# Test Report

| | |
|---|---|
| Product Name | HP Bluetooth Stereo Headphones |
| Model No. | HSTNN-DM19, H400 |
| FCC ID. | O62H400 |

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

| | |
|---|---|
| Date of Receipt | Dec. 17, 2007 |
| Issued Date | Dec. 28, 2007 |
| Report No. | 07C244R-RFUSP06V01 |

# Test Report Certification

Issued Date: Dec. 28, 2007
Report No.: 07C244R-RFUSP06V01

| | |
|---|---|
| Product Name | HP Bluetooth Stereo Headphones |
| Applicant | Darfon Electronics Corp. |
| Address | 6, Feng-Shu Tsuen, Gueishan Taoyuan, County 333, Taiwan. |
| Manufacturer | Darfon Electronics (Suzhou) Co., Ltd. |
| Model No. | HSTNN-DM19, H400 |
| FCC ID. | O62H400 |
| Rated Voltage | AC 120V/60Hz |
| Working Voltage | DC 5V |
| Trade Name | HP |
| Applicable Standard | FCC CFR Title 47 Part 15 Subpart C: 2006<br>ANSI C63.4: 2003 |
| Test Result | Complied |

NVLAP Lab Code: 200533-0

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

Documented By : Rita Huang
( Engineering Adm. Specialist / Rita Huang )

Tested By : Dino Chen
( Engineer / Dino Chen )

Approved By :
( Deputy Manager / Vincent Lin)

Testing Laboratory
0914

# TABLE OF CONTENTS

# 1. GENERAL INFORMATION

## 1.1. EUT Description

| | |
|---|---|
| Product Name | HP Bluetooth Stereo Headphones |
| Trade Name | HP |
| FCC ID. | O62H400 |
| Model No. | HSTNN-DM19, H400 |
| Frequency Range | 2402 – 2480MHz |
| Channel Number | 79 |
| Type of Modulation | FHSS (GFSK/8DPSK) |
| Antenna Interface Type | Soldered on PCB |
| Antenna Type | Chip Antenna |
| Channel Control | Auto |
| Antenna Gain | Refer to the table “Antenna List” |
| Power Adapter | DELTA, EADP-5CB A<br>Input: 100-240V, 50-60Hz<br>Output: 5V-1A |

**Antenna List**

| No. | Manufacturer | Part No. | Peak Gain |
|---|---|---|---|
| 1 | Walsin | RFANT5220110A2T | 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. This device is a HP Bluetooth Stereo Headphones 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 HP Bluetooth Stereo Headphones 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 Chip.

| | |
|---|---|
| Test Mode | Mode 1: Transmitter - 1Mbps (GFSK)<br>Mode 2: Transmitter - 3Mbps (8DPSK) |

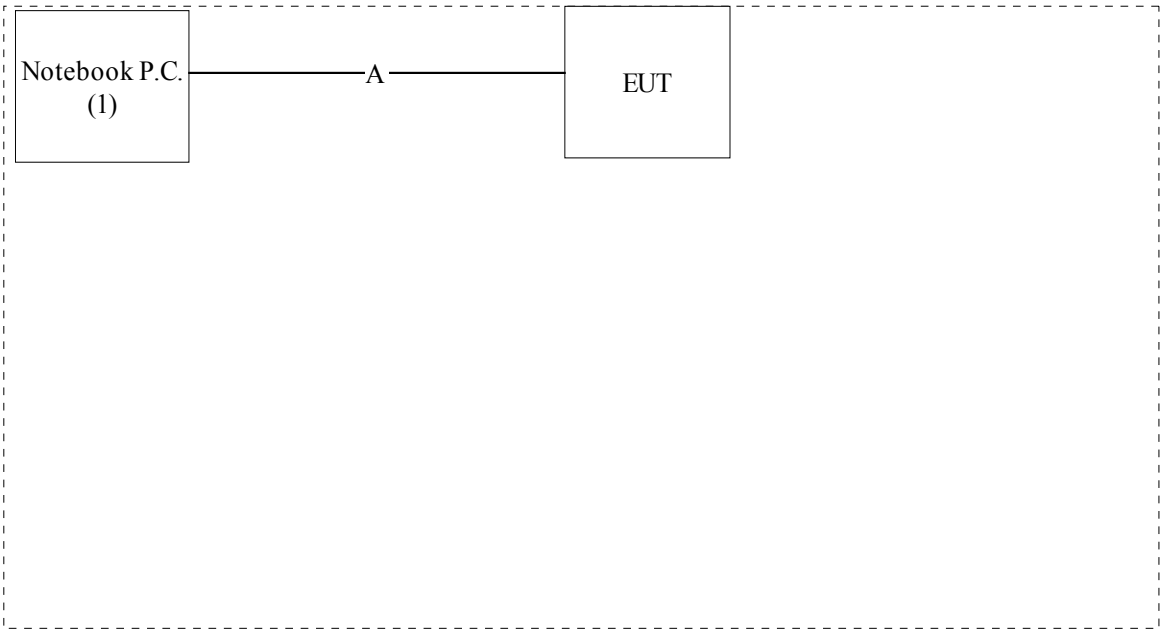
## 1.3. Tested System Details

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 |
|---|---|---|
| A | Print Cable | Shielded, 1.2m |

## 1.4. Configuration of Tested System




## 1.5. 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.

## 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: 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

Site Name: Quietek Corporation
Site Address: No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen,
Lin-Kou Shiang, Taipei,
Taiwan, R.O.C.
TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : service@quietek.com

FCC Accreditation Number: TW1014

Testing Laboratory
0914

# 2. Conducted Emission

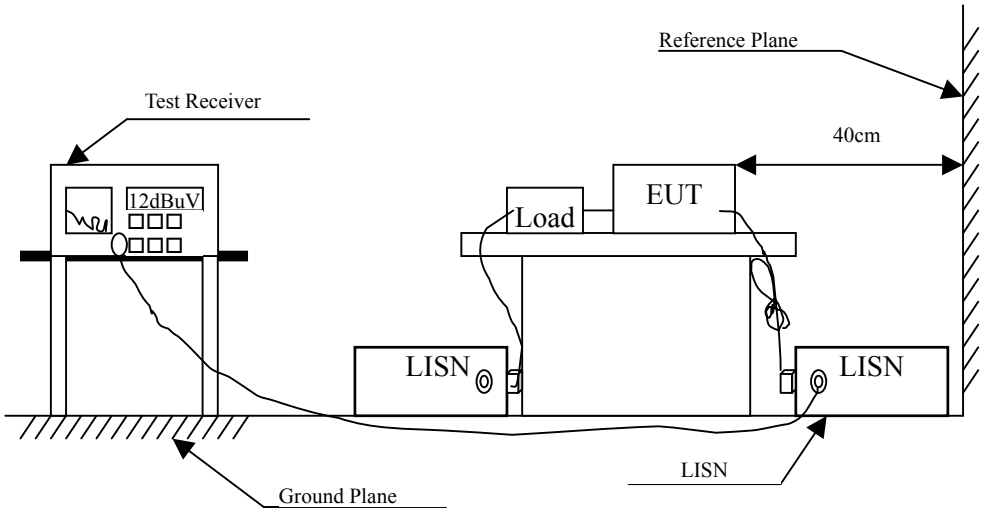
## 2.1. Test Equipment

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.

## 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.

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.

## 2.5. Uncertainty

± 2.26 dB

## 2.6. Test Result of Conducted Emission

Product : HP Bluetooth Stereo Headphones
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 1: Transmitter - 1Mbps (GFSK) (2441MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBuV | dBuV | dB | dBuV |
| **LINE 1** | | | | | |
| **Quasi-Peak** | | | | | |
| 0.201 | 0.643 | 45.050 | 45.693 | -18.850 | 64.543 |
| 0.662 | 0.310 | 34.620 | 34.930 | -21.070 | 56.000 |
| 1.521 | 0.330 | 34.170 | 34.500 | -21.500 | 56.000 |
| 3.373 | 0.380 | 37.570 | 37.950 | -18.050 | 56.000 |
| 10.787 | 0.630 | 41.640 | 42.270 | -17.730 | 60.000 |
| 16.080 | 1.020 | 45.950 | 46.970 | -13.030 | 60.000 |
| **Average** | | | | | |
| 0.201 | 0.643 | 39.560 | 40.203 | -14.340 | 54.543 |
| 0.662 | 0.310 | 32.660 | 32.970 | -13.030 | 46.000 |
| 1.521 | 0.330 | 32.090 | 32.420 | -13.580 | 46.000 |
| 3.373 | 0.380 | 34.620 | 35.000 | -11.000 | 46.000 |
| 10.787 | 0.630 | 38.300 | 38.930 | -11.070 | 50.000 |
| 16.080 | 1.020 | 42.120 | 43.140 | -6.860 | 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 : HP Bluetooth Stereo Headphones
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 1: Transmitter - 1Mbps (GFSK) (2441MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBuV | dBuV | dB | dBuV |
| **LINE 2** | | | | | |
| **Quasi-Peak** | | | | | |
| 0.197 | 0.300 | 46.290 | 46.590 | -18.067 | 64.657 |
| 0.267 | 0.300 | 41.650 | 41.950 | -20.707 | 62.657 |
| 0.662 | 0.310 | 37.920 | 38.230 | -17.770 | 56.000 |
| 1.521 | 0.339 | 35.870 | 36.209 | -19.791 | 56.000 |
| 6.021 | 0.430 | 40.260 | 40.690 | -19.310 | 60.000 |
| 19.384 | 0.900 | 45.490 | 46.390 | -13.610 | 60.000 |
| **Average** | | | | | |
| 0.197 | 0.300 | 43.340 | 43.640 | -11.017 | 54.657 |
| 0.267 | 0.300 | 36.280 | 36.580 | -16.077 | 52.657 |
| 0.662 | 0.310 | 36.970 | 37.280 | -8.720 | 46.000 |
| 1.521 | 0.339 | 34.400 | 34.739 | -11.261 | 46.000 |
| 6.021 | 0.430 | 38.510 | 38.940 | -11.060 | 50.000 |
| 19.384 | 0.900 | 39.840 | 40.740 | -9.260 | 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 : HP Bluetooth Stereo Headphones
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK) (2441MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBuV | dBuV | dB | dBuV |
| **LINE 1** | | | | | |
| **Quasi-Peak** | | | | | |
| 0.197 | 0.670 | 44.280 | 44.950 | -19.707 | 64.657 |
| 0.795 | 0.310 | 34.620 | 34.930 | -21.070 | 56.000 |
| 1.587 | 0.330 | 33.840 | 34.170 | -21.830 | 56.000 |
| 3.771 | 0.390 | 37.650 | 38.040 | -17.960 | 56.000 |
| 6.017 | 0.470 | 37.180 | 37.650 | -22.350 | 60.000 |
| 15.732 | 1.010 | 46.180 | 47.190 | -12.810 | 60.000 |
| **Average** | | | | | |
| 0.197 | 0.670 | 39.370 | 40.040 | -14.617 | 54.657 |
| 0.795 | 0.310 | 32.940 | 33.250 | -12.750 | 46.000 |
| 1.587 | 0.330 | 32.310 | 32.640 | -13.360 | 46.000 |
| 3.771 | 0.390 | 34.180 | 34.570 | -11.430 | 46.000 |
| 6.017 | 0.470 | 35.460 | 35.930 | -14.070 | 50.000 |
| 15.732 | 1.010 | 41.190 | 42.200 | -7.800 | 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 : HP Bluetooth Stereo Headphones
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK) (2441MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBuV | dBuV | dB | dBuV |
| **LINE 2** | | | | | |
| **Quasi-Peak** | | | | | |
| 0.197 | 0.300 | 45.130 | 45.430 | -19.227 | 64.657 |
| 0.662 | 0.310 | 37.490 | 37.800 | -18.200 | 56.000 |
| 1.654 | 0.340 | 34.280 | 34.620 | -21.380 | 56.000 |
| 3.701 | 0.390 | 35.060 | 35.450 | -20.550 | 56.000 |
| 6.013 | 0.430 | 39.490 | 39.920 | -20.080 | 60.000 |
| 15.666 | 0.900 | 47.150 | 48.050 | -11.950 | 60.000 |
| **Average** | | | | | |
| 0.197 | 0.300 | 42.540 | 42.840 | -11.817 | 54.657 |
| 0.662 | 0.310 | 36.550 | 36.860 | -9.140 | 46.000 |
| 1.654 | 0.340 | 32.980 | 33.320 | -12.680 | 46.000 |
| 3.701 | 0.390 | 30.770 | 31.160 | -14.840 | 46.000 |
| 6.013 | 0.430 | 37.100 | 37.530 | -12.470 | 50.000 |
| 15.666 | 0.900 | 43.500 | 44.400 | -5.600 | 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

# 3. Peak Power Output

## 3.1. Test Equipment

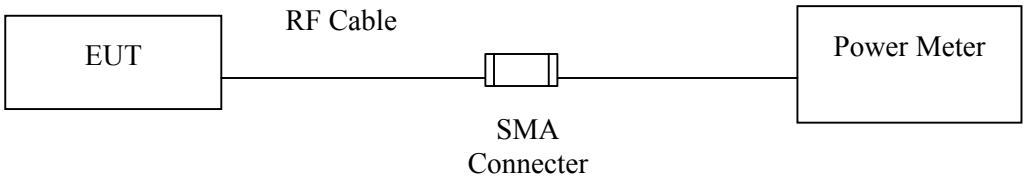
The following test equipments are used during the radiated emission tests:

| | 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.

