

# FCC Test Report

**APPLICANT** : Lenovo (Shanghai) Electronics Technology Co., Ltd.  
**EQUIPMENT** : Tablet PC  
**BRAND NAME** : Vodafone  
**MODEL NAME** : Smart Tab III<sup>7</sup>  
**MARKETING NAME** : Vodafone Smart Tab III<sup>7</sup>  
**FCC ID** : O57A3000VDF3G  
**STANDARD** : FCC 47 CFR FCC Part 15 Subpart B  
**CLASSIFICATION** : Certification

The product was received on Feb. 27, 2013 and completely tested on Jun. 24, 2013. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2009 and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.



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Reviewed by: Louis Wu / Manager



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Approved by: Jones Tsai / Manager



## SPORTON INTERNATIONAL INC.

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## REVISION HISTORY

| REPORT NO. | VERSION | DESCRIPTION             | ISSUED DATE   |
|------------|---------|-------------------------|---------------|
| FC350204   | Rev. 01 | Initial issue of report | Jul. 11, 2013 |
|            |         |                         |               |
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|            |         |                         |               |

## SUMMARY OF TEST RESULT

| Report Section | FCC Rule | Description           | Limit           | Result | Remark                                   |
|----------------|----------|-----------------------|-----------------|--------|--|
| 3.1            | 15.107   | AC Conducted Emission | < 15.107 limits | PASS   | Under limit<br>10.9 dB at<br>0.198 MHz   |
| 3.2            | 15.109   | Radiated Emission     | < 15.109 limits | PASS   | Under limit<br>5.98 dB at<br>162.300 MHz |

# 1. General Description

## 1.1. Applicant

**Lenovo (Shanghai) Electronics Technology Co., Ltd.**

No. 68 Building, 199 Fenju Road, Wai Gao Qiao FTZ , Shanghai , China

## 1.2. Manufacturer

**Lenovo PC HK Limited**

23/F, Lincoln House, Taikoo Place 979 King's Road, Quarry Bay, Hong Kong

## 1.3. Feature of Equipment Under Test

| Product Feature                 |  |
|---------------------------------|--|
| Equipment                       | Tablet PC  |
| Brand Name                      | Vodafone   |
| Model Name                      | Smart Tab III <sup>7</sup>   |
| Marketing Name                  | Vodafone Smart Tab III7  |
| FCC ID                          | O57A3000VDF3G  |
| EUT supports Radios application | GPRS/EGPRS/WCDMA/HSPA/HSPA+/DC-HSDPA/<br>WLAN 11bgn/Bluetooth/Bluetooth 4.0 - LE |
| HW Version                      | H402   |
| SW Version                      | A3000-S3   |
| EUT Stage                       | Identical Prototype  |

### Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. There are below types of I/O Ports of this project.

| I/O Port Types | Q'TY | Tested With |
|----------------|------|-------------|
| Earphone Jack  | 1    | 1           |
| SIM card slot  | 2    | 2           |
| Mirco SD slot  | 1    | 1           |
| Mirco USB port | 1    | 1           |

## 1.4. Product Specification of Equipment Under Test

| Product Specification subjective to this standard |   |
|---|---|
| <b>Tx Frequency</b>                               | GPRS850: 824.2 MHz ~ 848.8 MHz<br>GPRS1900: 1850.2 MHz ~ 1909.8MHz<br>WCDMA Band V: 826.4 MHz ~ 846.6 MHz<br>WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz<br>802.11b/g/n: 2412 MHz ~ 2462 MHz<br>Bluetooth: 2402 MHz ~ 2480 MHz   |
| <b>Rx Frequency Range</b>                         | GPRS850: 869.2 MHz ~ 893.8 MHz<br>GPRS1900: 1930.2 MHz ~ 1989.8 MHz<br>WCDMA Band V: 871.4 MHz ~ 891.6 MHz<br>WCDMA Band II: 1932.4 MHz ~ 1987.6 MHz<br>802.11b/g/n: 2412 MHz ~ 2462 MHz<br>Bluetooth: 2402 MHz ~ 2480 MHz<br>GPS: 1.57542 GHz  |
| <b>Antenna Type</b>                               | WWAN: Fixed Internal Antenna<br>WLAN: Fixed Internal Antenna<br>Bluetooth: Fixed Internal Antenna   |
| <b>Type of Modulation</b>                         | GPRS: GMSK<br>EDGE: GMSK / 8PSK<br>WCDMA: QPSK (Uplink)<br>HSDPA/DC-HSDPA: QPSK (Uplink)<br>HSUPA: QPSK (Uplink)<br>HSPA+: 16QAM (Uplink)<br>DC-HSDPA: 64QAM (Downlink Only)<br>802.11b: DSSS (DBPSK / DQPSK / CCK)<br>802.11g/n: OFDM (BPSK / QPSK / 16QAM / 64QAM)<br>Bluetooth 4.0 - LE (1Mbps): GFSK<br>Bluetooth BR (1Mbps): GFSK<br>Bluetooth EDR (2Mbps): $\pi/4$ -DQPSK<br>Bluetooth EDR (3Mbps): 8-DPSK<br>GPS: BPSK |

## 1.5. Modification of EUT

No modifications are made to the EUT during all test items.

## 1.6. Test Site

|                    |   |           |                         |
|--------------------|---|-----------|-------------------------|
| Test Site          | SPORTON INTERNATIONAL INC.  |           |                         |
| Test Site Location | No. 52, Hwa Ya 1 <sup>st</sup> Rd., Hwa Ya Technology Park,<br>Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.<br>TEL: +886-3-327-3456<br>FAX: +886-3-328-4978 |           |                         |
| Test Site No.      | Sporton Site No.  |           | FCC/IC Registration No. |
|                    | CO05-HY   | 03CH06-HY | 722060/4086B-1          |

## 1.7. Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC 47 CFR FCC Part 15 Subpart B
- ANSI C63.4-2009

**Remark:** All test items were verified and recorded according to the standards and without any deviation during the test.

