



Test Report

Product Name	Bluetooth Audio Dongle
Model No.	HSTNN-DM20, H401
FCC ID.	O62H401

Applicant	Darfon Electronics Corp.
Address	6, Feng-Shu Tsuen, Gueishan Taoyuan, County 333, Taiwan.

Date of Receipt	Dec. 17, 2007
Issued Date	Jan. 03, 2008
Report No.	07C244R-RFUSP06V01-A

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. 03, 2008

Report No.: 07C244R-RFUSP06V01-A



Product Name	Bluetooth Audio Dongle
Applicant	Darfon Electronics Corp.
Address	6, Feng-Shu Tsuen, Gueishan Taoyuan, County 333, Taiwan.
Manufacturer	Darfon Electronics (Suzhou) Co., Ltd.
Model No.	HSTNN-DM20, H401
FCC ID.	O62H401
Rated Voltage	AC 120V/60Hz
Working Voltage	DC 5V
Trade Name	HP
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2006 ANSI C63.4: 2003
Test Result	Complied



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Approved By : Vincent Lin
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TABLE OF CONTENTS

Description	Page
1. GENERAL INFORMATION	5
1.1. EUT Description.....	5
1.2. Operational Description.....	7
1.3. Tested System Details.....	8
2.1. Configuration of Tested System	8
2.2. EUT Exercise Software	8
2.3. Test Facility	9
3. CONDUCTED EMISSION	10
3.1. Test Equipment.....	10
3.2. Test Setup	10
3.3. Limits.....	11
3.4. Test Procedure	11
3.5. Uncertainty	11
3.6. Test Result of Conducted Emission.....	12
4. PEAK POWER OUTPUT	16
4.1. Test Equipment.....	16
4.2. Test Setup	16
4.3. Limit	16
4.4. Test Procedure	16
4.5. Uncertainty	16
4.6. Test Result of Peak Power Output.....	17
5. RADIATED EMISSION	19
5.1. Test Equipment.....	19
5.2. Test Setup	20
5.3. Limits.....	20
5.4. Test Procedure	21
5.5. Uncertainty	21
5.6. Test Result of Radiated Emission.....	22
6. RF ANTENNA CONDUCTED TEST	30
6.1. Test Equipment.....	30
6.2. Test Setup	30
6.3. Limits.....	30
6.4. Test Procedure	30
6.5. Uncertainty	30
6.6. Test Result of RF Antenna Conducted Test	31
7. BAND EDGE	37
7.1. Test Equipment.....	37
7.2. Test Setup	37
7.3. Limit	38
7.4. Test Procedure	38
7.5. Uncertainty	38
7.6. Test Result of Band Edge	39
8. CHANNEL NUMBER.....	47
8.1. Test Equipment.....	47
8.2. Test Setup	47
8.3. Limit	47
8.4. Test Procedure	47
8.5. Uncertainty	47
8.6. Test Result of Channel Number.....	48
9. CHANNEL SEPARATION.....	50
9.1. Test Equipment.....	50
9.2. Test Setup	50
9.3. Limit	50
9.4. Test Procedure	50
9.5. Uncertainty	50
9.6. Test Result of Channel Separation.....	51
10. DWELL TIME.....	53
10.1. Test Equipment.....	53

10.2.	Test Setup	53
10.3.	Limit	53
10.4.	Test Procedure	53
10.5.	Uncertainty	53
10.6.	Test Result of Dwell Time	54
11.	OCCUPIED BANDWIDTH	58
11.1.	Test Equipment	58
11.2.	Test Setup	58
11.3.	Limits	58
11.4.	Test Procedure	58
11.5.	Uncertainty	58
11.6.	Test Result of Occupied Bandwidth	59
12.	EMI REDUCTION METHOD DURING COMPLIANCE TESTING	65

Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Bluetooth Audio Dongle
Trade Name	HP
FCC ID.	O62H401
Model No.	HSTNN-DM20, H401
Frequency Range	2402 – 2480MHz
Channel Number	79
Type of Modulation	FHSS (GFSK/8DPSK)
Antenna Interface	Printed on PCB
Channel Control	Auto
Antenna Gain	Refer to the table “Antenna List”
Power Adapter	DELTA, EADP-5CB A Input: 100-240V, 50-60Hz Output: 5V-1A

Antenna List

No.	Manufacturer	Part No.	Peak Gain
1	Darfon	N/A	0.25dBi 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. This device is a Bluetooth Audio Dongle with a built-in 2.4GHz BluetoothVer.2.0+EDR transceiver.
2. These tests were conducted on a sample for the purpose of demonstrating compliance of bluetooth transmitter with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
4. 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 Audio Dongle with a built-in 2.4GHz BluetoothVer.2.0+EDR transceiver. There are 79 channels in 2402 – 2480MHz. The channels are separated by 1MHz. This device supports the data rates of 1Mbps, 2Mbps and 3Mbps. The antenna type is Printer on PCB.

Test Mode	Mode 1: Transmitter - 1Mbps (GFSK) Mode 2: Transmitter - 3Mbps (8DPSK)
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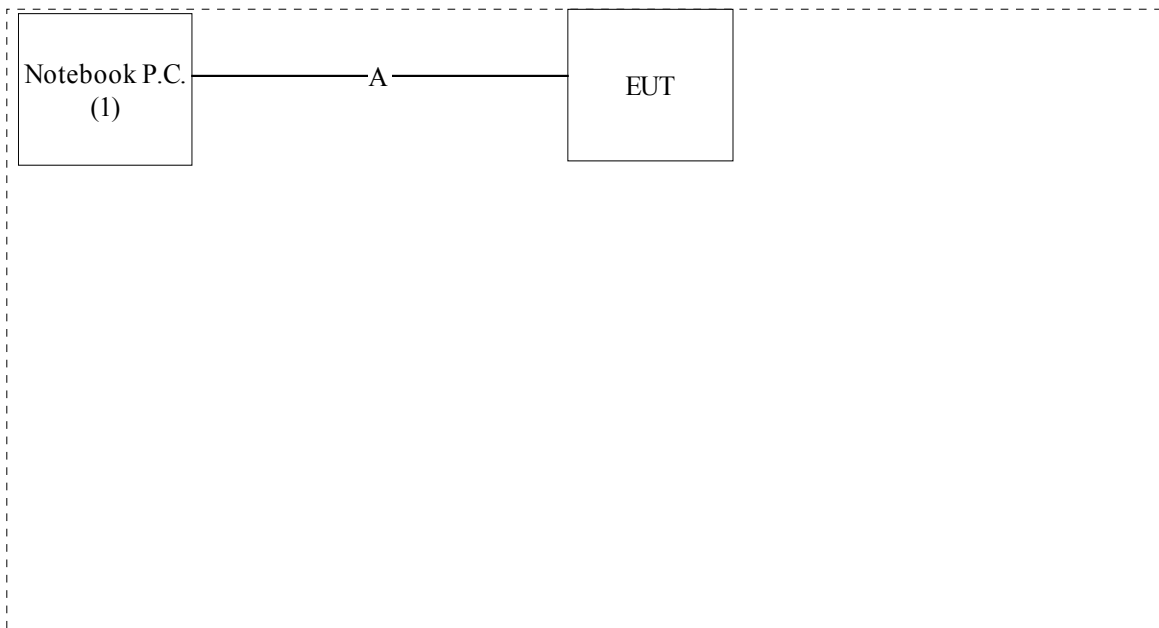
1.3. Tested System Details

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

	Product	Manufacturer	Model No.	Serial No.	Power Cord
(1)	Notebook P.C.	ASUS	L4000L	37NP067733	N/A

	Signal Cable Type	Signal cable Description
2.	Print Cable	Shielded, 1.2m

2.1. Configuration of Tested System



2.2. EUT Exercise Software

- 1 Setup the EUT as shown in section 1.4.
- 2 Execute “Bluesuilte.exe” on the notebook.
- 3 Press selects the test channel and test data rate.
- 4 Press “Transmit Data” to start the continuous transmission.

2.3. 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: File on
 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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 Site Address: No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen,
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 E-Mail : service@quietek.com

FCC Accreditation Number: TW1014



3. Conducted Emission

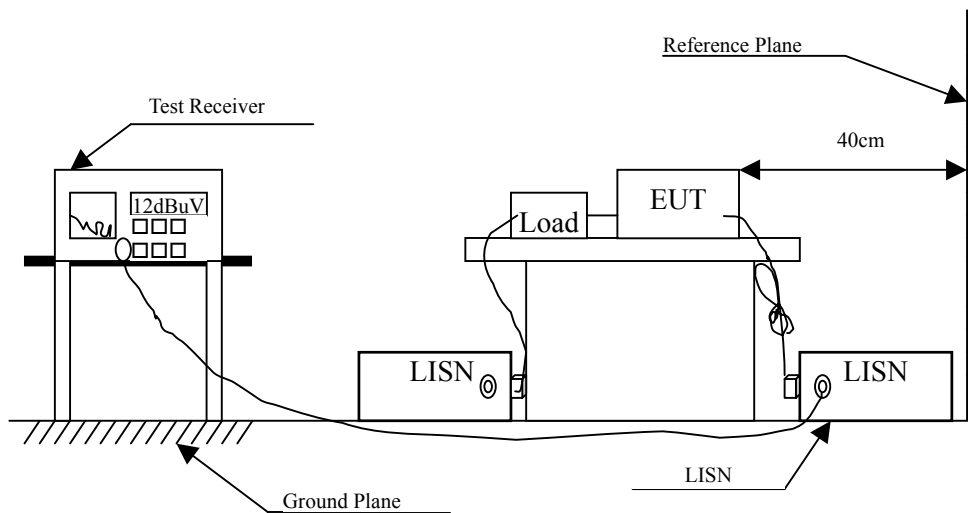
3.1. Test Equipment

The following test equipment are used during the conducted emission test:

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal.	Remark
1	Test Receiver	R & S	ESCS 30/825442/17	May, 2007	
2	L.I.S.N.	R & S	ESH3-Z5/825016/6	May, 2007	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 2007	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	May, 2007	
5	No.1 Shielded Room			N/A	

Note: All instruments are calibrated every one year.

3.2. Test Setup



3.3. 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.

3.4. 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.

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

3.5. Uncertainty

± 2.26 dB

3.6. Test Result of Conducted Emission

Product : Bluetooth Audio Dongle
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK) (2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
LINE 1					
Quasi-Peak					
0.197	0.670	43.170	43.840	-20.817	64.657
0.923	0.310	35.760	36.070	-19.930	56.000
1.650	0.330	34.440	34.770	-21.230	56.000
3.564	0.390	39.550	39.940	-16.060	56.000
10.435	0.620	41.440	42.060	-17.940	60.000
15.513	1.010	48.860	49.870	-10.130	60.000
Average					
0.197	0.670	38.660	39.330	-15.327	54.657
0.923	0.310	34.170	34.480	-11.520	46.000
1.650	0.330	33.230	33.560	-12.440	46.000
3.564	0.390	36.230	36.620	-9.380	46.000
10.435	0.620	36.770	37.390	-12.610	50.000
15.513	1.010	44.870	45.880	-4.120	50.000

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 Audio Dongle
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK) (2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
LINE 2					
Quasi-Peak					
0.197	0.300	44.040	44.340	-20.317	64.657
0.263	0.300	42.320	42.620	-20.151	62.771
0.662	0.310	36.930	37.240	-18.760	56.000
1.584	0.340	35.210	35.550	-20.450	56.000
5.873	0.430	39.090	39.520	-20.480	60.000
15.576	0.900	47.610	48.510	-11.490	60.000
Average					
0.197	0.300	42.540	42.840	-11.817	54.657
0.263	0.300	37.290	37.590	-15.181	52.771
0.662	0.310	35.930	36.240	-9.760	46.000
1.584	0.340	33.970	34.310	-11.690	46.000
5.873	0.430	36.690	37.120	-12.880	50.000
15.576	0.900	43.710	44.610	-5.390	50.000

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 Audio Dongle
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK) (2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
LINE 1					
Quasi-Peak					
0.396	0.300	36.030	36.330	-22.641	58.971
1.056	0.320	35.110	35.430	-20.570	56.000
2.045	0.340	35.330	35.670	-20.330	56.000
3.759	0.390	39.730	40.120	-15.880	56.000
10.224	0.610	43.070	43.680	-16.320	60.000
12.666	0.848	49.260	50.108	-9.892	60.000
Average					
0.396	0.300	33.830	34.130	-14.841	48.971
1.056	0.320	33.450	33.770	-12.230	46.000
2.045	0.340	33.880	34.220	-11.780	46.000
3.759	0.390	35.530	35.920	-10.080	46.000
10.224	0.610	39.170	39.780	-10.220	50.000
12.666	0.848	45.720	46.568	-3.432	50.000

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 Audio Dongle
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK) (2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
LINE 2					
Quasi-Peak					
0.197	0.300	44.100	44.400	-20.257	64.657
0.857	0.320	37.640	37.960	-18.040	56.000
3.037	0.370	34.040	34.410	-21.590	56.000
5.673	0.430	39.060	39.490	-20.510	60.000
10.224	0.510	42.380	42.890	-17.110	60.000
12.798	0.760	49.100	49.860	-10.140	60.000
Average					
0.197	0.300	42.630	42.930	-11.727	54.657
0.857	0.320	36.370	36.690	-9.310	46.000
3.037	0.370	31.660	32.030	-13.970	46.000
5.673	0.430	36.970	37.400	-12.600	50.000
10.224	0.510	39.030	39.540	-10.460	50.000
12.798	0.760	45.950	46.710	-3.290	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. "█" means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

4. Peak Power Output

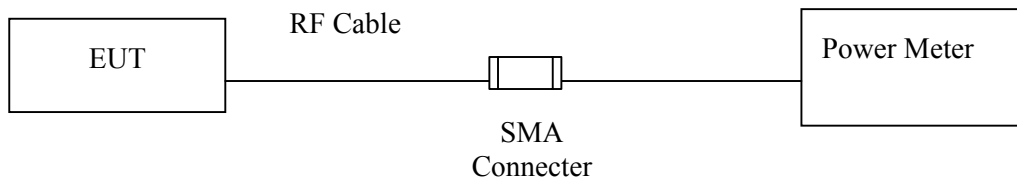
4.1. Test Equipment

The following test equipments are used during the radiated emission tests:

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X Power Meter	Anritsu	ML2495A/6K00003357	May, 2007
X Power Sensor	Anritsu	MA2491A/034457	May, 2007

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

4.2. Test Setup



4.3. Limit

According to FCC Section 15.247(b)(3). The maximum peak power shall be less 1Watt.

