

# FCC Radio TEST Report

## FCC ID: VGUZWM2

This report concerns (check one) : ☒ Original Grant ☐ Class I Change

**Issued Date** : Oct. 12, 2007

**Report No.** : 0708043

**Equipment** : Wireless Messenger 2

**Model Name** : Z2

**Applicant** : Zipit Wireless, Inc.

**Address** : 200 North Main St. Greenville, SC 29601

**Tested by:**

Neutron Engineering Inc. EMC Laboratory


**Data of Test:**

Aug. 11, 2007 ~ Sep. 26, 2007


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**Declaration**

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## **1. CERTIFICATION**

Equipment : Wireless Messenger 2  
Trade Name : Zipit  
Model Name : Z2  
Applicant : Zipit Wireless, Inc. (Certificate and Report Holder)  
Data of Test : Aug. 11, 2007 ~ Sep. 26, 2007  
Test Item : ENGINEERING SAMPLE  
Standards : FCC Part15, Subpart C(15.247)/ ANCI C63.4 : 2003

The above equipment has been tested and found compliance with the requirement of the relative standards by Neutron Engineering Inc. EMC Laboratory.  
The test data, data evaluation, and equipment configuration contained in our test report (Ref No. NEI-FCCP-1-0708043) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of NVLAP and TAF according to the ISO-17025 quality assessment standard and technical standard(s).

## 2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

| FCC Part15, Subpart C                |                                     |          |        |
|--------------------------------------|-------------------------------------|----------|--------|
| Standard Section                     | Test Item                           | Judgment | Remark |
| 15.207                               | Conducted Emission                  | PASS     |        |
| 15.247<br>(c)                        | Antenna conducted Spurious Emission | PASS     |        |
| 15.247<br>(a)(2)                     | 6dB Bandwidth                       | PASS     |        |
| 15.247<br>(b)                        | Peak Output Power                   | PASS     |        |
| 15.247<br>(c)                        | Radiated Spurious Emission          | PASS     |        |
| 15.247<br>(d)                        | Power Spectral Density              | PASS     |        |
| 15.203                               | Antenna Requirement                 | PASS     |        |
| 1.1307<br>1.1310<br>2.1091<br>2.1093 | RF Exposure Compliance              | PASS     |        |

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

## 2.1 TEST FACILITY

The test facilities used to collect the test data in this report is **C01/OS02** at the location of No.132-1, Lane 329, Sec. 2, Palain Road, Shijr City, Taipei, Taiwan.

Neutron's test firm number is: 95335.

## 2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$ , where expended uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately **95 %**.

### A. Conducted Measurement :

| Test Site | Method | Measurement Frequency Range | U , (dB) | NOTE |
|-----------|--------|-----------------------------|----------|------|
| C01       | ANSI   | 150 KHz ~ 30MHz             | 1.94     |      |

### B. Radiated Measurement :

| Test Site | Method | Measurement Frequency Range | Ant. H / V | U , (dB) | NOTE |
|-----------|--------|-----------------------------|------------|----------|------|
| OS-01     | ANSI   | 30MHz ~ 200MHz              | V          | 3.82     |      |
|           |        | 30MHz ~ 200MHz              | H          | 3.60     |      |
|           |        | 200MHz ~ 1,000MHz           | V          | 3.86     |      |
|           |        | 200MHz ~ 1,000MHz           | H          | 3.94     |      |
| OS-02     | ANSI   | 30MHz ~ 200MHz              | V          | 2.48     |      |
|           |        | 30MHz ~ 200MHz              | H          | 2.16     |      |
|           |        | 200MHz ~ 1,000MHz           | V          | 2.50     |      |
|           |        | 200MHz ~ 1,000MHz           | H          | 2.66     |      |

### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

|  |  |  |
|--|--|--|
| Equipment  | Wireless Messenger 2                       |  |
| Trade Name   | Zipit                                      |  |
| Model Name   | Z2   |  |
| OEM Brand/Model No.  | N/A  |  |
| Model Difference   | N/A  |  |
| Product Description  | The EUT is a Wireless Messenger 2.         |  |
|  | Operation Frequency:                       | 2412~2462 MHz  |
|  | Product Class:                             | Class 1  |
|  | Receiver Class:                            | Class 3  |
|  | Modulation Type:                           | DSSS & OFDM  |
|  | Bit Rate of Transmitter                    | 802.11b:11/5.5/2/1Mbps<br>802.11g:<br>54/48/36/24/18/12/9/6 Mbps |
|  | Number Of Channel                          | 11 CH, Please see Note 2.  |
|  | Antenna Designation:                       | Please see Note 3.   |
|  | Antenna Gain(Peak)                         |  |
|  | Output Power:                              | 11B:16.83dBm, 11G:14.59dBm                                       |
| Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual. |  |  |
| Channel List   | Please refer to the Note 2.                |  |
| Power Source   | DC Voltage supplied from AC/DC adapter.    |  |
| Power Rating   | I/P 100-240VAC~ 50/60Hz, 0.3A O/P 5V, 1.2A |  |
| Connecting I/O Port(s)   | Please refer to the User's Manual          |  |

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- 2.

| Channel List |                 |         |                 |         |                 |         |                 |
|--------------|-----------------|---------|-----------------|---------|-----------------|---------|-----------------|
| Channel      | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 01           | 2412            | 04      | 2427            | 07      | 2442            | 10      | 2457            |
| 02           | 2417            | 05      | 2432            | 08      | 2447            | 11      | 2462            |
| 03           | 2422            | 06      | 2437            | 09      | 2452            |         |                 |

3. Table for Filed Antenna

| Ant. | Brand  | Model Name    | Antenna Type   | Connector | Gain (dBi) |
|------|--------|---------------|----------------|-----------|------------|
| 1    | WIESON | G9851B002-022 | Dipole Antenna | U.FL      | 2.72       |



### 3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

| Pretest Mode | Description         |
|--------------|---------------------|
| Mode 1       | TX CH01 (With Jump) |
| Mode 2       | TX CH01(W/O Jump)   |

The worst emission was found in Mode 1. The final test was executed under test mode with highest emission and recorded in the report individually.

| For Conducted Test |             |
|--------------------|-------------|
| Final Test Mode    | Description |
| Mode 1             | TX CH06     |

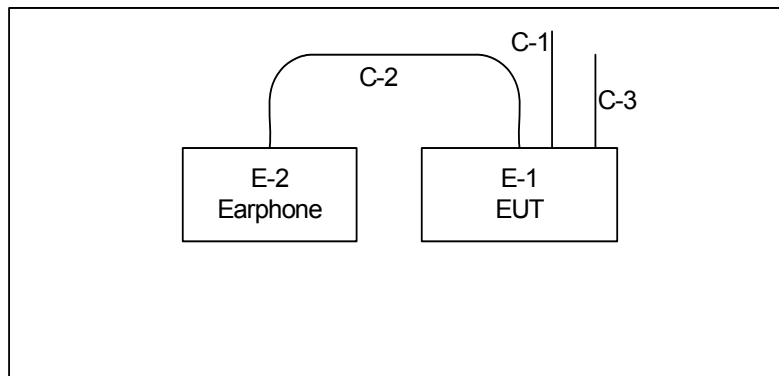
| For Radiated Test |             |
|-------------------|-------------|
| Final Test Mode   | Description |
| Mode 1            | TX CH01     |
| Mode 2            | TX CH06     |
| Mode 3            | TX CH11     |

### 3.3 TABLE OF PARAMETERS OF TEST SOFTWARE SETTING

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of WLAN

| Test Software Version | Class C Test |          |          |
|-----------------------|--------------|----------|----------|
| Frequency (MHz)       | 2412 MHz     | 2437 MHz | 2462 MHz |
| IEEE 802.11b DSSS     | 15           | 15       | 15       |
| IEEE 802.11g OFDM     | 15           | 15       | 15       |

### 3.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



C-1 Power Line  
C-2 Audio Cable  
C-3 Docket Cable

### 3.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| Item | Equipment            | Mfr/Brand | Model/Type No. | FCC ID  | Series No. | Note |
|------|----------------------|-----------|----------------|---------|------------|------|
| E-1  | Wireless Messenger 2 | Zipit     | Z2             | VGUZWM2 | N/A        | EUT  |
| E-2  | Earphone             | N/A       | DT-602MV       | N/A     | N/A        |      |
|      |                      |           |                |         |            |      |

| Item | Shielded Type | Ferrite Core | Length | Note |
|------|---------------|--------------|--------|------|
| C-1  | NO            | NO           | 1.8M   |      |
| C-2  | NO            | NO           | 1.8M   |      |
| C-3  | NO            | YES          | 0.1M   |      |

**Note:**

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

#### 4. EMC EMISSION TEST

##### 4.1 CONDUCTED EMISSION MEASUREMENT

##### 4.1.1 POWER LINE CONDUCTED EMISSION LIMITS (Frequency Range 150KHz-30MHz)

| FREQUENCY (MHz) | Class A (dBuV) |         | Class B (dBuV) |           | Standard |
|-----------------|----------------|---------|----------------|-----------|----------|
|                 | Quasi-peak     | Average | Quasi-peak     | Average   |          |
| 0.15 -0.5       | 79.00          | 66.00   | 66 - 56 *      | 56 - 46 * | CISPR    |
| 0.50 -5.0       | 73.00          | 60.00   | 56.00          | 46.00     | CISPR    |
| 5.0 -30.0       | 73.00          | 60.00   | 60.00          | 50.00     | CISPR    |

|           |       |       |           |           |     |
|-----------|-------|-------|-----------|-----------|-----|
| 0.15 -0.5 | 79.00 | 66.00 | 66 - 56 * | 56 - 46 * | FCC |
| 0.50 -5.0 | 73.00 | 60.00 | 56.00     | 46.00     | FCC |
| 5.0 -30.0 | 73.00 | 60.00 | 60.00     | 50.00     | FCC |

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " \* " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

##### 4.1.2 MEASUREMENT INSTRUMENTS LIST

| Item | Kind of Equipment | Manufacturer    | Type No.   | Serial No. | Calibrated until |
|------|-------------------|-----------------|------------|------------|------------------|
| 1    | LISN              | Rolf Heine      | NNB-2/16Z  | 98053      | Dec. 27, 2007    |
| 2    | 4L-V-LISN         | Rolf Heine      | NNB-4/63TL | 02/10040   | Apr. 08, 2008    |
| 3    | Pulse Limiter     | Electro-Metrics | EM-7600    | 112644     | Nov. 28, 2007    |
| 4    | 50Ω Terminator    | N/A             | N/A        | N/A        | May.13, 2009     |
| 5    | Test Cable        | N/A             | C01        | N/A        | Nov. 28, 2007    |
| 6    | EMI Test Receiver | R&S             | ESCI       | 100082     | Mar. 08, 2008    |

Remark: " N/A" denotes No Model No. , Serial No. or No Calibration specified.

The following table is the setting of the receiver

| Receiver Parameters | Setting  |
|---------------------|----------|
| Attenuation         | 10 dB    |
| Start Frequency     | 0.15 MHz |
| Stop Frequency      | 30 MHz   |
| IF Bandwidth        | 9 kHz    |

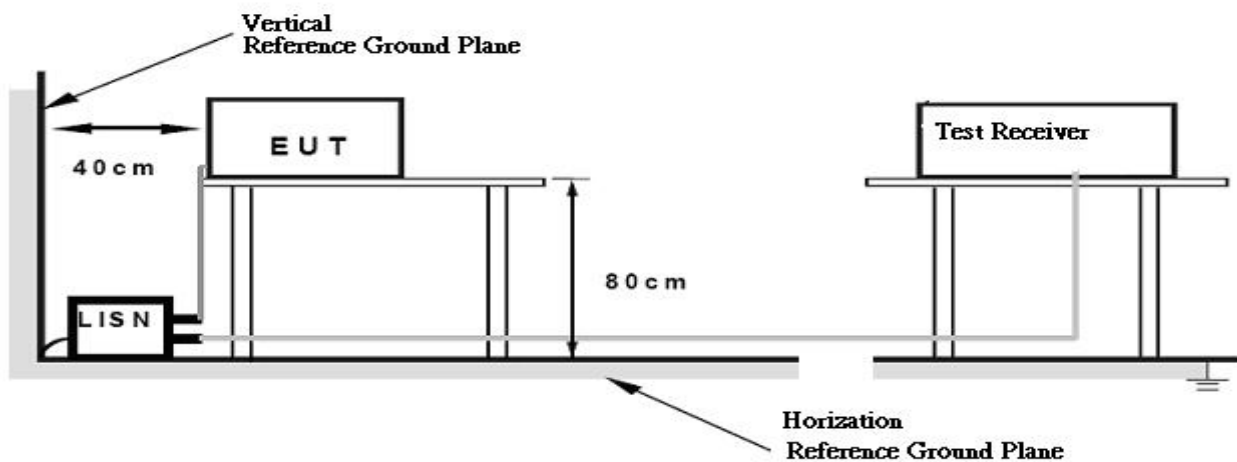
#### 4.1.3 TEST PROCEDURE

- a. The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.1.5 TEST SETUP



#### 4.1.6 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

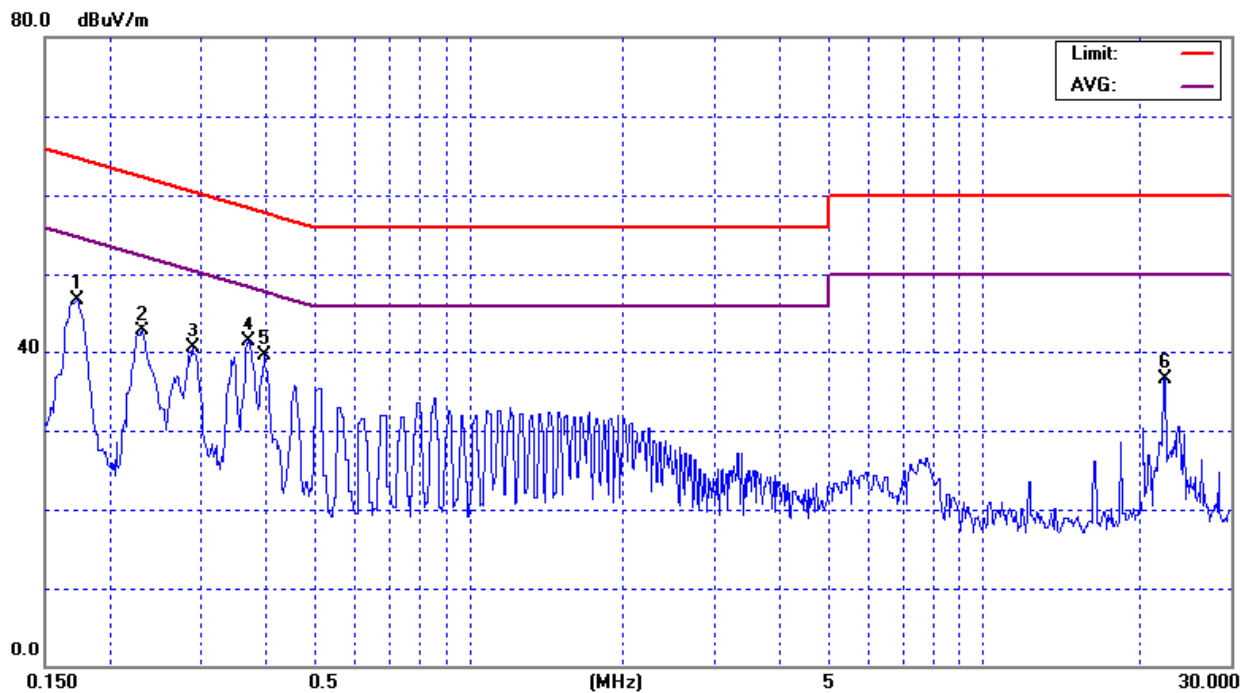
#### 4.1.7 TEST RESULTS

|               |                      |                     |              |
|---------------|----------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2 | Model Name :        | Z2           |
| Temperature : | 26 °C                | Relative Humidity : | 57 %         |
| Pressure :    | 1009 hPa             | Test Power :        | AC 120V/60Hz |
| Test Mode :   | TX CH06              |                     |              |

| Freq.<br>(MHz) | Terminal<br>L/N | Measured(dBuV) |         | Limits(dBuV) |         | Margin<br>(dB) | Note |
|----------------|-----------------|----------------|---------|--------------|---------|----------------|------|
|                |                 | QP-Mode        | AV-Mode | QP-Mode      | AV-Mode |                |      |
| 0.17           | Line            | 46.65          | *       | 64.81        | 54.81   | -18.16         | (QP) |
| 0.23           | Line            | 42.62          | *       | 62.41        | 52.41   | -19.79         | (QP) |
| 0.29           | Line            | 40.46          | *       | 60.54        | 50.54   | -20.08         | (QP) |
| 0.37           | Line            | 41.39          | *       | 58.49        | 48.49   | -17.10         | (QP) |
| 0.40           | Line            | 39.45          | *       | 57.91        | 47.91   | -18.46         | (QP) |
| 22.55          | Line            | 36.60          | *       | 60.00        | 50.00   | -23.40         | (QP) |

#### Remark

- (1) All readings are QP Mode value unless otherwise stated AVG in column of Note. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a “\*” marked in AVG Mode column of Interference Voltage Measured.
- (2) Measuring frequency range from 150KHz to 30MHz.

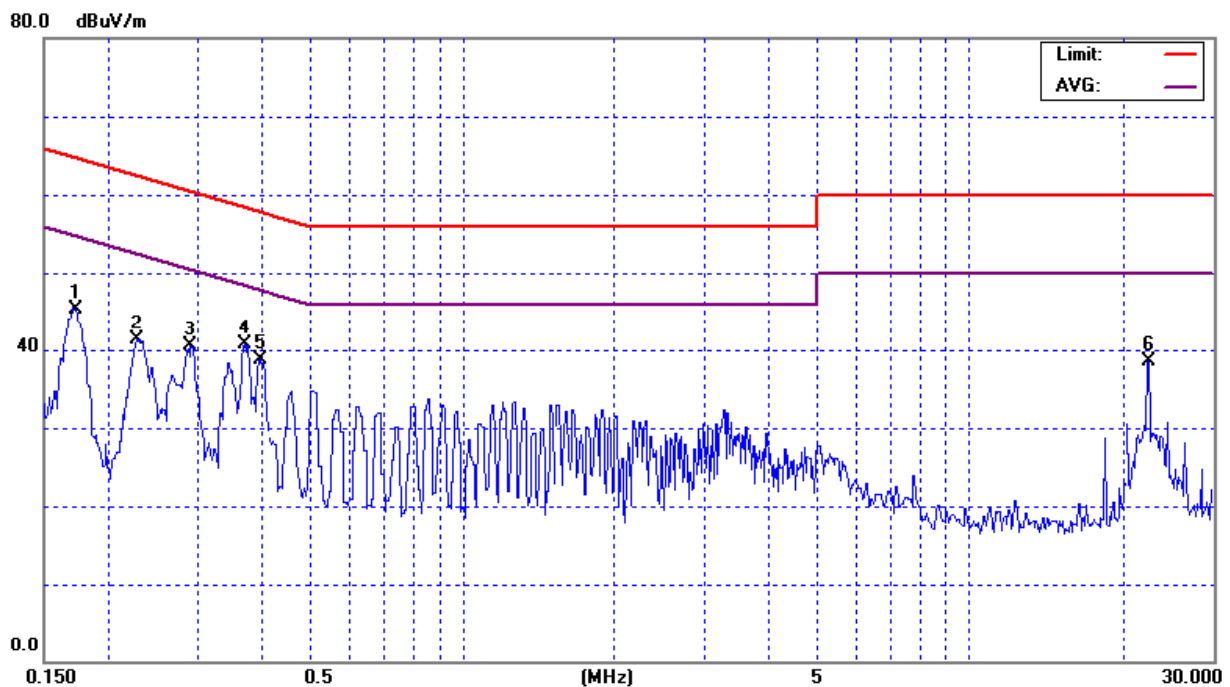


|               |                      |                     |              |
|---------------|----------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2 | Model Name :        | Z2           |
| Temperature : | 26 °C                | Relative Humidity : | 57 %         |
| Pressure :    | 1009 hPa             | Test Power :        | AC 120V/60Hz |
| Test Mode :   | TX CH06              |                     |              |

| Freq.<br>(MHz) | Terminal<br>L/N | Measured(dBuV) |         | Limits(dBuV) |         | Margin<br>(dB) | Note |
|----------------|-----------------|----------------|---------|--------------|---------|----------------|------|
|                |                 | QP-Mode        | AV-Mode | QP-Mode      | AV-Mode |                |      |
| 0.17           | Neutral         | 45.27          | *       | 64.84        | 54.84   | -19.57         | (QP) |
| 0.23           | Neutral         | 41.37          | *       | 62.53        | 52.53   | -21.16         | (QP) |
| 0.29           | Neutral         | 40.46          | *       | 60.50        | 50.50   | -20.04         | (QP) |
| 0.38           | Neutral         | 40.64          | *       | 58.49        | 48.49   | -17.85         | (QP) |
| 0.40           | Neutral         | 38.73          | *       | 57.88        | 47.88   | -19.15         | (QP) |
| 22.55          | Neutral         | 38.43          | *       | 60.00        | 50.00   | -21.57         | (QP) |

**Remark**

- (1) All readings are QP Mode value unless otherwise stated AVG in column of "Note". If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a " \* " marked in AVG Mode column of Interference Voltage Measured.
- (2) Measuring frequency range from 150KHz to 30MHz.



## 4.2 RADIATED EMISSION MEASUREMENT

### 4.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

| Frequencies<br>(MHz) | Field Strength<br>(micorvolts/meter) | Measurement Distance<br>(meters) |
|----------------------|--------------------------------------|----------------------------------|
| 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                                |

### LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

| FREQUENCY (MHz) | Class A (dBuV/m) (at 3m) |         | Class B (dBuV/m) (at 3m) |         |
|-----------------|--------------------------|---------|--------------------------|---------|
|                 | PEAK                     | AVERAGE | PEAK                     | AVERAGE |
| Above 1000      | 80                       | 60      | 74                       | 54      |

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15B.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

### FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

| Highest frequency generated or<br>Upper frequency of<br>measurement used in the device<br>or on which the device operates<br>or tunes (MHz) | Range (MHz)  |
|---|--|
| Below 1.705   | 30   |
| 1.705 – 108   | 1000   |
| 108 – 500   | 2000   |
| 500 – 1000  | 5000   |
| Above 1000  | 5 <sup>th</sup> harmonic of the highest frequency or 40 GHz,<br>whichever is lower |



#### 4.2.2 MEASUREMENT INSTRUMENTS LIST

| Item | Kind of Equipment       | Manufacturer     | Type No.     | Serial No. | Calibrated until |
|------|-------------------------|------------------|--------------|------------|------------------|
| 1    | Log-Bicon Antenna       | Schwarzbeck      | VULB 9161    | 4022       | Jun. 13, 2008    |
| 2    | Test Cable              | N/A              | 10M_OS01     | N/A        | Nov. 28, 2007    |
| 3    | Test Cable              | N/A              | OS01-1/-2    | N/A        | Nov. 28, 2007    |
| 4    | Pre-Amplifier           | Anritsu          | MH648A(OS02) | M10061     | Nov. 28, 2007    |
| 5    | Pre-Amplifier           | Agilent          | 8449B        | 3008A01714 | May, 14, 2008    |
| 6    | Spectrum Analyzer       | R&S              | FSP_40       | 100129     | Aug, 16, 2008    |
| 7    | Test Receiver           | MEB              | SMV41        | 130        | Jun. 21, 2008    |
| 8    | Horn Antenna            | Schwarzbeck      | BBHA9120D    | 9120D-546  | Jun. 03, 2008    |
| 9    | Antenna Mast            | Chance Most      | CMTB-1.5     | N/A        | N/A              |
| 10   | Turn Table              | Chance Most      | CMTB-1.5     | N/A        | N/A              |
| 11   | Loop Ant                | EMCO             | 6502         | 00042960   | Jan. 13, 2008    |
| 12   | Horn Antenna            | EMCO             | 3115         | 9120D-325  | Aug. 19, 2008    |
| 13   | Microwave Pre-amplifier | Agilent          | 8449B        | 3008A01714 | May. 14, 2008    |
| 14   | Microflex Cable         | United Microwave | 57793        | 1m         | May. 13, 2008    |
| 15   | Microflex Cable         | United Microwave | A30A30-5006  | 10M        | Jul. 24, 2008    |

Remark: " N/A" denotes No Model Name / Serial No. and No Calibration specified.

| Spectrum Parameter                    | Setting  |
|---------------------------------------|--|
| Attenuation                           | Auto   |
| Start Frequency                       | 1000 MHz                                       |
| Stop Frequency                        | 10th carrier harmonic                          |
| RB / VB (emission in restricted band) | 1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average |
| RB / VB (other emission)              | 100KHz / 100KHz for peak                       |

| Receiver Parameter     | Setting                          |
|------------------------|----------------------------------|
| Attenuation            | Auto                             |
| Start ~ Stop Frequency | 9kHz~150kHz / RB 200Hz for QP    |
| Start ~ Stop Frequency | 150kHz~30MHz / RB 9kHz for QP    |
| Start ~ Stop Frequency | 30MHz~1000MHz / RB 120kHz for QP |

#### 4.2.3 TEST PROCEDURE

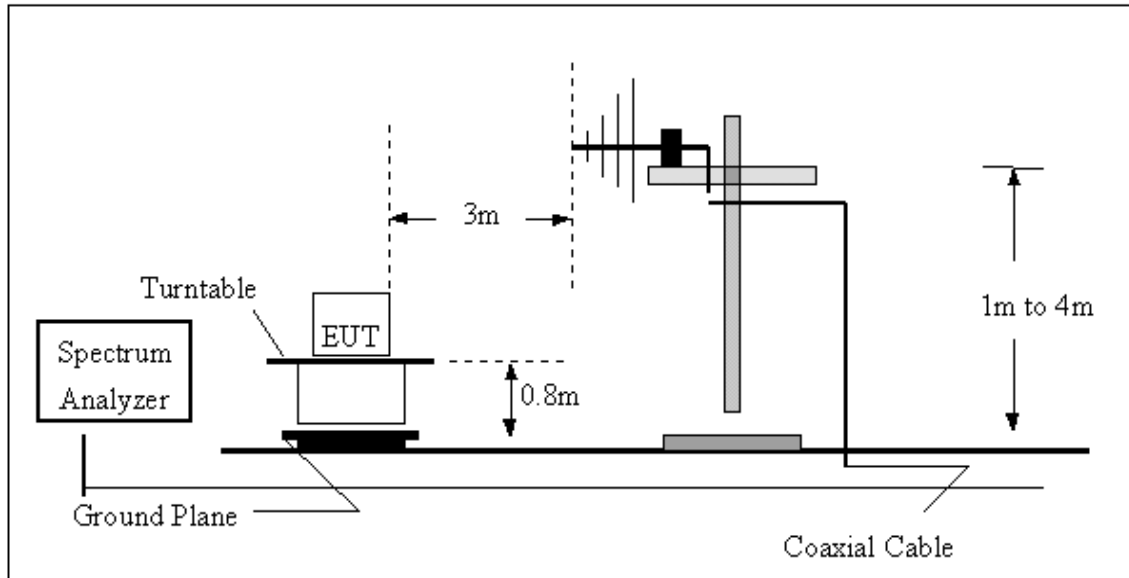
- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

