

TEST REPORT For FCC

Test Report No. : 2010120043
Date of Issue : March 14, 2011
FCC ID : WLFSTM-7700
Model/Type No. : STM-7700
Kind of Product : Industrial PDA
Applicant : Woongjin System & Technology Co., Ltd.
Applicant Address : 18th Floor. Ace High-End Tower 3, 371-50, Gasan-dong, Geumcheon-gu, Seoul, Korea
Manufacturer : Woongjin System & Technology Co., Ltd.
Manufacturer Address : 18th Floor. Ace High-End Tower 3, 371-50, Gasan-dong, Geumcheon-gu, Seoul, Korea
Contact Person : Ki Seung Jung / Principal Research Engineer
Telephone : +82-2-2081-9321
Received Date : November 24, 2010
Test period : Start : November 24, 2010 End : March 14, 2011
Test Results : **In Compliance** **Not in Compliance**

The test results presented in this report relate only to the object tested.

Tested by



Young-taek, Lee
Test Engineer
Date: March 14, 2011

Reviewed by



Young-Joon, Park
Technical Manager
Date: March 14, 2011

REPORT REVISION HISTORY

| Date | Revision | Revision |
|-------------------|---------------------|----------|
| December 13, 2010 | Issued (2010120043) | 3.1 |
| February 14, 2011 | Correction | 3.2 |
| March 14, 2011 | Correction | 3.3 |
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1.0 General Product Description

1.0.1 Tested Equipment

- Unless otherwise indicated, all tests were conducted on Model STM-7700
- Tests performed on Model _____ were considered to be representative of Model(s) _____.

1.0.2 Equipment Size, Mobility and Identification

Dimensions: 82.2(W) by 216.2(L) by 59.2(H) mm (Outdoor Unit)
82.2(W) by 216.2(L) by 59.2(H) mm (Indoor Unit)
Mobility: Portable Table-top Built-in
 Floor-standing
Serial No.: Prototype

1.0.3 Electrical Ratings

Input 1: DC 7.4 V(Rechargeable Li-ion Battery Pack)
Output 1: -

Input 2: 9.0 Vdc (AC ADAPTER) Input: 100-240 Vac, 50-60 Hz, 1.7 A
Output: 9.0 Vdc, 5.0 A
Output 2: -

1.0.4 Test Voltage & Frequency

Unless indicated otherwise on the individual data sheet or test results, the test voltage and frequency was as indicated below.

Voltage 1: 7.4 Vdc (Battery)
Frequency 1: -

Voltage 2: 120 Vac (AC ADAPTOR)
Frequency 2: 60 Hz

1.1 Model Differences

Not applicable

1.2 Device Modifications

Not applicable

1.3 EUT Configuration(s)

See Appendix A for individual test set-up configuration(s). The following peripheral devices and/or interface cables were connected during the measurement:

[Without Cradle mode]

Peripheral Devices

| Device | Manufacturer | Model No. | Serial No. | FCC ID or DoC |
|-------------------|-------------------------------------|----------------------------------|-------------------------|---------------|
| AC ADAPTER | NingBo ISO Electronics Co., Ltd. | KPA-045E | - | - |
| Personal Computer | Samsung Electronics Co., Ltd. | DB-A150 | ZMSI96BSB00125F | DoC |
| LCD Monitor | VS17 | Lite-ON Technology Corp. | CNN5130QMC | DoC |
| Keyboard(PS/2) | Samsung Electro-Mechanics Co., Ltd. | SEM-DT35 | 33008101 | DoC |
| Mouse(USB) | Microsoft Corporation | Optical Mouse USB/PS2 Compatible | 69657-492-4974533-40420 | DoC |

Cable Description

| # | Description | Ferrite Core | Length (m) | Other Details |
|---|----------------------------|--------------|------------|---|
| 1 | AC power Cable, Unshielded | No | 1.8 | Connect to AC Power |
| 2 | AC power Cable, Unshielded | No | 1.8 | Connect to AC Power |
| 3 | D-SUB Cable, Shielded | Yes | 1.8 | Between a Personal Computer and a LCD Monitor |
| 4 | Keyboard Cable, Shielded | No | 1.5 | PS/2 type |
| 5 | Mouse Cable, Shielded | Yes | 1.5 | USB type |
| 6 | USB Cable, Shielded | Yes | 1.0 | Between the EUT and a Personal Computer |
| 7 | DC IN Cable, Unshielded | Yes | 1.5 | Between the EUT and an AC ADAPTER |
| 8 | AC power Cable, Unshielded | No | 1.8 | Connect to AC Power |

[With Cradle mode]

Peripheral Devices

| Device | Manufacturer | Model No. | Serial No. | FCC ID or DoC |
|-------------------|--|----------------------------------|-------------------------|---------------|
| AC ADAPTER | NingBo ISO Electronics Co., Ltd. | KPA-045E | - | - |
| Cradle | Woongjin System & Technology Co., Ltd. | - | - | - |
| USB Drive | BMK Technology | MemoRive | - | DoC |
| Personal Computer | Samsung Electronics Co., Ltd. | DB-A150 | ZMSI96BSB00125F | DoC |
| LCD Monitor | VS17 | Lite-ON Technology Corp. | CNN5130QMC | DoC |
| Keyboard(PS/2) | Samsung Electro-Mechanics Co., Ltd. | SEM-DT35 | 33008101 | DoC |
| Mouse(USB) | Microsoft Corporation | Optical Mouse USB/PS2 Compatible | 69657-492-4974533-40420 | DoC |

Cable Description

| # | Description | Ferrite Core | Length (m) | Other Details |
|----|--|--------------|------------|---|
| 1 | AC power Cable, Unshielded | No | 1.8 | Connect to AC Power |
| 2 | AC power Cable, Unshielded | No | 1.8 | Connect to AC Power |
| 3 | D-SUB Cable, Shielded | Yes | 1.8 | Between a Personal Computer and a LCD Monitor |
| 4 | Keyboard Cable, Shielded | No | 1.5 | PS/2 type |
| 5 | Mouse Cable, Shielded | Yes | 1.5 | USB type |
| 6 | USB port | - | - | Between the EUT and an USB Drive |
| 7 | USB Cable, Shielded (Mini USB or B Type USB) | Yes | 1.0 | Between the EUT and a Personal Computer |
| 8 | Serial Cable, Shielded | No | 1.8 | Between the EUT and a Personal Computer |
| 9 | Serial Cable, Shielded | No | 1.8 | Connect to the EUT |
| 10 | Cradle Port | - | - | Between the EUT and a Cradle |
| 11 | DC IN Cable, Unshielded | Yes | 1.5 | Between the EUT and an AC ADAPTER |
| 12 | AC power Cable, Unshielded | No | 1.8 | Connect to AC Power |