## 3.2. Test Setup




## 3.3. Limit

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

## 3.4. 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.

## 3.5. Uncertainty

± 1.27 dB

## 3.6. Test Result of Peak Power Output

Product : HP Bluetooth Stereo Headphones
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 | -2.11dBm | 1 Watt= 30 dBm | Pass |
| Channel 39 | 2441.00 | -2.22dBm | 1 Watt= 30 dBm | Pass |
| Channel 78 | 2480.00 | -3.11dBm | 1 Watt= 30 dBm | Pass |

Product : HP Bluetooth Stereo Headphones
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 | -4.37dBm | 1 Watt= 30 dBm | Pass |
| Channel 39 | 2441.00 | -4.07dBm | 1 Watt= 30 dBm | Pass |
| Channel 78 | 2480.00 | -5.34dBm | 1 Watt= 30 dBm | Pass |

# 4. Radiated Emission

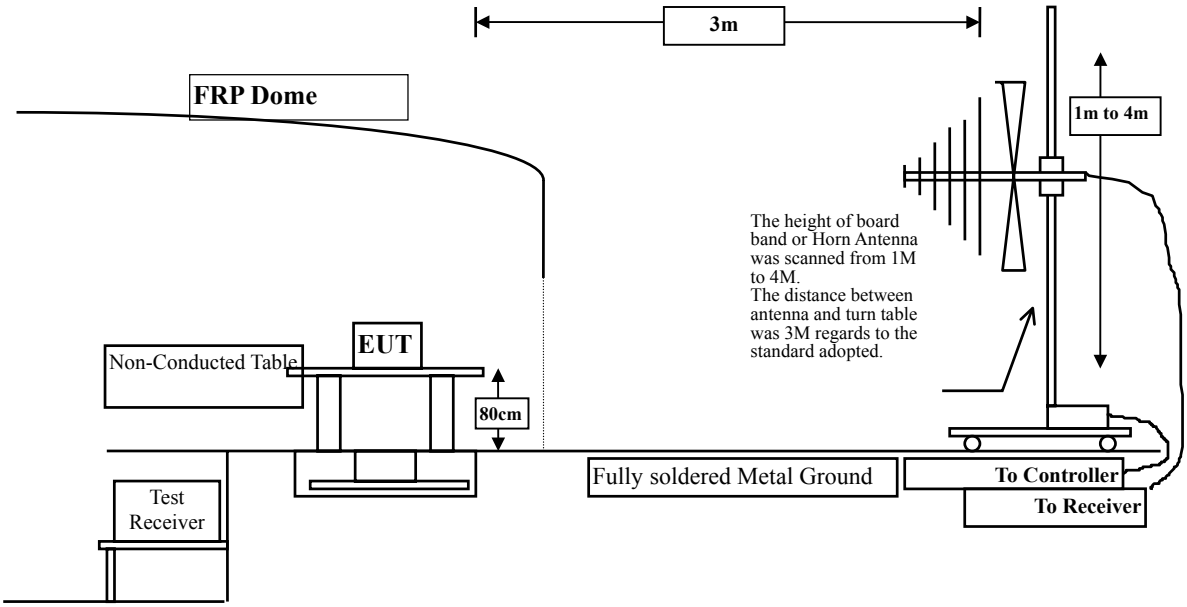
## 4.1. Test Equipment

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

| Test Site | Equipment | Manufacturer | Model No./Serial No. | Last Cal. |
|---|---|---|---|---|
| ☐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 |
| ☐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 |
| ☒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.

## 4.2. Test Setup




## 4.3. 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.

## 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 dtrength 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 harminics 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.

## 4.5. Uncertainty

± 3.9 dB above 1GHz
± 3.8 dB below 1GHz

## 4.6. Test Result of Radiated Emission

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

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBuV | dBuV/m | dB | dBuV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 4804.000 | -0.205 | 62.870 | 62.665 | -11.335 | 74.000 |
| 7206.000 | 3.294 | 42.520 | 45.814 | -28.186 | 74.000 |
| 9608.000 | 5.696 | 40.880 | 46.576 | -27.424 | 74.000 |
| **Average** | | | | | |
| **Detector:** | | | | | |
| 4804.000 | -0.205 | 43.550 | 43.345 | -10.655 | 54.000 |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 4804.000 | -0.205 | 63.990 | 63.785 | -10.215 | 74.000 |
| 7206.000 | 3.294 | 42.580 | 45.874 | -28.126 | 74.000 |
| 9608.000 | 5.696 | 40.770 | 46.466 | -27.534 | 74.000 |
| **Average** | | | | | |
| **Detector:** | | | | | |
| 4804.000 | -0.205 | 48.500 | 48.295 | -5.705 | 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 : HP Bluetooth Stereo Headphones
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)(2441MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBuV | dBuV/m | dB | dBuV/m |
| **Horizontal Peak Detector:** | | | | | |
| 4884.000 | -0.278 | 60.730 | 60.452 | -13.548 | 74.000 |
| 7323.000 | 3.330 | 40.610 | 43.939 | -30.061 | 74.000 |
| 9764.000 | 6.262 | 40.120 | 46.383 | -27.617 | 74.000 |
| **Average Detector:** | | | | | |
| 4882.000 | -0.276 | 44.050 | 43.774 | -10.226 | 54.000 |
| **Vertical Peak Detector:** | | | | | |
| 4882.000 | -0.276 | 65.690 | 65.414 | -8.586 | 74.000 |
| 7323.000 | 3.330 | 39.610 | 42.939 | -31.061 | 74.000 |
| 9764.000 | 6.262 | 39.880 | 46.143 | -27.857 | 74.000 |
| **Average Detector:** | | | | | |
| 4882.000 | -0.276 | 46.140 | 45.864 | -8.136 | 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 : HP Bluetooth Stereo Headphones
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)(2480MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBuV | dBuV/m | dB | dBuV/m |
| **Horizontal Peak Detector:** | | | | | |
| 4960.000 | 0.591 | 57.970 | 58.561 | -15.439 | 74.000 |
| 7440.000 | 3.924 | 39.920 | 43.844 | -30.156 | 74.000 |
| 9920.000 | 6.468 | 38.950 | 45.418 | -28.582 | 74.000 |
| **Average Detector:** | | | | | |
| 4960.000 | 0.591 | 45.020 | 45.611 | -8.389 | 54.000 |
| **Vertical Peak Detector:** | | | | | |
| 4960.000 | 0.591 | 60.270 | 60.861 | -13.139 | 74.000 |
| 7440.000 | 3.924 | 39.240 | 43.164 | -30.836 | 74.000 |
| 9920.000 | 6.468 | 39.620 | 46.088 | -27.912 | 74.000 |
| **Average Detector:** | | | | | |
| 4960.000 | 0.591 | 44.750 | 45.341 | -8.659 | 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 : HP Bluetooth Stereo Headphones
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)(2402MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBuV | dBuV/m | dB | dBuV/m |
| **Horizontal** | | | | | |
| **Peak Detector:** | | | | | |
| 4804.000 | -0.205 | 52.210 | 52.005 | -21.995 | 74.000 |
| 7206.000 | 3.294 | 39.820 | 43.114 | -30.886 | 74.000 |
| 9608.000 | 5.696 | 39.530 | 45.226 | -28.774 | 74.000 |
| **Average Detector:** | | | | | |
| -- | | | | | |
| **Vertical** | | | | | |
| **Peak Detector:** | | | | | |
| 4804.000 | -0.205 | 53.010 | 52.805 | -21.195 | 74.000 |
| 7206.000 | 3.294 | 41.210 | 44.504 | -29.496 | 74.000 |
| 9608.000 | 5.696 | 40.540 | 46.236 | -27.764 | 74.000 |
| **Average Detector:** | | | | | |
| -- | | | | | |

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 : HP Bluetooth Stereo Headphones
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK) (2441MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBuV | dBuV/m | dB | dBuV/m |
| **Horizontal Peak Detector:** | | | | | |
| 4882.000 | -0.276 | 51.650 | 51.374 | -22.626 | 74.000 |
| 7323.000 | 3.330 | 40.160 | 43.489 | -30.511 | 74.000 |
| 9764.000 | 6.262 | 40.050 | 46.313 | -27.687 | 74.000 |
| **Average Detector:** | | | | | |
| -- | | | | | |
| **Vertical Peak Detector:** | | | | | |
| 4882.000 | -0.276 | 55.790 | 55.514 | -18.486 | 74.000 |
| 7323.000 | 3.330 | 39.910 | 43.239 | -30.761 | 74.000 |
| 9764.000 | 6.262 | 41.030 | 47.293 | -26.707 | 74.000 |
| **Average Detector:** | | | | | |
| 4882.000 | 0.591 | 34.640 | 35.231 | -18.769 | 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 : HP Bluetooth Stereo Headphones
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK) (2480MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBuV | dBuV/m | dB | dBuV/m |
| **Horizontal Peak Detector:** | | | | | |
| 4960.000 | 0.591 | 49.400 | 49.991 | -24.009 | 74.000 |
| 7440.000 | 3.924 | 39.970 | 43.894 | -30.106 | 74.000 |
| 9920.000 | 6.468 | 37.860 | 44.328 | -29.672 | 74.000 |
| **Average Detector:** | | | | | |
| -- | | | | | |
| **Vertical Peak Detector:** | | | | | |
| 4960.000 | 0.591 | 51.390 | 51.981 | -22.019 | 74.000 |
| 7440.000 | 3.924 | 40.010 | 43.934 | -30.066 | 74.000 |
| 9920.000 | 6.468 | 38.950 | 45.418 | -28.582 | 74.000 |
| **Average Detector:** | | | | | |
| -- | | | | | |

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 : HP Bluetooth Stereo Headphones
Test Item : General Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)(2441MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBuV | dBuV/m | dB | dBuV/m |
| **Horizontal** | | | | | |
| 334.580 | 14.290 | 20.974 | 35.264 | -10.736 | 46.000 |
| 383.080 | 15.831 | 26.827 | 42.658 | -3.342 | 46.000 |
| 586.780 | 20.141 | 14.230 | 34.371 | -11.629 | 46.000 |
| 652.740 | 20.876 | 15.151 | 36.027 | -9.973 | 46.000 |
| 846.740 | 22.232 | 15.221 | 37.453 | -8.547 | 46.000 |
| 912.700 | 22.319 | 12.181 | 34.500 | -11.500 | 46.000 |
| **Vertical** | | | | | |
| 202.660 | 9.853 | 25.228 | 35.081 | -8.419 | 43.500 |
| 363.680 | 16.416 | 16.544 | 32.960 | -13.040 | 46.000 |
| 460.680 | 18.467 | 15.599 | 34.066 | -11.934 | 46.000 |
| 623.640 | 21.210 | 9.171 | 30.381 | -15.619 | 46.000 |
| 782.720 | 22.269 | 13.066 | 35.335 | -10.665 | 46.000 |
| 930.160 | 24.128 | 9.265 | 33.393 | -12.607 | 46.000 |

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 : HP Bluetooth Stereo Headphones
Test Item : General Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit |
|---|---|---|---|---|---|
| MHz | dB | dBuV | dBuV/m | dB | dBuV/m |
| **Horizontal** | | | | | |
| 270.560 | 13.522 | 24.104 | 37.626 | -8.374 | 46.000 |
| 367.560 | 15.992 | 19.016 | 35.008 | -10.992 | 46.000 |
| 470.380 | 18.642 | 20.576 | 39.218 | -6.782 | 46.000 |
| 544.100 | 19.945 | 15.412 | 35.357 | -10.643 | 46.000 |
| 652.740 | 20.876 | 13.008 | 33.884 | -12.116 | 46.000 |
| 846.740 | 22.232 | 16.512 | 38.744 | -7.256 | 46.000 |
| **Vertical** | | | | | |
| 194.900 | 9.417 | 27.363 | 36.780 | -6.720 | 43.500 |
| 363.680 | 16.416 | 16.772 | 33.188 | -12.812 | 46.000 |
| 460.680 | 18.467 | 16.718 | 35.185 | -10.815 | 46.000 |
| 623.640 | 21.210 | 9.742 | 30.952 | -15.048 | 46.000 |
| 782.720 | 22.269 | 13.252 | 35.521 | -10.479 | 46.000 |
| 932.100 | 24.140 | 9.116 | 33.256 | -12.744 | 46.000 |

Note:

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

# 5. RF Antenna Conducted Test

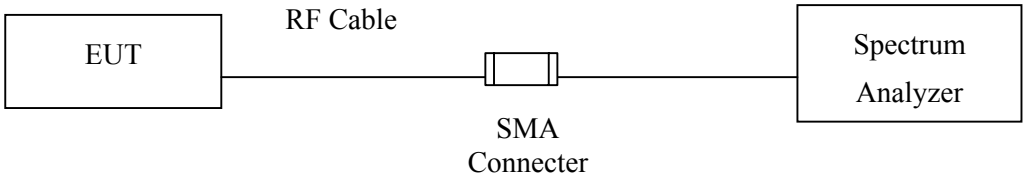
## 5.1. Test Equipment

| | 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.