## 2. Test Configuration of Equipment Under Test

### 2.1. Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2009 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Frequency range investigated: conduction (150 KHz to 30 MHz), radiation (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

The following tables are showing the test modes as the worst cases and recorded in this report.

| Item | EUT Configuration                                     | Test Condition |           |           |
|------|---|----------------|-----------|-----------|
|      |   | EMI AC         | EMI RE<1G | EMI RE≥1G |
| 1.   | Charging Mode (EUT with adapter)                      | ☒              | ☒         | ☒         |
| 2.   | Data application transferred mode (EUT with notebook) | ☒              | ☒         | Note 1    |

#### Abbreviations:

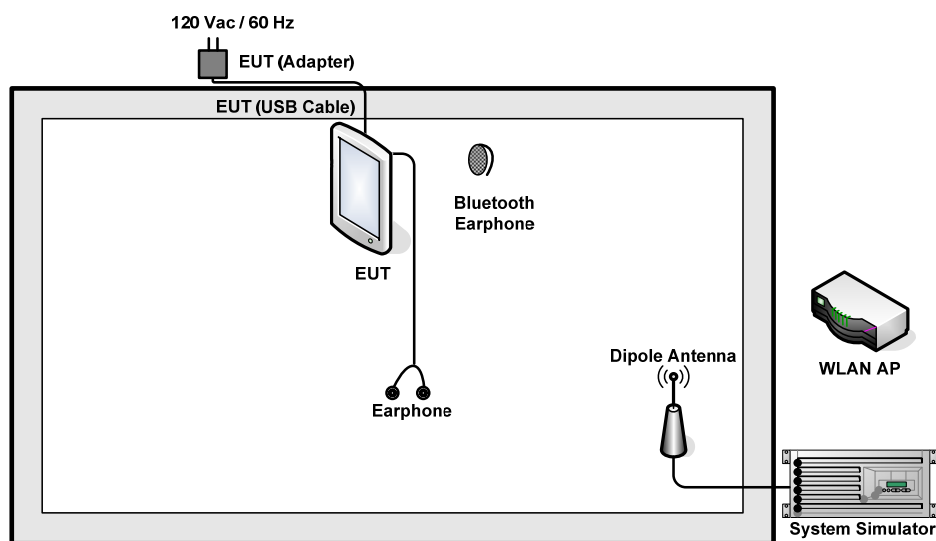
- EMI AC: AC conducted emissions
- EMI RE ≥ 1G: EUT radiated emissions ≥ 1GHz
- EMI RE < 1G: EUT radiated emissions < 1GHz

**Note 1:** Testing for this mode is not required or not the worst case.

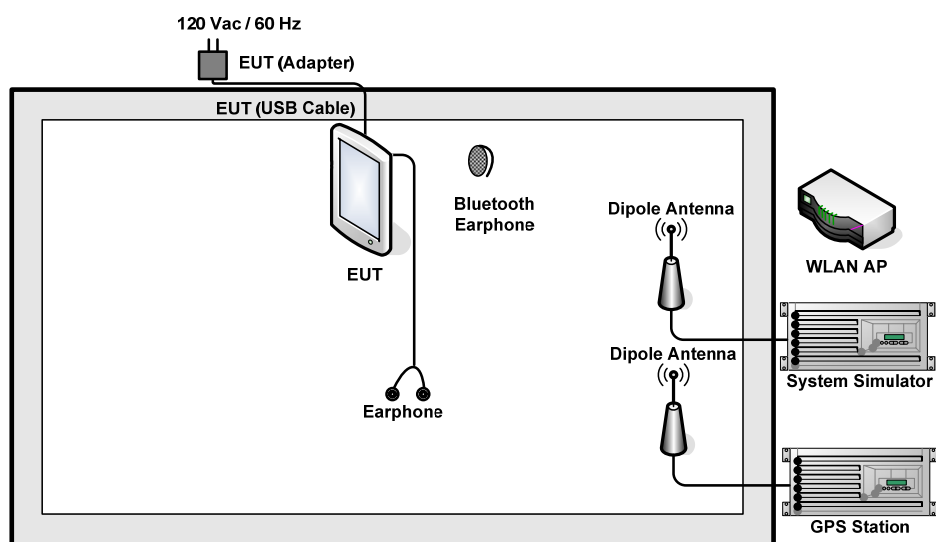
**Remark:** For signal above 1GHz, the worst case was test item 1.

| Test Items   | EUT Configure Mode | Function Type  |
|--|--------------------|--|
| AC Conducted Emission  | 1/2                | <p>Mode 1: GPRS850 Idle + USB Cable 1 (Charging from Adapter) + Bluetooth Idle + WLAN Idle + Earphone + Camera + Battery &lt;Fig. 1&gt;</p> <p>Mode 2: GPRS1900 Idle + USB Cable 1 (Charging from Adapter) + Bluetooth Idle + WLAN Idle + Earphone + MPEG4 + Battery &lt;Fig. 1&gt;</p> <p>Mode 3: WCDMA Band V Idle + USB Cable 1 (Charging from Adapter) + Bluetooth Idle + WLAN Idle + Earphone + GPS Rx + Battery &lt;Fig. 2&gt;</p> <p>Mode 4: WCDMA Band II Idle + USB Cable 1 (Data Link with Notebook) + Bluetooth Idle + WLAN Idle + Earphone + Battery &lt;Fig. 3&gt;</p> <p>Mode 5: WCDMA Band II Idle + USB Cable 2 (Data Link with Notebook) + Bluetooth Idle + WLAN Idle + Earphone + Battery &lt;Fig. 3&gt;</p>       |
| Radiated Emissions < 1GHz  | 1/2                | <p>Mode 1: GPRS850 Idle + USB Cable 1 (Charging from Adapter) + Bluetooth Idle + WLAN Idle + Earphone + Camera + Battery &lt;Fig. 1&gt;</p> <p>Mode 2: GPRS1900 Idle + USB Cable 1 (Charging from Adapter) + Bluetooth Idle + WLAN Idle + Earphone + MPEG4 + Battery &lt;Fig. 1&gt;</p> <p>Mode 3: WCDMA Band V Idle + USB Cable 1 (Charging from Adapter) + Bluetooth Idle + WLAN Idle + Earphone + GPS Rx + Battery &lt;Fig. 2&gt;</p> <p>Mode 4: WCDMA Band II Idle + USB Cable 1 (Data Link with Notebook) + Bluetooth Idle + WLAN Idle + Earphone + Battery &lt;Fig. 3&gt;</p> <p>Mode 5: WCDMA Band V Idle + USB Cable 2 (Charging from Adapter) + Bluetooth Idle + WLAN Idle + Earphone + GPS Rx + Battery &lt;Fig. 2&gt;</p> |
| Radiated Emissions ≥ 1GHz  | 1                  | <p>Mode 1: GPRS850 Idle + USB Cable 1 (Charging from Adapter) + Bluetooth Idle + WLAN Idle + Earphone + Camera + Battery &lt;Fig. 1&gt;</p>  |
| <b>Remark:</b> <ol style="list-style-type: none"> <li>The worst case of AC Conducted Emission is mode 4; only the test data of this mode is reported.</li> <li>The worst case of Radiated Emissions &lt; 1G is mode 1; only the test data of this mode is reported.</li> <li>Link with Notebook means data application transferred mode between EUT and Notebook.</li> </ol> |                    |  |

