# FCC Part 15B
# Measurement and Test Report

**For**

**Shenzhen Wisky Technology Co., LTD.**

**5th Floor, W2-A Building, Hi-tech Park South 1st Road, Nanshan District,**

**Shenzhen**

## FCC ID: Y5KW001

| | |
|---|---|
| **Test Standards:** | FCC Part 15 Subpart B |
| **Product Description:** | MID |
| **Tested Model:** | W001 |
| **Report No.:** | STR13028006I-2 |
| **Tested Date:** | 2013-02-01 to 2013-02-25 |
| **Issued Date:** | 2013-02-26 |
| **Tested By:** | Vigoss Xiong / Engineer |
| **Reviewed By:** | Lahm Peng / EMC Manager |
| **Approved & Authorized By:** | Jandy so / PSQ Manager |

**Prepared By:**

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# 1. GENERAL INFORMATION

## 1.1 Product Description for Equipment Under Test (EUT)

**Client Information**

| | |
|---|---|
| Applicant: | Shenzhen Wisky Technology Co., LTD. |
| Address of applicant: | 5th Floor, W2-A Building, Hi-tech Park South 1st Road, Nanshan District, Shenzhen |
| Manufacturer: | Shenzhen Wisky Technology Co., LTD. |
| Address of manufacturer: | 5th Floor, W2-A Building, Hi-tech Park South 1st Road, Nanshan District, Shenzhen |

| **General Description of EUT** | |
|---|---|
| Product Name: | MID |
| Trade Name: | / |
| Model No.: | W001 |
| Adding Model(s): | / |
| Power Adapter Model: | SAPA05010US |
| | Input: AC 100-240V, Output: DC 5V |
| | |
| *Note: The test data is gathered from a production sample, provided by the manufacturer.* | |

| **Technical Characteristics of EUT** | |
|---|---|
| Rated Voltage: | DC 3.7V Lithium Battery |
| Rated Current: | 2.0A |
| Rated Power: | / |
| Highest Internal Frequency: | 2GHz |
| Classification of ITE: | B |
| Support Interface: | USB, HDMI |

## 1.2 Test Standards

The following report is prepared on behalf of the Shenzhen Wisky Technology Co., LTD. in accordance with Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart B, and section 15.205, 15.107, and 15.109 rules.

**Maintenance of compliance** is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

## 1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

## 1.4 Test Facility

- **FCC – Registration No.: 994117**
  SEM.Test Compliance Services Co., Ltd. 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 and the Registration is 994117.

- **Industry Canada (IC) Registration No.: 7673A**
  The 3m Semi-anechoic chamber of SEM.Test Compliance Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 7673A.

- **CNAS Registration No.: L4062**
  Shenzhen SEM.Test Electronics Service Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 3/F, Jinbao Commerce Building, Xin’an Fanshen Road, Bao’an District, Shenzhen, P.R.C (518101)

## 1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List:

| Test Mode | Description | Remark |
|---|---|---|
| TM1 | Charging and Playing | Playing Color Bar with 1kHz Video |
| TM2 | Downloading | Connect to PC |

EUT Cable List and Details

| Cable Description | Length (M) | Shielded/Unshielded | With Core/Without Core |
|---|---|---|---|
| USB Cable | 1.0 | Shielded | With Core |

Auxiliary Equipment List and Details

| Description | Manufacturer | Model | Serial Number |
|---|---|---|---|
| Notebook | SAMSUNG | NP-R20 | 124V93FP300082V |
| Monitor | SAMSUNG | B2230H | YDG7HVJZ800050N |

Special Cable List and Details

| Cable Description | Length (M) | Shielded/Unshielded | With Core/Without Core |
|---|---|---|---|
| Earphone Cable | 1.5 | Unshielded | Without Core |
| HDMI Cable | 2.0 | Shielded | Without Core |

# 2. SUMMARY OF TEST RESULTS

| FCC Rules | Description of Test Item | Result |
|---|---|---|
| § 15.107 (a) | Conducted Emissions | Compliant |
| § 15.109 (a) | Radiated Emissions | Compliant |

