



FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Handheld Terminal

Model: TeamPad7xx (x: 0 to 9 or A to Z)

Trade Name:

FUJITSU FRONTECH LIMITED

Issued to

Wistron Corporation

**21F, 88, Sec. 1, Hsin Tai Wu Rd., Hsichih,
Taipei Hsien 221, Taiwan, R.O.C.**

Issued by

Compliance Certification Services Inc.

**No. 11, Wu-Gong 6th Rd., Wugu Industrial Park,
Taipei Hsien 248, Taiwan (R.O.C.)**

<http://www.ccsemc.com.tw>

service@ccsrf.com



***Note:** This report shall not be reproduced except in full, without the written approval of Compliance Certification Services Inc. This document may be altered or revised by Compliance Certification Services Inc. personnel only, and shall be noted in the revision section of the document.*



TABLE OF CONTENTS

- 1. TEST RESULT CERTIFICATION.....3**
- 2. EUT DESCRIPTION4**
- 3. TEST METHODOLOGY5**
 - 3.1 EUT CONFIGURATION5
 - 3.2 EUT EXERCISE.....5
 - 3.3 GENERAL TEST PROCEDURES.....5
 - 3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS6
 - 3.5 DESCRIPTION OF TEST MODES7
- 4. INSTRUMENT CALIBRATION.....8**
 - 4.1 MEASURING INSTRUMENT CALIBRATION8
 - 4.2 MEASUREMENT EQUIPMENT USED8
 - 4.3 MEASUREMENT UNCERTAINTY9
- 5. FACILITIES AND ACCREDITATIONS10**
 - 5.1 FACILITIES10
 - 5.2 EQUIPMENT.....10
 - 5.3 TABLE OF ACCREDITATIONS AND LISTINGS.....11
- 6. SETUP OF EQUIPMENT UNDER TEST12**
 - 6.1 SETUP CONFIGURATION OF EUT.....12
 - 6.2 SUPPORT EQUIPMENT12
- 7. FCC PART 15.247 REQUIREMENTS.....13**
 - 7.1 6DB BANDWIDTH13
 - 7.2 PEAK POWER.....20
 - 7.3 AVERAGE POWER27
 - 7.4 BAND EDGES MEASUREMENT34
 - 7.5 PEAK POWER SPECTRAL DENSITY44
 - 7.6 SPURIOUS EMISSIONS.....51
 - 7.7 POWERLINE CONDUCTED EMISSIONS.....70
- APPENDIX I RADIO FREQUENCY EXPOSURE.....73**
- APPENDIX II PHOTOGRAPHS OF TEST SETUP75**



1. TEST RESULT CERTIFICATION

Applicant: Wistron Corporation
 21F, 88, Sec. 1, Hsin Tai Wu Rd., Hsichih,
 Taipei Hsien 221, Taiwan, R.O.C.

Equipment Under Test: Handheld Terminal

Trade Name: FUJITSU FRONTECH LIMITED

Model: TeamPad7xx (x: 0 to 9 or A to Z)

Date of Test: November 9 ~ 11, 2009

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 15 Subpart C	No non-compliance noted
Deviation from Applicable Standard	
N/A	

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:

Reviewed by:

Rex Lai
 Section Manager
 Compliance Certification Services Inc.

Gina Lo
 Section Manager
 Compliance Certification Services Inc.



2. EUT DESCRIPTION

Product	Handheld Terminal
Trade Name	FUJITSU FRONTECH LIMITED
Model Number	TeamPad7xx (x: 0 to 9 or A to Z)
Model Discrepancy	All the above models are identical except for the designation of model numbers. The suffix of (X= a-z / 0-9) on model number is just for marketing purpose only.
Power Supply	1. Power Adapter: UMEC / UP0501Q-12T I/P: AC 100-240V, 47-63Hz, 2.0A MAX O/P: 12V, 4.16A, 50W MAX 2. VDC from Battery Rating: 2.6Ah
Frequency Range	IEEE 802.11a mode: 5.745~5.825 GHz IEEE 802.11b/g mode: 2412 ~ 2462 MHz
Transmit Power	IEEE 802.11a mode: 17.52 dBm IEEE 802.11b mode: 17.93 dBm IEEE 802.11g mode: 18.42 dBm
Modulation Technique	IEEE 802.11a: OFDM (QPSK, BPSK, 16-QAM, 64-QAM) 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 802.11a mode: 6, 9, 12, 18, 24, 36, 48 and 54 Mbps IEEE 802.11b mode: 11, 5.5, 2, 1 Mbps IEEE 802.11g mode: 54, 48, 36, 24, 18, 12, 9, 6Mbps
Number of Channels	IEEE 802.11a mode: 5 Channels IEEE 802.11b/g mode: 11 Channels
Antenna Specification	IEEE 802.11a mode: 3.98dBi IEEE 802.11b/g mode: 2.93 dBi
Antenna Designation	PIFA Antenna
Lan Cradle / model	FHTUL781

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: **PU5-TP7500WE** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.



3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 and FCC CFR 47 Part 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: TeamPad700) had been tested under operating condition.

Software used to control the EUT for staying in continuous transmitting mode was programmed.

The field strength of spurious emission was measured in the following position: EUT stand-up position (Z mode), lie-down position (X, Y mode) and docking mode. The worst emission was found in docking mode for powerline conducted emissions, X mode for radiation emissions and the worst cases were recorded.

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz and power line conducted emissions below 30MHz, which worst case was in normal link mode only.

IEEE 802.11a mode:

Channel Low(5745MHz), Channel Mid(5785MHz) and Channel High(5825MHz) with 6Mbps data rate were chosen for full testing.

IEEE 802.11b mode:

Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 1Mbps data rate were chosen for the final testing.

IEEE 802.11g mode:

Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 6Mbps data rate were chosen for the final testing.

The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X, Z axis) and the worst case was recorded.



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	MY43360131	03/05/2010

3M Semi Anechoic Chamber				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	US42510252	10/06/2010
Test Receiver	Rohde&Schwarz	ESCI	100064	11/29/2009
Switch Controller	TRC	Switch Controller	SC94050010	05/02/2010
4 Port Switch	TRC	4 Port Switch	SC94050020	05/02/2010
Loop Antenna	EMCO	6502	8905/2356	05/28/2010
Horn-Antenna	TRC	HA-0502	06	06/03/2010
Horn-Antenna	TRC	HA-0801	04	10/19/2010
Horn-Antenna	TRC	HA-1201A	01	10/14/2010
Horn-Antenna	TRC	HA-1301A	01	10/14/2010
Bilog- Antenna	Sunol Sciences	JB3	A030205	03/27/2010
Turn Table	Max-Full	MFT-120S	T120S940302	N.C.R.
Antenna Tower	Max-Full	MFA-430	A440940302	N.C.R.
Controller	Max-Full	MF-CM886	CC-C-1F-13	N.C.R.
Site NSA	CCS	N/A	FCC MRA: TW1039 IC: IC 2324G-1/-2	10/17/2010 11/04/2010
Test S/W	LABVIEW (V 6.1)			

Powerline Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI TEST RECEIVER 9kHz-30MHz	ROHDE & SCHWARZ	ESHS30	828144/003	11/17/2010
TWO-LINE V-NETWORK 9kHz-30MHz	SCHAFFNER	NNB41	03/10013	06/10/2010
LISN 10kHz-100MHz	EMCO	3825/2	9106-1809	04/08/2010
Test S/W	LABVIEW (V 6.1)			



4.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
Powerline Conducted Emission	+/- 2.81
3M Semi Anechoic Chamber / 30MHz ~ 1GHz	+/-3.7046
3M Semi Anechoic Chamber / Above 1GHz	+/-3.0958

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, Bade 2nd Rd., Luchu Hsiang, Taoyuan Hsien 338, Taiwan

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 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	FCC	3M Semi Anechoic Chamber (FCC MRA: TW1039) to perform FCC Part 15 measurements	 FCC MRA: TW1039
Taiwan	TAF	LP0002, RTTE01, FCC Method-47 CFR Part 15 Subpart C, D, E, RSS-210, RSS-310 IDA TS SRD, AS/NZS 4268, AS/NZS 4771, TS 12.1 & 12.2, ETSI EN 300 440-1, ETSI EN 300 440-2, ETSI EN 300 328, ETSI EN 300 220-1, ETSI EN 300 220-2, ETSI EN 301 893, ETSI EN 301 489-1/3/7/17 FCC OET Bulletin 65 + Supplement C, EN 50360, EN 50361, EN 50371, RSS 102, EN 50383, EN 50385, EN 50392, IEC 62209, CNS 14958-1, CNS 14959 FCC Method -47 CFR Part 15 Subpart B IEC / EN 61000-3-2, IEC / EN 61000-3-3, IEC / EN 61000-4-2/3/4/5/6/8/11	 Testing Laboratory 1309
Canada	Industry Canada	3M Semi Anechoic Chamber (IC 2324G-1 / IC 2324G-2) to perform	 IC 2324G-1 IC 2324G-2

* No part of this report may be used to claim or imply product endorsement by A2LA or any agency of the US Government.



6. SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

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

6.2 SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
1.	USB Keyboard	Compaq	KU-9978	B463A0AGLT110	FCC DoC	Shielded, 1.8m	N/A
2.	USB Mouse	Logitech	M-UE58	LZA10752880	FCC DoC	Shielded, 1.8m	N/A
3.	USB 2.0 External HDD	TeraSyS	F12-U	A0100214-39t000 3	FCC DoC	Shielded, 1.8m	N/A
4.	USB 2.0 External HDD	TeraSyS	F12-U	A0100214-43b000 6	FCC DoC	Shielded, 1.8m	N/A
5.	Laser Scanner	FUJITSU	KD02902-3301	005706	N/A	Unshielded, 1m	N/A
6.	Multimedia Earphone	Labtec	Axis-301	N/A	FCC DoC	Unshielded, 1.8m*2	N/A
7.	SD Card	SANDISK	N/A	AA0312MX	N/A	N/A	N/A
8.	Notebook PC (Remote)	DELL	PP05L	7T390 A03	E2K5HCKT	LAN Cable: Unshielded, 10m	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core
9.	Notebook PC (Remote)	DELL	PP19L	GK102 A00	QDS-BRCM1021	N/A	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core
10.	Bluetooth earphone (Remote)	corega	10T	CG-BTHS01	BTHS01	N/A	N/A
11.	RFID remote-controlled (Remote)	FUJITSU	TFA-TG011	KD02907-1750	FCC DoC	N/A	N/A

Remark:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.



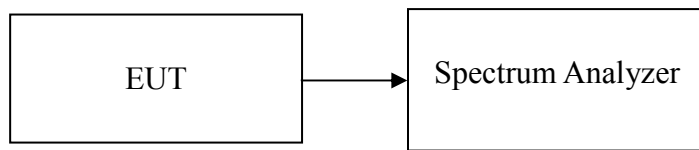
7. FCC PART 15.247 REQUIREMENTS

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 = RBW, Span = 50MHz, 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 mode: IEEE 802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	10.17	>500	PASS
Mid	2437	11.17		PASS
High	2462	9.75		PASS

Test mode: IEEE 802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	16.50	>500	PASS
Mid	2437	16.58		PASS
High	2462	16.58		PASS

Test mode: IEEE 802.11a mode / 5745 ~ 5825MHz

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Test Result
Low	5745	16.58	>500	PASS
Mid	5785	16.50		PASS
High	5825	16.58		PASS



Test Plot

IEEE 802.11b

6dB Bandwidth (CH Low)

Agilent 00:37:57 Nov 11, 2009

R T

6dB BW, b Mode Low Ch.

Δ Mkr1 10.17 MHz

Ref 20 dBm

Atten 10 dB

-0.89 dB

#Peak

Log

10

dB/

Offst

20.7

dB

DI

-3.7

dBm

LgAv

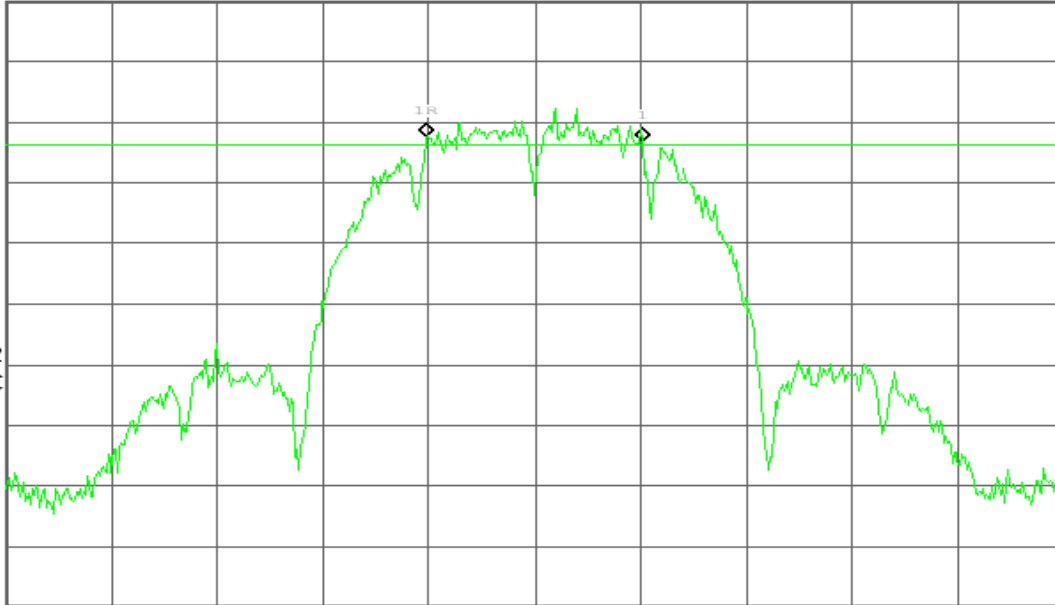
V1 S2

S3 FC

□(f):

FTun

Swp



Center 2.412 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

6dB Bandwidth (CH Mid)

Agilent 00:42:36 Nov 11, 2009

R T

6dB BW, b Mode Mid Ch.

Δ Mkr1 11.17 MHz

Ref 20 dBm

Atten 10 dB

-0.87 dB

#Peak

Log

10

dB/

Offst

20.7

dB

DI

-2.0

dBm

LgAv

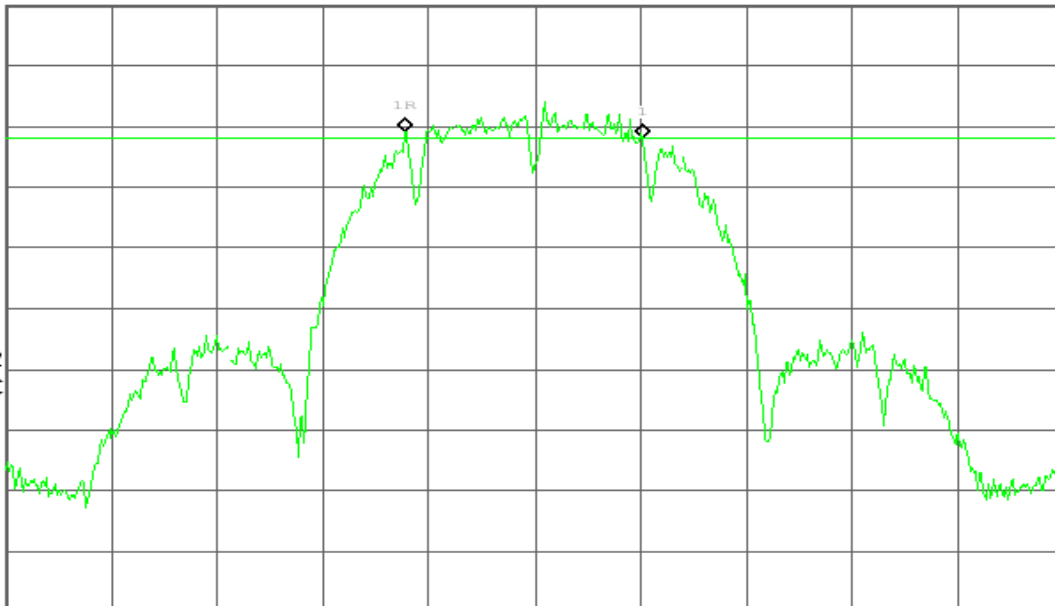
V1 S2

S3 FC

□(f):

FTun

Swp



Center 2.437 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)



6dB Bandwidth (CH High)

Agilent 00:47:03 Nov 11, 2009

R T

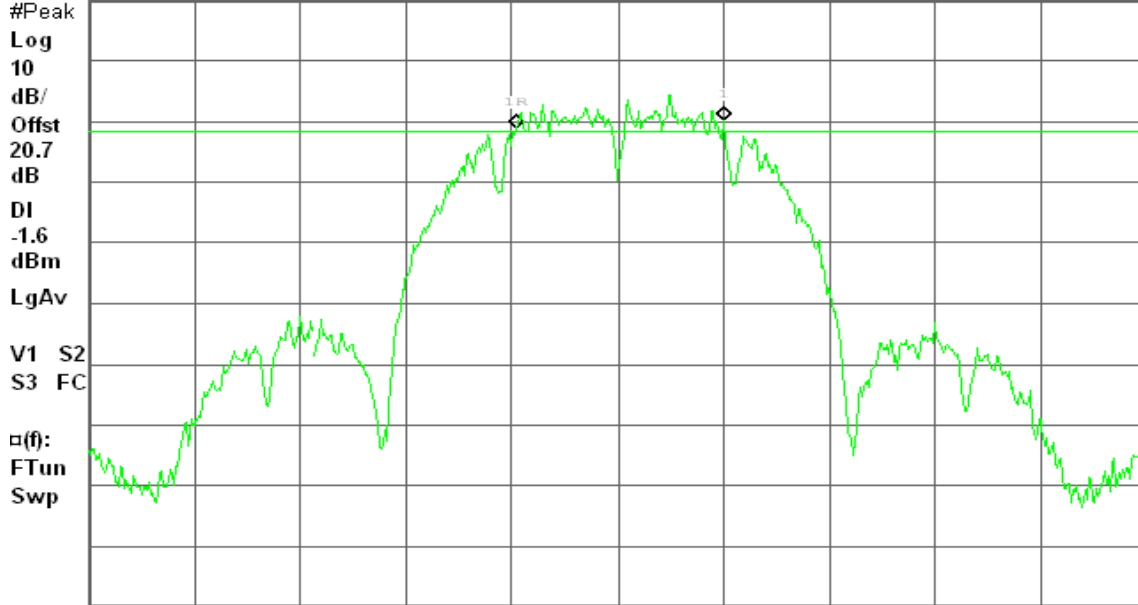
6dB BW, b Mode High Ch.

Δ Mkr1 9.75 MHz

Ref 20 dBm

Atten 10 dB

1.22 dB



Center 2.462 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

IEEE 802.11g

6dB Bandwidth (CH Low)

Agilent 00:19:24 Nov 11, 2009

R T

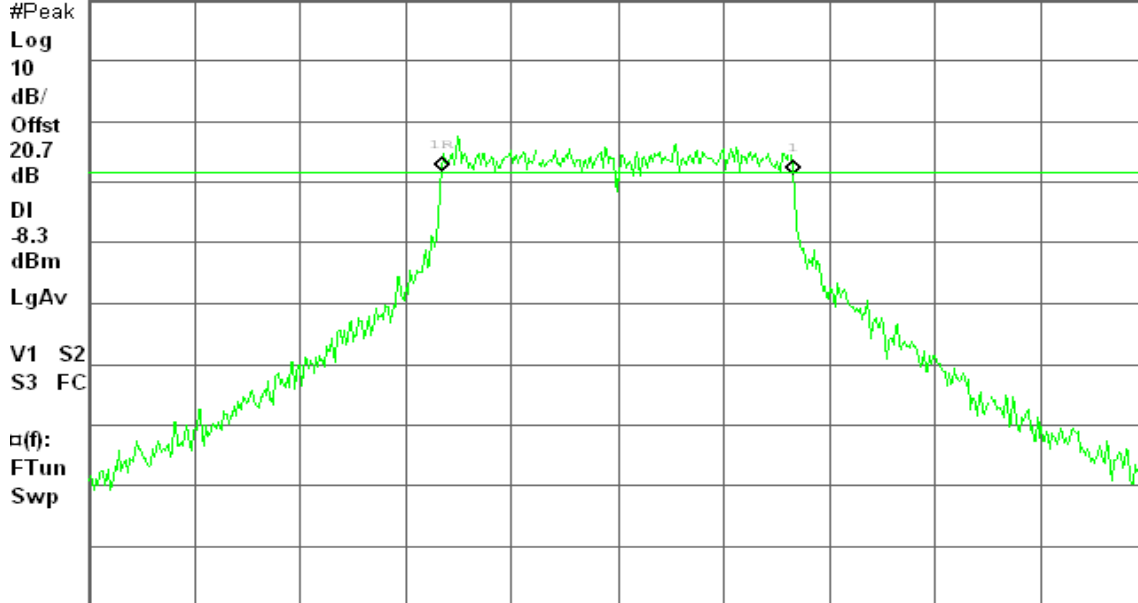
6dB BW, g Mode Low Ch.

Δ Mkr1 16.50 MHz

Ref 20 dBm

Atten 10 dB

-0.46 dB



Center 2.412 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)



6dB Bandwidth (CH Mid)

Agilent 00:24:21 Nov 11, 2009

R T

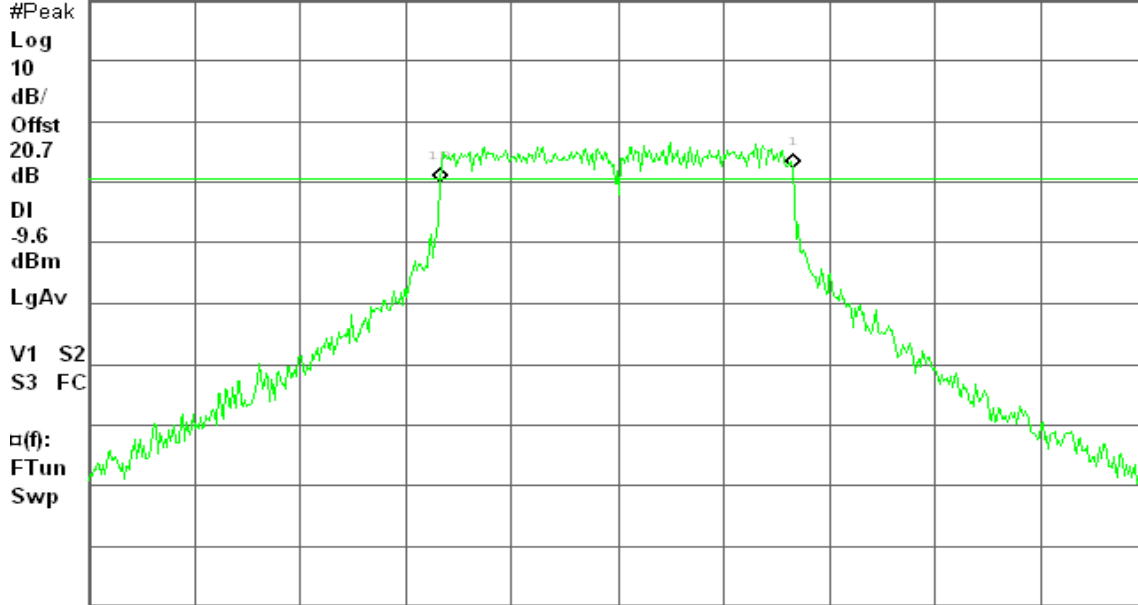
6dB BW, g Mode Mid Ch.

