

FCC 47 CFR PART 15 SUBPART C

Product Type : 3G Router
Applicant : Netcomm Limited
Address : 2-6 Orion Road, Lane Cove, NSW, 2066 Australia
Trade Name : Netcomm
Model Number : 3G10WVR
Test Specification : FCC 47 CFR PART 15 SUBPART C: Oct, 2009
Canada RSS-210 ISSUE 7: Jun., 2007
Canada RSS-Gen ISSUE 2: Jun., 2007
ANSI C63.4-2003
Issue Date : Jun. 04, 2010

Issue by

A Test Lab Techno Corp.
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Taiwan Accreditation Foundation accreditation number: 1330

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Revision History

| Rev. | Issue Date | Revisions | Revised By |
|-------------|-------------------|------------------|-------------------|
| 00 | Jun. 04, 2010 | Initial Issue | |
| | | | |
| | | | |
| | | | |

Verification

Issued Date: 2010/06/04

Product Type : 3G Router
Applicant : Netcomm Limited
Address : 2-6 Orion Road, Lane Cove, NSW, 2066 Australia
Trade Name : Netcomm
Model Number : 3G10WVR
FCC ID : XIA-3G10WVR
IC ID : 8847A-3G10WVR
EUT Rated Voltage : DC 12V, 1.5A
Test Voltage : 120 Vac / 60 Hz
Applicable Standard : FCC 47 CFR PART 15 SUBPART C: Oct, 2009
Canada RSS-210 ISSUE 7: Jun., 2007
Canada RSS-Gen ISSUE 2: Jun., 2007
ANSI C63.4-2003

Test Result : Complied

Performed Lab. : A Test Lab Techno Corp.

No. 140-1, Changan Street, Bade City,
Taoyuan Country 334, Taiwan R.O.C.


Tel : +86-3-2710188 / Fax : +86-3-2710190

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1330



<http://www.atl-lab.com.tw/e-index.htm>

The above equipment has been tested by A Test Lab Techno Corp., and found compliance with the requirements set forth in the Electromagnetic Compatibility Directive 2004/108/EC and technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Approved By : 
(Manager) (Miller Lee)

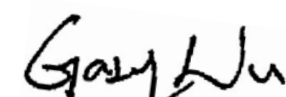
Reviewed By : 
(Testing Engineer) (Gary Wu)

TABLE OF CONTENTS

| | | |
|----------|--|-----------|
| 1 | General Information | 6 |
| 2 | EUT Description | 7 |
| 3 | Test Methodology..... | 8 |
| | 3.1. Mode of Operation | 8 |
| | 3.2. EUT Exercise Software..... | 8 |
| | 3.3. Configuration of Test System Details..... | 9 |
| | 3.4. Test Site Environment..... | 9 |
| 4 | Conducted Emission Measurement | 10 |
| | 4.1. Limit | 10 |
| | 4.2. Test Instruments | 10 |
| | 4.3. Test Setup..... | 10 |
| | 4.4. Test Procedure..... | 11 |
| | 4.5. Test Result..... | 12 |
| 5 | Radiated Interference Measurement | 14 |
| | 5.1. Limit | 14 |
| | 5.2. Test Instruments | 14 |
| | 5.3. Setup | 15 |
| | 5.4. Test Procedure..... | 15 |
| | 5.5. Test Result..... | 17 |
| 6 | Maximum Conducted Output Power Measurement..... | 25 |
| | 6.1. Limit | 25 |
| | 6.2. Test Setup..... | 25 |
| | 6.3. Test Instruments | 25 |
| | 6.4. Test Procedure..... | 25 |
| | 6.5. Test Result..... | 26 |
| 7 | 6dB RF Bandwidth Measurement | 27 |
| | 7.1. Limit | 27 |
| | 7.2. Test Setup..... | 27 |
| | 7.3. Test Instruments | 27 |
| | 7.4. Test Procedure..... | 27 |
| | 7.5. Test Result..... | 28 |
| | 7.6. Test Graphs | 29 |

| | | |
|-----------|--|-----------|
| 8 | Maximum Power Density Measurement..... | 31 |
| 8.1. | Limit | 31 |
| 8.2. | Test Setup..... | 31 |
| 8.3. | Test Instruments | 31 |
| 8.4. | Test Procedure..... | 31 |
| 8.5. | Test Result..... | 32 |
| 8.6. | Test Graphs | 33 |
| 9 | Out of Band Conducted Emissions Measurement | 35 |
| 9.1. | Limit | 35 |
| 9.2. | Test Setup..... | 35 |
| 9.3. | Test Instruments | 35 |
| 9.4. | Test Procedure..... | 35 |
| 9.5. | Test Result..... | 36 |
| 10 | Band Edges Measurement | 38 |
| 10.1. | Limit | 38 |
| 10.2. | Test Setup..... | 38 |
| 10.3. | Test Instruments | 38 |
| 10.4. | Test Procedure..... | 39 |
| 10.5. | Test Graphs | 40 |
| 11 | 99 % Occupied Bandwidth Measurement..... | 48 |
| 11.1. | Limit | 48 |
| 11.2. | Test Setup..... | 48 |
| 11.3. | Test Instruments | 48 |
| 11.4. | Test Procedure..... | 48 |
| 11.5. | Test Result..... | 49 |
| 11.6. | Test Graphs | 50 |
| 12 | Antenna Measurement..... | 52 |
| 12.1. | Limit | 52 |
| 12.2. | Antenna Connector Construction | 52 |

1 General Information

1.1 Summary of Test Result

| Standard | | Item | Result | Remark |
|--------------|----------|---|--------|--------|
| 15.247 | RSS-GEN | | | |
| 15.207 | 7.2.2 | AC Power Conducted Emission | PASS | ----- |
| ----- | 6 | Receiver Radiated Emissions | PASS | ----- |
| Standard | | Item | Result | Remark |
| 15.247 | RSS-210 | | | |
| 15.247(d) | A8.5 | Transmitter Radiated Emissions | PASS | ----- |
| 15.247(b)(3) | A8.4 | Max. Output Power | PASS | ----- |
| 15.247(a)(2) | A8.2 (a) | 6dB RF Bandwidth | PASS | ----- |
| 15.247(e) | A8.2 (b) | Power Spectral Density | PASS | ----- |
| 15.247(c) | A8.5 | Out of Band Conducted Spurious Emission | PASS | ----- |
| 15.247(d) | A8.5 | Band Edge Measurement | PASS | ----- |
| 15.247(c) | A8.5 | Occupied Bandwidth Measurement | PASS | ----- |
| 15.203 | - | Antenna Requirement | PASS | ----- |

The test results of this report relate only to the tested sample(s) identified in this report. Manufacturer or whom it may concern should recognize the pass or fail of the test result.

1.2 Measurement Uncertainty

Conducted Emission

The measurement uncertainty is evaluated as ± 2.24 dB.

Radiated Emission

The measurement uncertainty of 30 MHz - 1GHz is evaluated as ± 3.072 dB.

2 EUT Description

| | | |
|-----------------------------|---|---|
| Product | : | 3G Router |
| Trade Name | : | Netcomm |
| Model Number | : | 3G10WVR |
| Applicant | : | Netcomm Limited 2-6 Orion Road, Lane Cove, NSW, 2066 Australia |
| Manufacturer | : | Netcomm Limited 2-6 Orion Road, Lane Cove, NSW, 2066 Australia |
| FCC ID | : | XIA-3G10WVR |
| IC ID | : | 8847A-3G10WVR |
| Frequency Range | : | IEEE 802.11b / IEEE 802.11g: 2412MHz~2462MHz |
| Modulation Type | : | IEEE 802.11b:DSSS(CCK, DQPSK, DBPSK) IEEE 802.11g:DSSS(CCK, DQPSK, DBPSK)+ OFDM(QPSK, BPSK, 16-QAM, 64-QAM) |
| Antenna Type | : | External diople antenna |
| Antenna Gain | : | 1.47 dBi |
| Max. RF Output Power | : | IEEE 802.11b: 0.088 W / 19.45 dBm IEEE 802.11g: 0.212 W / 23.27 dBm |
| Component | | |
| Power Adapter | : | ELEMENTECH , Au-79Dmu I/P: 100-240VAC, 50/60Hz, 0.5A O/P: 12VDC, 1.5A Non-Shielded, 1.53m, Non-Detachable at Power Adapter |

3 Test Methodology

3.1. Mode of Operation

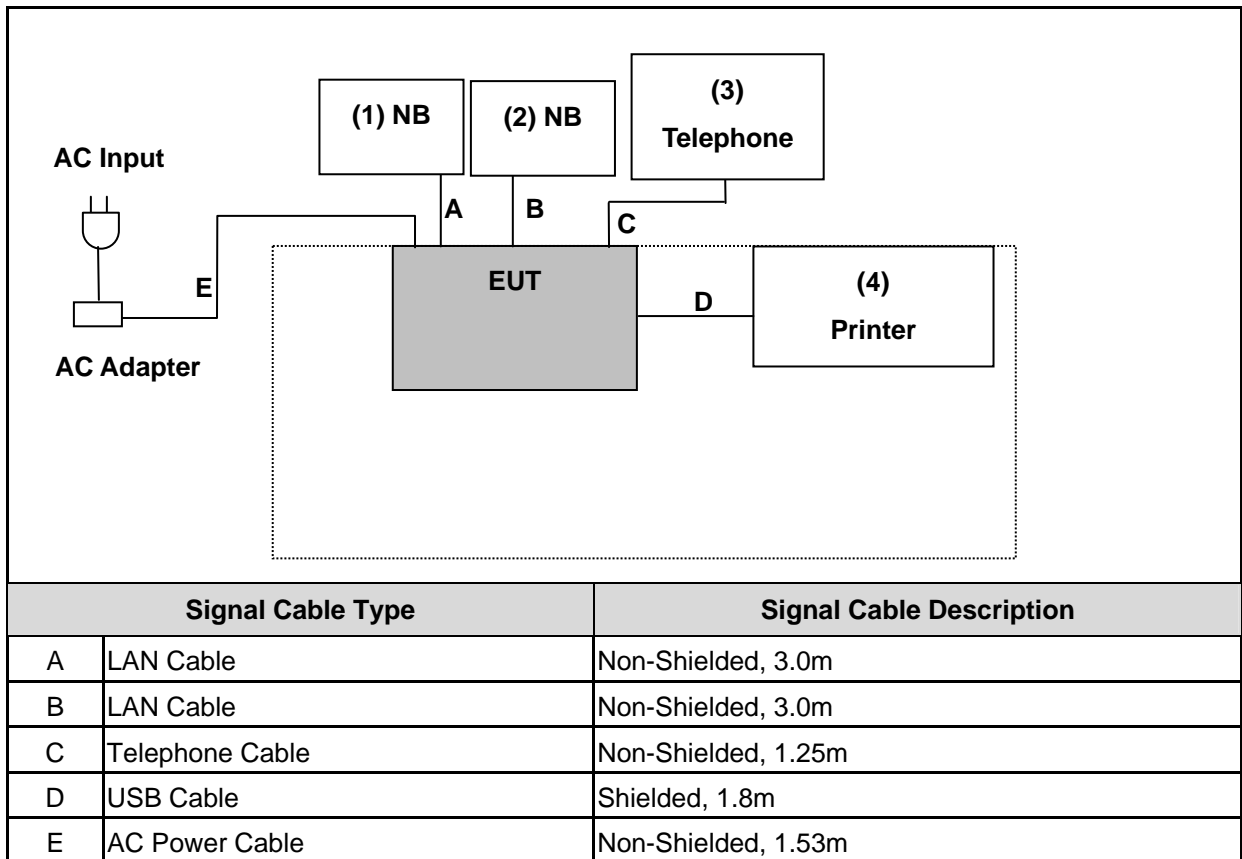
Decision of Test ATL has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

| Pre-Test Mode |
|--------------------------------|
| Mode 1: IDLE Mode |
| Mode 2: Normal Operation Mode |
| Mode 3: IEEE 802.11b Link Mode |
| Mode 4: IEEE 802.11g Link Mode |
| Mode 5: Receiver Mode |
| Final-Test Mode |
| Mode 1: IDLE Mode |
| Mode 2: Normal Operation Mode |
| Mode 3: IEEE 802.11b Link Mode |
| Mode 4: IEEE 802.11g Link Mode |
| Mode 5: Receiver Mode |

3.2. EUT Exercise Software

| | |
|-----|--|
| (1) | Setup the EUT and simulators as shown on 3.3 |
| (2) | Turn on the power of all equipment. |
| (3) | Data will communicate between Notebook and partner Notebook through the EUT that is connected to LAN port. |
| (4) | Telecom signal was communicate between Notebook and partner Notebook through the LAN port of the EUT. |
| (5) | The Notebook's and partner Notebook 's monitor will show the transmitting and receiving characteristics when the communication is success. |
| (6) | Repeat the above procedure (4) to (5). |

3.3. Configuration of Test System Details



| Devices Description | | | | | |
|---------------------|--------------|--------------|---------------|------------------------------|--------------------|
| Product | Manufacturer | Model Number | Serial Number | Power Cord | |
| 1. | Notebook | DELL | D830 | CN-OHN341-48643-88 Q-1221 | Non-Shielded, 1.8m |
| 2. | Notebook | DELL | D531 | CN-OXM006-48643-87 A-3398 | Non-Shielded, 1.8m |
| 3. | Telephone | H · T · T | N/A | N/A | N/A |
| 4. | Printer | Epson | STY1US-C60 | DR3K041323 | Non-Shielded, 1.8m |

3.4. Test Site Environment

| Items | Required (IEC 68-1) | Actual |
|----------------------------|---------------------|--------|
| Temperature (°C) | 15-35 | 25 |
| Humidity (%RH) | 25-75 | 50 |
| Barometric pressure (mbar) | 860-1060 | 950 |

4 Conducted Emission Measurement

4.1. Limit

| Frequency (MHz) | Quasi-peak | Average |
|-----------------|------------|----------|
| 0.15 - 0.5 | 66 to 56 | 56 to 46 |
| 0.50 - 5.0 | 56 | 46 |
| 5.0 - 30.0 | 60 | 50 |

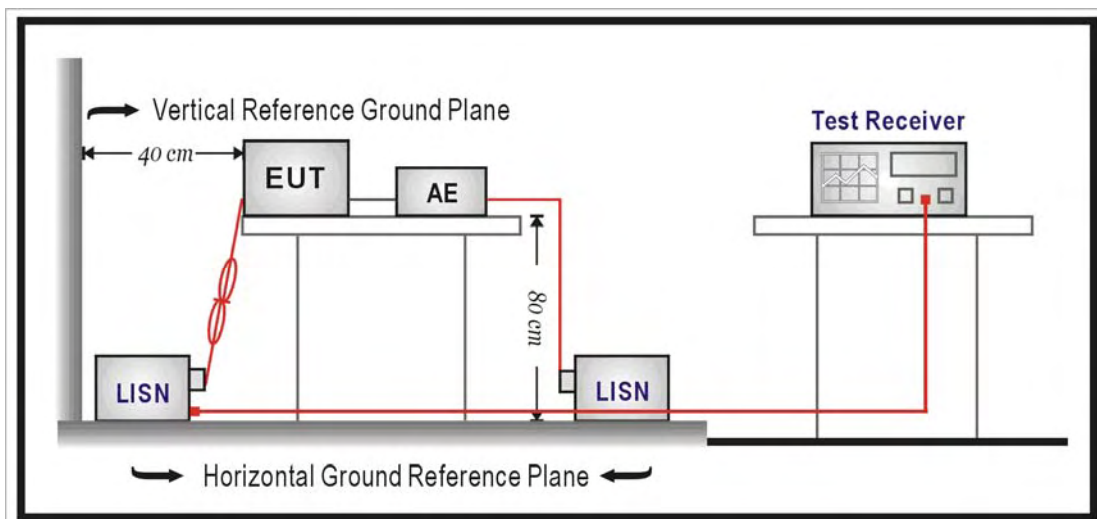
4.2. Test Instruments

| Describe | Manufacturer | Model Number | Serial Number | Cal. Date | Remark |
|---------------|--------------|--------------|---------------|------------|--------|
| Test Receiver | R&S | ESCI | 100367 | 07/01/2009 | (1) |
| LISN | R&S | ENV216 | 101040 | 03/02/2010 | (1) |
| LISN | R&S | ENV216 | 101041 | 03/02/2010 | (1) |
| Test Site | ATL | TE02 | TE02 | N.C.R. | ----- |

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

4.3. Test Setup



4.4. Test Procedure

The power line conducted emission measurements were performed in a shielded enclosure. The EUT was assembled on a wooden table which is 80 centimeters high, was placed 40 centimeters from the back wall and at least 1 meter from the sidewall.