N/A: not applicable

# 3. Conducted Emissions

## 3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 2.88 dB.

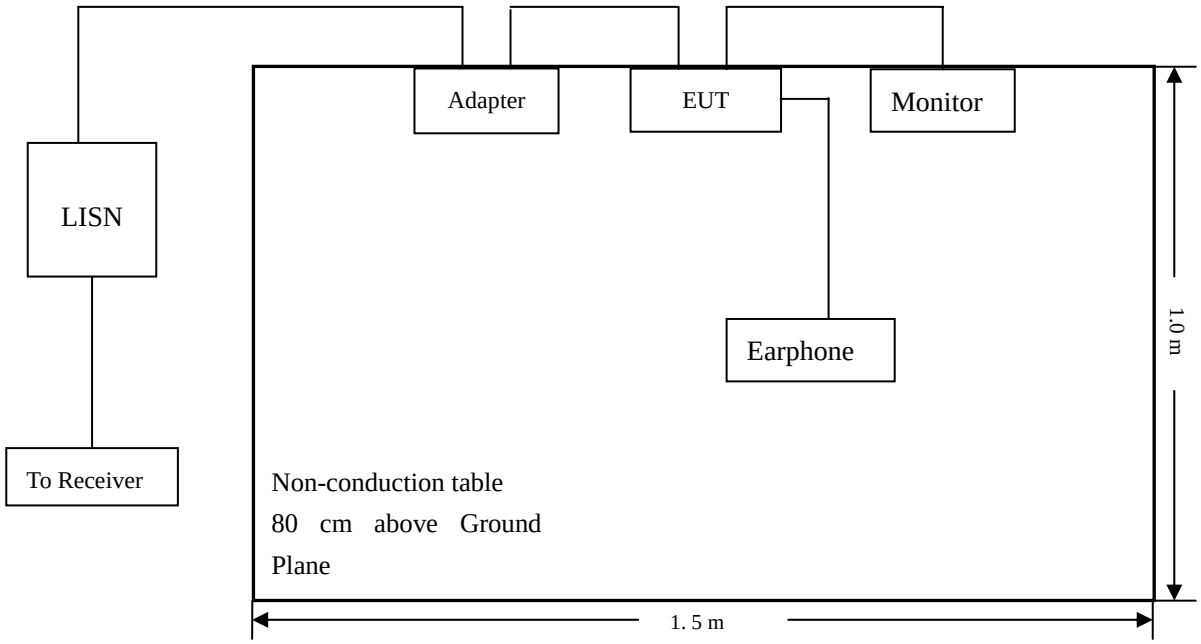
## 3.2 Test Equipment List and Details

| Description | Manufacturer | Model | Serial Number | Cal. Date | Due. Date |
|---|---|---|---|---|---|
| EMI Test Receiver | Rohde & Schwarz | ESPI | 101611 | 2012-03-28 | 2013-03-27 |
| L.I.S.N | Schwarz beck | NSLK8126 | 8126-224 | 2012-03-28 | 2013-03-27 |
| Pulse Limiter | Rohde & Schwarz | ESH3-Z2 | 100911 | 2012-03-28 | 2013-03-27 |

## 3.3 Test Procedure

Test is conducting under the description of ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

## 3.4 Basic Test Setup Block Diagram



## 3.5 Environmental Conditions

| | |
|---|---|
| Temperature: | 23 °C |
| Relative Humidity: | 52% |
| ATM Pressure: | 1011 mbar |

## 3.6 Summary of Test Results/Plots

According to the data in section 3.7, the EUT complied with the FCC Part 15.107(a) Conducted margin for a Class B device, with the *worst* margin reading of:

**-6.10 dBμV** at **0.214 MHz** in the **Neutral**, **Charging and Playing** Mode, **Peak** detector, 0.15-30MHz

## 3.7 Conducted Emissions Test Data

**Plot of Conducted Emissions Test Data**

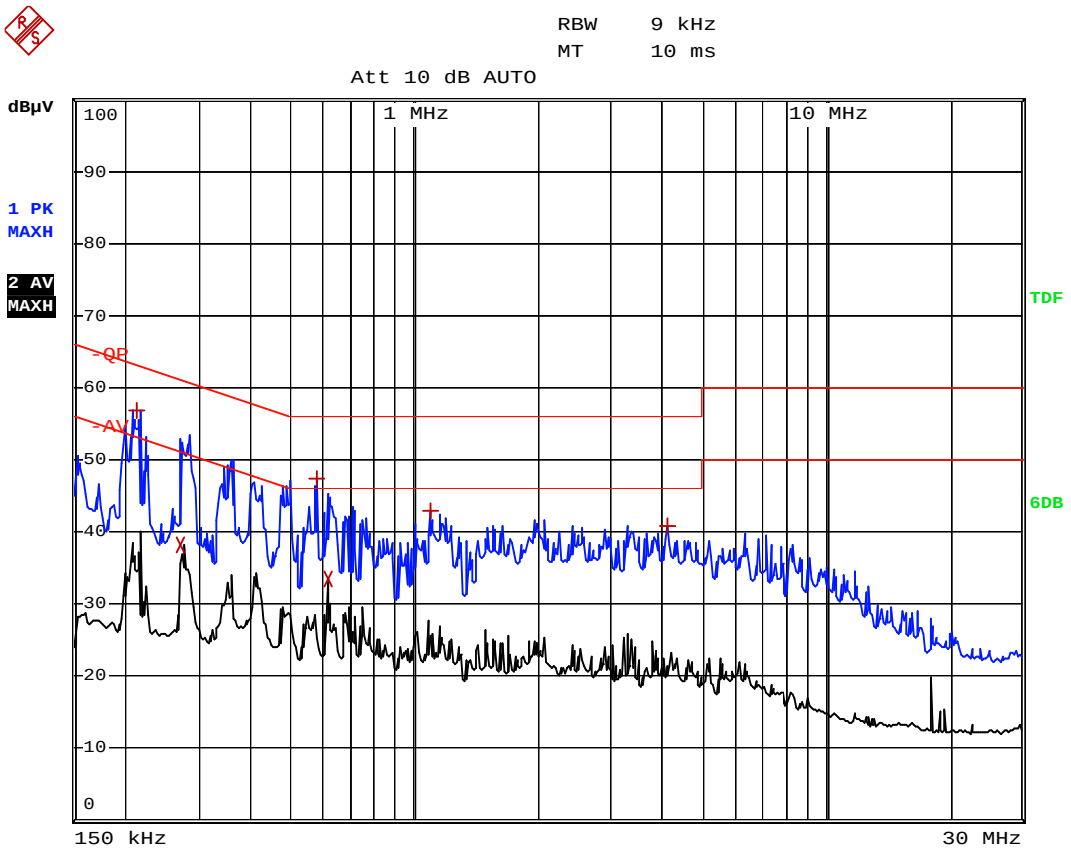
*EUT:* *MID*

*Tested Model:* *W001*

*Operating Condition:* *Charging and Playing*

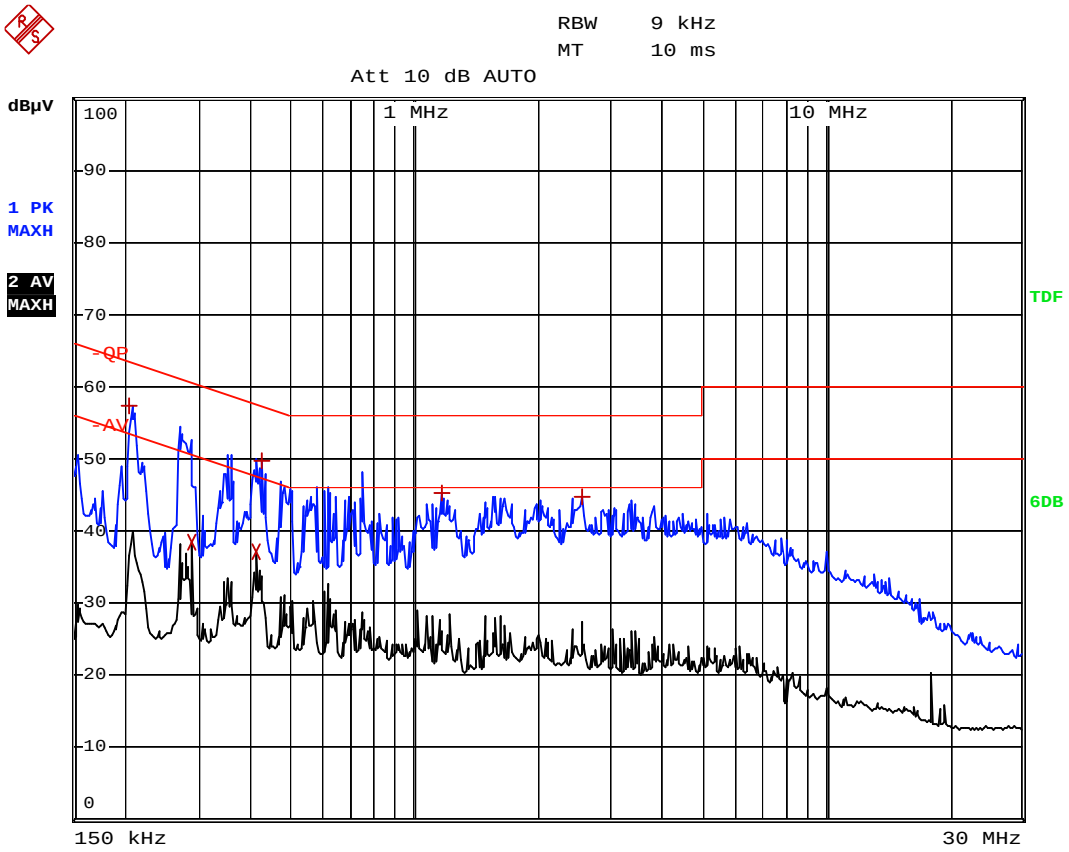
*Comment:* *Connect to Monitor*

*Test Specification:* *Neutral*




| EDIT PEAK LIST (Prescan Results) | | | |
|---|---|---|---|
| Trace1: | -QP | | |
| Trace2: | -AV | | |
| Trace3: | --- | | |
| TRACE | FREQUENCY | LEVEL dBµV | DELTA LIMIT dB |
| 1 Max Peak | 214 kHz | 56.94 | -6.10 |
| 2 Average | 274 kHz | 38.11 | -12.87 |
| 1 Max Peak | 578 kHz | 47.44 | -8.55 |
| 2 Average | 614 kHz | 33.57 | -12.42 |
| 1 Max Peak | 1.094 MHz | 42.84 | -13.15 |
| 1 Max Peak | 4.11 MHz | 40.84 | -15.15 |

*Test Specification:* *Live*




| EDIT PEAK LIST (Prescan Results) | | | |
|---|---|---|---|
| Trace1: | -QP | | |
| Trace2: | -AV | | |
| Trace3: | --- | | |
| TRACE | FREQUENCY | LEVEL dBµV | DELTA LIMIT dB |
| 1 Max Peak | 206 kHz | 57.22 | -6.13 |
| 2 Average | 286 kHz | 38.34 | -12.29 |
| 2 Average | 410 kHz | 37.26 | -10.38 |
| 1 Max Peak | 426 kHz | 49.73 | -7.59 |
| 1 Max Peak | 1.174 MHz | 45.34 | -10.65 |
| 1 Max Peak | 2.57 MHz | 44.68 | -11.31 |

