FCC Part 15
EMI TEST REPORT

of

E.U.T. : Bluetooth Speaker
Model : BluTab
Series Model : BTS-101
FCC ID : BYG025

for

APPLICANT : SANGEAN ELECTRONICS INC.
ADDRESS : NO.18, LANE 7, LI-DE STREET, CHUNG HO DISTRICT, NEW TAIPEI CITY, 23584, TAIWAN, R.O.C.

Test Performed by

ELECTRONICS TESTING CENTER, TAIWAN
NO. 34. LIN 5, DINGFU VIL., LINKOU DIST.,
NEW TAIPEI CITY, TAIWAN, 24442, R.O.C.
TEL : (02)26023052 FAX: (02)26010910

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Report Number : 14-06-RBF-007-01

TEST REPORT CERTIFICATION

Applicant	: SANGEAN ELECTRONICS INC.
	NO.18, LANE 7, LI-DE STREET, CHUNG HO DISTRICT, NEW TAIPEI CITY, 23584, TAIWAN, R.O.C.
Manufacturer	: SANGEAN ELECTRONICS INC.
	NO.18, LANE 7, LI-DE STREET, CHUNG HO DISTRICT, NEW TAIPEI CITY, 23584, TAIWAN, R.O.C.

Description of EUT

a) Type of EUT	: Bluetooth Speaker
b) Trade Name	: SANGEAN
c) Model	: BluTab
d) Series Model	: BTS-101
e) Power Supply	: USB DC 5V
	Li-ion Battery DC 3.6V 2200mA
f) Frequency Range	: 2402MHz~2480MHz;

Regulation Applied : FCC Rules and Regulations Part 15 Subpart C

I HEREBY CERTIFY THAT: The data shown in this report were made in accordance with the procedures given in ANSI C63.4, and the energy emitted by the device was founded to be within the limits applicable. I assume full responsibility for accuracy and completeness of these data.

Note: 1. The result of the testing report relate only to the item tested.
2. The testing report shall not be reproduced expect in full, without the written approval of ETC.

Summary of Tests

Test	Results
Radiated Emission	**Pass**
Conducted Emission	**Pass**
Band Edge Requirement	**Pass**

Date Test Item Received	:	*Jun. 03, 2014*
Date Test Campaign Completed	:	*Jun. 19, 2014*
Date of Issue	:	*Sep. 29, 2014*

Test Engineer : Jiapeng Chen

(Jiapeng Chen, Engineer)

Approve & Authorized Signer : S. S. Liou

S. S. Liou, Section Manager
EMC Dept. II of ELECTRONICS
TESTING CENTER, TAIWAN

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1 GENERAL INFORMATION

1.1 Product Description

a) Type of EUT : Bluetooth Speaker
b) Trade Name : SANGEAN
c) Model : BluTab
d) Series Model : BTS-101
e) Power Supply : USB DC 5V
Li-ion Battery DC 3.6V 2200mA
f) Model Difference : Serial models BTS-101 is the same with BluTab. The only difference is the model name designation

1.2 Characteristics of Device

Bluetooth Speaker
Bluetooth specification: Bluetooth® Ver 4.0
Transmitting Power: Specification Power Class 2
Micro USB jack 5V 1A
Bluetooth Modulation:

1. Basic Rate (BR) 1 Mbps uses GFSK modulation
2. Enhanced Data Rate (EDR) 2Mbps uses pi/4-DQPSK modulation
3. Enhanced Data Rate (EDR) 3Mbps uses 8DPSK modulation
4. BT4.0 BLE uses GFSK modulation

1.3 Test Methodology

Both conducted and radiated emissions were performed according to the procedures illustrated in ANSI C63.4 (2003). Other required measurements were illustrated in separate sections of this test report for details.

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located on the roof top of Building at No.34, Lin 5, Dingfu Vil., Linkou Dist., New Taipei City, Taiwan 24442, R.O.C.

This site is FCC 2.948 listed and accepted in a letter dated Jan. 29, 2014.

Registration Number: 90589

2 PROVISIONS APPLICABLE

2.1 Definition

Unintentional radiator:
A device that intentionally generates and radio frequency energy for use within the device, or that sends radio frequency signals by conduction to associated equipment via connecting wiring, but which is not intended to emit RF energy by radiation or induction.

Class A Digital Device:
A digital device which is marketed for use in commercial or business environment; exclusive of a device which is market for use by the general public, or which is intended to be used in the home.

Class B Digital Device :
A digital device which is marketed for use in a residential environment notwithstanding use in a commercial, business of industrial environment. Example of such devices that are marketed for the general public.

Note : A manufacturer may also qualify a device intended to be marketed in a commercial, business, or industrial environment as a Class B digital device, and in fact is encouraged to do so, provided the device complies with the technical specifications for a Class B Digital Device. In the event that a particular type of device has been found to repeatedly cause harmful interference to radio communications, the Commission may classify such a digital device as a Class B Digital Device, Regardless of its intended use.

Intentional radiator:
A device that intentionally generates and emits radio frequency energy by radiation or induction.

2.2 Requirement for Compliance

(1) Conducted Emission Requirement

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50MH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the band edges.

Frequency MHz	Quasi Peak dBμV	Average dBμV
0.15 - 0.5	66-56	56-46
0.5 - 5.0	56	46
5.0 - 30.0	60	50

(2) Radiated Emission Requirement

For unintentional device, according to §15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency MHz	**Distance Meters**	**Radiated dBμV/m**	**Radiated μV/m**
30 - 88	3	40.0	100
88 - 216	3	43.5	150
216 - 960	3	46.0	200
Above 960	3	54.0	500

For intentional device, according to §15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

For intentional radiator device, per §15.249(a), the field strength of emissions shall comply with the following :

Frequency	Distance	Fundamental		Harmonic	
MHz	Meters	dBμV/m	mV/m	dBμV/m	μV/m
902 - 928	3	94	50	54	500
2400 - 2483.5	3	94	50	54	500
5725 - 5875	3	94	50	54	500
24000 - 24250	3	108	250	68	2500

In accordance with §15.249(e), limits shown in above table are based on average limits for frequencies above 1000 MHz, and frequencies below 1000 MHz are based on quasi peak. However, the peak field strength of any emission shall not exceed the maximum permitted average limits by more than 20 dB.

(3) Spurious in Out Band Requirement

For intentional device, according to §15.249 (d), emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of fundamental or to the general radiated emission limits in §15.209.

(4) Antenna Requirement

For intentional device, according to §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.

2.3 Restricted Bands of Operation

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	4.5-5.25
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	2655-2900	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	3360-4400	Above 38.6
13.36-13.41			

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

2.4 Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device:

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.

2.5 User Information

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual.

The Federal Communications Commission Radio Frequency Interference Statement includes the following paragraph.

This equipment has been tested and found to comply with the limits for a Class B Digital Device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio / TV technician for help.

3. SYSTEM TEST CONFIGURATION

3.1 Justification

For both radiated and conducted emissions, the system was configured for testing in a typical fashion as a customer would normally use it. The peripherals other than EUT were connected in normally standing by situation.

All measurement were intentional to maximum the emissions from EUT by varying the connection cables, therefore, the test result is sure to meet the applicable requirement.

This device can be considered as a portable device so that 3 orientations were investigated. The worst case was chosen for final test.

Orientation	Description	Investigation Result
1	The EUT stands on the table	Worst case
2	The EUT lay down evenly on the table	---
3	The EUT side-up stands on the table	---

The following modes were investigated and the worst cases (mode 1, 3 and 4) were chosen for final test.
1. Basic Rate (BR) 1 Mbps uses GFSK modulation
2. Enhanced Data Rate (EDR) 2Mbps uses pi/4-DQPSK modulation
3. Enhanced Data Rate (EDR) 3Mbps uses 8DPSK modulation
4. BT4.0 BLE uses GFSK modulation

The EUT set for test with the continuous transmission mode and the duty cycle >98%.

3.2 Devices for Tested System

Device	Manufacturer	Model / FCC ID	Description
* Bluetooth Speaker	SANGEAN ELECTRONICS INC.	BluTab / BYG025	1.6m Shielded USB Power Cord 1.8m Unshielded Audio Line
Notebook PC	Lenovo	7298 RN1	1.8m Unshielded AC Power Cord
Printer	HP	THINKJET	1.3m Shielded USB Cable 1.8m Unshielded AC Power line
hard disk	HP	HD-PCTU3	1.2m Shielded USB Cable
Mouse	Lenovo	M028UOL	1.5m Unshielded Cable
Cell Phone	NOKIA	N73	---

Remark "*" means equipment under test.

4 RADIATED EMISSION MEASUREMENT

4.1 Applicable Standard

For intentional radiators, according to §15.249 (a), the fundamental field strength shall not exceed 94 dBuV/m and the harmonics shall not exceed 54 dBuV/m. For out band emission except for harmonics shall be comply with §15.209 or at least attenuated by 50 dB below the level of the fundamental.

4.2 Measurement Procedure

A. Preliminary Measurement For Portable Devices

For portable devices, the following procedure was performed to determine the maximum emission axis of EUT:

1. With the receiving antenna is H polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
2. With the receiving antenna is V polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
3. Compare the results derived from above two steps. So, the axis of maximum emission from EUT was determined and the configuration was used to perform the final measurement.

B. Final Measurement

1. Setup the configuration per figure 1 and 2 for frequencies measured below and above 1 GHz respectively. Turn on EUT and make sure that it is in normal function.

2. For emission frequencies measured below 1 GHz, a pre-scan is performed in a shielded chamber to determine the accurate frequencies of higher emissions will be checked on a open test site. As the same purpose, for emission frequencies measured above 1 GHz, a pre-scan also be performed with a 1 meter measuring distance before final test.

3. For emission frequencies measured below and above 1 GHz, set the spectrum analyzer on a 100 kHz and 1 MHz resolution bandwidth respectively for each frequency measured in step 2.

4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 ° to 360 ° with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading. A RF test receiver is also used to confirm emissions measured.

5. Repeat step 4 until all frequencies need to be measured were complete.
6. Repeat step 5 with search antenna in vertical polarized orientations.
7. Check the three frequencies of highest emission with varying the placement of cables (if any) associated with EUT to obtain the worse case and record the result.

Figure 1 : Frequencies measured below 1 GHz configuration

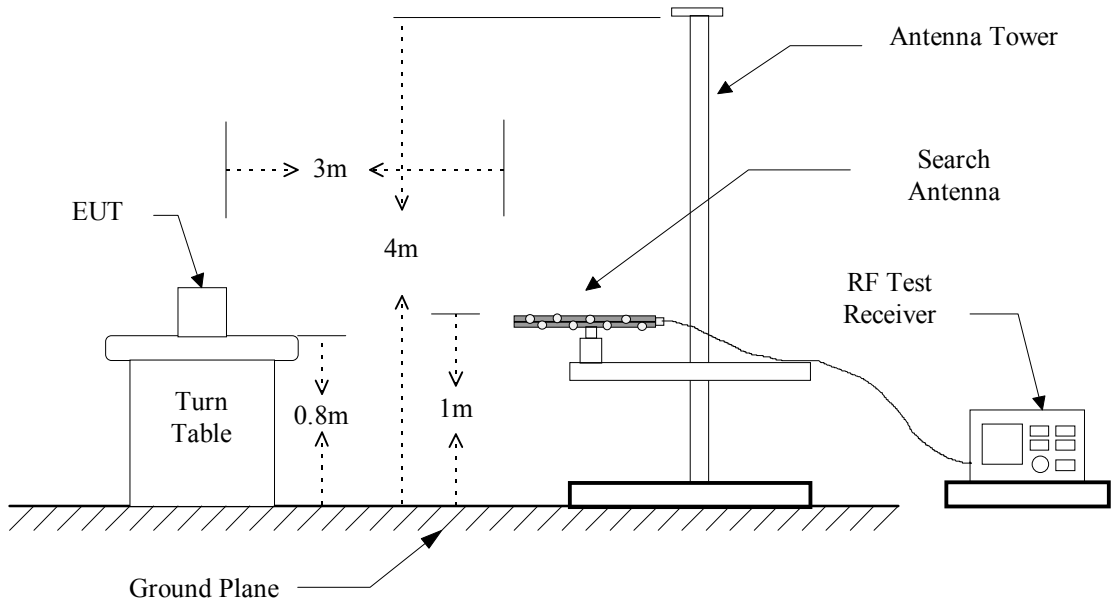
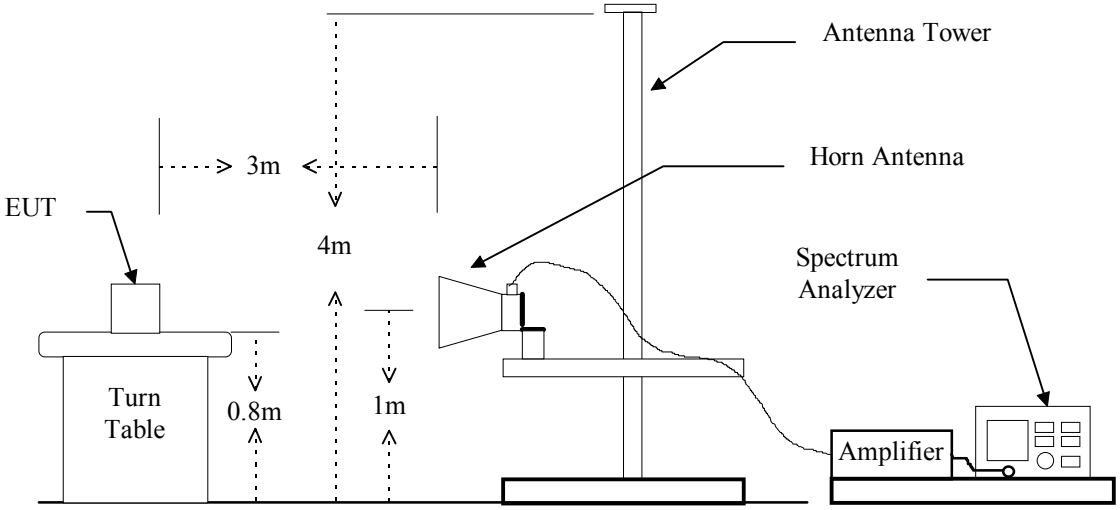


Figure 2 : Frequencies measured above 1 GHz configuration



4.3 Measuring Instrument

The following instrument are used for radiated emissions measurement:

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
Test Receiver	Rohde & Schwarz	ESVS30	2014/05/29	2015/05/28
EMI Test Receiver	Rohde & Schwarz	ESL	2013/09/11	2014/09/10
Bi-Log Antenna	ETC	MCTD 2756	2014/01/03	2015/01/02
Log-periodic Antenna	EMCO	3146	2013/10/25	2014/10/24
Double Ridged Guide Horn Antenna	EMCO	3116	2014/01/15	2015/01/14
Biconical Antenna	EMCO	3110	2013/10/25	2014/10/24
Double Ridged Antenna	EMCO	3115	2013/08/02	2014/08/01
Amplifier	HP	8449B	2014/01/15	2015/01/14
Amplifier	HP	83051A	2014/05/05	2015/05/04
Amplifier	HP	8447D	2014/05/29	2015/05/28
EMI Test Receiver	Rohde & Schwarz	ESU 40	2013/09/24	2014/09/23

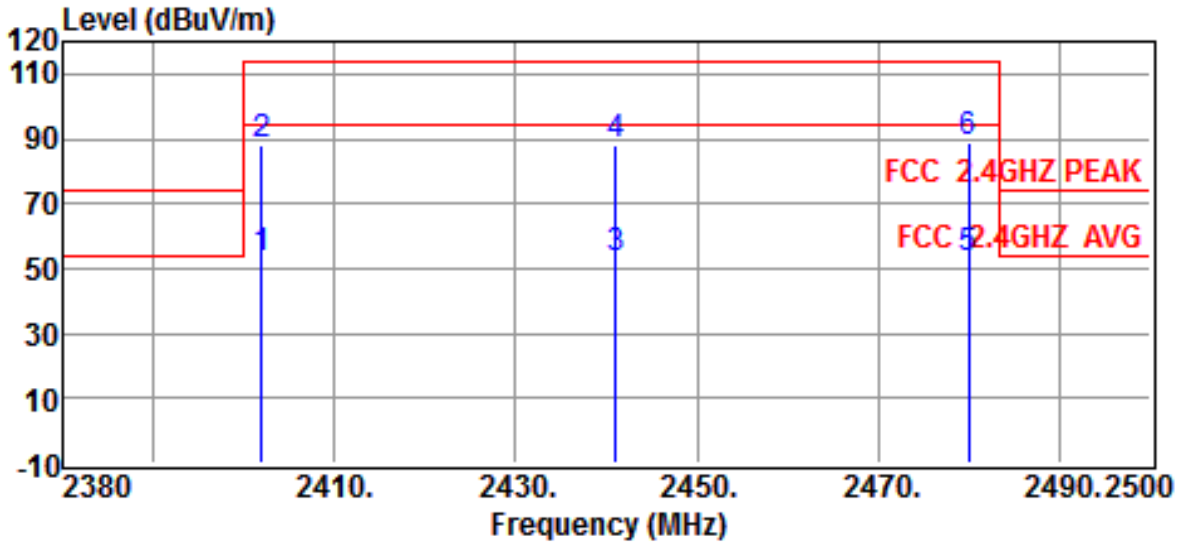
Measuring instrument setup in measured frequency band when specified detector function is used :

Frequency Band (MHz)	Instrument	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	RF Test Receiver	Quasi-Peak	120 kHz	N/A
	Spectrum Analyzer	Peak	100 kHz	100 kHz
Above 1000	Spectrum Analyzer	Peak	1 MHz	1 MHz
	Spectrum Analyzer	Average	1 MHz	10Hz

