

# FC

## Test Report

Product Name	Bluetooth Stereo Headset
Model No.	CZ-800S
FCC ID.	UQS-CZ-800S

Applicant	J-TEK INCORPORATION
Address	2F-1, No. 83, Sec. 2, Gongdaowu Rd., Hsinchu City 30070, Taiwan

Date of Receipt	Dec.19, 2006
Issued Date	Jan. 29, 2007
Report No.	06CL109-RFUSP06V01

The Test Results relate only to the samples tested.  
The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.  
This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

# Test Report Certification

Issued Date: Jan. 29, 2007

Report No.: 06CL109-RFUSP06V01



Product Name	Bluetooth Stereo Headset
Applicant	J-TEK INCORPORATION
Address	2F-1, No. 83, Sec. 2, Gongdaowu Rd., Hsinchu City 30070, Taiwan
Model No.	CZ-800S
FCC ID.	UQS-CZ-800S
Rated Voltage	AC 120V/60Hz
Working Voltage	Battery 3.7V
Trade Name	JTI
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2005 ANSI C63.4: 2003
Test Result	Complied



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Documented By :

*Leven Huang*

( Leven Huang )



Tested By :

*Tom Hsieh*

( Tom Hsieh )



0914

Approved By :

*George Chen*

( George Chen )

# TABLE OF CONTENTS

Description	Page
<b>1. GENERAL INFORMATION .....</b>	<b>5</b>
1.1. EUT Description.....	5
1.2. Operational Description.....	7
1.3. Test System Details .....	8
1.4. Configuration of Test System .....	8
1.5. EUT Exercise Software .....	9
1.6. Test Facility .....	10
<b>2. CONDUCTED EMISSION .....</b>	<b>11</b>
2.1. Test Equipment.....	11
2.2. Test Setup .....	11
2.3. Limits.....	12
2.4. Test Procedure .....	12
2.5. Uncertainty .....	12
2.6. Test Result of Conducted Emission.....	13
<b>3. PEAK POWER OUTPUT .....</b>	<b>17</b>
3.1. Test Equipment.....	17
3.2. Test Setup .....	17
3.3. Limit.....	17
3.4. Uncertainty .....	17
3.5. Test Result of Peak Power Output.....	18
<b>4. RADIATED EMISSION .....</b>	<b>19</b>
4.1. Test Equipment.....	19
4.2. Test Setup .....	20
4.3. Limits.....	20
4.4. Test Procedure .....	21
4.5. Uncertainty .....	21
4.6. Test Result of Radiated Emission.....	22
<b>5. BAND EDGE .....</b>	<b>28</b>
5.1. Test Equipment.....	28
5.2. Test Setup .....	28
5.3. Limit.....	29
5.4. Test Procedure .....	29
5.5. Uncertainty .....	29
5.6. Test Result of Band Edge .....	30
<b>6. CHANNEL NUMBER.....</b>	<b>38</b>
6.1. Test Equipment.....	38

6.2.	Test Setup .....	38
6.3.	Limit. ....	38
6.4.	Uncertainty .....	38
6.5.	Test Result of Channel Number.....	39
<b>7.</b>	<b>CHANNEL SEPARATION.....</b>	<b>40</b>
7.1.	Test Equipment .....	40
7.2.	Test Setup .....	40
7.3.	Limit. ....	40
7.4.	Uncertainty .....	40
7.5.	Test Result of Channel Separation.....	41
<b>8.</b>	<b>DWELL TIME .....</b>	<b>42</b>
8.1.	Test Equipment .....	42
8.2.	Test Setup .....	42
8.3.	Limit. ....	42
8.4.	Uncertainty .....	42
8.5.	Test Result of Dwell Time .....	43
<b>9.</b>	<b>OCCUPIED BANDWIDTH .....</b>	<b>45</b>
9.1.	Test Equipment .....	45
9.2.	Test Setup .....	45
9.3.	Limits.....	45
9.4.	Uncertainty .....	45
9.5.	Test Result of Occupied Bandwidth .....	46
<b>10.</b>	<b>EMI REDUCTION METHOD DURING COMPLIANCE TESTING .....</b>	<b>49</b>

Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs

## 1. GENERAL INFORMATION

### 1.1. EUT Description

Product Name	Bluetooth Stereo Headset
Trade Name	JTI
FCC ID.	UQS-CZ-800S
Model No.	CZ-800S
Frequency Range	2402 – 2480MHz
Type of Modulation	FHSS
Channel Number	79
Channel Control	Auto
Antenna Type	Chip Antenna
Antenna Gain	Refer to the table “Antenna List”

Component	
USB Cable	Non-Shielded, 1.8m
Power Adapter	MFR: Highcell Tech, M/N:HL-AF002A-050060 Input: AC 100-240V, 50-60Hz, 0.5A Output: DC 5V, 600mA Cable Out: Non-Shielded, 1.6m

#### Antenna List

No.	Manufacturer	Part No.	Peak Gain
1	ACX	AT7020-B2R4HAA_	2dBi for 2.4 GHz

## Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 00:	2402 MHz	Channel 20:	2422 MHz	Channel 40:	2442 MHz	Channel 60:	2462 MHz
Channel 01:	2403 MHz	Channel 21:	2423 MHz	Channel 41:	2443 MHz	Channel 61:	2463 MHz
Channel 02:	2404 MHz	Channel 22:	2424 MHz	Channel 42:	2444 MHz	Channel 62:	2464 MHz
Channel 03:	2405 MHz	Channel 23:	2425 MHz	Channel 43:	2445 MHz	Channel 63:	2465 MHz
Channel 04:	2406 MHz	Channel 24:	2426 MHz	Channel 44:	2446 MHz	Channel 64:	2466 MHz
Channel 05:	2407 MHz	Channel 25:	2427 MHz	Channel 45:	2447 MHz	Channel 65:	2467 MHz
Channel 06:	2408 MHz	Channel 26:	2428 MHz	Channel 46:	2448 MHz	Channel 66:	2468 MHz
Channel 07:	2409 MHz	Channel 27:	2429 MHz	Channel 47:	2449 MHz	Channel 67:	2469 MHz
Channel 08:	2410 MHz	Channel 28:	2430 MHz	Channel 48:	2450 MHz	Channel 68:	2470 MHz
Channel 09:	2411 MHz	Channel 29:	2431 MHz	Channel 49:	2451 MHz	Channel 69:	2471 MHz
Channel 10:	2412 MHz	Channel 30:	2432 MHz	Channel 50:	2452 MHz	Channel 70:	2472 MHz
Channel 11:	2413 MHz	Channel 31:	2433 MHz	Channel 51:	2453 MHz	Channel 71:	2473 MHz
Channel 12:	2414 MHz	Channel 32:	2434 MHz	Channel 52:	2454 MHz	Channel 72:	2474 MHz
Channel 13:	2415 MHz	Channel 33:	2435 MHz	Channel 53:	2455 MHz	Channel 73:	2475 MHz
Channel 14:	2416 MHz	Channel 34:	2436 MHz	Channel 54:	2456 MHz	Channel 74:	2476 MHz
Channel 15:	2417 MHz	Channel 35:	2437 MHz	Channel 55:	2457 MHz	Channel 75:	2477 MHz
Channel 16:	2418 MHz	Channel 36:	2438 MHz	Channel 56:	2458 MHz	Channel 76:	2478 MHz
Channel 17:	2419 MHz	Channel 37:	2439 MHz	Channel 57:	2459 MHz	Channel 77:	2479 MHz
Channel 18:	2420 MHz	Channel 38:	2440 MHz	Channel 58:	2460 MHz	Channel 78:	2480 MHz
Channel 19:	2421 MHz	Channel 39:	2441 MHz	Channel 59:	2461 MHz		

The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals

Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. The transmitter is presented with a continuous data stream. In addition, a system employing short transmission bursts must comply with the definition of a frequency hopping system and must distribute its 79 channels and over the minimum number of hopping channels (75 channels).

The incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hopsets to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

Note:

1. The EUT is a Bluetooth Stereo Headset with a built-in 2.4GHz transceiver.
2. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
3. Regarding to the operation frequency band, the lowest, middle, and highest frequency are selected to perform the test.
4. QuietTek verified constructions and functions, which are shown in the test report, in typical operation.
5. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

## 1.2. Operational Description

The EUT is a Bluetooth Stereo Headset with a built-in 2.4GHz transceiver. It supports 79 channels in 2402-2480MHz and the data rate of 2Mbps. The signals are modulated by FHSS. The antenna is a chip antenna.

The EUT provides wireless technology that revolutionizes personal connectivity. It is the solution for the seamless integration of Bluetooth technology into personal computer enabling short-range wireless connections between desktop/laptop computers, Bluetooth-enabled peripherals, and portable handheld devices.

