



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

This 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.
This document is issued subject to the latest CMA Testing General Terms and Conditions of Testing and Inspection Services, available on request or accessible at website www.cmateesting.org.
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

Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.

Tel: (852) 2698 8198 Fax: (852) 2695 4177 E-mail: info@cmateesting.org Web Site: <http://www.cmateesting.org>



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 REFERANCE	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.

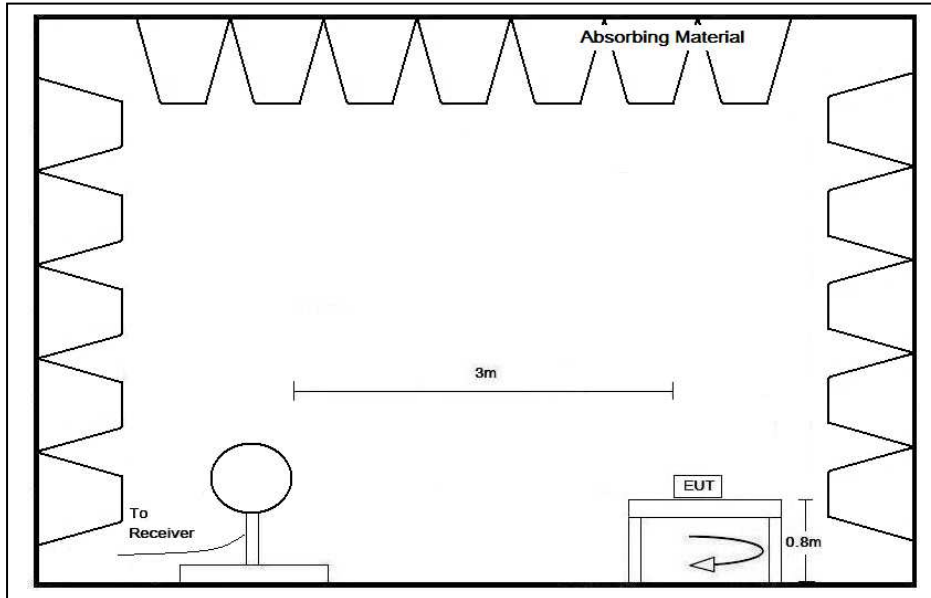
The device was rotated through three orthogonal axes to determine which attitude and configuration produce the highest emission during measurement.

TEST REPORT

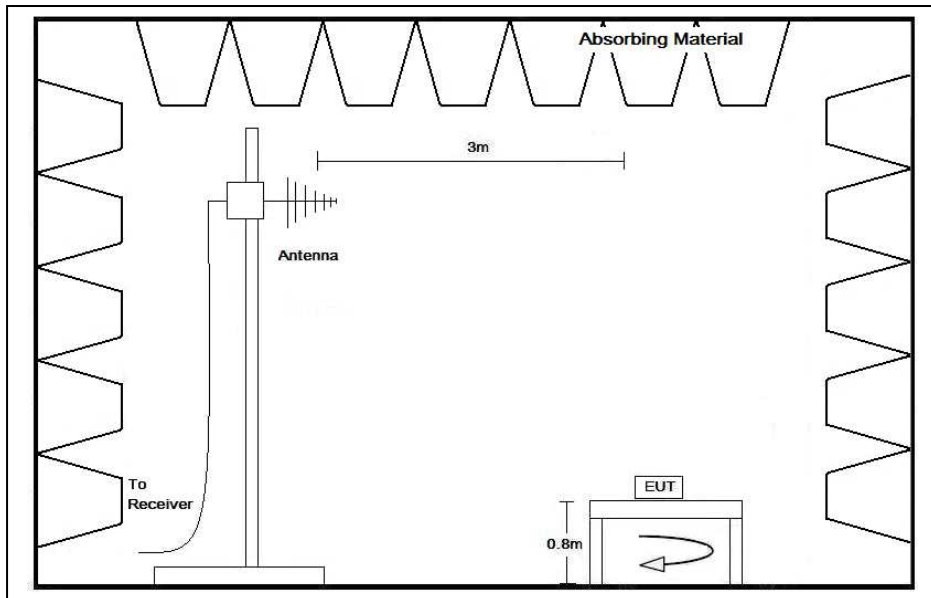
Report No. : AA0022305(1)

