



ISO/IEC17025 Accredited Lab.

Report No: FCC 1206117
File reference No: 2012-06-14

Applicant: Guangzhou Wowe Tech Company Ltd

Product: Mini Bluetooth Speaker

Model No: PS-1300, PS-1800

Trademark: WOVE

Test Standards: FCC Part 15 Subpart C, Paragraph 15.247

Test result: It is herewith confirmed and found to comply with the requirements set up by ANSI C63.4&FCC Part 15 Subpart C, Paragraph 15.247 regulations for the evaluation of electromagnetic compatibility

Approved By

Jack Chung

Jack Chung
Manager

Dated: June 14, 2012

Results appearing herein relate only to the sample tested

The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO., LTD

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Special Statement:

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meets with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

CNAS-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:1999 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 899988

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.:899988.

IC- Registration No.: IC5205A-01

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration No.: IC 5205A-01.



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1.0 General Details

1.1 Test Lab Details

Name : SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO LTD
Address: 5/F,Block 4, Anhua Industrial Zone.,No.8 TaiRan Rd.CheGongMiao,FuTian District, Shenzhen,CHINA.
Telephone: (755) 83448688
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Site on File with the Federal Communications Commission – United States
Registration Number: 899988
For 3m & 10 m OATS
Site Listed with Industry Canada of Ottawa, Canada
Registration Number: IC: 5205A-01
For 3m & 10 m OATS

1.2 Applicant Details

Applicant: Guangzhou Wowe Tech Company Ltd
Address: Room 2105, Jinshan Building, Wushan Road, Tianhe District, Guangzhou, China (Head office)
Telephone: 020-23351952
Fax: 020-28817103

1.3 Description of EUT

Product: Mini Bluetooth Speaker
Manufacturer: Dongguan Wowe Tech Company Ltd (Factory)
Brand Name: WOVE
Model Number: PS-1300
Additional Model Name PS-1800
Additional Trade Name N/A
Rating: Input: DC 5V
Power Supply N/A
Type of Modulation FHSS (BDR, EDR provided to the EUT)
Frequency range 2402-2480MHz
Number of Channel 79
Frequency Selection By software
Antenna type PCB Printed antenna, and the maximum Gain of this antenna is 2dBi

1.4 Submitted Sample: 2 Samples

1.5 Test Duration

2012-06-09 to 2012-06-14

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1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB

Radiated Emissions Uncertainty =4.7dB

1.7 Test Engineer

Terry Tang

The sample tested by

Print Name: Terry Tang

2.0	Test Equipments				
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	ROHDE&SCHWARZ	ESPI 3	100379	2012-04-21	2013-04-20
TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100294	2012-04-21	2013-04-20
TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100253	2012-04-21	2013-04-20
Ultra Broadband ANT	ROHDE&SCHWARZ	HL562	100157	2012-04-21	2013-04-20
ESDV Test Receiver	ROHDE&SCHWARZ	ESDV	100008	2012-04-21	2013-04-20
Impuls-Begrenzer	ROHDE&SCHWARZ	ESH3-Z2	100281	2012-04-21	2013-04-20
System Controller	CT	SC100	-	--	--
Printer	EPSON	PHOTO EX3	CFNH234850	--	--
Computer	IBM	8434	1S8434KCE99BLXL O*	-	-
Loop Antenna	EMCO	6502	00042960	2012-04-21	2013-04-20
ESPI Test Receiver	ROHDE&SCHWARZ	ESI26	838786/013	2012-04-21	2013-04-20
3m OATS	--	--	N/A	2012-04-21	2013-04-20
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170265	2012-04-21	2013-04-20
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-631	2012-04-21	2013-04-20
Power meter	Anritsu	ML2487A	6K00003613	2012-04-21	2013-04-20
Power sensor	Anritsu	MA2491A	32263	2012-04-21	2013-04-20
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2012-04-21	2013-04-20
LISN	AFJ	LS16C	10010947251	2012-04-21	2013-04-20

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LISN (Three Phase)	Schwarebeck	NSLK 8126	8126453	2012-04-21	2013-04-20
9*6*6 Anechoic	--	--	N/A	2012-04-21	2013-04-20
EMI Test Receiver	RS	ESCS30	100139	2012-04-21	2013-04-20
LISN	AFJ	LS16C	10010947251	2012-04-21	2013-04-20
LISN (Three Phase)	Schwarebeck	NSLK 8126	8126453	2012-04-21	2013-04-20

3.0 Technical Details

3.1 Summary of test results

The EUT has been tested according to the following specifications:			
Requirement	CFR 47 Section	Result	Notes
Antenna Requirement	15.203, 15.247(b)(4)	PASS	Complies
Maximum Peak Out Power	15.247 (b)(1), (4)	PASS	Complies
Carrier Frequency Separation	15.247(a)(1)	PASS	Complies
20dB Channel Bandwidth	15.247 (a)(1)	PASS	Complies
Number of Hopping Channels	15.247(a)(iii), 15.247(b)(1)	PASS	Complies
Time of Occupancy (Dwell Time)	15.247(a)(iii)	PASS	Complies
Spurious Emission, Band Edge, and Restricted bands	15.247(d),15.205(a), 15.209 (a),15.109	PASS	Complies
Conducted Emissions	15.207(a), 15.107	PASS	Complies
RF Exposure	15.247(i), 1.1307(b)(1)	PASS	Complies

3.2 Test Standards

FCC Part 15 Subpart & Subpart C, Paragraph 15.247

4.0 EUT Modification

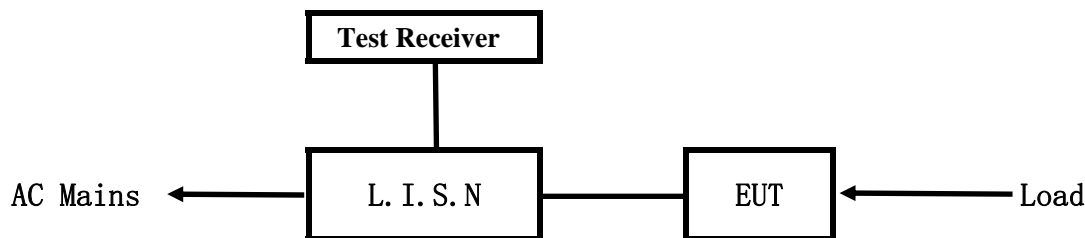
No modification by Shenzhen Timeway Technology Consulting Co., Ltd

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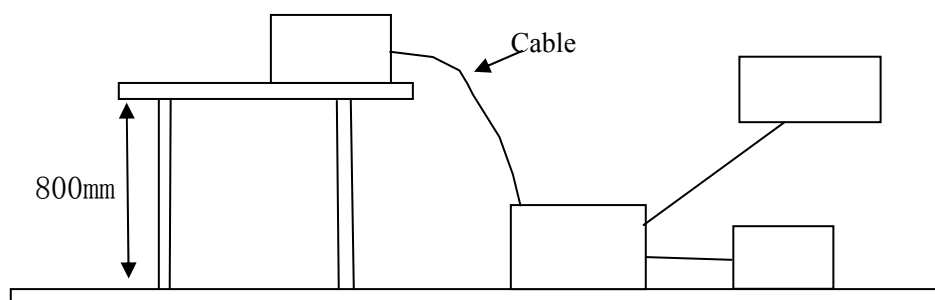
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5.1 Schematics of the test



5.2 Test Method and test Procedure

Block diagram of Test setup



The EUT was configured according to ANSI C63.4-2003. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

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A. EUT

Device	Manufacturer	Model	FCC ID
Mini Blue Tooth Speaker	Guangzhou WOwe Tech Company Ltd	PS-1300, PS-1800	OCBPS-1300

B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

C. Peripherals

Device	Manufacturer	Model	FCC ID/DOC	Cable
N/A				

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.4 -2003.

A Setup the EUT and simulators as shown on follow

B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.107, 15.207and RSS-210

Frequency (MHz)	Class A Limits (dB μ V)		Class B Limits (dB μ V)	
	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level
0.15 ~ 0.50	79.0	66.0	66.0~56.0*	56.0~46.0*
0.50 ~ 5.00	73.0	60.0	56.0	46.0
5.00 ~ 30.00	73.0	60.0	60.0	50.0

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The tighter limit shall apply at the transition frequencies

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

Note: the worse cases was selected to conducted the test

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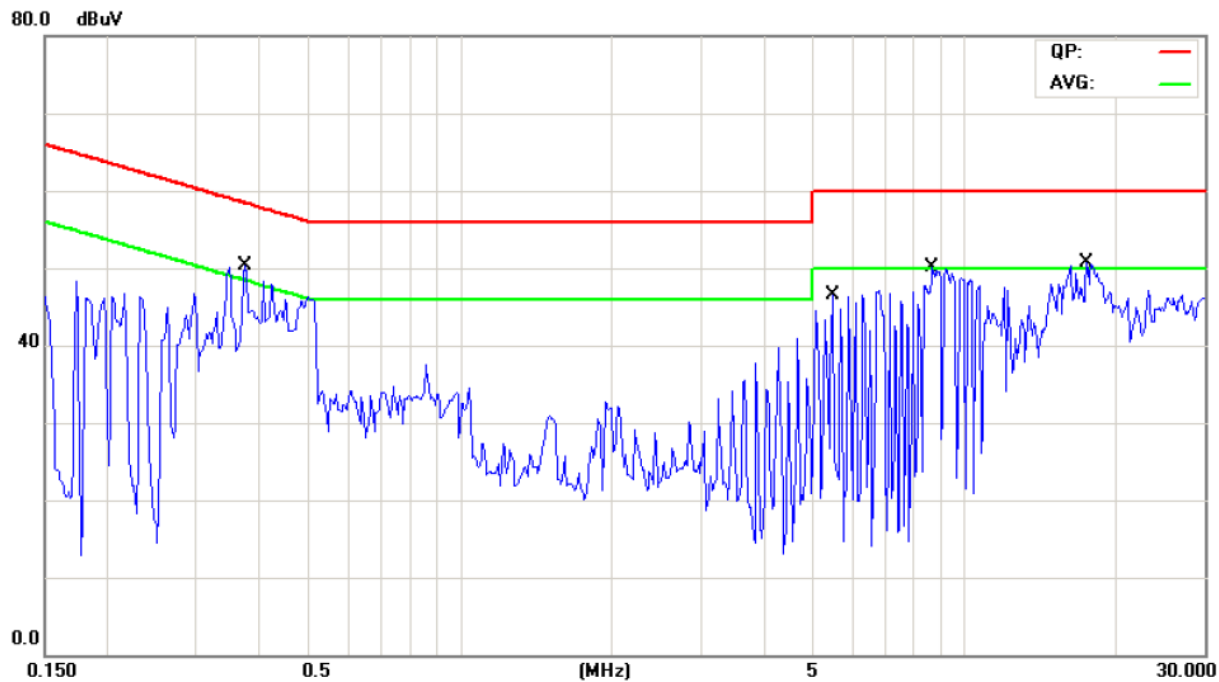


A Conducted Emission on Line Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Charging Mode

Results: Pass

Please refer to following diagram for individual



Frequency (MHz)	Reading(dB μ V)				Limit (dB μ V)	
	Line		Neutral			
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.376	50.33	42.23	--	--	58.35	48.35
5.491	46.54	38.34	--	--	60.00	50.00
8.637	50.11	43.48	--	--	60.00	50.00
17.492	50.76	42.49	--	--	60.00	50.00

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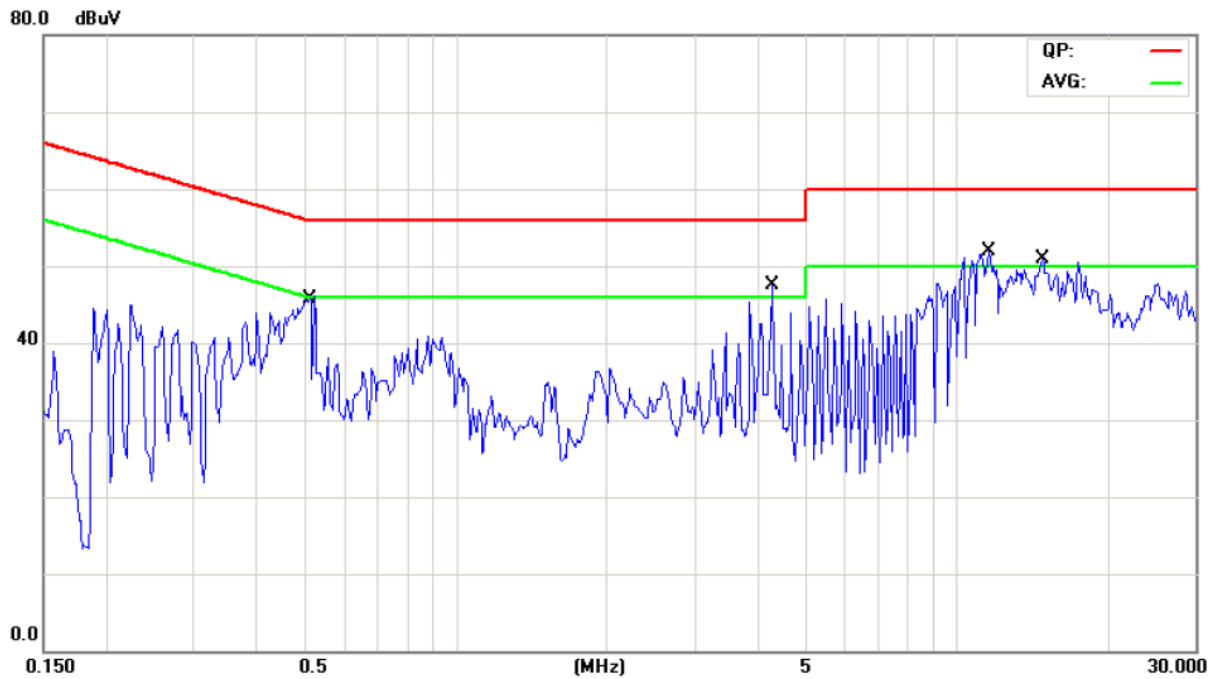


B Conducted Emission on Neutral Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Charging Mode

Results: Pass

Please refer to following diagram for individual



Frequency (MHz)	Reading(dB μ V)				Limit (dB μ V)	
	Live		Neutral			
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
11.682	--	--	51.38	42.24	60.00	50.00
4.291	--	--	45.36	36.47	56.00	46.00
0.507	--	--	45.37	33.41	56.00	46.00
14.847	--	--	50.90	43.34	60.00	50.00

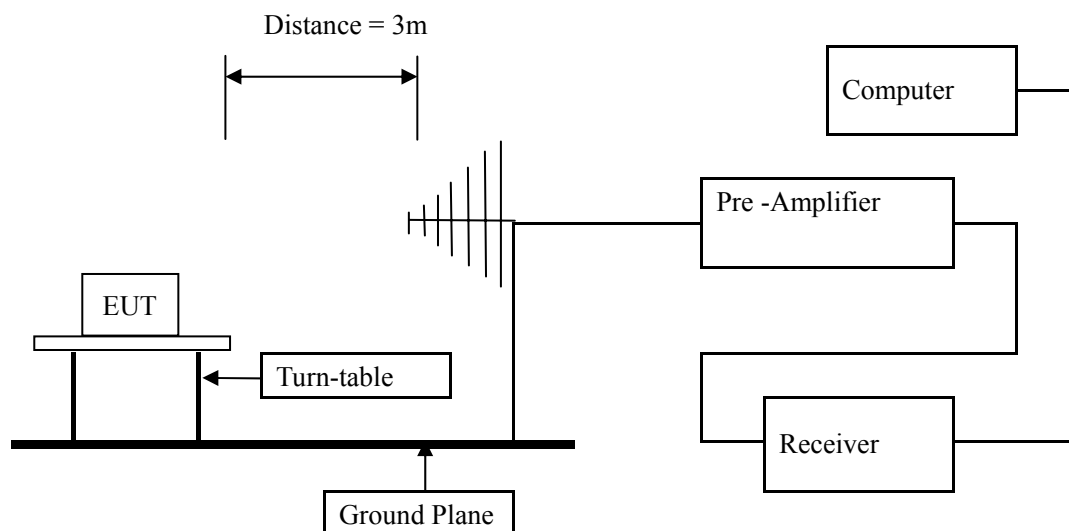
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6 Radiated Emission Test

6.1 Test Method and test Procedure:

- (1) The EUT was tested according to ANSI C63.4 –2003. The radiated test was performed at Timeway Laboratory. This site is on file with the FCC laboratory division, Registration No.899988
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.4-2003.
- (3) The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 kHz. For measurement above 1GHz, peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK detector. Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "QP" in the data table.
- (6) The antenna polarization: Vertical polarization and Horizontal polarization.

Block diagram of Test setup



6.2 Configuration of The EUT

Same as section 5.3 of this report

6.3 EUT Operating Condition

Same as section 5.4 of this report.

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6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

Frequencies in restricted band are complied to limit on Paragraph 15.109. 15.209

Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

- Note:
1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
 2. In the Above Table, the higher limit applies at the band edges.
 3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
 4. This is a handheld device. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.
 5. Battery was fully charged during the radiated test.
 6. After pre-scan, BDR mode was the worse case and it was selected to conducted the radiated emission tests.



Test result

General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Charging mode

Results: Pass

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
59.158	30.35	H	40.00
191.342	34.77	H	43.50
335.190	40.88	H	46.00
809.499	35.23	H	46.00
59.158	29.83	V	40.00
142.745	27.81	V	43.50
191.342	29.88	V	43.50
352.685	36.77	V	46.00
809.499	36.11	V	46.00
871.703	34.20	V	46.00

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Test result

General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: AUX IN

Results: Pass

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
96.092	25.46	H	43.50
191.342	25.50	H	43.50
239.940	28.79	H	46.00
335.190	40.27	H	46.00
751.182	32.29	H	46.00
961.122	33.71	H	54.00
103.867	21.80	V	43.50
239.940	23.32	V	46.00
335.190	31.66	V	46.00
875.591	32.56	V	46.00

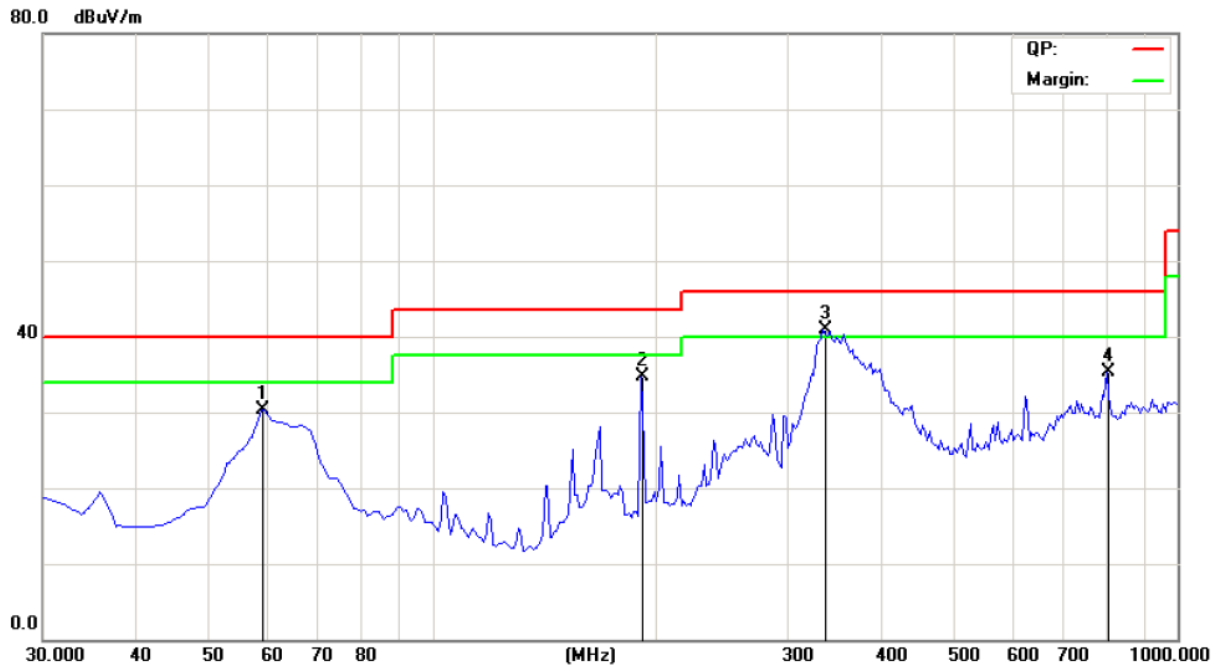
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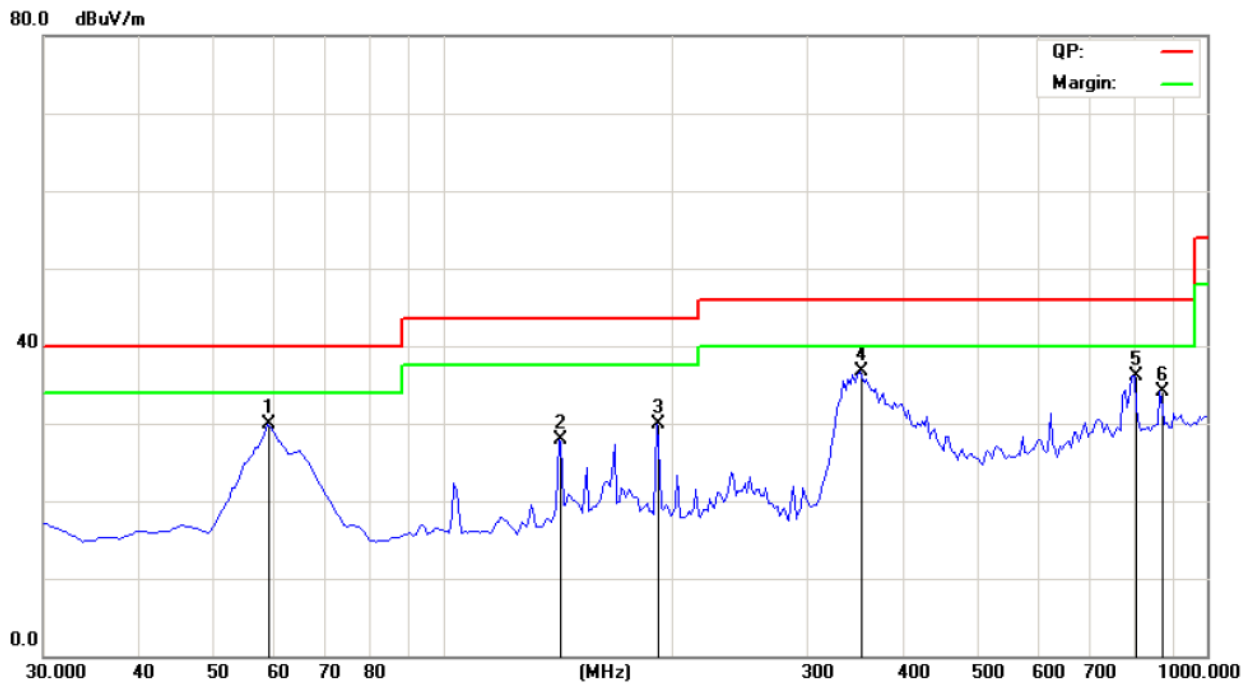
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Test Figure: Charging mode

