

Report No.: ATE20140163

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# APPLICATION CERTIFICATION On Behalf of Sure Wave(Hong Kong) Limited

iBun Bluetooth Speaker Model No.: CQL1412-B, UG-M6

FCC ID: 2AAPLCQL1412-B

Prepared for : Sure Wave(Hong Kong) Limited

Address : A-703, Building 2, TianAn Cyber Park, Huangge

North Road, Longgang District, Shenzhen, 518172,

China

Prepared by : ACCURATE TECHNOLOGY CO., LTD

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Report Number : ATE20140163

Date of Test : Feb 24, 2014-Mar 06, 2014

Date of Report : Mar 06, 2014

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## **Test Report Certification**

Applicant : Sure Wave(Hong Kong) Limited

Manufacturer : Sure Wave(Hong Kong) Limited

EUT Description : iBun Bluetooth Speaker

(A) MODEL NO.: CQL1412-B, UG-M6

(B) Trade Name.: /

(C) POWER SUPPLY: DC3.7V(Lithium ion battery) & DC 5V(Powered by USB Port)

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.247 ANSI C63.4- 2009

The device described above is tested by ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.247 limits. The measurement results are contained in this test report and ACCURATE TECHNOLOGY CO. LTD is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of ACCURATE TECHNOLOGY CO. LTD.

Date of Test :	Feb 24, 2014-Mar 06, 2014
Prepared by :	7 in Zhang
	(Tim.zhang, Engineer)
Approved & Authorized Signer :_	Lemil
	( Sean Liu, Manager)



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#### 1. GENERAL INFORMATION

#### 1.1.Description of Device (EUT)

EUT : iBun Bluetooth Speaker Model Number : CQL1412-B, UG-M6 Frequency Band : 2402MHz-2480MHz

Number of Channels : 79

Modulation type : GFSK,  $\Pi/4$ -DQPSK, 8DPSK

Antenna Gain : 0dBi

Bluetooth version : Bluetooth V2.1+EDR

Antenna type : PCB Antenna

Power Supply : DC3.7V(Lithium ion battery) &

DC 5V(Powered by USB Port)

Applicant : Sure Wave(Hong Kong) Limited

Address : A-703, Building 2, TianAn Cyber Park, Huangge North

Road, Longgang District, Shenzhen, 518172, China

Manufacturer : Sure Wave(Hong Kong) Limited

Address : A-703, Building 2, TianAn Cyber Park, Huangge North

Road, Longgang District, Shenzhen, 518172, China

Date of sample received: Feb 24, 2014

Date of Test : Feb 24, 2014-Mar 06, 2014



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#### 1.2.Description of Test Facility

EMC Lab : Accredited by TUV Rheinland Shenzhen

Listed by FCC

The Registration Number is 752051

Listed by Industry Canada

The Registration Number is 5077A-2

Accredited by China National Accreditation Committee

for Laboratories

The Certificate Registration Number is L3193

Name of Firm : ACCURATE TECHNOLOGY CO. LTD

Site Location : F1, Bldg. A, Changyuan New Material Port, Keyuan Rd.

Science & Industry Park, Nanshan, Shenzhen, Guangdong

P.R. China

#### 1.3. Measurement Uncertainty

Conducted Emission Expanded Uncertainty = 2.23dB, k=2

Radiated emission expanded uncertainty = 3.08dB, k=2

(9kHz-30MHz)

Radiated emission expanded uncertainty = 4.42dB, k=2

(30MHz-1000MHz)

Radiated emission expanded uncertainty = 4.06dB, k=2

(Above 1GHz)



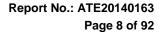


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# 2. MEASURING DEVICE AND TEST EQUIPMENT

**Table 1: List of Test and Measurement Equipment** 

Kind of equipment	Manufacturer	Туре	S/N	Calibrated dates	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 11, 2014	Jan. 10, 2015
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 11, 2014	Jan. 10, 2015
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 11, 2014	Jan. 10, 2015
Pre-Amplifier	Rohde&Schwarz	CBLU118354 0-01	3791	Jan. 11, 2014	Jan. 10, 2015
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 15, 2014	Jan. 14, 2015
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 15, 2014	Jan. 14, 2015
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 15, 2014	Jan. 14, 2015
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1067	Jan. 15, 2014	Jan. 14, 2015
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 11, 2014	Jan. 10, 2015
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 11, 2014	Jan. 10, 2015
Highpass Filter	Wainwright Instruments	WHKX3.6/18 G-10SS	N/A	Jan. 11, 2014	Jan. 10, 2015
Band Reject Filter	Wainwright Instruments	WRCG2400/2 485-2375/2510 -60/11SS	N/A	Jan. 11, 2014	Jan. 10, 2015





3. OPERATION OF EUT DURING TESTING

## 3.1. Operating Mode

The mode is used: Transmitting mode

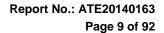
Low Channel: 2402MHz Middle Channel: 2441MHz High Channel: 2480MHz

Hopping

## 3.2. Configuration and peripherals

EUT

(EUT: IBun Bluetooth Speaker)





# 4. TEST PROCEDURES AND RESULTS

FCC Rules	<b>Description of Test</b>	Result
Section 15.207	Power Line Conducted Emission	Compliant
Section 15.247(a)(1)	20dB Bandwidth Test	Compliant
Section 15.247(a)(1)	Carrier Frequency Separation Test	Compliant
Section 15.247(a)(1)(iii)	Number Of Hopping Frequency Test	Compliant
Section 15.247(a)(1)(iii)	Dwell Time Test	Compliant
Section 15.247(b)(1)	Maximum Peak Output Power Test	Compliant
Section 15.247(d) Section 15.209	Radiated Emission Test	Compliant
Section 15.247(d)	Band Edge Compliance Test	Compliant
Section 15.203	Antenna Requirement	Compliant

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#### 5. 20DB BANDWIDTH TEST

#### 5.1.Block Diagram of Test Setup



(EUT: IBun Bluetooth Speaker)

#### 5.2. The Requirement For Section 15.247(a)(1)

Section 15.247(a)(1): Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

#### 5.3.EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

#### 5.4. Operating Condition of EUT

- 5.4.1. Setup the EUT and simulator as shown as Section 5.1.
- 5.4.2. Turn on the power of all equipment.
- 5.4.3.Let the EUT work in TX (Hopping off) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.



#### 5.5.Test Procedure

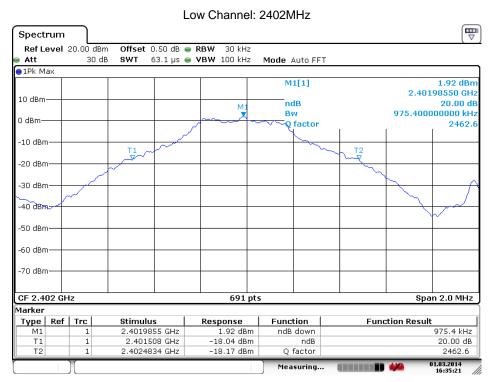
- 5.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.
- 5.5.2.Set RBW of spectrum analyzer to 30 kHz and VBW to 100 kHz.
- 5.5.3.The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

#### 5.6.Test Result

	Enganaga	GFSK	∏/4-DQPSK	8DPSK	
Channel	Frequency (MHz)	20dB Bandwidth	20dB Bandwidth	20dB Bandwidth	Result
	(IVII IZ)	(MHz)	(MHz)	(MHz)	
Low	2402	0.975	1.285	1.256	Pass
Middle	2441	0.897	1.274	1.268	Pass
High	2480	0.929	1.274	1.256	Pass

The spectrum analyzer plots are attached as below.

Mode 1: GFSK Link Mode



Date: 1.MAR.2014 16:35:21

2720.5

01.03.2014 16:36:19



Middle Channel: 2441MHz Spectrum Ref Level 20.00 dBm Offset 0.50 dB 
RBW 30 kHz 63.1 μs 🌞 **VBW** 100 kHz Att 30 dB Mode Auto FFT 1Pk Max M1[1] 1.34 dBn 2.44097680 GH 10 dBm ndB 20.00 dB Bw Q factor 897.300000000 kHz 0 dBm-2720. -10 dBm -20 dBm -30 dBm 40 dBm -50 dBm -60 dBm -70 dBm-CF 2.441 GHz 691 pts Span 2.0 MHz Marker Type | Ref | Trc Stimulus Response Function **Function Result** 1.34 dBm -18.53 dBm 2.4409768 GHz ndB down 897.3 kHz Τ1 2.440534 GHz ndB 20.00 dB

-18.54 dBm

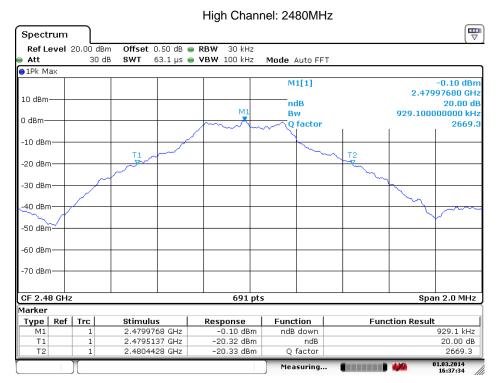
Q factor

Measuring...

Date: 1.MAR.2014 16:36:19

Т2

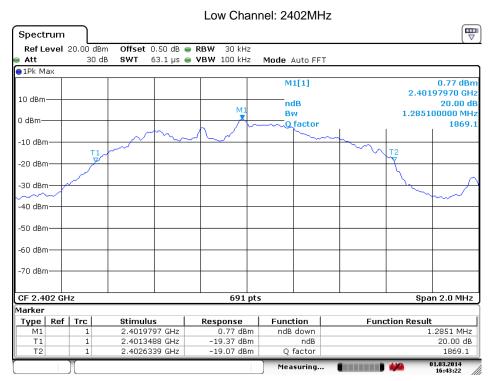
2.4414313 GHz



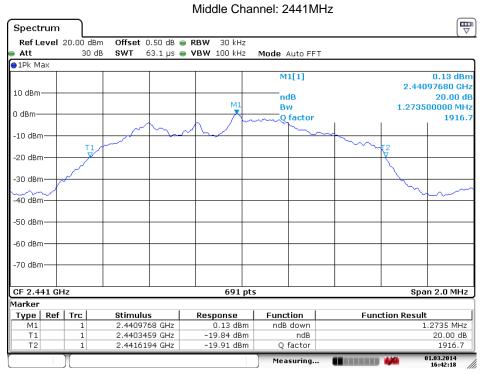
Date: 1.MAR.2014 16:37:34



Mode 2:  $\pi$  /4 DQPSK Link Mode

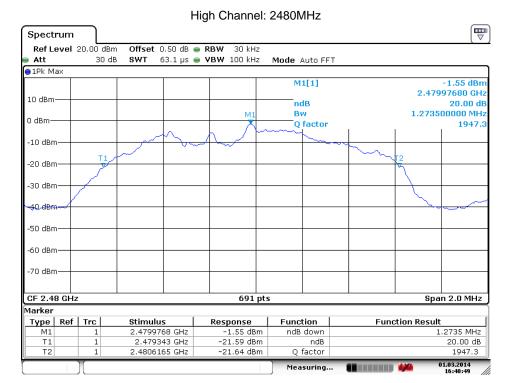


Date: 1.MAR.2014 16:43:22



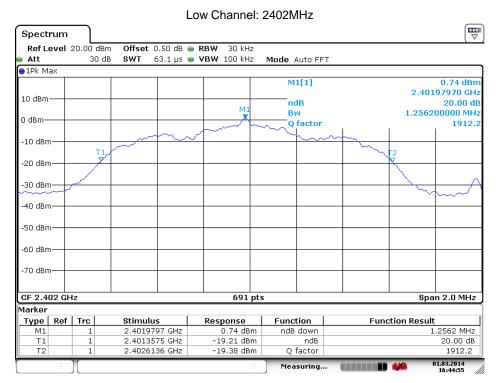
Date: 1.MAR.2014 16:42:18





Date: 1.MAR.2014 16:40:49

Mode 3: 8DPSK Link Mode



Date: 1.MAR.2014 16:44:55

1925.5

01.03.2014 16:46:21



#### Middle Channel: 2441MHz Spectrum Ref Level 20.00 dBm Offset 0.50 dB RBW 30 kHz 63.1 μs 🌞 **VBW** 100 kHz Mode Auto FFT Att 30 dB ●1Pk Ma× M1[1] 0.05 dBn 2.44097680 GH 10 dBm ndB 20.00 dB Bw Q factor 1.267700000 MHz 0 dBm-1925. -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm CF 2.441 GHz 691 pts Span 2.0 MHz Marker Type | Ref | Trc Stimulus Response Function **Function Result** 2.4409768 GHz 0.05 dBm ndB down 1.2677 MHz -19.86 dBm Τ1 2.4403517 GHz ndB 20.00 dB

-20.01 dBm

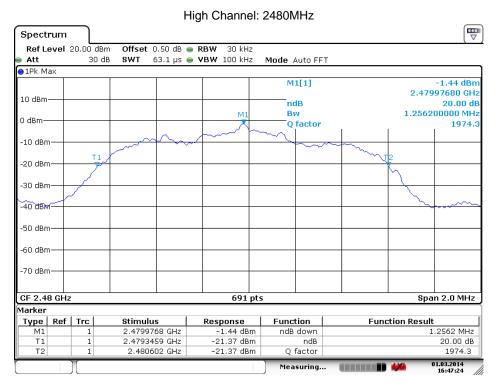
Q factor

Measuring...

Date: 1.MAR.2014 16:46:20

Т2

2.4416194 GHz



Date: 1.MAR.2014 16:47:24

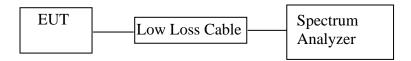


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## 6. CARRIER FREQUENCY SEPARATION TEST

#### 6.1.Block Diagram of Test Setup



(EUT: IBun Bluetooth Speaker)

#### 6.2. The Requirement For Section 15.247(a)(1)

Section 15.247(a)(1): Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudorandomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

#### 6.3.EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

#### 6.4. Operating Condition of EUT

- 6.4.1. Setup the EUT and simulator as shown as Section 6.1.
- 6.4.2. Turn on the power of all equipment.
- 6.4.3.Let the EUT work in TX (Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.



