TESTING
CNAS L3572

# FCC Part 15C TEST REPORT

*Issued to*

**Guangzhou ZHIYUAN Electronics Stock Co., Ltd.**

*For*

**ZM2410P0-ATS Zigbee Module**

| | | |
|---|---|---|
| Model Name | : | ZM2410P0-ATS |
| Trade Name | : | ZLG |
| Brand Name | : | Low Power Zigbee Module |
| FCC ID | : | ODH-ZMATS |
| Standard | : | 47 CFR Part 15 Subpart C |
| Test date | : | 2012-6-23 to 2012-7-12 |
| Issue date | : | 2012-7-13 |

**Shenzhen MORLAB Communication Technology Co., Ltd.**

| | | | | | |
|---|---|---|---|---|---|
| *Tested by* | Zhang Yan | *Approved by* | Wu Xuewen | *Review by* | Peng Huarui |
| *Date* | 2012. 7. 13 | *Date* | 2012.07.13 | *Date* | 2012.7.13 |

# DIRECTORY



| Change History | | |
|---|---|---|
| Issue | Date | Reason for change |
| 1.0 | July 13, 2012 | First edition |
| | | |
| | | |

# 1. General Information

## 1.1. EUT Description

| | | |
|---|---|---|
| EUT Type | : | Zigbee Module |
| Serial No. | : | (n.a, marked #1 by test site) |
| Hardware Version | : | V1.01 |
| Software Version | : | V1.08 |
| Applicant | : | Guangzhou ZHIYUAN Electronics Stock Co.,Ltd.<br>Floor 2.Building No.7,Huangzhou Industrial Estate, Chebei Road, Tianhe District, Guangzhou City, CHINA. |
| Manufacturer | : | Guangzhou ZHIYUAN Electronics Stock Co.,Ltd.<br>Floor 2.Building No.7,Huangzhou Industrial Estate, Chebei Road, Tianhe District, Guangzhou City, CHINA. |
| Frequency Range | : | 2.405GHz - 2.480GHz (at interval of 5MHz) |
| Channel Number | : | 16 |
| Modulation Type | : | DSSS |
| Antenna Type | : | Dipole Antenna |
| Antenna Gain | : | 2.15dBi |

Note 1: The EUT is a Zigbee Module, with IEE802.15.4. Only DSSS Modulation technology was tested in this report.

Note 2: The frequencies allocated is F (MHz) =2405+5*(n-1) (1<=n<=16). The lowest, middle, highest channel numbers of the EUT used and tested in this report are separately 1 (2405MHz), 6 (2440MHz) and 11 (2480MHz).

Note 3: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

## 1.2. Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart C (2.4GHz ISM band radiators) for the EUT FCC ID Certification:

| No. | Identity | Document Title |
|---|---|---|
| 1 | 47 CFR Part 15 (10-1-09 Edition) | Radio Frequency Devices |

Test detailed items/section required by FCC rules and results are as below:

| No. | Section | Description | Result |
|---|---|---|---|
| 1 | 15.247(a) | Number of Hopping Frequency | (n.a) |
| 2 | 15.247(b) | Peak Output Power | PASS |
| 3 | 15.247(a) | Bandwidth | PASS |
| 4 | 15.247(a) | Carrier Frequency Separation | (n.a) |
| 5 | 15.247(a) | Time of Occupancy (Dwell time) | (n.a) |
| 6 | 15.247(c) | Conducted Spurious Emission | PASS |
| 7 | 15.247(c) | Band Edge | PASS |
| 8 | 15.207 | Conducted Emission | PASS |
| 9 | 15.209 15.247(c) | Radiated Emission | PASS |
| 10 | 15.247(d) | Power spectral density (PSD) | PASS |

The tests of Conducted Emission and Radiated Emission were performed according to the method of measurements prescribed in ANSI C63.4 2009.

These RF tests were performed according to the method of measurements prescribed in KBD558074.

## 1.3. Facilities and Accreditations

### 1.3.1. Facilities

Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L3572.

All measurement facilities used to collect the measurement data are located at FL.3, Building a, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22; the FCC registration number is 741109.

### 1.3.2. Test Environment Conditions

During the measurement, the environmental conditions were within the listed ranges:

| | |
|---|---|
| Temperature (°C): | 15 - 35 |
| Relative Humidity (%): | 30 -60 |
| Atmospheric Pressure (kPa): | 86-106 |

# 2. 47 CFR Part 15C Requirements

## 2.1. Peak Output Power

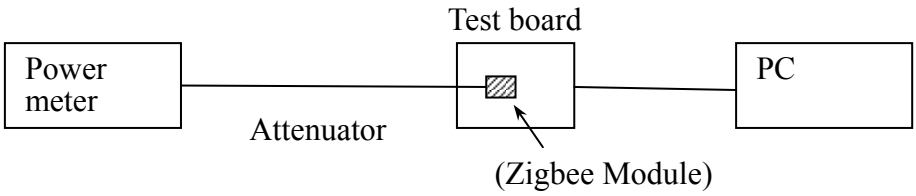
### 2.1.1. Requirement

According to FCC section 15.247(b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: The maximum peak conducted output power of the intentional radiator shall not exceed 1Watt.

### 2.1.2. Test Description

The measured output power was calculated by the reading of the Power Meter and calibration.

**A. Test Setup:**




The EUT (Equipment under the test) which is powered by the Control PC is coupled to the Power Meter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading, all test result in power meter.

**B. Equipments List:**

| Description | Manufacturer | Model | Serial No. | Cal. Date | Cal. Due |
|---|---|---|---|---|---|
| EPM Series Power Meter | Agilent | E4418B | GB43318055 | 2012.05 | 2013.05 |

### 2.1.3. Test Result

The lowest, middle and highest channels are selected to perform testing to verify the conducted RF output peak power of the Module.

#### 2.1.3.1. Peak Output Power Test mode

| Channel | Frequency (MHz) | Measured Output Peak Power | | Limit | | Verdict |
|---|---|---|---|---|---|---|
| | | dBm | mW | dBm | mW | |
| 1 | 2405 | 5.92 | 3.91 | 30 | 1000 | PASS |
| 8 | 2440 | 5.75 | 3.76 | | | PASS |
| 16 | 2480 | 5.43 | 3.49 | | | PASS |

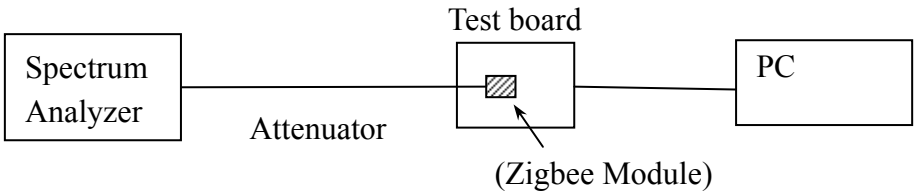
## 2.2. Bandwidth

### 2.2.1. Requirement

According to FCC section 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.

### 2.2.2. Test Description

**A. Test Set:**




The EUT which is powered by the Control PC is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, set the span greater than RBW.

**B. Equipments List:**

| Description | Manufacturer | Model | Serial No. | Cal. Date | Cal. Due |
|---|---|---|---|---|---|
| Spectrum Analyzer | Agilent | E7405A | US44210471 | 2012.05 | 2013.05 |

### 2.2.3. Test Result

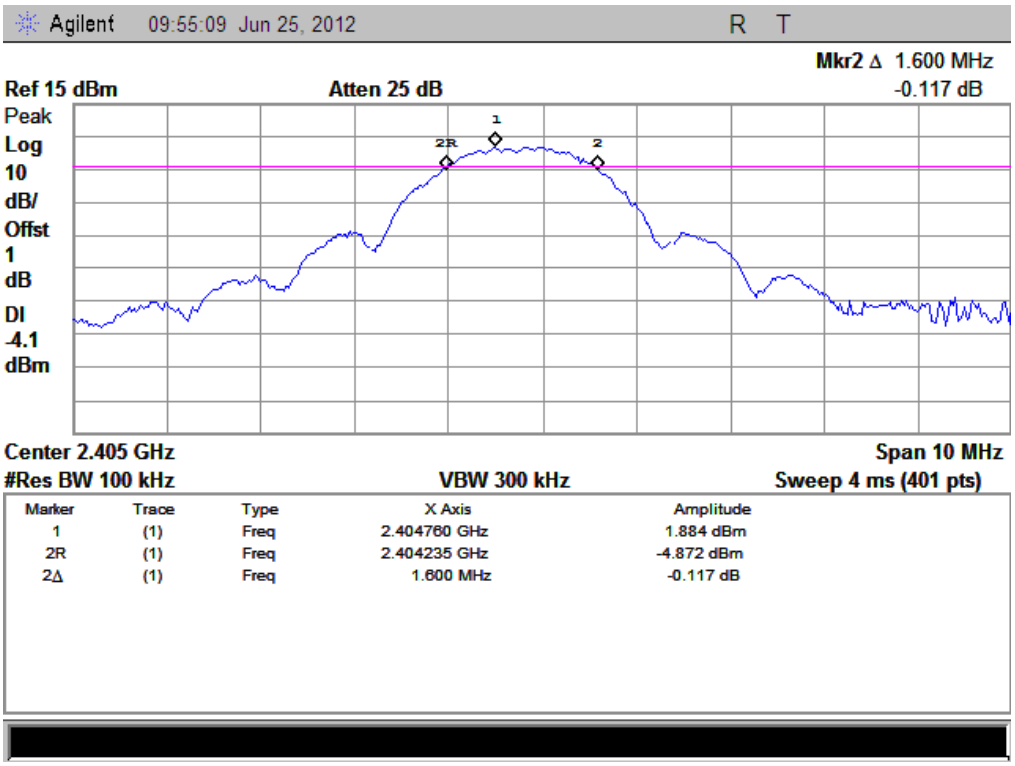
The lowest, middle and highest channels are selected to perform testing to record the 6 dB bandwidth of the Module.