1.4 Test Software

- EMC Test V 1.0
- Display Test Patterns – V1.5
- Ping.exe
- Not applicable

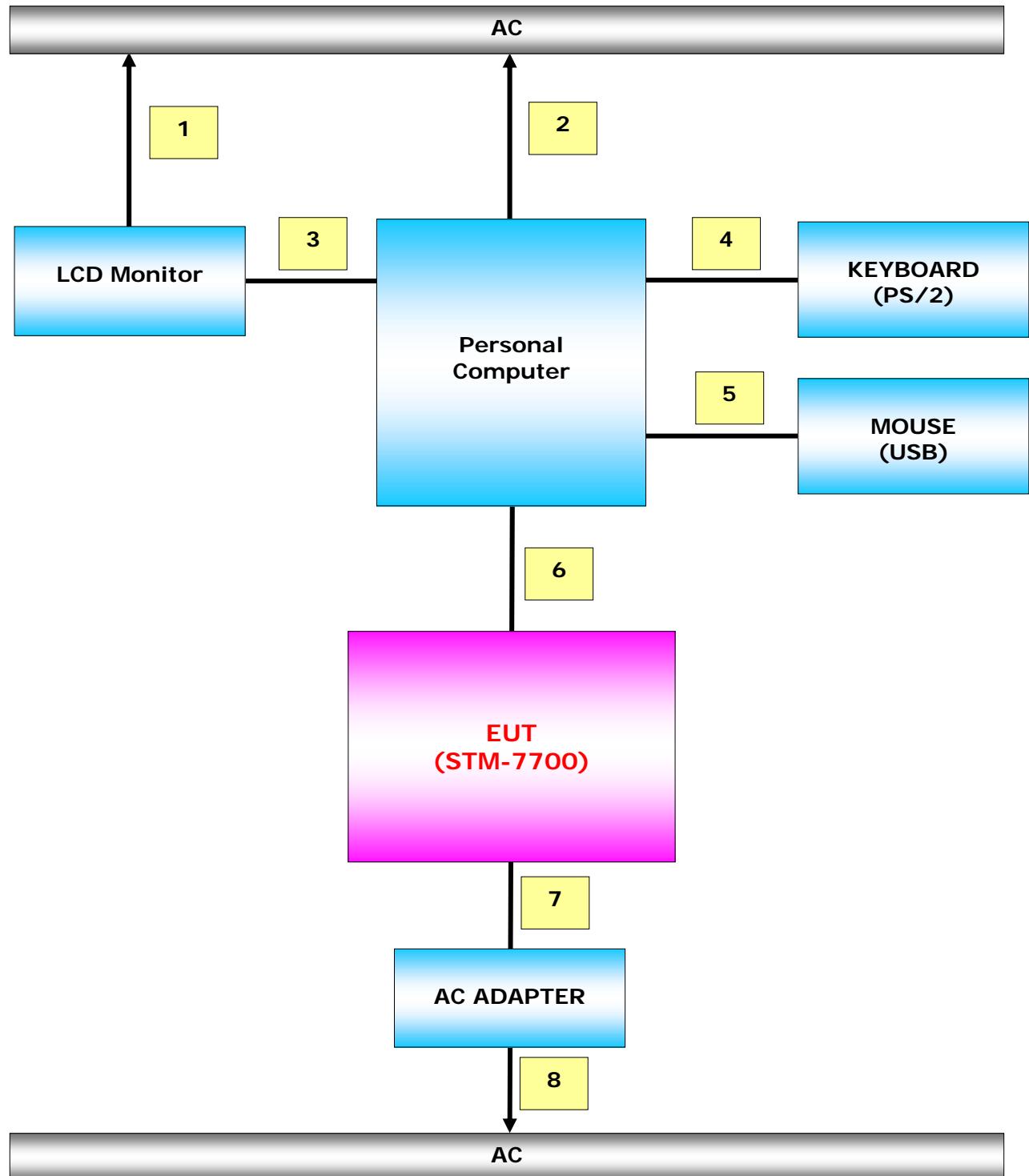
1.5 EUT Operating Mode(s)

Equipment under test was operated during the measurement under the following conditions:

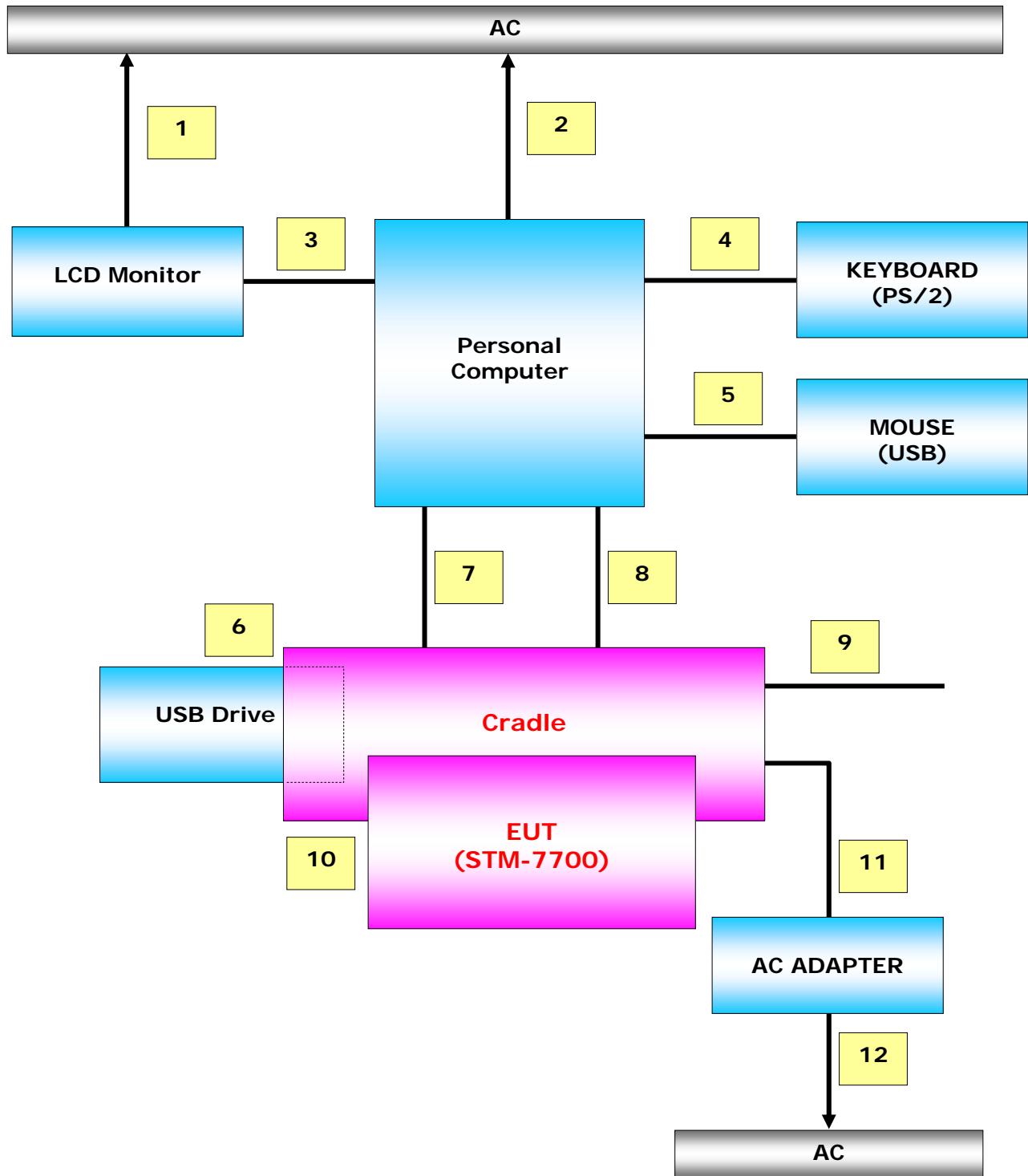
| | |
|---|--|
| <input type="checkbox"/> Standby | <input type="checkbox"/> Scrolling 'H' |
| <input type="checkbox"/> Display circles pattern | <input type="checkbox"/> Read / Write |
| <input checked="" type="checkbox"/> Practice operation – EUT transmitting at 13.56 MHz continuously | |
| 1. Without Cradle Mode(Battery Mode) | |
| 2. With Cradle Mode | |