4.4 Radiated Emission Data

4.4.1 RF Portion

(1) Test Mode: BR

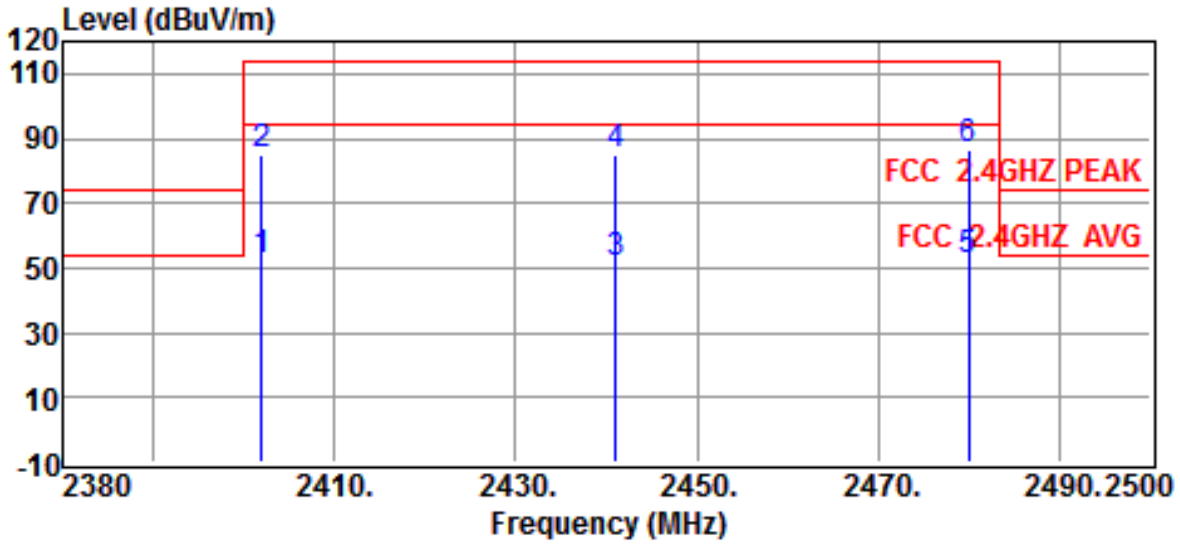


Site	:CHAMBER #2	Date	:2014-05-29
EUT	: Bluetooth Speaker	Ant. Pol.	:HORIZONTAL
Model	: BluTab	Detector	:
Power Rating	:Power From PC	Engineer	: Jiapeng
Limit	:FCC 2.4GHZ PEAK	Temp.	:22°C
Memo	: fundamental	Humi.	:62 %
Memo	: BR		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits (AVG) dBuV/m	Over limit dB	Detector
2402.0000	93.5	-5.6	87.9	94.0	-6.1	Peak
2441.0000	93.8	-5.5	88.3	94.0	-5.7	Peak
2480.0000	94.3	-5.4	88.9	94.0	-5.1	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result
4. Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
5. The expanded uncertainty of the radiated emission tests is 3.53 dB.

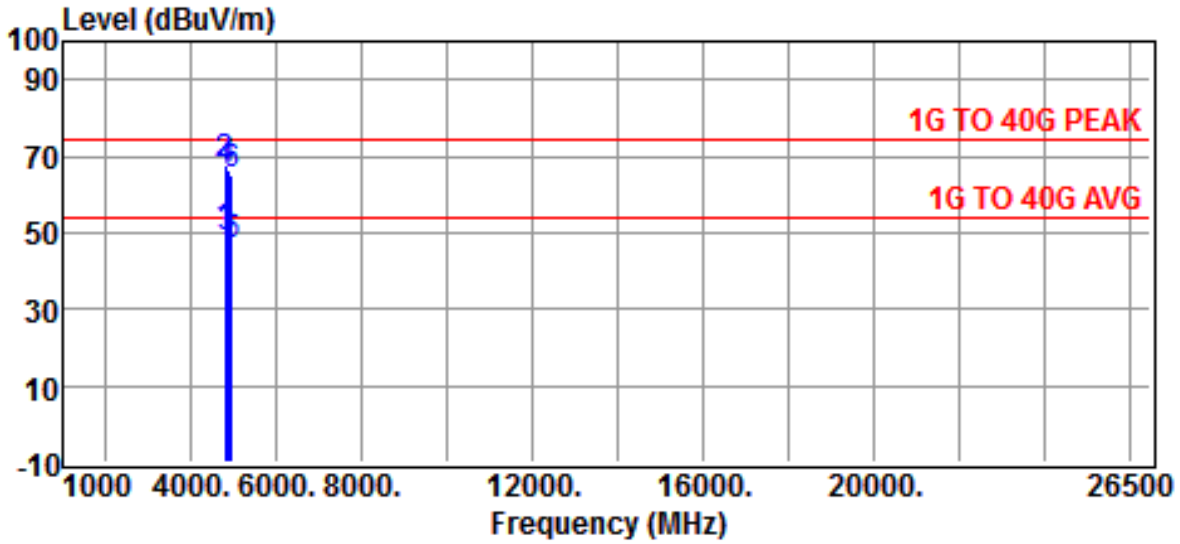


Site	:CHAMBER #2	Date	:2014-05-29
EUT	: Bluetooth Speaker	Ant. Pol.	:VERTICAL
Model	: BluTab	Detector	:
Power Rating	: Power From PC	Engineer	: Jiapeng
Limit	:FCC 2.4GHZ PEAK	Temp.	:22°C
Memo	: fundamental	Humi.	:62 %
Memo	: BR		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits (AVG) dBuV/m	Over limit dB	Detector
2402.0000	90.9	-5.6	85.3	94.0	-8.7	Peak
2441.0000	90.1	-5.5	84.6	94.0	-9.4	Peak
2480.0000	92.1	-5.4	86.7	94.0	-7.3	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result
4. Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
5. The expanded uncertainty of the radiated emission tests is 3.53 dB.

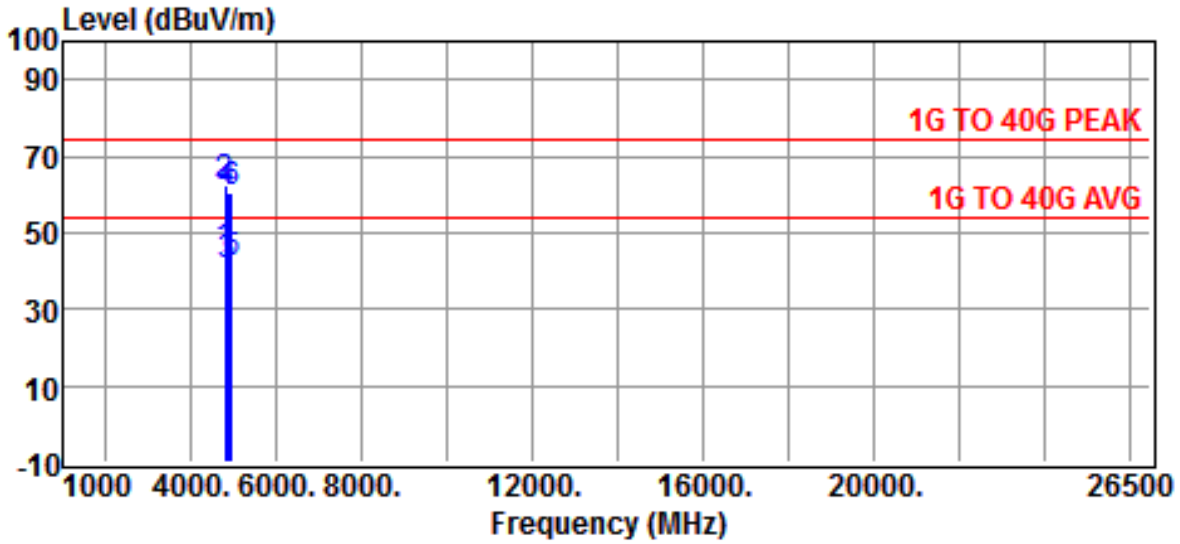


Site	:CHAMBER #2	Date	:2014-05-29
EUT	: Bluetooth Speaker	Ant. Pol.	:HORIZONTAL
Model	: BluTab	Detector	:
Power Rating	: Power From PC	Engineer	: Jiapeng
Limit	:1G TO 40G PEAK	Temp.	:20°C
Memo	: BR	Humi.	:62 %
Memo	:		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4804.0000	48.5	1.4	49.9	54.0	-4.1	Average
4804.0000	66.5	1.4	67.9	74.0	-6.1	Peak
4882.0000	47.0	1.5	48.5	54.0	-5.5	Average
4882.0000	65.2	1.5	66.7	74.0	-7.3	Peak
4960.0000	45.0	1.8	46.8	54.0	-7.2	Average
4960.0000	63.1	1.8	64.9	74.0	-9.1	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result
4. The expanded uncertainty of the radiated emission tests is 3.53 dB.

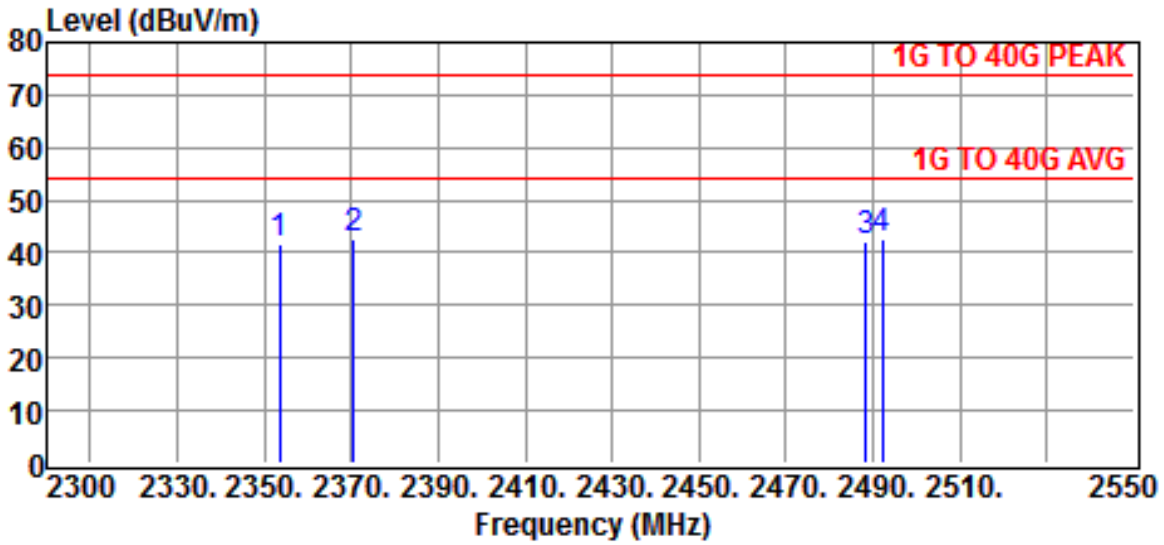


Site	:CHAMBER #2	Date	:2014-05-29
EUT	: Bluetooth Speaker	Ant. Pol.	:VERTICAL
Model	: BluTab	Detector	:
Power Rating	: Power From PC	Engineer	: Jiapeng
Limit	:1G TO 40G PEAK	Temp.	:20°C
Memo	: BR	Humi.	:62 %
Memo	:		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4804.0000	43.1	1.4	44.5	54.0	-9.5	Average
4804.0000	61.1	1.4	62.5	74.0	-11.5	Peak
4882.0000	40.2	1.5	41.7	54.0	-12.3	Average
4882.0000	58.9	1.5	60.4	74.0	-13.6	Peak
4960.0000	40.2	1.8	42.0	54.0	-12.0	Average
4960.0000	58.6	1.8	60.4	74.0	-13.6	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result
4. The expanded uncertainty of the radiated emission tests is 3.53 dB.

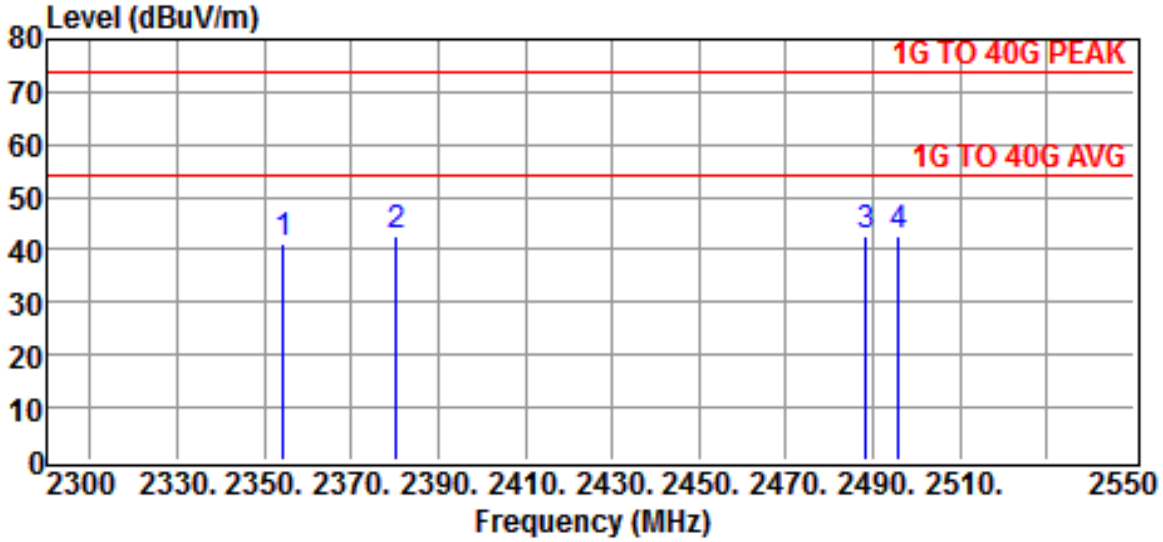


Site	:CHAMBER #2	Date	:2014-05-29
EUT	: Bluetooth Speaker	Ant. Pol.	:HORIZONTAL
Model	: BluTab	Detector	:
Power Rating	: Power From PC	Engineer	: Jiapeng
Limit	:1G TO 40G PEAK	Temp.	:22°C
Memo	: BR	Humi.	:62 %
Memo	: CH LO & HI - Restricted Bands		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits (AVG) dBuV/m	Over limit dB	Detector
2353.5000	47.6	-5.8	41.8	54.0	-12.2	Peak
2370.5000	48.2	-5.7	42.5	54.0	-11.5	Peak
2488.5000	47.4	-5.4	42.0	54.0	-12.0	Peak
2492.0000	48.3	-5.4	42.9	54.0	-11.1	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value = Limit - Result
4. Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
5. The expanded uncertainty of the radiated emission tests is 3.53 dB.



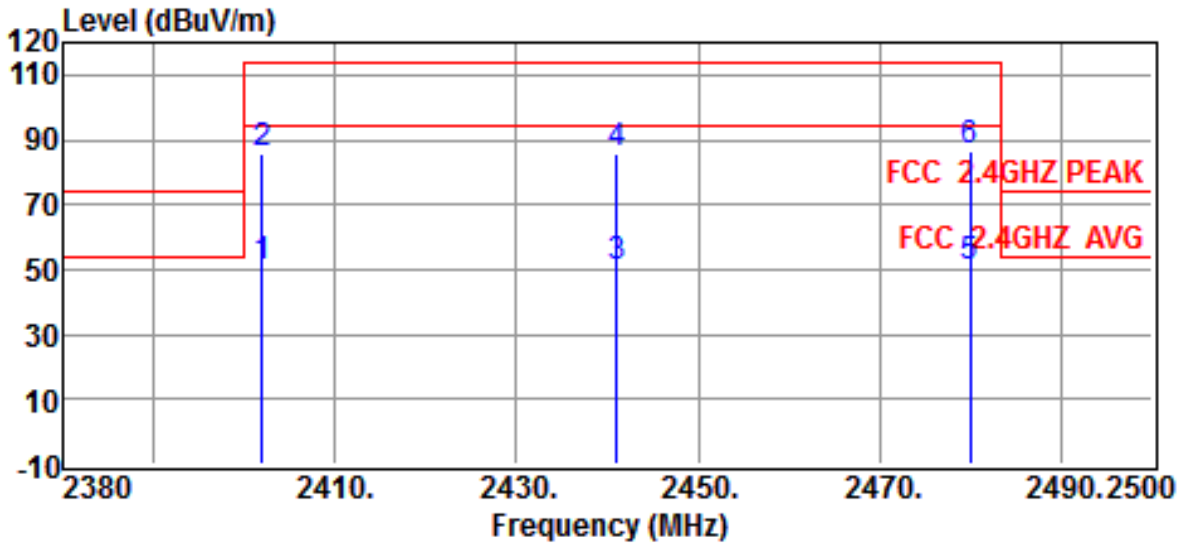
Site	:CHAMBER #2	Date	:2014-05-29
EUT	: Bluetooth Speaker	Ant. Pol.	:VERTICAL
Model	: BluTab	Detector	:
Power Rating	: Power From PC	Engineer	: Jiapeng
Limit	:1G TO 40G PEAK	Temp.	:22°C
Memo	: BR	Humi.	:62 %
Memo	: CH LO & HI - Restricted Bands		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits (AVG) dBuV/m	Over limit dB	Detector
2354.5000	47.2	-5.8	41.4	54.0	-12.6	Peak
2380.5000	48.3	-5.7	42.6	54.0	-11.4	Peak
2488.5000	48.1	-5.4	42.7	54.0	-11.3	Peak
2496.0000	47.8	-5.4	42.4	54.0	-11.6	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result
4. Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
5. The expanded uncertainty of the radiated emission tests is 3.53 dB.

