

# b mobile HK Limited

## Mobile Phone

Main Model: AX515

Serial Model: N/A

June 21, 2012

Report No.: 12050033-FCC-E

(This report supersedes NONE)



Modifications made to the product : None

This Test Report is Issued Under the Authority of:

|                                                                                     |                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |
| Deon Dai<br>Compliance Engineer                                                     | Alex Liu<br>Technical Manager                                                       |                                                                                       |

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Test result presented in this test report is applicable to the representative sample only.

# EMC Test Report

To: FCC Part 15 Subpart B Class B: 2012, ANSI C63.4: 2003

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|----------------|------------------------|------------------------------------|
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### Accreditations for Product Certifications

| Country/Region | Accreditation Body | Scope                 |
|----------------|--------------------|-----------------------|
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| Singapore      | iDA, NIST          | EMC , RF , Telecom    |
| EU             | NB                 | EMC & R&TTE Directive |
| Japan          | MIC, (RCB 208)     | RF , Telecom          |
| Hong Kong      | OFTA (US002)       | RF , Telecom          |

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# CONTENTS

|          |                                                                            |           |
|----------|----------------------------------------------------------------------------|-----------|
| <b>1</b> | <b>EXECUTIVE SUMMARY &amp; EUT INFORMATION .....</b>                       | <b>5</b>  |
| <b>2</b> | <b>TECHNICAL DETAILS .....</b>                                             | <b>6</b>  |
| <b>3</b> | <b>MODIFICATION.....</b>                                                   | <b>7</b>  |
| <b>4</b> | <b>TEST SUMMARY.....</b>                                                   | <b>8</b>  |
| <b>5</b> | <b>MEASUREMENTS, EXAMINATION AND DERIVED RESULTS .....</b>                 | <b>9</b>  |
|          | <b>ANNEX A. TEST INSTRUMENT &amp; METHOD .....</b>                         | <b>19</b> |
|          | <b>ANNEX B. EUT AND TEST SETUP PHOTOGRAPHS .....</b>                       | <b>24</b> |
|          | <b>ANNEX C. TEST SETUP AND SUPPORTING EQUIPMENT.....</b>                   | <b>25</b> |
|          | <b>ANNEX D. USER MANUAL / BLOCK DIAGRAM / SCHEMATICS / PART LIST .....</b> | <b>30</b> |
|          | <b>ANNEX E. DECLARATION OF SIMILARITY .....</b>                            | <b>31</b> |

## 1 EXECUTIVE SUMMARY & EUT INFORMATION

The purpose of this test programme was to demonstrate compliance of the b mobile HK Limited, Mobile Phone and model AX515 against the current Stipulated Standards. The Mobile Phone has demonstrated compliance with the FCC Part 15 Subpart B Class B: 2012, ANSI C63.4: 2003.

### EUT Information

|                                                    |                                                                |
|----------------------------------------------------|----------------------------------------------------------------|
| <b>EUT Description</b>                             | : <b>Mobile Phone</b>                                          |
| <b>Main Model</b>                                  | : <b>AX515</b>                                                 |
| <b>Serial Model</b>                                | : <b>N/A</b>                                                   |
|                                                    | <b>B mobile AC Adapter</b>                                     |
|                                                    | <b>Input: AC 100-240V 20mA 50/60Hz</b>                         |
|                                                    | <b>Output: DC 5.0V 500mA</b>                                   |
| <b>Input Power</b>                                 | : <b>Li-ion Battery</b>                                        |
|                                                    | <b>Model : BL-4B</b>                                           |
|                                                    | <b>Charging Voltage:3.7V 1100 mAh</b>                          |
|                                                    | <b>Charge Cut-off Voltage: 4.2 V</b>                           |
| <b>Classification Per Stipulated Test Standard</b> | : <b>FCC Part 15 Subpart B Class B: 2012, ANSI C63.4: 2003</b> |

## **2 TECHNICAL DETAILS**

|                                        |                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>                         | <b>Compliance testing of Mobile Phone with stipulated standard</b>                                                                                                                                                                                                                                                                                                         |
| <b>Applicant / Client</b>              | <b>b mobile HK Limited<br/>G/F. 144 UN CHAU STREET, SHAM SHUI PO, KOWLOON HONG KONG, CHINA</b>                                                                                                                                                                                                                                                                             |
| <b>Manufacturer</b>                    | <b>b mobile HK Limited<br/>G/F. 144 UN CHAU STREET, SHAM SHUI PO, KOWLOON HONG KONG, CHINA</b>                                                                                                                                                                                                                                                                             |
| <b>Laboratory performing the tests</b> | <b>SIEMIC Nanjing (China) Laboratories<br/>NO.2-1, Longcang Dadao, Yuhua Economic Development Zone, Nanjing, China<br/>Tel: +86(25)86730128/86730129<br/>Fax: +86(25)86730127<br/>Email: info@siemic.com</b>                                                                                                                                                               |
| <b>Test report reference number</b>    | <b>12050033-FCC-E</b>                                                                                                                                                                                                                                                                                                                                                      |
| <b>Date EUT received</b>               | <b>May 23, 2012</b>                                                                                                                                                                                                                                                                                                                                                        |
| <b>Standard applied</b>                | <b>FCC Part 15 Subpart B Class B: 2012,<br/>ANSI C63.4: 2003</b>                                                                                                                                                                                                                                                                                                           |
| <b>Dates of test</b>                   | <b>June 04, 2012</b>                                                                                                                                                                                                                                                                                                                                                       |
| <b>No of Units</b>                     | <b>#1</b>                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Equipment Category</b>              | <b>Class B Emission Product</b>                                                                                                                                                                                                                                                                                                                                            |
| <b>Trade Name</b>                      | <b>B mobile</b>                                                                                                                                                                                                                                                                                                                                                            |
| <b>RF Operating Frequency (ies)</b>    | <b>GSM850 TX: 824.2 ~ 848.8 MHz; RX: 869.2 ~ 893.8 MHz<br/>PCS1900 TX: 1850.2 ~ 1909.8 MHz; RX: 1930.2 ~ 1989.8 MHz<br/>UMTS-FDD Band V TX: 826.4 ~ 846.6 MHz; RX: 871.4 ~ 891.6 MHz<br/>UMTS-FDD Band II TX: 1852.4 ~ 1907.6 MHz; RX: 1932.4 ~ 1987.6 MHz<br/>WLAN: 2.4GHz band: 802.11b/g; 2412-2462 MHz<br/>GPS: 1570.42 ~ 1580.42 MHz<br/>Bluetooth: 2402-2480 MHz</b> |
| <b>Number of Channels</b>              | <b>299CH (PCS1900) and 124CH (GSM850)<br/>UMTS-FDD Band V : 102CH<br/>UMTS-FDD Band II : 277CH<br/>Bluetooth: 79CH<br/>WiFi: 11CH</b>                                                                                                                                                                                                                                      |
| <b>Modulation</b>                      | <b>GSM / GPRS: GMSK<br/>UMTS-FDD: QPSK<br/>WLAN: DSSS<br/>Bluetooth: GFSK</b>                                                                                                                                                                                                                                                                                              |
| <b>FCC ID</b>                          | <b>ZSW-AX510-AX515</b>                                                                                                                                                                                                                                                                                                                                                     |

### 3 MODIFICATION

**NONE**

## 4 TEST SUMMARY

The product was tested in accordance with the following specifications.  
All testing has been performed according to below product classification:

### Class B Emission Product

#### Test Results Summary

| Emissions                                                |                             |               |             |
|----------------------------------------------------------|-----------------------------|---------------|-------------|
| Test Standard                                            | Description                 | Product Class | Pass / Fail |
| FCC Part 15 Subpart B Class B:<br>2012, ANSI C63.4: 2003 | AC Line Conducted Emissions | See Above     | Pass        |
| FCC Part 15 Subpart B Class B:<br>2012, ANSI C63.4: 2003 | Radiated Emissions          | See Above     | Pass        |

All measurement uncertainty is not taken into consideration for all presented test result.