Configuration

[Without Cradle mode]



[With Cradle mode]



1.7 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

1.8 Test Facility

The measurement facility is located at 386-1, Ho-dong, Cheoin-gu, Yongin-si, Gyeonggi-do, 449-100, Korea. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

1.9 Measurement Procedure

Preliminary AC power line conducted emissions tests were performed shielded room. To find worst mode, several typical mode and typical cable position were tested. Final AC power line conducted emissions test was performed shielded room. (location is same as Preliminary test) Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

Preliminary radiated emissions test were performed anechoic chamber (Distance of antenna and EUT was 3 m). To find worst mode, several typical mode and typical cable position were tested and peak level and frequency were recorded.

Final radiated emissions test was performed Open Area Test Site. Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

* Measurement procedures was In accordance with ANSI C63.4-2003 7.2.3, 7.2.4, 8.3.1.1, 8.3.1.2

1.10 Laboratory Accreditations and Listings

| Country | Agency | Scope of Accreditation | Logo |
|---------------|--------|---|---|
| USA | FCC | 3 & 10 meter Open Area Test Sites and one conducted site to perform FCC Part 15/18 measurements. |  805871 |
| JAPAN | VCCI | 10 meter Open Area Test Site and one conducted site. |  R-948, C-986, T-1843 |
| KOREA | KCC | EMI (10 meter Open Area Test Site and two conducted sites) EMS (ESD, RS, EFT/Burst, Surge, CS, Magnetic, Dips and interruptions) |  No. 51, KR0025 |
| International | KOLAS | EMC |  |

2.0 Emissions Test Regulations

The emissions tests were performed according to following regulations:

| | | |
|--|--|--|
| <input type="checkbox"/> EN 61000-6-3:2007 | | |
| <input type="checkbox"/> EN 61000-6-4:2007 | | |
| <input type="checkbox"/> EN 55011:2007 +A2:2007 | <input type="checkbox"/> Group 1 <input type="checkbox"/> Class A | <input type="checkbox"/> Group 2 <input type="checkbox"/> Class B |
| <input type="checkbox"/> EN 55013:2001 +A1:2003 +A2:2006 | | |
| <input type="checkbox"/> EN 55014-1:2006 | | |
| <input type="checkbox"/> EN 55015:2006 | | |
| <input type="checkbox"/> EN 61204-3:2000 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> EN 61131-2:2003 | | |
| <input type="checkbox"/> EN 61326-1:2006 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> EN 55022:2006 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> EN 61000-3-2:2006 | | |
| <input type="checkbox"/> EN 61000-3-3:1995 +A1:2001 +A2:2005 | | |
| <input type="checkbox"/> VCCI V-3/2008.04 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input type="checkbox"/> AS/NZS CISPR22:2006 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |
| <input checked="" type="checkbox"/> FCC Part 15 Subpart C | | |
| <input type="checkbox"/> CISPR 22:2006 | <input type="checkbox"/> Class A | <input type="checkbox"/> Class B |

2.1 Radiated Electric Field Emissions - 15.225(a)

Reference Standard

FCC Part 15.225(a)

Test Date

March 10, 2011

Test Location

EMI-Anechoic chamber with a conductive ground plane:
Testing was performed at a test distance of 3 m

Test Equipment

| | Name of Equipment | Manufacturer | Model No. | Serial No. | Due Date |
|-------------------------------------|----------------------|-----------------|-----------|------------|------------|
| <input checked="" type="checkbox"/> | Field Strength Meter | Rohde & Schwarz | ESHS30 | 828144/002 | 2012-02-09 |
| <input checked="" type="checkbox"/> | Loop Antenna | EMCO | 6502 | 9107-2652 | 2011-10-29 |

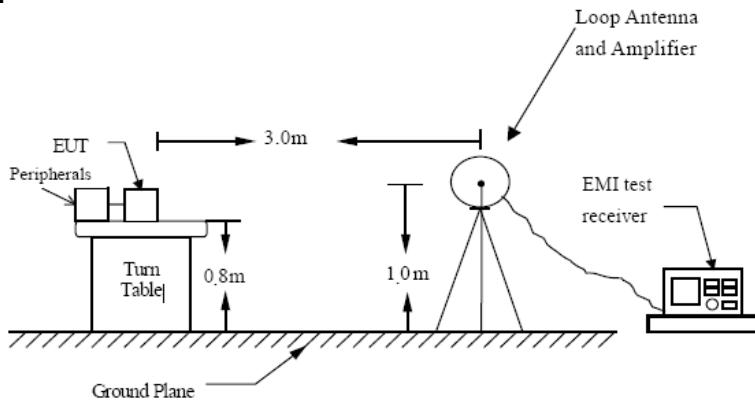
Frequency Range of Measurement

13.553 MHz to 13.567 MHz

Instrument Settings

IF Band Width: 10 kHz

Test Setup



Measurement Procedure(below 30 MHz)

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. Three orientation for the EUT were tried to find out which orientation produces the worst emissions.
3. The loop antenna was also moved around to find out worst position for the emissions.
4. Set the spectrum analyzer in the following setting as:
For Below 30 MHz :
RBW = 9 kHz / VBW = 300 kHz / Sweep = AUTO
5. Repeat above procedures until the measurements for all frequencies are complete.