4.4. Test Procedure

Set the RBW greater than 6 dB bandwidth of the emission or use a peak power meter.
 The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

4.5. Uncertainty

± 1.27 dB

4.6. Test Result of Peak Power Output

Product : Bluetooth Audio Dongle
Test Item : Peak Power Output
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)

Cable loss: 0.5dB				
Channel No.	Frequency (MHz)	Measurement	Required Limit	Result
Channel 00	2402.00	-6.37dBm	1 Watt= 30 dBm	Pass
Channel 39	2441.00	-4.05dBm	1 Watt= 30 dBm	Pass
Channel 78	2480.00	-2.51dBm	1 Watt= 30 dBm	Pass

Product : Bluetooth Audio Dongle
Test Item : Peak Power Output
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)

Cable loss: 0.5dB				
Channel No.	Frequency (MHz)	Measurement	Required Limit	Result
Channel 00	2402.00	-4.20dBm	1 Watt= 30 dBm	Pass
Channel 39	2441.00	-4.34dBm	1 Watt= 30 dBm	Pass
Channel 78	2480.00	-3.96dBm	1 Watt= 30 dBm	Pass

5. Radiated Emission

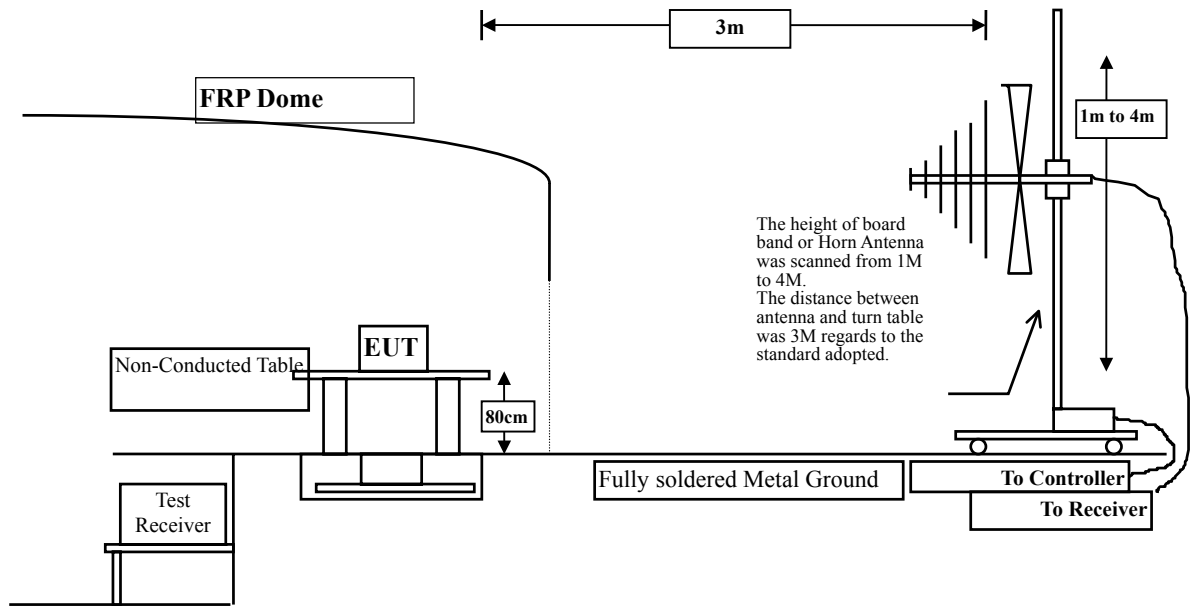
5.1. Test Equipment

The following test equipments are used during the radiated emission test:

Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
<input type="checkbox"/> Site # 1	Test Receiver	R & S	ESVS 10 / 834468/003	May, 2007
	Spectrum Analyzer	Advantest	R3162/ 00803480	May, 2007
	Pre-Amplifier	Advantest	BB525C/ 3307A01812	May, 2007
	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	Sep., 2007
<input type="checkbox"/> Site # 2	Test Receiver	R & S	ESCS 30 / 836858 / 022	May, 2007
	Spectrum Analyzer	Advantest	R3162 / 100803466	May, 2007
	Pre-Amplifier	Advantest	BB525C/3307A01814	May, 2007
	Bilog Antenna	SCHAFFNER	CBL6112B / 2705	May, 2007
	Horn Antenna	ETS	3115 / 0005-6160	Sep., 2007
	Pre-Amplifier	QTK	QTK-AMP-01/ 0001	May, 2007
<input checked="" type="checkbox"/> Site # 3	Test Receiver	R & S	ESI 26 / 838786 / 004	May, 2007
	Spectrum Analyzer	HP	E4407B / US39440758	May, 2007
	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2007
	Horn Antenna	Schwarzbeck	BBHA9120D / 305, 306	July, 2007
	Horn Antenna	Schwarzbeck	BBHA9170 / 208, 209	July, 2007
	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2007
	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2007
	Pre-Amplifier	HP	8449B / 3008A01123	July, 2007

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

5.2. Test Setup



5.3. Limits

➤ General Radiated Emission Limits

Attenuation below the general limits specified in FCC 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC 15.205(a), must also comply in FCC 15.209(a) (see FCC 15.205(c)).

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.

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 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.

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

5.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

5.6. Test Result of Radiated Emission

Product : Bluetooth Audio Dongle
 Test Item : Harmonic Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)(2402MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
1602.000	-9.376	58.620	49.244	-24.756	74.000
4804.000	-0.205	63.750	63.545	-10.455	74.000
7206.000	3.294	48.760	52.054	-21.946	74.000
9608.000	5.696	45.650	51.346	-22.654	74.000
Average					
Detector:					
4804.000	-0.205	53.560	53.355	-0.645	54.000
Vertical					
Peak Detector:					
1601.900	-9.376	60.320	50.944	-23.056	74.000
4804.000	-0.205	65.110	64.905	-9.095	74.000
7206.000	3.294	52.650	55.944	-18.056	74.000
9608.000	5.696	46.980	52.676	-21.324	74.000
Average					
Detector:					
4804.000	-0.205	53.320	53.115	-0.885	54.000
7206.000	3.294	40.450	43.744	-10.256	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz ◦
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:10Hz; 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 Audio Dongle
 Test Item : Harmonic Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)(2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
1598.300	-9.390	52.340	42.950	-31.050	74.000
4882.000	-0.276	61.370	61.094	-12.906	74.000
7323.000	3.330	46.510	49.839	-24.161	74.000
9764.000	6.262	44.210	50.473	-23.527	74.000
Average Detector:					
4882.000	-0.276	51.550	51.274	-2.726	54.000
Vertical					
Peak Detector:					
1591.700	-9.397	55.080	45.683	-28.317	74.000
4882.000	-0.276	62.050	61.774	-12.226	74.000
7323.000	3.330	47.630	50.959	-23.041	74.000
9764.000	6.262	45.310	51.573	-22.427	74.000
Average Detector:					
4882.000	-0.276	52.810	52.534	-1.466	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz ◦
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:10Hz; 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 Audio Dongle
 Test Item : Harmonic Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)(2480MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
1597.700	-9.391	52.850	43.459	-30.541	74.000
4960.000	0.591	60.620	61.211	-12.789	74.000
7440.000	3.924	42.330	46.254	-27.746	74.000
9920.000	6.468	40.960	47.428	-26.572	74.000
Average Detector:					
4960.000	0.591	48.050	48.641	-5.359	54.000
Vertical					
Peak Detector:					
1602.500	-9.376	54.910	45.534	-28.466	74.000
4960.000	0.591	59.840	60.431	-13.569	74.000
7440.000	3.924	42.350	46.274	-27.726	74.000
9920.000	6.468	40.850	47.318	-26.682	74.000
Average Detector:					
4960.000	0.591	46.550	47.141	-6.859	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz ◦
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:10Hz; 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 Audio Dongle
 Test Item : Harmonic Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)(2402MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
1601.400	-9.377	60.200	50.823	-23.177	74.000
4804.000	-0.205	60.040	59.835	-14.165	74.000
7206.000	3.294	45.920	49.214	-24.786	74.000
9608.000	5.696	43.750	49.446	-24.554	74.000
Average					
Detector:					
4804.000	-0.205	40.850	40.645	-13.355	54.000
Vertical					
Peak Detector:					
1600.800	-9.379	61.830	52.451	-21.549	74.000
4804.000	-0.205	61.340	61.135	-12.865	74.000
7206.000	3.294	49.380	52.674	-21.326	74.000
9608.000	5.696	43.610	49.306	-24.694	74.000
Average					
Detector:					
4804.000	-0.205	41.800	41.595	-12.405	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz ◦
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:10Hz; 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 Audio Dongle
 Test Item : Harmonic Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK) (2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
1601.500	-9.377	53.080	43.703	-30.297	74.000
4882.000	-0.276	58.510	58.234	-15.766	74.000
7323.000	3.330	42.860	46.189	-27.811	74.000
9764.000	6.262	42.680	48.943	-25.057	74.000
Average Detector:					
4882.000	-0.276	38.950	38.674	-15.326	54.000
Vertical					
Peak Detector:					
1601.300	-9.377	54.350	44.973	-29.027	74.000
4882.000	-0.276	57.970	57.694	-16.306	74.000
7323.000	3.330	45.280	48.609	-25.391	74.000
9764.000	6.262	42.640	48.903	-25.097	74.000
Average Detector:					
4882.000	-0.276	39.420	39.144	-14.856	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz ◦
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:10Hz; 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 Audio Dongle
 Test Item : Harmonic Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK) (2480MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
1594.300	-9.394	51.860	42.466	-31.534	74.000
4960.000	0.591	55.020	55.611	-18.389	74.000
7440.000	3.924	41.780	45.704	-28.296	74.000
9920.000	6.468	38.900	45.368	-28.632	74.000
Average Detector:					
4960.000	0.591	34.830	35.421	-18.579	54.000
Vertical					
Peak Detector:					
1602.700	-9.376	55.240	45.864	-28.136	74.000
4960.000	0.591	54.750	55.341	-18.659	74.000
7740.000	4.371	42.190	46.561	-27.439	74.000
9920.000	6.468	40.810	47.278	-26.722	74.000
Average Detector:					
4960.000	0.591	34.510	35.101	-18.899	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz ◦
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:10Hz; 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 Audio Dongle
 Test Item : General Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)(2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
375.320	16.017	25.096	41.113	-4.887	46.000
460.680	18.626	21.439	40.065	-5.935	46.000
652.740	20.876	14.485	35.361	-10.639	46.000
817.640	21.732	14.971	36.703	-9.297	46.000
846.740	22.232	16.324	38.556	-7.444	46.000
912.700	22.319	13.628	35.947	-10.053	46.000
Vertical					
379.200	16.655	23.688	40.343	-5.657	46.000
528.580	18.993	14.777	33.770	-12.230	46.000
623.640	21.210	10.735	31.945	-14.055	46.000
794.360	21.866	14.508	36.374	-9.626	46.000
932.100	24.140	9.156	33.296	-12.704	46.000
961.200	23.009	8.613	31.622	-22.378	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
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 Audio Dongle
 Test Item : General Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
373.380	15.785	25.820	41.605	-4.395	46.000
470.380	18.642	20.814	39.456	-6.544	46.000
528.580	18.638	15.688	34.326	-11.674	46.000
782.720	21.519	13.425	34.944	-11.056	46.000
846.740	22.232	19.093	41.325	-4.675	46.000
912.700	22.319	14.048	36.367	-9.633	46.000
Vertical					
379.200	16.655	23.590	40.245	-5.755	46.000
460.680	18.467	16.712	35.179	-10.821	46.000
530.520	19.011	15.182	34.193	-11.807	46.000
623.640	21.210	13.046	34.256	-11.744	46.000
796.300	21.884	16.444	38.328	-7.672	46.000
926.280	24.105	13.458	37.563	-8.437	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.

