



# FCC Test Report

APPLICANT : Sony Mobile Communications Inc  
EQUIPMENT : PDA Phone  
BRAND NAME : Sony  
TYPE NAME : PM-0781-BV  
FCC ID : PY7-PM0781  
STANDARD : FCC 47 CFR FCC Part 15 Subpart B  
CLASSIFICATION : FCC CLASS B PERSONAL  
COMPUTERS AND PERIPHERALS

The product was received on Dec. 04, 2014 and testing was completed on Mar. 13, 2015. 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.

*Louis Wu*

Reviewed by: Louis Wu / Manager

*Jones Tsai*

Approved by: Jones Tsai / Manager



## SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1<sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

SPORTON INTERNATIONAL INC.

TEL : 886-3-327-3456

FAX : 886-3-328-4978

FCC ID : PY7-PM0781

Page Number : 1 of 25

Report Issued Date : Mar. 27, 2015

Report Version : Rev. 01

Report Template No.: BU5-FD15B Version 1.0



## TABLE OF CONTENTS

|                                                              |           |
|--------------------------------------------------------------|-----------|
| <b>REVISION HISTORY .....</b>                                | <b>3</b>  |
| <b>SUMMARY OF TEST RESULT .....</b>                          | <b>4</b>  |
| <b>1. GENERAL DESCRIPTION .....</b>                          | <b>5</b>  |
| 1.1. Applicant.....                                          | 5         |
| 1.2. Manufacturer .....                                      | 5         |
| 1.3. Product Feature of Equipment Under Test .....           | 5         |
| 1.4. Details of Tested Sample (EUT) Information .....        | 6         |
| 1.5. Modification of EUT .....                               | 6         |
| 1.6. Test Location.....                                      | 7         |
| 1.7. Applicable Standards .....                              | 7         |
| <b>2. TEST CONFIGURATION OF EQUIPMENT UNDER TEST .....</b>   | <b>8</b>  |
| 2.1. Test Mode .....                                         | 8         |
| 2.2. Connection Diagram of Test System .....                 | 9         |
| 2.3. Support Unit used in test configuration and system..... | 11        |
| 2.4. EUT Operation Test Setup .....                          | 11        |
| <b>3. TEST RESULT .....</b>                                  | <b>12</b> |
| 3.1. Test of AC Conducted Emission Measurement .....         | 12        |
| 3.2. Test of Radiated Emission Measurement .....             | 18        |
| <b>4. LIST OF MEASURING EQUIPMENT .....</b>                  | <b>24</b> |
| <b>5. UNCERTAINTY OF EVALUATION .....</b>                    | <b>25</b> |



## REVISION HISTORY

| REPORT NO. | VERSION | DESCRIPTION             | ISSUED DATE   |
|------------|---------|-------------------------|---------------|
| FC4D0459   | Rev. 01 | Initial issue of report | Mar. 27, 2015 |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |
|            |         |                         |               |



## 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>8.90 dB at 0.190 MHz   |
| 3.2            | 15.109   | Radiated Emission     | < 15.109 limits | PASS   | Under limit<br>4.33 dB at 240.060 MHz |



# 1. General Description

## 1.1. Applicant

**Sony Mobile Communications Inc**  
Nya Vattentorget 22188 Lund/Sweden

## 1.2. Manufacturer

**Sony Mobile Communications Inc**  
Nya Vattentorget 22188 Lund/Sweden

## 1.3. Product Feature of Equipment Under Test

The Equipment Under Test (hereafter called: EUT) is PDA Phone supporting, GSM / WCDMA / LTE, Wi-Fi 2.4GHz 802.11b/g/n, 5GHz 802.11a/n, Bluetooth with FM Receiver, GPS, ANT+, and NFC features, and below is details of information

| Product Feature               |                                             |
|-------------------------------|---------------------------------------------|
| Equipment                     | PDA Phone                                   |
| Brand Name                    | Sony                                        |
| Type Name                     | PM-0781-BV                                  |
| FCC ID                        | PY7-PM0781                                  |
| GSM Operating Band(s)         | GSM 850/900/1800/1900MHz                    |
| GPRS / EGPRS Multi Slot Class | GPRS Class 33, EGPRS Class 33               |
| WCDMA Operating Band(s)       | FDD Band I / II / V / VIII                  |
| WCDMA Rel. Version            | Rel. 8                                      |
| LTE Operating Band(s)         | FDD Band I / II / III / V / VII / VIII / XX |
| LTE Rel. Version              | Rel. 10                                     |
| Wi-Fi Specification           | 802.11b/g/n HT20<br>802.11a/n HT20/HT40     |
| Bluetooth Version             | v3.0 + EDR / v4.0 - LE                      |
| NFC Specification             | ISO14443A / ISO14443B / Felica / ISO15693   |
| ANT+                          | ANT+                                        |
| Power Supply                  | Battery / AC Adapter / Car Charger          |

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

## 1.4. Details of Tested Sample (EUT) Information

Below EUT sample and accessory are used to test.

| EUT Information List                               |            |             |            |                                         |
|----------------------------------------------------|------------|-------------|------------|-----------------------------------------|
| IMEI                                               | HW Version | SW Version  | S/N        | Performed Test Item                     |
| IMEI 1: 004402454055272<br>IMEI 2: 004402454055264 | AP         | 26.1.B.1.23 | YT9111CEEZ | Conducted Emission<br>Radiated Emission |

| Accessory List     |                                                                                              |
|--------------------|----------------------------------------------------------------------------------------------|
| <b>Battery</b>     | Model No. : Bellis                                                                           |
| <b>Earphone</b>    | Model No. : MH410c                                                                           |
|                    | Type No. : AG-1100                                                                           |
|                    | S/N :<br>12431A1B0011582 (For Conducted Emission)<br>12431A180011AEC (For Radiated Emission) |
| <b>USB Cable 1</b> | Model No. : EC450                                                                            |
|                    | Type No. : AI-0700                                                                           |
|                    | S/N :<br>142412D8250297C (For Conducted Emission)<br>132312D02961412 (For Radiated Emission) |

**Note:**

1. Above EUT list and accessory list used are electrically identical per declared by manufacturer.
2. Above the accessories list are used to exercise the EUT during test.
3. For other wireless features of this EUT, test report will be issued separately.

## 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 supporting USB interface or similar peripherals (defined as the Section 15.3 (r) Peripheral device) acting as a peripheral for personal computers shall be authorized as "The Class B personal computers and peripherals" per the Section 15.101 (a) Equipment authorization of unintentional radiators.
3. For other Unintentional Radiators features of this EUT, test reports are be 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.

