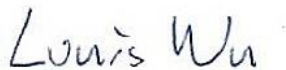


# FCC Test Report

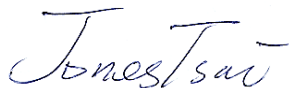
APPLICANT : Motorola Mobility LLC  
EQUIPMENT : Cellular Mobile Phone  
BRAND NAME : Motorola  
MODEL NAME : 4107  
FCC ID : IHDT56QE3  
STANDARD : FCC 47 CFR FCC Part 15 Subpart B  
CLASSIFICATION : Certification

The product was received on Oct. 21, 2014 and testing was completed on Nov. 02, 2014. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI C63.4-2009 and has been in 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.



Reviewed by: Louis Wu / Manager



Approved by: Jones Tsai / Manager



## SPORTON INTERNATIONAL INC.

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FCC ID : IHDT56QE3

Page Number : 1 of 22

Report Issued Date : Dec. 03, 2014

Report Version : Rev. 01

Report Template No.: BU5-FD15B Version 1.0



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## REVISION HISTORY

| REPORT NO.  | VERSION | DESCRIPTION             | ISSUED DATE   |
|-------------|---------|-------------------------|---------------|
| FC4O1411-01 | Rev. 01 | Initial issue of report | Dec. 03, 2014 |
|             |         |                         |               |
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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>5.00 dB at 0.190 MHz               |
| 3.2            | 15.109   | Radiated Emission     | < 15.109 limits | PASS   | Under limit<br>4.11 dB at 240.060 MHz<br>for Peak |



## 1. General Description

### 1.1. Applicant

**Motorola Mobility LLC**

222 W. Merchandise Mart Plaza, Suite 1800, Chicago IL. 60654, United States

### 1.2. Manufacturer

**Motorola Mobility LLC**

222 W. Merchandise Mart Plaza, Suite 1800, Chicago IL. 60654, United States

### 1.3. Product Feature of Equipment Under Test

| Product Feature                 |                                                                                        |
|---------------------------------|----------------------------------------------------------------------------------------|
| Equipment                       | Cellular Mobile Phone                                                                  |
| Brand Name                      | Motorola                                                                               |
| Model Name                      | 4107                                                                                   |
| FCC ID                          | IHDT56QE3                                                                              |
| IMEI                            | 353310060006463                                                                        |
| EUT supports Radios application | GSM/EGPRS/WCDMA/HSPA<br>WLAN 11b/g/n HT20<br>Bluetooth v2.1 EDR<br>Bluetooth v4.0 - LE |
| HW Version                      | P2A                                                                                    |
| EUT Stage                       | Identical Prototype                                                                    |

**Remark:** The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

| Accessory List |                             |
|----------------|-----------------------------|
| USB Cable      | Brand Name : MOTOROLA       |
|                | Model Name : 6691-10FL-0387 |
| Battery        | Brand Name : MOTOROLA       |
|                | Model Name : FT40           |
| Earphone       | Brand Name : MOTOROLA       |
|                | Model Name : SJYN1181B      |

## 1.4. Product Specification subjective to this standard

| Product Specification subjective to this standard |                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tx Frequency</b>                               | GSM850 : 824.2 MHz ~ 848.8 MHz<br>GSM1900 : 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</b>                               | GSM850: 869.2 MHz ~ 893.8 MHz<br>GSM1900: 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 : Monopole type (LDS)<br>WLAN : Fixed Internal Antenna<br>Bluetooth : Fixed Internal Antenna<br>GPS : Monopole type (LDS)                                                                                                                                                                                                                                             |
| <b>Type of Modulation</b>                         | GSM: GMSK<br>GPRS: GMSK<br>EDGE(MCS 0-4): GMSK / (MCS 5-9): 8PSK<br>WCDMA: QPSK (Uplink)<br>HSDPA: 64QAM (Downlink)<br>HSUPA: QPSK (Uplink)<br>802.11b : DSSS (DBPSK / DQPSK / CCK)<br>802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)<br>Bluetooth LE : GFSK<br>Bluetooth (1Mbps) : GFSK<br>Bluetooth (2Mbps) : $\pi/4$ -DQPSK<br>Bluetooth (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 Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation TW1022 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

|                    |                                                                                                                                                                 |           |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 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.                                                                                                                                                |           |
|                    | CO05-HY                                                                                                                                                         | 03CH06-HY |

## 1.7. Applicable 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:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. For FCC 15 Subpart B - Unintentional Radiators, device supports FM Radio (Receiver) shall be authorized as "FM broadcast receiver" per the Section 15.101 (a) Equipment authorization of unintentional radiators.
3. For other Unintentional Radiators features of this EUT, test reports are issued separately.  
Per the Note of the Section 15.101, when device supports features (USB, FM Radio, digital devices...etc.) more than one category of authorization, type of authorization shall be appropriately chosen for FCC 15B compliance rule, and the Section 15.101 (b), only those receivers that operate (tune) within the frequency range of 30-960 MHz, CB receivers and radar detectors are subject to the authorizations shown in paragraph (a) of the Section 15.101. However, receivers indicated as being subject to Declaration of Conformity that are contained within a transceiver, the transmitter portion of which is subject to certification, shall be authorized under the verification procedure

## 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.   | Data application transferred mode (EUT with notebook) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