**Plot of Conducted Emissions Test Data**

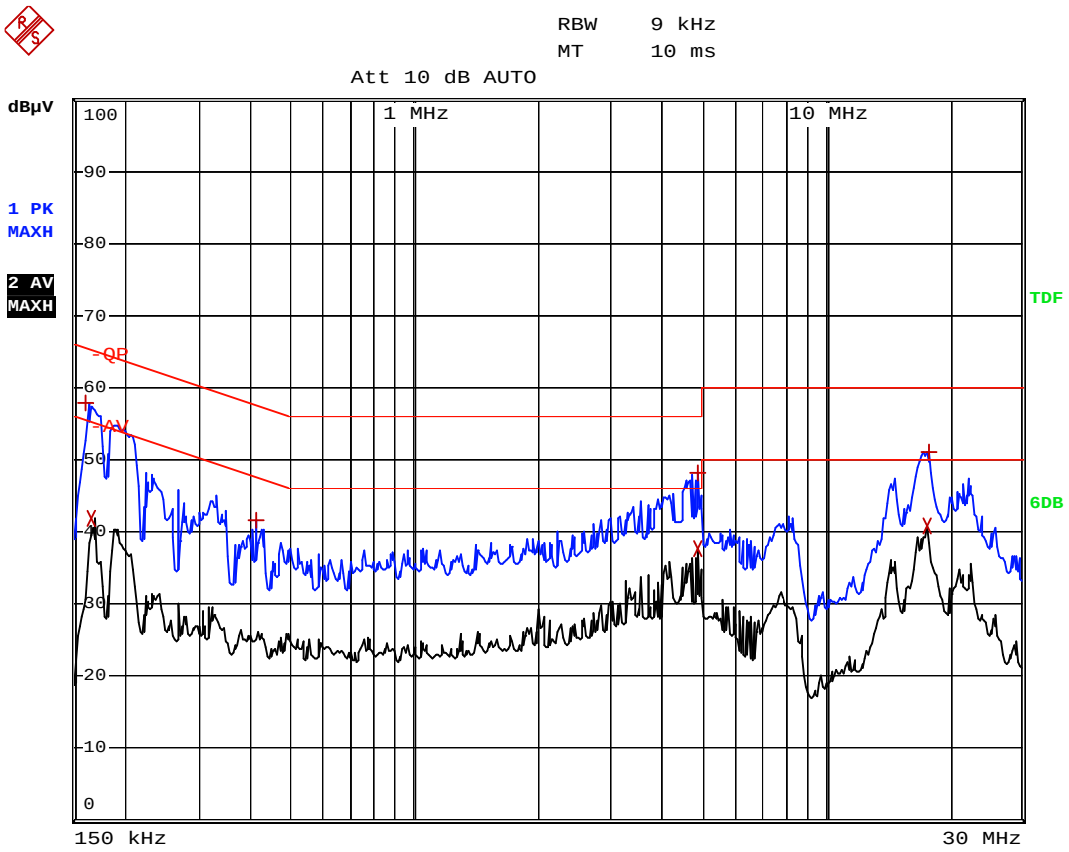
*EUT:* *MID*

*Tested Model:* *W001*

*Operating Condition:* *Downloading*

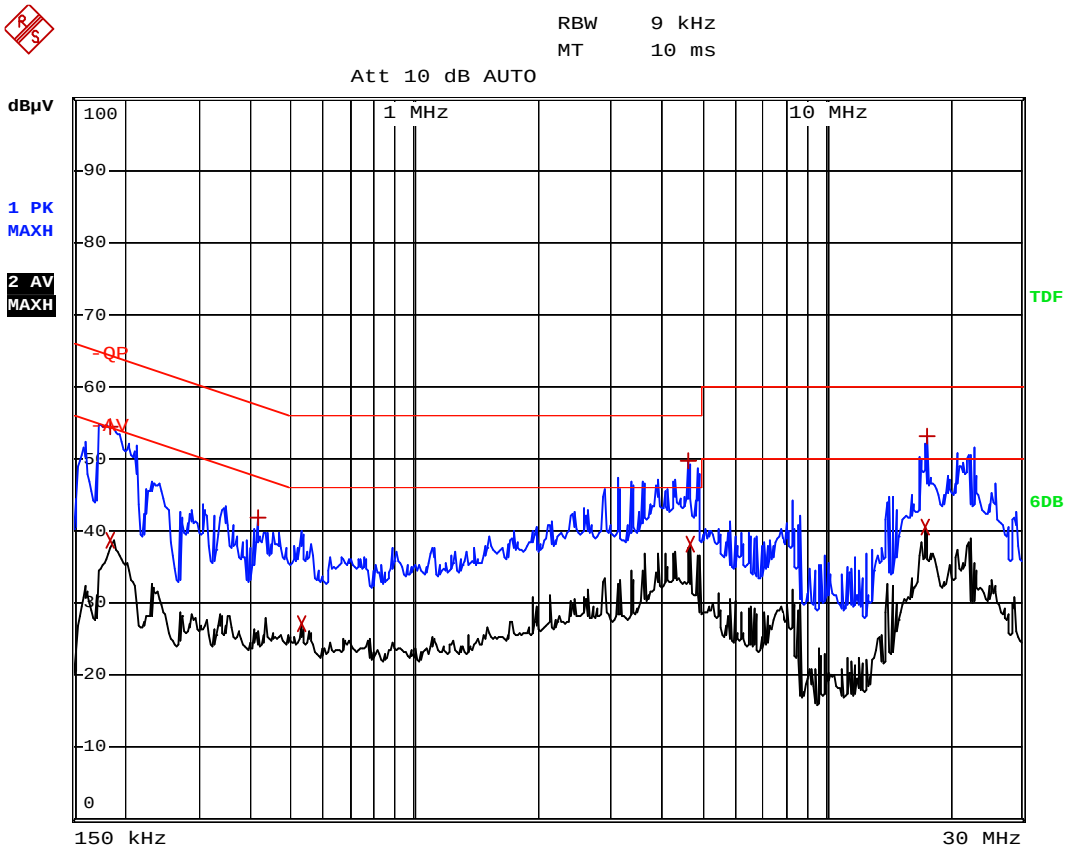
*Comment:* *Connect to PC*

*Test Specification:* *Neutral*




| EDIT PEAK LIST (Prescan Results) | | | |
|---|---|---|---|
| Trace1: | -QP | | |
| Trace2: | -AV | | |
| Trace3: | --- | | |
| TRACE | FREQUENCY | LEVEL dBµV | DELTA LIMIT dB |
| 1 Max Peak | 162 kHz | 57.75 | -7.60 |
| 2 Average | 166 kHz | 41.78 | -13.37 |
| 1 Max Peak | 410 kHz | 41.57 | -16.07 |
| 1 Max Peak | 4.878 MHz | 48.20 | -7.79 |
| 2 Average | 4.878 MHz | 37.57 | -8.42 |
| 2 Average | 17.598 MHz | 40.71 | -9.28 |
| 1 Max Peak | 17.87 MHz | 51.14 | -8.85 |

