



Prüfbericht - Nr.: 17021999 001 <i>Test Report No.:</i>			Seite 1 von 55 <i>Page 1 of 55</i>						
Auftraggeber: <i>Client:</i>			Plastoform Industries Ltd. Units 6A-12, 15 Floor, Mita Centre, 552-566 Castle Peak Road, Kwai Chung, Hong Kong						
Gegenstand der Prüfung: Bluetooth Speaker <i>Test item:</i>									
Bezeichnung: <i>Identification:</i>		RF-SPX15 RF-SPX15-T		Serien-Nr.: n.a. <i>Serial No.:</i>					
Wareneingangs-Nr.: <i>Receipt No.:</i>		163082000		Eingangsdatum: 2011-08-09 <i>Date of receipt:</i>					
Prüfort: <i>Testing location:</i>		Audix Technology (Shenzhen) Co., Ltd. No. 6, Ke Feng Road, Block 52, Shenzhen Science & Industry Park, Nantou, Shenzhen, Guangdong, P.R. China FCC Registration No.:90454 Test site Industry Canada No.: 5183A-1							
Prüfgrundlage: <i>Test specification:</i>		FCC CFR47 Part 15: Subpart C Section 15.247 FCC CFR47 Part 15: Subpart C Section 15.207 FCC CFR47 Part 15: Subpart C Section 15.209 FCC CFR47 Part 15: Subpart B Section 15.107 FCC CFR47 Part 15: Subpart B Section 15.109 RSS-210 Issue 8 December 2010 RSS-Gen Issue 3 December 2010 RSS-102 Issue 4 March 2010							
Prüfergebnis: <i>Test Result:</i>		Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n). <i>The test item passed the test specification(s).</i>							
Prüflaboratorium: <i>Testing Laboratory:</i>		TÜV Rheinland (Shenzhen) Co., Ltd.							
geprüft/ tested by:			kontrolliert/ reviewed by:						
2011-09-16  Winnie Hou/ Project Manager			2011-09-16  Shawn Peng/ Technical Certifier						
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>				
Sonstiges/ Other Aspects:									
<table style="width: 100%; border: none;"> <tr> <td style="width: 15%;">Abkürzungen:</td> <td style="width: 45%;"> <i>P(ass)</i> = entspricht Prüfgrundlage <i>F(ail)</i> = entspricht nicht Prüfgrundlage <i>N/A</i> = nicht anwendbar <i>NIT</i> = nicht getestet </td> <td style="width: 15%;">Abbreviations:</td> <td style="width: 45%;"> <i>P(ass)</i> = passed <i>F(ail)</i> = failed <i>N/A</i> = not applicable <i>NIT</i> = not tested </td> </tr> </table>						Abkürzungen:	<i>P(ass)</i> = entspricht Prüfgrundlage <i>F(ail)</i> = entspricht nicht Prüfgrundlage <i>N/A</i> = nicht anwendbar <i>NIT</i> = nicht getestet	Abbreviations:	<i>P(ass)</i> = passed <i>F(ail)</i> = failed <i>N/A</i> = not applicable <i>NIT</i> = not tested
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Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.</i>									

TEST SUMMARY

5.1.1 ANTENNA REQUIREMENT*RESULT: Passed***5.1.2 PEAK OUTPUT POWER***RESULT: Passed***5.1.3 20dB BANDWIDTH AND 99% BANDWIDTH***RESULT: Passed***5.1.4 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHz BANDWIDTH***RESULT: Passed***5.1.5 SPURIOUS EMISSIONS***RESULT: Passed***5.1.6 FREQUENCY SEPARATION***RESULT: Passed***5.1.7 NUMBER OF HOPPING FREQUENCY***RESULT: Passed***5.1.8 TIME OF OCCUPANCY***RESULT: Passed***5.1.9 RADIATED EMISSIONS***RESULT: Passed***5.1.10 CONDUCTED EMISSIONS***RESULT: Passed***6.1.1 ELECTROMAGNETIC FIELDS***RESULT: Passed*

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1. General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix 1: Test Result

2. Test Sites

2.1 Test Facilities

AUDIX Technology (Shenzhen) Co., Ltd.

(FCC Registration No.: 90454 & Test Site Industry Canada No.: 5183A-1)

No. 6, Ke Feng Road, Block 52
Shenzhen Science & Industry Park
Nantou, Shenzhen
Guangdong, P.R. China

The tests at the test site have been conducted under the supervision of a TÜV engineer.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Kind of Equipment	Manufacturer	Type	S/N	Calibrated until
Spurious Radiated Emissions				
3#Chamber	AUDIX	N/A	N/A	Dec.05,11
EMI Spectrum	Agilent	E4407B	MY41440292	April.25, 12
Test Receiver	Rohde & Schwarz	ESVS10	834468/011	April.25, 12
Amplifier	HP	8447D	2648A04738	April.25, 12
Bilog Antenna	Schaffner	CBL6111C	2598	Dec.14, 11
RF Cable	MIYAZAKI	8D-FB	3# Chamber No.1	April.25, 12
Coaxial Switch	Anritsu	MP59B	M73989	April.25, 12
Triple-loop Antenna	Rohde & Schwarz	HM020	843885/002	April.25, 12
Spectrum Analyzer	Agilent	E4446A	US44300459	April.25, 12
Horn Antenna	EMCO	3115	9510-4580	Nov.19, 11
Horn Antenna	EMCO	3116	00060088	Nov.25, 11
Amplifier	Agilent	8449B	3008A00863	April.25, 12
RF Cable	Hubersuhner	SUCOFLEX102	28620/2	April.25, 12
RF Cable	Hubersuhner	SUCOFLEX102	28618/2	April.25, 12
RF Cable	Hubersuhner	SUCOFLEX102	28610/2	April.25, 12
Radio Frequency Test Suite				
Spectrum Analyzer	Agilent	E4446A	US44300459	April.25, 12

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements are $\pm 3\text{dB}$.

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix 1 of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

The Audix Technology (Shenzhen) Co., Ltd. test facility located at No. 6, Ke Feng Road, Block 52, Shenzhen Science & Industry part, Nantou, Shenzhen, Guangdong, P.R. China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3. General Product Information

3.1 Product Function and Intended Use

The EUTs are wireless speaker with Bluetooth technology.

This speaker enables comfortable and high quality music playback performance, and also the clear voice speakerphone (Hands-free) communication with a Bluetooth-compatible phone. It supports Bluetooth 2.1+EDR specification.

All models are identical in circuit diagram and PCB layout except for different model name. For details refer to the User Manual and Circuit Diagram.

3.2 Ratings and System Details

Table 2: Rating of EUT

Kind of Equipment:	Bluetooth Speaker
Type Designation:	RF-SPX15, RF-SPX15-T
FCC ID	VL5PF310
IC ID	9092A-PF310

Table 3: Technical Specification of EUT

Technical Specification	Value
Operating Frequency band	2402 – 2480 MHz
Channel separation	1MHz
Operation Voltage	DC 3.7V via Lithium battery (for operating)
	DC 5V via AC/DC adapter (for charging)
Modulation	GFSK, 8DPSK, $\pi/4$ -DQPSK
Antenna Type	Internal Antenna, Non-User Replaceable
Antenna Gain	0dBi
RF Output Power	0.000946W (-0.24dBm)

Table 4: Technical Specification of AC/DC adapter

Technical Specification	Value
Model	SC1402
Input Rating	100 ~ 240V, 50/60Hz, 0.150A
Output Rating	DC 5.0V, 1.0A

Table 5: Frequency hopping information

Technical Specification	Description
Hopping Range	Hereby we declare that the maximum frequency of this device is: 2402-2480MHz. This is according the Bluetooth Core Specification V2.1+EDR for devices which will be operated in the USA. This was checked during the Bluetooth Qualification tests (Test Case: TRM/CA/04-E).
Hopping Sequence	Example of a 79 hopping sequence in data mode: 33,04,21,44,23,42,53,46,55,48,40,59,72,29,76,31,08,73,07,75,09,45,60,39,58,13,47,11,77,52,35,50,65,54,67,56,69,62,71,64, 7,25,27,66,57,70,74,61,78,63,10,41,05,43,15,44,64,68,02,70,06,01,51,03,55,05,03,66,53,49,36,47,
Receiver input bandwidth	<p>The input bandwidth of the receiver is 1MHz. In every connection one Bluetooth device is the master and the other one is the slave. The master determines the hopping sequence. The slave follows this sequence. Both devices shift between RX and TX time slot according to the clock of the master.</p> <p>Additionally the type of connection is set up at the beginning of the connection. The master adapts its hopping frequency and its TX/RX timing according to the packet type of the connection. Also the slave of the connection will use these settings.</p> <p>Repeating of a packer has no influence on the hopping sequence. The hopping sequence generated by the master of the connection will be followed in any case.</p> <p>That means a repeated packet will not be send on the same frequency, it is send on the next frequency of the hopping sequence.</p>

3.3 Independent Operation Modes

The basic operation modes are:

- A. Transmitting
 - 1. Low channel
 - 2. Middle channel
 - 3. High channel
- B. Receiving
- C. Charging by USB port
- D. Line-in input mode
- E. Standby
- F. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.5 Submitted Documents

- | | |
|--------------------|----------------------|
| - Bill of Material | - Circuit Diagram |
| - PCB Layout | - Instruction Manual |
| - Photo Document | - Rating Label |

4. Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

The equipment under test (EUT) was configured to measure its maximum power level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5.

Due to clause 3.1, all testing were applied on model RF-SPX15, and were performed according to the procedures in ANSI C63.4: 2009.

4.3 Special Accessories and Auxiliary Equipment

Kind of Equipment	Manufacturer	Type	S/N
Notebook	DELL	DELL Inspiron 8100	3E568 A00

4.4 Countermeasures to achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Constructional Data Form or the Technical Construction File. No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test

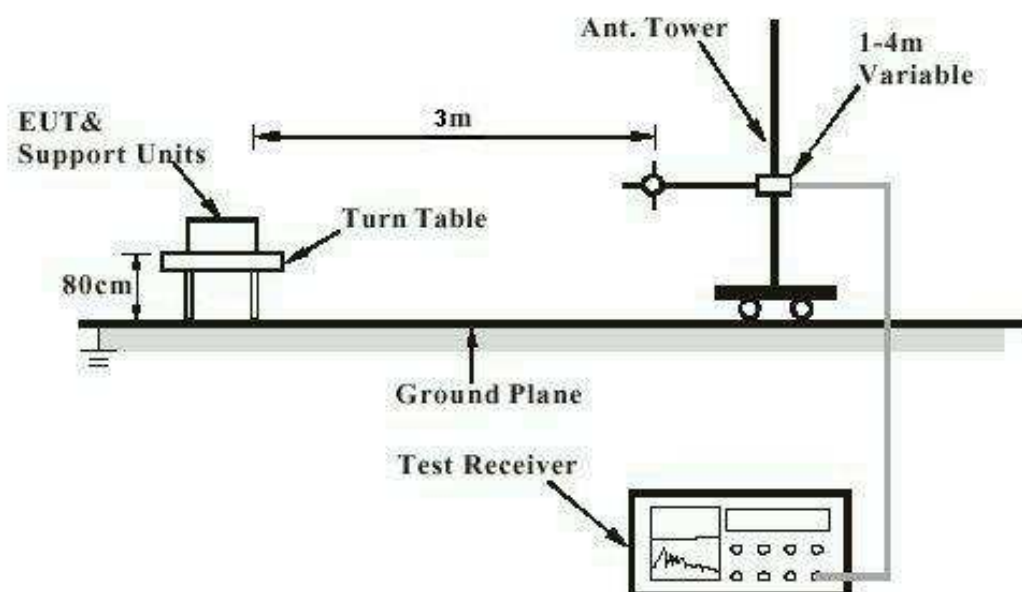


Diagram of Measurement Equipment Configuration for Conduction Measurement

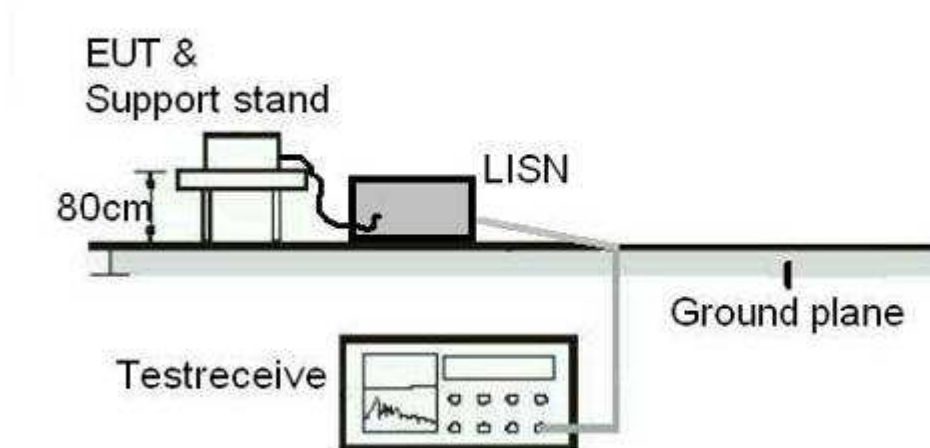
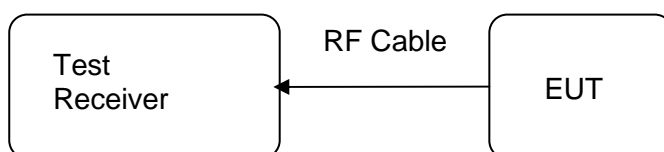


Diagram of Measurement Equipment Configuration for Transmitter Measurement



5. Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT:**Passed**

Test date	:	2011-09-08
Test standard	:	FCC Part 15.247(b)(4) and Part 15.203 RSS-Gen 7.1.4
Limit	:	the use of antennas with directional gains that do not exceed 6 dBi

According to the manufacturer declared, the EUT has an internal antenna, the directional gain of antenna is 0dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to compliance the provision.

Refer to EUT photo for details.

5.1.2 Peak Output Power

RESULT:
Passed

Test date : 2011-08-17 to 2011-09-08
 Test standard : FCC Part 15.247(b)(1)
 RSS-210 A8.4(2)
 Basic standard : ANSI C63.4: 2009
 Limit : 1 Watt
 Kind of test site : Shielded room

Test setup

Test Channel : Low/ Middle/ High
 Operation Mode : A
 Ambient temperature : 22°C
 Relative humidity : 54%
 Atmospheric pressure : 100.6 kPa

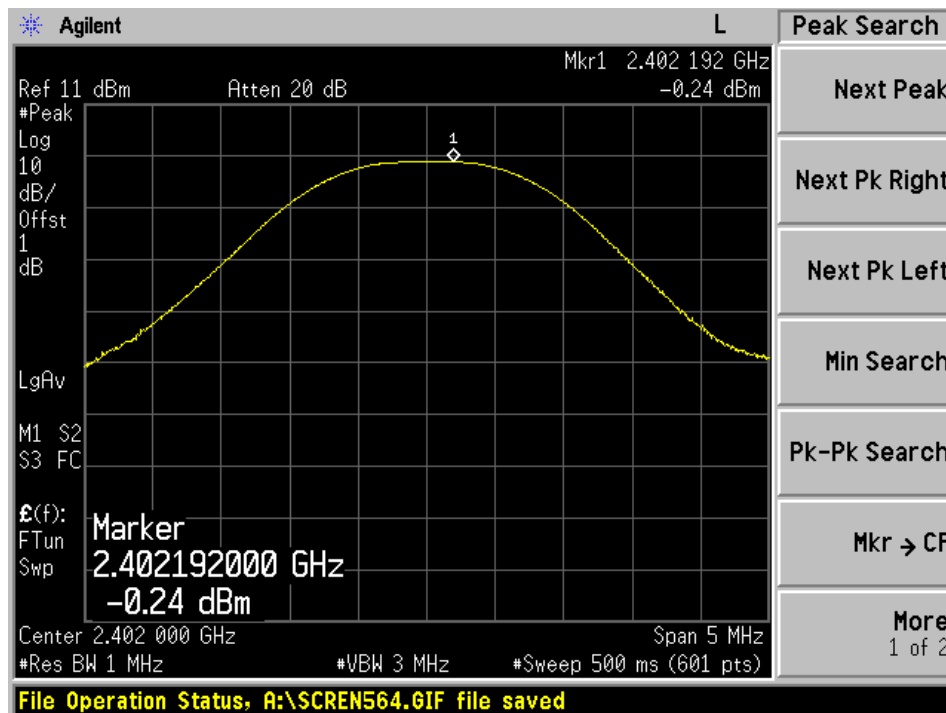
Table 6: Test result of Peak Output Power

Channel	Channel Frequency (MHz)	BDR mode		
		Peak Output Power		Limit
		(dBm)	(W)	(W)
Low Channel	2402	-0.24	0.000946	1
Middle Channel	2441	-1.03	0.000789	1
High Channel	2480	-2.27	0.000593	1
Channel	Channel Frequency (MHz)	EDR mode		
		Peak Output Power		Limit
		(dBm)	(W)	(W)
Low Channel	2402	1.39	0.00137	1
Middle Channel	2441	1.99	0.00158	1
High Channel	2480	2.06	0.00160	1

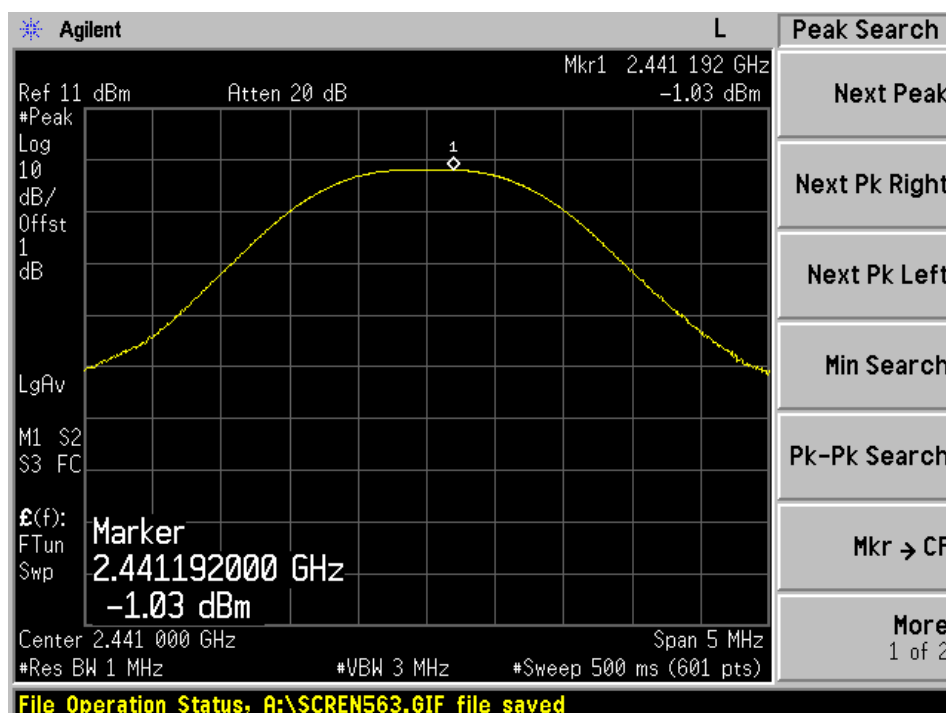
Test Graph of Peak Output Power

BDR mode:

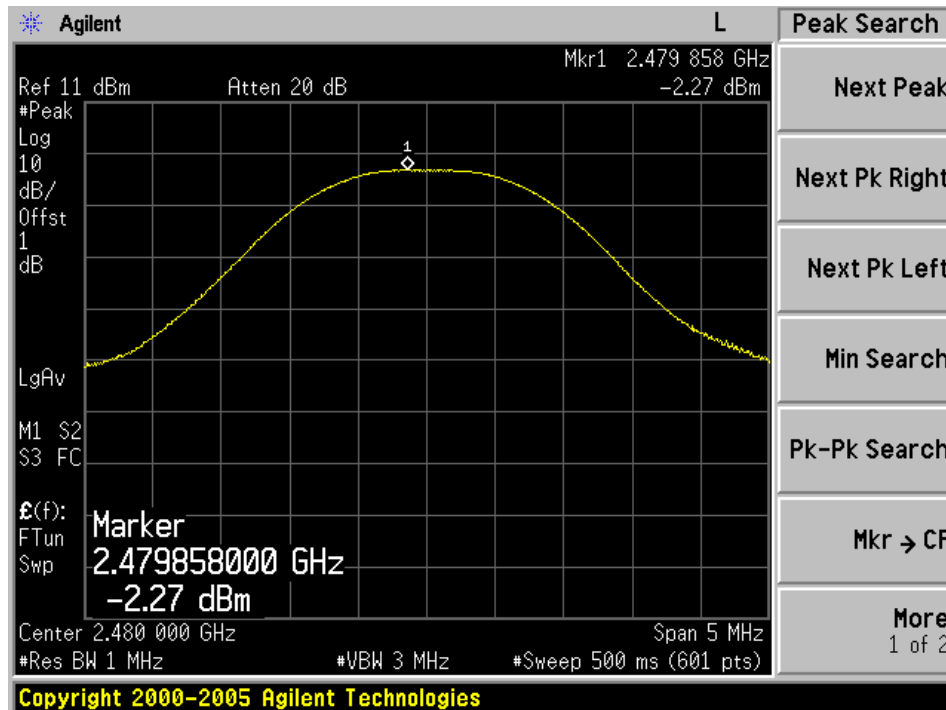
Low Channel



Middle Channel

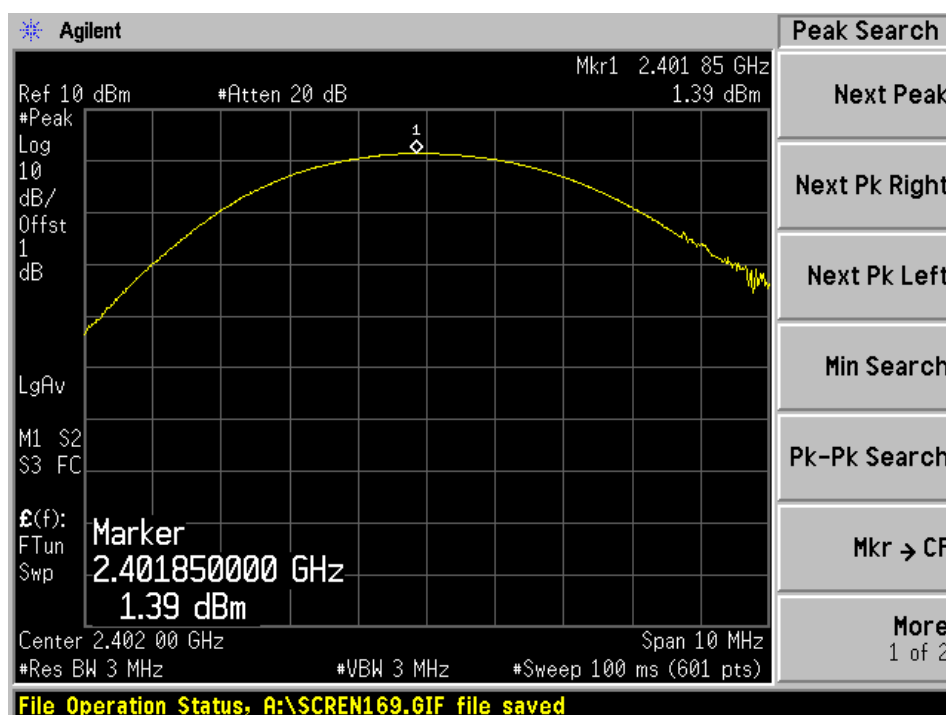


High Channel

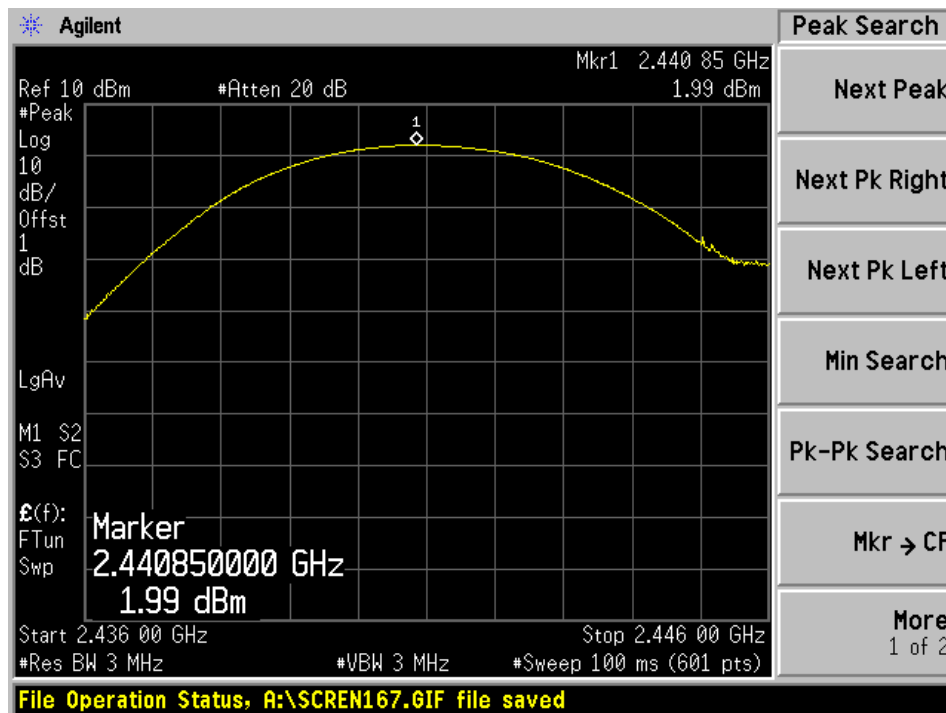


EDR mode:

