



## FCC COMPLIANCE TEST REPORT

Technical Statement of Conformity  
in accordance with 47 CFR Part 15 Subpart C

### The product

**Equipment Under Test** : ACTIVE RSE MONITOR-10.1 STD  
**Model Number** : ATM1010AA0  
**Product Series** : N/A  
**Report Number** : HA130330-FD  
**Issue Date** : 08-Jul-2013  
**Test Result** : Compliance

is produced by

**JET OPTO ELECTRONICS CO., LTD.**

**3F., No.300, Yangguang St., Neihu Dist., Taipei City 11491, Taiwan, R.O.C**



**HongAn TECHNOLOGY CO., LTD.**

NO.15-1, CWEISHUH KENG, CWEIPIN VILLAGE,  
LINKOU, TAIPEI COUNTY,  
TAIWAN, R. O. C.

**TEL:** +886-2-26030362  
**FAX:** +886-2-26019259  
**E-mail:** hatlab@ms19.hinet.net

**BSMI Registration No.:** SL2-IN-E-0023, SL2-A1-E-0023,  
SL2-IS-E-0023, SL2-R1-E-0023,  
SL2-R2-E-0023, SL2-L1-E-0023

**FCC Designation No.:** TW1071  
**TAF Accreditation No.:** 1163  
**VCCI Registration No.:** R-2156, C-2329, T-219

# Contents

|          |   |           |
|----------|---|-----------|
| <b>1</b> | <b>General Description</b>                        | <b>5</b>  |
| 1.1      | Description of EUT                                | 5         |
| 1.2      | Test Instruments                                  | 6         |
| 1.3      | Auxiliary Equipments                              | 7         |
| 1.4      | EUT SETUP   | 7         |
| 1.5      | Identifying the Final Test Mode                   | 7         |
| 1.6      | Final Test Mode                                   | 8         |
| 1.7      | Condition of Power Supply                         | 8         |
| 1.8      | EUT Configuration                                 | 8         |
| 1.9      | Test Methodology                                  | 8         |
| 1.10     | General Test Procedures                           | 8         |
| 1.11     | Modification                                      | 8         |
| 1.12     | FCC Part 15.205 restricted bands of operations    | 9         |
| 1.13     | Qualification of Test Facility                    | 9         |
| <b>2</b> | <b>Power line Conducted Emission Measurement</b>  | <b>10</b> |
| 2.1      | Test Instruments                                  | 10        |
| 2.2      | Test Arrangement and Procedure                    | 10        |
| 2.3      | Limit (§ 15.207)                                  | 10        |
| 2.4      | Test Result                                       | 10        |
| <b>3</b> | <b>Radiated Emission Test</b>                     | <b>11</b> |
| 3.1      | Test Instruments                                  | 11        |
| 3.2      | Test Arrangement and Procedure                    | 11        |
| 3.3      | Limit of Field Strength of Fundamental (§ 15.239) | 12        |
| 3.4      | Limit of Spurious Emission (§ 15.209)             | 12        |
| 3.5      | Test Result                                       | 12        |
| <b>4</b> | <b>Emission Band Measurement</b>                  | <b>35</b> |
| 4.1      | Test Instruments                                  | 35        |
| 4.2      | Test Arrangement and Procedure                    | 35        |
| 4.3      | Limit (§ 15.239(a))                               | 35        |
| 4.4      | Test Result                                       | 35        |
| <b>5</b> | <b>Antenna requirement</b>                        | <b>39</b> |
| 5.1      | Limit (§ 15.203)                                  | 39        |
| 5.2      | Test Result                                       | 39        |

# Test Result Certification

|                                |   |
|--------------------------------|---|
| <b>Applicant</b>               | : JET OPTO ELECTRONICS CO., LTD.  |
| <b>Address of Applicant</b>    | : 3F., No.300, Yangguang St., Neihu Dist., Taipei City<br>11491, Taiwan, R.O.C                                |
| <b>Manufacturer</b>            | : 3D Technologies(WuJiang) Co., LTD.  |
| <b>Address of Manufacturer</b> | : No.1518, Yundong Ave. Wujiang Economic Development<br>Zone, Wujiang, Suzhou, Jiangsu Province P.R.C. 215200 |
| <b>Trade Name</b>              | :  ATOM                      |
| <b>Equipment Under Test</b>    | : ACTIVE RSE MONITOR-10.1 STD   |
| <b>Model Number</b>            | : ATM1010AA0  |
| <b>Product Series</b>          | : N/A   |
| <b>FCC ID</b>                  | : Z3KATM1010AA0   |
| <b>Filing Type</b>             | : Certification   |
| <b>Sample Received Date</b>    | : 18-Jun-2013   |
| <b>Test Standard</b>           | :   |

FCC Part 15 Subpart C §15.239

**Deviations from standard test methods & any other specifications : NONE**

**Remark:**

1. This report details the results of the test carried out on one sample.
2. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2009) and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.203, 15.207, 15.209, 15.239.
3. This report applies to the above sample only and shall not be reproduced in part without written approval of HongAn Technology Co., Ltd.

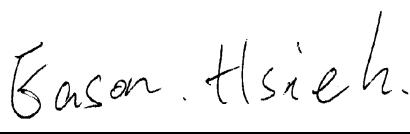


**Documented by:**

Kay Wang/ ADM. Dept Staff

2013-05-15

**Tested by:**



Eason Hsieh/ ENG. Dept. Staff

2013-04-24

**Approved by:**



Peter Chin / Section Manager

**Date:** 2013-05-15

## Summary of Test Result

|   | <b>Test Item</b>         | <b>Applicable Standard</b>    | <b>Test Result</b> |
|---|--------------------------|-------------------------------|--------------------|
| 1 | Antenna Requirement      | FCC part 15 subpart C §203    | Compliance         |
| 2 | Conducted limits         | FCC part 15 subpart C §207    | N/A                |
| 3 | Radiated emission limits | FCC part 15 subpart C §209    | Compliance         |
| 4 | Emission Band            | FCC part 15 subpart C §239(a) | Compliance         |
| 5 | Field Strength           | FCC part 15 subpart C §239(b) | Compliance         |

## 1 General Description

### 1.1 Description of EUT

|                              |   |   |
|------------------------------|---|---|
| <b>Equipment Under Test</b>  | : | ACTIVE RSE MONITOR-10.1 STD   |
| <b>Model Number of EUT</b>   | : | ATM1010AA0  |
| <b>Product Series</b>        | : | N/A   |
| <b>Power Supply</b>          | : | DC 13.5V, 2A<br>Max.:13W  |
| <b>Frequency Range</b>       | : | 88.3~107.7 MHz  |
| <b>Number of Channels</b>    | : | 98 Channels   |
| <b>Channel Spacing</b>       | : | 200 kHz   |
| <b>Antenna Specification</b> | : | Wire Antenna/ Gain: 0 dBi   |
| <b>Modulation Technique</b>  | : | FM  |
| <b>Specification</b>         | : | <b>Dimensions</b> : 201 mm (L) X 350 mm (W) X 159 mm (H)<br><b>Weight</b> : 2 KG<br><b>Function</b> : The EUT is a rear seat entertainment system for vehicle use. It has a FM transmitter which would transmit audio signal from the system to radio on the vehicle and broadcast the sound through the loudspeaker on the vehicle. Its frequency range is between 88.3 to 107.7 MHz.<br><b>※For more detail specification, please refer to the User Manual.</b> |

## 1.2 Test Instruments

### 1.2.1. Instruments Used for Measurement

HA1

| Instrument Name              | Manufacture Mode | Model Number     | Serial Number | Last Cal. Date | Next Cal. Date |
|------------------------------|------------------|------------------|---------------|----------------|----------------|
| RF Amplifier                 | AR               | 15S1G3           | 306578        | 11-AUG-2012    | 11-AUG-2013    |
| EMI Receiver                 | R&S              | ESCI             | 100615        | 03-MAR-2013    | 03-MAR-2014    |
| Spectrum Analyzer            | R&S              | FSL6             | 100323        | 11-JUN-2013    | 11-JUN-2014    |
| Spectrum Analyzer            | Advantest        | R3172            | 101202158     | 24-JUN-2013    | 24-JUN-2014    |
| Preamplifier                 | WIRELESS         | FPA-6592G        | 060009        | 09-JUL-2012    | 09-JUL-2013    |
| Preamplifier                 | HD               | HD17187          | 004           | 04-AUG-2012    | 04-AUG-2013    |
| Bilog Antenna                | TESEQ            | CBL6111D         | 25769         | 03-MAR-2013    | 03-MAR-2014    |
| Bilog Antenna                | Schaffner        | CBL6112B         | 2860          | 12-AUG-2012    | 12-AUG-2013    |
| Double-Ridged Waveguide Horn | EMCO             | 3115             | 9912-5992     | 04-MAY-2013    | 04-MAY-2014    |
| Temp. & Humidity Chamber     | Giant Force      | GTH-150-20-SP-AR | MMA0907-012   | 22-JUL-2012    | 22-JUL-2013    |

※ The test equipments used are calibrated and can be traced to National ITRI and International Standards.

## 1.3 Auxiliary Equipments

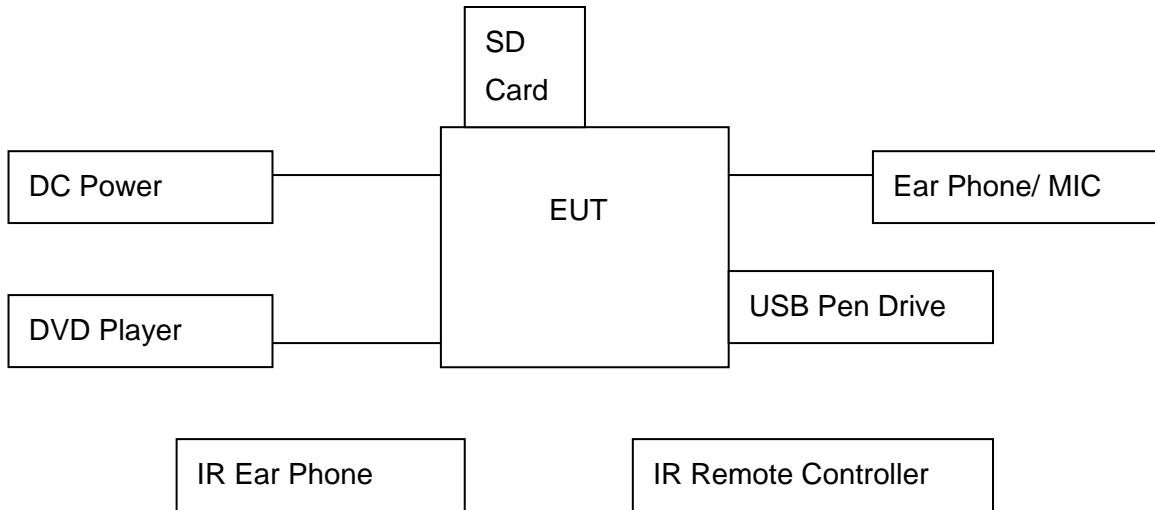
### 1.3.1. Provided by HongAn Technology Co., Ltd. for Emission Test.

| No. | Equipment                      | Model No. | Serial No.         | EMC Approved   | Brand   | Power Cord                         |
|-----|--------------------------------|-----------|--------------------|----------------|---------|------------------------------------|
| 1.  | Pen Drive No.37                | V210W     | PC0106-000850 .200 | CE FCC<br>BSMI | HP      | USB 2.0                            |
| 2.  | SD Card No. 1                  | SD-MO1G   | 0614TK5331T        | CE             | TOSHIBA | N/A                                |
| 3.  | DVD Player No. 1               | DV-400V-S | GHKD008484LS       | BSMI           | PIONEER | N/A                                |
| 4.  | Microphone,<br>Earphone No. 12 | EK-Y672CS | N/A                | N/A            | SAMPO   | Audio cable, Un-detachable, 2m     |
| 5.  | HDMI Cable                     | N/A       | N/A                | N/A            | N/A     | Shielded, Detachable 1.8, w/o Core |

### 1.3.2. Provided by the Manufacturer

N/A

## 1.4 EUT SETUP



Note: Main Test Sample: EC30616

## 1.5 Identifying the Final Test Mode

1. AV mode 1: AV input from Built-in DVD Player.
2. AV mode 2: AV input from SD card.
3. AV mode 3: AV input from USB Pen Drive.
4. AV mode 4: AV input from DVD player through AV cable.
5. AV mode 5: AV input from DVD player through HDMI cable, Resolution set at 720P.
6. FM mode 6: AV input from Built-in DVD Player. FM transmitter set at 88.3 MHz.
7. FM mode 7: AV input from Built-in DVD Player. FM transmitter set at 97.9 MHz.
8. FM mode 8: AV input from Built-in DVD Player. FM transmitter set at 107.3 MHz.

Note:

1. After pre-test, we identified that the AV mode 1 (the worst case) was most likely to cause maximum unwanted disturbance. Therefore, the Final Assessment was performed for the worst case. All pre-test data show at appendix.
2. Channel Low (88.3 MHz), Mid (97.9 MHz) and High (107.7 MHz) were chosen for full testing.
3. According to its specifications, the EUT must comply with the requirements of the Section 15.203, 15.207, 15.209 and 15.239 under the FCC Rules Part 15 Subpart C.

## 1.6 Final Test Mode

1. Radiated Emission (30~960MHz): AV mode 1.
2. Field Strength (Fundamental & Harmonics ): FM Mode 6, 7, 8
3. Conducted Emission: N/A. The EUT is designed to use DC input from a vehicle.

## 1.7 Condition of Power Supply

DC 13.5 V (battery)

## 1.8 EUT Configuration

1. Setup the EUT as shown in Sec.1.4 Block Diagram.
2. Turn on the power of all equipments.
3. Activate the selected Final Test Mode.

## 1.9 Test Methodology

The tests documented in this report were performed in accordance with ANSI C63.4 (2009) and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, 15.203, 15.207, 15.209 and 15.239.

## 1.10 General Test Procedures

### Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.3 of ANSI C63.4 (2009) Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-peak and average detector modes.

### Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. The EUT was designed to be mounted on back of vehicle seat, according to the requirements in Section 13.4 of ANSI C 63.4 (2009), only one axe of the EUT has to be measured.

