

EMISSIONS TEST REPORT

Report Number: 100398565BOX-001c

Project Number: G100398565

Report Issue Date: 10/31/2011

Product Designation: ZOLL E Series Data Comm Card (Wi Fi Mode)

Standards: FCC Part 15:2011 Subpart C Section 15.247,
FCC Part 15:2011 Subpart B Class B,
RSS-210 Issue 8 December 2010,
ICES-003 Issue 4 February 2004,
RSS-Gen Issue 3 December 2010

Tested by:
Intertek Testing Services NA, Inc.
70 Codman Hill Road
Boxborough, MA 01719

Client:
Zoll Medical Corporation
269 Mill Road
Chelmsford, MA 01824

Report prepared by



Kouma Sinn / Senior Project Engineer

Report reviewed by



Nicholas Abbondante/Transmitter Staff
Engineer

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1 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 3.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested **complies** with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested.

2 Test Summary

Section	Test full name	Result
3	Client Information	--
4	Description of Equipment Under Test	--
5	System Setup and Method	--
6	Maximum Peak Output Power FCC 15:2011 Subpart C, Section 15.247 (3) RSS-210 Issue 8 December 2010, A8.4 (4) Transfer Rate: 802.11b (11MB/s), 802.11g (54MB/s)	Pass
7	Transmitter Radiated Spurious Emissions FCC 15:2011 Subpart C Section 15.247 (d) RSS-210 Issue 8 December 2010, A8.5 Transfer Rate: 802.11b (11MB/s), 802.11g (54MB/s)	Pass
8	6 dB Bandwidth FCC 15:2011 Subpart C Section 15.247 (2) RSS-210 Issue 8 December 2010, A8.2 (a) Transfer Rate: 802.11b (11MB/s), 802.11g (54MB/s)	Pass
9	Power Spectral Density FCC 15:2011 Subpart C Section 15.247 (e) RSS-210 Issue 8 December 2010, A8.2 (b) Transfer Rate: 802.11b (11MB/s), 802.11g (54MB/s)	Pass
10	Band-edge Compliance FCC 15:2011 Subpart C Section 15.247 (d) RSS-210 Issue 8 December 2010, A8.5 Transfer Rate: 802.11b (11MB/s), 802.11g (54MB/s)	Pass
11	Receiver Radiated Spurious FCC Part 15:2011 Subpart B Section 15.109 (a) RSS-Gen 3 December 2010, Section 6	Pass
12	AC Mains Conducted Emissions FCC Part 15:2011 Section 15.207 (a) RSS-Gen Issue 3 December 2010, 7.2.2 (Table 2) Transfer Rate: 802.11b (11MB/s), 802.11g (54MB/s)	Pass
13	Revision History	--

3 Client Information

This EUT was tested at the request of:

Company: Zoll Medical Corporation
269 Mill Road
Chelmsford, MA 01824
Contact: Mr. Don Paradis
Telephone: 978-421-9608
Fax: Not Available
Email: DParadis@zoll.com

4 Description of Equipment Under Test

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
ZOLL E Series Data Comm Card	Zoll Medical	ZOLL E Series Data Comm Card	IN0411-00032

Receive Date:	08/15/2011
Received Condition:	Good
Type:	Production

Description of Equipment Under Test (provided by client)
Wifi 802.11b/g transmitter card inside E-Series Defibrillator, with an Integral antenna

Equipment Under Test Power Configuration (Host)			
Rated Voltage	Rated Current	Rated Frequency	Number of Phases
100-120V	220VA	50/60 Hz	1

Operating modes of the EUT:	
No.	Descriptions of EUT Exercising
1	Transmit mode with data transfer rate at 802.11b (11 MB/s) and 802.11g (54 MB/s)
2	Receive mode

5 System Setup and Method

Cables (Host)					
Qty	Description	Length (m)	Shielding	Ferrites	Termination
1	AC Mains Cable	3.0m	None	None	EUT/AC
1	ECG Cable	3.0m	Foil	None	EUT
1	ECGx1000 RS-232 Cable	1.2	Foil	None	EUT
1	SPO2 Cable	3.0m	Braid	None	EUT
1	Defibrillator Cable	2.2m	Braid	None	EUT
1	CO2 Cable	3.0m	Braid	None	EUT

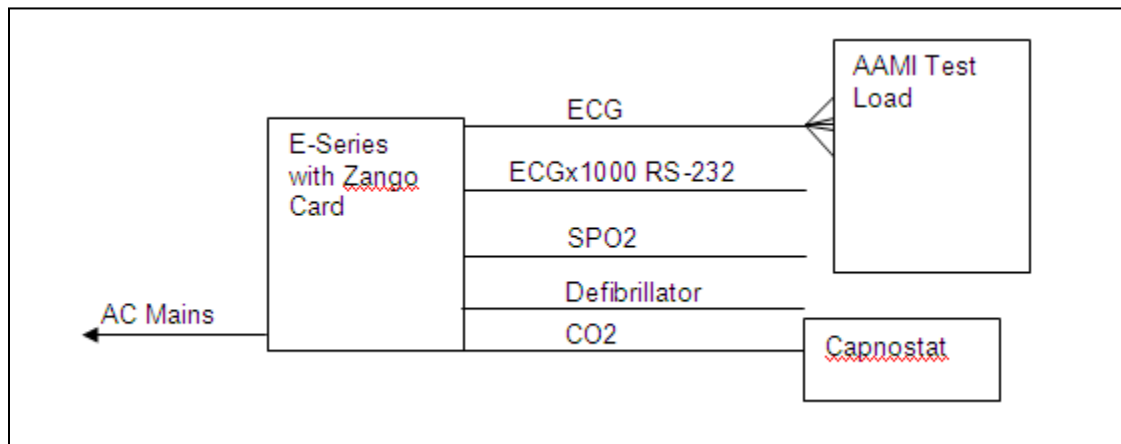
Support Equipment (Host)			
Description	Manufacturer	Model Number	Serial Number
E-Series Defibrillator	Zoll Medical	E Series	AB11B016129

5.1 Method:

Configuration as required by ANSI C 63.4:2003, FCC Part 15:2011 Subpart C Section 15.247, RSS-210 Issue 8 December 2010, RSS-Gen Issue 3 December 2010, and KDB 558074 Released March 30, 2000.

Notes: The worst-case data transfer rate for 802.11g is 54MB/s and for 802.11b is 11MB/s. All the tests are performed with the worst-case data transfer rate.

5.2 EUT Block Diagram:



6 Maximum Peak Output Power

6.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C Section 15.247, *KDB 558074*, and RSS-210 Annex 8.

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A wooden table 80 cm high is used for table-top equipment.

Measurement Uncertainty

For radiated emissions, U_{lab} (3.5 dB at 3m and 3.5 dB at 10m below 1 GHz, and 4.2 dB at 3m above 1 GHz) < U_{CISPR} (5.2 dB), which is the reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where

- FS = Field Strength in dB μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = 52.0 dB μ V
AF = 7.4 dB/m
CF = 1.6 dB
AG = 29.0 dB
FS = 32 dB μ V/m

To convert from dB μ V to μ V or mV the following was used:

$$UF = 10^{(NF / 20)} \text{ where } UF = \text{Net Reading in } \mu\text{V}$$

NF = Net Reading in dB μ V

Example:

$$FS = RA + AF + CF - AG = 52.0 + 7.4 + 1.6 - 29.0 = 32.0$$
$$UF = 10^{(32 \text{ dB}\mu\text{V} / 20)} = 39.8 \mu\text{V/m}$$

6.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV002'	Weather Station	Davis Instruments	7400	PE80519A93	08/12/2010	08/12/2011
145-416'	Cables 145-400 145-408 145-402 145-404	Huber + Suhner	3m Track B cables	multiple	08/31/2010	08/31/2011
145128'	EMI Receiver 40 GHz (20 Hz - 40 Ghz)	Rohde & Schwarz	ESI	8392831001	08/10/2010	09/10/2011
HORN2'	HORN ANTENNA	EMCO	3115	9602-4675	10/08/2010	10/08/2011

Software Utilized:

Name	Manufacturer	Version
Excel 2003	Microsoft	(11.8231.8221) SP3
EMI Boxborough.xls	Intertek	08/27/10

6.3 Results:

The sample tested was found to comply. The worst-case data transfer rate for 802.11g is 54MB/s and for 802.11b is 11MB/s. All the tests are performed with the worst-case data transfer rate.

FCC 15 Subpart C, Section 15.247 (3) & RSS-210, A8.4 (4)

The maximum peak conducted output power of the intentional radiator shall not exceed 1 watt.

As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the *maximum conducted output power* is the highest total transmit power occurring in any mode.

The antenna conducted tests cannot be performed on this device, radiated tests to show compliance was performed using the following formula per KDB 558074 Released March 30, 2000.

$$P = \frac{(E \cdot d)^2}{30G}$$

E is the measured maximum fundamental field strength in V/m.

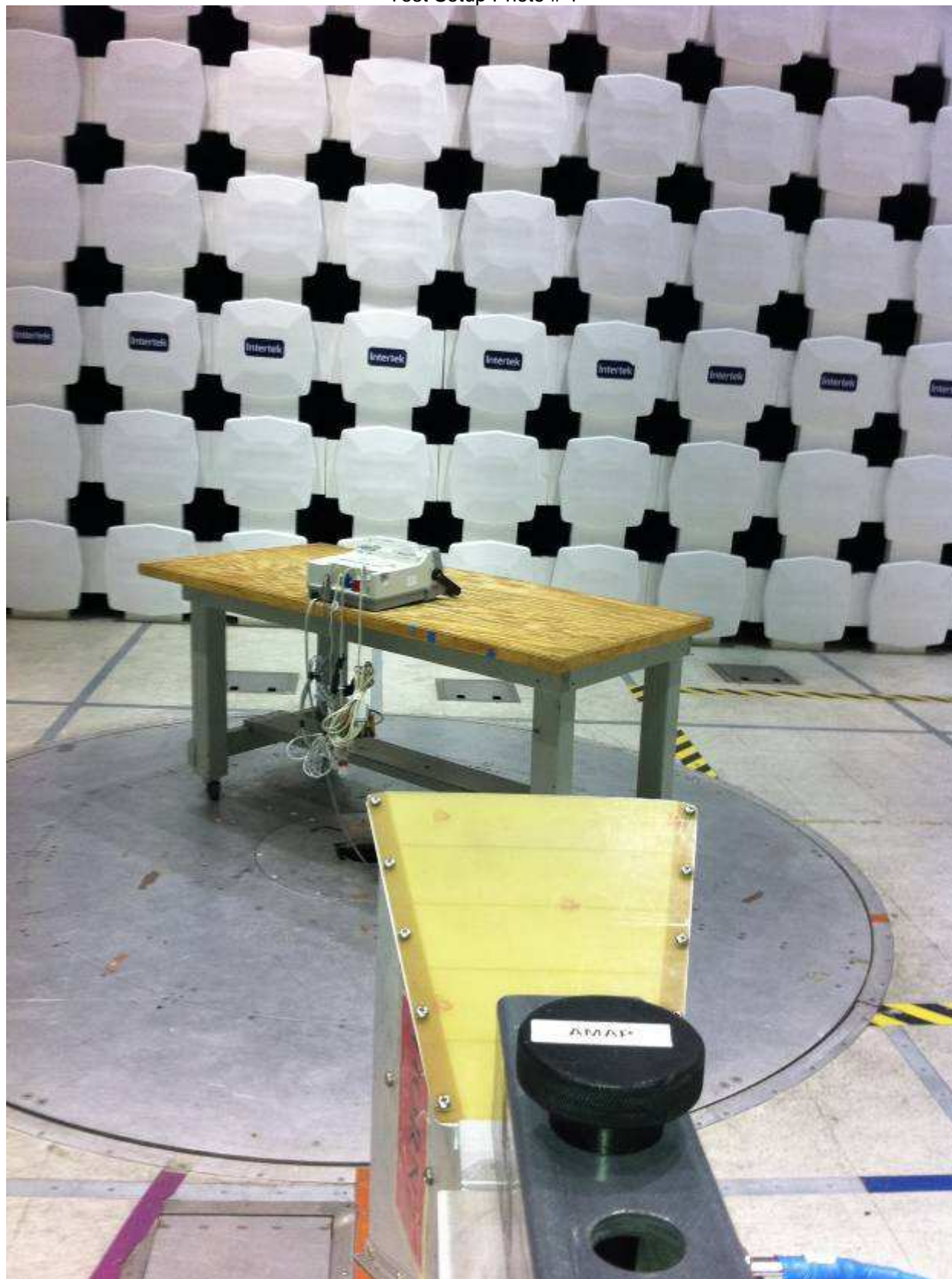
G is the numeric gain of the transmitting antenna with reference to an isotropic radiator.

d is the distance in meters from which the field strength was measured.

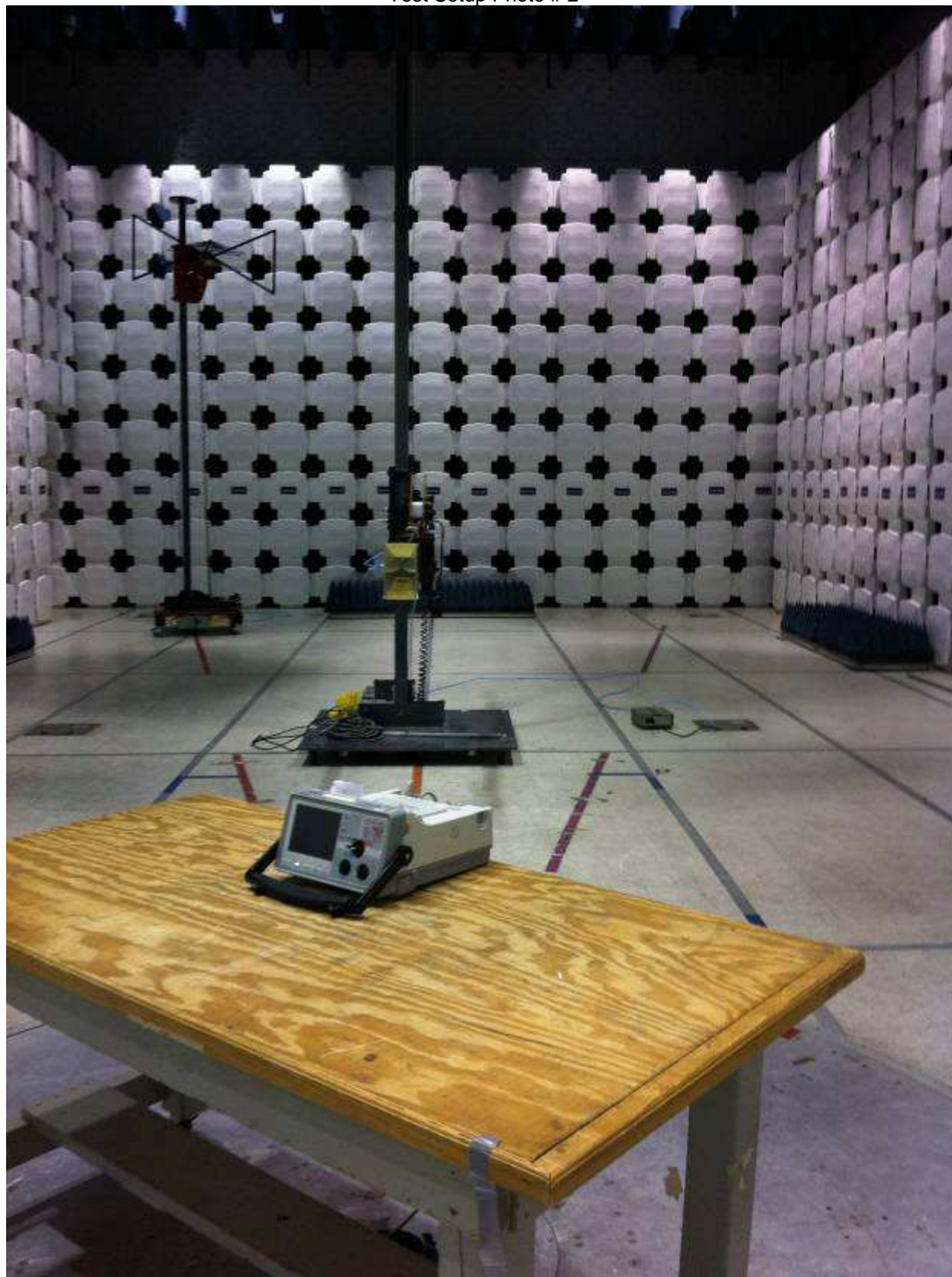
P is the power in watts.

6.4 Setup Photographs:

Test Setup Photo # 1

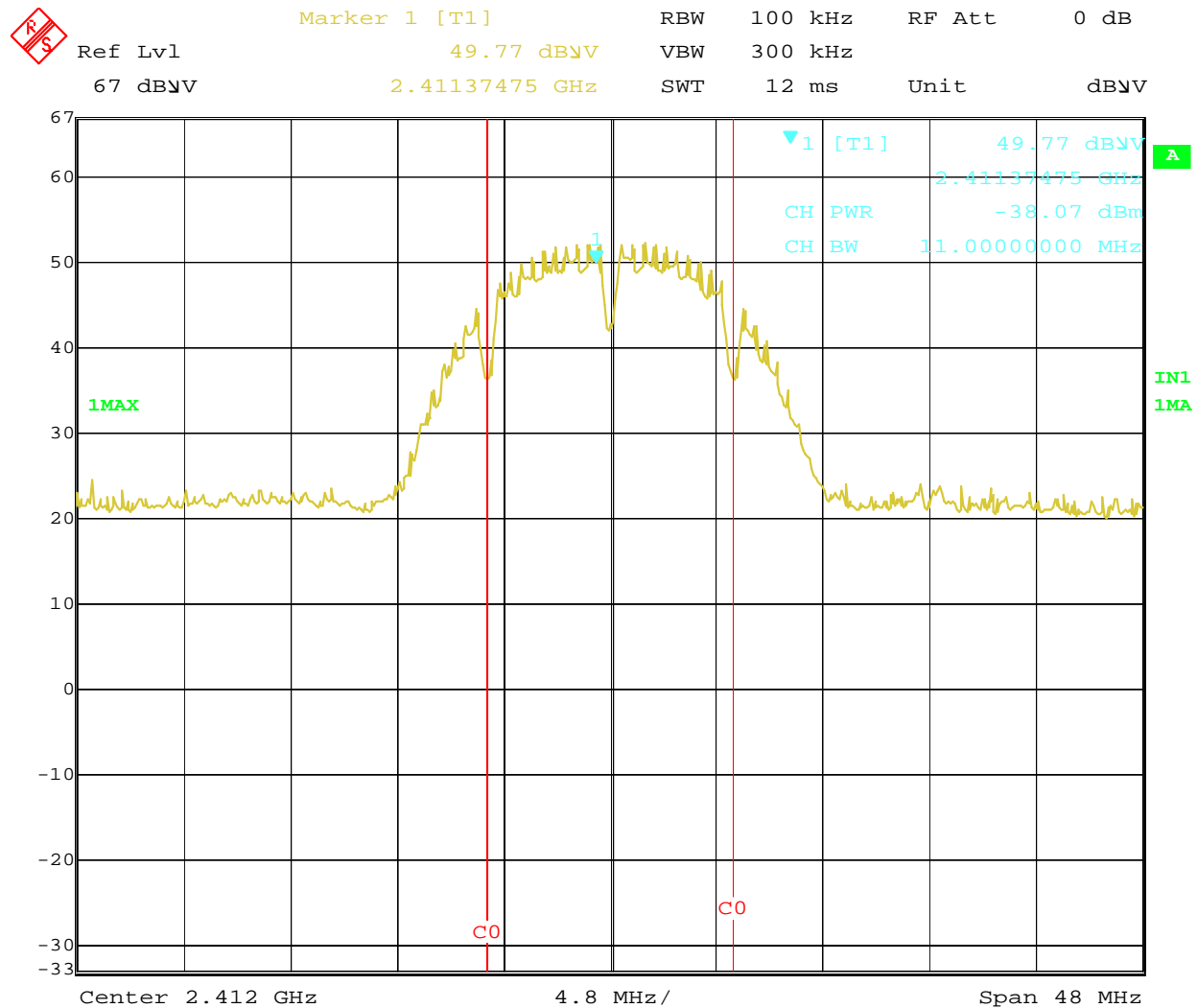


Test Setup Photo # 2



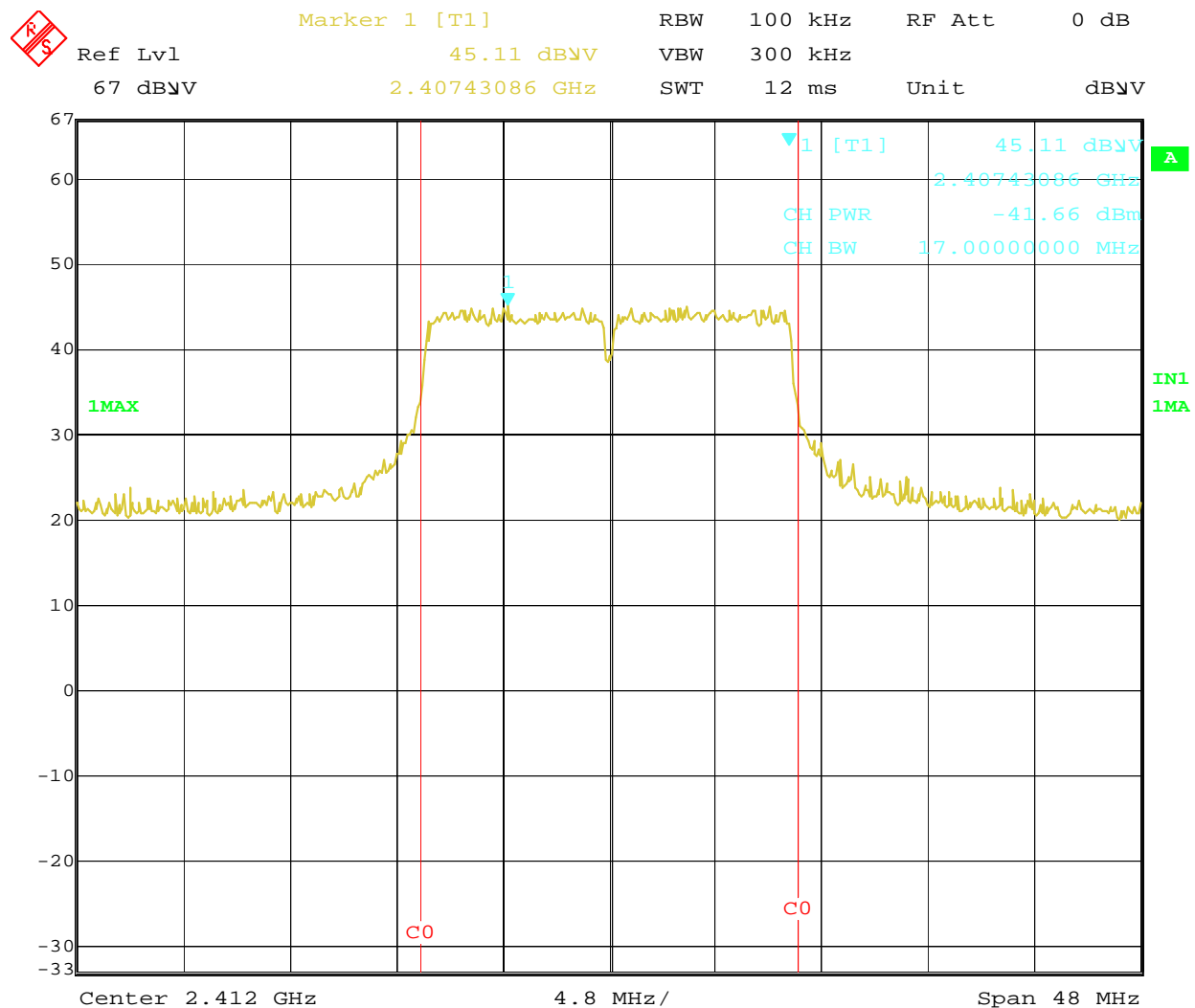
6.5 Data:

Channel 1 field strength at 3 meters (802.11b: 1 MB/s) using channel power integration function



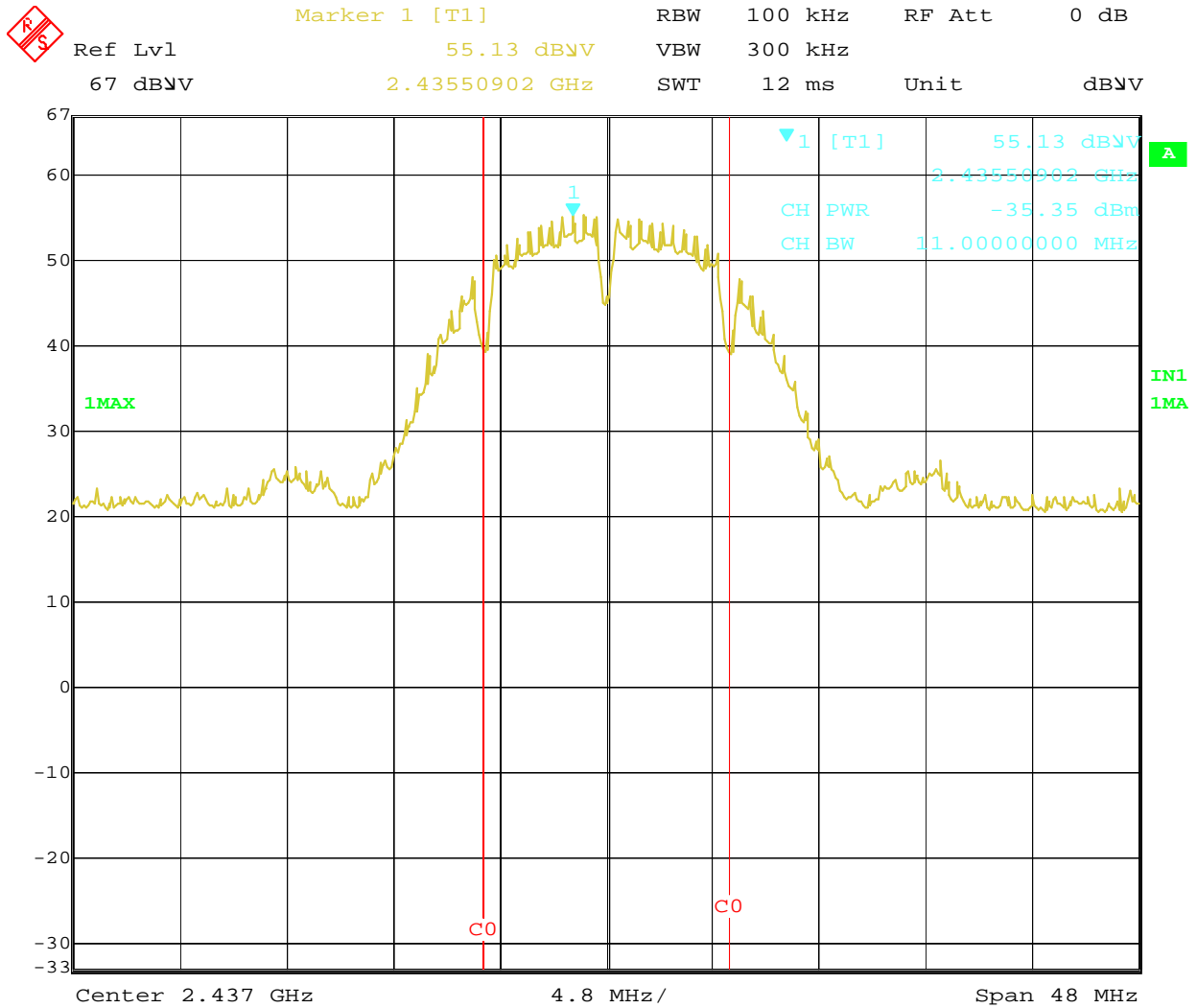
Date: 17.AUG.2011 13:18:11

Channel 1 field strength at 3 meters (802.11g: 6 MB/s) using channel power integration function



Date: 17.AUG.2011 14:04:36

Channel 6 field strength at 3 meters (802.11b: 1 MB/s) using channel power integration function

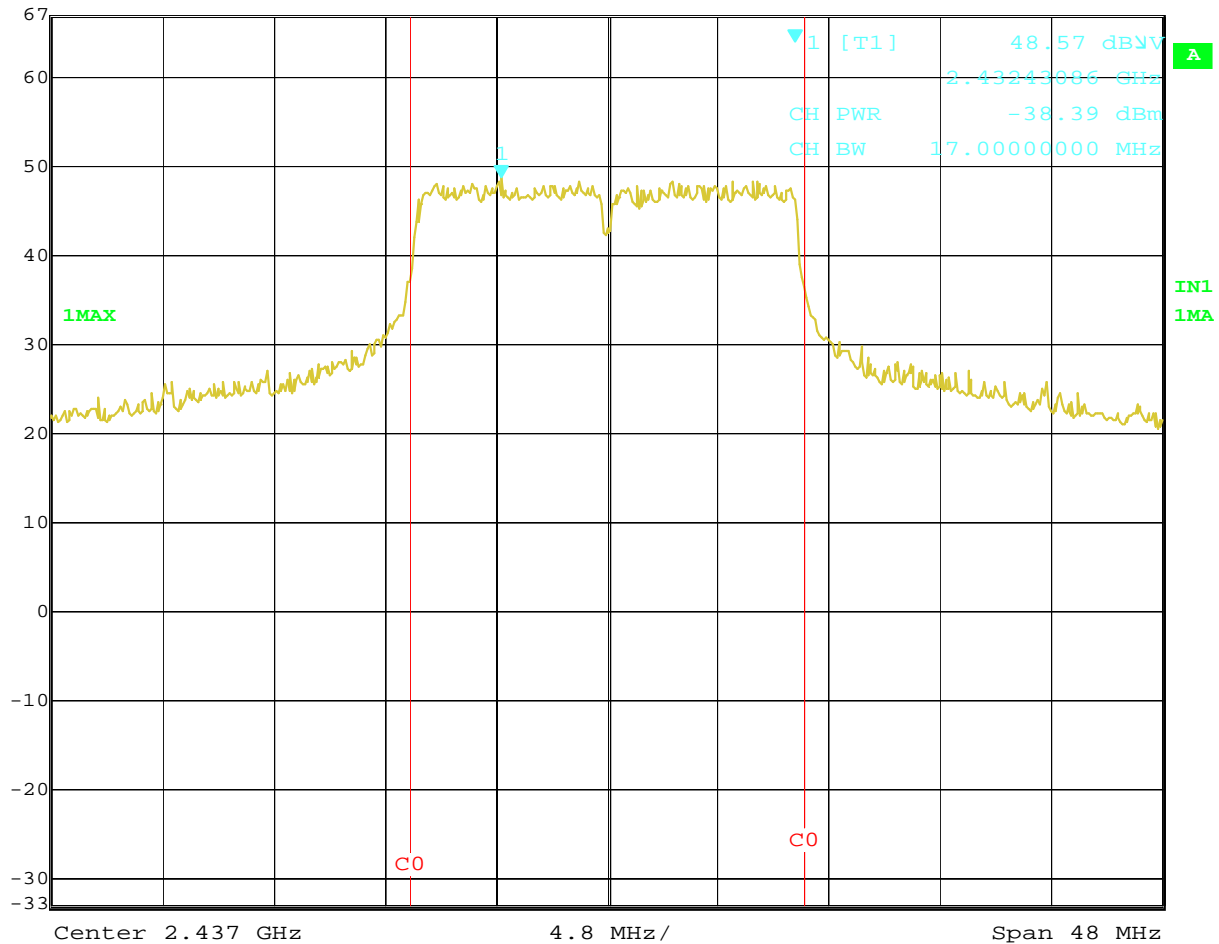


Date: 17.AUG.2011 14:45:38

Channel 6 field strength at 3 meters (802.11g: 6 MB/s) using channel power integration function

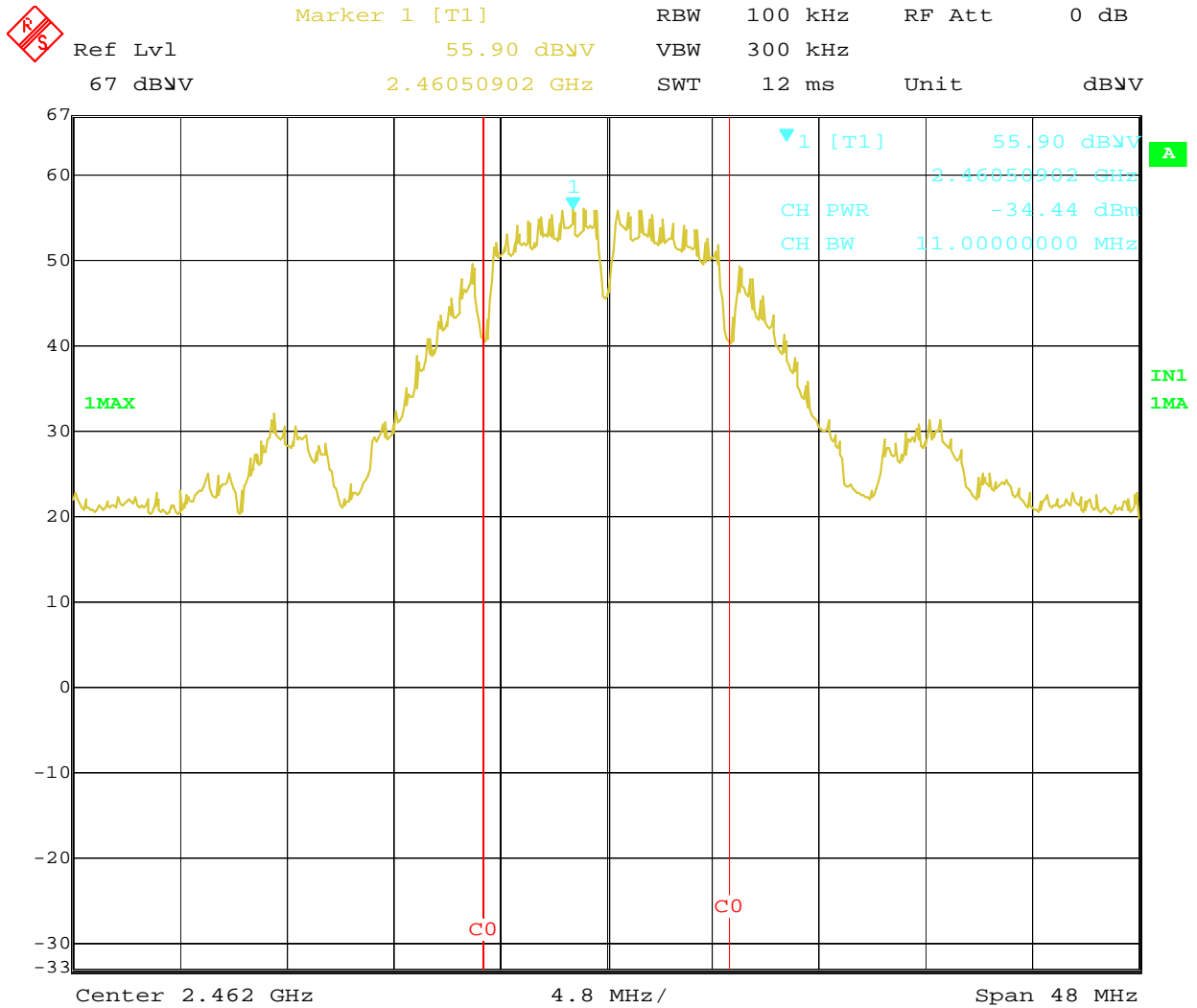


Marker 1 [T1] RBW 100 kHz RF Att 0 dB
Ref Lvl 48.57 dBμV VBW 300 kHz
67 dBμV 2.43243086 GHz SWT 12 ms Unit dBμV