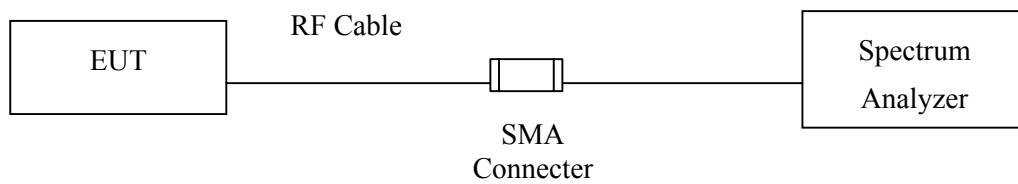
6. RF Antenna Conducted Test

6.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Test Receiver	R & S	ESI 26 / 838786 / 004	May, 2007

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

6.2. Test Setup



6.3. Limits

According to FCC Section 15.247(d). In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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 measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

6.4. Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

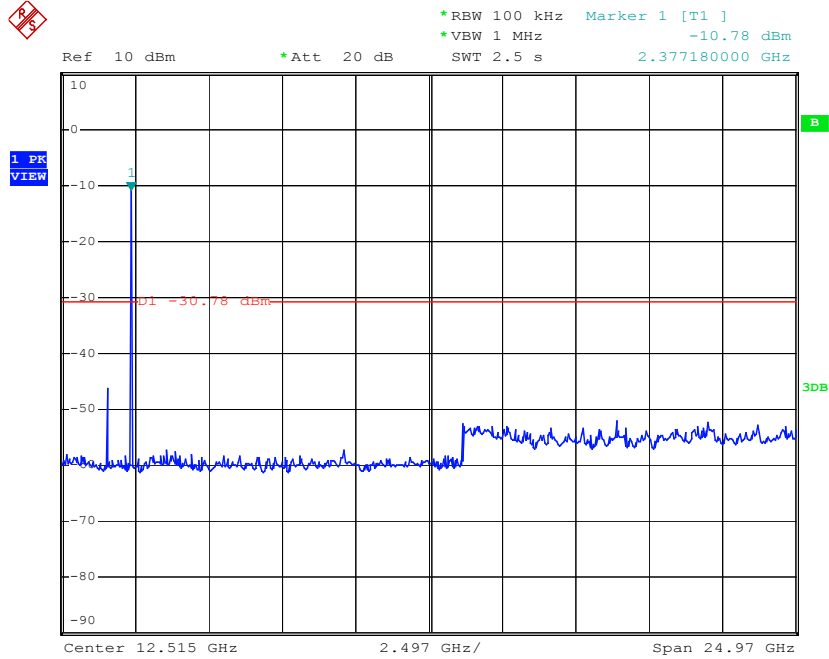
6.5. Uncertainty

± 150Hz

6.6. Test Result of RF Antenna Conducted Test

Product : Bluetooth Audio Dongle
 Test Item : RF Antenna Conducted Test
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK) (2402MHz)

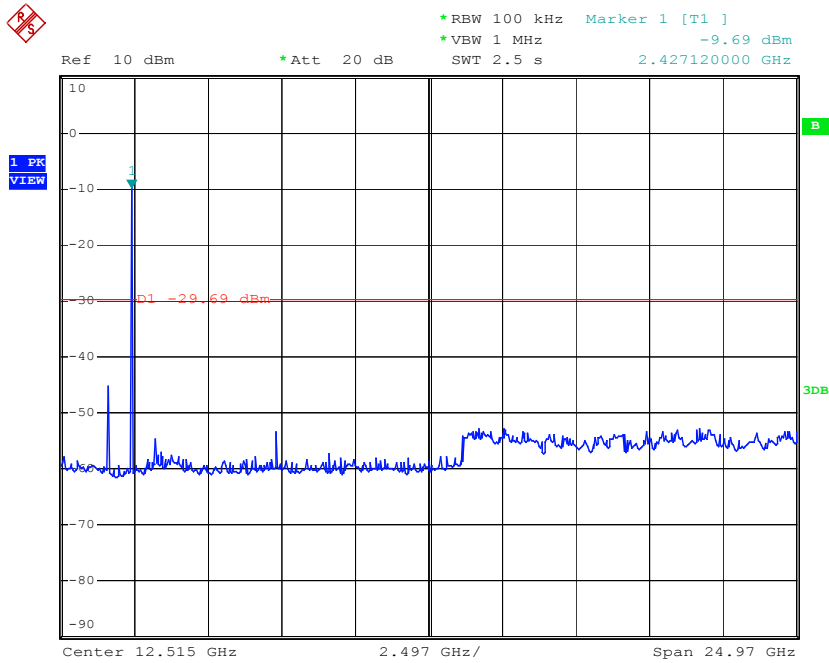
Figure Channel 00: 30-25GHz



Date: 25.DEC.2007 22:23:24

Product : Bluetooth Audio Dongle
Test Item : RF Antenna Conducted Test
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter - 1Mbps (GFSK) (2441MHz)

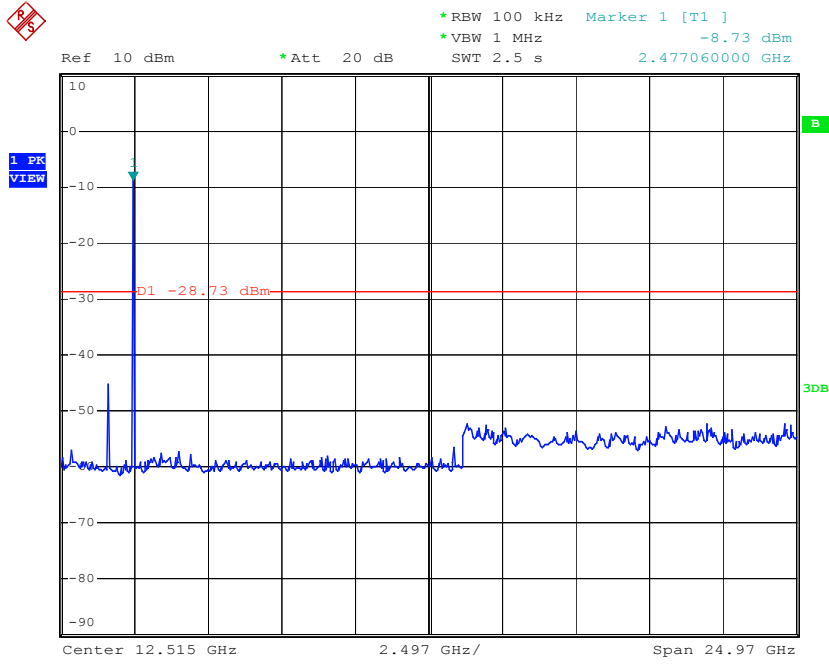
Figure Channel 39: 30-25GHz



Date: 25.DEC.2007 22:24:16

Product : Bluetooth Audio Dongle
Test Item : RF Antenna Conducted Test
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter - 1Mbps (GFSK) (2480MHz)

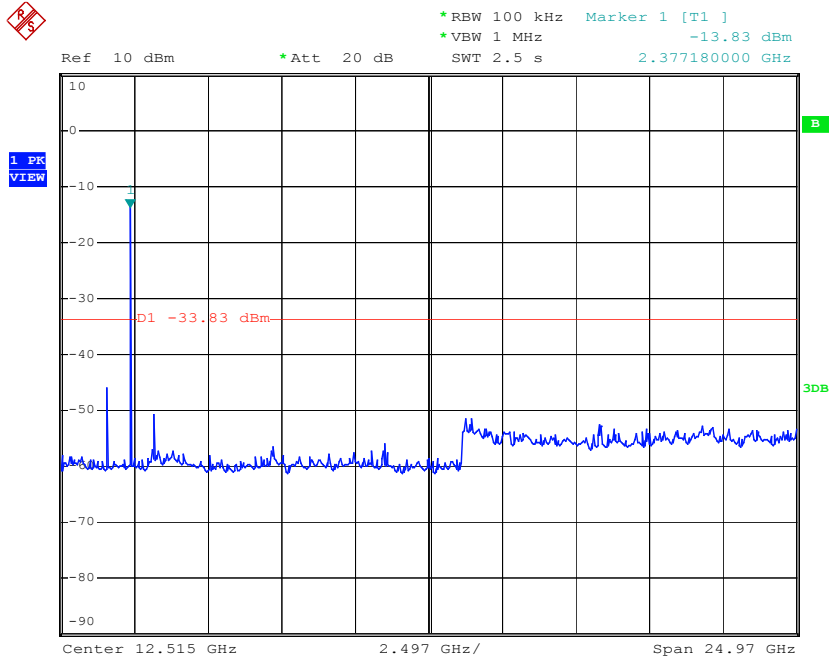
Figure Channel 78: 30-25GHz



Date: 25.DEC.2007 22:25:03

Product : Bluetooth Audio Dongle
Test Item : RF Antenna Conducted Test
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK) (2402MHz)

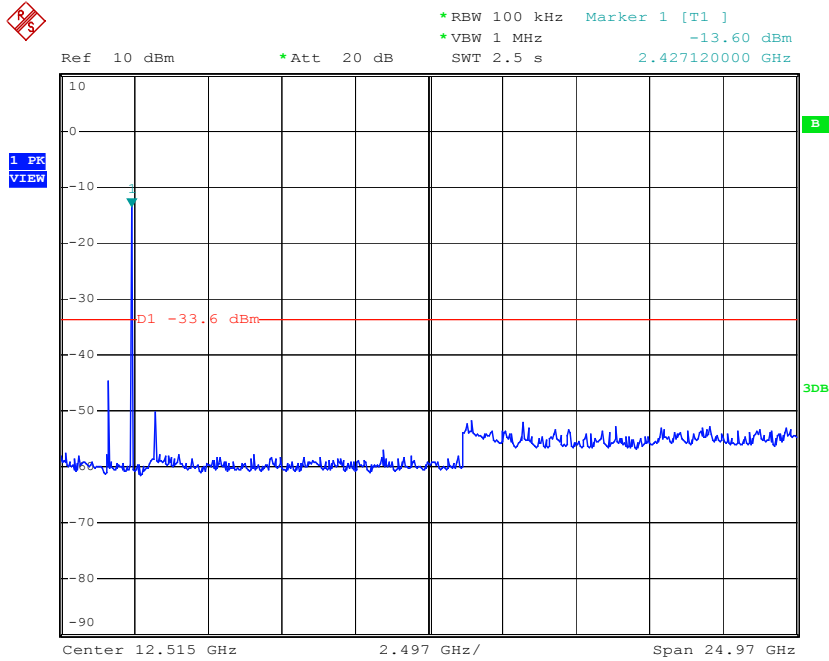
Figure Channel 00: 30-25GHz



Date: 25.DEC.2007 22:28:20

Product : Bluetooth Audio Dongle
Test Item : RF Antenna Conducted Test
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK) (2441MHz)

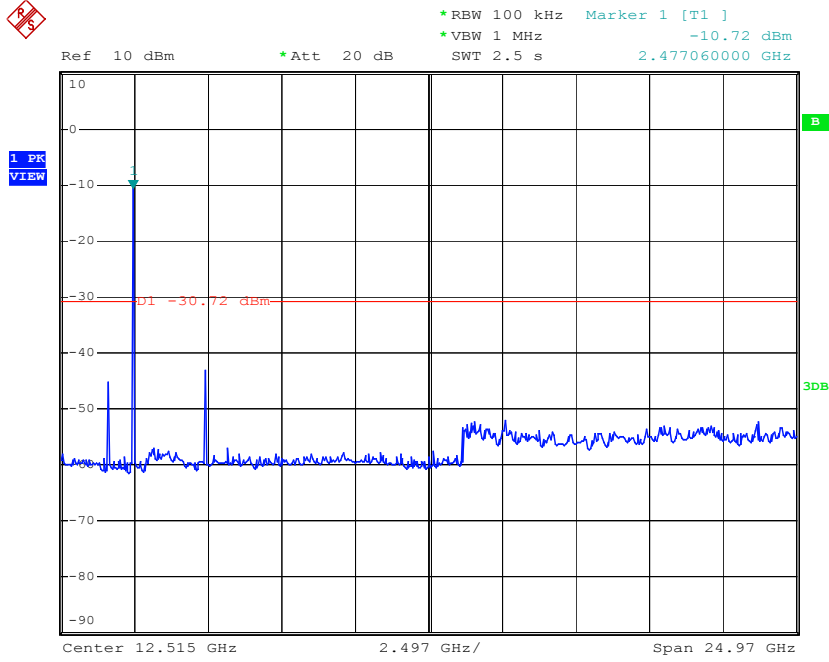
Figure Channel 39: 30-25GHz



Date: 25.DEC.2007 22:27:42

Product : Bluetooth Audio Dongle
Test Item : RF Antenna Conducted Test
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK) (2480MHz)