H



V



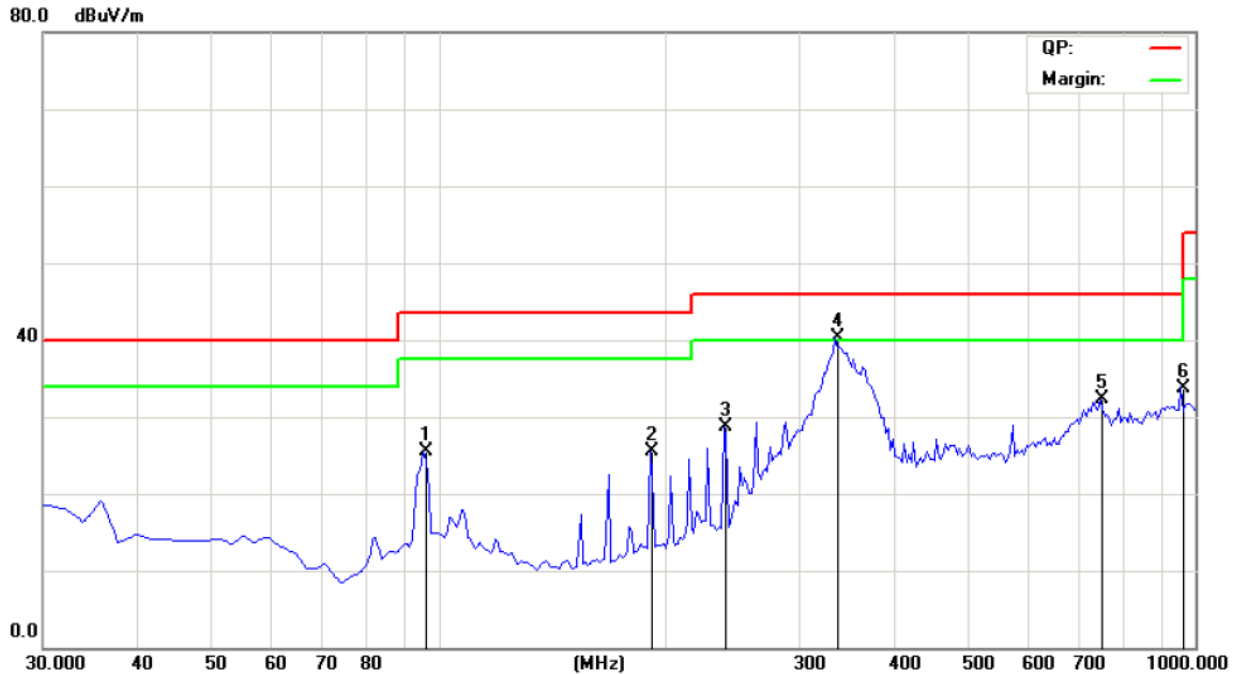
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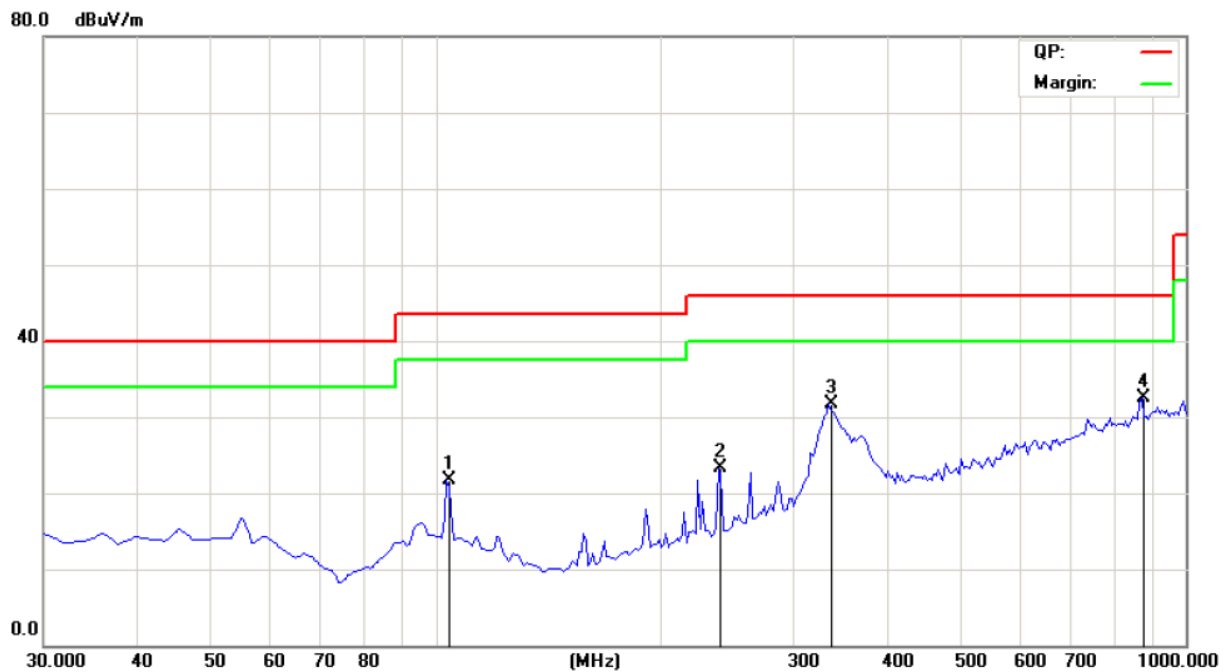
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Test Figure: AUX IN

H



V



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Operation Mode: Transmitting under Low Channel (2402MHz)

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
2402	85.68 (PK)	H	Fundamental Frequency
2402	85.07(PK)	V	
4804	--	H	74(Peak)/ 54(AV)
4804	--	V	74(Peak)/ 54(AV)
7206	--	H/V	74(Peak)/ 54(AV)
9608	--	H/V	74(Peak)/ 54(AV)
12010	--	H/V	74(Peak)/ 54(AV)
14412	--	H/V	74(Peak)/ 54(AV)
16814	--	H/V	74(Peak)/ 54(AV)
19216	--	H/V	74(Peak)/ 54(AV)
21618	--	H/V	74(Peak)/ 54(AV)
24020	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit
2. Remark "---" means that the emissions level is too low to be measured

Operation Mode: Transmitting g under Middle Channel (2441MHz)

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
2441	86.47 (PK)	H	Fundamental Frequency
2441	84.51 (PK)	V	
4882	--	H	74(Peak)/ 54(AV)
4882	--	V	74(Peak)/ 54(AV)
7323	--	H/V	74(Peak)/ 54(AV)
9764	--	H/V	74(Peak)/ 54(AV)
12205	--	H/V	74(Peak)/ 54(AV)
14646	--	H/V	74(Peak)/ 54(AV)
17087	--	H/V	74(Peak)/ 54(AV)
19528	--	H/V	74(Peak)/ 54(AV)
21969	--	H/V	74(Peak)/ 54(AV)
24410	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit
2. Remark "---" means that the emissions level is too low to be measured

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Operation Mode: Transmitting under High Channel

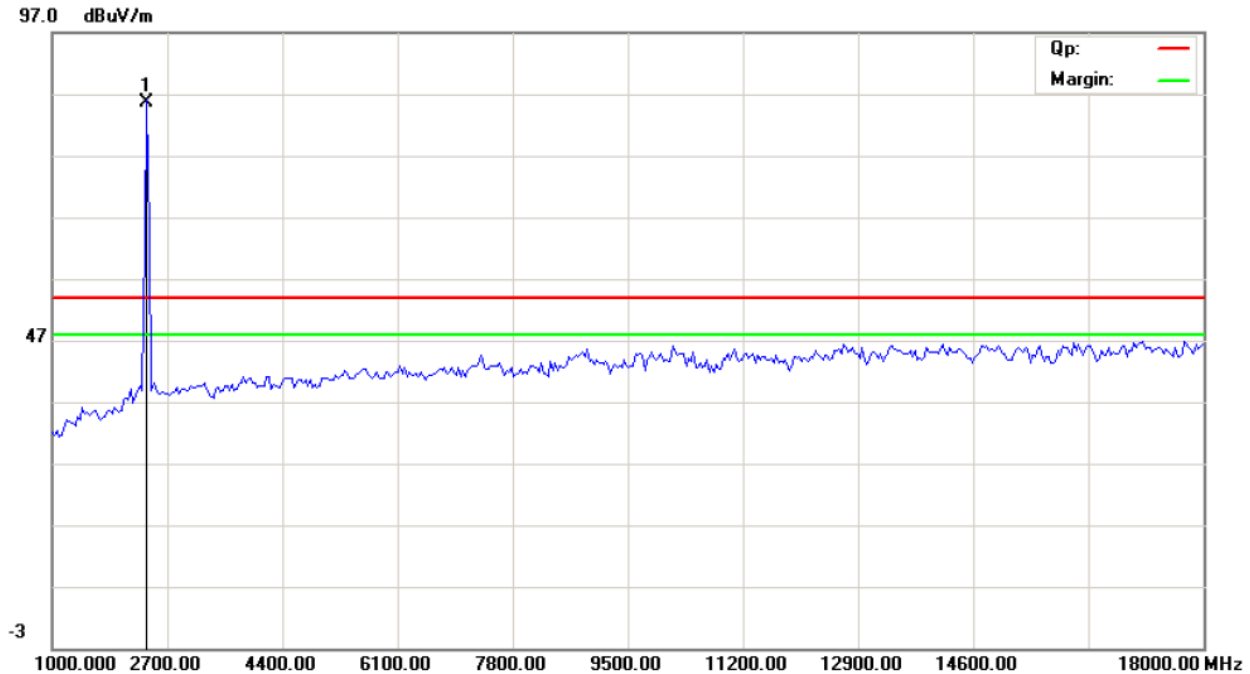
Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
2480	85.67 (PK)	H	Fundamental Frequency
2480	84.34 (PK)	V	
4960.	--	H	74(Peak)/ 54(AV)
4960.	--	V	74(Peak)/ 54(AV)
7440	--	H/V	74(Peak)/ 54(AV)
9920	--	H/V	74(Peak)/ 54(AV)
12400	--	H/V	74(Peak)/ 54(AV)
14880	--	H/V	74(Peak)/ 54(AV)
17360	--	H/V	74(Peak)/ 54(AV)
19840	--	H/V	74(Peak)/ 54(AV)
22320	--	H/V	74(Peak)/ 54(AV)
24800	--	H/V	74(Peak)/ 54(AV)

- Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit
2. Remark "---" means that the emissions level is too low to be measured

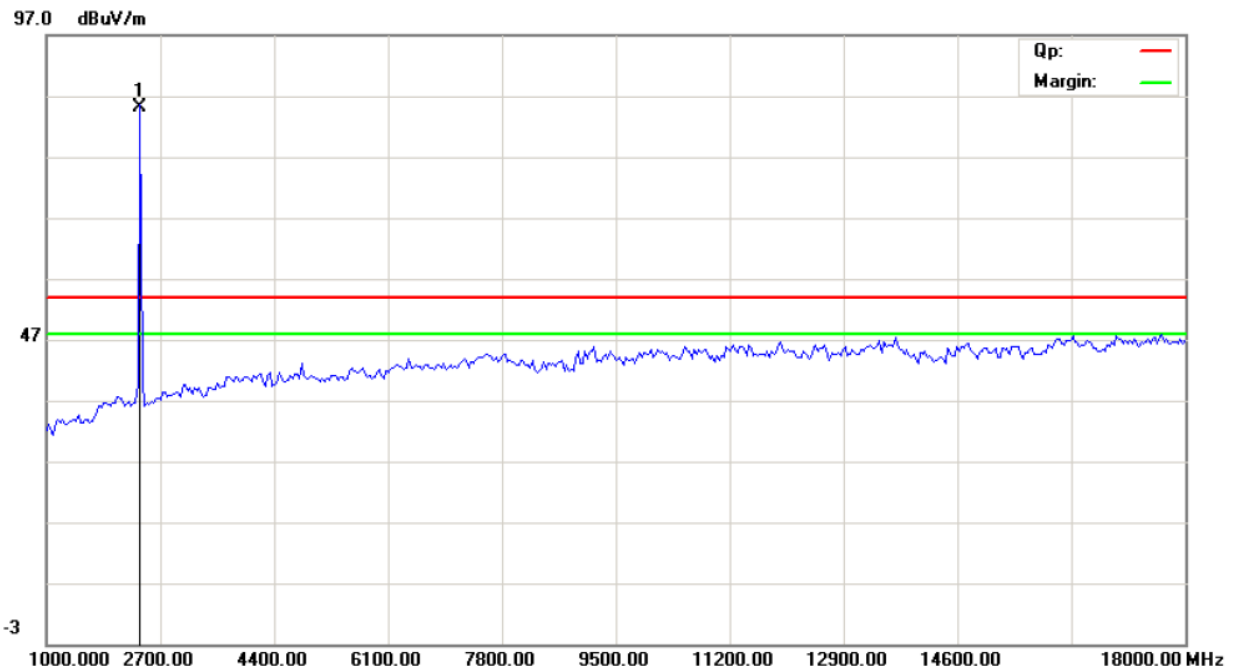
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Please refer to the following test plots for details:

Low Channel: Horizontal



Low Channel : Vertical

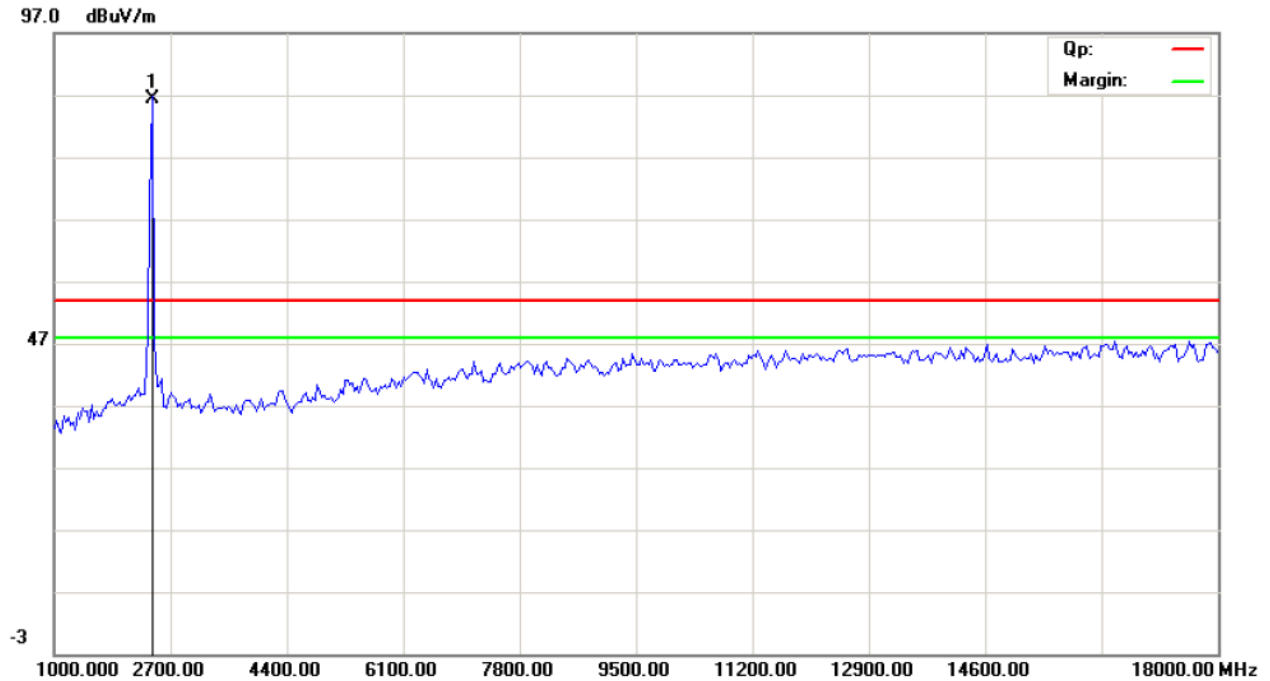


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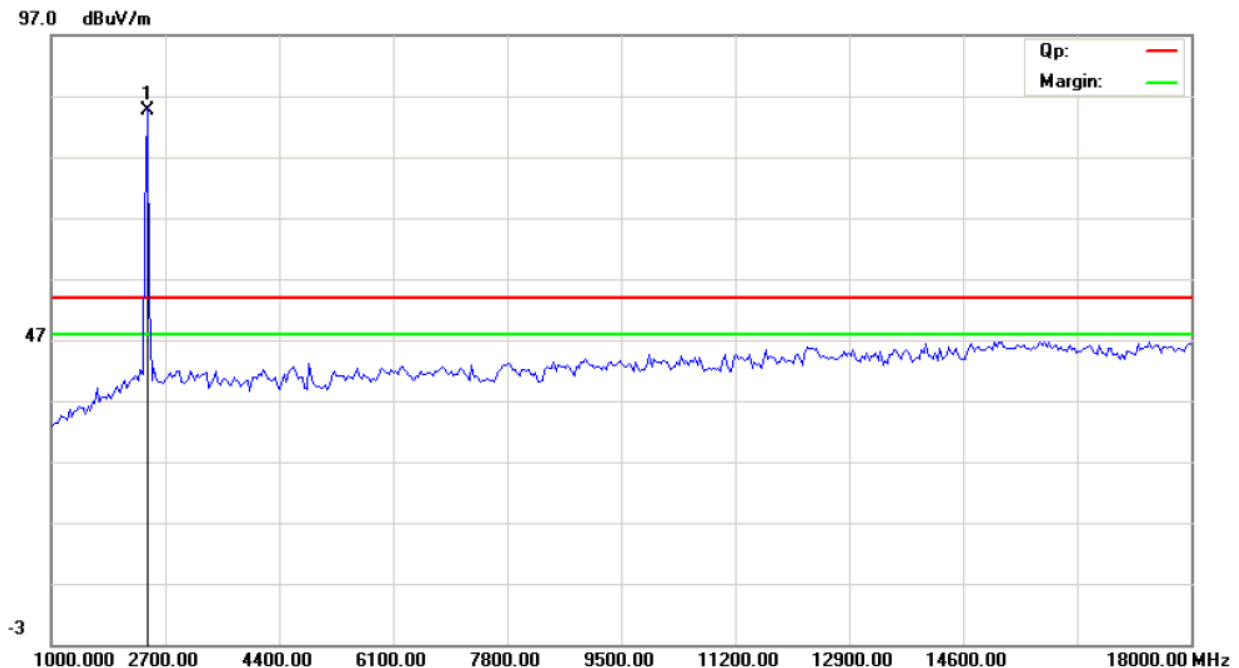
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Middle Channel : Horizontal



Middle Channel :: Vertical

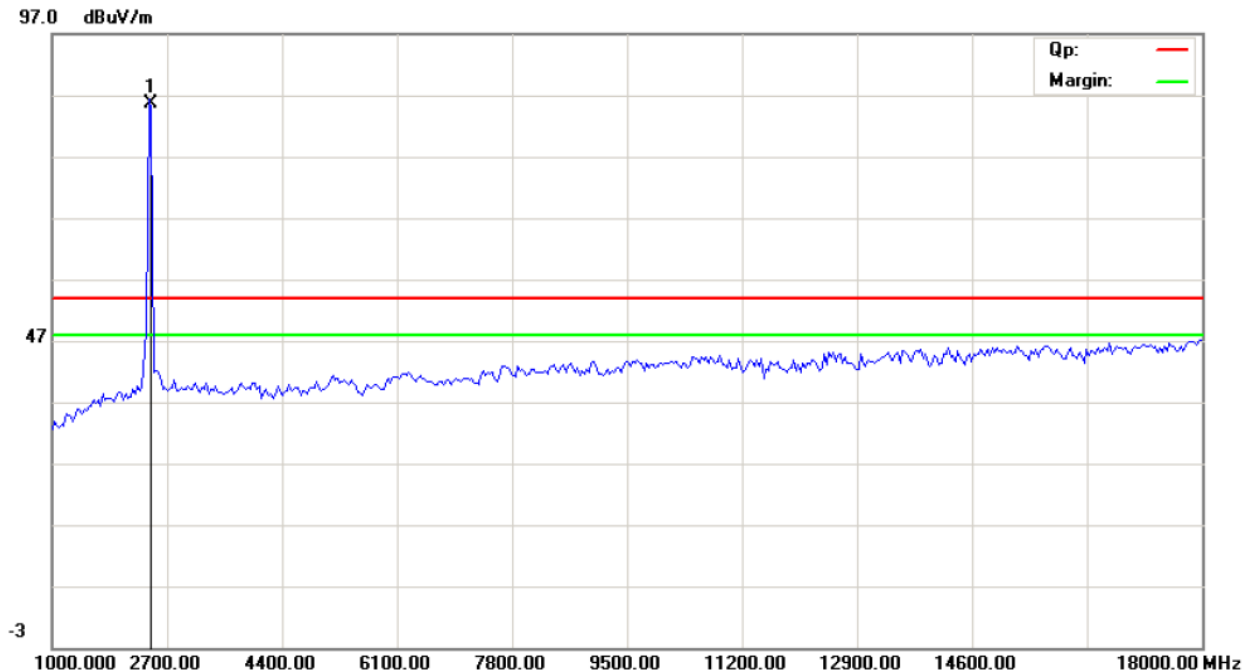


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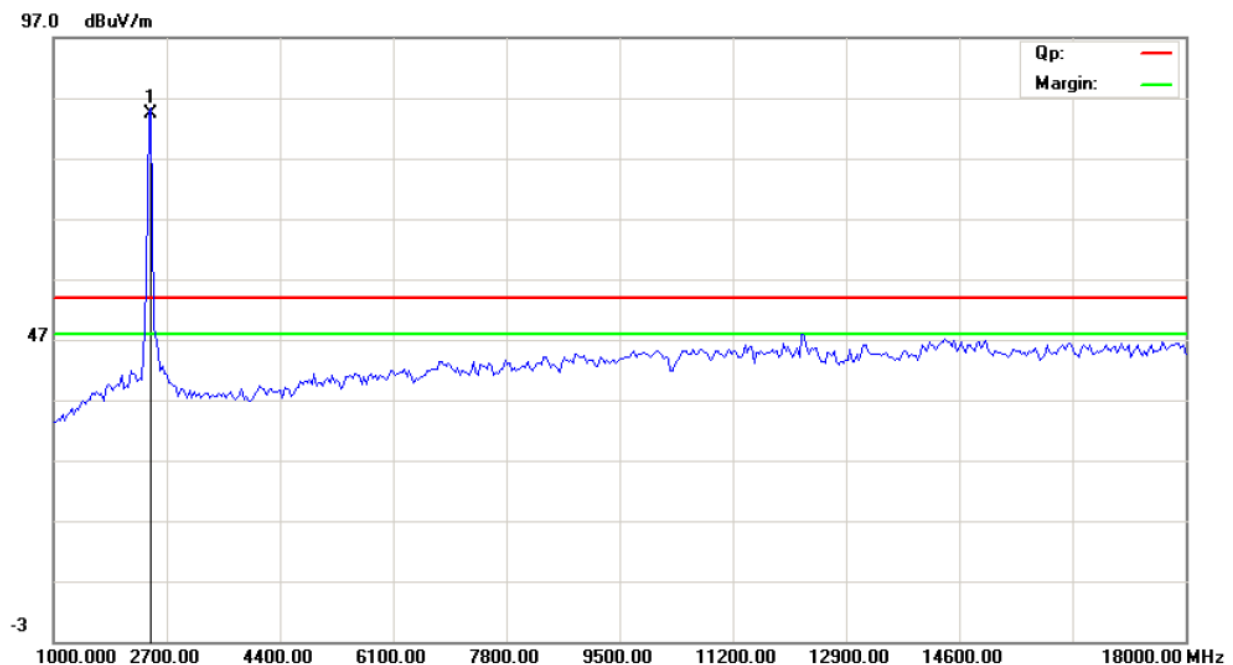
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High Channel : Horizontal



High Channel : Vertical



Note: For the radiated emissions from 18GHz-25GHz, it is the floor noise that meets the requirement of FCC rule.

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7.0 20dB Bandwidth Measurement

7.1 Regulation

According to §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. According to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

7.2 Limits of 20dB Bandwidth Measurement

N/A

7.3 Test Procedure.

1. Check the calibration of the measuring instrument (spectrum analyzer) using either an internal calibrator or a known signal from an external generator.
2. Set the spectrum analyzer as follows: Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel RBW > the 20 dB bandwidth of the emission being measured VBW \geq RBW Sweep = auto Detector function = peak Trace = max hold
3. Measure the highest amplitude appearing on spectral display and record the level to calculate results. 6. Repeat above procedures until all frequencies measured were complete.