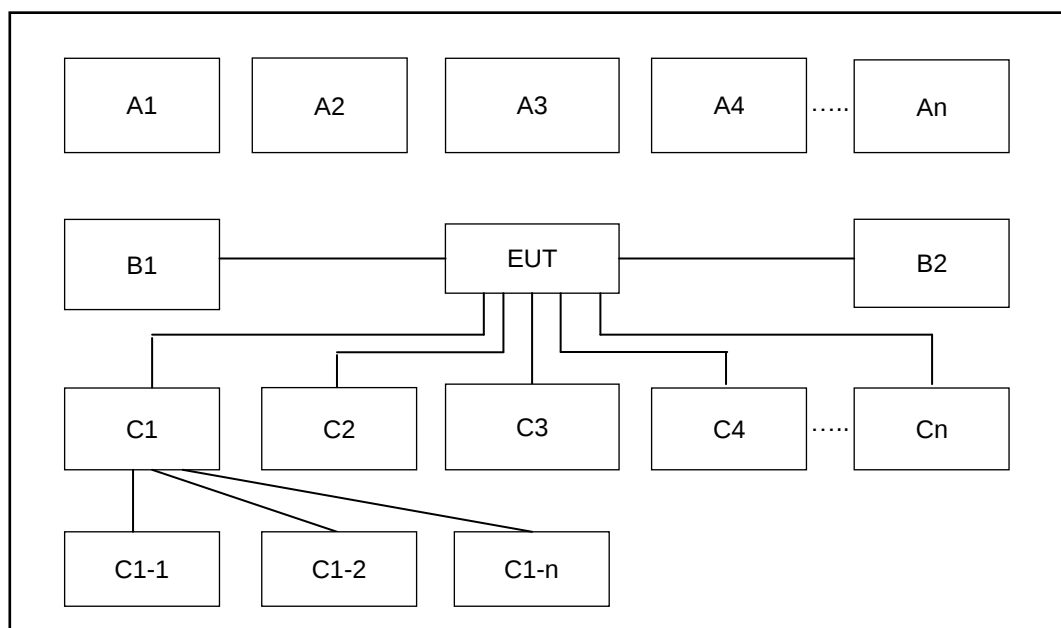
| Item | EUT Configuration       | Test Condition                      |                                     |
|------|-------------------------|-------------------------------------|-------------------------------------|
|      |                         | EMI AC                              | EMI RE                              |
| 1.   | Data Link with Notebook | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

The data application (each file size is greater than 30Mbytes) is continuously transferred between the EUT and Notebook connected via USB cable, while GSM, WLAN, Bluetooth, NFC, and GPS idle.

#### Abbreviations:

- EMI AC: AC conducted emissions
- EMI RE: EUT radiated emission

## 2.2. Connection Diagram of Test System



| Conduction Test Setup |                   |                                |           |   |   |   |   |   |   |
|-----------------------|-------------------|--------------------------------|-----------|---|---|---|---|---|---|
| No.                   | Wireless Station  | Connection Type                | Test Mode |   |   |   |   |   |   |
|                       |                   |                                | 1         | 2 | - | - | - | - | - |
| A1                    | BT Earphone       | Bluetooth                      | X         | X |   |   |   |   |   |
| A2                    | System Simulator  | GSM                            | 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                               | X         | X |   |   |   |   |   |
| A3                   | AP router         | WiFi                              | X         | X |   |   |   |   |   |
| A4                   | NFC card          | NFC                               | 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<br>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.   | System Simulator   | Anritsu      | MT8820C        | N/A                                          | N/A             | Unshielded, 1.8 m                                          |
| 3.   | GPS Station        | Pendulum     | GSG-54         | N/A                                          | N/A             | Unshielded, 1.8 m                                          |
| 4.   | Bluetooth Earphone | Samsung      | SBH20          | PY7-RD0010                                   | N/A             | N/A                                                        |
| 5.   | WLAN AP            | D-Link       | DIR-865L       | KA2IR865LA1                                  | N/A             | Unshielded, 1.8 m                                          |
| 6.   | 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 |
| 7.   | iPod               | Apple        | A1199          | FCC DoC                                      | Shielded, 1.0 m | N/A                                                        |
| 8.   | iPod               | Apple        | A1285          | FCC DoC                                      | Shielded, 1.0 m | N/A                                                        |
| 9.   | NFC Card           | Metro Taipei | Easy Card      | N/A                                          | N/A             | N/A                                                        |
| 10.  | SD Card            | SamDisk      | MicroSD HC     | FCC DoC                                      | N/A             | N/A                                                        |

## 2.4. EUT Operation Test Setup

The data application (each file size is greater than 30Mbytes) is continuously transferred between the EUT and Notebook connected via USB cable, while GSM, WLAN, Bluetooth, NFC, and GPS idle.