(2) Test Mode: EDR

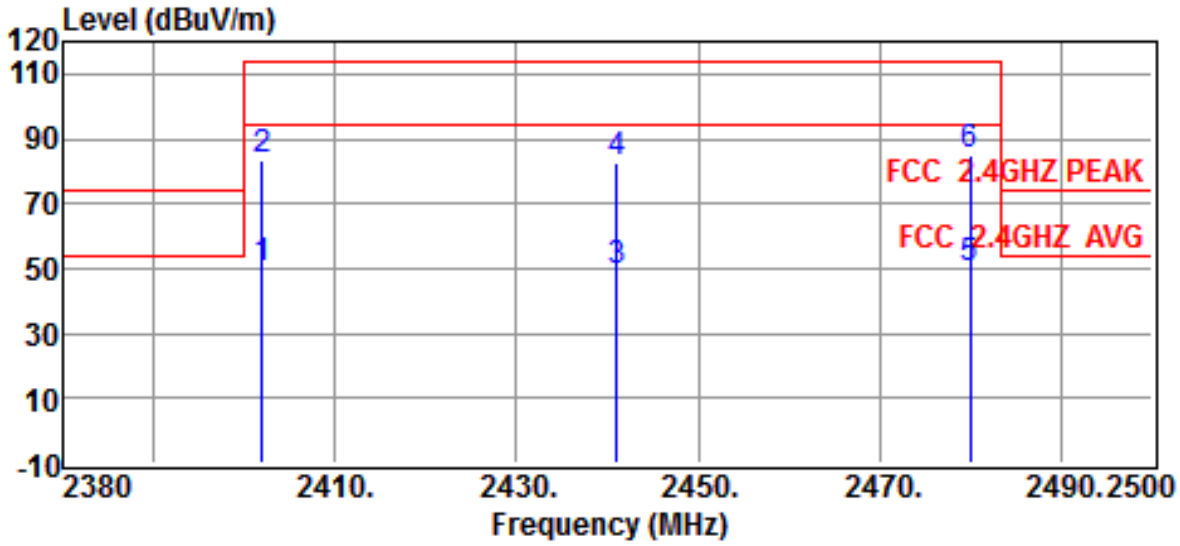


Site	:CHAMBER #2	Date	:2014-10-08
EUT	: Bluetooth Speaker	Ant. Pol.	:HORIZONTAL
Model	: BluTab	Detector	:
Power Rating	: Power From PC	Engineer	: Jiapeng
Limit	:FCC 2.4GHZ PEAK	Temp.	:22°C
Memo	: fundamental	Humi.	:62 %
Memo	: EDR		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits (AVG) dBuV/m	Over limit dB	Detector
2402.0000	91.1	-5.6	85.5	94.0	-8.5	Peak
2441.0000	91.1	-5.5	85.6	94.0	-8.4	Peak
2480.0000	92.0	-5.4	86.6	94.0	-7.4	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result
4. Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
5. The expanded uncertainty of the radiated emission tests is 3.53 dB.

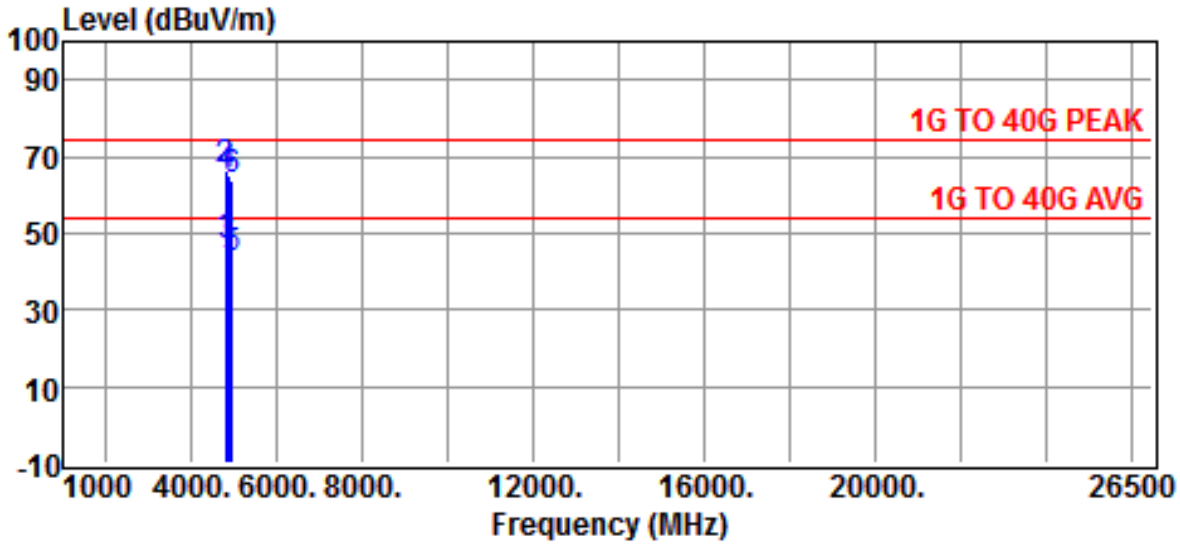


Site	:CHAMBER #2	Date	:2014-10-08
EUT	: Bluetooth Speaker	Ant. Pol.	:VERTICAL
Model	: BluTab	Detector	:
Power Rating	: Power From PC	Engineer	: Jiapeng
Limit	:FCC 2.4GHZ PEAK	Temp.	:22°C
Memo	: fundamental	Humi.	:62 %
Memo	: EDR		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits (AVG) dBuV/m	Over limit dB	Detector
2402.0000	89.0	-5.6	83.4	94.0	-10.6	Peak
2441.0000	88.3	-5.5	82.8	94.0	-11.2	Peak
2480.0000	90.3	-5.4	84.9	94.0	-9.1	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result
4. Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
5. The expanded uncertainty of the radiated emission tests is 3.53 dB.

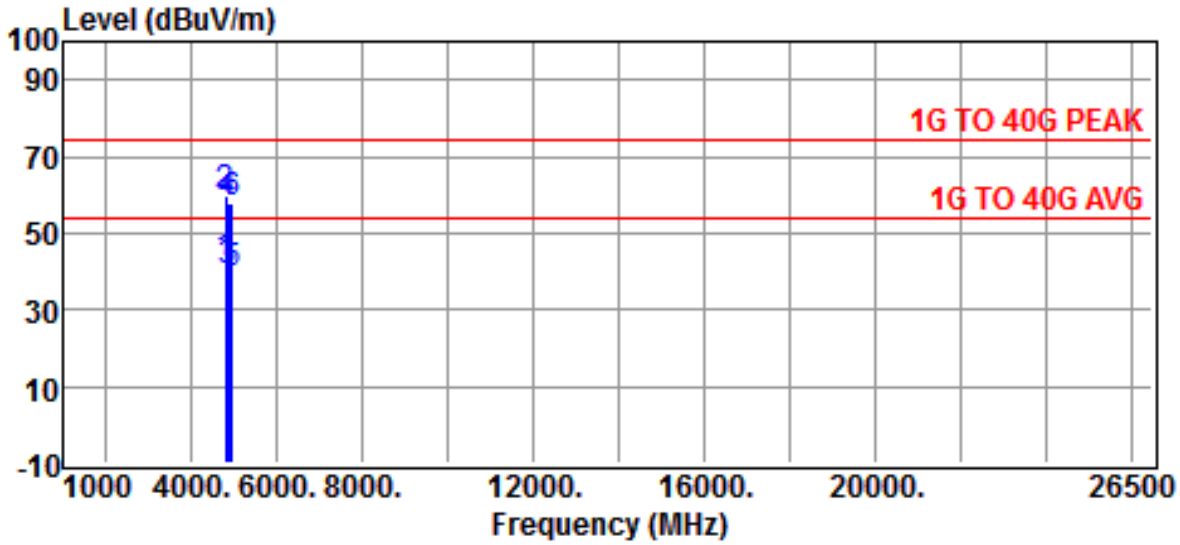


Site	:CHAMBER #2	Date	:2014-10-08
EUT	: Bluetooth Speaker	Ant. Pol.	:HORIZONTAL
Model	: BluTab	Detector	:
Power Rating	: Power From PC	Engineer	: Jiapeng
Limit	:1G TO 40G PEAK	Temp.	:20°C
Memo	: EDR	Humi.	:62 %
Memo	:		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4804.0000	46.1	1.4	47.5	54.0	-6.5	Average
4804.0000	64.7	1.4	66.1	74.0	-7.9	Peak
4882.0000	45.1	1.5	46.6	54.0	-7.4	Average
4882.0000	63.3	1.5	64.8	74.0	-9.2	Peak
4960.0000	41.8	1.8	43.6	54.0	-10.4	Average
4960.0000	61.6	1.8	63.4	74.0	-10.6	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result
4. The expanded uncertainty of the radiated emission tests is 3.53 dB.

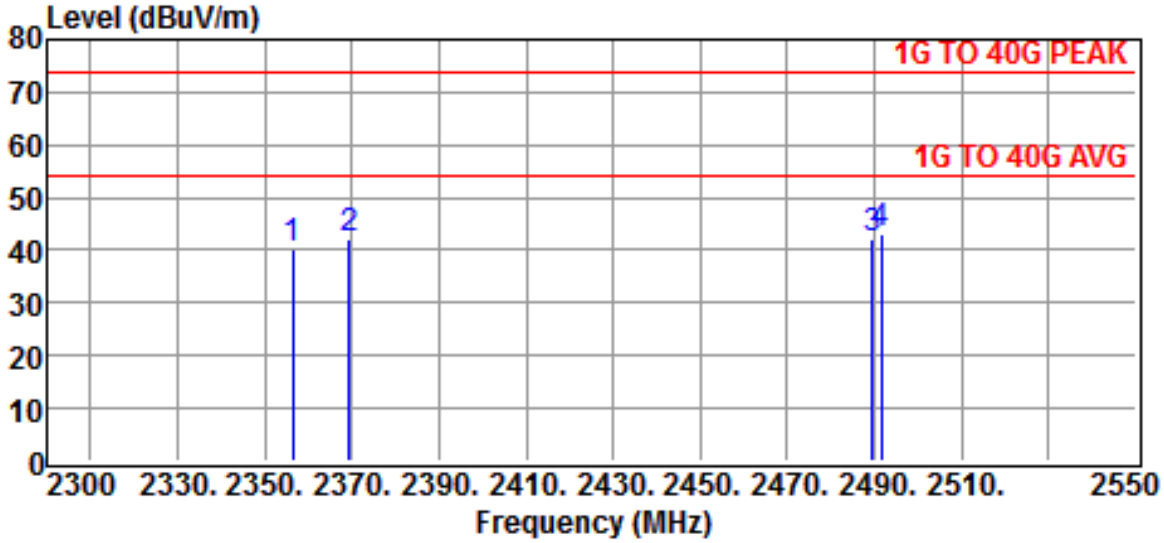


Site	:CHAMBER #2	Date	:2014-10-08
EUT	: Bluetooth Speaker	Ant. Pol.	:VERTICAL
Model	: BluTab	Detector	:
Power Rating	: Power From PC	Engineer	: Jiapeng
Limit	:1G TO 40G PEAK	Temp.	:20°C
Memo	: EDR	Humi.	:62 %
Memo	:		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4804.0000	40.7	1.4	42.1	54.0	-11.9	Average
4804.0000	58.7	1.4	60.1	74.0	-13.9	Peak
4882.0000	38.4	1.5	39.9	54.0	-14.1	Average
4882.0000	56.4	1.5	57.9	74.0	-16.1	Peak
4960.0000	37.7	1.8	39.5	54.0	-14.5	Average
4960.0000	56.1	1.8	57.9	74.0	-16.1	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result
4. The expanded uncertainty of the radiated emission tests is 3.53 dB.

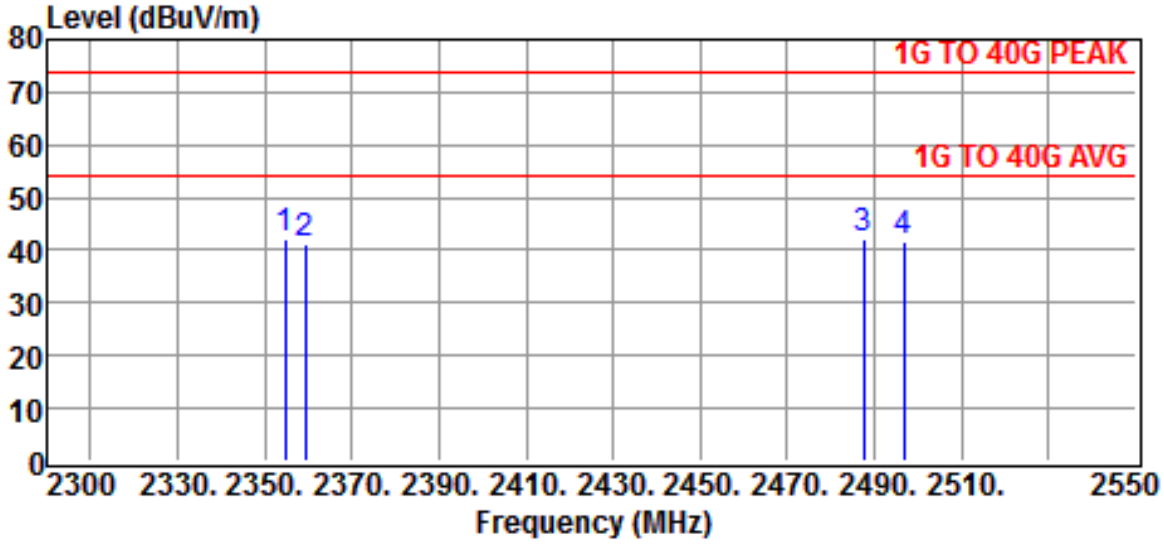


Site	:CHAMBER #2	Date	:2014-10-08
EUT	: Bluetooth Speaker	Ant. Pol.	:HORIZONTAL
Model	: BluTab	Detector	:
Power Rating	: Power From PC	Engineer	:Jiapeng
Limit	:1G TO 40G PEAK	Temp.	:22°C
Memo	: CH LO & HI - Restricted Bands	Humi.	:62 %
Memo	: EDR		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits (AVG) dBuV/m	Over limit dB	Detector
2356.4700	46.2	-5.8	40.4	54.0	-13.6	Peak
2369.4500	47.9	-5.7	42.2	54.0	-11.8	Peak
2489.5600	47.4	-5.4	42.0	54.0	-12.0	Peak
2491.6500	48.6	-5.4	43.2	54.0	-10.8	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result
4. Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
5. The expanded uncertainty of the radiated emission tests is 3.53 dB.



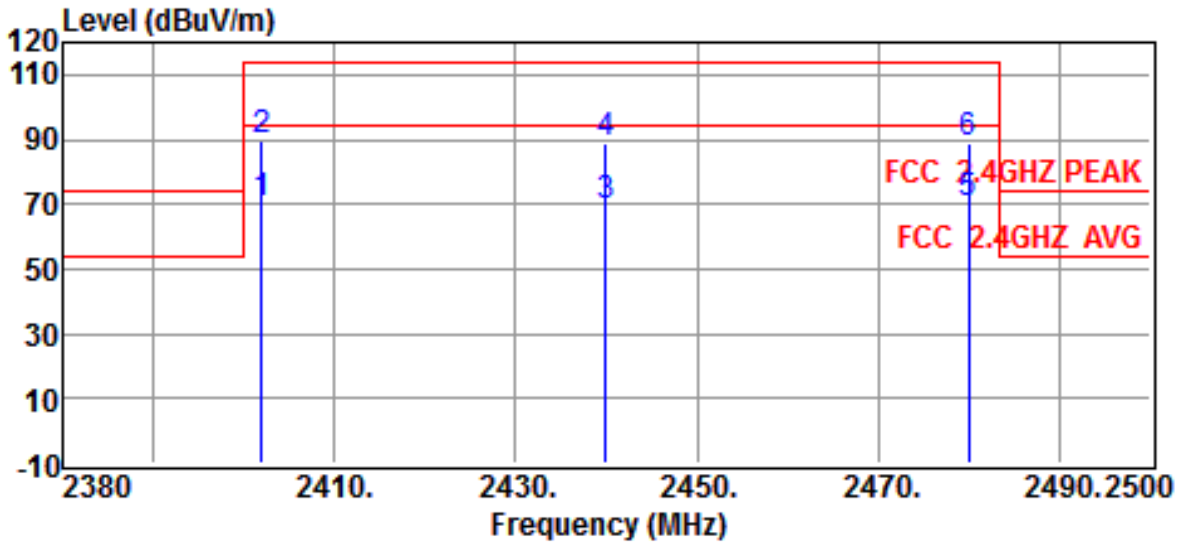
Site	:CHAMBER #2	Date	:2014-10-08
EUT	: Bluetooth Speaker	Ant. Pol.	:VERTICAL
Model	: BluTab	Detector	:
Power Rating	: Power From PC	Engineer	: Jiapeng
Limit	:1G TO 40G PEAK	Temp.	:22°C
Memo	: CH LO & HI - Restricted Bands	Humi.	:62 %
Memo	: EDR		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits (AVG) dBuV/m	Over limit dB	Detector
2354.6200	47.8	-5.8	42.0	54.0	-12.0	Peak
2359.2400	46.9	-5.8	41.1	54.0	-12.9	Peak
2487.4000	47.6	-5.4	42.2	54.0	-11.8	Peak
2496.8500	46.9	-5.4	41.5	54.0	-12.5	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result
4. Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
5. The expanded uncertainty of the radiated emission tests is 3.53 dB.

