TECHNICAL REPORT

卓時檢測 TIMEWAY TESTING LABORATORY

TESTING CNAS L2292

**ISO/IEC17025 Accredited Lab.**

Report No: FCC 1003346-02
File reference No: 2010-07-30

Applicant: Shenzhen Sungworld Electronics Co., Ltd

Product: EPC

Model No: E700 Series

Trademark: N/A

Test Standards: FCC Part 15 Subpart B: 2008

Test result: It is herewith confirmed and found to comply with the requirements set up by ANSI C63.4&FCC Part 15 regulations for the evaluation of electromagnetic compatibility

Approved By

Jack Chung

Jack Chung

Manager

Dated: July 30, 2010

**Results appearing herein relate only to the sample tested**
**The technical reports is issued errors and omissions exempt and is subject to withdrawal at**


**SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO LTD**

East 5/Block 4, Anhua Industrial Zone, No.8, Tairan Rd. Chegongmiao, FuTian District, Shenzhen, CHINA.

Tel (755) 83448688 Fax (755) 83442996

## Special Statement:

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

**CNAS-LAB Code: L2292**

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of testing Laboratories.

**FCC-Registration No.: 899988**

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 899988.

**IC- Registration No.: IC5205A-01**

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration IC No.: 5205A-01.

Test Report Conclusion

Content

## 1.0 General Details

1.1 Test Lab Details

| | |
|---|---|
| Name : | SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO LTD |
| Address: | East 5/Block 4, Anhua Industrial Zone, No.8,Tairan Rd. CheGongMiao, FuTian District, Shenzhen, CHINA. |
| Telephone: | (755) 83448688 |
| Fax: | (755) 83442996 |

1.2 Applicant Details

| | |
|---|---|
| Applicant: | Shenzhen Sungworld Electronics Co., Ltd |
| Address: | 4#, North District, Shangxue Industrial park, Bantian, Long Gang District, Shenzhen, China |
| Telephone: | 86-755-89580111 |
| Fax: | 86-755-89580563 |

1.3 Description of EUT

| | |
|---|---|
| Product: | EPC |
| Manufacturer: | Shenzhen Sungworld Electronics Co., Ltd |
| Brand Name: | N/A |
| Model Number: | E700 Series |

The adapter Model No.: APS-A01809020-G

Rating: Input: 100-240V~0.55A 60/50Hz ,Output: 9V, 2A

1.4 Submitted Sample: 1 Sample

1.5 Test Duration: 2010-03-10 to 2010-07-26

1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB

Radiated Emissions Uncertainty =4.7dB

1.7 Test Engineer

The sample tested by Terry Tong

Print Name: Terry Tong

## 2.0 List of Measurement Equipment

2.1 Conducted Emission Test

| Name | Model No. | Serial No. | Manufacturer | Calibration Date | Calibration Cycle |
|---|---|---|---|---|---|
| EMI Test Receiver | ESH3 | 860905/006 | RS | 2010.4.26 | 1Year |
| Spectrum Analyzer | ESA-L1500A | US37451154 | HP | 2010.4.26 | 1Year |
| PULSE LIMITER | ESH3-Z2 | 100281 | RS | 2010.4.26 | 1Year |
| LISN | ESH3-Z5 | 100294 | RS | 2010.4.26 | 1Year |
| LISN | ESH3-Z5 | 100253 | RS | 2010.4.26 | 1Year |
| LISN | LS16C | 10010947251 | AFJ | 2010-5-14 | 1Year |
| LISN (Three Phase) | NSLK 8126 | 8126453 | Schwarebeck | 2010-5-14 | 1Year |

2.2 Radiated electromagnetic disturbance test

| Name | Model No. | Serial No. | Manufacturer | Calibration Date | Calibration Cycle |
|---|---|---|---|---|---|
| EMI Test Receiver | ESVD | 100008 | RS | 2010.4.26 | 1Year |
| Coaxial Switch | MP59B | M70585 | ANRITSU | N/A | N/A |
| Spectrum Analyzer | 8595E | 3441A00893 | HP | 2010.4.26 | 1Year |
| Amplifier | 8447D | 2727A05017 | HP | 2010.4.26 | 1Year |
| Bilog Antenna | VULB9163 | 9163/340 | Schwarebeck | 2010.4.26 | 1Year |
| Horn Antenna | BBHA 9120D | 9120D-631 | Schwarebeck | 2010.07.03 | 1Year |

2.3 Auxiliary Equipment

| Name | Model No. | Serial No. | Manufacturer | Calibration Date | Calibration Cycle |
|---|---|---|---|---|---|
| Mouse | OM860XC | HM0509 | BIGCOW | Data cable of 1.5m length | FCC DOC |
| U-disk | U208 | -- | Netac | -- | FCC DOC |
| Earphone | -- | -- | -- | Data cable of 1.0m length | -- |
| SD | -- | -- | Kingston | -- | -- |

## 3.0 Technical Details

3.1 Investigations Requested

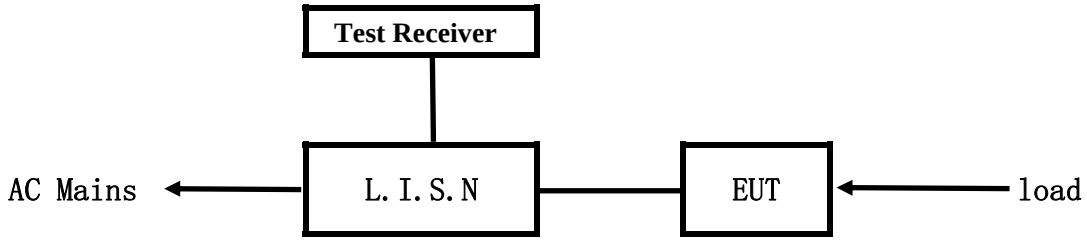
Perform Electromagnetic Interference [EMI] tests for FCC Requirement.

3.2 Test Standards

**FCC Part 15 Subpart B: 2008**

**4.0 Conducted Power line Test**

4.1 Schematics of the test



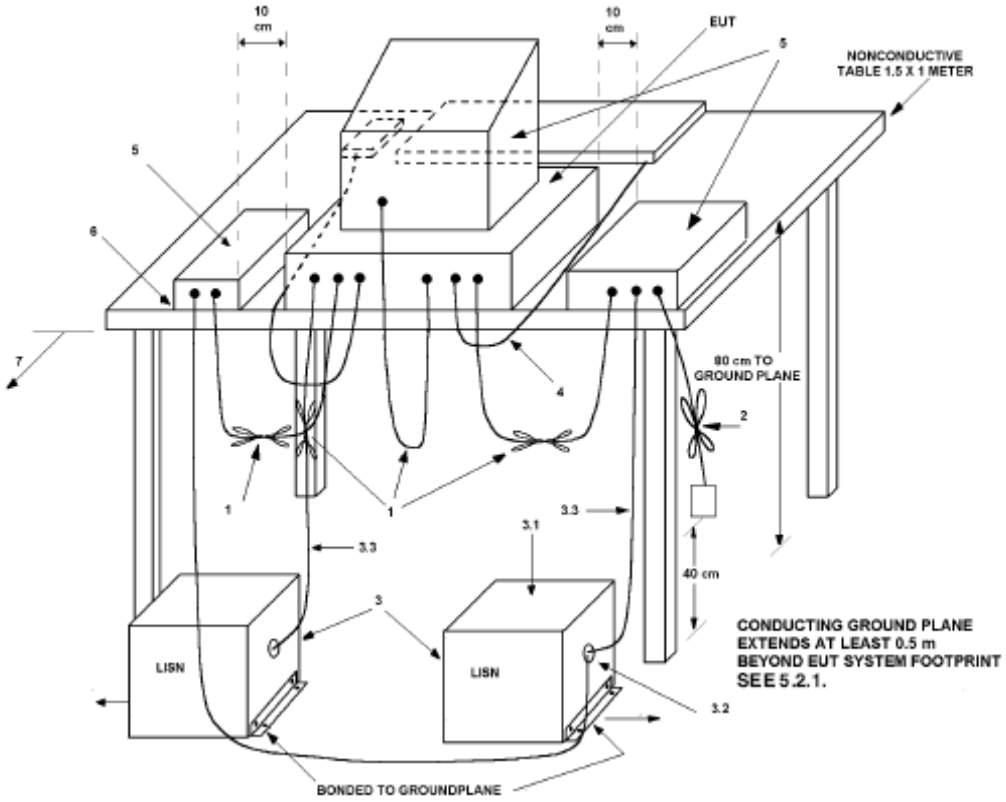

EUT: Equipment Under Test

4.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.4-2003.The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.4 –2003.Cables and peripherals were moved to find the maximum emission levels for each frequency.