#### 6.5. Test Procedure

- 6.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.
- $6.5.2. Set\ RBW$  of spectrum analyzer to  $100\ kHz$  and VBW to  $300\ kHz.$  Adjust Span to  $3\ MHz.$
- 6.5.3.Set the adjacent channel of the EUT maxhold another trace.
- 6.5.4. Measurement the channel separation

#### 6.6.Test Result

#### **GFSK**

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.0058	25KHz or 20dB	PASS
Low	2403	1.0038	bandwidth	PASS
Middle	2440	1.0029	25KHz or20dB	PASS
	2441	1.0029	bandwidth	TASS
High	2479	1.0029	25KHz or 20dB	PASS
	2480	1.0029	bandwidth	LASS

#### ∏/4-DQPSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.0029	25KHz or 2/3*20dB	PASS
Low	2403	1.002)	bandwidth	17100
Middle	2440	1.0029	25KHz or 2/3*20dB	PASS
Middle	2441	bandwidth	rass	
High	2479	1.0029	25KHz or 2/3*20dB	PASS
	2480	1.0029	bandwidth	rass

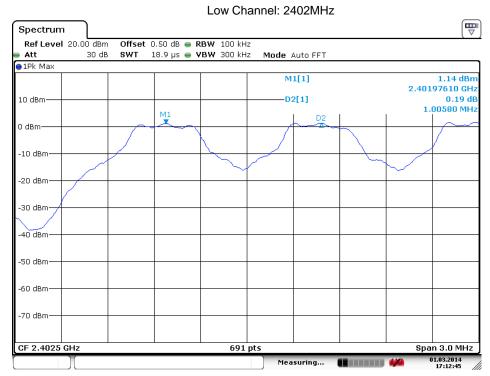
#### 8DPSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.0029	25KHz or 2/3*20dB	PASS
Low	2403	1.0029	bandwidth	rass
Middle	2440	1.0029	25KHz or 2/3*20dB	PASS
Middle	2441	1.0029	bandwidth	rass
High	2479	1.0029	25KHz or 2/3*20dB	PASS
	2480	1.0029	bandwidth	rass

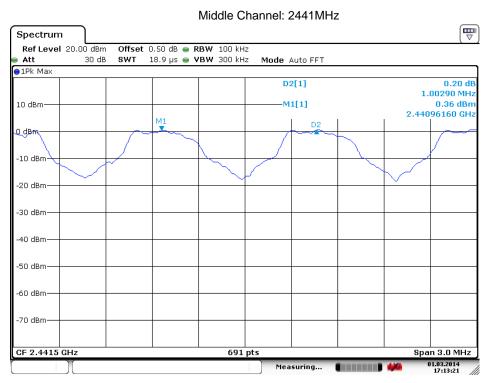
The spectrum analyzer plots are attached as below.



Mode 1: GFSK Link Mode



Date: 1.MAR.2014 17:12:44



Date: 1.MAR.2014 17:13:21

Span 3.0 MHz



High Channel: 2480MHz

Offset 0.50 dB ■ RBW 100 kHz
SWT 18.9 μs ■ VBW 300 kHz Mode Auto FFT

D2[1] 0.13 dB 1.00290 MHz
-1.22 dBm 2.47897900 GHz

Measuring...

Date: 1.MAR.2014 17:13:59

Spectrum

●1Pk Max

10 dBm

0 dBm

-10 dBm

-20 dBm

-30 dBm -40 dBm -50 dBm

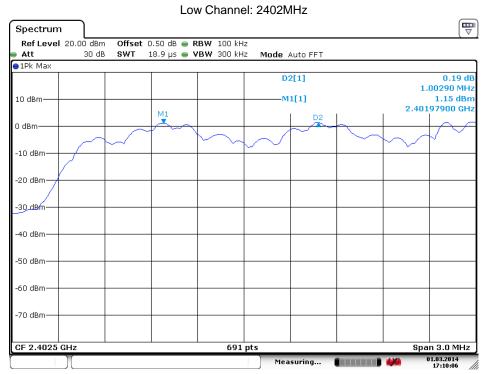
-60 dBm-

CF 2.4795 GHz

Ref Level 20.00 dBm

30 dB

Mode 2:  $\pi$  /4 DQPSK Link Mode



691 pts

Date: 1.MAR.2014 17:10:06

Span 3.0 MHz

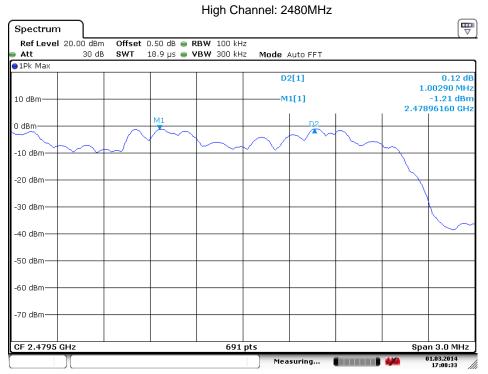


Middle Channel: 2441MHz Spectrum Ref Level 20.00 dBm Offset 0.50 dB e RBW 100 kHz Att 30 dB SWT 18.9 µs 🎃 **VBW** 300 kHz Mode Auto FFT ●1Pk Max D2[1] 0.15 dB 1.00290 MHz 0.43 dBm 2.44097470 GHz 10 dBm -M1[1] 0 dBm -10 dBm--20 dBm -30 dBm-40 dBm -50 dBm--60 dBm--70 dBm

691 pts

Date: 1.MAR.2014 17:09:27

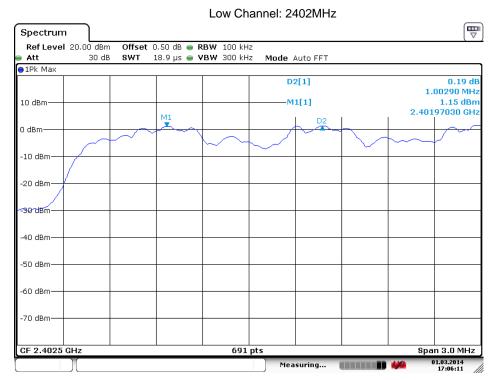
CF 2.4415 GHz



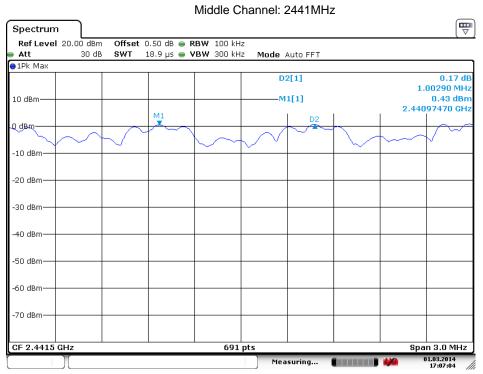
Date: 1.MAR.2014 17:08:33



Mode 3: 8DPSK Link Mode



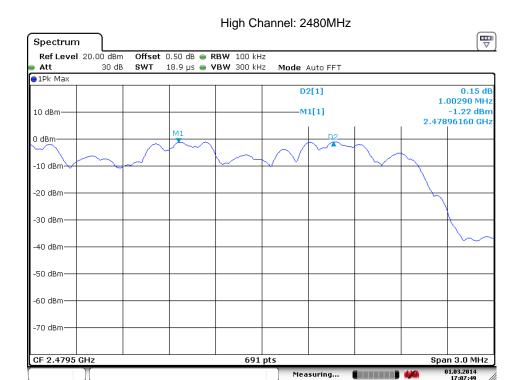
Date: 1.MAR.2014 17:06:10



Date: 1.MAR.2014 17:07:04



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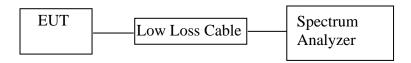
Date: 1.MAR.2014 17:07:48

 $ACCURATE\ TECHNOLOGY\ CO.\ LTD$ FCC ID: 2AAPLCQL1412-B

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## 7. NUMBER OF HOPPING FREQUENCY TEST

#### 7.1.Block Diagram of Test Setup



(EUT: IBun Bluetooth Speaker)

#### 7.2. The Requirement For Section 15.247(a)(1)(iii)

Section 15.247(a)(1)(iii): Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

#### 7.3.EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

#### 7.4. Operating Condition of EUT

- 7.4.1. Setup the EUT and simulator as shown as Section 7.1.
- 7.4.2. Turn on the power of all equipment.
- 7.4.3.Let the EUT work in TX (Hopping on) modes measure it.

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#### 7.5.Test Procedure

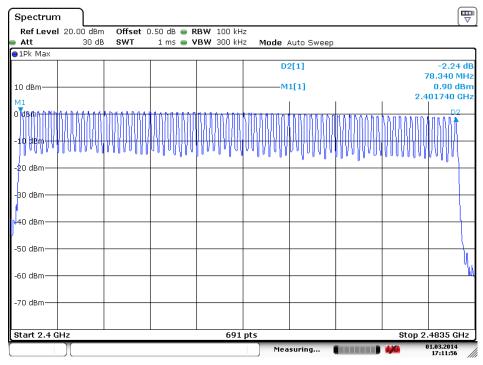
- 7.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.
- 7.5.2.Set the spectrum analyzer as Span=83.5MHz, RBW=100 kHz, VBW=300 kHz.
- 7.5.3.Max hold, view and count how many channel in the band.

#### 7.6.Test Result

Total number of	Measurement result(CH)	Limit(CH)
hopping channel	79	≥15

The spectrum analyzer plots are attached as below.

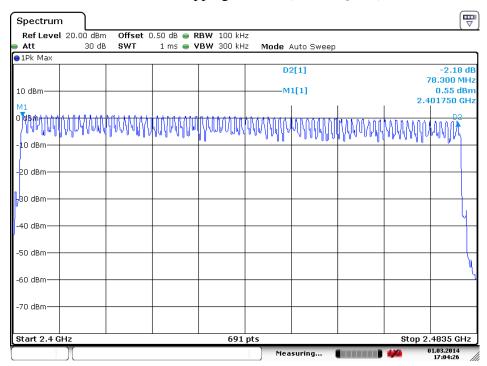
#### Number of hopping channels(GFSK)



Date: 1.MAR.2014 17:11:55

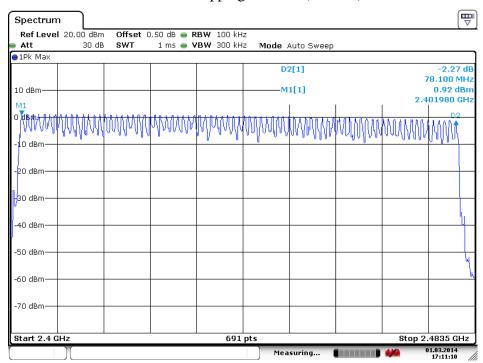


#### Number of hopping channels( $\prod/4$ -DQPSK)



Date: 1.MAR.2014 17:04:26

#### Number of hopping channels(8DPSK)



Date: 1.MAR.2014 17:11:09

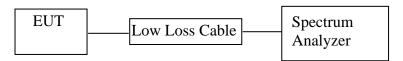


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#### 8. DWELL TIME TEST

#### 8.1.Block Diagram of Test Setup



(EUT: IBun Bluetooth Speaker)

#### 8.2. The Requirement For Section 15.247(a)(1)(iii)

Section 15.247(a)(1)(iii): Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

#### 8.3.EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

#### 8.4. Operating Condition of EUT

- 8.4.1. Setup the EUT and simulator as shown as Section 8.1.
- 8.4.2. Turn on the power of all equipment.
- 8.4.3.Let the EUT work in TX (Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

#### 8.5. Test Procedure

- 8.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.
- 8.5.2.Set center frequency of spectrum analyzer = operating frequency.
- 8.5.3.Set the spectrum analyzer as RBW=1MHz, VBW=3MHz, Span=0Hz, Adjust Sweep=5ms, 10ms, 15ms. Get the pulse time.

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8.5.4.Repeat above procedures until all frequency measured were complete.

## 8.6.Test Result

### GFSK Mode

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)	
	2402	0.5362	171.58	400	
DH1	2441	0.5290	169.28	400	
	2480	0.5362	171.58	400	
A period to	ransmit time = $0.4 \times 79$ =	31.6 Dwell time = $pu$	alse time $\times$ (1600/(2*)	79))×31.6	
	2402	1.8261	292.18	400	
DH3	2441	1.8116	289.86	400	
	2480	1.8116	289.86	400	
A period to	ransmit time = $0.4 \times 79 =$	31.6 Dwell time = $pt$	alse time $\times$ (1600/(4*)	79))×31.6	
	2402	3.0725	327.73	400	
DH5	2441	3.0725	327.73	400	
	2480	3.0725	327.73	400	
A period transr	A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6*79)) \times 31.6$				

## $\Pi/4$ -DQPSK

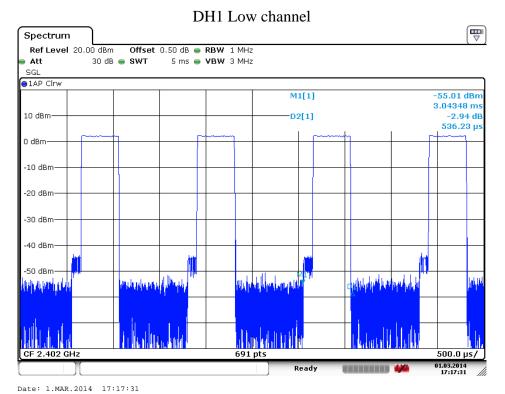
Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)	
	2402	0.5507	176.22	400	
DH1	2441	0.5507	176.22	400	
	2480	0.5435	173.92	400	
A period to	ransmit time = $0.4 \times 79 =$	31.6 Dwell time = $pt$	alse time $\times$ (1600/(2*)	79))×31.6	
	2402	1.8261	292.18	400	
DH3	2441	1.8261	292.18	400	
	2480	1.8043	288.69	400	
A period to	ransmit time = $0.4 \times 79 =$	31.6 Dwell time = $pt$	alse time $\times$ (1600/(4*)	79))×31.6	
	2402	3.0435	324.64	400	
DH5	2441	3.0652	326.95	400	
	2480	2.9783	317.69	400	
A period transr	A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6*79)) \times 31.6$				



#### 8DPSK Mode

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.5435	173.92	400
	2441	0.5435	173.92	400
	2480	0.5435	173.92	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(2*79)) \times 31.6$				
DH3	2402	1.8188	291.01	400
	2441	1.8188	291.01	400
	2480	1.8188	291.01	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(4*79)) \times 31.6$				
DH5	2402	3.0797	328.50	400
	2441	3.0580	326.19	400
	2480	3.0797	328.50	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6*79)) \times 31.6$				

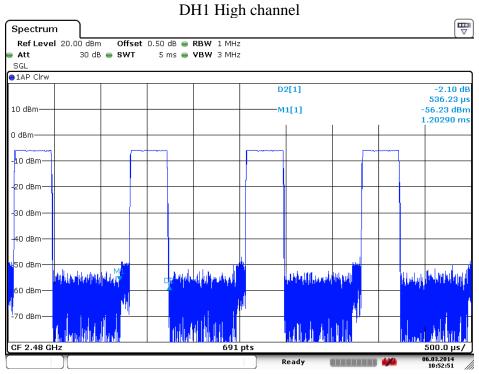
The spectrum analyzer plots are attached as below.