Figure Channel 78: 30-25GHz



Date: 25.DEC.2007 22:26:24

7. Band Edge

7.1. Test Equipment

The following test equipments are used during the band edge tests:

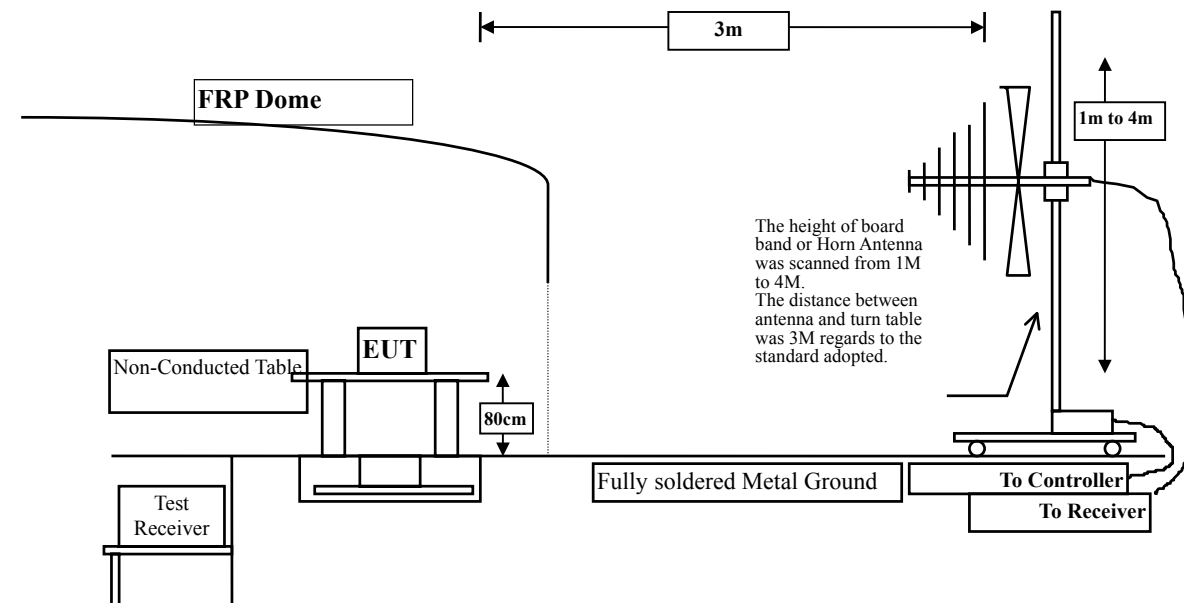
	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Test Receiver	R & S	ESI 26 / 838786 / 004	May, 2007
X	Spectrum Analyzer	HP	E4407B / US39440758	May, 2007
X	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2007
X	Horn Antenna	Schwarzbeck	BBHA9120D / 305, 306	July, 2007
X	Horn Antenna	Schwarzbeck	BBHA9170 / 208, 209	July, 2007
X	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2007
X	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2007
X	Pre-Amplifier	HP	8449B / 3008A01123	July, 2007

Test Site Site 3

- 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

RF Radiated Measurement:



7.3. Limit

Attenuation below the general limits specified in FCC 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC 15.205(a), must also comply in FCC 15.209(a) (see FCC 15.205(c)).

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.

7.4. 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. The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

7.5. Uncertainty

Conducted is ± 1 MHz

Radiated is ± 3.9 dB

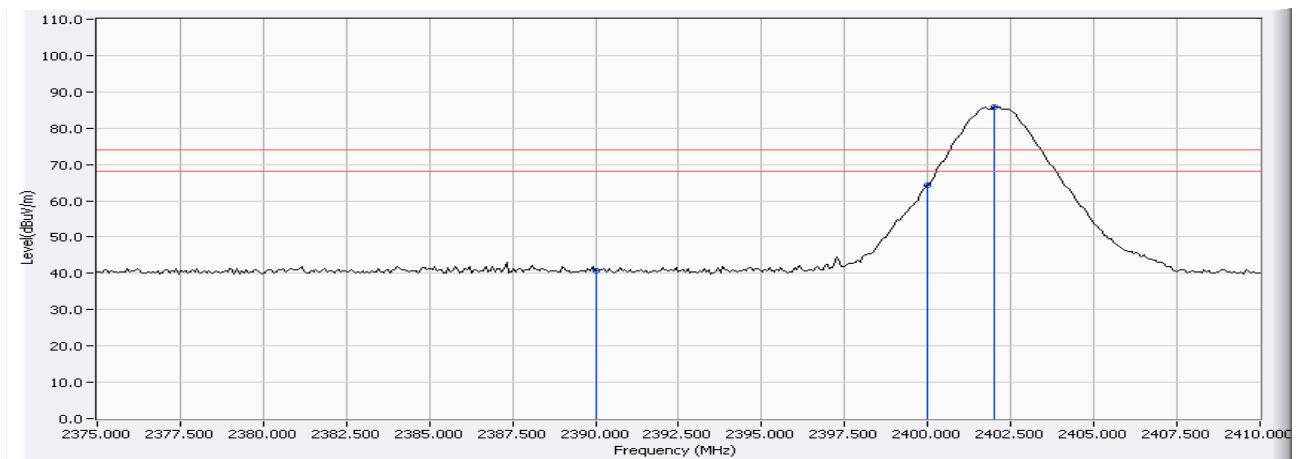
7.6. Test Result of Band Edge

Product : Bluetooth Audio Dongle
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)(2402MHz)

RF Radiated Measurement (Horizontal):

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2390.000	-6.769	47.558	40.790	74.00	54.00	Pass
00 (Peak)	2400.000	-6.730	70.974	64.244	74.00	54.00	Pass
00 (Peak)	2402.020	-6.725	92.570	85.845	74.00	54.00	Pass

Figure Channel 00: (Horizontal) (Peak)



Note:

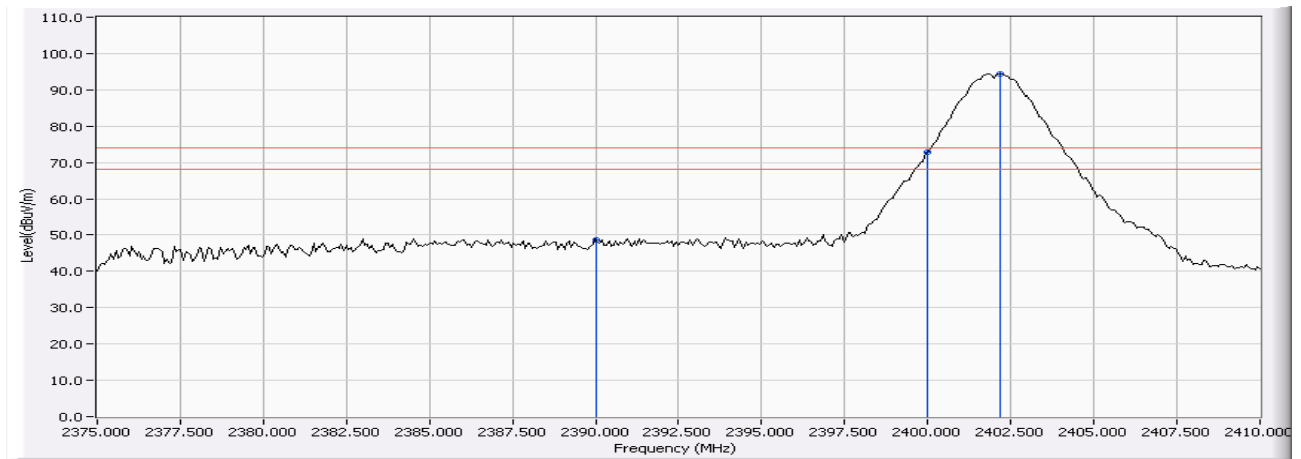
RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Product : Bluetooth Audio Dongle
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)(2402MHz)

RF Radiated Measurement (Vertical):

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2390.000	-6.769	55.401	48.633	74.00	54.00	Pass
00 (Peak)	2400.000	-6.730	79.704	72.974	74.00	54.00	Pass
00 (Peak)	2402.160	-6.724	101.010	94.286	74.00	54.00	Pass

Figure Channel 00: (Vertical) (Peak)



Note:

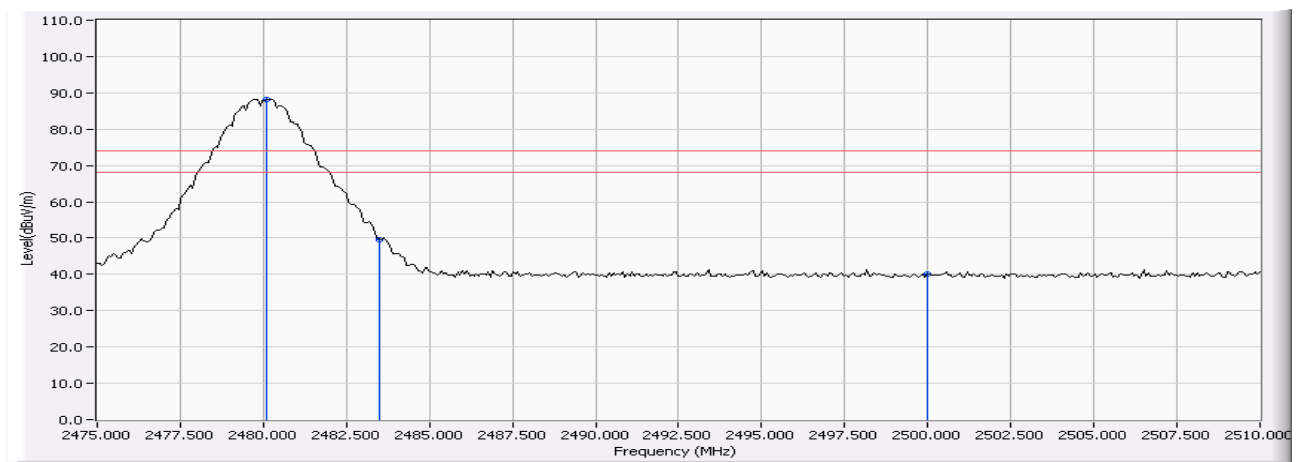
RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Product : Bluetooth Audio Dongle
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)(2480MHz)

RF Radiated Measurement (Horizontal):

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78(Peak)	2480.110	-6.473	94.752	88.278	74.00	54.00	Pass
78(Peak)	2483.500	-6.469	56.108	49.640	74.00	54.00	Pass
78(Peak)	2500.000	-6.437	46.501	40.064	74.00	54.00	Pass

Figure Channel 78: (Horizontal) (Peak)



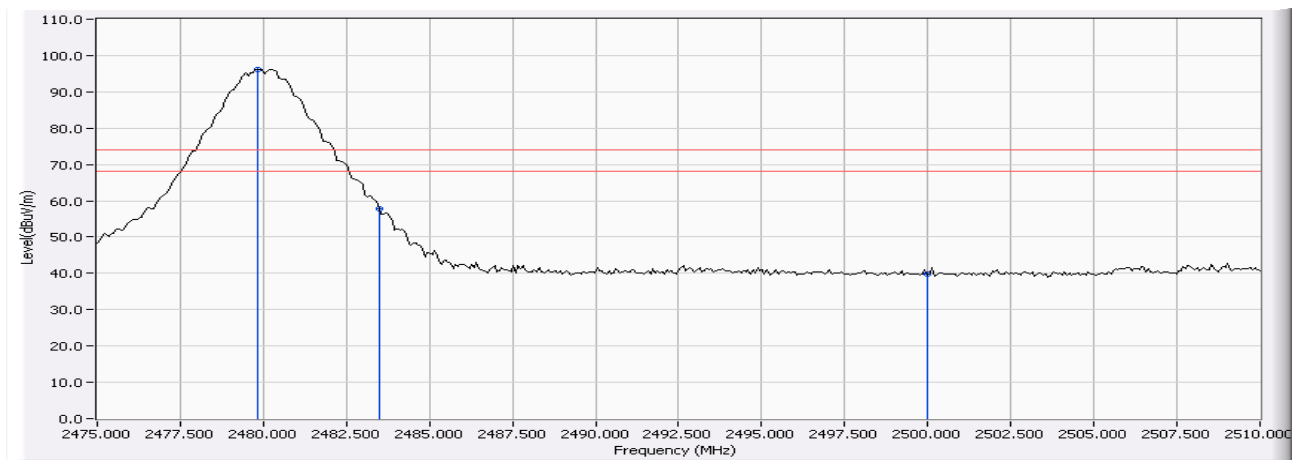
Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

Product : Bluetooth Audio Dongle
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)(2480MHz)

