



Compliance Certification Services Inc.

Report No: 91030103-RP1 FCC ID: XKINVDXMW09-1 Date of Issue: Nov. 19, 2009

FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

EXR6004 WiFi

Model: F2XMW

Trade Name: AVerMedia

Issued to

**AVerMedia INFORMATION, Inc.
5F, No. 135, Jian Yi Rd., Chung Ho City, Taipei Hsien, Taiwan**

Issued by

**Compliance Certification Services Inc.
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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	Nov. 19, 2009	Initial Issue	ALL	Jill Shiau



TABLE OF CONTENTS

1	TEST RESULT CERTIFICATION	4
2	EUT DESCRIPTION	5
3	TEST METHODOLOGY	6
3.1.	EUT CONFIGURATION	6
3.2.	EUT EXERCISE	6
3.3.	GENERAL TEST PROCEDURES	6
3.4.	FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS.....	7
3.5.	DESCRIPTION OF TEST MODES.....	8
4	INSTRUMENT CALIBRATION	9
4.1.	MEASURING INSTRUMENT CALIBRATION	9
4.2.	MEASUREMENT EQUIPMENT USED	9
4.3.	MEASUREMENT UNCERTAINTY	10
5	FACILITIES AND ACCREDITATIONS	11
5.1	FACILITIES.....	11
5.2	EQUIPMENT	11
5.3	TABLE OF ACCREDITATIONS AND LISTINGS.....	12
6	SETUP OF EQUIPMENT UNDER TEST	13
6.1.	SETUP CONFIGURATION OF EUT	13
6.2.	SUPPORT EQUIPMENT	13
7	FCC PART 15.247 REQUIREMENTS	15
7.1.	6dB BANDWIDTH	15
7.2.	PEAK POWER.....	19
7.3.	AVERAGE POWER.....	23
7.4.	BAND EDGES MEASUREMENT	27
7.5.	PEAK POWER SPECTRAL DENSITY	36
7.6.	SPURIOUS EMISSIONS.....	40
7.7.	POWERLINE CONDUCTED EMISSIONS	55
	APPENDIX I PHOTOGRAPHS OF TEST SETUP	58



1 TEST RESULT CERTIFICATION

Applicant: **AVerMedia INFORMATION, Inc.**
 No. 300, Yang Guang St., NeiHu, Taipei, Taiwan, 114

Manufacturer: **AVerMedia INFORMATION, Inc.**
 3F-4, No. 502, Yuan Shan Rd., Chung Ho City,
 Taipei, Taiwan

Equipment Under Test: EXR6004 WiFi

Trade Name: AVerMedia

Model: F2XMW

Date of Test: November 16 ~ 18, 2009

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 15 Subpart C	No non-compliance noted

We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2003 and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247.

The test results of this report relate only to the tested sample EUT identified in this report.

Approved by:

Ethan Huang
Section Manager

Reviewed by:

Stan Lin
Supervisor



2 EUT DESCRIPTION

Product	EXR6004 WiFi
Trade Name	AVerMedia
Model Number	F2XMW
EUT Power Rating	12VDC, 4A
Power Adapter	Asian / DA-48M12 I/P: 100-240VAC, 50-60Hz, 1.2A max. O/P: 12VDC, 4A Asian / DA-36J12 I/P: 100-240VAC, 50-60Hz, 0.9A max. O/P: 12VDC, 3A
Operating Frequency Range	2412 ~ 2462 MHz
Transmit Power	IEEE 802.11b: 17.44 dBm IEEE 802.11g: 20.39 dBm
Modulation Technique	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: DSSS (CCK, DQPSK, DBPSK) + OFDM (QPSK, BPSK, 16-QAM, 64-QAM)
Transmit Data Rate	IEEE 802.11b: 11, 5.5, 2, 1 Mbps IEEE 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps
Number of Channels	11 Channels
Channels Spacing	5MHz
Antenna Specification	Dipole Antenna (Refer to the table Antenna List)

Remark:

1. The sample selected for test was production product and was provided by manufacturer.
2. This submittal(s) (test report) is intended for FCC ID: **XKINVDXMW09-1** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.

Antenna List:

Manufacturer	Model	Gain (peak)
WNC	XCI	4.3dBi
ARISTOTLE	RFA-02-5-F7M3-B70-NP	4.0dBi



3 TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 (2003) and FCC CFR 47 Part 2, 15.207, 15.209 and 15.247.

3.1. EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2. EUT EXERCISE

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

3.3. GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4 (2003) Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4 (2003).



3.4. FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

(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
¹ 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 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	(²)
13.36 - 13.41	322 - 335.4		

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

(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.



3.5. DESCRIPTION OF TEST MODES

The EUT (model: F2XMW) comes with two types of adapter and two antenna Source (WNC and ARISTOTL) for sale. After the preliminary test, the EUT with adapter (Model: DA-48M12) and WNC Antenna was found to emit the worst emissions and therefore had been tested under operating condition.

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz, which worst case was in normal link mode only.

IEEE802.11b: Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 1Mbps data rate were chosen for full testing.

IEEE802.11g: Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6Mbps data rate were chosen for full testing.



4 INSTRUMENT CALIBRATION

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

4.2. MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

Remark: Each piece of equipment is scheduled for calibration once a year.

Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY48250064	11/05/2010
Spectrum Analyzer	R&S	FSEB	825829/011	10/29/2010
USB Power Sensor	BOONTON	52012	2061194	06/08/2010

3M Chamber Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY48250064	11/05/2010
Spectrum Analyzer	R&S	FSEB	825829/011	10/29/2010
Pre-Amplifier	HP	8447D	2944A06530	12/31/2009
Pre-Amplifier	HP	8449B	3008A01738	04/17/2010
EMI Test Receiver	SCHAFFNER	SCR 3501	436	01/21/2010
Loop Antenna	EMCO	6502	2356	05/28/2010
Bilog Antenna	SCHWAZBECK	VULB9160	3084	09/11/2010
Horn Antenna	EMCO	3115	00022250	05/08/2010
Turn Table	CCS	CC-T-1F	N/A	N.C.R
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R
Test S/W	LabVIEW 6.1 (Wugu Chamber EMI Test V1_4.5.3)			

Powerline Conducted Emissions Test Site #3				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESCS30	845552/030	05/18/2010
LISN	R&S	ENV216	100074	12/09/2009
LISN	FCC	FCC-LISN-50/ 250-16-2-07	06013	10/13/2010
Test S/W	CCS-3A1-CE			



4.3. MEASUREMENT UNCERTAINTY

Parameter	Uncertainty
Powerline Conducted Emission	± 1.7366
3M Semi Anechoic Chamber / 30MHz ~ 1GHz	± 4.0235
3M Semi Anechoic Chamber / Above 1GHz	± 3.8732

Remark: *This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.*



5 FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

- No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.
Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

- No.11, Wugong 6th Rd., Wugu Industrial Park, Taipei Hsien 248, Taiwan
Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

- No. 81-1, Lane 210, Pa-De 2nd Rd., Luchu Hsiang, Taoyuan Shien, (338) Taiwan,
R.O.C.
Tel: 886-3-324-0332 / Fax: 886-3-324-5235

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2003) and CISPR Publication 22.

5.2 EQUIPMENT


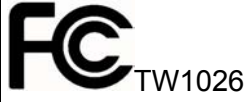


Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

5.3 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	A2LA	CFR 47, FCC Part15/18, CISPR 22, EN 55022, ICES-003, AS/NZS CISPR 22, VCCI V-3, EN 55011, CISPR 11, IEC/EN 61000-4-2/3/4/5/6/8/11, EN 61000-6-1/2/3/4, EN 55024, CISPR 24, AS/NZS CISPR 24, AS/NZS 61000.6.2, EN 55014-1/-2, ETSI EN 300 386 v1.3.2/v1.3.3, IEC/EN 61000-3-2, AS/NZS 61000.3.2, IEC/EN 61000-3-3, AS/NZS 61000.3.3	 <p>ACCREDITED No. 0824-01</p>
USA	FCC MRA	3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements	 <p>FC_{TW1026}</p>
Japan	VCCI	3/10 meter Open Area Test Sites and conducted test sites to perform radiated/conducted measurements	<p>VCCI</p> <p>R-2882/2541/2798/725/1868 C-402/747/912 T-321/325</p>
Taiwan	TAF	EN 55014-1, CISPR 14, CNS 13781-1, EN 55013, CISPR 13, CNS 13439, EN 55011, CISPR 11, CNS 13803, PLMN09, IS2045-0, LP0002 FCC Part 27/90, Part 15B/C/D/E, RSS-192/193/210/310 ETSI EN 300 328/ 300 220-1/ 300 220-2/ 301 893/ 301 489-01/ 301 489-03/ 301 489-07 / 301 489-17/ 300 440-1/ 300 440-2 AS/NZS 4268, AS/NZS 4771 CISPR 22, EN 55022, CNS 13438, AS/NZS CISPR 22, VCCI, IEC/EN 61000-4-2/3/4/5/6/8/11, CNS 14676-2/3/4/5/6/8, CNS 14934-2/3, CNS 13783-1, CNS 13439, CNS 13803	 <p>Testing Laboratory 0363</p>
Taiwan	BSMI	CNS 13438, CNS 13783-1, CNS 13439, CNS 14115	<p>SL2-IS-E-0014 / IN-E-0014 /A1-E-0014 /R1-E-0014 /R2-E-0014 /L1-E-0014</p>
Canada	Industry Canada	RSS212, Issue 1	 <p>IC 2324C-3 IC 2324C-5</p>

Note: No part of this report may be used to claim or imply product endorsement by A2LA, TAF or other government agency.



6 SETUP OF EQUIPMENT UNDER TEST

6.1. SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

6.2. SUPPORT EQUIPMENT

Conducted Emission & Radiated Emission Above 1GHz Measurement:

No.	Device Type	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
	N/A						

****No any support equipment during the test.**

Radiated Emission 30MHz ~ 1GHz Measurement:

No.	Device Type	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
1.	LCD Monitor	DELL	2408WFB	CN-0G293H-74261-874-2CWS	FCC DoC	D-SUB Cable: Shielded, 1.8m with two core	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core
2.	e-SATA HDD	TeraSys	F12-U	A0100214-43b0005	FCC DoC	Unshielded, 1.8m	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core
3.	USB Keyboard	ACER	6512-UV	21200201-1293780865	FCC DoC	Unshielded, 1.8m	N/A
4.	USB Mouse	HP	MO19UCA	020440953	FCC DoC	Unshielded, 1.8m	N/A
5.	Traveling Disk	PQI	U172	N/A	FCC DoC	N/A	N/A
6.	CCD	AVerMedia	SF1301	N/A	FCC DoC	LAN Cable: Unshielded, 1.6m	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.5m with a core
7.	CCD (Remote)	AVerMedia	SF1301W	N/A	FCC DoC	N/A	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.5m with a core

Remark: Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.



PowerLine Conducted Emission Measurement:

No.	Device Type	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
1.	LCD Monitor	DELL	2408WFB	CN-0G293H-74261-874-2CWS	FCC DoC	D-SUB Cable: Shielded, 1.8m with two core	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core
2.	e-SATA HDD	TeraSys	F12-U	A0100214-43b0005	FCC DoC	Unshielded, 1.8m	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core
3.	USB 2.0 External HDD	Onnto	ST-M10	A02170-F22-0003	FCC DoC	Unshielded, 1.8m	N/A
4.	USB Keyboard	ACER	6512-UV	21200201-12937808 65	FCC DoC	Unshielded, 1.8m	N/A
5.	USB Mouse	HP	MO19UCA	020440953	FCC DoC	Unshielded, 1.8m	N/A
6.	CCD	AVerMedia	SF1301	N/A	FCC DoC	LAN Cable: Unshielded, 1.6m	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.5m with a core
7.	CCD	AVerMedia	SF1301W	N/A	FCC DoC	N/A	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.5m with a core

Remark: Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.



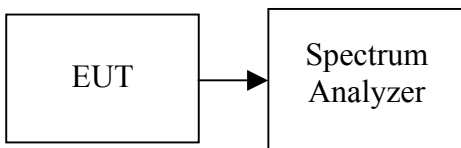
7 FCC PART 15.247 REQUIREMENTS

7.1. 6dB BANDWIDTH

LIMIT

According to §15.247(a)(2), systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

TEST CONFIGURATION



TEST PROCEDURE

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = 100kHz, VBW = 300MHz, Span = 30MHz, Sweep = auto.
4. Mark the peak frequency and -6dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

TEST RESULTS

No non-compliance noted

TEST DATA

Test mode: IEEE 802.11b

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
Low	2412	13046	>500	PASS
Mid	2437	13046		PASS
High	2462	12565		PASS

Test mode: IEEE 802.11g

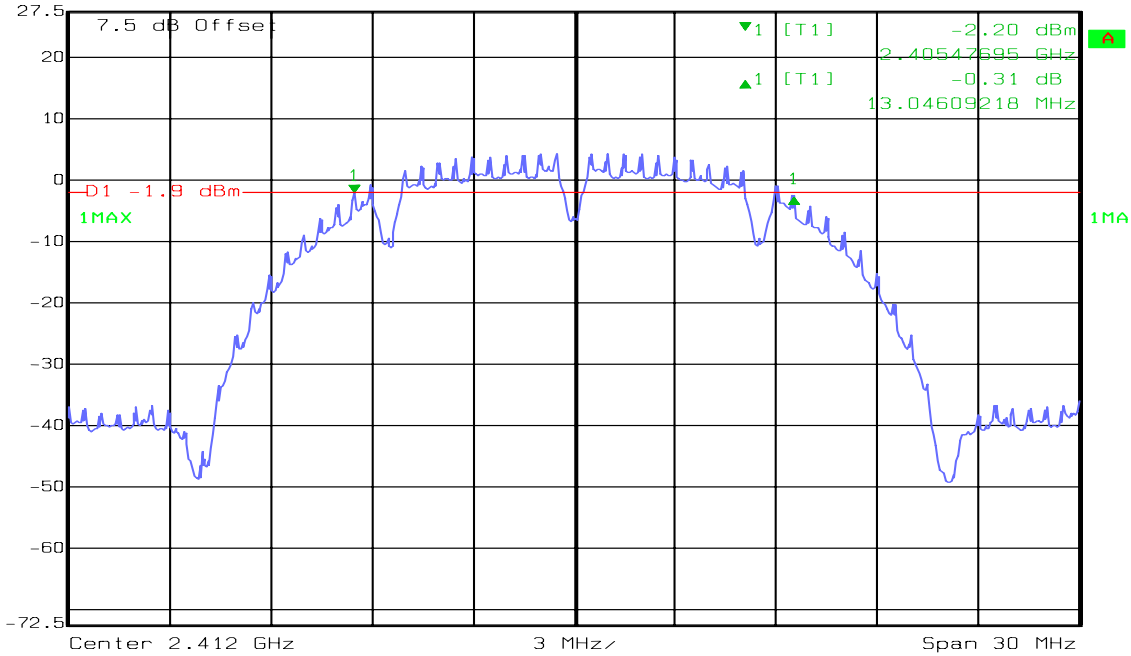
Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
Low	2412	16473	>500	PASS
Mid	2437	16533		PASS
High	2462	16533		PASS



Test Plot

6dB Bandwidth (IEEE 802.11b / CH Low)

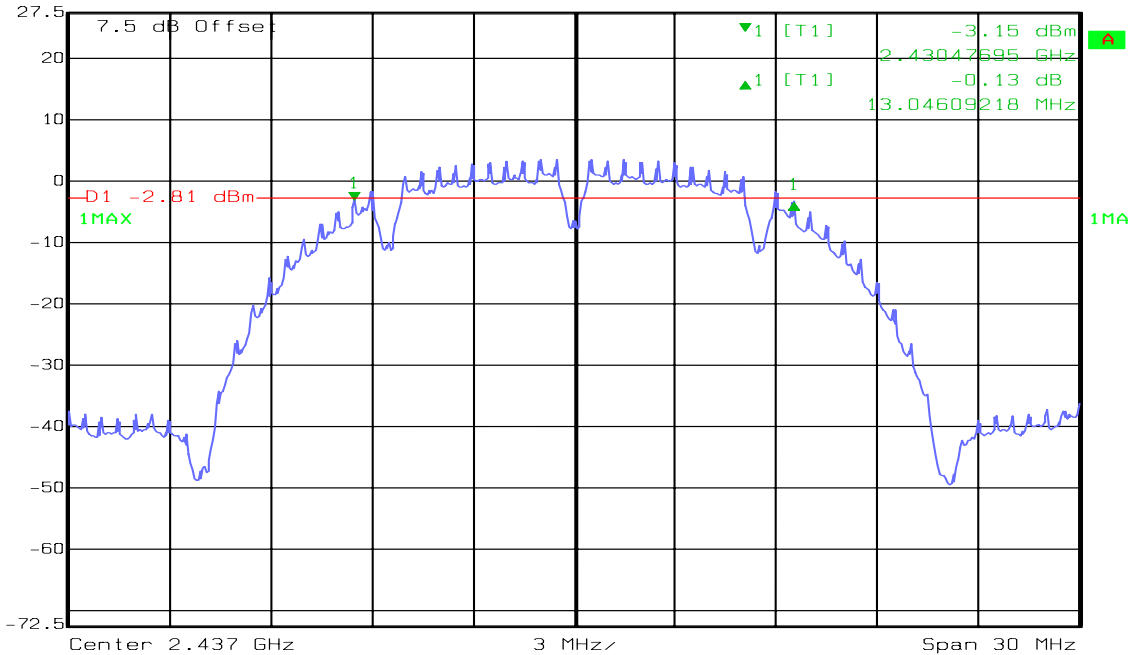
 Delta 1 [T1] RBW 100 kHz RF Att 30 dB
Ref Lvl -0.31 dB VBW 300 kHz
27.5 dBm 13.04609218 MHz SWT 100 ms Unit dBm



Date: 17.NOV.2009 14:09:17

6dB Bandwidth (IEEE 802.11b / CH Mid)

 Delta 1 [T1] RBW 100 kHz RF Att 30 dB
Ref Lvl -0.13 dB VBW 300 kHz
27.5 dBm 13.04609218 MHz SWT 100 ms Unit dBm

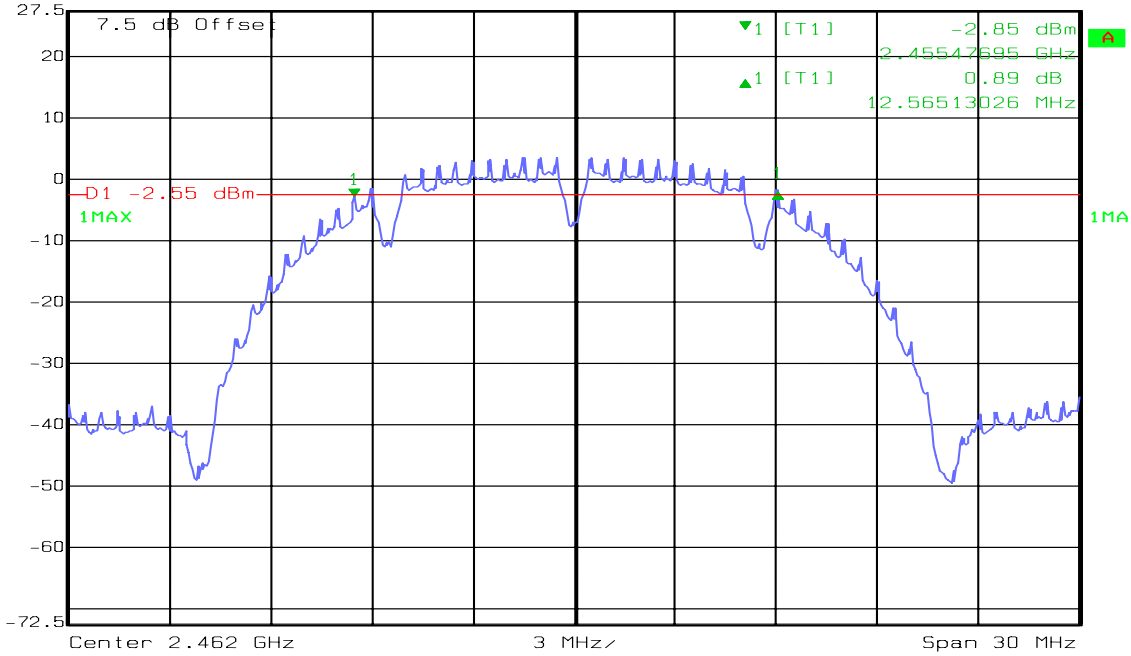


Date: 17.NOV.2009 14:05:25



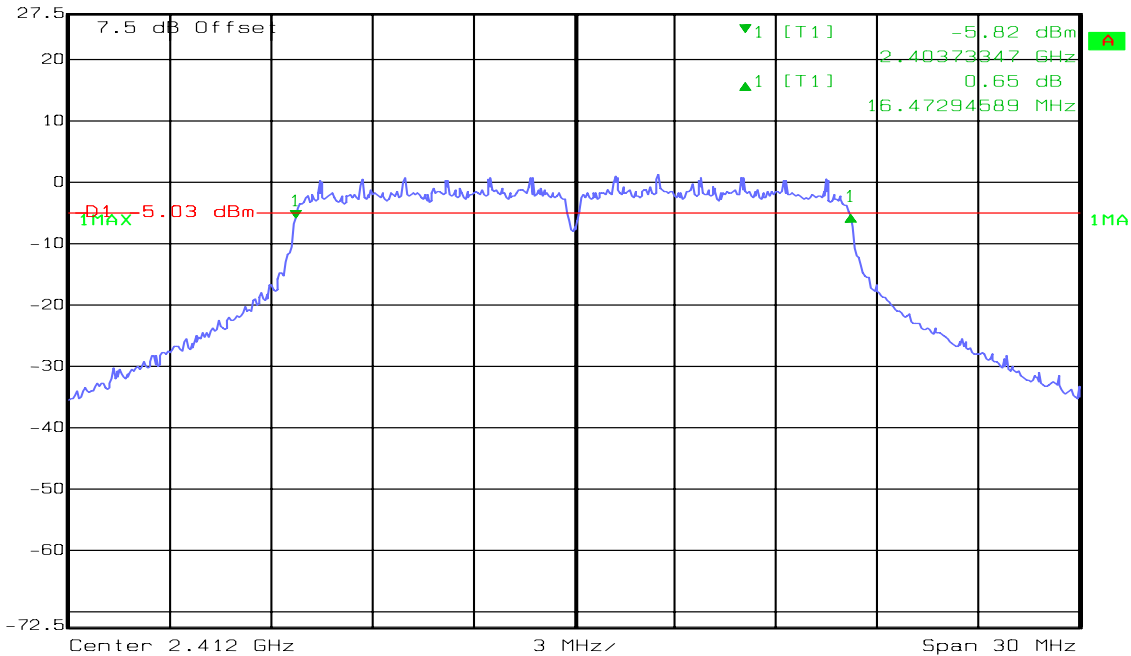
6dB Bandwidth (IEEE 802.11b / CH High)