7.4 Test Result: (BDR MODE)

EUT	Mini Blue Tooth Speaker	Model	PS-1300, PS-1800	
Mode	Keep Transmitting	Input Voltage	DC5V	
Temperature	24 deg. C,	Humidity	56% RH	
Channel	Channel Frequency (MHz)	20 dB Bandwidth (kHz)	Maximum Limit (kHz)	Pass/Fail
Low	2402	798	--	Pass
Middle	2441	792	--	Pass
High	2480	804	--	Pass

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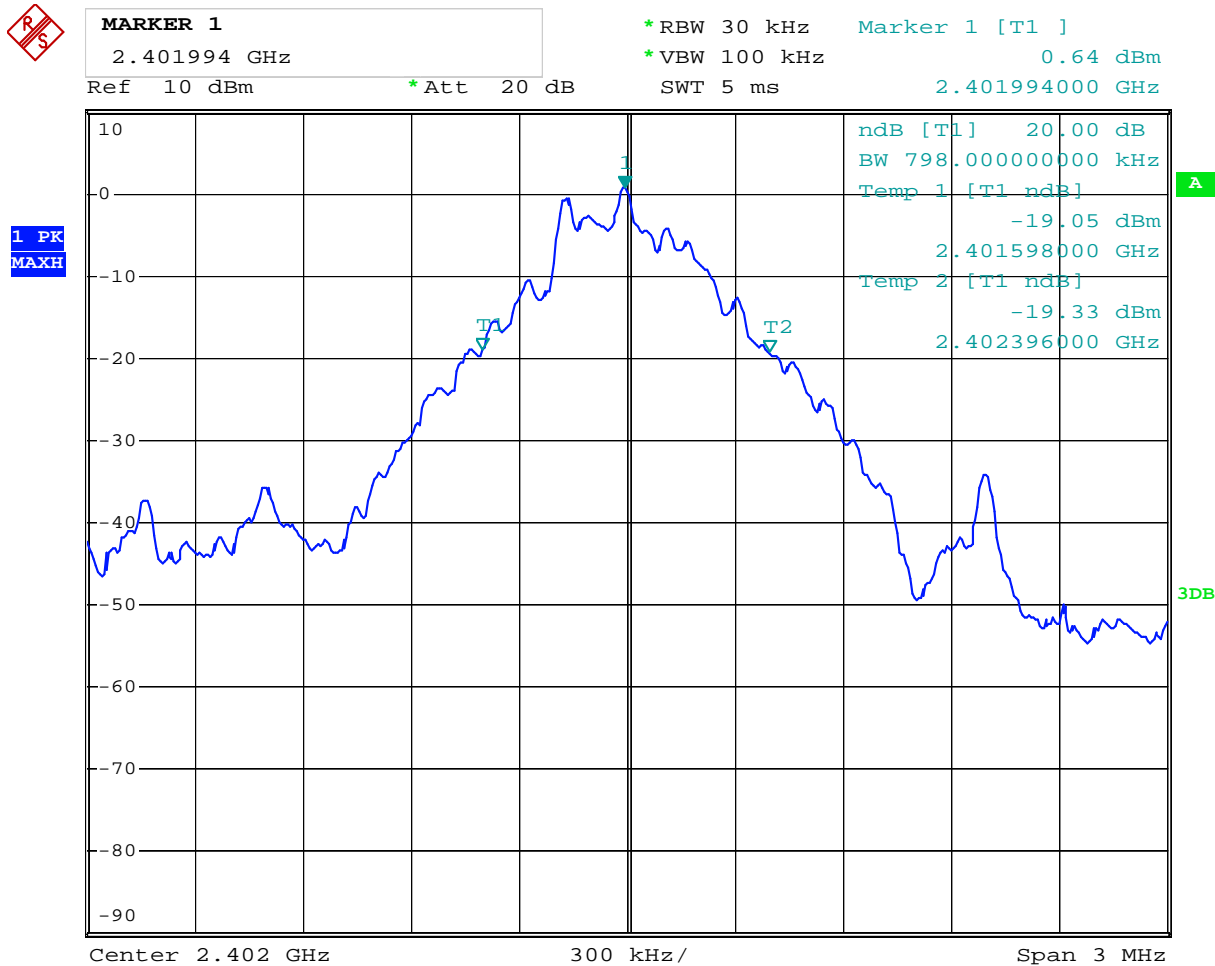
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Test Figure: (BDR MODE)

1. Condition: Low Channel

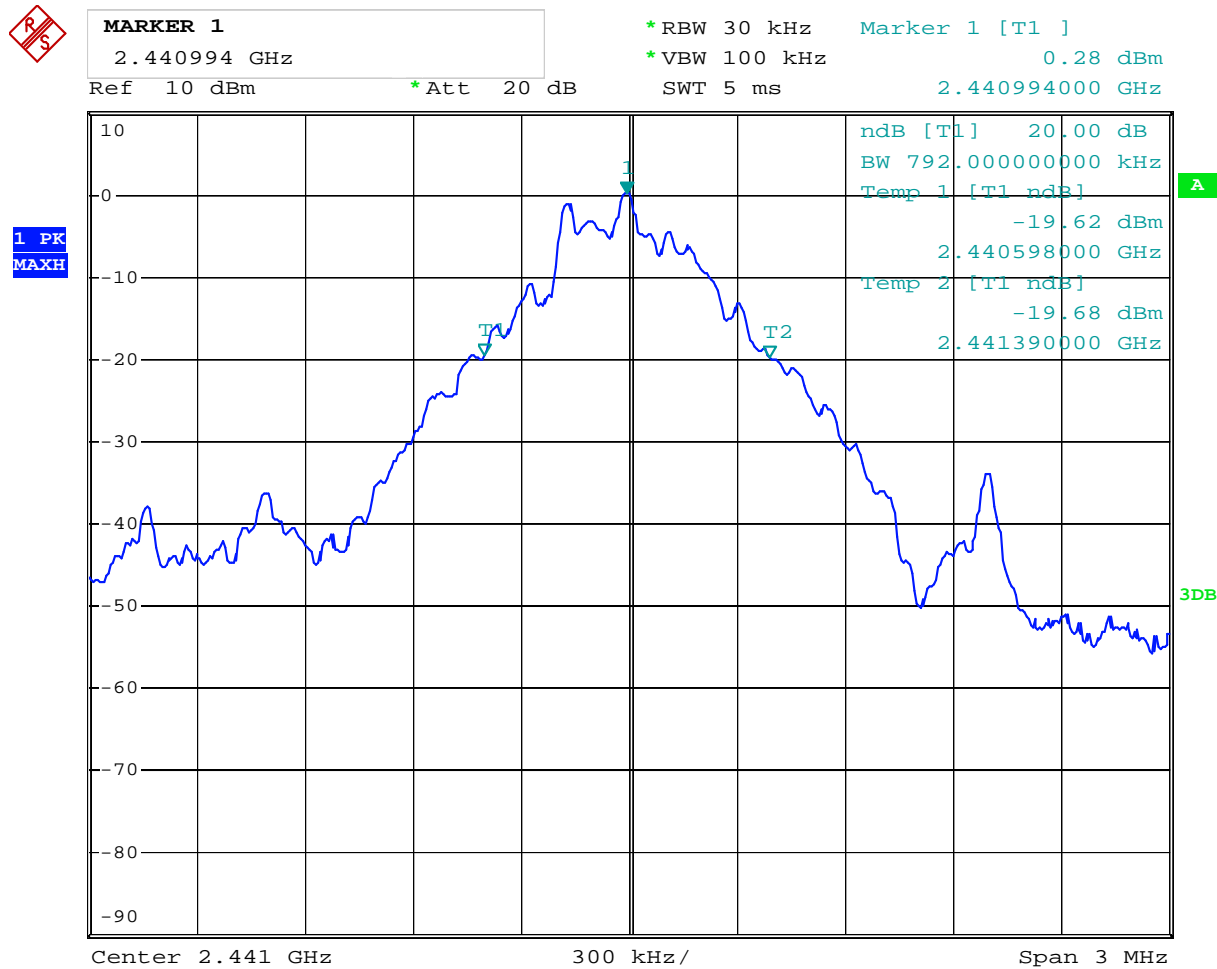


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2. Condition: Middle Channel

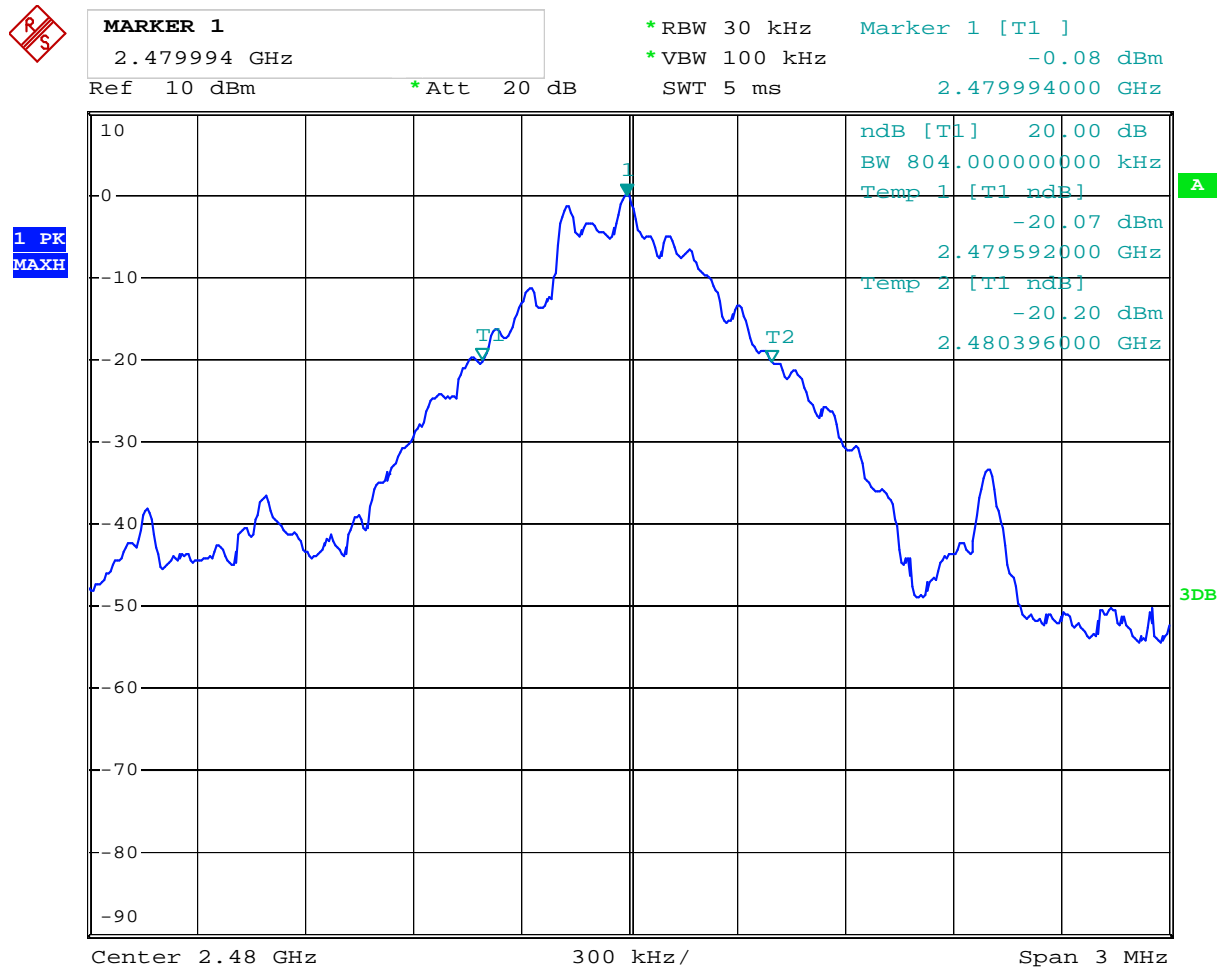


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3. High Channel



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7.5 Test Result: (EDR MODE)

EUT	Mini Blue Tooth Speaker		Model	PS-1300, PS-1800	
Mode	Keep Transmitting		Input Voltage	DC5V	
Temperature	24 deg. C,		Humidity	56% RH	
Channel	Channel Frequency (MHz)	20 dB Bandwidth (KHz)		Maximum Limit (kHz)	Pass/ Fail
Low	2402	1212		--	Pass
Middle	2441	1206		--	Pass
High	2480	1200		--	Pass

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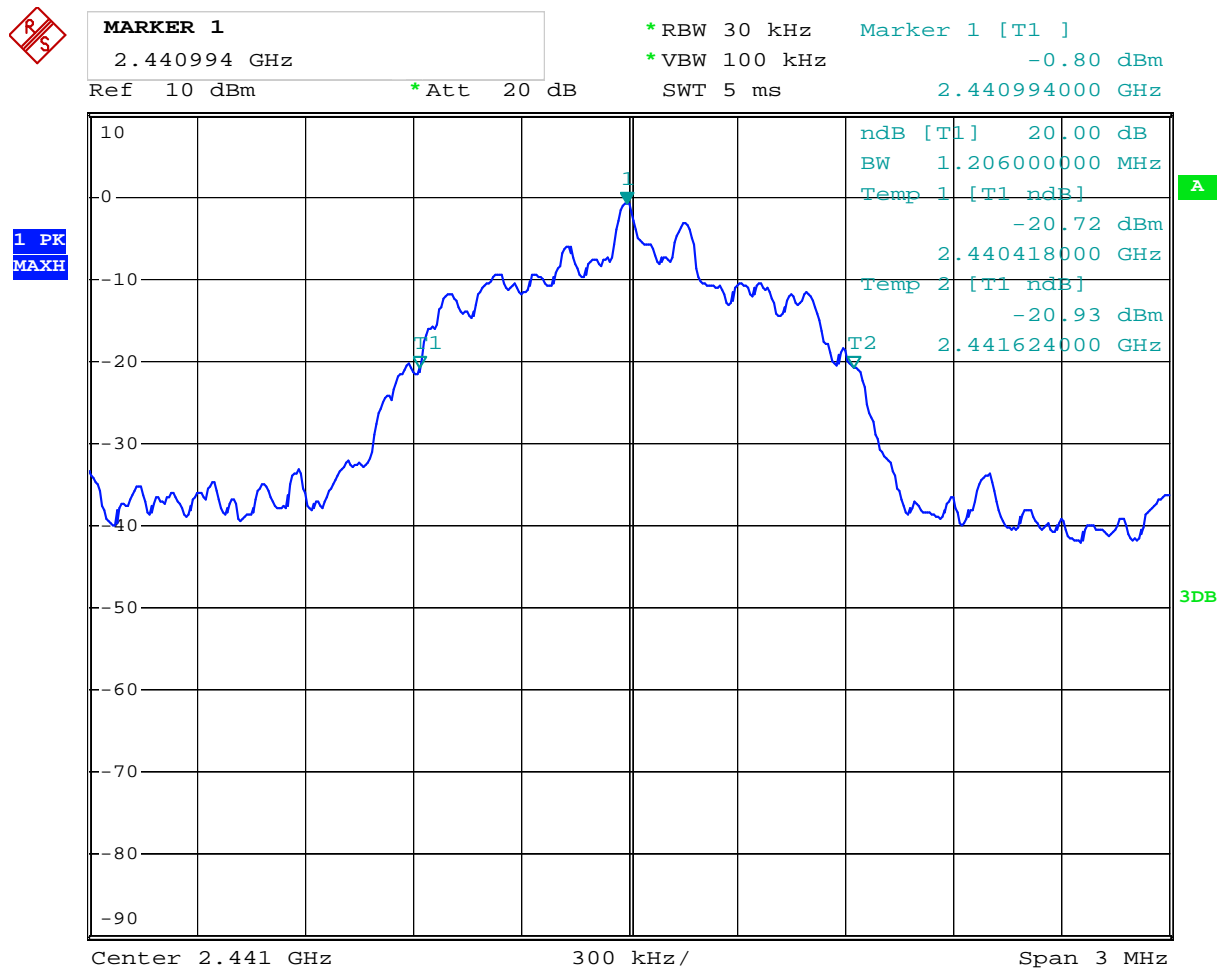
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2. Condition: Middle Channel

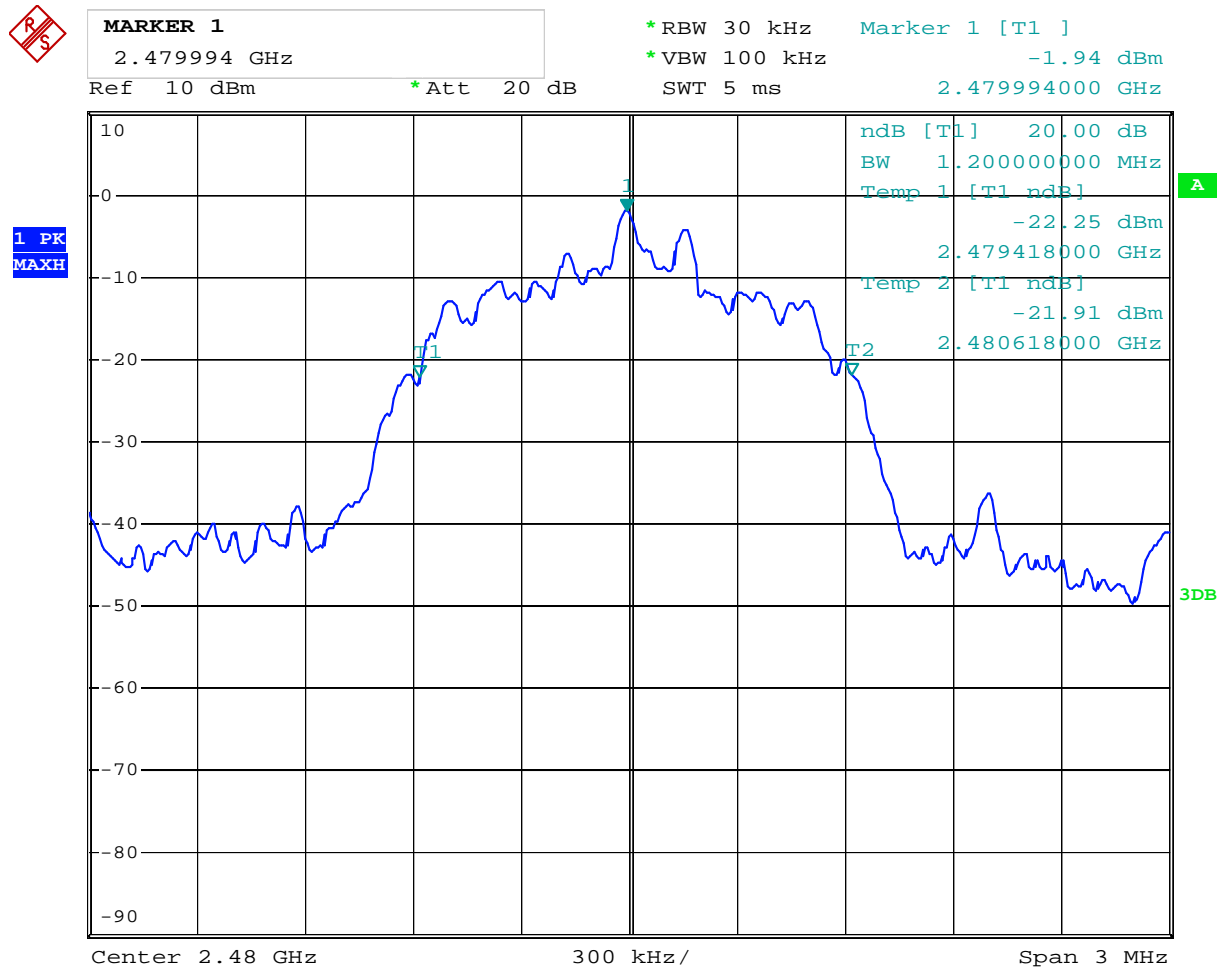


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3. High Channel



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8. Maximum Peak Output Power

8.1 Regulation

According to §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 2400-2483.5MHz band:0.125 watts. According to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

8.2 Limits of Maximum Peak Output Power

The Maximum Peak Output Power Measurement is 30dBm.

8.3 Test Procedure

1. Check the calibration of the measuring instrument (spectrum analyzer) using either an internal calibrator or a known signal from an external generator.
2. Set the spectrum analyzer as follows: Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel; RBW > the 20 dB bandwidth of the emission being measured; VBW \geq RBW; Sweep = auto; Detector function = peak; Trace = max hold
3. Measure the highest amplitude appearing on spectral display and record the level to calculate results.
4. Repeat above procedures until all frequencies measured were complete.

The report refers only to the sample tested and does not apply to the bulk.

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8.4 Test Results (BDR MODE)

EUT	Mini Blue Tooth Speaker		Model	PS-1300, PS-1800	
Mode	Keep Transmitting		Input Voltage	DC 5V	
Temperature	24 deg. C,		Humidity	56% RH	
Channel	Channel Frequency (MHz)	Peak Power Output (dBm)	Peak Power Limit (dBm)	Pass/ Fail	
Low	2402	0.98	30	Pass	
Middle	2441	0.68	30	Pass	
High	2480	0.22	30	Pass	

Note: 1. the result basic equation calculation as follow:

$$\text{Peak Power Output} = \text{Peak Power Reading} + \text{Cable loss} + \text{Attenuator}$$

8.5 Test Results (EDR MODE)

EUT	Mini Blue Tooth Speaker		Model	PS-1300, PS-1800	
Mode	Keep Transmitting		Input Voltage	DC 5V	
Temperature	24 deg. C,		Humidity	56% RH	
Channel	Channel Frequency (MHz)	Peak Power Output (dBm)	Peak Power Limit (dBm)	Pass/ Fail	
Low	2402	0.39	30	Pass	
Middle	2441	0.02	30	Pass	
High	2480	-0.87	30	Pass	

Note: 1. the result basic equation calculation as follow:

$$\text{Peak Power Output} = \text{Peak Power Reading} + \text{Cable loss} + \text{Attenuator}$$



9. Carrier Frequency Separation

9.1 Regulation

According to §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.

9.2 Limits of Carrier Frequency Separation

The Maximum Power Spectral Density Measurement is 25kHz or two-thirds of the 20dB bandwidth of the hopping Channel which is great.

9.3 Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Set the spectrum analyzer as follows: Span = wide enough to capture the peaks of two adjacent channels: Resolution (or IF) Bandwidth (RBW) \geq 1% of the span; Video (or Average) Bandwidth (VBW) \geq RBW; Sweep = auto; Detector function = peak; Trace = max hold
3. Measure the separation between the peaks of the adjacent channels using the marker-delta function.
4. Repeat above procedures until all frequencies measured were complete.

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9.4 Test Result (BDR MODE)

EUT	Mini Blue Tooth Speaker		Model	PS-1300, PS-1800	
Mode	Keep Transmitting		Input Voltage	DC 5V	
Temperature	24 deg. C,		Humidity	56% RH	
Channel	Channel Frequency (MHz)	Carrier Frequency Separation	Limit	Pass/ Fail	
Middle	2480	990kHz	≥ 25 kHz or two-thirds of 20 dB bandwidth	Pass	

The report refers only to the sample tested and does not apply to the bulk.

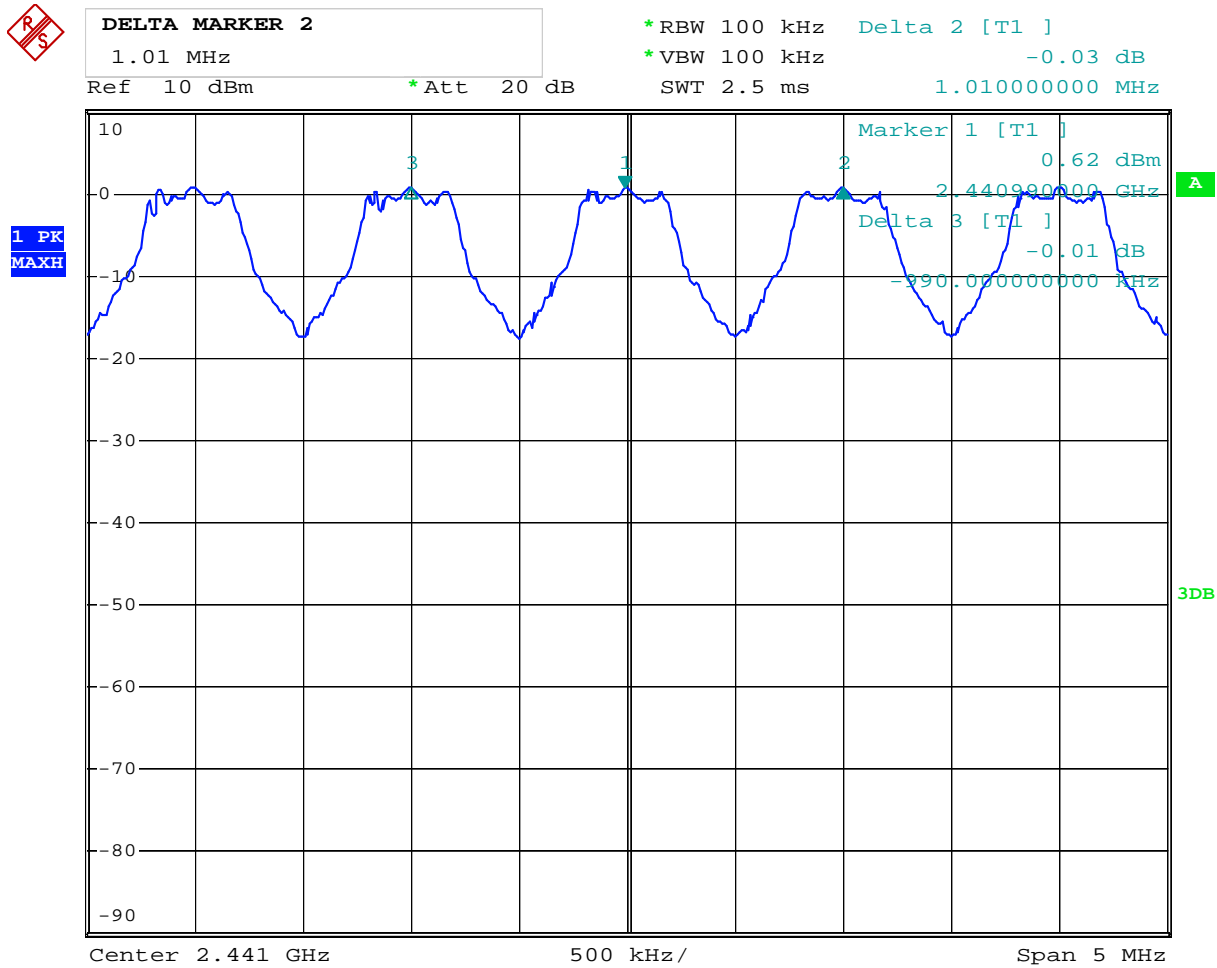
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Test Plots (BDR MODE)

