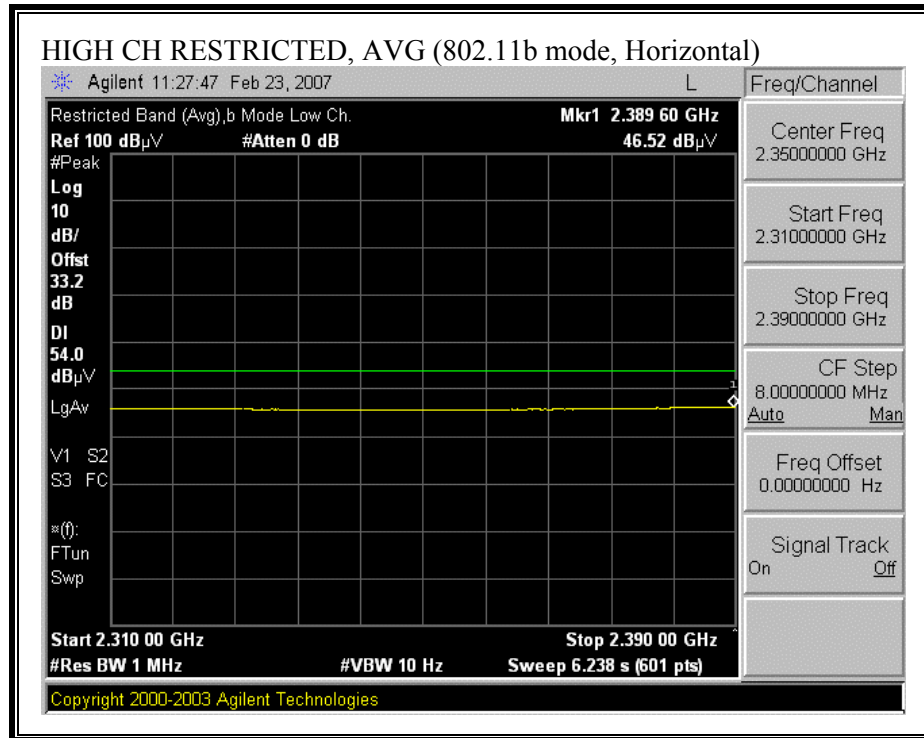
**RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, VERTICAL)**



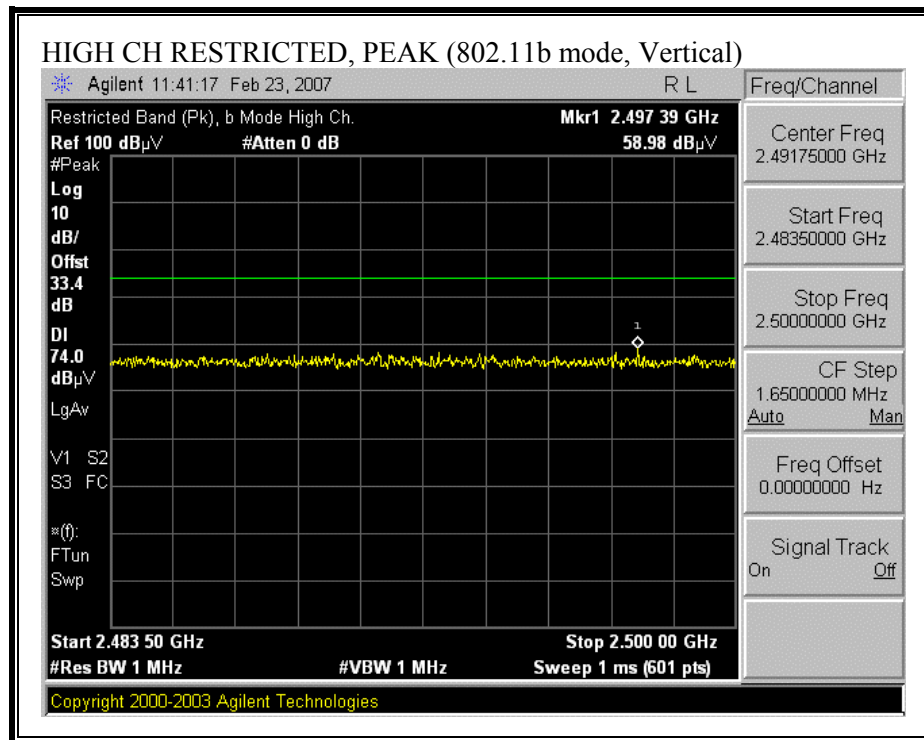


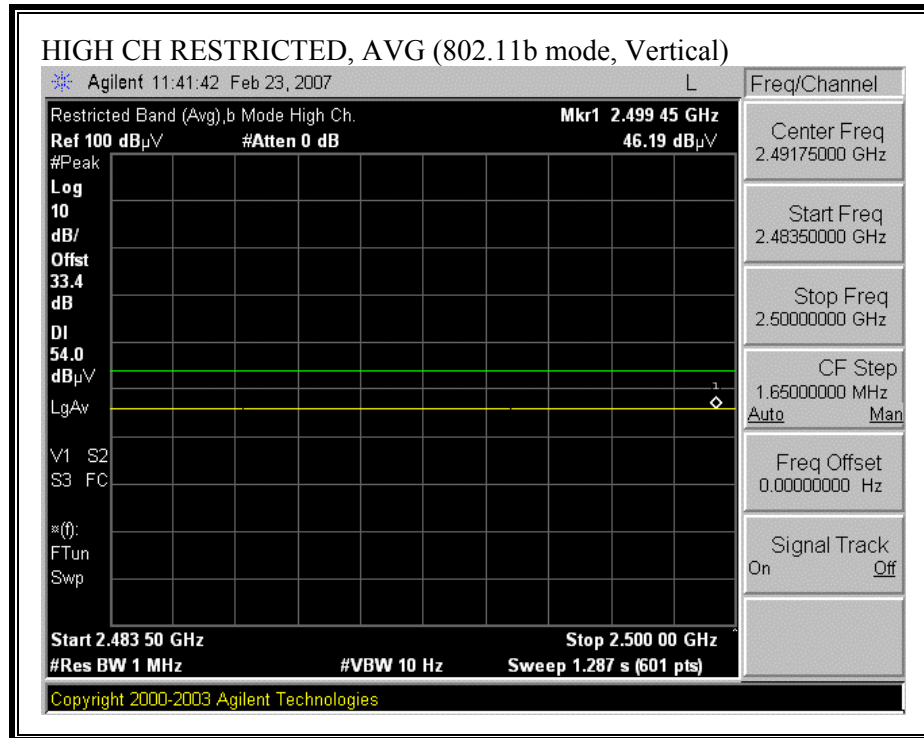
**RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, HORIZONTAL)**





**RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, VERTICAL)**



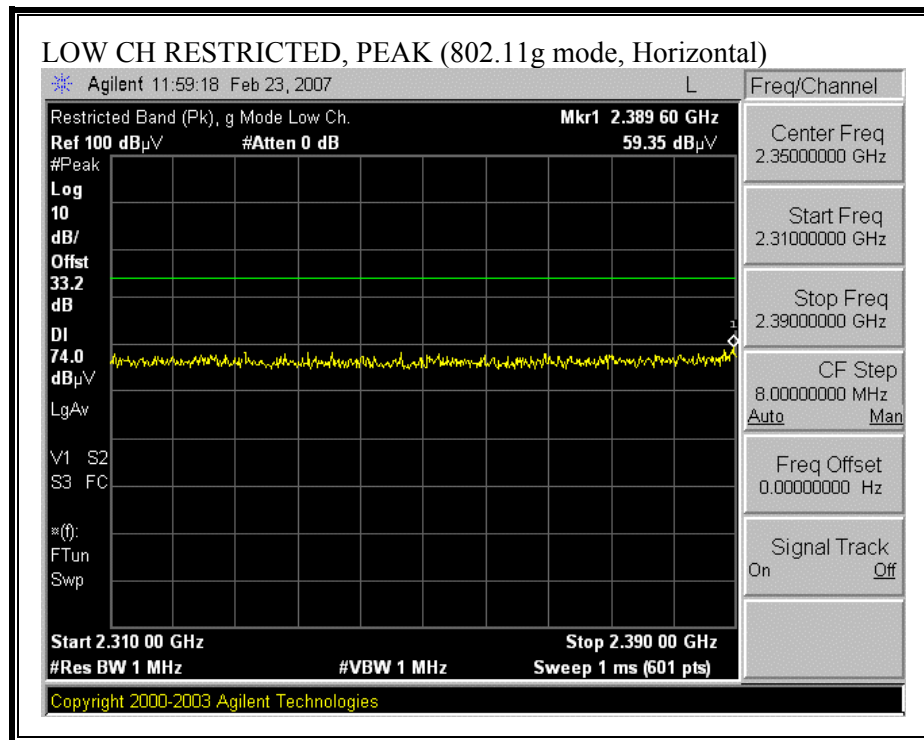


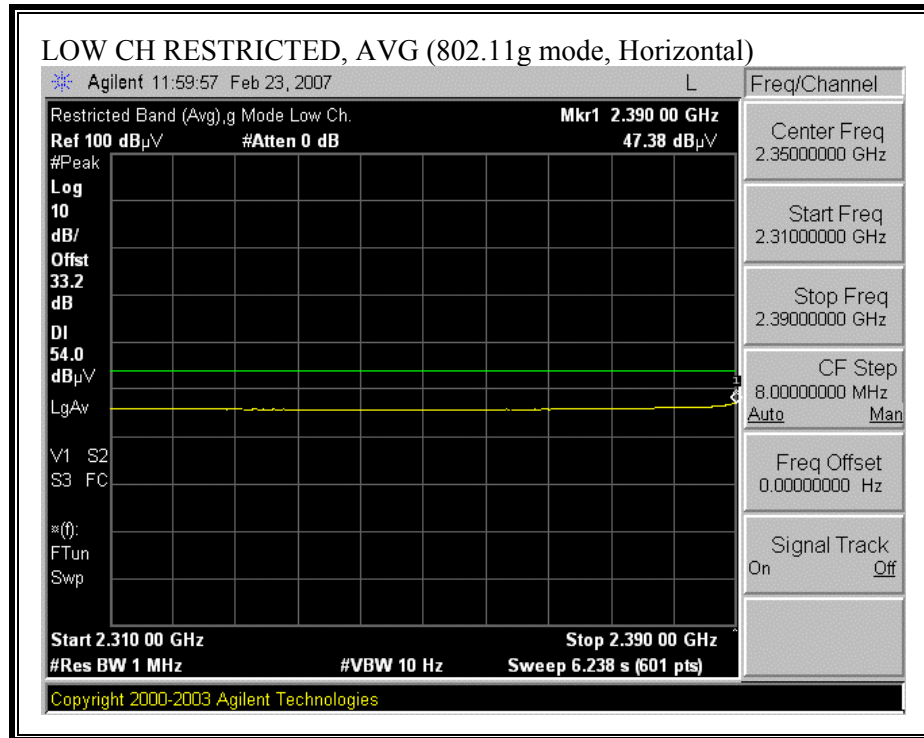
**HARMONICS AND SPURIOUS EMISSIONS (b MODE)**