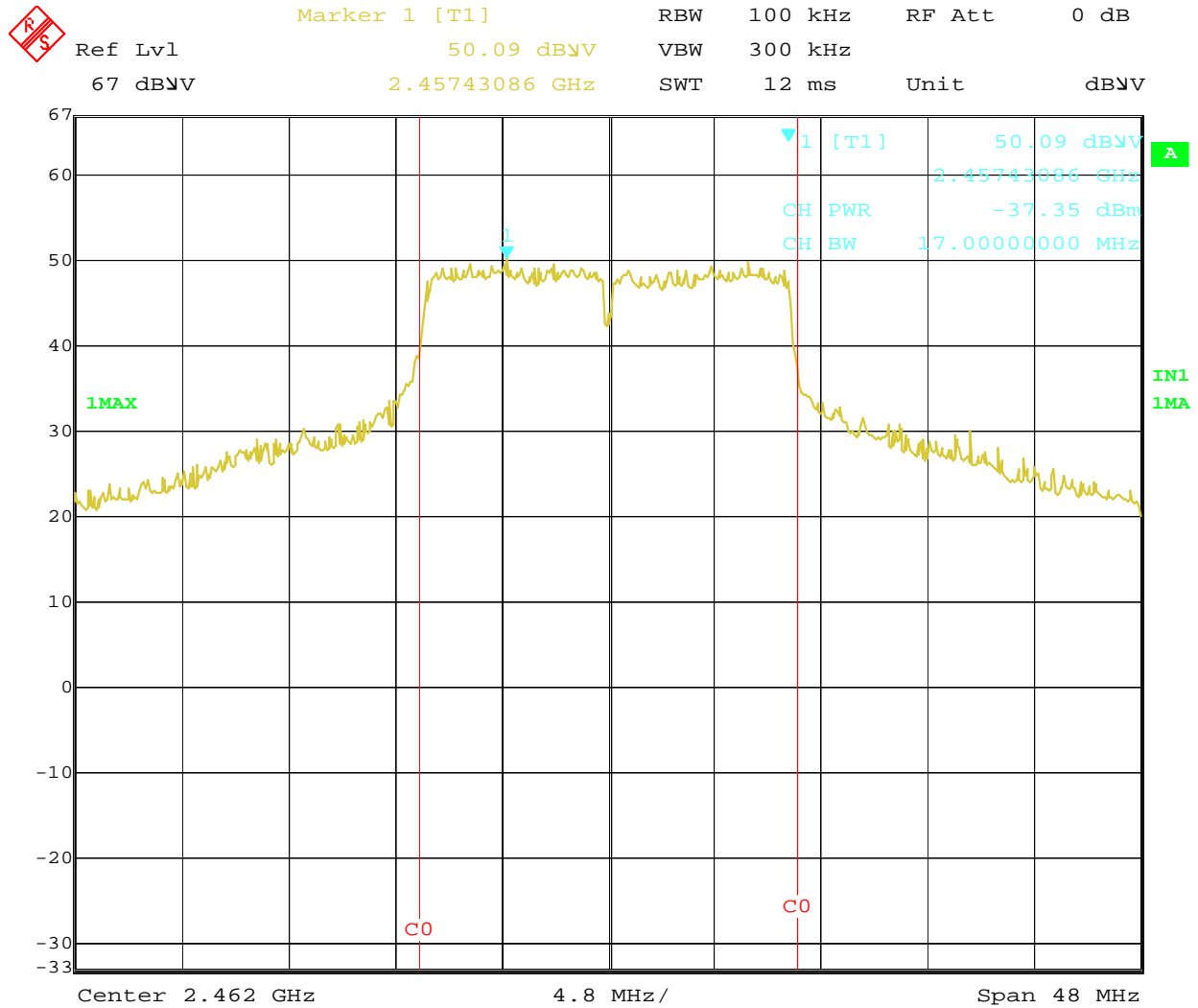
Date: 17.AUG.2011 15:18:31

Channel 11 field strength at 3 meters (802.11b: 1 MB/s) using channel power integration function



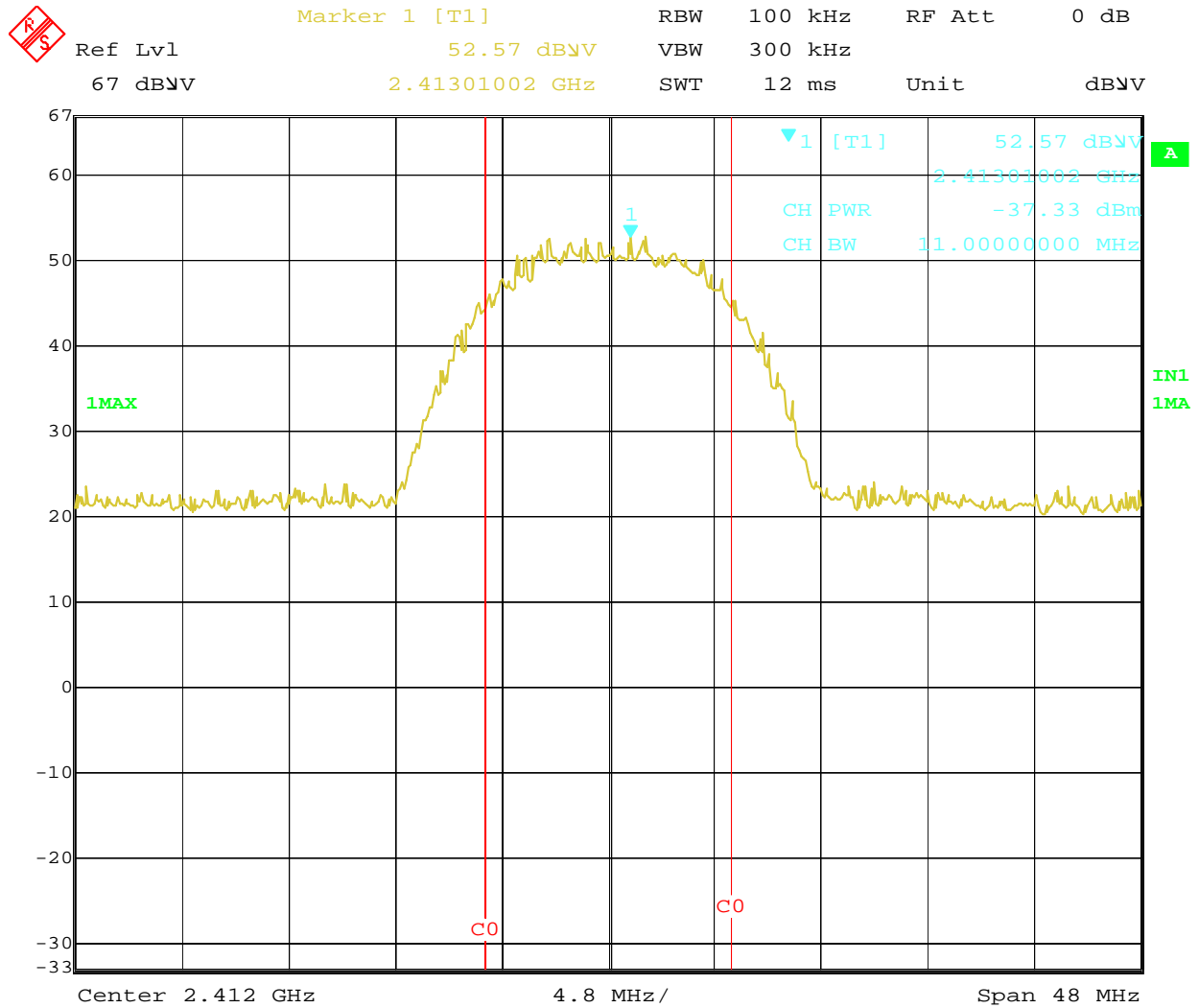
Date: 17.AUG.2011 16:01:46

Channel 11 field strength at 3 meters (802.11g: 6 MB/s) using channel power integration function



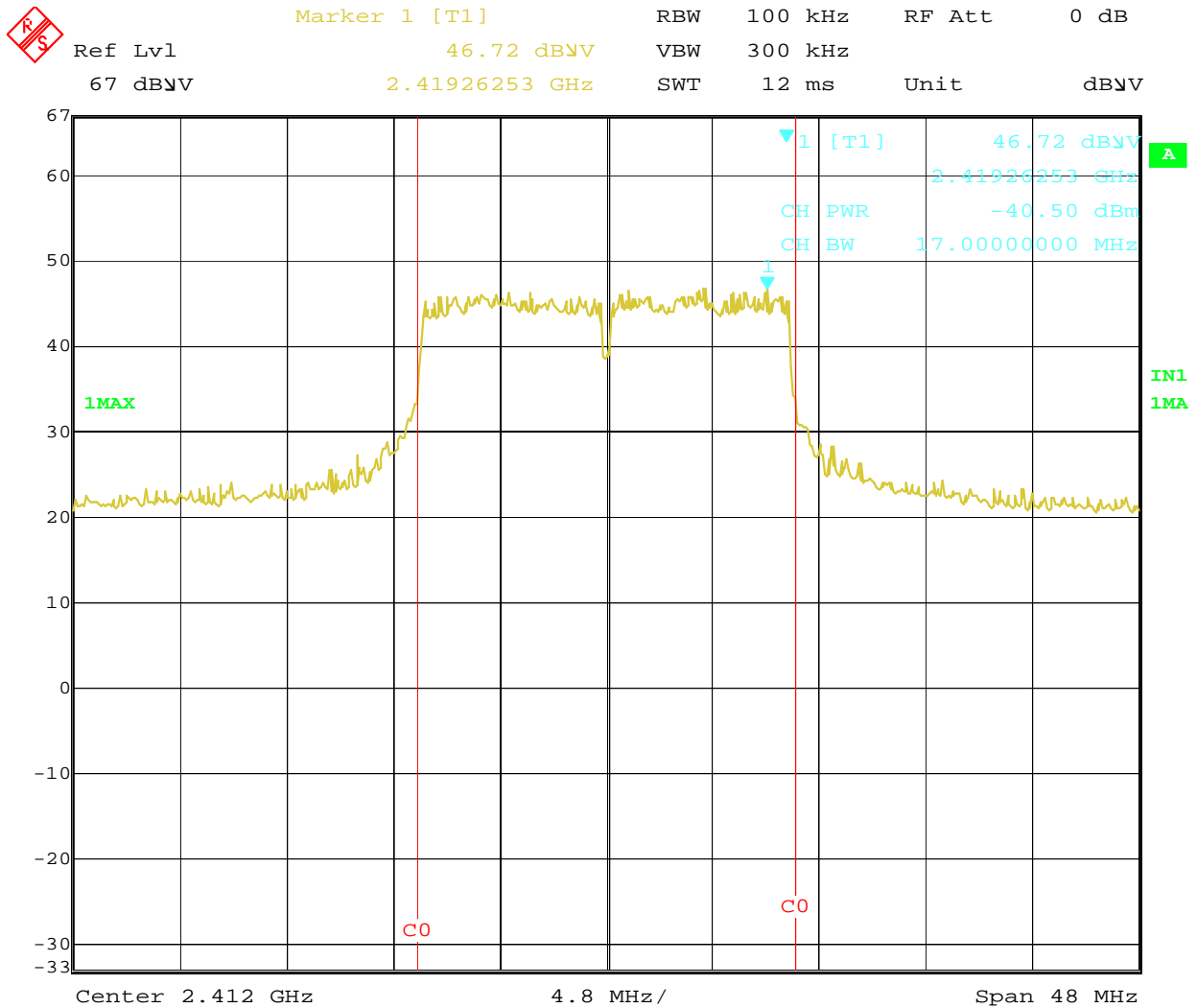
Date: 17.AUG.2011 16:22:51

Channel 1 field strength at 3 meters (802.11b: 11MB/s) using channel power integration function



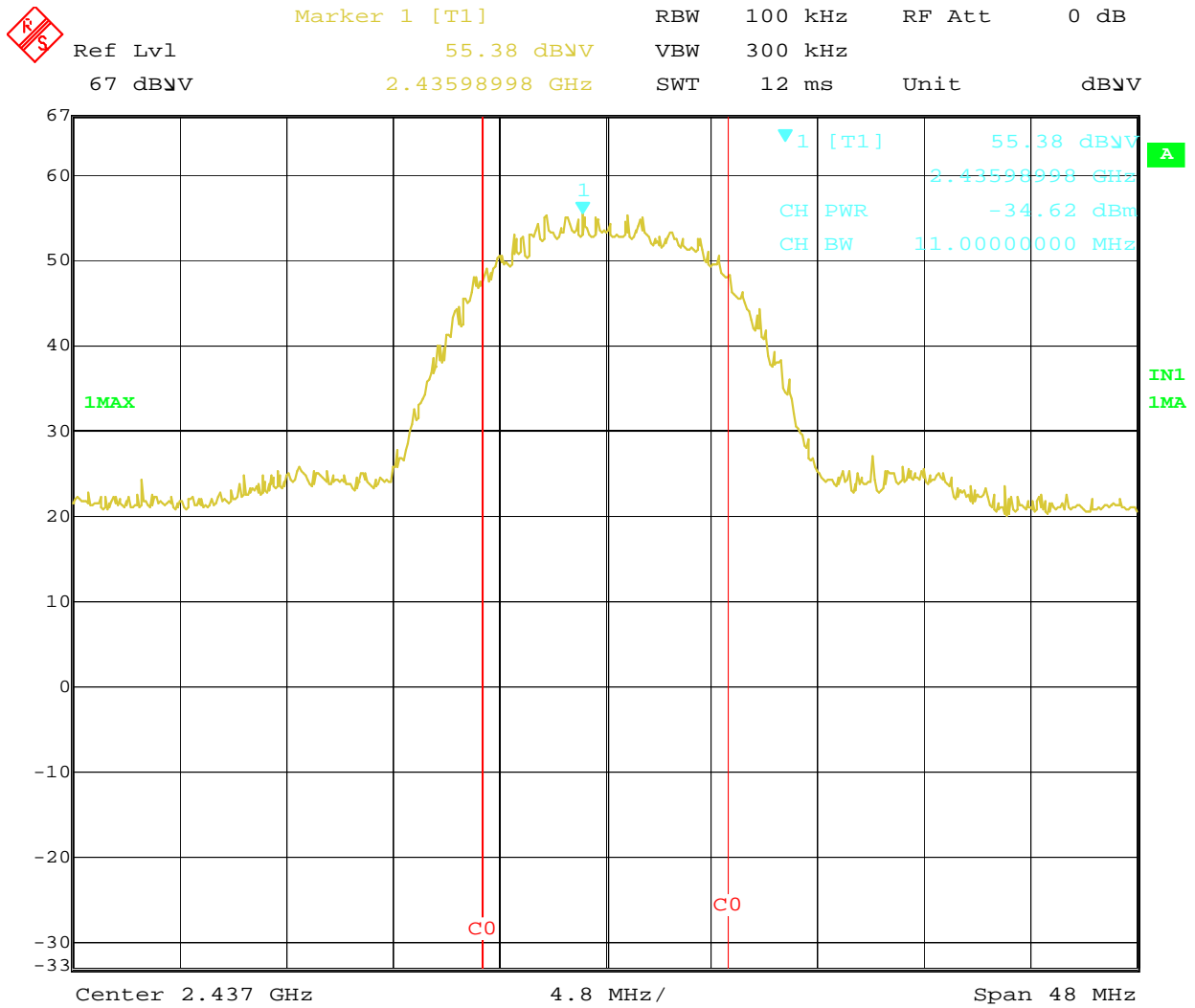
Date: 17.AUG.2011 13:42:20

Channel 1 field strength at 3 meters (802.11g: 54MB/s) using channel power integration function



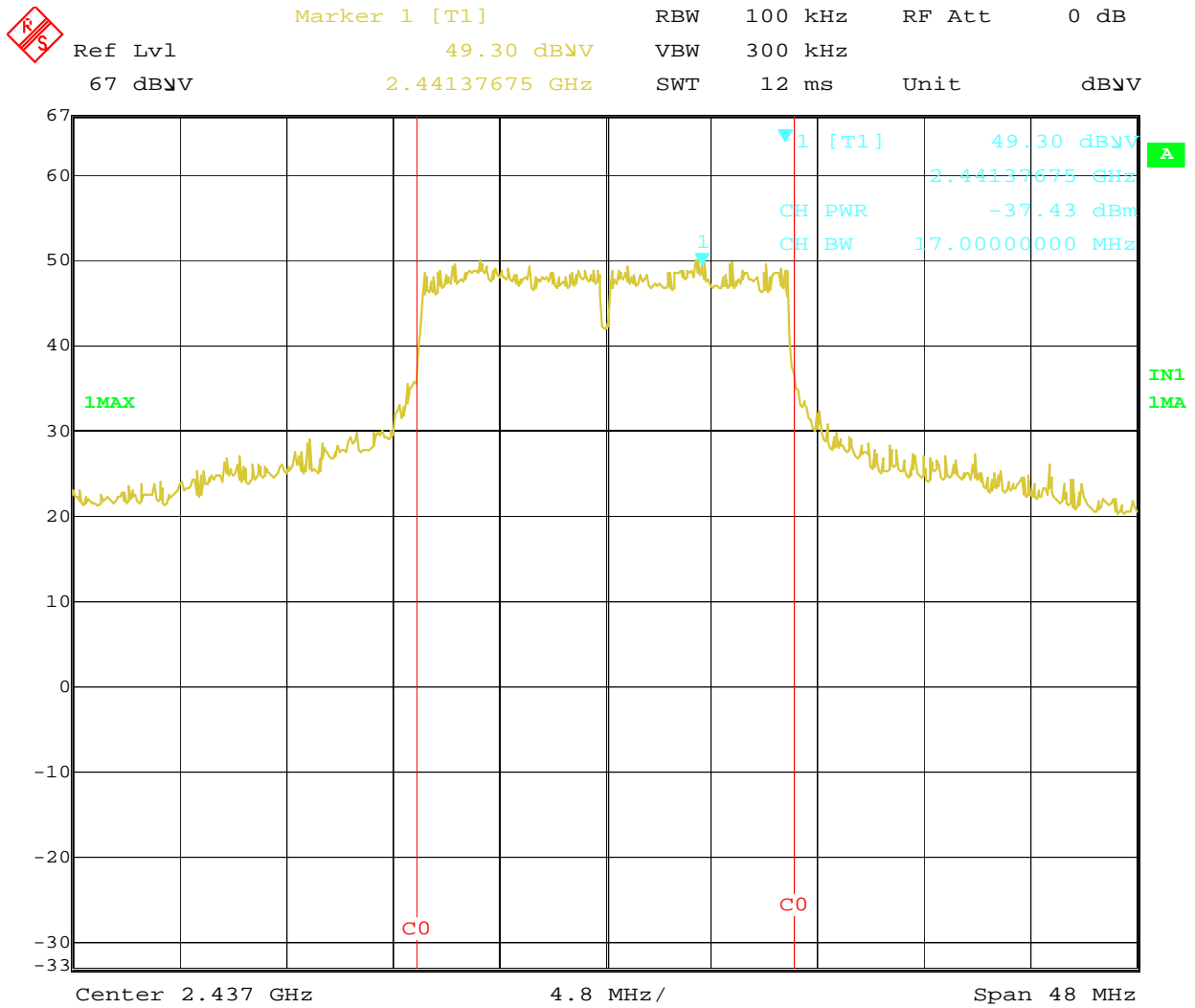
Date: 17.AUG.2011 14:19:26

Channel 6 field strength at 3 meters (802.11b: 11MB/s) using channel power integration function



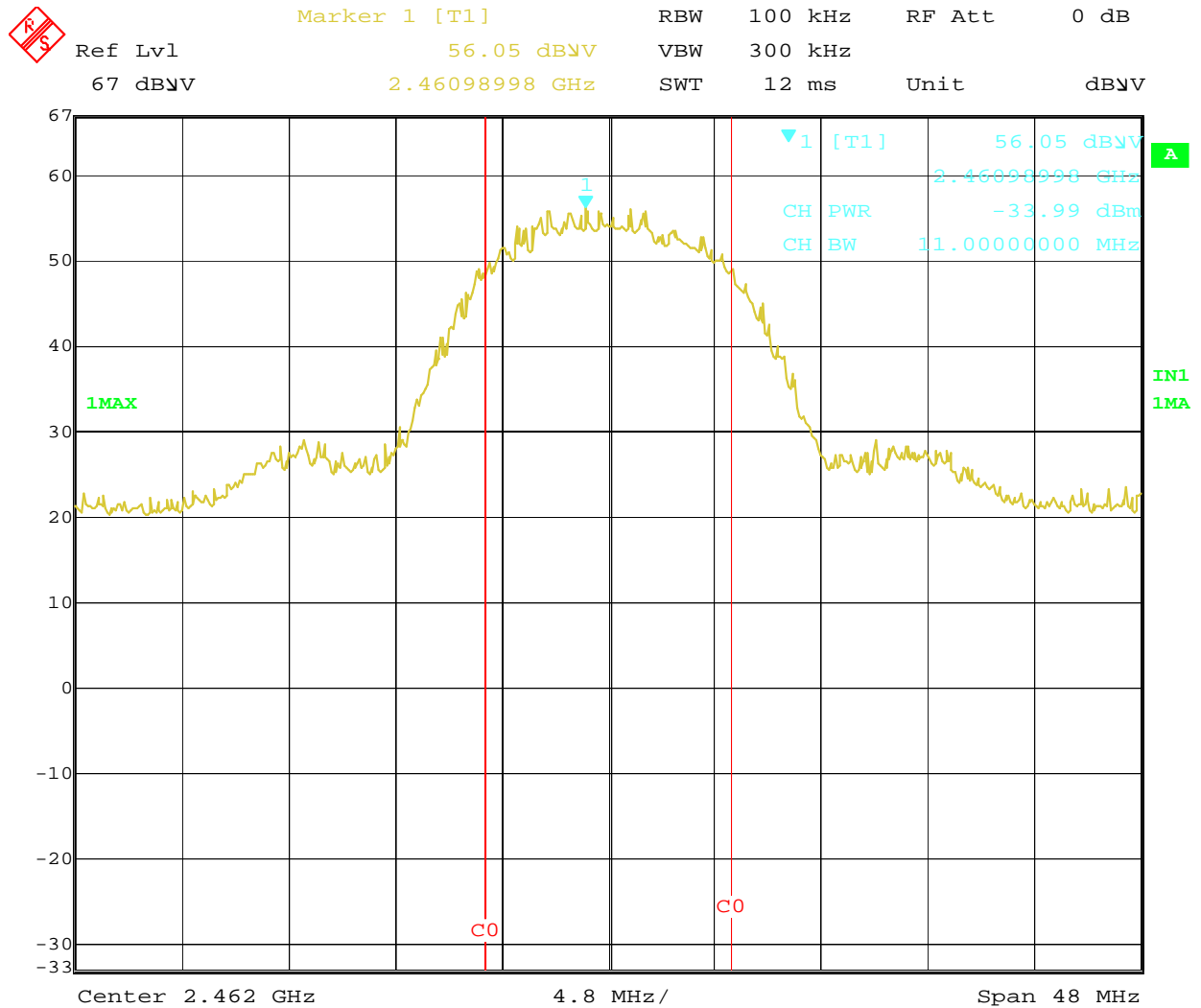
Date: 17.AUG.2011 14:59:11

Channel 6 field strength at 3 meters (802.11g: 54MB/s) using channel power integration function



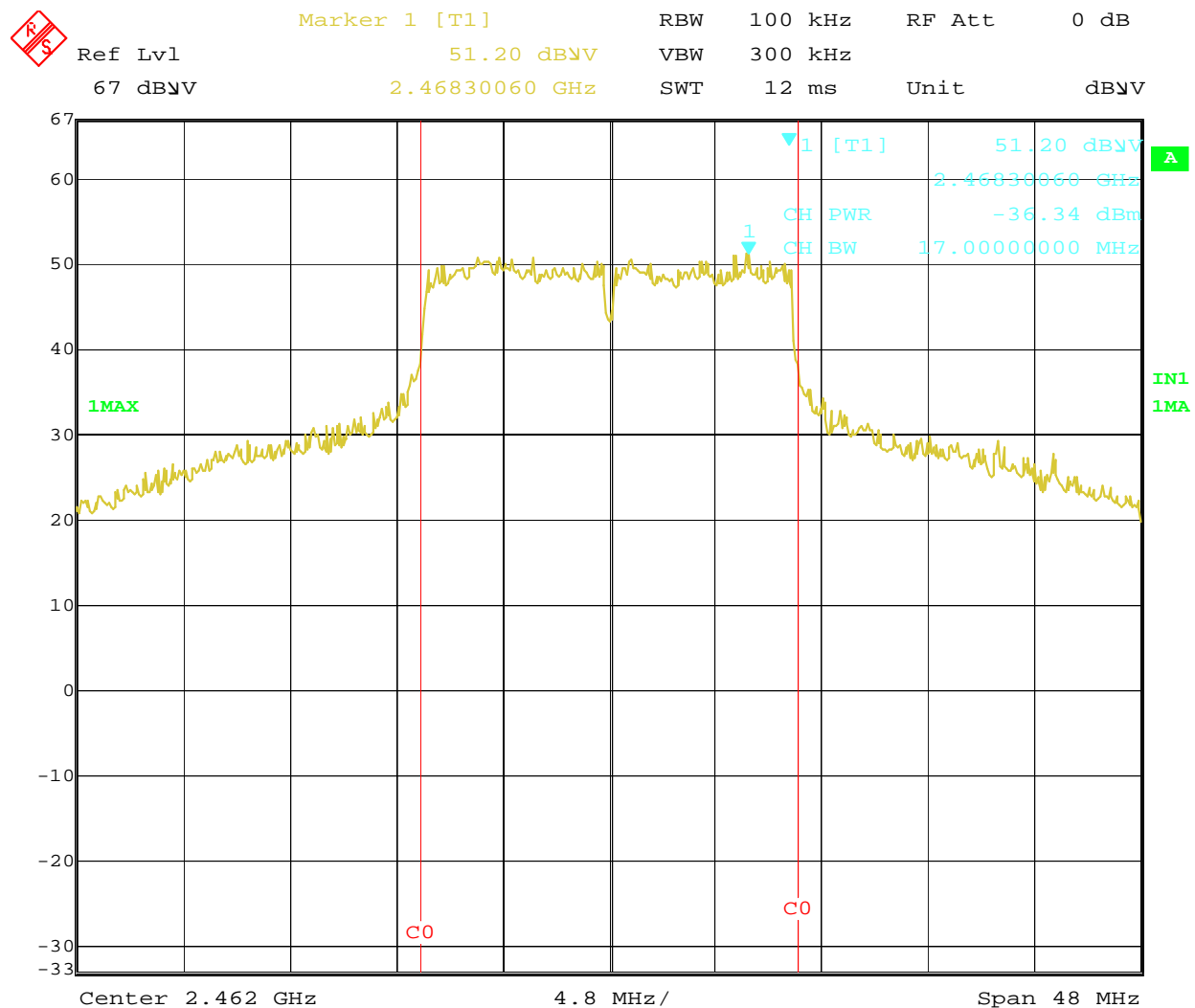
Date: 17.AUG.2011 15:28:23

Channel 11 field strength at 3 meters (802.11b: 11MB/s) using channel power integration function



Date: 17.AUG.2011 15:51:18

Channel 11 field strength at 3 meters (802.11g: 54MB/s) using channel power integration function



Date: 17.AUG.2011 16:34:18

Radiated Emissions

Company: Zoll Medical
 Model #: ZOLL E Series Data Comm Card
 Serial #: IN0411-00032
 Engineers: Kouma Sinn
 Project #: G100398565
 Standard: FCC Part 15.247 & RSS-210
 Receiver: 145-128
 PreAmp: NONE
 Antenna & Cables: N Bands: N, LF, HF, SHF
 Antenna: HORN2 V3m 10-08-2011.txt HORN2 H3m 10-08-2011.txt
 Cable(s): 3mTrackB 145-416 08-31-2011.txt NONE
 Location: 10m Chamber Barometer: DAV002 Filter: NONE
 Date(s): 08/17/11
 Temp/Humidity/Pressure: 20C 55% 998mbar
 Limit Distance (m): 3
 Test Distance (m): 3
 PreAmp Used? (Y or N): N Voltage/Frequency: 120VAC/60Hz Frequency Range: CH1, CH6, CH11
 Net = Reading (dBuV/m) + Antenna Factor (dB1/m) + Cable Loss (dB) - Preamp Factor (dB) - Distance Factor (dB)
 Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW

Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dBm	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dBm/m	Limit dBm/m	Margin dB	Bandwidth
Channel 1 802.11b (11 MB/s)											
CPF	V	2413.000	-37.33	28.34	5.83	0.00	0.00	-3.17	--	--	100/300 kHz
Channel 1 802.11g (54 MB/s)											
CPF	V	2413.000	-40.50	28.34	5.83	0.00	0.00	-6.34	--	--	100/300 kHz
Channel 6 802.11b (11 MB/s)											
CPF	V	2435.000	-34.62	28.35	5.87	0.00	0.00	-0.40	--	--	100/300 kHz
Channel 6 802.11g (54 MB/s)											
CPF	V	2435.000	-37.43	28.35	5.87	0.00	0.00	-3.21	--	--	100/300 kHz
Channel 11 802.11b (11 MB/s)											
CPF	V	2461.000	-33.99	28.36	5.92	0.00	0.00	0.29	--	--	100/300 kHz
Channel 11 802.11g (54 MB/s)											
CPF	V	2461.000	-36.34	28.36	5.92	0.00	0.00	-2.06	--	--	100/300 kHz

CPF = Channel Power Function

Power adjustment from 3 meters to an EIRP at 10 meters.

dBuV = dBm + 107 (in the spectrum analyzer front-end)

Net Power = P = (E² * d²) / (30G), or dBuV@ 3m - 95.22 = dBm

Channel	Data Transfer Rate	Field Strength (dBuV/m)	Net Power (dBm)
1	802.11b (11 MB/s)	103.83	8.61
1	802.11g (54 MB/s)	100.66	5.44
6	802.11b (11 MB/s)	106.60	11.38
6	802.11g (54 MB/s)	103.79	8.57
11	802.11b (11 MB/s)	107.29	12.07
11	802.11g (54 MB/s)	104.94	9.72

Test Personnel: Kouma Sinn *KPS*

Test Date: 08/17/2011

Supervising Engineer:
 (Where Applicable) N/A
 Product Standard: FCC Part 15.247, RSS-210 Annex 8
 Input Voltage: 115VAC/60Hz

Emissions below the limits
 specified in Section 6.3
 Test Levels:
 Ambient Temperature: 20 °C
 Relative Humidity: 55 %
 Atmospheric Pressure: 998 mbar

Pretest Verification w/ Ambient
 Signals or BB Source: **Ambient Signals**

Notes: The worst-case data transfer rate for 802.11g is 54MB/s and for 802.11b is 11MB/s. All the tests are performed with the worst-case data transfer rate.

Deviations, Additions, or Exclusions: None

7 Transmitter Radiated Spurious Emissions

7.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C Section 15.247 and RSS-210 Annex 8.

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A wooden table 80 cm high is used for table-top equipment.

Measurement Uncertainty

For radiated emissions, U_{lab} (3.5 dB at 3m and 3.5 dB at 10m below 1 GHz, and 4.2 dB at 3m above 1 GHz) $< U_{CISPR}$ (5.2 dB), which is the reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where

- FS = Field Strength in dB μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = 52.0 dB μ V
AF = 7.4 dB/m
CF = 1.6 dB
AG = 29.0 dB
FS = 32 dB μ V/m

To convert from dB μ V to μ V or mV the following was used:

$$UF = 10^{(NF / 20)} \text{ where } UF = \text{Net Reading in } \mu\text{V}$$

NF = Net Reading in dB μ V

Example:

$$FS = RA + AF + CF - AG = 52.0 + 7.4 + 1.6 - 29.0 = 32.0$$
$$UF = 10^{(32 \text{ dB}\mu\text{V} / 20)} = 39.8 \mu\text{V/m}$$

7.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
SAF767'	Weatherstation	Davis Instruments	Perception II	PE91222A03	01/14/2011	01/14/2012
145-414	Cables 145-400 145-409 145-4-5 145-403	Huber + Suhner	3m Track A cables	multiple	08/31/2010	09/15/2011
145034'	BiLog Antenna (30 MHz to 1GHz)	Schaffner Chase EMC	CBL6111C	none	01/07/2011	01/07/2012
145003'	Preamplifier (150 KHz to 1.3 GHz)	Hewlett Packard	8447D	2443A04077	09/24/2010	09/24/2011
145014'	Preamplifier (1 GHz to 26.5 GHz)	Hewlett Packard	8449B	3008A00232	12/28/2010	12/28/2011
HORN2'	HORN ANTENNA	EMCO	3115	9602-4675	10/08/2010	10/08/2011
145128'	EMI Receiver 40 GHz (20 Hz - 40 Ghz)	Rohde & Schwarz	ESI	8392831001	08/10/2010	09/10/2011
REA002'	2.5GHz High Pass Filter	Reactel, Inc	7HS-2.5G/18G-S11	06-1	12/06/2010	12/06/2011
145-416'	Cables 145-400 145-408 145-402 145-404	Huber + Suhner	3m Track B cables	multiple	08/31/2010	08/31/2011
EMC02'	ANTENNA, RIDGED GUIDE, 1-18 GHZ	EMCO	3115	2784	10/08/2010	10/08/2011
CBL030'	High Frequency Cable 40GHz	Megaphase	TM40 K1K1 80	CBL030	01/06/2011	01/06/2012
MEG005'	High Frequency Cable	Megaphase	TM40-K1K1-197	8148601-001	01/06/2011	01/06/2012
PRE9'	100MHz-40GHz Preamp	MITEQ	NSP4000-NFG	1260417	05/12/2011	05/12/2012
ROS001'	Spectrum Analyzer 20Hz - 40 GHz	Rohde & Schwartz	FSEK-30	100225	01/13/2011	01/13/2012

Software Utilized:

Name	Manufacturer	Version
C5	Teseq	Build 5.26.00.3
Excel 2003	Microsoft	(11.8231.8221) SP3
EMI Boxborough.xls	Intertek	08/27/10

7.3 Results:

The sample tested was found to comply.

In any 100 kHz bandwidth outside the frequency band, 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. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in 15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see 15.205(c)).