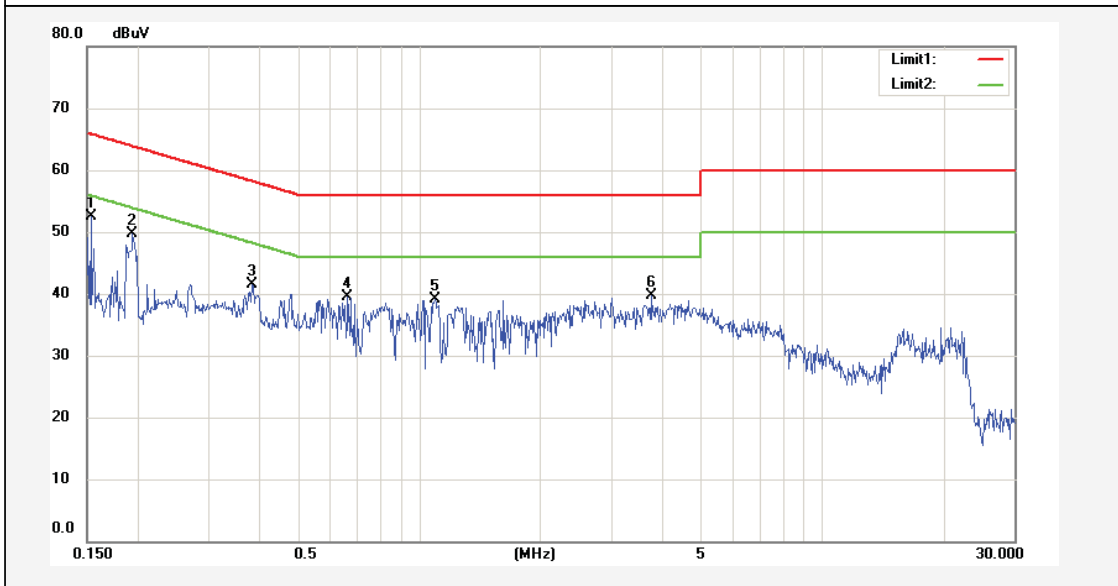
Power was fed to the EUT from the public utility power grid through a line filter and EMCO Model 3162/2 SH Line Impedance Stabilization Networks (LISN). The LISN housing, measuring instrumentation case, ground plane, etc., were electrically bonded together at the same RF potential. The Spectrum analyzer was connected to the AC line through an isolation transformer. The 50-ohm output of the LISN was connected to the spectrum analyzer directly. Conducted emission levels were in the CISPR quasi-peak detection mode. The analyzer's 6 dB bandwidth was set to 9 KHz. No post-detector video filter was used.

The spectrum was scanned from 150 KHz to 30 MHz. The physical arrangement of the test system and associated cabling was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude and frequency. All spurious emission frequencies were observed. The highest emission amplitudes relative to the appropriate limit were measured and have been recorded in paragraph 4.1.

4.5. Test Result

| | | | |
|------------|----------------------------|--------------------|--------------|
| Job No.: | File :10-0202-CEO | Date: | 2010/5/27 |
| Company: | 3G Router | Time: | 10:45:17 |
| Standard: | FCC Class B Conduction(QP) | Temp.(°C)/Hum.(%): | 26 °C / 60 % |
| Test item: | Conduction Test | Test By : | Gary |
| Line : | L1 | Test Voltage | AC 120V/60Hz |
| Model: | 3G10WVR | Mode: | 2 |

Description:

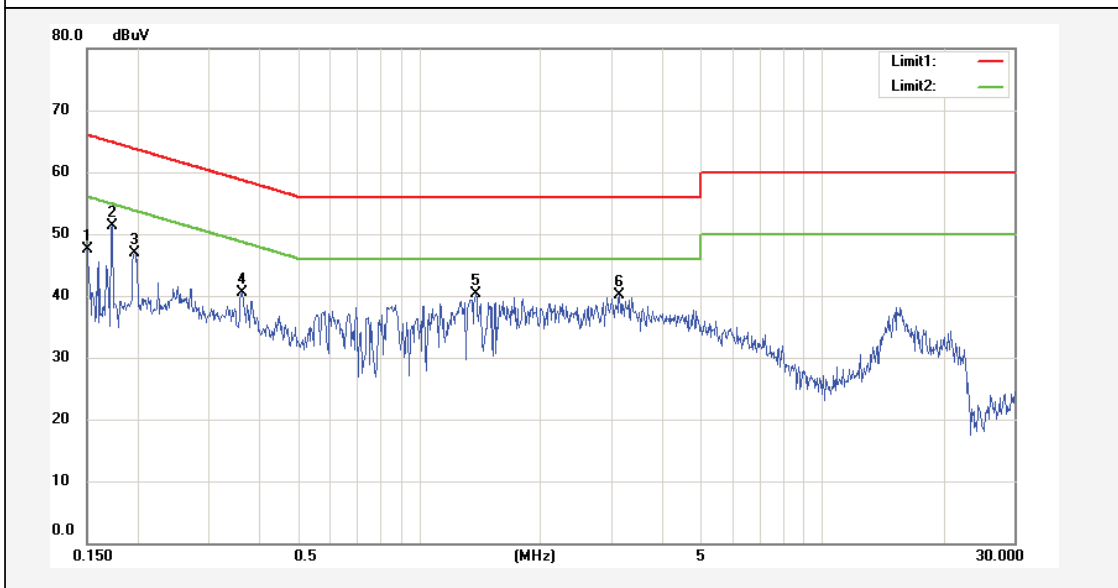


| No. | Frequency (MHz) | QuasiPeak reading (dBuV) | Average reading (dBuV) | Correction factor (dB) | QuasiPeak result (dBuV) | Average result (dBuV) | QuasiPeak limit (dBuV) | Average limit (dBuV) | QuasiPeak margin (dB) | Average margin (dB) | Remark |
|-----|--------------------|--------------------------------|------------------------------|------------------------------|-------------------------------|-----------------------------|------------------------------|----------------------------|-----------------------------|---------------------------|--------|
| 1 | 0.1532 | 28.79 | 6.10 | 10.11 | 38.90 | 16.21 | 65.82 | 55.82 | -26.92 | -39.61 | |
| 2 | 0.1945 | 35.05 | 20.41 | 10.08 | 45.13 | 30.49 | 63.84 | 53.84 | -18.71 | -23.35 | * |
| 3 | 0.3852 | 28.00 | 15.64 | 10.01 | 38.01 | 25.65 | 58.17 | 48.17 | -20.16 | -22.52 | |
| 4 | 0.6648 | 25.17 | 9.66 | 9.88 | 35.05 | 19.54 | 56.00 | 46.00 | -20.95 | -26.46 | |
| 5 | 1.0940 | 25.61 | 11.25 | 9.72 | 35.33 | 20.97 | 56.00 | 46.00 | -20.67 | -25.03 | |
| 6 | 3.7594 | 22.65 | 12.34 | 9.84 | 32.49 | 22.18 | 56.00 | 46.00 | -23.51 | -23.82 | |

Remark: "*" Maximum data

| | | | |
|------------|----------------------------|--------------------|--------------|
| Job No.: | File :10-0202-CEO | Date: | 2010/5/27 |
| Company: | 3G Router | Time: | 10:47:06 |
| Standard: | FCC Class B Conduction(QP) | Temp.(°C)/Hum.(%): | 26 °C / 60 % |
| Test item: | Conduction Test | Test By : | Gary |
| Line : | N | Test Voltage | AC 120V/60Hz |
| Model: | 3G10WVR | Mode: | 2 |

Description:



| No. | Frequency (MHz) | QuasiPeak reading (dBuV) | Average reading (dBuV) | Correction factor (dB) | QuasiPeak result (dBuV) | Average result (dBuV) | QuasiPeak limit (dBuV) | Average limit (dBuV) | QuasiPeak margin (dB) | Average margin (dB) | Remark |
|-----|--------------------|--------------------------------|------------------------------|------------------------------|-------------------------------|-----------------------------|------------------------------|----------------------------|-----------------------------|---------------------------|--------|
| 1 | 0.1508 | 28.51 | 6.61 | 10.10 | 38.61 | 16.71 | 65.96 | 55.96 | -27.35 | -39.25 | |
| 2 | 0.1731 | 27.48 | 3.96 | 10.09 | 37.57 | 14.05 | 64.81 | 54.81 | -27.24 | -40.76 | |
| 3 | 0.1965 | 34.34 | 16.95 | 10.07 | 44.41 | 27.02 | 63.76 | 53.76 | -19.35 | -26.74 | * |
| 4 | 0.3634 | 24.25 | 5.45 | 10.01 | 34.26 | 15.46 | 58.65 | 48.65 | -24.39 | -33.19 | |
| 5 | 1.3810 | 25.20 | 10.99 | 9.67 | 34.87 | 20.66 | 56.00 | 46.00 | -21.13 | -25.34 | |
| 6 | 3.1397 | 24.33 | 13.07 | 9.82 | 34.15 | 22.89 | 56.00 | 46.00 | -21.85 | -23.11 | |

Remark: "*" Maximum data

5 Radiated Interference Measurement

5.1. Limit

| Frequency Range (MHz) | Peak (dBuV) |
|-----------------------|-------------|
| 30 to 88 | 40 |
| 88 to 216 | 43.5 |
| 216 to 960 | 46 |
| Above 960 | 54 |

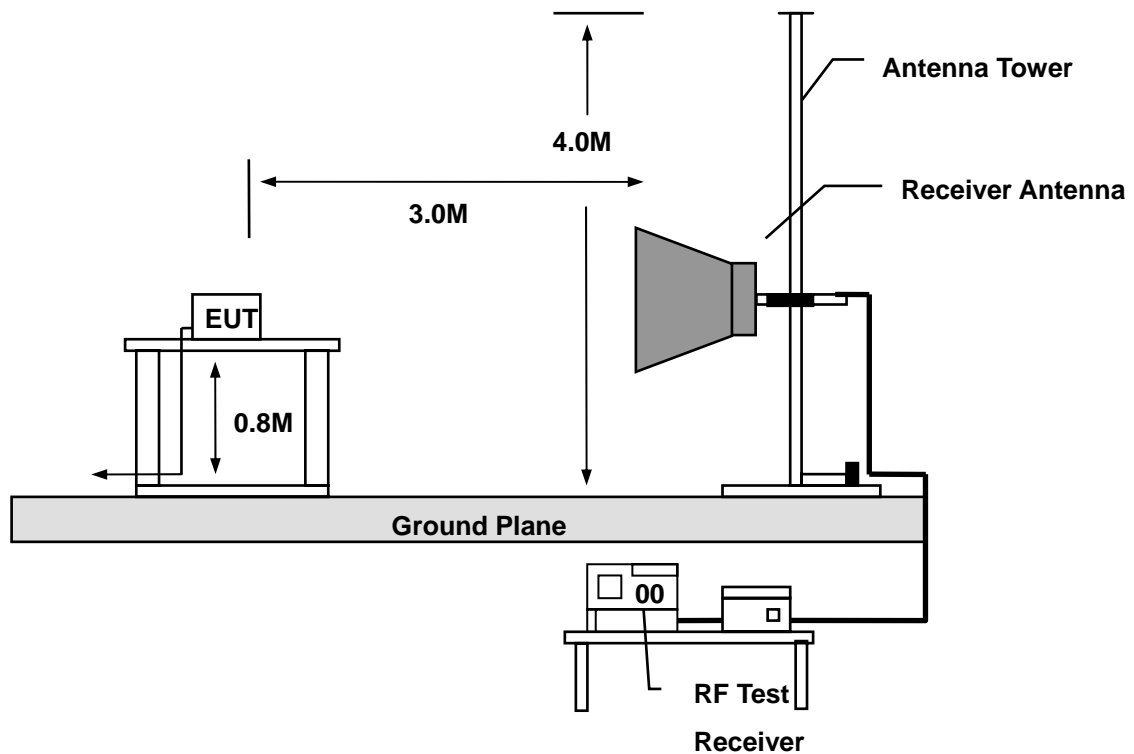
5.2. Test Instruments

| 3 Meter Chamber | | | | | |
|-------------------|--------------------------------|--------------|---------------|------------|--------|
| Equipment | Manufacturer | Model Number | Serial Number | Cal. Date | Remark |
| RF Pre-selector | Agilent | N9039A | MY46520256 | 01/27/2009 | (2) |
| Spectrum Analyzer | Agilent | E4446A | MY46180578 | 01/20/2009 | (2) |
| Pre Amplifier | Agilent | 8449B | 3008A02237 | 07/01/2009 | (1) |
| Pre Amplifier | Agilent | 8447D | 2944A10961 | 06/30/2009 | (1) |
| Bi-log Antenna | SCHWARZBECK MESS-ELEKTRONIK | VULB9163 | 9163-270 | 06/23/2009 | (2) |
| Horn Antenna | SCHWARZBECK MESS-ELEKTRONIK | BBHA9120D | 9120D-550 | 07/01/2009 | (2) |
| Horn Antenna | SCHWARZBECK MESS-ELEKTRONIK | BBHA9170 | 9170-320 | 06/30/2009 | (2) |
| Test Site | ATL | TE01 | 888001 | 08/06/2009 | (1) |

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

5.3. Setup



5.4. Test Procedure

Final radiation measurements were made on a three-meter, Semi Anechoic Chamber. The EUT system was placed on a nonconductive turntable which is 0.8 meters height, top surface 1.0 x 1.5 meter. The spectrum was examined from 250 MHz to 2.5 GHz in order to cover the whole spectrum below 10th harmonic which could generate from the EUT. During the test, EUT was set to transmit continuously & Measurements spectrum range from 30 MHz to 26.5 GHz is investigated.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

A nonconductive material surrounded the EUT to supporting the EUT for standing on three orthogonal planes. At each condition, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

SCHWARZBECK MESS-ELEKTRONIK Biconilog Antenna (mode VULB9163) at 3 Meter and the SCHWARZBECK Double Ridged Guide Antenna (model BBHA9120D&9170) was used in frequencies 1 – 26.5 GHz at a distance of 1 meter. All test results were extrapolated to equivalent signal at 3 meters utilizing an inverse linear distance extrapolation Factor (20dB/decade).

For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. No post – detector video filters were used in the test.

The spectrum analyzer's 6 dB bandwidth was set to 1 MHz, and the analyzer was operated in the peak detection mode, for frequencies both below and up 1 GHz. The average levels were obtained by subtracting the duty cycle correction factor from the peak readings.

The following procedures were used to convert the emission levels measured in decibels referenced to 1 microvolt (dBuV) into field intensity in micro volts per meter (uV/m).

The actual field intensity in decibels referenced to 1 microvolt in to field intensity in micro volts per meter (dBuV/m).

The actual field intensity in decibels referenced to 1 microvolt per meter (dBuV/m) is determined by algebraically adding the measured reading in dBuV, the antenna factor (dB), and cable loss (dB) and Subtracting the gain of preamplifier (dB) is auto calculate in spectrum analyzer.

$$(1) \text{ Amplitude (dBuV/m) = FI (dBuV) +AF (dBuV) +CL (dBuV)-Gain (dB)}$$

FI= Reading of the field intensity.

AF= Antenna factor.

CL= Cable loss.