High Frequency Measurement																
Compliance Certification Services, Fremont Chamber B																
Company: Hospira																
Project #: 07U10885																
Date: 02/24/2007																
Test Engineer: Thanh Nguyen																
Configuration: EUT, antenna																
Mode: Transmit b Mode																
Test Equipment:																
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit				
T73; S/N: 6717 @3m			T144 Miteq 3008A00931									FCC 15.205				
Hi Frequency Cables																
2 foot cable			3 foot cable			12 foot cable			HPF			Reject Filter			Peak Measurements RBW=VBW=1MHz	
			Thanh 187215003			Gordon 203134001			HPF_4.0GHz						Average Measurements RBW=1MHz ; VBW=10Hz	
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)	
<b>Low Channel</b>																
4.824	3.0	45.9	36.9	33.3	7.2	-36.5	0.0	0.0	50.0	41.0	74	54	-24.0	-13.0	V	
4.824	3.0	44.6	32.5	33.3	7.2	-36.5	0.0	0.6	49.3	37.2	74	54	-24.7	-16.8	H	
<b>Mid Channel</b>																
4.874	3.0	46.7	39.5	33.4	7.3	-36.5	0.0	0.0	50.8	43.7	74	54	-23.2	-10.3	V	
7.311	3.0	43.1	31.0	35.0	9.3	-36.2	0.0	0.6	51.8	39.7	74	54	-22.2	-14.3	V	
4.874	3.0	44.7	31.1	33.4	7.3	-36.5	0.0	0.0	48.9	35.3	74	54	-25.1	-18.7	H	
7.311	3.0	42.5	31.0	35.0	9.3	-36.2	0.0	0.6	51.2	39.7	74	54	-22.8	-14.3	H	
<b>High channel</b>																
4.924	3.0	47.2	40.2	33.4	7.4	-36.5	0.0	0.6	52.2	45.2	74	54	-21.8	-8.8	V	
7.386	3.0	42.8	31.3	35.0	9.3	-36.2	0.0	0.6	51.6	40.1	74	54	-22.4	-13.9	V	
4.924	3.0	44.4	34.4	33.4	7.4	-36.5	0.0	0.6	49.4	39.4	74	54	-24.6	-14.6	H	
7.386	3.0	42.5	31.7	35.0	9.3	-36.2	0.0	0.6	51.2	40.5	74	54	-22.8	-13.5	H	
Rev. 1.24.7																
f	Measurement Frequency			Amp	Preamp Gain			Avg Lim	Average Field Strength Limit							
Dist	Distance to Antenna			D Corr	Distance Correct to 3 meters			Pk Lim	Peak Field Strength Limit							
Read	Analyzer Reading			Avg	Average Field Strength @ 3 m			Avg Mar	Margin vs. Average Limit							
AF	Antenna Factor			Peak	Calculated Peak Field Strength			Pk Mar	Margin vs. Peak Limit							
CL	Cable Loss			HPF	High Pass Filter											

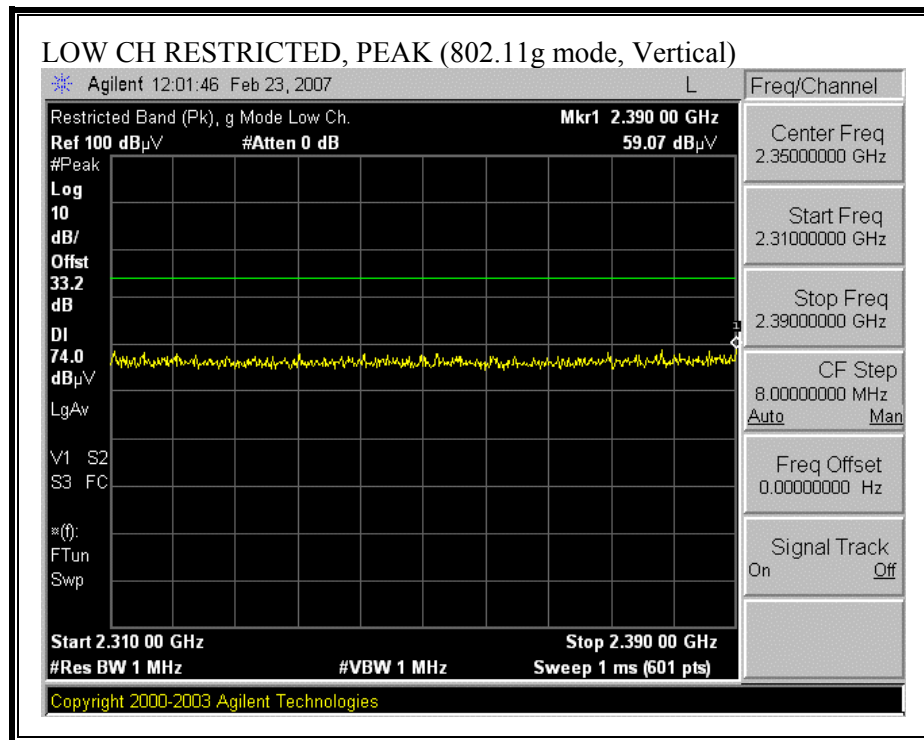


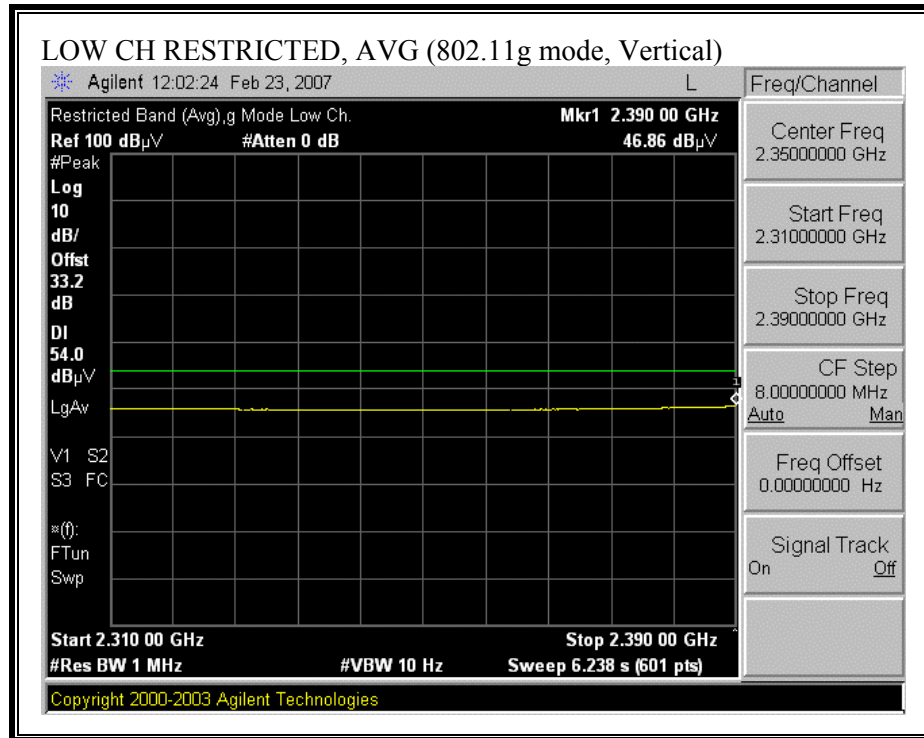
**RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, HORIZONTAL)**



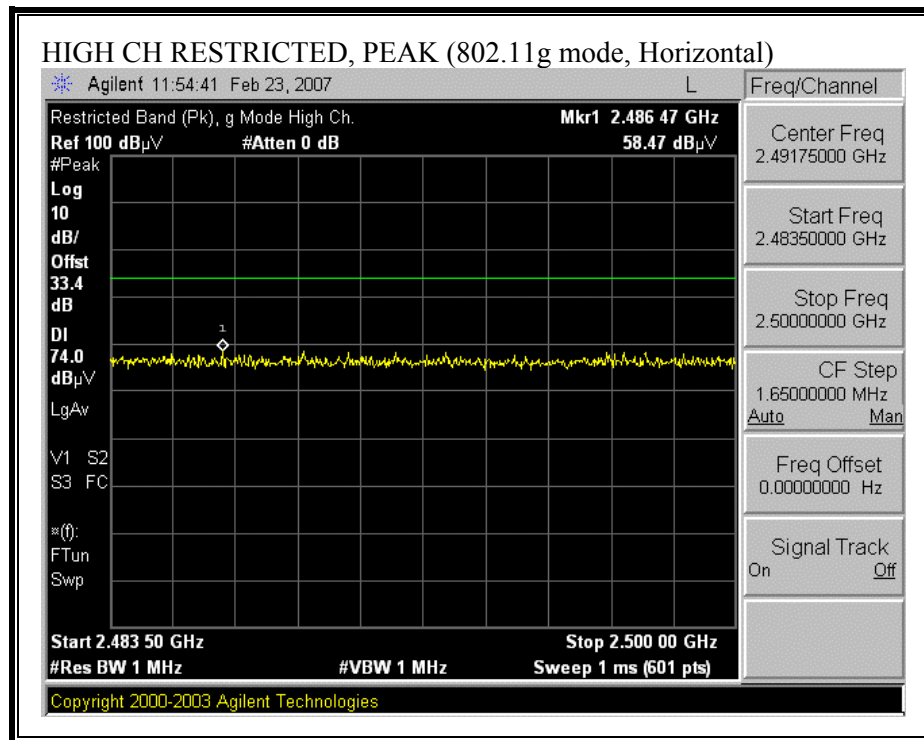


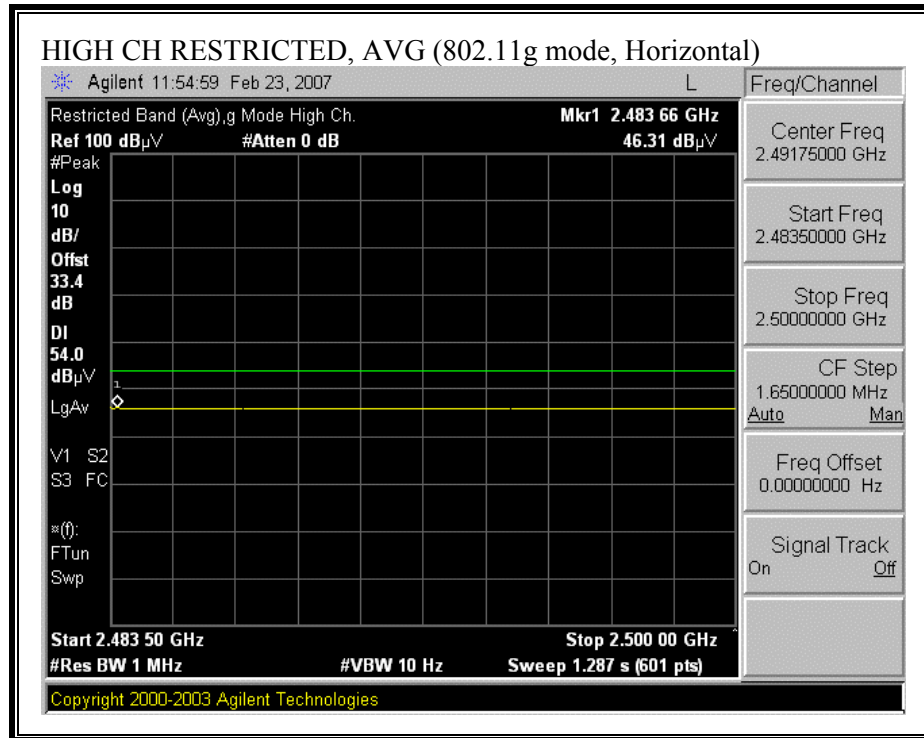
**RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, VERTICAL)**