FCC Part 15.209(a) & RSS-210 A8.5 – Restricted Band Radiated Spurious/Harmonics Limits

Frequency	Field Strength		Test Distance
(MHz)	µV/m	dBµV/m	(meters)
30–88	100	40.00	3
88–216	150	43.52	3
216–960	200	46.02	3
Above 960	500	53.98	3

FCC Part 15.247(d) & RSS-210 A8.5 – Non Restricted Band Radiated Spurious/Harmonics Limits

802.11(b) 11Mb/s

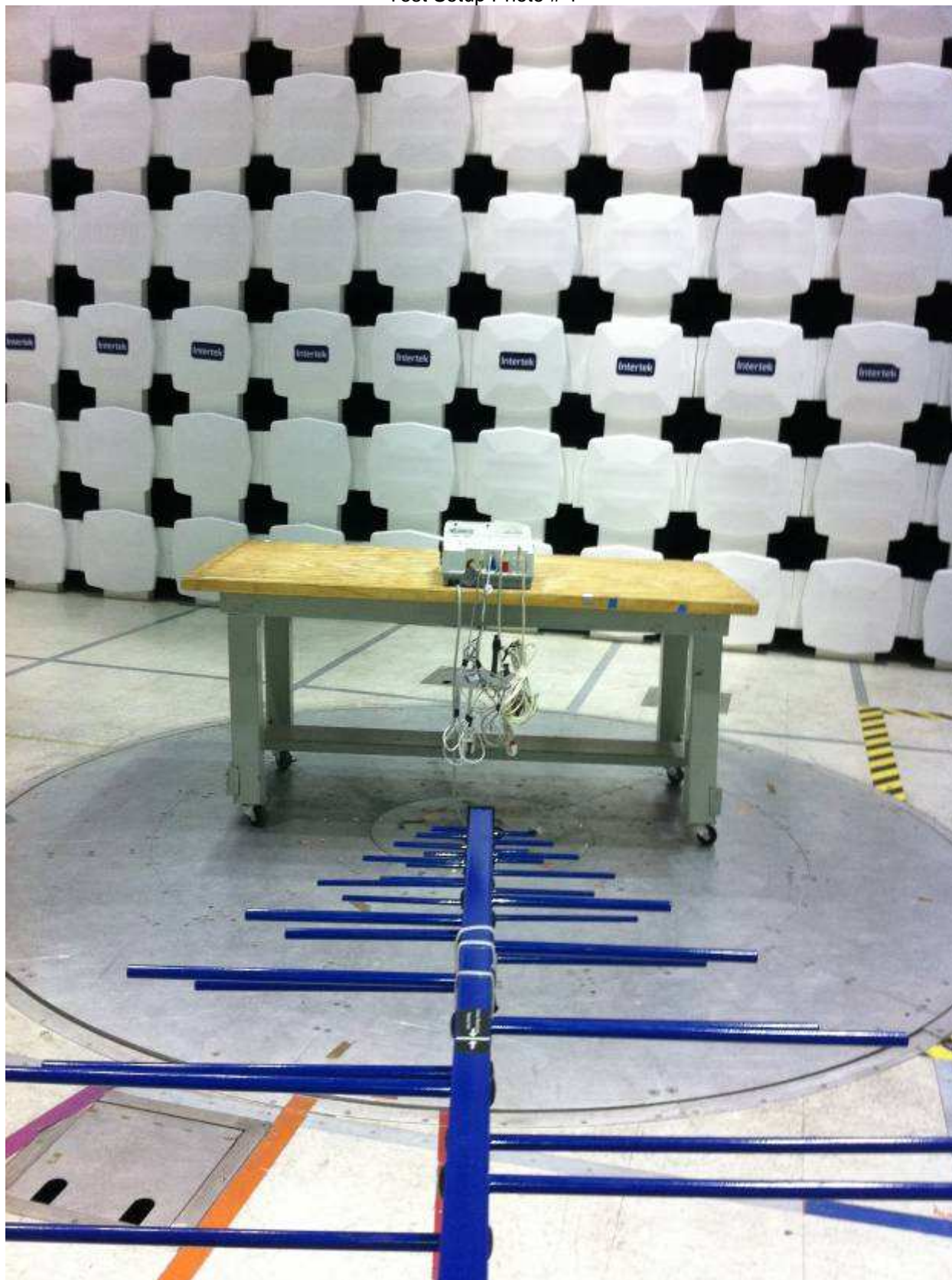
Channels	Fundamental Field Strength (dBuV/m)	Spurious/Harmonics Limits (dBuV/m)	Test Distance (meters)
1	93.41	73.41	3
6	96.91	76.91	3
11	97.58	77.58	3

802.11(g) 54Mb/s

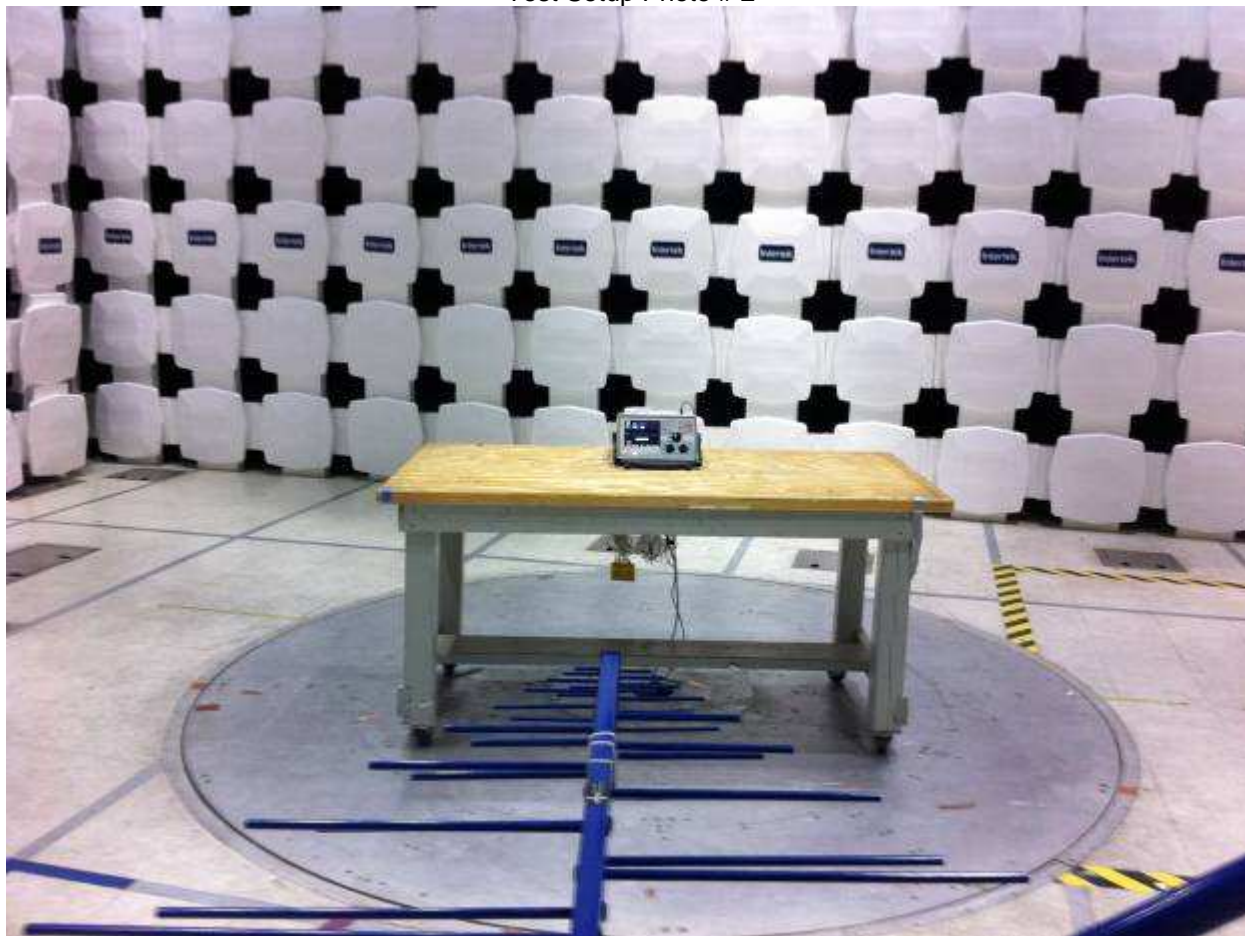
Channels	Fundamental Field Strength (dBuV/m)	Spurious/Harmonics Limits (dBuV/m)	Test Distance (meters)
1	91.22	71.22	3
6	94.38	74.38	3
11	95.17	75.17	3

7.4 Photos:

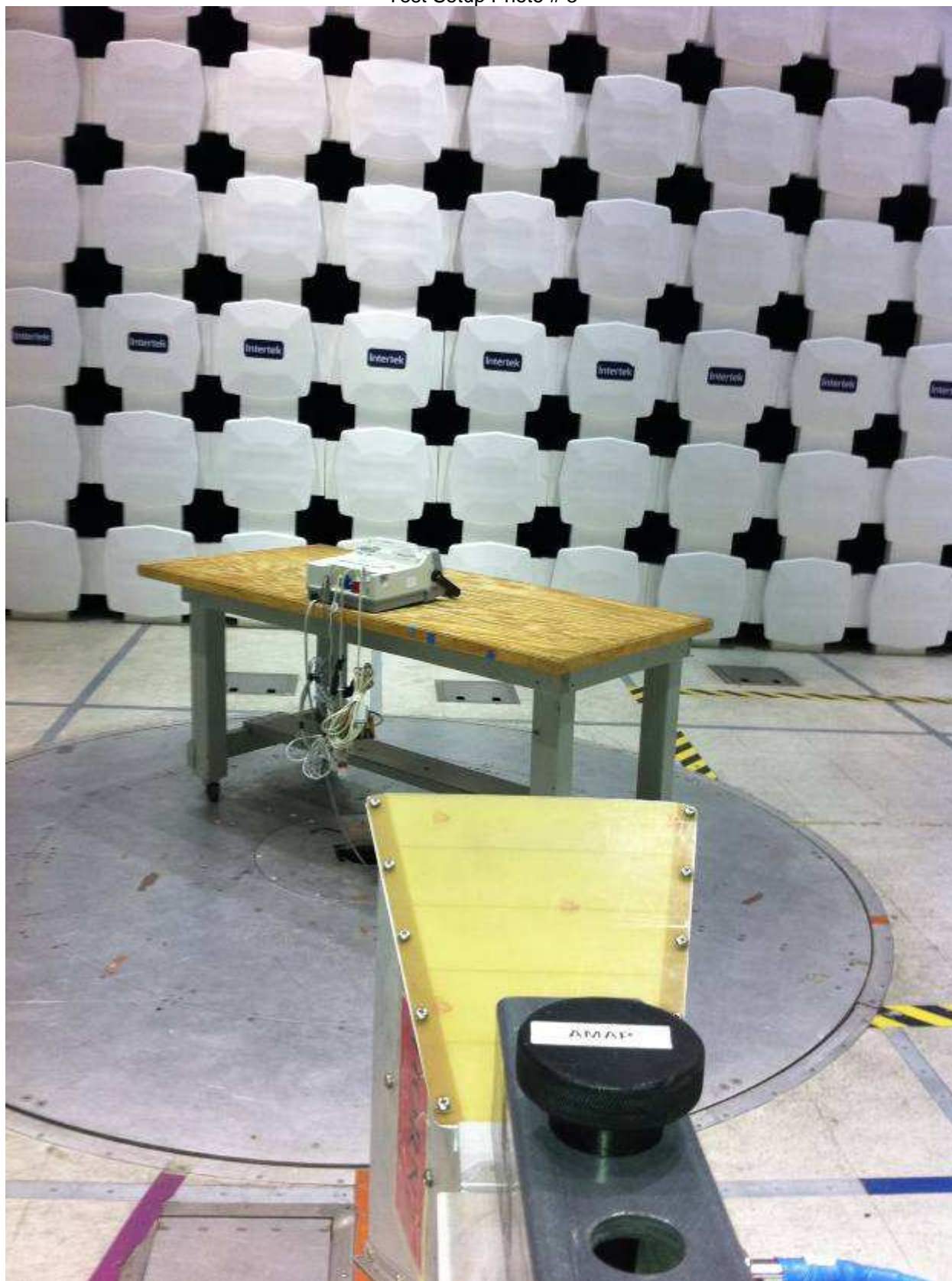
Test Setup Photo # 1



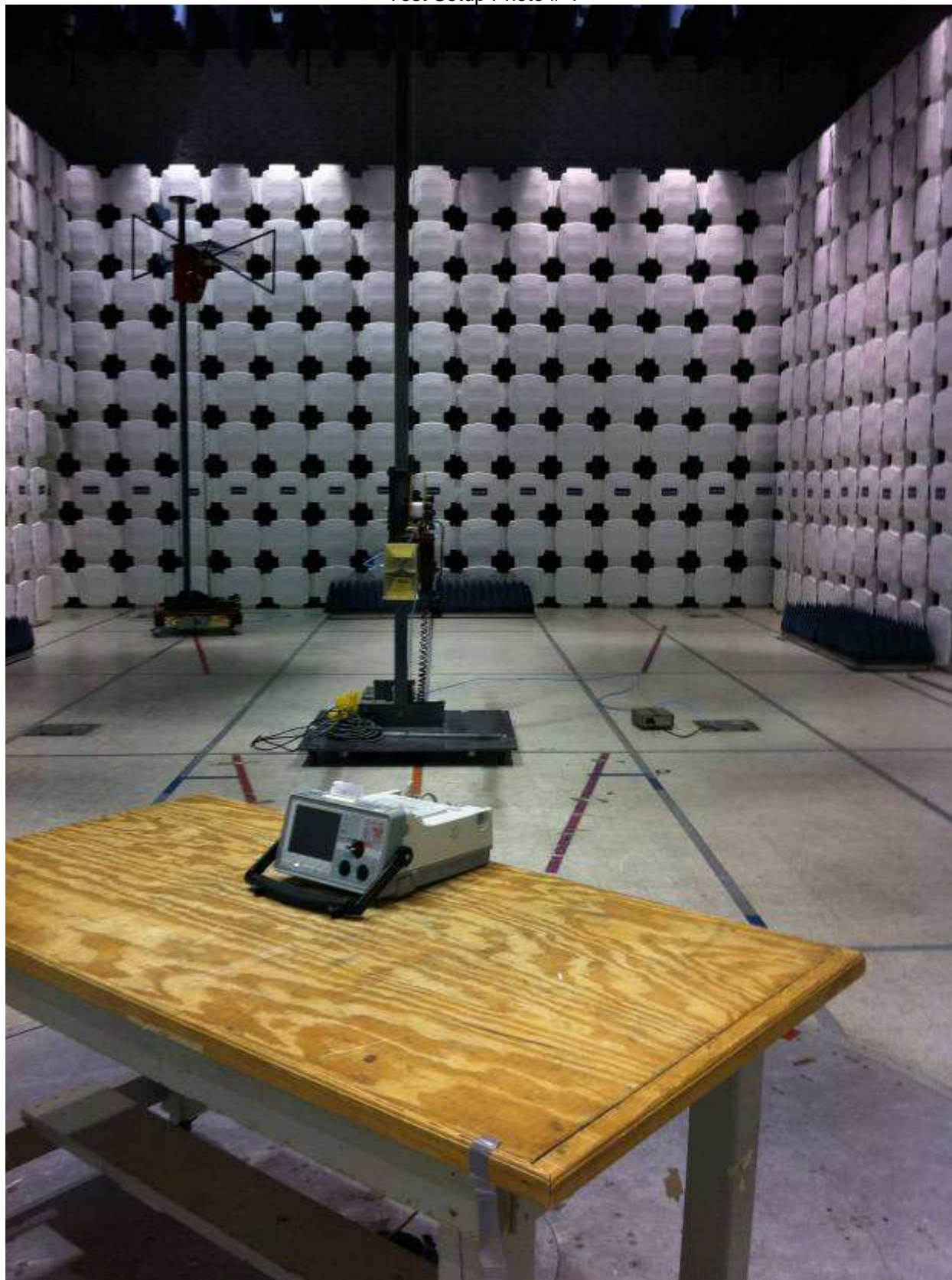
Test Setup Photo # 2



Test Setup Photo # 3



Test Setup Photo # 4

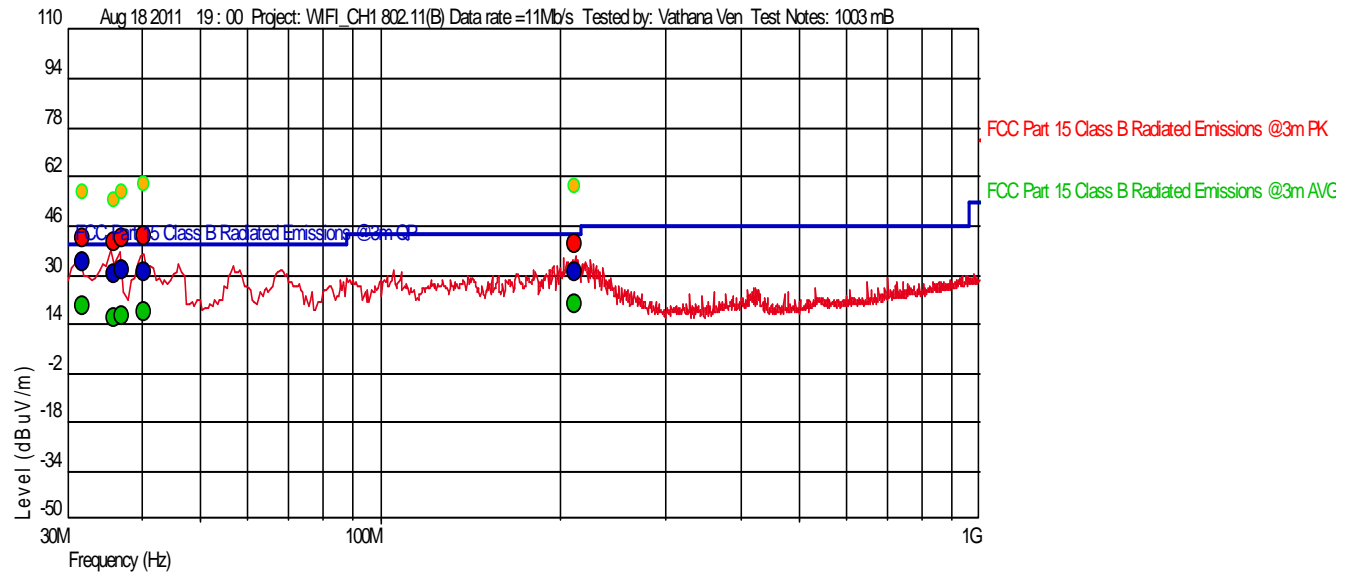


7.5 Plots/Data:

Data Transfer Rate: 802.11b (11 MB/s)

FCC Part 15.209, FCC Part 15.247, RSS-210

Channel 1 (2.412GHz) Radiated Emissions @ 3m, Vertical Polarity, 30-1000MHz



- Measured Peak Value
 - Measured Quasi Peak Value
 - Measured Average Value
 - Maximum Value of Mast and Turntable
- Level (dBuV/m) = AF + CL + PA + Raw
- AF = Antenna Factor
- CL = Cable Losses
- PA = Pre-Amplifier
- Raw = Raw Instrument Reading (Not listed on Spot Tables)

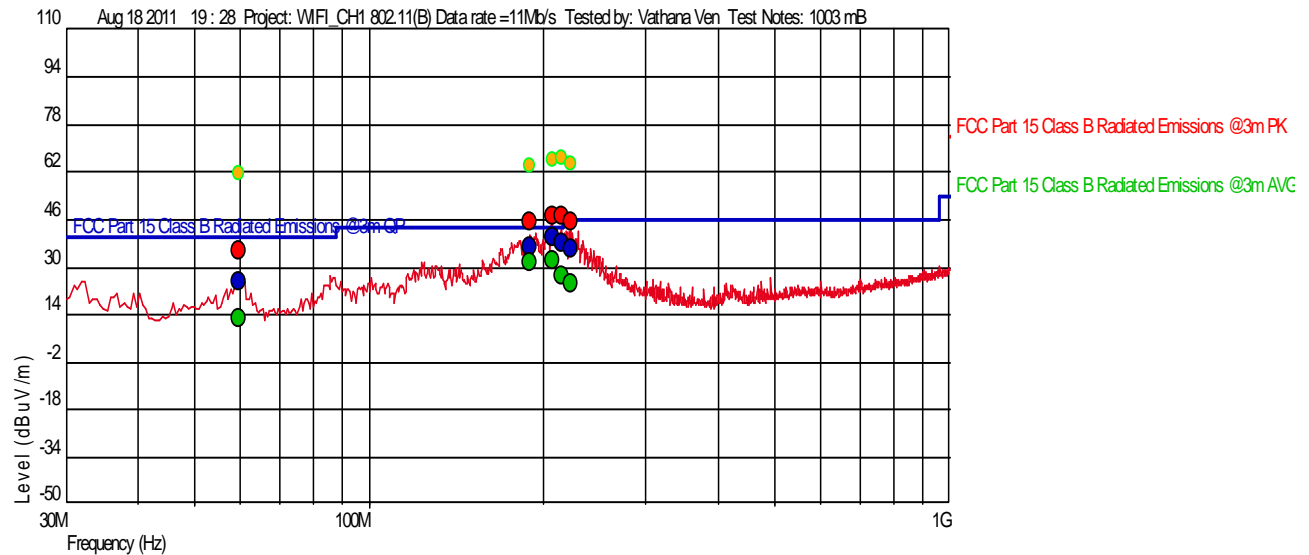
Measured: Quasi-Peak

Frequency (Hz)	Level (dBuV/m)	Ant. Fact. (dB)	Other Fact. (dB)	Limit (dBuV/m)	Margin (dB)	Vert (I)	Angle (deg)	Mast Height (m)	RBW (Hz)
31.7914M	33.92	16.963	-26.767	40	-6.08		323	1.00	120k
35.8859M	30.50	14.834	-26.784	40	-9.5		258	1.00	120k
36.8587M	31.36	14.285	-26.788	40	-8.64		259	1.00	120k
40.2333M	30.90	12.707	-26.795	40	-9.1		3	1.00	120k
211.388M	30.90	10.700	-25.406	43.52	-12.62		45	1.00	120k

Data Transfer Rate: 802.11b (11 MB/s)

FCC Part 15.209, FCC Part 15.247, RSS-210

Channel 1 (2.412GHz) Radiated Emissions @ 3m, Horizontal Polarity, 30-1000MHz



- Measured Peak Value
 - Measured Quasi Peak Value
 - Measured Average Value
 - Maximum Value of Mast and Turntable
- Level (dBuV/m) = AF + CL + PA + Raw
- AF = Antenna Factor
- CL = Cable Losses
- PA = Pre-Amplifier
- Raw = Raw Instrument Reading (Not listed on Spot Tables)

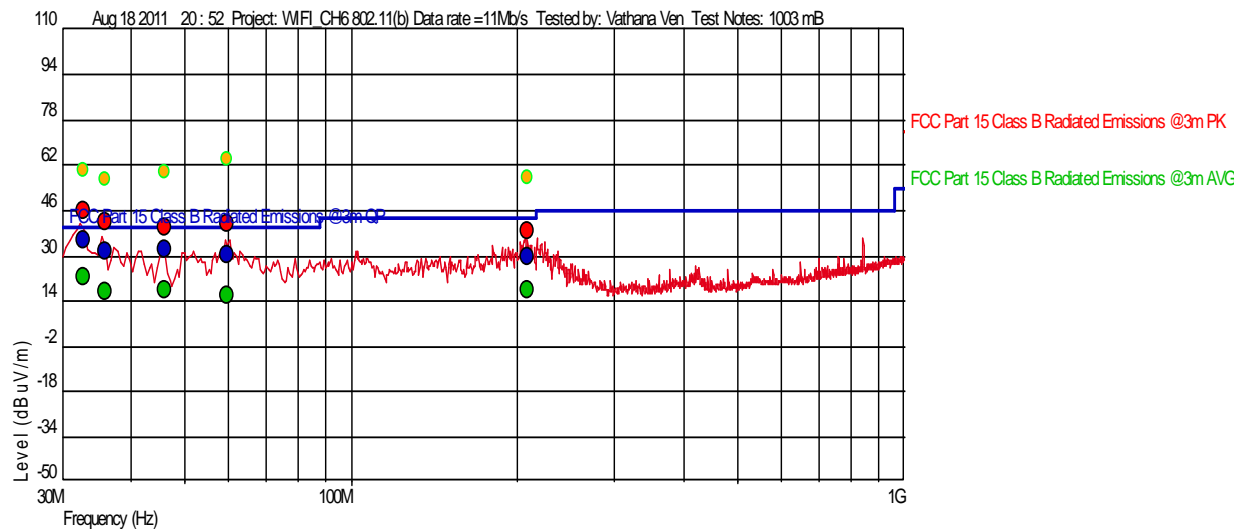
Measured: Quasi-Peak

Frequency (Hz)	Level (dBuV/m)	Ant. Fact. (dB)	Other Fact. (dB)	Limit (dBuV/m)	Margin (dB)	Hor (—)	Angle (deg)	Mast Height (m)	RBW (Hz)
59.5816M	24.92	5.684	-26.311	40	-15.08	--	278	3.22	120k
188.745M	36.53	9.700	-25.474	43.52	-6.99	--	248	1.07	120k
206.696M	39.81	10.500	-25.404	43.52	-3.71	--	249	1.34	120k
214.287M	37.90	10.157	-25.408	43.52	-5.62	--	249	1.53	120k
223.070M	36.27	10.484	-25.412	46	-7.25	--	257	1.11	120k

Data Transfer Rate: 802.11b (11 MB/s)

FCC Part 15.209, FCC Part 15.247, RSS-210

Channel 6 (2.437GHz) Radiated Emissions @ 3m, Vertical Polarity, 30-1000MHz



- Measured Peak Value
 - Measured Quasi Peak Value
 - Measured Average Value
 - Maximum Value of Mast and Turntable
- Level (dBuV/m) = AF + CL + PA + Raw
 AF = Antenna Factor
 CL = Cable Losses
 PA = Pre-Amplifier
 Raw = Raw Instrument Reading (Not listed on Spot Tables)

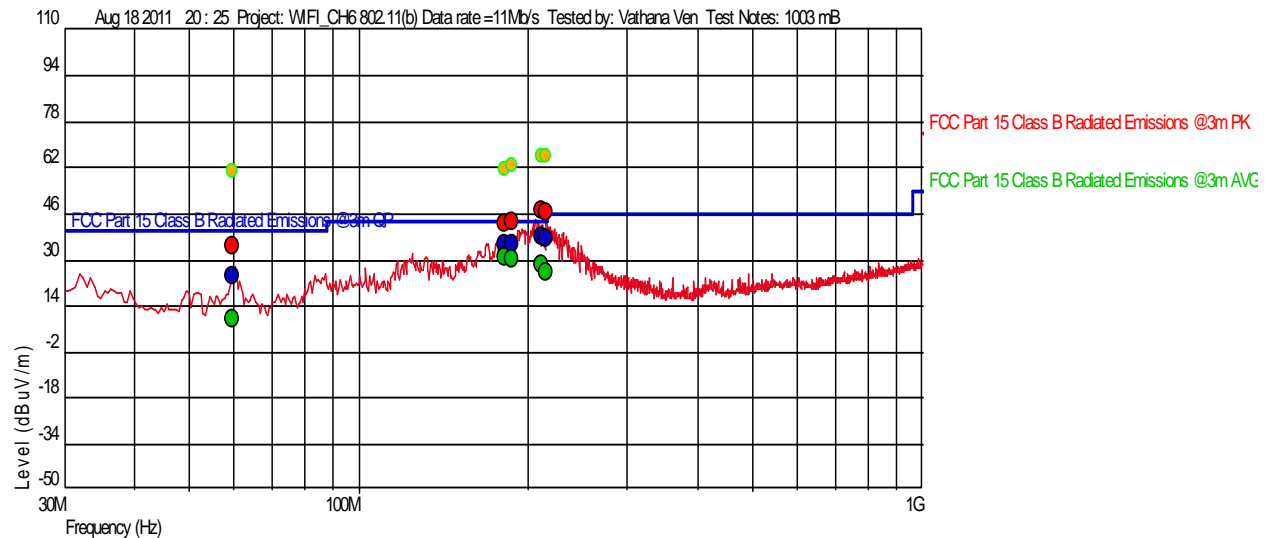
Measured: Quasi-Peak

Frequency (Hz)	Level (dBuV/m)	Ant. Fact. (dB)	Other Fact. (dB)	Limit (dBuV/m)	Margin (dB)	Vert (I)	Angle (deg)	Mast Height (m)	RBW (Hz)
32.7800M	35.59	16.354	-26.771	40	-4.41		242	1.02	120k
35.8423M	31.55	14.847	-26.784	40	-8.45		303	1.00	120k
45.8346M	32.58	9.883	-26.672	40	-7.42		243	1.02	120k
59.5948M	30.58	5.841	-26.311	40	-9.42		347	1.00	120k
208.601M	29.83	10.728	-25.405	43.52	-13.69		35	1.07	120k

Data Transfer Rate: 802.11b (11 MB/s)

FCC Part 15.209, FCC Part 15.247, RSS-210

Channel 6 (2.437GHz) Radiated Emissions @ 3m, Horizontal Polarity, 30-1000MHz



- Measured Peak Value
 - Measured Quasi Peak Value
 - Measured Average Value
 - Maximum Value of Mast and Turntable
- Level (dBuV/m) = AF + CL + PA + Raw

AF = Antenna Factor

CL = Cable Losses

PA = Pre-Amplifier

Raw = Raw Instrument Reading (Not listed on Spot Tables)

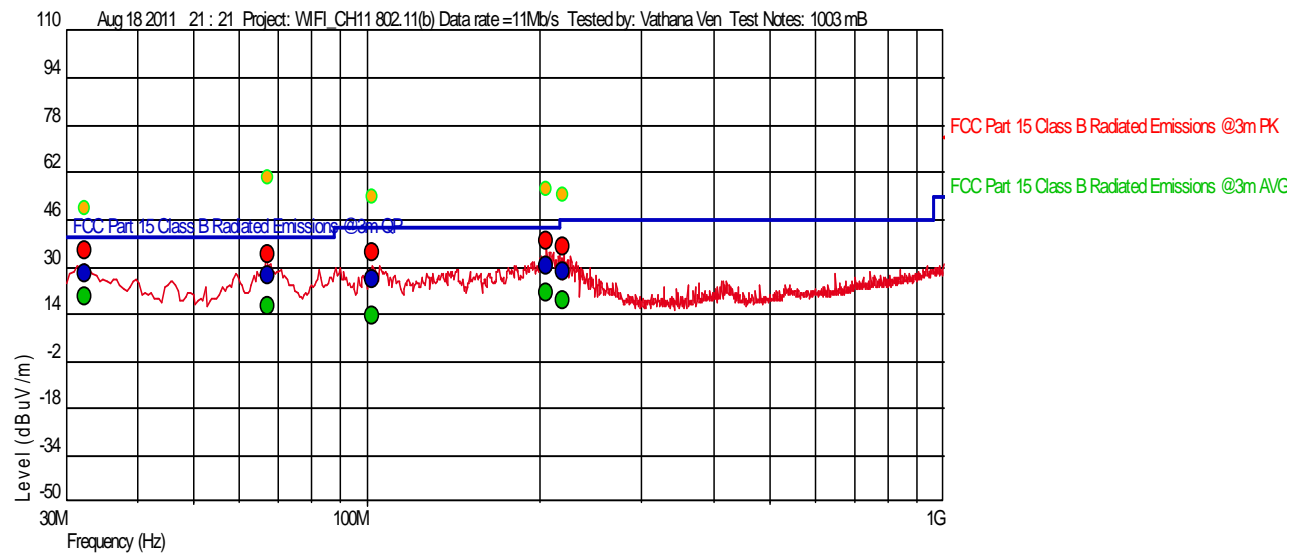
Measured: Quasi-Peak

Frequency (Hz)	Level (dBuV/m)	Ant. Fact. (dB)	Other Fact. (dB)	Limit (dBuV/m)	Margin (dB)	Hor (°)	Angle (deg)	Mast Height (m)	RBW (Hz)
59.5535M	24.79	5.689	-26.312	40	-15.21	--	113	3.50	120k
181.575M	35.85	9.500	-25.523	43.52	-7.67	--	236	1.35	120k
186.849M	35.64	9.600	-25.487	43.52	-7.88	--	232	1.26	120k
211.331M	38.23	10.393	-25.406	43.52	-5.29	--	229	1.27	120k
215.120M	37.52	10.105	-25.408	46	-8.48	--	104	1.46	120k

Data Transfer Rate: 802.11b (11 MB/s)

FCC Part 15.209, FCC Part 15.247, RSS-210

Channel 11 (2.462GHz) Radiated Emissions @ 3m, Vertical Polarity, 30-1000MHz



- Measured Peak Value
 - Measured Quasi Peak Value
 - Measured Average Value
 - Maximum Value of Mast and Turntable
- Level (dBuV/m) = AF + CL + PA + Raw
- AF = Antenna Factor
- CL = Cable Losses
- PA = Pre-Amplifier
- Raw = Raw Instrument Reading (Not listed on Spot Tables)

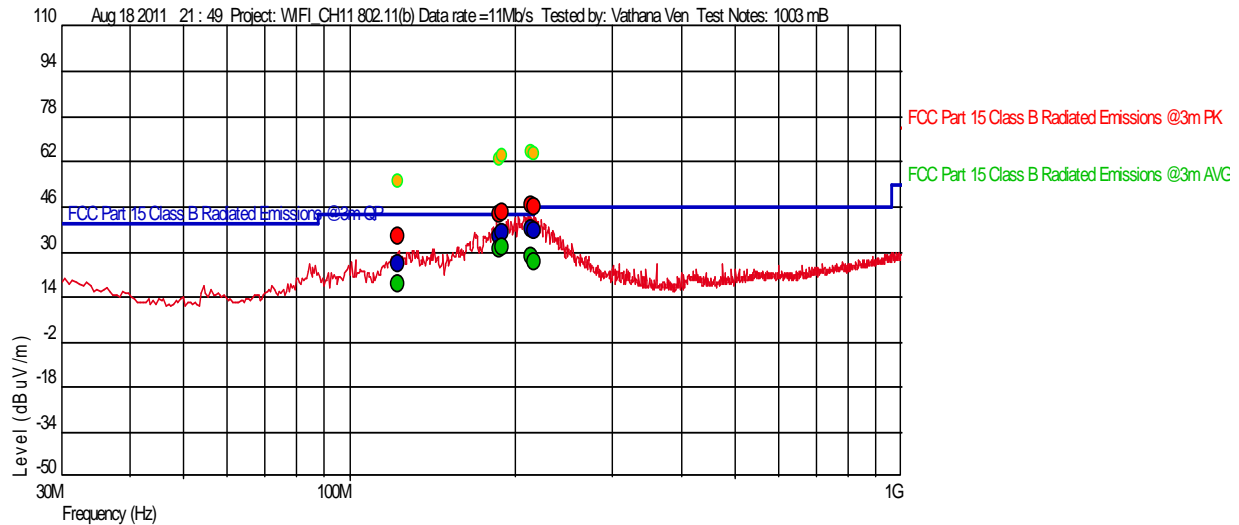
Measured: Quasi-Peak

Frequency (Hz)	Level (dBuV/m)	Ant. Fact. (dB)	Other Fact. (dB)	Limit (dBuV/m)	Margin (dB)	Vert (I)	Angle (deg)	Mast Height (m)	RBW (Hz)
32.377M	27.63	16.636	-26.769	40	-12.37		35	1.16	120k
67.1698M	27.13	5.851	-26.300	40	-12.87		17	1.58	120k
101.777M	25.45	11.978	-26.181	43.52	-18.07		217	1.02	120k
204.013M	30.50	10.721	-25.402	43.52	-13.02		42	1.02	120k
218.825M	28.63	10.777	-25.410	46	-17.37		38	1.42	120k

Data Transfer Rate: 802.11b (11 MB/s)

FCC Part 15.209, FCC Part 15.247, RSS-210

Channel 11 (2.462GHz) Radiated Emissions @ 3m, Horizontal Polarity, 30-1000MHz



- Measured Peak Value
 - Measured Quasi Peak Value
 - Measured Average Value
 - Maximum Value of Mast and Turntable
- Level (dBuV/m) = AF + CL + PA + Raw
- AF = Antenna Factor
- CL = Cable Losses
- PA = Pre-Amplifier
- Raw = Raw Instrument Reading (Not listed on Spot Tables)

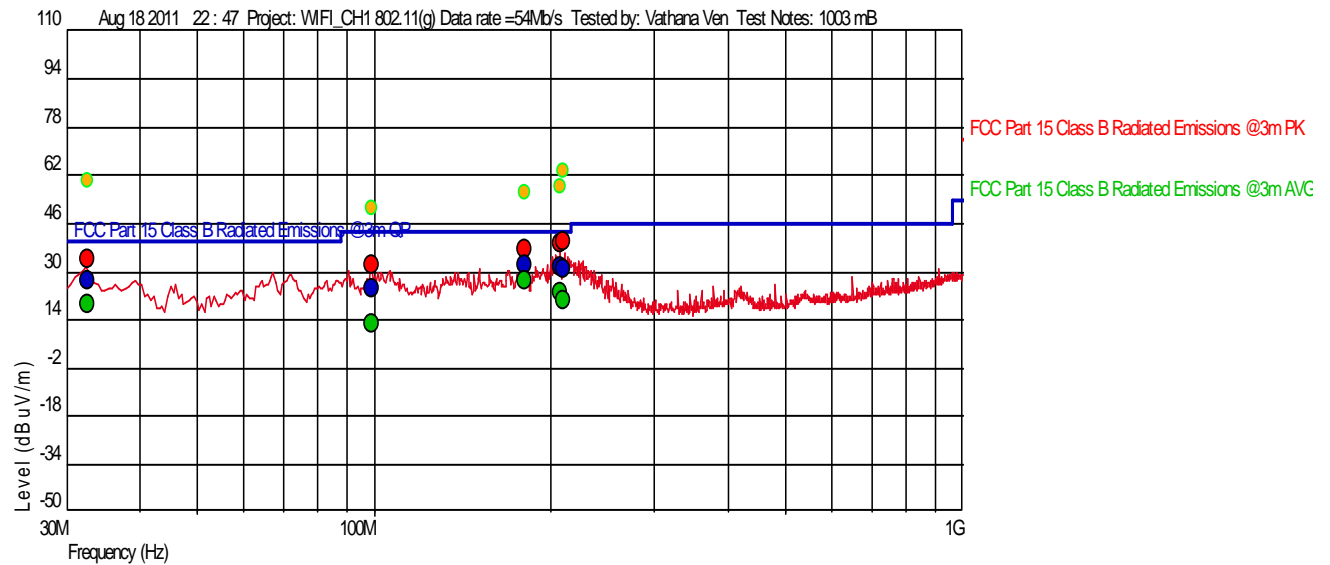
Measured: Quasi-Peak

Frequency (Hz)	Level (dBuV/m)	Ant. Fact. (dB)	Other Fact. (dB)	Limit (dBuV/m)	Margin (dB)	Hor (°)	Angle (deg)	Mast Height (m)	RBW (Hz)
122.219M	25.96	11.922	-25.985	43.52	-17.56	--	86	1.79	120k
186.424M	35.85	9.600	-25.489	43.52	-7.67	--	231	1.43	120k
188.599M	36.83	9.700	-25.475	43.52	-6.69	--	248	1.64	120k
212.761M	38.27	10.279	-25.407	43.52	-5.25	--	85	1.35	120k
216.166M	37.19	10.147	-25.409	46--	-8.81	--	235	1.04	120k