## 5.2. Test Setup




## 5.3. 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.

## 5.4. 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.

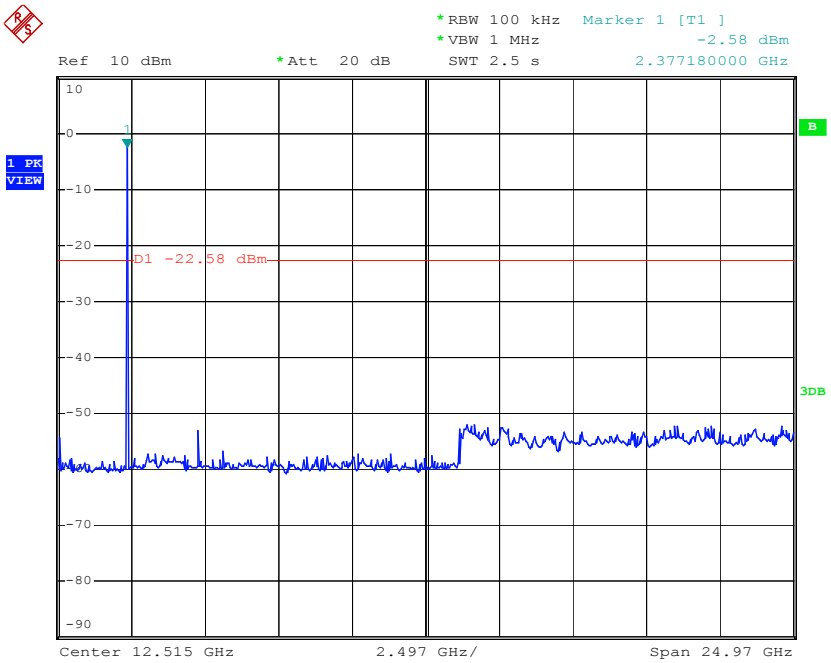
## 5.5. Uncertainty

± 150Hz

## 5.6. Test Result of RF Antenna Conducted Test

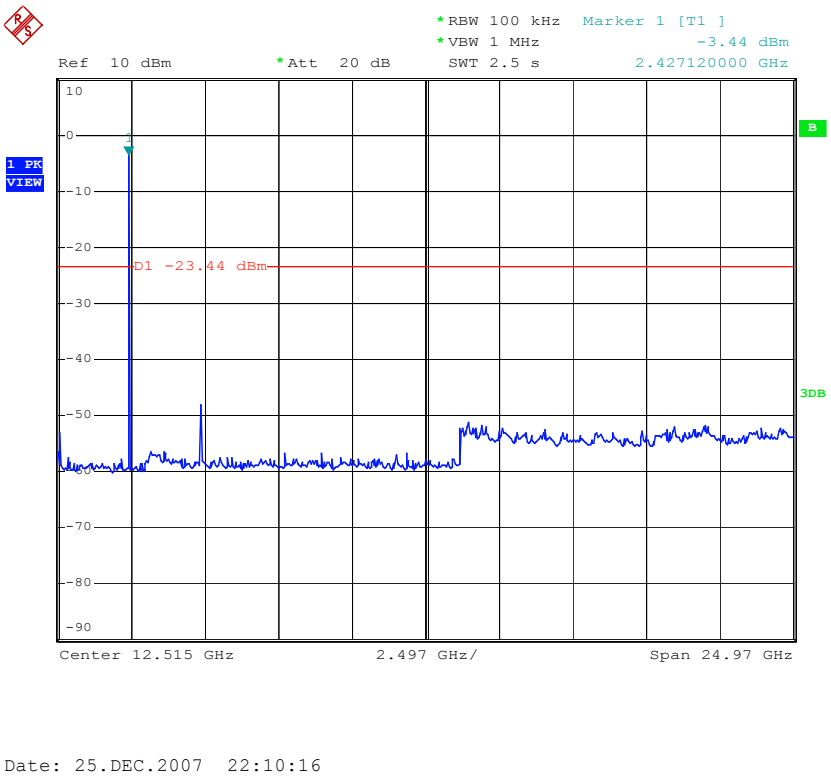
Product : HP Bluetooth Stereo Headphones
Test Item : RF Antenna Conducted Test
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter - 1Mbps (GFSK) (2402MHz)

**Figure Channel 00: 30-25GHz**



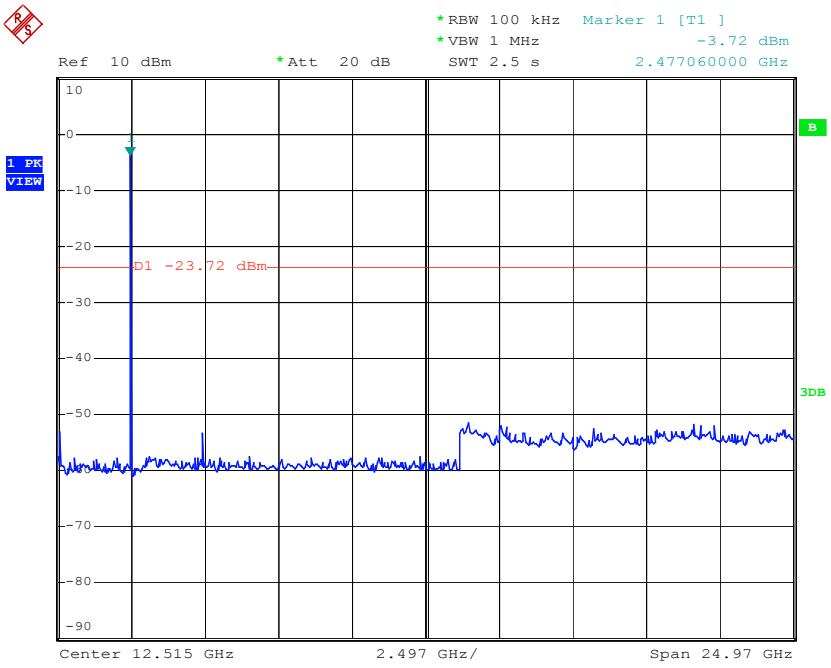
Product : HP Bluetooth Stereo Headphones
Test Item : RF Antenna Conducted Test
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter - 1Mbps (GFSK) (2441MHz)

**Figure Channel 39: 30-25GHz**



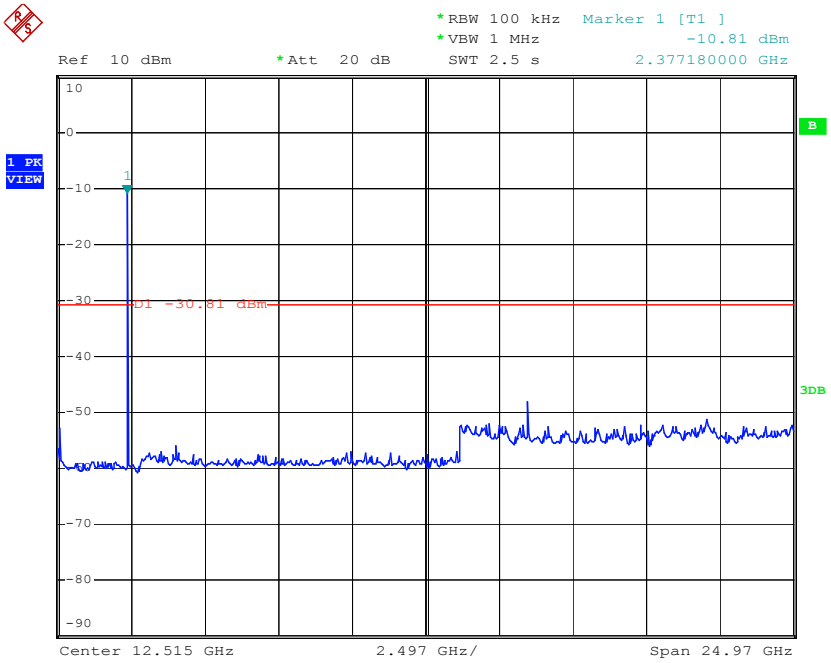
Product : HP Bluetooth Stereo Headphones
Test Item : RF Antenna Conducted Test
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter - 1Mbps (GFSK) (2480MHz)

**Figure Channel 78: 30-25GHz**



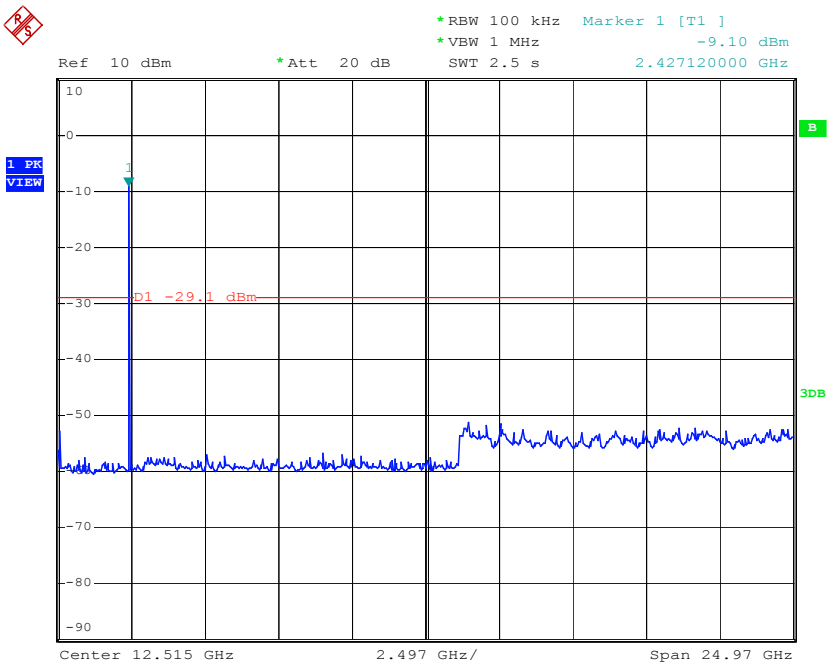
Product : HP Bluetooth Stereo Headphones
Test Item : RF Antenna Conducted Test
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK) (2402MHz)

**Figure Channel 00: 30-25GHz**



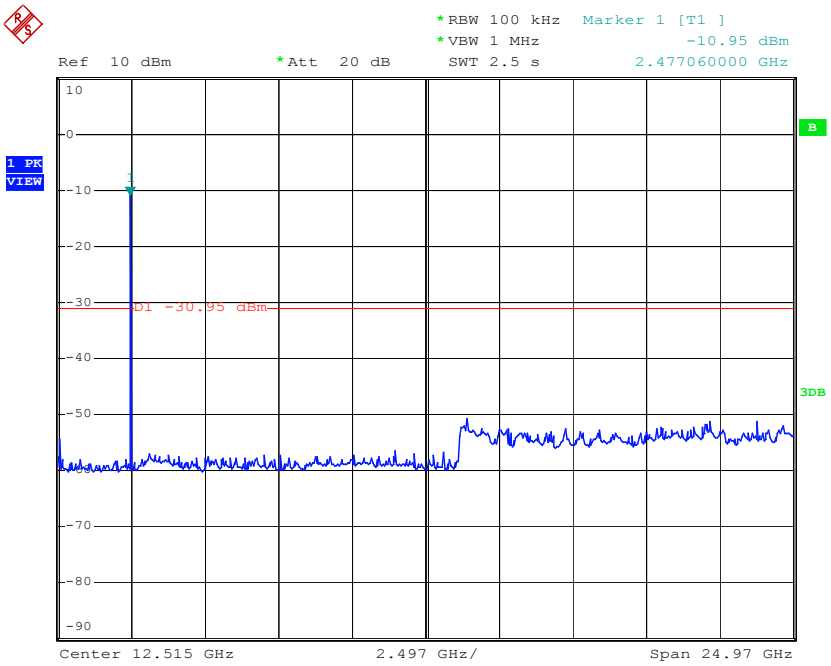
Product : HP Bluetooth Stereo Headphones
Test Item : RF Antenna Conducted Test
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK) (2441MHz)

**Figure Channel 39: 30-25GHz**



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

**Figure Channel 78: 30-25GHz**



# 6. Band Edge

## 6.1. Test Equipment

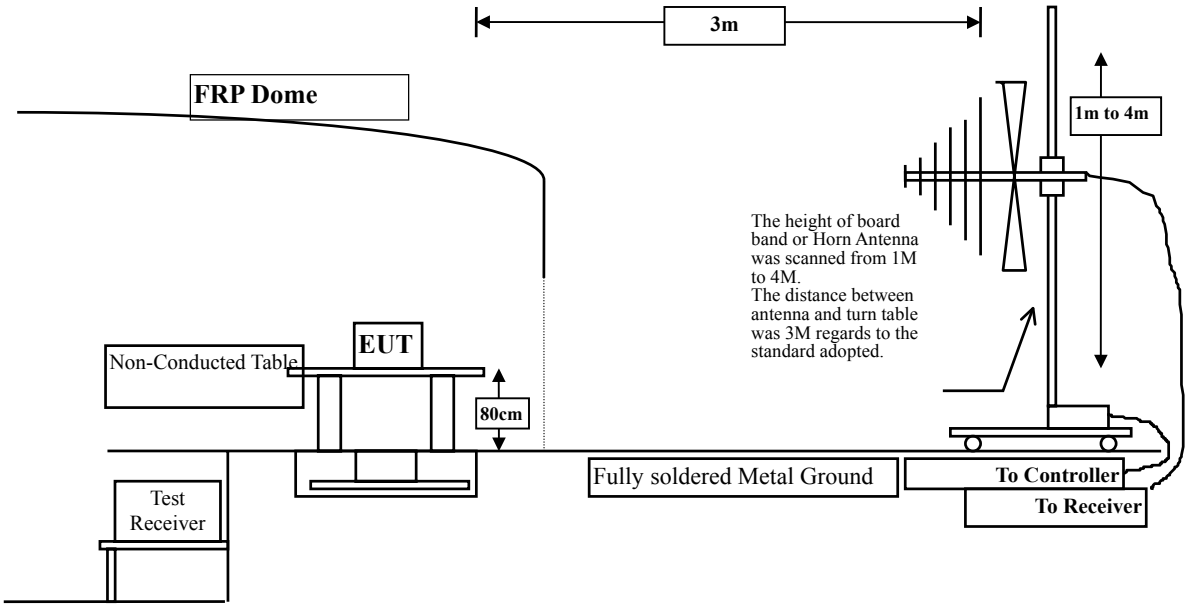
The following test equipments are used during the band edge tests:

| | 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.