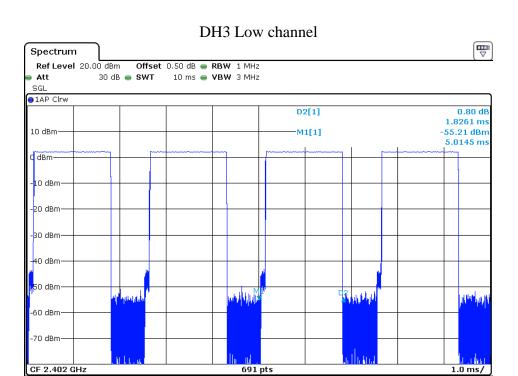
#### DH1 Middle channel Spectrum Ref Level 20.00 dBm Offset 0.50 dB 🖷 RBW 1 MHz 30 dB 🅌 SWT 5 ms 🍅 VBW 3 MHz Att SGL ●1AP Clrw D2[1] 3.24 dB 528.99 μs 10 dBm-M1[1] -57.50 dBm 2.03623 m 10 dBm 20 dBm-30 dBm 40 dBm-50 dBm 500.0 µs/

Date: 1.MAR.2014 17:16:42



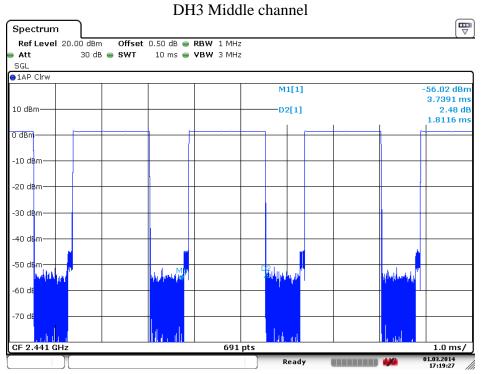
Date: 6.MAR.2014 10:52:51





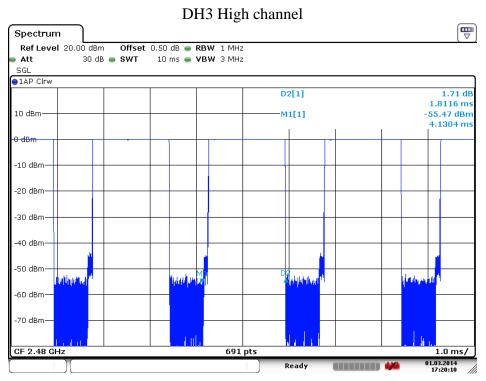
Ready

Date: 1.MAR.2014 17:18:35

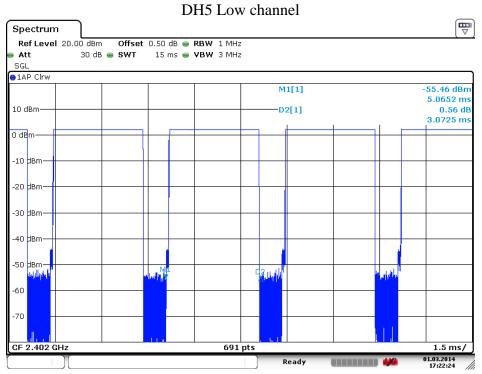


Date: 1.MAR.2014 17:19:27





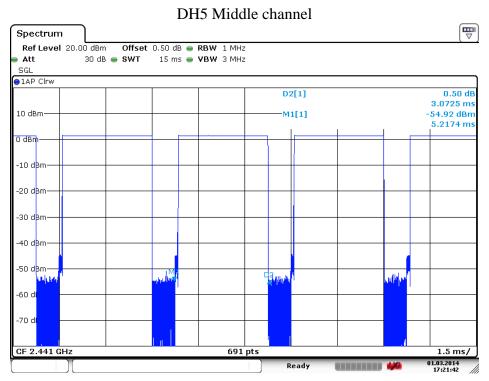
Date: 1.MAR.2014 17:20:10



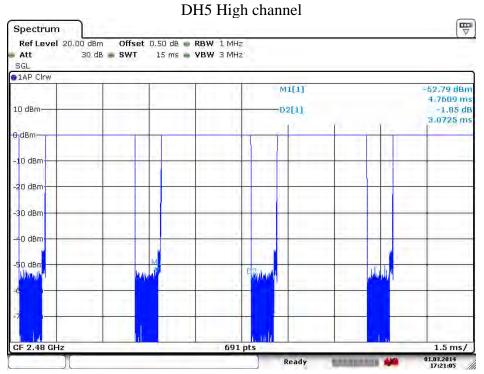
Date: 1.MAR.2014 17:22:24



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Date: 1.MAR.2014 17:21:42

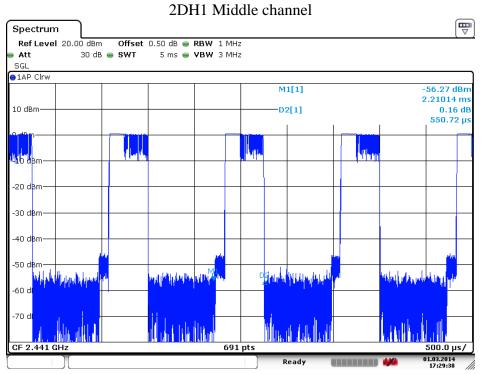


Date: 1.MAR.2014 17:21:05



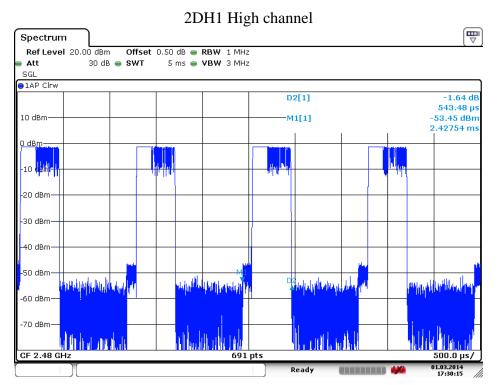
#### 2DH1 Low channel Spectrum Ref Level 20.00 dBm Offset 0.50 dB 🖷 RBW 1 MHz 30 dB 🎃 SWT 5 ms 🍅 VBW 3 MHz Att SGL ●1AP Clrw D2[1] -0.58 dB 550.72 μs 10 dBm--M1[1] -55.27 dBm 2.06522 m -10 dBm -20 dBm-30 dBm 0 dBm-50 dBm 691 pts 500.0 µs/

Date: 1.MAR.2014 17:29:05

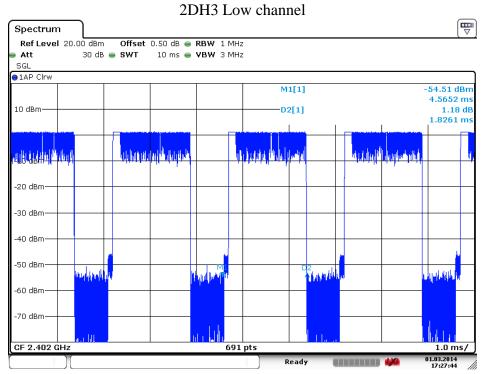


Date: 1.MAR.2014 17:29:38





Date: 1.MAR.2014 17:30:15



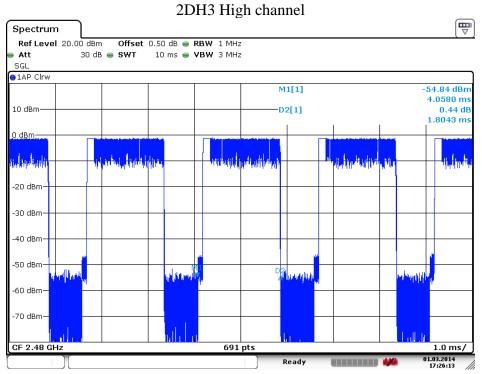
Date: 1.MAR.2014 17:27:43

01.03.2014 17:26:58



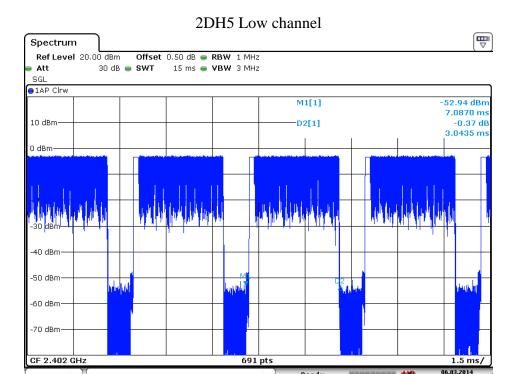
#### 2DH3 Middle channel Spectrum Ref Level 20.00 dBm Offset 0.50 dB 🖷 RBW 1 MHz 30 dB 🅌 SWT 10 ms 🎃 **VBW** 3 MHz Att SGL ●1AP Clrw D2[1] 1.16 dB 1.8261 ms 10 dBm-M1[1] -56.00 dBm 5.5942 ms -20 dBm -30 dBn 40 dBn -50 dBr CF 2.441 GHz 691 pts 1.0 ms/

Date: 1.MAR.2014 17:26:58

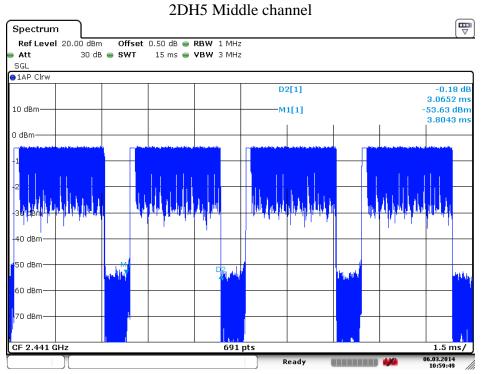


Date: 1.MAR.2014 17:26:13





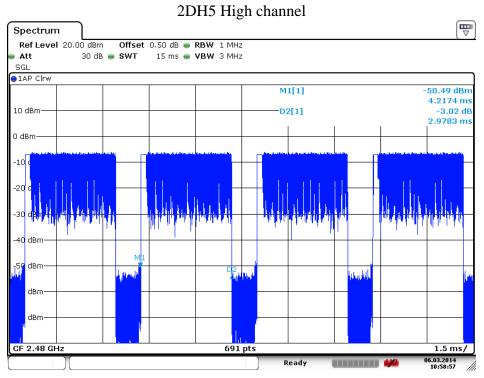
Date: 6.MAR.2014 11:01:07



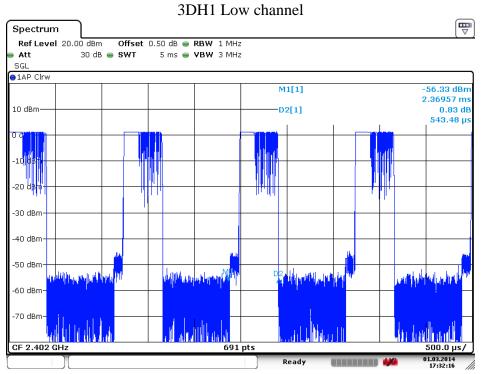
Date: 6.MAR.2014 10:59:49



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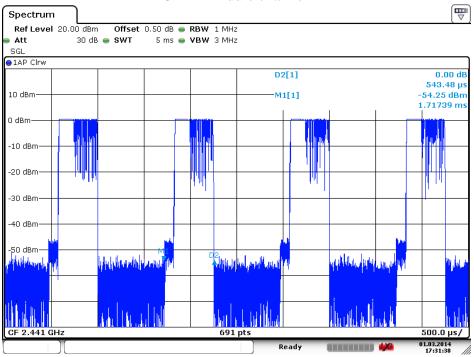
Date: 6.MAR.2014 10:58:57



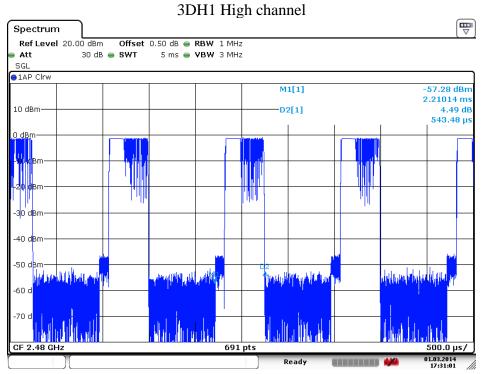
Date: 1.MAR.2014 17:32:16



# 3DH1 Middle channel



Date: 1.MAR.2014 17:31:38



Date: 1.MAR.2014 17:31:01

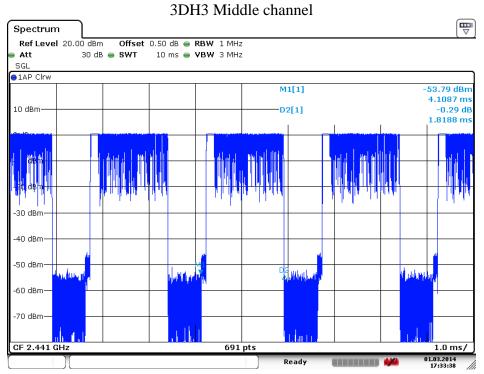
01.03.2014 17:33:04



#### 3DH3 Low channel Spectrum Ref Level 20.00 dBm Offset 0.50 dB 🖷 RBW 1 MHz 30 dB 🅌 SWT 10 ms 🎃 **VBW** 3 MHz Att SGL ●1AP Clrw D2[1] -1.65 dB 1.8188 ms 10 dBm-M1[1] -54.15 dBm 2.8768 m -20 dB -30 d<mark>3</mark>m 40 d<mark>3</mark>m dBm 691 pts CF 2.402 GHz 1.0 ms/

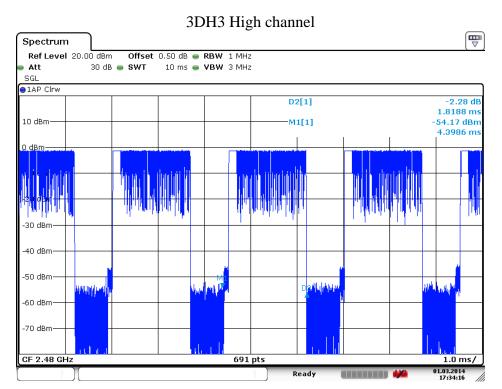
Ready

Date: 1.MAR.2014 17:33:04

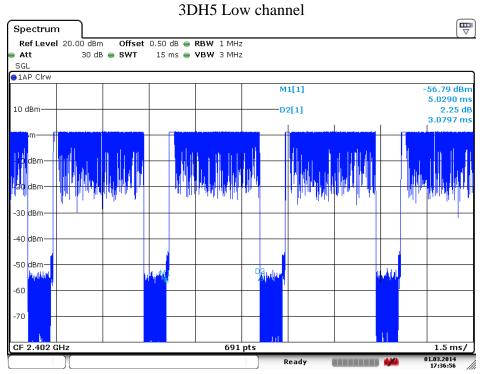


Date: 1.MAR.2014 17:33:38



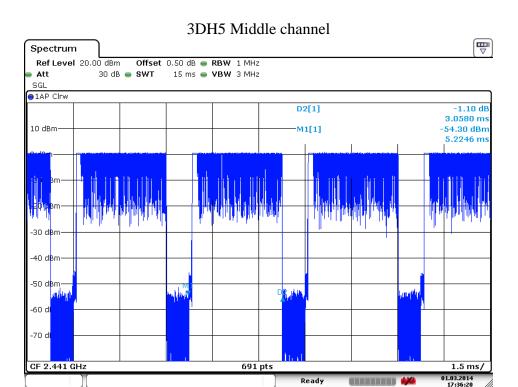


Date: 1.MAR.2014 17:34:16

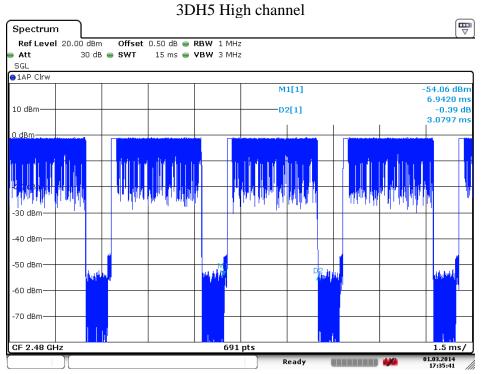


Date: 1.MAR.2014 17:36:56





Date: 1.MAR.2014 17:36:20



Date: 1.MAR.2014 17:35:41

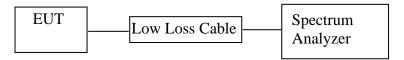


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# 9. MAXIMUM PEAK OUTPUT POWER TEST

## 9.1.Block Diagram of Test Setup



(EUT: IBun Bluetooth Speaker)

# 9.2. The Requirement For Section 15.247(b)(1)

Section 15.247(b)(1): For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

# 9.3.EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

## 9.4. Operating Condition of EUT

- 9.4.1. Setup the EUT and simulator as shown as Section 9.1.
- 9.4.2. Turn on the power of all equipment.
- 9.4.3.Let the EUT work in TX (Hopping off) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

#### 9.5.Test Procedure

- 9.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.
- 9.5.2.Set RBW of spectrum analyzer to 1MHz and VBW to 3MHz for GFSK mode
- 9.5.3.Set RBW of spectrum analyzer to 3MHz and VBW to 3MHz for other mode
- 9.5.4. Measurement the maximum peak output power.