Data Transfer Rate: 802.11g (54 MB/s)

FCC Part 15.209, FCC Part 15.247, RSS-210

Channel 1 (2.412GHz) Radiated Emissions @ 3m, Vertical Polarity, 30-1000MHz



- Measured Peak Value
 - Measured Quasi Peak Value
 - Measured Average Value
 - Maximum Value of Mast and Turntable
- Level (dBuV/m) = AF + CL + PA + Raw
- AF = Antenna Factor
- CL = Cable Losses
- PA = Pre-Amplifier
- Raw = Raw Instrument Reading (Not listed on Spot Tables)

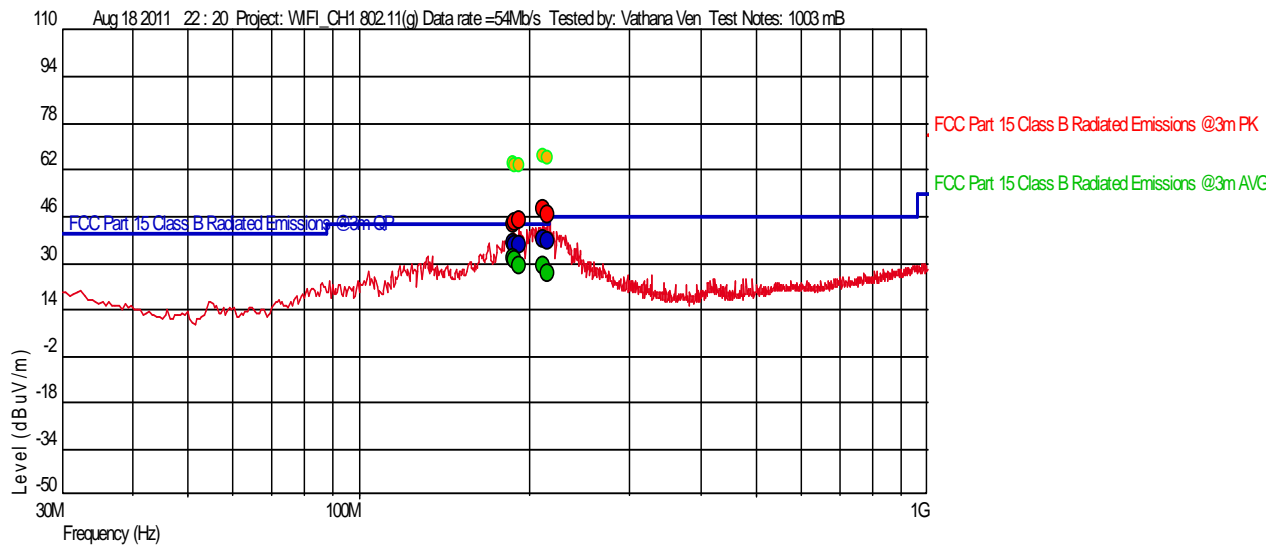
Measured: Quasi-Peak

Frequency (Hz)	Level (dBuV/m)	Ant. Fact. (dB)	Other Fact. (dB)	Limit (dBuV/m)	Margin (dB)	Vert (I)	Angle (deg)	Mast Height (m)	RBW (Hz)
32.6482M	26.92	16.446	-26.771	40	-13.08		191	1.43	120k
99.1596M	24.49	11.832	-26.208	43.52	-19.03		240	1.00	120k
179.941M	32.43	10.000	-25.534	43.52	-11.09		271	1.02	120k
206.917M	31.64	10.762	-25.404	43.52	-11.88		43	1.28	120k
210.117M	30.94	10.700	-25.406	43.52	-12.58		27	1.51	120k

Data Transfer Rate: 802.11g (54 MB/s)

FCC Part 15.209, FCC Part 15.247, RSS-210

Channel 1 (2.412GHz) Radiated Emissions @ 3m, Horizontal Polarity, 30-1000MHz



- Measured Peak Value
 - Measured Quasi Peak Value
 - Measured Average Value
 - Maximum Value of Mast and Turntable
- Level (dBuV/m) = AF + CL + PA + Raw
- AF = Antenna Factor
- CL = Cable Losses
- PA = Pre-Amplifier
- Raw = Raw Instrument Reading (Not listed on Spot Tables)

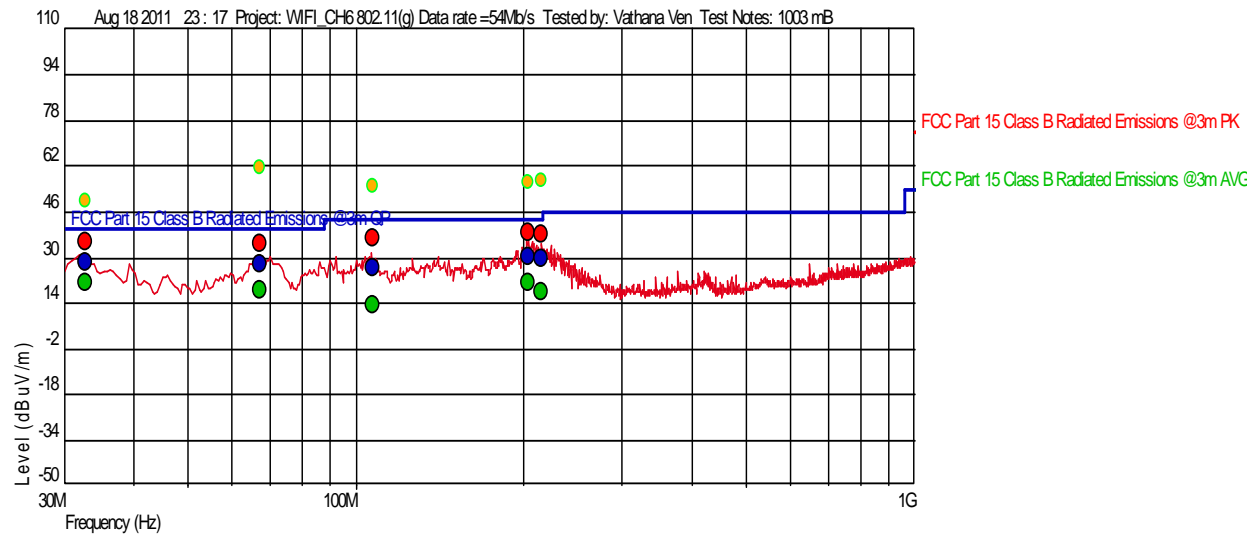
Measured: Quasi-Peak

Frequency (Hz)	Level (dBuV/m)	Ant. Fact. (dB)	Other Fact. (dB)	Limit (dBuV/m)	Margin (dB)	Hor (°)	Angle (deg)	Mast Height (m)	RBW (Hz)
187.077M	36.69	9.608	-25.485	43.52	-6.83	--	225	1.71	120k
188.151M	36.44	9.700	-25.478	43.52	-7.08	--	244	1.05	120k
191.525M	36.28	9.853	-25.455	43.52	-7.24	--	238	1.26	120k
211.011M	38.41	10.419	-25.406	43.52	-5.11	--	92	1.02	120k
214.125M	37.80	10.170	-25.408	43.52	-5.72	--	89	1.48	120k

Data Transfer Rate: 802.11g (54 MB/s)

FCC Part 15.209, FCC Part 15.247, RSS-210

Channel 6 (2.437GHz) Radiated Emissions @ 3m, Vertical Polarity, 30-1000MHz



- Measured Peak Value
 - Measured Quasi Peak Value
 - Measured Average Value
 - Maximum Value of Mast and Turntable
- Level (dBuV/m) = AF + CL + PA + Raw
- AF = Antenna Factor
- CL = Cable Losses
- PA = Pre-Amplifier
- Raw = Raw Instrument Reading (Not listed on Spot Tables)

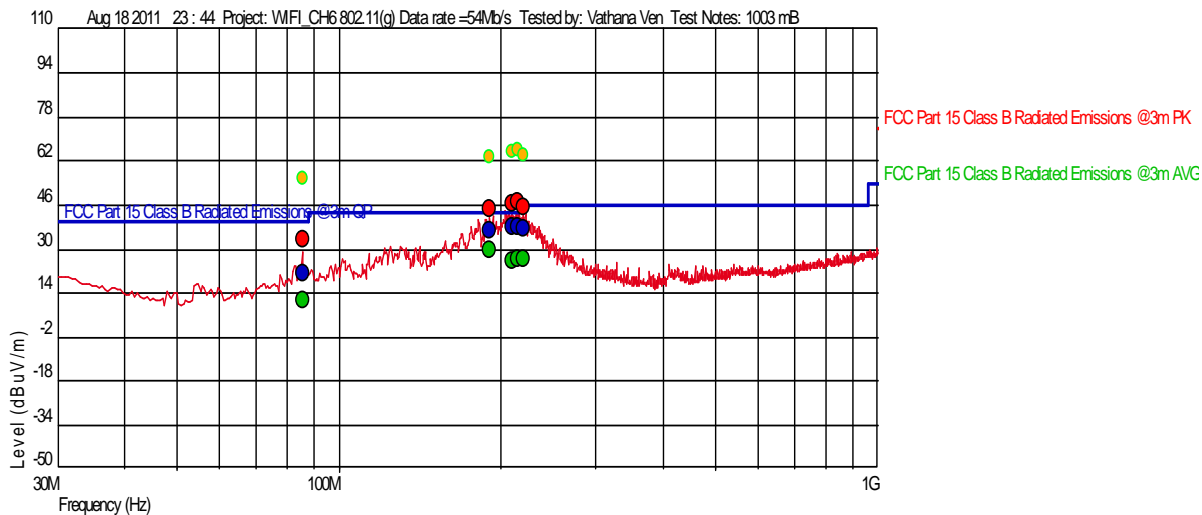
Measured: Quasi-Peak

Frequency (Hz)	Level (dBuV/m)	Ant. Fact. (dB)	Other Fact. (dB)	Limit (dBuV/m)	Margin (dB)	Vert (I)	Angle (deg)	Mast Height (m)	RBW (Hz)
32.6927M	28.26	16.415	-26.771	40	-11.74		275	1.02	120k
67.1260M	27.98	5.838	-26.300	40	-12.02		355	1.72	120k
107.080M	26.32	11.816	-26.127	43.52	-17.2		220	1.00	120k
203.555M	30.63	10.684	-25.402	43.52	-12.89		42	1.11	120k
214.787M	29.78	10.700	-25.408	43.52	-13.74		48	1.00	120k

Data Transfer Rate: 802.11g (54 MB/s)

FCC Part 15.209, FCC Part 15.247, RSS-210

Channel 6 (2.437GHz) Radiated Emissions @ 3m, Horizontal Polarity, 30-1000MHz



- Measured Peak Value
 - Measured Quasi Peak Value
 - Measured Average Value
 - Maximum Value of Mast and Turntable
- Level (dBuV/m) = AF + CL + PA + Raw
 AF = Antenna Factor
 CL = Cable Losses
 PA = Pre-Amplifier
 Raw = Raw Instrument Reading (Not listed on Spot Tables)

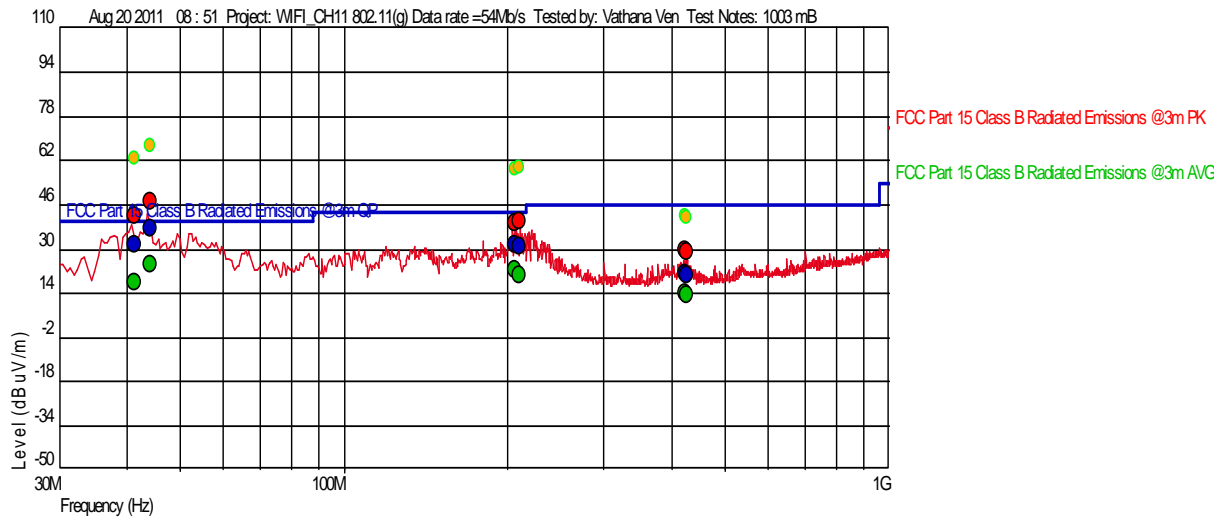
Measured: Quasi-Peak

Frequency (Hz)	Level (dBuV/m)	Ant. Fact. (dB)	Other Fact. (dB)	Limit (dBuV/m)	Margin (dB)	Hor (°)	Angle (deg)	Mast Height (m)	RBW (Hz)
85.5840M	21.42	8.617	-26.300	40	-18.58	--	96	3.32	120k
189.816M	36.66	9.782	-25.466	43.52	-6.86	--	255	1.37	120k
209.361M	38.05	10.500	-25.405	43.52	-5.47	--	251	1.03	120k
214.648M	38.10	10.128	-25.408	43.52	-5.42	--	254	1.22	120k
219.529M	37.42	10.281	-25.411	46	-8.58	--	254	1.42	120k

Data Transfer Rate: 802.11g (54 MB/s)

FCC Part 15.209, FCC Part 15.247, RSS-210

Channel 11 (2.462GHz) Radiated Emissions @ 3m, Vertical Polarity, 30-1000MHz



- Measured Peak Value
 - Measured Quasi Peak Value
 - Measured Average Value
 - Maximum Value of Mast and Turntable
- Level (dBuV/m) = AF + CL + PA + Raw
 AF = Antenna Factor
 CL = Cable Losses
 PA = Pre-Amplifier
 Raw = Raw Instrument Reading (Not listed on Spot Tables)

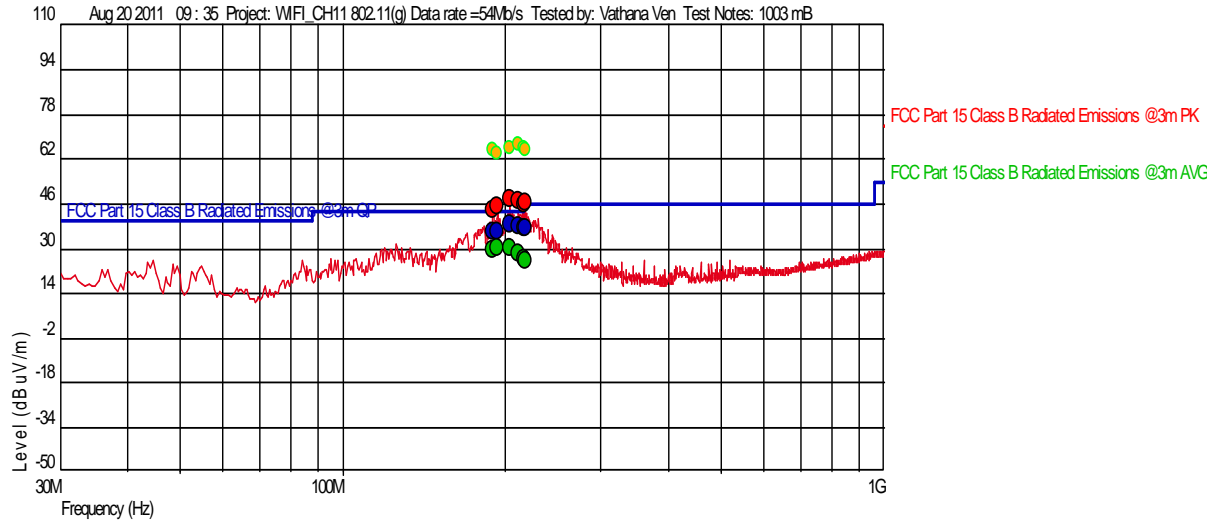
Measured: Quasi-Peak

Frequency (Hz)	Level (dBuV/m)	Ant. Fact. (dB)	Other Fact. (dB)	Limit (dBuV/m)	Margin (dB)	Vert (I)	Angle (deg)	Mast Height (m)	RBW (Hz)
41.2733M	31.87	12.236	-26.770	40	-8.13		333	1.05	120k
44.0366M	37.16	10.782	-26.709	40	-2.84		304	1.30	120k
206.383M	31.49	10.772	-25.404	43.52	-12.03		22	1.07	120k
209.951M	31.01	10.701	-25.406	43.52	-12.51		32	1.00	120k
423.343M	21.31	16.700	-25.264	46	-24.69		337	1.39	120k
425.527M	20.88	16.711	-25.270	46	-25.12		335	1.47	120k

Data Transfer Rate: 802.11g (54 MB/s)

FCC Part 15.209, FCC Part 15.247, RSS-210

Channel 11 (2.462GHz) Radiated Emissions @ 3m, Horizontal Polarity, 30-1000MHz



- Measured Peak Value
 - Measured Quasi Peak Value
 - Measured Average Value
 - Maximum Value of Mast and Turntable
- Level (dBuV/m) = AF + CL + PA + Raw
- AF = Antenna Factor
- CL = Cable Losses
- PA = Pre-Amplifier
- Raw = Raw Instrument Reading (Not listed on Spot Tables)

Measured: Quasi-Peak

Frequency (Hz)	Level (dBuV/m)	Ant. Fact. (dB)	Other Fact. (dB)	Limit (dBuV/m)	Margin (dB)	Hor (°)	Angle (deg)	Mast Height (m)	RBW (Hz)
189.222M	36.08	9.722	-25.470	43.52	-7.44	--	248	1.41	120k
192.884M	36.46	9.988	-25.446	43.52	-7.06	--	260	1.56	120k
203.398M	39.01	10.372	-25.402	43.52	-4.51	--	236	1.48	120k
210.864M	38.34	10.431	-25.406	43.52	-5.18	--	81	1.14	120k
215.439M	37.73	10.118	-25.408	46	-8.27	--	91	1.27	120k
217.482M	37.28	10.199	-25.410	46	-8.72	--	94	1.50	120k

Data Transfer Rate: 802.11b (11 MB/s)

FCC Part 15.209, FCC Part 15.247, RSS-210

Channel 1 (2.412GHz) Radiated Emissions @ 3m, Vertical/ Horizontal Polarity, 1-25GHz

Radiated Emissions

Company: Zoll Medical Corp
 Model #: ZOLL E Series Data Comm Card
 Serial #: IN0411-00032
 Engineers: Vathana Ven
 Project #: G100398565
 Standard: FCC Part 15 Subpart C 15.247
 Receiver: R&S ESCI (ROS002) 04-15-2012
 PreAmp: PRE_145014_12-28-2011.txt
 Antenna & Cables: HF Bands: N, LF, HF, SHF
 Antenna: HORN2 V3m 10-08-2011.txt HORN2 H3m 10-08-2011.txt EMC04
 Cable(s): 3mTrackB 145-416 08-31-2011.txt CBL030 MEG005
 Barometer: BAR3 Filter: REA002 ROS001
 Location: 10M
 Date(s): 08/17/11
 Limit Distance (m): 3
 Test Distance (m): 3
 Voltage/Frequency: 120VAC/60Hz Frequency Range: 1-25GHz
 Temp/Humidity/Pressure: 21 deg C 63% 994 mB
 Net = Reading (dBuV/m) + Antenna Factor (dB1/m) + Cable Loss (dB) - Preamp Factor (dB) - Distance Factor (dB)
 Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS: NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW

Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Bandwidth	FCC	IC	Harmonic?
CHANNEL 1, Channel BW set to > 6dB, set to 11MHz, Data Rate: 11MB/Second, 802.11(b)														
PK	H	2412.000	52.52	28.17	5.82	0.00	0.00	86.52	-	-	100/300 kHz			
PK	V	4824.000	55.40	32.89	8.32	34.88	0.00	61.74	74.00	-12.26	1/3 MHz	RB	RB	No Pre-Amp
AVG	V	4824.000	41.90	32.89	8.32	34.88	0.00	48.24	54.00	-5.76	1/3 MHz	RB		
PK	V	7236.000	34.49	36.05	10.53	35.53	0.00	45.55	66.52	-20.97	100/300 kHz			
PK	V	9648.000	50.15	37.72	12.21	35.94	9.54	54.60	66.52	-11.92	100/300 kHz			
PK	V	12060.000	42.14	39.31	13.35	35.17	9.54	50.09	54.00	-3.91	1/3 MHz	RB	1 Meter	Noise Floor
AVG	V	12060.000	29.28	39.31	13.35	35.17	9.54	37.23	54.00	-16.77	1/3 MHz	RB	1 Meter	Noise Floor
PK	V	14472.000	42.31	41.95	16.16	34.07	9.54	56.81	74.00	-17.19	1/3 MHz	RB	1 Meter	Noise Floor
AVG	V	14472.000	30.85	41.95	16.16	34.07	9.54	45.35	54.00	-8.65	1/3 MHz	RB	1 Meter	Noise Floor
PK	V	16884.000	41.38	39.96	16.80	34.87	9.54	53.73	66.52	-12.79	120/300 kHz		1 Meter	Noise Floor

Hand scan was performed from 18-25GHz, no emissions were detected above the measuring equipment noise floor.

Data Transfer Rate: 802.11b (11 MB/s)

FCC Part 15.209, FCC Part 15.247, RSS-210

Channel 6 (2.437GHz) Radiated Emissions @ 3m, Vertical/ Horizontal Polarity, 1-25GHz

Radiated Emissions

Company: Zoll Medical Corp
 Model #: ZOLL E Series Data Comm Card
 Serial #: IN0411-00032
 Engineers: Vathana Ven
 Project #: G100398565
 Standard: FCC Part 15 Subpart C 15.247
 Receiver: R&S ESCI (ROS002) 04-15-2012
 PreAmp: PRE_145014_12-28-2011.txt
 Antenna & Cables: HF Bands: N, LF, HF, SHF
 Antenna: HORN2 V3m 10-08-2011.txt HORN2 H3m 10-08-2011.txt EMC04
 Cable(s): 3mTrackB 145-416 08-31-2011.txt CBL030 MEG005
 Barometer: BAR3 Filter: REA002 ROS001
 Location: 10M
 Date(s): 08/17/11
 Limit Distance (m): 3
 Test Distance (m): 3
 Temp/Humidity/Pressure: 21 deg C 63% 994 mB
 Voltage/Frequency: 120VAC/60Hz Frequency Range: 1-25GHz
 Net = Reading (dBuV/m) + Antenna Factor (dB1/m) + Cable Loss (dB) - Preamp Factor (dB) - Distance Factor (dB)
 Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS: NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW

Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Bandwidth	FCC	IC	Harmonic?
CHANNEL 6. Channel BW set to > 6dB, set to 11MHz. Data Rate: 11MB/Second. 802.11(b)														
PK	V	2437.000	55.38	28.35	5.87	0.00	0.00	89.60	-	-	100/300 kHz			No Pre-Amp
PK	V	4874.000	52.76	32.96	8.37	34.88	0.00	59.21	74.00	-14.79	1/3 MHz	RB	RB	
AVG	V	4874.000	40.00	32.96	8.37	34.88	0.00	46.45	54.00	-7.55	1/3 MHz	RB	RB	
PK	V	7311.000	47.64	36.30	10.57	35.53	0.00	58.98	74.00	-15.02	1/3 MHz	RB	RB	
AVG	V	7311.000	36.40	36.30	10.57	35.53	0.00	47.74	54.00	-6.26	1/3 MHz	RB	RB	
PK	V	9748.000	50.56	37.79	12.32	35.94	0.00	64.72	69.60	-4.88	100/300 kHz			
PK	V	12185.000	42.10	39.19	13.63	35.17	9.54	50.21	74.00	-23.79	1/3 MHz	RB	1 Meter	Noise Floor
AVG	V	12185.000	30.98	39.19	13.63	35.17	9.54	39.09	54.00	-14.91	1/3 MHz	RB	1 Meter	Noise Floor
PK	V	14622.000	30.70	41.53	16.16	34.07	9.54	44.78	69.60	-24.82	100/300 kHz		1 Meter	Noise Floor
PK	V	17059.000	29.32	40.66	16.79	34.87	9.54	42.35	69.60	-27.25	100/300 kHz		1 Meter	Noise Floor

Hand scan was performed from 18-25GHz, no emissions were detected above the measuring equipment noise floor.

Data Transfer Rate: 802.11b (11 MB/s)

FCC Part 15.209, FCC Part 15.247, RSS-210

Channel 11 (2.462GHz) Radiated Emissions @ 3m, Vertical/ Horizontal Polarity, 1-25GHz

Radiated Emissions

Company: Zoll Medical Corp		Antenna & Cables:		HF	Bands: N, LF, HF, SHF
Model #: ZOLL E Series Data Comm Card		Antenna: HORN2 V3m		10-08-2011.txt	HORN2 H3m 10-08-2011.txt
Serial #: IN0411-00032		Cable(s): 3mTrackB 145-416		08-31-2011.txt	EMC04 MEG005
Engineers: Vathana Ven	Location: 10M	Barometer: BAR3		Filter: REA002	ROS001
Project #: G100398565	Date(s): 08/17/11	Temp/Humidity/Pressure: 21 deg C		63%	994 mB
Standard: FCC Part 15 Subpart C 15.247					
Receiver: R&S ESCI (ROS002) 04-15-2012	Limit Distance (m): 3				
PreAmp: PRE_145014_12-28-2011.txt	Test Distance (m): 3				
PreAmp Used? (Y or N): Y	Voltage/Frequency: 120VAC/60Hz	Frequency Range: 1-25GHz			
Net = Reading (dBuV/m) + Antenna Factor (dB1/m) + Cable Loss (dB) - Preamp Factor (dB) - Distance Factor (dB)					
Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW					

Peak, PK Quasi-Peak, QP Average, AVG RMS, RMS NR = Noise Floor, RF = Restricted Band, Bandwidth defined as RBW/VBW												FCC	IC	Harmonic?
Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(μV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dB(μV/m)	Limit dB(μV/m)	Margin dB	Bandwidth			
CHANNEL 11: Channel BW set to > 6dB, set to 11MHz. Data Rate: 11MB/Second. 802.11(b)														
PK	V	2462.000	56.05	28.36	5.92	0.00	0.00	90.34	-	-	100/300 kHz			No Pre-Amp
PK	V	4924.000	53.27	33.01	8.42	34.88	0.00	59.83	74.00	-14.17	1/3 MHz	RB	RB	
AVG	V	4924.000	40.00	33.01	8.42	34.88	0.00	46.56	54.00	-7.44	1/3 MHz	RB	RB	
PK	V	7386.000	46.92	36.37	10.62	35.63	0.00	58.27	74.00	-15.73	1/3 MHz	RB	RB	
AVG	V	7386.000	37.20	36.37	10.62	35.63	0.00	48.55	54.00	-5.45	1/3 MHz	RB	RB	
PK	V	9848.000	50.25	37.94	12.43	35.97	0.00	64.65	70.34	-5.69	100/300 kHz			
PK	V	12310.000	41.94	39.04	13.90	35.05	9.54	50.30	74.00	-23.70	1/3 MHz	RB	1 Meter	Noise Floor
AVG	V	12310.000	30.01	39.04	13.90	35.05	9.54	38.37	54.00	-15.63	1/3 MHz	RB	1 Meter	Noise Floor
PK	V	14772.000	30.40	40.78	16.03	34.47	9.54	43.20	70.34	-27.14	100/300 kHz		1 Meter	Noise Floor
PK	V	17234.000	29.70	41.32	17.13	34.64	9.54	43.97	70.34	-26.37	100/300 kHz		1 Meter	Noise Floor

Hand scan was performed from 18-25GHz, no emissions were detected above the measuring equipment noise floor.

Data Transfer Rate: 802.11g (54 MB/s)

FCC Part 15.209, FCC Part 15.247, RSS-210

Channel 1 (2.412GHz) Radiated Emissions @ 3m, Vertical/ Horizontal Polarity, 1-25GHz

Radiated Emissions

Company: Zoll Medical Corp
 Model #: ZOLL E Series Data Comm Card
 Serial #: IN0411-00032
 Engineers: Vathana Ven
 Project #: G100398565
 Standard: FCC Part 15 Subpart C 15.247
 Receiver: R&S ESCI (ROS002) 04-15-2012
 PreAmp: PRE_145014_12-28-2011.txt
 Antenna & Cables: HF Bands: N, LF, HF, SHF
 Antenna: HORN2 V3m 10-08-2011.txt HORN2 H3m 10-08-2011.txt EMC04
 Cable(s): 3mTrackB 145-416 08-31-2011.txt CBL030 MEG005
 Barometer: BAR3 Filter: REA002 ROS001
 Location: 10M
 Date(s): 08/17/11
 Temp/Humidity/Pressure: 21 deg C 63% 994 mB
 Limit Distance (m): 3
 Test Distance (m): 3
 PreAmp Used? (Y or N): Y Voltage/Frequency: 120VAC/60Hz Frequency Range: 1-25GHz
 Net = Reading (dBuV/m) + Antenna Factor (dB1/m) + Cable Loss (dB) - Preamp Factor (dB) - Distance Factor (dB)

Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW

Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Bandwidth	FCC	IC	Harmonic?
CHANNEL 1. Channel BW set to > 6dB, set to 17MHz. Data Rate: 54MB/Second. 802 11(g)														
PK	H	2412.000	45.05	28.17	5.82	0.00	0.00	79.05	-	-	100/300 kHz			
PK	V	4824.000	47.57	32.89	8.32	34.88	0.00	53.91	74.00	-20.09	1/3 MHz	RB	RB	No Pre-Amp
AVG	V	4824.000	35.80	32.89	8.32	34.88	0.00	42.14	54.00	-11.86	1/3 MHz	RB		
PK	V	7236.000	33.70	36.05	10.53	35.53	0.00	44.76	59.05	-14.29	100/300 kHz			
PK	V	9648.000	44.00	37.72	12.21	35.94	9.54	48.45	59.05	-10.60	100/300 kHz			
PK	V	12060.000	42.34	39.31	13.35	35.17	9.54	50.29	54.00	-3.71	1/3 MHz	RB	1 Meter	Noise Floor
AVG	V	12060.000	30.24	39.31	13.35	35.17	9.54	38.19	54.00	-15.81	1/3 MHz	RB	1 Meter	Noise Floor
PK	V	14472.000	41.22	41.95	16.16	34.07	9.54	55.72	74.00	-18.28	1/3 MHz	RB	1 Meter	Noise Floor
AVG	V	14472.000	30.62	41.95	16.16	34.07	9.54	45.12	54.00	-8.88	1/3 MHz	RB	1 Meter	Noise Floor
PK	V	16884.000	41.38	39.96	16.80	34.87	9.54	53.73	59.05	-5.32	120/300 kHz		1 Meter	Noise Floor

Hand scan was performed from 18-25GHz, no emissions were detected above the measuring equipment noise floor.

Data Transfer Rate: 802.11g (54 MB/s)

FCC Part 15.209, FCC Part 15.247, RSS-210

Channel 6 (2.437GHz) Radiated Emissions @ 3m, Vertical/ Horizontal Polarity, 1-25GHz

Radiated Emissions

Company: Zoll Medical Corp
 Model #: ZOLL E Series Data Comm Card
 Serial #: IN0411-00032
 Engineers: Vathana Ven
 Project #: G100398565
 Standard: FCC Part 15 Subpart C 15.247
 Receiver: R&S ESCI (ROS002) 04-15-2012
 PreAmp: PRE_145014_12-28-2011.txt
 PreAmp Used? (Y or N): Y
 Antenna & Cables: HF Bands: N, LF, HF, SHF
 Antenna: HORN2 V3m 10-08-2011.txt HORN2 H3m 10-08-2011.txt EMC04
 Cable(s): 3mTrackB 145-416 08-31-2011.txt CBL030 MEG005
 Barometer: BAR3 Filter: REA002 ROS001
 Location: 10M
 Date(s): 08/17/11
 Temp/Humidity/Pressure: 21 deg C 63% 994 mB
 Limit Distance (m): 3
 Test Distance (m): 3
 Voltage/Frequency: 120VAC/60Hz Frequency Range: 1-25GHz
 Net = Reading (dBuV/m) + Antenna Factor (dB1/m) + Cable Loss (dB) - Preamp Factor (dB) - Distance Factor (dB)
 Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW

Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Bandwidth	FCC	IC	Harmonic?
CHANNEL 6. Channel BW set to > 6dB, set to 17MHz. Data Rate: 54MB/Second. 802.11(g)														
PK	H	2437.000	49.30	28.24	5.87	0.00	0.00	83.41	-	-	100/300 kHz			
PK	V	4874.000	43.74	32.96	8.37	34.88	0.00	50.19	74.00	-23.81	1/3 MHz	RB	RB	No Pre-Amp
AVG	V	4874.000	33.90	32.96	8.37	34.88	0.00	40.35	54.00	-13.65	1/3 MHz	RB	RB	
PK	V	7311.000	43.60	36.30	10.57	35.53	0.00	54.94	74.00	-19.06	1/3 MHz	RB	RB	
AVG	V	7311.000	32.80	36.30	10.57	35.53	0.00	44.14	54.00	-9.86	1/3 MHz	RB	RB	
PK	V	9748.000	36.51	37.79	12.32	35.94	0.00	50.67	63.52	-12.85	100/300 kHz			
PK	V	12185.000	41.42	39.19	13.63	35.17	9.54	49.53	74.00	-24.47	1/3 MHz	RB	1 Meter	Noise Floor
AVG	V	12185.000	30.40	39.19	13.63	35.17	9.54	38.51	54.00	-15.49	1/3 MHz	RB	1 Meter	Noise Floor
PK	V	14622.000	31.76	41.53	16.16	34.07	9.54	45.84	63.52	-17.68	100/300 kHz		1 Meter	Noise Floor
PK	V	17059.000	32.64	40.66	16.79	34.87	9.54	45.67	63.52	-17.85	100/300 kHz		1 Meter	Noise Floor

Hand scan was performed from 18-25GHz, no emissions were detected above the measuring equipment noise floor.

Data Transfer Rate: 802.11g (54 MB/s)

FCC Part 15.209, FCC Part 15.247, RSS-210

Channel 11 (2.462GHz) Radiated Emissions @ 3m, Vertical/ Horizontal Polarity, 1-25GHz

Radiated Emissions

Company: Zoll Medical Corp
 Model #: ZOLL E Series Data Comm Card
 Serial #: IN0411-00032
 Engineers: Vathana Ven
 Project #: G100398565
 Standard: FCC Part 15 Subpart C 15.247
 Receiver: R&S ESCI (ROS002) 04-15-2012
 PreAmp: PRE_145014_12-28-2011.txt
 Antenna & Cables: HF Bands: N, LF, HF, SHF
 Antenna: HORN2 V3m 10-08-2011.txt HORN2 H3m 10-08-2011.txt EMC04
 Cable(s): 3mTrackB 145-416 08-31-2011.txt CBL030 MEG005
 Barometer: BAR3 Filter: REA002 ROS001
 Location: 10M
 Date(s): 08/17/11
 Temp/Humidity/Pressure: 21 deg C 63% 994 mB

PreAmp Used? (Y or N): Y Voltage/Frequency: 120VAC/60Hz Frequency Range: 1-25GHz
 Net = Reading (dBuV/m) + Antenna Factor (dB1/m) + Cable Loss (dB) - Preamp Factor (dB) - Distance Factor (dB)
 Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor; RB = Restricted Band; Bandwidth denoted as RBW/VBW

Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Bandwidth	FCC	IC	Harmonic?
CHANNEL 11. Channel BW set to > 6dB, set to 17MHz. Data Rate: 54MB/Second. 802.11(g)														
PK	V	2462.000	51.20	28.36	5.92	0.00	0.00	85.49	-	-	100/300 kHz			No Pre-Amp
PK	V	4924.000	44.67	33.01	8.42	34.88	0.00	51.23	74.00	-22.77	1/3 MHz	RB	RB	
AVG	V	4924.000	34.50	33.01	8.42	34.88	0.00	41.06	54.00	-12.94	1/3 MHz	RB	RB	
PK	V	7386.000	42.27	36.37	10.62	35.63	0.00	53.62	74.00	-20.38	1/3 MHz	RB	RB	
AVG	V	7386.000	32.00	36.37	10.62	35.63	0.00	43.35	54.00	-10.65	1/3 MHz	RB	RB	
PK	V	9848.000	42.20	37.94	12.43	35.97	0.00	56.60	65.49	-8.89	100/300 kHz			
PK	V	12310.000	40.20	39.04	13.90	35.05	9.54	48.56	74.00	-25.44	1/3 MHz	RB	1 Meter	Noise Floor
AVG	V	12310.000	29.70	39.04	13.90	35.05	9.54	38.06	54.00	-15.94	1/3 MHz	RB	1 Meter	Noise Floor
PK	V	14772.000	32.55	40.78	16.03	34.47	9.54	45.35	65.49	-20.14	100/300 kHz		1 Meter	Noise Floor
PK	V	17234.000	31.09	41.32	17.13	34.64	9.54	45.36	65.49	-20.13	100/300 kHz		1 Meter	Noise Floor

Hand scan was performed from 18-25GHz, no emissions were detected above the measuring equipment noise floor.