 Ref Lvl Delta 1 [T1] RBW 100 kHz RF Att 30 dB
27.5 dBm 0.89 dB VBW 300 kHz
12.56513026 MHz SWT 100 ms Unit dBm



6dB Bandwidth (IEEE 802.11g / CH Low)

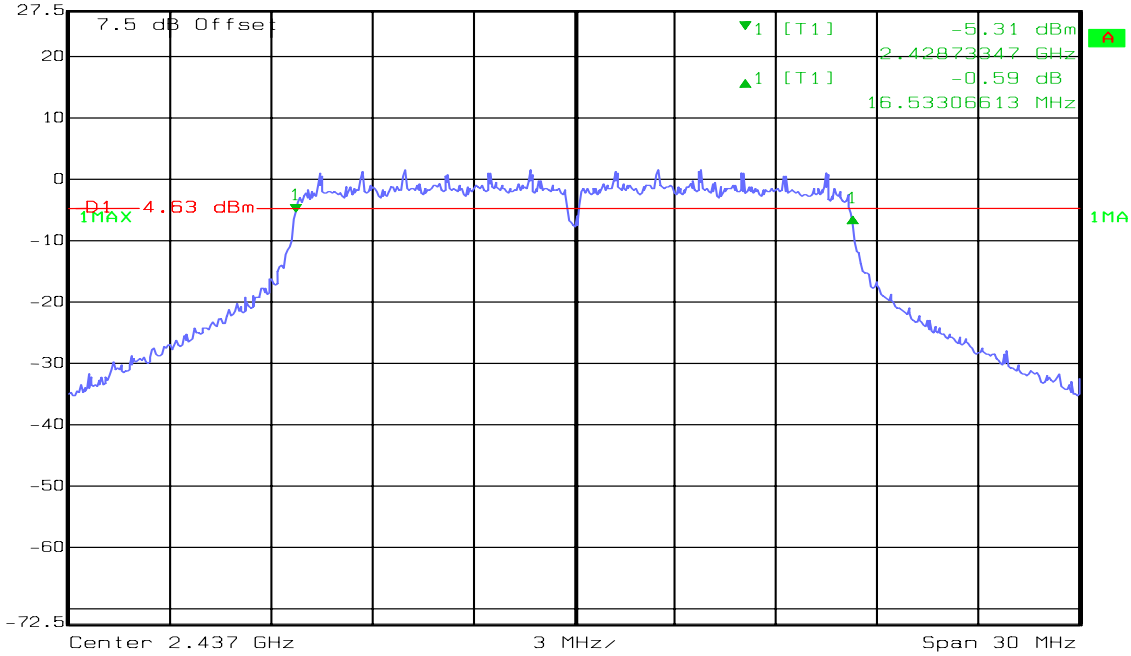
 Ref Lvl Delta 1 [T1] RBW 100 kHz RF Att 30 dB
27.5 dBm 0.65 dB VBW 300 kHz
16.47294589 MHz SWT 100 ms Unit dBm





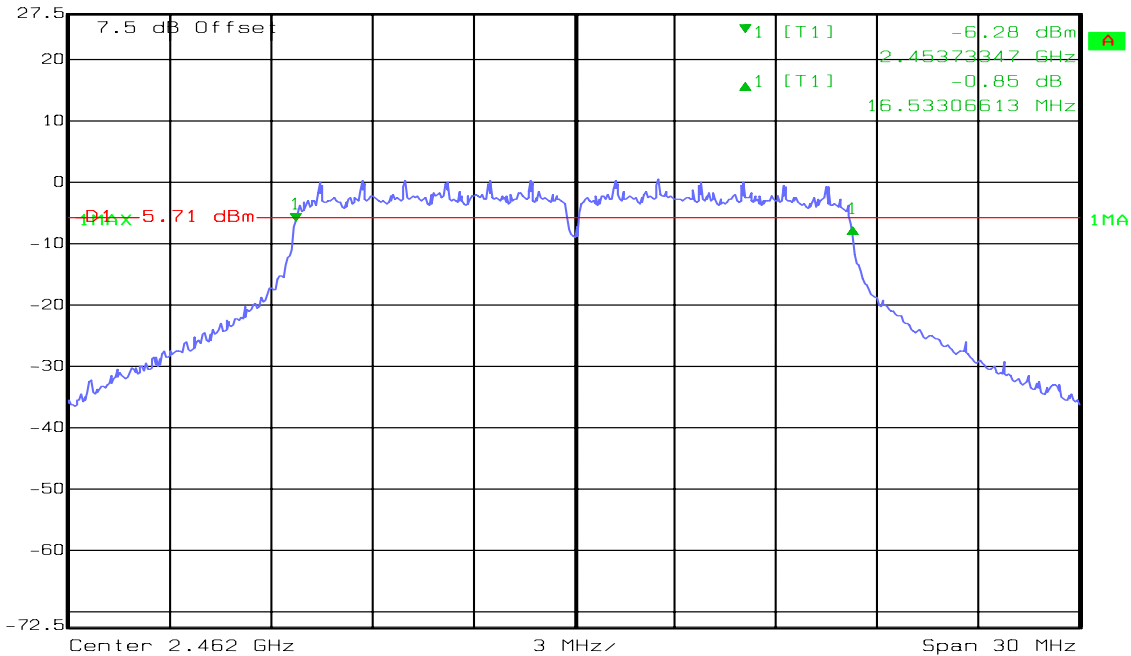
6dB Bandwidth (IEEE 802.11g / CH Mid)

 Ref Lvl 27.5 dBm Delta 1 [T1] -0.59 dB RBW 100 kHz RF Att 30 dB
16.53306613 MHz VBW 300 kHz Unit dBm
SWT 100 ms



6dB Bandwidth (IEEE 802.11g / CH High)

 Ref Lvl 27.5 dBm Delta 1 [T1] -0.85 dB RBW 100 kHz RF Att 30 dB
16.53306613 MHz VBW 300 kHz Unit dBm
SWT 100 ms





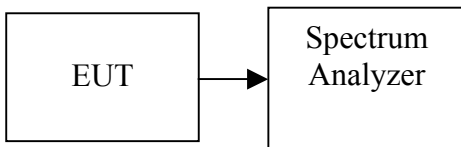
7.2. PEAK POWER

LIMIT

The maximum peak output power of the intentional radiator shall not exceed the following:

- 1. According to §15.247(b)(3), for systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz: 1 Watt.
2. According to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST CONFIGURATION



TEST PROCEDURE

The transmitter output is connected to the Spectrum analyzer. The Spectrum analyzer is set to the peak power detection.

TEST RESULTS

No non-compliance noted

TEST DATA

IEEE 802.11b

Table with 6 columns: Channel, Frequency (MHz), Output Power (dBm), Output Power (W), Limit (W), Test Result. Rows for Low, Mid, High channels.

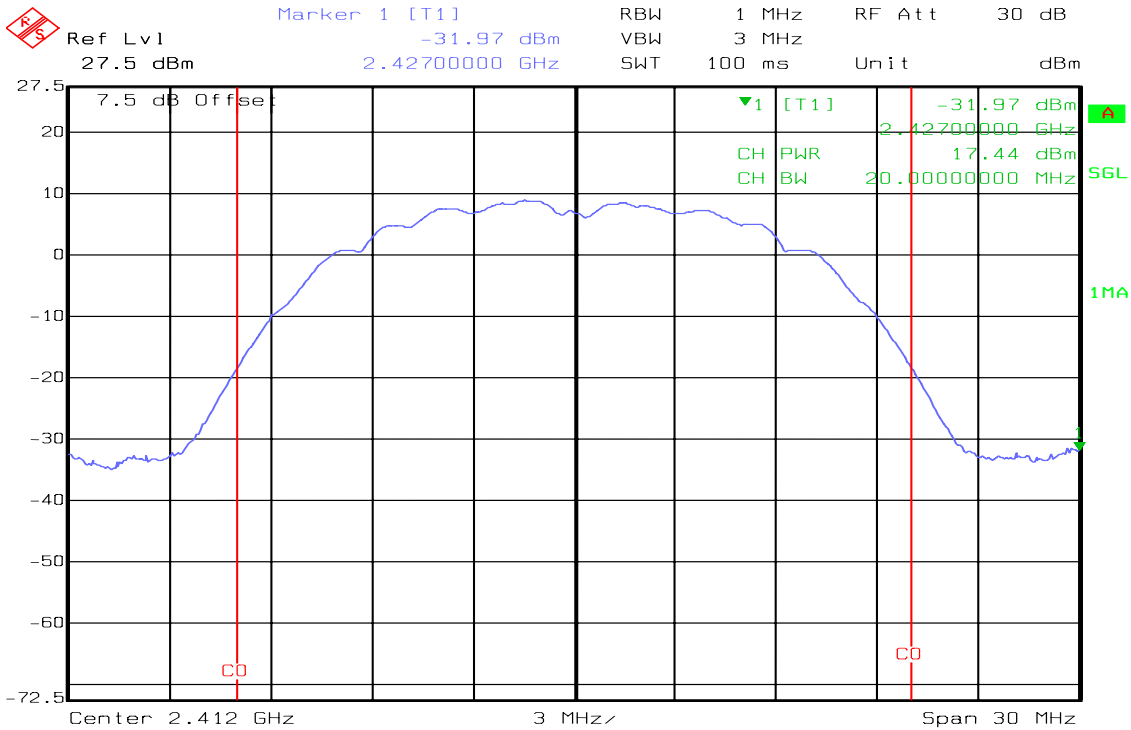
IEEE 802.11g

Table with 6 columns: Channel, Frequency (MHz), Output Power (dBm), Output Power (W), Limit (W), Test Result. Rows for Low, Mid, High channels.



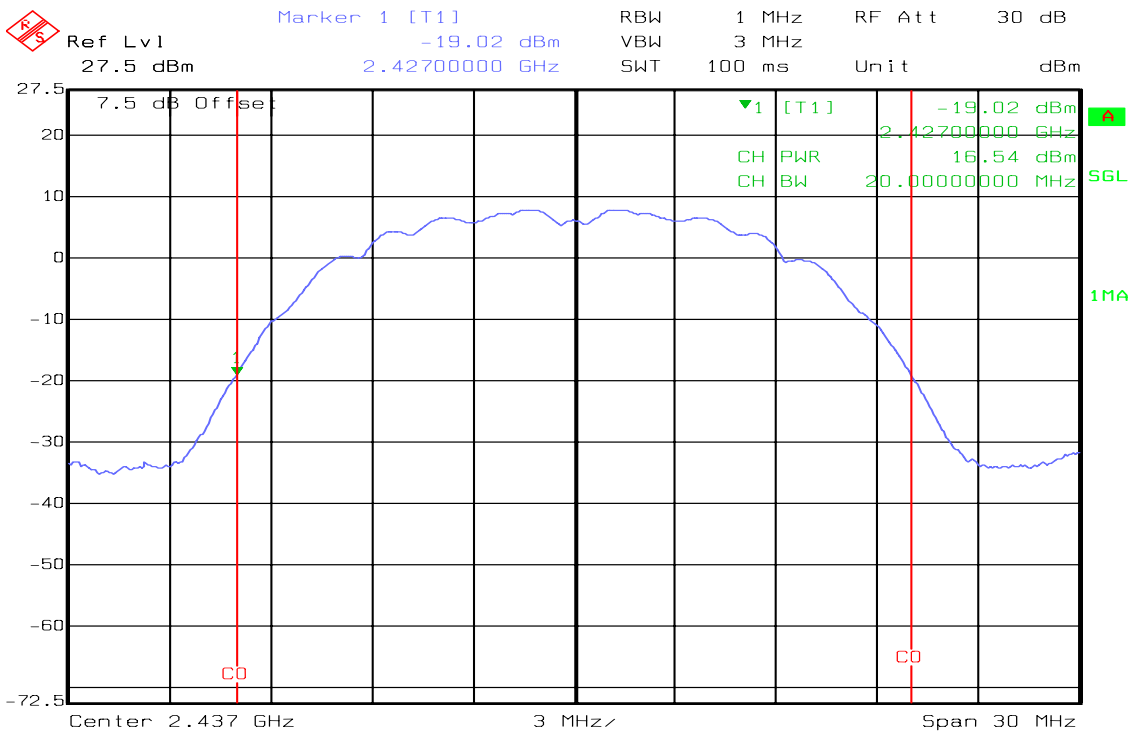
Test Plot

Peak Power (IEEE 802.11b / CH Low)



Date: 17.NOV.2009 13:16:50

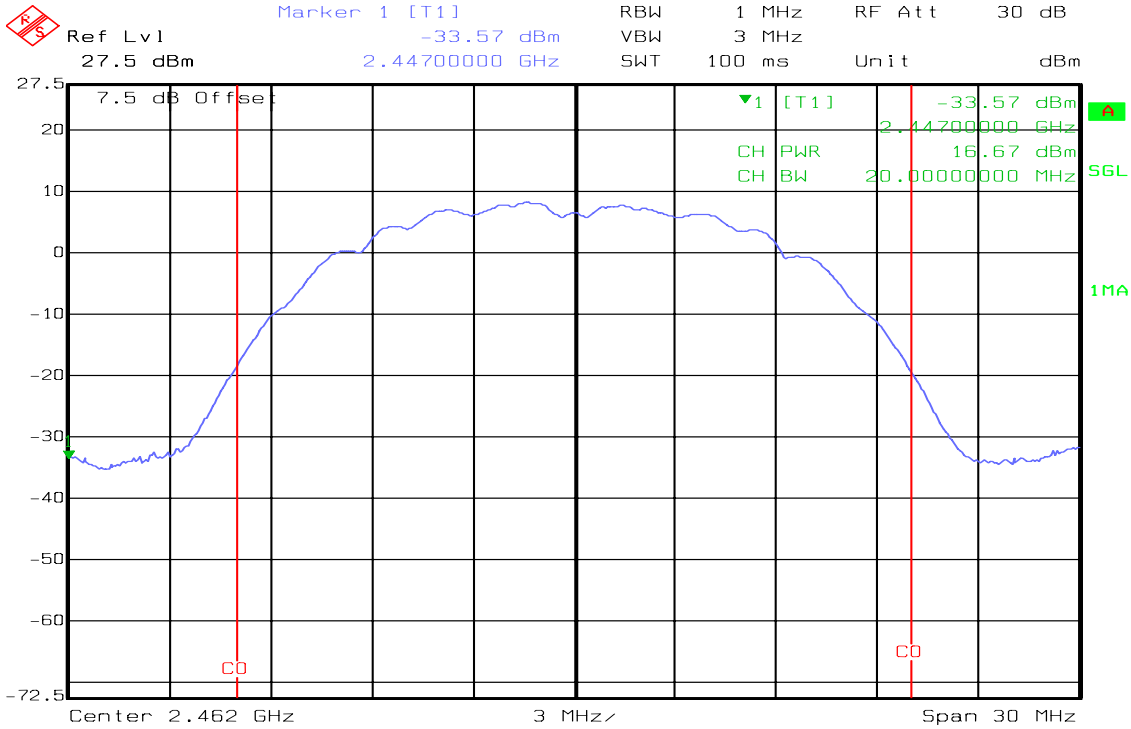
Peak Power (IEEE 802.11b / CH Mid)



Date: 17.NOV.2009 13:21:30

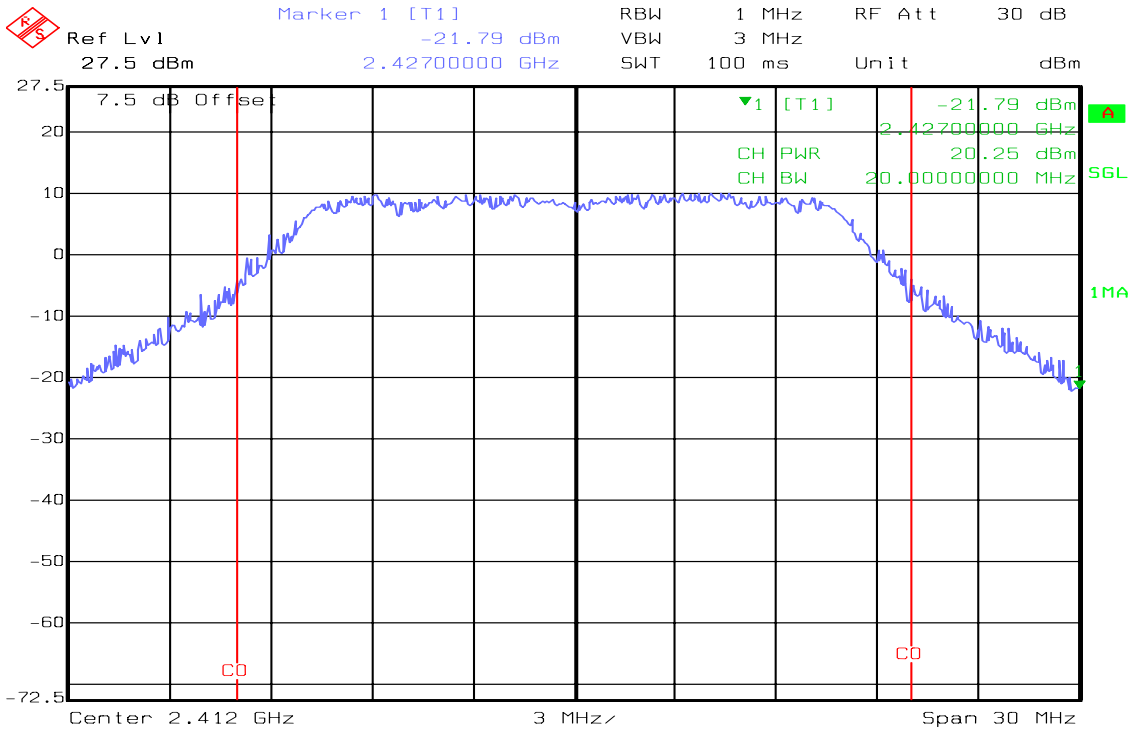


Peak Power (IEEE 802.11b / CH High)



Date: 17.NOV.2009 13:23:42

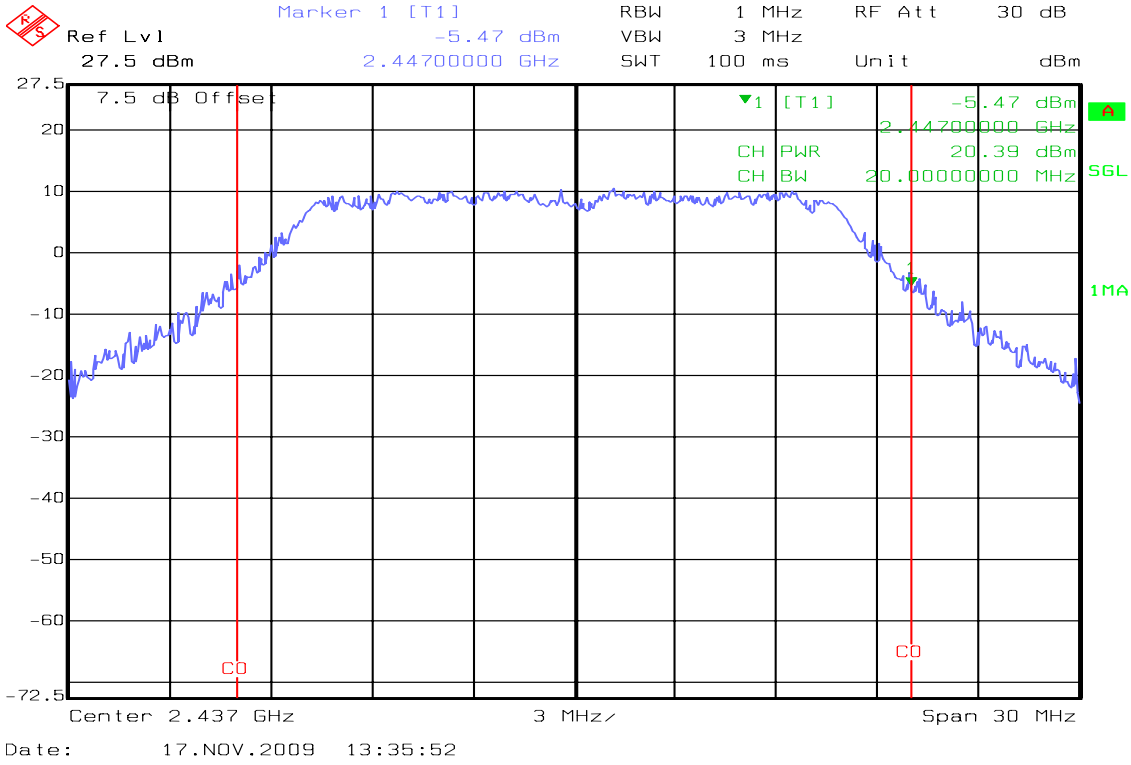
Peak Power (IEEE 802.11g / CH Low)



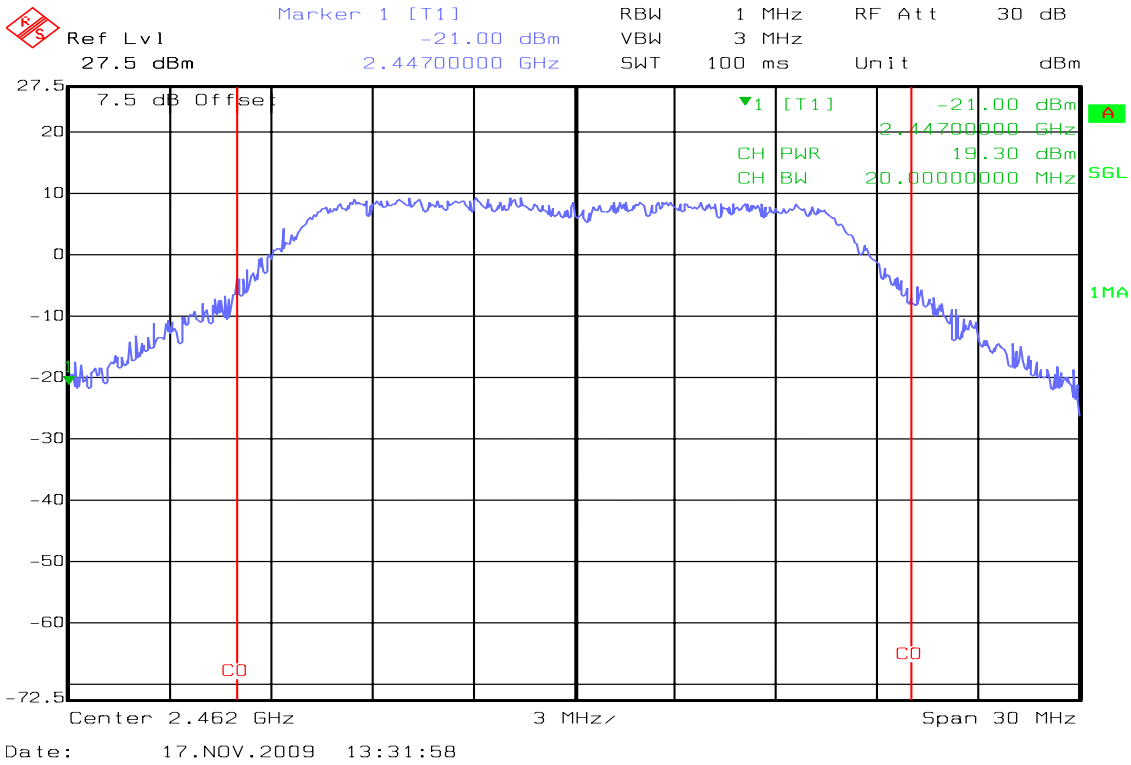
Date: 17.NOV.2009 13:43:32



Peak Power (IEEE 802.11g / CH Mid)



Peak Power (IEEE 802.11g / CH High)



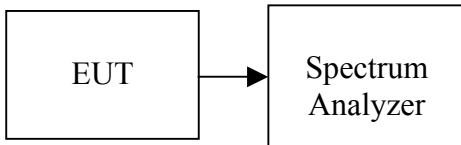


7.3. AVERAGE POWER

LIMIT

None; for reporting purposes only.