### 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.

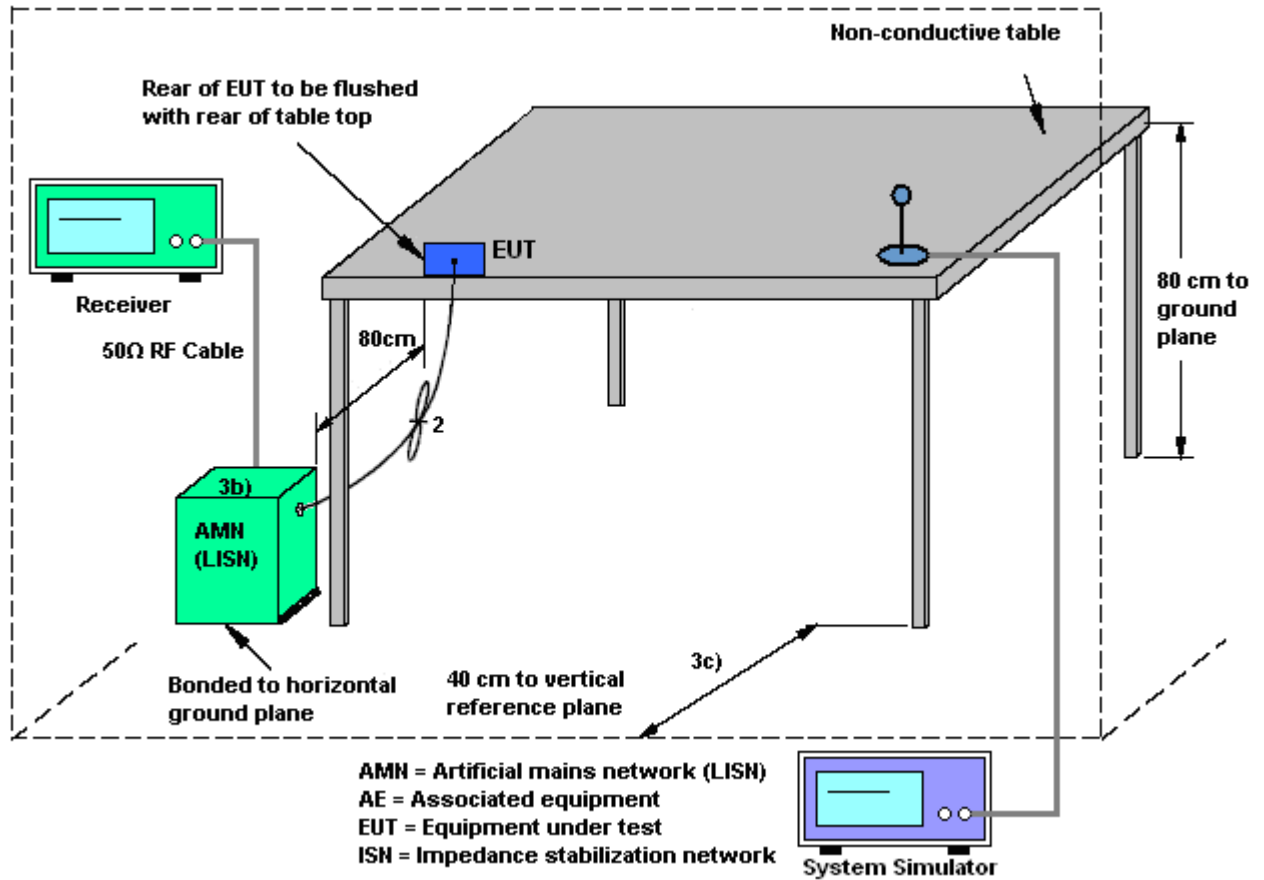
##### 3.1.2 Measuring Instruments

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

##### 3.1.3 Test Procedure

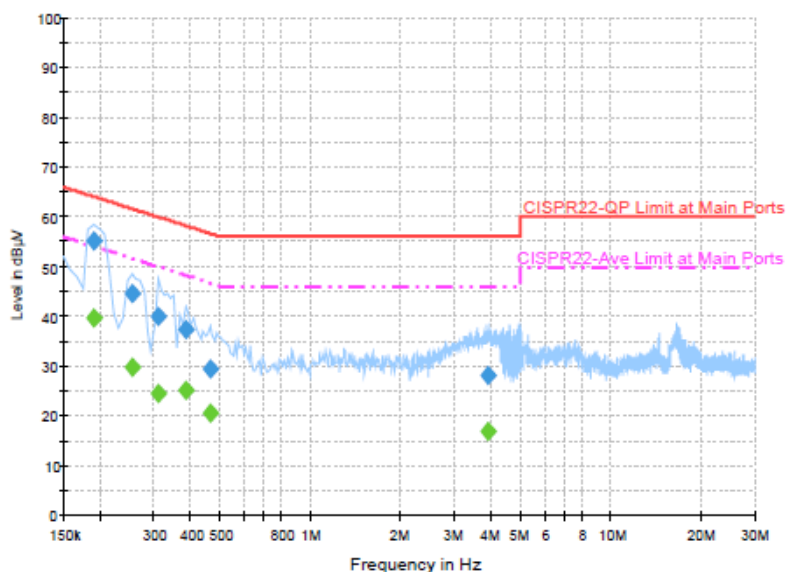
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
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 (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

### 3.1.4 Test Setup



### 3.1.5 Test Result of AC Conducted Emission

|                 |                                                                                 |                     |        |
|-----------------|---------------------------------------------------------------------------------|---------------------|--------|
| Test Mode :     | Mode 1                                                                          | Temperature :       | 21~23℃ |
| Test Engineer : | Kai-Chun Chu                                                                    | Relative Humidity : | 46~48% |
| Test Voltage :  | 120Vac / 60Hz                                                                   | Phase :             | Line   |
| Function Type : | Data Link with Notebook (with USB Cable 1) + SIM1 + WLAN (2.4GHz) Idle + GPS Rx |                     |        |



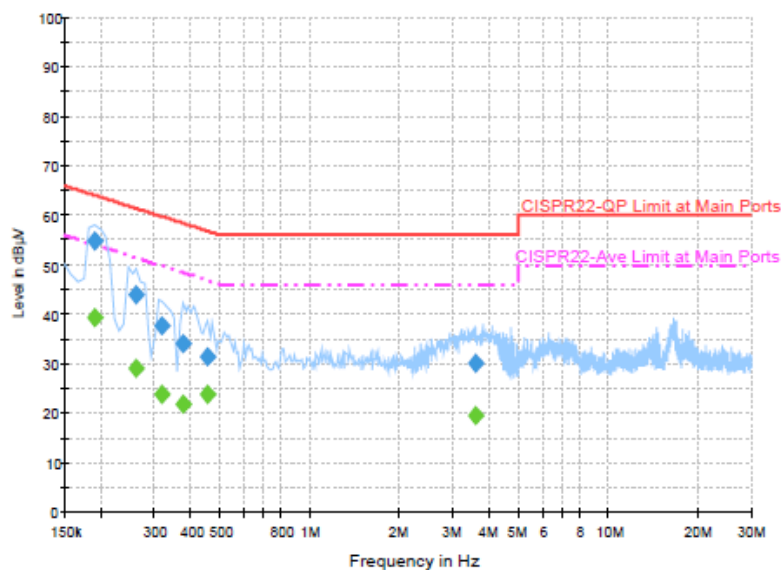
#### Final Result : Quasi-Peak

| Frequency (MHz) | Quasi-Peak (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-------------------|--------|------|------------|-------------|--------------|
| 0.190000        | 55.0              | Off    | L1   | 19.5       | 9.0         | 64.0         |
| 0.254000        | 44.5              | Off    | L1   | 19.6       | 17.1        | 61.6         |
| 0.310000        | 40.0              | Off    | L1   | 19.5       | 20.0        | 60.0         |
| 0.382000        | 37.4              | Off    | L1   | 19.6       | 20.8        | 58.2         |
| 0.462000        | 29.4              | Off    | L1   | 19.6       | 27.3        | 56.7         |
| 3.902000        | 27.9              | Off    | L1   | 19.6       | 28.1        | 56.0         |

#### Final Result : Average

| Frequency (MHz) | Average (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 0.190000        | 39.5           | Off    | L1   | 19.5       | 14.5        | 54.0         |
| 0.254000        | 29.8           | Off    | L1   | 19.6       | 21.8        | 51.6         |
| 0.310000        | 24.5           | Off    | L1   | 19.5       | 25.5        | 50.0         |
| 0.382000        | 25.0           | Off    | L1   | 19.6       | 23.2        | 48.2         |
| 0.462000        | 20.4           | Off    | L1   | 19.6       | 26.3        | 46.7         |
| 3.902000        | 17.0           | Off    | L1   | 19.6       | 29.0        | 46.0         |

|                        |                                                                                 |                            |         |
|------------------------|---------------------------------------------------------------------------------|----------------------------|---------|
| <b>Test Mode :</b>     | Mode 1                                                                          | <b>Temperature :</b>       | 21~23°C |
| <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> | Data Link with Notebook (with USB Cable 1) + SIM1 + WLAN (2.4GHz) Idle + GPS Rx |                            |         |