P.S Amplitude is auto calculate in spectrum analyzer.

$$(2) \text{ Actual Amplitude (dBuV/m) = Amplitude (dBuV)-Dis(dB)}$$

The FCC specified emission limits were calculated according the EUT operating frequency and by following linear interpolation equations:

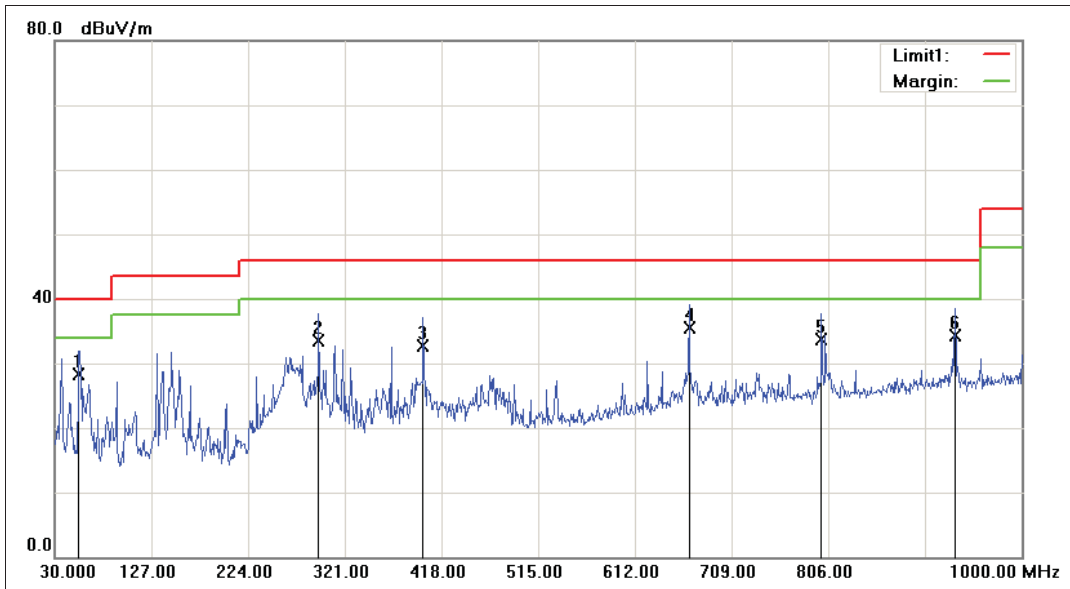
(a) For fundamental frequency : Transmitter Output < +30dBm

(b) For spurious frequency : Spurious emission limits = fundamental emission limit /10

5.5. Test Result

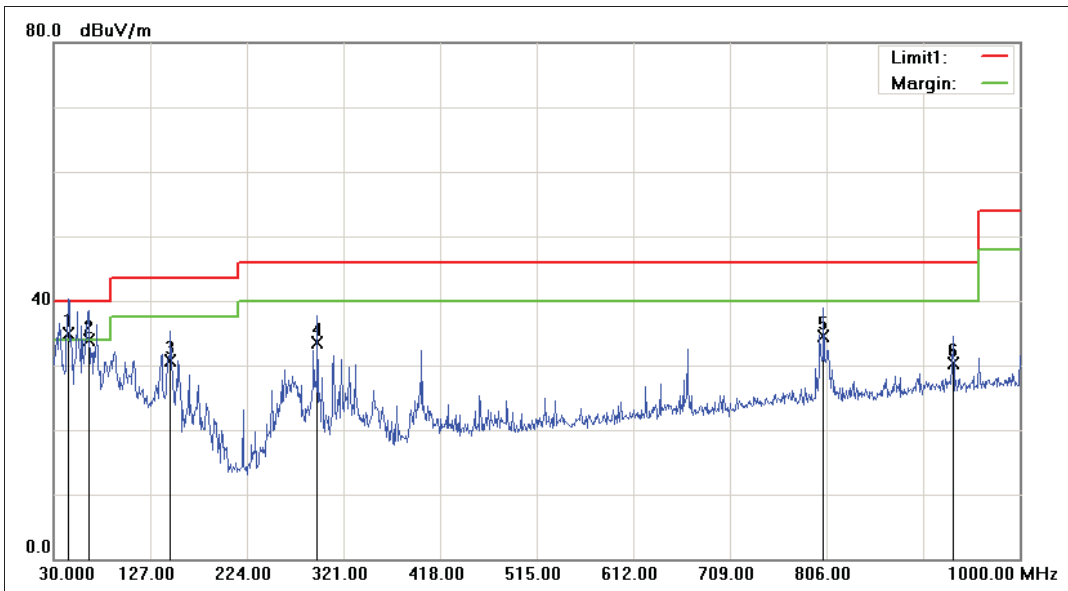
5.5.1. Below 1GHz

| | | | |
|----------------------|--------------------------|----------------|----------------|
| Job No.: | 10-0202-CEO | Ant.Polar.: | Horizontal |
| Standard: | FCC Class B 3M Radiation | Test Distance: | 3m |
| Test item: | Radiation Test | Power: | AC 120V/60Hz |
| Temp.(°C)/Hum.(%RH): | 26(°C)/60%RH | Date:2010/6/2 | Time: 07:16:40 |
| EUT: | 3G Router | Test By: | Gary |
| Model: | 3G10WVR | | |
| Description: | Mode 2 | | |



| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|----------------------|-----------------|----------------|-------------|-------------|------------|--------|
| 1 | 55.0000 | 40.61 | -12.22 | 28.39 | 40.00 | -11.61 | | | QP |
| 2 | 295.0000 | 44.25 | -10.70 | 33.55 | 46.00 | -12.45 | | | QP |
| 3 | 400.0000 | 41.30 | -8.60 | 32.70 | 46.00 | -13.30 | | | QP |
| 4 | 666.5000 | 39.52 | -3.92 | 35.60 | 46.00 | -10.40 | | | QP |
| 5 | 800.0000 | 35.31 | -1.65 | 33.66 | 46.00 | -12.34 | | | QP |
| 6 | 933.5000 | 33.57 | 0.69 | 34.26 | 46.00 | -11.74 | | | QP |

| | | | |
|----------------------|--------------------------|----------------|----------------|
| Job No.: | 10-0202-CEO | Ant.Polar.: | Vertical |
| Standard: | FCC Class B 3M Radiation | Test Distance: | 3m |
| Test item: | Radiation Test | Power: | AC 120V/60Hz |
| Temp.(°C)/Hum.(%RH): | 26(°C)/60%RH | Date:2010/6/2 | Time: 07:14:12 |
| EUT: | 3G Router | Test By: | Gary |
| Model: | 3G10WVR | | |
| Description: | Mode 2 | | |



| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|----------------------|-----------------|----------------|-------------|-------------|------------|--------|
| 1 | 45.5000 | 46.50 | -11.62 | 34.88 | 40.00 | -5.12 | | | QP |
| 2 | 65.0000 | 48.26 | -14.40 | 33.86 | 40.00 | -6.14 | | | QP |
| 3 | 148.0000 | 47.31 | -16.56 | 30.75 | 43.50 | -12.75 | | | QP |
| 4 | 295.0000 | 44.25 | -10.70 | 33.55 | 46.00 | -12.45 | | | QP |
| 5 | 804.0000 | 36.15 | -1.56 | 34.59 | 46.00 | -11.41 | | | QP |
| 6 | 933.5000 | 29.61 | 0.69 | 30.30 | 46.00 | -15.70 | | | QP |

5.5.2. Above 1GHz

| Job No.: | 10-0202-CEO | Test Distance: | 3m | | | | |
|-----------------------------|---------------------------|---------------------------------|----------------------------|---------------------------|------------------------|---------------|-----------------------------|
| Standard: | FCC part 15 (PK) | Power: | AC 110V/60Hz | | | | |
| Test item: | Radiation Test | Date: | 2010/6/2 | | | | |
| Temp.(°C)/Hum.(%RH): | 26(°C)/60%RH | Test By: | Gary Wu | | | | |
| Model: | 3G10WVR | | | | | | |
| Description: | Mode 3 _ 2412MHz | | | | | | |
| Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Polar. H / V |
| 1608.000 | 54.57 | -3.36 | 51.21 | 74.00 | -22.79 | peak | H |
| 5525.000 | 37.37 | 9.93 | 47.30 | 74.00 | -26.70 | peak | H |
| 13920.000 | 16.49 | 28.90 | 45.39 | 54.00 | -8.61 | AVG | H |
| 18025.500 | 4.35 | 37.17 | 41.52 | 54.00 | -12.48 | AVG | H |
| 1608.000 | 52.26 | -3.36 | 48.90 | 74.00 | -25.10 | peak | V |
| 4825.000 | 47.33 | 7.79 | 55.12 | 74.00 | -18.88 | peak | V |
| 4825.000 | 40.72 | 7.79 | 48.51 | 54.00 | -5.49 | AVG | V |
| 7235.000 | 39.34 | 15.38 | 54.72 | 74.00 | -19.28 | peak | V |
| 7235.000 | 33.20 | 15.38 | 48.58 | 54.00 | -5.42 | AVG | V |
| 14430.000 | 15.87 | 29.77 | 45.64 | 54.00 | -8.36 | AVG | V |
| 18000.000 | 4.52 | 37.70 | 42.22 | 54.00 | -11.78 | AVG | V |

| Job No.: | 10-0202-CEO | | Test Distance: | 3m | | | |
|-----------------------------|---------------------------|---------------------------------|----------------------------|---------------------------|------------------------|---------------|-----------------------------|
| Standard: | FCC part 15 (PK) | | Power: | AC 110V/60Hz | | | |
| Test item: | Radiation Test | | Date: | 2010/6/2 | | | |
| Temp.(°C)/Hum.(%RH): | 26(°C)/60%RH | | Test By: | Gary Wu | | | |
| Model: | 3G10WVR | | | | | | |
| Description: | Mode 3 _ 2437MHz | | | | | | |
| Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Polar. H / V |
| 1624.000 | 55.22 | -3.30 | 51.92 | 74.00 | -22.08 | peak | H |
| 6075.000 | 35.82 | 11.08 | 46.90 | 74.00 | -27.10 | peak | H |
| 14530.000 | 14.83 | 29.78 | 44.61 | 54.00 | -9.39 | AVG | H |
| 18051.000 | 4.91 | 36.66 | 41.57 | 54.00 | -12.43 | AVG | H |
| 1624.000 | 53.23 | -3.30 | 49.93 | 74.00 | -24.07 | peak | V |
| 4875.000 | 47.23 | 7.94 | 55.17 | 74.00 | -18.83 | peak | V |
| 4875.000 | 43.52 | 7.94 | 51.46 | 54.00 | -2.54 | AVG | V |
| 14510.000 | 16.07 | 29.84 | 45.91 | 54.00 | -8.09 | AVG | V |
| 18017.000 | 5.42 | 37.35 | 42.77 | 54.00 | -11.23 | AVG | V |

| Job No.: | 10-0202-CEO | Test Distance: | 3m | | | | |
|-----------------------------|---------------------------|---------------------------------|----------------------------|---------------------------|------------------------|---------------|-----------------------------|
| Standard: | FCC part 15 (PK) | Power: | AC 110V/60Hz | | | | |
| Test item: | Radiation Test | Date: | 2010/6/2 | | | | |
| Temp.(°C)/Hum.(%RH): | 26(°C)/60%RH | Test By: | Gary Wu | | | | |
| Model: | 3G10WVR | | | | | | |
| Description: | Mode 3 _ 2462MHz | | | | | | |
| Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Polar. H / V |
| 1642.000 | 54.84 | -3.22 | 51.62 | 74.00 | -22.38 | peak | H |
| 5830.000 | 36.73 | 10.46 | 47.19 | 74.00 | -26.81 | peak | H |
| 14670.000 | 16.73 | 29.28 | 46.01 | 54.00 | -7.99 | AVG | H |
| 18034.000 | 5.90 | 37.00 | 42.90 | 54.00 | -11.10 | AVG | H |
| 1642.000 | 52.73 | -3.22 | 49.51 | 74.00 | -24.49 | peak | V |
| 4925.000 | 44.37 | 8.08 | 52.45 | 74.00 | -21.55 | peak | V |
| 4925.000 | 43.13 | 8.08 | 51.21 | 54.00 | -2.79 | AVG | V |
| 14410.000 | 15.49 | 29.74 | 45.23 | 54.00 | -8.77 | AVG | V |
| 18034.000 | 4.59 | 37.00 | 41.59 | 54.00 | -12.41 | AVG | V |

| Job No.: | 10-0202-CEO | Test Distance: | 3m | | | | |
|-----------------------------|---------------------------|---------------------------------|----------------------------|---------------------------|------------------------|---------------|-----------------------------|
| Standard: | FCC part 15 (PK) | Power: | AC 110V/60Hz | | | | |
| Test item: | Radiation Test | Date: | 2010/6/2 | | | | |
| Temp.(°C)/Hum.(%RH): | 26(°C)/60%RH | Test By: | Gary Wu | | | | |
| Model: | 3G10WVR | | | | | | |
| Description: | Mode 4 _ 2412MHz | | | | | | |
| Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Polar. H / V |
| 1608.000 | 55.04 | -3.36 | 51.68 | 74.00 | -22.32 | peak | H |
| 4855.000 | 38.51 | 7.88 | 46.39 | 74.00 | -27.61 | peak | H |
| 14570.000 | 15.50 | 29.63 | 45.13 | 54.00 | -8.87 | AVG | H |
| 18008.500 | 4.67 | 37.53 | 42.20 | 54.00 | -11.80 | AVG | H |
| 1608.000 | 50.86 | -3.36 | 47.50 | 74.00 | -26.50 | peak | V |
| 4820.000 | 39.95 | 7.77 | 47.72 | 74.00 | -26.28 | peak | V |
| 14570.000 | 15.97 | 29.63 | 45.60 | 54.00 | -8.40 | AVG | V |
| 18034.000 | 4.60 | 37.00 | 41.60 | 54.00 | -12.40 | AVG | V |

| Job No.: | 10-0202-CEO | Test Distance: | 3m | | | | |
|-----------------------------|---------------------------|---------------------------------|----------------------------|---------------------------|------------------------|---------------|-----------------------------|
| Standard: | FCC part 15 (PK) | Power: | AC 110V/60Hz | | | | |
| Test item: | Radiation Test | Date: | 2010/6/2 | | | | |
| Temp.(°C)/Hum.(%RH): | 26(°C)/60%RH | Test By: | Gary Wu | | | | |
| Model: | 3G10WVR | | | | | | |
| Description: | Mode 4 _ 2437MHz | | | | | | |
| Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Polar. H / V |
| 1624.000 | 55.00 | -3.30 | 51.70 | 74.00 | -22.30 | peak | H |
| 5285.000 | 37.03 | 9.20 | 46.23 | 74.00 | -27.77 | peak | H |
| 14610.000 | 15.94 | 29.48 | 45.42 | 54.00 | -8.58 | AVG | H |
| 18008.500 | 3.96 | 37.53 | 41.49 | 54.00 | -12.51 | AVG | H |
| 1624.000 | 52.27 | -3.30 | 48.97 | 74.00 | -25.03 | peak | V |
| 4885.000 | 43.02 | 7.97 | 50.99 | 74.00 | -23.01 | peak | V |
| 14230.000 | 16.12 | 29.43 | 45.55 | 54.00 | -8.45 | AVG | V |
| 18008.500 | 4.84 | 37.53 | 42.37 | 54.00 | -11.63 | AVG | V |

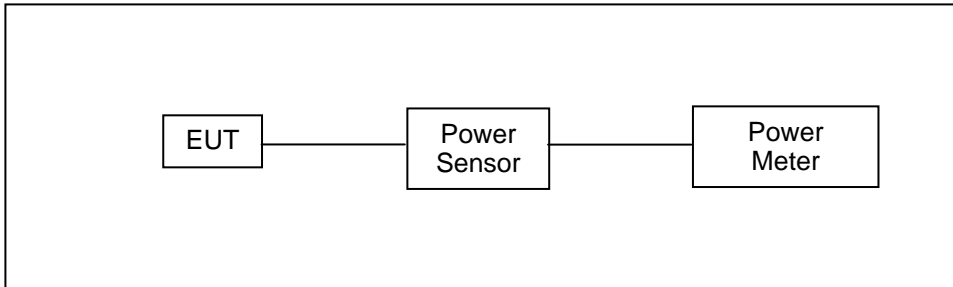
| Job No.: | 10-0202-CEO | Test Distance: | 3m | | | | |
|-----------------------------|---------------------------|---------------------------------|----------------------------|---------------------------|------------------------|---------------|-----------------------------|
| Standard: | FCC part 15 (PK) | Power: | AC 110V/60Hz | | | | |
| Test item: | Radiation Test | Date: | 2010/6/2 | | | | |
| Temp.(°C)/Hum.(%RH): | 26(°C)/60%RH | Test By: | Gary Wu | | | | |
| Model: | 3G10WVR | | | | | | |
| Description: | Mode 4 _ 2462MHz | | | | | | |
| Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark | Ant.Polar. H / V |
| 1642.000 | 54.79 | -3.22 | 51.57 | 74.00 | -22.43 | peak | H |
| 5820.000 | 36.45 | 10.45 | 46.90 | 74.00 | -27.10 | peak | H |
| 14430.000 | 15.87 | 29.77 | 45.64 | 54.00 | -8.36 | AVG | H |
| 18034.000 | 4.54 | 37.00 | 41.54 | 54.00 | -12.46 | AVG | H |
| 1642.000 | 51.34 | -3.22 | 48.12 | 74.00 | -25.88 | peak | V |
| 4925.000 | 40.34 | 8.08 | 48.42 | 74.00 | -25.58 | peak | V |
| 14450.000 | 16.30 | 29.80 | 46.10 | 54.00 | -7.90 | AVG | V |
| 18017.000 | 4.08 | 37.35 | 41.43 | 54.00 | -12.57 | AVG | V |

6 Maximum Conducted Output Power Measurement

6.1. Limit

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm.