TEST CONFIGURATION



TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer. The Spectrum Analyzer is set to the average power detection.

TEST RESULTS

No non-compliance noted

TEST DATA

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)
Low	2412	14.40	0.0275
Mid	2437	13.85	0.0243
High	2462	13.79	0.0239

Test mode: IEEE 802.11g mode

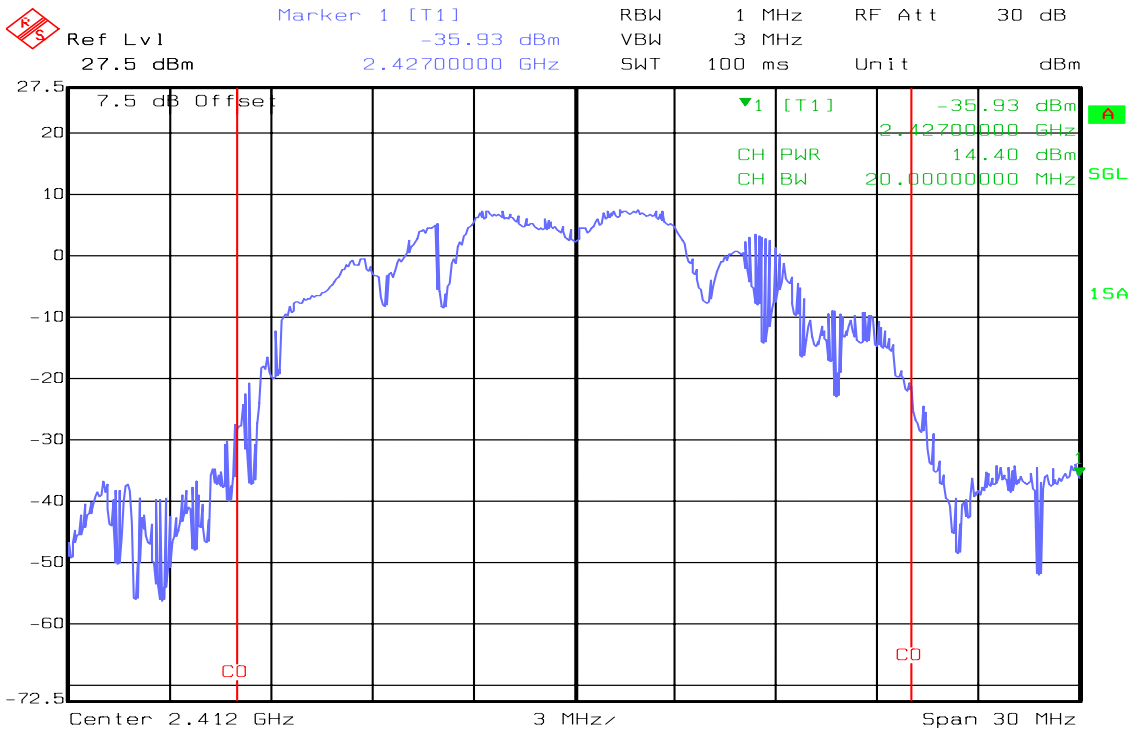
Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)
Low	2412	12.87	0.0194
Mid	2437	12.74	0.0188
High	2462	11.70	0.0148



Test Plot

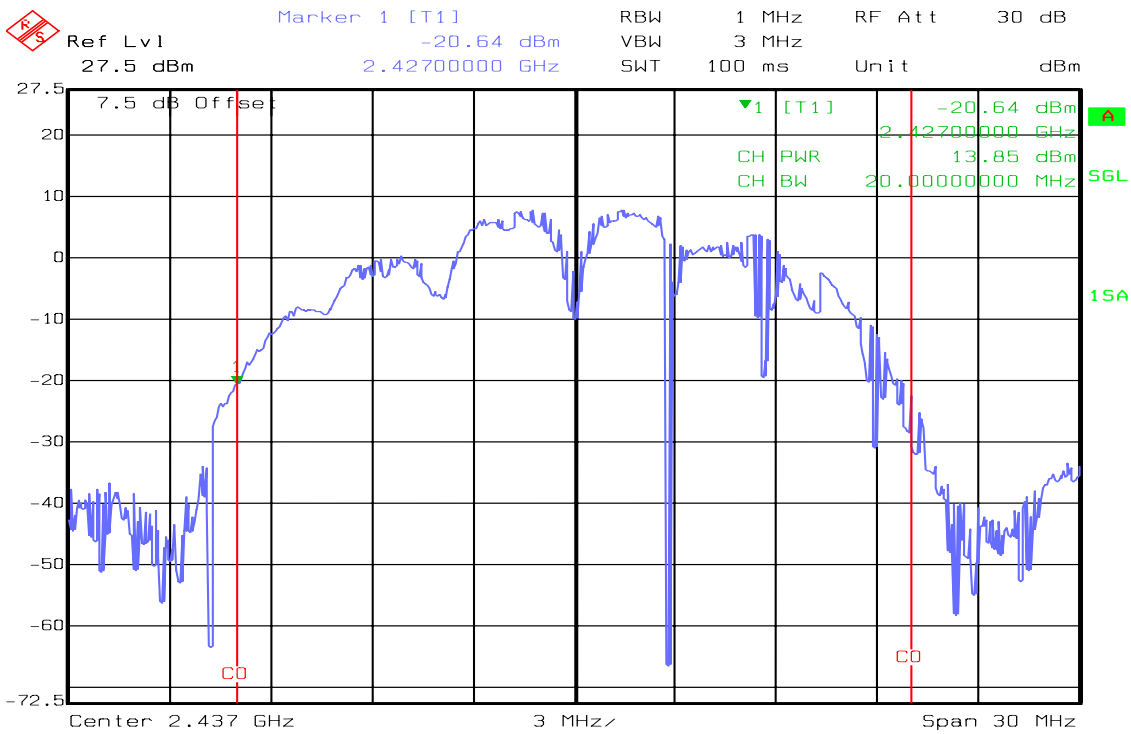
IEEE 802.11b

Average Power (CH Low)



Date: 17.NOV.2009 13:17:42

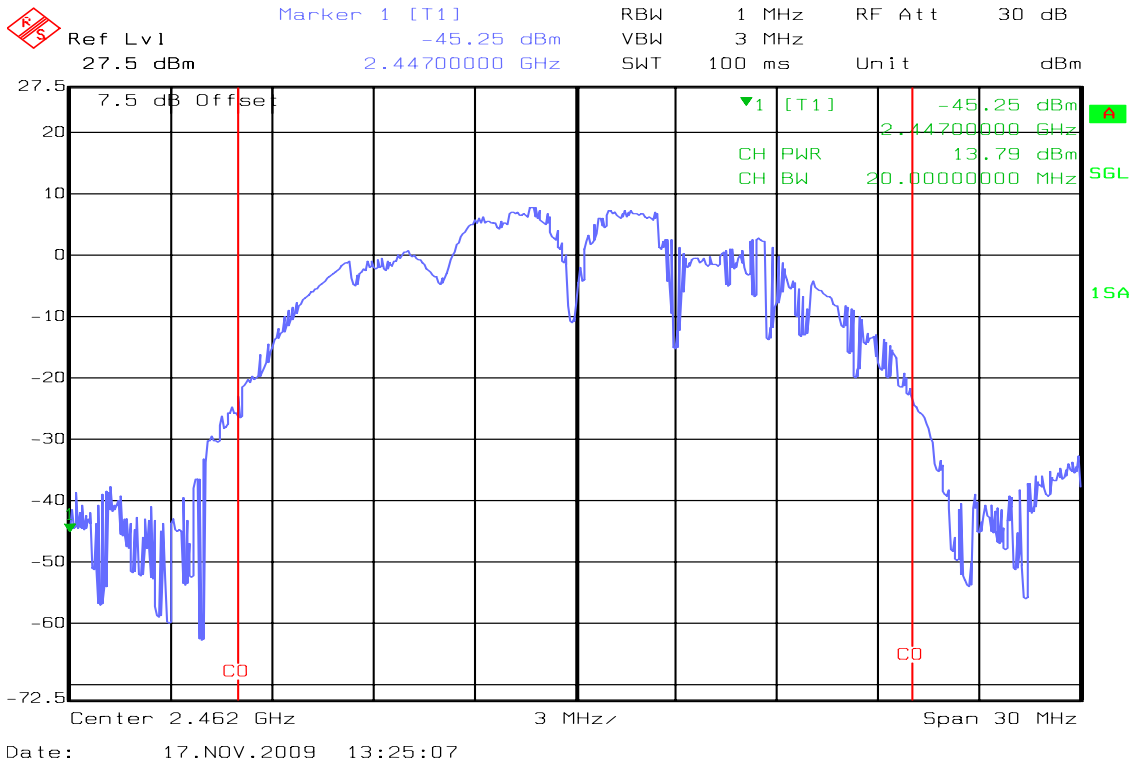
Average Power (CH Mid)



Date: 17.NOV.2009 13:20:40

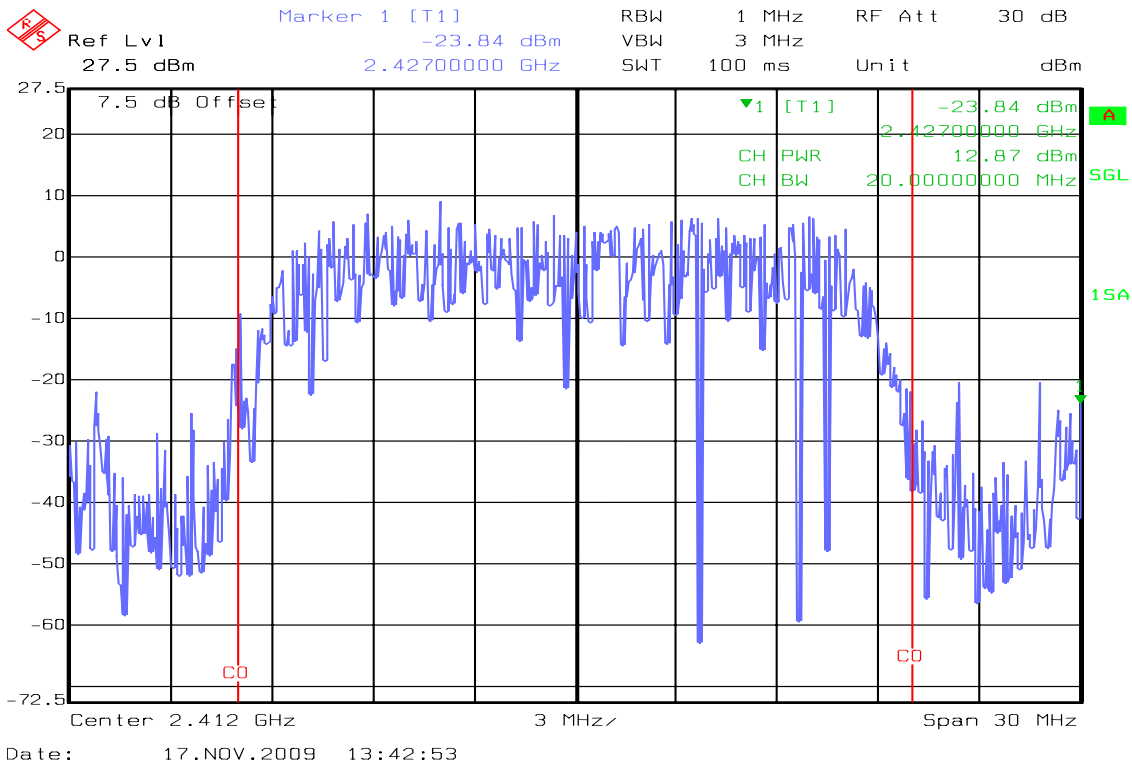


Average Power (CH High)



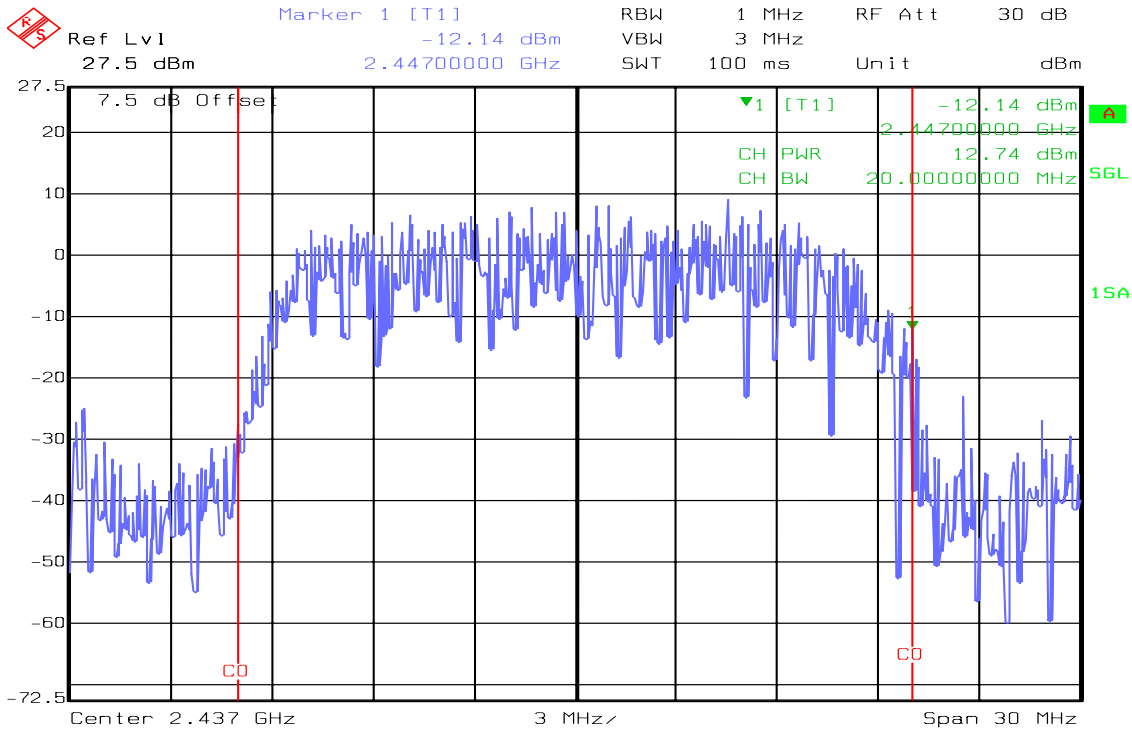
IEEE 802.11g

Average Power (CH Low)



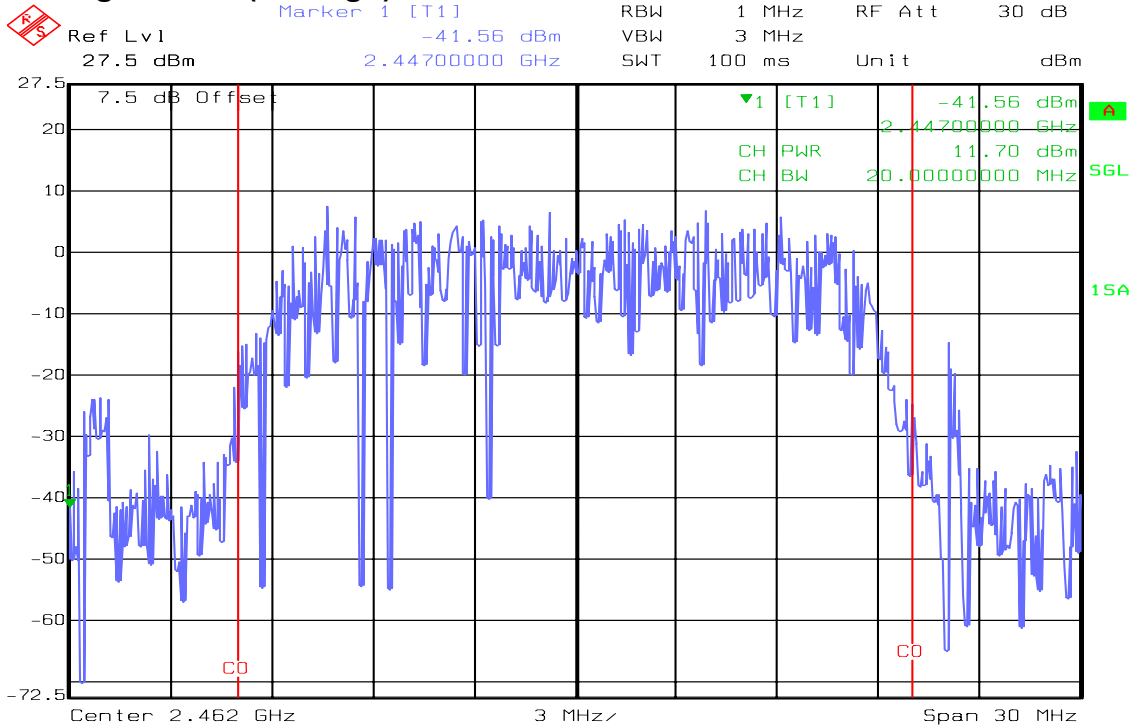


Average Power (CH Mid)



Date: 17.NOV.2009 13:40:33

Average Power (CH High)



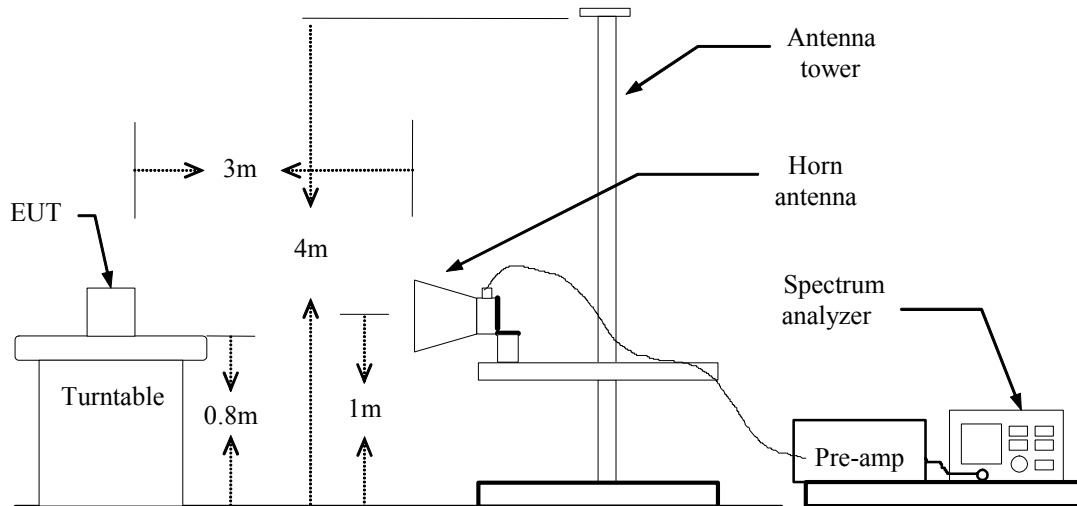
Date: 17.NOV.2009 13:29:50

7.4. BAND EDGES MEASUREMENT

LIMIT

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. 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 Section 15.205(c)).

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above the ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
 - (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
 - (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

TEST RESULTS

Refer to attach spectrum analyzer data chart.



