



## Test Report

Product Name : IEEE 802.11b/g Bluetooth 2.0+  
EDR and GPS MiniCard  
Model No. : MM230-M  
FCC ID. : N89-MM230M

Applicant : CyberTAN Technology, Inc.  
Address : 99 Park Avenue 3, Science Park Hsinchu 308,  
Taiwan, R.O.C.

Date of Receipt : 2008/01/06  
Issued Date : 2008/01/08  
Report No. : 081090R-RFUSP06V01

The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

# Test Report Certification

Issued Date : 2008/01/08

Report No. : 081090R-RFUSP06V01



Product Name : IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard  
 Applicant : CyberTAN Technology, Inc.  
 Address : 99 Park Avenue 3, Science Park Hsinchu 308, Taiwan, R.O.C.  
 Manufacturer : Foxconn Technology Group- Ambit Microsystems  
 (Zhongshan)LTD.  
 Model No. : MM230-M  
 FCC ID. : N89-MM230M  
 Rated Voltage : AC 120 V / 60 Hz  
 EUT Voltage : Power by PC  
 Trade Name : CyberTAN  
 Applicable Standard : FCC CFR Title 47 Part 15 Subpart C Section 15.247:2006  
 Test Result : Complied

The test results relate only to the samples tested.

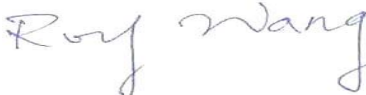
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Documented By : 

( Carol Tsai / Adm. Specialist )

Tested By : 

( Lucia Lu / Assistant Engineer )

Approved By : 

( Roy Wang / Manager )

# TABLE OF CONTENTS

| Description                               | Page      |
|-------------------------------------------|-----------|
| <b>1. General Information .....</b>       | <b>5</b>  |
| 1.1. EUT Description .....                | 5         |
| 1.2. Operational Description .....        | 7         |
| 1.3. Test Mode .....                      | 8         |
| 1.4. Tested System Details.....           | 9         |
| 1.5. Configuration of tested System ..... | 10        |
| 1.6. EUT Exercise Software .....          | 11        |
| 1.7. Test Facility .....                  | 12        |
| <b>2. Conducted Emission.....</b>         | <b>14</b> |
| 2.1. Test Equipment .....                 | 14        |
| 2.2. Test Setup .....                     | 14        |
| 2.3. Limits.....                          | 15        |
| 2.4. Test Procedure .....                 | 15        |
| 2.5. Test Specification .....             | 15        |
| 2.6. Test Result .....                    | 16        |
| 2.7. Test Photo .....                     | 20        |
| <b>3. Peak Power Output .....</b>         | <b>21</b> |
| 3.1. Test Equipment .....                 | 21        |
| 3.2. Test Setup .....                     | 21        |
| 3.3. Test procedures.....                 | 21        |
| 3.4. Limits.....                          | 21        |
| 3.5. Test Specification .....             | 21        |
| 3.6. Test Result .....                    | 22        |
| <b>4. Radiated Emission .....</b>         | <b>31</b> |
| 4.1. Test Equipment .....                 | 31        |
| 4.2. Test Setup .....                     | 31        |
| 4.3. Limits.....                          | 32        |
| 4.4. Test Procedure .....                 | 32        |
| 4.5. Test Specification .....             | 32        |
| 4.6. Test Result .....                    | 33        |
| 4.7. Test Photo .....                     | 42        |
| <b>5. RF Conducted Emission .....</b>     | <b>44</b> |
| 5.1. Test Equipment .....                 | 44        |
| 5.2. Test Setup .....                     | 44        |
| 5.3. Limits.....                          | 45        |
| 5.4. Test Procedure .....                 | 45        |
| 5.5. Test Specification .....             | 45        |
| 5.6. Test Result .....                    | 46        |
| <b>6. Band Edge.....</b>                  | <b>48</b> |
| 6.1. Test Equipment .....                 | 48        |
| 6.2. Test Setup .....                     | 48        |

|                  |                                           |           |
|------------------|-------------------------------------------|-----------|
| 6.3.             | Limits.....                               | 49        |
| 6.4.             | Test Procedure .....                      | 49        |
| 6.5.             | Test Specification .....                  | 49        |
| 6.6.             | Test Result .....                         | 50        |
| <b>7.</b>        | <b>Number of hopping frequency .....</b>  | <b>58</b> |
| 7.1.             | Test Equipment .....                      | 58        |
| 7.2.             | Test Setup .....                          | 58        |
| 7.3.             | Limits.....                               | 59        |
| 7.4.             | Test Procedures .....                     | 59        |
| 7.5.             | Test Specification .....                  | 59        |
| 7.6.             | Test Result .....                         | 60        |
| <b>8.</b>        | <b>Carrier Frequency Separation .....</b> | <b>64</b> |
| 8.1.             | Test Equipment .....                      | 64        |
| 8.2.             | Test Setup .....                          | 64        |
| 8.3.             | Limits.....                               | 64        |
| 8.4.             | Test Procedures.....                      | 64        |
| 8.5.             | Test Specification .....                  | 64        |
| 8.6.             | Test Result .....                         | 65        |
| <b>9.</b>        | <b>Occupied Bandwidth.....</b>            | <b>68</b> |
| 9.1.             | Test Equipment .....                      | 68        |
| 9.2.             | Test Setup .....                          | 68        |
| 9.3.             | Limits.....                               | 69        |
| 9.4.             | Test Procedures .....                     | 69        |
| 9.5.             | Test Specification .....                  | 69        |
| 9.6.             | Test Result .....                         | 70        |
| <b>10.</b>       | <b>Dwell Time.....</b>                    | <b>88</b> |
| 10.1.            | Test Equipment .....                      | 88        |
| 10.2.            | Test Setup .....                          | 88        |
| 10.3.            | Limits.....                               | 89        |
| 10.4.            | Test Procedures .....                     | 89        |
| 10.5.            | Test Specification .....                  | 89        |
| 10.6.            | Test Result .....                         | 90        |
| Attachement..... |                                           | 102       |
|                  | EUT Photograph .....                      | 102       |

## 1. General Information

### 1.1. EUT Description

|                    |                                                    |
|--------------------|----------------------------------------------------|
| Product Name       | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |
| Trade Name         | CyberTAN                                           |
| Model No.          | MM230-M                                            |
| Frequency Range    | 2402~2480MHz                                       |
| Channel Number     | 79                                                 |
| Type of Modulation | FHSS                                               |
| Channel Control    | Manual                                             |
| Antenna Type       | Connector (PIFA)                                   |
| Antenna Gain       | 2.51dBi                                            |

| Working 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 hop sets 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 an IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard, which including 2.4GHz BT/WLAN and 1575.42MHz receiving function, and 2.4GHz BT/WLAN transmitting function.
2. These test results on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
3. Regards to the frequency band operation; the lowest 、 middle and highest frequency of channel were selected to perform the test, and then shown on this report.
4. This device is a composite device in accordance with Part 15 regulations. The function receiving was measured and made a test report that the report number is 081090R-RFUSP01V02-A under Declaration of Conformity.