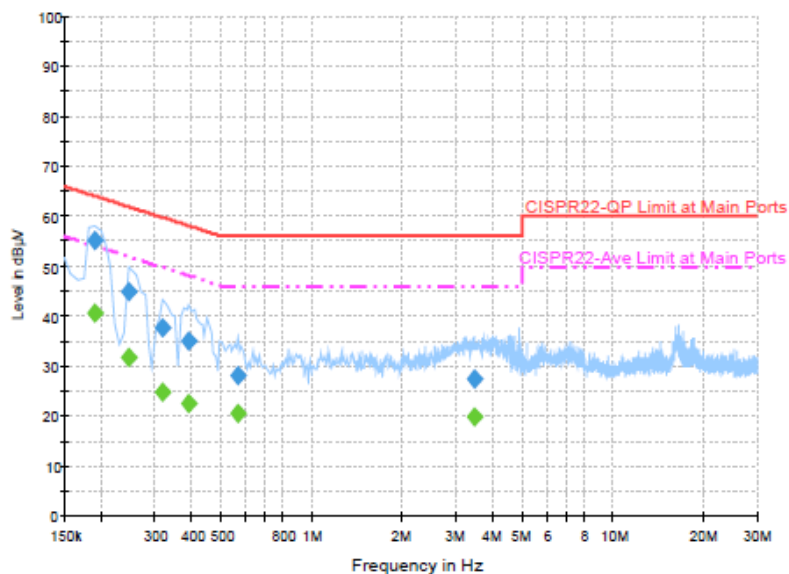

**Final Result : Quasi-Peak**

| Frequency (MHz) | Quasi-Peak (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-------------------|--------|------|------------|-------------|--------------|
| 0.190000        | 54.8              | Off    | N    | 19.5       | 9.2         | 64.0         |
| 0.262000        | 44.0              | Off    | N    | 19.6       | 17.4        | 61.4         |
| 0.318000        | 37.7              | Off    | N    | 19.5       | 22.1        | 59.8         |
| 0.374000        | 33.9              | Off    | N    | 19.5       | 24.5        | 58.4         |
| 0.454000        | 31.3              | Off    | N    | 19.6       | 25.5        | 56.8         |
| 3.582000        | 30.2              | Off    | N    | 19.6       | 25.8        | 56.0         |

**Final Result : Average**

| Frequency (MHz) | Average (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 0.190000        | 39.3           | Off    | N    | 19.5       | 14.7        | 54.0         |
| 0.262000        | 28.9           | Off    | N    | 19.6       | 22.5        | 51.4         |
| 0.318000        | 23.7           | Off    | N    | 19.5       | 26.1        | 49.8         |
| 0.374000        | 21.7           | Off    | N    | 19.5       | 26.7        | 48.4         |
| 0.454000        | 23.6           | Off    | N    | 19.6       | 23.2        | 46.8         |
| 3.582000        | 19.4           | Off    | N    | 19.6       | 26.6        | 46.0         |

|                        |                                                                                    |                            |         |
|------------------------|------------------------------------------------------------------------------------|----------------------------|---------|
| <b>Test Mode :</b>     | Mode 2                                                                             | <b>Temperature :</b>       | 21~23°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> | Data Link with Notebook (with USB Cable 1) + SIM1 + WLAN (2.4GHz) Idle<br>+ GPS Rx |                            |         |

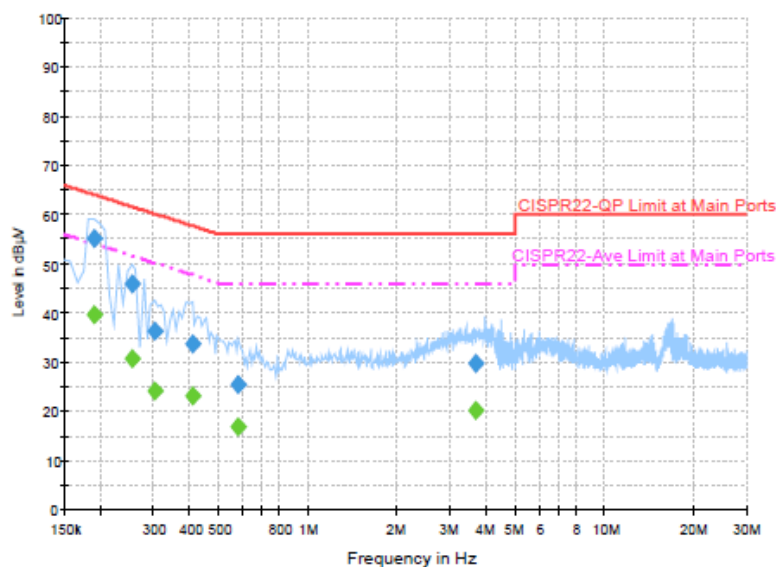

**Final Result : Quasi-Peak**

| Frequency (MHz) | Quasi-Peak (dBµV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|-------------------|--------|------|------------|-------------|--------------|
| 0.190000        | 55.1              | Off    | L1   | 19.5       | 8.9         | 64.0         |
| 0.246000        | 44.9              | Off    | L1   | 19.6       | 17.0        | 61.9         |
| 0.318000        | 37.7              | Off    | L1   | 19.5       | 22.1        | 59.8         |
| 0.390000        | 34.9              | Off    | L1   | 19.6       | 23.2        | 58.1         |
| 0.566000        | 27.9              | Off    | L1   | 19.5       | 28.1        | 56.0         |
| 3.446000        | 27.2              | Off    | L1   | 19.6       | 28.8        | 56.0         |

**Final Result : Average**

| Frequency (MHz) | Average (dBµV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 0.190000        | 40.6           | Off    | L1   | 19.5       | 13.4        | 54.0         |
| 0.246000        | 31.6           | Off    | L1   | 19.6       | 20.3        | 51.9         |
| 0.318000        | 24.8           | Off    | L1   | 19.5       | 25.0        | 49.8         |
| 0.390000        | 22.5           | Off    | L1   | 19.6       | 25.6        | 48.1         |
| 0.566000        | 20.3           | Off    | L1   | 19.5       | 25.7        | 46.0         |
| 3.446000        | 19.9           | Off    | L1   | 19.6       | 26.1        | 46.0         |

|                 |                                                                                    |                     |         |
|-----------------|------------------------------------------------------------------------------------|---------------------|---------|
| Test Mode :     | Mode 2                                                                             | Temperature :       | 21~23℃  |
| Test Engineer : | Kai-Chun Chu                                                                       | Relative Humidity : | 46~48%  |
| Test Voltage :  | 120Vac / 60Hz                                                                      | Phase :             | Neutral |
| Function Type : | Data Link with Notebook (with USB Cable 1) + SIM1 + WLAN (2.4GHz) Idle<br>+ GPS Rx |                     |         |


**Final Result : Quasi-Peak**

| Frequency (MHz) | Quasi-Peak (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|-------------------|--------|------|------------|-------------|--------------|
| 0.190000        | 55.0              | Off    | N    | 19.5       | 9.0         | 64.0         |
| 0.254000        | 45.9              | Off    | N    | 19.6       | 15.7        | 61.6         |
| 0.302000        | 36.1              | Off    | N    | 19.5       | 24.1        | 60.2         |
| 0.406000        | 33.8              | Off    | N    | 19.6       | 23.9        | 57.7         |
| 0.582000        | 25.4              | Off    | N    | 19.5       | 30.6        | 56.0         |
| 3.670000        | 29.8              | Off    | N    | 19.6       | 26.2        | 56.0         |

