

FC

Test Report

Product Name	Bluetooth Stereo Headset
Model No.	CZ-900S, CZ-910S
FCC ID.	UQS-CZ-900S

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. 30, 2007
Report No.	06CL110-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. 30, 2007

Report No.: 06CL110-RFUSP06V01



Product Name	Bluetooth Stereo Headset
Applicant	J-TEK INCORPORATION
Address	2F-1, No. 83, Sec. 2, Gongdaowu Rd., Hsinchu City 30070, Taiwan
Manufacturer	ZhuHai ChangZhi Technologies Co., LTD.
Model No.	CZ-900S, CZ-910S
FCC ID.	UQS-CZ-900S
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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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Bluetooth Stereo Headset
Trade Name	JTI
FCC ID.	UQS-CZ-900S
Model No.	CZ-900S, CZ-910S
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	
Power Adapter	MFR: Highcell Tech, M/N: HL-AF-002A-050060 Cable Out: Non-Shielded, 1.2m

Antenna List

No.	Manufacturer	Part No.	Peak Gain
1	ACX	AT7020	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 the 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:

Mode 1 & Mode 2

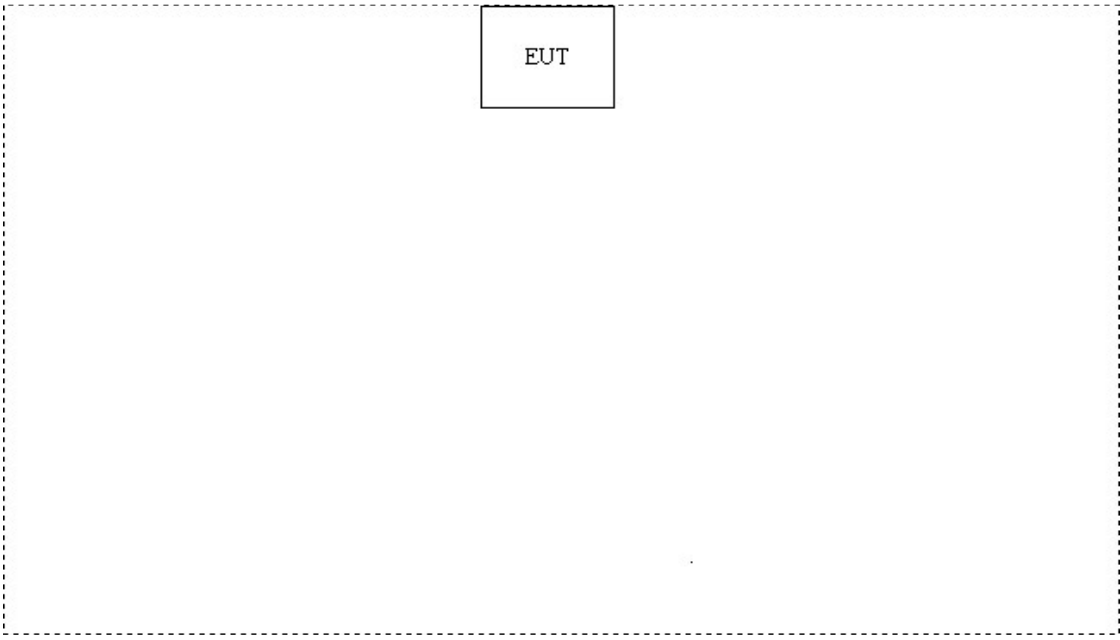
	Product	Manufacturer	Model No.	Serial No.	Power Cord
(1)	N/A	N/A	N/A	N/A	N/A