### 1.3. Test Mode

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

| Pre-Test Mode   |                  |
|-----------------|------------------|
| EMI             | Mode 1: Transmit |
| Final Test Mode |                  |
| EMI             | Mode 1: Transmit |

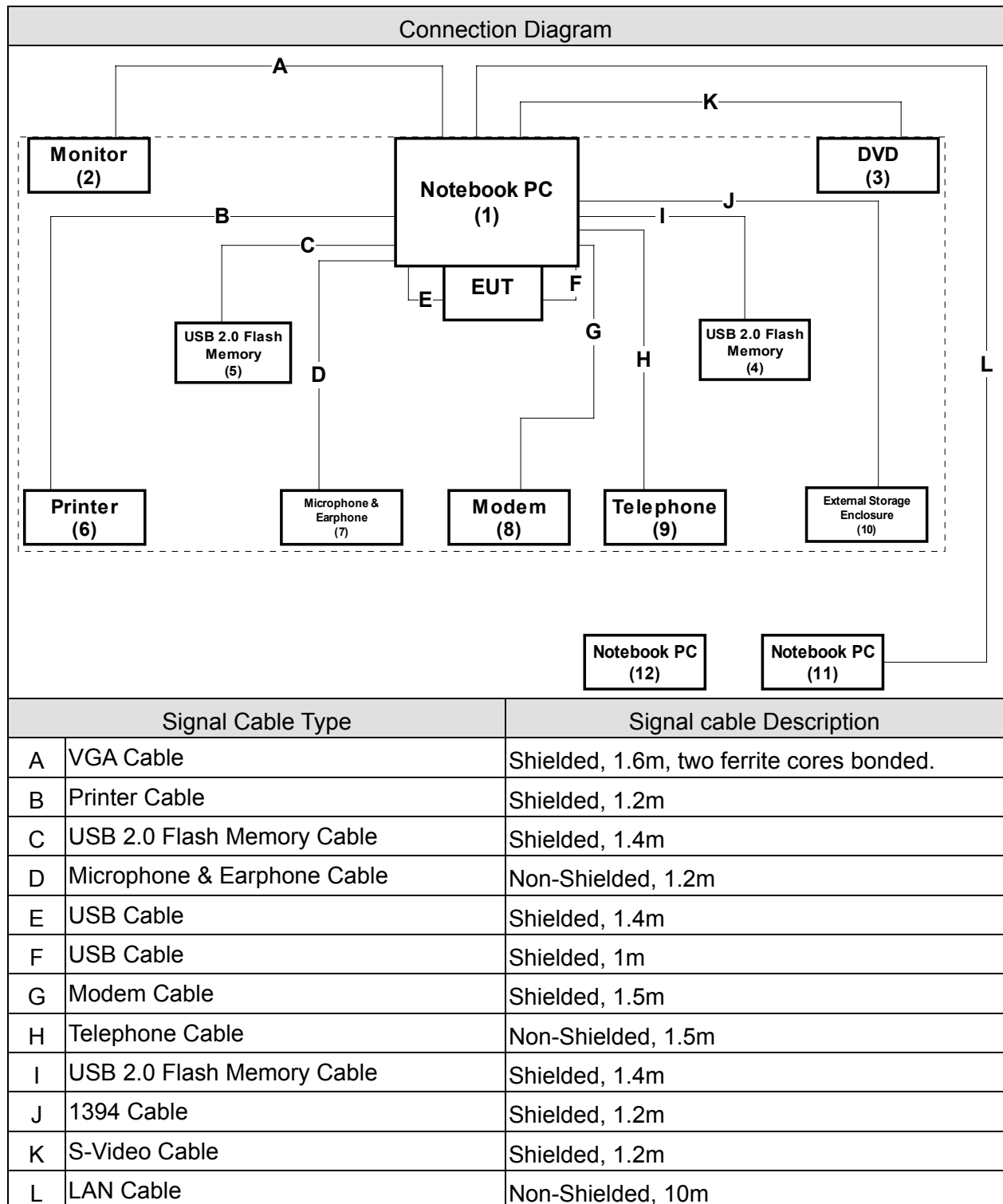
| Emission           | Mode 1 |
|--------------------|--------|
| Conducted Emission | Yes    |
| Peak Power Output  | Yes    |
| Radiated Emission  | Yes    |
| Band Edge          | Yes    |
| Channel of Number  | Yes    |
| Channel Separation | Yes    |
| Occupied Bandwidth | Yes    |
| Dwell Time         | Yes    |

#### 1.4. Tested System Details

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

| Product |                            | Manufacturer | Model No.          | Serial No.      | FCC ID | Power Cord         |
|---------|----------------------------|--------------|--------------------|-----------------|--------|--------------------|
| 1       | Notebook PC                | HP           | NX6320             | CNU62D1F4K      | DoC    | Non-Shielded, 1.8m |
| 2       | Monitor                    | CHI MEI      | A170E1-09          | 3UC120954HA0063 | DoC    | Non-Shielded, 1.8m |
| 3       | DVD                        | Panasonic    | DVD-A120TN         | 9542160         | DoC    | Non-Shielded, 1.8m |
| 4       | USB 2.0 Flash Memory       | Sony         | USM2GJX            | N/A             | DoC    | --                 |
| 5       | USB 2.0 Flash Memory       | Sony         | USM2GJX            | N/A             | DoC    | --                 |
| 6       | Printer                    | HP           | C2642A             | TH86M1M34W      | DoC    | Non-Shielded, 0.7m |
| 7       | Microphone & Earphone      | TOKTO        | SX-MI              | N/A             | DoC    | --                 |
| 8       | Modem                      | ACEEX        | DM-1414            | 0102027535      | DoC    | Non-Shielded, 1.6m |
| 9       | Telephone                  | TENTEL       | K-302              | 50721005000219  | DoC    | --                 |
| 10      | External Storage Enclosure | MACPOWER     | Laureate Super 800 | N/A             | DoC    | --                 |
| 11      | Notebook PC                | HP           | NX6320             | CNU62D1F5Y      | DoC    | Non-Shielded, 1.8m |
| 12      | Notebook PC                | HP           | NX6320             | CNU62D1F6F      | DoC    | Non-Shielded, 1.8m |