## 6.2. Test Setup

**RF Radiated Measurement:**



## 6.3. 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.

## 6.4. 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.

## 6.5. Uncertainty

Conducted is ± 1 MHz

Radiated is ± 3.9 dB

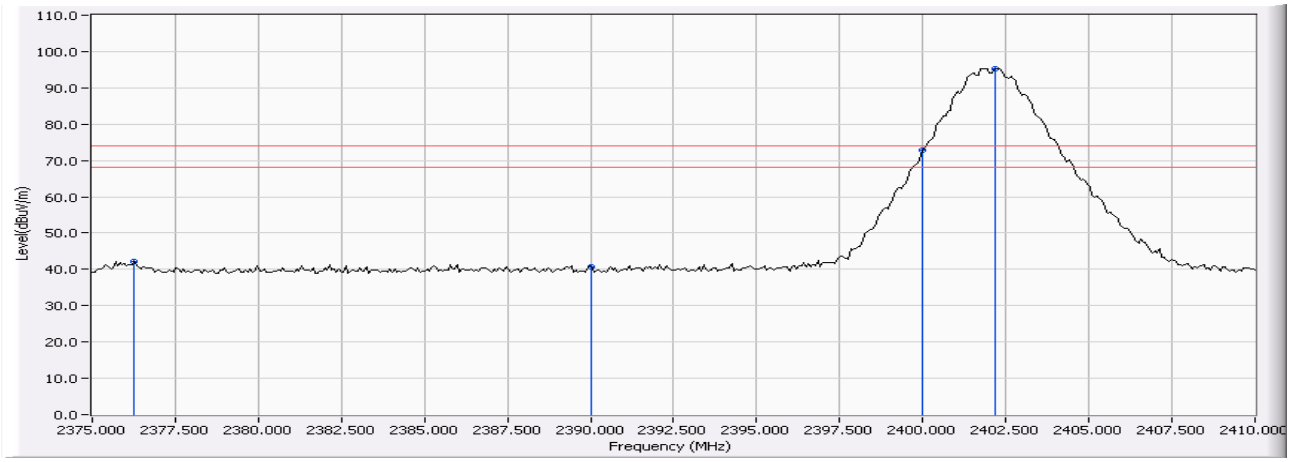
## 6.6. Test Result of Band Edge

Product : HP Bluetooth Stereo Headphones
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) | 2376.260 | -6.822 | 48.992 | 42.170 | 74.00 | 54.00 | Pass |
| 00 (Peak) | 2390.000 | -6.769 | 47.602 | 40.834 | 74.00 | 54.00 | Pass |
| 00 (Peak) | 2400.000 | -6.730 | 79.516 | 72.786 | 74.00 | 54.00 | Pass |
| 00 (Peak) | 2402.160 | -6.724 | 102.097 | 95.373 | 74.00 | 54.00 | Pass |

**Figure Channel 00: (Horizontal) (Peak)**




Note:

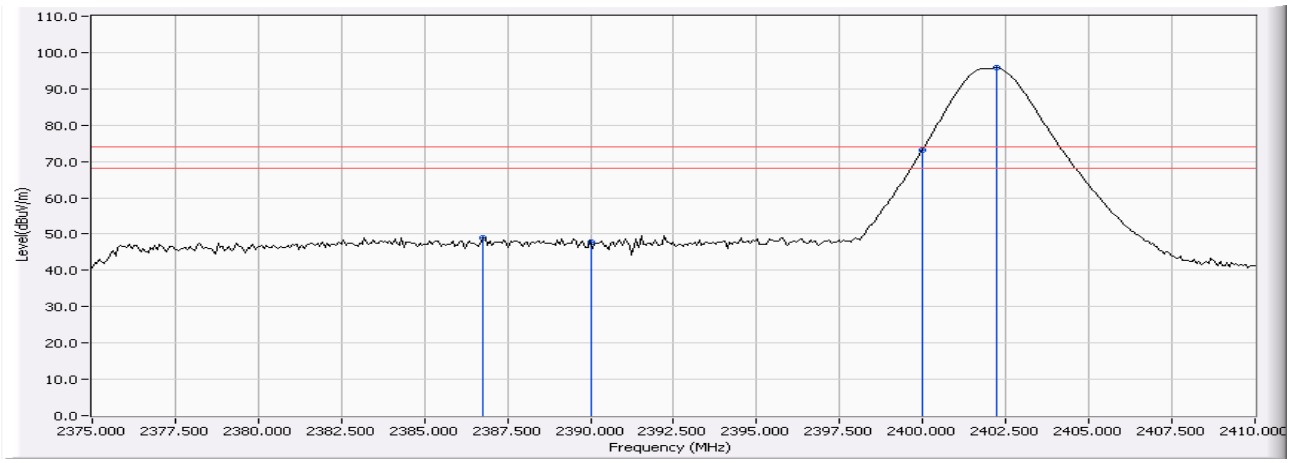
RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Product : HP Bluetooth Stereo Headphones
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) | 2386.760 | -6.777 | 55.872 | 49.095 | 74.00 | 54.00 | Pass |
| 00 (Peak) | 2390.000 | -6.769 | 54.517 | 47.749 | 74.00 | 54.00 | Pass |
| 00 (Peak) | 2400.000 | -6.730 | 79.938 | 73.208 | 74.00 | 54.00 | Pass |
| 00 (Peak) | 2402.229 | -6.724 | 102.422 | 95.698 | 74.00 | 54.00 | Pass |

**Figure Channel 00: (Vertical) (Peak)**




Note:

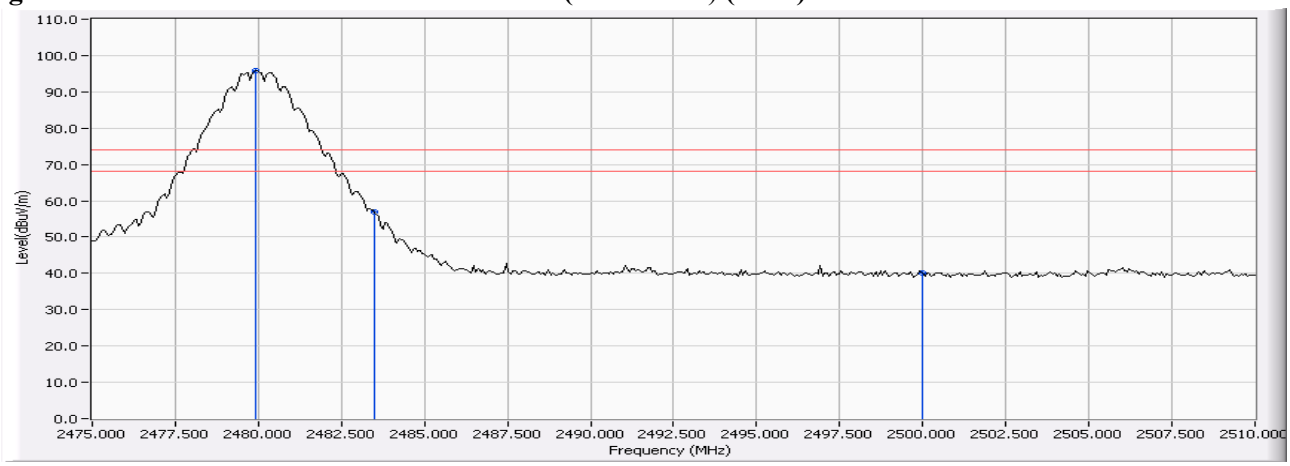
RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

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

**RF Radiated Measurement (Horizontal):**

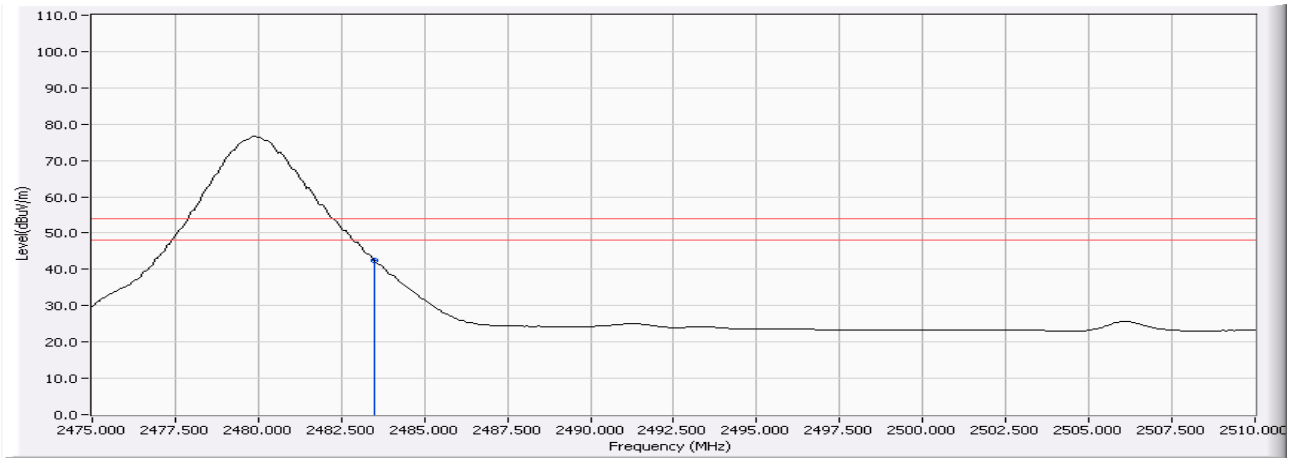
| Channel | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBuV) | Emission Level (dBuV/m) | Peak Limit (dBuV/m) | Average Limit (dBuV/m) | Result |
|---|---|---|---|---|---|---|---|
| 78(Peak) | 2479.900 | -6.475 | 102.303 | 95.828 | 74.00 | 54.00 | Pass |
| 78(Peak) | 2483.500 | -6.469 | 63.463 | 56.995 | 74.00 | 54.00 | Pass |
| 78(Peak) | 2500.000 | -6.437 | 46.502 | 40.065 | 74.00 | 54.00 | Pass |
| 78(Average) | 2483.500 | -6.469 | 48.990 | 42.522 | 74.00 | 54.00 | Pass |

**Figure Channel 78: (Horizontal) (Peak)**




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

**Figure Channel 78: (Horizontal) (Average)**



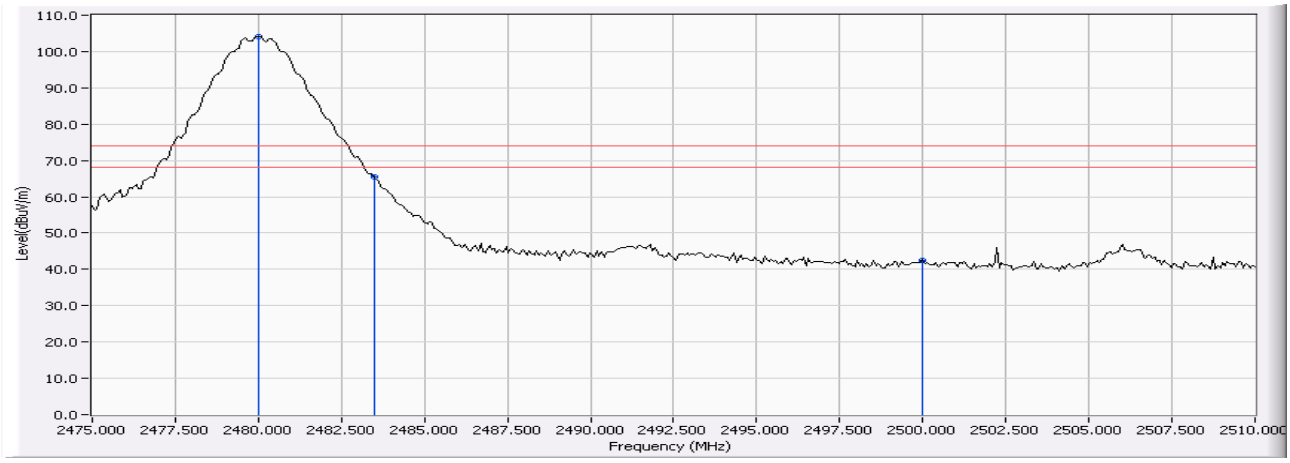

Note:
RBW=1MHz, VBW=300Hz, Sweep Time=500ms.