6.2. Test Setup



6.3. Test Instruments

| Equipment | Manufacturer | Model Number | Serial Number | Cal. Date | Remark |
|--------------------------------|--------------|--------------|---------------|------------|--------|
| Single Channel PK Power Sensor | Agilent | N1911A | MY15101619 | 07/14/2009 | (1) |
| Wideband Power Meter | Agilent | N1921A | MY45241957 | 07/25/2009 | (1) |
| Test Site | ATL | TE06 | TE06 | N.C.R. | ----- |

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

6.4. Test Procedure

The tests below are run with the EUT's transmitter set at high power in TX mode. The EUT is needed to force selection of output power level and channel number. While testing, EUT was set to transmit continuously. Remove the Subjective device's antenna and connect the RF output port to power sensor. The maximum peak output power shall not exceed 1 watt.

Use a direct connection between the antenna port of transmitter and the power sensor, for prevent the power sensor input attenuation 40-50 dB. Set the RBW Bandwidth of the emission or use a channel power meter mode.

For antennas with gains of 6 dBi or less, maximum allowed transmitter output is 1 watt (+30 dBm). For antennas with gains greater than 6 dBi, transmitter output level must be decreased by an amount equal to $(\text{GAIN} - 6)/3$ dBm.

The antenna port of the EUT was connected to the input of a power sensor. Power was read directly and cable loss correction was added to the reading to obtain power at the EUT antenna terminals.

6.5. Test Result

| Product | 3G Router | | | | | |
|-----------------|--------------------------------|---------------|-------|--------------|-------|-------------|
| Test Item | Maximum Conducted Output Power | | | | | |
| Test Mode | Mode 3: IEEE 802.11b Link Mode | | | | | |
| Date of Test | 06/02/2010 | | | Test Site | TE06 | |
| Frequency (MHz) | Data Rate | Average Power | | Peak Power | | Limit (dBm) |
| | | (dBm) | (W) | (dBm) | (W) | |
| 2412 | 1 | 14.97 | 0.031 | 19.16 | 0.082 | < 30 |
| 2437 | 1 | 14.08 | 0.026 | 18.58 | 0.072 | < 30 |
| 2462 | 1 | 14.30 | 0.027 | 18.64 | 0.073 | < 30 |
| 2412 | 11 | 14.48 | 0.028 | 19.45 | 0.088 | < 30 |
| 2437 | 11 | 13.64 | 0.023 | 18.86 | 0.077 | < 30 |
| 2462 | 11 | 13.81 | 0.024 | 18.70 | 0.074 | < 30 |

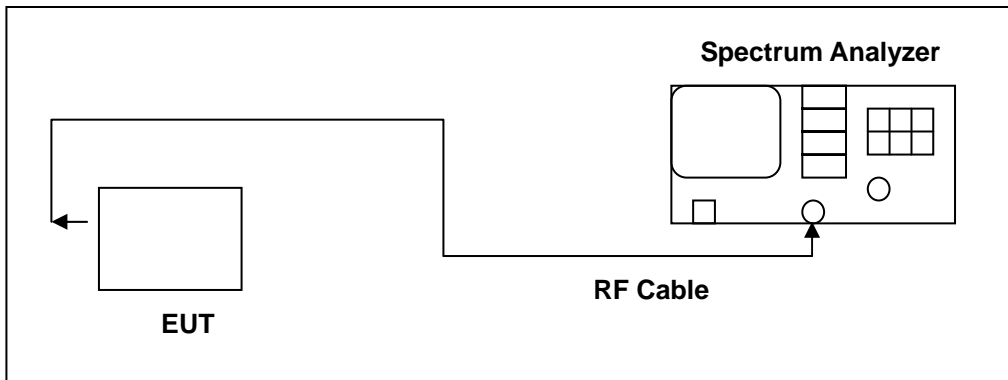
| Product | 3G Router | | | | | |
|-----------------|--------------------------------|---------------|-------|--------------|-------|-------------|
| Test Item | Maximum Conducted Output Power | | | | | |
| Test Mode | Mode 4: IEEE 802.11g Link Mode | | | | | |
| Date of Test | 06/02/2010 | | | Test Site | TE06 | |
| Frequency (MHz) | Data Rate | Average Power | | Peak Power | | Limit (dBm) |
| | | (dBm) | (W) | (dBm) | (W) | |
| 2412 | 6 | 11.79 | 0.015 | 23.16 | 0.207 | < 30 |
| 2437 | 6 | 11.87 | 0.015 | 23.25 | 0.211 | < 30 |
| 2462 | 6 | 11.90 | 0.015 | 23.27 | 0.212 | < 30 |
| 2412 | 54 | 9.40 | 0.009 | 22.56 | 0.180 | < 30 |
| 2437 | 54 | 9.49 | 0.009 | 22.93 | 0.196 | < 30 |
| 2462 | 54 | 9.57 | 0.009 | 22.87 | 0.194 | < 30 |

7 6dB RF Bandwidth Measurement

7.1. Limit

Systems using digital modulation techniques may operate in the 2400–2483.5 MHz bands. The minimum 6 dB band-width shall be at least 500 kHz.

7.2. Test Setup



7.3. Test Instruments

| Equipment | Manufacturer | Model Number | Serial Number | Cal. Date | Remark |
|-------------------|--------------|--------------|---------------|------------|----------------|
| Spectrum Analyzer | Agilent | E4445A | MY46181986 | 05/14/2009 | ⁽²⁾ |
| Test Site | ATL | TE06 | TE06 | N.C.R. | ----- |

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

7.4. Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was set to 100 kHz. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A peak output reading was taken, a DISPLAY line was drawn 6 dB lower than peak level. The 6 dB bandwidth was determined from where the channel output spectrum intersected the display line.

The test was performed at 3 channels (Channel 1, 6, 11)

7.5. Test Result

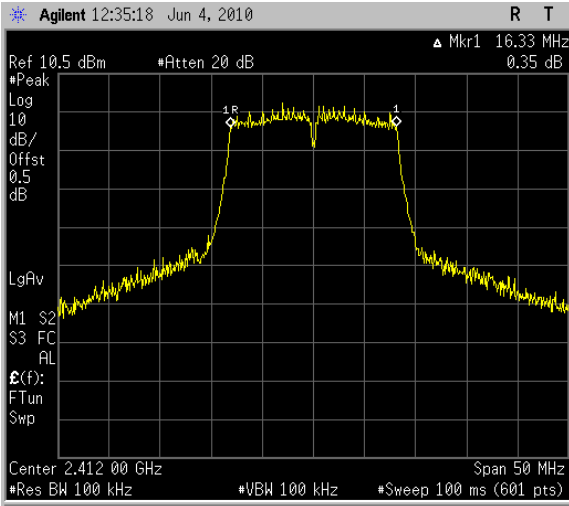
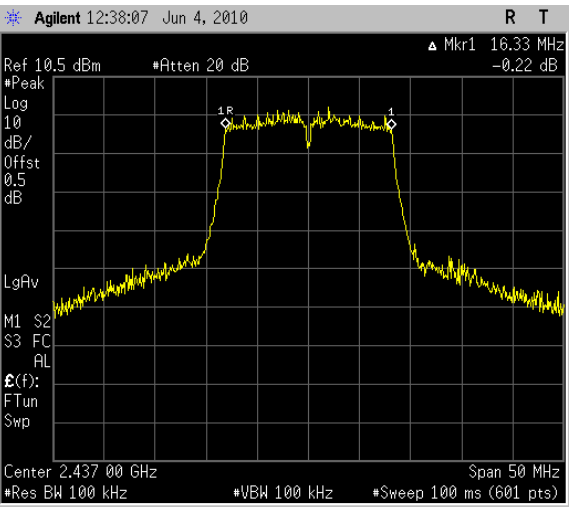
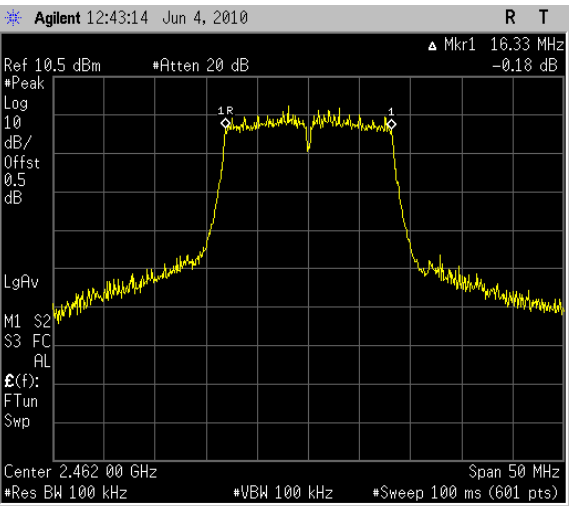
| | | | |
|--------------|--------------------------------|-------------------|-------------|
| Product | 3G Router | | |
| Test Item | 6dB RF Bandwidth | | |
| Test Mode | Mode 3: IEEE 802.11b Link Mode | | |
| Date of Test | 06/04/2010 | Test Site | TE06 |
| | Frequency (MHz) | Measurement (kHz) | Limit (kHz) |
| | 2412 | 10000 | > 500 |
| | 2437 | 10000 | > 500 |
| | 2462 | 10000 | > 500 |

| | | | |
|--------------|--------------------------------|-------------------|-------------|
| Product | 3G Router | | |
| Test Item | 6dB RF Bandwidth | | |
| Test Mode | Mode 4: IEEE 802.11g Link Mode | | |
| Date of Test | 06/04/2010 | Test Site | TE06 |
| | Frequency (MHz) | Measurement (kHz) | Limit (kHz) |
| | 2412 | 16330 | > 500 |
| | 2437 | 16330 | > 500 |
| | 2462 | 16330 | > 500 |

7.6. Test Graphs

| Mode 3: IEEE 802.11b Link Mode | |
|--------------------------------|--|
| 2412 | |
| 2437 | |
| 2462 | |

Mode 4: IEEE 802.11g Link Mode

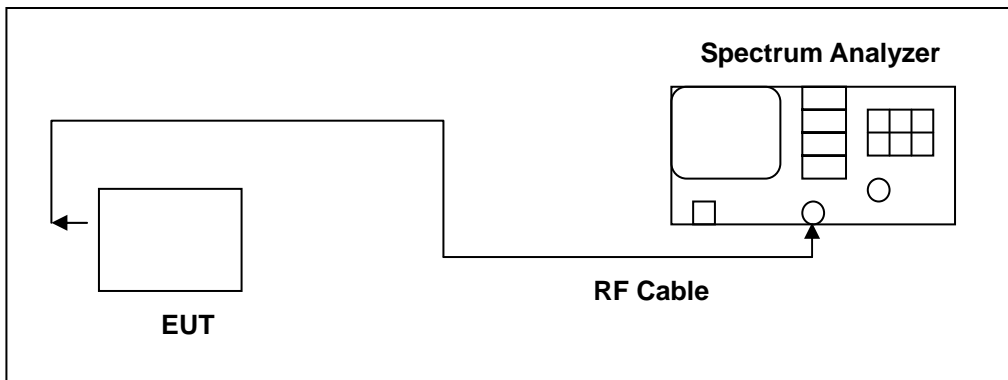
| <p>2412</p> |  <table border="1" data-bbox="1189 353 1332 857"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>2.41200000 GHz</td> </tr> <tr> <td>Start Freq</td> <td>2.38700000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.43700000 GHz</td> </tr> <tr> <td>CF Step</td> <td>5.00000000 MHz Auto Man</td> </tr> <tr> <td>Freq Offset</td> <td>0.00000000 Hz</td> </tr> <tr> <td>Signal Track</td> <td>On Off</td> </tr> </tbody> </table> | Freq/Channel | | Center Freq | 2.41200000 GHz | Start Freq | 2.38700000 GHz | Stop Freq | 2.43700000 GHz | CF Step | 5.00000000 MHz Auto Man | Freq Offset | 0.00000000 Hz | Signal Track | On Off |
|--------------------|---|--------------|--|-------------|----------------|------------|----------------|-----------|----------------|---------|----------------------------|-------------|---------------|--------------|--------|
| Freq/Channel | | | | | | | | | | | | | | | |
| Center Freq | 2.41200000 GHz | | | | | | | | | | | | | | |
| Start Freq | 2.38700000 GHz | | | | | | | | | | | | | | |
| Stop Freq | 2.43700000 GHz | | | | | | | | | | | | | | |
| CF Step | 5.00000000 MHz Auto Man | | | | | | | | | | | | | | |
| Freq Offset | 0.00000000 Hz | | | | | | | | | | | | | | |
| Signal Track | On Off | | | | | | | | | | | | | | |
| <p>2437</p> |  <table border="1" data-bbox="1189 880 1332 1384"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>2.43700000 GHz</td> </tr> <tr> <td>Start Freq</td> <td>2.41200000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.46200000 GHz</td> </tr> <tr> <td>CF Step</td> <td>5.00000000 MHz Auto Man</td> </tr> <tr> <td>Freq Offset</td> <td>0.00000000 Hz</td> </tr> <tr> <td>Signal Track</td> <td>On Off</td> </tr> </tbody> </table> | Freq/Channel | | Center Freq | 2.43700000 GHz | Start Freq | 2.41200000 GHz | Stop Freq | 2.46200000 GHz | CF Step | 5.00000000 MHz Auto Man | Freq Offset | 0.00000000 Hz | Signal Track | On Off |
| Freq/Channel | | | | | | | | | | | | | | | |
| Center Freq | 2.43700000 GHz | | | | | | | | | | | | | | |
| Start Freq | 2.41200000 GHz | | | | | | | | | | | | | | |
| Stop Freq | 2.46200000 GHz | | | | | | | | | | | | | | |
| CF Step | 5.00000000 MHz Auto Man | | | | | | | | | | | | | | |
| Freq Offset | 0.00000000 Hz | | | | | | | | | | | | | | |
| Signal Track | On Off | | | | | | | | | | | | | | |
| <p>2462</p> |  <table border="1" data-bbox="1189 1406 1332 1910"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>2.46200000 GHz</td> </tr> <tr> <td>Start Freq</td> <td>2.43700000 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.48700000 GHz</td> </tr> <tr> <td>CF Step</td> <td>5.00000000 MHz Auto Man</td> </tr> <tr> <td>Freq Offset</td> <td>0.00000000 Hz</td> </tr> <tr> <td>Signal Track</td> <td>On Off</td> </tr> </tbody> </table> | Freq/Channel | | Center Freq | 2.46200000 GHz | Start Freq | 2.43700000 GHz | Stop Freq | 2.48700000 GHz | CF Step | 5.00000000 MHz Auto Man | Freq Offset | 0.00000000 Hz | Signal Track | On Off |
| Freq/Channel | | | | | | | | | | | | | | | |
| Center Freq | 2.46200000 GHz | | | | | | | | | | | | | | |
| Start Freq | 2.43700000 GHz | | | | | | | | | | | | | | |
| Stop Freq | 2.48700000 GHz | | | | | | | | | | | | | | |
| CF Step | 5.00000000 MHz Auto Man | | | | | | | | | | | | | | |
| Freq Offset | 0.00000000 Hz | | | | | | | | | | | | | | |
| Signal Track | On Off | | | | | | | | | | | | | | |

8 Maximum Power Density Measurement

8.1. Limit

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.

