# FCC PART 15 SUBPART C (Class II Change)
# MEASURMENT AND TEST REPORT

**For**

**Acrox Technologies Co., Ltd.**

**4F., No.89, Minshan St., Neihu Dist., Taipei City 114, Taiwan, R.O.C**

**E.U.T.: Wireless Bluetooth Mouse**

**Model Name: BWB15HO213, BKW**

**Brand Name: Blackweb**

**FCC ID: PRDMU36**

**Report Number: NTC1512241F**

**Test Date(s): December 30, 2015 to January 06, 2016**

**Report Date(s): January 06, 2016**

**Prepared by**

**Dongguan Nore Testing Center Co., Ltd.**

**Building D, Gaosheng Science and Technology Park, Hongtu Road, Nancheng District,Dongguan City, Guangdong, China**

**Tel: +86-769-22022444** **Fax: +86-769-22022799**

| Prepared By | Approved & Authorized Signer |
|---|---|
| Rose Hu / Engineer | Sunny Lv / Q.A. Director |

# Table of Contents

# 1. GENERAL INFORMATION

## 1.1 Product Description for Equipment under Test

| | | |
|---|---|---|
| Manufacturer | : | Acrox Technologies Co., Ltd. |
| Address | : | Hsinmin Industrial, Changan Town, Dongguan City, Guangdong, China |
| Power Supply | : | 2* 1.5V AAA Battery |
| Model name | : | BWB15HO213, BKW |
| Model Difference Description | : | Both of models have the same circuit schematic, construction, PCB Layout and critical components except model number due to marketing purpose. |
| Hardware | : | 1.0 |
| Software | : | 1.0 |

**For 2.4GHz Function**

| | | |
|---|---|---|
| Frequency range: | : | 2408-2474MHz |
| Modulation | : | GFSK |
| Number of Channel | : | 34 |
| Channel space | : | 2MHz |
| Antenna Type | : | PCB |
| Antenna Gain | : | -1.55dBi (declaration by manufacturer) |

**For BT Function**

| | | |
|---|---|---|
| BT Version | : | BLE(V4.0) |
| Frequency | : | 2402-2480MHz |
| Modulation | : | GFSK |
| Number of Channel | : | 40 |
| Channel space | : | 2MHz |
| Antenna Type | : | Integral antenna |
| Antenna Gain | : | -0.615 dBi |

Remark : The product was originally authorized for FCC certification under FCC ID: PRDMU36
The device contains both a 2.4G Bluetooth radio and 2.4G RF radio.
No changes have been made to either radio.
The Class II Permissive changes to the original product are as follows:
1. Bluetooth antenna type: From PCBA change to Integral.
2. Antenna Gain.

For Bluetooth evaluation, RF Output power, spurious emissions, Band Edge and Restricted Bands were retested.

## 1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: PRDMU36 filing to comply with Section 15.247 of the FCC Part 15(2014), Subpart C Rule.

## 1.3 Test Methodology

The radiated emission measurement was performed according to the procedures in ANSI C63.10: 2013. Radiated emission measurement was performed in semi-anechoic chamber. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters. All other measurements were made in accordance with the procedures in 47 CFR part 2.

## 1.4 Equipment Modifications

Not available for this EUT intended for grant.

## 1.5 Support Device

None

## 1.6 Test Facility and Location

Listed by FCC, August 02, 2011
The Certificate Registration Number is 665078.
Listed by Industry Canada, July 01, 2011
The Certificate Registration Number is 46405-9743.

Dongguan NTC Co., Ltd.
(Full Name: Dongguan Nore Testing Center Co., Ltd.)

Building D, Gaosheng Science and Technology Park, Hongtu Road, Nancheng District, Dongguan City, Guangdong, China
(Full Name: Building D, Gaosheng Science & Technology Park, Zhouxi Longxi Road, Nancheng District, Dongguan, Guangdong, China.

## 1.7 Summary of Test Results

| FCC Rules | Description Of Test | Result |
|---|---|---|
| §15.247(b)(3) | Max. Conducted Output Power | Compliance |
| §15.247(e) | Power Spectral Density | Compliance |
| §15.247(d) | Band Edge and Conducted Spurious Emissions | Compliance |
| §15.247(d),§15.209, §15.205 | Radiated Spurious Emissions and Restricted Bands | Compliance |
| §15.203 | Antenna Requirement | Compliance |

Note: 1. The EUT has been tested as an independent unit. (The new battery was used during the test.)
2. The EUT operate multiple positions, so the EUT shall be performed 3 planes. The worst plane is X.

| X Plane | Y Plane | Z Plane |
|---|---|---|
|  |  |  |

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# 2. System Test Configuration

## 2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

## 2.2 Special Accessories

Not available for this EUT intended for grant.

## 2.3 Description of test modes

The EUT has been tested under continuous operating condition (The duty cycle >98%). Test program used to control the EUT staying in continuous transmitting mode. The Lowest, middle and highest channel were chosen for testing, and modulation type GFSK was tested, but only the worst case data is shown in this report.

## 2.4 EUT Exercise

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements.

# 3. Max. Conducted Output Power

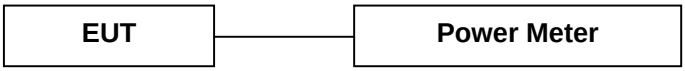
## 3.1 Measurement Procedure

Maximum Conducted Output power at Antenna Terminals, FCC Rules 15.247(b)(3):

One of the following procedures may be used to determine the maximum peak conducted output power of a DTS EUT.

