



## TEST REPORT

Report No. : AA0022305(1) Date : 21 Apr, 2021

Application No. : LA003560(3)

Applicant : Bell Sports Inc.  
5550 SCOTTS VALLEY DRIVE,  
SCOTTS VALLEY, CA 95066

Sample Description : One(1) item of submitted sample stated to be:

| Sample Description   | Model No. |
|----------------------|-----------|
| Light of Turn Signal | JY-1305A  |

Radio Frequency : 2403 – 2480MHz

Rating : 3.7V rechargeable battery

No. of submitted sample : Two (2) sets

Sample registration No. : RA032368-001

Date Received : 02 Apr 2021

Test Period : 06 Apr 2019 to 19 Apr 2021

Test Requested : FCC 47CFR Part 15 Certification

Test Method : 47 CFR Part 15 (10-1-19 Edition)  
ANSI C63.10 – 2013  
ANSI C63.4 – 2014

Test Result : See attached sheet(s) from page 2 to 22.

Conclusion : The submitted sample was found to comply with requirement of FCC 47CFR Part 15 Subpart C, section 15.249.

For and on behalf of  
CMA Industrial Development Foundation Limited

Authorized Signature : \_\_\_\_\_

Wong Lap Pong / Andrew  
Deputy Technical Manager

Page 1 of 22

FCC ID: QH67115952LV2

The conformity statement stated in Conclusion above is based on the decision rule agreed with applicant and listed in [www.cmateesting.org/qac/statement-of-conformity.pdf](http://www.cmateesting.org/qac/statement-of-conformity.pdf).  
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This document shall not be reproduced except in full without written approval by CMA Testing. The results apply to the sample as received unless otherwise specified. The observations and test results in this report are relevant only to the sample tested.

**CMA Industrial Development Foundation Limited**

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## TEST REPORT

Report No. : AA0022305(1)

Date : 21 Apr, 2021

### Table of Contents

|     |                                                              |    |
|-----|--------------------------------------------------------------|----|
| 1   | General Information .....                                    | 3  |
| 1.1 | General Description .....                                    | 3  |
| 1.2 | Location of the test site .....                              | 4  |
| 1.3 | List of measuring equipment.....                             | 5  |
| 1.4 | Measurement Uncertainty.....                                 | 6  |
| 1.5 | Test Summary .....                                           | 6  |
| 2   | Description of the radiated emission test .....              | 7  |
| 2.1 | Test Procedure .....                                         | 7  |
| 2.2 | Test Setup .....                                             | 8  |
| 2.3 | Test Result .....                                            | 10 |
| 3.1 | Test Procedure .....                                         | 15 |
| 3.2 | Test Result .....                                            | 15 |
| 3.3 | Test Setup .....                                             | 15 |
| 3.4 | Graph and Table of Conducted Emission Measurement Data ..... | 15 |
| 4   | Supplementary document.....                                  | 18 |
| 4.1 | Bandwidth.....                                               | 18 |
| 5   | Appendices.....                                              | 19 |



## **TEST REPORT**

Report No. : AA0022305(1)

Date : 21 Apr, 2021

### **1 General Information**

#### **1.1 General Description**

The 16MHz crystal oscillator drives the base of IC final amplifier. The modulation provided by IC u1. The modulation provided by IC u1. The output of U1 has the matching network consisting C2, L1, L2 that limit the harmonic content and affect the proper coupling of the antenna to the output stage.

Antenna, Ground and Power Source:

The antenna consists of PCB antenna with 0.0dBi gain. The ground is only that of the printed circuit board. Electric current is supplied by 3.7V rechargeable battery.

Operation Descriptions:

The Equipment Under Test (EUT) is a mobile 2.4GHz transmitter, The transmitter is light control system. The transmission signal is frequency hopping with channel frequency range 2403.0-2480.0MHz during normal use. The EUT was set to fixed frequency test mode by application. The EUT is powered by 3.7V rechargeable. After switching on the EUT, the light can be controlled by remote.

The EUT is need to pair with a transmitter and received the transmitted signal for corresponding response.

Modulation: GFSK

Number of channel: 78

Frequency range: 2403 – 2480MHz

Channel separation: 1MHz



## **TEST REPORT**

Report No. : AA0022305(1)

Date : 21 Apr, 2021

### 1.2 Location of the test site

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2014. A Semi-Anechoic Chamber Testing Site is set up for investigation and located at:

Ground Floor, Yan Hing Centre,  
9 – 13 Wong Chuk Yeung Street,  
Fo Tan, Shatin,  
New Territories,  
Hong Kong.

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.4 – 2014. A shielded room is located at :

Ground Floor, Yan Hing Centre,  
9 – 13 Wong Chuk Yeung Street,  
Fo Tan, Shatin,  
New Territories,  
Hong Kong.

