



FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Stratus Plug Computer

Model: Stratus B02, STRATUS A01.X, STRATUS B01.X

Trade Name: Ionics

Issued to

IONICS EMS, INC

**Plant 2, Block 2 & 3 Carmelray Industrial Part of the Philippines II, Barangay Tulo,
Calamba City, Laguna, Philippines 4027**

Issued by

Compliance Certification Services Inc.

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

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1. TEST RESULT CERTIFICATION

Applicant: IONICS EMS, INC
 Plant 2, Block 2 & 3 Carmelray Industrial Part of the Philippines II,
 Barangay Tulo, Calamba City, Laguna, Philippines 4027

Equipment Under Test: Stratus Plug Computer

Trade Name: Ionics

Model: Stratus B02, STRATUS A01.X, STRATUS B01.X

Date of Test: November 10 ~ December 31, 2010

| 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 | Stratus Plug Computer | |
| Trade Name | Ionics | |
| Model Number | Stratus B02, STRATUS A01.X, STRATUS B01.X | |
| Model Discrepancy | See table below | |
| | Model Number | Description |
| | STRATUS A01.X {X is for revision number of the particular model Where X is between 0-9 or nothing.} | STRATUS (STANDARD + WIFI) |
| STRATUS B01.X {X is for revision number of the particular model Where X is between 0-9 or nothing.} | STRATUS (STANDARD + WIFI + JTAG) (JTAG for software Function) | |
| Power Supply | Power from host device | |
| Frequency Range | 2412 ~ 2462 MHz | |
| Transmit Power | IEEE 802.11b: 14.58 dBm IEEE 802.11g: 16.63 dBm | |
| Modulation Technique | IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM (QPSK, BPSK, 16-QAM, 64-QAM) | |
| Transmit Data Rate | 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 | 11 Channels | |
| Antenna Specification | Gain: 2 dBi | |
| Antenna Designation | Chip Antenna | |

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: Y6SSTRTSWFX00 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: Stratus B02) had been tested under operating condition.

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

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 802.11b 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 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 and Loop Antenna is scheduled for calibration once three years.

| Conducted Emissions Test Site | | | | |
|-------------------------------|--------------|--------|---------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| Spectrum Analyzer | Agilent | E4446A | MY43360131 | 03/03/2011 |
| Power Meter | Agilent | E4416A | GB41291611 | 09/26/2011 |
| Power Sensor | Agilent | E9327A | US40441097 | 09/16/2011 |

| 3M Semi Anechoic Chamber | | | | |
|--------------------------|--------------------|--------------------------|---------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| Spectrum Analyzer | Agilent | E4446A | US42510252 | 10/25/2011 |
| EMI Test Receiver | R&S | ESCI | 100064 | 02/04/2011 |
| Pre-Amplifier | Mini-Circuits | ZFL-1000LN | SF350700823 | 01/13/2011 |
| Pre-Amplifier | MITEQ | AFS44-00102650-42-10P-44 | 1415367 | 11/19/2011 |
| Bilog Antenna | Sunol Sciences | JB3 | A030105 | 09/10/2011 |
| Horn Antenna | EMCO | 3117 | 00055165 | 12/06/2011 |
| Loop Antenna | EMCO | 6502 | 8905/2356 | 06/10/2013 |
| Turn Table | CCS | CC-T-1F | N/A | N.C.R |
| Antenna Tower | CCS | CC-A-1F | N/A | N.C.R |
| Controller | CCS | CC-C-1F | N/A | N.C.R |
| Site NSA | CCS | N/A | N/A | 12/30/2011 |
| Test S/W | EZ-EMC (CCS-3A1RE) | | | |



| Powerline Conducted Emissions Test Site | | | | |
|--|---------------------|------------------|----------------------|------------------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| TEST RECEIVER | R&S | ESCI | 100234 | 06/13/2011 |
| LISN (EUT) | FCC | FCC-LISN-50-32-2 | 08009 | 03/25/2011 |
| LISN | EMCO | 3825/2 | 1382 | 01/10/2012 |
| BNC CABLE | MIYAZAKI | 5D-FB | BNC B3 | 08/10/2011 |
| Pulse Limiter | R&S | ESH3-Z2 | 100374 | 08/19/2011 |
| THERMO-HYGRO METER | TOP | HA-202 | 9303-3 | 01/31/2011 |



4.3 MEASUREMENT UNCERTAINTY

| PARAMETER | UNCERTAINTY |
|---------------------------------------|-------------|
| Powerline Conducted Emission | +/- 1.1089 |
| 3M Semi Anechoic Chamber / 30M~200M | +/- 4.0606 |
| 3M Semi Anechoic Chamber / 200M~1000M | +/- 3.9979 |
| 3M Semi Anechoic Chamber / 1G~8G | +/- 2.5790 |
| 3M Semi Anechoic Chamber / 8G~18G | +/- 2.5928 |
| 3M Semi Anechoic Chamber / 18G~26G | +/- 2.7212 |
| 3M Semi Anechoic Chamber / 26G~40G | +/- 2.9520 |

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

*Remark: The Powerline Conducted Emissions was tested at Compliance Certification Services. (Hsintien Lab.)
The test equipments were listed in page 9 and the test data were recorded in page 53~54.*

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 |  |
| 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 | Notebook | HP | 2210B | CNV7472KG5 | DOC BSMI: R33001 | USB: Shielded, 0.5m with a core LAN: Unshielded, 1.0m with a core | Unshielded, 1.8m |
| 2 | Notebook PC | HP | dv6-1332TX | CNF9491GM9 | PD9112BNHU | N/A | AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core |
| 3 | USB thumbdrive | U3 Smart | U3 Smart Intuix | 53710401 | N/A | N/A | N/A |
| 4 | Light bulb | Generic light bulb | 110V Light Bulb | not available | N/A | Unshielded, 1.5m | N/A |
| 5 | Z-wave Receiver | Leviton | RZP03-1LW | 206A21 | QGH-RZP03 | 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.



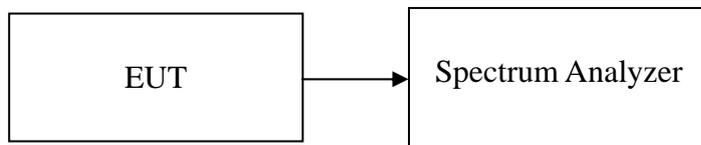
7. FCC PART 15.247 REQUIREMENTS

7.16DB 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 | 9.92 | >500 | PASS |
| Mid | 2437 | 9.92 | | 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 | 16.50 | | PASS |
| High | 2462 | 16.58 | | PASS |



Test Plot

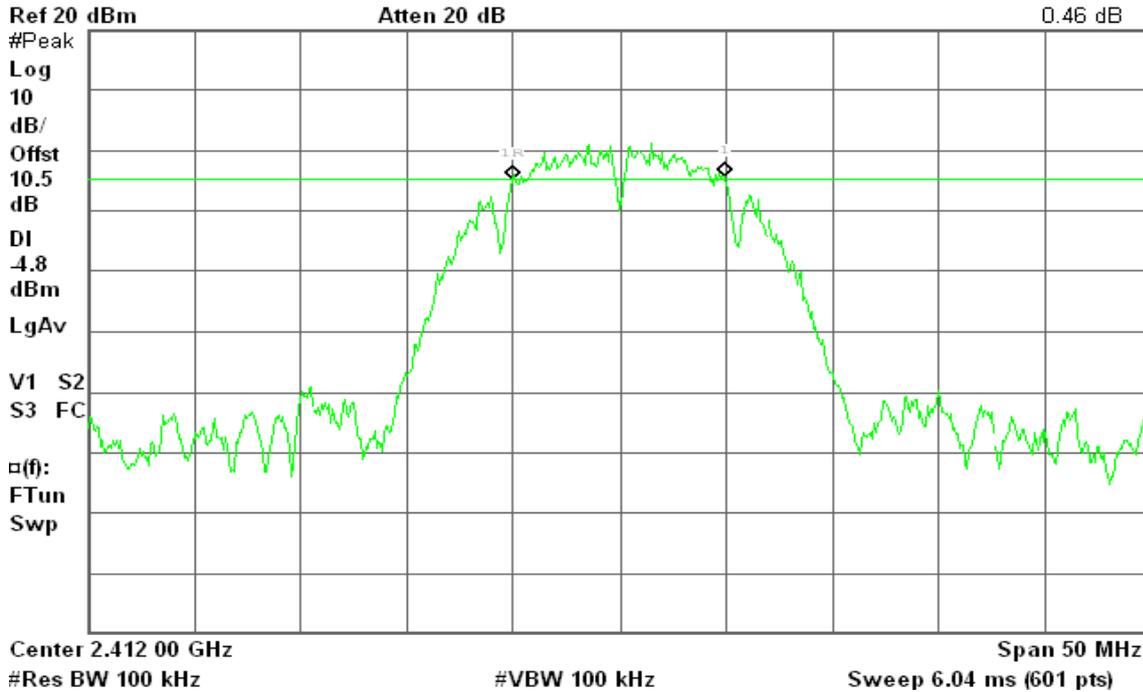
IEEE 802.11b

6dB Bandwidth (CH Low)

Agilent 16:40:17 Dec 31, 2010

R T

Δ Mkr1 9.92 MHz
0.46 dB

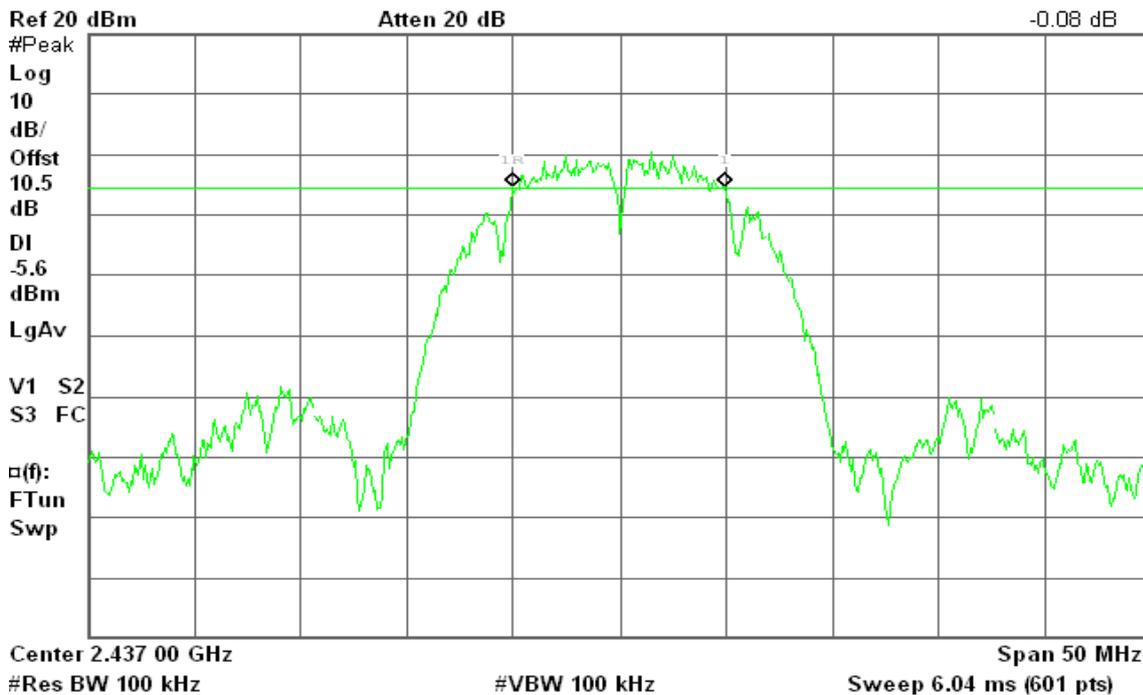


6dB Bandwidth (CH Mid)

