



FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

54M Wireless Router

Model: MR0-WR541G / MR0-WR542G , AL7954

Trade Name: TP-LINK, JensenScandinavia

Prepared for

**TP-LINK TECHNOLOGIES CO., LTD.
BUILDING 7, SECTION 2, HONGHUALING INDUSTRIAL PARK, XILI,
NANSHAN DISTRICT, SHENZHEN, P.R.C.**

Prepared by

**COMPLIANCE CERTIFICATION SERVICES (SHENZHEN) INC.
NO. 5, JINAO INDUSTRIAL PARK, NO. 35 JUKENG ROAD,
DASHUIKENG VILLAGE, GUANLAN TOWN, BAOAN
DISTRICT, SHENZHEN, CHINA**

TEL: 86-755-28055000

FAX: 86-755-28055221



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 OPERATIONS.....6

 3.5 DESCRIPTION OF TEST MODES6

4. INSTRUMENT CALIBRATION.....7

5. FACILITIES AND ACCREDITATIONS8

 5.1 FACILITIES.....8

 5.2 EQUIPMENT.....8

 5.3 LABORATORY ACCREDITATIONS AND LISTING.....8

6. SETUP OF EQUIPMENT UNDER TEST9

 6.1 SETUP CONFIGURATION OF EUT.....9

 6.2 SUPPORT EQUIPMENT.....9

7. FCC PART 15.247 REQUIREMENTS.....10

 7.1 6DB BANDWIDTH.....10

 7.2 PEAK POWER.....16

 7.3 BAND EDGES MEASUREMENT.....22

 7.4 PEAK POWER SPECTRAL DENSITY.....31

 7.5 RADIO FREQUENCY EXPOSURE.....37

 7.6 SPURIOUS EMISSIONS37

 7.7 POWERLINE CONDUCTED EMISSIONS54

APPENDIX 1 PHOTOGRPHS OF TEST SETUP58



1. TEST RESULT CERTIFICATION

Applicant: TP-LINK TECHNOLOGIES CO., LTD.
BUILDING 7, SECTION 2, HONGHUALING INDUSTRIAL
PARK, XILI, NANSHAN DISTRICT, SHENZHEN, P.R.C.

Equipment Under Test: 54M Wireless Router

Trade Name: TP-LINK, JensenScandinavia

Model: MR0-WR541G / MR0-WR542G , AL7954

Date of Test: October 27-November 16, 2006

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

We hereby certify that:

The above equipment was tested by Compliance Certification Services (Shenzhen) 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:

Tested By: Henry Ding

Clinton Kao/ Manager
COMPLIANCE CERTIFICATION
SERVICES (SHENZHEN) INC.

Reviewed By:
Eric Wong / Assistant manager
COMPLIANCE CERTIFICATION
SERVICES (SHENZHEN) INC.



2. EUT DESCRIPTION

| | |
|------------------------------|--|
| Product | 54M Wireless Router |
| Trade Name | TP-LINK, JensenScandinavia |
| Model Number | MR0-WR541G / MR0-WR542G , AL7954 |
| Model Difference | MR0-WR541G are fixed antenna, MR0-WR542G and AL7954 are detachable antenna. Others are the same each other. |
| Power Supply | Powered by the adapter |
| Frequency Range | 802.11b mode: 2412 ~ 2462 MHz 802.11g mode: 2412 ~ 2462 MHz |
| Transmit Power | 802.11b mode: 23.36 dBm 802.11g mode: 23.19 dBm |
| Modulation Technique | 802.11b: DSSS (CCK; DQPSK; DBPSK) 802.11g: OFDM |
| Transmit Data Rate | 802.11b: 11Mbps(CCK) with fall back rates of 5.5, 2, and 1Mbps 802.11g: 54Mbps with fall back rates of 48/36/24/18/12/9/6 Mbps (OFDM) |
| Number of Channels | 11 Channels |
| Antenna Specification | Flying Lead antenna Gain: 5 dBi (Max) |

Note: This submittal(s) (test report) 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: 2003 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, 15.207, 15.209 and 15.247.

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.

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.

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.



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 |
| 2. 17725 – 4.17775 | 37.5 – 38.25 | 1435 – 1626.5 | 9.0 – 9.2 |
| 2. 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.

DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

IEEE802.11b: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 11Mbps highest data rate (worst case) are chosen for the final testing.

IEEE802.11g: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 6Mbps data rate (the worst case) are chosen for the final testing.



4. 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.



5. FACILITIES AND ACCREDITATIONS

FACILITIES

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

No. 5, Jinao industrial park, No.35 Jukeng Road, Dashuikeng Village, Guanlan Town, Baoan District, Shenzhen, China

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

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."

LABORATORY ACCREDITATIONS AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code: 200577-0 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government. In addition, the test facilities are listed with Federal Communications Commission.



6. SETUP OF EQUIPMENT UNDER TEST

SETUP CONFIGURATION OF EUT

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

SUPPORT EQUIPMENT

| No | Equipment | Model | Serial No. | FCC ID | Trade Name | Data Cable | Power Cord |
|----|------------------|-----------|------------|--------|------------|------------|--------------------|
| 1. | Notebook | 992F2VG | N/A | DoC | IBM | N/A | Unshielded 1.8m |
| 2. | AC/AC Adaptor | U090080A | N/A | DoC | TEN PAO | N/A | Unshielded 1.8m |
| 3. | AC Adaptor | A410908OT | N/A | DoC | LEADER | N/A | Unshielded 1.8m |

Notes:

- 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

6dB BANDWIDTH

LIMIT

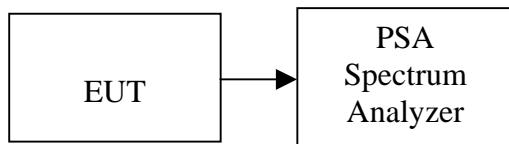
For the direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz.

MEASUREMENT EQUIPMENT USED

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|-----------------------|--------------|--------|---------------|-----------------|
| PSA Spectrum Analyzer | Agilent | E4446A | US44300399 | 02/08/2007 |

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

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 = 20MHz, 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 | 11600 | >500 | PASS |
| Mid | 2437 | 11630 | | PASS |
| High | 2462 | 11200 | | PASS |

Test mode: IEEE 802.11g

| Channel | Frequency (MHz) | Bandwidth (kHz) | Limit (kHz) | Margin (kHz) |
|---------|-----------------|-----------------|-------------|--------------|
| Low | 2412 | 16400 | >500 | PASS |
| Mid | 2437 | 16370 | | PASS |
| High | 2462 | 16370 | | PASS |



Test Plot

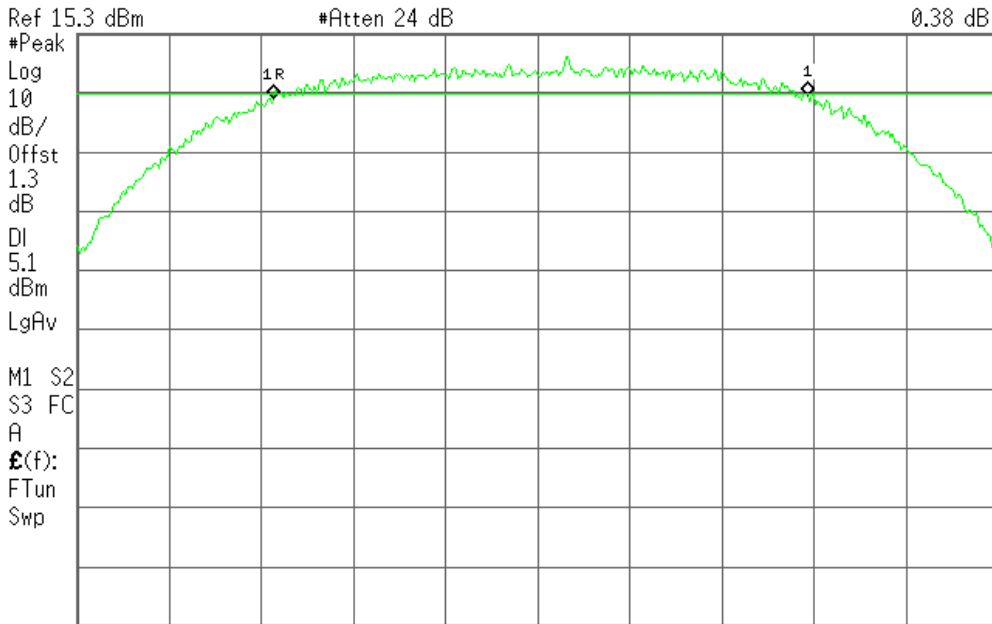
802.11b mode

6dB Bandwidth (CH Low)

Agilent 20:00:22 Oct 30, 2006

R L

Mkr1 11.60 MHz
0.38 dB



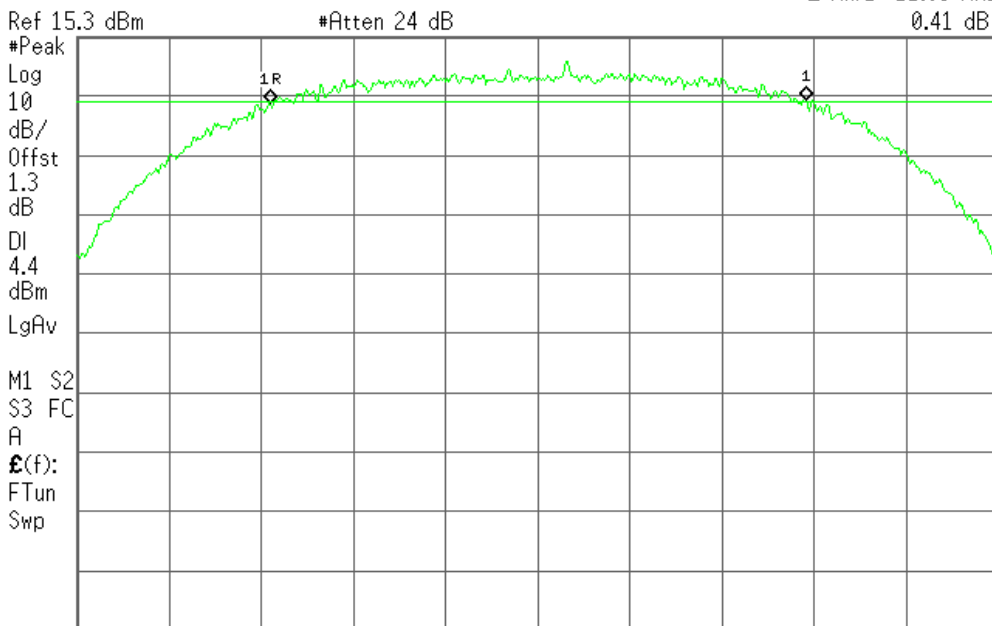
Center 2.412 00 GHz #Res BW 100 kHz #VBW 100 kHz Span 20 MHz Sweep 2.44 ms (601 pts)

6dB Bandwidth (CH Mid)

Agilent 19:58:52 Oct 30, 2006

R T

Mkr1 11.63 MHz
0.41 dB



Center 2.437 00 GHz #Res BW 100 kHz #VBW 100 kHz Span 20 MHz Sweep 2.44 ms (601 pts)



6dB Bandwidth (CH High)

Agilent 20:01:51 Oct 30, 2006

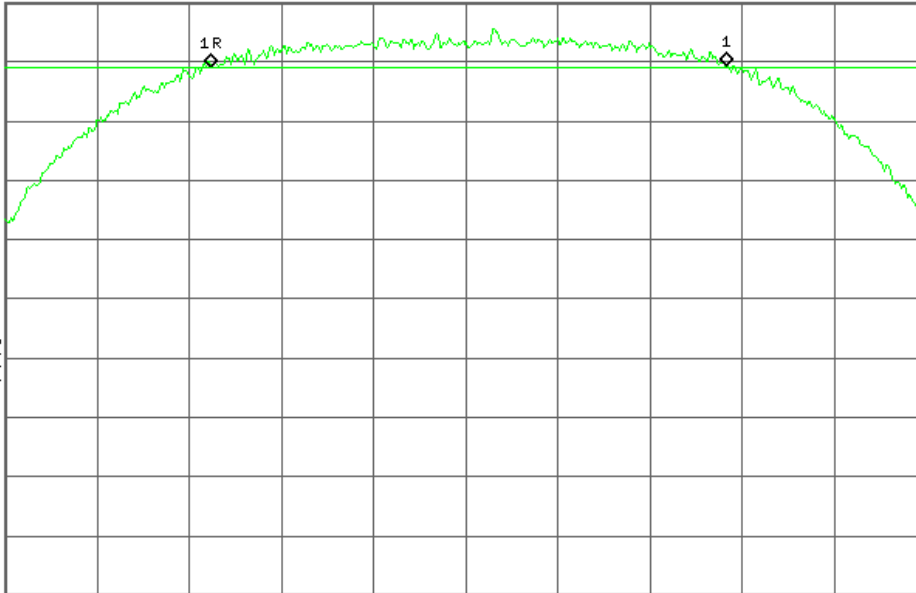
R T

Mkr1 11.20 MHz
0.04 dB

Ref 15.3 dBm

#Atten 24 dB

#Peak
Log
10
dB/
Offst
1.3
dB
DI
4.4
dBm
LgAv
M1 S2
S3 FC
A
E(f):
FTun
Swp



Center 2.462 00 GHz

Span 20 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 2.44 ms (601 pts)



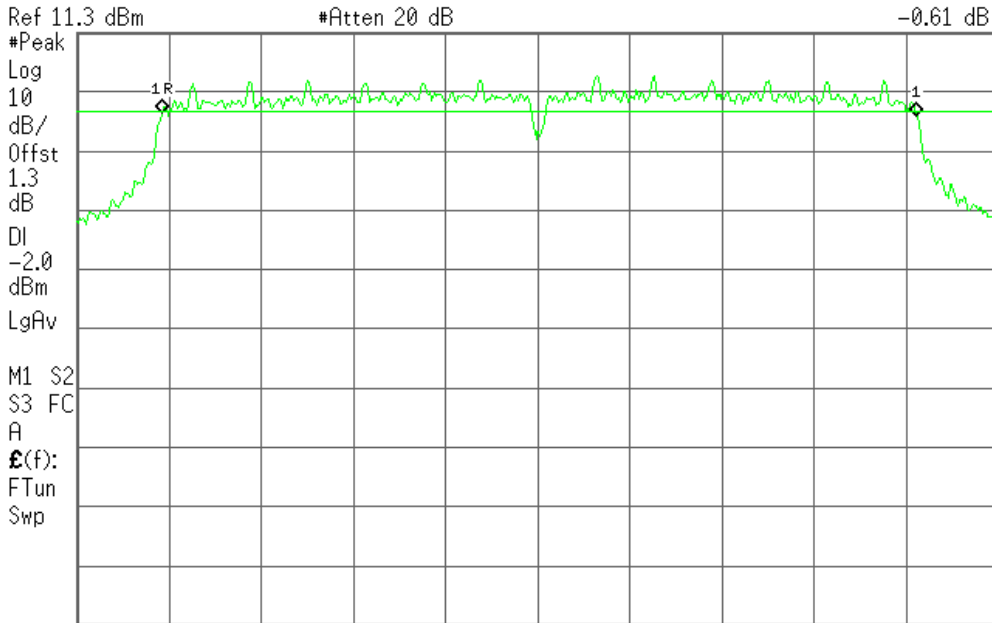
802.11g mode

6dB Bandwidth (CH Low)

Agilent 19:52:07 Oct 30, 2006

R T

Mkr1 16.40 MHz
-0.61 dB

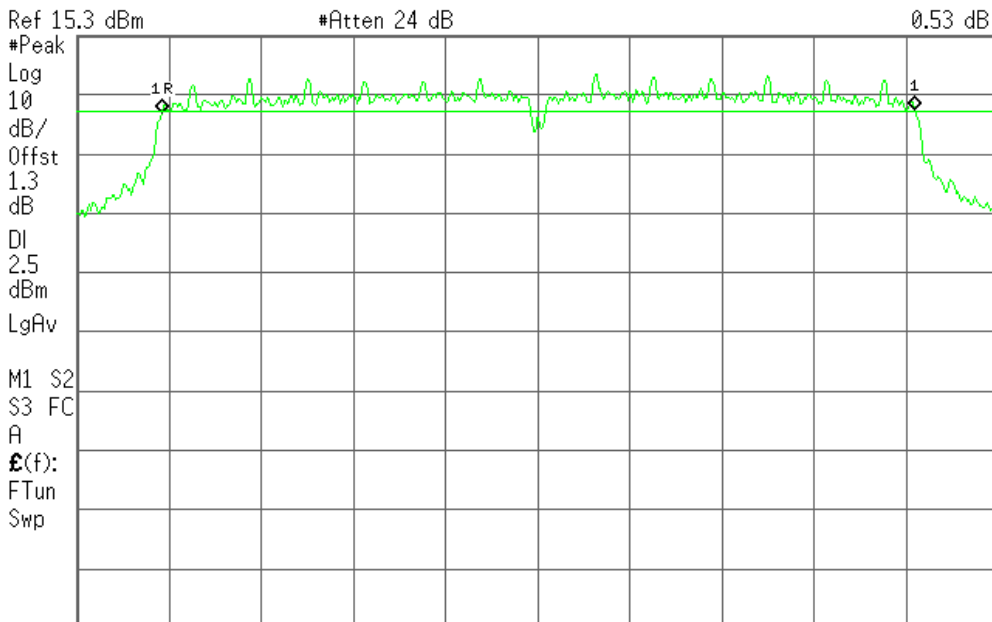


6dB Bandwidth (CH Mid)

Agilent 19:54:31 Oct 30, 2006

R T

Mkr1 16.37 MHz
0.53 dB





6dB Bandwidth (CH High)

