**SPORTON International Inc.**
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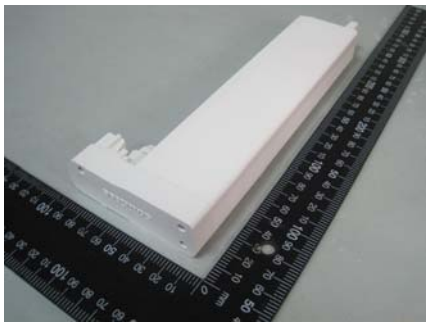
# FCC RADIO TEST REPORT

| | |
|---|---|
| Applicant's company | **Coulisse B.V.** |
| Applicant Address | Vonderweg 48 7468 DC |
| FCC ID | **ZY4ABC03** |
| Manufacturer's company | **Santa Monica Co., Ltd** |
| Manufacturer Address | 18F., No.67, Sec.2, Tun-Hwa South Rd. Taipei, Taiwan |

| | |
|---|---|
| Product Name | Motor for drive a vertical blind by RF remote control |
| Brand Name | Coulisse |
| Model Name | ABC-03 |
| Marketing Name | Coulisse |
| Test Rule Part(s) | 47 CFR FCC Part 15 Subpart C § 15.249 |
| Test Freq. Range | 2402 ~ 2480MHz |
| Received Date | Nov. 17, 2011 |
| Final Test Date | Mar. 19, 2012 |
| Submission Type | Original Equipment |



## Statement

The test result in this report refers exclusively to the presented test model / sample.
Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.
The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.10-2009** and **47 CFR FCC Part 15 Subpart C**.
The test equipment used to perform the test is calibrated and traceable to NML/ROC.

Testing Laboratory
1190

# Table of Contents

# History of This Test Report

| REPORT NO. | VERSION | DESCRIPTION | ISSUED DATE |
|---|---|---|---|
| FR1N1731 | Rev. 01 | Initial issue of report | Apr. 05, 2012 |
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Certificate No.: CB10103085

# 1. CERTIFICATE OF COMPLIANCE

| | | |
|---|---|---|
| Product Name | : | Motor for drive a vertical blind by RF remote control |
| Brand Name | : | Coulisse |
| Model Name | : | ABC-03 |
| Applicant | : | Coulisse B.V. |
| Test Rule Part(s) | : | 47 CFR FCC Part 15 Subpart C § 15.249 |

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Nov. 17, 2011 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.

Jordan Hsiao

Reviewed By:
Jordan Hsiao
SPORTON INTERNATIONAL INC.

## 2. SUMMARY OF THE TEST RESULT

| Applied Standard: 47 CFR FCC Part 15 Subpart C | | | | |
|---|---|---|---|---|
| **Part** | **Rule Section** | **Description of Test** | **Result** | **Under Limit** |
| 4.1 | 15.207 | AC Power Line Conducted Emissions | Complies | 21.93 dB |
| 4.2 | 15.249(a) | Field Strength of Fundamental Emissions | Complies | 18.40 dB |
| 4.3 | 15.215(c) | 20dB Spectrum Bandwidth | Complies | - |
| 4.4 | 15.249(a)/(d) | Radiated Emissions | Complies | 0.93 dB |
| 4.5 | 15.249(d) | Band Edge Emissions | Complies | 1.73 dB |
| 4.6 | 15.203 | Antenna Requirements | Complies | - |

| Test Items | Uncertainty | Remark |
|---|---|---|
| AC Power Line Conducted Emissions | ±2.3dB | Confidence levels of 95% |
| Field Strength of Fundamental Emissions | ±0.8dB | Confidence levels of 95% |
| 20dB Spectrum Bandwidth | $\pm 8.5\times10^{-8}$ | Confidence levels of 95% |
| Radiated Emissions (9kHz~30MHz) | ±0.8dB | Confidence levels of 95% |
| Radiated Emissions (30MHz~1000MHz) | ±1.9dB | Confidence levels of 95% |
| Radiated / Band Edge Emissions (1GHz~18GHz) | ±1.9dB | Confidence levels of 95% |
| Radiated Emissions (18GHz~40GHz) | ±1.9dB | Confidence levels of 95% |
| Temperature | ±0.7℃ | Confidence levels of 95% |
| Humidity | ±3.2% | Confidence levels of 95% |
| DC / AC Power Source | ±1.4% | Confidence levels of 95% |

# 3. GENERAL INFORMATION

## 3.1. Product Details

| Items | Description |
|---|---|
| Power Type | From AC adaptor and Battery tube |
| Modulation | GFSK |
| Frequency Range | 2402 ~ 2480MHz |
| Channel Number | 79 |
| Channel Band Width (99%) | 0.63 MHz |
| Max. Field Strength | 75.60 dBuV/m |
| Carrier Frequencies | Please refer to section 3.3 |
| Antenna | Internal Antenna (Without any antenna connector) |

## 3.2. Accessories

N/A

## 3.3. Table for Carrier Frequencies

| Frequency Band | Channel No. | Frequency |
|---|---|---|
| 2402 ~ 2480MHz | 1 | 2402 MHz |
| | 2 | 2403 MHz |
| | : | : |
| | 39 | 2440 MHz |
| | 40 | 2441 MHz |
| | 41 | 2442 MHz |
| | : | : |
| | 78 | 2479 MHz |
| | 79 | 2480 MHz |

## 3.4. Table for Test Modes

Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

| Test Items | Mode | Channel |
|---|---|---|
| AC Power Line Conducted Emissions | Normal Link | - |
| Field Strength of Fundamental Emissions<br>20dB Spectrum Bandwidth | CTX | 1/40/79 |
| Radiated Emissions 30MHz ~ 1GHz | Normal Link | - |
| Radiated Emissions 1GHz~10$^{th}$ Harmonic | CTX | 1/40/79 |
| Band Edge Emissions | CTX | 1/79 |

Note: CTX=continuously transmitting

The following test modes were performed for all tests:

**For Radiated Emission test:**

Mode 1. : AC Power supply (Adapter)

Mode 2. : DC Power supply (Battery Tube)

Due to Mode 1 generated the worst test result, it was recorded in this report.

## 3.5. Table for Testing Locations

| Test Site No. | Site Category | Location | FCC Reg. No. | IC File No. | VCCI Reg. No |
|---|---|---|---|---|---|
| 03CH01-CB | SAC | Hsin Chu | 262045 | IC 4086D | - |
| CO01-CB | Conduction | Hsin Chu | 262045 | IC 4086D | - |
| TH01-CB | OVEN Room | Hsin Chu | - | - | - |

Open Area Test Site (OATS); Semi Anechoic Chamber (SAC); Fully Anechoic Chamber (FAC).

Please refer section 6 for Test Site Address.

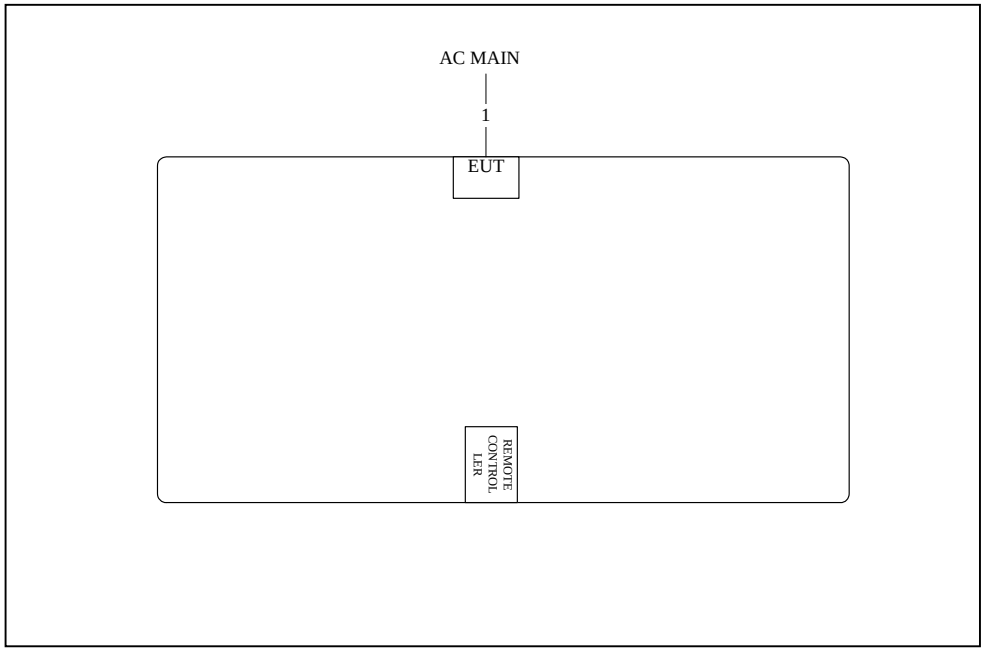
## 3.6. Table for Supporting Units

| Support Unit | Brand | Model | FCC ID |
|---|---|---|---|
| CONTROLLER | Coulisse | ABC-01-W | ZY4ABC01 |