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

## 3.2 Test SET-UP (Block Diagram of Configuration)




## 3.3 Measurement Results

Please refer to following table and plots.

| | | | |
|---|---|---|---|
| Modulation: | GFSK | | |
| Temperature : | 21 ℃ | Humidity : | 58 % |
| Test By: | Sance | Test Date : | January 02, 2016 |
| Test Result: | PASS | | |

| Frequency MHz | Data Rate Mbps | Peak Output Power dBm | Limit dBm |
|---|---|---|---|
| Low Channel: 2402 | 1 | 2.98 | 30 |
| Middle Channel: 2440 | 1 | 2.46 | 30 |
| High Channel: 2480 | 1 | 1.73 | 30 |

# 4. Power Spectral Density

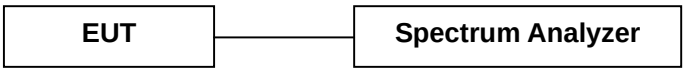
## 4.1 Measurement Procedure

DTS 6dB Channel Bandwidth, FCC Rule 15.247(a)(2):

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer was set as below according to FCC KDB558074(v03r02):

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to: 3 kHz≤RBW≤100KHz
4. Set the VBW ≥ 3 x RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

## 4.2 Test SET-UP (Block Diagram of Configuration)



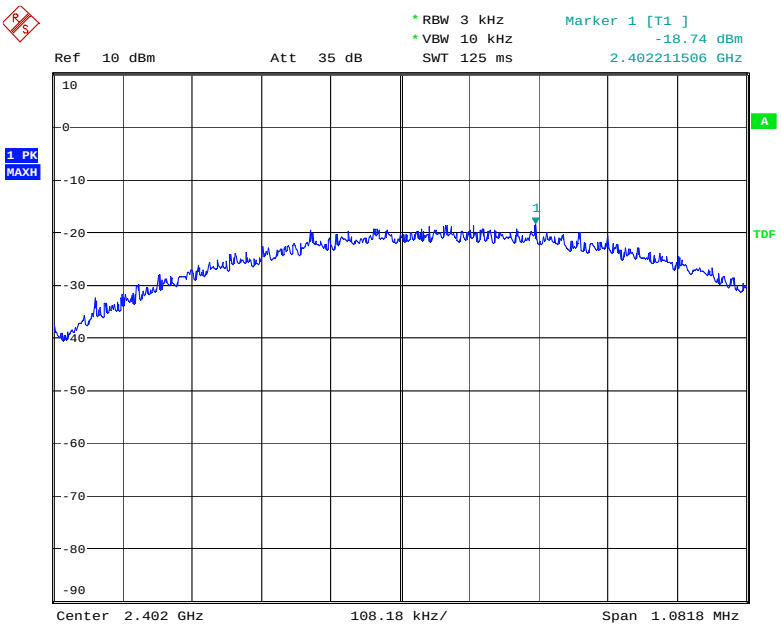

## 4.3 Measurement Results

Please refer to following table and plots.

| | | | |
|---|---|---|---|
| Modulation: | GFSK | | |
| Temperature : | 21 ℃ | Humidity : | 58 % |
| Test By: | Sance | Test Date : | January 02, 2016 |
| Test Result: | PASS | | |

| Frequency MHz | Data Rate Mbps | PSD dBm/3kHz | Limit dBm/3kHz |
|---|---|---|---|
| Low Channel: 2402 | 1 | -18.74 | 8 |
| Middle Channel: 2440 | 1 | -19.77 | 8 |
| High Channel: 2480 | 1 | -22.12 | 8 |

## Low Channel

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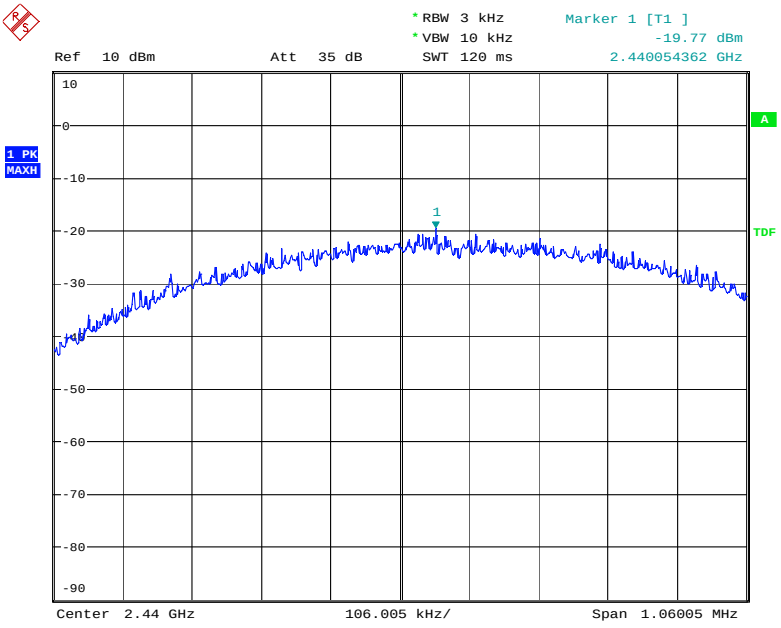
## Middle Channel