Agilent 19:56:07 Oct 30, 2006

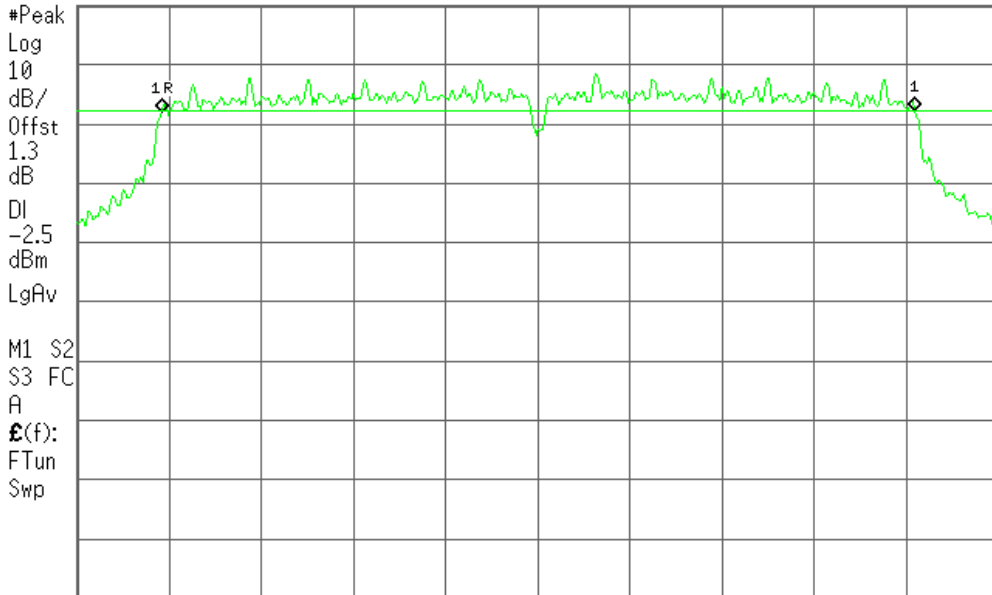
R T

Mkr1 16.37 MHz

0.27 dB

Ref 15.3 dBm

#Atten 24 dB



Center 2.462 00 GHz

Span 20 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 2.44 ms (601 pts)



PEAK POWER

LIMIT

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

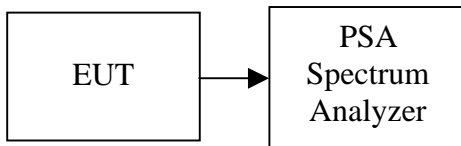
1. For systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz: 1 watt.
2. Except as shown in paragraphs (b)(3) (i), (ii) and (iii) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

MEASUREMENT EQUIPMENT USED

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|-----------------------|--------------|--------|---------------|-----------------|
| PSA Spectrum Analyzer | Agilent | E4446A | US44300399 | 02/08/2007 |

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

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

Test mode: IEEE 802.11b

| Channel | Frequency (MHz) | Output Power (dBm) | Factor (dB) | Output Power (dBm) | Output Power (W) | Limit (W) | Result |
|---------|-----------------|--------------------|-------------|--------------------|------------------|-----------|--------|
| Low | 2412 | 22.06 | 1.30 | 23.36 | 0.21677 | 1 | PASS |
| Md | 2437 | 21.17 | 1.30 | 22.47 | 0.17660 | | PASS |
| Hgh | 2462 | 21.03 | 1.30 | 22.33 | 0.17100 | | PASS |

Test mode: IEEE 802.11g

| Channel | Frequency (MHz) | Output Power (dBm) | Factor (dB) | Output Power (dBm) | Output Power (W) | Limit (W) | Result |
|---------|-----------------|--------------------|-------------|--------------------|------------------|-----------|--------|
| Low | 2412 | 17.13 | 1.30 | 18.43 | 0.06966 | 1 | PASS |
| Md | 2437 | 21.89 | 1.30 | 23.19 | 0.20845 | | PASS |
| Hgh | 2462 | 17.11 | 1.30 | 18.41 | 0.06934 | | PASS |



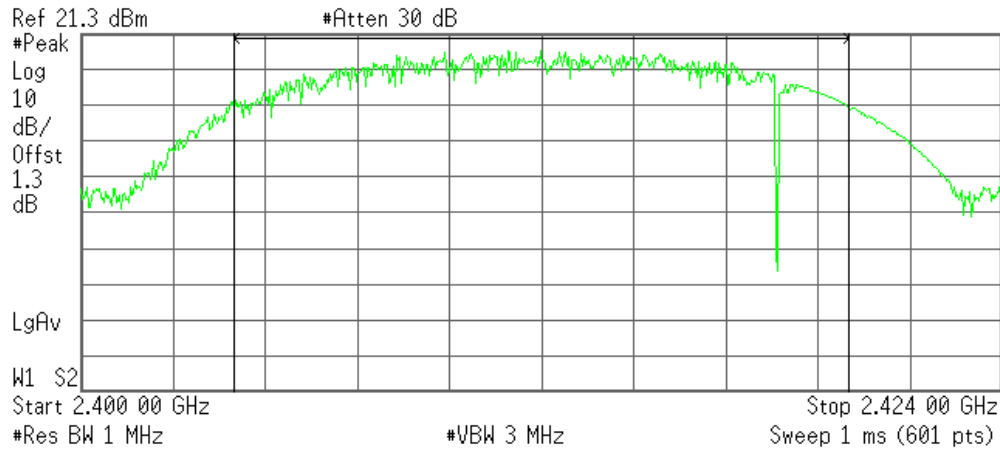
Test Plot

802.11b mode

Peak power (CH Low)

Agilent 19:24:31 Oct 30, 2006

R T



Channel Power

23.36 dBm /16.0000 MHz

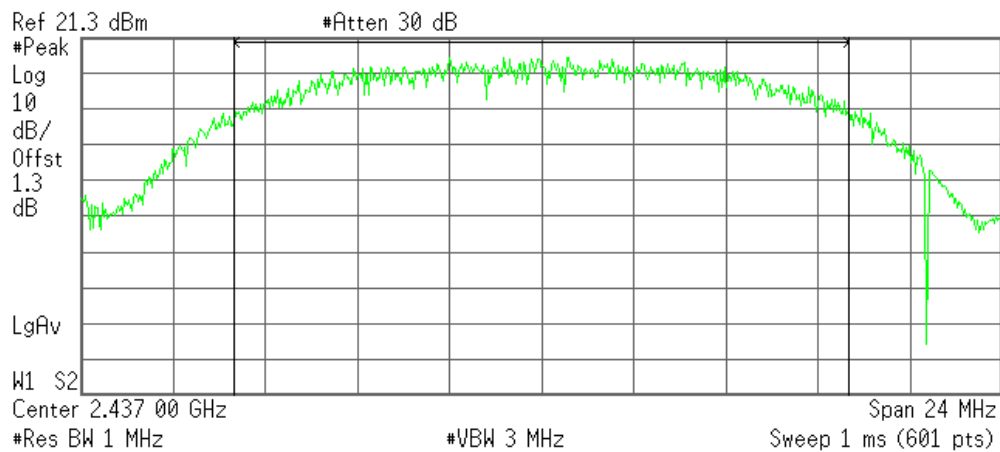
Power Spectral Density

-48.68 dBm/Hz

Peak power (CH Mid)

Agilent 19:23:34 Oct 30, 2006

R T



Channel Power

22.47 dBm /16.0000 MHz

Power Spectral Density

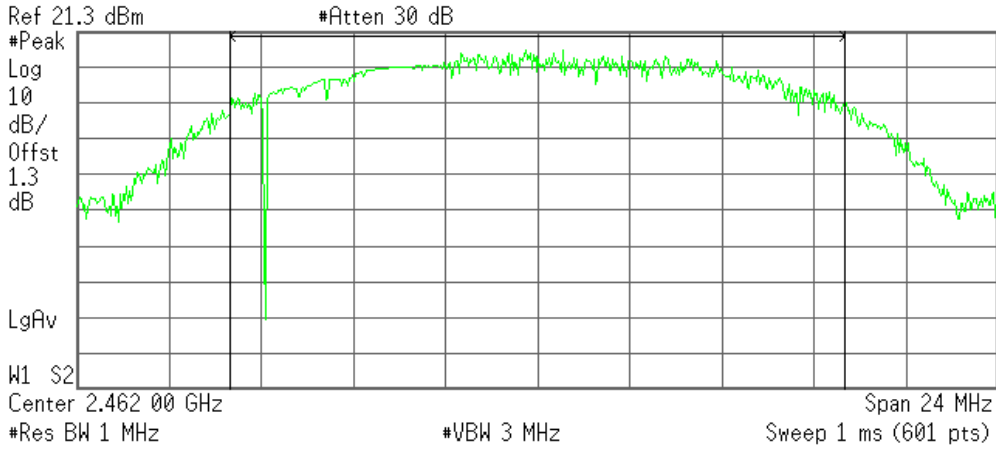
-49.57 dBm/Hz



Peak power (CH High)

Agilent 19:20:39 Oct 30, 2006

R T



Channel Power

22.33 dBm /16.0000 MHz

Power Spectral Density

-49.71 dBm/Hz

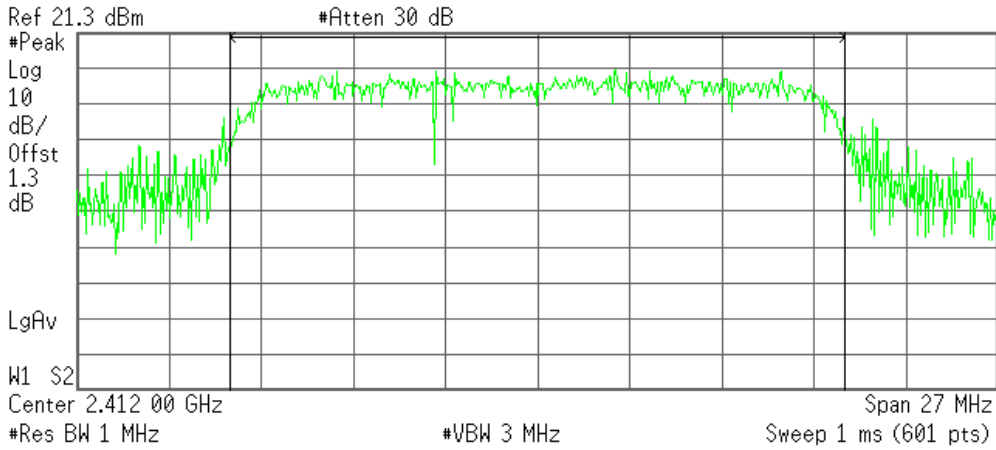


802.11g mode

Peak power (CH Low)

Agilent 19:10:00 Oct 30, 2006

R T



Channel Power

18.43 dBm /18.0000 MHz

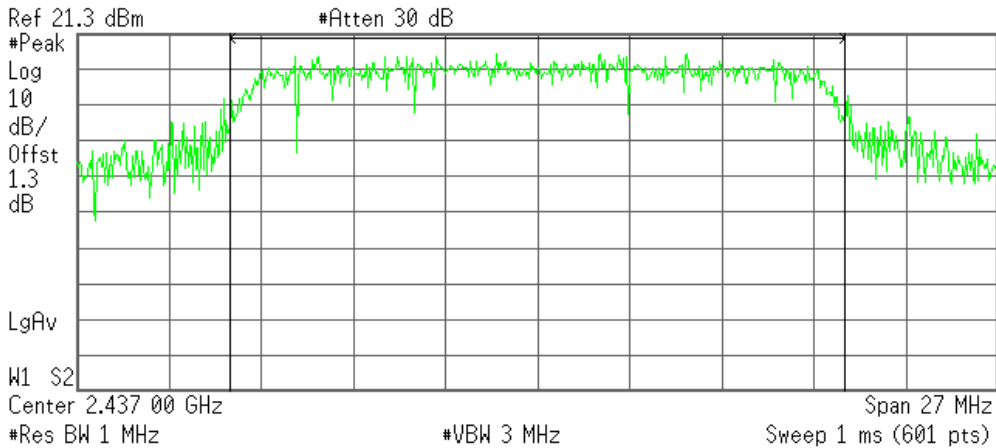
Power Spectral Density

-54.13 dBm/Hz

Peak power (CH Mid)

Agilent 19:13:52 Oct 30, 2006

R L



Channel Power

23.19 dBm /18.0000 MHz

Power Spectral Density

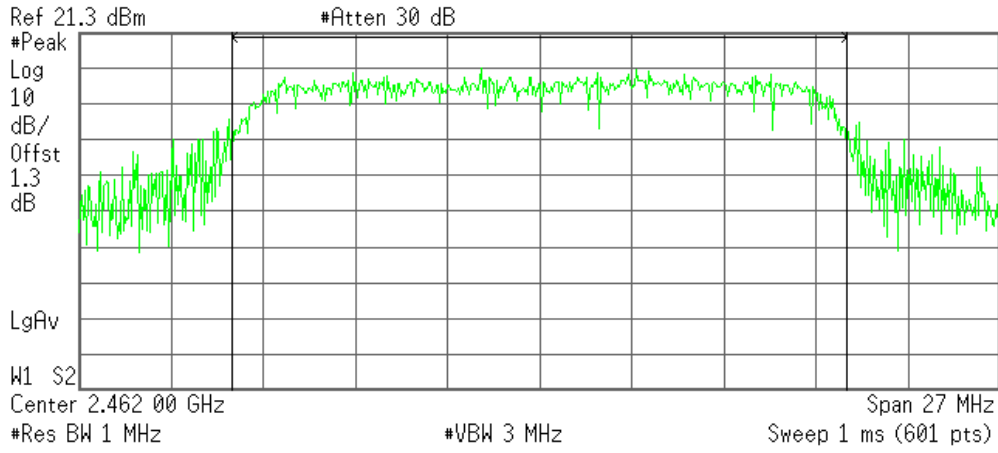
-49.36 dBm/Hz



Peak power (CH High)

Agilent 19:17:25 Oct 30, 2006

R T



Channel Power

18.41 dBm /18.0000 MHz

Power Spectral Density

-54.15 dBm/Hz

BAND EDGES MEASUREMENT

LIMIT

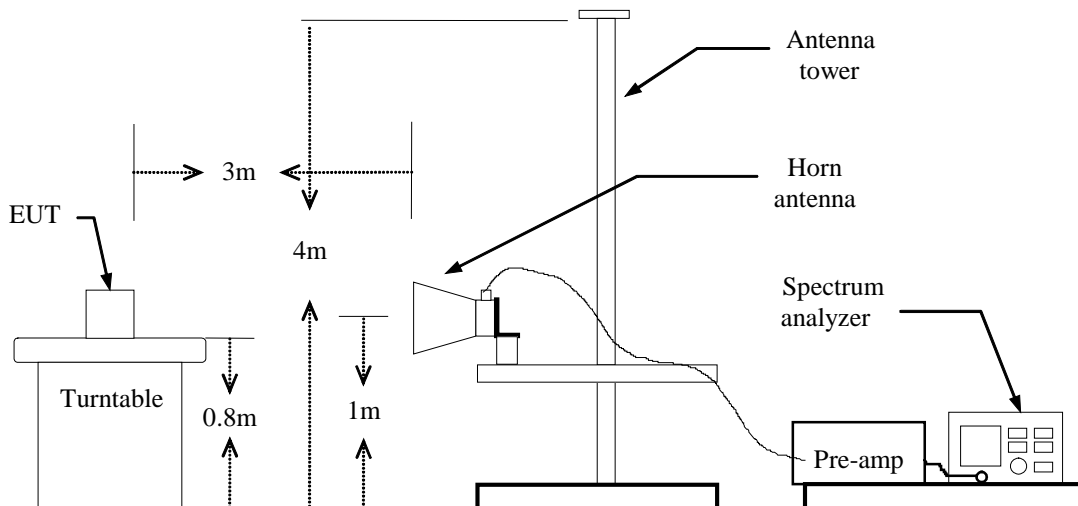
According to §15.247(c), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power. 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).

MEASUREMENT EQUIPMENT USED

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|-----------------------|--------------|--------|---------------|-----------------|
| PSA Spectrum Analyzer | Agilent | E4446A | US44300399 | 02/08/2007 |

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

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.