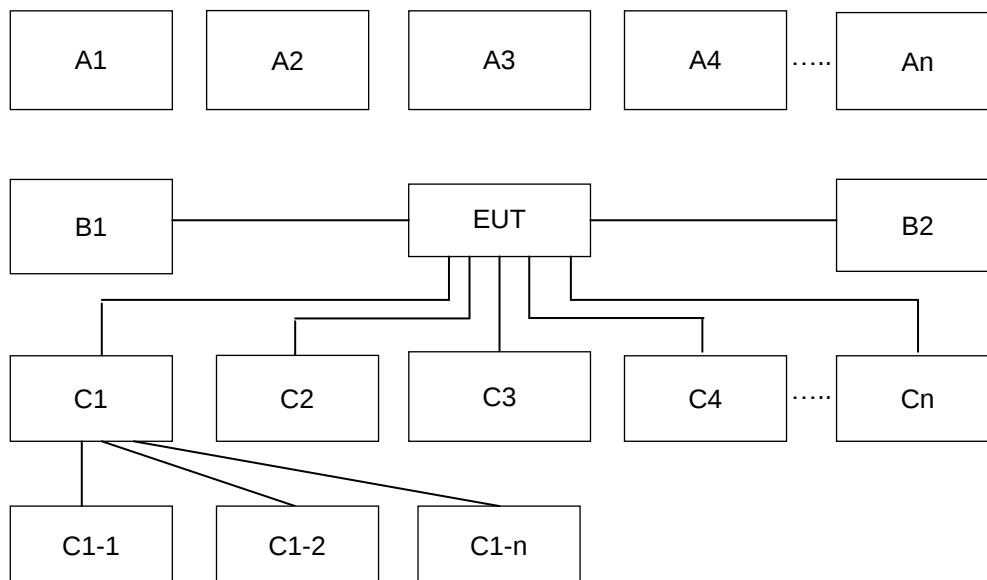
#### Abbreviations:

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

| Test Items                                                                                                                                                                                                                                                                                  | EUT Configure Mode | Function Type                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AC Conducted Emission                                                                                                                                                                                                                                                                       | 1                  | Mode 1: GSM850 Idle + Bluetooth Idle + WLAN Idle + Earphone + GPS Rx + Battery + USB Cable (Data Link with Notebook) + RJ-45 Cable + iPod + WLAN AP<br>Mode 2: WCDMA Band II Idle + Bluetooth Idle + WLAN Idle + Earphone + GPS Rx + Battery + USB Cable (Data Link with Notebook) + RJ-45 Cable + iPod + WLAN AP |
| Radiated Emissions < 1GHz                                                                                                                                                                                                                                                                   | 1                  | Mode 1: GSM850 Idle + Bluetooth Idle + WLAN Idle + Earphone + GPS Rx + Battery + USB Cable (Data Link with Notebook) + RJ-45 Cable + iPod + WLAN AP<br>Mode 2: WCDMA Band II Idle + Bluetooth Idle + WLAN Idle + Earphone + GPS Rx + Battery + USB Cable (Data Link with Notebook) + RJ-45 Cable + iPod + WLAN AP |
| Radiated Emissions $\geq$ 1GHz                                                                                                                                                                                                                                                              | 1                  | Mode 1: GSM850 Idle + Bluetooth Idle + WLAN Idle + Earphone + GPS Rx + Battery + USB Cable (Data Link with Notebook) + RJ-45 Cable + iPod + WLAN AP                                                                                                                                                               |
| <b>Remark:</b><br>1. The worst case of AC is mode 2; only the test data of this mode was reported.<br>2. The worst case of RE < 1G is mode 1; only the test data of this mode was reported.<br>3. Data Link with Notebook means data application transferred mode between EUT and Notebook. |                    |                                                                                                                                                                                                                                                                                                                   |

## 2.2. Connection Diagram of Test System

### Setup Photo



| Conduction Test Setup |                   |                                |           |   |   |   |   |   |   |
|-----------------------|-------------------|--------------------------------|-----------|---|---|---|---|---|---|
| No.                   | Wireless Station  | Connection Type                | Test Mode |   |   |   |   |   |   |
|                       |                   |                                | 1         | 2 | - | - | - | - | - |
| A1                    | BT Earphone       | Bluetooth                      | X         | X |   |   |   |   |   |
| A2                    | System Simulator  | GSM/ WCDMA                     | X         | X |   |   |   |   |   |
| A3                    | GPS Station       | GPS                            | X         | X |   |   |   |   |   |
| A4                    | AP router         | WiFi                           | X         | X |   |   |   |   |   |
| No.                   | Setup Peripherals | Connection Type                | 1         | 2 | - | - | - | - | - |
| C1                    | Notebook          | USB cable                      | X         | X |   |   |   |   |   |
| C1-1                  | iPod              | USB Cable to C1                | X         | X |   |   |   |   |   |
| C1-2                  | AP router         | RJ-45 Cable to C1              | X         | X |   |   |   |   |   |
| C2                    | Earphone          | Earphone jack                  | X         | X |   |   |   |   |   |
| C3                    | SD card           | SD I/O interface without cable | X         | X |   |   |   |   |   |

| Radiation Test Setup |                   |                                |           |   |   |   |   |   |   |
|----------------------|-------------------|--------------------------------|-----------|---|---|---|---|---|---|
| No.                  | Wireless Station  | Connection Type                | Test Mode |   |   |   |   |   |   |
|                      |                   |                                | 1         | 2 | - | - | - | - | - |
| A1                   | BT Earphone       | Bluetooth                      | X         | X |   |   |   |   |   |
| A2                   | System Simulator  | GSM/ WCDMA                     | X         | X |   |   |   |   |   |
| A3                   | AP router         | WiFi                           | X         | X |   |   |   |   |   |
| No.                  | Setup Peripherals | Connection Type                | 1         | 2 | - | - | - | - | - |
| C1                   | Notebook          | USB cable                      | X         | X |   |   |   |   |   |
| C1-1                 | iPod              | USB Cable to C1                | X         | X |   |   |   |   |   |
| C1-2                 | AP router         | RJ-45 Cable to C1              | X         | X |   |   |   |   |   |
| C2                   | Earphone          | Earphone jack                  | X         | X |   |   |   |   |   |
| C3                   | SD card           | SD I/O interface without cable | X         | X |   |   |   |   |   |

