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
Address	:	F1, Bldg. A, Chan Yuan New Material Port, Keyuan Rd. Science & Industry Park, Nan Shan, Shenzhen, Guangdong P.R. China Tel: (0755) 26503290 Fax: (0755) 26503396

Report Number	:	ATE20140163
Date of Test	:	Feb 24, 2014-Mar 06, 2014
Date of Report	:	Mar 06, 2014

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Description Page

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 : Tim Zhang
(Tim.zhang, Engineer)

Approved & Authorized Signer : Sean Liu
(Sean Liu, Manager)

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, Π/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

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 (9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty (30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty (Above 1GHz)	=	4.06dB, k=2

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	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	CBLU1183540-01	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	WHKX3.6/18G-10SS	N/A	Jan. 11, 2014	Jan. 10, 2015
Band Reject Filter	Wainwright Instruments	WRCG2400/2485-2375/2510-60/11SS	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

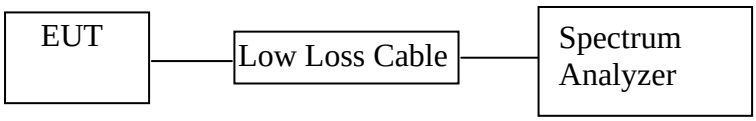
(EUT: IBun Bluetooth Speaker)

4. TEST PROCEDURES AND RESULTS

FCC Rules	Description of Test	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

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.

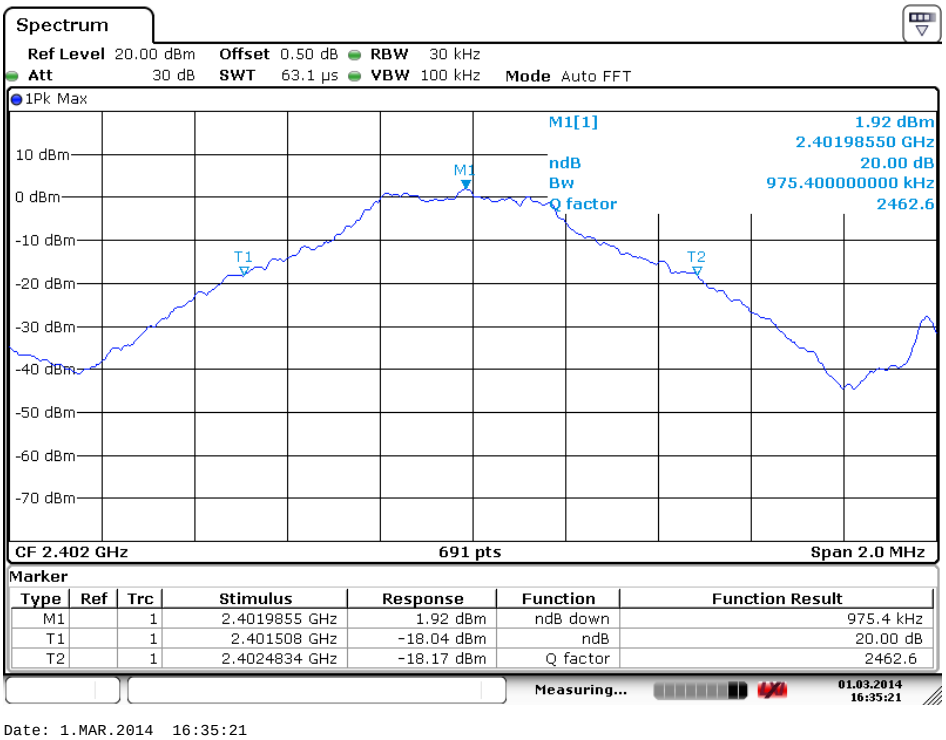
5.6.Test Result

Channel	Frequency (MHz)	GFSK 20dB Bandwidth (MHz)	Π/4-DQPSK 20dB Bandwidth (MHz)	8DPSK 20dB Bandwidth (MHz)	Result
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

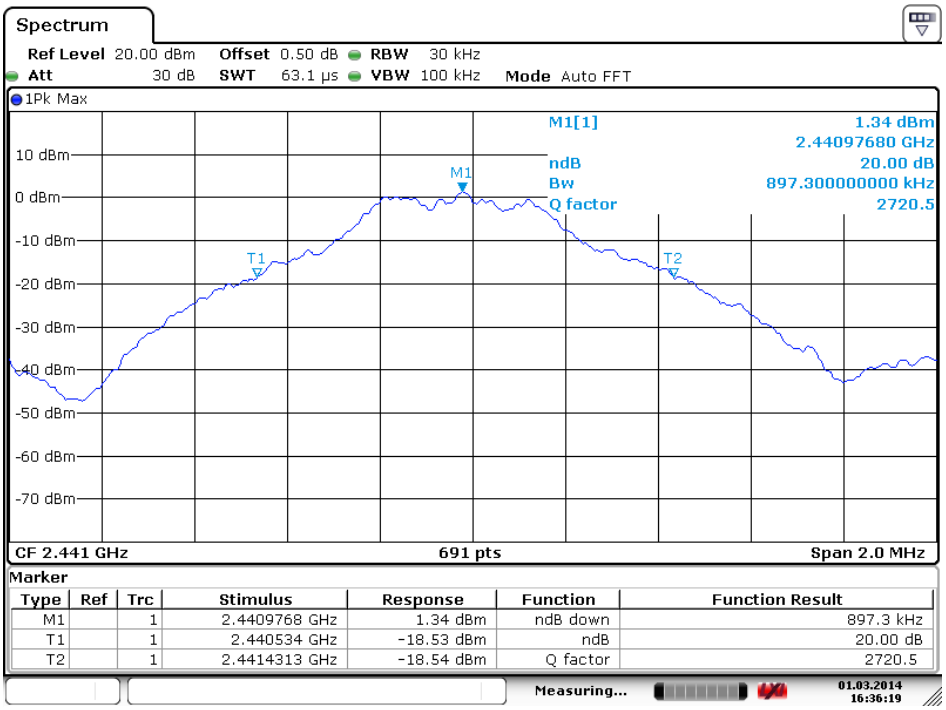
The spectrum analyzer plots are attached as below.

Mode 1: GFSK Link Mode

Low Channel: 2402MHz

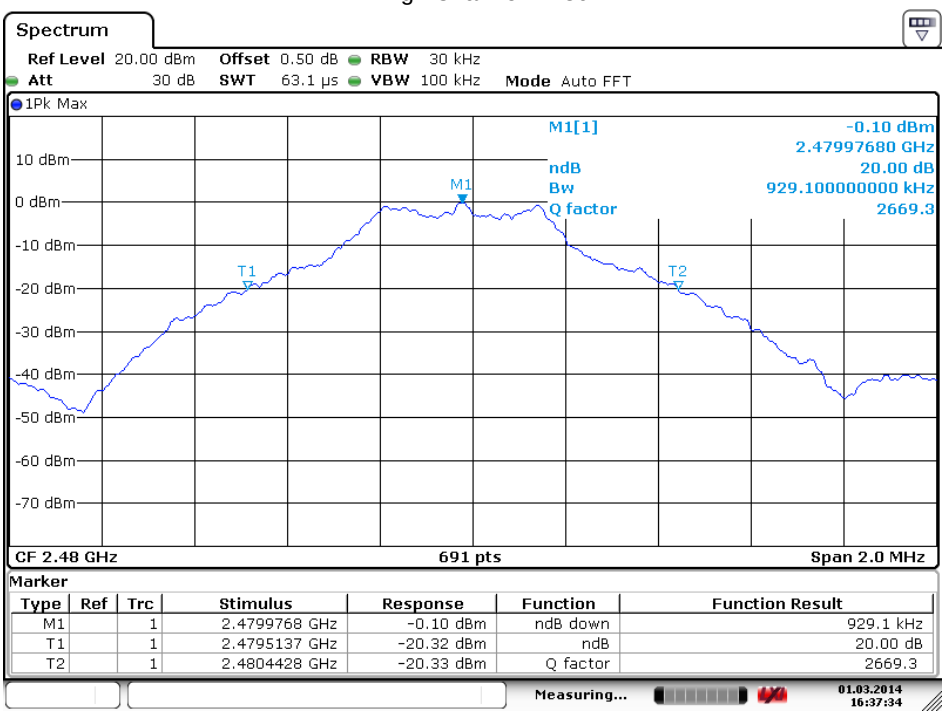


Middle Channel: 2441MHz



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

High Channel: 2480MHz



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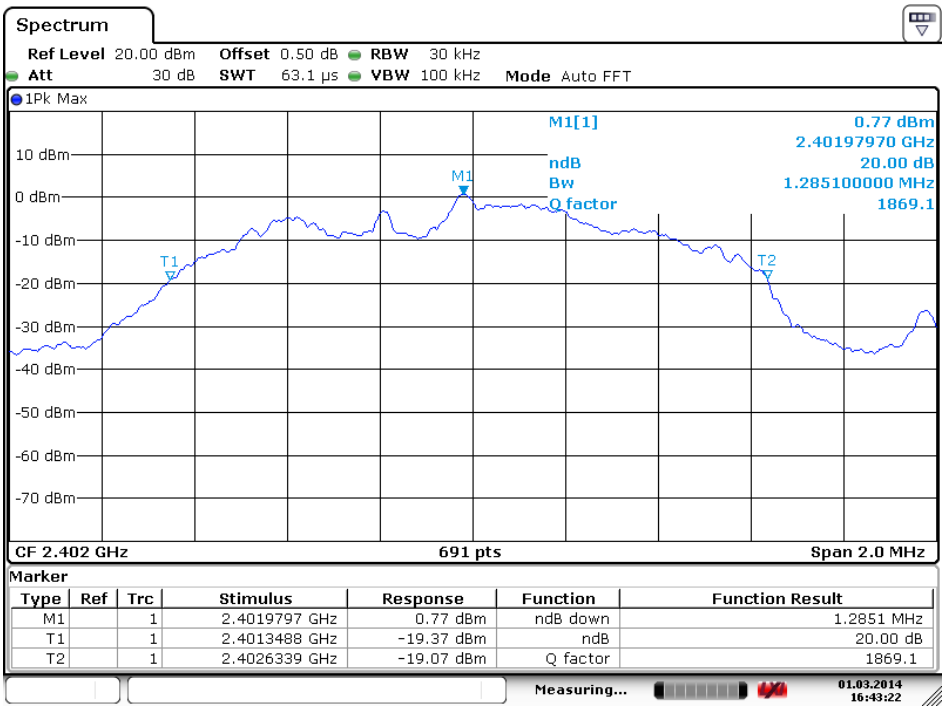
Mode 2: π/4 DQPSK Link Mode

Low Channel: 2402MHz



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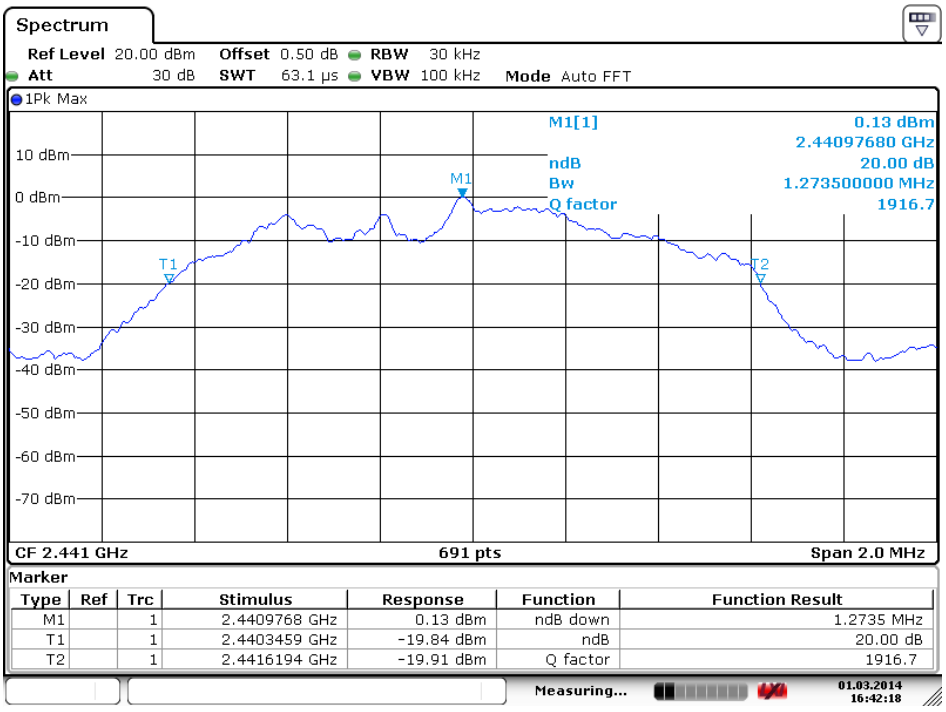
Middle Channel: 2441MHz



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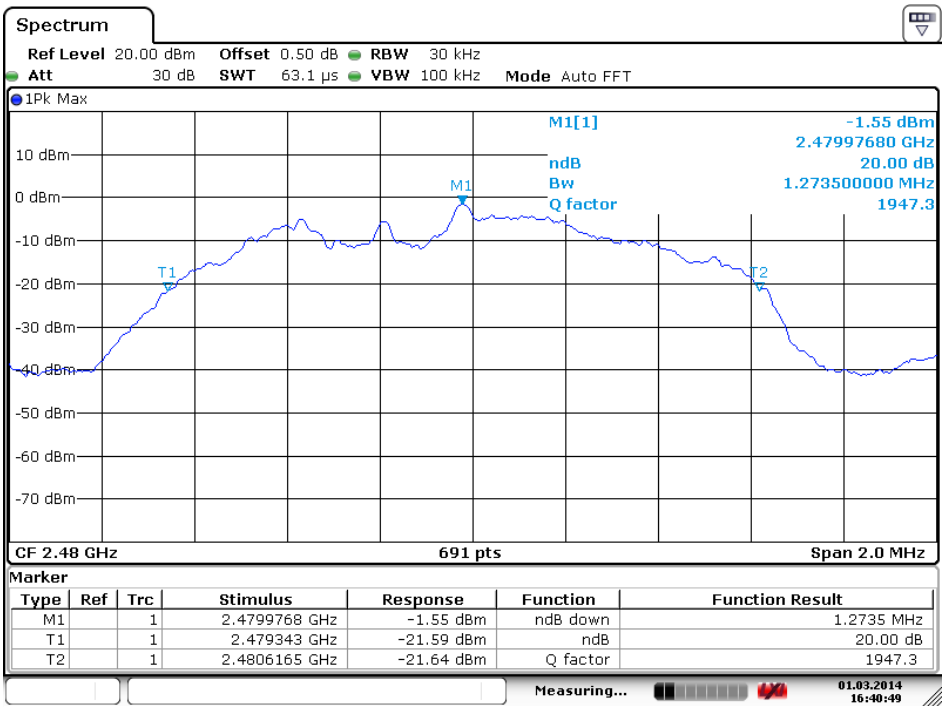
High Channel: 2480MHz



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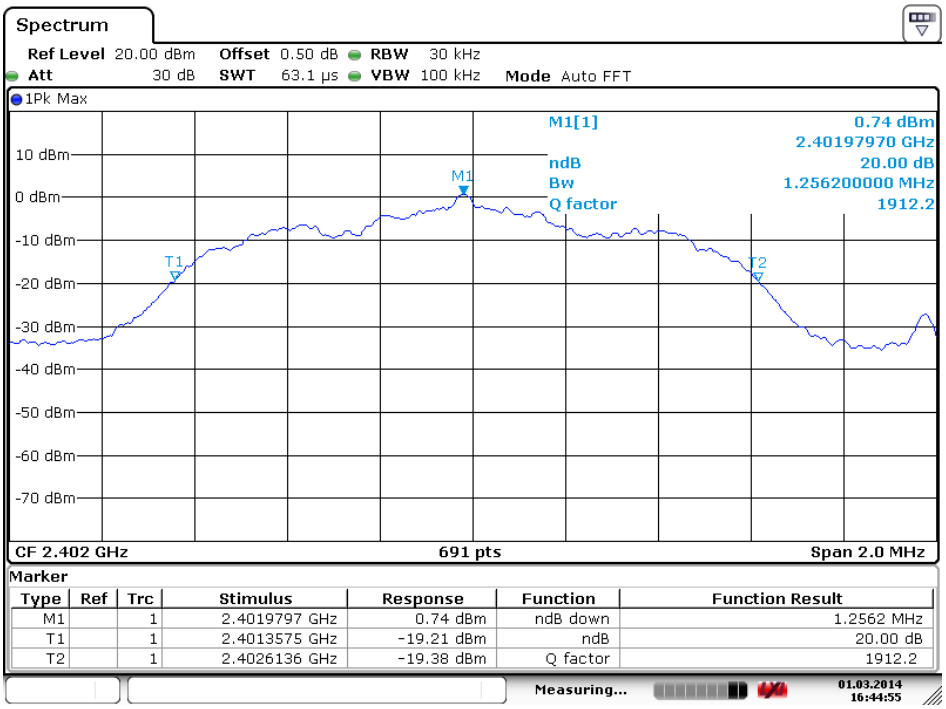
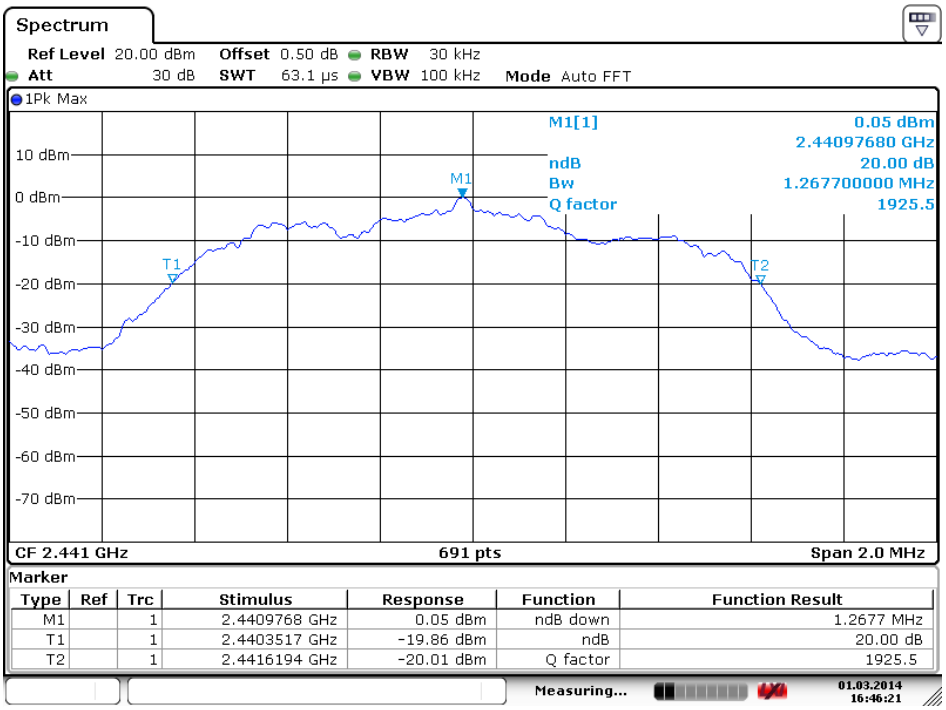
Mode 3: 8DPSK Link Mode

Low Channel: 2402MHz



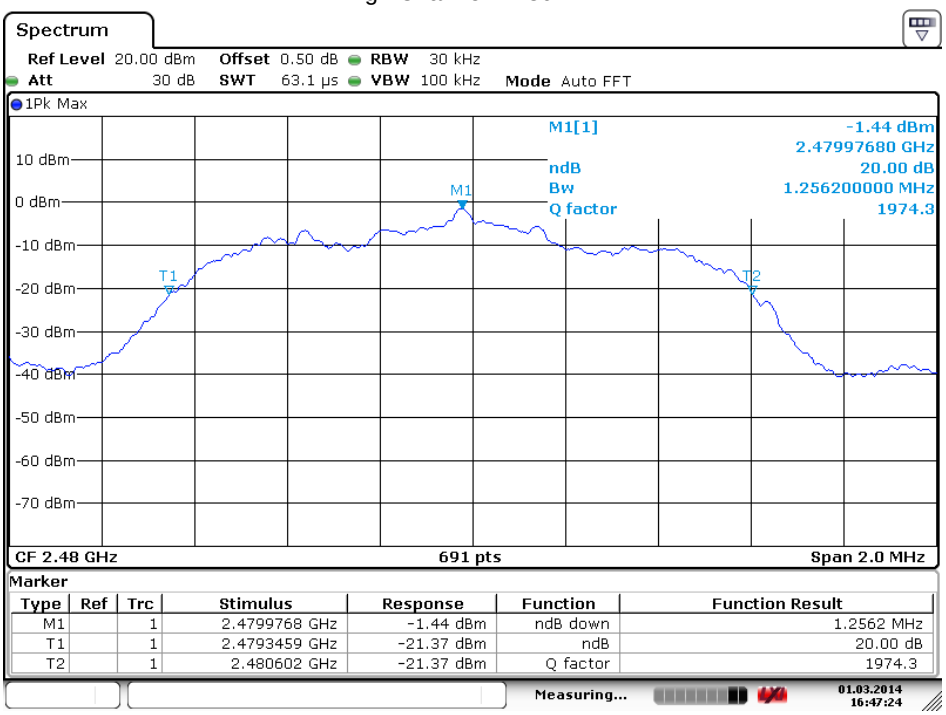
Date: 1.MAR.2014 16:44:55

Middle Channel: 2441MHz



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

High Channel: 2480MHz



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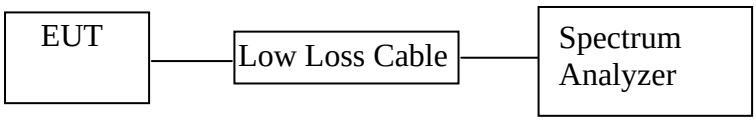
6. CARRIER FREQUENCY SEPARATION TEST

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 bandwidth	PASS
	2403			
Middle	2440	1.0029	25KHz or20dB bandwidth	PASS
	2441			
High	2479	1.0029	25KHz or 20dB bandwidth	PASS
	2480			

Π/4-DQPSK

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

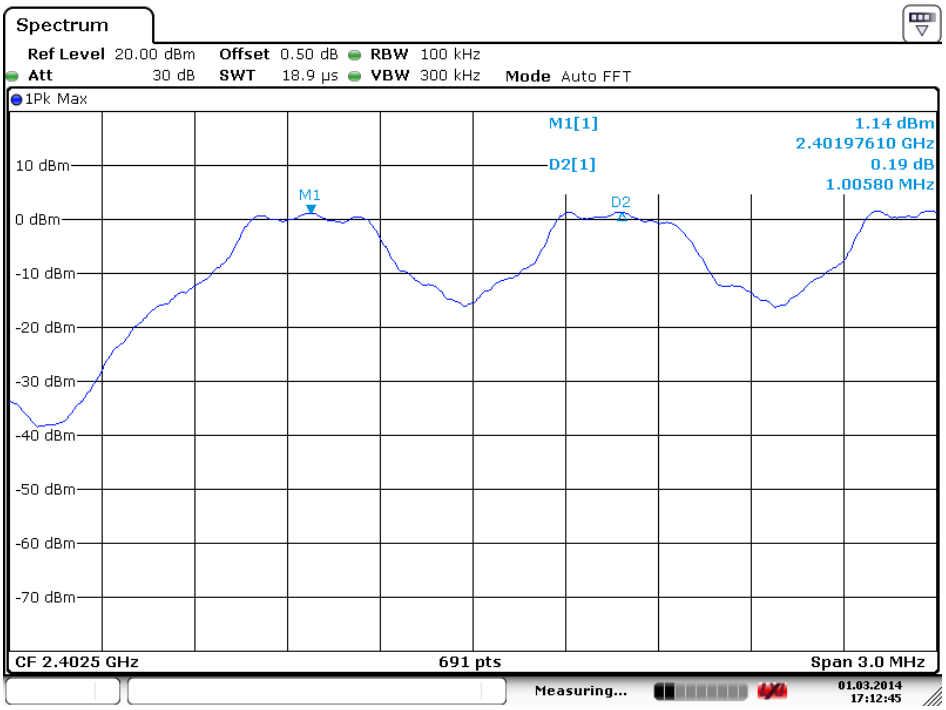
8DPSK

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

The spectrum analyzer plots are attached as below.

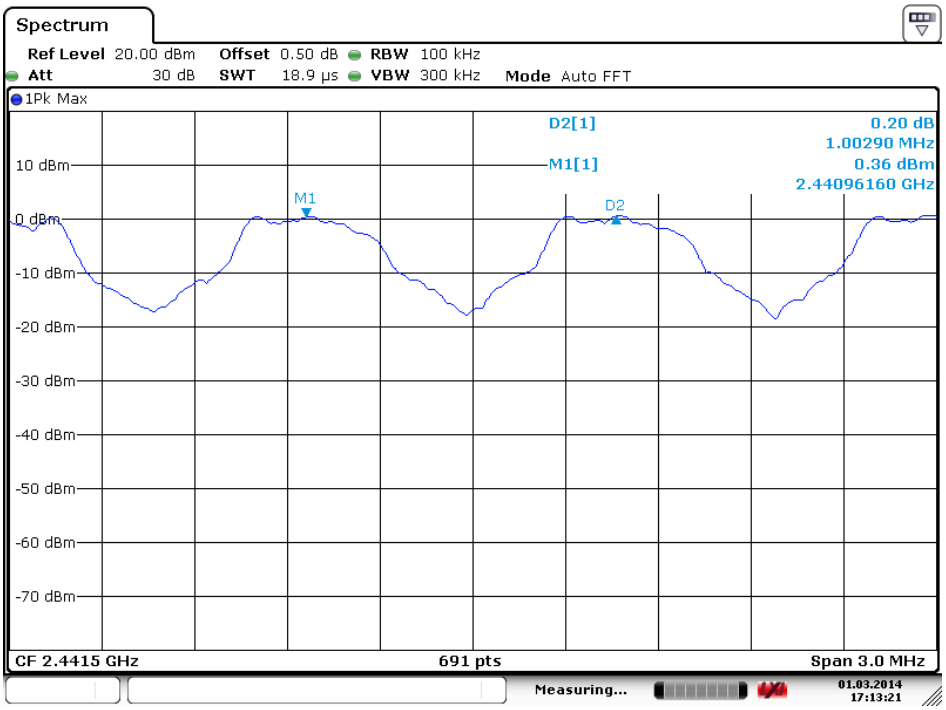
Mode 1: GFSK Link Mode

Low Channel: 2402MHz



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

Middle Channel: 2441MHz



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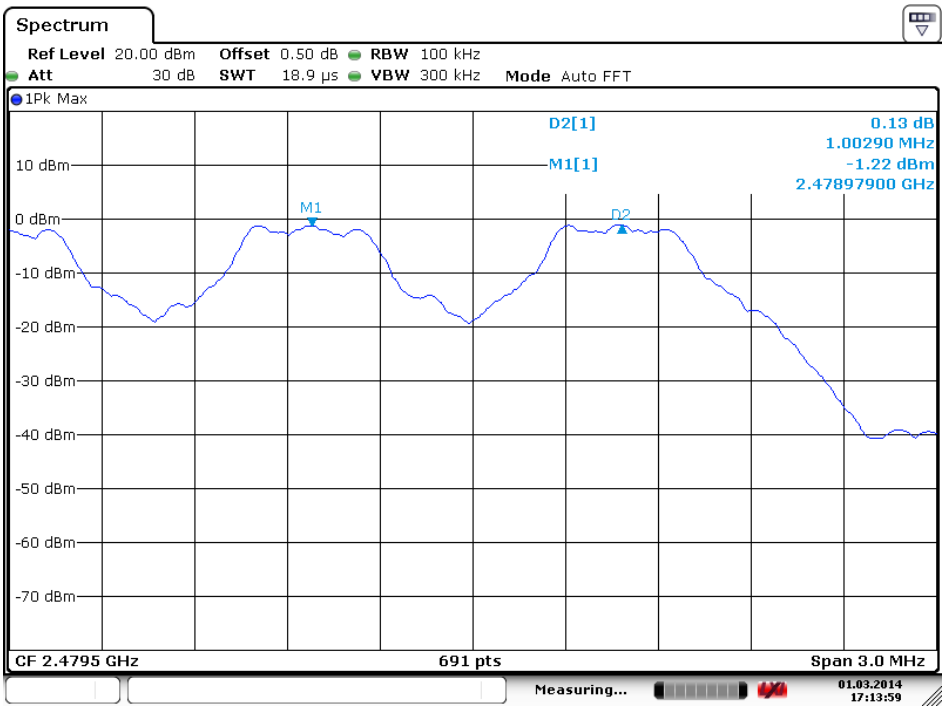
High Channel: 2480MHz