Band Edges (802.11b / CH Low)

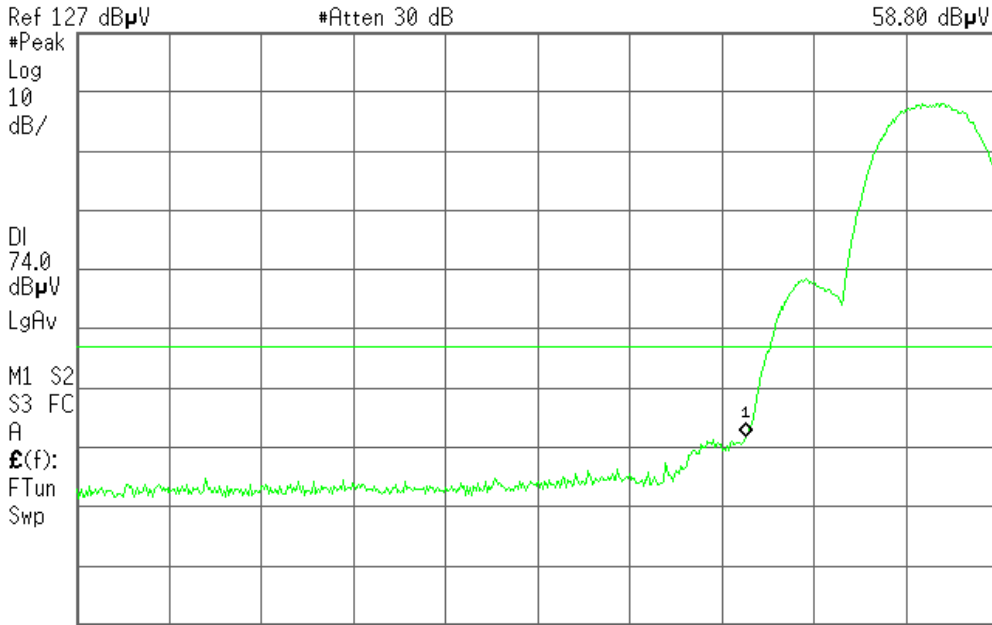
Detector mode: Peak

Polarity: Vertical

Agilent 16:52:37 Oct 30, 2006

R T

Mkr1 2.390 0 GHz
58.80 dBμV



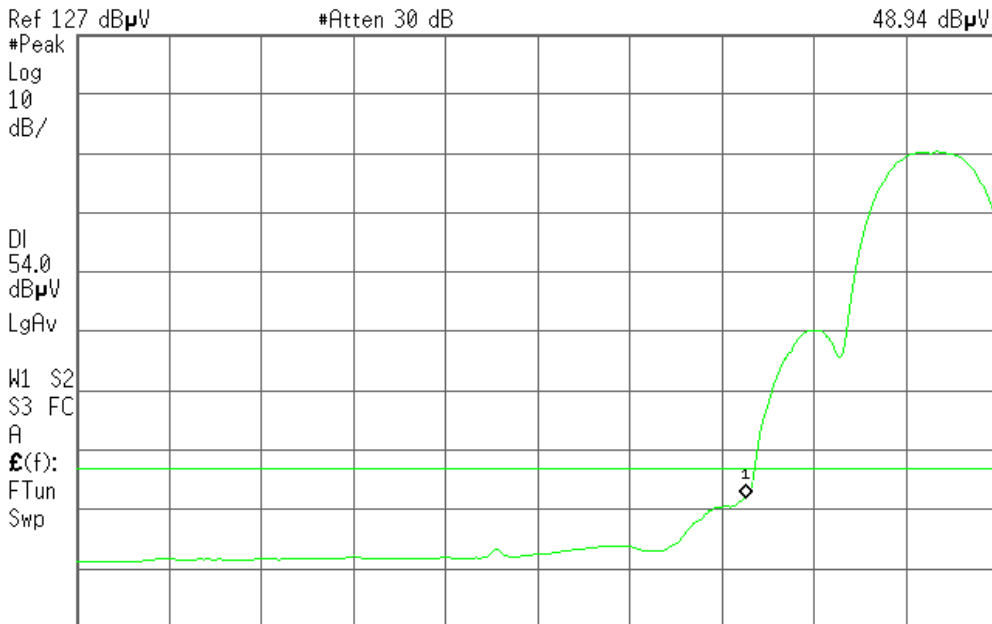
Detector mode: Average

Polarity: Vertical

Agilent 16:53:07 Oct 30, 2006

R T

Mkr1 2.390 0 GHz
48.94 dBμV





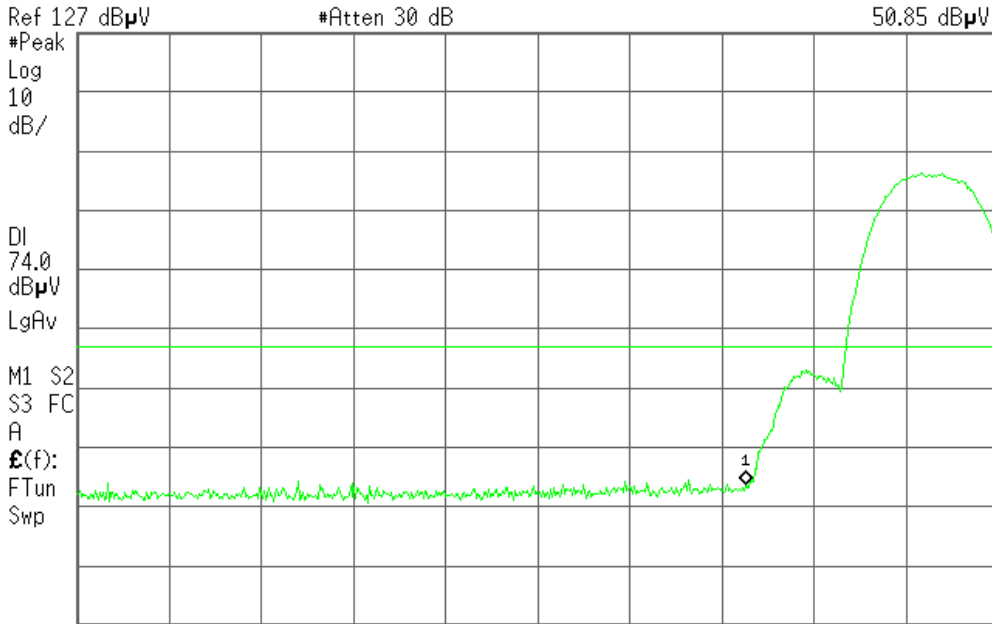
Detector mode: Peak

Polarity: Horizontal

Agilent 16:57:05 Oct 30, 2006

R T

Mkr1 2.390 0 GHz
50.85 dBμV



Start 2.310 0 GHz #Res BW 1 MHz #VBW 1 MHz Stop 2.420 0 GHz Sweep 1 ms (601 pts)

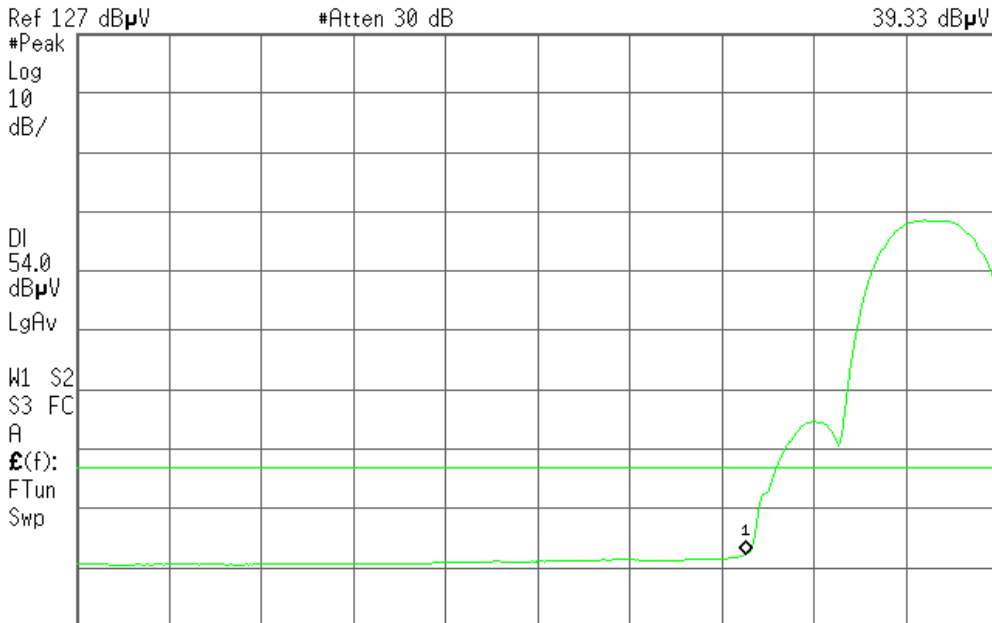
Detector mode: Average

Polarity: Horizontal

Agilent 16:57:37 Oct 30, 2006

R T

Mkr1 2.390 0 GHz
39.33 dBμV



Start 2.310 0 GHz #Res BW 1 MHz #VBW 10 Hz Stop 2.420 0 GHz Sweep 8.577 s (601 pts)



Band Edges (802.11b / CH High)

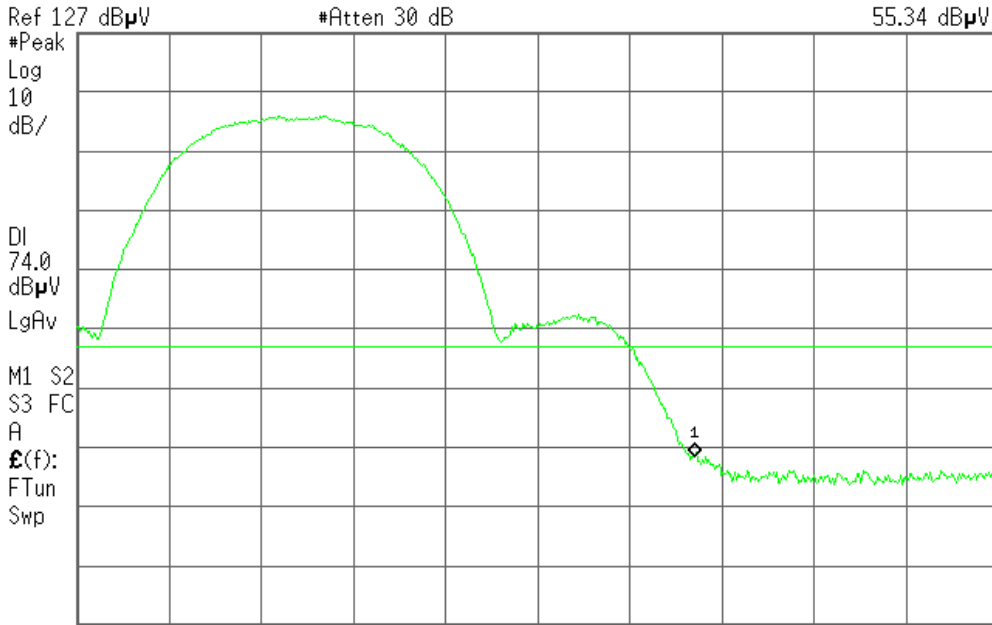
Detector mode: Peak

Polarity: Vertical

Agilent 16:51:03 Oct 30, 2006

R L

Mkr1 2.483 50 GHz
55.34 dBμV



Start 2.450 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 1 ms (601 pts)

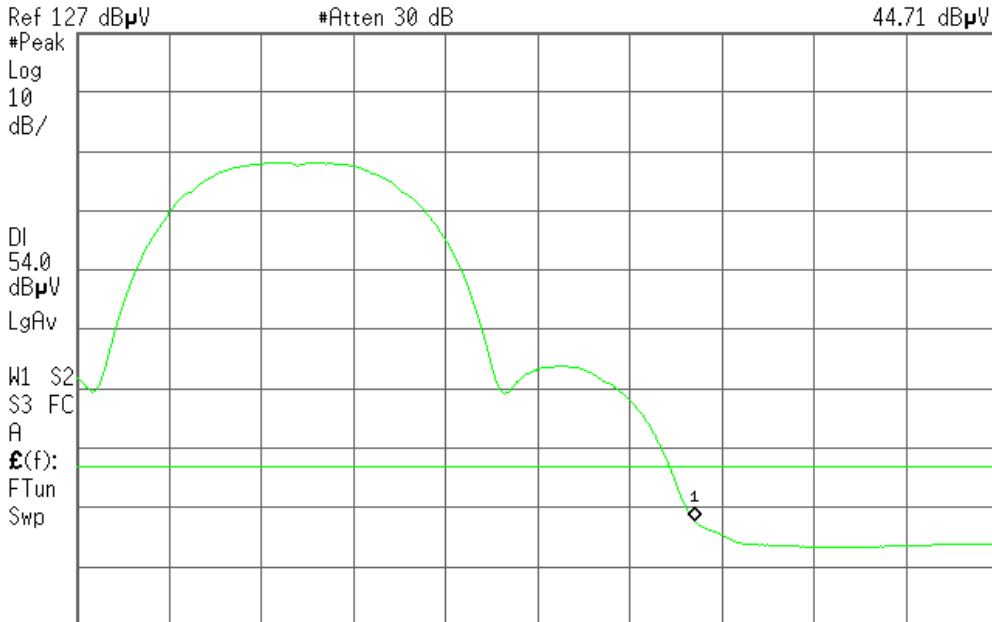
Detector mode: Average

Polarity: Vertical

Agilent 16:51:37 Oct 30, 2006

R T

Mkr1 2.483 50 GHz
44.71 dBμV



Start 2.450 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 3.899 s (601 pts)



Detector mode: Peak

Polarity: Horizontal

Agilent 16:58:49 Oct 30, 2006

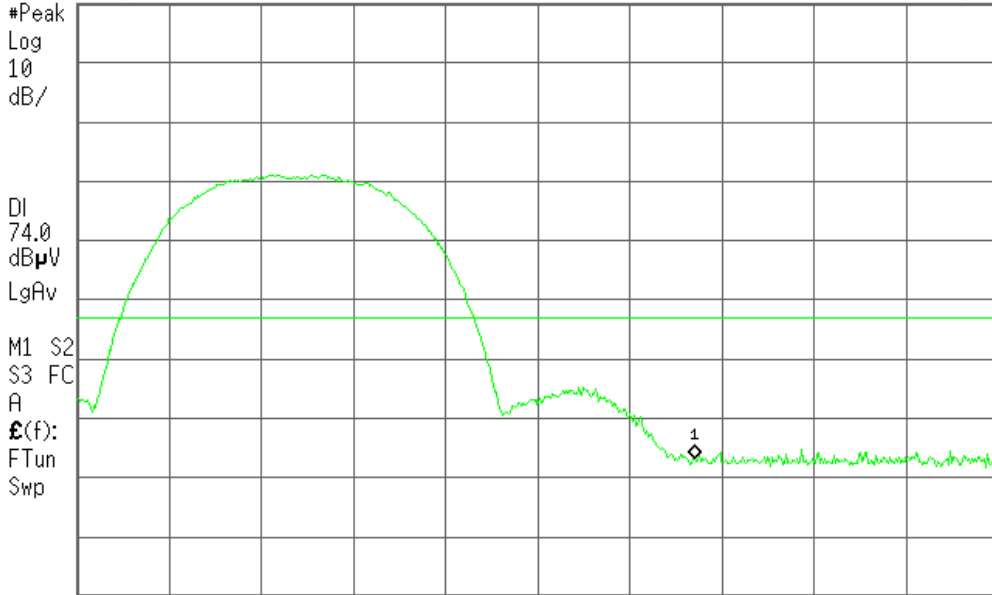
R T

Mkr1 2.483 50 GHz

50.32 dBμV

Ref 127 dBμV

#Atten 30 dB



Start 2.450 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 1 ms (601 pts)

Detector mode: Average

Polarity: Horizontal

Agilent 16:59:19 Oct 30, 2006

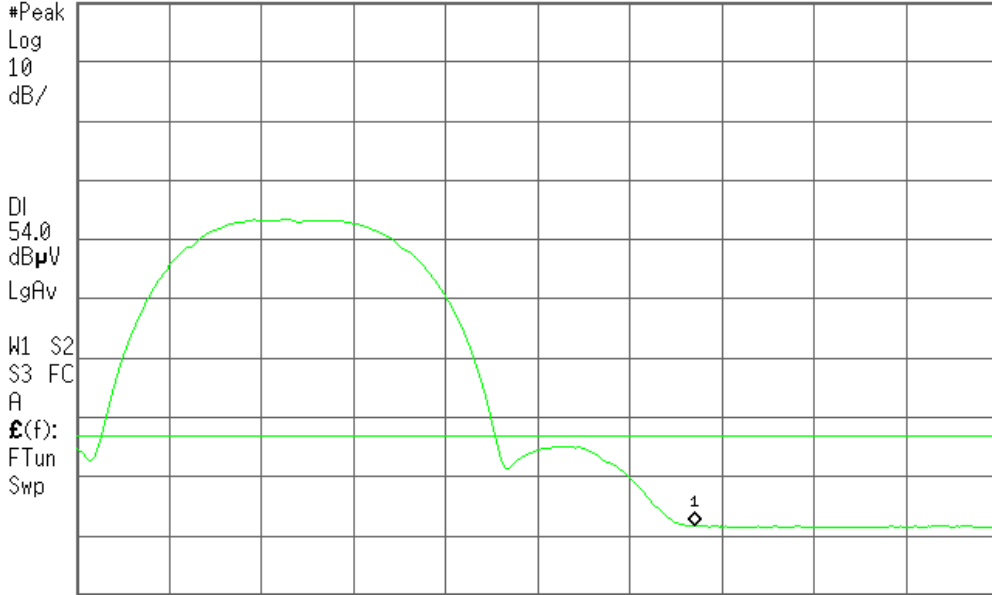
R T

Mkr1 2.483 50 GHz

38.70 dBμV

Ref 127 dBμV

#Atten 30 dB



Start 2.450 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 3.899 s (601 pts)



Band Edges (802.11g / CH Low)