## 1.11 Modification

N/A

## 1.12 FCC Part 15.205 restricted bands of operations

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz                      | MHz                 | MHz           | GHz              |
|--------------------------|---------------------|---------------|------------------|
| 0.090-0.110              | 16.42-16.423        | 399.9-410     | 4.5-5.15         |
| <sup>1</sup> 0.495-0.505 | 16.69475-16.69525   | 608-614       | 5.35-5.46        |
| 2.1735-2.1905            | 16.80425-16.80475   | 960-1240      | 7.25-7.75        |
| 4.125-4.128              | 25.5-25.67          | 1300-1427     | 8.025-8.5        |
| 4.17725-4.17775          | 37.5-38.25          | 1435-1626.5   | 9.0-9.2          |
| 4.20725-4.20775          | 73-74.6             | 1645.5-1646.5 | 9.3-9.5          |
| 6.215-6.218              | 74.8-75.2           | 1660-1710     | 10.6-12.7        |
| 6.26775-6.26825          | 108-121.94          | 1718.8-1722.2 | 13.25-13.4       |
| 6.31175-6.31225          | 123-138             | 2200-2300     | 14.47-14.5       |
| 8.291-8.294              | 149.9-150.05        | 2310-2390     | 15.35-16.2       |
| 8.362-8.366              | 156.52475-156.52525 | 2483.5-2500   | 17.7-21.4        |
| 8.37635-8.38675          | 156.7-156.9         | 2690-2900     | 22.01-23.12      |
| 8.41425-8.41475          | 162.0125-167.17     | 3260-3267     | 23.6-24.0        |
| 12.29-12.293             | 167.72-173.2        | 3332-3339     | 31.2-31.8        |
| 12.51975-12.52025        | 240-285             | 3345.8-3358   | 36.43-36.5       |
| 12.57675-12.57725        | 322-335.4           | 3600-4400     | ( <sup>2</sup> ) |
| 13.36-13.41              |                     |               |                  |

<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

<sup>2</sup> Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

## 1.13 Qualification of Test Facility

|                              |  |
|------------------------------|--|
| <b>BSMI Certificate No.</b>  | : SL2-IS-E-0023, SL2-IN-E-0023, SL2-R1-E-0023, SL2-R2-E-0023,<br>: SL2-A1-E-0023, SL2-L1-E-0023. |
| <b>FCC Designation No.</b>   | : TW1071   |
| <b>TAF Accreditation No.</b> | : 1163   |
| <b>VCCI Certificate No.</b>  | : R-2156, C-2329, T-219  |

## 2 Power line Conducted Emission Measurement

### 2.1 Test Instruments

Refer to Sec. 1.2 Test Instruments.

### 2.2 Test Arrangement and Procedure

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

### 2.3 Limit (§ 15.207)

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

| Frequency (MHz) | Limits (dBuV)     |                |
|-----------------|-------------------|----------------|
|                 | Q.P. (Quasi-Peak) | A.V. (Average) |
| 0.15 to 0.50    | 66 to 56          | 56 to 46       |
| 0.50 to 5.0     | 56                | 46             |
| 5.0 to 30       | 60                | 50             |

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

### 2.4 Test Result

N/A.

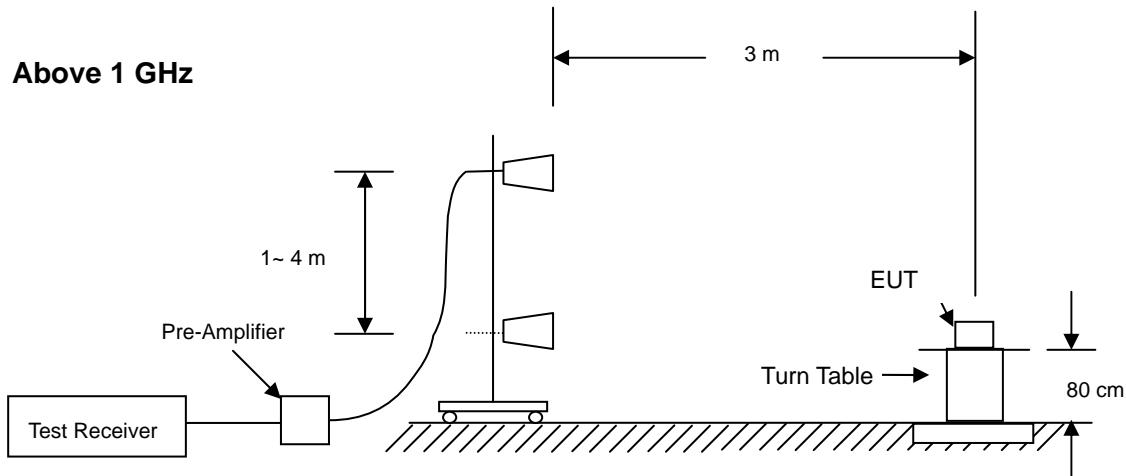
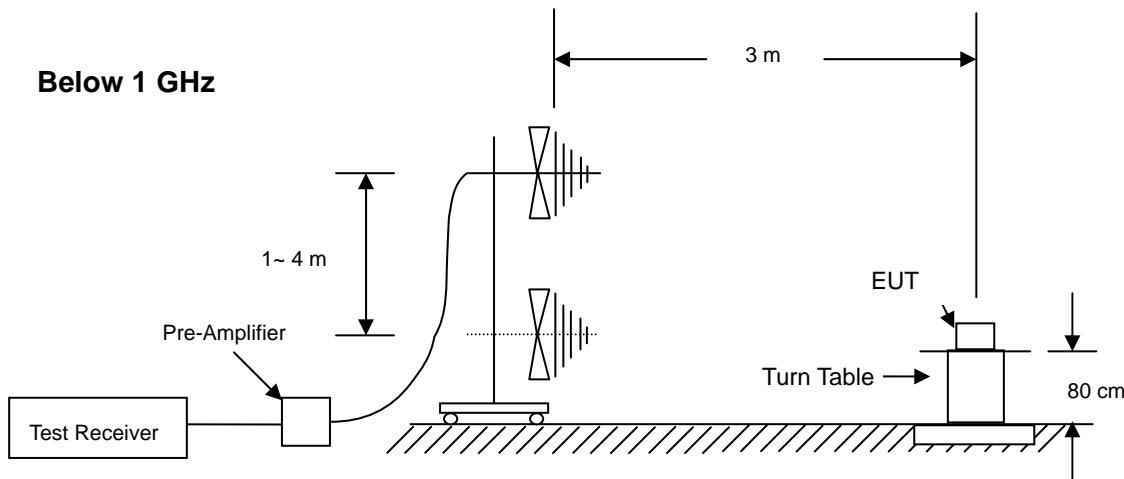
**The EUT applied DC input from a vehicle; therefore, no conducted emission measurement is required.**

### 3 Radiated Emission Test

#### 3.1 Test Instruments

Refer to Sec. 1.2 Test Instruments.

#### 3.2 Test Arrangement and Procedure



1. The EUT is placed on a turntable, which is 0.8 m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3 m away from the receiving antenna, which is varied from 1 m to 4 m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:
  - (a) Below 1 GHz: RBW = 100 kHz/ VBW = 1 MHz/ Sweep = AUTO.
  - (b) Above 1 GHz: Peak: RBW = VBW = 1MHz/ Sweep = AUTO; Average: RBW = 1MHz/ VBW =

10Hz/ Sweep = AUTO.

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

### 3.3 Limit of Field Strength of Fundamental (§ 15.239)

The field strength of emissions from intentional radiators operated under these frequency bands shall not exceed with the following:

| Fundamental Frequency<br>(MHz) | Field strength of fundamental<br>(microvolts/ meter) |                     |
|--------------------------------|--|---------------------|
| 88-108                         | Peak   | Average             |
|                                | 2500<br>(67.96 dBuV)                                 | 250<br>(47.96 dBuV) |

Note:

1. Field strength limits are specified at a distance of 3 meters.
2. For frequencies above 1000 MHz, the field strength limits in above table are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

### 3.4 Limit of Spurious Emission (§ 15.209)

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is lesser attenuation.

| Frequency<br>(MHz) | Field strength<br>(microvolts/ 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                                |

\*\* Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g. §§ 15.231 and 15.241.

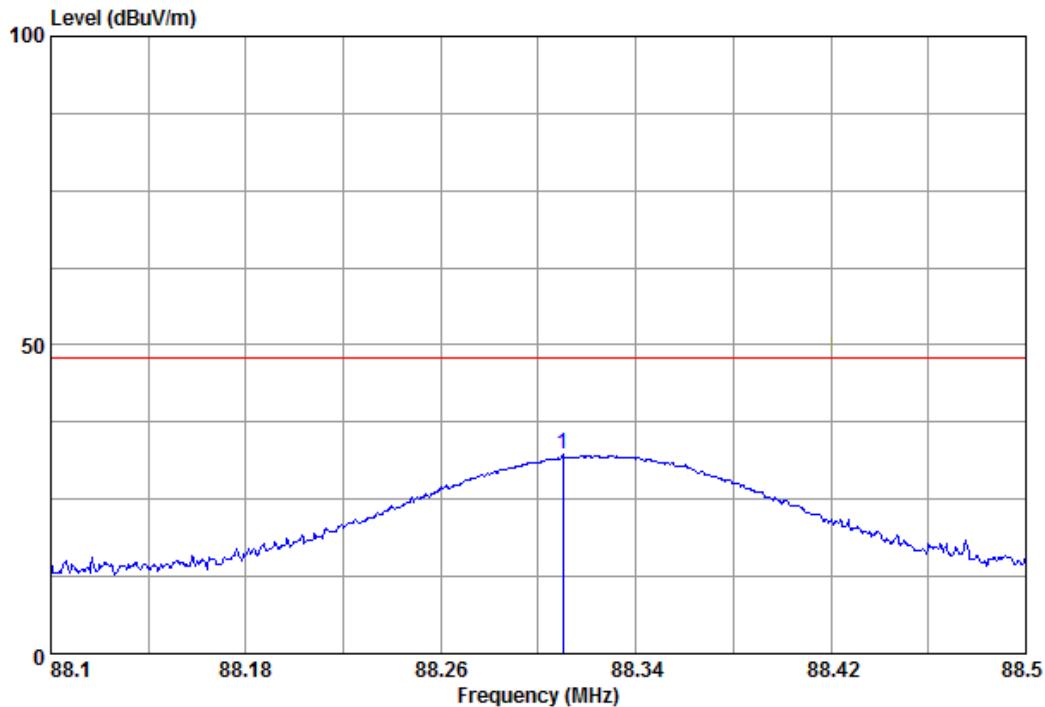
### 3.5 Test Result

#### Compliance

The final test data are shown on the following page(s).

**Radiated Emission Test Data (Field Strength of Fundamental)**

|              |               |           |                     |
|--------------|---------------|-----------|---------------------|
| Temperature  | : 28°C        | Humidity  | : 30%               |
| Test Date    | : 03-JUL-2013 | Tested by | : Eason Hsieh       |
| Polarization | : Horizontal  | Channel   | : CH LOW (88.3 MHz) |
| Test Mode    | : FM Mode 6   |           |                     |



| Freq       | Reading          | C.F    | Result              | Limit               | Margin | A/pos | T/pos | Remark |
|------------|------------------|--------|---------------------|---------------------|--------|-------|-------|--------|
| MHz        | dB <sub>UV</sub> | dB     | dB <sub>UV</sub> /m | dB <sub>UV</sub> /m | dB     |       |       |        |
| 1 @ 88.310 | 56.08            | -23.88 | 32.20               | 47.96               | -15.76 | ---   | ---   |        |

C.F = Antenna Factor + Cable Loss - Preamp gain  
Result = Reading + C.F ; Margin = Result - Limit

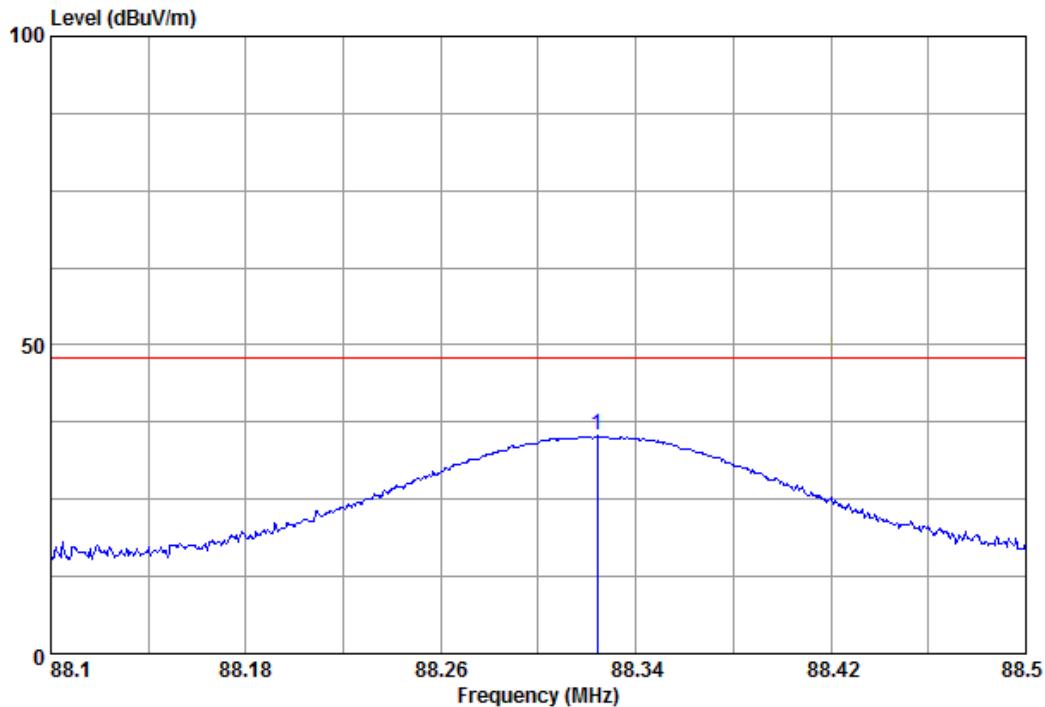
@ : Maximum Data    x : Over Limit

**Remark :**

1. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
2. Spectrum setting: Peak Setting, RBW = 100kHz, VBW = 300kHz

**Radiated Emission Test Data (Field Strength of Fundamental)**

|              |               |           |                     |
|--------------|---------------|-----------|---------------------|
| Temperature  | : 28°C        | Humidity  | : 30%               |
| Test Date    | : 03-JUL-2013 | Tested by | : Eason Hsieh       |
| Polarization | : Vertical    | Channel   | : CH LOW (88.3 MHz) |
| Test Mode    | : FM Mode 6   |           |                     |



| Freq       | Reading          | C.F    | Result              | Limit               | Margin | A/pos | T/pos | Remark |
|------------|------------------|--------|---------------------|---------------------|--------|-------|-------|--------|
| MHz        | dB <sub>UV</sub> | dB     | dB <sub>UV</sub> /m | dB <sub>UV</sub> /m | dB     |       |       |        |
| 1 @ 88.324 | 59.14            | -23.88 | 35.26               | 47.96               | -12.70 | ---   | ---   |        |

C.F = Antenna Factor + Cable Loss - Preamp gain  
Result = Reading + C.F ; Margin = Result - Limit