#### 2.2.3.1. Bandwidth Test Result

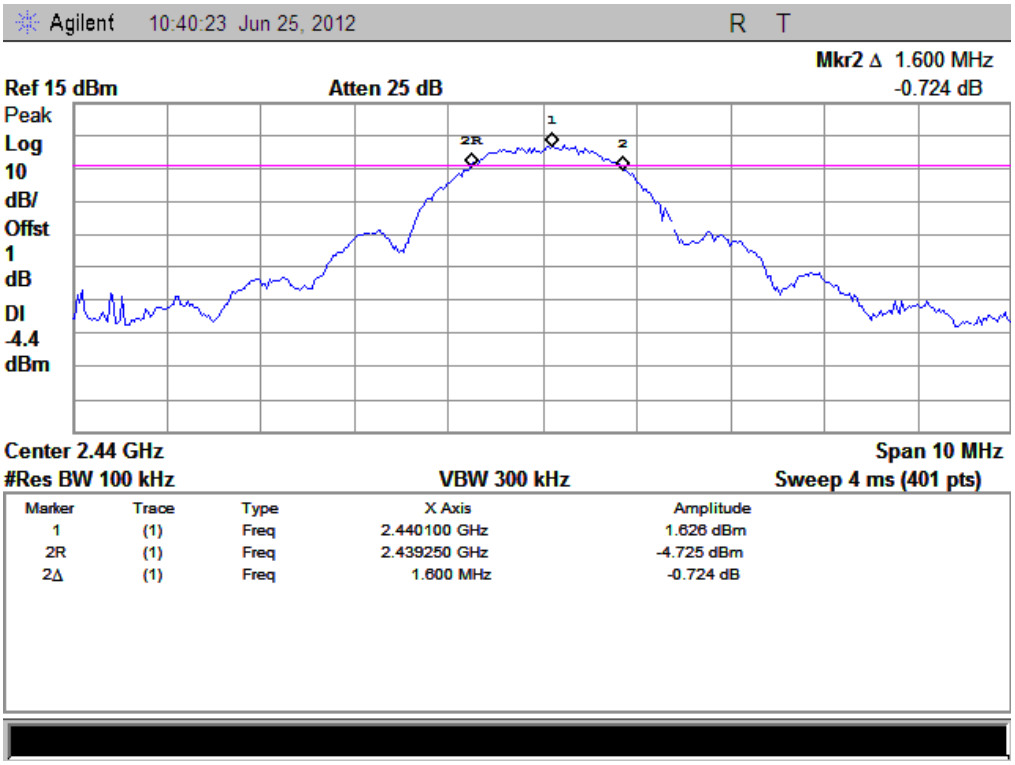
**A. Test Verdict:**

| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | Refer to Plot | Limits(kHz) | Result |
|---|---|---|---|---|---|
| 1 | 2405 | 1.600 | Plot A | ≥500 | PASS |
| 8 | 2440 | 1.600 | Plot B | ≥500 | PASS |
| 16 | 2480 | 1.625 | Plot C | ≥500 | PASS |

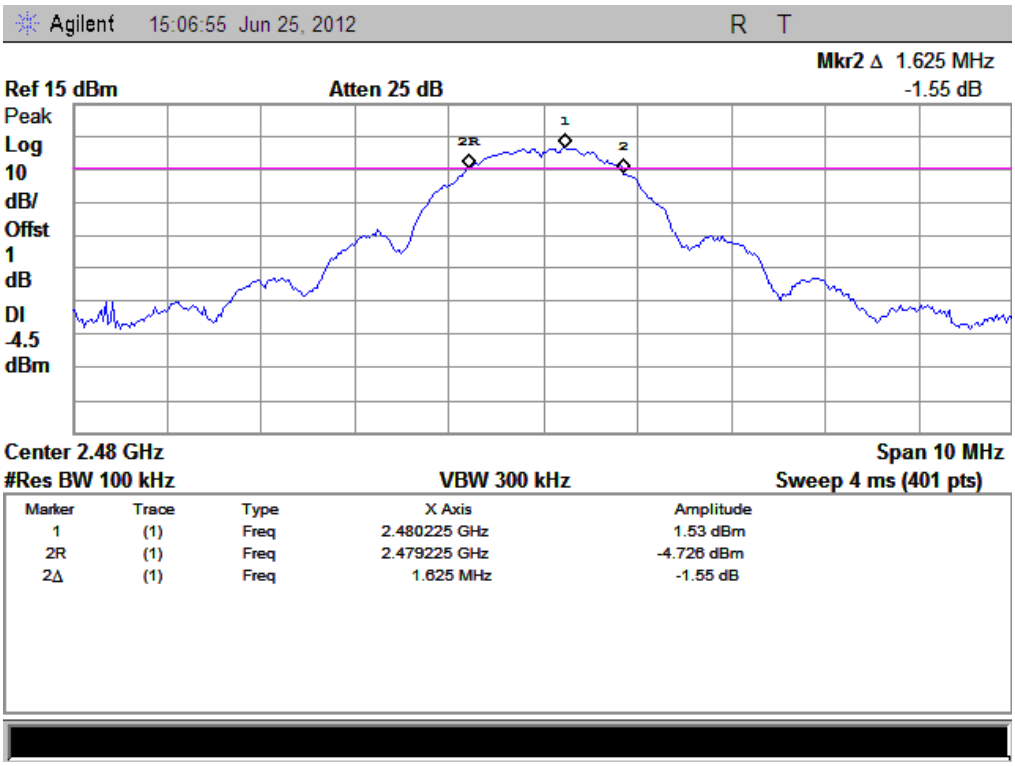
**B. Test Plots:**




(Plot A: Channel 1: 2405MHz)




(Plot B: Channel 8: 2440MHz)




(Plot C: Channel 16: 2480MHz)

## 2.3. Conducted Spurious Emissions

### 2.3.1. Requirement

According to FCC section 15.247(c), in any 100kHz 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

### 2.3.2. Test Description

See section 2.2.2 of this report.

### 2.3.3. Test Result

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions.

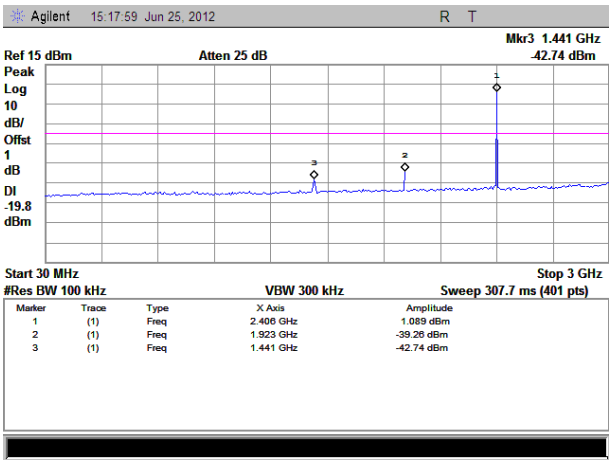
#### 2.3.3.1. Conducted Spurious Emissions Test Result

**A. Test Verdict:**

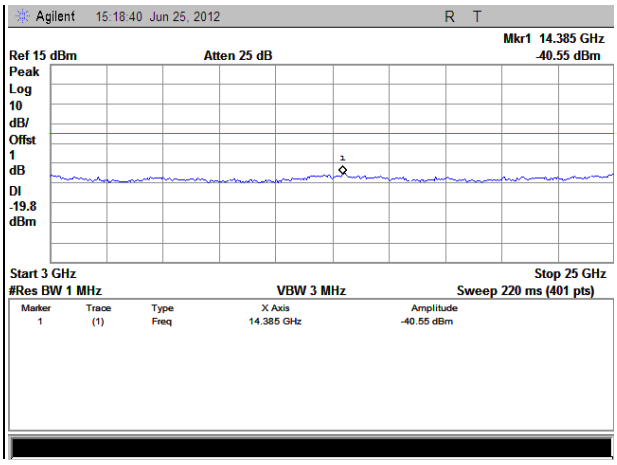
| Channel | Frequency (MHz) | Measured Max. Out of Band Emission (dBm) | Refer to Plot | Limit (dBm) | | Verdict |
|---|---|---|---|---|---|---|
| | | | | Carrier Level | Calculated -20dBc Limit | |
| 1 | 2405 | <-25 | Plot A.1/A.2 | 1.089 | -18.911 | PASS |
| 8 | 2440 | <-25 | Plot B.1/B.2 | 0.862 | -19.138 | PASS |
| 16 | 2480 | <-25 | Plot C.1/C.2 | 0.564 | -19.436 | PASS |

**B. Test Plots:**

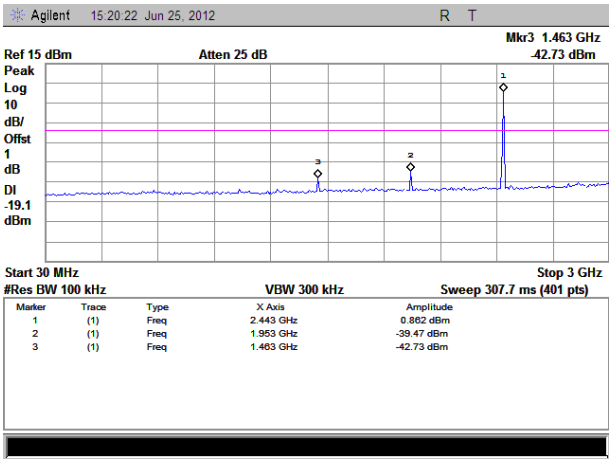
Note: the power of the Module transmitting frequency should be ignored.



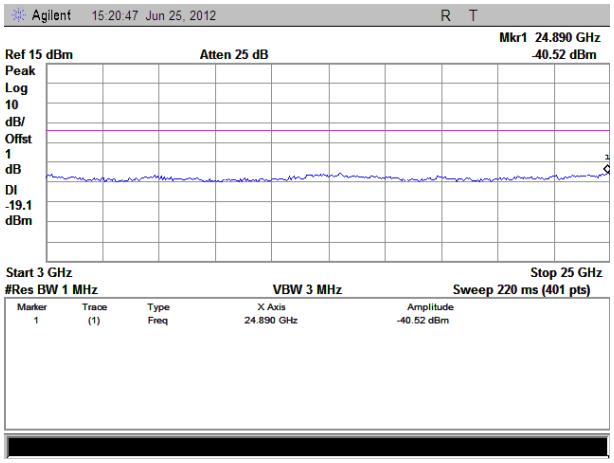

(Plot A.1: Channel = 1, 30MHz to 3GHz)



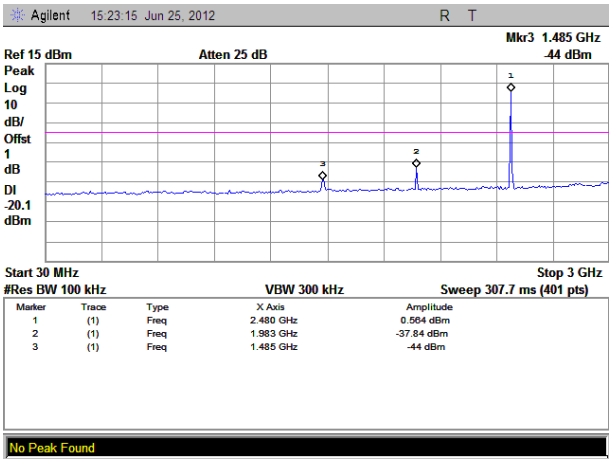

(Plot A.2: Channel = 1, 3GHz to 25GHz)



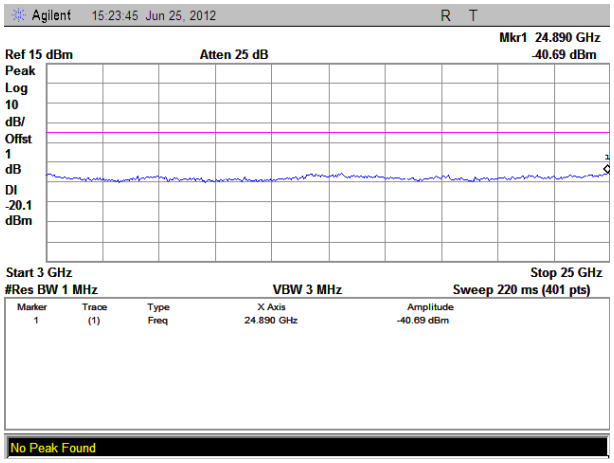

(Plot B.1: Channel = 8, 30MHz to 3GHz)




(Plot B.2: Channel = 8, 3GHz to 25GHz)




(Plot C.1: Channel = 16, 30MHz to 3GHz)




(Plot C.2: Channel = 16, 3GHz to 25GHz)

## 2.4. Power spectral density (PSD)

### 2.4.1. Requirement

According to FCC section 15.247(d), the same method of determining the conducted output power shall be used to determine the power spectral density. If a peak output power is measured, then a peak power spectral density measurement is required. If an average output power is measured, then an average power spectral density measurement should be used.