# 9.6.Test Result

# **GFSK Mode**

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	2.31/0.0017	30 / 1.0
Middle	2441	1.65/0.0015	30 / 1.0
High	2480	-1.02/0.0008	30 / 1.0

# $\Pi$ /4-DQPSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	1.98/0.0016	21 / 0.125
Middle	2441	1.23/0.0013	21 / 0.125
High	2480	-0.45/0.0009	21 / 0.125

## 8DPSK Mode

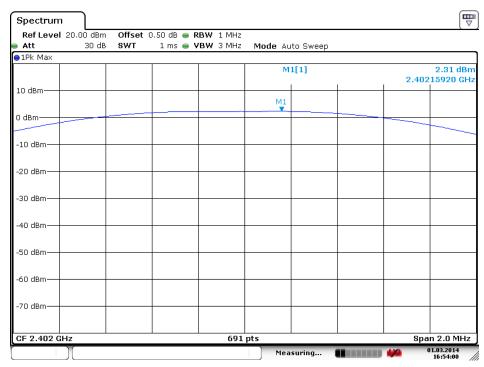
Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	2.11/0.0016	21 / 0.125
Middle	2441	1.42/0.0014	21 / 0.125
High	2480	-0.24/0.0009	21 / 0.125

The spectrum analyzer plots are attached as below.



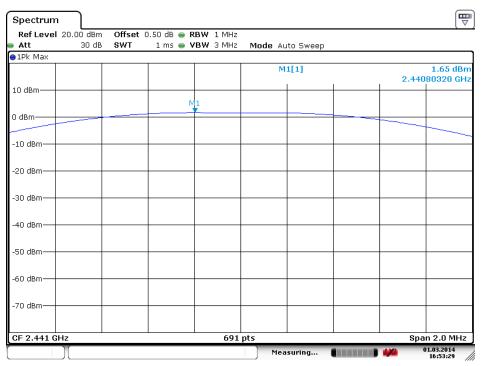
#### **GFSK Mode**

#### Low channel



Date: 1.MAR.2014 16:54:00

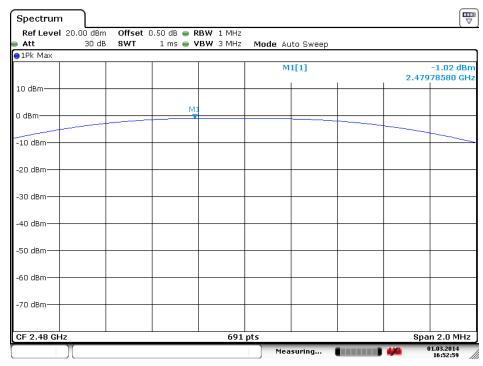
#### Middle channel



Date: 1.MAR.2014 16:53:28



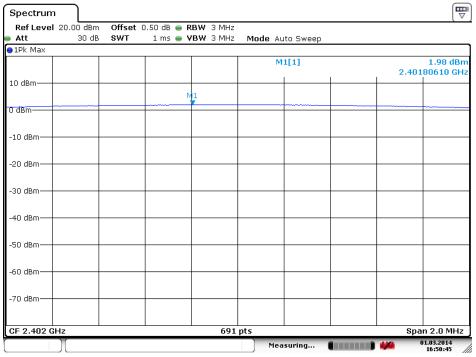
# High channel



Date: 1.MAR.2014 16:52:59

## ∏/4-DQPSK Mode

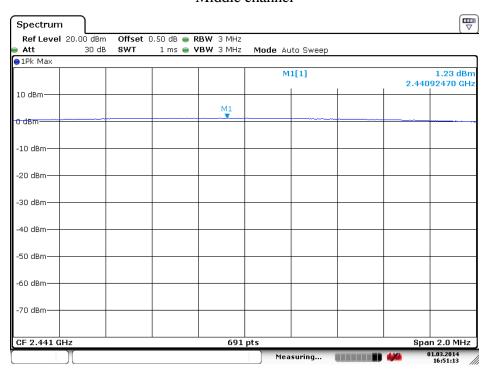
#### Low channel



Date: 1.MAR.2014 16:50:45

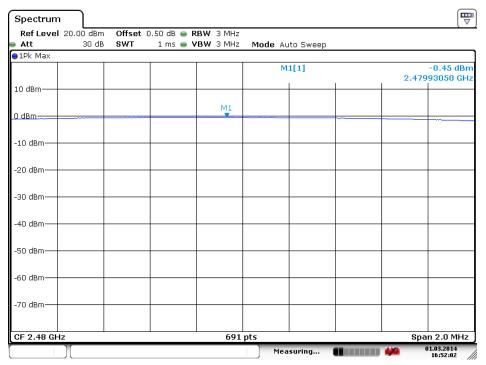


#### Middle channel



Date: 1.MAR.2014 16:51:13

# High channel

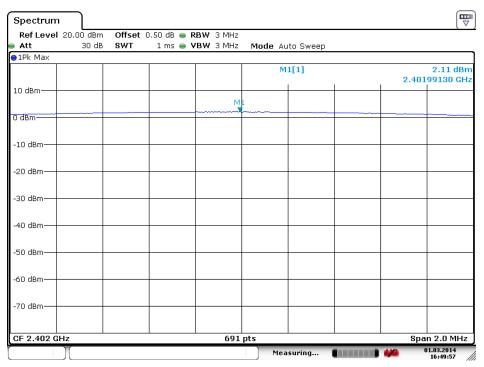


Date: 1.MAR.2014 16:52:02



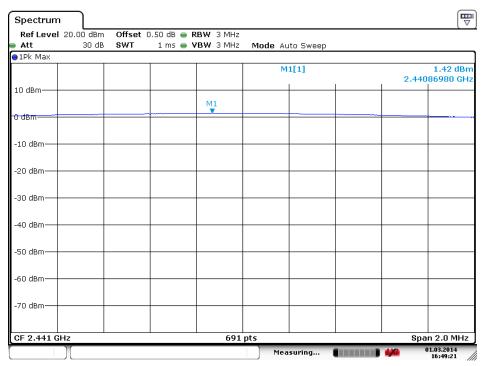
#### 8DPSK Mode

#### Low channel



Date: 1.MAR.2014 16:49:57

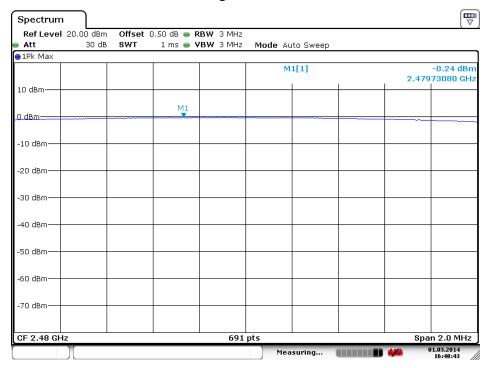
#### Middle channel



Date: 1.MAR.2014 16:49:21



# High channel



Date: 1.MAR.2014 16:48:43



# 10. RADIATED EMISSION TEST

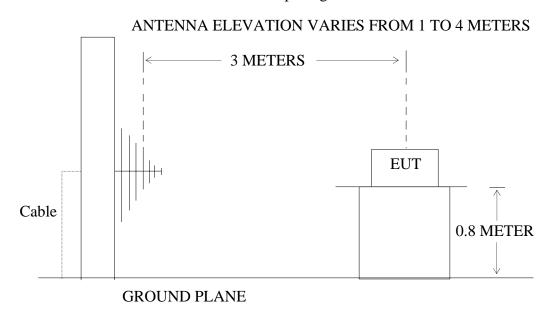
## 10.1.Block Diagram of Test Setup

10.1.1.Block diagram of connection between the EUT and simulators



(EUT: IBun Bluetooth Speaker)

#### 10.1.2. Anechoic Chamber Test Setup Diagram



## 10.2. The Limit For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

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# 10.3.Restricted bands of operation

## 10.3.1.FCC Part 15.205 Restricted bands of operation

(a) Except as shown in paragraph (d) of this section, Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
<sup>1</sup> 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	$(^2)$
13.36-13.41			

Until February 1, 1999, this restricted band shall be 0.490-0.510

(b) Except as provided in paragraphs (d) and (e), the field strength of emission appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000MHz, Compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000MHz, compliance with the emission limits in Section15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

# 10.4. Configuration of EUT on Measurement

The equipment is installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

<sup>&</sup>lt;sup>2</sup>Above 38.6



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#### 10.5.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4- 2009 on radiated emission measurement.

The bandwidth of test receiver (R&S ESI26) is set at 120 KHz in 30-1000MHz. and set at 1MHz in above 1000MHz.

The frequency range from 30MHz to 25000MHz is checked.

The final measurement in band 9-90 kHz, 110-490 kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

The field strength is calculated by adding the antenna factor, and cable loss, and subtracting the amplifier gain from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

10.6. The Field Strength of Radiation Emission Measurement Results

Note: 1.We tested GFSK mode,  $\Pi/4$ -DQPSK Mode & 8DPSK mode and recorded the worst case data (GFSK mode) for all test mode.

2. The 18-25GHz emissions are not reported, because the levels are too low against the limit.



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#### **Below 1GHz**



# ACCURATE TECHNOLOGY CO., LTD.

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Job No.: alen #3544

Standard: FCC 3M Radiated Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: iBun Bluetooth Speaker

Mode: TX 2402MHz

Model: CQL1412-B

Manufacturer: Sure Wave

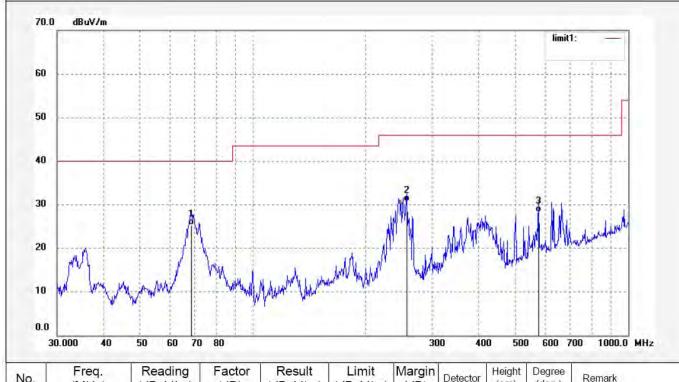
Polarization: Horizontal

Power Source: DC 5V

Date: 14/02/25/ Time: 8/32/45

Engineer Signature:
Distance: 3m

Note: Report No:ATE20140163



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark	
1	68.3907	46.59	-21.30	25.29	40.00	-14.71	QP				
2	256.5210	50.01	-19.36	30.65	46.00	-15.35	QP				
3	576.6443	40.42	-12.21	28.21	46.00	-17.79	QP				



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Site: 1# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396



Job No.: alen #3545

F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China

Polarization: Vertical Power Source: DC 5V

Date: 14/02/25/ Time: 8/33/50 Engineer Signature: Distance: 3m

Test item: Radiation Test
Temp.( C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker

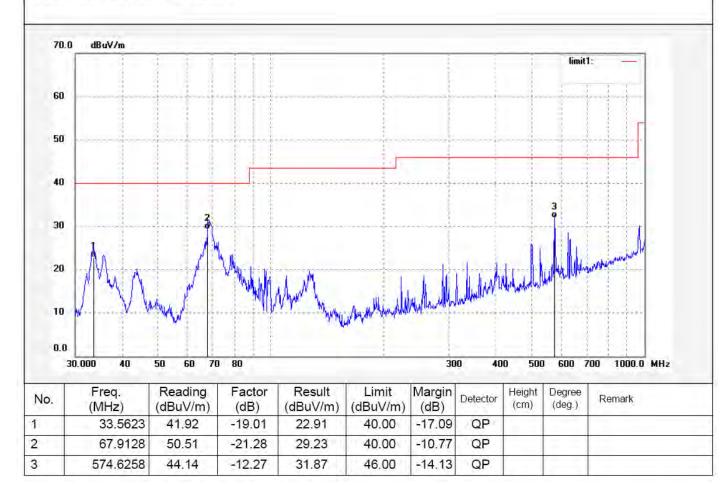
Mode: TX 2402MHz

Model: CQL1412-B

Manufacturer: Sure Wave

Standard: FCC 3M Radiated

Note: Report No:ATE20140163





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# ACCURATE TECHNOLOGY CO., LTD.

F1, Bldg, A, Changyuan New Material Port Keyuan Rd, Science & Industry Park, Nanshan Shenzhen, P.R. China

Site: 1# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: alen #3547

Standard: FCC 3M Radiated Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: iBun Bluetooth Speaker

Mode: TX 2441MHz Model: CQL1412-B Manufacturer: Sure Wave

Power Source: DC 5V

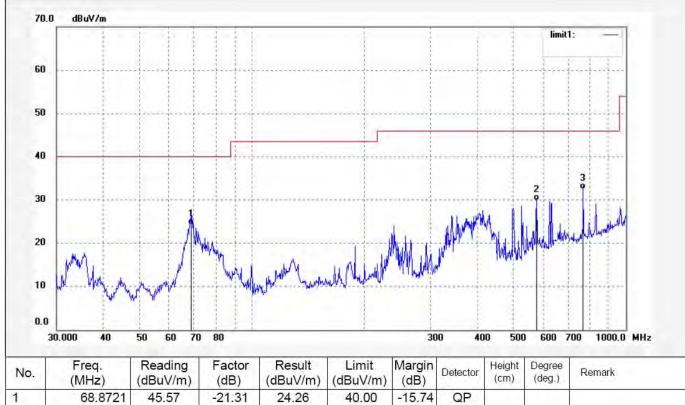
Horizontal

Date: 14/02/25/ Time: 8/36/11

Polarization:

Engineer Signature: Distance: 3m

Report No:ATE20140163 Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	68.8721	45.57	-21.31	24.26	40.00	-15.74	QP		224	
2	576.6443	42.01	-12.21	29.80	46.00	-16.20	QP	1.4	4 44	
3	768.7481	40.78	-8.30	32.48	46.00	-13.52	QP		1 11	



EUT:

ACCURATE TECHNOLOGY CO., LTD.