Δ Mkr1 16.58 MHz

Ref 20 dBm

Atten 10 dB

2.38 dB



Center 2.437 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

6dB Bandwidth (CH High)

Agilent 00:29:03 Nov 11, 2009

R T

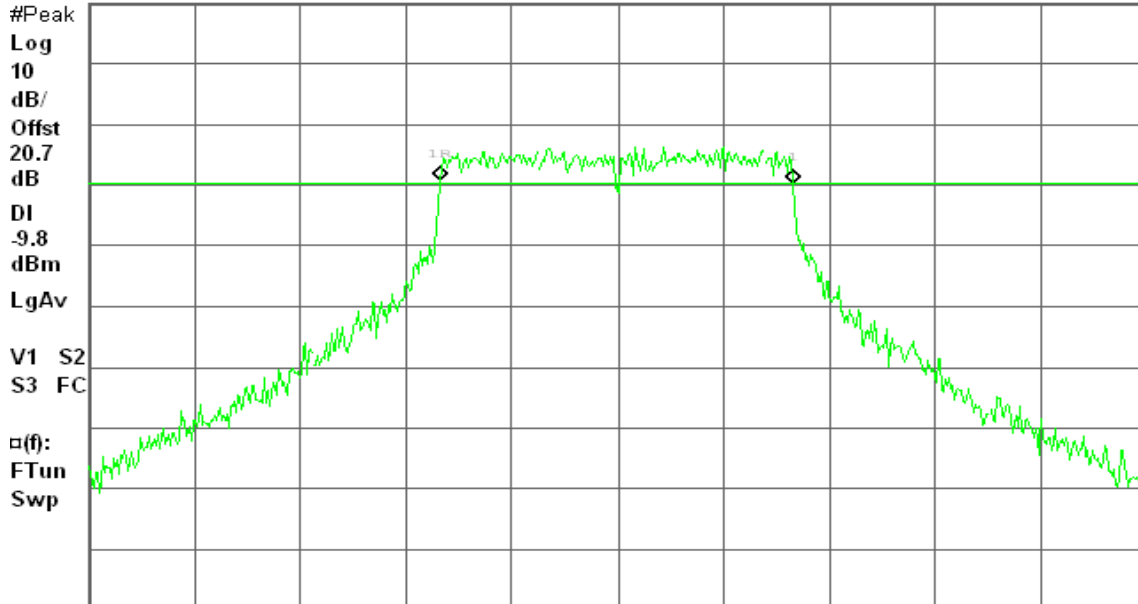
6dB BW, g Mode High Ch.

Δ Mkr1 16.58 MHz

Ref 20 dBm

Atten 10 dB

-0.45 dB



Center 2.462 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)



IEEE 802.11a mode / 5745 ~ 5825MHz

6dB Bandwidth (CH Low)

Agilent 00:53:59 Nov 11, 2009

R T

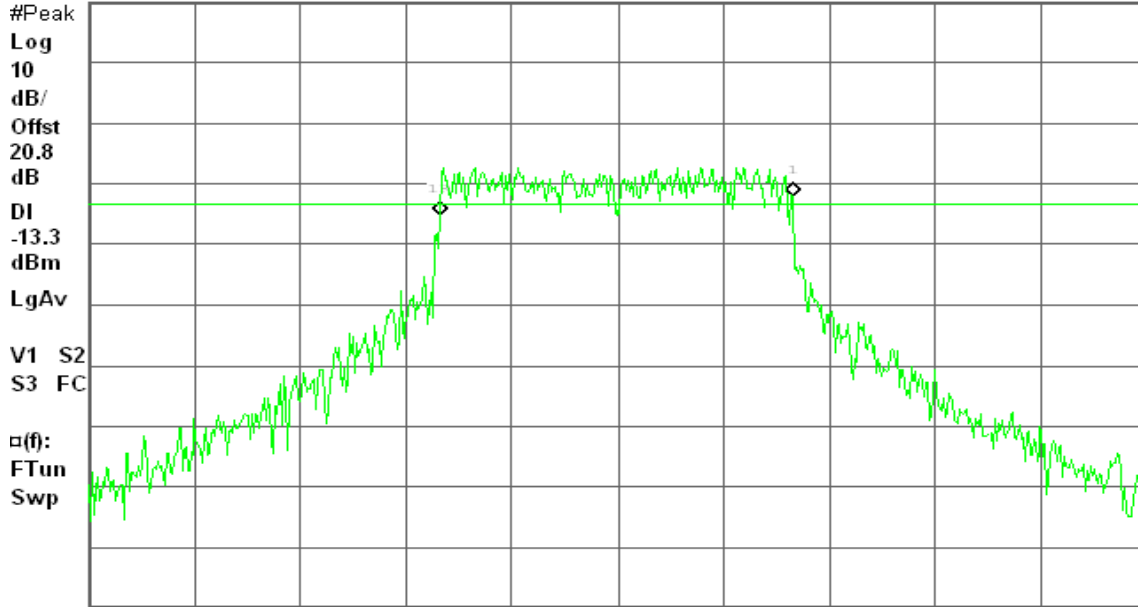
6dB BW, a Mode Low Ch.

Δ Mkr1 16.58 MHz

Ref 20 dBm

Atten 10 dB

3.18 dB



Center 5.745 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

6dB Bandwidth (CH Mid)

Agilent 01:00:42 Nov 11, 2009

R T

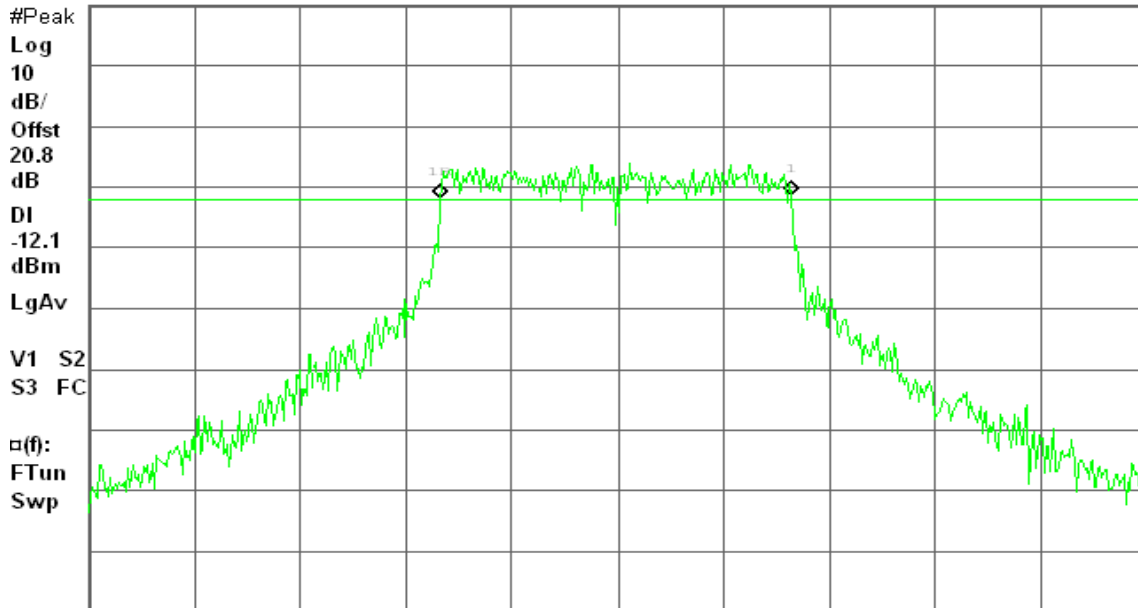
6dB BW, a Mode Mid Ch.

Δ Mkr1 16.50 MHz

Ref 20 dBm

Atten 10 dB

0.46 dB



Center 5.785 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)



6dB Bandwidth (CH High)

Agilent 01:05:14 Nov 11, 2009

R T

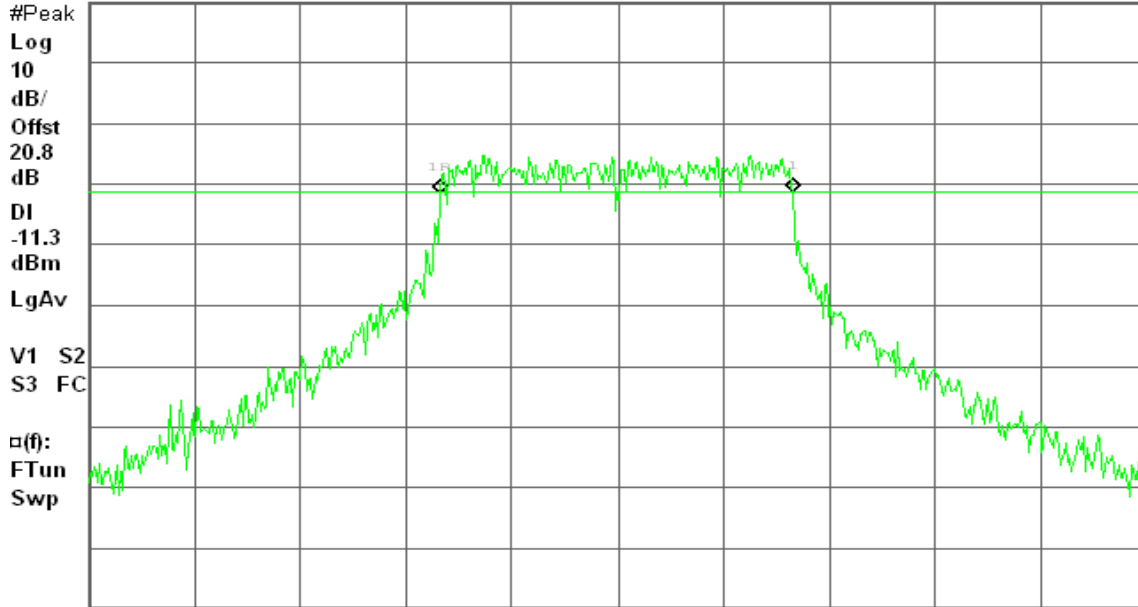
6dB BW, a Mode High Ch.

Δ Mkr1 16.58 MHz

Ref 20 dBm

Atten 10 dB

0.19 dB



Center 5.825 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)



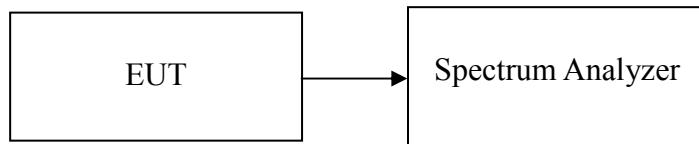
7.2 PEAK POWER

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

1. Peak power is measured using the spectrum analyzer's internal channel power integration function.
2. Power is integrated over a bandwidth greater than or equal to the 99% bandwidth.

TEST RESULTS

No non-compliance noted.



Test Data

Test mode: IEEE 802.11b

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	15.91	0.0390	1.00	PASS
Mid	2437	17.07	0.0509		PASS
High	2462	17.93	0.0621		PASS

Test mode: IEEE 802.11g

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	18.34	0.0682	1.00	PASS
Mid	2437	18.25	0.0668		PASS
High	2462	18.42	0.0695		PASS

Test mode: IEEE 802.11a mode / 5745 ~ 5825MHz

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	5745	16.46	0.0443	1.00	PASS
Mid	5785	16.90	0.0490		PASS
High	5825	17.52	0.0565		PASS



Test Plot

IEEE 802.11b

Peak Power (CH Low)

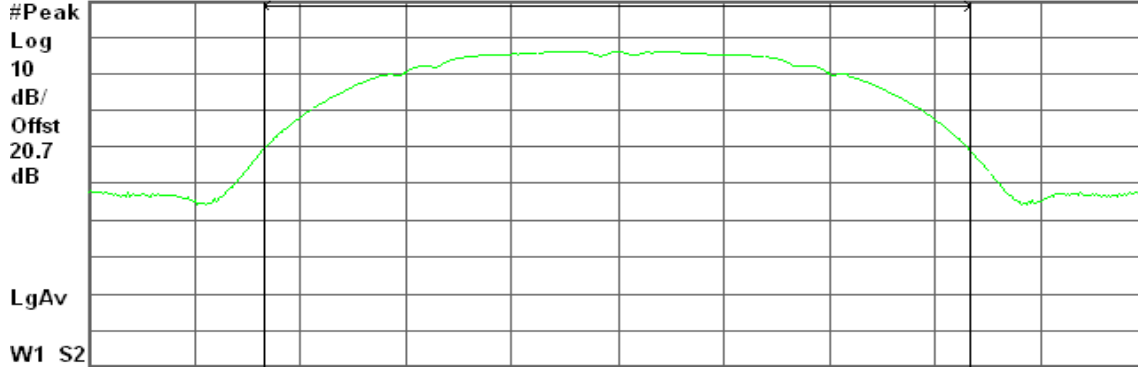
Agilent 00:38:48 Nov 11, 2009

R L

Peak Output Power (DTS), b Mode Low Ch.

Ref 20 dBm

Atten 10 dB



Center 2.412 00 GHz

Span 30 MHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms (601 pts)

Channel Power

Power Spectral Density

15.91 dBm / 20.0000 MHz

-57.10 dBm/Hz

Peak Power (CH Mid)

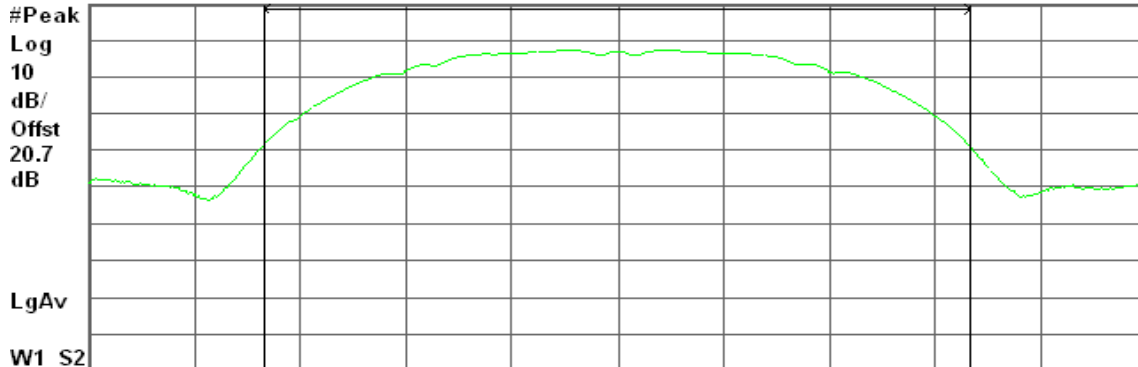
Agilent 00:43:35 Nov 11, 2009

R T

Peak Output Power (DTS), b Mode Mid Ch.

Ref 20 dBm

Atten 10 dB



Center 2.437 00 GHz

Span 30 MHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms (601 pts)

Channel Power

Power Spectral Density

17.07 dBm / 20.0000 MHz

-55.94 dBm/Hz



Peak Power (CH High)

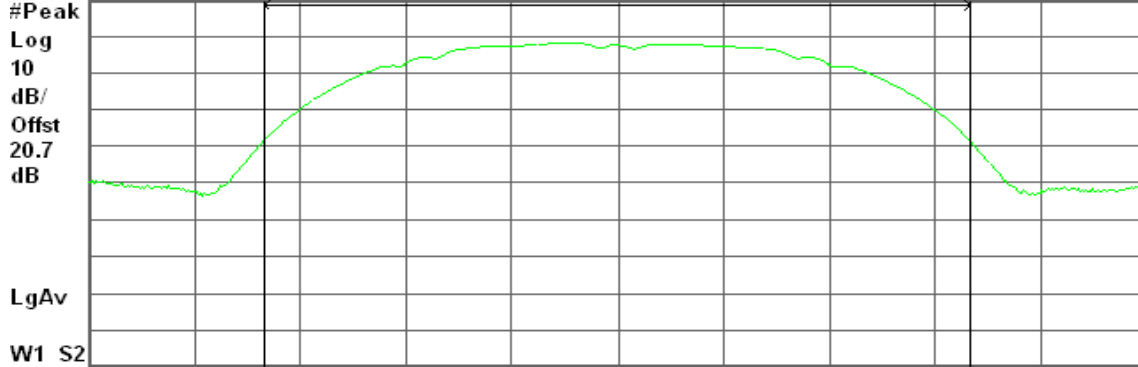
Agilent 00:47:51 Nov 11, 2009

R T

Peak Output Power (DTS), b Mode High Ch.

Ref 20 dBm

Atten 10 dB



Center 2.462 00 GHz

Span 30 MHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms (601 pts)

Channel Power

Power Spectral Density

17.93 dBm / 20.0000 MHz

-55.08 dBm/Hz

IEEE 802.11g

Peak Power (CH Low)

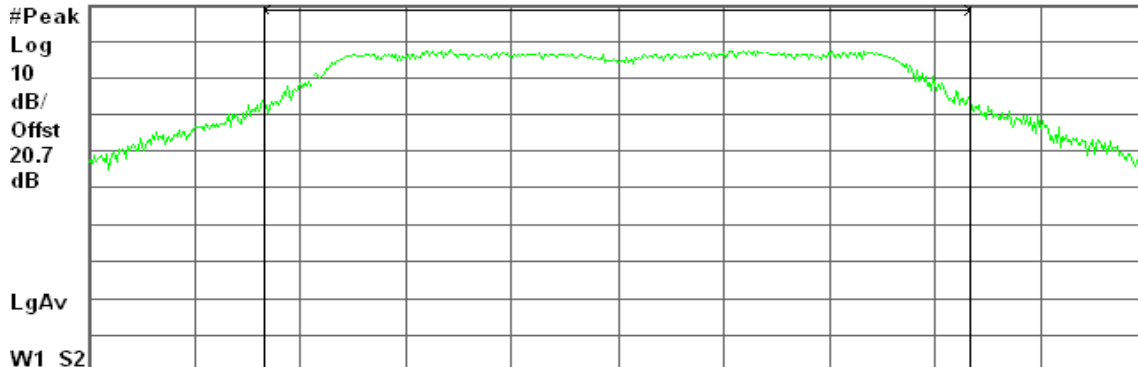
Agilent 00:20:39 Nov 11, 2009

R T

Peak Output Power (DTS), g Mode Low Ch.

Ref 20 dBm

Atten 10 dB



Center 2.412 00 GHz

Span 30 MHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms (601 pts)

Channel Power

Power Spectral Density

18.34 dBm / 20.0000 MHz

-54.67 dBm/Hz



Peak Power (CH Mid)

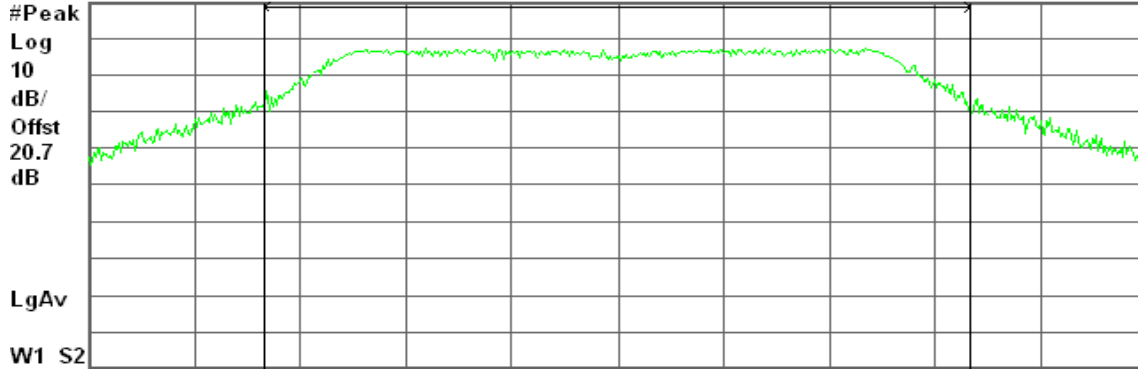
Agilent 00:25:26 Nov 11, 2009

R T

Peak Output Power (DTS), g Mode Mid Ch.

Ref 20 dBm

Atten 10 dB



Center 2.437 00 GHz

Span 30 MHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms (601 pts)

Channel Power

Power Spectral Density

18.25 dBm / 20.0000 MHz

-54.76 dBm/Hz

Peak Power (CH High)

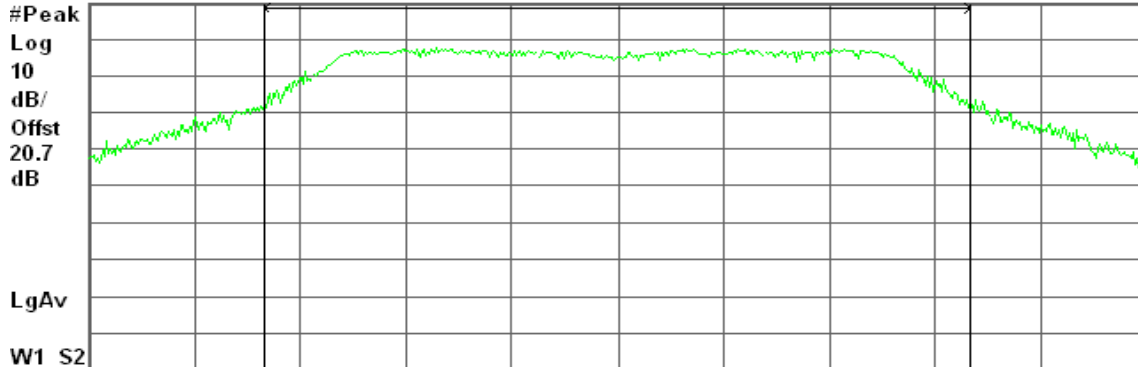
Agilent 00:29:51 Nov 11, 2009

R T

Peak Output Power (DTS), g Mode High Ch.