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

**RF Radiated Measurement (Vertical):**

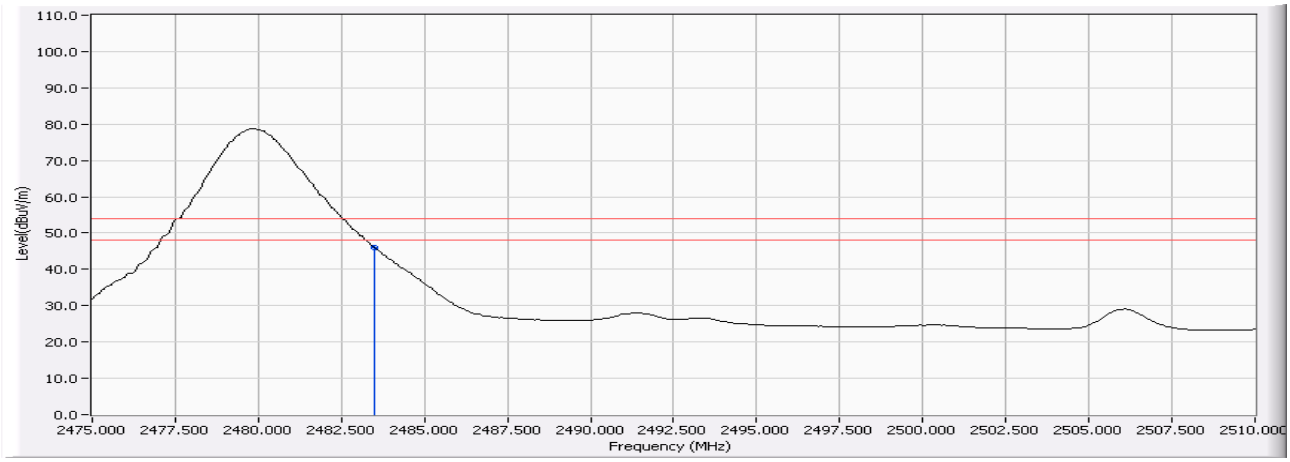
| Channel | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBuV) | Emission Level (dBuV/m) | Peak Limit (dBuV/m) | Average Limit (dBuV/m) | Result |
|---|---|---|---|---|---|---|---|
| 78(Peak) | 2479.990 | -6.475 | 110.554 | 104.080 | 74.00 | 54.00 | Pass |
| 78(Peak) | 2483.500 | -6.469 | 71.903 | 65.435 | 74.00 | 54.00 | Pass |
| 78(Peak) | 2500.000 | -6.437 | 48.975 | 42.538 | 74.00 | 54.00 | Pass |
| 78(Average) | 2483.500 | -6.469 | 52.557 | 46.089 | 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.

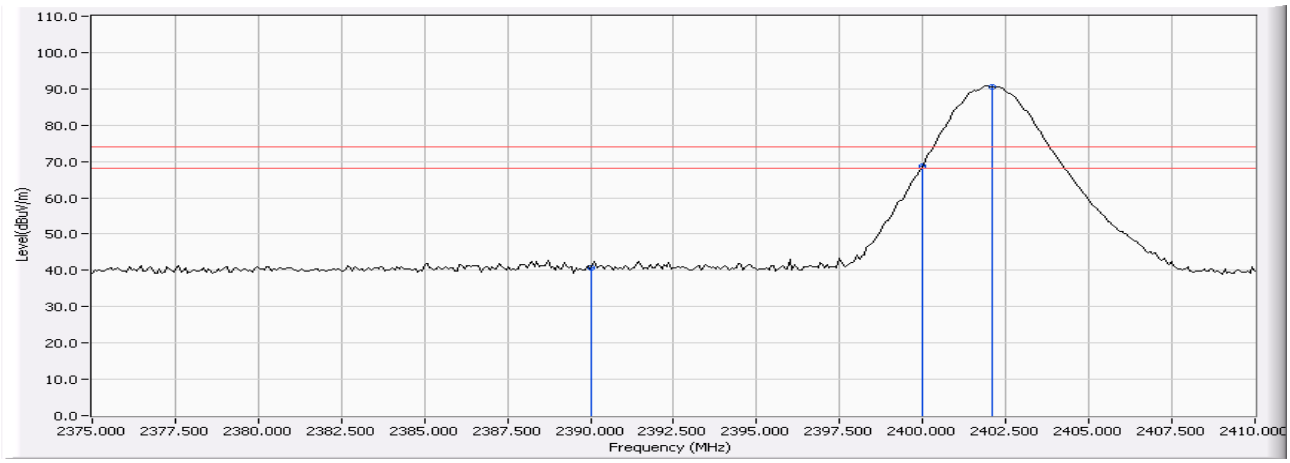
Note: The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : HP Bluetooth Stereo Headphones
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) | 2390.000 | -6.769 | 47.579 | 40.811 | 74.00 | 54.00 | Pass |
| 00 (Peak) | 2400.000 | -6.730 | 75.348 | 68.618 | 74.00 | 54.00 | Pass |
| 00 (Peak) | 2402.080 | -6.724 | 97.168 | 90.444 | 74.00 | 54.00 | Pass |

**Figure Channel 00: (Horizontal) (Peak)**




Note:

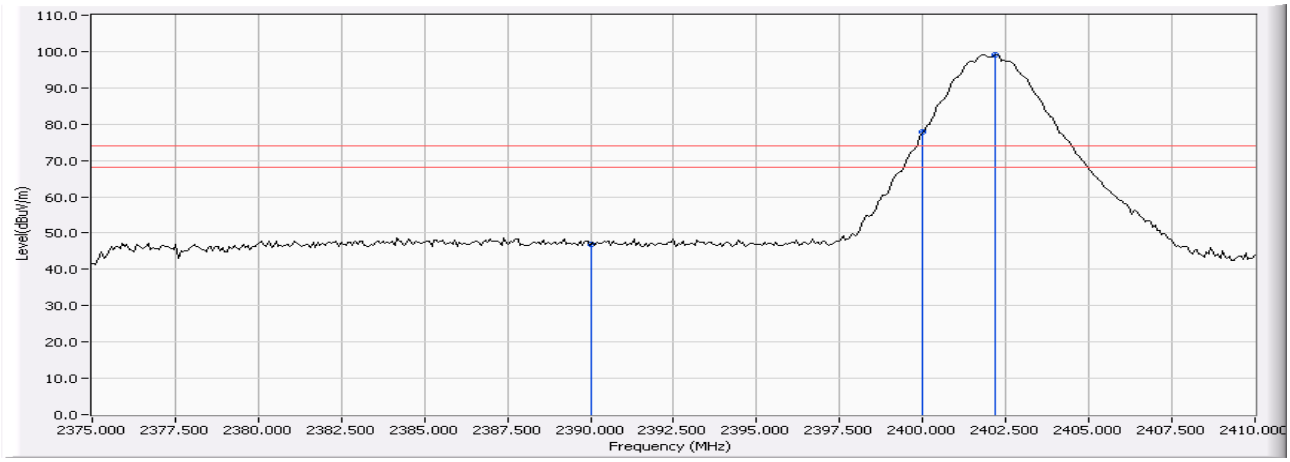
RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Product : HP Bluetooth Stereo Headphones
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 | 53.733 | 46.965 | 74.00 | 54.00 | Pass |
| 00 (Peak) | 2400.000 | -6.730 | 84.445 | 77.715 | 74.00 | 54.00 | Pass |
| 00 (Peak) | 2402.160 | -6.724 | 105.950 | 99.226 | 74.00 | 54.00 | Pass |

**Figure Channel 00: (Vertical) (Peak)**




Note:

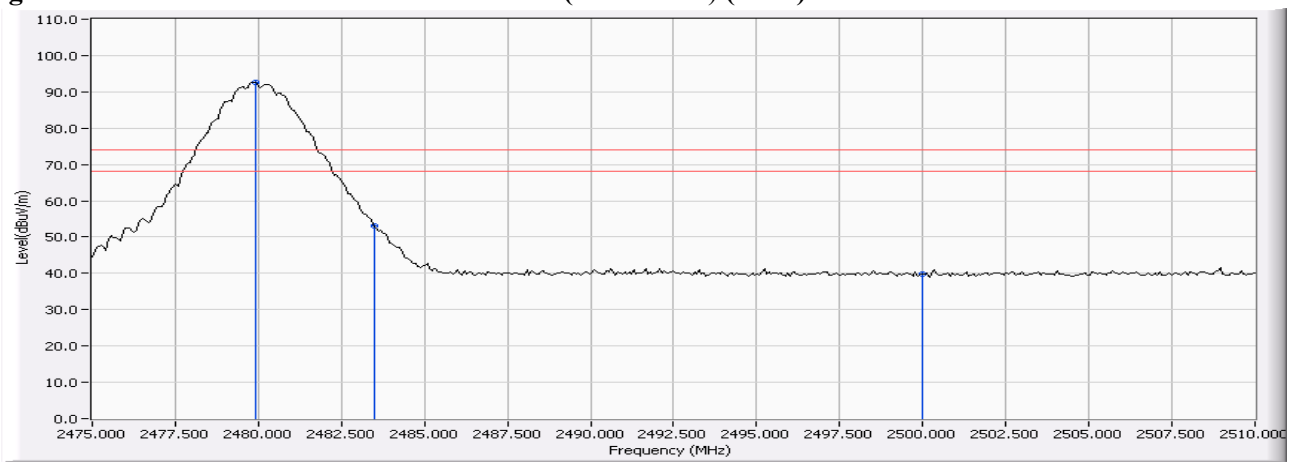
RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Product : HP Bluetooth Stereo Headphones
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) | 2479.900 | -6.475 | 98.958 | 92.483 | 74.00 | 54.00 | Pass |
| 78(Peak) | 2483.500 | -6.469 | 59.422 | 52.954 | 74.00 | 54.00 | Pass |
| 78(Peak) | 2500.000 | -6.437 | 46.175 | 39.738 | 74.00 | 54.00 | Pass |

**Figure Channel 78: (Horizontal) (Peak)**



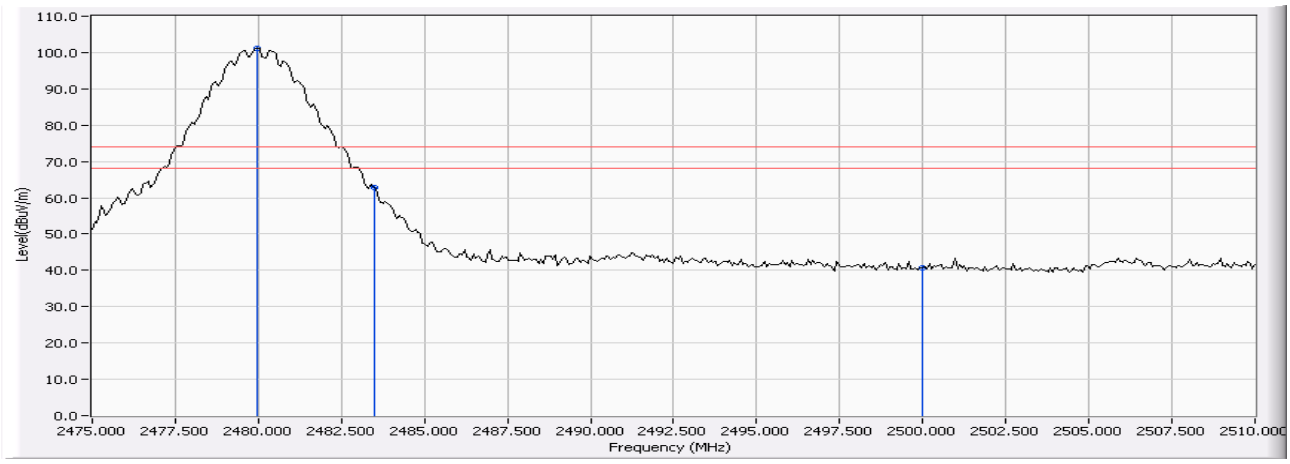

Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

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

**RF Radiated Measurement (Vertical):**

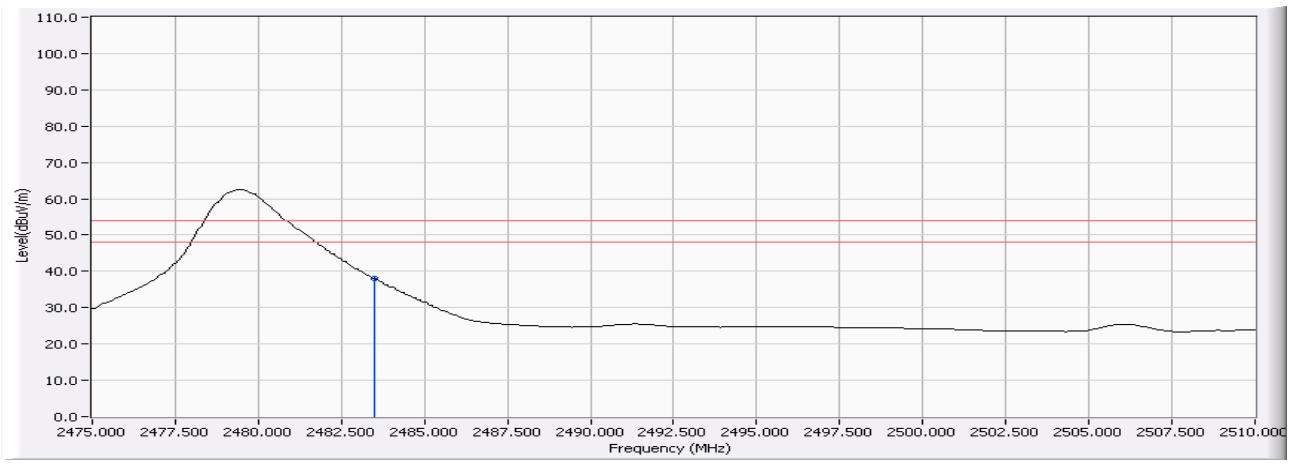
| Channel | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBuV) | Emission Level (dBuV/m) | Peak Limit (dBuV/m) | Average Limit (dBuV/m) | Result |
|---|---|---|---|---|---|---|---|
| 78(Peak) | 2479.970 | -6.475 | 107.753 | 101.278 | 74.00 | 54.00 | Pass |
| 78(Peak) | 2483.500 | -6.469 | 69.257 | 62.789 | 74.00 | 54.00 | Pass |
| 78(Peak) | 2500.000 | -6.437 | 47.073 | 40.636 | 74.00 | 54.00 | Pass |
| 78(Average) | 2483.500 | -6.469 | 44.375 | 37.907 | 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.