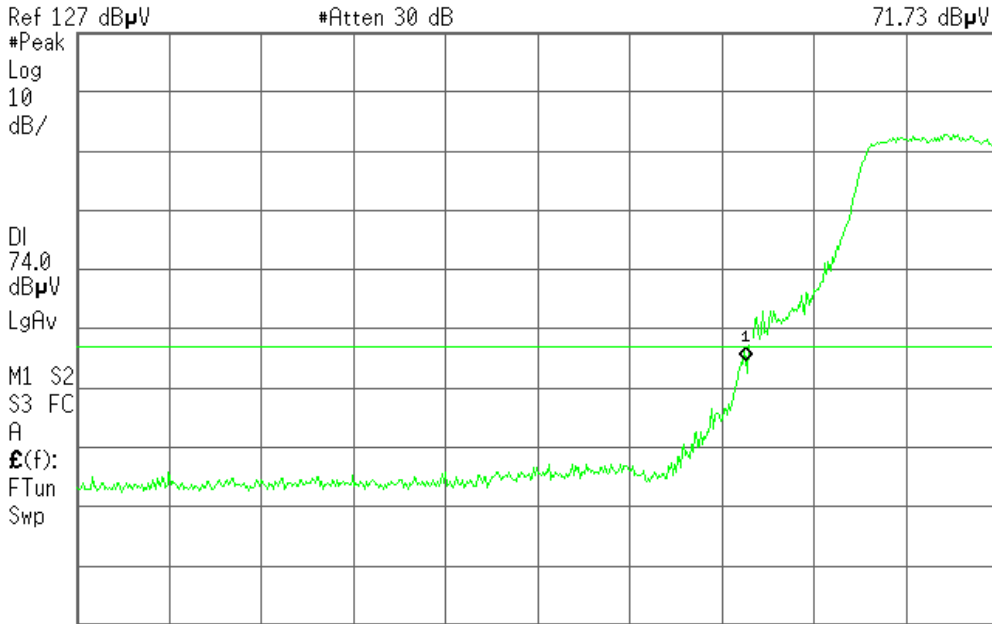
Detector mode: Peak

Polarity: Vertical

Agilent 16:44:51 Oct 30, 2006

R T

Mkr1 2.390 0 GHz
71.73 dBμV



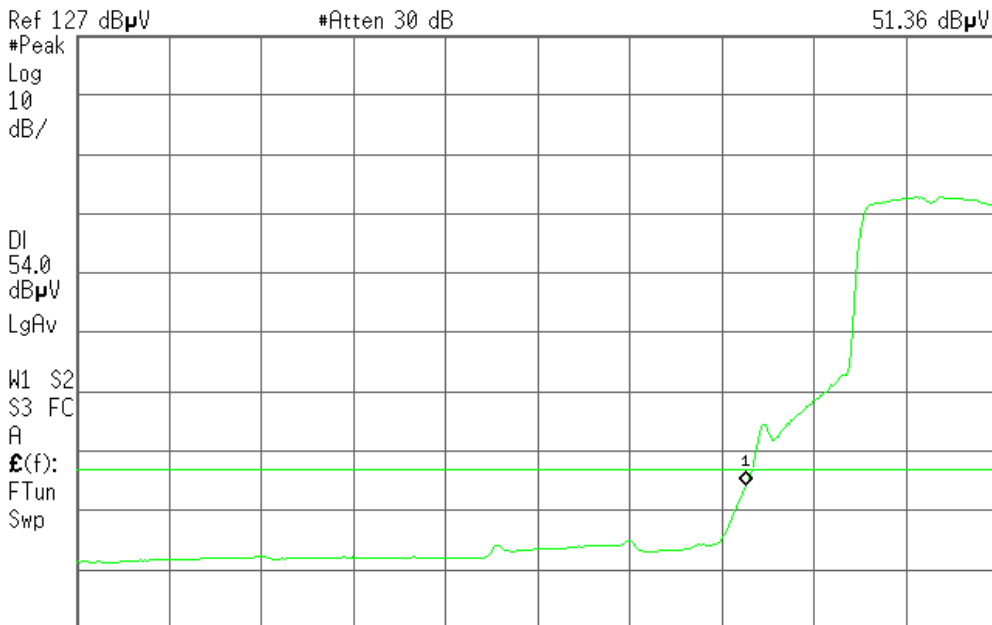
Detector mode: Average

Polarity: Vertical

Agilent 16:45:51 Oct 30, 2006

R T

Mkr1 2.390 0 GHz
51.36 dBμV



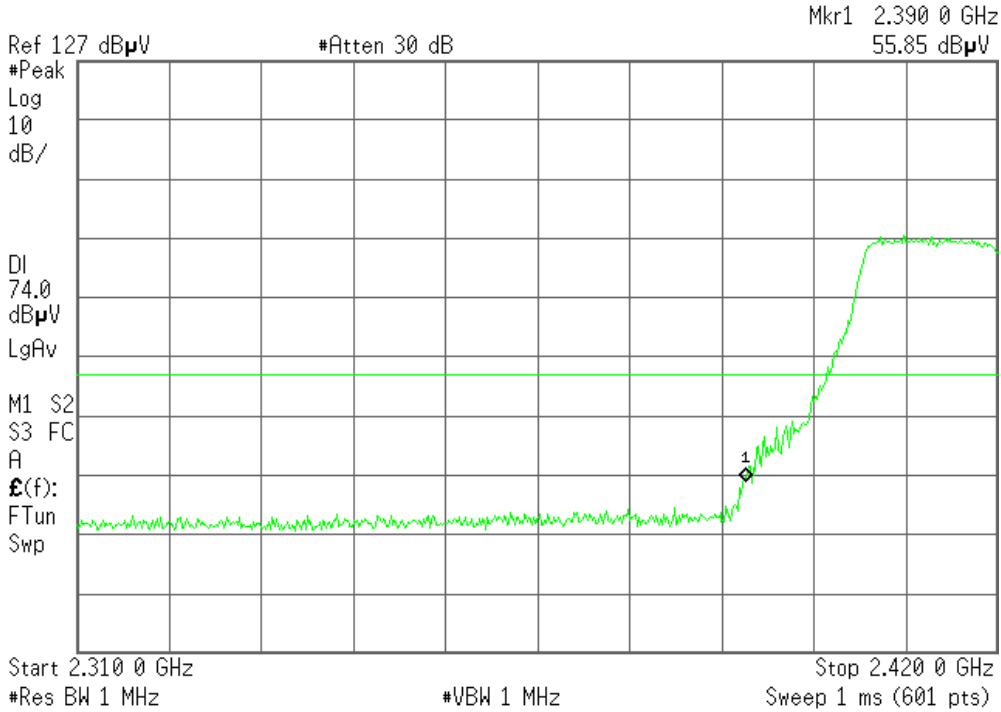


Detector mode: Peak

Polarity: Horizontal

Agilent 17:02:20 Oct 30, 2006

R T

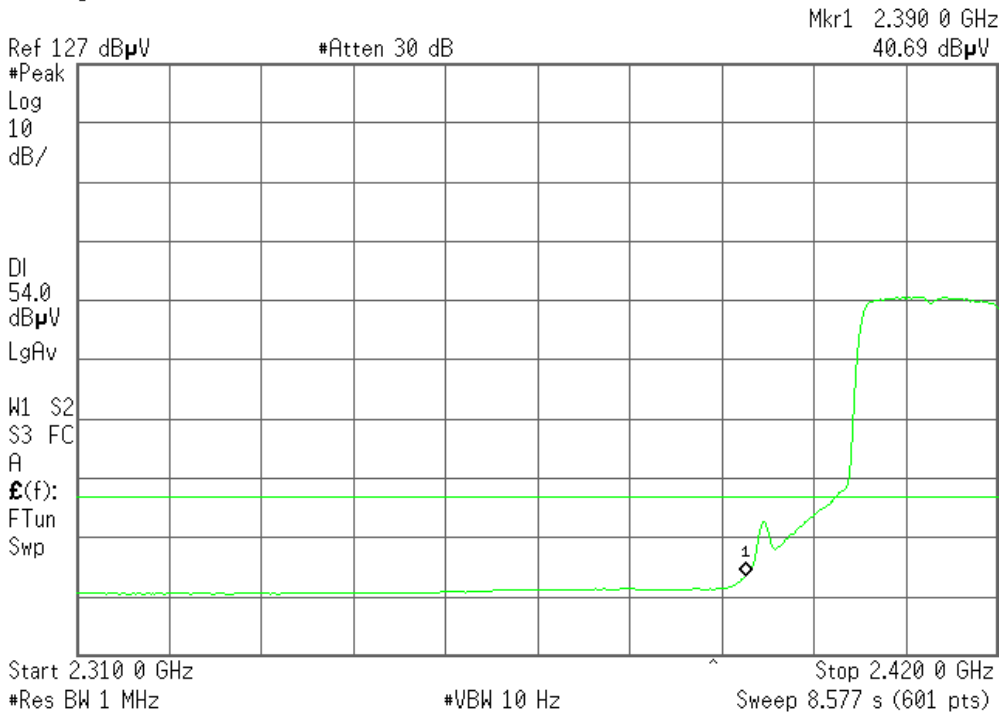


Detector mode: Average

Polarity: Horizontal

Agilent 17:02:50 Oct 30, 2006

R T





Band Edges (802.11g / CH High)

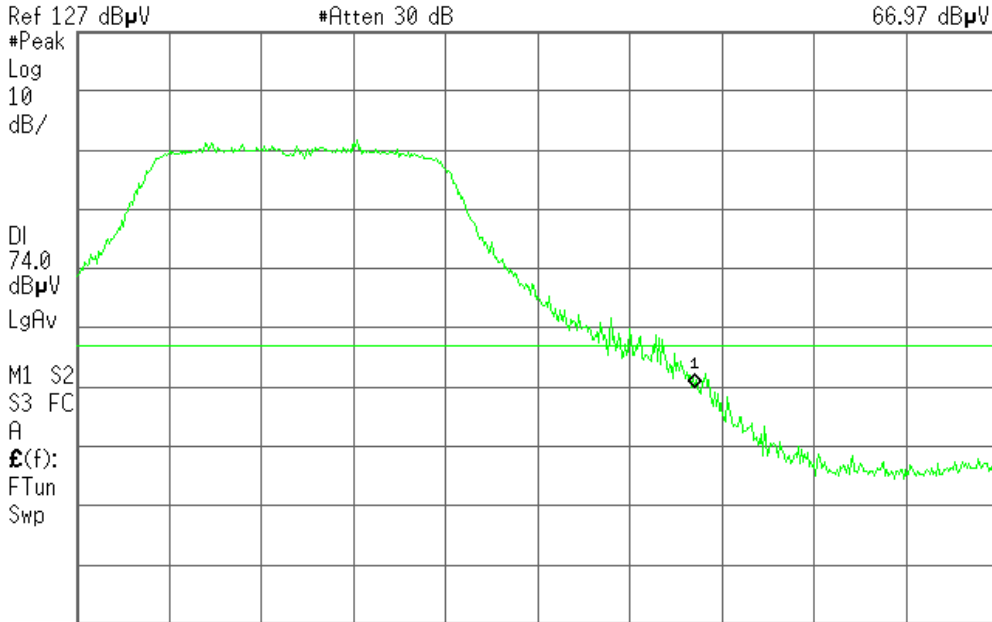
Detector mode: Peak

Polarity: Vertical

Agilent 16:49:14 Oct 30, 2006

R T

Mkr1 2.483 50 GHz
66.97 dBμV



Start 2.450 00 GHz Stop 2.500 00 GHz
#Res BW 1 MHz #VBW 1 MHz Sweep 1 ms (601 pts)

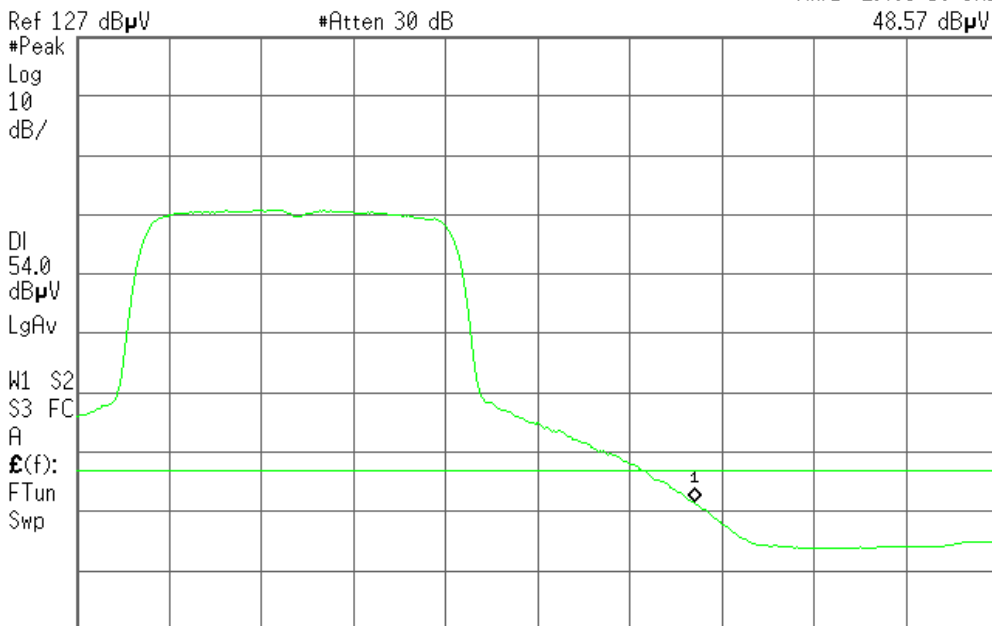
Detector mode: Average

Polarity: Vertical

Agilent 16:49:44 Oct 30, 2006

R T

Mkr1 2.483 50 GHz
48.57 dBμV



Start 2.450 00 GHz Stop 2.500 00 GHz
#Res BW 1 MHz #VBW 10 Hz Sweep 3.899 s (601 pts)



Detector mode: Peak

Polarity: Horizontal

Agilent 17:01:16 Oct 30, 2006

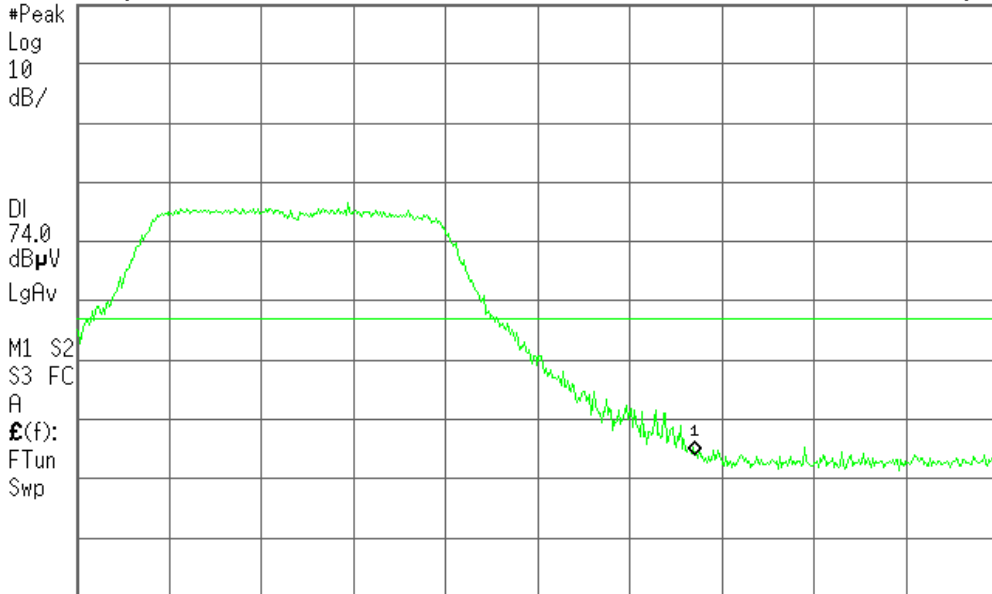
R T

Mkr1 2.483 50 GHz

51.01 dB μ V

Ref 127 dB μ V

#Atten 30 dB



Start 2.450 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 1 ms (601 pts)

Detector mode: Average

Polarity: Horizontal

Agilent 17:01:33 Oct 30, 2006

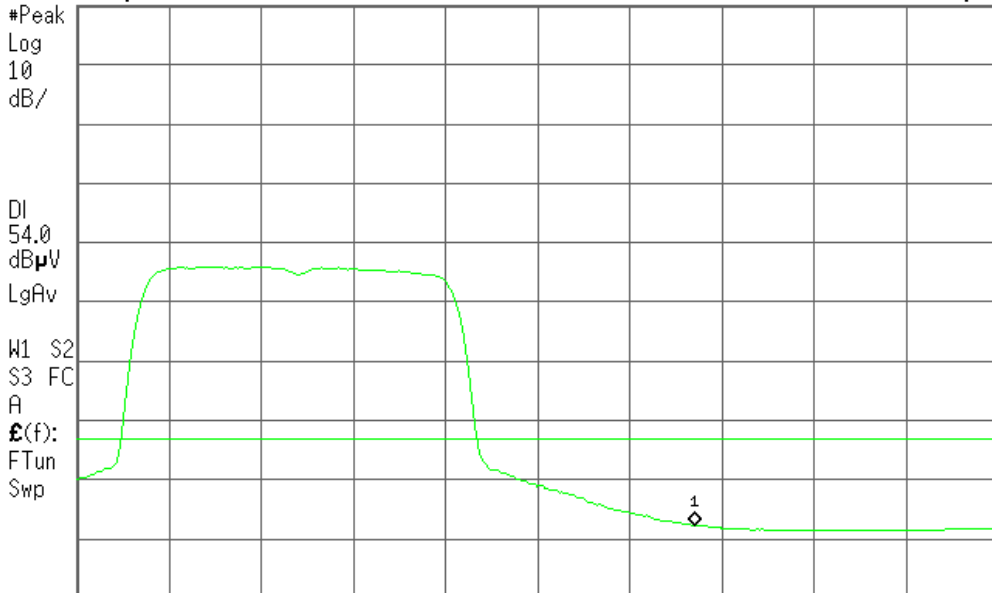
R T

Mkr1 2.483 50 GHz

39.32 dB μ V

Ref 127 dB μ V

#Atten 30 dB



Start 2.450 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 3.899 s (601 pts)

PEAK POWER SPECTRAL DENSITY

LIMIT

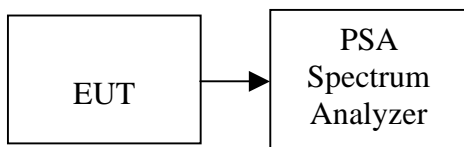
1. For direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.
2. The direct sequence operating of the hybrid system, with the frequency hopping operation turned off, shall comply with the power density requirements of paragraph (d) of this section.