Agilent 16:50:33 Dec 31, 2010

R T

Δ Mkr1 9.92 MHz
-0.08 dB



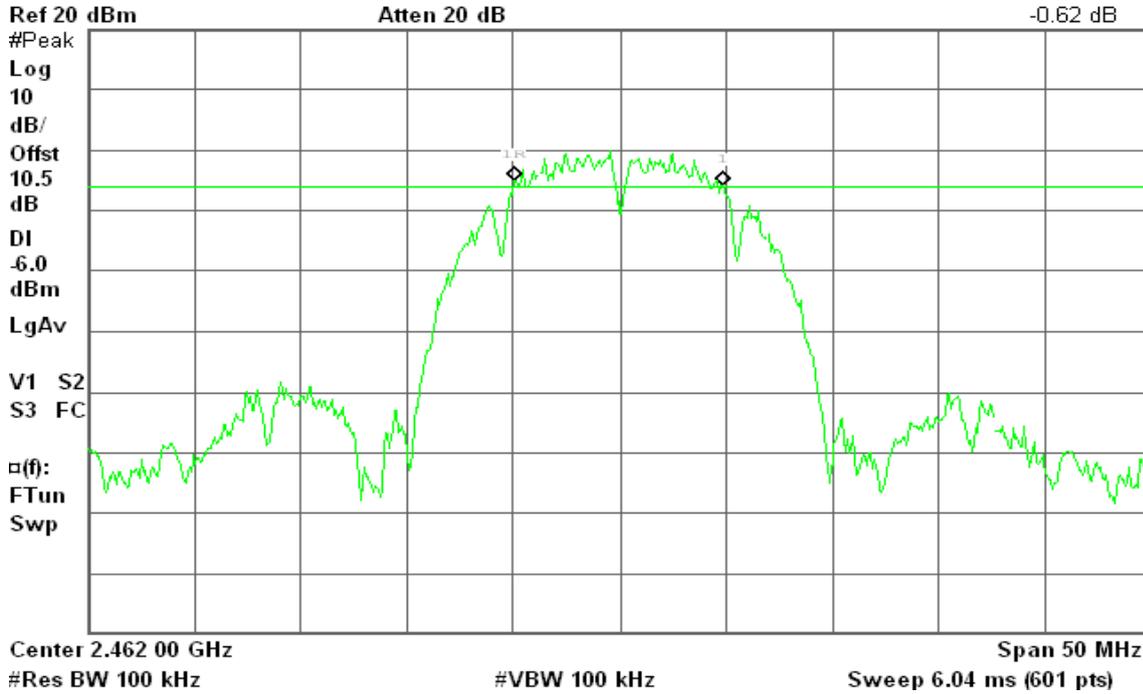


6dB Bandwidth (CH High)

Agilent 16:56:12 Dec 31, 2010

R T

Δ Mkr1 9.75 MHz
-0.62 dB



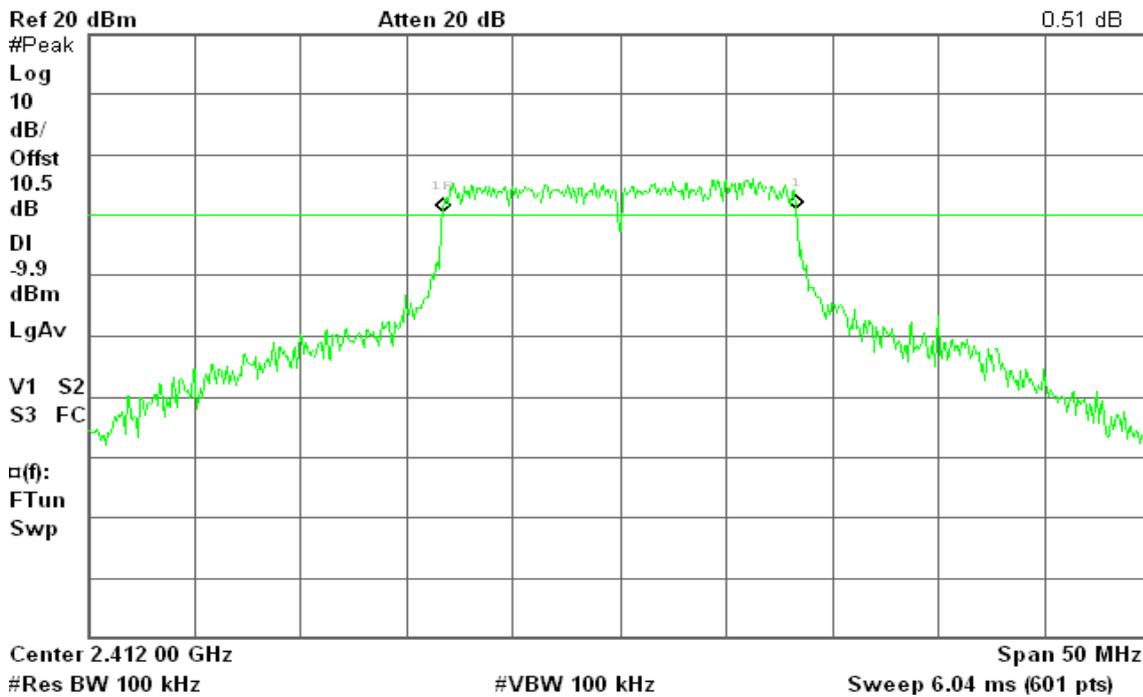
IEEE 802.11g

6dB Bandwidth (CH Low)

Agilent 16:12:48 Dec 31, 2010

R T

Δ Mkr1 16.50 MHz
0.51 dB



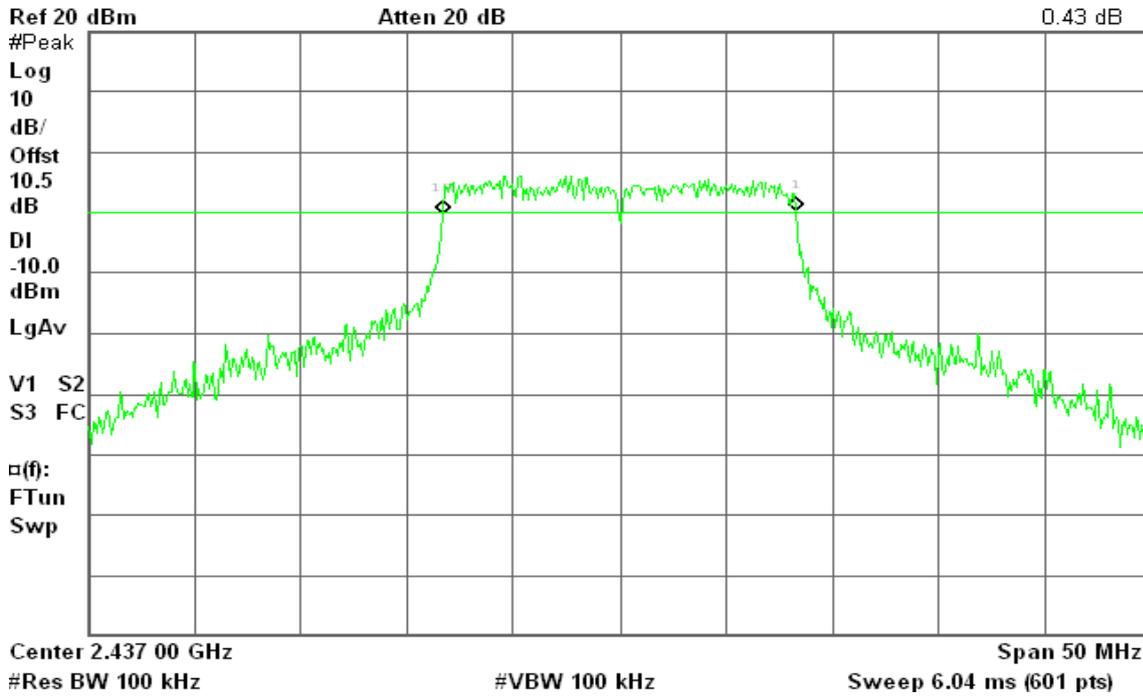


6dB Bandwidth (CH Mid)

Agilent 16:26:34 Dec 31, 2010

R T

Δ Mkr1 16.50 MHz
0.43 dB

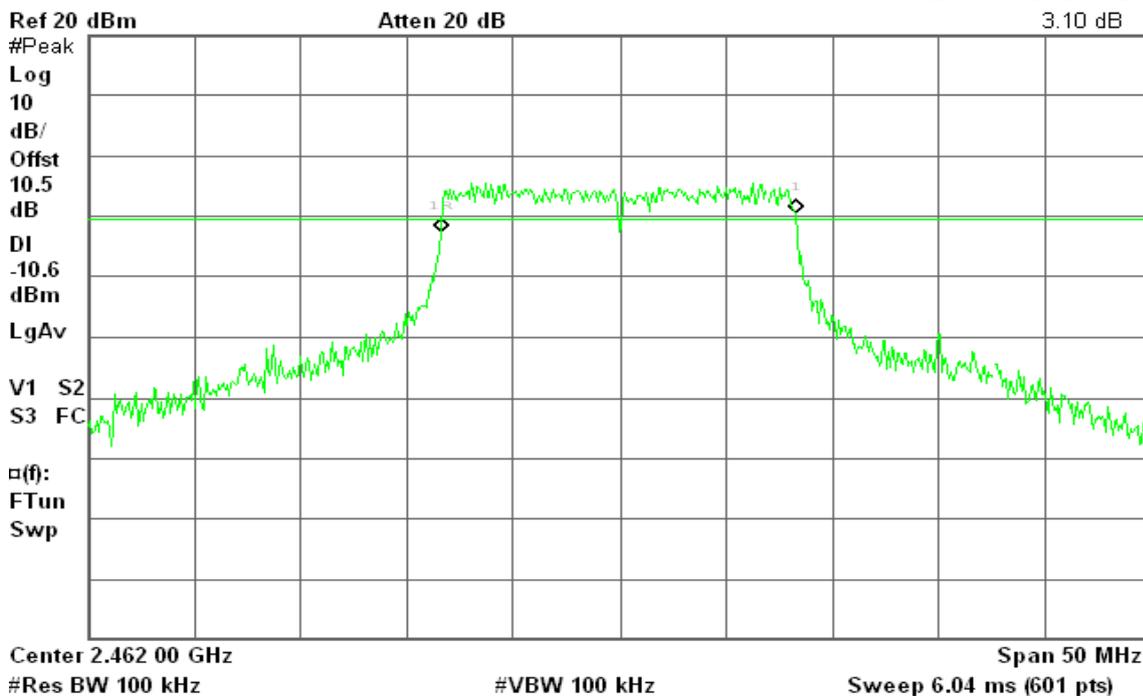


6dB Bandwidth (CH High)

Agilent 15:55:10 Dec 31, 2010

R T

Δ Mkr1 16.58 MHz
3.10 dB





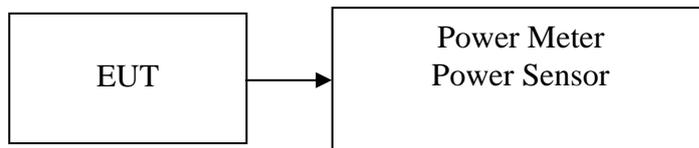
7.2 PEAK POWER

LIMIT

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

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

Test Configuration



TEST PROCEDURE

The transmitter output is connected to the Power Meter. The Power Meter 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) | Output Power (W) | Limit (W) | Result |
|---------|-----------------|--------------------|------------------|-----------|--------|
| Low | 2412 | 14.58 | 0.02871 | 1.00 | PASS |
| Mid | 2437 | 14.12 | 0.02582 | | PASS |
| High | 2462 | 13.15 | 0.02065 | | PASS |

Test mode: IEEE 802.11g

| Channel | Frequency (MHz) | Output Power (dBm) | Output Power (W) | Limit (W) | Result |
|---------|-----------------|--------------------|------------------|-----------|--------|
| Low | 2412 | 16.47 | 0.04436 | 1.00 | PASS |
| Mid | 2437 | 16.63 | 0.04603 | | PASS |
| High | 2462 | 16.61 | 0.04581 | | PASS |

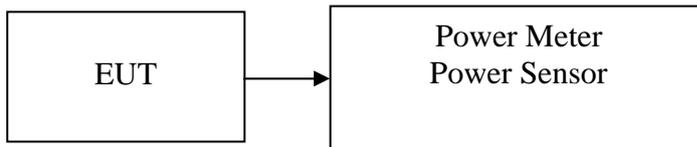


7.3 AVERAGE POWER

LIMIT

None; for reporting purposes only.

Test Configuration



TEST PROCEDURE

The transmitter output is connected to the Power Meter. The Power Meter is set to the peak power detection.

TEST RESULTS

No non-compliance noted.