*Test Specification:* *Live*




| EDIT PEAK LIST (Prescan Results) | | | |
|---|---|---|---|
| Trace1: | -QP | | |
| Trace2: | -AV | | |
| Trace3: | --- | | |
| TRACE | FREQUENCY | LEVEL dBµV | DELTA LIMIT dB |
| 1 Max Peak | 186 kHz | 54.58 | -9.62 |
| 2 Average | 186 kHz | 38.65 | -15.55 |
| 1 Max Peak | 414 kHz | 41.87 | -15.69 |
| 2 Average | 530 kHz | 27.04 | -18.95 |
| 1 Max Peak | 4.666 MHz | 49.64 | -6.35 |
| 2 Average | 4.674 MHz | 38.21 | -7.78 |
| 2 Average | 17.414 MHz | 40.60 | -9.39 |
| 1 Max Peak | 17.746 MHz | 53.15 | -6.84 |

# 4. Radiated Emissions

## 4.1 Measurement Uncertainty

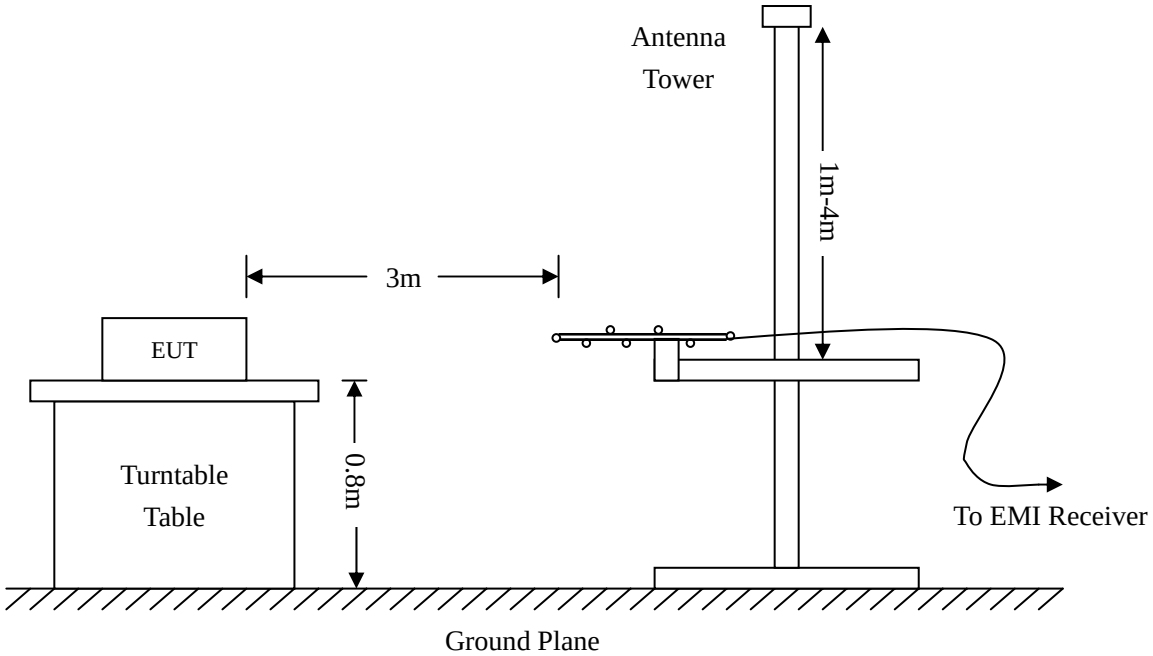
Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

## 4.2 Test Equipment List and Details

| Description | Manufacturer | Model | Serial Number | Cal. Date | Due. Date |
|---|---|---|---|---|---|
| Spectrum Analyzer | R&S | FSP | 836079/035 | 2012-03-28 | 2013-03-27 |
| EMI Test Receiver | R&S | ESVB | 825471/005 | 2012-03-28 | 2013-03-27 |
| Pre-amplifier | Agilent | 8447F | 3113A06717 | 2012-03-28 | 2013-03-27 |
| Pre-amplifier | Compliance Direction | PAP-0118 | 24002 | 2012-03-28 | 2013-03-27 |
| Trilog Broadband Antenna | SCHWARZBECK | VULB9163 | 9163-333 | 2012-02-25 | 2013-02-24 |
| Horn Antenna | ETS | 3117 | 00086197 | 2012-02-25 | 2013-02-24 |

## 4.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.109 Limit.
The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.
The spacing between the peripherals was 10 cm.



## 4.4 Test Receiver Setup

During the radiated emission test for above 1GHz, the test receiver was set with the following configurations:

For peak detector:
RBW = 1000kHz, VBW = 3000kHz, Sweep Time = Auto

For average detector:
RBW = 1000kHz, VBW = 10Hz, Sweep Time = Auto

## 4.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading – Corr. Factor

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for a Class B device. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – FCC Part 15.109(a) Limit

## 4.6 Environmental Conditions

| | |
|---|---|
| Temperature: | 23 °C |
| Relative Humidity: | 55 % |
| ATM Pressure: | 1011 mbar |