## 5 MEASUREMENTS, EXAMINATION AND DERIVED RESULTS

### 5.1 AC Line Conducted Emissions Test Result

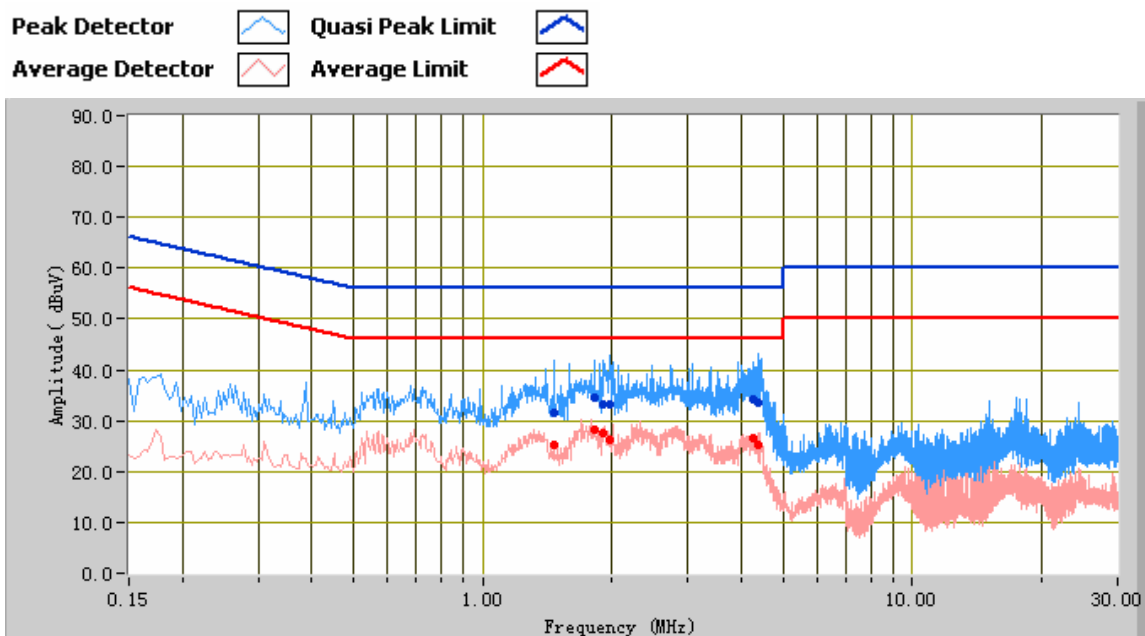
Note:

1. All possible modes of operation were investigated. Only the 6 worst case emissions measured, using the correct CISPR and Average detectors, are reported. All other emissions were relatively insignificant.
2. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. Conducted Emissions Measurement Uncertainty  
All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 9 kHz – 30 MHz (Average & Quasi-peak) is  $\pm 3.86\text{dB}$ .
4. Environmental Conditions

|                      |          |
|----------------------|----------|
| Temperature          | 16°C     |
| Relative Humidity    | 50%      |
| Atmospheric Pressure | 1009mbar |
5. Test date : June 04, 2012  
Tested By : Deon Dai

**Test Result: Pass**

|                   |                                   |
|-------------------|-----------------------------------|
| <b>Test Mode:</b> | <b>Charging &amp; Downloading</b> |
|-------------------|-----------------------------------|

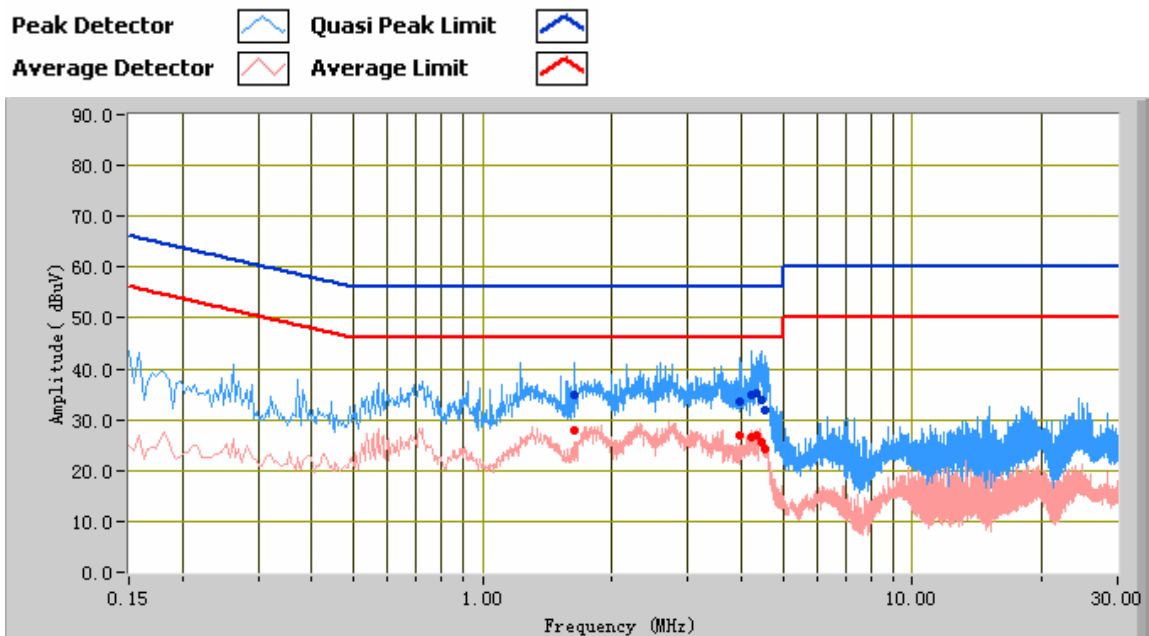


### Test Data

Phase Line Plot at 120Vac, 60Hz

| Frequency (MHz) | Quasi Peak (dBμV) | Limit (dBμV) | Margin (dB) | Average (dBμV) | Limit (dBμV) | Margin (dB) | Factors (dB) |
|-----------------|-------------------|--------------|-------------|----------------|--------------|-------------|--------------|
| 4.38            | 33.39             | 56.00        | -22.61      | 25.37          | 46.00        | -20.63      | 10.44        |
| 1.98            | 33.15             | 56.00        | -22.85      | 26.36          | 46.00        | -19.64      | 10.20        |
| 1.46            | 31.62             | 56.00        | -24.38      | 25.36          | 46.00        | -20.64      | 10.18        |
| 1.91            | 33.10             | 56.00        | -22.90      | 27.56          | 46.00        | -18.44      | 10.20        |
| 1.82            | 34.61             | 56.00        | -21.39      | 28.18          | 46.00        | -17.82      | 10.19        |
| 4.26            | 34.12             | 56.00        | -21.88      | 26.51          | 46.00        | -19.49      | 10.46        |

|                   |                                   |
|-------------------|-----------------------------------|
| <b>Test Mode:</b> | <b>Charging &amp; Downloading</b> |
|-------------------|-----------------------------------|