Middle Channel



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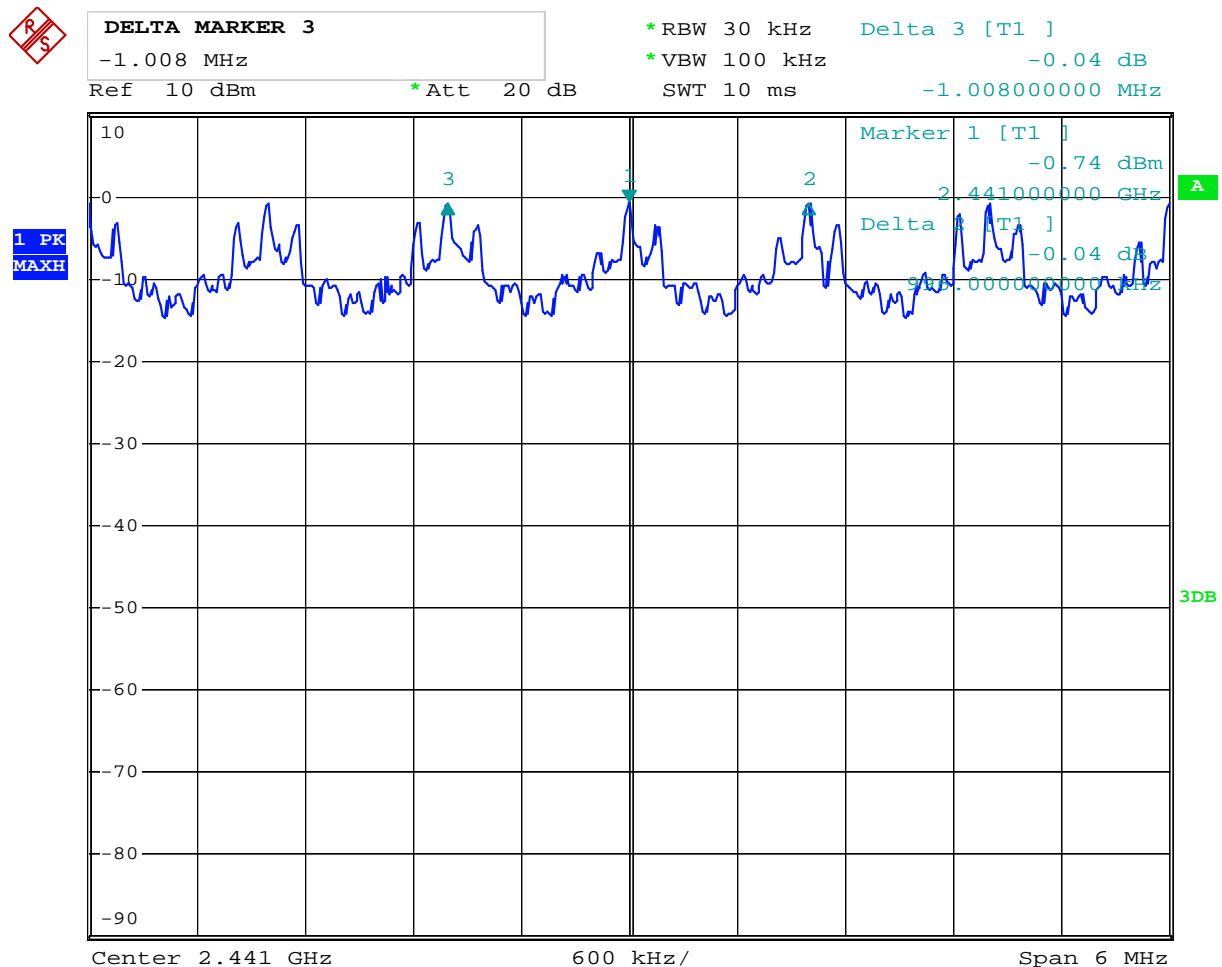


9.5 Test Result (EDR MODE)

EUT	Mini Blue Tooth Speaker		Model	PS-1300, PS-1800
Mode	Keep Transmitting		Input Voltage	DC 5V
Temperature	24 deg. C,		Humidity	56% RH
Channel	Channel Frequency (MHz)	Carrier Frequency Separation	Limit	Pass/ Fail
Middle	2480	996kHz	≥ 25 kHz or two-thirds of 20 dB bandwidth	Pass

Test Plots (EDR MODE)

Middle Channel



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10. Number of Hopping Channels

10.1 Regulation

According to §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. According to §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.

10.2 Limits of Number of Hopping Channels

The frequency hopping systems in the 2400-2483.5MHz band shall use at least 15 channels.

10.3 Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Set the spectrum analyzer as follows: Span = the frequency band of operation; $RBW \geq 1\%$ of the span; $VBW \geq RBW$; Sweep = auto; Detector function = peak; Trace = max hold
3. Record the number of hopping channels.

The report refers only to the sample tested and does not apply to the bulk.

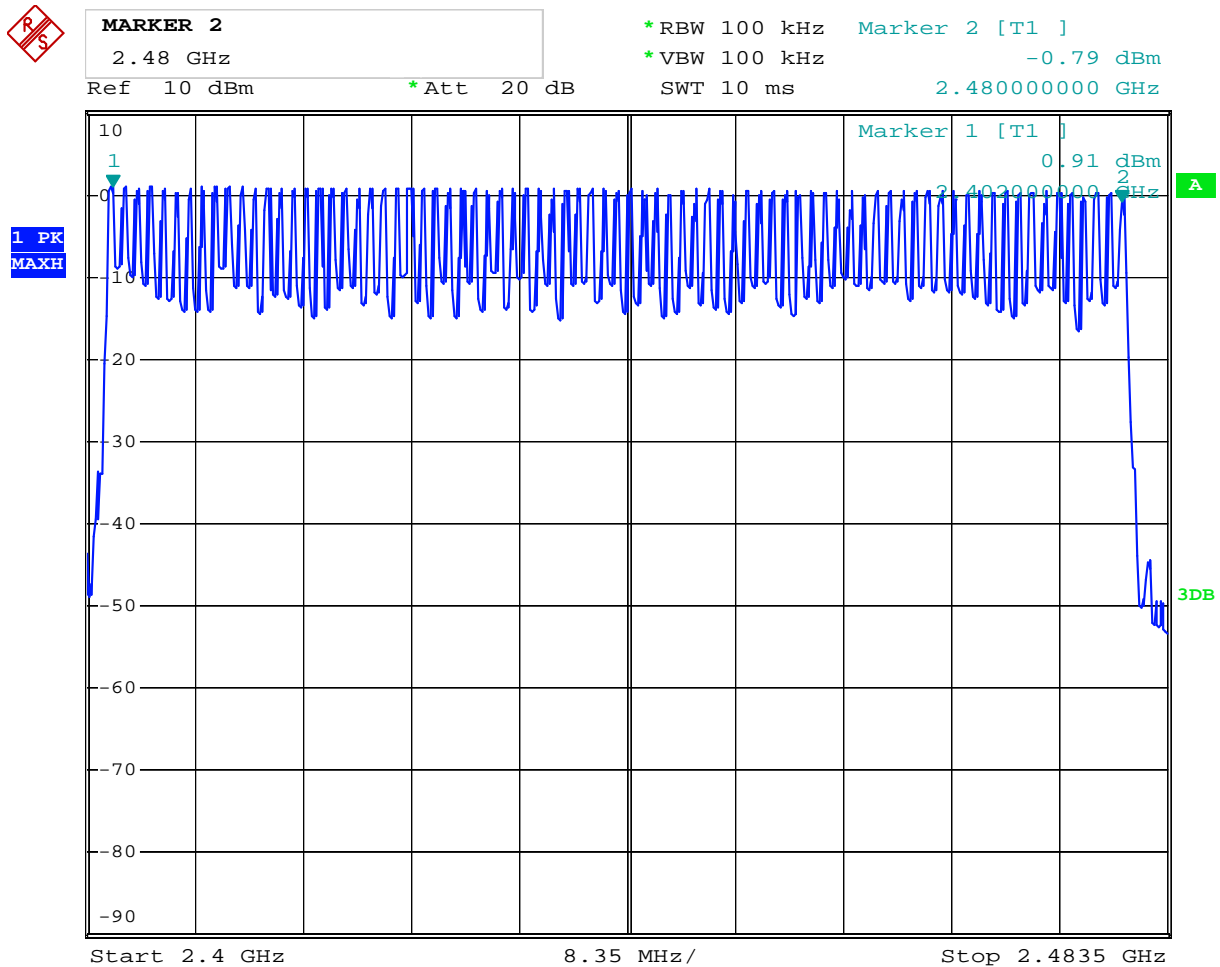
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10.4 Test Result (BDR MODE)

EUT	Mini Blue Tooth Speaker	Model	PS-1300, PS-1800
Mode	Keep Transmitting	Input Voltage	DC 5V
Temperature	24 deg. C,	Humidity	56% RH
Operating Frequency	Number of hopping channels	Limit	Pass/ Fail
2402-2480MHz	79	≥ 15	Pass

Test Plot (BDR MODE)



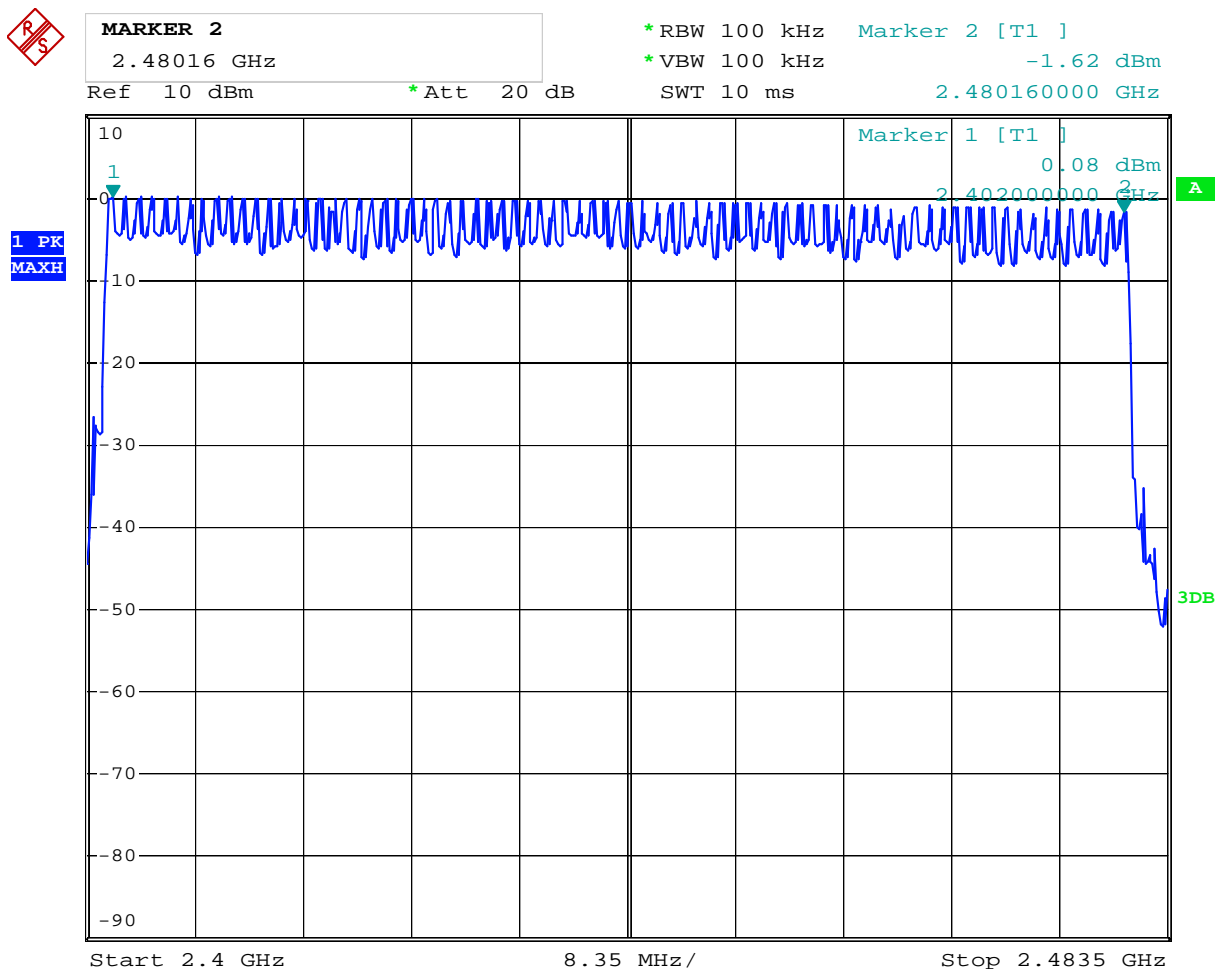
Date: 14.JUN.2012 09:56:13

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10.5 Test Result (EDR MODE)

EUT	Mini Blue Tooth Speaker	Model	PS-1300, PS-1800
Mode	Keep Transmitting	Input Voltage	DC 5V
Temperature	24 deg. C,	Humidity	56% RH
Operating Frequency	Number of hopping channels	Limit	Pass/ Fail
2402-2480MHz	79	≥ 15	Pass

Test Plot (EDR MODE)



Date: 13.JUN.2012 14:19:30

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11. Time of Occupancy (Dwell Time)

11.1 Regulation

According to §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.

11.2 Limits of Carrier Frequency Separation

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

11.3 Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Set the spectrum analyzer as follows: Span = zero span, centered on a hopping channel; RBW = 1 MHz; VBW \geq RBW; Sweep = as necessary to capture the entire dwell time per hopping channel; Detector function = peak; Trace = max hold
3. Measure the dwell time using the marker-delta function.
4. Repeat above procedures until all frequencies measured were complete.
5. Repeat this test for different modes of operation (e.g., data rate, modulation format, etc.), if applicable.

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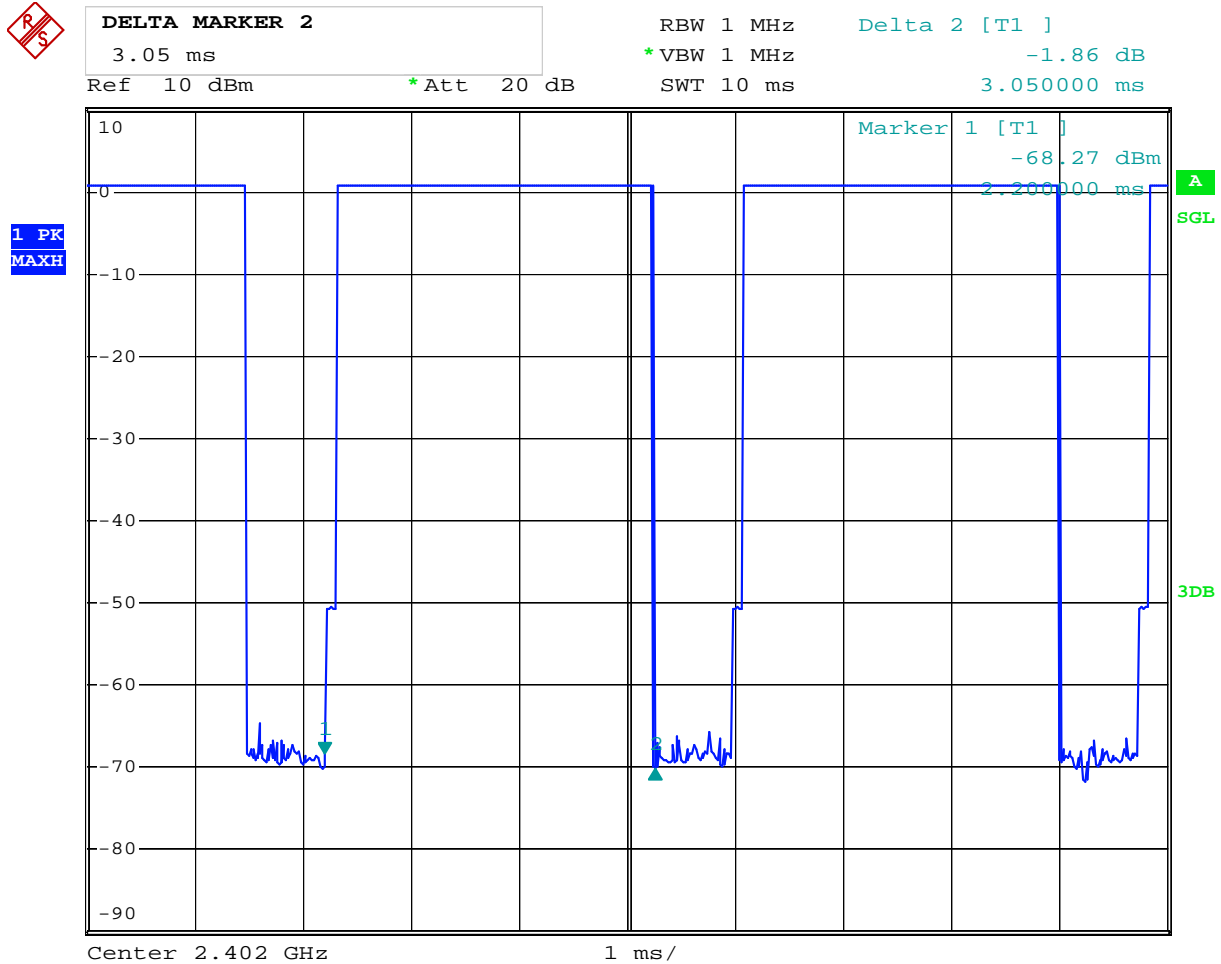
11.4 Test Result (BDR MODE)

EUT	Mini Blue Tooth Speaker		Model	PS-1300, PS-1800	
Mode	Keep Transmitting		Input Voltage	DC5V	
Temperature	24 deg. C,		Humidity	56% RH	
Channel	Reading	Hopping Rate	Actual	Limit	
Low	3.05	266.667 hop/s	0.325	0.4s	
Middle	3.07	266.667 hop/s	0.327	0.4s	
High	3.07	266.667 hop/s	0.327	0.4s	

Actual = Reading \times (Hopping rate / Number of channels) \times Test period, Test period = 0.4 [seconds / channel] \times 79 [channel] = 31.6 [seconds] NOTE: The EUT makes worst case 1600 hops per second or 1 time slot has a length of 625 μ s with 79 channels. A DH5 Packet needs 5 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 266.667 hops per second with 79 channels. **And the DH5 is the worst case.**

Test Plots: (BDR MODE)