Actual Working Voltage and Frequency: 120V~, 60Hz

Block diagram of Test setup



4.3 Power line conducted Emission Limit

| Frequency(MHz) | Class A Limits dB(μV) | | Class B Limits dB(μV) | |
|---|---|---|---|---|
| | Quasi-peak Level | Average Level | Quasi-peak Level | Average Level |
| 0.15 ～ 0.50 | 79.00 | 66.00 | 66.00～56.00* | 56.00～46.00* |
| 0.50 ～ 5.00 | 73.00 | 60.00 | 56.00 | 46.00 |
| 5.00 ～ 30.00 | 73.00 | 60.00 | 60.00 | 50.00 |

Notes: 1. *decreasing linearly with logarithm of frequency.

2. The tighter limit shall apply at the transition frequencies

4.4 Test Results

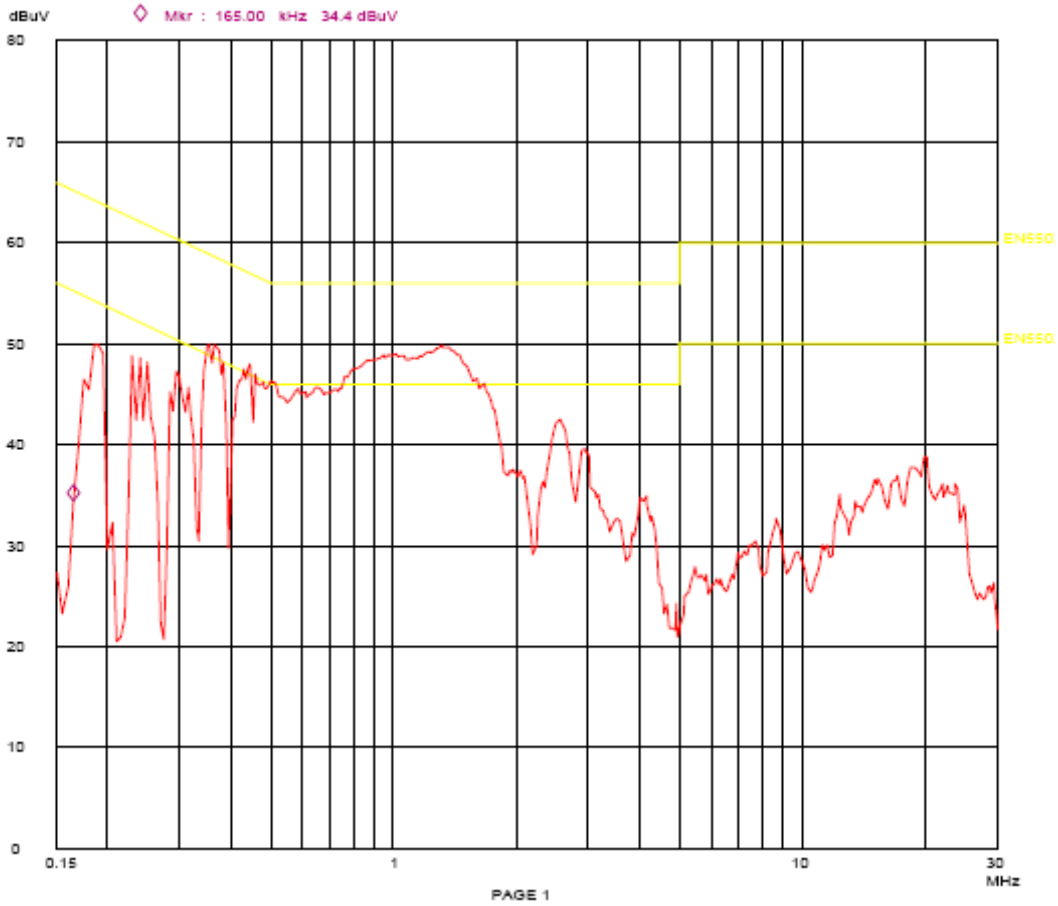
The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

## A Conducted Emission on Line Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Read USB,SD card and Running EMC test software and Ping wireless network