### 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.   | WLAN AP            | D-Link        | DIR-865L       | KA2IR865LA1                                  | N/A             | Unshielded, 1.8 m                                          |
| 5.   | Notebook           | DELL          | Latitude E6320 | FCC DoC/<br>Contains FCC ID:<br>QDS-BRCM1054 | N/A             | AC I/P:<br>Unshielded, 1.2 m<br>DC O/P:<br>Shielded, 1.8 m |
| 6.   | Bluetooth Earphone | Sony Ericsson | MW600          | PY7DDA-2029                                  | N/A             | N/A                                                        |
| 7.   | iPod               | Apple         | A1285          | FCC DoC                                      | Shielded, 1.0 m | N/A                                                        |
| 8.   | SD Card            | SanDisk       | MicroSD HC     | FCC DoC                                      | N/A             | 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.

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

1. Data application is transferred between Laptop and EUT via USB cable.
2. Execute "GPS Test" to make the EUT continuously receive signals from GPS station.

### 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.

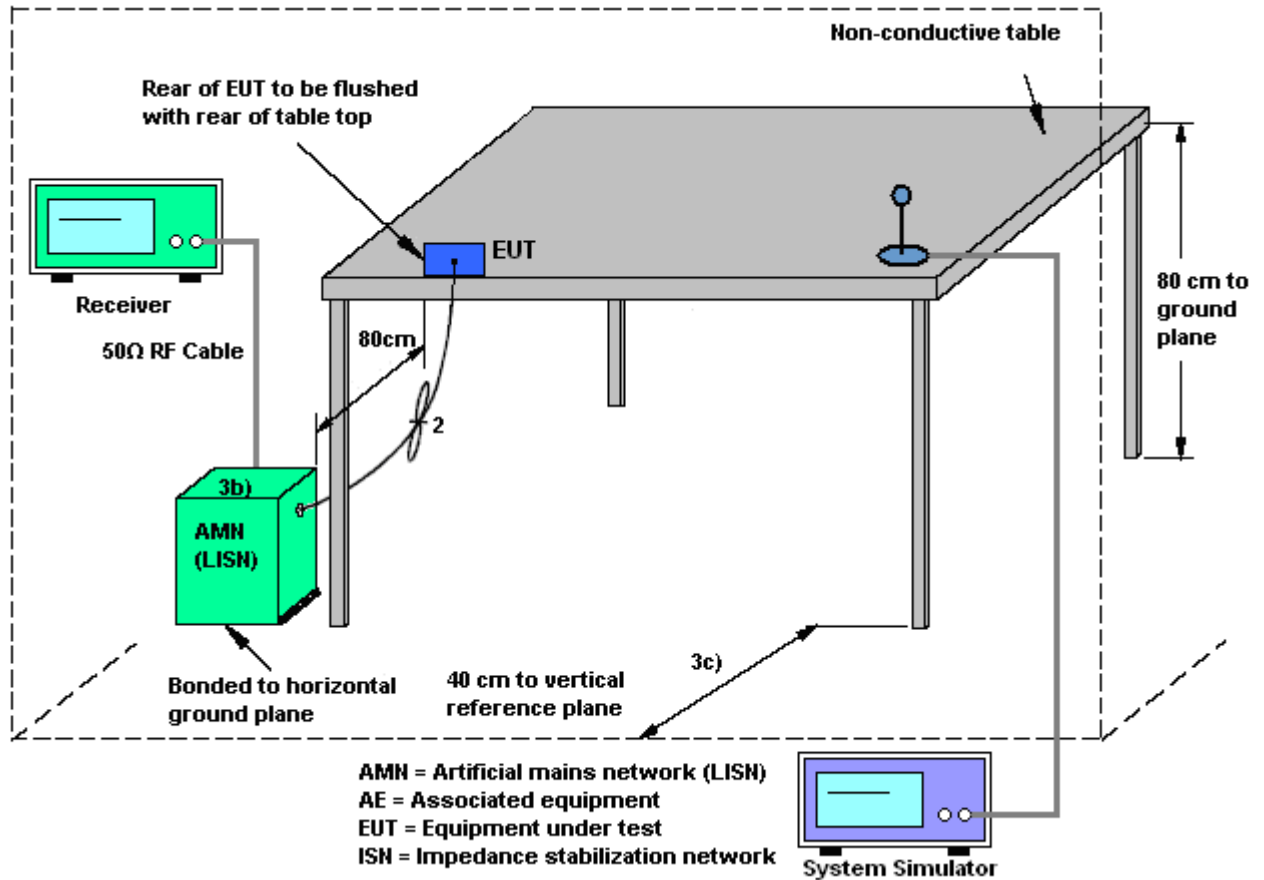
##### 3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