Mode 3

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

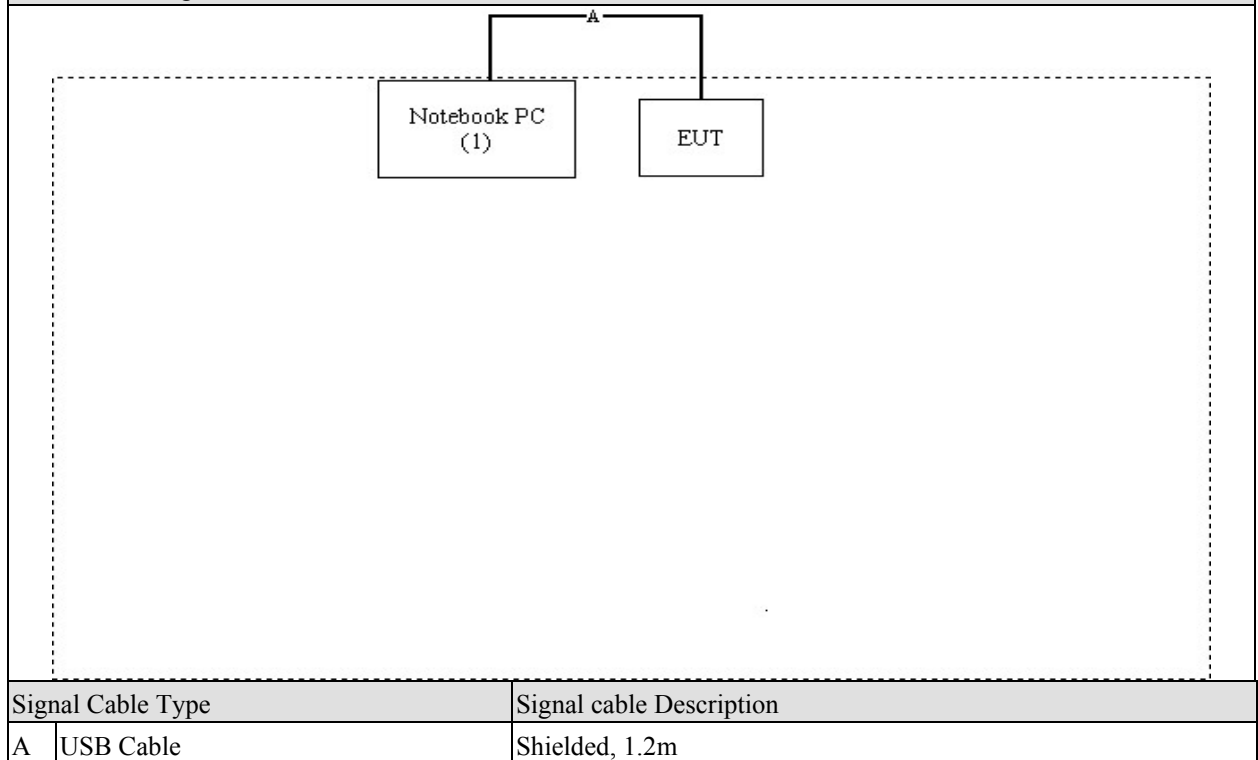
1.4. Configuration of Test System

Mode 1 & Mode 2

Connection Diagram	
	
Signal Cable Type	Signal cable Description
A N/A	N/A

Mode 3

Connection Diagram



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



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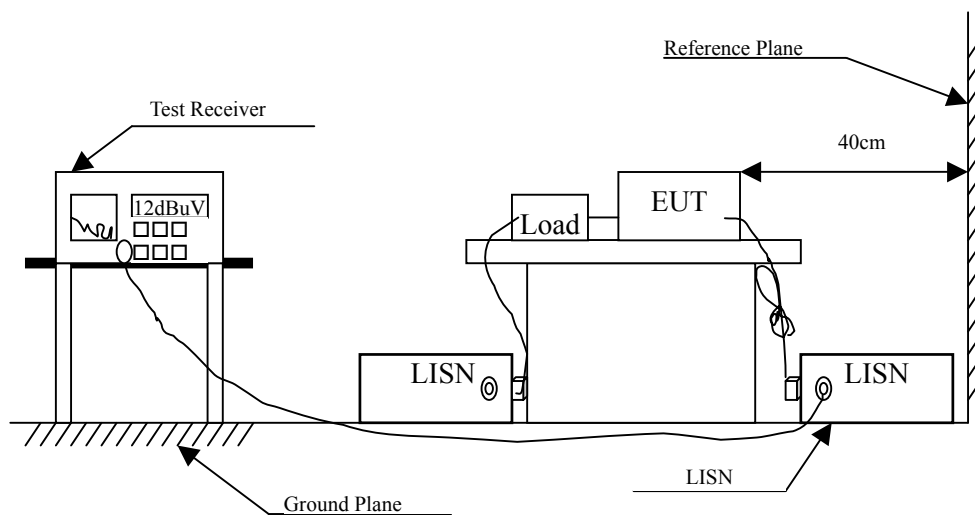
2. Conducted Emission

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 the AC adapter

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV	dB	dBuV
Quasi-Peak					
0.255	0.333	50.980	51.313	-11.687	63.000
0.373	0.300	37.940	38.240	-21.389	59.629
0.505	0.300	44.460	44.760	-11.240	56.000
0.759	0.310	40.760	41.070	-14.930	56.000
1.525	0.330	38.660	38.990	-17.010	56.000
3.556	0.390	31.680	32.070	-23.930	56.000
Average					
0.255	0.333	46.440	46.773	-6.227	53.000
0.373	0.300	33.900	34.200	-15.429	49.629
0.505	0.300	40.900	41.200	-4.800	46.000
0.759	0.310	35.470	35.780	-10.220	46.000
1.525	0.330	30.910	31.240	-14.760	46.000
3.556	0.390	23.620	24.010	-21.990	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 the AC adapter

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV	dB	dBuV
Quasi-Peak					
0.252	0.300	51.000	51.300	-11.786	63.086
0.373	0.310	39.640	39.950	-19.679	59.629
0.509	0.310	47.020	47.330	-8.670	56.000
0.763	0.320	42.900	43.220	-12.780	56.000
1.017	0.320	38.300	38.620	-17.380	56.000
1.783	0.340	35.720	36.060	-19.940	56.000
Average					
0.252	0.300	43.800	44.100	-8.986	53.086
0.373	0.310	35.330	35.640	-13.989	49.629
0.509	0.310	42.870	43.180	-2.820	46.000
0.763	0.320	38.750	39.070	-6.930	46.000
1.017	0.320	31.680	32.000	-14.000	46.000
1.783	0.340	31.230	31.570	-14.430	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
Quasi-Peak					
0.173	0.202	52.650	52.852	-12.491	65.343
0.201	0.202	49.670	49.872	-14.671	64.543
0.263	0.208	39.820	40.028	-22.743	62.771
0.527	0.217	26.430	26.647	-29.353	56.000
0.687	0.229	29.040	29.269	-26.731	56.000
0.925	0.232	30.840	31.072	-24.928	56.000
Average					
0.173	0.202	36.730	36.932	-18.411	55.343
0.201	0.202	32.680	32.882	-21.661	54.543
0.263	0.208	22.190	22.398	-30.373	52.771
0.527	0.217	13.680	13.897	-32.103	46.000
0.687	0.229	20.330	20.559	-25.441	46.000
0.925	0.232	19.900	20.132	-25.868	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
Quasi-Peak					
0.177	0.202	47.570	47.772	-17.457	65.229
0.201	0.202	48.320	48.522	-16.021	64.543
0.220	0.202	45.840	46.042	-17.958	64.000
0.252	0.203	39.700	39.903	-23.183	63.086
0.294	0.209	36.340	36.549	-25.337	61.886
0.452	0.216	30.320	30.536	-26.835	57.371
Average					
0.177	0.202	29.620	29.822	-25.407	55.229
0.201	0.202	32.260	32.462	-22.081	54.543
0.220	0.202	31.060	31.262	-22.738	54.000
0.252	0.203	23.960	24.163	-28.923	53.086
0.294	0.209	20.680	20.889	-30.997	51.886
0.452	0.216	20.730	20.946	-26.425	47.371

Note:

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

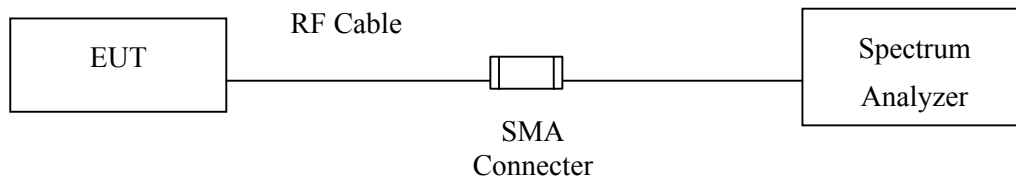
3. Peak Power Output

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

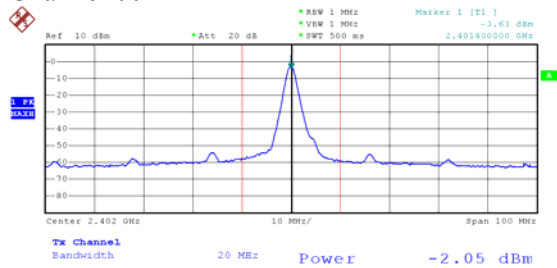
± 1.27 dB

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

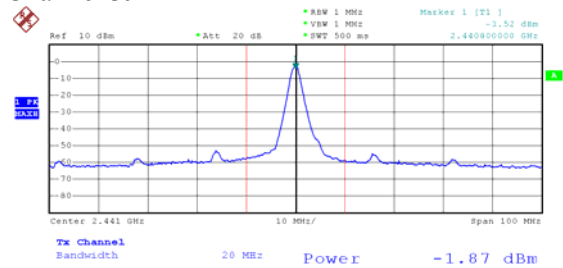
Channel No.	Frequency (MHz)	Measurement	Required Limit	Result
Channel 00	2402.00	-2.05dBm	1 Watt= 30 dBm	Pass
Channel 39	2441.00	-1.87dBm	1 Watt= 30 dBm	Pass
Channel 78	2480.00	-2.38dBm	1 Watt= 30 dBm	Pass