Test Mode	Mode 1: Transmitter
	Mode 2: Charging with AC Adapter
	Mode 3: Charging with the USB

### 1.3. Test System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Charging with the AC adapter

	Product	Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
(1)	N/A	N/A	N/A	N/A	N/A	N/A

	Signal Cable Type	Signal cable Description
A.	N/A	N/A

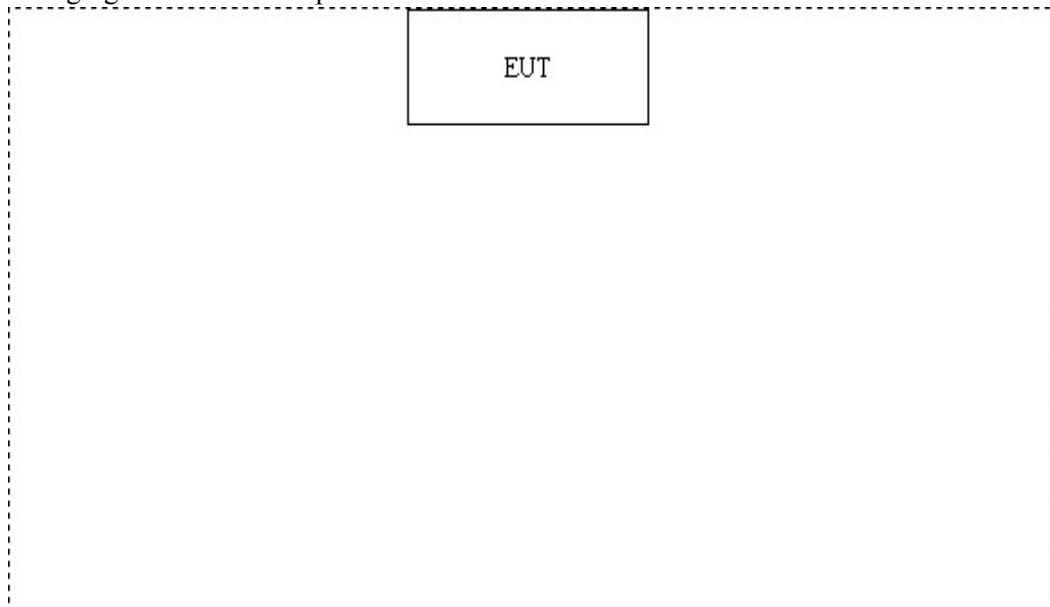
Charging with the USB

	Product	Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
(1)	Notebook PC	DELL	PPT	N/A	DoC	Non-Shielded, 0.8m

	Signal Cable Type	Signal cable Description
A.	USB Cable	Shielded, 1.8m

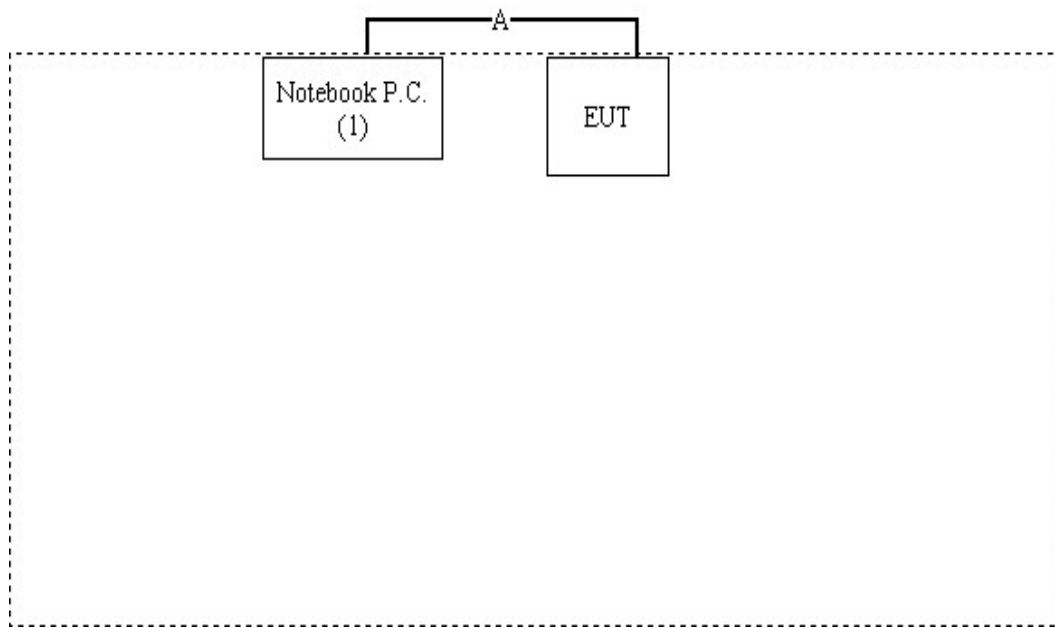
### 1.4. Configuration of Test System

Charging with the AC adapter





### Charging with the USB



### 1.5. EUT Exercise Software

(1)	Connect the EUT to a notebook through the CSR development kit.
(2)	Execute BlueTest.exe on the notebook.
(3)	Configure the test channel and the packet type.
(4)	Press “execute” to start the continuous transmission.
(5)	Disconnect the EUT from the notebook.
(6)	Setup the EUT as shown in section 1.4.
(7)	Verify that the EUT works correctly.

## 1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	30-65
Barometric pressure (mbar)	860-1060	950-1000

Site Description: Federal Communications Commission  
FCC Engineering Laboratory  
7435 Oakland Mills Road  
Columbia, MD 21046  
Reference 31040/SIT1300F2



Accreditation on NVLAP  
NVLAP Lab Code: 200533-0



Site Name: Quietek Corporation  
Site Address: No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen,  
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TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789  
E-Mail : [service@quietek.com](mailto:service@quietek.com)



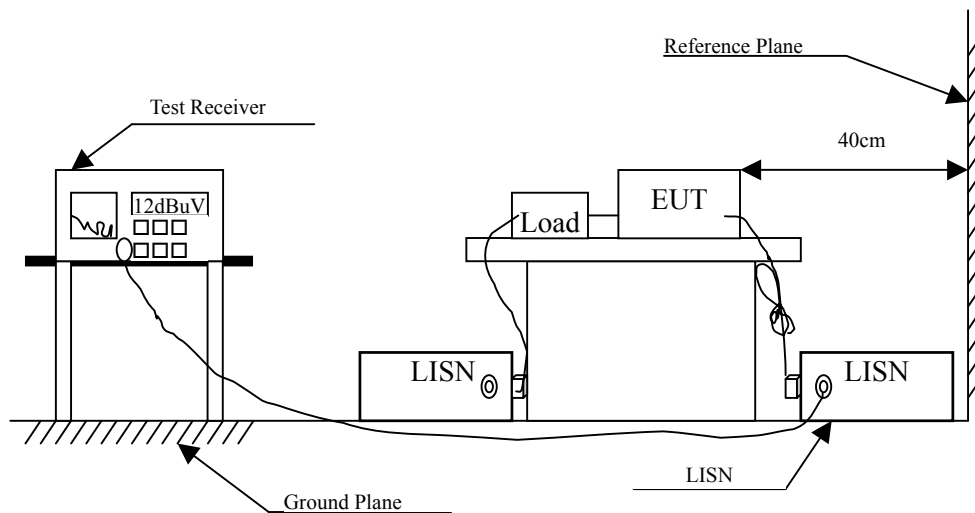
## 2. Conducted Emission

## 2.1. Test Equipment

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal.	Remark
1	EMI Test Receiver	R&S	ESCS 30/100367	Aug., 2006	
2	LISN	R&S	ESH3-Z5/836679/023	July, 2006	EUT
3	LISN	R&S	ESH3-Z5/836679/017	Feb., 2006	Peripherals
4	Pulse Limiter	R&S	ESH3-Z2/357.8810.52	Sep., 2006	
5	No.7 Shielded Room			N/A	

Note: All equipments are calibrated every one year.

## 2.2. Test Setup



### 2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

### 2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

### 2.5. Uncertainty

± 2.26 dB

## 2.6. Test Result of Conducted Emission

Product : Bluetooth Stereo Headset  
 Test Item : Conducted Emission Test  
 Power Line : Line 1  
 Test Mode : Mode 2: Charging with AC Adapter

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV	dB	dBuV
<b>LINE 1</b>					
<b>Quasi-Peak</b>					
0.228	0.203	43.500	43.703	-20.068	63.771
0.268	0.209	51.640	51.849	-10.780	62.629
0.513	0.216	43.860	44.076	-11.924	56.000
0.564	0.217	34.480	34.697	-21.303	56.000
0.923	0.232	35.810	36.042	-19.958	56.000
1.599	0.261	35.250	35.511	-20.489	56.000
<b>Average</b>					
0.228	0.203	25.040	25.243	-28.528	53.771
0.268	0.209	25.760	25.969	-26.660	52.629
0.513	0.216	22.420	22.636	-23.364	46.000
0.564	0.217	18.340	18.557	-27.443	46.000
0.923	0.232	21.530	21.762	-24.238	46.000
1.599	0.261	19.690	19.951	-26.049	46.000

Note:

1. All reading levels are quasi-peak and average value.
2. "■" means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Product : Bluetooth Stereo Headset  
 Test Item : Conducted Emission Test  
 Power Line : Line 2  
 Test Mode : Mode 2: Charging with AC Adapter

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV	dB	dBuV
<b>LINE 2</b>					
<b>Quasi-Peak</b>					
0.173	0.202	43.600	43.802	-21.541	65.343
0.180	0.202	43.570	43.772	-21.371	65.143
0.263	0.203	49.670	49.873	-12.898	62.771
0.443	0.216	36.920	37.136	-20.493	57.629
0.517	0.216	41.480	41.696	-14.304	56.000
0.841	0.231	31.160	31.391	-24.609	56.000
<b>Average</b>					
0.173	0.202	25.590	25.792	-29.551	55.343
0.180	0.202	25.860	26.062	-29.081	55.143
0.263	0.203	25.560	25.763	-27.008	52.771
0.443	0.216	19.330	19.546	-28.083	47.629
0.517	0.216	21.870	22.086	-23.914	46.000
0.841	0.231	20.890	21.121	-24.879	46.000

Note:

1. All reading levels are quasi-peak and average value.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Product : Bluetooth Stereo Headset  
 Test Item : Conducted Emission Test  
 Power Line : Line 1  
 Test Mode : Mode 3: Charging with the USB