#### 4.2.4 DEVIATION FROM TEST STANDARD

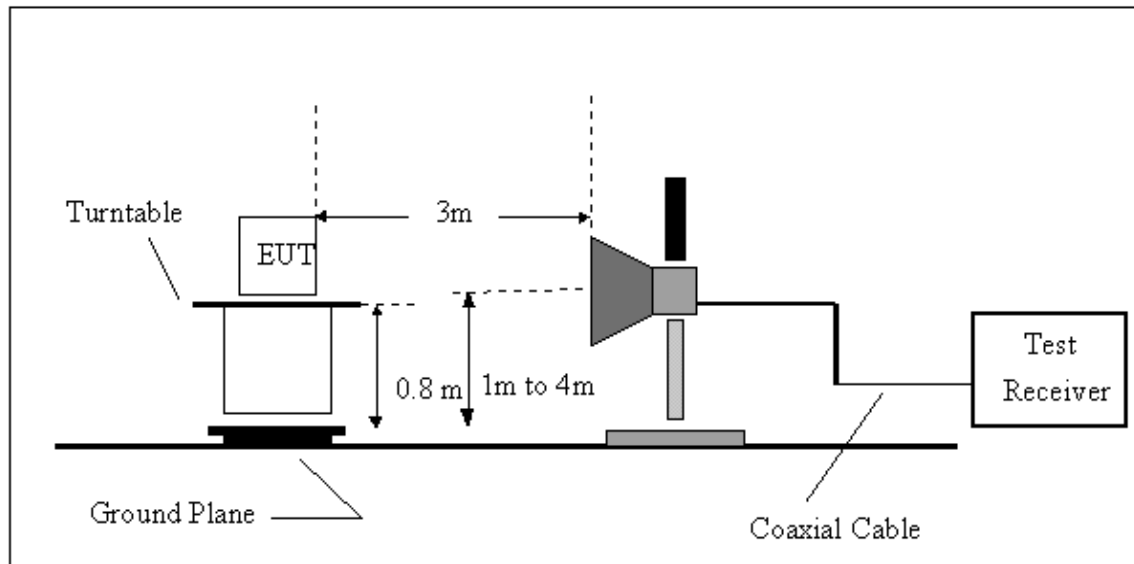
No deviation

#### 4.2.5 TEST SETUP

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(B) Radiated Emission Test Set-Up Frequency Above 1 GHz



#### 4.2.6 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

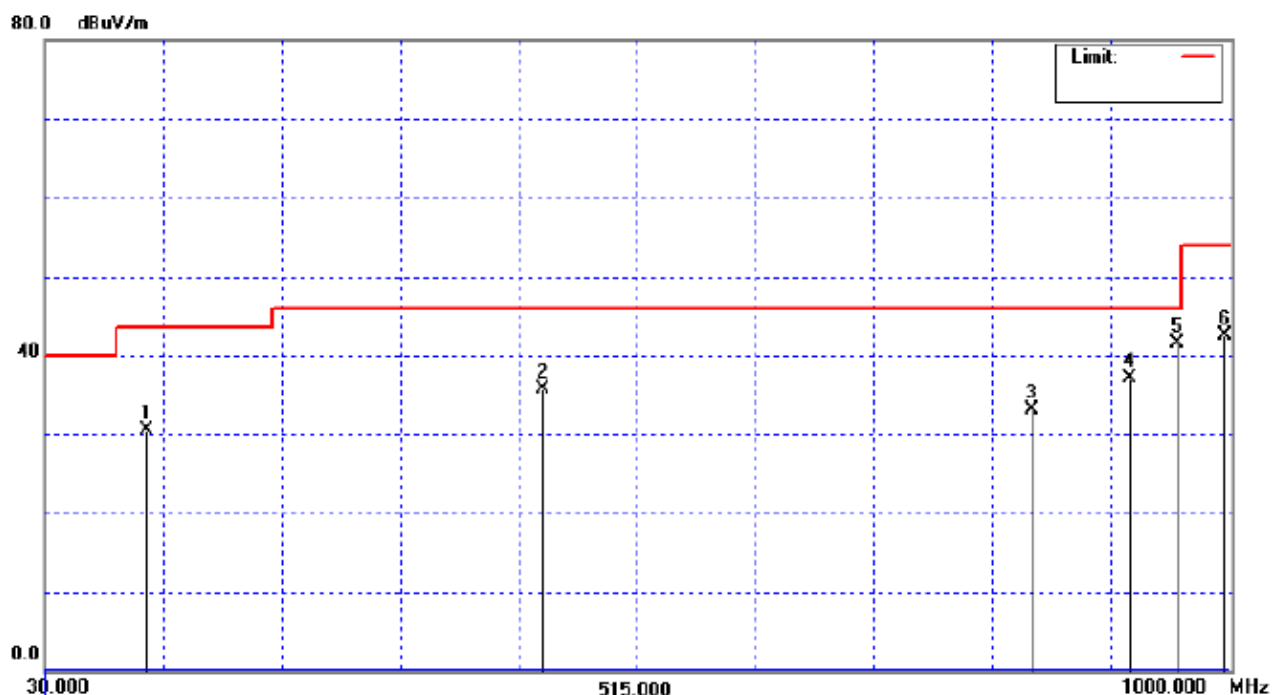
#### 4.2.7 TEST RESULTS (Between 30 – 1000 MHz)

|               |                              |                     |              |
|---------------|------------------------------|---------------------|--------------|
| EUT :         | Multimedia Networking Device | Model Name :        | Z2           |
| Temperature : | 26 °C                        | Relative Humidity : | 57%          |
| Pressure :    | 1009 hPa                     | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | TX CH06                      |                     |              |

| Freq.<br>(MHz) | Ant.<br>H/V | Reading(RA)<br>(dBuV) | Corr.Factor(CF)<br>(dB) | Measured(FS)<br>(dBuV/m) | Limits(QP)<br>(dBuV/m) | Margin<br>(dB) | Note |
|----------------|-------------|-----------------------|-------------------------|--------------------------|------------------------|----------------|------|
| 113.42         | V           | 52.78                 | -22.18                  | 30.60                    | 43.50                  | -12.9          |      |
| 437.40         | V           | 54.49                 | -18.77                  | 35.72                    | 46.00                  | -10.28         |      |
| 838.98         | V           | 47.04                 | -13.87                  | 33.17                    | 46.00                  | -12.83         |      |
| 918.52         | V           | 47.87                 | -10.70                  | 37.17                    | 46.00                  | -8.83          |      |
| 957.32         | V           | 52.43                 | -10.89                  | 41.54                    | 46.00                  | -4.46          |      |
| 996.12         | V           | 54.13                 | -11.65                  | 42.48                    | 54.00                  | -11.52         |      |

#### Remark :

- (1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz ; SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz .
- (2) All readings are Peak unless otherwise stated QP in column of 『Note 』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform .
- (3) Measuring frequency range from 30MHz to 1000MHz .
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table .

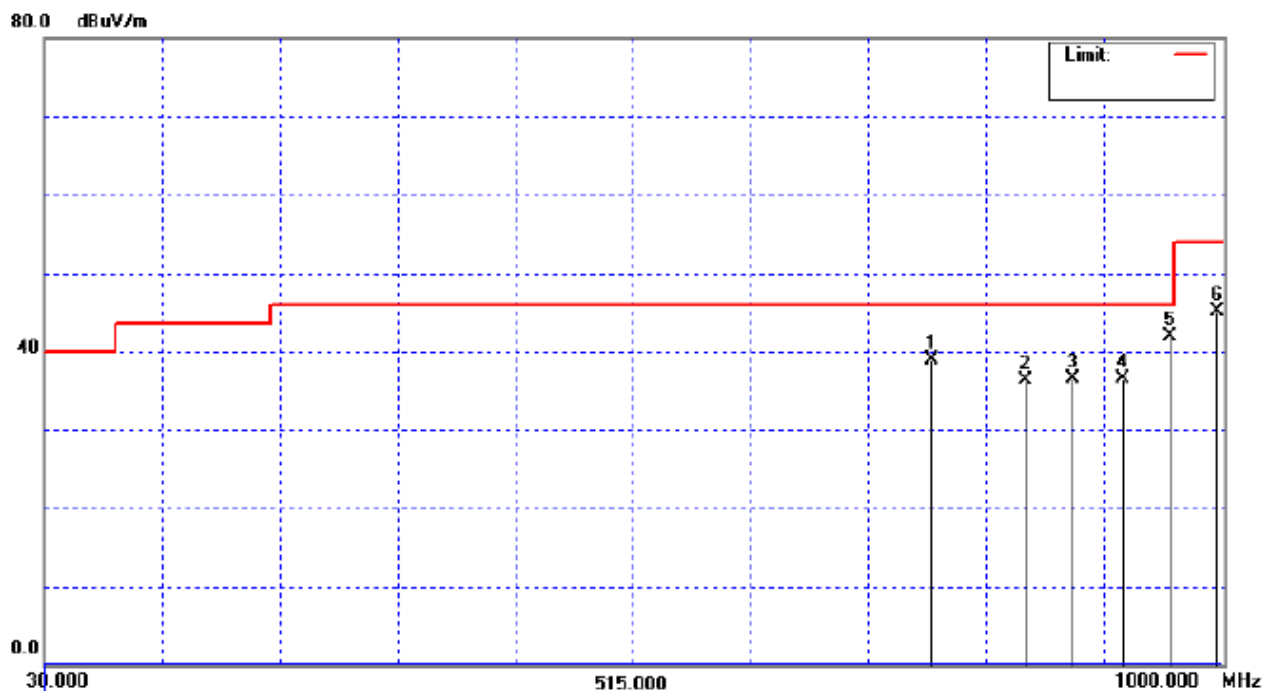


|               |                              |                     |              |
|---------------|------------------------------|---------------------|--------------|
| EUT :         | Multimedia Networking Device | Model Name :        | Z2           |
| Temperature : | 26 °C                        | Relative Humidity : | 57 %         |
| Pressure :    | 1009 hPa                     | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | TX CH06                      |                     |              |

| Freq.<br>(MHz) | Ant.<br>H/V | Reading(RA)<br>(dBuV) | Corr.Factor(CF)<br>(dB) | Measured(FS)<br>(dBuV/m) | Limits(QP)<br>(dBuV/m) | Margin<br>(dB) | Note |
|----------------|-------------|-----------------------|-------------------------|--------------------------|------------------------|----------------|------|
| 761.38         | H           | 50.35                 | -11.44                  | 38.91                    | 46.00                  | - 7.09         |      |
| 838.98         | H           | 48.28                 | -12.04                  | 36.24                    | 46.00                  | - 9.76         |      |
| 877.78         | H           | 48.61                 | -12.07                  | 36.54                    | 46.00                  | - 9.46         |      |
| 918.52         | H           | 50.22                 | -13.75                  | 36.47                    | 46.00                  | - 9.53         |      |
| 957.32         | H           | 48.49                 | -6.54                   | 41.95                    | 46.00                  | - 4.05         |      |
| 996.12         | H           | 55.77                 | -10.60                  | 45.17                    | 54.00                  | - 8.83         |      |

**Remark :**

- (1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz ; SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz .
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform .
- (3) Measuring frequency range from 30MHz to 1000MHz .
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table .

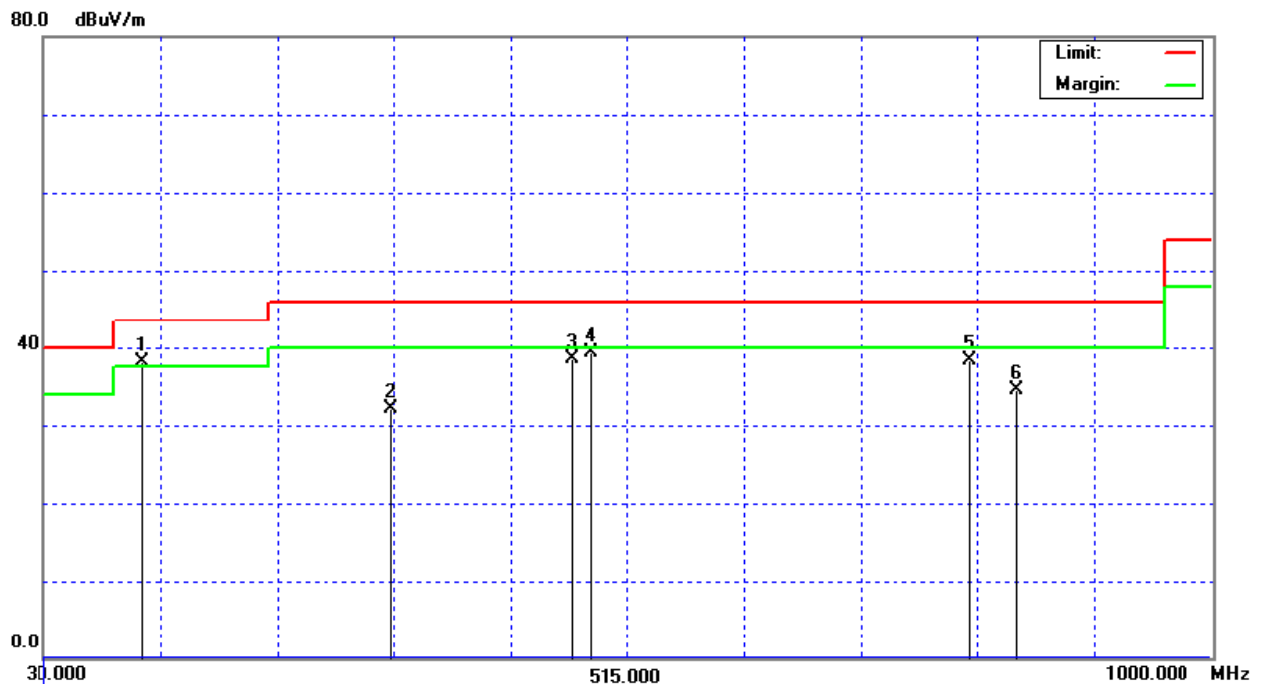


|               |                      |                     |              |
|---------------|----------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2 | Model Name :        | Z2           |
| Temperature : | 34 °C                | Relative Humidity : | 54%          |
| Pressure :    | 1003 hPa             | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | TX                   |                     |              |

| Freq.<br>(MHz) | Ant.<br>H/V | Reading(RA)<br>(dBuV) | Corr.Factor(CF)<br>(dB) | Measured(FS)<br>(dBuV/m) | Limits(QP)<br>(dBuV/m) | Margin<br>(dB) | Note |
|----------------|-------------|-----------------------|-------------------------|--------------------------|------------------------|----------------|------|
| 111.48         | V           | 44.30                 | -6.27                   | 38.03                    | 43.50                  | -5.47          |      |
| 319.06         | V           | 35.05                 | -2.99                   | 32.06                    | 46.00                  | -13.94         |      |
| 468.44         | V           | 38.00                 | 0.56                    | 38.56                    | 46.00                  | -7.44          |      |
| 483.96         | V           | 38.34                 | 0.89                    | 39.23                    | 46.00                  | -6.77          |      |
| 800.18         | V           | 31.55                 | 6.74                    | 38.29                    | 46.00                  | -7.71          |      |
| 838.98         | V           | 27.24                 | 7.25                    | 34.49                    | 46.00                  | -11.51         |      |

**Remark :**

- (1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz ; SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz .
- (2) All readings are Peak unless otherwise stated QP in column of 『Note 』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform .
- (3) Measuring frequency range from 30MHz to 1000MHz .
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table .

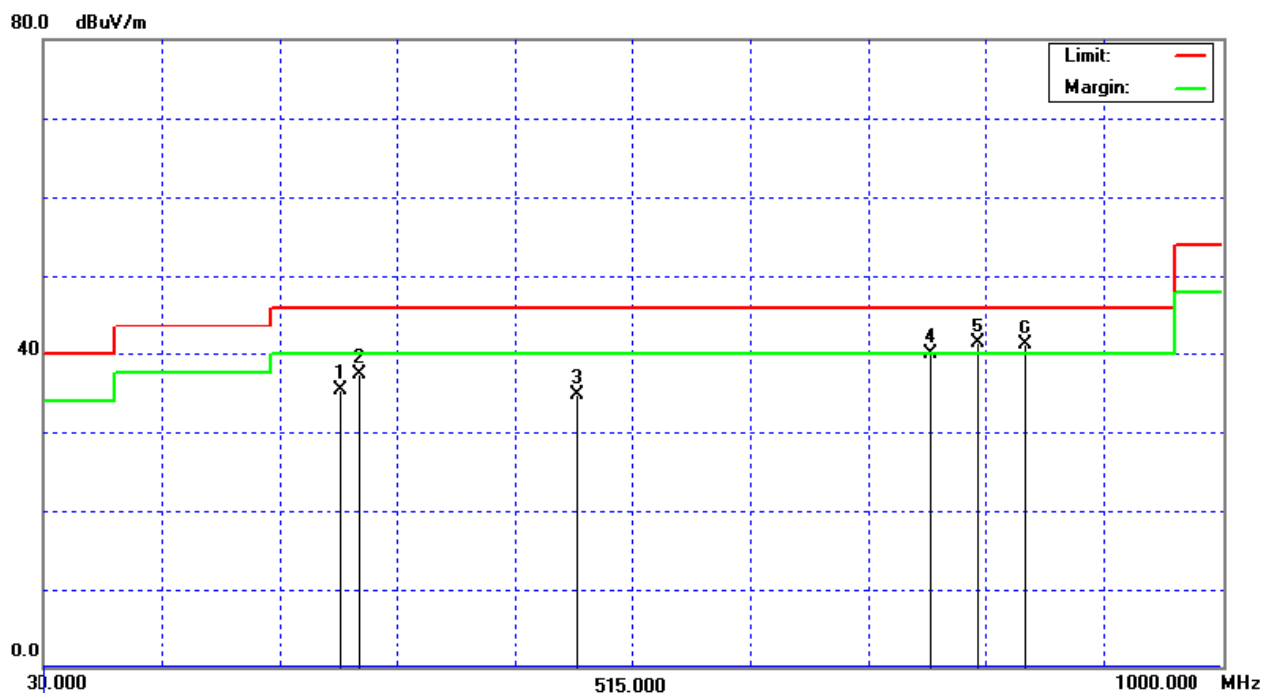


|               |                      |                     |              |
|---------------|----------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2 | Model Name :        | Z2           |
| Temperature : | 34 °C                | Relative Humidity : | 54 %         |
| Pressure :    | 1003 hPa             | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | TX                   |                     |              |

| Freq.<br>(MHz) | Ant.<br>H/V | Reading(RA)<br>(dBuV) | Corr.Factor(CF)<br>(dB) | Measured(FS)<br>(dBuV/m) | Limits(QP)<br>(dBuV/m) | Margin<br>(dB) | Note |
|----------------|-------------|-----------------------|-------------------------|--------------------------|------------------------|----------------|------|
| 274.44         | H           | 39.70                 | -4.36                   | 35.34                    | 46.00                  | - 10.66        |      |
| 289.96         | H           | 41.18                 | -3.84                   | 37.34                    | 46.00                  | - 8.66         |      |
| 468.44         | H           | 34.14                 | 0.56                    | 34.70                    | 46.00                  | - 11.30        |      |
| 761.38         | H           | 33.73                 | 6.08                    | 39.81                    | 46.00                  | - 6.19         |      |
| 800.18         | H           | 34.56                 | 6.74                    | 41.30                    | 46.00                  | - 4.70         |      |
| 838.98         | H           | 33.85                 | 7.25                    | 41.10                    | 46.00                  | - 4.90         |      |

**Remark :**

- (1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz ; SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz .
- (2) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform .
- (3) Measuring frequency range from 30MHz to 1000MHz .
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table .



#### 4.2.8 TEST RESULTS (Above 1000 MHz)

|               |                      |                     |              |
|---------------|----------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2 | Model Name :        | Z2           |
| Temperature : | 26 °C                | Relative Humidity : | 57 %         |
| Pressure :    | 1009 hPa             | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | TX 11B mode CH01     |                     |              |

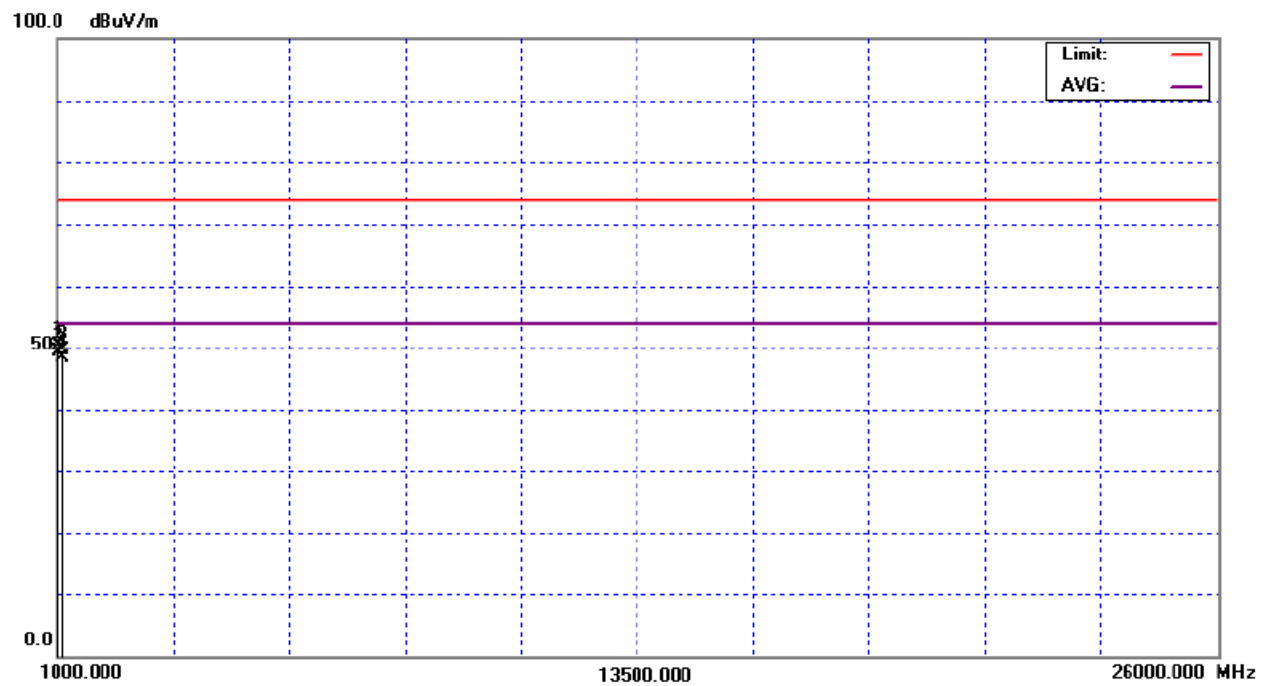
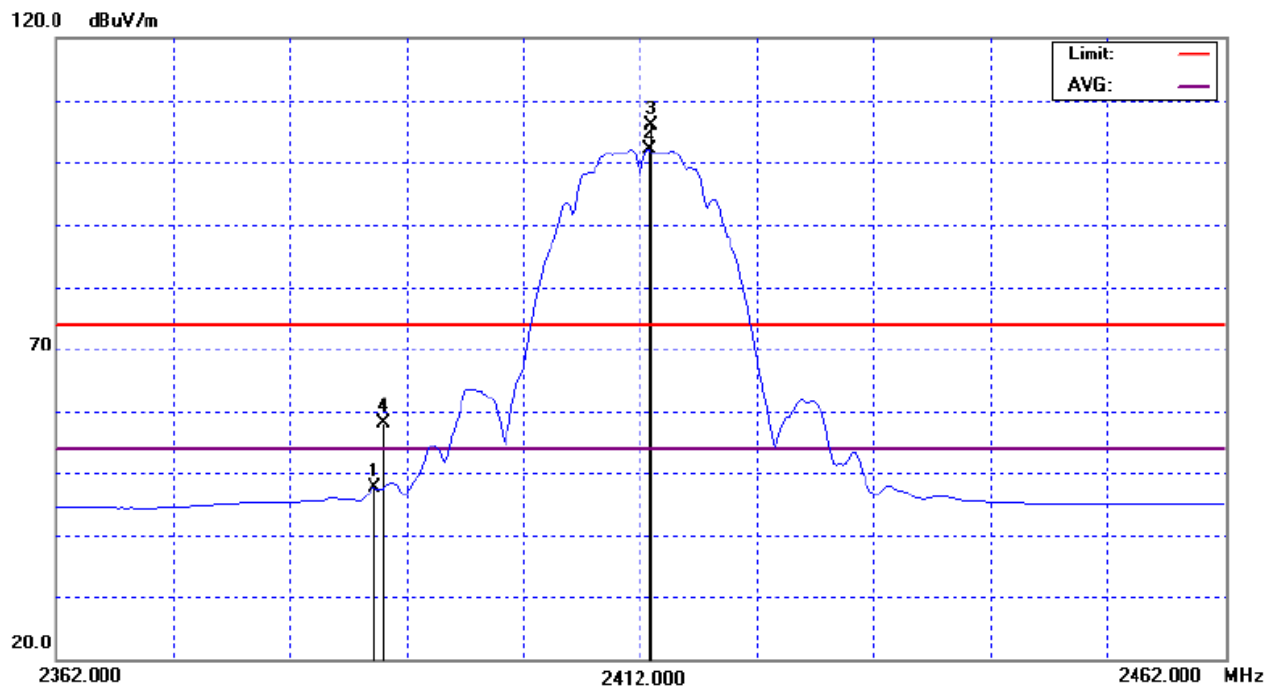
| Freq.<br>(MHz) | Ant.Pol.<br>H/V | Reading        |              | Ant./CF<br>CF(dB) | Act.             |                | Limit            |                | Note       |
|----------------|-----------------|----------------|--------------|-------------------|------------------|----------------|------------------|----------------|------------|
|                |                 | Peak<br>(dBuV) | AV<br>(dBuV) |                   | Peak<br>(dBuV/m) | AV<br>(dBuV/m) | Peak<br>(dBuV/m) | AV<br>(dBuV/m) |            |
| 2389.20        | V               | 26.41          | 15.75        | 31.77             | 58.18            | 47.52          | 74.00            | 54.00          | Y/E        |
| <b>2412.80</b> | <b>V</b>        | <b>74.04</b>   | <b>70.22</b> | <b>31.88</b>      | <b>105.92</b>    | <b>102.10</b>  |                  |                | <b>Y/F</b> |
| 1032.00        | V               | 61.16          | 59.95        | -10.73            | 50.46            | 49.45          | 74.00            | 54.00          | Y/H        |
| 1072.00        | V               | 57.68          | 56.31        | -7.95             | 49.73            | 48.36          | 74.00            | 54.00          | Y/H        |

#### Remark :

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission.
- (4) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :  
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand



TX CH01 (Above 1000 MHz, Vertical)