Date : 21 Apr, 2021

2.2 Test Setup



Below 30MHz



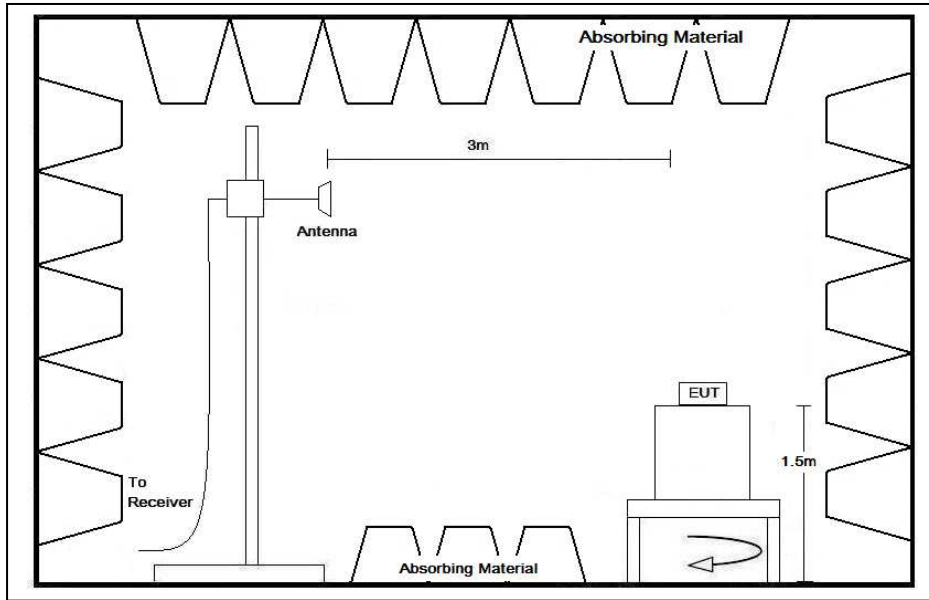
30MHz – 1GHz

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 ¹	85.3	-4.6	80.7	94.0	-13.3	Peak
V	2402.874 ¹	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 ¹	33.7	9.7	43.4	54.0	-10.6	Peak
V	7208.452 ¹	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 (dB μ V)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dB μ V/m)	Limit at 3m (dB μ V/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 (dB μ V)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dB μ V/m)	Limit at 3m (dB μ V/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 (dB μ V)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dB μ V/m)	Limit at 3m (dB μ V/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