## 3.7. Test Configurations

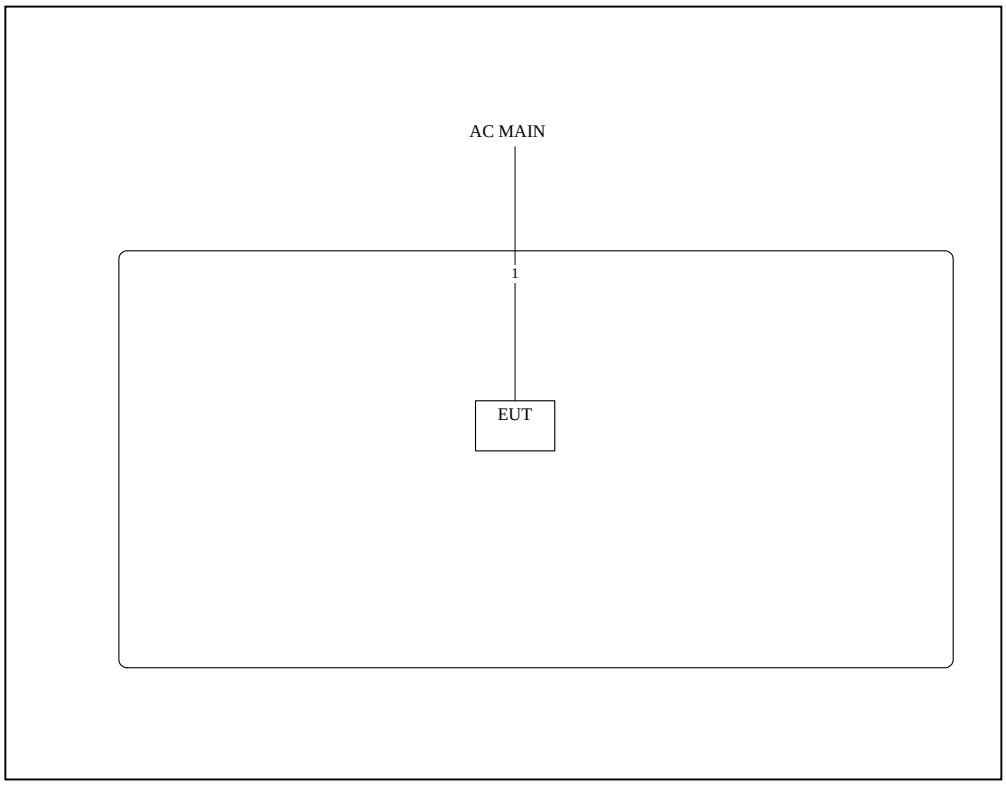
### 3.7.1. Radiation Emissions Test Configuration

Test Configuration: 30MHz~1GHz / Mode 1



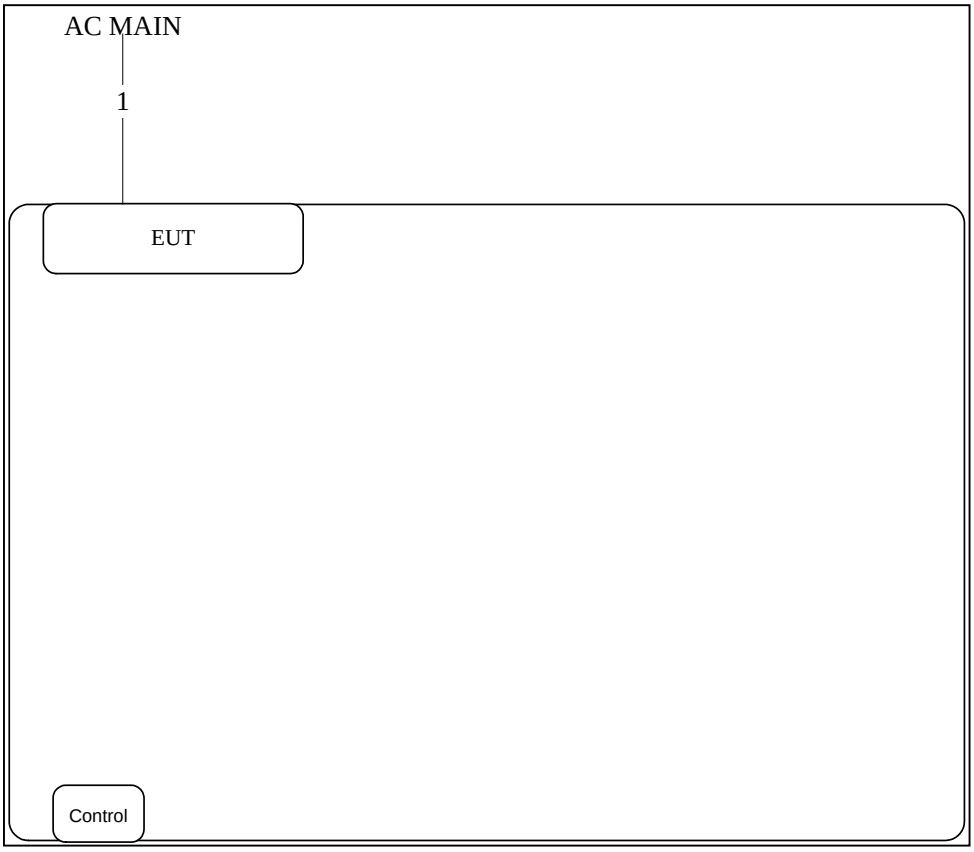

| Item | Cable | Shield | Length |
|---|---|---|---|
| 1 | Power Cable | No | 4.6M |

Test Configuration: Above 1GHz / Mode 1




| Item | Cable | Shield | Length |
|---|---|---|---|
| 1 | Power Cable | No | 4.6M |

### 3.7.2. AC Power Line Conduction Emissions Test Configuration




| Item | Cable | Shield | Length |
|---|---|---|---|
| 1 | Power Cable | No | 4.6M |

# 4. TEST RESULT

## 4.1. AC Power Line Conducted Emissions Measurement

### 4.1.1. Limit

For this product which is designed to be connected to the 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 below limits table.

| Frequency (MHz) | QP Limit (dBuV) | AV Limit (dBuV) |
|---|---|---|
| 0.15~0.5 | 66~56 | 56~46 |
| 0.5~5 | 56 | 46 |
| 5~30 | 60 | 50 |

### 4.1.2. Measuring Instruments and Setting

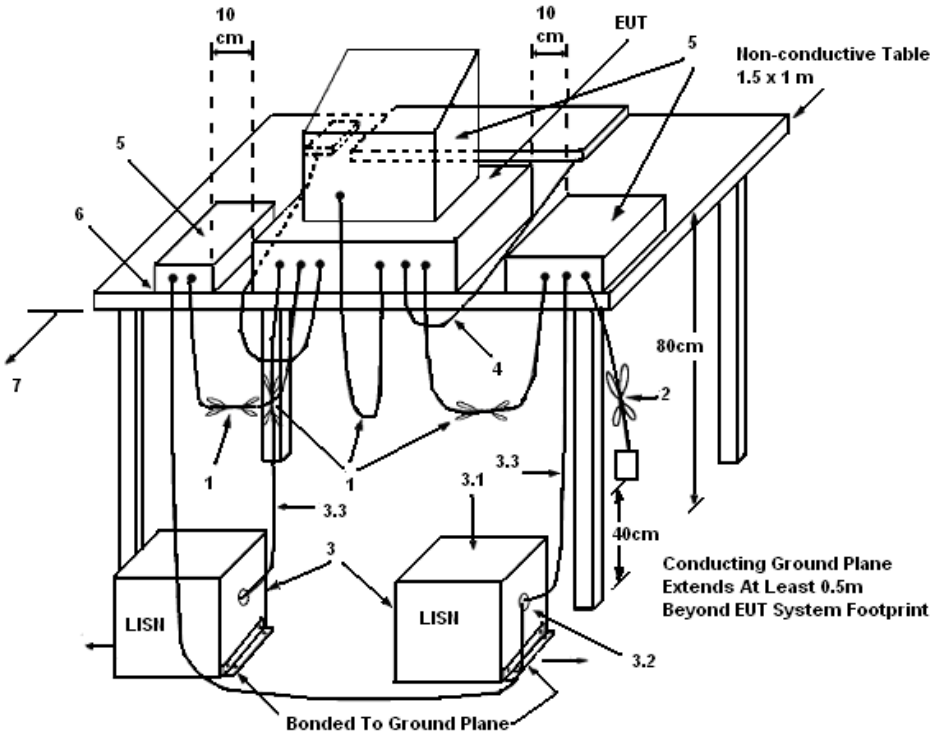
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

| Receiver Parameters | Setting |
|---|---|
| Attenuation | 10 dB |
| Start Frequency | 0.15 MHz |
| Stop Frequency | 30 MHz |
| IF Bandwidth | 9 KHz |

### 4.1.3. Test Procedures

1. Configure the EUT according to ANSI C63.10. The EUT or host of EUT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT or host of EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connected to the other LISNs. The LISN should provide 50uH/50ohms coupling impedance.
4. The frequency range from 150 KHz to 30 MHz was searched.
5. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. The measurement has to be done between each power line and ground at the power terminal.

### 4.1.4. Test Setup Layout




LEGEND:

(1) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

(2) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

(3) EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω. LISN can be placed on top of, or immediately beneath, reference ground plane.