# 7. Channel Number

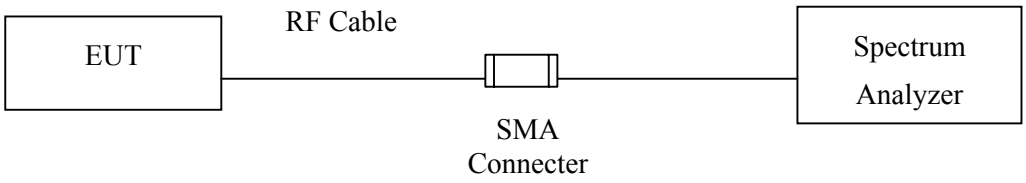
## 7.1. Test Equipment

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.

## 7.2. Test Setup




## 7.3. Limit

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

## 7.4. 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.

## 7.5. Uncertainty

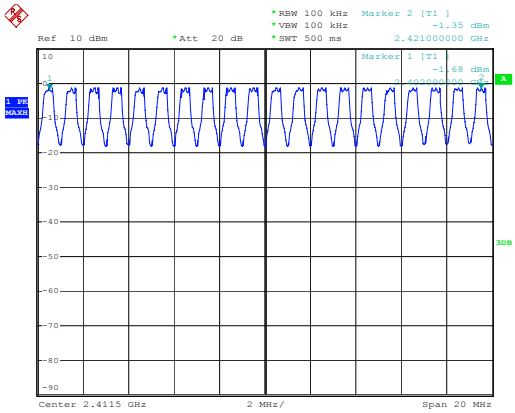
N/A

## 7.6. Test Result of Channel Number

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

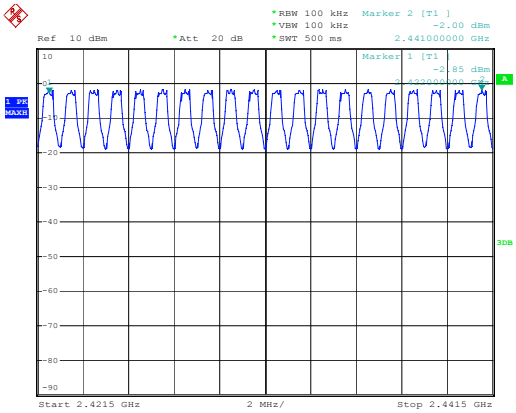
| Frequency Range (MHz) | Measurement (Hopping Channel) | Required Limit (Hopping Channel) | Result |
|---|---|---|---|
| 2402 ~ 2480 | 79 | >75 | Pass |

**2402-2421MHz**



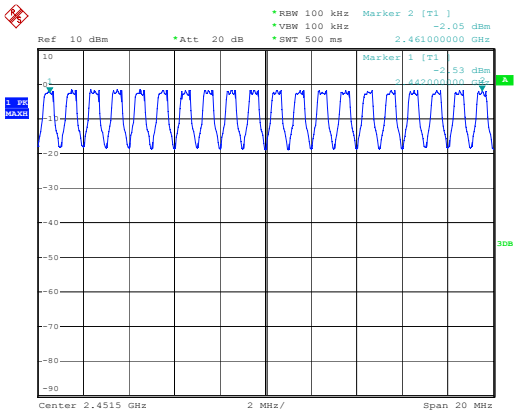

Date: 25.DEC.2007 19:18:48

**2422-2441MHz**



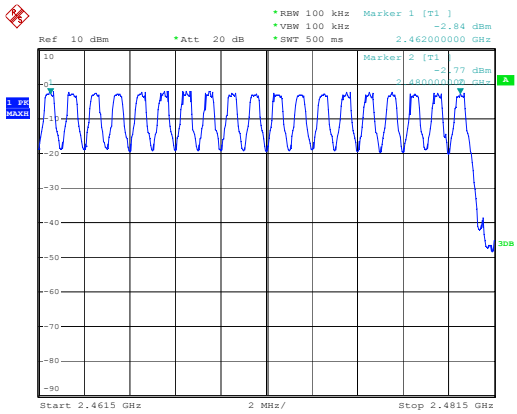

Date: 25.DEC.2007 20:08:09

**2442-2461MHz**




Date: 25.DEC.2007 20:31:07

**2462-2480MHz**

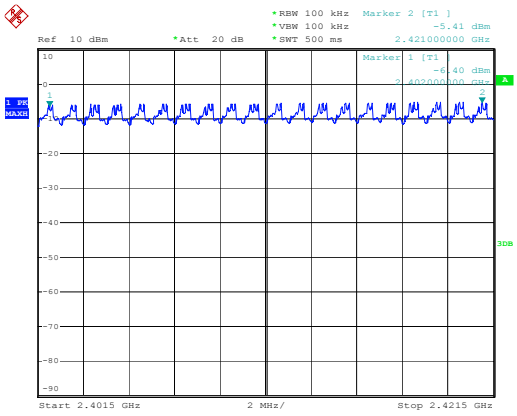



Date: 25.DEC.2007 20:35:05

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

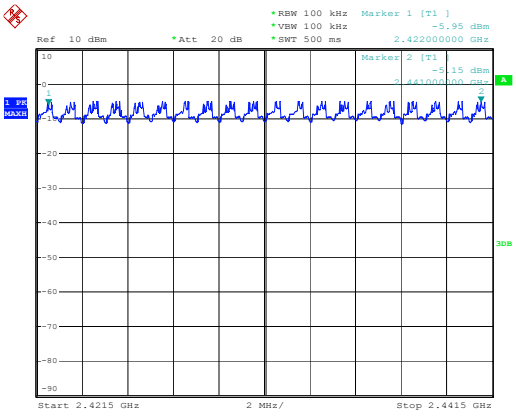
| Frequency Range (MHz) | Measurement (Hopping Channel) | Required Limit (Hopping Channel) | Result |
|---|---|---|---|
| 2402 ~ 2480 | 79 | >75 | Pass |

**2402-2421MHz**



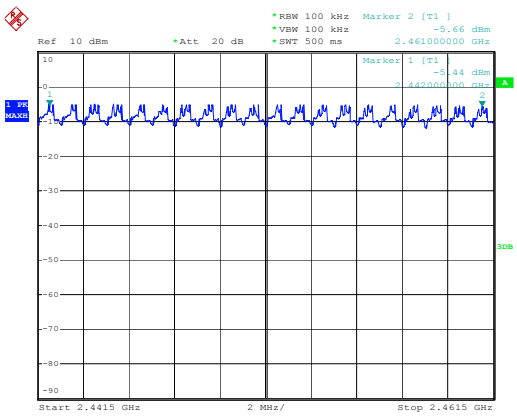

Date: 25.DEC.2007 21:45:40

**2422-2441MHz**



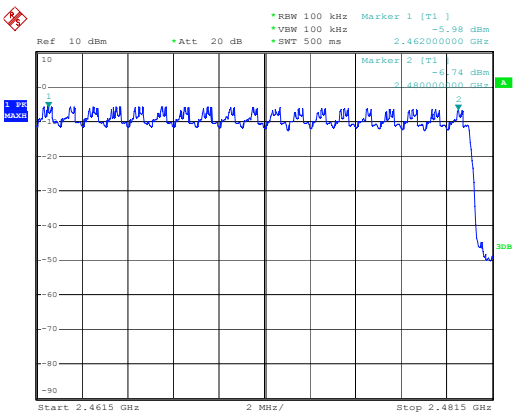

Date: 25.DEC.2007 21:10:43

**2442-2461MHz**




Date: 25.DEC.2007 20:59:23

**2462-2480MHz**




Date: 25.DEC.2007 20:46:57

# 8. Channel Separation

## 8.1. Test Equipment

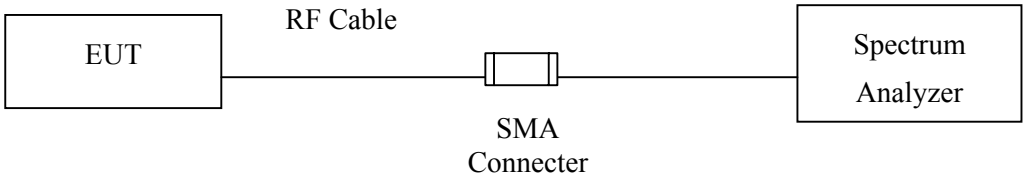
The following test equipments are used during the radiated emission tests:

| | 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 mark by "X" are used to measure the final test results.

## 8.2. Test Setup




## 8.3. 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.

## 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

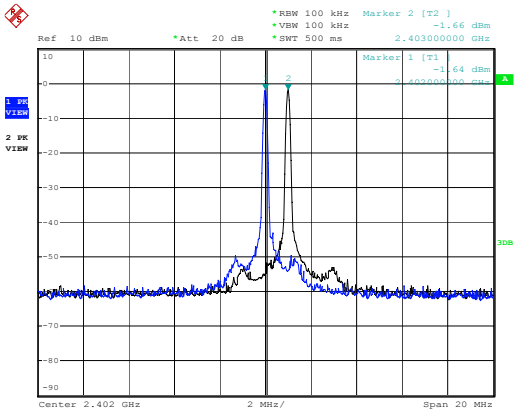
± 150Hz

## 8.6. Test Result of Channel Separation

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

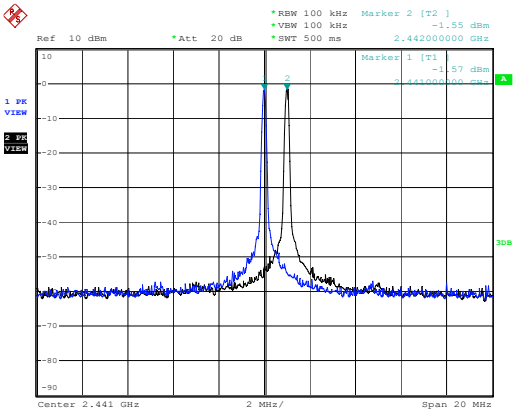
| Frequency (MHz) | Measurement Level (MHz) | Required Limit | Result |
|---|---|---|---|
| 2402 | 1.00 | >25 kHz or 2/3 * 20 dB BW | Pass |
| 2441 | 1.00 | >25 kHz or 2/3 * 20 dB BW | Pass |
| 2480 | 1.00 | >25 kHz or 2/3 * 20 dB BW | Pass |

Channel 00 2402MHz



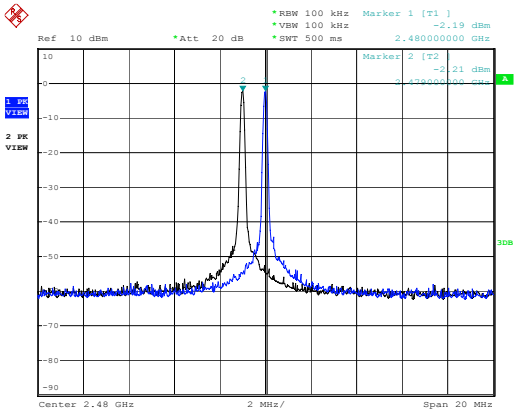

Date: 25.DEC.2007 18:42:28

Channel 39 2441MHz




Date: 25.DEC.2007 18:43:20

Channel 78 2480 MHz

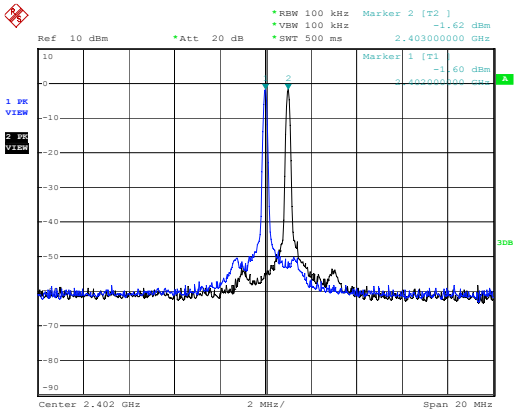



Date: 25.DEC.2007 18:44:13

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

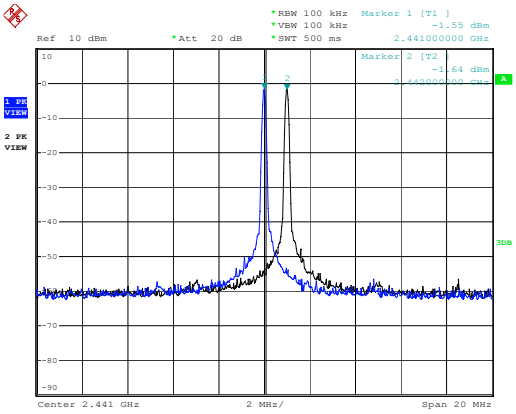
| Frequency (MHz) | Measurement Level (MHz) | Required Limit | Result |
|---|---|---|---|
| 2402 | 1.00 | >25 kHz or 2/3 * 20 dB BW | Pass |
| 2441 | 1.00 | >25 kHz or 2/3 * 20 dB BW | Pass |
| 2480 | 1.00 | >25 kHz or 2/3 * 20 dB BW | Pass |