Test Data

Test mode: IEEE 802.11b mode

| Channel | Frequency (MHz) | Output Power (dBm) |
|---------|-----------------|--------------------|
| Low | 2412 | 12.43 |
| Mid | 2437 | 11.82 |
| High | 2462 | 10.65 |

Test mode: IEEE 802.11g mode

| Channel | Frequency (MHz) | Output Power (dBm) |
|---------|-----------------|--------------------|
| Low | 2412 | 11.37 |
| Mid | 2437 | 11.13 |
| High | 2462 | 10.43 |

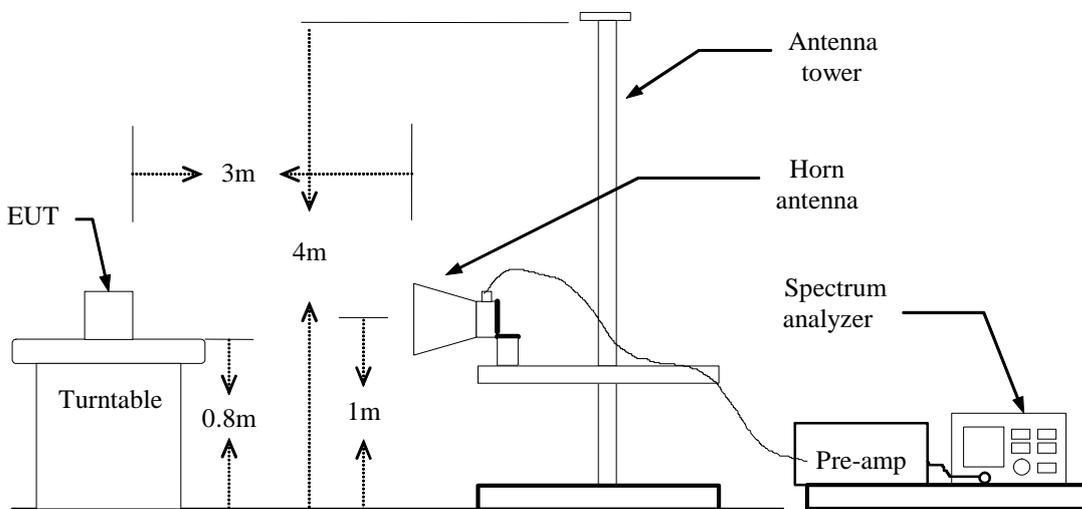


7.4 BAND EDGES MEASUREMENT

LIMIT

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)).

Test Configuration



TEST PROCEDURE

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

TEST RESULTS

Refer to attach spectrum analyzer data chart.



Band Edges (IEEE 802.11b / CH Low)

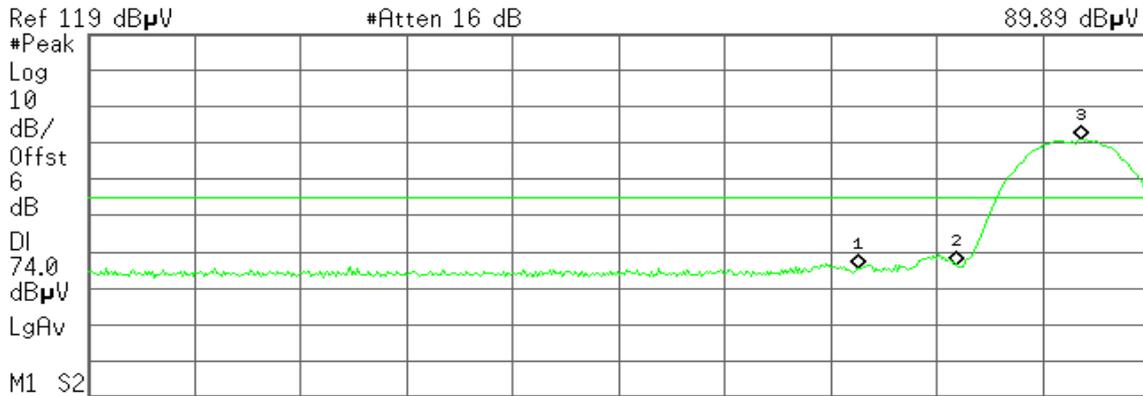
Detector mode: Peak

Polarity: Vertical

Agilent 07:48:57 Nov 27, 2010

R T

Mkr3 2.413 0 GHz
89.89 dBμV



Start 2.310 0 GHz Stop 2.420 0 GHz
#Res BW 1 MHz #VBW 1 MHz #Sweep 100 ms (601 pts)

| Marker | Trace | Type | X Axis | Amplitude |
|--------|-------|------|-------------|------------|
| 1 | (1) | Freq | 2.390 0 GHz | 54.42 dBμU |
| 2 | (1) | Freq | 2.400 0 GHz | 55.24 dBμU |
| 3 | (1) | Freq | 2.413 0 GHz | 89.89 dBμU |

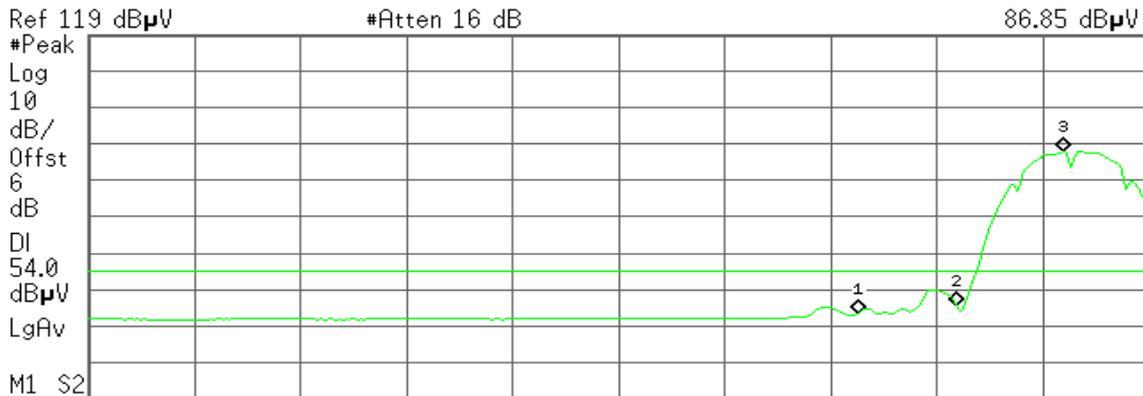
Detector mode: Average

Polarity: Vertical

Agilent 07:49:28 Nov 27, 2010

R T

Mkr3 2.411 2 GHz
86.85 dBμV



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

| Marker | Trace | Type | X Axis | Amplitude |
|--------|-------|------|-------------|------------|
| 1 | (1) | Freq | 2.390 0 GHz | 42.48 dBμU |
| 2 | (1) | Freq | 2.400 0 GHz | 44.50 dBμU |
| 3 | (1) | Freq | 2.411 2 GHz | 86.85 dBμU |



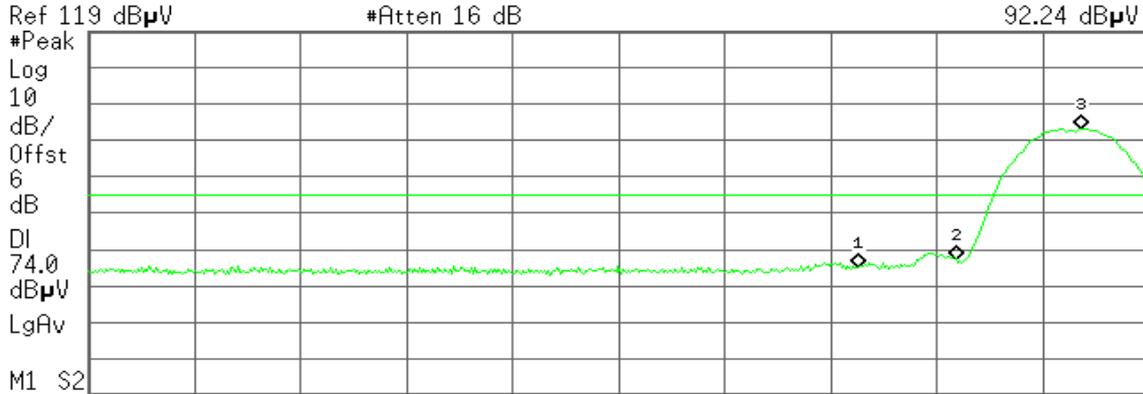
Detector mode: Peak

Polarity: Horizontal

Agilent 06:26:40 Nov 27, 2010

R T

Mkr3 2.413 0 GHz
92.24 dBµV



Start 2.310 0 GHz Stop 2.420 0 GHz
#Res BW 1 MHz #VBW 1 MHz #Sweep 100 ms (601 pts)

| Marker | Trace | Type | X Axis | Amplitude |
|--------|-------|------|-------------|------------|
| 1 | (1) | Freq | 2.390 0 GHz | 54.22 dBµU |
| 2 | (1) | Freq | 2.400 0 GHz | 56.14 dBµU |
| 3 | (1) | Freq | 2.413 0 GHz | 92.24 dBµU |

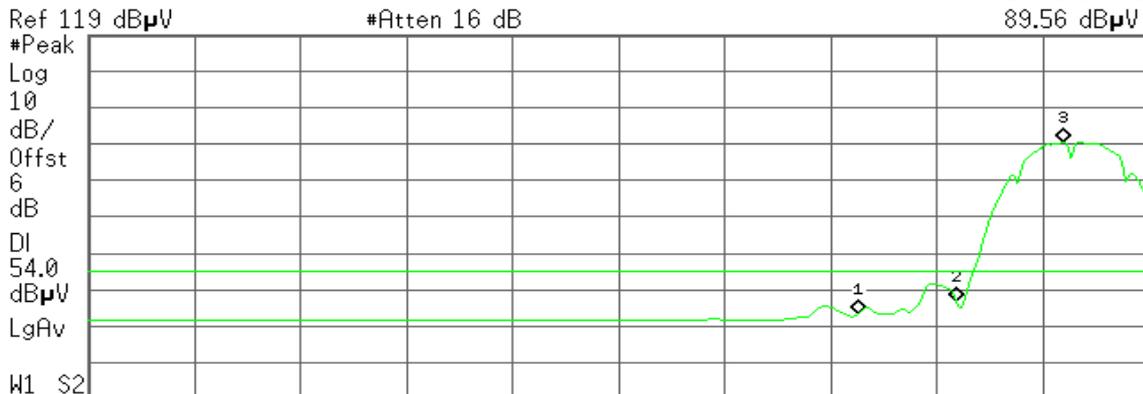
Detector mode: Average

Polarity: Horizontal

Agilent 06:25:35 Nov 27, 2010

R T

Mkr3 2.411 2 GHz
89.56 dBµV



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

| Marker | Trace | Type | X Axis | Amplitude |
|--------|-------|------|-------------|------------|
| 1 | (1) | Freq | 2.390 0 GHz | 42.34 dBµU |
| 2 | (1) | Freq | 2.400 0 GHz | 45.77 dBµU |
| 3 | (1) | Freq | 2.411 2 GHz | 89.56 dBµU |



Band Edges (IEEE 802.11b / CH High)