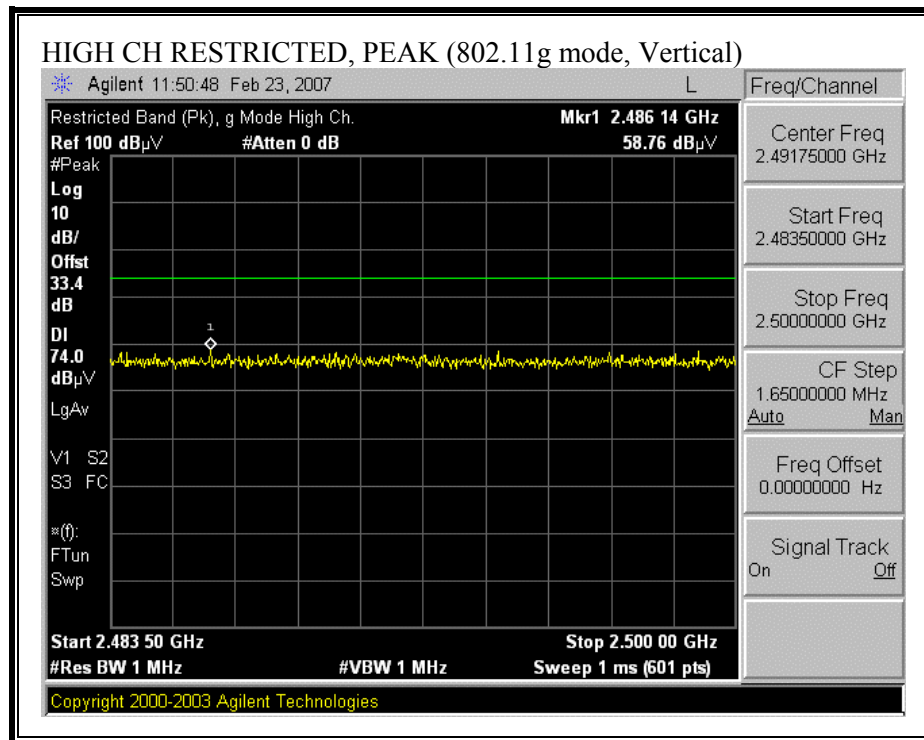


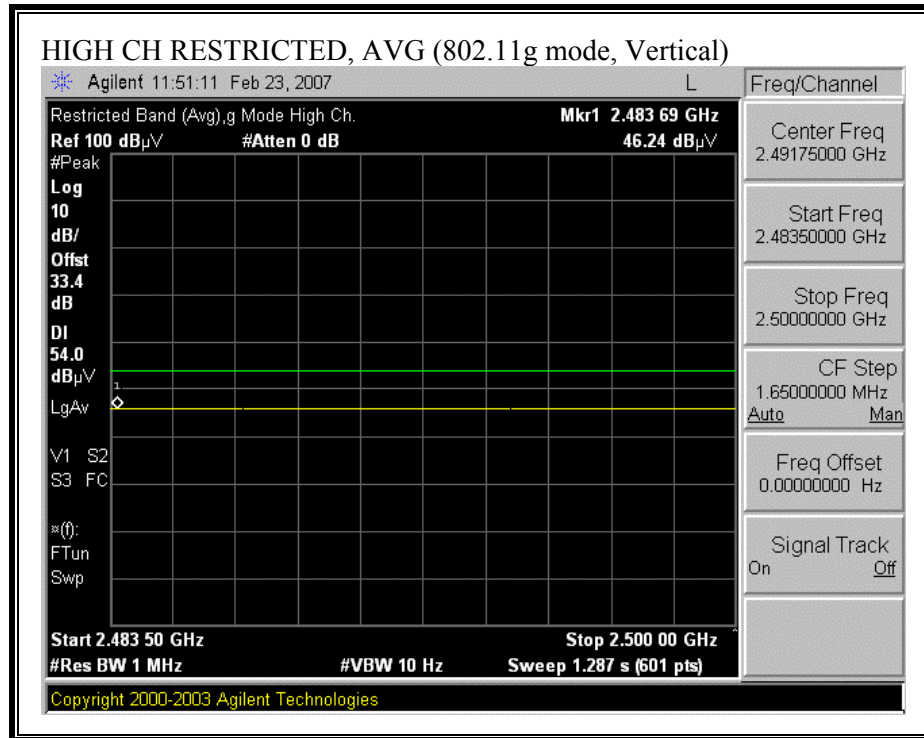
**RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, HORIZONTAL)**





**RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, VERTICAL)**





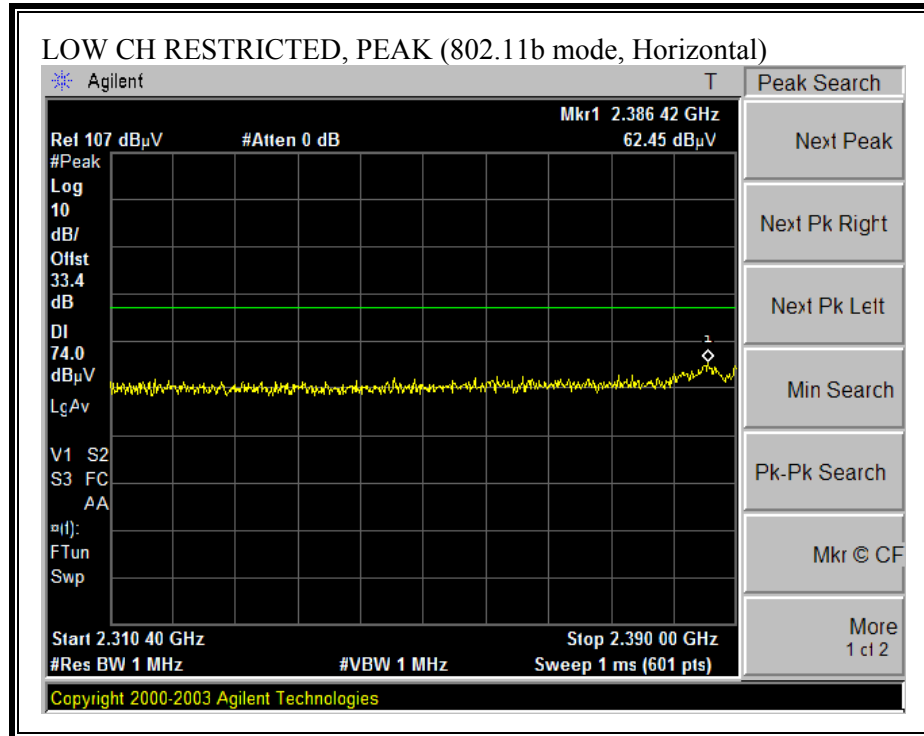


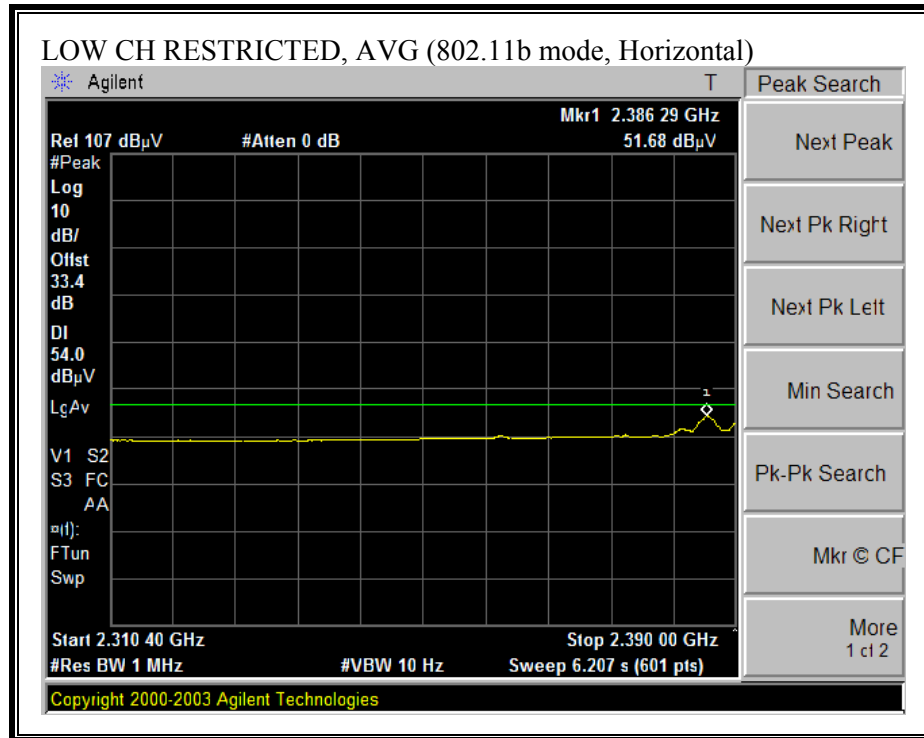
# **HARMONICS AND SPURIOUS EMISSIONS (g MODE)**