Radiated emission limits

The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15.848 uV/m at 30 meters.

Test Results

| Frequency (MHz) | Field Strength of Fundamental uV/m@ 30 m | Field Strength of Fundamental dBuV/m @ 30 m | Field Strength of Fundamental dBuV/m @ 3 m |
|-----------------|--|---|--|
| 13.553-13.567 | 1.01 | 0.12 | 40.12 |

The requirements are:

MET
 NOT MET
 NOT APPLICABLE

Remarks

See Appendix A for test data

2.2 Radiated Electric Field Emissions - 15.225(b)(c)

Reference Standard

FCC Part 15.225(b)(c)

Test Date

March 10, 2011

Test Location

EMI-Anechoic chamber with a conductive ground plane:
Testing was performed at a test distance of 3 m

Test Equipment

| | Name of Equipment | Manufacturer | Model No. | Serial No. | Due Date |
|-------------------------------------|----------------------|-----------------|-----------|------------|------------|
| <input checked="" type="checkbox"/> | Field Strength Meter | Rohde & Schwarz | ESHS30 | 828144/002 | 2012-02-09 |
| <input checked="" type="checkbox"/> | Loop Antenna | EMCO | 6502 | 9107-2652 | 2011-10-29 |

Frequency Range of Measurement

13.410 MHz to 13.553 MHz, 13.567 MHz to 13.710 MHz
13.110 MHz to 13.410 MHz, 13.710 MHz to 14.010 MHz

Instrument Settings

IF Band Width: 10 kHz

Radiated emission limits

Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 uV/m at 30 meters.

Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz, the field strength of any emissions shall not exceed 106 uV/m at 30 meters.

Test Results

| Frequency (MHz) | Field Strength of Fundamental uV/m @ 30 m | Field Strength of Fundamental dBuV/m @ 30 m | Field Strength of Fundamental dBuV/m @ 3 m |
|-----------------|---|---|--|
| 13.410-13.553 | 0.12 | -18.59 | 21.41 |
| 13.567-13.710 | 0.29 | -10.66 | 29.34 |
| 13.110-13.410 | 0.26 | -11.77 | 28.23 |
| 13.710-14.010 | 0.16 | -16.07 | 23.93 |

The requirements are:

- MET
- NOT MET
- NOT APPLICABLE

2.3 Radiated Electric Field Emissions - 15.225(d)

Reference Standard

FCC Part 15.225(d), 15.209

Test Date

December 6, 2010

Test Location

EMI-OATS: Testing was performed at a test distance of 3 m

Test Equipment

| | Name of Equipment | Manufacturer | Model No. | Serial No. | Due Date |
|-------------------------------------|-------------------------|-----------------|-----------|------------|------------|
| <input checked="" type="checkbox"/> | Field Strength Meter | Rohde & Schwarz | ESVS30 | 826638/008 | 2011-07-12 |
| <input checked="" type="checkbox"/> | ULTRA Broadband Antenna | Rohde & Schwarz | HL562 | 361324/014 | 2011-11-18 |
| <input checked="" type="checkbox"/> | Field Strength Meter | Rohde & Schwarz | ESHS30 | 828144/002 | 2012-02-09 |
| <input checked="" type="checkbox"/> | Loop Antenna | EMCO | 6502 | 9107-2652 | 2011-10-29 |

Frequency Range of Measurement

9 kHz to 1000 MHz

Instrument Settings

IF Band Width: 10 kHz (9 kHz to 30 MHz)

IF Band Width: 120 kHz (30 MHz to 1000 MHz)

Measurement Procedure(above 30 MHz)

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:
For 30 MHz ~ 1000 MHz :
RBW = 120 kHz / VBW = 300 kHz / Sweep = AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.

Radiated emission limits

| Frequency (MHz) | Field Strength (uV/m) | Measurement Distance (m) |
|-----------------|-----------------------|--------------------------|
| 0.009-0.490 | 2400/F(kHz) | 300 |
| 0.490-1.705 | 24000/F(kHz) | 30 |
| 1.705-30.0 | 30 | 30 |
| 30-88 | 100** | 3 |
| 88-216 | 150** | 3 |
| 216-960 | 200** | 3 |
| Above 960 | 500 | 3 |

** Except as provided in 15.209(g). fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72MHz, 76-88MHz, 174-216MHz, 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

Test Results

The requirements are:

- MET
- NOT MET
- NOT APPLICABLE

Remarks

See Appendix A for test data

2.4 Frequency Stability – 15.225(e)

Reference Standard

FCC Part 15.225(e)

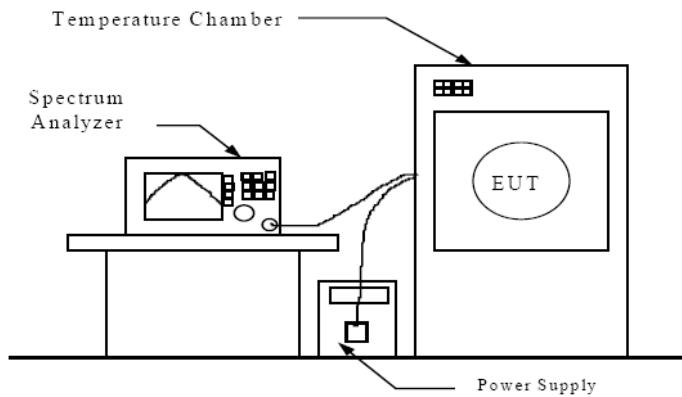
Test Date

December 08, 2010

Test Equipment

| | Name of Equipment | Manufacturer | Model No. | Serial No. | Due Date |
|-------------------------------------|---------------------|----------------------|-----------|--------------|------------|
| <input checked="" type="checkbox"/> | Signal Analyzer | Agilent | N9020A | MY48011598 | 2011-11-12 |
| <input checked="" type="checkbox"/> | Temp & Humi Chamber | Kunpoong Engineering | KP-1000 | 2002KP050041 | 2011-01-25 |

Test Setup



Test Procedure

A. Frequency stability vs. temperature measurement

- The EUT was placed into the constant temperature chamber.
- The spectrum analyzer was used to read the EUT operating frequency.
- Set the constant temperature chamber temperature within the range of -20°C to +50°C

B. Frequency stability vs. input voltage measurement

- The EUT was placed into the constant temperature chamber and set the temperature to 20°C.
- The spectrum analyzer was used to read the EUT operating frequency.
- The EUT is powered with the DC Power Supplied it with 85% and 115% voltage, and measured the EUT operating frequency.

Frequency tolerance Limit

The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency over a temperature variation of -20 °C to +50 °C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 °C.