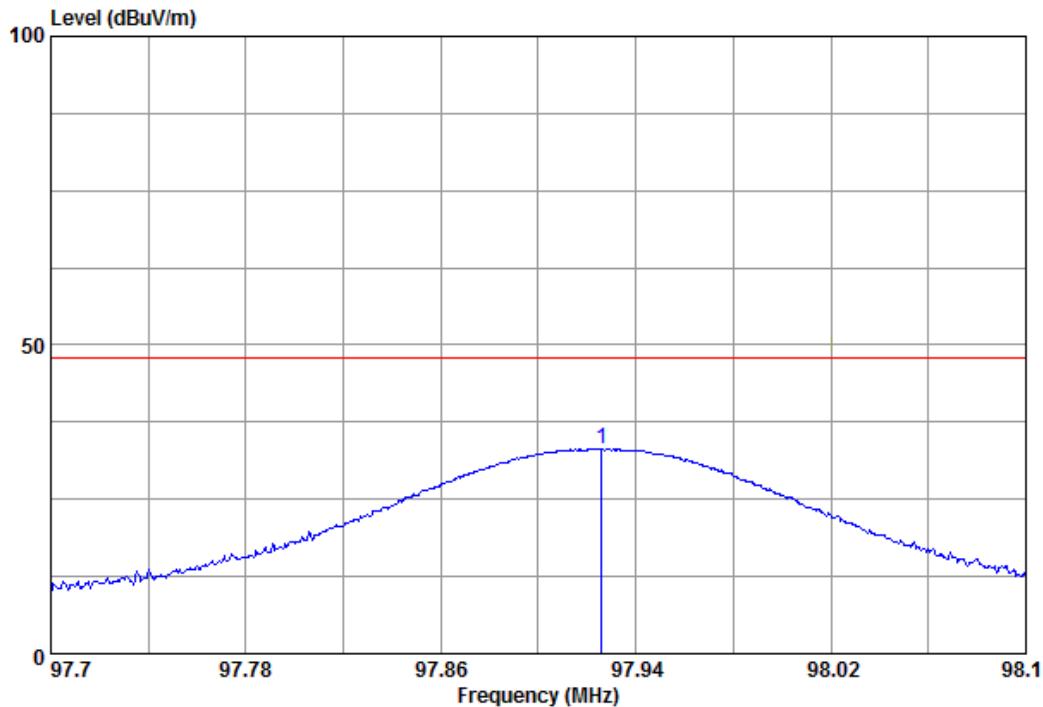
@ : Maximum Data    x : Over Limit

**Remark :**

1. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
2. Spectrum setting: Peak Setting. RBW = 100kHz, VBW = 300kHz

**Radiated Emission Test Data (Field Strength of Fundamental)**

|              |               |           |                      |
|--------------|---------------|-----------|----------------------|
| Temperature  | : 28°C        | Humidity  | : 30%                |
| Test Date    | : 03-JUL-2013 | Tested by | : Eason Hsieh        |
| Polarization | : Horizontal  | Channel   | : CH MID ( 97.9 MHz) |
| Test Mode    | : FM Mode 7   |           |                      |



| Freq       | Reading          | C.F    | Result              | Limit               | Margin | A/pos | T/pos | Remark |
|------------|------------------|--------|---------------------|---------------------|--------|-------|-------|--------|
| MHz        | dB <sub>UV</sub> | dB     | dB <sub>UV</sub> /m | dB <sub>UV</sub> /m | dB     |       |       |        |
| 1 @ 97.926 | 55.93            | -22.68 | 33.25               | 47.96               | -14.71 | ---   | ---   |        |

C.F = Antenna Factor + Cable Loss - Preamp gain  
Result = Reading + C.F ; Margin = Result - Limit

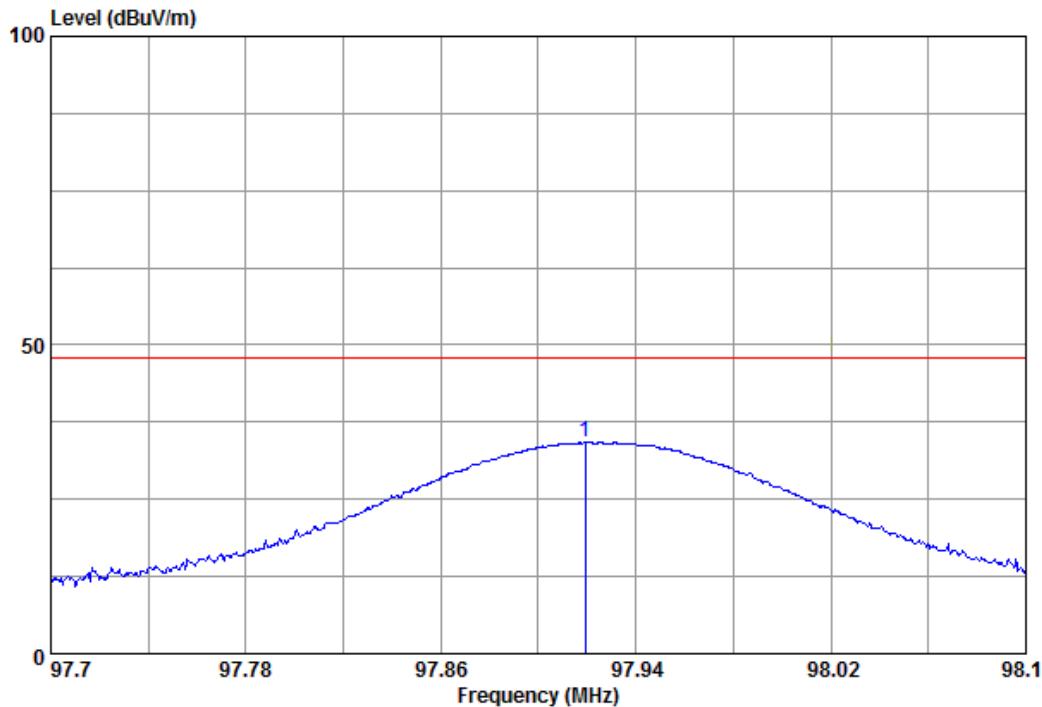
@ : Maximum Data    x : Over Limit

**Remark :**

1. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
2. Spectrum setting: Peak Setting, RBW = 100kHz, VBW = 300kHz

**Radiated Emission Test Data (Field Strength of Fundamental)**

|              |               |           |                     |
|--------------|---------------|-----------|---------------------|
| Temperature  | : 28°C        | Humidity  | : 30%               |
| Test Date    | : 03-JUL-2013 | Tested by | : Eason Hsieh       |
| Polarization | : Vertical    | Channel   | : CH MID (97.9 MHz) |
| Test Mode    | : FM Mode 7   |           |                     |



| Freq       | Reading          | C.F    | Result              | Limit               | Margin | A/pos | T/pos | Remark |
|------------|------------------|--------|---------------------|---------------------|--------|-------|-------|--------|
| MHz        | dB <sub>UV</sub> | dB     | dB <sub>UV</sub> /m | dB <sub>UV</sub> /m | dB     |       |       |        |
| 1 @ 97.919 | 56.92            | -22.68 | 34.24               | 47.96               | -13.72 | ---   | ---   |        |

C.F = Antenna Factor + Cable Loss - Preamp gain  
Result = Reading + C.F ; Margin = Result - Limit

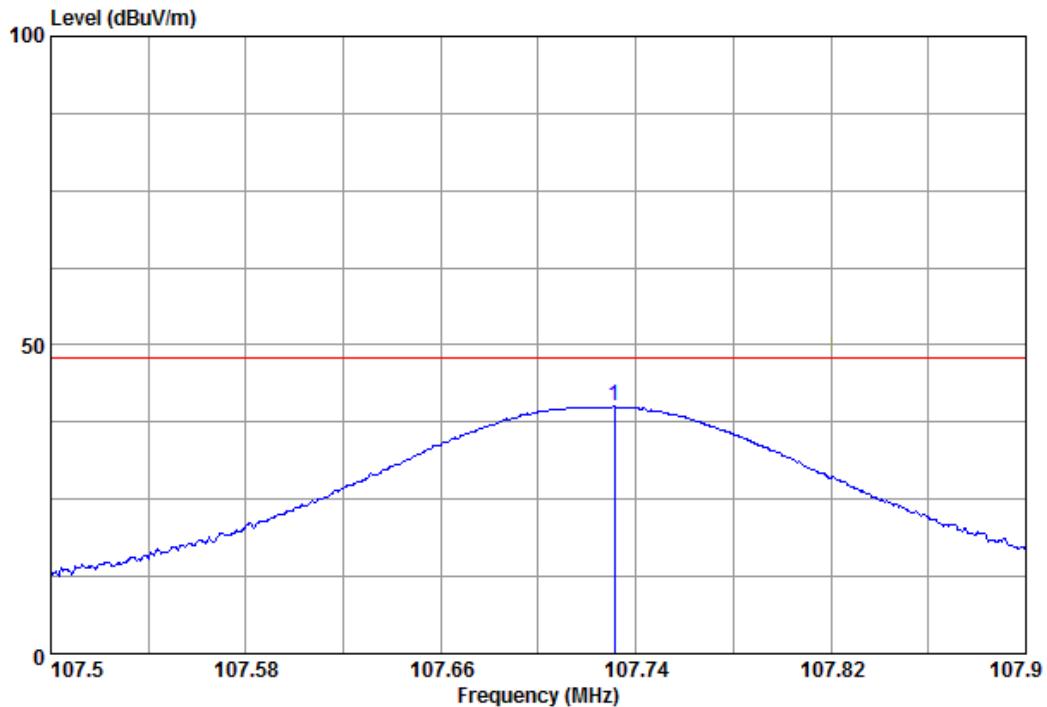
@ : Maximum Data    x : Over Limit

**Remark :**

1. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
2. Spectrum setting: Peak Setting, RBW = 100kHz, VBW = 300kHz

**Radiated Emission Test Data (Field Strength of Fundamental)**

|              |               |           |                        |
|--------------|---------------|-----------|------------------------|
| Temperature  | : 28°C        | Humidity  | : 30%                  |
| Test Date    | : 03-JUL-2013 | Tested by | : Eason Hsieh          |
| Polarization | : Horizontal  | Channel   | : CH HIGH ( 107.7 MHz) |
| Test Mode    | : FM Mode 8   |           |                        |



| Freq        | Reading          | C.F    | Result              | Limit               | Margin | A/pos | T/pos | Remark |
|-------------|------------------|--------|---------------------|---------------------|--------|-------|-------|--------|
| MHz         | dB <sub>UV</sub> | dB     | dB <sub>UV</sub> /m | dB <sub>UV</sub> /m | dB     |       |       |        |
| 1 0 107.731 | 64.23            | -24.20 | 40.03               | 47.96               | -7.93  | ---   | ---   |        |

C.F = Antenna Factor + Cable Loss - Preamp gain  
Result = Reading + C.F ; Margin = Result - Limit

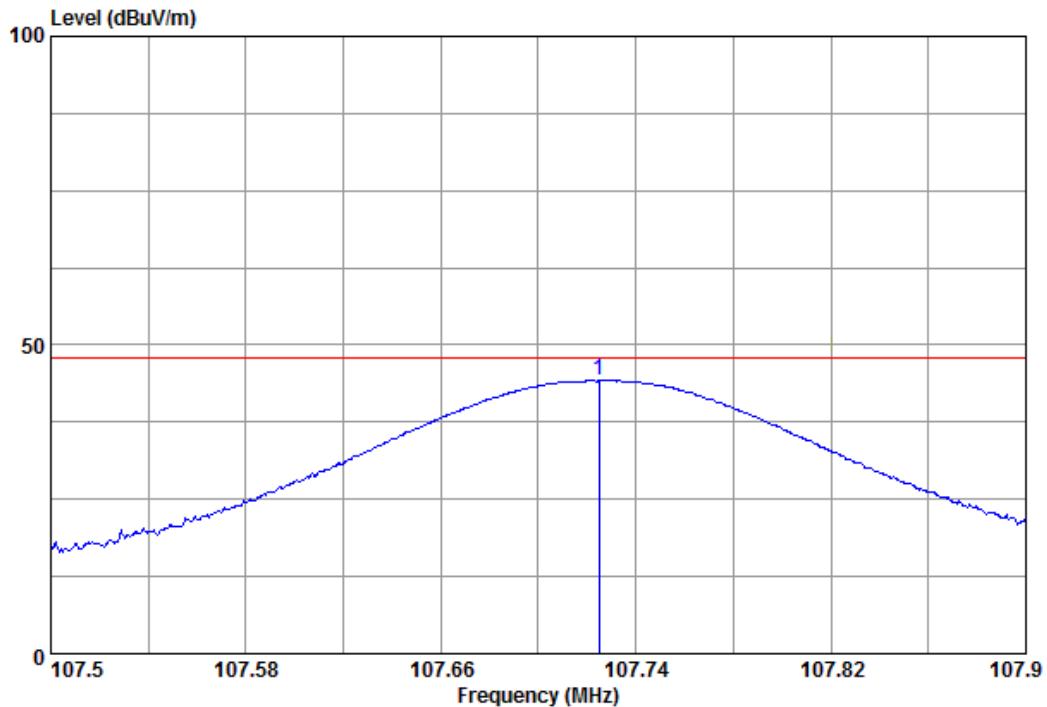
@ : Maximum Data    x : Over Limit

**Remark :**

1. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
2. Spectrum setting: Peak Setting, RBW = 100kHz, VBW = 300kHz

**Radiated Emission Test Data (Field Strength of Fundamental)**

|              |               |           |                       |
|--------------|---------------|-----------|-----------------------|
| Temperature  | : 28°C        | Humidity  | : 30%                 |
| Test Date    | : 03-JUL-2013 | Tested by | : Eason Hsieh         |
| Polarization | : Vertical    | Channel   | : CH HIGH (107.7 MHz) |
| Test Mode    | : FM Mode 8   |           |                       |



| Freq        | Reading          | C.F    | Result              | Limit               | Margin | A/pos | T/pos | Remark |
|-------------|------------------|--------|---------------------|---------------------|--------|-------|-------|--------|
| MHz         | dB <sub>UV</sub> | dB     | dB <sub>UV</sub> /m | dB <sub>UV</sub> /m | dB     |       |       |        |
| 1 @ 107.725 | 68.43            | -24.20 | 44.23               | 47.96               | -3.73  | ---   | ---   |        |

C.F = Antenna Factor + Cable Loss - Preamp gain  
Result = Reading + C.F ; Margin = Result - Limit