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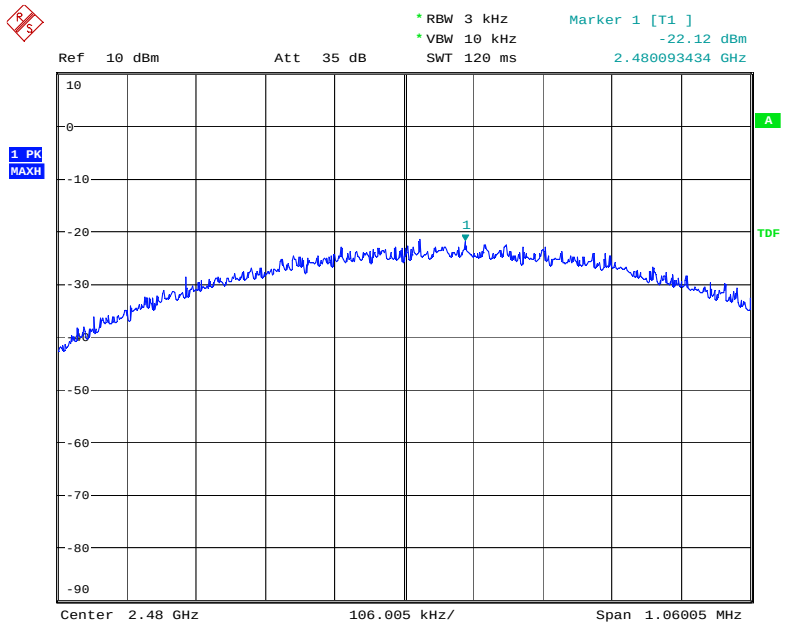
## High Channel

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# 5. Band Edge and Conducted Spurious Emissions

## 5.1 Requirement and Measurement Procedure

In any 100KHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100KHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer was set according to FCC KDB558074(v03r02) clause 11.3.

A Quasi-peak measurement was then made for that frequency point for below 1GHz test. PK and AV for above 1GHz emission test.

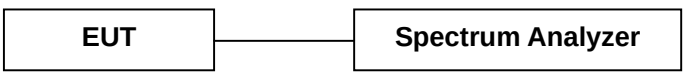
For 30MHz to 1GHz:
Sept the spectrum analyzer as: RBW=120kHz, VBW=300kHz, Detector=Quasi-Peak

For Above 1GHz:
Set the spectrum analyzer as: RBW=1MHz, VBW=3MHz, Detector=Peak.
Set the spectrum analyzer as: RBW=1MHz, VBW=10Hz, Detector=Peak.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

| Frequency Band (MHz) | Level | Resolution Bandwidth | Video Bandwidth |
|---|---|---|---|
| 30 to 1000 | QP | 120 kHz | 300 kHz |
| Above 1000 | Peak | 1 MHz | 3 MHz |
| | Average | 1 MHz | 10 Hz |

## 5.2 Test SET-UP (Block Diagram of Configuration)



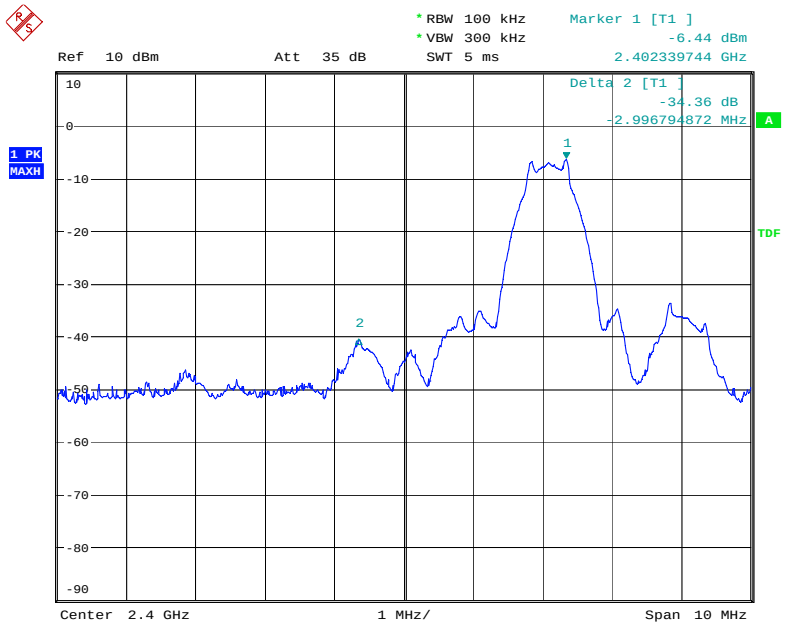

## 5.3 Measurement Results

The test plots and table showed all spurious emission and up to the tenth harmonic was measured and they were found to be at least 20dB below the highest level of the desired power in the passband. Please refer to below plots.

| Freq. (MHz) | Ant.Pol. (H/V) | Emission Level (dBuV) | | Limit 3m (dBuV/m) | | Margin (dB) | |
|---|---|---|---|---|---|---|---|
| | | PK | AV | PK | AV | PK | AV |
| 2399.990 | H | 55.25 | 42.05 | 74.00 | 54.00 | -18.75 | -11.95 |
| 2399.990 | V | 52.95 | 43.79 | 74.00 | 54.00 | -21.05 | -10.21 |
| 2483.510 | H | 48.96 | 37.20 | 74.00 | 54.00 | -25.04 | -16.80 |
| 2483.510 | V | 46.93 | 37.08 | 74.00 | 54.00 | -27.07 | -16.92 |

**Note:** (1) All Readings are Peak Value and AV.
(2) Emission Level= Reading Level+Probe Factor +Cable Loss
(3) Measurement uncertainty : ±3.7dB