### 2.4.2. Test Description

See section 2.2.2 of this report.

### 2.4.3. Test Result

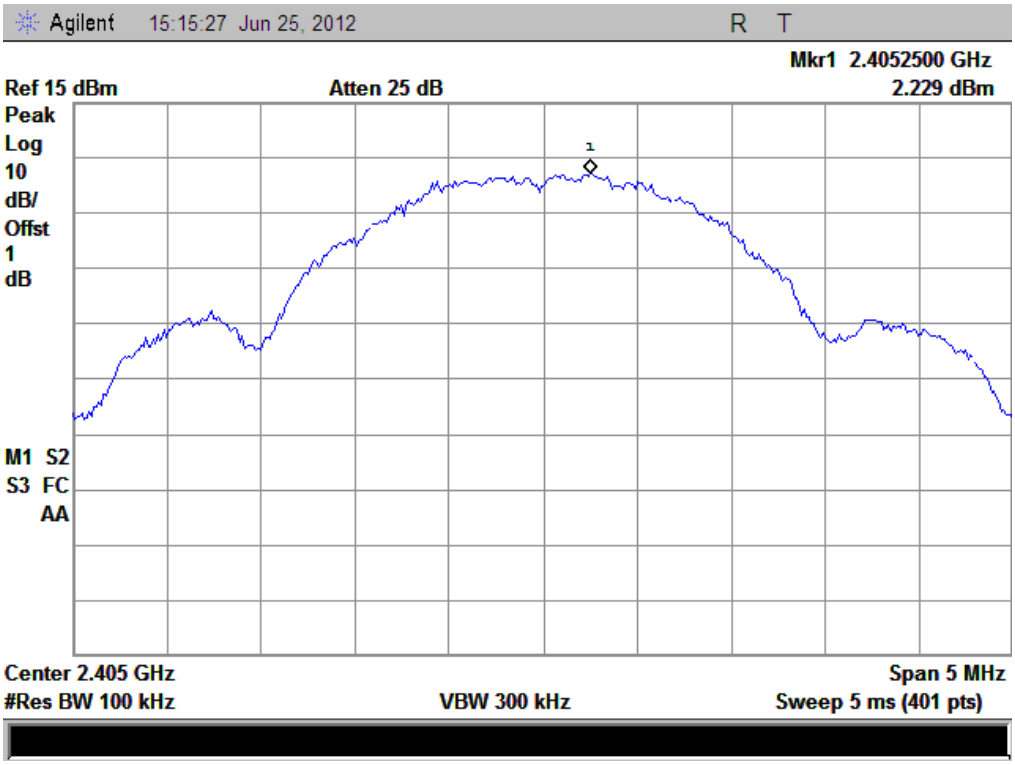
The lowest, middle and highest channels are tested to verify the band edge emissions.

#### 2.4.3.1. Power spectral density Test Result

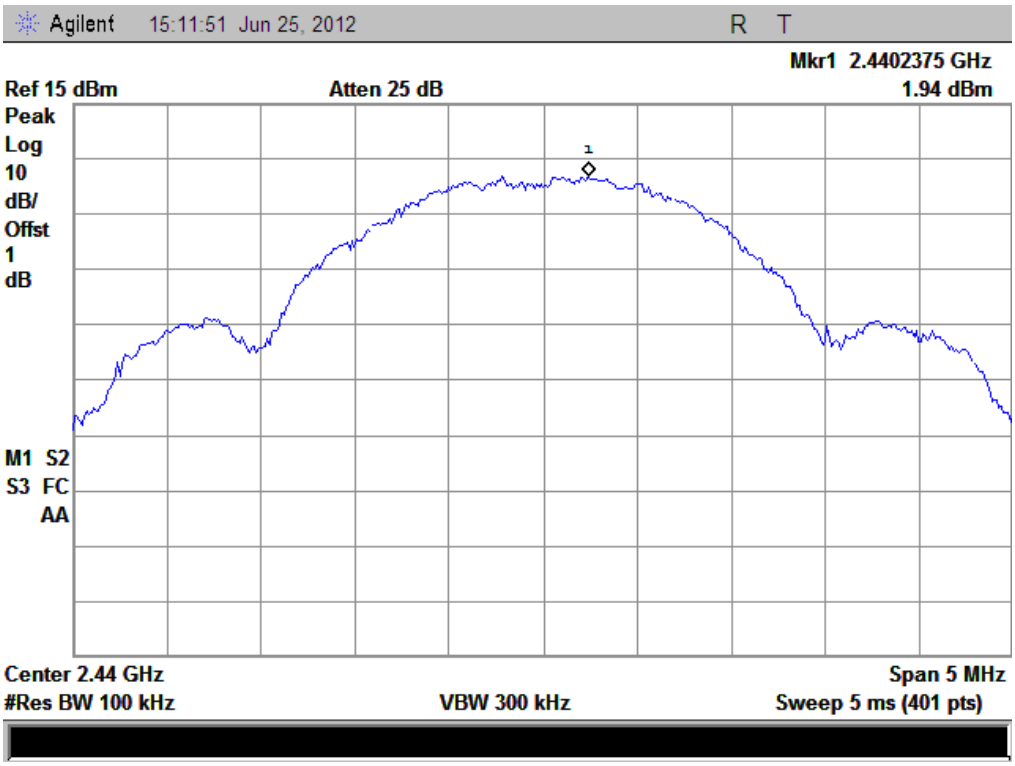
**A. Test Verdict:**

| Spectral power density (dBm/3kHz) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Measured PSD (dBm/100kHz) | Refer to Plot | BWCF (dB) | Scale Result (dBm/3kHz) | Limit (dBm/3kHz) | Verdict |
| 1 | 2405 | 2.229 | Plot A | -15.2 | -12.971 | 8 | PASS |
| 8 | 2440 | 1.940 | Plot B | -15.2 | -13.260 | 8 | PASS |
| 16 | 2480 | 1.877 | Plot C | -15.2 | -13.323 | 8 | PASS |
| Measurement uncertainty: ±1.3dB | | | | | | | |

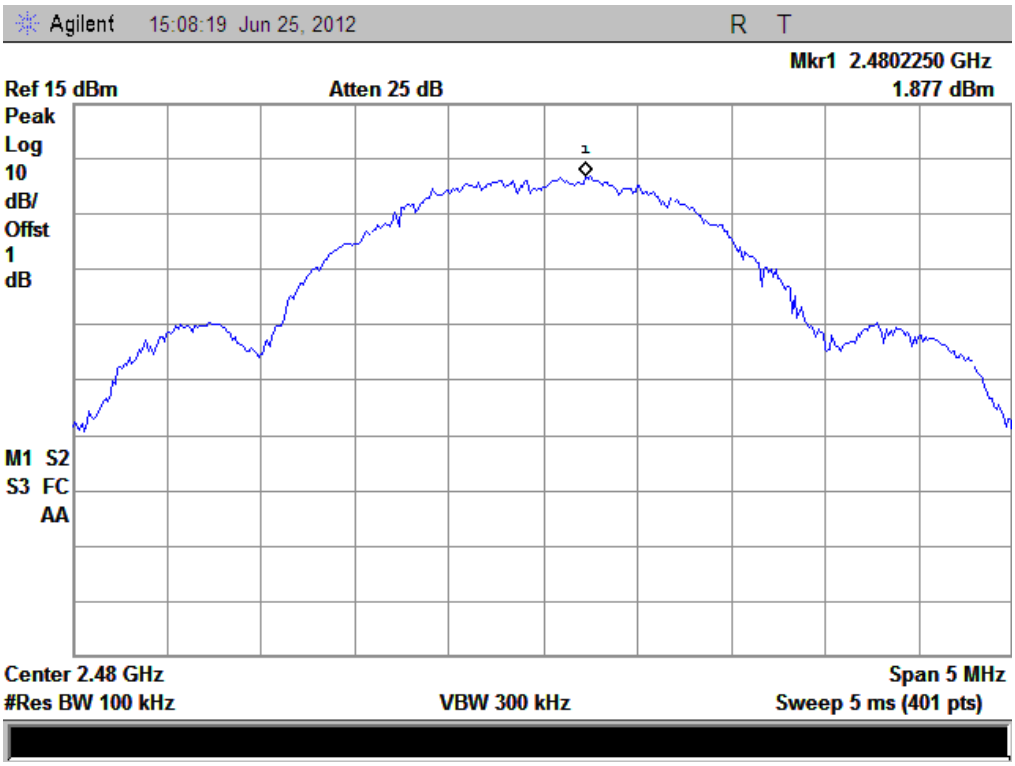
**Test Plots:**




(Plot A: Channel = 1)




(Plot B: Channel = 8)




(Plot C: Channel = 16)

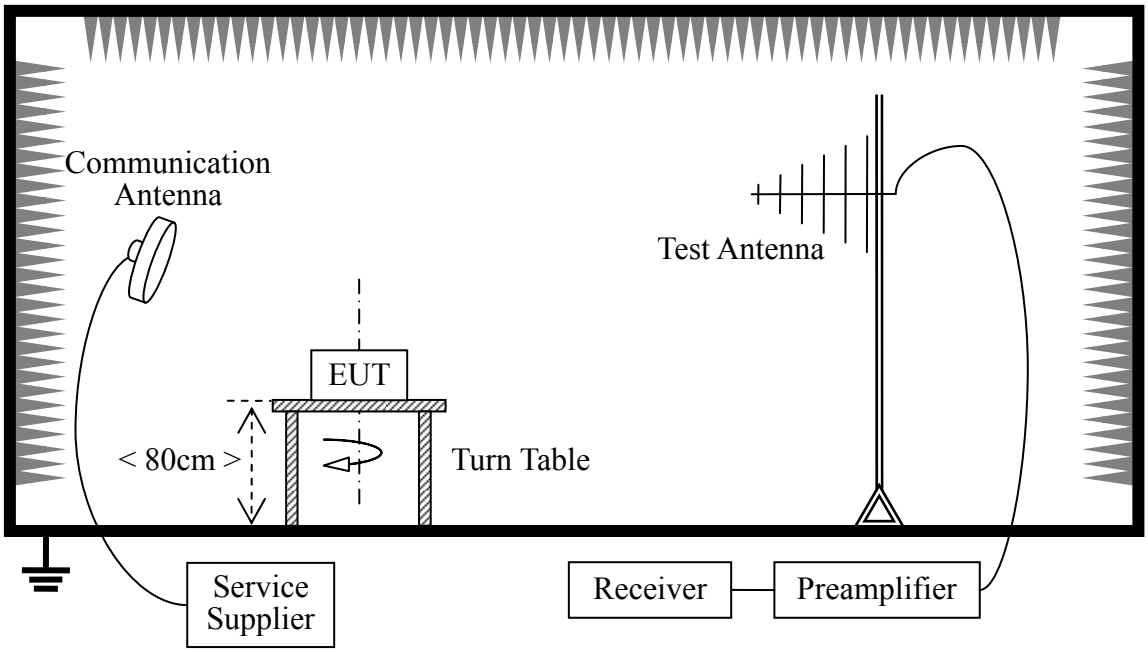
## 2.5. Band Edge

### 2.5.1. Requirement

According to FCC section 15.247(c), in any 100kHz 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

### 2.5.2. Test Description

**A. Test Setup**




The Module of the EUT is powered by the Battery charged with the AC Adapter. The Module is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading.