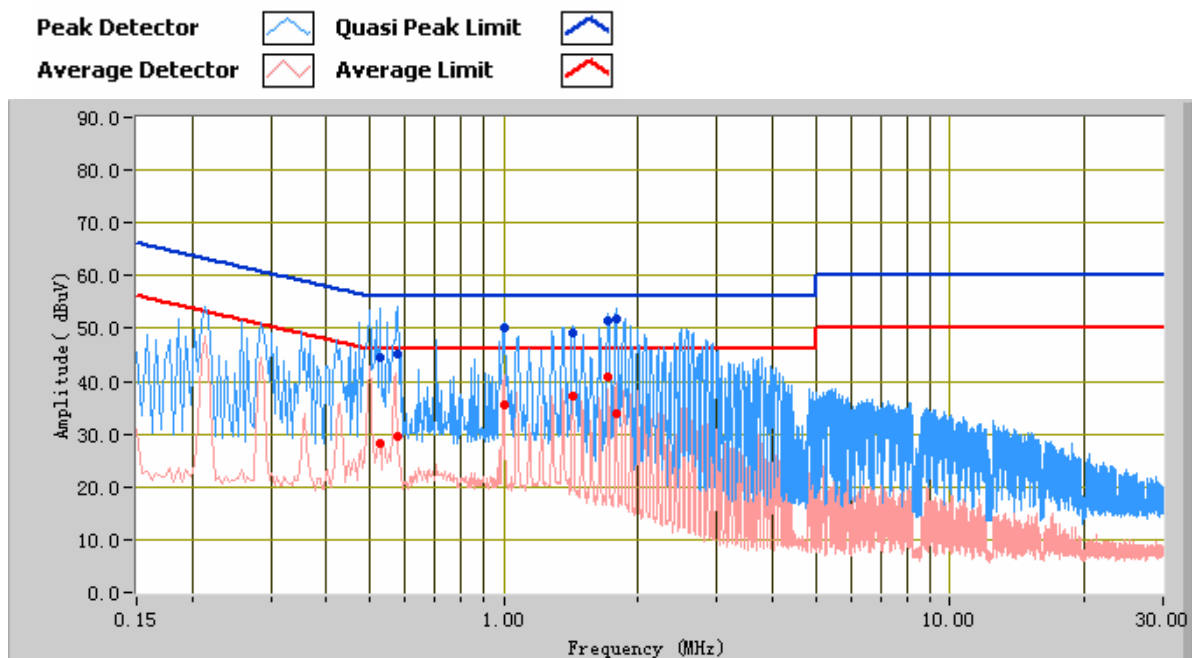


### Test Data

#### Phase Neutral Plot at 120Vac, 60Hz

| Frequency (MHz) | Quasi Peak (dBμV) | Limit (dBμV) | Margin (dB) | Average (dBμV) | Limit (dBμV) | Margin (dB) | Factors (dB) |
|-----------------|-------------------|--------------|-------------|----------------|--------------|-------------|--------------|
| 4.43            | 33.95             | 56.00        | -22.05      | 25.65          | 46.00        | -20.35      | 10.43        |
| 4.23            | 35.01             | 56.00        | -20.99      | 26.58          | 46.00        | -19.42      | 10.47        |
| 4.53            | 31.77             | 56.00        | -24.23      | 24.21          | 46.00        | -21.79      | 10.41        |
| 4.33            | 35.04             | 56.00        | -20.96      | 26.73          | 46.00        | -19.27      | 10.45        |
| 3.96            | 33.64             | 56.00        | -22.36      | 26.84          | 46.00        | -19.16      | 10.50        |
| 1.64            | 35.00             | 56.00        | -21.00      | 27.93          | 46.00        | -18.07      | 10.19        |

|                   |                           |
|-------------------|---------------------------|
| <b>Test Mode:</b> | <b>GPS Receiving Mode</b> |
|-------------------|---------------------------|

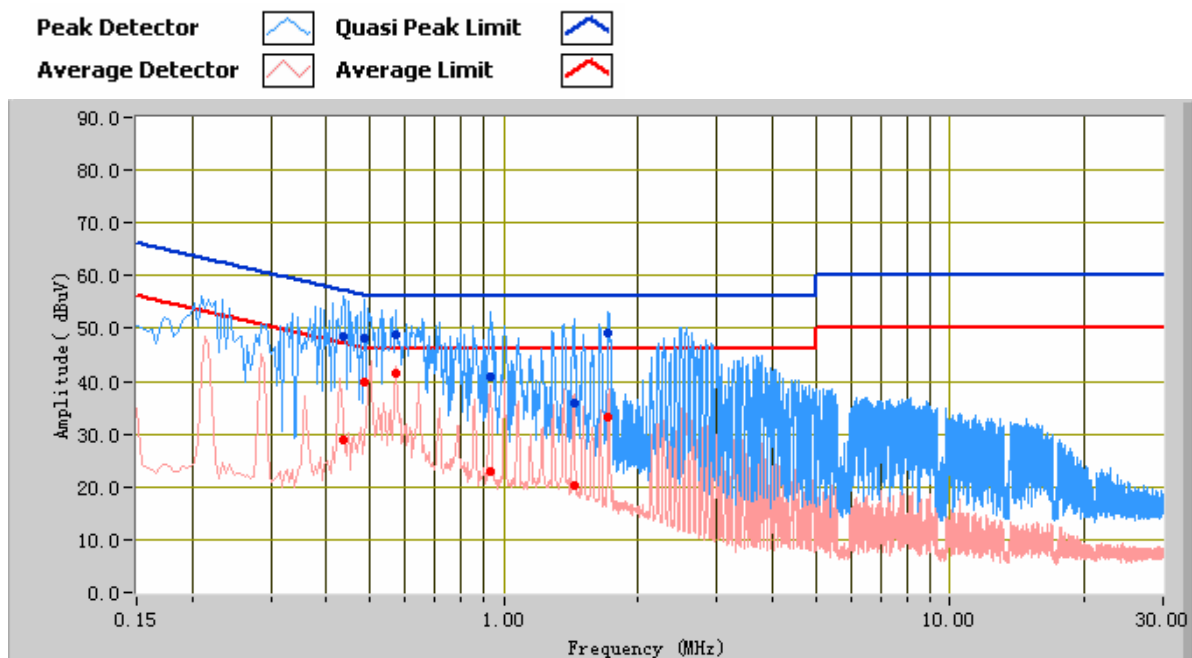


### Test Data

Phase Line Plot at 120Vac, 60Hz

| Frequency (MHz) | Quasi Peak (dBμV) | Limit (dBμV) | Margin (dB) | Average (dBμV) | Limit (dBμV) | Margin (dB) | Factors (dB) |
|-----------------|-------------------|--------------|-------------|----------------|--------------|-------------|--------------|
| 0.58            | 45.30             | 56.00        | -10.70      | 29.43          | 46.00        | -16.57      | 10.15        |
| 0.53            | 44.55             | 56.00        | -11.45      | 28.18          | 46.00        | -17.82      | 10.16        |
| 1.79            | 51.68             | 56.00        | -4.32       | 33.76          | 46.00        | -12.24      | 10.19        |
| 1.71            | 51.47             | 56.00        | -4.53       | 40.69          | 46.00        | -5.31       | 10.19        |
| 1.00            | 50.16             | 56.00        | -5.84       | 35.53          | 46.00        | -10.47      | 10.16        |
| 1.43            | 49.17             | 56.00        | -6.83       | 37.24          | 46.00        | -8.76       | 10.18        |

|                   |                           |
|-------------------|---------------------------|
| <b>Test Mode:</b> | <b>GPS Receiving Mode</b> |
|-------------------|---------------------------|



### Test Data

**Phase Neutral Plot at 120Vac, 60Hz**

| Frequency (MHz) | Quasi Peak (dBuV) | Limit (dBuV) | Margin (dB) | Average (dBuV) | Limit (dBuV) | Margin (dB) | Factors (dB) |
|-----------------|-------------------|--------------|-------------|----------------|--------------|-------------|--------------|
| 0.49            | 48.13             | 56.24        | -8.11       | 39.74          | 46.24        | -6.50       | 10.17        |
| 0.43            | 48.38             | 57.19        | -8.81       | 28.90          | 47.19        | -18.29      | 10.17        |
| 0.57            | 48.83             | 56.00        | -7.17       | 41.53          | 46.00        | -4.47       | 10.15        |
| 0.93            | 40.76             | 56.00        | -15.24      | 23.07          | 46.00        | -22.93      | 10.17        |
| 1.71            | 49.00             | 56.00        | -7.00       | 33.25          | 46.00        | -12.75      | 10.19        |
| 1.44            | 35.75             | 56.00        | -20.25      | 20.19          | 46.00        | -25.81      | 10.18        |