## 1.5. Configuration of tested System



## 1.6. EUT Exercise Software

|   |                                                       |
|---|-------------------------------------------------------|
| 1 | Setup the EUT and Notebook PC as shown on 1.5         |
| 2 | Turn on the power of all equipment.                   |
| 3 | Notebook PC reads data from disk.                     |
| 4 | Data will be transmitting through EUT.                |
| 5 | The transmitting status will be shown on the monitor. |
| 6 | Repeat the above procedure (4) to (5)                 |

## 1.7. Test Facility

Ambient conditions in the laboratory:

| Items                      | Test Item                                         | Required (IEC 68-1) | Actual   |
|----------------------------|---------------------------------------------------|---------------------|----------|
| Temperature (°C)           | FCC PART 15 B 15.107<br>Conducted Emission        | 15 - 35             | 25       |
| Humidity (%RH)             |                                                   | 25 - 75             | 50       |
| Barometric pressure (mbar) |                                                   | 860 - 1060          | 950-1000 |
| Temperature (°C)           | FCC PART 15 C 15.247<br>Peak Power Output (FHSS)  | 15 - 35             | 26       |
| Humidity (%RH)             |                                                   | 25 - 75             | 51       |
| Barometric pressure (mbar) |                                                   | 860 - 1060          | 950-1000 |
| Temperature (°C)           | FCC PART 15 C 15.247<br>Radiated Emission (FHSS)  | 15 - 35             | 25       |
| Humidity (%RH)             |                                                   | 25 - 75             | 54       |
| Barometric pressure (mbar) |                                                   | 860 - 1060          | 950-1000 |
| Temperature (°C)           | FCC PART 15 C 15.247<br>Band Edge (FHSS)          | 15 - 35             | 25       |
| Humidity (%RH)             |                                                   | 25 - 75             | 50       |
| Barometric pressure (mbar) |                                                   | 860 - 1060          | 950-1000 |
| Temperature (°C)           | FCC PART 15 C 15.247<br>Channel Of Number (FHSS)  | 15 - 35             | 25       |
| Humidity (%RH)             |                                                   | 25 - 75             | 53       |
| Barometric pressure (mbar) |                                                   | 860 - 1060          | 950-1000 |
| Temperature (°C)           | FCC PART 15 C 15.247<br>Channel Separation (FHSS) | 15 - 35             | 26       |
| Humidity (%RH)             |                                                   | 25 - 75             | 51       |
| Barometric pressure (mbar) |                                                   | 860 - 1060          | 950-1000 |
| Temperature (°C)           | FCC PART 15 C 15.247<br>Occupied Bandwidth (FHSS) | 15 - 35             | 25       |
| Humidity (%RH)             |                                                   | 25 - 75             | 50       |
| Barometric pressure (mbar) |                                                   | 860 - 1060          | 950-1000 |
| Temperature (°C)           | FCC PART 15 C 15.247<br>Dwell Time (FHSS)         | 15 - 35             | 26       |
| Humidity (%RH)             |                                                   | 25 - 75             | 52       |
| Barometric pressure (mbar) |                                                   | 860 - 1060          | 950-1000 |

## Site Description:

January 24, 2005 File on  
Federal Communications Commission  
Laboratory Division  
7435 Oakland Mills Road  
Columbia, MD 21046  
Registration Number: 365520



Accredited by TAF  
Accreditation Number: 1313  
Effective through: December 27, 2010



Accredited by NVLAP  
NVLAP Lab Code: 200347-0  
Effective through: September 30, 2008



Site Name: Quietek Corporation  
Site Address: No.75-1, Wang-Yeh Valley, Yung-Hsing,  
Chiung-Lin, Hsin-Chu County,  
Taiwan, R.O.C.  
TEL : 886-3-592-8858 / FAX : 886-3-592-8859  
E-Mail : [service@quietek.com](mailto:service@quietek.com)

## 2. Conducted Emission

### 2.1. Test Equipment

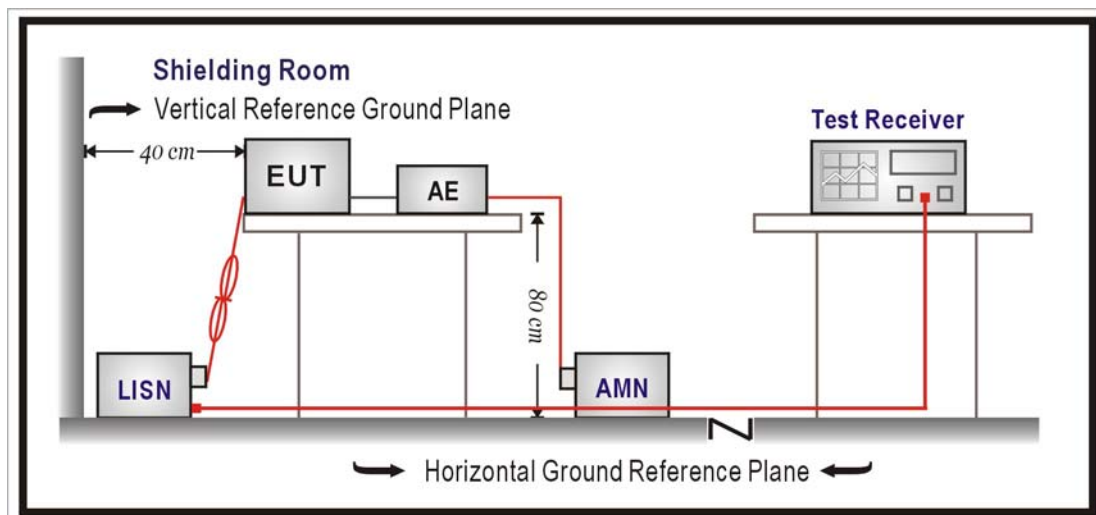
The following test equipment are used during the test:

#### Conducted Emission / SR2

| Instrument               | Manufacturer | Type No. | Serial No   | Cal. Date  |
|--------------------------|--------------|----------|-------------|------------|
| 4-Wire ISN               | R & S        | ENY 41   | 837032/001  | 2007/04/15 |
| Artificial Mains Network | R & S        | ENV4200  | 848411/010  | 2007/03/13 |
| Double 2-Wire ISN        | R & S        | ENY 22   | 835354/008  | 2007/04/15 |
| LISN                     | R & S        | ESH3-Z5  | 825562/002  | 2007/03/31 |
| Pulse Limiter            | R & S        | ZSH3Z2   | 357.8810.54 | 2007/07/19 |
| Test Receiver            | R & S        | ESCS 30  | 100122      | 2007/02/21 |

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

### 2.2. Test Setup



### 2.3. Limits

| FCC Part 15 Subpart C Paragraph 15.207 Limits (dBuV) |       |       |
|------------------------------------------------------|-------|-------|
| Frequency<br>MHz                                     | 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 was setup and tested according to ANSI C63.4, 2003.