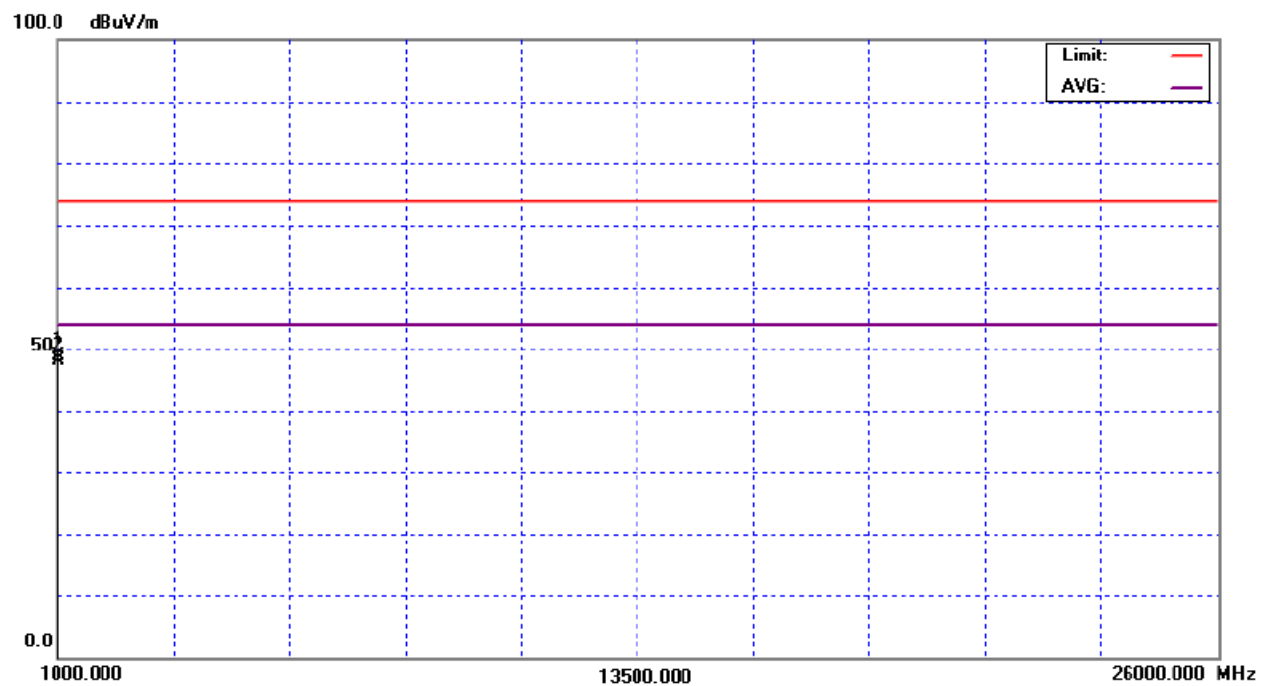
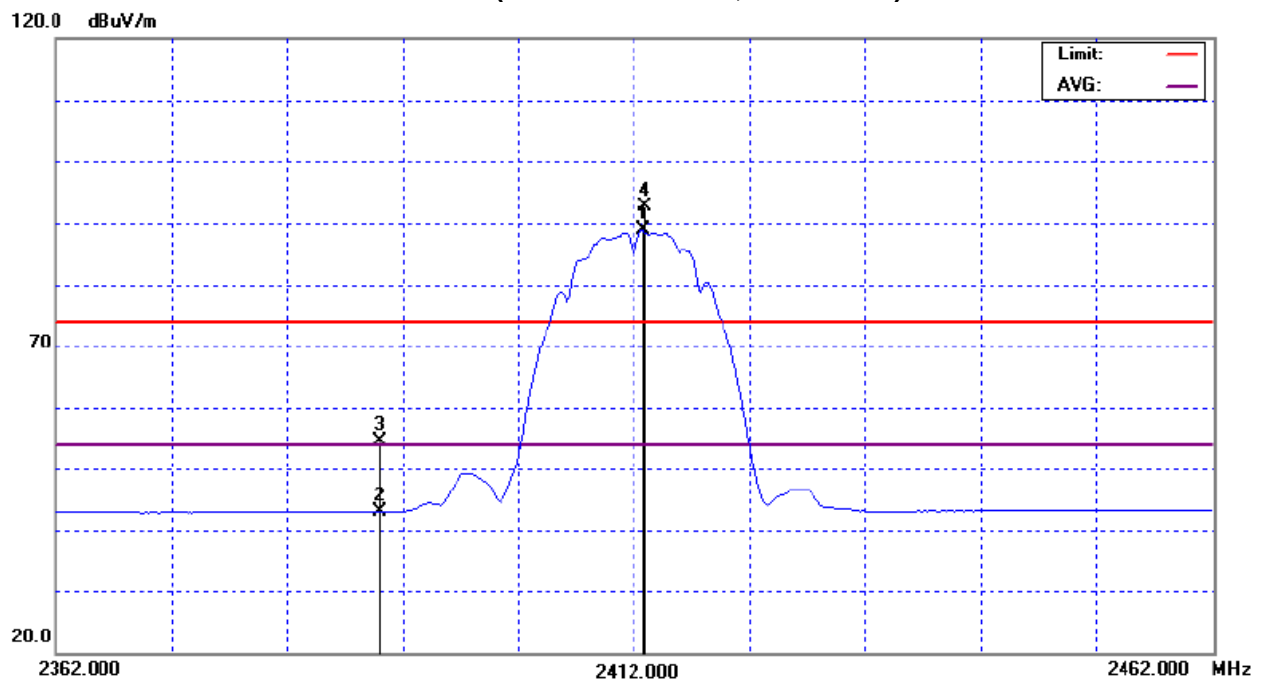
|               |                      |                     |              |
|---------------|----------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2 | Model Name :        | Z2           |
| Temperature : | 26 °C                | Relative Humidity : | 57 %         |
| Pressure :    | 1009 hPa             | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | TX 11B mode CH01     |                     |              |

| Freq.<br>(MHz) | Ant.Pol.<br>H/V | Reading        |              | Ant./CF<br>CF(dB) | Act.             |                | Limit            |                | Note       |
|----------------|-----------------|----------------|--------------|-------------------|------------------|----------------|------------------|----------------|------------|
|                |                 | Peak<br>(dBuV) | AV<br>(dBuV) |                   | Peak<br>(dBuV/m) | AV<br>(dBuV/m) | Peak<br>(dBuV/m) | AV<br>(dBuV/m) |            |
| <b>2412.80</b> | <b>H</b>        | <b>60.78</b>   | <b>56.89</b> | <b>31.88</b>      | <b>92.66</b>     | <b>88.77</b>   |                  |                | <b>Y/F</b> |
| 2390.00        | H               | 22.81          | 11.06        | 31.77             | 54.58            | 42.83          | 74.00            | 54.00          | Y/E        |
| 1032.00        | H               | 59.32          | 58.41        | -10.26            | 48.76            | 48.15          | 74.00            | 54.00          | Y/H        |

**Remark :**

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission.
- (4) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :  
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand

TX CH01 (Above 1000 MHz, Horizontal)



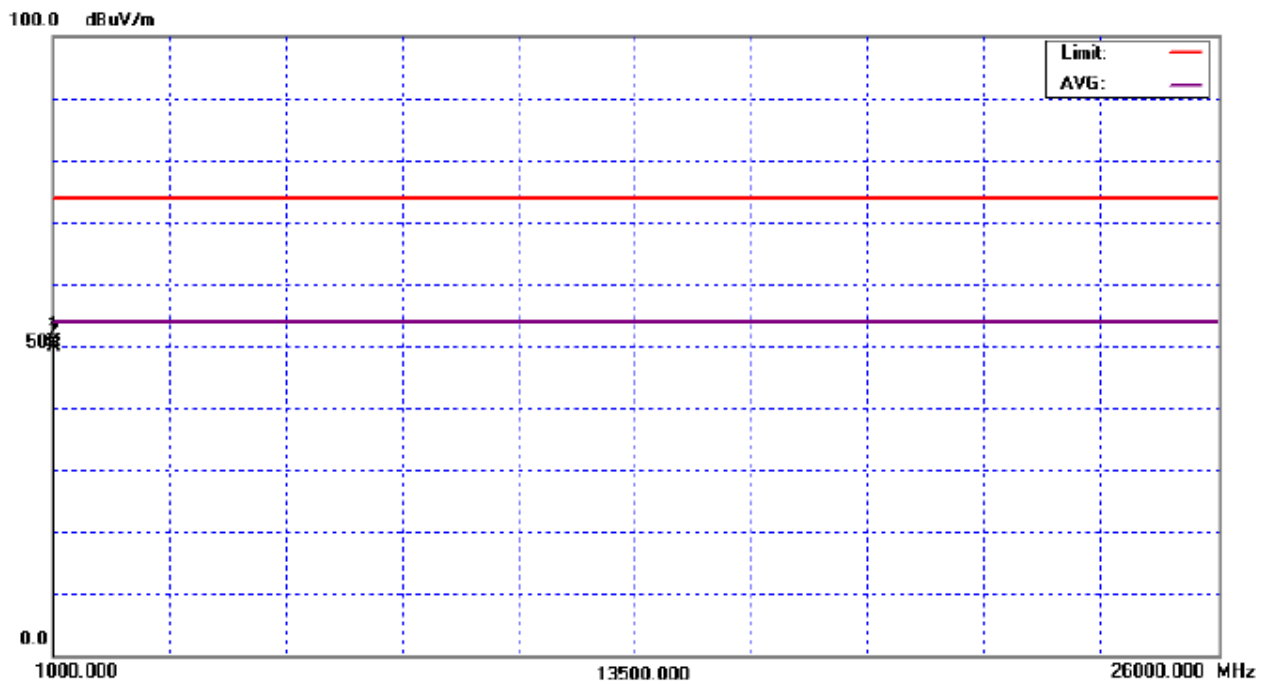
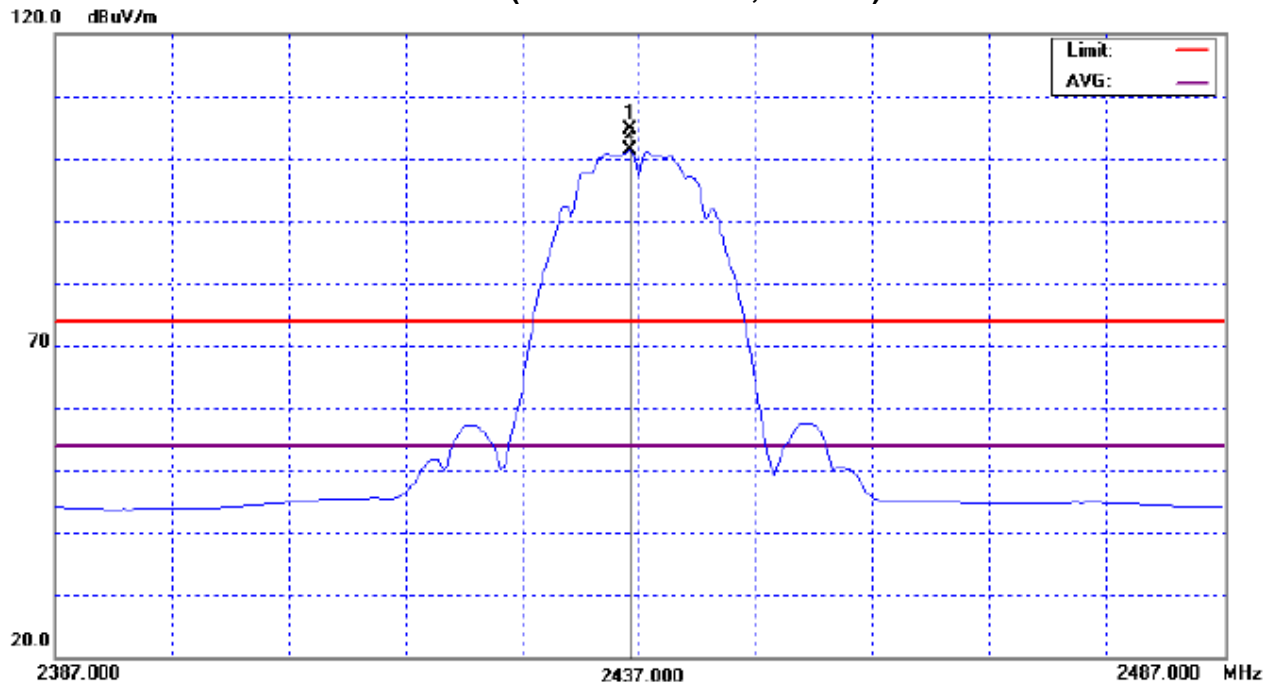
|               |                      |                     |              |
|---------------|----------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2 | Model Name :        | Z2           |
| Temperature : | 26 °C                | Relative Humidity : | 57 %         |
| Pressure :    | 1009 hPa             | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | TX 11B mode CH06     |                     |              |

| Freq.<br>(MHz) | Ant.Pol.<br>H/V | Reading        |              | Ant./CF<br>CF(dB) | Act.             |                | Limit            |                | Note       |
|----------------|-----------------|----------------|--------------|-------------------|------------------|----------------|------------------|----------------|------------|
|                |                 | Peak<br>(dBuV) | AV<br>(dBuV) |                   | Peak<br>(dBuV/m) | AV<br>(dBuV/m) | Peak<br>(dBuV/m) | AV<br>(dBuV/m) |            |
| <b>2436.20</b> | <b>V</b>        | <b>72.60</b>   | <b>69.32</b> | <b>31.99</b>      | <b>104.59</b>    | <b>101.31</b>  |                  |                | <b>Y/F</b> |
| 1033.32        | V               | 60.92          | 60.06        | -10.30            | 50.62            | 49.80          | 74.00            | 54.00          | Y/E        |

**Remark :**

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform .
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .
- (4) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :  
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand

TX CH06 (Above 1000 MHz, Vertical)



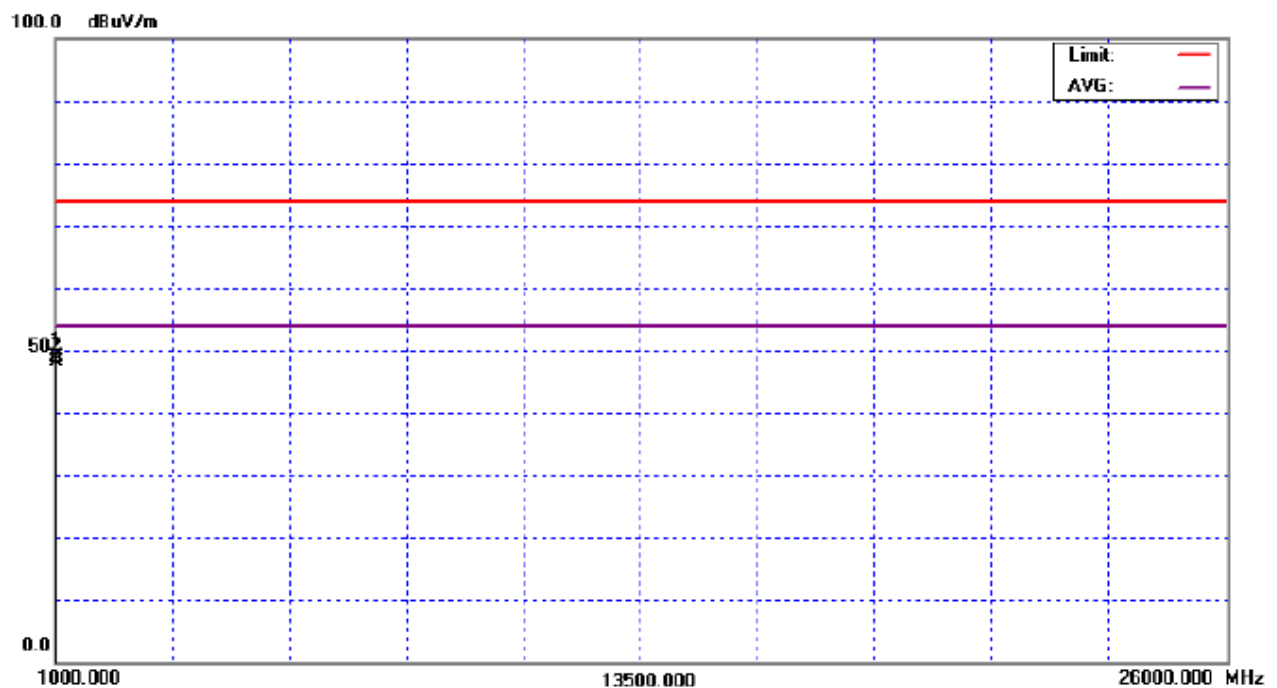
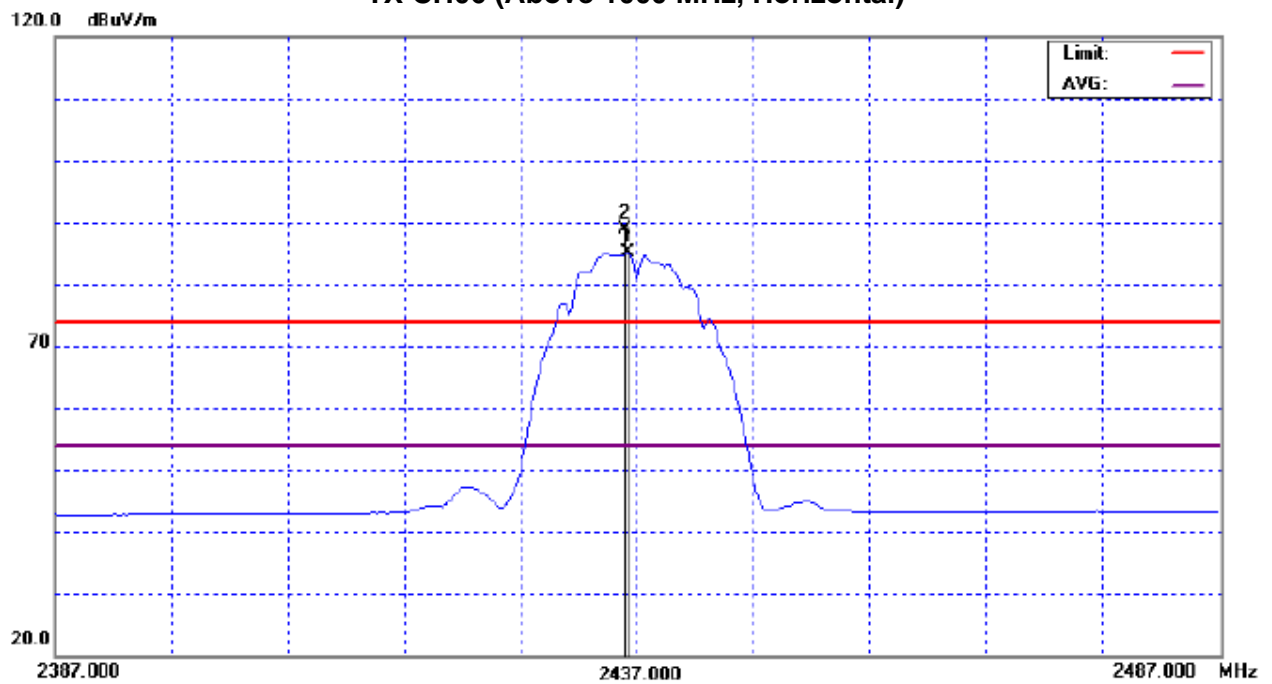
|               |                      |                     |              |
|---------------|----------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2 | Model Name :        | Z2           |
| Temperature : | 26 °C                | Relative Humidity : | 57 %         |
| Pressure :    | 1009 hPa             | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | TX 11B mode CH06     |                     |              |

| Freq.<br>(MHz) | Ant.Pol.<br>H/V | Reading        |              | Ant./CF<br>CF(dB) | Act.             |                | Limit            |                | Note |
|----------------|-----------------|----------------|--------------|-------------------|------------------|----------------|------------------|----------------|------|
|                |                 | Peak<br>(dBuV) | AV<br>(dBuV) |                   | Peak<br>(dBuV/m) | AV<br>(dBuV/m) | Peak<br>(dBuV/m) | AV<br>(dBuV/m) |      |
| 2436.20        | H               | 56.99          | 53.10        | 31.99             | 88.98            | 85.09          |                  |                | Y/F  |
| 1032.00        | H               | 59.26          | 58.36        | -10.47            | 48.79            | 48.09          | 74.00            | 54.00          | Y/E  |

**Remark :**

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission.
- (4) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :  
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand

TX CH06 (Above 1000 MHz, Horizontal)



|               |                      |                     |              |
|---------------|----------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2 | Model Name :        | Z2           |
| Temperature : | 26 °C                | Relative Humidity : | 57 %         |
| Pressure :    | 1009 hPa             | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | TX 11B mode CH11     |                     |              |

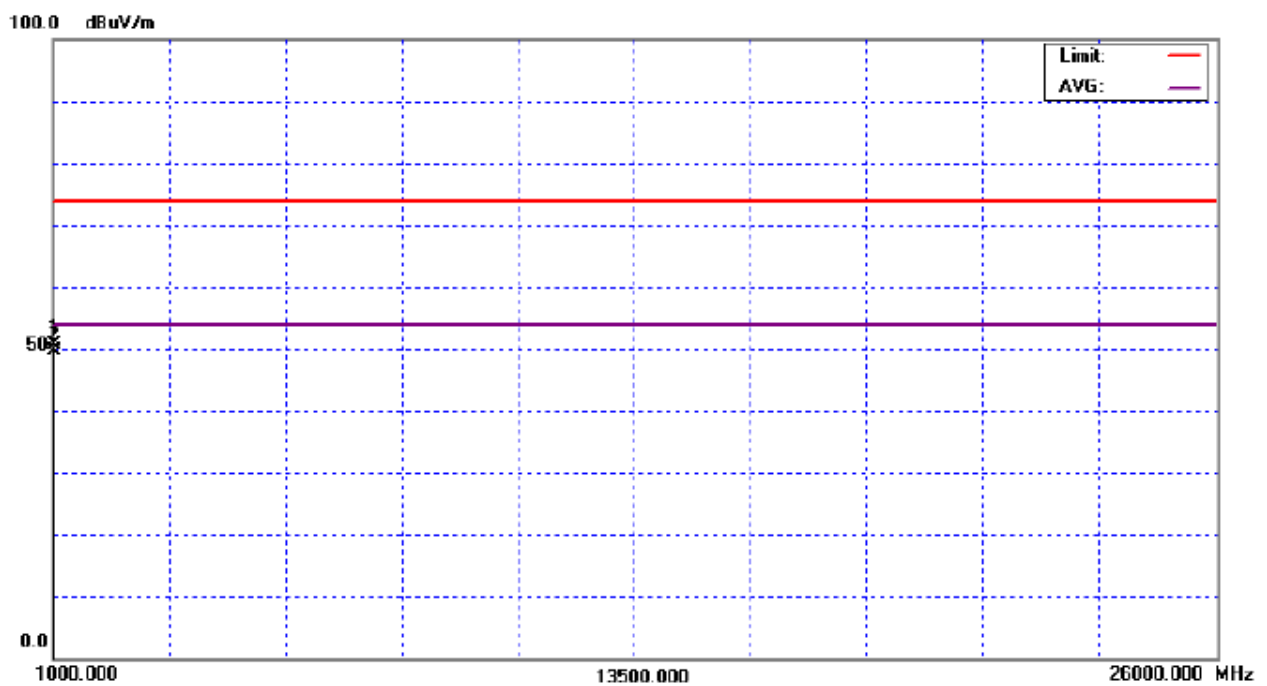
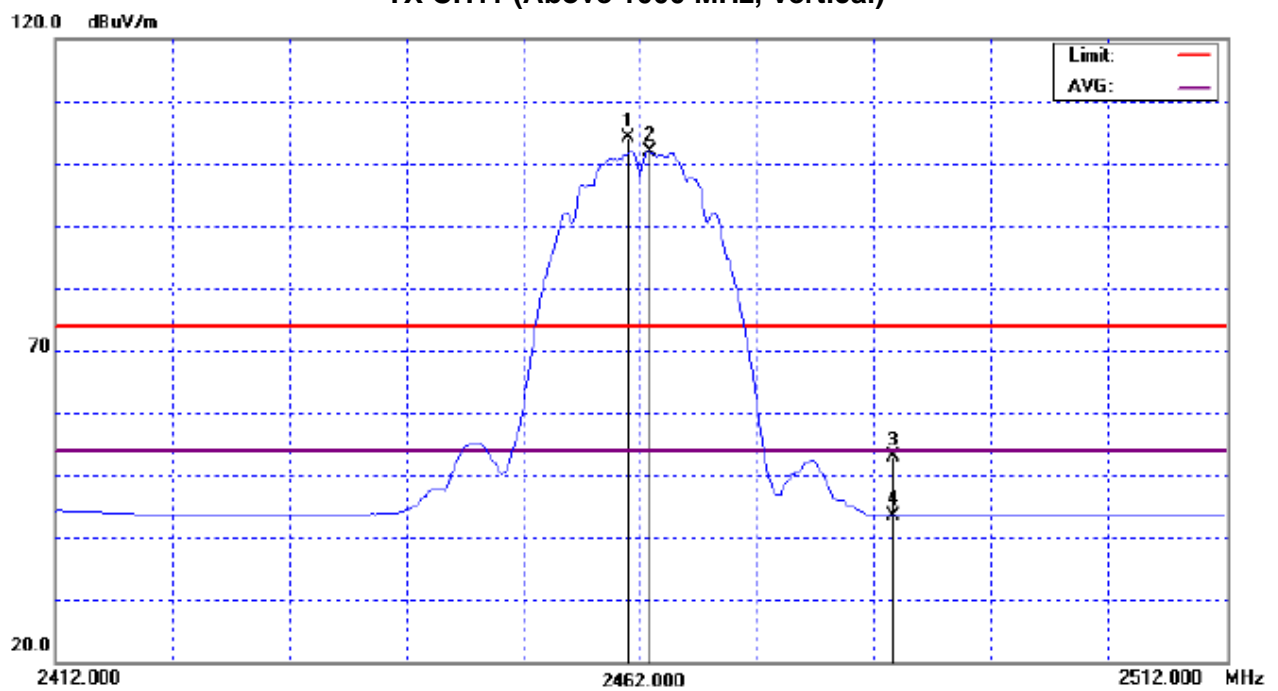
| Freq.<br>(MHz) | Ant.Pol.<br>H/V | Reading        |              | Ant./CF<br>CF(dB) | Act.             |                | Limit            |                | Note       |
|----------------|-----------------|----------------|--------------|-------------------|------------------|----------------|------------------|----------------|------------|
|                |                 | Peak<br>(dBuV) | AV<br>(dBuV) |                   | Peak<br>(dBuV/m) | AV<br>(dBuV/m) | Peak<br>(dBuV/m) | AV<br>(dBuV/m) |            |
| <b>2461.00</b> | <b>V</b>        | <b>72.14</b>   | <b>69.80</b> | <b>32.11</b>      | <b>104.25</b>    | <b>101.92</b>  |                  |                | <b>Y/F</b> |
| 2483.50        | V               | 20.74          | 11.15        | 32.22             | 52.96            | 43.37          | 74.00            | 54.00          | Y/E        |
| 1033.32        | V               | 60.88          | 59.98        | -10.30            | 50.58            | 49.72          | 74.00            | 54.00          | Y/E        |

**Remark :**

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission.
- (4) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :  
 "X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand



TX CH11 (Above 1000 MHz, Vertical)