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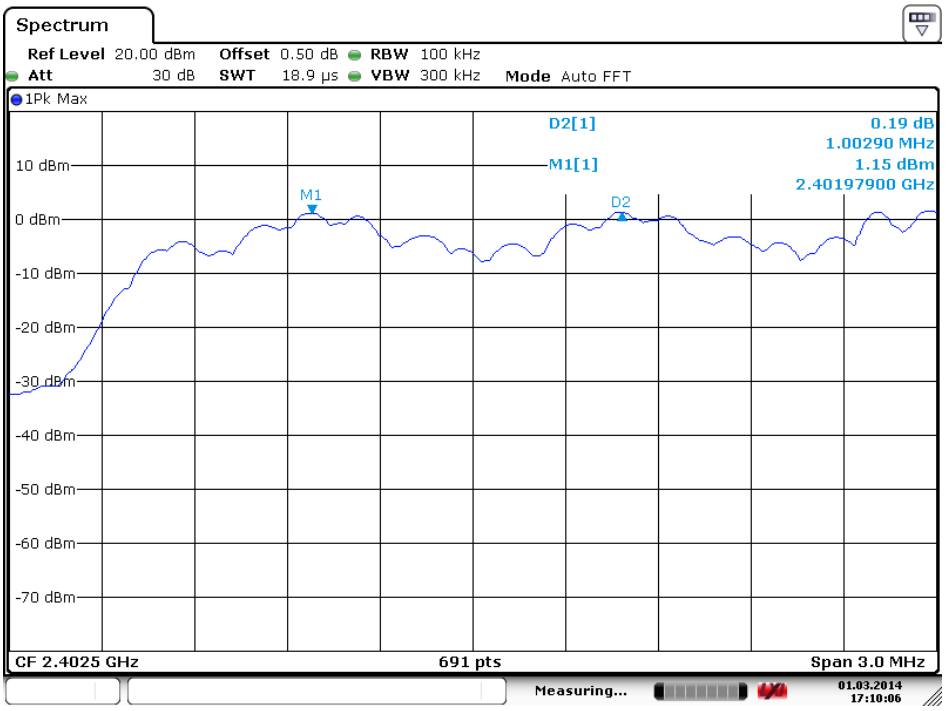
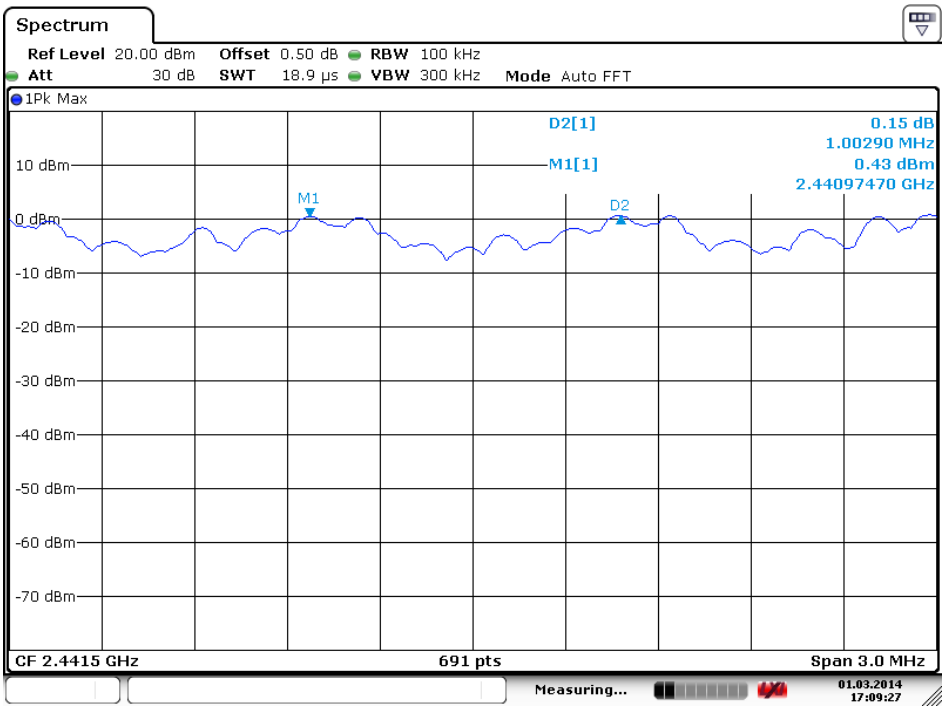
Mode 2: π/4 DQPSK Link Mode

Low Channel: 2402MHz



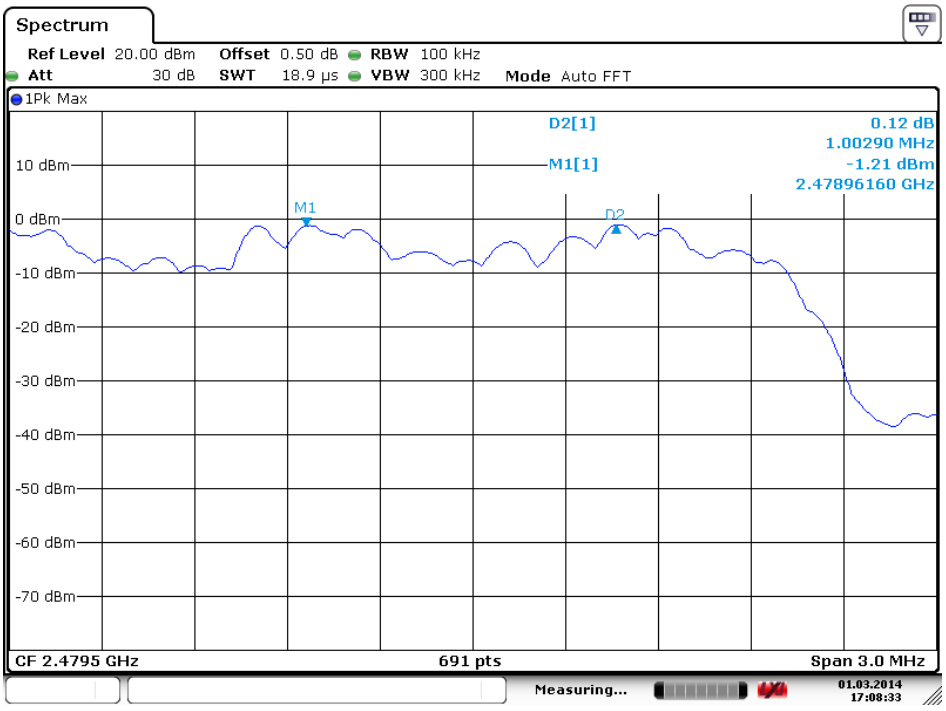
Date: 1.MAR.2014 17:10:06

Middle Channel: 2441MHz



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

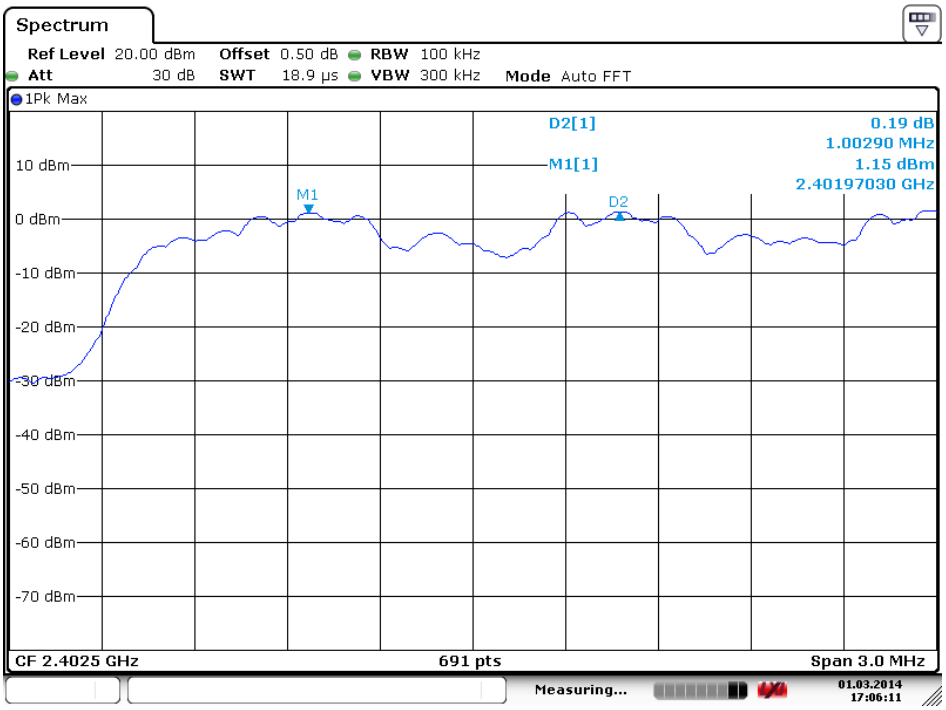
High Channel: 2480MHz



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

Mode 3: 8DPSK Link Mode

Low Channel: 2402MHz



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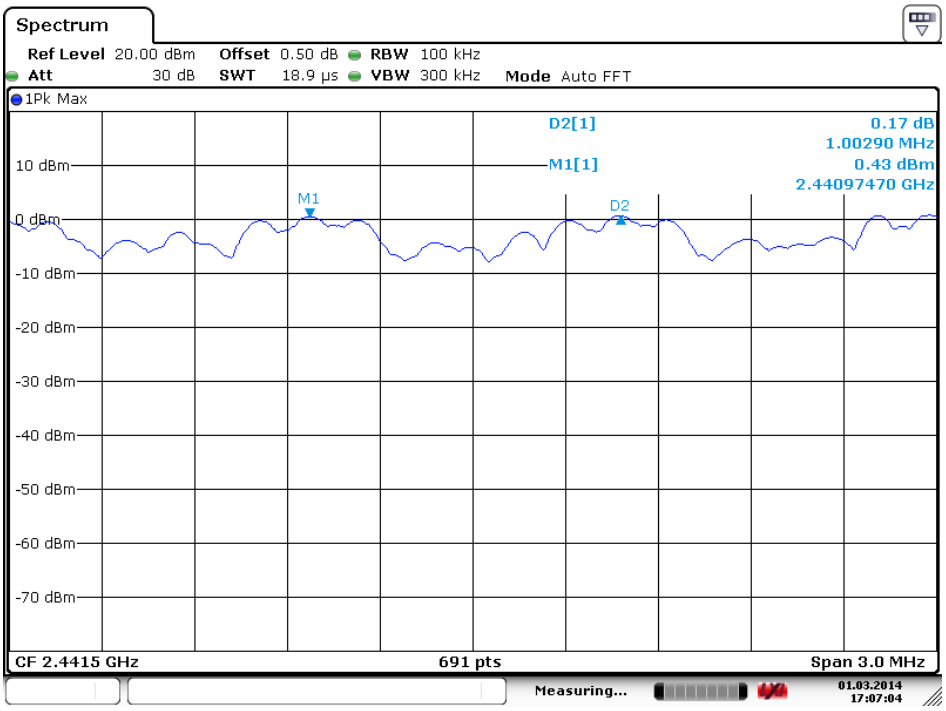
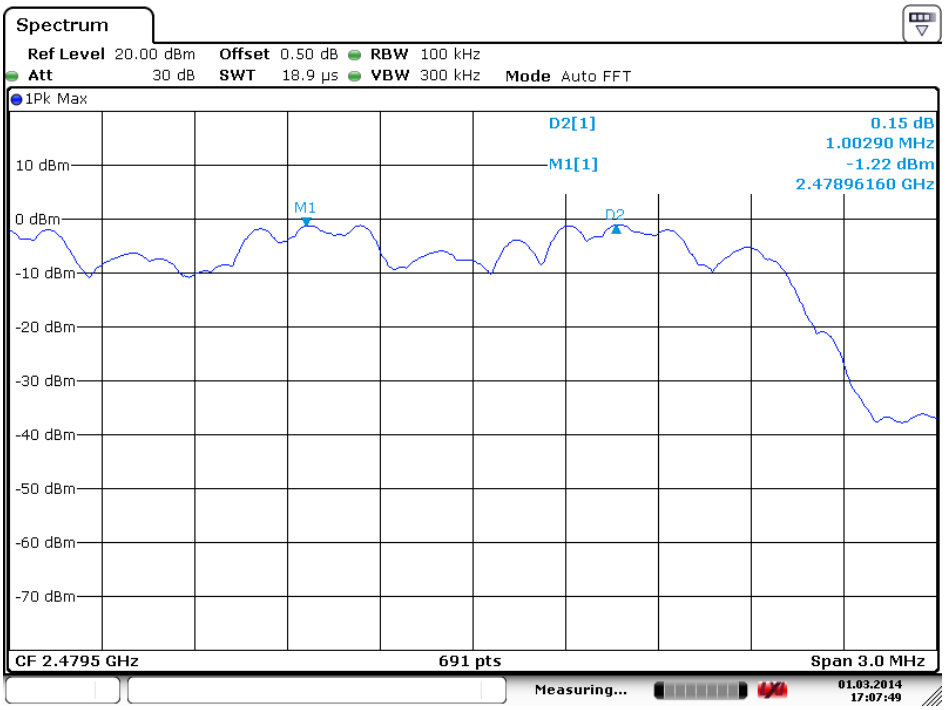
Middle Channel: 2441MHz



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

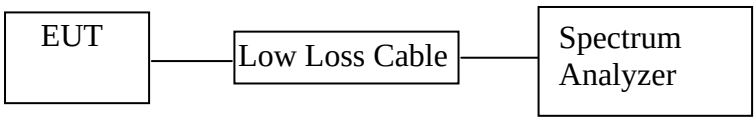
High Channel: 2480MHz



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

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.

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.

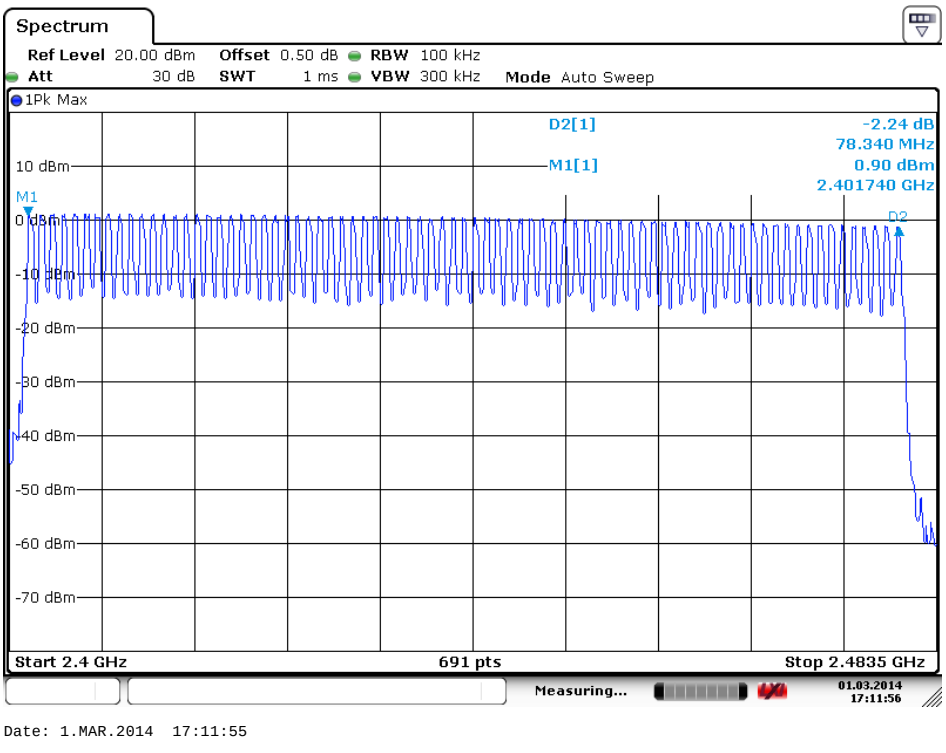
7.5.3.Max hold, view and count how many channel in the band.

7.6.Test Result

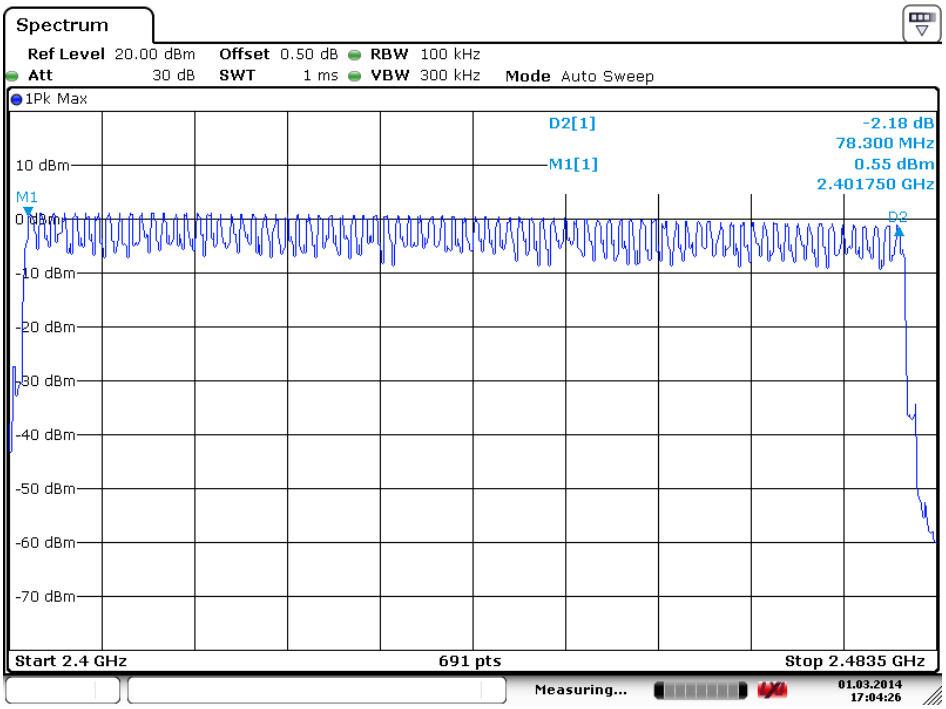
Total number of hopping channel	Measurement result(CH)	Limit(CH)
	79	⩾15

The spectrum analyzer plots are attached as below.

Number of hopping channels(GFSK)

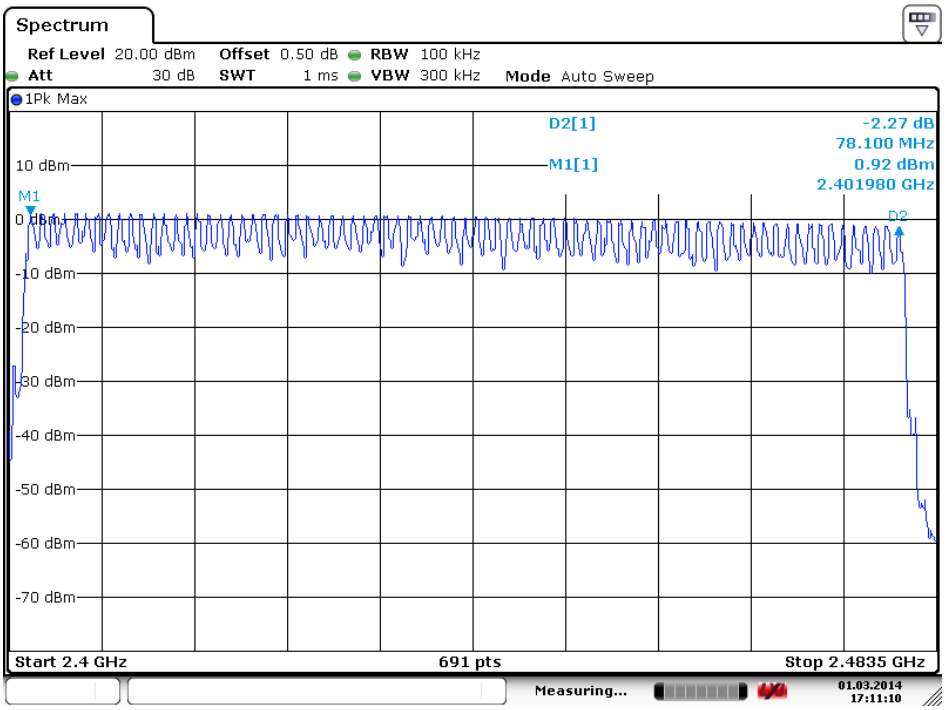


Number of hopping channels(Π/4-DQPSK)



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

Number of hopping channels(8DPSK)



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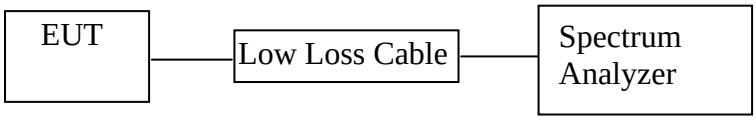
8. DWELL TIME TEST

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.

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)
DH1	2402	0.5362	171.58	400
	2441	0.5290	169.28	400
	2480	0.5362	171.58	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(2*79))×31.6				
DH3	2402	1.8261	292.18	400
	2441	1.8116	289.86	400
	2480	1.8116	289.86	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(4*79))×31.6				
DH5	2402	3.0725	327.73	400
	2441	3.0725	327.73	400
	2480	3.0725	327.73	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(6*79))×31.6				

Π/4-DQPSK

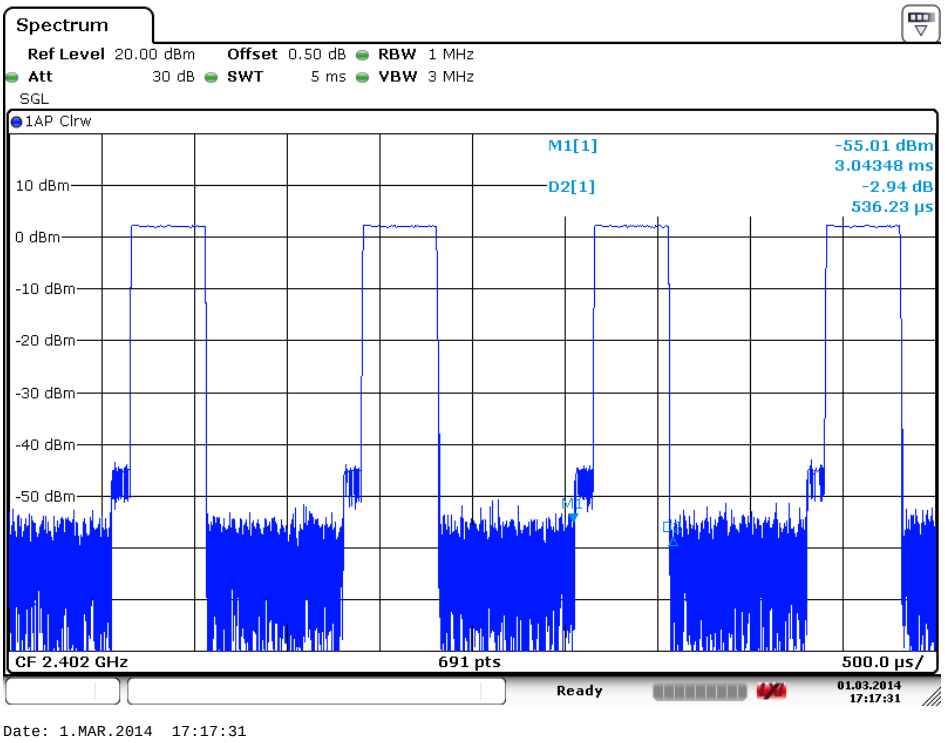
Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.5507	176.22	400
	2441	0.5507	176.22	400
	2480	0.5435	173.92	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(2*79))×31.6				
DH3	2402	1.8261	292.18	400
	2441	1.8261	292.18	400
	2480	1.8043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

8DPSK Mode

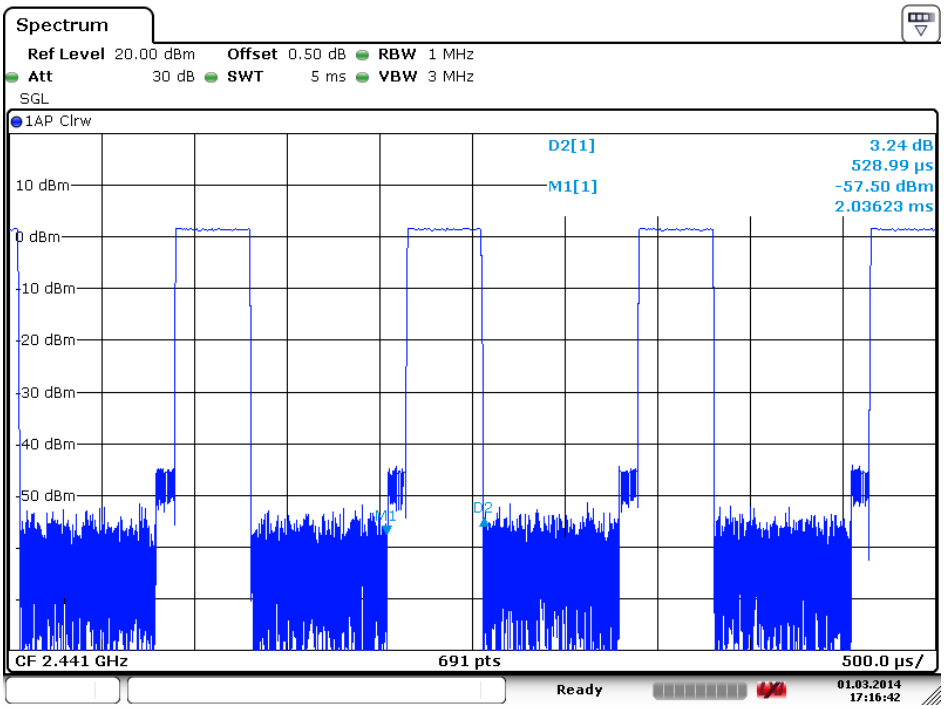
Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.5435	173.92	400
	2441	0.5435	173.92	400
	2480	0.5435	173.92	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(2*79))×31.6				
DH3	2402	1.8188	291.01	400
	2441	1.8188	291.01	400
	2480	1.8188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

The spectrum analyzer plots are attached as below.