Test Personnel: Vathana Ven

Test Date: 08/17/2011

Supervising Engineer: N/A
 (Where Applicable)

Product Standard: FCC Part 15.247, RSS-210 Annex 8

Input Voltage: 115VAC/60Hz

Pretest Verification w/ Ambient Signals or BB Source: Ambient Signals

Emissions below the limits specified in Section 7.3

Ambient Temperature: 21 °C

Relative Humidity: 63 %

Atmospheric Pressure: 994 mbars

Deviations, Additions, or Exclusions: None

8 6 dB Bandwidth

8.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C Section 15.247 and RSS-210 Annex 8.

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A wooden table 80 cm high is used for table-top equipment.

8.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
SAF767'	Weatherstation	Davis Instruments	Perception II	PE91222A03	01/14/2011	01/14/2012
145-416'	Cables 145-400 145-408 145-402 145-404	Huber + Suhner	3m Track B cables	multiple	08/31/2010	08/31/2011
HORN2'	HORN ANTENNA	EMCO	3115	9602-4675	10/08/2010	10/08/2011
145128'	EMI Receiver 40 GHz (20 Hz - 40 Ghz)	Rohde & Schwarz	ESI	8392831001	08/10/2010	09/10/2011

Software Utilized:

Name	Manufacturer	Version
None		

8.3 Results:

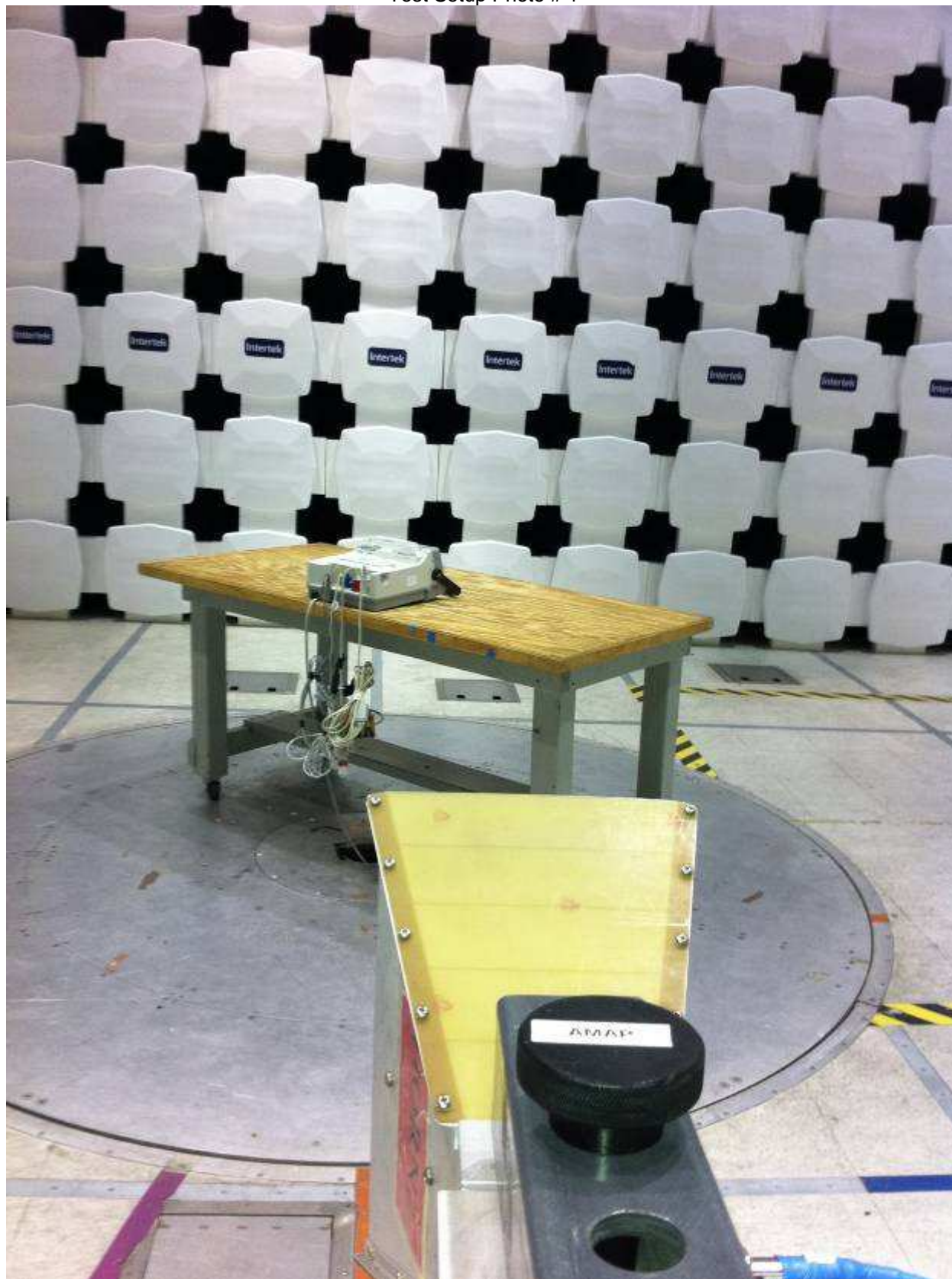
The sample tested was found to comply.

FCC Part 15.247 (2) & RSS-210 A8.2 (a)

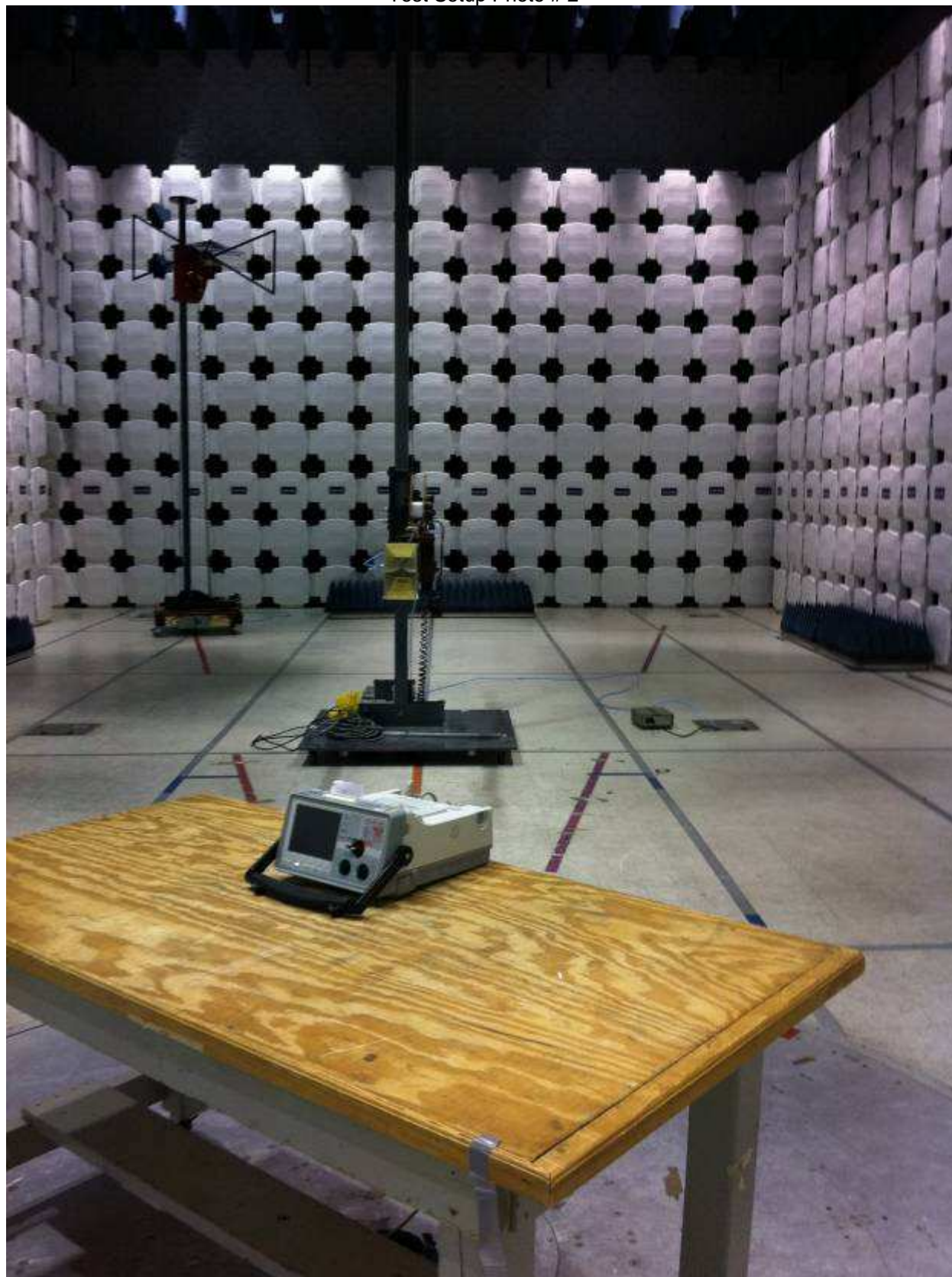
The minimum 6 dB bandwidth shall be at least 500 kHz.

8.4 Setup Photographs:

Test Setup Photo # 1

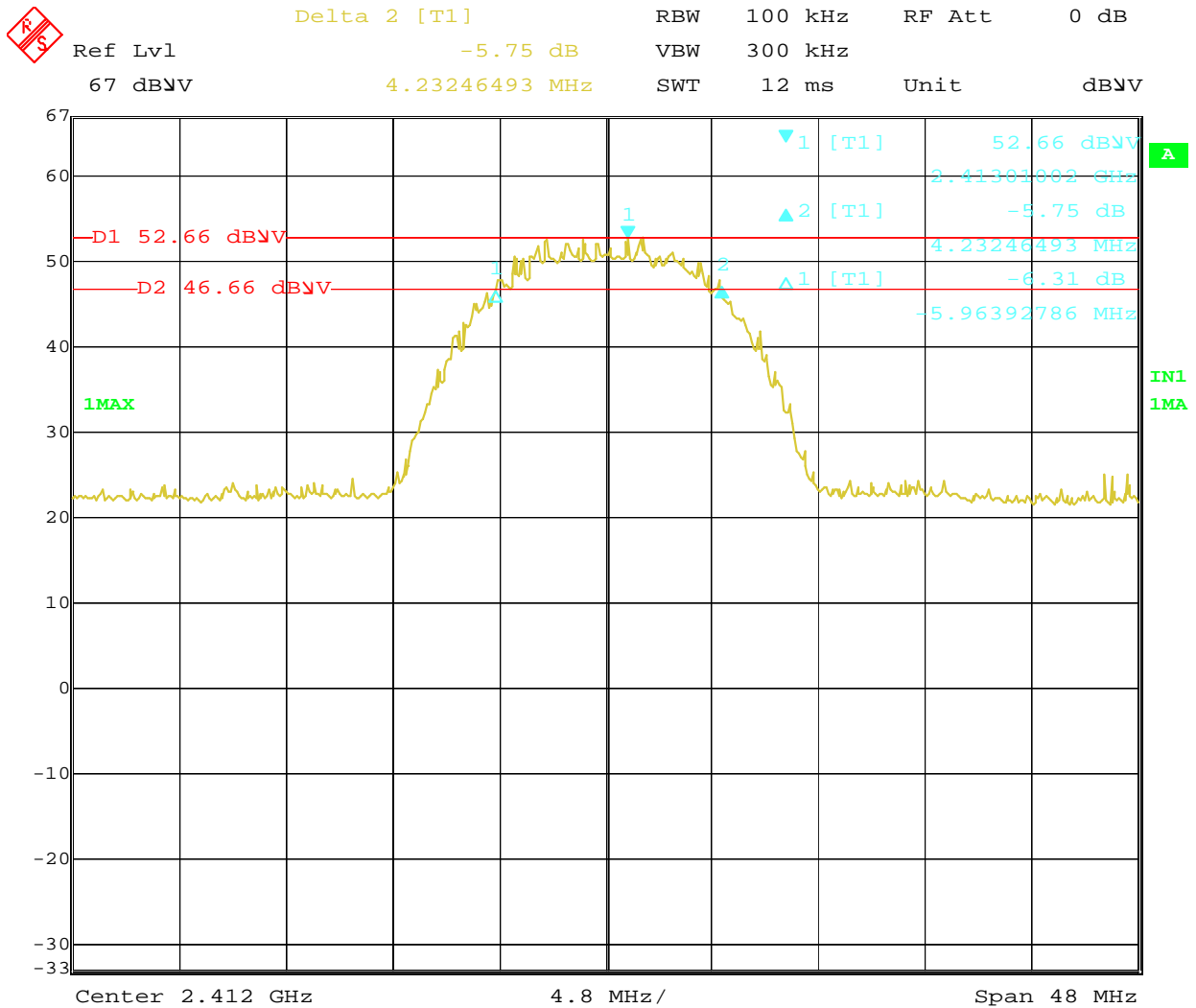


Test Setup Photo # 2



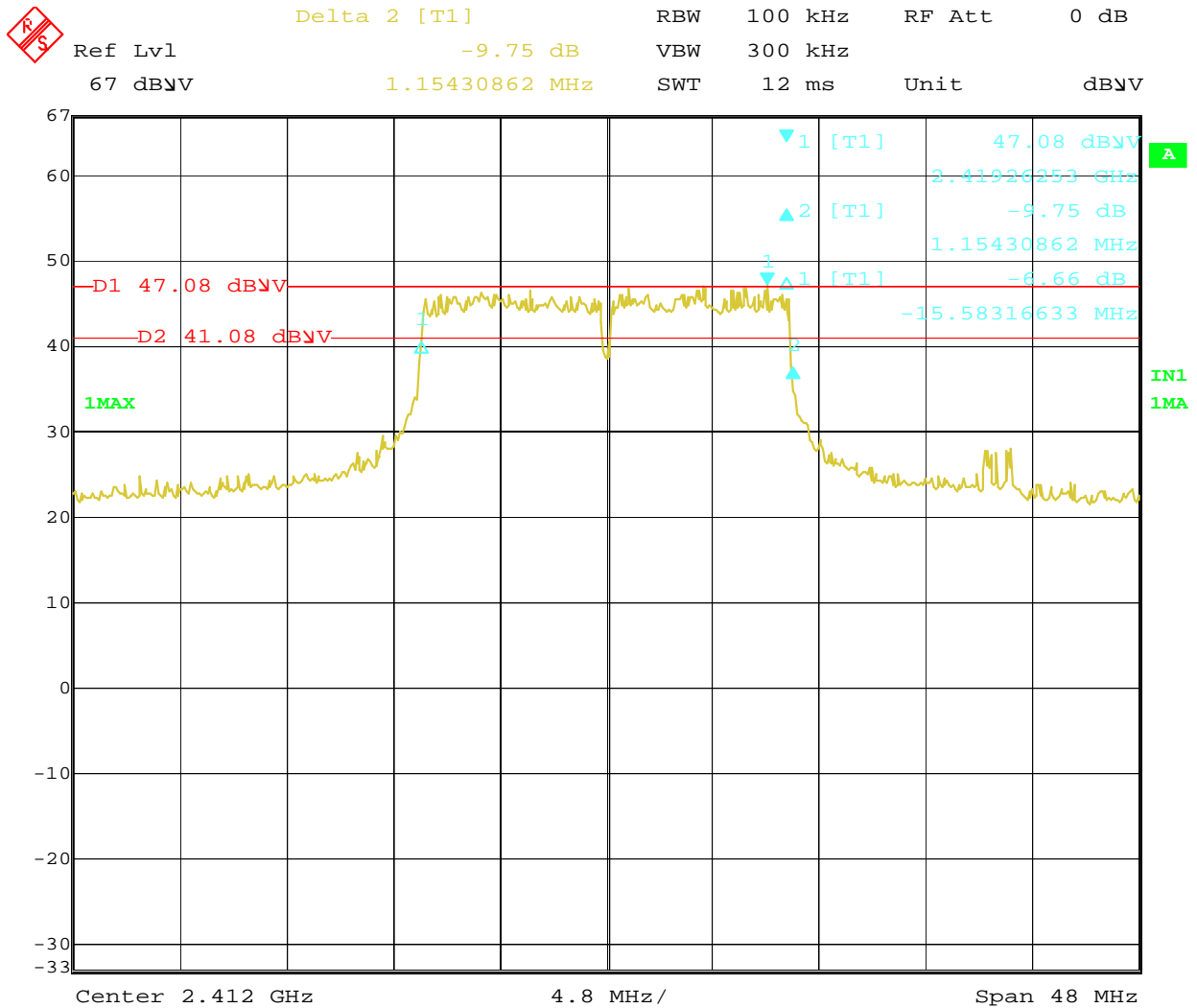
8.5 Plots/Data:

Channel 1 (2.412 GHz) with 802.11b set to 11 MB/s



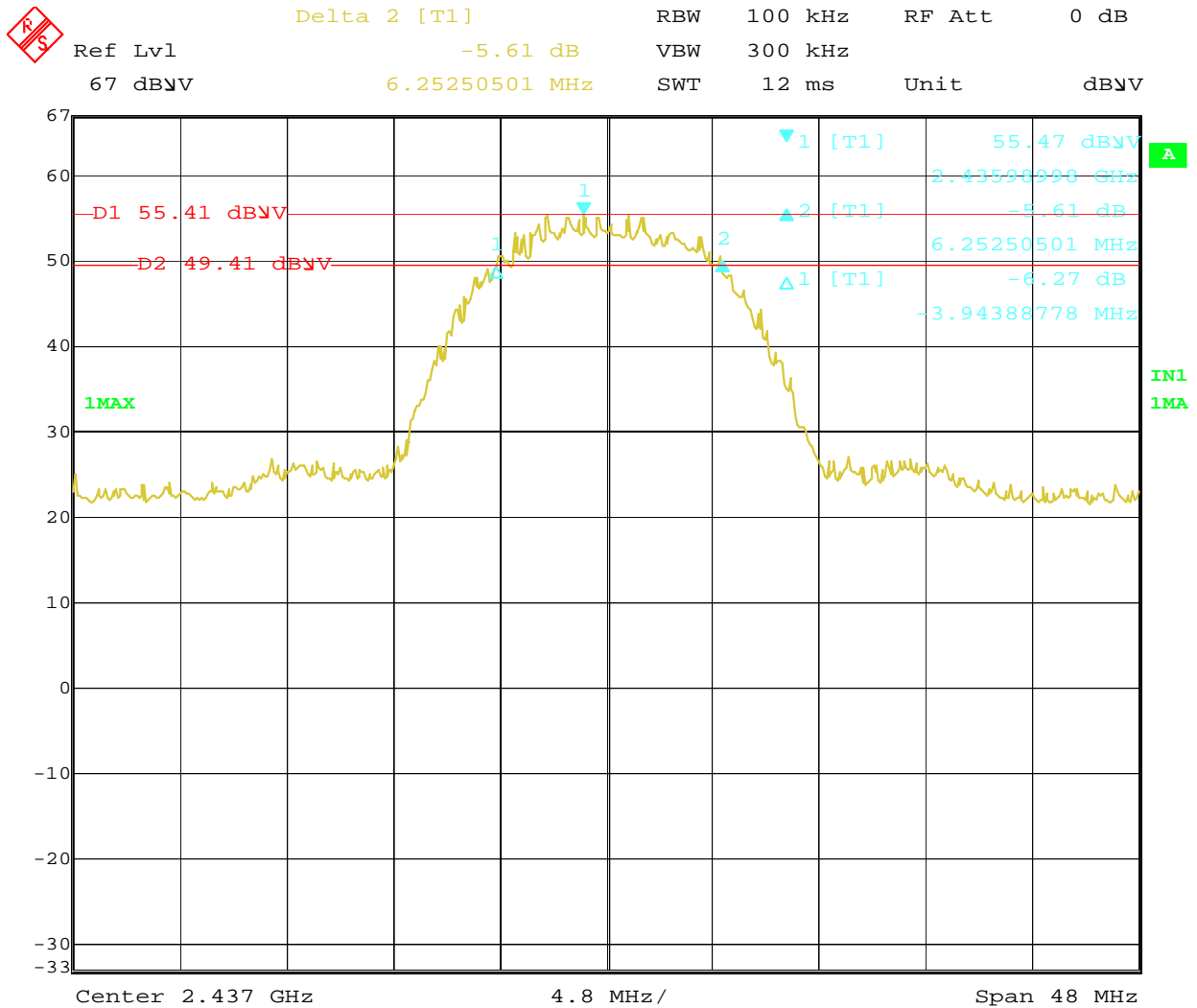
Date: 17.AUG.2011 13:39:12

Channel 1 (2.412 GHz) with 802.11g set to 54 MB/s



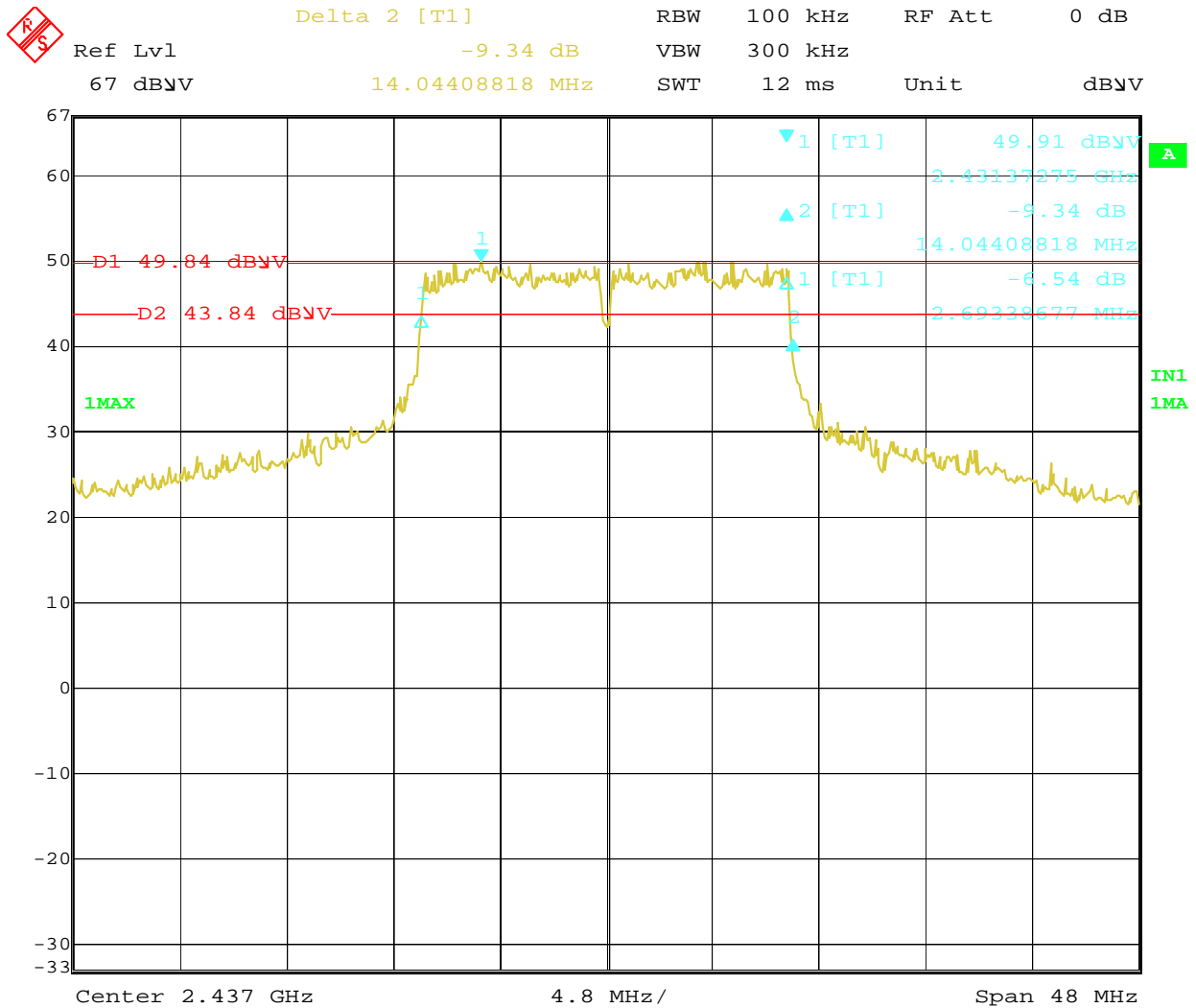
Date: 17.AUG.2011 14:17:07

Channel 6 (2.437 GHz) with 802.11b set to 11 MB/s



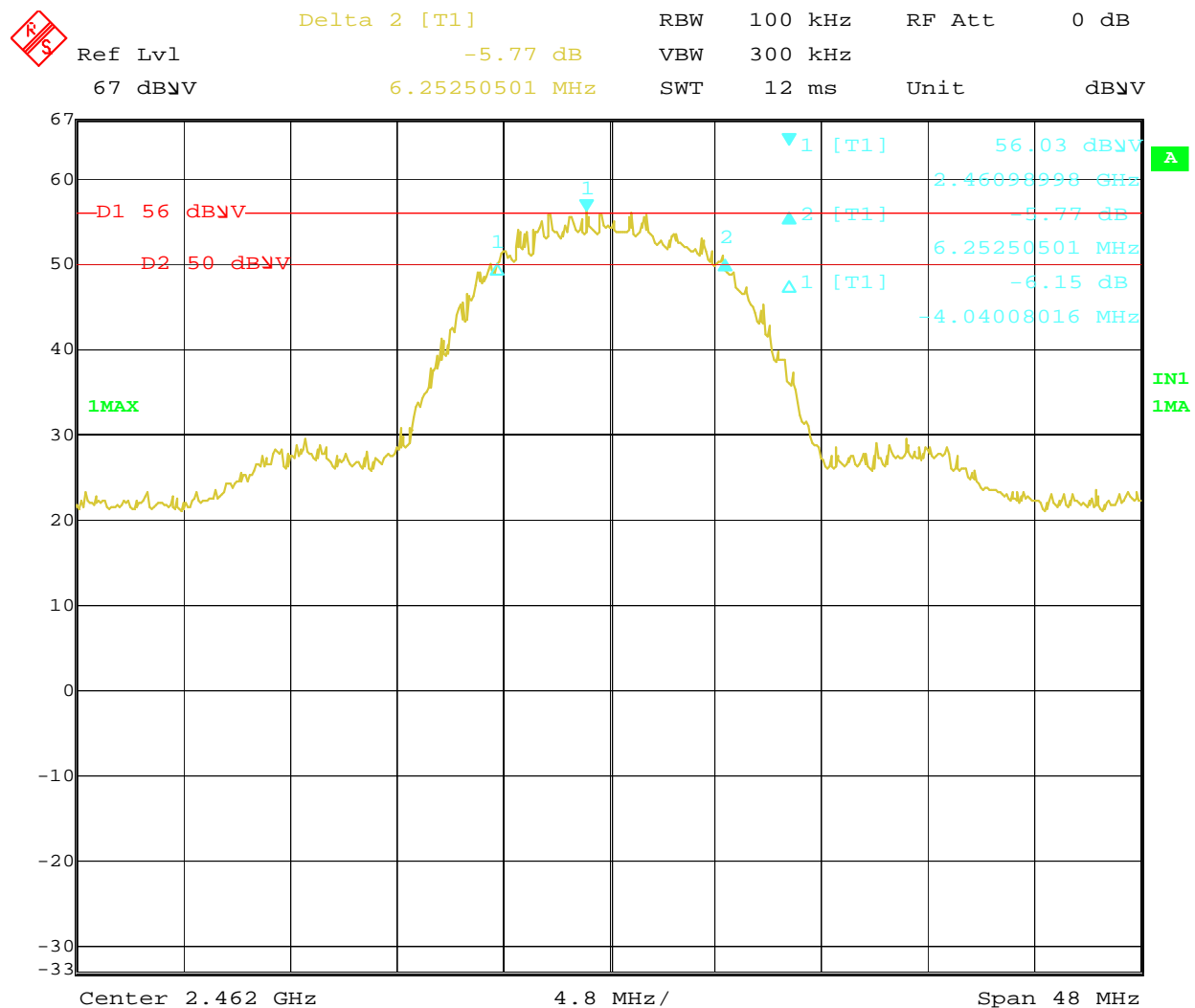
Date: 17.AUG.2011 14:56:39

Channel 6 (2.437 GHz) with 802.11g set to 54 MB/s



Date: 17.AUG.2011 15:25:19

Channel 11 (2.437 GHz) with 802.11b set to 11 MB/s

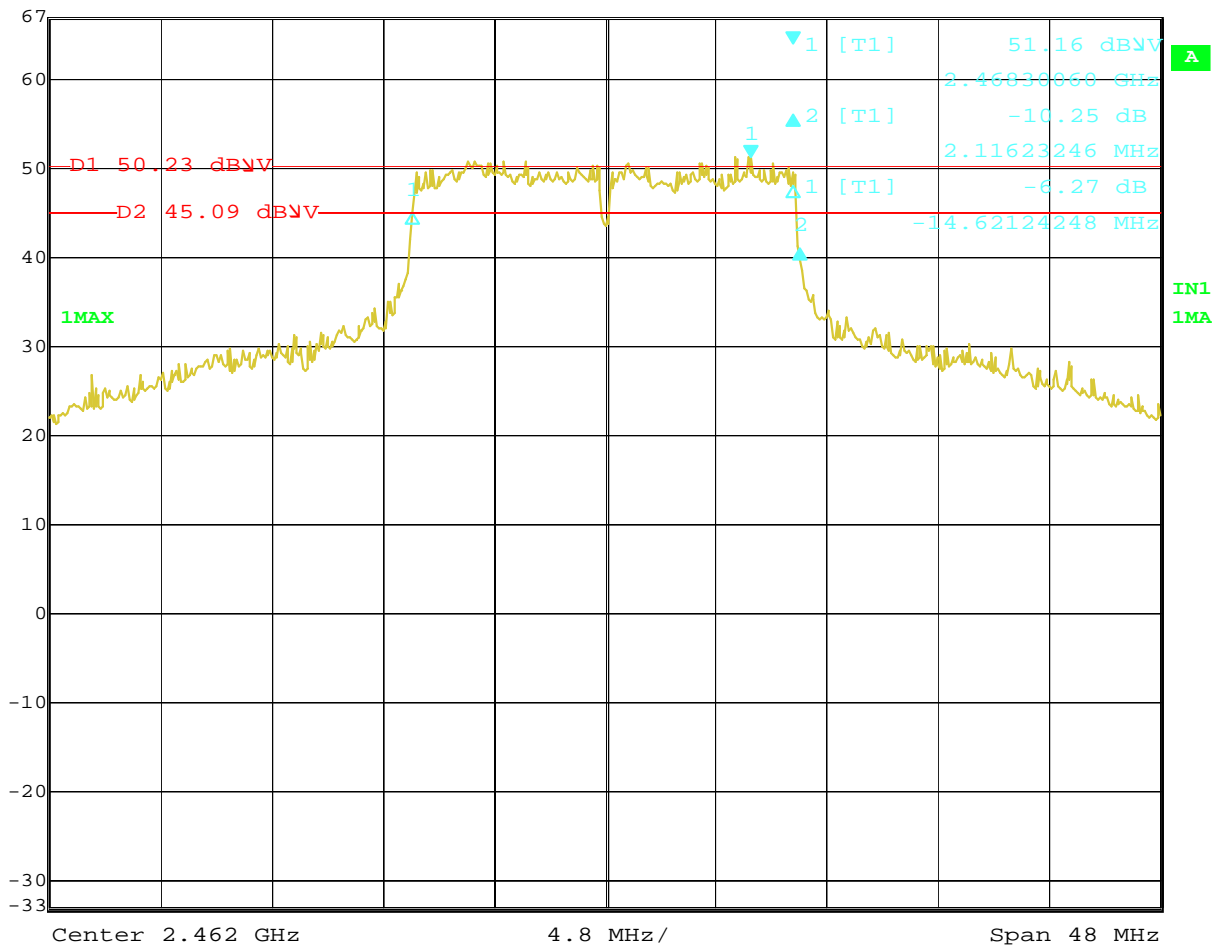


Date: 17.AUG.2011 15:49:05

Channel 11 (2.437 GHz) with 802.11g set to 54 MB/s



Delta 2 [T1] RBW 100 kHz RF Att 0 dB
 Ref Lvl -10.25 dB VBW 300 kHz
 67 dBμV 2.11623246 MHz SWT 12 ms Unit dBμV



Date: 17.AUG.2011 16:32:24

Channels	Frequency (GHz)	Data Transfer Rate	6dB BW (MHz)	6dB BW Limit (kHz)
1	2.412	802.11b (11 MB/s)	10.196	>= 500 kHz
1	2.412	802.11g (54 MB/s)	16.737	>= 500 kHz
6	2.437	802.11b (11 MB/s)	10.196	>= 500 kHz
6	2.437	802.11g (54 MB/s)	16.737	>= 500 kHz
11	2.462	802.11b (11 MB/s)	10.293	>= 500 kHz
11	2.462	802.11g (54 MB/s)	16.737	>= 500 kHz

Test Personnel: Kouma Sinn *KPS*

Test Date: 08/17/2011

Supervising Engineer:
(Where Applicable) N/A

Product Standard: FCC Part 15.247, RSS-210 Annex 8

Input Voltage: 115VAC/60Hz

Pretest Verification w/ Ambient
Signals or BB Source: Ambient Signals

Test Levels: Emissions below the limits
specified in Section 8.3

Ambient Temperature: 20 °C

Relative Humidity: 55 %

Atmospheric Pressure: 998 mbar

Deviations, Additions, or Exclusions: None

9 Power Spectral Density

9.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C Section 15.247, KDB558074, and RSS-210 Annex 8.

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A wooden table 80 cm high is used for table-top equipment.