FCC Accredited Lab (Designation Number: HK0004)  
Conformity Assessment Body Identifier (CABID: HK0002)

## TEST REPORT

Report No. : AA0022305(1)

Date : 21 Apr, 2021

### 1.3 List of measuring equipment

| Equipment               | Manufacturer     | Model No.    | Serial No.  | Calibration Due Date | Calibration Period |
|-------------------------|------------------|--------------|-------------|----------------------|--------------------|
| EMI Test Receiver       | Rohde & Schwarz  | ESCI         | 100152      | 15 Jan 2022          | 1Year              |
| Spectrum Analyzer       | Rohde & Schwarz  | FSP30        | 100628      | 29 Oct 2021          | 1Year              |
| Broadband Antenna       | Schaffner        | CBL6112B     | 2692        | 28 Oct 2022          | 2Years             |
| Loop Antenna            | EMCO             | 6502         | 00056620    | 02 Feb 2023          | 2Years             |
| Horn Antenna            | Schwarzbeck      | BBHA 9120D   | 9120D-531   | 02 Feb 2023          | 2Years             |
| Broadband Pre-Amplifier | Schwarzbeck      | BBV 9718     | 9718-119    | 15 Sep 2021          | 2Years             |
| Horn Antenna            | Schwarzbeck      | BBHA 9170    | BBHA9170442 | 12 Sep 2021          | 2Years             |
| Broadband Pre-Amplifier | Schwarzbeck      | BBV 9719     | 9719-010    | 03 May 2022          | 2Years             |
| Coaxial Cable           | Schaffner        | RG 213/U     | N/A         | 03 May 2022          | 1Year              |
| Coaxial Cable           | Suhner           | RG 214/U     | N/A         | 14 Jan 2022          | 1Year              |
| Coaxial Cable           | Suhner           | Sucoflex_104 | N/A         | 30 Dec 2021          | 1Year              |
| LISN                    | Rohde & Schwarz  | ENV216       | 101323      | 19 Oct 2021          | 1Year              |
| Coaxial Cable           | Tyco Electronics | RG 58C/U     | N/A         | 15 Jan 2022          | 1Year              |

## TEST REPORT

Report No. : AA0022305(1)

Date : 21 Apr, 2021

### 1.4 Measurement Uncertainty

The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor  $k=2$ , providing a level of confidence of approximately 95%.

#### Radiated emissions

| Frequency                     | Uncertainty ( $U_{lab}$ ) |
|-------------------------------|---------------------------|
| 30MHz ~ 200MHz (Horizontal)   | 4.59dB                    |
| 30MHz ~ 200MHz (Vertical)     | 4.49dB                    |
| 200MHz ~ 1000MHz (Horizontal) | 4.94dB                    |
| 200MHz ~ 1000MHz (Vertical)   | 4.97dB                    |
| 1GHz ~ 6GHz                   | 4.52dB                    |
| 6GHz – 18GHz                  | 4.58dB                    |
| 18GHz – 40GHz                 | 4.80dB                    |

### 1.5 Test Summary

| TEST ITEM                         | FCC REFERENCE | RESULT |
|-----------------------------------|---------------|--------|
| Fundamental and harmonic emission | 15.249(a)     | Comply |
| Out-band emission                 | 15.249(d)     | Comply |
| Peak Limit                        | 15.249(e)     | Comply |
| Bandwidth                         | 15.215(c)     | Comply |



## **TEST REPORT**

Report No. : AA0022305(1)

Date : 21 Apr, 2021

### **2 Description of the radiated emission test**

#### **2.1 Test Procedure**

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.10 – 2013.

A non-conductive turntable with dimensions of 1.5m x 0.4m x 0.8m (L x W x H) placed above the reference ground plane. The equipment under test (EUT) was placed at 0.8m height for below 1GHz measurement and 1.5m height for above 1GHz measurement. The test distance is 3m between EUT and receiving antenna. A broadband antenna mounting on the mast received the signal strength. The turntable was rotated to maximize the emission level. The antenna was moving along the mast from 1m up to 4m until no more higher value was found. Both horizontal and vertical polarization of the antenna were placed and investigated. Additional absorbing material will be placed between the EUT and receiving antenna for above 1GHz measurement.

For below 30MHz, a loop antenna with its vertical plane is placed 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1 m above the ground.