## 4.7 Summary of Test Results/Plots

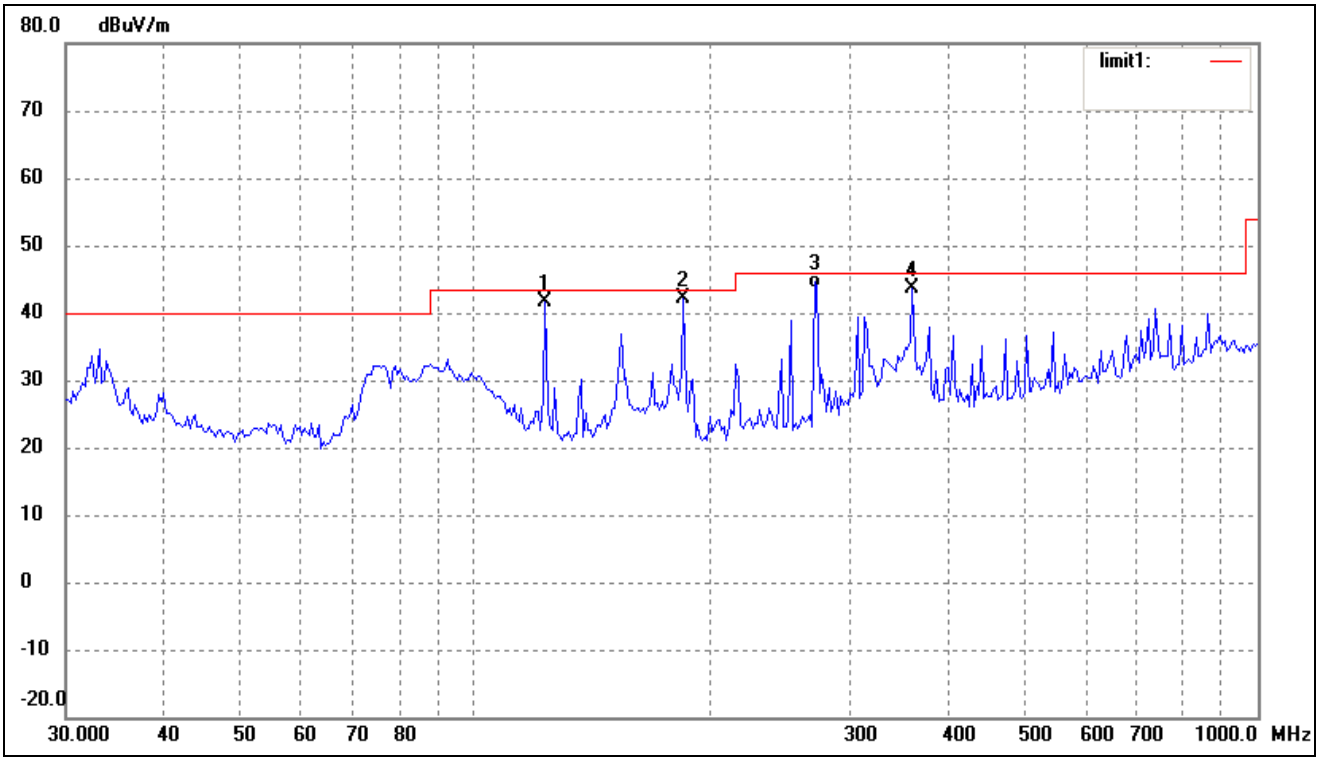
According to the data, the EUT complied with the FCC Part 15.109(a) rule, and had the worst margin of:

**-1.46 dBμV** at **184.4898 MHz** in the **Horizontal** polarization, Playing Mode, **9 kHz** to **10 GHz**, **3Meters**

**Plot of Radiated Emissions Test Data(30MHz to 1GHz)**

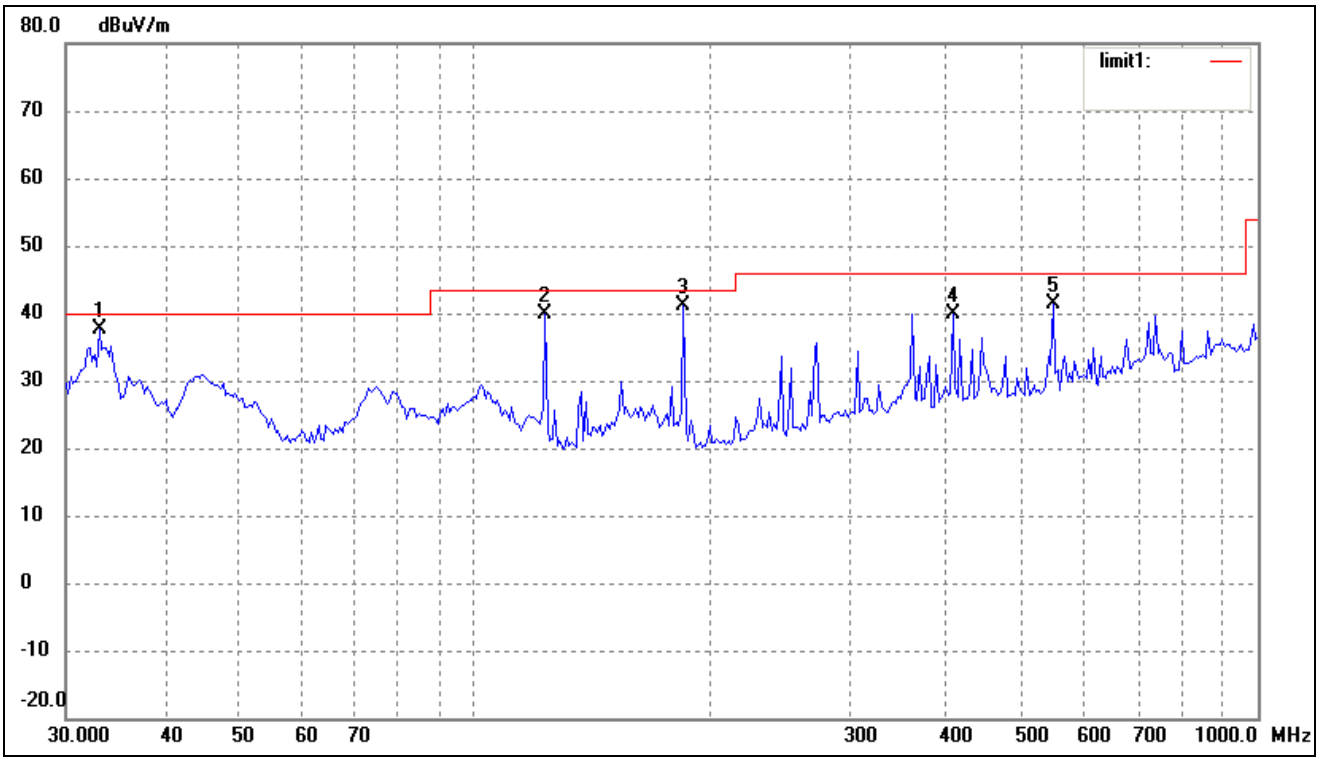
*EUT:* *MID*
*Tested Model:* *W001*
*Operating Condition:* *Charging and Playing*
*Comment:* *Connect to Monitor*