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV	dB	dBuV
<b>LINE 1</b>					
<b>Quasi-Peak</b>					
0.173	0.202	47.040	47.242	-18.101	65.343
0.227	0.203	43.280	43.483	-20.317	63.800
0.276	0.212	36.390	36.602	-25.798	62.400
0.332	0.214	35.060	35.274	-25.526	60.800
0.406	0.215	28.630	28.845	-29.841	58.686
0.553	0.217	31.570	31.787	-24.213	56.000
<b>Average</b>					
0.173	0.202	34.960	35.162	-20.181	55.343
0.227	0.203	30.300	30.503	-23.297	53.800
0.276	0.212	21.970	22.182	-30.218	52.400
0.332	0.214	22.490	22.704	-28.096	50.800
0.406	0.215	16.800	17.015	-31.671	48.686
0.553	0.217	20.870	21.087	-24.913	46.000

Note:

1. All reading levels are quasi-peak and average value.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Product : Bluetooth Stereo Headset  
Test Item : Conducted Emission Test  
Power Line : Line 2  
Test Mode : Mode 3: Charging with the USB

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV	dB	dBuV
<b>LINE 2</b>					
<b>Quasi-Peak</b>					
0.185	0.202	46.020	46.222	-18.778	65.000
0.219	0.202	39.010	39.212	-24.817	64.029
0.234	0.203	41.310	41.513	-22.087	63.600
0.356	0.214	34.790	35.004	-25.110	60.114
0.481	0.216	30.360	30.576	-25.967	56.543
0.681	0.223	29.790	30.013	-25.987	56.000
<b>Average</b>					
0.185	0.202	33.980	34.182	-20.818	55.000
0.219	0.202	20.320	20.522	-33.507	54.029
0.234	0.203	28.650	28.853	-24.747	53.600
0.356	0.214	20.790	21.004	-29.110	50.114
0.481	0.216	17.580	17.796	-28.747	46.543
0.681	0.223	18.740	18.963	-27.037	46.000

Note:

1. All reading levels are quasi-peak and average value.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.



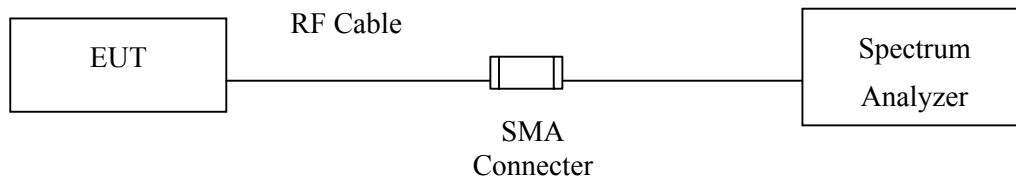
### 3. Peak Power Output

#### 3.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	R & S	FSP40 / 100170	Nov., 2006

Note: 1. All equipments are calibrated every one year.  
2. Test instruments marked by "X" are used to measure the final test results.

#### 3.2. Test Setup



#### 3.3. Limit

The maximum peak power shall be less 1Watt.

#### 3.4. Uncertainty

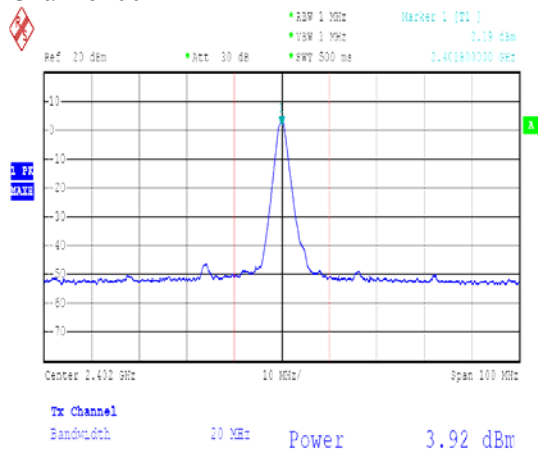
$\pm 1.27$  dB

### 3.5. Test Result of Peak Power Output

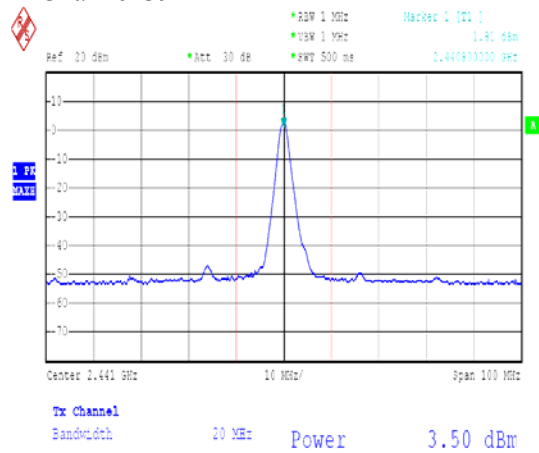
Product : Bluetooth Stereo Headset  
 Test Item : Peak Power Output  
 Test Site : CTR1  
 Test Mode : Mode 1: Transmitter

Channel No.	Frequency (MHz)	Measurement	Required Limit	Result
Channel 00	2402.00	3.92 dBm	1 Watt= 30 dBm	Pass
Channel 39	2441.00	3.50 dBm	1 Watt= 30 dBm	Pass
Channel 78	2480.00	3.28 dBm	1 Watt= 30 dBm	Pass

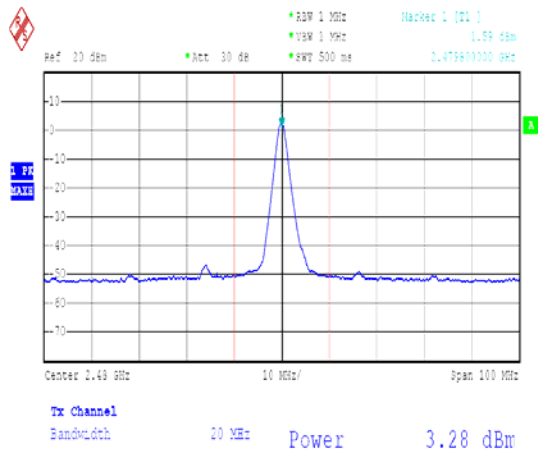
Channel 00



Channel 39



Channel 78



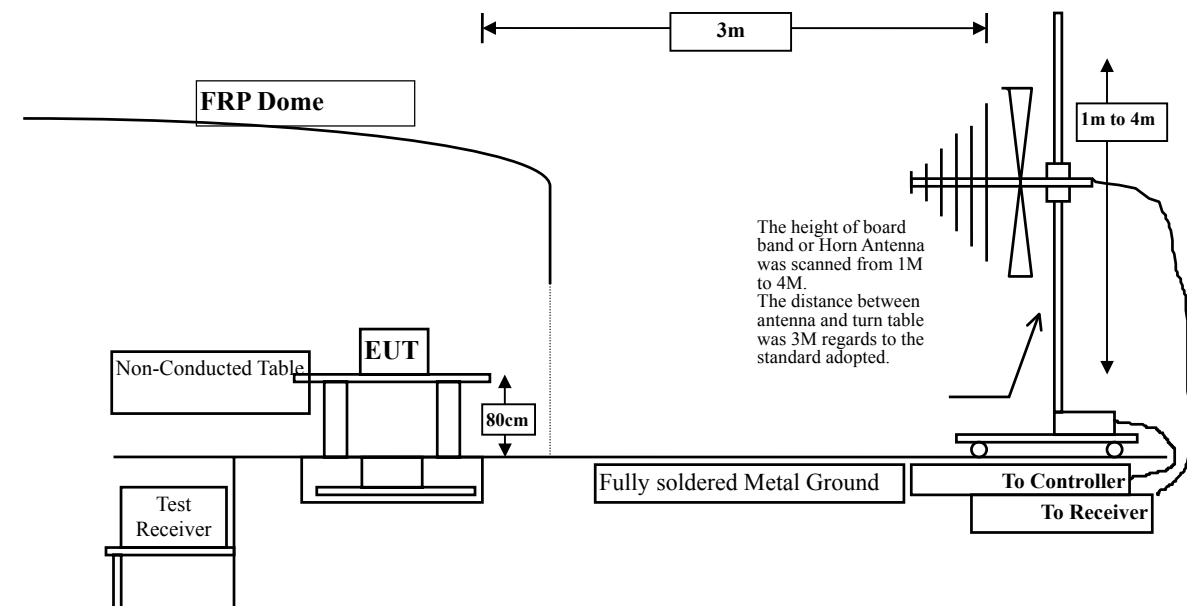
## 4. Radiated Emission

### 4.1. Test Equipment

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
<input type="checkbox"/> Site # 1		Test Receiver	R & S	ESVS 10 / 834468/003	May, 2006
		Spectrum Analyzer	Advantest	R3162/ 00803480	May, 2006
		Pre-Amplifier	Advantest	BB525C/ 3307A01812	May, 2006
		Bilog Antenna	SCHAFFNER	CBL6112B / 2697	Sep., 2006
<input type="checkbox"/> Site # 2		Test Receiver	R & S	ESCS 30 / 836858 / 022	May, 2006
		Spectrum Analyzer	Advantest	R3162 / 100803466	May, 2006
		Pre-Amplifier	Advantest	BB525C/3307A01814	May, 2006
		Bilog Antenna	SCHAFFNER	CBL6112B / 2705	May, 2006
		Horn Antenna	ETS	3115 / 0005-6160	Sep., 2006
		Pre-Amplifier	QTK	QTK-AMP-01/ 0001	May, 2006
<input checked="" type="checkbox"/> Site # 3	X	Test Receiver	R & S	ESI 26 / 838786/004	May, 2006
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2006
	X	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2006
	X	Horn Antenna	Schwarzbeck	BBHA9120D / 305, 306	July, 2006
	X	Horn Antenna	Schwarzbeck	BBHA9170 / 208, 209	July, 2006
	X	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2006
	X	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2006
	X	Pre-Amplifier	HP	8449B / 3008A01123	July, 2006

- Note:
1. All equipments are calibrated every one year.
  2. Test equipments marked by "X" are used to measure the final test results.