(3.1) All other equipment powered from additional LISN(s).

(3.2) Multiple outlet strip can be used for multiple power cords of non-EUT equipment.

(3.3) LISN at least 80 cm from nearest part of EUT chassis.

(4) Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.

(5) Non-EUT components of EUT system being tested.

(6) Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.

(7) Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

### 4.1.5. Test Deviation

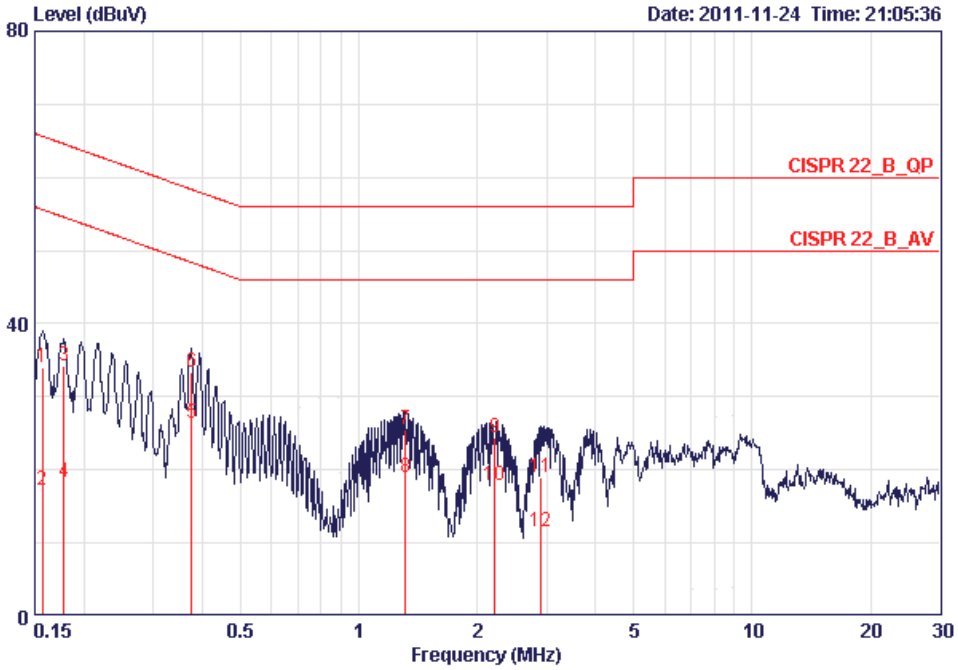
There is no deviation with the original standard.

### 4.1.6. EUT Operation during Test

The EUT was placed on the test table and programmed in normal function.

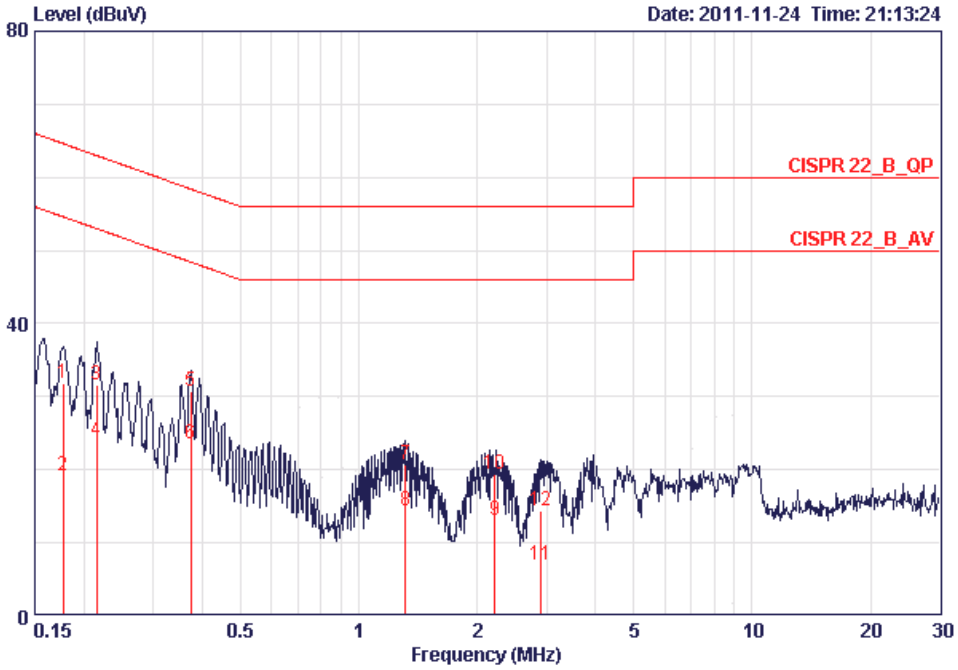
## 4.1.7. Results of AC Power Line Conducted Emissions Measurement

| Temperature | 25°C | Humidity | 65% |
|---|---|---|---|
| Test Engineer | Simon Yang | Phase | Line |
| Configuration | Normal Link | | |




| | Freq | Level | Over Limit | Limit Line | Read Level | LISN Factor | Cable Loss | Remark |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dBuV | dBuV | dB | dB | |
| 1 | 0.15670 | 33.91 | -31.73 | 65.64 | 33.64 | 0.07 | 0.20 | QP |
| 2 | 0.15670 | 17.32 | -38.32 | 55.64 | 17.05 | 0.07 | 0.20 | AVERAGE |
| 3 | 0.17772 | 34.25 | -30.34 | 64.59 | 33.99 | 0.06 | 0.20 | QP |
| 4 | 0.17772 | 18.25 | -36.34 | 54.59 | 17.99 | 0.06 | 0.20 | AVERAGE |
| 5 @ | 0.37512 | 26.45 | -21.93 | 48.39 | 26.22 | 0.03 | 0.20 | AVERAGE |
| 6 | 0.37512 | 33.45 | -24.93 | 58.39 | 33.22 | 0.03 | 0.20 | QP |
| 7 | 1.317 | 25.54 | -30.46 | 56.00 | 25.37 | 0.04 | 0.13 | QP |
| 8 | 1.317 | 19.01 | -26.99 | 46.00 | 18.84 | 0.04 | 0.13 | AVERAGE |
| 9 | 2.220 | 24.43 | -31.57 | 56.00 | 24.17 | 0.06 | 0.20 | QP |
| 10 | 2.220 | 17.93 | -28.07 | 46.00 | 17.67 | 0.06 | 0.20 | AVERAGE |
| 11 | 2.900 | 19.00 | -37.00 | 56.00 | 18.72 | 0.08 | 0.20 | QP |
| 12 | 2.900 | 11.47 | -34.53 | 46.00 | 11.19 | 0.08 | 0.20 | AVERAGE |

| Temperature | 25°C | Humidity | 65% |
|---|---|---|---|
| Test Engineer | Simon Yang | Phase | Neutral |
| Configuration | Normal Link | | |




| | Freq | Level | Over Limit | Limit Line | Read Level | LISN Factor | Cable Loss | Remark |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dBuV | dBuV | dB | dB | |
| 1 | 0.17678 | 31.88 | -32.76 | 64.64 | 31.59 | 0.09 | 0.20 | QP |
| 2 | 0.17678 | 19.09 | -35.55 | 54.64 | 18.80 | 0.09 | 0.20 | AVERAGE |
| 3 | 0.21506 | 31.65 | -31.36 | 63.01 | 31.37 | 0.08 | 0.20 | QP |
| 4 | 0.21506 | 23.99 | -29.02 | 53.01 | 23.71 | 0.08 | 0.20 | AVERAGE |
| 5 | 0.37314 | 30.79 | -27.64 | 58.43 | 30.52 | 0.07 | 0.20 | QP |
| 6 @ | 0.37314 | 23.50 | -24.93 | 48.43 | 23.23 | 0.07 | 0.20 | AVERAGE |
| 7 | 1.317 | 20.74 | -35.26 | 56.00 | 20.53 | 0.08 | 0.13 | QP |
| 8 | 1.317 | 14.42 | -31.58 | 46.00 | 14.21 | 0.08 | 0.13 | AVERAGE |
| 9 | 2.220 | 13.09 | -32.91 | 46.00 | 12.79 | 0.10 | 0.20 | AVERAGE |
| 10 | 2.220 | 19.34 | -36.66 | 56.00 | 19.04 | 0.10 | 0.20 | QP |
| 11 | 2.900 | 7.03 | -38.97 | 46.00 | 6.71 | 0.12 | 0.20 | AVERAGE |
| 12 | 2.900 | 14.34 | -41.66 | 56.00 | 14.02 | 0.12 | 0.20 | QP |

Note:

Level = Read Level + LISN Factor + Cable Loss

## 4.2. Field Strength of Fundamental Emissions Measurement

### 4.2.1. Limit

The field strength of fundamental emissions within these bands specified at a distance of 3 meters (measurement instrumentation employing an average detector) shall comply with the following table.

| Frequency Band (MHz) | Fundamental Emissions Limit (dBuV/m) at 3m |
|---|---|
| 2400-2483.5 | 94 (Average) |
| | 114 (Peak) |