High Frequency Measurement																
Compliance Certification Services, Fremont Chamber B																
<b>Company:</b> Hospira <b>Project #:</b> 07U10885 <b>Date:</b> 02/24/2007 <b>Test Engineer:</b> Thanh Nguyen <b>Configuration:</b> EUT, antenna <b>Mode:</b> Transmit g Mode																
<b>Test Equipment:</b>																
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit				
T73; S/N: 6717 @3m			T144 Miteq 3008A00931									FCC 15.205				
Hi Frequency Cables <div> <div>2 foot cable</div> <div>3 foot cable</div> <div>12 foot cable</div> </div> <div> <div></div> <div>Thanh 187215003</div> <div>Gordon 203134001</div> </div> <div> <div>HPF</div> <div>Reject Filter</div> </div> <div> <div>HPF_4.0GHz</div> <div></div> </div> <div> <b>Peak Measurements</b>            RBW=VBW=1MHz  <b>Average Measurements</b>            RBW=1MHz ; VBW=10Hz         </div>																
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)	
<b>Low Channel</b>																
4.824	3.0	46.4	33.5	33.3	7.2	-36.5	0.0	0.0	50.5	37.5	74	54	-23.5	-16.5	V	
4.824	3.0	43.6	32.7	33.3	7.2	-36.5	0.0	0.6	48.2	37.3	74	54	-25.8	-16.7	H	
<b>Mid Channel</b>																
4.874	3.0	43.5	31.2	33.4	7.3	-36.5	0.0	0.0	47.7	35.4	74	54	-26.3	-18.6	V	
7.311	3.0	42.9	31.1	35.0	9.3	-36.2	0.0	0.6	51.6	39.8	74	54	-22.4	-14.2	V	
4.874	3.0	43.4	31.1	33.4	7.3	-36.5	0.0	0.0	47.6	35.3	74	54	-26.4	-18.7	H	
7.311	3.0	42.7	31.1	35.0	9.3	-36.2	0.0	0.6	51.4	39.8	74	54	-22.6	-14.2	H	
<b>High channel</b>																
4.924	3.0	46.9	33.7	33.4	7.4	-36.5	0.0	0.6	51.8	38.7	74	54	-22.2	-15.3	V	
7.386	3.0	42.7	30.6	35.0	9.3	-36.2	0.0	0.6	51.5	39.4	74	54	-22.5	-14.6	V	
4.924	3.0	43.5	32.3	33.4	7.4	-36.5	0.0	0.6	48.5	37.3	74	54	-25.5	-16.7	H	
7.386	3.0	42.3	30.3	35.0	9.3	-36.2	0.0	0.6	51.1	39.1	74	54	-22.9	-14.9	H	
Rev. 1.24.7																
f	Measurement Frequency		Amp	Preamp Gain		Avg Lim	Average Field Strength Limit									
Dist	Distance to Antenna		D Corr	Distance Correct to 3 meters		Pk Lim	Peak Field Strength Limit									
Read	Analyzer Reading		Avg	Average Field Strength @ 3 m		Avg Mar	Margin vs. Average Limit									
AF	Antenna Factor		Peak	Calculated Peak Field Strength		Pk Mar	Margin vs. Peak Limit									
CL	Cable Loss		HPF	High Pass Filter												

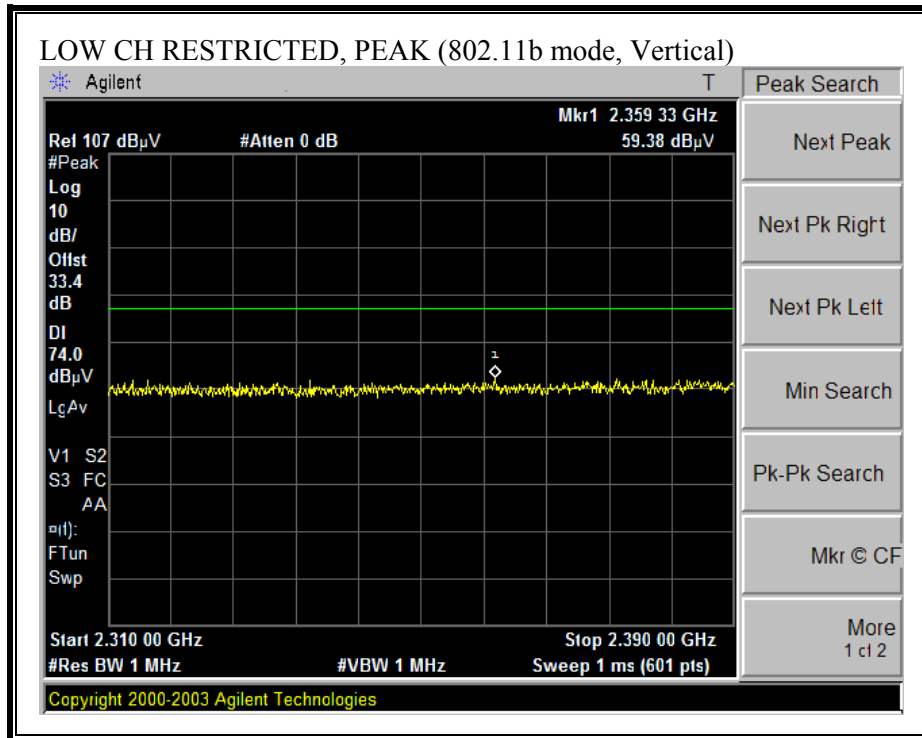
**EUT MODULE INSIDE THE PUMP**

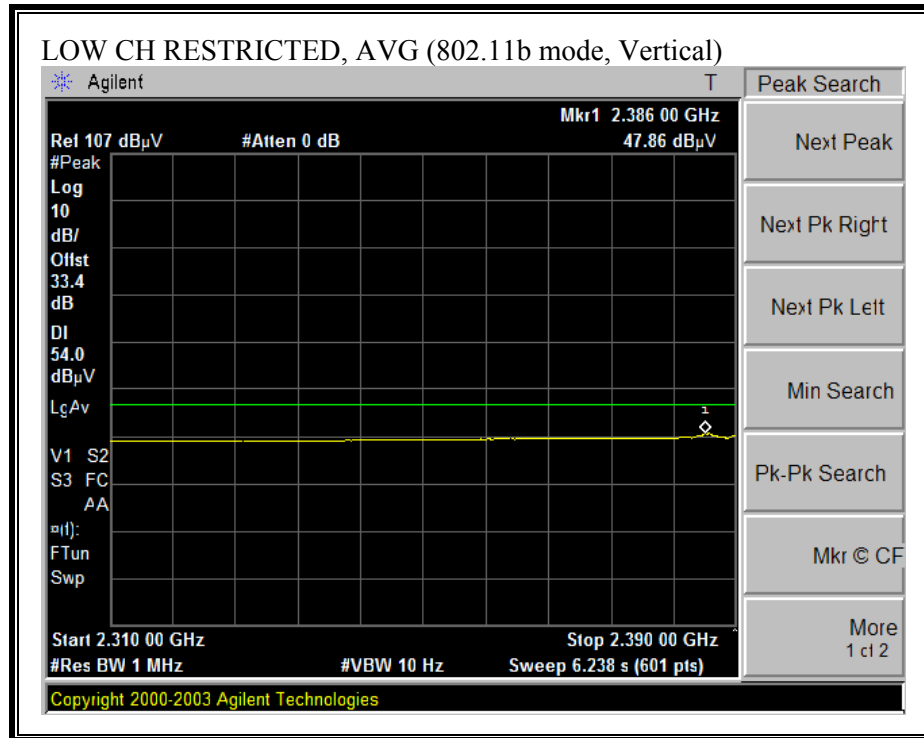
**RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, HORIZONTAL)**



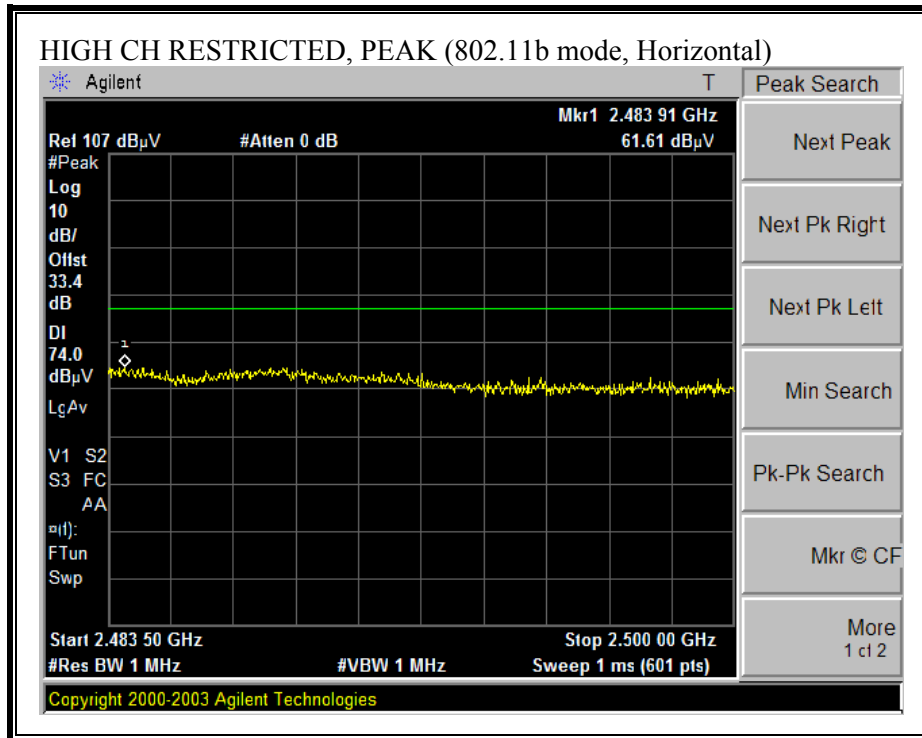


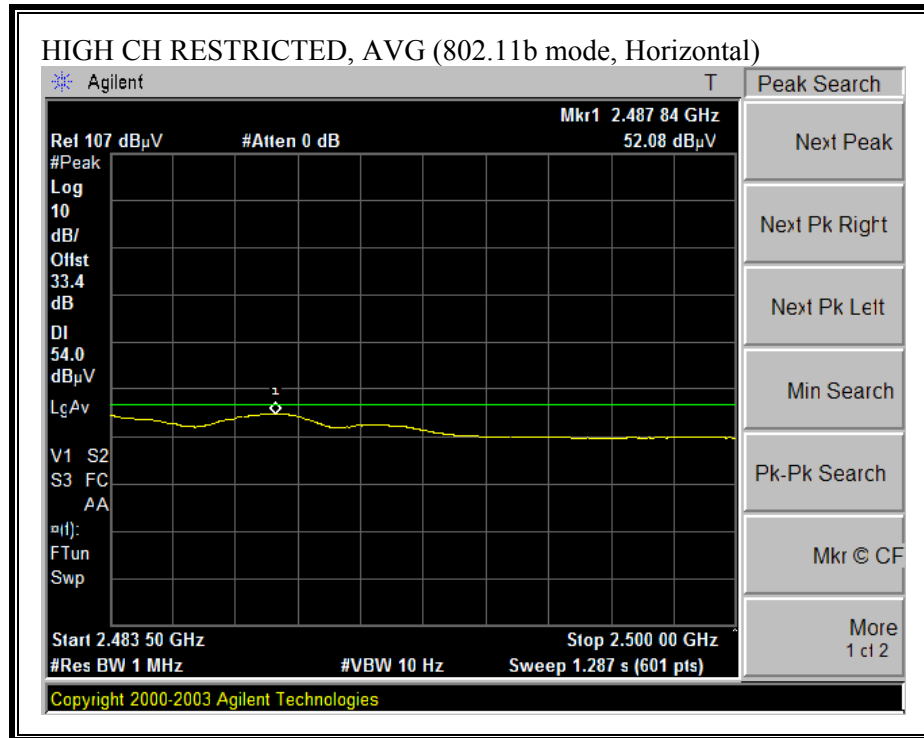
**RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, VERTICAL)**