For the Test Antenna:

Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength.

**B. Equipments List:**

| Description | Manufacturer | Model | Serial No. | Cal. Date | Cal. Due |
|---|---|---|---|---|---|
| Receiver | Agilent | E7405A | US44210471 | 2012.05 | 2013.05 |
| Full-Anechoic Chamber | Albatross | 9m*6m*6m | (n.a.) | 2011.05 | 2013.05 |
| Test Antenna | Schwarzbeck | BBHA 9120C | 9120C-384 | 2012.05 | 201.05 |

## 2.5.3. Test Result

The lowest and highest channels are tested to verify the band edge emissions.

The measurement results are obtained as below:
E [dBμV/m] =$U_R$ + $A_T$ + $A_{Factor}$ [dB]; $A_T$ =$L_{Cable\ loss}$ [dB]-$G_{preamp}$ [dB]
$A_T$: Total correction Factor except Antenna
$U_R$: Receiver Reading
$G_{preamp}$: Preamplifier Gain
$A_{Factor}$: Antenna Factor at 3m

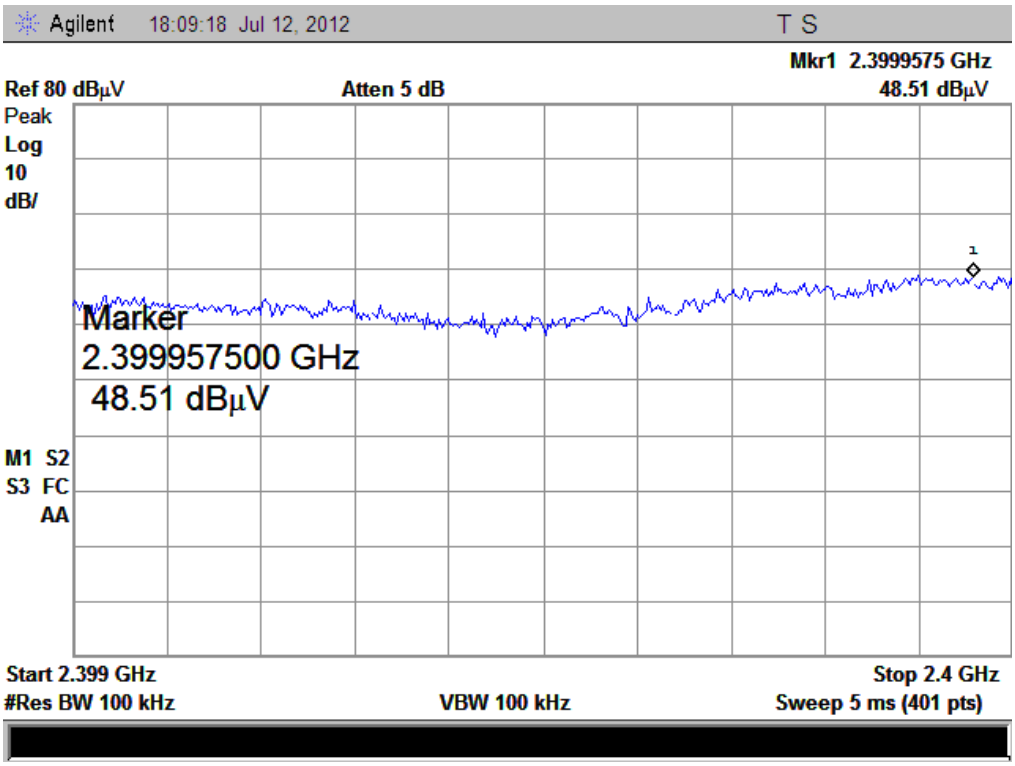
### 2.5.3.1. 802.11b Test mode

The lowest and highest channels are tested to verify the band edge emissions.

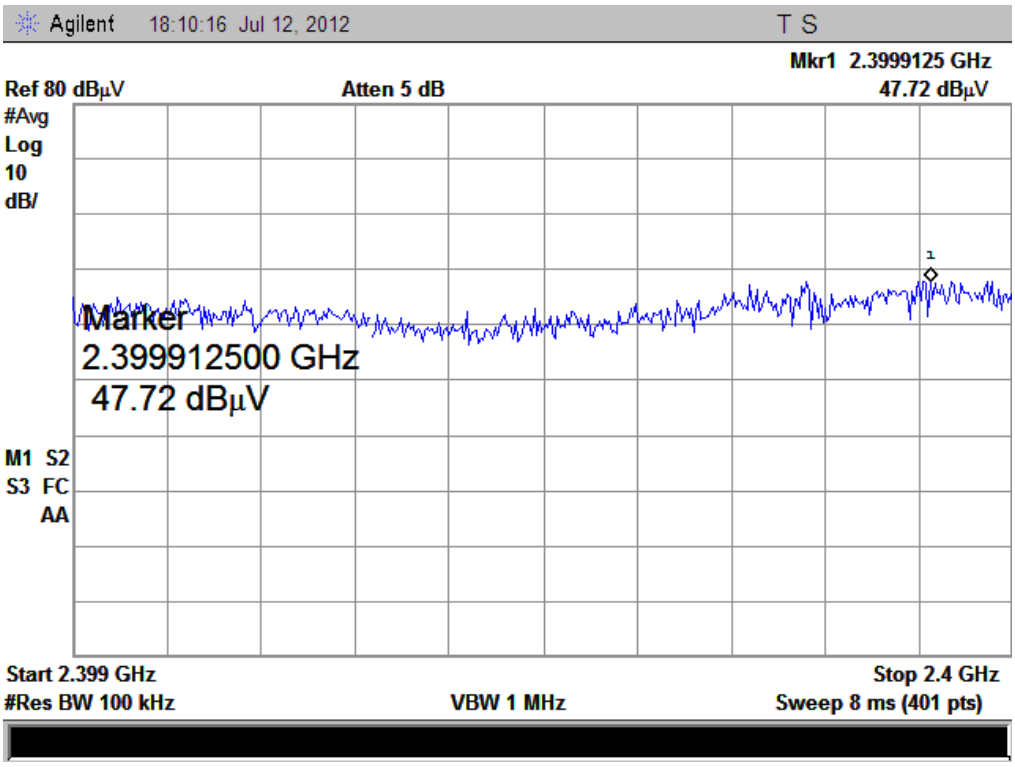
**A. Test Verdict:**

| Channel | Frequency (MHz) | Receiver Reading $U_R$ (dBuV) | | $A_T$ (dB) | $A_{Factor}$ (dB@3m) | Max. Emission E (dBμV/m) | | Limit (dBμV/m) | | Verdict |
|---|---|---|---|---|---|---|---|---|---|---|
| | | PK | AV | | | PK | AV | PK | AV | |
| 1 | 2405 | 48.51 | 47.72 | -33.36 | 27.58 | 42.73 | 41.94 | 74 | 54 | PASS |
| 16 | 2480 | 50.85 | 49.9 | -33.16 | 28.42 | 46.11 | 45.16 | 74 | 54 | PASS |

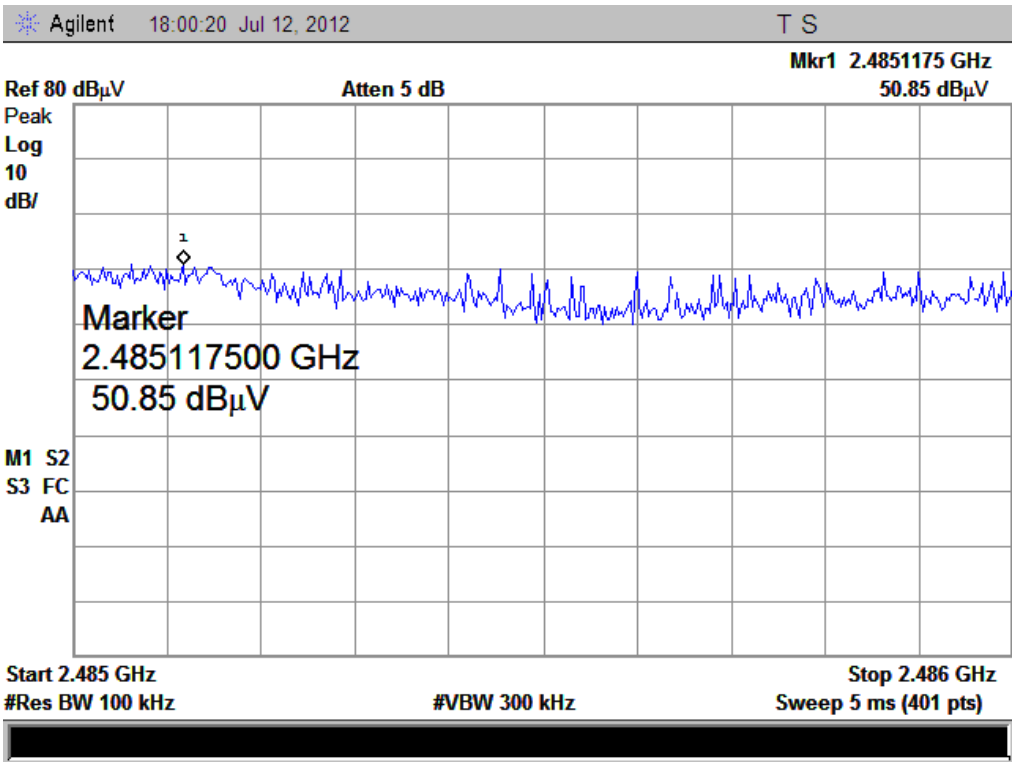
**B. Test Plots:**



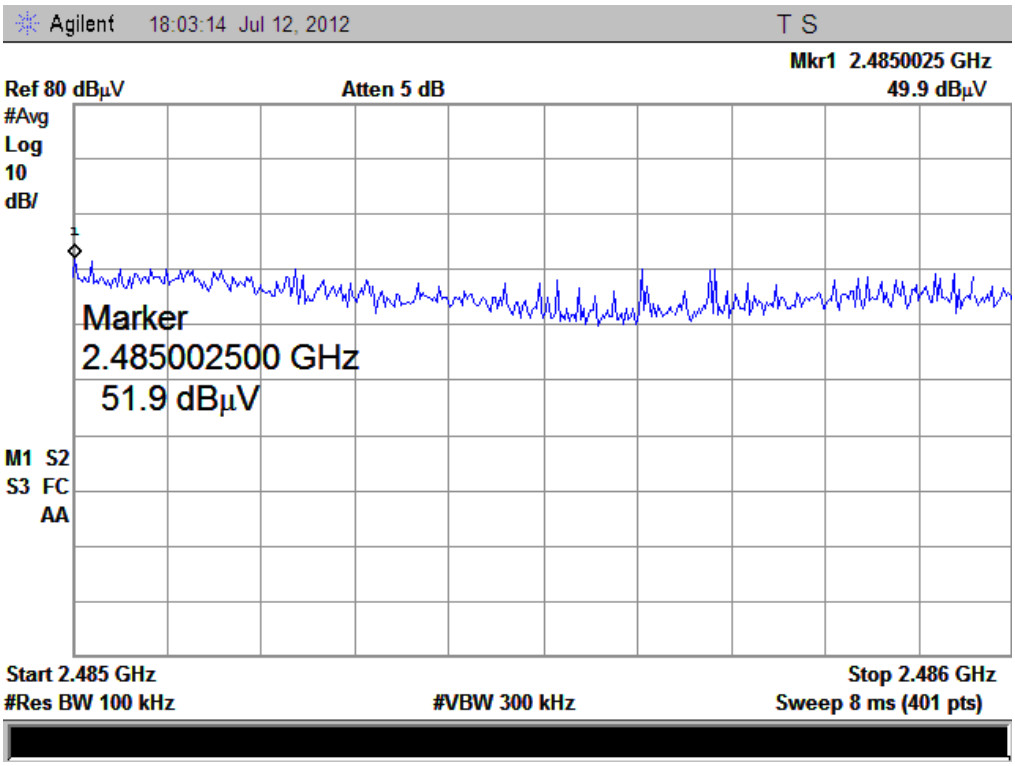

(Plot A1: Channel = 1 PEAK @ 802.11b)