Site: 1# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Report No.: ATE20140163

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F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park, Nanshan Shenzhen, P.R. China

> Polarization: Vertical Power Source: DC 5V

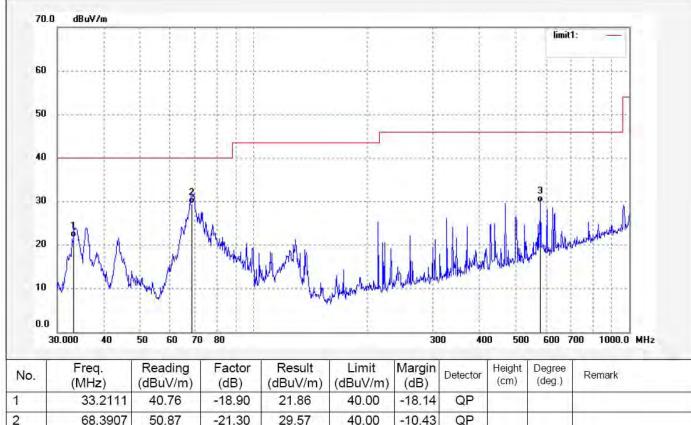
> > Date: 14/02/25/ Time: 8/34/35 Engineer Signature: Distance: 3m

Job No.: alen #3546 Standard: FCC 3M Radiated Test item: Radiation Test Temp.( C)/Hum.(%) 25 C / 55 %

iBun Bluetooth Speaker

Mode: TX 2441MHz Model: CQL1412-B Manufacturer: Sure Wave

Note: Report No:ATE20140163







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Site: 1# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: alen #3548 Standard: FCC 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % iBun Bluetooth Speaker EUT:

Mode: Model: CQL1412-B Manufacturer: Sure Wave

Note:

TX 2480MHz

Report No:ATE20140163

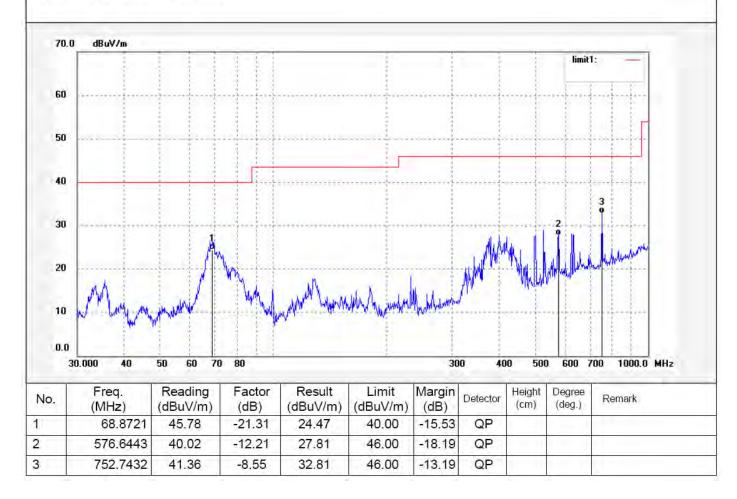
Polarization: Horizontal

Power Source: DC 5V

Date: 14/02/25/ Time: 8/37/08

Engineer Signature:

Distance: 3m





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Report No.: ATE20140163

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Job No.: alen #3549 Standard: FCC 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: iBun Bluetooth Speaker

Mode: TX 2480MHz Model: CQL1412-B Manufacturer: Sure Wave

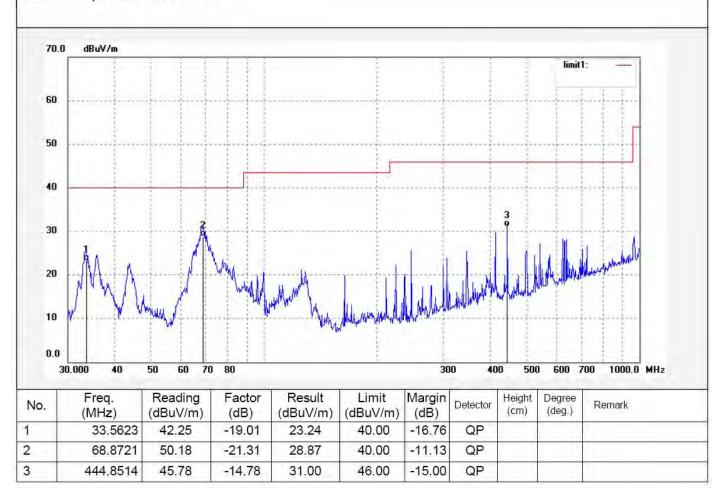
Note: Report No:ATE20140163

Polarization: Vertical Power Source: DC 5V

Date: 14/02/25/ Time: 8/37/54

Engineer Signature:

Distance: 3m





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#### Above 1GHz



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Job No.: alen #3597

Standard: FCC 3M Radiated Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: iBun Bluetooth Speaker

Mode: TX 2402MHz Model: CQL1412-B Manufacturer: Sure Wave

Note: Report No:ATE20140163

Polarization: Horizontal

Power Source: DC 5V

Date: 14/03/01/ Time: 9/39/04 Engineer Signature:

Distance: 3m

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70								-		
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Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark	
2401.753	96.29	-6.76	89.53	114.00	35.53	peak	1			
2401.753	90.02	-6.76	83.26	94.00	29.26	AVG	1 7 1			
4804.110	54.51	-1.59	52.92	54.00	-1.08	peak				
11735.245	42.89	6.25	49.14	54.00	-4.86	peak				
	(MHz) 2401.753 2401.753 4804.110	(MHz) (dBuV/m) 2401.753 96.29 2401.753 90.02 4804.110 54.51	(MHz)         (dBuV/m)         (dB)           2401.753         96.29         -6.76           2401.753         90.02         -6.76           4804.110         54.51         -1.59	(MHz)         (dBuV/m)         (dB)         (dBuV/m)           2401.753         96.29         -6.76         89.53           2401.753         90.02         -6.76         83.26           4804.110         54.51         -1.59         52.92	(MHz)         (dBuV/m)         (dB)         (dBuV/m)         (dBuV/m)         (dBuV/m)           2401.753         96.29         -6.76         89.53         114.00           2401.753         90.02         -6.76         83.26         94.00           4804.110         54.51         -1.59         52.92         54.00	(MHz)     (dBuV/m)     (dB)     (dBuV/m)     (dBuV/m)     (dBuV/m)     (dB)       2401.753     96.29     -6.76     89.53     114.00     35.53       2401.753     90.02     -6.76     83.26     94.00     29.26       4804.110     54.51     -1.59     52.92     54.00     -1.08	(MHz)         (dBuV/m)         (dB)         (dBuV/m)         (dBuV/m)         (dB)         Detector           2401.753         96.29         -6.76         89.53         114.00         35.53         peak           2401.753         90.02         -6.76         83.26         94.00         29.26         AVG           4804.110         54.51         -1.59         52.92         54.00         -1.08         peak	(MHz)     (dBuV/m)     (dB)     (dBuV/m)     (dBuV/m)     (dB)     (dBuV/m)     (dB)     (dB)     (cm)       2401.753     96.29     -6.76     89.53     114.00     35.53     peak       2401.753     90.02     -6.76     83.26     94.00     29.26     AVG       4804.110     54.51     -1.59     52.92     54.00     -1.08     peak	(MHz)     (dBuV/m)     (dB)     (dBuV/m)     (dBuV/m)     (dB)     description     (cm)     (deg.)       2401.753     96.29     -6.76     89.53     114.00     35.53     peak       2401.753     90.02     -6.76     83.26     94.00     29.26     AVG       4804.110     54.51     -1.59     52.92     54.00     -1.08     peak	(MHz)     (dBuV/m)     (dB)     (dBuV/m)     (dBuV/m)     (dB)     (dB)     (dBuV/m)     (dB)     (dB)     (deg.)     Remark       2401.753     96.29     -6.76     89.53     114.00     35.53     peak       2401.753     90.02     -6.76     83.26     94.00     29.26     AVG       4804.110     54.51     -1.59     52.92     54.00     -1.08     peak



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Report No.: ATE20140163



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Site: 1# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: alen #3596 Standard: FCC 3M Radiated Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: iBun Bluetooth Speaker

Mode: Model: CQL1412-B Manufacturer: Sure Wave

Note:

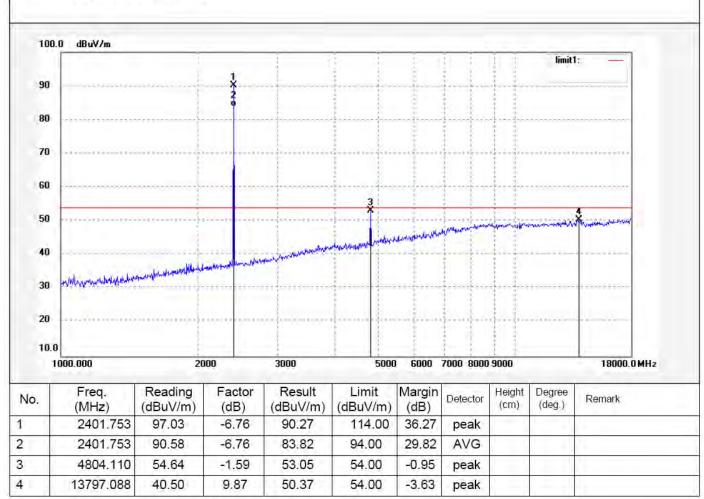
TX 2402MHz

Report No:ATE20140163

Polarization: Vertical Power Source: DC 5V

Date: 14/03/01/ Time: 9/37/17

Engineer Signature: Distance: 3m





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Report No.: ATE20140163

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Job No.: alen #3598 Polarization: Horizontal Standard: FCC 3M Radiated Power Source: DC 5V

 Test item:
 Radiation Test
 Date: 14/03/01/

 Temp.( C)/Hum.(%) 25 C / 55 %
 Time: 9/42/01

 EUT:
 iBun Bluetooth Speaker
 Engineer Signatu

Mode: TX 2441MHz

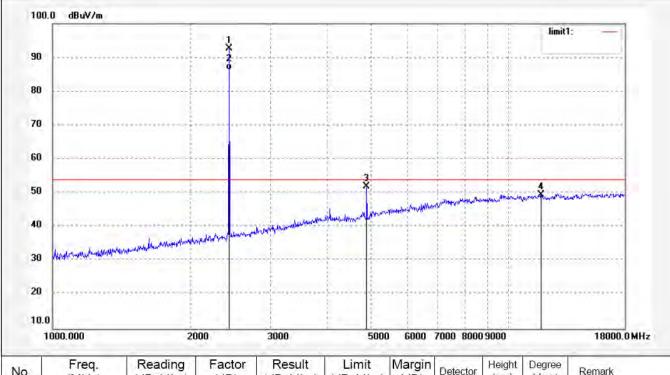
Model: CQL1412-B

Manufacturer: Sure Wave

Note: Report No:ATE20140163

Power Source: DC 5V Date: 14/03/01/

Engineer Signature:
Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2440.751	99.30	-6.64	92.66	114.00	38.66	peak			
2	2440.751	93.01	-6.64	86.37	94.00	32.37	AVG	1 1		
3	4888.151	53.33	-1.33	52.00	54.00	-2.00	peak	1 11 1	-	
4	11803.280	43.28	6.32	49.60	54.00	-4.40	peak			U C





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Report No.: ATE20140163

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Job No.: alen #3599

Standard: FCC 3M Radiated Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: iBun Bluetooth Speaker

Mode: TX 2441MHz

Model: CQL1412-B

Manufacturer: Sure Wave

Polarization: Vertical

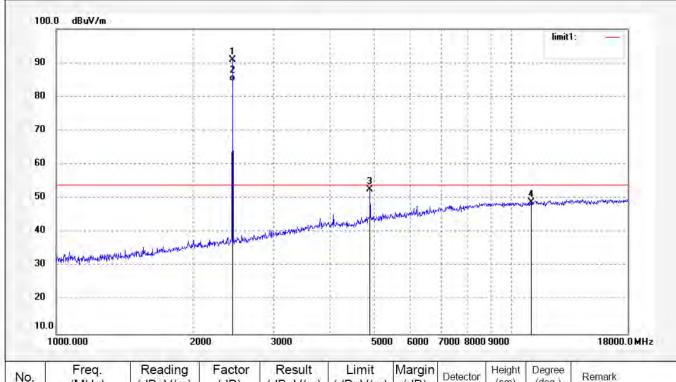
Power Source: DC 5V

Date: 14/03/01/ Time: 9/43/39

Engineer Signature:

Distance: 3m

Note: Report No:ATE20140163



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark	
1	2440.751	97.64	-6.64	91.00	114.00	37.00	peak				
2	2440.751	91.32	-6.64	84.68	94.00	30.68	AVG		-		
3	4888.151	53.93	-1.33	52.60	54.00	-1.40	peak		-		
4	11044.129	43.35	5.55	48.90	54.00	-5.10	peak		1		



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Report No.: ATE20140163 Page 62 of 92

Site: 1# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396



EUT:

Job No.: alen #3601

F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China

Polarization: Horizontal Power Source: DC 5V

Date: 14/03/01/
Time: 9/47/56
Engineer Signature:
Distance: 3m

Mode: TX 2480MHz
Model: CQL1412-B
Manufacturer: Sure Wave

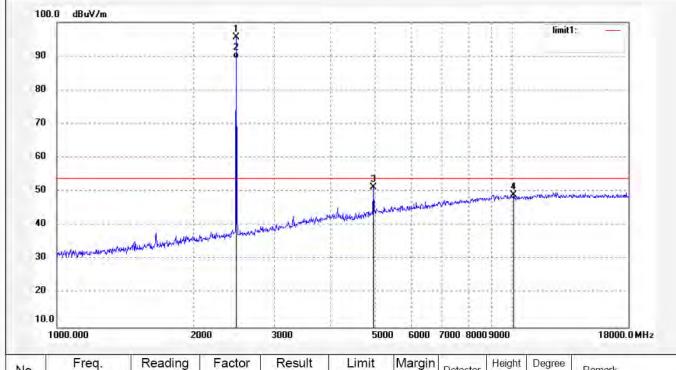
Standard: FCC 3M Radiated

Temp.( C)/Hum.(%) 25 C / 55 %

iBun Bluetooth Speaker

Test item: Radiation Test

Note: Report No:ATE20140163



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.310	102.10	-6.56	95.54	114.00	41.54	peak			
2	2480.310	95.87	-6.56	89.31	94.00	35.31	AVG		1 = 41	
3	4959.307	52.37	-1.12	51.25	54.00	-2.75	peak			
4	10068.453	43.74	5.36	49.10	54.00	-4.90	peak			



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Job No.: alen #3600

Standard: FCC 3M Radiated
Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: iBun Bluetooth Speaker

Mode: TX 2480MHz
Model: CQL1412-B
Manufacturer: Sure Wave

Note:

turer: Sure Wave Report No:ATE20140163 Power Source: DC 5V Date: 14/03/01/

Polarization: Vertical

Time: 9/46/14
Engineer Signature:
Distance: 3m

100.0 dBuV/m limit1 90 80 70 60 50 40 30 20 10.0 1000.000 2000 3000 5000 6000 7000 8000 9000 18000.0 MHz Freq. Reading Factor Result Limit Margin Height Degree Detector No. Remark (dB) (cm) (deg.) (MHz) (dBuV/m) (dB) (dBuV/m) (dBuV/m) 1 2480.310 98.23 -6.5691.67 114.00 37.67 peak 2 2480.310 92.24 -6.5694.00 AVG 85.68 31.68 3 4959.307 53.87 -1.1252.75 54.00 -1.25peak

54.00

-4.79

peak

9669.164

44.24

4.97

49.21

4

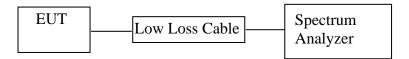


Report No.: ATE20140163

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# 11.BAND EDGE COMPLIANCE TEST

## 11.1.Block Diagram of Test Setup



(EUT: IBun Bluetooth Speaker)

# 11.2. The Requirement For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

# 11.3.EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

## 11.4. Operating Condition of EUT

- 11.4.1. Setup the EUT and simulator as shown as Section 11.1.
- 11.4.2. Turn on the power of all equipment.
- 11.4.3.Let the EUT work in TX (Hopping off, Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2480MHz TX frequency to transmit.