Test Plot

Band Edges (IEEE 802.11b / CH Low)

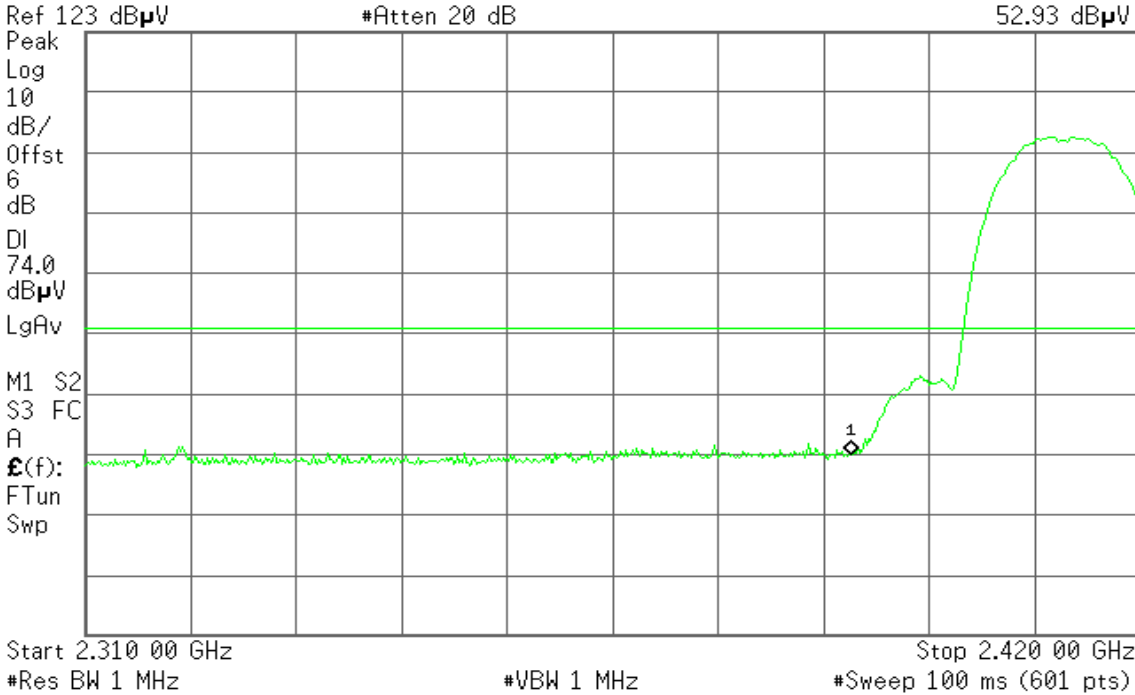
Detector mode: Peak

Polarity: Vertical

Agilent 16:52:46 Nov 16, 2009

R T

Mkr1 2.390 00 GHz
52.93 dBµV



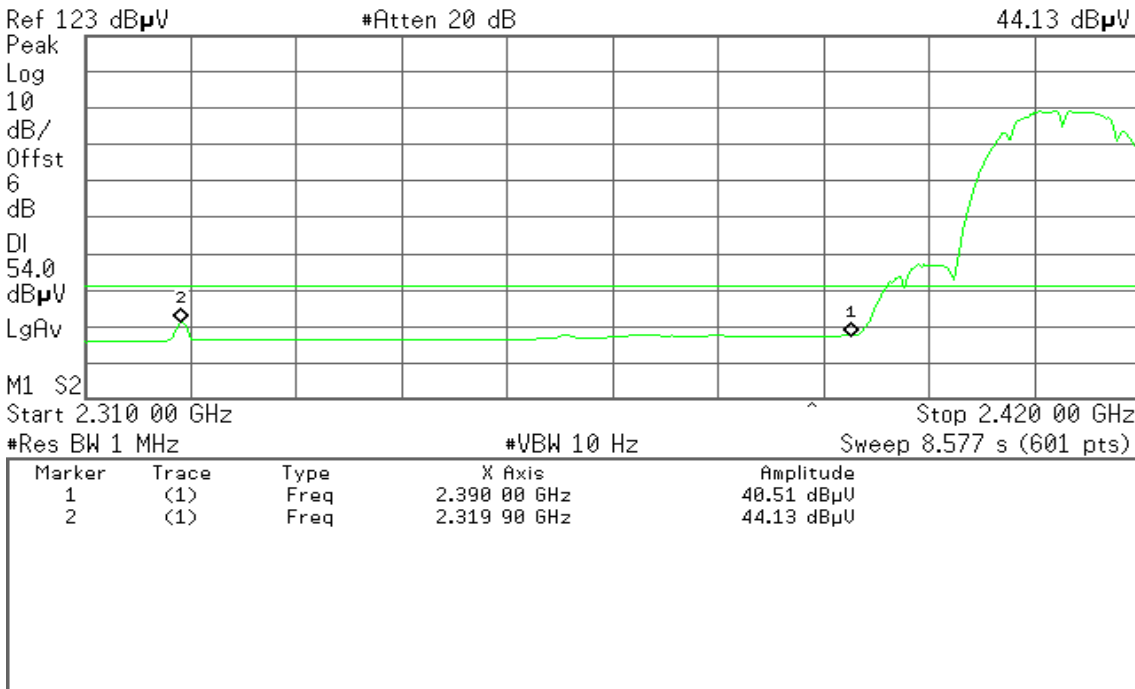
Detector mode: Average

Polarity: Vertical

Agilent 16:54:54 Nov 16, 2009

R T

Mkr2 2.319 90 GHz
44.13 dBµV





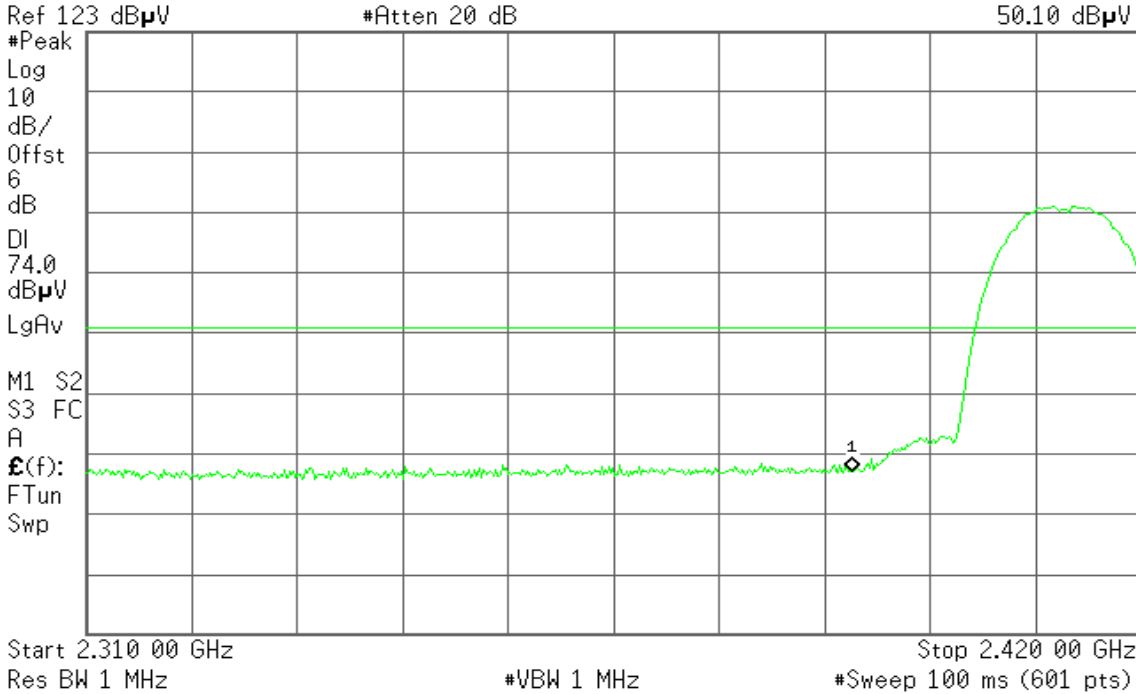
Detector mode: Peak

Polarity: Horizontal

* Agilent 08:39:35 Nov 17, 2009

R L

Mkr1 2.390 00 GHz
50.10 dB μ V



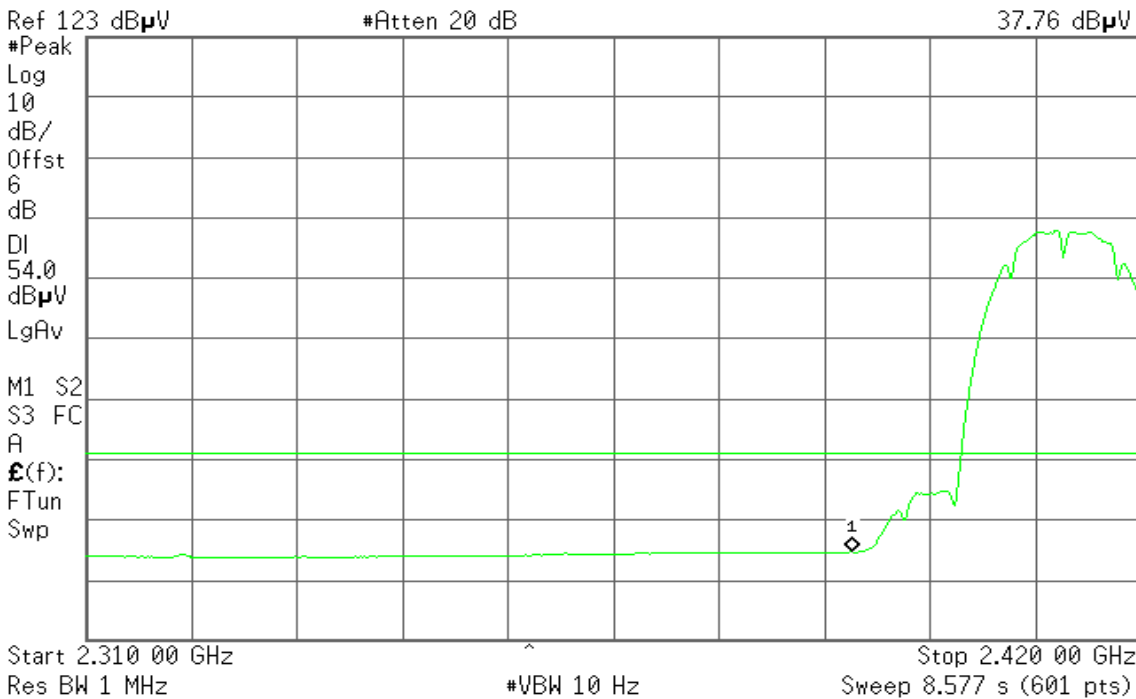
Detector mode: Average

Polarity: Horizontal

* Agilent 08:40:25 Nov 17, 2009

R L

Mkr1 2.390 00 GHz
37.76 dB μ V





Band Edges (IEEE 802.11b / CH High)

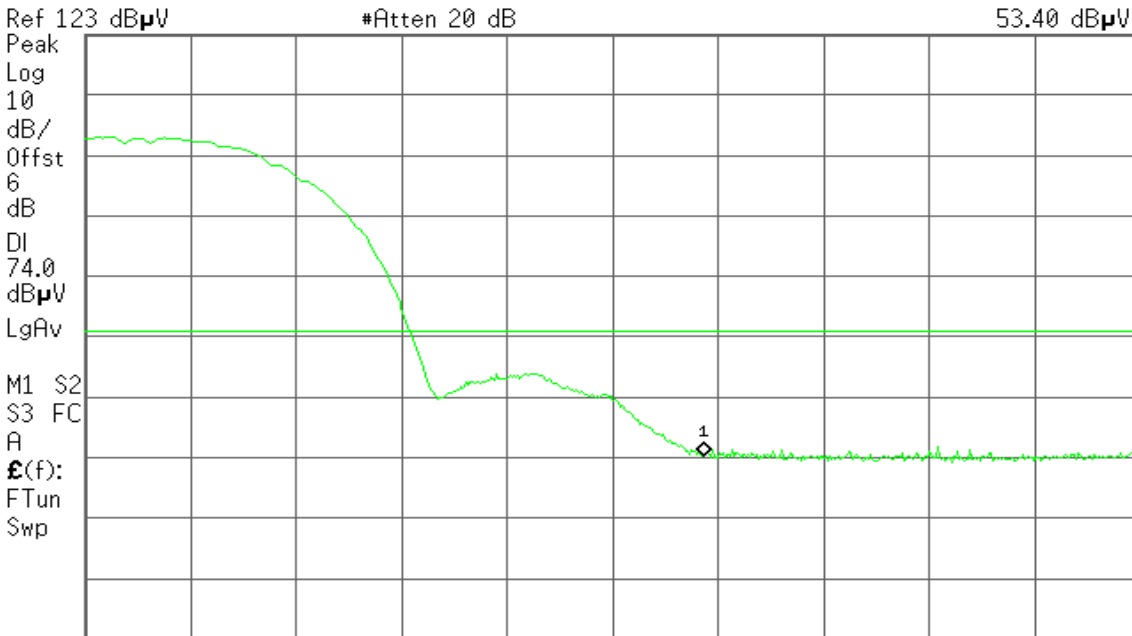
Detector mode: Peak

Polarity: Vertical

Agilent 16:43:30 Nov 16, 2009

R T

Mkr1 2.483 50 GHz
53.40 dBµV



Start 2.460 00 GHz #Res BW 1 MHz #VBW 1 MHz Stop 2.500 00 GHz #Sweep 100 ms (601 pts)

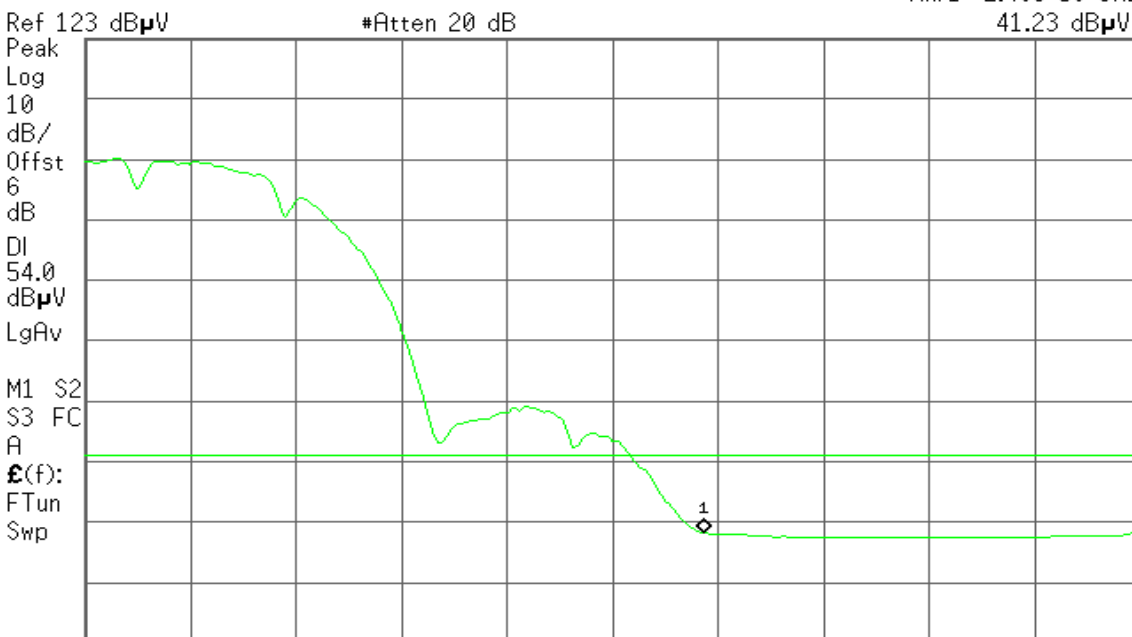
Detector mode: Average

Polarity: Vertical

Agilent 16:46:28 Nov 16, 2009

R T

Mkr1 2.483 50 GHz
41.23 dBµV



Start 2.460 00 GHz #Res BW 1 MHz #VBW 10 Hz Stop 2.500 00 GHz Sweep 3.119 s (601 pts)



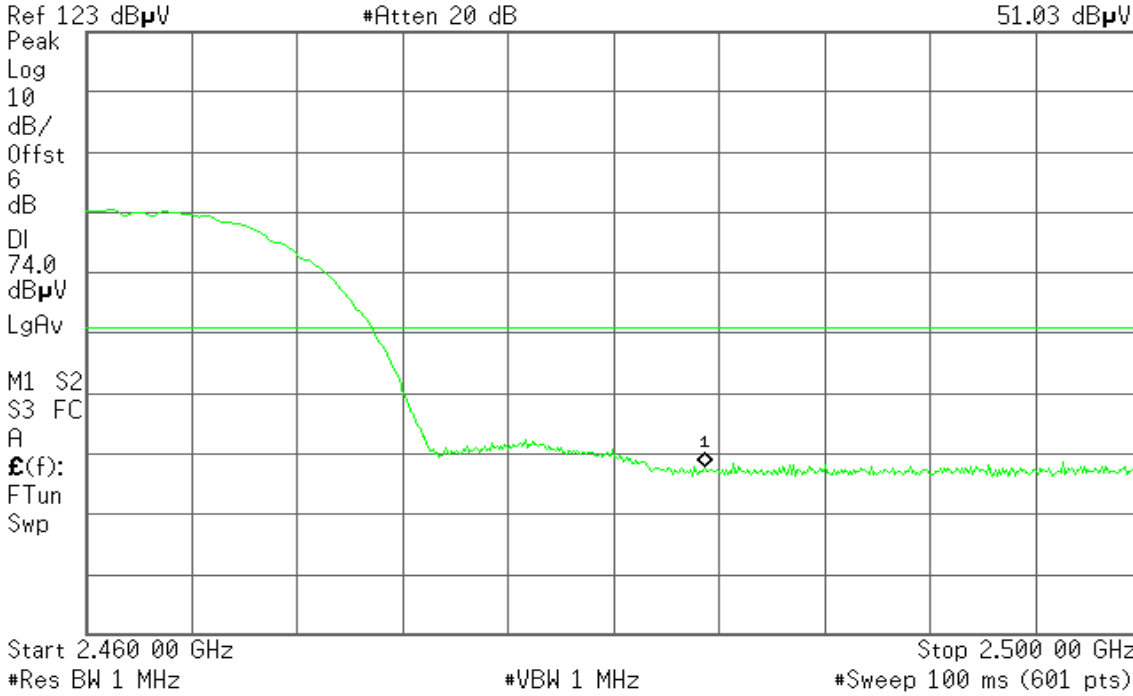
Detector mode: Peak

Polarity: Horizontal

Agilent 16:35:25 Nov 16, 2009

R T

Mkr1 2.483 50 GHz
51.03 dB μ V



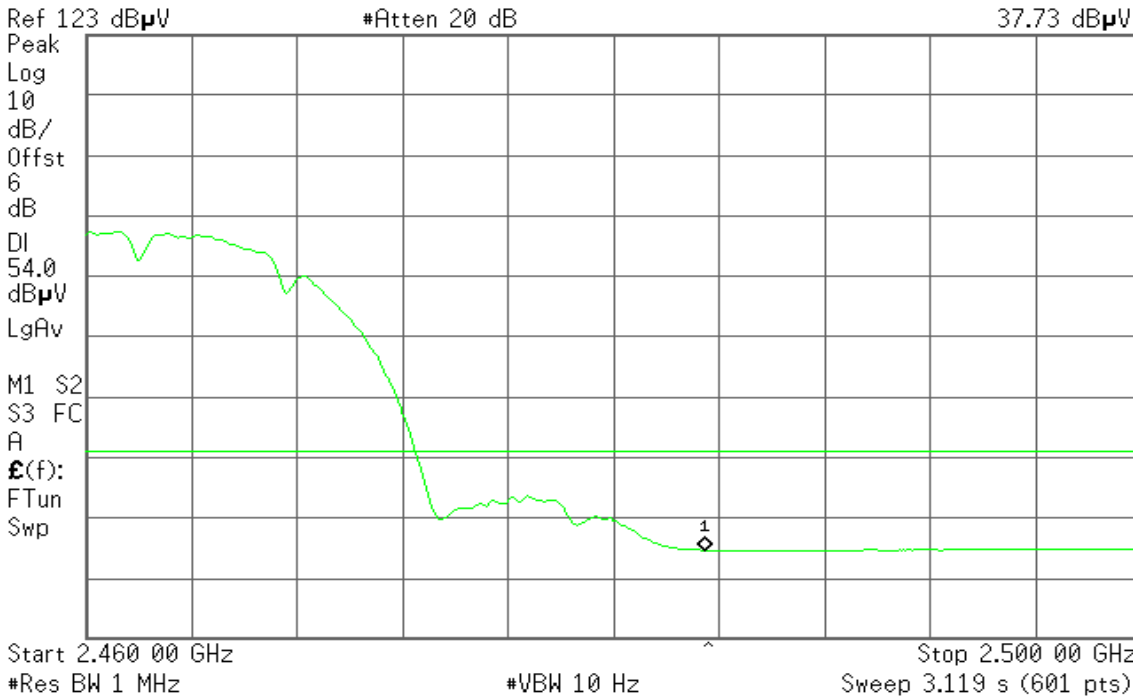
Detector mode: Average

Polarity: Horizontal

Agilent 16:39:06 Nov 16, 2009

R T

Mkr1 2.483 50 GHz
37.73 dB μ V





Band Edges (IEEE 802.11g / CH Low)

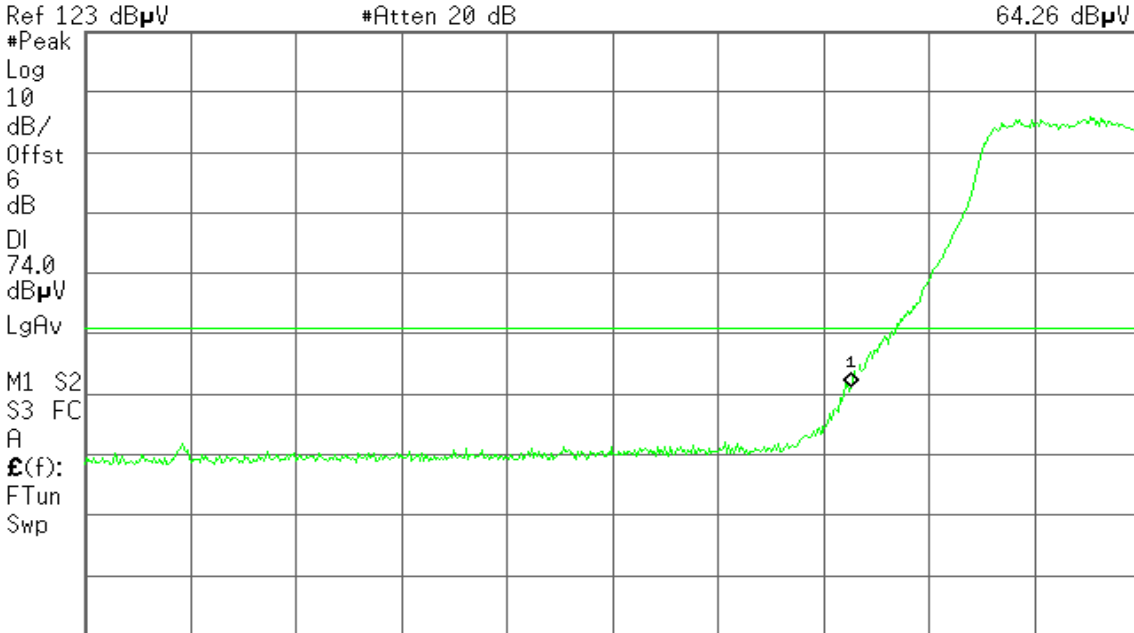
Detector mode: Peak

Polarity: Vertical

Agilent 08:47:26 Nov 17, 2009

R L

Mkr1 2.390 00 GHz
64.26 dBµV



Start 2.310 00 GHz Stop 2.420 00 GHz
Res BW 1 MHz #VBW 1 MHz #Sweep 100 ms (601 pts)