(Plot A2: Channel = 1 AVG @ 802.11b)




(Plot B1: Channel = 16 PEAK @ 802.11b)




(Plot B2: Channel = 16 AVG @ 802.11b)

## 2.6. Conducted Emission

### 2.6.1. Requirement

According to FCC section 15.207, 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 within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

| Frequency range (MHz) | Conducted Limit (dBμV) | |
|---|---|---|
| | Quai-peak | Average |
| 0.15 - 0.50 | 66 to 56 | 56 to 46 |
| 0.50 - 5 | 56 | 46 |
| 5 - 30 | 60 | 50 |

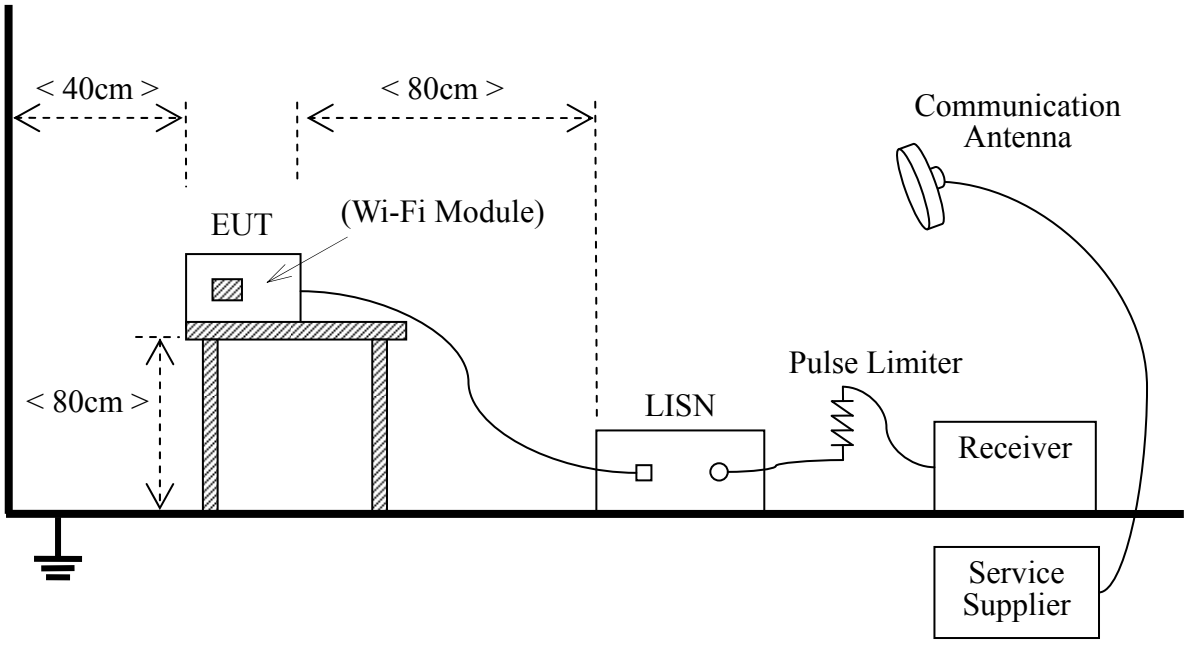
NOTE:

(a) The lower limit shall apply at the band edges.

(b) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

### 2.6.2. Test Description

**A. Test Setup:**




The Table-top EUT was placed upon a non-metallic table 0.8m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm from LISN. The set-up and test methods were according to ANSI C63.4:2009

The EUT is powered by the Battery charged with the AC Adapter which is powered by 120V, 60Hz AC mains supply. The factors of the site are calibrated to correct the reading. During the measurement, the EUT is activated and controlled by the Wi-Fi Service Supplier (SS) via a Common Antenna.

**B. Equipments List:**

| Description | Manufacturer | Model | Serial No. | Cal. Date | Cal. Due |
|---|---|---|---|---|---|
| Receiver | Agilent | E7405A | US44210471 | 2012.05 | 1year |
| LISN | Schwarzbeck | NSLK 8127 | 812744 | 2012.05 | 1year |
| Service Supplier | R&S | CMU200 | 100448 | 2012.05 | 1year |
| Pulse Limiter (20dB) | Schwarzbeck | VTSD 9561-D | 9391 | (n.a.) | (n.a.) |

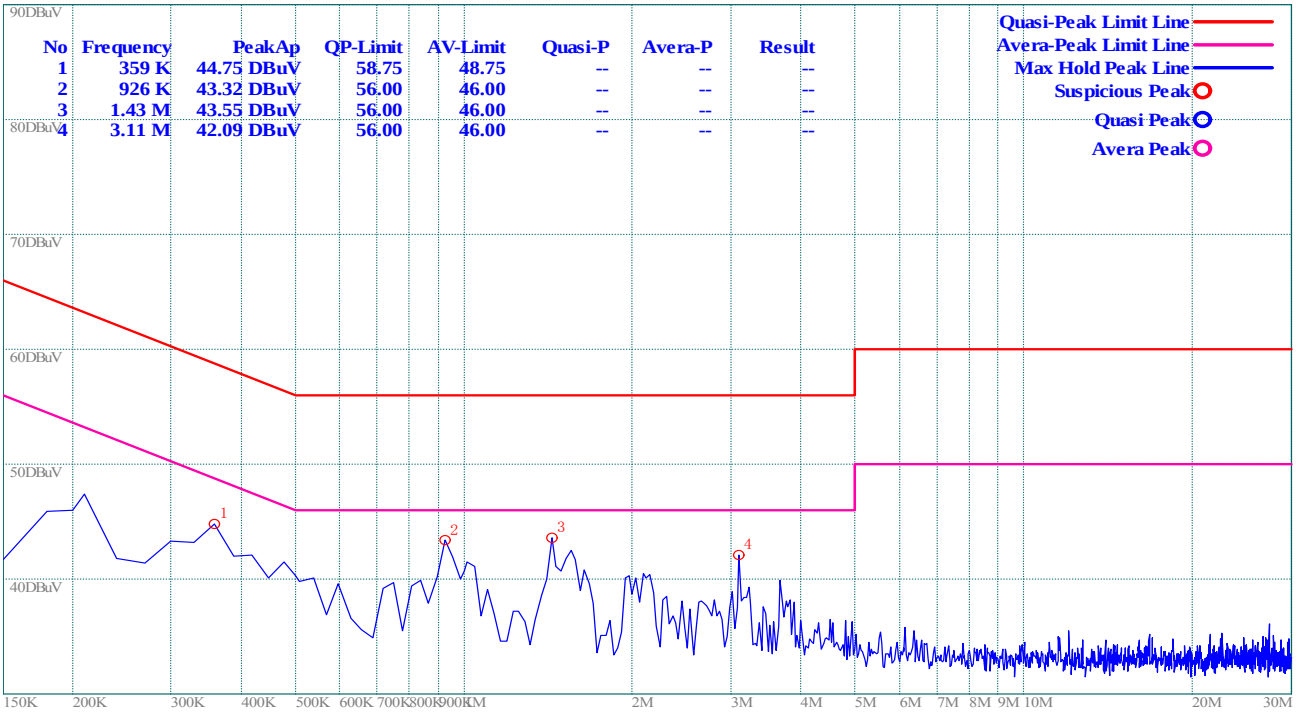
## 2.6.3. Test Result

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.

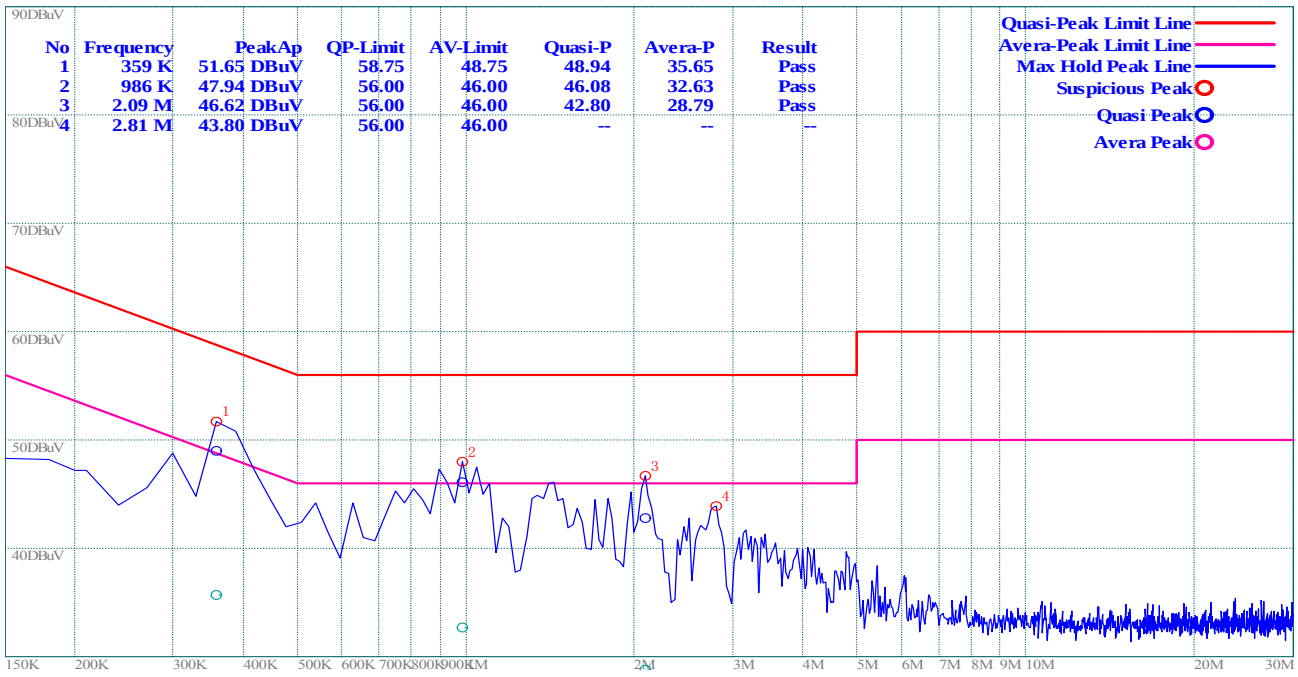
**A. Test setup:**

The EUT configuration of the emission tests is EUT + Charger.