9.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV002'	Weather Station	Davis Instruments	7400	PE80519A93	08/17/2011	08/17/2012
145-416'	Cables 145-400 145-408 145-402 145-404	Huber + Suhner	3m Track B cables	multiple	08/31/2010	09/15/2011
HORN2'	HORN ANTENNA	EMCO	3115	9602-4675	10/08/2010	10/08/2011
145128'	EMI Receiver 40 GHz (20 Hz - 40 Ghz)	Rohde & Schwarz	ESI	8392831001	08/23/2011	08/23/2012

Software Utilized:

Name	Manufacturer	Version
Excel 2003	Microsoft	(11.8231.8221) SP3
EMI Boxborough.xls	Intertek	08/27/10

9.3 Results:

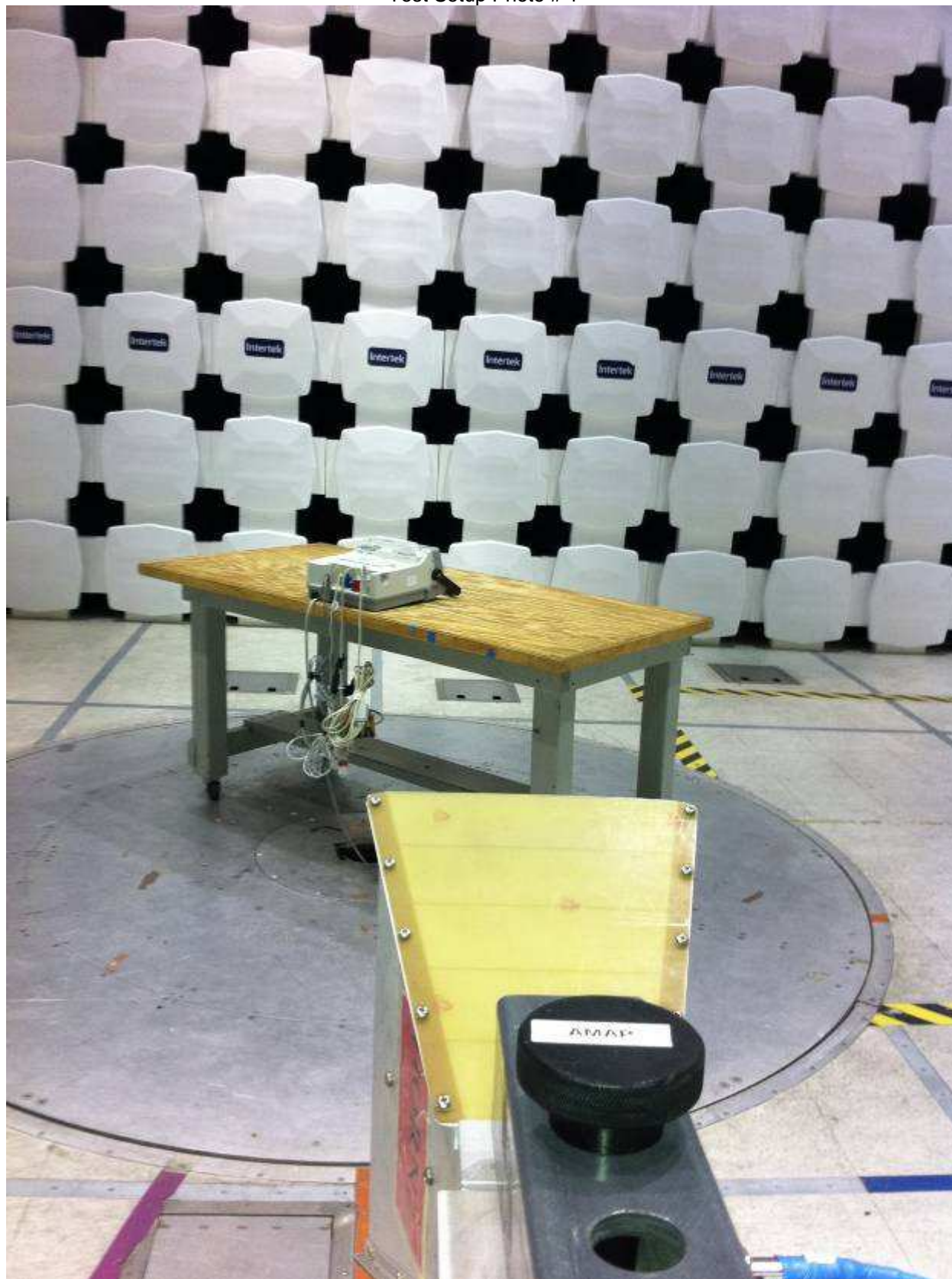
The sample tested was found to comply.

FCC Part 15.247 (e) & RSS-210 A8.2 (b)

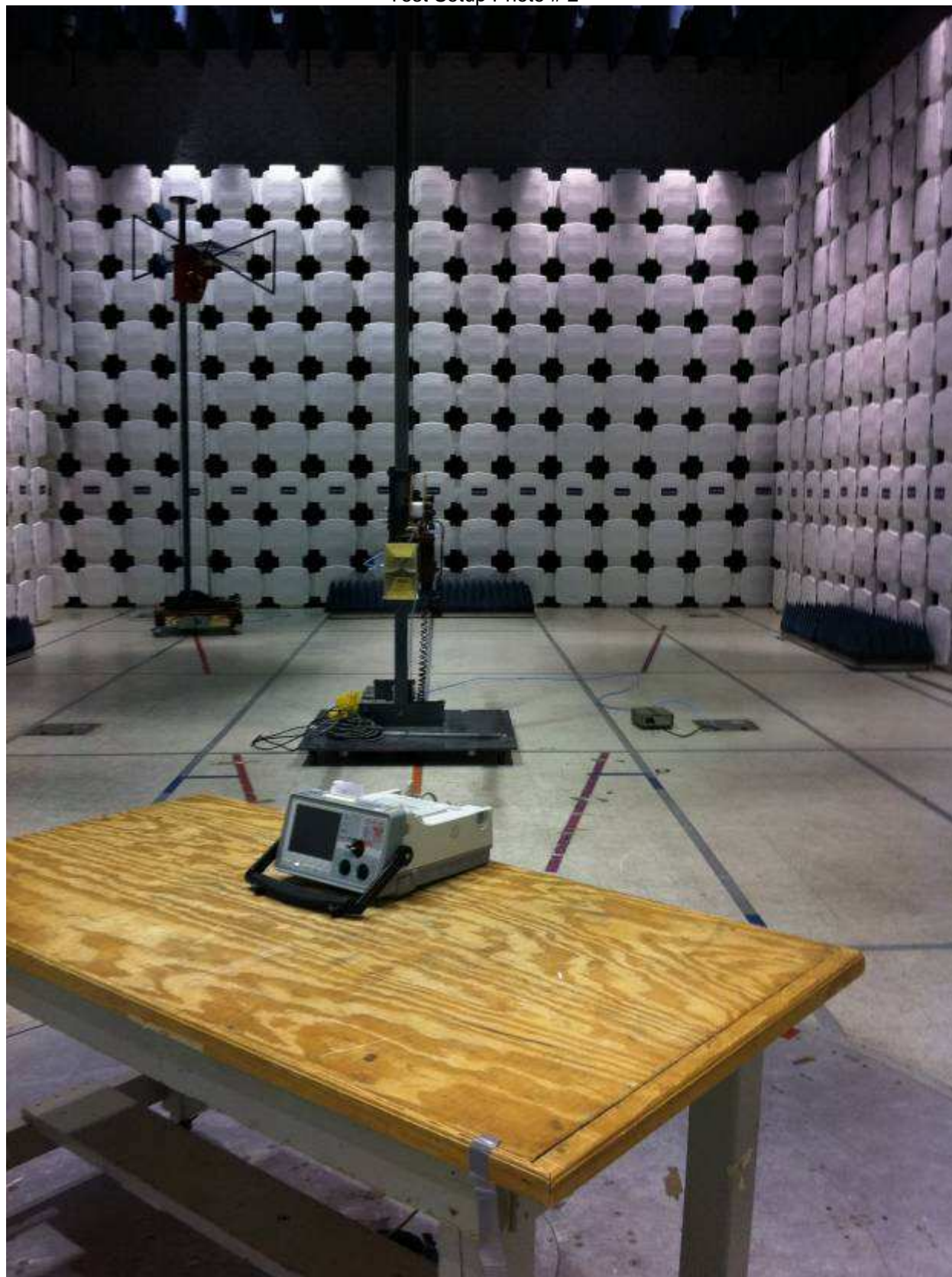
The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

9.4 Setup Photographs:

Test Setup Photo # 1



Test Setup Photo # 2



9.5 Data:**Radiated Emissions**

Company: Zoll Medical Corp
 Model #: ZOLL E Series Data Comm Card
 Serial #: IN0411-00032
 Engineers: Vathana Ven
 Project #: G100398565
 Standard: FCC Part 15 Subpart C 15.247
 Receiver: R&S ESCI (ROS002) 04-15-2012
 PreAmp: PRE_145014_12-28-2011.txt
 PreAmp Used? (Y or N): Y
 Antenna & Cables: HF Bands: N, LF, HF, SHF
 Antenna: HORN2 V3m 10-08-2011.txt HORN2 H3m 10-08-2011.txt
 Cable(s): 3mTrackB 145-416 08-31-2011.txt NONE.
 Barometer: DAV002 Filter: NONE
 Location: 10M
 Date(s): 09/02/11
 Temp/Humidity/Pressure: 22 deg C 45% 1008 mB
 Limit Distance (m): 3
 Test Distance (m): 3
 Voltage/Frequency:
 Frequency Range:
 Net = Reading (dBuV/m) + Antenna Factor (dB1/m) + Cable Loss (dB) - Preamp Factor (dB) - Distance Factor (dB)
 Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW

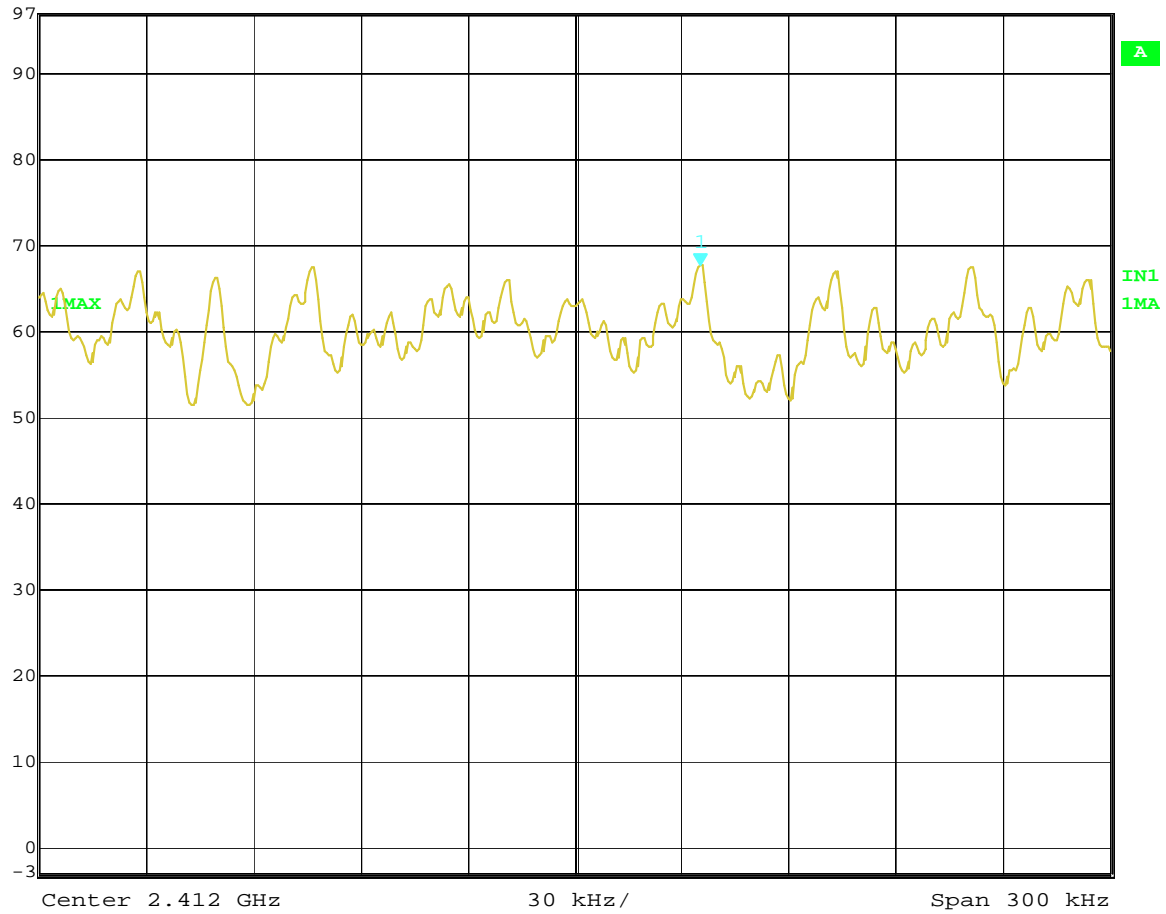
Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dBm	Limit dBm	Margin dB	Bandwidth
Note: Peak Power Spectral Density, dBm value obtained using $P=(e^2 d^2)/30G$											
Data Rate: 11MB/Second. 802.11(b)											
PK	V	2412.000	67.65	28.34	5.82	33.99	0.00	-27.38	8.00	-35.38	3/30 kHz
PK	V	2437.000	68.50	28.35	5.87	34.00	0.00	-26.48	8.00	-34.48	3/30 kHz
PK	V	2462.000	68.12	28.36	5.92	34.01	0.00	-26.81	8.00	-34.81	3/30 kHz
Data Rate: 54MB/Second. 802.11(g)											
PK	V	2412.000	56.90	28.34	5.82	33.99	0.00	-38.13	8.00	-46.13	3/30 kHz
PK	V	2437.000	62.03	28.35	5.87	34.00	0.00	-32.95	8.00	-40.95	3/30 kHz
PK	V	2462.000	60.77	28.36	5.92	34.01	0.00	-34.16	8.00	-42.16	3/30 kHz

FCC

Channel 1 (2.412 GHz) with 802.11b set to 11 MB/s, Vertical Polarity



Marker 1 [T1] RBW 3 kHz RF Att 20 dB
 Ref Lvl 67.65 dBμV VBW 30 kHz
 97 dBμV 2.41203517 GHz SWT 100 ms Unit dBμV

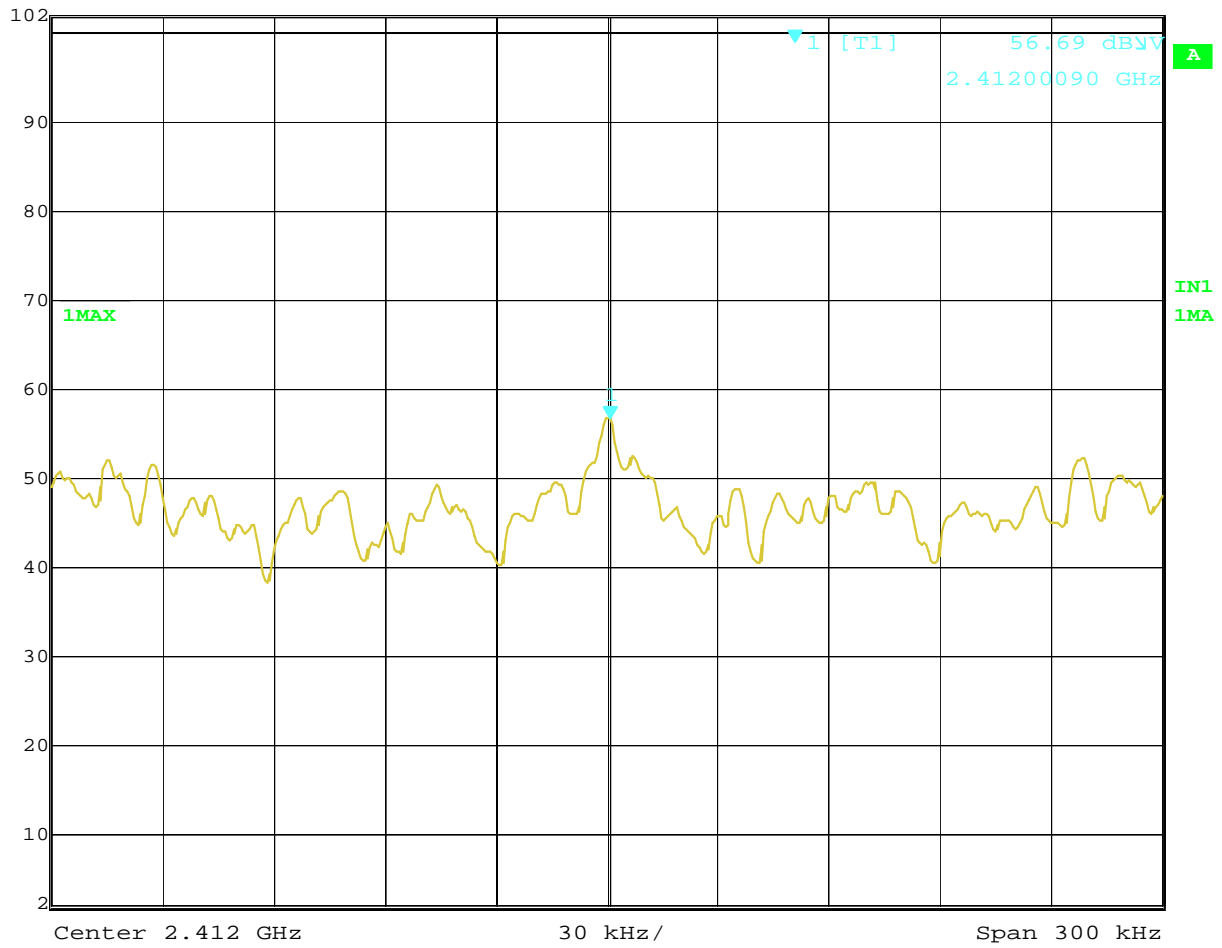


Date: 2.SEP.2011 19:02:14

Channel 1 (2.412 GHz) with 802.11g set to 54 MB/s, Vertical Polarity



Marker 1 [T1]	RBW	3 kHz	RF Att	20 dB
Ref Lvl	56.69 dBμV	VBW	30 kHz	
102 dBμV	2.41200090 GHz	SWT	84 ms	Unit dBμV

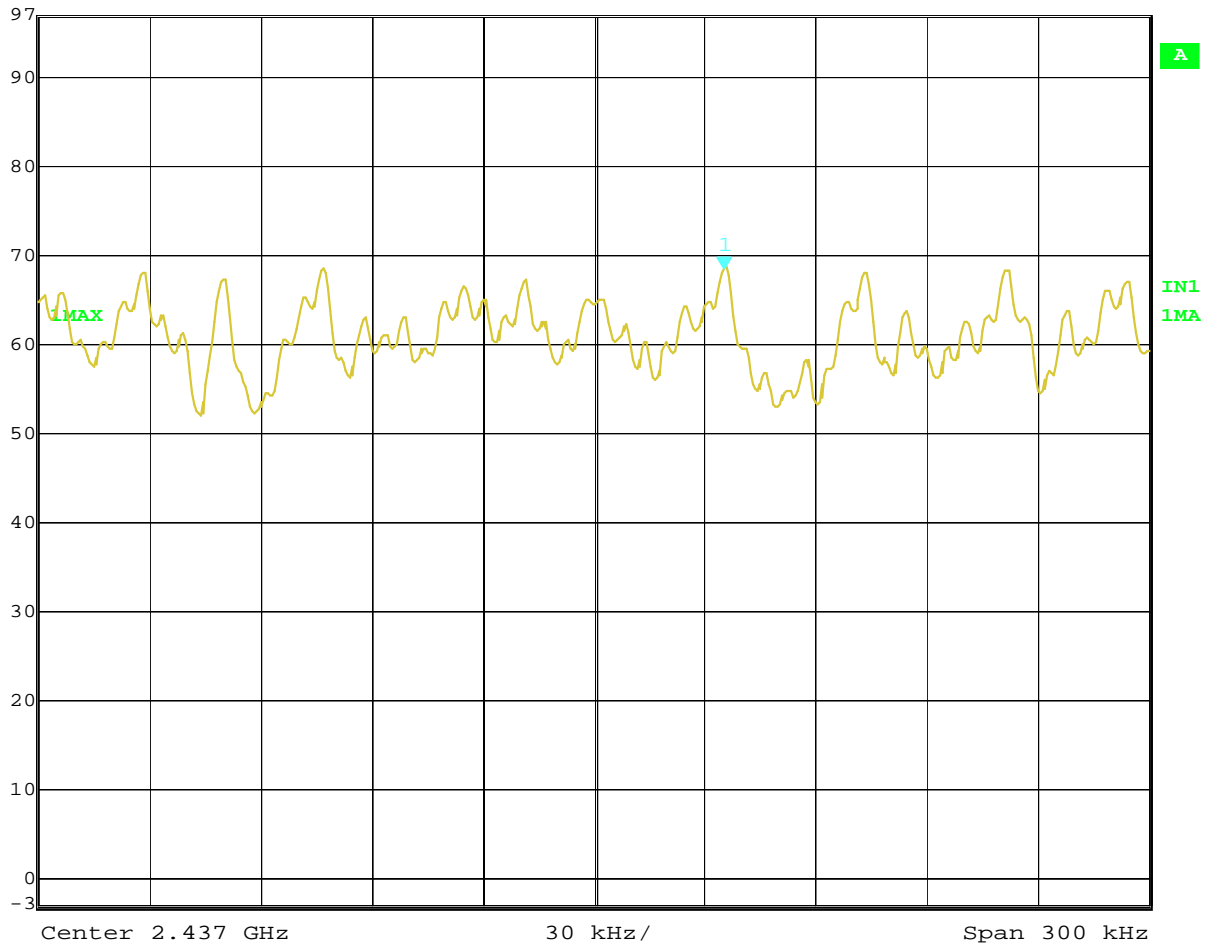


Date: 2.SEP.2011 20:53:36

Channel 6 (2.437GHz) with 802.11b set to 11 MB/s, Vertical Polarity



Marker 1 [T1]	RBW	3 kHz	RF Att	20 dB
Ref Lvl	68.50 dBμV	VBW	30 kHz	
97 dBμV	2.43703517 GHz	SWT	100 ms	Unit dBμV

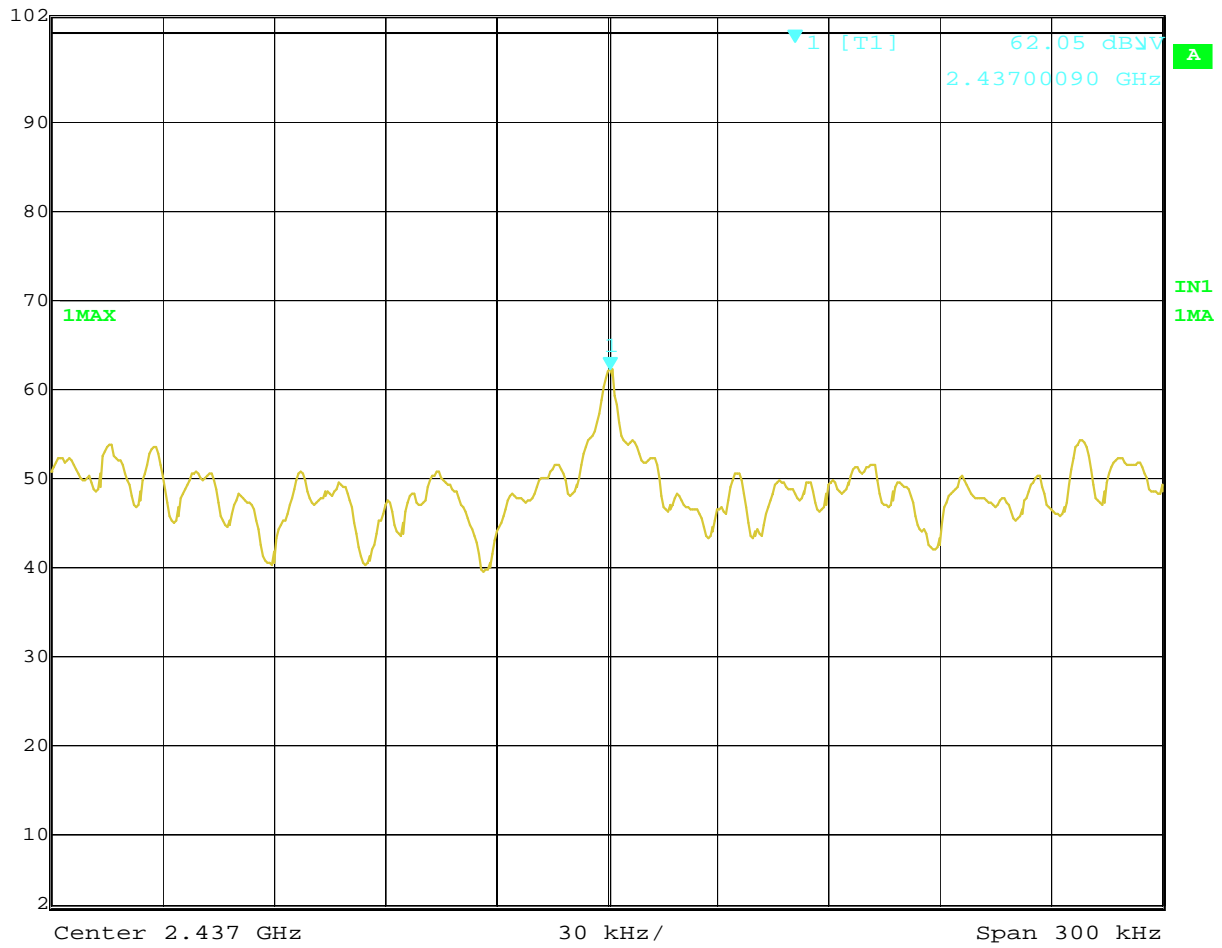


Date: 2.SEP.2011 19:33:32

Channel 6 (2.437GHz) with 802.11g set to 54 MB/s, Vertical Polarity



Ref Lvl	Marker 1 [T1]	RBW	3 kHz	RF Att	20 dB
102 dBμV	62.05 dBμV	VBW	30 kHz		
	2.43700090 GHz	SWT	84 ms	Unit	dBμV

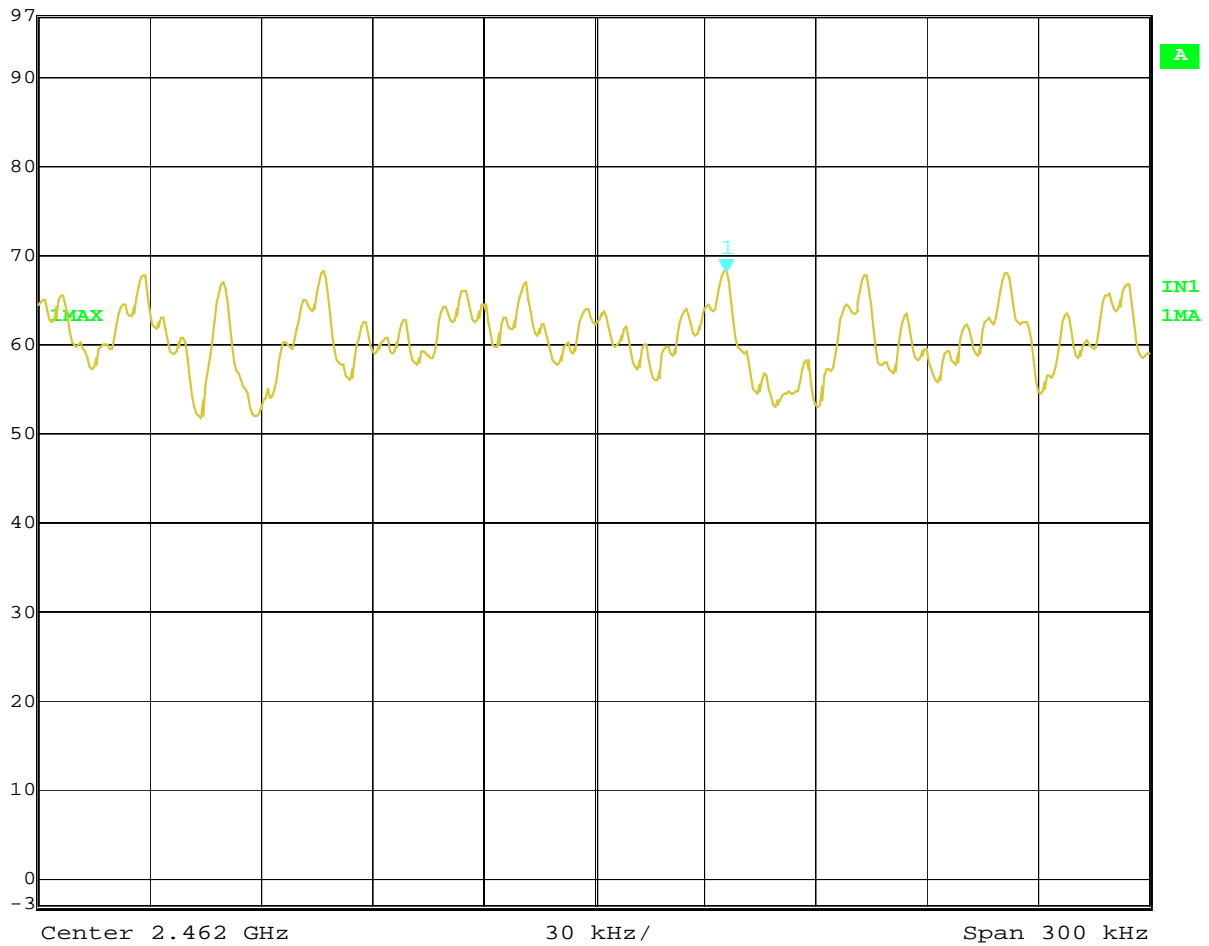


Date: 2.SEP.2011 21:08:34

Channel 11 (2.462 GHz) with 802.11b set to 11 MB/s, Vertical Polarity



Marker 1 [T1]	RBW	3 kHz	RF Att	20 dB
Ref Lvl	68.18 dBμV	VBW	30 kHz	
97 dBμV	2.46203577 GHz	SWT	100 ms	Unit dBμV

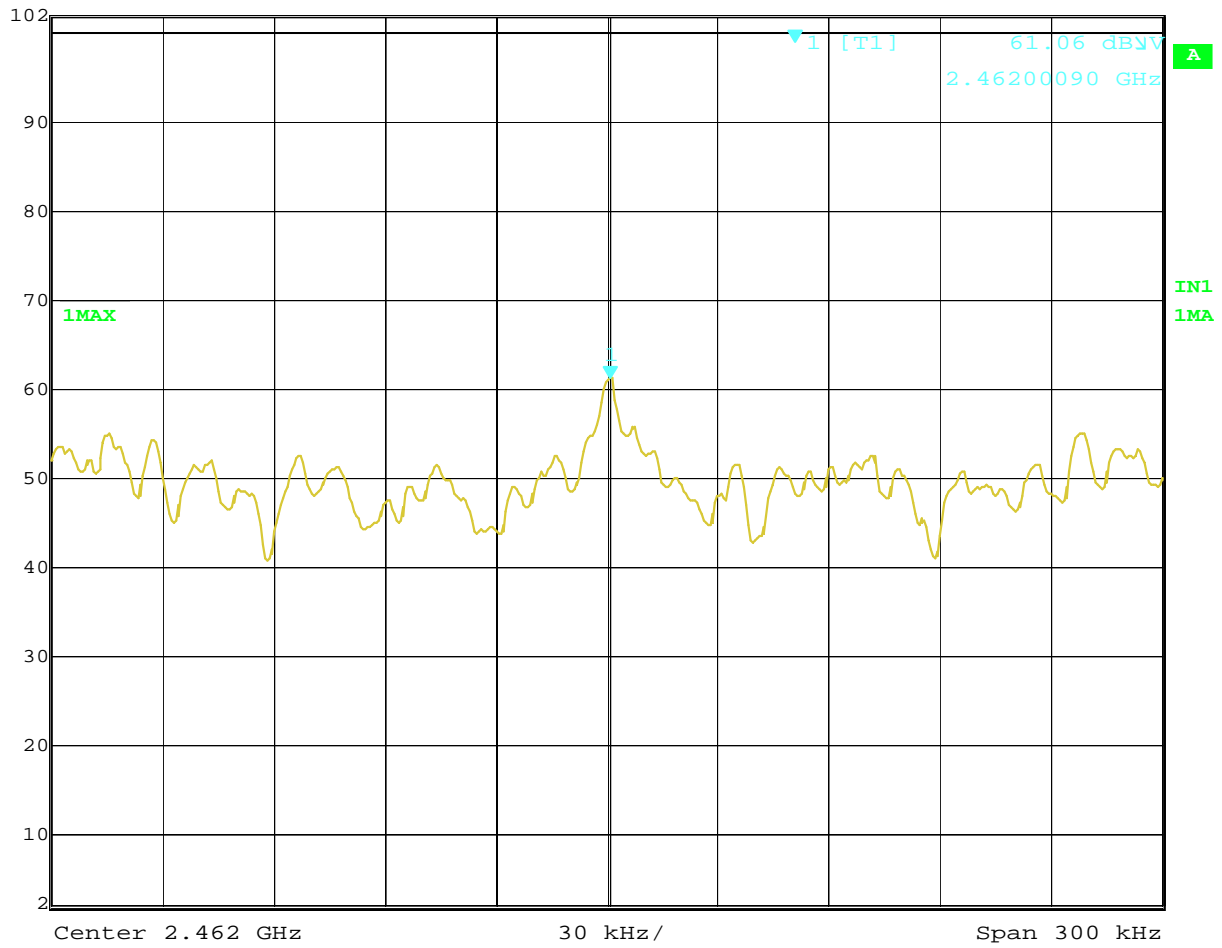


Date: 2.SEP.2011 19:51:48

Channel 11 (2.462 GHz) with 802.11g set to 54 MB/s, Vertical Polarity



Marker 1 [T1]	RBW	3 kHz	RF Att	20 dB
Ref Lvl	61.06 dBμV	VBW	30 kHz	
102 dBμV	2.46200090 GHz	SWT	84 ms	Unit dBμV



Date: 2.SEP.2011 21:18:14

Test Personnel:	Vathana Ven <i>VSV</i>	Test Date:	09/02/2011
Supervising Engineer:		Emissions below the limits	
(Where Applicable)	N/A	Test Levels:	specified in Section 9.3
Product Standard:	FCC Part 15.247, RSS-210 Annex 8	Ambient Temperature:	22 °C
Input Voltage:	115VAC/60Hz	Relative Humidity:	45 %
Pretest Verification w/ Ambient		Atmospheric Pressure:	1008 mbar
Signals or BB Source:	Ambient Signals		

Deviations, Additions, or Exclusions: None

10 Band-edge Compliance

10.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C Section 15.247, KDB558074, and RSS-210 Annex 8.

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A wooden table 80 cm high is used for table-top equipment.

10.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV002	Weather Station	Davis Instruments	7400	PE80519A93	08/17/2011	08/17/2012
145-416	Cables 145-400 145-408 145-402 145-404	Huber + Suhner	3m Track B cables	multiple	08/31/2010	09/15/2011
HORN2	HORN ANTENNA	EMCO	3115	9602-4675	10/08/2010	10/08/2011
145128	EMI Receiver 40 GHz (20 Hz - 40 GHz)	Rohde & Schwarz	ESI	8392831001	08/23/2011	08/23/2012

Software Utilized:

Name	Manufacturer	Version
Excel 2003	Microsoft	(11.8231.8221) SP3
EMI Boxborough.xls	Intertek	08/27/10

10.3 Results:

The sample tested was found to comply.

In any 100 kHz bandwidth outside the frequency band, 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. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in 15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see 15.205(c)).