## 4.2. Test Setup



## 4.3. Limits

### ➤ General Radiated Emission Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m @3m	dBuV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

- Remarks:
1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
  2. In the Above Table, the tighter limit applies at the band edges.
  3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

#### **4.4. Test Procedure**

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated measurement.

The additional latch filter below 1GHz was used to measure the level of harmonics radiated emission during field strength of harmonics measurement.

The bandwidth below 1GHz setting on the field strength meter is 120 kHz, above 1GHz are 1 MHz.

The frequency range from 30MHz to 10th harmonics is checked.

#### **4.5. Uncertainty**

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

#### 4.6. Test Result of Radiated Emission

Product : Bluetooth Stereo Headset  
 Test Item : Harmonic Radiated Emission  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter (Channel 00)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
4804.000	3.737	44.314	48.051	-25.949	74.000
7206.000	10.741	39.219	49.960	-24.040	74.000
9608.000	14.854	37.948	52.802	-21.198	74.000
<b>Average Detector:</b>					
--					
<b>Vertical</b>					
<b>Peak Detector:</b>					
4804.000	3.737	50.416	54.153	-19.847	74.000
7206.000	10.741	39.852	50.593	-23.407	74.000
9608.000	14.854	39.068	53.922	-20.078	74.000
<b>Average Detector:</b>					
4804.000	3.737	41.167	44.904	-9.096	74.000

#### Note:

1. The reading levels below 1GHz and above 1GHz are quasi-peak values and peak/average values, respectively.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz °
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz °
4. Emission Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : Bluetooth Stereo Headset  
 Test Item : Harmonic Radiated Emission  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter (Channel 39)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m

**Horizontal  
Peak Detector:**

4882.000	3.932	42.466	46.398	-27.602	74.000
7323.000	11.633	38.723	50.355	-23.645	74.000
9764.000	13.740	38.420	52.160	-21.840	74.000

**Average Detector:**

--

**Vertical  
Peak Detector:**

4882.000	3.932	47.612	51.544	-22.456	74.000
7323.000	11.633	37.563	49.195	-24.805	74.000
9764.000	13.740	38.479	52.219	-21.781	74.000

**Average Detector:**

--

**Note:**

1. The reading levels below 1GHz and above 1GHz are quasi-peak values and peak/average values, respectively.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz ◦
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz ◦
4. Emission Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : Bluetooth Stereo Headset  
Test Item : Harmonic Radiated Emission  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmitter (Channel 78)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m

#### Horizontal

##### Peak Detector:

4960.000	4.151	42.766	46.916	-27.084	74.000
7440.000	12.067	37.486	49.552	-24.448	74.000
9920.000	13.472	37.401	50.872	-23.128	74.000

##### Average Detector:

--

#### Vertical

##### Peak Detector:

4960.000	4.151	47.722	51.872	-22.128	74.000
7440.000	12.067	38.379	50.445	-23.555	74.000
9920.000	13.472	37.686	51.157	-22.843	74.000

##### Average Detector:

--

#### Note:

1. Reading levels below 1GHz and above 1GHz are quasi-peak values and peak/average values, respectively.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz °
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz °
4. Emission Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.



Product : Bluetooth Stereo Headset  
 Test Item : General Radiated Emission  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter (Channel 39)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
<b>Horizontal</b>					
125.000	11.968	19.700	31.668	-11.832	43.500
160.000	9.978	15.100	25.078	-18.422	43.500
192.400	8.417	12.600	21.017	-22.483	43.500
240.000	10.969	16.200	27.169	-18.831	46.000
265.000	13.061	14.700	27.761	-18.239	46.000
365.000	14.601	18.600	33.201	-12.799	46.000
<b>Vertical</b>					
125.000	10.513	16.300	26.813	-16.687	43.500
245.000	11.805	10.300	22.105	-23.895	46.000
270.000	13.007	9.900	22.907	-23.093	46.000
287.100	12.619	11.800	24.419	-21.581	46.000
380.000	15.428	15.100	30.528	-15.472	46.000
620.000	20.074	16.700	36.774	-9.226	46.000

Note:

1. The reading levels below 1GHz are quasi-peak values.
2. “ ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The radiated emissions below 1GHz of the lowest, middle, highest frequency are pretested. Only the worst case is shown on the report.

Product : Bluetooth Stereo Headset  
 Test Item : General Radiated Emission  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Charging with AC Adapter

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
<b>Horizontal</b>					
190.100	8.555	2.670	11.225	-32.275	43.500
255.100	12.865	11.790	24.655	-21.345	46.000
270.000	12.507	12.400	24.907	-21.093	46.000
385.100	14.603	6.900	21.503	-24.497	46.000
415.000	16.375	7.670	24.045	-21.955	46.000
430.100	16.466	8.070	24.537	-21.463	46.000
<b>Vertical</b>					
126.300	10.644	16.370	27.014	-16.486	43.500
155.100	9.344	13.820	23.164	-20.336	43.500
270.100	13.007	9.820	22.827	-23.173	46.000
285.100	12.768	11.800	24.568	-21.432	46.000
380.120	15.418	15.100	30.518	-15.482	46.000
620.200	20.035	6.700	26.735	-19.265	46.000

Note :

1. The reading levels below 1GHz are quasi-peak values.
2. “ ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The radiated emissions below 1GHz of the lowest, middle, highest frequency are pretested. Only the worst case is shown on the report.

Product : Bluetooth Stereo Headset  
Test Item : General Radiated Emission  
Test Site : No.3 OATS  
Test Mode : Mode 3: Charging with the USB

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
<b>Horizontal</b>					
400.200	15.463	13.500	28.963	-17.037	46.000
460.200	17.299	7.960	25.258	-20.742	46.000
524.100	17.235	13.520	30.755	-15.245	46.000
595.100	18.639	8.200	26.839	-19.161	46.000
620.200	19.526	9.240	28.766	-17.234	46.000
700.300	19.211	8.240	27.451	-18.549	46.000
<b>Vertical</b>					
475.210	17.310	4.480	21.790	-24.210	46.000
485.900	17.240	11.800	29.040	-16.960	46.000
515.100	17.390	10.800	28.191	-17.809	46.000
672.500	18.473	10.600	29.073	-16.927	46.000
700.700	19.161	8.900	28.062	-17.938	46.000
825.100	19.826	6.500	26.326	-19.674	46.000

Note:

1. The reading levels below 1GHz are quasi-peak values.
2. “ ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The radiated emissions below 1GHz of the lowest, middle, highest frequency are pretested. Only the worst case is shown on the report.

## 5. Band Edge

### 5.1. Test Equipment

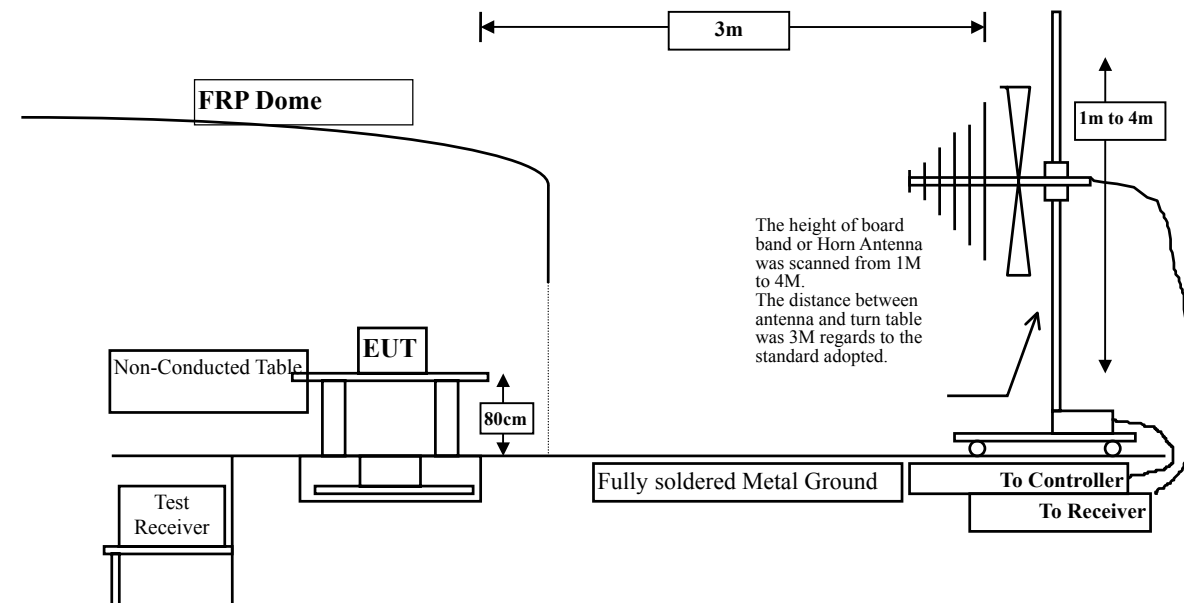
Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X Test Receiver	R & S	ESI 26 / 838786/004	May, 2006
X Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2006
X Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2006
X Horn Antenna	Schwarzbeck	BBHA9120D / 305, 306	July, 2006
X Horn Antenna	Schwarzbeck	BBHA9170 / 208, 209	July, 2006
X Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2006
X Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2006
X Pre-Amplifier	HP	8449B / 3008A01123	July, 2006

OATS No.3

- Note:
1. All equipments are calibrated every one year.
  2. The test equipments marked by "X" are used to measure the final test results.

### 5.2. Test Setup

#### RF Radiated Measurement:



### **5.3. Limit**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

### **5.4. Test Procedure**

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2003 on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter is 120 kHz, above 1GHz are 1 MHz.