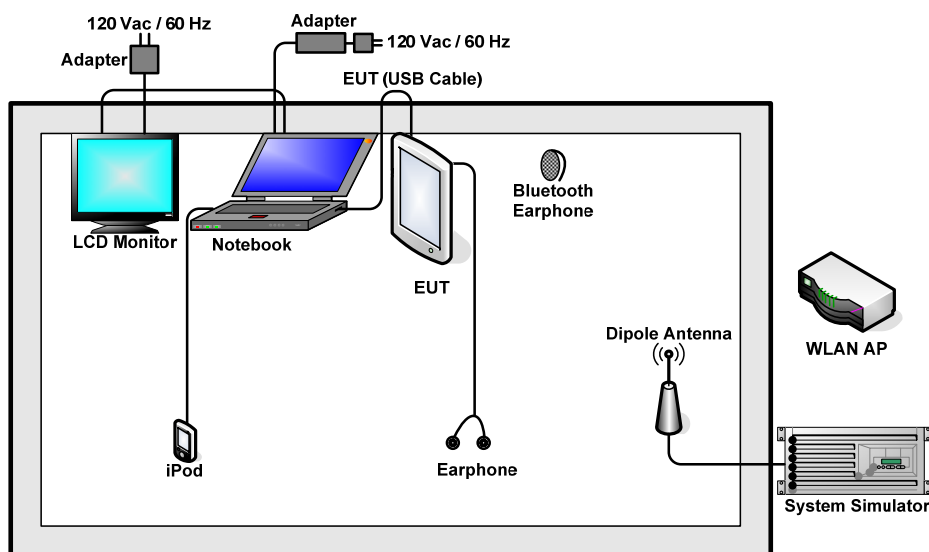
## 2.2. Connection Diagram of Test System



**<Fig.1>**



**<Fig.2>**



**<Fig.3>**

## 2.3. Support Unit used in test configuration and system

| Item | Equipment          | Trade Name    | Model Name     | FCC ID      | Data Cable        | Power Cord   |
|------|--------------------|---------------|----------------|-------------|-------------------|--|
| 1.   | System Simulator   | R&S           | CMU 200        | N/A         | N/A               | Unshielded, 1.8 m  |
| 2.   | GPS Station        | Pendulum      | GSG-54         | N/A         | N/A               | Unshielded, 1.8 m  |
| 3.   | WLAN AP            | D-Link        | DIR-628        | KA2DIR628A2 | N/A               | Unshielded, 1.8 m  |
| 4.   | LCD Monitor        | DELL          | U2410          | FCC DoC     | Shielded, 1.6 m   | Unshielded, 1.8 m  |
| 5.   | Bluetooth Earphone | Sony Ericsson | MW600          | PY7DDA-2029 | N/A               | N/A  |
| 6.   | Earphone           | Lenovo        | SH100          | FCC DoC     | Unshielded, 1.2 m | N/A  |
| 7.   | Notebook           | DELL          | Latitude E6320 | FCC DoC     | N/A               | AC I/P:<br>Unshielded, 1.2 m<br>DC O/P:<br>Shielded, 1.8 m |
| 8.   | iPod               | Apple         | A1285          | DoC         | Shielded, 1.0 m   | N/A  |

## **2.4. EUT Operation Test Setup**

The EUT was in GSM or WCDMA idle mode during the testing. The EUT was synchronized to the BCCH, and is in continuous receiving mode by setting system simulator's paging reorganization.

At the same time, the EUT was attached to the Bluetooth earphone or WLAN AP, and the following programs installed in the EUT were programmed during the test.

1. Execute the program, "Winthrax" under WIN7 installed in notebook for files transfer with EUT via USB cable.
2. Turn on GPS function to make the EUT receive continuous signals from GPS station.
3. Execute "Video player" to play MPEG4 files.
4. Turn on camera to capture images.

### 3. Test Result

#### 3.1. Test of AC Conducted Emission Measurement

##### 3.1.1 Limits of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 KHz to 30 MHz shall not exceed the limits in the following table.

| Frequency of emission<br>(MHz) | Conducted limit (dBuV) |           |
|--------------------------------|------------------------|-----------|
|                                | Quasi-peak             | Average   |
| 0.15-0.5                       | 66 to 56*              | 56 to 46* |
| 0.5-5                          | 56                     | 46        |
| 5-30                           | 60                     | 50        |

\*Decreases with the logarithm of the frequency.