DH1 Low channel

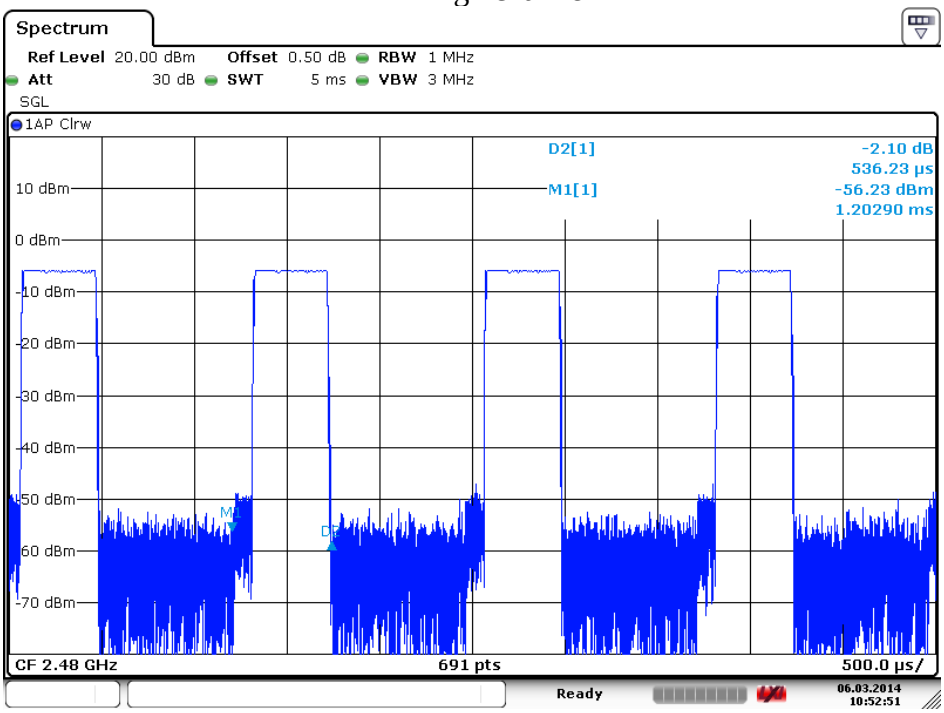


DH1 Middle channel



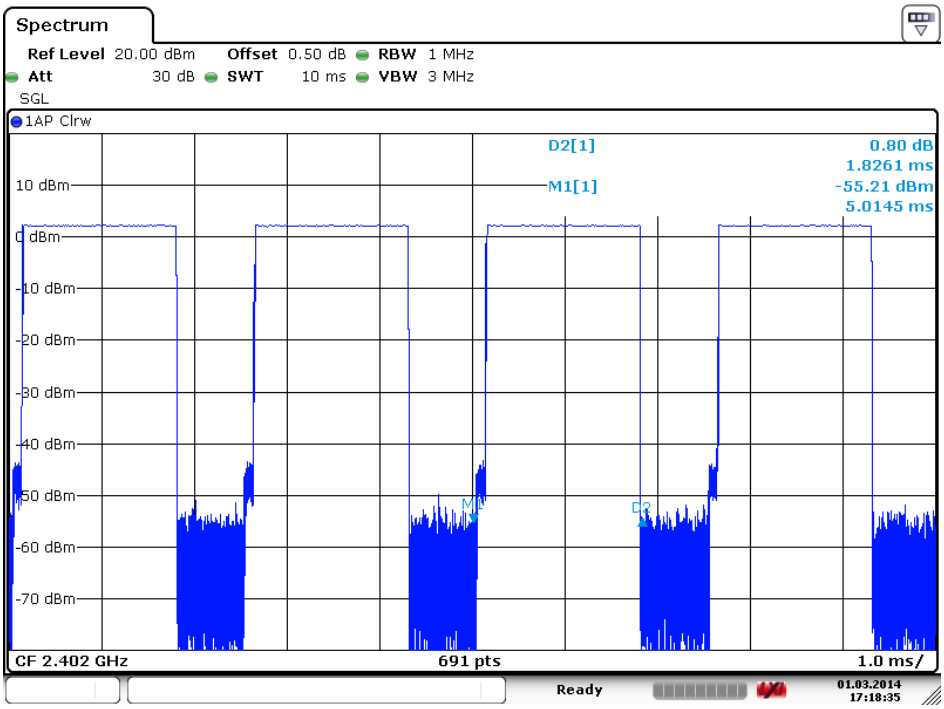
Date: 1.MAR.2014 17:16:42

DH1 High channel



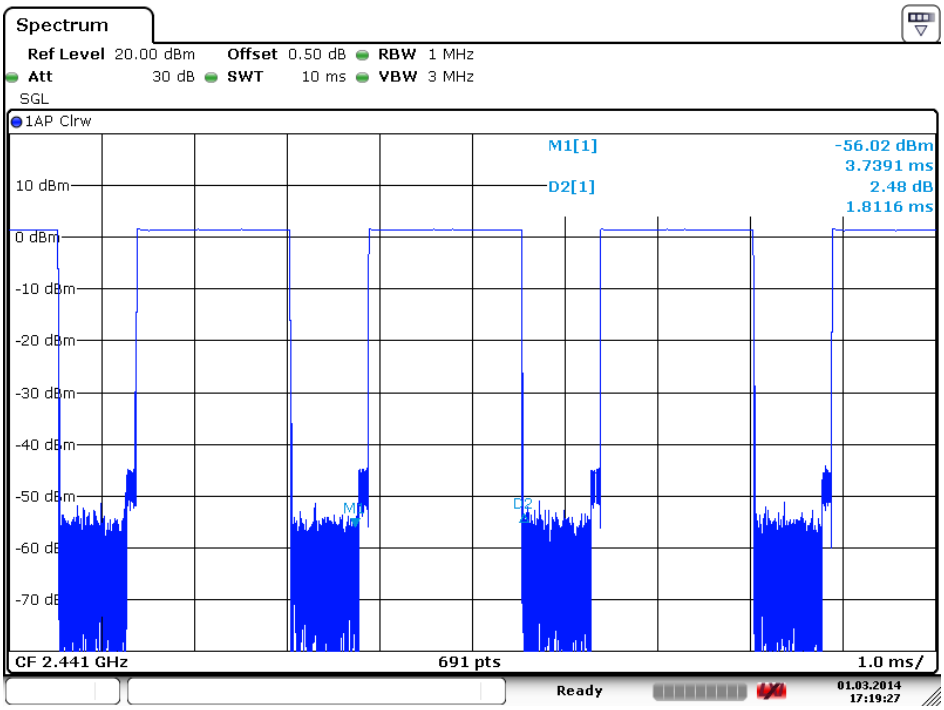
Date: 6.MAR.2014 10:52:51

DH3 Low channel



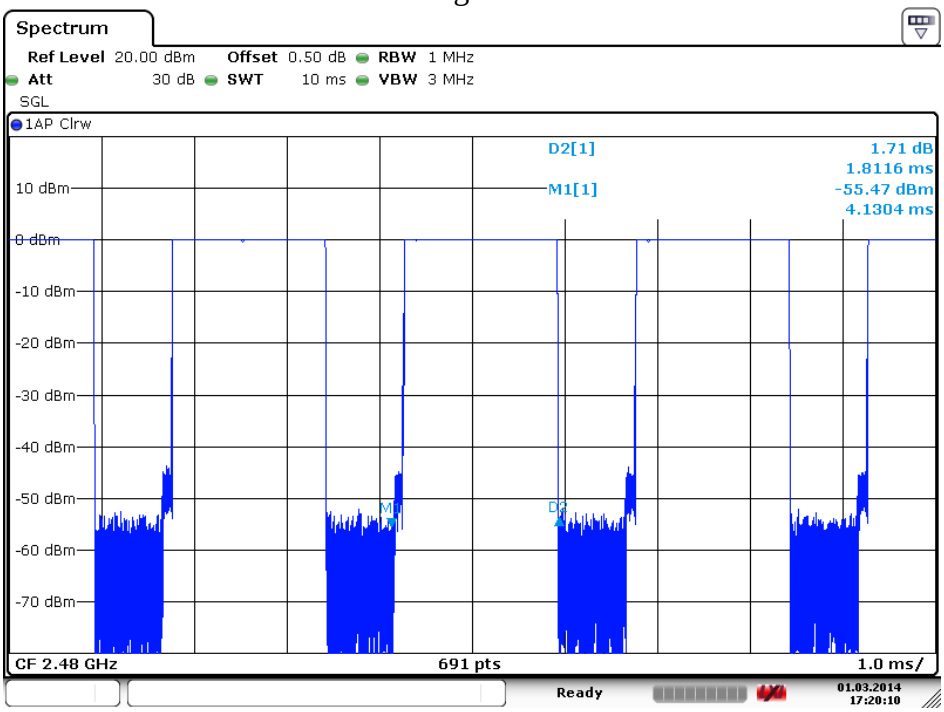
Date: 1.MAR.2014 17:18:35

DH3 Middle channel



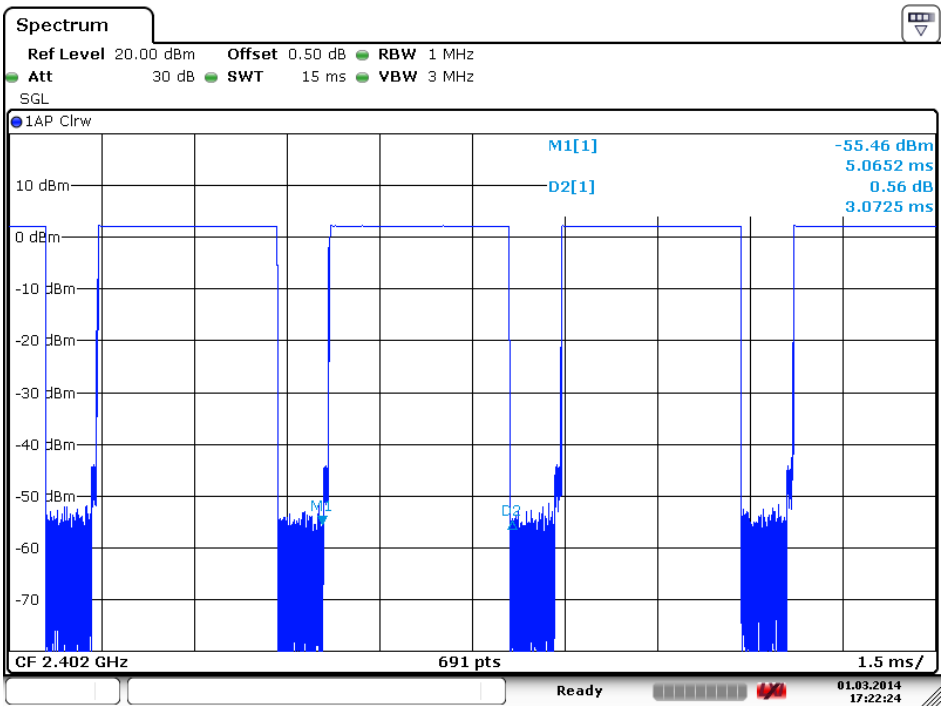
Date: 1.MAR.2014 17:19:27

DH3 High channel



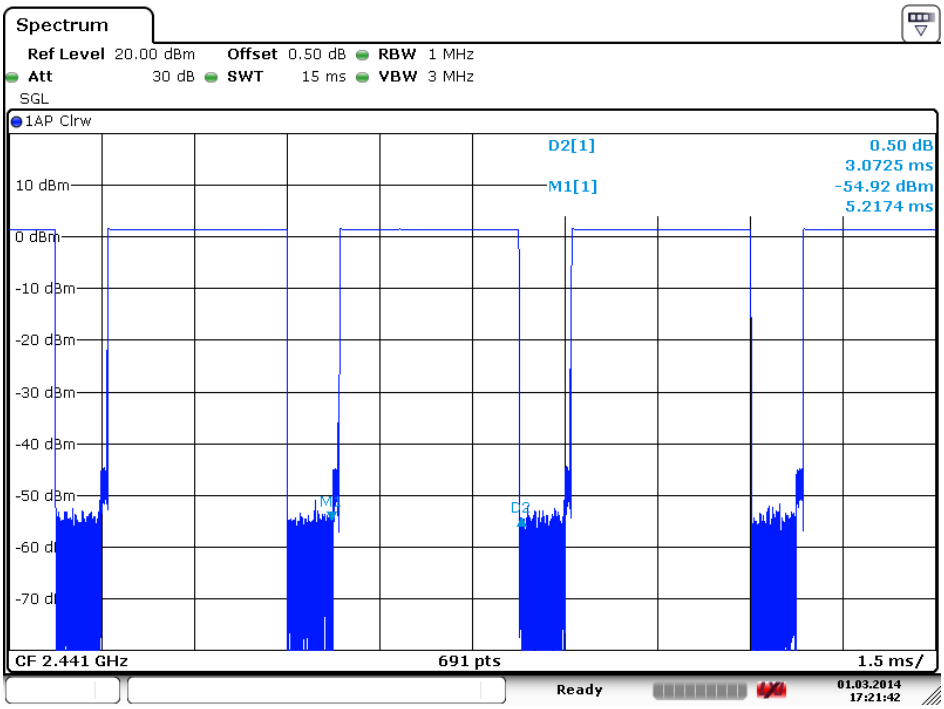
Date: 1.MAR.2014 17:20:10

DH5 Low channel



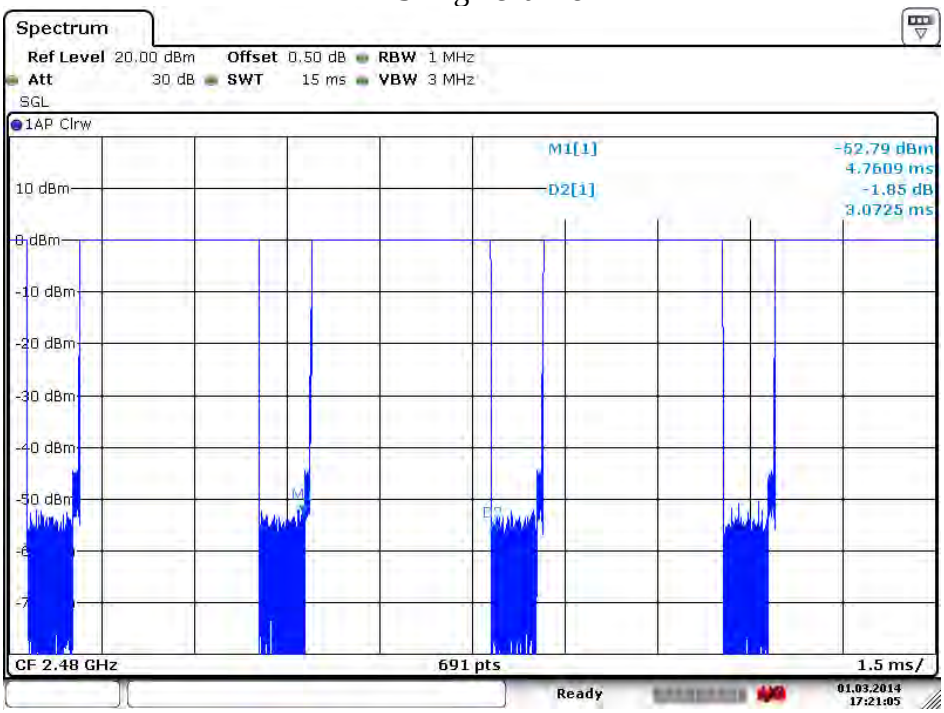
Date: 1.MAR.2014 17:22:24

DH5 Middle channel



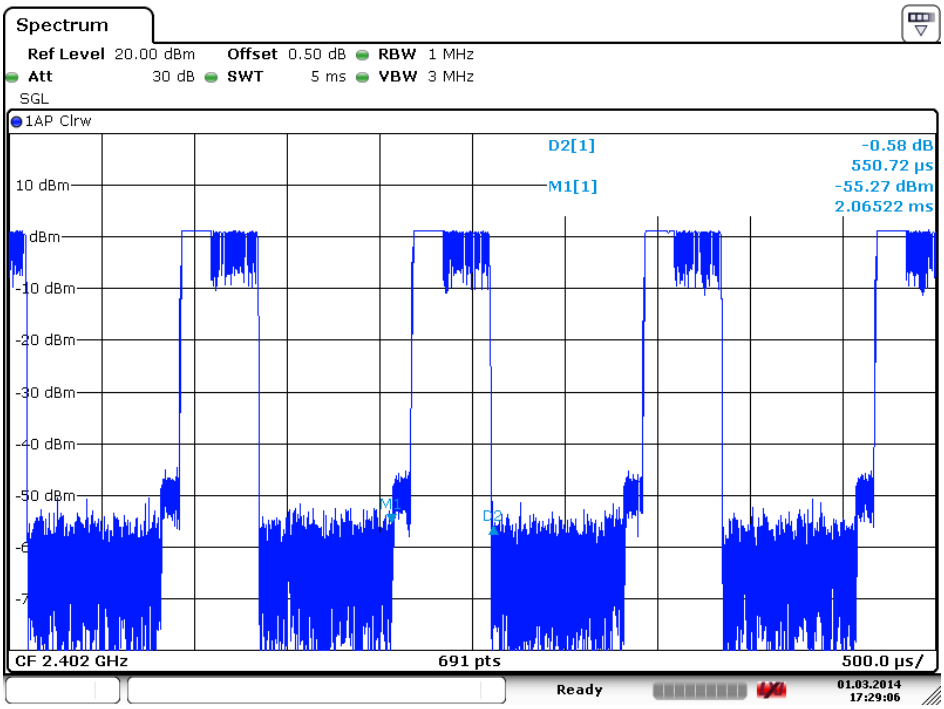
Date: 1.MAR.2014 17:21:42

DH5 High channel



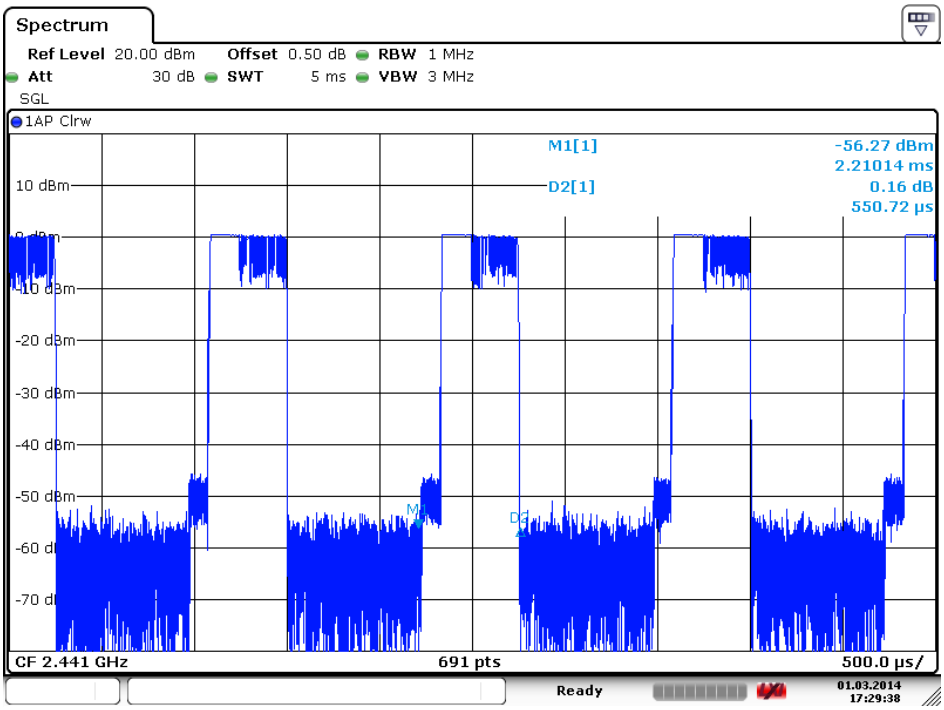
Date: 1.MAR.2014 17:21:05

2DH1 Low channel



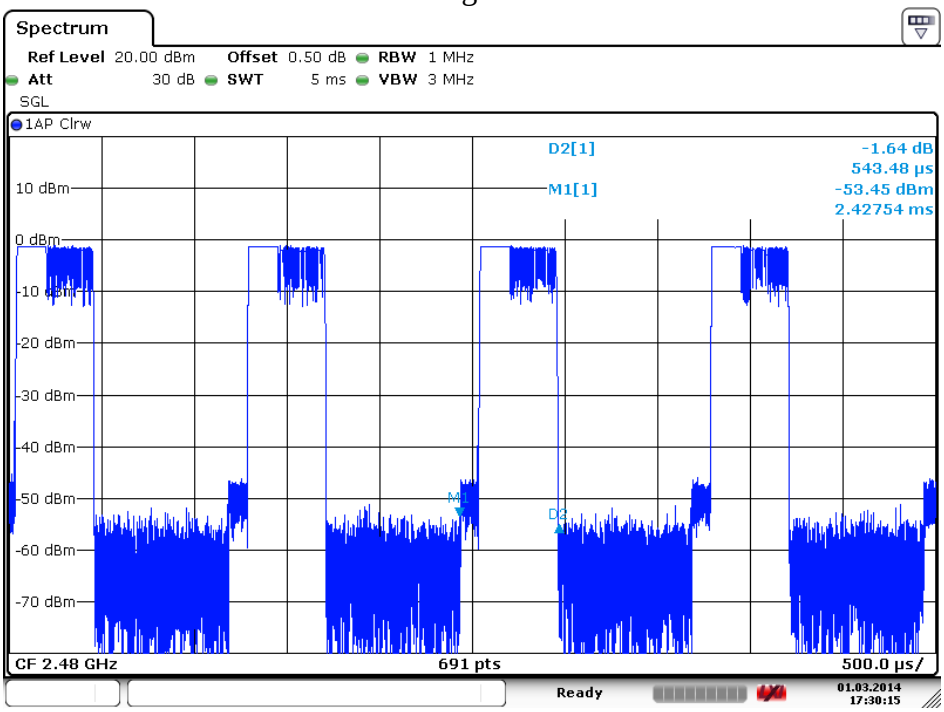
Date: 1.MAR.2014 17:29:05

2DH1 Middle channel



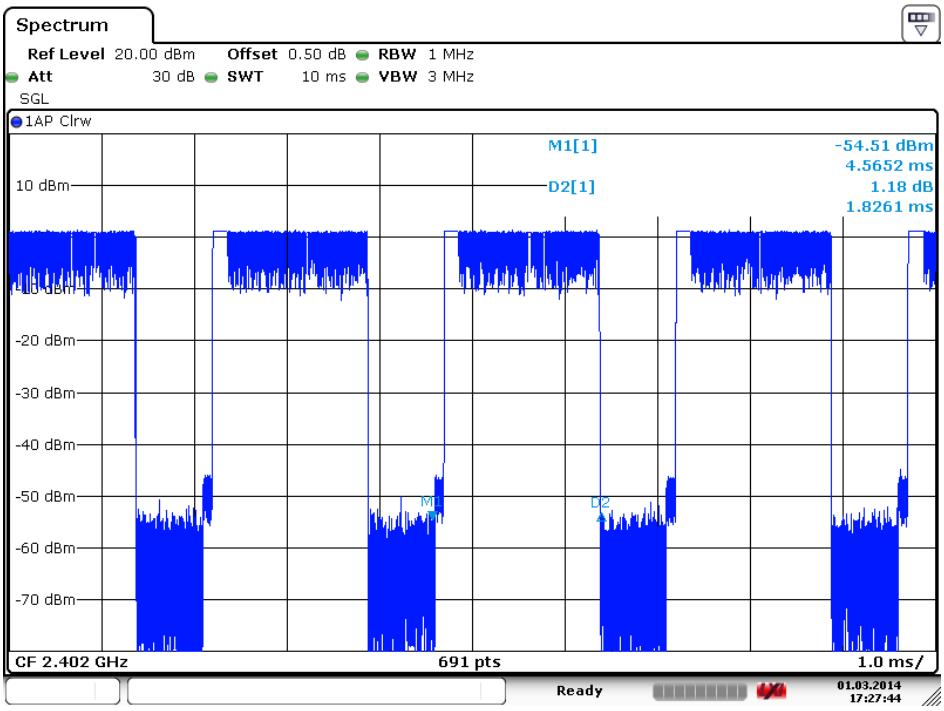
Date: 1.MAR.2014 17:29:38

2DH1 High channel



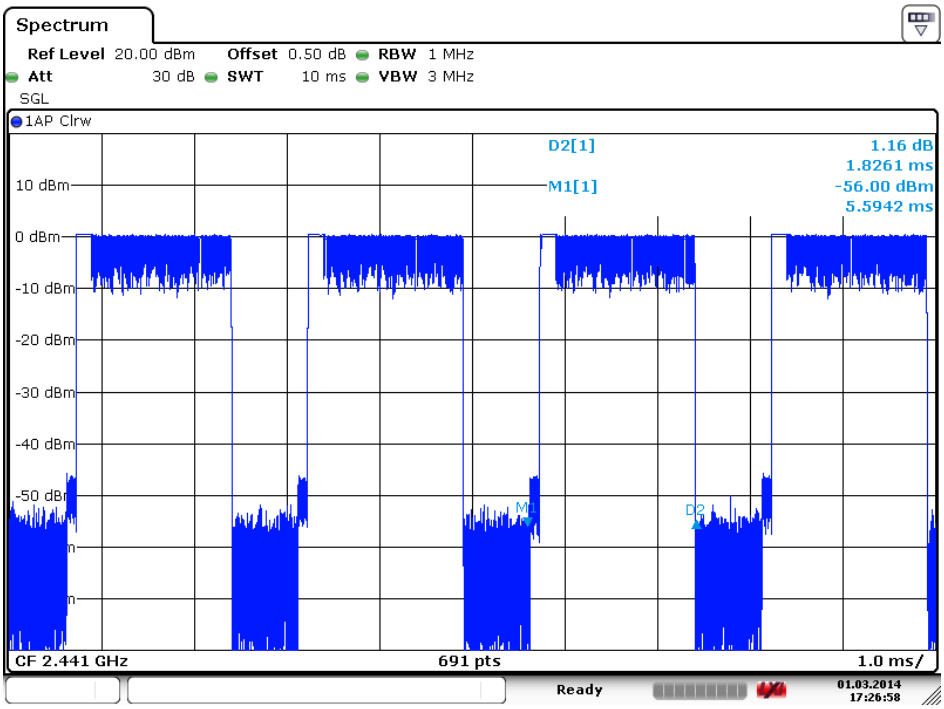
Date: 1.MAR.2014 17:30:15

2DH3 Low channel



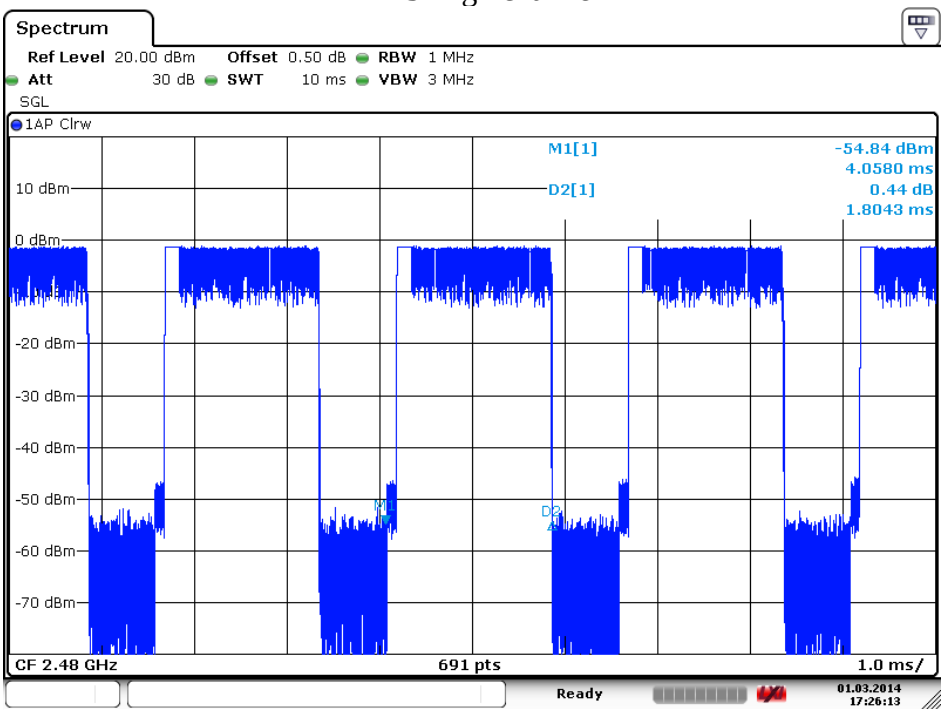
Date: 1.MAR.2014 17:27:43

2DH3 Middle channel



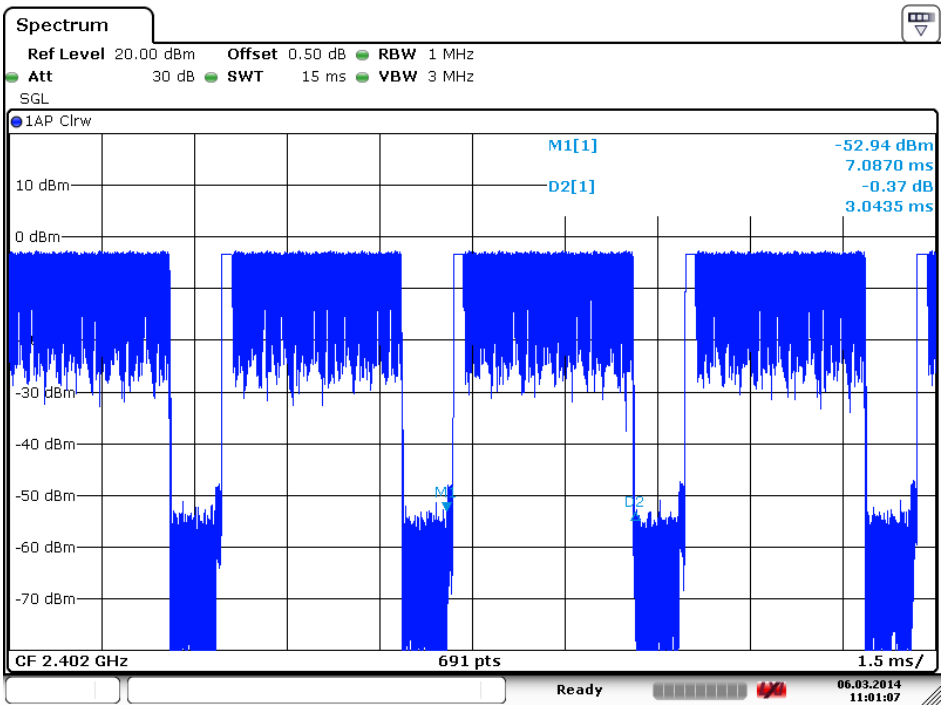
Date: 1.MAR.2014 17:26:58

2DH3 High channel



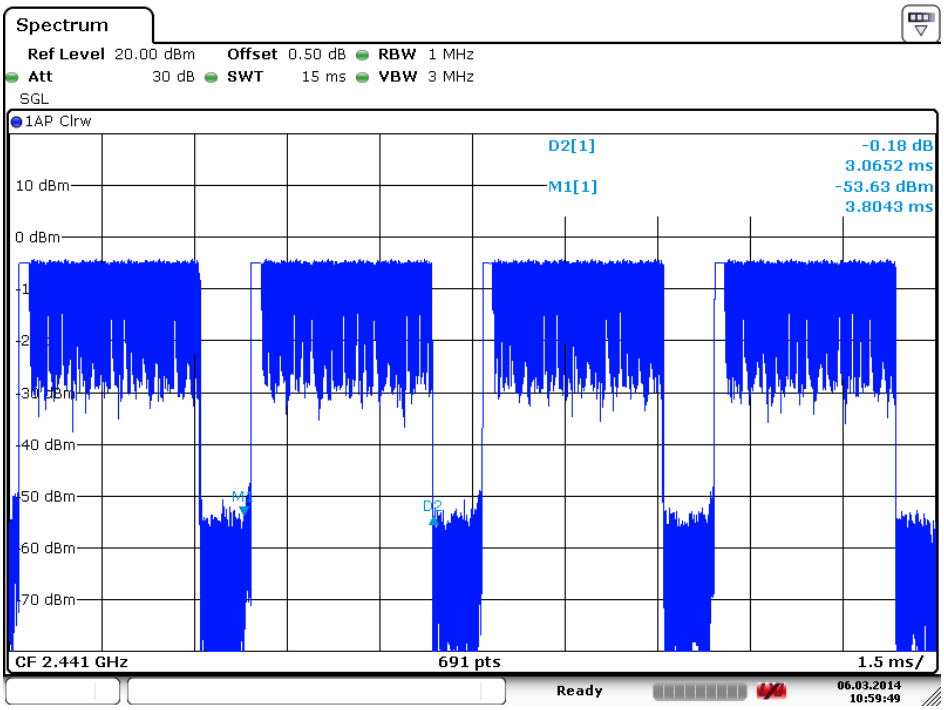
Date: 1.MAR.2014 17:26:13