- Operating frequency : 13.56 MHz
- Limit : 13.56 MHz * (\pm) 0.0001 = (\pm) 1356 Hz
- Within the band : 13.558644 MHz – 13.561356 MHz.

Test Data

| Timing | -20 °C | -10 °C | 0 °C | 10 °C | 20 °C | 30 °C | 40 °C | 50 °C |
|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Start-up | 13.560200 | 13.560200 | 13.560194 | 13.560198 | 13.560184 | 13.560160 | 13.560166 | 13.560151 |
| 10 min | 13.560200 | 13.560200 | 13.560198 | 13.560190 | 13.560174 | 13.560156 | 13.560161 | 13.560151 |
| 30 min | 13.560196 | 13.560202 | 13.560200 | 13.560190 | 13.560166 | 13.560154 | 13.560156 | 13.560150 |

| Timing | Power 85% | Power 115% |
|-----------------|---------------|---------------|
| Start-up | 13.560184 MHz | 13.560186 MHz |
| 10 min | 13.560184 MHz | 13.560184 MHz |
| 30 min | 13.560184 MHz | 13.560186 MHz |

Test Results

The requirements are:

- MET
- NOT MET
- NOT APPLICABLE

2.5 Conducted Voltage Emissions – 15.207

Reference Standard

FCC Part 15.207

Test Date

December 9, 2010

Test Location

Shielded Room

Test Equipment

| | Name of Equipment | Manufacturer | Model No. | Serial No. | Due Date |
|-------------------------------------|-------------------|-----------------|-----------|------------|------------|
| <input checked="" type="checkbox"/> | EMI Test Receiver | Rohde & Schwarz | ESC13 | 100032 | 2012-02-09 |
| <input type="checkbox"/> | EMI Test Receiver | Rohde & Schwarz | ESHS30 | 828144/002 | 2012-02-09 |
| <input type="checkbox"/> | LISN | Rohde & Schwarz | ENV216 | 101150 | 2012-03-09 |
| <input type="checkbox"/> | LISN | EMCO | 3825/2 | 9409-2246 | 2011-07-09 |
| <input checked="" type="checkbox"/> | LISN | Rohde & Schwarz | ENV216 | 101151 | 2012-03-09 |
| <input checked="" type="checkbox"/> | LISN | Rohde & Schwarz | ESH3-Z5 | 100207 | 2011-11-15 |
| <input type="checkbox"/> | ISN | TESEQ GMBH | ISN T8 | 25191 | 2011-12-30 |
| <input type="checkbox"/> | ISN | TESEQ GMBH | ENY81-CA6 | 101553 | 2011-11-25 |

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Conducted Emission limits

| Frequency of Emission (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 |

Test Results

The requirements are:

MET

| Frequency (MHz) | Measured Data (dBuV) | Margin (dB) | Remark |
|-----------------|----------------------|-------------|------------|
| 0.4515 | 44.4 | 12.4 | Quasi-peak |

NOT MET

NOT APPLICABLE

Remarks

See Appendix A for test data.

APPENDIX A – TEST DATA

Radiated Electric Field Emissions (Quasi-Peak reading)

#1 Without Cradle Mode(Battery Mode)

1) Fundamental Frequency Test Data

| Frequency [MHz] | Reading [dB μ N/m@3m] | Pol. | Height [m] | Correction Factor | | Limits [dBuV/m@3m] | Result [dBuV/m@3m] | Margin [dB] |
|--------------------|------------------------------|------|---------------|----------------------|-------|-----------------------|-----------------------|----------------|
| | | | | Antenna | Cable | | | |
| 13.56 | 26.57 | V | 1.0 | 8.84 | 0.01 | 124.0 | 35.4 | 88.6 |

2) Frequency Range from 9 kHz to 30 MHz Test Data

| Frequency [MHz] | Reading [dB μ N/m@3m] | Pol. | Height [m] | Correction Factor | | Limits [dBuV/m@3m] | Result [dBuV/m@3m] | Margin [dB] |
|--------------------|------------------------------|------|---------------|----------------------|-------|-----------------------|-----------------------|----------------|
| | | | | Antenna | Cable | | | |
| 18.41 | 13.9 | V | 1.0 | 8.26 | 0.01 | 49.5 | 22.2 | 27.3 |
| 12.84 | 19.4 | V | 1.0 | 8.84 | 0.01 | 49.5 | 28.3 | 21.3 |

3) Frequency Range from 30 MHz to 1000 MHz Test Data

| Frequency [MHz] | Reading [dB μ N/m@3m] | Pol. | Height [m] | Correction Factor | | | Limits [dBuV/m@3m] | Result [dBuV/m@3m] | Margin [dB] |
|--------------------|------------------------------|------|---------------|----------------------|-------|-----------|-----------------------|-----------------------|----------------|
| | | | | Antenna | Cable | Amp. Gain | | | |
| 80.90 | 55.8 | V | 3.4 | 8.1 | 0.6 | 31.4 | 40.0 | 33.1 | 6.9 |
| 110.00 | 56.5 | V | 3.8 | 10.0 | 0.9 | 31.5 | 43.5 | 35.9 | 7.6 |
| 408.30 | 54.9 | H | 1.3 | 14.1 | 2.9 | 31.3 | 46.0 | 40.6 | 5.4 |
| 461.70 | 54.0 | H | 1.2 | 15.1 | 3.2 | 31.4 | 46.0 | 40.9 | 5.1 |
| 476.20 | 53.0 | H | 1.2 | 15.4 | 3.3 | 31.4 | 46.0 | 40.3 | 5.7 |
| 937.00 | 44.2 | H | 1.2 | 21.1 | 4.5 | 30.2 | 46.0 | 39.6 | 6.4 |

#2 With Cradle Mode

1) Fundamental Frequency Test Data

| Frequency [MHz] | Reading [dB μ N/m@3m] | Pol. | Height [m] | Correction Factor | | Limits [dBuV/m@3m] | Result [dBuV/m@3m] | Margin [dB] |
|--------------------|------------------------------|------|---------------|-------------------|-------|-----------------------|-----------------------|----------------|
| | | | | Antenna | Cable | | | |
| 13.56 | 31.2 | V | 1.0 | 8.84 | 0.01 | 124.0 | 40.1 | 84.0 |

2) Frequency Range from 9 kHz to 30 MHz Test Data

| Frequency [MHz] | Reading [dB μ N/m@3m] | Pol. | Height [m] | Correction Factor | | Limits [dBuV/m@3m] | Result [dBuV/m@3m] | Margin [dB] |
|--------------------|------------------------------|------|---------------|-------------------|-------|-----------------------|-----------------------|----------------|
| | | | | Antenna | Cable | | | |
| 28.51 | 14.2 | V | 1.0 | 5.38 | 0.01 | 49.5 | 19.6 | 29.9 |
| 27.26 | 16.7 | V | 1.0 | 7.18 | 0.01 | 49.5 | 23.9 | 25.6 |