##### 3.1.3 Test Procedure

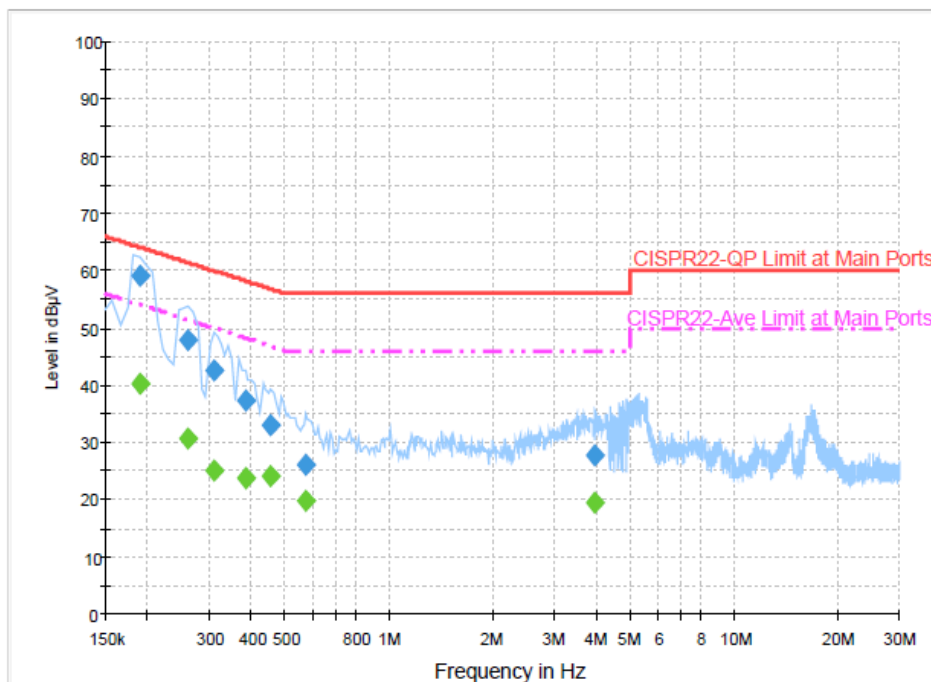
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. The AC adapter of Notebook was connected to the line impedance stabilization network (LISN).
3. The LISN provides 50 ohm coupling impedance for the measuring instrument.
4. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
5. Both sides of AC line were checked for maximum conducted interference.
6. The frequency range from 150 kHz to 30 MHz was searched.
7. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth=9KHz) with Maximum Hold Mode.

### 3.1.4 Test Setup



### 3.1.5 Test Result of AC Conducted Emission

|                        |                                                                                                                                                    |                            |         |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|
| <b>Test Mode :</b>     | Mode 2                                                                                                                                             | <b>Temperature :</b>       | 20~22°C |
| <b>Test Engineer :</b> | Kai-Chun Chu                                                                                                                                       | <b>Relative Humidity :</b> | 46~48%  |
| <b>Test Voltage :</b>  | 120Vac / 60Hz                                                                                                                                      | <b>Phase :</b>             | Line    |
| <b>Function Type :</b> | WCDMA Band II Idle + Bluetooth Idle + WLAN Idle + Earphone + GPS Rx + Battery + USB Cable (Data Link with Notebook) + RJ-45 Cable + iPod + WLAN AP |                            |         |



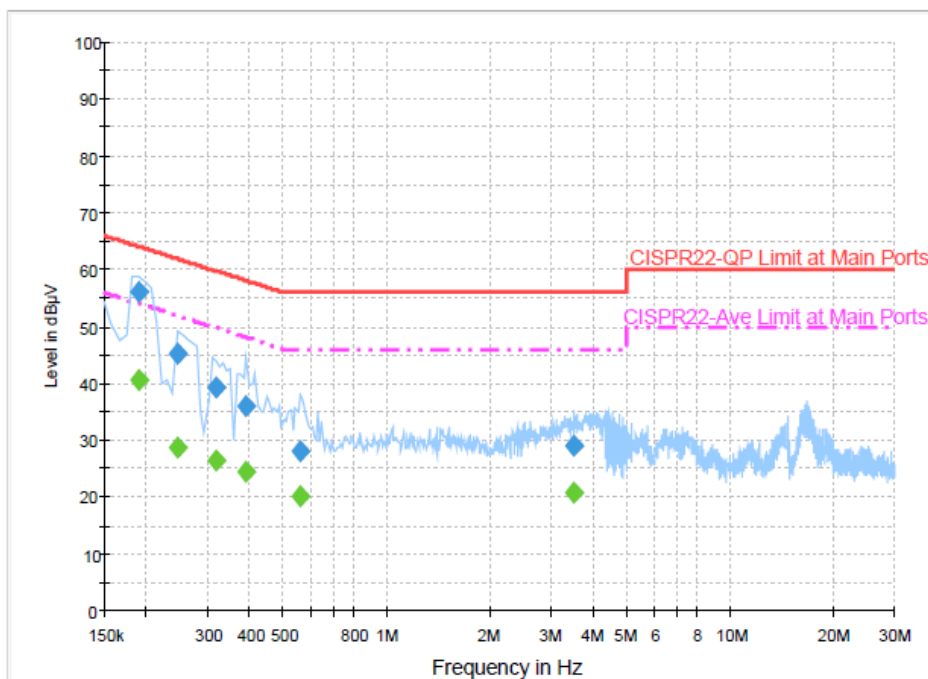
#### Final Result : Quasi-Peak

| Frequency (MHz) | Quasi-Peak (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-------------------|--------|------|------------|-------------|--------------|
| 0.190000        | 59.0              | Off    | L1   | 19.5       | 5.0         | 64.0         |
| 0.262000        | 47.8              | Off    | L1   | 19.5       | 13.6        | 61.4         |
| 0.310000        | 42.7              | Off    | L1   | 19.5       | 17.3        | 60.0         |
| 0.382000        | 37.3              | Off    | L1   | 19.5       | 20.9        | 58.2         |
| 0.454000        | 33.1              | Off    | L1   | 19.5       | 23.7        | 56.8         |
| 0.574000        | 26.0              | Off    | L1   | 19.5       | 30.0        | 56.0         |
| 3.950000        | 27.8              | Off    | L1   | 19.6       | 28.2        | 56.0         |