**Final Result : Average**

| Frequency (MHz) | Average (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 0.190000        | 39.5           | Off    | N    | 19.5       | 14.5        | 54.0         |
| 0.254000        | 30.8           | Off    | N    | 19.6       | 20.8        | 51.6         |
| 0.302000        | 24.0           | Off    | N    | 19.5       | 26.2        | 50.2         |
| 0.406000        | 23.2           | Off    | N    | 19.6       | 24.5        | 47.7         |
| 0.582000        | 17.0           | Off    | N    | 19.5       | 29.0        | 46.0         |
| 3.670000        | 20.3           | Off    | N    | 19.6       | 25.7        | 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

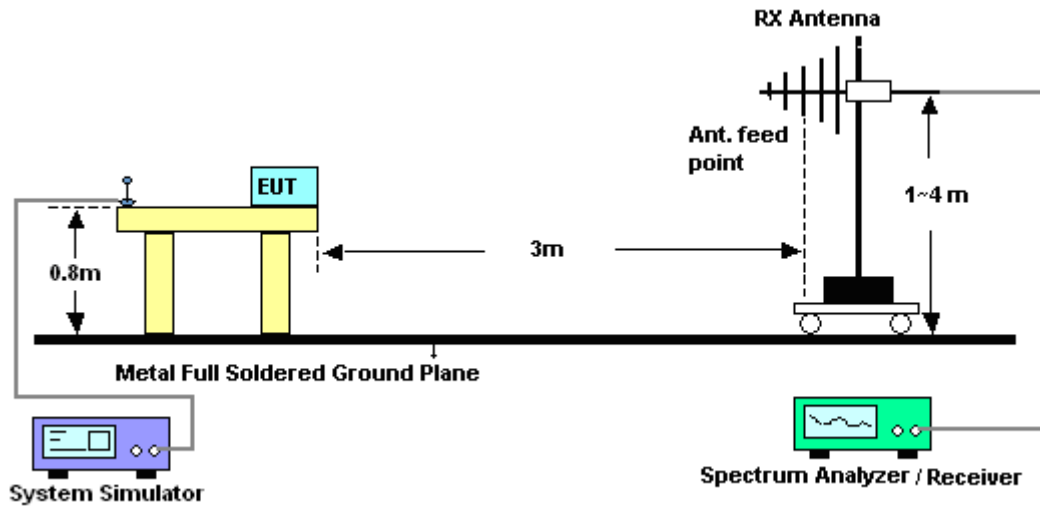
The measuring equipment is listed in the section 4 of this test report.

### 3.2.3. Test Procedures

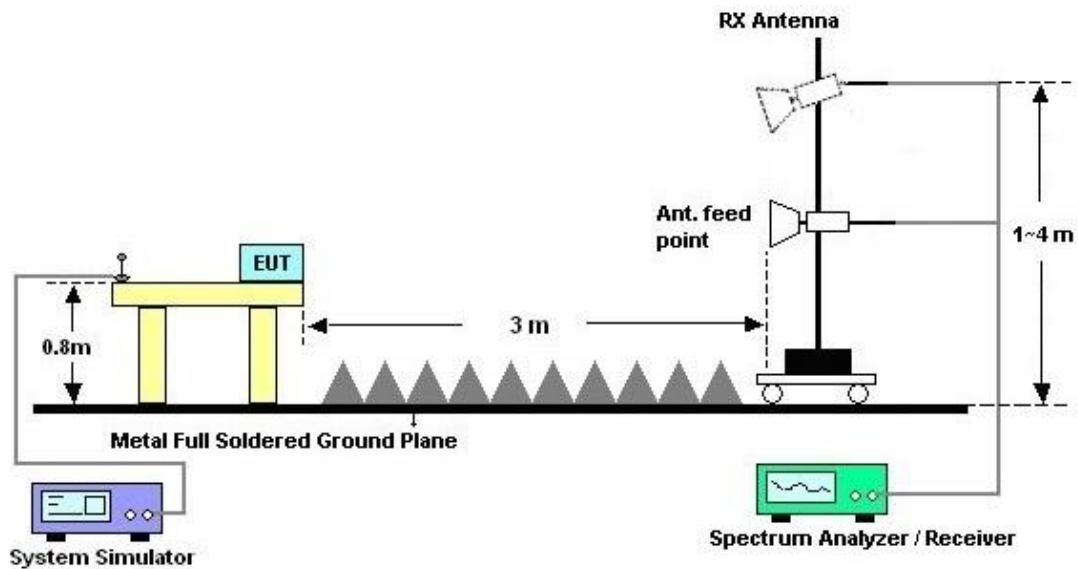
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna 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.
6. 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).
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 (dB $\mu$ V/m) = 20 log Emission level ( $\mu$ V/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

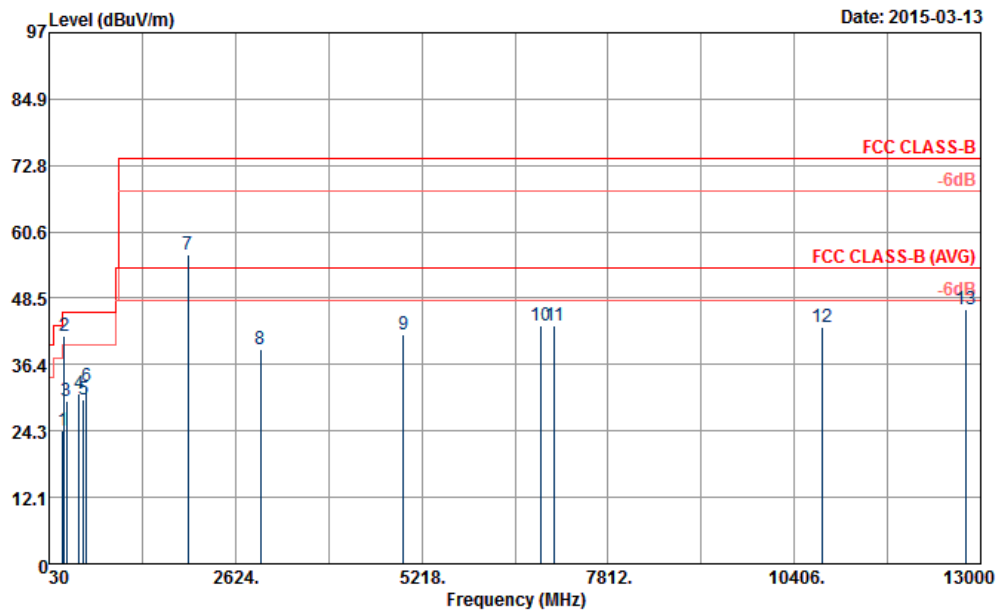


For radiated emissions above 1GHz



### 3.2.5. Test Result of Radiated Emission

|                 |                                                                               |                     |            |
|-----------------|-------------------------------------------------------------------------------|---------------------|------------|
| Test Mode :     | Mode 1                                                                        | Temperature :       | 20~23°C    |
| Test Engineer : | Daniel Lee                                                                    | Relative Humidity : | 50~53%     |
| Test Distance : | 3m                                                                            | Polarization :      | Horizontal |
| Function Type : | Data Link with Notebook (with USB Cable 1) + SIM1 + WLAN (5GHz) Idle + NFC On |                     |            |
| Remark :        | #7 is system simulator signal which can be ignored.                           |                     |            |