MEASUREMENT EQUIPMENT USED

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|-----------------------|--------------|--------|---------------|-----------------|
| PSA Spectrum Analyzer | Agilent | E4446A | US44300399 | 02/08/2007 |

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

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 | Reading (dBm) | Factor (dB) | PPSD (dBm) | Limit (dBm) | Result |
|---------|-----------|---------------|-------------|------------|-------------|--------|
| Low | 2412 | -4.19 | 1.30 | -2.89 | 8.00 | PASS |
| Mid | 2437 | -5.76 | 1.30 | -4.46 | | PASS |
| High | 2462 | -6.18 | 1.30 | -4.88 | | PASS |

Test mode: IEEE 802.11g

| Channel | Frequency | Reading (dBm) | Factor (dB) | PPSD (dBm) | Limit (dBm) | Result |
|---------|-----------|---------------|-------------|------------|-------------|--------|
| Low | 2412 | -11.51 | 1.30 | -10.21 | 8.00 | PASS |
| Mid | 2437 | -6.60 | 1.30 | -5.30 | | PASS |
| High | 2462 | -10.32 | 1.30 | -9.02 | | PASS |



Test Plot

802.11b mode

PPSD (CH Low)

Agilent 19:31:01 Oct 30, 2006

R T

Mkr1 2.412 009 0 GHz

-2.89 dBm

Ref 7.3 dBm

#Atten 16 dB

#Peak

Log

10

dB/

Offst

1.3

dB

LgAv

W1 S2

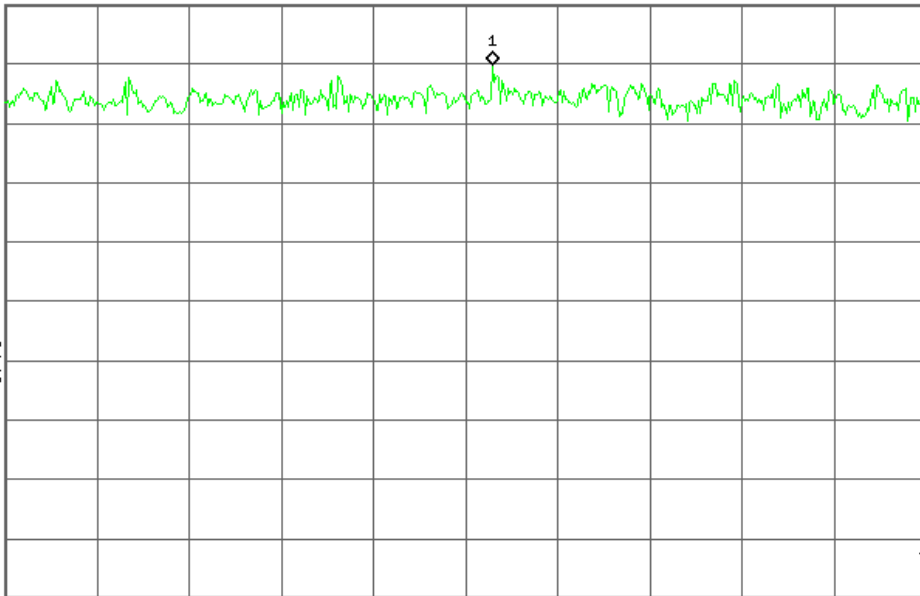
S3 FS

A

£(f):

f>50k

Swp



Center 2.412 000 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)

PPSD (CH Mid)

Agilent 19:33:14 Oct 30, 2006

R L

Mkr1 2.437 010 5 GHz

-4.46 dBm

Ref 7.3 dBm

#Atten 16 dB

#Peak

Log

10

dB/

Offst

1.3

dB

LgAv

W1 S2

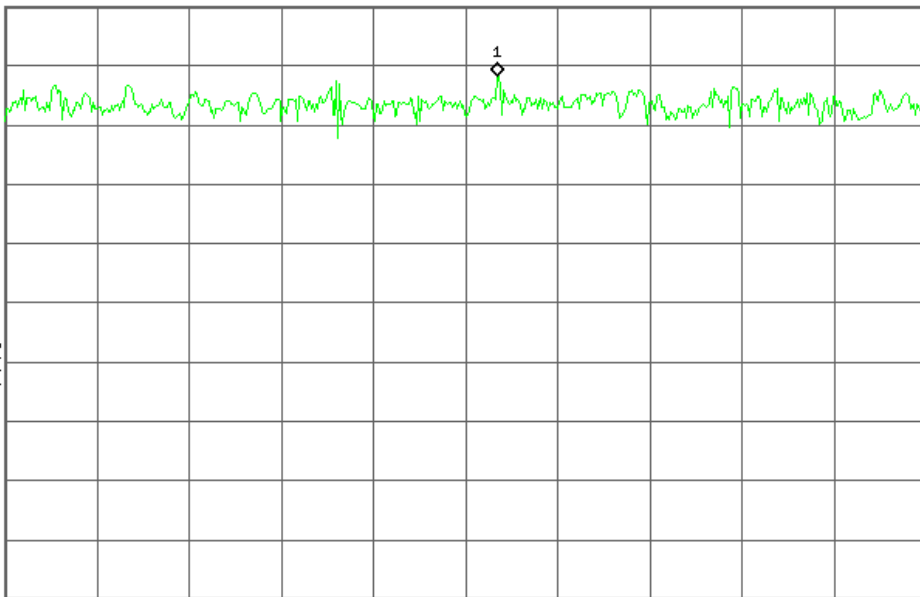
S3 FC

A

£(f):

f>50k

Swp



Center 2.437 000 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)



PPSD (CH High)

Agilent 19:35:37 Oct 30, 2006

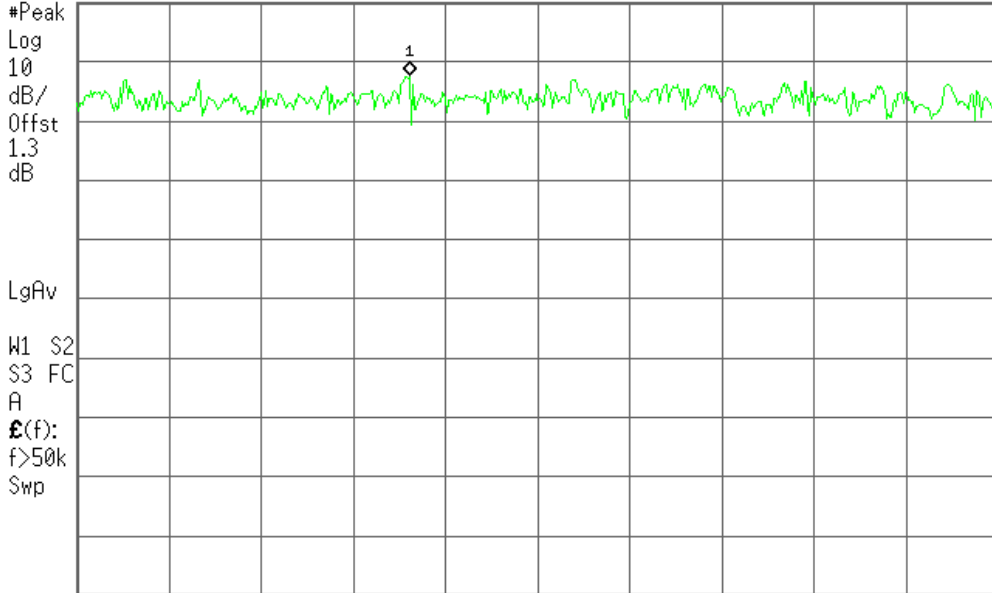
R T

Mkr1 2.461 958 4 GHz

-4.88 dBm

Ref 7.3 dBm

#Atten 16 dB



Center 2.462 000 0 GHz ^

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)



802.11g mode

PPSD (CH Low)

Agilent 19:48:13 Oct 30, 2006

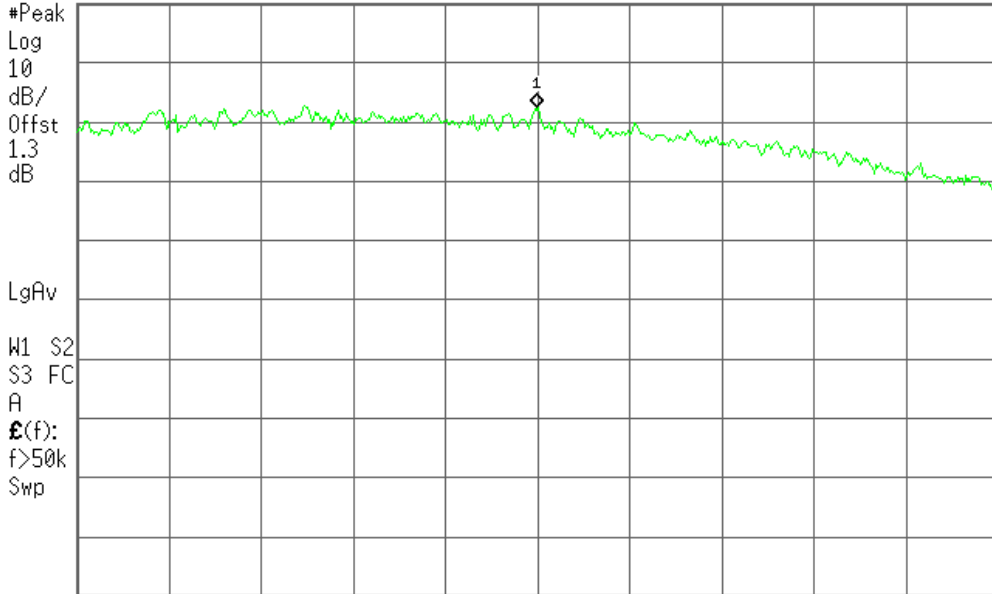
R T

Mkr1 2.411 759 8 GHz

-10.21 dBm

Ref 7.3 dBm

#Atten 16 dB



Start 2.411 609 8 GHz

Stop 2.411 909 8 GHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)

PPSD (CH Mid)

Agilent 19:44:13 Oct 30, 2006

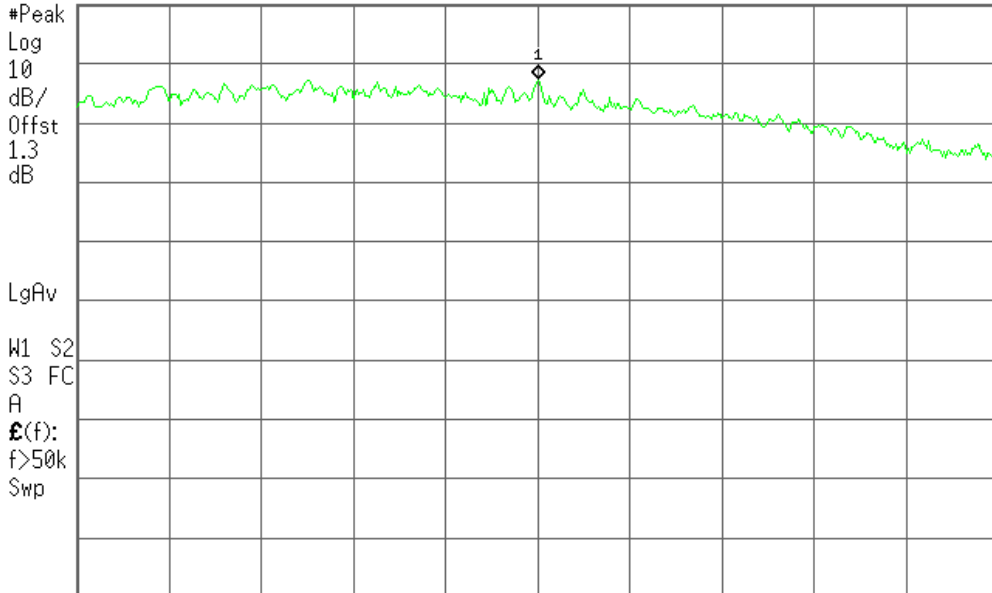
R T

Mkr1 2.436 759 7 GHz

-5.30 dBm

Ref 7.3 dBm

#Atten 16 dB



Center 2.436 759 2 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)



PPSD (CH High)

Agilent 19:40:41 Oct 30, 2006

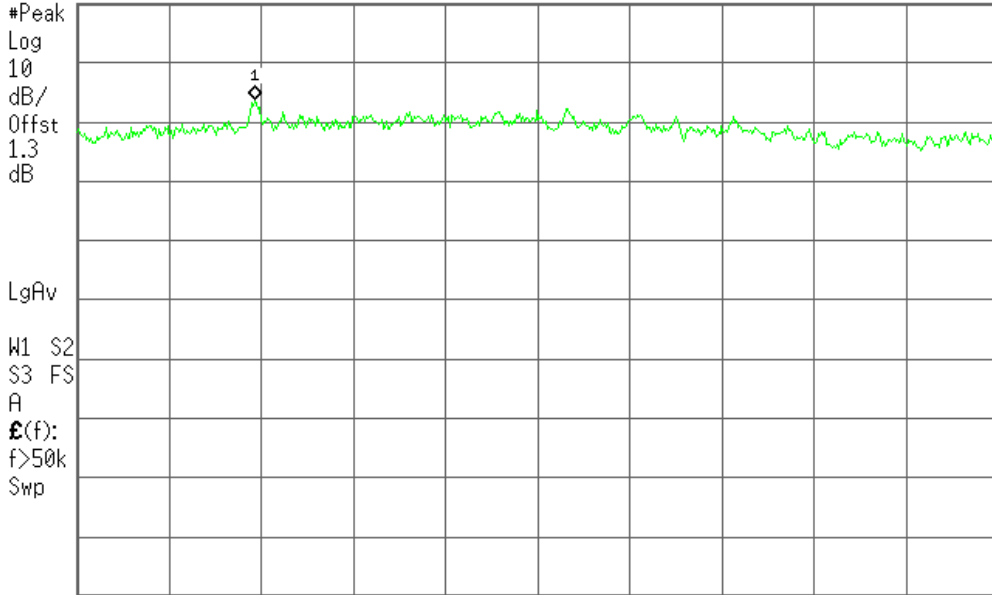
R T

Mkr1 2.461 009 3 GHz

-9.02 dBm

Ref 7.3 dBm

#Atten 16 dB



Center 2.461 101 5 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)



SPURIOUS EMISSIONS

Conducted Measurement

LIMIT

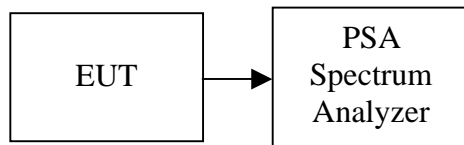
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

MEASUREMENT EQUIPMENT USED

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|-----------------------|--------------|--------|---------------|-----------------|
| PSA Spectrum Analyzer | Agilent | E4446A | US44300399 | 02/08/2007 |