## Band Edge
## Low Channel

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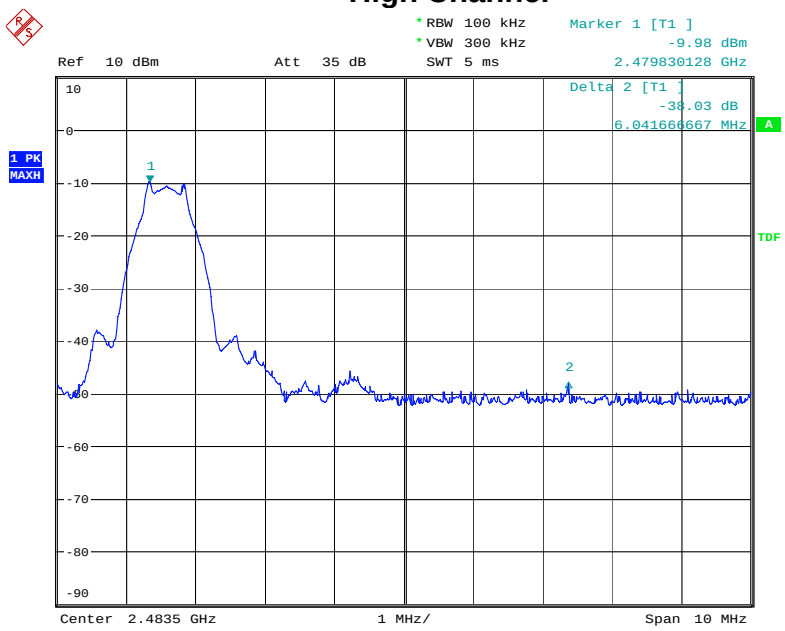
## High Channel

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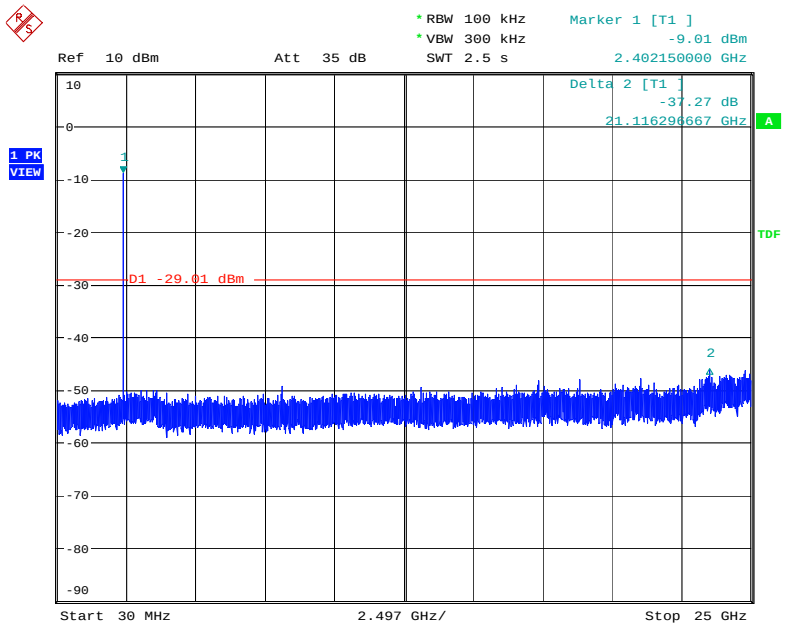
# Conducted Spurious Emissions