FCC Part 15.209(a) & RSS-210 A8.5 – Restricted Band Radiated Spurious/Harmonics Limits

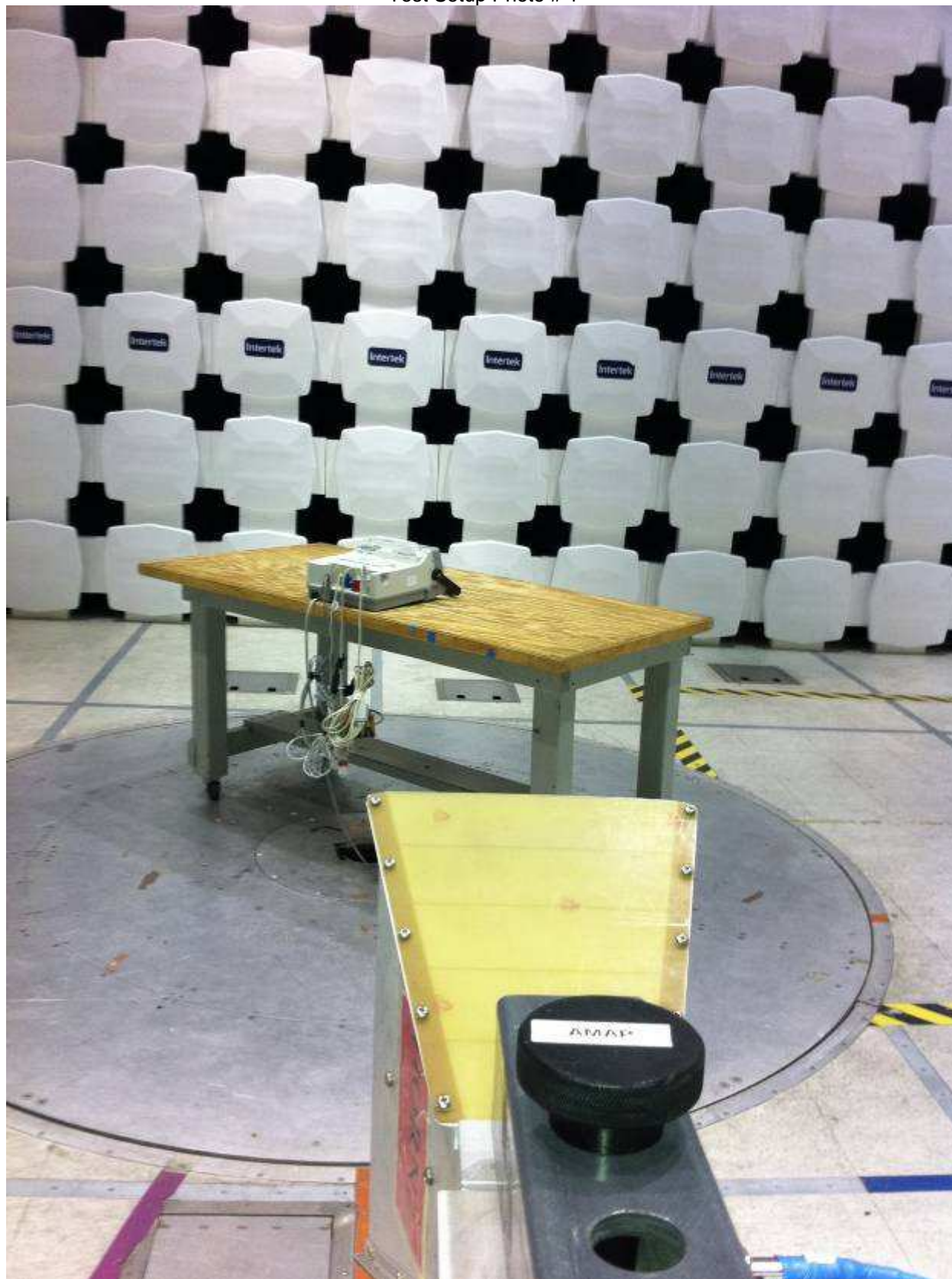
Frequency (MHz)	Field Strength		Test Distance (meters)
	μV/m	dBμV/m	
30–88	100	40.00	3
88–216	150	43.52	3
216–960	200	46.02	3
Above 960	500	53.98	3

FCC Part 15.247(d) & RSS-210 A8.5 – Non Restricted Band Radiated Spurious/Harmonics Limits

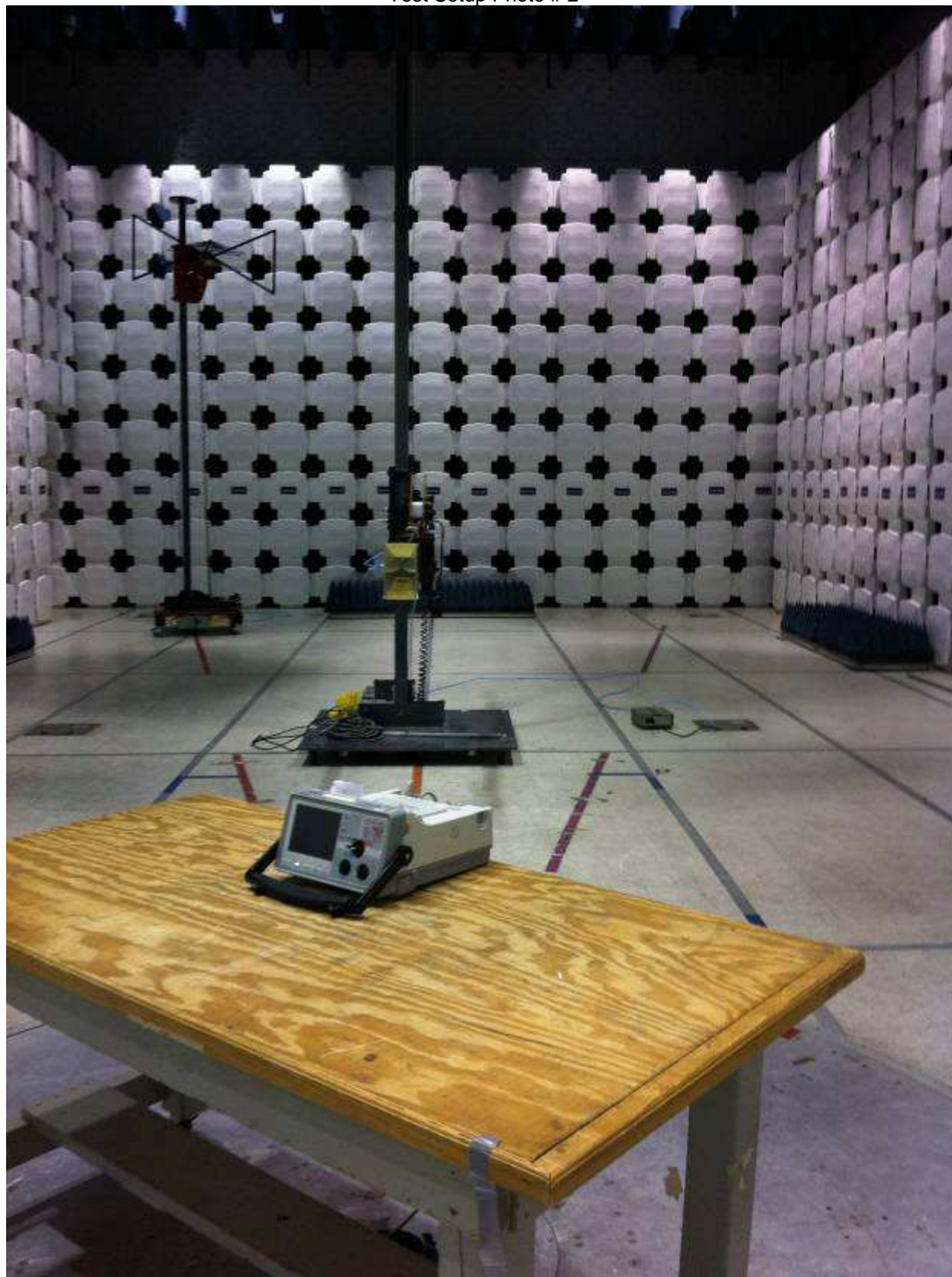
Channels	Fundamental Field Strength (dBμV/m)	Spurious/Harmonics Limits (dBμV/m)	Test Distance (meters)
1	85.73	65.73	3
6	86.10	66.10	3
11	87.28	67.28	3

10.4 Setup Photographs:

Test Setup Photo # 1



Test Setup Photo # 2



10.5 Data:

Radiated Emissions

Company: Zoll Medical Corp

Model #: ZOLL E Series Data Comm Card

Serial #: IN0411-00032

Engineers: Vathana Ven

Project #: G100398565

Date(s): 09/02/11

Standard: FCC Part 15 Subpart C 15.247

Receiver: R&S ESCI (ROS002) 04-15-2012

Limit Distance (m): 3

PreAmp: PRE_145014_12-28-2011.txt

Test Distance (m): 3

PreAmp Used? (Y or N): Y

Voltage/Frequency: 120VAC/60Hz

Frequency Range: Frequency shown

Net = Reading (dBuV/m) + Antenna Factor (dB1/m) + Cable Loss (dB) - Preamp Factor (dB) - Distance Factor (dB)

Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW

Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Bandwidth	FCC
Fundamental field strength, Data Rate: 11MB/Second. 802.11(b)												
PK	V	2412.000	91.52	28.34	5.82	33.99	0.00	91.69	--	--	1/3 MHz	
PK	H	2412.000	91.00	28.17	5.82	33.99	0.00	91.01	--	--	1/3 MHz	
PK	V	2437.000	92.26	28.35	5.87	34.00	0.00	92.48	--	--	1/3 MHz	
PK	H	2437.000	88.91	28.24	5.87	34.00	0.00	89.03	--	--	1/3 MHz	
PK	V	2462.000	92.18	28.36	5.92	34.01	0.00	92.45	--	--	1/3 MHz	
AVG	V	2462.000	83.75	28.36	5.92	34.01	0.00	84.02	--	--	1MHz/10Hz	
Note: 100 kHz reference for 20 dBc limit												
Fundamental field strength, Data Rate: 11MB/Second. 802.11(b)												
PK	V	2412.000	84.49	28.34	5.82	33.99	0.00	84.66	--	--	100/300 kHz	
PK	H	2412.000	81.75	28.17	5.82	33.99	0.00	81.76	--	--	100/300 kHz	
PK	V	2437.000	85.14	28.35	5.87	34.00	0.00	85.36	--	--	100/300 kHz	
PK	H	2437.000	81.80	28.24	5.87	34.00	0.00	81.92	--	--	100/300 kHz	
PK	V	2462.000	84.85	28.36	5.92	34.01	0.00	85.12	--	--	100/300 kHz	
Note: Upper Band Edge Compliance (using marker-delta method factor of -43.14dB)												
Note: Average obtained by using 10Hz VBW as referenced by the KDB558074												
PK	V	2483.500	49.04	28.37	5.97	34.02	0.00	49.36	74.00	-24.64	1/3 MHz	
AVG	V	2483.500	40.61	28.37	5.97	34.02	0.00	40.93	54.00	-13.07	1MHz/10Hz	

No other emissions were detected above the measuring noise floor.

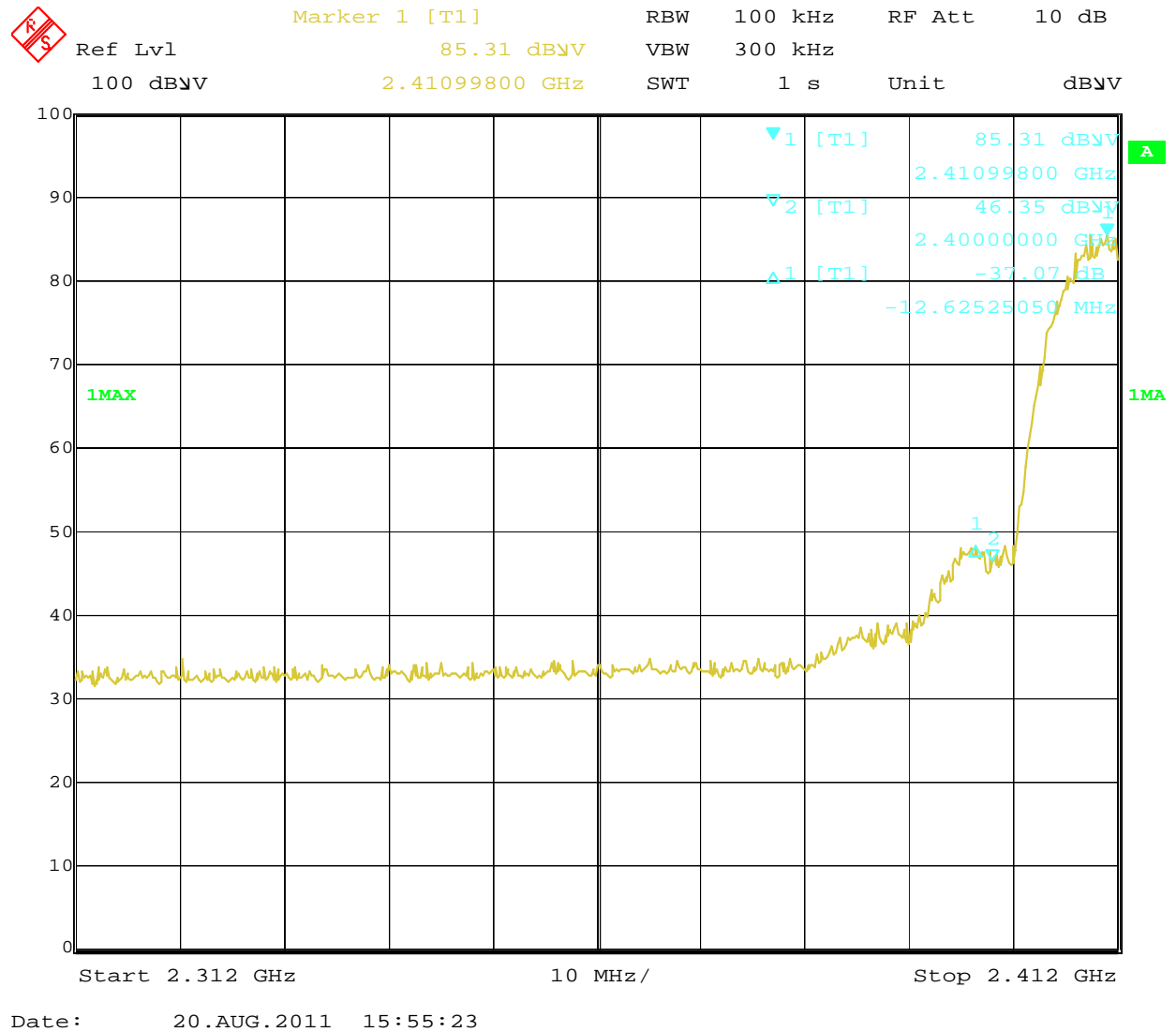
Special Radiated Emissions

Company: Zoll Medical Corp
 Model #: ZOLL E Series Data Comm Card
 Serial #: IN0411-00032
 Engineers: Vathana Ven
 Project #: G100398565 Date(s): 09/02/11
 Standard: FCC Part 15 Subpart C 15.247
 Receiver: R&S ESCI (ROS002) 04-15-2012 Limit Distance (m): 3
 PreAmp: PRE_145014_12-28-2011.txt Test Distance (m): 3
 PreAmp Used? (Y or N): Y Voltage/Frequency: 120VAC/60Hz Frequency Range: Frequency shown
 Net = Reading (dBuV/m) + Antenna Factor (dB1/m) + Cable Loss (dB) - Preamp Factor (dB) - Distance Factor (dB)
 Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/BW

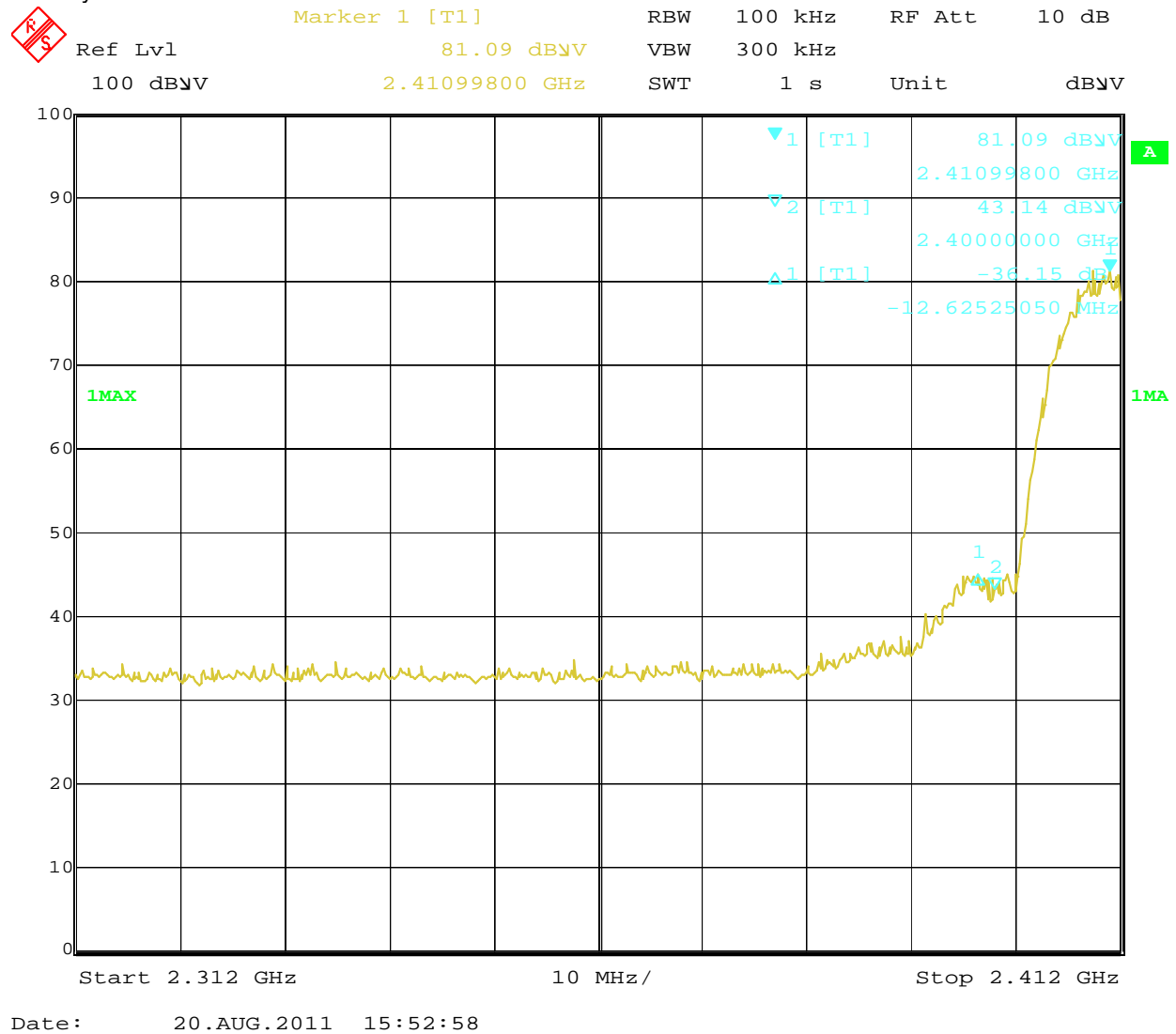
Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Bandwidth
Fundamental field strength, Data Rate: 54MB/Second. 802.11(g)											
PK	V	2412.000	87.38	28.34	5.82	33.99	0.00	87.55	--	--	1/3 MHz
PK	H	2412.000	87.40	28.17	5.82	33.99	0.00	87.41	--	--	1/3 MHz
PK	V	2437.000	88.89	28.35	5.87	34.00	0.00	89.11	--	--	1/3 MHz
PK	H	2437.000	88.61	28.24	5.87	34.00	0.00	88.73	--	--	1/3 MHz
PK	V	2462.000	90.36	28.36	5.92	34.01	0.00	90.63	--	--	1/3 MHz
AVG	V	2462.000	78.53	28.36	5.92	34.01	0.00	78.80	--	--	1MHz/10Hz
Note: 100 kHz reference for 20 dBc limit											
Fundamental field strength, Data Rate: 54MB/Second. 802.11(g)											
PK	V	2412.000	75.78	28.34	5.82	33.99	0.00	75.95	--	--	100/300 kHz
PK	H	2412.000	76.43	28.17	5.82	33.99	0.00	76.44	--	--	100/300 kHz
PK	V	2437.000	77.68	28.35	5.87	34.00	0.00	77.90	--	--	100/300 kHz
PK	H	2437.000	77.79	28.24	5.87	34.00	0.00	77.91	--	--	100/300 kHz
PK	V	2462.000	79.21	28.36	5.92	34.01	0.00	79.48	--	--	100/300 kHz
Note: Upper Band Edge Compliance (using marker-delta method factor of -35.7dB)											
Note: Average obtained by using 10Hz VBW as referenced by the KDB558074											
PK	V	2483.500	47.22	28.37	5.97	34.02	0.00	47.54	74.00	-26.46	1/3 MHz
AVG	V	2483.500	35.39	28.37	5.97	34.02	0.00	35.71	54.00	-18.29	1MHz/10Hz

No other emissions were detected above the measuring noise floor.

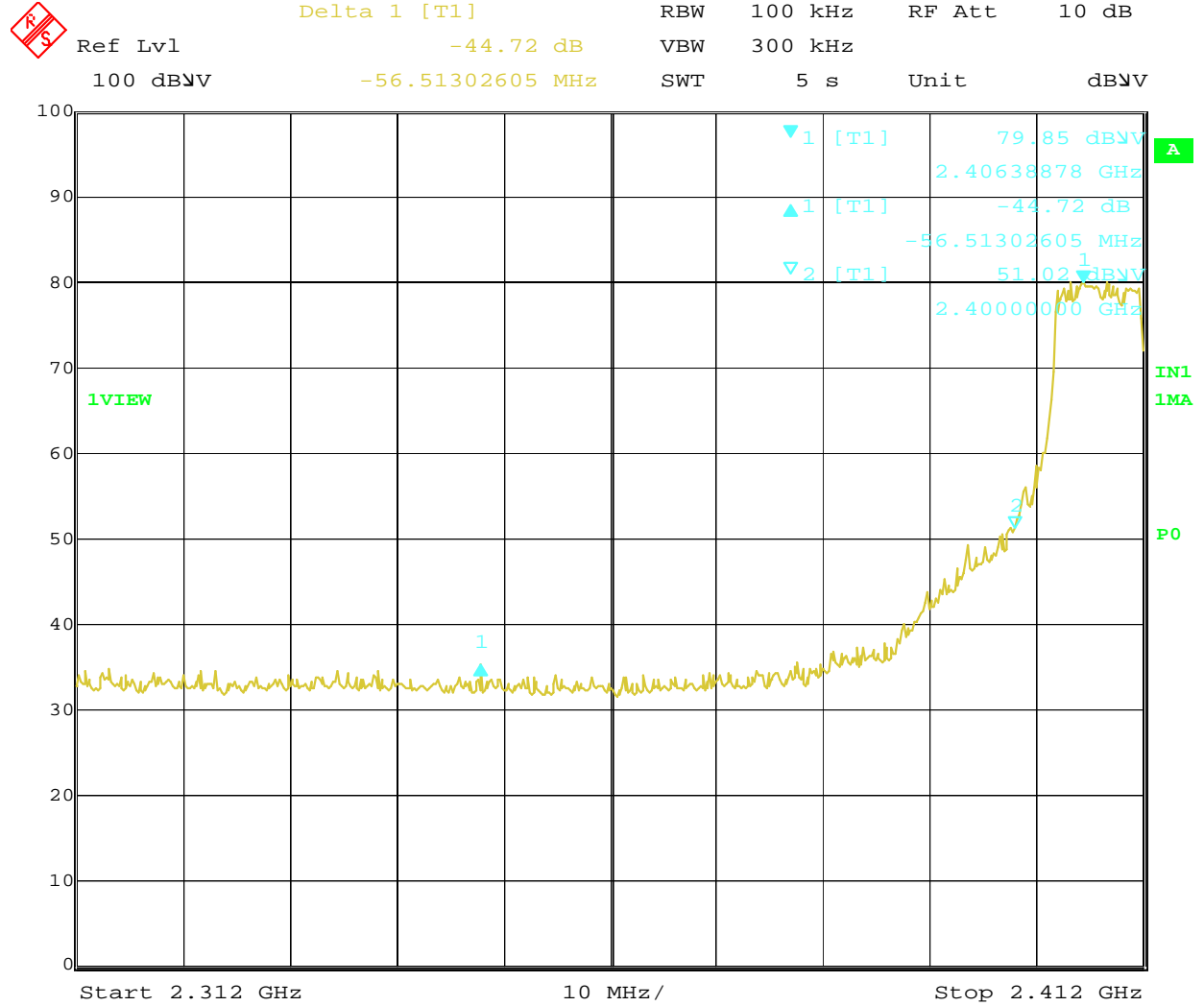
Lower Band-edge at channel 1 (2.412 GHz) with data transfer rate set to 11Mb/s 802.11b, Vertical Polarity



Lower Band-edge at channel 1 (2.412 GHz) with data transfer rate set to 11Mb/s 802.11b, Horizontal Polarity

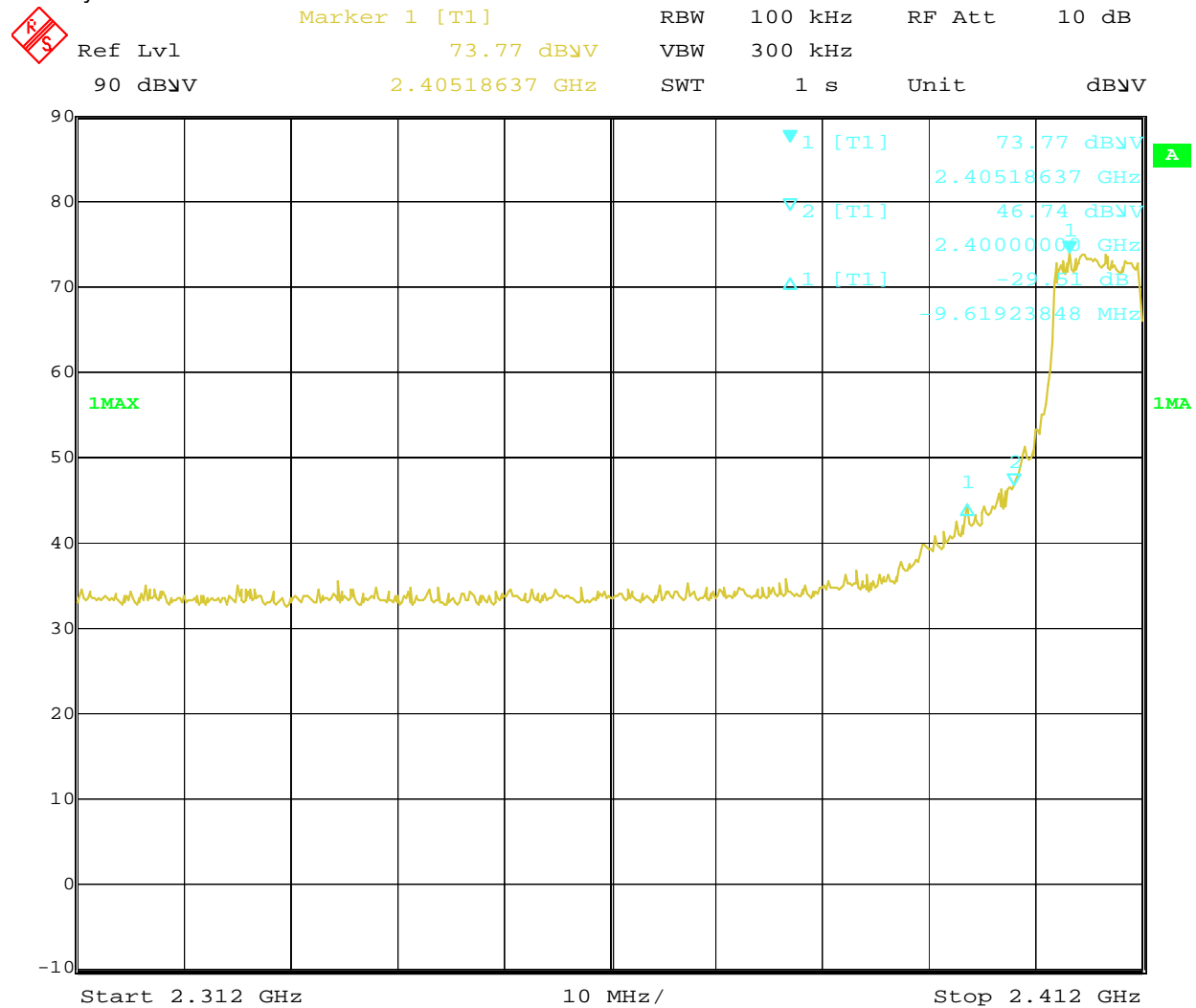


Lower Band-edge at channel 1 (2.412 GHz) with data transfer rate set to 54Mb/s 802.11g, Vertical Polarity



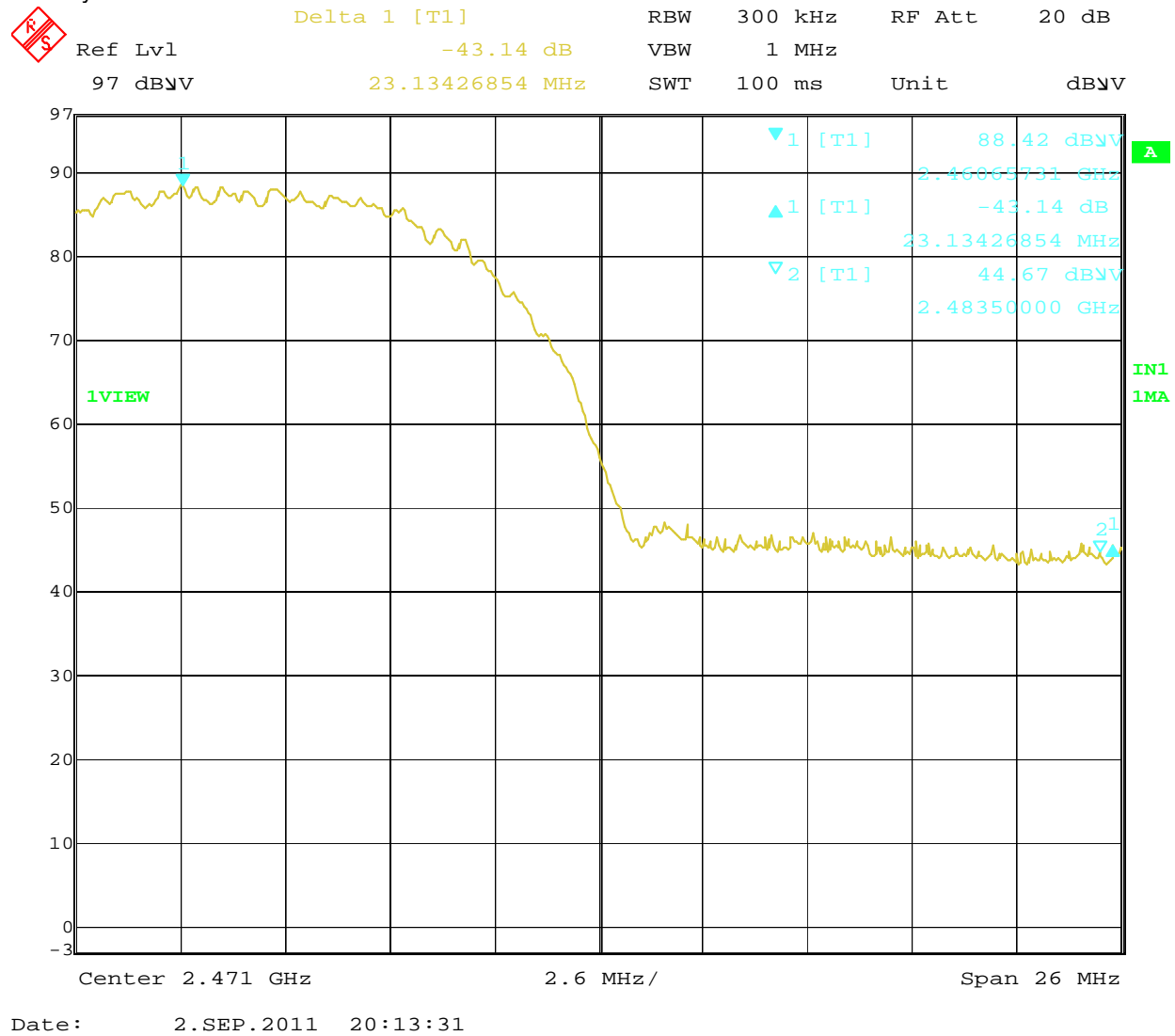
Date: 20.AUG.2011 14:36:56

Lower Band-edge at channel 1 (2.412 GHz) with data transfer rate set to 54Mb/s 802.11g, Horizontal Polarity

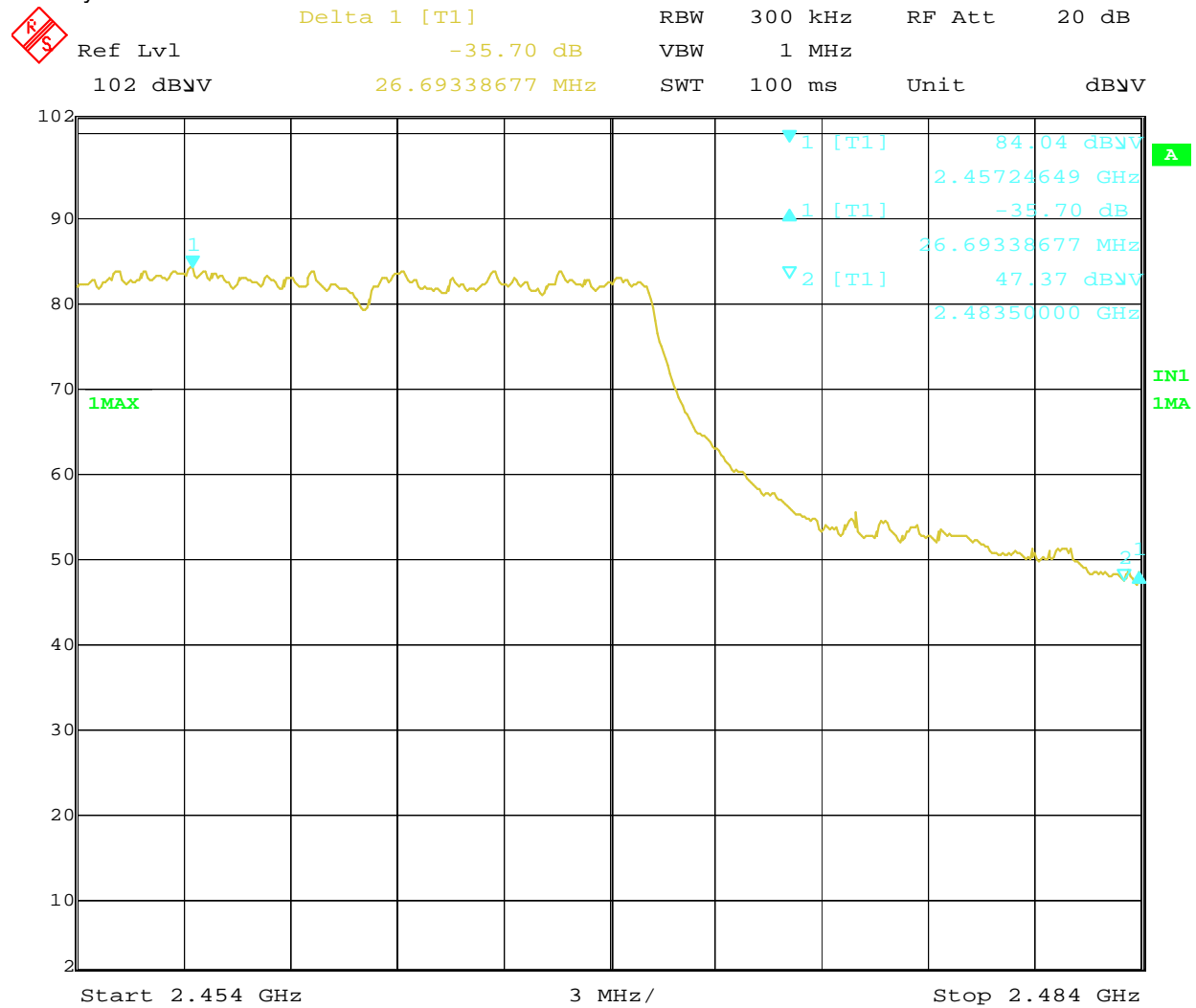


Date: 20.AUG.2011 15:35:04

Upper Band-edge at channel 11 (2.462 GHz) with data transfer rate set to 11Mb/s 802.11b, Vertical Polarity



Upper Band-edge at channel 11 (2.462 GHz) with data transfer rate set to 54Mb/s 802.11g, Vertical Polarity



Date: 2.SEP.2011 21:29:51

Test Personnel:	Vathana Ven <i>VSV</i>	Test Date:	09/02/2011
Supervising Engineer:		Emissions below the limits	
(Where Applicable)	N/A	Test Levels:	specified in Section 10.3
Product Standard:	FCC Part 15.247, RSS-210 Annex 8	Ambient Temperature:	22 °C
Input Voltage:	115VAC/60Hz	Relative Humidity:	45 %
Pretest Verification w/ Ambient		Atmospheric Pressure:	1008 mbar
Signals or BB Source:	Ambient Signals		

11 Receiver Spurious Emissions

11.1 Method

Tests are performed in accordance with ANSI C 63.4:2003 and RSS-Gen.

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A wooden table 80 cm high is used for table-top equipment.

Measurement Uncertainty

For radiated emissions, U_{lab} (3.5 dB at 3m and 3.5 dB at 10m below 1 GHz, and 4.2 dB at 3m above 1 GHz) < U_{CISPR} (5.2 dB), which is the reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where

- FS = Field Strength in dB μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = 52.0 dB μ V
AF = 7.4 dB/m
CF = 1.6 dB
AG = 29.0 dB
FS = 32 dB μ V/m

To convert from dB μ V to μ V or mV the following was used:

$$UF = 10^{(NF / 20)} \text{ where } UF = \text{Net Reading in } \mu\text{V}$$

NF = Net Reading in dB μ V

Example:

$$FS = RA + AF + CF - AG = 52.0 + 7.4 + 1.6 - 29.0 = 32.0$$
$$UF = 10^{(32 \text{ dB}\mu\text{V} / 20)} = 39.8 \mu\text{V/m}$$

11.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV002'	Weather Station	Davis Instruments	7400	PE80519A93	08/12/2011	08/12/2012
145-410'	Cables 145-400 145-406 145-407 145-405 145-403	Huber + Suhner	10m Track A Cables	multiple	08/31/2010	08/31/2011
145034'	BiLog Antenna (30 MHz to 1GHz)	Schaffner Chase EMC	CBL6111C	none	01/07/2011	01/07/2012
145003'	Preamplifier (150 KHz to 1.3 GHz)	Hewlett Packard	8447D	2443A04077	09/24/2010	09/24/2011
145128'	EMI Receiver 40 GHz (20 Hz - 40 Ghz)	Rohde & Schwarz	ESI	8392831001	08/10/2010	08/31/2011

Software Utilized:

Name	Manufacturer	Version
C5	Teseq	Build 5.26.00.3

11.3 Results:

The sample tested was found to comply.