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

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

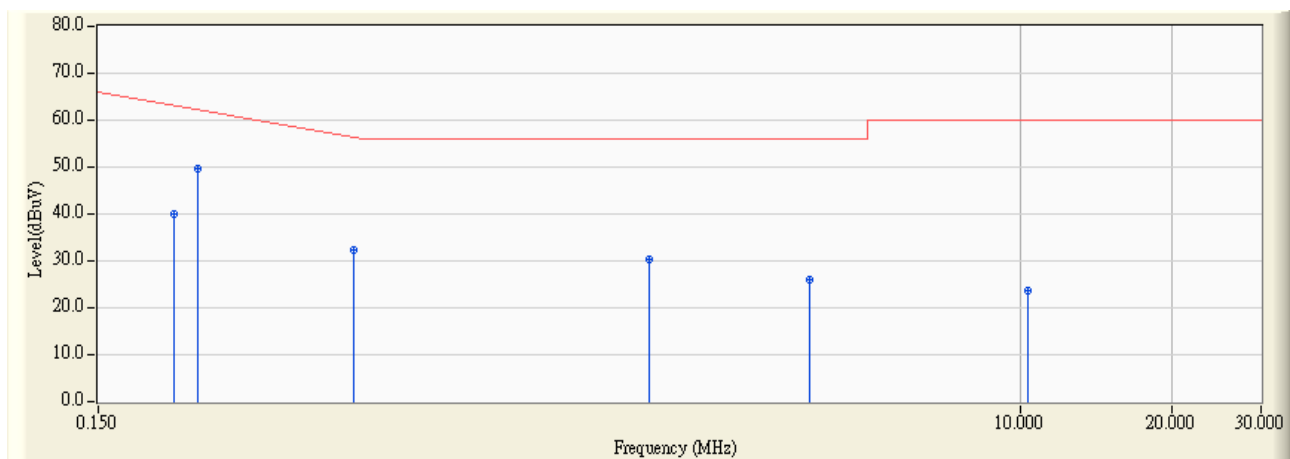
Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

### 2.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.207: 2006

## 2.6. Test Result

|                                                             |                              |
|-------------------------------------------------------------|------------------------------|
| Site : ShieldingRoom 2                                      | Time : 2008/01/05 - 17:43    |
| Limit : CISPR_B_00M_QP                                      | Margin : 0                   |
| EUT : IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS<br>MiniCard | Probe : QTK-LISN-SR2 - Line1 |
| Power : Power by PC                                         | Note : BT-TX                 |

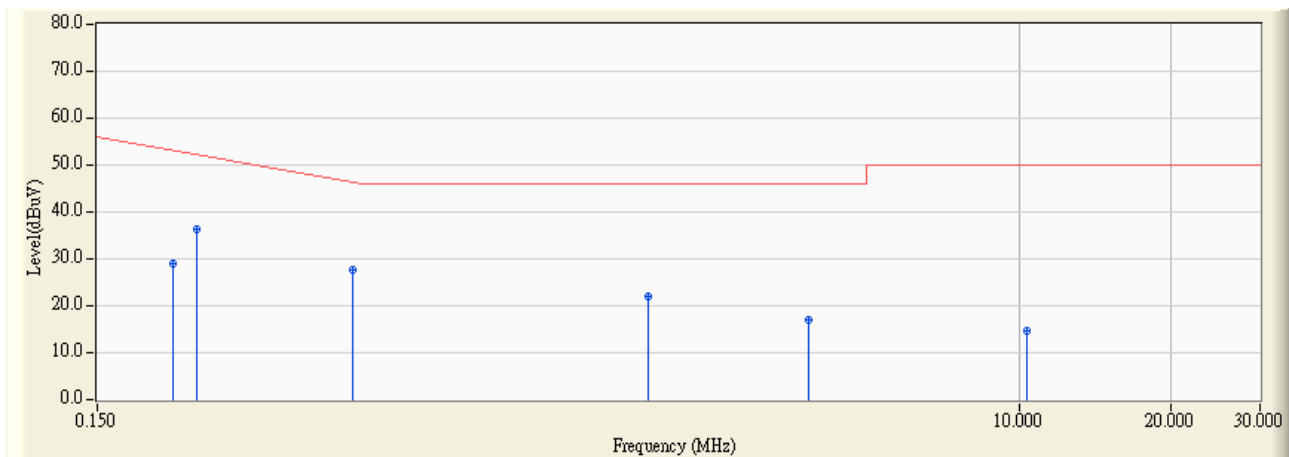


|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV) | Margin<br>(dB) | Limit<br>(dBuV) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|-------------------------|----------------|-----------------|---------------|
| 1 |   | 0.212              | 0.060                  | 39.860                  | 39.920                  | -24.309        | 64.229          | QUASIPeAK     |
| 2 | * | 0.236              | 0.060                  | 49.750                  | 49.810                  | -13.733        | 63.543          | QUASIPeAK     |
| 3 |   | 0.480              | 0.070                  | 32.330                  | 32.400                  | -24.171        | 56.571          | QUASIPeAK     |
| 4 |   | 1.845              | 0.162                  | 30.310                  | 30.472                  | -25.528        | 56.000          | QUASIPeAK     |
| 5 |   | 3.841              | 0.220                  | 25.710                  | 25.930                  | -30.070        | 56.000          | QUASIPeAK     |
| 6 |   | 10.357             | 0.550                  | 22.960                  | 23.510                  | -36.490        | 60.000          | QUASIPeAK     |

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

|                                                             |                              |
|-------------------------------------------------------------|------------------------------|
| Site : ShieldingRoom 2                                      | Time : 2008/01/05 - 17:43    |
| Limit : CISPR_B_00M_AV                                      | Margin : 0                   |
| EUT : IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS<br>MiniCard | Probe : QTK-LISN-SR2 - Line1 |
| Power : Power by PC                                         | Note : BT-TX                 |