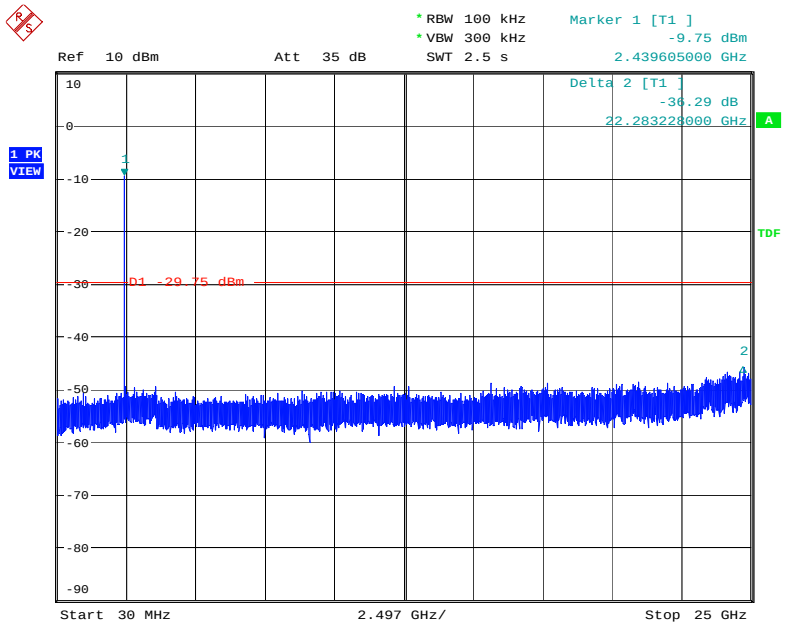
## Low Channel




Date: 2.JAN.2016 10:04:58

**Note: Sweep points=30001pts**

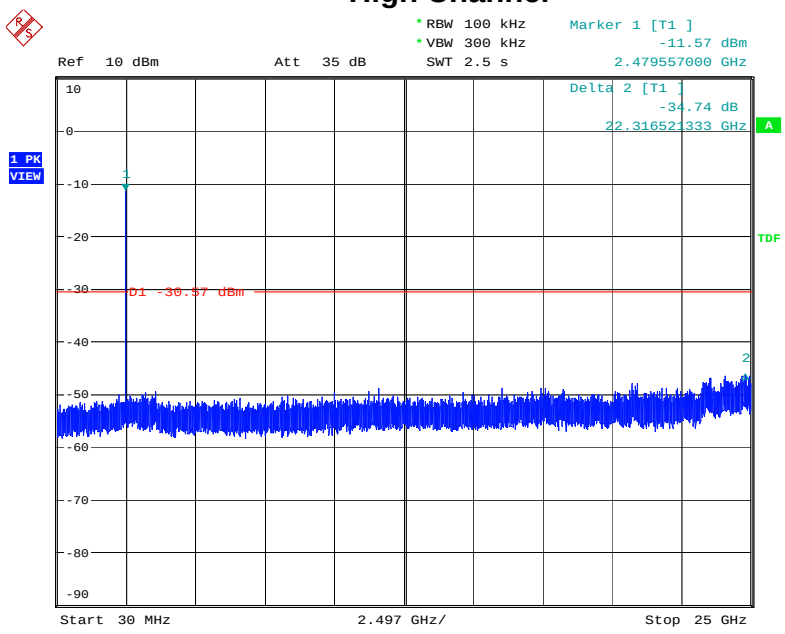
## Middle Channel




Date: 2.JAN.2016 10:19:27

**Note: Sweep points=30001pts**

## High Channel



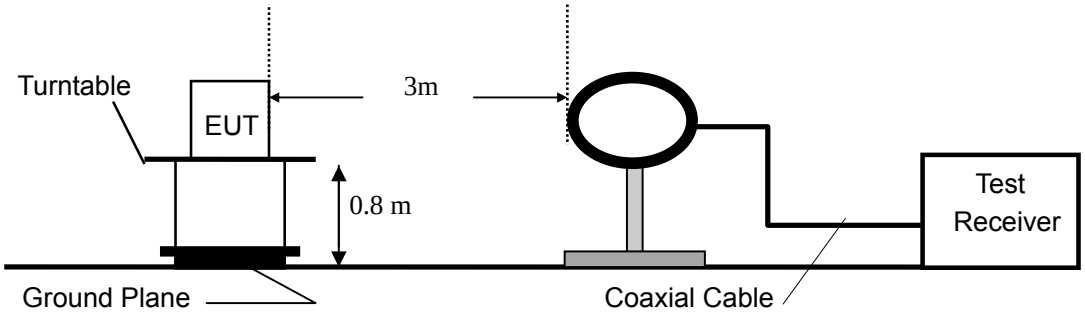

Date: 2.JAN.2016 10:24:05

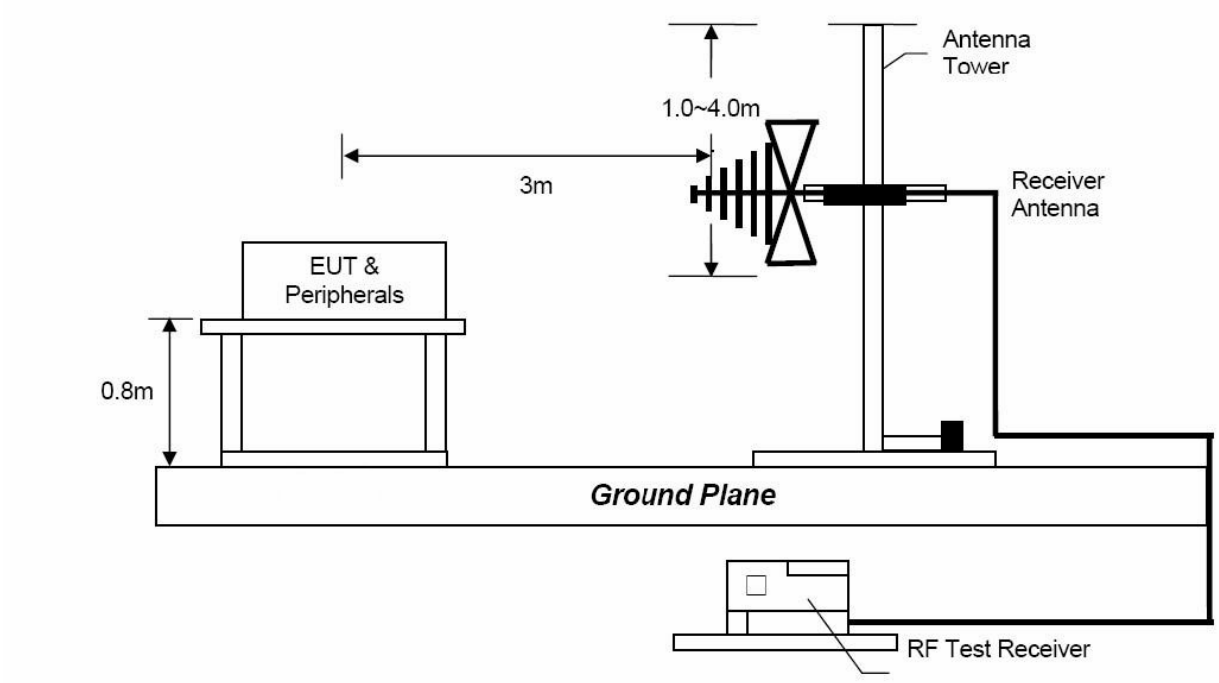
**Note: Sweep points=30001pts**

# 6. Radiated Spurious Emissions and Restricted Bands

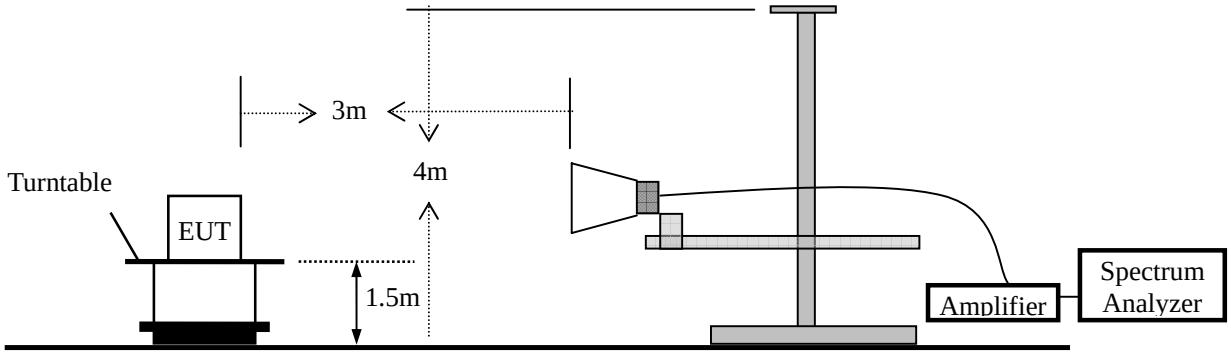
## 6.1 Test SET-UP (Block Diagram of Configuration)

### 6.1.1 Radiated Emission Test Set-Up, Frequency Below 30MHz



6.1.2 Radiated Emission Test Set-Up, Frequency above 1GHz




## 6.2 Measurement Procedure

a. Blow 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi- anechoic chamber room. Above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi- anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. The test-receiver system was set to peak detect function and specified bandwidth with maximum hold mode.
e. A Quasi-peak measurement was then made for that frequency point for below 1GHz test. PK and AV for above 1GHz emission test.

For 30MHz to 1GHz:
Sept the spectrum analyzer as: RBW=120kHz, VBW=300kHz, Detector=Quasi-Peak

For Above 1GHz:
Set the spectrum analyzer as: RBW=1MHz, VBW=3MHz, Detector=Peak.
Set the spectrum analyzer as: RBW=1MHz, VBW=10Hz, Detector=Peak.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

| Frequency Band (MHz) | Level | Resolution Bandwidth | Video Bandwidth |
|---|---|---|---|