(3) Test Mode: BT4.0 (BLE)

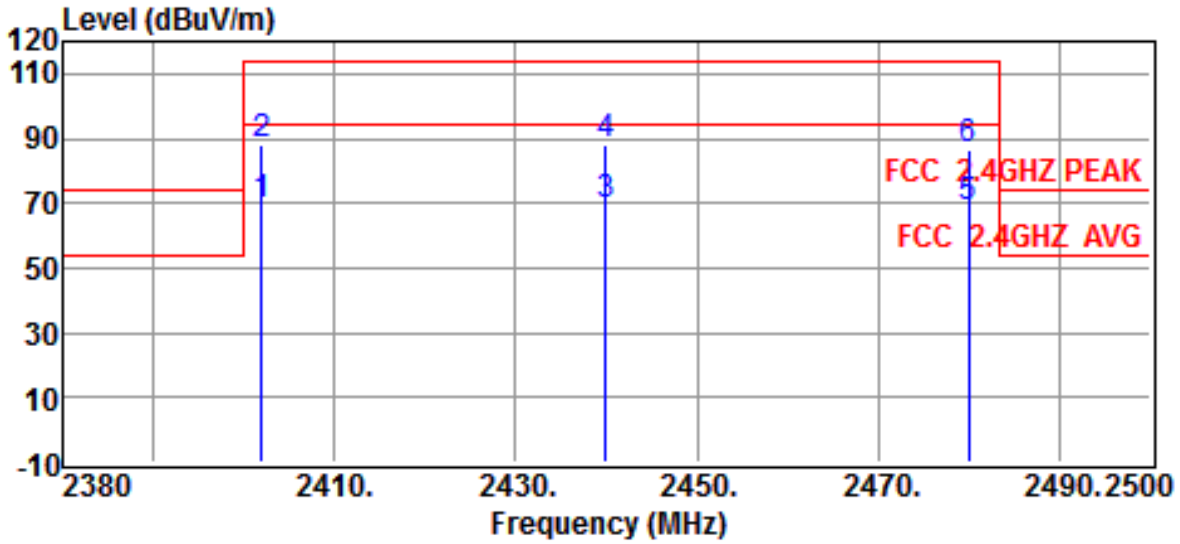


Site	:CHAMBER #2	Date	:2014-05-29
EUT	: Bluetooth Speaker	Ant. Pol.	:HORIZONTAL
Model	: BluTab	Detector	:
Power Rating	:Power From PC	Engineer	: Jiapeng
Limit	:FCC 2.4GHZ PEAK	Temp.	:22°C
Memo	:BT4.0 (BLE)	Humi.	:62 %
Memo	: fundamental		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits (AVG) dBuV/m	Over limit dB	Detector
2402.0000	95.4	-5.6	89.8	94.0	-4.2	Peak
2440.0000	94.1	-5.5	88.6	94.0	-5.4	Peak
2480.0000	94.1	-5.4	88.7	94.0	-5.3	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result
4. Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
5. The expanded uncertainty of the radiated emission tests is 3.53 dB.

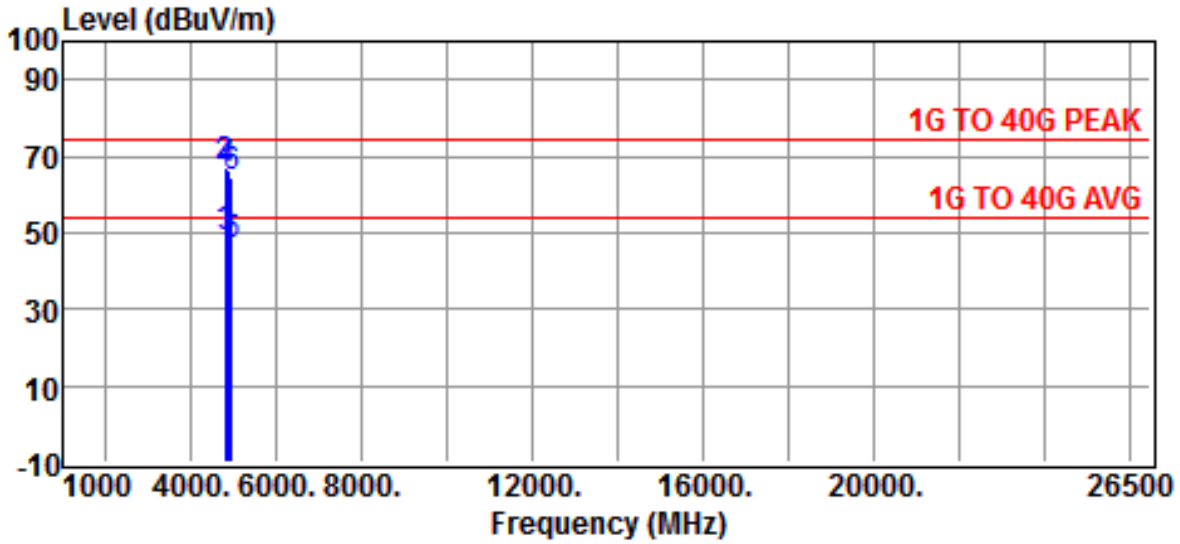


Site	:CHAMBER #2	Date	:2014-05-29
EUT	: Bluetooth Speaker	Ant. Pol.	:VERTICAL
Model	: BluTab	Detector	:
Power Rating	:Power From PC	Engineer	: Jiapeng
Limit	:FCC 2.4GHZ PEAK	Temp.	:22°C
Memo	:BT4.0 (BLE)	Humi.	:62 %
Memo	: fundamental		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits (AVG) dBuV/m	Over limit dB	Detector
2402.0000	93.5	-5.6	87.9	94.0	-6.1	Peak
2440.0000	93.5	-5.5	88.0	94.0	-6.0	Peak
2480.0000	92.1	-5.4	86.7	94.0	-7.3	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result
4. Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
5. The expanded uncertainty of the radiated emission tests is 3.53 dB.

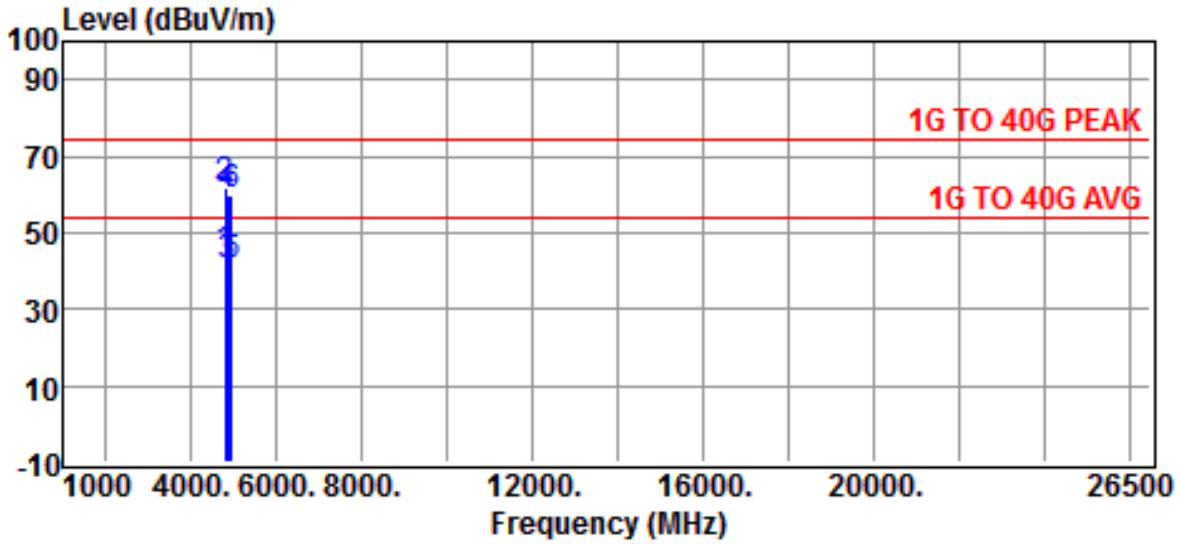


Site	:CHAMBER #2	Date	:2014-06-19
EUT	: Bluetooth Speaker	Ant. Pol.	:HORIZONTAL
Model	: BluTab	Detector	:
Power Rating	: Power From PC	Engineer	: Jiapeng
Limit	:1G TO 40G PEAK	Temp.	:20°C
Memo	:BT4.0 (BLE)	Humi.	:62 %
Memo	:		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4804.0000	48.2	1.4	49.6	54.0	-4.4	Average
4804.0000	66.0	1.4	67.4	74.0	-6.6	Peak
4880.0000	46.8	1.5	48.3	54.0	-5.7	Average
4880.0000	65.0	1.5	66.5	74.0	-7.5	Peak
4960.0000	44.6	1.8	46.4	54.0	-7.6	Average
4960.0000	62.7	1.8	64.5	74.0	-9.5	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result

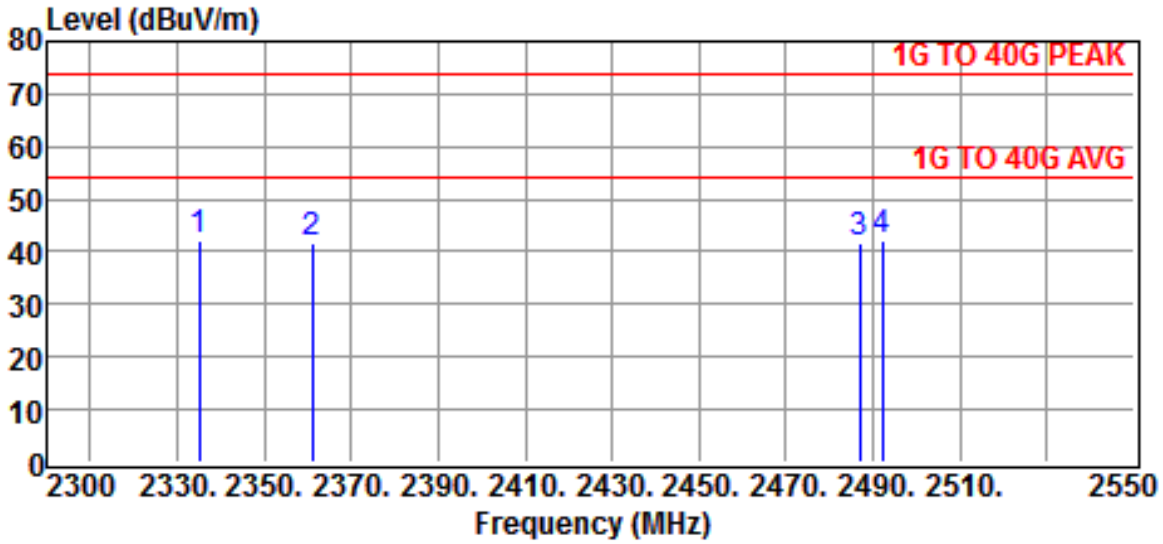


Site	:CHAMBER #2	Date	:2014-06-19
EUT	: Bluetooth Speaker	Ant. Pol.	:VERTICAL
Model	: BluTab	Detector	:
Power Rating	: Power From PC	Engineer	: Jiapeng
Limit	:1G TO 40G PEAK	Temp.	:20°C
Memo	:BT4.0 (BLE)	Humi.	:62 %
Memo	:		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
4804.0000	42.9	1.4	44.3	54.0	-9.7	Average
4804.0000	60.7	1.4	62.1	74.0	-11.9	Peak
4880.0000	40.1	1.5	41.6	54.0	-12.4	Average
4880.0000	58.6	1.5	60.1	74.0	-13.9	Peak
4960.0000	39.8	1.8	41.6	54.0	-12.4	Average
4960.0000	58.3	1.8	60.1	74.0	-13.9	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result

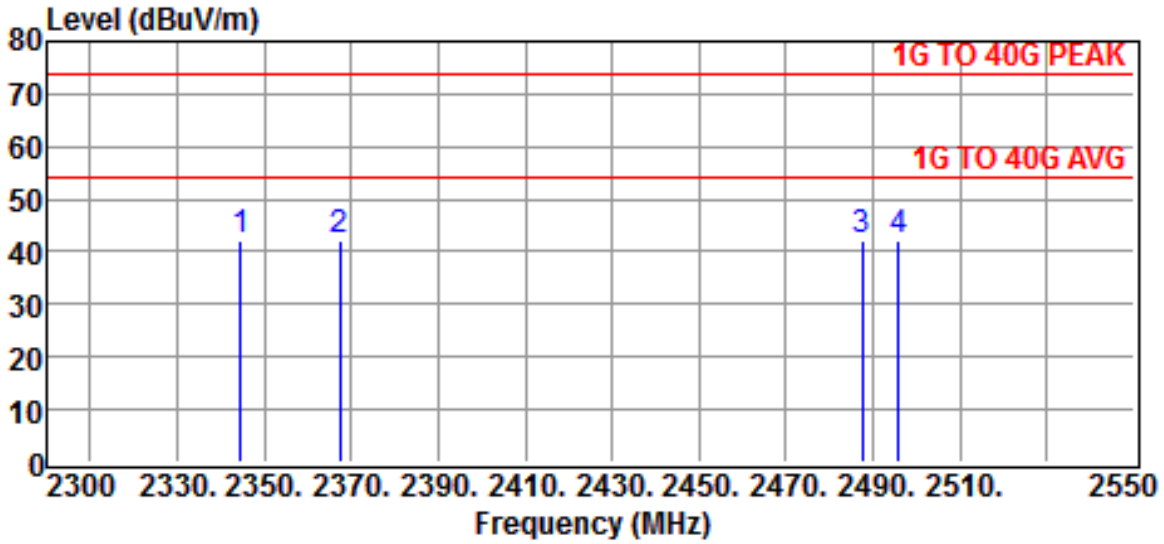


Site	:CHAMBER #2	Date	:2014-05-29
EUT	: Bluetooth Speaker	Ant. Pol.	:HORIZONTAL
Model	: BluTab	Detector	:
Power Rating	:Power From PC	Engineer	: Jiapeng
Limit	:1G TO 40G PEAK	Temp.	:22°C
Memo	:BT4.0 (BLE)	Humi.	:62 %
Memo	: CH LO & HI - Restricted Bands		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits (AVG) dBuV/m	Over limit dB	Detector
2335.0000	48.3	-5.9	42.4	54.0	-11.6	Peak
2361.0000	47.4	-5.8	41.6	54.0	-12.4	Peak
2487.0000	47.1	-5.4	41.7	54.0	-12.3	Peak
2492.0000	47.8	-5.4	42.4	54.0	-11.6	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value = Limit - Result
4. Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
5. The expanded uncertainty of the radiated emission tests is 3.53 dB.



Site	:CHAMBER #2	Date	:2014-05-29
EUT	: Bluetooth Speaker	Ant. Pol.	:VERTICAL
Model	: BluTab	Detector	:
Power Rating	:Power From PC	Engineer	: Jiapeng
Limit	:1G TO 40G PEAK	Temp.	:22°C
Memo	:BT4.0 (BLE)	Humi.	:62 %
Memo	: CH LO & HI - Restricted Bands		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits (AVG) dBuV/m	Over limit dB	Detector
2344.5000	48.1	-5.9	42.2	54.0	-11.8	Peak
2367.5000	47.8	-5.8	42.0	54.0	-12.0	Peak
2487.5000	47.8	-5.4	42.4	54.0	-11.6	Peak
2496.0000	47.4	-5.4	42.0	54.0	-12.0	Peak

Note :

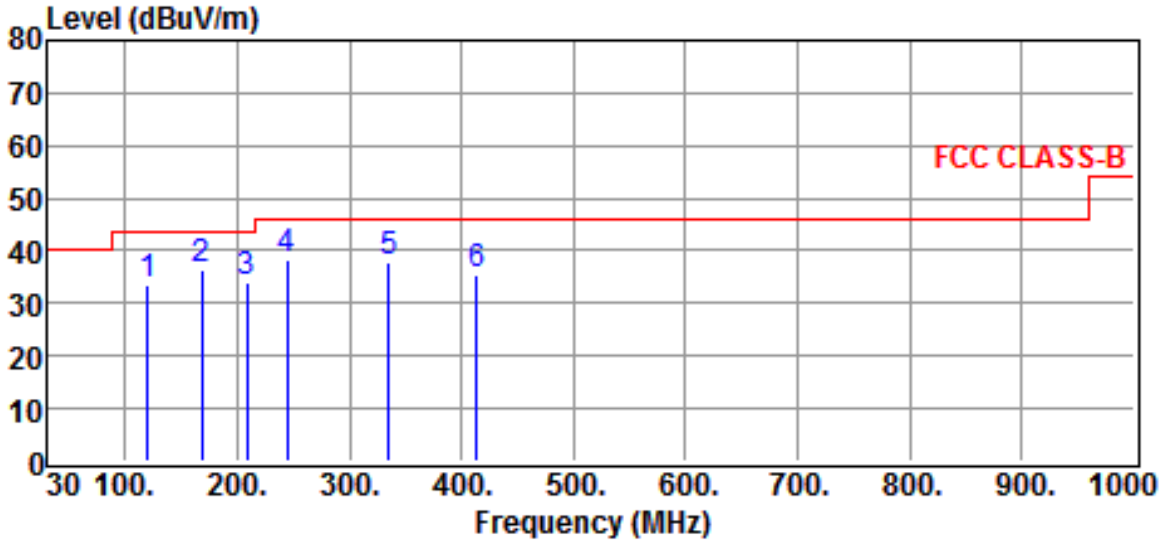
1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result
4. Peak measurements are compared to the average limit - as peak measurements are below the average limit, they also comply with the peak limit.
5. The expanded uncertainty of the radiated emission tests is 3.53 dB.