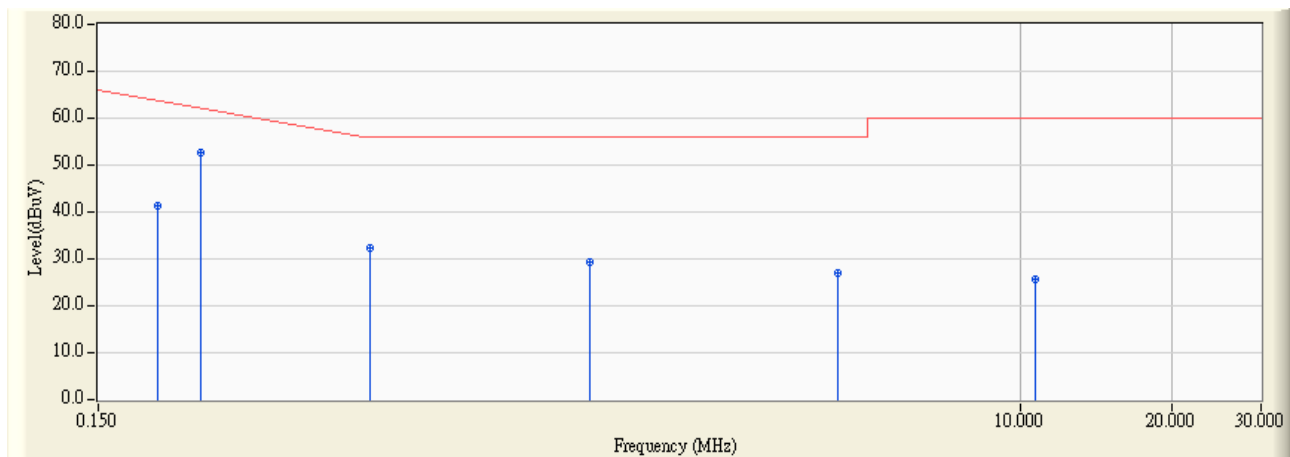


|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV) | Margin<br>(dB) | Limit<br>(dBuV) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|-------------------------|----------------|-----------------|---------------|
| 1 |   | 0.212              | 0.060                  | 28.850                  | 28.910                  | -25.319        | 54.229          | AVERAGE       |
| 2 | * | 0.236              | 0.060                  | 36.120                  | 36.180                  | -17.363        | 53.543          | AVERAGE       |
| 3 |   | 0.480              | 0.070                  | 27.640                  | 27.710                  | -18.861        | 46.571          | AVERAGE       |
| 4 |   | 1.845              | 0.162                  | 21.990                  | 22.152                  | -23.848        | 46.000          | AVERAGE       |
| 5 |   | 3.841              | 0.220                  | 16.750                  | 16.970                  | -29.030        | 46.000          | AVERAGE       |
| 6 |   | 10.357             | 0.550                  | 14.170                  | 14.720                  | -35.280        | 50.000          | AVERAGE       |

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

|                                                             |                              |
|-------------------------------------------------------------|------------------------------|
| Site : ShieldingRoom 2                                      | Time : 2008/01/05 - 17:46    |
| Limit : CISPR_B_00M_QP                                      | Margin : 0                   |
| EUT : IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS<br>MiniCard | Probe : QTK-LISN-SR2 - Line2 |
| Power : Power by PC                                         | Note : BT-TX                 |

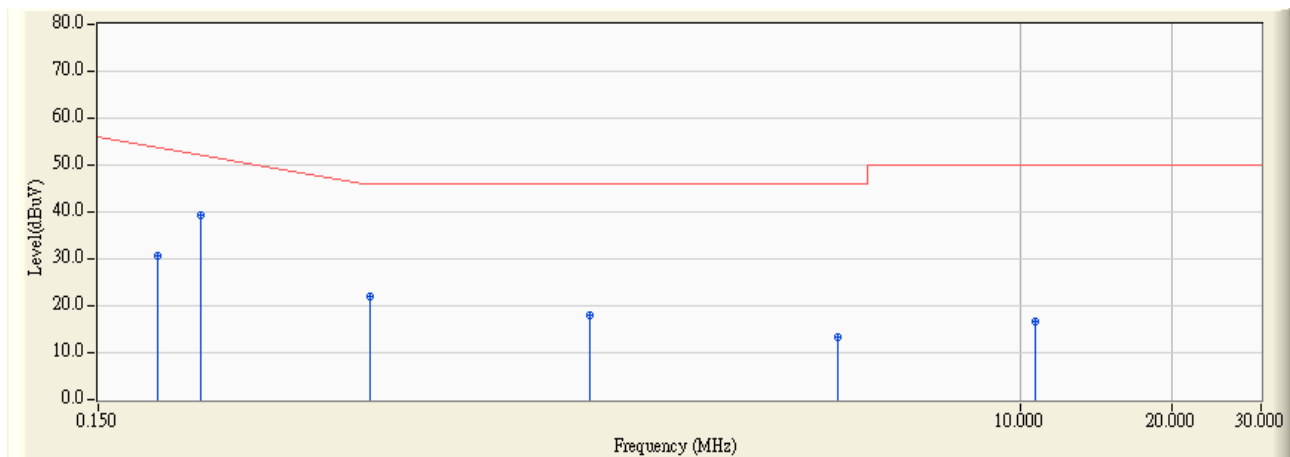


|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV) | Margin<br>(dB) | Limit<br>(dBuV) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|-------------------------|----------------|-----------------|---------------|
| 1 |   | 0.197              | 0.060                  | 41.280                  | 41.340                  | -23.317        | 64.657          | QUASIPeAK     |
| 2 | * | 0.240              | 0.060                  | 52.600                  | 52.660                  | -10.769        | 63.429          | QUASIPeAK     |
| 3 |   | 0.517              | 0.070                  | 32.260                  | 32.330                  | -23.670        | 56.000          | QUASIPeAK     |
| 4 |   | 1.412              | 0.070                  | 29.130                  | 29.200                  | -26.800        | 56.000          | QUASIPeAK     |
| 5 |   | 4.353              | 0.240                  | 26.900                  | 27.140                  | -28.860        | 56.000          | QUASIPeAK     |
| 6 |   | 10.744             | 0.460                  | 25.210                  | 25.670                  | -34.330        | 60.000          | QUASIPeAK     |

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

|                                                             |                              |
|-------------------------------------------------------------|------------------------------|
| Site : ShieldingRoom 2                                      | Time : 2008/01/05 - 17:46    |
| Limit : CISPR_B_00M_AV                                      | Margin : 0                   |
| EUT : IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS<br>MiniCard | Probe : QTK-LISN-SR2 - Line2 |
| Power : Power by PC                                         | Note : BT-TX                 |



|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV) | Margin<br>(dB) | Limit<br>(dBuV) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|-------------------------|----------------|-----------------|---------------|
| 1 |   | 0.197              | 0.060                  | 30.440                  | 30.500                  | -24.157        | 54.657          | AVERAGE       |
| 2 | * | 0.240              | 0.060                  | 39.270                  | 39.330                  | -14.099        | 53.429          | AVERAGE       |
| 3 |   | 0.517              | 0.070                  | 21.820                  | 21.890                  | -24.110        | 46.000          | AVERAGE       |
| 4 |   | 1.412              | 0.070                  | 17.780                  | 17.850                  | -28.150        | 46.000          | AVERAGE       |
| 5 |   | 4.353              | 0.240                  | 13.190                  | 13.430                  | -32.570        | 46.000          | AVERAGE       |
| 6 |   | 10.744             | 0.460                  | 16.330                  | 16.790                  | -33.210        | 50.000          | AVERAGE       |

## Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

### 3. Peak Power Output

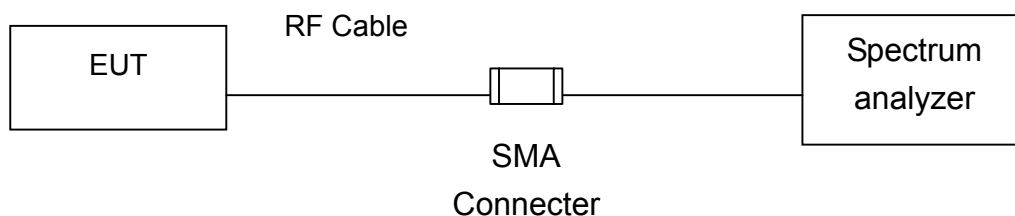
#### 3.1. Test Equipment

The following test equipments are used during the test:

| Item | Equipment         | Manufacturer | Model No. / Serial No. | Last Cal.  |
|------|-------------------|--------------|------------------------|------------|
| 1    | Spectrum Analyzer | Agilent      | E4416A / GB41291630    | May, 2007  |
| 2    | No.1 OATS         |              |                        | Sep., 2007 |

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

#### 3.2. Test Setup



#### 3.3. Test procedures

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

#### 3.4. Limits

For frequency hopping systems operating in the 902-928 MHz band: 1 Watt for systems employing at least 50 hopping channels; and, 0.25 Watts for systems employing less than 50 hopping channels.

For frequency hopping systems in the 2400-2483.5 MHz band employing at least 75 hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1Watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 Watt.

#### 3.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2006

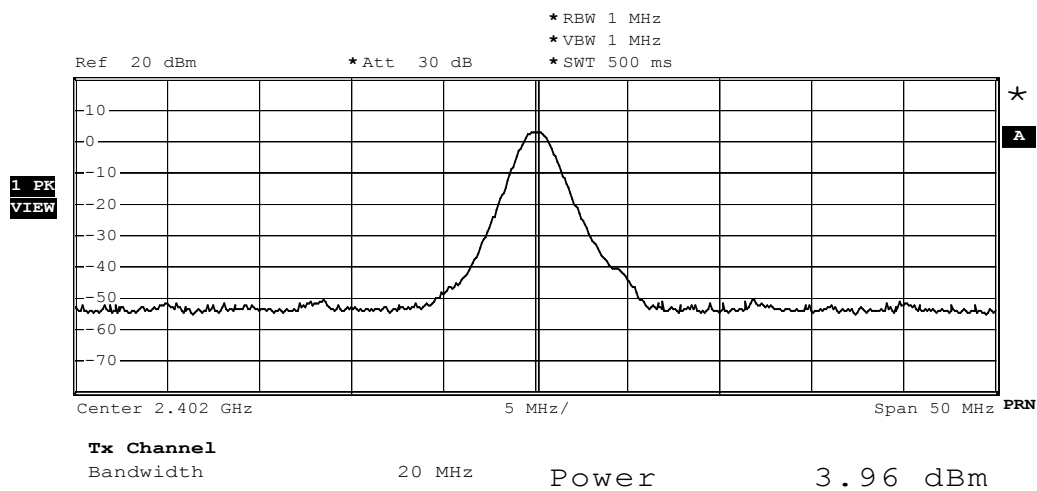
### 3.6. Test Result

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Peak Power Output                                  |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/06                                         | Test Site | No.1 OATS |

1M-GFSK Modulation, PRBS Packet Type

| Channel No. | Frequency (MHz) | Measure Level (dBm) | Limit (dBm)   | Result |
|-------------|-----------------|---------------------|---------------|--------|
| 00          | 2402            | 3.96                | 1Watt= 30 dBm | Pass   |

#### Channel 00

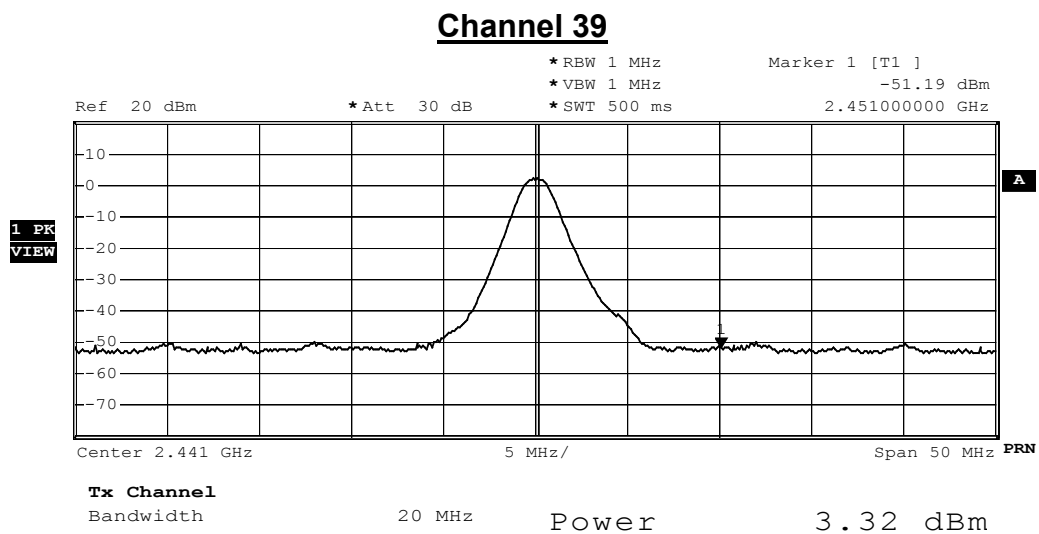


Date: 6.JAN.2008 02:58:40

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Peak Power Output                                  |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/06                                         | Test Site | No.1 OATS |

## 1M-GFSK Modulation, PRBS Packet Type

| Channel No. | Frequency (MHz) | Measure Level (dBm) | Limit (dBm)   | Result |
|-------------|-----------------|---------------------|---------------|--------|
| 39          | 2441            | 3.32                | 1Watt= 30 dBm | Pass   |