| 30 to 1000 | QP | 120 kHz | 300 kHz |
| Above 1000 | Peak | 1 MHz | 3 MHz |
| | Average | 1 MHz | 10 Hz |

## 6.3 Limit

| Frequency range MHz | Distance Meters | Field Strengths Limit (15.209) μV/m |
|---|---|---|
| 0.009 ~ 0.490 | 300 | 2400/F(kHz) |
| 0.490 ~ 1.705 | 30 | 24000/F(kHz) |
| 1.705 ~ 30 | 30 | 30 |
| 30 ~ 88 | 3 | 100 |
| 88 ~ 216 | 3 | 150 |
| 216 ~ 960 | 3 | 200 |
| Above 960 | 3 | 500 |

Remark：(1) Emission level (dB)μV = 20 log Emission level μV/m
(2) The smaller limit shall apply at the cross point between two frequency bands.
(3) As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.
(4) The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower.
(5) §15.247(d) specifies that emissions which fall in the restricted bands, as defined in §15.205 comply with radiated emission limits specified in §15.209.

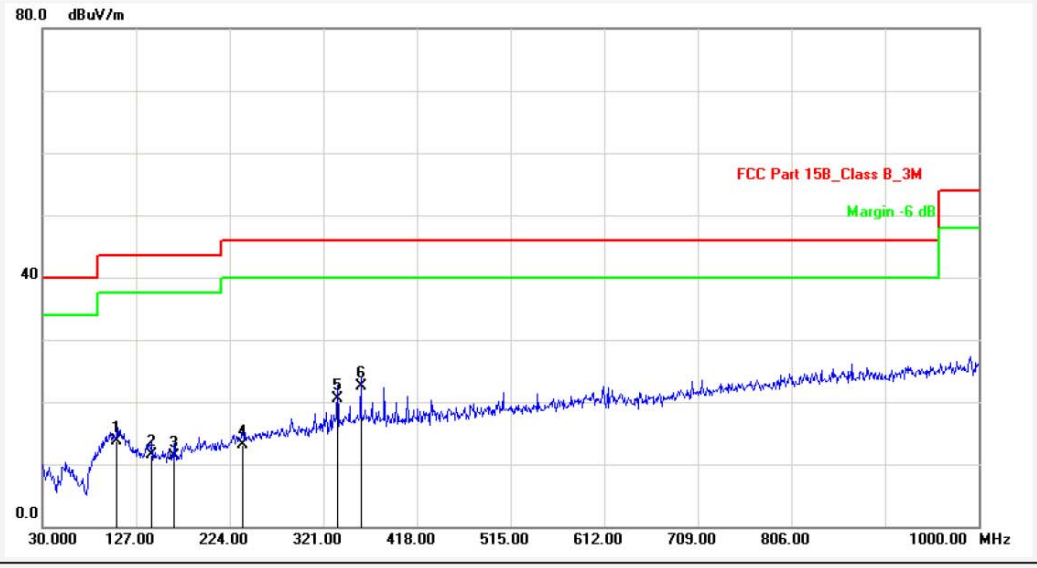
## 6.4 Measurement Results

Please refer to following the test plots and data tables of the worst case: **X Plane.**

**Dongguan NTC Co., Ltd.**
**Tel:+86-769-22022444 Fax:+86-769-22022799**
Web: Http://www.ntc-c.com

Site: Radiation

Test Time: 2016-1-5 11:28:03




| | | | |
|---|---|---|---|
| Report No.: | BWB15HO213 | | |
| Test Standard: | FCC Part 15B_Class B_3M | Test Distance: | 3m |
| Test item: | Radiation Emission | Ant. Polarization: | Horizontal |
| Applicant: | Acrox | Temp.(C)/Hum.(%): | 22(C) / 54 % |
| Product: | Wireless Bluetooth Mouse | Power Rating: | DC 3V |
| Model No.: | BWB15HO213 | Test Engineer: | Jerry |