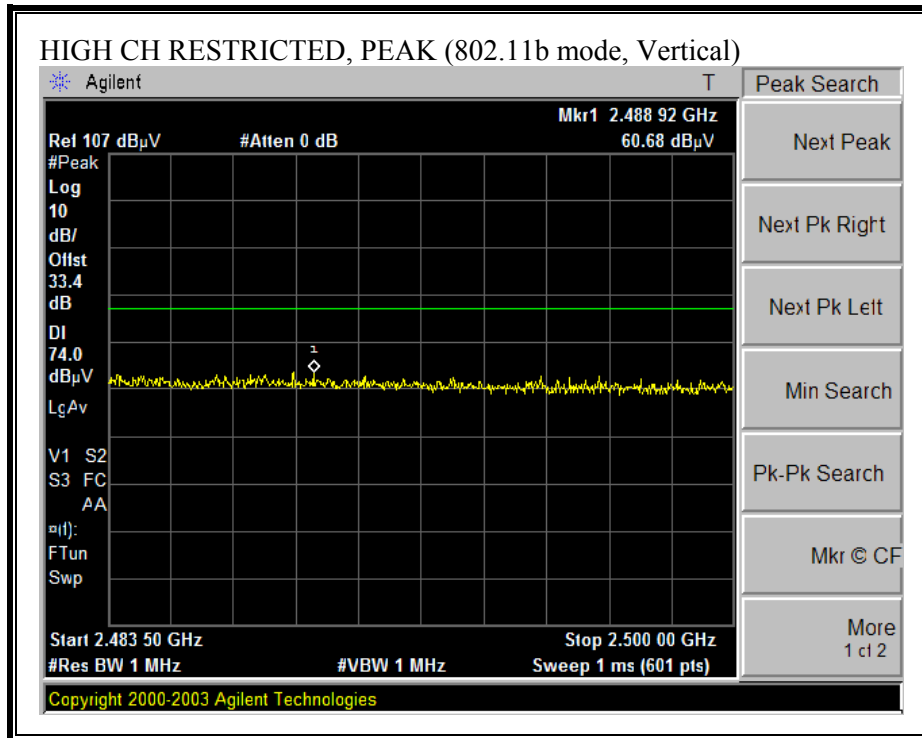


**RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, HORIZONTAL)**

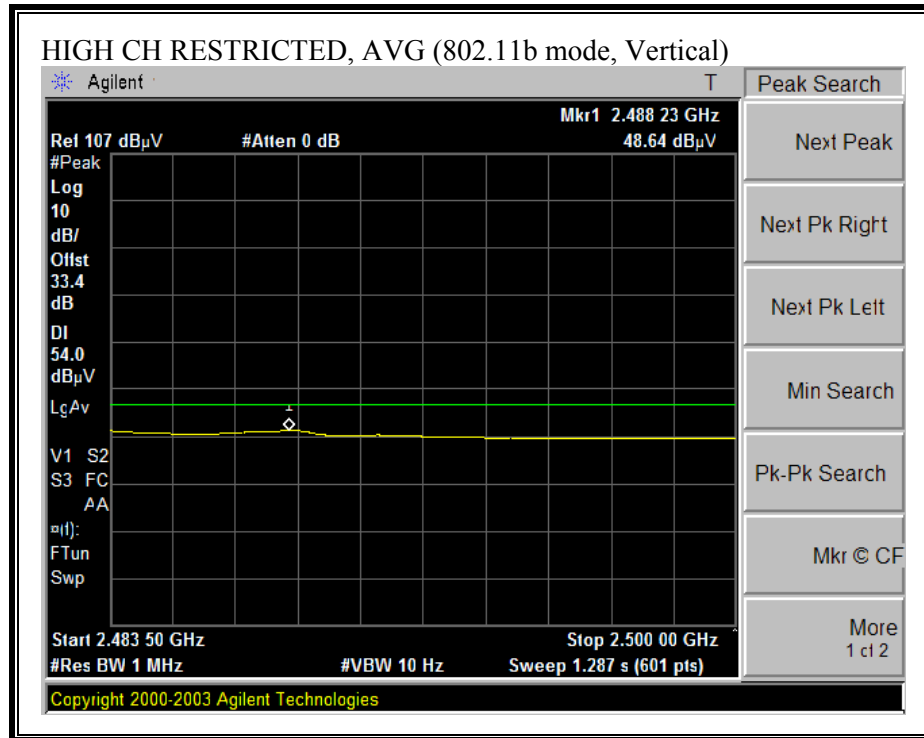




**RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, VERTICAL)**



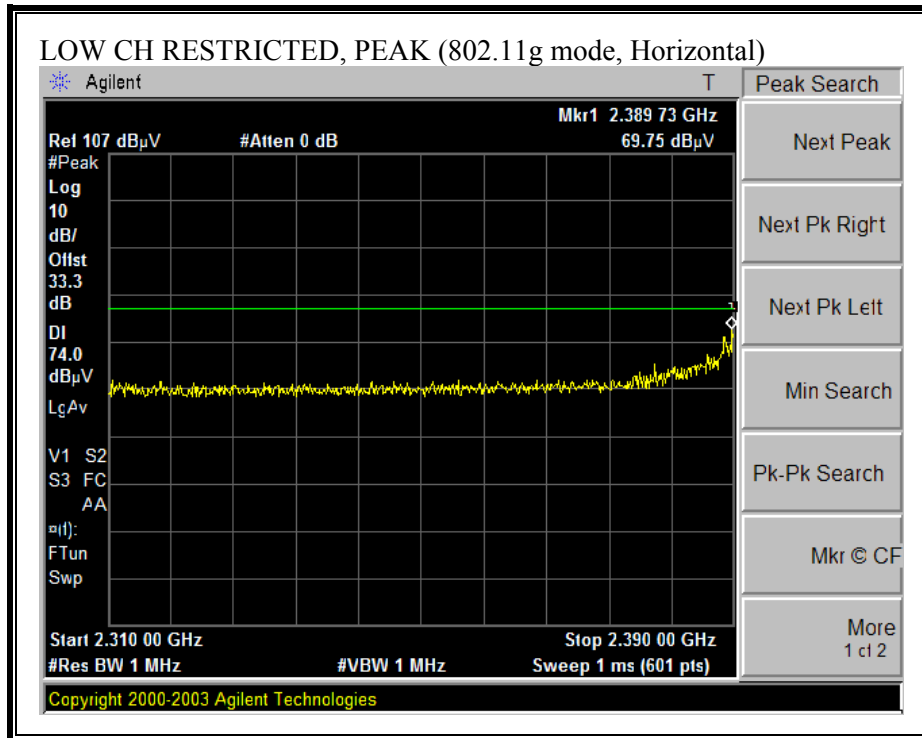


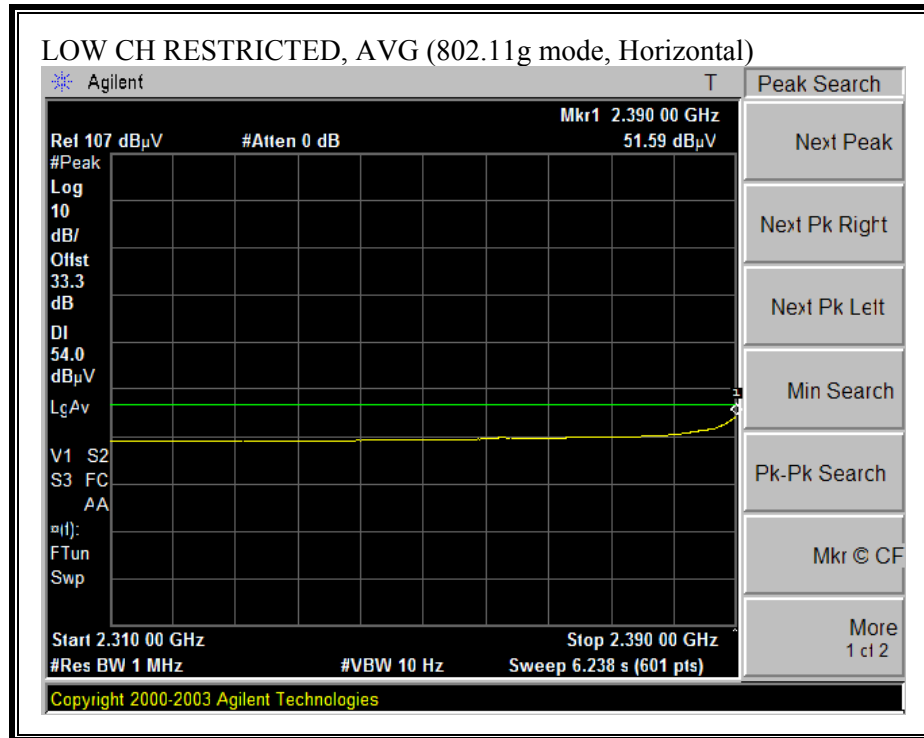


**HARMONICS AND SPURIOUS EMISSIONS (b MODE)**

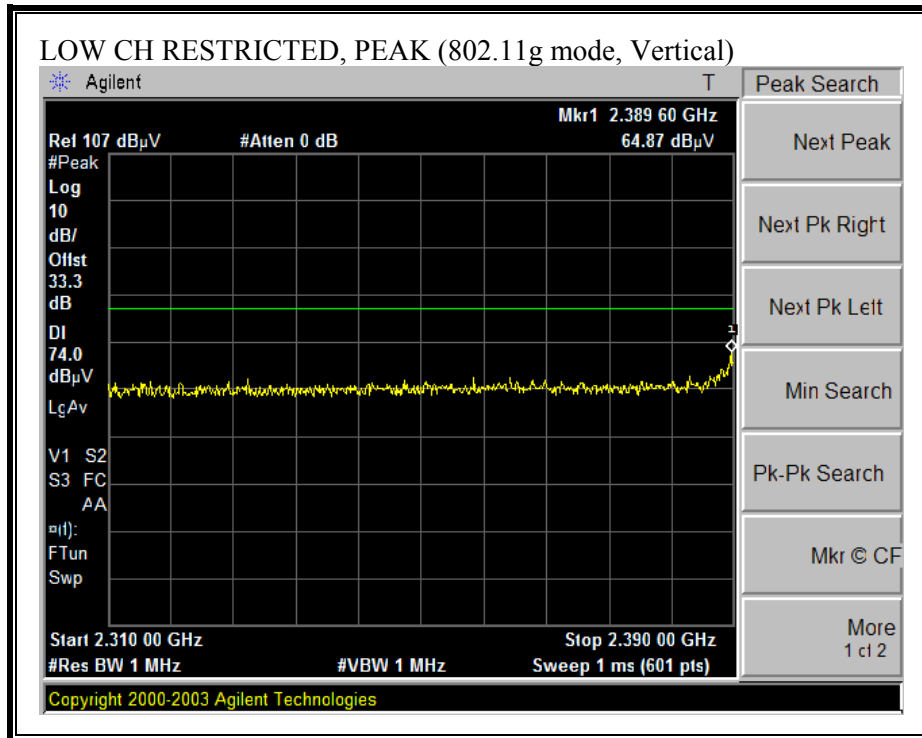
High Frequency Measurement																
Compliance Certification Services, Fremont Chamber B																
Company: HOSPIRA																
Project #: 07U10885																
Date: 03/10/2007																
Test Engineer: Chin Pang																
Configuration: EUT Inside the Plum A+																
Mode: Transmit, b Mode																
Test Equipment:																
Horn 1-18GHz			Pre-amplifier 1-26GHz			Pre-amplifier 26-40GHz			Horn > 18GHz			Limit				
T73; S/N: 6717 @3m			T144 Miteq 3008A00931									FCC 15.205				
Hi Frequency Cables																
2 foot cable			3 foot cable			12 foot cable			HPF			Reject Filter			Peak Measurements RBW=VBW=1MHz	
			Thanh 187215003			Gordon 203134001			HPF_4.0GHz						Average Measurements RBW=1MHz ; VBW=10Hz	
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)	
<b>Low Channel</b>																
4.824	3.0	48.3	44.2	33.3	7.2	-36.5	0.0	0.0	52.4	48.3	74	54	-21.6	-5.7	V	
4.824	3.0	48.5	44.3	33.3	7.2	-36.5	0.0	0.6	53.2	49.0	74	54	-20.8	-5.0	H	
<b>Mid Channel</b>																
4.874	3.0	47.7	43.8	33.4	7.3	-36.5	0.0	0.0	51.9	48.0	74	54	-22.1	-6.0	V	