3) Frequency Range from 30 MHz to 1000 MHz Test Data

| Frequency [MHz] | Reading [dB μ N/m@3m] | Pol. | Height [m] | Correction Factor | | | Limits [dBuV/m@3m] | Result [dBuV/m@3m] | Margin [dB] |
|--------------------|------------------------------|------|---------------|-------------------|-------|-----------|-----------------------|-----------------------|----------------|
| | | | | Antenna | Cable | Amp. Gain | | | |
| 54.30 | 58.1 | V | 1.4 | 6.7 | 0.3 | 31.4 | 40.0 | 33.7 | 6.4 |
| 80.90 | 59.6 | V | 1.2 | 8.1 | 0.6 | 31.4 | 40.0 | 36.9 | 3.1 |
| 110.00 | 52.3 | V | 1.2 | 10.0 | 0.9 | 31.5 | 43.5 | 31.7 | 11.8 |
| 204.60 | 56.5 | H | 3.5 | 7.9 | 1.6 | 31.3 | 43.5 | 34.7 | 8.8 |
| 231.30 | 56.9 | H | 3.4 | 9.1 | 1.8 | 31.3 | 46.0 | 36.5 | 9.5 |
| 963.60 | 43.4 | V | 1.1 | 21.3 | 4.6 | 30.0 | 54.0 | 39.3 | 14.7 |

Conducted Voltage Emissions (AC ADAPTOR Mode)

[HOT]

Final Result 1

| Frequency (MHz) | QuasiPeak (dB μ V) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dB μ V) |
|-----------------|------------------------|-----------------|-----------------|--------|------|------------|-------------|--------------------|
| 0.150000 | 50.4 | 1000.0 | 9.000 | On | L1 | 10.1 | 15.6 | 66.0 |
| 0.163500 | 48.6 | 1000.0 | 9.000 | On | L1 | 10.3 | 16.7 | 65.3 |
| 0.163500 | 50.6 | 1000.0 | 9.000 | On | L1 | 10.3 | 14.7 | 65.3 |
| 0.406500 | 36.3 | 1000.0 | 9.000 | On | L1 | 10.1 | 21.4 | 57.7 |
| 0.415500 | 39.2 | 1000.0 | 9.000 | On | L1 | 10.1 | 18.3 | 57.5 |
| 0.438000 | 43.9 | 1000.0 | 9.000 | On | L1 | 10.2 | 13.2 | 57.1 |
| 9.271500 | 36.1 | 1000.0 | 9.000 | On | L1 | 9.8 | 23.9 | 60.0 |
| 18.496500 | 42.4 | 1000.0 | 9.000 | On | L1 | 9.9 | 17.6 | 60.0 |
| 21.057000 | 34.0 | 1000.0 | 9.000 | On | L1 | 10.0 | 26.0 | 60.0 |
| 29.463000 | 32.4 | 1000.0 | 9.000 | On | L1 | 10.1 | 27.6 | 60.0 |

Final Result 2

| Frequency (MHz) | Average (dB μ V) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dB μ V) |
|-----------------|----------------------|-----------------|-----------------|--------|------|------------|-------------|--------------------|
| 0.150000 | 22.9 | 1000.0 | 9.000 | On | L1 | 10.1 | 33.1 | 56.0 |
| 0.451500 | 26.8 | 1000.0 | 9.000 | On | L1 | 10.2 | 20.0 | 46.8 |
| 0.456000 | 26.5 | 1000.0 | 9.000 | On | L1 | 10.2 | 20.3 | 46.8 |
| 3.664500 | 16.0 | 1000.0 | 9.000 | On | L1 | 9.8 | 30.0 | 46.0 |
| 7.431000 | 12.4 | 1000.0 | 9.000 | On | L1 | 9.8 | 37.6 | 50.0 |
| 9.334500 | 25.7 | 1000.0 | 9.000 | On | L1 | 9.8 | 24.3 | 50.0 |
| 15.855000 | 22.2 | 1000.0 | 9.000 | On | L1 | 9.9 | 27.8 | 50.0 |
| 18.487500 | 34.7 | 1000.0 | 9.000 | On | L1 | 9.9 | 15.3 | 50.0 |
| 21.052500 | 30.0 | 1000.0 | 9.000 | On | L1 | 10.0 | 20.0 | 50.0 |
| 29.458500 | 27.1 | 1000.0 | 9.000 | On | L1 | 10.1 | 22.9 | 50.0 |

[NEUTRAL]