2DH5 Low channel



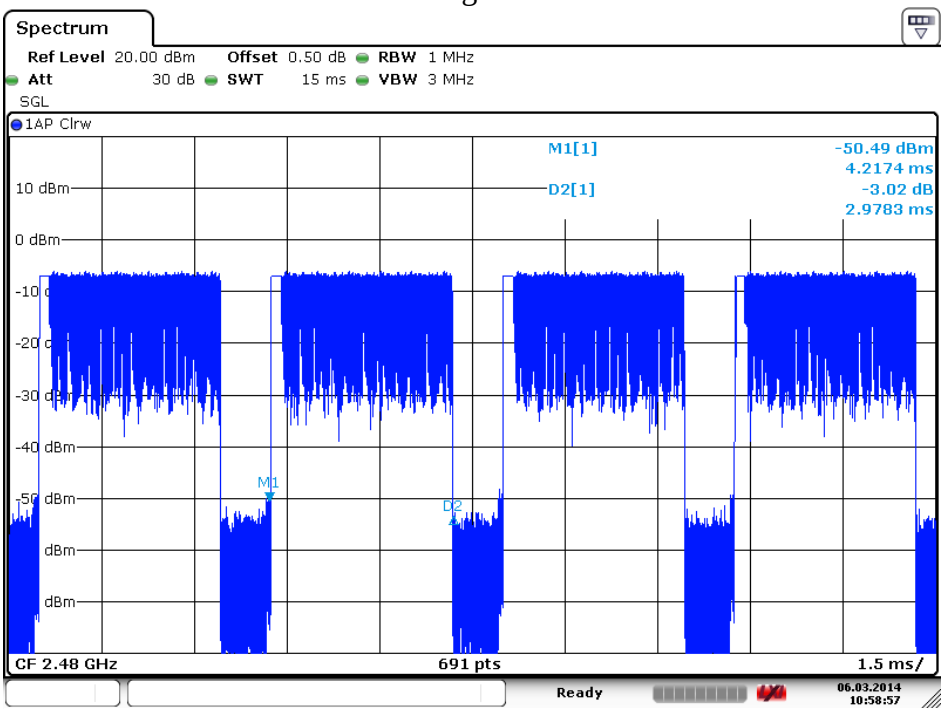
Date: 6.MAR.2014 11:01:07

2DH5 Middle channel



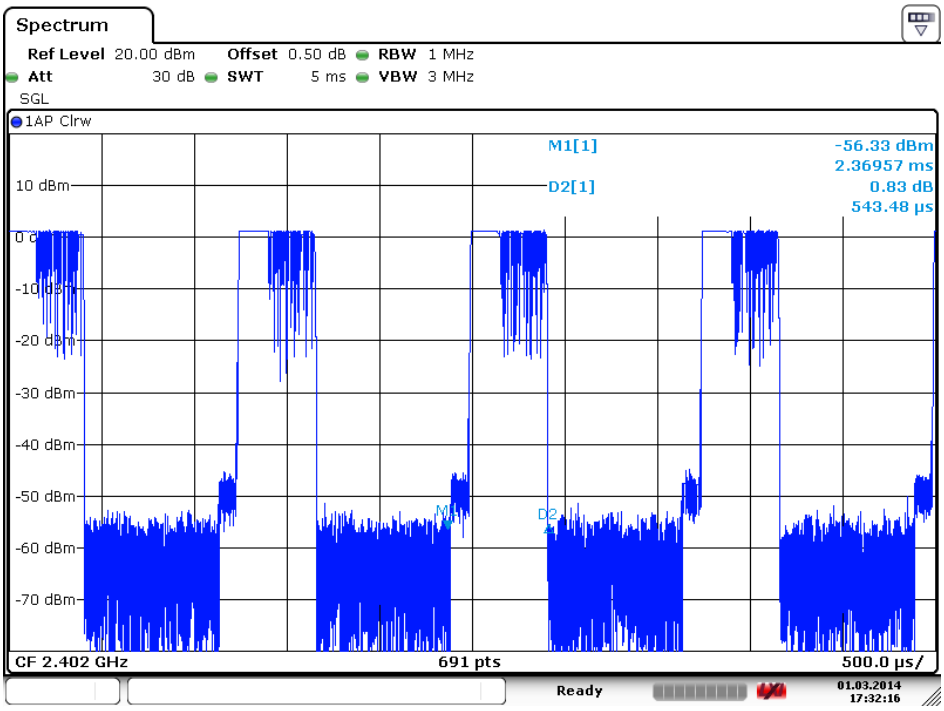
Date: 6.MAR.2014 10:59:49

2DH5 High channel



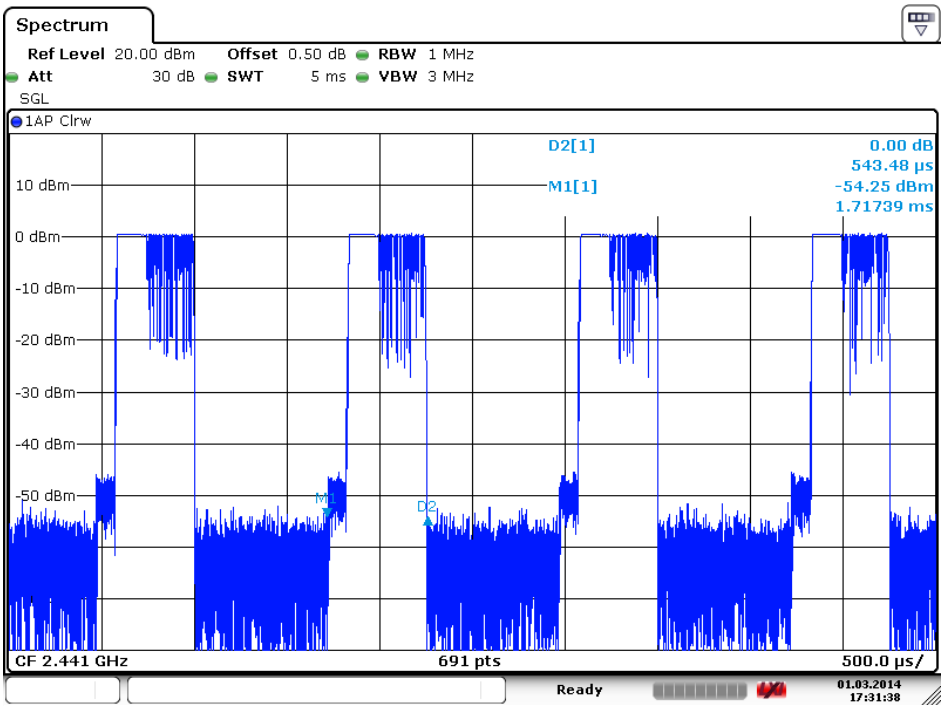
Date: 6.MAR.2014 10:58:57

3DH1 Low channel



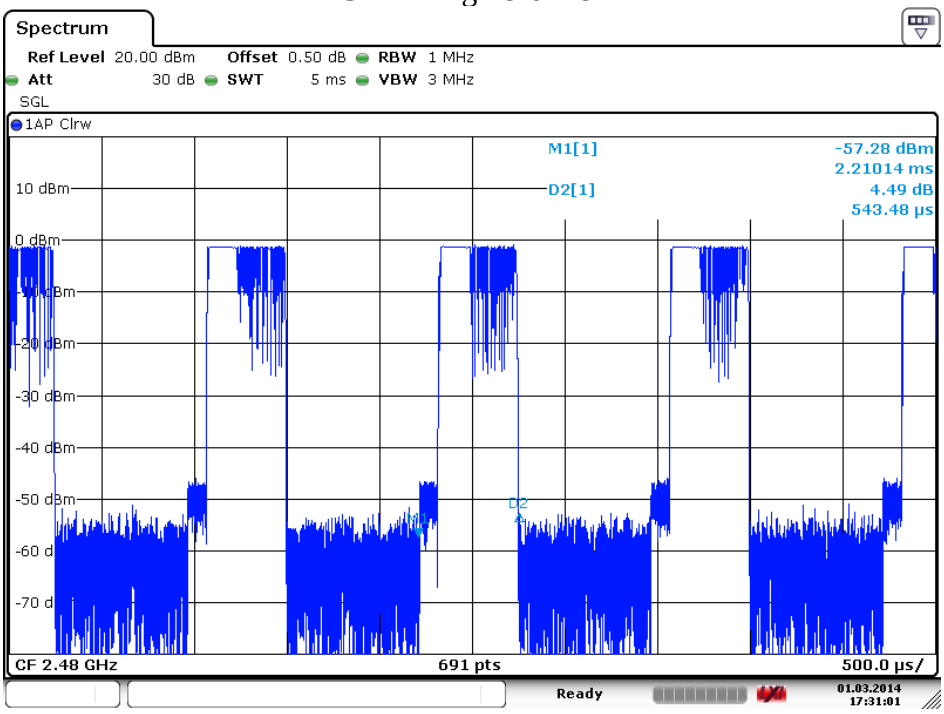
Date: 1.MAR.2014 17:32:16

3DH1 Middle channel



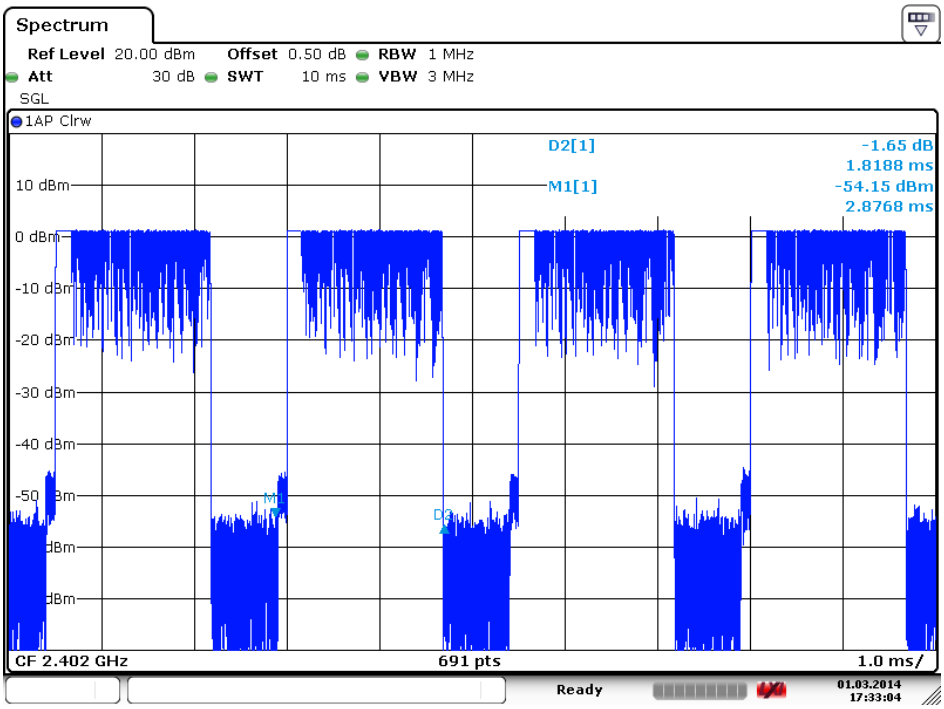
Date: 1.MAR.2014 17:31:38

3DH1 High channel



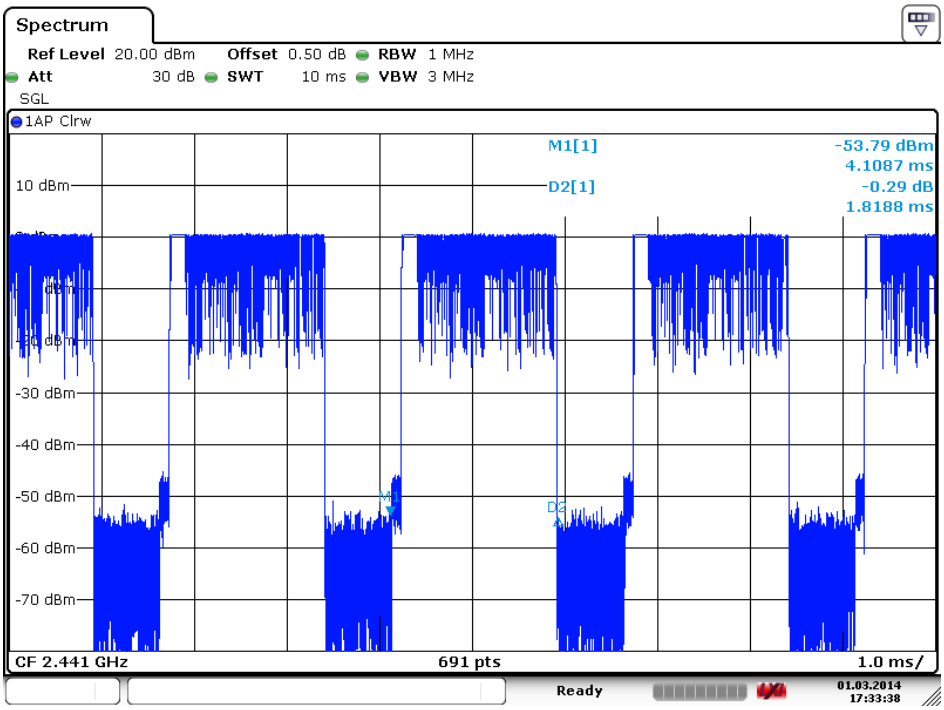
Date: 1.MAR.2014 17:31:01

3DH3 Low channel



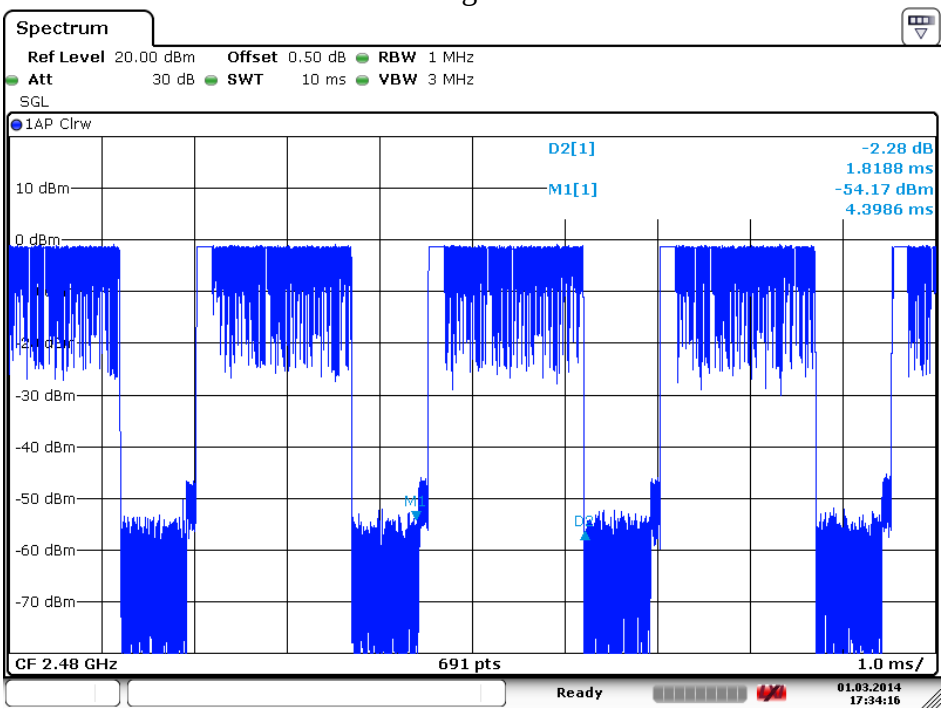
Date: 1.MAR.2014 17:33:04

3DH3 Middle channel



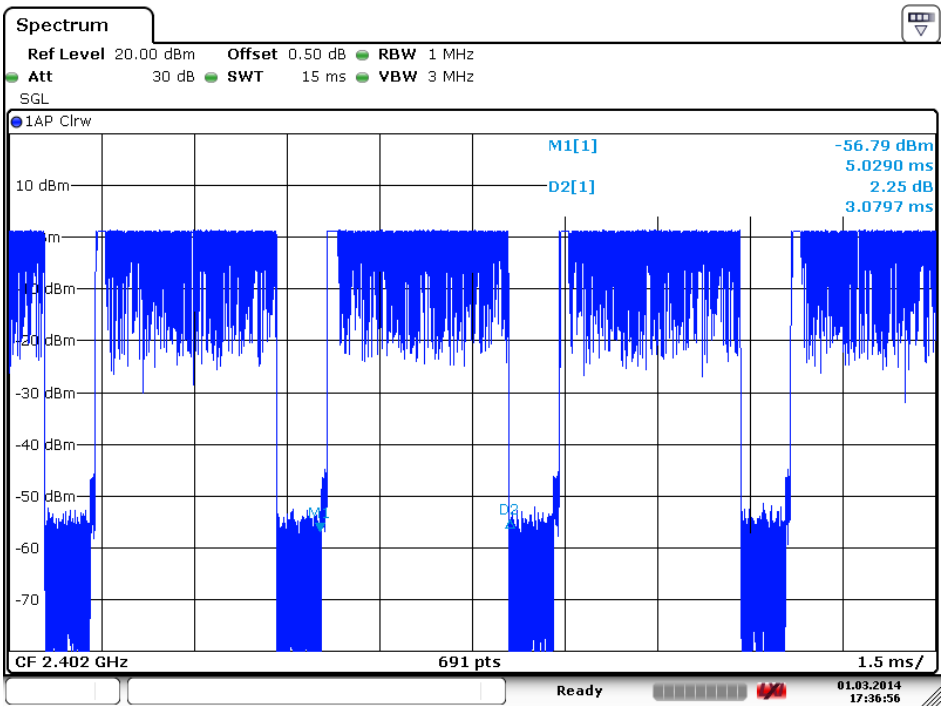
Date: 1.MAR.2014 17:33:38

3DH3 High channel



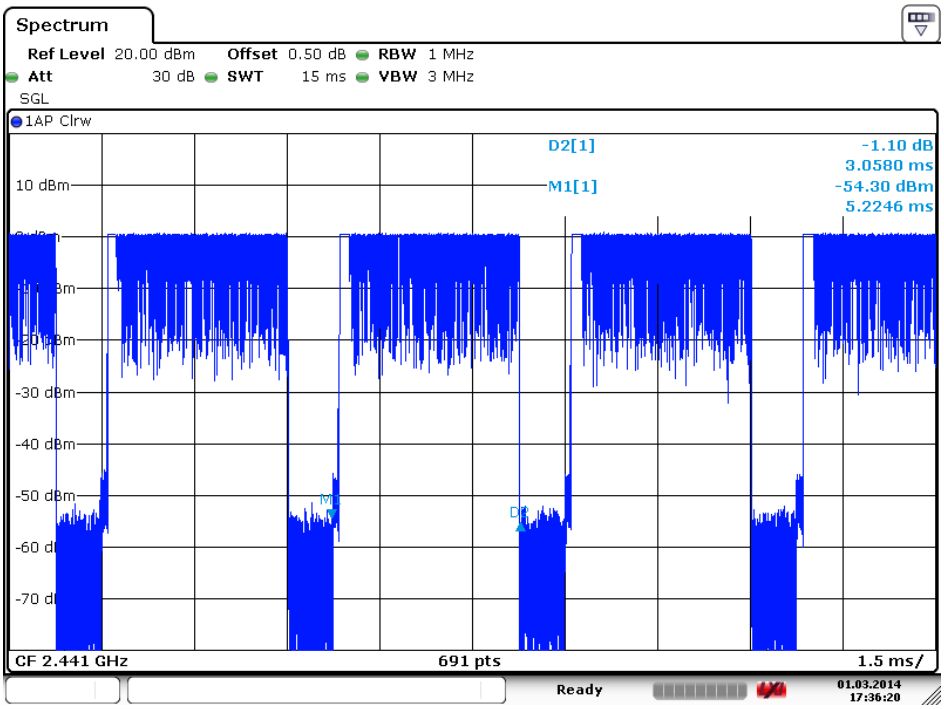
Date: 1.MAR.2014 17:34:16

3DH5 Low channel



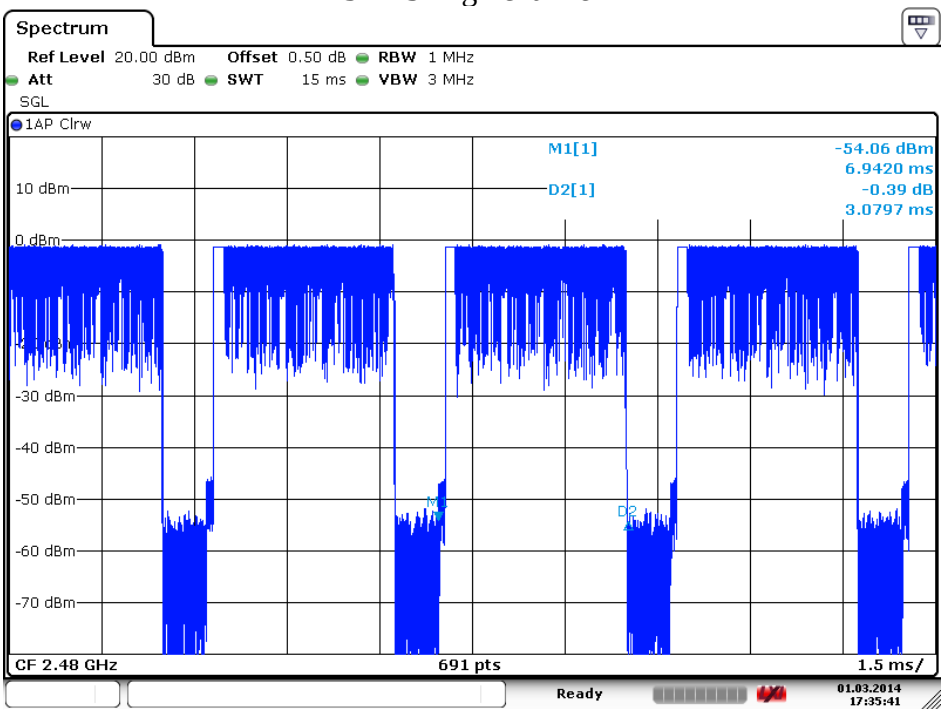
Date: 1.MAR.2014 17:36:56

3DH5 Middle channel



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

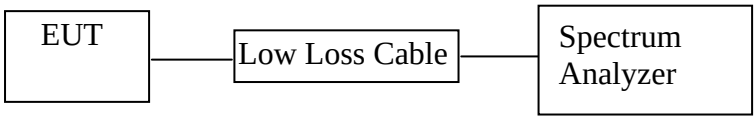
3DH5 High channel



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

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

∏/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

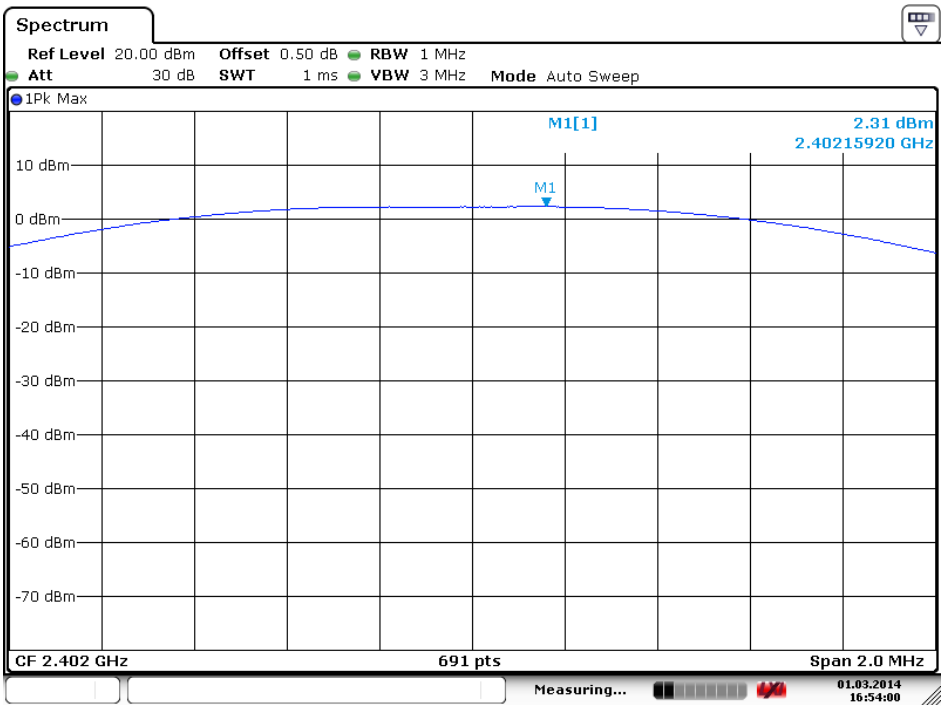
8DPSK Mode

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.