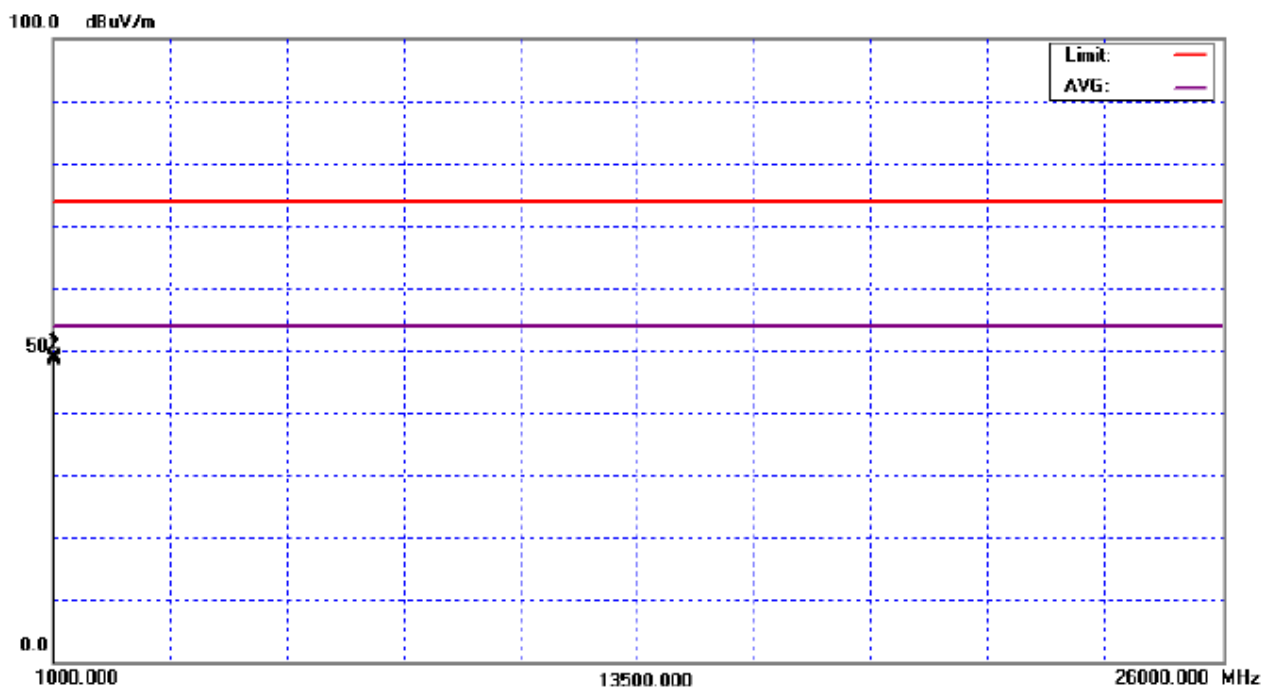
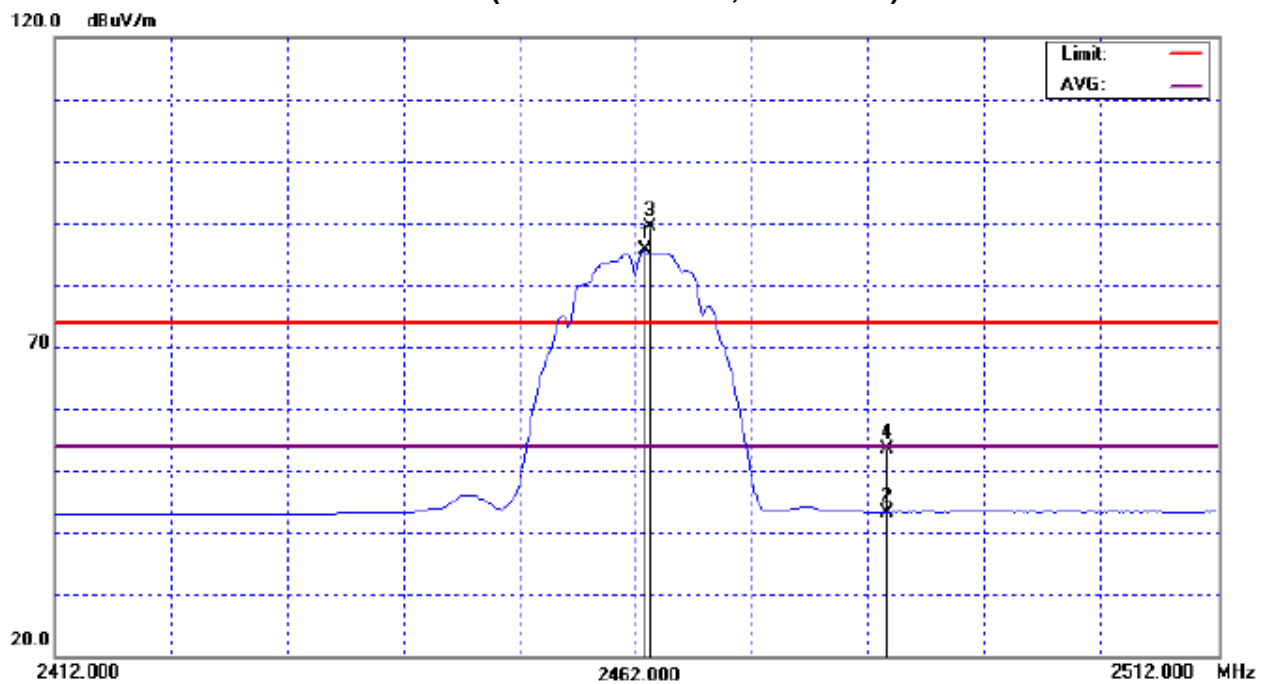
|               |                      |                     |              |
|---------------|----------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2 | Model Name :        | Z2           |
| Temperature : | 26 °C                | Relative Humidity : | 57 %         |
| Pressure :    | 1009 hPa             | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | TX 11B mode CH11     |                     |              |

| Freq.<br>(MHz) | Ant.Pol.<br>H/V | Reading        |              | Ant./CF<br>CF(dB) | Act.             |                | Limit            |                | Note       |
|----------------|-----------------|----------------|--------------|-------------------|------------------|----------------|------------------|----------------|------------|
|                |                 | Peak<br>(dBuV) | AV<br>(dBuV) |                   | Peak<br>(dBuV/m) | AV<br>(dBuV/m) | Peak<br>(dBuV/m) | AV<br>(dBuV/m) |            |
| <b>2462.80</b> | <b>H</b>        | <b>57.25</b>   | <b>53.40</b> | <b>32.12</b>      | <b>89.37</b>     | <b>85.52</b>   |                  |                | <b>Y/F</b> |
| 2483.50        | H               | 21.11          | 11.01        | 32.22             | 53.33            | 43.23          | 74.00            | 54.00          | Y/E        |
| 1032.00        | H               | 59.43          | 58.65        | -10.47            | 48.96            | 48.38          | 74.00            | 54.00          | Y/E        |

**Remark :**

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission.
- (4) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :  
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand

TX CH11 (Above 1000 MHz, Horizontal)



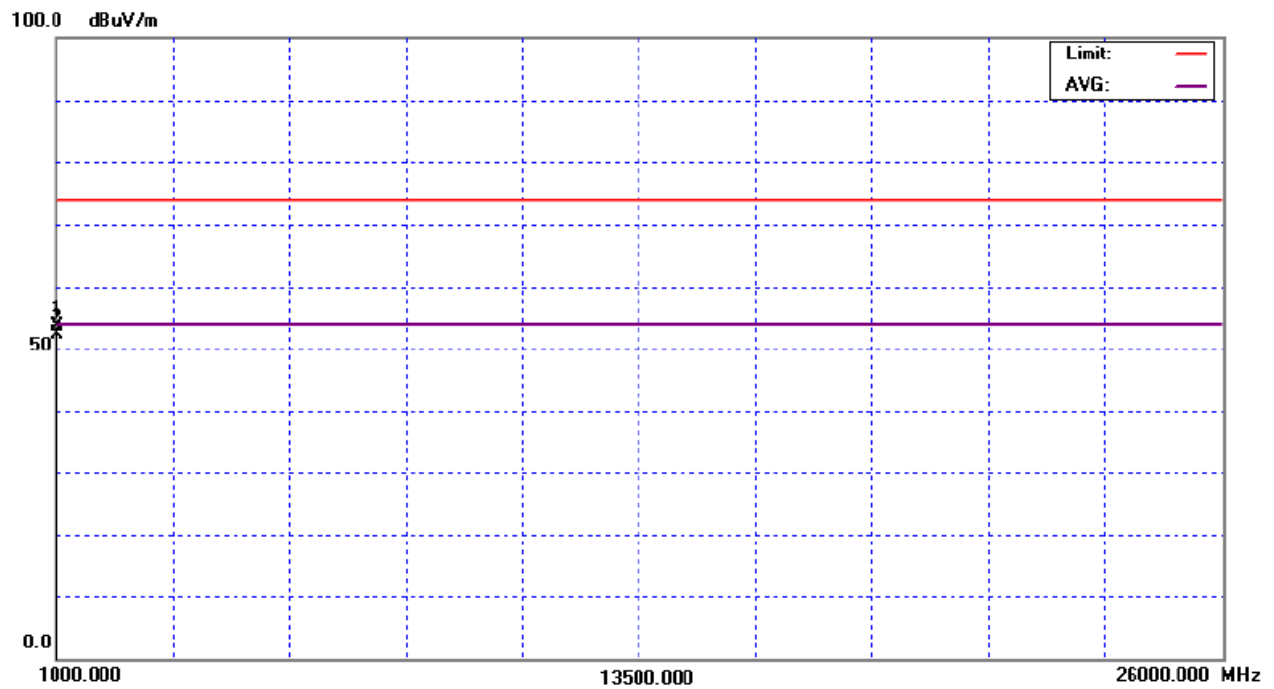
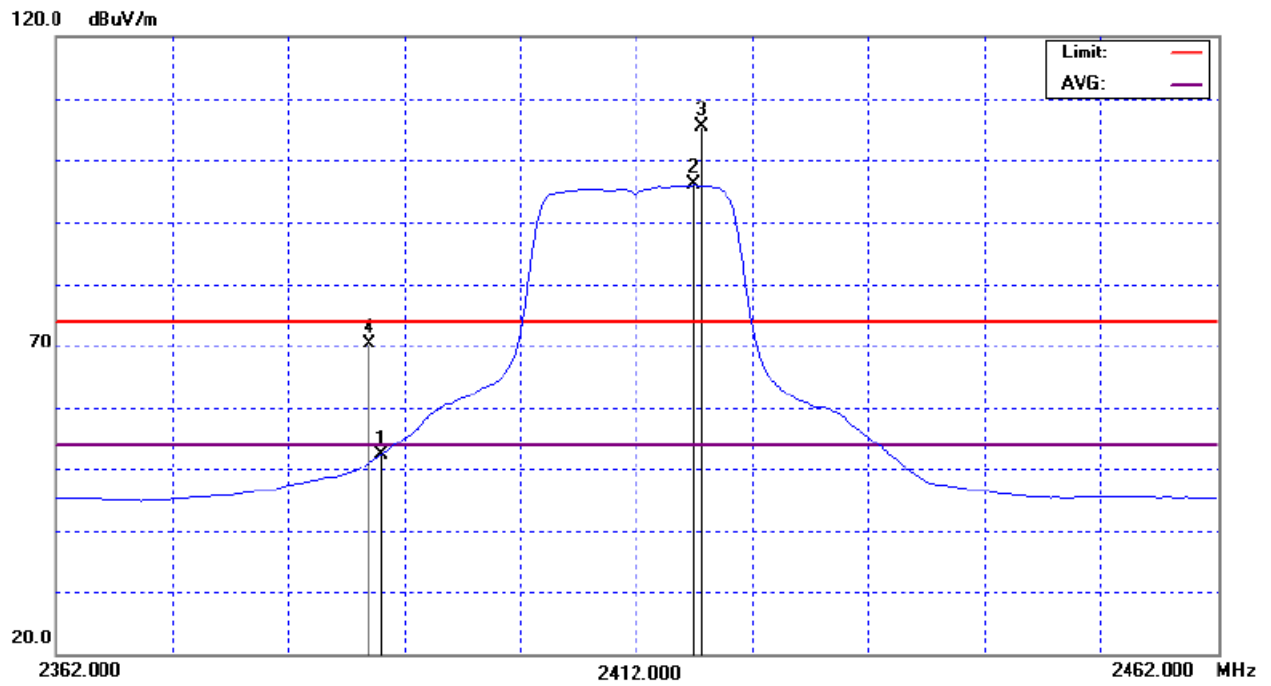
|               |                      |                     |              |
|---------------|----------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2 | Model Name :        | Z2           |
| Temperature : | 26 °C                | Relative Humidity : | 57 %         |
| Pressure :    | 1009 hPa             | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | TX 11G mode CH01     |                     |              |

| Freq.<br>(MHz) | Ant.Pol.<br>H/V | Reading        |              | Ant./CF<br>CF(dB) | Act.             |                | Limit            |                | Note       |
|----------------|-----------------|----------------|--------------|-------------------|------------------|----------------|------------------|----------------|------------|
|                |                 | Peak<br>(dBuV) | AV<br>(dBuV) |                   | Peak<br>(dBuV/m) | AV<br>(dBuV/m) | Peak<br>(dBuV/m) | AV<br>(dBuV/m) |            |
| 2390.00        | V               | 38.73          | 20.68        | 31.77             | 70.50            | 52.45          | 74.00            | 54.00          | Y/E        |
| <b>2417.00</b> | <b>V</b>        | <b>73.56</b>   | <b>64.11</b> | <b>31.90</b>      | <b>105.46</b>    | <b>96.01</b>   |                  |                | <b>Y/F</b> |
| 1032.00        | V               | 61.62          | 60.40        | -8.11             | 53.51            | 52.29          | 74.00            | 54.00          | Y/H        |

Remark :

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission.
- (4) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :  
 "X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand

TX CH01(Above 1000 MHz, Vertical)



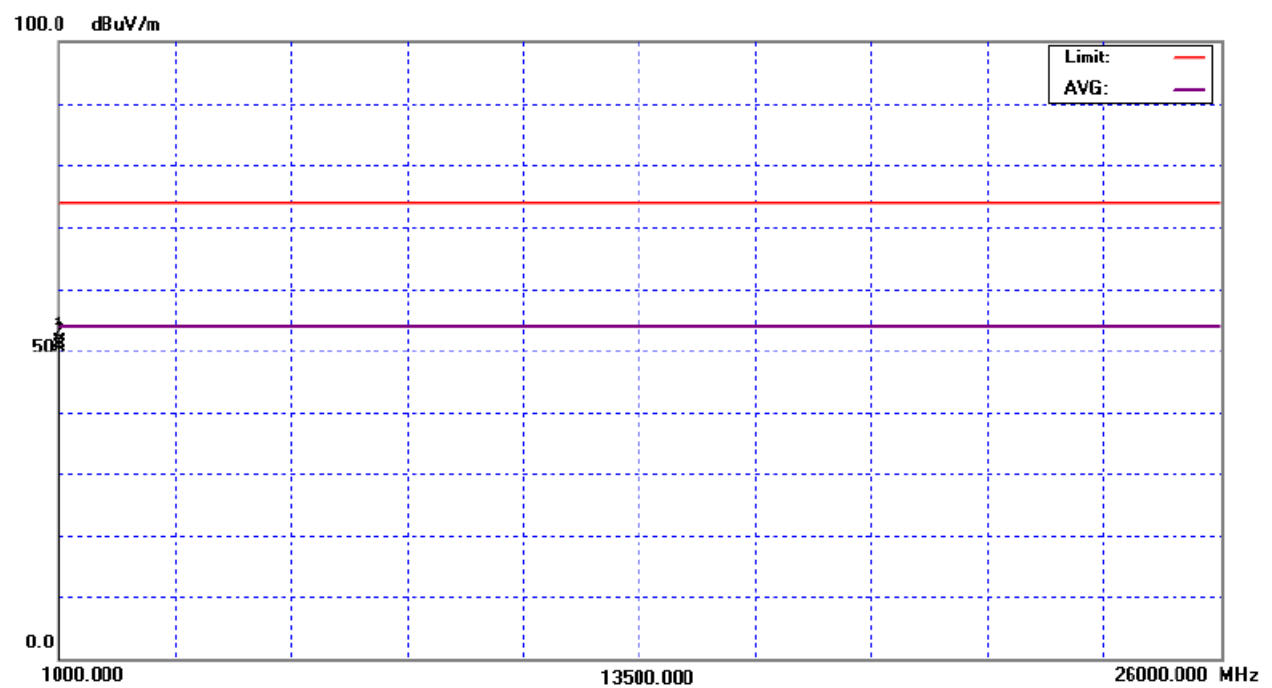
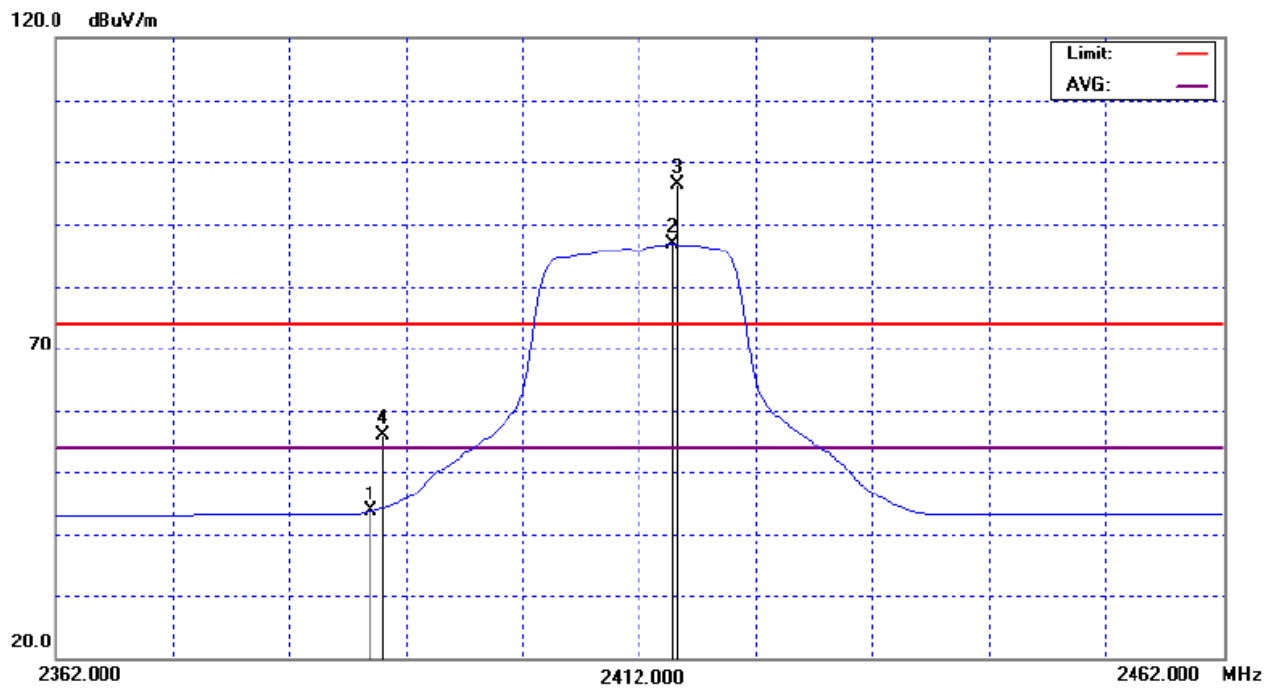
|               |                      |                     |              |
|---------------|----------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2 | Model Name :        | Z2           |
| Temperature : | 26 °C                | Relative Humidity : | 57 %         |
| Pressure :    | 1009 hPa             | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | TX 11G mode CH01     |                     |              |

| Freq.<br>(MHz) | Ant.Pol.<br>H/V | Reading        |              | Ant./CF<br>CF(dB) | Act.             |                | Limit            |                | Note       |
|----------------|-----------------|----------------|--------------|-------------------|------------------|----------------|------------------|----------------|------------|
|                |                 | Peak<br>(dBuV) | AV<br>(dBuV) |                   | Peak<br>(dBuV/m) | AV<br>(dBuV/m) | Peak<br>(dBuV/m) | AV<br>(dBuV/m) |            |
| <b>2414.80</b> | <b>H</b>        | <b>64.51</b>   | <b>54.97</b> | <b>31.89</b>      | <b>96.40</b>     | <b>86.86</b>   |                  |                | <b>Y/F</b> |
| 2389.00        | H               | 24.42          | 11.87        | 31.77             | 56.19            | 43.64          | 74.00            | 54.00          | Y/E        |
| 1032.56        | H               | 59.38          | 58.76        | -8.11             | 51.27            | 50.65          | 74.00            | 54.00          | Y/H        |

**Remark :**

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission.
- (4) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :  
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand

TX CH01(Above 1000 MHz, Horizontal)



|               |                      |                     |              |
|---------------|----------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2 | Model Name :        | Z2           |
| Temperature : | 26 °C                | Relative Humidity : | 57 %         |
| Pressure :    | 1009 hPa             | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | TX 11G mode CH06     |                     |              |

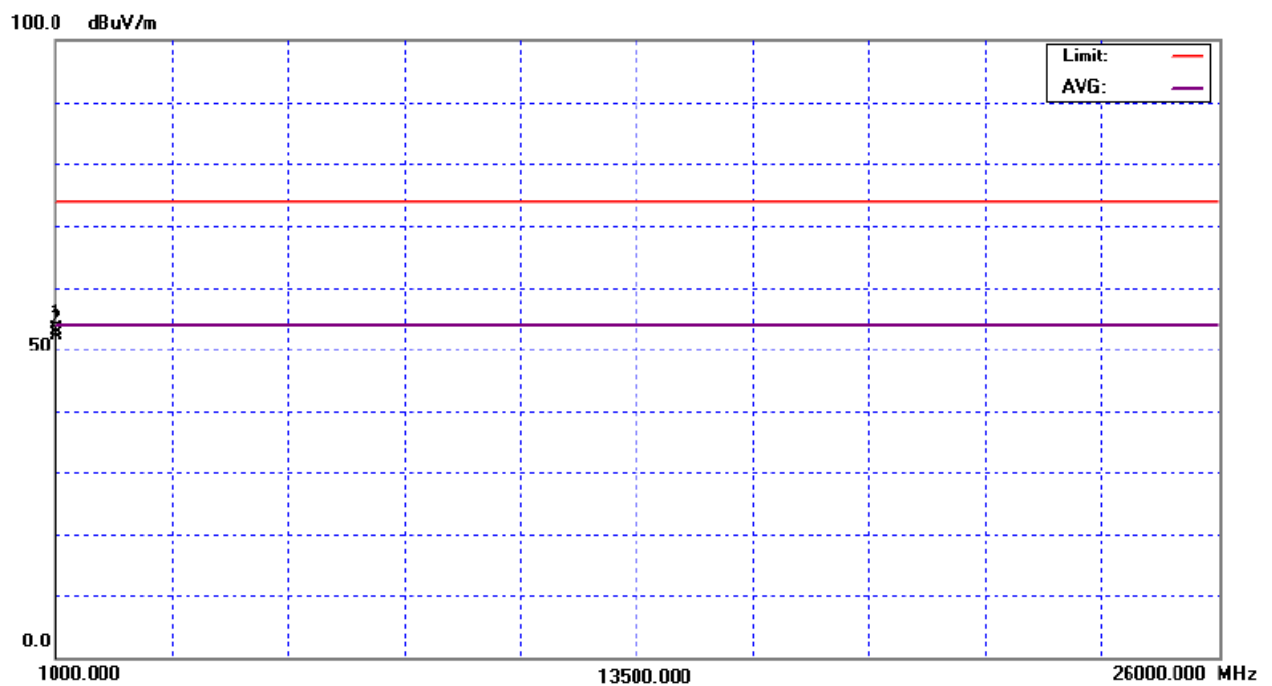
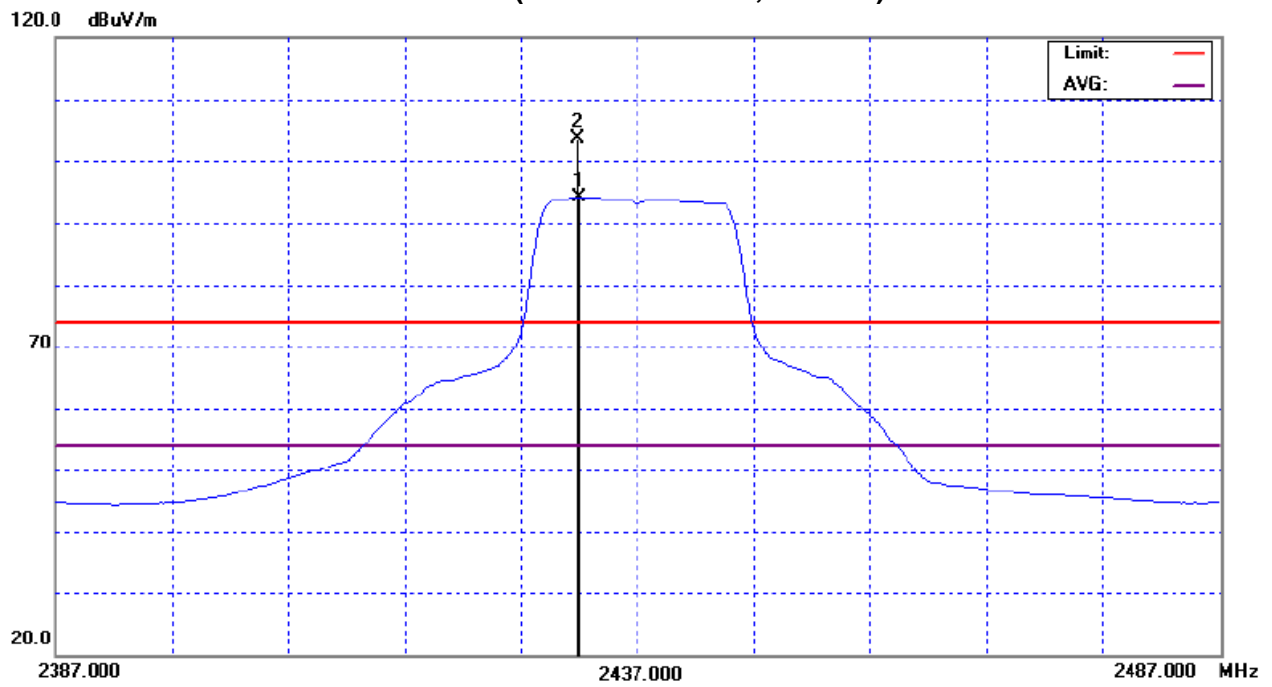
| Freq.<br>(MHz) | Ant.Pol.<br>H/V | Reading        |              | Ant./CF<br>CF(dB) | Act.             |                | Limit            |                | Note       |
|----------------|-----------------|----------------|--------------|-------------------|------------------|----------------|------------------|----------------|------------|
|                |                 | Peak<br>(dBuV) | AV<br>(dBuV) |                   | Peak<br>(dBuV/m) | AV<br>(dBuV/m) | Peak<br>(dBuV/m) | AV<br>(dBuV/m) |            |
| <b>2432.00</b> | <b>V</b>        | <b>71.61</b>   | <b>62.22</b> | <b>31.97</b>      | <b>103.58</b>    | <b>94.19</b>   |                  |                | <b>Y/F</b> |
| 1032.00        | V               | 61.35          | 60.60        | -8.11             | 53.24            | 52.49          | 74.00            | 54.00          | Y/H        |

**Remark :**

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission.
- (4) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :  
 "X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand



TX CH06 (Above 1000 MHz, Vertical)