### 4.2.2. Measuring Instruments and Setting

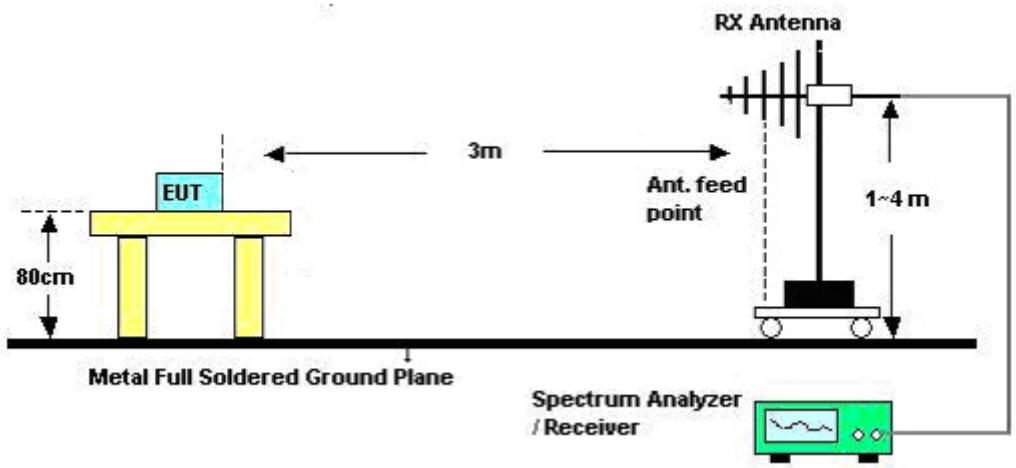
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

| Power Meter Parameter | Setting |
|---|---|
| RB | 1 MHz Peak / 3MHz Peak |
| VB | 1 MHz Peak / 10Hz Average |
| Detector | Peak |
| Trace | Max Hold |
| Sweep Time | Auto |

### 4.2.3. Test Procedures

1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. For Fundamental emissions, use 1MHz VBW and 3MHz RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
6. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.

### 4.2.4. Test Setup Layout




### 4.2.5. Test Deviation

There is no deviation with the original standard.

### 4.2.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

## 4.2.7. Test Result of Field Strength of Fundamental Emissions

| Temperature | 22°C | Humidity | 65% |
|---|---|---|---|
| Test Engineer | Rion Li | Configurations | Channel 1 |
| Test Date | Mar. 14, 2012 | | |

*Horizontal*

| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | Remark | A/Pos | T/Pos | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | | cm | deg | |
| 1 | 2401.84 | 73.60 | 94.00 | -20.40 | 43.17 | 2.22 | 28.21 | 0.00 | Average | 100 | 119 | HORIZONTAL |
| 2 | 2401.84 | 80.46 | 114.00 | -33.54 | 50.03 | 2.22 | 28.21 | 0.00 | Peak | 100 | 119 | HORIZONTAL |

*Vertical*

| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | Remark | A/Pos | T/Pos | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | | cm | deg | |
| 1 | 2401.81 | 69.82 | 94.00 | -24.18 | 39.39 | 2.22 | 28.21 | 0.00 | Average | 100 | 101 | VERTICAL |
| 2 | 2401.81 | 79.68 | 114.00 | -34.32 | 49.25 | 2.22 | 28.21 | 0.00 | Peak | 100 | 101 | VERTICAL |

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

| Temperature | 22°C | Humidity | 65% |
|---|---|---|---|
| Test Engineer | Rion Li | Configurations | Channel 40 |
| Test Date | Mar. 14, 2012 | | |

*Horizontal*

| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | Remark | A/Pos | T/Pos | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | | cm | deg | |
| 1 | 2440.83 | 73.53 | 94.00 | -20.47 | 43.00 | 2.24 | 28.29 | 0.00 | Average | 190 | 203 | HORIZONTAL |
| 2 | 2440.83 | 80.39 | 114.00 | -33.61 | 49.86 | 2.24 | 28.29 | 0.00 | Peak | 190 | 203 | HORIZONTAL |

*Vertical*

| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | Remark | A/Pos | T/Pos | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | | cm | deg | |
| 1 | 2440.84 | 71.85 | 94.00 | -22.15 | 41.32 | 2.24 | 28.29 | 0.00 | Average | 100 | 263 | VERTICAL |
| 2 | 2440.84 | 78.71 | 114.00 | -35.29 | 48.18 | 2.24 | 28.29 | 0.00 | Peak | 100 | 263 | VERTICAL |

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

| Temperature | 22°C | Humidity | 65% |
|---|---|---|---|
| Test Engineer | Rion Li | Configurations | Channel 79 |
| Test Date | Mar. 14, 2012 | | |

*Horizontal*

| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | Remark | A/Pos | T/Pos | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | | cm | deg | |
| 1 | 2480.07 | 75.60 | 94.00 | -18.40 | 44.96 | 2.26 | 28.38 | 0.00 | Average | 193 | 138 | HORIZONTAL |
| 2 | 2480.07 | 82.46 | 114.00 | -31.54 | 51.82 | 2.26 | 28.38 | 0.00 | Peak | 193 | 138 | HORIZONTAL |

*Vertical*

| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | Remark | A/Pos | T/Pos | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | | cm | deg | |
| 1 | 2480.18 | 74.06 | 94.00 | -19.94 | 43.43 | 2.26 | 28.37 | 0.00 | Average | 104 | 300 | VERTICAL |
| 2 | 2480.18 | 80.92 | 114.00 | -33.08 | 50.29 | 2.26 | 28.37 | 0.00 | Peak | 104 | 300 | VERTICAL |

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m)

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

## 4.3. 20dB Spectrum Bandwidth Measurement

### 4.3.1. Limit

Intentional radiators must be designed to ensure that the 20 dB bandwidth of the emissions in the specific band (2402 ~ 2480MHz).

### 4.3.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

| Spectrum Parameters | Setting |
|---|---|
| Attenuation | Auto |
| Span Frequency | > 6dB Bandwidth |
| RB | 100 kHz |
| VB | 100 kHz |
| Detector | Peak |
| Trace | Max Hold |
| Sweep Time | Auto |

### 4.3.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
2. The resolution bandwidth of 100 kHz and the video bandwidth of 100 kHz were used.
3. Measured the spectrum width with power higher than 6dB below carrier.

### 4.3.4. Test Setup Layout

### 4.3.5. Test Deviation

There is no deviation with the original standard.

### 4.3.6. EUT Operation during Test

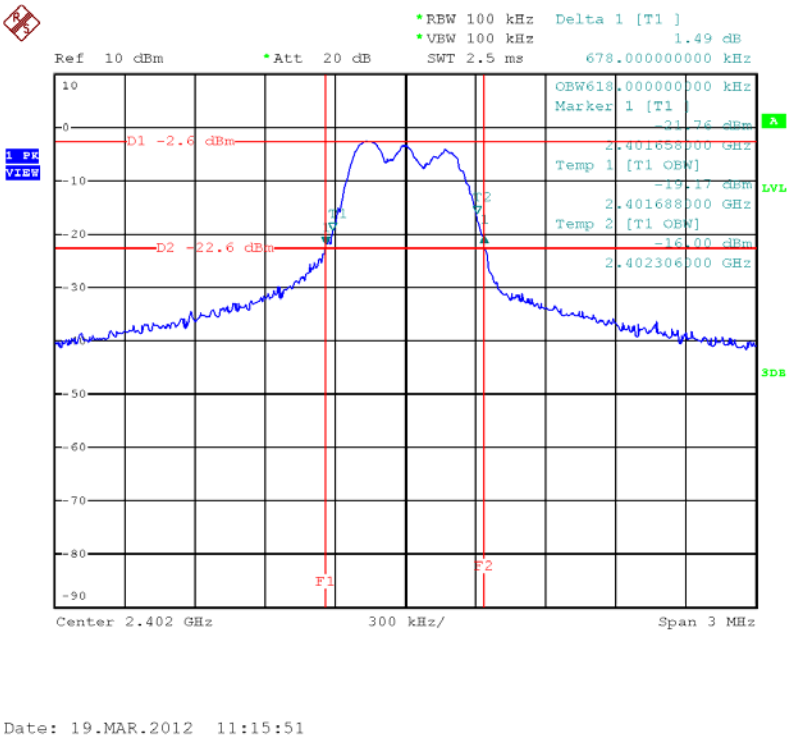
The EUT was programmed to be in continuously transmitting mode.