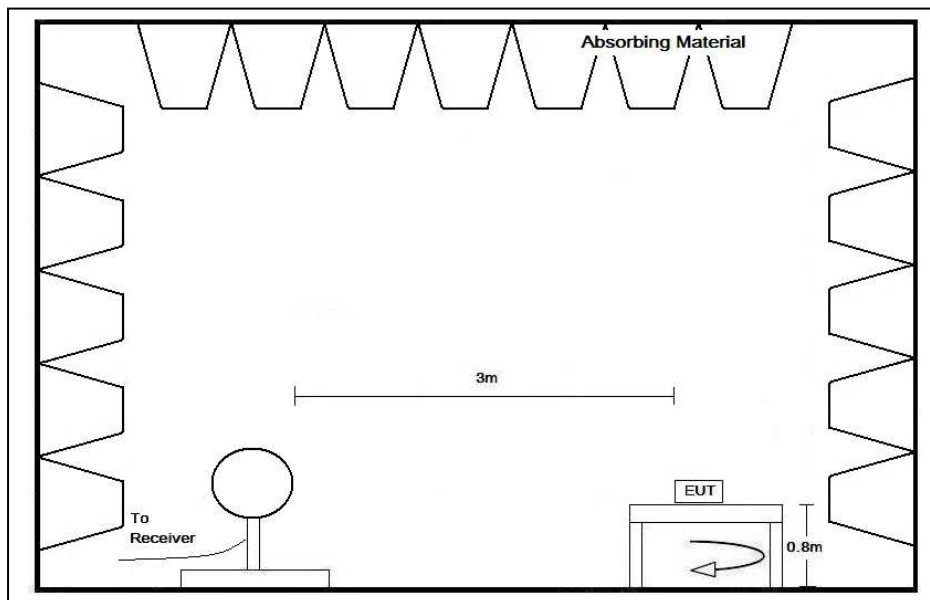
The device was rotated through three orthogonal axes to determine which attitude and configuration produce the highest emission during measurement.

## TEST REPORT

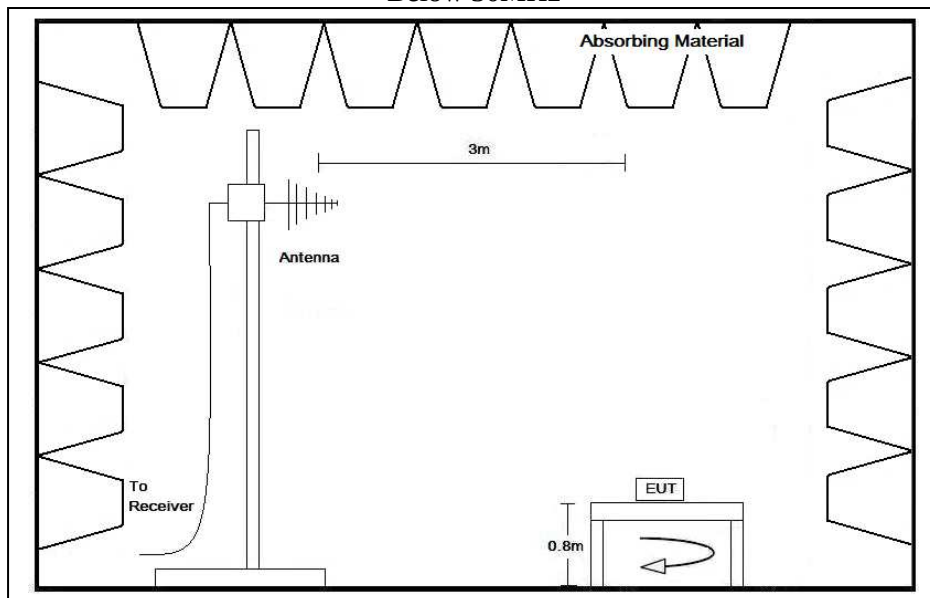
Report No. : AA0022305(1)

Date : 21 Apr, 2021

### 2.2 Test Setup



Below 30MHz



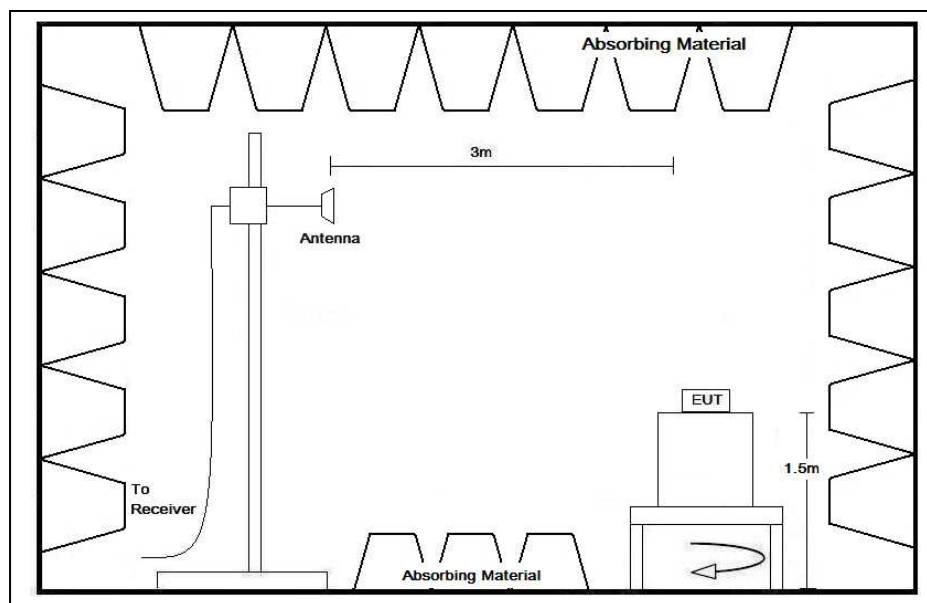
30MHz – 1GHz

## TEST REPORT

Report No. : AA0022305(1)

Date : 21 Apr, 2021

### 2.2 Test Setup



Above 1GHz



## **TEST REPORT**

Report No. : AA0022305(1)

Date : 21 Apr, 2021

### 2.3 Test Result

Peak Detector data was measured unless otherwise stated.