### **5.5. Uncertainty**

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

## 5.6. Test Result of Band Edge

Product : Bluetooth Stereo Headset  
 Test Item : Band Edge  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter (Channel 00)

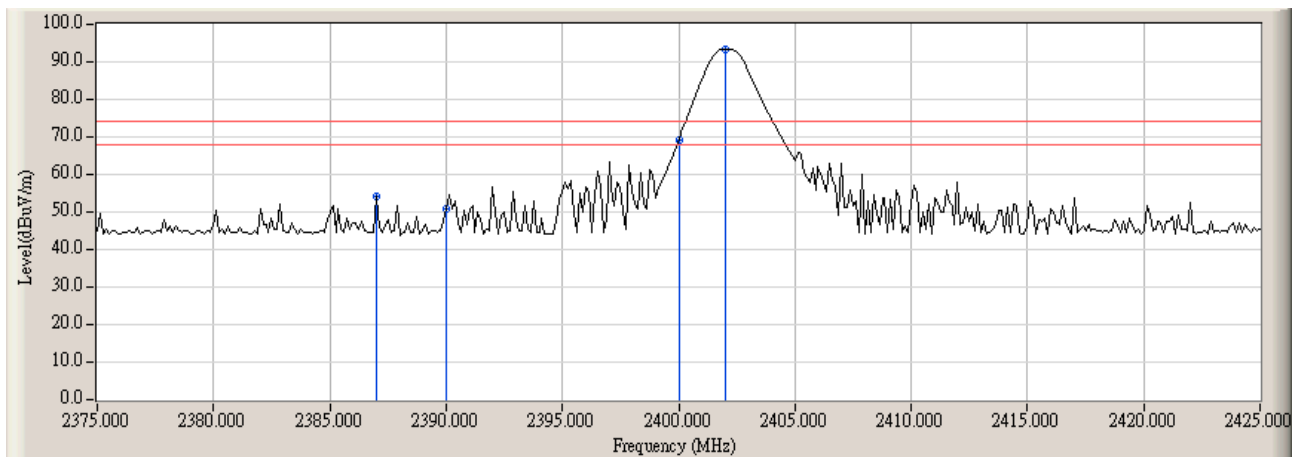
### RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
00	<2400	>20	Pass

### RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00(Peak)	2387.000	-2.267	56.359	54.092	74.00	54.00	Pass
00(Avg)	2387.000	-2.267	38.342	36.075	74.00	54.00	Pass

Figure Channel 00: Horizontal (Peak)

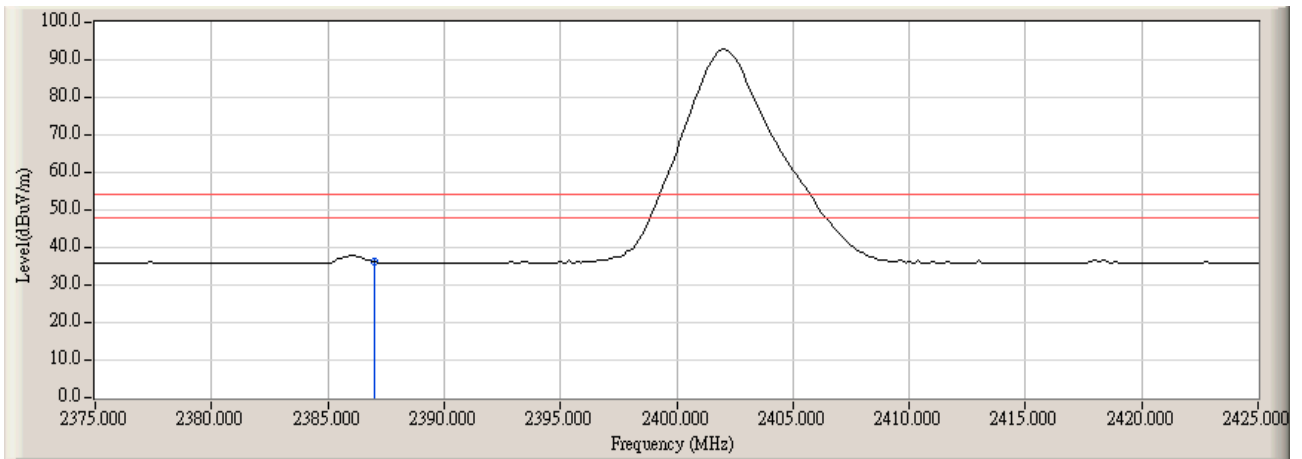


Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Figure Channel 00:

Horizontal (Average)



Note:

RBW=1MHz, VBW=3kHz, Sweep Time=500ms.

Product : Bluetooth Stereo Headset  
 Test Item : Band Edge  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter (Channel 00)

**RF Radiated Measurement:**

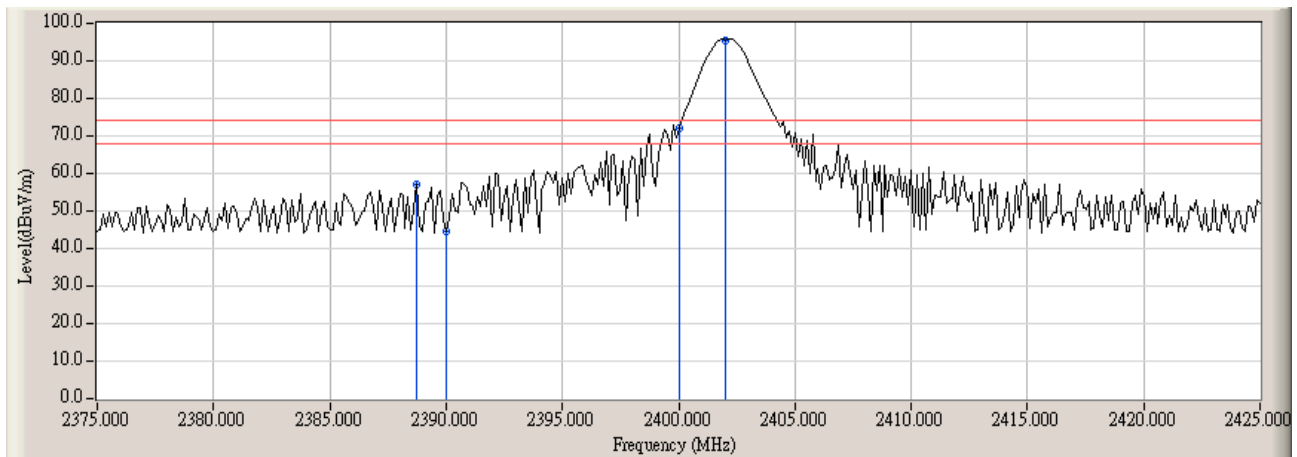
Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
00	<2400	>20	Pass

**RF Radiated Measurement (Vertical):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00(Peak)	2388.750	-2.261	59.394	57.133	74.00	54.00	Pass
00(Avg)	2388.750	-2.261	38.151	35.890	74.00	54.00	Pass

**Figure Channel 00:**

**Vertical (Peak)**



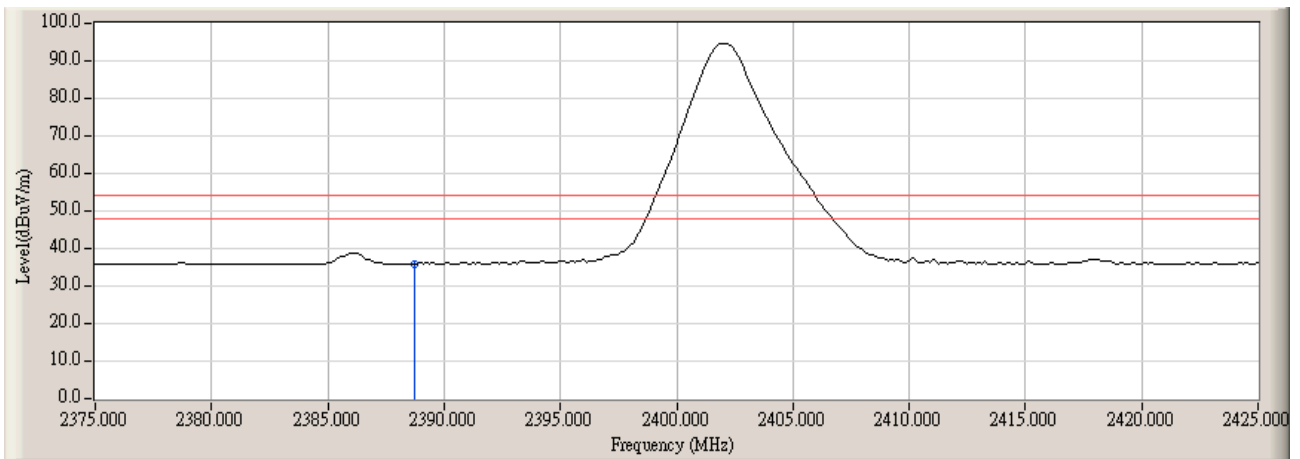
Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms.



Figure Channel 00:

Vertical (Average)



Note:

RBW=1MHz, VBW=3kHz, Sweep Time=500ms.