**Results:** **Pass**

Please refer to following diagram for individual



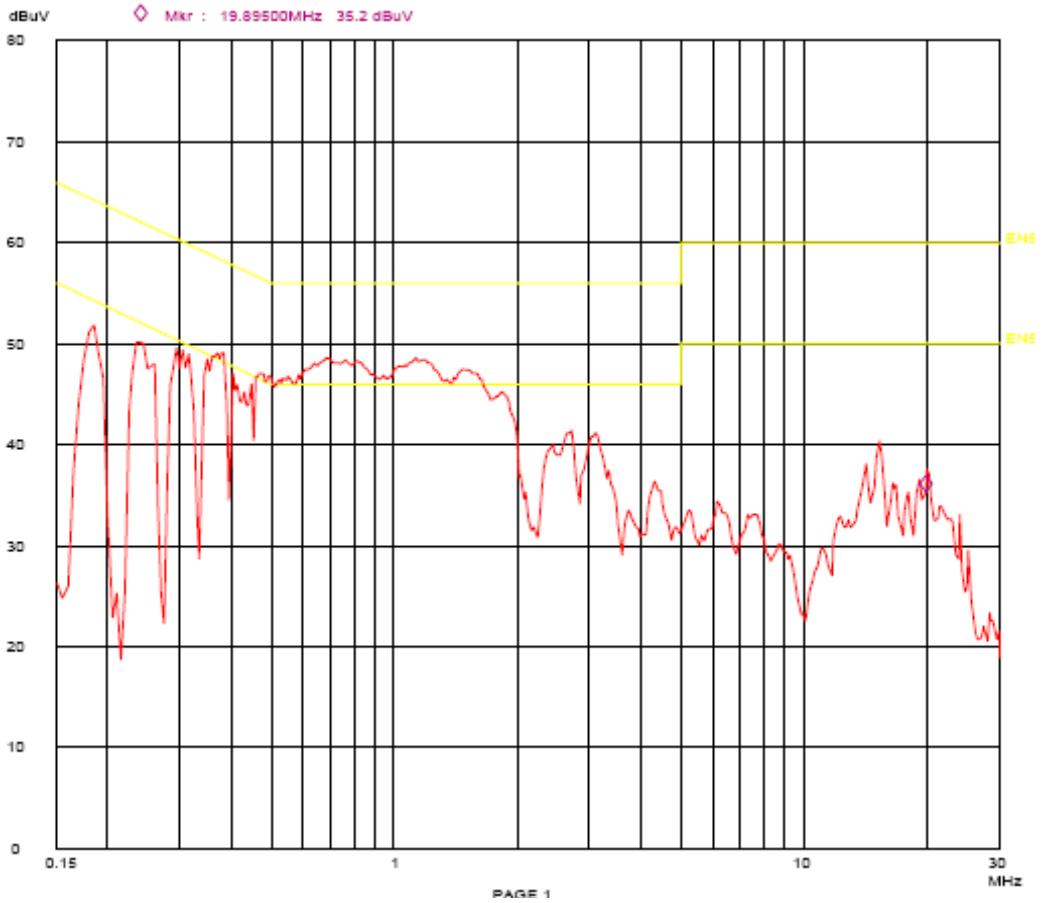

| Frequency (MHz) | Reading(dB μ V) | | | | Limit (dB μ V) | |
|---|---|---|---|---|---|---|
| | Line | | Neutral | | | |
| | Quasi-peak | Average | Quasi-peak | Average | Quasi-peak | Average |
| 0.175 | 46.80 | 34.60 | -- | -- | 64.70 | 54.70 |
| 0.375 | 46.70 | 35.90 | -- | -- | 58.40 | 48.40 |
| 3.910 | 28.70 | 24.20 | -- | -- | 56.00 | 46.00 |
| 16.060 | 31.50 | 22.50 | -- | -- | 60.00 | 50.00 |

B **Conducted Emission on Neutral Terminal of the power line (150kHz to 30MHz)**

EUT set Condition: Read USB,SD card and Running EMC test software and Ping wireless network

**Results:** **Pass**

Please refer to following diagram for individual



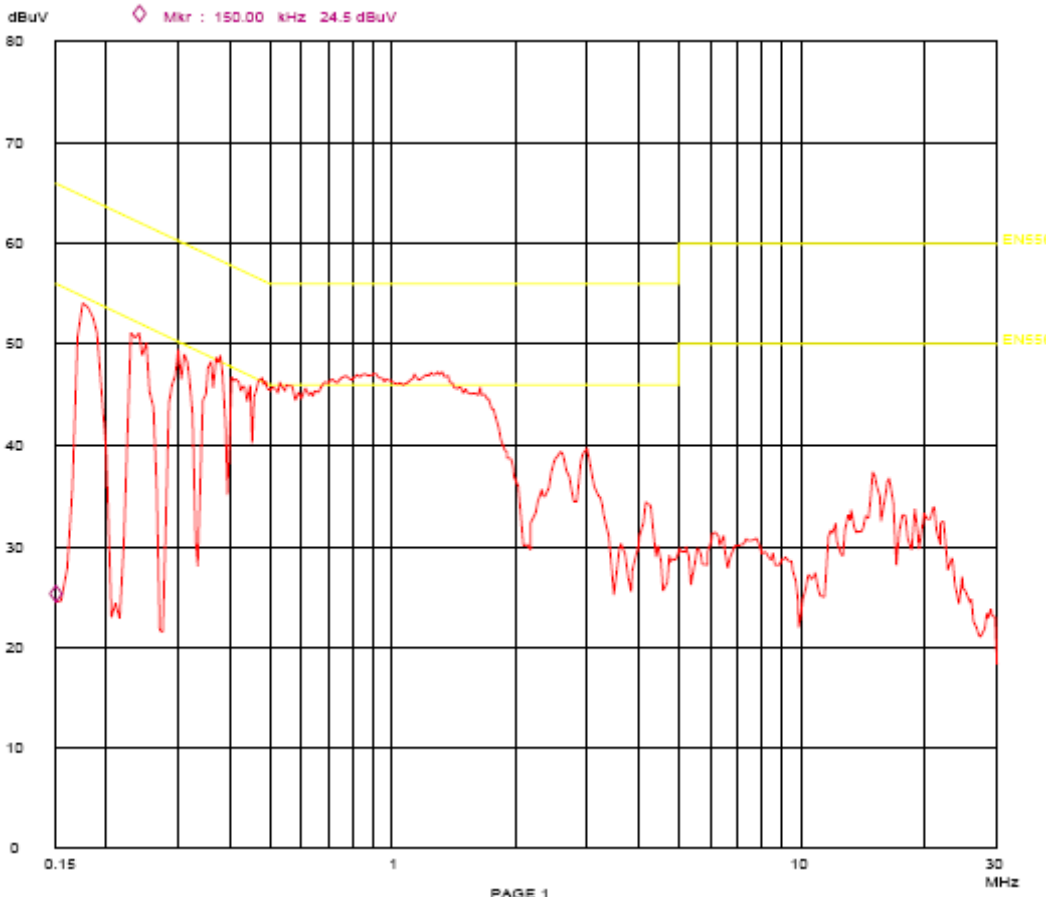

| Frequency (MHz) | Reading(dB μ V) | | | | Limit (dB μ V) | |
|---|---|---|---|---|---|---|
| | Live | | Neutral | | | |
| | Quasi-peak | Average | Quasi-peak | Average | Quasi-peak | Average |
| 0.175 | -- | -- | 48.60 | 36.50 | 64.70 | 54.70 |
| 0.380 | -- | -- | 45.70 | 33.10 | 58.30 | 48.30 |
| 4.165 | -- | -- | 31.10 | 26.50 | 56.00 | 46.00 |
| 14.980 | -- | -- | 32.80 | 24.50 | 60.00 | 50.00 |

## C Conducted Emission on Line Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Running notebook test program and Ping network