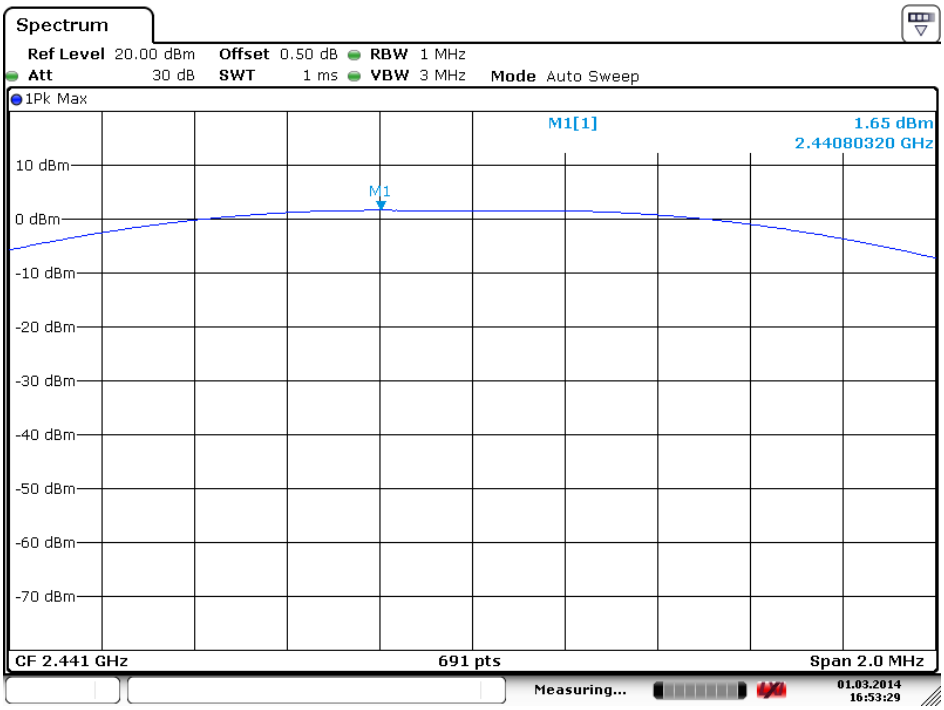
GFSK Mode

Low channel



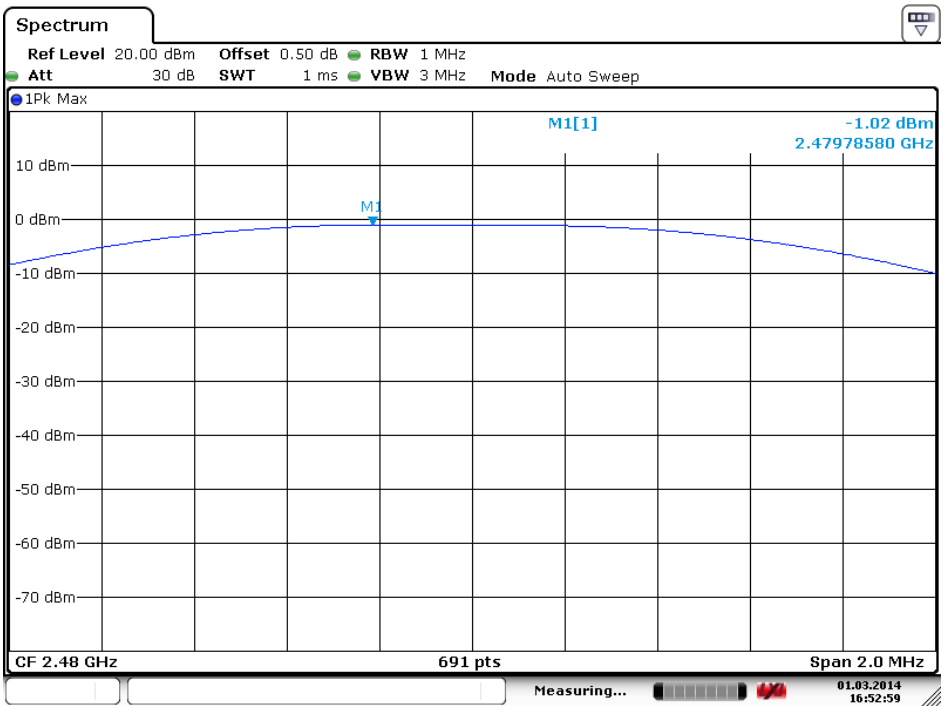
Date: 1.MAR.2014 16:54:00

Middle channel



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

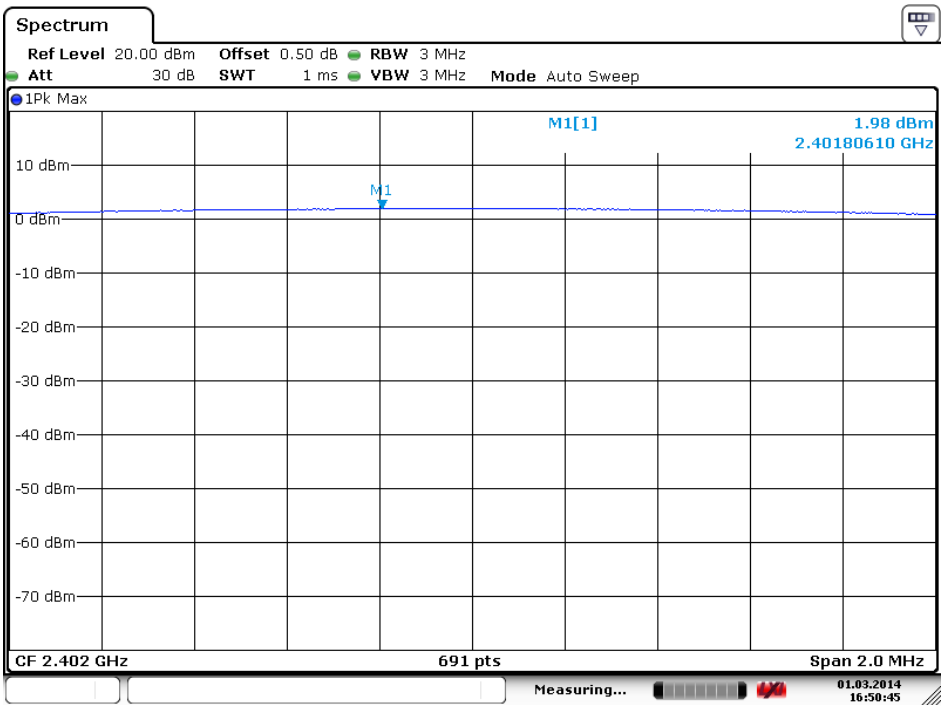
High channel



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

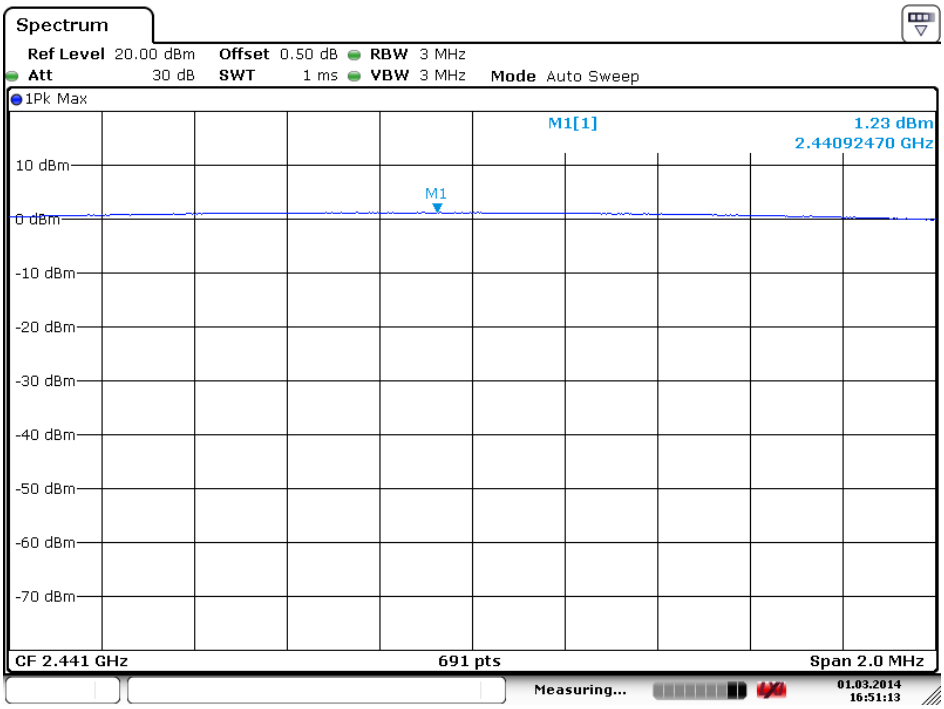
Π/4-DQPSK Mode

Low channel



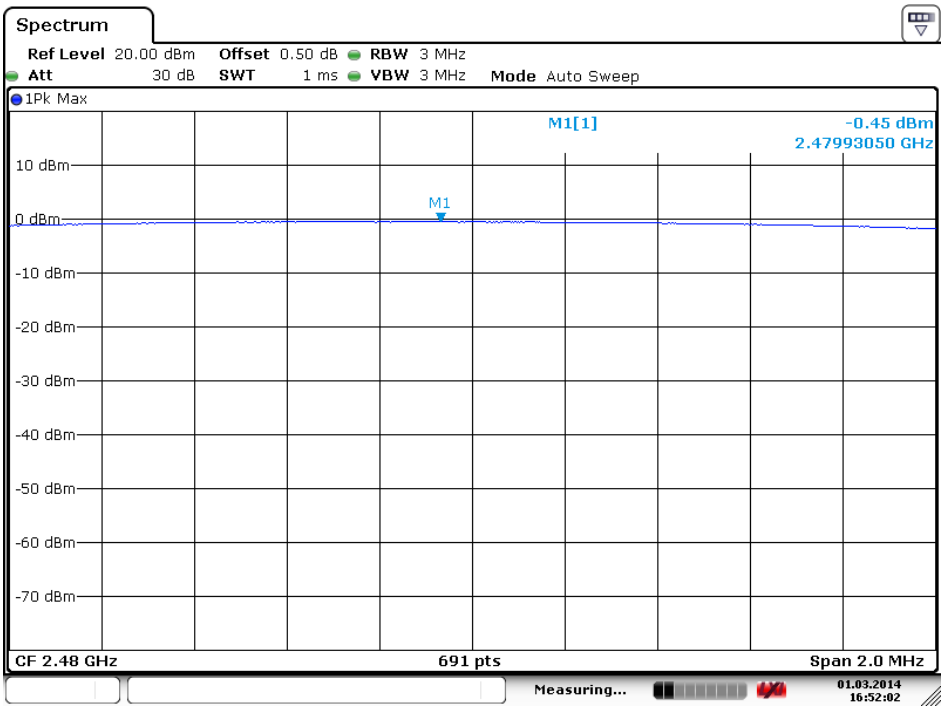
Date: 1.MAR.2014 16:50:45

Middle channel



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

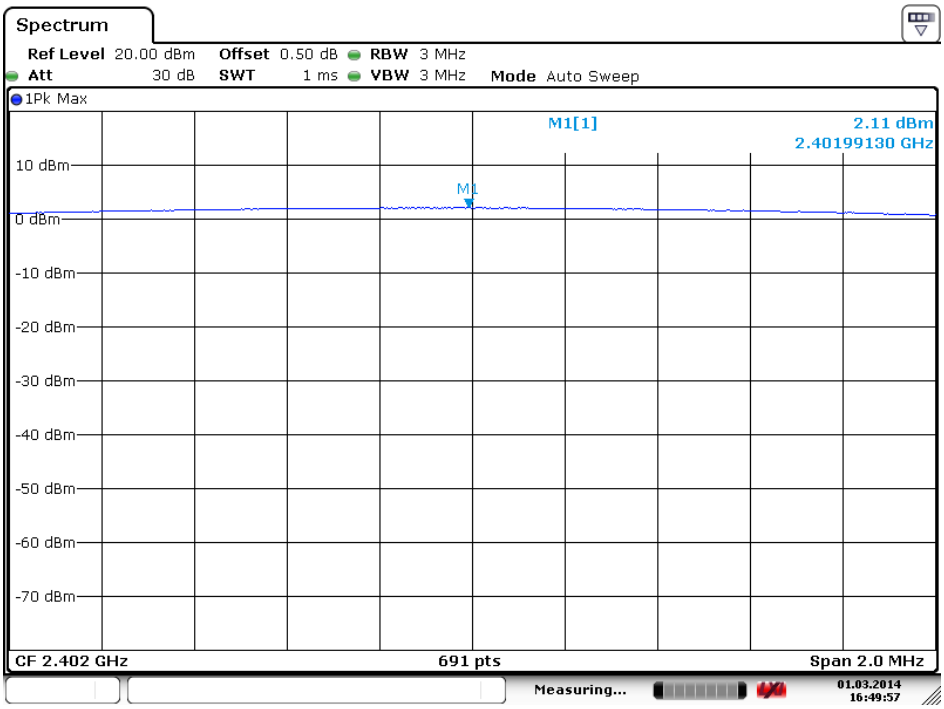
High channel



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

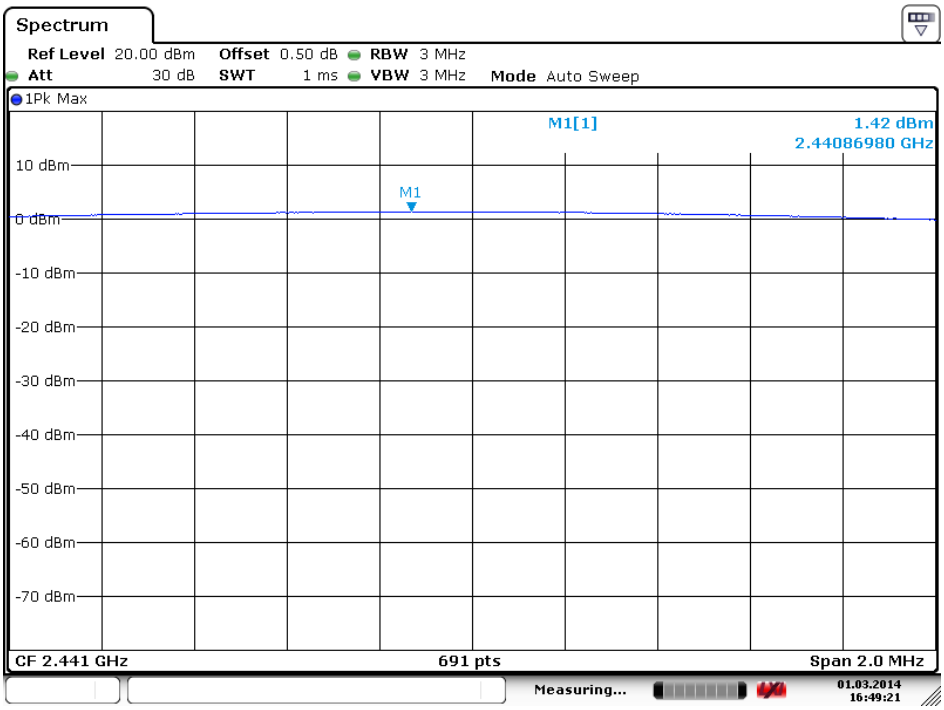
8DPSK Mode

Low channel



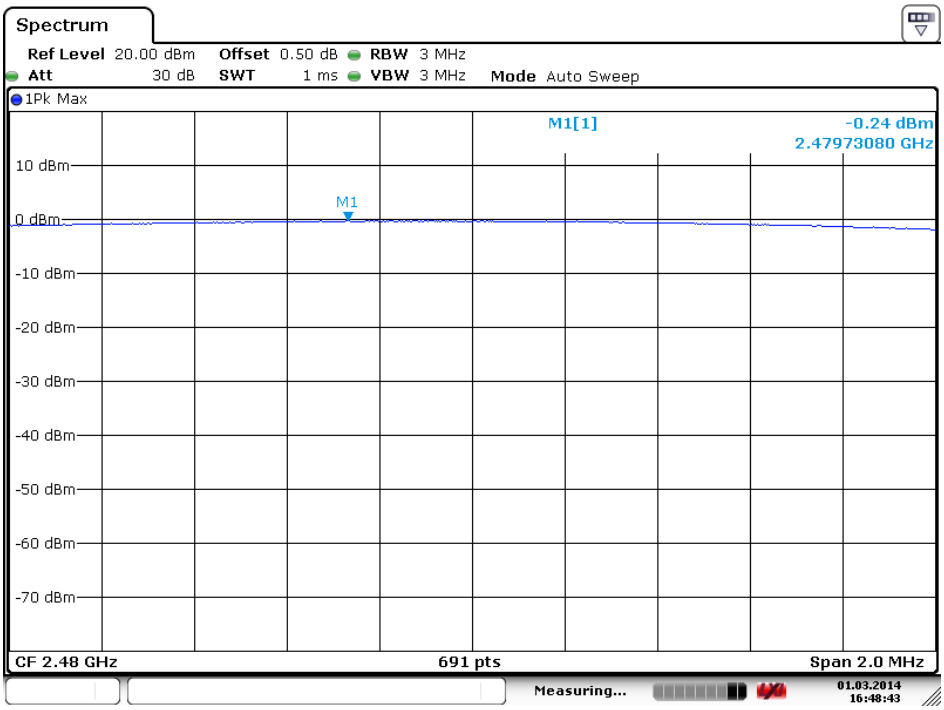
Date: 1.MAR.2014 16:49:57

Middle channel



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

High channel



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

10.RADIATED EMISSION TEST

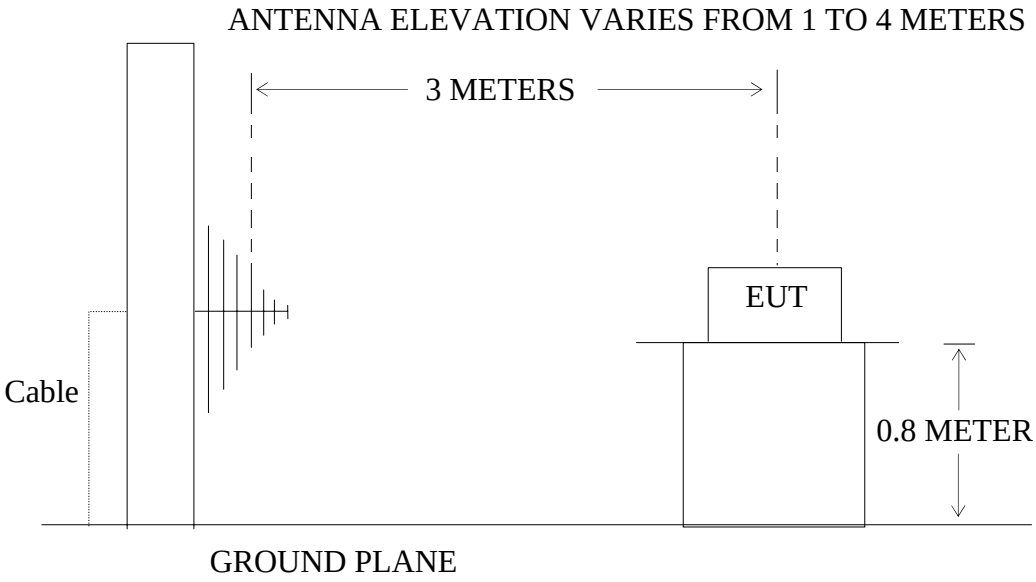
10.1.Block Diagram of Test Setup

10.1.1.Block diagram of connection between the EUT and simulators

EUT

(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).

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
[1]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			

[1]Until February 1, 1999, this restricted band shall be 0.490-0.510
[2]Above 38.6

(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.

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, Π/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.

Below 1GHz

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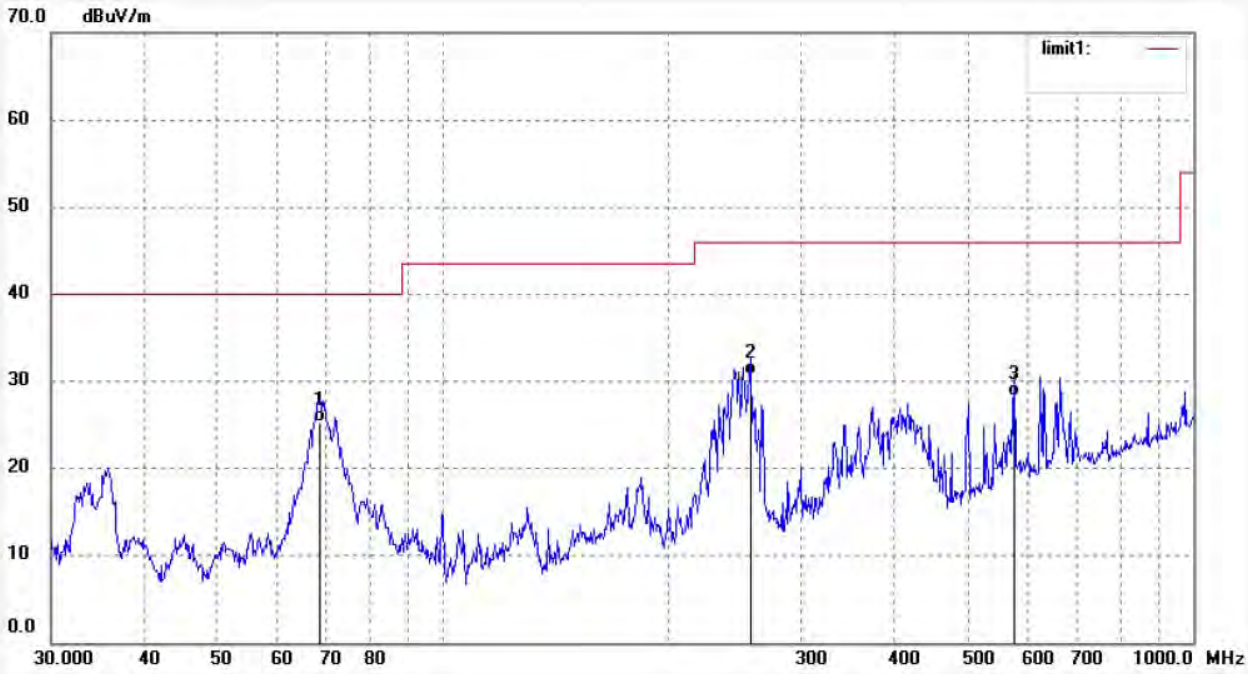
Job No.: alen #3544
Standard: FCC 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: TX 2402MHz
Model: CQL1412-B
Manufacturer: Sure Wave

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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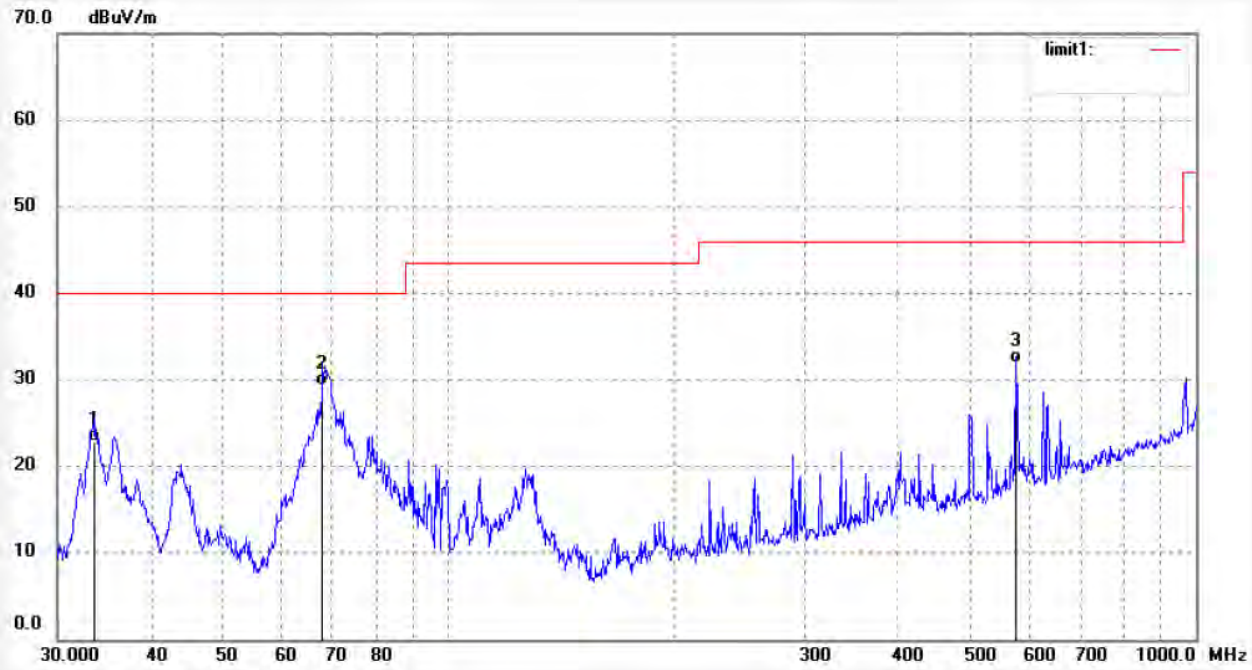
Job No.: alen #3545
Standard: FCC 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: TX 2402MHz
Model: CQL1412-B
Manufacturer: Sure Wave

Polarization: Vertical
Power Source: DC 5V
Date: 14/02/25/
Time: 8/33/50
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	33.5623	41.92	-19.01	22.91	40.00	-17.09	QP			
2	67.9128	50.51	-21.28	29.23	40.00	-10.77	QP			
3	574.6258	44.14	-12.27	31.87	46.00	-14.13	QP			

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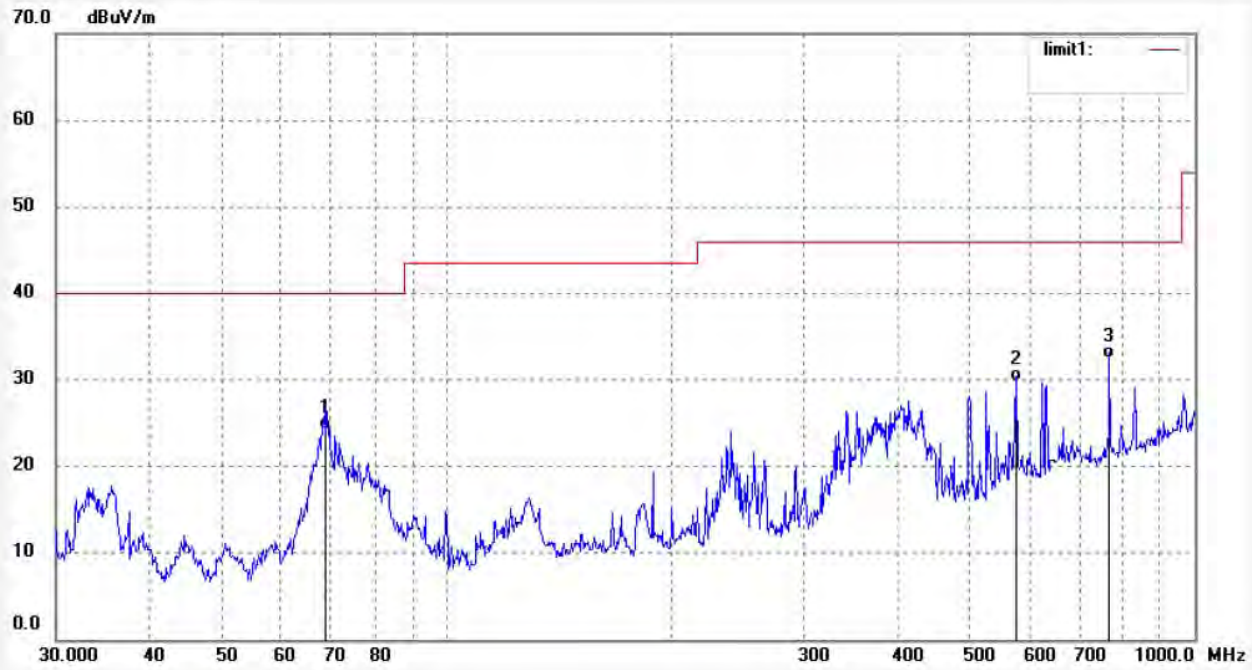
Job No.: alen #3547
Standard: FCC 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: TX 2441MHz
Model: CQL1412-B
Manufacturer: Sure Wave

Polarization: Horizontal
Power Source: DC 5V
Date: 14/02/25/
Time: 8/36/11
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	68.8721	45.57	-21.31	24.26	40.00	-15.74	QP			
2	576.6443	42.01	-12.21	29.80	46.00	-16.20	QP			
3	768.7481	40.78	-8.30	32.48	46.00	-13.52	QP			

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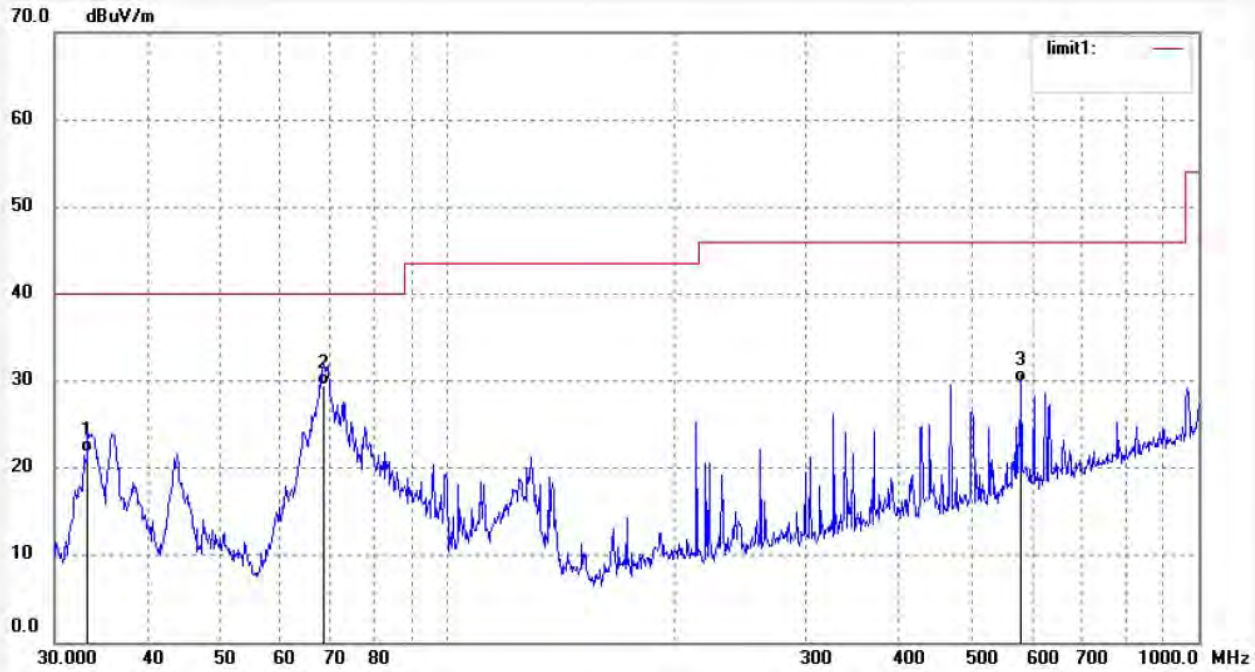
Job No.: alen #3546
Standard: FCC 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: TX 2441MHz
Model: CQL1412-B
Manufacturer: Sure Wave

Polarization: Vertical
Power Source: DC 5V
Date: 14/02/25/
Time: 8/34/35
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	33.2111	40.76	-18.90	21.86	40.00	-18.14	QP			
2	68.3907	50.87	-21.30	29.57	40.00	-10.43	QP			
3	580.7025	42.01	-12.11	29.90	46.00	-16.10	QP			

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Job No.: alen #3548
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

Polarization: Horizontal
Power Source: DC 5V
Date: 14/02/25/
Time: 8/37/08
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	68.8721	45.78	-21.31	24.47	40.00	-15.53	QP			
2	576.6443	40.02	-12.21	27.81	46.00	-18.19	QP			
3	752.7432	41.36	-8.55	32.81	46.00	-13.19	QP			

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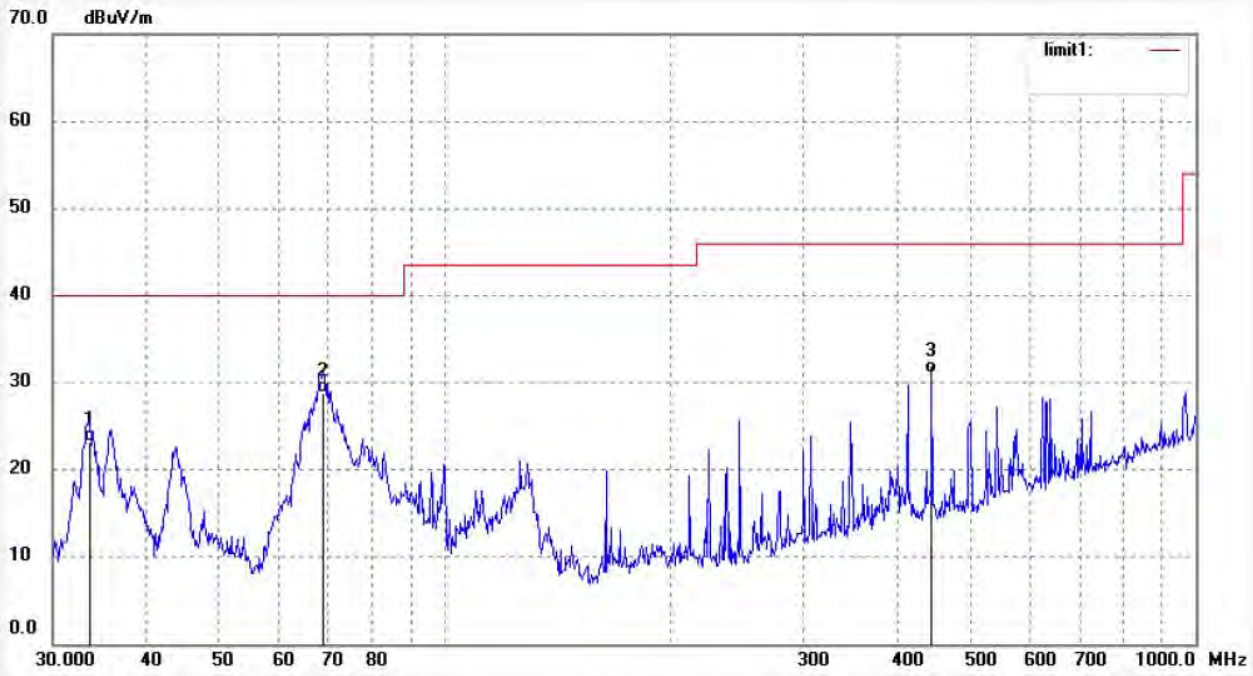
Job No.: alen #3549
Standard: FCC 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: TX 2480MHz
Model: CQL1412-B
Manufacturer: Sure Wave

Polarization: Vertical
Power Source: DC 5V
Date: 14/02/25/
Time: 8/37/54
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	33.5623	42.25	-19.01	23.24	40.00	-16.76	QP			
2	68.8721	50.18	-21.31	28.87	40.00	-11.13	QP			
3	444.8514	45.78	-14.78	31.00	46.00	-15.00	QP			

Above 1GHz

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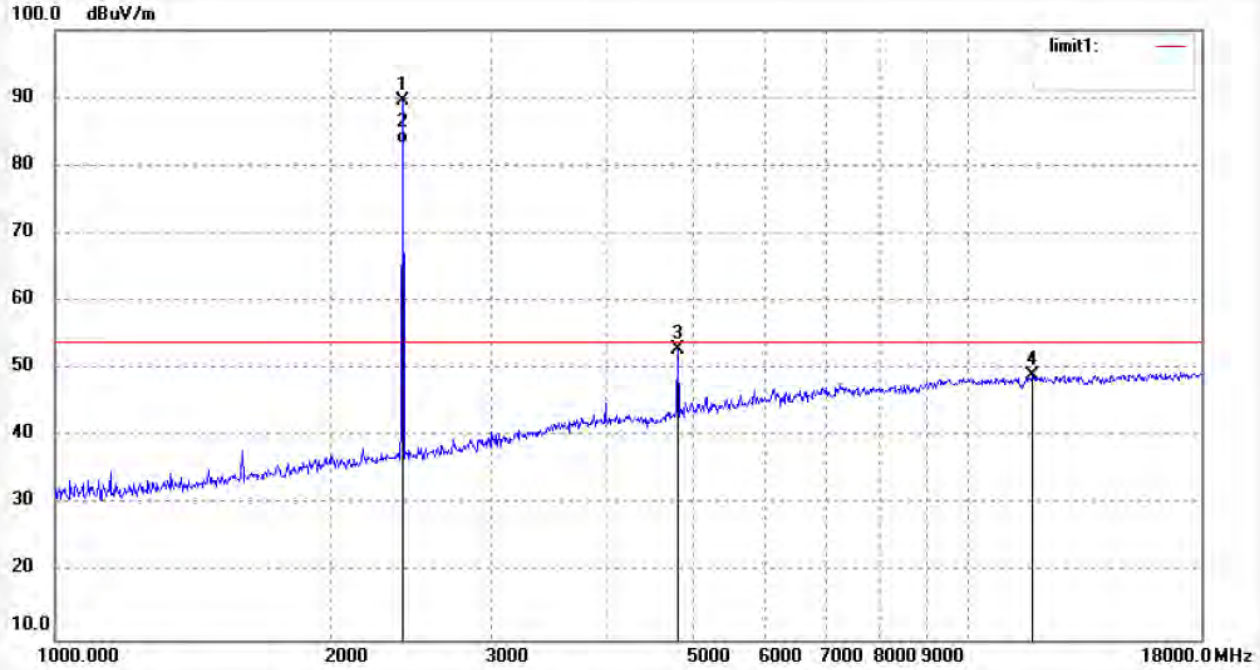
Job No.: alen #3597
Standard: FCC 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: TX 2402MHz
Model: CQL1412-B
Manufacturer: Sure Wave

Polarization: Horizontal
Power Source: DC 5V
Date: 14/03/01/
Time: 9/39/04
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	2401.753	96.29	-6.76	89.53	114.00	35.53	peak			
2	2401.753	90.02	-6.76	83.26	94.00	29.26	AVG			
3	4804.110	54.51	-1.59	52.92	54.00	-1.08	peak			
4	11735.245	42.89	6.25	49.14	54.00	-4.86	peak			