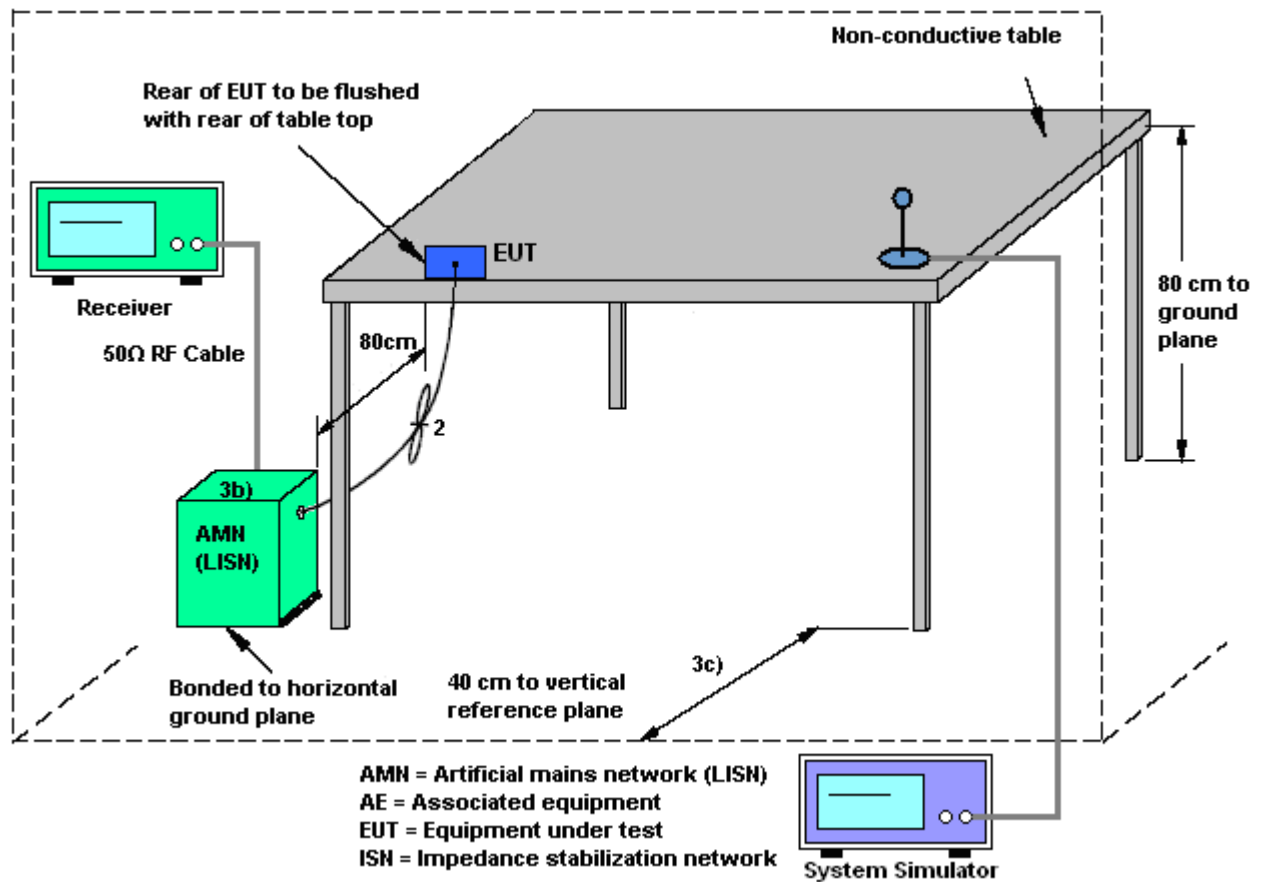
##### 3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

##### 3.1.3 Test Procedure

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 KHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

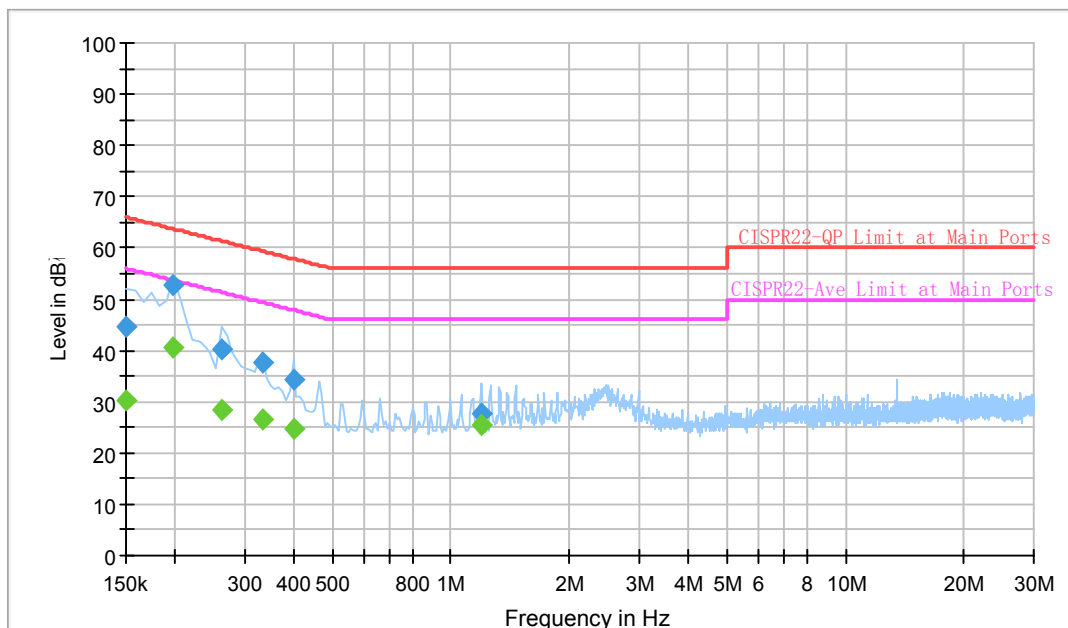
### 3.1.4 Test Setup



### 3.1.5 Test Result of AC Conducted Emission

|                        |  |                            |        |
|------------------------|--|----------------------------|--------|
| <b>Test Mode :</b>     | Mode 4   | <b>Temperature :</b>       | 20~22℃ |
| <b>Test Engineer :</b> | Novic Chiang   | <b>Relative Humidity :</b> | 45~47% |
| <b>Test Voltage :</b>  | 120Vac / 60Hz  | <b>Phase :</b>             | Line   |
| <b>Function Type :</b> | WCDMA Band II Idle + USB Cable 1 (Data Link with Notebook) + Bluetooth Idle + WLAN Idle + Earphone + Battery |                            |        |