Product : Bluetooth Stereo Headset  
 Test Item : Band Edge  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter (Channel 78)

**RF Radiated Measurement:**

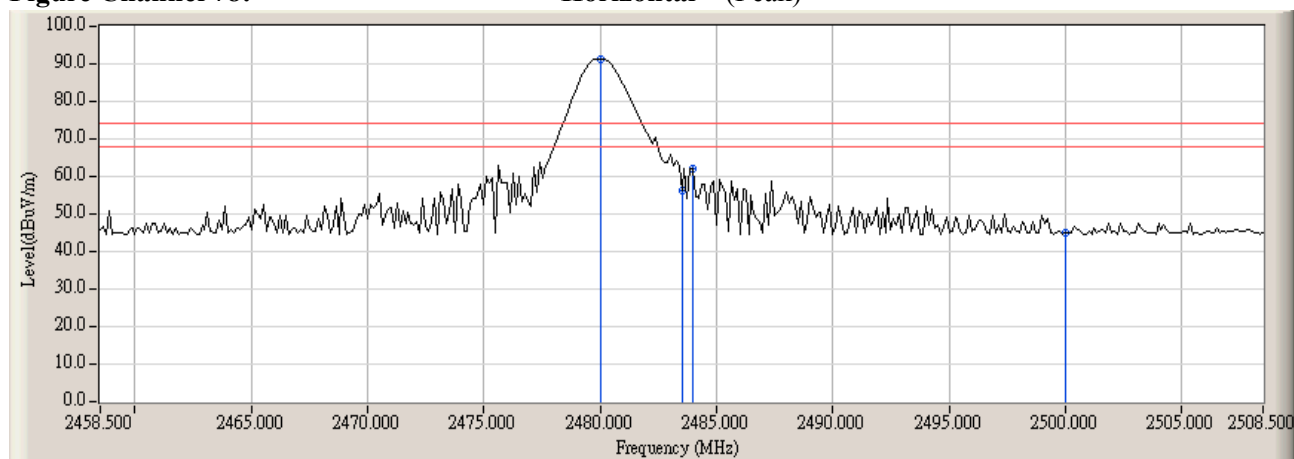
Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
78	>2483.5	>20	Pass

**RF Radiated Measurement (Horizontal):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBUV)	Emission Level (dBUV/m)	Peak Limit (dBUV/m)	Average Limit (dBUV/m)	Result
78(Peak)	2484.000	-1.893	64.124	62.230	74.00	54.00	Pass
78(Avg)	2484.000	-1.893	51.307	49.413	74.00	54.00	Pass

**Figure Channel 78:**

**Horizontal (Peak)**

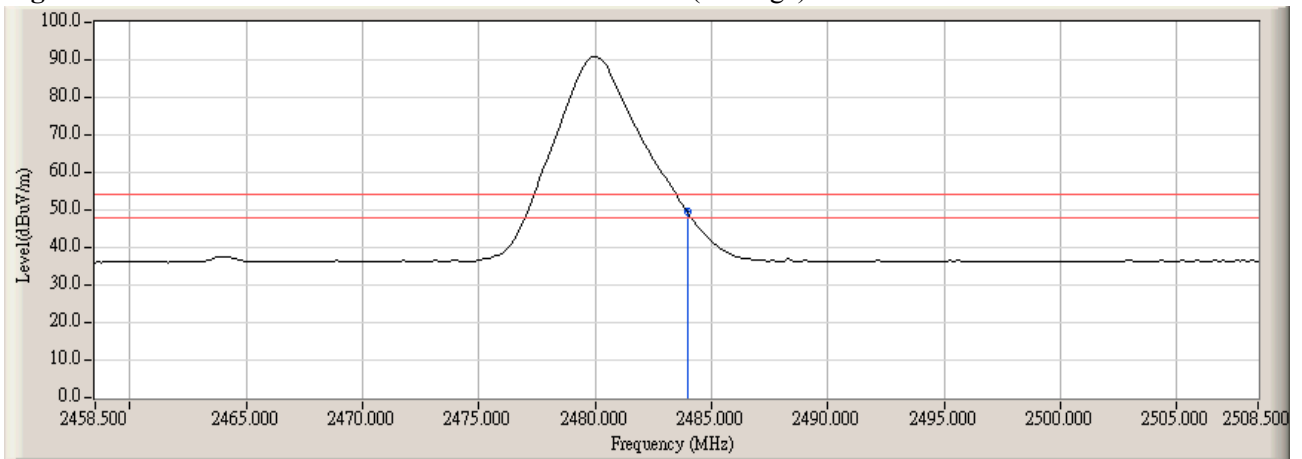


Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms

Figure Channel 78:

Horizontal (Average)



Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms

Product : Bluetooth Stereo Headset  
 Test Item : Band Edge  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter (Channel 78)

**RF Radiated Measurement:**

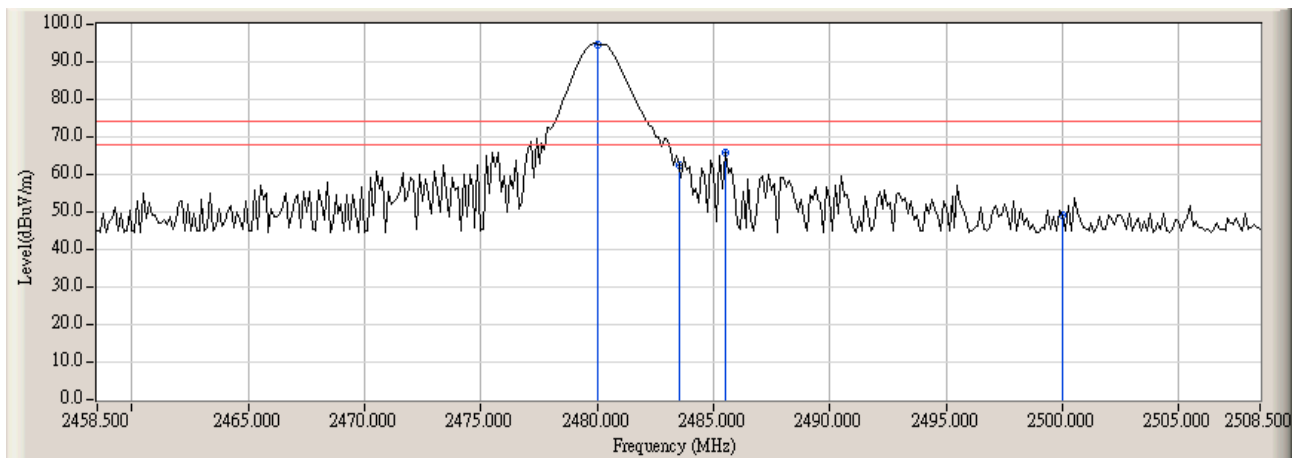
Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
78	>2483.5	>20	Pass

**RF Radiated Measurement (Vertical):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78(Peak)	2485.500	-1.889	67.520	65.635	74.00	54.00	Pass
78(Avg)	2485.500	-1.889	44.110	42.222	74.00	54.00	Pass

**Figure Channel 78:**

**Vertical (Peak)**

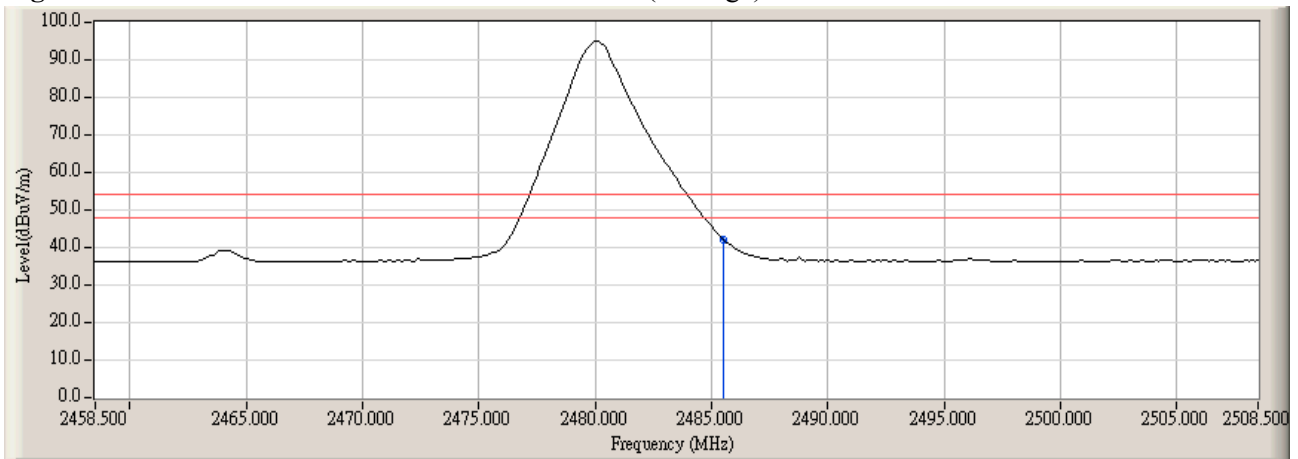


Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Figure Channel 78:

Vertical (Average)



Note:

RBW=1MHz, VBW=3kHz, Sweep Time=500ms.

Note: The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

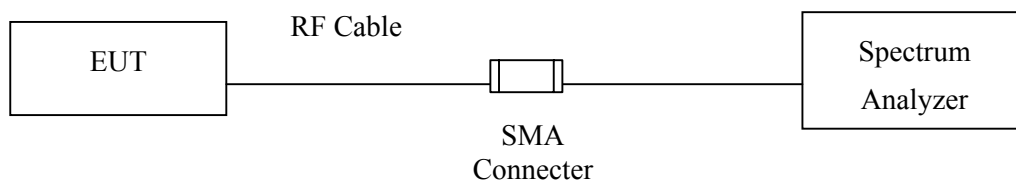
## 6. Channel Number

### 6.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	R & S	FSP40 / 100170	Nov., 2006

Note: 1. All equipments are calibrated every one year.  
2. The test equipments marked by "X" are used to measure the final test results.

### 6.2. Test Setup



### 6.3. Limit

Frequency hopping systems operating in the 2400-2483.5 MHz bands shall use at least 75 hopping frequencies.