RF Radiated Measurement (Vertical):

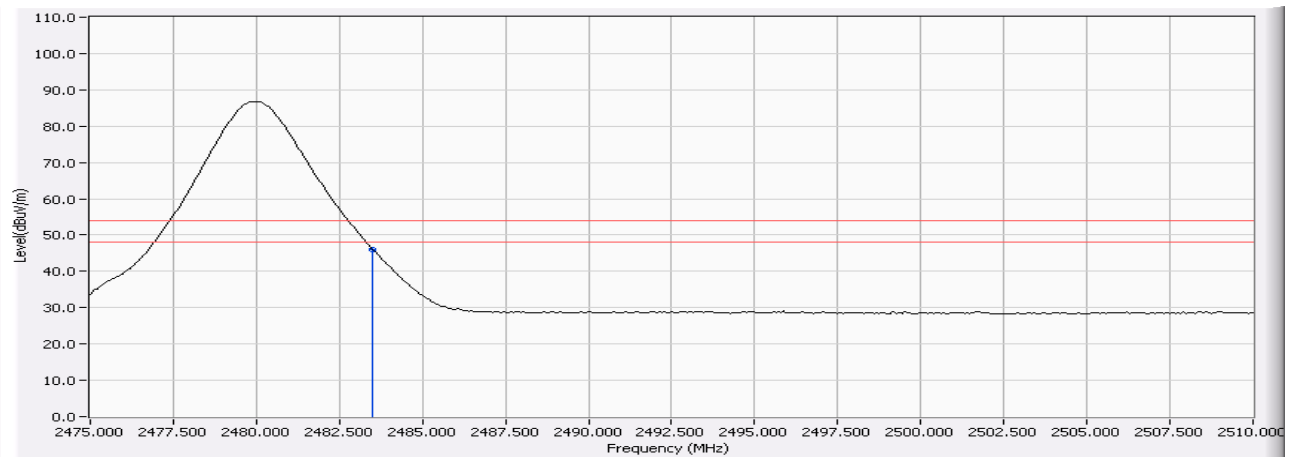
Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78(Peak)	2479.830	-6.475	102.680	96.205	74.00	54.00	Pass
78(Peak)	2483.500	-6.469	64.360	57.892	74.00	54.00	Pass
78(Peak)	2500.000	-6.437	46.140	39.703	74.00	54.00	Pass
78(Average)	2483.500	-6.469	52.584	46.116	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=300Hz, Sweep Time=500ms.

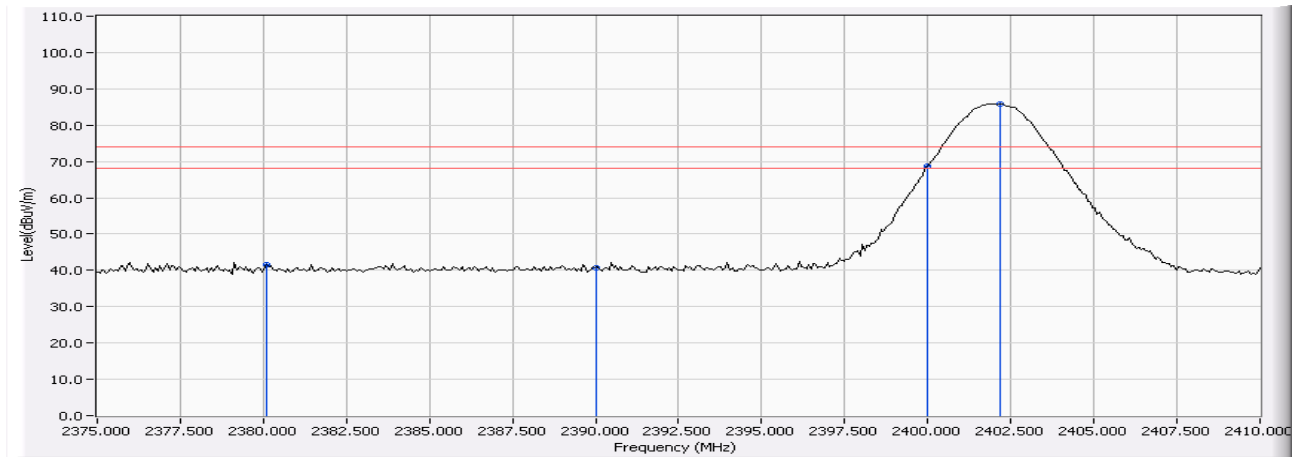
Note: The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : Bluetooth Audio Dongle
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)(2402MHz)

RF Radiated Measurement (Horizontal):

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2380.110	-6.800	48.365	41.565	74.00	54.00	Pass
00 (Peak)	2390.000	-6.769	47.564	40.796	74.00	54.00	Pass
00 (Peak)	2400.000	-6.730	75.578	68.848	74.00	54.00	Pass
00 (Peak)	2402.160	-6.724	92.495	85.771	74.00	54.00	Pass

Figure Channel 00: (Horizontal) (Peak)



Note:

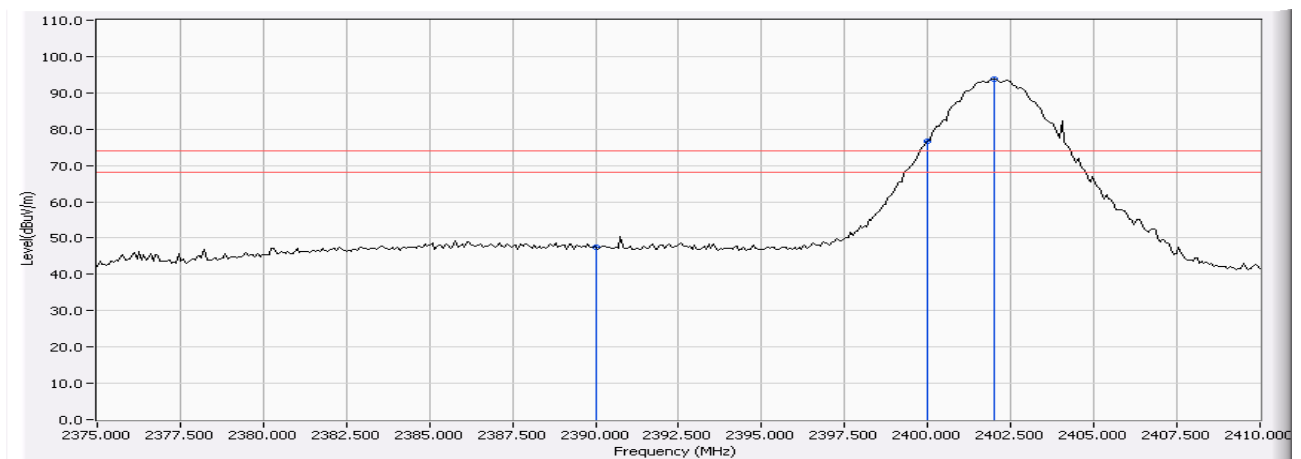
RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Product : Bluetooth Audio Dongle
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)(2402MHz)

RF Radiated Measurement (Vertical):

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2390.000	-6.769	54.331	47.563	74.00	54.00	Pass
00 (Peak)	2400.000	-6.730	83.483	76.753	74.00	54.00	Pass
00 (Peak)	2402.020	-6.725	100.402	93.677	74.00	54.00	Pass

Figure Channel 00: (Vertical) (Peak)



Note:

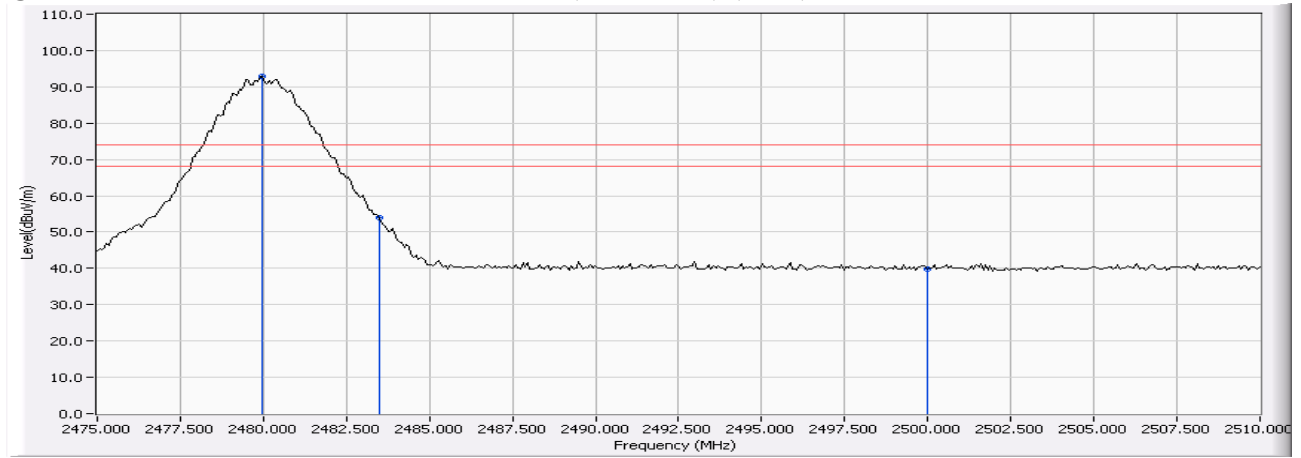
RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Product : Bluetooth Audio Dongle
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)(2480MHz)

RF Radiated Measurement (Horizontal):

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78(Peak)	2479.970	-6.475	99.456	92.981	74.00	54.00	Pass
78(Peak)	2483.500	-6.469	59.300	52.832	74.00	54.00	Pass
78(Peak)	2500.000	-6.437	46.357	39.920	74.00	54.00	Pass

Figure Channel 78: (Horizontal) (Peak)



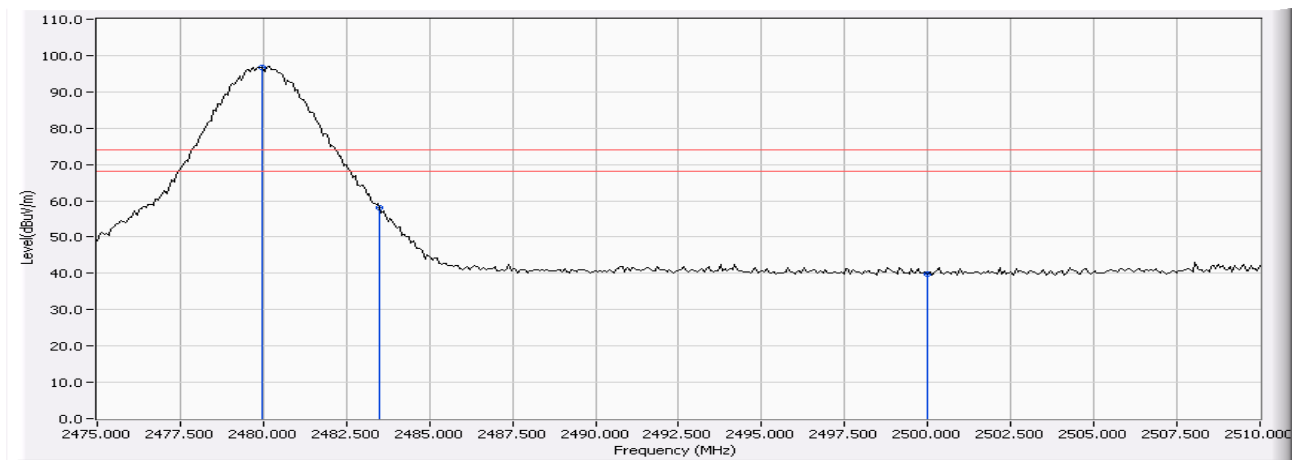
Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

Product : Bluetooth Audio Dongle
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)(2480MHz)

RF Radiated Measurement (Vertical):

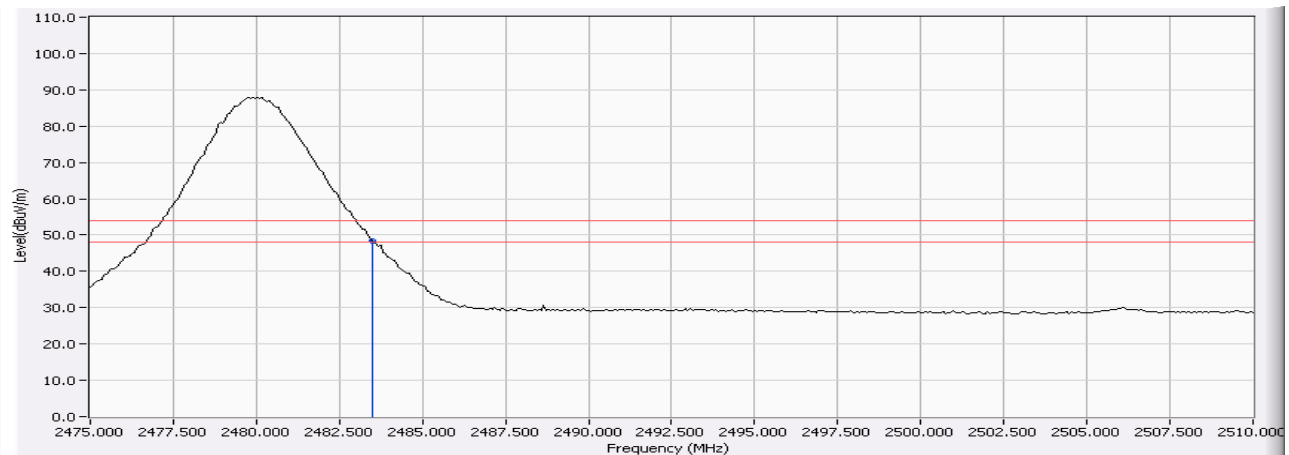
Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78(Peak)	2479.970	-6.475	103.183	96.708	74.00	54.00	Pass
78(Peak)	2483.500	-6.469	64.664	58.196	74.00	54.00	Pass
78(Peak)	2500.000	-6.437	46.294	39.857	74.00	54.00	Pass
78(Average)	2483.500	-6.469	54.845	48.377	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=300Hz, 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.