## **5.2 Radiated Emissions Test Result**

### Note:

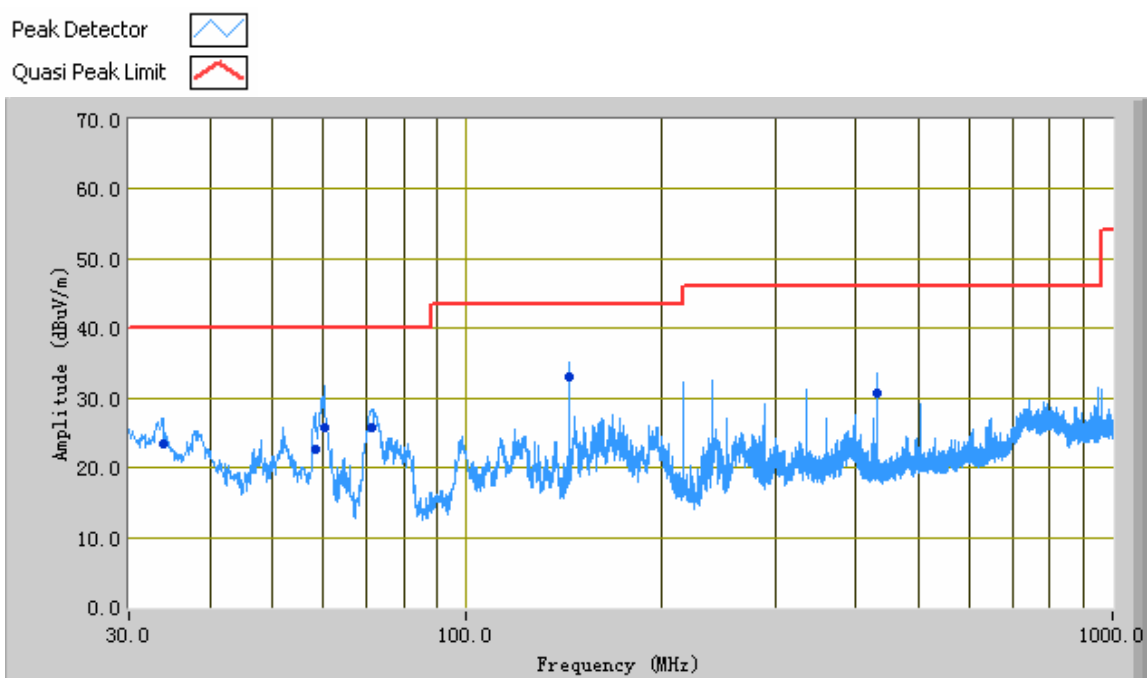
1. All possible modes of operation were investigated. Only the 6 worst case emissions measured, using the correct CISPR detectors, are reported. All other emissions were relatively insignificant.
2. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. Radiated Emissions Measurement Uncertainty  
All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 1GHz & 1GHz above ( 3m & 10m) is +5.6/-4.5dB.
4. Environmental Conditions

|                      |          |
|----------------------|----------|
| Temperature          | 16°C     |
| Relative Humidity    | 50%      |
| Atmospheric Pressure | 1009mbar |
5. Test date : June 04, 2012  
Tested By : Deon Dai

**Test Result: Pass**

|                   |                                   |
|-------------------|-----------------------------------|
| <b>Test Mode:</b> | <b>Charging &amp; Downloading</b> |
|-------------------|-----------------------------------|

### Below 1GHz

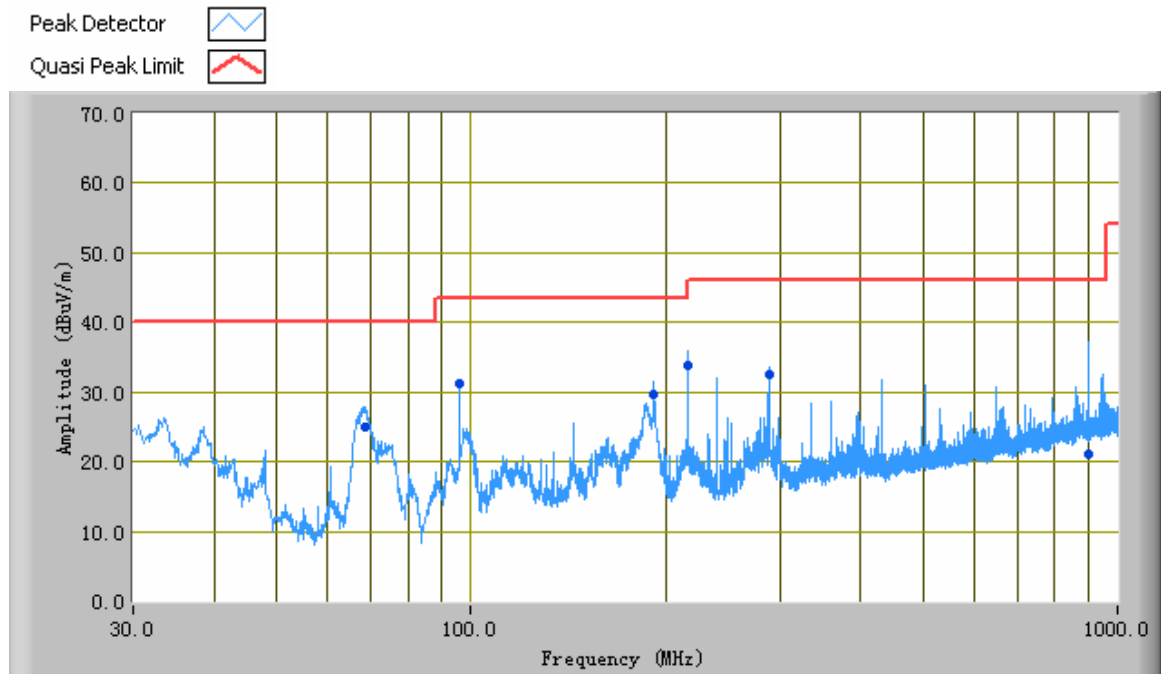


### Test Data

#### Vertical Polarity Plot @3m

| Frequency (MHz) | Quasi Peak (dBuV/m) | Azimuth | Polarity (H/V) | Height (cm) | Factors (dB) | Limit (dBuV/m) | Margin (dB) |
|-----------------|---------------------|---------|----------------|-------------|--------------|----------------|-------------|
| 60.05           | 25.85               | 88.00   | V              | 247.00      | -37.28       | 40.00          | -14.15      |
| 143.99          | 33.08               | 123.00  | V              | 110.00      | -32.06       | 43.50          | -10.42      |
| 71.62           | 25.22               | 0.00    | V              | 145.00      | -37.15       | 40.00          | -14.78      |
| 58.44           | 22.54               | 246.00  | V              | 120.00      | -36.56       | 40.00          | -17.46      |
| 432.86          | 30.60               | 189.00  | V              | 103.00      | -29.19       | 46.00          | -15.40      |
| 33.78           | 23.36               | 160.00  | V              | 101.00      | -22.70       | 40.00          | -16.64      |

|                   |                                   |
|-------------------|-----------------------------------|
| <b>Test Mode:</b> | <b>Charging &amp; Downloading</b> |
|-------------------|-----------------------------------|