7.311	3.0	42.4	31.2	35.0	9.3	-36.2	0.0	0.6	51.1	39.9	74	54	-22.9	-14.1	V	
4.874	3.0	48.0	44.0	33.4	7.3	-36.5	0.0	0.0	52.2	48.2	74	54	-21.8	-5.8	H	
7.311	3.0	43.0	32.0	35.0	9.3	-36.2	0.0	0.6	51.7	40.7	74	54	-22.3	-13.3	H	
<b>High channel</b>																
4.924	3.0	49.0	44.6	33.4	7.4	-36.5	0.0	0.6	54.0	49.6	74	54	-20.0	-4.4	V	
7.386	3.0	43.0	32.4	35.0	9.3	-36.2	0.0	0.6	51.8	41.2	74	54	-22.2	-12.8	V	
4.924	3.0	50.0	46.0	33.4	7.4	-36.5	0.0	0.6	55.0	51.0	74	54	-19.0	-3.0	H	
7.386	3.0	45.0	33.0	35.0	9.3	-36.2	0.0	0.6	53.8	41.8	74	54	-20.2	-12.2	H	
Rev. 1.24.7																
Note: No other emissions were detected above the system noise floor.																
f	Measurement Frequency					Amp	Preamp Gain					Avg Lim	Average Field Strength Limit			
Dist	Distance to Antenna					D Corr	Distance Correct to 3 meters					Pk Lim	Peak Field Strength Limit			
Read	Analyzer Reading					Avg	Average Field Strength @ 3 m					Avg Mar	Margin vs. Average Limit			
AF	Antenna Factor					Peak	Calculated Peak Field Strength					Pk Mar	Margin vs. Peak Limit			
CL	Cable Loss					HPF	High Pass Filter									

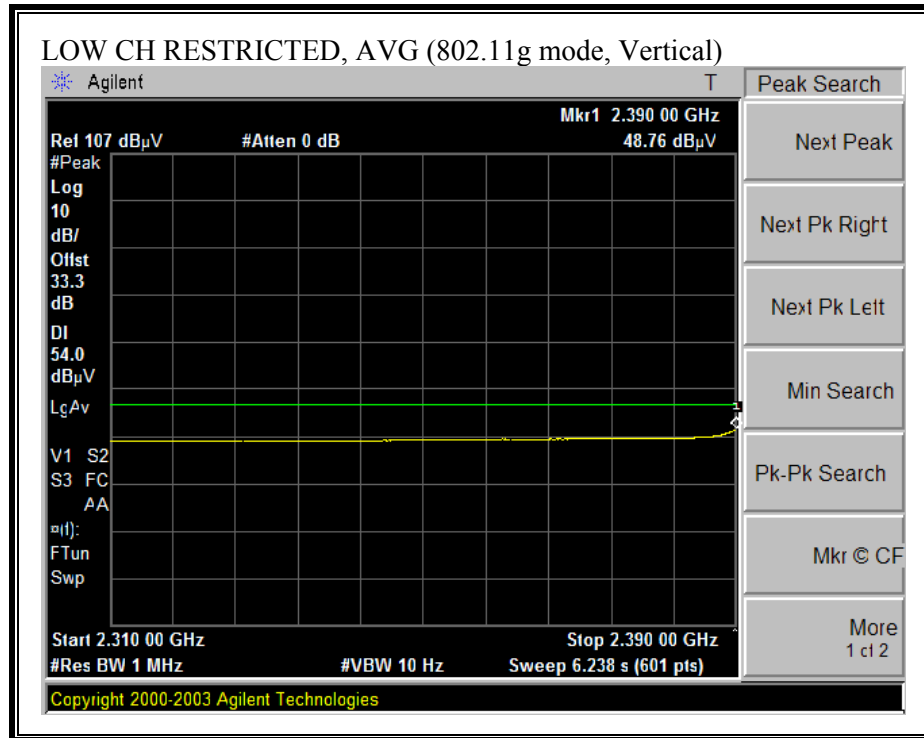
**RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, HORIZONTAL)**



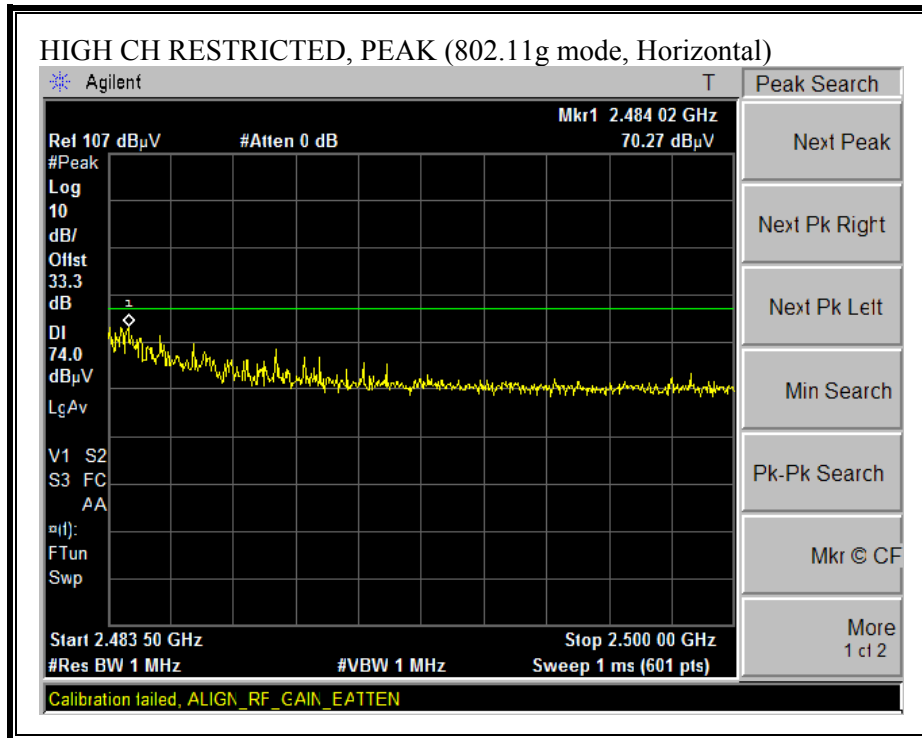


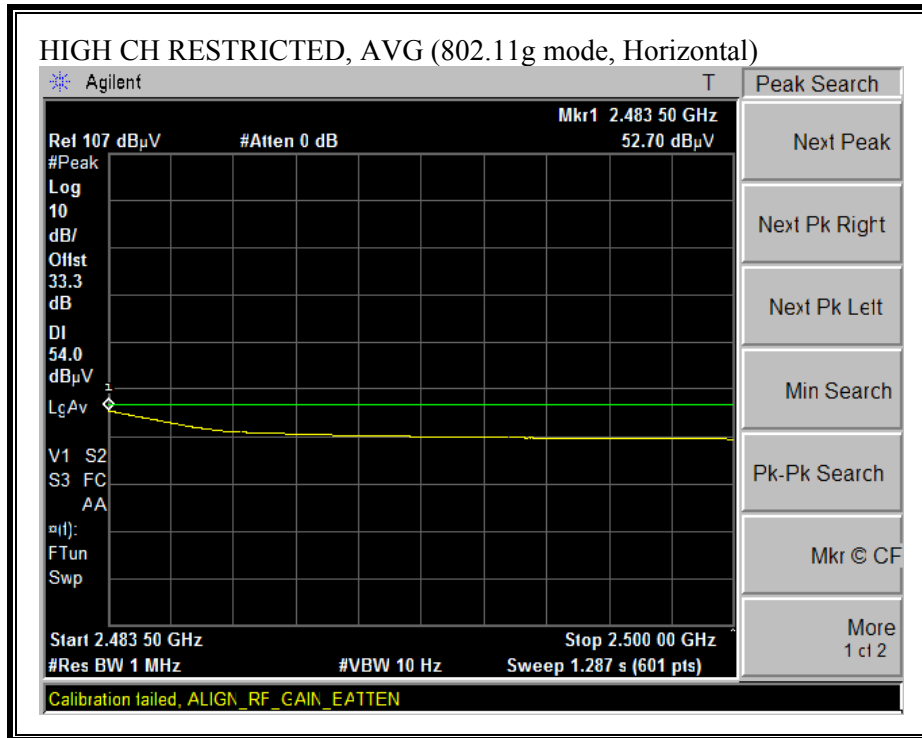
**RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, VERTICAL)**





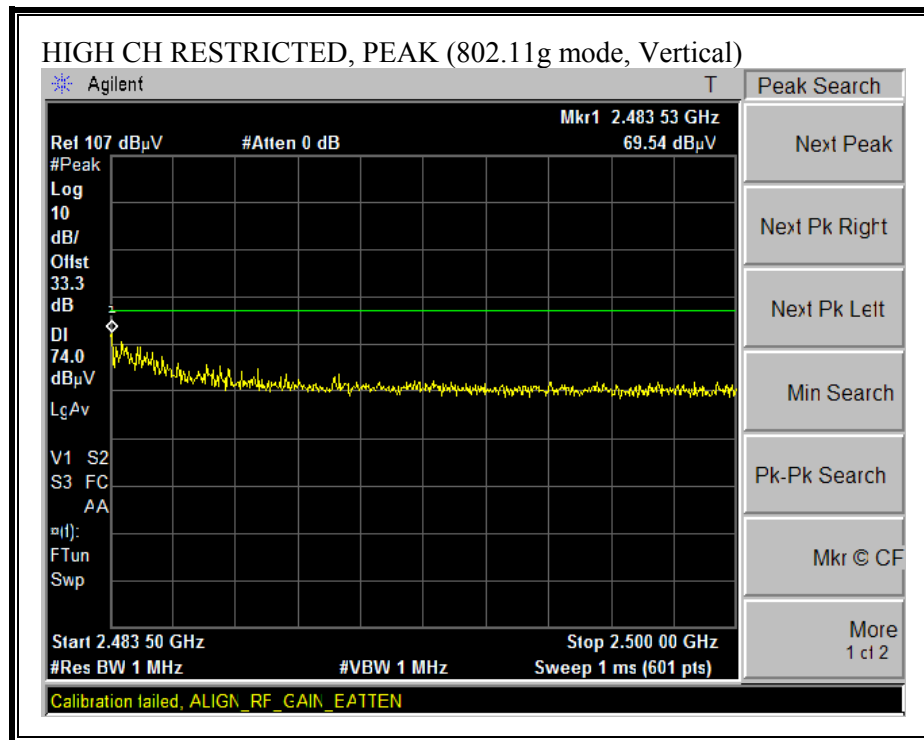
**RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, HORIZONTAL)**