The radiated emissions are measured from 9kHz to 26GHz (the tenth harmonics)

The worst case configuration is shown on the worst case configuration of test setup photo.

The frequencies from fundamental up to tenth harmonics were investigated, and emissions more 20dB below limit were not reported. Thus, those highest emissions were presented in next pages.

The EUT has been tested in Transmission mode.

It was found that the EUT meet the FCC requirement.

## TEST REPORT

Report No. : AA0022305(1)

Date : 21 Apr, 2021

### 2.4 Radiated Emission Measurement Data

#### Radiated emission

##### Environmental conditions:

| Parameter            | Recorded value |     |
|----------------------|----------------|-----|
| Ambient temperature: | 25.5           | ° C |
| Relative humidity:   | 58.0           | %   |

Channel: 2403 MHz

| Polarization | Frequency (MHz)       | Reading at 3m (dBμV) | Antenna Factor and Cable Loss (dB/m) | Field Strength at 3m (dBμV/m) | Limit at 3m (dBμV/m) | Margin (dB) | Detector Type |
|--------------|-----------------------|----------------------|--------------------------------------|-------------------------------|----------------------|-------------|---------------|
| H            | 2402.848 <sup>1</sup> | 85.3                 | -4.6                                 | 80.7                          | 94.0                 | -13.3       | Peak          |
| V            | 2402.874 <sup>1</sup> | 85.0                 | -4.6                                 | 80.4                          | 94.0                 | -13.6       | Peak          |
| H            | 2400.000              | 60.4                 | -4.6                                 | 55.8                          | 74.0                 | -18.2       | Peak          |
| H            | 2400.000              | 27.4                 | -4.6                                 | 22.8                          | 54.0                 | -31.2       | Average       |
| V            | 2400.000              | 60.0                 | -4.6                                 | 55.4                          | 74.0                 | -18.6       | Peak          |
| V            | 2400.000              | 26.7                 | -4.6                                 | 22.1                          | 54.0                 | -31.9       | Average       |
| H            | 4806.389              | 57.4                 | 2.9                                  | 60.3                          | 74.0                 | -13.7       | Peak          |
| H            | 4806.289              | 33.1                 | 2.9                                  | 36.0                          | 54.0                 | -18.0       | Average       |
| V            | 4806.272              | 52.4                 | 2.9                                  | 55.3                          | 74.0                 | -18.7       | Peak          |
| V            | 4806.288              | 28.7                 | 2.9                                  | 31.6                          | 54.0                 | -22.4       | Average       |
| H            | 7209.086 <sup>1</sup> | 33.7                 | 9.7                                  | 43.4                          | 54.0                 | -10.6       | Peak          |
| V            | 7208.452 <sup>1</sup> | 33.8                 | 9.7                                  | 43.5                          | 54.0                 | -10.5       | Peak          |

Remark: 1) The peak value of emissions at fundamental and above 7GHz are below the average limit, so no average measurement is performed.



## TEST REPORT

Report No. : AA0022305(1)

Date : 21 Apr, 2021

Channel: 2440 MHz

| Polarization | Frequency (MHz) | Reading at 3m (dBμV) | Antenna Factor and Cable Loss (dB/m) | Field Strength at 3m (dBμV/m) | Limit at 3m (dBμV/m) | Margin (dB) | Detector Type |
|--------------|-----------------|----------------------|--------------------------------------|-------------------------------|----------------------|-------------|---------------|
| H            | 2440.127        | 86.4                 | -4.6                                 | 81.8                          | 94.0                 | -12.2       | Peak          |
| V            | 2440.113        | 85.2                 | -4.6                                 | 80.6                          | 94.0                 | -13.4       | Peak          |
| H            | 4880.162        | 56.6                 | 2.5                                  | 59.1                          | 74.0                 | -14.9       | Peak          |
| H            | 4880.297        | 32.4                 | 2.5                                  | 34.9                          | 54.0                 | -19.1       | Average       |
| V            | 4880.391        | 54.0                 | 2.5                                  | 56.5                          | 74.0                 | -17.5       | Peak          |
| V            | 4880.309        | 30.2                 | 2.5                                  | 32.7                          | 54.0                 | -21.3       | Average       |
| H            | 7320.059        | 34.6                 | 9.7                                  | 44.3                          | 54.0                 | -9.7        | Peak          |
| V            | 7320.341        | 35.6                 | 9.7                                  | 45.3                          | 54.0                 | -8.7        | Peak          |

Remark: 1) The peak value of emissions at fundamental and above 7GHz are below the average limit, so no average measurement is performed.