**Test Data**

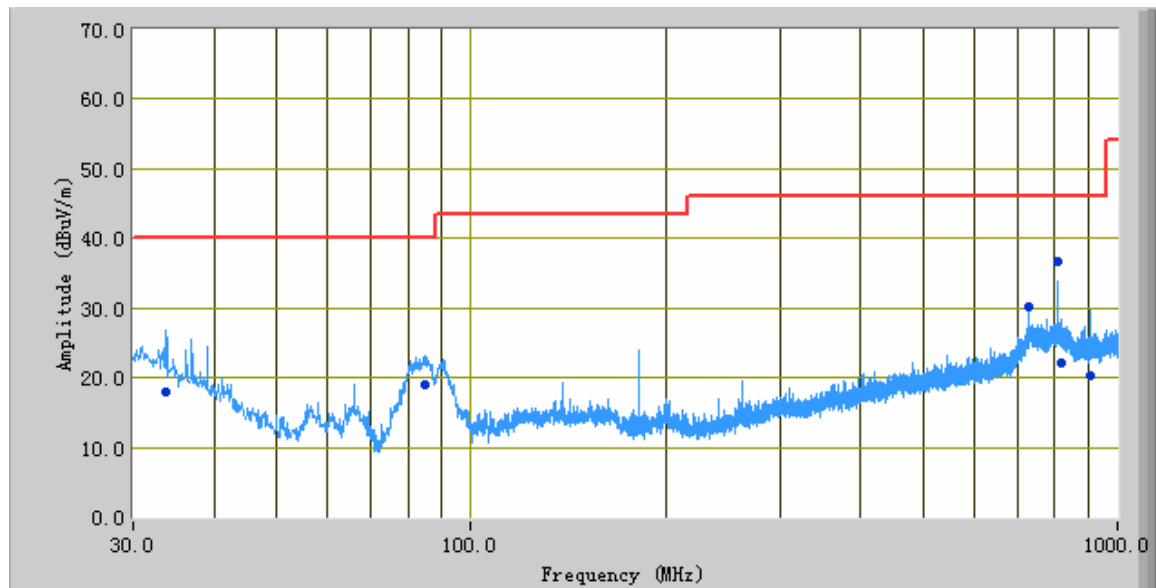
**Horizontal Polarity Plot @3m**

| Frequency (MHz) | Quasi Peak (dBμV/m) | Azimuth | Polarity (H/V) | Height (cm) | Factors (dB) | Limit (dBμV/m) | Margin (dB) |
|-----------------|---------------------|---------|----------------|-------------|--------------|----------------|-------------|
| 59.93           | 27.24               | 194.00  | H              | 268.00      | -37.56       | 40.00          | -12.76      |
| 240.03          | 37.77               | 166.00  | H              | 108.00      | -33.55       | 46.00          | -8.23       |
| 243.50          | 31.66               | 185.00  | H              | 136.00      | -33.33       | 46.00          | -14.34      |
| 144.02          | 34.61               | 208.00  | H              | 216.00      | -32.44       | 43.50          | -8.89       |
| 335.99          | 35.62               | 311.00  | H              | 107.00      | -29.71       | 46.00          | -10.38      |
| 424.65          | 14.86               | 107.00  | H              | 191.00      | -29.67       | 46.00          | -31.14      |

*Note: The data above 1 GHz which below 20 dB to the limit was not recorded.*

|                   |                           |
|-------------------|---------------------------|
| <b>Test Mode:</b> | <b>GPS Receiving Mode</b> |
|-------------------|---------------------------|

Peak Detector   
 Quasi Peak Limit 



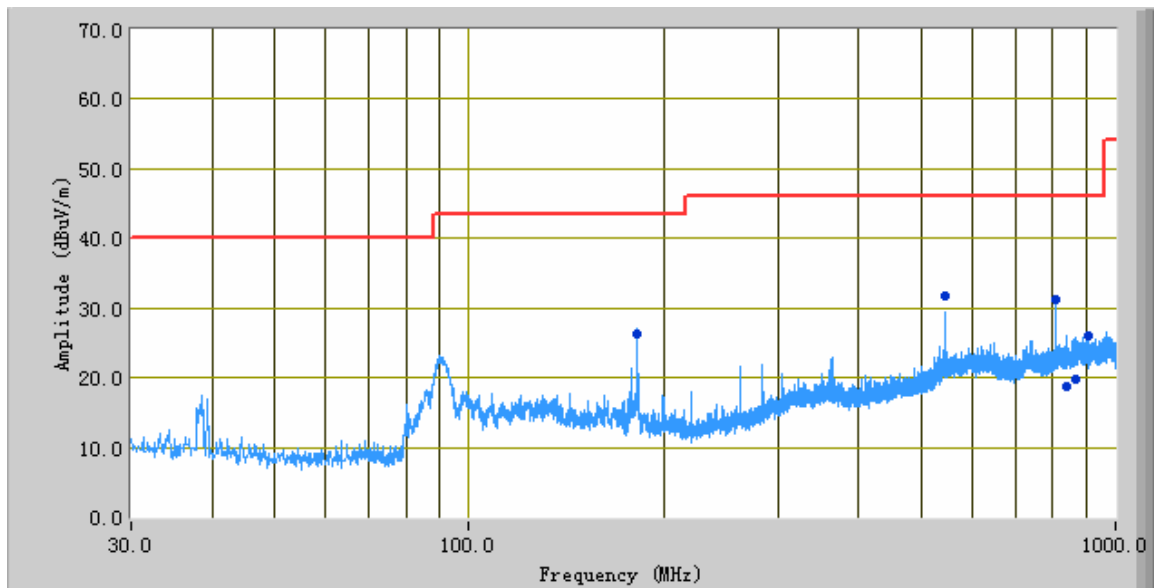
### Test Data

#### Vertical Polarity Plot @3m

| Frequency (MHz) | Quasi Peak (dBμV/m) | Azimuth | Polarity (H/V) | Height (cm) | Factors (dB) | Limit (dBμV/m) | Margin (dB) |
|-----------------|---------------------|---------|----------------|-------------|--------------|----------------|-------------|
| 806.03          | 36.56               | 205.00  | V              | 100.00      | -19.23       | 46.00          | -9.44       |
| 33.81           | 18.06               | 22.00   | V              | 110.00      | -22.55       | 40.00          | -21.94      |
| 728.01          | 30.14               | 213.00  | V              | 101.00      | -20.21       | 46.00          | -15.86      |
| 910.28          | 20.27               | 33.00   | V              | 395.00      | -19.93       | 46.00          | -25.73      |
| 85.11           | 18.89               | 135.00  | V              | 127.00      | -37.19       | 40.00          | -21.11      |
| 817.39          | 22.17               | 199.00  | V              | 348.00      | -18.40       | 46.00          | -23.83      |

|                   |                           |
|-------------------|---------------------------|
| <b>Test Mode:</b> | <b>GPS Receiving Mode</b> |
|-------------------|---------------------------|

Peak Detector   
 Quasi Peak Limit 



### Test Data

#### Horizontal Polarity Plot @3m

| Frequency (MHz) | Quasi Peak (dBμV/m) | Azimuth | Polarity (H/V) | Height (cm) | Factors (dB) | Limit (dBμV/m) | Margin (dB) |
|-----------------|---------------------|---------|----------------|-------------|--------------|----------------|-------------|
| 805.99          | 31.21               | 21.00   | H              | 108.00      | -22.63       | 46.00          | -14.79      |
| 181.99          | 26.20               | 96.00   | H              | 195.00      | -33.57       | 43.50          | -17.30      |
| 545.99          | 31.71               | 35.00   | H              | 216.00      | -25.27       | 46.00          | -14.29      |
| 840.78          | 18.72               | 252.00  | H              | 312.00      | -20.58       | 46.00          | -27.28      |
| 910.03          | 26.05               | 213.00  | H              | 109.00      | -20.63       | 46.00          | -19.95      |
| 867.41          | 19.66               | 143.00  | H              | 255.00      | -21.44       | 46.00          | -26.34      |

Note: The data above 1 GHz which below 20 dB to the limit was not recorded.