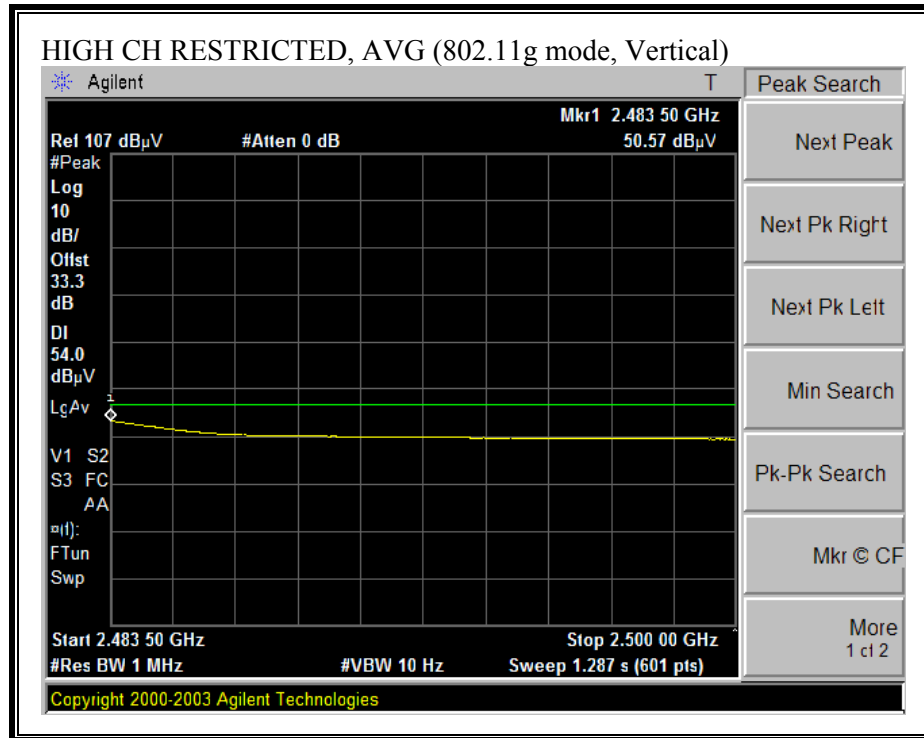






**RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, VERTICAL)**





# **HARMONICS AND SPURIOUS EMISSIONS (g MODE)**

**High Frequency Measurement**

Compliance Certification Services, Morgan Hill Open Field Site

Company: Hospira  
Project #: 07U10885  
Date: 03/10/2007  
Test Engineer: Chin Pang  
Configuration: EUT Inside the Plum A+  
Mode: Transmit, g Mode

**Test Equipment:**

Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz	Limit
T73; S/N: 6717 @3m	T144 Miteq 3008A00931			FCC 15.205

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter	<b>Peak Measurements</b> RBW=VBW=1MHz <b>Average Measurements</b> RBW=1MHz ; VBW=10Hz
	Thanh 187215003	Gordon 203134001	HPF_4.0GHz		

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
<b>Low Channel</b>															
4.824	3.0	49.2	34.7	33.3	7.2	-36.5	0.0	0.0	53.3	38.8	74	54	-20.7	-15.2	V
4.824	3.0	47.3	33.0	33.3	7.2	-36.5	0.0	0.6	52.0	37.7	74	54	-22.0	-16.3	H
<b>Mid Channel</b>															
4.874	3.0	49.0	34.5	33.4	7.3	-36.5	0.0	0.0	53.2	38.7	74	54	-20.8	-15.3	V
7.311	3.0	43.4	32.0	35.0	9.3	-36.2	0.0	0.6	52.1	40.7	74	54	-21.9	-13.3	V
4.874	3.0	45.8	32.6	33.4	7.3	-36.5	0.0	0.0	50.0	36.8	74	54	-24.0	-17.2	H
7.311	3.0	43.2	31.3	35.0	9.3	-36.2	0.0	0.6	51.9	40.0	74	54	-22.1	-14.0	H
<b>High channel</b>															
4.924	3.0	48.0	34.0	33.4	7.4	-36.5	0.0	0.6	53.0	39.0	74	54	-21.0	-15.0	V
7.386	3.0	44.0	32.3	35.0	9.3	-36.2	0.0	0.6	52.8	41.1	74	54	-21.2	-12.9	V
4.924	3.0	46.3	33.4	33.4	7.4	-36.5	0.0	0.6	51.3	38.4	74	54	-22.7	-15.6	H
7.386	3.0	43.6	31.5	35.0	9.3	-36.2	0.0	0.6	52.4	40.3	74	54	-21.6	-13.7	H

Rev. 1.24.7  
Note: No other emissions were detected above the system noise floor.

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

### 7.3.2. TRANSMITTER ABOVE 1 GHz FOR 5725 TO 5850 MHz BAND

#### EUT MODULE WITH EXTERNAL ANTENNA

#### HARMONICS AND SPURIOUS EMISSIONS (802.11a MODE)

High Frequency Measurement															
Compliance Certification Services, Fremont Chamber B															
Company: Hospira															
Project #: 07U10885															
Date: 02/24/2007															
Test Engineer: Thanh Nguyen															
Configuration: EUT/Antenna															
Mode: Transmit a Mode 5.8GHz Band															
Test Equipment:															
Horn 1-18GHz		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit							
T73; S/N: 6717 @3m		T144 Miteq 3008A00931						FCC 15.205							
Hi Frequency Cables															
2 foot cable		3 foot cable		12 foot cable		HPF		Reject Filter		Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz					
Thanh 177079008				Gordon 203134001		HPF_7.6GHz									
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch 5745Mhz															
11.490	1.0	49.0	36.2	37.5	12.3	-35.9	-9.5	0.0	53.3	40.6	74	54	-20.7	-13.4	V
11.490	1.0	45.8	31.5	37.5	12.3	-35.9	-9.5	0.7	50.9	36.6	74	54	-23.1	-17.4	H
Mid Ch 5785Mhz															
11.570	1.0	51.0	38.1	37.5	12.4	-35.8	-9.5	0.7	56.2	43.4	74	54	-17.8	-10.6	V
11.570	1.0	46.8	34.5	37.5	12.4	-35.8	-9.5	0.7	52.0	39.7	74	54	-22.0	-14.3	H
High Ch 5825Mhz															
11.650	1.0	53.6	41.1	37.5	12.5	-35.7	-9.5	0.7	59.0	46.5	74	54	-15.0	-7.5	V
11.650	1.0	47.5	34.1	37.5	12.5	-35.7	-9.5	0.7	53.0	39.5	74	54	-21.0	-14.5	H
Rev. 5.1.6															
f	Measurement Frequency			Amp	Preamp Gain			Avg Lim	Average Field Strength Limit						
Dist	Distance to Antenna			D Corr	Distance Correct to 3 meters			Pk Lim	Peak Field Strength Limit						
Read	Analyzer Reading			Avg	Average Field Strength @ 3 m			Avg Mar	Margin vs. Average Limit						
AF	Antenna Factor			Peak	Calculated Peak Field Strength			Pk Mar	Margin vs. Peak Limit						
CL	Cable Loss			HPF	High Pass Filter										

**EUT MODULE INSIDE THE PLUM A+**

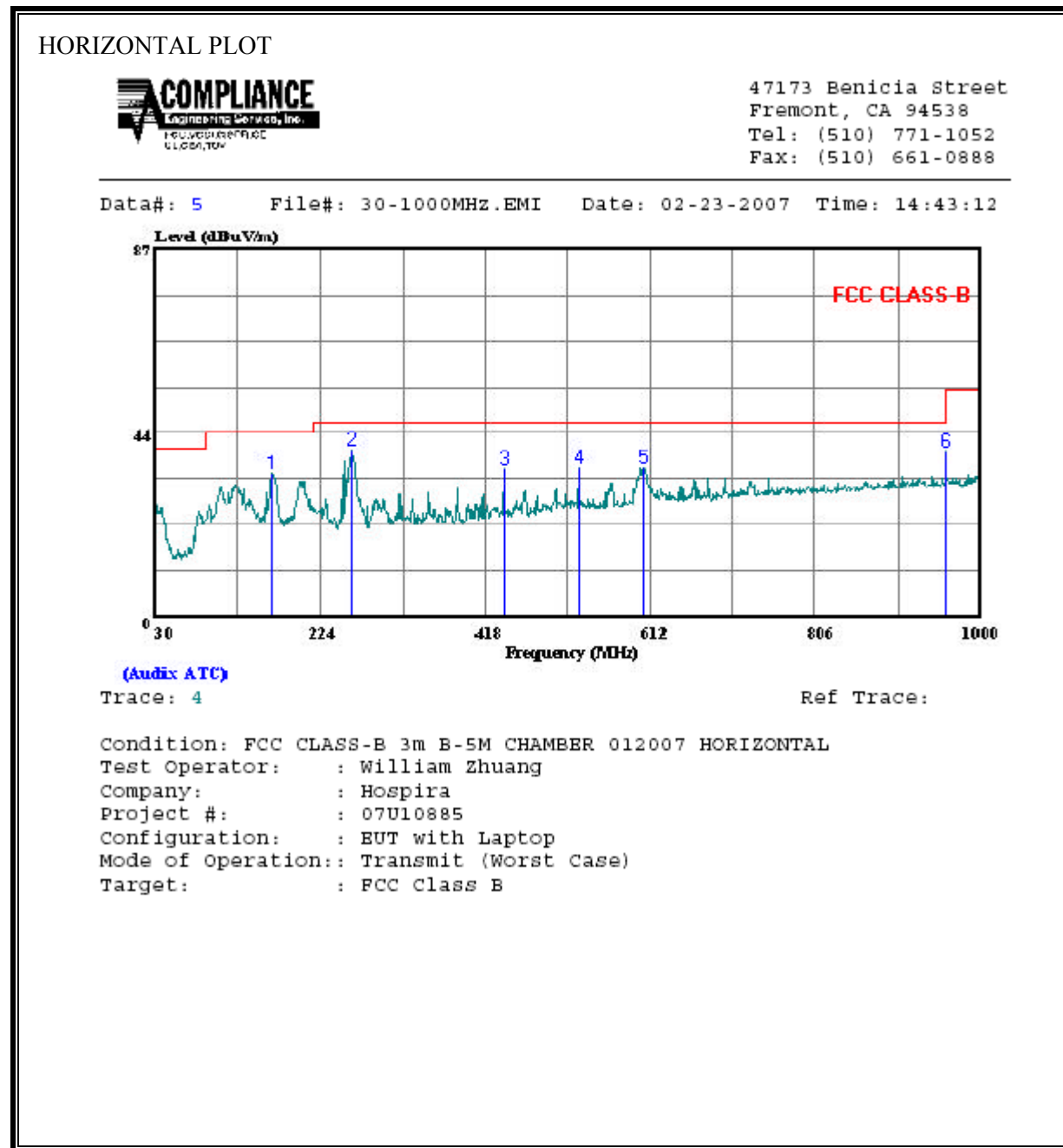
**HARMONICS AND SPURIOUS EMISSIONS (802.11a MODE)**