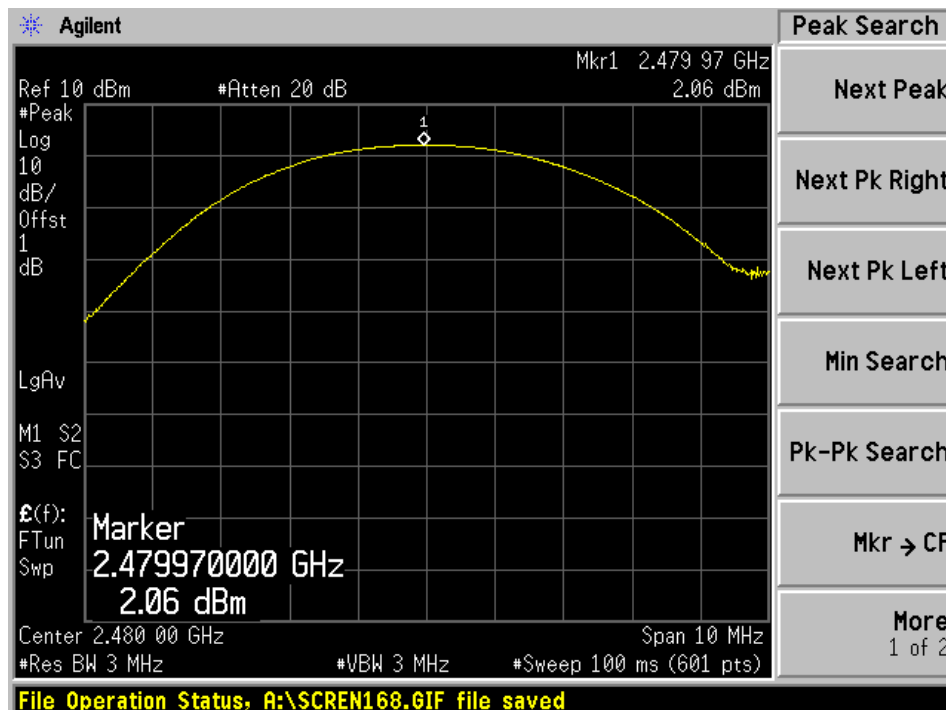
Low Channel



Middle Channel



High Channel

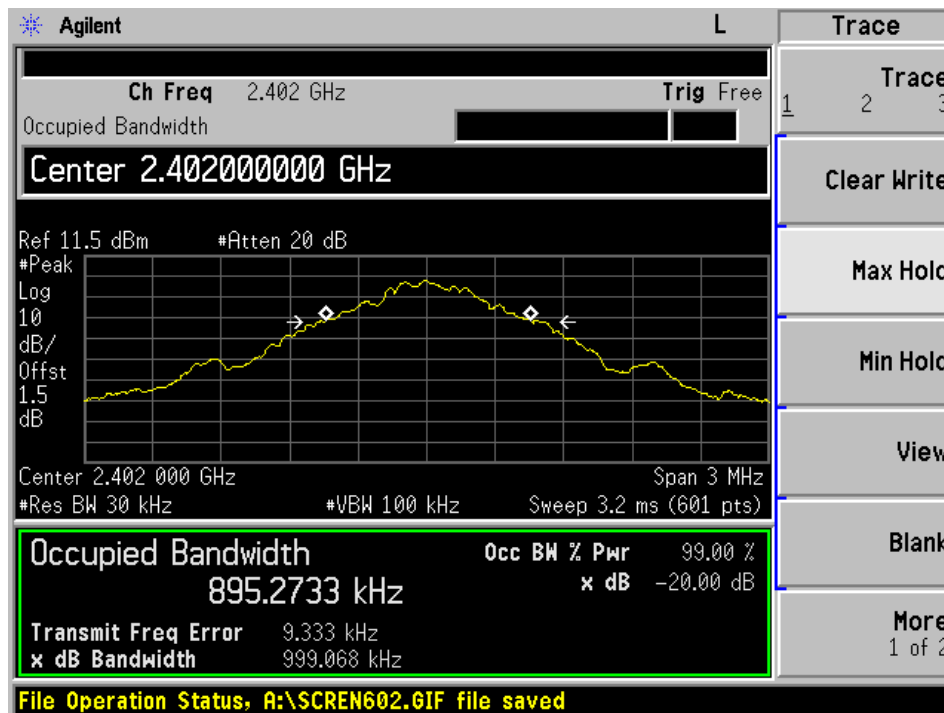


BDR mode				
Channel	Channel Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)	Result
Low Channel	2402	999.07	895.27	Pass
Mid Channel	2441	1010.00	912.70	Pass
High Channel	2480	1023.00	918.32	Pass
EDR mode				
Channel	Channel Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)	Result
Low Channel	2402	1268.00	1158.50	Pass
Mid Channel	2441	1269.00	1160.00	Pass
High Channel	2480	1269.00	1162.60	Pass

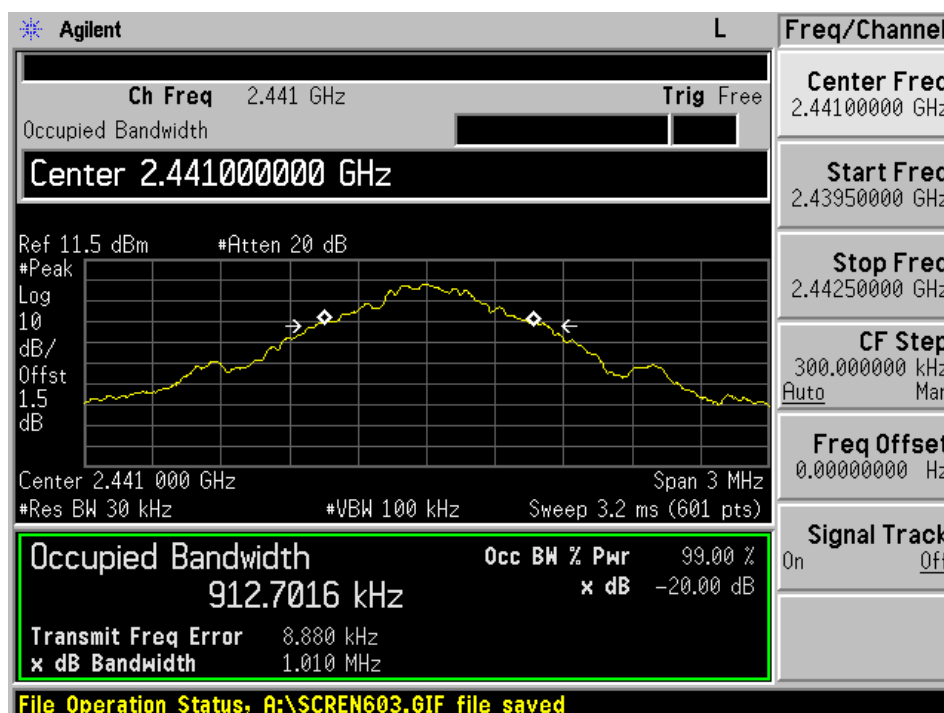
Test Graph of 20dB Bandwidth and 99% Bandwidth

BDR mode:

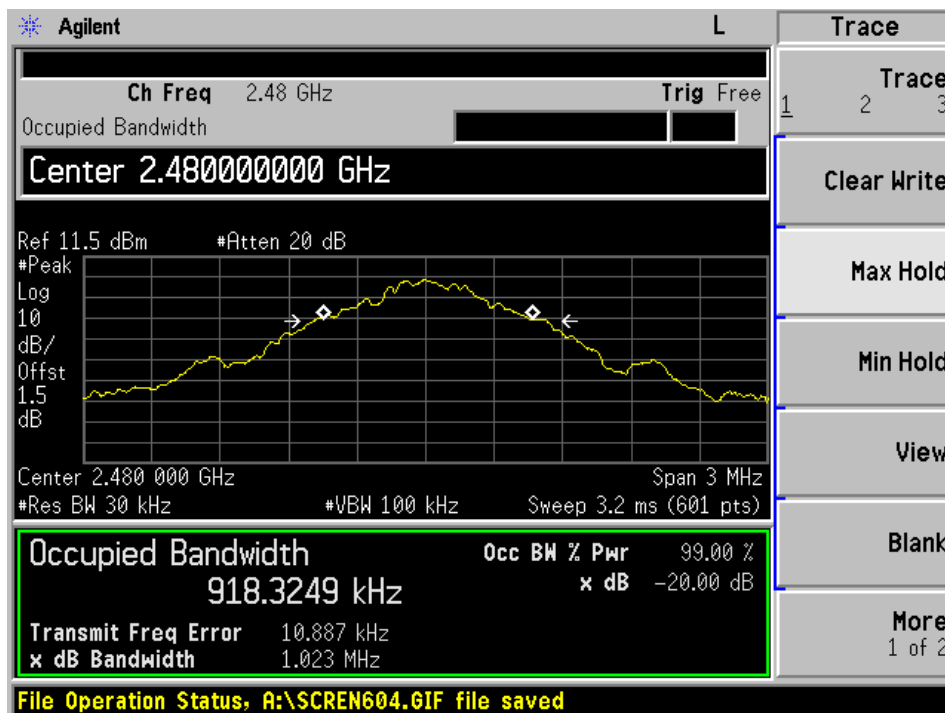
Low Channel



Middle Channel

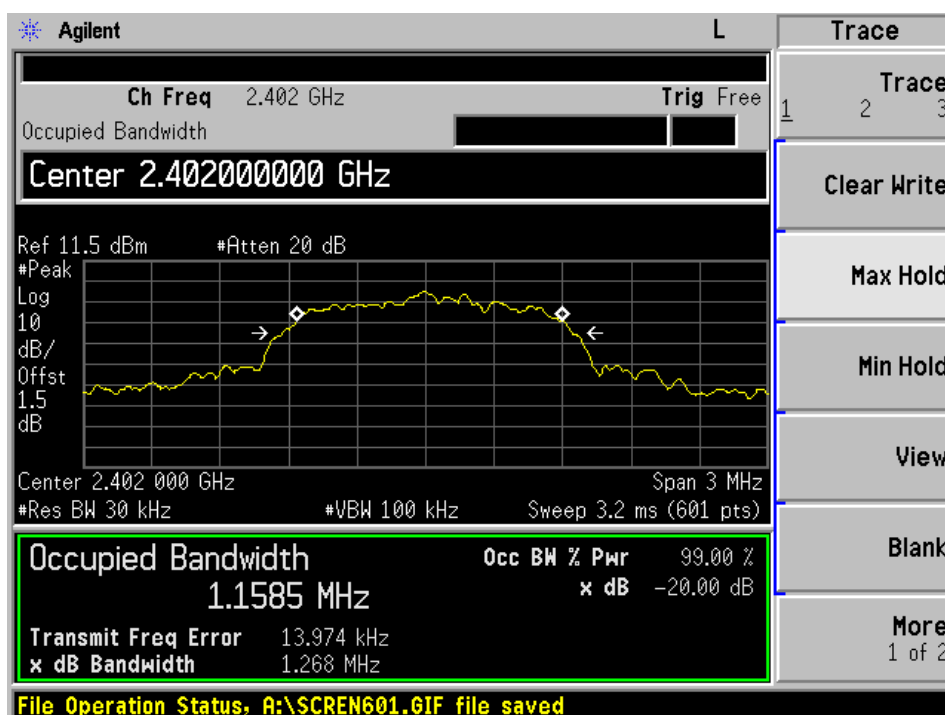


High Channel

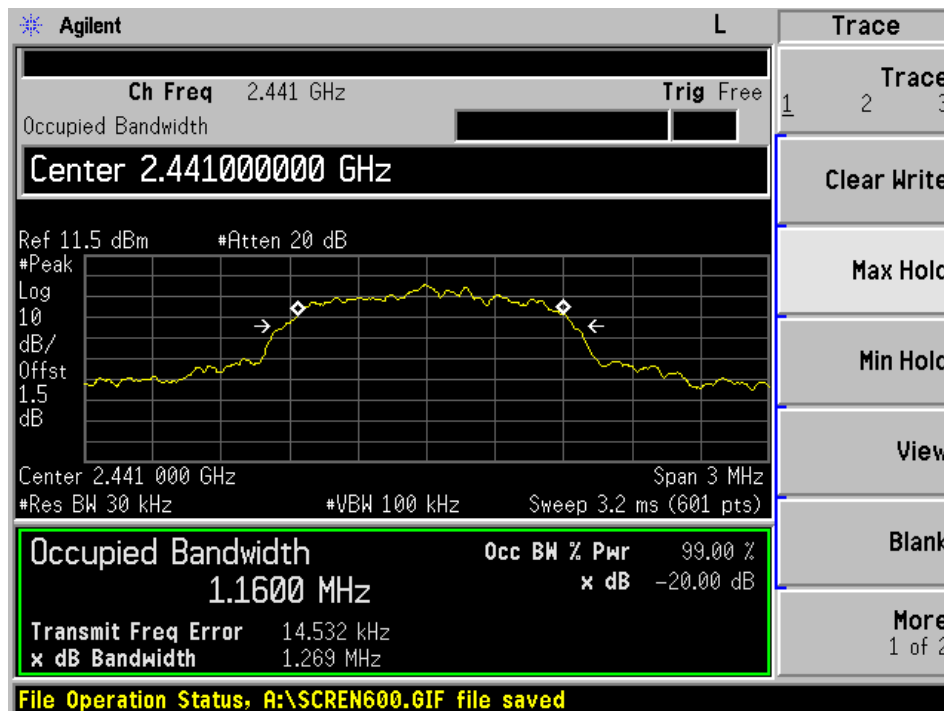


EDR mode:

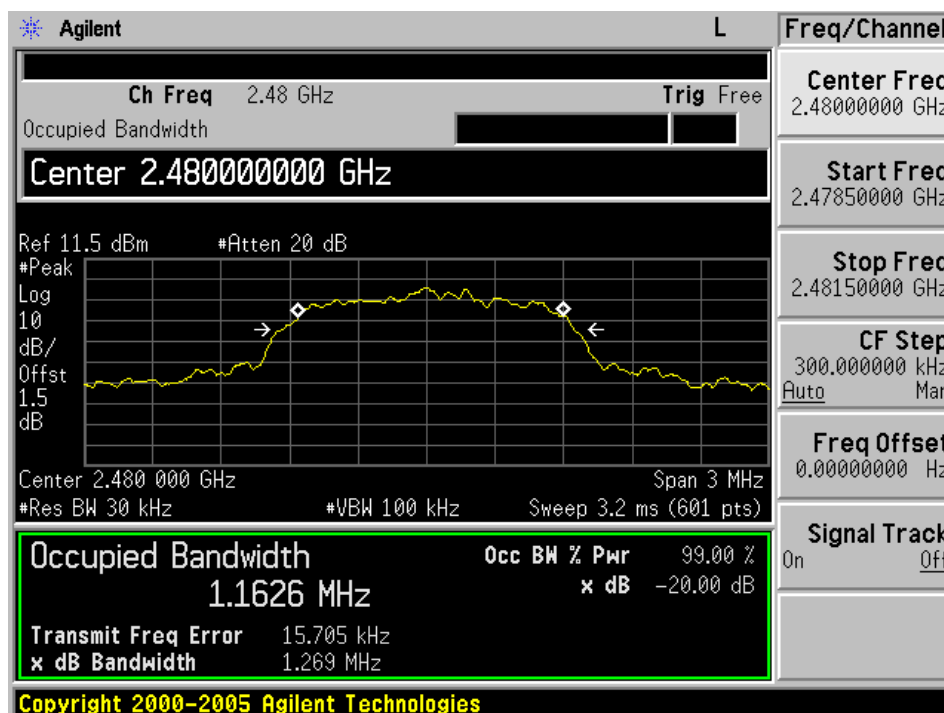
Low Channel



Middle Channel



High Channel



5.1.4 Conducted Spurious Emissions measured in 100 kHz Bandwidth

RESULT:**Passed**

Date of testing	:	2011-08-17 to 2011-09-08
Test standard	:	FCC part 15.247(d) RSS-210 A8.5
Basic standard	:	ANSI C63.4: 2009
Limit	:	20dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power); In addition, radiated emissions which fall in the restricted bands, must also comply with the radiated emission limits specified in 15.209(a)
Kind of test site	:	Shield room

Test setup

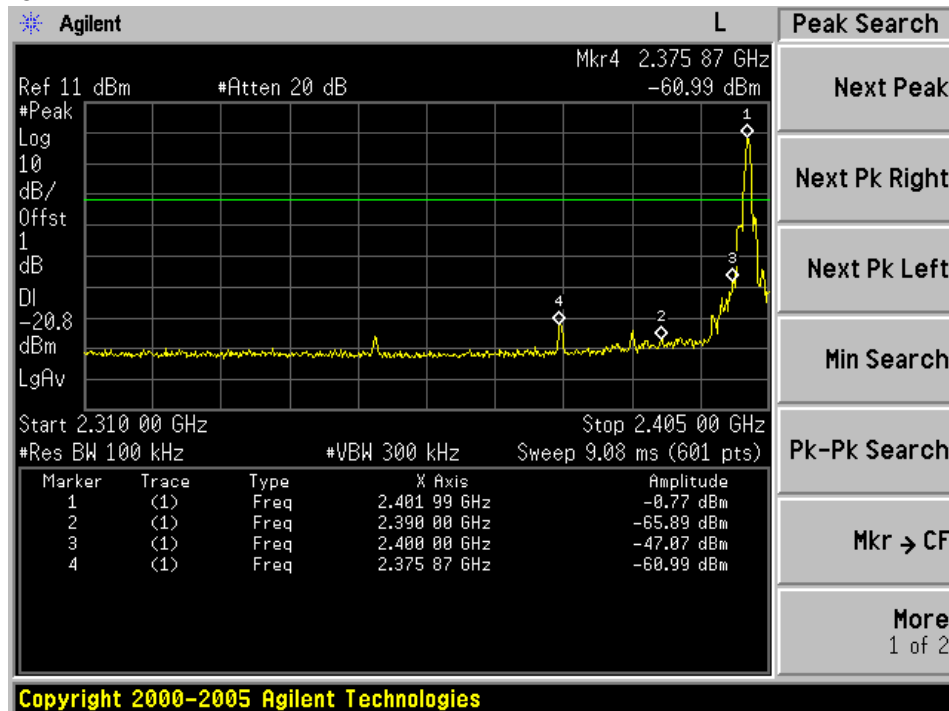
Test Channel	:	Low/ Middle/ High
Operation mode	:	A
Ambient temperature	:	22°C
Relative humidity	:	54%
Atmospheric pressure	:	100.6 kPa

Test results of 100kHz Bandwidth of Frequency Band Edge by Conducted method refer to following test graph, and compliance is achieved as well.

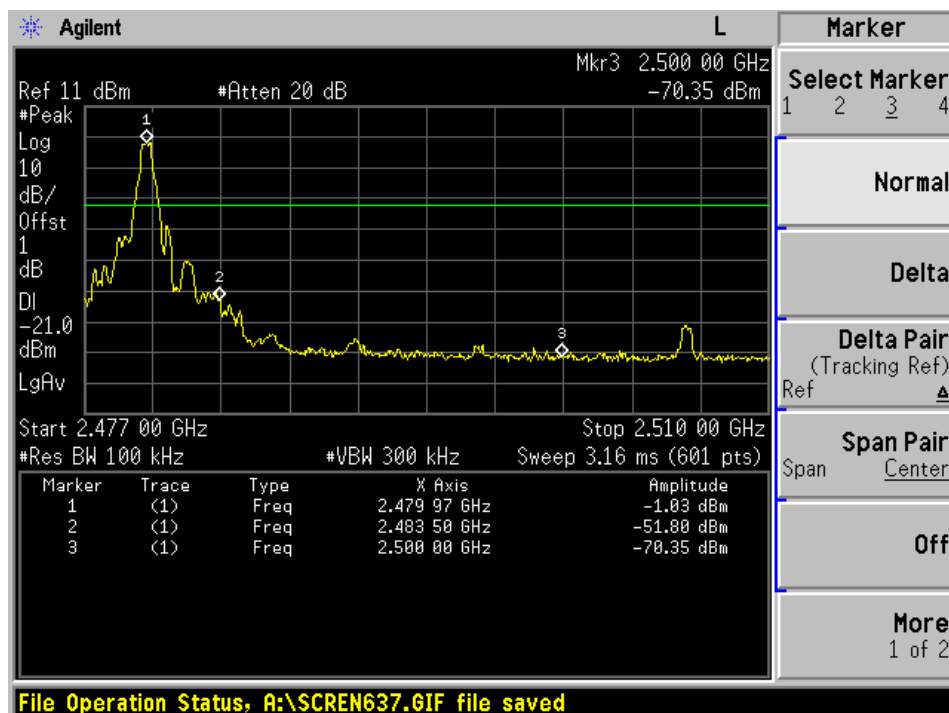
Test Graph of 100 kHz Bandwidth of Frequency Band Edge

BDR mode:

Low Channel

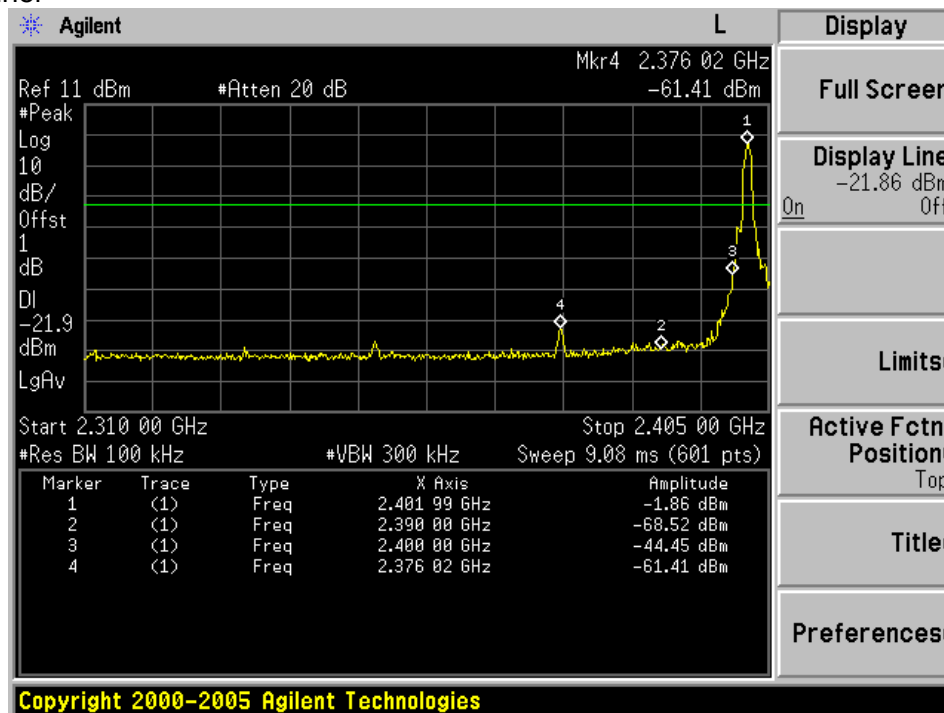


High Channel

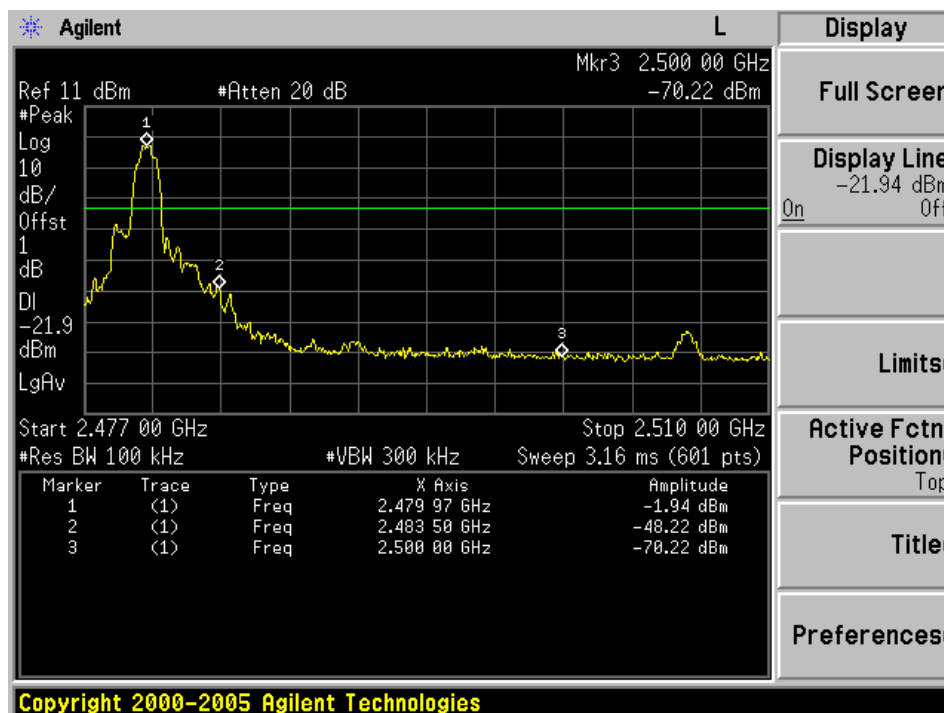


EDR mode:

Low Channel



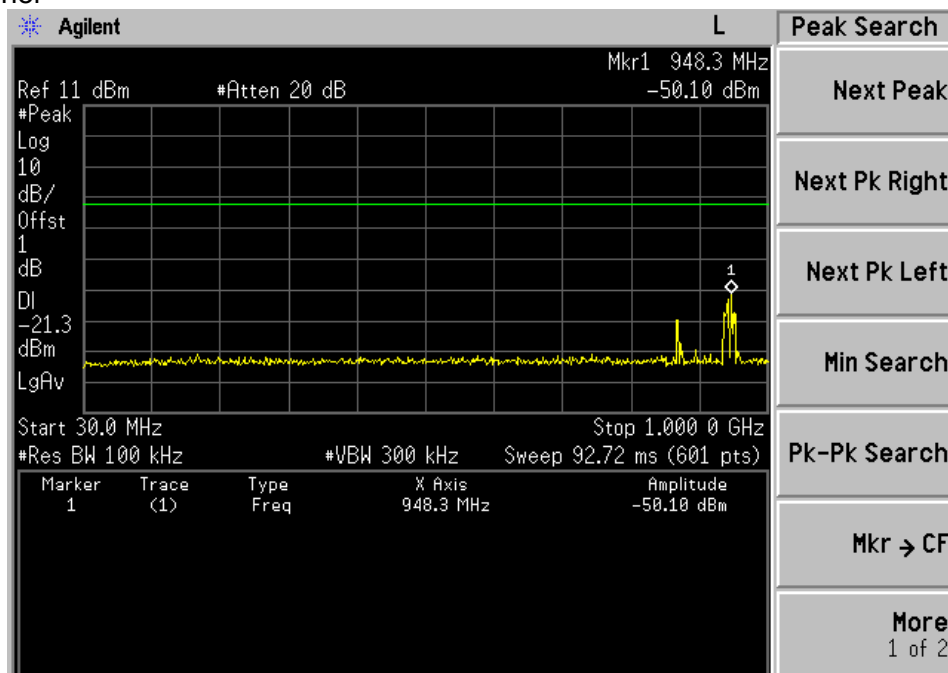
High Channel



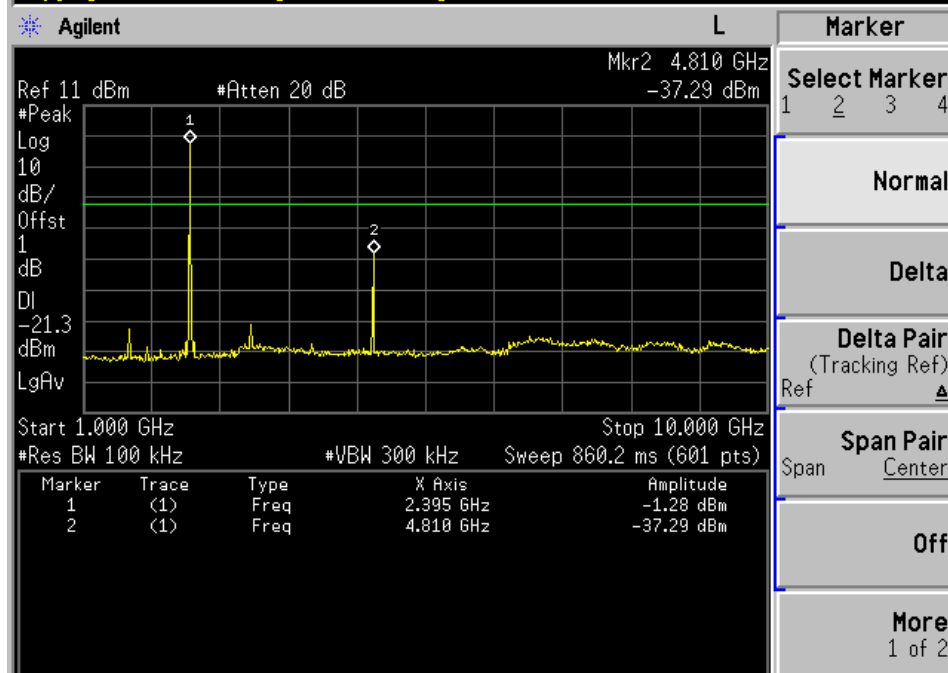
Test Graph of Conducted spurious emissions measured in 100 kHz Bandwidth

BDR mode:

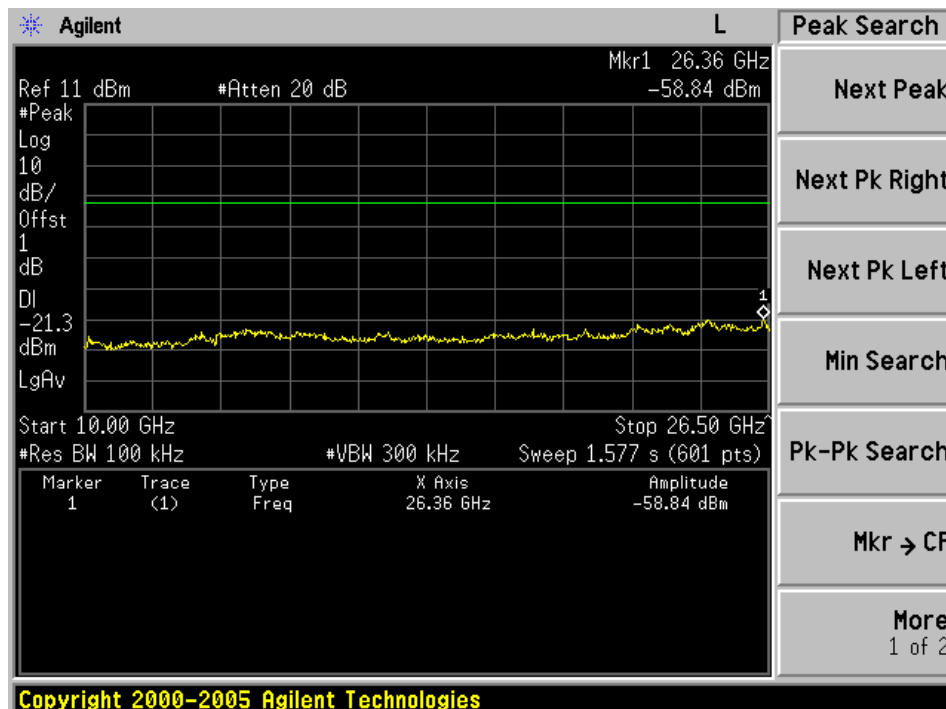
Low Channel



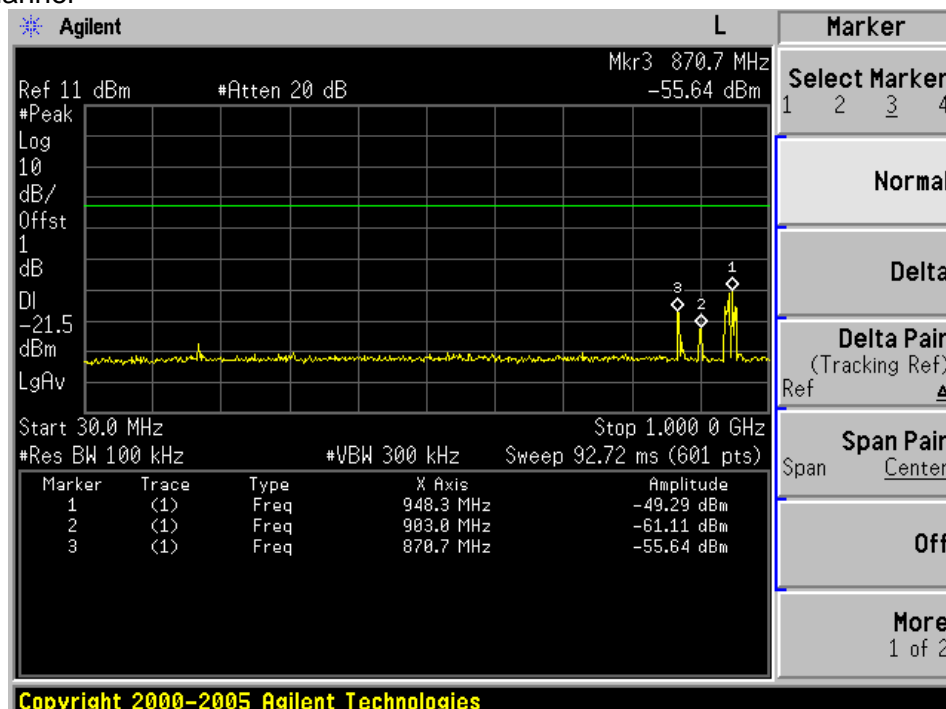
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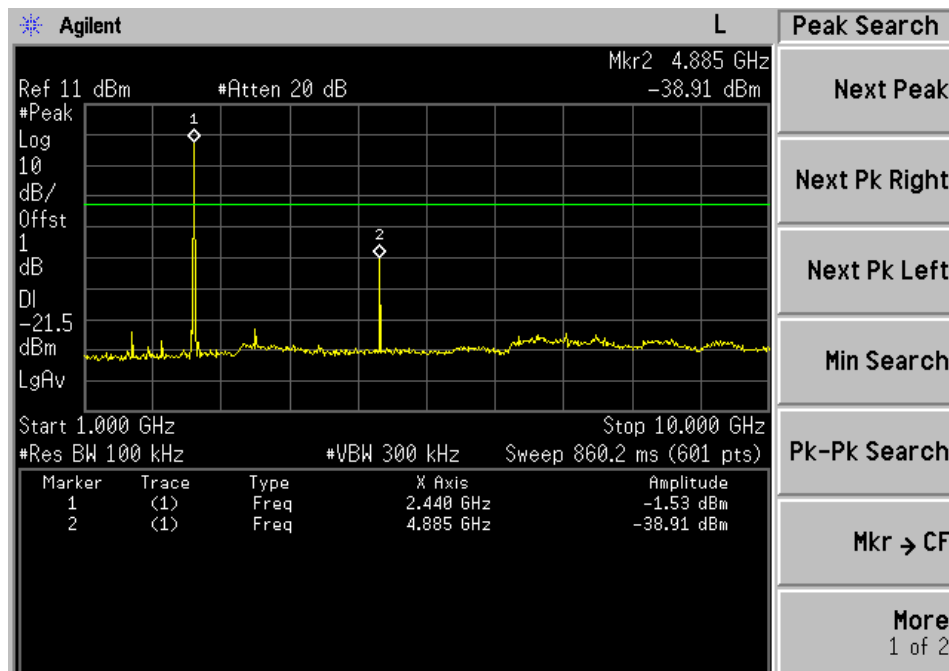


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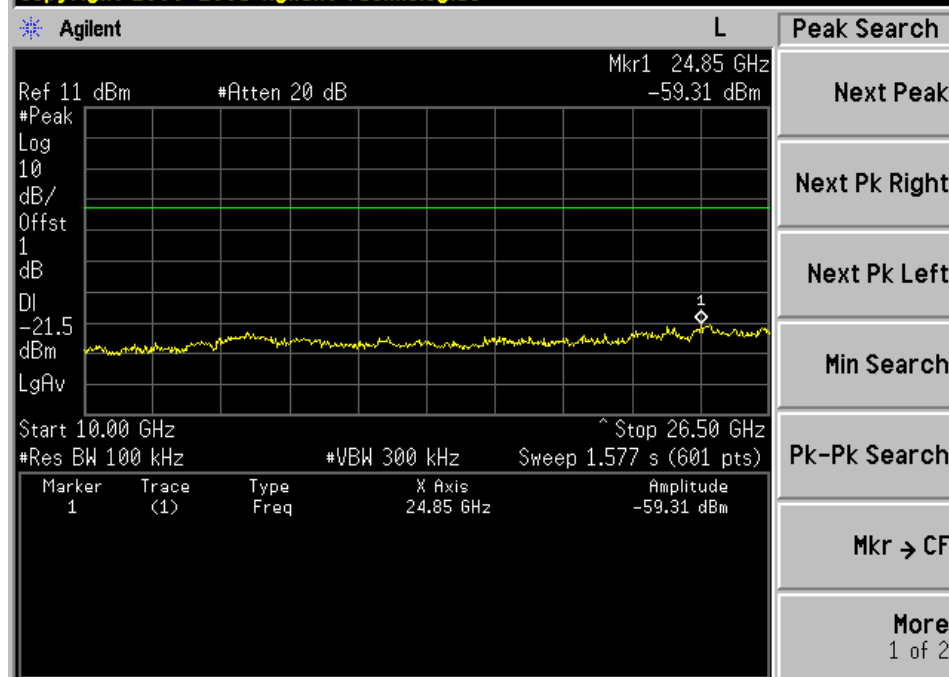


Middle Channel



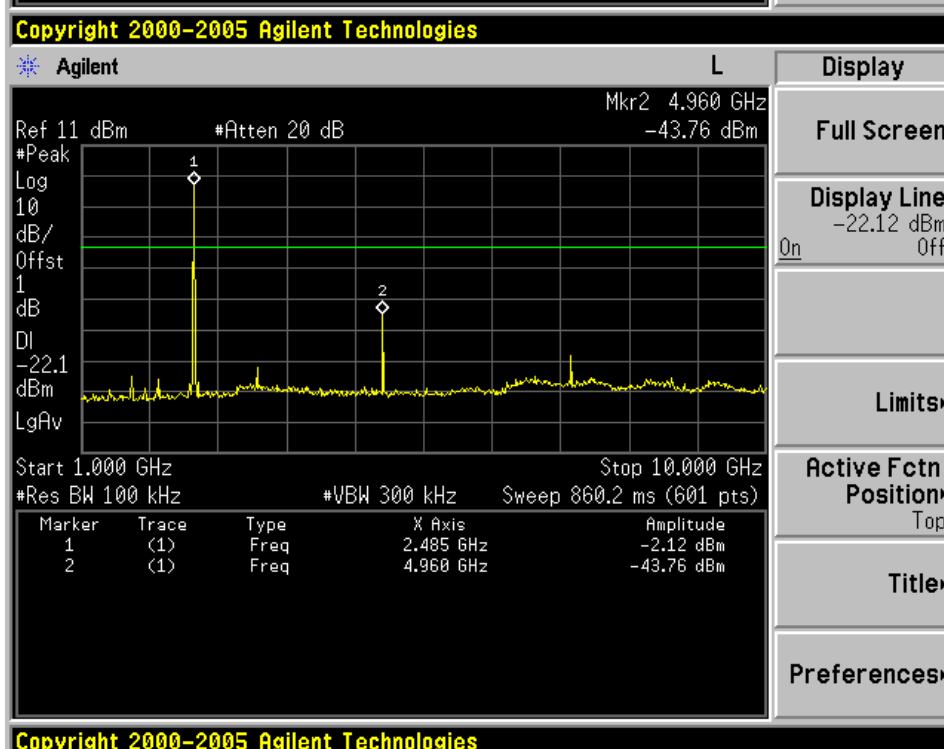
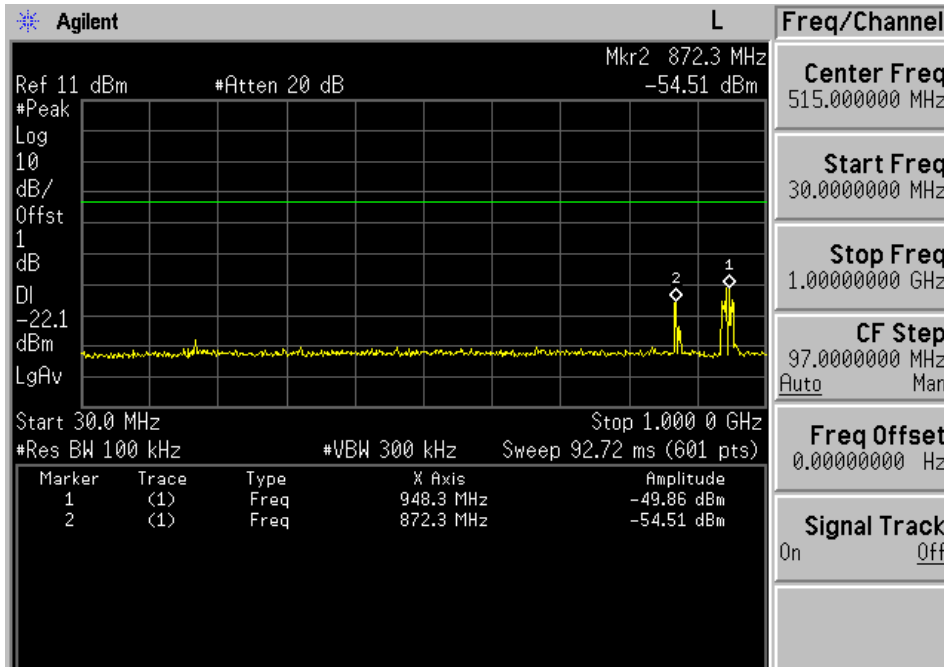


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High Channel



Freq/Channel

Center Freq
515.000000 MHz

Start Freq
30.000000 MHz

Stop Freq
1.0000000 GHz

CF Step
97.0000000 MHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Display

Full Screen

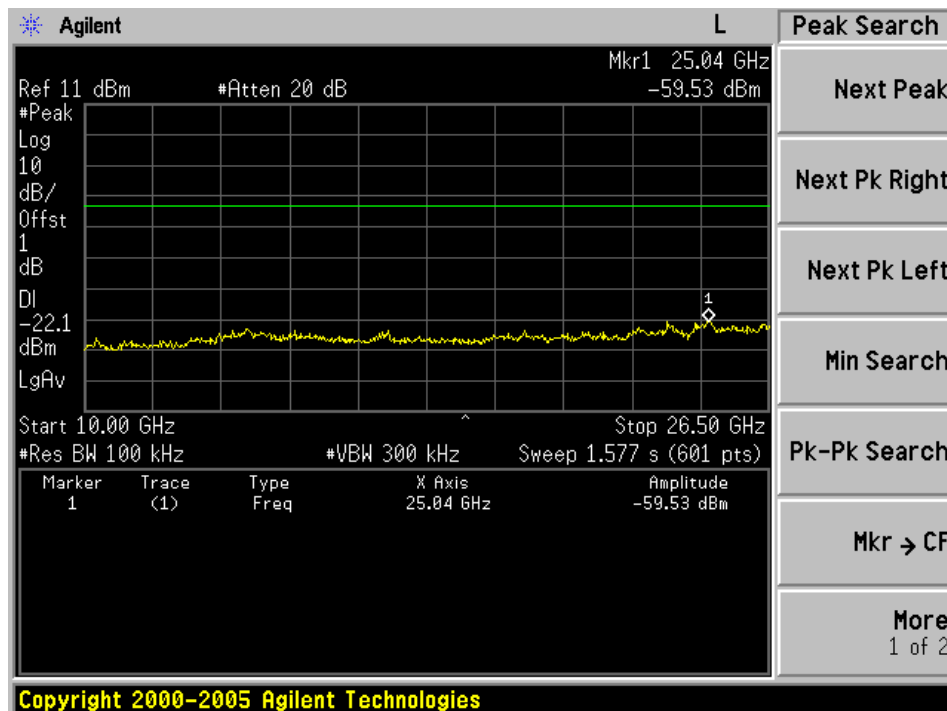
Display Line
-22.12 dBm
On Off

Limits>

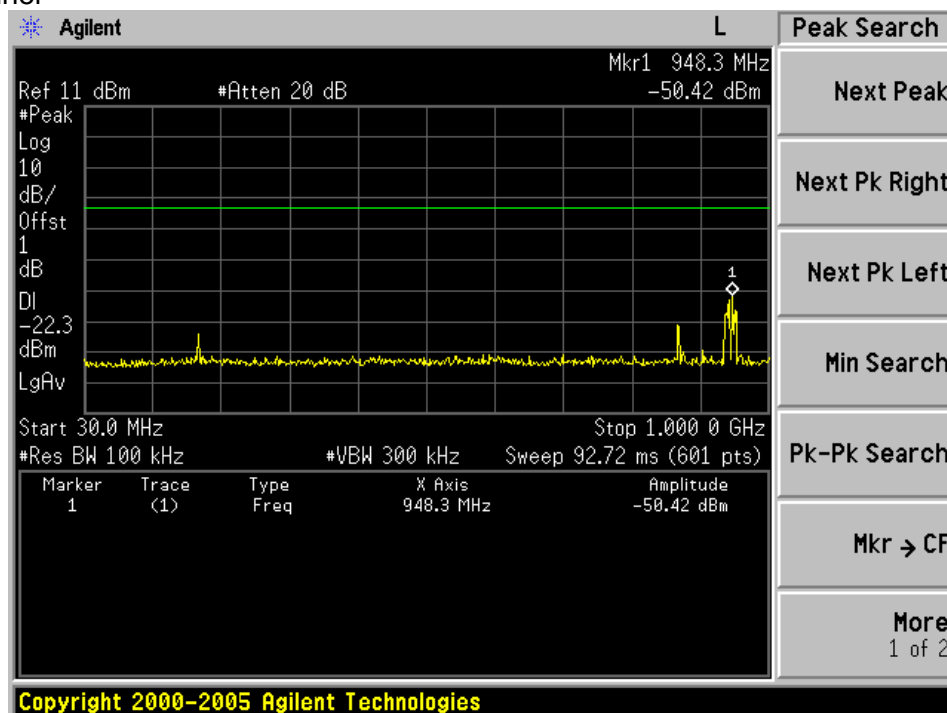
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Top

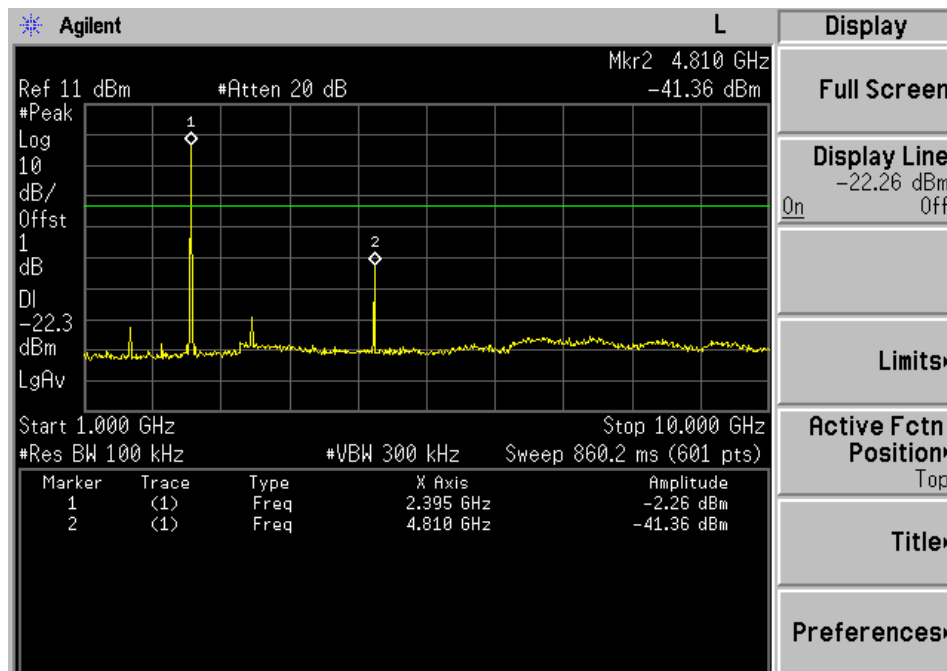
Title>

Preferences>

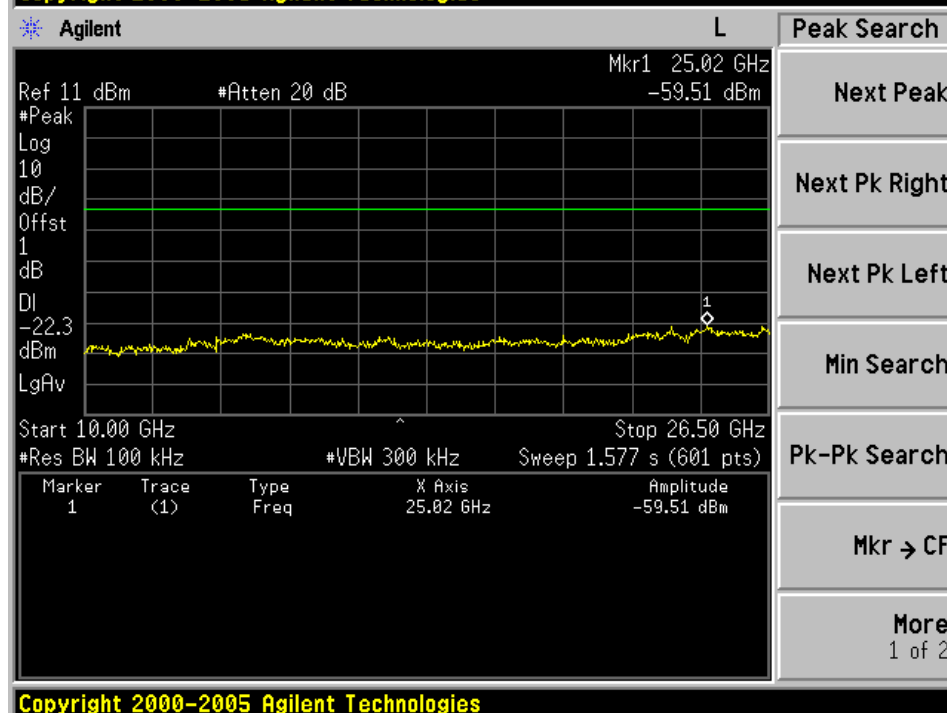


EDR mode:
Low Channel

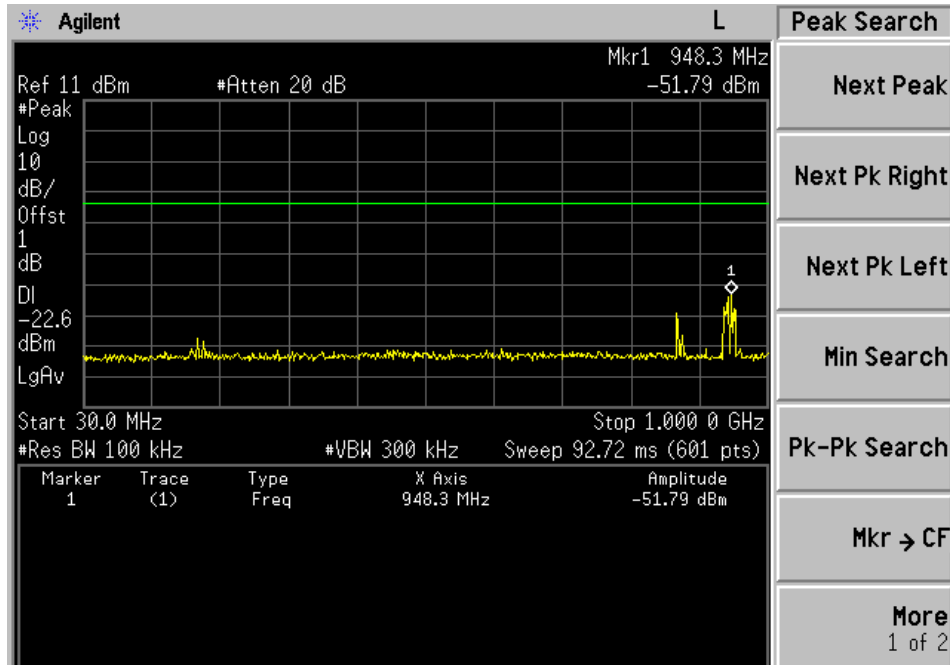




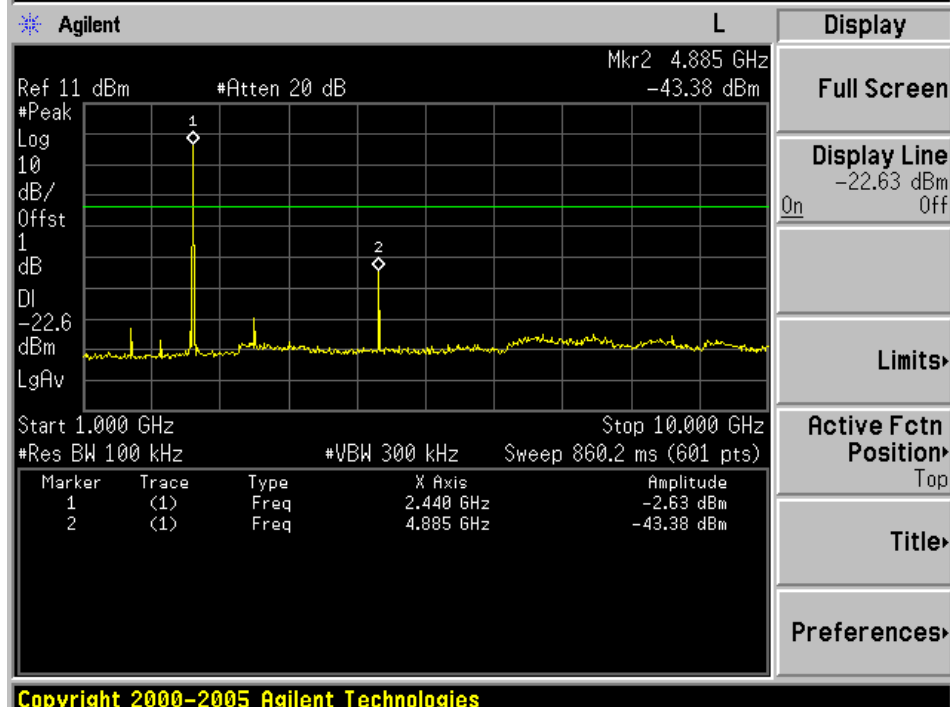
Copyright 2000-2005 Agilent Technologies



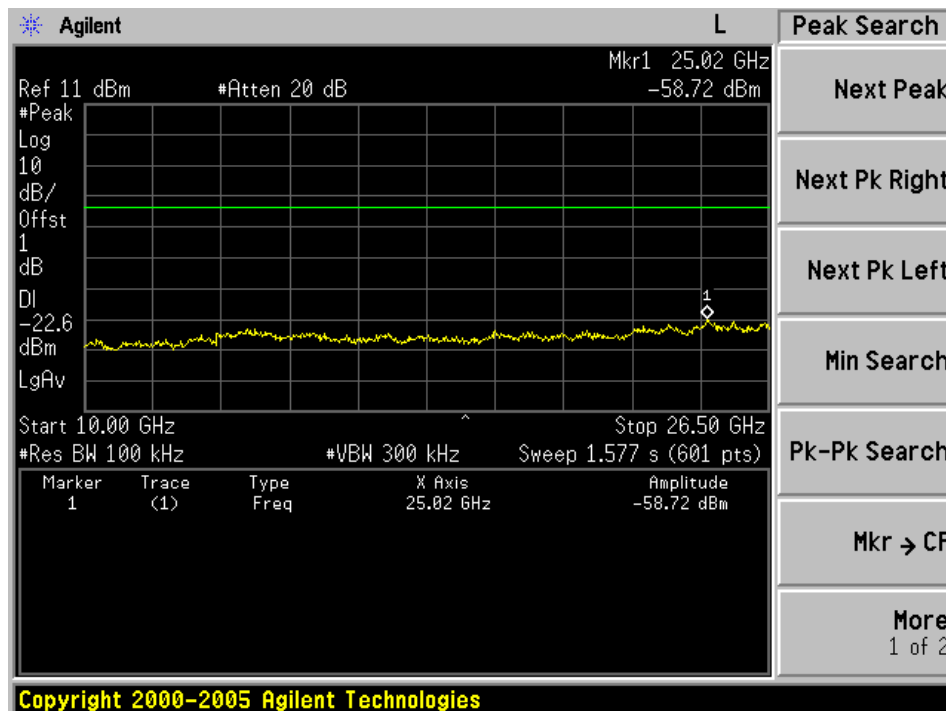
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Middle Channel