Ref 20 dBm

Atten 10 dB



Center 2.462 00 GHz

Span 30 MHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms (601 pts)

Channel Power

Power Spectral Density

18.42 dBm / 20.0000 MHz

-54.59 dBm/Hz



IEEE 802.11a mode / 5745 ~ 5825MHz

Peak Power (CH Low)

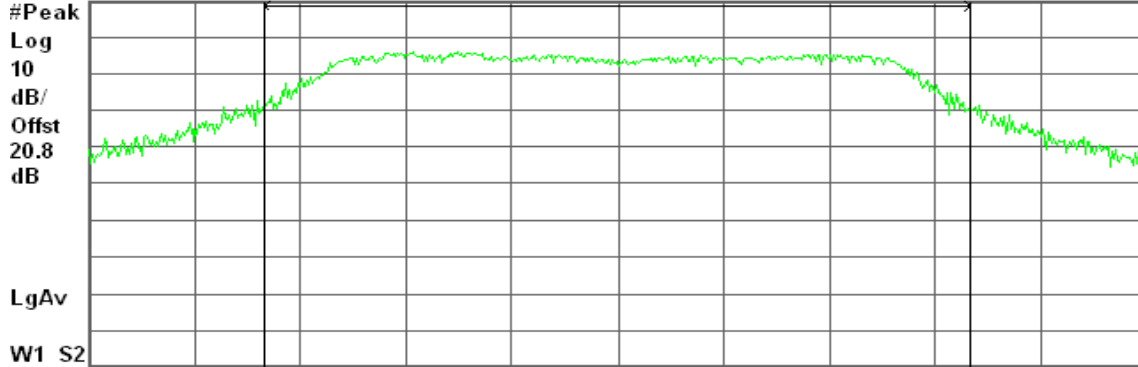
Agilent 00:59:38 Nov 11, 2009

R T

Peak Output Power (DTS), a Mode Low Ch.

Ref 20 dBm

Atten 10 dB



Center 5.745 00 GHz

Span 30 MHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms (601 pts)

Channel Power

Power Spectral Density

16.46 dBm / 20.0000 MHz

-56.55 dBm/Hz

Peak Power (CH Mid)

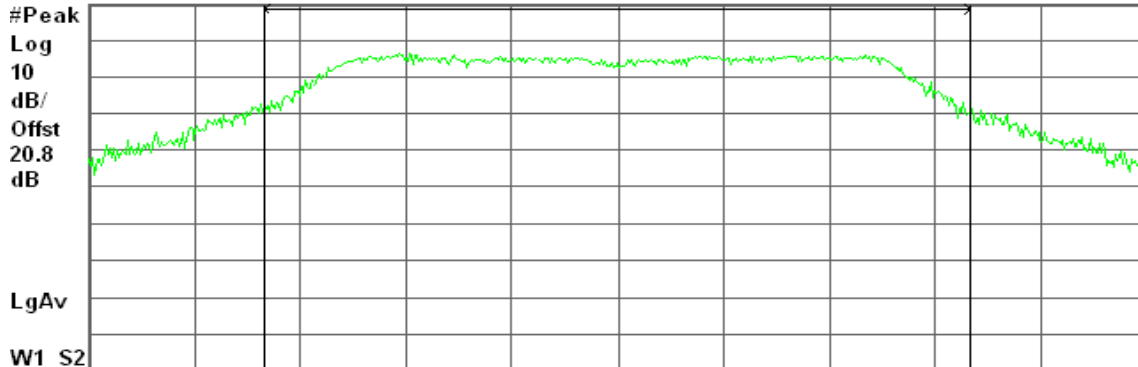
Agilent 01:01:21 Nov 11, 2009

R T

Peak Output Power (DTS), a Mode Mid Ch.

Ref 20 dBm

Atten 10 dB



Center 5.785 00 GHz

Span 30 MHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms (601 pts)

Channel Power

Power Spectral Density

16.90 dBm / 20.0000 MHz

-56.11 dBm/Hz



Peak Power (CH High)

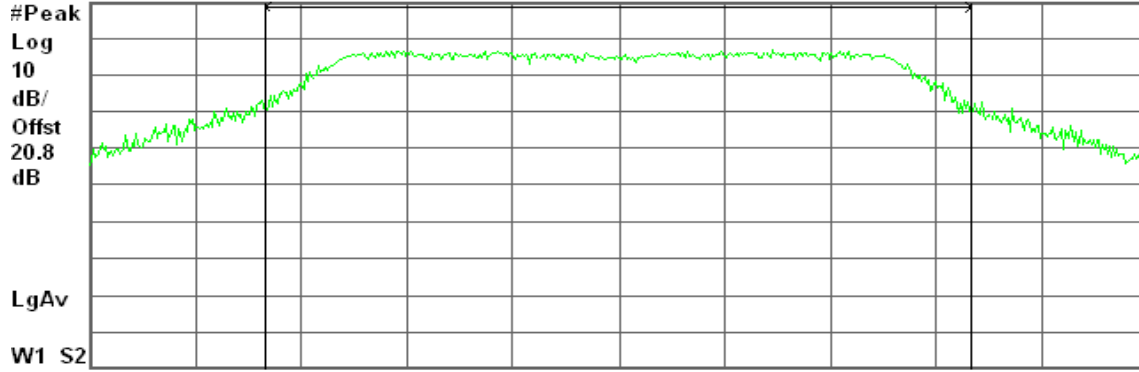
Agilent 01:05:59 Nov 11, 2009

R T

Peak Output Power (DTS), a Mode High Ch.

Ref 20 dBm

Atten 10 dB



Center 5.825 00 GHz

Span 30 MHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms (601 pts)

Channel Power

Power Spectral Density

17.52 dBm / 20.0000 MHz

-55.49 dBm/Hz

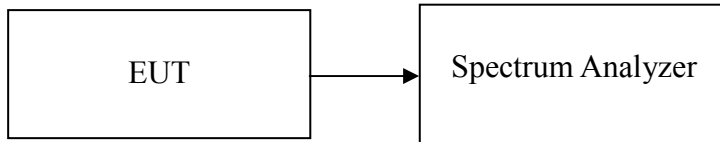


7.3 AVERAGE POWER

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)
Low	2412	12.60
Mid	2437	14.32
High	2462	14.75

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Output Power (dBm)
Low	2412	10.89
Mid	2437	11.10
High	2462	11.13

Test mode: IEEE 802.11a mode / 5745 ~ 5825MHz

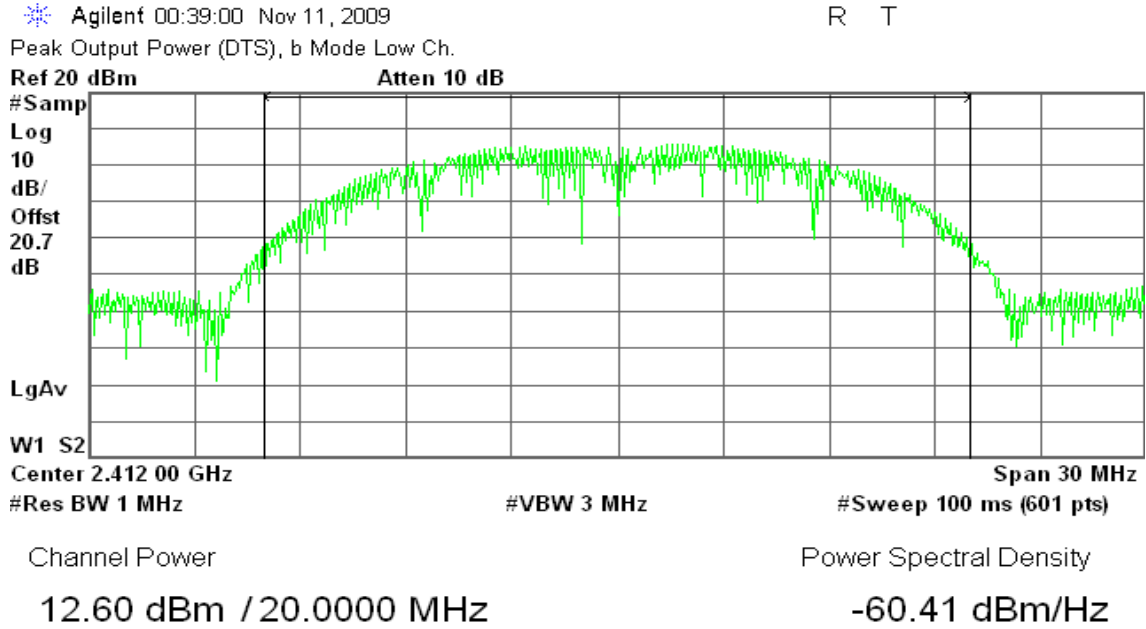
Channel	Frequency (MHz)	Output Power (dBm)
Low	5745	9.35
Mid	5785	9.67
High	5825	10.40



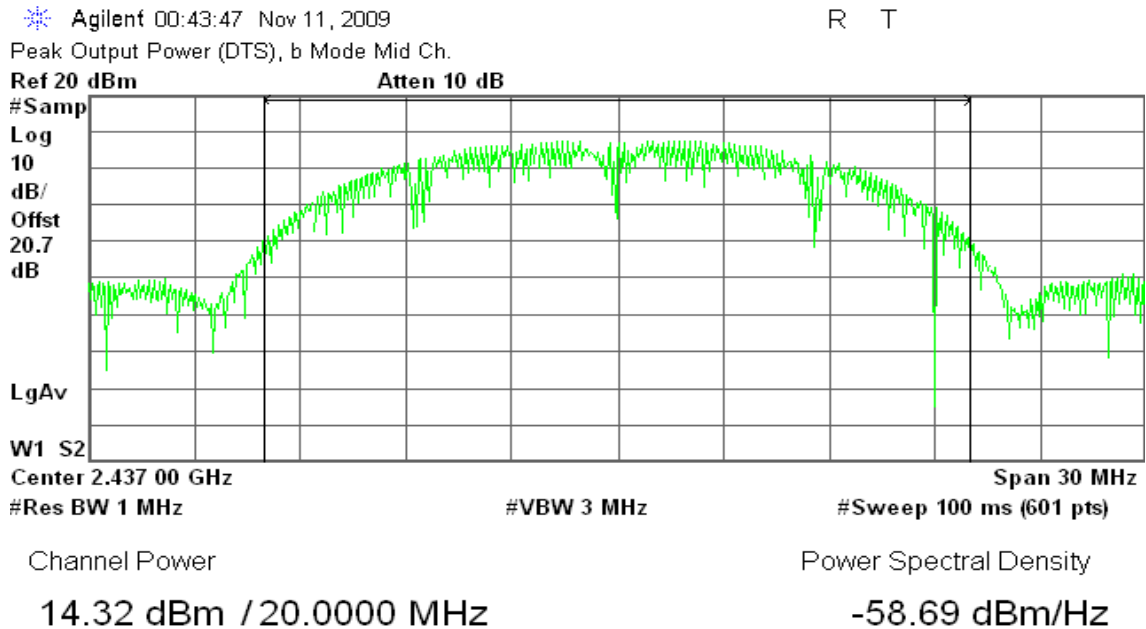
Test Plot

IEEE 802.11b

Average Power (CH Low)



Average Power (CH Mid)





Average Power (CH High)

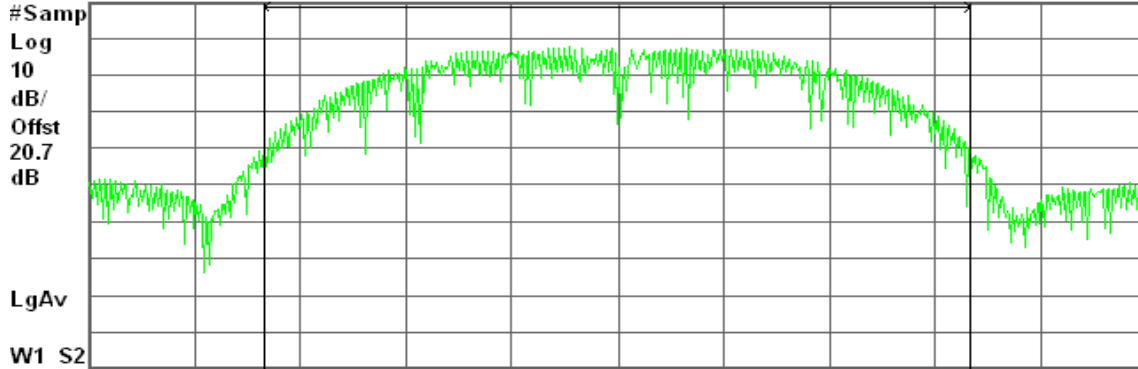
Agilent 00:48:06 Nov 11, 2009

R T

Peak Output Power (DTS), b Mode High Ch.

Ref 20 dBm

Atten 10 dB



Center 2.462 00 GHz

Span 30 MHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms (601 pts)

Channel Power

Power Spectral Density

14.75 dBm / 20.0000 MHz

-58.26 dBm/Hz

IEEE 802.11g

Average Power (CH Low)

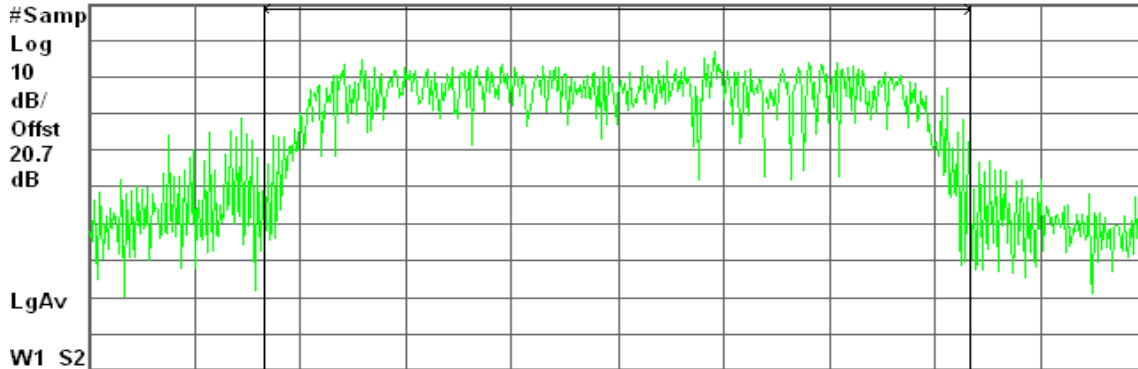
Agilent 00:20:58 Nov 11, 2009

R T

Peak Output Power (DTS), g Mode Low Ch.

Ref 20 dBm

Atten 10 dB



Center 2.412 00 GHz

Span 30 MHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms (601 pts)

Channel Power

Power Spectral Density

10.89 dBm / 20.0000 MHz

-62.12 dBm/Hz



Average Power (CH Mid)

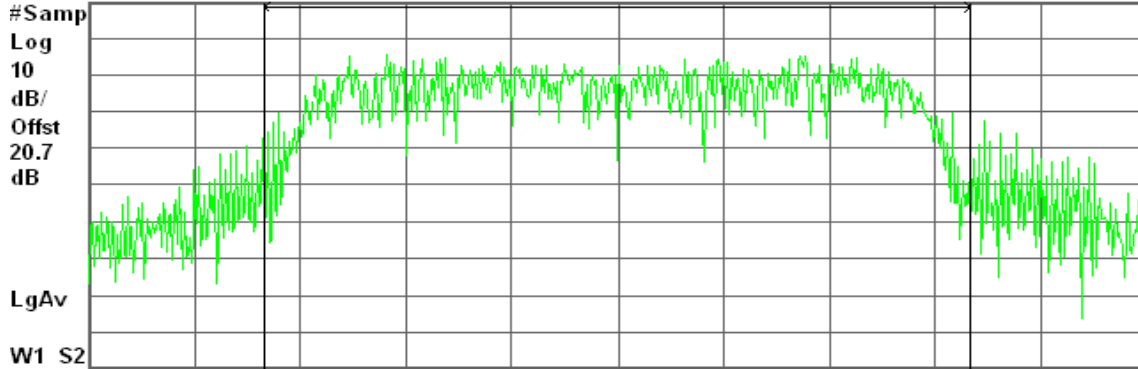
Agilent 00:25:42 Nov 11, 2009

R T

Peak Output Power (DTS), g Mode Mid Ch.

Ref 20 dBm

Atten 10 dB



Center 2.437 00 GHz

Span 30 MHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms (601 pts)

Channel Power

Power Spectral Density

11.10 dBm / 20.0000 MHz

-61.91 dBm/Hz

Average Power (CH High)

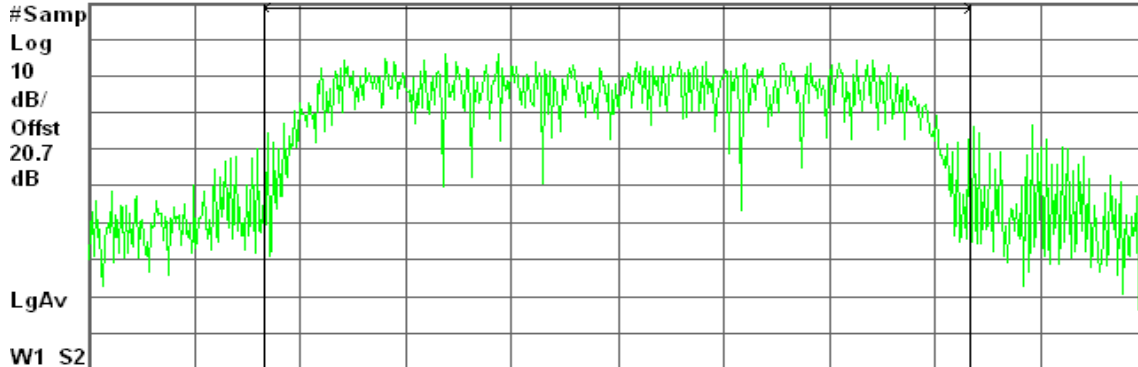
Agilent 00:30:04 Nov 11, 2009

R T

Peak Output Power (DTS), g Mode High Ch.

Ref 20 dBm

Atten 10 dB



Center 2.462 00 GHz

Span 30 MHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms (601 pts)

Channel Power

Power Spectral Density

11.13 dBm / 20.0000 MHz

-61.88 dBm/Hz



IEEE 802.11a mode / 5745 ~ 5825MHz

Average Power (CH Low)

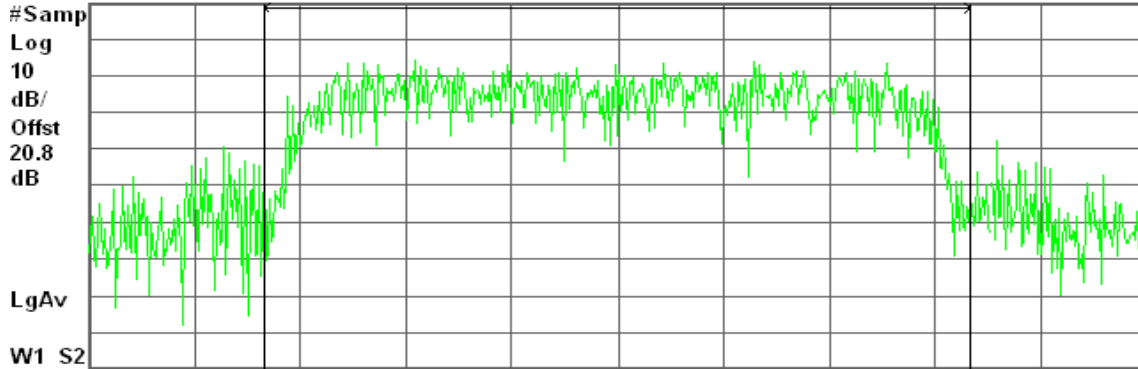
Agilent 00:59:53 Nov 11, 2009

R T

Peak Output Power (DTS), a Mode Low Ch.

Ref 20 dBm

Atten 10 dB



Center 5.745 00 GHz

Span 30 MHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms (601 pts)

Channel Power

Power Spectral Density

9.35 dBm / 20.0000 MHz

-63.66 dBm/Hz

Average Power (CH Mid)

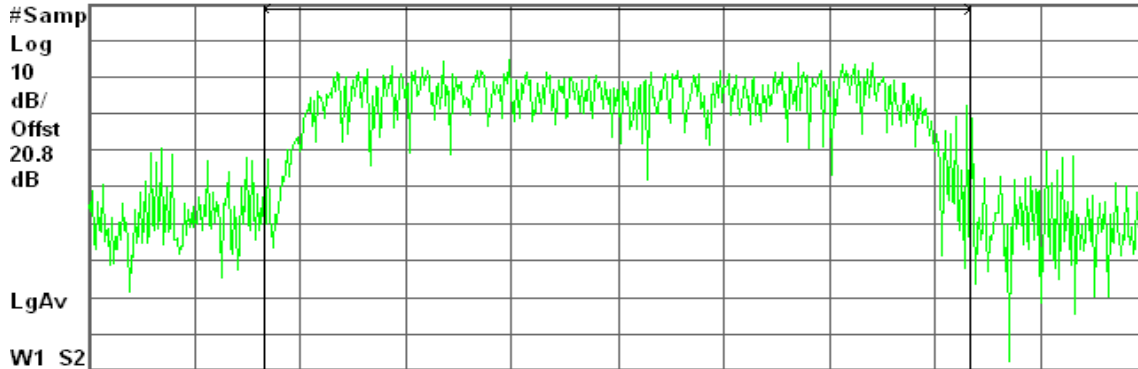
Agilent 01:01:34 Nov 11, 2009

R T

Peak Output Power (DTS), a Mode Mid Ch.

Ref 20 dBm

Atten 10 dB



Center 5.785 00 GHz

Span 30 MHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms (601 pts)

Channel Power

Power Spectral Density

9.67 dBm / 20.0000 MHz

-63.34 dBm/Hz



Average Power (CH High)

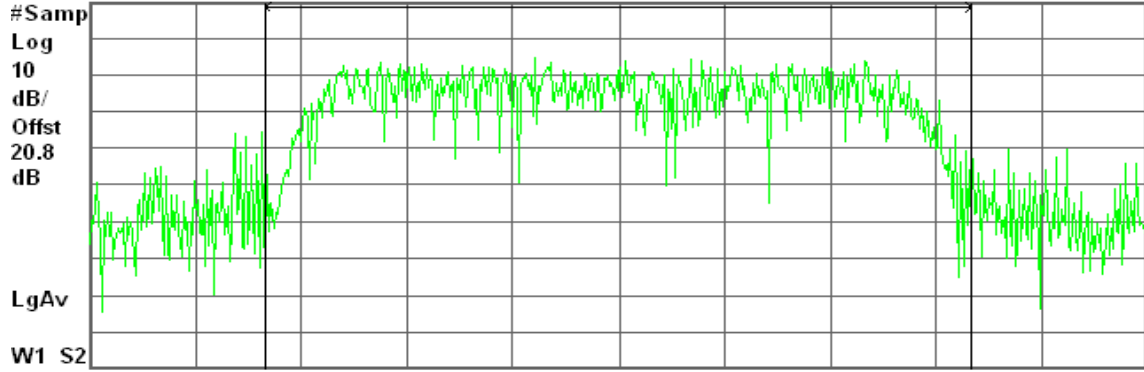
Agilent 01:06:11 Nov 11, 2009

R T

Peak Output Power (DTS), a Mode High Ch.