**Results:** **Pass**

Please refer to following diagram for individual



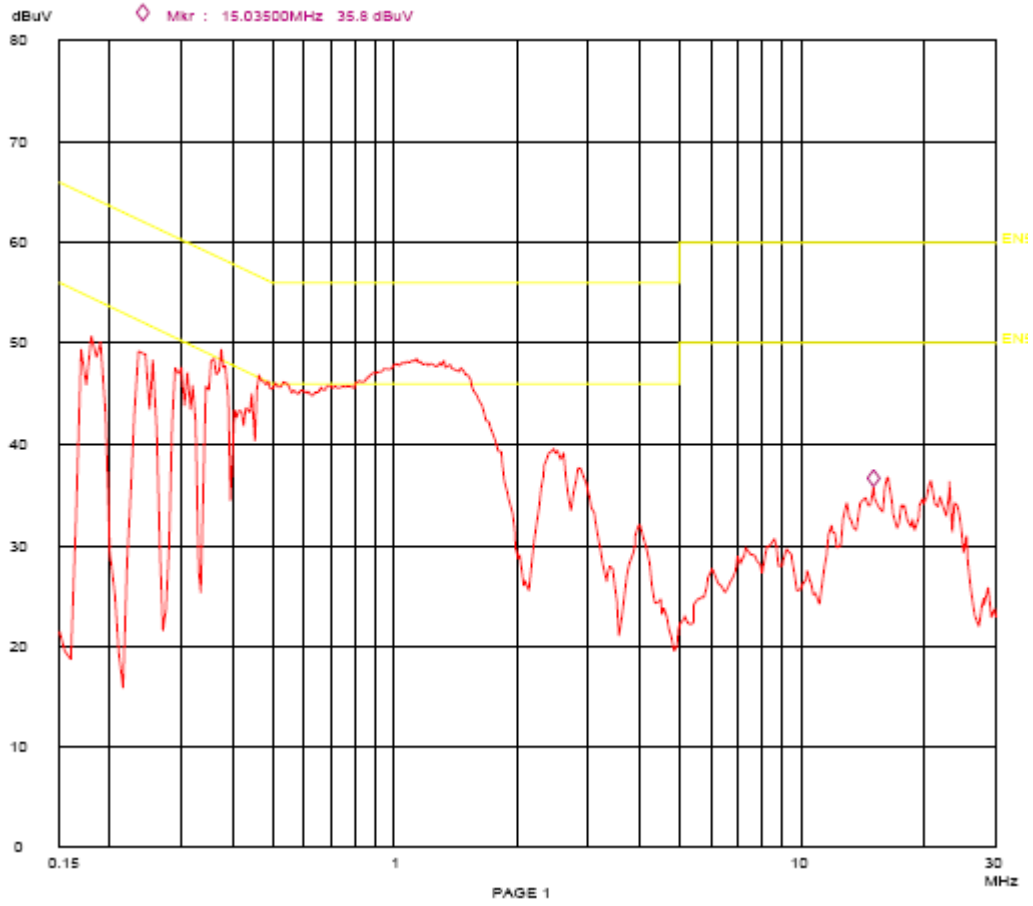

| Frequency (MHz) | Reading(dB μ V) | | | | Limit (dB μ V) | |
|---|---|---|---|---|---|---|
| | Line | | Neutral | | | |
| | Quasi-peak | Average | Quasi-peak | Average | Quasi-peak | Average |
| 0.190 | 45.00 | 32.9 | -- | -- | 64.00 | 54.00 |
| 0.240 | 43.4 | 34.6 | -- | -- | 62.10 | 52.10 |
| 0.365 | 47.4 | 37.2 | -- | -- | 58.60 | 48.60 |
| 1.325 | 48.5 | 39.0 | -- | -- | 56.00 | 46.00 |
| 19.805 | 31.1 | 25.7 | -- | -- | 60.00 | 50.00 |

D **Conducted Emission on Neutral Terminal of the power line (150kHz to 30MHz)**

EUT set Condition: Running notebook test program and Ping network

**Results:** **Pass**

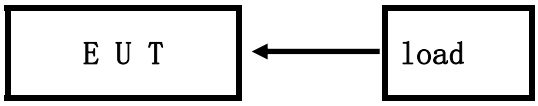
Please refer to following diagram for individual




| Frequency (MHz) | Reading(dB μ V) | | | | Limit (dB μ V) | |
|---|---|---|---|---|---|---|
| | Live | | Neutral | | | |
| | Quasi-peak | Average | Quasi-peak | Average | Quasi-peak | Average |
| 0.180 | -- | -- | 47.60 | 40.30 | 64.50 | 54.50 |
| 0.245 | -- | -- | 47.00 | 39.40 | 61.90 | 51.90 |
| 0.380 | -- | -- | 47.90 | 35.10 | 58.30 | 48.30 |
| 1.160 | -- | -- | 46.60 | 36.70 | 56.00 | 46.00 |
| 19.950 | -- | -- | 31.10 | 23.50 | 60.00 | 50.00 |

**5.0 Radiated Disturbance Test**

5.1 Schematics of the test

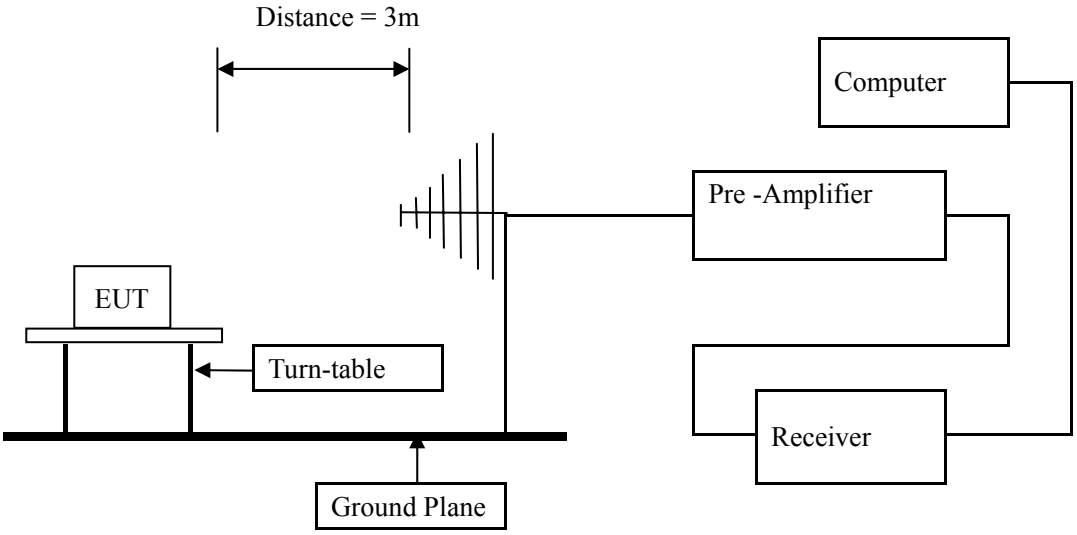


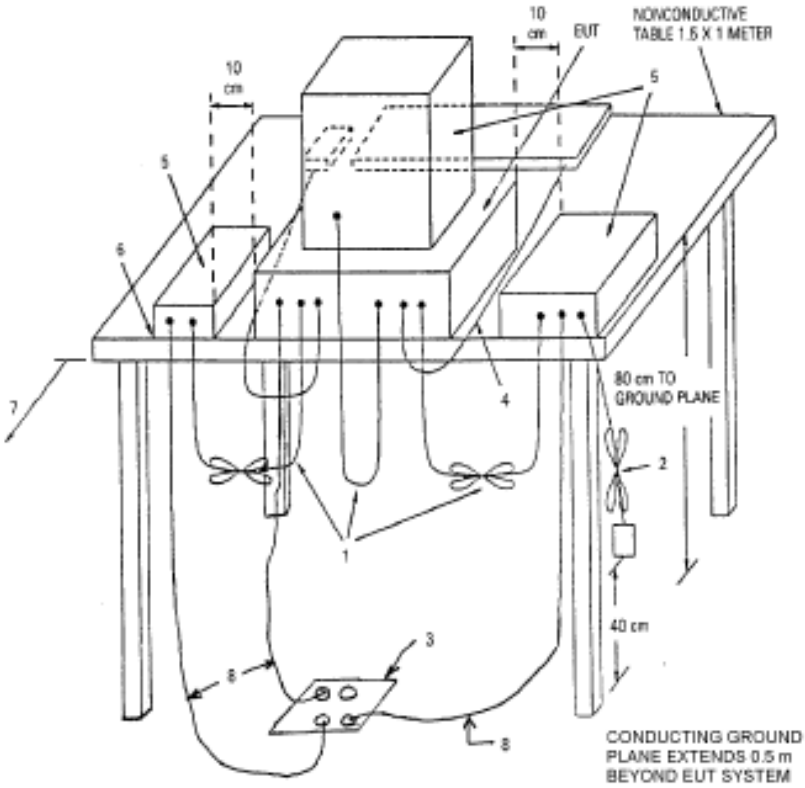

5.2 Test Method and test Procedure:

The EUT was tested according to ANSI C63.4 –2003, The frequency spectrum from 30MHz to 5GHz was investigated. All reading from 30MHz to 1GHz are quasi-peak values with a resolution bandwidth of 120kHz. For measurement above 1GHz, peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK

Actual Working Voltage and Frequency: 120V~, 60Hz

**Block diagram of Test setup**






5.3 Radiated Emission Limit

| Frequency Range (MHz) | Distance (m) | Field strength (dB μ V/m) |
|---|---|---|
| 30-88 | 3 | 40.00 |
| 88-216 | 3 | 43.50 |
| 216-960 | 3 | 46.00 |
| Above 960 | 3 | 54.00 |

Note: The lower limit shall apply at the transition frequencies

5.4 Test result

The frequency spectrum from 30MHz to 8GHz was investigated. All reading from 30MHz to 1GHz are quasi-peak values with a resolution bandwidth of 120KHz. For measurement above 1GHz, peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK. Measurements were made at 3 meters.