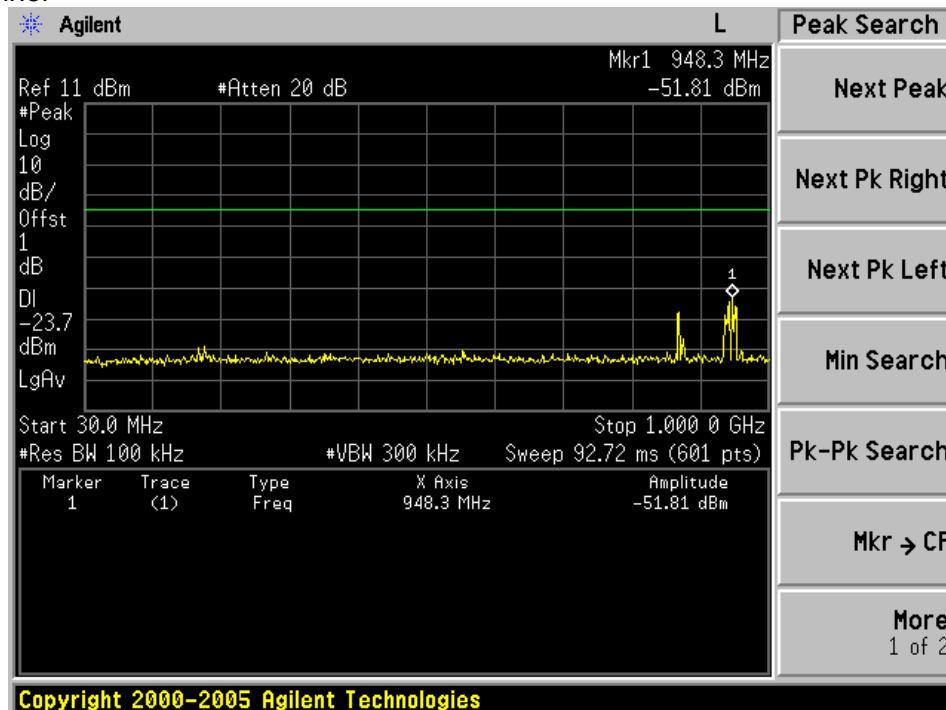
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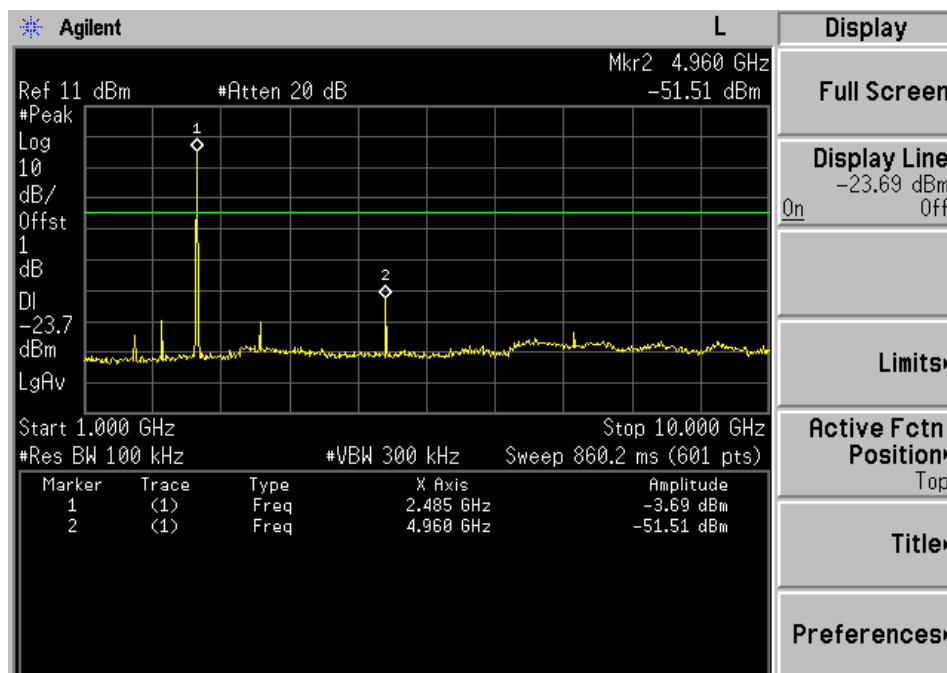


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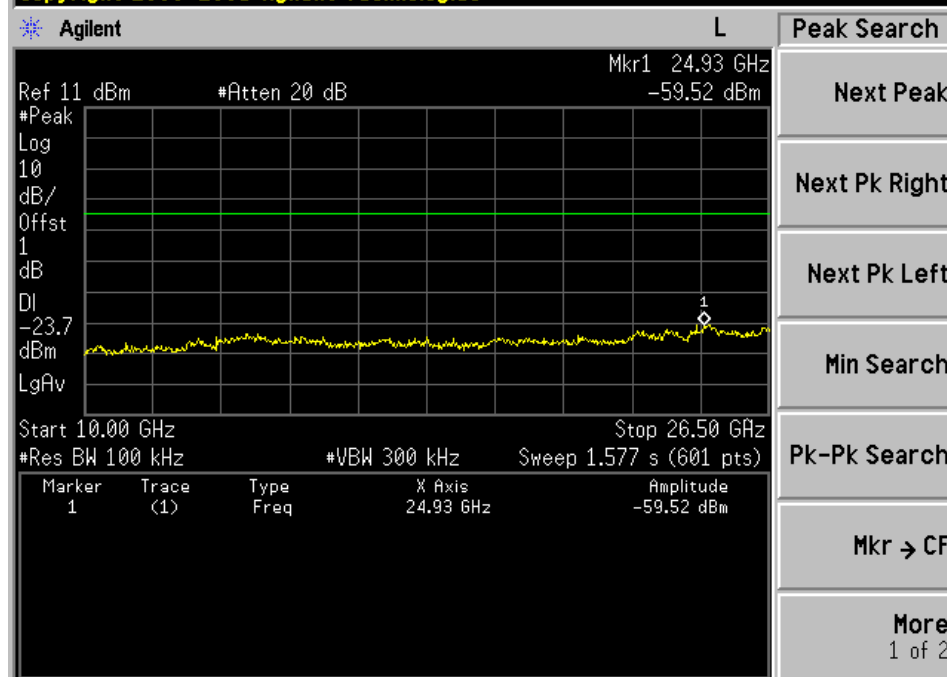


High Channel





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5.1.5 Spurious Emissions

RESULT:**Passed**

Date of testing	:	2011-08-17 to 2011-09-08
Test standard	:	FCC part 15.247(d) RSS-210 Clause 2.2
Basic standard	:	ANSI C63.4: 2009
Limits	:	Refer to 15.209(a) Table 2 & 3 of RSS-210
Kind of test site	:	3m Semi-Anechoic Chamber 10m Semi-Anechoic Chamber

Test setup

Test Channel	:	Low/ Middle/ High
Operation mode	:	A, B, E
Ambient temperature	:	23°C
Relative humidity	:	54%
Atmospheric pressure	:	100.6 kPa

During the pretest the EUT was rotated through three orthogonal axes to determine the attitude that maximizes the emissions. After that the EUT was manually handled to find the orientation that has the maximum emission, which is the orientation shown in the test setup photos.

The range from 9 kHz to 26GHz was investigated, and carried out on all test modes, only the worst case was shown in attached appendix.

Refer to attached appendix 1 for details.

5.1.6 Frequency Separation

RESULT:
Passed

Date of testing : 2011-08-17 to 2011-09-08
 Test standard : FCC part 15.247(a)(1)
 RSS-210 A8.1(b)
 Basic standard : ANSI C63.4: 2009
 Limit : $\geq 25\text{kHz}$ or two-thirds of 20dB bandwidth,
 whichever is greater
 Kind of test site : Shield room

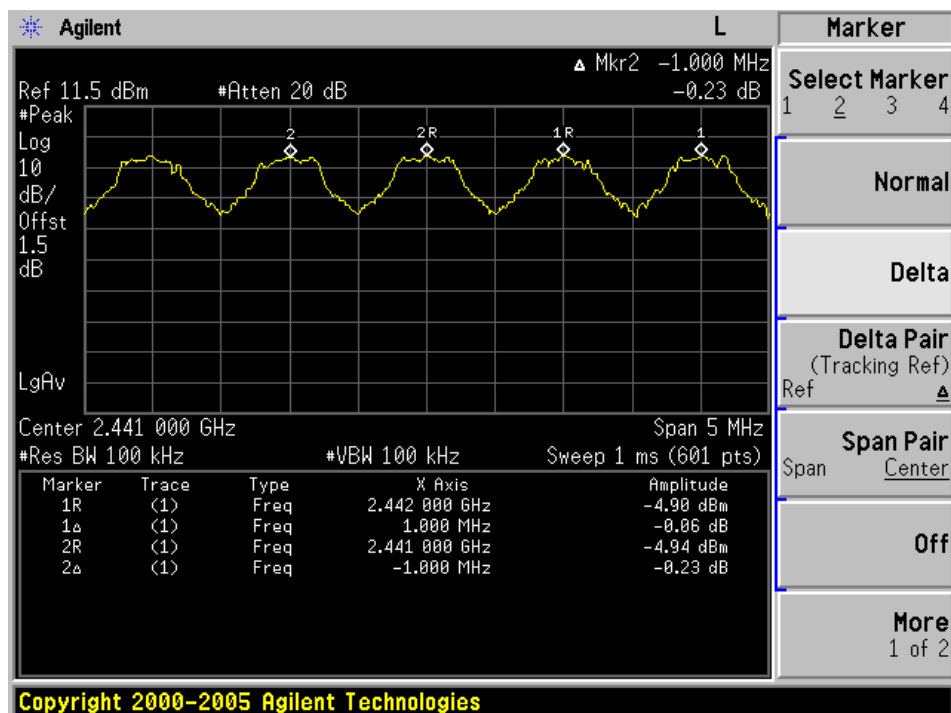
Test setup

Test Channel : Low/ Middle/ High
 Operation Mode : A
 Ambient temperature : 23°C
 Relative humidity : 54%
 Atmospheric pressure : 100.6 kPa

Table 8: Test result of Frequency Separation

Channel	Channel Frequency (MHz)	Measured Channel Separation (MHz)	Limit (kHz)	Result
Low Channel	2402	1	$\geq 25\text{kHz}$ or two-thirds of 20dB bandwidth	Pass
Adjacency Channel	2403			
Mid Channel	2441	1	$\geq 25\text{kHz}$ or two-thirds of 20dB bandwidth	Pass
Adjacency Channel	2442			
High Channel	2480	1	$\geq 25\text{kHz}$ or two-thirds of 20dB bandwidth	Pass
Adjacency Channel	2479			

Test Graph of Frequency Separation



5.1.7 Number of hopping frequency

RESULT:**Passed**

Date of testing : 2011-08-17 to 2011-09-08
Test standard : FCC part 15.247(a)(1)(iii)
RSS-210 A8.1(d)
Basic standard : ANSI C63.4: 2009
Limits : ≥ 15 non-overlapping channels
Kind of test site : Shield room

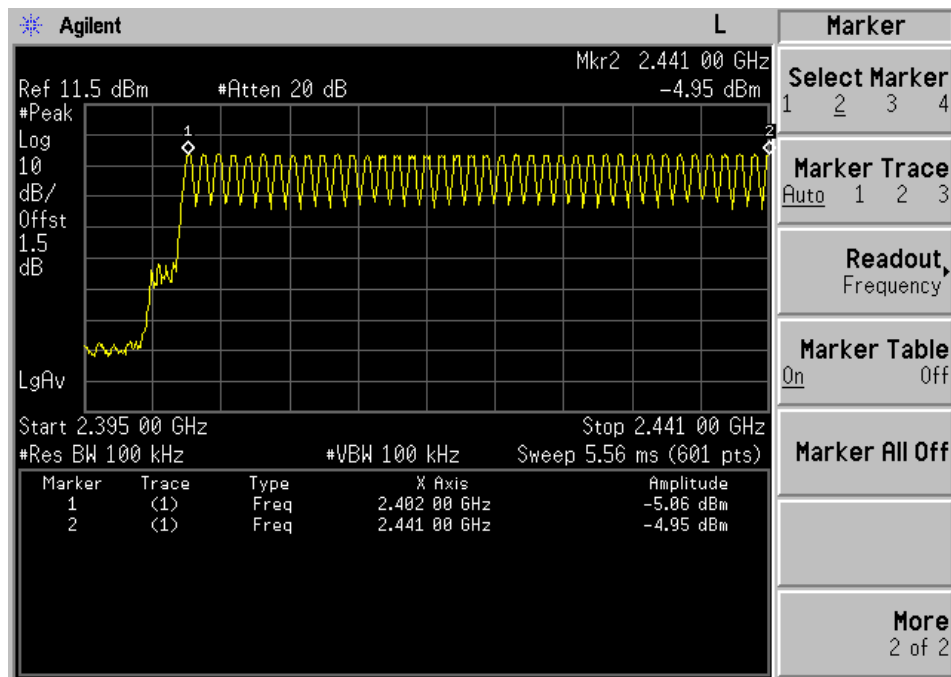
Test setup

Test Channel : Low/ Middle/ High
Operation Mode : A
Ambient temperature : 22°C
Relative humidity : 54%
Atmospheric pressure : 100.6 kPa

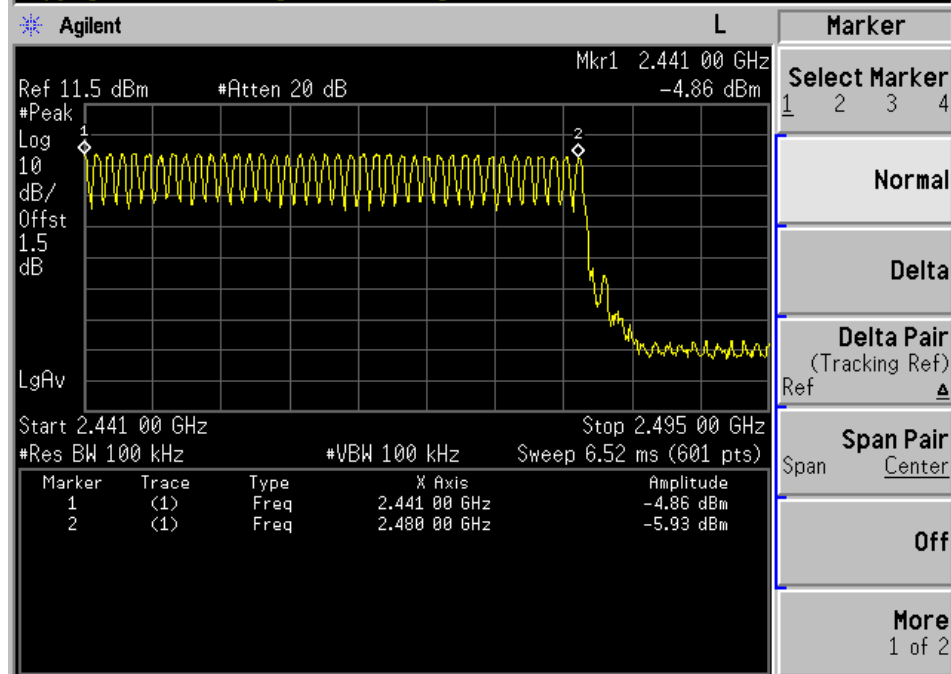
Table 9: Test result of Number of hopping frequency

Frequency Range	Measured Quantity of Hopping Channel	Limit	Result
<u>2400</u> to <u>2483.5</u> MHz	79	≥ 15	Pass

Test Graph of Number of hopping frequency



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5.1.8 Time of Occupancy

RESULT:**Passed**

Date of testing : 2011-08-17 to 2011-09-08
Test standard : FCC part 15.247(a)(1)(iii)
RSS-210 A8.1(d)
Basic standard : ANSI C63.4: 2009
Limits : 0.4s
Kind of test site : Shield room

Test setup

Test Channel : Low/ Middle/ High
Operation Mode : A
Ambient temperature : 23°C
Relative humidity : 54%
Atmospheric pressure : 100.6 kPa

Table 10: Test result of Time of Occupancy

Data Mode	Pulse width (ms)	Measured Dwell time (s)	Limit (s)	Result
DH1	0.445	0.142	0.4	Pass
DH3	1.717	0.275	0.4	Pass
DH5	2.967	0.316	0.4	Pass

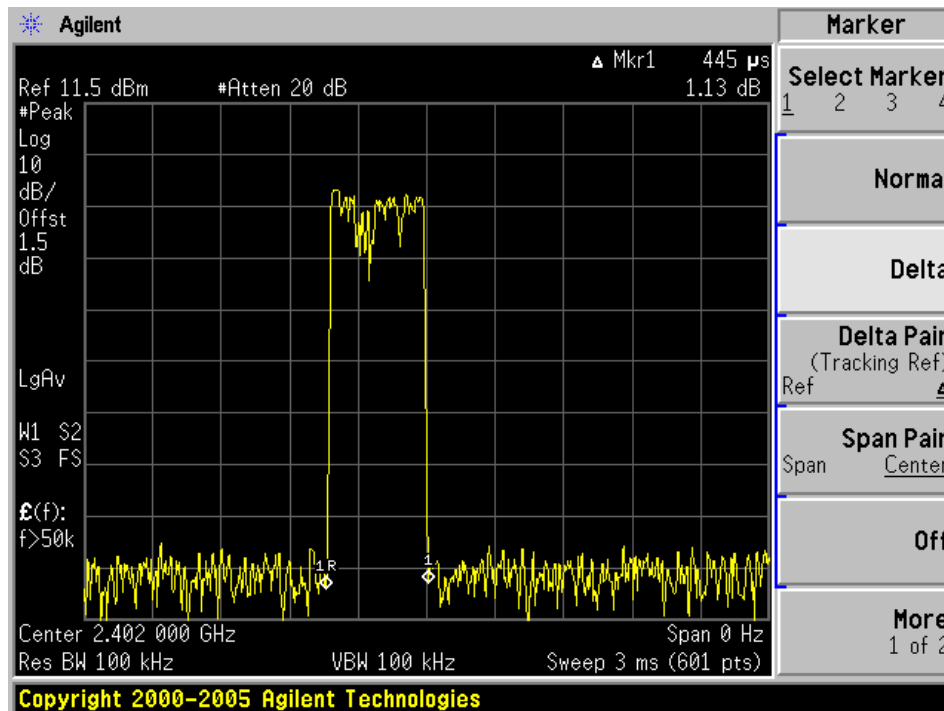
Note:

Dwell time = Pulse width x (Hopping rate / Number of channels) x Period

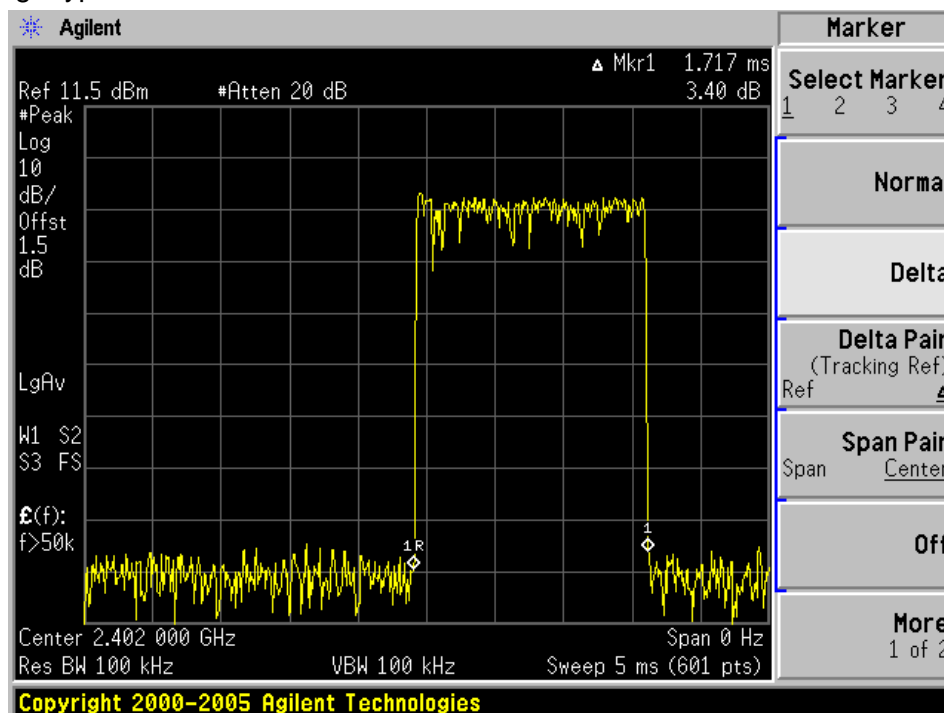
Period = 0.4 (seconds/ channel) x 79 (channel) = 31.6 seconds

Test Graph of Time of Occupancy

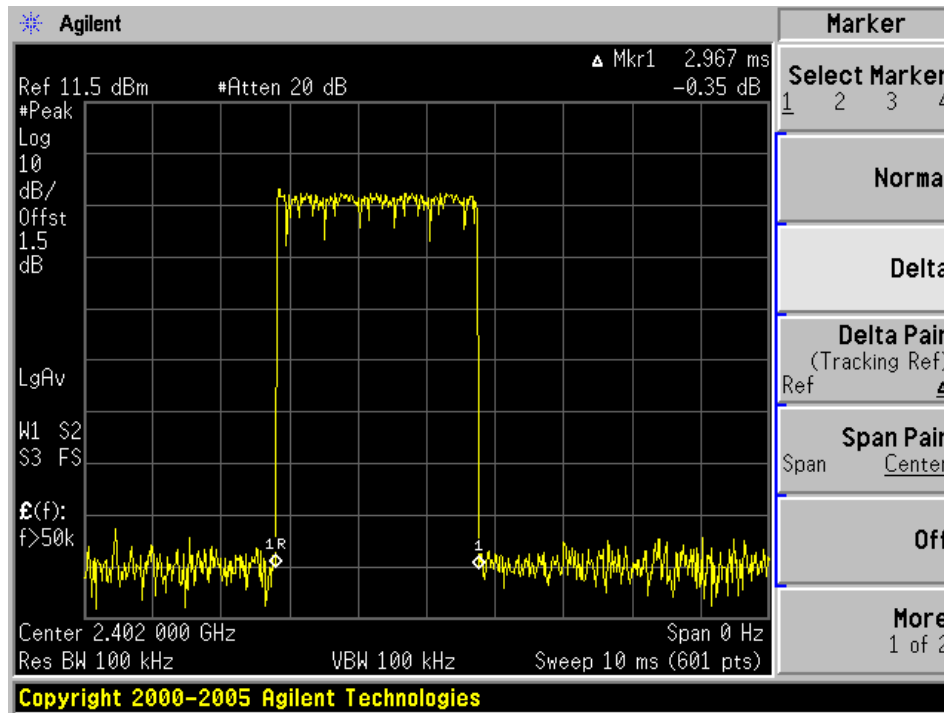
DH1 package type



DH3 package type



DH5 package type



5.1.9 Radiated emissions

RESULT:**Passed**

Date of testing	:	2011-08-17 to 2011-09-08
Test standard	:	FCC Part 15.109 RSS-Gen 7.1.4
Basic standard	:	ANSI C63.4: 2009
Frequency range	:	30 – 1000MHz
Limits	:	FCC Part 15.109(a) ICES-003
Kind of test site	:	3m Semi-Anechoic Chamber

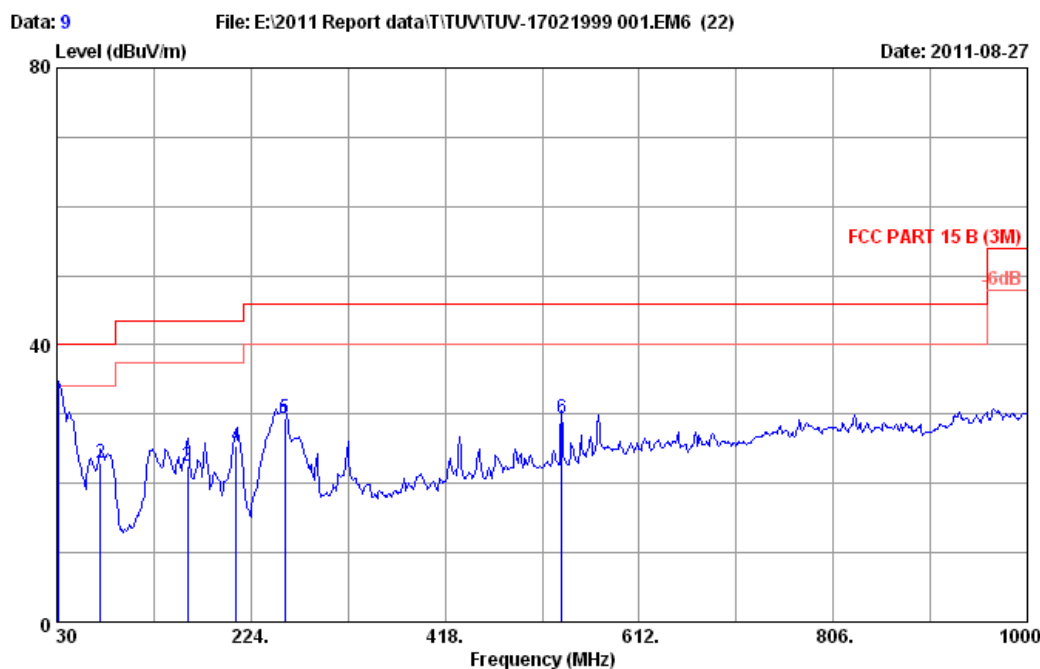
Test Setup

Input Voltage	:	DC 3.7V (via AC/DC adapter)
Operation Mode	:	C&D
Ambient temperature	:	24°C
Relative humidity	:	52%
Atmospheric pressure	:	101.0 kPa

Refer to following test graphs for details.