8.2. Test Setup



8.3. Test Instruments

| Equipment | Manufacturer | Model Number | Serial Number | Cal. Date | Remark |
|-------------------|--------------|--------------|---------------|------------|--------|
| Spectrum Analyzer | Agilent | E4445A | MY46181986 | 05/14/2009 | (2) |
| Test Site | ATL | TE06 | TE06 | N.C.R. | ----- |

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

8.4. Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The spectrum analyzer RES BW was set to 3 kHz. The START and STOP frequencies were set to the band edges of the maximum output pass band. If there is no clear maximum amplitude in any given portion of the band, it may be necessary to make measurements at a number of bands defined by several START and STOP frequency pairs. The specification calls for a 1 second interval at each 3 kHz bandwidth; total SWEEP TIME is calculated as follows:

$$\text{SWEEP TIME (SEC)} = (\text{Fstop, kHz} - \text{Fstart, kHz}) / 3 \text{ kHz}$$

Antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

8.5. Test Result

| | | | |
|--------------|--------------------------------|-------------------|-------------|
| Product | 3G Router | | |
| Test Item | Maximum Power Density | | |
| Test Mode | Mode 3: IEEE 802.11b Link Mode | | |
| Date of Test | 06/04/2010 | Test Site | TE06 |
| | Frequency (MHz) | Measurement (dBm) | Limit (dBm) |
| | 2412 | -8.03 | < 8 |
| | 2437 | -7.91 | < 8 |
| | 2462 | -9.20 | < 8 |

| | | | |
|--------------|--------------------------------|-------------------|-------------|
| Product | 3G Router | | |
| Test Item | Maximum Power Density | | |
| Test Mode | Mode 4: IEEE 802.11g Link Mode | | |
| Date of Test | 06/04/2010 | Test Site | TE06 |
| | Frequency (MHz) | Measurement (dBm) | Limit (dBm) |
| | 2412 | -11.14 | < 8 |
| | 2437 | -10.22 | < 8 |
| | 2462 | -12.37 | < 8 |

8.6. Test Graphs

| Mode 3: IEEE 802.11b Link Mode | | | | | | | | |
|---------------------------------|--|--------------|----------------------------|---------------------------|--------------------------|---------------------------------|---------------------------|---------------------|
| 2412 | <p>Agilent 15:29:56 Jun 4, 2010</p> <p>Ref 10.5 dBm #Atten 20 dB Mkr1 2.414 577 GHz -8.03 dBm</p> <p>#Peak Log 10 dB/Offst 0.5 dB</p> <p>LgAv</p> <p>M1 S2 S3 FC AA</p> <p>Ⓔ(f): f>50k Swp</p> <p>Center 2.414 684 GHz Span 600 kHz #Res BW 3 kHz #VBW 10 kHz #Sweep 100 s (601 pts)</p> <table border="1"> <tr><th>Freq/Channel</th></tr> <tr><td>Center Freq 2.41468366 GHz</td></tr> <tr><td>Start Freq 2.41438366 GHz</td></tr> <tr><td>Stop Freq 2.41498366 GHz</td></tr> <tr><td>CF Step 60.0000000 kHz Auto Man</td></tr> <tr><td>Freq Offset 0.00000000 Hz</td></tr> <tr><td>Signal Track On Off</td></tr> </table> | Freq/Channel | Center Freq 2.41468366 GHz | Start Freq 2.41438366 GHz | Stop Freq 2.41498366 GHz | CF Step 60.0000000 kHz Auto Man | Freq Offset 0.00000000 Hz | Signal Track On Off |
| Freq/Channel | | | | | | | | |
| Center Freq 2.41468366 GHz | | | | | | | | |
| Start Freq 2.41438366 GHz | | | | | | | | |
| Stop Freq 2.41498366 GHz | | | | | | | | |
| CF Step 60.0000000 kHz Auto Man | | | | | | | | |
| Freq Offset 0.00000000 Hz | | | | | | | | |
| Signal Track On Off | | | | | | | | |
| 2437 | <p>Agilent 15:26:57 Jun 4, 2010</p> <p>Ref 10.5 dBm #Atten 20 dB Mkr1 2.434 284 GHz -7.91 dBm</p> <p>#Peak Log 10 dB/Offst 0.5 dB</p> <p>LgAv</p> <p>M1 S2 S3 FC AA</p> <p>Ⓔ(f): f>50k Swp</p> <p>Center 2.434 044 GHz Span 600 kHz #Res BW 3 kHz #VBW 10 kHz #Sweep 100 s (601 pts)</p> <table border="1"> <tr><th>Freq/Channel</th></tr> <tr><td>Center Freq 2.43404417 GHz</td></tr> <tr><td>Start Freq 2.43374417 GHz</td></tr> <tr><td>Stop Freq 2.43434417 GHz</td></tr> <tr><td>CF Step 60.0000000 kHz Auto Man</td></tr> <tr><td>Freq Offset 0.00000000 Hz</td></tr> <tr><td>Signal Track On Off</td></tr> </table> | Freq/Channel | Center Freq 2.43404417 GHz | Start Freq 2.43374417 GHz | Stop Freq 2.43434417 GHz | CF Step 60.0000000 kHz Auto Man | Freq Offset 0.00000000 Hz | Signal Track On Off |
| Freq/Channel | | | | | | | | |
| Center Freq 2.43404417 GHz | | | | | | | | |
| Start Freq 2.43374417 GHz | | | | | | | | |
| Stop Freq 2.43434417 GHz | | | | | | | | |
| CF Step 60.0000000 kHz Auto Man | | | | | | | | |
| Freq Offset 0.00000000 Hz | | | | | | | | |
| Signal Track On Off | | | | | | | | |
| 2462 | <p>Agilent 15:14:30 Jun 4, 2010</p> <p>Ref 10.5 dBm #Atten 20 dB Mkr1 2.461 202 GHz -9.20 dBm</p> <p>#Peak Log 10 dB/Offst 0.5 dB</p> <p>LgAv</p> <p>M1 S2 S3 FC AA</p> <p>Ⓔ(f): f>50k Swp</p> <p>Center 2.461 244 GHz Span 600 kHz #Res BW 3 kHz #VBW 10 kHz #Sweep 100 s (601 pts)</p> <table border="1"> <tr><th>Freq/Channel</th></tr> <tr><td>Center Freq 2.46124383 GHz</td></tr> <tr><td>Start Freq 2.46094383 GHz</td></tr> <tr><td>Stop Freq 2.46154383 GHz</td></tr> <tr><td>CF Step 60.0000000 kHz Auto Man</td></tr> <tr><td>Freq Offset 0.00000000 Hz</td></tr> <tr><td>Signal Track On Off</td></tr> </table> | Freq/Channel | Center Freq 2.46124383 GHz | Start Freq 2.46094383 GHz | Stop Freq 2.46154383 GHz | CF Step 60.0000000 kHz Auto Man | Freq Offset 0.00000000 Hz | Signal Track On Off |
| Freq/Channel | | | | | | | | |
| Center Freq 2.46124383 GHz | | | | | | | | |
| Start Freq 2.46094383 GHz | | | | | | | | |
| Stop Freq 2.46154383 GHz | | | | | | | | |
| CF Step 60.0000000 kHz Auto Man | | | | | | | | |
| Freq Offset 0.00000000 Hz | | | | | | | | |
| Signal Track On Off | | | | | | | | |

Mode 4: IEEE 802.11g Link Mode

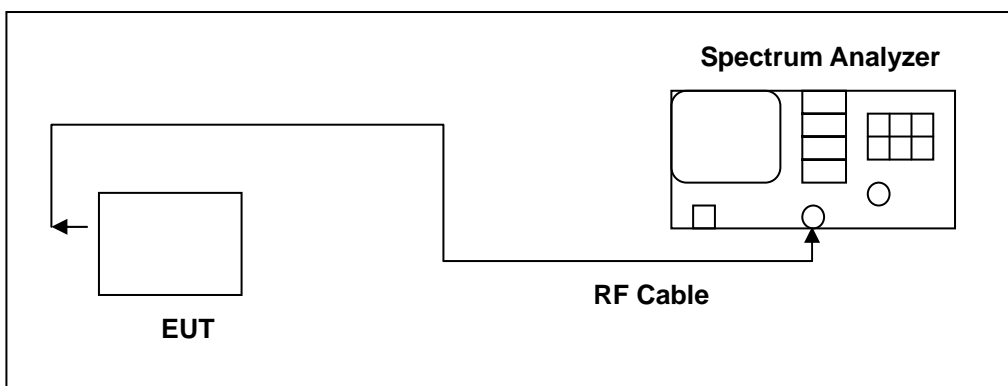
| <p>2412</p> | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>2.41013118 GHz</td> </tr> <tr> <td>Start Freq</td> <td>2.40983118 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.41043118 GHz</td> </tr> <tr> <td>CF Step</td> <td>60.0000000 kHz Auto Man</td> </tr> <tr> <td>Freq Offset</td> <td>0.00000000 Hz</td> </tr> <tr> <td>Signal Track</td> <td>On Off</td> </tr> </tbody> </table> | Freq/Channel | | Center Freq | 2.41013118 GHz | Start Freq | 2.40983118 GHz | Stop Freq | 2.41043118 GHz | CF Step | 60.0000000 kHz Auto Man | Freq Offset | 0.00000000 Hz | Signal Track | On Off |
|--------------------|--|--------------|--|-------------|----------------|------------|----------------|-----------|----------------|---------|----------------------------|-------------|---------------|--------------|--------|
| Freq/Channel | | | | | | | | | | | | | | | |
| Center Freq | 2.41013118 GHz | | | | | | | | | | | | | | |
| Start Freq | 2.40983118 GHz | | | | | | | | | | | | | | |
| Stop Freq | 2.41043118 GHz | | | | | | | | | | | | | | |
| CF Step | 60.0000000 kHz Auto Man | | | | | | | | | | | | | | |
| Freq Offset | 0.00000000 Hz | | | | | | | | | | | | | | |
| Signal Track | On Off | | | | | | | | | | | | | | |
| <p>2437</p> | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>2.43922325 GHz</td> </tr> <tr> <td>Start Freq</td> <td>2.43892325 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.43952325 GHz</td> </tr> <tr> <td>CF Step</td> <td>60.0000000 kHz Auto Man</td> </tr> <tr> <td>Freq Offset</td> <td>0.00000000 Hz</td> </tr> <tr> <td>Signal Track</td> <td>On Off</td> </tr> </tbody> </table> | Freq/Channel | | Center Freq | 2.43922325 GHz | Start Freq | 2.43892325 GHz | Stop Freq | 2.43952325 GHz | CF Step | 60.0000000 kHz Auto Man | Freq Offset | 0.00000000 Hz | Signal Track | On Off |
| Freq/Channel | | | | | | | | | | | | | | | |
| Center Freq | 2.43922325 GHz | | | | | | | | | | | | | | |
| Start Freq | 2.43892325 GHz | | | | | | | | | | | | | | |
| Stop Freq | 2.43952325 GHz | | | | | | | | | | | | | | |
| CF Step | 60.0000000 kHz Auto Man | | | | | | | | | | | | | | |
| Freq Offset | 0.00000000 Hz | | | | | | | | | | | | | | |
| Signal Track | On Off | | | | | | | | | | | | | | |
| <p>2462</p> | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>2.46230183 GHz</td> </tr> <tr> <td>Start Freq</td> <td>2.46200183 GHz</td> </tr> <tr> <td>Stop Freq</td> <td>2.46260183 GHz</td> </tr> <tr> <td>CF Step</td> <td>60.0000000 kHz Auto Man</td> </tr> <tr> <td>Freq Offset</td> <td>0.00000000 Hz</td> </tr> <tr> <td>Signal Track</td> <td>On Off</td> </tr> </tbody> </table> | Freq/Channel | | Center Freq | 2.46230183 GHz | Start Freq | 2.46200183 GHz | Stop Freq | 2.46260183 GHz | CF Step | 60.0000000 kHz Auto Man | Freq Offset | 0.00000000 Hz | Signal Track | On Off |
| Freq/Channel | | | | | | | | | | | | | | | |
| Center Freq | 2.46230183 GHz | | | | | | | | | | | | | | |
| Start Freq | 2.46200183 GHz | | | | | | | | | | | | | | |
| Stop Freq | 2.46260183 GHz | | | | | | | | | | | | | | |
| CF Step | 60.0000000 kHz Auto Man | | | | | | | | | | | | | | |
| Freq Offset | 0.00000000 Hz | | | | | | | | | | | | | | |
| Signal Track | On Off | | | | | | | | | | | | | | |

9 Out of Band Conducted Emissions Measurement

9.1. 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

9.2. Test Setup



9.3. Test Instruments

| Equipment | Manufacturer | Model Number | Serial Number | Cal. Date | Remark |
|-------------------|--------------|--------------|---------------|------------|--------|
| Spectrum Analyzer | Agilent | E4445A | MY46181986 | 05/14/2009 | (2) |
| Test Site | ATL | TE06 | TE06 | N.C.R. | ----- |

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

9.4. Test Procedure

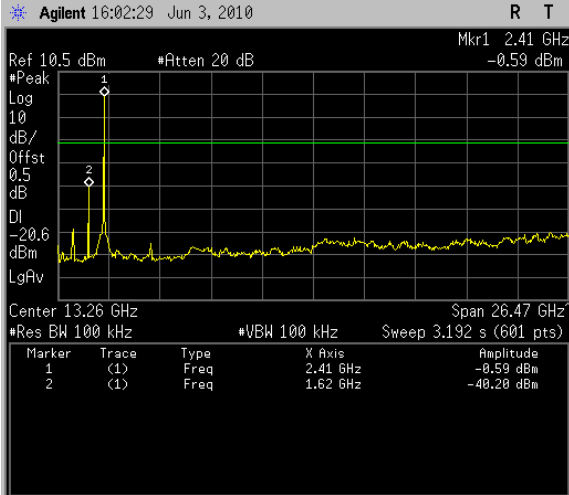
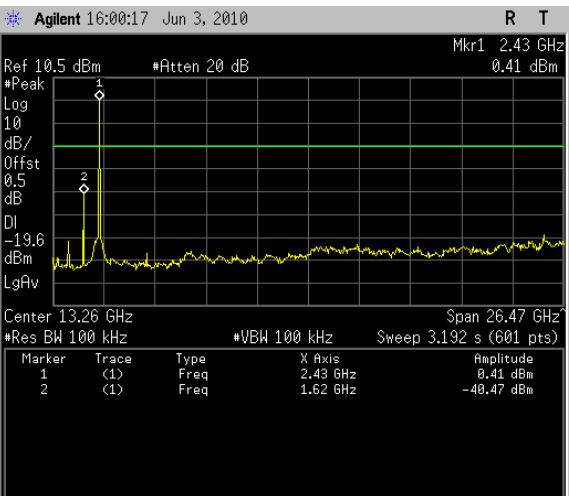
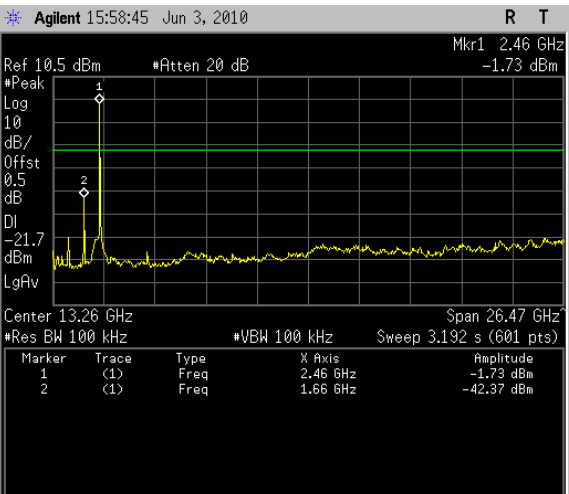
In any 100 kHz bandwidth outside the EUT pass band, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20 dB below that of the maximum in-band 100 kHz emission, antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the pass band. The test was performed at 3 channels (Channel 1, 6, 11)