Channel 00



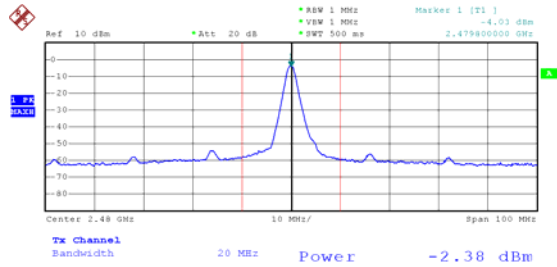
PN1
 Date: 2.JAN.2007 07:50:48

Channel 39



PN1
 Date: 2.JAN.2007 07:51:34

Channel 78



PN1
 Date: 2.JAN.2007 07:52:15

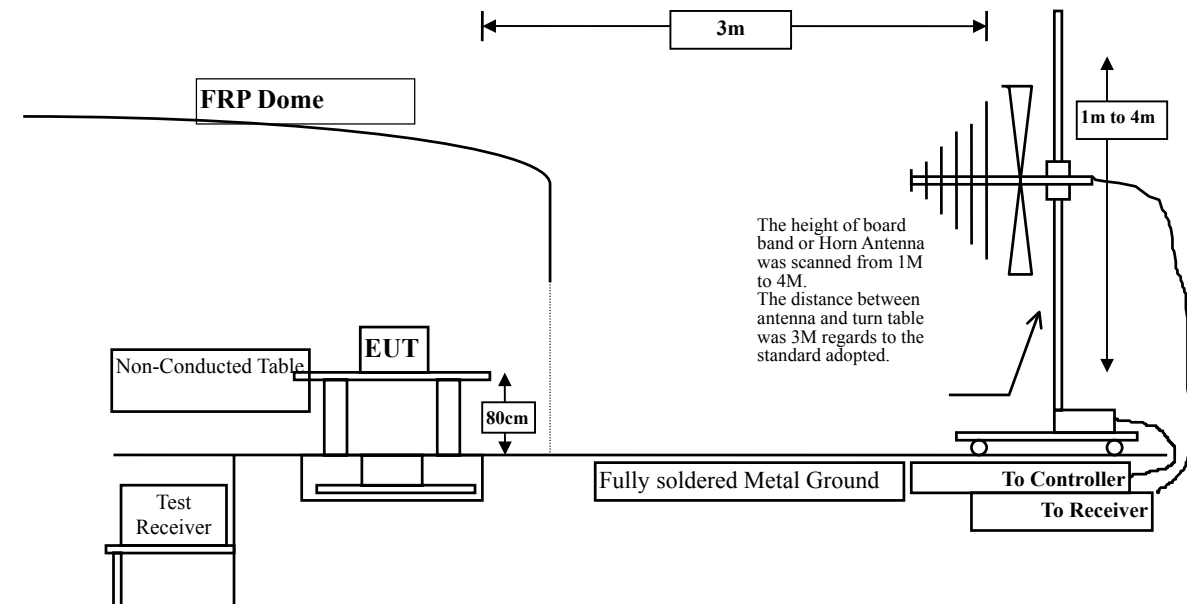
4. Radiated Emission

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

Horizontal

Peak Detector:

4804.000	3.737	40.402	44.139	-29.861	74.000
7206.000	10.741	30.942	41.683	-32.317	74.000
9608.000	14.854	38.930	53.784	-20.216	74.000

Average Detector:

--

Vertical

Peak Detector:

4804.000	3.737	42.571	46.308	-27.692	74.000
7206.000	10.741	37.943	48.684	-25.316	74.000
9608.000	14.854	38.425	53.279	-20.721	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 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	44.372	48.304	-25.696	74.000
7323.000	11.633	38.034	49.666	-24.334	74.000
9764.000	13.740	40.699	54.439	-19.561	74.000
Average Detector:					
9764.000	13.740	29.617	43.358	-10.642	54.000
Vertical					
Peak Detector:					
4882.000	3.932	44.952	48.884	-25.116	74.000
7323.000	11.633	37.142	48.774	-25.226	74.000
9764.000	13.740	38.320	52.060	-21.940	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	46.160	50.310	-23.690	74.000
7440.000	12.067	37.403	49.469	-24.531	74.000
9920.000	13.472	38.511	51.982	-22.018	74.000

Average Detector:

--

**Vertical
Peak Detector:**

4960.000	4.151	47.628	51.778	-22.222	74.000
7440.000	12.067	37.573	49.639	-24.361	74.000
9920.000	13.472	39.017	52.488	-21.512	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
Horizontal					
120.000	12.148	8.500	20.648	-22.852	43.500
158.500	10.158	9.200	19.357	-24.143	43.500
285.000	12.497	14.800	27.297	-18.703	46.000
380.000	14.448	16.400	30.848	-15.152	46.000
595.000	18.637	9.800	28.437	-17.563	46.000
620.000	19.523	9.560	29.083	-16.917	46.000
Vertical					
55.000	6.054	14.800	20.854	-19.146	40.000
195.000	8.527	15.500	24.027	-19.473	43.500
285.000	12.768	12.200	24.968	-21.032	46.000
380.000	15.428	16.300	31.728	-14.272	46.000
460.000	17.119	12.100	29.219	-16.781	46.000
620.000	20.074	7.100	27.174	-18.826	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 the AC adapter

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
140.300	11.382	3.150	14.532	-28.968	43.500
192.100	8.417	2.670	11.087	-32.413	43.500
286.100	12.416	14.500	26.916	-19.084	46.000
352.100	13.703	8.200	21.903	-24.097	46.000
400.100	15.442	10.340	25.782	-20.218	46.000
430.100	16.466	8.600	25.067	-20.933	46.000
Vertical					
125.100	10.514	6.900	17.414	-26.086	43.500
155.100	9.344	3.900	13.244	-30.256	43.500
255.300	12.861	10.540	23.400	-22.600	46.000
285.000	12.768	11.700	24.468	-21.532	46.000
380.100	15.420	5.800	21.220	-24.780	46.000
620.100	20.054	6.900	26.954	-19.046	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.