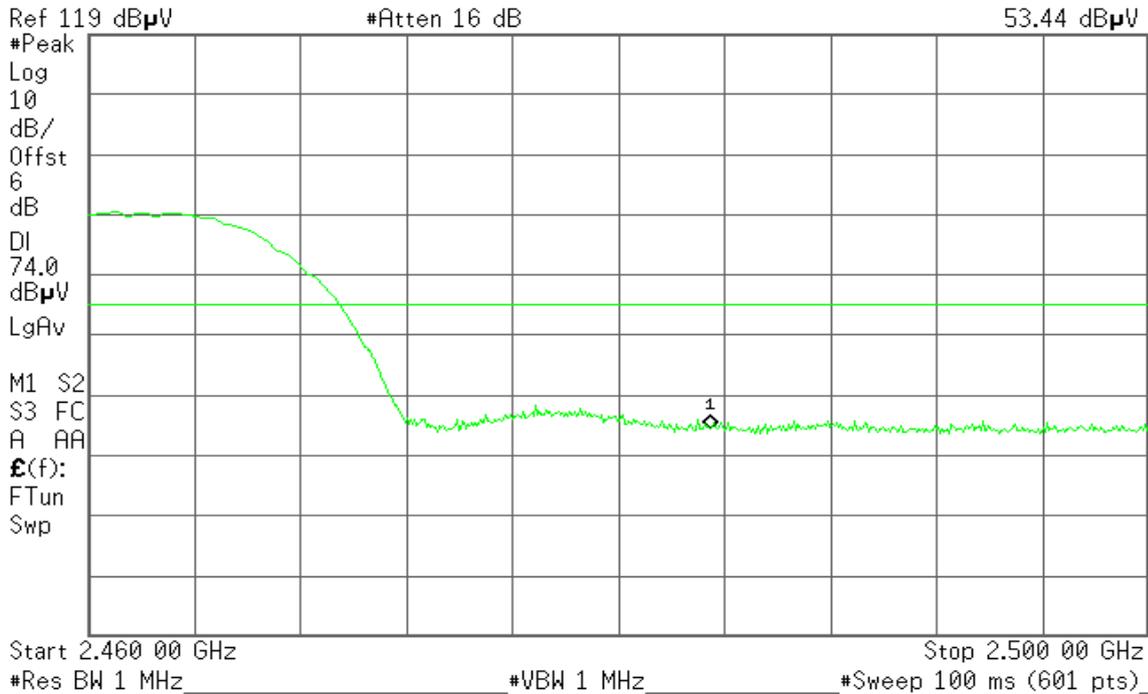
Detector mode: Peak

Polarity: Vertical

Agilent 09:05:44 Nov 27, 2010

T

Mkr1 2.483 50 GHz
53.44 dB μ V



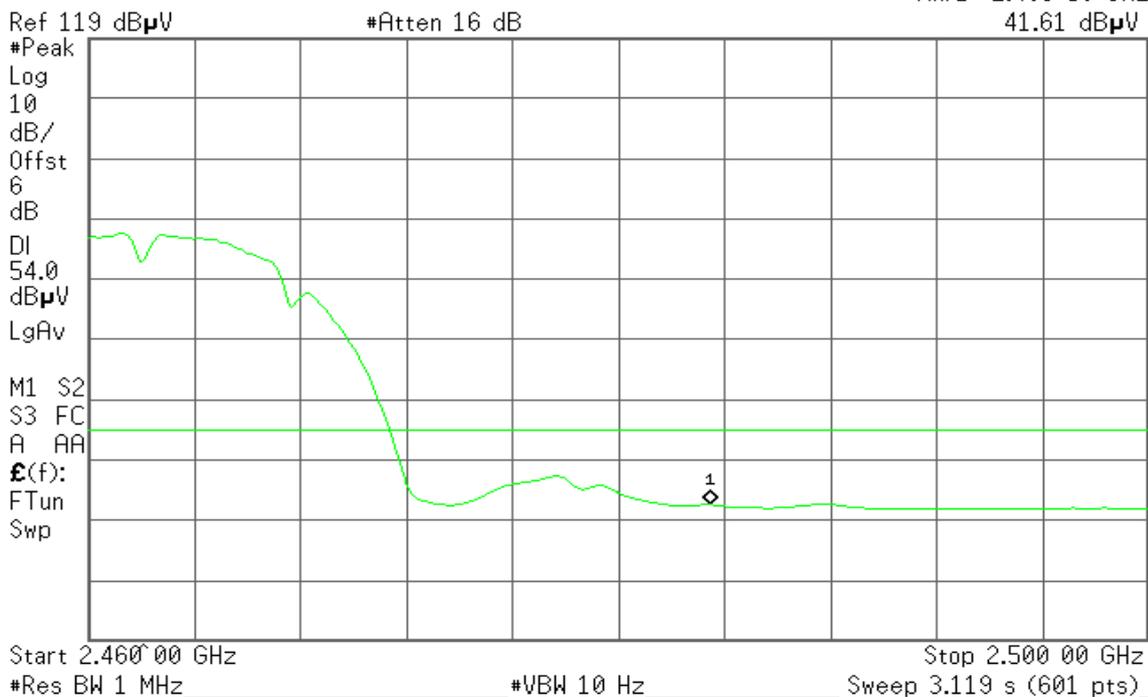
Detector mode: Average

Polarity: Vertical

Agilent 09:06:10 Nov 27, 2010

T

Mkr1 2.483 50 GHz
41.61 dB μ V





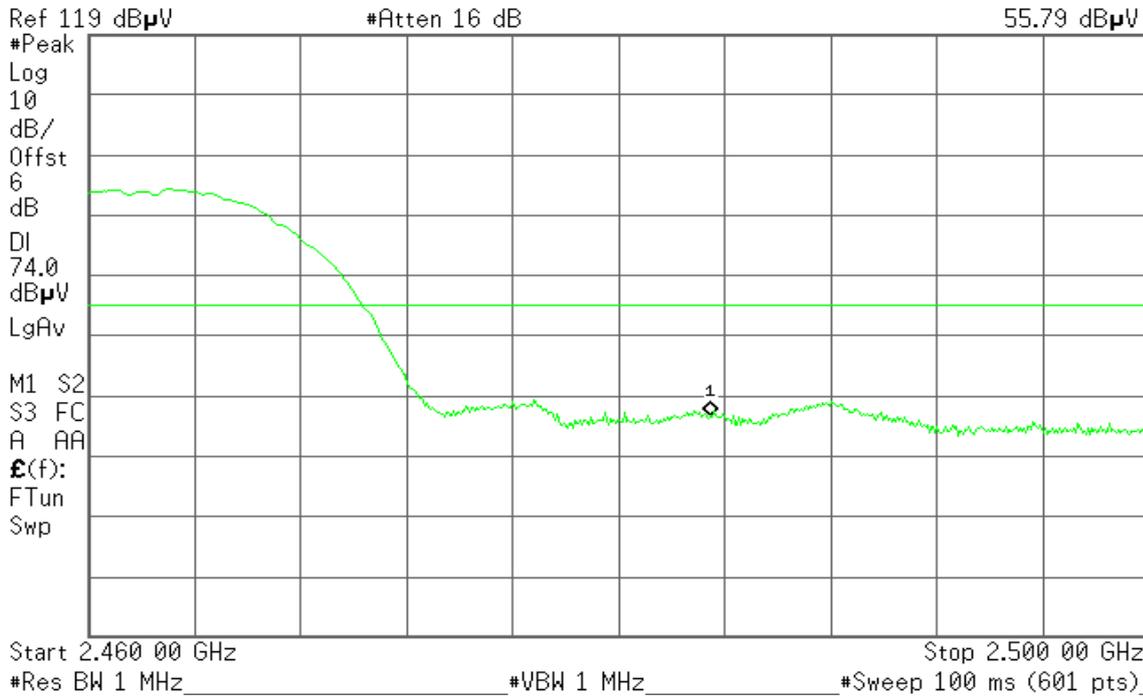
Detector mode: Peak

Polarity: Horizontal

Agilent 08:38:22 Nov 27, 2010

L

Mkr1 2.483 50 GHz
55.79 dB μ V



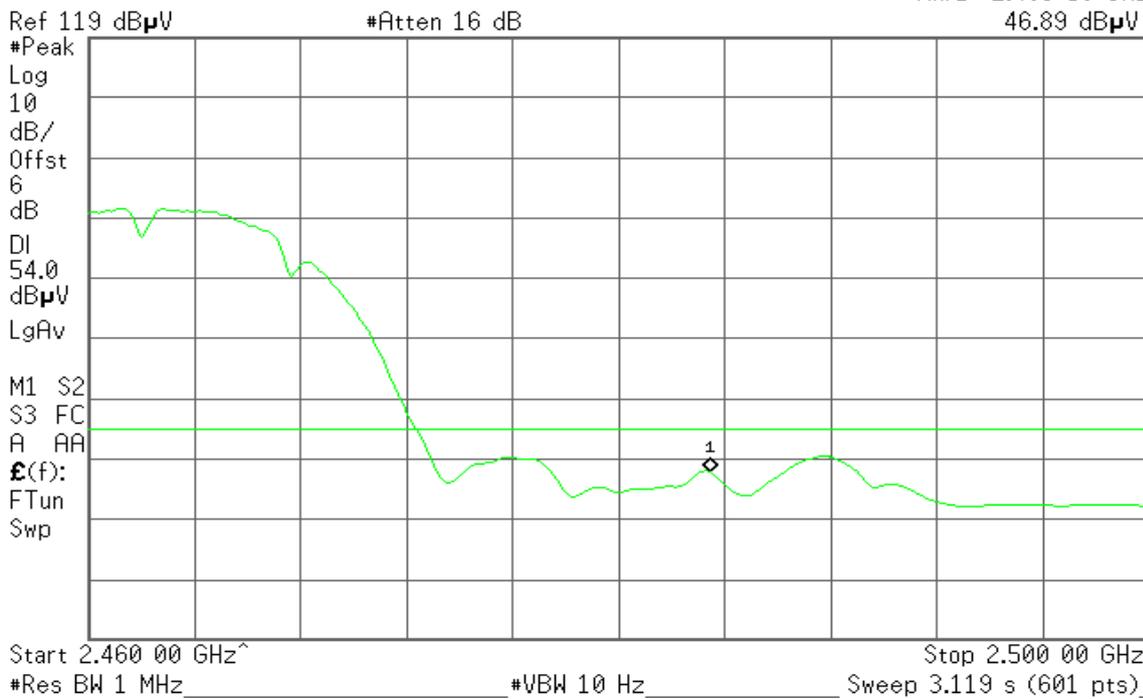
Detector mode: Average

Polarity: Horizontal

Agilent 08:38:47 Nov 27, 2010

T

Mkr1 2.483 50 GHz
46.89 dB μ V





Band Edges (IEEE 802.11g / CH Low)

Detector mode: Peak

Polarity: Vertical

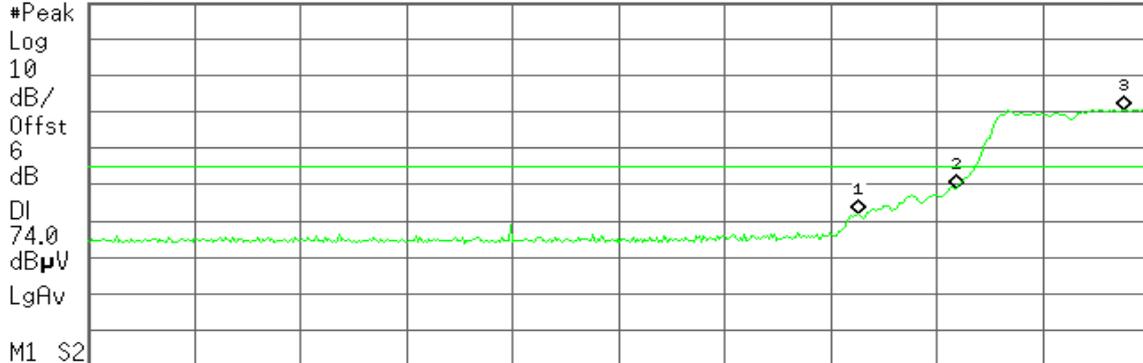
Agilent 06:35:35 Nov 27, 2010

R T

Mkr3 2.417 4 GHz
89.74 dBμV

Ref 119 dBμV

#Atten 16 dB



Start 2.310 0 GHz

Stop 2.420 0 GHz

#Res BW 1 MHz

#VBW 1 MHz

#Sweep 100 ms (601 pts)

| Marker | Trace | Type | X Axis | Amplitude |
|--------|-------|------|-------------|------------|
| 1 | (1) | Freq | 2.390 0 GHz | 61.16 dBμU |
| 2 | (1) | Freq | 2.400 0 GHz | 68.03 dBμU |
| 3 | (1) | Freq | 2.417 4 GHz | 89.74 dBμU |

Detector mode: Average

Polarity: Vertical

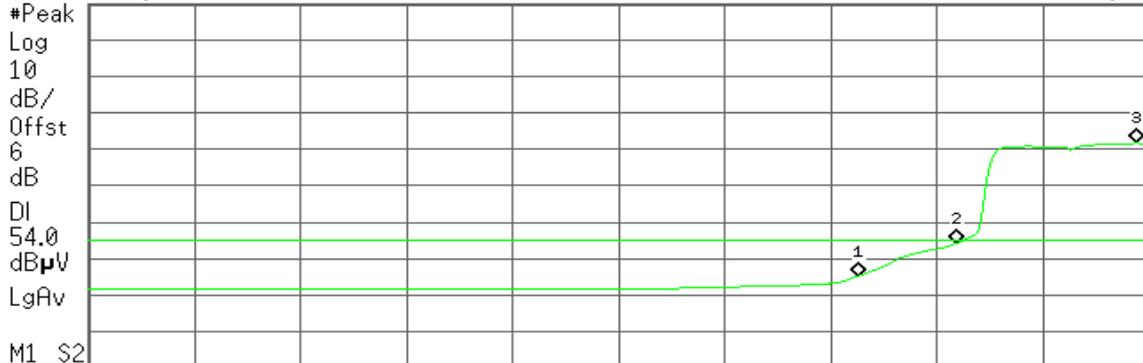
Agilent 06:36:19 Nov 27, 2010

R T

Mkr3 2.418 7 GHz
80.72 dBμV

Ref 119 dBμV

#Atten 16 dB



Start 2.310 0 GHz

Stop 2.420 0 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 8.577 s (601 pts)

| Marker | Trace | Type | X Axis | Amplitude |
|--------|-------|------|-------------|------------|
| 1 | (1) | Freq | 2.390 0 GHz | 44.23 dBμU |
| 2 | (1) | Freq | 2.400 0 GHz | 53.18 dBμU |
| 3 | (1) | Freq | 2.418 7 GHz | 80.72 dBμU |