Ref 20 dBm

Atten 10 dB



Center 5.825 00 GHz

Span 30 MHz

#Res BW 1 MHz

#VBW 3 MHz

#Sweep 100 ms (601 pts)

Channel Power

Power Spectral Density

10.40 dBm / 20.0000 MHz

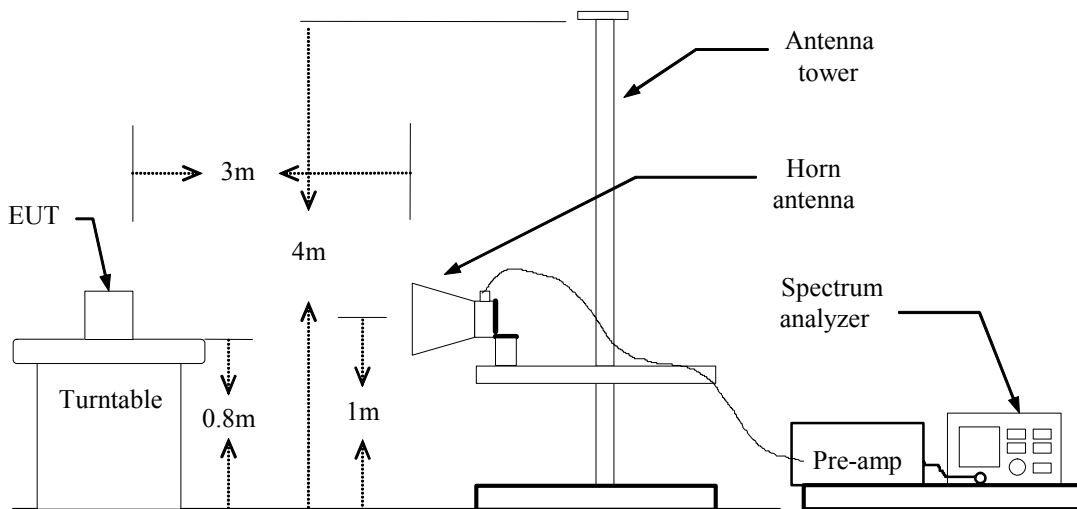
-62.61 dBm/Hz

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

No non-compliance noted.



802.11a Mode

1. Operating Frequency: 5745-5825MHz
2. CH Low: 5745MHz, CH High: 5825MHz
3. 6dB bandwidth: CH Low: 16.58MHz, CH High: 16.58MHz

Because the mentioned conditions, the test is not applicable.



Band Edges (IEEE 802.11b / CH Low)

Detector mode: Peak

Polarity: Vertical

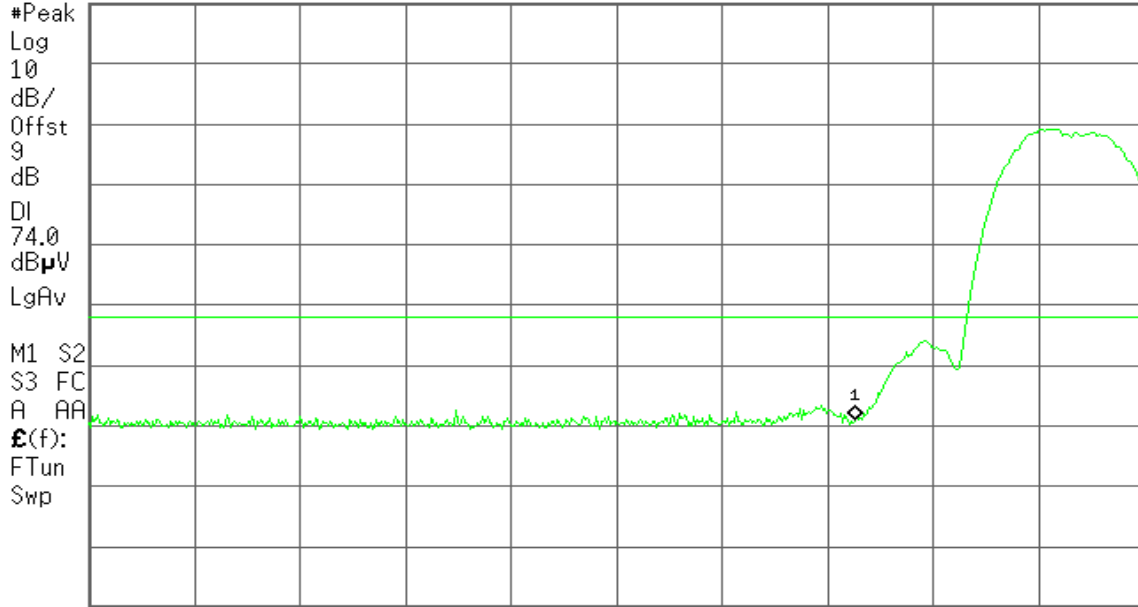
Agilent

R T

Mkr1 2.390 0 GHz
56.94 dBμV

Ref 126 dBμV

#Atten 20 dB



Start 2.310 0 GHz

Stop 2.420 0 GHz

#Res BW 1 MHz

#VBW 1 MHz

#Sweep 100 ms (601 pts)

Detector mode: Average

Polarity: Vertical

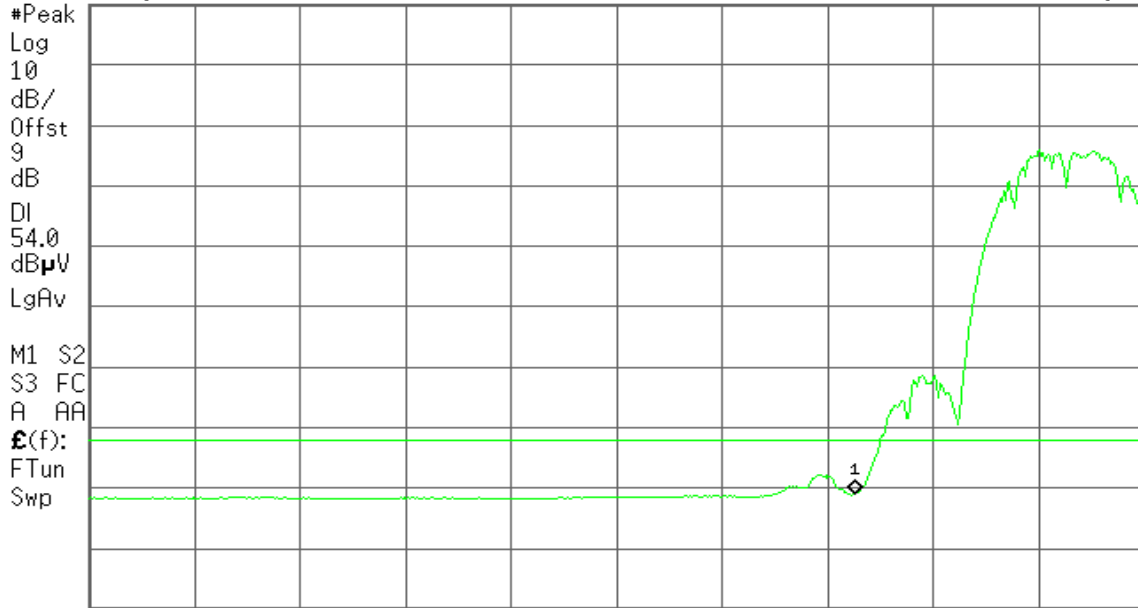
Agilent

R T

Mkr1 2.390 0 GHz
45.02 dBμV

Ref 126 dBμV

#Atten 20 dB



Start 2.310 0 GHz

Stop 2.420 0 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 30.32 s (601 pts)



Detector mode: Peak

Polarity: Horizontal

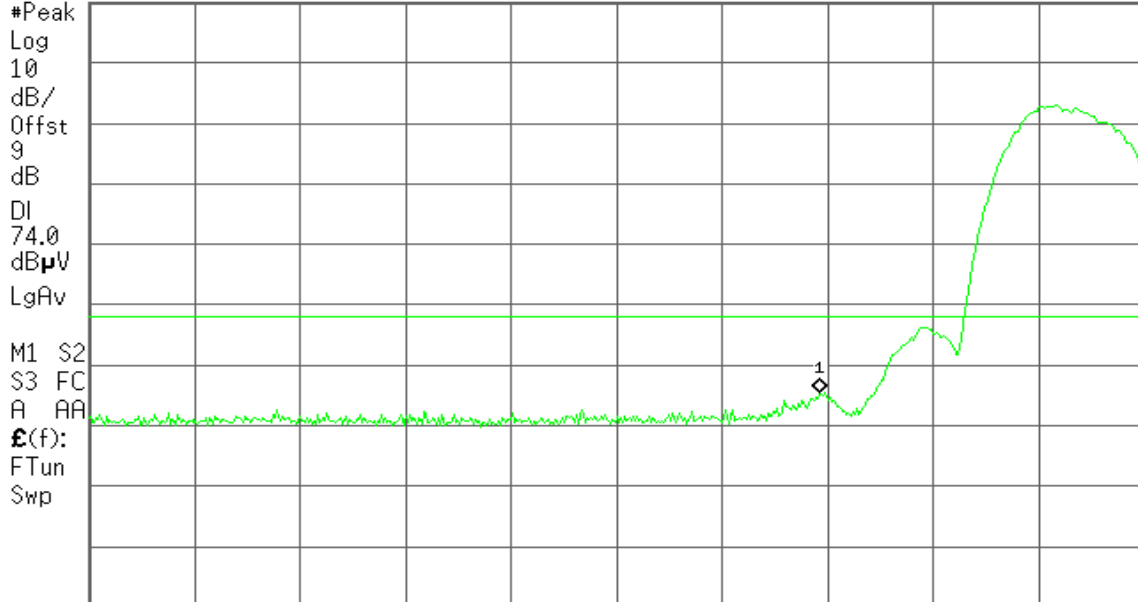
Agilent

R T

Mkr1 2.386 2 GHz
61.37 dBμV

Ref 126 dBμV

#Atten 20 dB



Start 2.310 0 GHz

Stop 2.420 0 GHz

#Res BW 1 MHz

#VBW 1 MHz

#Sweep 100 ms (601 pts)

Detector mode: Average

Polarity: Horizontal

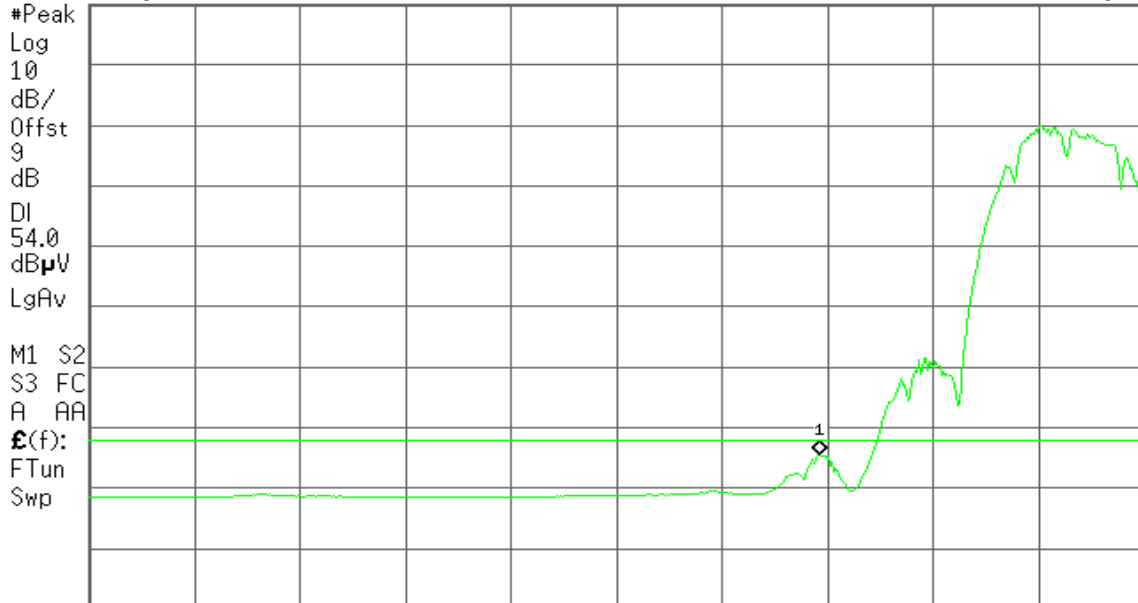
Agilent

R T

Mkr1 2.386 2 GHz
51.60 dBμV

Ref 126 dBμV

#Atten 20 dB



Start 2.310 0 GHz

Stop 2.420 0 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 30.32 s (601 pts)



Band Edges (IEEE 802.11b / CH High)

Detector mode: Peak

Polarity: Vertical

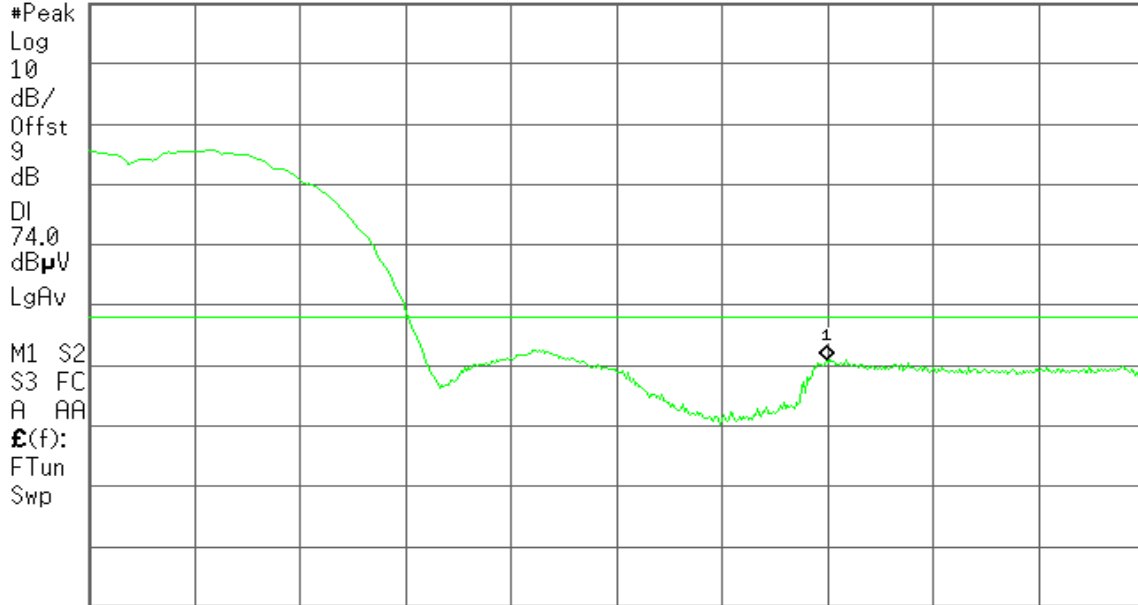
Agilent

R T

Mkr1 2.487 97 GHz
66.95 dB μ V

Ref 126 dB μ V

#Atten 20 dB



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

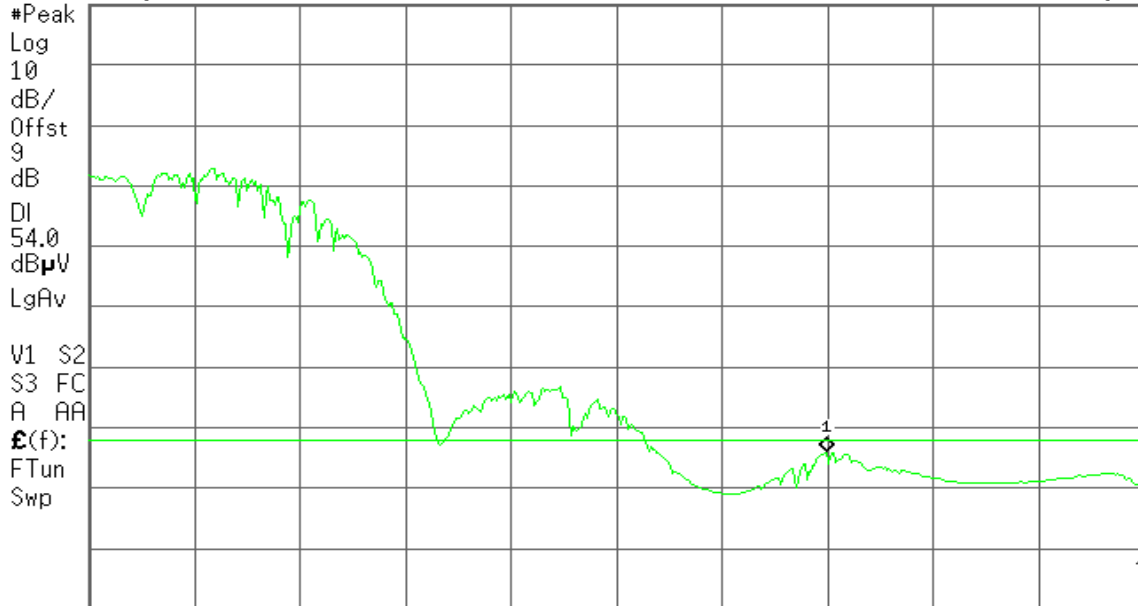
Agilent

R T

Mkr1 2.487 97 GHz
51.98 dB μ V

Ref 126 dB μ V

#Atten 20 dB



Start 2.460 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 11.03 s (601 pts)



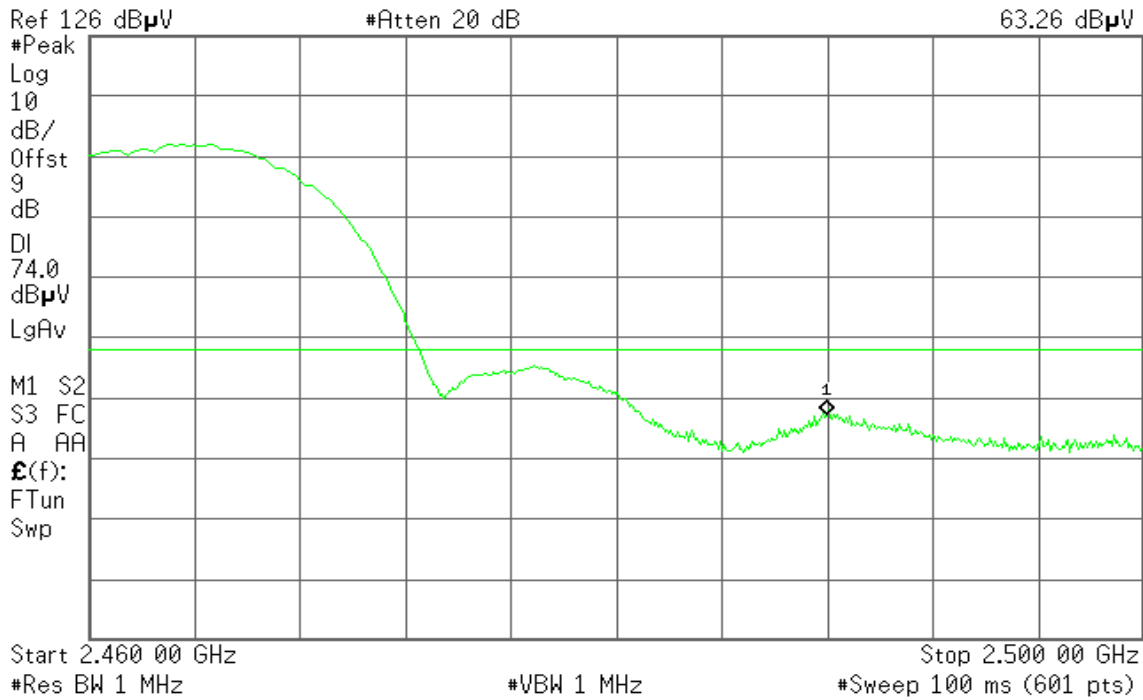
Detector mode: Peak

Polarity: Horizontal

Agilent

R T

Mkr1 2.488 03 GHz
63.26 dBµV



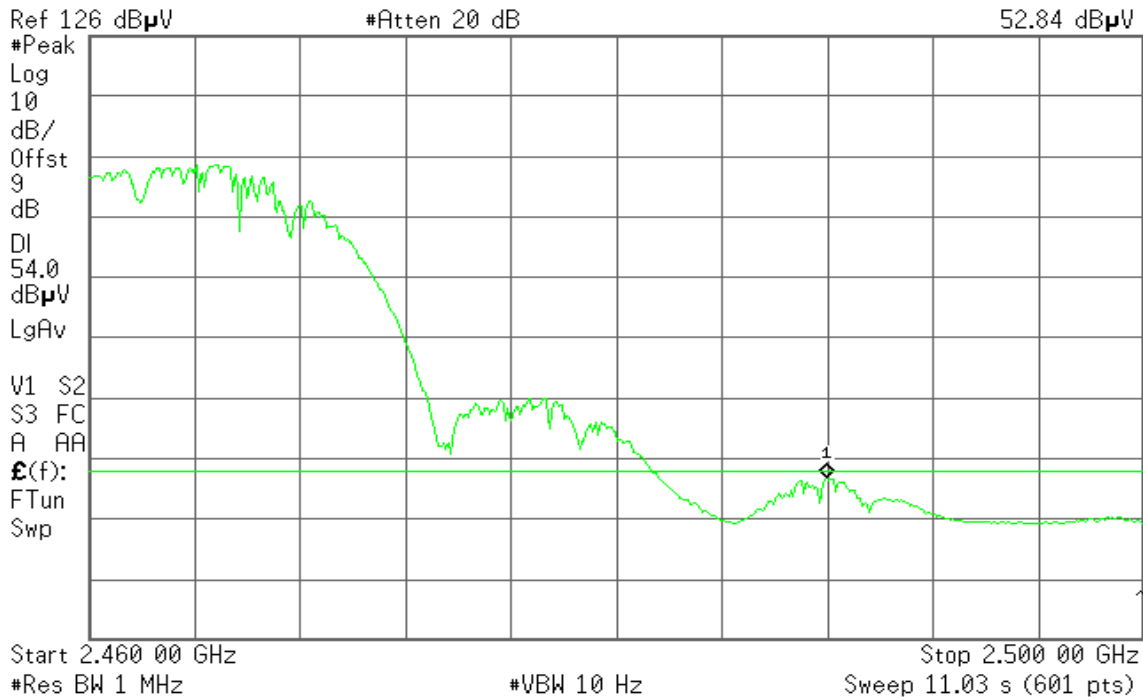
Detector mode: Average

Polarity: Horizontal

Agilent

R T

Mkr1 2.488 03 GHz
52.84 dBµV





Band Edges (IEEE 802.11g / CH Low)