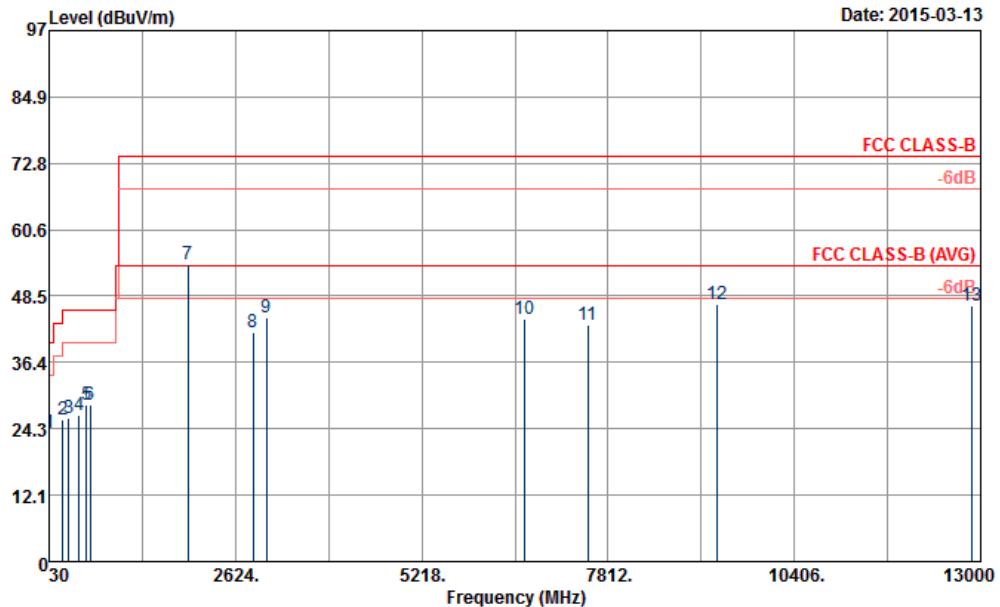
Site : 03CH06-HY  
Condition : FCC CLASS-B 3m HF-ANT\_583\_140731 HORIZONTAL

Power : From System  
Mode : Mode 1

|    | Freq     | Level  | Over Limit | Limit Line | ReadAntenna Level | Antenna Factor | Cable Loss | Preamp Factor | A/Pos | T/Pos | Remark |
|----|----------|--------|------------|------------|-------------------|----------------|------------|---------------|-------|-------|--------|
|    | MHz      | dBuV/m | dB         | dBuV/m     | dBuV              | dB/m           | dB         | dB            | cm    | deg   |        |
| 1  | 222.24   | 24.43  | -21.57     | 46.00      | 45.16             | 9.38           | 1.63       | 31.74         | ---   | ---   | Peak   |
| 2  | 240.06   | 41.67  | -4.33      | 46.00      | 60.33             | 11.39          | 1.69       | 31.74         | 100   | 346   | Peak   |
| 3  | 272.46   | 29.71  | -16.29     | 46.00      | 46.89             | 12.73          | 1.82       | 31.73         | ---   | ---   | Peak   |
| 4  | 450.50   | 31.07  | -14.93     | 46.00      | 43.82             | 16.82          | 2.31       | 31.88         | ---   | ---   | Peak   |
| 5  | 508.60   | 30.05  | -15.95     | 46.00      | 42.09             | 17.40          | 2.50       | 31.94         | ---   | ---   | Peak   |
| 6  | 550.60   | 32.45  | -13.55     | 46.00      | 43.11             | 18.80          | 2.54       | 32.00         | ---   | ---   | Peak   |
| 7  | 1960.00  | 56.56  |            |            | 78.35             | 31.33          | 5.40       | 58.52         | ---   | ---   | Peak   |
| 8  | 2974.00  | 39.16  | -34.84     | 74.00      | 57.89             | 32.75          | 6.72       | 58.20         | ---   | ---   | Peak   |
| 9  | 4962.00  | 42.00  | -32.00     | 74.00      | 55.95             | 34.47          | 9.02       | 57.44         | ---   | ---   | Peak   |
| 10 | 6866.00  | 43.38  | -30.62     | 74.00      | 55.88             | 35.80          | 10.39      | 58.69         | ---   | ---   | Peak   |
| 11 | 7068.00  | 43.49  | -30.51     | 74.00      | 55.15             | 35.79          | 11.42      | 58.87         | ---   | ---   | Peak   |
| 12 | 10784.00 | 43.12  | -30.88     | 74.00      | 49.71             | 37.58          | 13.51      | 57.68         | ---   | ---   | Peak   |
| 13 | 12786.00 | 46.46  | -27.54     | 74.00      | 49.66             | 39.41          | 15.83      | 58.44         | 100   | 0     | Peak   |



|                 |                                                                               |                     |          |
|-----------------|-------------------------------------------------------------------------------|---------------------|----------|
| Test Mode :     | Mode 1                                                                        | Temperature :       | 20~23°C  |
| Test Engineer : | Daniel Lee                                                                    | Relative Humidity : | 50~53%   |
| Test Distance : | 3m                                                                            | Polarization :      | Vertical |
| Function Type : | Data Link with Notebook (with USB Cable 1) + SIM1 + WLAN (5GHz) Idle + NFC On |                     |          |
| Remark :        | #7 is system simulator signal which can be ignored.                           |                     |          |



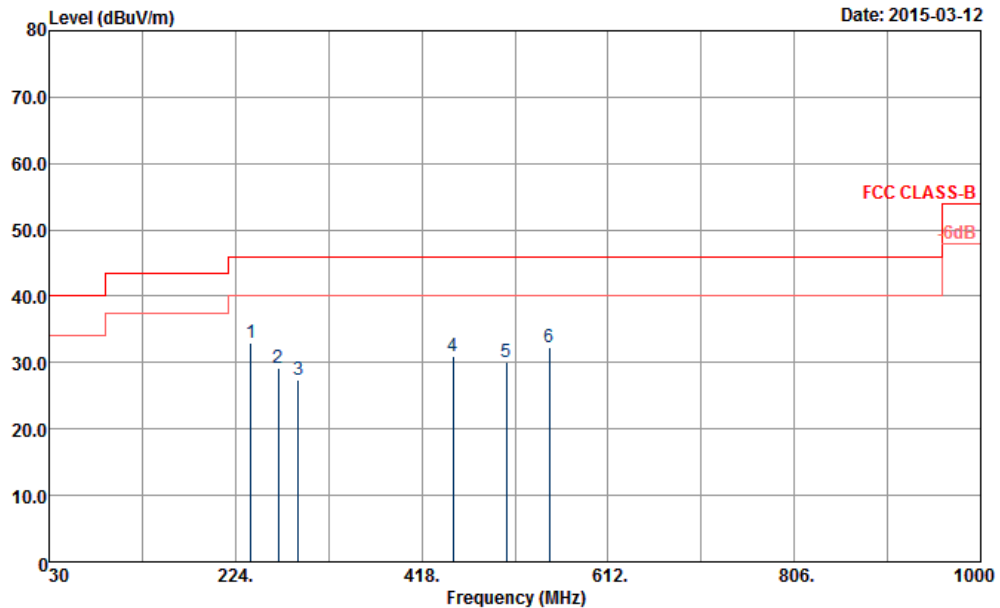
Site : 03CH06-HY  
Condition : FCC CLASS-B 3m HF-ANT\_583\_140731 VERTICAL