*Test Specification:* *Horizontal*




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Degree | Height | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV/m) | Factor(dB) | (dBuV/m) | (dBuV/m) | (dB) | ( • ) | (cm) | |
| 1 | 122.8340 | 36.88 | 4.66 | 41.54 | 43.50 | -1.96 | 58 | 150 | QP |
| 2 | 184.4898 | 38.09 | 3.95 | 42.04 | 43.50 | -1.46 | 326 | 100 | QP |
| 3 | 271.3245 | 35.13 | 8.58 | 43.71 | 46.00 | -2.29 | 29 | 120 | QP |
| 4 | 361.7139 | 32.96 | 10.69 | 43.65 | 46.00 | -2.35 | 209 | 100 | peak |

*Test Specification:* *Vertical*

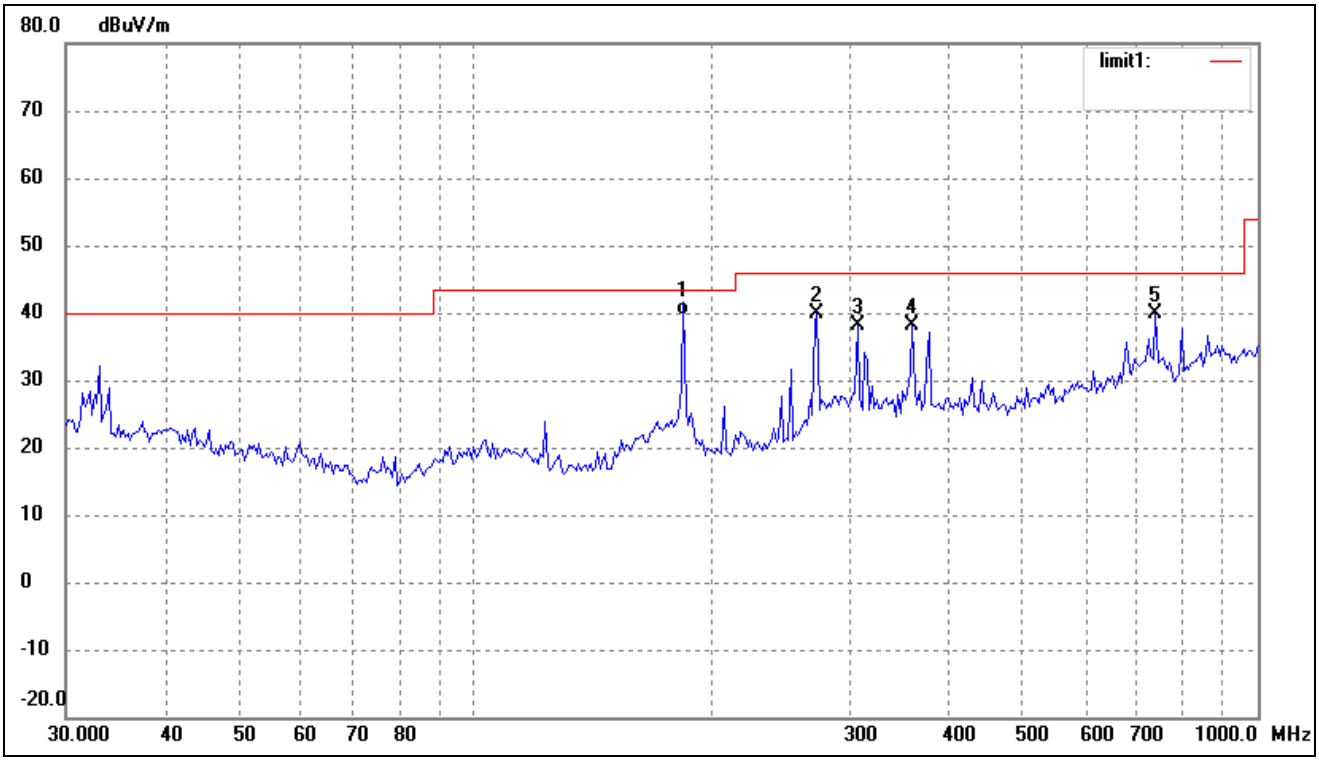



| No. | Frequency | Reading | Correct | Result | Limit | Margin | Degree | Height | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV/m) | Factor(dB) | (dBuV/m) | (dBuV/m) | (dB) | ( • ) | (cm) | |
| 1 | 33.0950 | 29.17 | 8.56 | 37.73 | 40.00 | -2.27 | 51 | 100 | peak |
| 2 | 122.8340 | 35.28 | 4.66 | 39.94 | 43.50 | -3.56 | 308 | 100 | peak |
| 3 | 184.4898 | 37.17 | 3.95 | 41.12 | 43.50 | -2.38 | 120 | 100 | peak |
| 4 | 407.5145 | 28.74 | 11.22 | 39.96 | 46.00 | -6.04 | 359 | 100 | peak |
| 5 | 547.0977 | 28.21 | 13.19 | 41.40 | 46.00 | -4.60 | 359 | 100 | peak |