## **Annex A. TEST INSTRUMENT & METHOD**

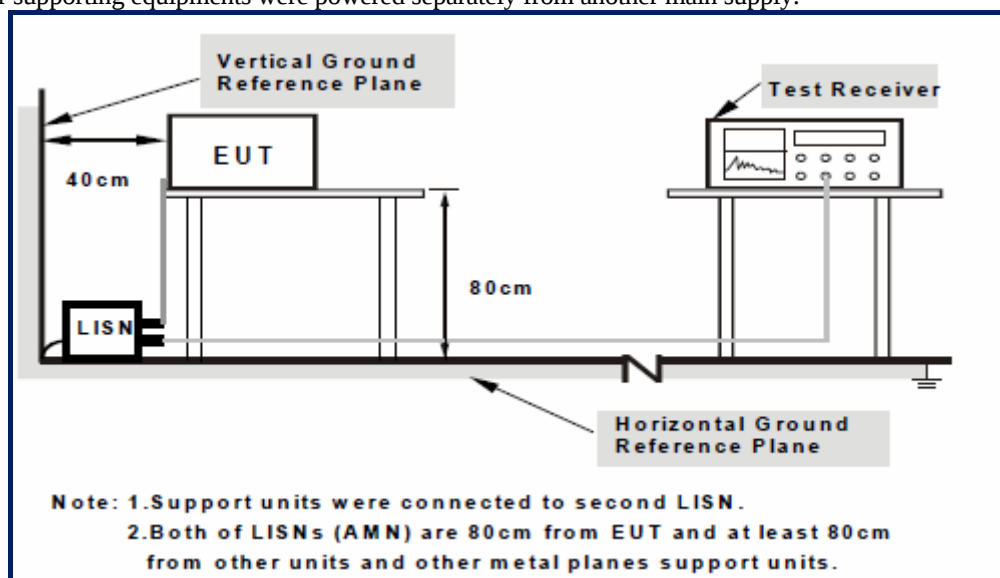
### **Annex A.i. TEST INSTRUMENTATION & GENERAL PROCEDURES**

| Instrument                         | Model                  | Calibration Date | Calibration Due Date |
|------------------------------------|------------------------|------------------|----------------------|
| <b>AC Line Conducted Emissions</b> |                        |                  |                      |
| R&S EMI Test Receiver              | ESPI3                  | 08/26/2011       | 08/25/2012           |
| Com-Power LISN                     | LI-115                 | 05/26/2012       | 05/25/2013           |
| A-INFOMW Antenna(1 ~18GHz)         | JXTXLB-10180           | 06/25/2012       | 06/24/2013           |
| <b>Radiated Emissions</b>          |                        |                  |                      |
| Hp Spectrum Analyzer               | 8563E                  | 01/10/2012       | 01/09/2013           |
| R&S EMI Receiver                   | ESPI3                  | 08/26/2011       | 08/25/2012           |
| Antenna (30MHz~2GHz)               | JB1                    | 10/04/2011       | 10/03/2012           |
| ETS-Lindgren Antenna(1 ~18 GHz)    | 3115                   | 10/04/2011       | 10/03/2012           |
| A-INFOMW Antenna(1 ~18 GHz)        | JXTXLB-10180           | 06/25/2012       | 06/24/2013           |
| Horn Antenna (18~40GHz)            | AH-840                 | 07/23/2011       | 07/22/2013           |
| Microwave Pre-Amp (18~40GHz)       | PA-840                 | Every 2000 Hours |                      |
| Hp Agilent Pre-Amplifier           | 8447F                  | 05/26/2012       | 05/25/2013           |
| MITEQ Pre-Amplifier(0.1 ~ 18GHz)   | AMF-7D-00101800-30-10P | 05/26/2012       | 05/25/2013           |
| Chamber                            | 3m                     | 04/13/2012       | 04/13/2013           |

## Annex A.ii. AC LINE CONDUCTED EMISSIONS TEST DESCRIPTION

### Test Set-up

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table, as shown in Annex B.
2. The power supply for the EUT was fed through a 50Ω/50μH EUT LISN, connected to filtered mains.
3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.
4. All other supporting equipments were powered separately from another main supply.



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration1

### Test Method

1. The EUT was switched on and allowed to warm up to its normal operating condition.
2. A scan was made on the NEUTRAL line (for AC mains) or Earth line (for DC power) over the required frequency range using an EMI test receiver.
3. High peaks, relative to the limit line, were then selected.
4. The EMI test receiver was then tuned to the selected frequencies and the necessary measurements made with a receiver bandwidth setting of 10 kHz. For FCC tests, only Quasi-peak measurements were made; while for CISPR/EN tests, both Quasi-peak and Average measurements were made.
5. Steps 2 to 4 were then repeated for the LIVE line (for AC mains) or DC line (for DC power).

### Description of Conducted Emission Program

This EMC Measurement software run LabView automation software and offers a common user interface for electromagnetic interference (EMI) measurements. This software is a modern and powerful tool for controlling and monitoring EMI test receivers and EMC test systems. It guarantees reliable collection, evaluation, and documentation of measurement results. Basically, this program will run a pre-scan measurement before it proceeds with the final measurement. The pre-scan routine will run the common scan range from 150 kHz to 30 MHz; the program will first start a peak and average scan on selectable measurement time and step size. After the program complete the pre-scan, this program will perform the Quasi Peak and Average measurement, based on the pre-scan peak data reduction result.

### **Sample Calculation Example**

At 20 MHz

limit = 250  $\mu$ V = 47.96 dB $\mu$ V

Transducer factor of LISN, pulse limiter & cable loss at 20 MHz = 11.20 dB

Q-P reading obtained directly from EMI Receiver = 40.00 dB $\mu$ V  
(Calibrated for system losses)

Therefore, Q-P margin = 47.96 – 40.00 = 7.96                      i.e. **7.96 dB below limit**

### **Annex A.iii. RADIATED EMISSIONS TEST DESCRIPTION**

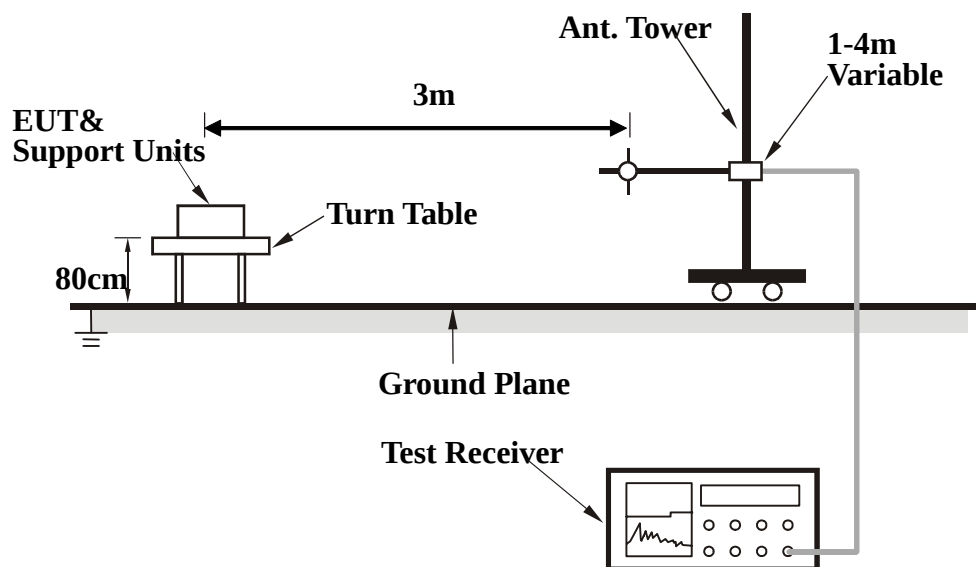
#### **EUT Characterisation**

EUT characterisation, over the frequency range from 30MHz to 10<sup>th</sup> Harmonic, was done in order to minimise radiated emissions testing time while still maintaining high confidence in the test results.