Power : From System  
Mode : Mode 1

|    | Freq     | Level  | Over Limit | Limit Line | ReadAntenna Level | Antenna Factor | Cable Loss | Preamp Factor | A/Pos | T/Pos | Remark |
|----|----------|--------|------------|------------|-------------------|----------------|------------|---------------|-------|-------|--------|
|    | MHz      | dBuV/m | dB         | dBuV/m     | dBuV              | dB/m           | dB         | dB            | cm    | deg   |        |
| 1  | 30.00    | 23.55  | -16.45     | 40.00      | 36.31             | 18.40          | 0.64       | 31.80         | 100   | 164   | Peak   |
| 2  | 223.86   | 25.81  | -20.19     | 46.00      | 46.35             | 9.56           | 1.64       | 31.74         | ---   | ---   | Peak   |
| 3  | 300.00   | 26.18  | -19.82     | 46.00      | 42.89             | 13.10          | 1.91       | 31.72         | ---   | ---   | Peak   |
| 4  | 450.50   | 26.71  | -19.29     | 46.00      | 39.46             | 16.82          | 2.31       | 31.88         | ---   | ---   | Peak   |
| 5  | 550.60   | 28.62  | -17.38     | 46.00      | 39.28             | 18.80          | 2.54       | 32.00         | ---   | ---   | Peak   |
| 6  | 601.00   | 28.54  | -17.46     | 46.00      | 39.23             | 18.60          | 2.77       | 32.06         | ---   | ---   | Peak   |
| 7  | 1960.00  | 54.41  |            |            | 76.20             | 31.33          | 5.40       | 58.52         | ---   | ---   | Peak   |
| 8  | 2872.00  | 42.01  | -31.99     | 74.00      | 60.98             | 32.59          | 6.64       | 58.20         | ---   | ---   | Peak   |
| 9  | 3054.00  | 44.63  | -29.37     | 74.00      | 63.31             | 32.78          | 6.78       | 58.24         | ---   | ---   | Peak   |
| 10 | 6656.00  | 44.44  | -29.56     | 74.00      | 57.31             | 35.80          | 9.85       | 58.52         | ---   | ---   | Peak   |
| 11 | 7526.00  | 43.25  | -30.75     | 74.00      | 54.83             | 35.71          | 12.02      | 59.31         | ---   | ---   | Peak   |
| 12 | 9324.00  | 46.91  | -27.09     | 74.00      | 56.20             | 36.33          | 13.51      | 59.13         | 100   | 204   | Peak   |
| 13 | 12870.00 | 46.84  | -27.16     | 74.00      | 49.92             | 39.45          | 15.90      | 58.43         | ---   | ---   | Peak   |



|                 |                                                                               |                     |            |
|-----------------|-------------------------------------------------------------------------------|---------------------|------------|
| Test Mode :     | Mode 2                                                                        | Temperature :       | 20~23°C    |
| Test Engineer : | Daniel Lee                                                                    | Relative Humidity : | 50~53%     |
| Test Distance : | 3m                                                                            | Polarization :      | Horizontal |
| Function Type : | Data Link with Notebook (with USB Cable 1) + SIM1 + WLAN (5GHz) Idle + NFC On |                     |            |



Site : 03CH06-HY

Condition : FCC CLASS-B 3m BILOG\_131010\_9664 HORIZONTAL

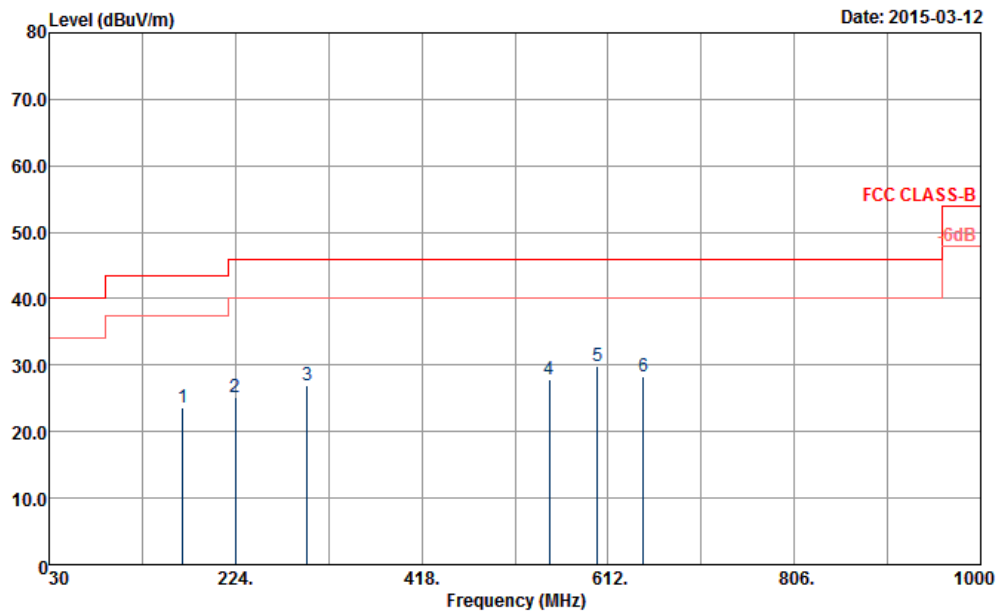
Power : From System

Mode : Mode 2

|   | Freq   | Level  | Over Limit | Limit Line | ReadAntenna Level | Antenna Factor | Cable Loss | Preamplifier | A/Pos | T/Pos | Remark |
|---|--------|--------|------------|------------|-------------------|----------------|------------|--------------|-------|-------|--------|
|   | MHz    | dBuV/m | dB         | dBuV/m     | dBuV              | dB/m           | dB         | dB           | cm    | deg   |        |
| 1 | 240.06 | 33.08  | -12.92     | 46.00      | 51.74             | 11.39          | 1.69       | 31.74        | 100   | 20    | Peak   |
| 2 | 268.95 | 29.10  | -16.90     | 46.00      | 46.22             | 12.80          | 1.81       | 31.73        | ---   | ---   | Peak   |
| 3 | 289.74 | 27.38  | -18.62     | 46.00      | 44.24             | 13.00          | 1.86       | 31.72        | ---   | ---   | Peak   |
| 4 | 450.50 | 30.99  | -15.01     | 46.00      | 43.74             | 16.82          | 2.31       | 31.88        | ---   | ---   | Peak   |
| 5 | 506.50 | 29.99  | -16.01     | 46.00      | 42.03             | 17.40          | 2.50       | 31.94        | ---   | ---   | Peak   |
| 6 | 550.60 | 32.27  | -13.73     | 46.00      | 42.93             | 18.80          | 2.54       | 32.00        | ---   | ---   | Peak   |



|                        |                                                                               |                            |          |
|------------------------|-------------------------------------------------------------------------------|----------------------------|----------|
| <b>Test Mode :</b>     | Mode 2                                                                        | <b>Temperature :</b>       | 20~23°C  |
| <b>Test Engineer :</b> | Daniel Lee                                                                    | <b>Relative Humidity :</b> | 50~53%   |
| <b>Test Distance :</b> | 3m                                                                            | <b>Polarization :</b>      | Vertical |
| <b>Function Type :</b> | Data Link with Notebook (with USB Cable 1) + SIM1 + WLAN (5GHz) Idle + NFC On |                            |          |