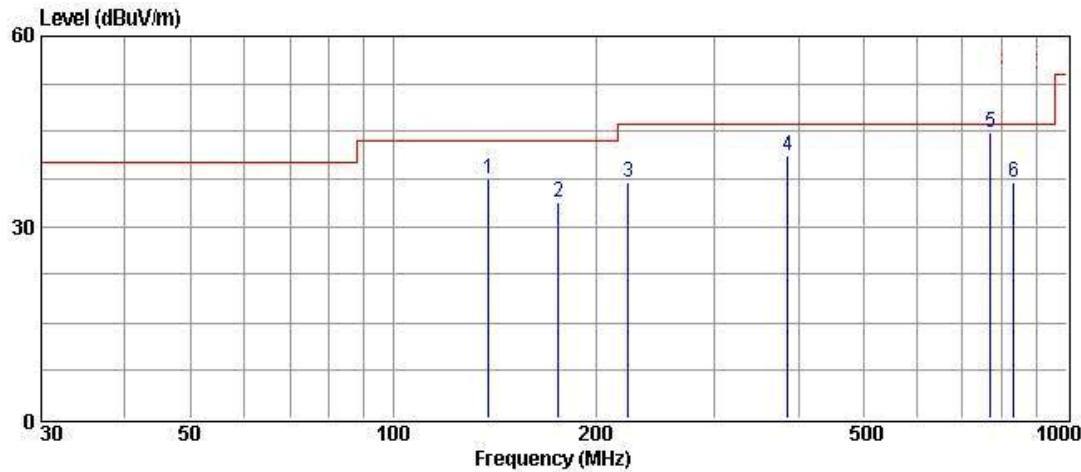
@ : Maximum Data    x : Over Limit

**Remark :**

1. All readings are Peak values. None of the peak value reading exceeds the A.V. limit. Hence, A.V. reading was not measured.
2. Spectrum setting: Peak Setting, RBW = 100kHz, VBW = 300kHz

**Radiated Emission Test Data (Below 1 GHz)**

|              |               |           |               |
|--------------|---------------|-----------|---------------|
| Temperature  | : 28°C        | Humidity  | : 30%         |
| Test Date    | : 03-JUL-2013 | Tested by | : Eason Hsieh |
| Polarization | : Horizontal  | Channel   | : N/A         |
| Test Mode    | : AV Mode 1   |           |               |



| No. | Freq<br>MHz | Reading<br>dB $\mu$ V | C.F.<br>dB | Result<br>dB $\mu$ V/m | Limit<br>dB $\mu$ V/m | Margin<br>dB | Height<br>cm | Angle<br>deg | Antenna<br>Pol. | Remark |
|-----|-------------|-----------------------|------------|------------------------|-----------------------|--------------|--------------|--------------|-----------------|--------|
| 1   | 138.63      | 56.88                 | -19.35     | 37.53                  | 43.50                 | -5.97        |              |              | HORIZONTAL      | QP     |
| 2   | 175.82      | 51.74                 | -18.05     | 33.69                  | 43.50                 | -9.81        |              |              | HORIZONTAL      | QP     |
| 3   | 223.77      | 53.22                 | -16.40     | 36.82                  | 46.00                 | -9.18        |              |              | HORIZONTAL      | QP     |
| 4   | 384.75      | 52.77                 | -11.74     | 41.03                  | 46.00                 | -4.97        |              |              | HORIZONTAL      | QP     |
| 5   | 769.60      | 50.91                 | -6.12      | 44.79                  | 46.00                 | -1.21        |              |              | HORIZONTAL      | QP     |
| 6   | 833.92      | 42.85                 | -5.81      | 37.04                  | 46.00                 | -8.96        |              |              | HORIZONTAL      | QP     |

Note: 1. C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain .

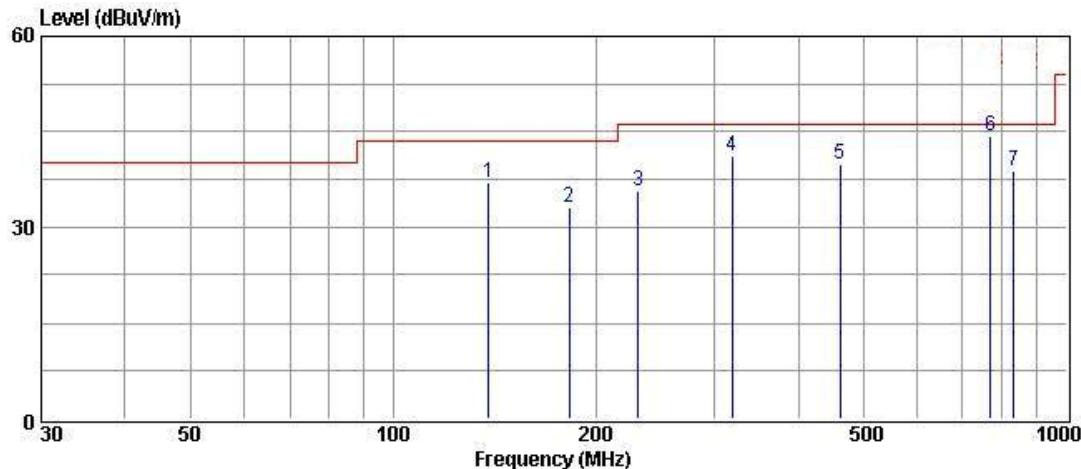
2. Margin = Result - Limit , Result = Reading + C.F .

**Remark :**

1. Measuring frequencies from 30 MHz to 1 GHz.
2. Measurements above show only up to 6 maximum emissions noted.
3. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Q.P. detector mode.
4. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
5. The IF bandwidth of SPA between 30 MHz to 1 GHz was 100 kHz.

**Radiated Emission Test Data (Below 1 GHz)**

|              |               |           |               |
|--------------|---------------|-----------|---------------|
| Temperature  | : 28°C        | Humidity  | : 30%         |
| Test Date    | : 03-JUL-2013 | Tested by | : Eason Hsieh |
| Polarization | : Vertical    | Channel   | : N/A         |
| Test Mode    | : AV Mode 1   |           |               |



| No. | Freq MHz | Reading dB <sub>μ</sub> V | C.F dB | Result dB <sub>μ</sub> V/m | Limit dB <sub>μ</sub> V/m | Margin dB | Height cm | Angle deg | Antenna Pol. | Remark |
|-----|----------|---------------------------|--------|----------------------------|---------------------------|-----------|-----------|-----------|--------------|--------|
| 1   | 138.63   | 56.29                     | -19.35 | 36.94                      | 43.50                     | -6.56     |           |           | VERTICAL     | QP     |
| 2   | 182.77   | 50.90                     | -17.86 | 33.04                      | 43.50                     | -10.46    |           |           | VERTICAL     | QP     |
| 3   | 231.34   | 51.82                     | -16.09 | 35.73                      | 46.00                     | -10.27    |           |           | VERTICAL     | QP     |
| 4   | 319.54   | 54.12                     | -12.86 | 41.26                      | 46.00                     | -4.74     |           |           | VERTICAL     | QP     |
| 5   | 460.24   | 50.45                     | -10.75 | 39.70                      | 46.00                     | -6.30     |           |           | VERTICAL     | QP     |
| 6   | 769.50   | 50.27                     | -6.12  | 44.15                      | 46.00                     | -1.85     |           |           | VERTICAL     | QP     |
| 7   | 834.16   | 44.60                     | -5.81  | 38.79                      | 46.00                     | -7.21     |           |           | VERTICAL     | QP     |

Note: 1. C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain .

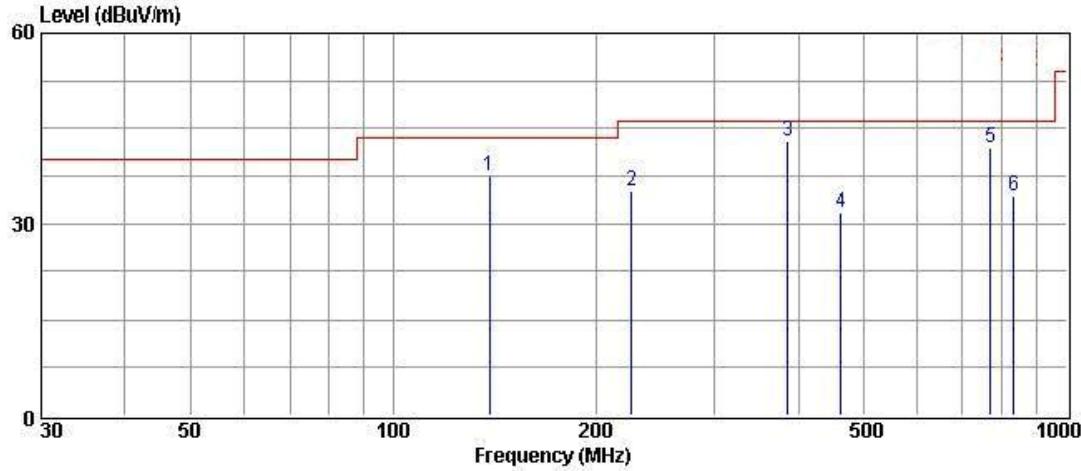
2. Margin = Result - Limit ; Result = Reading + C.F .

**Remark :**

1. Measuring frequencies from 30 MHz to 1 GHz.
2. Measurements above show only up to 6 maximum emissions noted.
3. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Q.P. detector mode.
4. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
5. The IF bandwidth of SPA between 30 MHz to 1 GHz was 100 kHz.

**Radiated Emission Test Data (Below 1 GHz)**

|              |               |           |               |
|--------------|---------------|-----------|---------------|
| Temperature  | : 28°C        | Humidity  | : 30%         |
| Test Date    | : 03-JUL-2013 | Tested by | : Eason Hsieh |
| Polarization | : Horizontal  | Channel   | : N/A         |
| Test Mode    | : AV Mode 2   |           |               |



| No. | Freq   | Reading    | C.F.   | Result | Limit  | Margin | Height | Angle | Antenna    | Remark |
|-----|--------|------------|--------|--------|--------|--------|--------|-------|------------|--------|
|     | MHz    | dB $\mu$ V | dB     | dBuV/m | dBuV/m | dB     | cm     | deg   | Pol.       |        |
| 1   | 138.81 | 56.89      | -19.34 | 37.55  | 43.50  | -5.95  |        |       | HORIZONTAL | QP     |
| 2   | 226.00 | 51.35      | -16.31 | 35.04  | 46.00  | -10.96 |        |       | HORIZONTAL | QP     |
| 3   | 384.76 | 54.83      | -11.74 | 43.09  | 46.00  | -2.91  |        |       | HORIZONTAL | QP     |
| 4   | 461.60 | 42.32      | -10.72 | 31.60  | 46.00  | -14.40 |        |       | HORIZONTAL | QP     |
| 5   | 769.60 | 48.05      | -6.12  | 41.93  | 46.00  | -4.07  |        |       | HORIZONTAL | QP     |
| 6   | 833.52 | 40.03      | -5.81  | 34.22  | 46.00  | -11.78 |        |       | HORIZONTAL | QP     |

Note: 1. C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain .

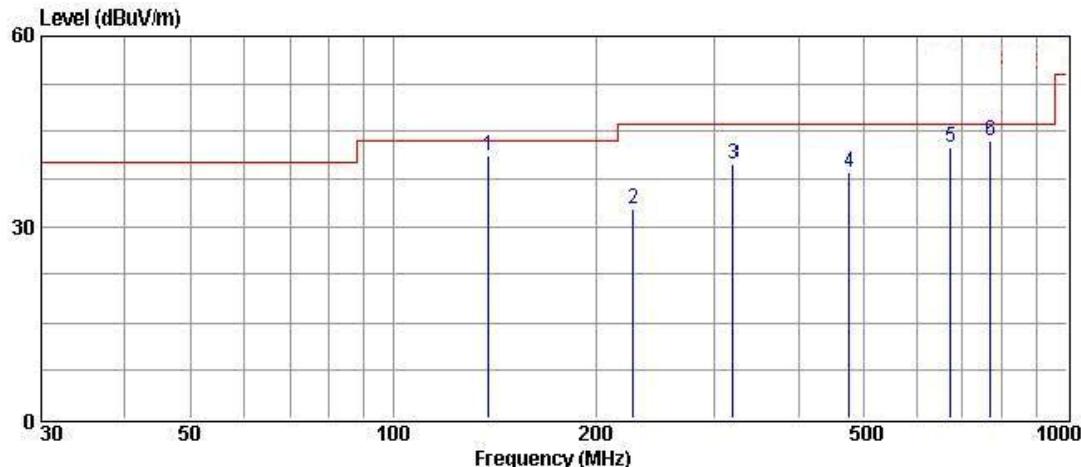
2. Margin = Result - Limit ; Result = Reading + C.F .

**Remark :**

1. Measuring frequencies from 30 MHz to 1 GHz.
2. Measurements above show only up to 6 maximum emissions noted.
3. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Q.P. detector mode.
4. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
5. The IF bandwidth of SPA between 30 MHz to 1 GHz was 100 kHz.

**Radiated Emission Test Data (Below 1 GHz)**

|              |               |           |               |
|--------------|---------------|-----------|---------------|
| Temperature  | : 28°C        | Humidity  | : 30%         |
| Test Date    | : 03-JUL-2013 | Tested by | : Eason Hsieh |
| Polarization | : Vertical    | Channel   | : N/A         |
| Test Mode    | : AV Mode 2   |           |               |



| No. | Freq MHz | Reading dBuV | C.F. dB | Result dBuV/m | Limit dBuV/m | Margin dB | Height cm | Angle deg | Antenna Pol. | Remark |
|-----|----------|--------------|---------|---------------|--------------|-----------|-----------|-----------|--------------|--------|
| 1   | 138.62   | 60.52        | -19.35  | 41.17         | 43.50        | -2.33     |           |           | VERTICAL     | QP     |
| 2   | 227.60   | 48.98        | -16.25  | 32.73         | 46.00        | -13.27    |           |           | VERTICAL     | QP     |
| 3   | 320.40   | 52.71        | -12.86  | 39.85         | 46.00        | -6.15     |           |           | VERTICAL     | QP     |
| 4   | 474.40   | 49.08        | -10.45  | 38.63         | 46.00        | -7.37     |           |           | VERTICAL     | QP     |
| 5   | 671.25   | 49.21        | -6.75   | 42.46         | 46.00        | -3.54     |           |           | VERTICAL     | QP     |
| 6   | 769.65   | 49.66        | -6.12   | 43.54         | 46.00        | -2.46     |           |           | VERTICAL     | QP     |

Note: 1. C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain -

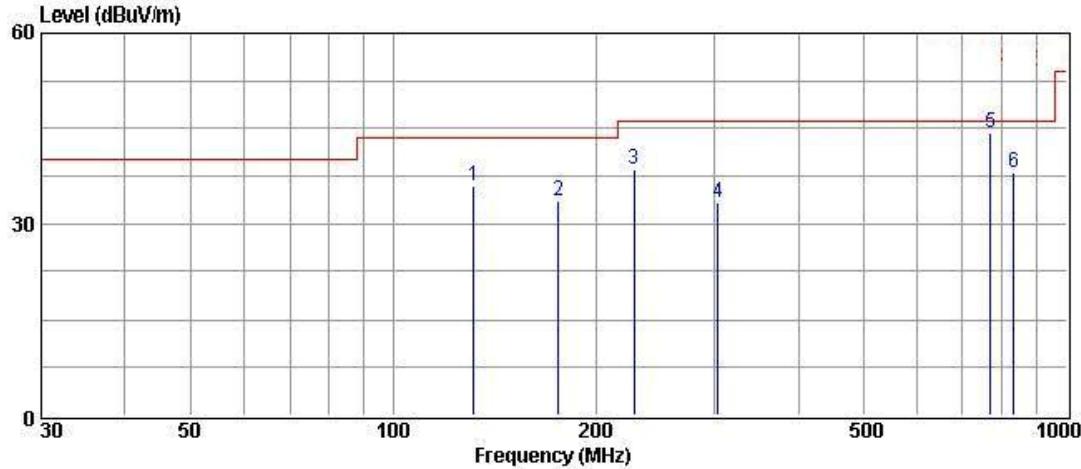
2. Margin = Result - Limit ; Result = Reading + C.F .