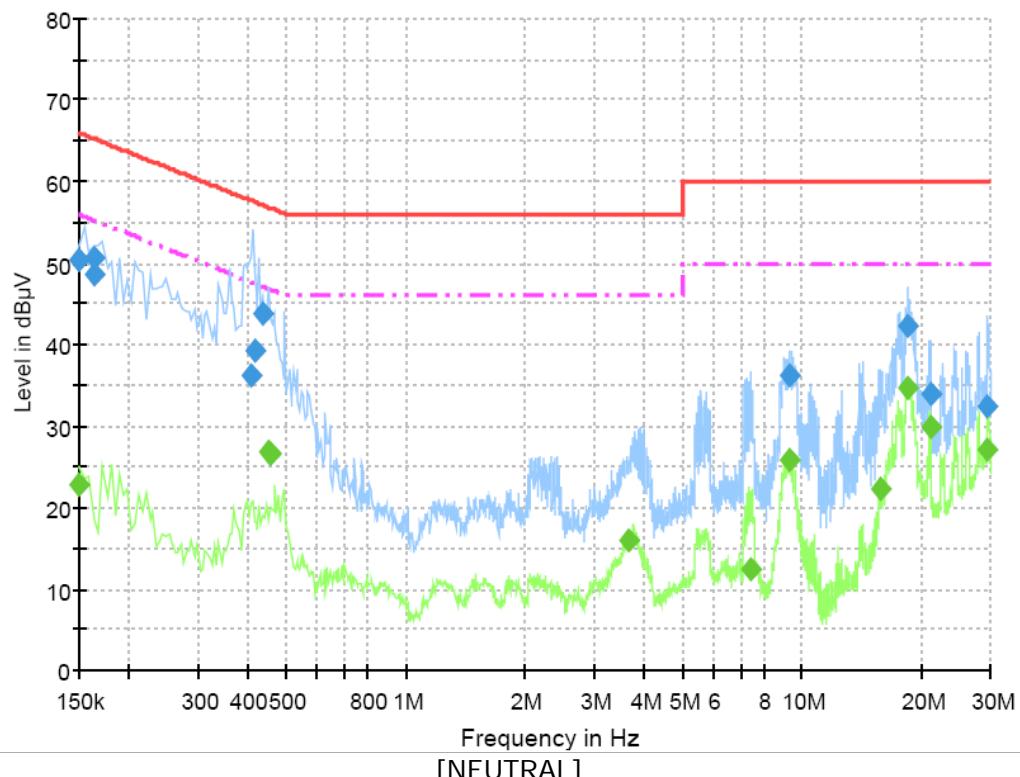
Final Result 1

| Frequency (MHz) | QuasiPeak (dB μ V) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dB μ V) |
|-----------------|------------------------|-----------------|-----------------|--------|------|------------|-------------|--------------------|
| 0.159000 | 45.6 | 1000.0 | 9.000 | On | N | 10.2 | 19.9 | 65.5 |
| 0.163500 | 50.8 | 1000.0 | 9.000 | On | N | 10.3 | 14.5 | 65.3 |
| 0.168000 | 49.2 | 1000.0 | 9.000 | On | N | 10.3 | 15.9 | 65.1 |
| 0.217500 | 39.8 | 1000.0 | 9.000 | On | N | 10.0 | 23.1 | 62.9 |
| 0.424500 | 42.4 | 1000.0 | 9.000 | On | N | 10.1 | 15.0 | 57.4 |
| 0.433500 | 44.0 | 1000.0 | 9.000 | On | N | 10.1 | 13.2 | 57.2 |
| 0.451500 | 44.4 | 1000.0 | 9.000 | On | N | 10.2 | 12.4 | 56.8 |
| 9.334500 | 33.9 | 1000.0 | 9.000 | On | N | 9.8 | 26.1 | 60.0 |
| 18.379500 | 41.2 | 1000.0 | 9.000 | On | N | 10.0 | 18.8 | 60.0 |
| 29.791500 | 31.3 | 1000.0 | 9.000 | On | N | 10.2 | 28.7 | 60.0 |

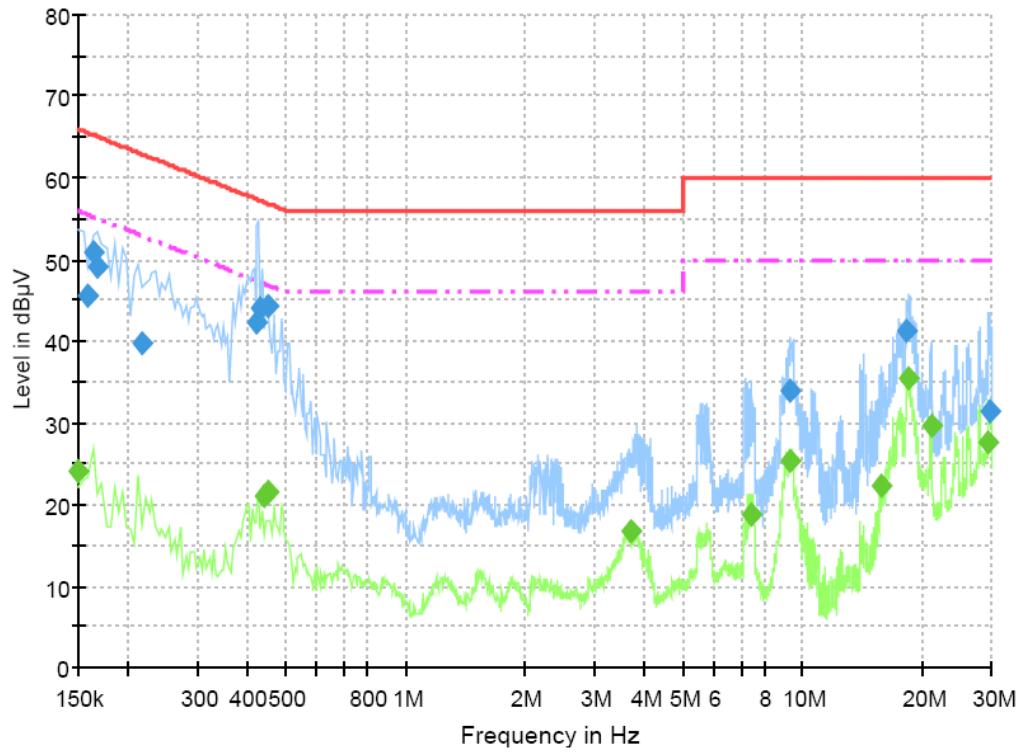
Final Result 2

| Frequency (MHz) | Average (dB μ V) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dB μ V) |
|-----------------|----------------------|-----------------|-----------------|--------|------|------------|-------------|--------------------|
| 0.150000 | 23.9 | 1000.0 | 9.000 | On | N | 10.1 | 32.1 | 56.0 |
| 0.442500 | 20.9 | 1000.0 | 9.000 | On | N | 10.1 | 26.1 | 47.0 |
| 0.451500 | 21.5 | 1000.0 | 9.000 | On | N | 10.2 | 25.3 | 46.8 |
| 3.696000 | 16.8 | 1000.0 | 9.000 | On | N | 9.8 | 29.2 | 46.0 |
| 7.422000 | 18.8 | 1000.0 | 9.000 | On | N | 9.8 | 31.2 | 50.0 |
| 9.361500 | 25.2 | 1000.0 | 9.000 | On | N | 9.8 | 24.8 | 50.0 |
| 15.841500 | 22.2 | 1000.0 | 9.000 | On | N | 9.9 | 27.8 | 50.0 |
| 18.483000 | 35.4 | 1000.0 | 9.000 | On | N | 10.0 | 14.6 | 50.0 |
| 21.052500 | 29.5 | 1000.0 | 9.000 | On | N | 10.0 | 20.5 | 50.0 |
| 29.481000 | 27.5 | 1000.0 | 9.000 | On | N | 10.2 | 22.5 | 50.0 |

[HOT]