Test Graph of Radiated emissions, mode C, charging by USB port


No.6 Ke Feng Road,Block 52,
 ShenZhen Science & Industry Park
 Noutou,ShenZhen,GuangDong,China
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 Fax:+86-755-26632877
 Postcode:518057



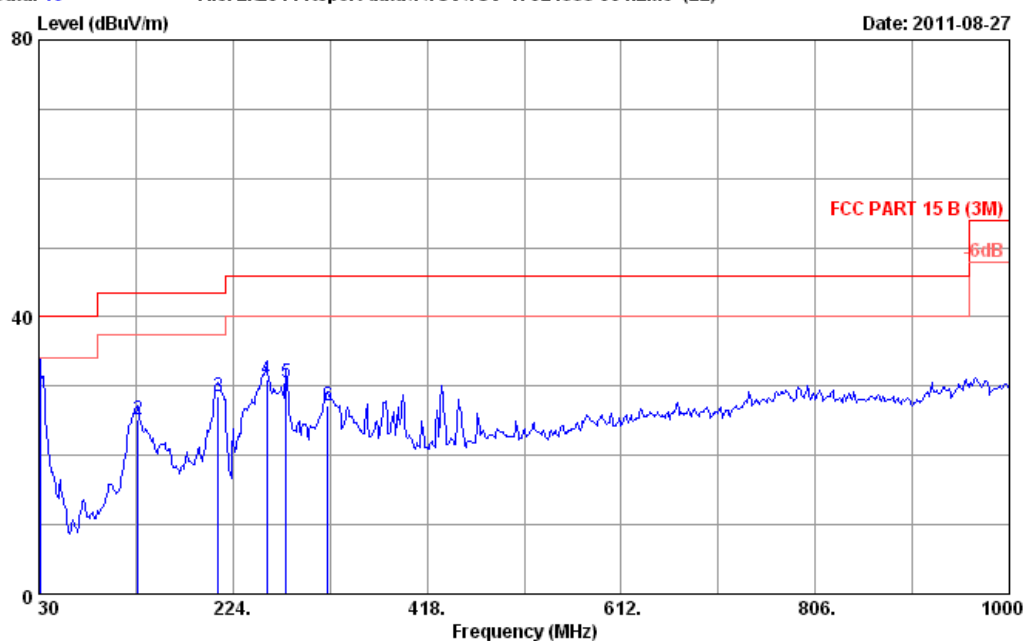
Site no. : 3m Chamber Data no. : 9
 Dis. / Ant. : 3m 2010 CBL6111C 2598 Ant. pol. : VERTICAL
 Limit : FCC PART 15 B (3M)
 Env. / Ins. : 24°C/56% Engineer : Gary_zeng
 EUT : Bluetooth Speaker
 Power rating : DC 5V From Adapter Input AC 120V/60Hz
 Test Mode : Charging by USB port
 M/N:RF-SPX15

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	31.940	18.88	0.61	12.21	31.70	40.00	8.30	QP
2	73.650	7.16	0.99	14.77	22.92	40.00	17.08	QP
3	160.950	11.02	1.57	10.02	22.61	43.50	20.89	QP
4	209.450	10.10	1.94	13.42	25.46	43.50	18.04	QP
5	257.950	13.60	2.51	13.24	29.35	46.00	16.65	QP
6	534.400	18.25	4.17	7.01	29.43	46.00	16.57	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



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Data: 10
File: E:\2011 Report data\TUTUV\TUV-17021999 001.EM6 (22)
Date: 2011-08-27


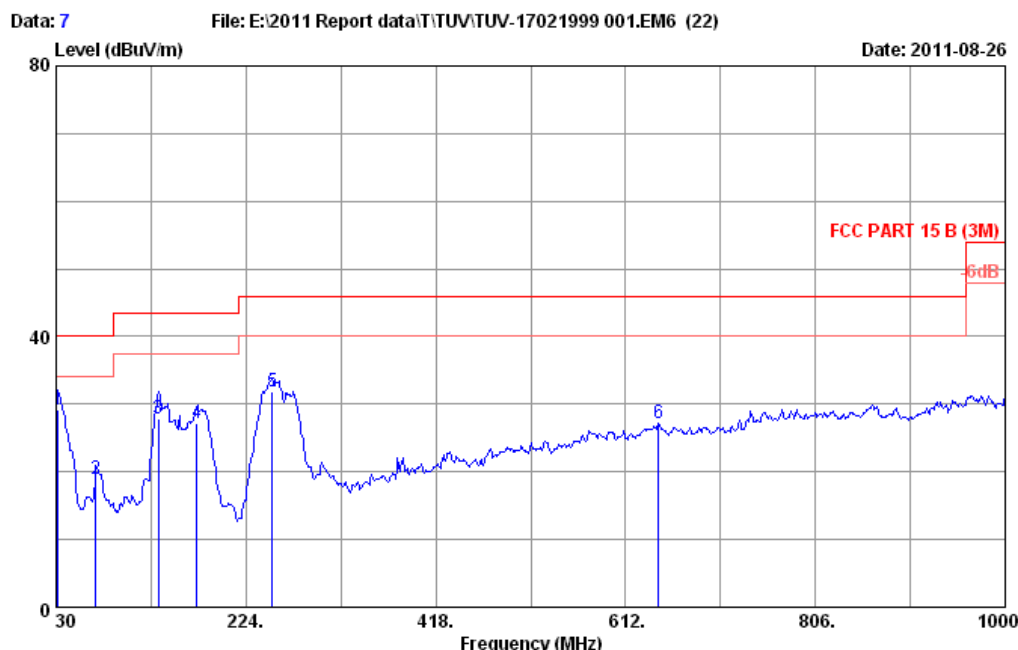
Site no. : 3m Chamber Data no. : 10
 Dis. / Ant. : 3m 2010 CBL6111C 2598 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 B (3M)
 Env. / Ins. : 24°C/56% Engineer : Gary_zeng
 EUT : Bluetooth Speaker
 Power rating : DC 5V From Adapter Input AC 120V/60Hz
 Test Mode : Charging by USB port
 M/N:RF-SPX15

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	31.940	18.88	0.61	11.68	31.17	40.00	8.83	QP
2	128.940	12.18	1.36	11.55	25.09	43.50	18.41	QP
3	209.450	10.10	1.94	16.46	28.50	43.50	15.00	QP
4	257.950	13.60	2.51	14.79	30.90	46.00	15.10	QP
5	277.350	13.20	2.73	14.62	30.55	46.00	15.45	QP
6	319.060	14.18	3.06	9.95	27.19	46.00	18.81	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Test Graph of Radiated emissions, mode D, Line-in input mode


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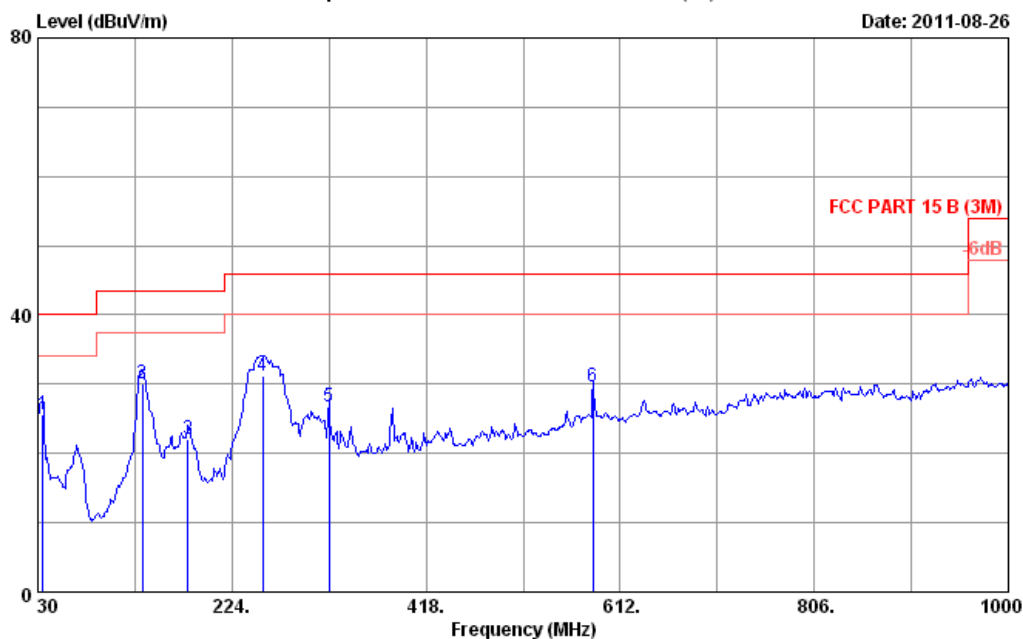
Site no.	: 3m Chamber	Data no.	: 7
Dis. / Ant.	: 3m 2010 CBL6111C 2598	Ant. pol.	: VERTICAL
Limit	: FCC PART 15 B (3M)		
Env. / Ins.	: 24°C/56%	Engineer	: Gary_zeng
EUT	: Bluetooth Speaker		
Power rating	: DC 5V From Adapter Input AC 120V/60Hz		
Test Mode	: Line-in mode		
	M/N:RF-SPX15		

No.	Freq. (MHz)	Ant.		Cable		Emission		Limits	Margin	Remark
		Factor (dB/m)	Loss (dB)	Reading (dBUV)	Level (dBUV/m)	Level (dBUV/m)	Level (dBUV/m)			
1	31.940	18.88	0.61	9.61	29.10		40.00	10.90	QP	
2	70.740	6.74	0.97	11.30	19.01		40.00	20.99	QP	
3	134.760	12.10	1.40	14.41	27.91		43.50	15.59	QP	
4	173.560	9.80	1.66	15.70	27.16		43.50	16.34	QP	
5	251.160	12.90	2.43	16.44	31.77		46.00	14.23	QP	
6	645.950	20.44	4.73	2.08	27.25		46.00	18.75	QP	

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



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 ShenZhen Science & Industry Park
 Noutou,ShenZhen,GuangDong,China
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Data: 8
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Date: 2011-08-26


Site no. : 3m Chamber Data no. : 8
 Dis. / Ant. : 3m 2010 CBL6111C 2598 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 B (3M)
 Env. / Ins. : 24°C/56% Engineer : Gary_zeng
 EUT : Bluetooth Speaker
 Power rating : DC 5V From Adapter Input AC 120V/60Hz
 Test Mode : Line-in mode
 M/N:RF-SPX15

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	34.850	17.20	0.65	7.85	25.70	40.00	14.30	QP
2	134.760	12.10	1.40	16.59	30.09	43.50	13.41	QP
3	180.350	9.40	1.70	11.04	22.14	43.50	21.36	QP
4	255.040	13.30	2.47	15.43	31.20	46.00	14.80	QP
5	321.000	14.22	3.07	9.51	26.80	46.00	19.20	QP
6	584.840	19.70	4.43	5.51	29.64	46.00	16.36	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

5.1.10 Conducted emissions

RESULT:**Passed**

Date of testing	:	2011-08-17 to 2011-09-08
Test standard	:	FCC Part 15.107
		FCC Part 15.207
		RSS-210 Clause 2.6
Basic standard	:	ANSI C63.4: 2009
Frequency range	:	0.15MHz – 30MHz
Limits	:	FCC Part 15.107(a)
		Table 4 of RSS Gen
Kind of test site	:	Shield Room

Test Setup

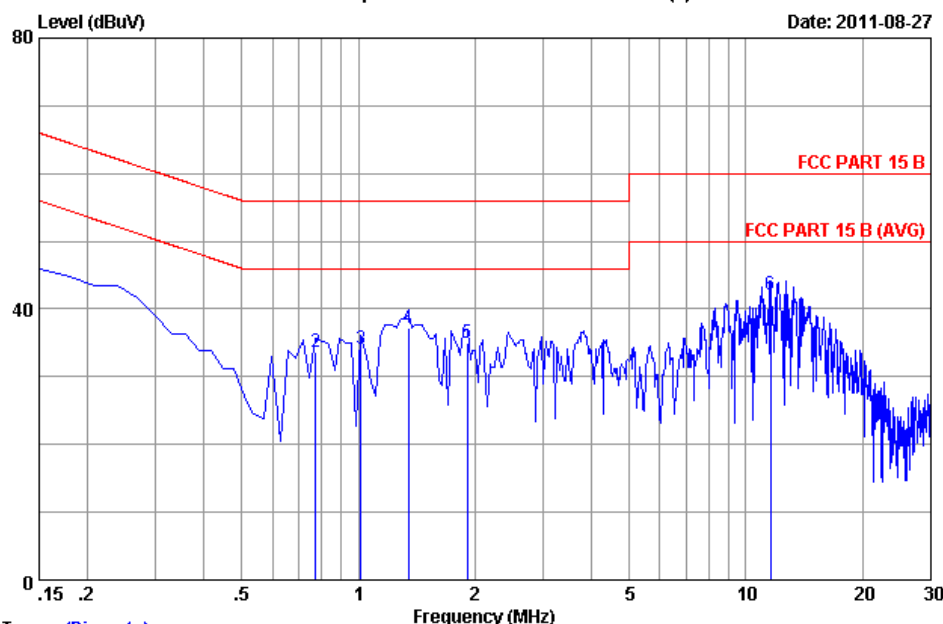
Input Voltage	:	DC 3.7V (via AC/DC adapter)
Operation Mode	:	A+B+C, D
Ambient temperature	:	24°C
Relative humidity	:	52%
Atmospheric pressure	:	101.0 kPa

Refer to following test graphs for details.

Test Graph of Conducted emissions, mode A+B+C


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Data: 1 File: D:\DATA\2011 Report data\TUTUM\17021999 001.EM6 (8)


Trace: (Discrete)

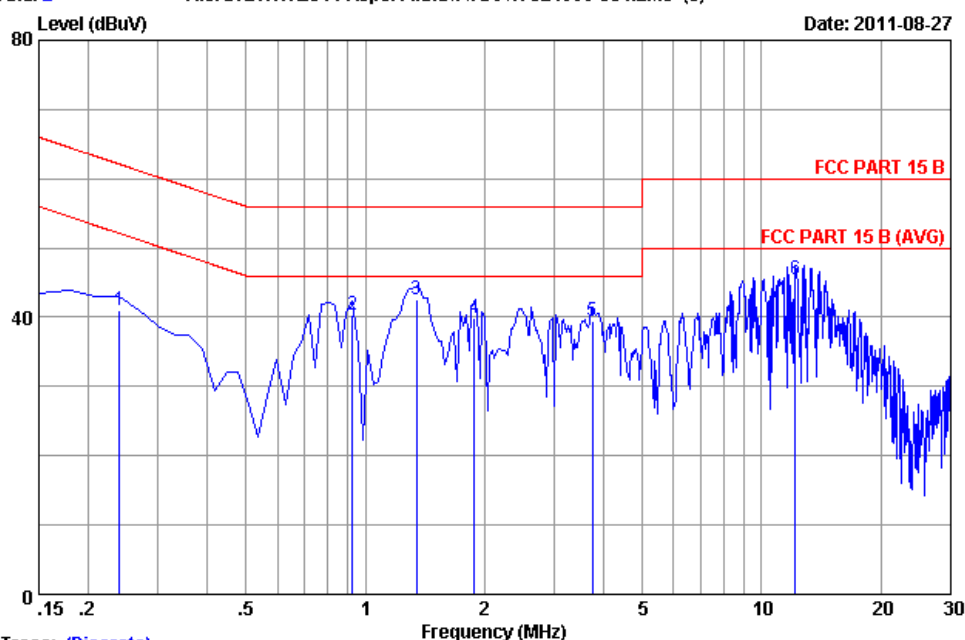
Site no : 1#conduction Data No : 1
 Dis./Ant. : ** 2011 ESH2-Z5 LINE
 Limit : FCC PART 15 B
 Env./Ins. : 25.5°C/55% Engineer : Gary
 EUT : Bluetooth Speaker
 Power Rating : DC 5V From Adapter Input AC 120V/60Hz
 Test Mode : Charging by USB port
 M/N: RF-SPX15

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15000	0.17	9.98	33.75	43.90	66.00	22.10	QP
2	0.77685	0.20	9.97	23.59	33.76	56.00	22.24	QP
3	1.016	0.23	9.98	23.83	34.04	56.00	21.96	QP
4	1.344	0.26	9.97	27.08	37.31	56.00	18.69	QP
5	1.911	0.30	9.96	24.78	35.04	56.00	20.96	QP
6	11.583	0.76	9.91	31.55	42.22	60.00	17.78	QP

Remarks: 1. Emission Level = LISN Factor + Cable Loss (Include 10dB pulse limit) + Reading.
 2. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.



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Data: 2
File: D:\DATA\2011 Report data\TUV\17021999 001.EM6 (8)
Date: 2011-08-27

Trace: (Discrete)

Site no : 1#conduction Data No : 2
 Dis./Ant. : ** 2011 ESH2-25 NEUTRAL
 Limit : FCC PART 15 B
 Env./Ins. : 25.5°C/55% Engineer : Gary
 EUT : Bluetooth Speaker
 Power Rating : DC 5V From Adapter Input AC 120V/60Hz
 Test Mode : Charging by USB port
 M/N: RF-SPX15

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.23955	0.21	9.98	30.77	40.96	62.11	21.15	QP
2	0.92610	0.24	9.98	30.08	40.30	56.00	15.70	QP
3	1.344	0.25	9.97	32.32	42.54	56.00	13.46	QP
4	1.881	0.27	9.96	29.74	39.97	56.00	16.03	QP
5	3.732	0.30	9.94	29.23	39.47	56.00	16.53	QP
6	12.180	0.52	9.91	35.02	45.45	60.00	14.55	QP

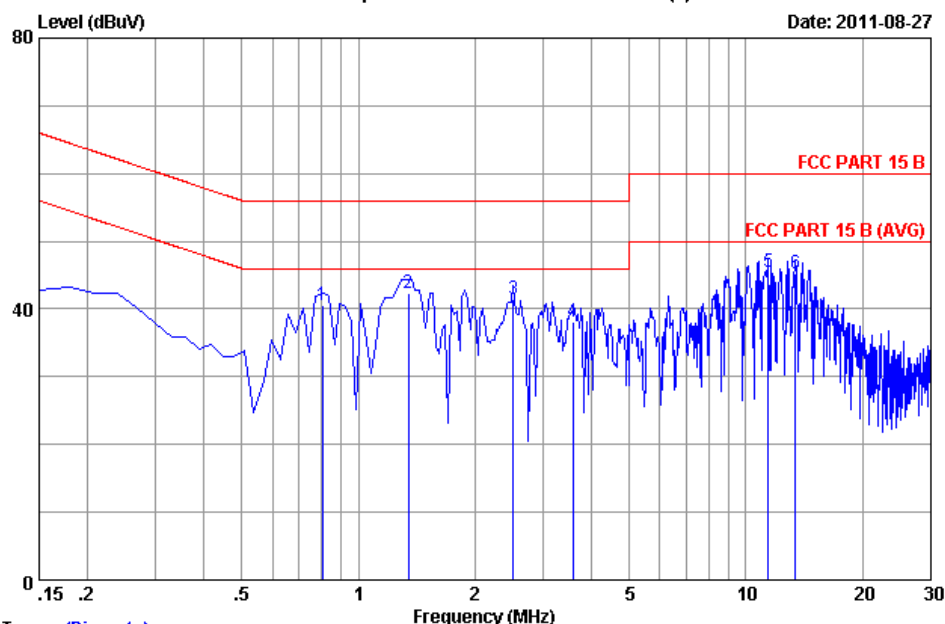
Remarks: 1. Emission Level = LISN Factor + Cable Loss (Include 10dB pulse limit) + Reading.
 2. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

Test Graph of Conducted emissions, mode D, Line-in input mode


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Data: 3 File: D:\DATA\2011 Report data\TUTUM\17021999 001.EM6 (8)

Date: 2011-08-27



Trace: (Discrete)

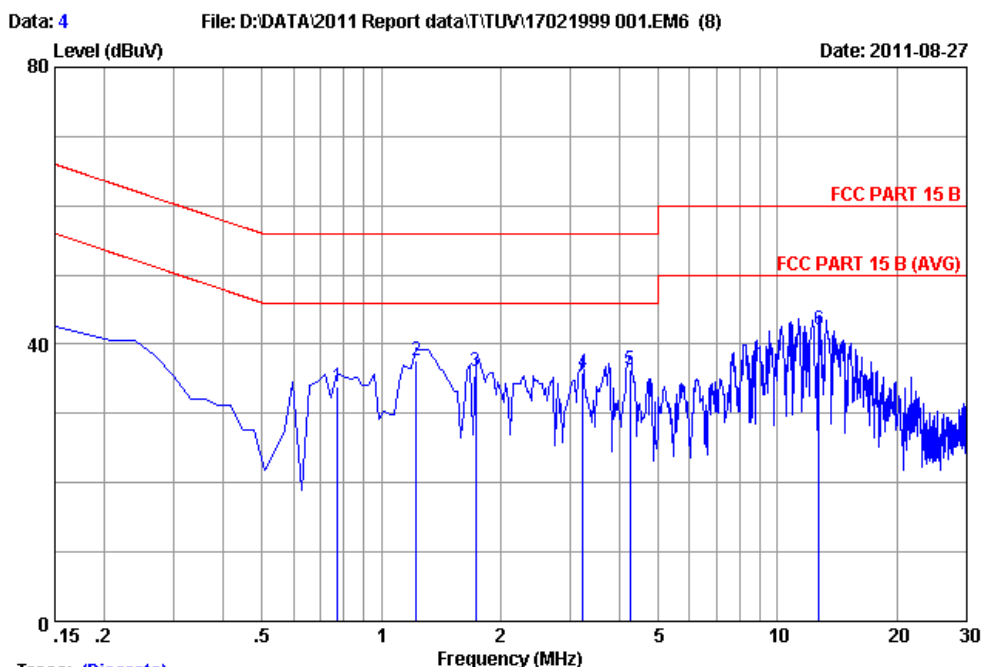
Site no : 1#conduction Data No : 3
 Dis./Ant. : ** 2011 ESH2-Z5 NEUTRAL
 Limit : FCC PART 15 B
 Env./Ins. : 25.5°C/55% Engineer : Gary
 EUT : Bluetooth Speaker
 Power Rating : DC 5V From Adapter Input AC 120V/60Hz
 Test Mode : Line-in mode
 M/N: RF-SPX15

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.80670	0.23	9.97	30.25	40.45	56.00	15.55	QP
2	1.344	0.25	9.97	32.22	42.44	56.00	13.56	QP
3	2.508	0.28	9.95	31.22	41.45	56.00	14.55	QP
4	3.583	0.30	9.94	27.96	38.20	56.00	17.80	QP
5	11.433	0.49	9.91	35.09	45.49	60.00	14.51	QP
6	13.403	0.55	9.91	34.75	45.21	60.00	14.79	QP

Remarks: 1. Emission Level = LISN Factor + Cable Loss (Include 10dB pulse limit) + Reading.
 2. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.



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 Nantou Shenzhen, Guangdong, China
 Tel: +86-755-26639495
 Fax: +86-755-26632877
 Postcode: 518057



Trace: (Discrete)

Site no : 1#conduction Data No : 4

Dis./Ant. : ** 2011 ESH2-25 LINE

Limit : FCC PART 15 B

Env./Ins. : 25.5°C/55% Engineer : Gary

EUT : Bluetooth Speaker

Power Rating : DC 5V From Adapter Input AC 120V/60Hz

Test Mode : Line-in mode

M/N: RF-SPX15

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.77685	0.20	9.97	23.62	33.79	56.00	22.21	QP
2	1.225	0.25	9.97	27.33	37.55	56.00	18.45	QP
3	1.732	0.29	9.96	25.92	36.17	56.00	19.83	QP
4	3.225	0.33	9.95	25.63	35.91	56.00	20.09	QP
5	4.239	0.36	9.94	25.92	36.22	56.00	19.78	QP
6	12.717	0.83	9.91	31.39	42.13	60.00	17.87	QP

Remarks: 1. Emission Level = LISN Factor + Cable Loss (Include 10dB pulse limit) + Reading.

2. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

6. Safety Human exposure

6.1 Radio Frequency Exposure Compliance

6.1.1 Electromagnetic Fields

RESULT:**Passed**

Test standard : RSS-102 Issue 4
FCC KDB Publication 447498

The maximum peak output power of the transmitter is 1.60 mW (2.06dBm) only, which less than 20mW. Hence the EUT is exempted from routine evaluation limits (SAR Evaluation) according to clause 2.5.1 of RSS-102 Issue 4.

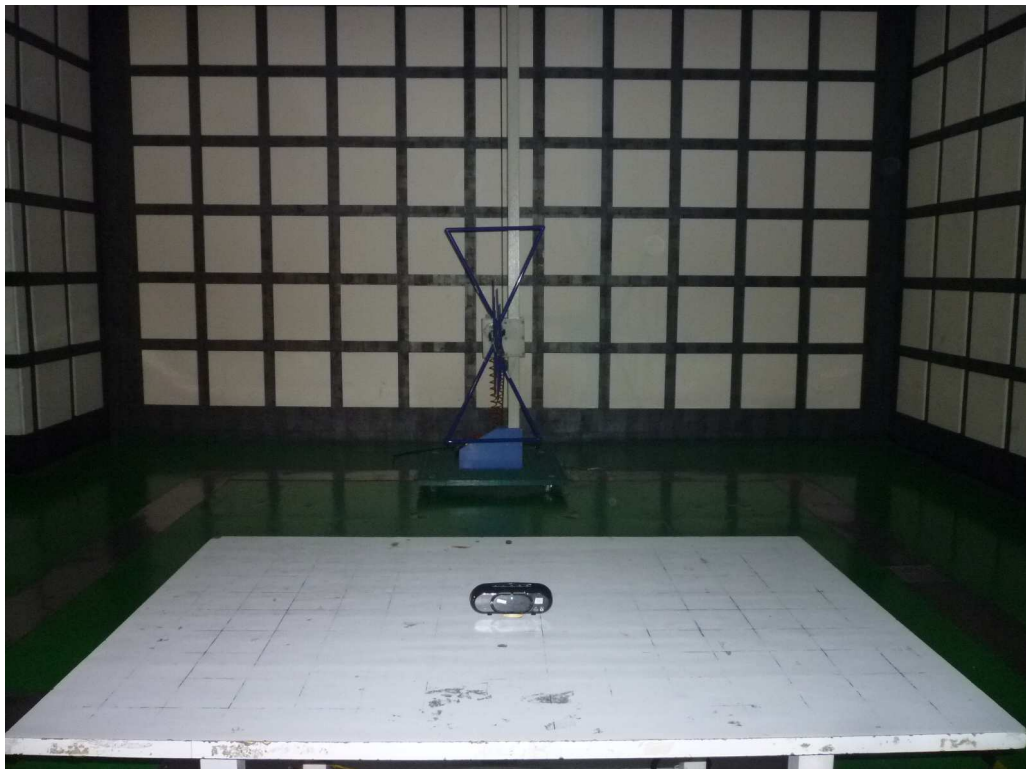
Since maximum peak output power of the transmitter is $<60/f$ (GHz) mW, i.e.
 $1.60\text{mW} < 25(=60/2.4)$ mW, hence the EUT is excluded from SAR evaluation according to FCC KDB publication 447498 D01: Mobile Portable RF Exposure.