8. Channel Number

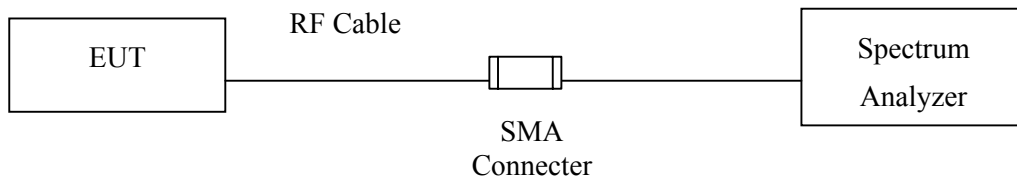
8.1. Test Equipment

The following test equipments are used during the radiated emission tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	EMI Test Receiver	R&S	ESI 26 / 838786/004	May, 2007

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

8.2. Test Setup



8.3. Limit

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

8.4. Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

8.5. Uncertainty

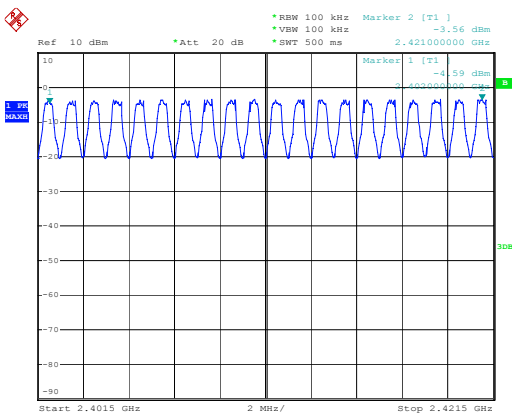
N/A

8.6. Test Result of Channel Number

Product : Bluetooth Audio Dongle
 Test Item : Channel Number
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)

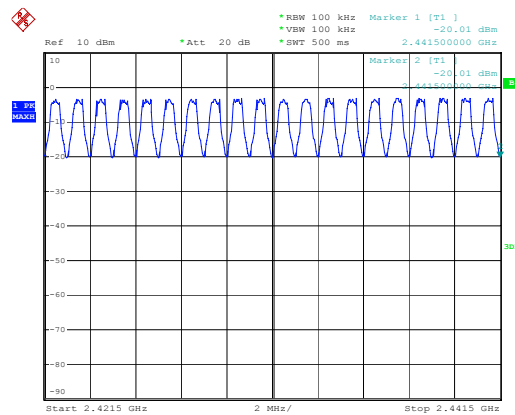
Frequency Range (MHz)	Measurement (Hopping Channel)	Required Limit (Hopping Channel)	Result
2402 ~ 2480	79	>75	Pass

2402-2421MHz



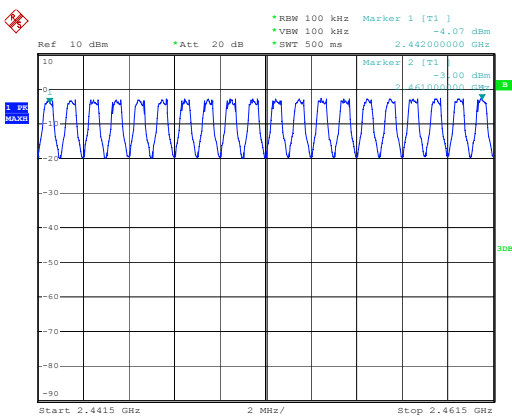
Date: 25.DEC.2007 16:42:33

2422-2441MHz



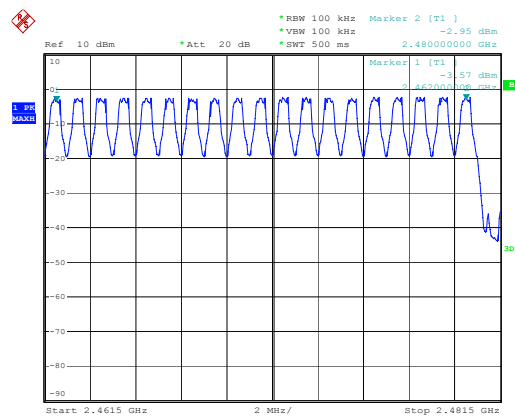
Date: 25.DEC.2007 16:36:49

2442-2461MHz



Date: 25.DEC.2007 16:33:47

2462-2480MHz

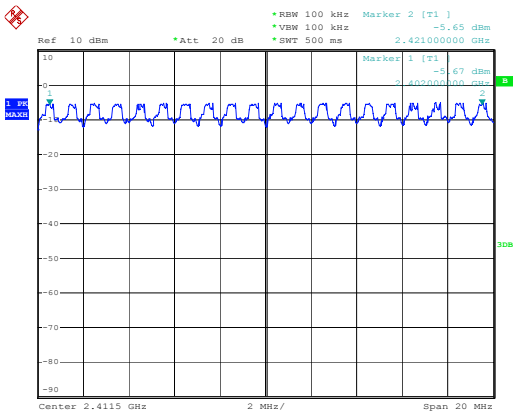


Date: 25.DEC.2007 16:30:16

Product : Bluetooth Audio Dongle
 Test Item : Channel Number
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)

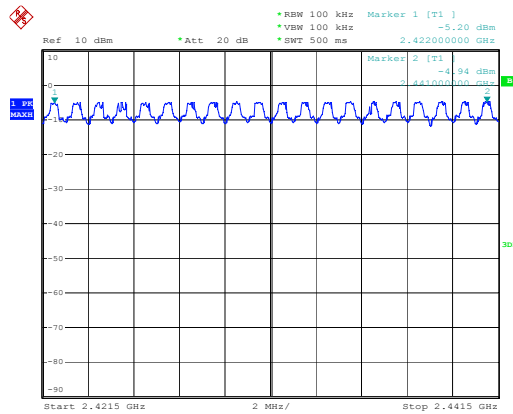
Frequency Range (MHz)	Measurement (Hopping Channel)	Required Limit (Hopping Channel)	Result
2402 ~ 2480	79	>75	Pass

2402-2421MHz



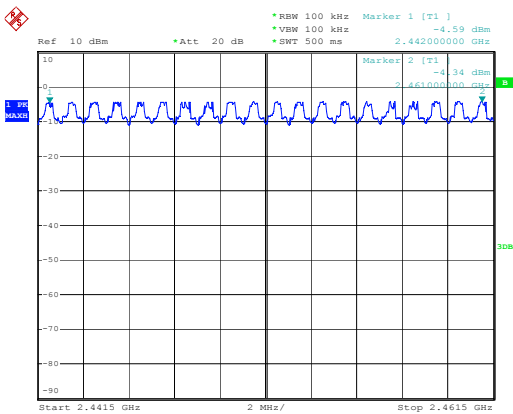
Date: 25.DEC.2007 15:51:16

2422-2441MHz



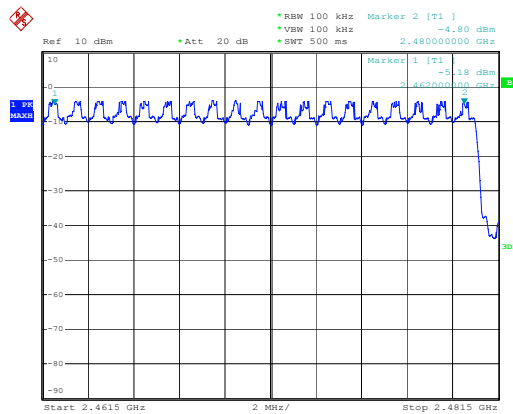
Date: 25.DEC.2007 16:00:38

2442-2461MHz



Date: 25.DEC.2007 16:11:55

2462-2480MHz



Date: 25.DEC.2007 16:19:18

9. Channel Separation

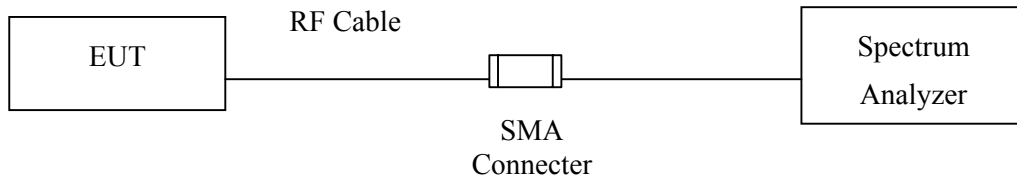
9.1. Test Equipment

The following test equipments are used during the radiated emission tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	EMI Test Receiver	R&S	ESI 26 / 838786/004	May, 2007

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

9.2. Test Setup



9.3. 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.

9.4. Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

9.5. Uncertainty

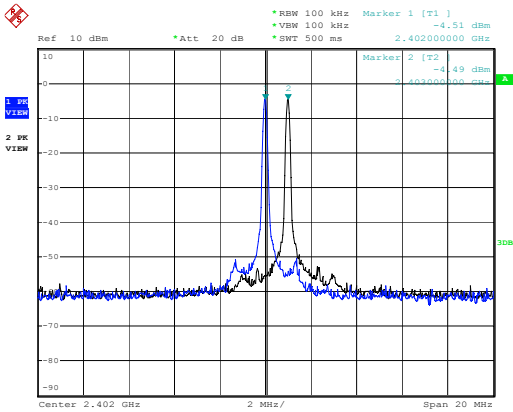
± 150Hz

9.6. Test Result of Channel Separation

Product : Bluetooth Audio Dongle
 Test Item : Channel Separation
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)

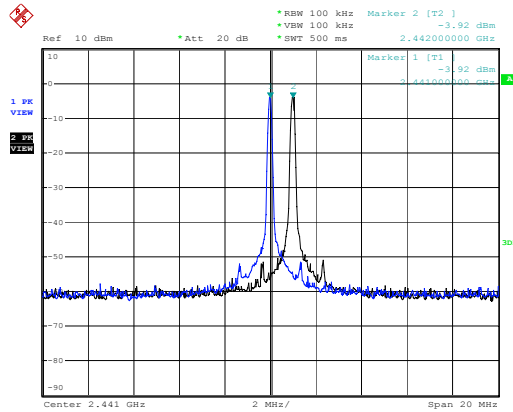
Frequency (MHz)	Measurement Level (MHz)	Required Limit	Result
2402	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2441	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2480	1.00	>25 kHz or 2/3 * 20 dB BW	Pass

Channel 00 2402MHz



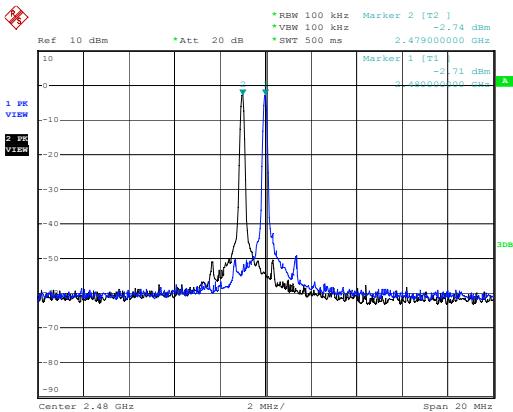
Date: 25.DEC.2007 15:31:01

Channel 39 2441MHz



Date: 25.DEC.2007 15:35:23

Channel 78 2480 MHz

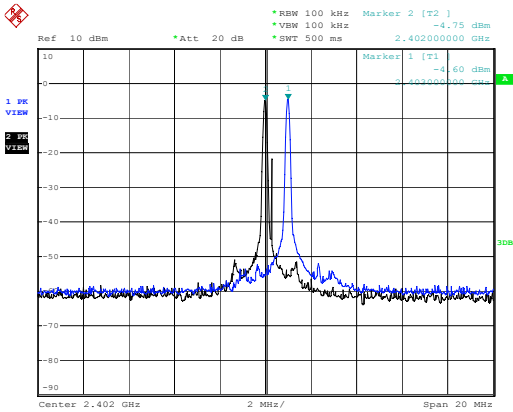


Date: 25.DEC.2007 15:28:15

Product : Bluetooth Audio Dongle
 Test Item : Channel Separation
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)