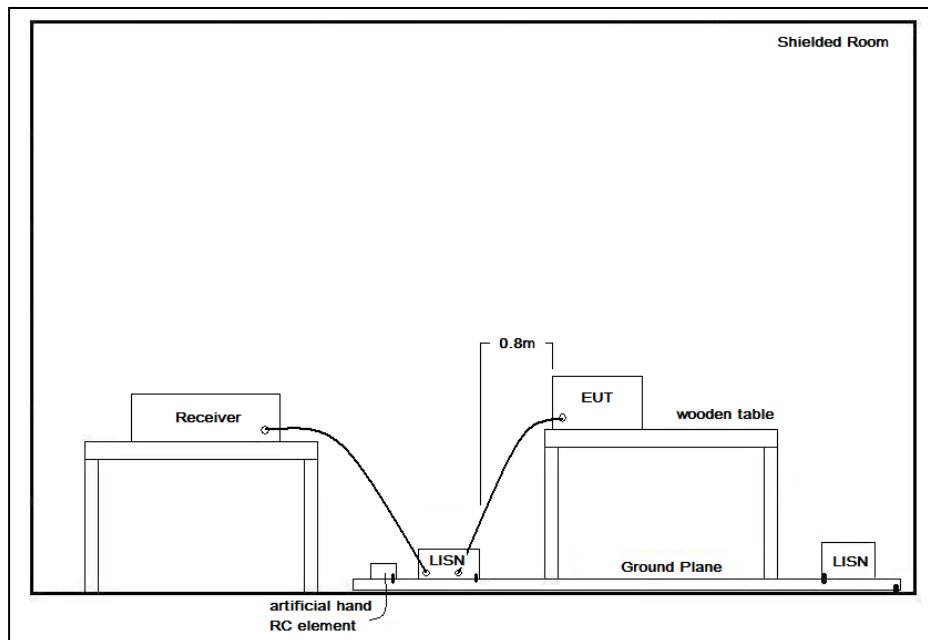
3.1 Test Procedure

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



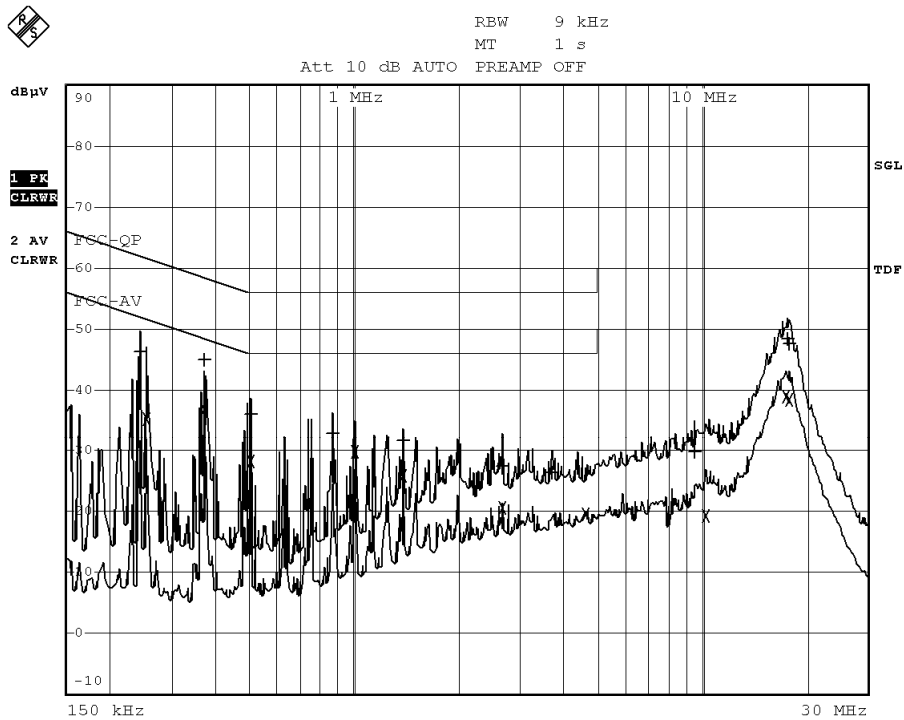
TEST REPORT

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

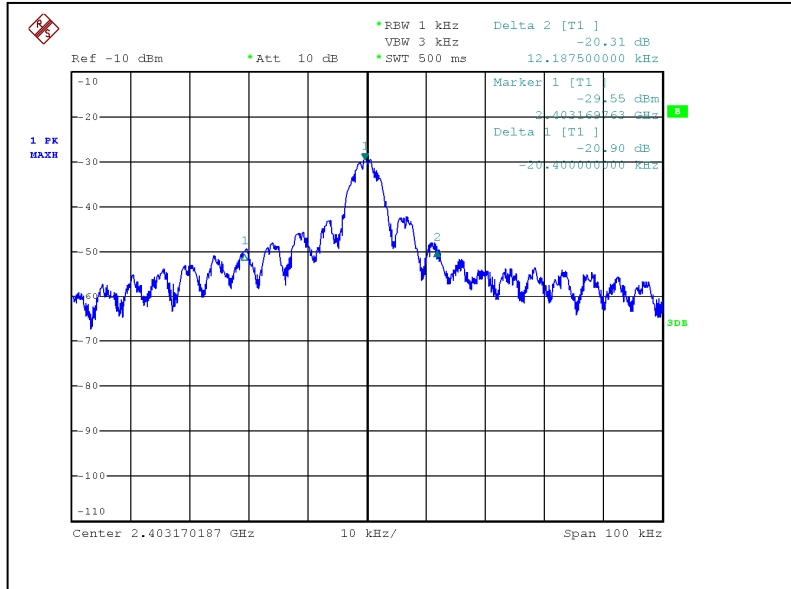


TEST REPORT

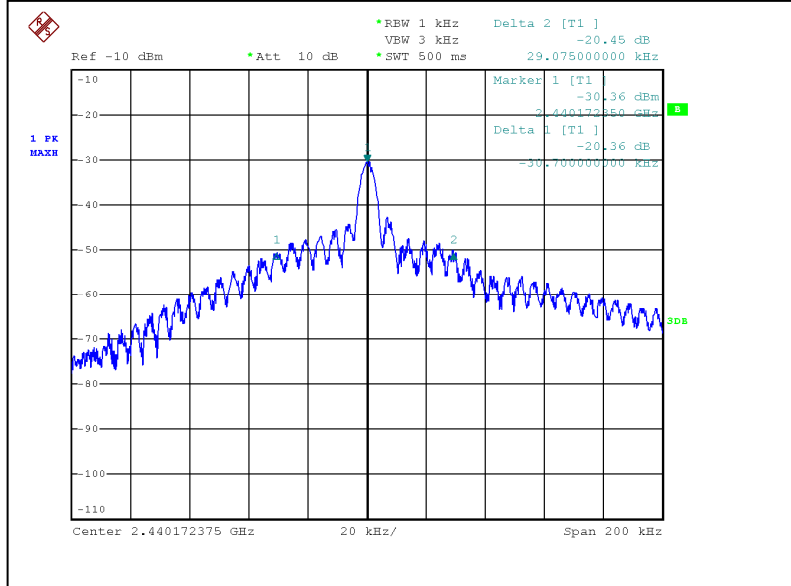
Report No. : AA0022305(1)

Date : 21 Apr, 2021