Low Channel: DH5

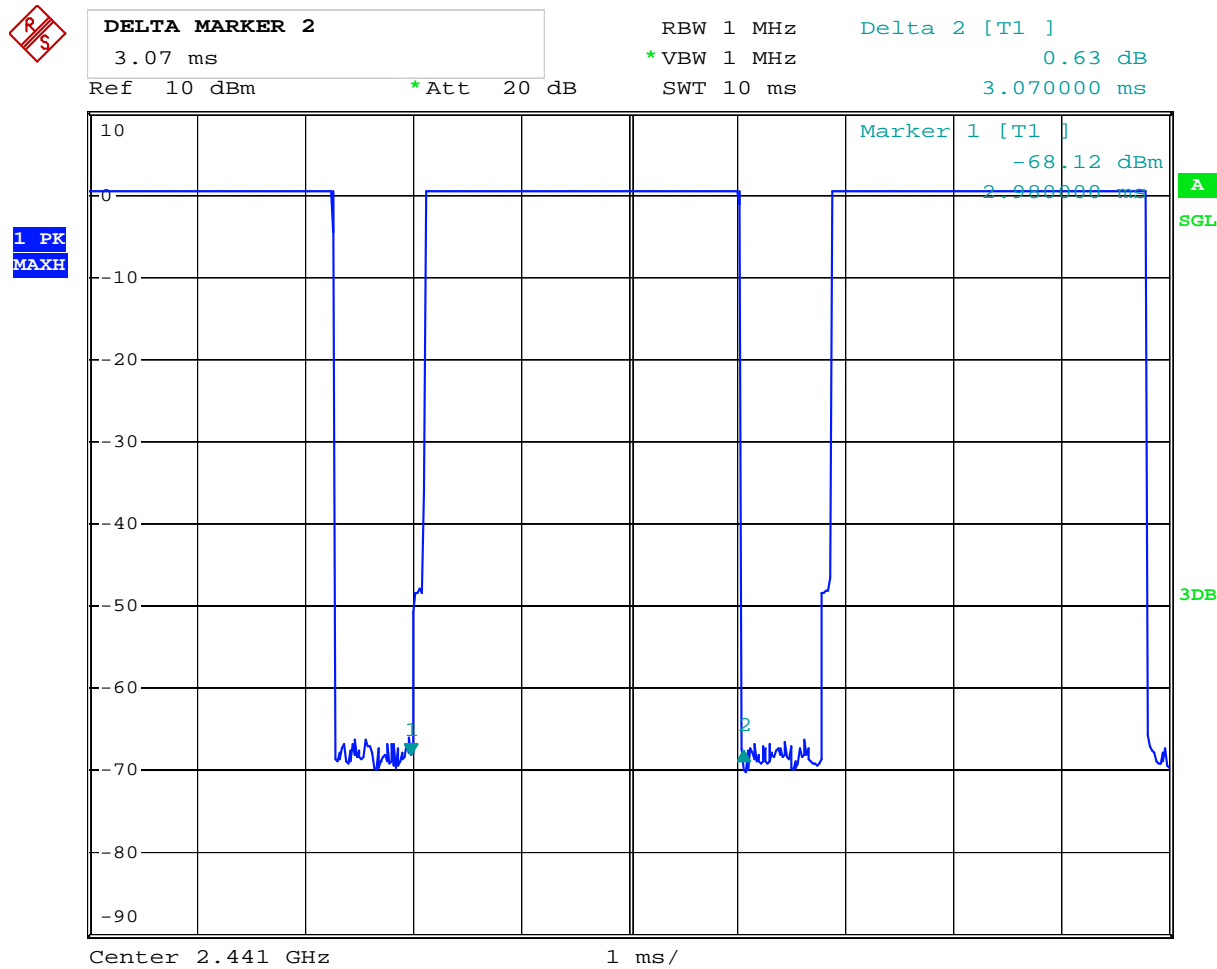


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Middle Channel: DH5

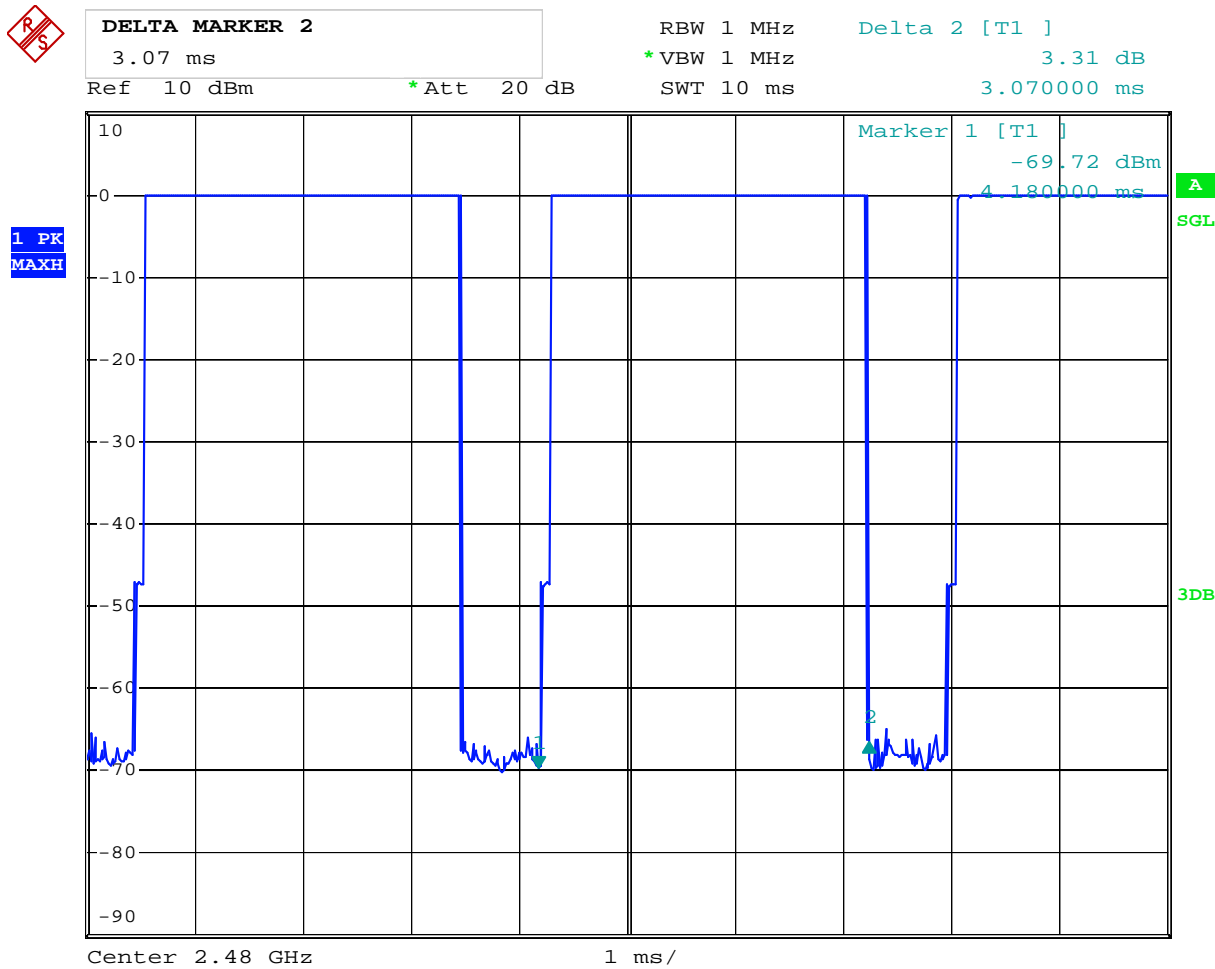


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High Channel: DH5

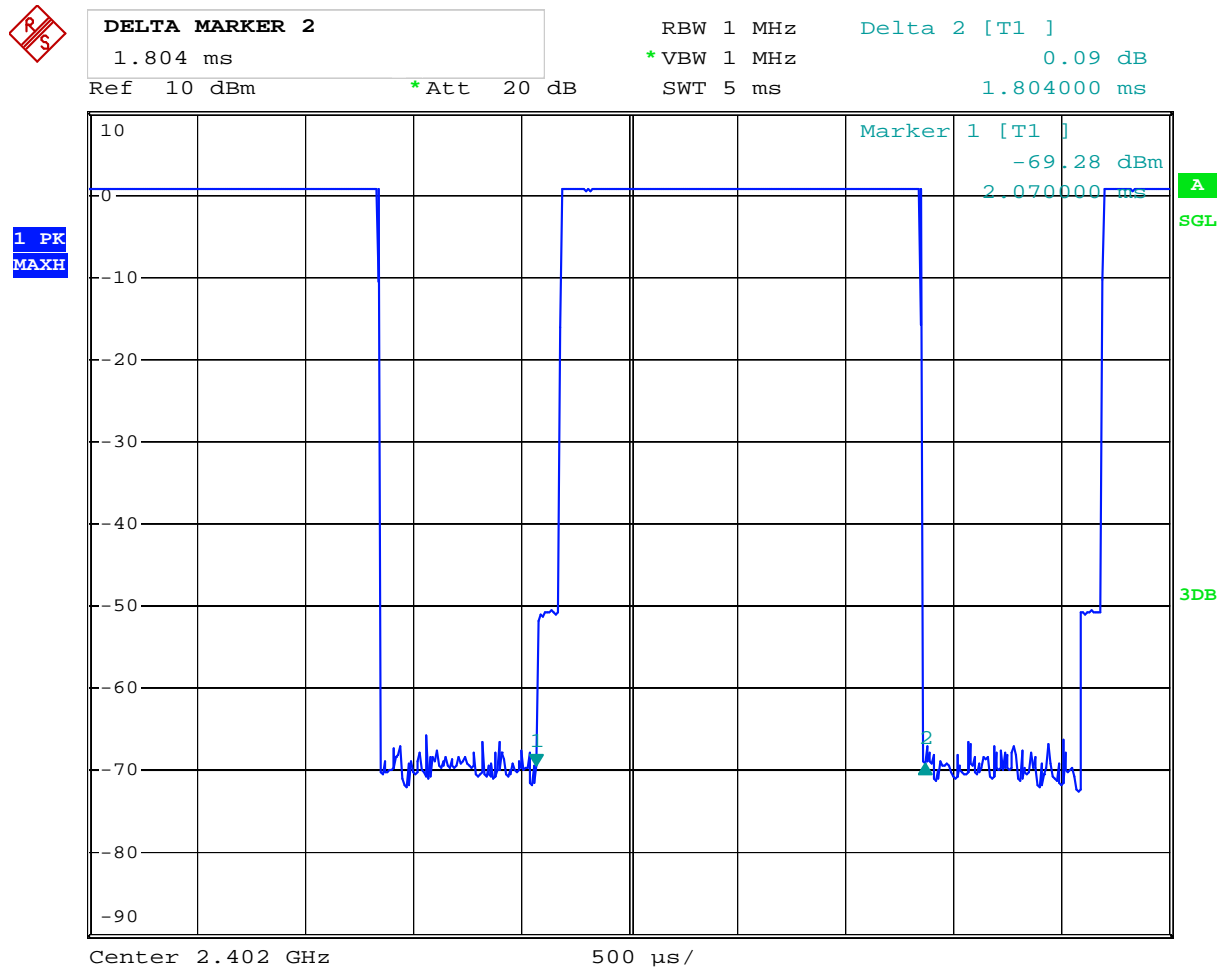


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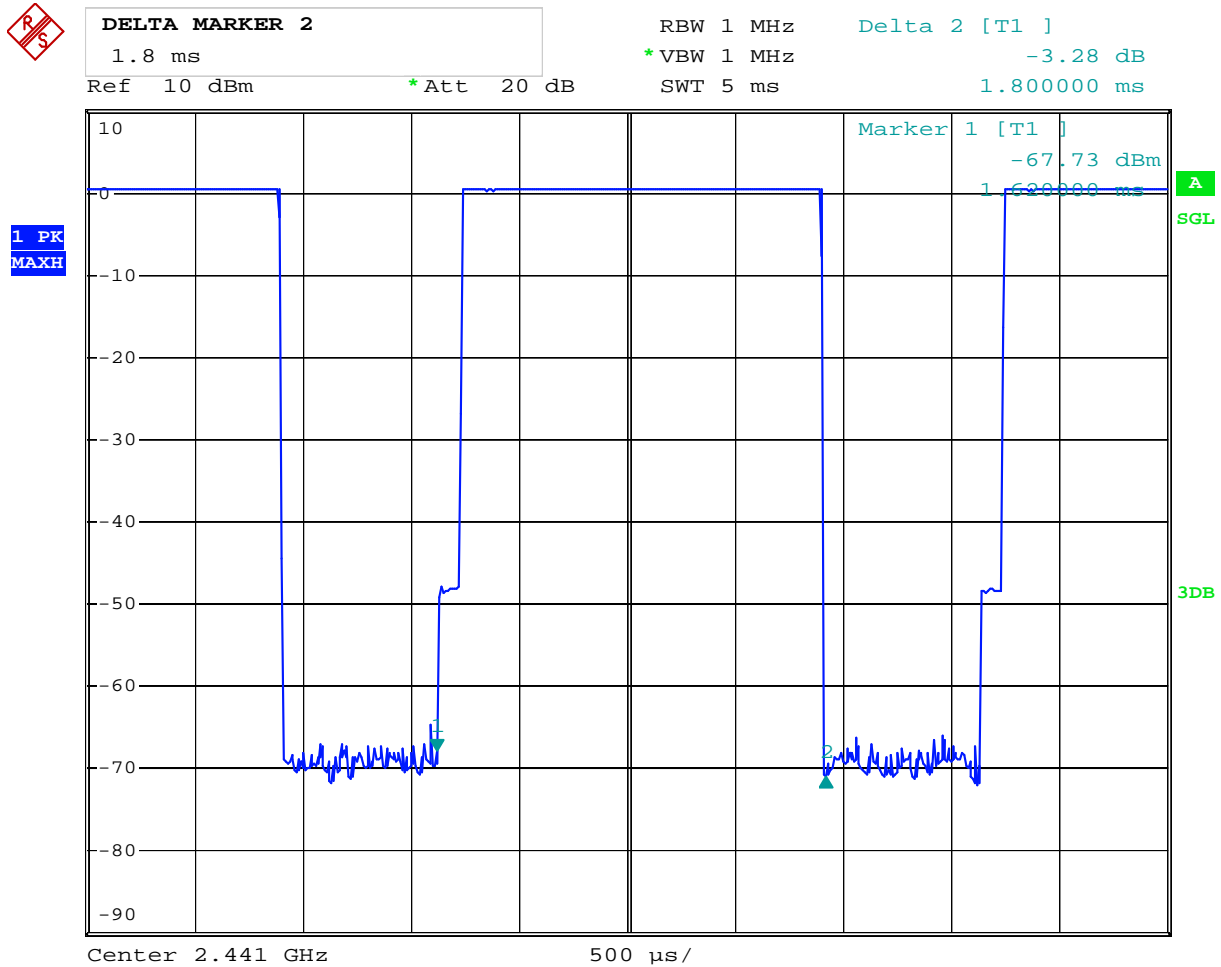
Low Channel: DH3



Date: 14.JUN.2012 09:36:39

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Middle Channel: DH3



Date: 14.JUN.2012 09:37:35

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1.8 ms

Ref 10 dBm

* Att 20 dB

RBW 1 MHz

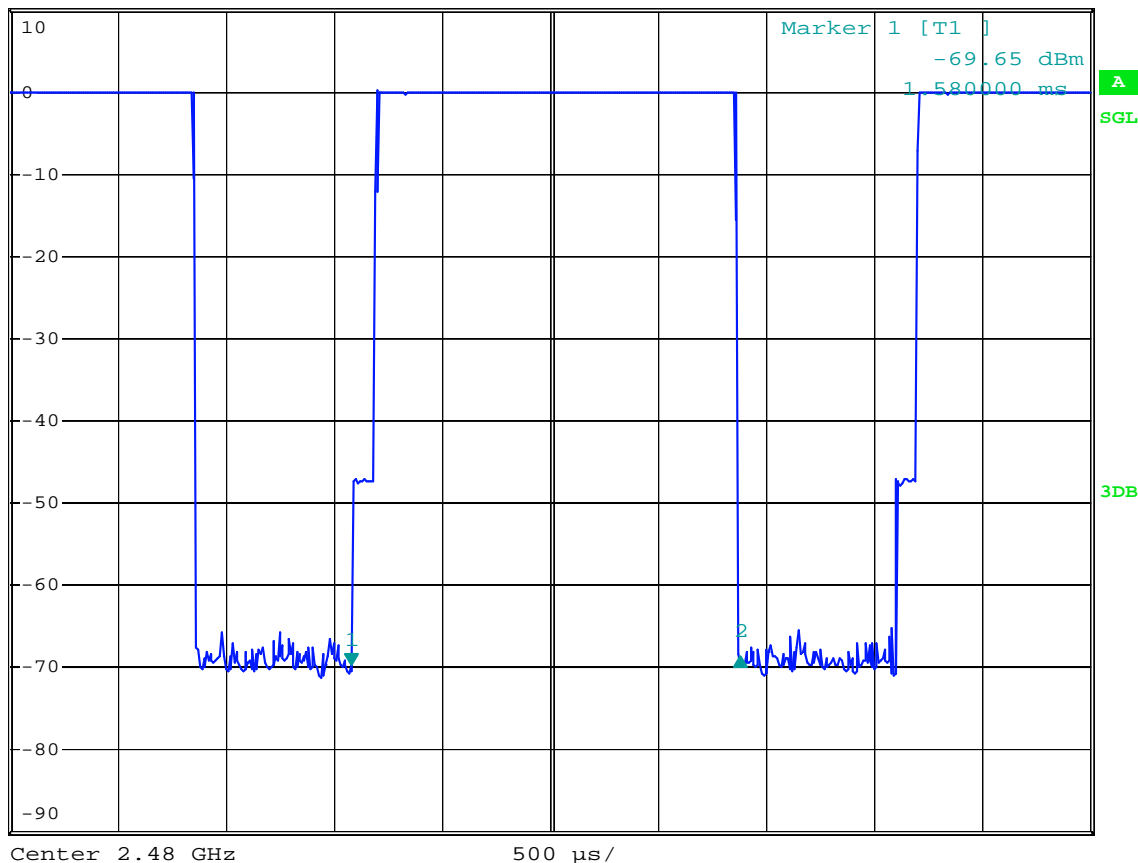
Delta 2 [T1]

* VBW 1 MHz

1.03 dB

SWT 5 ms

1.800000 ms

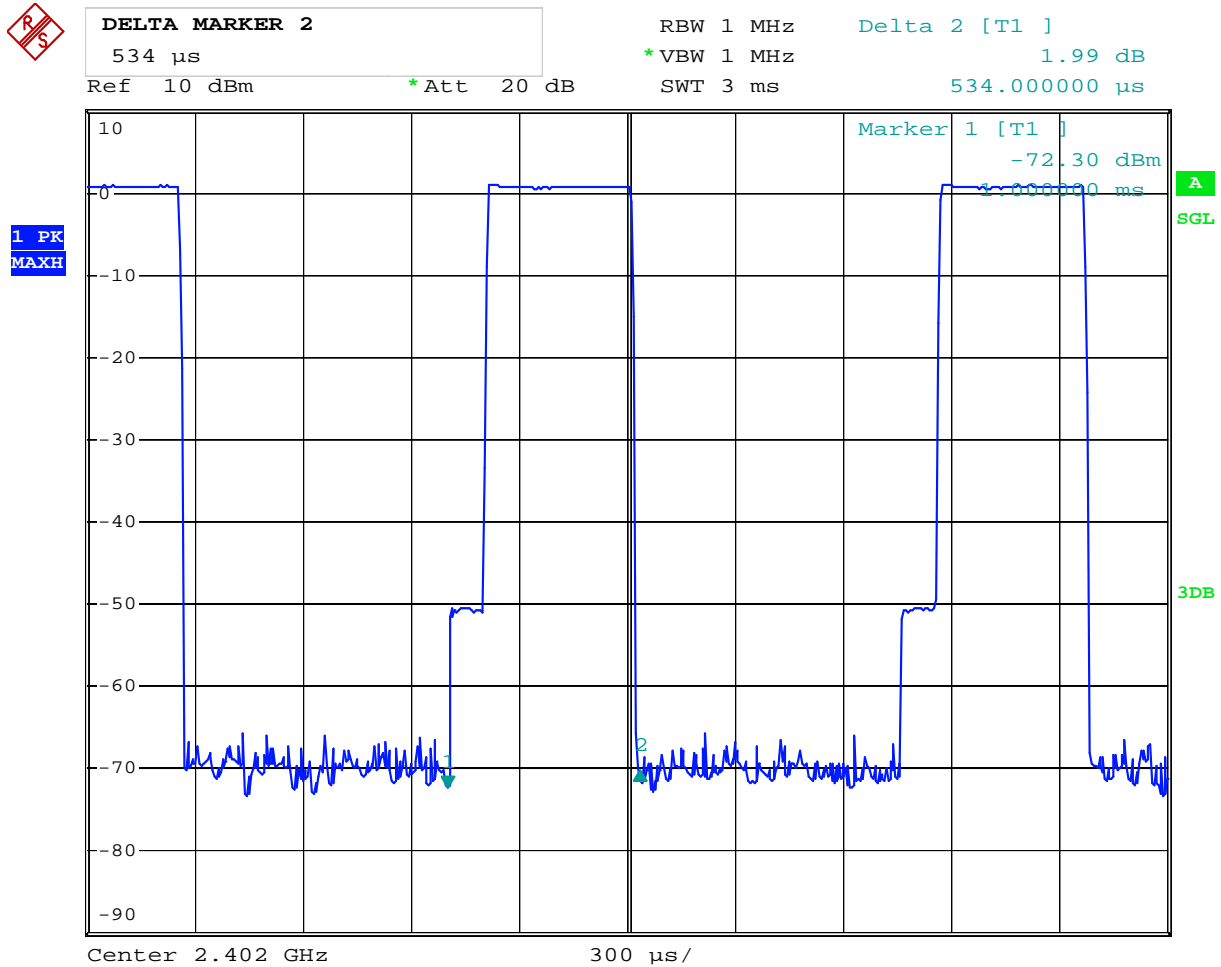


Date: 14.JUN.2012 09:41:16

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Low Channel: DH1

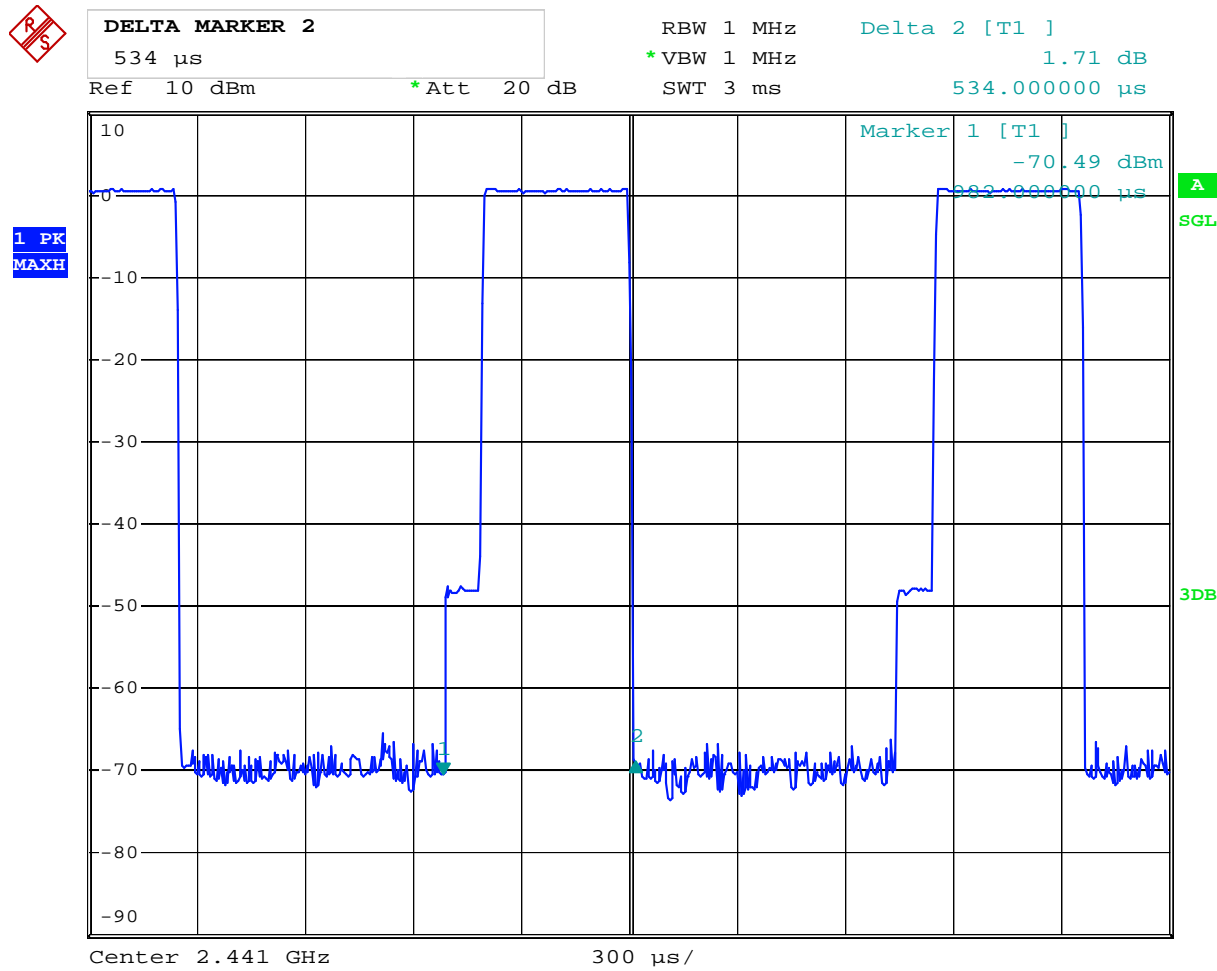


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Middle Channel: DH1

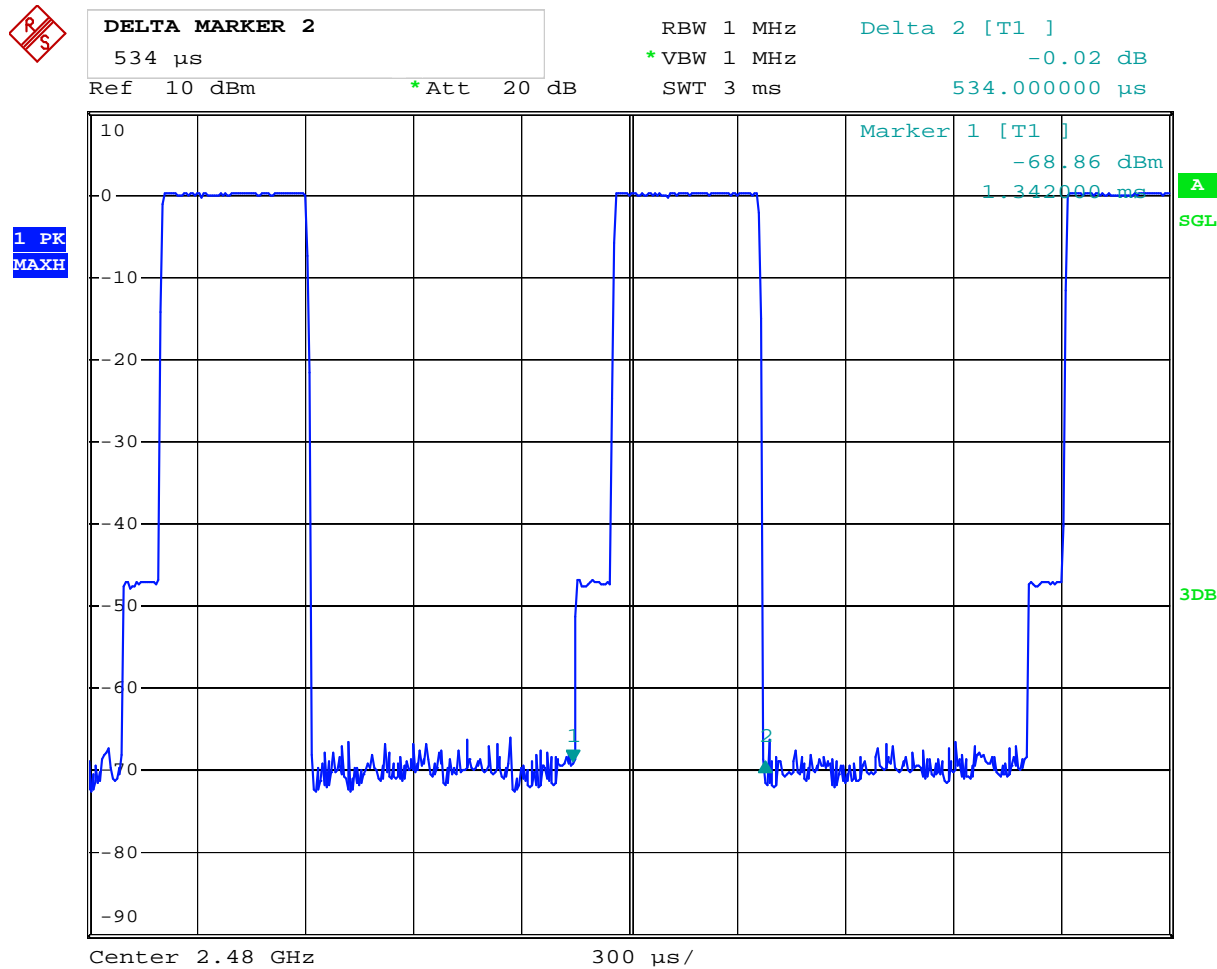


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High Channel: DH1:



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11.5 Test Result (EDR MODE)

EUT	Mini Blue Tooth Speaker		Model	PS-1300, PS-1800	
Mode	Keep Transmitting		Input Voltage	DC5V	
Temperature	24 deg. C,		Humidity	56% RH	
Channel	Reading	Hopping Rate	Actual	Limit	
Low	3.068	266.667 hop/s	0.327	0.4s	
Middle	3.084	266.667 hop/s	0.329	0.4s	
High	3.068	266.667 hop/s	0.327	0.4s	

Actual = Reading × (Hopping rate / Number of channels) × Test period, Test period = 0.4 [seconds / channel] × 79 [channel] = 31.6 [seconds] NOTE: The EUT makes worst case 1600 hops per second or 1 time slot has a length of 625μs with 79 channels. A DH5 Packet needs 5 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 266.667 hops per second with 79 channels. **And the DH5 is the worst case.**