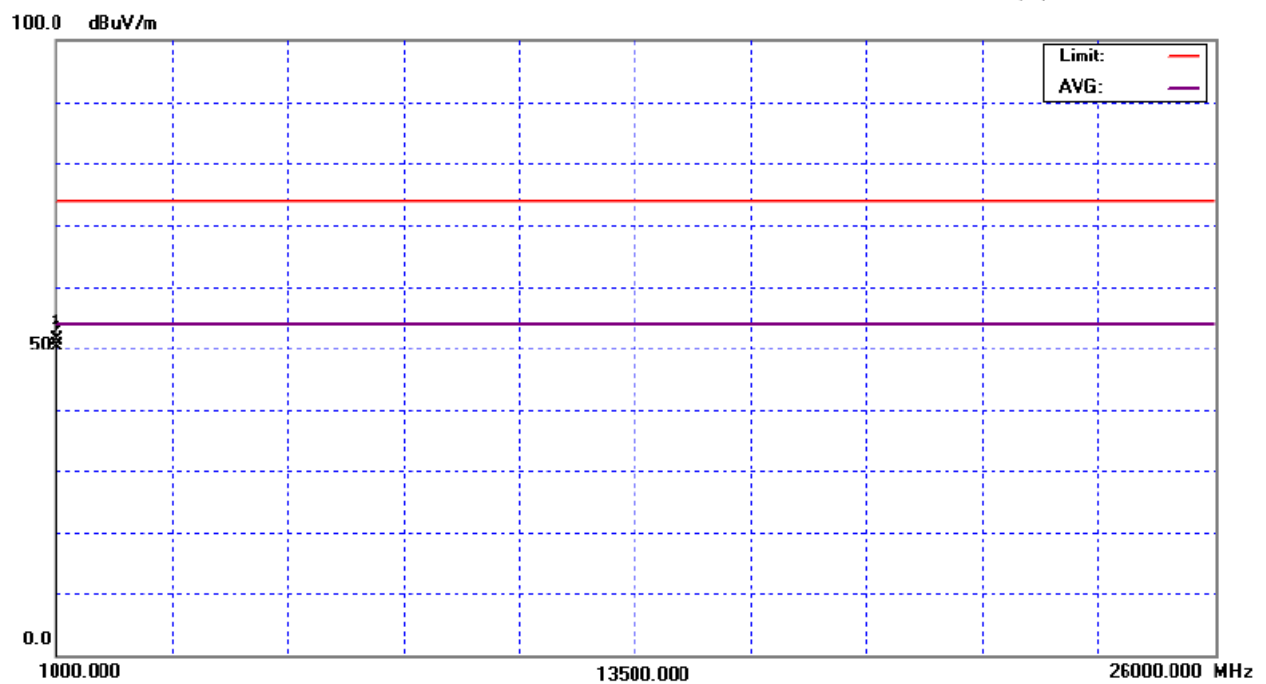
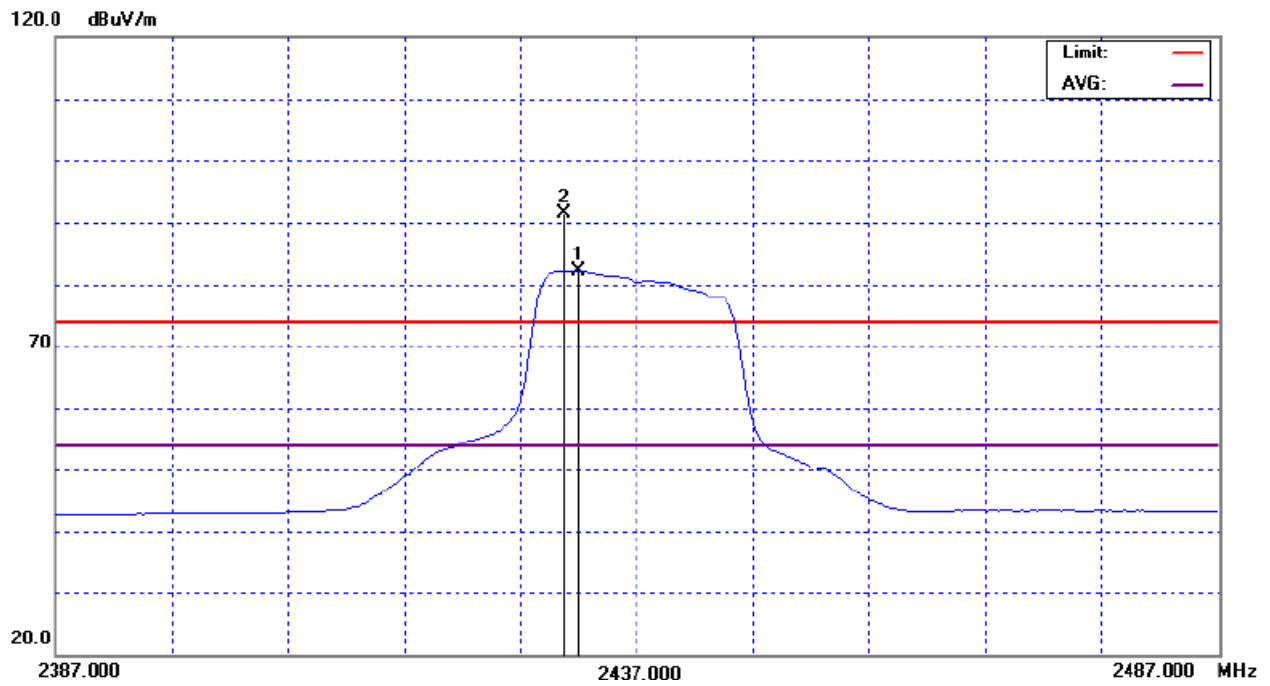
|               |                      |                     |              |
|---------------|----------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2 | Model Name :        | Z2           |
| Temperature : | 26 °C                | Relative Humidity : | 57 %         |
| Pressure :    | 1009 hPa             | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | TX 11G mode CH06     |                     |              |

| Freq.<br>(MHz) | Ant.Pol.<br>H/V | Reading        |              | Ant./CF<br>CF(dB) | Act.             |                | Limit            |                | Note |
|----------------|-----------------|----------------|--------------|-------------------|------------------|----------------|------------------|----------------|------|
|                |                 | Peak<br>(dBuV) | AV<br>(dBuV) |                   | Peak<br>(dBuV/m) | AV<br>(dBuV/m) | Peak<br>(dBuV/m) | AV<br>(dBuV/m) |      |
| 2432.00        | H               | 59.53          | 50.19        | 31.97             | 91.50            | 82.16          |                  |                | Y/F  |
| 1032.00        | H               | 59.44          | 58.56        | -8.11             | 51.33            | 50.45          | 74.00            | 54.00          | Y/H  |

**Remark :**

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission.
- (4) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :  
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand

TX CH06 (Above 1000 MHz, Horizontal)



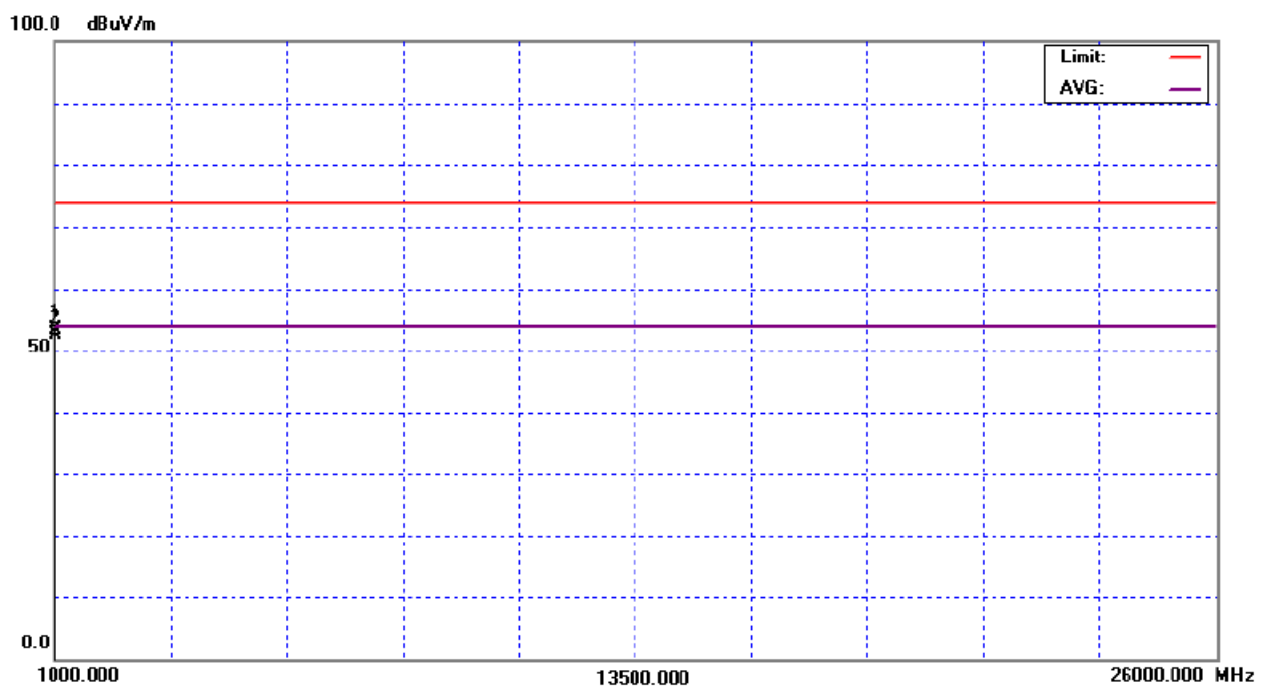
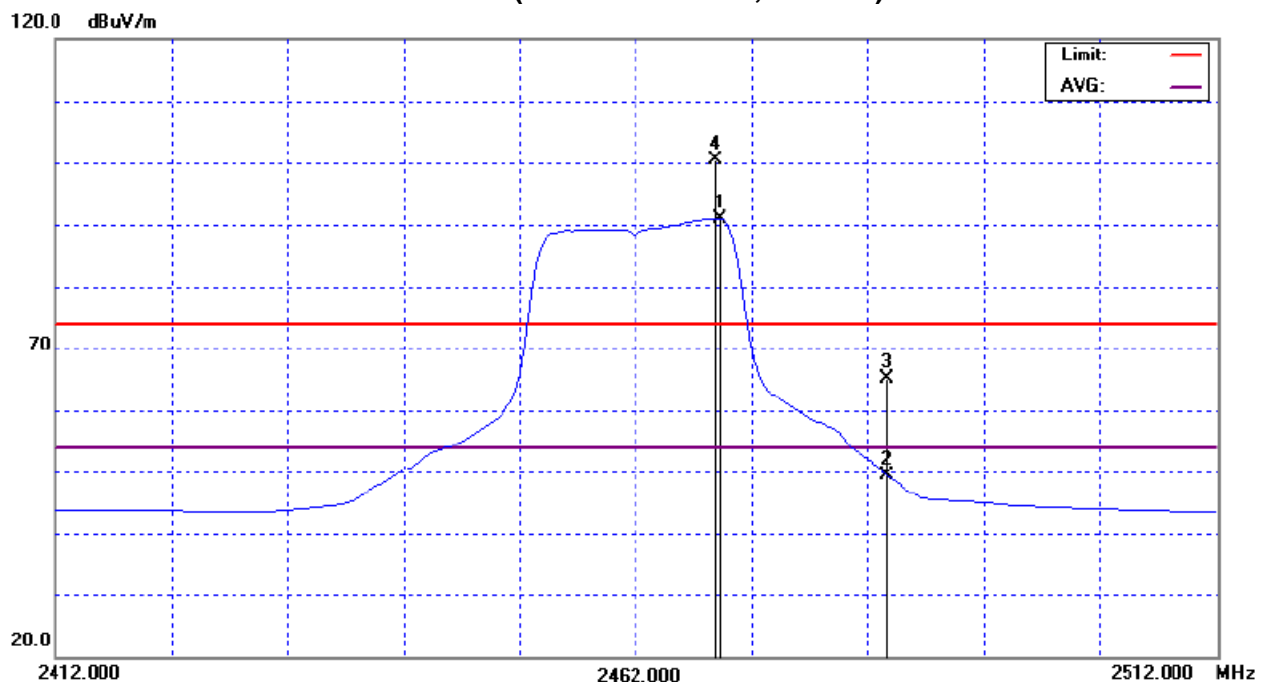
|               |                      |                     |              |
|---------------|----------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2 | Model Name :        | Z2           |
| Temperature : | 26 °C                | Relative Humidity : | 57 %         |
| Pressure :    | 1009 hPa             | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | TX 11G mode CH11     |                     |              |

| Freq.<br>(MHz) | Ant.Pol.<br>H/V | Reading        |              | Ant./CF<br>CF(dB) | Act.             |                | Limit            |                | Note       |
|----------------|-----------------|----------------|--------------|-------------------|------------------|----------------|------------------|----------------|------------|
|                |                 | Peak<br>(dBuV) | AV<br>(dBuV) |                   | Peak<br>(dBuV/m) | AV<br>(dBuV/m) | Peak<br>(dBuV/m) | AV<br>(dBuV/m) |            |
| <b>2469.20</b> | <b>V</b>        | <b>68.18</b>   | <b>58.73</b> | <b>32.15</b>      | <b>100.33</b>    | <b>90.88</b>   |                  |                | <b>Y/F</b> |
| 2483.50        | V               | 32.88          | 17.19        | 32.22             | 65.10            | 49.41          | 74.00            | 54.00          | Y/E        |
| 1032.00        | V               | 61.52          | 60.70        | -8.11             | 53.41            | 52.59          | 74.00            | 54.00          | Y/H        |

**Remark :**

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission.
- (4) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :  
 "X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand

TX CH11 (Above 1000 MHz, Vertical)



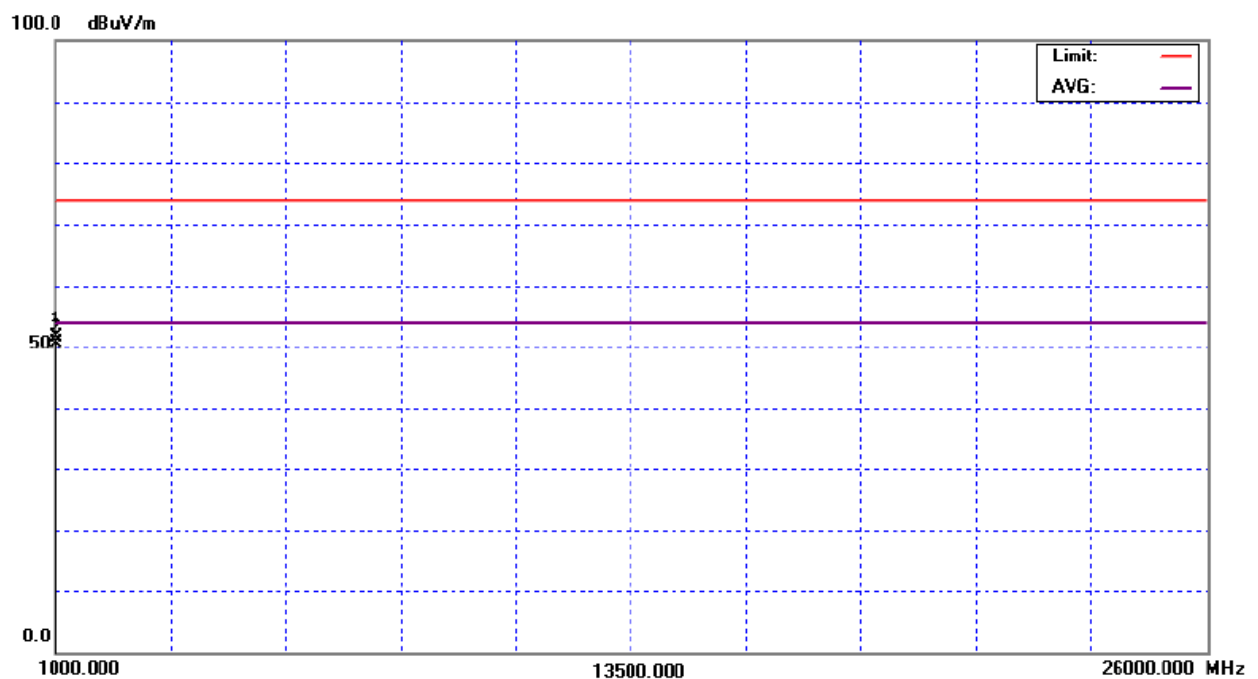
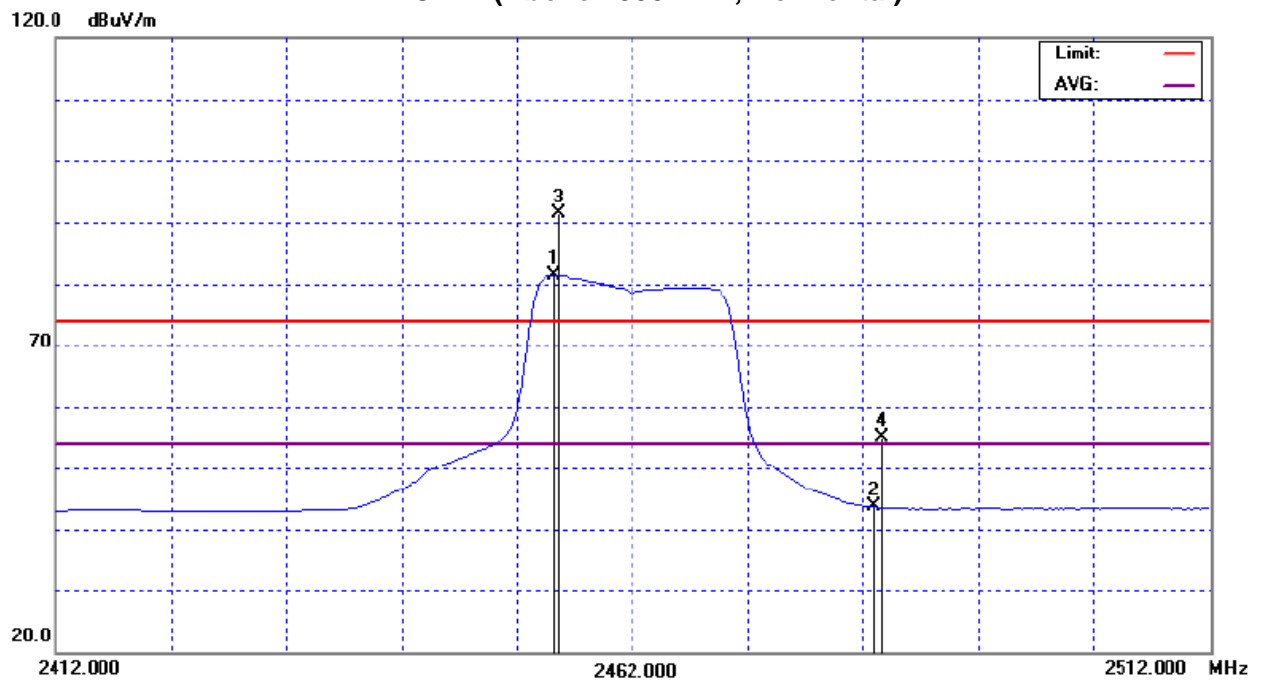
|               |                      |                     |              |
|---------------|----------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2 | Model Name :        | Z2           |
| Temperature : | 26 °C                | Relative Humidity : | 57 %         |
| Pressure :    | 1009 hPa             | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | TX 11G mode CH11     |                     |              |

| Freq.<br>(MHz) | Ant.Pol.<br>H/V | Reading        |              | Ant./CF<br>CF(dB) | Act.             |                | Limit            |                | Note       |
|----------------|-----------------|----------------|--------------|-------------------|------------------|----------------|------------------|----------------|------------|
|                |                 | Peak<br>(dBuV) | AV<br>(dBuV) |                   | Peak<br>(dBuV/m) | AV<br>(dBuV/m) | Peak<br>(dBuV/m) | AV<br>(dBuV/m) |            |
| <b>2455.20</b> | <b>H</b>        | <b>59.19</b>   | <b>49.33</b> | <b>32.08</b>      | <b>91.28</b>     | <b>81.41</b>   |                  |                | <b>Y/F</b> |
| 2483.50        | H               | 22.99          | 11.33        | 32.22             | 55.21            | 43.55          | 74.00            | 54.00          | Y/E        |
| 1032.48        | H               | 59.75          | 58.62        | -8.11             | 51.64            | 50.51          | 74.00            | 54.00          | Y/H        |

**Remark :**

- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform .
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency . "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .
- (4) Data of measurement within this frequency range shown " \* " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis :  
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand

TX CH11 (Above 1000 MHz, Horizontal)



#### 4.2.9 TEST RESULTS (Restricted Bands Requirements)

|               |   |                     |              |
|---------------|---|---------------------|--------------|
| EUT :         | Wireless Messenger 2  | Model Name :        | Z2           |
| Temperature : | 26 °C   | Relative Humidity : | 57 %         |
| Pressure :    | 1009 hPa  | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | 11B mode CH 01/11(Vertical )  |                     |              |
| Note :        | <p>The emission of the carrier radiated field strength is measured for 802.11b (Peak and AV) as following:</p> <ol style="list-style-type: none"> <li>1. The transmitter was then configured with the worst case antenna and setup to transmit at the lowest channel (CH01). Then the field strength was measured at 2310-2390 MHz.</li> <li>2. The transmitter was configured with the worst case antenna and setup to transmit at the highest channel (CH11). Then the field strength was measured at 2483.5-2500 MHz.</li> </ol> |                     |              |

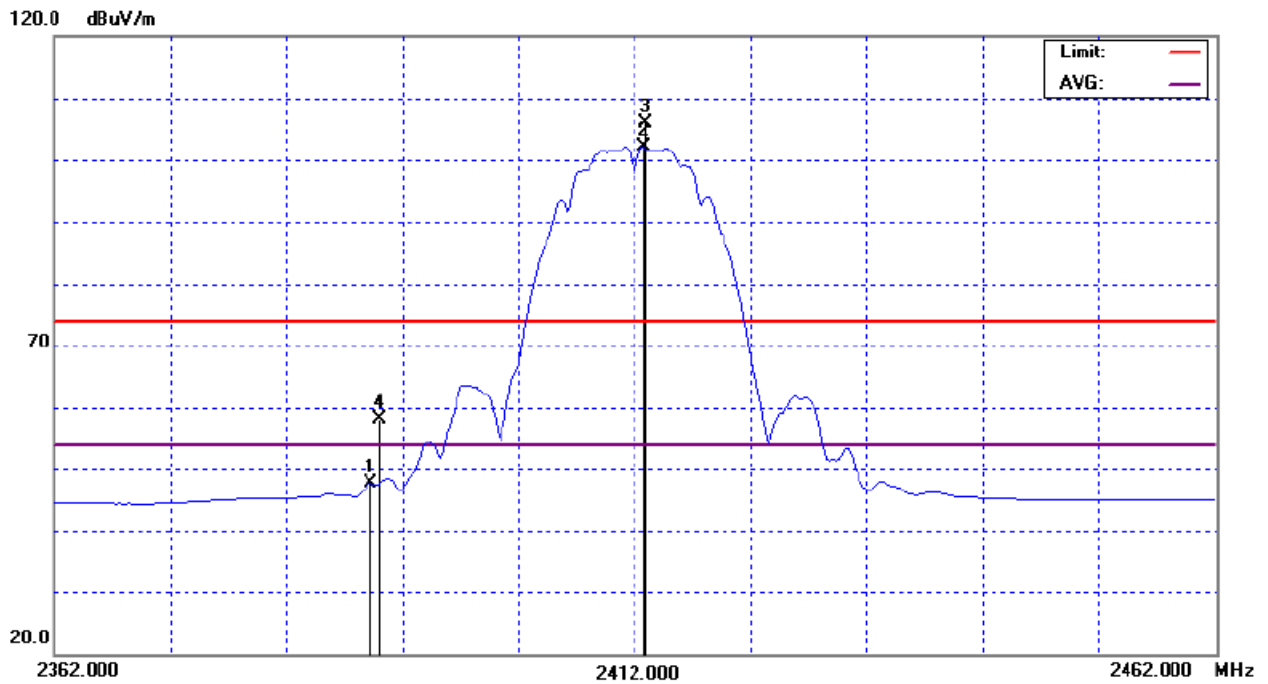
| Freq.<br>(MHz) | Ant.Pol.<br>H/V | Reading        |              | Ant./CF<br>CF(dB) | Act.             |                | Limit            |                | Note |
|----------------|-----------------|----------------|--------------|-------------------|------------------|----------------|------------------|----------------|------|
|                |                 | Peak<br>(dBuV) | AV<br>(dBuV) |                   | Peak<br>(dBuV/m) | AV<br>(dBuV/m) | Peak<br>(dBuV/m) | AV<br>(dBuV/m) |      |
| 2389.20        | V               | 26.41          | 15.75        | 31.77             | 58.18            | 47.52          | 74.00            | 54.00          | CH01 |
| 2483.50        | V               | 20.74          | 11.15        | 32.22             | 52.96            | 43.37          | 74.00            | 54.00          | CH11 |

#### Remark :

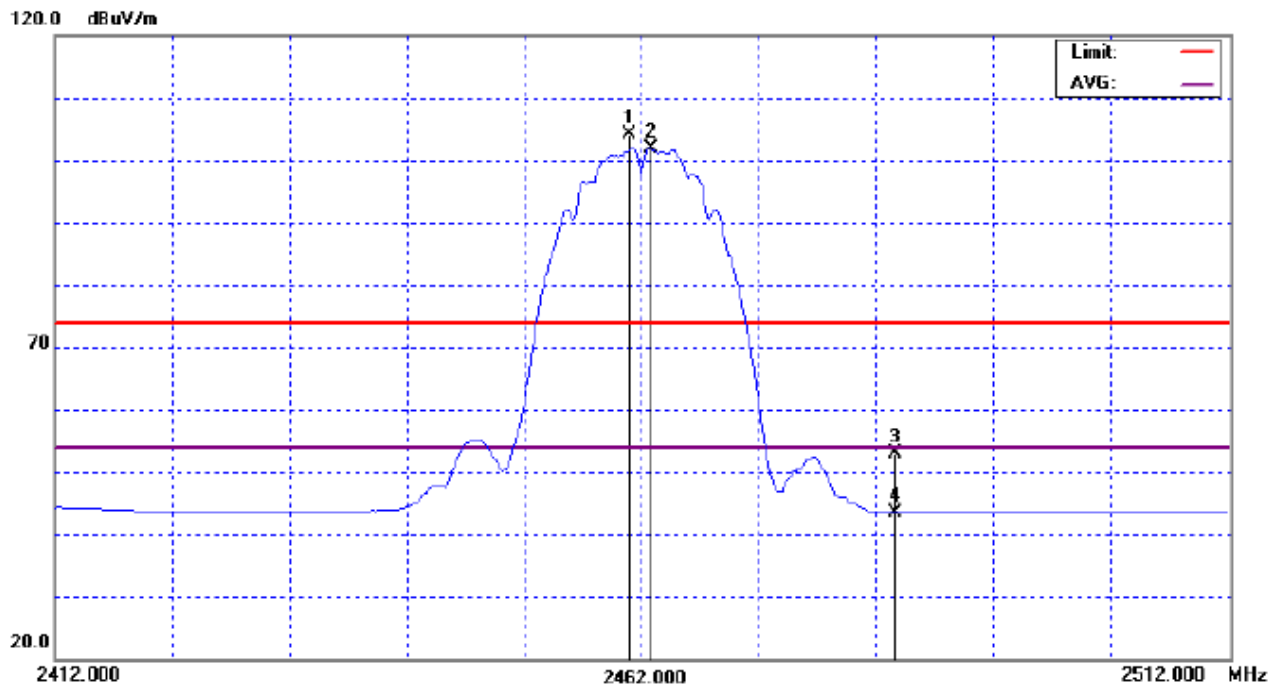
- (1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = 200 ms
- (2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .
- (3) EUT Orthogonal Axes :  
“X” - denotes Laid on Table ; “Y” - denotes Vertical Stand ; “Z” - denotes Side Stand