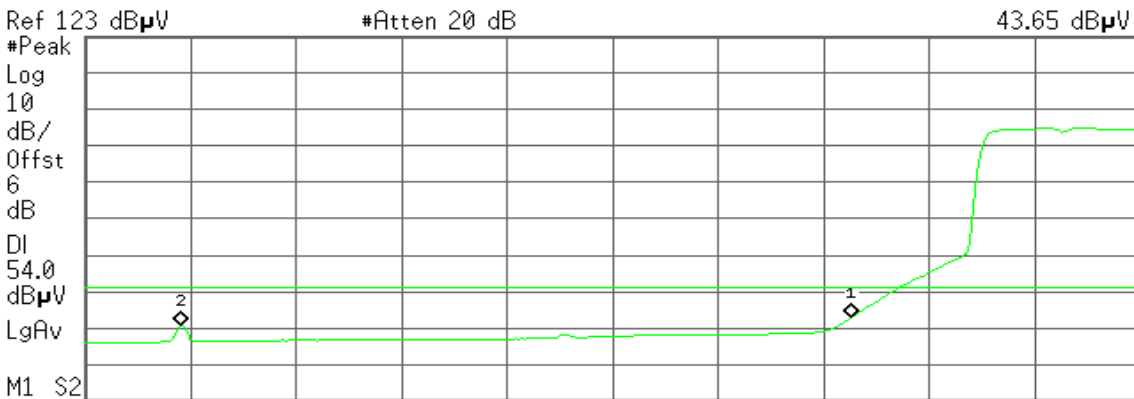
Detector mode: Average

Polarity: Vertical

Agilent 08:48:42 Nov 17, 2009

R L

Mkr2 2.319 90 GHz
43.65 dBµV



Start 2.310 00 GHz Stop 2.420 00 GHz
Res BW 1 MHz #VBW 10 Hz Sweep 8.577 s (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.390 00 GHz	45.94 dBµV
2	(1)	Freq	2.319 90 GHz	43.65 dBµV



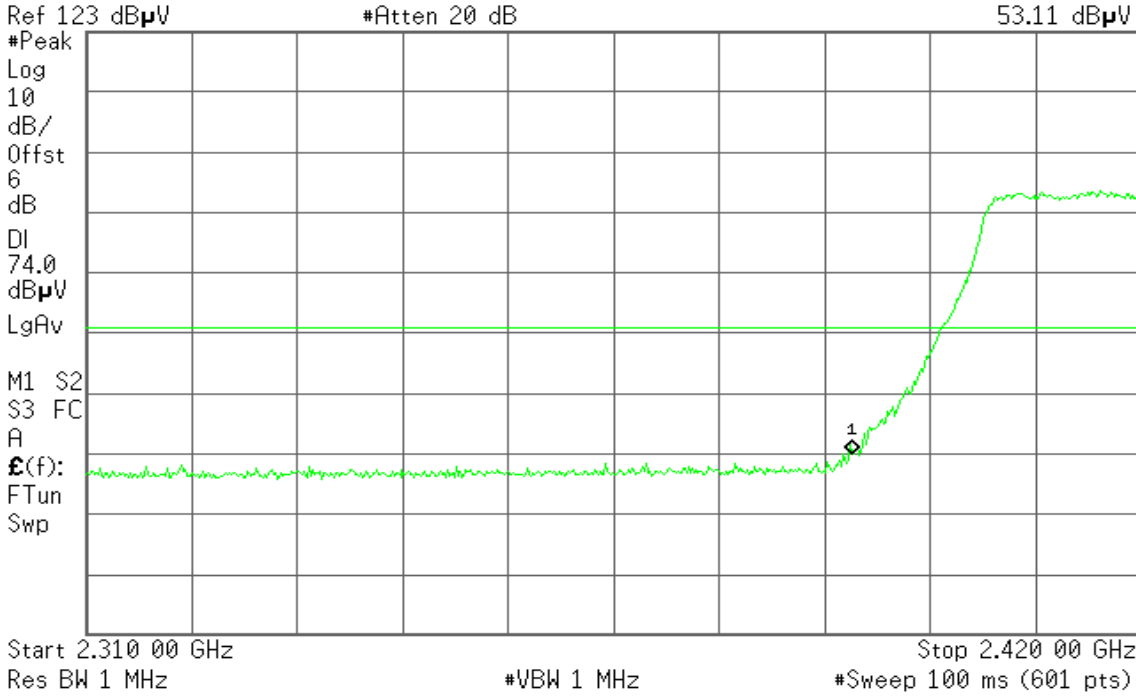
Detector mode: Peak

Polarity: Horizontal

* Agilent 08:44:08 Nov 17, 2009

R L

Mkr1 2.390 00 GHz
53.11 dB μ V



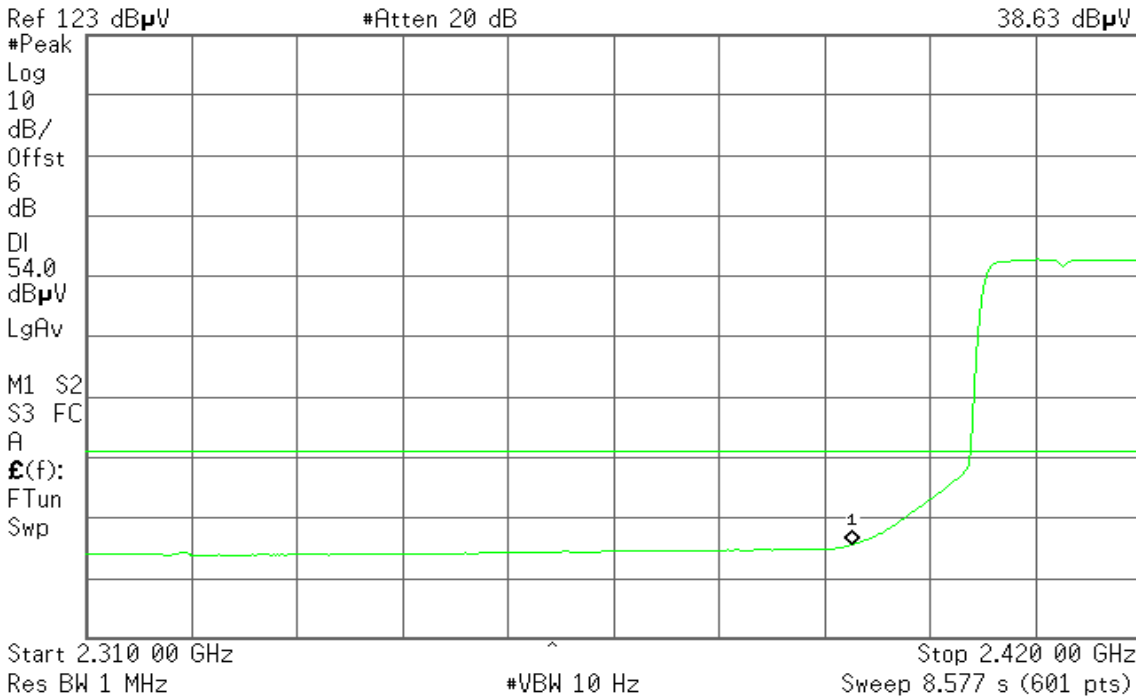
Detector mode: Average

Polarity: Horizontal

* Agilent 08:44:44 Nov 17, 2009

R L

Mkr1 2.390 00 GHz
38.63 dB μ V





Band Edges (IEEE 802.11g / CH High)

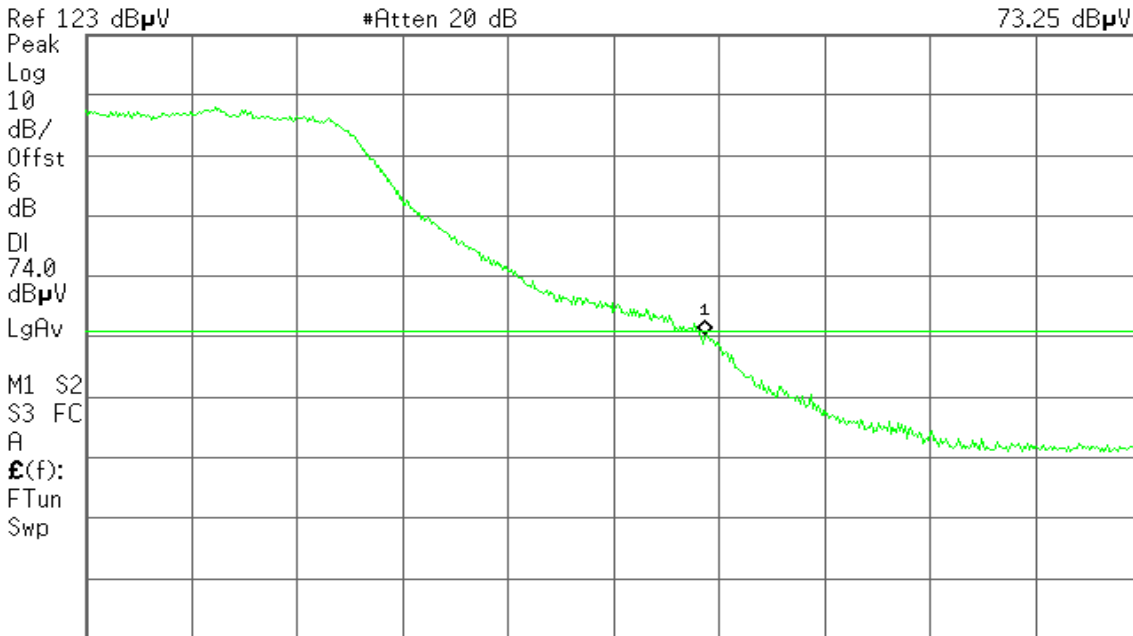
Detector mode: Peak

Polarity: Vertical

* Agilent 16:04:35 Nov 16, 2009

R T

Mkr1 2.483 50 GHz
73.25 dB μ V



Start 2.460 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

#Sweep 100 ms (601 pts)

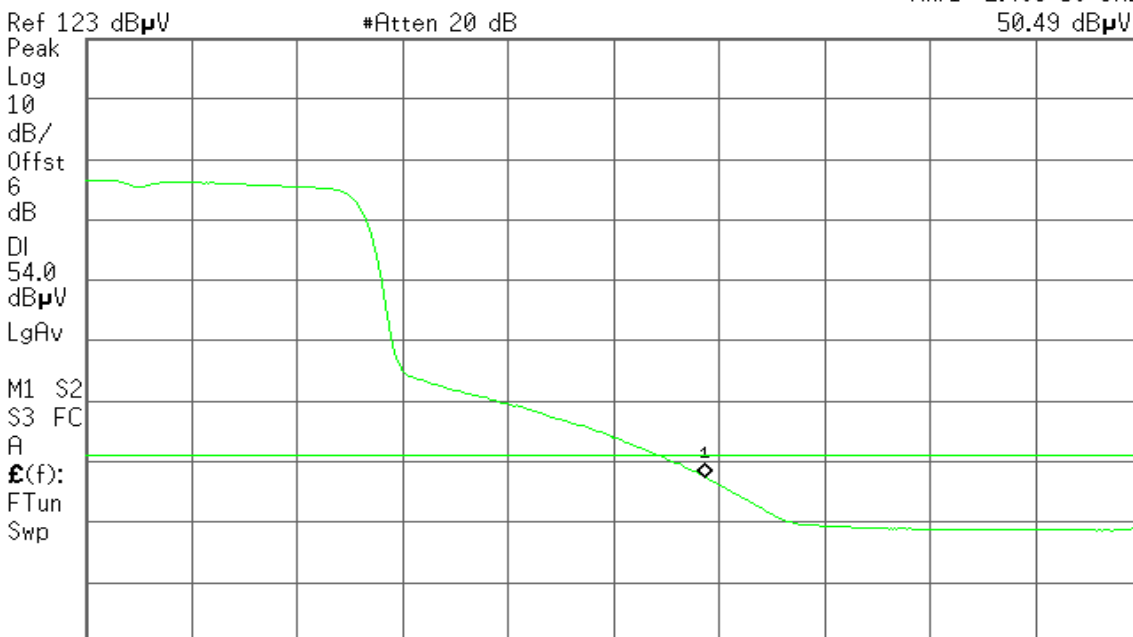
Detector mode: Average

Polarity: Vertical

* Agilent 16:11:19 Nov 16, 2009

R T

Mkr1 2.483 50 GHz
50.49 dB μ V



Start 2.460 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 3.119 s (601 pts)



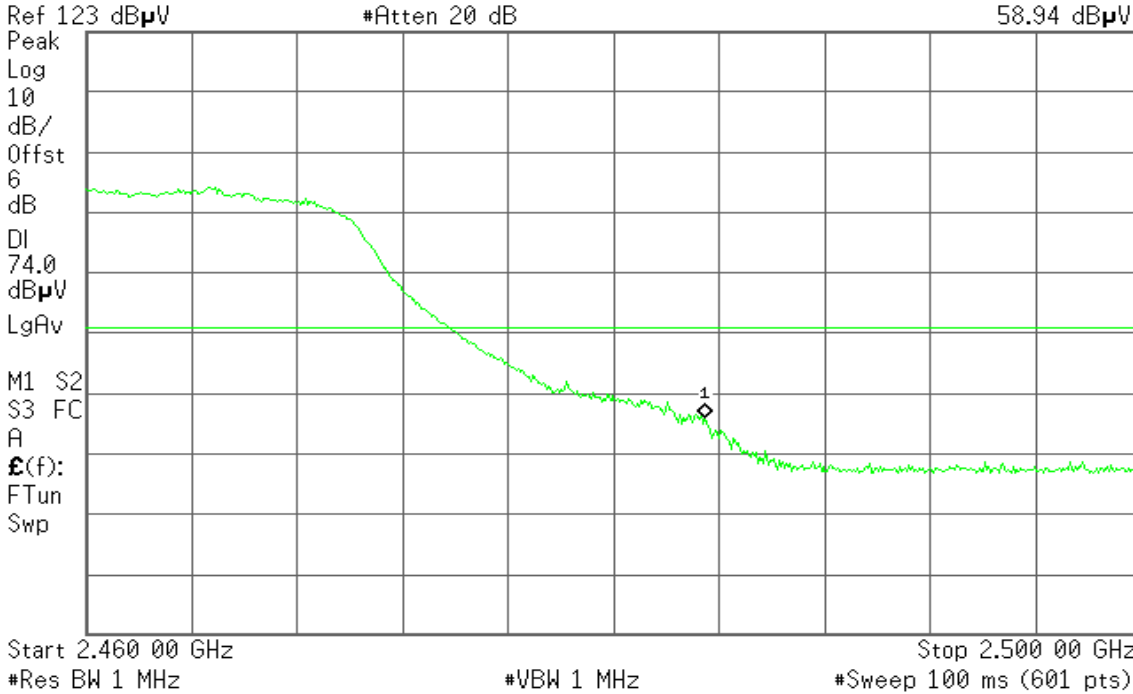
Detector mode: Peak

Polarity: Horizontal

* Agilent 16:18:28 Nov 16, 2009

R T

Mkr1 2.483 50 GHz
58.94 dB μ V



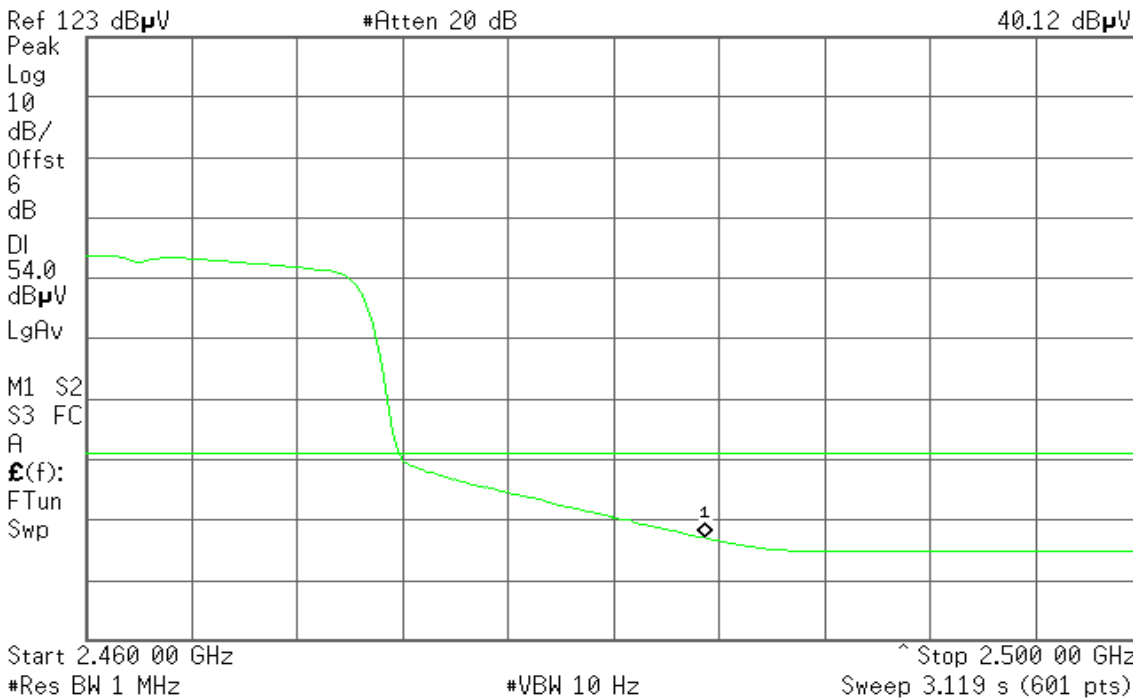
Detector mode: Average

Polarity: Horizontal

* Agilent 16:27:04 Nov 16, 2009

R T

Mkr1 2.483 50 GHz
40.12 dB μ V



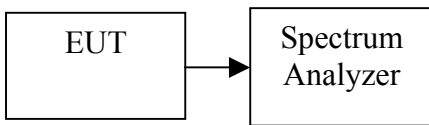


7.5. PEAK POWER SPECTRAL DENSITY

LIMIT

1. According to §15.247(e), for digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.
2. According to §15.247(f), the digital modulation operation of the hybrid system, with the frequency hopping turned off, shall comply with the power density requirements of paragraph (d) of this section.

TEST CONFIGURATION



TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set the spectrum analyzer as RBW = 3kHz, VBW = 10kHz, Span = 300kHz, Sweep=100s
3. Record the max. reading.
4. Repeat the above procedure until the measurements for all frequencies are completed.

TEST RESULTS

No non-compliance noted

TEST DATA

IEEE 802.11b

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Test Result
Low	2412	-9.71	8.00	PASS
Mid	2437	-9.53		PASS
High	2462	-10.91		PASS

IEEE 802.11g

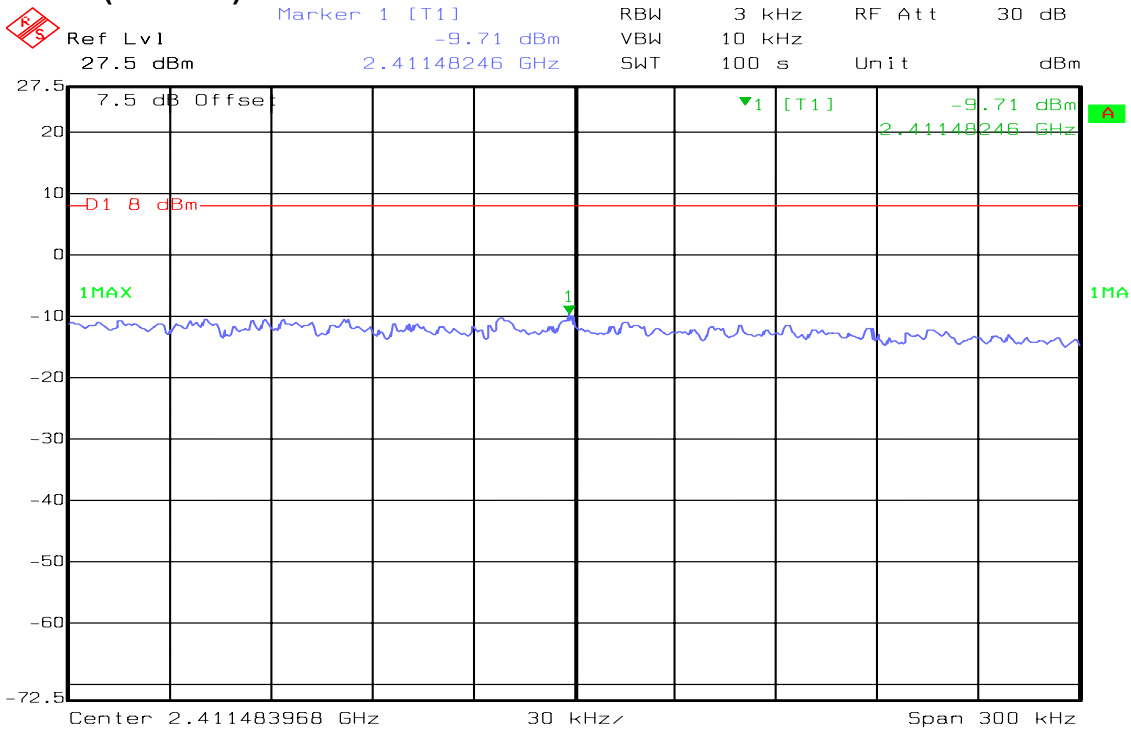
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Test Result
Low	2412	-12.70	8.00	PASS
Mid	2437	-12.20		PASS
High	2462	-12.53		PASS