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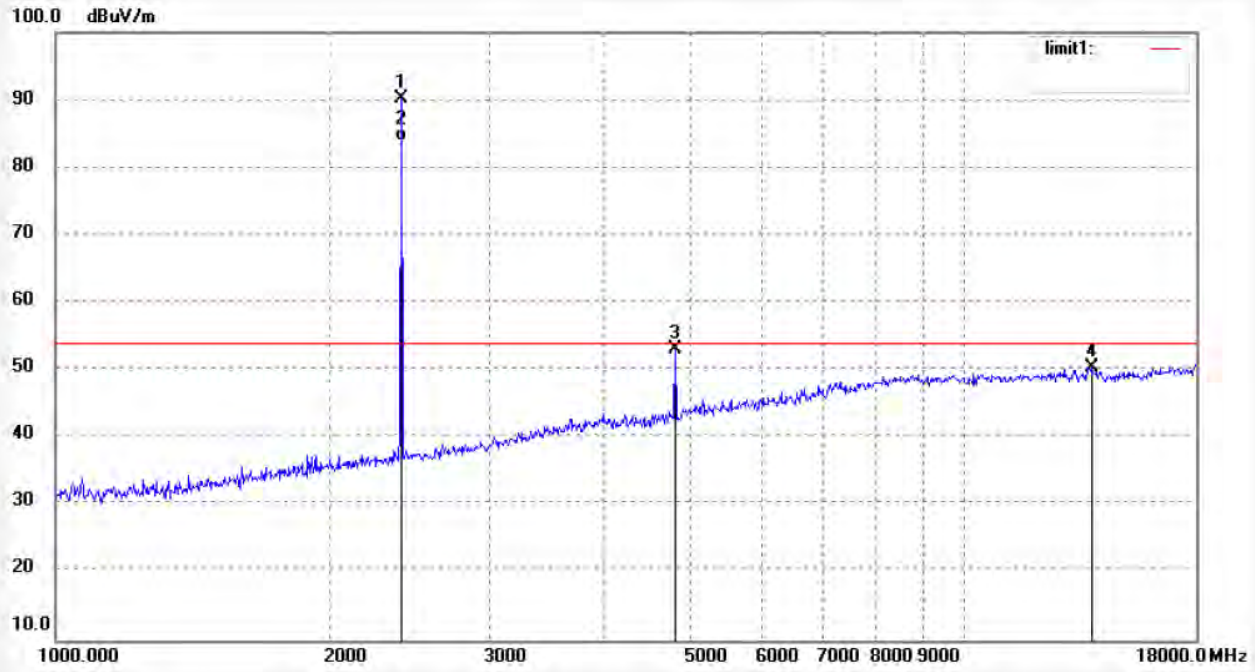
Job No.: alen #3596
Standard: FCC 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: TX 2402MHz
Model: CQL1412-B
Manufacturer: Sure Wave

Polarization: Vertical
Power Source: DC 5V
Date: 14/03/01/
Time: 9/37/17
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	2401.753	97.03	-6.76	90.27	114.00	36.27	peak			
2	2401.753	90.58	-6.76	83.82	94.00	29.82	AVG			
3	4804.110	54.64	-1.59	53.05	54.00	-0.95	peak			
4	13797.088	40.50	9.87	50.37	54.00	-3.63	peak			

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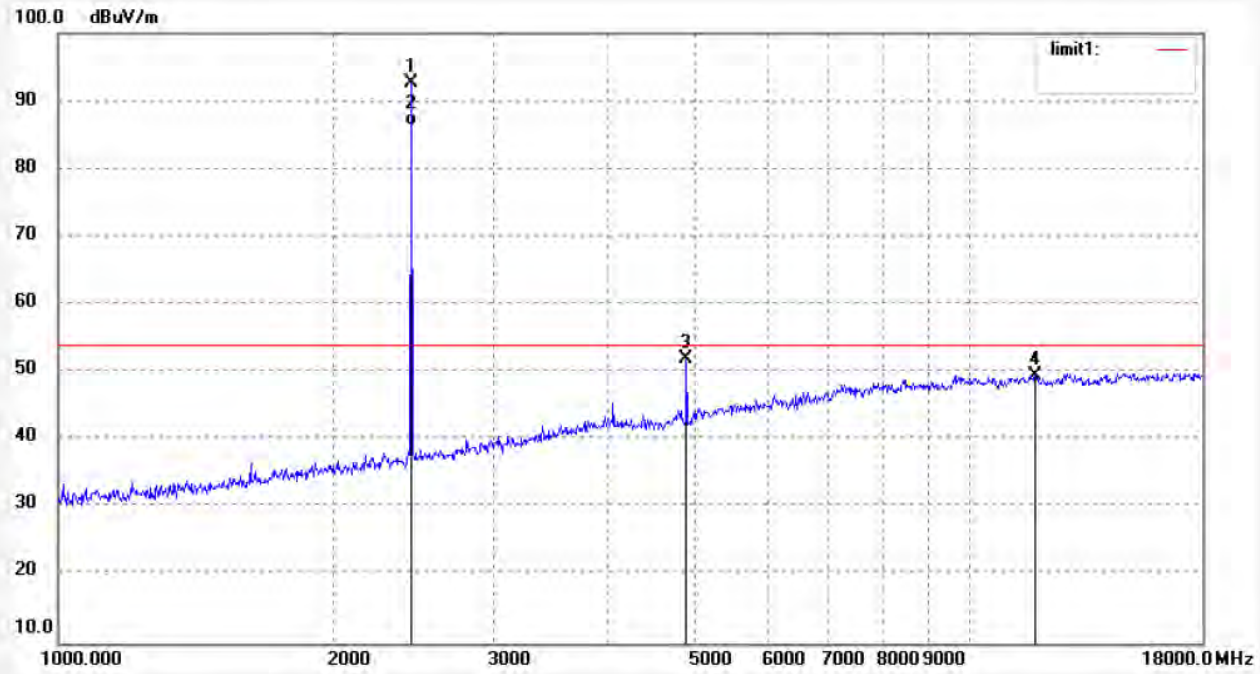
Job No.: alen #3598
Standard: FCC 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: TX 2441MHz
Model: CQL1412-B
Manufacturer: Sure Wave

Polarization: Horizontal
Power Source: DC 5V
Date: 14/03/01/
Time: 9/42/01
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	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			
3	4888.151	53.33	-1.33	52.00	54.00	-2.00	peak			
4	11803.280	43.28	6.32	49.60	54.00	-4.40	peak			

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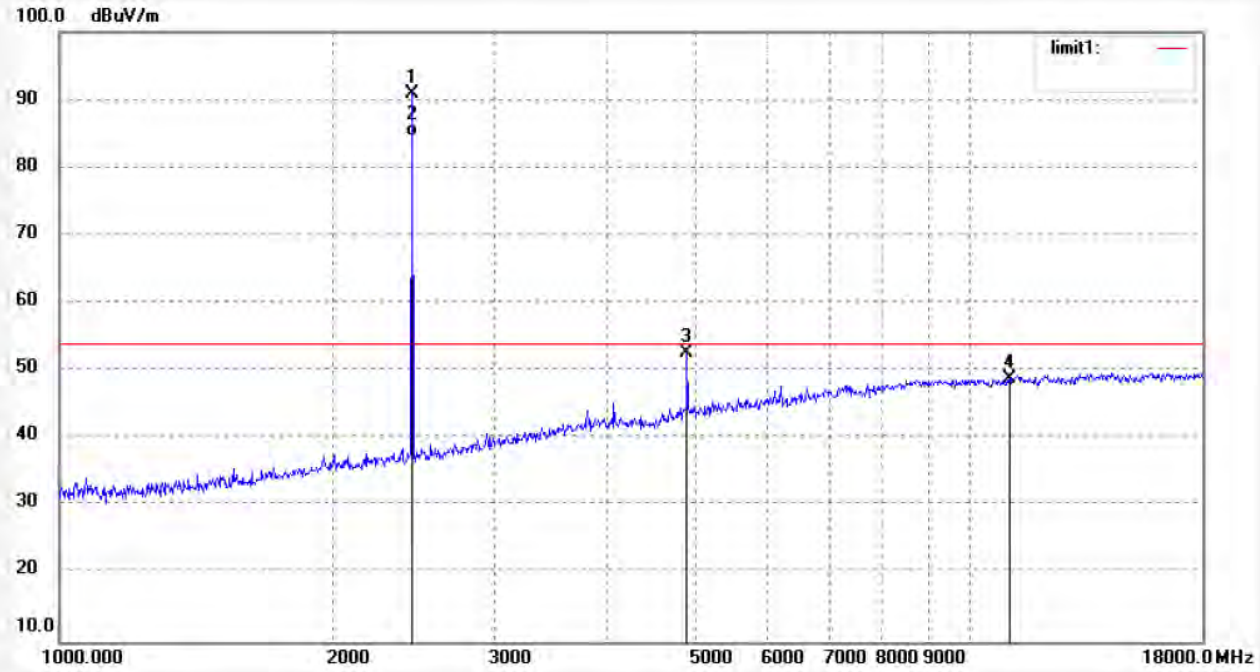
Job No.: alen #3599
Standard: FCC 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: TX 2441MHz
Model: CQL1412-B
Manufacturer: Sure Wave

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			

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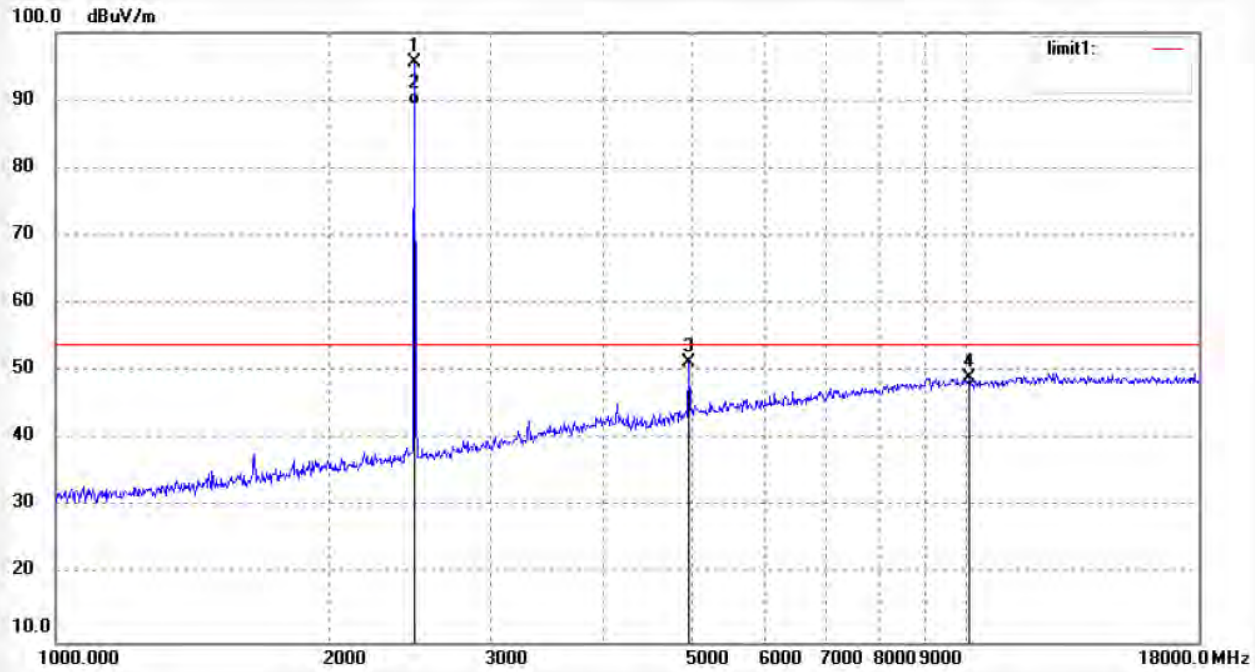
Job No.: alen #3601
Standard: FCC 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: TX 2480MHz
Model: CQL1412-B
Manufacturer: Sure Wave

Polarization: Horizontal
Power Source: DC 5V
Date: 14/03/01/
Time: 9/47/56
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	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			
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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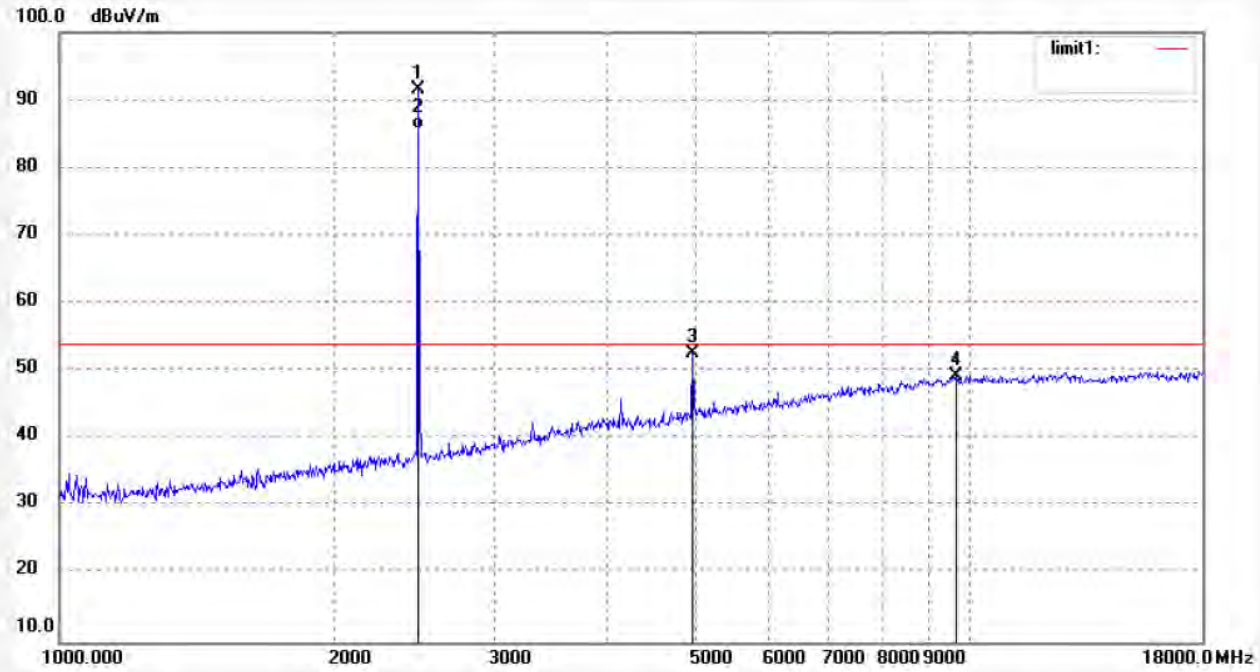
Job No.: alen #3600
Standard: FCC 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: TX 2480MHz
Model: CQL1412-B
Manufacturer: Sure Wave

Polarization: Vertical
Power Source: DC 5V
Date: 14/03/01/
Time: 9/46/14
Engineer Signature:
Distance: 3m

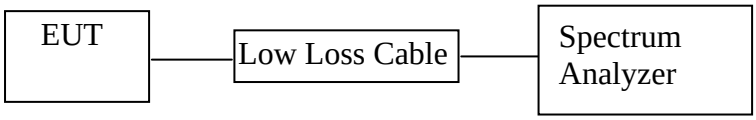
Note: Report No:ATE20140163



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.310	98.23	-6.56	91.67	114.00	37.67	peak			
2	2480.310	92.24	-6.56	85.68	94.00	31.68	AVG			
3	4959.307	53.87	-1.12	52.75	54.00	-1.25	peak			
4	9669.164	44.24	4.97	49.21	54.00	-4.79	peak			

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.

11.5.Test Procedure

11.5.1.The transmitter output was connected to the spectrum analyzer via a low loss cable.

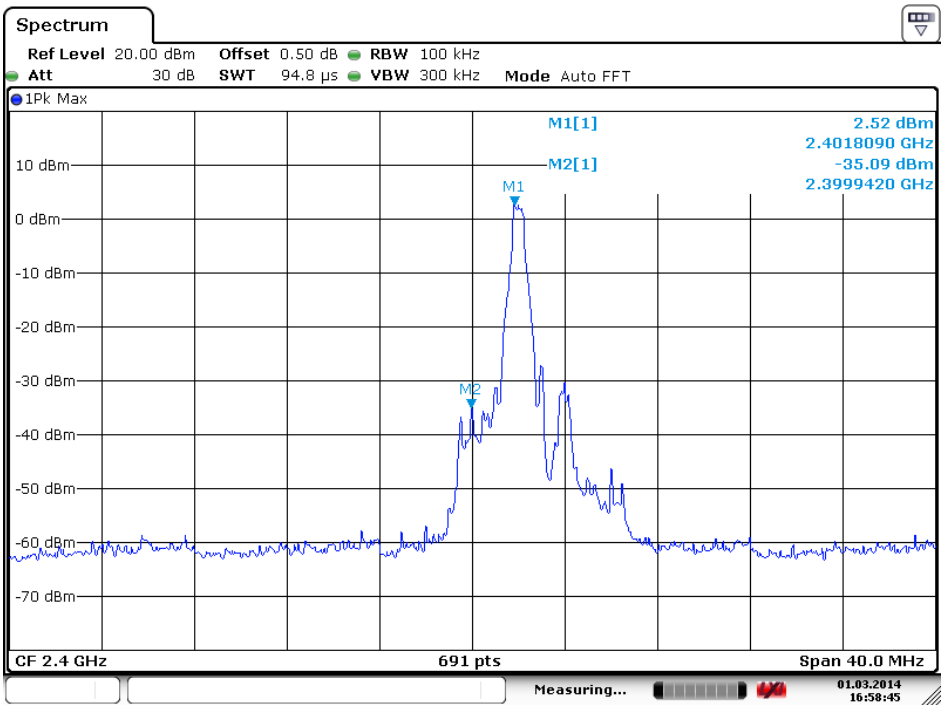
11.5.2.Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz with convenient frequency span including 100 kHz bandwidth from band edge.

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
Π/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



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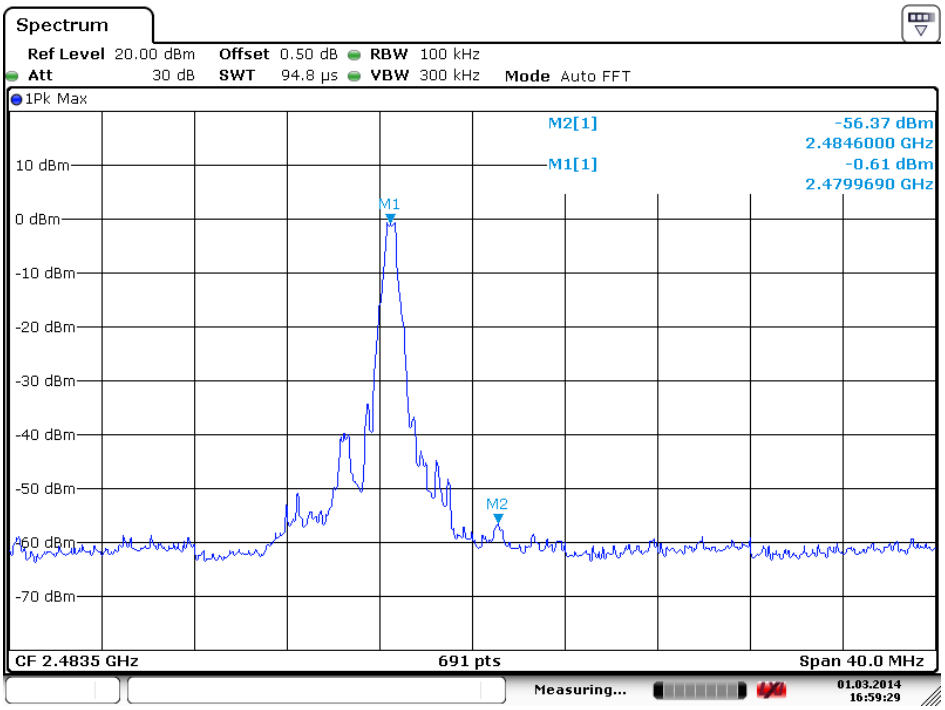

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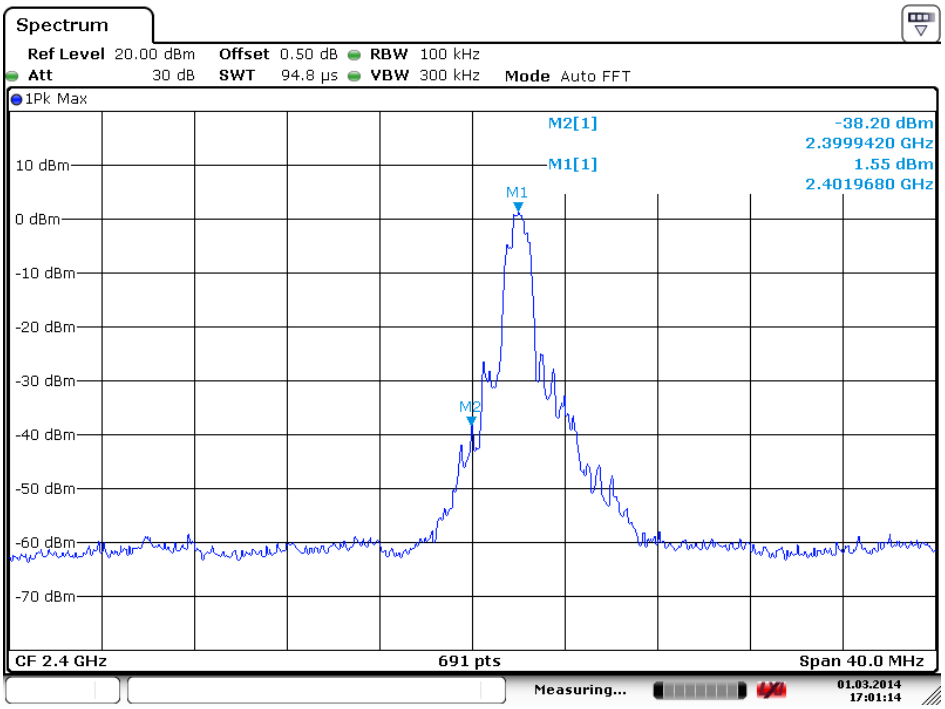
Π/4-DQPSK Mode



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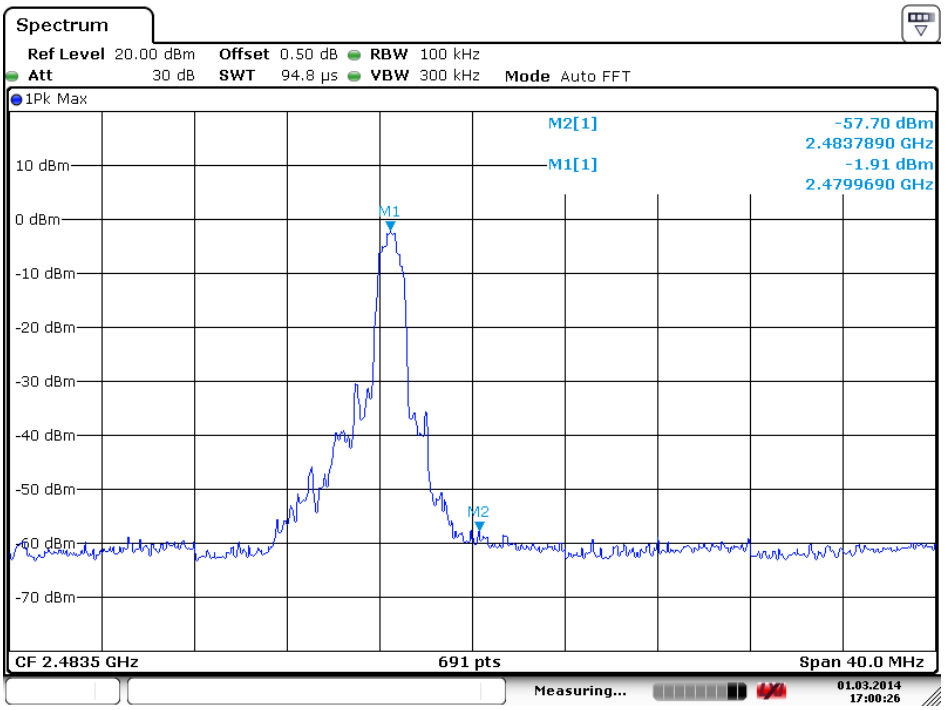
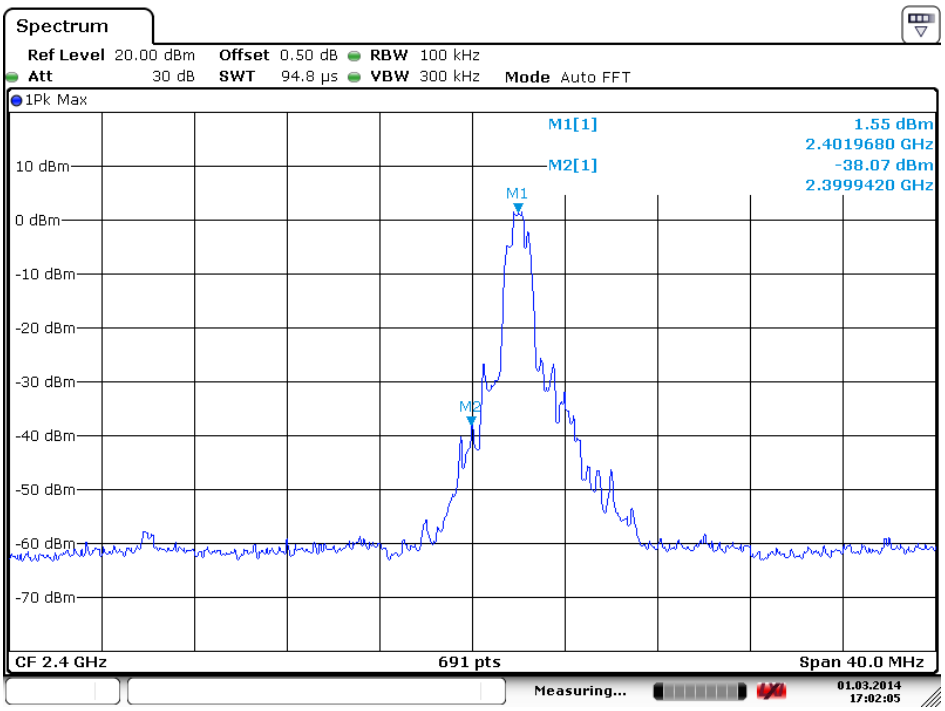


Date: 1.MAR.2014 17:00:26

8DPSK



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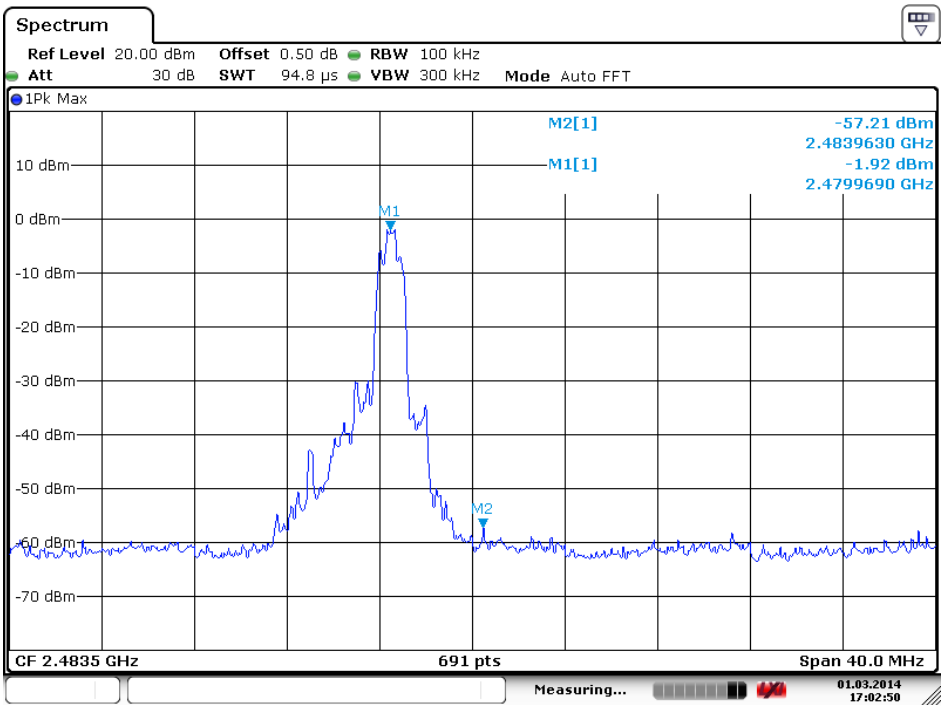

Date: 1.MAR.2014 17:02:50

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
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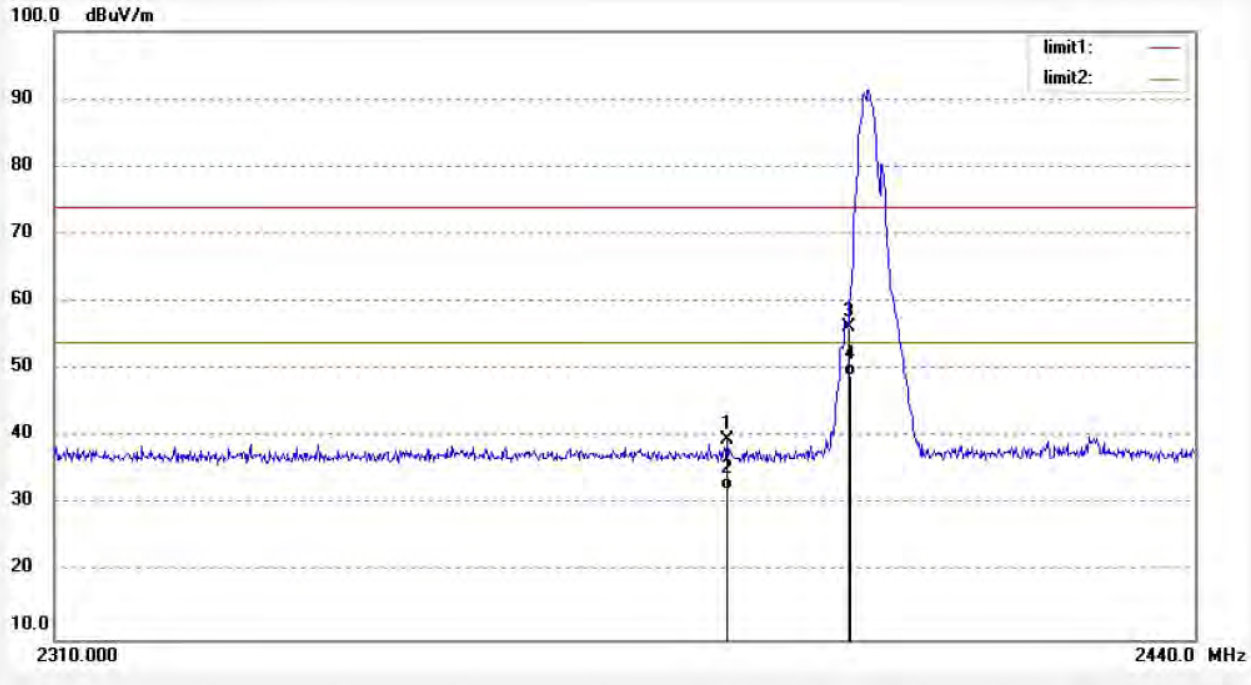
Fax:+86-0755-26503396