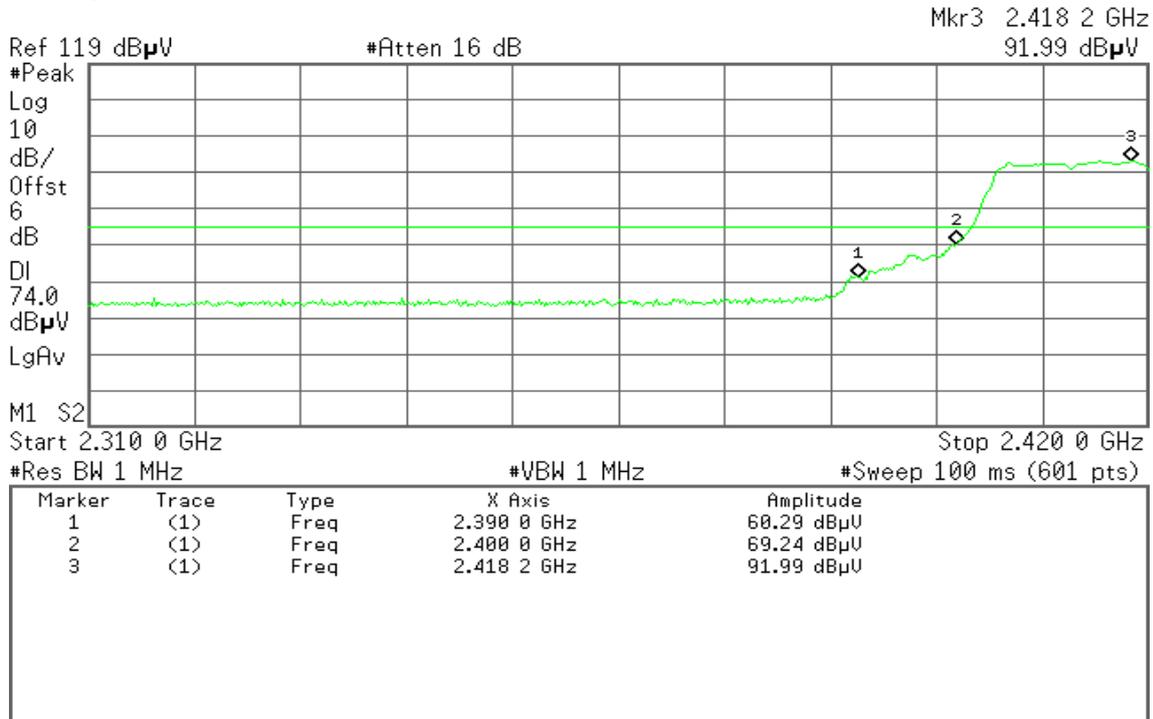


Detector mode: Peak

Polarity: Horizontal

Agilent 08:42:45 Nov 27, 2010

T

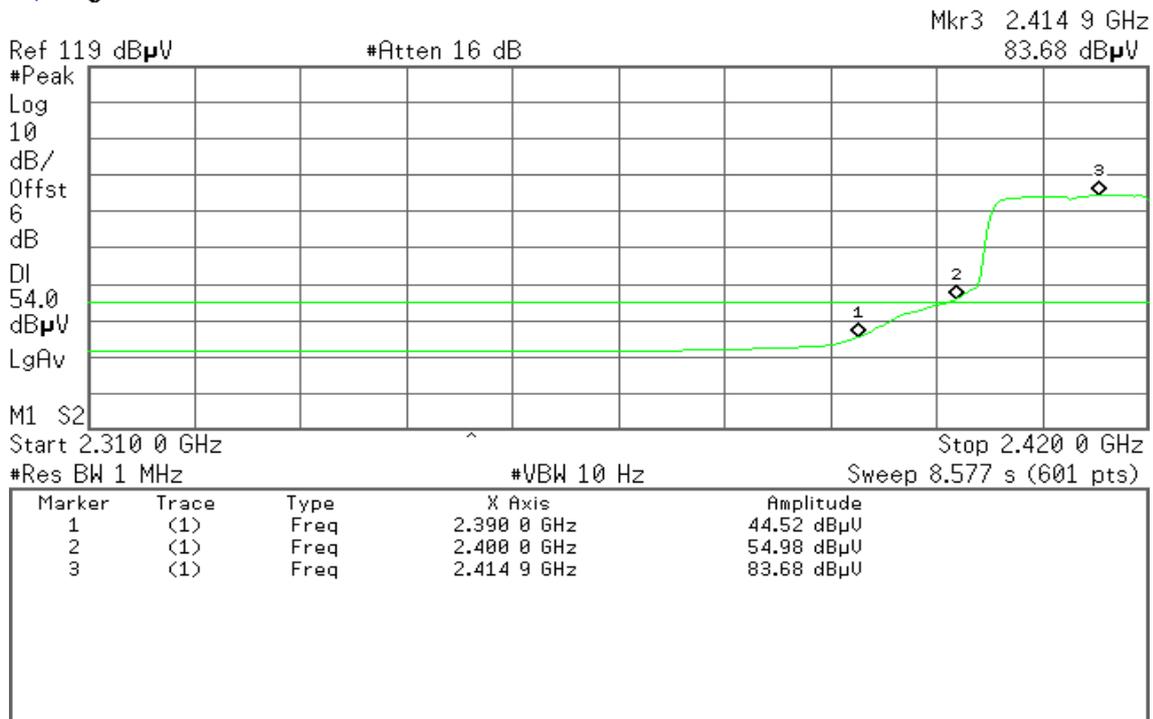


Detector mode: Average

Polarity: Horizontal

Agilent 06:23:53 Nov 27, 2010

R T





Band Edges (IEEE 802.11g / CH High)