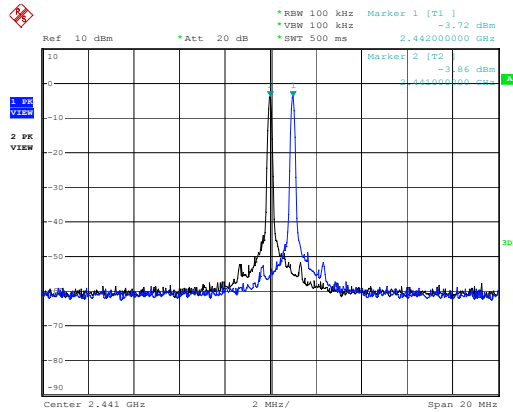
Frequency (MHz)	Measurement Level (MHz)	Required Limit	Result
2402	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2441	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2480	1.00	>25 kHz or 2/3 * 20 dB BW	Pass

Channel 00 2402MHz



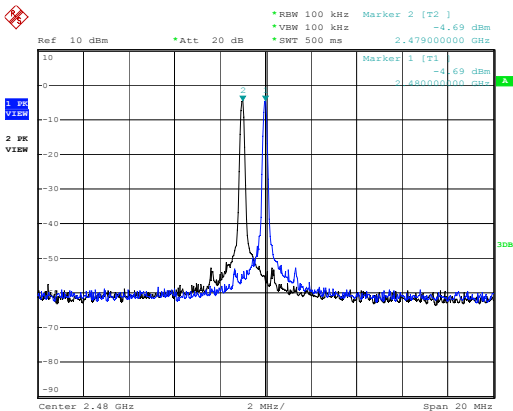
Date: 25.DEC.2007 15:14:33

Channel 39 2441MHz



Date: 25.DEC.2007 15:17:42

Channel 78 2480 MHz



Date: 25.DEC.2007 15:28:49

10. Dwell Time

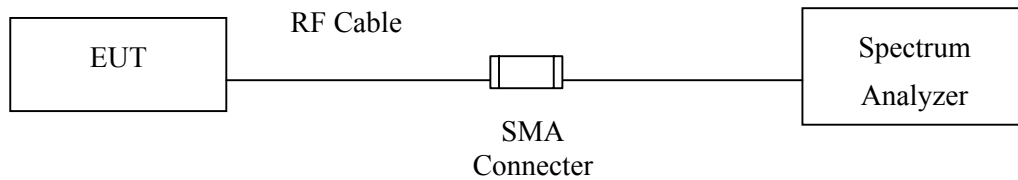
10.1. Test Equipment

The following test equipments are used during the radiated emission tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	EMI Test Receiver	R&S	ESI 26 / 838786/004	May, 2007

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

10.2. Test Setup



10.3. 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.

10.4. Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

10.5. Uncertainty

± 25msec

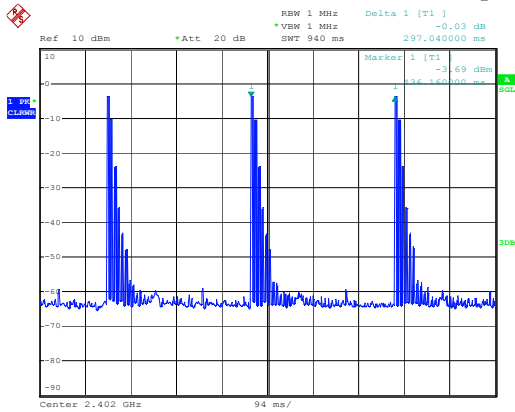
10.6. Test Result of Dwell Time

Product : Bluetooth Audio Dongle
 Test Item : Dwell Time
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)(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	297.04	2907.2	309.2765957	400	Pass
39	2441	295.16	2907.2	311.2465104	400	Pass
78	2480	295.16	2907.2	311.2465104	400	Pass

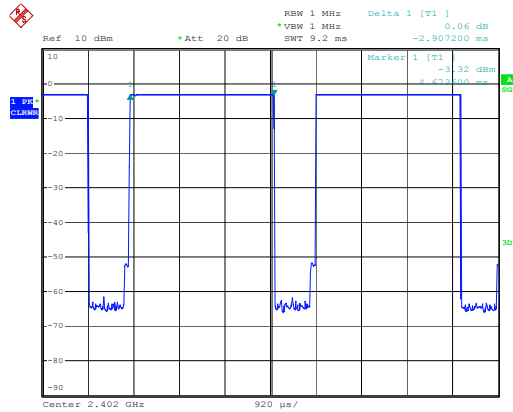
Note: Dwell Time = 79 * 400 / Time Interval Between Hops * Transmission Time / 1000

CH 2402MHz Time Interval between hops



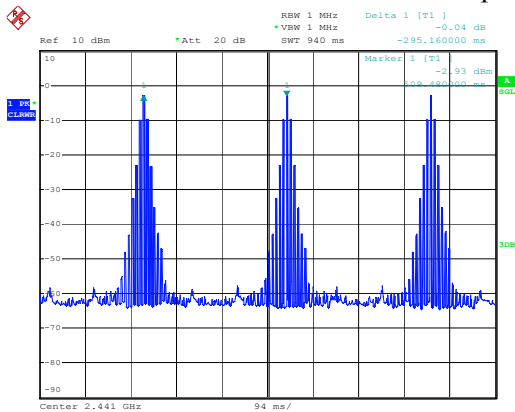
Date: 25.DEC.2007 16:49:53

Transmission Time



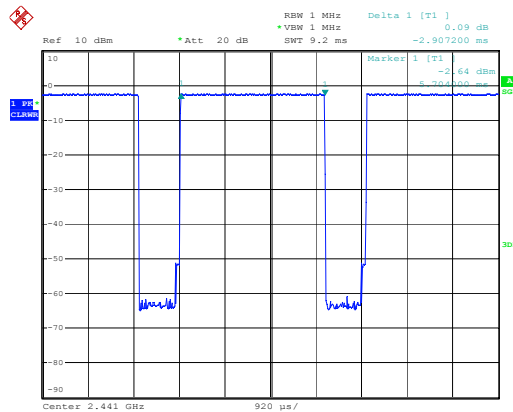
Date: 25.DEC.2007 17:08:08

CH 2441MHz Time Interval between hops



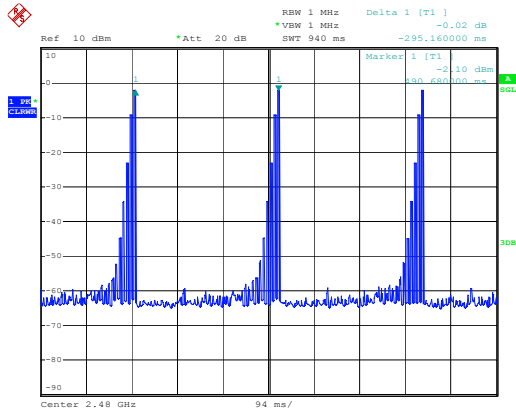
Date: 25.DEC.2007 16:51:14

Transmission Time



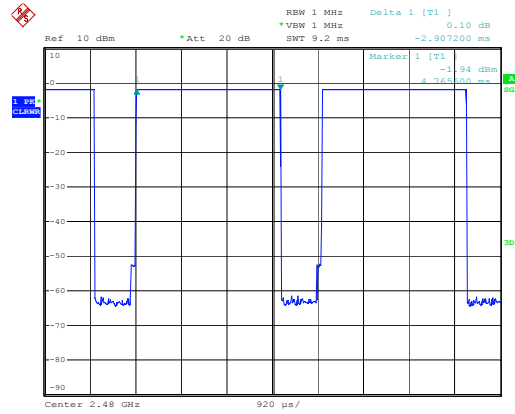
Date: 25.DEC.2007 17:08:44

CH 2480MHz Time Interval between hops



Date: 25.DEC.2007 16:52:00

Transmission Time



Date: 25.DEC.2007 17:09:36

Note:

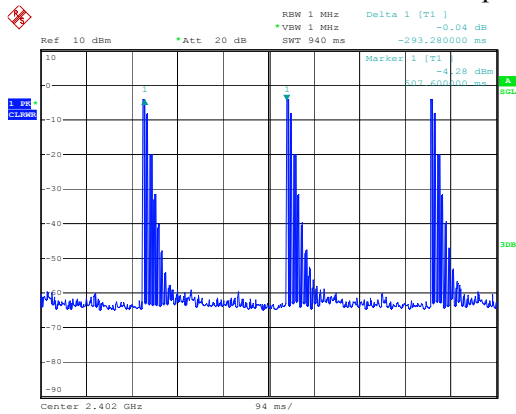
The dwell times of the packet type DH5 are tested.

Product : Bluetooth Audio Dongle
 Test Item : Dwell Time
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)(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	293.28	2925.6	315.2242226	400	Pass
39	2441	295.16	2907.2	311.2465104	400	Pass
78	2480	293.28	2925.6	315.2242226	400	Pass

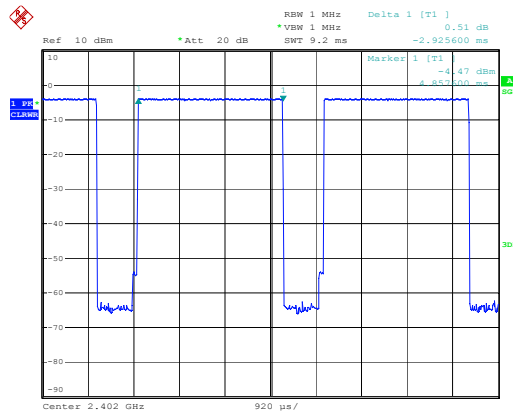
Note: Dwell Time = 79 * 400 / Time Interval Between Hops * Transmission Time / 1000

CH 2402MHz Time Interval between hops



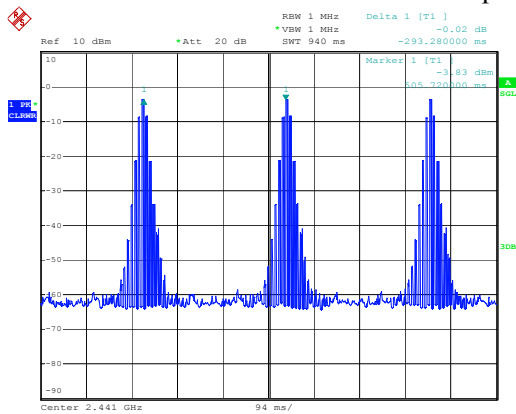
Date: 25.DEC.2007 16:54:32

Transmission Time



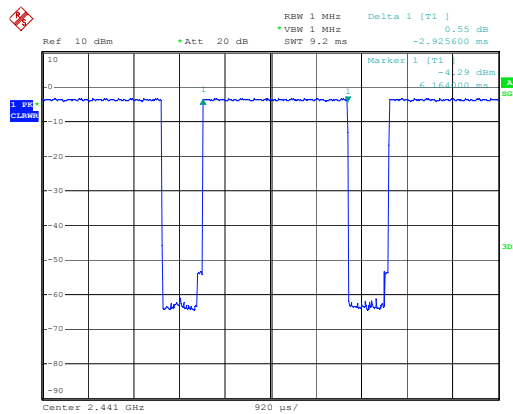
Date: 25.DEC.2007 17:07:15

CH 2441MHz Time Interval between hops



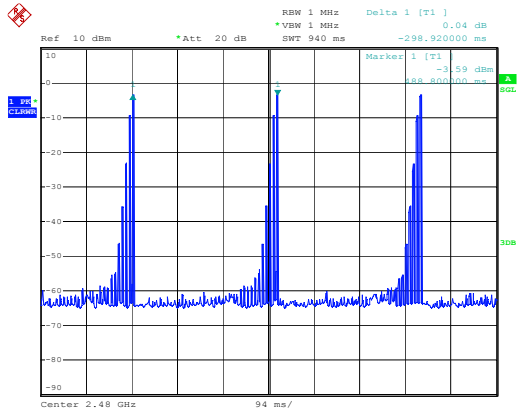
Date: 25.DEC.2007 16:53:50

Transmission Time



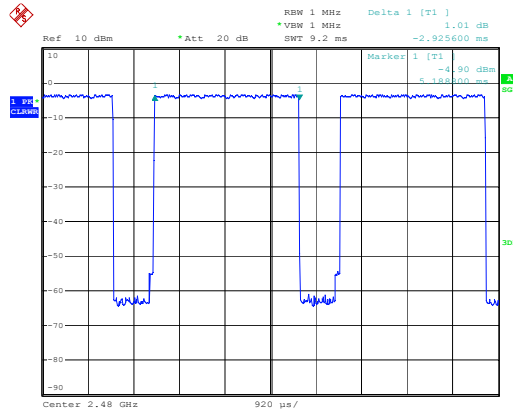
Date: 25.DEC.2007 17:06:29

CH 2480MHz Time Interval between hops



Date: 25.DEC.2007 16:53:06

Transmission Time



Date: 25.DEC.2007 17:05:47

Note:

The dwell times of the packet type DH5 are tested.