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

Polarization: Horizontal
Power Source: DC 5V
Date: 14/03/01/
Time: 9/53/59
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	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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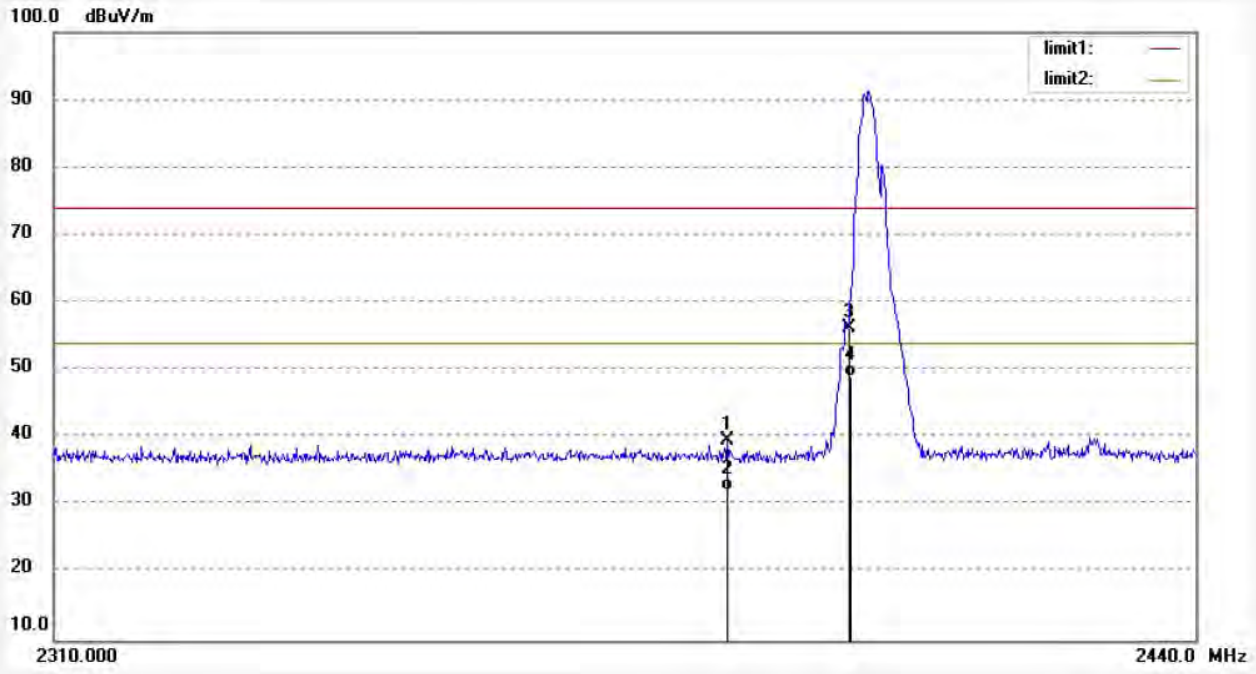
Job No.: alen #3604
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: TX 2402MHz(GFSK)
Model: CQL1412-B
Manufacturer: Sure Wave

Polarization: Vertical
Power Source: DC 5V
Date: 14/03/01/
Time: 9/53/59
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	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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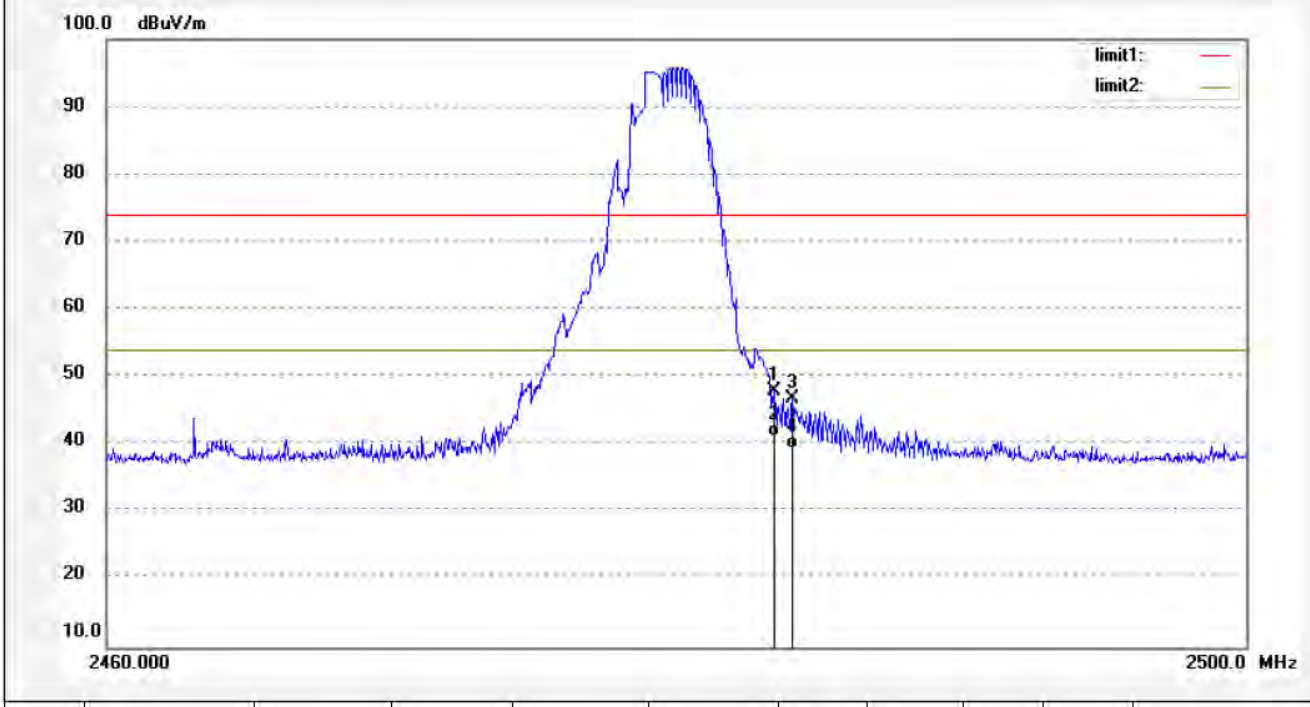
Job No.: alen #3602
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: TX 2480MHz(GFSK)
Model: CQL1412-B
Manufacturer: Sure Wave

Polarization: Horizontal
Power Source: DC 5V
Date: 14/03/01/
Time: 9/50/41
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	2483.500	54.49	-6.54	47.95	74.00	-26.05	peak			
2	2483.500	47.68	-6.54	41.14	54.00	-12.86	AVG			
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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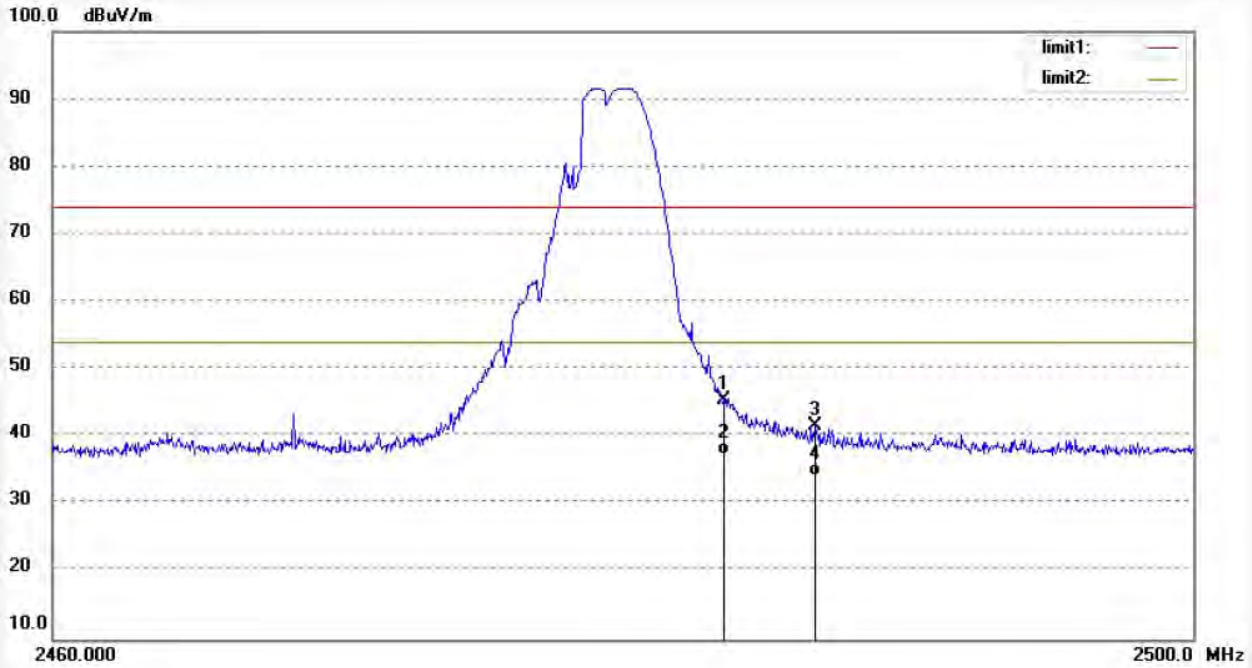
Job No.: alen #3603
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: TX 2480MHz(GFSK)
Model: CQL1412-B
Manufacturer: Sure Wave

Polarization: Vertical
Power Source: DC 5V
Date: 14/03/01/
Time: 9/52/11
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	2483.500	51.98	-6.54	45.44	74.00	-28.56	peak			
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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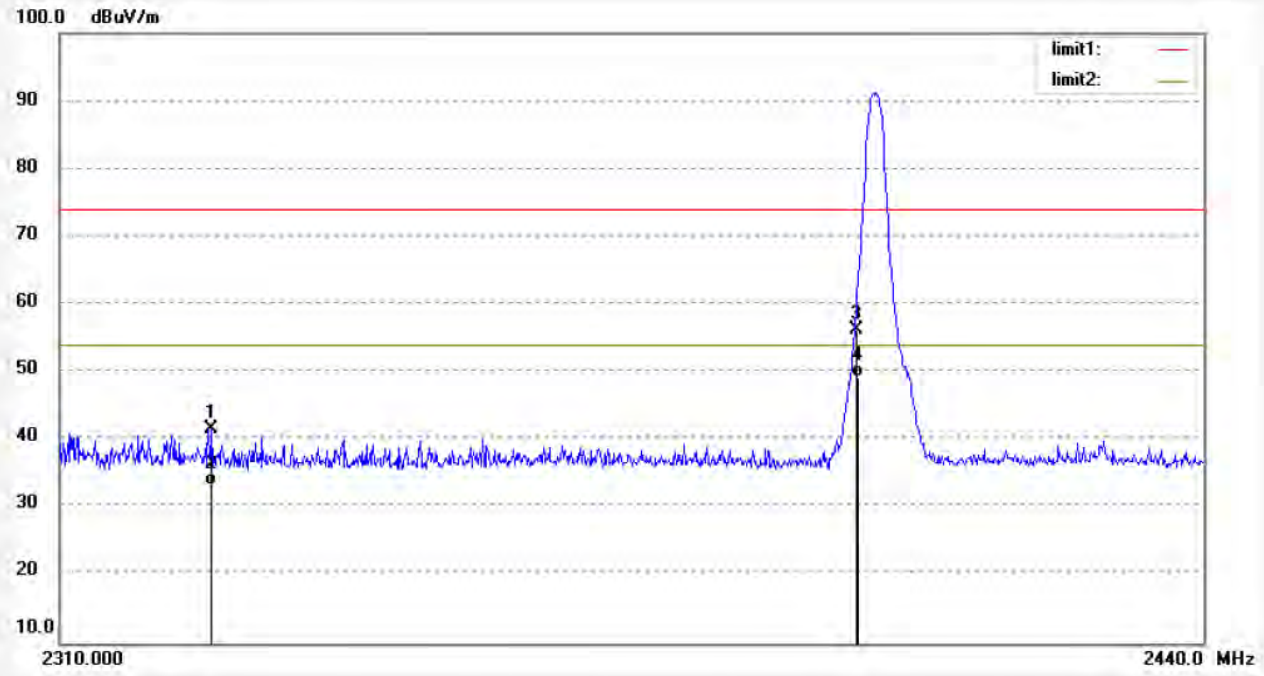
Job No.: alen #3626
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: TX 2402MHz(pi/4DQPSK)
Model: CQL1412-B
Manufacturer: Sure Wave

Polarization: Horizontal
Power Source: DC 5V
Date: 14/03/04/
Time: 9/05/12
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	2326.900	48.65	-6.95	41.70	74.00	-32.30	peak			
2	2326.900	40.35	-6.95	33.40	54.00	-20.60	AVG			
3	2400.000	63.01	-6.76	56.25	74.00	-17.75	peak			
4	2400.000	56.10	-6.76	49.34	54.00	-4.66	AVG			

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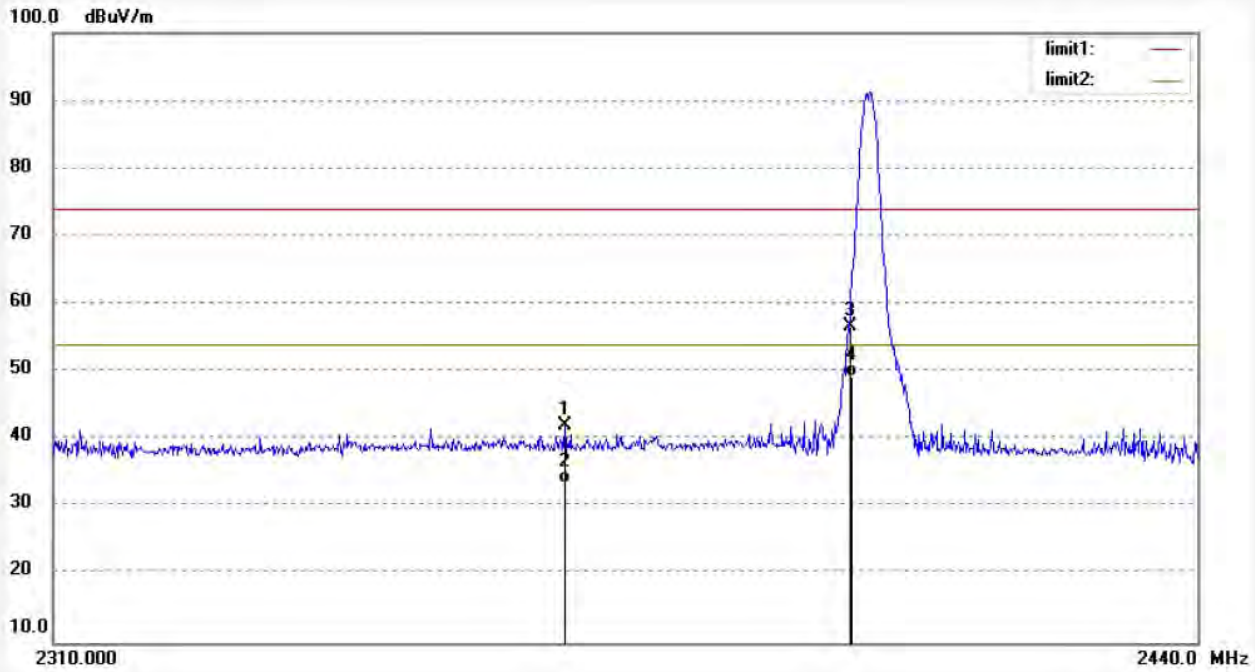
Job No.: alen #3625
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: TX 2402MHz(pi/4DQPSK)
Model: CQL1412-B
Manufacturer: Sure Wave

Polarization: Vertical
Power Source: DC 5V
Date: 14/03/04/
Time: 9/04/05
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	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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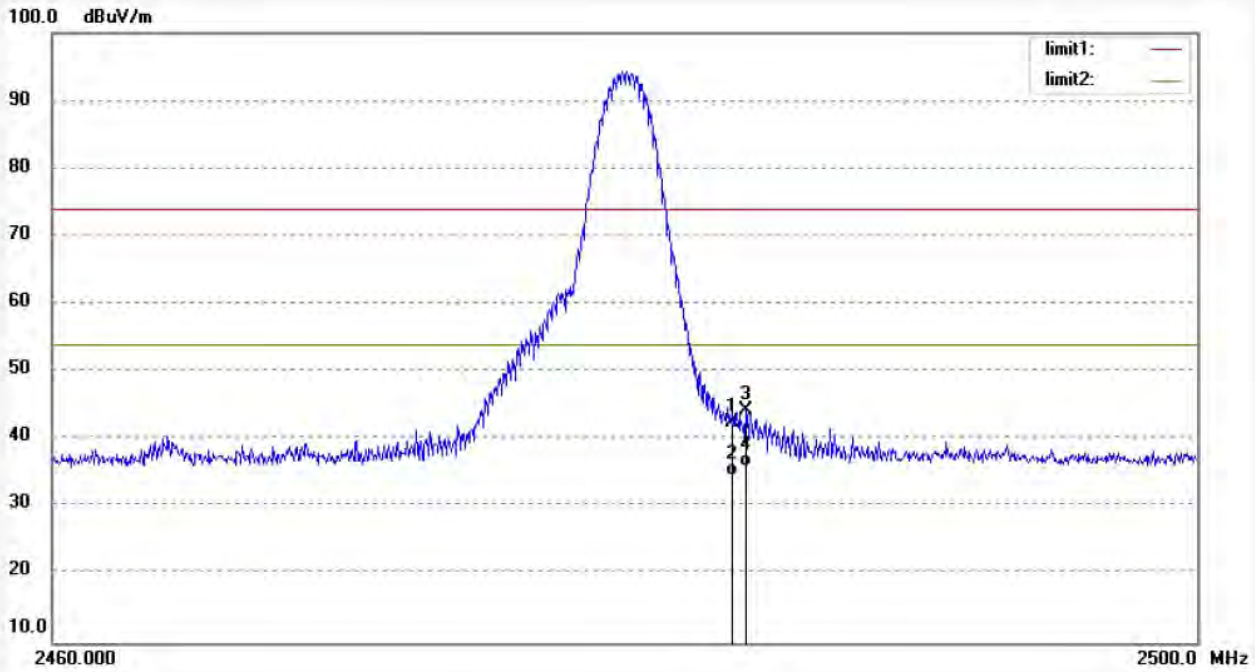
Job No.: alen #3627
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: TX 2480MHz(pi/4DQPSK)
Model: CQL1412-B
Manufacturer: Sure Wave

Polarization: Horizontal
Power Source: DC 5V
Date: 14/03/04/
Time: 9/06/39
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	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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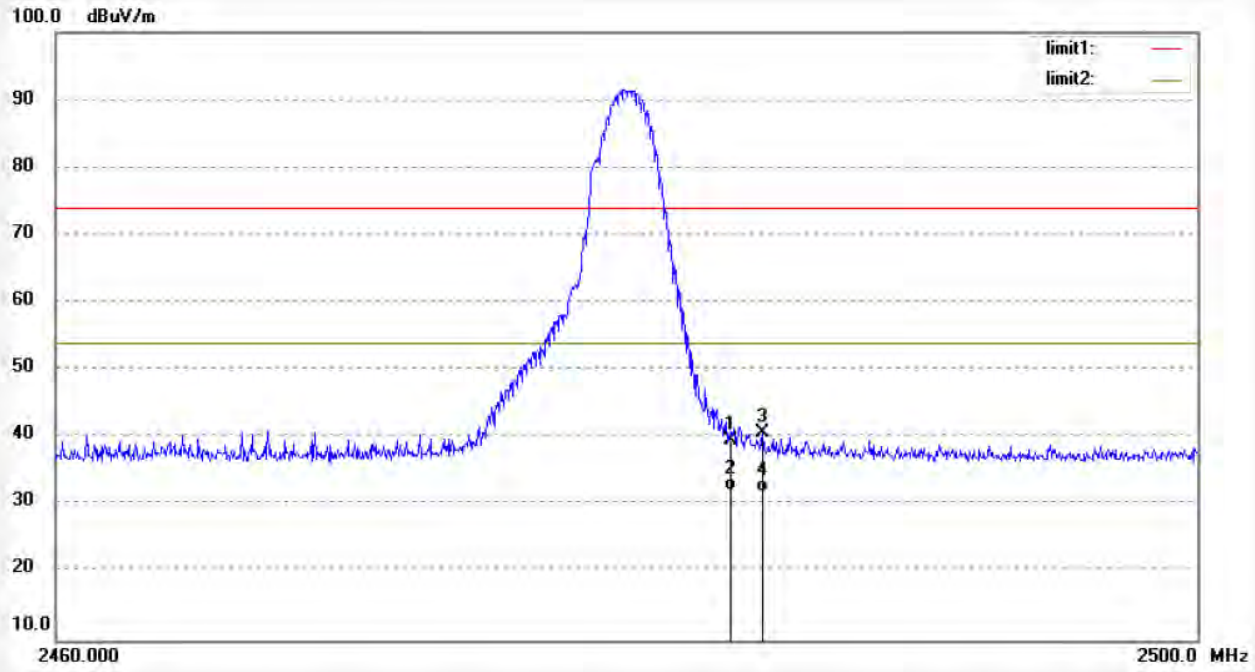
Job No.: alen #3628
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: TX 2480MHz(pi/4DQPSK)
Model: CQL1412-B
Manufacturer: Sure Wave

Polarization: Vertical
Power Source: DC 5V
Date: 14/03/04/
Time: 9/08/06
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	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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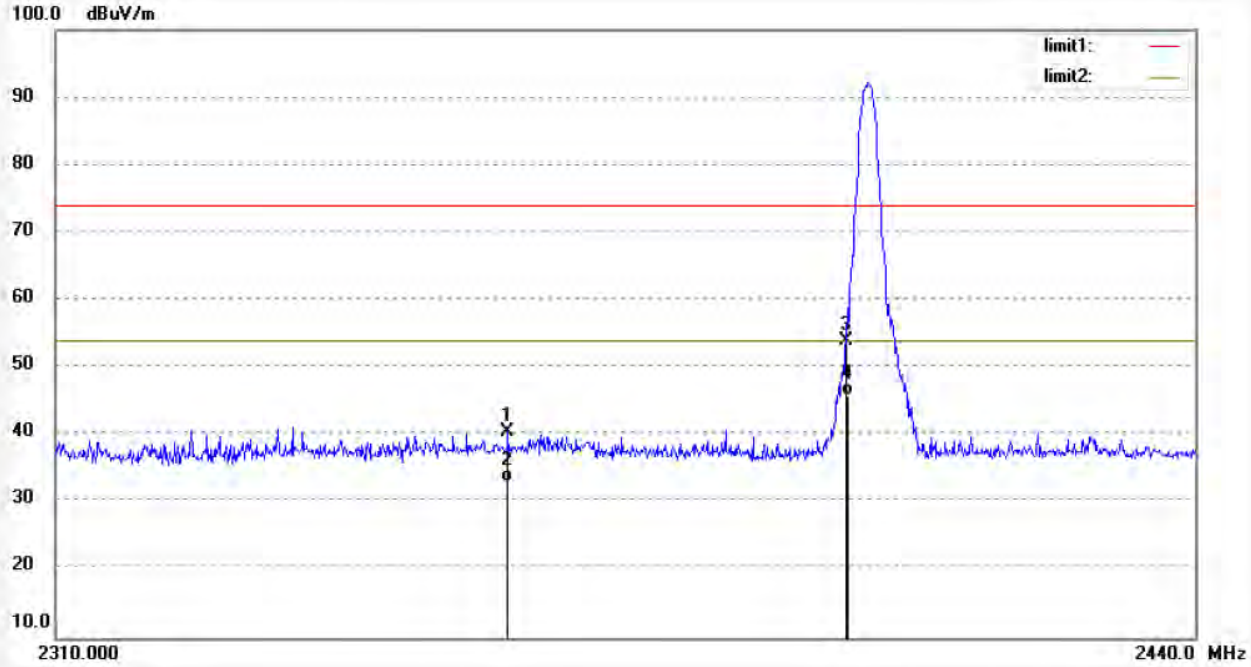
Job No.: alen #3618
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: TX 2402MHz(8DPSK)
Model: CQL1412-B
Manufacturer: Sure Wave

Polarization: Horizontal
Power Source: DC 5V
Date: 14/03/04/
Time: 8/43/01
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	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			
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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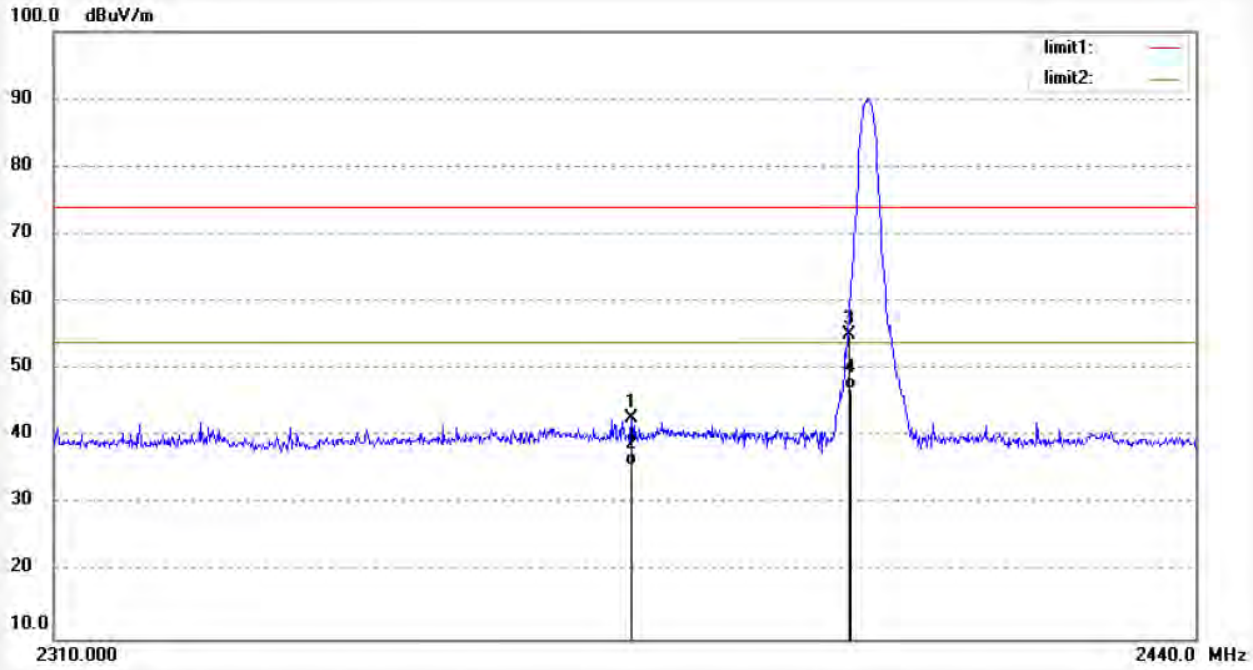
Fax:+86-0755-26503396

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

Polarization: Vertical
Power Source: DC 5V
Date: 14/03/04/
Time: 8/41/27
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	2375.000	49.62	-6.83	42.79	74.00	-31.21	peak			
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			

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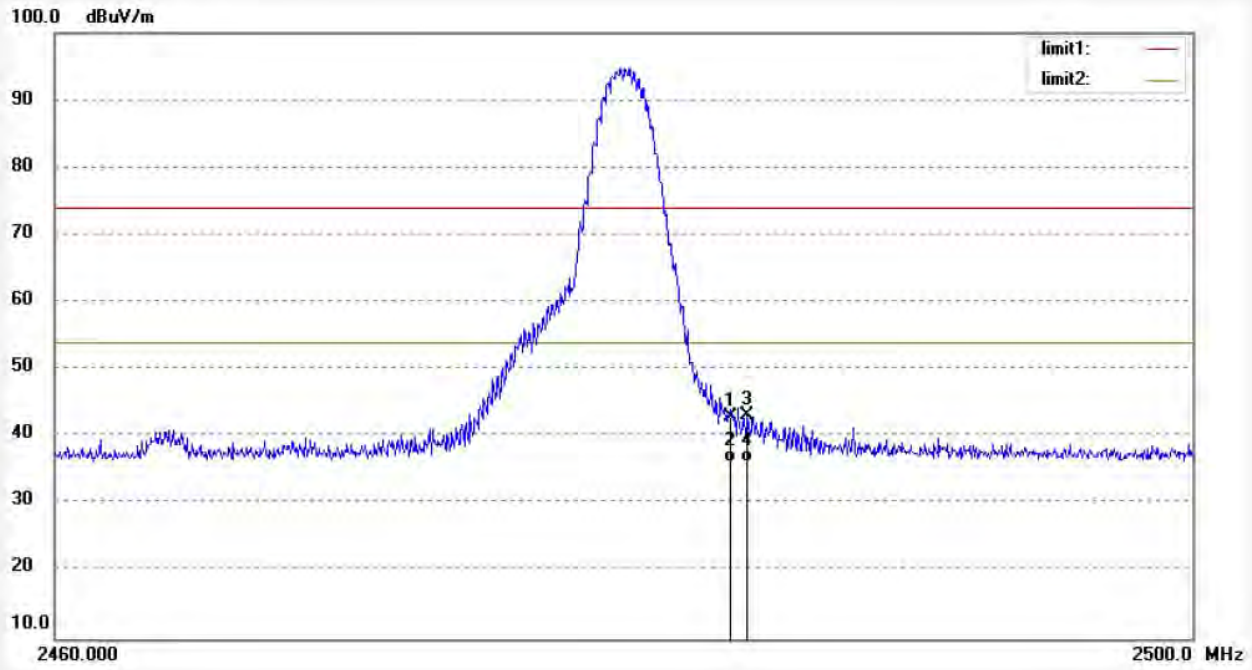
Job No.: alen #3619
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: TX 2480MHz(8DPSK)
Model: CQL1412-B
Manufacturer: Sure Wave

Polarization: Horizontal
Power Source: DC 5V
Date: 14/03/04/
Time: 8/44/57
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	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			