**Remark :**

1. Measuring frequencies from 30 MHz to 1 GHz.
2. Measurements above show only up to 6 maximum emissions noted.
3. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Q.P. detector mode.
4. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
5. The IF bandwidth of SPA between 30 MHz to 1 GHz was 100 kHz.

**Radiated Emission Test Data (Below 1 GHz)**

|              |               |           |               |
|--------------|---------------|-----------|---------------|
| Temperature  | : 28°C        | Humidity  | : 30%         |
| Test Date    | : 03-JUL-2013 | Tested by | : Eason Hsieh |
| Polarization | : Horizontal  | Channel   | : N/A         |
| Test Mode    | : AV Mode 3   |           |               |



| No. | Freq<br>MHz | Reading<br>dB $\mu$ V | C.F.<br>dB | Result<br>dB $\mu$ V/m | Limit<br>dB $\mu$ V/m | Margin<br>dB | Height<br>cm | Angle<br>deg | Antenna<br>Pol. | Remark |
|-----|-------------|-----------------------|------------|------------------------|-----------------------|--------------|--------------|--------------|-----------------|--------|
| 1   | 131.37      | 55.53                 | -19.56     | 35.97                  | 43.50                 | -7.53        |              |              | HORIZONTAL      | QP     |
| 2   | 175.82      | 51.53                 | -18.05     | 33.48                  | 43.50                 | -10.02       |              |              | HORIZONTAL      | QP     |
| 3   | 227.84      | 54.76                 | -16.25     | 38.51                  | 46.00                 | -7.49        |              |              | HORIZONTAL      | QP     |
| 4   | 304.40      | 46.64                 | -13.30     | 33.34                  | 46.00                 | -12.66       |              |              | HORIZONTAL      | QP     |
| 5   | 769.60      | 50.39                 | -6.12      | 44.27                  | 46.00                 | -1.73        |              |              | HORIZONTAL      | QP     |
| 6   | 834.00      | 43.75                 | -5.81      | 37.94                  | 46.00                 | -8.06        |              |              | HORIZONTAL      | QP     |

Note: 1. C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain .

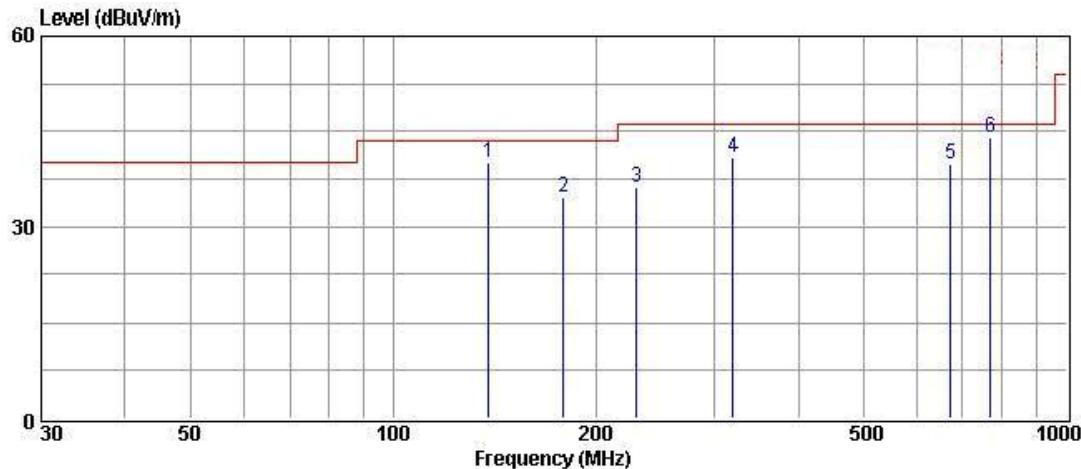
2. Margin = Result - Limit , Result = Reading + C.F .

**Remark :**

1. Measuring frequencies from 30 MHz to 1 GHz.
2. Measurements above show only up to 6 maximum emissions noted.
3. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Q.P. detector mode.
4. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
5. The IF bandwidth of SPA between 30 MHz to 1 GHz was 100 kHz.

**Radiated Emission Test Data (Below 1 GHz)**

|              |               |           |               |
|--------------|---------------|-----------|---------------|
| Temperature  | : 28°C        | Humidity  | : 30%         |
| Test Date    | : 03-JUL-2013 | Tested by | : Eason Hsieh |
| Polarization | : Vertical    | Channel   | : N/A         |
| Test Mode    | : AV Mode 3   |           |               |



| No. | Freq MHz | Reading dBuV | C.F. dB | Result dBuV/m | Limit dBuV/m | Margin dB | Height cm | Angle deg | Antenna Pol. | Remark |
|-----|----------|--------------|---------|---------------|--------------|-----------|-----------|-----------|--------------|--------|
| 1   | 138.62   | 59.43        | -19.35  | 40.08         | 43.50        | -3.42     |           |           | VERTICAL     | QP     |
| 2   | 178.80   | 52.45        | -17.99  | 34.46         | 43.50        | -9.04     |           |           | VERTICAL     | QP     |
| 3   | 230.00   | 52.39        | -16.15  | 36.24         | 46.00        | -9.76     |           |           | VERTICAL     | QP     |
| 4   | 320.40   | 53.83        | -12.86  | 40.97         | 46.00        | -5.03     |           |           | VERTICAL     | QP     |
| 5   | 671.25   | 46.65        | -6.75   | 39.90         | 46.00        | -6.10     |           |           | VERTICAL     | QP     |
| 6   | 769.65   | 50.10        | -6.12   | 43.98         | 46.00        | -2.02     |           |           | VERTICAL     | QP     |

Note: 1. C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain -

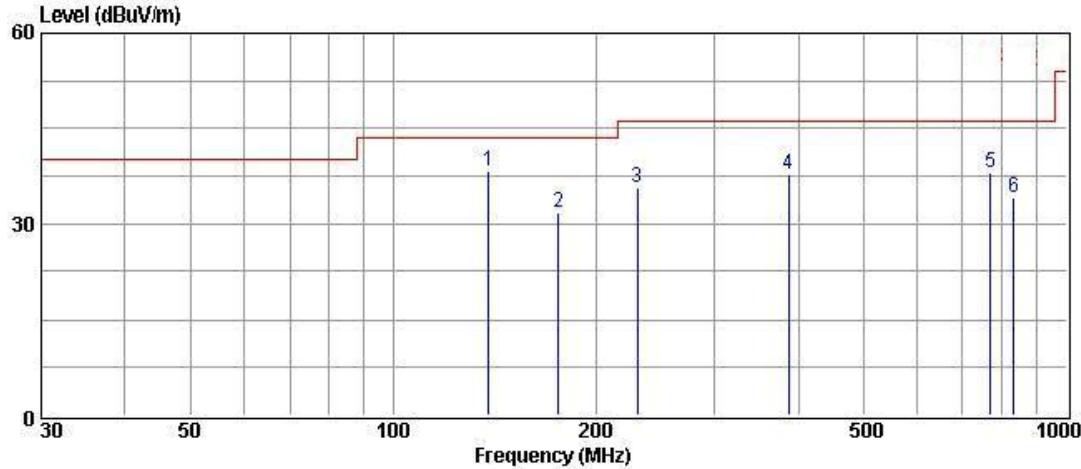
2. Margin = Result - Limit ; Result = Reading + C.F .

**Remark :**

1. Measuring frequencies from 30 MHz to 1 GHz.
2. Measurements above show only up to 6 maximum emissions noted.
3. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Q.P. detector mode.
4. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
5. The IF bandwidth of SPA between 30 MHz to 1 GHz was 100 kHz.

**Radiated Emission Test Data (Below 1 GHz)**

|              |               |           |               |
|--------------|---------------|-----------|---------------|
| Temperature  | : 28°C        | Humidity  | : 30%         |
| Test Date    | : 03-JUL-2013 | Tested by | : Eason Hsieh |
| Polarization | : Horizontal  | Channel   | : N/A         |
| Test Mode    | : AV Mode 4   |           |               |



| No. | Freq   | Reading    | C.F.   | Result | Limit  | Margin | Height | Angle | Antenna    | Remark |
|-----|--------|------------|--------|--------|--------|--------|--------|-------|------------|--------|
|     | MHz    | dB $\mu$ V | dB     | dBuV/m | dBuV/m | dB     | cm     | deg   | Pol.       |        |
| 1   | 138.62 | 57.68      | -19.35 | 38.33  | 43.50  | -5.17  |        |       | HORIZONTAL | QP     |
| 2   | 175.82 | 49.63      | -18.05 | 31.58  | 43.50  | -11.92 |        |       | HORIZONTAL | QP     |
| 3   | 230.80 | 51.64      | -16.12 | 35.52  | 46.00  | -10.48 |        |       | HORIZONTAL | QP     |
| 4   | 384.80 | 49.41      | -11.74 | 37.67  | 46.00  | -8.33  |        |       | HORIZONTAL | QP     |
| 5   | 769.60 | 43.99      | -6.12  | 37.87  | 46.00  | -8.13  |        |       | HORIZONTAL | QP     |
| 6   | 834.00 | 39.89      | -5.81  | 34.08  | 46.00  | -11.92 |        |       | HORIZONTAL | QP     |

Note: 1. C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain .

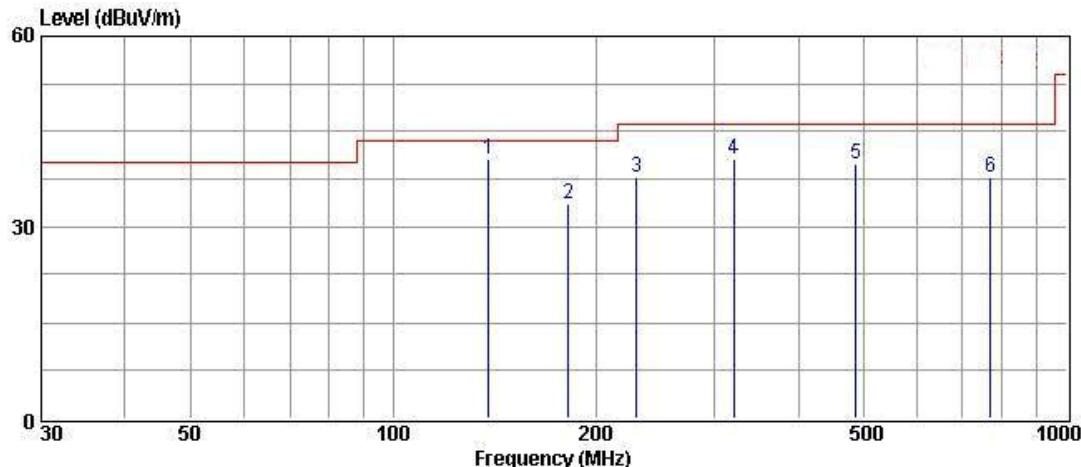
2. Margin = Result - Limit , Result = Reading + C.F .

**Remark :**

1. Measuring frequencies from 30 MHz to 1 GHz.
2. Measurements above show only up to 6 maximum emissions noted.
3. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Q.P. detector mode.
4. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
5. The IF bandwidth of SPA between 30 MHz to 1 GHz was 100 kHz.

**Radiated Emission Test Data (Below 1 GHz)**

|              |               |           |               |
|--------------|---------------|-----------|---------------|
| Temperature  | : 28°C        | Humidity  | : 30%         |
| Test Date    | : 03-JUL-2013 | Tested by | : Eason Hsieh |
| Polarization | : Vertical    | Channel   | : N/A         |
| Test Mode    | : AV Mode 4   |           |               |



| No. | Freq MHz | Reading dBuV | C.F dB | Result dBuV/m | Limit dBuV/m | Margin dB | Height cm | Angle deg | Antenna Pol. | Remark |
|-----|----------|--------------|--------|---------------|--------------|-----------|-----------|-----------|--------------|--------|
| 1   | 138.40   | 60.03        | -19.35 | 40.68         | 43.50        | -2.82     |           |           | VERTICAL     | QP     |
| 2   | 182.02   | 51.55        | -17.89 | 33.66         | 43.50        | -9.84     |           |           | VERTICAL     | QP     |
| 3   | 230.06   | 53.79        | -16.15 | 37.64         | 46.00        | -8.36     |           |           | VERTICAL     | QP     |
| 4   | 321.32   | 53.48        | -12.83 | 40.65         | 46.00        | -5.35     |           |           | VERTICAL     | QP     |
| 5   | 485.72   | 50.21        | -10.29 | 39.92         | 46.00        | -6.08     |           |           | VERTICAL     | QP     |
| 6   | 769.60   | 43.95        | -6.12  | 37.83         | 46.00        | -8.17     |           |           | VERTICAL     | QP     |

Note: 1. C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain -

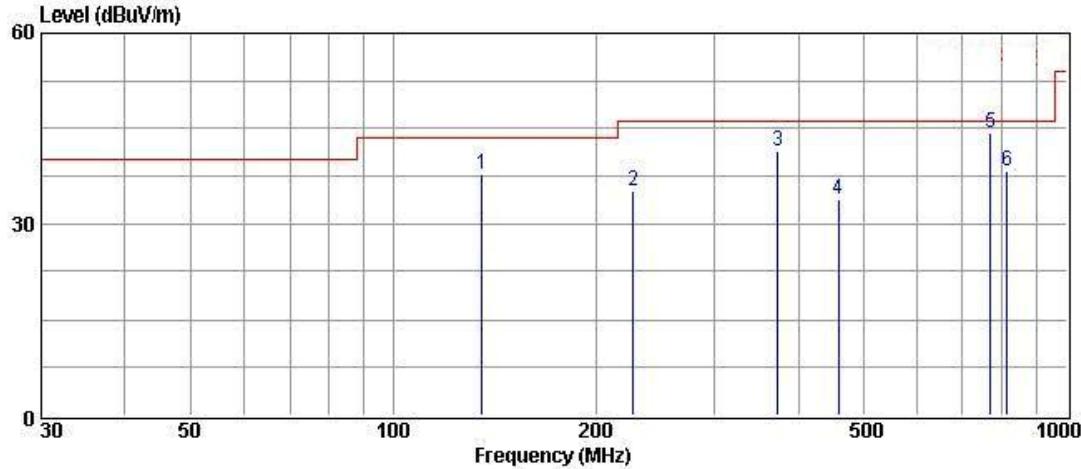
2. Margin = Result - Limit ; Result = Reading + C.F .