Test Plot

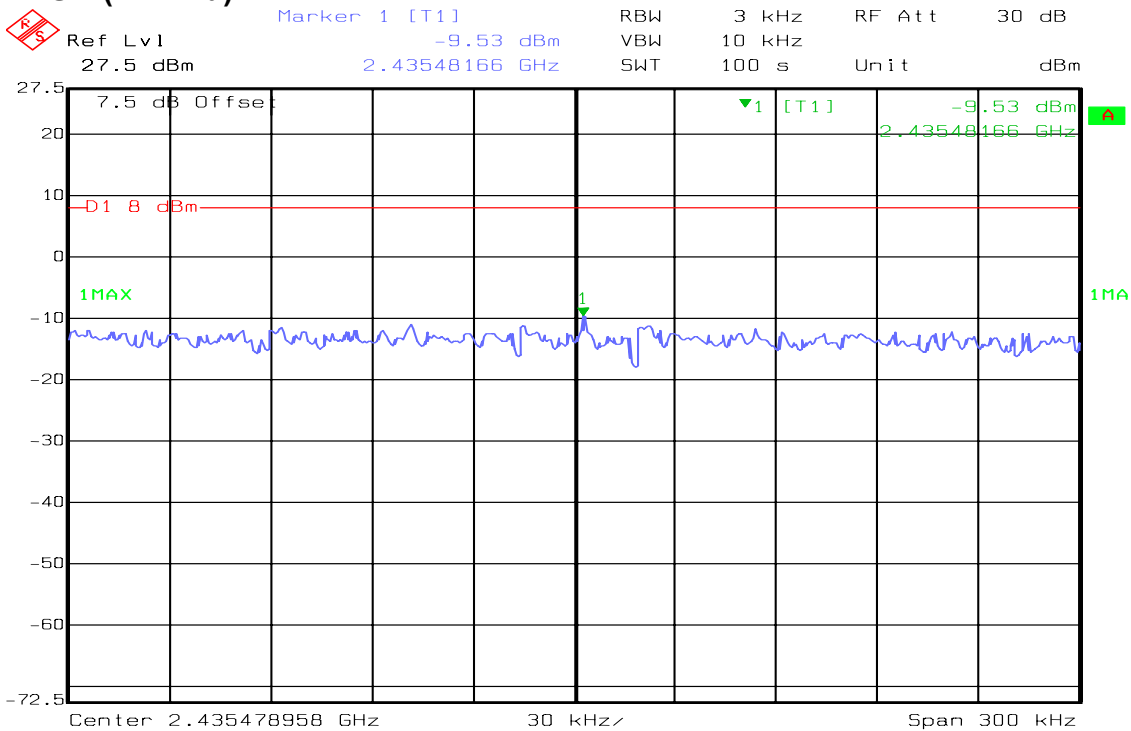
IEEE 802.11b

PPSD (CH Low)



Date: 17.NOV.2009 14:51:06

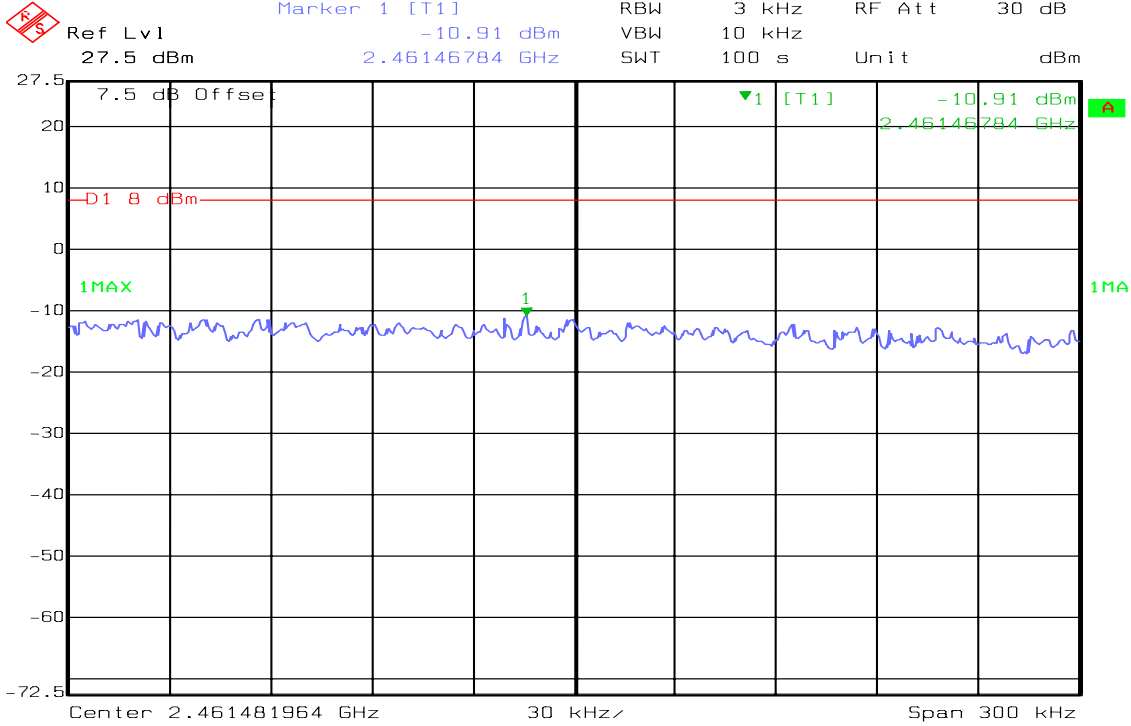
PPSD (CH Mid)



Date: 17.NOV.2009 14:42:48



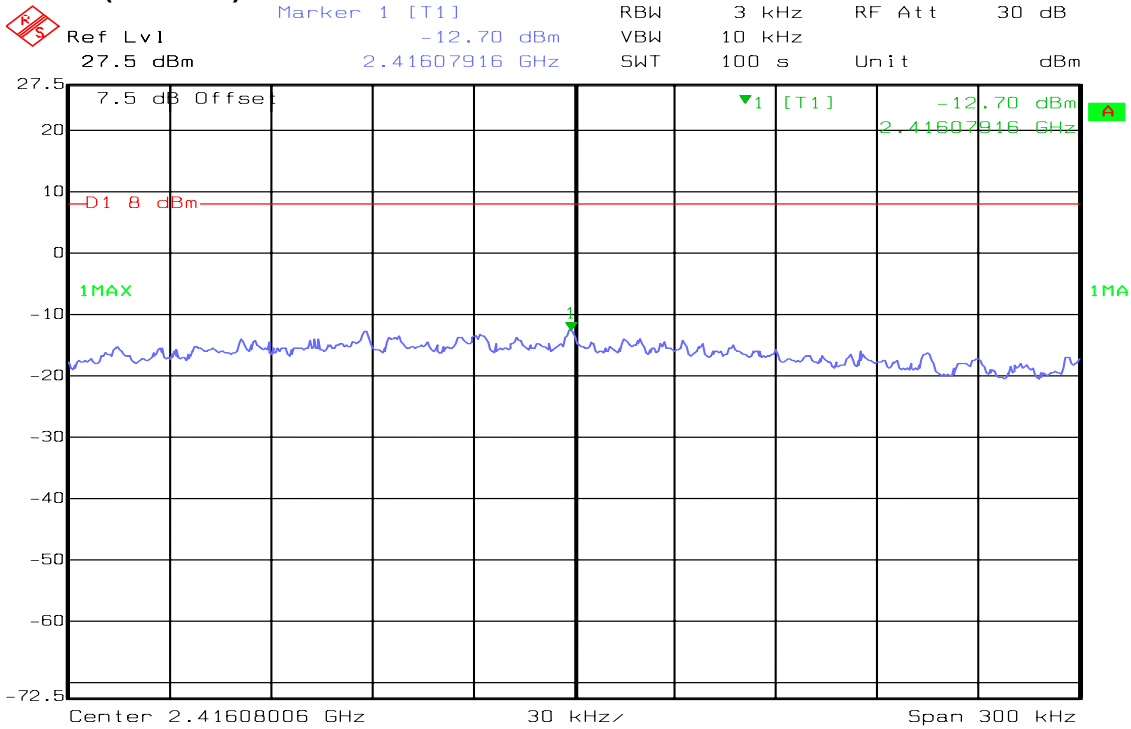
PPSD (CH High)



Date: 17.NOV.2009 14:34:49

IEEE 802.11g

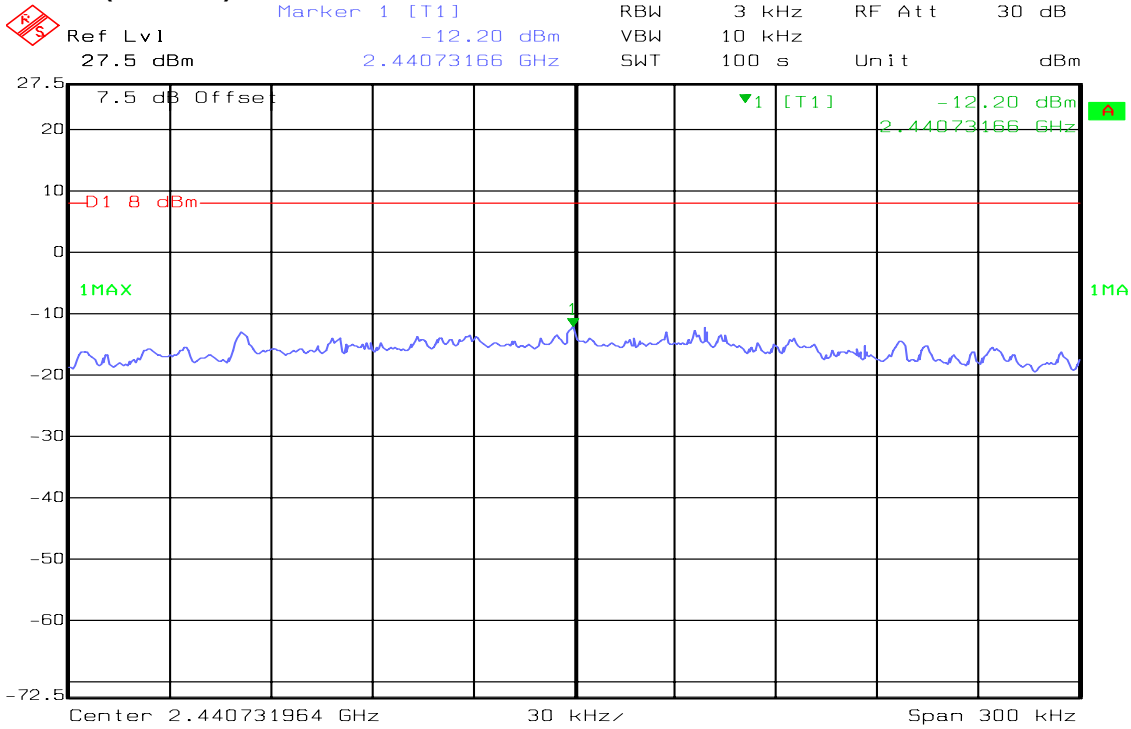
PPSD (CH Low)



Date: 17.NOV.2009 14:56:27

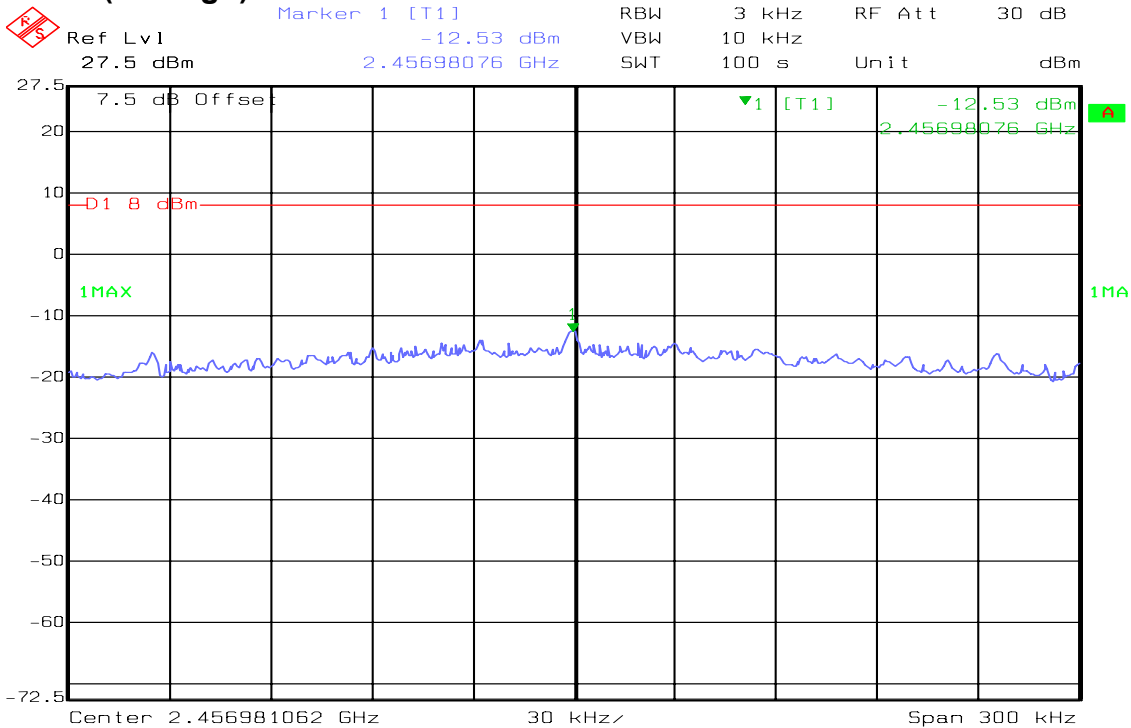


PPSD (CH Mid)



Date: 17.NOV.2009 15:03:11

PPSD (CH High)



Date: 17.NOV.2009 15:08:00



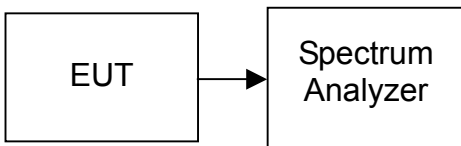
7.6. SPURIOUS EMISSIONS

CONDUCTED MEASUREMENT

LIMIT

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. 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 Section 15.205(c)).

TEST CONFIGURATION



TEST PROCEDURE

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 100 kHz.

Measurements are made over the 30MHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels.

TEST RESULTS

No non-compliance noted.