**B. Test Plots:**




(Plot A: L Phase)




| No | Frequency | PeakAp | QP-Limit | AV-Limit | Quasi-P | Avera-P | Result |
|---|---|---|---|---|---|---|---|
| 1 | 359 K | 51.65 DBuV | 58.75 | 48.75 | 48.94 | 35.65 | Pass |
| 2 | 986 K | 47.94 DBuV | 56.00 | 46.00 | 46.08 | 32.63 | Pass |
| 3 | 2.09 M | 46.62 DBuV | 56.00 | 46.00 | 42.80 | 28.79 | Pass |
| 4 | 2.81 M | 43.80 DBuV | 56.00 | 46.00 | -- | -- | -- |

(Plot B: N Phase)

## 2.7. Radiated Emission

### 2.7.1. Requirement

According to FCC section 15.247(c), radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| Frequency (MHz) | Field Strength (μV/m) | Measurement Distance (m) |
|---|---|---|
| 0.009 - 0.490 | 2400/F(kHz) | 300 |
| 0.490 - 1.705 | 24000/F(kHz) | 30 |
| 1.705 - 30.0 | 30 | 30 |
| 30 - 88 | 100 | 3 |
| 88 - 216 | 150 | 3 |
| 216 - 960 | 200 | 3 |
| Above 960 | 500 | 3 |

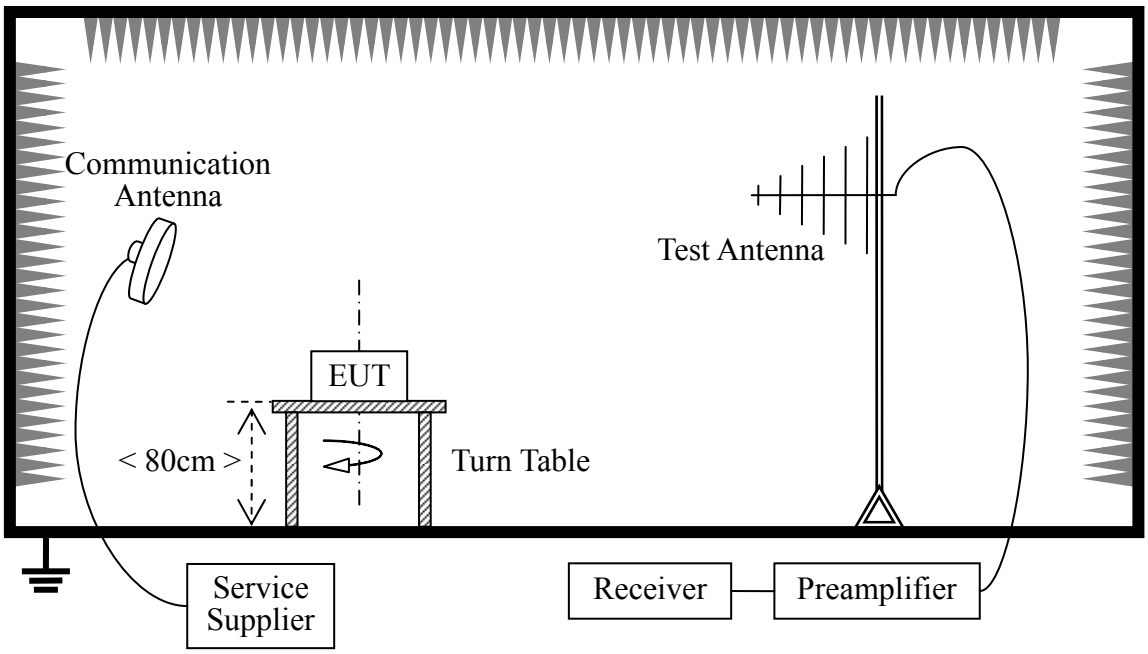
Note:

1. For Above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.
2. For above 1000MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK)

In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), also should comply with the radiated emission limits specified in Section 15.209(a)(above table)

### 2.7.2. Test Description

**A. Test Setup:**




The test site semi-anechoic chamber has met the requirement of NSA tolerance 4dB according to the standards: ANSI C63.4 (2009). The EUT was set-up on insulator 80cm above the Ground Plane. The set-up and test methods were according to ANSI C63.4.

The EUT of the EUT is powered by the Battery charged with the AC Adapter which is powered by 120V, 60Hz AC mains supply. The Module is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading. During the measurement, the EUT is activated and controlled by the Wireless Router via a Common Antenna, and is set to operate under hopping-on test mode.

For the Test Antenna:

(a) In the frequency range of 9kHz to 30MHz, magnetic field is measured with Loop Test Antenna. The Test Antenna is positioned with its plane vertical at 1m distance from the EUT. The center of the Loop Test Antenna is 1m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.
(b) In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength. The emission levels at both horizontal and vertical polarizations should be tested.

**B. Equipments List:**

| Description | Manufacturer | Model | Serial No. | Cal. Date | Cal. Due |
|---|---|---|---|---|---|
| System Simulator | R&S | CMU200 | 100448 | 2012.05 | 1year |
| Receiver | Agilent | E7405A | US44210471 | 2012.05 | 1year |
| Semi-Anechoic Chamber | Albatross | 9m*6m*6m | (n.a.) | 2012.05 | 2year |
| Test Antenna - Bi-Log | Schwarzbeck | VULB 9163 | 9163-274 | 2012.05 | 1year |
| Test Antenna - Horn | Schwarzbeck | BBHA 9120C | 9120C-384 | 2012.05 | 1year |
| Test Antenna - circular | R&S | AC004R1 | 0749.3000.03 | 2012.05 | 1year |

| Description | Manufacturer | Model | Serial No. | Cal. Date | Cal. Due |
|---|---|---|---|---|---|
| Test Antenna - Horn | R&S | HL050S7 | 71688 | 2012.05 | 1year |
| Test Antenna - Loop | Schwarzbeck | FMZB 1519 | 1519-022 | 2012.05 | 1year |

### 2.7.3. Test Result

According to ANSI C63.4 selection 4.2.2, because of peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak (or average) detector, the measurement data from a spectrum analyzer peak detector will represent the worst-case results, if the peak measured value complies with the quasi-peak limit, it is unnecessary to perform an quasi-peak measurement.

The measurement results are obtained as below:

$E\ [dB\mu V/m] = U_R + A_T + A_{Factor}\ [dB]$; $A_T = L_{Cable\ loss}\ [dB] - G_{preamp}\ [dB]$

$A_T$: Total correction Factor except Antenna

$U_R$: Receiver Reading

$G_{preamp}$: Preamplifier Gain

$A_{Factor}$: Antenna Factor at 3m

During the test, the total correction Factor AT and $A_{Factor}$ were built in test software.

Note: All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

#### 2.7.3.1. DSSS Test mode

**A. Test Verdict for Harmonics:**

The Fundamental Emissions

The field strength of {Fundamental Emission} listed below is recorded, and used in the next table.

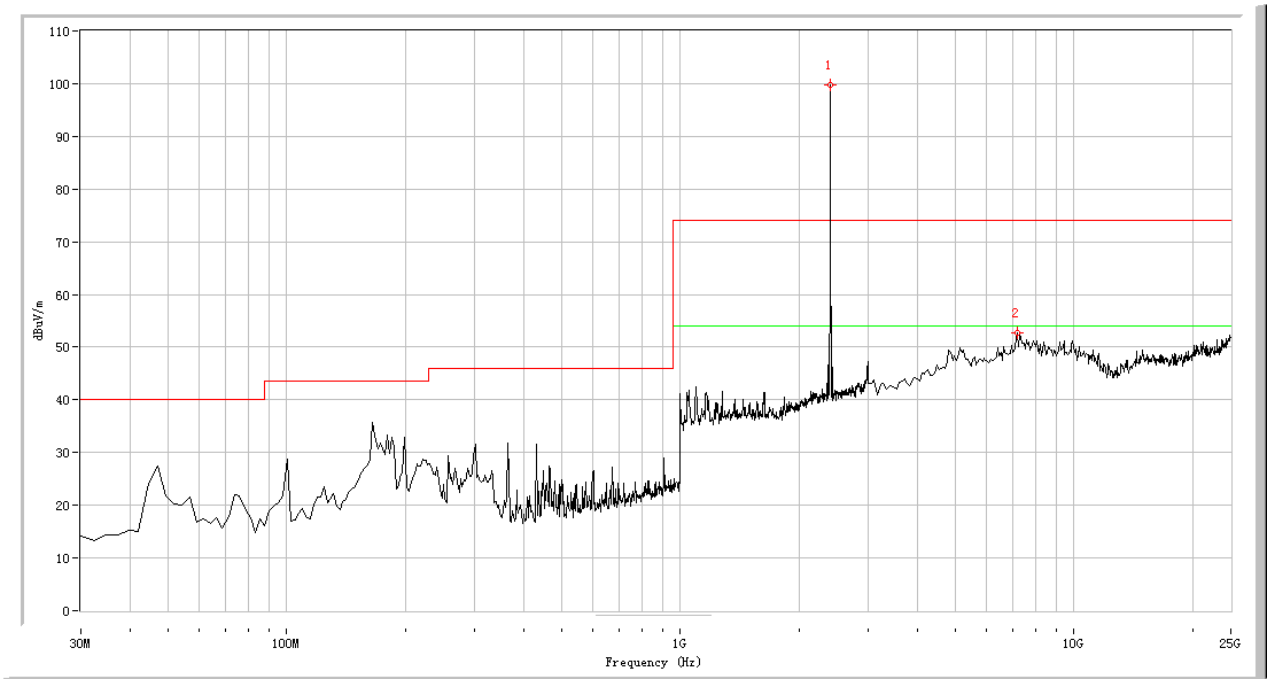
| Channel | Frequency (MHz) | Fundamental Emission (dBμV/m) | | Antenna Polarization | Refer to Plot |
|---|---|---|---|---|---|
| | | PK | AV | | |
| 1 | 2405 | 99.66 | N/A | Horizontal | Plot A.2 |
| | | 98.73 | N/A | Vertical | Plot A.3 |
| 8 | 2440 | 98.73 | N/A | Horizontal | Plot B.2 |
| | | 98.58 | N/A | Vertical | Plot B.3 |
| 16 | 2480 | 99.00 | N/A | Horizontal | Plot C.2 |
| | | 99.39 | N/A | Vertical | Plot C.3 |

Also refer to following plots for the emissions falling in the restricted bands.