ENV216 Auto Test



#### Final Result : Quasi-Peak

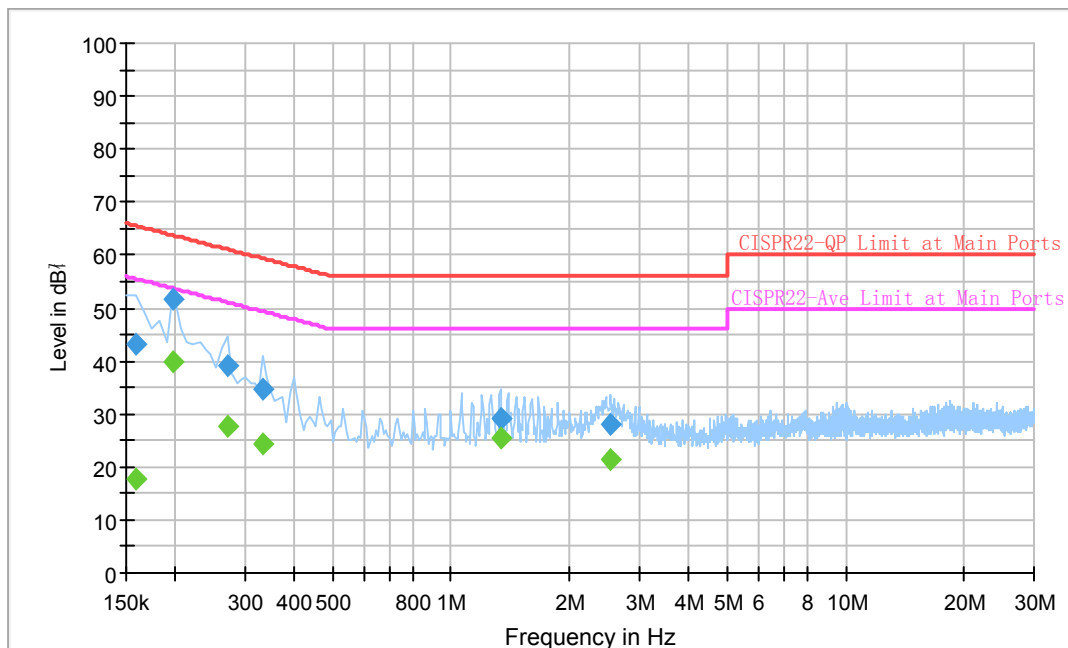
| Frequency (MHz) | Quasi-Peak (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-------------------|--------|------|------------|-------------|--------------|
| 0.150000        | 44.6              | Off    | L1   | 19.4       | 21.4        | 66.0         |
| 0.198000        | 52.8              | Off    | L1   | 19.3       | 10.9        | 63.7         |
| 0.262000        | 40.3              | Off    | L1   | 19.4       | 21.1        | 61.4         |
| 0.334000        | 37.5              | Off    | L1   | 19.4       | 21.9        | 59.4         |
| 0.398000        | 34.4              | Off    | L1   | 19.5       | 23.5        | 57.9         |
| 1.198000        | 27.5              | Off    | L1   | 19.5       | 28.5        | 56.0         |

#### Final Result : Average

| Frequency (MHz) | Average (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 0.150000        | 30.1           | Off    | L1   | 19.4       | 25.9        | 56.0         |
| 0.198000        | 40.6           | Off    | L1   | 19.3       | 13.1        | 53.7         |
| 0.262000        | 28.3           | Off    | L1   | 19.4       | 23.1        | 51.4         |
| 0.334000        | 26.5           | Off    | L1   | 19.4       | 22.9        | 49.4         |
| 0.398000        | 24.7           | Off    | L1   | 19.5       | 23.2        | 47.9         |
| 1.198000        | 25.4           | Off    | L1   | 19.5       | 20.6        | 46.0         |

|                        |  |                            |         |
|------------------------|--|----------------------------|---------|
| <b>Test Mode :</b>     | Mode 4   | <b>Temperature :</b>       | 20~22°C |
| <b>Test Engineer :</b> | Novic Chiang   | <b>Relative Humidity :</b> | 45~47%  |
| <b>Test Voltage :</b>  | 120Vac / 60Hz  | <b>Phase :</b>             | Neutral |
| <b>Function Type :</b> | WCDMA Band II Idle + USB Cable 1 (Data Link with Notebook) + Bluetooth Idle + WLAN Idle + Earphone + Battery |                            |         |

ENV216 Auto Test


**Final Result : Quasi-Peak**

| Frequency (MHz) | Quasi-Peak (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-------------------|--------|------|------------|-------------|--------------|
| 0.158000        | 43.0              | Off    | N    | 19.3       | 22.6        | 65.6         |
| 0.198000        | 51.8              | Off    | N    | 19.3       | 11.9        | 63.7         |
| 0.270000        | 39.2              | Off    | N    | 19.4       | 21.9        | 61.1         |
| 0.334000        | 34.6              | Off    | N    | 19.4       | 24.8        | 59.4         |
| 1.334000        | 29.0              | Off    | N    | 19.5       | 27.0        | 56.0         |
| 2.526000        | 27.9              | Off    | N    | 19.6       | 28.1        | 56.0         |

**Final Result : Average**

| Frequency (MHz) | Average (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 0.158000        | 17.8           | Off    | N    | 19.3       | 37.8        | 55.6         |
| 0.198000        | 39.7           | Off    | N    | 19.3       | 14.0        | 53.7         |
| 0.270000        | 27.7           | Off    | N    | 19.4       | 23.4        | 51.1         |
| 0.334000        | 24.2           | Off    | N    | 19.4       | 25.2        | 49.4         |
| 1.334000        | 25.3           | Off    | N    | 19.5       | 20.7        | 46.0         |
| 2.526000        | 21.4           | Off    | N    | 19.6       | 24.6        | 46.0         |

## 3.2. Test of Radiated Emission Measurement

### 3.2.1. Limit of Radiated Emission

The emissions from an unintentional radiator shall not exceed the field strength levels specified in the following table:

| Frequency<br>(MHz) | Field Strength<br>(microvolts/meter) | Measurement Distance<br>(meters) |
|--------------------|--------------------------------------|----------------------------------|
| 30 – 88            | 100                                  | 3                                |
| 88 – 216           | 150                                  | 3                                |
| 216 - 960          | 200                                  | 3                                |
| Above 960          | 500                                  | 3                                |