Channel 00 2402MHz



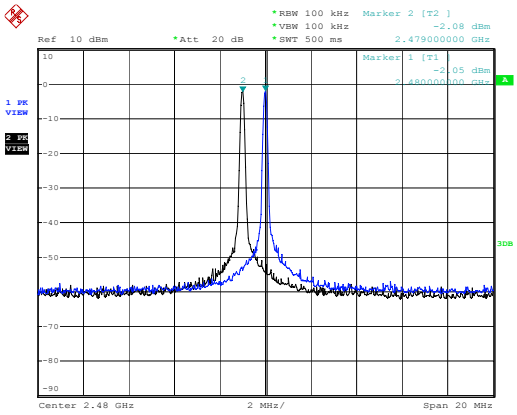

Date: 25.DEC.2007 18:40:47

Channel 39 2441MHz




Date: 25.DEC.2007 18:39:57

Channel 78 2480 MHz




Date: 25.DEC.2007 18:38:48

# 9. Dwell Time

## 9.1. Test Equipment

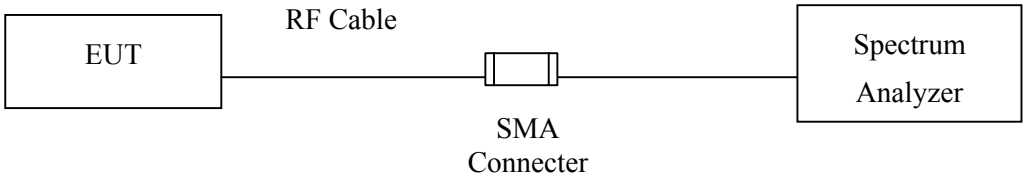
The following test equipments are used during the radiated emission tests:

| | 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 marked by "X" are used to measure the final test results.

## 9.2. Test Setup




## 9.3. 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.

## 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

± 25msec

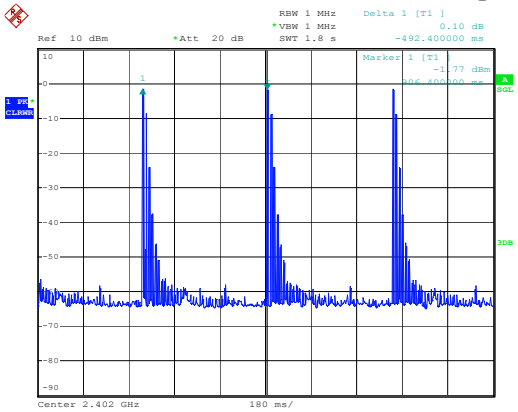
## 9.6. Test Result of Dwell Time

Product : HP Bluetooth Stereo Headphones
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 | 492.4 | 2883.2 | 185.0307067 | 400 | Pass |
| 39 | 2441 | 496 | 2907.2 | 185.2167742 | 400 | Pass |
| 78 | 2480 | 496.5 | 2883.2 | 183.5027593 | 400 | Pass |

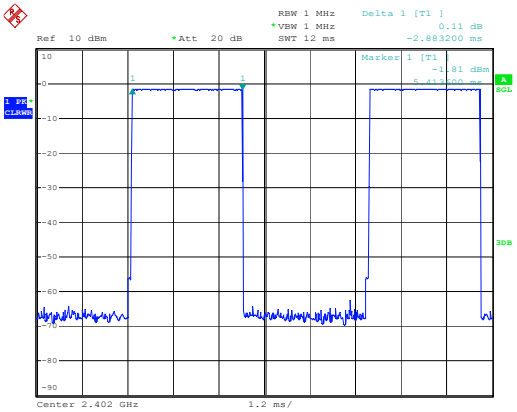
Note: Dwell Time = 79 * 400 / Time Interval Between Hops * Transmission Time / 1000

CH 2402MHz Time Interval between hops



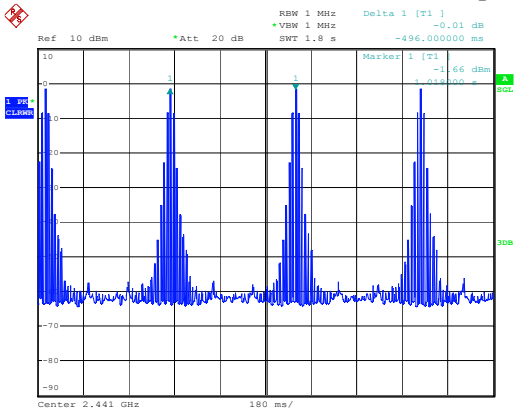

Date: 25.DEC.2007 17:40:32

Transmission Time



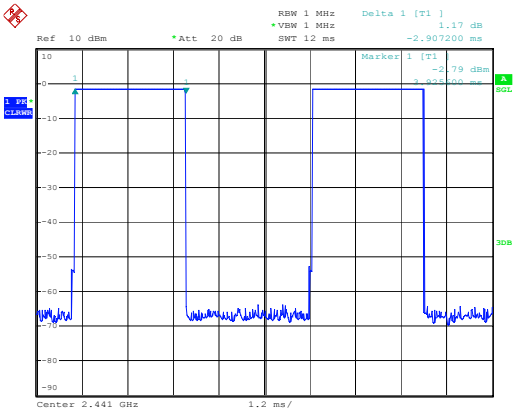

Date: 25.DEC.2007 17:35:13

CH 2441MHz Time Interval between hops



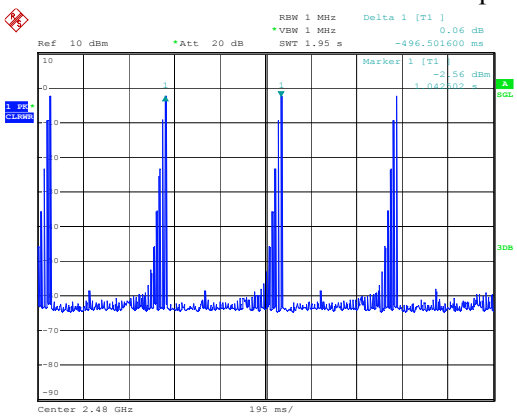

Date: 25.DEC.2007 17:39:59

Transmission Time



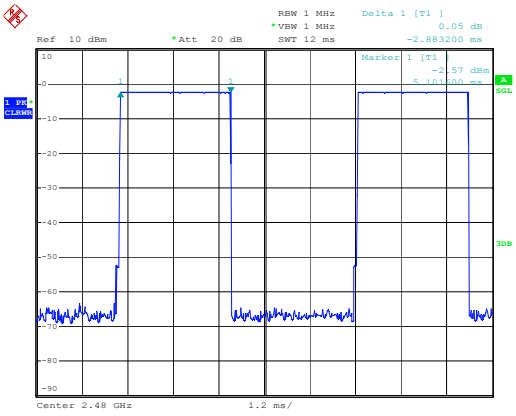

Date: 25.DEC.2007 17:35:56

CH 2480MHz Time Interval between hops




Date: 25.DEC.2007 17:38:03

Transmission Time




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

Note:

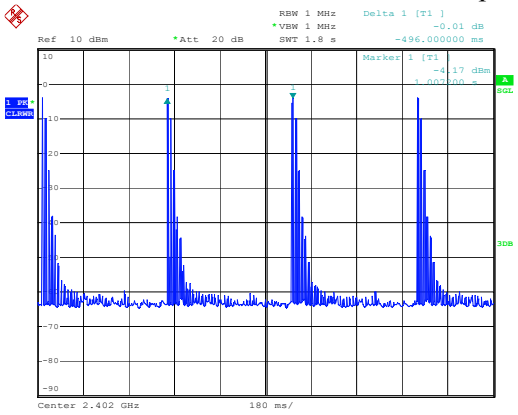
The dwell times of the packet type DH5 are tested.

Product : HP Bluetooth Stereo Headphones
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 | 496 | 2924 | 186.2870968 | 400 | Pass |
| 39 | 2441 | 496 | 2924 | 186.2870968 | 400 | Pass |
| 78 | 2480 | 492.4 | 2916 | 187.1356621 | 400 | Pass |

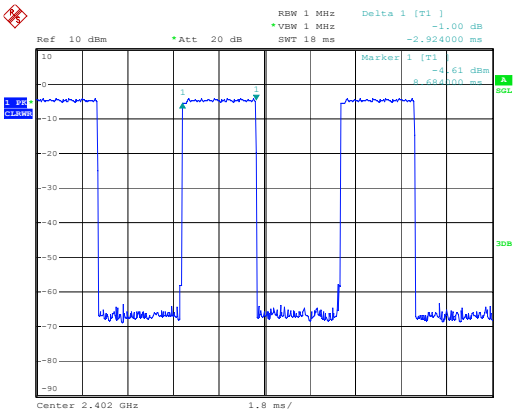
Note: Dwell Time = 79 * 400 / Time Interval Between Hops * Transmission Time / 1000

CH 2402MHz Time Interval between hops



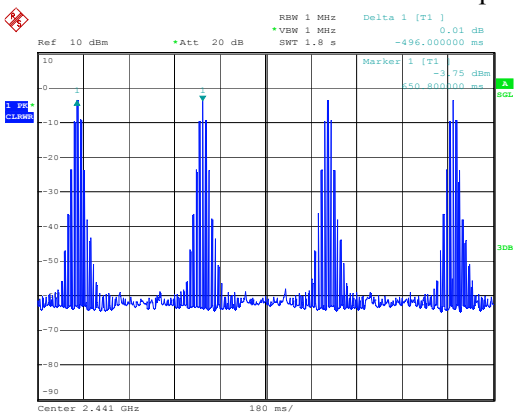

Date: 25.DEC.2007 17:41:29

Transmission Time



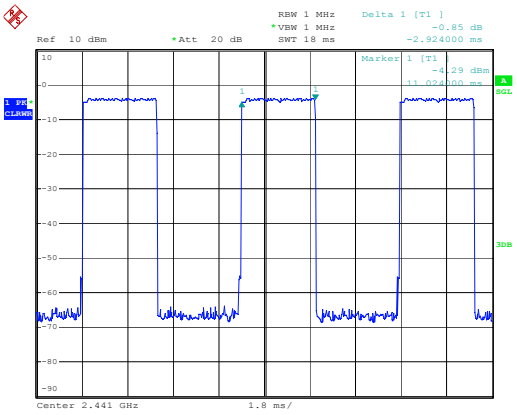

Date: 25.DEC.2007 17:46:46

CH 2441MHz Time Interval between hops



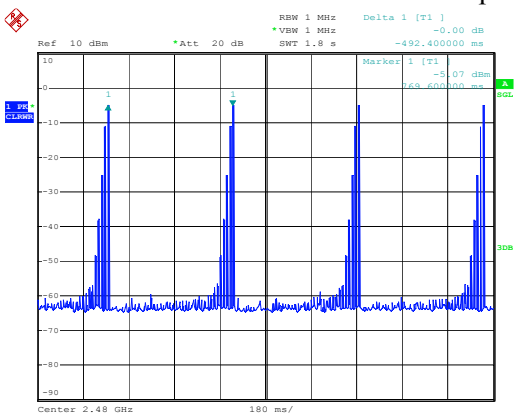

Date: 25.DEC.2007 17:42:05

Transmission Time



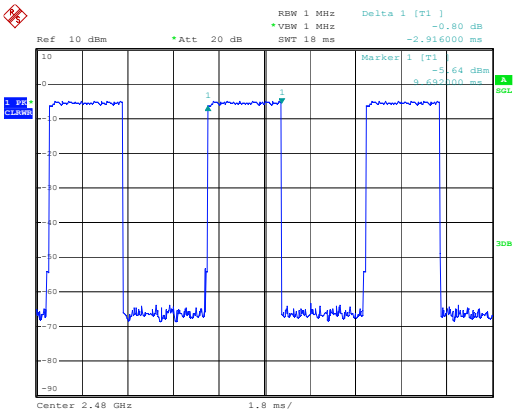

Date: 25.DEC.2007 17:45:34

CH 2480MHz Time Interval between hops




Date: 25.DEC.2007 17:42:35

Transmission Time




Date: 25.DEC.2007 17:44:33

Note:

The dwell times of the packet type DH5 are tested.