## TEST REPORT

Report No. : AA0022305(1)

Date : 21 Apr, 2021

Channel: 2480 MHz

| Polarization | Frequency (MHz) | Reading at 3m (dBμV) | Antenna Factor and Cable Loss (dB/m) | Field Strength at 3m (dBμV/m) | Limit at 3m (dBμV/m) | Margin (dB) | Detector Type |
|--------------|-----------------|----------------------|--------------------------------------|-------------------------------|----------------------|-------------|---------------|
| H            | 2480.107        | 85.3                 | -4.6                                 | 80.7                          | 94.0                 | -13.3       | Peak          |
| V            | 2480.139        | 83.3                 | -4.6                                 | 78.7                          | 94.0                 | -15.3       | Peak          |
| H            | 2483.500        | 54.3                 | -4.6                                 | 49.7                          | 74.0                 | -24.3       | Peak          |
| V            | 2483.500        | 53.3                 | -4.6                                 | 48.7                          | 74.0                 | -25.3       | Peak          |
| H            | 4960.408        | 53.4                 | 2.9                                  | 56.3                          | 74.0                 | -17.7       | Peak          |
| H            | 4960.355        | 29.9                 | 2.9                                  | 32.8                          | 54.0                 | -21.2       | Average       |
| V            | 4960.319        | 54.6                 | 2.9                                  | 57.5                          | 74.0                 | -16.5       | Peak          |
| V            | 4906.342        | 30.3                 | 2.9                                  | 33.2                          | 54.0                 | -20.8       | Average       |
| H            | 7440.147        | 35.1                 | 9.7                                  | 44.8                          | 54.0                 | -9.2        | Peak          |
| V            | 7440.505        | 35.0                 | 9.7                                  | 44.7                          | 54.0                 | -9.3        | Peak          |

Remark: 1) The peak value of emissions at fundamental and above 7GHz are below the average limit, so no average measurement is performed.



## TEST REPORT

Report No. : AA0022305(1)

Date : 21 Apr, 2021

Mode: Charging

| Polarization | Frequency (MHz) | Reading at 3m (dBμV) | Antenna Factor and Cable Loss (dB/m) | Field Strength at 3m (dBμV/m) | Limit at 3m (dBμV/m) | Margin (dB) | Detector Type |
|--------------|-----------------|----------------------|--------------------------------------|-------------------------------|----------------------|-------------|---------------|
| H            | 128.215         | 6.9                  | 13.7                                 | 20.6                          | 43.5                 | -22.9       | QP            |
| V            | 198.901         | 1.5                  | 16.8                                 | 18.3                          | 43.5                 | -25.2       | QP            |
| H            | 308.268         | 6.3                  | 17.7                                 | 24.0                          | 46.0                 | -22.0       | QP            |
| V            | 399.327         | 10.6                 | 17.7                                 | 28.3                          | 46.0                 | -17.7       | QP            |
| H            | 510.635         | 5.8                  | 22.8                                 | 28.6                          | 46.0                 | -17.4       | QP            |
| V            | 601.936         | 5.5                  | 25.2                                 | 30.7                          | 46.0                 | -15.3       | QP            |
| H            | 720.518         | 4.2                  | 26.8                                 | 31.0                          | 46.0                 | -15.0       | QP            |

## TEST REPORT

Report No. : AA0022305(1)