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

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



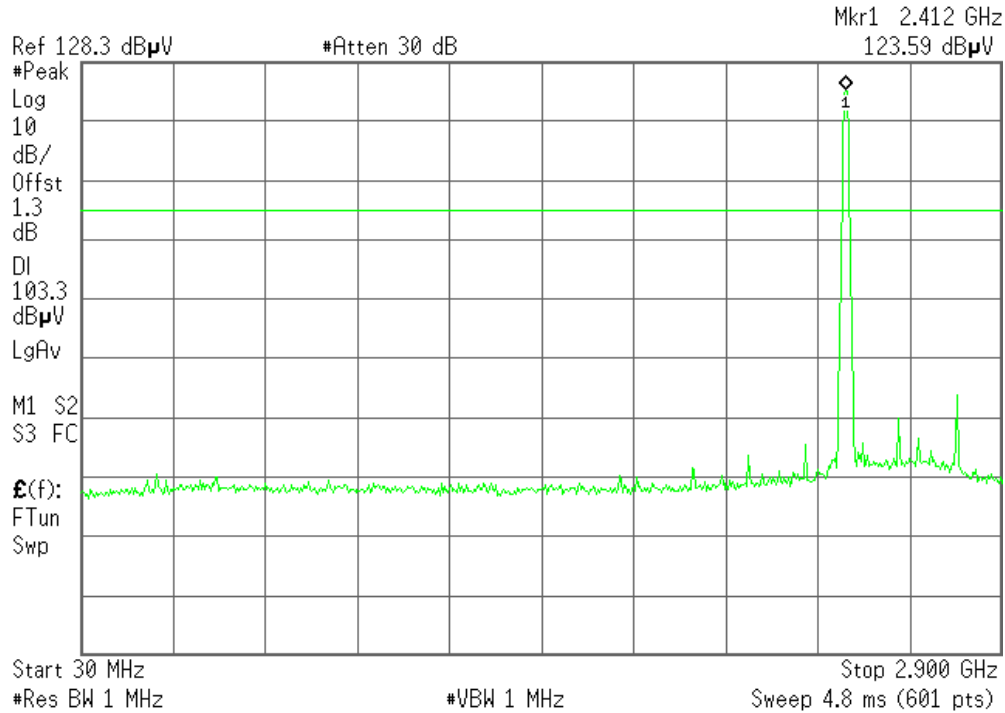
Test Plot

IEEE 802.11b / CH Low

30MHz ~ 2.9GHz

Agilent 08:31:10 Oct 31, 2006

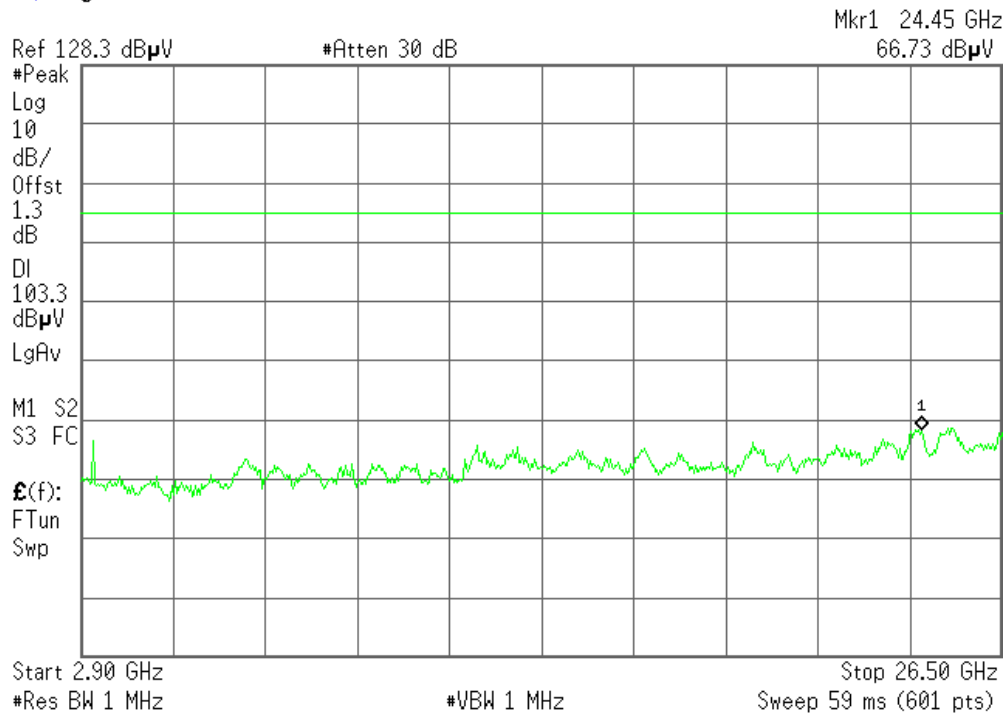
R T



2.9GHz ~ 26.5GHz

Agilent 08:31:33 Oct 31, 2006

R T



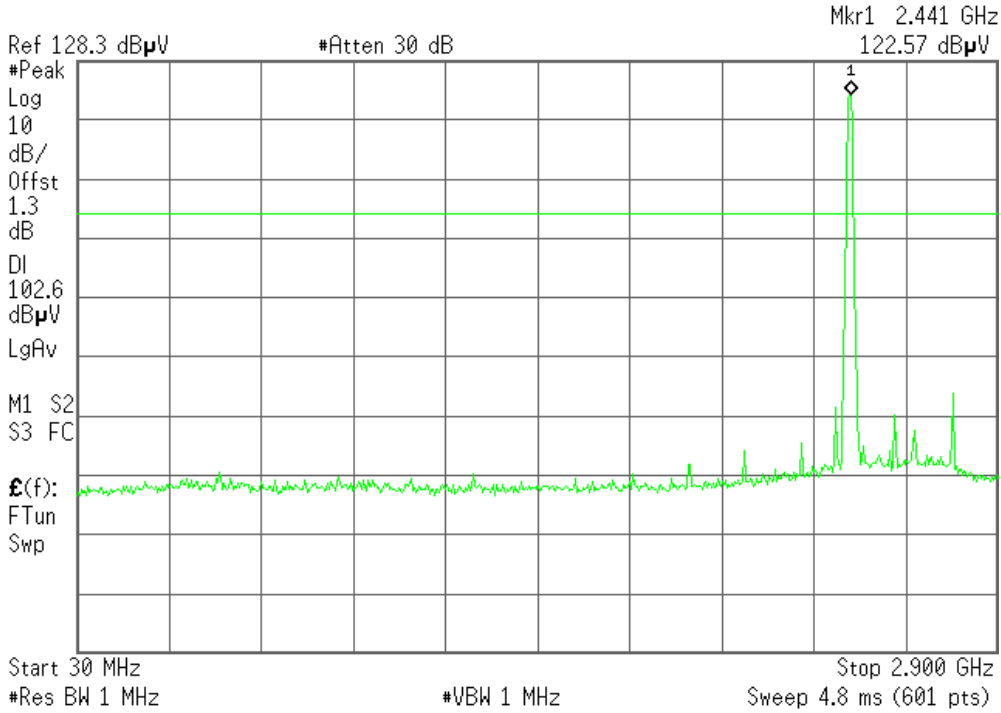


IEEE 802.11b / CH Mid

30MHz ~ 2.9GHz

Agilent 08:30:07 Oct 31, 2006

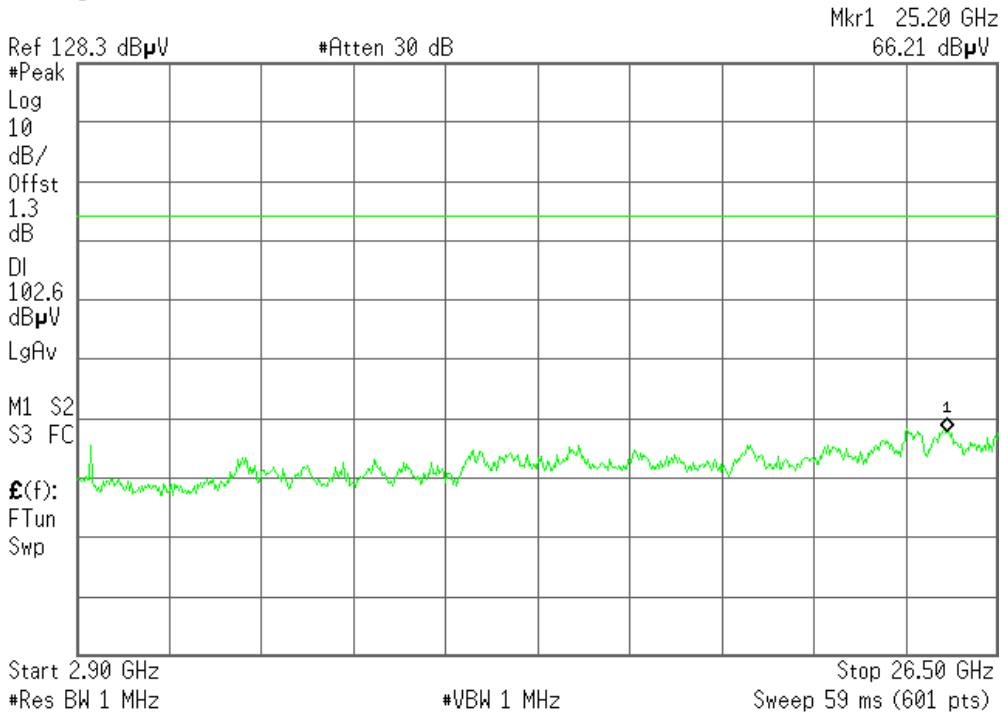
R T



2.9GHz ~ 26.5GHz

Agilent 08:30:27 Oct 31, 2006

R T



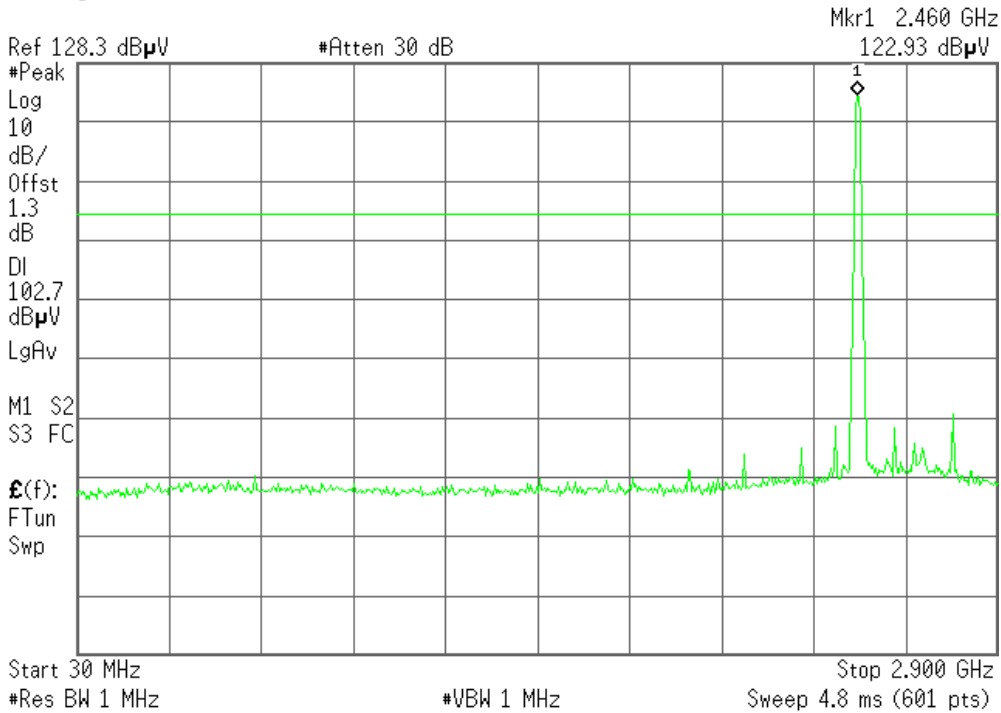


IEEE 802.11b / CH High

30MHz ~ 2.9GHz

Agilent 08:28:55 Oct 31, 2006

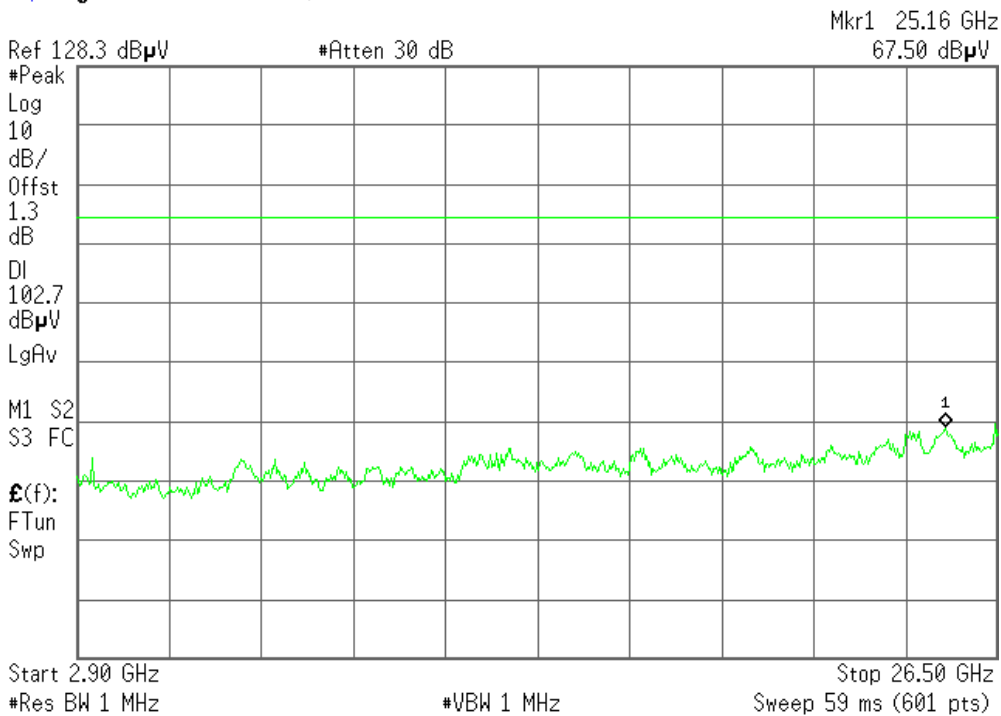
R T



2.9GHz ~ 26.5GHz

Agilent 08:29:22 Oct 31, 2006

R T



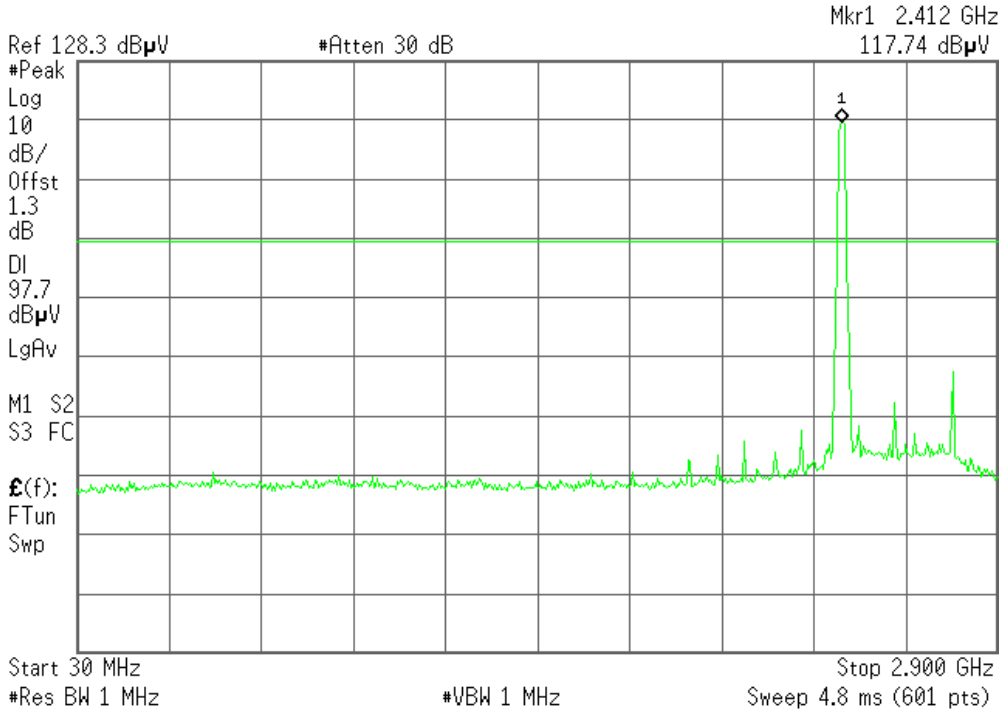


IEEE 802.11g / CH Low

30MHz ~ 2.9GHz

Agilent 08:24:08 Oct 31, 2006

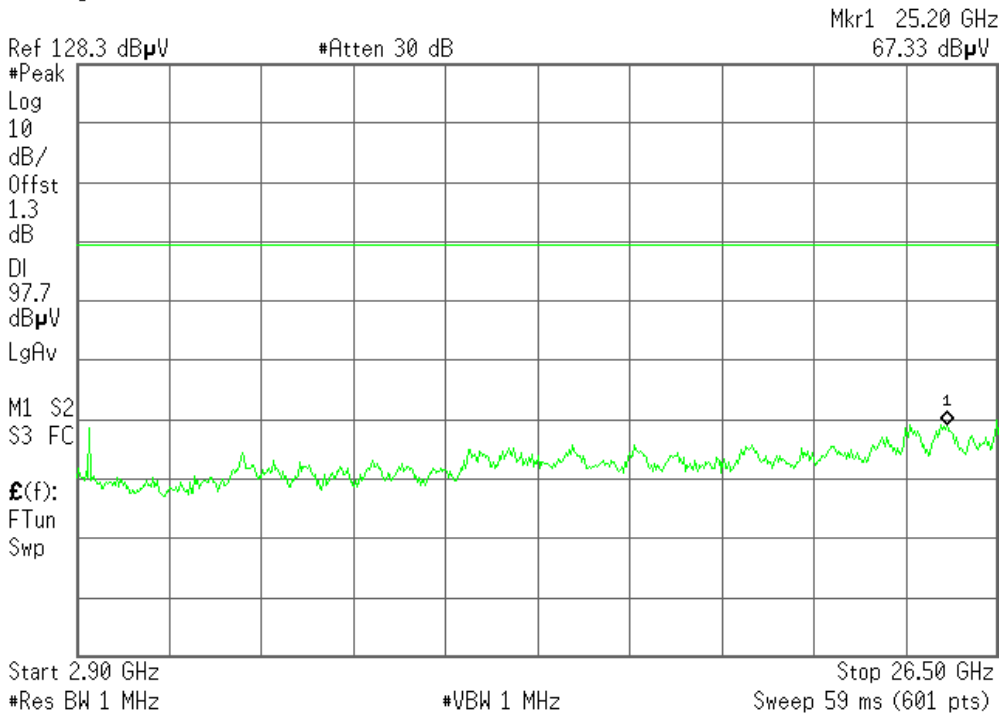
R T



2.9GHz ~ 26.5GHz

Agilent 08:24:55 Oct 31, 2006

R T



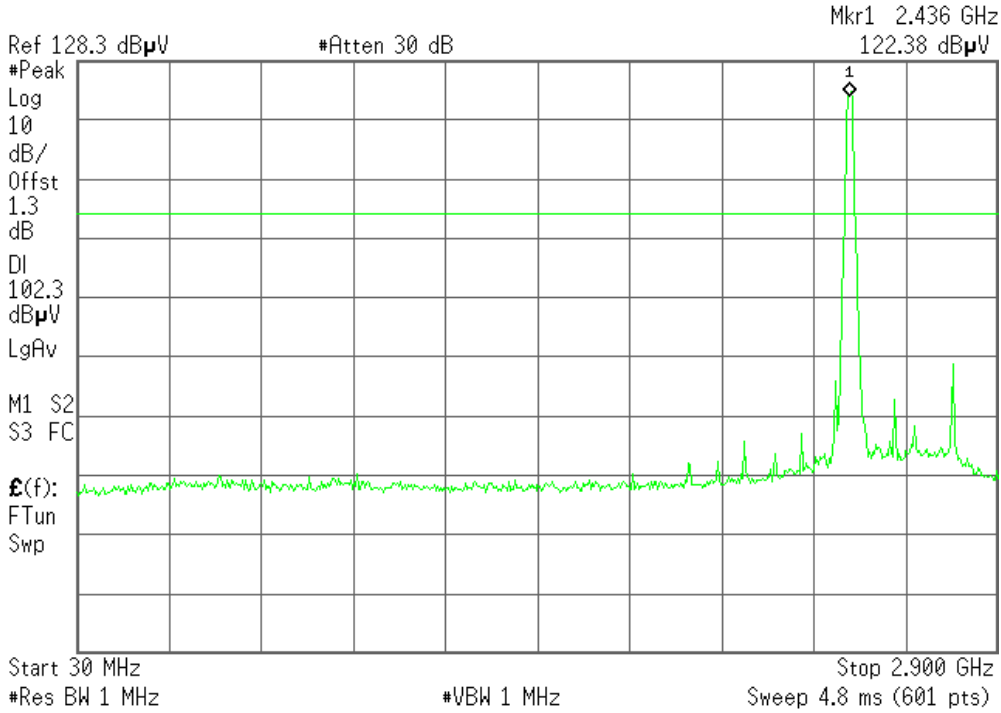


IEEE 802.11g / CH Mid

30MHz ~ 2.9GHz

Agilent 08:25:56 Oct 31, 2006

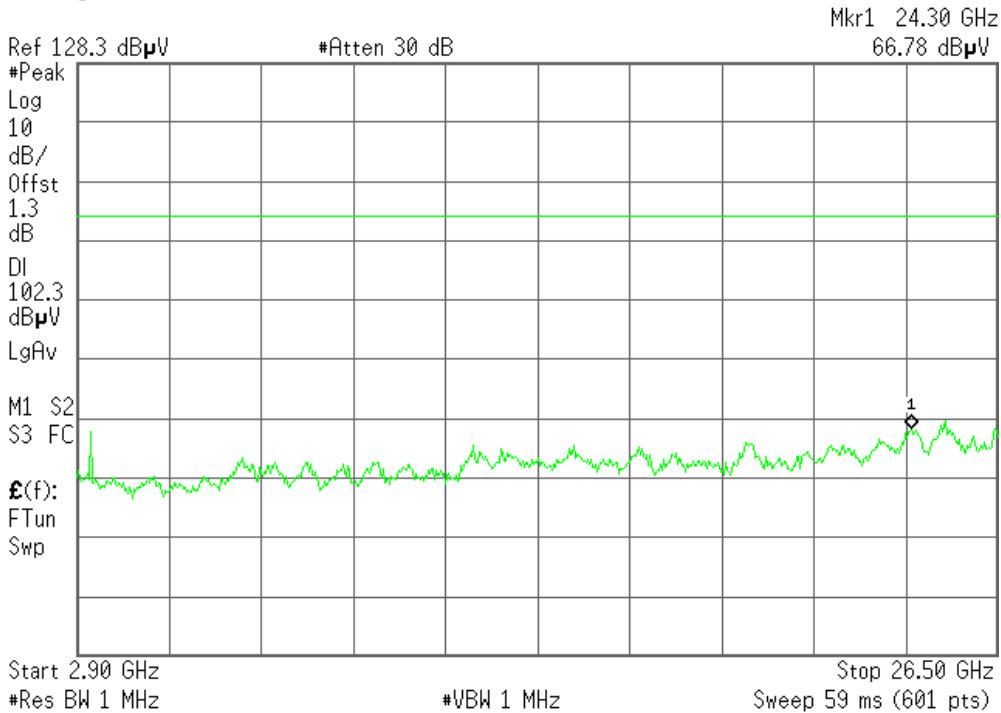
R T



2.9GHz ~ 26.5GHz

Agilent 08:26:22 Oct 31, 2006

R T



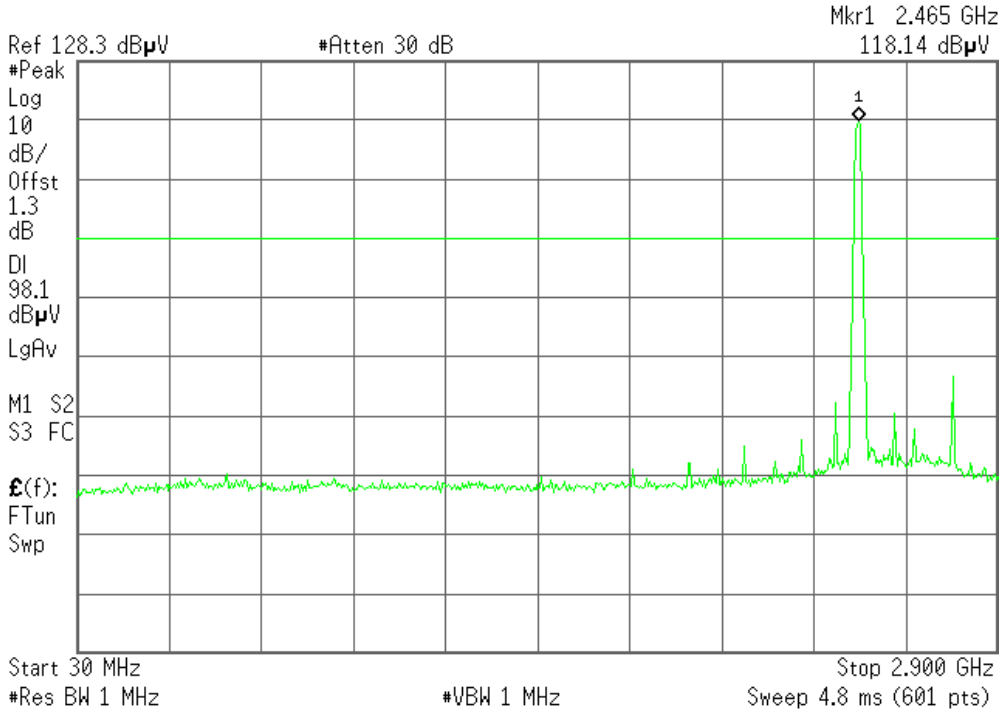


IEEE 802.11g / CH High

30MHz ~ 2.9GHz

Agilent 08:27:24 Oct 31, 2006

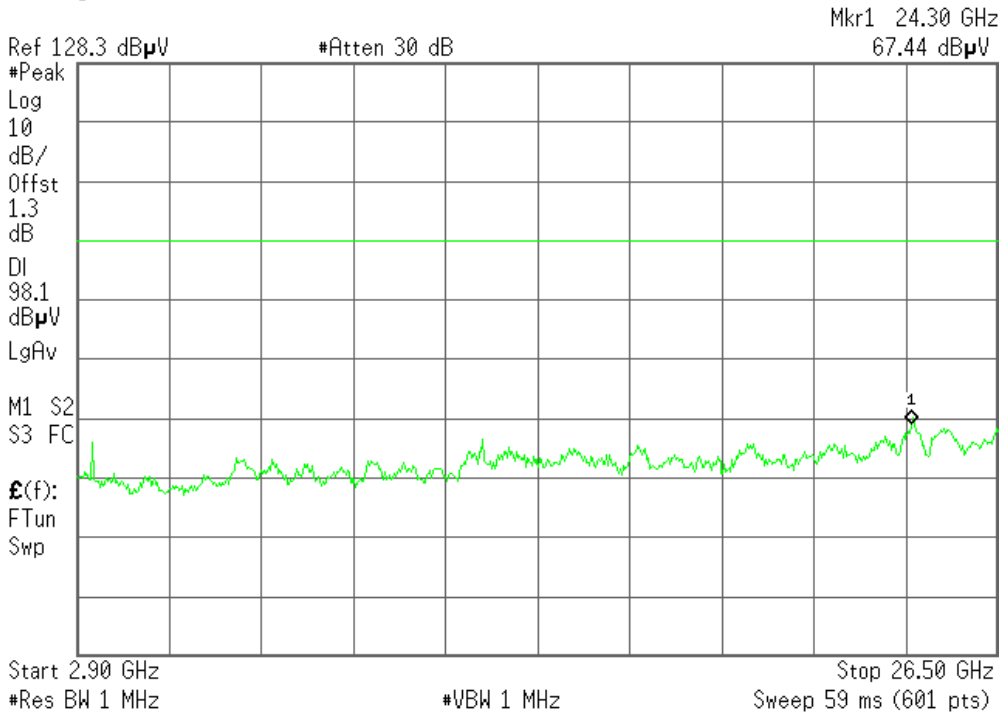
R L



2.9GHz ~ 26.5GHz

Agilent 08:28:01 Oct 31, 2006

R T





Radiated Emissions

LIMIT

1. 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 (mV/m) | Measurement Distance (m) |
|-----------------|-----------------------|--------------------------|
| 30-88 | 100* | 3 |
| 88-216 | 150* | 3 |
| 216-960 | 200* | 3 |
| Above 960 | 500 | 3 |

Note: 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 above emission table, the tighter limit applies at the band edges.

| Frequency (Hz) | Field Strength ($\mu\text{V/m}$ at 3-meter) | Field Strength ($\text{dB}\mu\text{V/m}$ at 3-meter) |
|----------------|--|---|
| 30-88 | 100 | 40 |
| 88-216 | 150 | 43.5 |
| 216-960 | 200 | 46 |
| Above 960 | 500 | 54 |

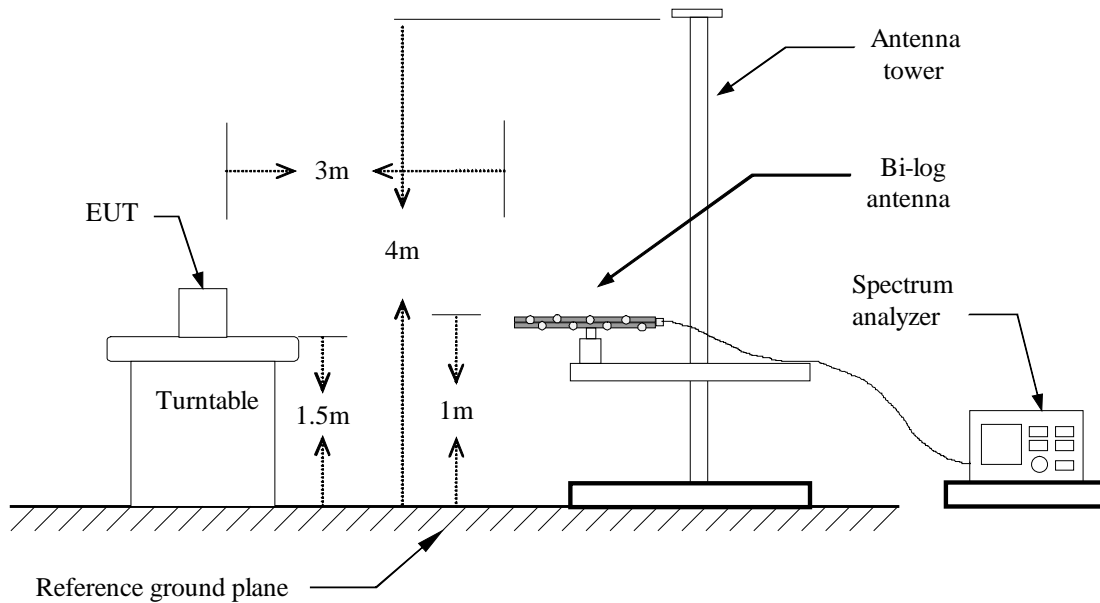
MEASUREMENT EQUIPMENT USED

| 966 RF CHAMBER 2 | | | | |
|-----------------------|--------------|-----------|--------------------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| PSA Spectrum Analyzer | Agilent | E4446A | US44300399 | 02/08/2007 |
| EMI Test Receiver | R&S | ESCI | 1166.5950 03 | 01/13/2007 |
| Pre-Amplifier | MITEQ | N/A | AFS42-00102650-42-10P-42 | 02/14/2007 |
| Bi-log Antenna | SCHWAZBECK | CBL6143 | 5082 | 06/09/2007 |
| Turn Table | EMCO | 2081-1.21 | N/A | N.C.R |
| Antenna Tower | CT | N/A | N/A | N.C.R |
| Controller | CT | N/A | N/A | N.C.R |
| RF Comm. Test set | HP | 8920B | US36142090 | N.C.R |
| Site NSA | C&C | N/A | N/A | 06/09/2007 |
| Horn Antenna | TRC | N/A | N/A | 03/04/2007 |

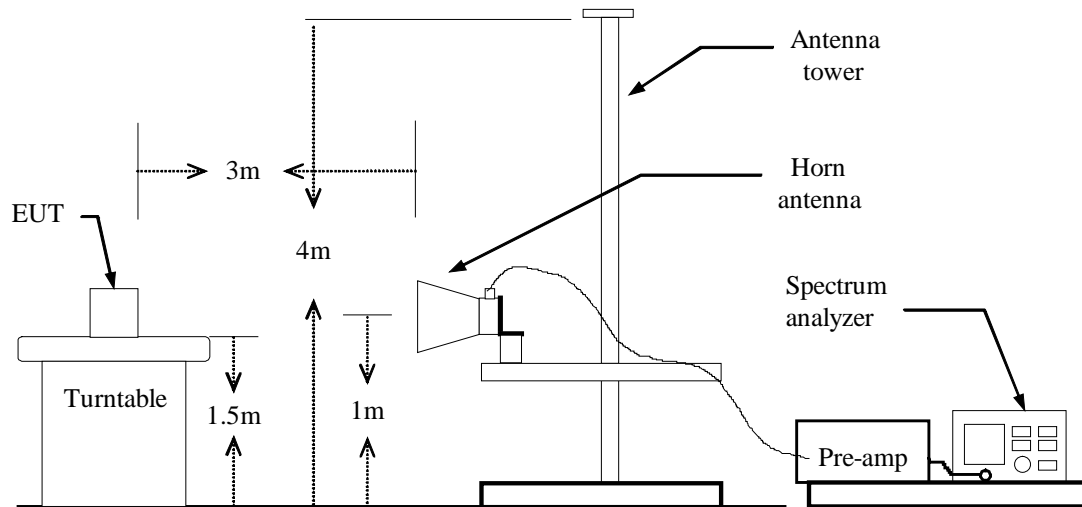
Remark: Each piece of equipment is scheduled for calibration once a year.

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



TEST RESULTS

Below 1 GHz

Operation Mode: Normal link

Test Date: November 01, 2006

Temperature: 20°C

Tested by: Henry

Humidity: 70 % 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) |
|-------------|--------------|-----------------------|----------------|-------------|--------------------|-------------------|------------------|
| 50.250 | V | Peak | 55.38 | -18.10 | 37.28 | 40.00 | -2.72 |
| 59.700 | V | Peak | 50.99 | -19.84 | 31.15 | 40.00 | -8.85 |
| 92.100 | V | Peak | 44.60 | -18.03 | 26.57 | 43.50 | -16.93 |
| 225.075 | V | Peak | 41.95 | -14.51 | 27.44 | 46.00 | -18.56 |
| 275.700 | V | Peak | 48.39 | -12.97 | 35.42 | 46.00 | -10.58 |
| 650.000 | V | Peak | 33.11 | -5.63 | 27.48 | 46.00 | -18.52 |
| 225.075 | H | Peak | 41.56 | -14.51 | 27.05 | 46.00 | -18.95 |