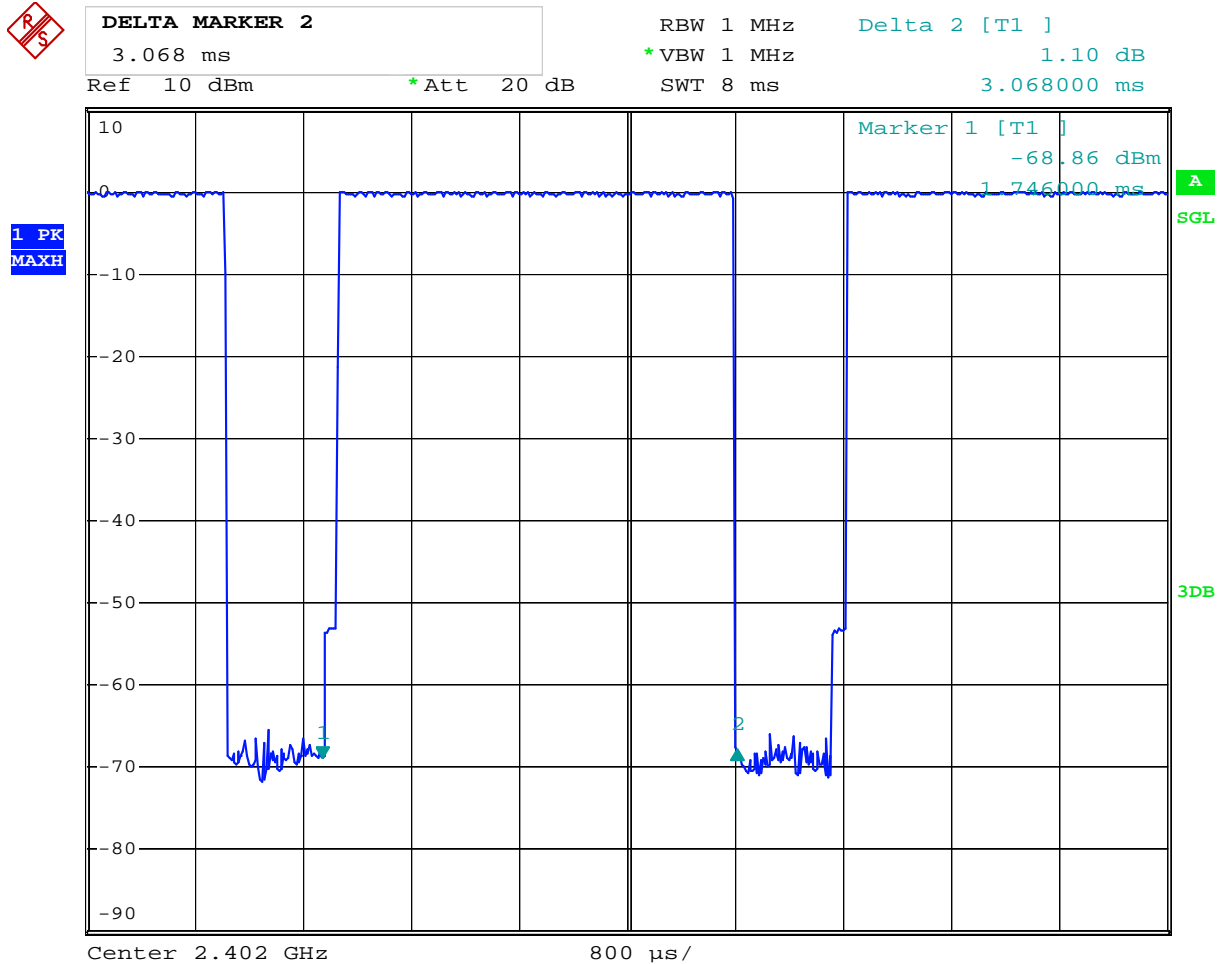
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Test Plots: (EDR MODE)

Low Channel: DH5



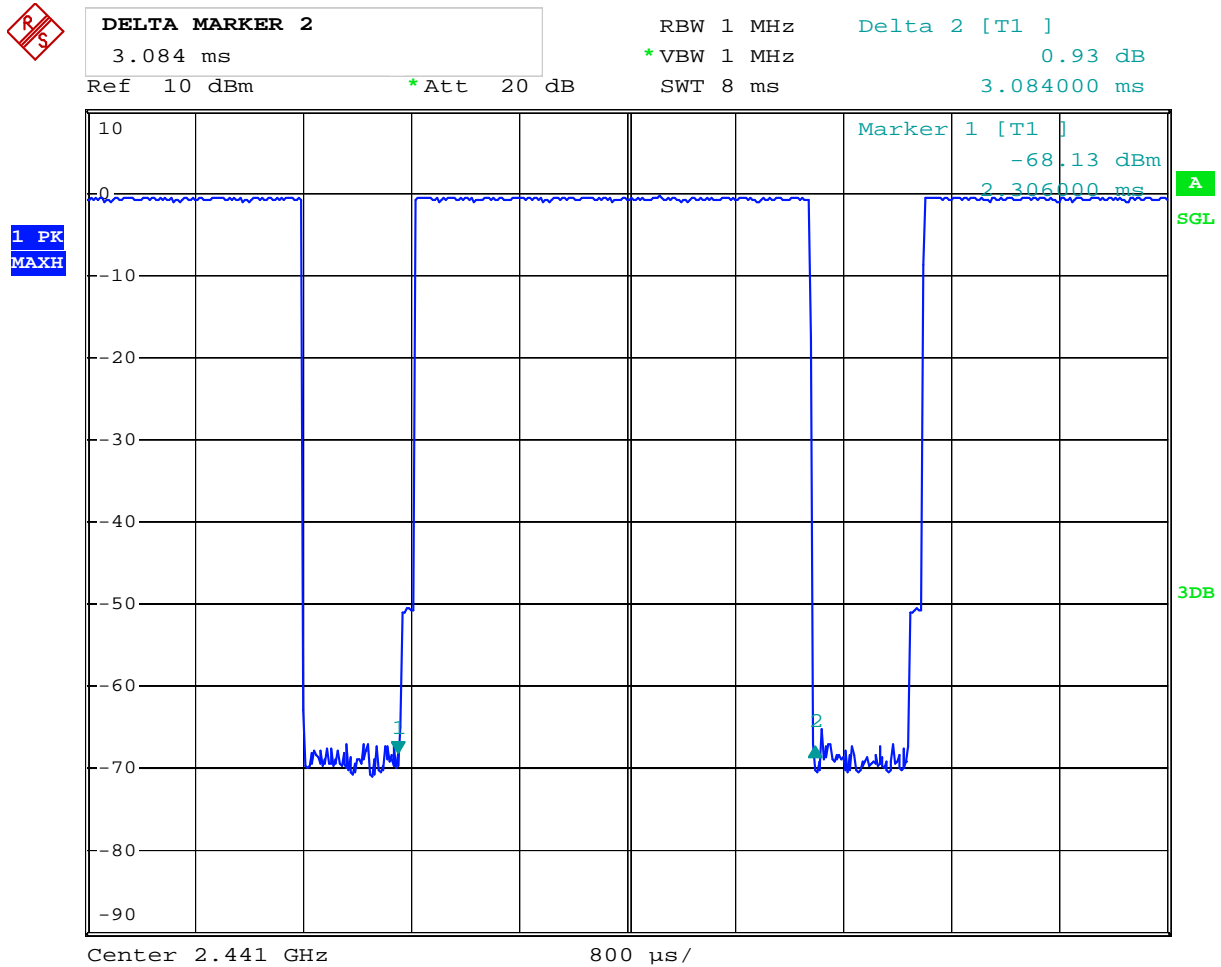
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Middle Channel: DH5