**Remark :**

1. Measuring frequencies from 30 MHz to 1 GHz.
2. Measurements above show only up to 6 maximum emissions noted.
3. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Q.P. detector mode.
4. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
5. The IF bandwidth of SPA between 30 MHz to 1 GHz was 100 kHz.

**Radiated Emission Test Data (Below 1 GHz)**

|              |               |           |               |
|--------------|---------------|-----------|---------------|
| Temperature  | : 28°C        | Humidity  | : 30%         |
| Test Date    | : 03-JUL-2013 | Tested by | : Eason Hsieh |
| Polarization | : Horizontal  | Channel   | : N/A         |
| Test Mode    | : AV Mode 5   |           |               |



| No. | Freq<br>MHz | Reading<br>dB $\mu$ V | C.F.<br>dB | Result<br>dB $\mu$ V/m | Limit<br>dB $\mu$ V/m | Margin<br>dB | Height<br>cm | Angle<br>deg | Antenna<br>Pol. | Remark |
|-----|-------------|-----------------------|------------|------------------------|-----------------------|--------------|--------------|--------------|-----------------|--------|
| 1   | 135.46      | 57.23                 | -19.44     | 37.79                  | 43.50                 | -5.71        |              |              | HORIZONTAL      | QP     |
| 2   | 227.20      | 51.27                 | -16.28     | 34.99                  | 46.00                 | -11.01       |              |              | HORIZONTAL      | QP     |
| 3   | 370.88      | 53.87                 | -12.42     | 41.45                  | 46.00                 | -4.55        |              |              | HORIZONTAL      | QP     |
| 4   | 457.60      | 44.61                 | -10.83     | 33.78                  | 46.00                 | -12.22       |              |              | HORIZONTAL      | QP     |
| 5   | 769.51      | 50.43                 | -6.12      | 44.31                  | 46.00                 | -1.69        |              |              | HORIZONTAL      | QP     |
| 6   | 815.92      | 44.08                 | -5.93      | 38.15                  | 46.00                 | -7.85        |              |              | HORIZONTAL      | QP     |

Note: 1. C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain .

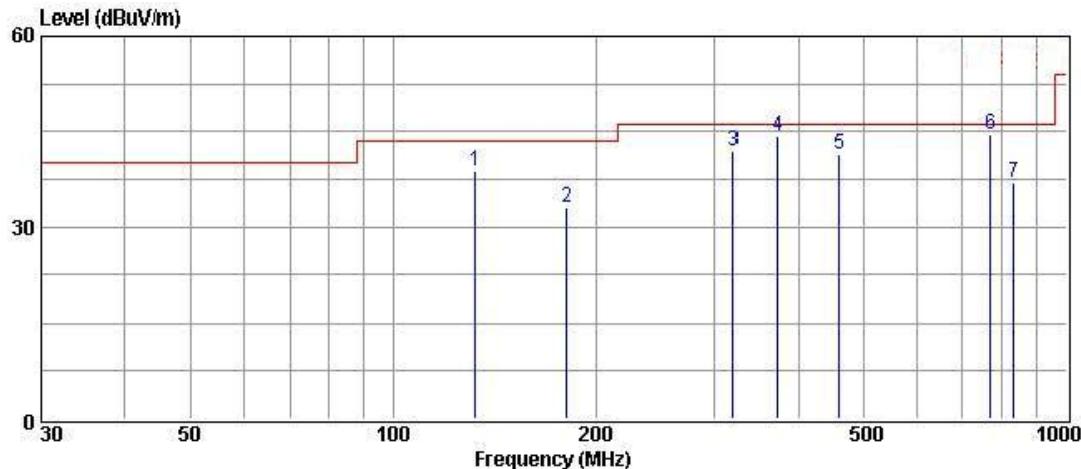
2. Margin = Result - Limit , Result = Reading + C.F .

**Remark :**

1. Measuring frequencies from 30 MHz to 1 GHz.
2. Measurements above show only up to 6 maximum emissions noted.
3. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Q.P. detector mode.
4. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
5. The IF bandwidth of SPA between 30 MHz to 1 GHz was 100 kHz.

**Radiated Emission Test Data (Below 1 GHz)**

|              |               |           |               |
|--------------|---------------|-----------|---------------|
| Temperature  | : 28°C        | Humidity  | : 30%         |
| Test Date    | : 03-JUL-2013 | Tested by | : Eason Hsieh |
| Polarization | : Vertical    | Channel   | : N/A         |
| Test Mode    | : AV Mode 5   |           |               |



| No. | Freq<br>MHz | Reading<br>dB $\mu$ V | C.F.<br>dB | Result<br>dB $\mu$ V/m | Limit<br>dB $\mu$ V/m | Margin<br>dB | Height<br>cm | Angle<br>deg | Antenna<br>Pol. | Remark |
|-----|-------------|-----------------------|------------|------------------------|-----------------------|--------------|--------------|--------------|-----------------|--------|
| 1   | 132.21      | 58.32                 | -19.53     | 38.79                  | 43.50                 | -4.71        |              |              | VERTICAL        | QP     |
| 2   | 181.13      | 50.99                 | -17.92     | 33.07                  | 43.50                 | -10.43       |              |              | VERTICAL        | QP     |
| 3   | 320.47      | 54.66                 | -12.86     | 41.80                  | 46.00                 | -4.20        |              |              | VERTICAL        | QP     |
| 4   | 370.87      | 56.83                 | -12.42     | 44.41                  | 46.00                 | -1.59        |              |              | VERTICAL        | QP     |
| 5   | 458.40      | 52.23                 | -10.80     | 41.43                  | 46.00                 | -4.57        |              |              | VERTICAL        | QP     |
| 6   | 769.51      | 50.64                 | -6.12      | 44.52                  | 46.00                 | -1.48        |              |              | VERTICAL        | QP     |
| 7   | 834.00      | 42.66                 | -5.81      | 36.85                  | 46.00                 | -9.15        |              |              | VERTICAL        | QP     |

Note: 1. C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain .

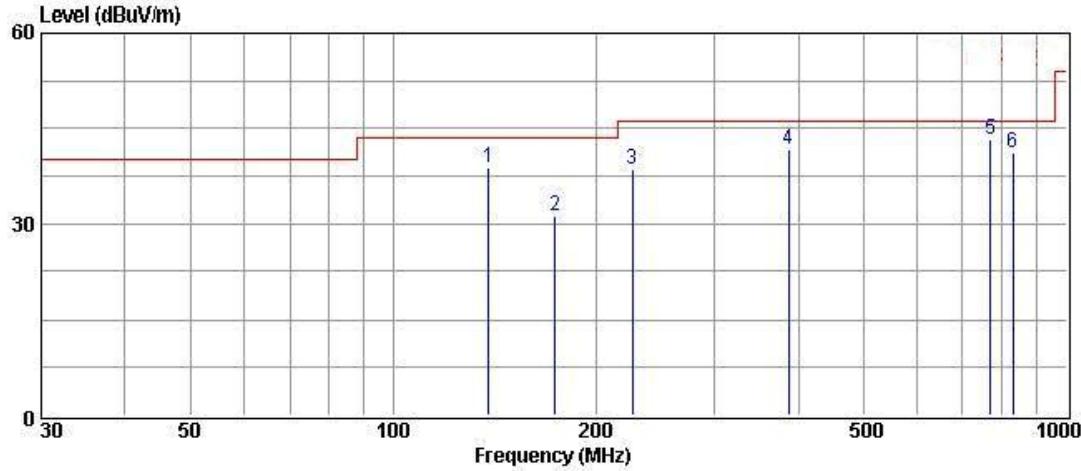
2. Margin = Result - Limit ; Result = Reading + C.F .

**Remark :**

1. Measuring frequencies from 30 MHz to 1 GHz.
2. Measurements above show only up to 6 maximum emissions noted.
3. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Q.P. detector mode.
4. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
5. The IF bandwidth of SPA between 30 MHz to 1 GHz was 100 kHz.

**Radiated Emission Test Data (Below 1 GHz)**

Temperature : 28°C      Humidity : 30%  
Test Date : 03-JUL-2013      Tested by : Eason Hsieh  
Polarization : Horizontal      Channel : CH LOW (88.3)  
Test Mode : FM Mode 6



| No. | Freq<br>MHz | Reading<br>dB $\mu$ V | C.F.<br>dB | Result<br>dB $\mu$ V/m | Limit<br>dB $\mu$ V/m | Margin<br>dB | Height<br>cm | Angle<br>deg | Antenna<br>Pol. | Remark |
|-----|-------------|-----------------------|------------|------------------------|-----------------------|--------------|--------------|--------------|-----------------|--------|
| 1   | 138.62      | 58.07                 | -19.35     | 38.72                  | 43.50                 | -4.78        |              |              | HORIZONTAL      | QP     |
| 2   | 173.77      | 49.20                 | -18.08     | 31.12                  | 43.50                 | -12.38       |              |              | HORIZONTAL      | QP     |
| 3   | 226.80      | 54.88                 | -16.28     | 38.60                  | 46.00                 | -7.40        |              |              | HORIZONTAL      | QP     |
| 4   | 384.80      | 53.28                 | -11.74     | 41.54                  | 46.00                 | -4.46        |              |              | HORIZONTAL      | QP     |
| 5   | 769.60      | 49.24                 | -6.12      | 43.12                  | 46.00                 | -2.88        |              |              | HORIZONTAL      | QP     |
| 6   | 833.19      | 47.02                 | -5.81      | 41.21                  | 46.00                 | -4.79        |              |              | HORIZONTAL      | QP     |

Note: 1. C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain .

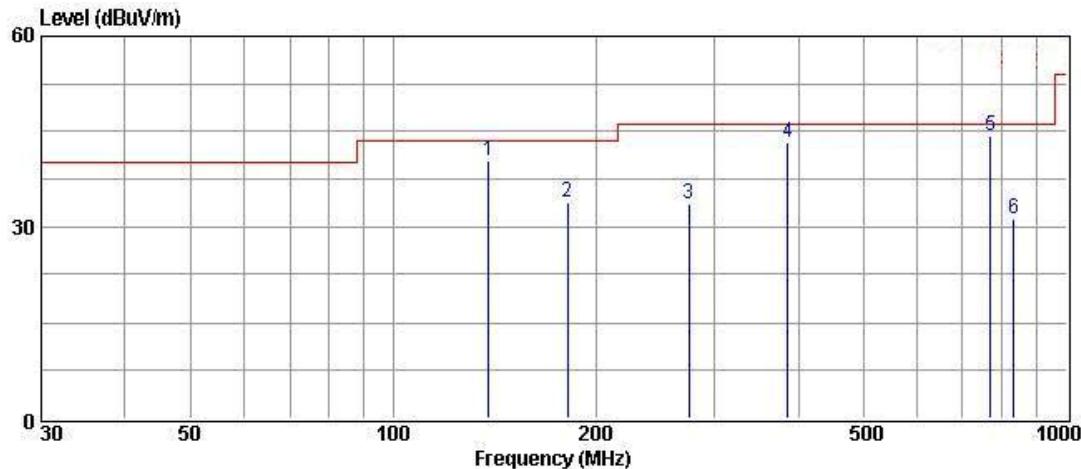
2. Margin = Result - Limit , Result = Reading + C.F .

**Remark :**

1. Measuring frequencies from 30 MHz to 1 GHz.
2. Measurements above show only up to 6 maximum emissions noted.
3. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Q.P. detector mode.
4. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
5. The IF bandwidth of SPA between 30 MHz to 1 GHz was 100 kHz.

**Radiated Emission Test Data (Below 1 GHz)**

|              |               |           |                 |
|--------------|---------------|-----------|-----------------|
| Temperature  | : 28°C        | Humidity  | : 30%           |
| Test Date    | : 03-JUL-2013 | Tested by | : Eason Hsieh   |
| Polarization | : Vertical    | Channel   | : CH LOW (88.3) |
| Test Mode    | : FM Mode 6   |           |                 |



| No. | Freq MHz | Reading dBuV | C.F dB | Result dBuV/m | Limit dBuV/m | Margin dB | Height cm | Angle deg | Antenna Pol. | Remark |
|-----|----------|--------------|--------|---------------|--------------|-----------|-----------|-----------|--------------|--------|
| 1   | 138.62   | 59.64        | -19.35 | 40.29         | 43.50        | -3.21     |           |           | VERTICAL     | QP     |
| 2   | 181.59   | 51.67        | -17.92 | 33.75         | 43.50        | -9.75     |           |           | VERTICAL     | QP     |
| 3   | 275.55   | 48.21        | -14.76 | 33.45         | 46.00        | -12.55    |           |           | VERTICAL     | QP     |
| 4   | 384.75   | 55.04        | -11.74 | 43.30         | 46.00        | -2.70     |           |           | VERTICAL     | QP     |
| 5   | 769.60   | 50.39        | -6.12  | 44.27         | 46.00        | -1.73     |           |           | VERTICAL     | QP     |
| 6   | 833.30   | 36.87        | -5.81  | 31.06         | 46.00        | -14.94    |           |           | VERTICAL     | QP     |

Note: 1. C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain -

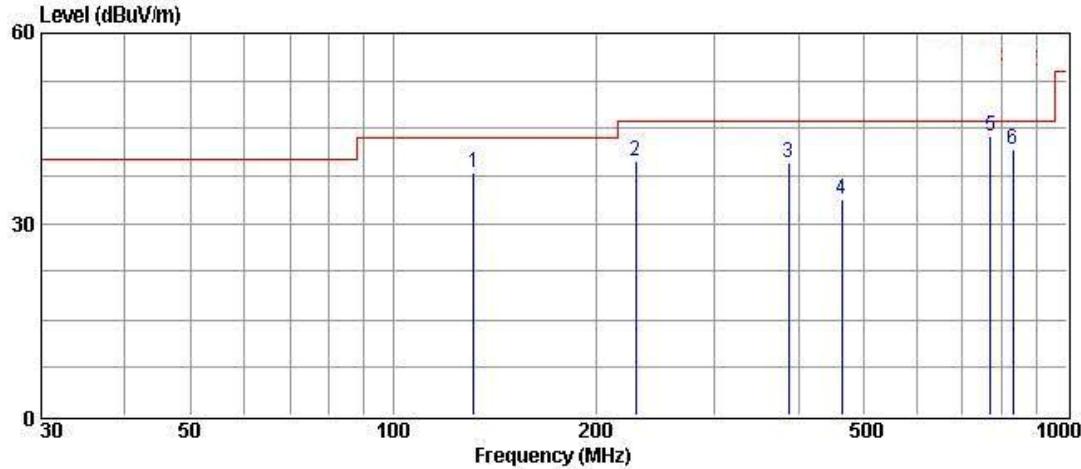
2. Margin = Result - Limit ; Result = Reading + C.F .