9.5. Test Result

| Mode 3: IEEE 802.11b Link Mode | | | | | | | | | | | | | | | | |
|--------------------------------|---|--------|----------|------------|--------|-----------|---|-----|------|----------|----------|---|-----|------|----------|------------|
| 2412 | <p>Agilent 15:51:57 Jun 3, 2010</p> <p>Ref 10.5 dBm #Atten 20 dB Mkr1 2.41 GHz 4.28 dBm</p> <p>#Peak Log 10 dB/Offst 0.5 dB DI -15.7 dBm LgAv</p> <p>Center 13.26 GHz Span 26.47 GHz #Res BW 100 kHz #VBW 100 kHz Sweep 3.192 s (601 pts)</p> <table border="1"> <thead> <tr> <th>Marker</th> <th>Trace</th> <th>Type</th> <th>X Axis</th> <th>Amplitude</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>(1)</td> <td>Freq</td> <td>2.41 GHz</td> <td>4.28 dBm</td> </tr> <tr> <td>2</td> <td>(1)</td> <td>Freq</td> <td>1.62 GHz</td> <td>-43.48 dBm</td> </tr> </tbody> </table> <p>Freq/Channel: Center Freq 13.2650000 GHz, Start Freq 30.0000000 MHz, Stop Freq 26.5000000 GHz, CF Step 2.64700000 GHz, Freq Offset 0.00000000 Hz, Signal Track On</p> | Marker | Trace | Type | X Axis | Amplitude | 1 | (1) | Freq | 2.41 GHz | 4.28 dBm | 2 | (1) | Freq | 1.62 GHz | -43.48 dBm |
| Marker | Trace | Type | X Axis | Amplitude | | | | | | | | | | | | |
| 1 | (1) | Freq | 2.41 GHz | 4.28 dBm | | | | | | | | | | | | |
| 2 | (1) | Freq | 1.62 GHz | -43.48 dBm | | | | | | | | | | | | |
| 2437 | <p>Agilent 15:55:13 Jun 3, 2010</p> <p>Ref 10.5 dBm #Atten 20 dB Mkr1 2.43 GHz 3.09 dBm</p> <p>#Peak Log 10 dB/Offst 0.5 dB DI -16.9 dBm LgAv</p> <p>Center 13.26 GHz Span 26.47 GHz #Res BW 100 kHz #VBW 100 kHz Sweep 3.192 s (601 pts)</p> <table border="1"> <thead> <tr> <th>Marker</th> <th>Trace</th> <th>Type</th> <th>X Axis</th> <th>Amplitude</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>(1)</td> <td>Freq</td> <td>2.43 GHz</td> <td>3.09 dBm</td> </tr> <tr> <td>2</td> <td>(1)</td> <td>Freq</td> <td>1.62 GHz</td> <td>-43.67 dBm</td> </tr> </tbody> </table> <p>Freq/Channel: Center Freq 13.2650000 GHz, Start Freq 30.0000000 MHz, Stop Freq 26.5000000 GHz, CF Step 2.64700000 GHz, Freq Offset 0.00000000 Hz, Signal Track On</p> | Marker | Trace | Type | X Axis | Amplitude | 1 | (1) | Freq | 2.43 GHz | 3.09 dBm | 2 | (1) | Freq | 1.62 GHz | -43.67 dBm |
| Marker | Trace | Type | X Axis | Amplitude | | | | | | | | | | | | |
| 1 | (1) | Freq | 2.43 GHz | 3.09 dBm | | | | | | | | | | | | |
| 2 | (1) | Freq | 1.62 GHz | -43.67 dBm | | | | | | | | | | | | |
| 2462 | <p>Agilent 15:57:06 Jun 3, 2010</p> <p>Ref 10.5 dBm #Atten 20 dB Mkr1 2.46 GHz 3.02 dBm</p> <p>#Peak Log 10 dB/Offst 0.5 dB DI -17.0 dBm LgAv</p> <p>Center 13.26 GHz Span 26.47 GHz #Res BW 100 kHz #VBW 100 kHz Sweep 3.192 s (601 pts)</p> <table border="1"> <thead> <tr> <th>Marker</th> <th>Trace</th> <th>Type</th> <th>X Axis</th> <th>Amplitude</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>(1)</td> <td>Freq</td> <td>2.46 GHz</td> <td>3.02 dBm</td> </tr> <tr> <td>2</td> <td>(1)</td> <td>Freq</td> <td>1.66 GHz</td> <td>-42.45 dBm</td> </tr> </tbody> </table> <p>Freq/Channel: Center Freq 13.2650000 GHz, Start Freq 30.0000000 MHz, Stop Freq 26.5000000 GHz, CF Step 2.64700000 GHz, Freq Offset 0.00000000 Hz, Signal Track On</p> | Marker | Trace | Type | X Axis | Amplitude | 1 | (1) | Freq | 2.46 GHz | 3.02 dBm | 2 | (1) | Freq | 1.66 GHz | -42.45 dBm |
| Marker | Trace | Type | X Axis | Amplitude | | | | | | | | | | | | |
| 1 | (1) | Freq | 2.46 GHz | 3.02 dBm | | | | | | | | | | | | |
| 2 | (1) | Freq | 1.66 GHz | -42.45 dBm | | | | | | | | | | | | |

Mode 4: IEEE 802.11g Link Mode

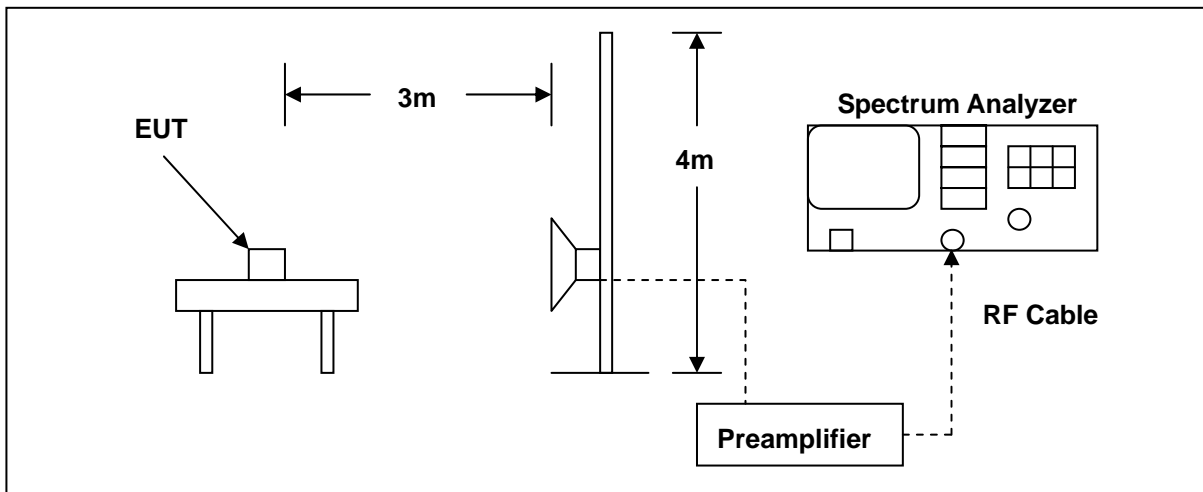
| <p style="text-align: center; font-weight: bold;">2412</p> |  <table border="1" data-bbox="1189 405 1326 898"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>13.2650000 GHz</td> </tr> <tr> <td>Start Freq</td> <td>30.0000000 MHz</td> </tr> <tr> <td>Stop Freq</td> <td>26.5000000 GHz</td> </tr> <tr> <td>CF Step</td> <td>2.64700000 GHz Auto Man</td> </tr> <tr> <td>Freq Offset</td> <td>0.00000000 Hz</td> </tr> <tr> <td>Signal Track</td> <td>On Off</td> </tr> </tbody> </table> | Freq/Channel | | Center Freq | 13.2650000 GHz | Start Freq | 30.0000000 MHz | Stop Freq | 26.5000000 GHz | CF Step | 2.64700000 GHz Auto Man | Freq Offset | 0.00000000 Hz | Signal Track | On Off |
|--|---|--------------|--|-------------|----------------|------------|----------------|-----------|----------------|---------|----------------------------|-------------|---------------|--------------|--------|
| Freq/Channel | | | | | | | | | | | | | | | |
| Center Freq | 13.2650000 GHz | | | | | | | | | | | | | | |
| Start Freq | 30.0000000 MHz | | | | | | | | | | | | | | |
| Stop Freq | 26.5000000 GHz | | | | | | | | | | | | | | |
| CF Step | 2.64700000 GHz Auto Man | | | | | | | | | | | | | | |
| Freq Offset | 0.00000000 Hz | | | | | | | | | | | | | | |
| Signal Track | On Off | | | | | | | | | | | | | | |
| <p style="text-align: center; font-weight: bold;">2437</p> |  <table border="1" data-bbox="1189 929 1326 1422"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>13.2650000 GHz</td> </tr> <tr> <td>Start Freq</td> <td>30.0000000 MHz</td> </tr> <tr> <td>Stop Freq</td> <td>26.5000000 GHz</td> </tr> <tr> <td>CF Step</td> <td>2.64700000 GHz Auto Man</td> </tr> <tr> <td>Freq Offset</td> <td>0.00000000 Hz</td> </tr> <tr> <td>Signal Track</td> <td>On Off</td> </tr> </tbody> </table> | Freq/Channel | | Center Freq | 13.2650000 GHz | Start Freq | 30.0000000 MHz | Stop Freq | 26.5000000 GHz | CF Step | 2.64700000 GHz Auto Man | Freq Offset | 0.00000000 Hz | Signal Track | On Off |
| Freq/Channel | | | | | | | | | | | | | | | |
| Center Freq | 13.2650000 GHz | | | | | | | | | | | | | | |
| Start Freq | 30.0000000 MHz | | | | | | | | | | | | | | |
| Stop Freq | 26.5000000 GHz | | | | | | | | | | | | | | |
| CF Step | 2.64700000 GHz Auto Man | | | | | | | | | | | | | | |
| Freq Offset | 0.00000000 Hz | | | | | | | | | | | | | | |
| Signal Track | On Off | | | | | | | | | | | | | | |
| <p style="text-align: center; font-weight: bold;">2462</p> |  <table border="1" data-bbox="1189 1456 1326 1948"> <thead> <tr> <th colspan="2">Freq/Channel</th> </tr> </thead> <tbody> <tr> <td>Center Freq</td> <td>13.2650000 GHz</td> </tr> <tr> <td>Start Freq</td> <td>30.0000000 MHz</td> </tr> <tr> <td>Stop Freq</td> <td>26.5000000 GHz</td> </tr> <tr> <td>CF Step</td> <td>2.64700000 GHz Auto Man</td> </tr> <tr> <td>Freq Offset</td> <td>0.00000000 Hz</td> </tr> <tr> <td>Signal Track</td> <td>On Off</td> </tr> </tbody> </table> | Freq/Channel | | Center Freq | 13.2650000 GHz | Start Freq | 30.0000000 MHz | Stop Freq | 26.5000000 GHz | CF Step | 2.64700000 GHz Auto Man | Freq Offset | 0.00000000 Hz | Signal Track | On Off |
| Freq/Channel | | | | | | | | | | | | | | | |
| Center Freq | 13.2650000 GHz | | | | | | | | | | | | | | |
| Start Freq | 30.0000000 MHz | | | | | | | | | | | | | | |
| Stop Freq | 26.5000000 GHz | | | | | | | | | | | | | | |
| CF Step | 2.64700000 GHz Auto Man | | | | | | | | | | | | | | |
| Freq Offset | 0.00000000 Hz | | | | | | | | | | | | | | |
| Signal Track | On Off | | | | | | | | | | | | | | |

10 Band Edges Measurement

10.1. Limit

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

10.2. Test Setup



10.3. Test Instruments

| Equipment | Manufacturer | Model Number | Serial Number | Cal. Date | Remark |
|-------------------|--------------------------------|--------------|---------------|------------|--------|
| Spectrum Analyzer | Agilent | E4408B | MY45107753 | 06/23/2009 | (2) |
| Pre Amplifier | Agilent | 8449B | 3008A02237 | 07/01/2009 | (1) |
| Horn Antenna | SCHWARZBECK MESS-ELEKTRONIK | 9120D | 9120D-550 | 07/01/2009 | (2) |
| Test Site | ATL | TE06 | TE06 | N.C.R. | ----- |

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

10.4. Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

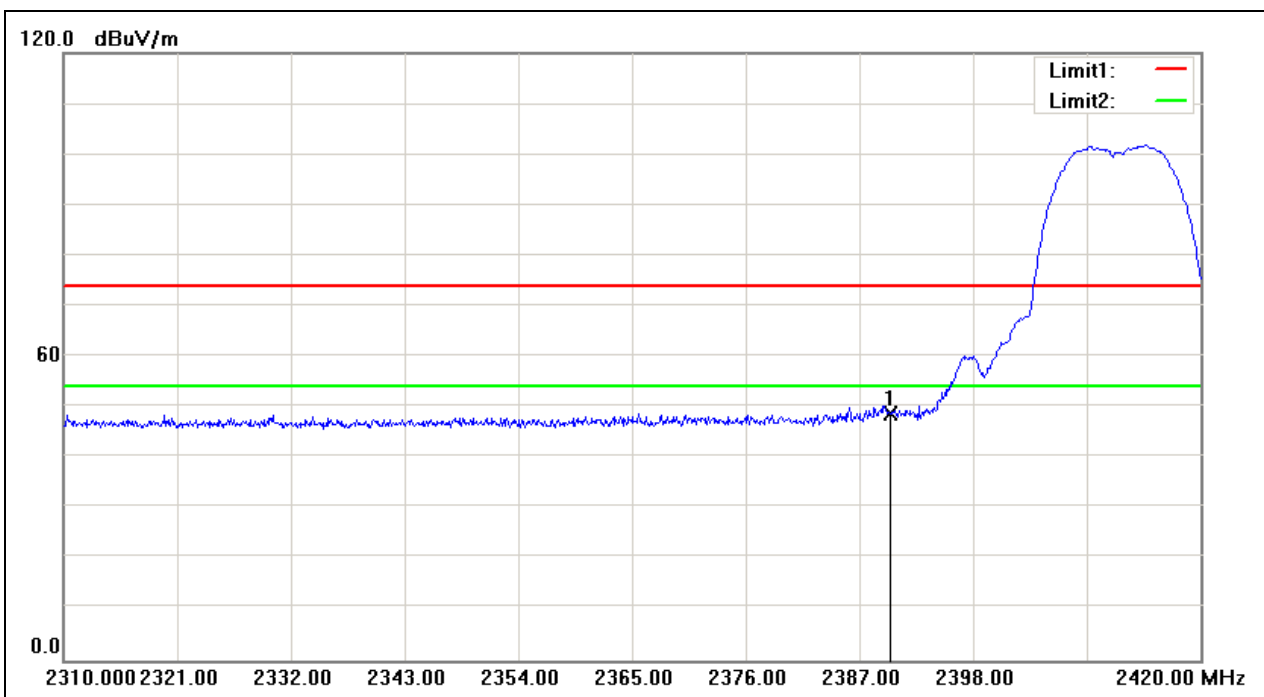
The emissions on the harmonics frequencies, the limits, and the margin of compliance are presented. These tests were made when the transmitter was in full radiated power. The additional test was performed to show compliance with the requirement at the band-edge frequency 2483.5 MHz and up to 2500 MHz and at 2390.0 MHz.

The transmitter was configured with the worst case antenna and setup to transmit at the highest channel. Then the field strength was measured at 2483.5 MHz.

The transmitter was then configured with the worst case antenna and setup to transmit at the lowest channel. Then the field strength was measured at 2390.0 MHz. These tests were performed at 4 different bit rates.