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
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
370.100	14.698	10.420	25.119	-20.881	46.000
485.100	17.240	11.300	28.540	-17.460	46.000
544.100	18.707	9.350	28.057	-17.943	46.000
565.200	17.857	9.100	26.957	-19.043	46.000
601.100	18.521	6.697	25.218	-20.782	46.000
686.100	19.492	8.450	27.942	-18.058	46.000
Vertical					
486.000	17.242	11.800	29.042	-16.958	46.000
500.300	17.046	12.800	29.846	-16.154	46.000
525.100	17.493	12.800	30.292	-15.708	46.000
672.500	18.473	10.500	28.973	-17.027	46.000
760.100	21.407	6.100	27.507	-18.493	46.000
815.100	20.119	9.100	29.219	-16.781	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.

5. Band Edge

5.1. Test Equipment

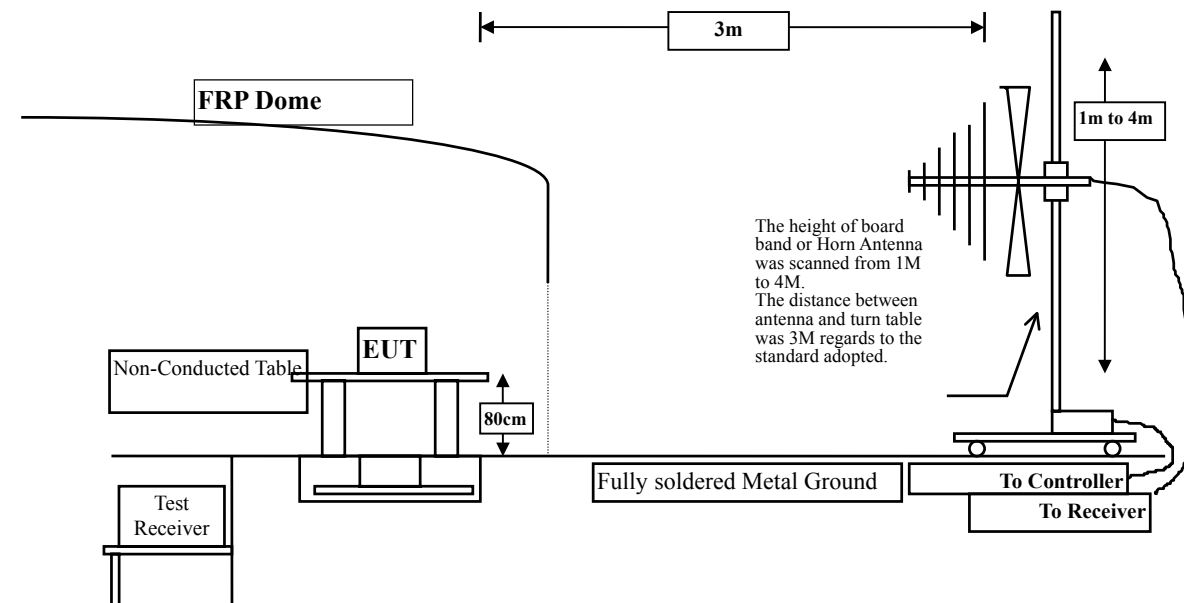
Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X Test Receiver	R & S	ESI 26 / 838786/004	May, 2006
X Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2006
X Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2006
X Horn Antenna	Schwarzbeck	BBHA9120D / 305, 306	July, 2006
X Horn Antenna	Schwarzbeck	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:

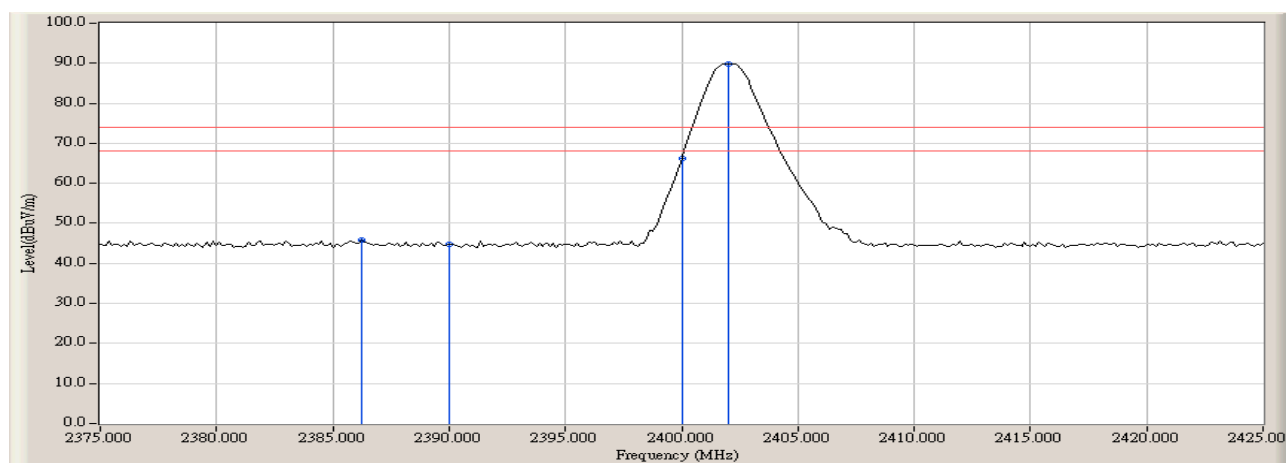
Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
00	<2400	>20	Pass

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)	2386.250	-2.269	48.156	45.887	74.00	54.00	Pass
00(Avg)	--	--	--	--	74.00	54.00	Pass

Figure Channel 00:

Horizontal (Peak)



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 00)

RF Radiated Measurement:

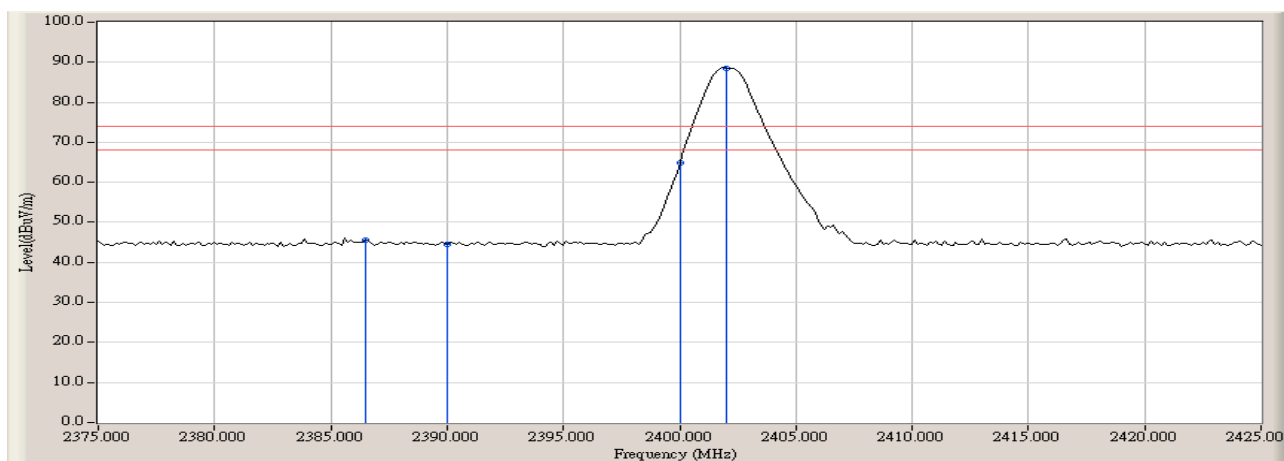
Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
00	<2400	>20	Pass