**Plot of Radiated Emissions Test Data(30MHz to 1GHz)**

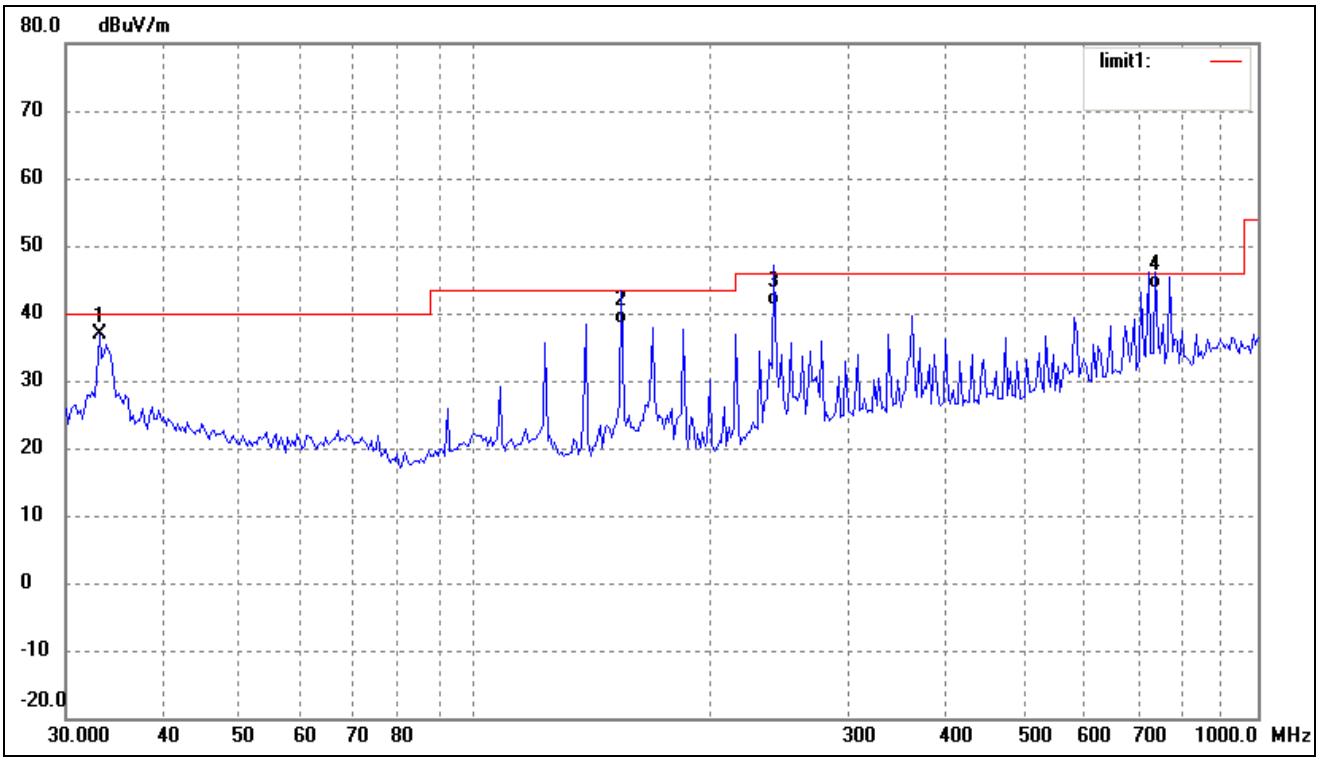
*EUT:* *MID*
*Tested Model:* *W001*
*Operating Condition:* *Downloading*
*Comment:* *Connect to PC*

*Test Specification:* *Horizontal*




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Degree | Height | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV/m) | Factor(dB) | (dBuV/m) | (dBuV/m) | (dB) | ( • ) | (cm) | |
| 1 | 184.4898 | 35.61 | 3.95 | 39.56 | 43.50 | -3.94 | 58 | 150 | QP |
| 2 | 273.2341 | 31.19 | 8.72 | 39.91 | 46.00 | -6.09 | 326 | 100 | QP |
| 3 | 307.8312 | 27.75 | 10.30 | 38.05 | 46.00 | -7.95 | 29 | 120 | QP |
| 4 | 361.7139 | 27.38 | 10.69 | 38.07 | 46.00 | -7.93 | 209 | 100 | peak |
| 5 | 739.6604 | 21.81 | 18.07 | 39.88 | 46.00 | -6.12 | 359 | 100 | peak |

*Test Specification:* *Vertical*




| No. | Frequency | Reading | Correct | Result | Limit | Margin | Degree | Height | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV/m) | Factor(dB) | (dBuV/m) | (dBuV/m) | (dB) | ( • ) | (cm) | |
| 1 | 33.0949 | 28.32 | 8.56 | 36.88 | 40.00 | -3.12 | 51 | 100 | peak |
| 2 | 153.7385 | 34.80 | 3.59 | 38.39 | 43.50 | -5.11 | 308 | 100 | peak |
| 3 | 240.8304 | 34.00 | 7.02 | 41.02 | 46.00 | -4.98 | 120 | 100 | peak |
| 4 | 739.6604 | 25.60 | 18.07 | 43.67 | 46.00 | -2.33 | 359 | 100 | peak |

*Note: Testing is carried out with frequency rang 9kHz to 10GHz, which above 9kHz to 30MHz and above 1GHz spurious are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*