Date : 21 Apr, 2021

### 3 Description of the Line-conducted Test

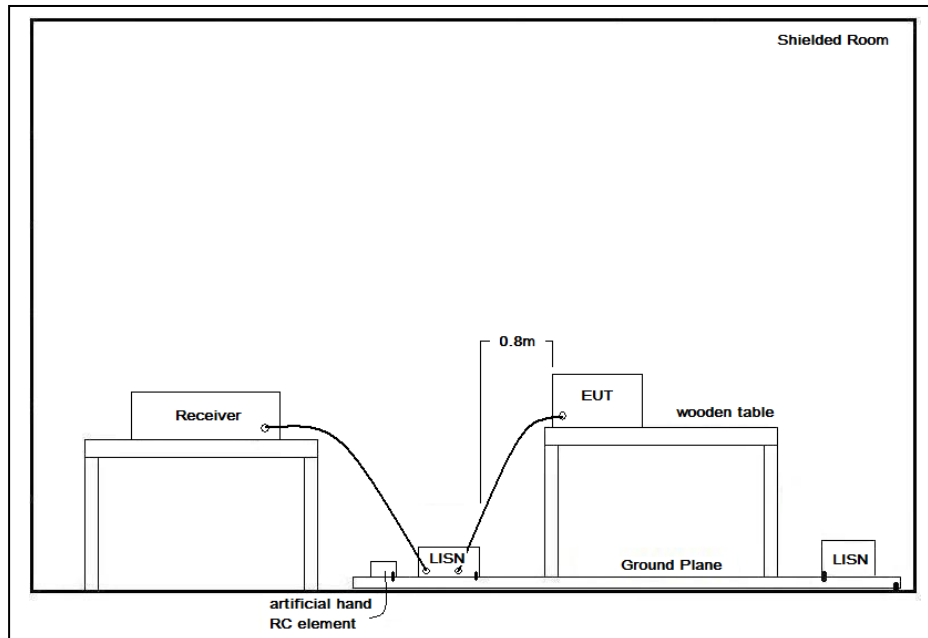
#### 3.1 Test Procedure

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.10 – 2013. The EUT was setup as described in the procedures, and both lines were measured.

#### 3.2 Test Result

The result showed that the EUT meet the FCC requirement.

#### 3.3 Test Setup



#### 3.4 Graph and Table of Conducted Emission Measurement Data

## TEST REPORT

Report No. : AA0022305(1)

Date : 21 Apr, 2021

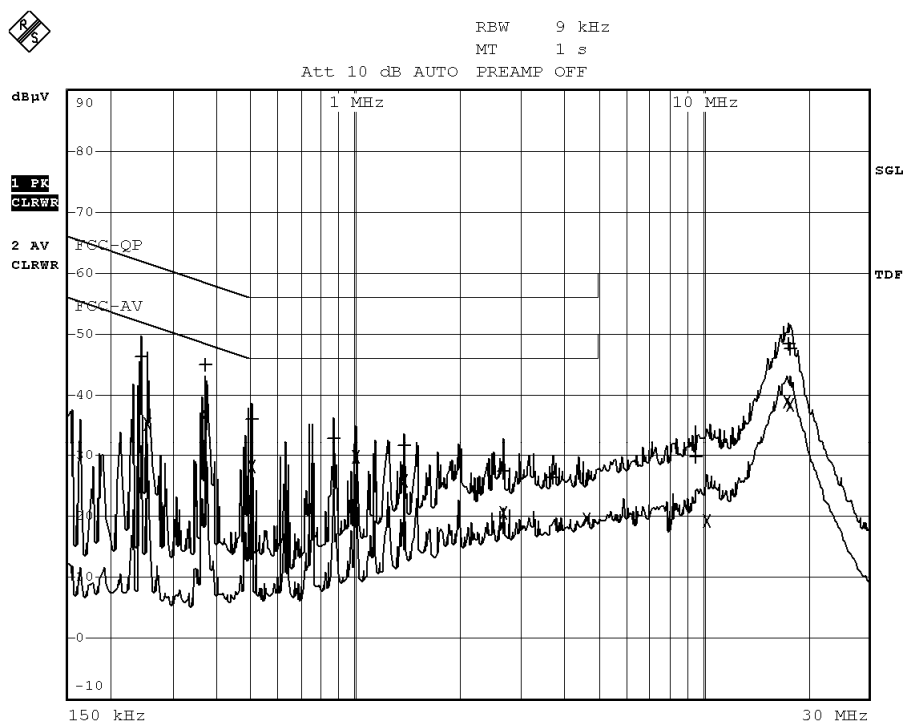
### Measurement Data (Graph)

Conducted emission

pursuant to

the requirement of FCC Part 15

Mode: Charging





## TEST REPORT

Report No. : AA0022305(1)

Date : 21 Apr, 2021

### Measurement Data (Data)

#### Conducted emission

pursuant to

the requirement of FCC Part 15

Mode: Charging

| EDIT PEAK LIST (Final Measurement Results) |             |            |        |                |
|--------------------------------------------|-------------|------------|--------|----------------|
| Trace1:                                    | FCC-QP      |            |        |                |
| Trace2:                                    | FCC-AV      |            |        |                |
| Trace3:                                    | ---         |            |        |                |
| TRACE                                      | FREQUENCY   | LEVEL dBμV |        | DELTA LIMIT dB |
| 1 Quasi Peak                               | 244.5 kHz   | 46.33      | N gnd  | -15.60         |
| 2 Average                                  | 253.5 kHz   | 35.24      | N gnd  | -16.40         |
| 1 Quasi Peak                               | 375 kHz     | 45.10      | N gnd  | -13.28         |
| 2 Average                                  | 375 kHz     | 36.82      | N gnd  | -11.56         |
| 1 Quasi Peak                               | 504.5 kHz   | 36.14      | L1 gnd | -19.86         |
| 2 Average                                  | 504.5 kHz   | 28.11      | N gnd  | -17.88         |
| 1 Quasi Peak                               | 869 kHz     | 32.99      | N gnd  | -23.00         |
| 2 Average                                  | 1.004 MHz   | 29.87      | N gnd  | -16.12         |
| 1 Quasi Peak                               | 1.3775 MHz  | 31.50      | N gnd  | -24.49         |
| 2 Average                                  | 1.3775 MHz  | 25.87      | N gnd  | -20.13         |
| 1 Quasi Peak                               | 2.66 MHz    | 27.33      | N gnd  | -28.67         |
| 2 Average                                  | 2.66 MHz    | 20.70      | N gnd  | -25.29         |
| 1 Quasi Peak                               | 3.713 MHz   | 26.45      | N gnd  | -29.55         |
| 2 Average                                  | 4.658 MHz   | 19.55      | N gnd  | -26.44         |
| 1 Quasi Peak                               | 9.581 MHz   | 29.80      | N gnd  | -30.19         |
| 2 Average                                  | 10.31 MHz   | 19.17      | N gnd  | -30.83         |
| 2 Average                                  | 17.4335 MHz | 38.83      | N gnd  | -11.16         |
| 1 Quasi Peak                               | 17.5775 MHz | 48.33      | N gnd  | -11.66         |
| 2 Average                                  | 17.834 MHz  | 38.55      | N gnd  | -11.44         |
| 1 Quasi Peak                               | 17.9015 MHz | 47.69      | N gnd  | -12.30         |