### 4.3.7. Test Result of 20dB Spectrum Bandwidth

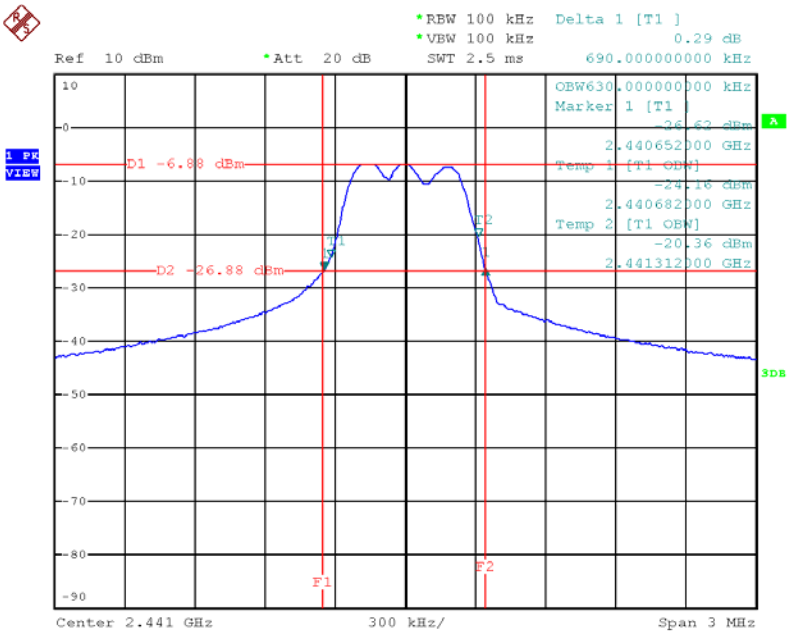
| Temperature | 22℃ | Humidity | 65% |
|---|---|---|---|
| Test Engineer | Satoshi Yang | Configurations | Channel 1/40/79 |

| Frequency | 20dB BW (MHz) | 99% OBW (MHz) | Frequency range (MHz) $f_L$ > 2400MHz | Frequency range (MHz) $f_H$ < 2483.5MHz | Test Result |
|---|---|---|---|---|---|
| 2402 MHz | 0.678 | 0.618 | 2401.6580 | - | Complies |
| 2441 MHz | 0.69 | 0.63 | - | - | Complies |
| 2480 MHz | 0.68 | 0.63 | - | 2480.3360 | Complies |

**20 dB/99% Bandwidth Plot on 2402 MHz**



## 20 dB/99% Bandwidth Plot on 2441 MHz

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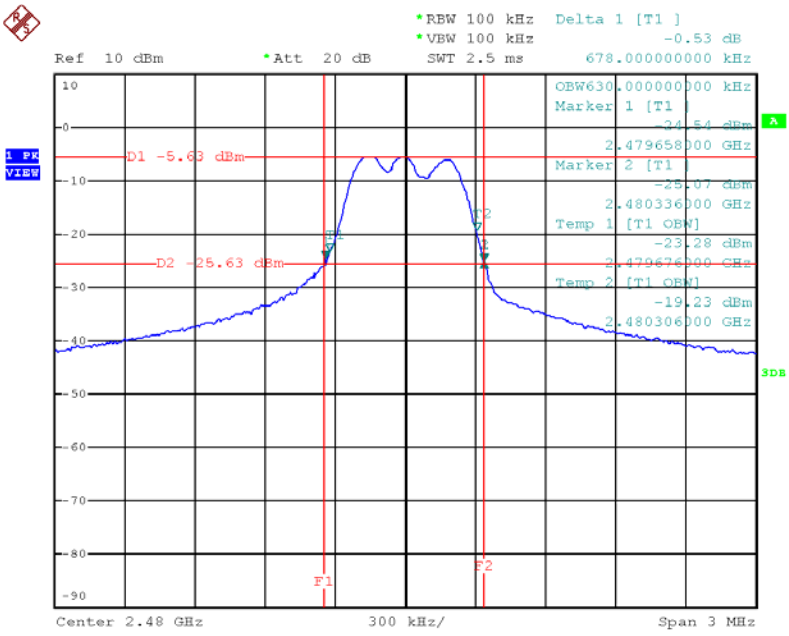
## 20 dB/99% Bandwidth Plot on 2480 MHz

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## 4.4. Radiated Emissions Measurement

### 4.4.1. Limit

Harmonic emissions limits comply with below 54 dBuV/m at 3m. Other emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or comply with the radiated emissions limits specified in section 15.209(a) limit in the table below has to be followed.

| Frequencies (MHz) | Field Strength (micorvolts/meter) | Measurement Distance (meters) |
|---|---|---|
| 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 |

### 4.4.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer and receiver.

| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start Frequency | 1000 MHz |
| Stop Frequency | 10th carrier harmonic |
| RB / VB | 1MHz / 3MHz for Peak, 1 MHz / 10Hz for Average |

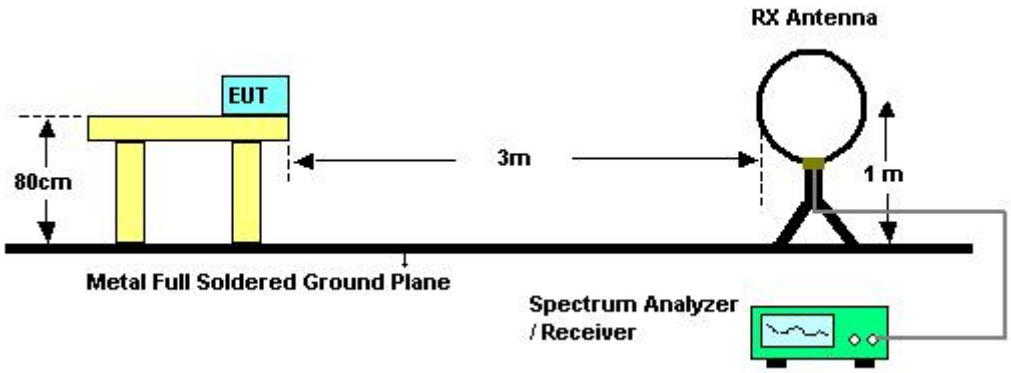
| Receiver Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start ~ Stop Frequency | 9kHz~150kHz / RB 200Hz for QP |
| Start ~ Stop Frequency | 150kHz~30MHz / RB 9kHz for QP |
| Start ~ Stop Frequency | 30MHz~1000MHz / RB 120kHz for QP |

### 4.4.3. Test Procedures

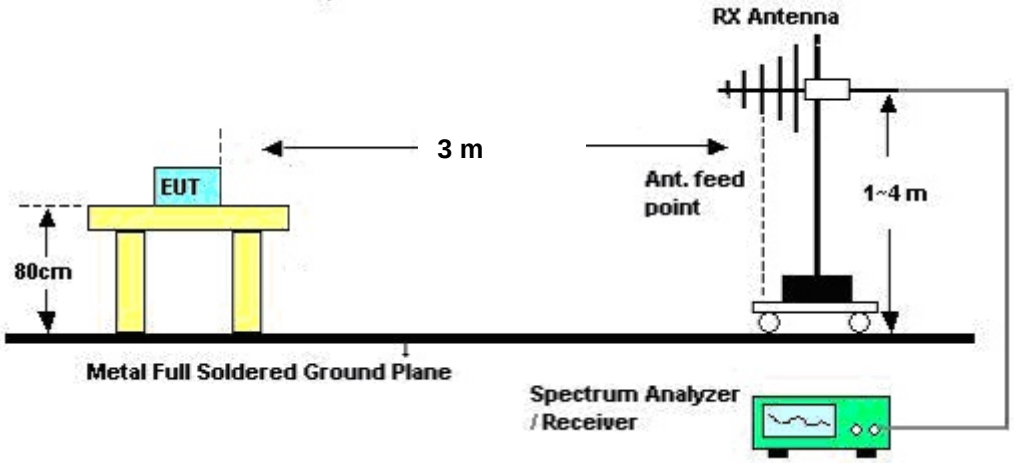
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and 3MHz RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

### 4.4.4. Test Setup Layout

**For radiated emissions below 1GHz**




**For radiated emissions above 1GHz**




### 4.4.5. Test Deviation

There is no deviation with the original standard.

### 4.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

### 4.4.7. Results of Radiated Emissions (9kHz~30MHz)

| Temperature | 22°C | Humidity | 65% |
|---|---|---|---|
| Test Engineer | Rion Li | Configurations | Normal Link |
| Test Date | Nov. 23, 2011 | | |

| Freq. (MHz) | Level (dBuV) | Over Limit (dB) | Limit Line (dBuV) | Remark |
|---|---|---|---|---|
| - | - | - | - | See Note |

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

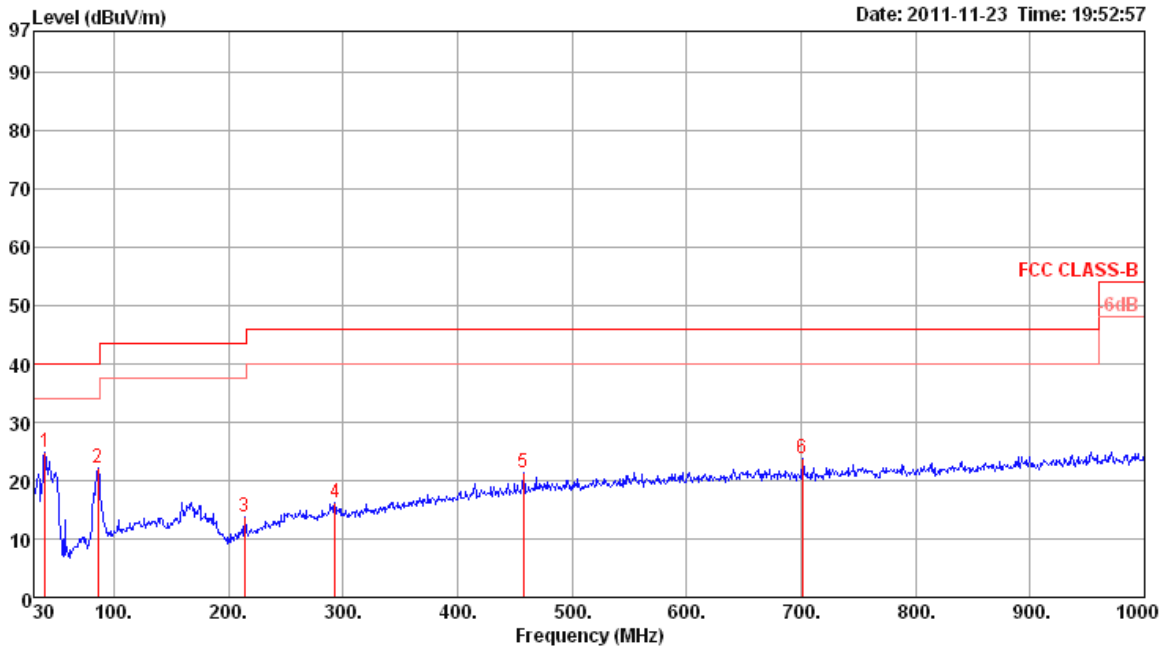
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