| 239.925 | H | Peak | 42.69 | -13.85 | 28.84 | 46.00 | -17.16 |
| 275.700 | H | Peak | 56.75 | -12.97 | 43.78 | 46.00 | -2.22 |
| 321.000 | H | Peak | 43.66 | -11.09 | 32.57 | 46.00 | -13.43 |
| 398.000 | H | Peak | 38.42 | -9.27 | 29.15 | 46.00 | -16.85 |
| 461.000 | H | Peak | 35.08 | -8.61 | 26.47 | 46.00 | -19.53 |

Notes:

1. Measuring frequencies from 30 MHz to the 1GHz.
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/Quasi-peak detector mode.
3. 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.
4. The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.



Above 1 GHz

Operation Mode: TX / IEEE 802.11b / CH Low

Test Date: November 01, 2006

Temperature: 23°C

Tested by: Henry

Humidity: 56 % RH

Polarity: Ver. / Hor.

| Freq. (MHz) | Ant. Pol H/V | Peak Reading (dBuV) | AV Reading (dBuV) | Ant. / CL CF (dB) | Actual Fs | | Peak Limit (dBuV/m) | AV Limit (dBuV/m) | Margin (dB) | Remark |
|-------------|--------------|---------------------|-------------------|-------------------|---------------|-------------|---------------------|-------------------|-------------|--------|
| | | | | | Peak (dBuV/m) | AV (dBuV/m) | | | | |
| 2113.33 | V | 55.14 | --- | -7.01 | 48.13 | --- | 74.00 | 54.00 | -5.87 | Peak |
| 2286.66 | V | 56.31 | --- | -6.32 | 49.99 | --- | 74.00 | 54.00 | -4.01 | Peak |
| 3216.66 | V | 53.30 | --- | -3.60 | 49.70 | --- | 74.00 | 54.00 | -4.30 | Peak |
| 4825.00 | V | 53.48 | 51.66 | 0.68 | 54.16 | 52.34 | 74.00 | 54.00 | -1.66 | AVG. |
| N/A | | | | | | | | | | |
| | | | | | | | | | | |
| 2126.66 | H | 51.02 | --- | -6.96 | 44.06 | --- | 74.00 | 54.00 | -9.94 | Peak |
| 2576.66 | H | 53.96 | --- | -5.27 | 48.69 | --- | 74.00 | 54.00 | -5.31 | Peak |
| 2863.33 | H | 50.75 | --- | -4.47 | 46.28 | --- | 74.00 | 54.00 | -7.72 | Peak |
| 4825.00 | H | 47.29 | --- | 0.68 | 47.97 | --- | 74.00 | 54.00 | -6.03 | Peak |
| N/A | | | | | | | | | | |
| | | | | | | | | | | |

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser 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.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 1MHz, Sweep time = 200 ms.
 - b. AV Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 10Hz, Sweep time = 200 ms.



Operation Mode: TX / IEEE 802.11b / CH Mid

Test Date: November 01, 2006

Temperature: 20°C

Tested by: Henry

Humidity: 70 % RH

Polarity: Ver. / Hor.

| Freq. (MHz) | Ant. Pol H/V | Peak Reading (dBuV) | AV Reading (dBuV) | Ant. / CL CF (dB) | Actual Fs | | Peak Limit (dBuV/m) | AV Limit (dBuV/m) | Margin (dB) | Remark |
|-------------|--------------|---------------------|-------------------|-------------------|---------------|-------------|---------------------|-------------------|-------------|--------|
| | | | | | Peak (dBuV/m) | AV (dBuV/m) | | | | |
| 1690.00 | V | 57.17 | --- | -8.68 | 48.49 | --- | 74.00 | 54.00 | -5.51 | Peak |
| 2023.33 | V | 58.17 | --- | -7.37 | 50.80 | --- | 74.00 | 54.00 | -3.20 | Peak |
| 3250.00 | V | 50.46 | --- | -3.53 | 46.93 | --- | 74.00 | 54.00 | -7.07 | Peak |
| 4875.00 | V | 53.96 | 51.65 | 0.77 | 54.73 | 52.42 | 74.00 | 54.00 | -1.58 | AVG. |
| N/A | | | | | | | | | | |
| | | | | | | | | | | |
| 2393.33 | H | 54.05 | --- | -5.90 | 48.15 | --- | 74.00 | 54.00 | -5.85 | Peak |
| 2576.66 | H | 53.44 | --- | -5.27 | 48.17 | --- | 74.00 | 54.00 | -5.83 | Peak |
| 2663.33 | H | 51.35 | --- | -5.03 | 46.32 | --- | 74.00 | 54.00 | -7.68 | Peak |
| 4866.66 | H | 46.99 | --- | 0.75 | 47.74 | --- | 74.00 | 54.00 | -6.26 | Peak |
| N/A | | | | | | | | | | |
| | | | | | | | | | | |

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser 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.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 1MHz, Sweep time = 200 ms.
 - b. AV Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 10Hz, Sweep time = 200 ms.