The EUT was placed in the chamber, at a height of about 0.8m on a turntable. Its radiated emissions frequency profile was observed, using a spectrum analyzer /receiver with the appropriate broadband antenna placed 3m away from the EUT. Radiated emissions from the EUT were maximised by rotating the turntable manually, changing the antenna polarisation and manipulating the EUT cables while observing the frequency profile on the spectrum analyzer / receiver. Frequency points at which maximum emissions occurred, clock frequencies and operating frequencies were then noted for the formal radiated emissions test at the Open Area Test Site (OATS) or EMC chamber.

#### **Test Set-up**

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m X 1.0m X 0.8m high, non-metallic table.
2. The filtered power supply for the EUT and supporting equipment were tapped from the appropriate power sockets located on the turntable.
3. The relevant broadband antenna was set at the required test distance away from the EUT and supporting equipment boundary.



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration2

## **Test Method**

The following procedure was performed to determine the maximum emission axis of EUT:

1. With the receiving antenna is H polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
2. With the receiving antenna is V polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
3. Compare the results derived from above two steps. So, the axis of maximum emission from EUT was determined and the configuration was used to perform the final measurement.

### **Final Radiated Emission Measurement**

1. Setup the configuration according to figure 1. Turn on EUT and make sure that it is in normal function.
2. For emission frequencies measured below 1 GHz, a pre-scan is performed in a shielded chamber to determine the accurate frequencies of higher emissions will be checked on a open test site. As the same purpose, for emission frequencies measured above 1 GHz, a pre-scan also be performed with a 1 meter measuring distance before final test.
3. For emission frequencies measured below and above 1 GHz, set the spectrum analyzer on a 100 kHz and 1 MHz resolution bandwidth respectively for each frequency measured in step 2.
4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0° to 360° with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading.
5. Repeat step 4 until all frequencies need to be measured were complete.
6. Repeat step 5 with search antenna in vertical polarized orientations.

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

| Frequency Band (MHz) | Function | Resolution bandwidth | Video Bandwidth |
|----------------------|----------|----------------------|-----------------|
| 30 to 1000           | Peak     | 100 kHz              | 100 kHz         |
| Above 1000           | Peak     | 1 MHz                | 1 MHz           |
|                      | Average  | 1 MHz                | 10 Hz           |

## **Sample Calculation Example**

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. For the limit is employed average value, therefore the peak value can be transferred to average value by subtracting the duty factor. The basic equation with a sample calculation is as follows:

$$\text{Peak} = \text{Reading} + \text{Corrected Factor}$$

where

$$\text{Corr. Factor} = \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain (if any)}$$

And the average value is

$$\text{Average} = \text{Peak Value} + \text{Duty Factor or}$$

$$\text{Set RBW} = 1\text{MHz, VBW} = 10\text{Hz.}$$

Note:

If the measured frequencies are fall in the restricted frequency band, the limit employed must be quasi peak value when frequencies are below or equal to 1 GHz. And the measuring instrument is set to quasi peak detector function.