## 4.4.8. Results of Radiated Emissions (30MHz~1GHz)

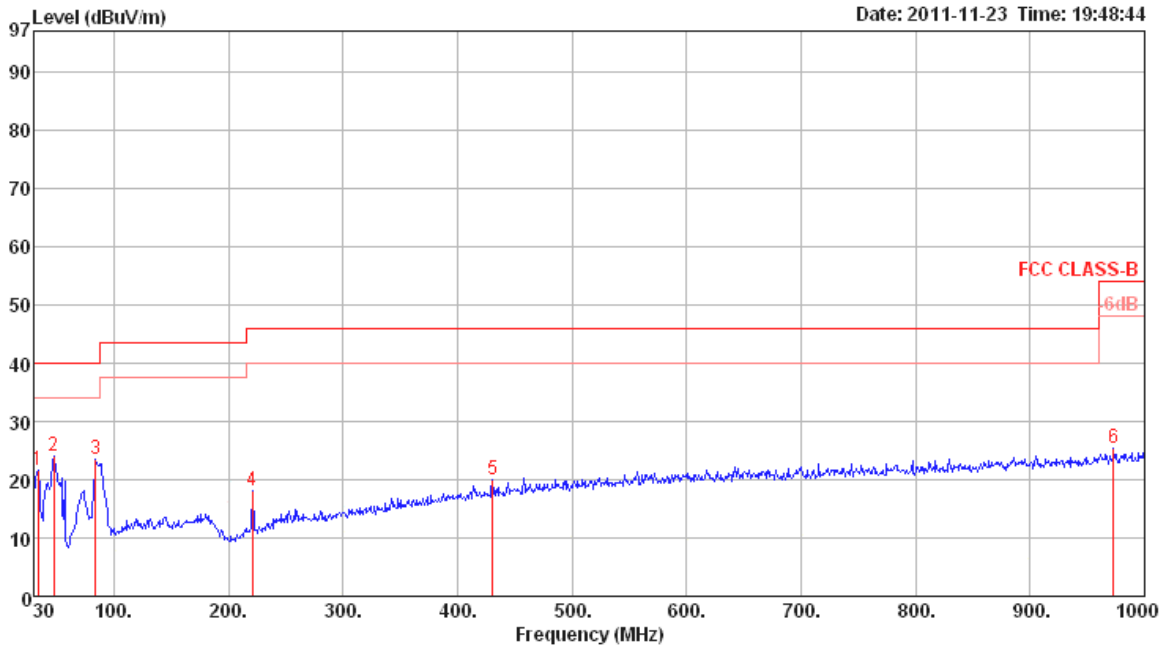
| Temperature | 22°C | Humidity | 65% |
|---|---|---|---|
| Test Engineer | Rion Li | Configurations | Normal Link |
| Test Mode | Mode 1 | | |

*Horizontal*




| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | Remark | A/Pos | T/Pos | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | | cm | deg | |
| 1 | 39.70 | 24.85 | 40.00 | -15.15 | 38.84 | 0.70 | 13.11 | 27.80 | Peak | 100 | 0 | HORIZONTAL |
| 2 | 86.26 | 22.23 | 40.00 | -17.77 | 40.53 | 1.10 | 8.26 | 27.66 | Peak | 100 | 0 | HORIZONTAL |
| 3 | 214.30 | 13.87 | 43.50 | -29.63 | 29.06 | 1.76 | 10.12 | 27.07 | Peak | 100 | 0 | HORIZONTAL |
| 4 | 292.87 | 16.16 | 46.00 | -29.84 | 27.73 | 2.07 | 13.28 | 26.92 | Peak | 100 | 0 | HORIZONTAL |
| 5 | 457.77 | 21.32 | 46.00 | -24.68 | 29.61 | 2.62 | 16.97 | 27.88 | Peak | 100 | 0 | HORIZONTAL |
| 6 | 701.24 | 23.85 | 46.00 | -22.15 | 29.44 | 3.30 | 19.10 | 27.99 | Peak | 100 | 0 | HORIZONTAL |

***Vertical***




| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | Remark | A/Pos | T/Pos | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | | cm | deg | |
| 1 | 33.88 | 21.58 | 40.00 | -18.42 | 32.26 | 0.50 | 16.62 | 27.80 | Peak | 400 | 0 | VERTICAL |
| 2 | 47.46 | 24.02 | 40.00 | -15.98 | 41.70 | 0.70 | 9.42 | 27.80 | Peak | 400 | 0 | VERTICAL |
| 3 | 84.32 | 23.52 | 40.00 | -16.48 | 42.19 | 1.10 | 7.89 | 27.66 | Peak | 400 | 0 | VERTICAL |
| 4 | 221.09 | 18.02 | 46.00 | -27.98 | 32.68 | 1.78 | 10.62 | 27.06 | Peak | 400 | 0 | VERTICAL |
| 5 | 430.61 | 19.90 | 46.00 | -26.10 | 28.63 | 2.48 | 16.54 | 27.75 | Peak | 400 | 0 | VERTICAL |
| 6 | 972.84 | 25.29 | 54.00 | -28.71 | 27.67 | 3.65 | 21.08 | 27.11 | Peak | 400 | 0 | VERTICAL |

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

## 4.4.9. Results for Radiated Emissions (1GHz~10th Harmonic)

| Temperature | 22°C | Humidity | 65% |
|---|---|---|---|
| Test Engineer | Rion Li | Configurations | Channel 1 |
| Test Date | Mar. 14, 2012 | Test Mode | Mode 1 |

*Horizontal*

| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | Remark | A/Pos | T/Pos | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | | cm | deg | |
| 1 | 4803.64 | 43.81 | 54.00 | -10.19 | 42.54 | 3.29 | 33.02 | 35.04 | Average | 130 | 222 | HORIZONTAL |
| 2 | 4803.64 | 50.67 | 74.00 | -23.33 | 49.40 | 3.29 | 33.02 | 35.04 | Peak | 130 | 222 | HORIZONTAL |

*Vertical*

| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | Remark | A/Pos | T/Pos | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | | cm | deg | |
| 1 | 4803.77 | 40.98 | 54.00 | -13.02 | 39.71 | 3.29 | 33.02 | 35.04 | Average | 103 | 286 | VERTICAL |
| 2 | 4803.77 | 47.84 | 74.00 | -26.16 | 46.57 | 3.29 | 33.02 | 35.04 | Peak | 103 | 286 | VERTICAL |

| Temperature | 22°C | Humidity | 65% |
|---|---|---|---|
| Test Engineer | Rion Li | Configurations | Channel 40 |
| Test Date | Mar. 14, 2012 | Test Mode | Mode 1 |

*Horizontal*

| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | Remark | A/Pos | T/Pos | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | | cm | deg | |
| 1 | 4881.68 | 41.99 | 54.00 | -12.01 | 40.53 | 3.33 | 33.16 | 35.03 | Average | 124 | 241 | HORIZONTAL |
| 2 | 4881.68 | 48.85 | 74.00 | -25.15 | 47.39 | 3.33 | 33.16 | 35.03 | Peak | 124 | 241 | HORIZONTAL |
| 3 | 7322.50 | 49.93 | 54.00 | -4.07 | 45.31 | 4.06 | 35.96 | 35.40 | Average | 100 | 350 | HORIZONTAL |
| 4 | 7322.50 | 56.79 | 74.00 | -17.21 | 52.17 | 4.06 | 35.96 | 35.40 | Peak | 100 | 350 | HORIZONTAL |

*Vertical*

| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | Remark | A/Pos | T/Pos | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | | cm | deg | |
| 1 | 4881.61 | 37.94 | 54.00 | -16.06 | 36.48 | 3.33 | 33.16 | 35.03 | Average | 100 | 0 | VERTICAL |
| 2 | 4881.61 | 44.80 | 74.00 | -29.20 | 43.34 | 3.33 | 33.16 | 35.03 | Peak | 100 | 0 | VERTICAL |
| 3 | 7322.99 | 53.07 | 54.00 | -0.93 | 48.45 | 4.06 | 35.96 | 35.40 | Average | 107 | 245 | VERTICAL |
| 4 | 7322.99 | 59.93 | 74.00 | -14.07 | 55.31 | 4.06 | 35.96 | 35.40 | Peak | 107 | 245 | VERTICAL |

| Temperature | 22°C | Humidity | 65% |
|---|---|---|---|
| Test Engineer | Rion Li | Configurations | Channel 79 |
| Test Date | Mar. 14, 2012 | Test Mode | Mode 1 |