11. Occupied Bandwidth

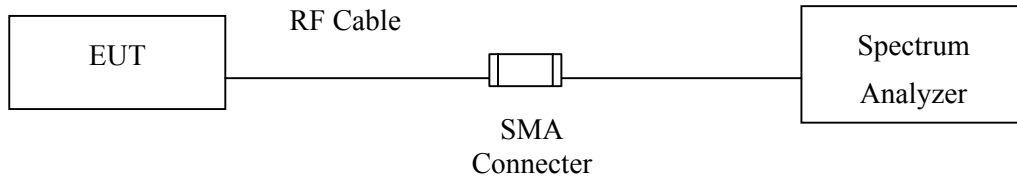
11.1. Test Equipment

The following test equipments are used during the radiated emission tests:

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X EMI Test Receiver	R&S	ESI 26 / 838786/004	May, 2007

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

11.2. Test Setup



11.3. Limits

N/A

11.4. Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

11.5. Uncertainty

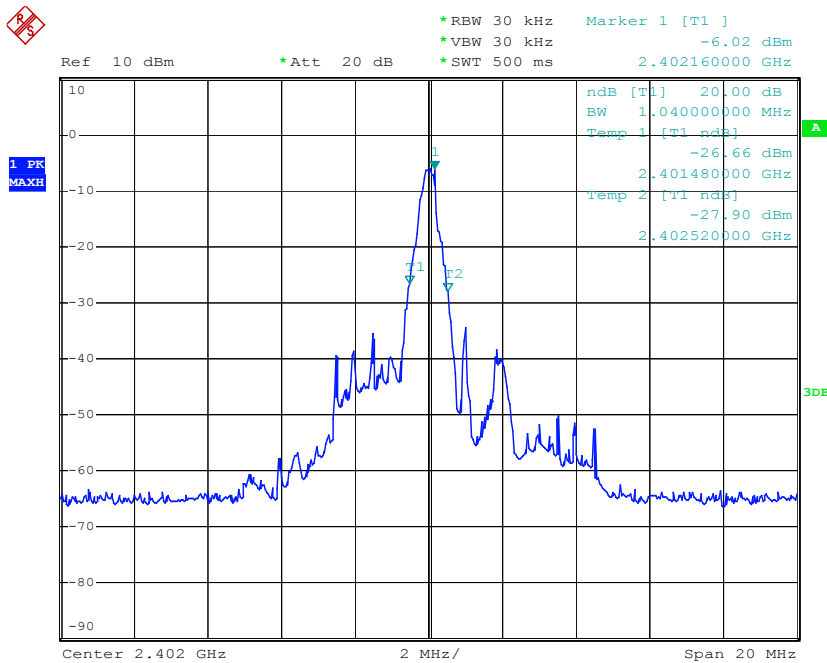
± 150Hz

11.6. Test Result of Occupied Bandwidth

Product : Bluetooth Audio Dongle
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)(2402MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1040	--	NA

Figure Channel 00:

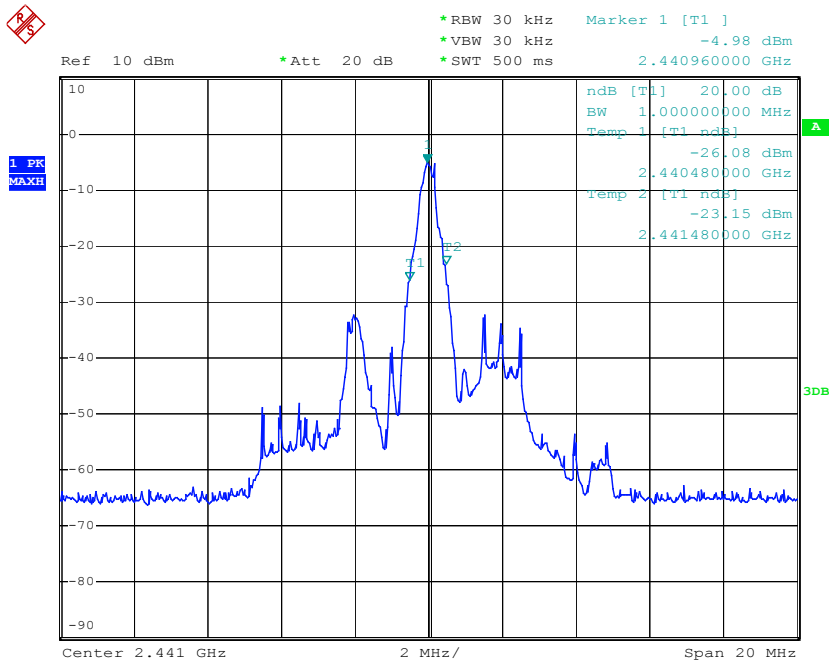


Date: 25.DEC.2007 14:32:59

Product : Bluetooth Audio Dongle
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)(2441MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
39	2441	1000	--	NA

Figure Channel 39:

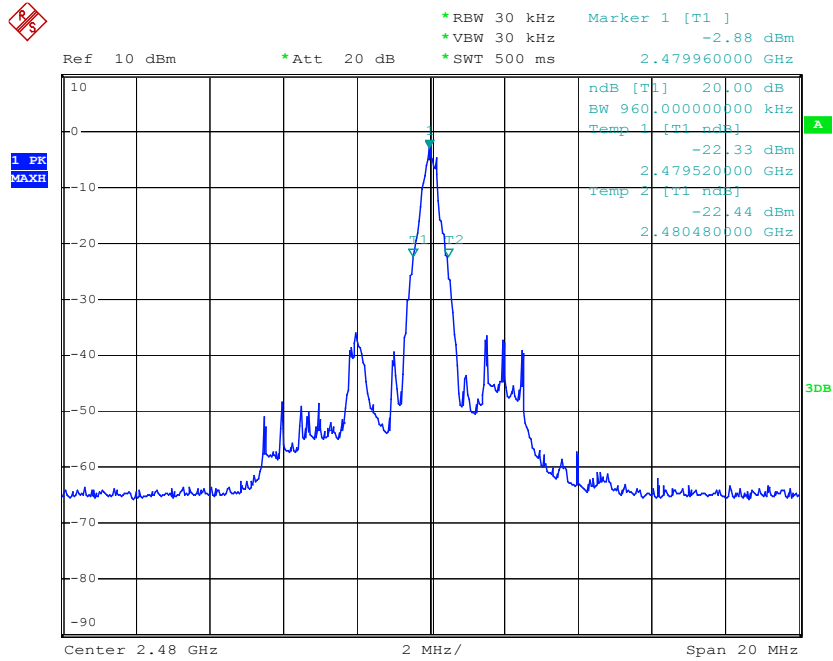


Date: 25.DEC.2007 14:32:14

Product : Bluetooth Audio Dongle
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)(2480MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
78	2480	960	--	NA

Figure Channel 78:

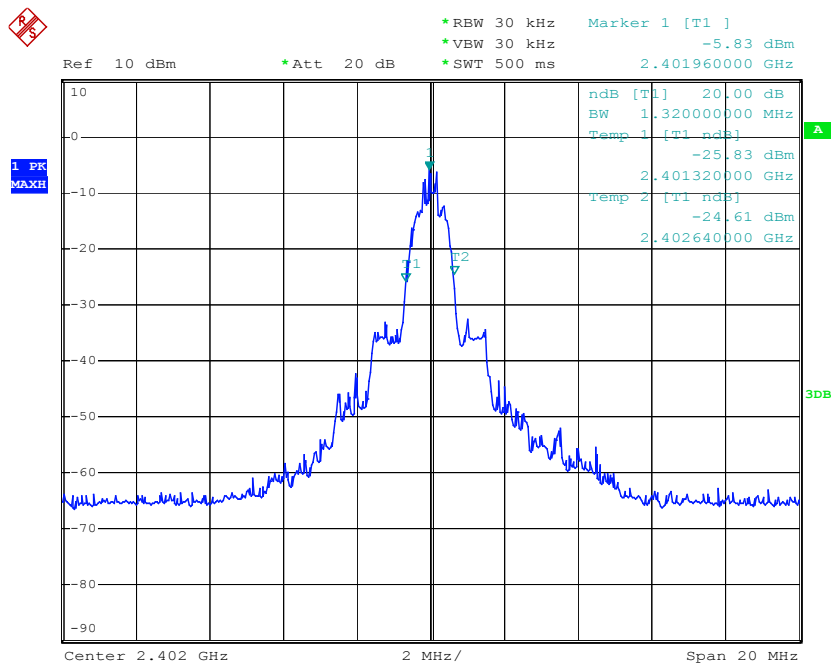


Date: 25.DEC.2007 14:31:28

Product : Bluetooth Audio Dongle
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK) (2402MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1320	--	NA

Figure Channel 00:

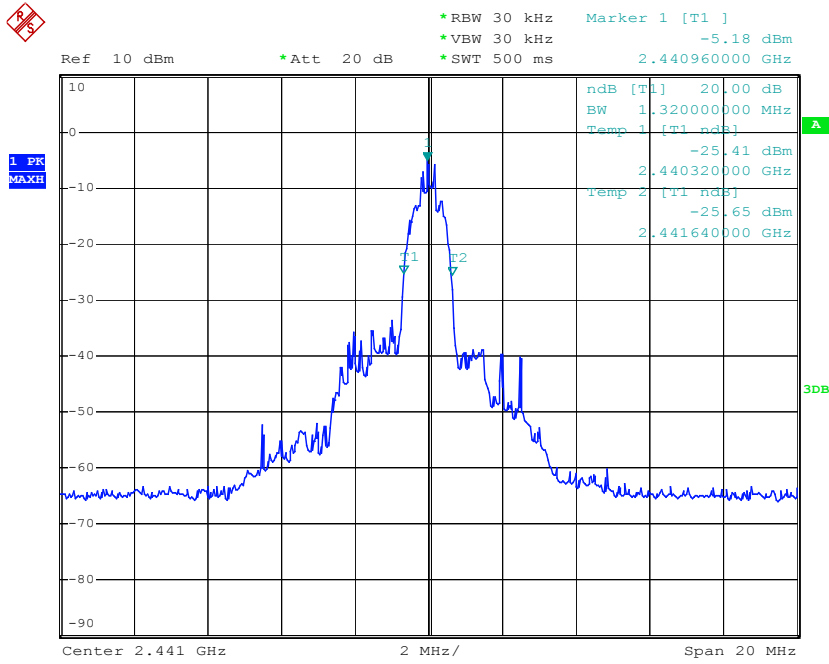


Date: 25.DEC.2007 14:34:15

Product : Bluetooth Audio Dongle
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK) (2441MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
39	2441	1320	--	NA

Figure Channel 39:

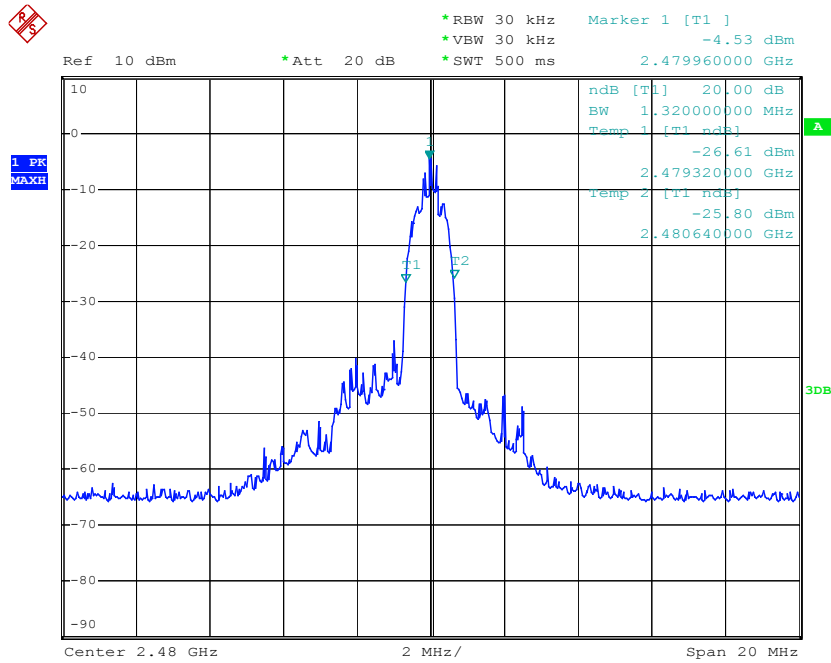


Date: 25.DEC.2007 14:35:25

Product : Bluetooth Audio Dongle
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)(2480MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
78	2480	1320	--	NA

Figure Channel 78:



Date: 25.DEC.2007 14:40:39

12. EMI Reduction Method During Compliance Testing

No modification was made during testing.