### 3.2.2. Measuring Instruments

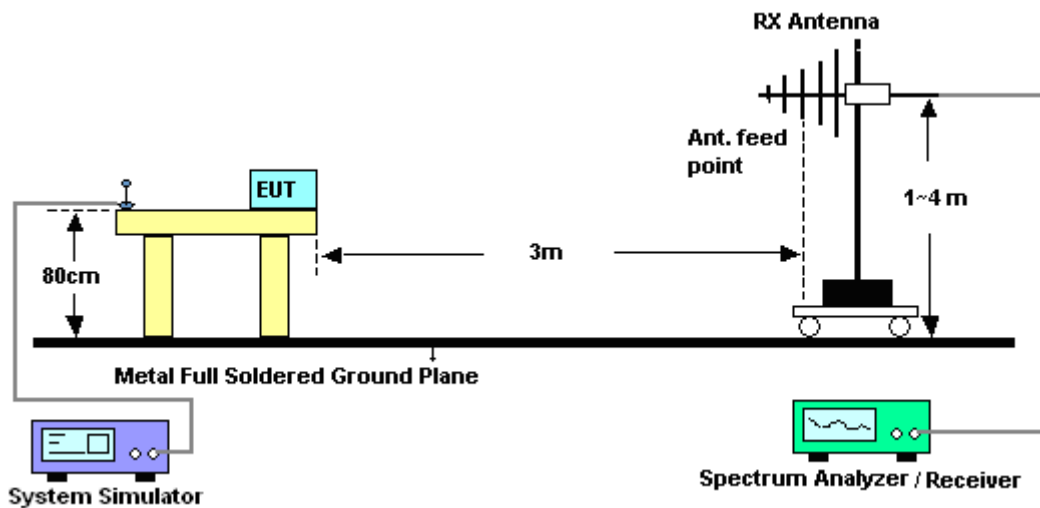
See list of measuring instruments of this test report.

### 3.2.3. Test Procedures

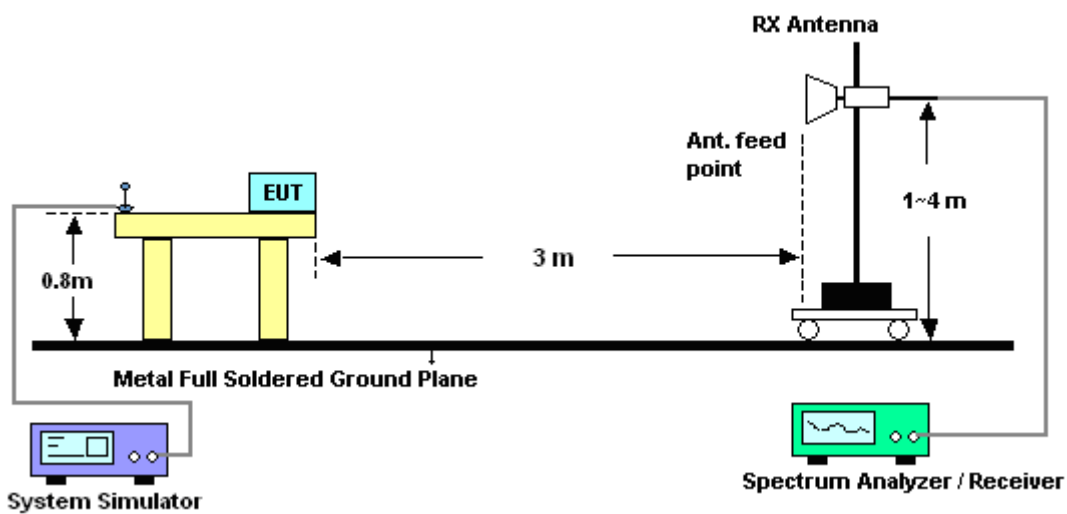
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna height is adjusted between one meter to four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, peak values of EUT will be reported. Otherwise, the emission will be repeated by using the quasi-peak method and reported.
8. Emission level (dBuV/m) = 20 log Emission level (uV/m)
9. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