A1. 20dB Bandwidth Plot



Channel: 2403MHz



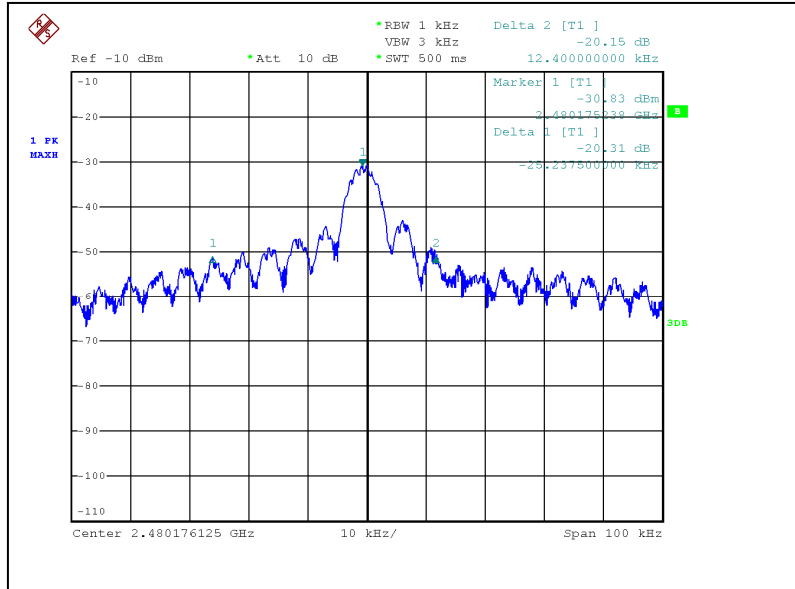
Channel: 2440MHz



TEST REPORT

Report No. : AA0022305(1)

Date : 21 Apr, 2021



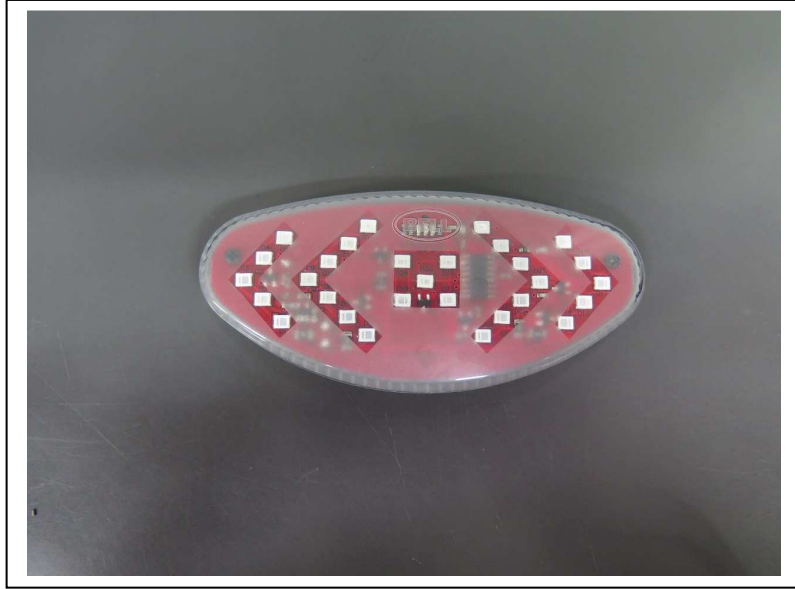
Channel: 2480MHz

TEST REPORT

Report No. : AA0022305(1)

Date : 21 Apr, 2021

A2. External Photo



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