**B. Test Plots for the Whole Measurement Frequency Range:**

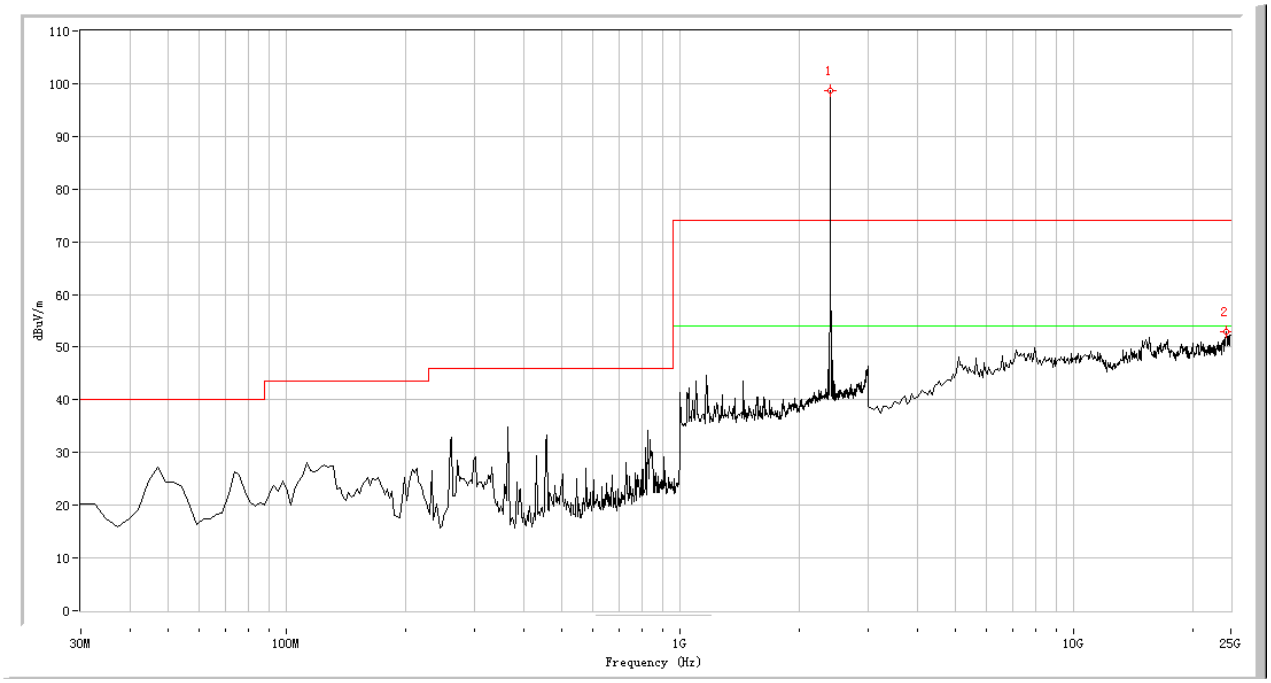
Plots for Channel = 1


(Plot A.1: 9kHz to 30MHz)




| Fre. (MHz) | Pk | QP | AV | Limit-PK | Limit-QP | Limit-AV | Antenna |
|---|---|---|---|---|---|---|---|
| 2401.46 | 99.66 | N.A | N.A | 74.0 | N.A | 54.0 | Horizontal |
| 7169.56 | 52.67 | N.A | N.A | 74.0 | N.A | 54.0 | Horizontal |

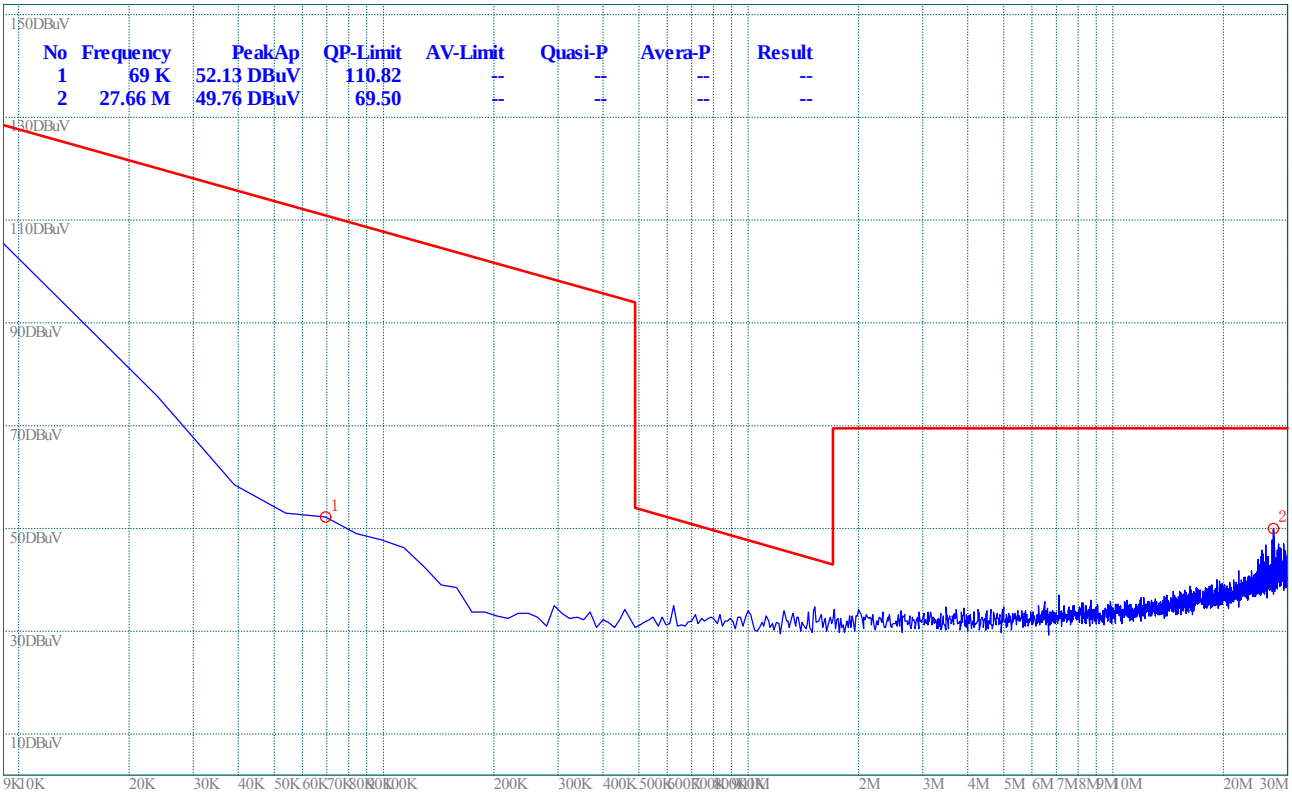
(Plot A.2: Antenna Horizontal, 30MHz to 25GHz)



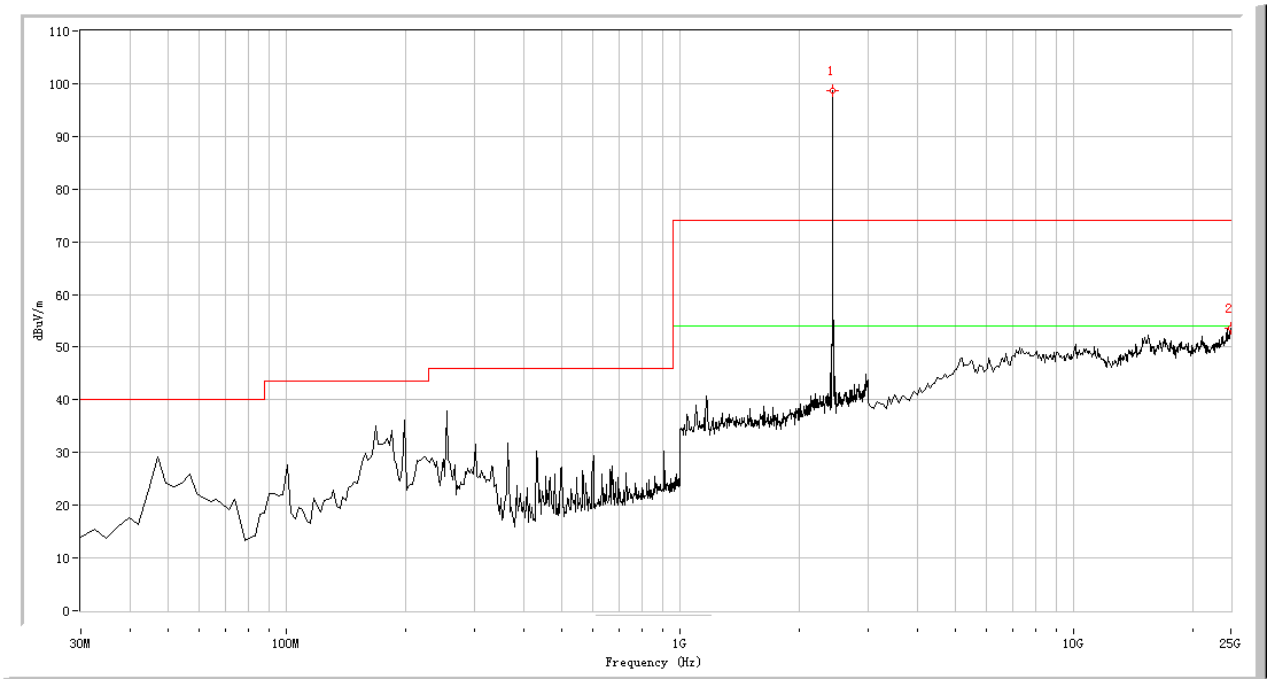

| Fre. (MHz) | Pk | QP | AV | Limit-PK | Limit-QP | Limit-AV | Antenna |
|---|---|---|---|---|---|---|---|
| 2401.496 | 98.73 | N.A | N.A | 74.0 | N.A | 54.0 | Vertical |
| 24396.509 | 52.97 | N.A | N.A | 74.0 | N.A | 54.0 | Vertical |

(Plot A.3: Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 8

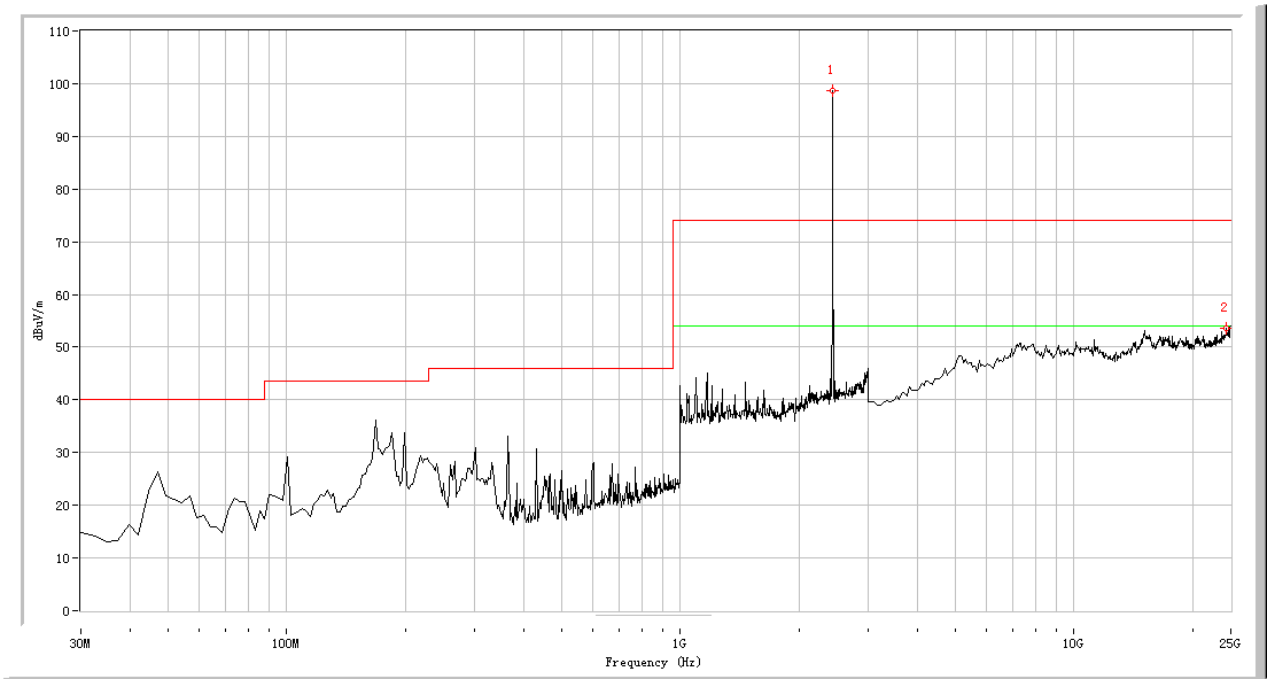



(Plot B.1: 9kHz to 30MHz)




| Fre. (MHz) | Pk | QP | AV | Limit-PK | Limit-QP | Limit-AV | Antenna |
|---|---|---|---|---|---|---|---|
| 2436.409 | 98.73 | N.A | N.A | 74.0 | N.A | 54.0 | Horizontal |
| 24945.137 | 53.61 | N.A | N.A | 74.0 | N.A | 54.0 | Horizontal |