## TEST REPORT

Report No. : AA0022305(1)

Date : 21 Apr, 2021

### 4 Supplementary document

The following document were submitted by applicant, and for electronic filing, the document are saved with the following filenames:

| Document                | Filename                       |
|-------------------------|--------------------------------|
| ID Label/Location       | Label Artwork and Location.pdf |
| Block Diagram           | Block Diagram.pdf              |
| Schematic Diagram       | Schematic.pdf                  |
| Users Manual            | User Manual.pdf                |
| Operational Description | Operation Description.pdf      |

#### 4.1 Bandwidth

Appendix A1 show the fundamental emission is confined in the specified band. 20dB bandwidth is 59.775kHz. 20dB bandwidth falls in the band of 2400 – 2483.5MHz. It also shows that the EUT met the requirement of FCC Part 15.215(c).

| Frequency (MHz) | Delta marker 1 (kHz) | Delta marker 2 (kHz) | Overall 20dB bandwidth (kHz) |
|-----------------|----------------------|----------------------|------------------------------|
| 2403            | -20.4                | 12.1875              | 32.5875                      |
| 2440            | -30.7                | 29.075               | 59.775                       |
| 2480            | -25.2375             | 12.4                 | 37.6375                      |

Overall 20dB bandwidth = value of delta marker 2 – value of delta marker 1



## **TEST REPORT**

Report No. : AA0022305(1)

Date : 21 Apr, 2021

### **5 Appendices**

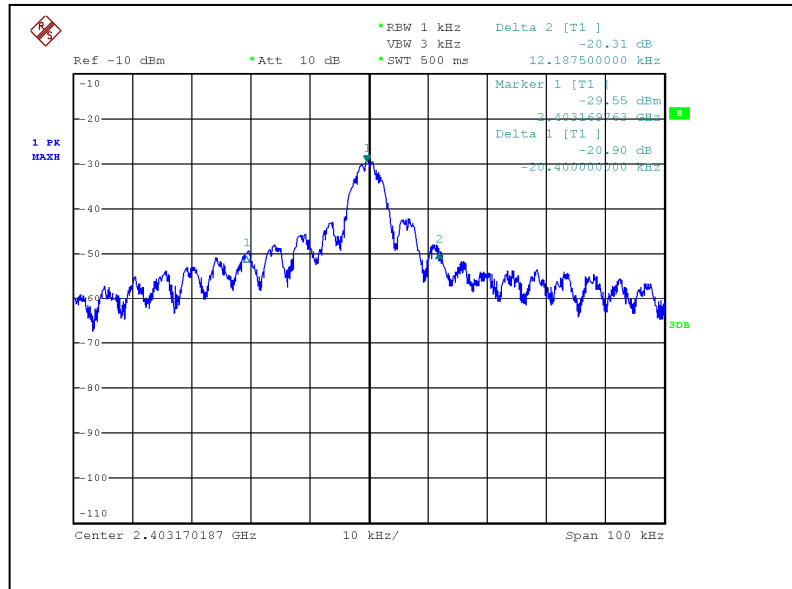
|     |                     |   |       |
|-----|---------------------|---|-------|
| A1. | 20dB Bandwidth Plot | 2 | Pages |
| A2. | External Photo      | 1 | Page  |