*Horizontal*

| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | Remark | A/Pos | T/Pos | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | | cm | deg | |
| 1 | 4959.69 | 41.31 | 54.00 | -12.69 | 39.62 | 3.37 | 33.33 | 35.01 | Average | 112 | 332 | HORIZONTAL |
| 2 | 4959.69 | 48.17 | 74.00 | -25.83 | 46.48 | 3.37 | 33.33 | 35.01 | Peak | 112 | 332 | HORIZONTAL |
| 3 | 7439.39 | 49.90 | 54.00 | -4.10 | 45.03 | 4.07 | 36.20 | 35.40 | Average | 113 | 332 | HORIZONTAL |
| 4 | 7439.39 | 56.76 | 74.00 | -17.24 | 51.89 | 4.07 | 36.20 | 35.40 | Peak | 113 | 332 | HORIZONTAL |

*Vertical*

| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | Remark | A/Pos | T/Pos | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | | cm | deg | |
| 1 | 4959.67 | 40.36 | 54.00 | -13.64 | 38.67 | 3.37 | 33.33 | 35.01 | Average | 120 | 95 | VERTICAL |
| 2 | 4959.67 | 47.22 | 74.00 | -26.78 | 45.53 | 3.37 | 33.33 | 35.01 | Peak | 120 | 95 | VERTICAL |
| 3 | 7439.45 | 49.23 | 54.00 | -4.77 | 44.36 | 4.07 | 36.20 | 35.40 | Average | 130 | 259 | VERTICAL |
| 4 | 7439.45 | 56.09 | 74.00 | -17.91 | 51.22 | 4.07 | 36.20 | 35.40 | Peak | 130 | 259 | VERTICAL |

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

## 4.5. Band Edge Emissions Measurement

### 4.5.1. Limit

Band edge emissions radiated outside of the specified frequency bands shall be attenuated by at least 50 dB below the level of the fundamental or comply with the radiated emissions limits specified in section 15.209(a) limit in the table below has to be followed.

| Frequencies (MHz) | Field Strength (micorvolts/meter) | Measurement Distance (meters) |
|---|---|---|
| 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 |

### 4.5.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Span Frequency | 100 MHz |
| RB / VB | 1MHz / 3MHz for Peak, 1 MHz / 10Hz for Average |

### 4.5.3. Test Procedures

1. The test procedure is the same as section 4.2.3, only the frequency range investigated is limited to 2MHz around bandedges.
2. In case the emission is fail due to the used RB/VB is too wide, marker-delta method of FCC Public Notice DA00-705 will be followed.

### 4.5.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.2.4.

### 4.5.5. Test Deviation

There is no deviation with the original standard.

### 4.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

## 4.5.7. Test Result of Band Edge and Fundamental Emissions

| Temperature | 22°C | Humidity | 65% |
|---|---|---|---|
| Test Engineer | Rion Li | Configurations | Channel 1, 40, 79 |
| Test Date | Mar. 14, 2012 | | |

**Channel 1**

| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | Remark | A/Pos | T/Pos | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | | cm | deg | |
| 1 | 2379.90 | 51.52 | 54.00 | -2.48 | 21.18 | 2.21 | 28.13 | 0.00 | Average | 100 | 115 | HORIZONTAL |
| 2 | 2379.90 | 58.38 | 74.00 | -15.62 | 28.04 | 2.21 | 28.13 | 0.00 | Peak | 100 | 115 | HORIZONTAL |
| 3 | 2401.84 | 72.83 | | | | 2.22 | 28.21 | 0.00 | Average | 100 | 115 | HORIZONTAL |
| 4 | 2401.84 | 79.69 | | | | 2.22 | 28.21 | 0.00 | Peak | 100 | 115 | HORIZONTAL |

Item 3, 4 are the fundamental frequency at 2402 MHz.

**Channel 40**

| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | Remark | A/Pos | T/Pos | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | | cm | deg | |
| 1 | 2386.92 | 50.60 | 54.00 | -3.40 | 20.22 | 2.21 | 28.17 | 0.00 | Average | 101 | 259 | VERTICAL |
| 2 | 2386.92 | 57.49 | 74.00 | -16.51 | 27.11 | 2.21 | 28.17 | 0.00 | Peak | 101 | 259 | VERTICAL |
| 3 | 2441.01 | 71.71 | | | | 2.24 | 28.29 | 0.00 | Average | 101 | 259 | VERTICAL |
| 4 | 2441.01 | 78.57 | | | | 2.24 | 28.29 | 0.00 | Peak | 101 | 259 | VERTICAL |
| 5 | 2497.92 | 51.20 | 54.00 | -2.80 | 20.52 | 2.27 | 28.41 | 0.00 | Average | 101 | 259 | VERTICAL |
| 6 | 2497.92 | 58.07 | 74.00 | -15.93 | 27.39 | 2.27 | 28.41 | 0.00 | Peak | 101 | 259 | VERTICAL |

Item 3, 4 are the fundamental frequency at 2441MHz.

**Channel 79**

| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | Remark | A/Pos | T/Pos | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | | cm | deg | |
| 1 | 2480.00 | 75.33 | | | | 2.26 | 28.38 | 0.00 | Average | 193 | 138 | HORIZONTAL |
| 2 | 2480.00 | 82.20 | | | | 2.26 | 28.38 | 0.00 | Peak | 193 | 138 | HORIZONTAL |
| 3 | 2483.82 | 52.27 | 54.00 | -1.73 | 21.63 | 2.26 | 28.38 | 0.00 | Average | 193 | 138 | HORIZONTAL |
| 4 | 2483.82 | 59.13 | 74.00 | -14.87 | 28.49 | 2.26 | 28.38 | 0.00 | Peak | 193 | 138 | HORIZONTAL |

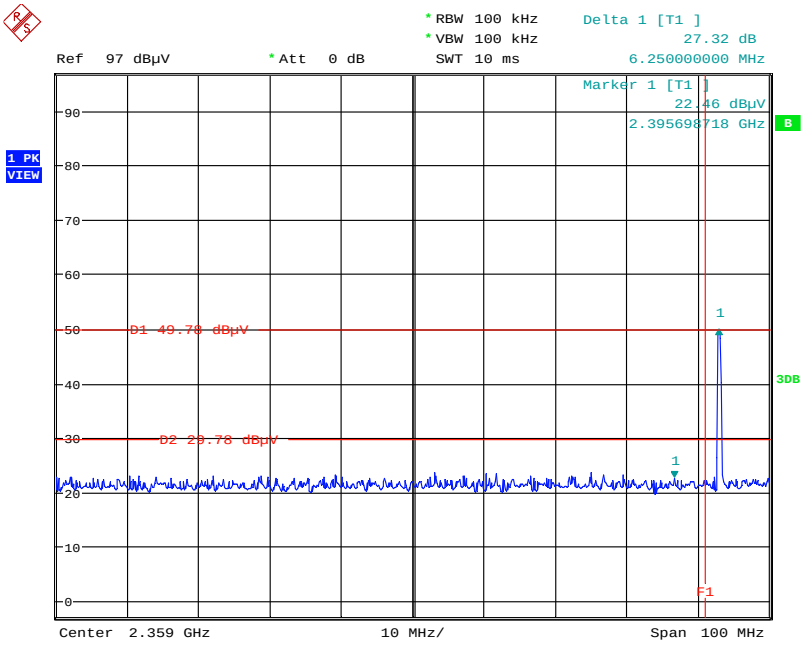
Item 1, 2 are the fundamental frequency at 2480 MHz.

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

## Low Band Edge Plot on 2402 MHz

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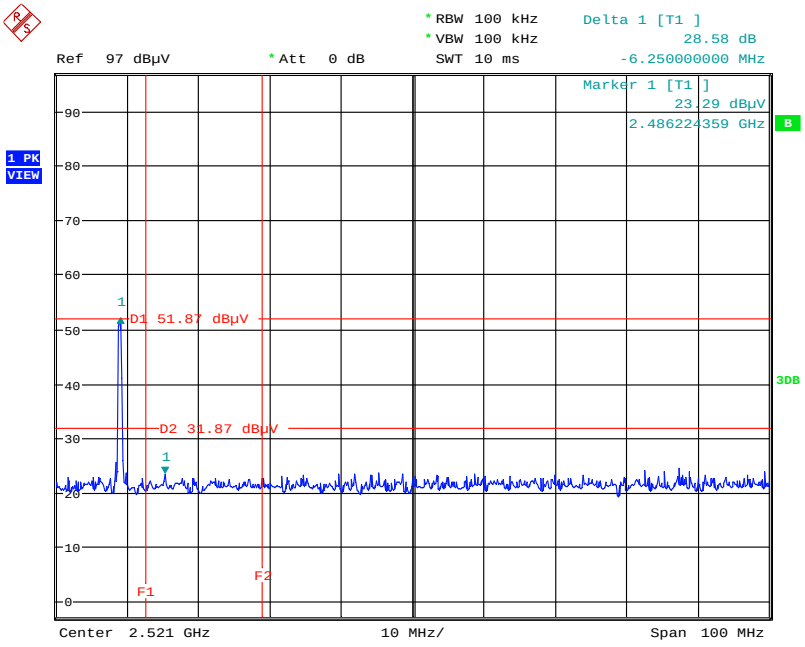
## High Band Edge Plot on 2480 MHz

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## 4.6. Antenna Requirements

### 4.6.1. Limit

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

### 4.6.2. Antenna Connector Construction

Please refer to section 3.1 in this test report, antenna connector complied with the requirements.