Detector mode: Peak

Polarity: Vertical

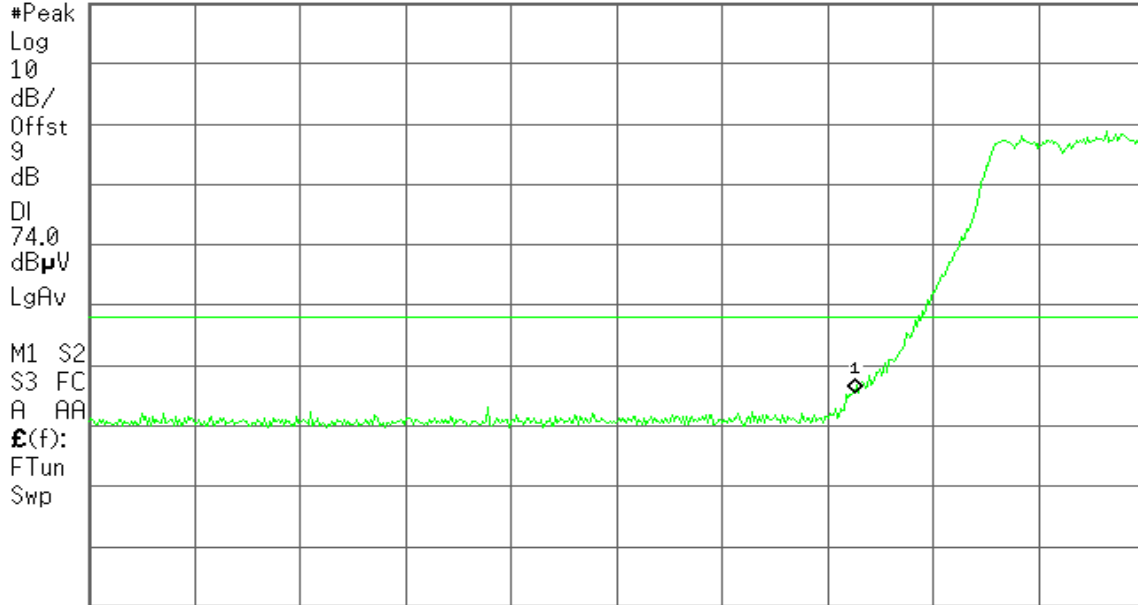
Agilent

R T

Mkr1 2.390 0 GHz
61.37 dB μ V

Ref 126 dB μ V

#Atten 20 dB



Start 2.310 0 GHz

Stop 2.420 0 GHz

#Res BW 1 MHz

#VBW 1 MHz

#Sweep 100 ms (601 pts)

Detector mode: Average

Polarity: Vertical

Agilent

R T

Mkr1 2.390 0 GHz
46.55 dB μ V

Ref 126 dB μ V

#Atten 20 dB



Start 2.310 0 GHz

Stop 2.420 0 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 30.32 s (601 pts)



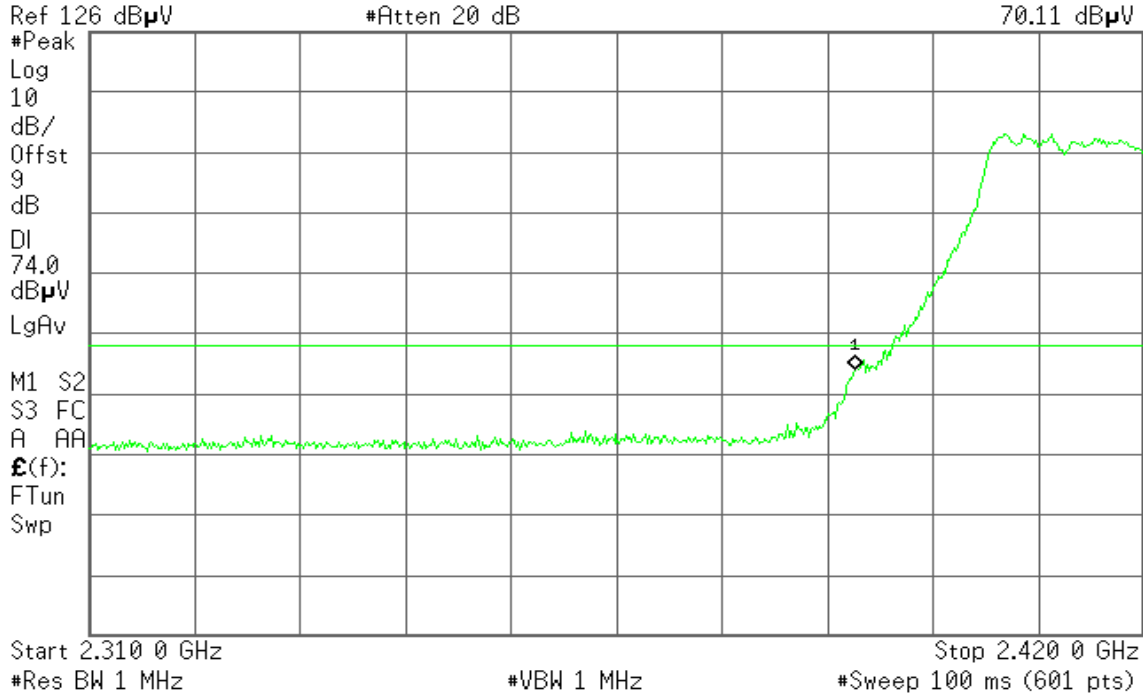
Detector mode: Peak

Polarity: Horizontal

Agilent

R T

Mkr1 2.390 0 GHz
70.11 dBµV



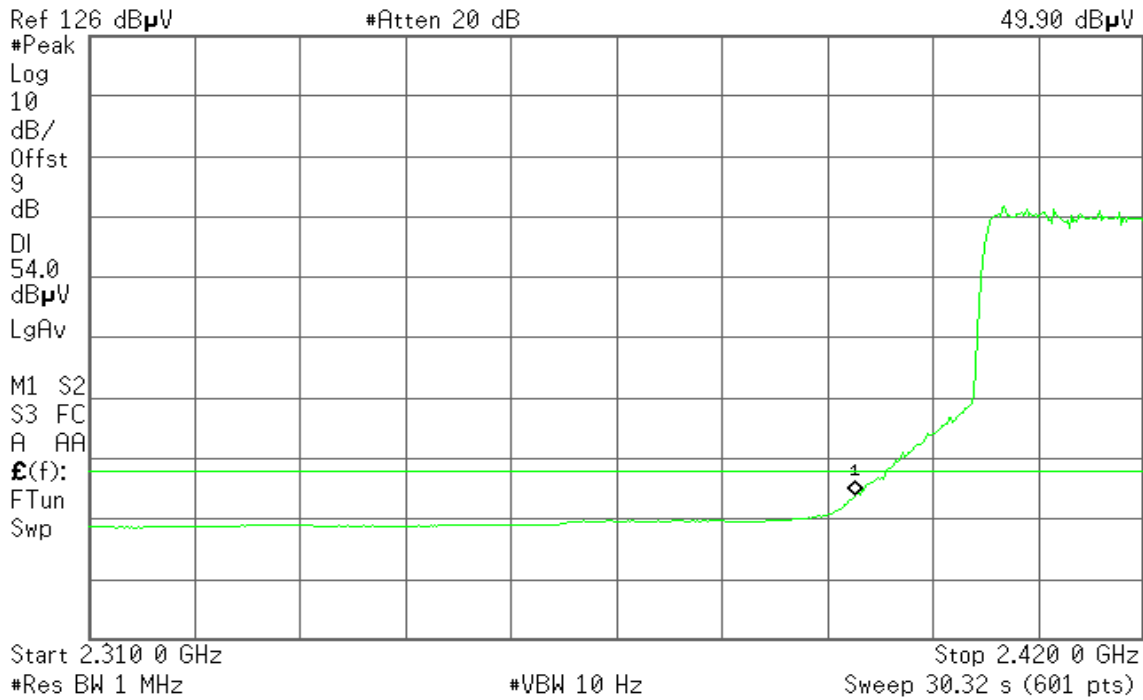
Detector mode: Average

Polarity: Horizontal

Agilent

R T

Mkr1 2.390 0 GHz
49.90 dBµV





Band Edges (IEEE 802.11g / CH High)

Detector mode: Peak

Polarity: Vertical

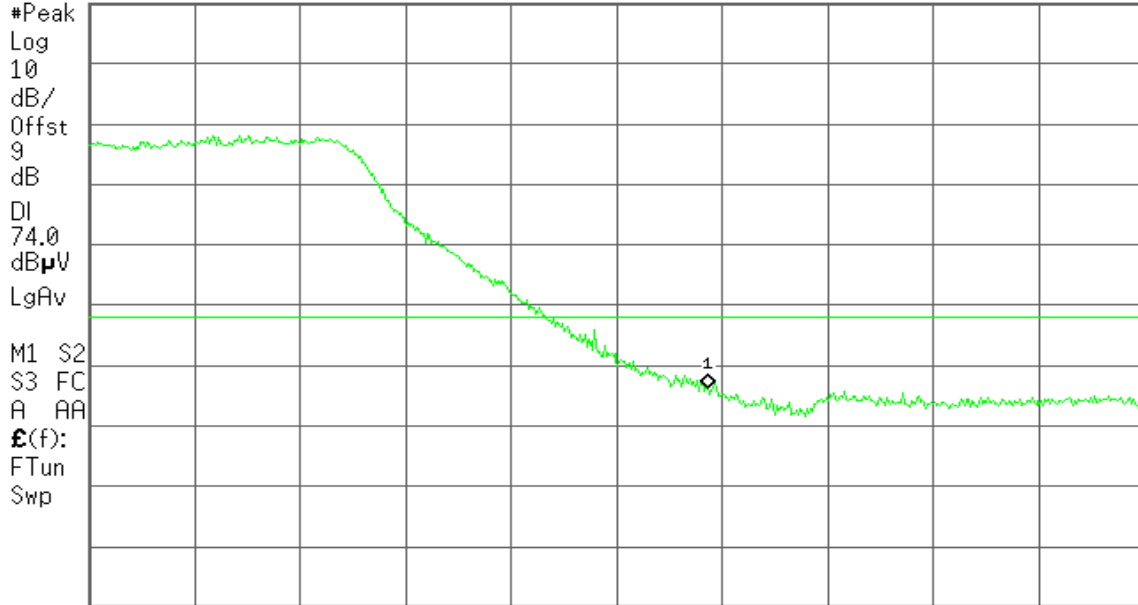
Agilent

R T

Mkr1 2.483 50 GHz
62.19 dB μ V

Ref 126 dB μ V

#Atten 20 dB



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

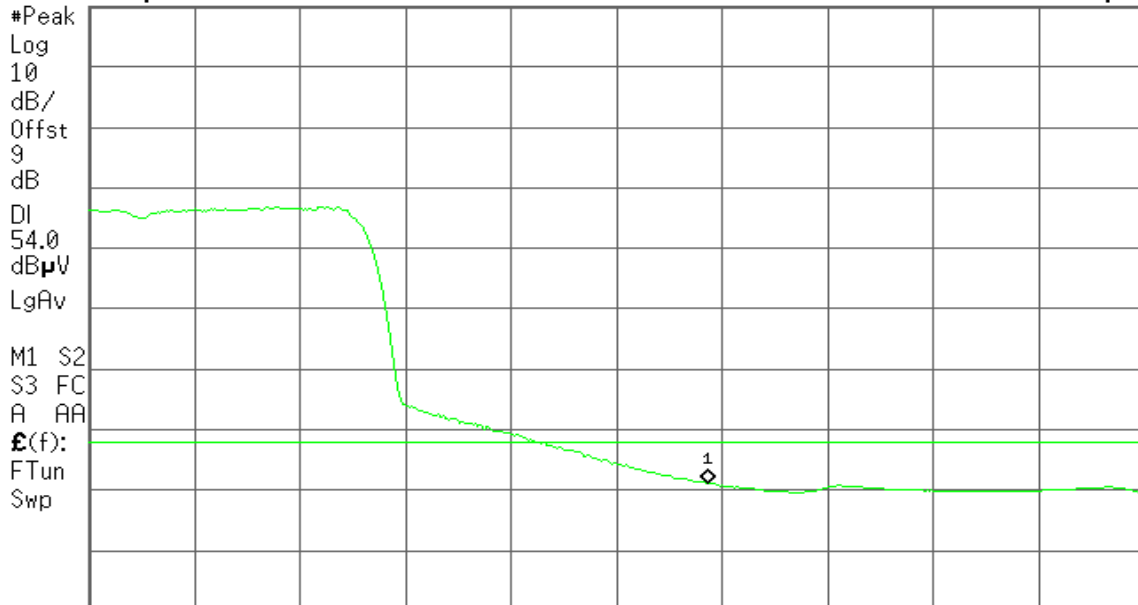
Agilent

R T

Mkr1 2.483 50 GHz
47.15 dB μ V

Ref 126 dB μ V

#Atten 20 dB



Start 2.460 00 GHz[^]

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 11.03 s (601 pts)



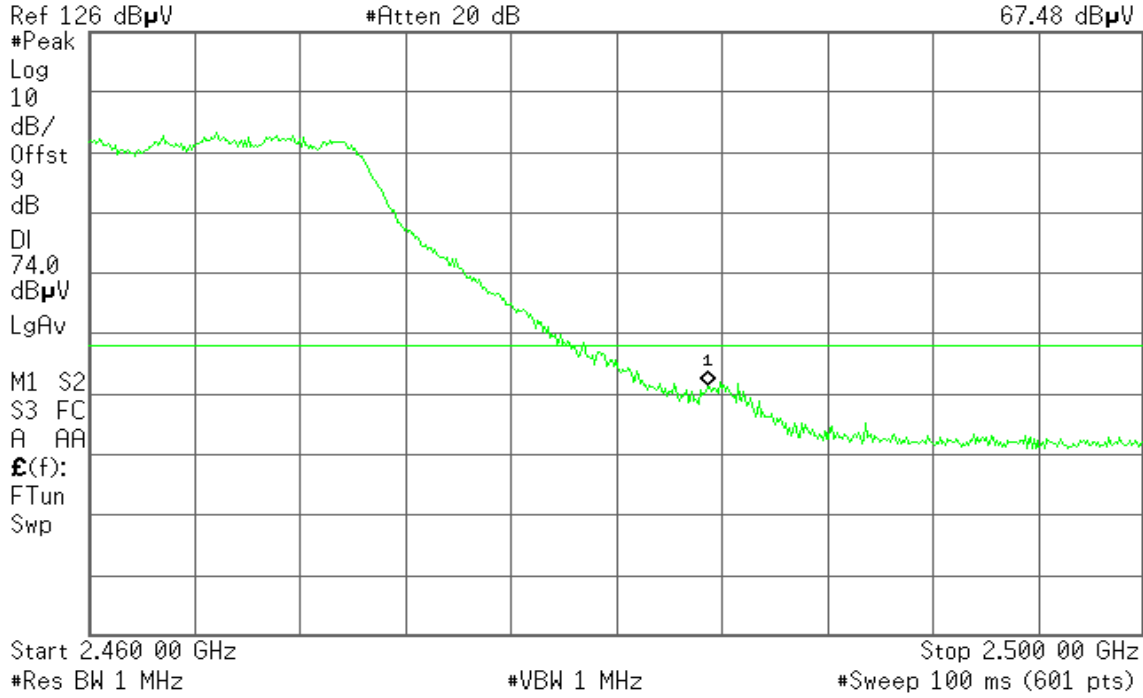
Detector mode: Peak

Polarity: Horizontal

Agilent

R T

Mkr1 2.483 50 GHz
67.48 dBµV



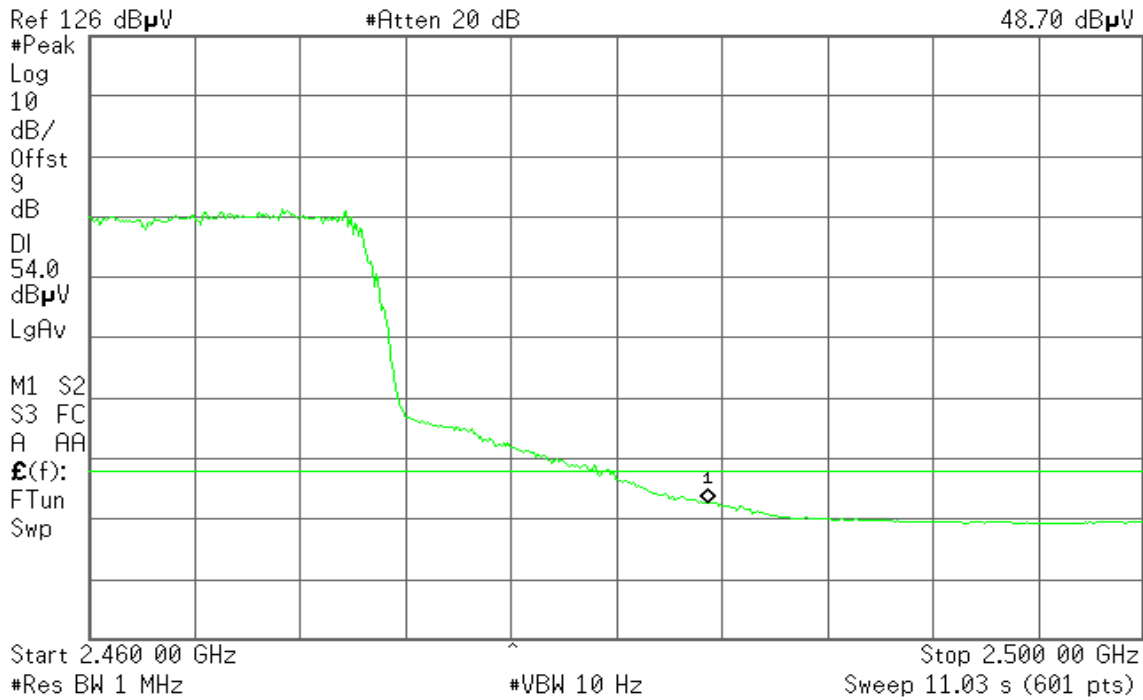
Detector mode: Average

Polarity: Horizontal

Agilent

R T

Mkr1 2.483 50 GHz
48.70 dBµV



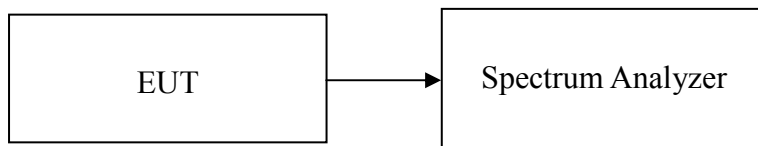


7.5 PEAK POWER SPECTRAL DENSITY

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

Test mode: IEEE 802.11b

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-10.91	8.00	PASS
Mid	2437	-8.97		PASS
High	2462	-8.22		PASS

Test mode: IEEE 802.11g

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-13.64	8.00	PASS
Mid	2437	-14.30		PASS
High	2462	-13.79		PASS

Test mode: IEEE 802.11a mode / 5745 ~ 5825MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	5745	-15.35	8.00	PASS
Mid	5785	-13.23		PASS
High	5825	-10.03		PASS



Test Plot

IEEE 802.11b

PPSD (CH Low)

Agilent 00:41:16 Nov 11, 2009

R T

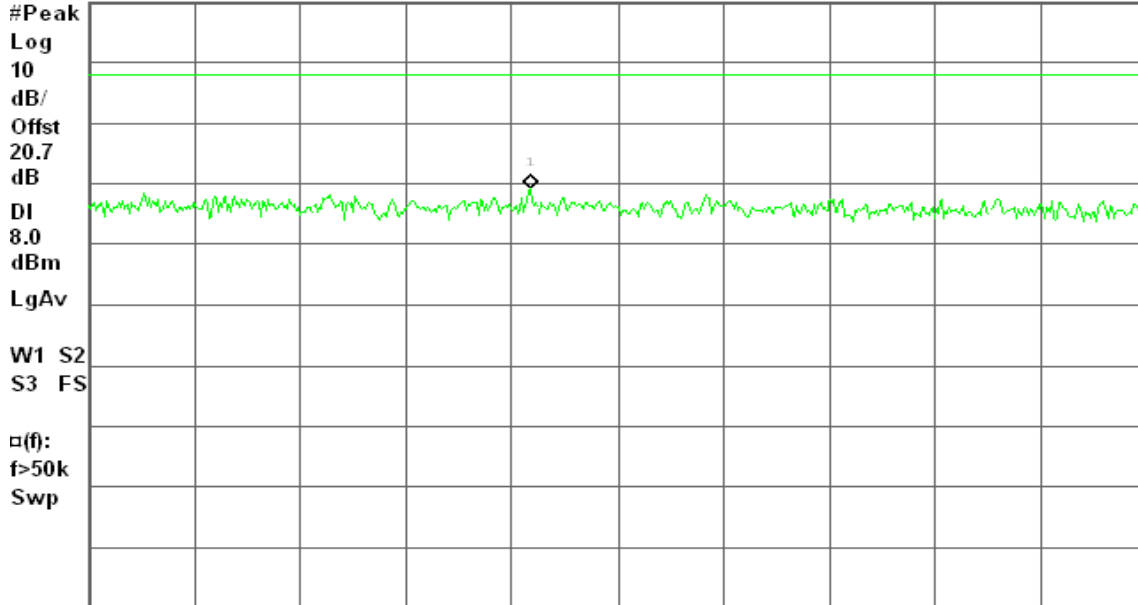
Peak Power Spectral Density, b Mode Low Ch.