#### Final Result : Average

| Frequency (MHz) | Average (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 0.190000        | 40.1           | Off    | L1   | 19.5       | 13.9        | 54.0         |
| 0.262000        | 30.8           | Off    | L1   | 19.5       | 20.6        | 51.4         |
| 0.310000        | 25.2           | Off    | L1   | 19.5       | 24.8        | 50.0         |
| 0.382000        | 23.9           | Off    | L1   | 19.5       | 24.3        | 48.2         |
| 0.454000        | 24.2           | Off    | L1   | 19.5       | 22.6        | 46.8         |
| 0.574000        | 19.9           | Off    | L1   | 19.5       | 26.1        | 46.0         |
| 3.950000        | 19.4           | Off    | L1   | 19.6       | 26.6        | 46.0         |

|                        |                                                                                                                                                    |                            |         |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------|
| <b>Test Mode :</b>     | Mode 2                                                                                                                                             | <b>Temperature :</b>       | 20~22℃  |
| <b>Test Engineer :</b> | Kai-Chun Chu                                                                                                                                       | <b>Relative Humidity :</b> | 46~48%  |
| <b>Test Voltage :</b>  | 120Vac / 60Hz                                                                                                                                      | <b>Phase :</b>             | Neutral |
| <b>Function Type :</b> | WCDMA Band II Idle + Bluetooth Idle + WLAN Idle + Earphone + GPS Rx + Battery + USB Cable (Data Link with Notebook) + RJ-45 Cable + iPod + WLAN AP |                            |         |


**Final Result : Quasi-Peak**

| Frequency (MHz) | Quasi-Peak (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-------------------|--------|------|------------|-------------|--------------|
| 0.190000        | 56.0              | Off    | N    | 19.5       | 8.0         | 64.0         |
| 0.246000        | 45.1              | Off    | N    | 19.5       | 16.8        | 61.9         |
| 0.318000        | 39.4              | Off    | N    | 19.5       | 20.4        | 59.8         |
| 0.390000        | 35.8              | Off    | N    | 19.5       | 22.3        | 58.1         |
| 0.558000        | 27.9              | Off    | N    | 19.5       | 28.1        | 56.0         |
| 3.494000        | 28.9              | Off    | N    | 19.6       | 27.1        | 56.0         |

**Final Result : Average**

| Frequency (MHz) | Average (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 0.190000        | 40.7           | Off    | N    | 19.5       | 13.3        | 54.0         |
| 0.246000        | 28.6           | Off    | N    | 19.5       | 23.3        | 51.9         |
| 0.318000        | 26.4           | Off    | N    | 19.5       | 23.4        | 49.8         |
| 0.390000        | 24.4           | Off    | N    | 19.5       | 23.7        | 48.1         |
| 0.558000        | 20.2           | Off    | N    | 19.5       | 25.8        | 46.0         |
| 3.494000        | 20.7           | Off    | N    | 19.6       | 25.3        | 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

The measuring equipment is listed in the section 4 of this test report.

### 3.2.3. Test Procedures

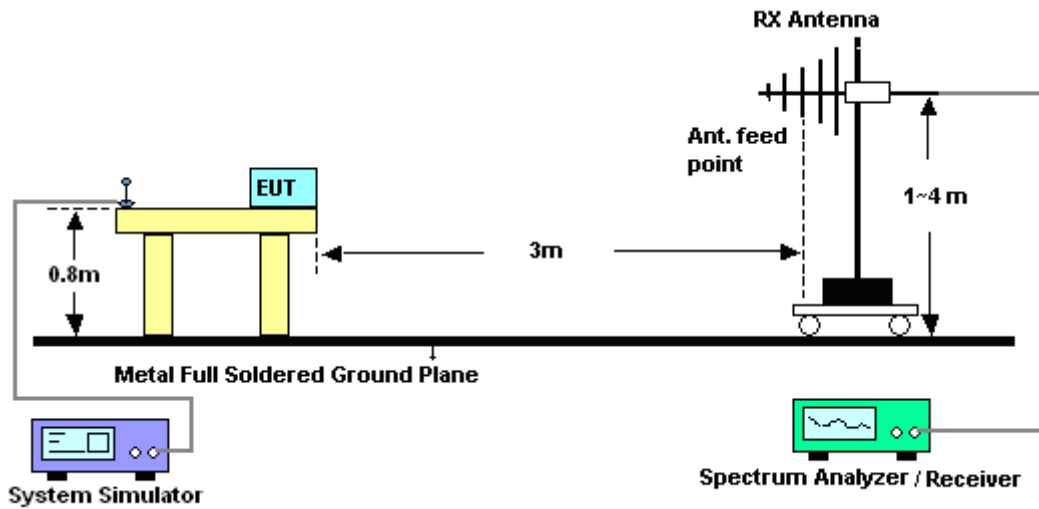
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a Bi-Log antenna and its height is adjusted between one 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.

Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode (RBW=120kHz/VBW=300KHz for frequency below 1GHz ; RBW=1MHz VBW=3MHz (Peak), RBW=1MHz/VBW=10Hz (Average) for frequency above 1GHz).