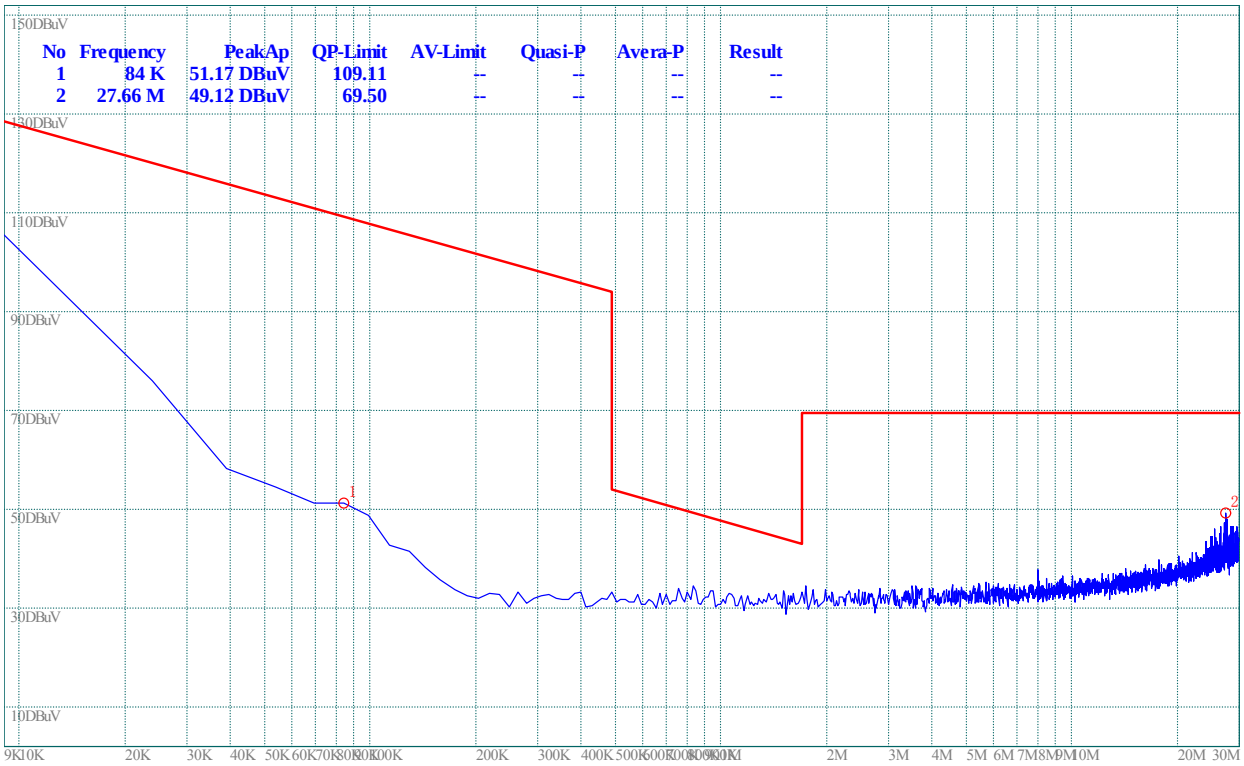
(Plot B.2: Antenna Horizontal, 30MHz to 25GHz)



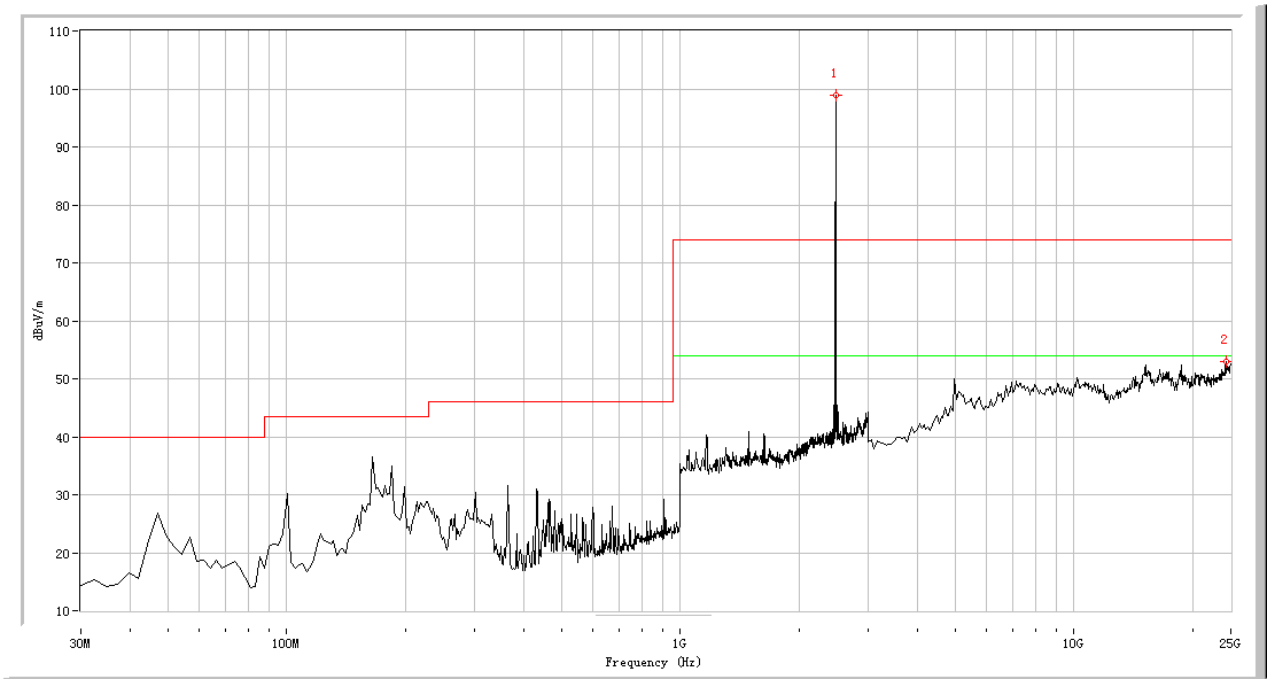

| Fre. (MHz) | Pk | QP | AV | Limit-PK | Limit-QP | Limit-AV | Antenna |
|---|---|---|---|---|---|---|---|
| 2436.409 | 98.58 | N.A | N.A | 74.0 | N.A | 54.0 | Vertical |
| 24396.509 | 53.59 | N.A | N.A | 74.0 | N.A | 54.0 | Vertical |

(Plot B.3: Antenna Vertical, 30MHz to 25GHz)

Plot for Channel = 16

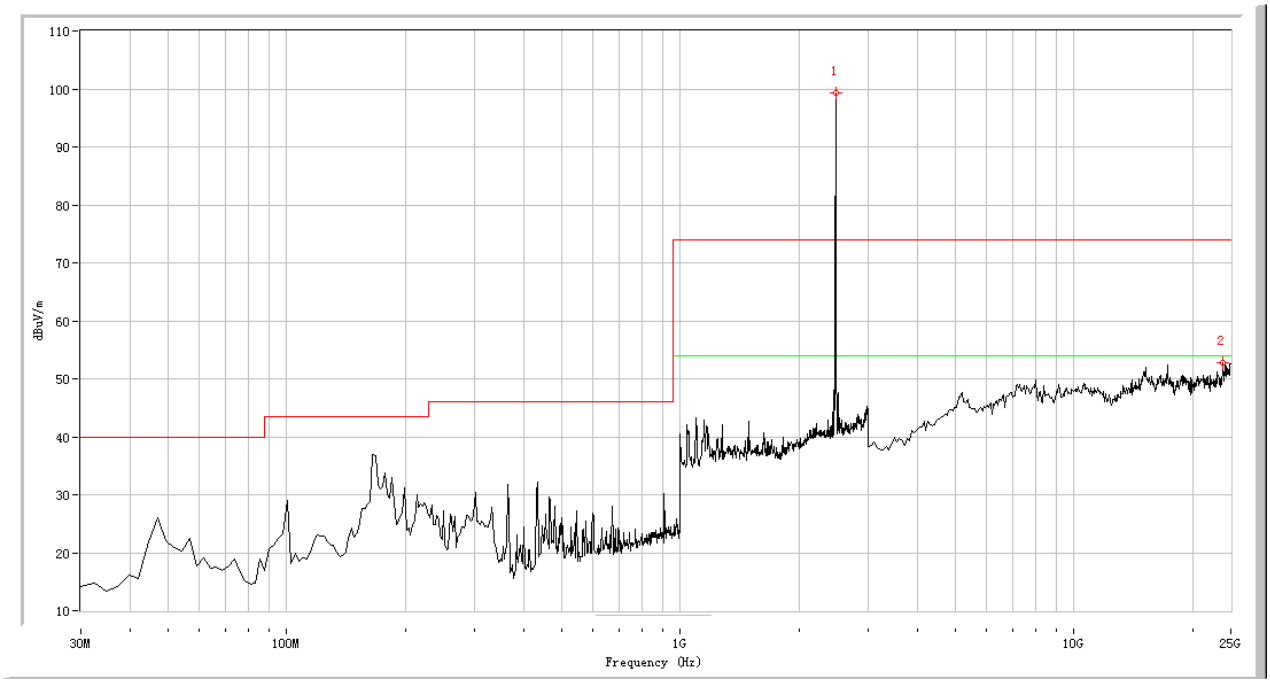



(Plot C.1: 9kHz to 30MHz)




| Fre. (MHz) | Pk | QP | AV | Limit-PK | Limit-QP | Limit-AV | Antenna |
|---|---|---|---|---|---|---|---|
| 2476.309 | 99.00 | N.A | N.A | 74.0 | N.A | 54.0 | Horizontal |
| 24396.509 | 53.01 | N.A | N.A | 74.0 | N.A | 54.0 | Horizontal |

(Plot C.2: Antenna Horizontal, 30MHz to 25GHz)




| Fre. (MHz) | Pk | QP | AV | Limit-PK | Limit-QP | Limit-AV | Antenna |
|---|---|---|---|---|---|---|---|
| 2476.309 | 99.39 | N.A | N.A | 74.0 | N.A | 54.0 | Vertical |
| 23902.743 | 52.77 | N.A | N.A | 74.0 | N.A | 54.0 | Vertical |

(Plot C.5: Antenna Vertical, 30MHz to 25GHz)

** END OF REPORT **