### 11B mode CH01 (Restricted Bands Requirements, Vertical)



### 11B mode CH11 (Restricted Bands Requirements, Vertical)



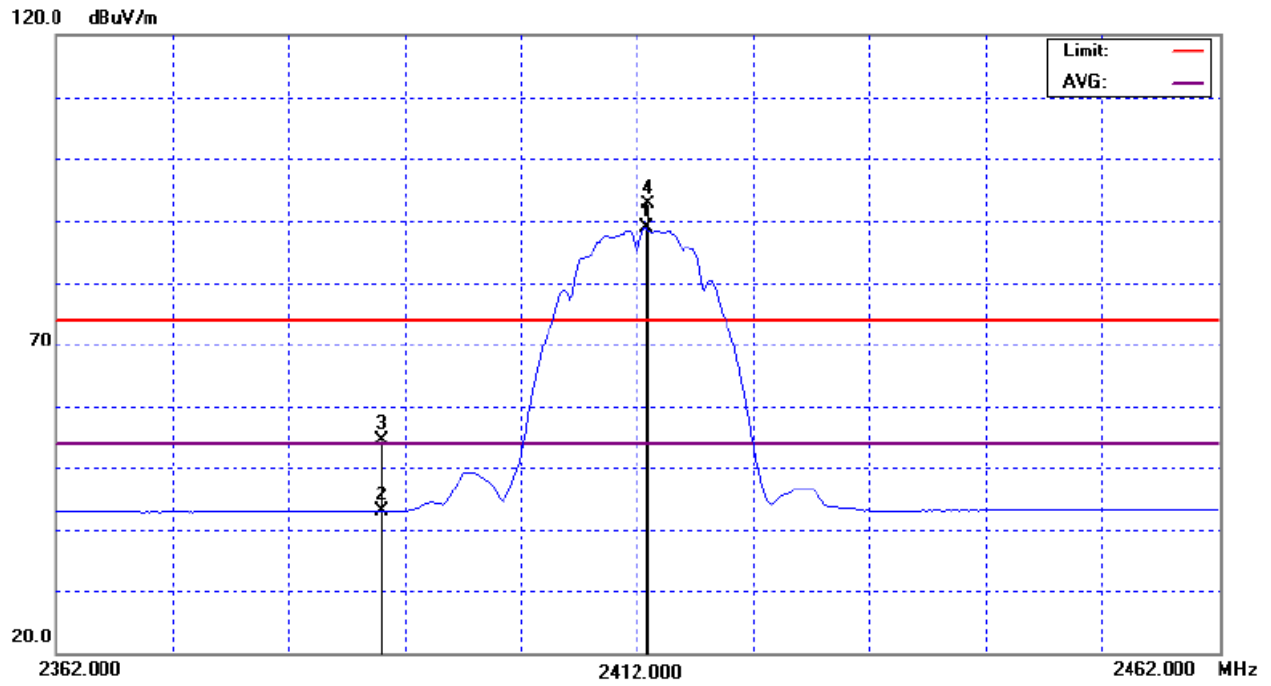
|               |   |                     |              |
|---------------|---|---------------------|--------------|
| EUT :         | Wireless Messenger 2  | Model Name :        | Z2           |
| Temperature : | 26 °C   | Relative Humidity : | 57 %         |
| Pressure :    | 1009 hPa  | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | 11B mode CH 01/11 (Horizontal)  |                     |              |
| Note :        | <p>The emission of the carrier radiated field strength is measured for 802.11b (Peak and AV) as following:</p> <ol style="list-style-type: none"> <li>1. The transmitter was then configured with the worst case antenna and setup to transmit at the lowest channel (CH01). Then the field strength was measured at 2310-2390 MHz.</li> <li>2. The transmitter was configured with the worst case antenna and setup to transmit at the highest channel (CH11). Then the field strength was measured at 2483.5-2500 MHz.</li> </ol> |                     |              |

| Freq.<br>(MHz) | Ant.Pol.<br>H/V | Reading        |              | Ant./CF<br>CF(dB) | Act.             |                | Limit            |                | Note |
|----------------|-----------------|----------------|--------------|-------------------|------------------|----------------|------------------|----------------|------|
|                |                 | Peak<br>(dBuV) | AV<br>(dBuV) |                   | Peak<br>(dBuV/m) | AV<br>(dBuV/m) | Peak<br>(dBuV/m) | AV<br>(dBuV/m) |      |
| 2390.00        | H               | 22.81          | 11.06        | 31.77             | 54.58            | 42.83          | 74.00            | 54.00          | CH01 |
| 2483.50        | H               | 21.11          | 11.01        | 32.22             | 53.33            | 43.23          | 74.00            | 54.00          | CH11 |

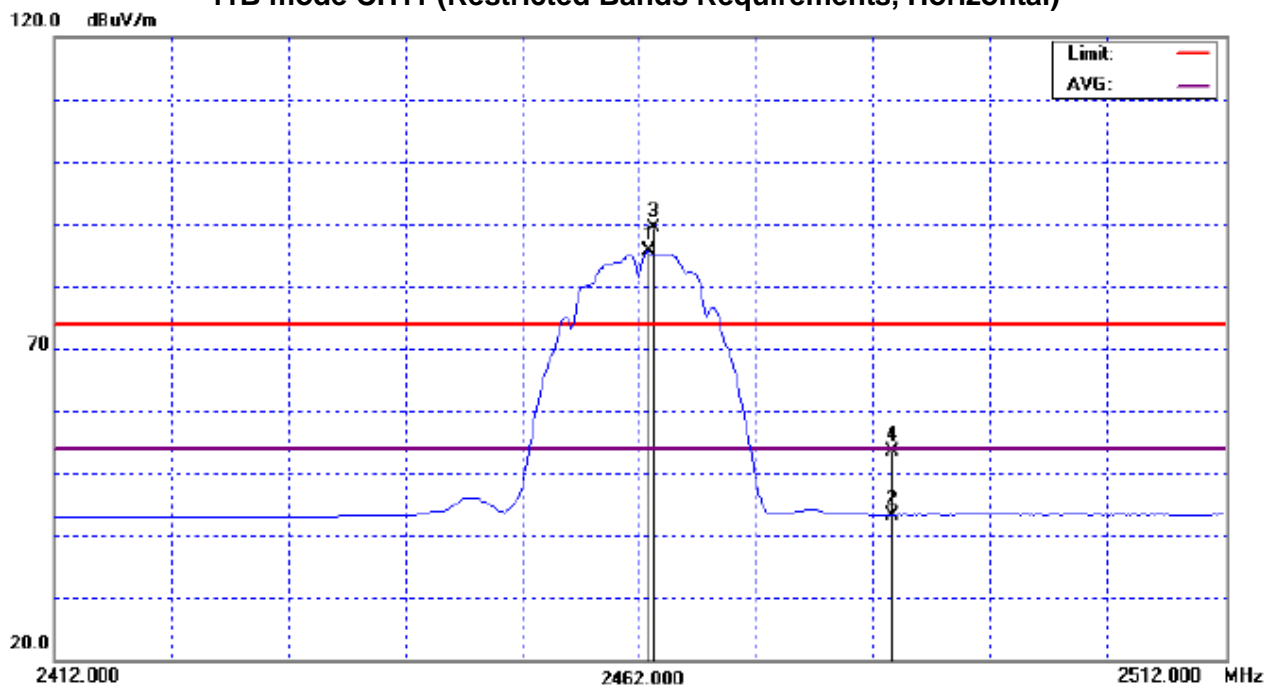
**Remark :**

- (1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = 200 ms
- (2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .
- (3) EUT Orthogonal Axes :  
“X” - denotes Laid on Table ; “Y” - denotes Vertical Stand ; “Z” - denotes Side Stand

### 11B mode CH01 (Restricted Bands Requirements, Horizontal)



### 11B mode CH11 (Restricted Bands Requirements, Horizontal)



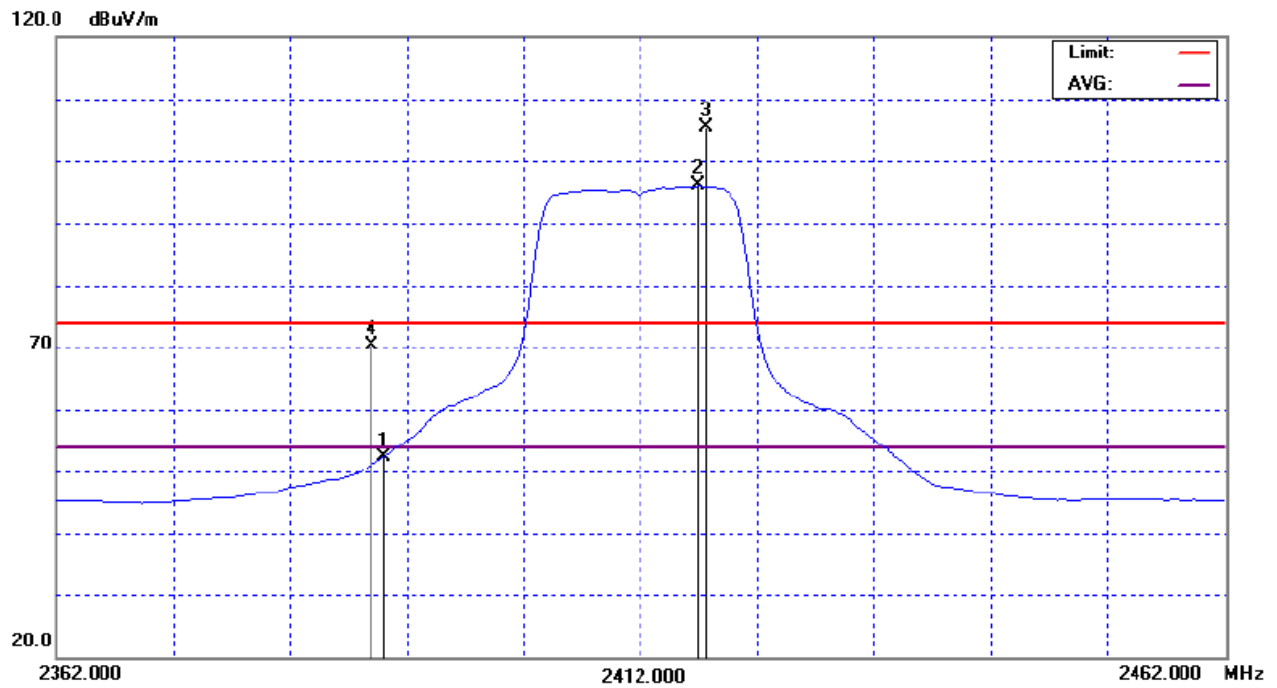
|               |   |                     |              |
|---------------|---|---------------------|--------------|
| EUT :         | Wireless Messenger 2  | Model Name :        | Z2           |
| Temperature : | 26 °C   | Relative Humidity : | 57 %         |
| Pressure :    | 1009 hPa  | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | 11G mode CH 01/11 (Vertical)  |                     |              |
| Note :        | <p>The emission of the carrier radiated field strength is measured for 802.11g (Peak and AV) as following:</p> <ol style="list-style-type: none"> <li>1. The transmitter was then configured with the worst case antenna and setup to transmit at the lowest channel (CH01). Then the field strength was measured at 2310-2390 MHz.</li> <li>2. The transmitter was configured with the worst case antenna and setup to transmit at the highest channel (CH11). Then the field strength was measured at 2483.5-2500 MHz.</li> </ol> |                     |              |

| Freq.<br>(MHz) | Ant. Pol.<br>H/V | Reading        |              | Ant./CF<br>CF(dB) | Act.             |                | Limit            |                | Note |
|----------------|------------------|----------------|--------------|-------------------|------------------|----------------|------------------|----------------|------|
|                |                  | Peak<br>(dBuV) | AV<br>(dBuV) |                   | Peak<br>(dBuV/m) | AV<br>(dBuV/m) | Peak<br>(dBuV/m) | AV<br>(dBuV/m) |      |
| 2390.00        | V                | 38.73          | 20.68        | 31.77             | 70.50            | 52.45          | 74.00            | 54.00          | CH01 |
| 2483.50        | V                | 32.88          | 17.19        | 32.22             | 65.10            | 49.41          | 74.00            | 54.00          | CH11 |

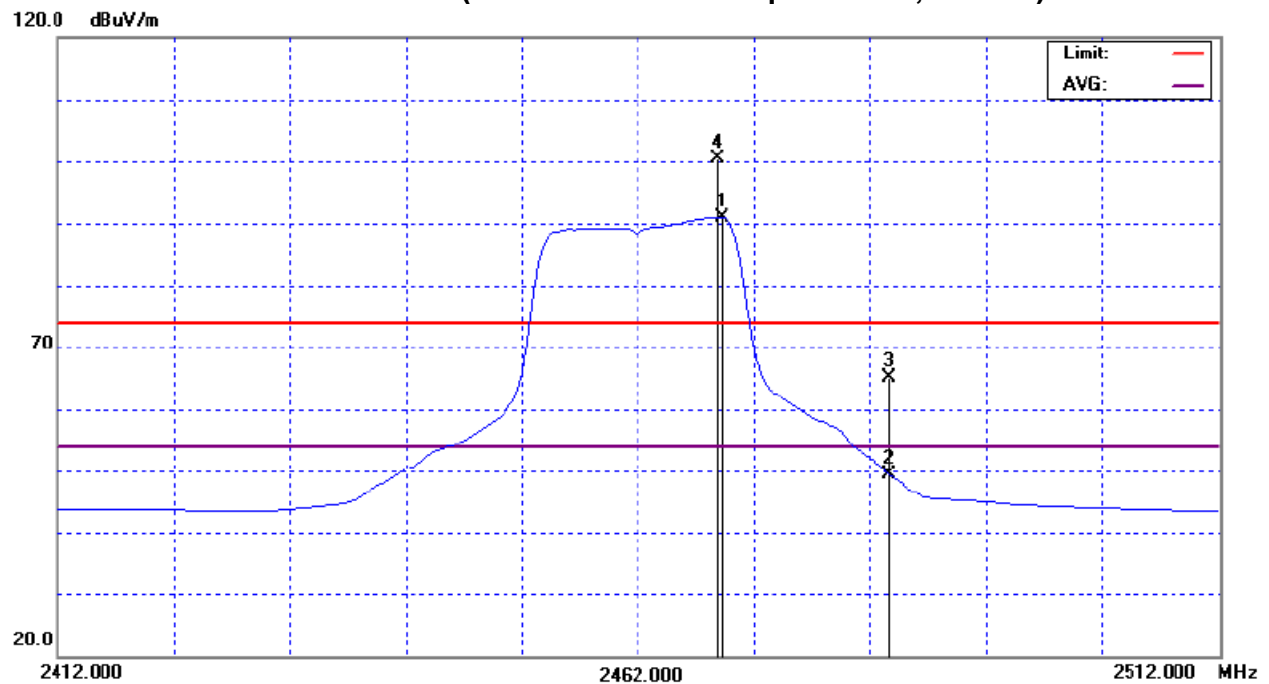
**Remark :**

- (1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = 200 ms
- (2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .
- (3) EUT Orthogonal Axes :  
“X” - denotes Laid on Table ; “Y” - denotes Vertical Stand ; “Z” - denotes Side Stand

### 11G mode CH 01 (Restricted Bands Requirements, Vertical)



### 11G mode CH 11 (Restricted Bands Requirements, Vertical)



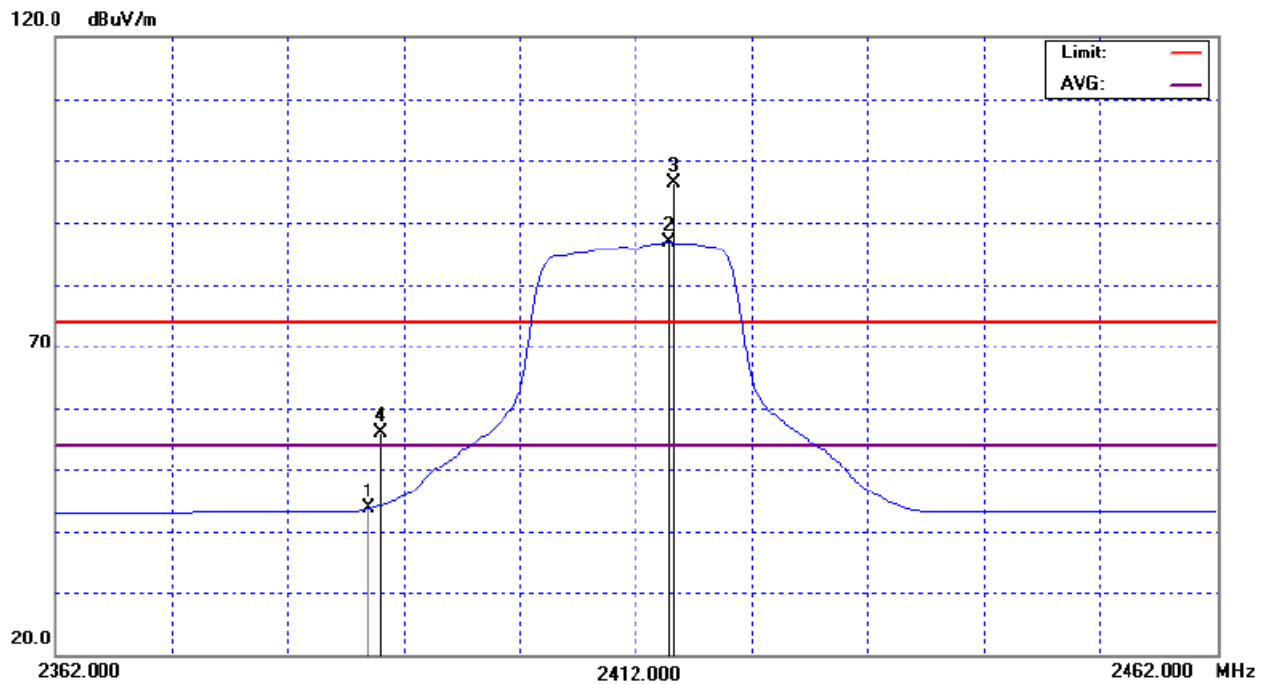
|               |   |                     |              |
|---------------|---|---------------------|--------------|
| EUT :         | Wireless Messenger 2  | Model Name :        | Z2           |
| Temperature : | 26 °C   | Relative Humidity : | 57 %         |
| Pressure :    | 1009 hPa  | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | 11G mode CH 01/11(Horizontal)   |                     |              |
| Note :        | <p>The emission of the carrier radiated field strength is measured for 802.11g (Peak and AV) as following:</p> <ol style="list-style-type: none"> <li>1. The transmitter was then configured with the worst case antenna and setup to transmit at the lowest channel (CH01). Then the field strength was measured at 2310-2390 MHz.</li> <li>2. The transmitter was configured with the worst case antenna and setup to transmit at the highest channel (CH11). Then the field strength was measured at 2483.5-2500 MHz.</li> </ol> |                     |              |

| Freq.<br>(MHz) | Ant.Pol.<br>H/V | Reading        |              | Ant./CF<br>CF(dB) | Act.             |                | Limit            |                | Note |
|----------------|-----------------|----------------|--------------|-------------------|------------------|----------------|------------------|----------------|------|
|                |                 | Peak<br>(dBuV) | AV<br>(dBuV) |                   | Peak<br>(dBuV/m) | AV<br>(dBuV/m) | Peak<br>(dBuV/m) | AV<br>(dBuV/m) |      |
| 2390.00        | H               | 24.42          | 11.87        | 31.77             | 56.19            | 43.64          | 74.00            | 54.00          | CH01 |
| 2483.50        | H               | 22.99          | 11.33        | 32.22             | 55.21            | 43.55          | 74.00            | 54.00          | CH11 |

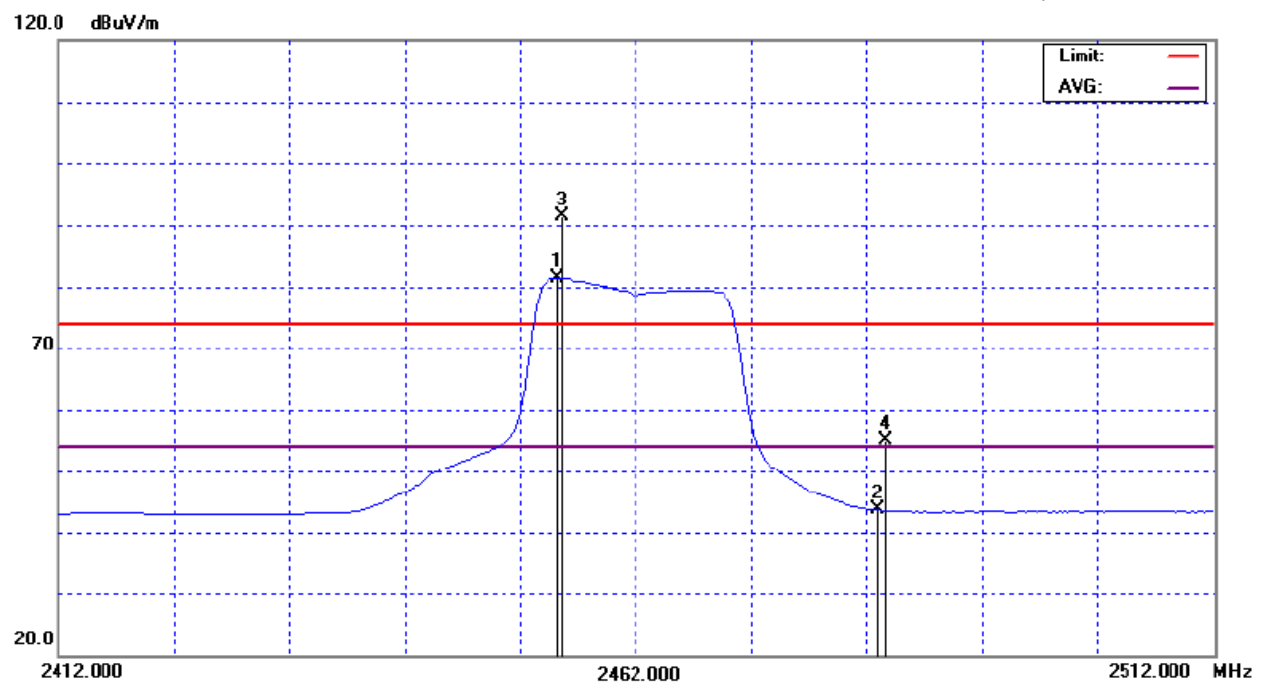
**Remark :**

- (1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = 200 ms
- (2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission .
- (3) EUT Orthogonal Axes :  
“X” - denotes Laid on Table ; “Y” - denotes Vertical Stand ; “Z” - denotes Side Stand

### 11G mode CH 01 (Restricted Bands Requirements, Horizontal)



### 11G mode CH 11 (Restricted Bands Requirements, Horizontal)



## 5. BANDWIDTH TEST

### 5.1 APPLIED PROCEDURES / LIMIT

| FCC Part15 (15.247) , Subpart C |           |   |                       |        |
|---------------------------------|-----------|---|-----------------------|--------|
| Section                         | Test Item | Limit                                   | Frequency Range (MHz) | Result |
| 15.247<br>(a)(2)                | Bandwidth | $\geq 500\text{KHz}$<br>(6dB bandwidth) | 2400-2483.5           | PASS   |

#### 5.1.1 MEASUREMENT INSTRUMENTS LIST

| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
|------|-------------------|--------------|----------|------------|------------------|
| 1    | Spectrum Analyzer | R&S          | FSP_40   | 100129     | Aug,16, 2008     |

Remark: " N/A" denotes No Model Name , Serial No. or No Calibration specified.

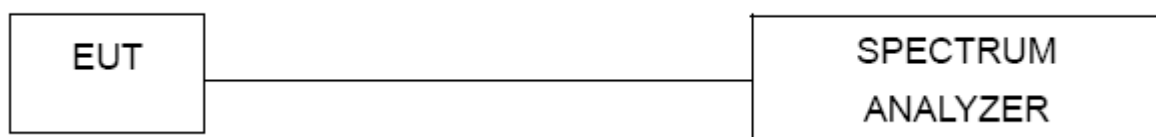
#### 5.1.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 100KHz, VBW=100KHz, Sweep time = 20 ms.

#### 5.1.3 DEVIATION FROM STANDARD

No deviation.

#### 5.1.4 TEST SETUP



#### 5.1.5 EUT OPERATION CONDITIONS

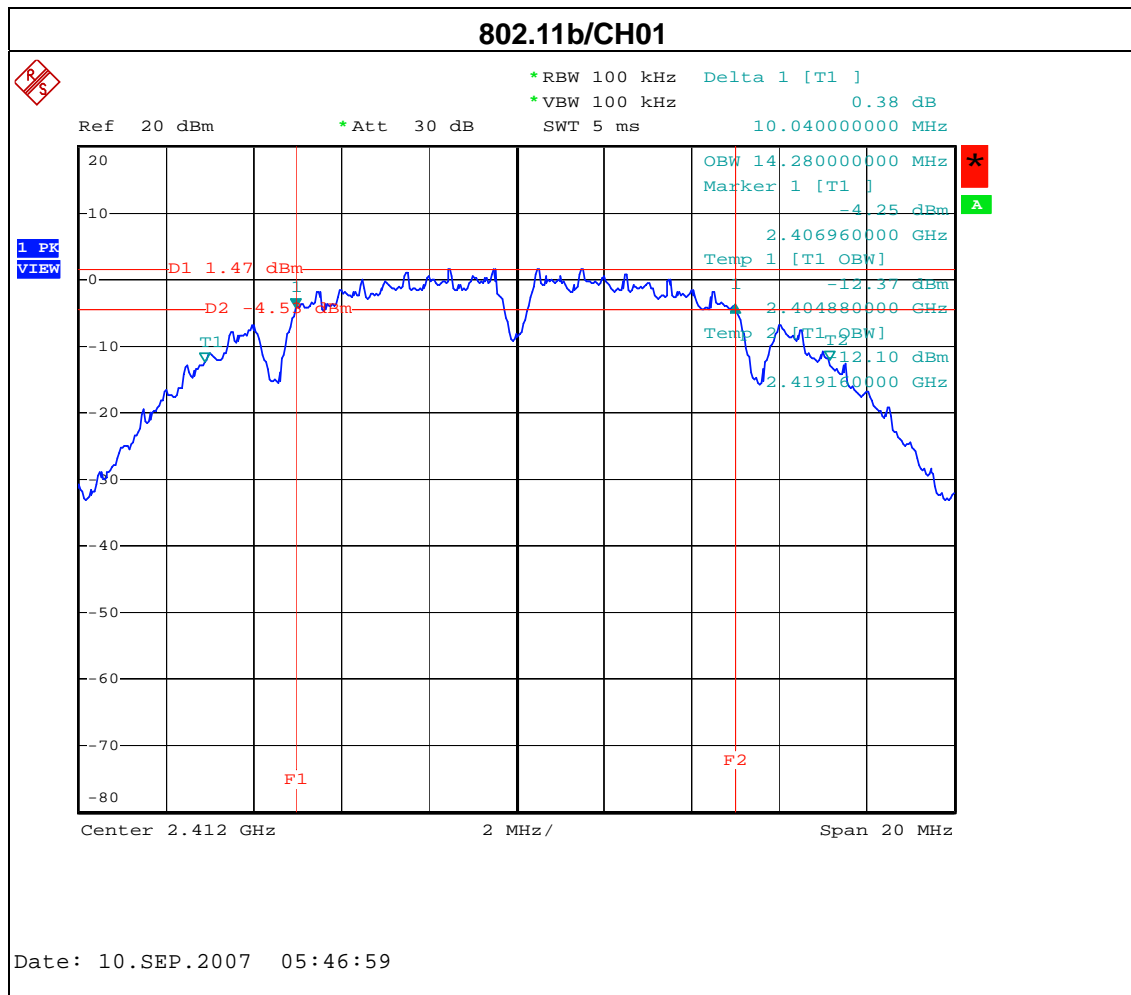
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.