4.4.2 Other Emissions

a) Emission frequencies below 1 GHz

Operation Mode : Charging & Bluetooth

Test Date : Jun. 19, 2014 Temperature : 22 °C Humidity : 58 %

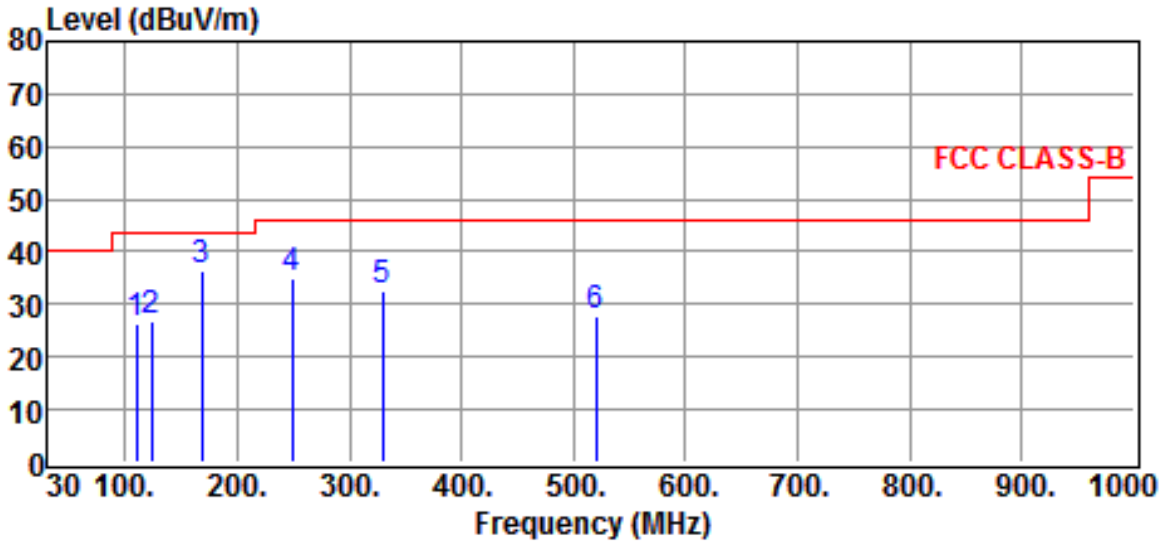


Site	:Open Site	Date	:2014-06-19
EUT	: Bluetooth Speaker	Ant. Pol.	:HORIZONTAL
Model	: BluTab	Detector	:Q.P.
Power Rating	: Power From PC	Engineer	: Jiapeng
Limit	:FCC CLASS-B	Temp.	:22°C
Memo	: Charging + BT Mode	Humi.	:58 %
Memo	:		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
119.7000	21.1	12.4	33.5	43.5	-10.0	QP
168.4800	21.8	14.4	36.2	43.5	-7.3	QP
208.3200	19.8	14.3	34.1	43.5	-9.4	QP
244.3600	24.3	14.2	38.5	46.0	-7.5	QP
335.7000	20.2	17.7	37.9	46.0	-8.1	QP
413.4000	15.8	19.5	35.3	46.0	-10.7	QP

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result



Site	:Open Site	Date	:2014-06-19
EUT	: Bluetooth Speaker	Ant. Pol.	:VERTICAL
Model	: BluTab	Detector	:Q.P.
Power Rating	: Power From PC	Engineer	: Jiapeng
Limit	:FCC CLASS-B	Temp.	:22°C
Memo	: Charging + BT Mode	Humi.	:58 %
Memo	:		

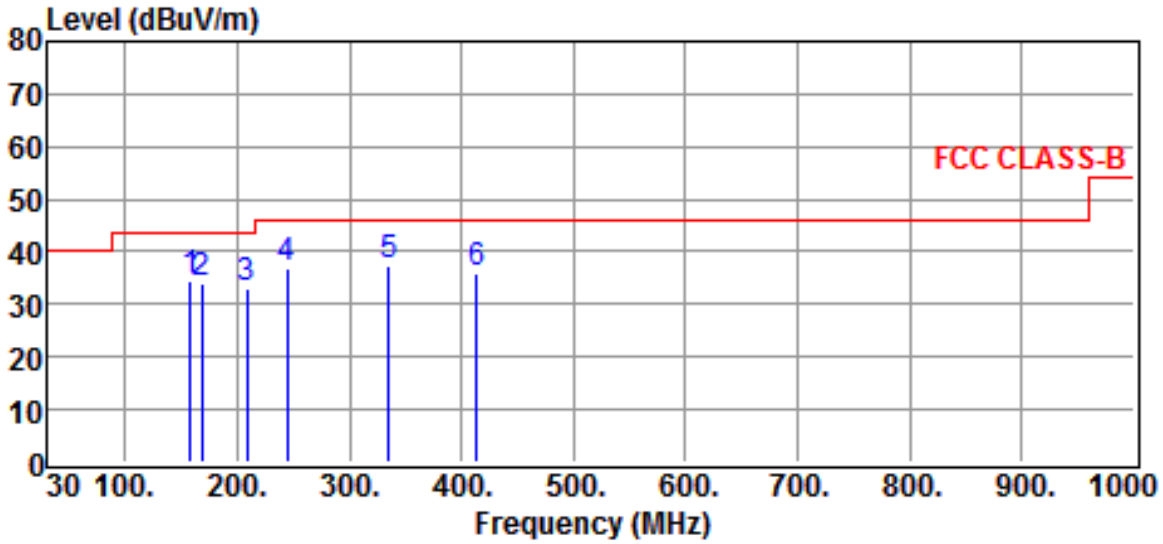
Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
109.9500	14.4	12.1	26.5	43.5	-17.0	QP
123.7700	14.4	12.6	27.0	43.5	-16.5	QP
168.2100	21.9	14.4	36.3	43.5	-7.2	QP
248.4300	20.6	14.5	35.1	46.0	-10.9	QP
329.4000	15.0	17.7	32.7	46.0	-13.3	QP
520.5000	5.8	21.8	27.6	46.0	-18.4	QP

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result

Operation Mode : Bluetooth

Test Date : Jun. 19, 2014 Temperature : 22 °C Humidity : 58 %

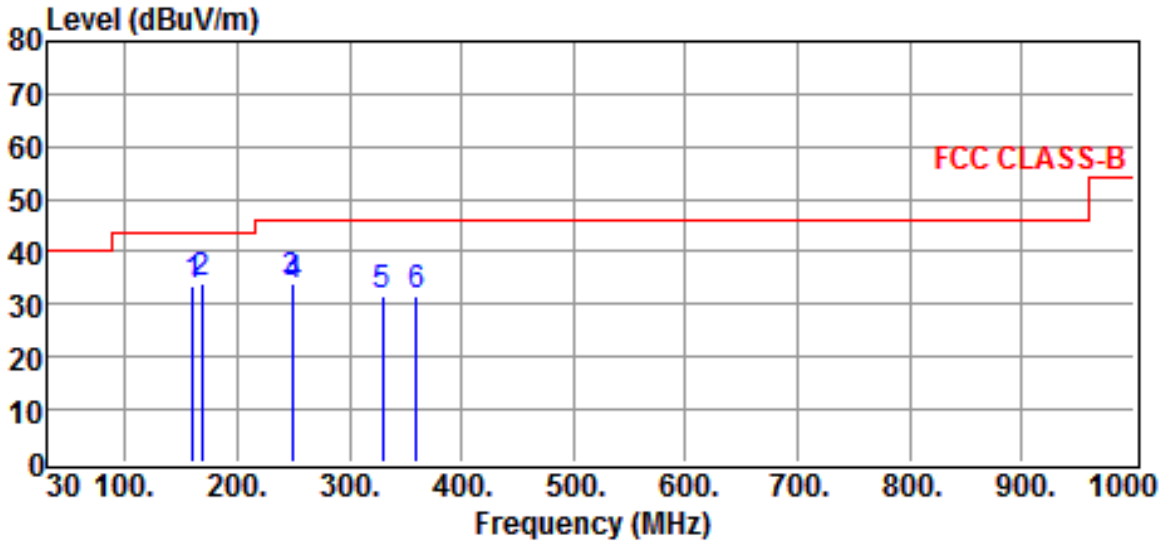


Site	:Open Site	Date	:2014-06-19
EUT	: Bluetooth Speaker	Ant. Pol.	:HORIZONTAL
Model	: BluTab	Detector	:Q.P.
Power Rating	:Battery	Engineer	: Jiapeng
Limit	:FCC CLASS-B	Temp.	:22°C
Memo	: BT	Humi.	:58 %

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
158.7300	20.4	14.2	34.6	43.5	-8.9	QP
168.4800	19.8	14.4	34.2	43.5	-9.3	QP
208.3200	18.9	14.3	33.2	43.5	-10.3	QP
244.3600	22.9	14.2	37.1	46.0	-8.9	QP
335.7000	19.5	17.7	37.2	46.0	-8.8	QP
413.4000	16.3	19.5	35.8	46.0	-10.2	QP

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result



Site	:Open Site	Date	:2014-06-19
EUT	: Bluetooth Speaker	Ant. Pol.	:VERTICAL
Model	: BluTab	Detector	:Q.P..
Power Rating	:Battery	Engineer	: Jiapeng
Limit	:FCC CLASS-B	Temp.	:22°C
Memo	: BT	Humi.	:58 %

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
160.6200	19.4	14.2	33.6	43.5	-9.9	QP
168.2100	19.8	14.4	34.2	43.5	-9.3	QP
248.4300	19.7	14.5	34.2	46.0	-11.8	QP
250.5900	18.8	14.6	33.4	46.0	-12.6	QP
329.4000	14.1	17.7	31.8	46.0	-14.2	QP
360.2000	13.6	18.0	31.6	46.0	-14.4	QP

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result

b) Emission frequencies above 1 GHz

Radiated emission frequencies above 1 GHz to 26.5 GHz were too low to be measured with a pre-amplifier of 35 dB.

4.5 Field Strength Calculation

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

where Corrected Factor

= Antenna FACTOR + Cable Loss + High Pass Filter Loss - Amplifier Gain

4.6 Photos of Radiation Measuring Setup

5 CONDUCTED EMISSION MEASUREMENT

5.1 Standard Applicable

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency MHz	Quasi Peak dBμV	Average dBμV
0.15 - 0.5	66-56*	56-46*
0.5 - 5.0	56	46
5.0 - 30.0	60	50

* Decreases with the logarithm of the frequency

5.2 Measurement Procedure

1. Setup the configuration per figure 3.

2. A preliminary scan with a spectrum monitor is performed to identify the frequency of emission that has the highest amplitude relative to the limit by operating the EUT in selected modes of operation, typical cable positions, and with a typical system configuration.

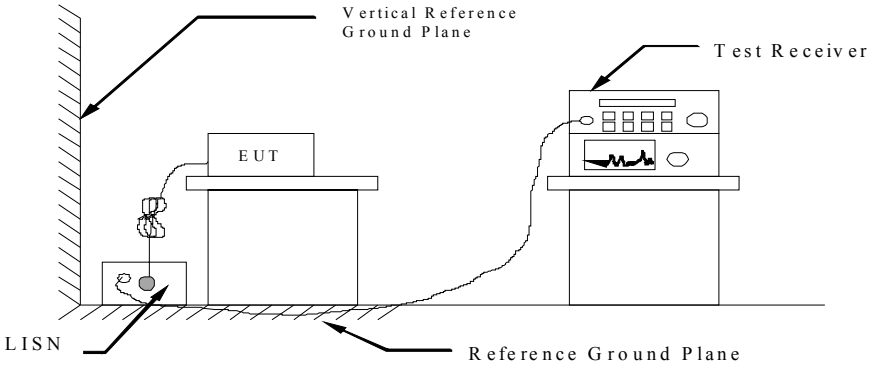
3. Record the 6 or 8 highest emissions relative to the limit.

4. Measure each frequency obtained from step 3 by a test receiver set on quasi peak detector function, and then records the accuracy frequency and emission level. If all emissions measured in the specified band are attenuated more than 20 dB from the limit, this step would be ignored, and the peak detector function would be used.

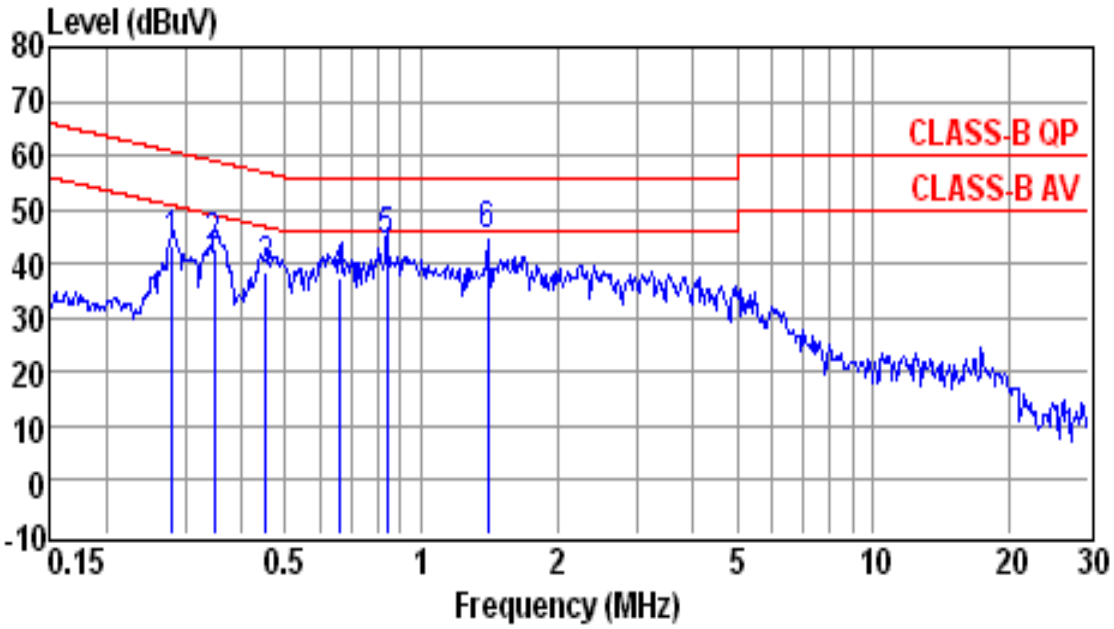
5. Confirm the highest three emissions with variation of the EUT cable configuration and record the final data.

6. Repeat all above procedures on measuring each operation mode of EUT.

Figure 3: Conducted emissions measurement configuration



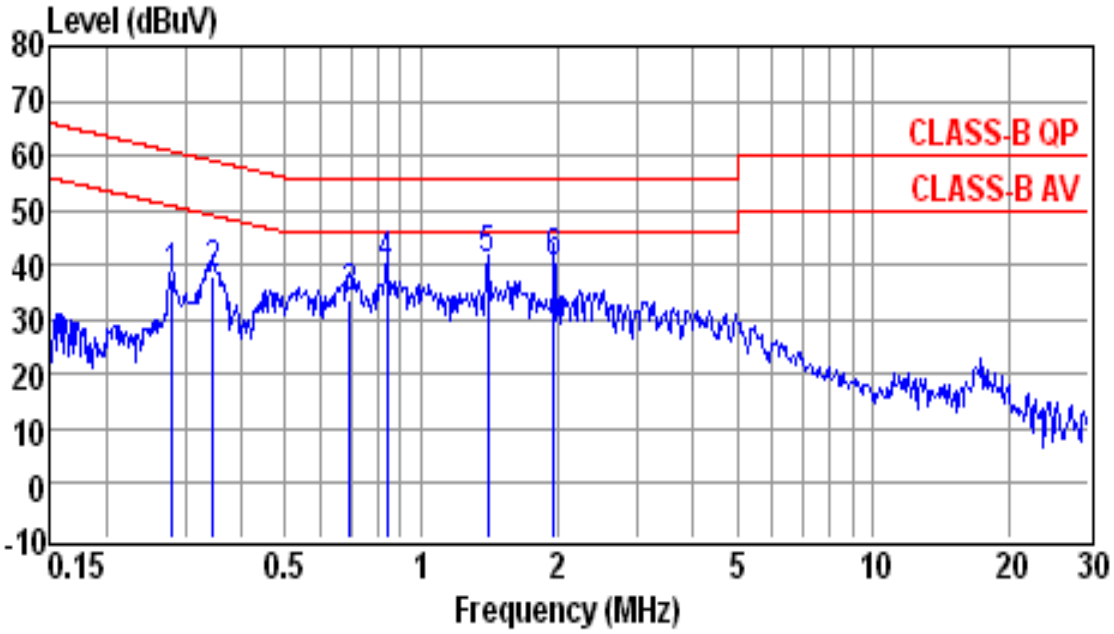
5.3 Conducted Emission Data



Site : conducted #1
Date : 06-19-2014
Condition : CLASS-B QP
LISN : NEUTRAL
Tem / Hum : 22 ℃ / 58%
Test Mode : Charging + BT
EUT : Bluetooth Speaker
Power Rating : Power From PC
Memo :
Memo :

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.2803	33.2	10.2	43.4	60.8	-17.4	QP
0.3483	32.8	10.2	43.0	59.0	-16.0	QP
0.4516	28.1	10.2	38.3	56.8	-18.5	QP
0.6613	27.4	10.2	37.6	56.0	-18.4	QP
0.8393	33.4	10.2	43.6	56.0	-12.4	QP
1.4030	34.7	10.3	45.0	56.0	-11.0	QP

Note :
1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss



Site : conducted #1
Date : 06-19-2014
Condition : CLASS-B QP
LISN : LINE
Tem / Hum : 22 ℃ / 58%
Test Mode : Charging + BT
EUT : Bluetooth Speaker
Power Rating : Power From PC
Memo :
Memo :

Freq (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV)	Limit Line (dBuV)	Over Limit (dB)	Remark
0.2803	27.4	10.1	37.5	60.8	-23.3	QP
0.3465	28.1	10.1	38.2	59.0	-20.8	QP
0.6936	23.7	10.2	33.9	56.0	-22.1	QP
0.8393	29.3	10.2	39.5	56.0	-16.5	QP
1.4030	30.5	10.3	40.8	56.0	-15.2	QP
1.9700	29.7	10.3	40.0	56.0	-16.0	QP

Note :
1. Result = Reading + Factor
2. Factor = LISN Factor + Cable Loss

5.4 Result Data Calculation

The result data is calculated by adding the LISN Factor to the measured reading. The basic equation with a sample calculation is as follows:

RESULT = READING + LISN FACTOR

Assume a receiver reading of 22.5 dBμV is obtained, and LISN Factor is 0.1 dB, then the total of disturbance voltage is 22.6 dBμV.