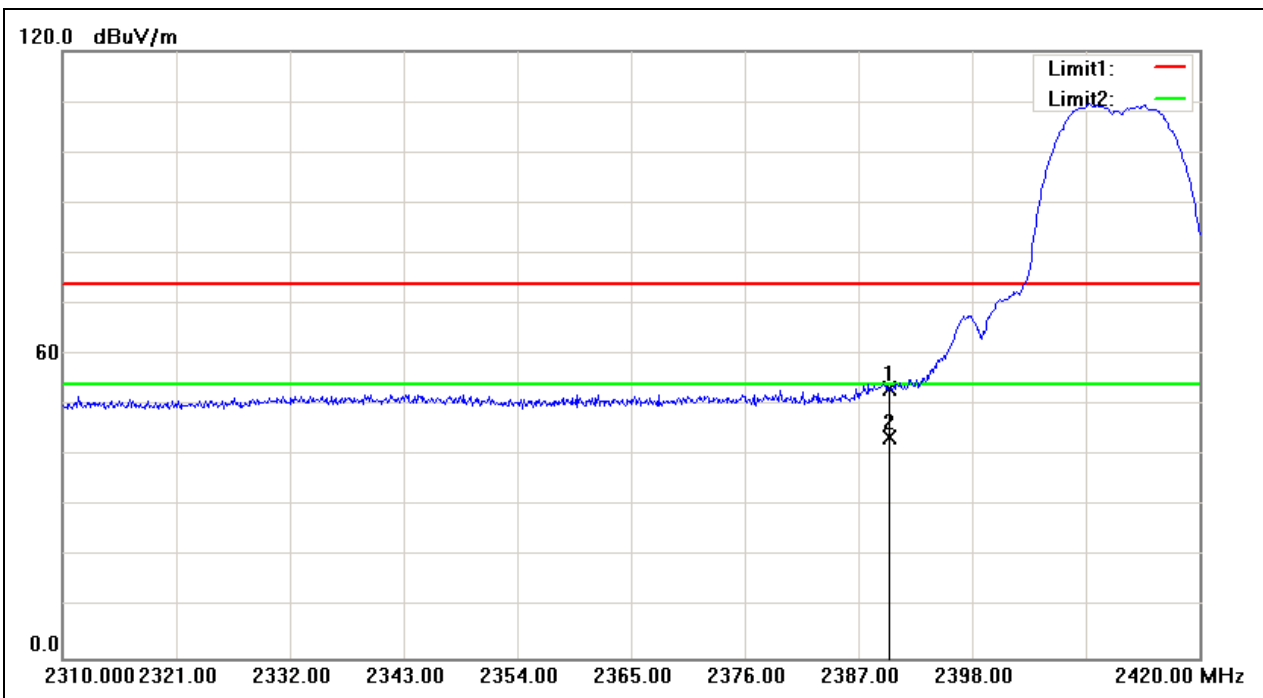
10.5. Test Graphs

| | | | |
|----------------------|------------------|----------------|----------------|
| Job No.: | 10-0202-CEO | Ant.Polar.: | Horizontal |
| Standard: | FCC part 15 (PK) | Test Distance: | 3m |
| Test item: | Radiation Test | Power: | AC 120V/60Hz |
| Temp.(°C)/Hum.(%RH): | 26(°C)/60%RH | Date:2010/6/2 | Time: 06:51:29 |
| EUT: | 3G Router | Test By: | Gary |
| Model: | 3G10WVR | Mode: | 3 |
| Description: | 2412Mhz | | |



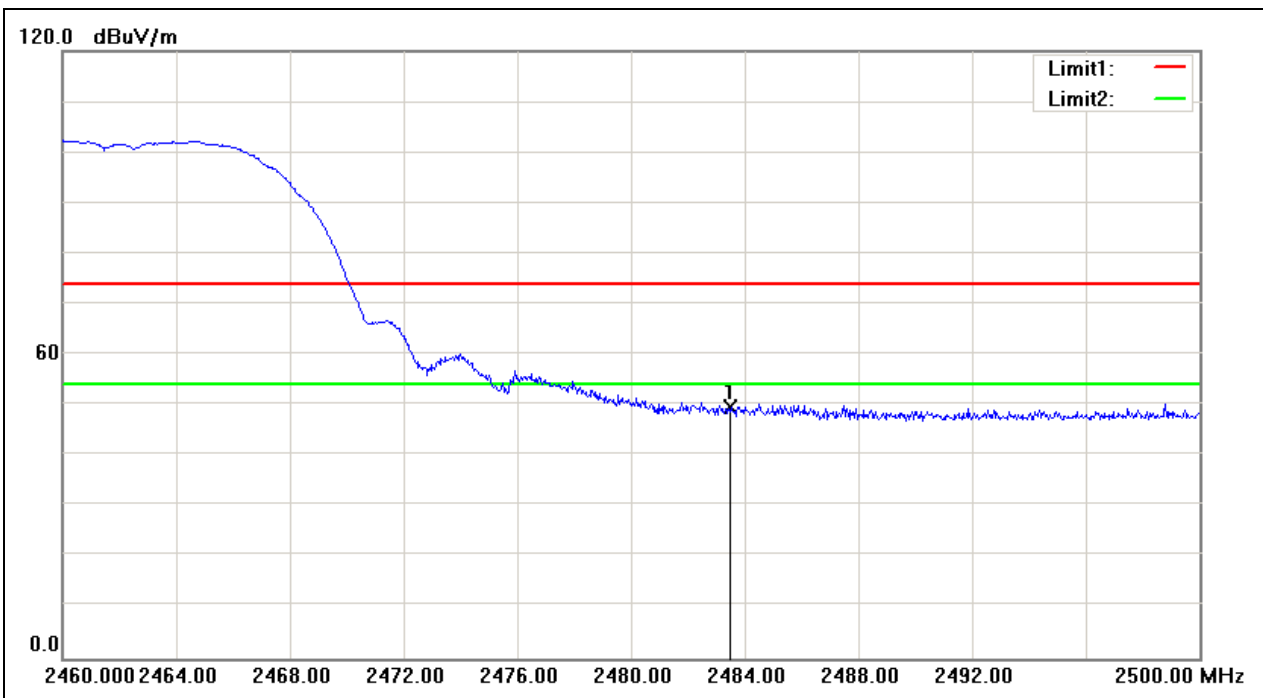
| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|-----------------|--------|
| 1 | 2390.000 | 49.11 | -0.24 | 48.87 | 74.00 | -25.13 | | | peak |

| | | | |
|----------------------|------------------|----------------|----------------|
| Job No.: | 10-0202-CEO | Ant.Polar.: | Vertical |
| Standard: | FCC part 15 (PK) | Test Distance: | 3m |
| Test item: | Radiation Test | Power: | AC 120V/60Hz |
| Temp.(°C)/Hum.(%RH): | 26(°C)/60%RH | Date:2010/6/2 | Time: 06:49:57 |
| EUT: | 3G Router | Test By: | Gary |
| Model: | 3G10WVR | Mode: | 3 |
| Description: | 2412Mhz | | |



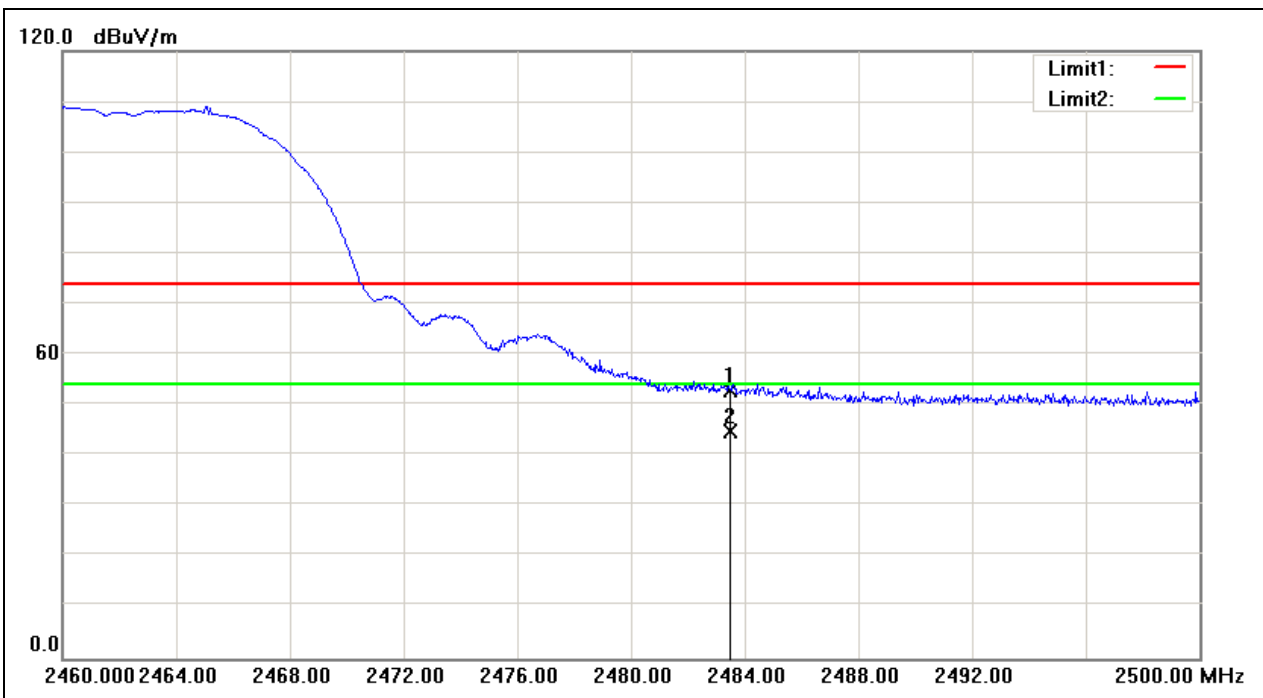
| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|----------------------|-----------------|----------------|-------------|-------------|------------|--------|
| 1 | 2390.000 | 53.51 | -0.24 | 53.27 | 74.00 | -20.73 | | | peak |
| 2 | 2390.000 | 43.94 | -0.24 | 43.70 | 54.00 | -10.30 | | | AVG |

| | | | |
|----------------------|------------------|----------------|----------------|
| Job No.: | 10-0202-CEO | Ant.Polar.: | Horizontal |
| Standard: | FCC part 15 (PK) | Test Distance: | 3m |
| Test item: | Radiation Test | Power: | AC 120V/60Hz |
| Temp.(°C)/Hum.(%RH): | 26(°C)/60%RH | Date:2010/6/2 | Time: 06:56:17 |
| EUT: | 3G Router | Test By: | Gary |
| Model: | 3G10WVR | Mode: | 3 |
| Description: | 2462Mhz | | |



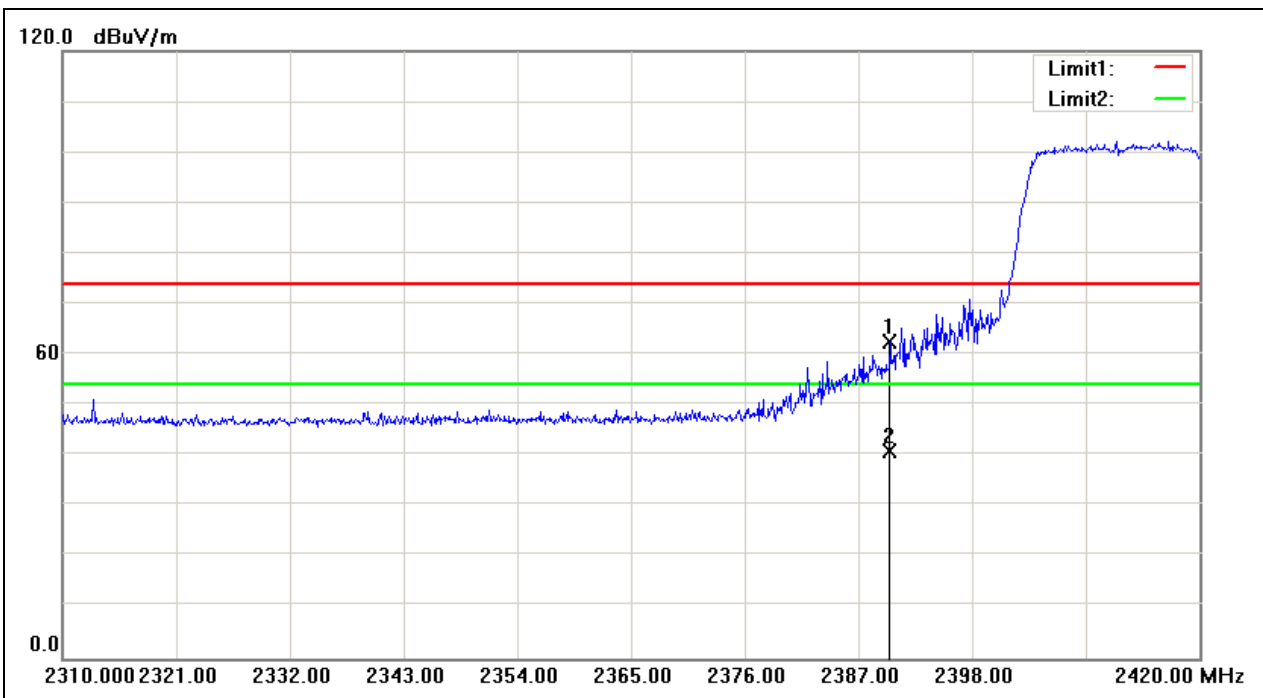
| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|--------------------|-------------------|-------------------------|--------------------|-------------------|----------------|----------------|-----------------|--------|
| 1 | 2483.500 | 49.42 | 0.15 | 49.57 | 74.00 | -24.43 | | | peak |

| | | | |
|----------------------|------------------|----------------|----------------|
| Job No.: | 10-0202-CEO | Ant.Polar.: | Vertical |
| Standard: | FCC part 15 (PK) | Test Distance: | 3m |
| Test item: | Radiation Test | Power: | AC 120V/60Hz |
| Temp.(°C)/Hum.(%RH): | 26(°C)/60%RH | Date:2010/6/2 | Time: 06:54:26 |
| EUT: | 3G Router | Test By: | Gary |
| Model: | 3G10WVR | Mode: | 3 |
| Description: | 2462Mhz | | |



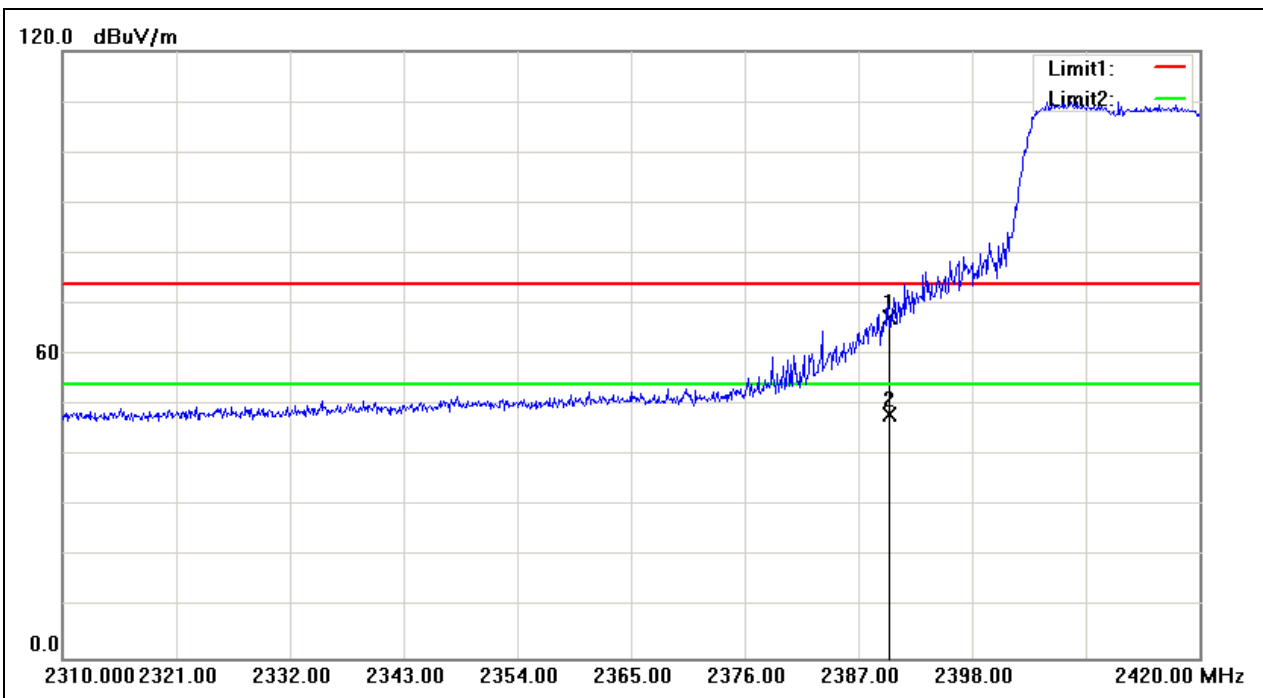
| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|----------------------|-----------------|----------------|-------------|-------------|------------|--------|
| 1 | 2483.500 | 52.76 | 0.15 | 52.91 | 74.00 | -21.09 | | | peak |
| 2 | 2483.500 | 44.69 | 0.15 | 44.84 | 54.00 | -9.16 | | | AVG |

| | | | |
|----------------------|------------------|----------------|----------------|
| Job No.: | 10-0202-CEO | Ant.Polar.: | Horizontal |
| Standard: | FCC part 15 (PK) | Test Distance: | 3m |
| Test item: | Radiation Test | Power: | AC 120V/60Hz |
| Temp.(°C)/Hum.(%RH): | 26(°C)/60%RH | Date:2010/6/2 | Time: 04:02:05 |
| EUT: | 3G Router | Test By: | Gary |
| Model: | 3G10WVR | Mode: | 4 |
| Description: | 2412Mhz | | |