Mkr1 2.413 975 4 GHz

Ref 20 dBm

Atten 10 dB

-10.91 dBm



Center 2.414 000 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)

PPSD (CH Mid)

Agilent 00:46:03 Nov 11, 2009

R T

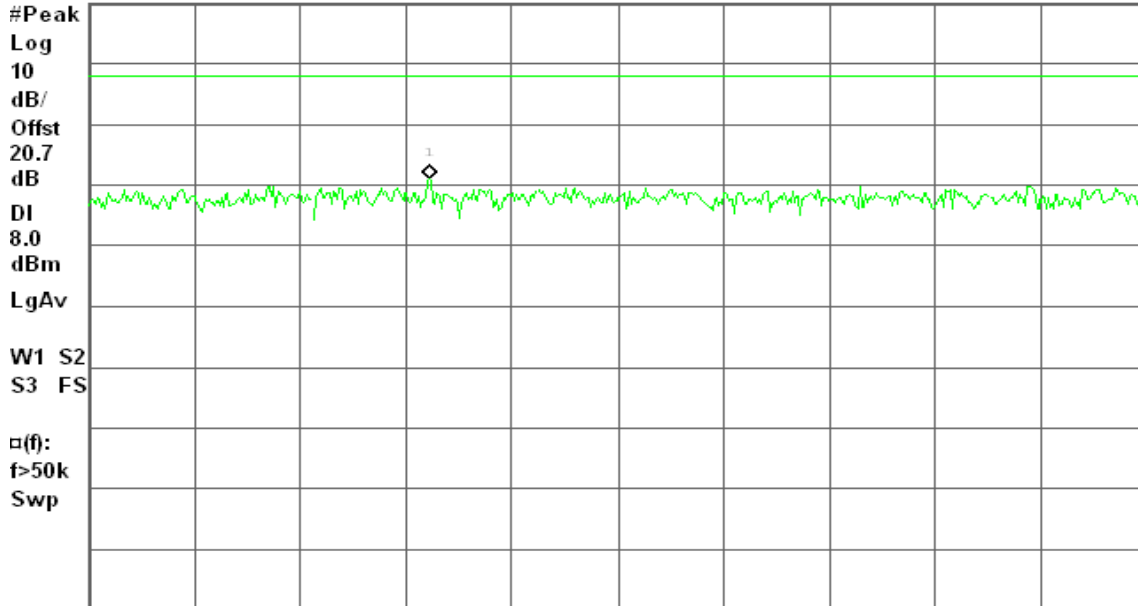
Peak Power Spectral Density, b Mode Mid Ch.

Mkr1 2.435 196 7 GHz

Ref 20 dBm

Atten 10 dB

-8.97 dBm



Center 2.435 250 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)



PPSD (CH High)

Agilent 00:50:22 Nov 11, 2009

R L

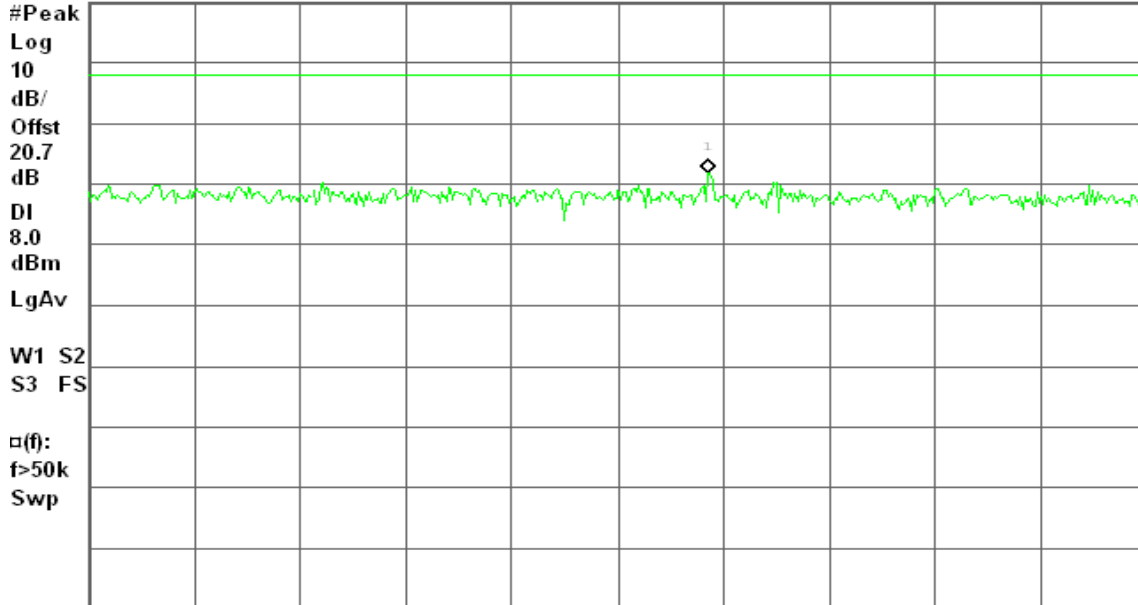
Peak Power Spectral Density, b Mode High Ch.

Mkr1 2.459 475 6 GHz

Ref 20 dBm

Atten 10 dB

-8.22 dBm



Center 2.459 450 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)

IEEE 802.11g

PPSD (CH Low)

Agilent 00:23:13 Nov 11, 2009

R T

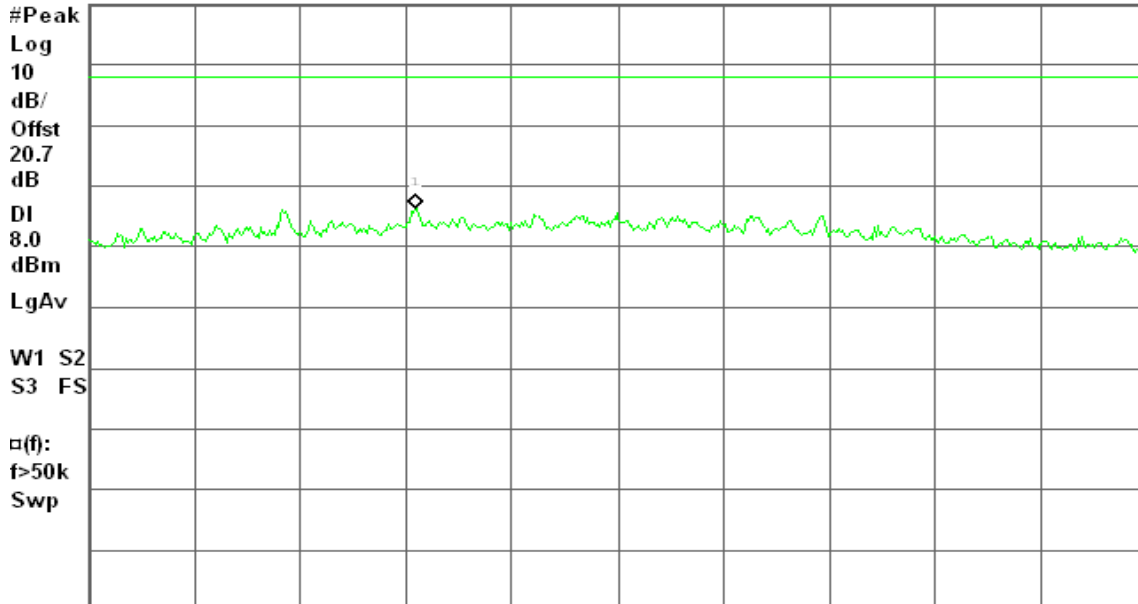
Peak Power Spectral Density, g Mode Low Ch.

Mkr1 2.413 492 7 GHz

Ref 20 dBm

Atten 10 dB

-13.64 dBm



Center 2.413 550 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)



PPSD (CH Mid)

Agilent 00:27:58 Nov 11, 2009

R T

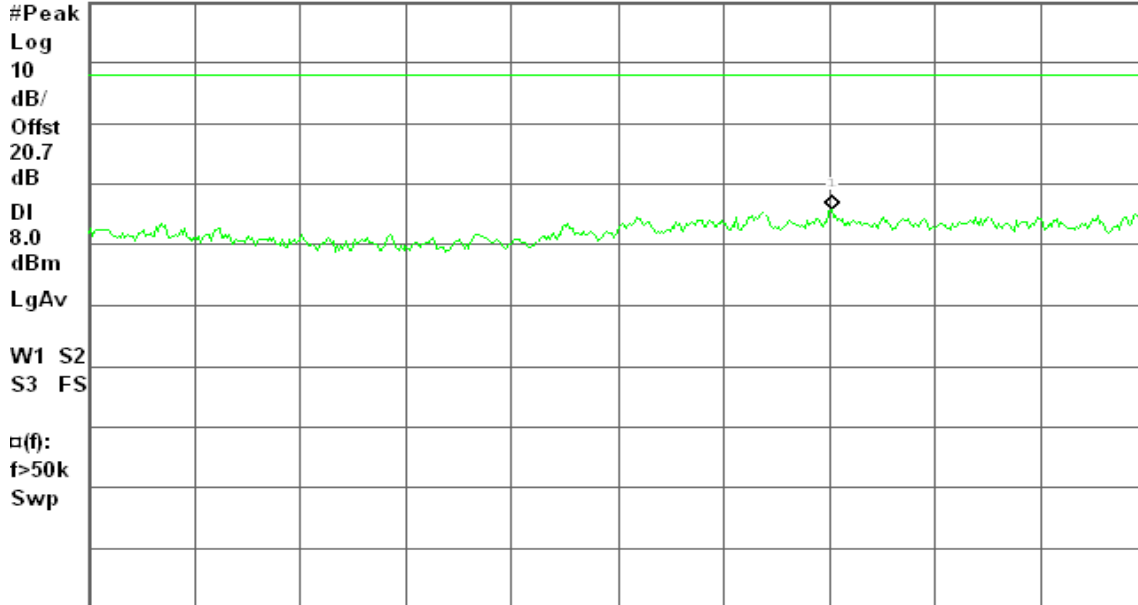
Peak Power Spectral Density, g Mode Mid Ch.

Mkr1 2.439 761 4 GHz

Ref 20 dBm

Atten 10 dB

-14.30 dBm



Center 2.439 700 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)

PPSD (CH High)

Agilent 00:35:57 Nov 11, 2009

R T

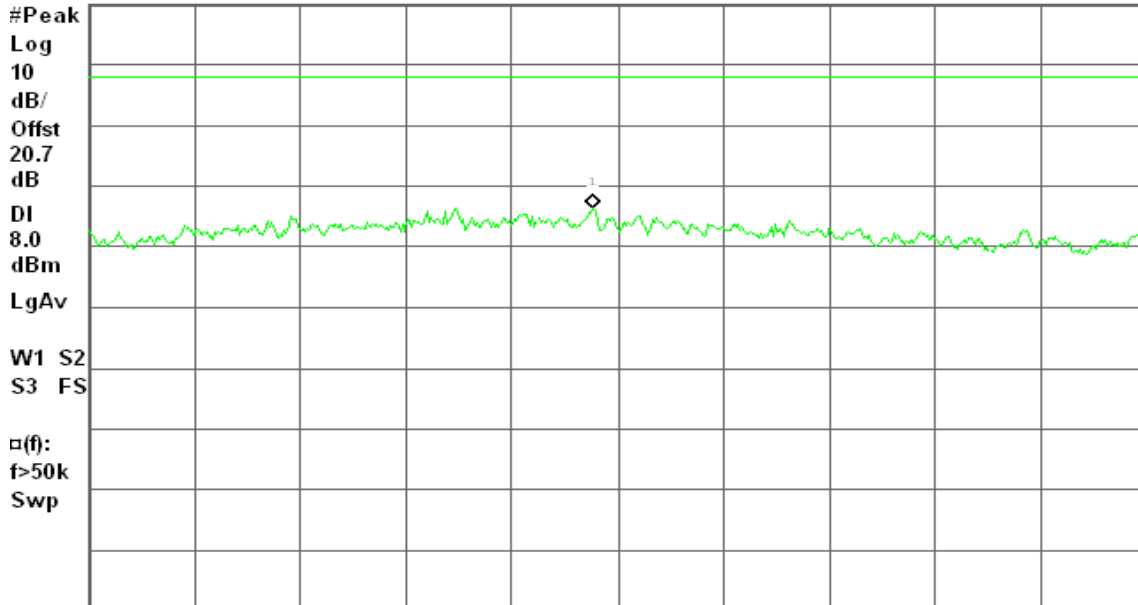
Peak Power Spectral Density, g Mode High Ch.

Mkr1 2.460 742 5 GHz

Ref 20 dBm

Atten 10 dB

-13.79 dBm



Center 2.460 750 0 GHz

Span 300 kHz

#Res BW 3 kHz

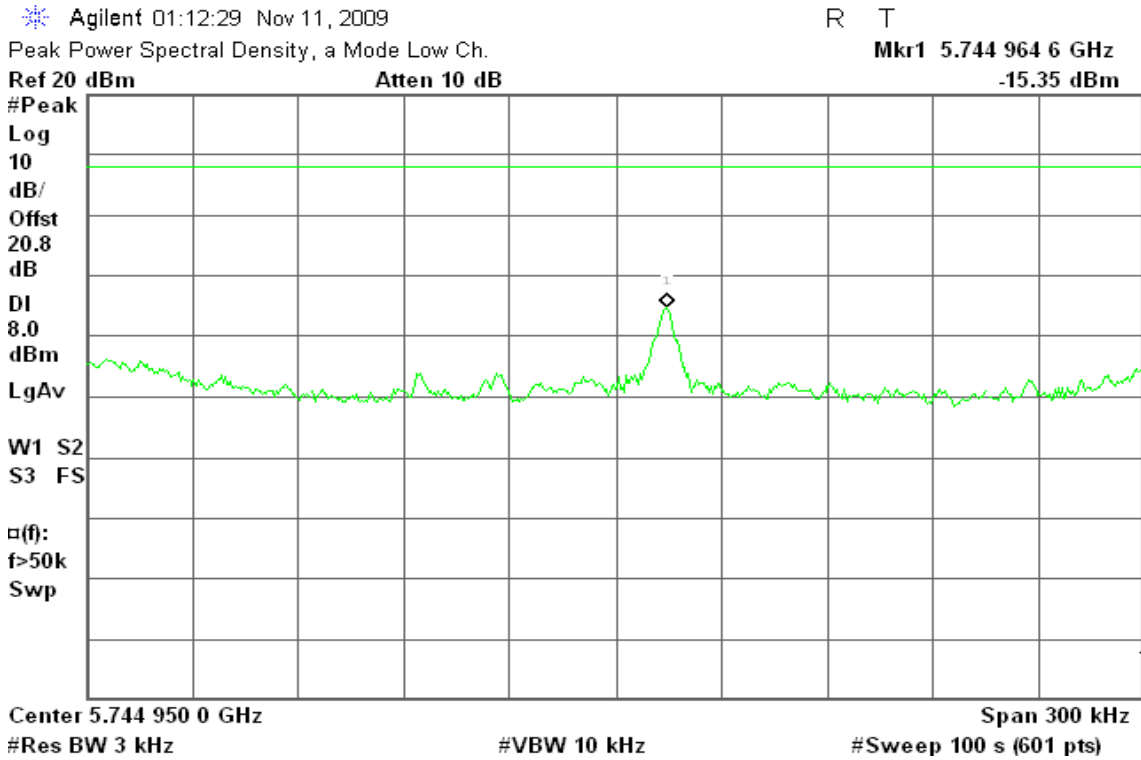
#VBW 10 kHz

#Sweep 100 s (601 pts)

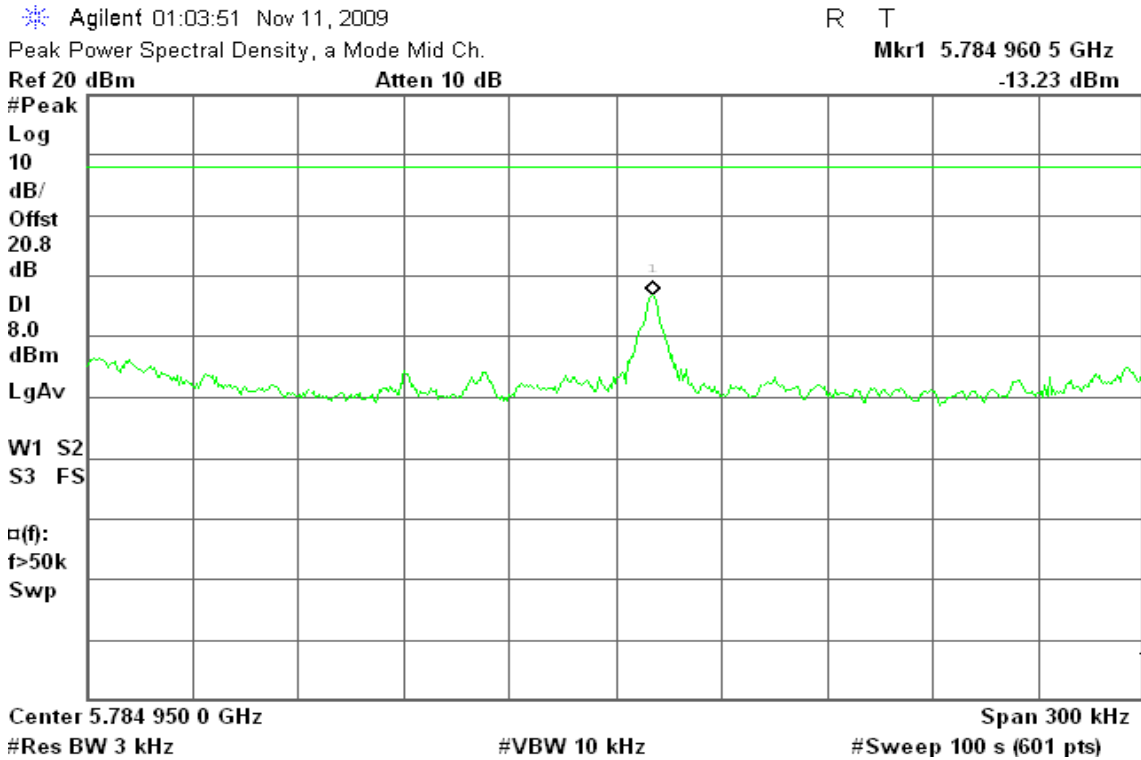


Test mode: IEEE 802.11a mode / 5745 ~ 5825MHz

PPSD (CH Low)



PPSD (CH Mid)





PPSD (CH High)

Agilent 01:08:26 Nov 11, 2009

R T

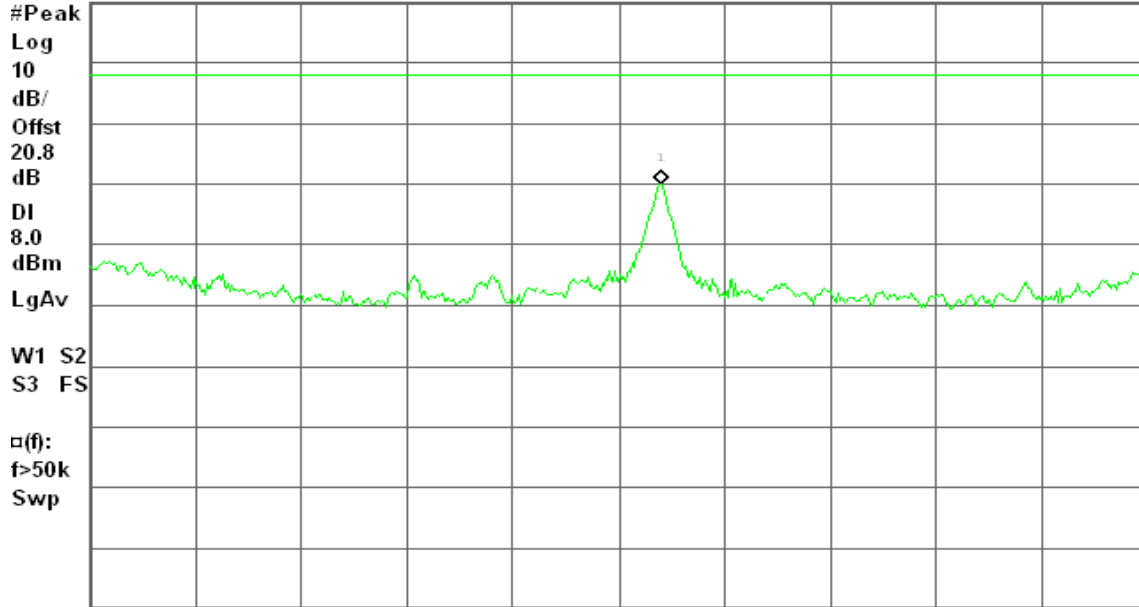
Peak Power Spectral Density, a Mode High Ch.

Mkr1 5.824 962 0 GHz

Ref 20 dBm

Atten 10 dB

-10.03 dBm



Center 5.824 950 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)



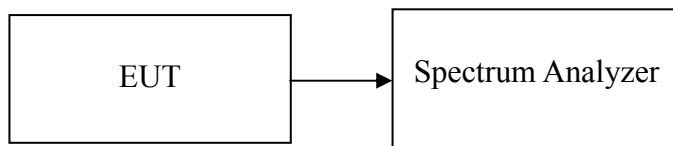
7.6 SPURIOUS EMISSIONS

7.6.1 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 00:42:07 Nov 11, 2009

R T

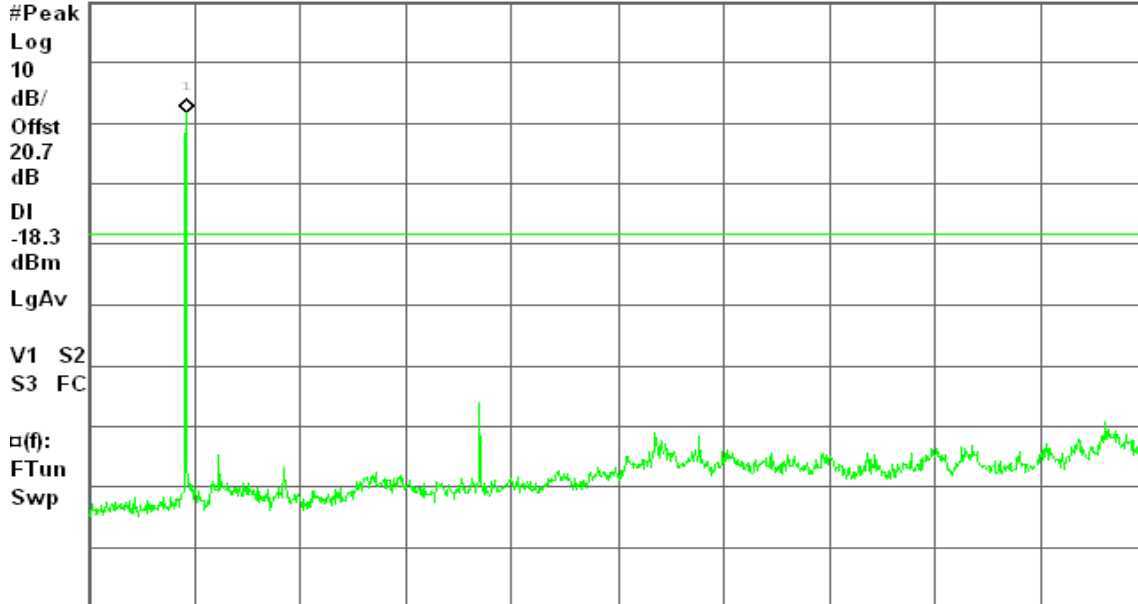
Spurious, b Mode Low Ch.