### 6.4. Uncertainty

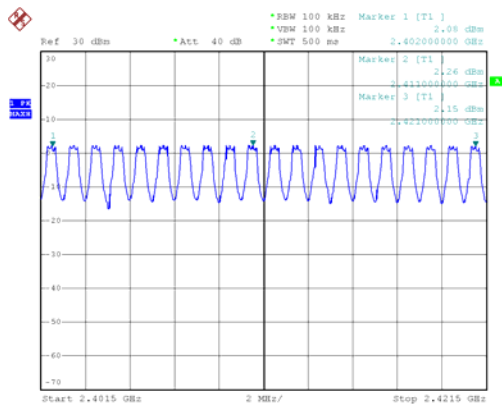
N/A

## 6.5. Test Result of Channel Number

Product : Bluetooth Stereo Headset  
 Test Item : Channel Number  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter

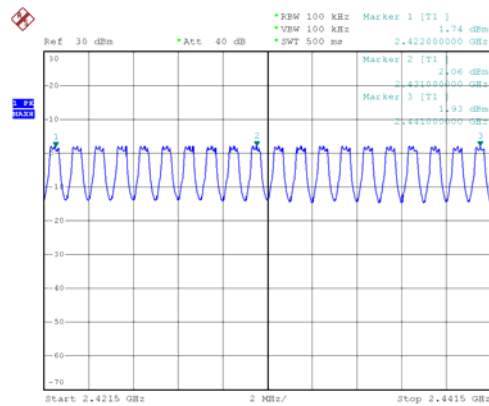
Frequency Range (MHz)	Measurement (Hopping Channel)	Required Limit (Hopping Channel)	Result
2402 - 2480	79	>75	Pass

2402-2421MHz



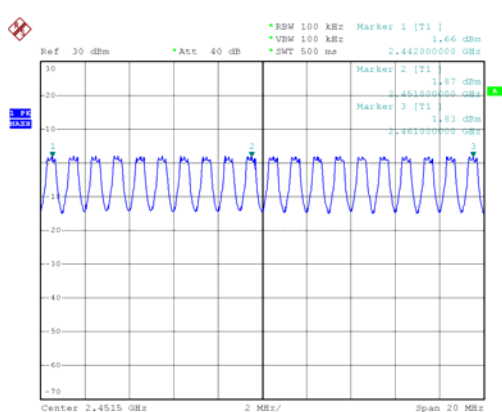
PN1  
 Date: 27.DEC.2006 08:16:52

2422-2441MHz



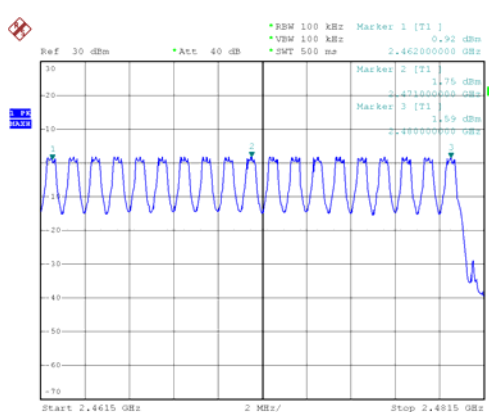
PN1  
 Date: 27.DEC.2006 08:26:05

2442-2471MHz



PN1  
 Date: 27.DEC.2006 08:32:00

2472-2481MHz



PN1  
 Date: 27.DEC.2006 08:34:58

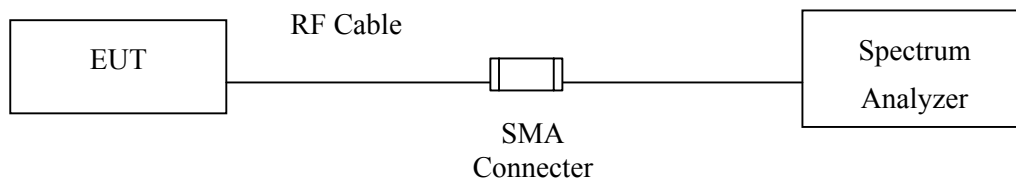
## 7. Channel Separation

### 7.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	R & S	FSP40 / 100170	Nov., 2006

Note: 1. All equipments are calibrated every one year.  
 2. The test instruments marked by “X” are used to measure the final test results.

### 7.2. Test Setup



### 7.3. Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125mW.

### 7.4. Uncertainty

$\pm 150\text{Hz}$

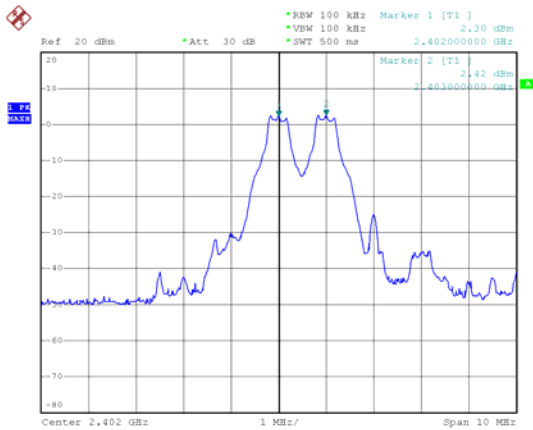


## 7.5. Test Result of Channel Separation

Product : Bluetooth Stereo Headset  
 Test Item : Channel Separation  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter

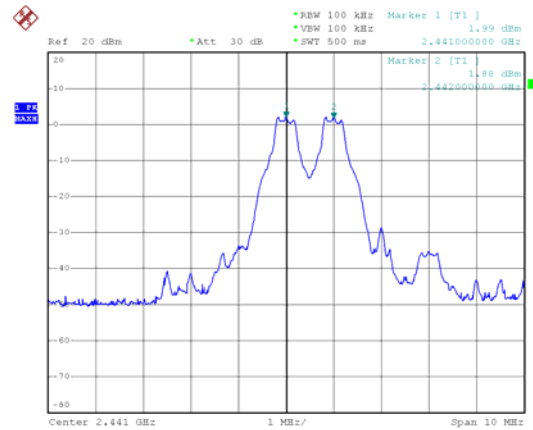
Frequency (MHz)	Measurement Level (MHz)	Required Limit	Result
2402	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2441	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2480	1.00	>25 kHz or 2/3 * 20 dB BW	Pass

Channel 00 2402MHz



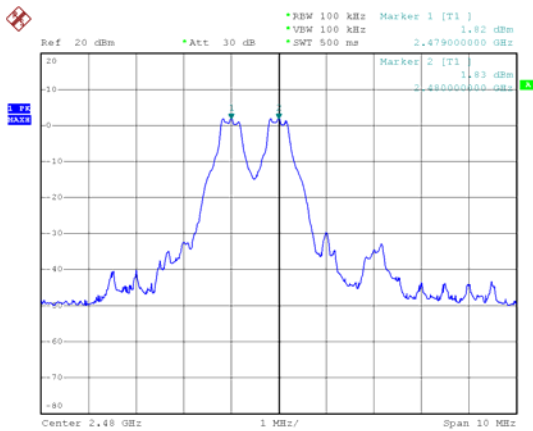
PN1  
 Date: 27.DEC.2006 07:53:03

Channel 39 2441MHz



PN1  
 Date: 27.DEC.2006 07:56:06

Channel 78 2480 MHz



PN1  
 Date: 27.DEC.2006 07:55:25

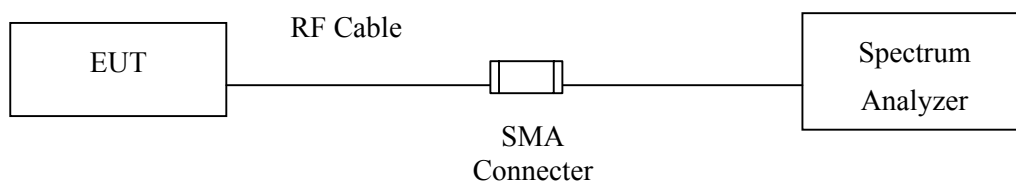
## 8. Dwell Time

### 8.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	R & S	FSP40 / 100170	Nov., 2006

Note: 1. All equipments are calibrated every one year.  
2. The test equipments marked “X” are used to measure the final test results.

### 8.2. Test Setup



### 8.3. Limit

The dwell time shall be the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

### 8.4. Uncertainty

± 25msec

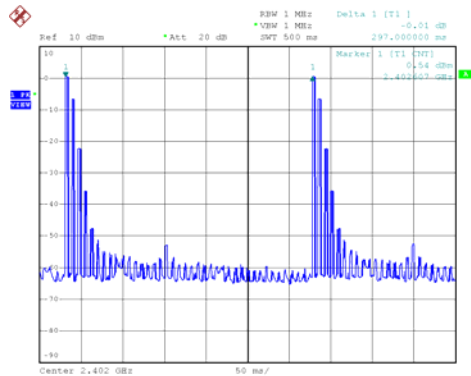
## 8.5. Test Result of Dwell Time

Product : Bluetooth Stereo Headset  
 Test Item : Dwell Time  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter (Channel 00,39,78 –DH5)

Channel No.	Frequency (MHz)	Time Interval between hops (ms)	Transmission Time (us)	Dwell Time (ms)	Limit (ms)	Result
00	2402	297	3120	331.959596	400	Pass
39	2441	296	3120	333.0810811	400	Pass
78	2480	297	3120	331.959596	400	Pass

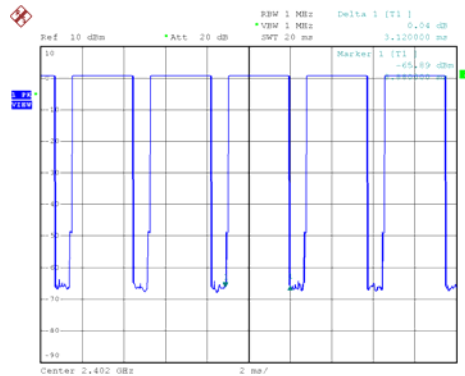
Note: Dwell Time =  $79 * 400 / \text{Time Interval Between Hops} * \text{Transmission Time} / 1000$