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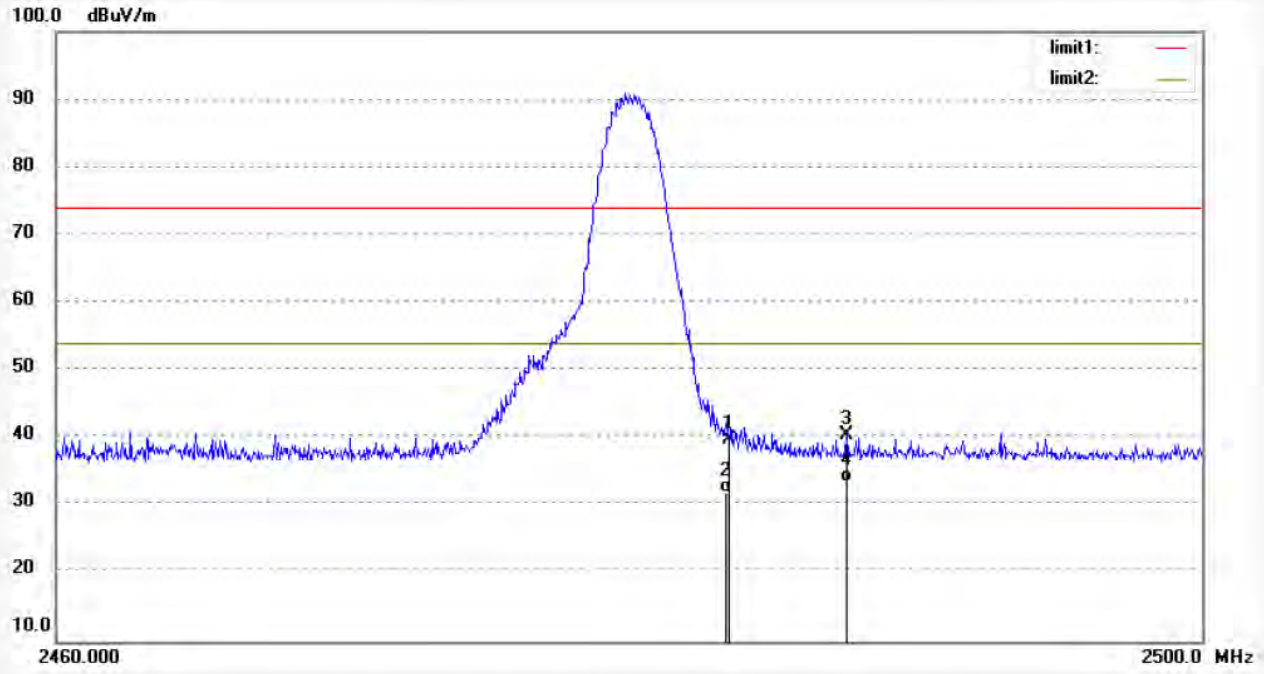
Job No.: alen #3620
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: TX 2480MHz(8DPSK)
Model: CQL1412-B
Manufacturer: Sure Wave

Polarization: Vertical
Power Source: DC 5V
Date: 14/03/04/
Time: 8/46/20
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	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			

Hopping mode

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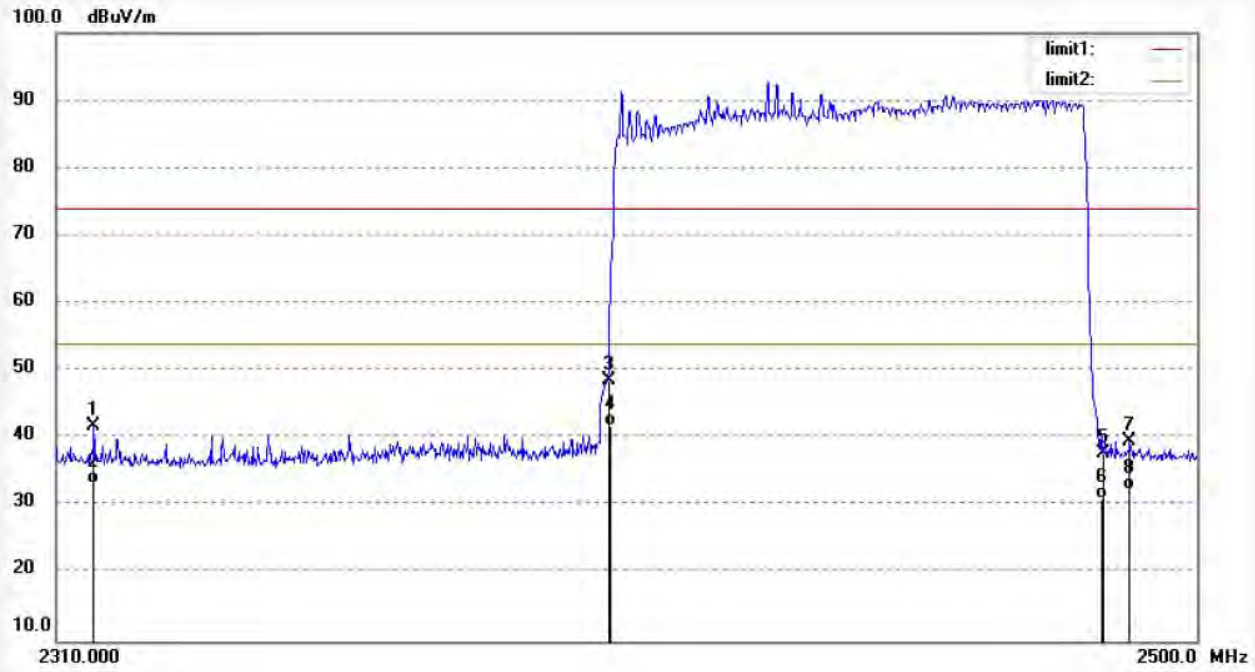
Job No.: alen #3608
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: Hopping TX(GFSK)
Model: CQL1412-B
Manufacturer: Sure Wave

Polarization: Horizontal
Power Source: DC 5V
Date: 14/03/01/
Time: 15/38/05
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	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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F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
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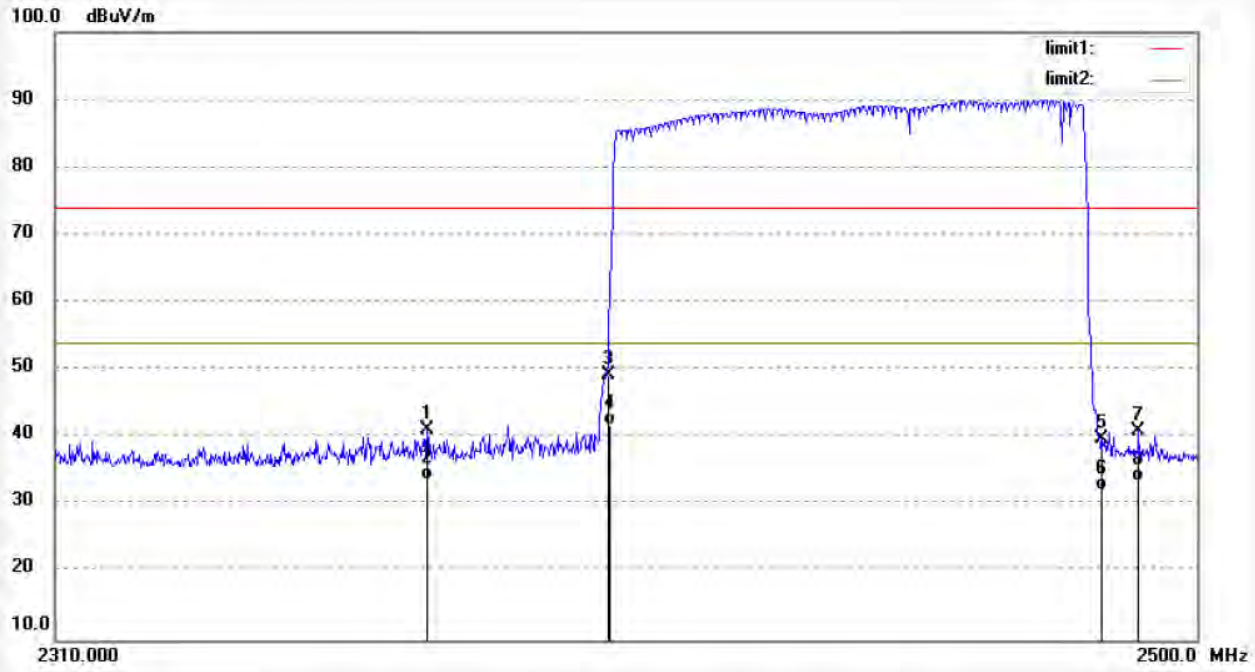
Fax:+86-0755-26503396

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

Polarization: Vertical
Power Source: DC 5V
Date: 14/03/01/
Time: 15/33/06
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	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			

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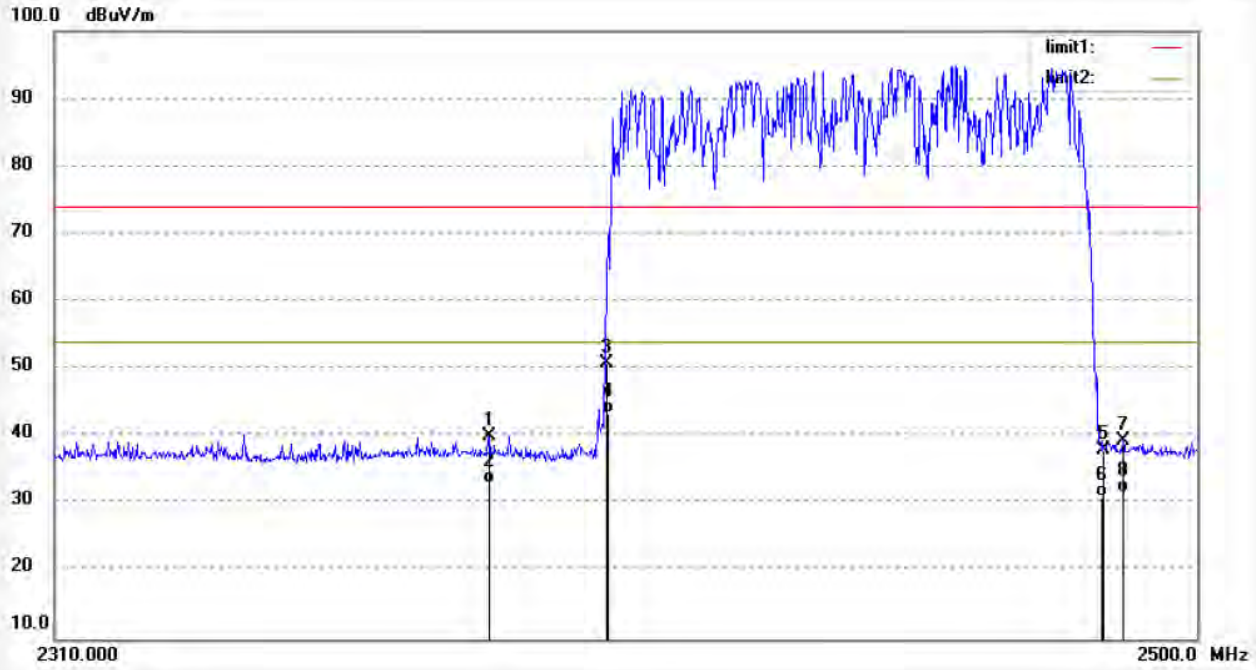
Fax:+86-0755-26503396

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

Polarization: Horizontal
Power Source: DC 5V
Date: 14/03/04/
Time: 8/59/45
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	2380.680	46.89	-6.81	40.08	74.00	-33.92	peak			
2	2380.680	39.87	-6.81	33.06	54.00	-20.94	AVG			
3	2400.000	57.64	-6.76	50.88	74.00	-23.12	peak			
4	2400.000	50.24	-6.76	43.48	54.00	-10.52	AVG			
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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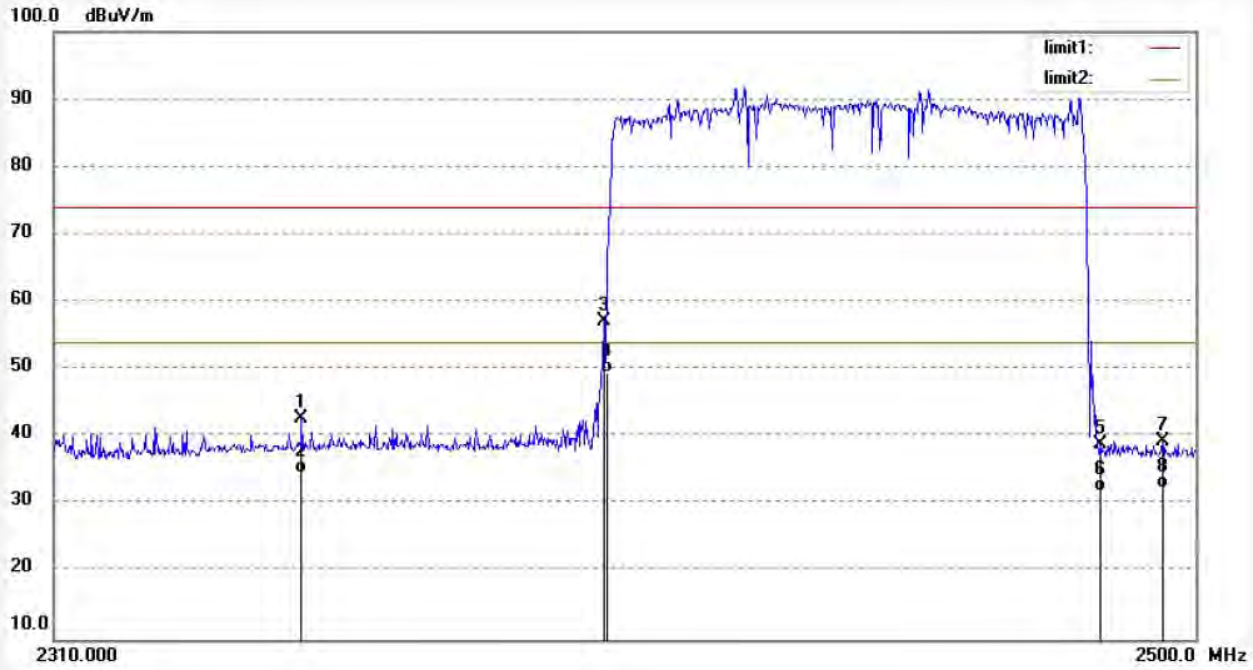
Job No.: alen #3624
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: Hopping TX(pi/4DQPSK)
Model: CQL1412-B
Manufacturer: Sure Wave

Polarization: Vertical
Power Source: DC 5V
Date: 14/03/04/
Time: 9/02/36
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	2350.090	49.72	-6.89	42.83	74.00	-31.17	peak			
2	2350.090	41.58	-6.89	34.69	54.00	-19.31	AVG			
3	2400.000	63.97	-6.76	57.21	74.00	-16.79	peak			
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			
8	2494.300	38.87	-6.50	32.37	54.00	-21.63	AVG			

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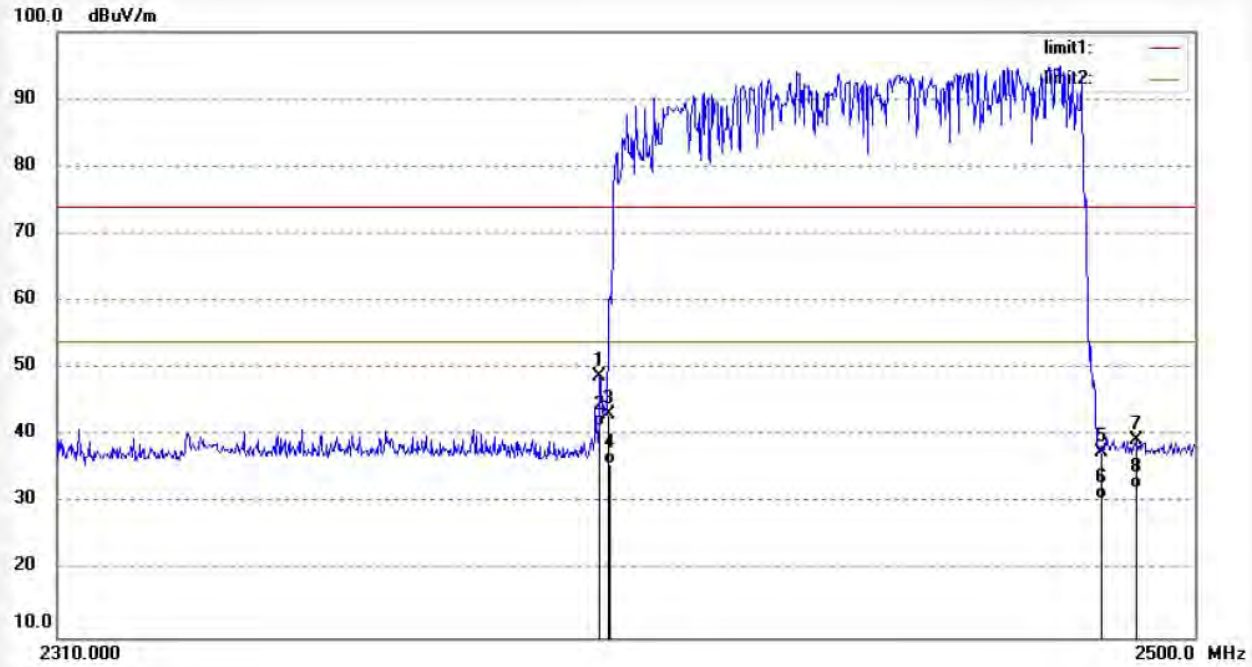
Job No.: alen #3622
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: iBun Bluetooth Speaker
Mode: Hopping TX(8DPSK)
Model: CQL1412-B
Manufacturer: Sure Wave

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			

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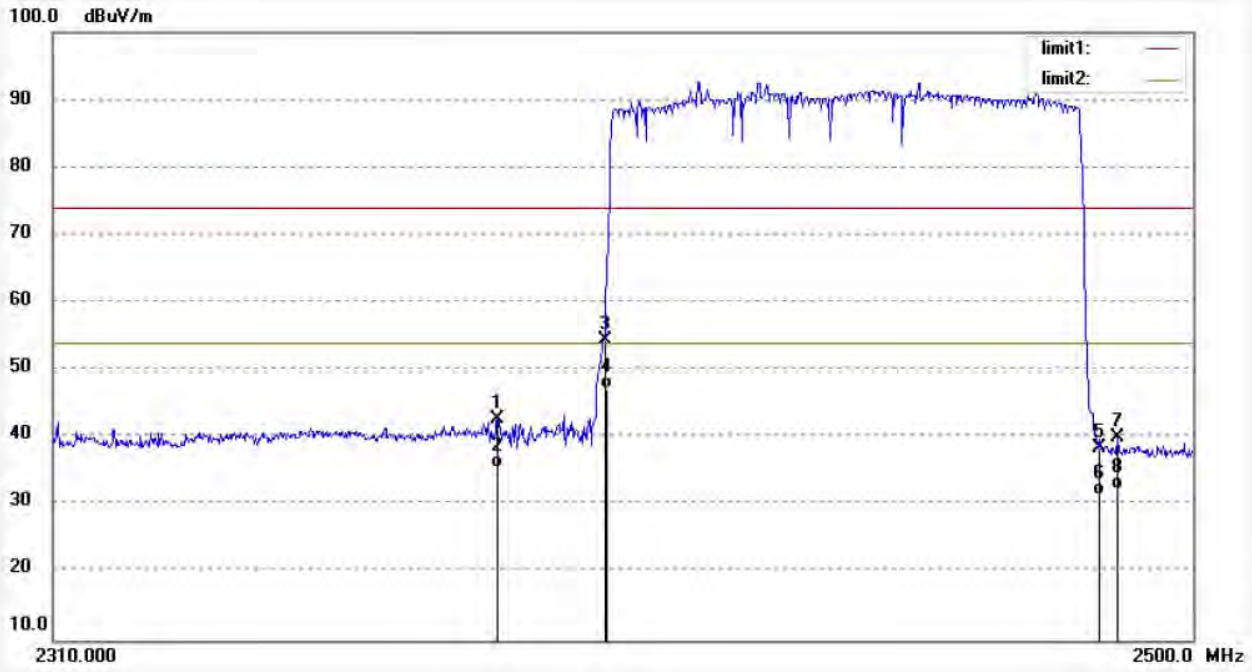
Fax:+86-0755-26503396

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

Polarization: Vertical
Power Source: DC 5V
Date: 14/03/04/
Time: 8/50/53
Engineer Signature:
Distance: 3m

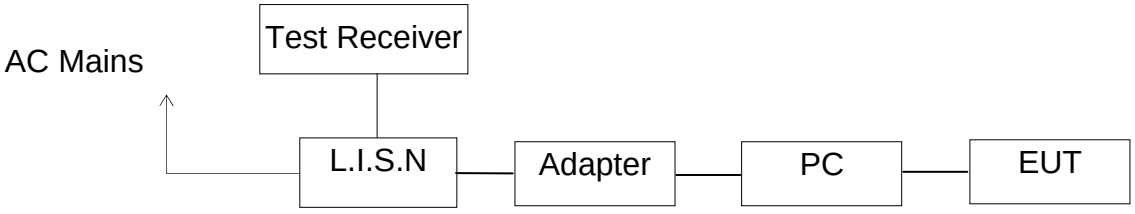
Note: Report No:ATE20140163



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2382.390	49.51	-6.81	42.70	74.00	-31.30	peak			
2	2382.390	42.45	-6.81	35.64	54.00	-18.36	AVG			
3	2400.000	61.24	-6.76	54.48	74.00	-19.52	peak			
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			

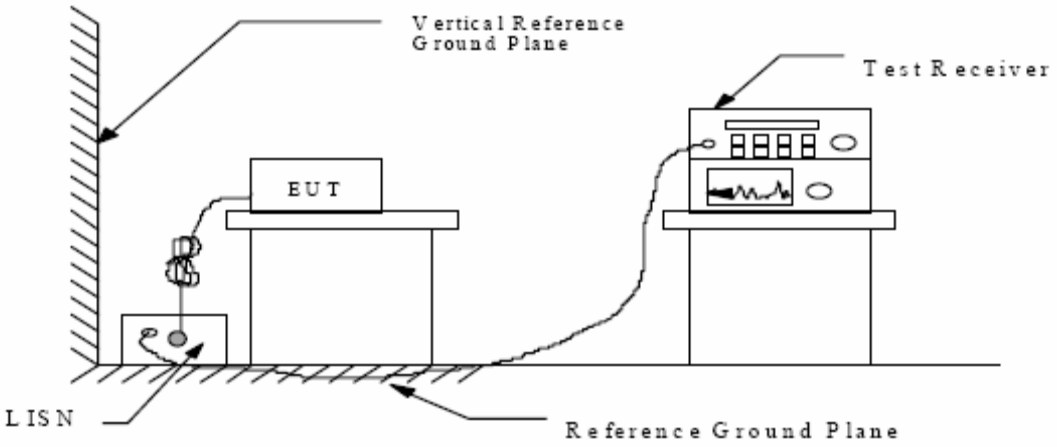
12. AC POWER LINE CONDUCTED EMISSION FOR FCC PART 15 SECTION 15.207(A)

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 (MHz)	Limit dB(μV)	
	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

* Decreases with the logarithm of the frequency.

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 : Charging&BT Communicating

MEASUREMENT RESULT: "SW-0225-F01_fin"

2/25/2014 10:34AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.151202	53.40	10.5	66	12.5	QP	L1	GND
0.525384	38.90	10.7	56	17.1	QP	L1	GND
2.542691	36.80	11.0	56	19.2	QP	L1	GND

MEASUREMENT RESULT: "SW-0225-F01_fin2"

2/25/2014 10:34AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
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	L1	GND

MEASUREMENT RESULT: "SW-0225-F02_fin"

2/25/2014 10:37AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
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"

2/25/2014 10:37AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.173183	41.00	10.5	55	13.8	AV	N	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

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

The spectral diagrams are attached as below.

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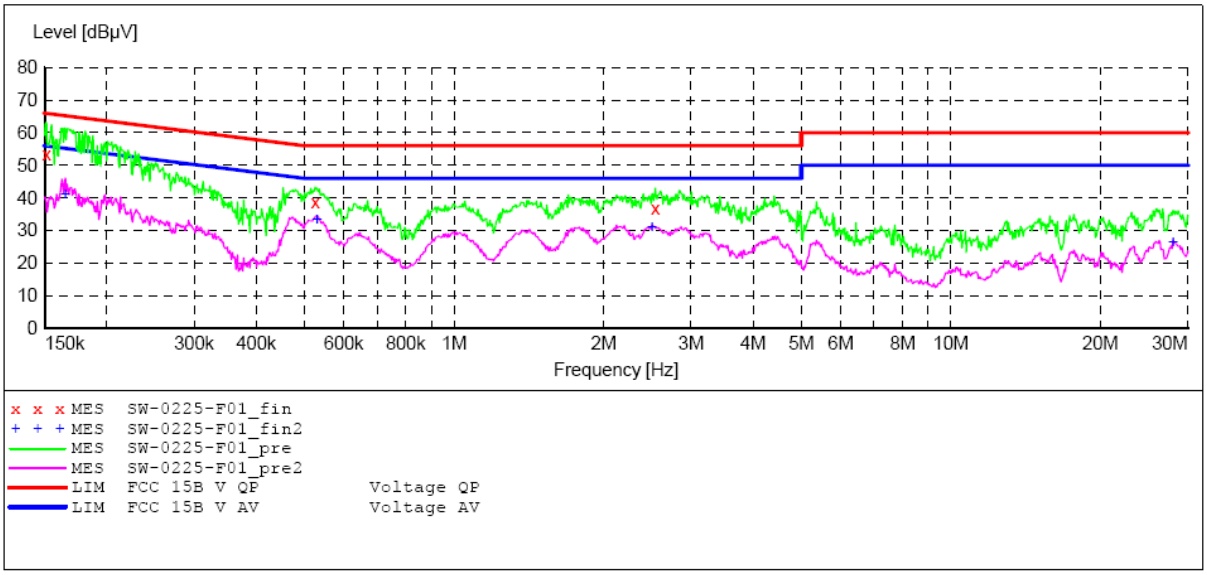
CONDUCTED EMISSION STANDARD FCC PART 15

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

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

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak Average	1.0 s	9 kHz	NSLK8126 2008



MEASUREMENT RESULT: "SW-0225-F01_fin"

2/25/2014 10:34AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.151202	53.40	10.5	66	12.5	QP	L1	GND
0.525384	38.90	10.7	56	17.1	QP	L1	GND
2.542691	36.80	11.0	56	19.2	QP	L1	GND

MEASUREMENT RESULT: "SW-0225-F01_fin2"

2/25/2014 10:34AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
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	L1	GND

ACCURATE TECHNOLOGY CO.,LTD

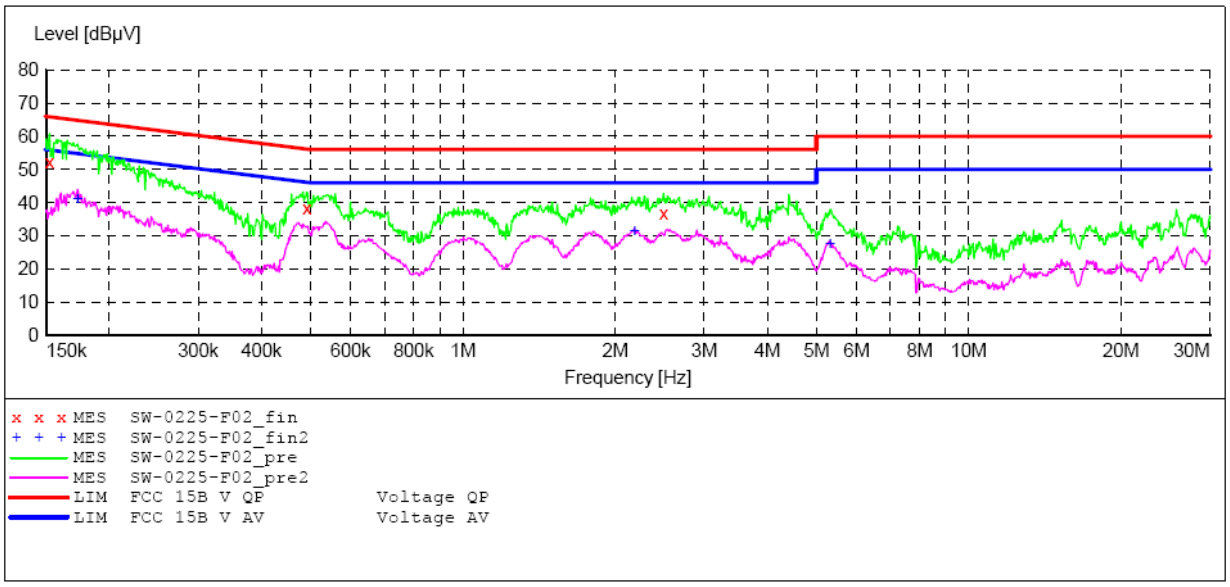
CONDUCTED EMISSION STANDARD FCC PART 15

EUT: iBun Bluetooth Speaker M/N:CQL1412-B
Manufacturer: Sure Wave
Operating Condition: BT&Charging
Test Site: 1#Shielding Room
Operator: Alen
Test Specification: N 120V/60Hz
Comment: Report No:ATE20140163
Start of Test: 2/25/2014 / 10:34:49AM

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

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak Average	1.0 s	9 kHz	NSLK8126 2008



MEASUREMENT RESULT: "SW-0225-F02_fin"

2/25/2014 10:37AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
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"

2/25/2014 10:37AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.173183	41.00	10.5	55	13.8	AV	N	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

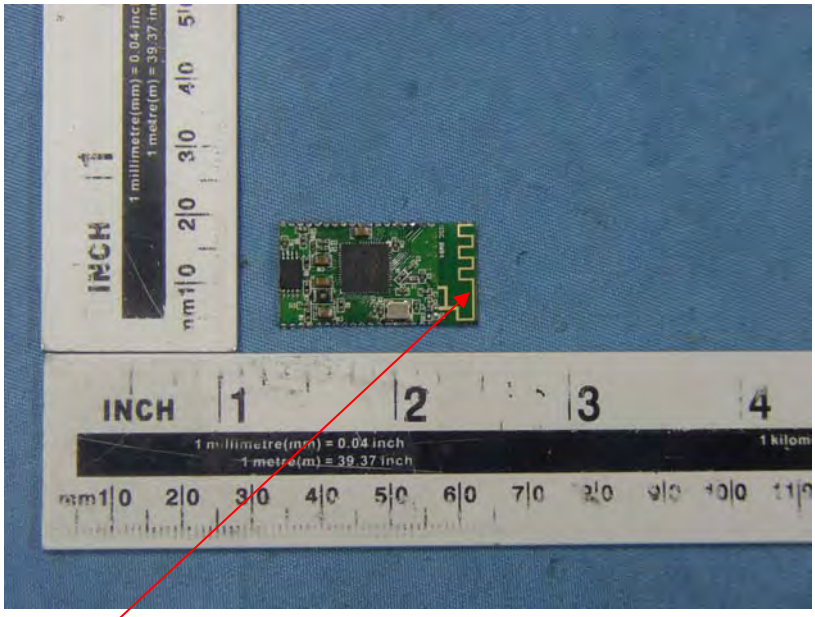
13. ANTENNA REQUIREMENT

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