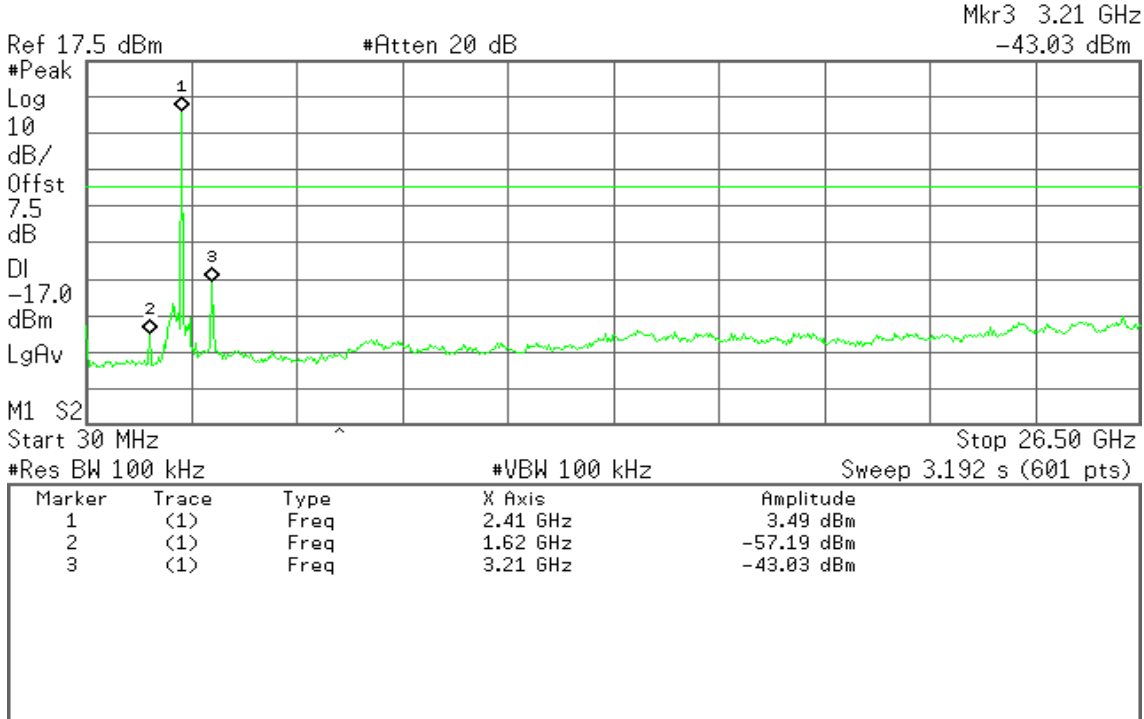


Test Plot

IEEE 802.11b / CH Low

* Agilent 10:33:09 Nov 17, 2009

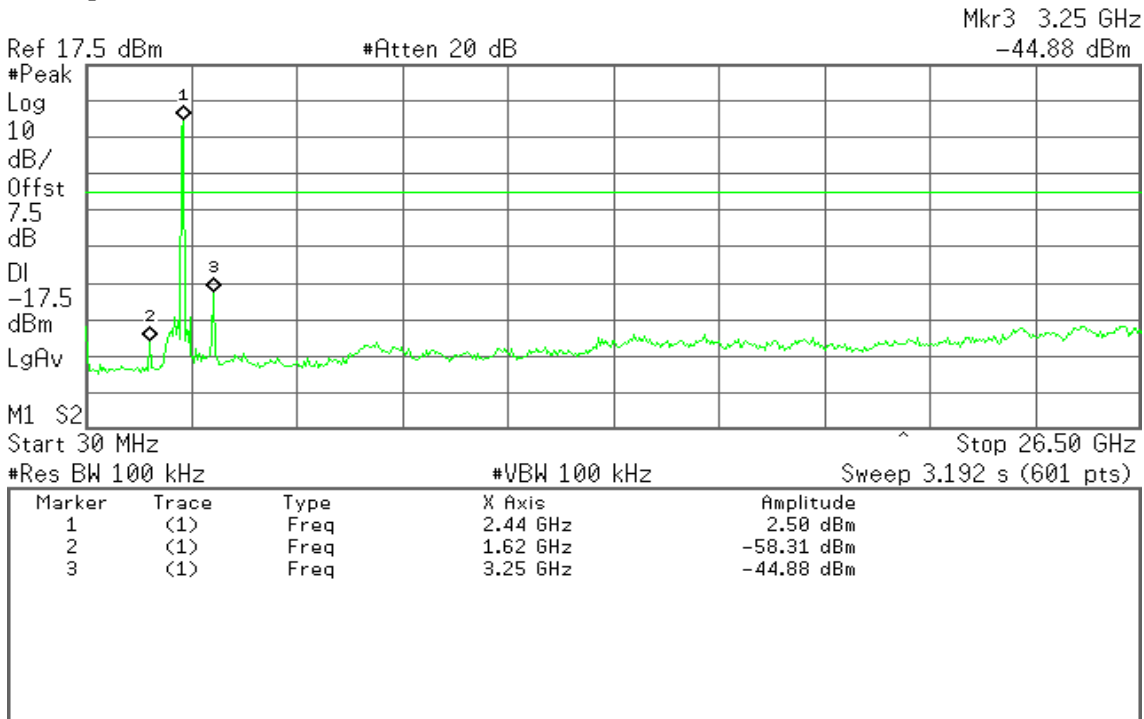
R T



IEEE 802.11b / CH Mid

* Agilent 10:34:54 Nov 17, 2009

R T



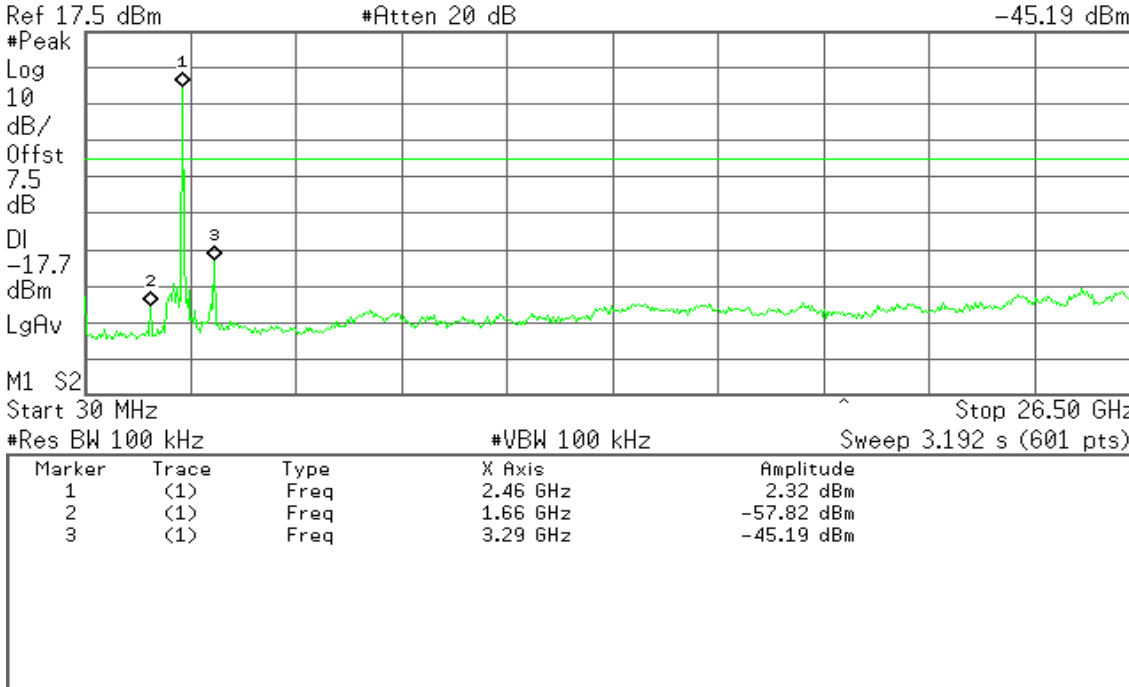


IEEE 802.11b / CH High

Agilent 10:37:18 Nov 17, 2009

R T

Mkr3 3.29 GHz
-45.19 dBm

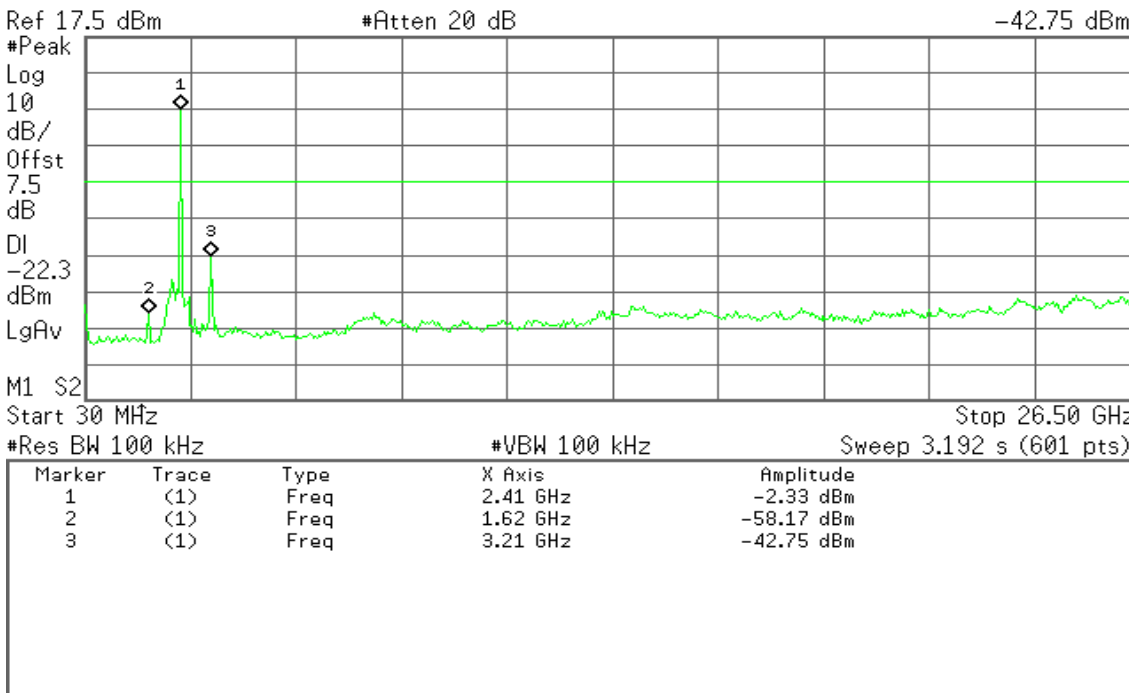


IEEE 802.11g / CH Low

Agilent 10:46:47 Nov 17, 2009

R T

Mkr3 3.21 GHz
-42.75 dBm



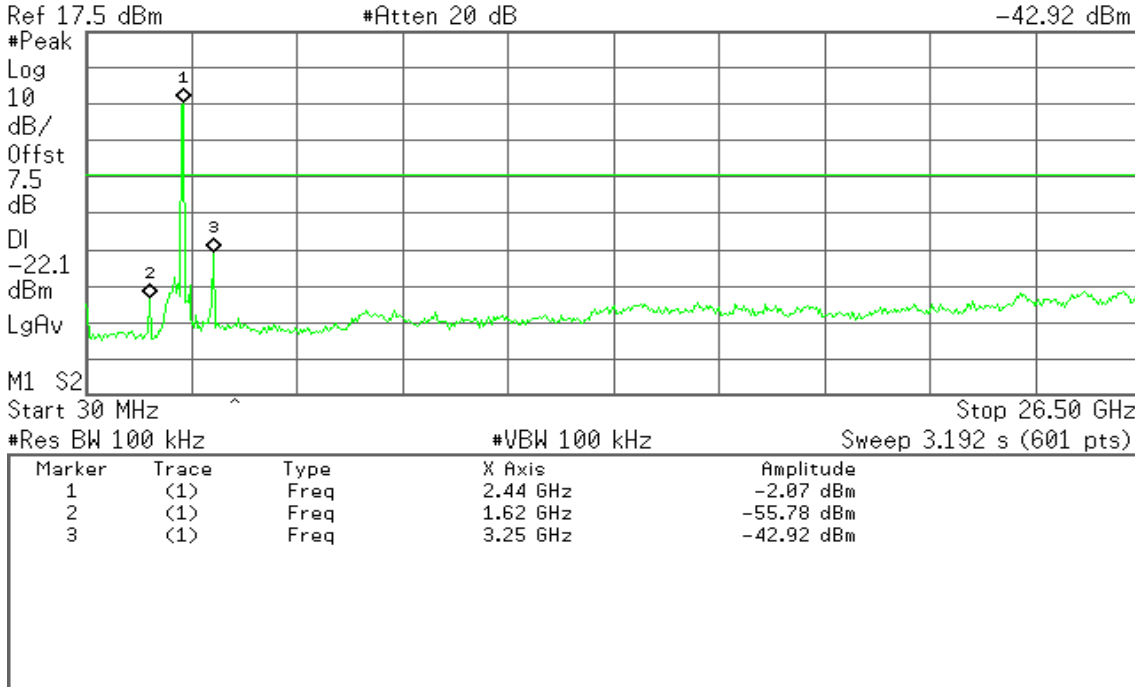


IEEE 802.11g / CH Mid

* Agilent 10:41:25 Nov 17, 2009

R T

Mkr3 3.25 GHz
-42.92 dBm

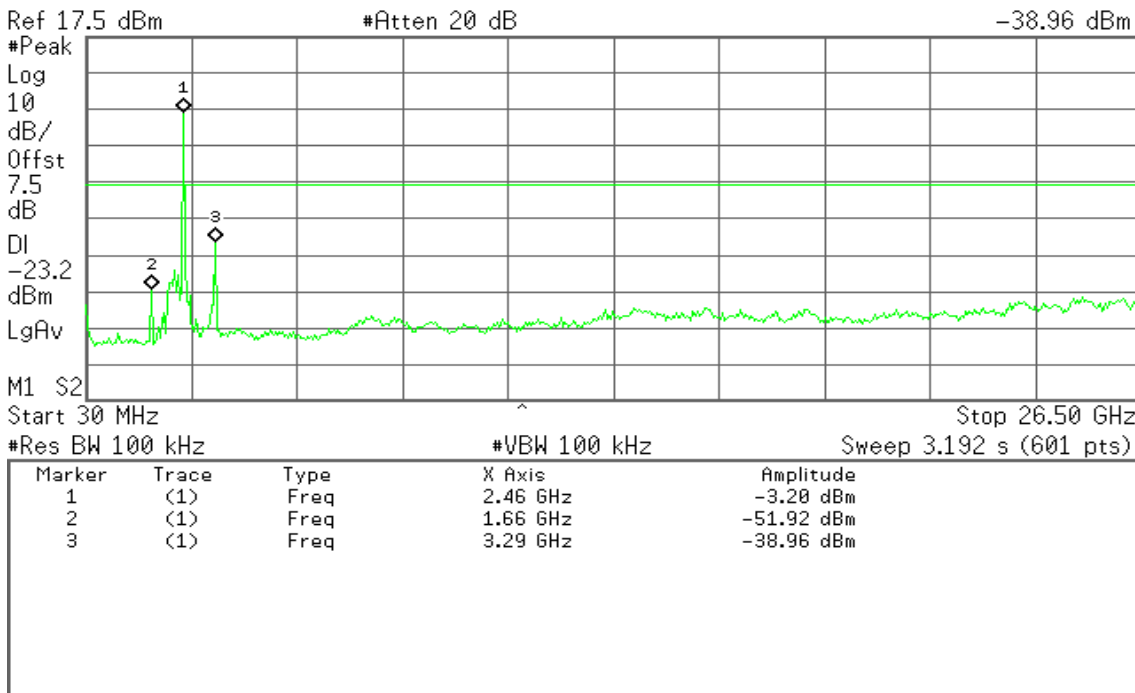


IEEE 802.11g / CH High

* Agilent 10:39:53 Nov 17, 2009

R T

Mkr3 3.29 GHz
-38.96 dBm





RADIATED EMISSIONS

LIMIT

- 1. According to §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:

Table with 3 columns: Frequency (MHz), Field Strength (µV/m), Measurement Distance (m). Rows include 30-88, 88-216, 216-960, and Above 960.

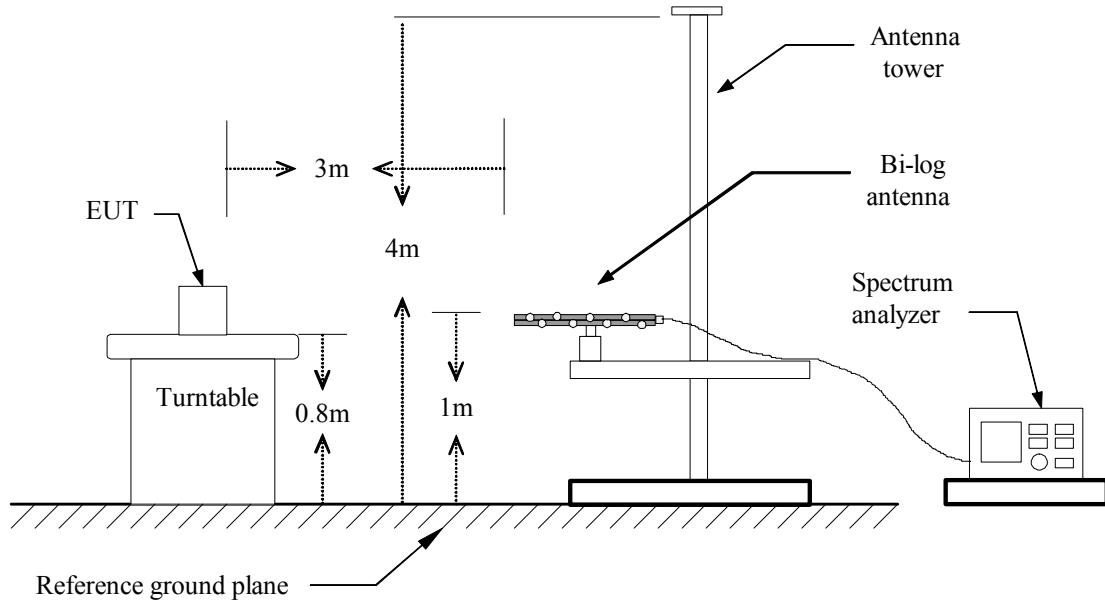
Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

- 2. In the emission table above, the tighter limit applies at the band edges.

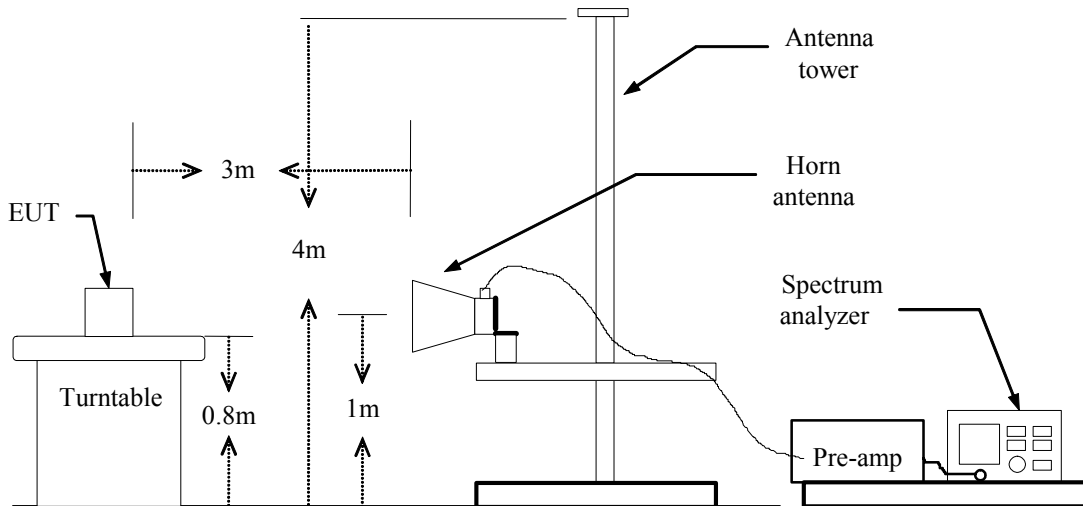
Table with 3 columns: Frequency (MHz), Field Strength (µV/m at 3-meter), Field Strength (dBµV/m at 3-meter). Rows include 30-88, 88-216, 216-960, and Above 960.

TEST CONFIGURATION

Below 1 GHz



Above 1 GHz





TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:

Below 1GHz:

RBW=100kHz / VBW=300kHz / Sweep=AUTO

Above 1GHz:

(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO

(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO

7. Repeat above procedures until the measurements for all frequencies are complete.

TEST RESULTS

No non-compliance noted.



TEST DATA

Below 1 GHz

Operation Mode: Normal Link

Test Date: Nov. 17, 2009

Temperature: 18°C

Tested by: Alonso Lu

Humidity: 60% RH

Polarity: Ver. / Hor.

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit 3m (dBuV/m)	Safe Margin (dB)
34.8500	V	QP	49.40	-13.88	35.52	40.00	-4.48
42.1250	V	QP	48.60	-13.07	35.53	40.00	-4.47
59.1000	V	QP	46.90	-14.92	31.98	40.00	-8.02
105.1750	V	QP	54.51	-16.74	37.77	43.50	-5.73
267.6500	V	QP	50.76	-11.33	39.43	46.00	-6.57
333.1250	V	QP	50.48	-9.44	41.04	46.00	-4.96
434.9750	V	QP	47.83	-8.05	39.78	46.00	-6.22
500.4500	V	QP	48.58	-6.29	42.29	46.00	-3.71
961.2000	V	QP	38.29	2.14	40.43	53.90	-13.47
141.5500	H	QP	50.08	-11.67	38.41	43.50	-5.09
153.6750	H	QP	51.45	-12.13	39.32	43.50	-4.18
250.6750	H	QP	55.57	-11.71	43.86	46.00	-2.14
267.6500	H	QP	52.86	-11.33	41.53	46.00	-4.47
333.1250	H	QP	52.29	-9.44	42.85	46.00	-3.15
374.3500	H	QP	50.91	-8.89	42.02	46.00	-3.98
500.4500	H	QP	48.86	-6.29	42.57	46.00	-3.43
776.9000	H	QP	45.61	-1.63	43.98	46.00	-2.02
961.2000	H	QP	44.08	2.14	46.22	53.90	-7.68

Remark:

1. No emission found between lowest internal used / generated frequency to 30 MHz. (9kHz ~ 30MHz)
2. Measuring frequencies from 30 MHz to the 1GHz.
3. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.



Above 1 GHz

Operation Mode: IEEE 802.11b / TX / CH Low

Test Date: Nov. 17, 2009

Temperature: 20°C

Tested by: Alonso Lu

Humidity: 50% RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2210.00	V	54.96	47.93	0.51	55.48	48.44	74.00	54.00	-5.56	AVG
2240.00	V	53.96	47.93	0.27	54.23	48.20	74.00	54.00	-5.80	AVG
2583.33	V	55.87	45.05	-0.43	55.44	44.62	74.00	54.00	-9.38	AVG
2640.00	V	52.53	---	-0.57	51.95	---	74.00	54.00	-2.05	Peak
3233.33	V	43.91	---	1.55	45.46	---	74.00	54.00	-8.54	Peak
4116.67	V	40.13	---	5.62	45.75	---	74.00	54.00	-8.25	Peak
2040.00	H	49.96	---	-2.22	47.75	---	74.00	54.00	-6.25	Peak
2296.67	H	49.58	---	-1.63	47.95	---	74.00	54.00	-6.05	Peak
2976.67	H	48.18	---	2.43	50.61	---	74.00	54.00	-3.39	Peak
4100.00	H	40.25	---	8.27	48.52	---	74.00	54.00	-5.48	Peak
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Compliance Certification Services Inc.

Report No: 91030103-RP1 FCC ID: XKINVDXMW09-1 Date of Issue: Nov. 19, 2009

Operation Mode: IEEE 802.11b / TX / CH Mid

Test Date: Nov. 17, 2009

Temperature: 20°C

Tested by: Alonso Lu

Humidity: 50% RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2210.00	V	51.49	---	0.51	52.00	---	74.00	54.00	-2.00	Peak
2240.00	V	54.14	47.90	0.27	54.42	48.17	74.00	54.00	-5.83	AVG
2593.33	V	55.89	45.11	-0.64	55.26	44.47	74.00	54.00	-9.53	AVG
3250.00	V	48.11	---	1.62	49.72	---	74.00	54.00	-4.28	Peak
4916.67	V	39.61	---	7.96	47.57	---	74.00	54.00	-6.43	Peak
N/A										
1820.00	H	50.15	---	-3.76	46.39	---	74.00	54.00	-7.61	Peak
2110.00	H	48.52	---	-1.43	47.08	---	74.00	54.00	-6.92	Peak
2950.00	H	48.39	---	1.87	50.26	---	74.00	54.00	-3.74	Peak
3250.00	H	43.25	---	3.02	46.26	---	74.00	54.00	-7.74	Peak
4133.33	H	40.20	---	8.23	48.42	---	74.00	54.00	-5.58	Peak
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Compliance Certification Services Inc.

Report No: 91030103-RP1 FCC ID: XKINVDXMW09-1 Date of Issue: Nov. 19, 2009

Operation Mode: IEEE 802.11b / TX / CH High

Test Date: Nov. 17, 2009

Temperature: 20°C

Tested by: Alonso Lu

Humidity: 50% RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2240.00	V	54.72	47.88	0.27	54.99	48.15	74.00	54.00	-5.85	AVG
2256.67	V	55.17	47.62	0.14	55.31	47.76	74.00	54.00	-6.24	AVG
2596.67	V	56.82	45.08	-0.70	56.12	44.38	74.00	54.00	-9.62	AVG
4925.00	V	40.52	---	7.90	48.42	---	74.00	54.00	-5.58	Peak
N/A										
2096.67	H	49.02	---	-1.30	47.71	---	74.00	54.00	-6.29	Peak
2293.33	H	50.31	---	-1.68	48.63	---	74.00	54.00	-5.37	Peak
2980.00	H	48.58	---	2.50	51.08	---	74.00	54.00	-2.92	Peak
3750.00	H	41.17	---	5.87	47.04	---	74.00	54.00	-6.96	Peak
5158.33	H	39.78	---	8.66	48.44	---	74.00	54.00	-5.56	Peak
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Compliance Certification Services Inc.

Report No: 91030103-RP1 FCC ID: XKINVDXMW09-1 Date of Issue: Nov. 19, 2009

Operation Mode: IEEE 802.11g / TX / CH Low

Test Date: Nov. 17, 2009

Temperature: 20°C

Tested by: Alonso Lu

Humidity: 50% RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2210.00	V	54.66	47.11	0.51	55.17	47.62	74.00	54.00	-6.38	AVG
2240.00	V	53.74	47.58	0.27	54.01	47.85	74.00	54.00	-6.15	AVG
2286.67	V	53.41	44.06	-0.09	53.31	43.97	74.00	54.00	-10.03	AVG
2586.67	V	52.94	45.22	-0.50	52.44	44.72	74.00	54.00	-9.28	AVG
3183.33	V	48.16	---	1.57	49.73	---	74.00	54.00	-4.27	Peak
3233.33	V	49.48	---	1.55	51.03	---	74.00	54.00	-2.97	Peak
2090.00	H	49.18	---	-1.41	47.77	---	74.00	54.00	-6.23	Peak
2636.67	H	49.23	---	-0.12	49.11	---	74.00	54.00	-4.89	Peak
2990.00	H	49.16	---	2.70	51.86	---	74.00	54.00	-2.14	Peak
4716.67	H	40.86	---	7.78	48.63	---	74.00	54.00	-5.37	Peak
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m)



Compliance Certification Services Inc.

Report No: 91030103-RP1 FCC ID: XKINVDXMW09-1 Date of Issue: Nov. 19, 2009

Operation Mode: IEEE 802.11g / TX / CH Mid

Test Date: Nov. 17, 2009

Temperature: 20°C

Tested by: Alonso Lu

Humidity: 50% RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2240.00	V	55.57	47.24	0.27	55.84	47.51	74.00	54.00	-6.49	AVG
2320.00	V	55.40	46.15	-0.23	55.17	45.92	74.00	54.00	-8.08	AVG
2600.00	V	57.94	45.78	-0.77	57.17	45.01	74.00	54.00	-8.99	AVG
3225.00	V	49.16	---	1.51	50.67	---	74.00	54.00	-3.33	Peak
3250.00	V	48.82	---	1.62	50.44	---	74.00	54.00	-3.56	Peak
6591.67	V	38.10	---	11.18	49.28	---	74.00	54.00	-4.72	Peak
2100.00	H	50.41	---	-1.25	49.16	---	74.00	54.00	-4.84	Peak
2263.33	H	50.59	---	-2.14	48.45	---	74.00	54.00	-5.55	Peak
2636.67	H	50.33	---	-0.12	50.21	---	74.00	54.00	-3.79	Peak
5325.00	H	39.23	---	8.78	48.01	---	74.00	54.00	-5.99	Peak
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Compliance Certification Services Inc.

Report No: 91030103-RP1 FCC ID: XKINVDXMW09-1 Date of Issue: Nov. 19, 2009

Operation Mode: IEEE 802.11g / TX / CH High

Test Date: Nov. 17, 2009

Temperature: 20°C

Tested by: Alonso Lu

Humidity: 50% RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2256.67	V	56.33	47.85	0.14	56.48	47.99	74.00	54.00	-6.01	AVG
2320.00	V	54.91	47.98	-0.23	54.68	47.75	74.00	54.00	-6.25	AVG
2593.33	V	57.10	45.62	-0.64	56.47	44.98	74.00	54.00	-9.02	AVG
3200.00	V	47.77	---	1.41	49.18	---	74.00	54.00	-4.82	Peak
3250.00	V	49.07	---	1.62	50.69	---	74.00	54.00	-3.31	Peak
4816.67	V	40.49	---	7.69	48.18	---	74.00	54.00	-5.82	Peak
2100.00	H	49.63	---	-1.25	48.38	---	74.00	54.00	-5.62	Peak
2303.33	H	50.43	---	-1.57	48.86	---	74.00	54.00	-5.14	Peak
2626.67	H	51.52	---	-0.15	51.38	---	74.00	54.00	-2.62	Peak
3250.00	H	44.03	---	3.02	47.04	---	74.00	54.00	-6.96	Peak
4100.00	H	40.50	---	8.27	48.77	---	74.00	54.00	-5.23	Peak
4375.00	H	39.48	---	7.11	46.58	---	74.00	54.00	-7.42	Peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Compliance Certification Services Inc.

Report No: 91030103-RP1 FCC ID: XKINVDXMW09-1 Date of Issue: Nov. 19, 2009

Operation Mode: Stand By

Test Date: Nov. 17, 2009

Temperature: 20°C

Tested by: Alonso Lu

Humidity: 50% RH

Polarity: Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1726.67	V	44.37	---	-2.04	42.34	---	74.00	54.00	-11.66	Peak
2213.33	V	43.00	---	0.48	43.48	---	74.00	54.00	-10.52	Peak
4841.67	V	39.23	---	7.80	47.03	---	74.00	54.00	-6.97	Peak
N/A										
1296.67	H	45.92	---	-6.95	38.96	---	74.00	54.00	-15.04	Peak
2090.00	H	43.10	---	-1.41	41.69	---	74.00	54.00	-12.31	Peak
2746.67	H	42.80	---	-0.10	42.70	---	74.00	54.00	-11.30	Peak
4083.33	H	39.83	---	8.22	48.05	---	74.00	54.00	-5.95	Peak
4933.33	H	40.14	---	7.76	47.90	---	74.00	54.00	-6.10	Peak
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



7.7. POWERLINE CONDUCTED EMISSIONS

LIMIT

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, 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 following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Limits (dBµV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

* Decreases with the logarithm of the frequency.