# 5. LIST OF MEASURING EQUIPMENTS

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Remark |
|---|---|---|---|---|---|---|
| EMI Test Receiver | R&S | ESCS 30 | 100377 | 9kHz ~ 2.75GHz | Sep. 14, 2011 | Conduction (CO01-CB) |
| LISN | F.C.C. | FCC-LISN-50-16-2 | 04083 | 150kHz ~ 100MHz | Nov. 14, 2011 | Conduction (CO01-CB) |
| V- LISN | Schwarzbeck | NSLK 8127 | 8127-478 | 9K ~ 30MHz | Nov. 30, 2011 | Conduction (CO01-CB) |
| PULSE LIMITER | R&S | ESH3-Z2 | 100430 | 9K~30MHz | Feb. 03, 2012 | Conduction (CO01-CB) |
| COND Cable | Woken | Cable | 01 | 0.15MHz~30MHz | Dec. 4, 2011 | Conduction (CO01-CB) |
| BILOG ANTENNA | Schaffner | CBL6112D | 22021 | 20MHz ~ 2GHz | Jan. 11, 2012 | Radiation (03CH01-CB) |
| Horn Antenna | EMCO | 3115 | 00075790 | 750MHz~18GHz | Nov. 25, 2011 | Radiation (03CH01-CB) |
| Horn Antenna | SCHWARZBEAK | BBHA 9170 | BBHA9170252 | 15GHz ~ 40GHz | Nov. 22, 2011 | Radiation (03CH01-CB) |
| Pre-Amplifier | Agilent | 8447D | 2944A10991 | 0.1MHz ~ 1.3GHz | Nov. 17, 2011 | Radiation (03CH01-CB) |
| Pre-Amplifier | Agilent | 8449B | 3008A02310 | 1GHz ~ 26.5GHz | Nov. 29, 2011 | Radiation (03CH01-CB) |
| Spectrum analyzer | R&S | FSP40 | 100056 | 9KHz~40GHz | Nov. 03, 2011 | Radiation (03CH01-CB) |
| EMI Test Receiver | R&S | ESCS 30 | 100355 | 9KHz ~ 2.75GHz | Mar. 22, 2011 | Radiation (03CH01-CB) |
| Turn Table | INN CO | CO 2000 | N/A | 0 ~ 360 degree | N/A | Radiation (03CH01-CB) |
| Antenna Mast | INN CO | CO2000 | N/A | 1 m - 4 m | N/A | Radiation (03CH01-CB) |
| RF Cable-low | Woken | Low Cable-1 | N/A | 30 MHz - 1 GHz | Nov. 17, 2011 | Radiation (03CH01-CB) |
| RF Cable-high | Woken | High Cable-1 | N/A | 1 GHz – 26.5 GHz | Nov. 17, 2011 | Radiation (03CH01-CB) |
| RF Cable-high | Woken | High Cable-2 | N/A | 1 GHz – 26.5 GHz | Nov. 17, 2011 | Radiation (03CH01-CB) |
| RF Cable-high | Woken | High Cable-3 | N/A | 1 GHz - 40 GHz | Nov. 17, 2011 | Radiation (03CH01-CB) |
| RF Cable-high | Woken | High Cable-4 | N/A | 1 GHz - 40 GHz | Nov. 17, 2011 | Radiation (03CH01-CB) |
| Signal analyzer | R&S | FSV40 | 100979 | 9KHz~40GHz | Sep. 26, 2011 | Conducted (TH01-CB) |
| Thermo-Hygro Meter | N/A | HC 520 | #1 | 15~70 degree | Nov. 02, 2011 | Conducted (TH01-CB) |
| RF Power Divider | HP | 11636A | 00306 | 2GHz ~ 18GHz | N/A | Conducted (TH01-CB) |
| RF Power Splitter | Anaren | 44100 | 1839 | 2GHz ~ 18GHz | N/A | Conducted (TH01-CB) |
| RF Power Splitter | Anaren | 42100 | 17930 | 2GHz ~ 18GHz | N/A | Conducted (TH01-CB) |
| RF Cable-high | Woken | High Cable-7 | - | 1 GHz – 26.5 GHz | Nov. 17, 2011 | Conducted (TH01-CB) |

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Remark |
|---|---|---|---|---|---|---|
| RF Cable-high | Woken | High Cable-8 | - | 1 GHz – 26.5 GHz | Nov. 17, 2011 | Conducted (TH01-CB) |
| RF Cable-high | Woken | High Cable-9 | - | 1 GHz – 26.5 GHz | Nov. 17, 2011 | Conducted (TH01-CB) |
| RF Cable-high | Woken | High Cable-10 | - | 1 GHz – 26.5 GHz | Nov. 17, 2011 | Conducted (TH01-CB) |
| RF Cable-high | Woken | High Cable-11 | - | 1 GHz – 26.5 GHz | Nov. 17, 2011 | Conducted (TH01-CB) |
| RF Cable-high | Woken | High Cable-12 | - | 1 GHz – 26.5 GHz | Nov. 17, 2011 | Conducted (TH01-CB) |
| RF Cable-high | Woken | High Cable-13 | - | 1 GHz – 26.5 GHz | Nov. 17, 2011 | Conducted (TH01-CB) |
| Power Sensor | Anritsu | MA2411B | 0917223 | 300MHz~40GHz | Nov. 01, 2011 | Conducted (TH01-CB) |
| Power Meter | Anritsu | ML2495A | 1035008 | 300MHz~40GHz | Nov. 01, 2011 | Conducted (TH01-CB) |

Note: Calibration Interval of instruments listed above is one year.

Note: "*" Calibration Interval of instruments listed above is two years.

# 6. TEST LOCATION

| | | | |
|---|---|---|---|
| SHIJR | ADD | : | 6Fl., No. 106, Sec. 1, Shintai 5th Rd., Shijr City, Taipei, Taiwan 221, R.O.C. |
| | TEL | : | 886-2-2696-2468 |
| | FAX | : | 886-2-2696-2255 |
| HWA YA | ADD | : | No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. |
| | TEL | : | 886-3-327-3456 |
| | FAX | : | 886-3-318-0055 |
| LINKOU | ADD | : | No. 30-2, Dingfu Tsuen, Linkou Shiang, Taipei, Taiwan 244, R.O.C |
| | TEL | : | 886-2-2601-1640 |
| | FAX | : | 886-2-2601-1695 |
| DUNGHU | ADD | : | No. 3, Lane 238, Kangle St., Neihu Chiu, Taipei, Taiwan 114, R.O.C. |
| | TEL | : | 886-2-2631-4739 |
| | FAX | : | 886-2-2631-9740 |
| JUNGHE | ADD | : | 7Fl., No. 758, Jungjeng Rd., Junghe City, Taipei, Taiwan 235, R.O.C. |
| | TEL | : | 886-2-8227-2020 |
| | FAX | : | 886-2-8227-2626 |
| NEIHU | ADD | : | 4Fl., No. 339, Hsin Hu 2nd Rd., Taipei 114, Taiwan, R.O.C. |
| | TEL | : | 886-2-2794-8886 |
| | FAX | : | 886-2-2794-9777 |
| JHUBEI | ADD | : | No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. |
| | TEL | : | 886-3-656-9065 |
| | FAX | : | 886-3-656-9085 |

# 7. TAF CERTIFICATE OF ACCREDITATION

Certificate No. : L1190-110702

財團法人全國認證基金會
Taiwan Accreditation Foundation

## Certificate of Accreditation

This is to certify that

**Sporton International Inc.**
**EMC & Wireless Communications Laboratory**
No.52, Hwa Ya 1st Road, Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

**is accredited in respect of laboratory**

| | | |
|---|---|---|
| **Accreditation Criteria** | : | ISO/IEC 17025:2005 |
| **Accreditation Number** | : | 1190 |
| **Originally Accredited** | : | December 15, 2003 |
| **Effective Period** | : | January 10, 2010 to January 09, 2013 |
| **Accredited Scope** | : | Testing Field, see described in the Appendix |
| **Specific Accreditation Program** | : | Accreditation Program for Designated Testing Laboratory for Commodities Inspection<br>Accreditation Program for Telecommunication Equipment Testing Laboratory<br>Accreditation Program for BSMI Mutual Recognition Arrangment with Foreign Authorities |

Jay-San Chen
President, Taiwan Accreditation Foundation
Date : July 02, 2011

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The Appendix forms an integral part of this Certificate, which shall be invalid when use without the Appendix