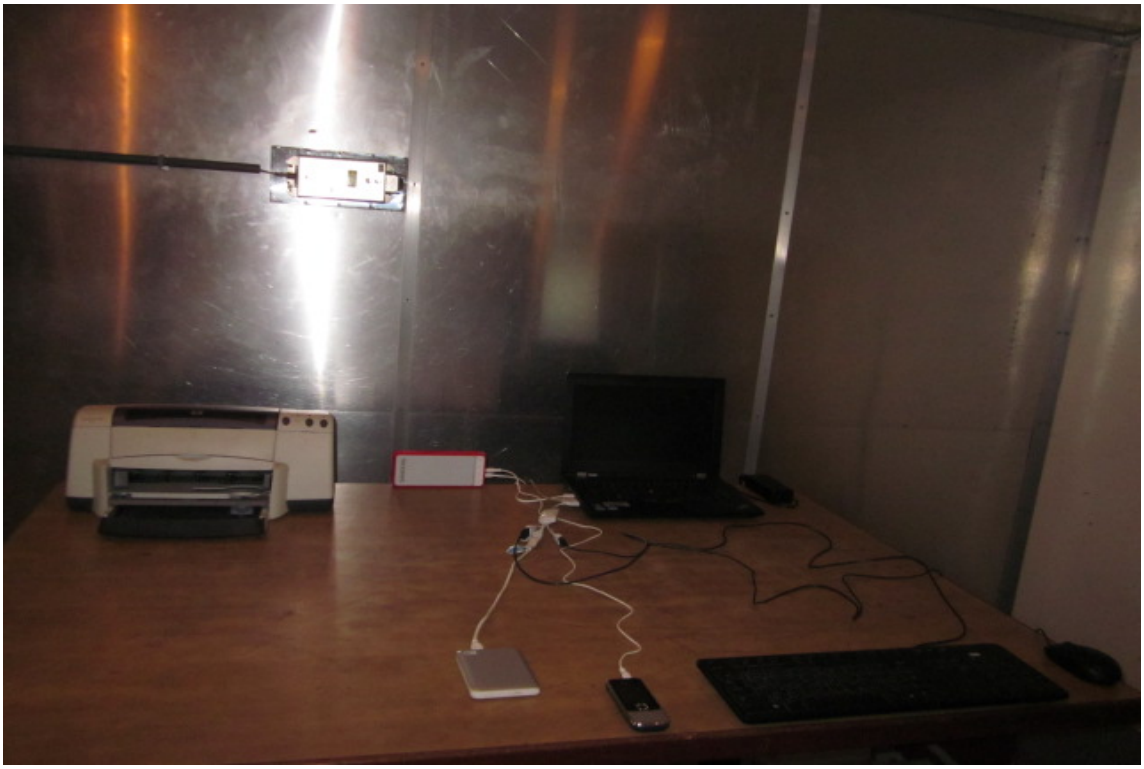
RESULT = 22.5 + 0.1 = 22.6 dBμV
Level in μV = Common Antilogarithm[(22.6 dBμV)/20]
= 13.48 μV

5.5 Conducted Measurement Equipment

The following test equipments are used during the conducted test.

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
EMI Test Receiver	Rohde & Schwarz	ESCI	2013/08/02	2014/08/01
LISN	EMCO	3625/2	2014/05/07	2015/05/06
LISN	Rohde & Schwarz	ESH2-Z5	2014/04/08	2015/04/07

5.6 Photos of Conduction Measuring Setup



6 ANTENNA REQUIREMENT

6.1 Standard Applicable

According to §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.

6.2 Antenna Construction

The antenna is integrated on the device. No consideration of replacement. Please refer to the construction Photo for details.

7 BAND EDGES MEASUREMENT

7.1 Standard Applicable

According to 15.249(d), out band emission except for harmonics shall be comply with §15.209 or at least attenuated by 50 dB below the level of the fundamental.

7.2 Measurement Procedure

A) 50 dB attenuation method

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT as shown in figure 4 without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
4. Repeat above procedures until all measured frequencies were complete.

B) Radiated Emission method

1. Following the measurement procedures in section 4.2 with the EUT set to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
2. Measure the highest amplitude appearing on spectral displayed.
3. Repeat above procedures until all measured frequencies were complete.

Measuring instrument setup in measured frequency band when specified detector function is used :

Frequency Band (MHz)	Instrument	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	RF Test Receiver	Quasi-Peak	120 kHz	N/A
	Spectrum Analyzer	Peak	100 kHz	100 kHz
Above 1000	Spectrum Analyzer	Peak	1 MHz	1 MHz
	Spectrum Analyzer	Average	1 MHz	10Hz

7.3 Measurement Equipment

A) 50 dB attenuation method

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
EMI Test Receiver	Rohde & Schwarz	ESU 40	2013/09/24	2014/09/23

B) Radiated Emission method

Equipment	Manufacturer	Model No.	Calibration Date	Next Cal. Date
Test Receiver	Rohde & Schwarz	ESVS30	2014/05/29	2015/05/28
EMI Test Receiver	Rohde & Schwarz	ESL	2013/09/11	2014/09/10
Bi-Log Antenna	ETC	MCTD 2756	2014/01/03	2015/01/02
Log-periodic Antenna	EMCO	3146	2013/10/25	2014/10/24
Double Ridged Guide Horn Antenna	EMCO	3116	2014/01/15	2015/01/14
Biconical Antenna	EMCO	3110	2013/10/25	2014/10/24
Double Ridged Antenna	EMCO	3115	2013/08/02	2014/08/01
Amplifier	HP	8449B	2014/01/15	2015/01/14
Amplifier	HP	83051A	2014/05/05	2015/05/04
Amplifier	HP	8447D	2014/05/29	2015/05/28
EMI Test Receiver	Rohde & Schwarz	ESU 40	2013/09/24	2014/09/23

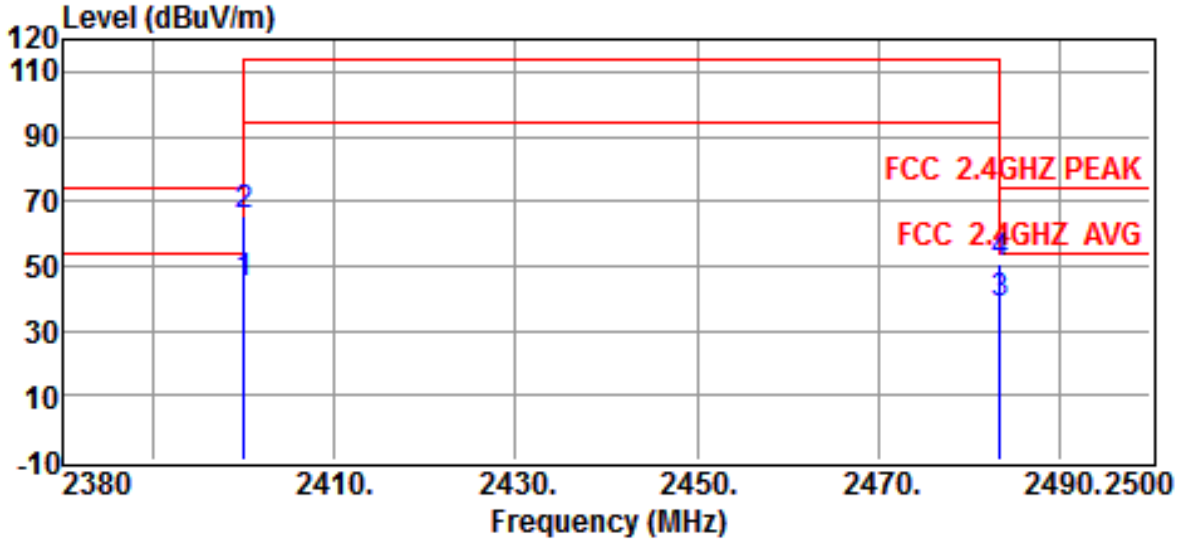
7.4 Measurement Data

Test Result: (Radiated Emission method)

The radiated emission test results of the lower and the upper band edges were comply with §15.209. Please refer to the following pages for test results.

Radiated Emission Test Results of the Band Edges

(1) Test Mode: BR

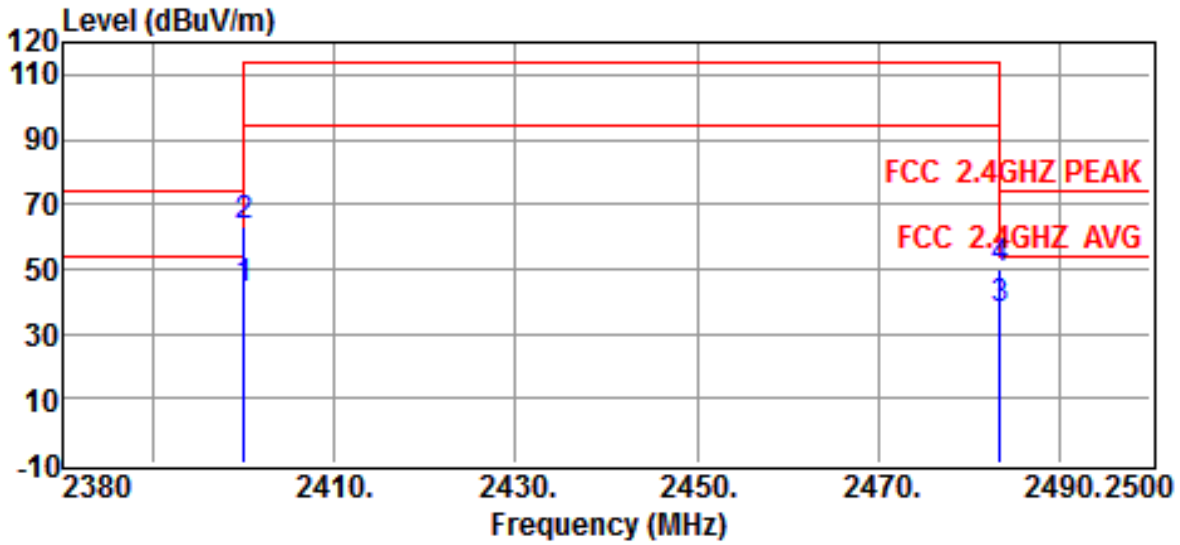


Site	:CHAMBER #2	Date	:2014-05-29
EUT	:Bluetooth Speaker	Ant. Pol.	:HORIZONTAL
Model	:Blutab	Detector	:
Power Rating	: Power From PC	Engineer	: Jiapeng
Limit	:FCC 2.4GHZ PEAK	Temp.	:22°C
Memo	: band edge	Humi.	:62 %
Memo	: BR		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2400.0000	49.8	-5.6	44.2	54.0	-9.8	Average
2400.0000	70.8	-5.6	65.2	74.0	-8.8	Peak
2483.5000	43.5	-5.4	38.1	54.0	-15.9	Average
2483.5000	55.9	-5.4	50.5	74.0	-23.5	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit - Result
4. The expanded uncertainty of the radiated emission tests is 3.53 dB.



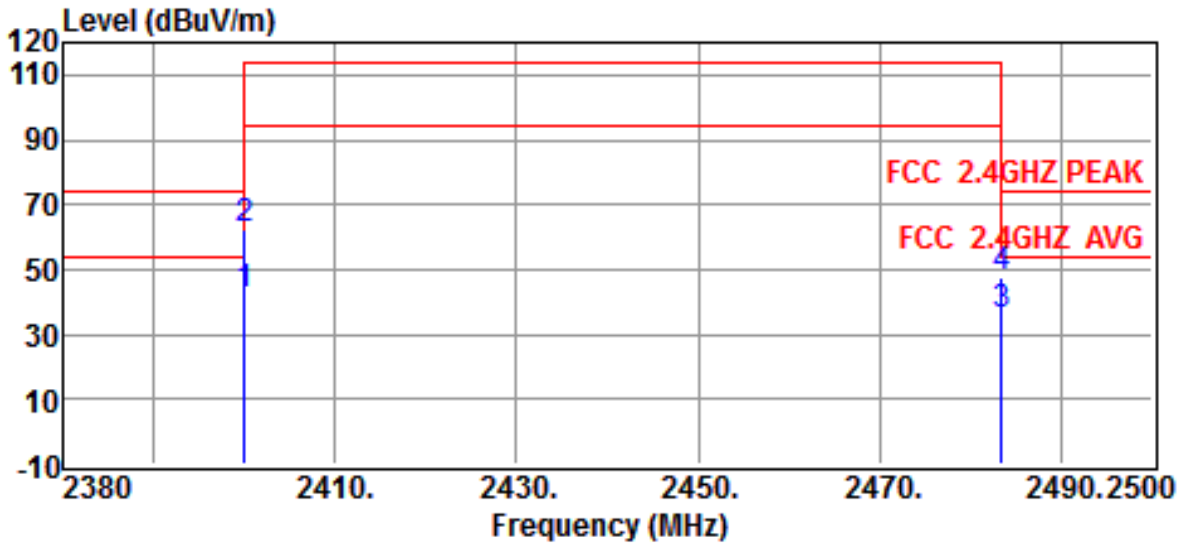
Site	:CHAMBER #2	Date	:2014-05-29
EUT	:Bluetooth Speaker	Ant. Pol.	:VERTICAL
Model	:Blutab	Detector	:
Power Rating	: Power From PC	Engineer	: Jiapeng
Limit	:FCC 2.4GHZ PEAK	Temp.	:22°C
Memo	: band edge	Humi.	:62 %
Memo	: BR		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2400.0000	49.0	-5.6	43.4	54.0	-10.6	Average
2400.0000	68.5	-5.6	62.9	74.0	-11.1	Peak
2483.5000	42.9	-5.4	37.5	54.0	-16.5	Average
2483.5000	55.3	-5.4	49.9	74.0	-24.1	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit – Result
4. The expanded uncertainty of the radiated emission tests is 3.53 dB.

(2) Test Mode: EDR

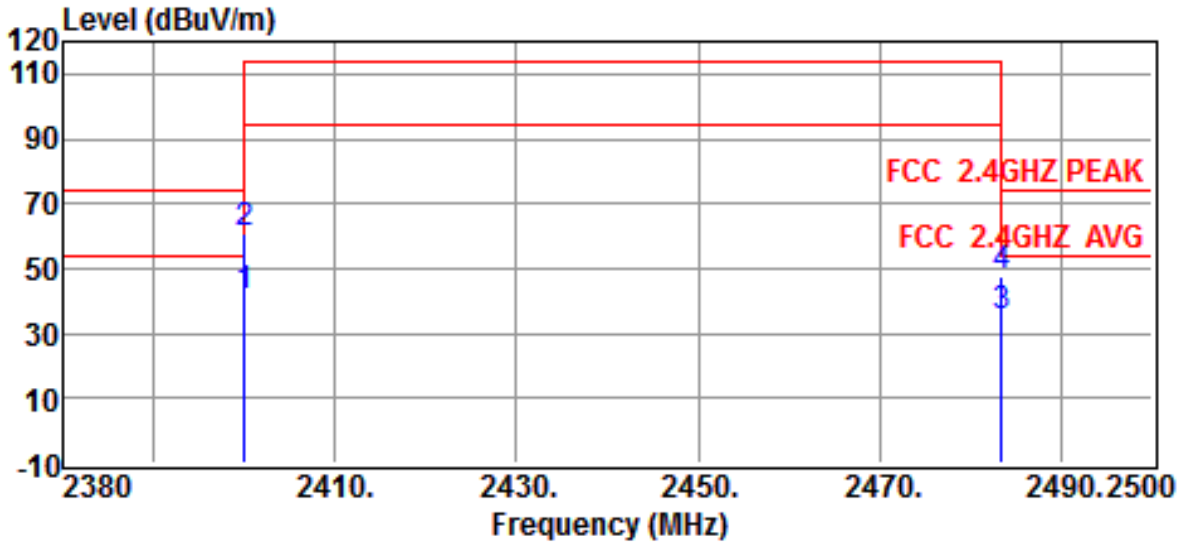


Site	:CHAMBER #2	Date	:2014-10-08
EUT	:Bluetooth Speaker	Ant. Pol.	:HORIZONTAL
Model	:Blutab	Detector	:
Power Rating	: Power From PC	Engineer	: Jiapeng
Limit	:FCC 2.4GHZ PEAK	Temp.	:22°C
Memo	: band edge	Humi.	:62 %
Memo	: EDR		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2400.0000	47.5	-5.6	41.9	54.0	-12.1	Average
2400.0000	68.3	-5.6	62.7	74.0	-11.3	Peak
2483.5000	41.1	-5.4	35.7	54.0	-18.3	Average
2483.5000	53.2	-5.4	47.8	74.0	-26.2	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit – Result
4. The expanded uncertainty of the radiated emission tests is 3.53 dB.