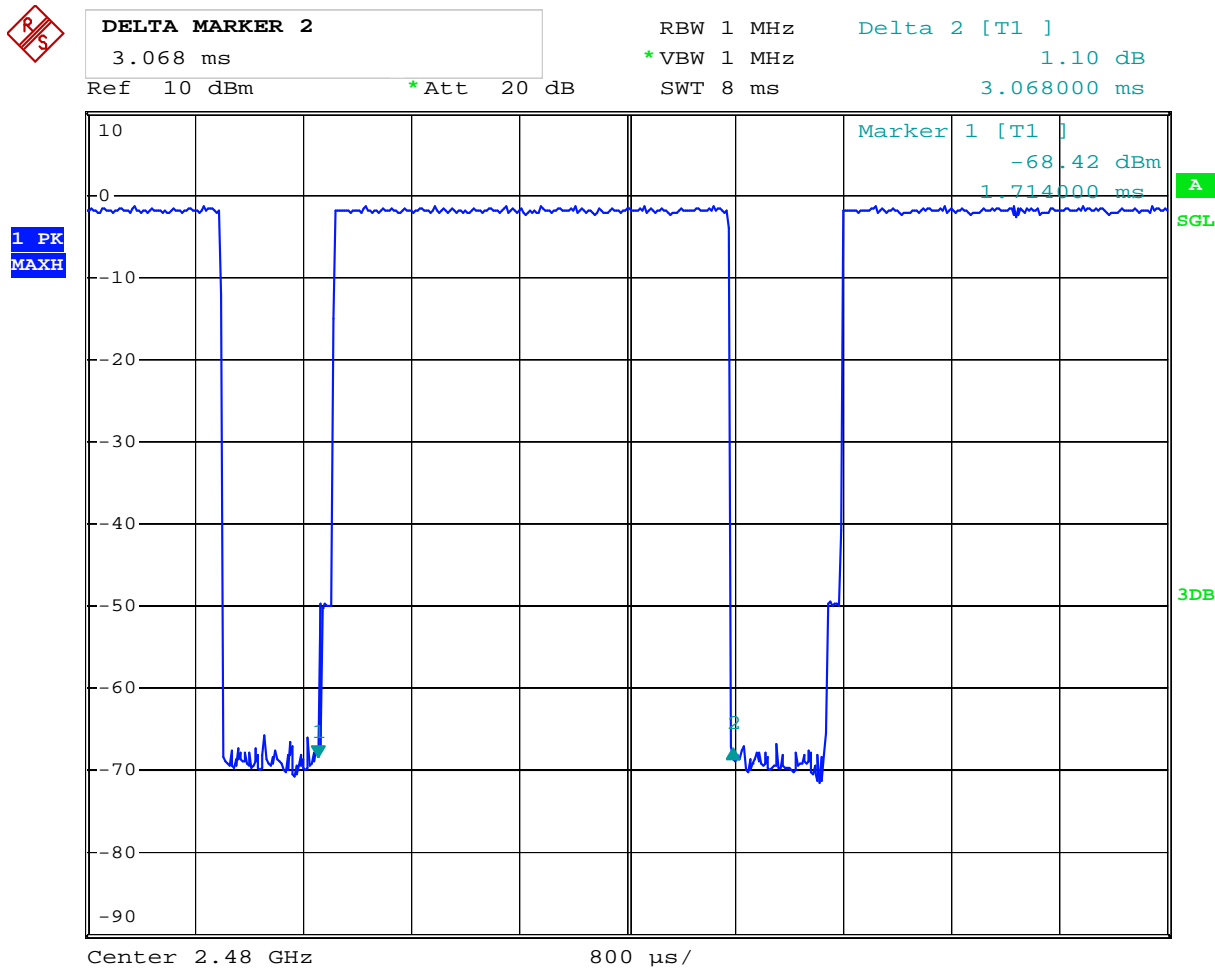


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High Channel: DH5

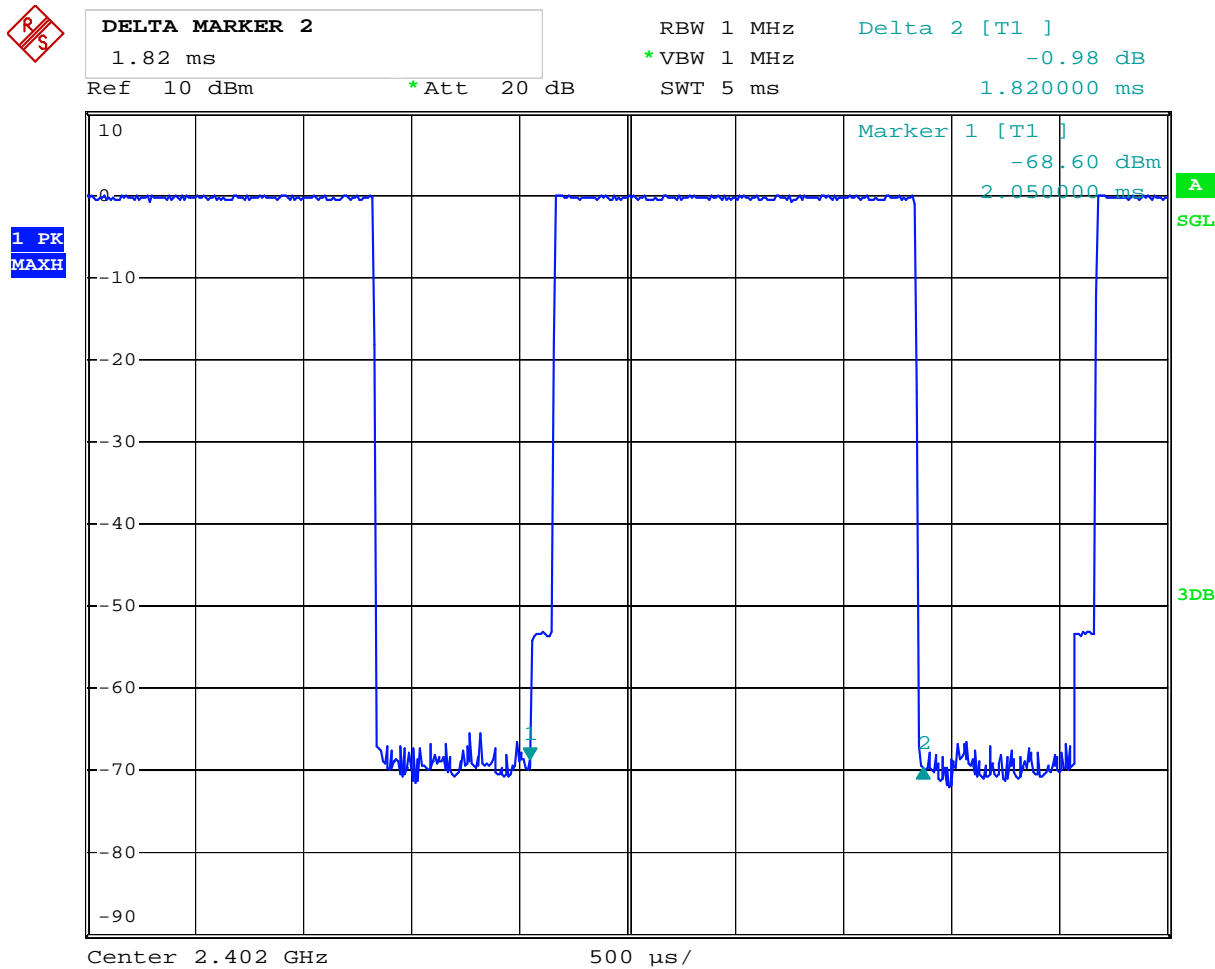


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Low Channel: DH3

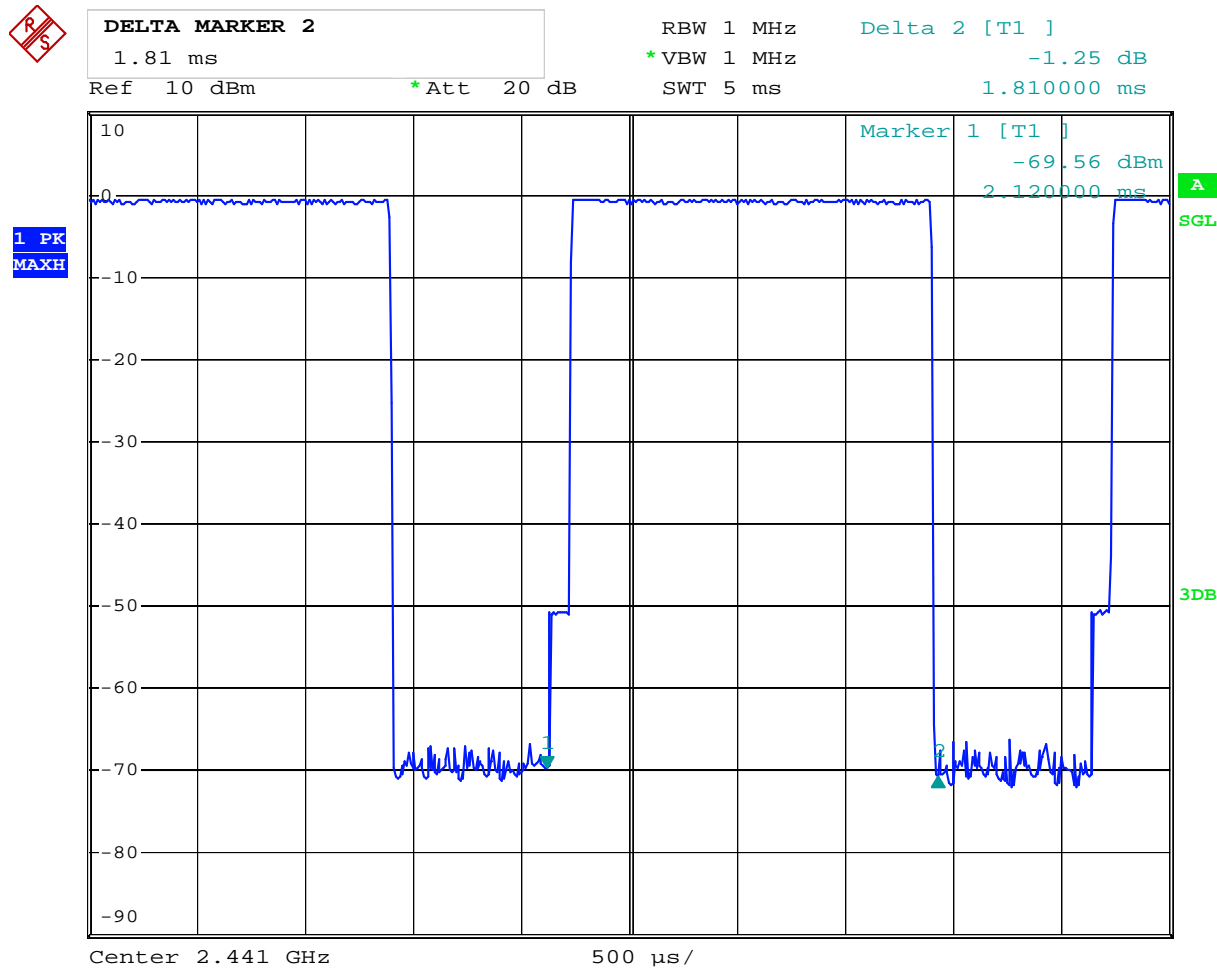


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Middle Channel: DH3

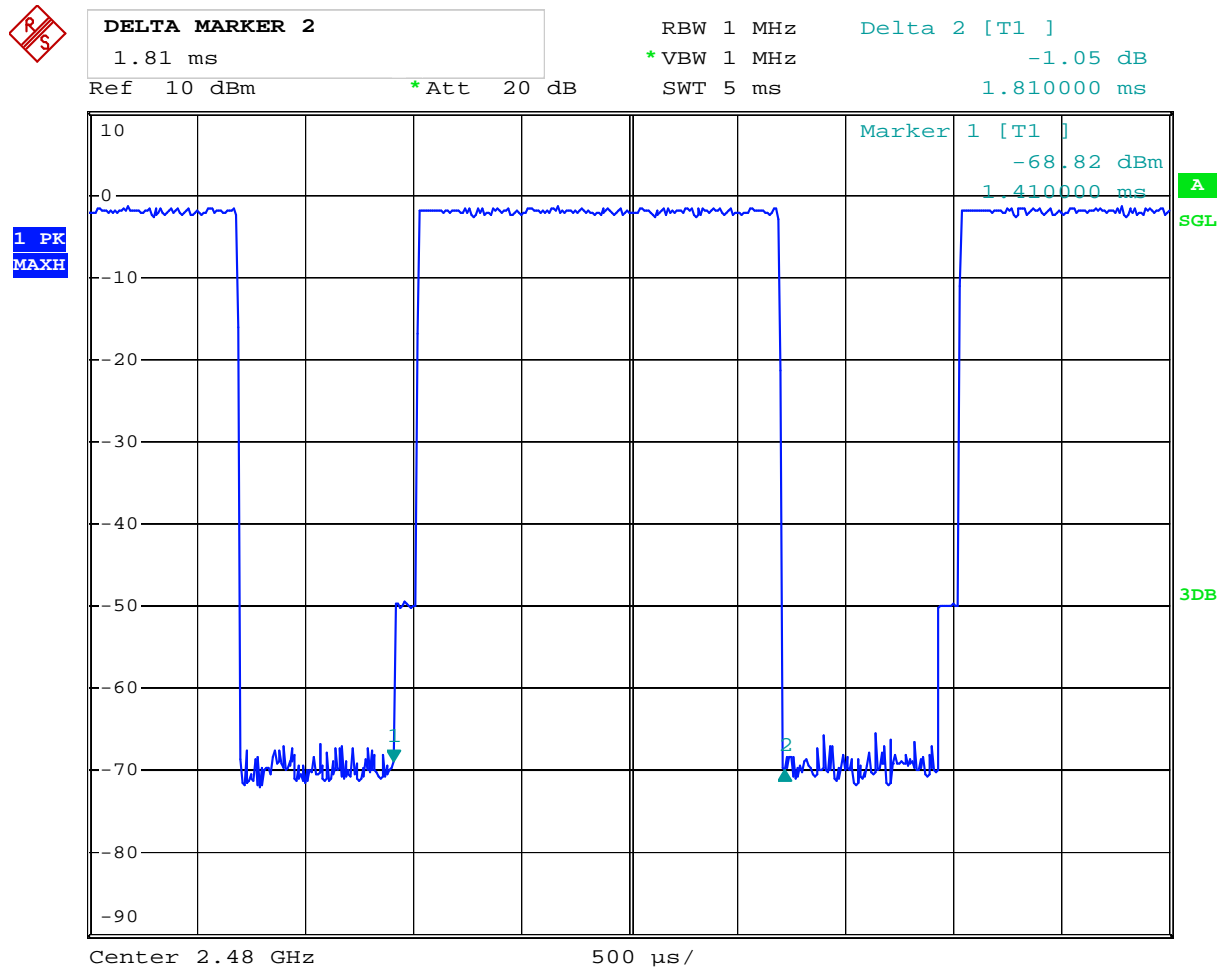


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High Channel: DH3

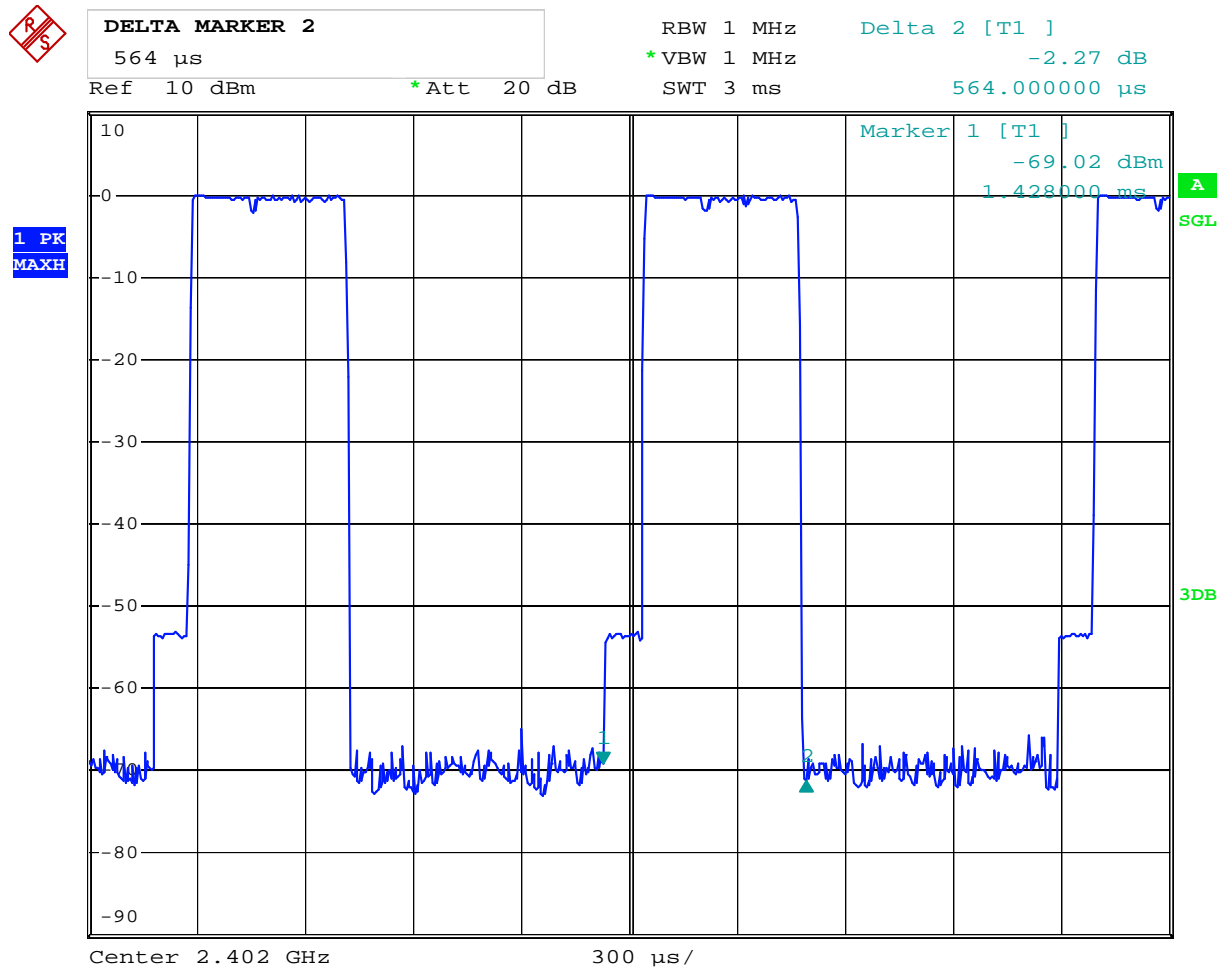


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Low Channel: DH1

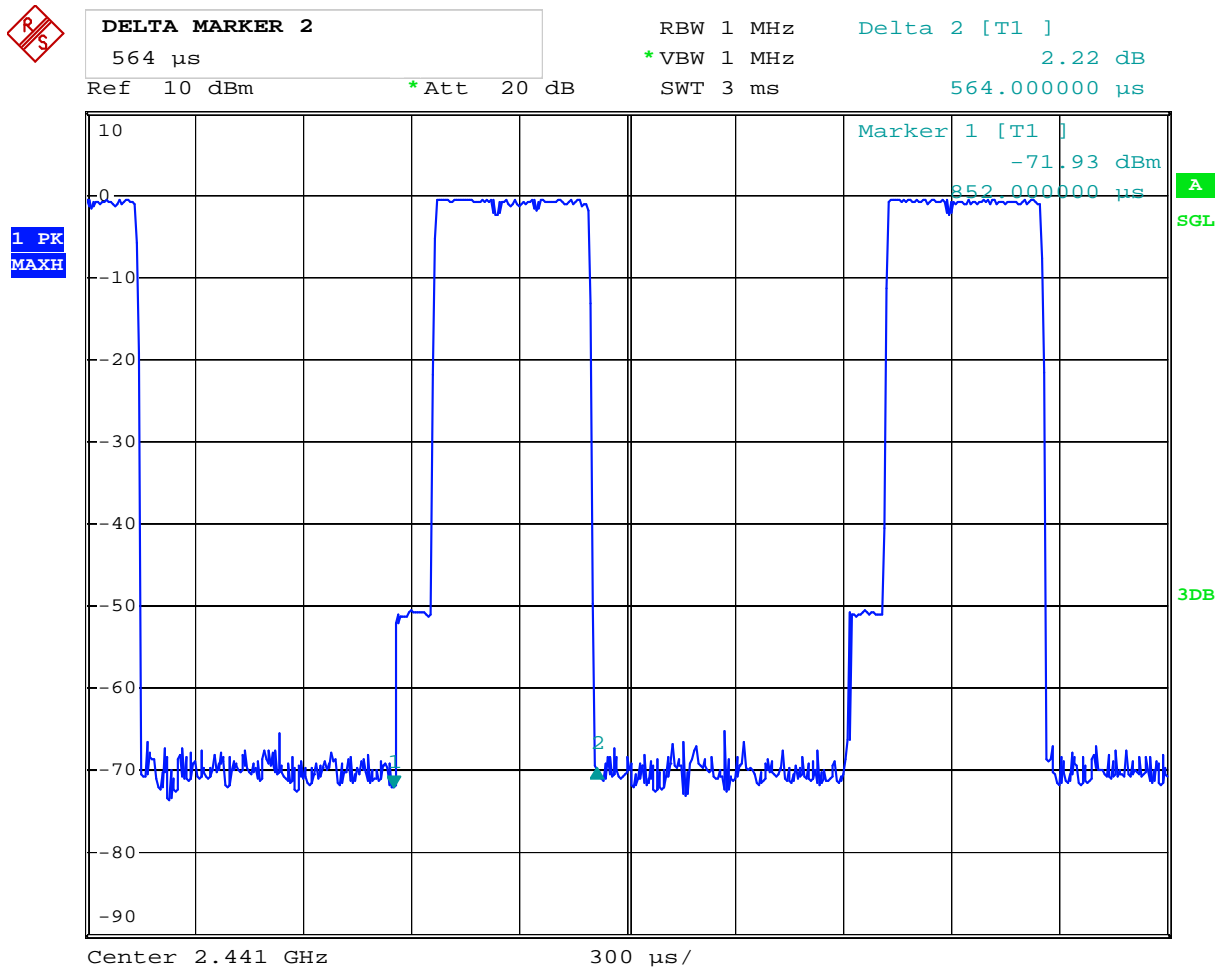


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Middle Channel: DH1

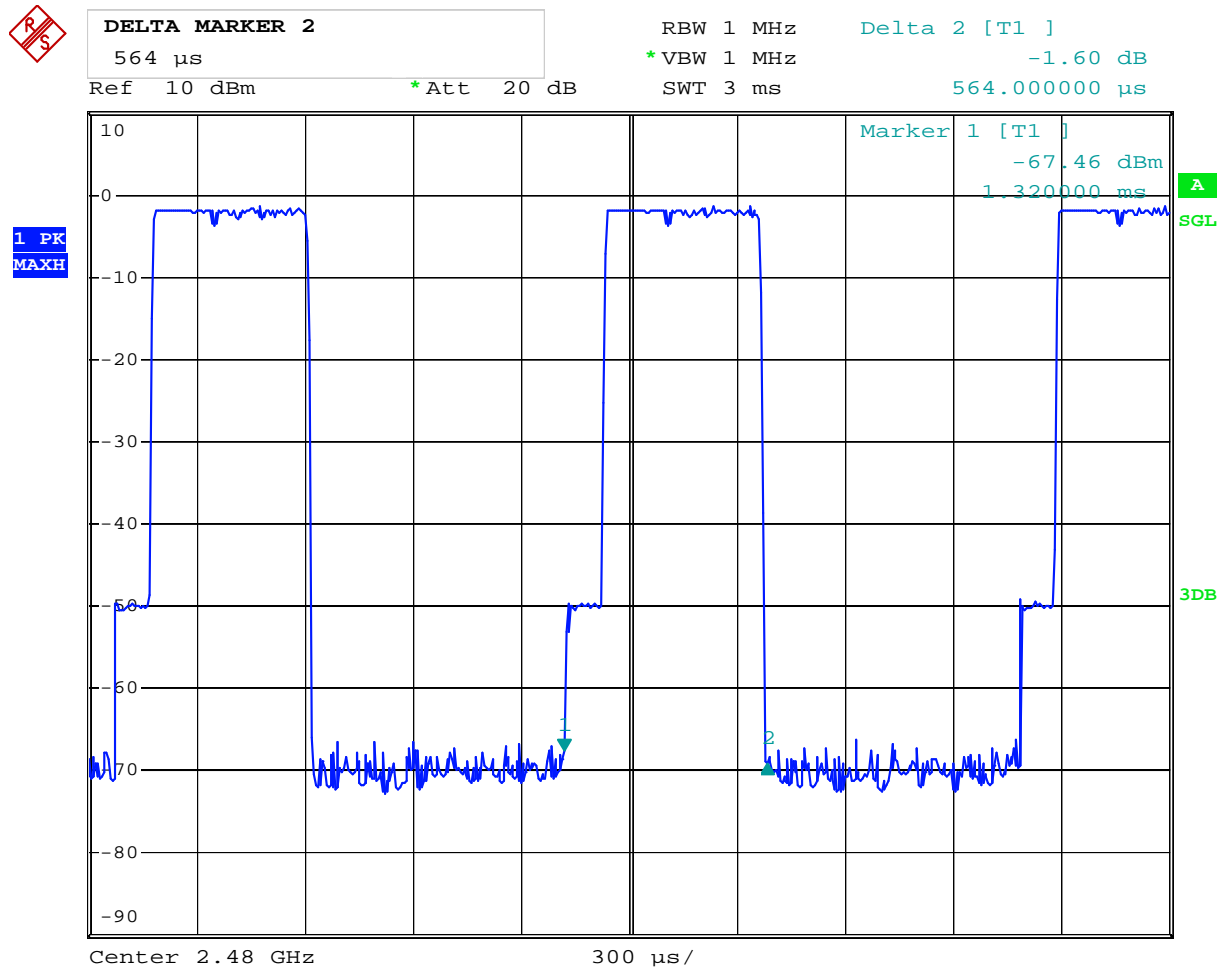


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High Channel: DH1:

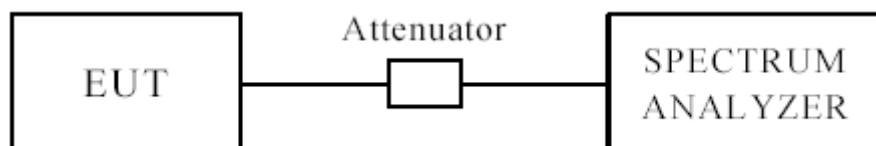


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12 Out of Band Measurement

12.1 Test Setup



The restricted band requirement based on radiated emission test; please see the clause 6 for the test setup

12.2 Limits of Out of Band Emissions Measurement

1. Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).
2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

12.3 Test Procedure

For signals in the restricted bands above and below the 2.4-2.483GHz allocated band a measurement was made of radiated emission test. (Peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK detector)

For bandage test, the spectrum set as follows: RBW=VBW=100 kHz. A conducted measurement used

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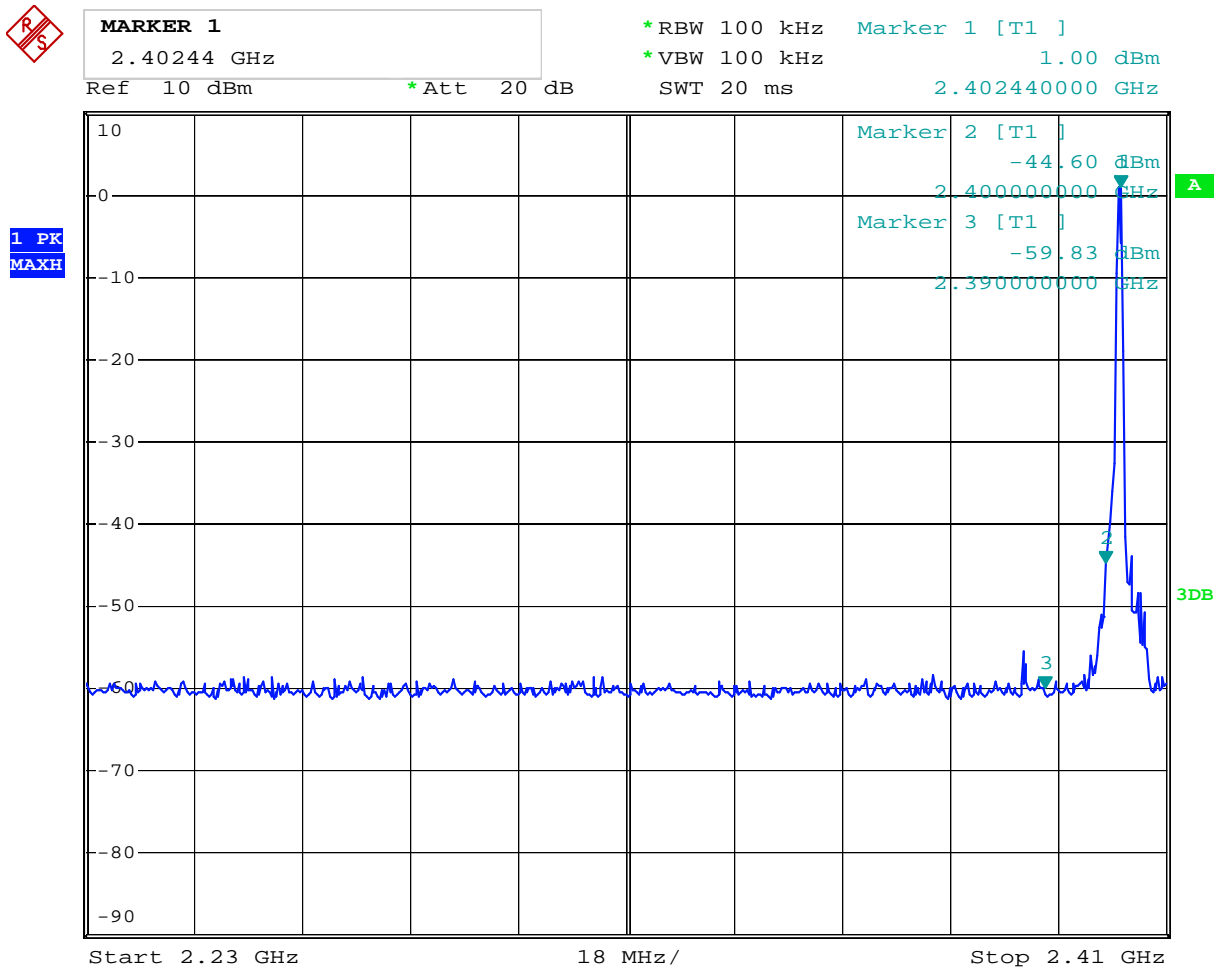
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Test result: (BDR MODE)

12.4 Out of Band and Restrict band Test Result

Product:	Mini Blue Tooth Speaker		Test Mode:	Low Channel
Mode	Keeping Transmitting Under Low CH		Input Voltage	DC 5V
Temperature	24 deg. C		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in Restrict Band 2390MHz	PK (dBμV/m)	38.8(V)/38.5(H)	Limit	74(dBμV/m)
	AV(dBμV/m)	--		54(dBμV/m)

Test Figure:



Date: 14.JUN.2012 09:23:57

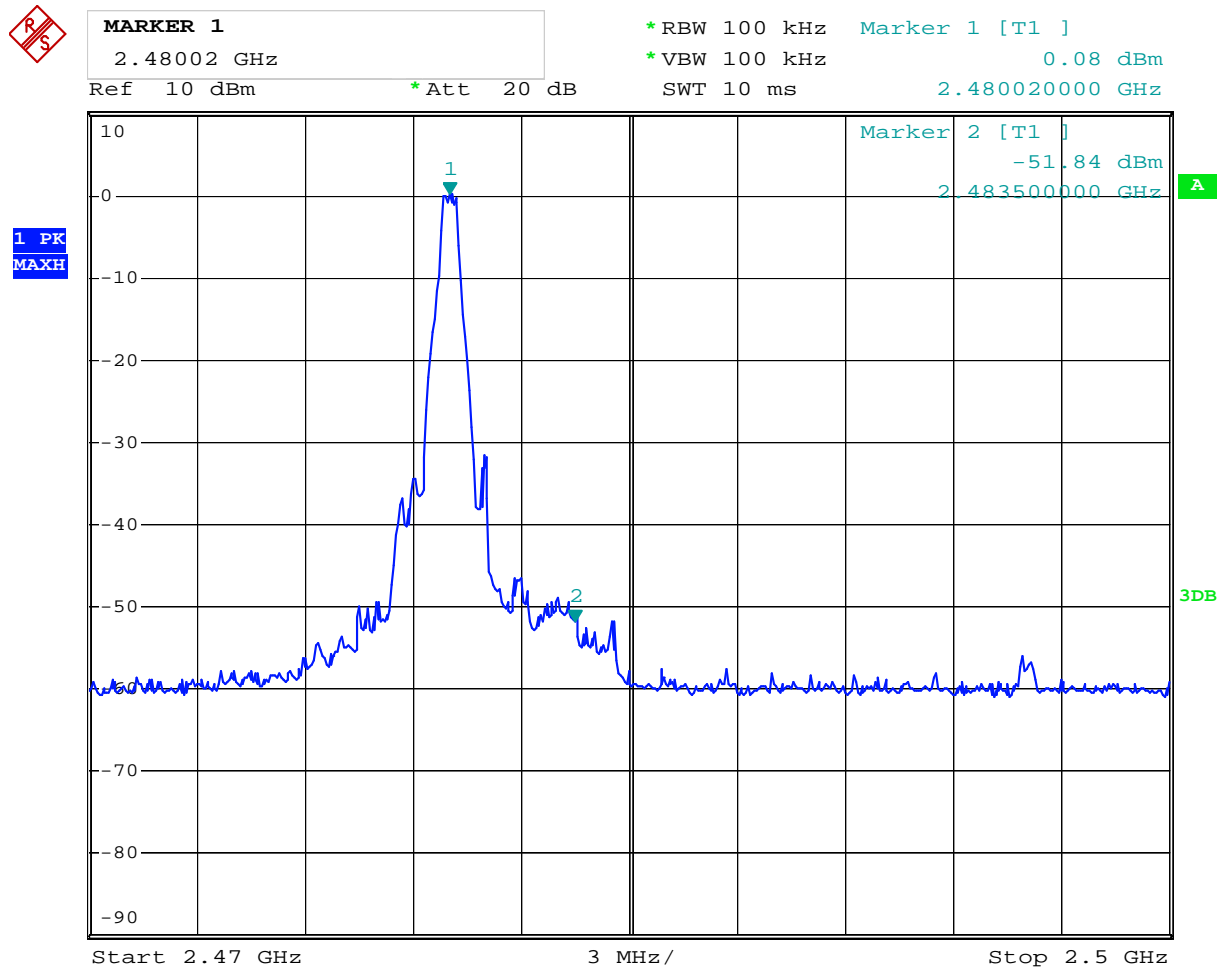
Note: The Max. FS in Restrict Band are measured in conventional method.

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12.4 Out of Band and Restrict band Test Result

Product:	Mini Blue Tooth Speaker		Test Mode:	High Channel
Mode	Keeping Transmitting Under High CH		Input Voltage	DC 5V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in Restrict Band 2484.5MHz	PK (dBμV/m)	39.6(V)/39.2(H)	Limit	74(dBμV/m)
	AV(dBμV/m)	--		54(dBμV/m)

Test Figure:



Date: 14.JUN.2012 09:31:52

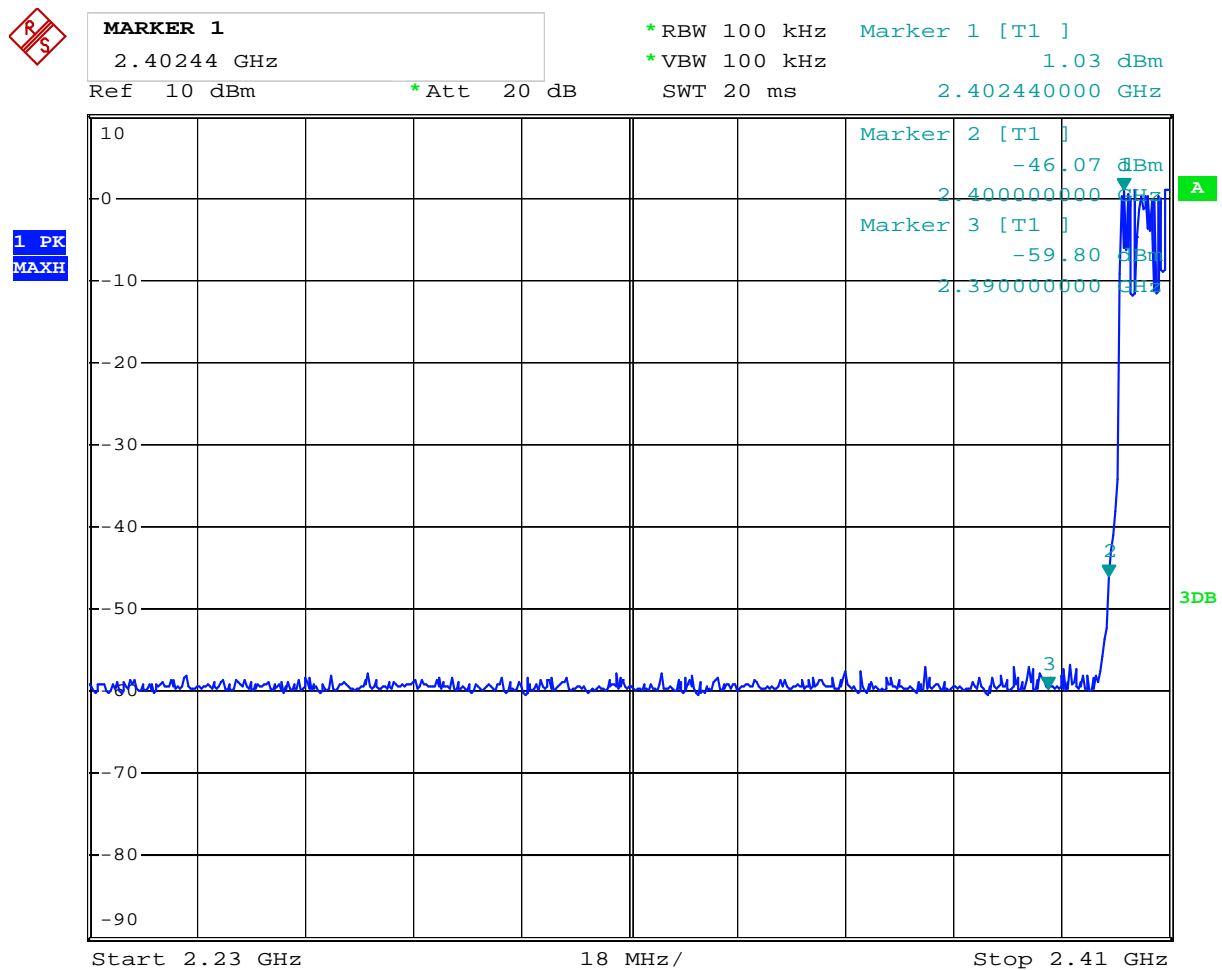
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12.4 Out of Band and Restrict band Test Result (Hopping Mode)

Product:	Mini Blue Tooth Speaker		Test Mode:	Low Channel
Mode	Hopping Mode		Input Voltage	DC5V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in Restrict Band 2390MHz	PK (dBμV/m)	38.2(V)/37.7(H)	Limit	74(dBμV/m)
	AV(dBμV/m)	--		54(dBμV/m)

Test Figure:



Date: 14.JUN.2012 09:26:33

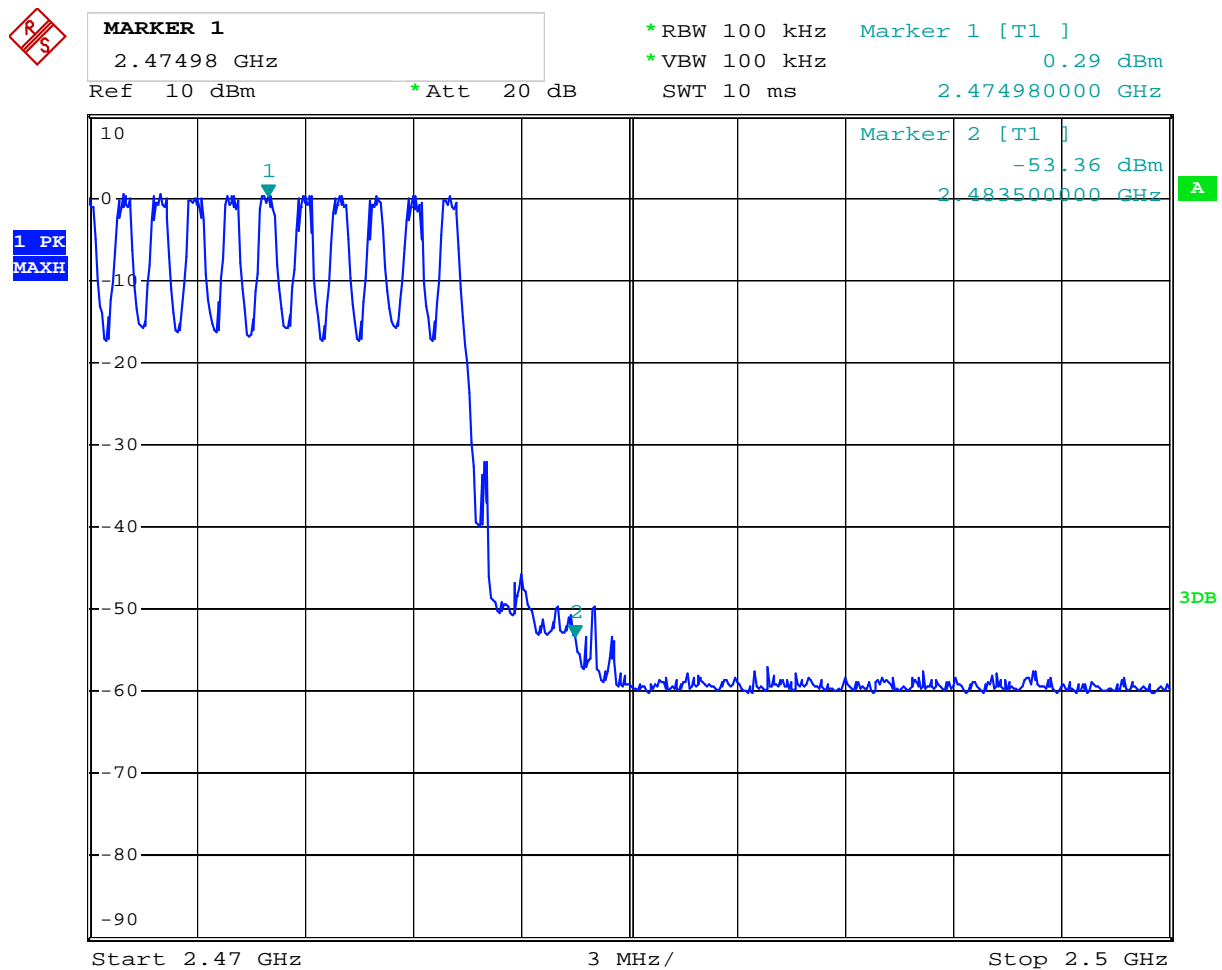
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12.4 Out of Band and Restrict band Test Result (Hopping Mode)

Product:	Mini Blue Tooth Speaker		Test Mode:	High Channel
Mode	Hopping Mode		Input Voltage	DC 5V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in Restrict Band 2483.5MHz	PK (dBμV/m)	38.8(V)/38.3(H)	Limit	74(dBμV/m)
	AV(dBμV/m)	--		54(dBμV/m)

Test Figure:



Date: 14.JUN.2012 09:30:28

Note: The Max. FS in Restrict Band are measured in conventional method.