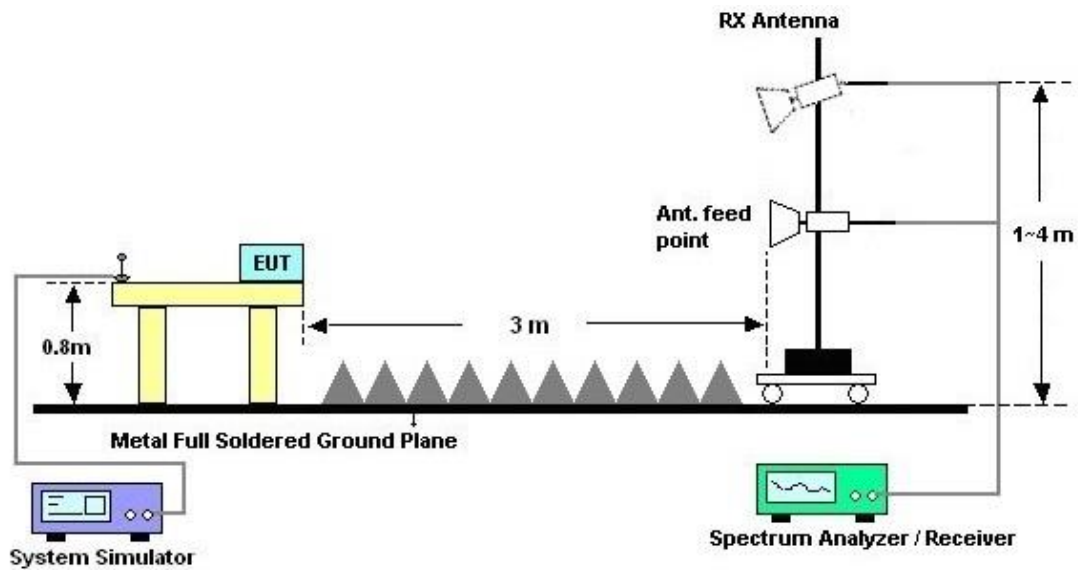
6. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, peak values of EUT will be reported. Otherwise, the emission will be repeated by using the quasi-peak method and reported.
7. Emission level (dBμV/m) = 20 log Emission level (μV/m)
8. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

### 3.2.4. Test Setup of Radiated Emission

For radiated emissions from 30MHz to 1GHz

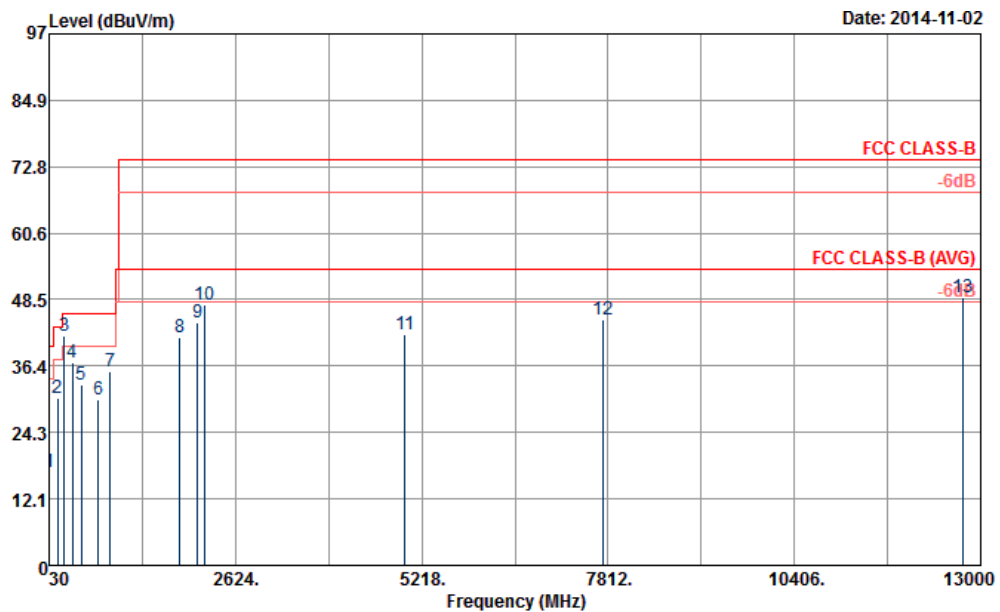


For radiated emissions above 1GHz



### 3.2.5. Test Result of Radiated Emission

|                        |                                                                                                                                             |                            |            |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------|
| <b>Test Mode :</b>     | Mode 1                                                                                                                                      | <b>Temperature :</b>       | 23~25°C    |
| <b>Test Engineer :</b> | Luke Chang                                                                                                                                  | <b>Relative Humidity :</b> | 41~42%     |
| <b>Test Distance :</b> | 3m                                                                                                                                          | <b>Polarization :</b>      | Horizontal |
| <b>Function Type :</b> | GSM850 Idle + Bluetooth Idle + WLAN Idle + Earphone + GPS Rx + Battery + USB Cable (Data Link with Notebook) + RJ-45 Cable + iPod + WLAN AP |                            |            |
| <b>Remark :</b>        | #7 is system simulator signal which can be ignored.                                                                                         |                            |            |