Mkr1 2.419 GHz

Ref 20 dBm

Atten 10 dB

1.74 dBm



Center 13.015 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)

CH Mid

Agilent 00:46:42 Nov 11, 2009

R L

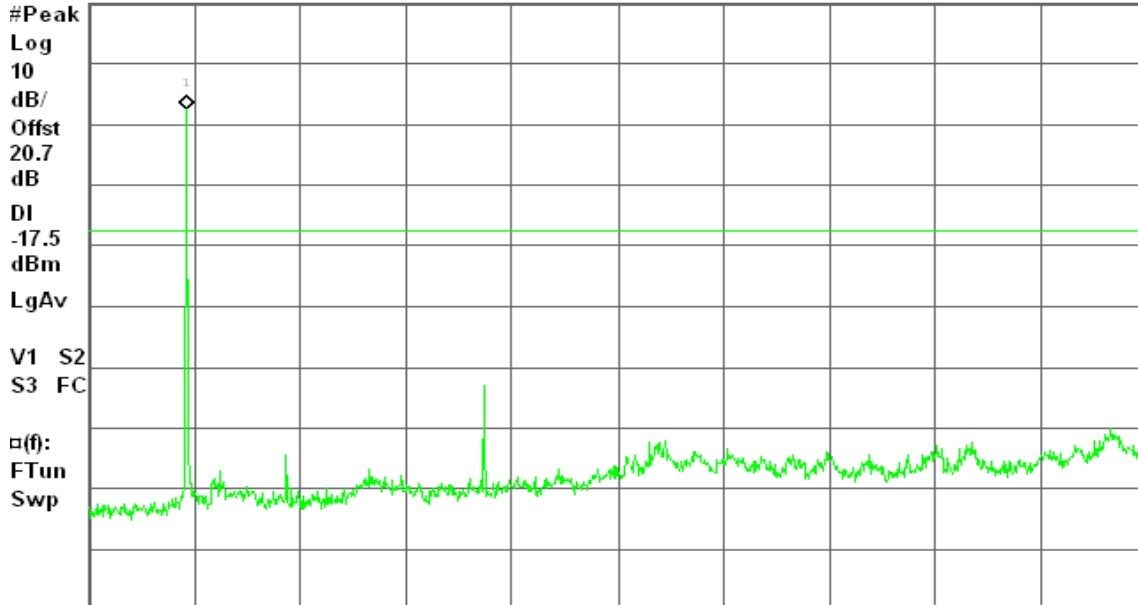
Spurious, b Mode Mid Ch.

Mkr1 2.445 GHz

Ref 20 dBm

Atten 10 dB

2.48 dBm



Center 13.015 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



CH High

Agilent 00:51:01 Nov 11, 2009

R L

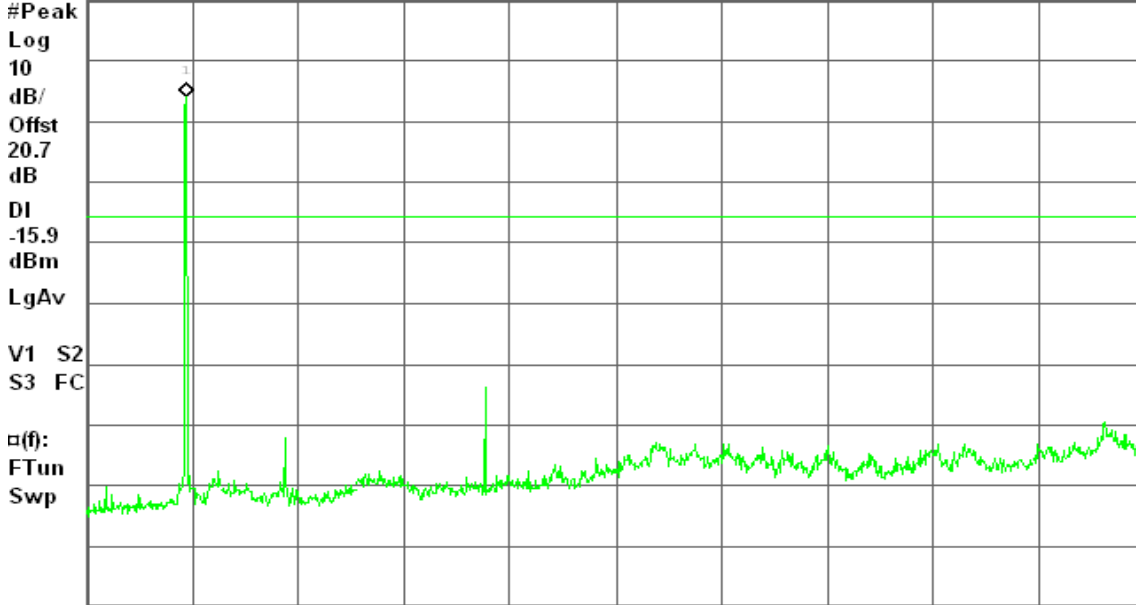
Spurious, b Mode High Ch.

Mkr1 2.471 GHz

Ref 20 dBm

Atten 10 dB

4.12 dBm



Center 13.015 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)

IEEE 802.11g

CH Low

Agilent 00:23:57 Nov 11, 2009

R T

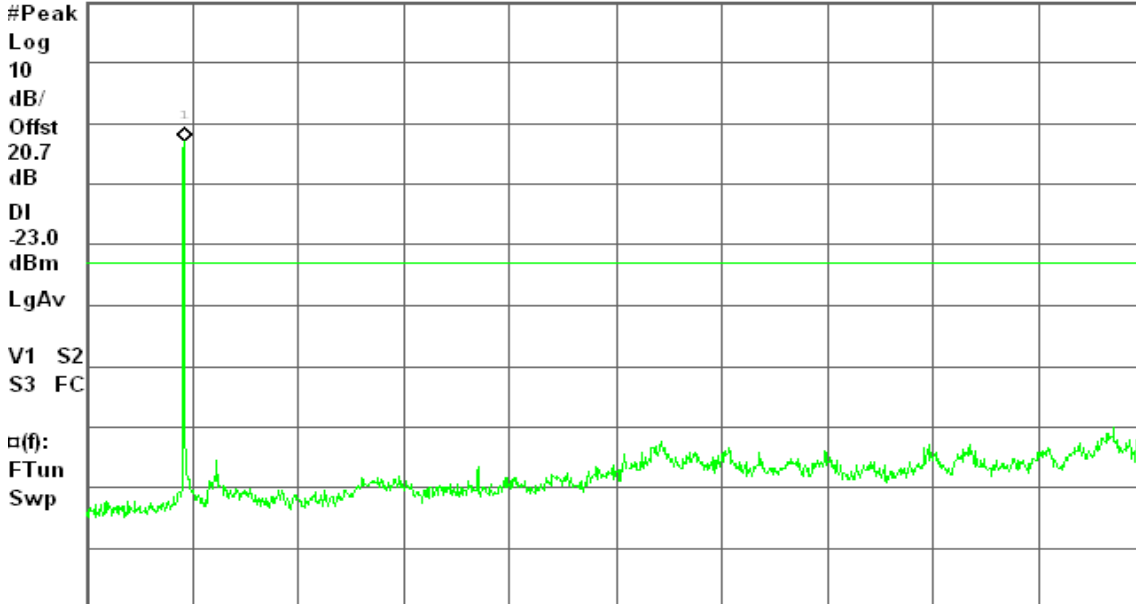
Spurious, g Mode Low Ch.

Mkr1 2.419 GHz

Ref 20 dBm

Atten 10 dB

-2.97 dBm



Center 13.015 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



CH Mid

Agilent 00:28:38 Nov 11, 2009

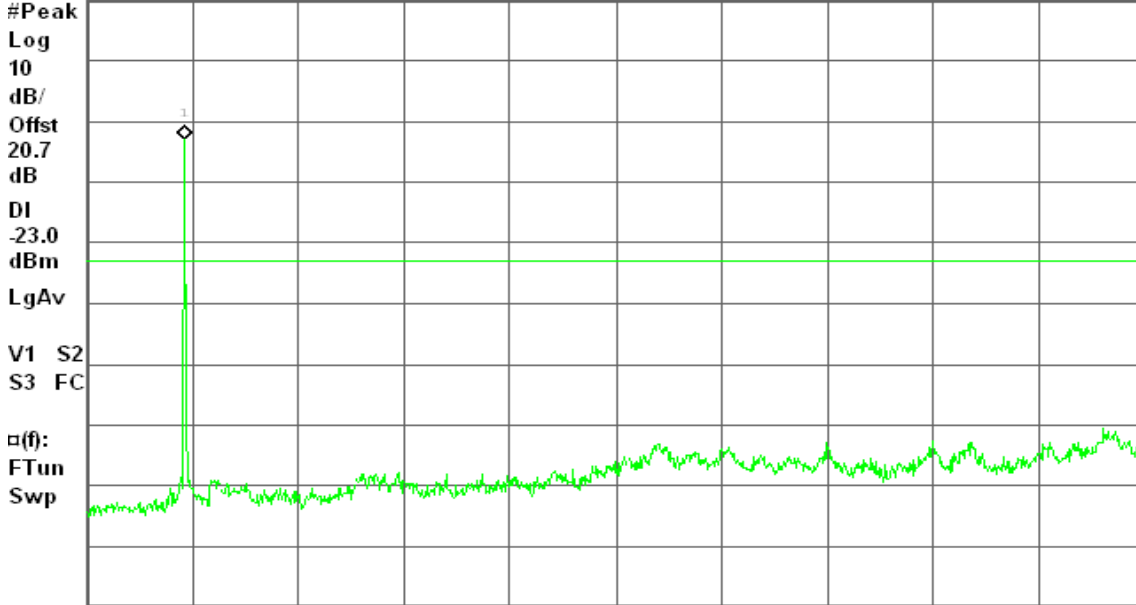
R T

Spurious, g Mode Mid Ch.

Mkr1 2.445 GHz
-3.01 dBm

Ref 20 dBm

Atten 10 dB



Center 13.015 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)

CH High

Agilent 00:36:44 Nov 11, 2009

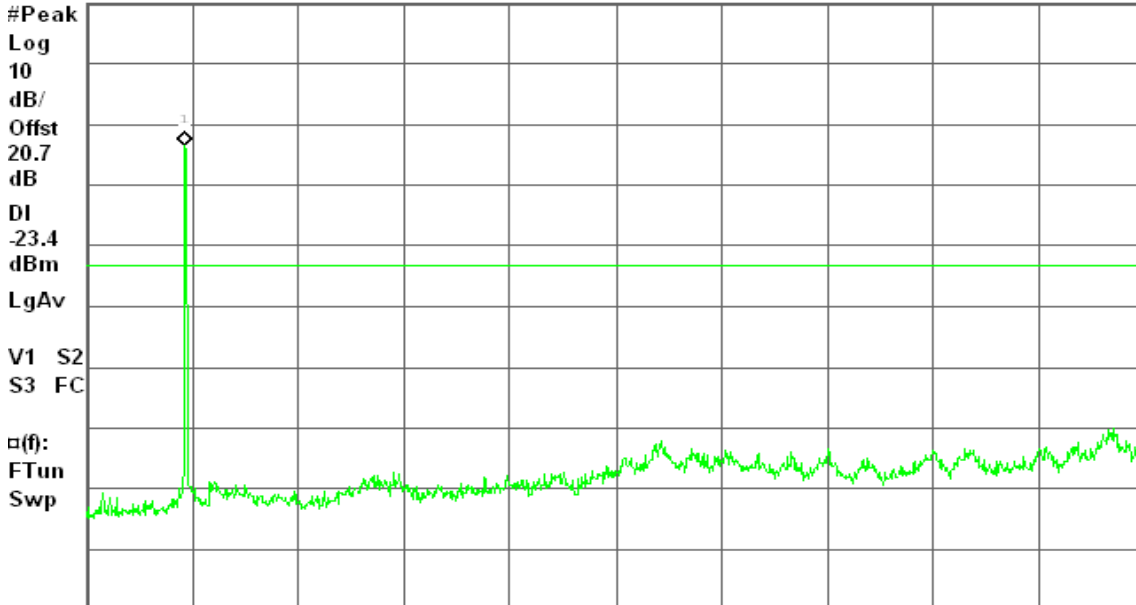
R T

Spurious, g Mode High Ch.

Mkr1 2.445 GHz
-3.41 dBm

Ref 20 dBm

Atten 10 dB



Center 13.015 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



IEEE 802.11a mode / 5745 ~ 5825MHz

CH Low

Agilent 00:58:12 Nov 11, 2009

R T

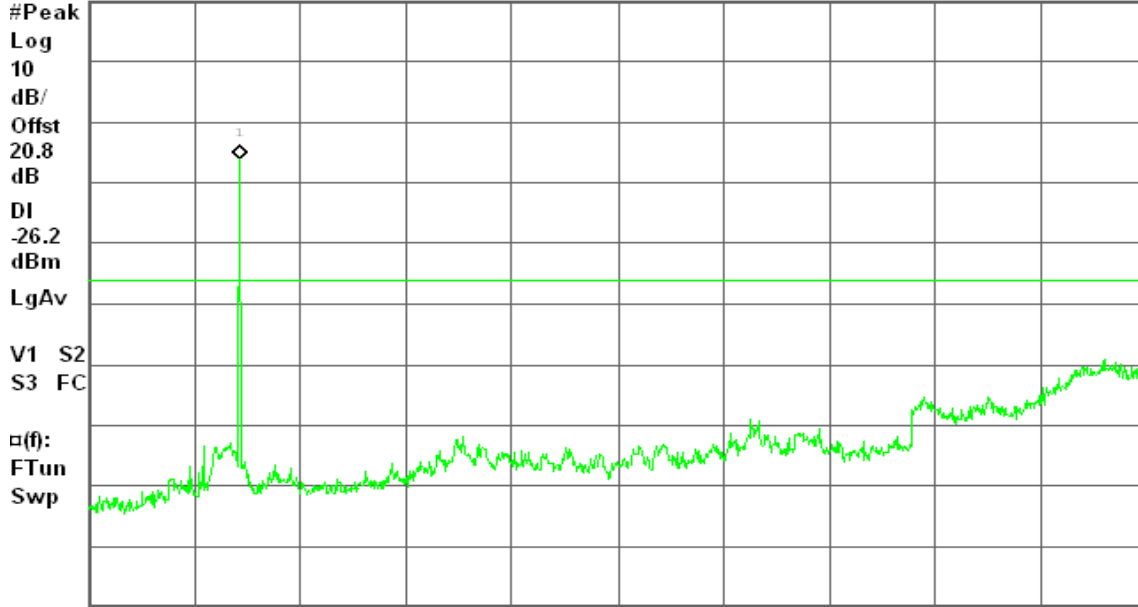
Spurious, a Mode Low Ch.

Mkr1 5.75 GHz

Ref 20 dBm

Atten 10 dB

-6.19 dBm



Center 20.02 GHz

Span 39.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 4.819 s (1001 pts)

CH Mid

Agilent 01:04:51 Nov 11, 2009

R T

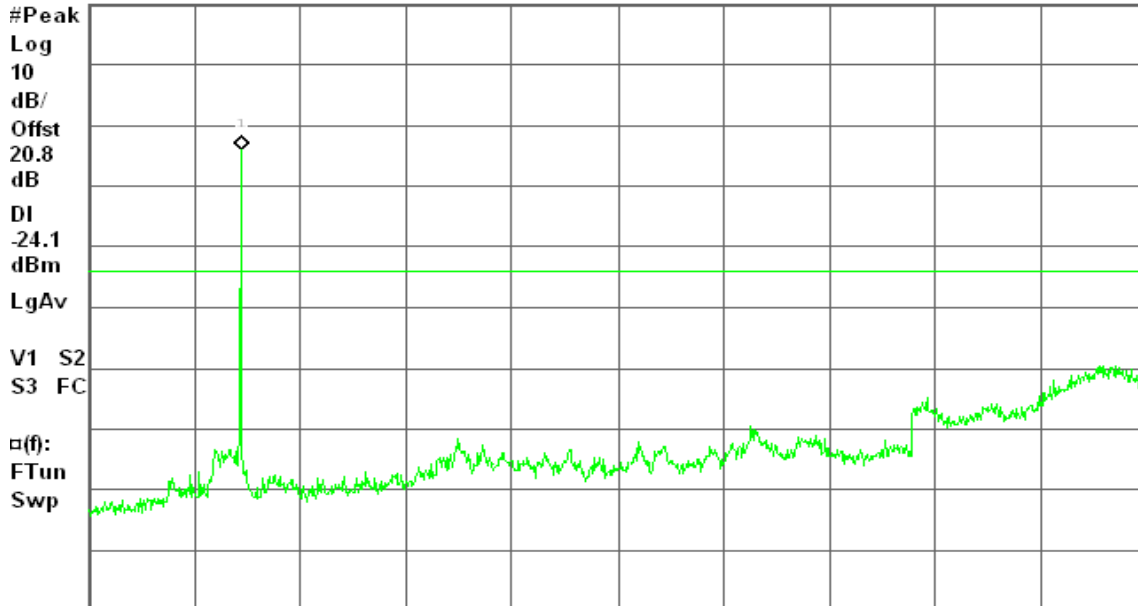
Spurious, a Mode Mid Ch.

Mkr1 5.79 GHz

Ref 20 dBm

Atten 10 dB

-4.08 dBm



Center 20.02 GHz

Span 39.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 4.819 s (1001 pts)



CH High

Agilent 01:09:12 Nov 11, 2009

R T

Spurious, a Mode High Ch.

Mkr1 5.83 GHz

Ref 20 dBm

Atten 10 dB

-5.69 dBm

#Peak

Log

10

dB/

Offst

20.8

dB

DI

-25.7

dBm

LgAv

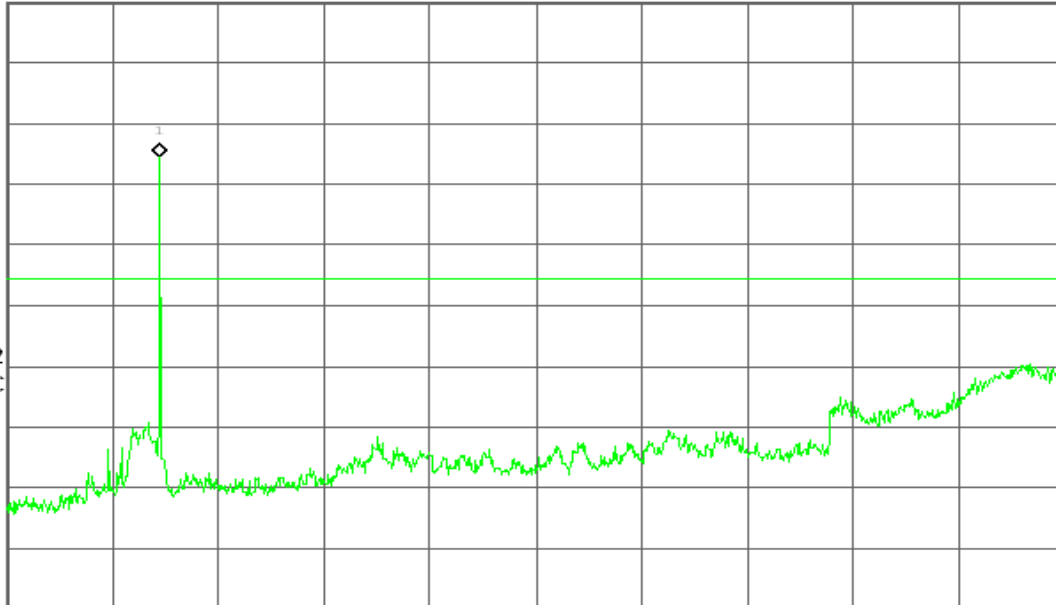
V1 S2

S3 FC

□(f):

FTun

Swp



Center 20.02 GHz

Span 39.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 4.819 s (1001 pts)



7.6.2 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:

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

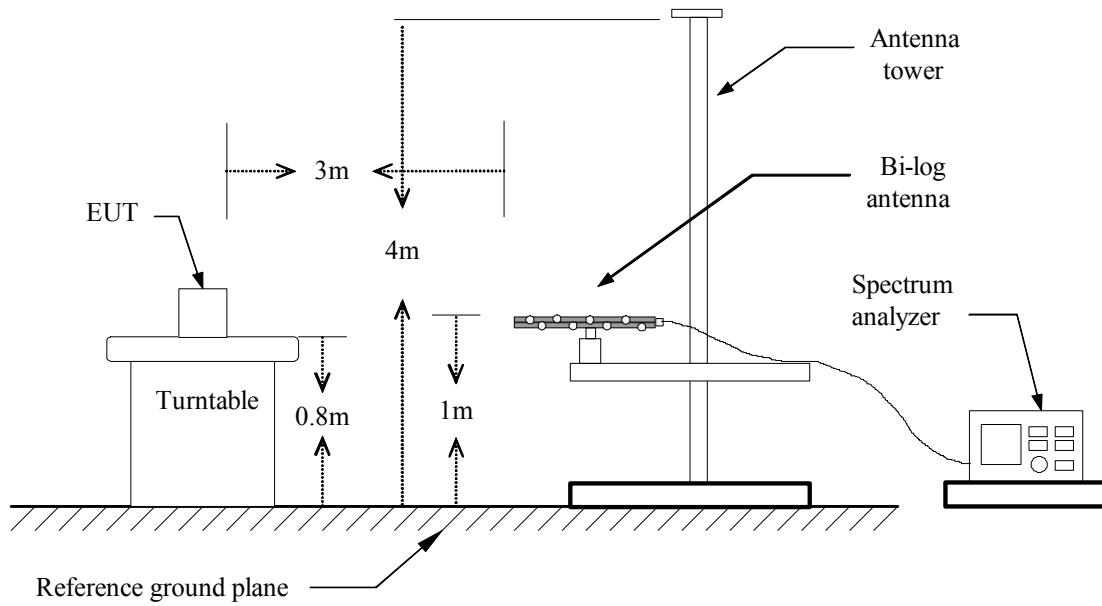
Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

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

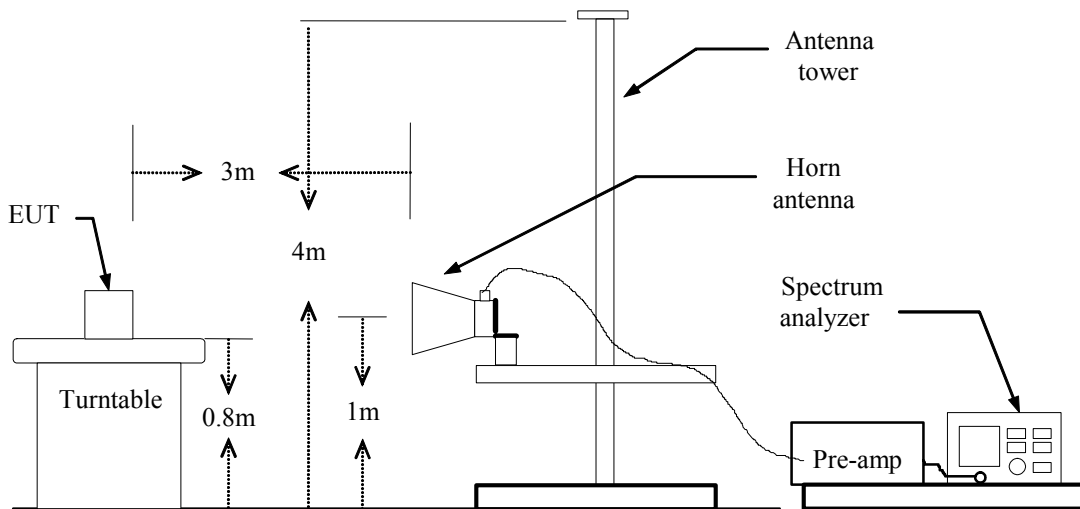
Frequency (MHz)	Field Strength (µV/m at 3-meter)	Field Strength (dBµV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

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.