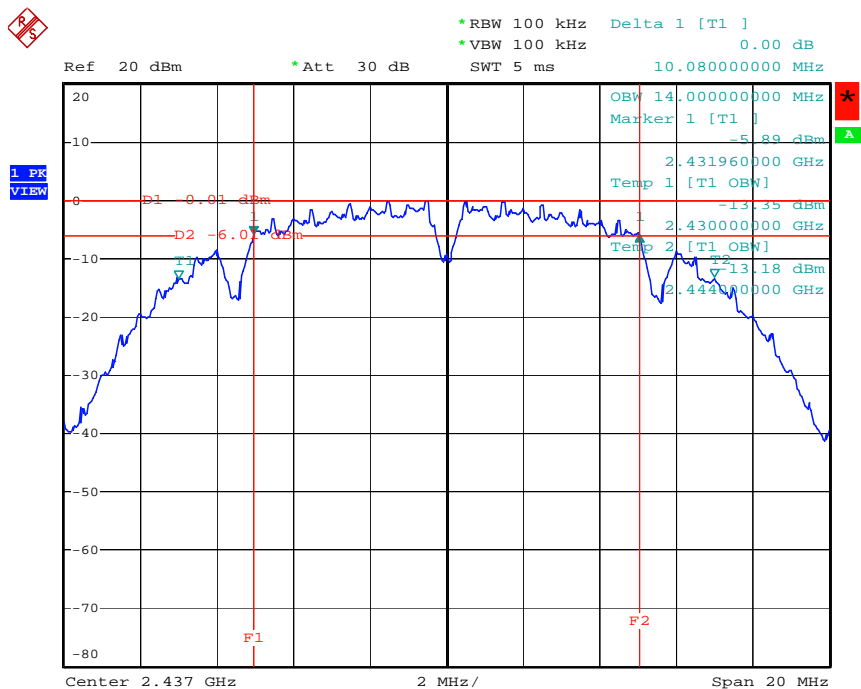
### 5.1.6 TEST RESULTS

|               |                          |                     |              |
|---------------|--------------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2     | Model Name :        | Z2           |
| Temperature : | 27 °C                    | Relative Humidity : | 58 %         |
| Pressure :    | 1004 hPa                 | Test Power :        | AC 120V/60Hz |
| Test Mode :   | 802.11b/CH01, CH06, CH11 |                     |              |

| Test Channel | Frequency (MHz) | Bandwidth (MHz) | 99% Occupied BW (MHz) | LIMIT (MHz) |
|--------------|-----------------|-----------------|-----------------------|-------------|
| CH01         | 2412            | 10.04           | 14.28                 | >=500KHz    |
| CH06         | 2437            | 10.08           | 14.00                 | >=500KHz    |
| CH11         | 2462            | 10.08           | 13.88                 | >=500KHz    |

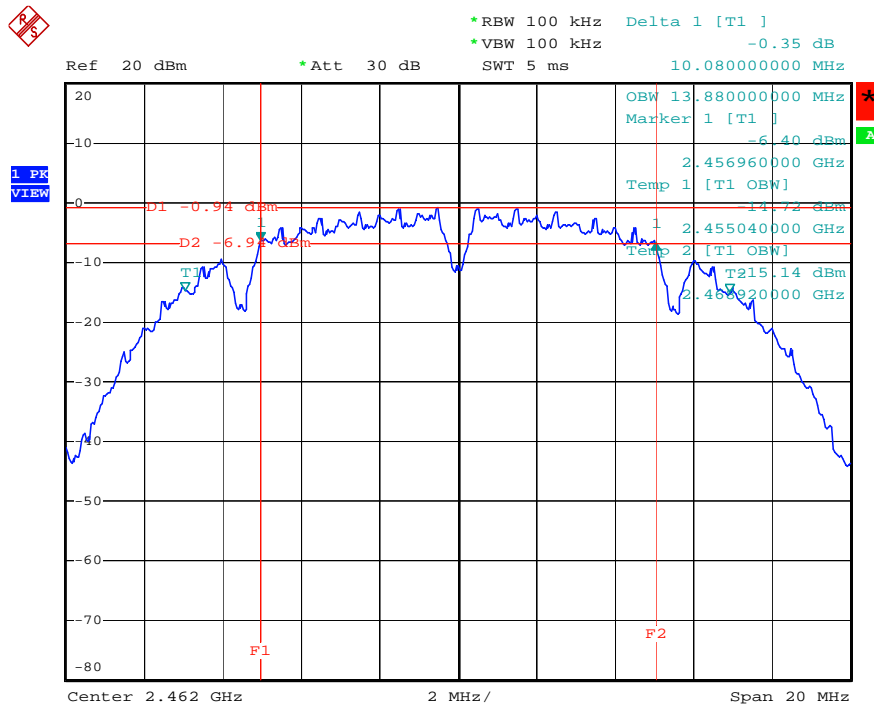


### 802.11b/CH06



Date: 10.SEP.2007 05:52:46

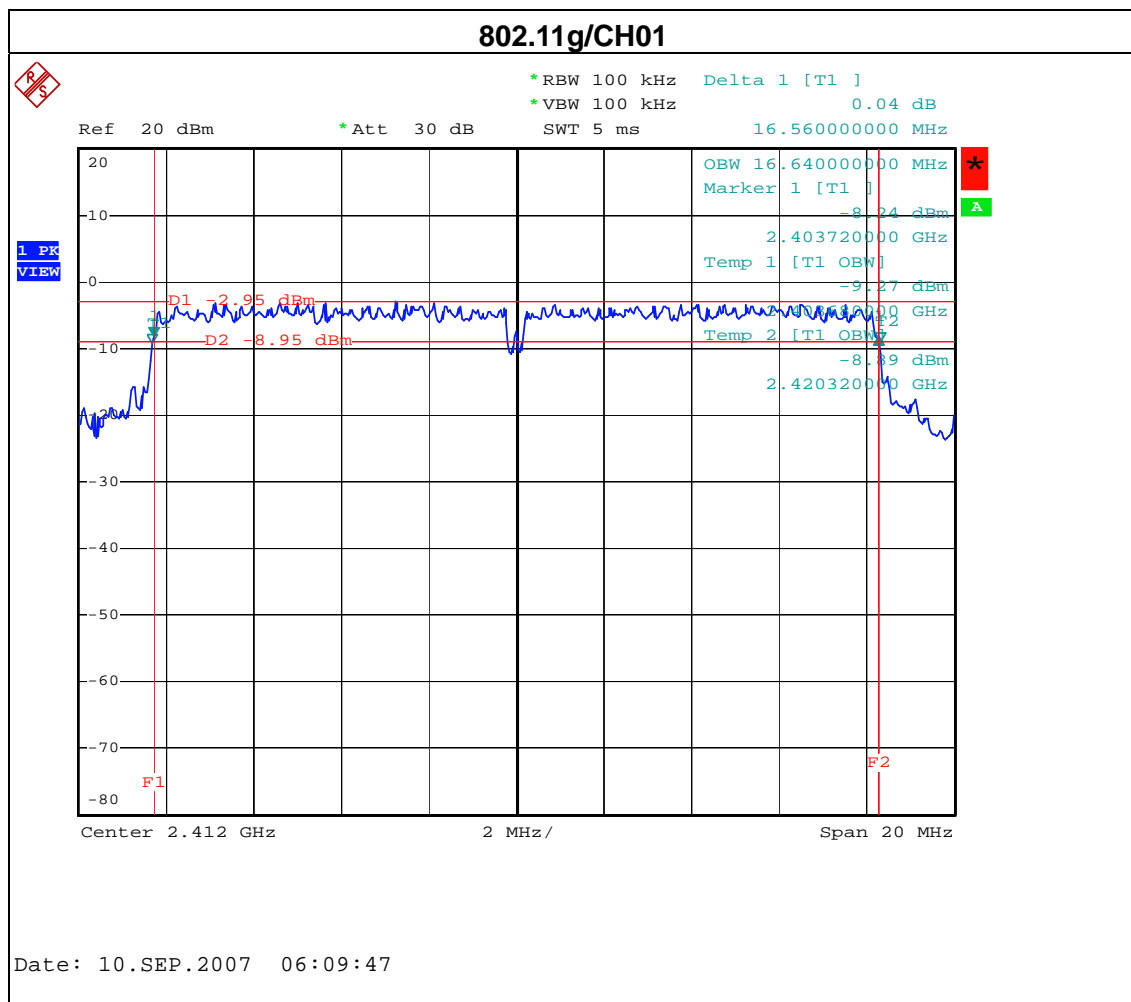
### 802.11b/CH11



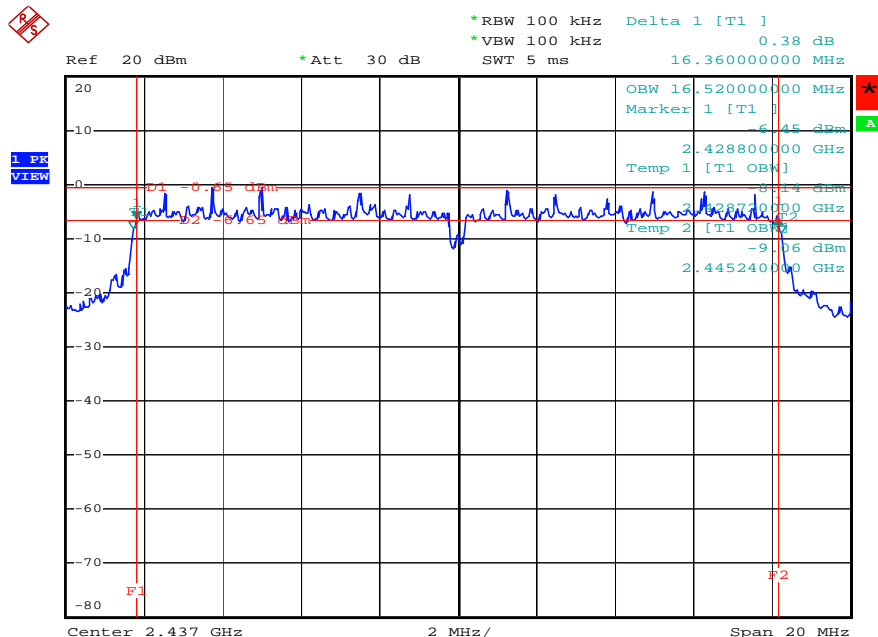
Date: 10.SEP.2007 05:55:55

|               |                          |                     |              |
|---------------|--------------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2     | Model Name :        | Z2           |
| Temperature : | 27 °C                    | Relative Humidity : | 58 %         |
| Pressure :    | 1004 hPa                 | Test Power :        | AC 120V/60Hz |
| Test Mode :   | 802.11g/CH01, CH06, CH11 |                     |              |

| Test Channel | Frequency (MHz) | Bandwidth (MHz) | 99% Occupied BW (MHz) | LIMIT (MHz) |
|--------------|-----------------|-----------------|-----------------------|-------------|
| CH01         | 2412            | 16.56           | 16.64                 | >=500KHz    |
| CH06         | 2437            | 16.36           | 16.52                 | >=500KHz    |
| CH11         | 2462            | 16.56           | 16.52                 | >=500KHz    |

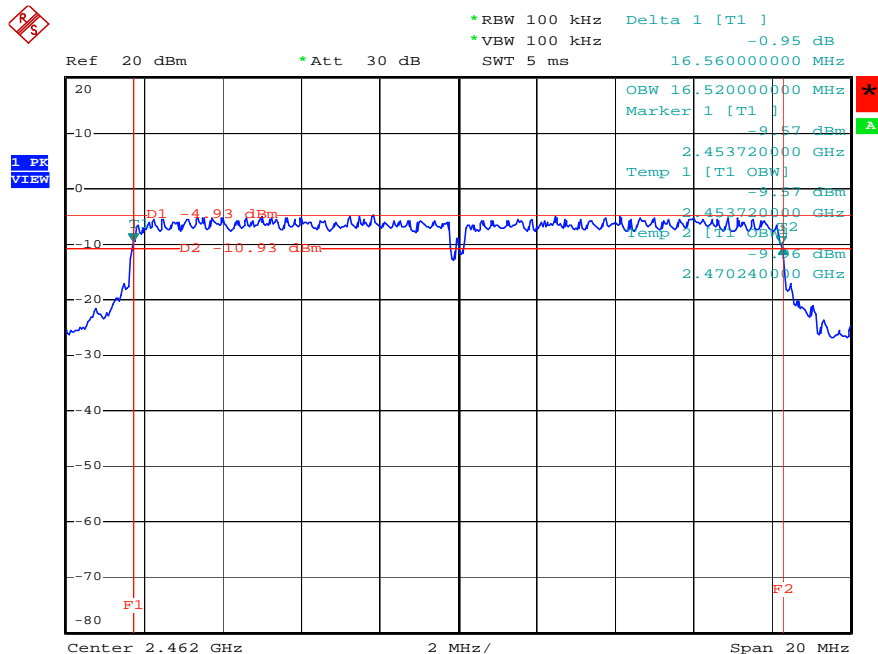


### 802.11g/CH06



Date: 10.SEP.2007 06:12:38

### 802.11g/CH11



Date: 10.SEP.2007 06:15:40

## 6. PEAK OUTPUT POWER TEST

### 6.1 APPLIED PROCEDURES / LIMIT

| FCC Part15 (15.247) , Subpart C |                   |                 |                       |        |
|---------------------------------|-------------------|-----------------|-----------------------|--------|
| Section                         | Test Item         | Limit           | Frequency Range (MHz) | Result |
| 15.247 (b)(1)                   | Peak Output Power | 1 watt or 30dBm | 2400-2483.5           | PASS   |

#### 6.1.1 MEASUREMENT INSTRUMENTS LIST

| Item | Kind of Equipment  | Manufacturer | Type No. | Serial No. | Calibrated until |
|------|--------------------|--------------|----------|------------|------------------|
| 1    | Power Meter        | Anritsu      | ML2487A  | 6K00004714 | Feb. 04, 2008    |
| 2    | Power Meter Sensor | Anritsu      | MA2491A  | 34138      | Feb. 04, 2008    |

Remark: " N/A" denotes No Model Name , Serial No. or No Calibration specified.

#### 6.1.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 3MHz, VBW= 3MHz, Sweep time = 20 ms.

#### 6.1.3 DEVIATION FROM STANDARD

No deviation.

#### 6.1.4 TEST SETUP



#### 6.1.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

**6.1.6 TEST RESULTS**

|               |                          |                     |              |
|---------------|--------------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2     | Model Name :        | Z2           |
| Temperature : | 27 °C                    | Relative Humidity : | 58 %         |
| Pressure :    | 1004 hPa                 | Test Power :        | AC 120V/60Hz |
| Test Mode :   | 802.11b/CH01, CH06, CH11 |                     |              |

| Test Channel | Frequency (MHz) | Peak Output Power (dBm) | LIMIT (dBm) | LIMIT (W) |
|--------------|-----------------|-------------------------|-------------|-----------|
| CH01         | 2412            | 16.83                   | 30          | 1         |
| CH06         | 2437            | 16.52                   | 30          | 1         |
| CH11         | 2462            | 16.57                   | 30          | 1         |

|               |                          |                     |              |
|---------------|--------------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2     | Model Name :        | Z2           |
| Temperature : | 27 °C                    | Relative Humidity : | 58 %         |
| Pressure :    | 1004 hPa                 | Test Power :        | AC 120V/60Hz |
| Test Mode :   | 802.11g/CH01, CH06, CH11 |                     |              |

| Test Channel | Frequency (MHz) | Peak Output Power (dBm) | LIMIT (dBm) | LIMIT (W) |
|--------------|-----------------|-------------------------|-------------|-----------|
| CH01         | 2412            | 14.59                   | 30          | 1         |
| CH06         | 2437            | 13.81                   | 30          | 1         |
| CH11         | 2462            | 13.08                   | 30          | 1         |

## 7. ANTENNA CONDUCTED SPURIOUS EMISSION

### 7.1 APPLIED PROCEDURES / LIMIT

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

| Frequencies (MHz) | Field Strength (micorvolts/meter) | Measurement Distance (meters) |
|-------------------|-----------------------------------|-------------------------------|
| 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                             |

#### 7.1.1 MEASUREMENT INSTRUMENTS LIST

| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
|------|-------------------|--------------|----------|------------|------------------|
| 1    | Spectrum Analyzer | R&S          | FSP_40   | 100129     | Aug,16, 2008     |

Remark: " N/A" denotes No Model Name , Serial No. or No Calibration specified.

The following table is the setting of the spectrum analyzer.

| Spectrum Parameter                    | Setting  |
|---------------------------------------|--|
| Attenuation                           | Auto   |
| Span Frequency                        | 100 MHz  |
| RB / VB (emission in restricted band) | 1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average |
| RB / VB (other emission)              | 100 KHz /100 KHz for Peak                      |

#### 7.1.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms.

#### 7.1.3 DEVIATION FROM STANDARD

No deviation.

#### 7.1.4 TEST SETUP



#### 7.1.5 EUT OPERATION CONDITIONS

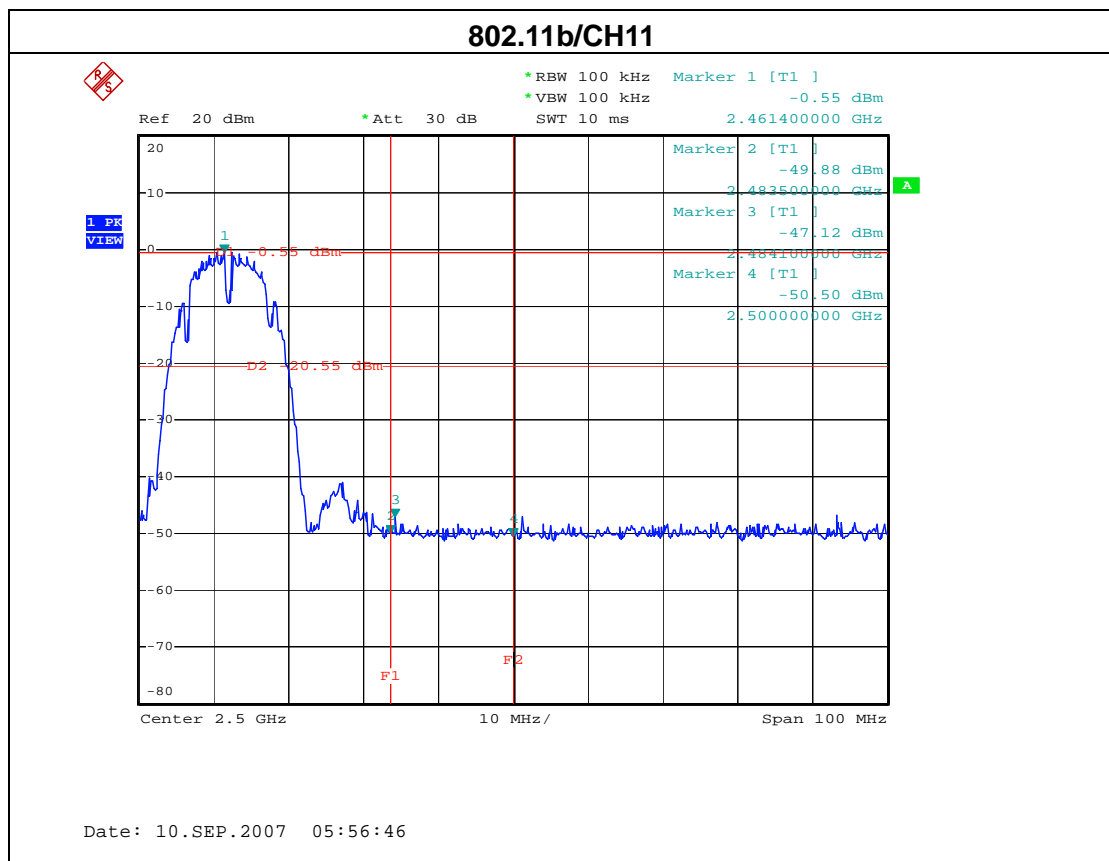
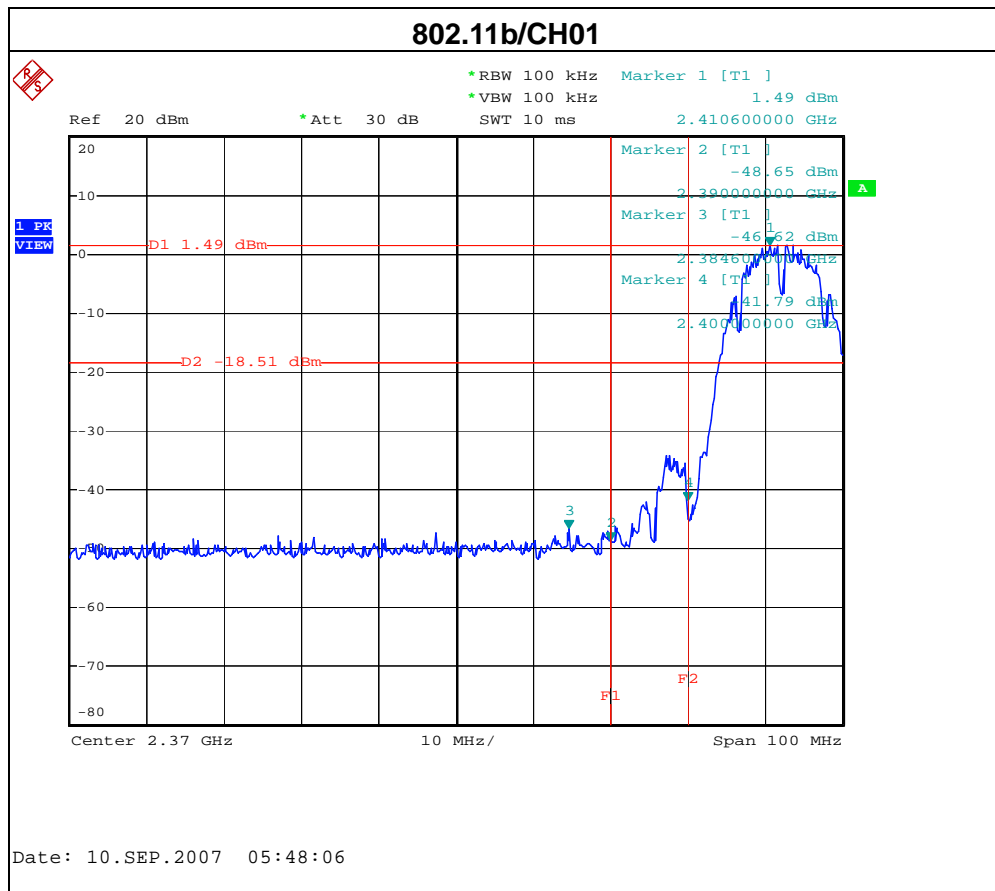
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.