**Remark :**

1. Measuring frequencies from 30 MHz to 1 GHz.
2. Measurements above show only up to 6 maximum emissions noted.
3. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Q.P. detector mode.
4. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
5. The IF bandwidth of SPA between 30 MHz to 1 GHz was 100 kHz.

**Radiated Emission Test Data (Below 1 GHz)**

|              |               |           |                     |
|--------------|---------------|-----------|---------------------|
| Temperature  | : 28°C        | Humidity  | : 30%               |
| Test Date    | : 03-JUL-2013 | Tested by | : Eason Hsieh       |
| Polarization | : Horizontal  | Channel   | : CH MID (97.9 MHz) |
| Test Mode    | : FM Mode 7   |           |                     |



| No. | Freq<br>MHz | Reading<br>dB $\mu$ V | C.F.<br>dB | Result<br>dB $\mu$ V/m | Limit<br>dB $\mu$ V/m | Margin<br>dB | Height<br>cm | Angle<br>deg | Antenna<br>Pol. | Remark |
|-----|-------------|-----------------------|------------|------------------------|-----------------------|--------------|--------------|--------------|-----------------|--------|
| 1   | 131.55      | 57.43                 | -19.54     | 37.89                  | 43.50                 | -5.61        |              |              | HORIZONTAL      | QP     |
| 2   | 229.20      | 56.11                 | -16.19     | 39.92                  | 46.00                 | -6.08        |              |              | HORIZONTAL      | QP     |
| 3   | 384.80      | 51.20                 | -11.74     | 39.46                  | 46.00                 | -6.54        |              |              | HORIZONTAL      | QP     |
| 4   | 462.80      | 44.53                 | -10.72     | 33.81                  | 46.00                 | -12.19       |              |              | HORIZONTAL      | QP     |
| 5   | 769.60      | 49.79                 | -6.12      | 43.67                  | 46.00                 | -2.33        |              |              | HORIZONTAL      | QP     |
| 6   | 833.07      | 47.34                 | -5.81      | 41.53                  | 46.00                 | -4.47        |              |              | HORIZONTAL      | QP     |

Note: 1. C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain .

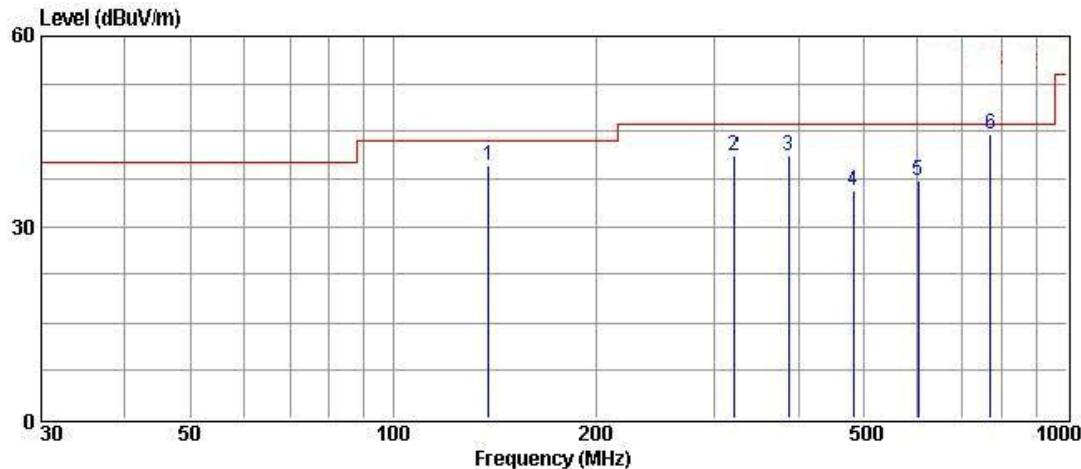
2. Margin = Result - Limit , Result = Reading + C.F .

**Remark :**

1. Measuring frequencies from 30 MHz to 1 GHz.
2. Measurements above show only up to 6 maximum emissions noted.
3. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Q.P. detector mode.
4. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
5. The IF bandwidth of SPA between 30 MHz to 1 GHz was 100 kHz.

**Radiated Emission Test Data (Below 1 GHz)**

|              |               |           |                     |
|--------------|---------------|-----------|---------------------|
| Temperature  | : 28°C        | Humidity  | : 30%               |
| Test Date    | : 03-JUL-2013 | Tested by | : Eason Hsieh       |
| Polarization | : Vertical    | Channel   | : CH MID (97.9 MHz) |
| Test Mode    | : FM Mode 7   |           |                     |



| No. | Freq MHz | Reading dBuV | C.F dB | Result dBuV/m | Limit dBuV/m | Margin dB | Height cm | Angle deg | Antenna Pol. | Remark |
|-----|----------|--------------|--------|---------------|--------------|-----------|-----------|-----------|--------------|--------|
| 1   | 138.62   | 58.94        | -19.35 | 39.59         | 43.50        | -3.91     |           |           | VERTICAL     | QP     |
| 2   | 320.80   | 53.94        | -12.83 | 41.11         | 46.00        | -4.89     |           |           | VERTICAL     | QP     |
| 3   | 384.80   | 52.89        | -11.74 | 41.15         | 46.00        | -4.85     |           |           | VERTICAL     | QP     |
| 4   | 481.60   | 45.90        | -10.34 | 35.56         | 46.00        | -10.44    |           |           | VERTICAL     | QP     |
| 5   | 601.60   | 44.94        | -7.76  | 37.18         | 46.00        | -8.82     |           |           | VERTICAL     | QP     |
| 6   | 769.60   | 50.63        | -6.12  | 44.51         | 46.00        | -1.49     |           |           | VERTICAL     | QP     |

Note: 1. C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain -

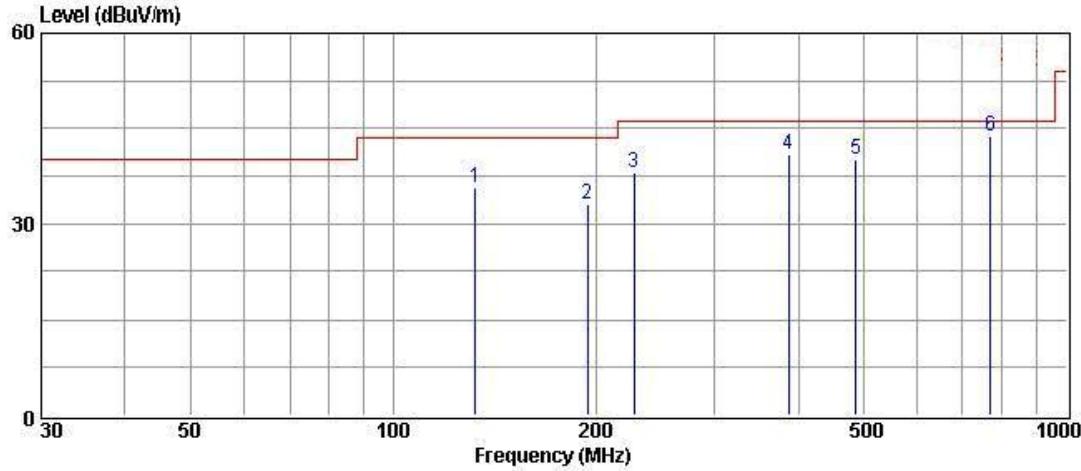
2. Margin = Result - Limit ; Result = Reading + C.F .

**Remark :**

1. Measuring frequencies from 30 MHz to 1 GHz.
2. Measurements above show only up to 6 maximum emissions noted.
3. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Q.P. detector mode.
4. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
5. The IF bandwidth of SPA between 30 MHz to 1 GHz was 100 kHz.

**Radiated Emission Test Data (Below 1 GHz)**

|              |               |           |                       |
|--------------|---------------|-----------|-----------------------|
| Temperature  | : 28°C        | Humidity  | : 30%                 |
| Test Date    | : 03-JUL-2013 | Tested by | : Eason Hsieh         |
| Polarization | : Horizontal  | Channel   | : CH HIGH (107.7 MHz) |
| Test Mode    | : FM Mode 8   |           |                       |



| No. | Freq<br>MHz | Reading<br>dB $\mu$ V | C.F.<br>dB | Result<br>dB $\mu$ V/m | Limit<br>dB $\mu$ V/m | Margin<br>dB | Height<br>cm | Angle<br>deg | Antenna<br>Pol. | Remark |
|-----|-------------|-----------------------|------------|------------------------|-----------------------|--------------|--------------|--------------|-----------------|--------|
| 1   | 132.20      | 55.21                 | -19.53     | 35.68                  | 43.50                 | -7.82        |              |              | HORIZONTAL      | QP     |
| 2   | 194.14      | 50.39                 | -17.44     | 32.95                  | 43.50                 | -10.55       |              |              | HORIZONTAL      | QP     |
| 3   | 228.00      | 54.12                 | -16.25     | 37.87                  | 46.00                 | -8.13        |              |              | HORIZONTAL      | QP     |
| 4   | 384.80      | 52.51                 | -11.74     | 40.77                  | 46.00                 | -5.23        |              |              | HORIZONTAL      | QP     |
| 5   | 485.80      | 50.49                 | -10.29     | 40.20                  | 46.00                 | -5.80        |              |              | HORIZONTAL      | QP     |
| 6   | 769.60      | 49.86                 | -6.12      | 43.74                  | 46.00                 | -2.26        |              |              | HORIZONTAL      | QP     |

Note: 1. C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain .

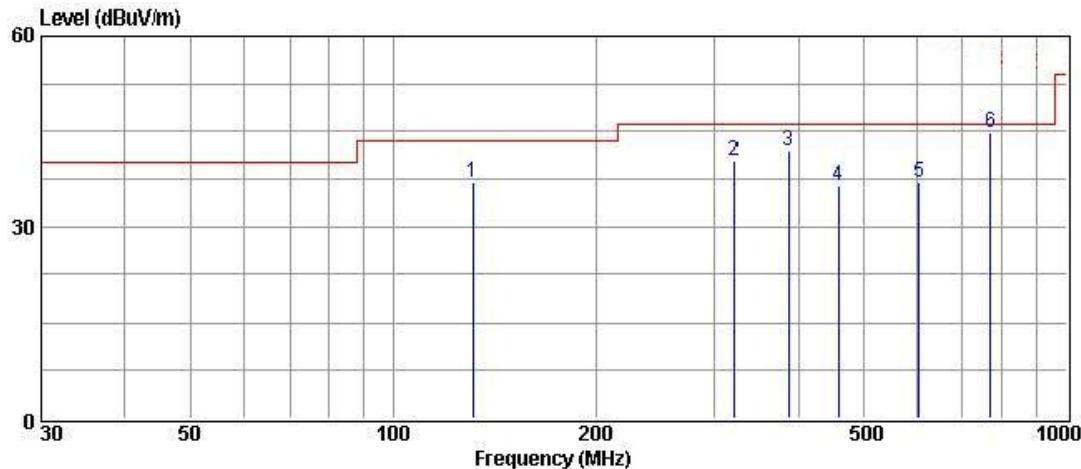
2. Margin = Result - Limit , Result = Reading + C.F .

**Remark :**

1. Measuring frequencies from 30 MHz to 1 GHz.
2. Measurements above show only up to 6 maximum emissions noted.
3. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Q.P. detector mode.
4. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
5. The IF bandwidth of SPA between 30 MHz to 1 GHz was 100 kHz.

**Radiated Emission Test Data (Below 1 GHz)**

|              |               |           |                       |
|--------------|---------------|-----------|-----------------------|
| Temperature  | : 28°C        | Humidity  | : 30%                 |
| Test Date    | : 03-JUL-2013 | Tested by | : Eason Hsieh         |
| Polarization | : Vertical    | Channel   | : CH HIGH (107.7 MHz) |
| Test Mode    | : FM Mode 8   |           |                       |



| No. | Freq MHz | Reading dBuV | C.F dB | Result dBuV/m | Limit dBuV/m | Margin dB | Height cm | Angle deg | Antenna Pol. | Remark |
|-----|----------|--------------|--------|---------------|--------------|-----------|-----------|-----------|--------------|--------|
| 1   | 131.09   | 56.54        | -19.56 | 36.98         | 43.50        | -6.52     |           |           | VERTICAL     | QP     |
| 2   | 321.20   | 53.18        | -12.83 | 40.35         | 46.00        | -5.65     |           |           | VERTICAL     | QP     |
| 3   | 384.80   | 53.55        | -11.74 | 41.81         | 46.00        | -4.19     |           |           | VERTICAL     | QP     |
| 4   | 457.60   | 47.13        | -10.83 | 36.30         | 46.00        | -9.70     |           |           | VERTICAL     | QP     |
| 5   | 602.40   | 44.66        | -7.76  | 36.90         | 46.00        | -9.10     |           |           | VERTICAL     | QP     |
| 6   | 769.60   | 50.89        | -6.12  | 44.77         | 46.00        | -1.23     |           |           | VERTICAL     | QP     |

Note: 1. C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain -

2. Margin = Result - Limit ; Result = Reading + C.F .

**Remark :**

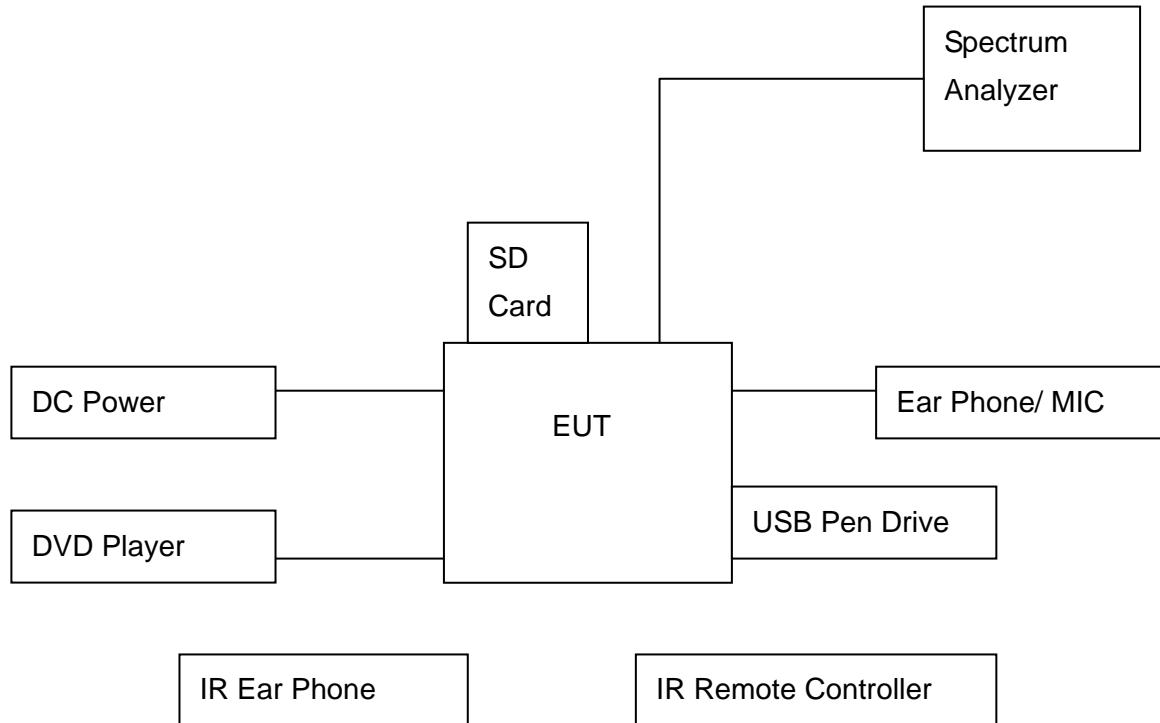
1. Measuring frequencies from 30 MHz to 1 GHz.
2. Measurements above show only up to 6 maximum emissions noted.
3. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Q.P. detector mode.
4. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
5. The IF bandwidth of SPA between 30 MHz to 1 GHz was 100 kHz.