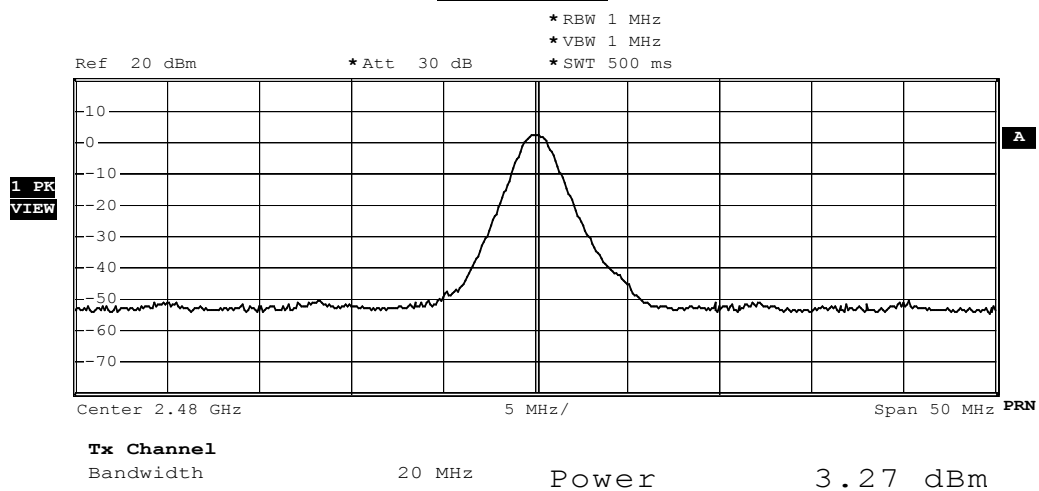
Date: 6.JAN.2008 04:43:59

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Peak Power Output                                  |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/06                                         | Test Site | No.1 OATS |

## 1M-GFSK Modulation, PRBS Packet Type

| Channel No. | Frequency (MHz) | Measure Level (dBm) | Limit (dBm)   | Result |
|-------------|-----------------|---------------------|---------------|--------|
| 78          | 2480            | 3.27                | 1Watt= 30 dBm | Pass   |

### Channel 78

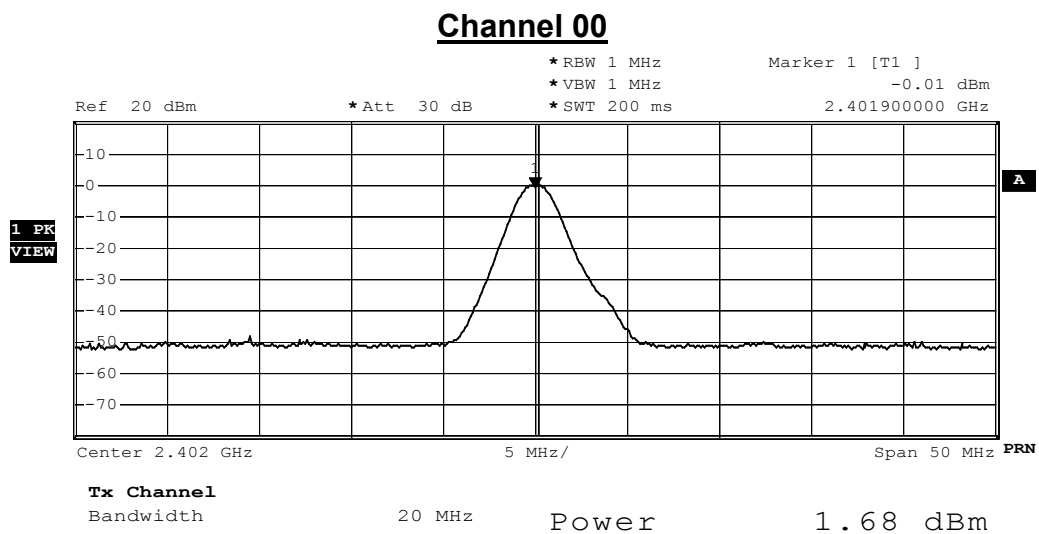


Date: 6.JAN.2008 03:02:29

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Peak Power Output                                  |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

2M-pi/4DQPSK Modulation, PRBS Packet Type

| Channel No. | Frequency (MHz) | Measure Level (dBm) | Limit (dBm)   | Result |
|-------------|-----------------|---------------------|---------------|--------|
| 00          | 2402            | 1.68                | 1Watt= 30 dBm | Pass   |

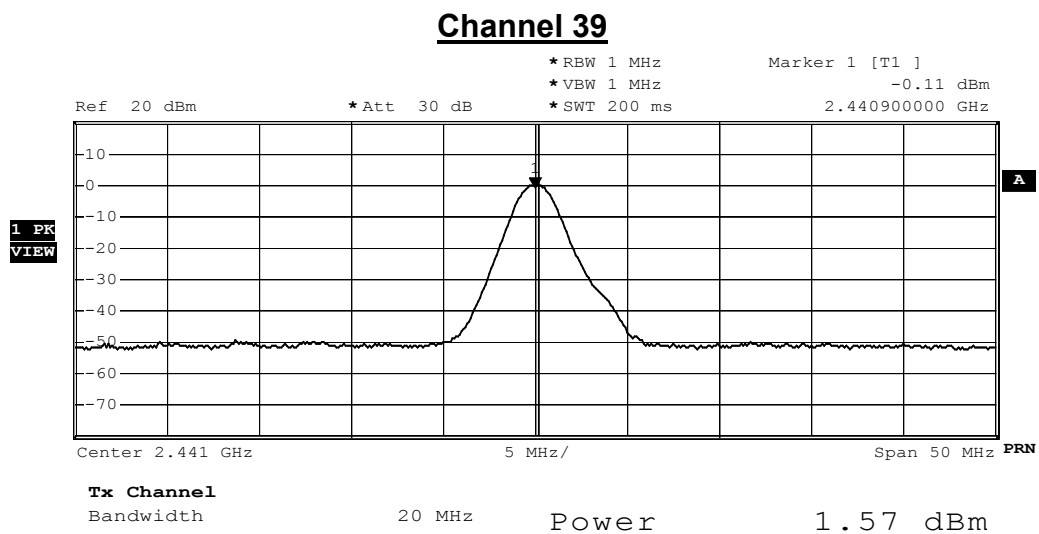


Date: 7.JAN.2008 01:26:07

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Peak Power Output                                  |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

2M-pi/4DQPSK Modulation, PRBS Packet Type

| Channel No. | Frequency (MHz) | Measure Level (dBm) | Limit (dBm)   | Result |
|-------------|-----------------|---------------------|---------------|--------|
| 39          | 2441            | 1.57                | 1Watt= 30 dBm | Pass   |