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)	2386.500	-2.268	47.926	45.658	74.00	54.00	Pass
00(Avg)	--	--	--	--	74.00	54.00	Pass

Figure Channel 00:

Vertical (Peak)



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)

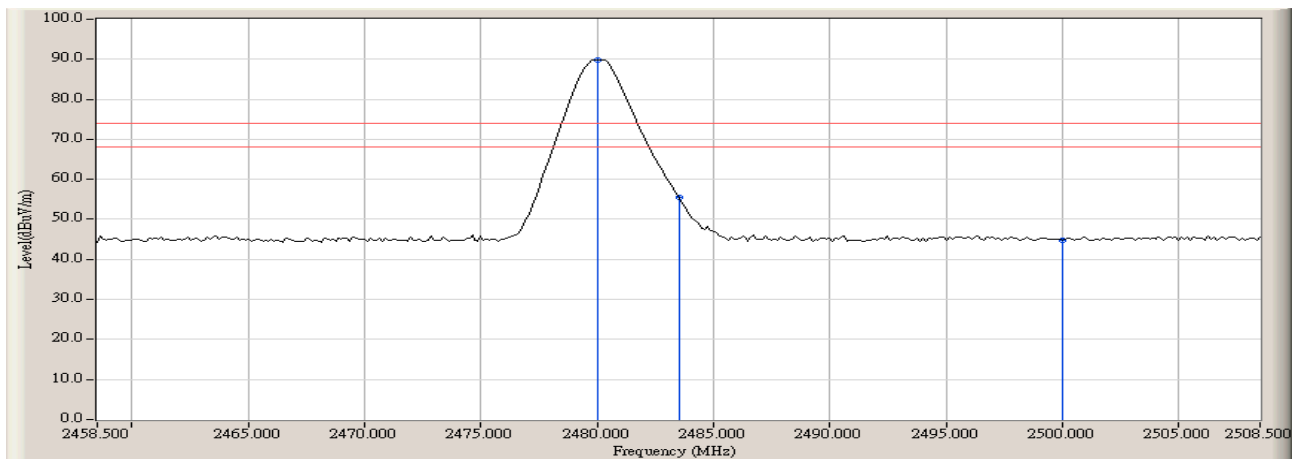
RF Radiated Measurement:

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

RF Radiated Measurement (Horizontal):

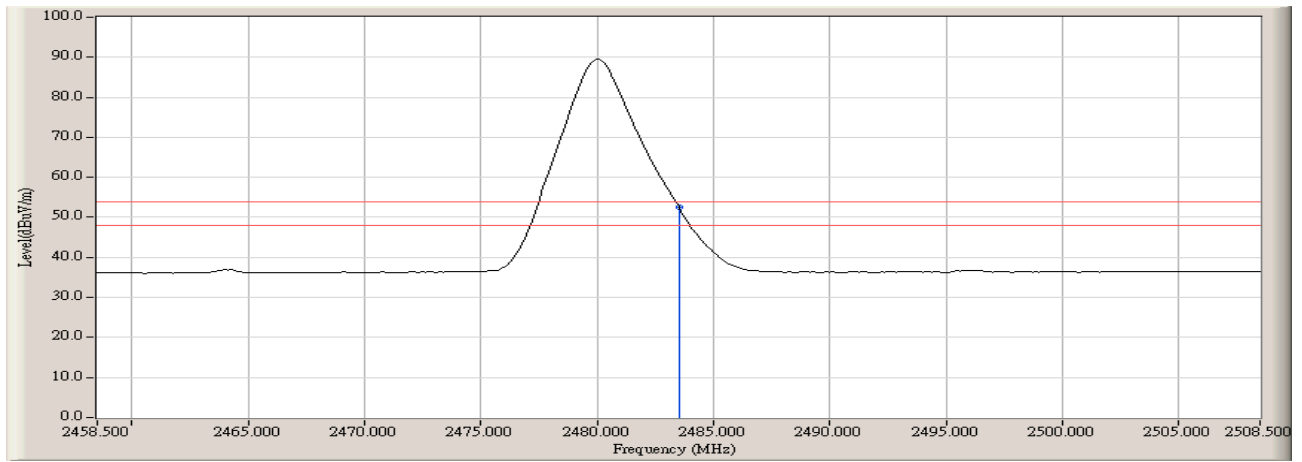
Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78(Peak)	2483.500	-1.896	57.363	55.468	74.00	54.00	Pass
78(Avg)	2483.500	-1.896	54.556	52.661	74.00	54.00	Pass

Figure Channel 78: Horizontal (Peak)



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

Figure Channel 78: Horizontal (Average)



Note:
RBW=1MHz, VBW=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:

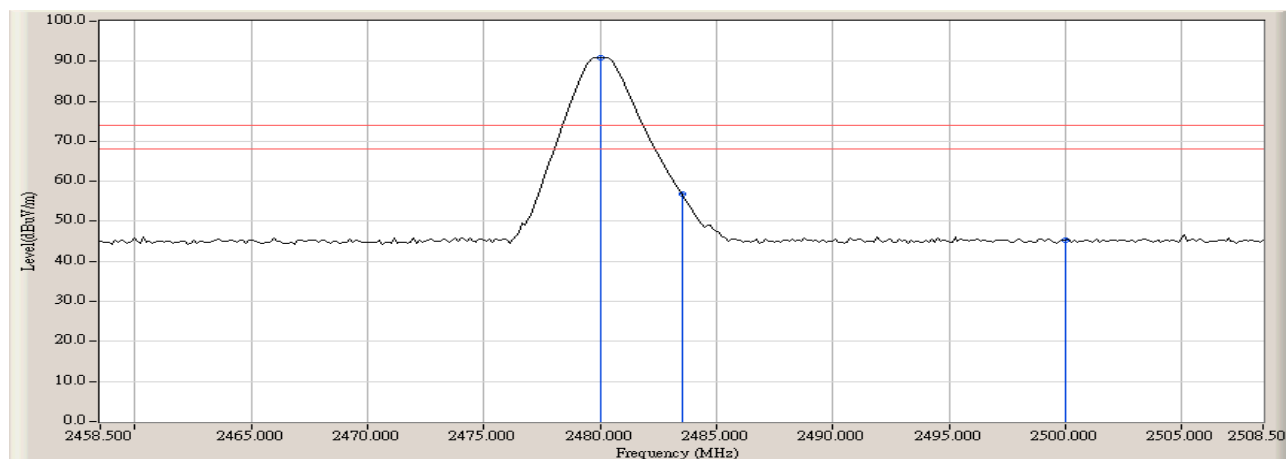
Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
78	>2483.5	>20	Pass