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# 11.5.Test Procedure

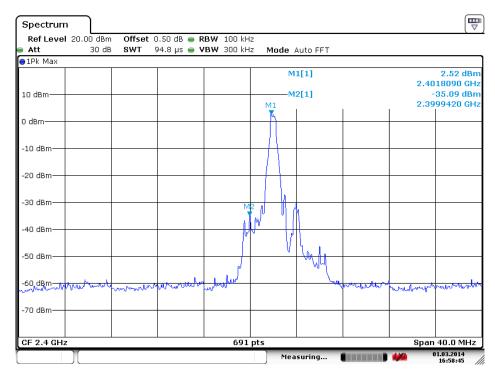
- 11.5.1. The transmitter output was connected to the spectrum analyzer via a low loss cable.
- 11.5.2.Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz with convenient frequency span including 100 kHz bandwidth from band edge.
- 11.5.3. The band edges was measured and recorded.

# 11.6.Test Result

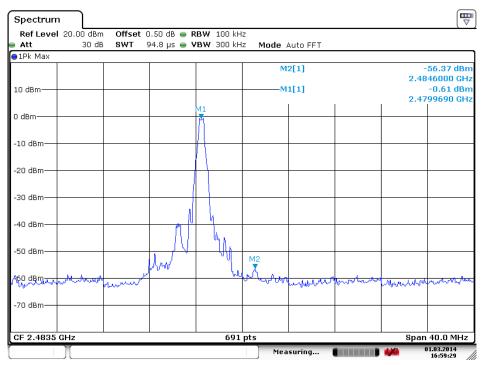
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)				
	GFSK					
2399.942	37.61	> 20dBc				
2484.600	55.76	> 20dBc				
	∏/4-DQPSK Mode					
2399.520	39.75	> 20dBc				
2490.400	55.79	> 20dBc				
	8DPSK					
2398.920	39.62	> 20dBc				
2485.300	55.29	> 20dBc				



## **GFSK**



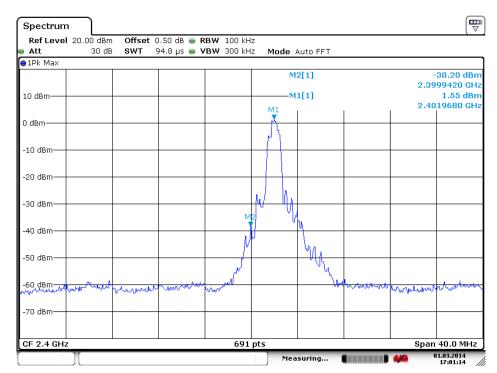
Date: 1.MAR.2014 16:58:45



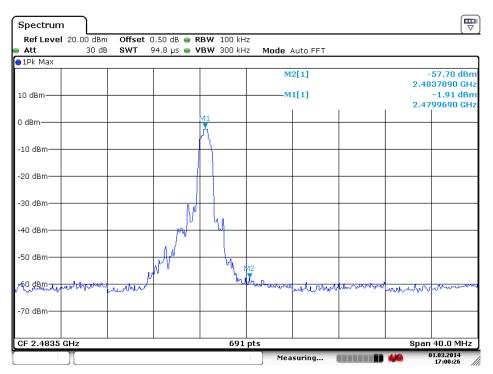
Date: 1.MAR.2014 16:59:29



# $\Pi/4$ -DQPSK Mode



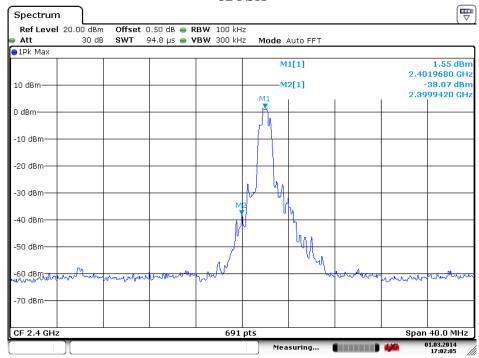
Date: 1.MAR.2014 17:01:14



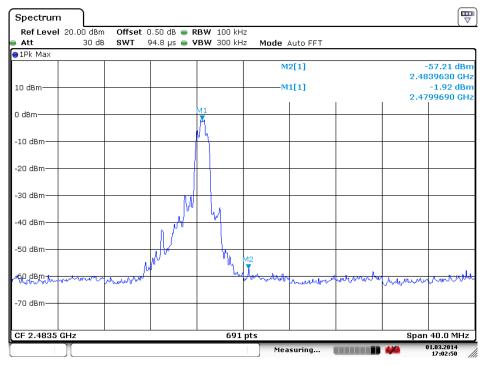
Date: 1.MAR.2014 17:00:26



## 8DPSK



Date: 1.MAR.2014 17:02:05



Date: 1.MAR.2014 17:02:50



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#### **Radiated Band Edge Result**

#### Note:

- 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
- 2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

3. Display the measurement of peak values.

#### Non-hopping mode

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Site: 1# Chamber

Job No.: alen #3604 Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: TX 2402MHz(GFSK)

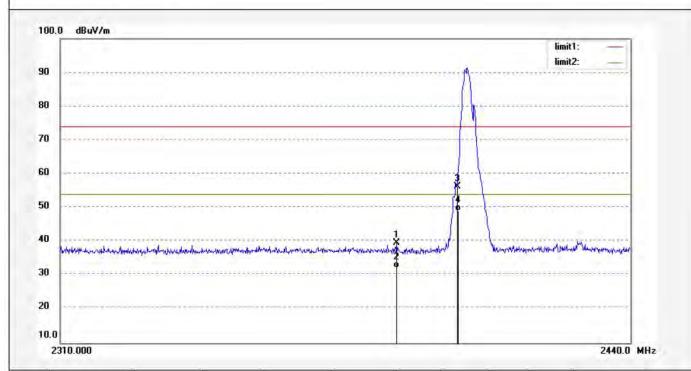
Model: CQL1412-B Manufacturer: Sure Wave

Note:

Report No:ATE20140163

Polarization: Horizontal Power Source: DC 5V

Date: 14/03/01/
Time: 9/53/59
Engineer Signature:
Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2385.920	46.35	-6.80	39.55	74.00	-34.45	peak			
2	2385.920	38.87	-6.80	32.07	54.00	-21.93	AVG			
3	2400.000	63.08	-6.76	56.32	74.00	-17.68	peak			
4	2400.000	55.78	-6.76	49.02	54.00	-4.98	AVG			



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Site: 1# Chamber

Report No.: ATE20140163

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Job No.: alen #3604 Standard: FCC PK

Test item: Radiation Test

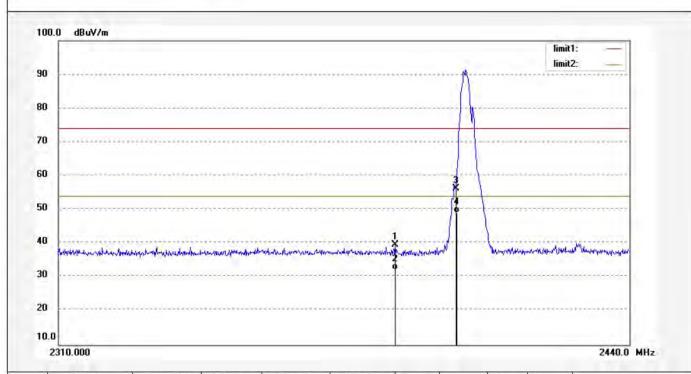
Temp.( C)/Hum.(%) 25 C / 55 % EUT: iBun Bluetooth Speaker Mode: TX 2402MHz(GFSK)

Model: CQL1412-B Manufacturer: Sure Wave

Note: Report No:ATE20140163

Polarization: Vertical Power Source: DC 5V

Date: 14/03/01/
Time: 9/53/59
Engineer Signature:
Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2385.920	46.35	-6.80	39.55	74.00	-34.45	peak			
2	2385.920	38.87	-6.80	32.07	54.00	-21.93	AVG	14 == 1		
3	2400.000	63.08	-6.76	56.32	74.00	-17.68	peak	11 = 1	11 11	
4	2400.000	55.78	-6.76	49.02	54.00	-4.98	AVG			



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Site: 1# Chamber Tel:+86-0755-26503290 Fax:+86-0755-26503396

Job No.: alen #3602 Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: iBun Bluetooth Speaker Mode: TX 2480MHz(GFSK)

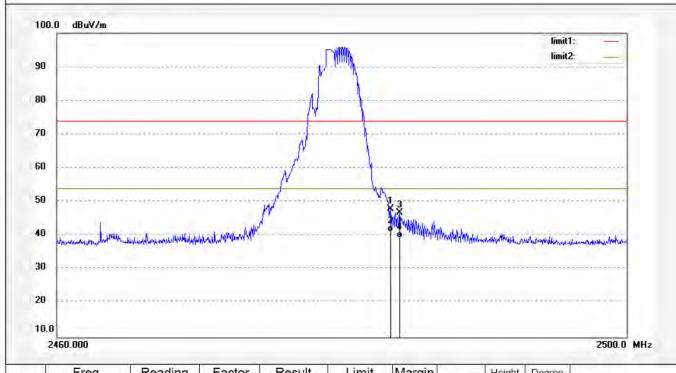
CQL1412-B Model: Manufacturer: Sure Wave

Polarization: Horizontal Power Source: DC 5V

Date: 14/03/01/ Time: 9/50/41 Engineer Signature:

Distance: 3m

Report No:ATE20140163 Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark	
1	2483.500	54.49	-6.54	47.95	74.00	-26.05	peak		-	1	
2	2483.500	47.68	-6.54	41.14	54.00	-12.86	AVG			1	
3	2484.040	53.28	-6.54	46.74	74.00	-27.26	peak				
4	2484.040	46.01	-6.54	39.47	54.00	-14.53	AVG				



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Report No.: ATE20140163

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Job No.: alen #3603 Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: TX 2480MHz(GFSK)

Model: CQL1412-B Manufacturer: Sure Wave

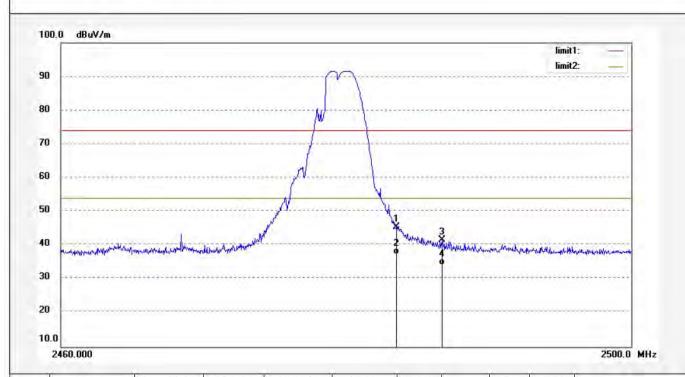
Note:

iBun Bluetooth Speaker TX 2480MHz(GFSK)

Report No:ATE20140163

Polarization: Vertical Power Source: DC 5V

Date: 14/03/01/ Time: 9/52/11 Engineer Signature: Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark	
1	2483.500	51.98	-6.54	45.44	74.00	-28.56	peak			1	
2	2483.500	43.89	-6.54	37.35	54.00	-16.65	AVG				
3	2486.720	48.23	-6.53	41.70	74.00	-32.30	peak				
4	2486.720	40.68	-6.53	34.15	54.00	-19.85	AVG				





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Report No.: ATE20140163

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Job No.: alen #3626 Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: iBun Bluetooth Speaker Mode: TX 2402MHz(pi/4DQPSK)

Model: CQL1412-B Manufacturer: Sure Wave

Note: Report No:ATE20140163

Polarization: Horizontal

Power Source: DC 5V

Date: 14/03/04/
Time: 9/05/12
Engineer Signature:
Distance: 3m



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No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2326.900	48.65	-6.95	41.70	74.00	-32.30	peak		1 4 1	
2	2326.900	40.35	-6.95	33.40	54.00	-20.60	AVG		11	
3	2400.000	63.01	-6.76	56.25	74.00	-17.75	peak		1	
4	2400.000	56.10	-6.76	49.34	54.00	-4.66	AVG			



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Report No.: ATE20140163

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Job No.: alen #3625 Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: iBun Bluetooth Speaker Mode: TX 2402MHz(pi/4DQPSK)

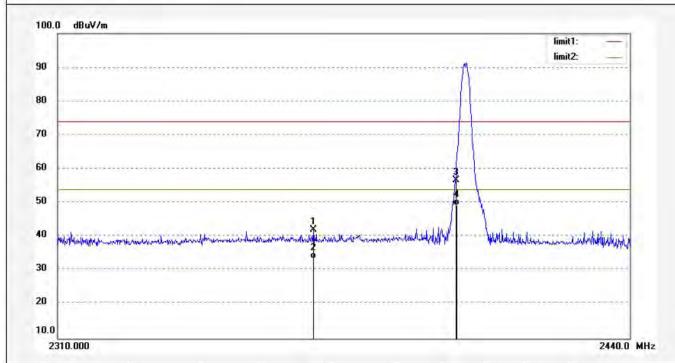
Model: CQL1412-B Manufacturer: Sure Wave

Note: Report No:ATE20140163

Polarization: Vertical Power Source: DC 5V

Date: 14/03/04/ Time: 9/04/05 Engineer Signature:

Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg_)	Remark	
1	2367.330	48.78	-6.83	41.95	74.00	-32.05	peak				
2	2367.330	40.35	-6.83	33.52	54.00	-20.48	AVG				
3	2400.000	63.47	-6.76	56.71	74.00	-17.29	peak				
4	2400.000	56.10	-6.76	49.34	54.00	-4.66	AVG				



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Report No.: ATE20140163

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Job No.: alen #3627 Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: iBun Bluetooth Speaker Mode: TX 2480MHz(pi/4DQPSK)

Model: CQL1412-B Manufacturer: Sure Wave

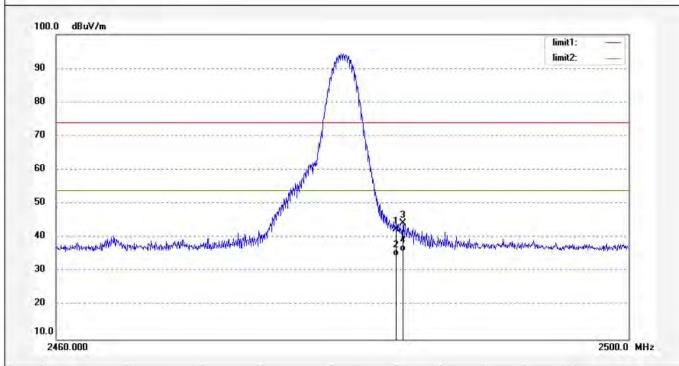
Note: Report No:ATE20140163

Polarization: Horizontal

Power Source: DC 5V

Date: 14/03/04/ Time: 9/06/39 Engineer Signature:

Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark	
1	2483.500	49.08	-6.54	42.54	74.00	-31.46	peak				
2	2483.500	41.24	-6.54	34.70	54.00	-19.30	AVG				
3	2484.200	50.89	-6.54	44.35	74.00	-29.65	peak				
4	2484.200	42.56	-6.54	36.02	54.00	-17.98	AVG				



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Polarization: Vertical Power Source: DC 5V

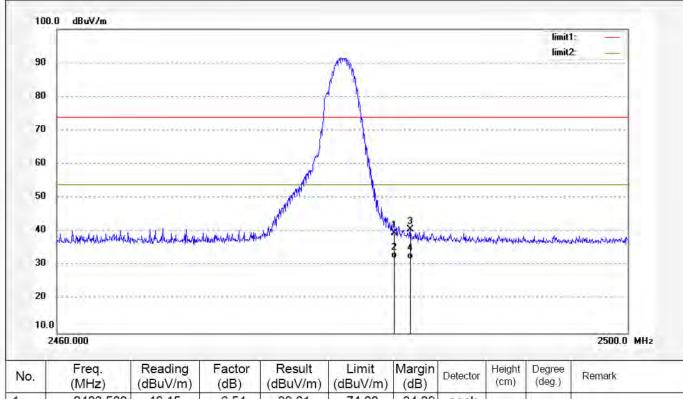
Date: 14/03/04/
Time: 9/08/06
Engineer Signature:
Distance: 3m

Job No.: alen #3628 Standard: FCC PK Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: iBun Bluetooth Speaker Mode: TX 2480MHz(pi/4DQPSK)

Model: CQL1412-B Manufacturer: Sure Wave

Note: Report No:ATE20140163



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	46.15	-6.54	39.61	74.00	-34.39	peak			
2	2483.500	38.78	-6.54	32.24	54.00	-21.76	AVG			
3	2484.720	47.16	-6.54	40.62	74.00	-33.38	peak			
4	2484.720	38.54	-6.54	32.00	54.00	-22.00	AVG		= :	



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Report No.: ATE20140163

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Job No.: alen #3618 Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: iBun Bluetooth Speaker Mode: TX 2402MHz(8DPSK)

Model: CQL1412-B Manufacturer: Sure Wave

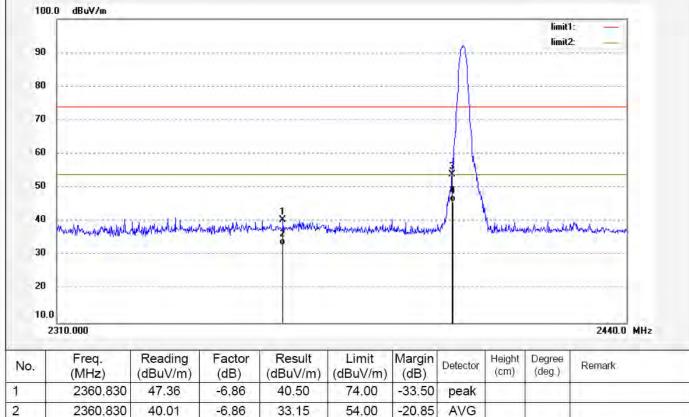
Report No:ATE20140163

Polarization: Horizontal

Power Source: DC 5V

Date: 14/03/04/ Time: 8/43/01 Engineer Signature: Distance: 3m





No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark	
1	2360,830	47.36	-6.86	40.50	74.00	-33.50	peak				
2	2360,830	40.01	-6.86	33,15	54.00	-20.85	AVG		- 1		
3	2400.000	60.73	-6.76	53.97	74.00	-20.03	peak				
4	2400.000	52.54	-6.76	45.78	54.00	-8.22	AVG				





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Job No.: alen #3617 Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: iBun Bluetooth Speaker Mode: TX 2402MHz(8DPSK)

Model: CQL1412-B Manufacturer: Sure Wave

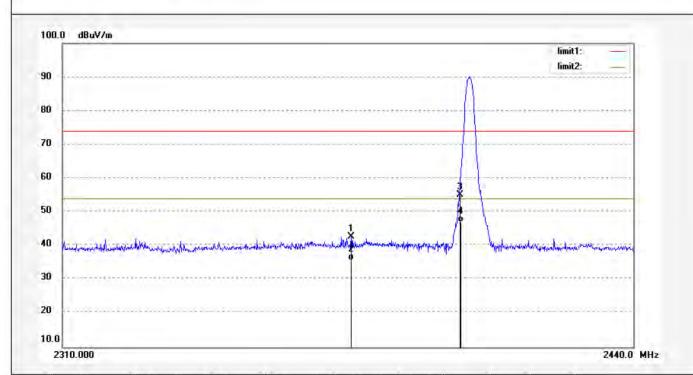
Note: Report No:ATE20140163

Polarization: Vertical Power Source: DC 5V

Date: 14/03/04/ Time: 8/41/27 Engineer Signature:

Distance: 3m

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No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2375.000	49.62	-6.83	42.79	74.00	-31.21	peak	14 T I		
2	2375.000	42.51	-6.83	35.68	54.00	-18.32	AVG			
3	2400.000	61.78	-6.76	55.02	74.00	-18.98	peak			
4	2400.000	53.87	-6.76	47.11	54.00	-6.89	AVG		1	



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2500.0 MHz

Job No.: alen #3619 Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: TX 2480MHz(8DPSK)

Report No:ATE20140163

Model: CQL1412-B Manufacturer: Sure Wave

lanufacturer: Sure Wa

Note:

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2460.000

Polarization: Horizontal Power Source: DC 5V

Date: 14/03/04/
Time: 8/44/57
Engineer Signature:
Distance: 3m

No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark	
1	2483.500	49.59	-6.54	43.05	74.00	-30.95	peak				
2	2483.500	42.65	-6.54	36.11	54.00	-17.89	AVG				
3	2484.320	49.68	-6.54	43.14	74.00	-30.86	peak				
4	2484.320	42.74	-6.54	36.20	54.00	-17.80	AVG		1		



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Job No.: alen #3620 Standard: FCC PK

Test item: Radiation Test

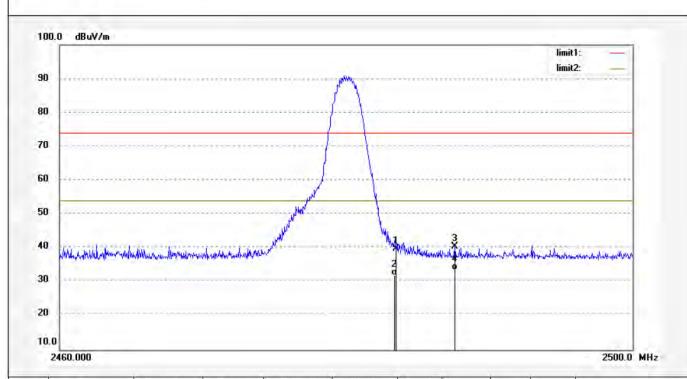
Temp,( C)/Hum,(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: TX 2480MHz(8DPSK)

Model: CQL1412-B Manufacturer: Sure Wave

Note: Report No:ATE20140163

Polarization: Vertical Power Source: DC 5V

Date: 14/03/04/ Time: 8/46/20 Engineer Signature: Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark	
1	2483.500	46.27	-6.54	39.73	74.00	-34.27	peak				
2	2483.500	38.54	-6.54	32.00	54.00	-22.00	AVG				
3	2487.560	47.11	-6.52	40.59	74.00	-33.41	peak		-		
4	2487.560	39.98	-6.52	33.46	54.00	-20.54	AVG				



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#### Hopping mode



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Job No.: alen #3608 Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: Hopping TX(GFSK)

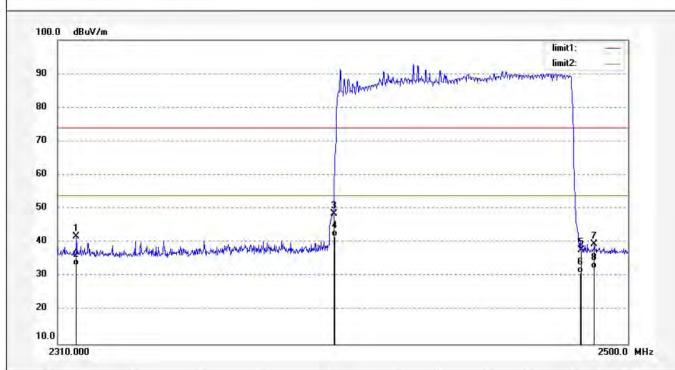
Model: CQL1412-B Manufacturer: Sure Wave

Note: Report No:ATE20140163

Polarization: Horizontal Power Source: DC 5V

Date: 14/03/01/ Time: 15/38/05 Engineer Signature:

Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2316.080	48.79	-6.97	41.82	74.00	-32.18	peak			
2	2316.080	40.35	-6.97	33.38	54.00	-20.62	AVG			
3	2400.000	55.37	-6.76	48.61	74.00	-25.39	peak			
4	2400.000	48.65	-6.76	41.89	54.00	-12.11	AVG			
5	2483.660	44.29	-6.54	37.75	74.00	-36.25	peak			
6	2483.660	37.65	-6.54	31.11	54.00	-22.89	AVG			
7	2488.500	46.03	-6.52	39.51	74.00	-34.49	peak			
8	2488.500	38.87	-6.52	32.35	54.00	-21.65	AVG			



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Job No.: alen #3607 Standard: FCC PK

Test item: Radiation Test

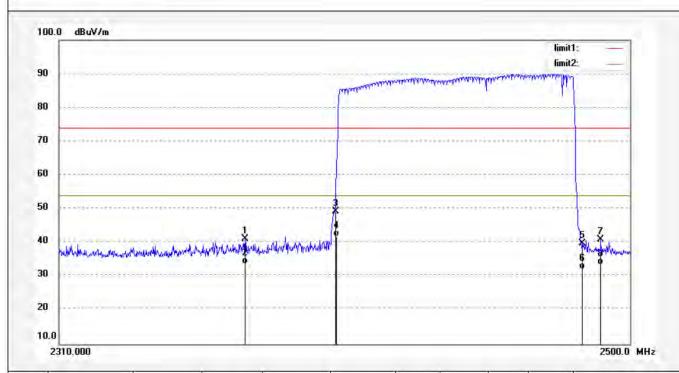
Temp.( C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: Hopping TX(GFSK)

Model: CQL1412-B Manufacturer: Sure Wave

Note: Report No:ATE20140163

Polarization: Vertical Power Source: DC 5V

Date: 14/03/01/
Time: 15/33/06
Engineer Signature:
Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark	
1	2370.420	47.96	-6.83	41.13	74.00	-32.87	peak				
2	2370.420	40.57	-6.83	33.74	54.00	-20.26	AVG				
3	2400.000	56.11	-6.76	49.35	74.00	-24.65	peak				
4	2400.000	48.68	-6.76	41.92	54.00	-12.08	AVG				
5	2483.500	46.40	-6.54	39.86	74.00	-34.14	peak				
6	2483.500	38.78	-6.54	32.24	54.00	-21.76	AVG				
7	2490.120	47.55	-6.52	41.03	74.00	-32.97	peak				
8	2490.120	40.12	-6.52	33.60	54.00	-20.40	AVG		1 4		



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Job No.: alen #3623 Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 % EUT: iBun Bluetooth Speaker Mode: Hopping TX(pi/4DQPSK)

Model: CQL1412-B Manufacturer: Sure Wave

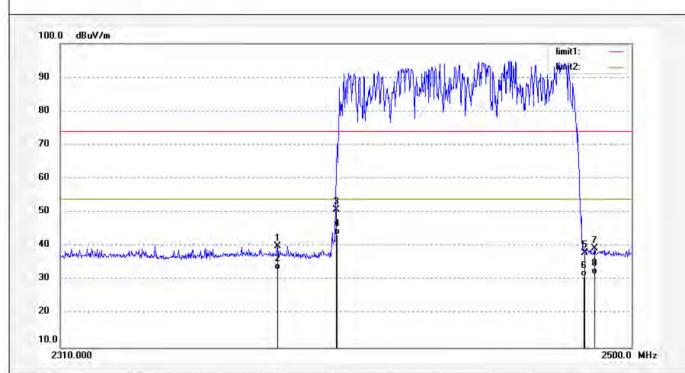
Note: Report No:ATE20140163

Polarization: Horizontal

Power Source: DC 5V Date: 14/03/04/

Time: 8/59/45
Engineer Signature:

Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2380.680	46.89	-6.81	40.08	74.00	-33.92	peak		1	11.
2	2380.680	39.87	-6.81	33.06	54.00	-20.94	AVG		1	
3	2400.000	57.64	-6.76	50.88	74.00	-23.12	peak		1 11	
4	2400.000	50.24	-6.76	43.48	54.00	-10.52	AVG		1 = 11	
5	2483.500	44.55	-6.54	38.01	74.00	-35.99	peak			
6	2483.500	37.65	-6.54	31.11	54.00	-22.89	AVG			
7	2487.270	45.86	-6.53	39.33	74.00	-34.67	peak			
8	2487.270	38.28	-6.53	31.75	54.00	-22.25	AVG			



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Job No.: alen #3624 Standard: FCC PK Test item: Radiation Test