# 10. Occupied Bandwidth

## 10.1. Test Equipment

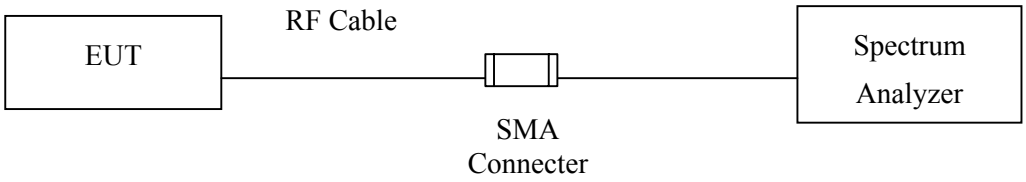
The following test equipments are used during the radiated emission tests:

| | 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. Limits

N/A

## 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

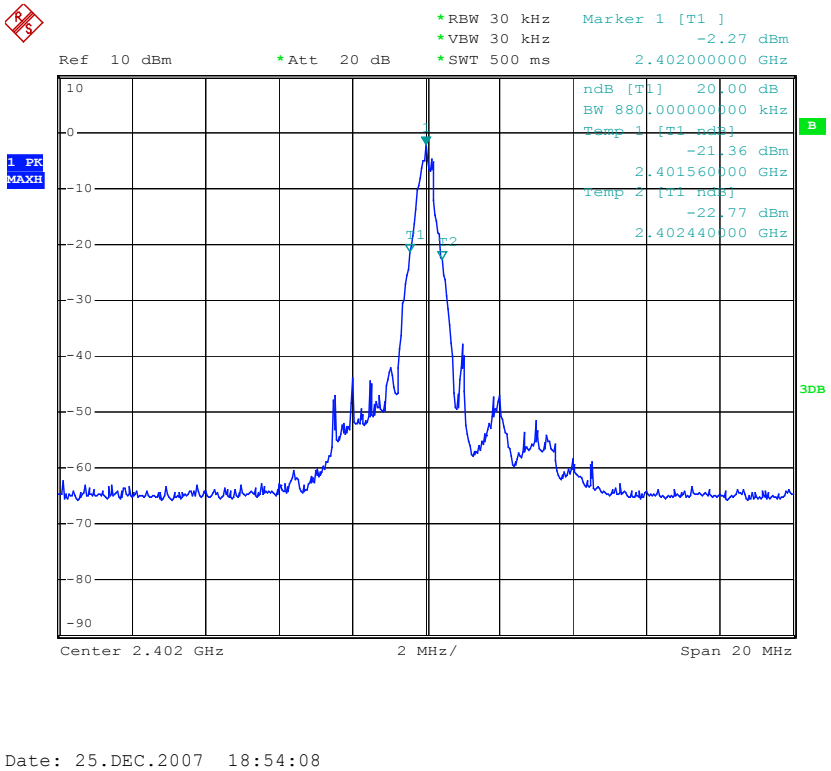
± 150Hz

## 10.6. Test Result of Occupied Bandwidth

Product : HP Bluetooth Stereo Headphones
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 | 880 | -- | NA |

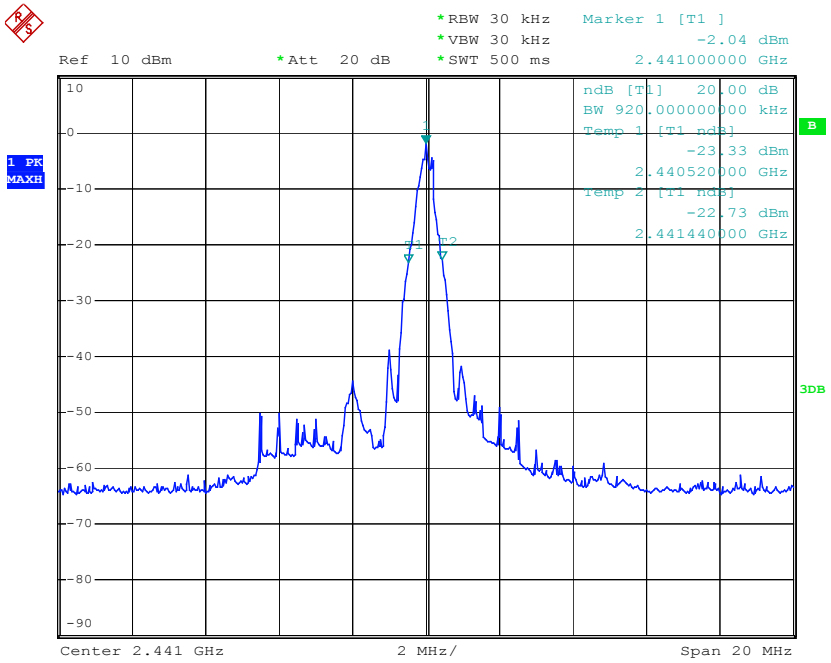
**Figure Channel 00:**



Product : HP Bluetooth Stereo Headphones
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 | 920 | -- | NA |

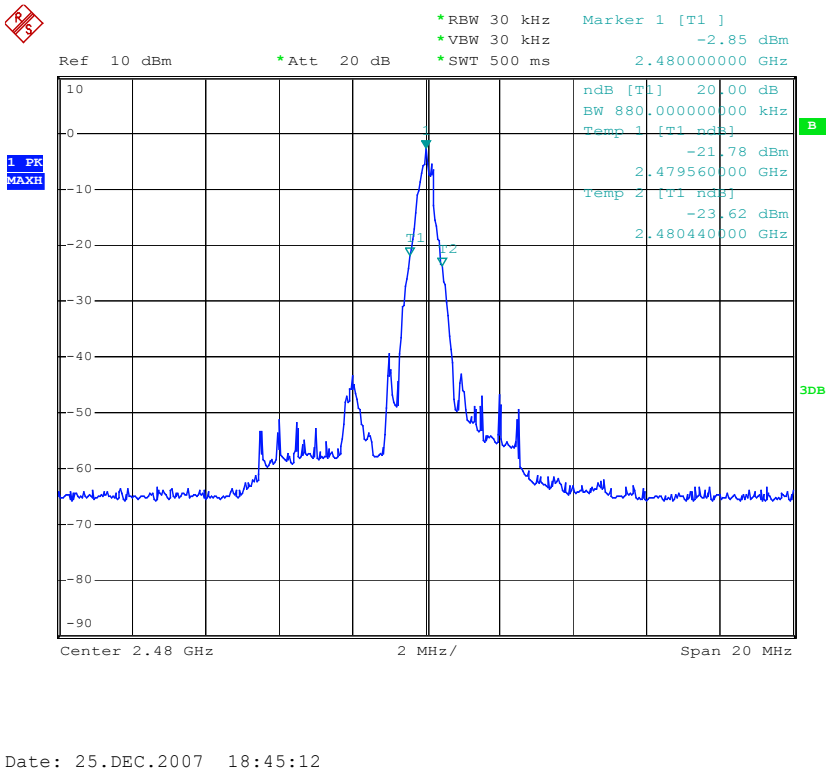
**Figure Channel 39:**



Product : HP Bluetooth Stereo Headphones
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 | 880 | -- | NA |

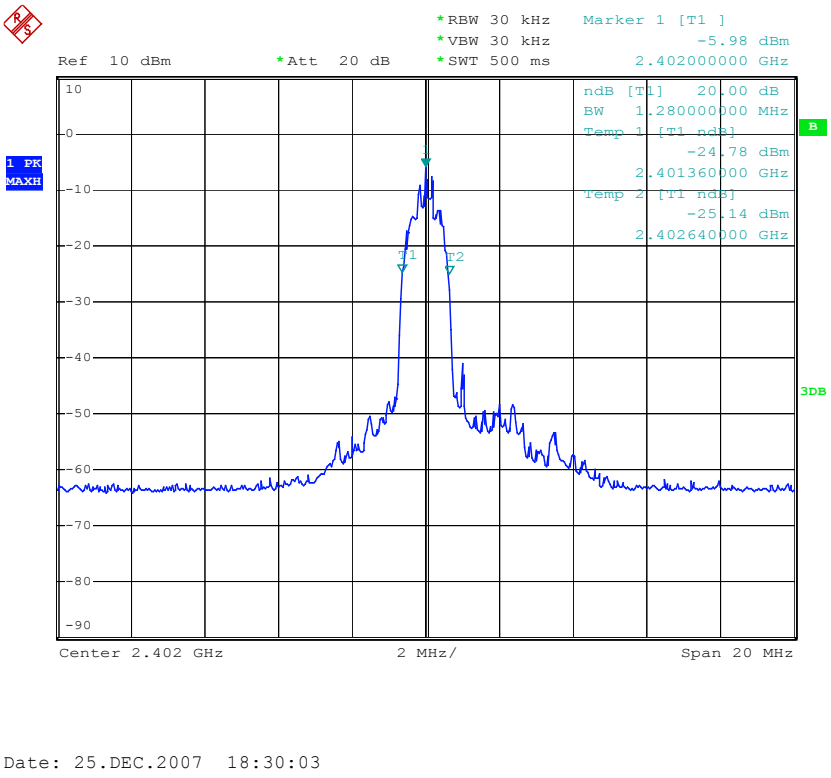
**Figure Channel 78:**



Product : HP Bluetooth Stereo Headphones
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 | 1280 | -- | NA |

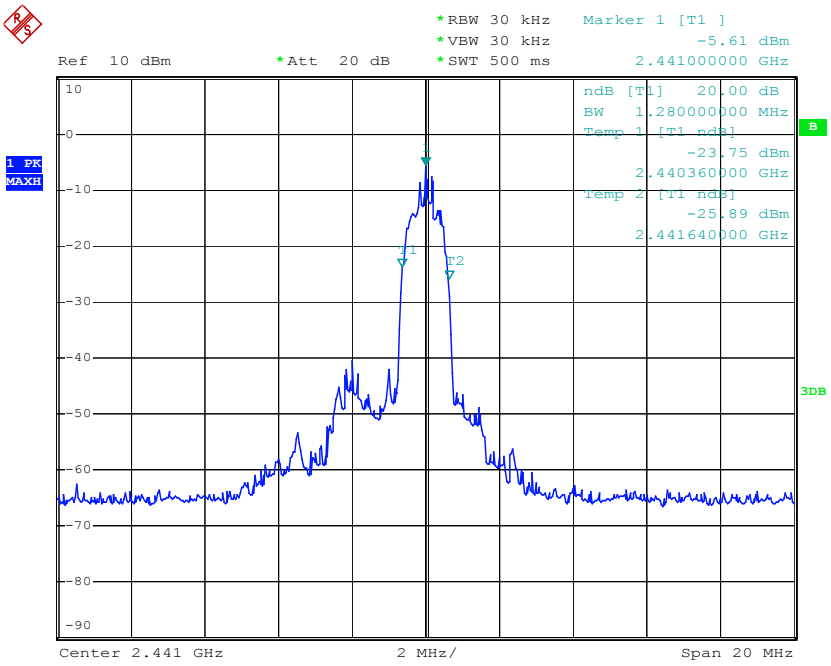
**Figure Channel 00:**



Product : HP Bluetooth Stereo Headphones
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 | 1280 | -- | NA |

**Figure Channel 39:**

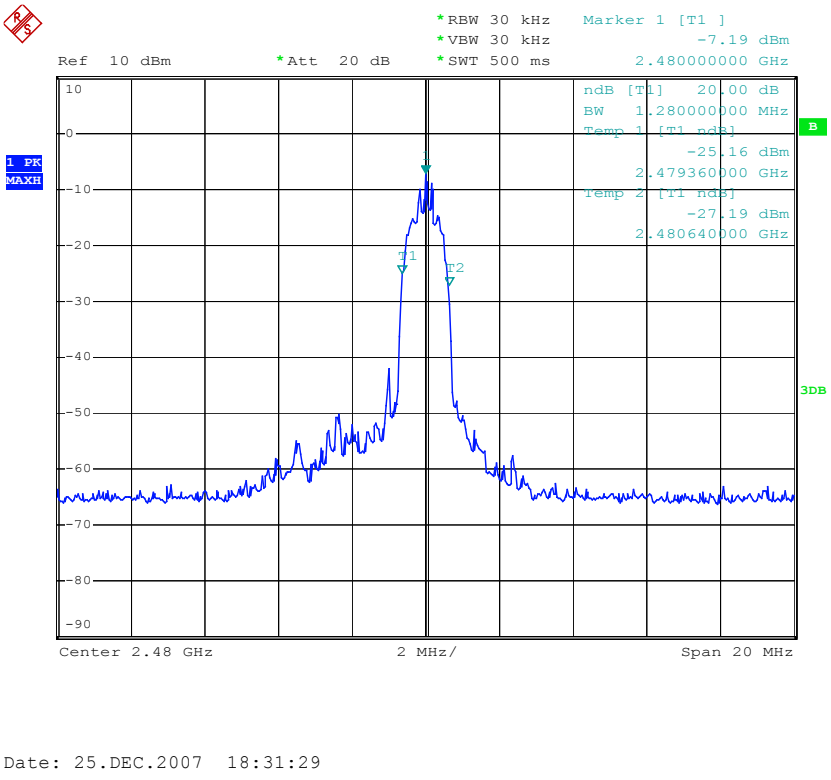



Date: 25.DEC.2007 18:30:43

Product : HP Bluetooth Stereo Headphones
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 | 1280 | -- | NA |

**Figure Channel 78:**



## 11. EMI Reduction Method During Compliance Testing

No modification was made during testing.