**Test result**

## General Radiated Emission Data and Harmonics Radiated Emission Data

**Radiated Emission In Horizontal (30MHz----8000MHz)**

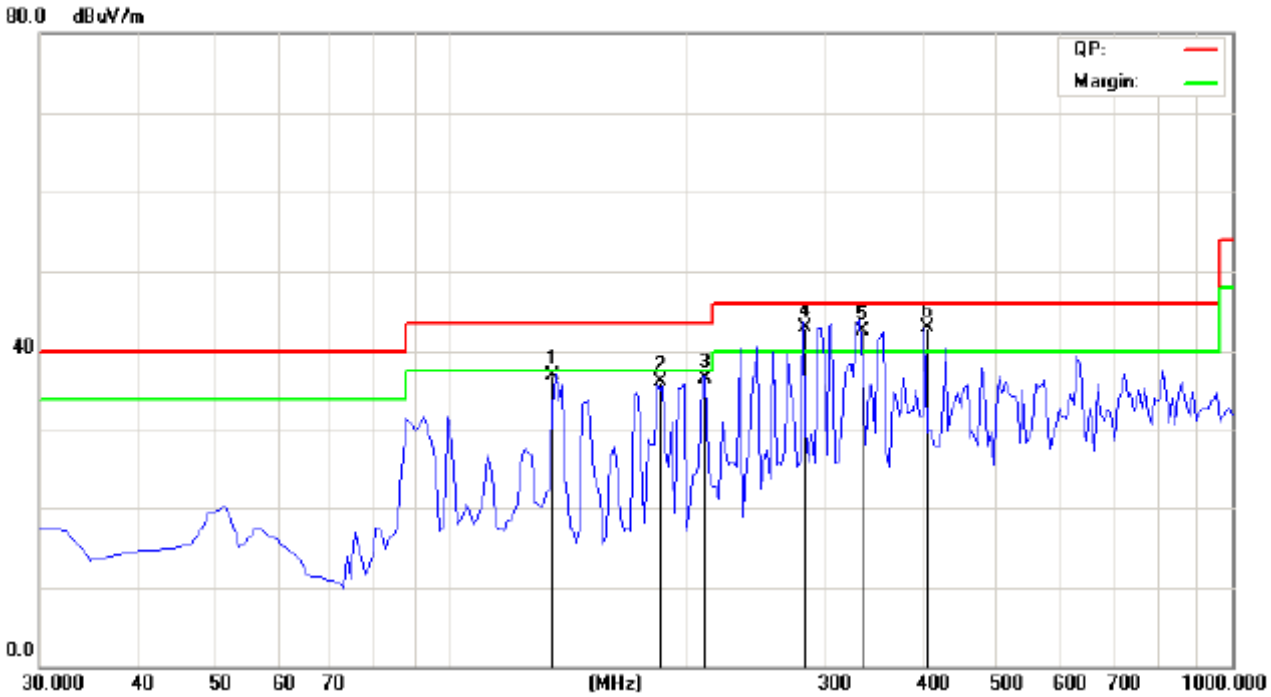
EUT set Condition: Read USB,SD card and Running EMC test software and Ping wireless network

**Results:** **Pass**

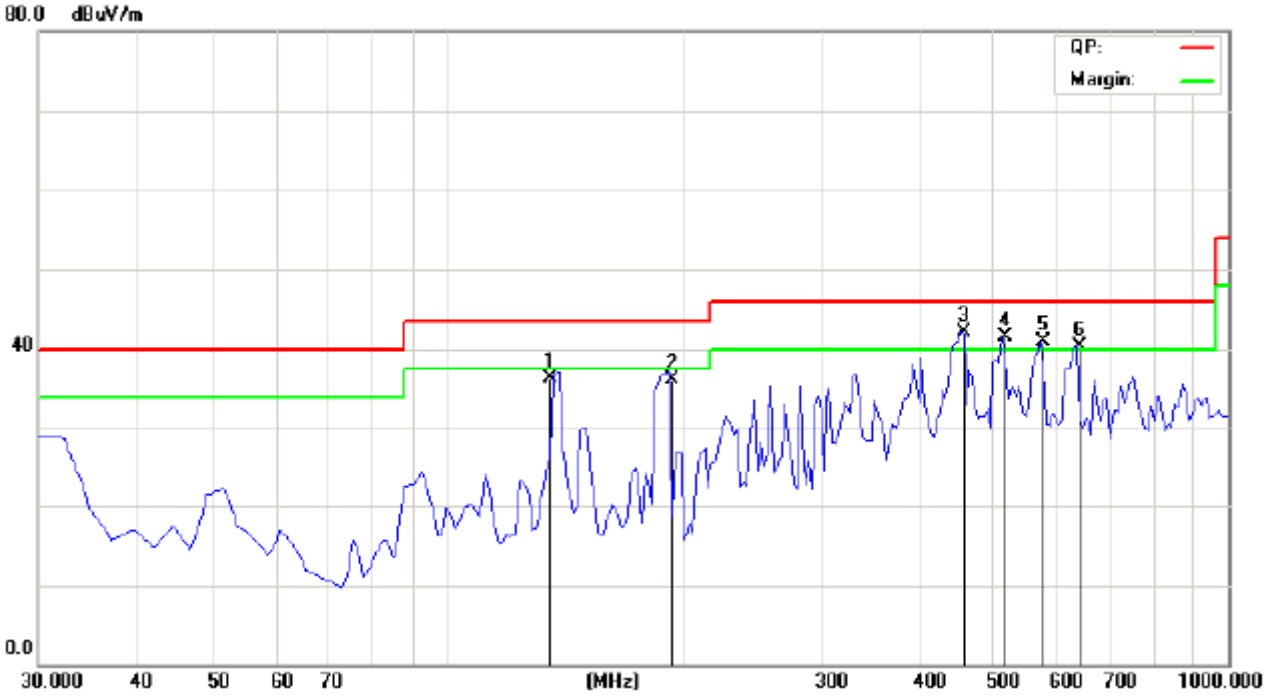
| Frequency (MHz) | Level@3m (dB μ V/m) | Antenna Polarity | Limit@3m (dB μ V/m) |
|---|---|---|---|
| 135.149 | 36.98 | H | 43.50 |
| 184.314 | 36.02 | H | 43.50 |
| 211.900 | 36.43 | H | 43.50 |
| 284.625 | 42.83 | H | 46.00 |
| 335.550 | 42.41 | H | 46.00 |
| 408.300 | 42.98 | H | 46.00 |
| | | | |
| 135.144 | 36.31 | V | 43.50 |
| 192.475 | 36.09 | V | 43.50 |
| 456.800 | 42.15 | V | 46.00 |
| 517.425 | 41.50 | V | 46.00 |
| 578.050 | 40.84 | V | 46.00 |
| 641.100 | 40.35 | V | 46.00 |

Test Figure:

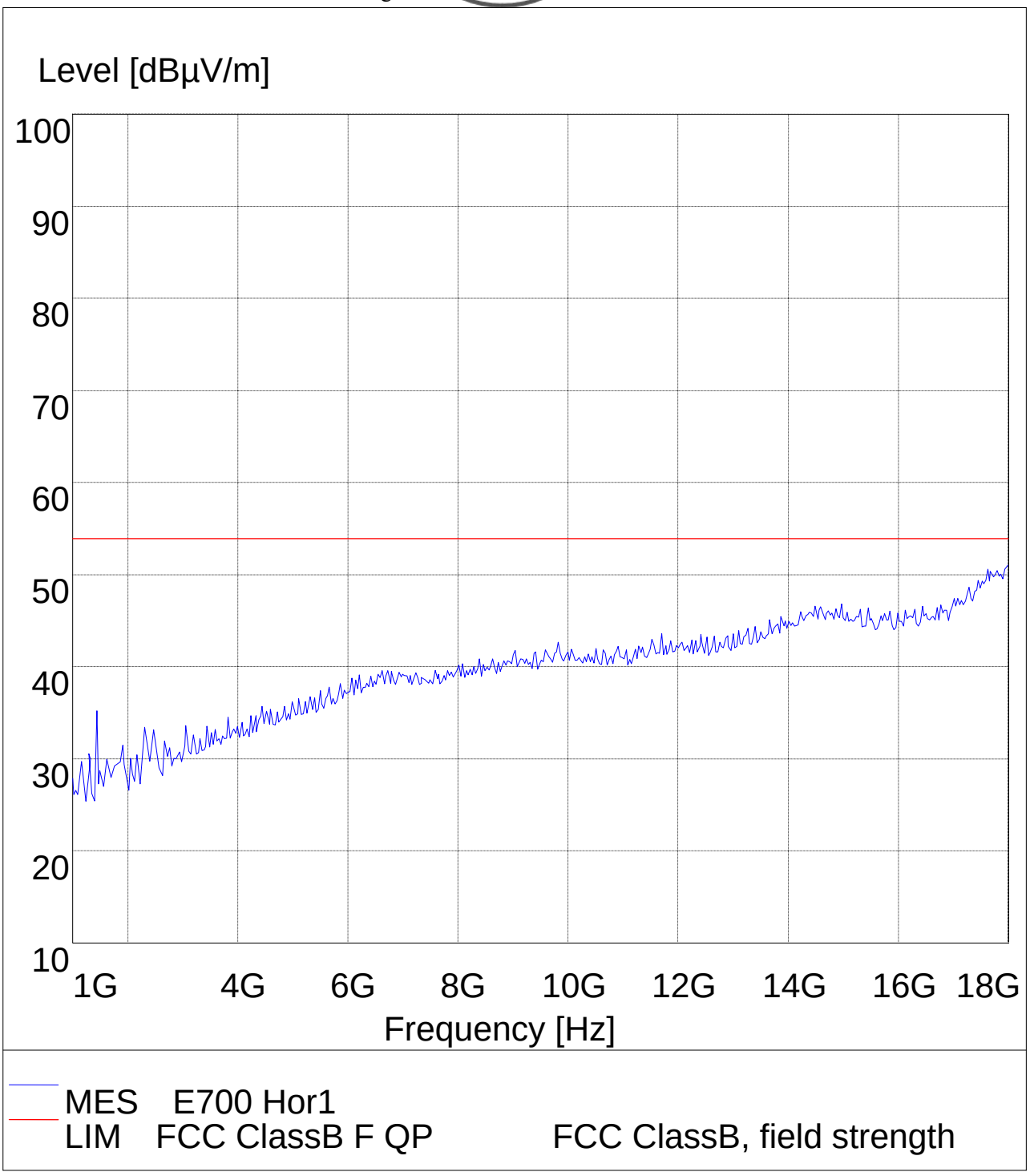
**H**



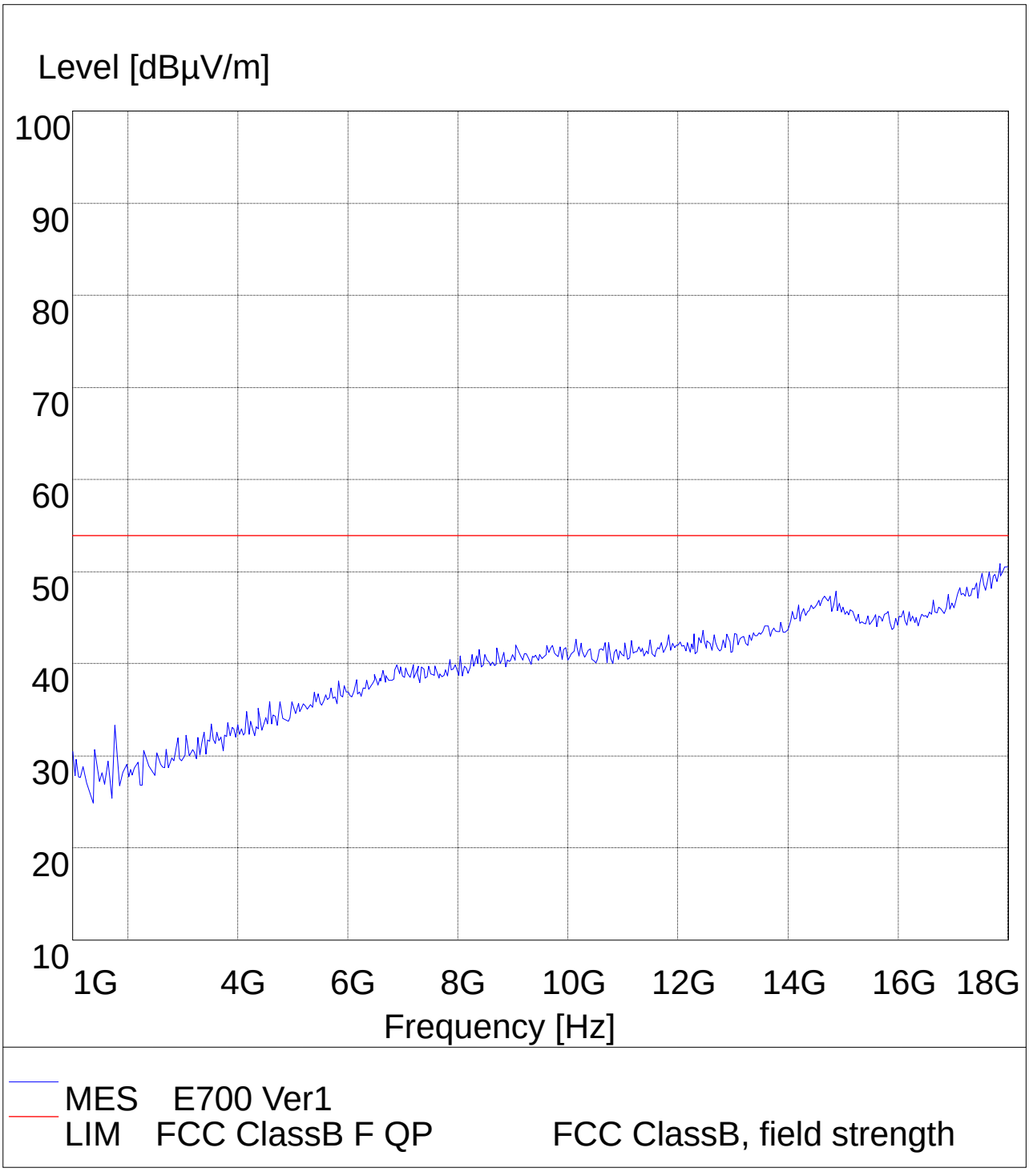

**V**



Test Figure: Horizontal



Test Figure: Vertical



**Test result**

## General Radiated Emission Data and Harmonics Radiated Emission Data

**Radiated Emission In Horizontal (30MHz----8000MHz)**

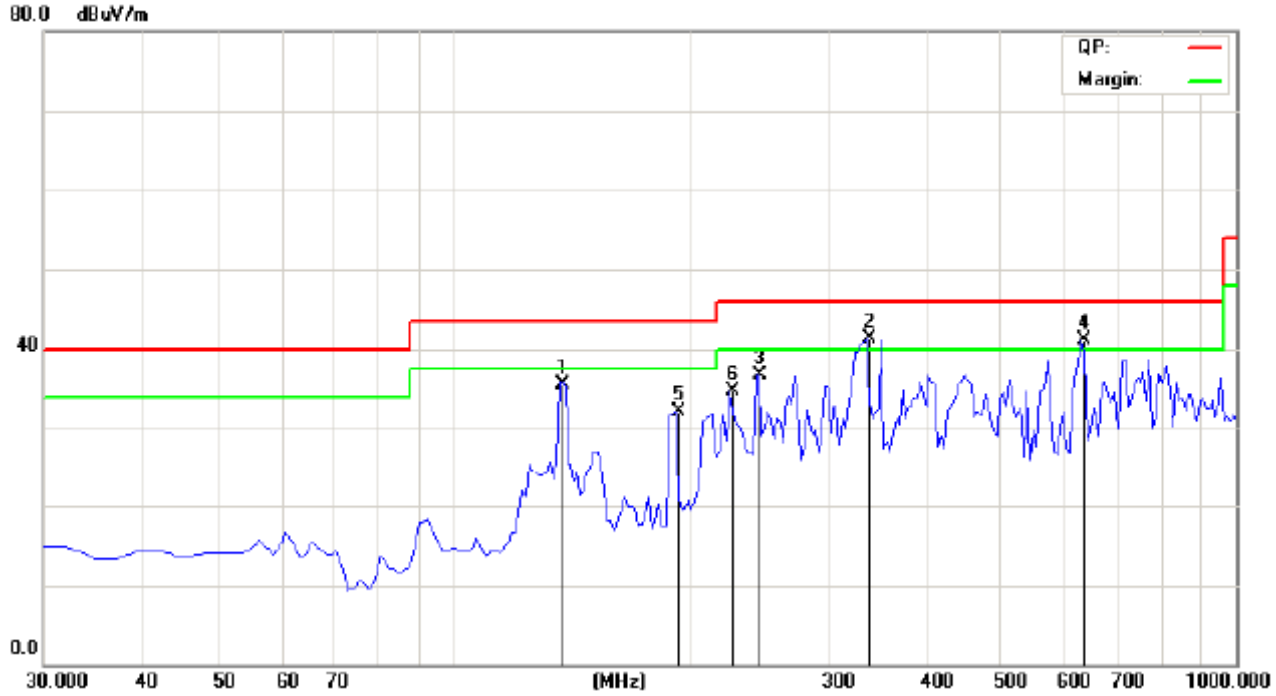
EUT set Condition: Running notebook test program and Ping network

**Results:** **Pass**

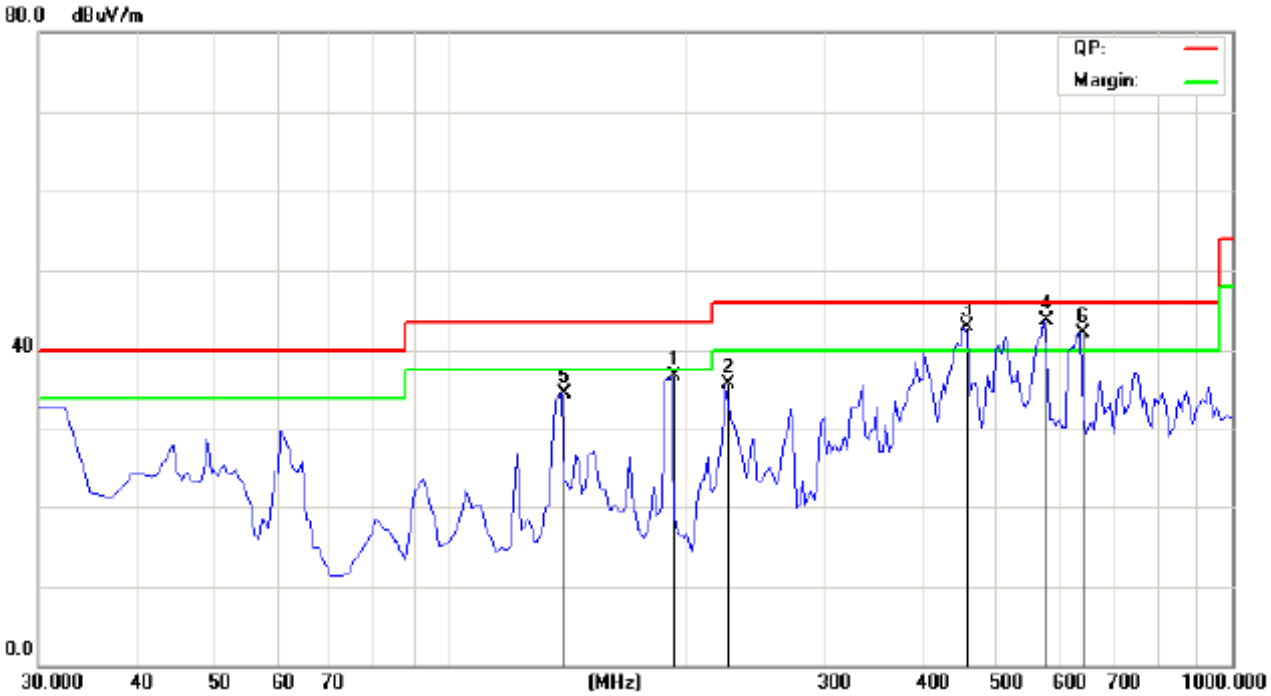
| Frequency (MHz) | Level@3m (dB μ V/m) | Antenna Polarity | Limit@3m (dB μ V/m) |
|---|---|---|---|
| 136.700 | 35.42 | H | 43.50 |
| 337.975 | 41.22 | H | 46.00 |
| 245.825 | 36.80 | H | 46.00 |
| 638.675 | 41.05 | H | 46.00 |
| 192.475 | 32.01 | H | 43.50 |
| 226.425 | 34.80 | H | 46.00 |
| | | | |
| 192.475 | 36.79 | V | 43.50 |
| 226.425 | 35.67 | V | 46.00 |
| 456.800 | 43.00 | V | 46.00 |
| 578.050 | 43.66 | V | 46.00 |
| 139.125 | 34.41 | V | 43.50 |
| 641.100 | 42.08 | V | 46.00 |

Test Figure:

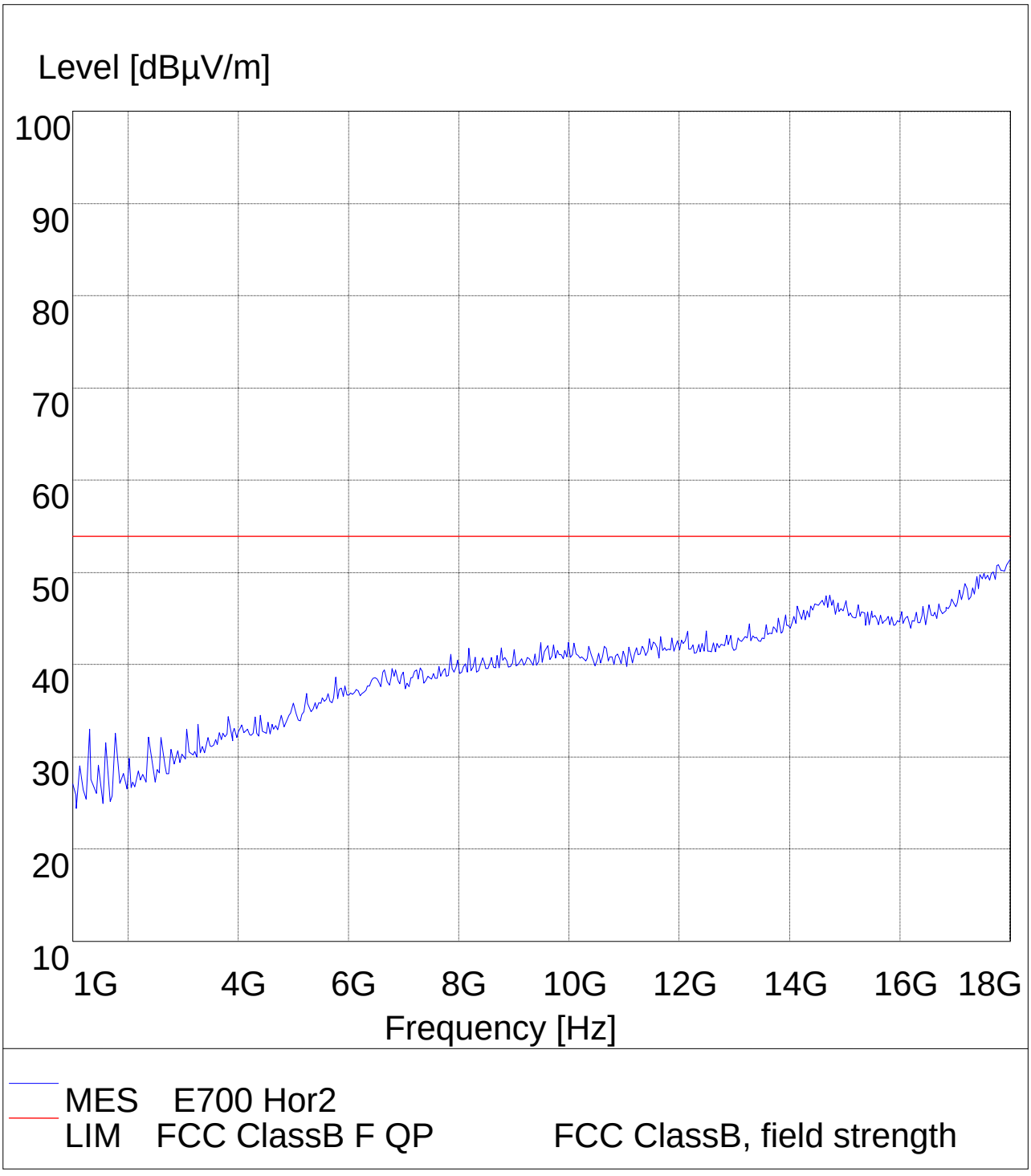
**H**



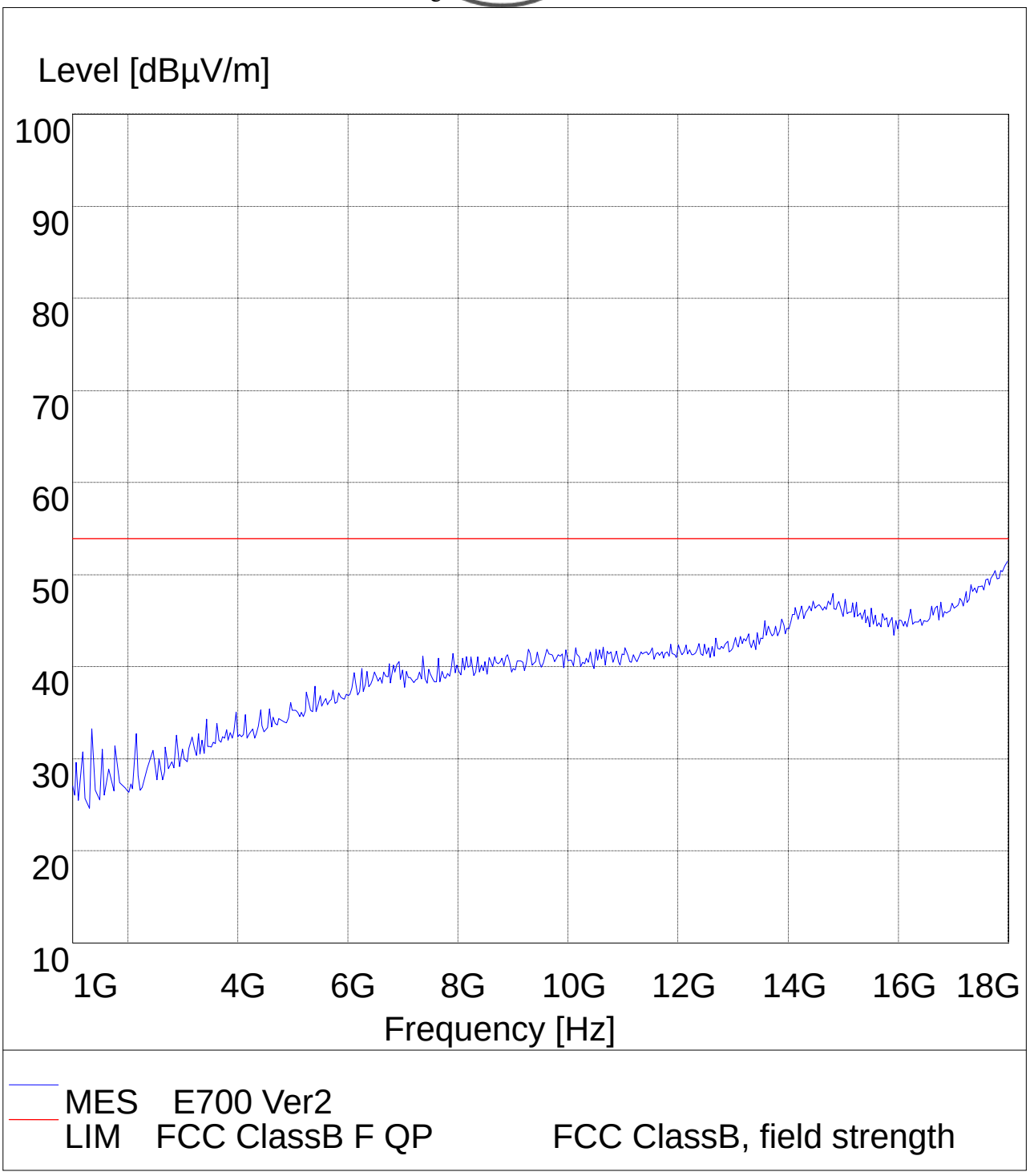

**V**



Test Figure: Horizontal



Test Figure: Vertical



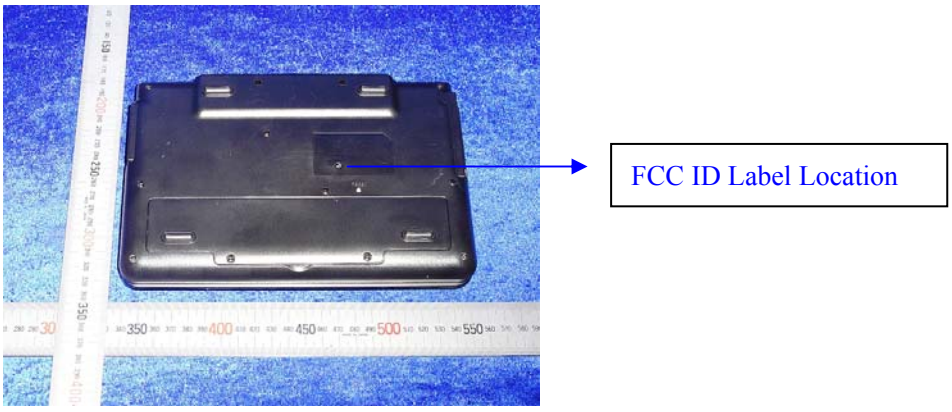
## 6.0 FCC ID Label

**FCC ID: WI3SW-E700X**

**This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.**

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

**Mark Location:**




7.0 Photo of testing

7.1 Conducted test View--
Please refer to report EMC1003074-01

7.2 Radiated emission test view--
Please refer to report EMC1003074-01

**-End of the report-**