Test Mode: TX

Remark:

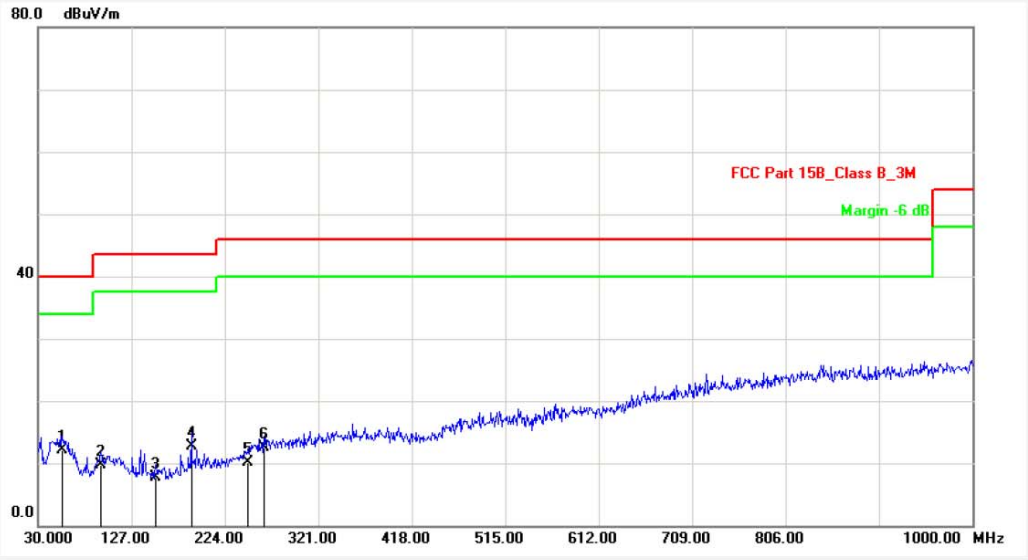
| No. | Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 107.5999 | -12.06 | 25.86 | 13.80 | 43.50 | -29.70 | QP | | | P | |
| 2 | 143.4900 | -15.59 | 27.19 | 11.60 | 43.50 | -31.90 | QP | | | P | |
| 3 | 166.7700 | -14.92 | 26.22 | 11.30 | 43.50 | -32.20 | QP | | | P | |
| 4 | 237.5800 | -12.14 | 25.34 | 13.20 | 46.00 | -32.80 | QP | | | P | |
| 5 | 335.5500 | -9.43 | 30.03 | 20.60 | 46.00 | -25.40 | QP | | | P | |
| 6 | 359.8000 | -9.13 | 31.63 | 22.50 | 46.00 | -23.50 | QP | | | P | |

Note: Level=Reading+Factor.
Margin=Limit-Level.

**Dongguan NTC Co., Ltd.**
**Tel:+86-769-22022444 Fax:+86-769-22022799**
Web: Http://www.ntc-c.com

Site: Radiation

Test Time: 2016-1-5 11:34:59




| | | | |
|---|---|---|---|
| Report No.: | BWB15HO213 | | |
| Test Standard: | FCC Part 15B_Class B_3M | Test Distance: | 3m |
| Test item: | Radiation Emission | Ant. Polarization: | Vertical |
| Applicant: | Acrox | Temp.(C)/Hum.(%): | 22(C) / 54 % |
| Product: | Wireless Bluetooth Mouse | Power Rating: | DC 3V |
| Model No.: | BWB15HO213 | Test Engineer: | Jerry |

Test Mode: TX

Remark:

| No. | Frequency (MHz) | Factor (dB/m) | Reading (dBuV) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Azimuth (deg.) | P/F | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 55.2199 | -13.72 | 25.92 | 12.20 | 40.00 | -27.80 | QP | | | P | |
| 2 | 94.9899 | -15.77 | 25.57 | 9.80 | 43.50 | -33.70 | QP | | | P | |
| 3 | 152.2198 | -18.43 | 26.13 | 7.70 | 43.50 | -35.80 | QP | | | P | |
| 4 | 189.0800 | -16.63 | 29.43 | 12.80 | 43.50 | -30.70 | QP | | | P | |
| 5 | 248.2500 | -13.94 | 24.14 | 10.20 | 46.00 | -35.80 | QP | | | P | |
| 6 | 264.7400 | -13.31 | 25.91 | 12.60 | 46.00 | -33.40 | QP | | | P | |

Note: Level=Reading+Factor.
Margin=Limit-Level.

**The worst case: X Plane**

| | | | |
|---|---|---|---|
| Modulation: | GFSK | | |
| Frequency Range: | 1-25GHz | Test Date : | January 05, 2016 |
| Test Result: | PASS | Temperature : | 22 ℃ |
| Measured Distance: | 3m | Humidity : | 54 % |
| Test By: | Sance | | |