## TEST REPORT

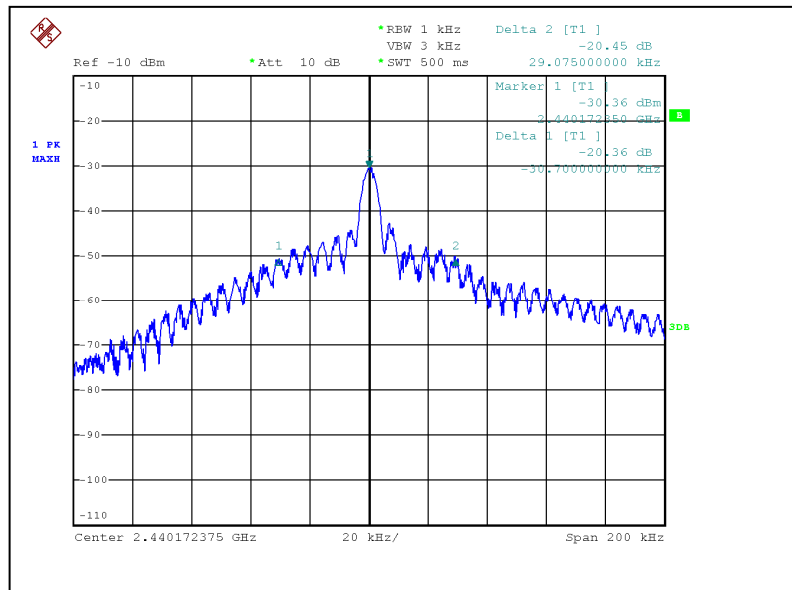
Report No. : AA0022305(1)

Date : 21 Apr, 2021

### A1. 20dB Bandwidth Plot



Channel: 2403MHz

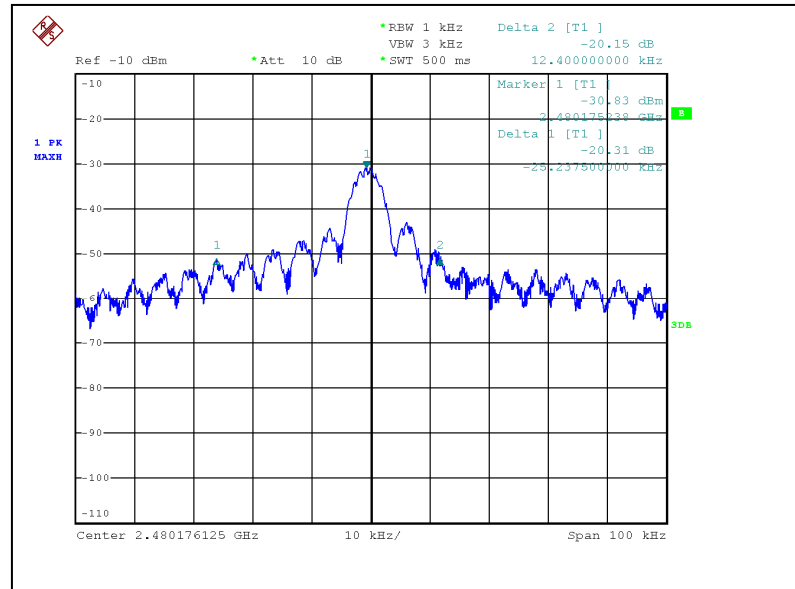


Channel: 2440MHz

## TEST REPORT

Report No. : AA0022305(1)

Date : 21 Apr, 2021



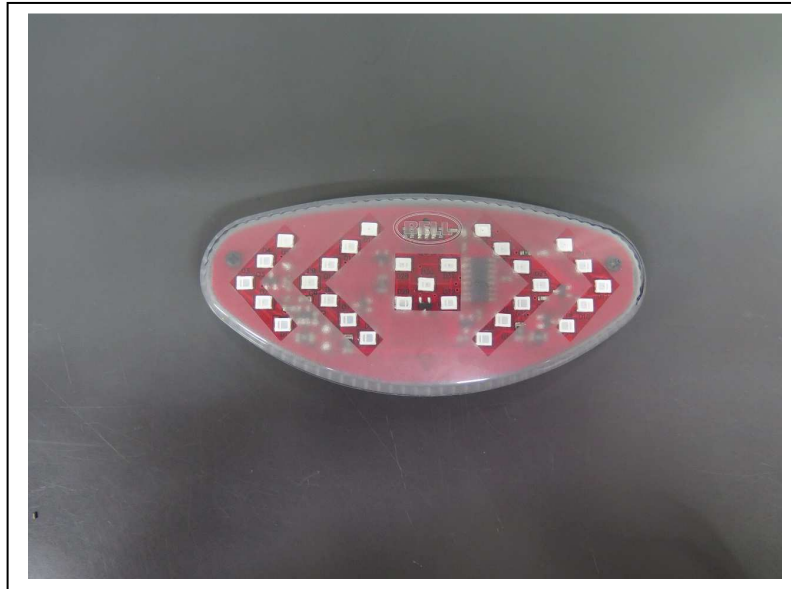
Channel: 2480MHz

## **TEST REPORT**

Report No. : AA0022305(1)

Date : 21 Apr, 2021

### **A2. External Photo**



\*\*\*\*\* End of Report \*\*\*\*\*