RF Radiated Measurement (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)	2483.500	-1.896	58.818	56.923	74.00	54.00	Pass
78(Avg)	2483.500	-1.896	55.789	53.894	74.00	54.00	Pass

Figure Channel 78:

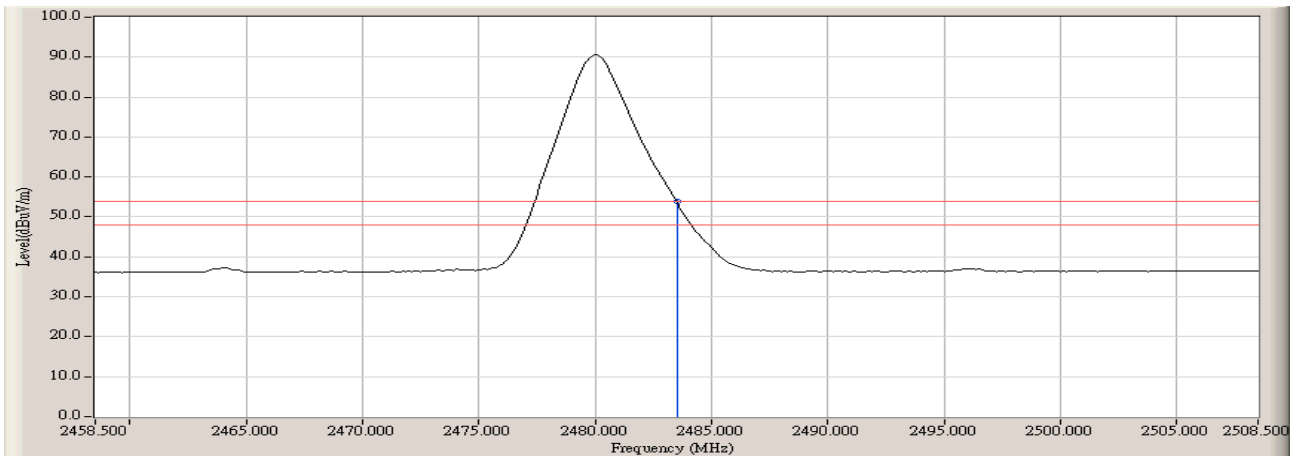
Vertical (Peak)



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.

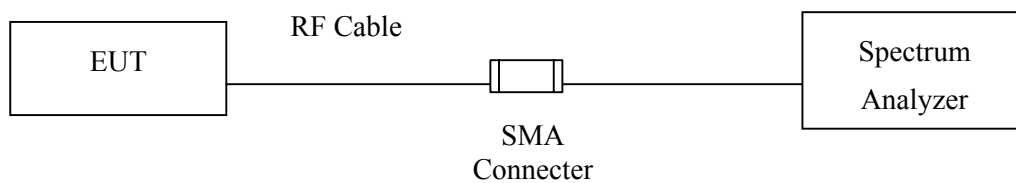
6. Channel Number

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

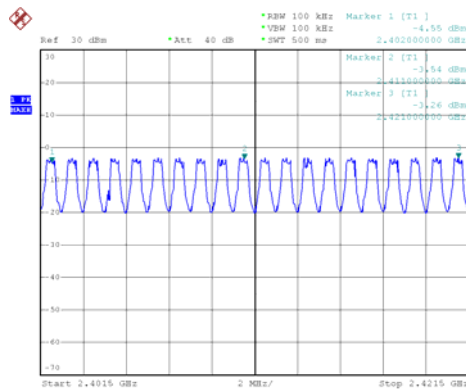
N/A

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

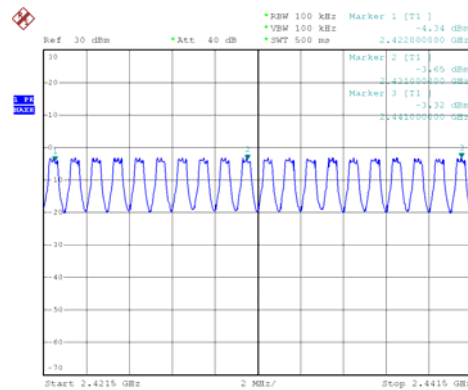
Frequency Range (MHz)	Measurement (Hopping Channel)	Required Limit (Hopping Channel)	Result
2402 ~ 2480	79	>75	Pass