| Freq. (MHz) | Ant.Pol. (H/V) | Reading Level(dBuV) | | Factor (dB/m) | Emission Level (dBuV) | | Limit 3m (dBuV/m) | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | PK | AV | | PK | AV | PK | AV | PK | AV |
| **Operation Mode: TX Mode (Low)** | | | | | | | | | | |
| 4804 | V | 40.09 | 27.69 | 14.63 | 54.72 | 42.32 | 74.00 | 54.00 | -19.28 | -11.68 |
| 7206 | V | 36.37 | 22.36 | 20.68 | 57.05 | 43.04 | 74.00 | 54.00 | -16.95 | -10.96 |
| --- | | | | | | | | | | |
| 4804 | H | 38.28 | 27.87 | 14.63 | 52.91 | 42.50 | 74.00 | 54.00 | -21.09 | -11.50 |
| 7206 | H | 34.9 | 22.31 | 20.68 | 55.58 | 42.99 | 74.00 | 54.00 | -18.42 | -11.01 |
| --- | | | | | | | | | | |
| **Operation Mode: TX Mode (Mid)** | | | | | | | | | | |
| 4884 | V | 39.16 | 27.55 | 14.98 | 54.14 | 42.53 | 74.00 | 54.00 | -19.86 | -11.47 |
| 7326 | V | 36.62 | 22.46 | 20.93 | 57.55 | 43.39 | 74.00 | 54.00 | -16.45 | -10.61 |
| --- | | | | | | | | | | |
| 4884 | H | 38.69 | 28.58 | 14.98 | 53.67 | 43.56 | 74.00 | 54.00 | -20.33 | -10.44 |
| 7326 | H | 35.05 | 22.44 | 20.93 | 55.98 | 43.37 | 74.00 | 54.00 | -18.02 | -10.63 |
| --- | | | | | | | | | | |
| **Operation Mode: TX Mode (High)** | | | | | | | | | | |
| 4960 | V | 38.34 | 25.77 | 15.30 | 53.64 | 41.07 | 74.00 | 54.00 | -20.36 | -12.93 |
| 7440 | V | 34.52 | 22.37 | 21.16 | 55.68 | 43.53 | 74.00 | 54.00 | -18.32 | -10.47 |
| --- | | | | | | | | | | |
| 4960 | H | 38.62 | 27.83 | 15.30 | 53.92 | 43.13 | 74.00 | 54.00 | -20.08 | -10.87 |
| 7440 | H | 36.95 | 22.46 | 21.16 | 58.11 | 43.62 | 74.00 | 54.00 | -15.89 | -10.38 |
| --- | | | | | | | | | | |

**Other harmonics emissions are lower than 10dB below the allowable limit.**

**Note:** (1) All Readings are Peak Value and AV.
(2) Emission Level= Reading Level + Factor
(3) Factor= Antenna Gain + Cable Loss – Amplifier Gain
(4) Data of measurement within this frequency range shown " ---" in the table above means the reading of emissions are attenuated more than 10dB below the permissible limits.
(5) Measurement uncertainty : ±3.7dB.
(6) Horn antenna used for the emission over 1000MHz.

# 7. Antenna Application

## 7.1 Antenna requirement

According to of FCC part 15C section 15.203 and 15.240:

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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.
Systems operating in the 2400-2483.5MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

## 7.2 Measurement Results

The antenna is integral antenna that no antenna other than that furnished by the responsible party shall be used with the device, and the best case gain of the antenna is -0.615dBi, So, the antenna is consider meet the requirement.

## 8. Test Equipment List

| Description | Manufacturer | Model Number | Serial Number | Characteristics | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|---|
| Test Receiver | Rohde & Schwarz | ESCI7 | 100837 | 9KHz~7GHz | Nov. 24, 2015 | Nov. 23, 2016 |
| Antenna | Schwarzbeck | VULB9162 | 9162-010 | 30MHz~7GHz | Nov. 27, 2015 | Nov. 26, 2016 |
| Positioning Controller | UC | UC 3000 | N/A | 0~360°, 1-4m | N/A | N/A |
| Color Monitor | SUNSPO | SP-140A | N/A | N/A | N/A | N/A |
| Single Phase Power Line Filter | SAEMC | PF201A-32 | 110210 | 32A | N/A | N/A |
| 3 Phase Power Line Filter | SAEMC | PF401A-200 | 110318 | 200A | N/A | N/A |
| DC Power Filter | SAEMC | PF301A-200 | 110245 | 200A | N/A | N/A |
| Cable | Huber+Suhner | CBL2-NN-1M | 22390001 | 9KHz~7GHz | Nov. 07, 2015 | Nov. 06, 2016 |
| Cable | Huber+Suhner | CIL02 | N/A | 9KHz~7GHz | Nov. 07, 2015 | Nov. 06, 2016 |
| Power Amplifier | HP | HP 8447D | 1145A00203 | 100KHz~1.3GHz | Nov. 07, 2015 | Nov. 06, 2016 |
| Horn Antenna | Schwarzbeck | BBHA9170 | 9170-372 | 15GHz~26.5GHz | Oct.23, 2015 | Oct.22, 2016 |
| Horn Antenna | Com-Power | AH-118 | 071078 | 1GHz~18GHz | Nov. 05, 2015 | Nov. 04, 2016 |
| Loop antenna | Daze | ZA30900A | 0708 | 9KHz~30MHz | Oct.10, 2015 | Oct.09, 2016 |
| Spectrum Analyzer | Rohde & Schwarz | FSU26 | 200409/026 | 20Hz~26.5GHz | Sep. 01, 2015 | Aug. 31, 2016 |
| Pre-Amplifier | Agilent | 8449B | 3008A02964 | 1GHz~26.5GHz | Nov. 03, 2015 | Nov. 02, 2016 |
| L.I.S.N. | Rohde & Schwarz | ENV 216 | 101317 | 9KHz~30MHz | Nov. 07, 2015 | Nov. 06, 2016 |
| Temporary antenna connector | TESCOM | SS402 | N/A | 1G-18GHz | N/A | N/A |
| Power Meter | Anritsu | ML2495A | 1139001 | 100k-65GHz | Nov. 05, 2015 | Nov. 04, 2016 |
| Power Sensor | Anritsu | MA2411B | 100345 | 300M-40GHz | Nov. 05, 2015 | Nov. 04, 2016 |

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