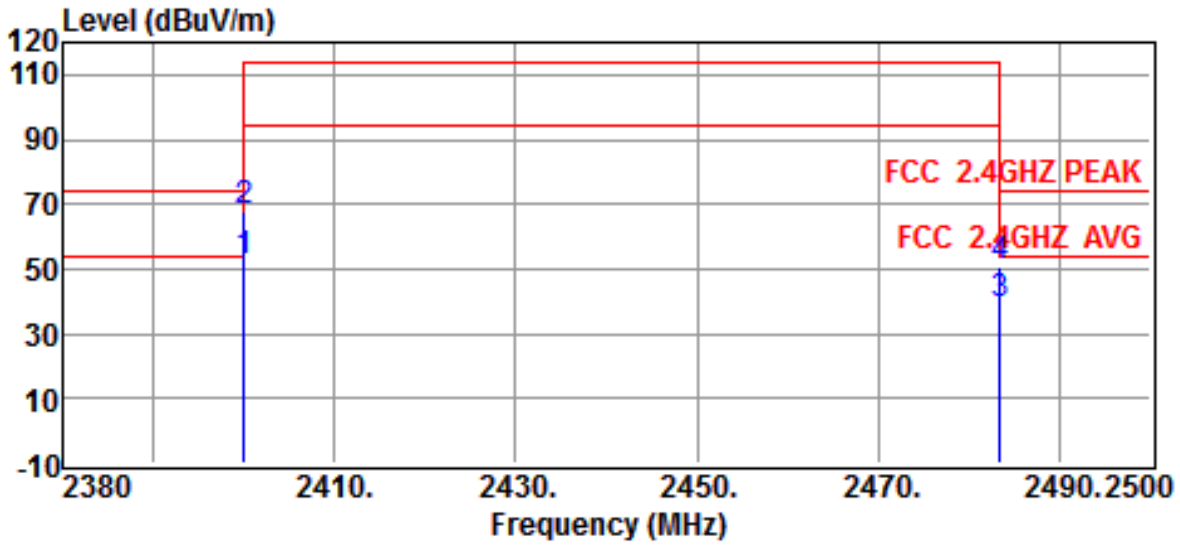
Site	:CHAMBER #2	Date	:2014-10-08
EUT	:Bluetooth Speaker	Ant. Pol.	:VERTICAL
Model	:Blutab	Detector	:
Power Rating	: Power From PC	Engineer	: Jiapeng
Limit	:FCC 2.4GHZ PEAK	Temp.	:22°C
Memo	: band edge	Humi.	:62 %
Memo	: EDR		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2400.0000	47.1	-5.6	41.5	54.0	-12.5	Average
2400.0000	66.1	-5.6	60.5	74.0	-13.5	Peak
2483.5000	40.2	-5.4	34.8	54.0	-19.2	Average
2483.5000	53.1	-5.4	47.7	74.0	-26.3	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit – Result
4. The expanded uncertainty of the radiated emission tests is 3.53 dB.

(3) Test Mode: BT4.0 (BLE)

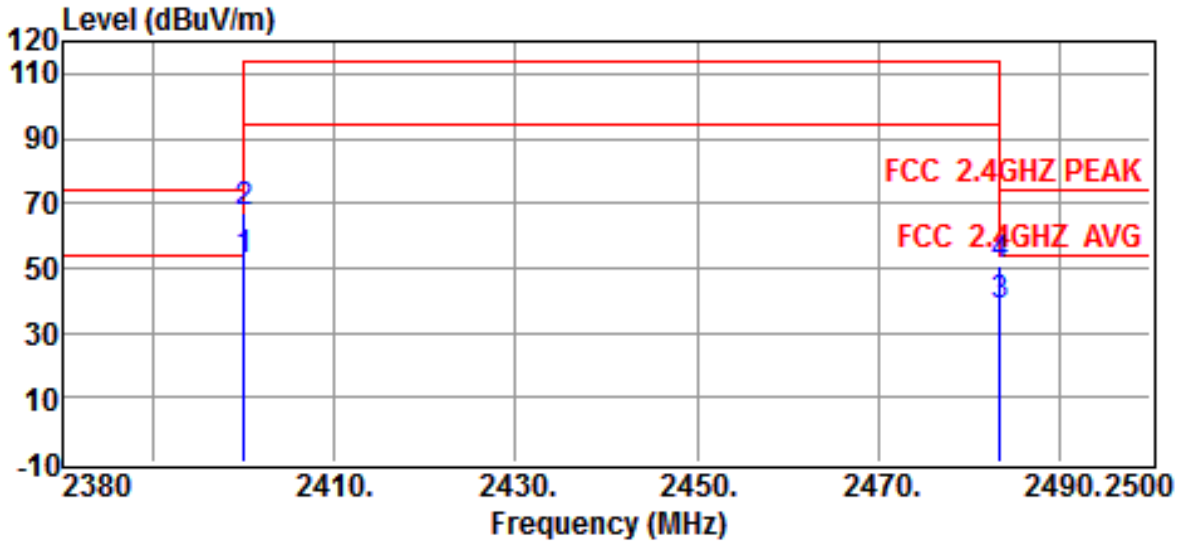


Site	:CHAMBER #2	Date	:2014-05-29
EUT	:Bluetooth Speaker	Ant. Pol.	:HORIZONTAL
Model	:Blutab	Detector	:
Power Rating	:Power From PC	Engineer	: Jiapeng
Limit	:FCC 2.4GHZ PEAK	Temp.	:22°C
Memo	:BT4.0 (BLE)	Humi.	:62 %
Memo	: band edge		

Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2400.0000	57.9	-5.6	52.3	54.0	-1.7	Average
2400.0000	73.7	-5.6	68.1	74.0	-5.9	Peak
2483.5000	44.7	-5.4	39.3	54.0	-14.7	Average
2483.5000	56.5	-5.4	51.1	74.0	-22.9	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit – Result
4. The expanded uncertainty of the radiated emission tests is 3.53 dB.



Site	:CHAMBER #2	Date	:2014-05-29
EUT	:	Ant. Pol.	:VERTICAL
Model	:Blutab	Detector	:
Power Rating	:Power From PC	Engineer	: Jiapeng
Limit	:FCC 2.4GHZ PEAK	Temp.	:22°C
Memo	:BT4.0 (BLE)	Humi.	:62 %
Memo	: band edge		

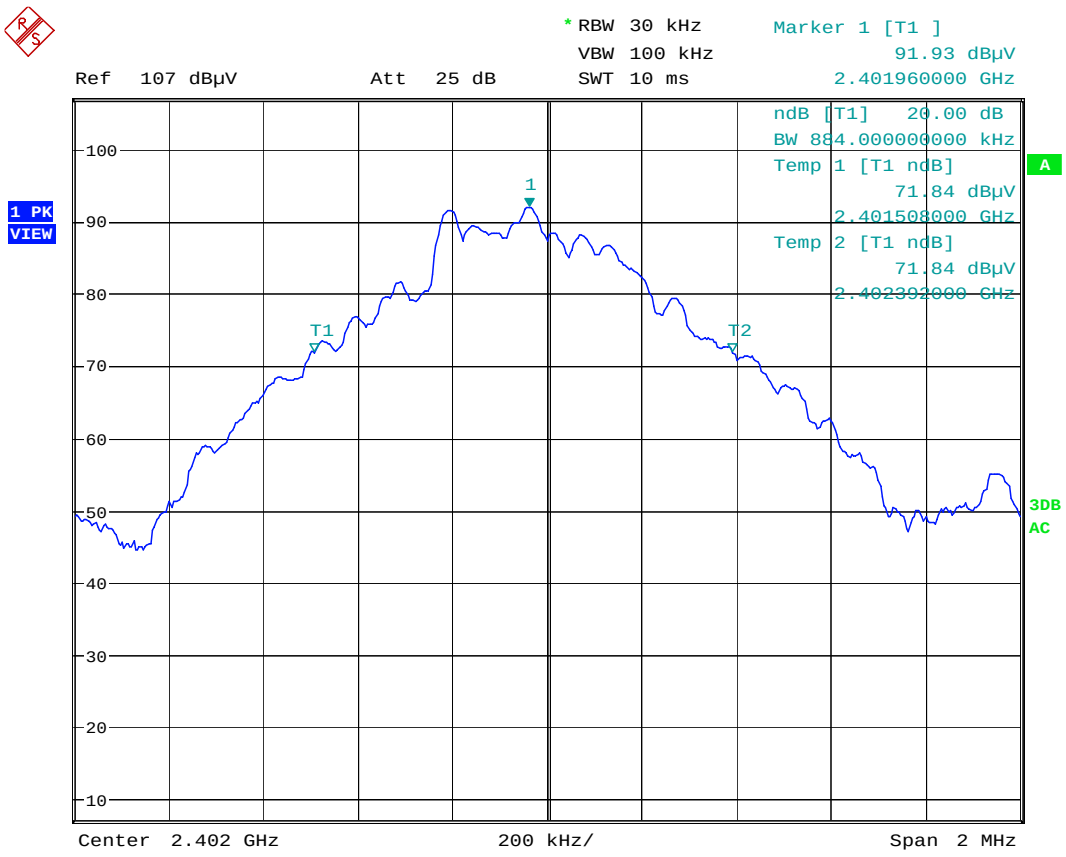
Freq MHz	Reading dBuV	Correction Factor dB	Result dBuV/m	Limits dBuV/m	Over limit dB	Detector
2400.0000	57.6	-5.6	52.0	54.0	-2.0	Average
2400.0000	72.4	-5.6	66.8	74.0	-7.2	Peak
2483.5000	43.8	-5.4	38.4	54.0	-15.6	Average
2483.5000	55.8	-5.4	50.4	74.0	-23.6	Peak

Note :

1. Result = Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain (if any)
3. The margin value=Limit – Result
4. The expanded uncertainty of the radiated emission tests is 3.53 dB.

Test Mode: BR

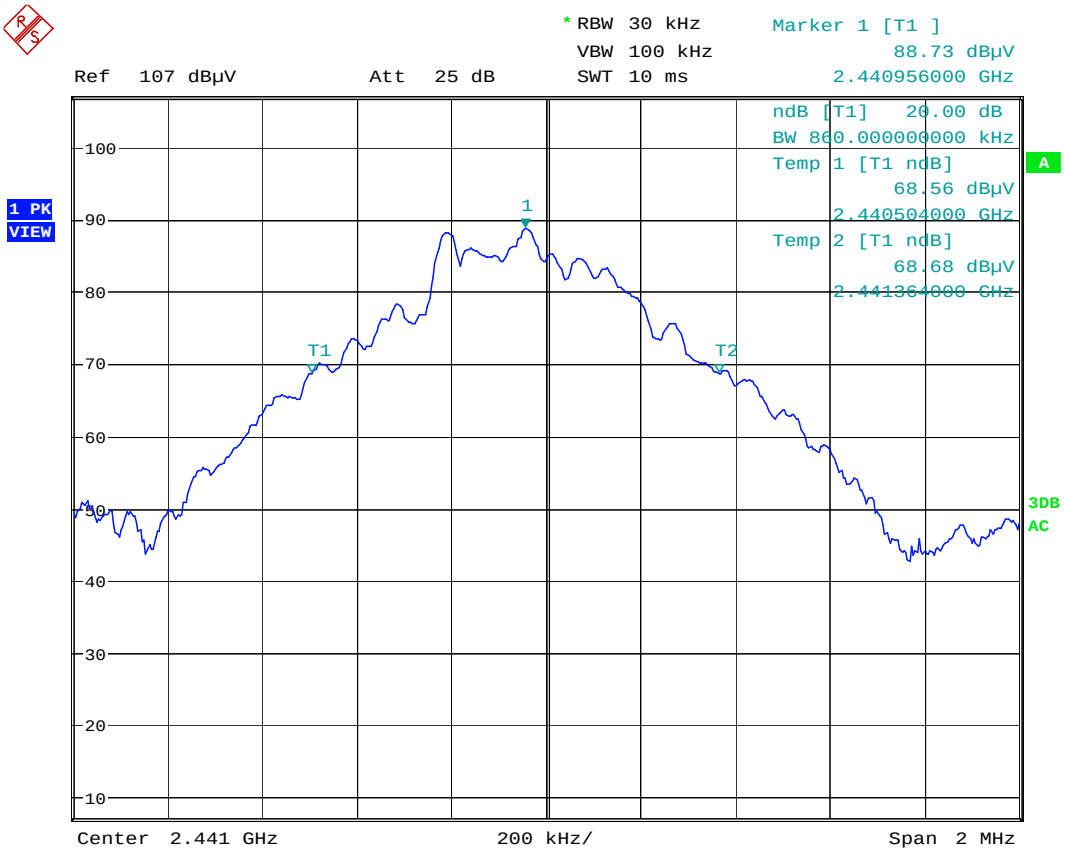
Lower band edge / -20dB BW plot of the lowest channel



Date: 29.MAY.2014 11:21:16

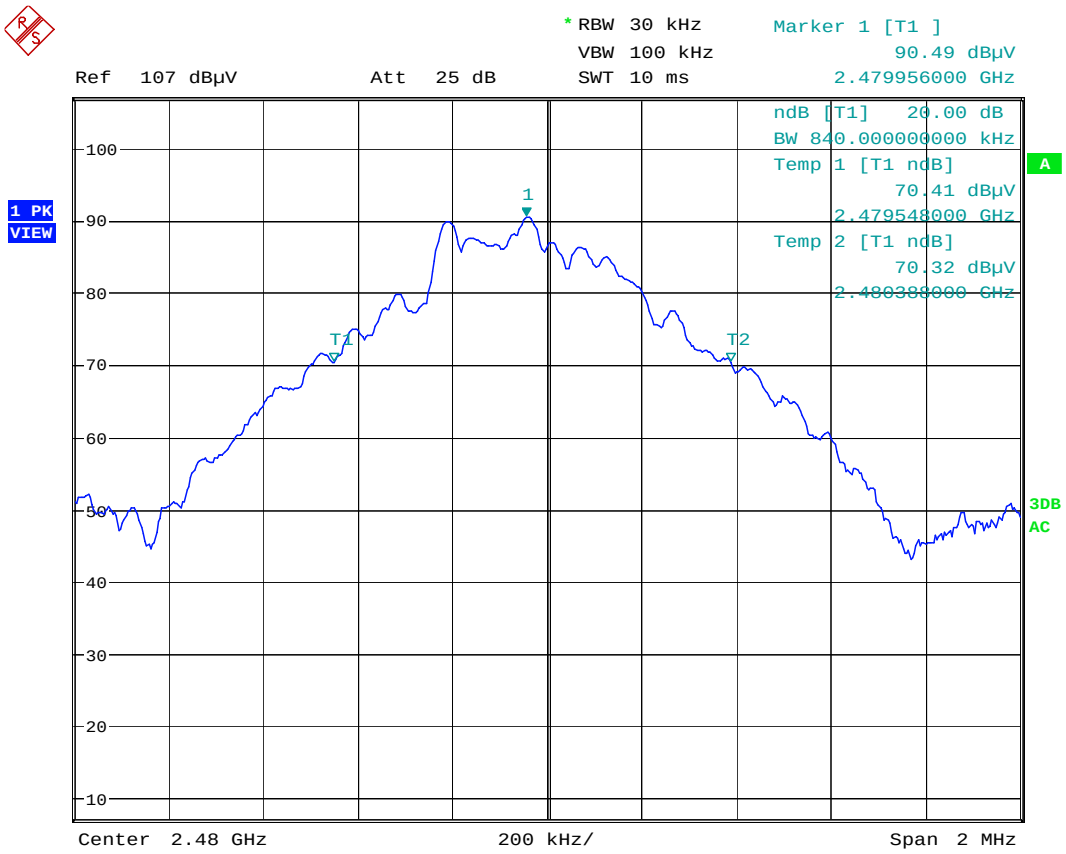
The 20 dB bandwidth of the emission is contained within the frequency band designated in the rule section 15.249.