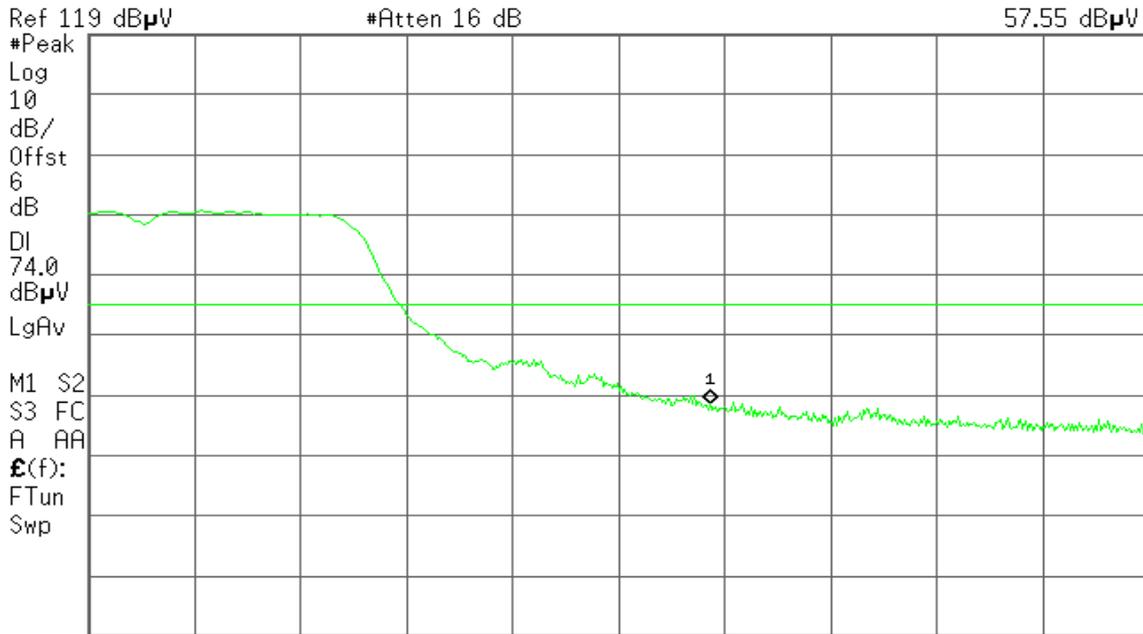
Detector mode: Peak

Polarity: Vertical

Agilent 09:04:02 Nov 27, 2010

T

Mkr1 2.483 50 GHz
57.55 dB μ V



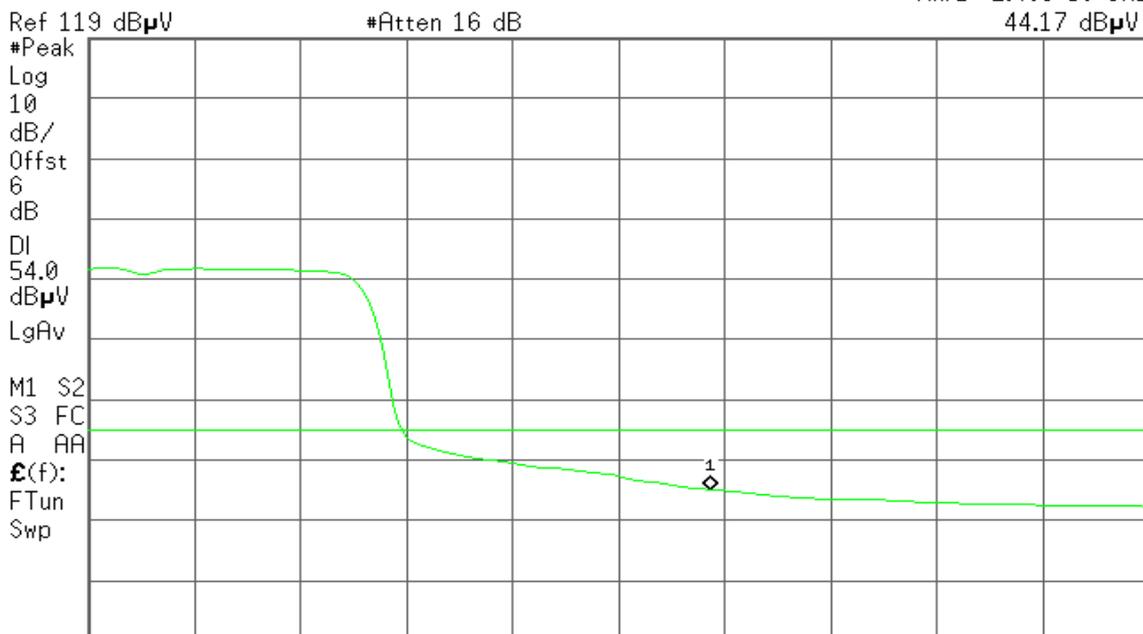
Detector mode: Average

Polarity: Vertical

Agilent 09:03:26 Nov 27, 2010

T

Mkr1 2.483 50 GHz
44.17 dB μ V





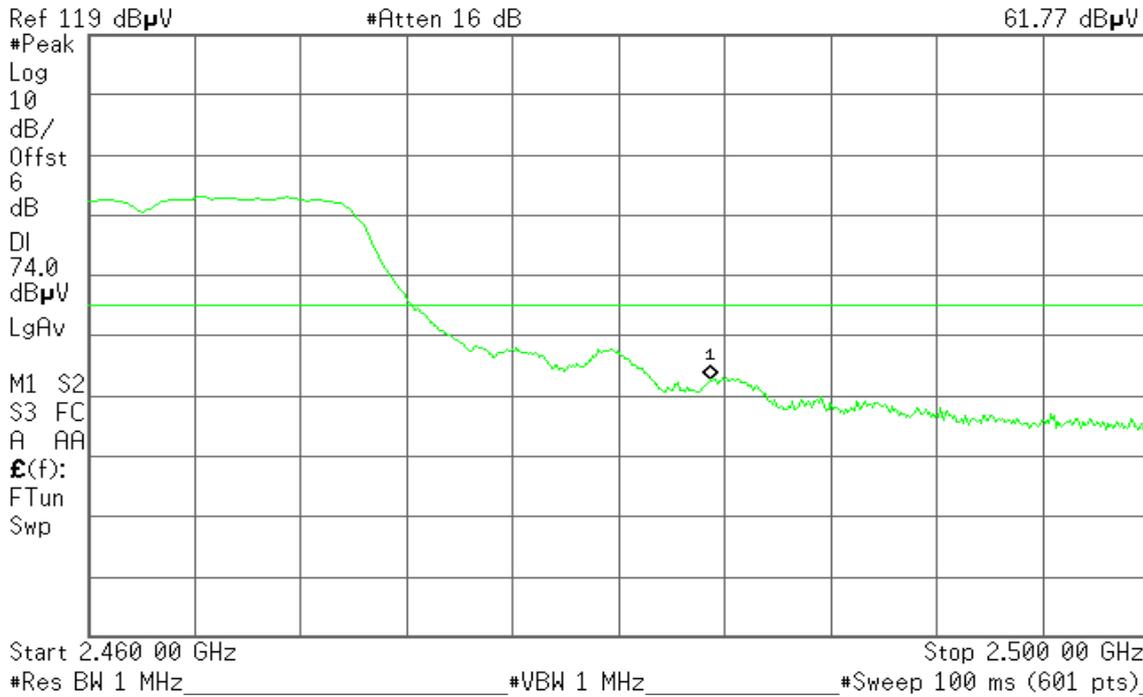
Detector mode: Peak

Polarity: Horizontal

Agilent 08:40:32 Nov 27, 2010

T

Mkr1 2.483 50 GHz
61.77 dB μ V



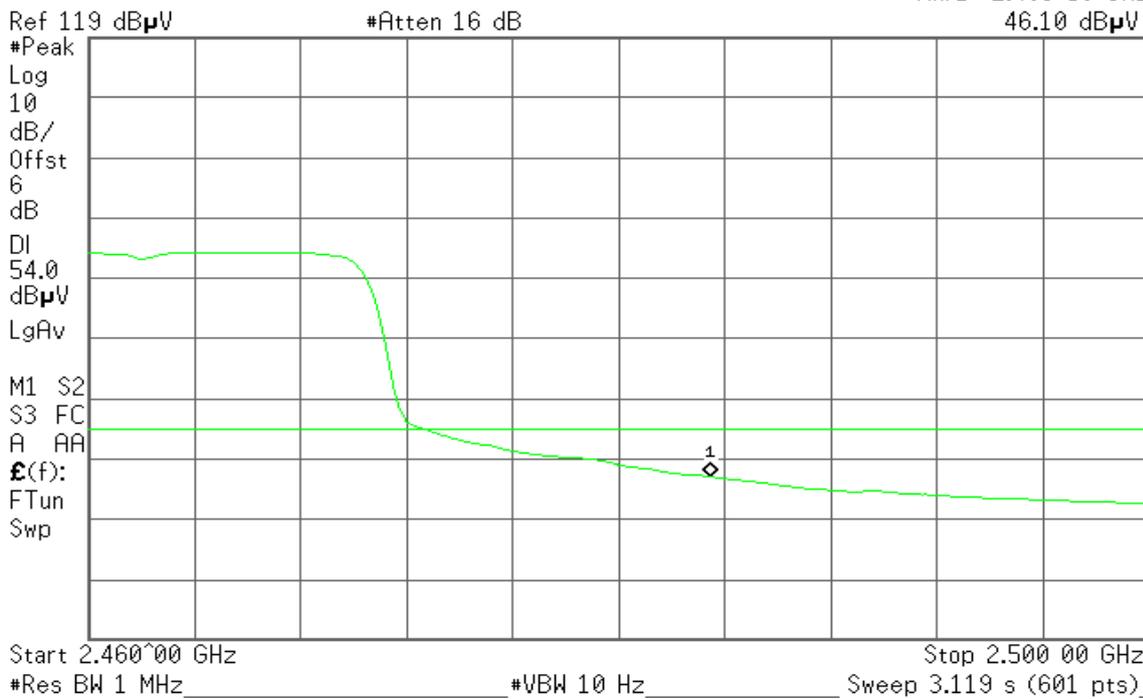
Detector mode: Average

Polarity: Horizontal

Agilent 08:40:10 Nov 27, 2010

T

Mkr1 2.483 50 GHz
46.10 dB μ V



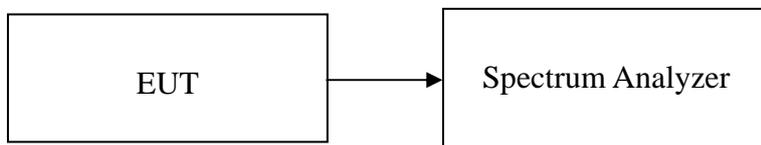


7.5 PEAK POWER SPECTRAL DENSITY

LIMIT

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

Test Configuration



TEST PROCEDURE

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

TEST RESULTS

No non-compliance noted.



Test Data

Test mode: IEEE 802.11b

| Channel | Frequency (MHz) | PPSD (dBm) | Limit (dBm) | Result |
|---------|-----------------|------------|-------------|--------|
| Low | 2412 | -16.57 | 8.00 | PASS |
| Mid | 2437 | -17.34 | | PASS |
| High | 2462 | -16.76 | | PASS |

Test mode: IEEE 802.11g

| Channel | Frequency (MHz) | PPSD (dBm) | Limit (dBm) | Result |
|---------|-----------------|------------|-------------|--------|
| Low | 2412 | -15.87 | 8.00 | PASS |
| Mid | 2437 | -16.17 | | PASS |
| High | 2462 | -16.94 | | PASS |



Test Plot

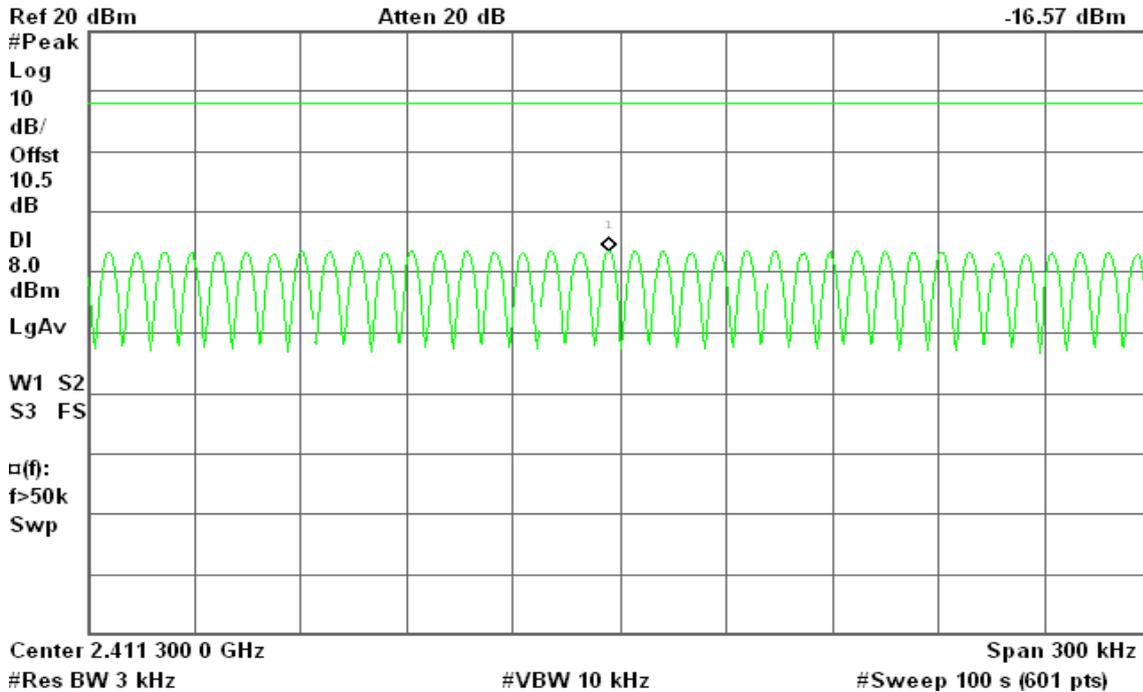
IEEE 802.11b

PPSD (CH Low)

Agilent 16:47:38 Dec 31, 2010

R T

Mkr1 2.411 296 5 GHz
-16.57 dBm

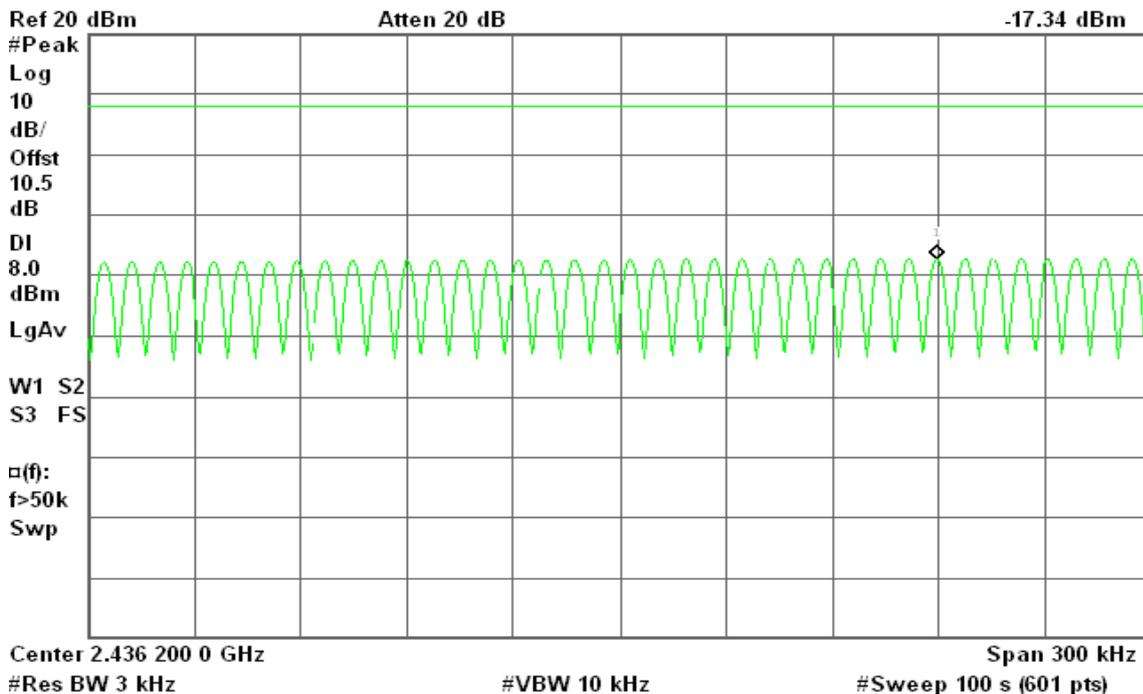


PPSD (CH Mid)

Agilent 16:53:56 Dec 31, 2010

R T

Mkr1 2.436 289 6 GHz
-17.34 dBm



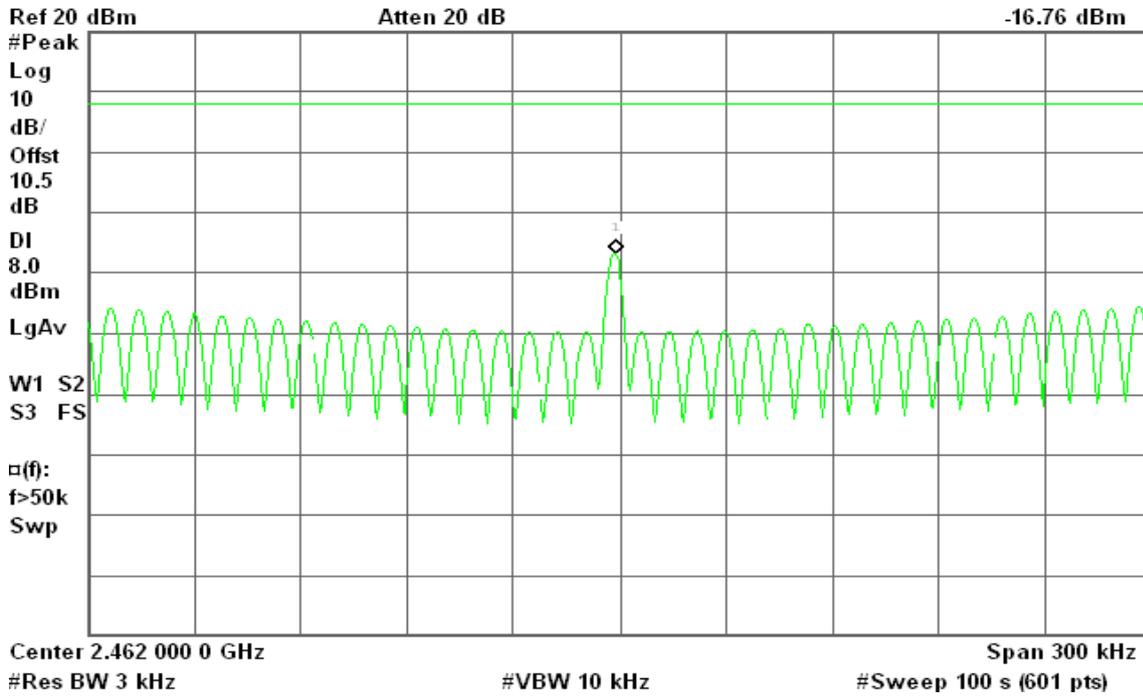


PPSD (CH High)