## **Annex B. EUT AND TEST SETUP PHOTOGRAPHS**

**Please see attachment**

## **Annex C. TEST SETUP AND SUPPORTING EQUIPMENT**

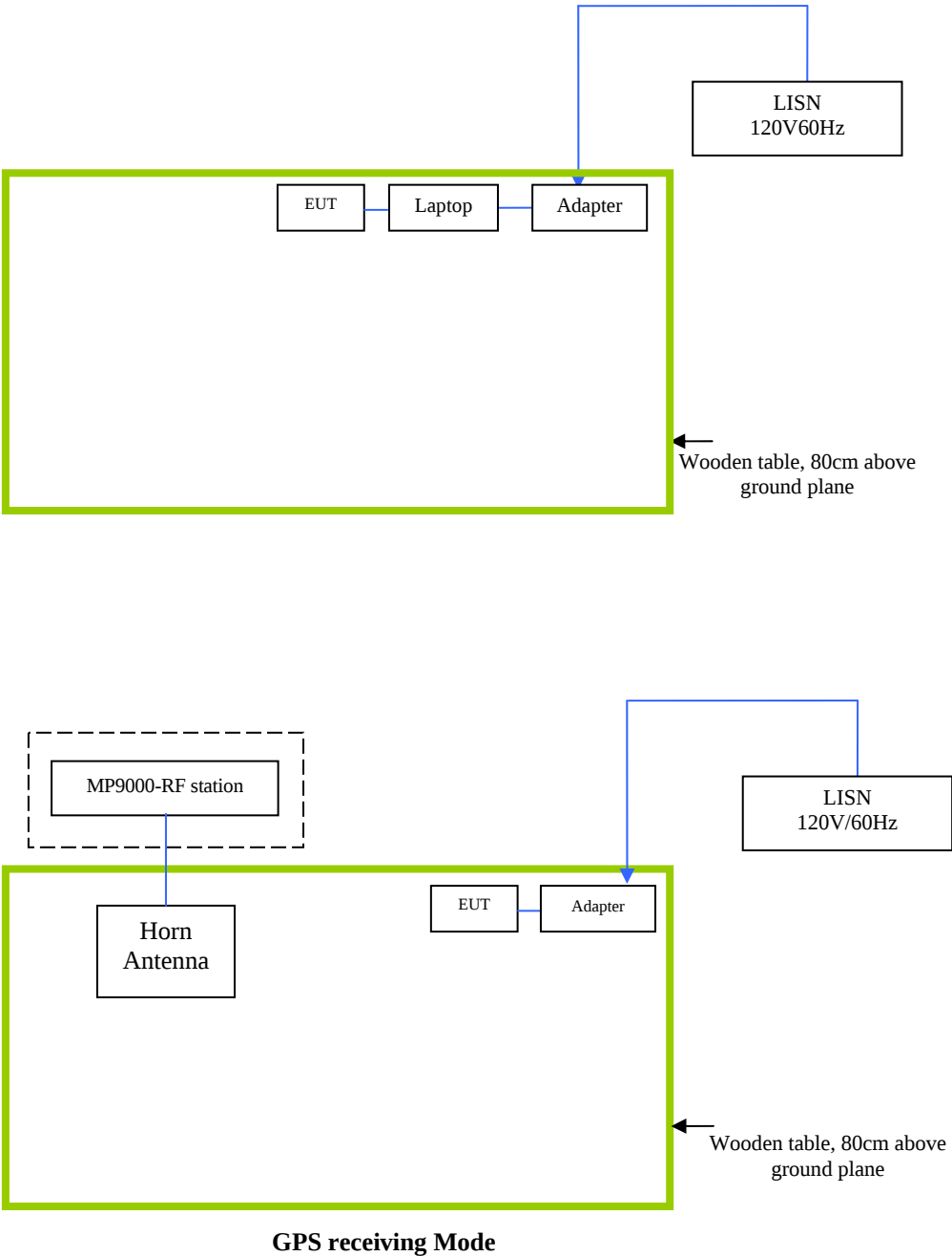
### **EUT TEST CONDITIONS**

#### **Annex C. i. SUPPORTING EQUIPMENT DESCRIPTION**

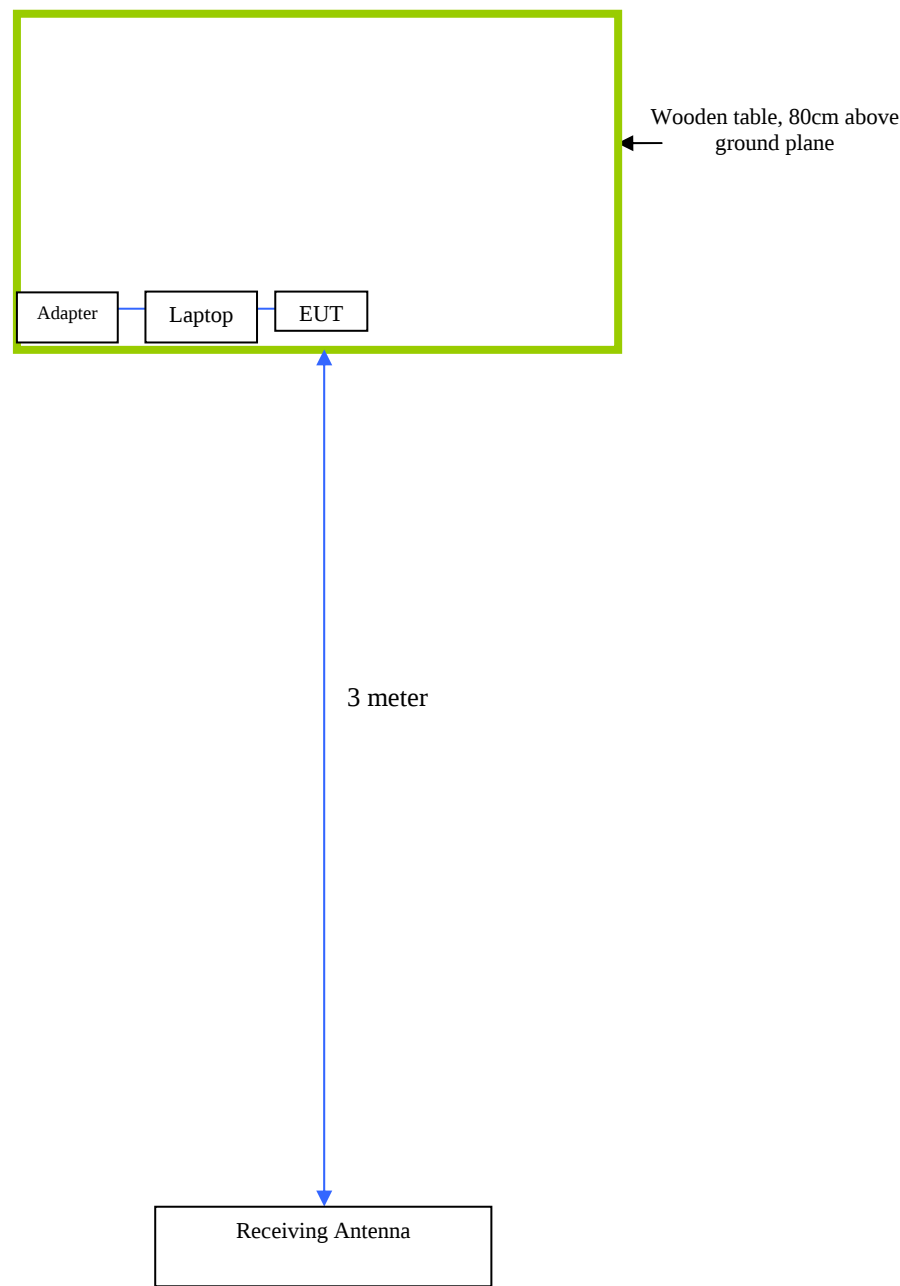
The following is a description of supporting equipment and details of cables used with the EUT.

| <b>Equipment Description<br/>(Including Brand Name)</b> | <b>Model &amp; Serial Number</b>   | <b>Cable Description<br/>(List Length, Type &amp; Purpose)</b> |
|---------------------------------------------------------|------------------------------------|----------------------------------------------------------------|
| Gateway Laptop                                          | MS2288 &<br>LXWHF02013951C3CA92200 | N/A                                                            |
| A-INFOMW                                                | Horn Antenna                       | JXTXLB-10180                                                   |
| MP9000-RF station<br>(ADIVIC)                           | MP9000                             | N/A                                                            |

**Block Configuration Diagram for Conducted Emissions**

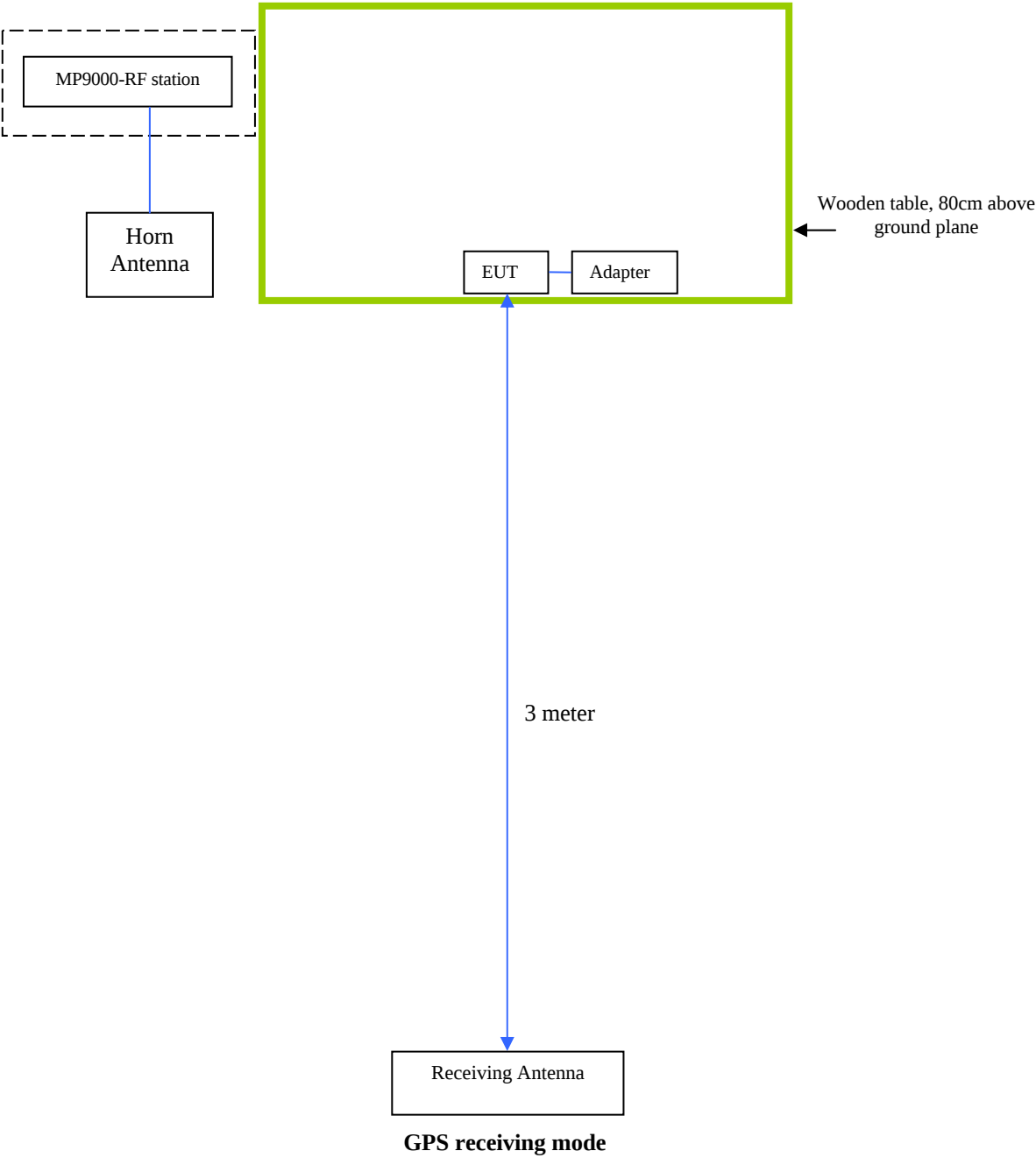


**Block Configuration Diagram for Radiated Emissions**



**Charging & Downloading mode**

**Block Configuration Diagram for Radiated Emissions**



**Annex C.ii. EUT OPERATING CONDITIONS**

The following is the description of how the EUT is exercised during testing.

| Test              | Description Of Operation |
|-------------------|--------------------------|
| Emissions Testing | Charging & Downloading   |

## **Annex D. USER MANUAL / BLOCK DIAGRAM / SCHEMATICS / PART LIST**

**Please see attachment**

## **Annex E. DECLARATION OF SIMILARITY**

N/A