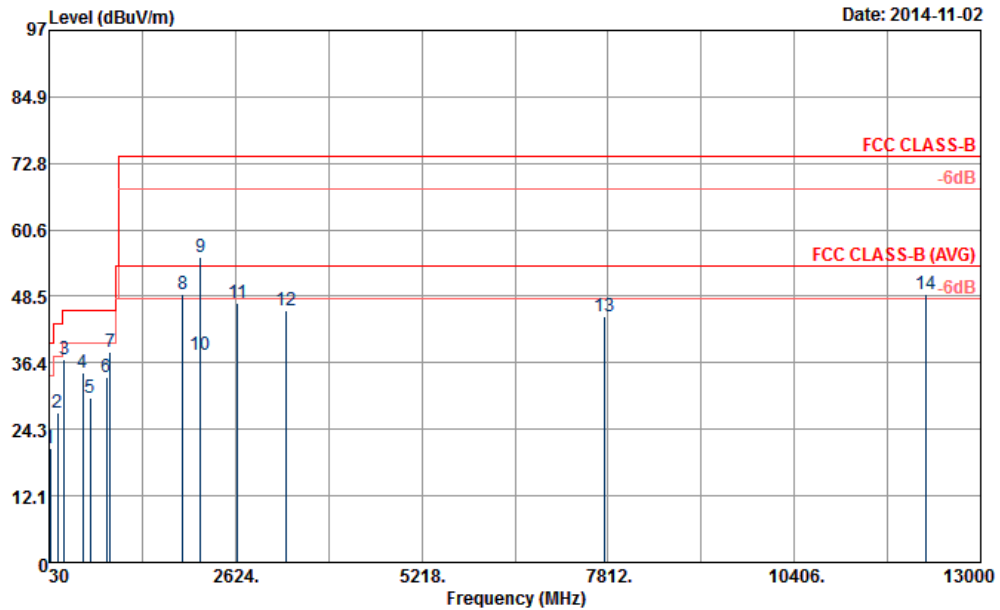


Site : 03CH06-HY  
 Condition : FCC CLASS-B 3m HF-ANT\_583\_140731 HORIZONTAL  
 Project : 401411-01  
 Power : From System  
 Mode : Mode 1

|    | Freq     | Level  | Over<br>Limit | Limit<br>Line | ReadAntenna<br>Level Factor | Cable<br>Loss | Preamp<br>Factor | A/Pos | T/Pos | Remark |      |
|----|----------|--------|---------------|---------------|-----------------------------|---------------|------------------|-------|-------|--------|------|
|    | MHz      | dBuV/m | dB            | dBuV/m        | dBuV                        | dB/m          | dB               | dB    | cm    | deg    |      |
| 1  | 32.70    | 16.95  | -23.05        | 40.00         | 31.37                       | 16.70         | 0.67             | 31.79 | ---   | ---    | Peak |
| 2  | 150.15   | 30.50  | -13.00        | 43.50         | 50.21                       | 10.70         | 1.34             | 31.75 | ---   | ---    | Peak |
| 3  | 240.06   | 41.89  | -4.11         | 46.00         | 60.45                       | 11.49         | 1.69             | 31.74 | 158   | 208    | Peak |
| 4  | 350.40   | 36.93  | -9.07         | 46.00         | 52.15                       | 14.50         | 2.05             | 31.77 | ---   | ---    | Peak |
| 5  | 480.60   | 32.92  | -13.08        | 46.00         | 44.91                       | 17.61         | 2.31             | 31.91 | ---   | ---    | Peak |
| 6  | 720.00   | 30.22  | -15.78        | 46.00         | 39.48                       | 19.80         | 2.95             | 32.01 | ---   | ---    | Peak |
| 7  | 881.40   | 35.51  |               |               | 42.90                       | 20.90         | 3.32             | 31.61 | ---   | ---    | Peak |
| 8  | 1854.00  | 41.54  | -32.46        | 74.00         | 66.18                       | 30.59         | 5.24             | 60.47 | ---   | ---    | Peak |
| 9  | 2100.00  | 44.29  | -29.71        | 74.00         | 67.35                       | 31.76         | 5.68             | 60.50 | ---   | ---    | Peak |
| 10 | 2186.00  | 47.68  | -26.32        | 74.00         | 70.45                       | 31.81         | 5.92             | 60.50 | ---   | ---    | Peak |
| 11 | 4988.00  | 42.11  | -31.89        | 74.00         | 58.90                       | 34.50         | 9.11             | 60.40 | ---   | ---    | Peak |
| 12 | 7748.00  | 44.85  | -29.15        | 74.00         | 57.07                       | 35.75         | 12.18            | 60.15 | ---   | ---    | Peak |
| 13 | 12756.00 | 48.89  | -25.11        | 74.00         | 53.68                       | 39.41         | 15.81            | 60.01 | 100   | 0      | Peak |



|                 |                                                                                                                                             |                     |          |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------|
| Test Mode :     | Mode 1                                                                                                                                      | Temperature :       | 23~25°C  |
| Test Engineer : | Luke Chang                                                                                                                                  | Relative Humidity : | 41~42%   |
| Test Distance : | 3m                                                                                                                                          | Polarization :      | Vertical |
| Function Type : | GSM850 Idle + Bluetooth Idle + WLAN Idle + Earphone + GPS Rx + Battery + USB Cable (Data Link with Notebook) + RJ-45 Cable + iPod + WLAN AP |                     |          |
| Remark :        | #7 is system simulator signal which can be ignored.                                                                                         |                     |          |