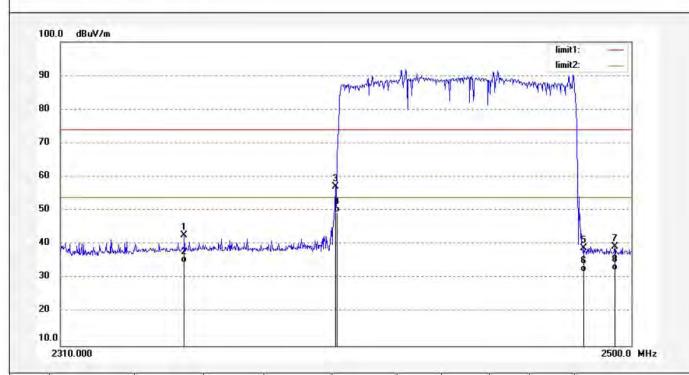
Temp.( C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: Hopping TX(pi/4DQPSK)

Model: CQL1412-B Manufacturer: Sure Wave

Note: Report No:ATE20140163

Polarization: Vertical Power Source: DC 5V

Date: 14/03/04/
Time: 9/02/36
Engineer Signature:
Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2350.090	49.72	-6.89	42.83	74.00	-31.17	peak		1 1	1.4.4.
2	2350.090	41.58	-6.89	34.69	54.00	-19.31	AVG		11-11	
3	2400.000	63.97	-6.76	57.21	74.00	-16.79	peak	1 = 1		
4	2400.000	56.21	-6.76	49.45	54.00	-4.55	AVG			
5	2483.500	45.38	-6.54	38.84	74.00	-35.16	peak			
6	2483.500	38.54	-6.54	32.00	54.00	-22.00	AVG			
7	2494.300	45.90	-6.50	39.40	74.00	-34.60	peak	11 1	17-0-1	
8	2494.300	38.87	-6.50	32.37	54.00	-21.63	AVG		-	



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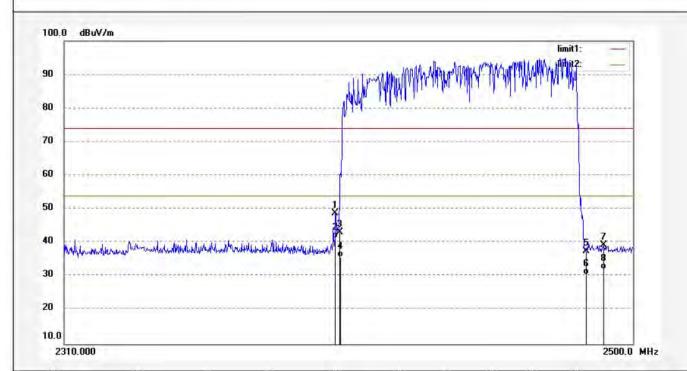
Job No.: alen #3622 Pol Standard: FCC PK Pov

Test item: Radiation Test
Temp.( C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: Hopping TX(8DPSK)
Model: COL1412-B

Model: CQL1412-B Manufacturer: Sure Wave Polarization: Horizontal Power Source: DC 5V

Date: 14/03/04/
Time: 8/55/36
Engineer Signature:
Distance: 3m

Note: Report No:ATE20140163



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2398.920	55.67	-6.76	48.91	74.00	-25.09	peak			
2	2398.920	48.21	-6.76	41.45	54.00	-12.55	AVG			
3	2400.000	49.91	-6.76	43.15	74.00	-30.85	peak			
4	2400.000	42.57	-6.76	35.81	54.00	-18.19	AVG			
5	2483.500	44.18	-6.54	37.64	74.00	-36.36	peak			
6	2483.500	37.17	-6.54	30.63	54.00	-23.37	AVG			
7	2490.120	45.90	-6.52	39.38	74.00	-34.62	peak			
8	2490.120	38.78	-6.52	32.26	54.00	-21.74	AVG			1700



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Job No.: alen #3621 Standard: FCC PK

Test item: Radiation Test

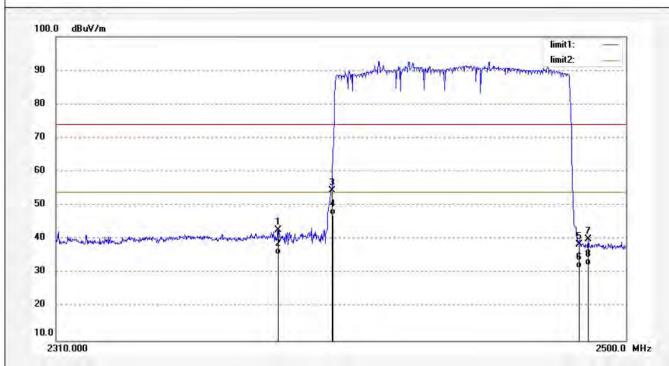
Temp.( C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: Hopping TX(8DPSK)

Model: CQL1412-B Manufacturer: Sure Wave

Note: Report No:ATE20140163

Polarization: Vertical Power Source: DC 5V

Date: 14/03/04/
Time: 8/50/53
Engineer Signature:
Distance: 3m



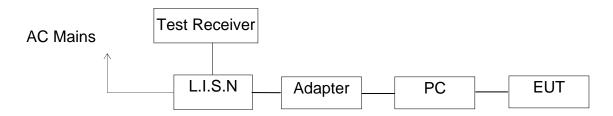
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2382.390	49.51	-6.81	42.70	74.00	-31.30	peak	. 1		
2	2382.390	42.45	-6.81	35.64	54.00	-18.36	AVG		1 2 1	
3	2400.000	61.24	-6.76	54.48	74.00	-19.52	peak	. =====1	1 11	
4	2400.000	54.01	-6.76	47.25	54.00	-6.75	AVG			
5	2483.500	45.07	-6.54	38.53	74.00	-35.47	peak			
6	2483.500	38.01	-6.54	31.47	54.00	-22.53	AVG			
7	2487.080	46.52	-6.53	39.99	74.00	-34.01	peak			
8	2487.080	38.89	-6.53	32.36	54.00	-21.64	AVG			



# 12.AC POWER LINE CONDUCTED EMISSION FOR FCC PART

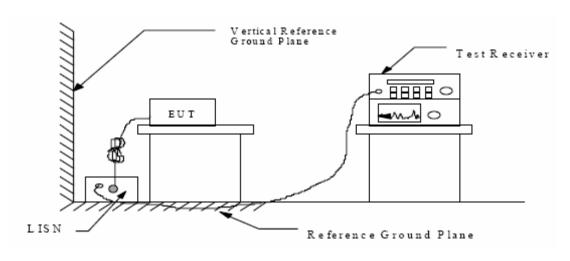
# 15 SECTION 15.207(A)

## 12.1.Block Diagram of Test Setup



(EUT: iBun Bluetooth Speaker)

## 12.2.Shielding Room Test Setup Diagram



### 12.3. The Emission Limit

#### 12.3.1.Conducted Emission Measurement Limits According to Section 15.207(a)

Frequency	Limit dB(μV)					
(MHz)	Quasi-peak Level	Average Level				
0.15 - 0.50	66.0 - 56.0 *	56.0 – 46.0 *				
0.50 - 5.00	56.0	46.0				
5.00 - 30.00	60.0	50.0				

<sup>\*</sup> Decreases with the logarithm of the frequency.



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### 12.4.Configuration of EUT on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

### 12.5. Operating Condition of EUT

- 12.5.1. Setup the EUT and simulator as shown as Section 12.1.
- 12.5.2. Turn on the power of all equipment.
- 12.5.3.Let the EUT work in test mode and measure it.

#### 12.6.Test Procedure

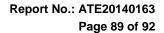
The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4: 2009 on Conducted Emission Measurement.

The bandwidth of test receiver (R & S ESCS30) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

#### 12.7. Power Line Conducted Emission Measurement Results

PASS.





The frequency range from 150kHz to 30MHz is checked.

Test mode : Ch	narging&l	3T Com	municat	ting			
MEASUREMENT	RESULT	: "SW-0	225-F0	)1_fin"			
2/25/2014 10: Frequency MHz		Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.151202 0.525384 2.542691	53.40 38.90 36.80		66 56 56			L1 L1 L1	GND GND GND
MEASUREMENT	RESULT	: " <b>SW</b> -0	225-F0	)1_fin2	,,		
2/25/2014 10: Frequency MHz	Level	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.165082 0.529596 2.502412 28.006255	33.20 31.00	10.7	55 46 46 50	12.8 15.0	AV AV	L1 L1 L1 L1	GND GND GND GND
MEASUREMENT	RESULT	: "SW-0	225-F0	2_fin"			
2/25/2014 10: Frequency MHz	Level	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.152414 0.490912 2.492442	38.20	10.7	66 56 56	18.0	QP	N N N	GND GND GND
MEASUREMENT	RESULT	: "SW-0	225-F0	02_fin2	77		
2/25/2014 10: Frequency MHz	Level	Transd dB			Detector	Line	PE
0.173183 2.184804 5.321456	41.00 31.40 27.60	10.5 11.0 11.2	55 46 50	13.8 14.6 22.4	AV	N N N	GND GND GND

Emissions attenuated more than 20 dB below the permissible value are not reported.

The spectral diagrams are attached as below.





#### CONDUCTED EMISSION STANDARD FCC PART 15

EUT: iBun Bluetooth Speaker M/N:CQL1412-B

Manufacturer: Sure Wave Operating Condition: BT&Charging Test Site: 1#Shielding Room

Operator: Alen

Test Specification: L 120V/60Hz

Report No:ATE20140163 Comment: Start of Test: 2/25/2014 / 10:31:16AM

#### SCAN TABLE: "V 150K-30MHz fin"

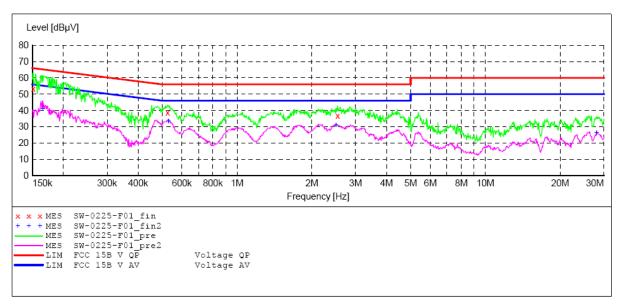
\_SUB\_STD\_VTERM2 1.70 Short Description:

Start Stop Step Detector Meas. ΙF Transducer

Frequency Frequency Width 150.0 kHz 30.0 MHz 4.5 kHz Time Bandw.

4.5 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008

Average



#### MEASUREMENT RESULT: "SW-0225-F01 fin"

34AM						
Level	Transd	Limit	Margin	Detector	Line	PΕ
dΒμV	dB	dΒμV	dB			
53.40	10.5	66	12.5	QP	L1	GND
38.90	10.7	56	17.1	QP	L1	GND
36.80	11.0	56	19.2	QP	L1	GND
	Level dBµV 53.40 38.90	Level Transd dB	Level Transd Limit dBμV dB dBμV 53.40 10.5 66 38.90 10.7 56	Level Transd Limit Margin dBμV dB dBμV dB 53.40 10.5 66 12.5 38.90 10.7 56 17.1	Level Transd dBμV         Limit dBμV         Margin dB         Detector dB           53.40         10.5         66         12.5         QP           38.90         10.7         56         17.1         QP	Level dBμV       Transd dB dBμV       Limit dBμV       Margin dB       Detector Line dBμV         53.40       10.5       66       12.5       QP       L1         38.90       10.7       56       17.1       QP       L1

#### MEASUREMENT RESULT: "SW-0225-F01 fin2"

2	/25/2014 10:	34AM						
	Frequency				-	Detector	Line	PΕ
	MHz	dΒμV	dB	dΒμV	dB			
	0.165082	40.90	10.5	55	14.3	AV	L1	GND
	0.529596	33.20	10.7	46	12.8	AV	L1	GND
	2.502412	31.00	11.0	46	15.0	AV	L1	GND
	28.006255	26.40	11.5	50	23.6	AV	T.1	GND





#### CONDUCTED EMISSION STANDARD FCC PART 15

EUT: iBun Bluetooth Speaker M/N:CQL1412-B

Sure Wave Manufacturer: Operating Condition: BT&Charging Test Site: 1#Shielding Room

Operator: Alen

Test Specification: N 120V/60Hz

Comment: Report No:ATE20140163 Start of Test: 2/25/2014 / 10:34:49AM

#### SCAN TABLE: "V 150K-30MHz fin"

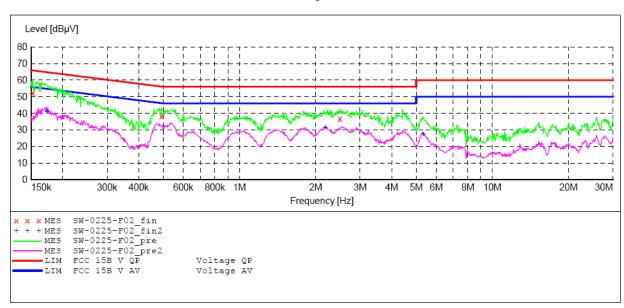
\_SUB\_STD\_VTERM2 1.70 Short Description:

Step Start Stop Detector Meas. ΙF Transducer

Frequency Frequency Width 150.0 kHz 30.0 MHz 4.5 kHz Time Bandw.

QuasiPeak 1.0 s 4.5 kHz 9 kHz NSLK8126 2008

Average



#### MEASUREMENT RESULT: "SW-0225-F02 fin"

2/25/2014 10:37AM

- 1	720/2014 10.	2 11111						
	Frequency MHz	Level dBuV			Margin dB	Detector	Line	PE
				0.D pt 1	3.2			
	0.152414	52.30	10.5	66	13.6	QP	N	GND
	0.490912	38.20	10.7	56	18.0	QP	N	GND
	2.492442	36.80	11.0	56	19.2	QP	N	GND

#### MEASUREMENT RESULT: "SW-0225-F02 fin2"

つ /つE	/2011	10:37AM
4/40	/2014	IU:3/AM

4/	25/2014 10:	J/AM						
	Frequency	Level	Transd	Limit	Margin	Detector	Line	PE
	MHz	dBuV		dBuV	dB			
	11112	αΣμι	42	GD pr	GLD.			
	0.173183	41 00	10 5	5.5	13 0	7\ 7.7	N	GND
	0.1/5105	41.00	10.5	55	13.0	AV	IA	GND
	2.184804	31.40	11.0	46	14.6	AV	N	GND
	5.321456	27.60	11.2	50	22.4	AV	N	GND



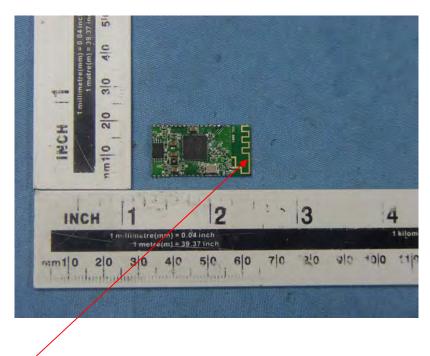
# 13.ANTENNA REQUIREMENT

### 13.1.The Requirement

According to Section 15.203, 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.

### 13.2. Antenna Construction

The antenna is PCB Layout antenna, no consideration of replacement. Therefore, the equipment complies with the antenna requirement of Section 15.203.



Antenna