### 3.2.4. Test Setup of Radiated Emission

For radiated emissions from 30MHz to 1GHz

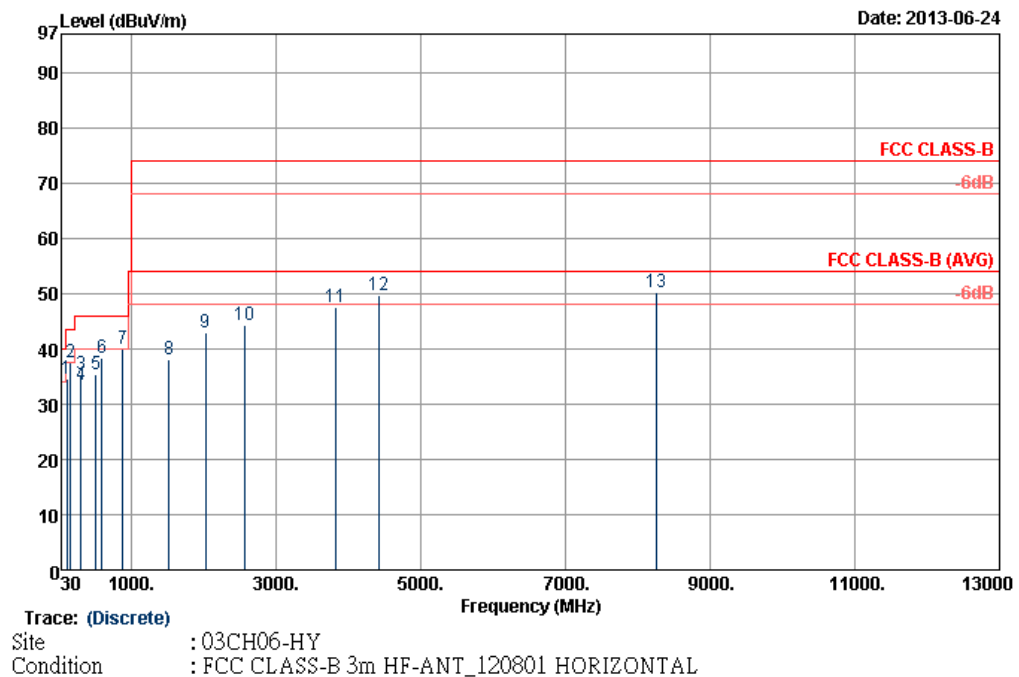


For radiated emissions above 1GHz



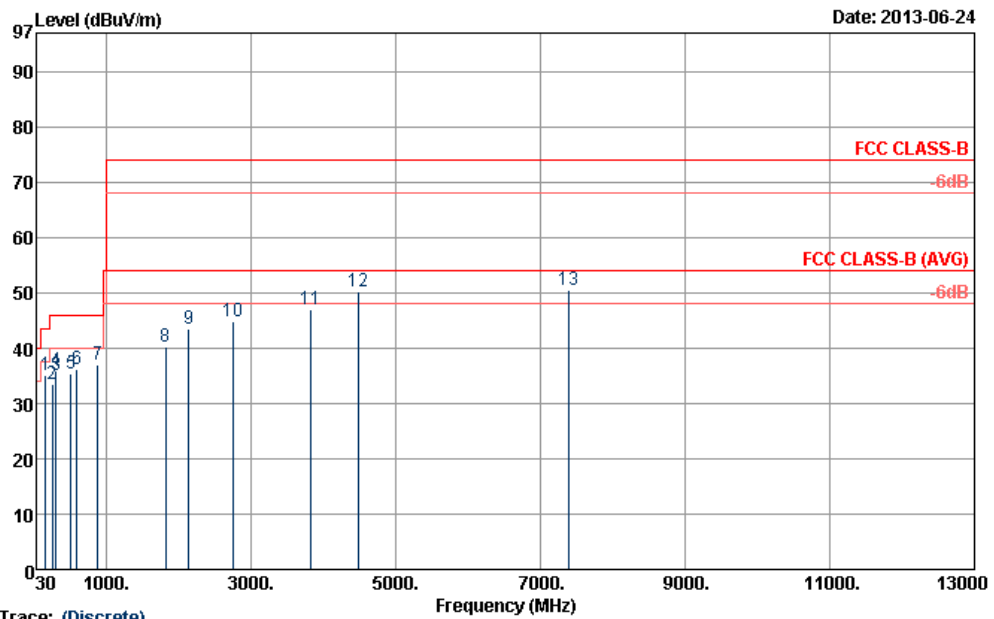
### 3.2.5. Test Result of Radiated Emission

|                        |   |                            |            |
|------------------------|---|----------------------------|------------|
| <b>Test Mode :</b>     | Mode 1  | <b>Temperature :</b>       | 22~24°C    |
| <b>Test Engineer :</b> | Marlboro Kai  | <b>Relative Humidity :</b> | 47~49%     |
| <b>Test Distance :</b> | 3m  | <b>Polarization :</b>      | Horizontal |
| <b>Function Type :</b> | GPRS850 Idle + USB Cable 1 (Charging from Adapter) + Bluetooth Idle + WLAN Idle + Earphone + Camera + Battery |                            |            |
| <b>Remark :</b>        | #7 is system simulator signal which can be ignored.   |                            |            |



|    | Freq    | Level  | Over Limit | Limit Line | ReadAntenna Level Factor | Cable Loss Factor | Preamp Factor | A/Pos | T/Pos | Remark |
|----|---------|--------|------------|------------|--------------------------|-------------------|---------------|-------|-------|--------|
|    | MHz     | dBuV/m | dB         | dBuV/m     | dBuV                     | dB/m              | dB            | dB    | cm    | deg    |
| 1  | 102.36  | 34.60  | -8.90      | 43.50      | 53.81                    | 11.42             | 1.12          | 31.75 | ---   | ---    |
| 2  | 162.30  | 37.52  | -5.98      | 43.50      | 57.77                    | 10.00             | 1.50          | 31.75 | 100   | 237    |
| 3  | 299.46  | 35.42  | -10.58     | 46.00      | 52.03                    | 13.20             | 1.91          | 31.72 | ---   | ---    |
| 4  | 303.50  | 33.38  | -12.62     | 46.00      | 49.91                    | 13.27             | 1.92          | 31.72 | ---   | ---    |
| 5  | 504.40  | 35.45  | -10.55     | 46.00      | 47.20                    | 17.70             | 2.49          | 31.94 | ---   | ---    |
| 6  | 588.40  | 38.32  | -7.68      | 46.00      | 48.82                    | 18.82             | 2.72          | 32.04 | ---   | ---    |
| 7  | 881.40  | 39.98  |            |            | 47.77                    | 20.50             | 3.32          | 31.61 | ---   | ---    |
| 8  | 1516.00 | 38.03  | -35.97     | 74.00      | 59.21                    | 27.93             | 4.79          | 53.90 | ---   | ---    |
| 9  | 2028.00 | 42.85  | -31.15     | 74.00      | 59.10                    | 31.82             | 5.93          | 54.00 | ---   | ---    |
| 10 | 2572.00 | 44.29  | -29.71     | 74.00      | 58.84                    | 32.58             | 6.78          | 53.91 | ---   | ---    |
| 11 | 3824.00 | 47.54  | -26.46     | 74.00      | 59.97                    | 33.56             | 8.63          | 54.62 | ---   | ---    |
| 12 | 4424.00 | 49.77  | -24.23     | 74.00      | 60.05                    | 34.80             | 9.90          | 54.98 | ---   | ---    |
| 13 | 8262.00 | 50.36  | -23.64     | 74.00      | 59.33                    | 36.15             | 10.84         | 55.96 | 100   | 185    |

|                        |   |                            |          |
|------------------------|---|----------------------------|----------|
| <b>Test Mode :</b>     | Mode 1  | <b>Temperature :</b>       | 22~24°C  |
| <b>Test Engineer :</b> | Marlboro Kai  | <b>Relative Humidity :</b> | 47~49%   |
| <b>Test Distance :</b> | 3m  | <b>Polarization :</b>      | Vertical |
| <b>Function Type :</b> | GPRS850 Idle + USB Cable 1 (Charging from Adapter) + Bluetooth Idle + WLAN Idle + Earphone + Camera + Battery |                            |          |
| <b>Remark :</b>        | #7 is system simulator signal which can be ignored.   |                            |          |