## 4 Emission Band Measurement

### 4.1 Test Instruments

Refer to Sec. 1.2 Test Instruments.

### 4.2 Test Arrangement and Procedure



1. The transmitter output was connected to the spectrum analyzer (through an attenuator, if it's necessary).
2. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 10kHz RBW and 30kHz VBW. Measured the -26 dB bandwidth and plotted the graph.
3. Audio input was set to max during the test.

### 4.3 Limit (§ 15.239(a))

Emissions from the intentional radiator shall be confined within a band 200kHz wide centered on the operating frequency. The 200kHz band shall lie wholly within the frequency range of 88~108MHz.

### 4.4 Test Result

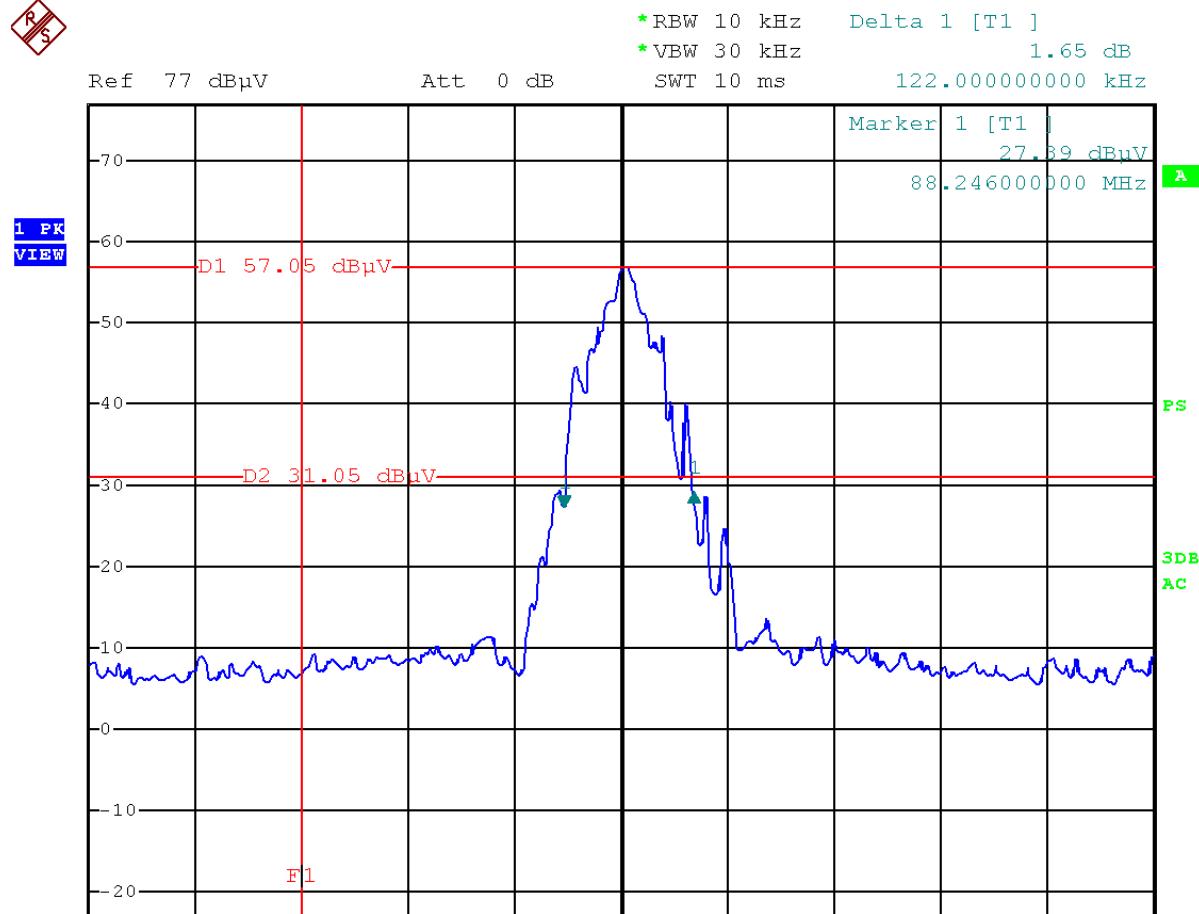
#### Compliance

The final test data are shown on the following page(s).



Temperature : 28°C  
Test Date : 03-JUL-2013  
Test Mode : FM Mode 6

Humidity : 30%  
Tested by : Eason Hsieh  
Channel : CH LOW (88.3 MHz)

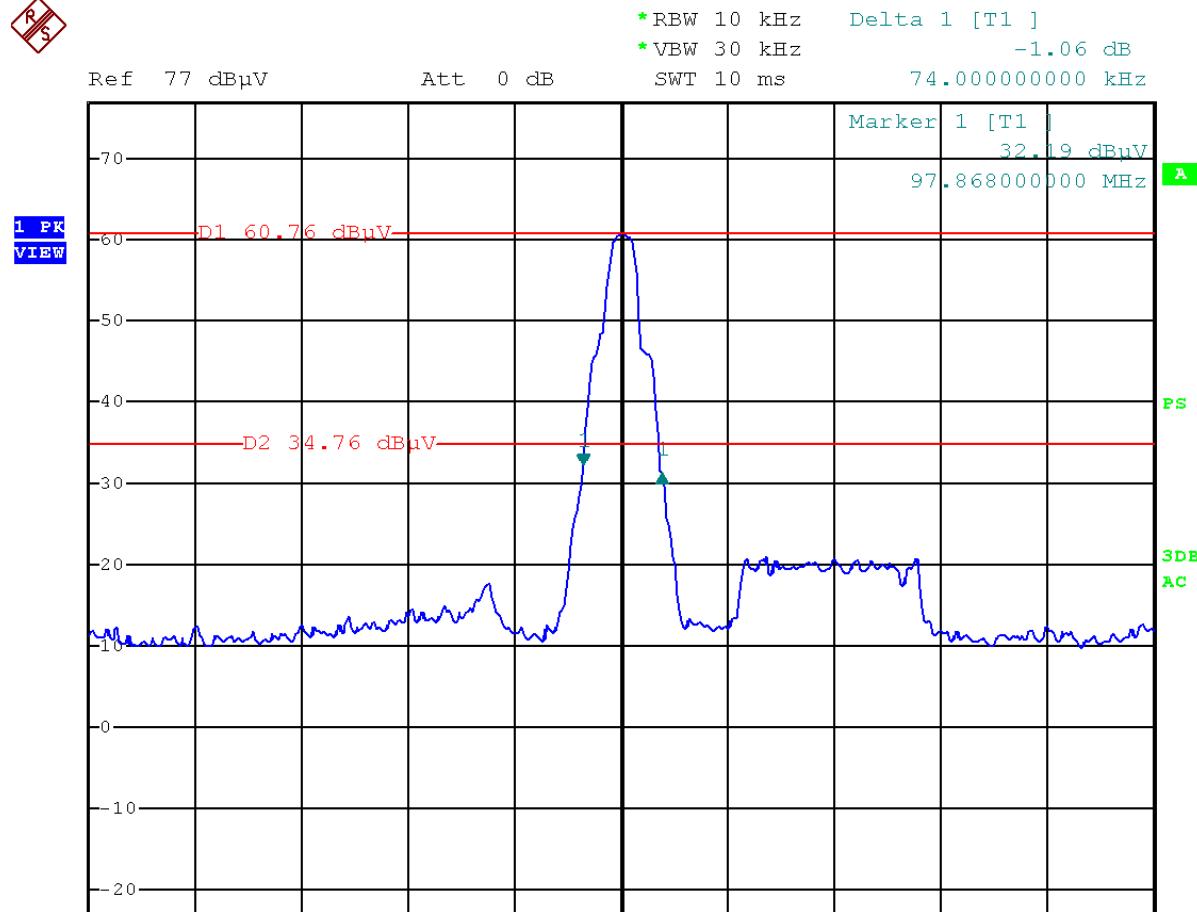


| -26 dB Bandwidth (kHz) | Maximum Limit (kHz) | Result |
|------------------------|---------------------|--------|
| 122                    | 200                 | Pass   |



Temperature : 28°C  
Test Date : 03-JUL-2013  
Test Mode : FM Mode 7

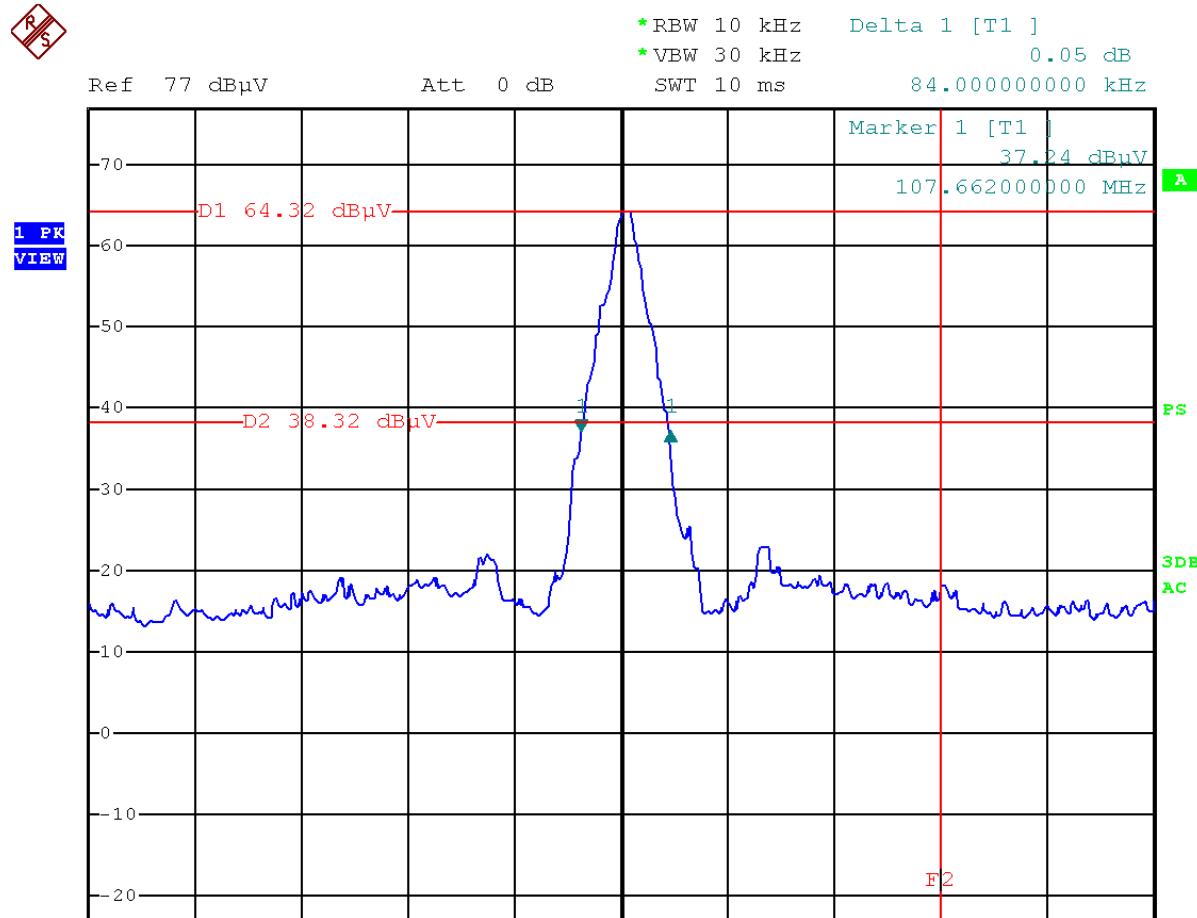
Humidity : 30%  
Tested by : Eason Hsieh  
Channel : CH MID (97.9 MHz)



| -26 dB Bandwidth (kHz) | Maximum Limit (kHz) | Result |
|------------------------|---------------------|--------|
| 74                     | 200                 | Pass   |



|             |               |           |                       |
|-------------|---------------|-----------|-----------------------|
| Temperature | : 28°C        | Humidity  | : 30%                 |
| Test Date   | : 03-JUL-2013 | Tested by | : Eason Hsieh         |
| Test Mode   | : FM Mode 8   | Channel   | : CH HIGH (107.7 MHz) |



| -26 dB Bandwidth (kHz) | Maximum Limit (kHz) | Result |
|------------------------|---------------------|--------|
| 84                     | 200                 | Pass   |

## 5 Antenna requirement

### 5.1 Limit (§ 15.203)

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of § 15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

### 5.2 Test Result

#### **Compliance.**

The EUT applies a wire antenna with 0 dBi gain.