High Frequency Measurement															
Compliance Certification Services, Fremont Chamber B															
Company: Hospira															
Project #: 07U10885															
Date: 03/10/2007															
Test Engineer: Chin Pang															
Configuration: EUT Inside the Plum A+															
Mode: Transmit, a Mode 5.8GHz Band															
Test Equipment:															
Horn 1-18GHz		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit							
T73; S/N: 6717 @3m		T144 Miteq 3008A00931		T88 Miteq 26-40GHz		T89; ARA 18-26GHz; S/N:1049		FCC 15.205							
Hi Frequency Cables															
2 foot cable		3 foot cable		12 foot cable		HPF		Reject Filter		Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz					
Thanh 177079008				Gordon 203134001		HPF_7.6GHz									
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch 5745Mhz															
11.490	1.0	49.3	35.4	37.5	12.3	-35.9	-9.5	0.0	53.7	39.8	74	54	-20.3	-14.2	V
11.490	1.0	46.5	32.7	37.5	12.3	-35.9	-9.5	0.7	51.6	37.8	74	54	-22.4	-16.2	H
Mid Ch 5785Mhz															
11.570	1.0	49.2	35.6	37.5	12.4	-35.8	-9.5	0.7	54.5	40.9	74	54	-19.5	-13.1	V
11.570	1.0	47.3	33.4	37.5	12.4	-35.8	-9.5	0.7	52.6	38.7	74	54	-21.4	-15.3	H
High Ch 5825Mhz															
11.650	1.0	48.5	35.0	37.5	12.5	-35.7	-9.5	0.7	54.0	40.5	74	54	-20.0	-13.5	V
11.650	1.0	46.7	33.0	37.5	12.5	-35.7	-9.5	0.7	52.2	38.5	74	54	-21.8	-15.5	H
Rev. 5.1.6															
Note: No other emissions were detected above the system noise floor.															
f	Measurement Frequency			Amp	Preamp Gain			Avg Lim	Average Field Strength Limit						
Dist	Distance to Antenna			D Corr	Distance Correct to 3 meters			Pk Lim	Peak Field Strength Limit						
Read	Analyzer Reading			Avg	Average Field Strength @ 3 m			Avg Mar	Margin vs. Average Limit						
AF	Antenna Factor			Peak	Calculated Peak Field Strength			Pk Mar	Margin vs. Peak Limit						
CL	Cable Loss			HPF	High Pass Filter										

### 7.3.3. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz

#### EUT MODULE WITH EXTERNAL ANTENNA

#### SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)



# HORIZONTAL DATA

Page: 1

	Freq	Read Level	Probe Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV/m	dBuV/m	dB	
1	166.770	48.30	12.32	1.35	28.17	33.80	43.50	-9.70	Peak
2	260.860	53.23	12.56	1.72	28.05	39.47	46.00	-6.53	Peak
3	440.310	44.00	16.84	2.30	27.95	35.19	46.00	-10.81	Peak
4	527.610	42.10	18.37	2.47	27.68	35.27	46.00	-10.73	Peak
5	604.240	40.60	19.33	2.73	27.38	35.29	46.00	-10.71	Peak
6	960.230	40.00	23.31	3.61	27.59	39.33	54.00	-14.67	Peak

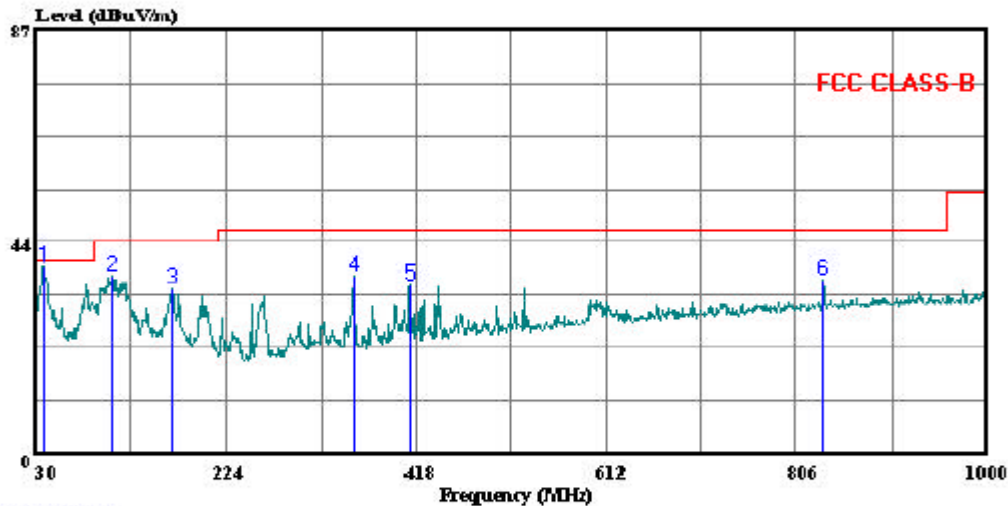
**SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)**

VERTICAL PLOT



47173 Benicia Street  
Fremont, CA 94538  
Tel: (510) 771-1052  
Fax: (510) 661-0888

Data#: 7 File#: 30-1000MHZ.EMI Date: 02-23-2007 Time: 14:52:49



(Auxiliary ATC)

Trace: 6

Ref Trace:

Condition: FCC CLASS-B 3m B-5M CHAMBER 012007 VERTICAL  
Test Operator: : William Zhuang  
Company: : Hospira  
Project #: : 07U10885  
Configuration: : EUT with Laptop  
Mode of Operation: : Transmit (Worst Case)  
Target: : FCC Class B



VERTICAL DATA

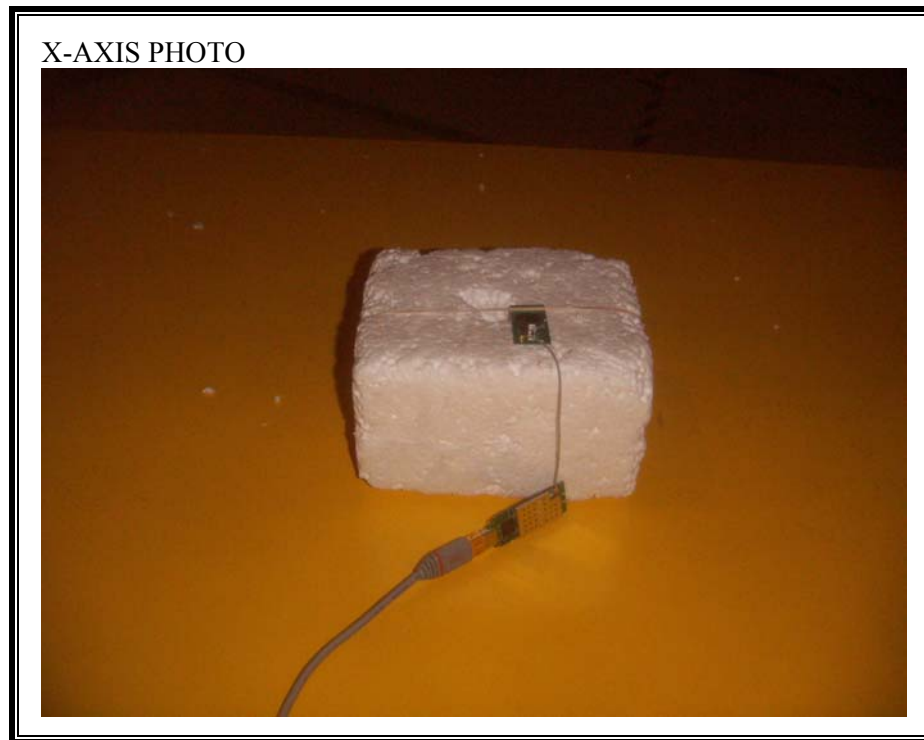
Page: 1

	Freq	Read Level	Probe Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV/m	dBuV/m	dB	
1	37.760	49.20	16.96	0.65	28.42	38.40	40.00	-1.60	Peak
2	107.600	52.30	11.56	1.09	28.27	36.67	43.50	-6.83	Peak
3	168.710	48.60	12.23	1.36	28.17	34.02	43.50	-9.48	Peak
4	353.980	47.40	15.10	2.02	28.05	36.47	46.00	-9.53	Peak
5	411.210	44.20	16.23	2.21	28.03	34.62	46.00	-11.38	Peak
6	833.160	37.60	22.06	3.26	27.06	35.87	46.00	-10.13	Peak

## 8. SETUP PHOTOS

### RADIATED RF MEASUREMENT SETUP FOR PORTABLE CONFIGURATION

#### EUT MODULE WITH ANTENNA



Y-AXIS PHOTO



Z-AXIS PHOTO

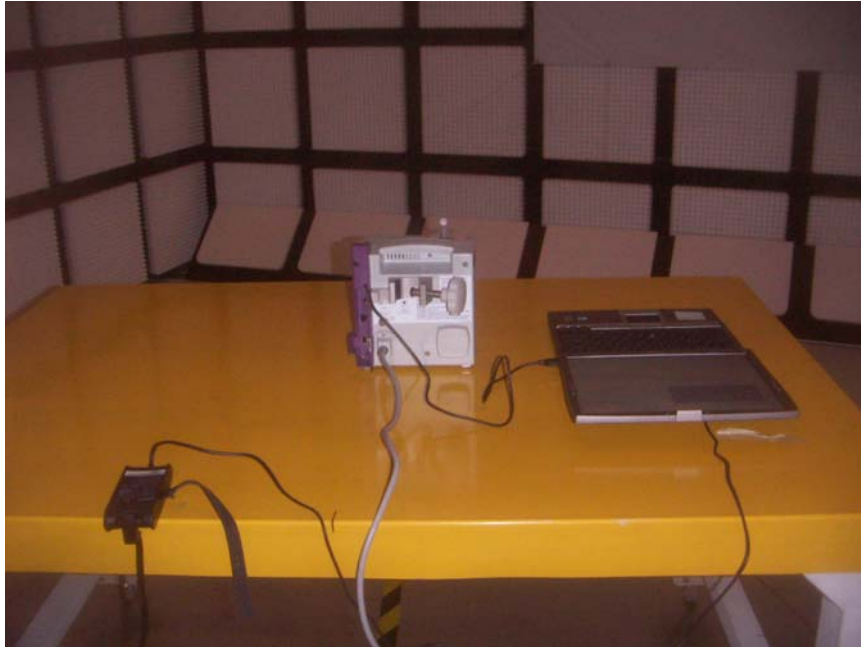


**EUT MODULE INSIDE THE PLUM A+**

RADIATED FRONT PHOTO



RADIATED BACK PHOTO



**END OF REPORT**