Site : 03CH06-HY  
Condition : FCC CLASS-B 3m HF-ANT\_120801 VERTICAL

|    | Freq    | Level  | Over   | Limit  | ReadAntenna | Cable Preamp | A/Pos | T/Pos  | Remark       |
|----|---------|--------|--------|--------|-------------|--------------|-------|--------|--------------|
|    | MHz     | dBuV/m | Limit  | Line   | Level       | Factor       | Loss  | Factor |              |
|    |         |        | dB     | dBuV/m | dBuV        | dB/m         | dB    | dB     |              |
| 1  | 162.30  | 35.18  | -8.32  | 43.50  | 55.43       | 10.00        | 1.50  | 31.75  | 100 27 Peak  |
| 2  | 249.24  | 33.57  | -12.43 | 46.00  | 51.28       | 12.30        | 1.73  | 31.74  | --- --- Peak |
| 3  | 299.46  | 35.18  | -10.82 | 46.00  | 51.79       | 13.20        | 1.91  | 31.72  | --- --- Peak |
| 4  | 300.00  | 35.86  | -10.14 | 46.00  | 52.47       | 13.20        | 1.91  | 31.72  | --- --- Peak |
| 5  | 504.40  | 35.51  | -10.49 | 46.00  | 47.26       | 17.70        | 2.49  | 31.94  | --- --- Peak |
| 6  | 588.40  | 36.09  | -9.91  | 46.00  | 46.59       | 18.82        | 2.72  | 32.04  | --- --- Peak |
| 7  | 881.40  | 37.11  |        |        | 44.90       | 20.50        | 3.32  | 31.61  | --- --- Peak |
| 8  | 1822.00 | 40.34  | -33.66 | 74.00  | 58.52       | 30.33        | 5.45  | 53.96  | --- --- Peak |
| 9  | 2134.00 | 43.44  | -30.56 | 74.00  | 59.35       | 31.99        | 6.07  | 53.97  | --- --- Peak |
| 10 | 2762.00 | 44.86  | -29.14 | 74.00  | 58.88       | 32.82        | 7.11  | 53.95  | --- --- Peak |
| 11 | 3822.00 | 47.06  | -26.94 | 74.00  | 59.49       | 33.56        | 8.63  | 54.62  | --- --- Peak |
| 12 | 4488.00 | 50.13  | -23.87 | 74.00  | 60.16       | 34.96        | 10.01 | 55.00  | --- --- Peak |
| 13 | 7398.00 | 50.59  | -23.41 | 74.00  | 59.67       | 36.12        | 10.91 | 56.11  | 100 227 Peak |

## 4. List of Measuring Equipment

| Instrument                            | Manufacturer    | Model No. | Serial No.    | Characteristics | Calibration Date | Test Date     | Due Date      | Remark                |
|---------------------------------------|-----------------|-----------|---------------|-----------------|------------------|---------------|---------------|-----------------------|
| EMI Test Receiver                     | Rohde & Schwarz | ESCS 30   | 100356        | 9kHz~2.75GHz    | Nov. 13, 2012    | Mar. 29, 2013 | Nov. 12, 2013 | Conduction (CO05-HY)  |
| Two-LISN<br>(for auxiliary equipment) | Rohde & Schwarz | ENV216    | 100081        | 9kHz~30MHz      | Dec. 12, 2012    | Mar. 29, 2013 | Dec. 11, 2013 | Conduction (CO05-HY)  |
| Two-LISN                              | Rohde & Schwarz | ENV216    | 100080        | 9kHz~30MHz      | Dec. 06, 2012    | Mar. 29, 2013 | Dec. 05, 2013 | Conduction (CO05-HY)  |
| AC Power Source                       | APC             | APC-1000W | N/A           | N/A             | N/A              | Mar. 29, 2013 | N/A           | Conduction (CO05-HY)  |
| Spectrum Analyzer                     | R&S             | FSP30     | 101352        | 9kHz~30GHz      | Nov. 07, 2012    | Jun. 24, 2013 | Nov. 06, 2013 | Radiation (03CH06-HY) |
| EMI Test Receiver                     | R&S             | ESVS10    | 834468/0003   | 20MHz~1000M Hz  | May 06, 2013     | Jun. 24, 2013 | May 05, 2014  | Radiation (03CH06-HY) |
| Bilog Antenna                         | SCHAFFNER       | CBL6112B  | 2885          | 30MHz~2GHz      | Oct. 06, 2012    | Jun. 24, 2013 | Oct. 05, 2013 | Radiation (03CH06-HY) |
| Double Ridge Horn Antenna             | COM-POWER       | AH-118    | 071025        | 1GHz~18GHz      | Aug. 09, 2012    | Jun. 24, 2013 | Aug. 08, 2013 | Radiation (03CH06-HY) |
| SHF-EHF Horn Antenna                  | SCHWARZBECK     | BBHA 9170 | BBHA9170251   | 15GHz~40GHz     | Sep. 28, 2012    | Jun. 24, 2013 | Sep. 27, 2013 | Radiation (03CH06-HY) |
| Preamplifier                          | Agilent         | 8449B     | 3008A01917    | 1GHz~26.5GHz    | Apr. 12, 2013    | Jun. 24, 2013 | Apr. 11, 2014 | Radiation (03CH06-HY) |
| Turn Table                            | chaintek        | T-200-S   | 420/650/00    | 0~360 degree    | N/A              | Jun. 24, 2013 | N/A           | Radiation (03CH06-HY) |
| Antenna Mast                          | chaintek        | M-400-0   | 114/8000604/L | 1 m~4 m         | N/A              | Jun. 24, 2013 | N/A           | Radiation (03CH06-HY) |

## 5. Uncertainty of Evaluation

### Uncertainty of Conducted Emission Measurement (150 KHz ~ 30 MHz)

|  |      |
|--|------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2U_c(y)$ ) | 2.26 |
|--|------|

### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

|  |      |
|--|------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2U_c(y)$ ) | 2.54 |
|--|------|

### Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

|  |      |
|--|------|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2U_c(y)$ ) | 4.72 |
|--|------|



## **Appendix A. Photographs of EUT**

Please refer to Sporton report number EP350204 as below.