Middle



Date: 29.MAY.2014 11:52:11

Upper band edge / -20dB BW plot of the highest channel

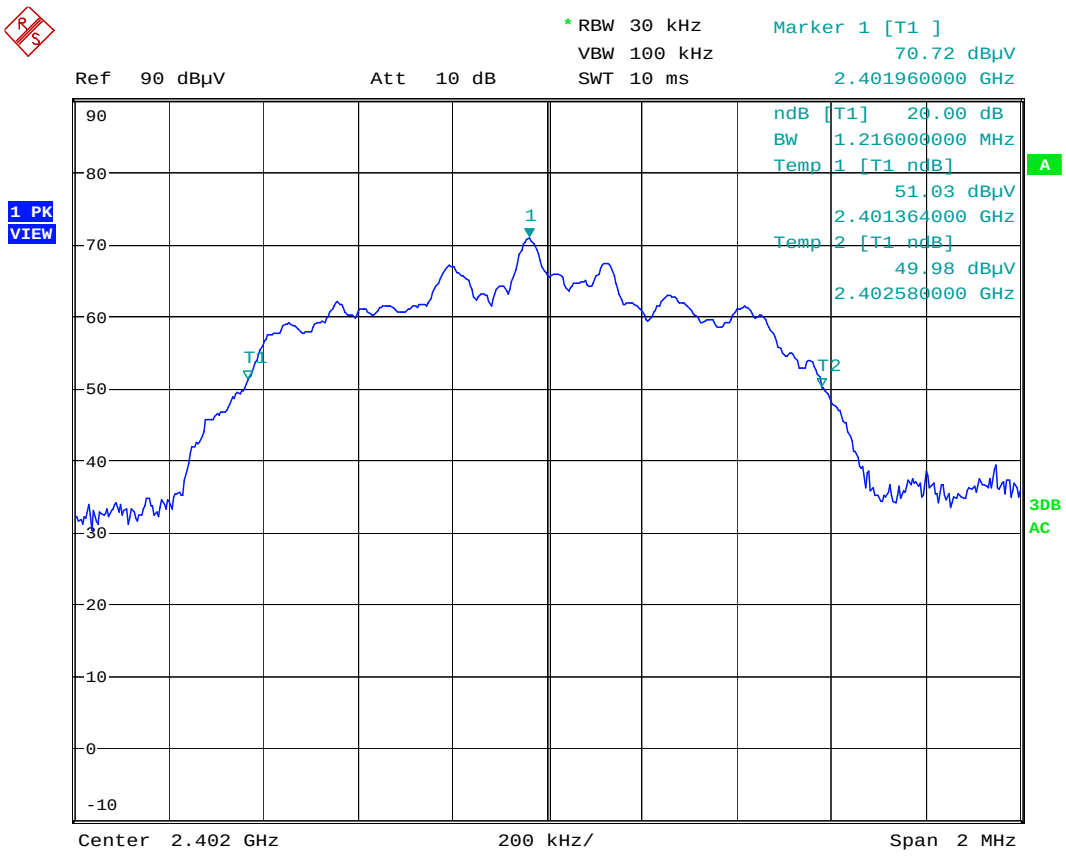


Date: 29.MAY.2014 11:38:36

The 20 dB bandwidth of the emission is contained within the frequency band designated in the rule section 15.249.

Test Mode: EDR

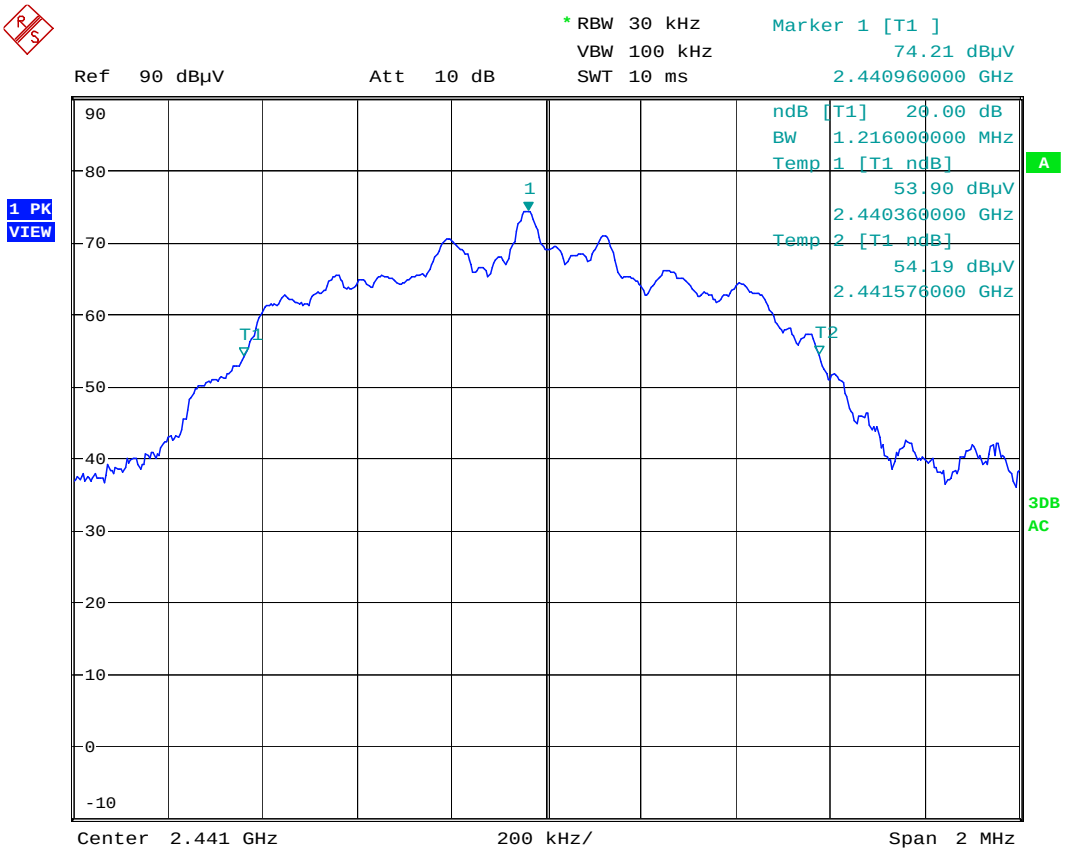
Lower band edge / -20dB BW plot of the lowest channel



Date: 29.MAY.2014 12:04:34

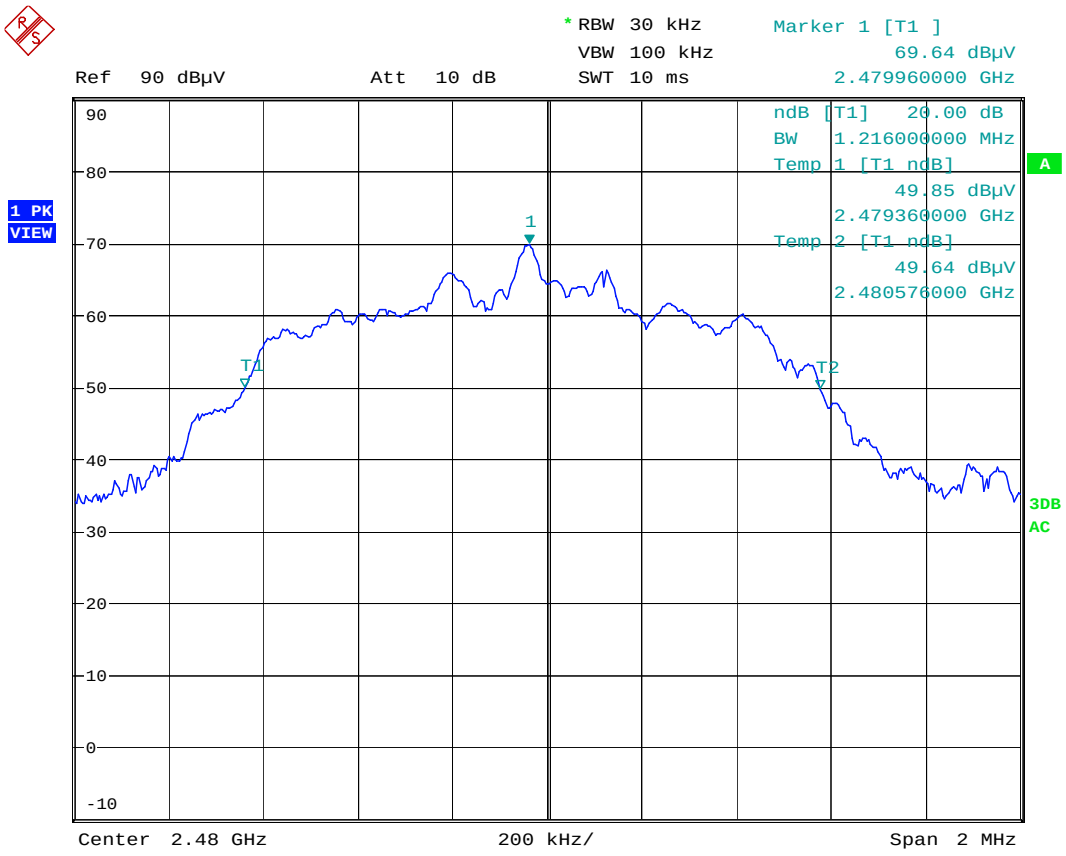
The 20 dB bandwidth of the emission is contained within the frequency band designated in the rule section 15.249.

Middle



Date: 29.MAY.2014 12:05:21

Upper band edge / -20dB BW plot of the highest channel

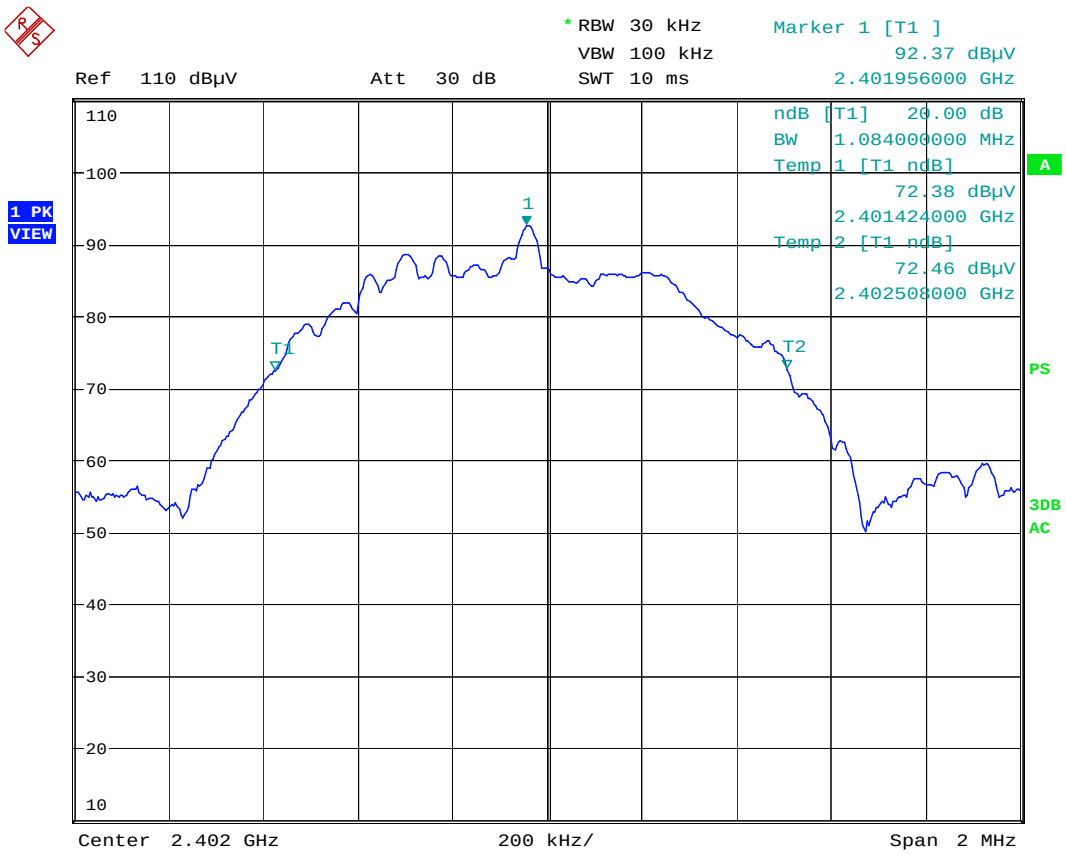


Date: 29.MAY.2014 12:06:05

The 20 dB bandwidth of the emission is contained within the frequency band designated in the rule section 15.249.

Test Mode: BT4.0 (BLE)

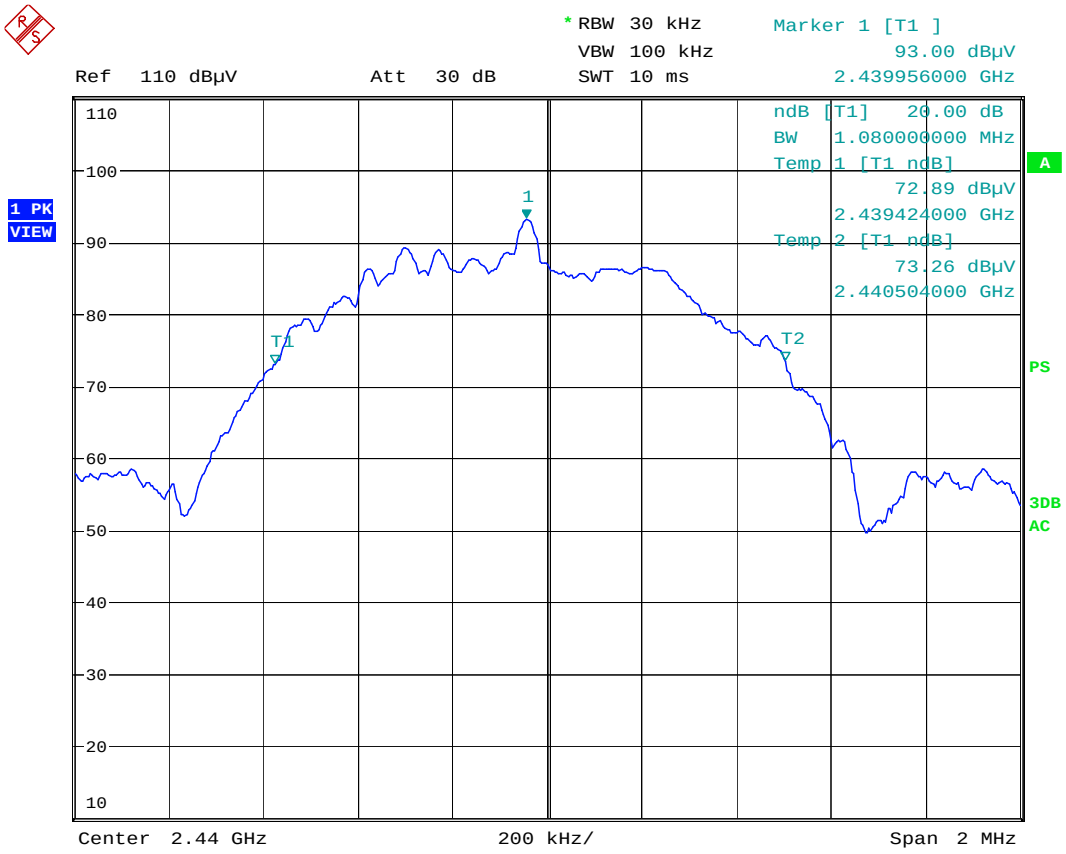
Lower band edge / -20dB BW plot of the lowest channel



Date: 29.MAY.2014 12:51:46

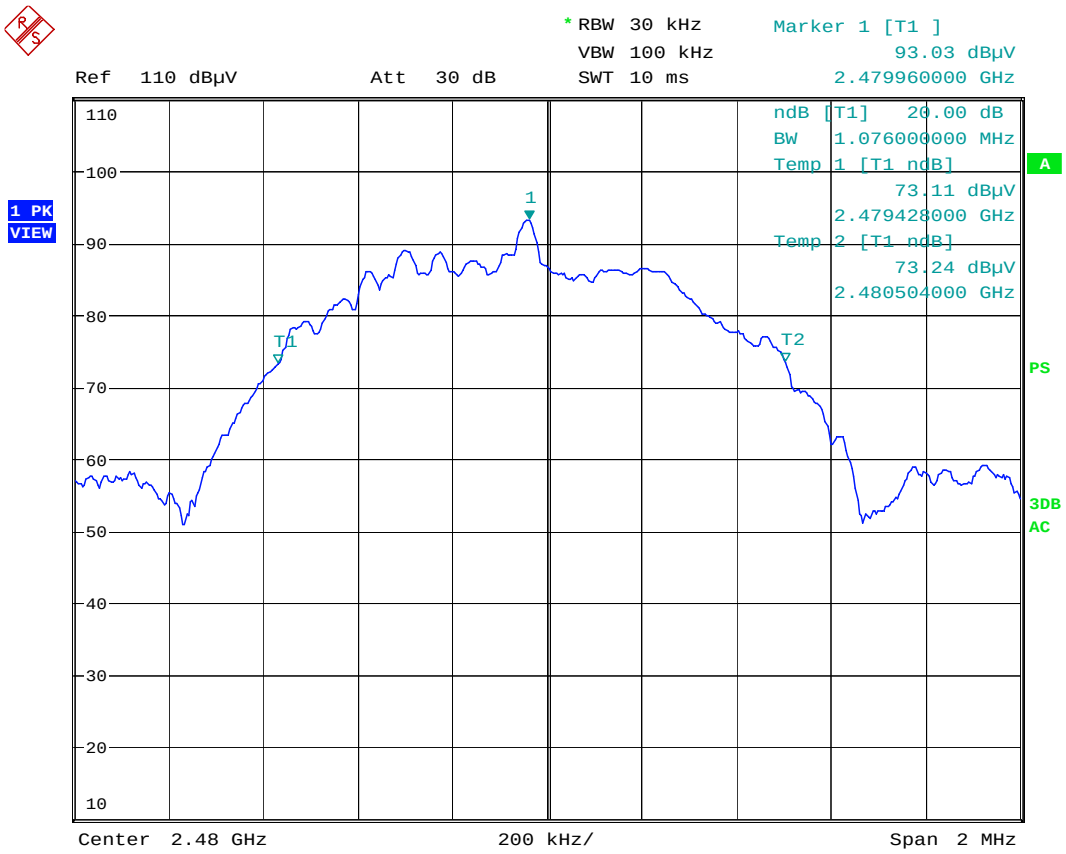
The 20 dB bandwidth of the emission is contained within the frequency band designated in the rule section 15.249.

Middle



Date: 29.MAY.2014 13:03:31

Upper band edge / -20dB BW plot of the highest channel



Date: 29.MAY.2014 13:00:43

The 20 dB bandwidth of the emission is contained within the frequency band designated in the rule section 15.249.