**7.1.6 TEST RESULTS**

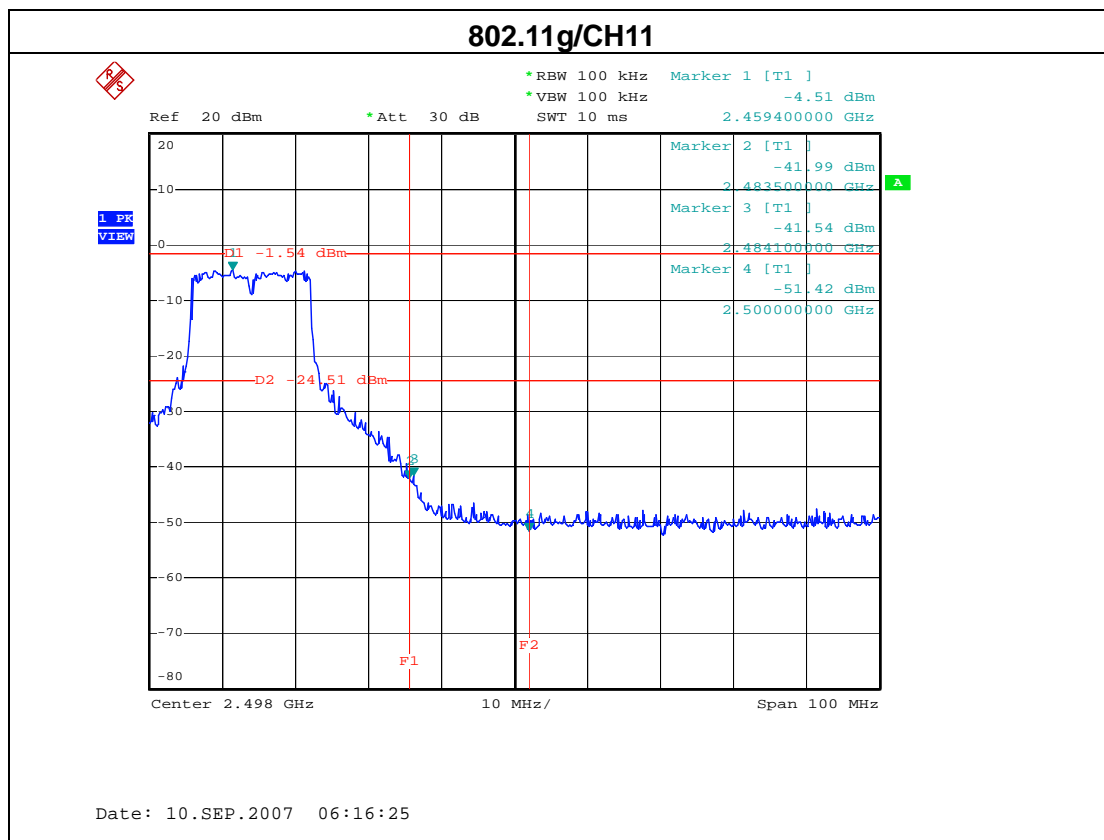
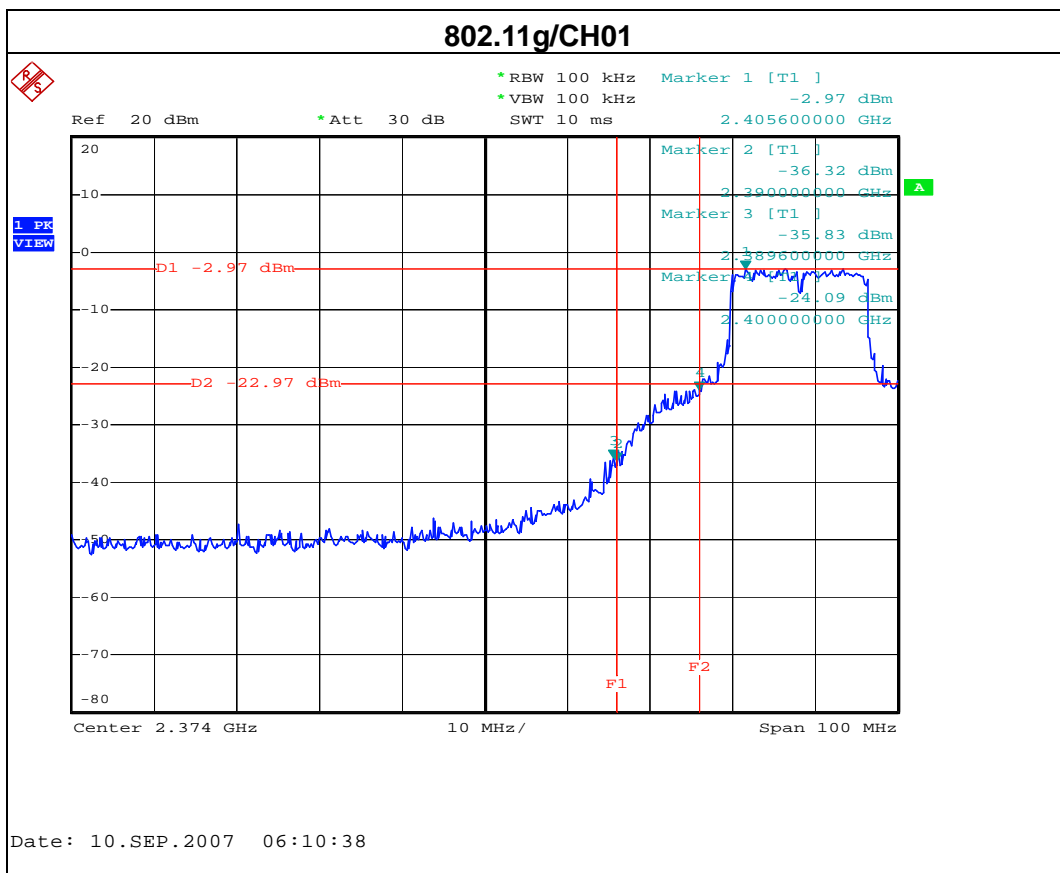
|               |                      |                     |              |
|---------------|----------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2 | Model Name :        | Z2           |
| Temperature : | 27 °C                | Relative Humidity : | 58 %         |
| Pressure :    | 1004 hPa             | Test Power :        | AC 120V/60Hz |
| Test Mode :   | 11B mode CH01, CH11  |                     |              |

| Channel of Worst Data: CH01   |            |  |            |
|---|------------|--|------------|
| The max. radio frequency power in any 100kHz bandwidth outside the frequency band   |            | The max. radio frequency power in any 100 kHz bandwidth within the frequency band. |            |
| FREQUENCY(MHz)  | POWER(dBm) | FREQUENCY(MHz)   | POWER(dBm) |
| 2384.6  | -46.62     | 2484.1   | -47.12     |
| Result  |            |  |            |
| In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power. |            |  |            |



|               |                      |                     |              |
|---------------|----------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2 | Model Name :        | Z2           |
| Temperature : | 27 °C                | Relative Humidity : | 58 %         |
| Pressure :    | 1004 hPa             | Test Power :        | AC 120V/60Hz |
| Test Mode :   | 11G mode CH01, CH11  |                     |              |

| Channel of Worst Data: CH01   |            |  |            |
|---|------------|--|------------|
| The max. radio frequency power in any 100kHz bandwidth outside the frequency band   |            | The max. radio frequency power in any 100 kHz bandwidth within the frequency band. |            |
| FREQUENCY(MHz)  | POWER(dBm) | FREQUENCY(MHz)   | POWER(dBm) |
| 2389.96   | -35.83     | 2484.1   | -41.54     |
| Result  |            |  |            |
| In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power. |            |  |            |



## 8. POWER SPECTRAL DENSITY TEST

### 8.1 APPLIED PROCEDURES / LIMIT

| FCC Part15 (15.247) , Subpart C |                        |                     |                       |        |
|---------------------------------|------------------------|---------------------|-----------------------|--------|
| Section                         | Test Item              | Limit               | Frequency Range (MHz) | Result |
| 15.247 (d)                      | Power Spectral Density | 8 dBm (in any 3KHz) | 2400-2483.5           | PASS   |

#### 8.1.1 MEASUREMENT INSTRUMENTS LIST

| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
|------|-------------------|--------------|----------|------------|------------------|
| 1    | Spectrum Analyzer | R&S          | FSP_40   | 100129     | Aug,16, 2008     |

Remark: " N/A" denotes No Model Name , Serial No. or No Calibration specified.

#### 8.1.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW=3KHz, VBW=30 KHz, Sweep time = 500s.

#### 8.1.3 DEVIATION FROM STANDARD

No deviation.

#### 8.1.4 TEST SETUP



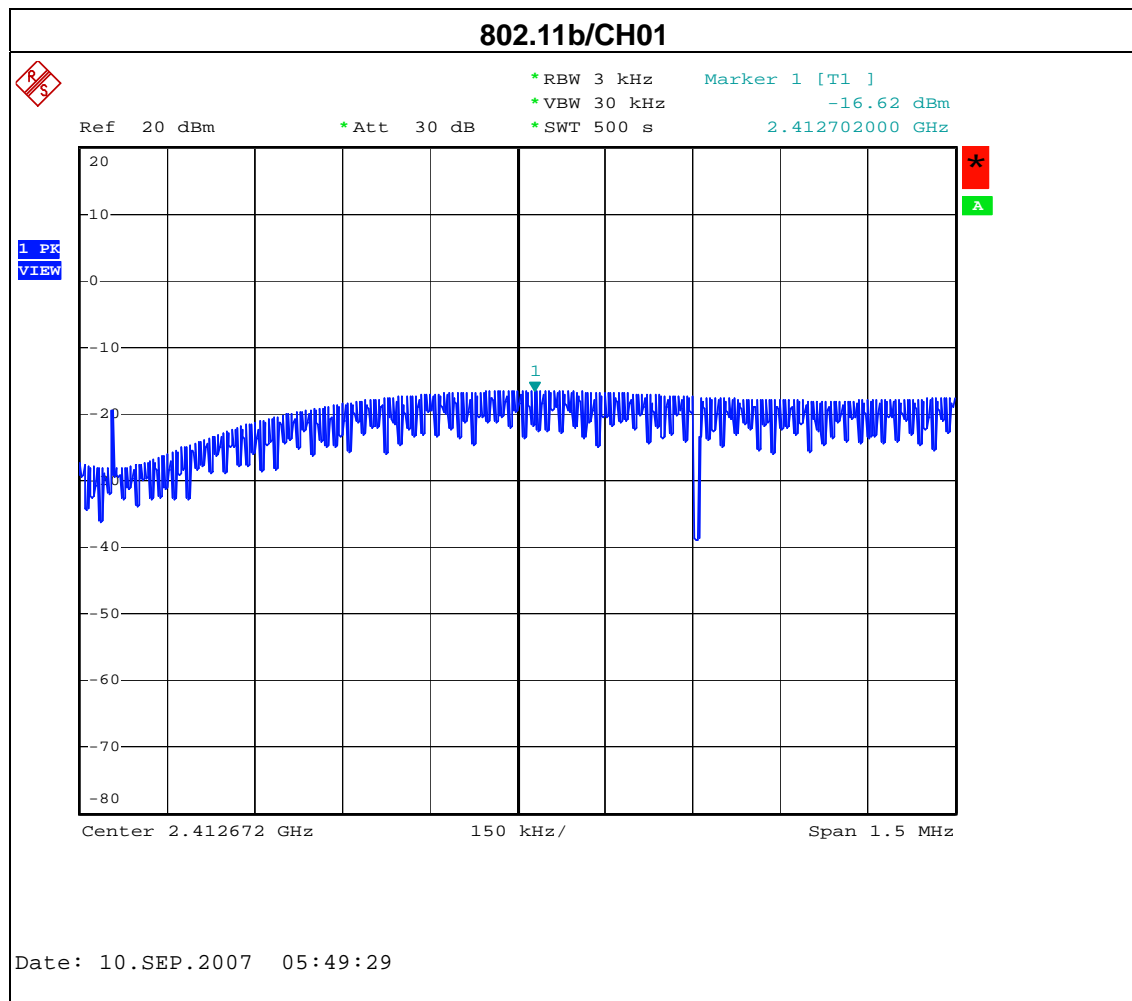
#### 8.1.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

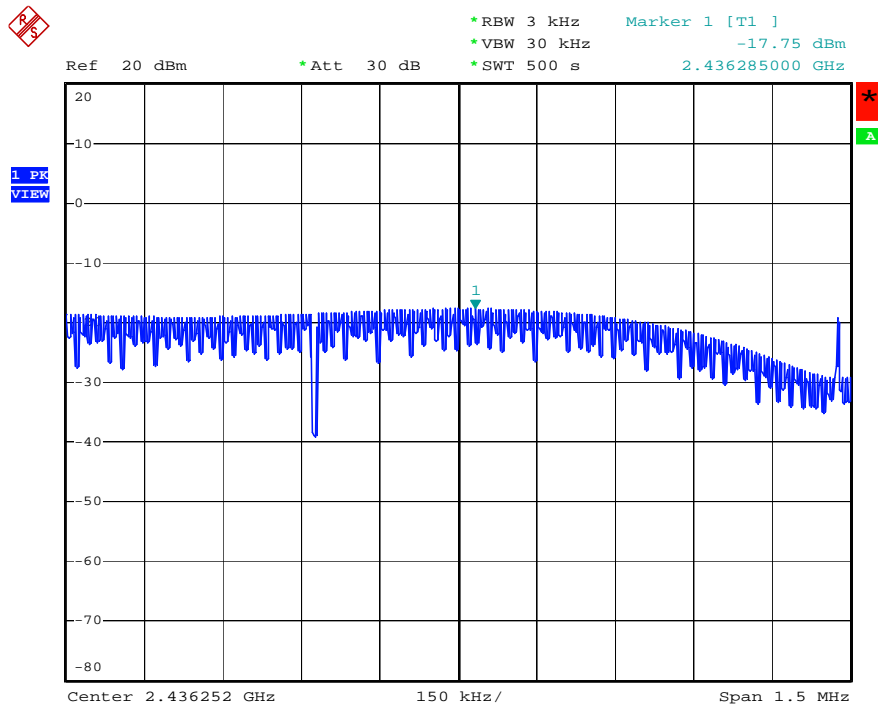
### 8.1.6 TEST RESULTS

|               |                           |                     |              |
|---------------|---------------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2      | Model Name :        | Z2           |
| Temperature : | 27 °C                     | Relative Humidity : | 58 %         |
| Pressure :    | 1004 hPa                  | Test Power :        | AC 120V/60Hz |
| Test Mode :   | 11B mode CH01, CH06, CH11 |                     |              |

| Test Channel | Frequency (MHz) | Peak Output Power (dBm) | LIMIT (dBm) |
|--------------|-----------------|-------------------------|-------------|
| CH01         | 2412            | -16.62                  | 8           |
| CH06         | 2437            | -17.75                  | 8           |
| CH11         | 2462            | -18.67                  | 8           |

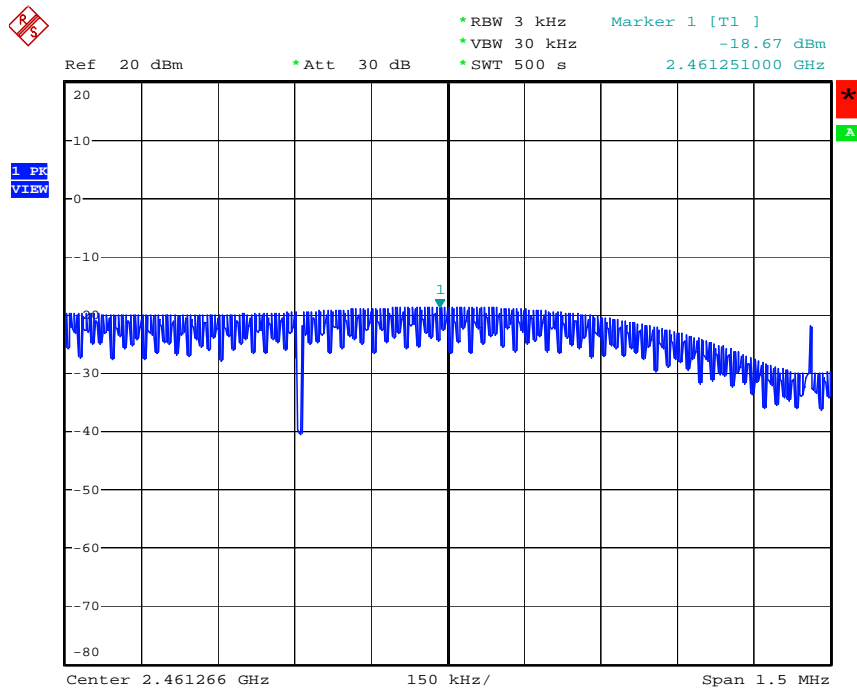


### 802.11b/CH06



Date: 10.SEP.2007 05:53:39

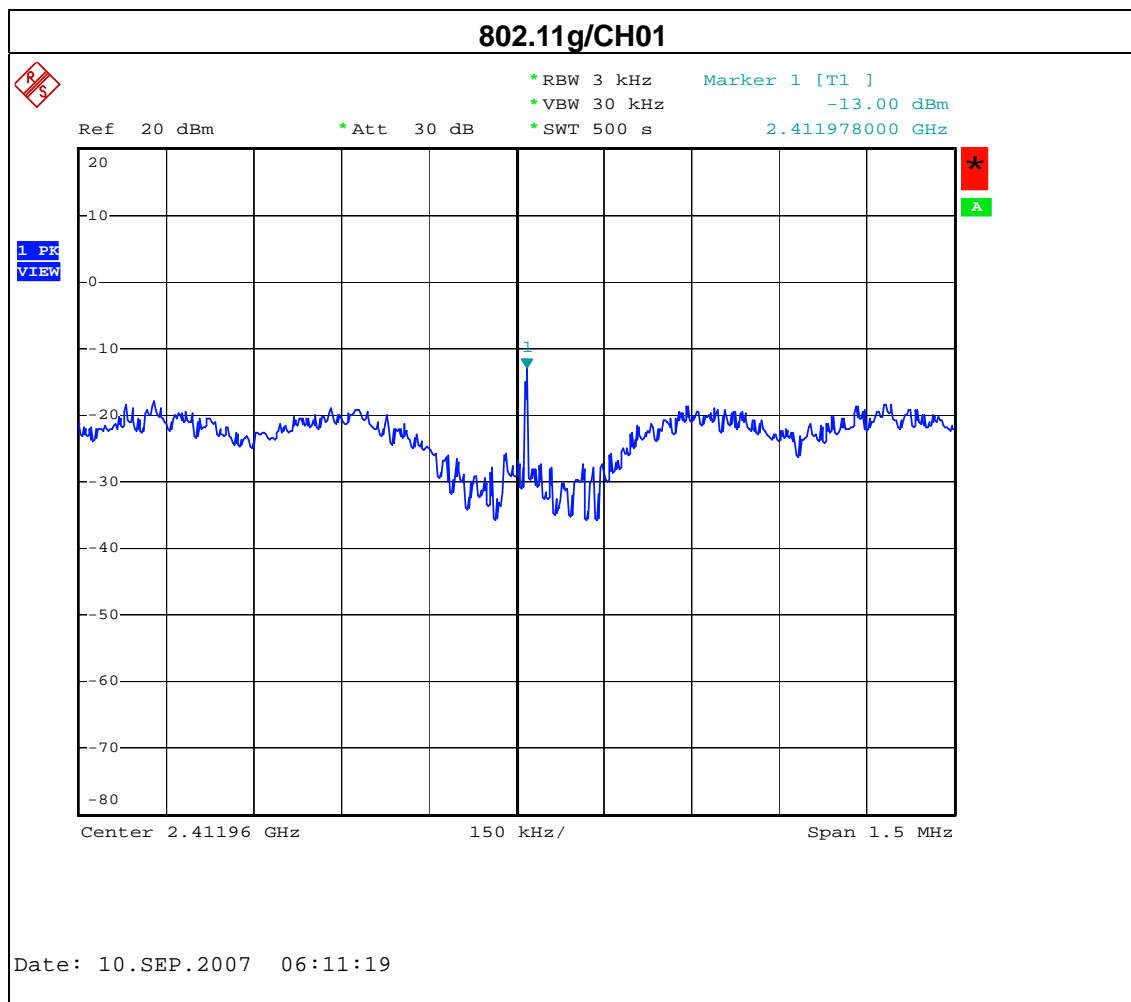
### 802.11b/CH11



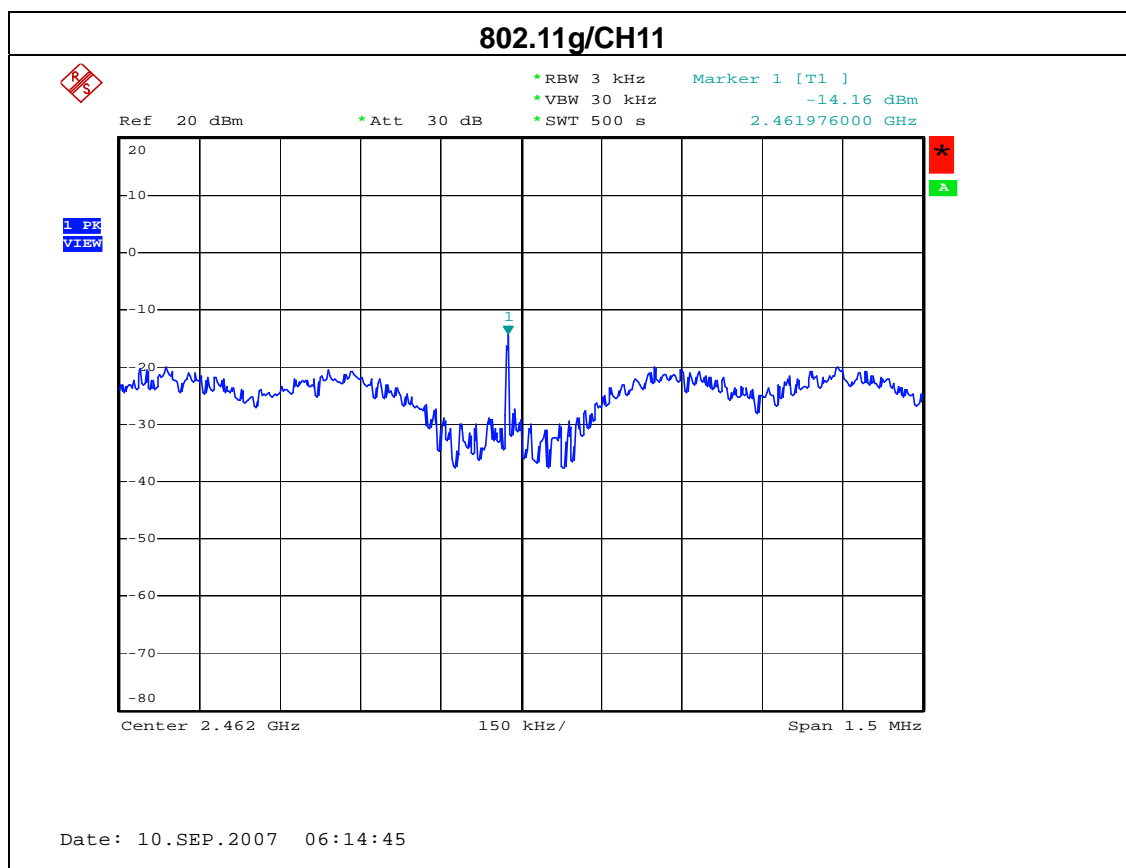
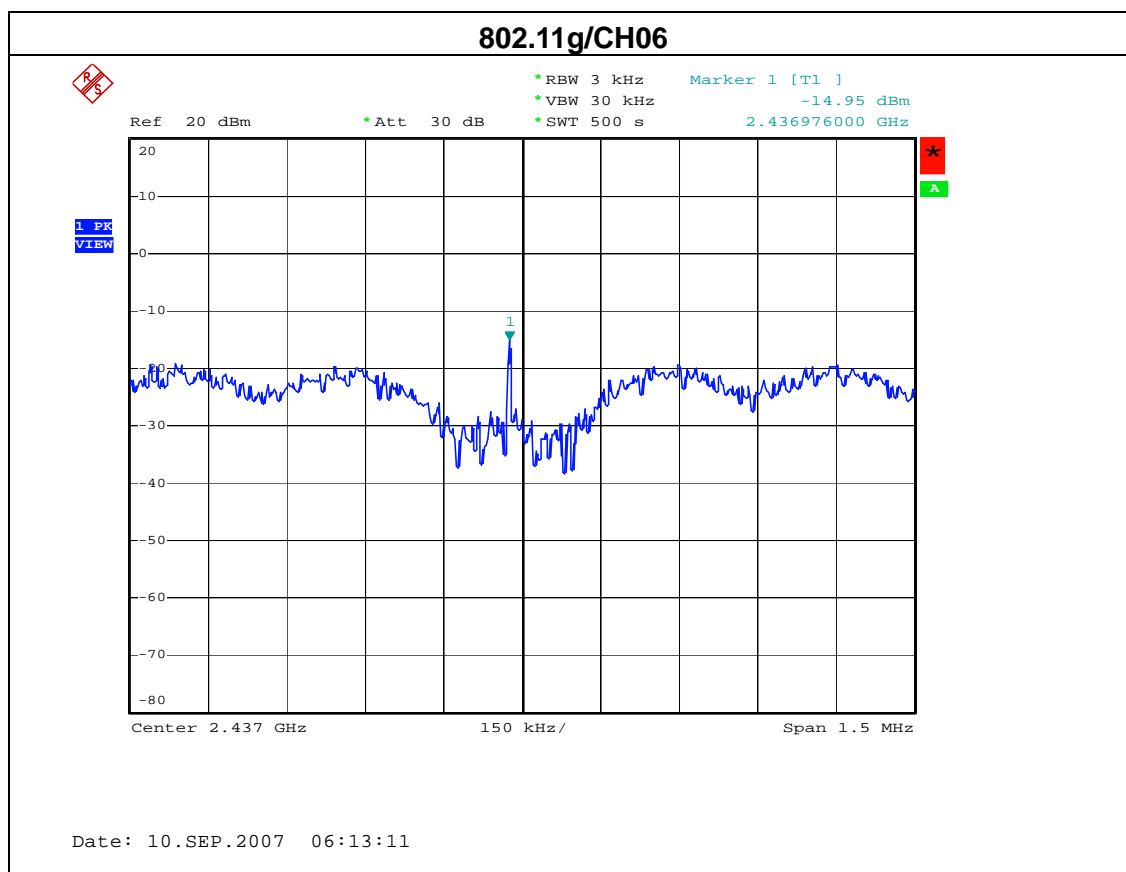
Date: 10.SEP.2007 05:57:29

|               |                           |                     |              |
|---------------|---------------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2      | Model Name :        | Z2           |
| Temperature : | 27 °C                     | Relative Humidity : | 58 %         |
| Pressure :    | 1004 hPa                  | Test Power :        | AC 120V/60Hz |
| Test Mode :   | 11G mode CH01, CH06, CH11 |                     |              |

| Test Channel | Frequency (MHz) | Peak Output Power (dBm) | LIMIT (dBm) |
|--------------|-----------------|-------------------------|-------------|
| CH01         | 2412            | -13.00                  | 8           |
| CH06         | 2437            | -14.95                  | 8           |
| CH11         | 2462            | -14.16                  | 8           |







## 9. RF EXPOSURE TEST

### 9.1 Applied procedures / limit

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device.

#### (A) Limits for Occupational / Controlled Exposure

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/ cm <sup>2</sup> ) | Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|--|---|
| 0.3-3.0               | 614                               | 1.63                              | (100)*                                   | 6   |
| 3.0-30                | 1842 / f                          | 4.89 / f                          | (900 / f)*                               | 6   |
| 30-300                | 61.4                              | 0.163                             | 1.0                                      | 6   |
| 300-1500              |                                   |                                   | F/300                                    | 6   |
| 1500-100,000          |                                   |                                   | 5  | 6   |

#### (B) Limits for General Population / Uncontrolled Exposure

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/ cm <sup>2</sup> ) | Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|--|---|
| 0.3-1.34              | 614                               | 1.63                              | (100)*                                   | 30  |
| 1.34-30               | 824/f                             | 2.19/f                            | (180/f)*                                 | 30  |
| 30-300                | 27.5                              | 0.073                             | 0.2                                      | 30  |
| 300-1500              |                                   |                                   | F/1500                                   | 30  |
| 1500-100,000          |                                   |                                   | 1.0                                      | 30  |

Note: f = frequency in MHz ; \*Plane-wave equivalent power density

### 9.1.1 MEASUREMENT INSTRUMENTS LIST

| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated until |
|------|-------------------|--------------|----------|------------|------------------|
| 1    | Spectrum Analyzer | R&S          | FSP_40   | 100129     | Aug,16, 2008     |

Remark: " N/A" denotes No Model Name , Serial No. or No Calibration specified.

### 9.1.2 MPE CALCULATION METHOD

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d}$$

$$\text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

**E** = Electric field (V/m)

**P** = Peak RF output power (W)

**G** = EUT Antenna numeric gain (numeric)

**d** = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained

### 9.1.3 DEVIATION FROM STANDARD

No deviation.

### 9.1.4 TEST SETUP



### 9.1.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

### 9.1.6 TEST RESULTS

|               |                                  |                     |              |
|---------------|----------------------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2             | Model Name :        | Z2           |
| Temperature : | 27°C                             | Relative Humidity : | 58 %         |
| Pressure :    | 1012 hPa                         | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | <b>11B mode CH01, CH06, CH11</b> |                     |              |

| Antenna Gain (dBi) | Antenna Gain (numeric) | Peak Output Power (dBm) | Peak Output Power (mW) | Power Density (S) (mW/cm <sup>2</sup> ) | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result     |
|--------------------|------------------------|-------------------------|------------------------|---|--|-----------------|
| <b>2.72</b>        | <b>1.8707</b>          | <b>16.83</b>            | <b>48.1948</b>         | <b>0.017945</b>                         | <b>1</b>   | <b>Complies</b> |
| 2.72               | 1.8707                 | 16.52                   | 44.8745                | 0.016709                                | 1  | Complies        |
| 2.72               | 1.8707                 | 16.57                   | 45.3942                | 0.016902                                | 1  | Complies        |

|               |                                  |                     |              |
|---------------|----------------------------------|---------------------|--------------|
| EUT :         | Wireless Messenger 2             | Model Name :        | Z2           |
| Temperature : | 27°C                             | Relative Humidity : | 58 %         |
| Pressure :    | 1012 hPa                         | Test Voltage :      | AC 120V/60Hz |
| Test Mode :   | <b>11G mode CH01, CH06, CH11</b> |                     |              |

| Antenna Gain (dBi) | Antenna Gain (numeric) | Peak Output Power (dBm) | Peak Output Power (mW) | Power Density (S) (mW/cm <sup>2</sup> ) | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result     |
|--------------------|------------------------|-------------------------|------------------------|---|--|-----------------|
| <b>2.72</b>        | <b>1.8707</b>          | <b>14.59</b>            | <b>28.7740</b>         | <b>0.010714</b>                         | <b>1</b>   | <b>Complies</b> |
| 2.72               | 1.8707                 | 13.81                   | 24.0436                | 0.008953                                | 1  | Complies        |
| 2.72               | 1.8707                 | 13.08                   | 20.3236                | 0.007567                                | 1  | Complies        |

## 10. EUT TEST PHOTO

### Conducted Measurement Photos



Radiated Measurement Photos