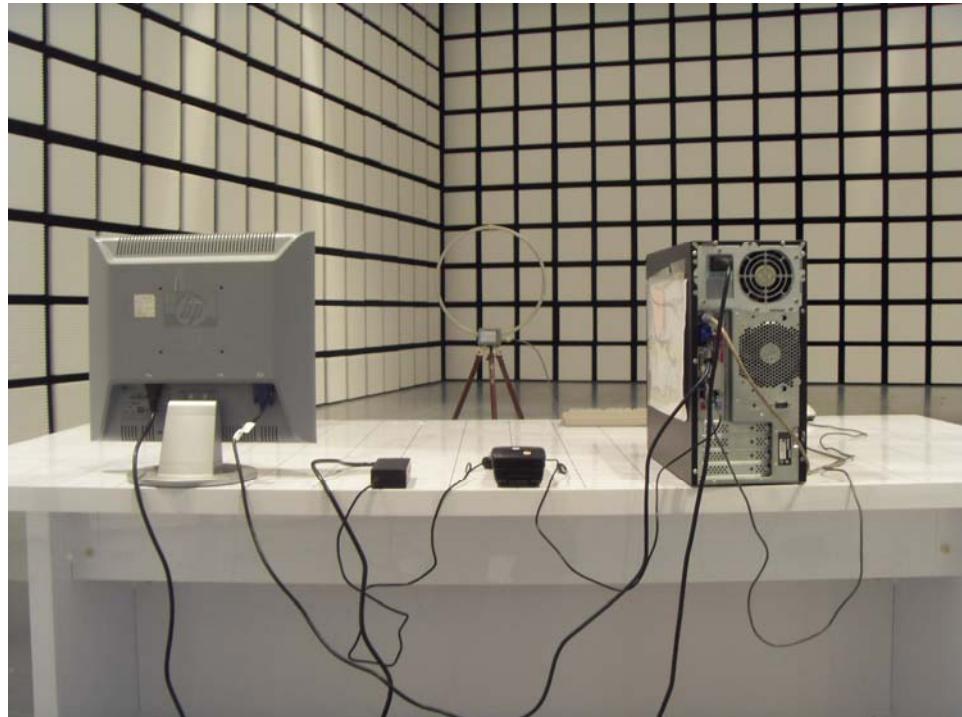


[NEUTRAL]



APPENDIX B - Test Setup Photos and Configuration

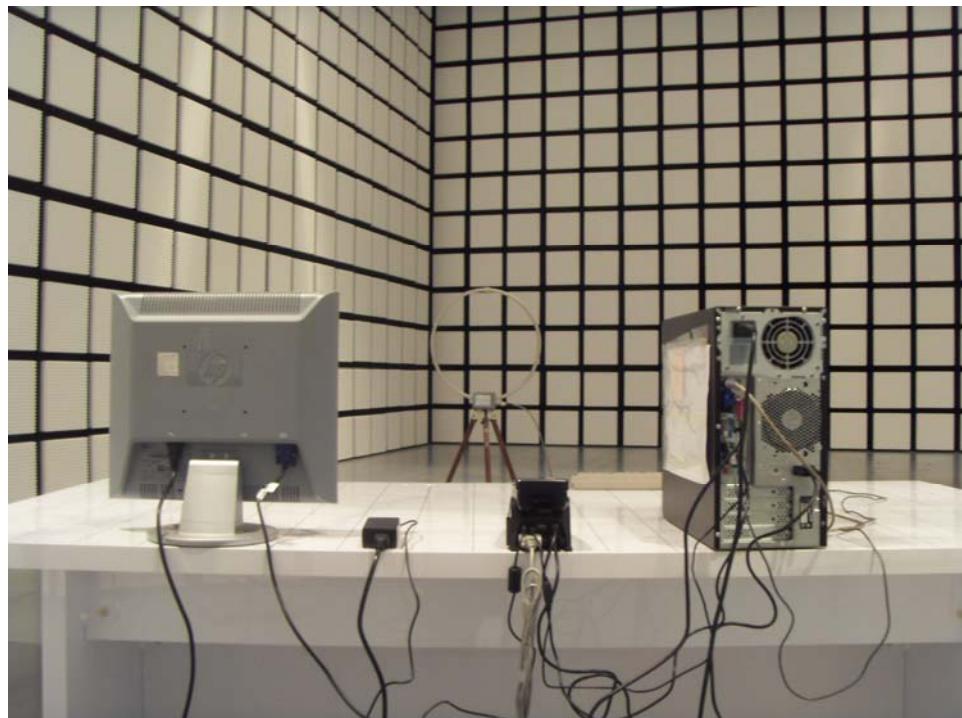
Radiated Electric Field Emissions (9 kHz ~ 30 MHz) : Battery



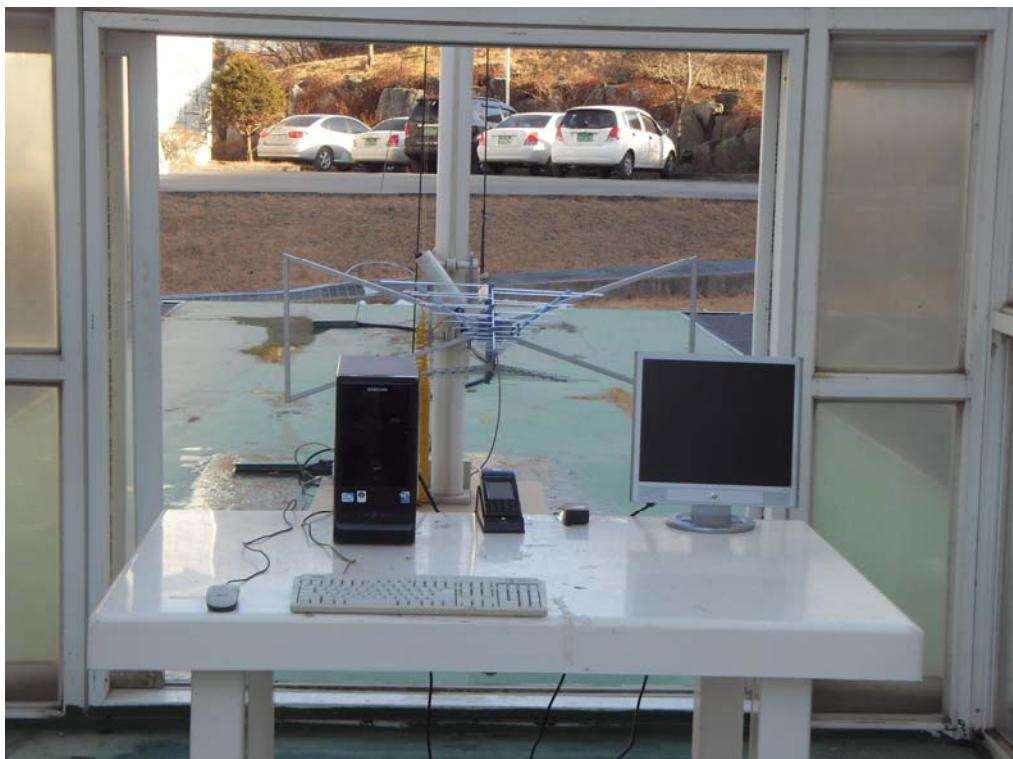
Radiated Electric Field Emissions (30 MHz ~ 1000 MHz) : Battery



Radiated Electric Field Emissions (9 kHz ~ 30 MHz) : With Cradle



Radiated Electric Field Emissions (30 MHz ~ 1000 MHz) : With Cradle



Frequency Stability