Site : 03CH06-HY  
Condition : FCC CLASS-B 3m HF-ANT\_583\_140731 VERTICAL  
Project : 401411-01  
Power : From System  
Mode : Mode 1

|    | Freq     | Level  | Over<br>Limit | Limit<br>Line | ReadAntenna<br>Level Factor | Cable Preamp<br>Loss Factor | A/Pos | T/Pos | Remark |     |         |
|----|----------|--------|---------------|---------------|-----------------------------|-----------------------------|-------|-------|--------|-----|---------|
|    | MHz      | dBuV/m | dB            | dBuV/m        | dBuV                        | dB/m                        | dB    | dB    | cm     | deg |         |
| 1  | 42.96    | 20.80  | -19.20        | 40.00         | 40.92                       | 10.92                       | 0.75  | 31.79 | ---    | --- | Peak    |
| 2  | 150.15   | 27.38  | -16.12        | 43.50         | 47.09                       | 10.70                       | 1.34  | 31.75 | ---    | --- | Peak    |
| 3  | 240.06   | 37.14  | -8.86         | 46.00         | 55.70                       | 11.49                       | 1.69  | 31.74 | 128    | 90  | Peak    |
| 4  | 497.40   | 34.52  | -11.48        | 46.00         | 46.22                       | 17.77                       | 2.46  | 31.93 | ---    | --- | Peak    |
| 5  | 601.00   | 30.11  | -15.89        | 46.00         | 39.99                       | 19.41                       | 2.77  | 32.06 | ---    | --- | Peak    |
| 6  | 832.00   | 33.70  | -12.30        | 46.00         | 41.73                       | 20.62                       | 3.17  | 31.82 | ---    | --- | Peak    |
| 7  | 881.40   | 38.33  |               |               | 45.72                       | 20.90                       | 3.32  | 31.61 | ---    | --- | Peak    |
| 8  | 1894.00  | 48.88  | -25.12        | 74.00         | 73.10                       | 30.96                       | 5.30  | 60.48 | ---    | --- | Peak    |
| 9  | 2142.00  | 55.68  | -18.32        | 74.00         | 78.60                       | 31.78                       | 5.80  | 60.50 | 142    | 203 | Peak    |
| 10 | 2142.00  | 37.76  | -16.24        | 54.00         | 60.68                       | 31.78                       | 5.80  | 60.50 | 142    | 203 | Average |
| 11 | 2658.00  | 47.29  | -26.71        | 74.00         | 69.20                       | 32.27                       | 6.49  | 60.67 | ---    | --- | Peak    |
| 12 | 3324.00  | 46.06  | -27.94        | 74.00         | 67.58                       | 32.67                       | 7.07  | 61.26 | ---    | --- | Peak    |
| 13 | 7758.00  | 44.92  | -29.08        | 74.00         | 57.11                       | 35.75                       | 12.18 | 60.12 | ---    | --- | Peak    |
| 14 | 12232.00 | 48.86  | -25.14        | 74.00         | 53.76                       | 39.04                       | 15.34 | 59.28 | ---    | --- | 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. 15, 2013    | Nov. 02, 2014 | Nov. 14, 2014 | Conduction (CO05-HY)  |
| LISN<br>(for auxiliary equipment) | Rohde & Schwarz | ENV216    | 100081          | 9kHz ~ 30MHz    | Dec. 12, 2013    | Nov. 02, 2014 | Dec. 11, 2014 | Conduction (CO05-HY)  |
| LISN                              | Rohde & Schwarz | ENV216    | 100080          | 9kHz ~ 30MHz    | Dec. 04, 2013    | Nov. 02, 2014 | Dec. 03, 2014 | Conduction (CO05-HY)  |
| AC Power Source                   | ChainTek        | APC-1000W | N/A             | N/A             | N/A              | Nov. 02, 2014 | N/A           | Conduction (CO05-HY)  |
| Spectrum Analyzer                 | R&S             | FSP30     | 101067          | 9kHz ~ 30GHz    | Nov. 20, 2013    | Nov. 02, 2014 | Nov. 19, 2014 | Radiation (03CH06-HY) |
| Spectrum Analyzer                 | Agilent         | E4408B    | MY44211030      | 9kHz ~ 26.5GHz  | Dec. 02, 2013    | Nov. 02, 2014 | Dec. 01, 2014 | Radiation (03CH06-HY) |
| EMI Test Receiver                 | R&S             | ESVS10    | 834468/0003     | 20MHz ~ 1000MHz | May 06, 2014     | Nov. 02, 2014 | May 05, 2015  | Radiation (03CH06-HY) |
| Bilog Antenna                     | Schaffner       | CBL6112B  | 2885            | 30MHz ~ 2GHz    | Sep. 27, 2014    | Nov. 02, 2014 | Sep. 26, 2015 | Radiation (03CH06-HY) |
| Double Ridge Horn Antenna         | EMCO            | 3117      | 00066583        | 1GHz ~ 18GHz    | Jul. 24, 2014    | Nov. 02, 2014 | Jul. 23, 2015 | Radiation (03CH06-HY) |
| Amplifier                         | SONOMA          | 310N      | 186713          | 9kHz ~ 1GHz     | Apr. 16, 2014    | Nov. 02, 2014 | Apr. 15, 2015 | Radiation (03CH06-HY) |
| Preamplifier                      | EMCI            | EMC051845 | SN980048        | 1GHz ~ 18GHz    | Jul. 17, 2014    | Nov. 02, 2014 | Jul. 16, 2015 | Radiation (03CH06-HY) |
| Turn Table                        | INN-CO          | DS2000    | 420/650/00      | 0 ~ 360 degree  | N/A              | Nov. 02, 2014 | N/A           | Radiation (03CH06-HY) |
| Antenna Mast                      | MF              | MF-7802   | MF78020821<br>2 | 1 m ~ 4 m       | N/A              | Nov. 02, 2014 | N/A           | Radiation (03CH06-HY) |
| Loop Antenna                      | R&S             | HFH2-Z2   | 100315          | 9 kHz~30 MHz    | Jul. 28, 2014    | Nov. 02, 2014 | Jul. 27, 2015 | 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% ( $U = 2U_c(y)$ ) | 4.50 |
|--------------------------------------------------------------------------|------|