Agilent 16:59:17 Dec 31, 2010

R T

Mkr1 2.461 998 5 GHz
-16.76 dBm



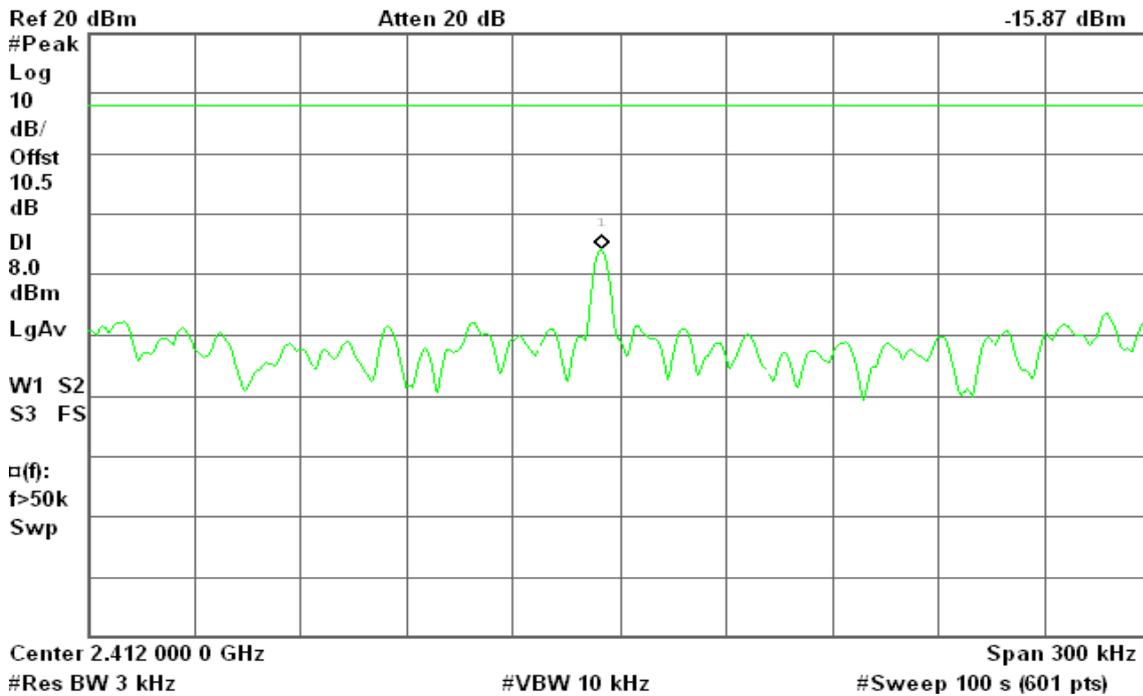
IEEE 802.11g

PPSD (CH Low)

Agilent 16:16:43 Dec 31, 2010

R T

Mkr1 2.411 994 5 GHz
-15.87 dBm





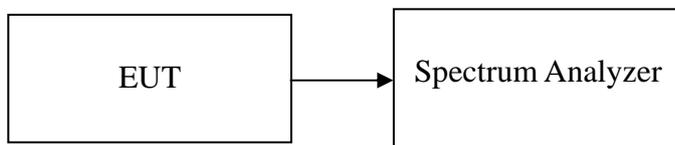
7.6 SPURIOUS EMISSIONS

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.



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 ($\mu\text{V/m}$) | 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.

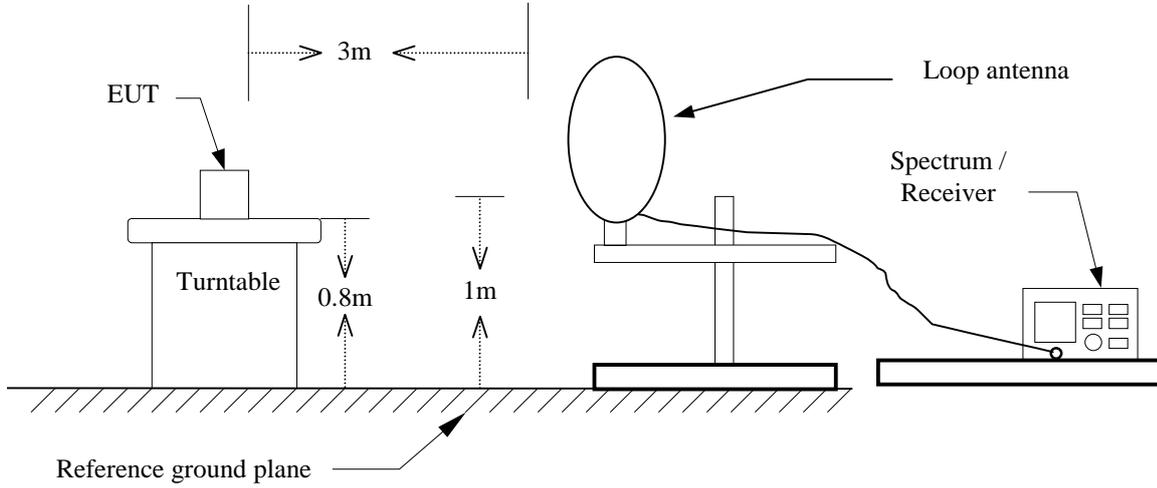
2. In the emission table above, the tighter limit applies at the band edges.

| Frequency (MHz) | Field Strength ($\mu\text{V/m}$ at 3-meter) | Field Strength (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 |

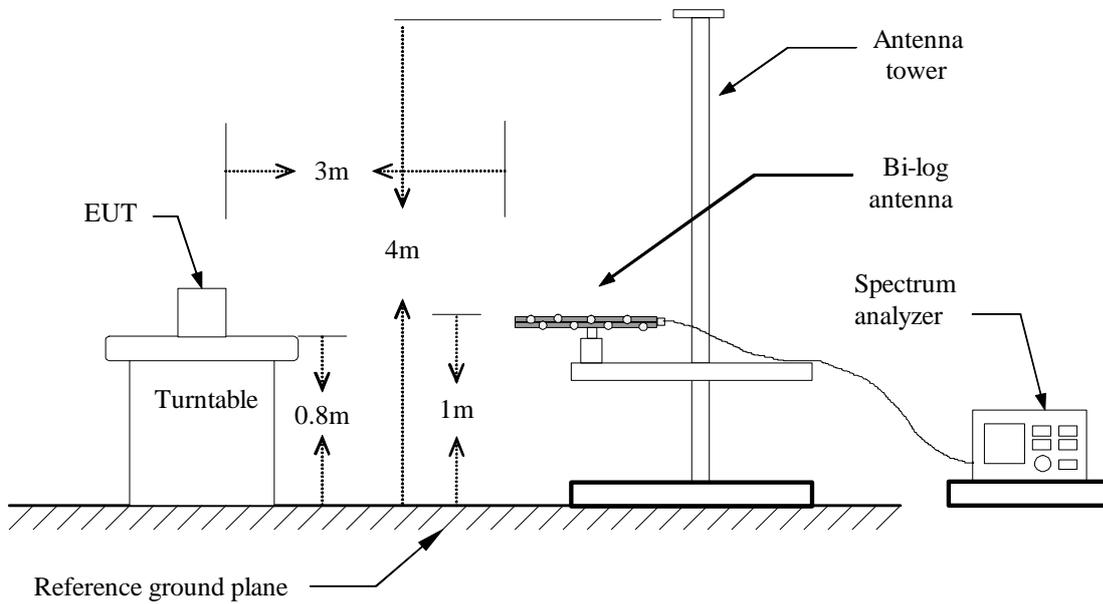


Test Configuration

9kHz ~ 30MHz

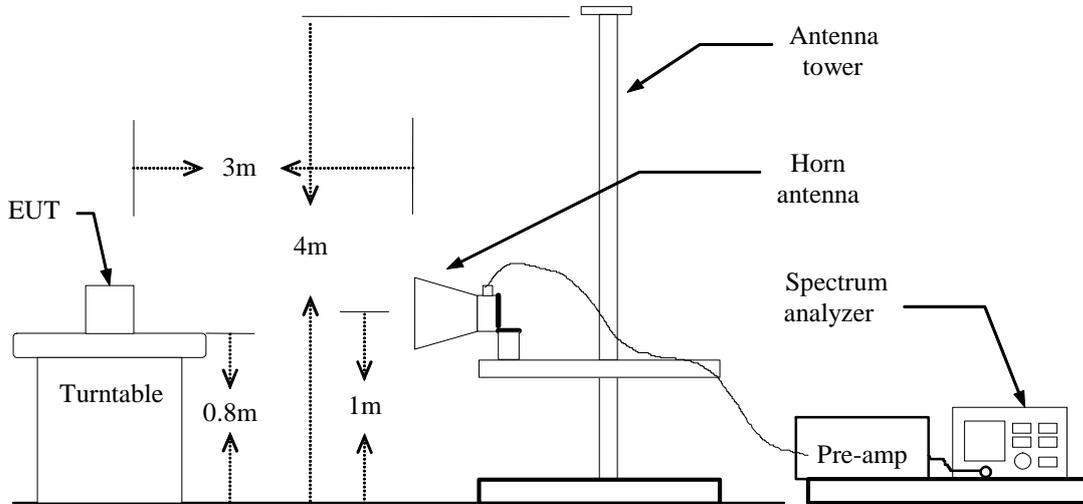


30MHz ~ 1GHz





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:** December 29, 2010**Temperature:** 26°C**Tested by:** Will Lee**Humidity:** 60 % RH**Polarity:** Ver. / Hor.

| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Pol. (H/V) |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------|----------------|
| 41.0500 | 53.37 | -19.81 | 33.56 | 40.00 | -6.44 | QP | V |
| 375.0200 | 54.39 | -14.86 | 39.53 | 46.00 | -6.47 | QP | V |
| 399.9860 | 44.97 | -14.22 | 30.75 | 46.00 | -15.25 | QP | V |
| 499.9860 | 49.36 | -12.11 | 37.25 | 46.00 | -8.75 | QP | V |
| 549.9860 | 54.30 | -11.31 | 42.99 | 46.00 | -3.01 | QP | V |
| 699.9860 | 48.19 | -9.27 | 38.92 | 46.00 | -7.08 | QP | V |
| 350.0020 | 51.40 | -15.50 | 35.90 | 46.00 | -10.10 | QP | H |
| 375.0257 | 57.74 | -14.86 | 42.88 | 46.00 | -3.12 | QP | H |
| 398.7098 | 44.00 | -14.25 | 29.75 | 46.00 | -16.25 | QP | H |
| 549.9960 | 52.11 | -11.31 | 40.80 | 46.00 | -5.20 | QP | H |
| 699.9895 | 53.44 | -9.27 | 44.17 | 46.00 | -1.83 | QP | H |
| 799.9755 | 49.17 | -8.04 | 41.13 | 46.00 | -4.87 | QP | H |

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 29, 2010**Temperature:** 21°C**Tested by:** Wolf Huang**Humidity:** 51 % RH**Polarity:** Ver. / Hor.

| Frequency (MHz) | 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 | Ant.Pol. (H/V) |
|-----------------|-----------------------|--------------------------|--------------------------|------------------------|---------------------------|-----------------------|--------------------------|-------------|--------|----------------|
| 1793.33 | 60.10 | 43.39 | -6.06 | 54.04 | 37.33 | 74.00 | 54.00 | -16.67 | AVG | V |
| 1900.00 | 61.20 | 44.44 | -5.07 | 56.13 | 39.37 | 74.00 | 54.00 | -14.63 | AVG | V |
| 2000.00 | 58.26 | 44.42 | -4.15 | 54.11 | 40.27 | 74.00 | 54.00 | -13.73 | AVG | V |
| 2186.67 | 58.10 | 44.65 | -3.59 | 54.50 | 41.06 | 74.00 | 54.00 | -12.94 | AVG | V |
| 2783.33 | 61.73 | 43.85 | -1.83 | 59.90 | 42.02 | 74.00 | 54.00 | -11.98 | AVG | V |
| N/A | | | | | | | | | | |
| 1896.67 | 61.61 | 44.30 | -5.10 | 56.51 | 39.20 | 74.00 | 54.00 | -14.80 | AVG | H |
| 2180.00 | 59.30 | 44.00 | -3.61 | 55.68 | 40.39 | 74.00 | 54.00 | -13.61 | AVG | H |
| 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 29, 2010**Temperature:** 21°C**Tested by:** Wolf Huang**Humidity:** 51 % RH**Polarity:** Ver. / Hor.