2402-2421MHz



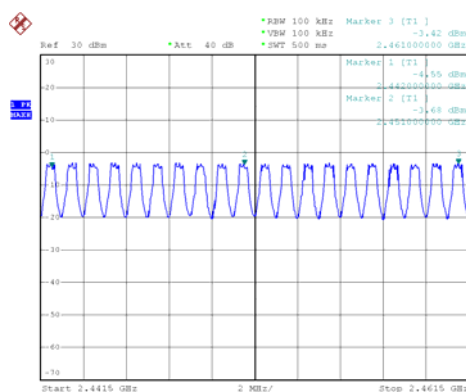
PN1
 Date: 2.JAN.2007 08:04:54

2422-2441MHz



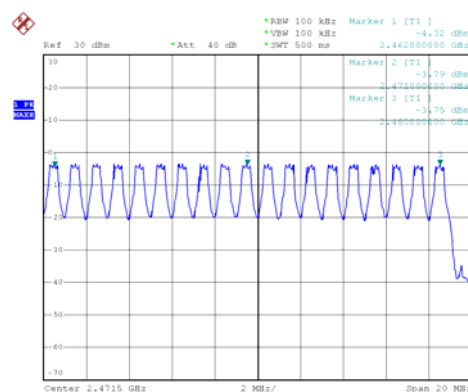
PN1
 Date: 2.JAN.2007 08:09:59

2442-2471MHz



PN1
 Date: 2.JAN.2007 08:14:01

2472-2481MHz



PN1
 Date: 2.JAN.2007 08:16:12

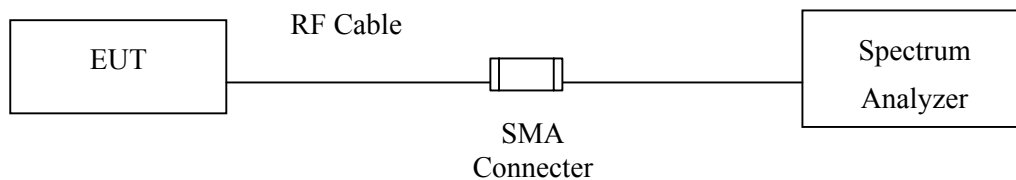
7. Channel Separation

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

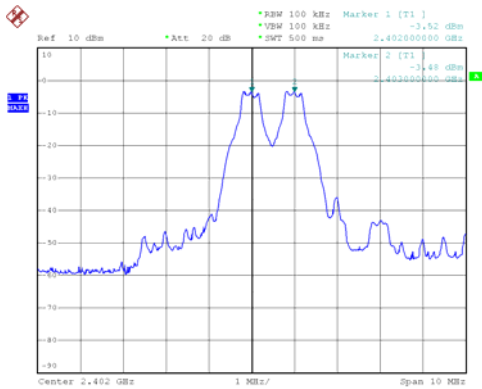
$\pm 150\text{Hz}$

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

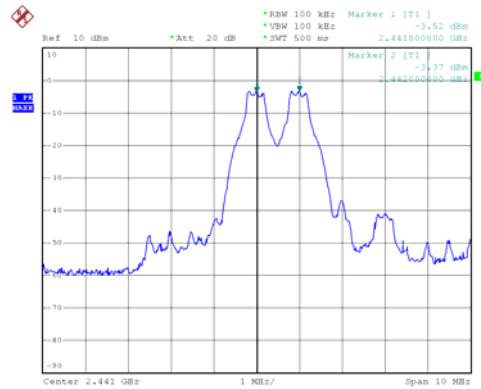
Frequency (MHz)	Measurement Level (MHz)	Required Limit	Result
2402	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2441	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2480	1.00	>25 kHz or 2/3 * 20 dB BW	Pass

Channel 00 2402MHz



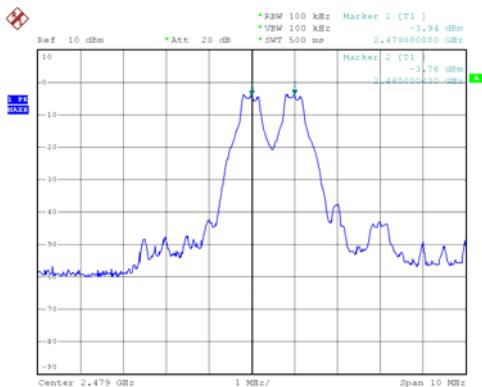
FN1
 Date: 2.JAN.2007 07:58:21

Channel 39 2441MHz



FN1
 Date: 2.JAN.2007 07:59:50

Channel 78 2480 MHz



FN1
 Date: 2.JAN.2007 08:01:07

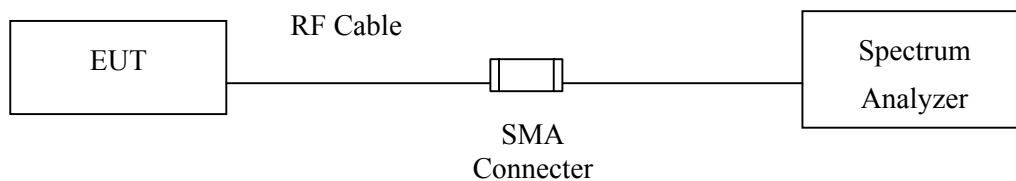
8. Dwell Time

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

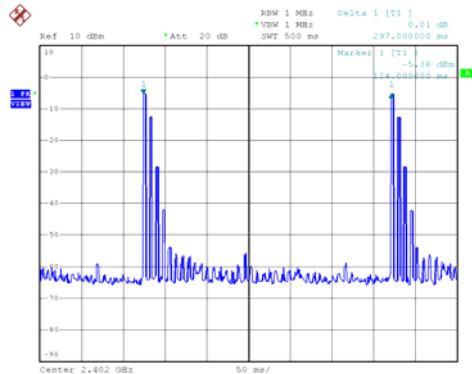
8.5. Test Result of Dwell Time

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	3060	325.5757576	400	Pass
39	2441	296	3060	326.6756757	400	Pass
78	2480	297	3060	325.5757576	400	Pass

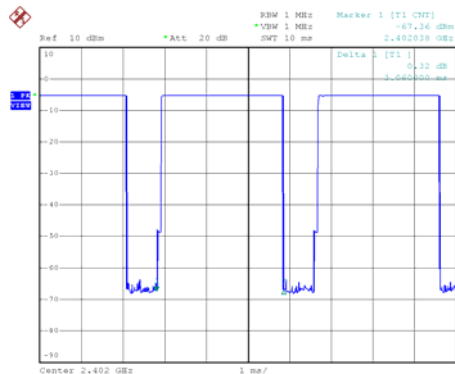
Note: Dwell Time = 79 * 400 / Time Interval Between Hops * Transmission Time / 1000

CH 2402MHz Time Interval between hops



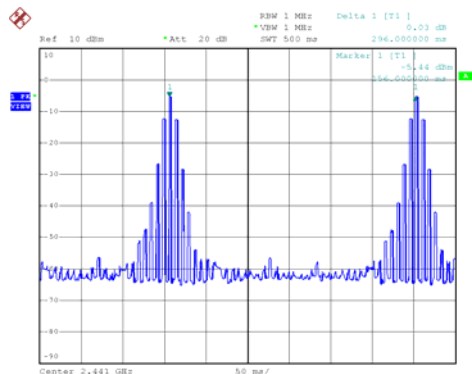
PN1
 Date: 25.JAN.2007 10:36:07

Transmission Time



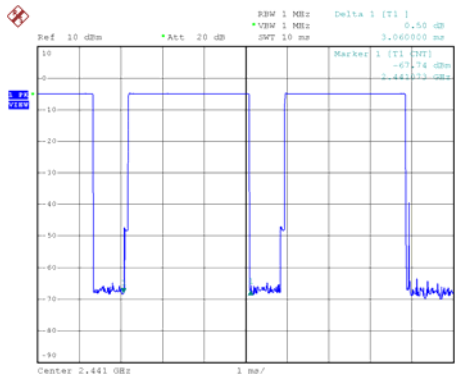
PN1
 Date: 25.JAN.2007 11:06:34

CH 2441MHz Time Interval between hops



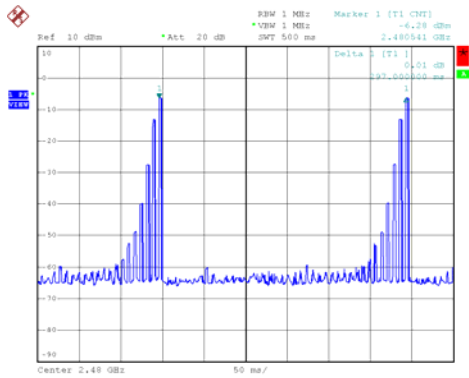
PN1
 Date: 25.JAN.2007 11:03:25

Transmission Time



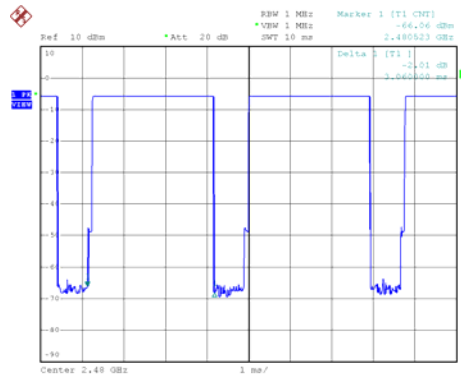
PN1
 Date: 25.JAN.2007 11:07:17

CH 2480MHz Time Interval between hops



PN1
 Date: 25.JAN.2007 11:04:21

Transmission Time



PN1
 Date: 25.JAN.2007 11:08:12

Note:

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

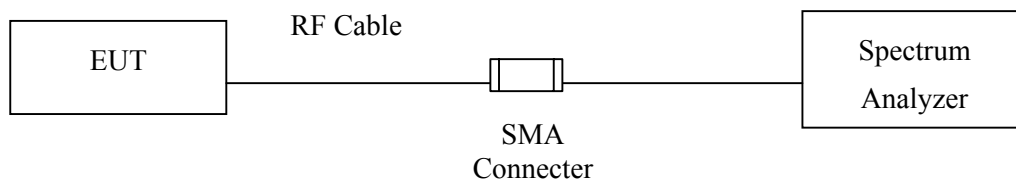
9. Occupied Bandwidth

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

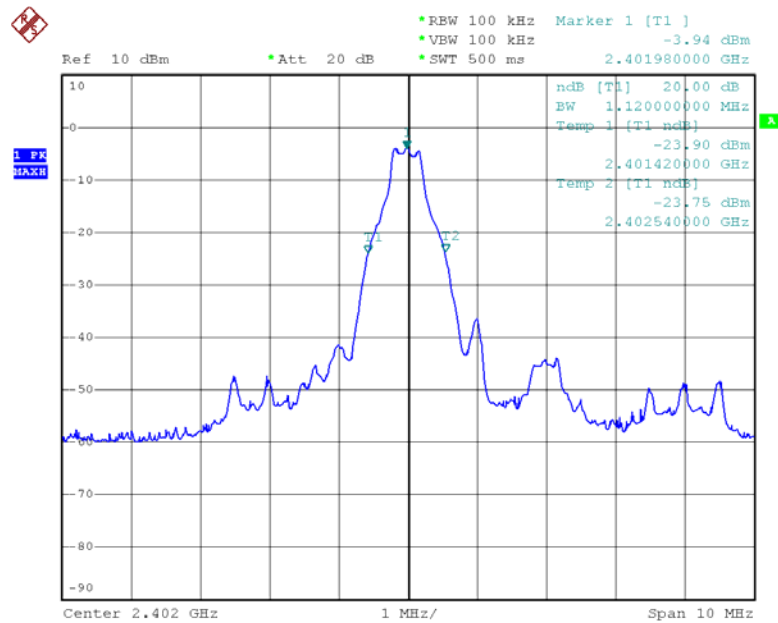
$\pm 150\text{Hz}$

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	1120	--	N/A

Figure Channel 00:



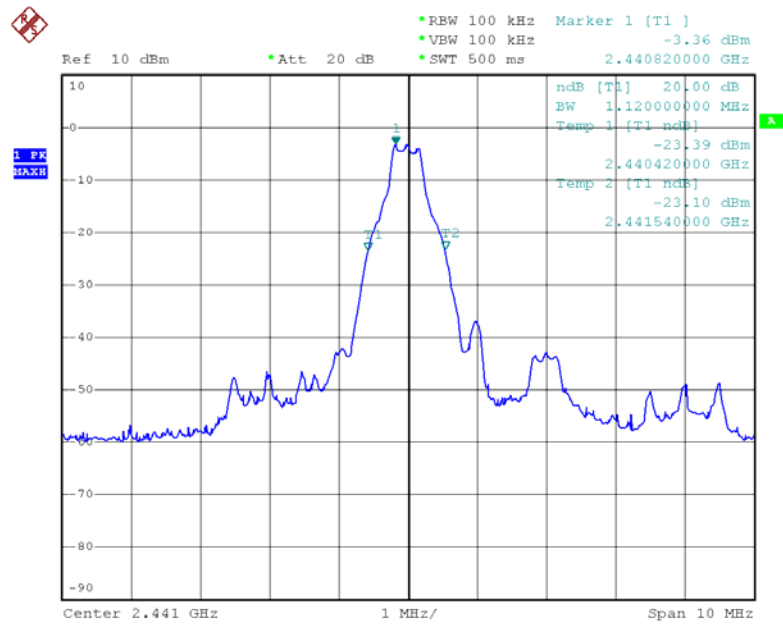
PN1

Date: 2.JAN.2007 07:55:06

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	1120	--	N/A

Figure Channel 39:



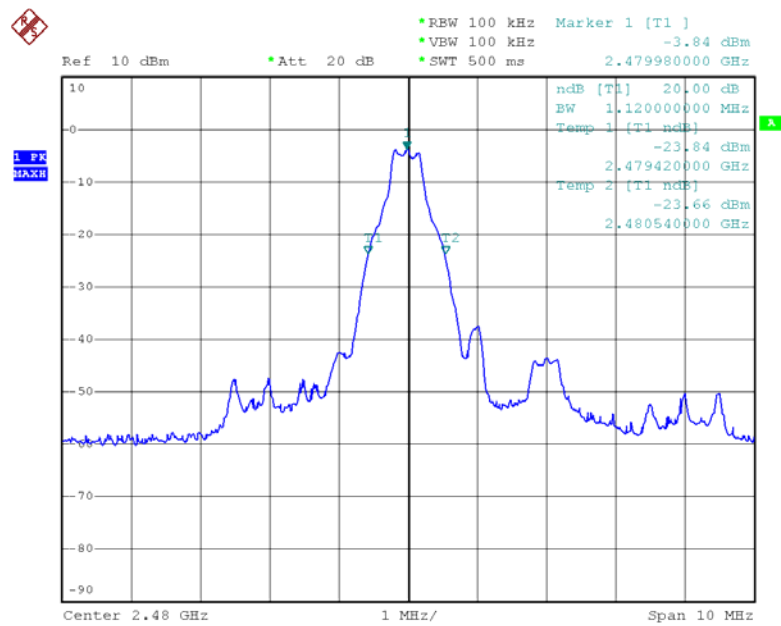
PN1

Date: 2.JAN.2007 07:55:57

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	1120	--	N/A

Figure Channel 78:



PN1

Date: 2.JAN.2007 07:56:47

10. EMI Reduction Method During Compliance Testing

No modification was made during testing.