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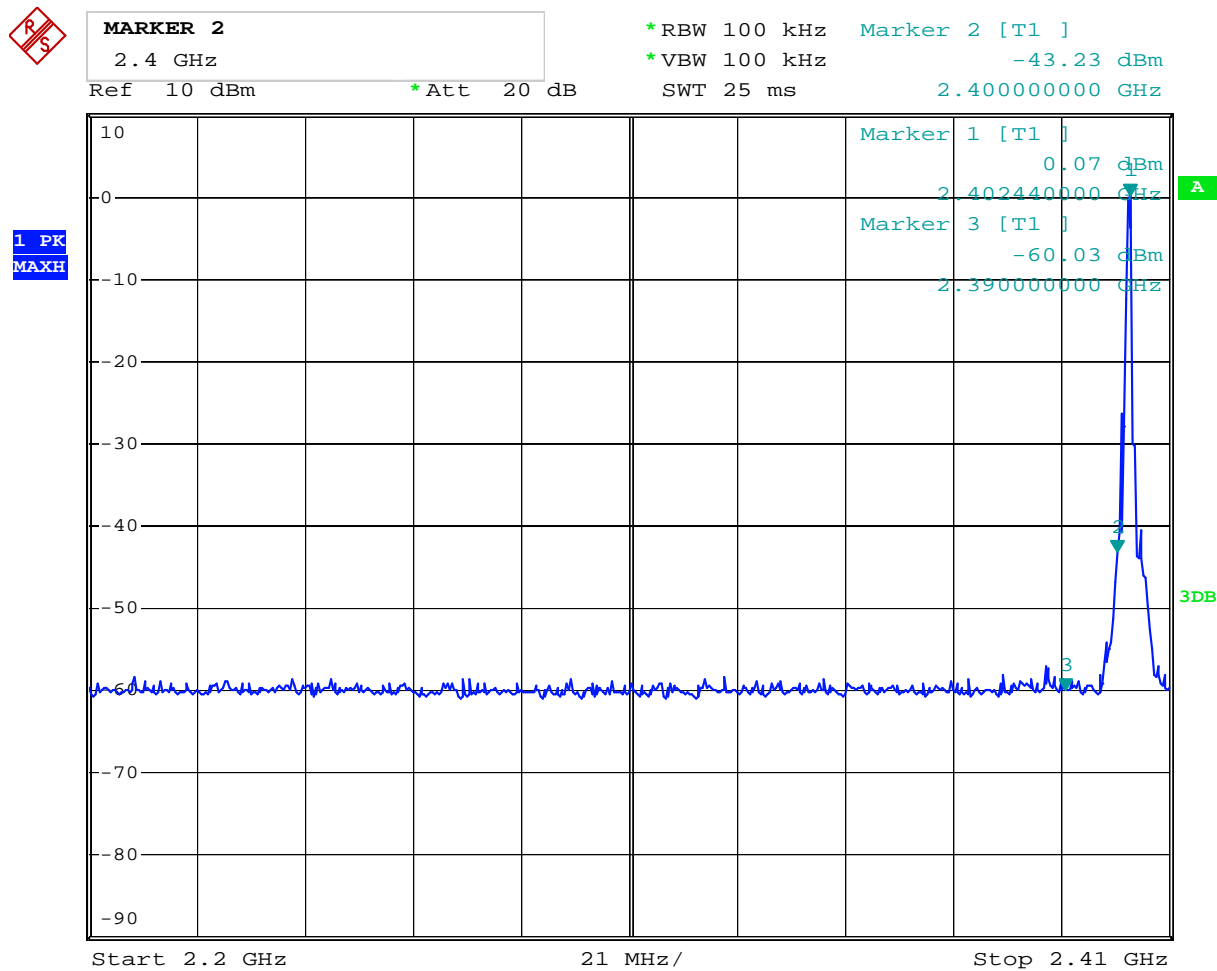


Test result: (EDR MODE)

12.5 Out of Band and Restrict band Test Result

Product:	Mini Blue Tooth Speaker		Test Mode:	Low Channel
Mode	Keeping Transmitting Under Low CH		Input Voltage	DC 5V
Temperature	24 deg. C		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in Restrict Band 2390MHz	PK (dBμV/m)	39.5(V)/39.2(H)	Limit	74(dBμV/m)
	AV(dBμV/m)	--		54(dBμV/m)

Test Figure:



Date: 13.JUN.2012 14:48:32

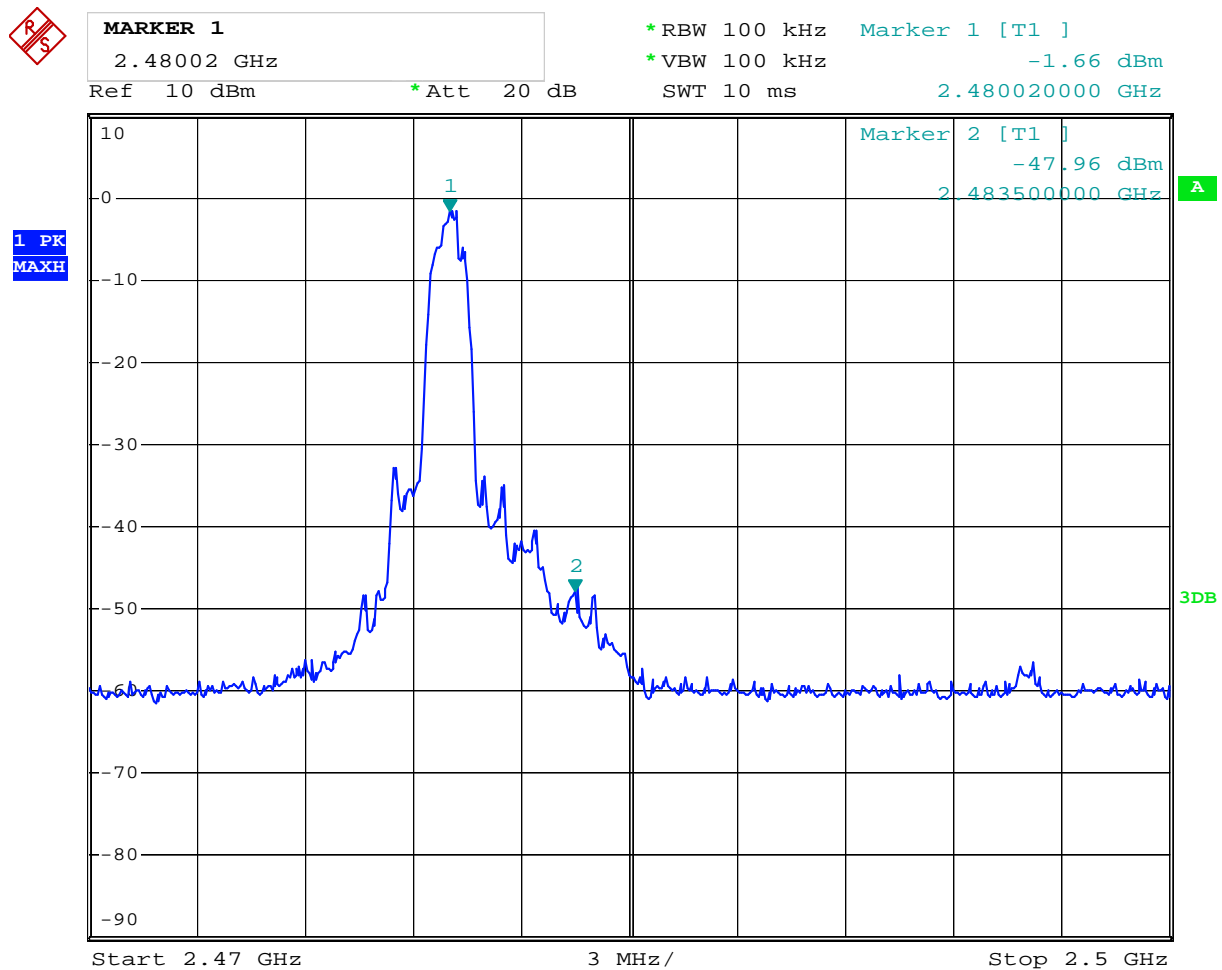
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12.5 Out of Band and Restrict band Test Result

Product:	Mini Blue Tooth Speaker		Test Mode:	High Channel
Mode	Keeping Transmitting Under High CH		Input Voltage	DC 5V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in Restrict Band 2483.5MHz	PK (dBμV/m)	39.6(V)/38.9(H)	Limit	74(dBμV/m)
	AV(dBμV/m)	--		54(dBμV/m)

Test Figure:



Date: 13.JUN.2012 14:47:29

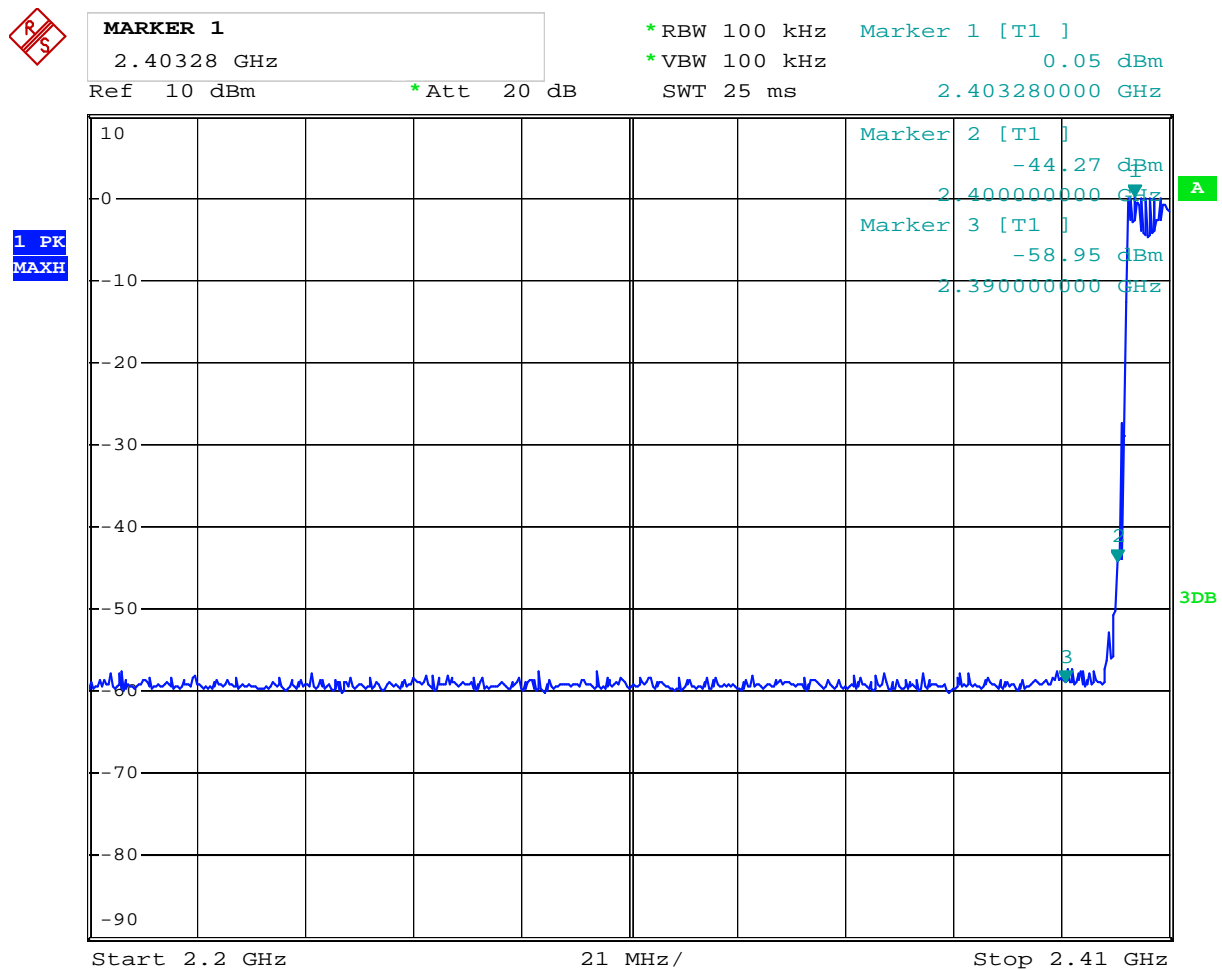
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12.5 Out of Band and Restrict band Test Result (Hopping Mode)

Product:	Mini Blue Tooth Speaker		Test Mode:	Low Channel
Mode	Hopping Mode		Input Voltage	DC5V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in Restrict Band 2390MHz	PK (dBμV/m)	38.5(V)/38.1(H)	Limit	74(dBμV/m)
	AV(dBμV/m)	--		54(dBμV/m)

Test Figure:



Date: 13.JUN.2012 14:42:17

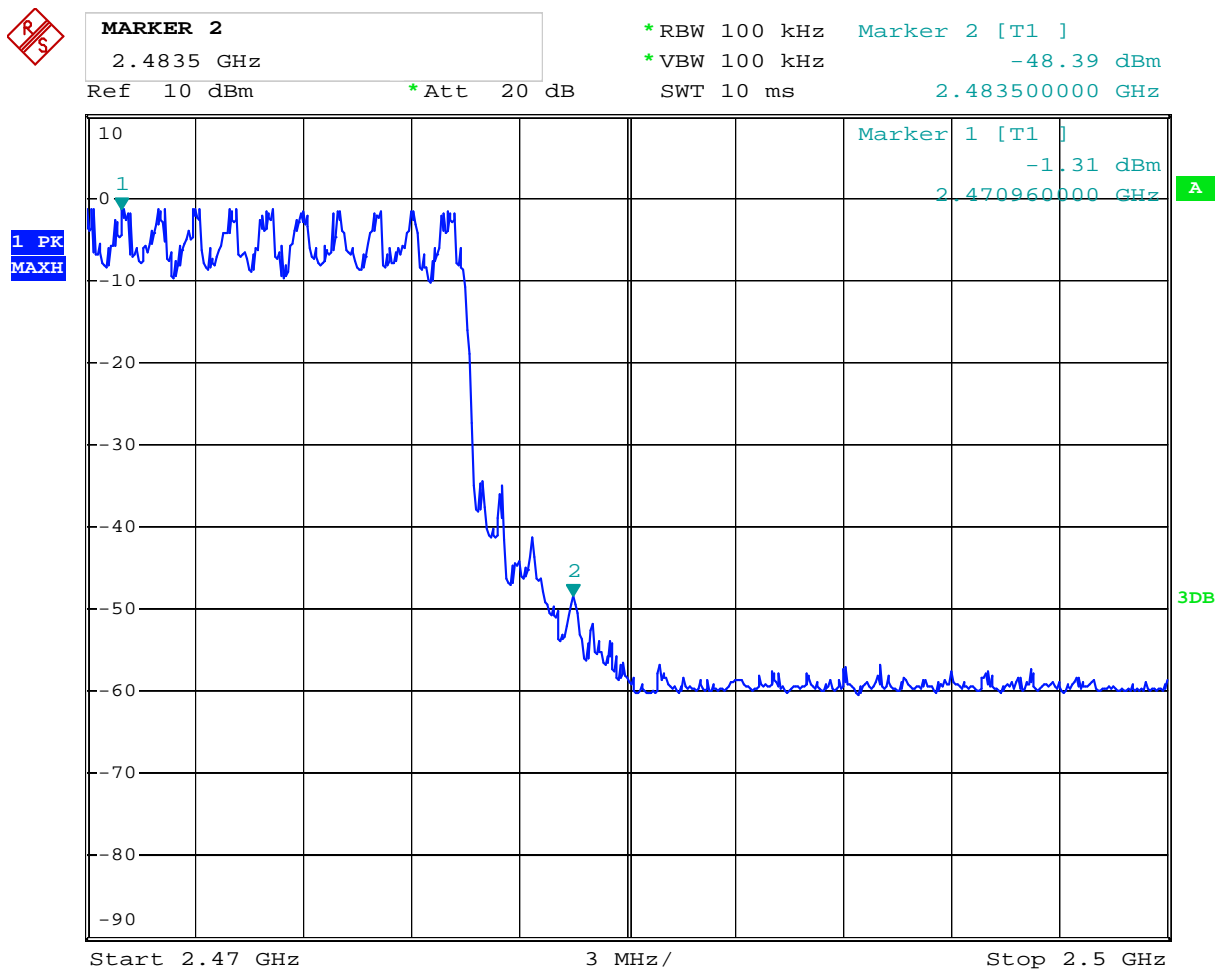
Note: The Max. FS in Restrict Band are measured in conventional method.

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12.5 Out of Band and Restrict band Test Result (Hopping Mode)

Product:	Mini Blue Tooth Speaker		Test Mode:	High Channel
Mode	Hopping Mode		Input Voltage	DC 5V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
The Max. FS in Restrict Band 2483.5MHz	PK (dBμV/m)	38.9(V)/38.4(H)	Limit	74(dBμV/m)
	AV(dBμV/m)	--		54(dBμV/m)

Test Figure:



Date: 13.JUN.2012 14:46:26

Note: The Max. FS in Restrict Band are measured in conventional method.

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13.0 Antenna Requirement

13.1 Standard Applicable

For intentional device, according to FCC 47 CFR 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.

And according to FCC 47 CFR Section 15.247 (b), if transmitter antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

13.2 Antenna Connected construction

There is a PCB printed antenna, and the maximum Gain of this antenna is 2dBi.

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14.0 RF Exposure

Applicable Standard

According to §1.1307(b)(5), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Portable device. **KDB616217 was used as the guidance.**

According to §1.1310 and §2.1093 RF exposure is calculated.

Measurement Result

This is a Mini Blue Tooth Speaker and the conducted output power is 0.98dBm (1.25mW), so the EIRP is $1.585 \times 1.25 = 1.98\text{mW}$ which is lower than low threshold 60/fGHz mW ($60/2.480\text{GHz} = 24.19\text{ mW}$), and the antenna is 2.0dBi which is less than 6dBi.

The SAR measurement is not necessary.

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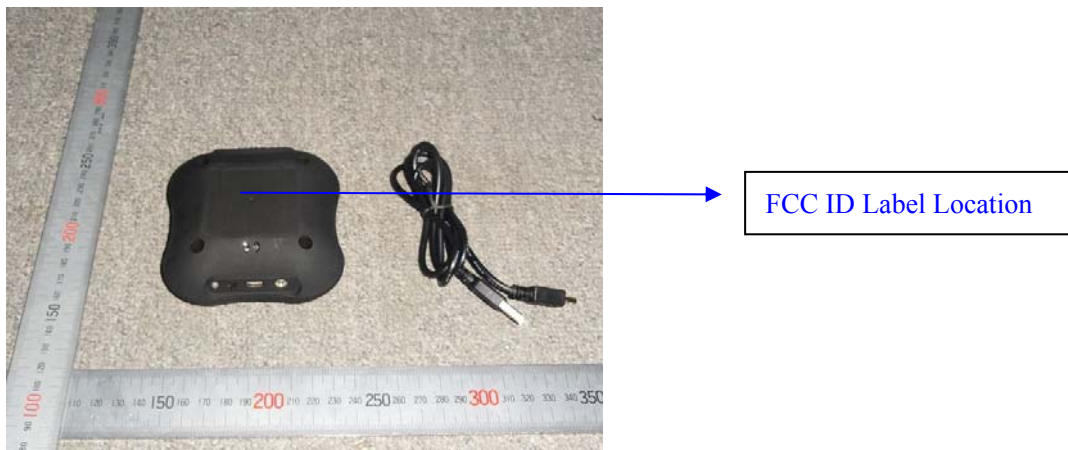
15.0 FCC ID Label

FCC ID: OCBPS-1300

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Mark Location:



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16.0 Photo of testing

16.1 Conducted test View



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16.2 Emission Radiated test View



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16.3 Photo for the EUT

Outside View



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Outside View

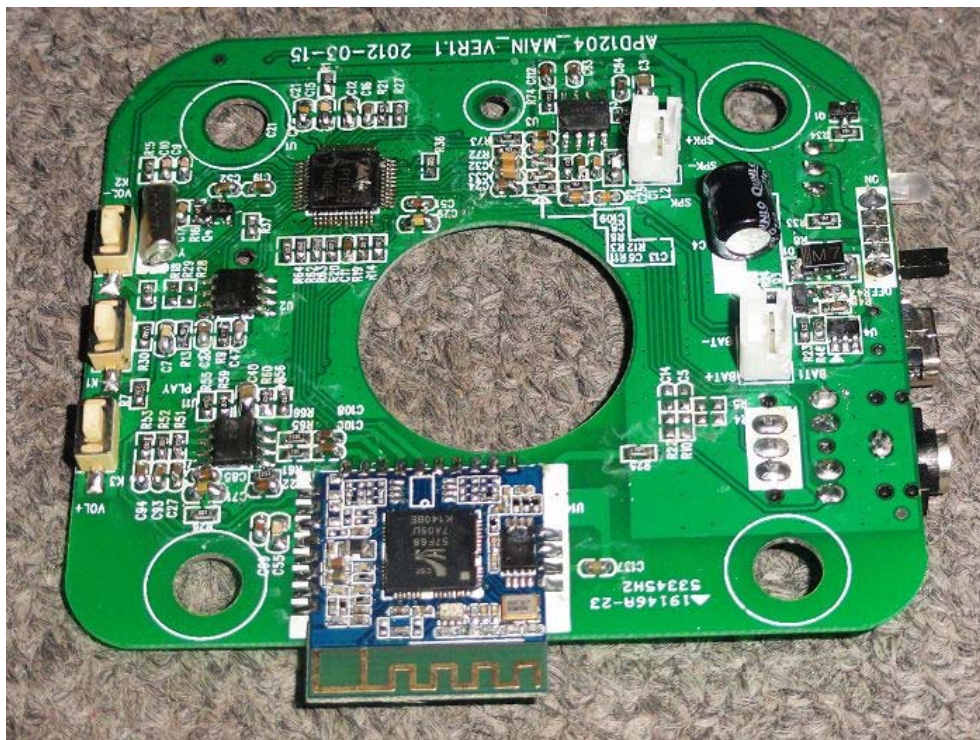


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Inside View

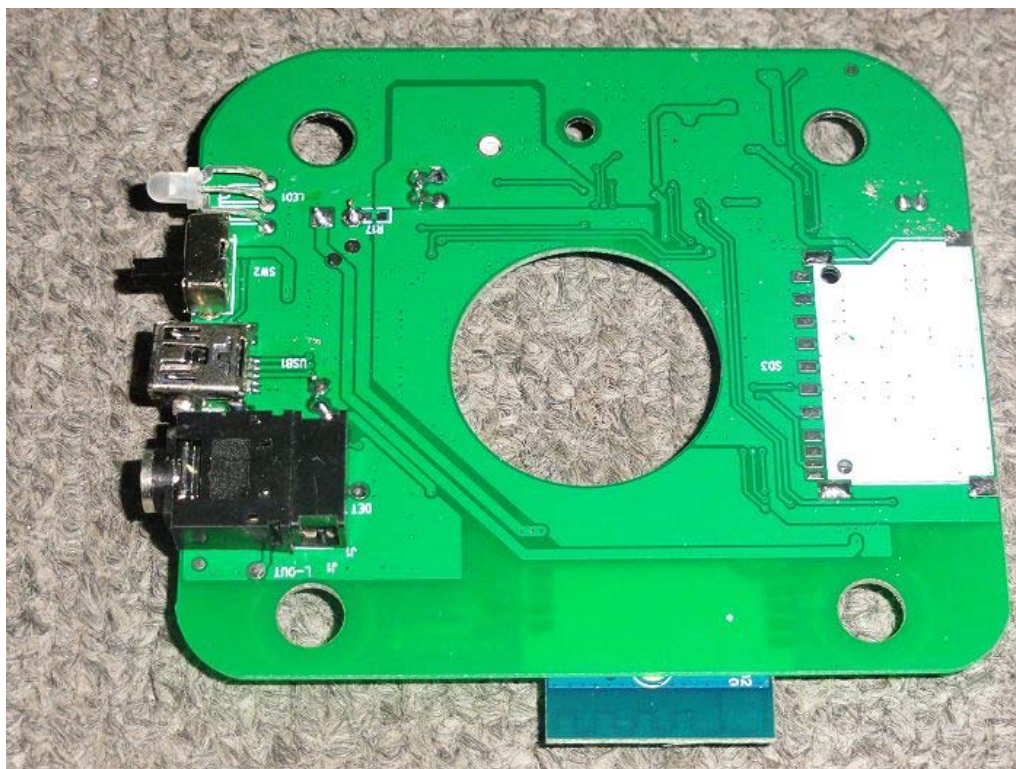


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Inside View



End of the report

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