CH 2402MHz Time Interval between hops



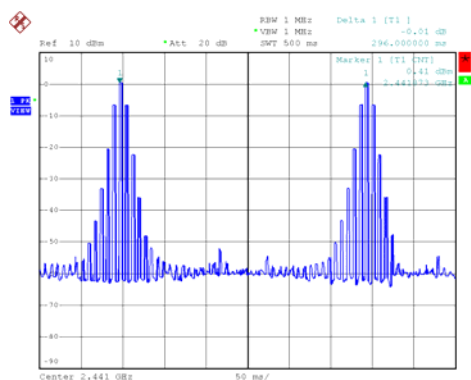
PN1  
 Date: 25.JAN.2007 12:24:37

Transmission Time



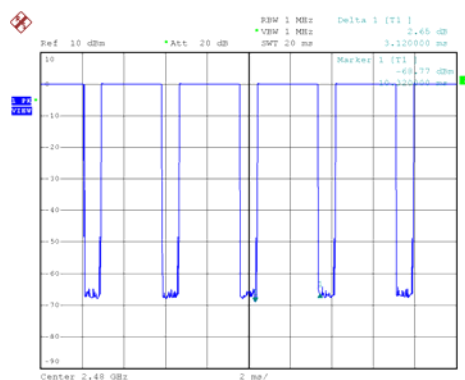
PN1  
 Date: 25.JAN.2007 12:32:17

CH 2441MHz Time Interval between hops



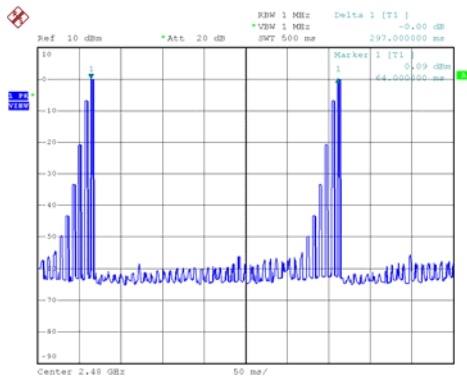
PN1  
 Date: 25.JAN.2007 12:26:58

Transmission Time



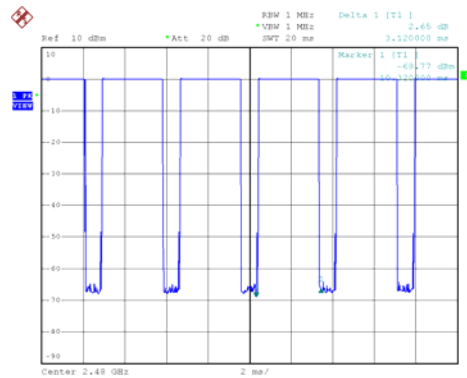
PN1  
 Date: 25.JAN.2007 12:33:44

## CH 2480MHz Time Interval between hops



PN1  
Date: 25.JAN.2007 12:31:04

## Transmission Time



PN1  
Date: 25.JAN.2007 12:33:44

### Note:

The dwell times of the packet type of DH1, DH3, and DH3 are tested. Only the worst case is shown on the report.

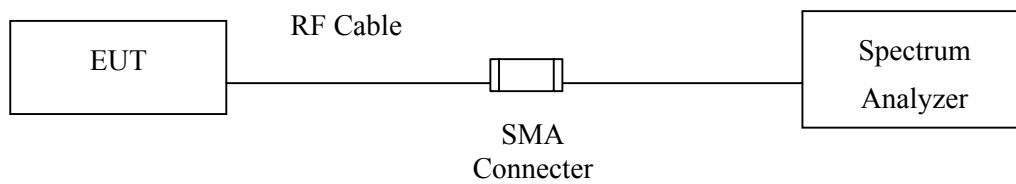
## 9. Occupied Bandwidth

### 9.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	R & S	FSP40 / 100170	Nov., 2006

Note: 1. All equipments are calibrated every one year.  
 2. The test instruments Marked "X" are used to measure the final test results.

### 9.2. Test Setup



### 9.3. Limits

N/A

### 9.4. Uncertainty

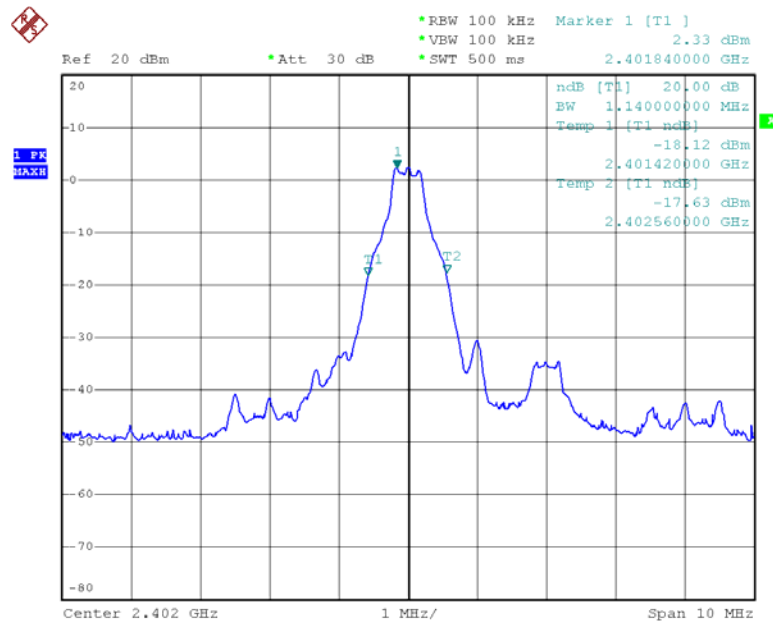
$\pm 150\text{Hz}$

## 9.5. Test Result of Occupied Bandwidth

Product : Bluetooth Stereo Headset  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter (2402MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1140	--	N/A

Figure Channel 00:



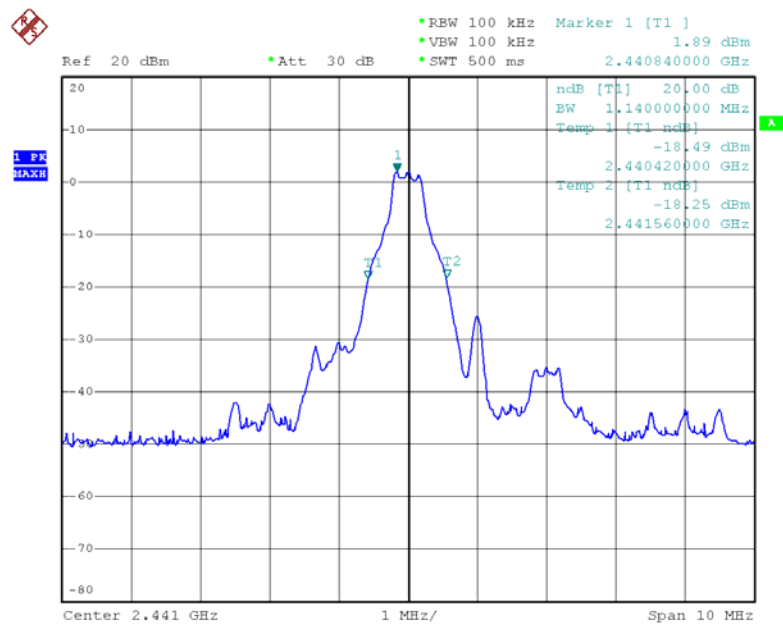
PN1

Date: 27.DEC.2006 07:58:19

Product : Bluetooth Stereo Headset  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter (2441MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
39	2441	1140	--	N/A

**Figure Channel 39:**



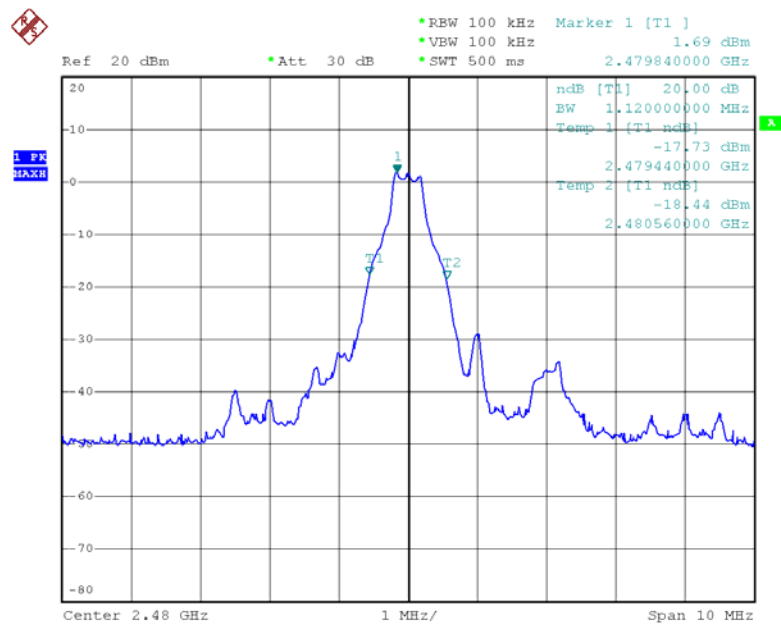
PN1

Date: 27.DEC.2006 07:58:55

Product : Bluetooth Stereo Headset  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter (2480MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
78	2480	1140	--	N/A

Figure Channel 78:



PN1

Date: 27.DEC.2006 07:59:36



## **10. EMI Reduction Method During Compliance Testing**

No modification was made during testing.