| Frequency (MHz) | 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 | Ant.Pol. (H/V) |
|-----------------|-----------------------|--------------------------|--------------------------|------------------------|---------------------------|-----------------------|--------------------------|-------------|--------|----------------|
| 1796.67 | 60.23 | 44.25 | -6.02 | 54.21 | 38.23 | 74.00 | 54.00 | -15.77 | AVG | V |
| 1983.33 | 62.65 | 45.12 | -4.30 | 58.35 | 40.82 | 74.00 | 54.00 | -13.18 | AVG | V |
| 2083.33 | 65.06 | 44.85 | -3.90 | 61.16 | 40.95 | 74.00 | 54.00 | -13.05 | AVG | V |
| 2183.33 | 61.42 | 43.98 | -3.60 | 57.82 | 40.38 | 74.00 | 54.00 | -13.62 | AVG | V |
| 2800.00 | 59.72 | 44.74 | -1.78 | 57.93 | 42.96 | 74.00 | 54.00 | -11.04 | AVG | V |
| 4883.33 | 49.81 | --- | 1.16 | 50.97 | --- | 74.00 | 54.00 | -3.03 | Peak | V |
| 1293.33 | 59.94 | --- | -9.10 | 50.83 | --- | 74.00 | 54.00 | -3.17 | Peak | H |
| 1586.67 | 59.24 | --- | -7.96 | 51.27 | --- | 74.00 | 54.00 | -2.73 | Peak | H |
| 1990.00 | 58.86 | 44.22 | -4.24 | 54.62 | 39.98 | 74.00 | 54.00 | -14.02 | AVG | H |
| 4866.67 | 49.62 | --- | 1.16 | 50.78 | --- | 74.00 | 54.00 | -3.22 | Peak | H |
| 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 29, 2010**Temperature:** 21°C**Tested by:** Wolf Huang**Humidity:** 51 % RH**Polarity:** Ver. / Hor.

| Frequency (MHz) | 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 | Ant.Pol. (H/V) |
|-----------------|-----------------------|--------------------------|--------------------------|------------------------|---------------------------|-----------------------|--------------------------|-------------|--------|----------------|
| 1493.33 | 59.49 | --- | -8.77 | 50.72 | --- | 74.00 | 54.00 | -3.28 | Peak | V |
| 1793.33 | 61.99 | 44.25 | -6.06 | 55.94 | 38.19 | 74.00 | 54.00 | -15.81 | AVG | V |
| 2000.00 | 60.10 | 44.69 | -4.15 | 55.95 | 40.54 | 74.00 | 54.00 | -13.46 | AVG | V |
| 2793.33 | 58.95 | 45.36 | -1.80 | 57.15 | 43.56 | 74.00 | 54.00 | -10.44 | AVG | V |
| N/A | | | | | | | | | | |
| | | | | | | | | | | |
| 1600.00 | 59.48 | --- | -7.84 | 51.64 | --- | 74.00 | 54.00 | -2.36 | Peak | H |
| 1993.33 | 58.22 | 44.10 | -4.21 | 54.01 | 39.89 | 74.00 | 54.00 | -14.11 | AVG | H |
| 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 29, 2010**Temperature:** 21°C**Tested by:** Wolf Huang**Humidity:** 51 % RH**Polarity:** Ver. / Hor.

| Frequency (MHz) | 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 | Ant.Pol. (H/V) |
|-----------------|-----------------------|--------------------------|--------------------------|------------------------|---------------------------|-----------------------|--------------------------|-------------|--------|----------------|
| 1783.33 | 62.37 | 44.95 | -6.15 | 56.22 | 38.80 | 74.00 | 54.00 | -15.20 | AVG | V |
| 1986.67 | 58.62 | 44.02 | -4.27 | 54.35 | 39.75 | 74.00 | 54.00 | -14.25 | AVG | V |
| 2083.33 | 62.31 | 44.52 | -3.90 | 58.41 | 40.62 | 74.00 | 54.00 | -13.38 | AVG | V |
| 2786.67 | 58.67 | 44.15 | -1.82 | 56.85 | 42.33 | 74.00 | 54.00 | -11.67 | AVG | V |
| N/A | | | | | | | | | | |
| | | | | | | | | | | |
| 1890.00 | 59.35 | 44.57 | -5.16 | 54.19 | 39.41 | 74.00 | 54.00 | -14.59 | AVG | H |
| 1996.67 | 62.11 | 44.95 | -4.18 | 57.93 | 40.77 | 74.00 | 54.00 | -13.23 | AVG | H |
| N/A | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
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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 29, 2010**Temperature:** 21°C**Tested by:** Wolf Huang**Humidity:** 51 % RH**Polarity:** Ver. / Hor.

| Frequency (MHz) | 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 | Ant.Pol. (H/V) |
|-----------------|-----------------------|--------------------------|--------------------------|------------------------|---------------------------|-----------------------|--------------------------|-------------|--------|----------------|
| 1990.00 | 61.46 | 44.65 | -4.24 | 57.22 | 40.41 | 74.00 | 54.00 | -13.59 | AVG | V |
| 2780.00 | 60.69 | 45.21 | -1.84 | 58.85 | 43.37 | 74.00 | 54.00 | -10.63 | AVG | V |
| N/A | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1460.00 | 58.73 | --- | -8.83 | 49.90 | --- | 74.00 | 54.00 | -4.10 | Peak | H |
| N/A | | | | | | | | | | |
| | | | | | | | | | | |
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| | | | | | | | | | | |

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 29, 2010**Temperature:** 21°C**Tested by:** Wolf Huang**Humidity:** 51 % RH**Polarity:** Ver. / Hor.

| Frequency (MHz) | 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 | Ant.Pol. (H/V) |
|-----------------|-----------------------|--------------------------|--------------------------|------------------------|---------------------------|-----------------------|--------------------------|-------------|--------|----------------|
| 1896.67 | 59.97 | 44.25 | -5.10 | 54.86 | 39.15 | 74.00 | 54.00 | -14.85 | AVG | V |
| 2196.67 | 60.75 | 44.78 | -3.56 | 57.18 | 41.22 | 74.00 | 54.00 | -12.78 | AVG | V |
| 2770.00 | 59.45 | 44.17 | -1.87 | 57.58 | 42.30 | 74.00 | 54.00 | -11.70 | AVG | V |
| N/A | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 1883.33 | 63.13 | 44.10 | -5.23 | 57.91 | 38.87 | 74.00 | 54.00 | -15.13 | AVG | H |
| 1990.00 | 58.40 | 44.78 | -4.24 | 54.16 | 40.54 | 74.00 | 54.00 | -13.46 | AVG | H |
| 2800.00 | 58.53 | 45.10 | -1.78 | 56.75 | 43.32 | 74.00 | 54.00 | -10.68 | AVG | H |
| 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 10, 2010
Temperature: 23°C **Tested by:** Webber Chung
Humidity: 56% RH

| Frequency (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 |
|-----------------|-------------------|-------------------|-------------------|------------------|------------------|-----------------|-----------------|----------------|----------------|------|
| 0.1580 | 47.96 | 19.01 | 10.84 | 58.80 | 29.85 | 65.56 | 55.56 | -6.76 | -25.71 | L1 |
| 0.1819 | 48.15 | 36.83 | 10.83 | 58.98 | 47.66 | 64.39 | 54.37 | -5.41 | -6.71 | L1 |
| 0.2540 | 39.99 | --- | 10.79 | 50.78 | --- | 61.62 | --- | -10.84 | --- | L1 |
| 0.6140 | 40.19 | 20.76 | 10.70 | 50.89 | 31.46 | 56.00 | 46.00 | -5.11 | -14.54 | L1 |
| 0.8940 | 36.96 | 25.18 | 10.68 | 47.64 | 35.86 | 56.00 | 46.00 | -8.36 | -10.14 | L1 |
| 3.7740 | 37.12 | 21.26 | 10.71 | 47.83 | 31.97 | 56.00 | 46.00 | -8.17 | -14.03 | L1 |
| 22.7020 | 39.27 | 29.02 | 11.23 | 50.50 | 40.25 | 60.00 | 50.00 | -9.50 | -9.75 | L1 |
| 0.1660 | 48.70 | 16.63 | 10.63 | 59.33 | 27.26 | 65.15 | 55.15 | -5.82 | -27.89 | L2 |
| 0.1819 | 48.45 | 35.82 | 10.65 | 59.10 | 46.47 | 64.39 | 54.37 | -5.29 | -7.90 | L2 |
| 0.2260 | 43.20 | 22.60 | 10.65 | 53.85 | 33.25 | 62.59 | 52.59 | -8.74 | -19.34 | L2 |
| 0.2420 | 41.84 | 22.34 | 10.64 | 52.48 | 32.98 | 62.02 | 52.02 | -9.54 | -19.04 | L2 |
| 0.5780 | 39.08 | 24.29 | 10.62 | 49.70 | 34.91 | 56.00 | 46.00 | -6.30 | -11.09 | L2 |
| 3.8940 | 37.28 | 20.75 | 10.64 | 47.92 | 31.39 | 56.00 | 46.00 | -8.08 | -14.61 | L2 |
| 22.3060 | 36.80 | --- | 11.16 | 47.96 | --- | 60.00 | --- | -12.04 | --- | L2 |

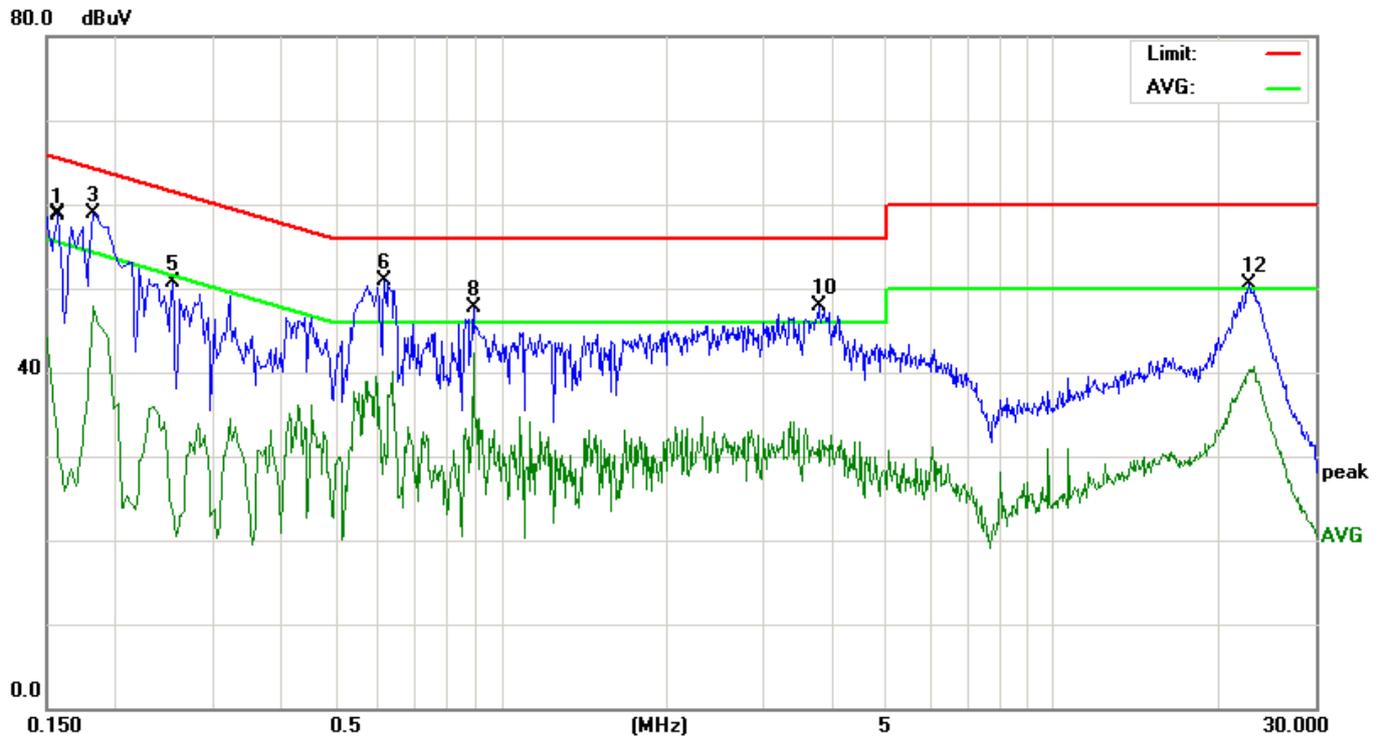
Remark:

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 to 30MHz was 10kHz; the IF bandwidth of Test Receiver between 0.15MHz to 30MHz was 9kHz;
4. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)
5. "-" means Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.



Test Plots

Conducted emissions (Line 1)



Conducted emissions (Line 2)