TEST CONFIGURATION

See test photographs attached in Appendix II for the actual connections between EUT and support equipment.

TEST PROCEDURE

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

TEST RESULTS

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.



TEST DATA

Operation Mode: Normal Link

Test Date: Nov. 18, 2009

Temperature: 25°C

Tested by: Tony Tsai

Humidity: 57% RH

Freq. (MHz)	QP Reading (dBuV)	AV Reading (dBuV)	Corr. factor (dB)	QP Result (dBuV)	AV Result (dBuV)	QP Limit (dBuV)	AV Limit (dBuV)	QP Margin (dB)	AV Margin (dB)	Note
0.1578	44.62	35.22	9.68	54.30	44.90	65.58	55.58	-11.28	-10.68	L1
0.2164	33.02	23.02	9.68	42.70	32.70	62.96	52.96	-20.26	-20.26	L1
0.2672	28.42	20.62	9.68	38.10	30.30	61.20	51.20	-23.10	-20.90	L1
0.4820	26.50	23.50	9.60	36.10	33.10	56.30	46.30	-20.20	-13.20	L1
4.1656	25.17	13.57	9.73	34.90	23.30	56.00	46.00	-21.10	-22.70	L1
15.8414	31.40	22.00	10.30	41.70	32.30	60.00	50.00	-18.30	-17.70	L1
0.1578	43.51	34.31	9.69	53.20	44.00	65.58	55.58	-12.38	-11.58	L2
0.2164	31.61	21.71	9.69	41.30	31.40	62.96	52.96	-21.66	-21.56	L2
0.3727	27.01	23.21	9.69	36.70	32.90	58.44	48.44	-21.74	-15.54	L2
0.4781	26.69	25.99	9.61	36.30	35.60	56.37	46.37	-20.07	-10.77	L2
4.6813	25.30	16.30	9.80	35.10	26.10	56.00	46.00	-20.90	-19.90	L2
15.4859	29.33	18.53	10.37	39.70	28.90	60.00	50.00	-20.30	-21.10	L2

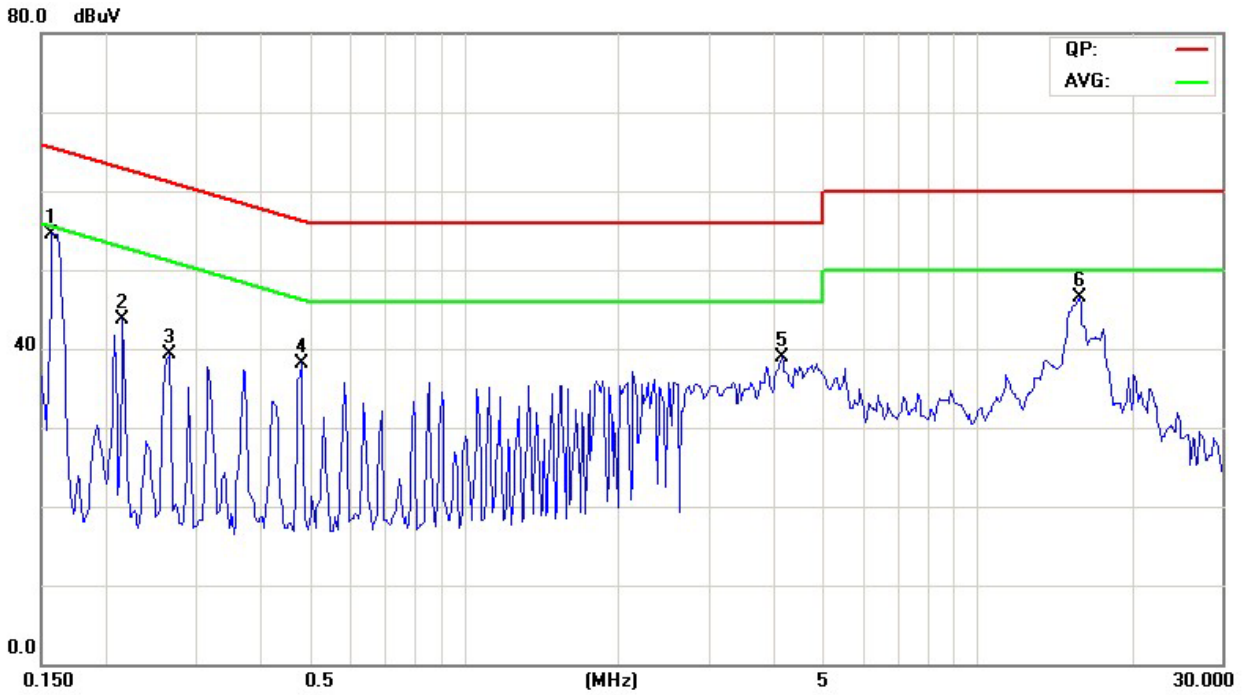
Remark:

1. The measuring frequencies range between 0.15 MHz and 30 MHz.
2. The emissions measured in the frequency range between 0.15 MHz and 30MHz were made with an instrument using Quasi-peak detector and Average detector.
3. The IF bandwidth of SPA between 0.15MHz and 30MHz was 10kHz. The IF bandwidth of Test Receiver between 0.15MHz and 30MHz was 9kHz.

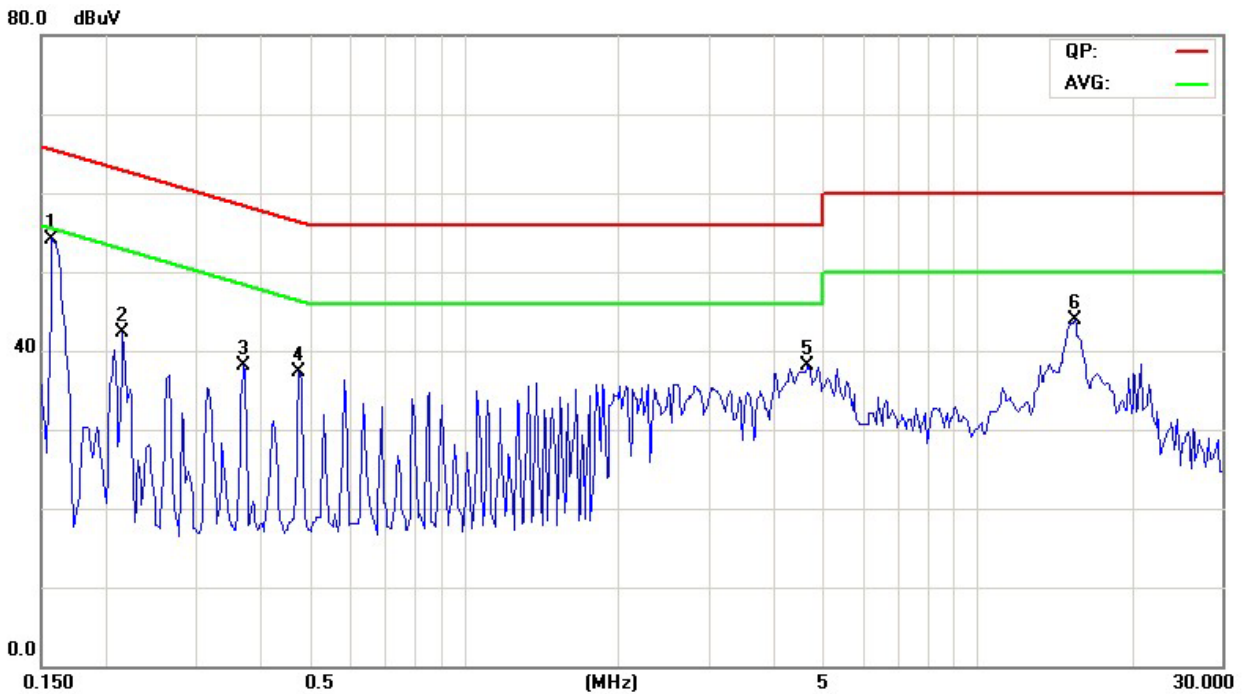


Test Plot

Conducted emissions (Line 1)



Conducted emissions (Line 2)

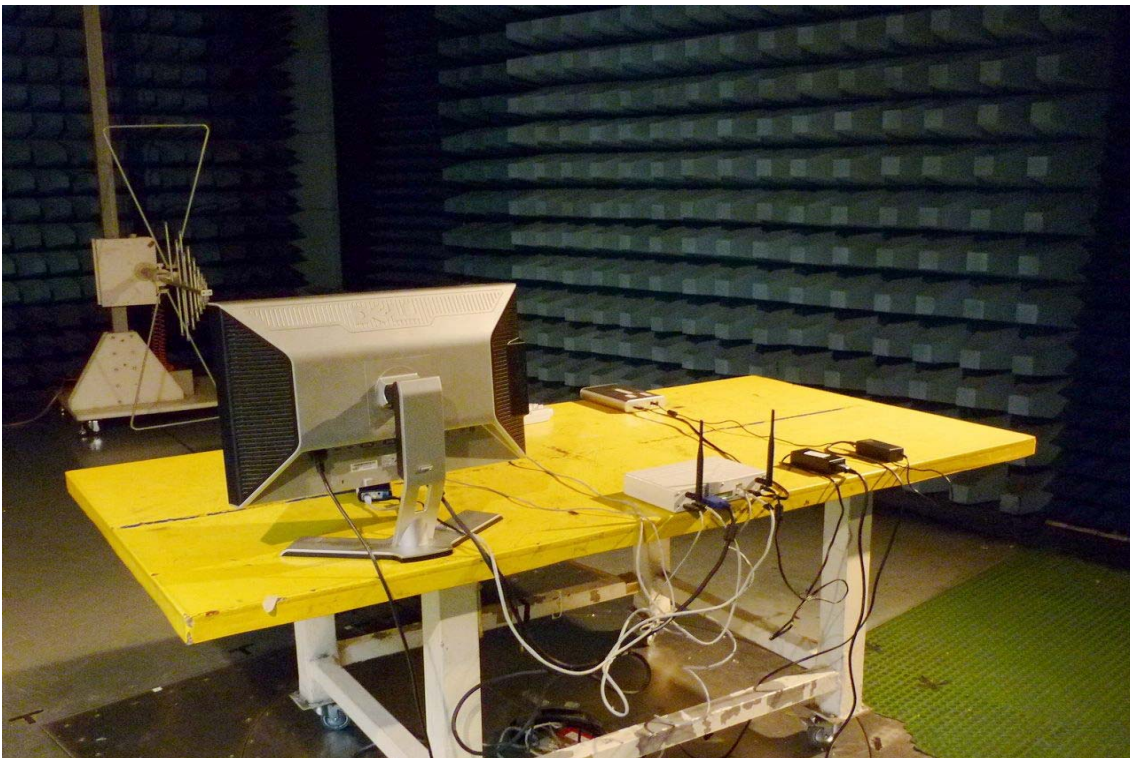
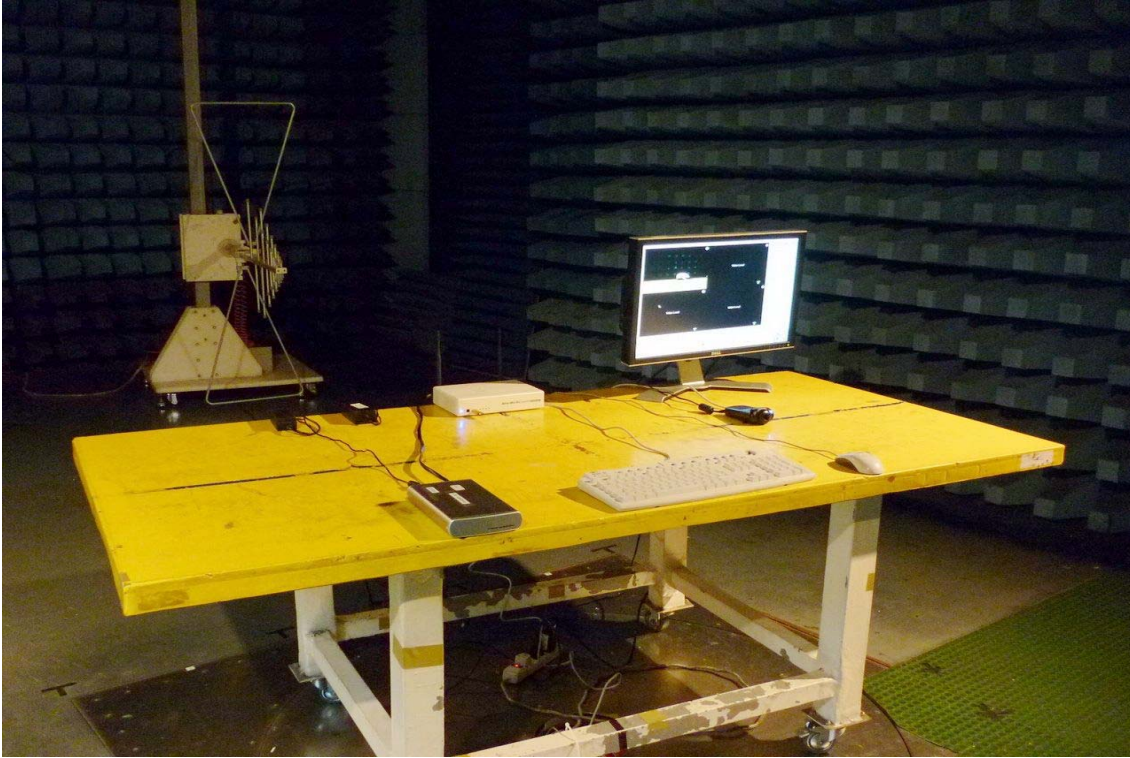




APPENDIX I PHOTOGRAPHS OF TEST SETUP

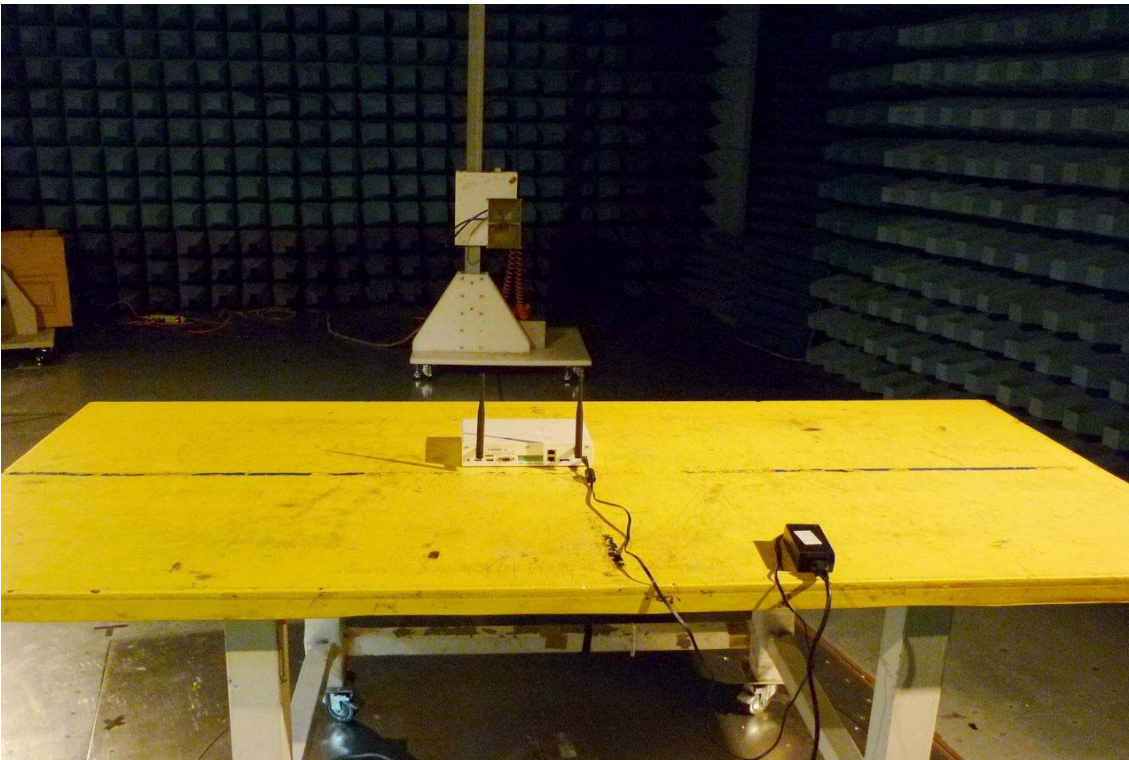
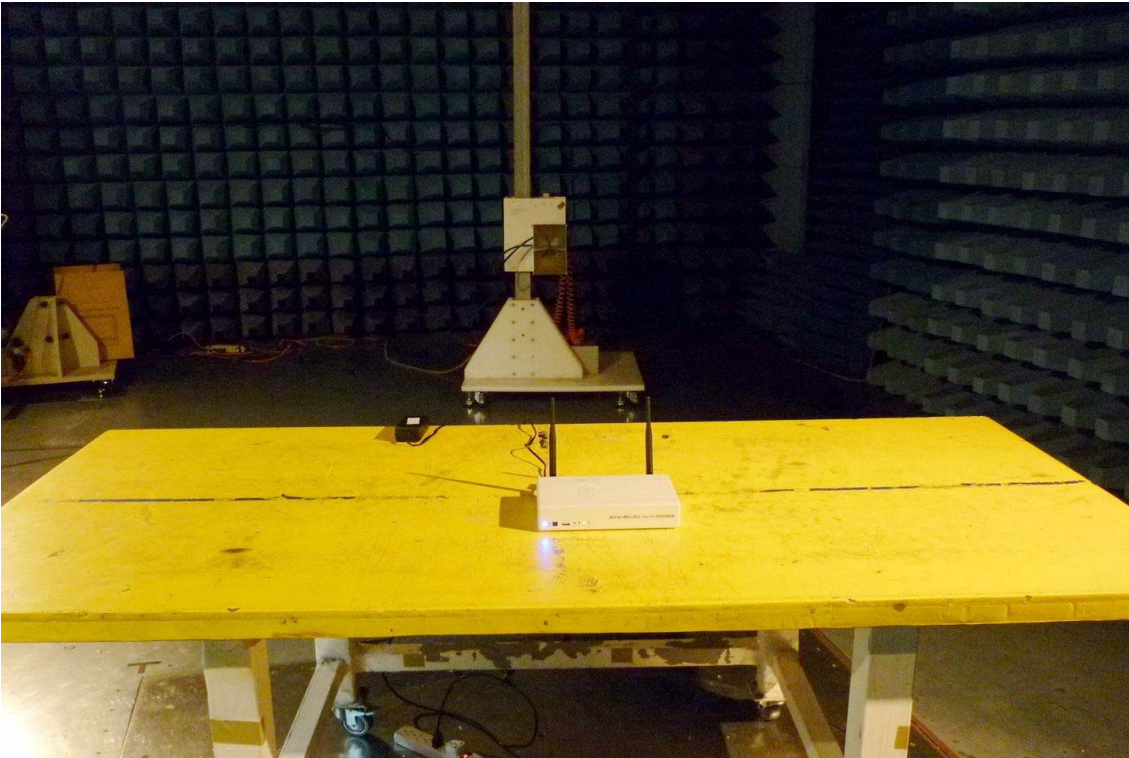
Radiated Emission Set up Photos

30 MHz ~ 1GHz



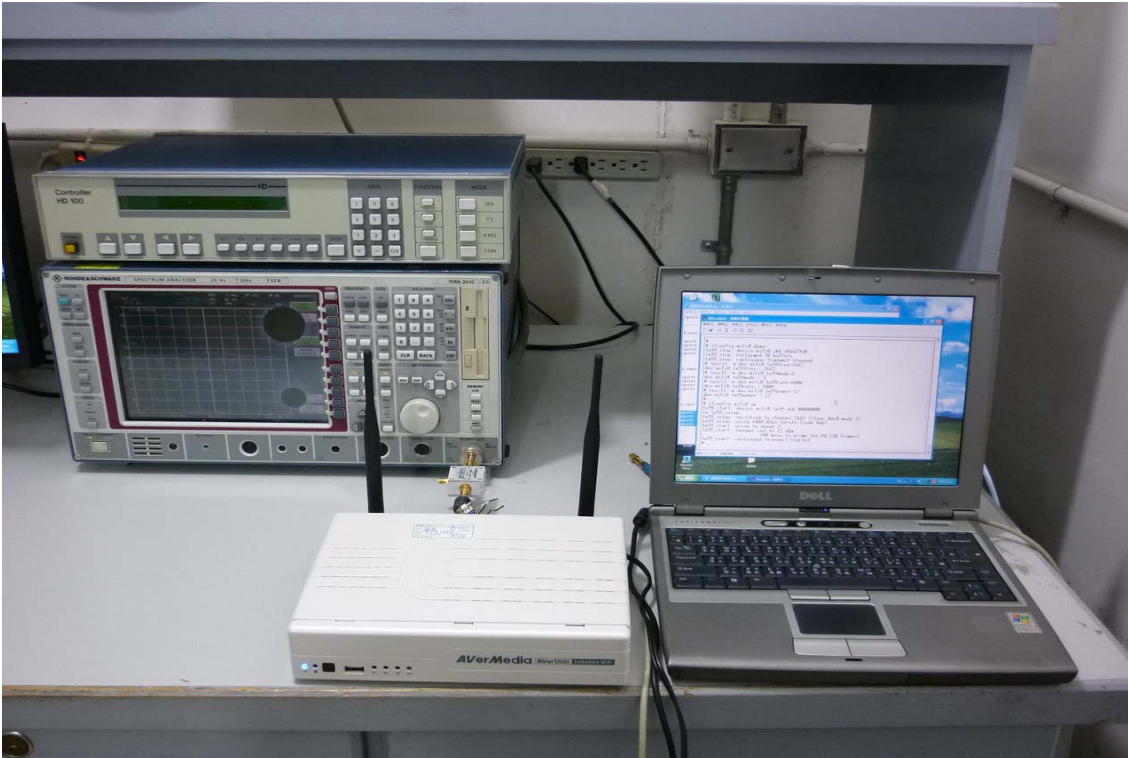


Above 1GHz





Conducted Emission Set Up Photos





Powerline Conducted Emissions Setup Photos