Operation Mode: TX / IEEE 802.11b / CH High

Test Date: November 01, 2006

Temperature: 20°C

Tested by: Henry

Humidity: 70 % RH

Polarity: Ver. / Hor.

| Freq. (MHz) | Ant. Pol H/V | Peak Reading (dBuV) | AV Reading (dBuV) | Ant. / CL CF (dB) | Actual Fs | | Peak Limit (dBuV/m) | AV Limit (dBuV/m) | Margin (dB) | Remark |
|-------------|--------------|---------------------|-------------------|-------------------|---------------|-------------|---------------------|-------------------|-------------|--------|
| | | | | | Peak (dBuV/m) | AV (dBuV/m) | | | | |
| 2286.66 | V | 59.06 | --- | -6.32 | 52.74 | --- | 74.00 | 54.00 | -1.26 | Peak |
| 2576.66 | V | 63.60 | --- | -5.27 | 58.33 | --- | 80.26 | --- | -21.93 | Peak |
| 3283.33 | V | 50.03 | --- | -3.46 | 46.57 | --- | 74.00 | 54.00 | -7.43 | Peak |
| 4925.00 | V | 58.05 | 46.37 | 0.85 | 58.90 | 47.22 | 74.00 | 54.00 | -6.78 | AVG. |
| N/A | | | | | | | | | | |
| | | | | | | | | | | |
| 2393.33 | H | 54.57 | --- | -5.90 | 48.67 | --- | 74.00 | 54.00 | -5.33 | Peak |
| 2576.66 | H | 52.49 | --- | -5.27 | 47.22 | --- | 74.00 | 54.00 | -6.78 | Peak |
| 2746.66 | H | 51.30 | --- | -4.79 | 46.51 | --- | 74.00 | 54.00 | -7.49 | Peak |
| 4925.00 | H | 49.97 | --- | 0.85 | 50.82 | --- | 74.00 | 54.00 | -3.18 | Peak |
| N/A | | | | | | | | | | |
| | | | | | | | | | | |

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser 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.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 1MHz, Sweep time = 200 ms.
 - b. AV Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 10Hz, Sweep time = 200 ms.



Operation Mode: TX / IEEE 802.11g / CH Low

Test Date: November 01, 2006

Temperature: 20°C

Tested by: Henry

Humidity: 70 % RH

Polarity: Ver. / Hor.

| Freq. (MHz) | Ant. Pol H/V | Peak Reading (dBuV) | AV Reading (dBuV) | Ant. / CL CF (dB) | Actual Fs | | -20dB Peak Limit (dBuV/m) | -20dB AV Limit (dBuV/m) | Remark |
|-------------|--------------|---------------------|-------------------|-------------------|---------------|-------------|---------------------------|-------------------------|-------------|
| | | | | | Peak (dBuV/m) | AV (dBuV/m) | | | |
| 2412.00 | V | 112.16 | 104.35 | -5.78 | 106.38 | 98.57 | 86.38 | 78.57 | Fundamental |
| 2412.00 | H | 102.36 | 102.36 | -5.78 | 96.58 | 90.79 | 76.58 | 70.79 | Fundamental |

| Freq. (MHz) | Ant. Pol H/V | Peak Reading (dBuV) | AV Reading (dBuV) | Ant. / CL CF (dB) | Actual Fs | | Peak Limit (dBuV/m) | AV Limit (dBuV/m) | Margin (dB) | Remark |
|-------------|--------------|---------------------|-------------------|-------------------|---------------|-------------|---------------------|-------------------|-------------|--------|
| | | | | | Peak (dBuV/m) | AV (dBuV/m) | | | | |
| 2286.66 | V | 60.44 | 58.57 | -6.32 | 54.12 | 52.25 | 74.00 | 54.00 | -1.75 | AVG. |
| 2576.66 | V | 65.70 | --- | -5.27 | 60.43 | --- | 91.01 | --- | -30.58 | Peak |
| 4825.00 | V | 53.81 | 44.63 | 0.68 | 54.49 | 45.31 | 74.00 | 54.00 | -8.69 | AVG. |
| 3216.66 | V | 56.17 | --- | -3.60 | 52.57 | --- | 74.00 | 54.00 | -1.43 | Peak |
| N/A | | | | | | | | | | |
| | | | | | | | | | | |
| 2160.00 | H | 51.35 | --- | -6.83 | 44.52 | --- | 74.00 | 54.00 | -9.48 | Peak |
| 2576.66 | H | 55.95 | --- | -5.27 | 50.68 | --- | 74.00 | 54.00 | -3.32 | Peak |
| 2873.33 | H | 50.80 | --- | -4.44 | 46.36 | --- | 74.00 | 54.00 | -7.64 | Peak |
| 4816.66 | H | 48.10 | --- | 0.66 | 48.76 | --- | 74.00 | 54.00 | -5.24 | Peak |
| N/A | | | | | | | | | | |
| | | | | | | | | | | |

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser 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.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 1MHz, Sweep time = 200 ms.
 - b. AV Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 10Hz, Sweep time = 200 ms.



Operation Mode: TX / IEEE 802.11g / CH Mid

Test Date: November 01, 2006

Temperature: 20°C

Tested by: Henry

Humidity: 70 % RH

Polarity: Ver. / Hor.

| Freq. (MHz) | Ant. Pol H/V | Peak Reading (dBuV) | AV Reading (dBuV) | Ant. / CL CF (dB) | Actual Fs | | -20dB Peak Limit (dBuV/m) | -20dB AV Limit (dBuV/m) | Remark |
|-------------|--------------|---------------------|-------------------|-------------------|---------------|-------------|---------------------------|-------------------------|-------------|
| | | | | | Peak (dBuV/m) | AV (dBuV/m) | | | |
| 2437.00 | V | 114.16 | 104.25 | -5.68 | 108.48 | 98.57 | 88.48 | 78.57 | Fundamental |
| 2437.00 | H | 106.36 | 96.47 | -5.68 | 100.68 | 90.79 | 80.68 | 70.79 | Fundamental |

| Freq. (MHz) | Ant. Pol H/V | Peak Reading (dBuV) | AV Reading (dBuV) | Ant. / CL CF (dB) | Actual Fs | | Peak Limit (dBuV/m) | AV Limit (dBuV/m) | Margin (dB) | Remark |
|-------------|--------------|---------------------|-------------------|-------------------|---------------|-------------|---------------------|-------------------|-------------|--------|
| | | | | | Peak (dBuV/m) | AV (dBuV/m) | | | | |
| 2023.33 | V | 59.68 | --- | -7.37 | 52.31 | --- | 74.00 | 54.00 | -1.69 | Peak |
| 2576.66 | V | 65.97 | 64.51 | -5.27 | 60.70 | 59.24 | 88.48 | 78.57 | -19.33 | AVG |
| 3250.00 | V | 53.32 | --- | -3.53 | 49.79 | --- | 74.00 | 54.00 | -4.21 | Peak |
| 4875.00 | V | 57.33 | --- | 0.77 | 58.10 | 45.35 | 74.00 | 54.00 | -8.65 | AVG |
| N/A | | | | | | | | | | |
| | | | | | | | | | | |
| 1760.00 | H | 50.79 | --- | -8.40 | 42.39 | --- | 74.00 | 54.00 | -11.61 | Peak |
| 2576.66 | H | 54.83 | --- | -5.27 | 49.56 | --- | 74.00 | 54.00 | -4.44 | Peak |
| 2813.33 | H | 51.06 | --- | -4.61 | 46.45 | --- | 74.00 | 54.00 | -7.55 | Peak |
| 4866.66 | H | 48.45 | --- | 0.75 | 49.20 | --- | 74.00 | 54.00 | -4.80 | Peak |
| N/A | | | | | | | | | | |
| | | | | | | | | | | |

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser 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.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 1MHz, Sweep time = 200 ms.
 - b. AV Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 10Hz, Sweep time = 200 ms.



Operation Mode: TX / IEEE 802.11g / CH High

Test Date: November 01, 2006

Temperature: 20°C

Tested by: Henry

Humidity: 70 % RH

Polarity: Ver. / Hor.

| Freq. (MHz) | Ant. Pol H/V | Peak Reading (dBuV) | AV Reading (dBuV) | Ant. / CL CF (dB) | Actual Fs | | -20dB Peak Limit (dBuV/m) | -20dB AV Limit (dBuV/m) | Remark |
|-------------|--------------|---------------------|-------------------|-------------------|---------------|-------------|---------------------------|-------------------------|-------------|
| | | | | | Peak (dBuV/m) | AV (dBuV/m) | | | |
| 2462 | V | 114.53 | 104.78 | -5.58 | 108.95 | 99.20 | 80.95 | 79.20 | Fundamental |
| 2462 | H | 106.74 | 96.40 | -5.58 | 101.16 | 90.82 | 81.16 | 70.82 | Fundamental |

| Freq. (MHz) | Ant. Pol H/V | Peak Reading (dBuV) | AV Reading (dBuV) | Ant. / CL CF (dB) | Actual Fs | | Peak Limit (dBuV/m) | AV Limit (dBuV/m) | Margin (dB) | Remark |
|-------------|--------------|---------------------|-------------------|-------------------|---------------|-------------|---------------------|-------------------|-------------|--------|
| | | | | | Peak (dBuV/m) | AV (dBuV/m) | | | | |
| 2290.00 | V | 59.60 | --- | -6.31 | 53.29 | --- | 74.00 | 54.00 | -0.71 | Peak |
| 2576.66 | V | 64.81 | 62.43 | -5.27 | 59.54 | 57.16 | 80.95 | 79.20 | -22.04 | AVG. |
| 3283.33 | V | 51.56 | --- | -3.46 | 48.10 | --- | 74.00 | 54.00 | -5.90 | Peak |
| 4916.66 | V | 59.57 | 48.80 | 0.84 | 60.41 | 49.64 | 74.00 | 54.00 | -4.36 | AVG. |
| N/A | | | | | | | | | | |
| | | | | | | | | | | |
| 2390.00 | H | 56.77 | --- | -5.92 | 50.85 | --- | 74.00 | 54.00 | -3.15 | Peak |
| 2576.66 | H | 55.46 | --- | -5.27 | 50.19 | --- | 74.00 | 54.00 | -3.81 | Peak |
| 2913.33 | H | 51.31 | --- | -4.33 | 46.98 | --- | 74.00 | 54.00 | -7.02 | Peak |
| 4925.00 | H | 49.09 | --- | 0.85 | 49.94 | --- | 74.00 | 54.00 | -4.06 | Peak |
| N/A | | | | | | | | | | |
| | | | | | | | | | | |

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser 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.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 1MHz, Sweep time = 200 ms.
 - b. AV Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 10Hz, Sweep time = 200 ms.



POWERLINE CONDUCTED EMISSIONS

LIMIT

For an intentional radiator which 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 250 microvolts (The limit decreases Linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

| 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 |

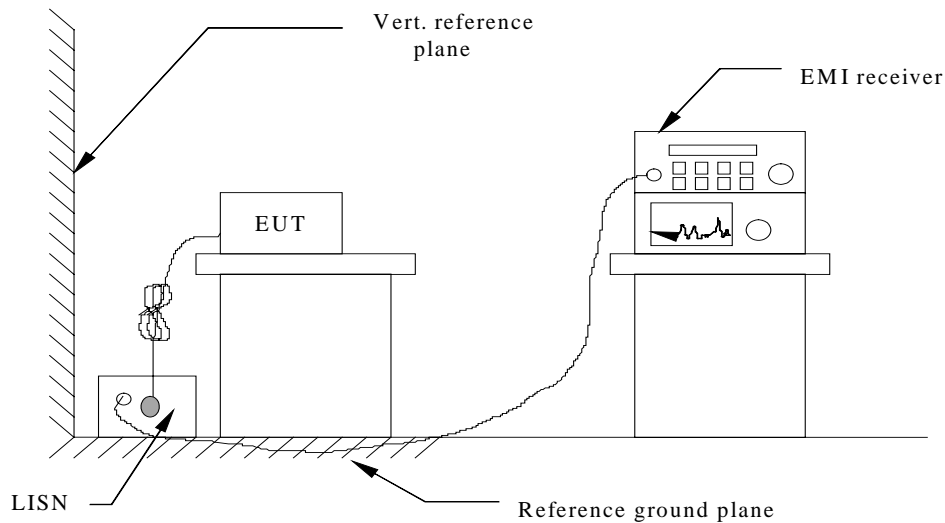
Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power Line (LINE and NEUTRAL) and ground at the power terminals.

MEASUREMENT EQUIPMENT USED

| Conducted Emission Test Site G | | | | |
|--------------------------------|---------------|--------------|---------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| ESCI EMI TEST RECEIV.ESCI | ROHDE&SCHWARZ | 1166.5950 03 | 100088 | 02/08/2007 |
| LISN | EMCO | 3825/2 | 1371 | 02/08/2007 |
| LISN | EMCO | 3825/2 | 8901-1459 | 02/08/2007 |

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

Test Configuration



See test photographs attached in Appendix 1 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

| | |
|-------------------------------|-------------------------------------|
| Test Mode: Normal link | Location: Site G |
| Model Name: MR0-WR540G | Test Date: November 01, 2006 |
| Tested by: Henry | Test Results: Passed |

Adaptor Model Number:U090080A

| FREQ MHz | PEAK RAW dBuV | Q.P. RAW dBuV | AVG RAW dBuV | Q.P. Limit dBuV | AVG Limit dBuV | Q.P. Margin dB | AVG Margin dB | NOTE |
|----------|---------------|---------------|--------------|-----------------|----------------|----------------|---------------|------|
| 0.183 | 24.74 | --- | --- | 65.05 | 55.05 | --- | -30.31 | L1 |
| 0.272 | 21.87 | --- | --- | 62.50 | 52.50 | --- | -30.63 | L1 |
| 9.751 | 26.38 | --- | --- | 60.00 | 50.00 | --- | -23.62 | L1 |
| 13.679 | 33.75 | --- | --- | 60.00 | 50.00 | --- | -16.25 | L1 |
| 15.442 | 40.31 | --- | --- | 60.00 | 50.00 | --- | -9.69 | L1 |
| 17.863 | 31.24 | --- | --- | 60.00 | 50.00 | --- | -18.76 | L1 |
| | | | | | | | | |
| 0.187 | 24.68 | --- | --- | 64.94 | 54.94 | --- | -30.26 | L2 |
| 5.158 | 25.14 | --- | --- | 60.00 | 50.00 | --- | -24.86 | L2 |
| 9.751 | 22.17 | --- | --- | 60.00 | 50.00 | --- | -27.83 | L2 |
| 11.675 | 26.30 | --- | --- | 60.00 | 50.00 | --- | -23.70 | L2 |
| 15.442 | 32.84 | --- | --- | 60.00 | 50.00 | --- | -17.16 | L2 |
| 17.863 | 25.49 | --- | --- | 60.00 | 50.00 | --- | -24.51 | L2 |

Note: The chart above shows the highest readings taken from the final data.



Adaptor Model Number: A410908OT

| FREQ MHz | PEAK RAW dBuV | Q.P. RAW dBuV | AVG RAW dBuV | Q.P. Limit dBuV | AVG Limit dBuV | Q.P. Margin dB | AVG Margin dB | NOTE |
|----------|---------------|---------------|--------------|-----------------|----------------|----------------|---------------|------|
| 0.361 | 26.32 | --- | --- | 59.96 | 49.96 | --- | -23.64 | L1 |
| 0.672 | 23.01 | --- | --- | 56.00 | 46.00 | --- | -22.99 | L1 |
| 5.799 | 18.87 | --- | --- | 60.00 | 50.00 | --- | -31.13 | L1 |
| 9.751 | 33.85 | --- | --- | 60.00 | 50.00 | --- | -16.15 | L1 |
| 15.458 | 32.92 | --- | --- | 60.00 | 50.00 | --- | -17.08 | L1 |
| 21.599 | 38.53 | --- | --- | 60.00 | 50.00 | --- | -11.47 | L1 |
| 0.272 | 32.30 | --- | --- | 62.50 | 52.50 | --- | -20.20 | L2 |
| 0.661 | 25.93 | --- | --- | 56.00 | 46.00 | --- | -20.07 | L2 |
| 9.751 | 27.62 | --- | --- | 60.00 | 50.00 | --- | -22.38 | L2 |
| 15.458 | 34.30 | --- | --- | 60.00 | 50.00 | --- | -15.70 | L2 |
| 17.655 | 27.06 | --- | --- | 60.00 | 50.00 | --- | -22.94 | L2 |
| 21.599 | 42.59 | --- | --- | 60.00 | 50.00 | --- | -7.41 | L2 |

Note: The chart above shows the highest readings taken from the final data.

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. “---” denotes the emission level was or more than 2dB below the Average limit, and no re-check was made.
4. 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.
5. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)

Note:

Freq. = Emission frequency in KHz

Factor (dB) = cable loss + Insertion loss of LISN+ Insertion loss of TRANSIENT LIMITER (The TRANSIENT LIMITER included 10 dB ATTENUATION)

Amptd dBuV = Uncorrected Analyzer/Receiver reading + cable loss + Insertion loss of LISN+ Insertion loss of TRANSIENT LIMITER,

if it > 0.5 dB

Limit dBuV = Limit stated in standard

Margin dB = Reading in reference to limit

Calculation Formula

Margin (dB) = Amptd (dBuV) – Limit (dBuV)

Common Mode Conducted Emission

Not applicable

APPENDIX 1 PHOTOGRPHS OF TEST SETUP

LINE CONDUCTED EMISSION TEST



RADIATED EMISSION TEST