Site : 03CH06-HY  
Condition : FCC CLASS-B 3m BILOG\_131010\_9664 VERTICAL

Power : From System  
Mode : Mode 2

|   | Freq   | Level  | Over Limit | Limit Line | ReadAntenna Level | Antenna Factor | Cable Loss | Preamplifier | A/Pos | T/Pos | Remark |
|---|--------|--------|------------|------------|-------------------|----------------|------------|--------------|-------|-------|--------|
|   | MHz    | dBuV/m | dB         | dBuV/m     | dBuV              | dB/m           | dB         | dB           | cm    | deg   |        |
| 1 | 169.05 | 23.51  | -19.99     | 43.50      | 43.91             | 9.74           | 1.61       | 31.75        | ---   | ---   | Peak   |
| 2 | 223.86 | 25.13  | -20.87     | 46.00      | 45.67             | 9.56           | 1.64       | 31.74        | ---   | ---   | Peak   |
| 3 | 298.65 | 26.98  | -19.02     | 46.00      | 43.71             | 13.09          | 1.90       | 31.72        | ---   | ---   | Peak   |
| 4 | 550.60 | 27.90  | -18.10     | 46.00      | 38.56             | 18.80          | 2.54       | 32.00        | ---   | ---   | Peak   |
| 5 | 601.00 | 29.96  | -16.04     | 46.00      | 40.65             | 18.60          | 2.77       | 32.06        | 100   | 133   | Peak   |
| 6 | 648.60 | 28.25  | -17.75     | 46.00      | 38.48             | 19.01          | 2.80       | 32.04        | ---   | ---   | 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  | Dec. 01, 2014    | Mar. 11, 2015 | Nov. 30, 2015 | Conduction (CO05-HY)  |
| LISN                           | Rohde & Schwarz | ENV216                     | 100080                          | 9kHz ~ 30MHz    | Dec. 02, 2014    | Mar. 11, 2015 | Dec. 01, 2015 | Conduction (CO05-HY)  |
| LISN (for auxiliary equipment) | Rohde & Schwarz | ENV216                     | 100081                          | 9kHz ~ 30MHz    | Dec. 08, 2014    | Mar. 11, 2015 | Dec. 07, 2015 | Conduction (CO05-HY)  |
| AC Power Source                | ChainTek        | APC-1000W                  | N/A                             | N/A             | N/A              | Mar. 11, 2015 | N/A           | Conduction (CO05-HY)  |
| Hygrometer                     | Testo           | 608-H1                     | 34913912                        | N/A             | Apr. 23, 2014    | Mar. 11, 2015 | Apr. 22, 2015 | Conduction (CO05-HY)  |
| LF Cable                       | Shuner          | RG-402                     | N/A                             | N/A             | Oct. 07, 2014    | Mar. 11, 2015 | Oct. 06, 2015 | Conduction (CO05-HY)  |
| Test Software                  | N/A             | EMC32                      | 8.40.0                          | N/A             | N/A              | Mar. 11, 2015 | N/A           | Conduction (CO05-HY)  |
| EMI Test Receiver              | Rohde & Schwarz | ESVS10                     | 834468/0003                     | 20MHz-1000M Hz  | May. 06, 2014    | Mar. 13, 2015 | May. 05, 2015 | Radiation (03CH06-HY) |
| Spectrum Analyzer              | Agilent         | E4408B                     | MY44211028                      | 9kHz ~ 26.5GHz  | Aug. 23, 2014    | Mar. 13, 2015 | Aug. 22, 2015 | Radiation (03CH06-HY) |
| EMI Test Receiver              | Rohde & Schwarz | ESU26                      | 100472                          | 20Hz~26.5GHz    | Jan. 19, 2015    | Mar. 13, 2015 | Jan. 18, 2016 | Radiation (03CH06-HY) |
| Bilog Antenna                  | Teseq GmbH      | CBL6112D                   | 35379                           | 30MHz ~2GHz     | Sep. 27, 2014    | Mar. 13, 2015 | Sep. 26, 2015 | Radiation (03CH06-HY) |
| Double Ridge Horn Antenna      | EMCO            | 3117                       | 00066583                        | 1GHz~18GHz      | Jul. 24, 2014    | Mar. 13, 2015 | Jul. 23, 2015 | Radiation (03CH06-HY) |
| Amplifier                      | SONOMA          | 310N                       | 186713                          | 9kHz~1GHz       | Apr. 16, 2014    | Mar. 13, 2015 | Apr. 15, 2015 | Radiation (03CH06-HY) |
| Preamplifier                   | MITEQ           | AMF-7D-0010<br>1800-30-10P | 1815698                         | 1GHz~18GHz      | Dec. 12, 2014    | Mar. 13, 2015 | Dec. 11, 2015 | Radiation (03CH06-HY) |
| Controller                     | INN-CO          | CO2000                     | 8000604                         | N/A             | N/A              | Mar. 13, 2015 | N/A           | Radiation (03CH06-HY) |
| Turn Table                     | INN-CO          | DS2000                     | 420/650/00                      | 0 ~ 360 degree  | N/A              | Mar. 13, 2015 | N/A           | Radiation (03CH06-HY) |
| Antenna Mast                   | MF              | MF-7802                    | MF78020821<br>2                 | 1 m ~ 4 m       | N/A              | Mar. 13, 2015 | N/A           | Radiation (03CH06-HY) |
| Hygrometer                     | WISEWIND        | 410                        | BU5004                          | N/A             | May. 06, 2014    | Mar. 13, 2015 | May. 05, 2015 | Radiation (03CH06-HY) |
| RF Cable                       | HUBER + SUHNER  | RG 142                     | NA                              | 30MHz ~ 1GHz    | Nov. 27, 2014    | Mar. 13, 2015 | Nov. 26, 2015 | Radiation (03CH06-HY) |
| RF Cable                       | Infinet         | LL142                      | Infinet<br>CA3601-3601<br>-1000 | 1GHz ~ 26.5GHz  | Nov. 27, 2014    | Mar. 13, 2015 | Nov. 26, 2015 | Radiation (03CH06-HY) |
| Test Software                  | Audix           | E3                         | Version<br>6.2009-8-24          | N/A             | N/A              | Mar. 13, 2015 | N/A           | Radiation (03CH06-HY) |

**Note:** The test equipment calibration is traceable to the ISO17025.



## 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 |
|--------------------------------------------------------------------------|------|