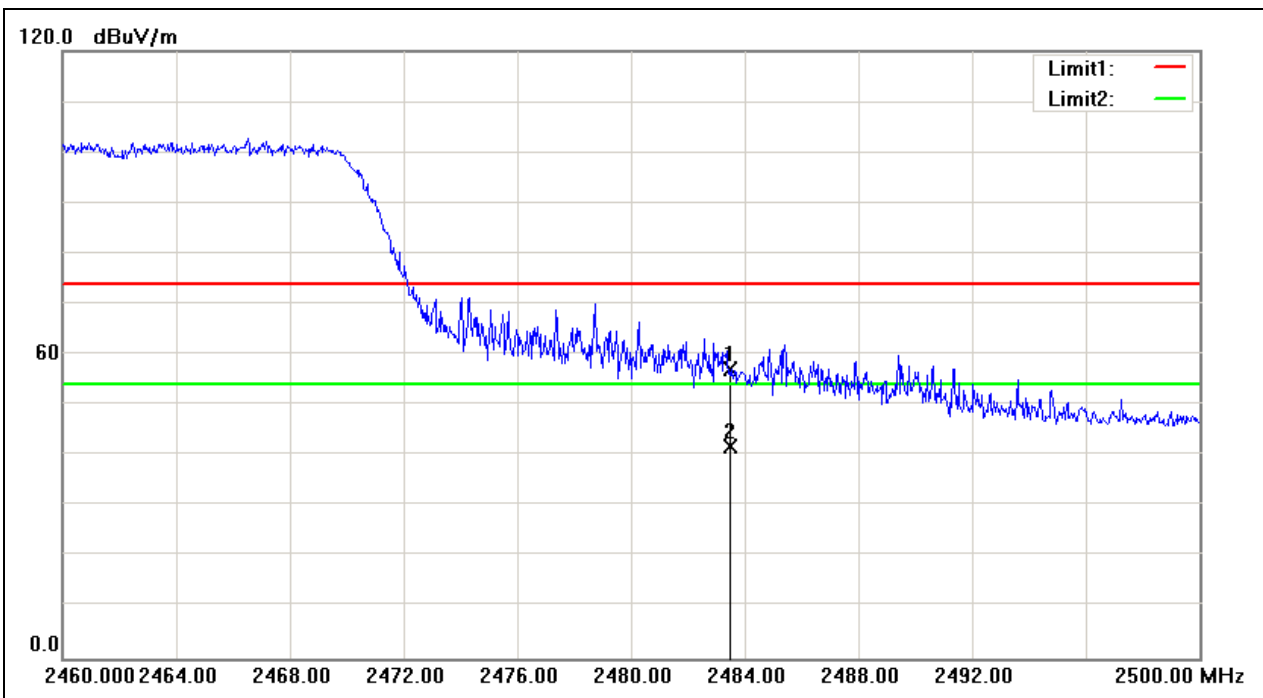
| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|----------------------|-----------------|----------------|-------------|-------------|------------|--------|
| 1 | 2390.000 | 62.73 | -0.24 | 62.49 | 74.00 | -11.51 | | | peak |
| 2 | 2390.000 | 41.31 | -0.24 | 41.07 | 54.00 | -12.93 | | | AVG |

| | | | |
|----------------------|------------------|----------------|----------------|
| Job No.: | 10-0202-CEO | Ant.Polar.: | Vertical |
| Standard: | FCC part 15 (PK) | Test Distance: | 3m |
| Test item: | Radiation Test | Power: | AC 120V/60Hz |
| Temp.(°C)/Hum.(%RH): | 26(°C)/60%RH | Date:2010/6/2 | Time: 03:56:11 |
| EUT: | 3G Router | Test By: | Gary |
| Model: | 3G10WVR | Mode: | 4 |
| Description: | 2412Mhz | | |



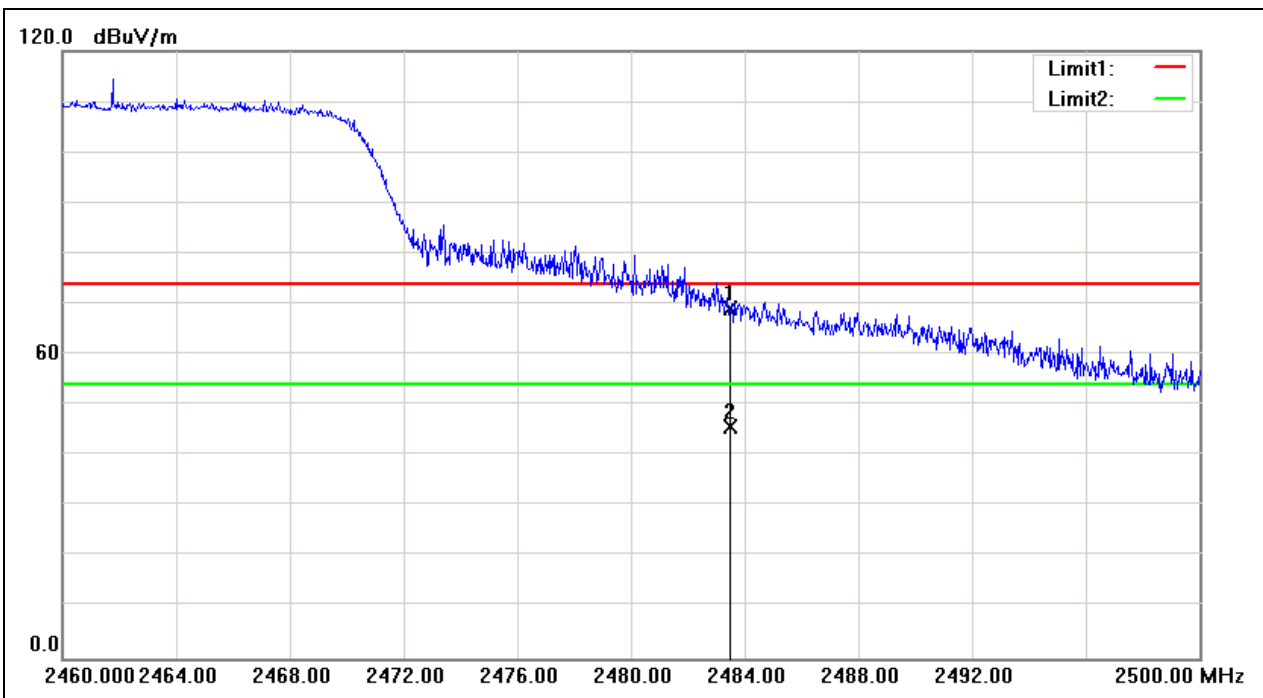
| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|----------------------|-----------------|----------------|-------------|-------------|--------------|--------|
| 1 | 2390.000 | 67.46 | -0.24 | 67.22 | 74.00 | -6.78 | | | peak |
| 2 | 2390.000 | 48.45 | -0.24 | 48.21 | 54.00 | -5.79 | | | AVG |

| | | | |
|----------------------|------------------|----------------|----------------|
| Job No.: | 10-0202-CEO | Ant.Polar.: | Horizontal |
| Standard: | FCC part 15 (PK) | Test Distance: | 3m |
| Test item: | Radiation Test | Power: | AC 120V/60Hz |
| Temp.(°C)/Hum.(%RH): | 26(°C)/60%RH | Date:2010/6/2 | Time: 04:20:02 |
| EUT: | 3G Router | Test By: | Gary |
| Model: | 3G10WVR | Mode: | 4 |
| Description: | 2462Mhz | | |



| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|----------------------|-----------------|----------------|-------------|-------------|--------------|--------|
| 1 | 2483.500 | 56.95 | 0.15 | 57.10 | 74.00 | -16.90 | | | peak |
| 2 | 2483.500 | 41.67 | 0.15 | 41.82 | 54.00 | -12.18 | | | AVG |

| | | | |
|----------------------|------------------|----------------|----------------|
| Job No.: | 10-0202-CEO | Ant.Polar.: | Vertical |
| Standard: | FCC part 15 (PK) | Test Distance: | 3m |
| Test item: | Radiation Test | Power: | AC 120V/60Hz |
| Temp.(°C)/Hum.(%RH): | 26(°C)/60%RH | Date:2010/6/2 | Time: 04:16:28 |
| EUT: | 3G Router | Test By: | Gary |
| Model: | 3G10WVR | Mode: | 4 |
| Description: | 2462Mhz | | |



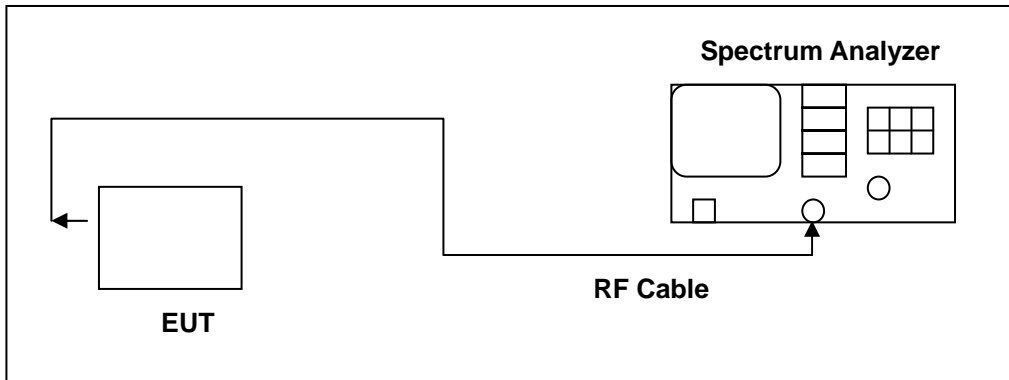
| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Degree (°) | Remark |
|-----|-----------------|----------------|----------------------|-----------------|----------------|-------------|-------------|------------|--------|
| 1 | 2483.500 | 68.96 | 0.15 | 69.11 | 74.00 | -4.89 | | | peak |
| 2 | 2483.500 | 45.61 | 0.15 | 45.76 | 54.00 | -8.24 | | | AVG |

11 99 % Occupied Bandwidth Measurement

11.1. Limit

N/A

11.2. Test Setup



11.3. Test Instruments

| Equipment | Manufacturer | Model Number | Serial Number | Cal. Date | Remark |
|-------------------|--------------|--------------|---------------|------------|--------|
| Spectrum Analyzer | Agilent | E4445A | MY46181986 | 05/14/2009 | (2) |
| Test Site | ATL | TE06 | TE06 | N.C.R. | ----- |

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

11.4. Test Procedure

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled.

11.5. Test Result

| | | | |
|-----------------|--------------------------------|-----------|-------------|
| Product | 3G Router | | |
| Test Item | 99 % Occupied Bandwidth | | |
| Test Mode | Mode 3: IEEE 802.11b Link Mode | | |
| Date of Test | 06/04/2010 | Test Site | TE06 |
| Frequency (MHz) | Measurement (kHz) | | Limit (kHz) |
| 2412 | 12657.5 | | ----- |
| 2437 | 12642.9 | | ----- |
| 2462 | 12685.9 | | ----- |

| | | | |
|-----------------|--------------------------------|-----------|-------------|
| Product | 3G Router | | |
| Test Item | 99 % Occupied Bandwidth | | |
| Test Mode | Mode 4: IEEE 802.11g Link Mode | | |
| Date of Test | 06/04/2010 | Test Site | TE06 |
| Frequency (MHz) | Measurement (kHz) | | Limit (kHz) |
| 2412 | 16362.7 | | ----- |
| 2437 | 16391.7 | | ----- |
| 2462 | 16392.2 | | ----- |

11.6. Test Graphs

| Mode 3: IEEE 802.11b Link Mode | |
|--------------------------------|--|
| 2412 | <p>Agilent 14:04:19 Jun 4, 2010</p> <p>Ch Freq 2.412 GHz Trig Free</p> <p>Center Freq 2.41200000 GHz</p> <p>Start Freq 2.38700000 GHz</p> <p>Stop Freq 2.43700000 GHz</p> <p>CF Step 5.00000000 MHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 10.5 dBm #Atten 20 dB</p> <p>#Peak Log 10 dB/Offst 0.5 dB</p> <p>Center 2.412 00 GHz Span 50 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 4.8 ms (601 pts)</p> <p>Occupied Bandwidth 12.6575 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -26.00 dB</p> <p>Transmit Freq Error -3.264 kHz</p> <p>x dB Bandwidth 15.238 MHz</p> |
| 2437 | <p>Agilent 13:02:20 Jun 4, 2010</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Center Freq 2.43700000 GHz</p> <p>Start Freq 2.41200000 GHz</p> <p>Stop Freq 2.46200000 GHz</p> <p>CF Step 5.00000000 MHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 10.5 dBm #Atten 20 dB</p> <p>#Peak Log 10 dB/Offst 0.5 dB</p> <p>Center 2.437 00 GHz Span 50 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 4.8 ms (601 pts)</p> <p>Occupied Bandwidth 12.6429 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -26.00 dB</p> <p>Transmit Freq Error -9.018 kHz</p> <p>x dB Bandwidth 15.221 MHz</p> |
| 2462 | <p>Agilent 12:59:01 Jun 4, 2010</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Center Freq 2.46200000 GHz</p> <p>Start Freq 2.43700000 GHz</p> <p>Stop Freq 2.48700000 GHz</p> <p>CF Step 5.00000000 MHz</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 10.5 dBm #Atten 20 dB</p> <p>#Peak Log 10 dB/Offst 0.5 dB</p> <p>Center 2.462 00 GHz Span 50 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 4.8 ms (601 pts)</p> <p>Occupied Bandwidth 12.6859 MHz</p> <p>Occ BW % Pwr 99.00 %</p> <p>x dB -26.00 dB</p> <p>Transmit Freq Error -7.252 kHz</p> <p>x dB Bandwidth 15.224 MHz</p> |

| Mode 4: IEEE 802.11g Link Mode | |
|--------------------------------|---|
| 2412 | <p>Agilent 14:03:14 Jun 4, 2010</p> <p>Ch Freq 2.412 GHz Trig Free</p> <p>Center Freq 2.41200000 GHz</p> <p>Start Freq 2.38700000 GHz</p> <p>Stop Freq 2.43700000 GHz</p> <p>CF Step 5.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 10.5 dBm #Atten 20 dB</p> <p>#Peak Log 10 dB/Offst 0.5 dB</p> <p>Center 2.412 00 GHz Span 50 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 4.8 ms (601 pts)</p> <p>Occupied Bandwidth 16.3627 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 1.804 kHz</p> <p>x dB Bandwidth 18.049 MHz</p> |
| 2437 | <p>Agilent 13:03:39 Jun 4, 2010</p> <p>Ch Freq 2.437 GHz Trig Free</p> <p>Center Freq 2.43700000 GHz</p> <p>Start Freq 2.41200000 GHz</p> <p>Stop Freq 2.46200000 GHz</p> <p>CF Step 5.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 10.5 dBm #Atten 20 dB</p> <p>#Peak Log 10 dB/Offst 0.5 dB</p> <p>Center 2.437 00 GHz Span 50 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 4.8 ms (601 pts)</p> <p>Occupied Bandwidth 16.3917 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 4.988 kHz</p> <p>x dB Bandwidth 18.335 MHz</p> |
| 2462 | <p>Agilent 14:06:14 Jun 4, 2010</p> <p>Ch Freq 2.462 GHz Trig Free</p> <p>Center Freq 2.46200000 GHz</p> <p>Start Freq 2.43700000 GHz</p> <p>Stop Freq 2.48700000 GHz</p> <p>CF Step 5.00000000 MHz Auto Man</p> <p>Freq Offset 0.00000000 Hz</p> <p>Signal Track On Off</p> <p>Ref 10.5 dBm #Atten 20 dB</p> <p>#Peak Log 10 dB/Offst 0.5 dB</p> <p>Center 2.462 00 GHz Span 50 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 4.8 ms (601 pts)</p> <p>Occupied Bandwidth 16.3922 MHz</p> <p>Occ BW % Pwr 99.00 % x dB -26.00 dB</p> <p>Transmit Freq Error 4.250 kHz</p> <p>x dB Bandwidth 18.230 MHz</p> |

12 Antenna Measurement

12.1. Limit

For intentional device, according to 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And According to 15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

12.2. Antenna Connector Construction

The antenna used in this product is **External diople antenna**. And the maximum Gain of this antenna is only **1.47 dBi**.