**Below 1 GHz****Operation Mode:** Normal Link**Test Date:** November 10, 2009**Temperature:** 25°C**Tested by:** Nan Tsai**Humidity:** 50 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
199.75	V	44.85	-9.58	35.28	43.50	-8.22	Peak
233.70	V	41.65	-10.82	30.84	46.00	-15.16	Peak
249.87	V	39.45	-10.47	28.98	46.00	-17.02	Peak
296.75	V	36.23	-8.74	27.49	46.00	-18.51	Peak
623.32	V	33.09	-2.36	30.73	46.00	-15.27	Peak
881.98	V	30.34	0.81	31.15	46.00	-14.85	Peak
199.75	H	45.20	-9.58	35.62	43.50	-7.88	Peak
233.70	H	45.37	-10.82	34.56	46.00	-11.44	Peak
251.48	H	46.44	-10.37	36.07	46.00	-9.93	Peak
298.37	H	44.08	-8.72	35.36	46.00	-10.64	Peak
400.22	H	42.75	-6.39	36.36	46.00	-9.64	Peak
831.87	H	35.73	0.41	36.14	46.00	-9.86	Peak

Remark:

1. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz)
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.
3. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.
4. 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.
5. Margin (dB) = Remark result (dBuV/m) – Quasi-peak limit (dBuV/m).



Above 1 GHz

Operation Mode: IEEE 802.11b / TX / CH Low

Test Date: November 9, 2009

Temperature: 25°C

Tested by: Nan Tsai

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
1596.67	V	53.41	---	-6.11	47.30	---	74.00	54.00	-6.70	Peak
2496.67	V	66.46	45.27	-1.43	65.04	43.84	74.00	54.00	-10.16	AVG
3216.67	V	50.11	---	-0.19	49.92	---	74.00	54.00	-4.08	Peak
4825.00	V	50.80	---	1.04	51.84	---	74.00	54.00	-2.16	Peak
5225.00	V	49.72	---	1.25	50.97	---	74.00	54.00	-3.03	Peak
N/A										
1063.33	H	54.00	---	-7.84	46.16	---	74.00	54.00	-7.84	Peak
1593.33	H	54.93	---	-6.14	48.80	---	74.00	54.00	-5.20	Peak
2500.00	H	60.66	42.58	-1.42	59.24	41.16	74.00	54.00	-12.84	AVG
4825.00	H	56.35	51.45	1.04	57.38	52.49	74.00	54.00	-1.51	AVG
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).*



Operation Mode: IEEE 802.11b / TX / CH Mid

Test Date: November 9, 2009

Temperature: 25°C

Tested by: Nan Tsai

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
1596.67	V	52.26	---	-6.11	46.16	---	74.00	54.00	-7.84	Peak
2496.67	V	65.80	44.81	-1.43	64.37	43.38	74.00	54.00	-10.62	AVG
3250.00	V	49.37	---	-0.15	49.22	---	74.00	54.00	-4.78	Peak
4875.00	V	52.69	50.99	1.02	53.71	52.01	74.00	54.00	-1.89	AVG
N/A										
1600.00	H	55.71	---	-6.07	49.64	---	74.00	54.00	-4.36	Peak
2496.67	H	59.29	42.35	-1.43	57.87	40.92	74.00	54.00	-13.08	AVG
4875.00	H	56.16	51.72	1.02	57.18	52.74	74.00	54.00	-1.26	AVG
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).



Operation Mode: IEEE 802.11b / TX / CH High

Test Date: November 9, 2009

Temperature: 25°C

Tested by: Nan Tsai

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
1596.67	V	53.97	---	-6.11	47.86	---	74.00	54.00	-6.14	Peak
2126.67	V	51.27	---	-2.04	49.23	---	74.00	54.00	-4.77	Peak
4925.00	V	53.90	51.28	1.01	54.91	52.29	74.00	54.00	-1.71	AVG
N/A										
1593.33	H	54.20	---	-6.14	48.06	---	74.00	54.00	-5.94	Peak
2286.67	H	53.44	---	-1.77	51.66	---	74.00	54.00	-2.34	Peak
4925.00	H	53.39	51.44	1.01	54.40	52.45	74.00	54.00	-1.55	AVG
6683.33	H	49.32	35.99	3.35	52.67	39.34	74.00	54.00	-14.66	AVG
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).



Operation Mode: IEEE 802.11g / TX / CH Low

Test Date: November 9, 2009

Temperature: 25°C

Tested by: Nan Tsai

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
1593.33	V	53.17	---	-6.14	47.03	---	74.00	54.00	-6.97	Peak
2496.67	V	66.40	45.35	-1.43	64.98	43.92	74.00	54.00	-10.08	AVG
4616.67	V	48.56	---	1.09	49.65	---	74.00	54.00	-4.35	Peak
N/A										
1063.33	H	54.98	---	-7.84	47.14	---	74.00	54.00	-6.86	Peak
1593.33	H	55.52	---	-6.14	49.38	---	74.00	54.00	-4.62	Peak
2496.67	H	60.42	42.55	-1.43	58.99	41.12	74.00	54.00	-12.88	AVG
4858.33	H	49.08	---	1.03	50.11	---	74.00	54.00	-3.89	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).



Operation Mode: IEEE 802.11g / TX / CH Mid

Test Date: November 9, 2009

Temperature: 25°C

Tested by: Nan Tsai

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
1063.33	V	53.35	---	-7.84	45.50	---	74.00	54.00	-8.50	Peak
1263.33	V	53.33	---	-7.47	45.86	---	74.00	54.00	-8.14	Peak
1593.33	V	53.91	---	-6.14	47.77	---	74.00	54.00	-6.23	Peak
1866.67	V	52.06	---	-3.52	48.54	---	74.00	54.00	-5.46	Peak
2490.00	V	66.44	45.51	-1.44	65.01	44.07	74.00	54.00	-9.93	AVG
4891.67	V	49.18	---	1.02	50.20	---	74.00	54.00	-3.80	Peak
1593.33	H	54.66	---	-6.14	48.52	---	74.00	54.00	-5.48	Peak
2496.67	H	60.48	42.78	-1.43	59.06	41.35	74.00	54.00	-12.65	AVG
4908.33	H	48.61	---	1.01	49.62	---	74.00	54.00	-4.38	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).



Operation Mode: IEEE 802.11g / TX / CH High

Test Date: November 9, 2009

Temperature: 25°C

Tested by: Nan Tsai

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
1600.00	V	52.89	---	-6.07	46.82	---	74.00	54.00	-7.18	Peak
4825.00	V	49.12	---	1.04	50.16	---	74.00	54.00	-3.84	Peak
N/A										
1063.33	H	56.04	---	-7.84	48.20	---	74.00	54.00	-5.80	Peak
1593.33	H	56.35	---	-6.14	50.21	---	74.00	54.00	-3.79	Peak
4825.00	H	49.20	---	1.04	50.24	---	74.00	54.00	-3.76	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).



Operation Mode: Tx / IEEE 802.11a mode / 5745 ~ 5825MHz / CH Low **Test Date:** November 10, 2009
Temperature: 25°C **Tested by:** Nan Tsai
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
1063.33	V	52.81	---	-7.84	44.96	---	74.00	54.00	-9.04	Peak
1333.33	V	50.82	---	-7.34	43.48	---	74.00	54.00	-10.52	Peak
1593.33	V	51.84	---	-6.14	45.71	---	74.00	54.00	-8.29	Peak
4241.67	V	50.46	---	0.81	51.27	---	74.00	54.00	-2.73	Peak
N/A										
1596.67	H	54.97	---	-6.11	48.87	---	74.00	54.00	-5.13	Peak
4808.33	H	58.20	46.75	1.04	59.24	47.79	74.00	54.00	-6.21	AVG
5333.33	H	58.15	47.78	1.38	59.52	49.16	74.00	54.00	-4.84	AVG
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).



Operation Mode: Tx / IEEE 802.11a mode / 5745 ~ 5825MHz / CH Mid **Test Date:** November 10, 2009
Temperature: 25°C **Tested by:** Nan Tsai
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
1596.67	V	51.30	---	-6.11	45.19	---	74.00	54.00	-8.81	Peak
4325.00	V	50.52	---	0.91	51.43	---	74.00	54.00	-2.57	Peak
N/A										
1600.00	H	54.26	---	-6.07	48.19	---	74.00	54.00	-5.81	Peak
4841.67	H	58.11	47.56	1.03	59.14	48.59	74.00	54.00	-5.41	AVG
5333.33	H	57.98	47.69	1.38	59.35	49.07	74.00	54.00	-4.93	AVG
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).



Operation Mode: Tx / IEEE 802.11a mode / 5745 ~ 5825MHz / CH High **Test Date:** November 10, 2009
Temperature: 25°C **Tested by:** Nan Tsai
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
1596.67	V	51.89	---	-6.11	45.78	---	74.00	54.00	-8.22	Peak
3883.33	V	53.40	50.62	0.43	53.83	51.05	74.00	54.00	-2.95	AVG
4825.00	V	56.84	43.86	1.04	57.88	44.90	74.00	54.00	-9.10	AVG
5125.00	V	57.18	44.44	1.13	58.32	45.57	74.00	54.00	-8.43	AVG
N/A										
1066.67	H	54.20	---	-7.84	46.37	---	74.00	54.00	-7.63	Peak
1596.67	H	54.17	---	-6.11	48.07	---	74.00	54.00	-5.93	Peak
3883.33	H	52.85	50.14	0.43	53.28	50.57	74.00	54.00	-3.43	AVG
4850.00	H	62.76	51.62	1.03	63.79	52.65	74.00	54.00	-1.35	AVG
5350.00	H	61.26	50.95	1.40	62.66	52.35	74.00	54.00	-1.65	AVG
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 μ H/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 (dB μ V)	
	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

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: November 11, 2009

Temperature: 22°C

Tested by: Ming Chen

Humidity: 45% 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
0.8500	39.75	34.95	0.05	39.80	35.00	56.00	46.00	-16.20	-11.00	L1
0.9600	37.95	33.75	0.05	38.00	33.80	56.00	46.00	-18.00	-12.20	L1
1.1300	40.15	36.75	0.05	40.20	36.80	56.00	46.00	-15.80	-9.20	L1
1.8100	43.44	36.64	0.06	43.50	36.70	56.00	46.00	-12.50	-9.30	L1
4.1300	40.84	31.94	0.06	40.90	32.00	56.00	46.00	-15.10	-14.00	L1
16.4800	47.15	32.15	0.35	47.50	32.50	60.00	50.00	-12.50	-17.50	L1
0.9100	35.75	29.35	0.05	35.80	29.40	56.00	46.00	-20.20	-16.60	L2
0.9600	37.75	33.55	0.05	37.80	33.60	56.00	46.00	-18.20	-12.40	L2
1.2400	38.15	31.55	0.05	38.20	31.60	56.00	46.00	-17.80	-14.40	L2
1.4200	35.45	30.05	0.05	35.50	30.10	56.00	46.00	-20.50	-15.90	L2
2.0400	42.74	36.24	0.06	42.80	36.30	56.00	46.00	-13.20	-9.70	L2
16.5300	44.35	31.75	0.35	44.70	32.10	60.00	50.00	-15.30	-17.90	L2

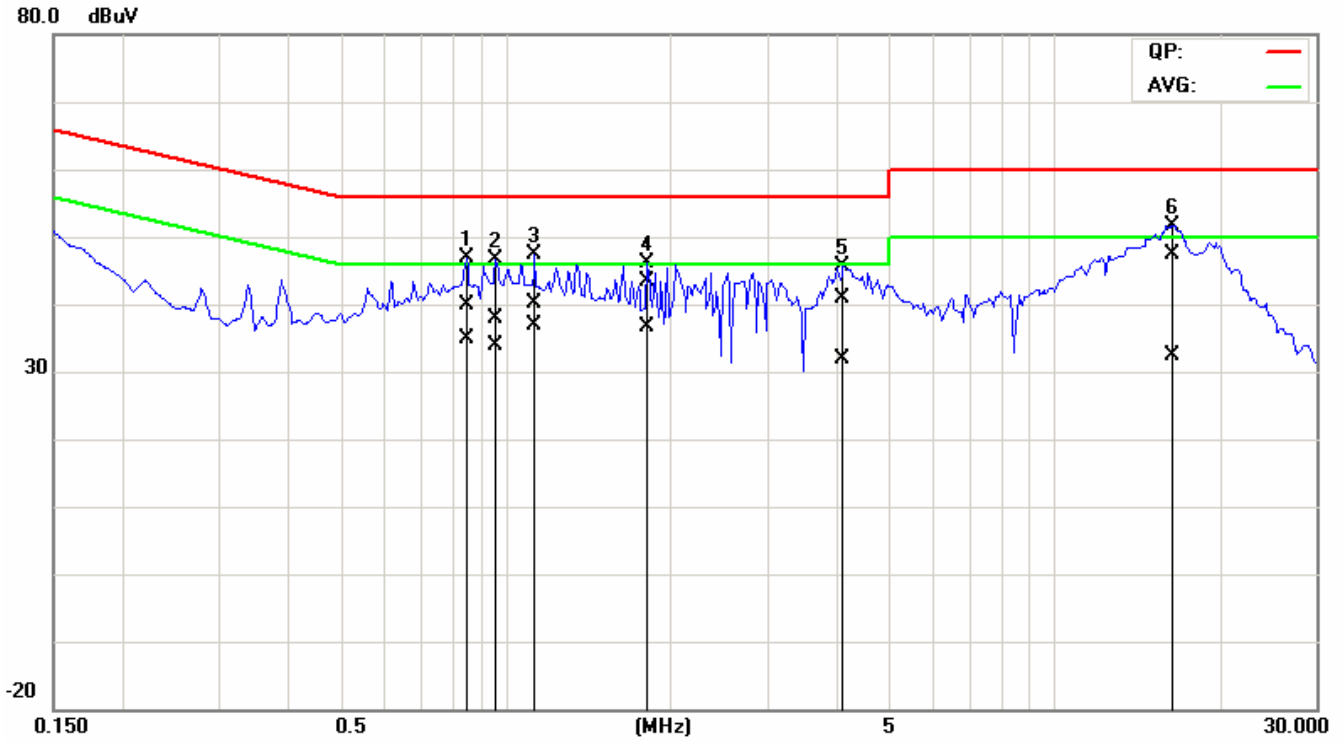
Remark:

1. Measuring frequencies from 0.15 MHz to 30MHz.
2. The emissions measured in frequency range from 0.15 MHz to 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;
4. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)

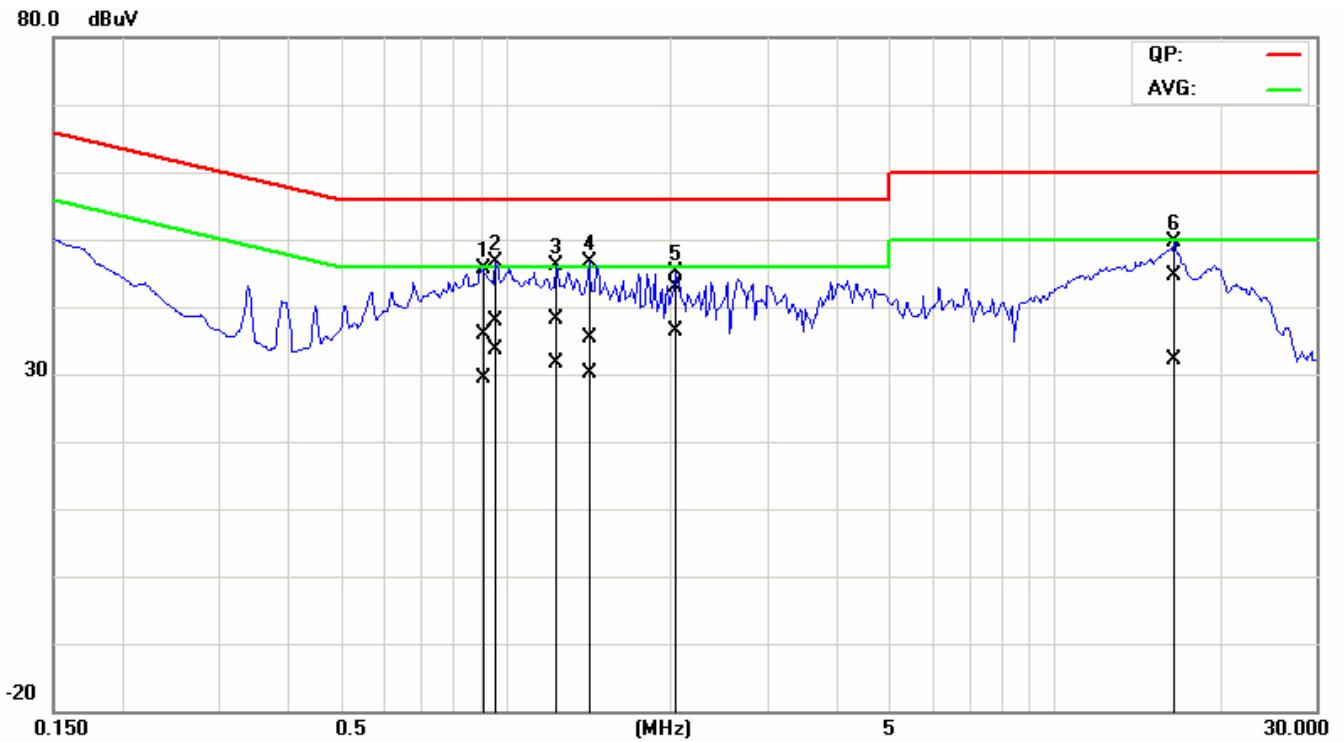


Test Plots

Conducted emissions (Line 1)



Conducted emissions (Line 2)





APPENDIX I RADIO FREQUENCY EXPOSURE

LIMIT

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See §15.247(i) and §1.1307(b)(1) of this chapter.

EUT Specification

EUT	Handheld Terminal
Frequency band (Operating)	<input checked="" type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input type="checkbox"/> WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz <input type="checkbox"/> WLAN: 5.745GHz ~ 5.825GHz <input type="checkbox"/> Bluetooth: <u>2.402GHz ~ 2.480 GHz</u>
Device category	<input checked="" type="checkbox"/> Portable (<20cm separation) <input type="checkbox"/> Mobile (>20cm separation)
Exposure classification	<input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm2) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm2)
Antenna diversity	<input type="checkbox"/> Single antenna <input checked="" type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input checked="" type="checkbox"/> Tx/Rx diversity
Max. output power	IEEE 802.11b: 17.93 dBm (62.09mW) IEEE 802.11g: 18.42 dBm (69.50mW)
Antenna gain (Max)	2.93 dBi (Numeric gain: 1.93)
Evaluation applied	<input type="checkbox"/> MPE Evaluation <input checked="" type="checkbox"/> SAR Evaluation* <input type="checkbox"/> N/A

Remark:

- The maximum output power is 18.42Bm (69.50mW) at 2462MHz (with 1.93 numeric antenna gain.)
- DTS device is not subject to routine RF evaluation; MPE estimate is used to justify the compliance.
- For mobile or fixed location transmitters, no SAR consideration applied. The maximum power density is 1.0 mW/cm² even if the calculation indicates that the power density would be larger.

TEST RESULTS

No non-compliance noted.

Remark: Please refer to the separated SAR report.

MPE EVALUATION

Not applicable.



EUT	Handheld Terminal
Frequency band (Operating)	<input type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input checked="" type="checkbox"/> WLAN: 5.745GHz ~ 5.825GHz <input type="checkbox"/> Others: <u>Bluetooth: 2.402GHz ~ 2.480GHz</u>
Device category	<input checked="" type="checkbox"/> Portable (<20cm separation) <input type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others
Exposure classification	<input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm ²) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm ²)
Antenna diversity	<input checked="" type="checkbox"/> Single antenna <input type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity
Max. output power	IEEE 802.11a mode / 5745 ~ 5825MHz: 17.52 dBm (56.49mW)
Antenna gain (Max)	3.98 dBi (Numeric gain: 2.50)
Evaluation applied	<input type="checkbox"/> MPE Evaluation <input checked="" type="checkbox"/> SAR Evaluation* <input type="checkbox"/> N/A

Remark:

1. The maximum output power is 17.52dBm (56.49mW) at 5825MHz (with 2.50 numeric antenna gain.)
2. DTS device is not subject to routine RF evaluation; MPE estimate is used to justify the compliance.
3. For mobile or fixed location transmitters, no SAR consideration applied. The maximum power density is 1.0 mW/cm² even if the calculation indicates that the power density would be larger.

TEST RESULTS

No non-compliance noted.

Remark: Please refer to the separated SAR report.

MPE EVALUATION

Not applicable.