7. Photographs of the Test Set-Up

Photograph 1: Set-up for Spurious Emissions (9kHz-30MHz)



Photograph 2: Set-up for Spurious Emissions below 1GHz



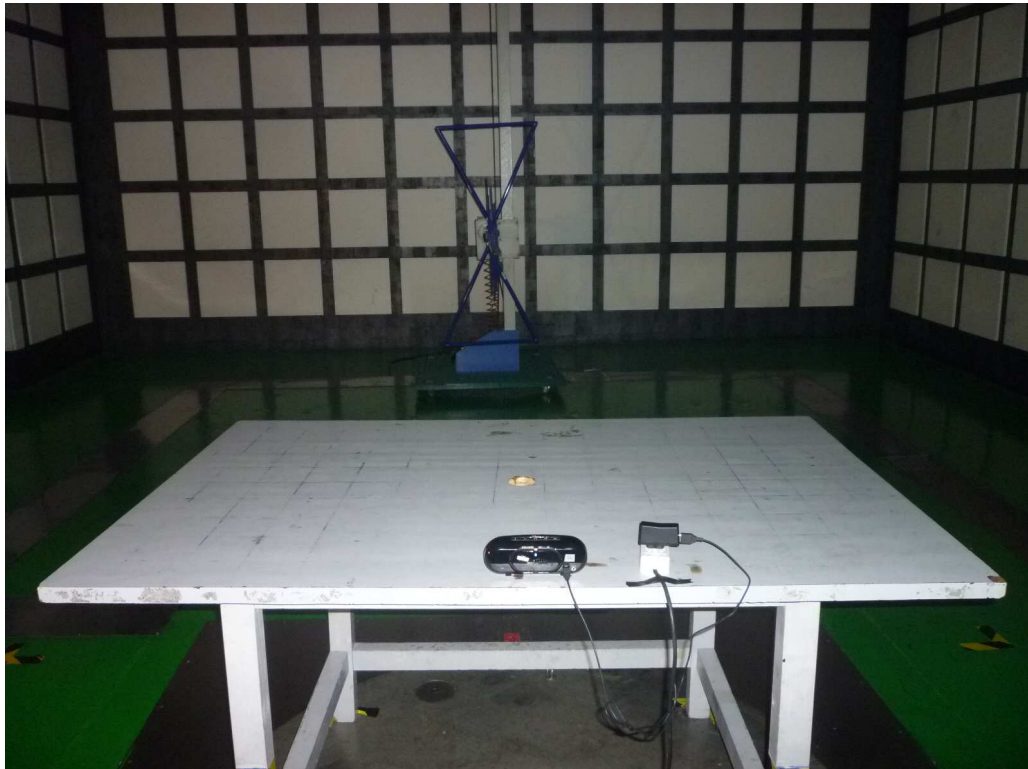
Photograph 3: Set-up for Spurious Emissions above 1GHz



Photograph 4: Set-up for Conducted Emissions



Photograph 5: Set-up for Radiated Emissions



8. List of Tables

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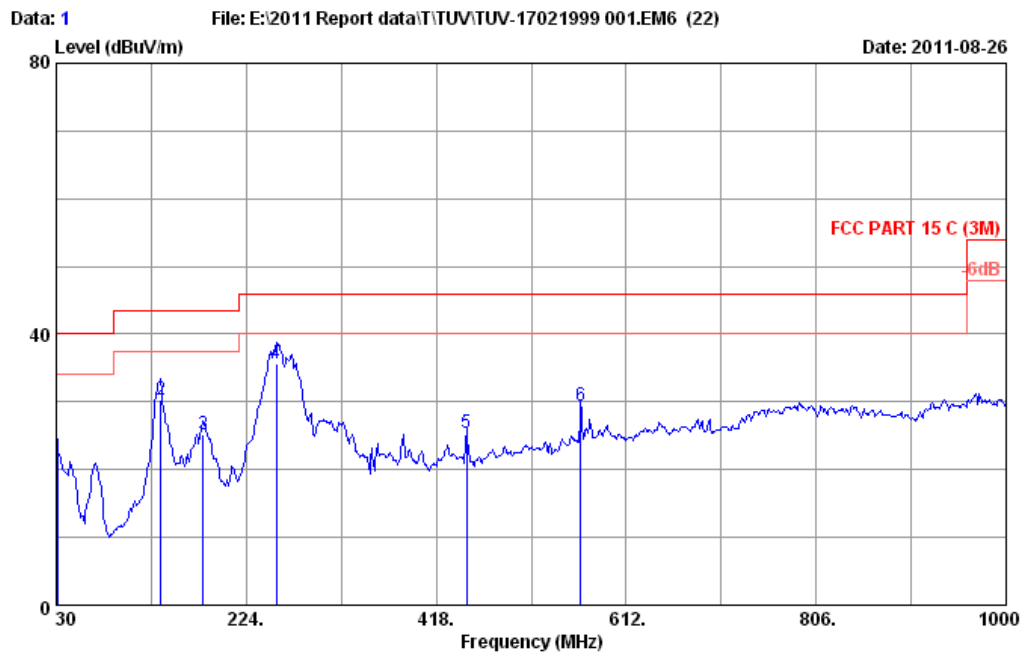
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Test Graphs of Spurious Emissions



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057



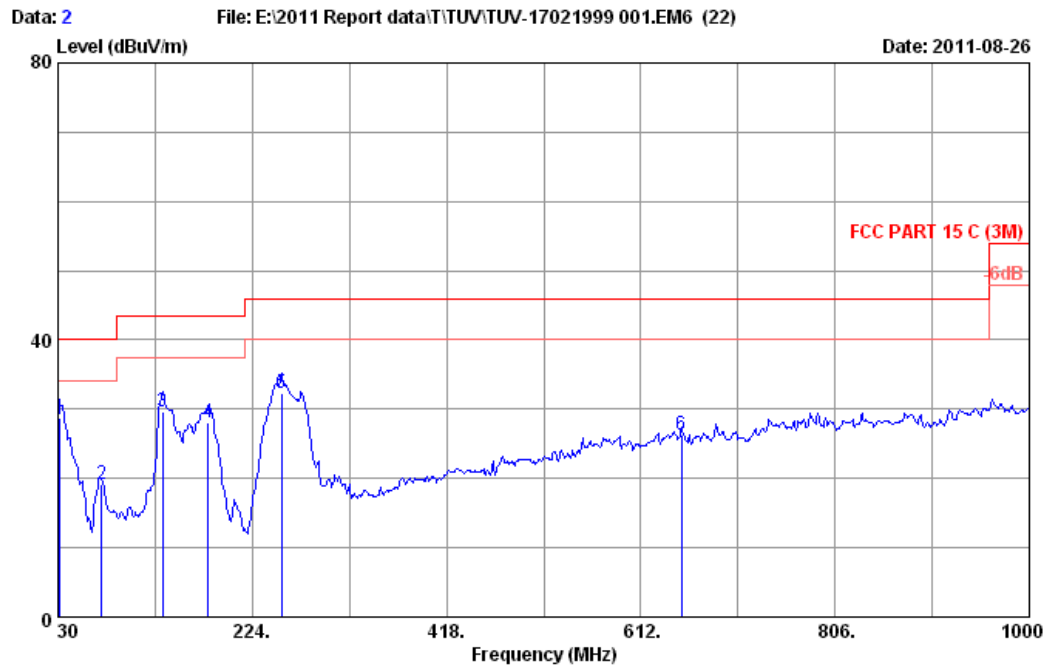
Site no.	: 3m Chamber	Data no.	: 1
Dis. / Ant.	: 3m 2010 CBL6111C 2598	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15 C (3M)		
Env. / Ins.	: 24°C/56%	Engineer	: Gary_zeng
EUT	: Bluetooth Speaker		
Power rating	: DC 3.7V		
Test Mode	: Tx 2402MHz		
	M/N:RF-SPX15		

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBUV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark
1	31.940	18.88	0.61	2.27	21.76	40.00	18.24	QP
2	136.700	12.06	1.41	16.92	30.39	43.50	13.11	QP
3	180.350	9.40	1.70	14.18	25.28	43.50	18.22	QP
4	255.040	13.30	2.47	19.93	35.70	46.00	10.30	QP
5	449.040	17.02	3.66	4.62	25.30	46.00	20.70	QP
6	565.440	19.61	4.32	5.44	29.37	46.00	16.63	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



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ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057



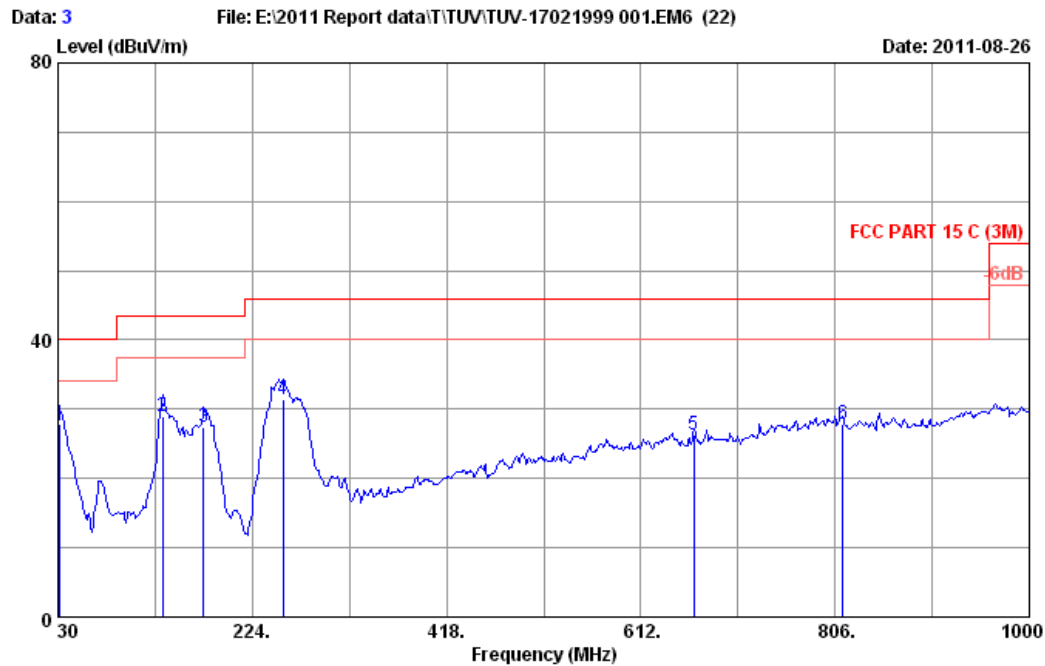
Site no. : 3m Chamber Data no. : 2
Dis. / Ant. : 3m 2010 CBL6111C 2598 Ant. pol. : VERTICAL
Limit : FCC PART 15 C (3M)
Env. / Ins. : 24°C/56% Engineer : Gary_zeng
EUT : Bluetooth Speaker
Power rating : DC 3.7V
Test Mode : Tx 2402MHz
M/N:RF-SPX15

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	31.940	18.88	0.61	9.24	28.73	40.00	11.27	QP
2	73.650	7.16	0.99	10.92	19.07	40.00	20.93	QP
3	134.760	12.10	1.40	16.14	29.64	43.50	13.86	QP
4	180.350	9.40	1.70	16.97	28.07	43.50	15.43	QP
5	253.100	13.10	2.45	16.68	32.23	46.00	13.77	QP
6	652.740	20.46	4.76	1.10	26.32	46.00	19.68	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



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ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
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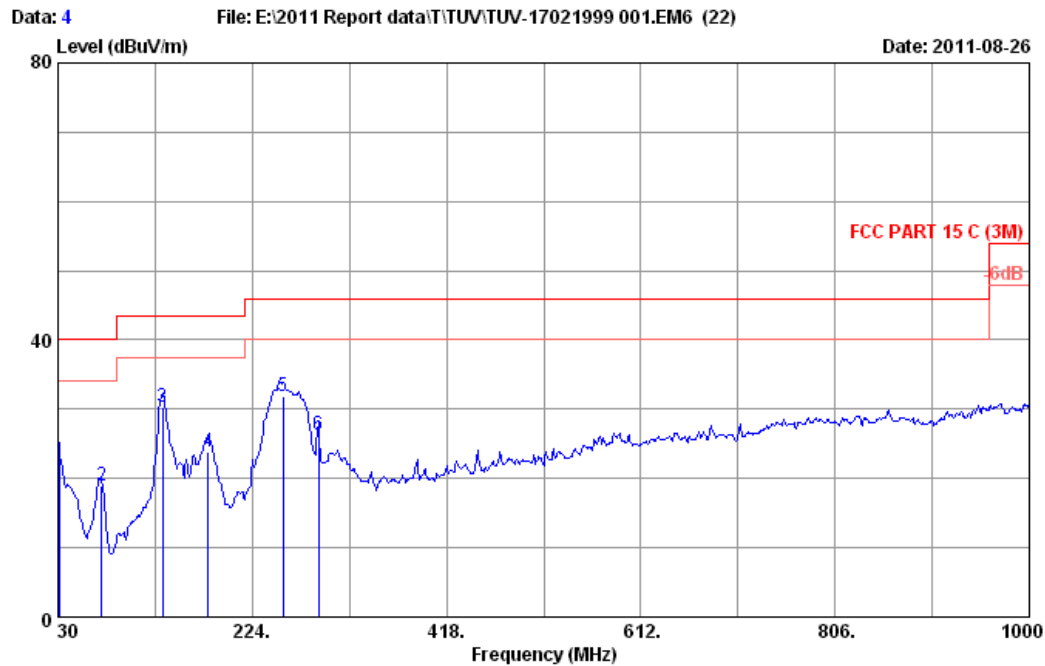
Site no. : 3m Chamber Data no. : 3
Dis. / Ant. : 3m 2010 CBL6111C 2598 Ant. pol. : VERTICAL
Limit : FCC PART 15 C (3M)
Env. / Ins. : 24°C/56% Engineer : Gary_zeng
EUT : Bluetooth Speaker
Power rating : DC 3.7V
Test Mode : Tx 2441MHz
M/N:RF-SPX15

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	31.940	18.88	0.61	8.45	27.94	40.00	12.06	QP
2	134.760	12.10	1.40	15.52	29.02	43.50	14.48	QP
3	175.500	9.65	1.66	16.07	27.38	43.50	16.12	QP
4	255.040	13.30	2.47	15.57	31.34	46.00	14.66	QP
5	665.350	20.71	4.82	0.72	26.25	46.00	19.75	QP
6	813.760	22.08	5.52	0.28	27.88	46.00	18.12	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



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ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057



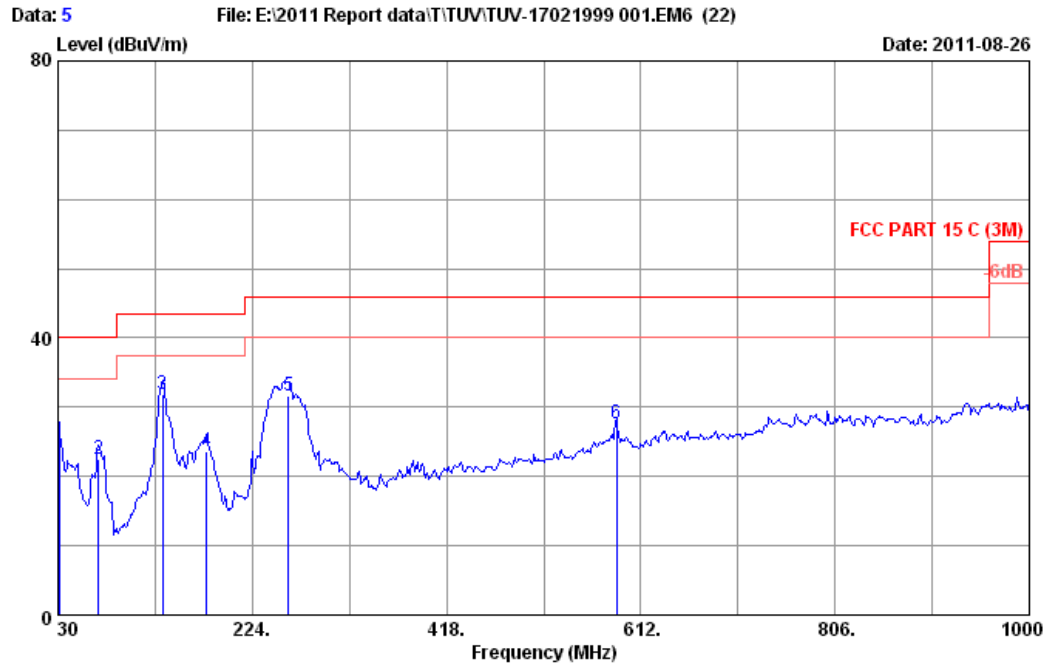
Site no.	: 3m Chamber	Data no.	: 4
Dis. / Ant.	: 3m 2010 CBL6111C 2598	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15 C (3M)	Engineer	: Gary_zeng
Env. / Ins.	: 24°C/56%		
EUT	: Bluetooth Speaker		
Power rating	: DC 3.7V		
Test Mode	: Tx 2441MHz		
	M/N:RF-SPX15		

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	31.940	18.88	0.61	3.00	22.49	40.00	17.51	QP
2	73.650	7.16	0.99	10.88	19.03	40.00	20.97	QP
3	134.760	12.10	1.40	16.76	30.26	43.50	13.24	QP
4	180.350	9.40	1.70	12.75	23.85	43.50	19.65	QP
5	255.040	13.30	2.47	16.16	31.93	46.00	14.07	QP
6	289.960	13.60	2.88	9.77	26.25	46.00	19.75	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057



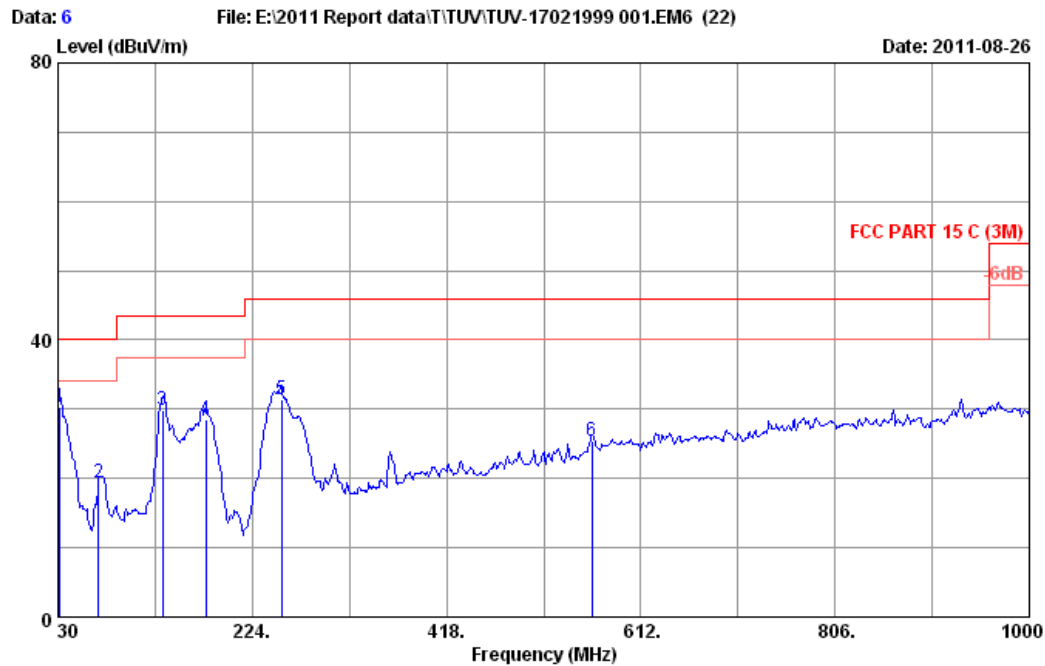
Site no.	: 3m Chamber	Data no.	: 5
Dis. / Ant.	: 3m 2010 CBL6111C 2598	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15 C (3M)	Engineer	: Gary_zeng
Env. / Ins.	: 24°C/56%		
EUT	: Bluetooth Speaker		
Power rating	: DC 3.7V		
Test Mode	: Tx 2480MHz		
	M/N:RF-SPX15		

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	31.940	18.88	0.61	5.60	25.09	40.00	14.91	QP
2	70.740	6.74	0.97	14.85	22.56	40.00	17.44	QP
3	134.760	12.10	1.40	18.35	31.85	43.50	11.65	QP
4	178.410	9.50	1.68	12.39	23.57	43.50	19.93	QP
5	259.890	13.80	2.53	15.38	31.71	46.00	14.29	QP
6	587.750	19.76	4.44	3.40	27.60	46.00	18.40	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057



Site no.	: 3m Chamber	Data no.	: 6
Dis. / Ant.	: 3m 2010 CBL6111C 2598	Ant. pol.	: VERTICAL
Limit	: FCC PART 15 C (3M)	Engineer	: Gary_zeng
Env. / Ins.	: 24°C/56%		
EUT	: Bluetooth Speaker		
Power rating	: DC 3.7V		
Test Mode	: Tx 2480MHz		
	M/N:RF-SPX15		

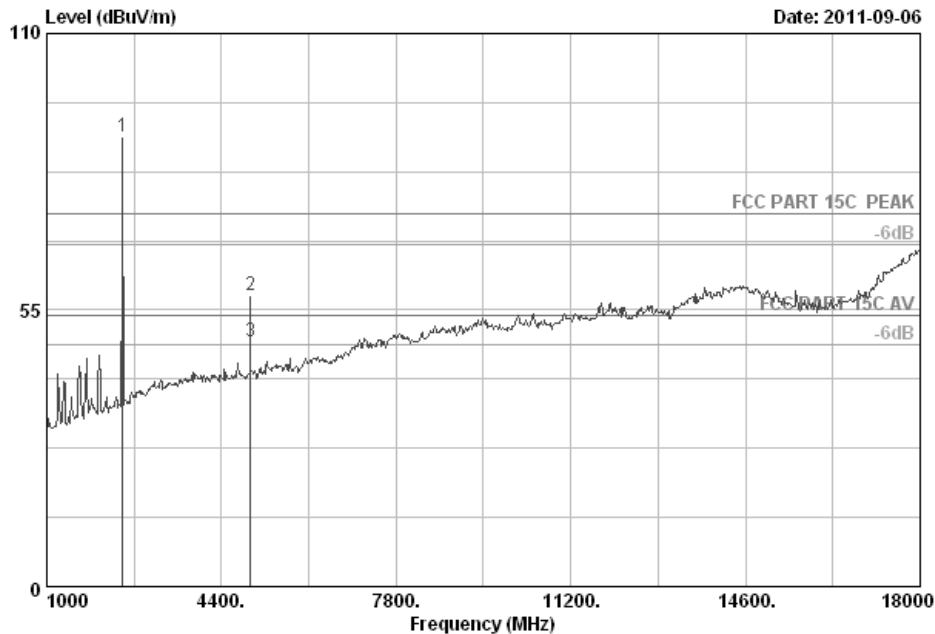
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	31.940	18.88	0.61	10.76	30.25	40.00	9.75	QP
2	70.740	6.74	0.97	11.62	19.33	40.00	20.67	QP
3	134.760	12.10	1.40	16.45	29.95	43.50	13.55	QP
4	177.440	9.55	1.68	17.25	28.48	43.50	15.02	QP
5	253.100	13.10	2.45	15.92	31.47	46.00	14.53	QP
6	563.500	19.57	4.32	1.50	25.39	46.00	20.61	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 184 File: E:\2011 report data\TUV\2011-08-23.EM6 (195) Date: 2011-09-06



Site no. : 3m Chamber Data no. : 184
Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : Bluetooth Speaker
Power : DC 5V From Adapter Input AC 120V/60Hz
Test mode : GFSK 2480 MHz Tx
M/N : RF-SPX15
:

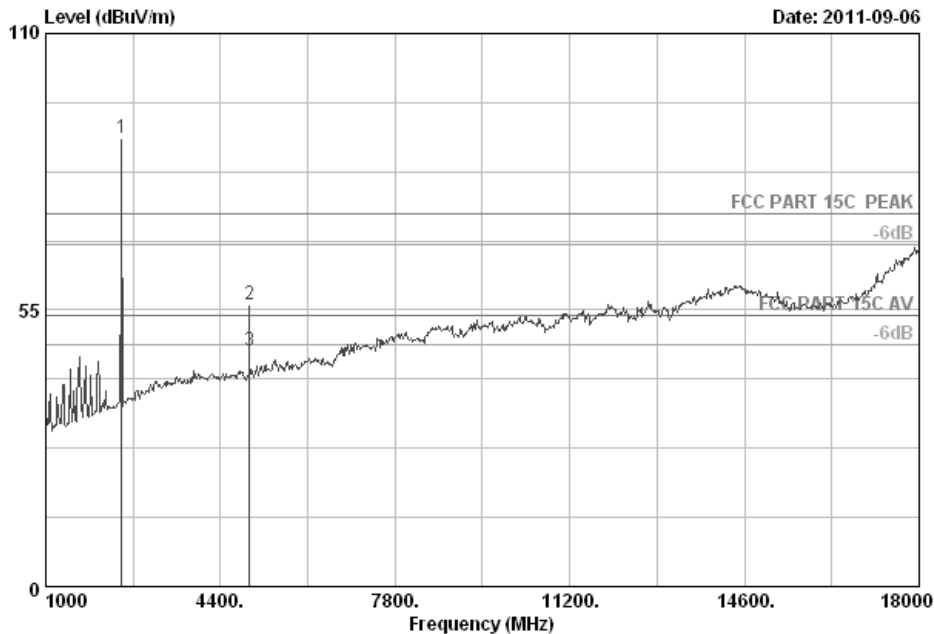
	Ant.	Cable	Amp.		Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1 2480.000	28.08	6.87	34.45	89.00	89.50	74.00	-15.50	Peak
2 4960.000	33.14	9.69	34.60	49.66	57.89	74.00	16.11	Peak
3 4960.000	33.14	9.69	34.60	40.36	48.59	54.00	5.41	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
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Data: 185 File: E:\2011 report data\TUV\2011-08-23.EM6 (195) Date: 2011-09-06



Site no. : 3m Chamber Data no. : 185
Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : Bluetooth Speaker
Power : DC 5V From Adapter Input AC 120V/60Hz
Test mode : GFSK 2480 MHz Tx
M/N : RF-SPX15
:

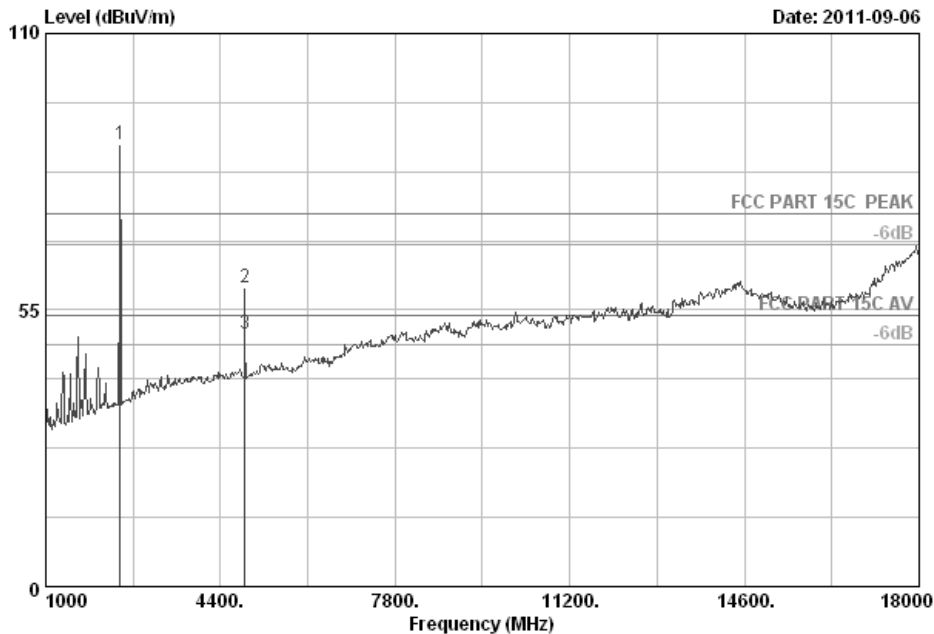
	Ant.	Cable	Amp.		Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1 2480.000	28.08	6.87	34.45	88.68	89.18	74.00	-15.18	Peak
2 4960.000	33.14	9.69	34.60	47.96	56.19	74.00	17.81	Peak
3 4960.000	33.14	9.69	34.60	38.66	46.89	54.00	7.11	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



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ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
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Data: 186 File: E:\2011 report data\TUV\2011-08-23.EM6 (195) Date: 2011-09-06



Site no. : 3m Chamber Data no. : 186
Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : Bluetooth Speaker
Power : DC 5V From Adapter Input AC 120V/60Hz
Test mode : GFSK 2441 MHz Tx
M/N : RF-SPX15
:

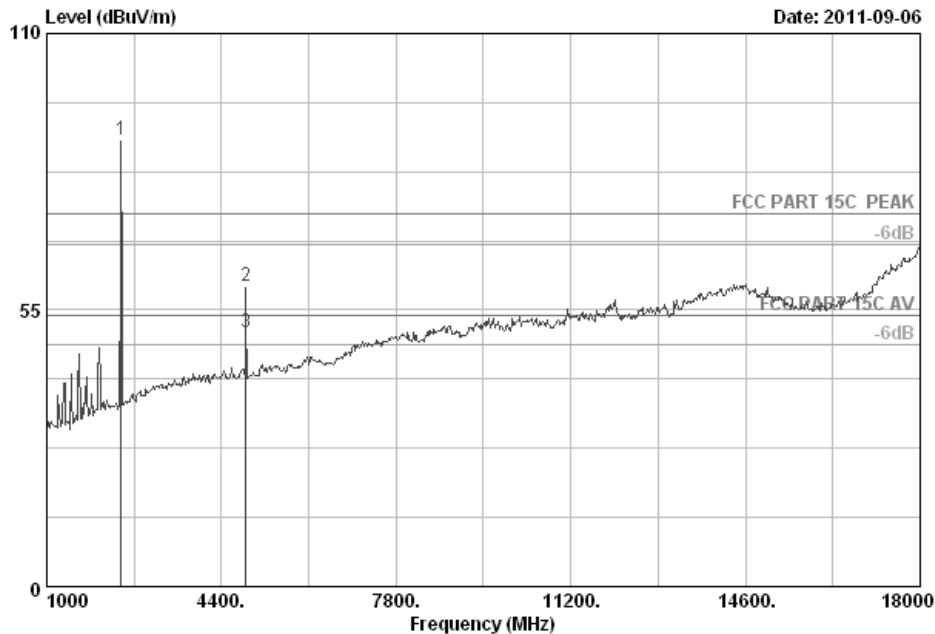
	Ant.	Cable	Amp.		Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1 2441.000	28.03	6.81	34.44	87.56	87.96	74.00	-13.96	Peak
2 4882.000	32.98	9.62	34.60	51.50	59.50	74.00	14.50	Peak
3 4882.000	32.98	9.62	34.60	42.20	50.20	54.00	3.80	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 187 File: E:\2011 report data\TUV\2011-08-23.EM6 (195) Date: 2011-09-06



Site no. : 3m Chamber Data no. : 187
Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : Bluetooth Speaker
Power : DC 5V From Adapter Input AC 120V/60Hz
Test mode : GFSK 2441 MHz Tx
M/N : RF-SPX15
:

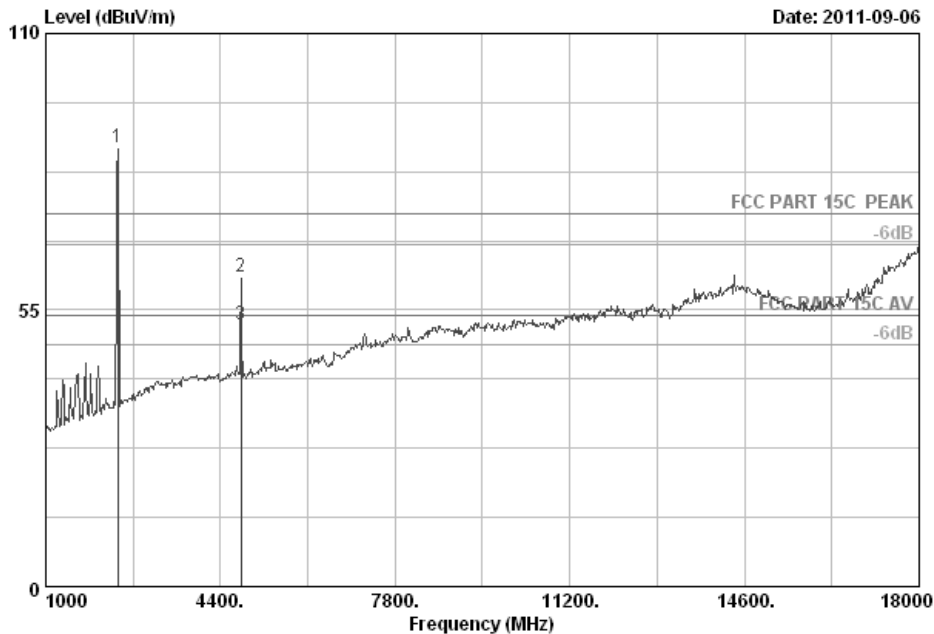
	Ant.	Cable	Amp.		Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1 2441.000	28.03	6.81	34.44	88.47	88.87	74.00	-14.87	Peak
2 4882.000	32.98	9.62	34.60	51.82	59.82	74.00	14.18	Peak
3 4882.000	32.98	9.62	34.60	42.52	50.52	54.00	3.48	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
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Data: 188 File: E:\2011 report data\T\TUV\2011-08-23.EM6 (195) Date: 2011-09-06



Site no. : 3m Chamber Data no. : 188
Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : Bluetooth Speaker
Power : DC 5V From Adapter Input AC 120V/60Hz
Test mode : GFSK 2402 MHz Tx
M/N : RF-SPX15
:

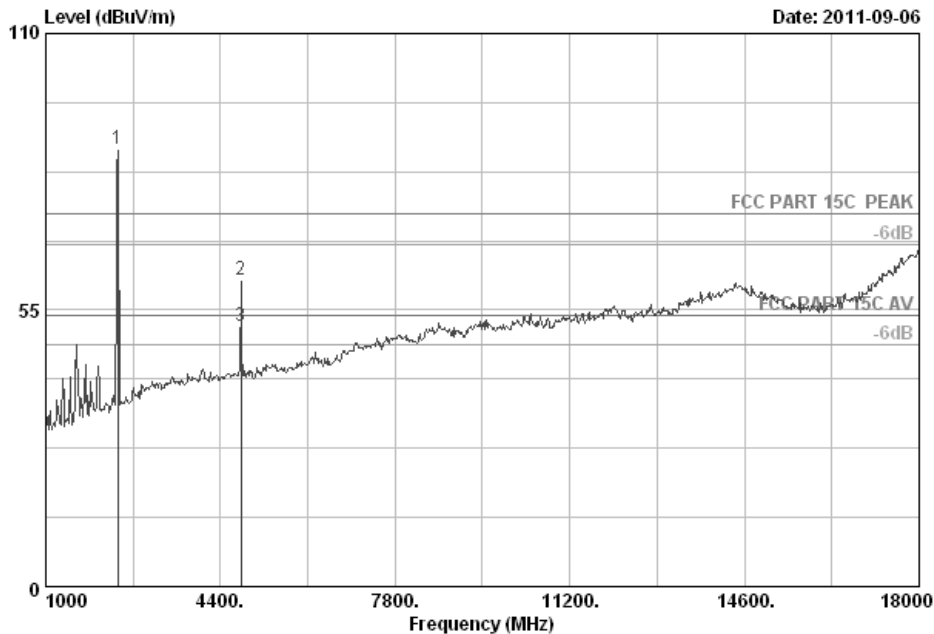
	Ant.	Cable	Amp.		Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1 2402.000	27.96	6.75	34.44	87.11	87.38	74.00	-13.38	Peak
2 4804.000	32.86	9.55	34.60	53.72	61.53	74.00	12.47	Peak
3 4804.000	32.86	9.55	34.60	44.42	52.23	54.00	1.77	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



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ShenZhen Science & Industry Park
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Data: 189 File: E:\2011 report data\TUV\2011-08-23.EM6 (195) Date: 2011-09-06



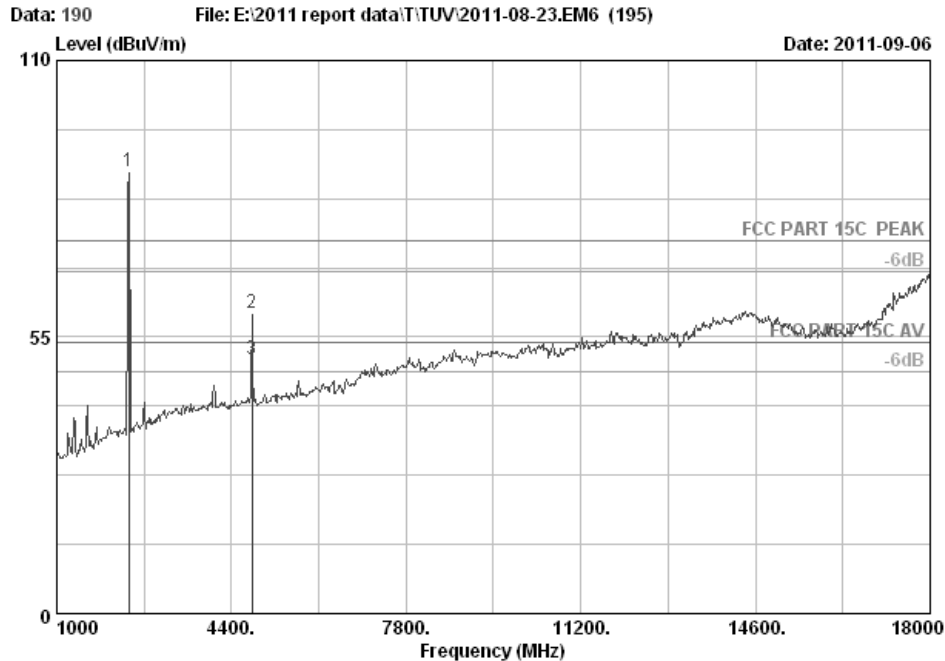
Site no. : 3m Chamber Data no. : 189
Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : Bluetooth Speaker
Power : DC 5V From Adapter Input AC 120V/60Hz
Test mode : GFSK 2402 MHz Tx
M/N : RF-SPX15
:

	Ant.	Cable	Amp.		Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)		
1 2402.000	27.96	6.75	34.44	86.78	87.05	74.00	-13.05	Peak	
2 4804.000	32.86	9.55	34.60	53.26	61.07	74.00	12.93	Peak	
3 4804.000	32.86	9.55	34.60	43.94	51.75	54.00	2.25	Average	

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



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ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057



Site no.	: 3m Chamber	Data no. :	190
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol. :	HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23°C/54%	Engineer :	Leo-Li
EUT	: Bluetooth Speaker		
Power	: DC 5V From Adapter Input AC 120V/60Hz		
Test mode	: 8DPSK 2402 MHz Tx		
M/N	: RF-SPX15		

	Ant.	Cable	Amp.		Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1 2402.000	27.96	6.75	34.44	87.52	87.79	74.00	-13.79	Peak
2 4804.000	32.86	9.55	34.60	51.91	59.72	74.00	14.28	Peak
3 4804.000	32.86	9.55	34.60	42.61	50.42	54.00	3.58	Average

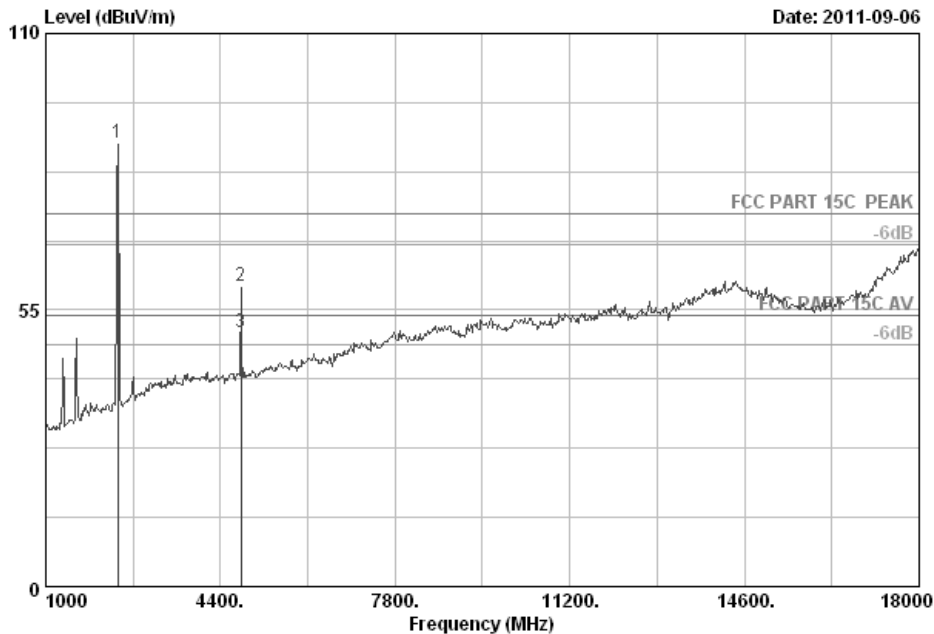
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



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ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
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Data: 191 File: E:\2011 report data\TUV\2011-08-23.EM6 (195) Date: 2011-09-06



Site no. : 3m Chamber Data no. : 191
Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : Bluetooth Speaker
Power : DC 5V From Adapter Input AC 120V/60Hz
Test mode : SDPSK 2402 MHz Tx
M/N : RF-SPX15
:

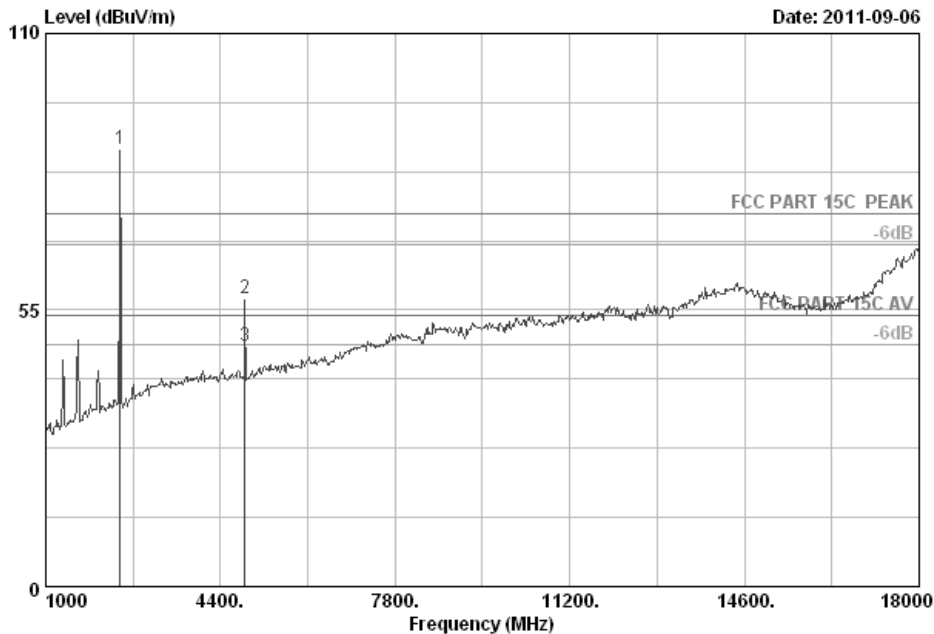
	Ant.	Cable	Amp.		Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1 2402.000	27.96	6.75	34.44	88.03	88.30	74.00	-14.30	Peak
2 4804.000	32.86	9.55	34.60	51.99	59.80	74.00	14.20	Peak
3 4804.000	32.86	9.55	34.60	42.69	50.50	54.00	3.50	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 192 File: E:\2011 report data\TUV\2011-08-23.EM6 (195) Date: 2011-09-06



Site no. : 3m Chamber Data no. : 192
Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : Bluetooth Speaker
Power : DC 5V From Adapter Input AC 120V/60Hz
Test mode : SDPSK 2441 MHz Tx
M/N : RF-SPX15
:

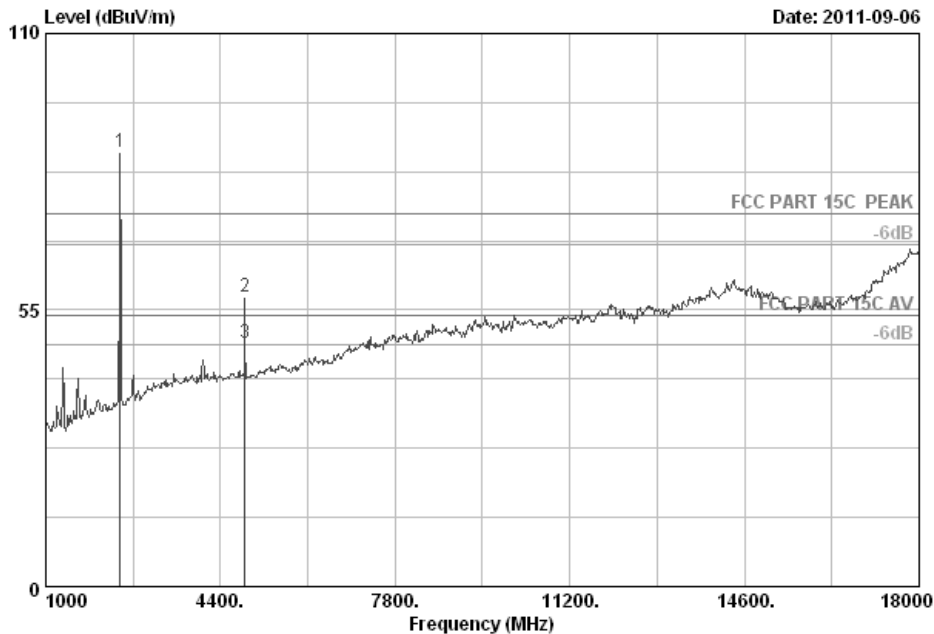
	Ant.	Cable	Amp.		Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBUV)	(dBUV/m)	(dBUV/m)	(dB)	
1 2441.000	28.03	6.81	34.44	86.57	86.97	74.00	-12.97	Peak
2 4882.000	32.98	9.62	34.60	49.15	57.15	74.00	16.85	Peak
3 4882.000	32.98	9.62	34.60	39.85	47.85	54.00	6.15	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
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Postcode:518057

Data: 193 File: E:\2011 report data\TUV\2011-08-23.EM6 (195) Date: 2011-09-06



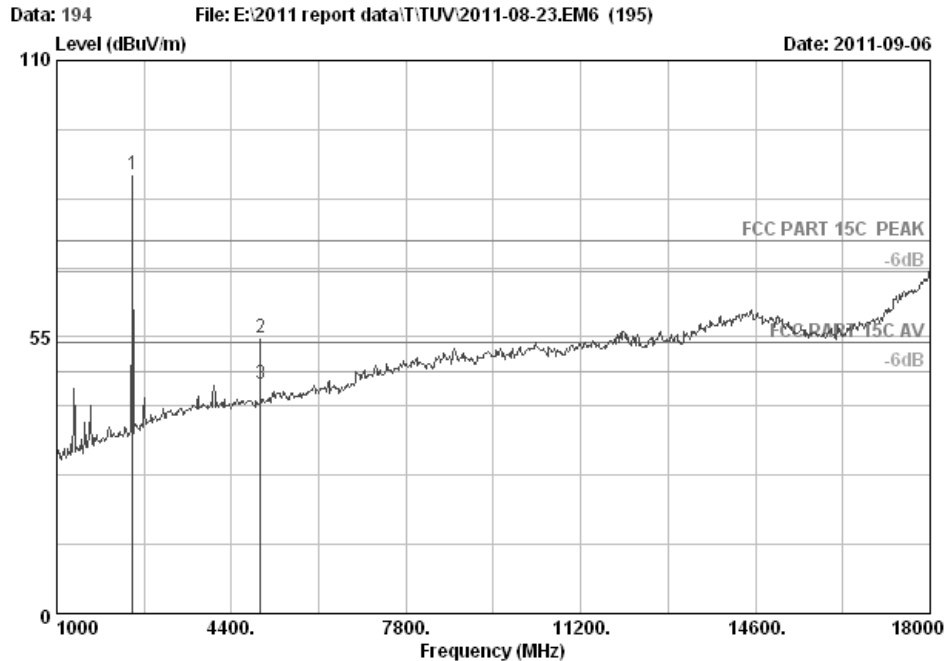
Site no. : 3m Chamber Data no. : 193
Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : Bluetooth Speaker
Power : DC 5V From Adapter Input AC 120V/60Hz
Test mode : SDPSK 2441 MHz Tx
M/N : RF-SPX15
:

	Ant.	Cable	Amp.		Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1 2441.000	28.03	6.81	34.44	85.99	86.39	74.00	-12.39	Peak
2 4882.000	32.98	9.62	34.60	49.70	57.70	74.00	16.30	Peak
3 4882.000	32.98	9.62	34.60	40.40	48.40	54.00	5.60	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



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ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057



Site no. : 3m Chamber Data no. : 194
Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : Bluetooth Speaker
Power : DC 5V From Adapter Input AC 120V/60Hz
Test mode : SDPSK 2480 MHz Tx
M/N : RF-SPX15
:

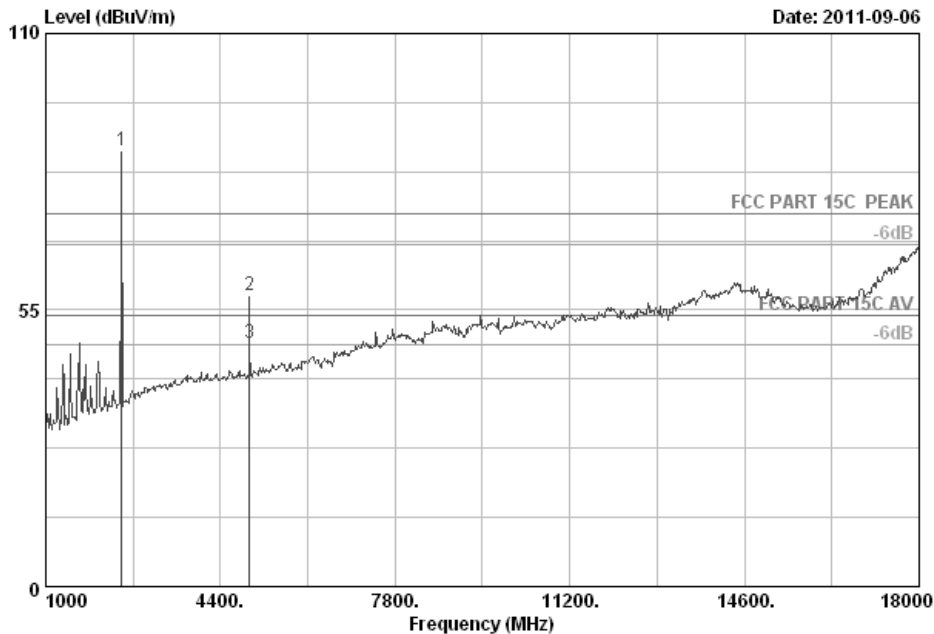
	Ant.	Cable	Amp.		Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1 2480.000	28.08	6.87	34.45	86.74	87.24	74.00	-13.24	Peak
2 4960.000	33.14	9.69	34.60	46.59	54.82	74.00	19.18	Peak
3 4960.000	33.14	9.69	34.60	37.29	45.52	54.00	8.48	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



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ShenZhen Science & Industry Park
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Data: 195 File: E:\2011 report data\TUV\2011-08-23.EM6 (195) Date: 2011-09-06



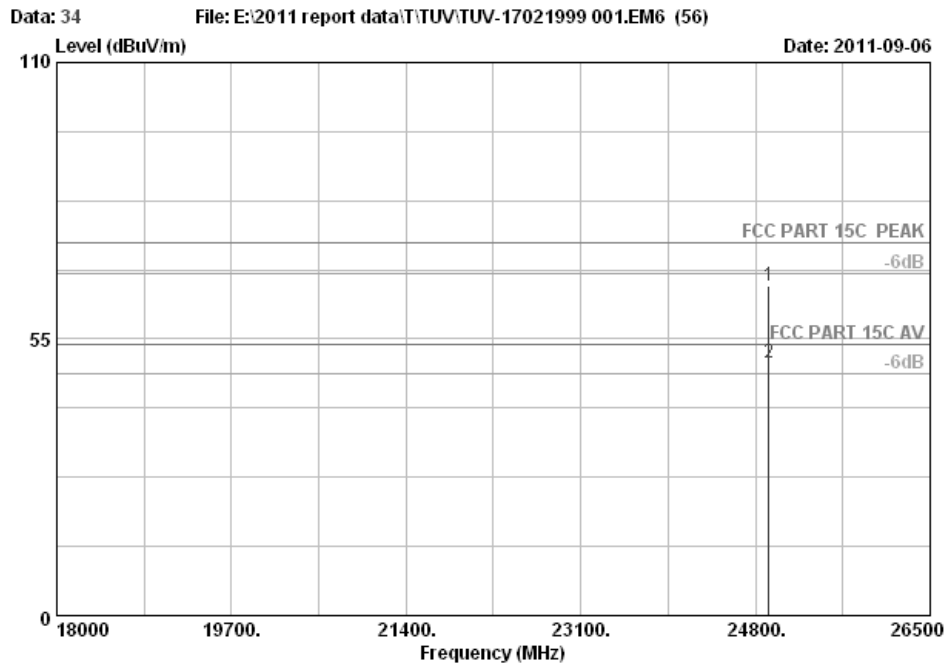
Site no. : 3m Chamber Data no. : 195
Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : Bluetooth Speaker
Power : DC 5V From Adapter Input AC 120V/60Hz
Test mode : SDPSK 2480 MHz Tx
M/N : RF-SPX15
:

	Ant.	Cable	Amp.		Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1 2480.000	28.08	6.87	34.45	86.13	86.63	74.00	-12.63	Peak
2 4960.000	33.14	9.69	34.60	49.60	57.83	74.00	16.17	Peak
3 4960.000	33.14	9.69	34.60	40.30	48.53	54.00	5.47	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



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ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
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Site no. : 3m Chamber Data no. : 34
Dis. / Ant. : 3m 3116 T Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : Bluetooth Speaker
Power : DC 5V From Adapter Input AC 120V/60Hz
Test mode : 8DPSK 2402 MHz Tx
M/N : RF-SPX15
:

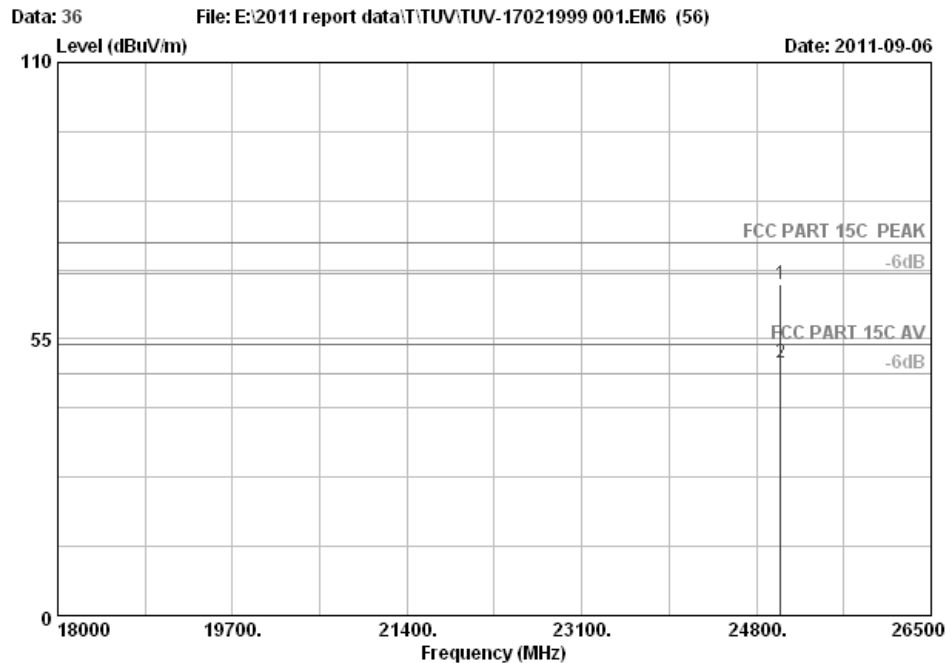
	Ant.	Cable	Amp.		Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1 24927.500	40.05	20.32	34.88	39.95	65.44	74.00	8.56	Peak
2 24927.500	40.05	20.32	34.88	24.89	50.38	54.00	3.62	Average

Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
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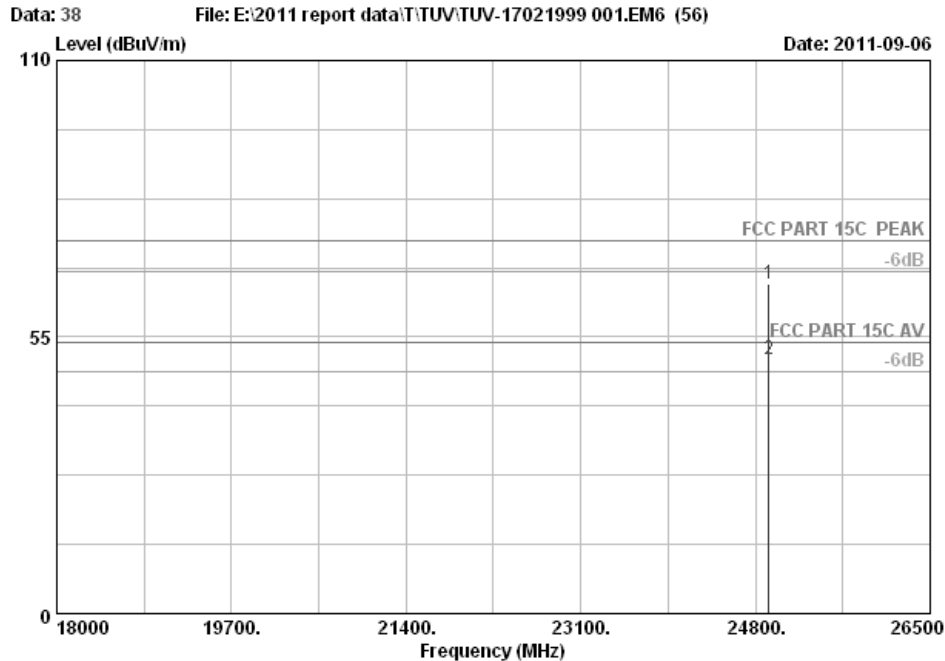
Site no. : 3m Chamber Data no. : 36
Dis. / Ant. : 3m 3116 T Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : Bluetooth Speaker
Power : DC 5V From Adapter Input AC 120V/60Hz
Test mode : 8DPSK 2402 MHz Tx
M/N : RF-SPX15
:

	Ant.	Cable	Amp.		Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1 25038.000	40.13	20.36	34.91	40.35	65.93	74.00	8.07	Peak
2 25038.000	40.13	20.36	34.91	24.69	50.27	54.00	3.73	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057



Site no. : 3m Chamber Data no. : 38
Dis. / Ant. : 3m 3116 T Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : Bluetooth Speaker
Power : DC 5V From Adapter Input AC 120V/60Hz
Test mode : 8DPSK 2441 MHz Tx
M/N : RF-SPX15
:

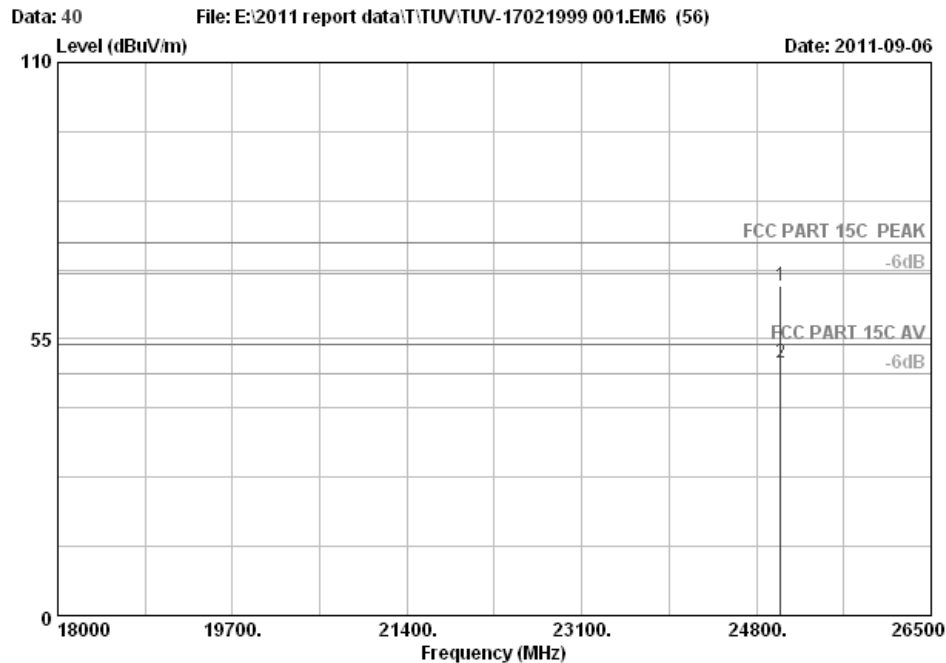
	Ant.	Cable	Amp.		Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1 24929.000	40.05	20.32	34.88	40.01	65.50	74.00	8.50	Peak
2 24929.000	40.05	20.32	34.88	25.10	50.59	54.00	3.41	Average

Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
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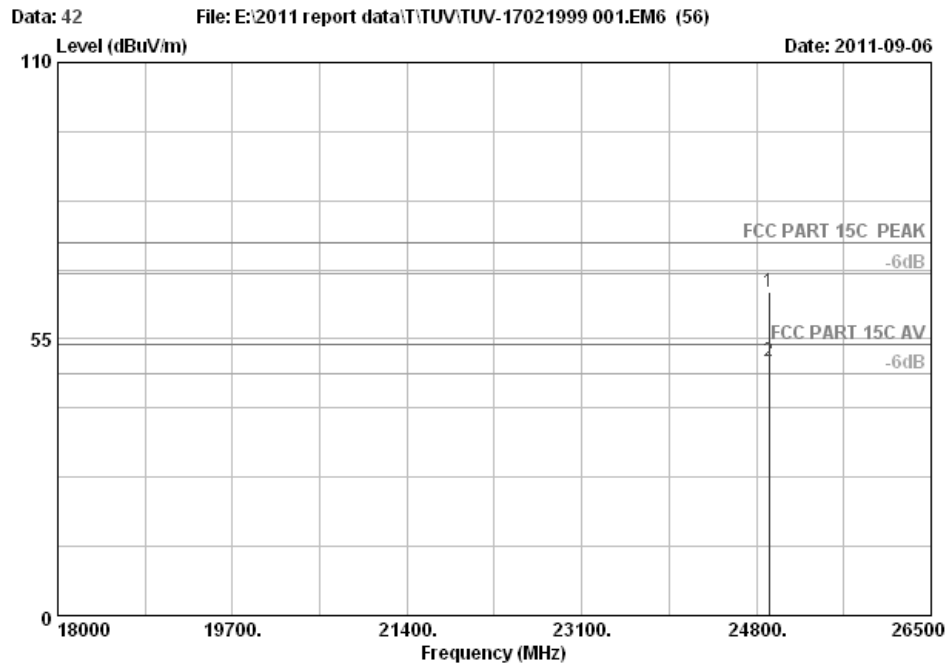
Site no. : 3m Chamber Data no. : 40
Dis. / Ant. : 3m 3116 T Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : Bluetooth Speaker
Power : DC 5V From Adapter Input AC 120V/60Hz
Test mode : 8DPSK 2441 MHz Tx
M/N : RF-SPX15
:

	Ant.	Cable	Amp.		Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1 25037.500	40.13	20.36	34.91	40.06	65.64	74.00	8.36	Peak
2 25037.500	40.13	20.36	34.91	24.56	50.14	54.00	3.86	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
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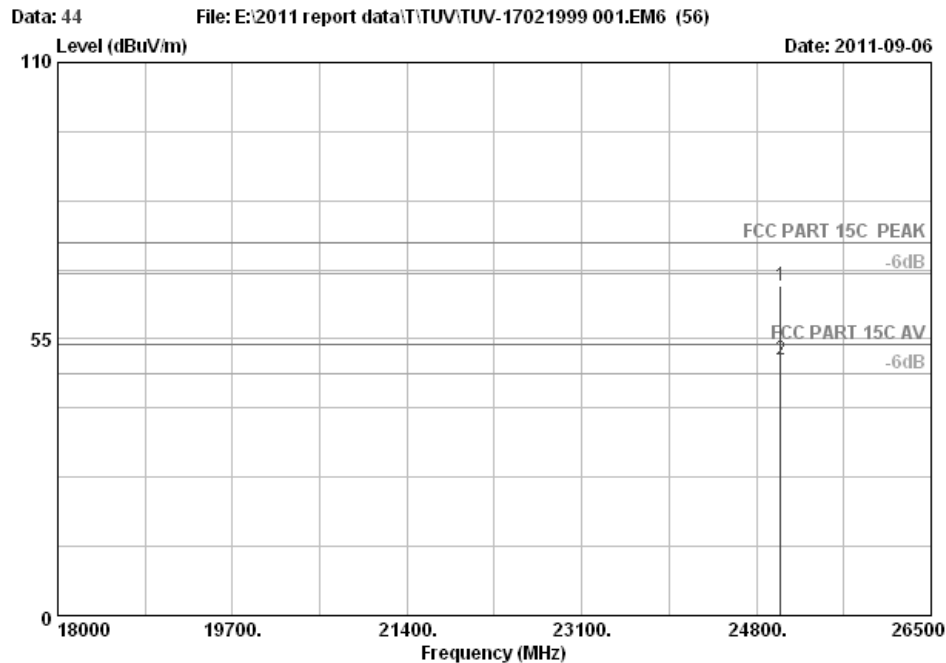
Site no. : 3m Chamber Data no. : 42
Dis. / Ant. : 3m 3116 T Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : Bluetooth Speaker
Power : DC 5V From Adapter Input AC 120V/60Hz
Test mode : 8DPSK 2480 MHz Tx
M/N : RF-SPX15
:

	Ant.	Cable	Amp.		Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1 24925.000	40.05	20.32	34.88	38.87	64.36	74.00	9.64	Peak
2 24925.000	40.05	20.32	34.88	25.12	50.61	54.00	3.39	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057



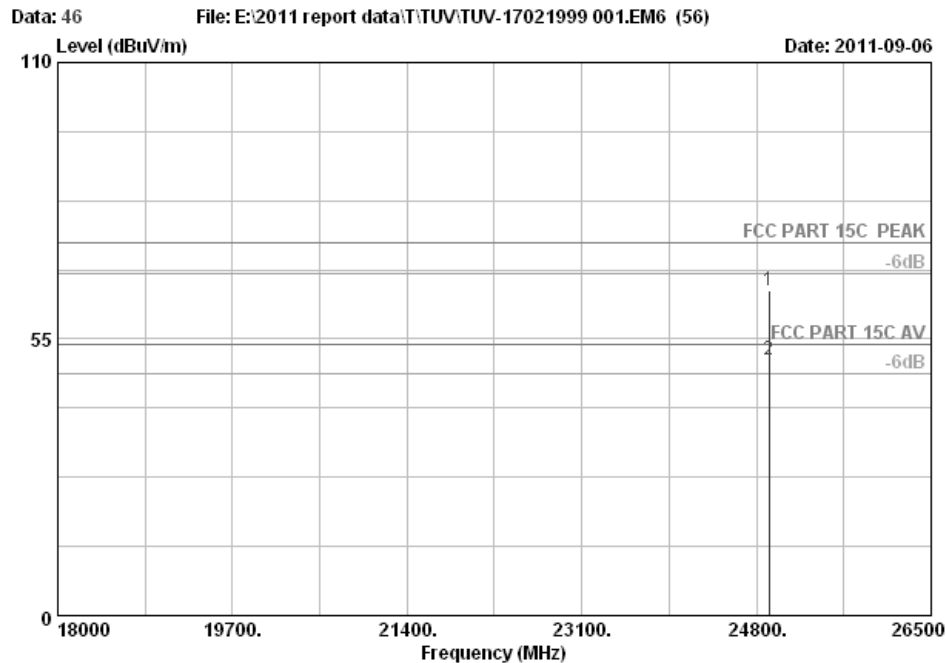
Site no. : 3m Chamber Data no. : 44
Dis. / Ant. : 3m 3116 T Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : Bluetooth Speaker
Power : DC 5V From Adapter Input AC 120V/60Hz
Test mode : 8DPSK 2480 MHz Tx
M/N : RF-SPX15
:

	Ant.	Cable	Amp.		Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1 25036.000	40.13	20.36	34.90	40.06	65.65	74.00	8.35	Peak
2 25036.000	40.13	20.36	34.90	25.20	50.79	54.00	3.21	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



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ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
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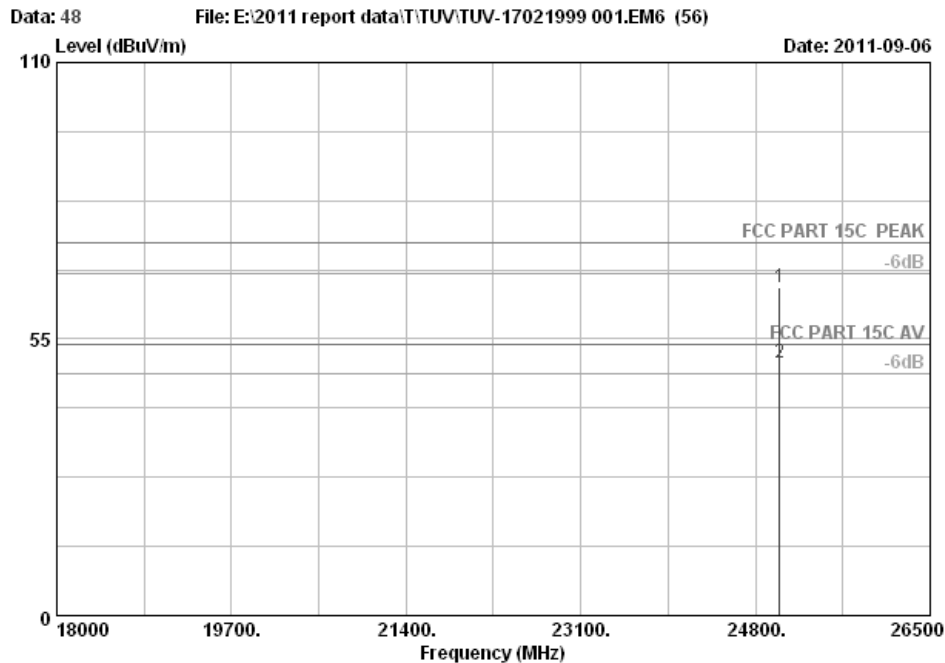
Site no. : 3m Chamber Data no. : 46
Dis. / Ant. : 3m 3116 T Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : Bluetooth Speaker
Power : DC 5V From Adapter Input AC 120V/60Hz
Test mode : GFSK 2402 MHz Tx
M/N : RF-SPX15
:

	Ant.	Cable	Amp.		Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1 24925.500	40.05	20.32	34.88	39.14	64.63	74.00	9.37	Peak
2 24925.500	40.05	20.32	34.88	25.33	50.82	54.00	3.18	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



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ShenZhen Science & Industry Park
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Tel:+86-755-26639495-7
Fax:+86-755-26632877
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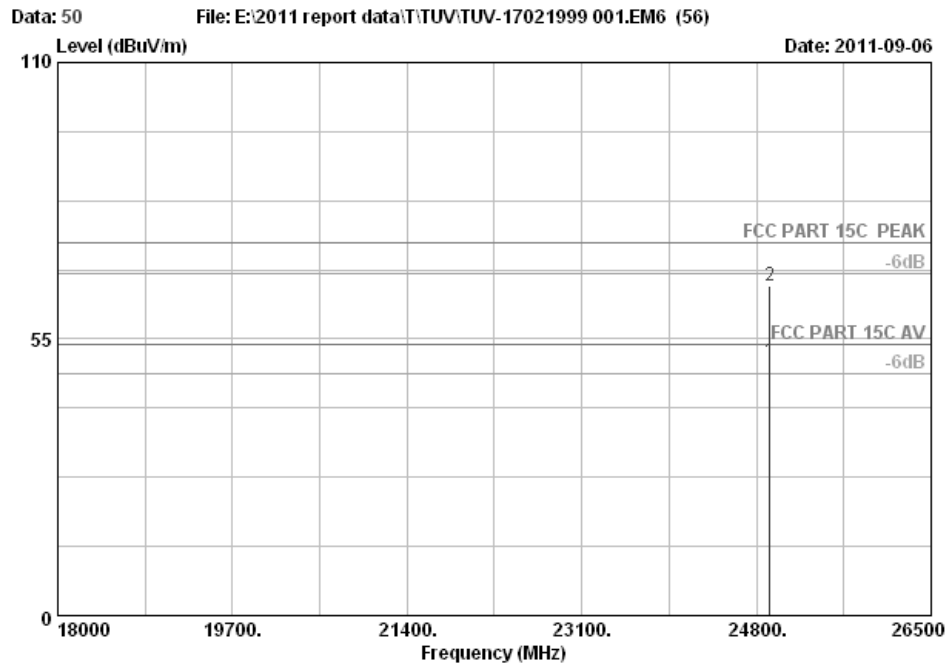
Site no. : 3m Chamber Data no. : 48
Dis. / Ant. : 3m 3116 T Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : Bluetooth Speaker
Power : DC 5V From Adapter Input AC 120V/60Hz
Test mode : GFSK 2402 MHz Tx
M/N : RF-SPX15
:

	Ant.	Cable	Amp.		Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1 25036.000	40.13	20.36	34.90	39.55	65.14	74.00	8.86	Peak
2 25036.000	40.13	20.36	34.90	24.58	50.17	54.00	3.83	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



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ShenZhen Science & Industry Park
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Tel:+86-755-26639495-7
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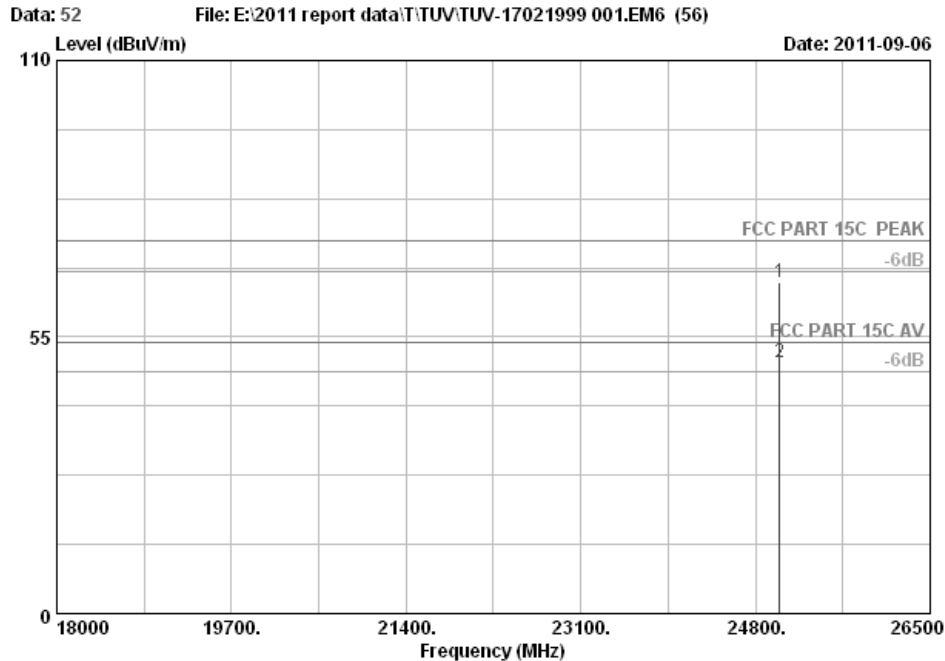
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Dis. / Ant. : 3m 3116 T Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : Bluetooth Speaker
Power : DC 5V From Adapter Input AC 120V/60Hz
Test mode : GFSK 2441 MHz Tx
M/N : RF-SPX15
:

	Ant.	Cable	Amp.		Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1 24929.000	40.05	20.32	34.88	25.09	50.58	54.00	3.42	Average
2 24929.000	40.05	20.32	34.88	40.04	65.53	74.00	8.47	Peak

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



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ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
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Fax:+86-755-26632877
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Site no. : 3m Chamber Data no. : 52
Dis. / Ant. : 3m 3116 T Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : Bluetooth Speaker
Power : DC 5V From Adapter Input AC 120V/60Hz
Test mode : GFSK 2441 MHz Tx
M/N : RF-SPX15
:

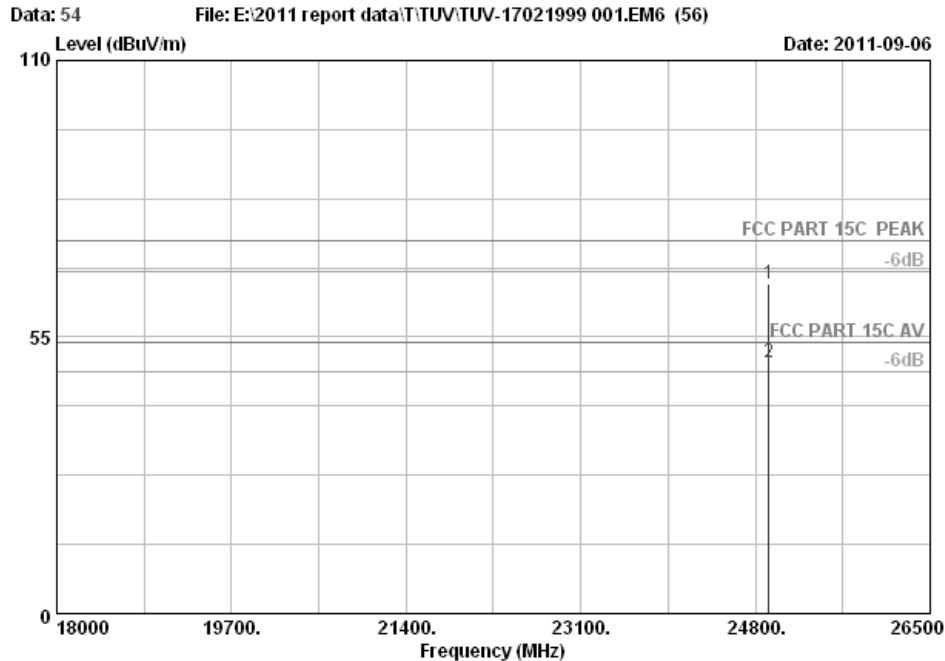
	Ant.	Cable	Amp.		Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1 25031.000	40.13	20.36	34.90	40.31	65.90	74.00	8.10	Peak
2 25031.000	40.13	20.36	34.90	24.26	49.85	54.00	4.15	Average

Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



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Tel:+86-755-26639495-7
Fax:+86-755-26632877
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Site no. : 3m Chamber Data no. : 54
Dis. / Ant. : 3m 3116 T Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : Bluetooth Speaker
Power : DC 5V From Adapter Input AC 120V/60Hz
Test mode : GFSK 2480 MHz Tx
M/N : RF-SPX15
:

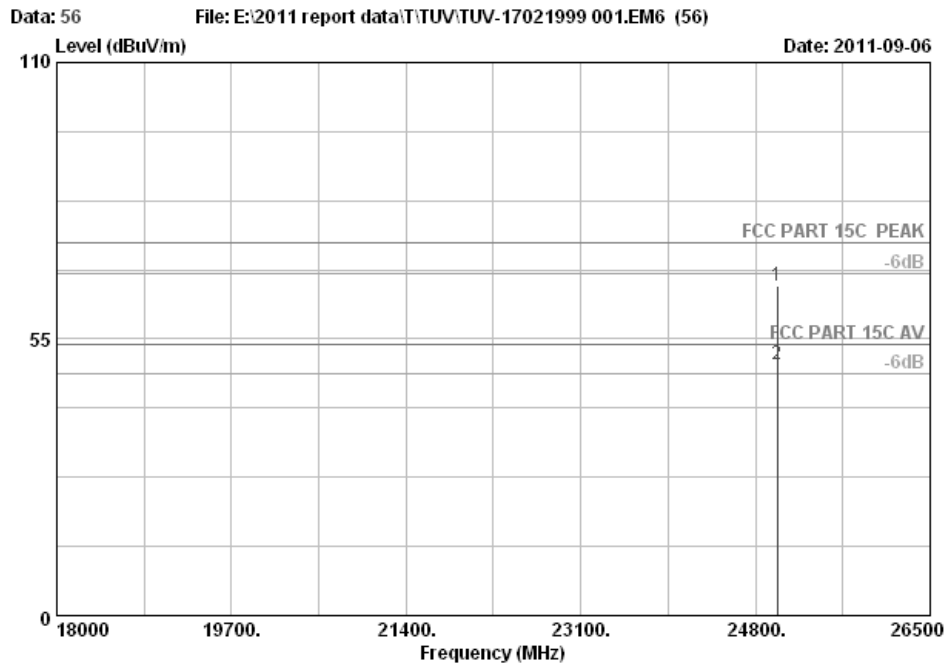
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Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1 24930.000	40.05	20.32	34.88	40.01	65.50	74.00	8.50	Peak
2 24930.000	40.05	20.32	34.88	24.49	49.98	54.00	4.02	Average

Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



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ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057



Site no. : 3m Chamber Data no. : 56
Dis. / Ant. : 3m 3116 T Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : Bluetooth Speaker
Power : DC 5V From Adapter Input AC 120V/60Hz
Test mode : GFSK 2480 MHz Tx
M/N : RF-SPX15
:

	Ant.	Cable	Amp.		Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1 25012.000	40.12	20.35	34.90	40.13	65.70	74.00	8.30	Peak
2 25012.000	40.12	20.35	34.90	24.25	49.82	54.00	4.18	Average

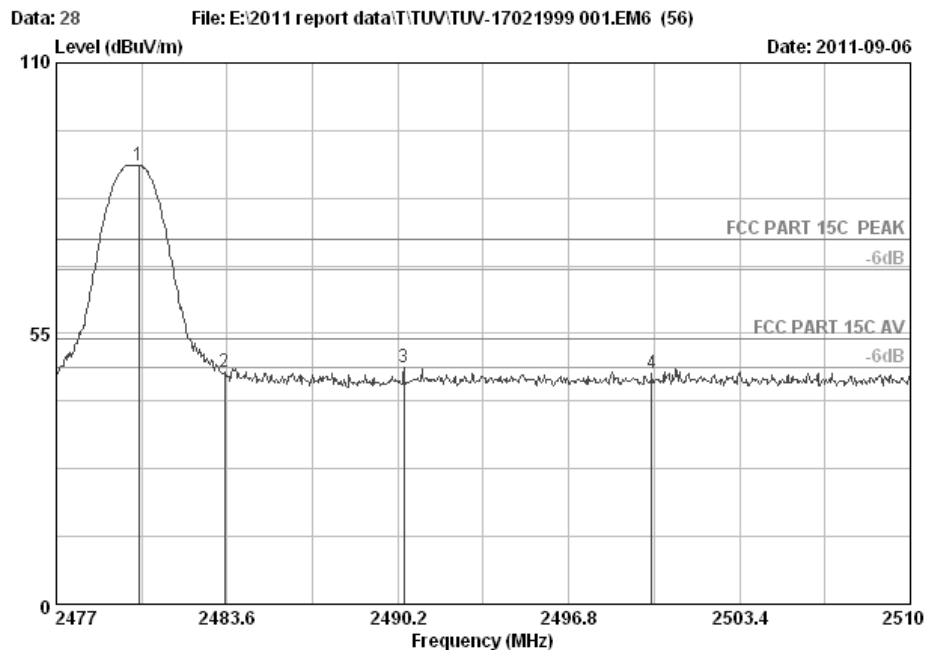
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Test Graphs of Radiated Emissions Band Edge



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Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057



Site no.	: 3m Chamber	Data no. :	28
Dis. / Ant.	: 3m 2011 3115 4580	Ant. pol. :	VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23°C/54%	Engineer :	Leo-Li
EUT	: Bluetooth Speaker		
Power	: DC 5V From Adapter Input AC 120V/60Hz		
Test mode	: GFSK 2480 MHz Tx		
M/N	: RF-SPX15		

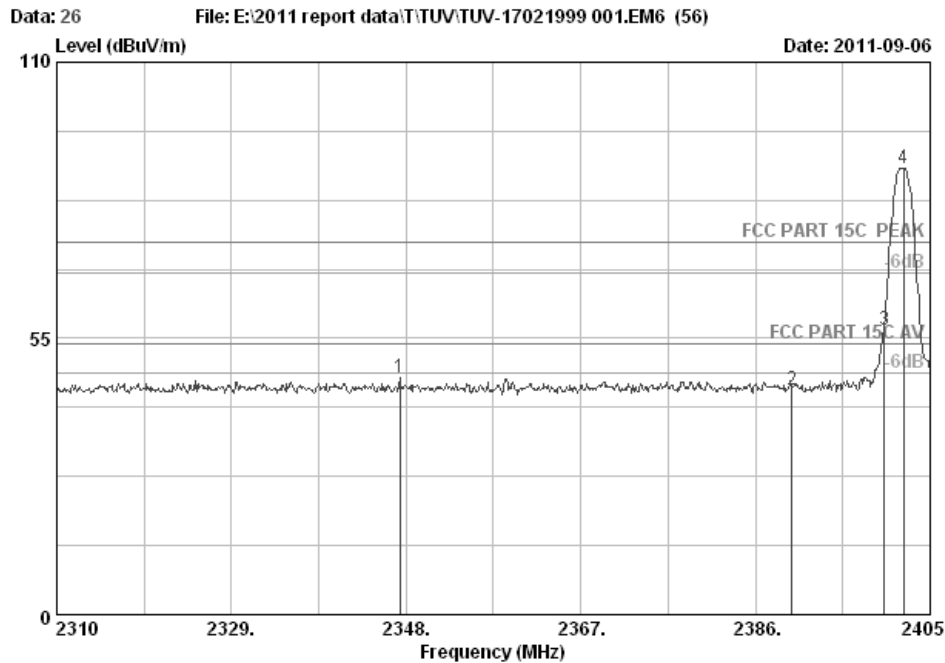
	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2480.201	28.08	6.87	34.45	88.71	89.21	74.00	-15.21	Peak
2	2483.500	28.08	6.90	34.45	46.62	47.15	74.00	26.85	Peak
3	2490.431	28.10	6.90	34.45	47.56	48.11	74.00	25.89	Peak
4	2500.000	28.10	6.90	34.45	46.28	46.83	74.00	27.17	Peak

Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057



Site no. : 3m Chamber Data no. : 26
Dis. / Ant. : 3m 2011 3115 4580 Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Leo-Li
EUT : Bluetooth Speaker
Power : DC 5V From Adapter Input AC 120V/60Hz
Test mode : GFSK 2402 MHz Tx
M/N : RF-SPX15
:

	Ant.	Cable	Amp.		Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1 2347.335	27.88	6.65	34.44	47.19	47.28	74.00	26.72	Peak
2 2390.000	27.96	6.72	34.44	44.49	44.73	74.00	29.27	Peak
3 2400.000	27.96	6.75	34.44	56.43	56.70	74.00	17.30	Peak
4 2402.150	27.96	6.75	34.44	88.68	88.95	74.00	-14.95	Peak

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.