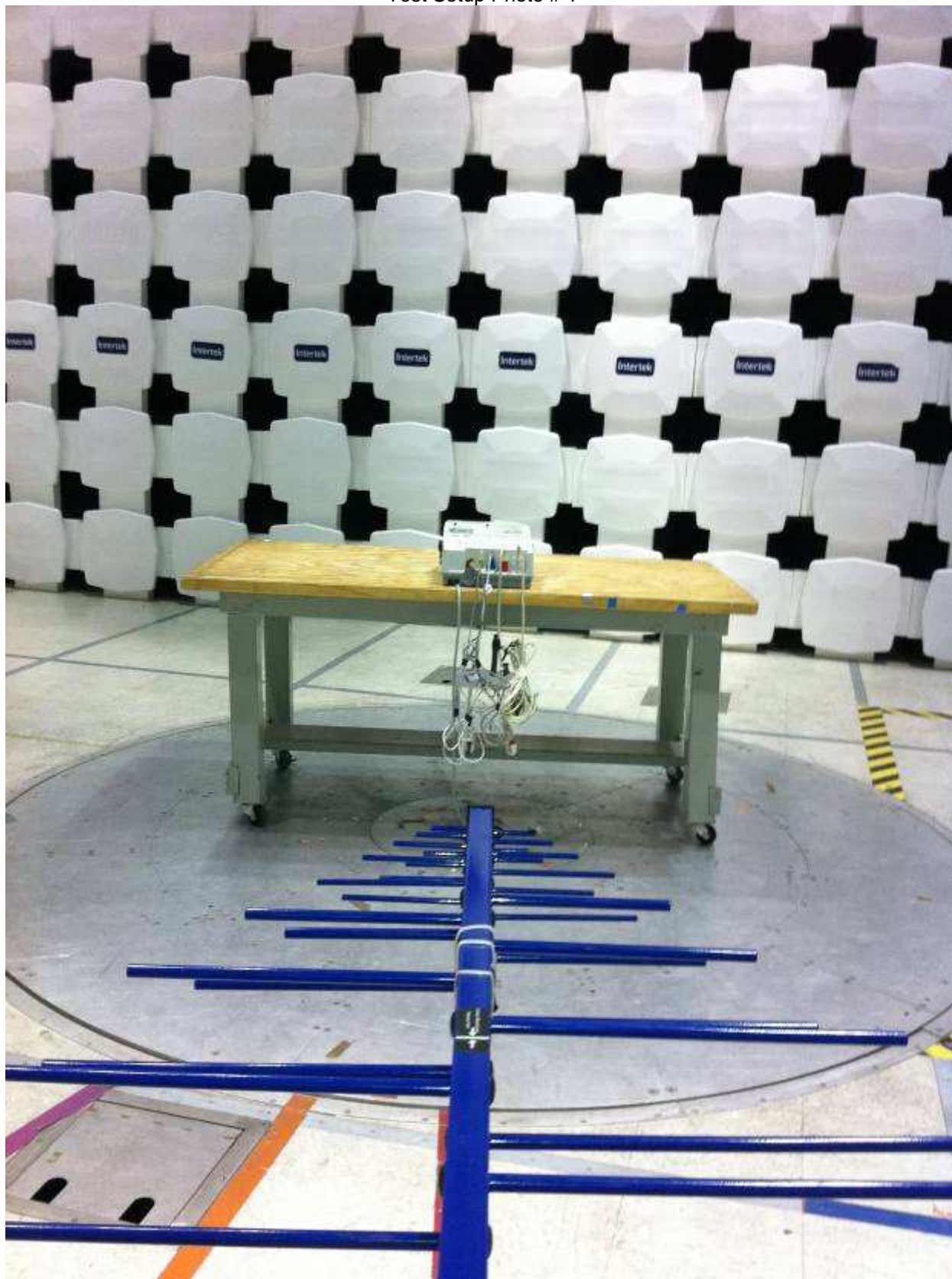
The field strength of any emissions shall not exceed the limits as follows:

FCC Part 15:2011 Subpart B Section 15.109 (a) & RSS-Gen Issue 2 June 2007, Section 6

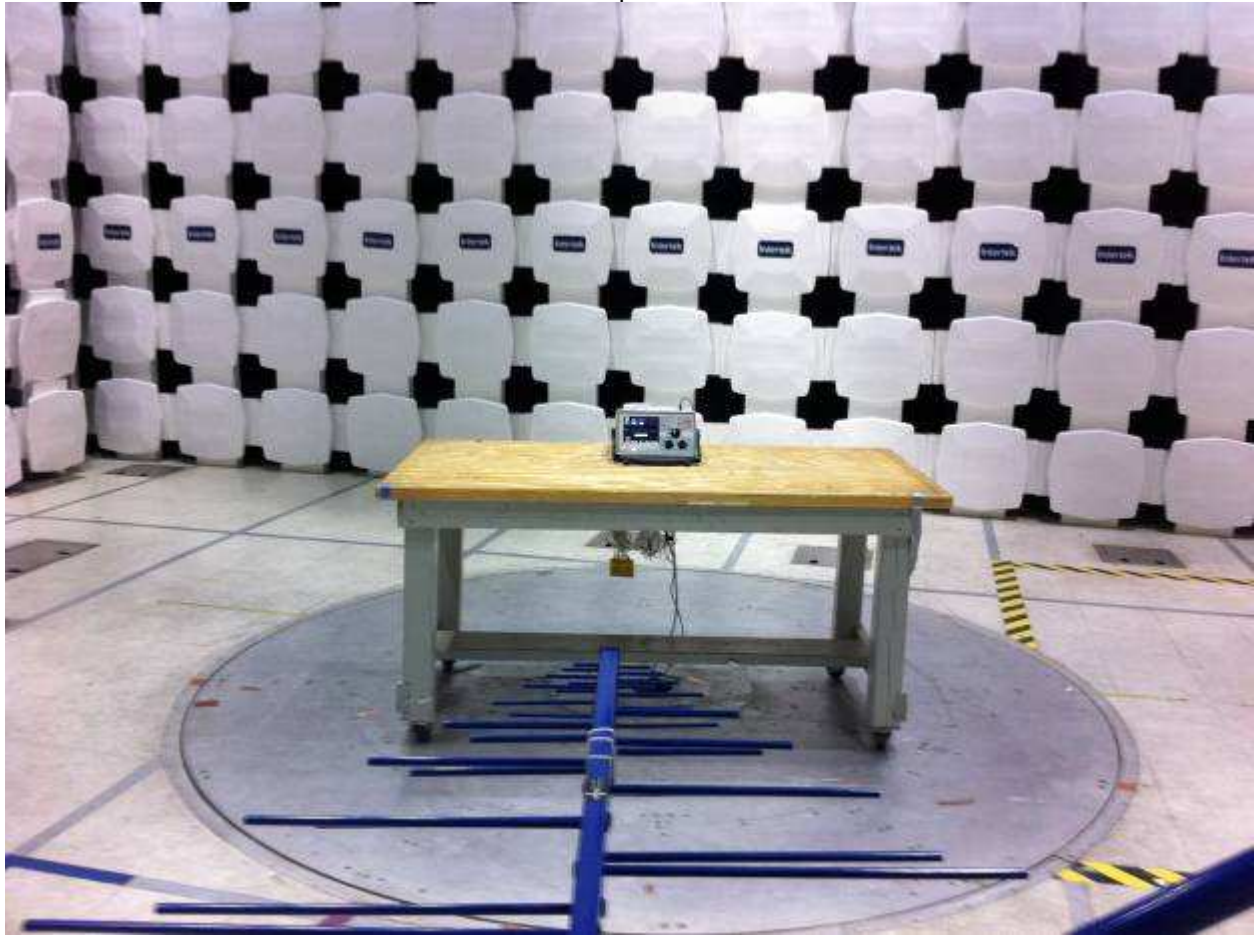
Frequency	Field Strength		Test Distance
(MHz)	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$	(meters)
30-88	100	40.00	3
88-216	150	43.52	3
216-960	200	46.02	3
Above 960	500	53.98	3

11.4 Setup Photographs:

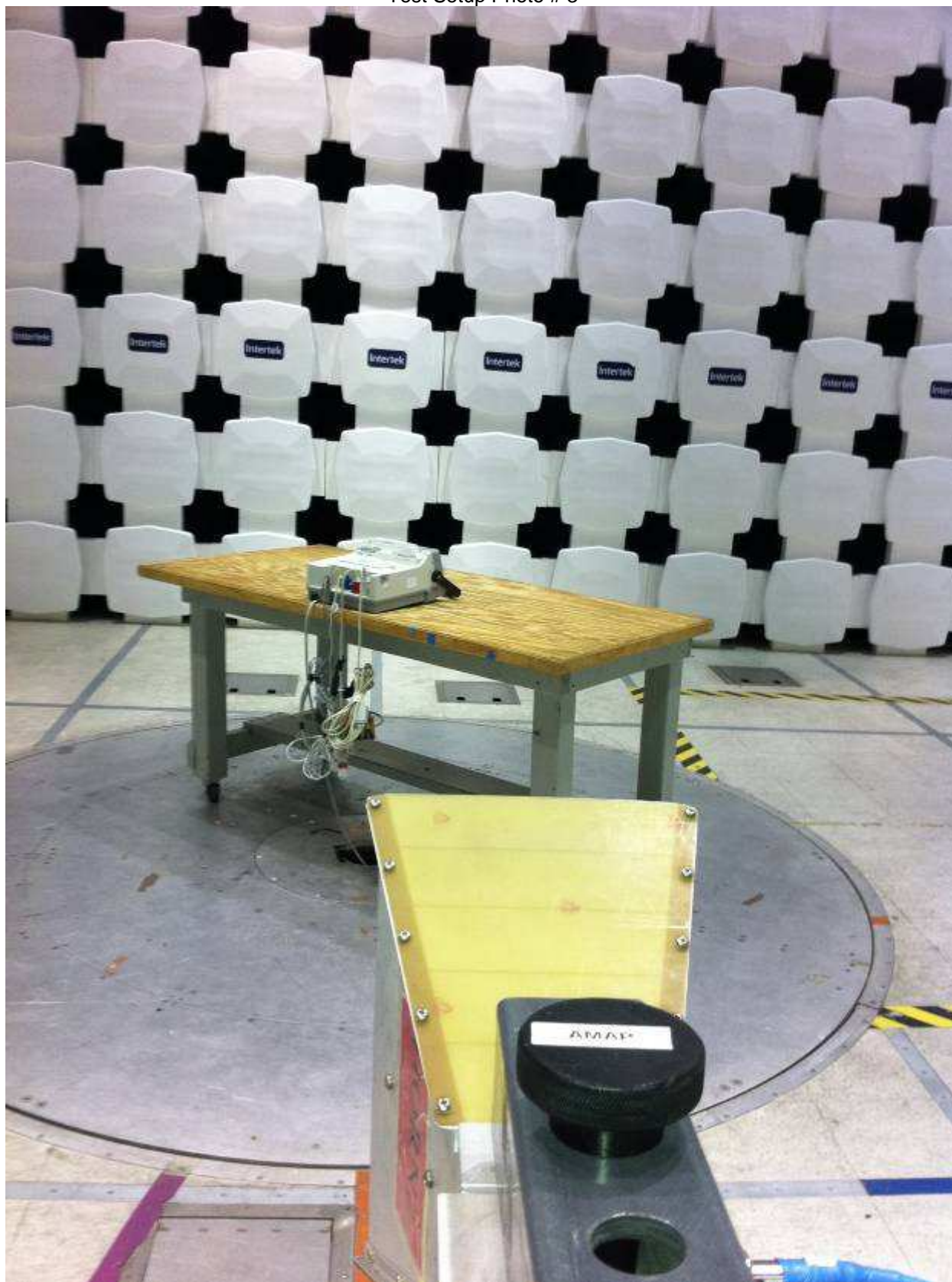
Test Setup Photo # 1



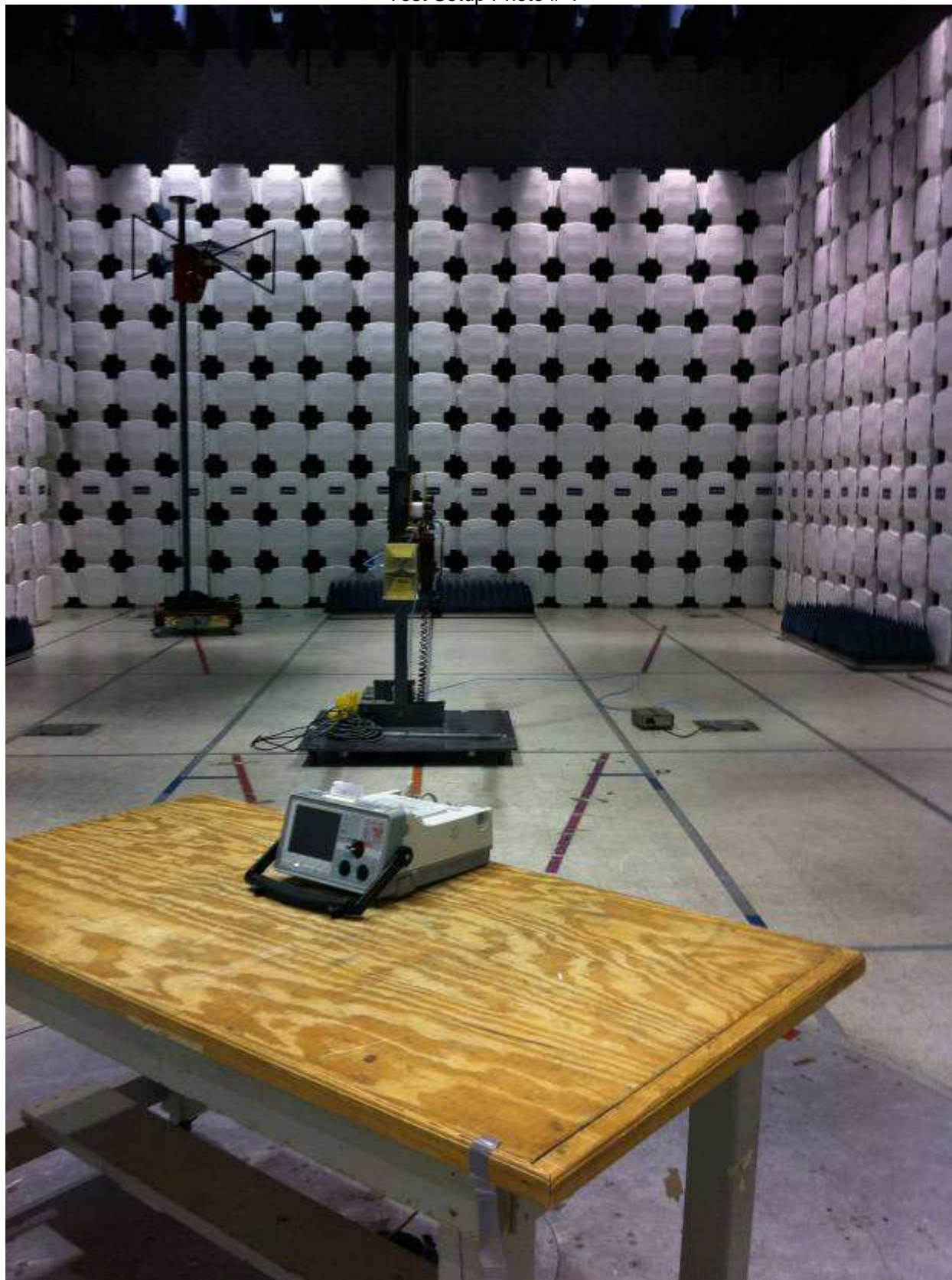
Test Setup Photo # 2



Test Setup Photo # 3



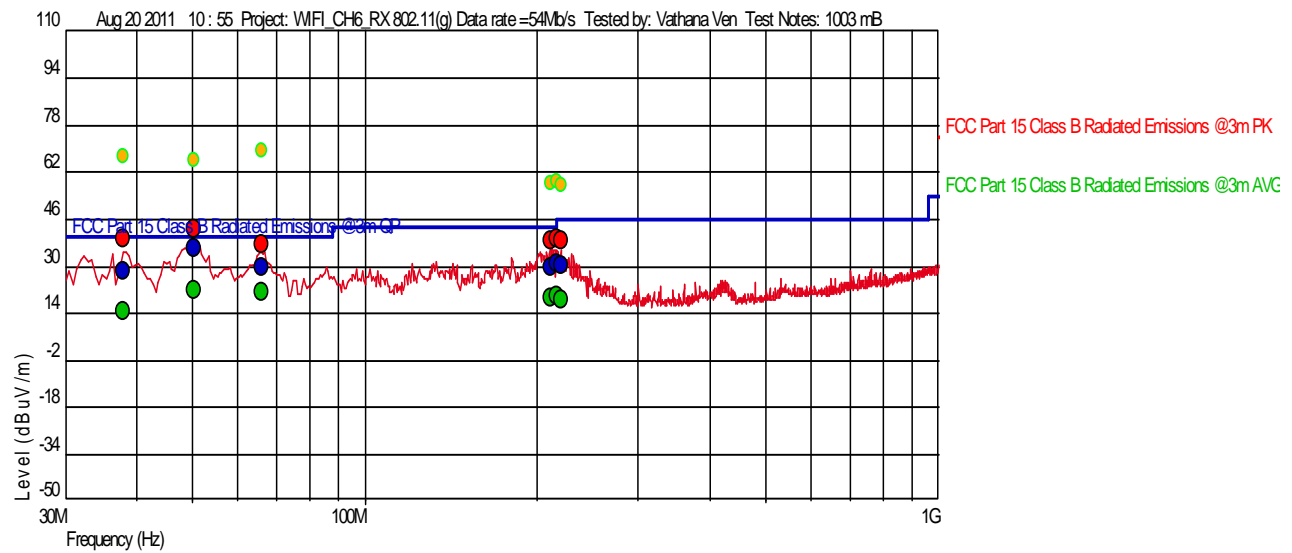
Test Setup Photo # 4



11.5 Plots/Data:

FCC Part 15.209, RSS-Gen

Channel 6 (2.437 GHz) Radiated Emissions @ 3m, Vertical Polarity, 30-1000MHz



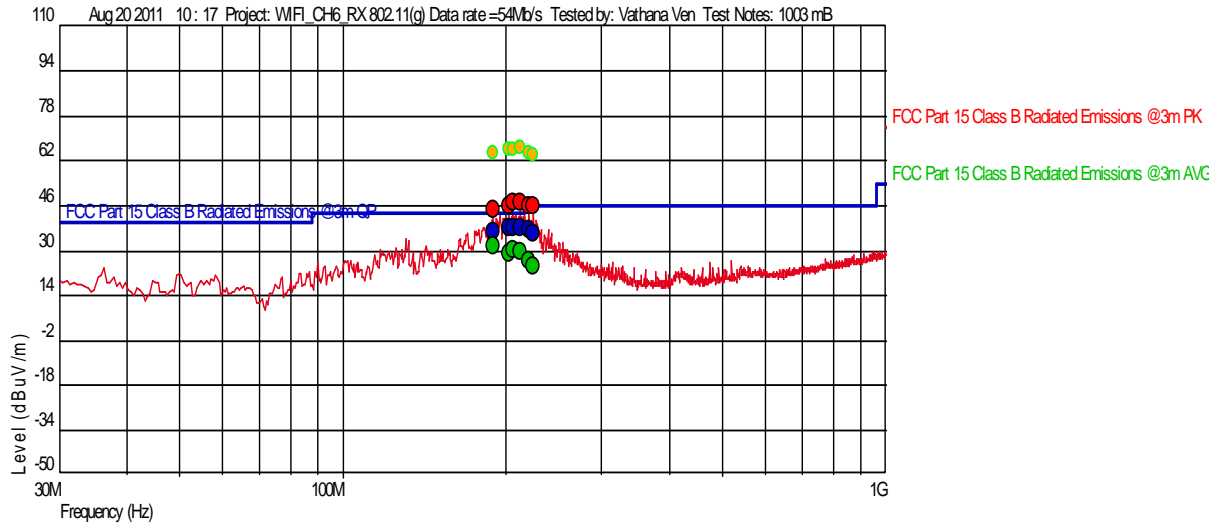
- Measured Peak Value
 - Measured Quasi Peak Value
 - Measured Average Value
 - Maximum Value of Mast and Turntable
- Level (dBuV/m) = AF + CL + PA + Raw
- AF = Antenna Factor
- CL = Cable Losses
- PA = Pre-Amplifier
- Raw = Raw Instrument Reading (Not listed on Spot Tables)

Measured: Quasi-Peak

Frequency (Hz)	Level (dBuV/m)	Ant. Fact. (dB)	Other Fact. (dB)	Limit (dBuV/m)	Margin (dB)	Vert (I)	Angle (deg)	Mast Height (m)	RBW (Hz)
37.9306M	28.68	13.828	-26.792	40	-11.32		316	1.36	120k
50.1771M	36.43	8.029	-26.584	40	-3.57		82	1.02	120k
66.1009M	29.38	5.710	-26.300	40	-10.62		248	1.35	120k
211.358M	29.69	10.700	-25.406	43.52	-13.83		14	1.08	120k
216.076M	31.21	10.722	-25.409	46	-14.79		171	1.65	120k
219.598M	30.31	10.792	-25.411	46	-15.69		165	1.99	120k

FCC Part 15.209, RSS-Gen

Channel 6 (2.437 GHz) Radiated Emissions @ 3m, Horizontal Polarity, 30-1000MHz



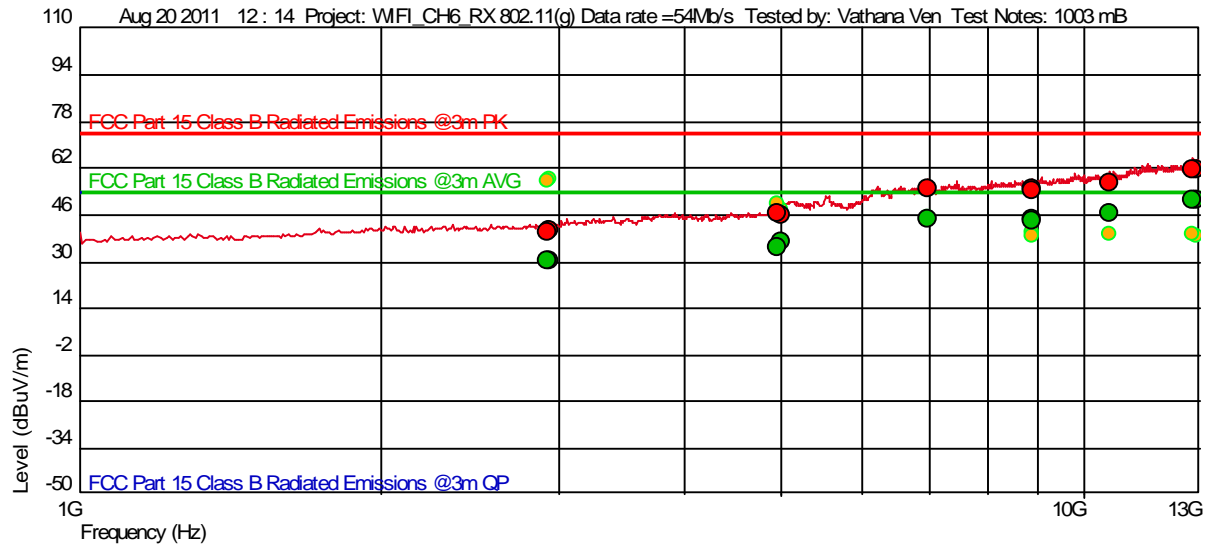
- Measured Peak Value
 - Measured Quasi Peak Value
 - Measured Average Value
 - Maximum Value of Mast and Turntable
- Level (dBuV/m) = AF + CL + PA + Raw
- AF = Antenna Factor
- CL = Cable Losses
- PA = Pre-Amplifier
- Raw = Raw Instrument Reading (Not listed on Spot Tables)

Measured: Quasi-Peak

Frequency (Hz)	Level (dBuV/m)	Ant. Fact. (dB)	Other Fact. (dB)	Limit (dBuV/m)	Margin (dB)	Hor (°)	Angle (deg)	Mast Height (m)	RBW (Hz)
188.790M	36.72	9.700	-25.473	43.52	-6.8	--	235	1.75	120k
202.023M	37.96	10.262	-25.401	43.52	-5.56	--	223	1.48	120k
205.153M	38.36	10.500	-25.403	43.52	-5.16	--	225	1.40	120k
211.918M	38.45	10.346	-25.407	43.52	-5.07	--	222	1.57	120k
219.981M	37.32	10.299	-25.411	46	-8.68	--	93	1.52	120k
223.712M	36.05	10.523	-25.413	46	-9.95	--	87	1.29	120k

FCC Part 15.209, RSS-Gen

Channel 6 (2.437 GHz) Radiated Emissions @ 3m, Vertical, Horizontal Polarity, 1-13GHz



- Measured Peak Value
 - Measured Quasi Peak Value
 - Measured Average Value
 - Maximum Value of Mast and Turntable
- Level (dBuV/m) = AF + CL + PA + Raw

AF = Antenna Factor

CL = Cable Losses

PA = Pre-Amplifier

Raw = Raw Instrument Reading (Not listed on Spot Tables)

Measured: Peak

Frequency (Hz)	Level (dBuV/m)	Ant. Fact. (dB)	Other Fact. (dB)	Limit (dBuV/m)	Margin (dB)	Ver() Hor(--)	Angle (deg)	Mast Height (m)	RBW (Hz)
2.92261G	40.09	29.680	-27.836	74.00	-33.91		179	1.16	1M
2.93995G	40.56	29.783	-27.843	74.00	-33.44	--	324	1.16	1M
4.94134G	46.36	33.029	-26.451	74.00	-27.64		172	3.61	1M
4.99969G	45.96	33.091	-26.380	74.00	-28.04	--	276	2.80	1M
6.97702G	55.18	35.043	-25.152	74.00	-18.82		310	3.69	1M
8.85225G	54.47	37.718	-24.003	74.00	-19.53		116	1.62	1M
8.86913G	55.14	37.733	-23.992	74.00	-18.86		80	1.22	1M
10.5822G	56.76	38.313	-22.676	74.00	-17.24		0	1.66	1M
12.8117G	61.62	39.245	-19.951	74.00	-12.38	--	2	3.73	1M
12.9051G	61.39	39.441	-19.722	74.00	-12.61	--	14	2.88	1M

Measured: Average

Frequency (Hz)	Level (dBuV/m)	Ant. Fact. (dB)	Other Fact. (dB)	Limit (dBuV/m)	Margin (dB)	Ver(l) Hor(--)	Angle (deg)	Mast Height (m)	RBW (Hz)
2.92261G	30.26	29.680	-27.836	54.00	-23.74		179	1.16	1M
2.93995G	30.53	29.783	-27.843	54.00	-23.47	--	324	1.16	1M
4.94134G	35.16	33.029	-26.451	54.00	-18.84		172	3.61	1M
4.99969G	36.56	33.091	-26.380	54.00	-17.44	--	276	2.80	1M
6.97702G	44.33	35.043	-25.152	54.00	-9.67		310	3.69	1M
8.85225G	44.27	37.718	-24.003	54.00	-9.73		116	1.62	1M
8.86913G	44.70	37.733	-23.992	54.00	-9.30		80	1.22	1M
10.5822G	46.72	38.313	-22.676	54.00	-7.28		0	1.66	1M
12.8117G	51.23	39.245	-19.951	54.00	-2.77	--	2	3.73	1M
12.9051G	51.30	39.441	-19.722	54.00	-2.70	--	14	2.88	1M

Test Personnel: Vathana Ven *VSV*

Test Date: 08/20/2011

Supervising Engineer:
(Where Applicable) N/A

Product Standard: FCC Part 15.247, RSS-210 Annex 8

Input Voltage: 115VAC/60Hz

Pretest Verification w/ Ambient
Signals or BB Source: Ambient SignalsEmissions below the limits
specified in Section 9.3

Test Levels:

Ambient Temperature: 22 °C

Relative Humidity: 44 %

Atmospheric Pressure: 1003 mbar

Deviations, Additions, or Exclusions: None

12 AC Mains Conducted Emissions

12.1 Method

Tests are performed in accordance with ANSI C 63.4:2003 and RSS-Gen.

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A wooden table 80 cm high is used for table-top equipment.

Measurement Uncertainty

For conducted emissions, U_{lab} (3.2 dB in worst case) < U_{CISPR} (3.6 dB), which is the reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Sample Calculations

The following is how net line-conducted readings were determined:

$$NF = RF + LF + CF + AF$$

Where NF = Net Reading in dB μ V

RF = Reading from receiver in dB μ V

LF = LISN Correction Factor in dB

CF = Cable Correction Factor in dB

AF = Attenuator Loss Factor in dB

To convert from dB μ V to μ V or mV the following was used:

$$UF = 10^{(NF / 20)} \text{ where } UF = \text{Net Reading in } \mu\text{V}$$

NF = Net Reading in dB μ V

Example:

$$NF = RF + LF + CF + AF = 28.5 + 0.2 + 0.4 + 20.0 = 49.1 \text{ dB}\mu\text{V}$$

$$UF = 10^{(49.1 \text{ dB}\mu\text{V} / 20)} = 285.1 \mu\text{V/m}$$

12.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
BAR3'	Digital 4 Line Barometer	Mannix	OABA116	BAR3	08/11/2010	08/11/2012
ROS002'	9kHz to 3GHz EMI Test Receiver	Rohde & Schwartz	ESCI 1166.5950K03	100067	04/15/2011	04/15/2012
CBLBNC60'	Cable, BNC - BNC, 10m long	Alpha	RG-58C/U	CBL10MS1	09/15/2011	09/15/2012
145015'	LISN: 50 Ohm/50 microHenry	Solar Electronics	9252-50-R-24-BNC	971617	01/18/2011	01/18/2012
DS27'	Attenuator, 20dB	Mini Circuits	20dB, 50 ohm	DS27	04/19/2011	04/19/2012

Software Utilized:

Name	Manufacturer	Version
Excel 2003	Microsoft	(11.8231.8221) SP3
EMI Boxborough.xls	Intertek	08/27/10

12.3 Results:

The sample tested was found to comply.

The radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the table below

FCC Part 15.207 (a) & RSS-Gen Section 7.2.2 (Table 2)

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

*Decreases with the logarithm of the frequency.

12.4 Setup Photographs:



12.5 Data:

Line conducted emissions in transmit mode
Conducted Emissions

Company: Zoll Medical Corp

Model #: ZOLL E Series Data Comm Card

Serial #: IN0411-00032

Engineer(s): Vathana Ven

Project #: G100398565

Date: 08/20/11

Standard: FCC Part 15 Subpart C 15.247/RSS-210

Note: Tx mode

Barometer: BAR3 Temp/Humidity/Pressure: 22 deg C 51% 1003 mB Attenuator: DS27_4-19-2012.txt

Voltage/Frequency: 120VAC/60Hz Frequency Range: 0.150-30MHz

Net is the sum of worst-case lisen, cable, & attenuator losses, and initial reading, factors are not shown

Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor; Bandwidth denoted as RBW/VBW

Detector Type	Frequency MHz	Reading Line 1 dB(uV)	Reading Line 2 dB(uV)	Reading Line 3 dB(uV)	Reading Line 4 dB(uV)	Net dB(uV)	QP Limit dB(uV)	Margin dB	Bandwidth
QP	0.175	24.20	18.40			44.54	64.72	-20.18	9/30 kHz
QP	0.214	28.90	29.50			49.80	63.05	-13.25	9/30 kHz
QP	13.275	17.10	16.80			37.70	60.00	-22.30	9/30 kHz
QP	13.705	13.60	13.60			34.20	60.00	-25.80	9/30 kHz
QP	13.648	14.70	14.30			35.30	60.00	-24.70	9/30 kHz
QP	15.968	16.40	16.10			37.03	60.00	-22.97	9/30 kHz

Detector Type	Frequency MHz	Reading Line 1 dB(uV)	Reading Line 2 dB(uV)	Reading Line 3 dB(uV)	Reading Line 4 dB(uV)	Net dB(uV)	Average Limit dB(uV)	Margin dB	Bandwidth
AVG	0.175	15.10	8.20			35.44	54.72	-19.28	9/30 kHz
AVG	0.214	26.30	26.40			46.70	53.05	-6.35	9/30 kHz
AVG	13.275	4.30	4.40			24.99	50.00	-25.01	9/30 kHz
AVG	13.705	3.40	3.00			24.00	50.00	-26.00	9/30 kHz
AVG	13.648	8.00	7.50			28.60	50.00	-21.40	9/30 kHz
AVG	15.968	11.00	10.00			31.63	50.00	-18.37	9/30 kHz

Line conducted emissions in receive mode
Conducted Emissions

Company: Zoll Medical Corp

Model #: ZOLL E Series Data Comm Card

Serial #: IN0411-00032

Engineer(s): Vathana Ven

Project #: G100398565

Date: 08/20/11

Standard: FCC Part 15 Subpart C 15.247/RSS-210

Note: Rx mode

Barometer: BAR3 Temp/Humidity/Pressure: 22 deg C 51% 1003 mB Attenuator: DS27_4-19-2012.txt

Voltage/Frequency: 120VAC/60Hz Frequency Range: 0.150-30MHz

Net is the sum of worst-case liss, cable, & attenuator losses, and initial reading, factors are not shown

Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor; Bandwidth denoted as RBW/VBW

Detector Type	Frequency MHz	Reading Line 1 dB(uV)	Reading Line 2 dB(uV)	Reading Line 3 dB(uV)	Reading Line 4 dB(uV)	Net dB(uV)	QP Limit dB(uV)	Margin dB	Bandwidth
QP	0.175	13.00	31.60			51.94	64.72	-12.78	9/30 kHz
QP	0.214	28.80	29.50			49.80	63.05	-13.25	9/30 kHz
QP	13.275	17.00	16.60			37.60	60.00	-22.40	9/30 kHz
QP	13.705	13.60	13.80			34.39	60.00	-25.61	9/30 kHz
QP	13.648	14.50	14.50			35.10	60.00	-24.90	9/30 kHz
QP	15.968	16.50	15.80			37.13	60.00	-22.87	9/30 kHz

Detector Type	Frequency MHz	Reading Line 1 dB(uV)	Reading Line 2 dB(uV)	Reading Line 3 dB(uV)	Reading Line 4 dB(uV)	Net dB(uV)	Average Limit dB(uV)	Margin dB	Bandwidth
AVG	0.175	11.70	20.00			40.34	54.72	-14.38	9/30 kHz
AVG	0.214	26.20	26.40			46.70	53.05	-6.35	9/30 kHz
AVG	13.275	3.20	3.50			24.09	50.00	-25.91	9/30 kHz
AVG	13.705	2.90	2.00			23.50	50.00	-26.50	9/30 kHz
AVG	13.648	7.70	7.20			28.30	50.00	-21.70	9/30 kHz
AVG	15.968	16.40	10.40			37.03	50.00	-12.97	9/30 kHz

Test Personnel: Vathana Ven *VSV*

Test Date: 08/20/2011

Supervising Engineer:

(Where Applicable) N/A

Product Standard: FCC Part 15.247 & RSS-210 Annex 8

Input Voltage: 120VAC/50Hz

Pretest Verification w/ Ambient

Signals or BB Source: **Ambient Signals**

Test Levels: Emissions below the limits specified in Section 12.3

Ambient Temperature: 22 °C

Relative Humidity: 51 %

Atmospheric Pressure: 1003 mbars

Deviations, Additions, or Exclusions: None

13 Revision History

Revision Level	Date	Report Number	Notes
0	09/09/2011	100398565BOX-001	Original Issue
1	10/31/2011	100398565BOX-001c	Changed model # from E-series with Zango Card to ZOLL E Series Data Comm Card, with the E Series as host, and serial number for card added