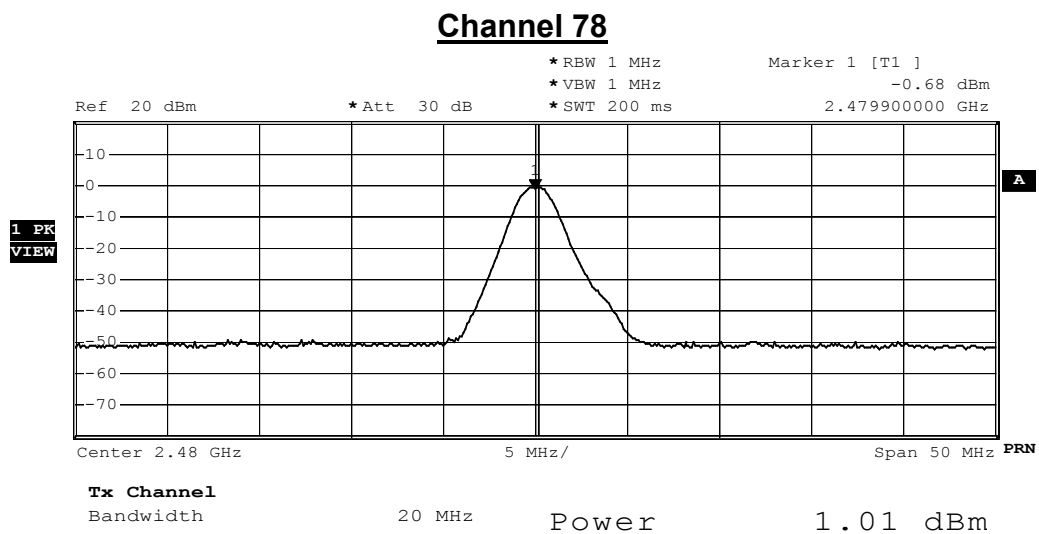


Date: 7.JAN.2008 01:28:52

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Peak Power Output                                  |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

2M-pi/4DQPSK Modulation, PRBS Packet Type

| Channel No. | Frequency (MHz) | Measure Level (dBm) | Limit (dBm)   | Result |
|-------------|-----------------|---------------------|---------------|--------|
| 78          | 2480            | 1.01                | 1Watt= 30 dBm | Pass   |



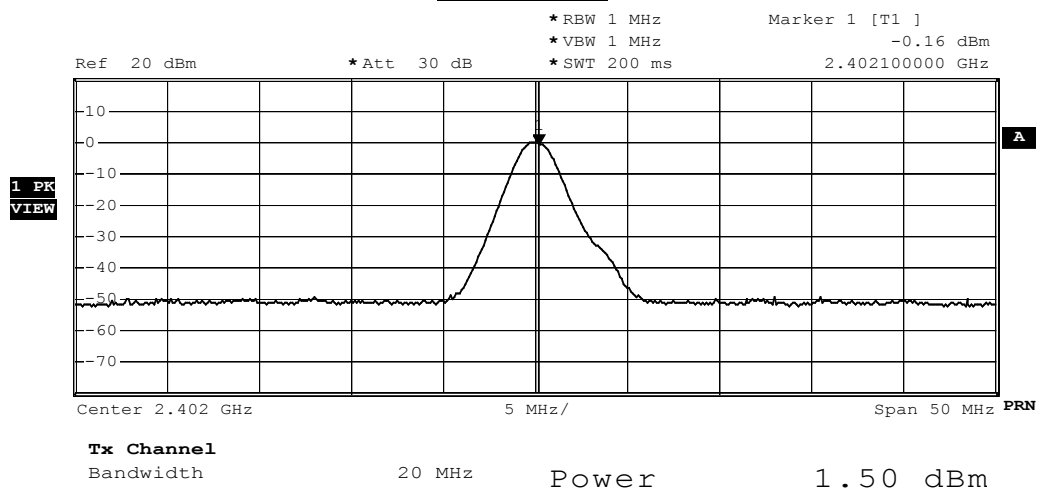
Date: 7.JAN.2008 01:31:59

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Peak Power Output                                  |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

## 3M-8DPSK Modulation, PRBS Packet Type

| Channel No. | Frequency (MHz) | Measure Level (dBm) | Limit (dBm)   | Result |
|-------------|-----------------|---------------------|---------------|--------|
| 00          | 2402            | 1.50                | 1Watt= 30 dBm | Pass   |

### Channel 00



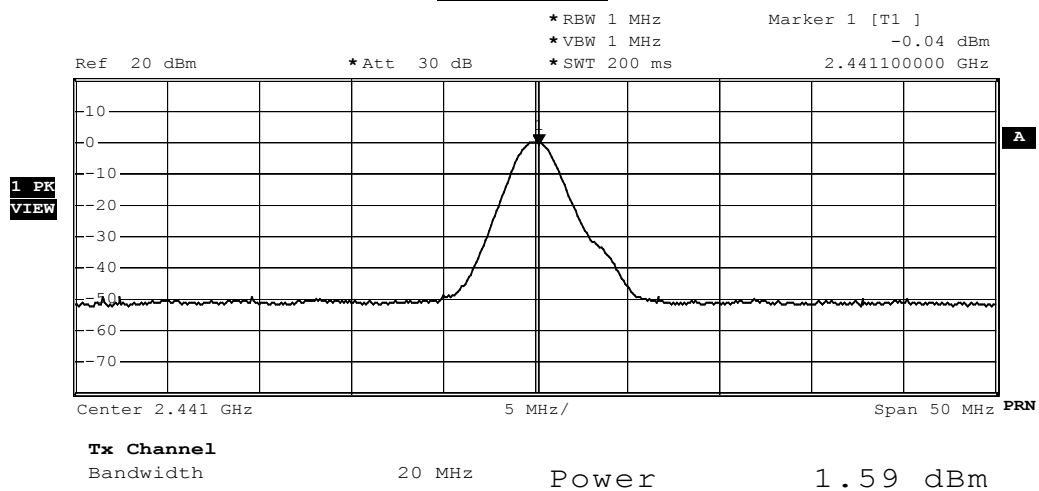
Date: 7.JAN.2008 01:27:04

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Peak Power Output                                  |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

## 3M-8DPSK Modulation, PRBS Packet Type

| Channel No. | Frequency (MHz) | Measure Level (dBm) | Limit (dBm)   | Result |
|-------------|-----------------|---------------------|---------------|--------|
| 39          | 2441            | 1.59                | 1Watt= 30 dBm | Pass   |

### Channel 39



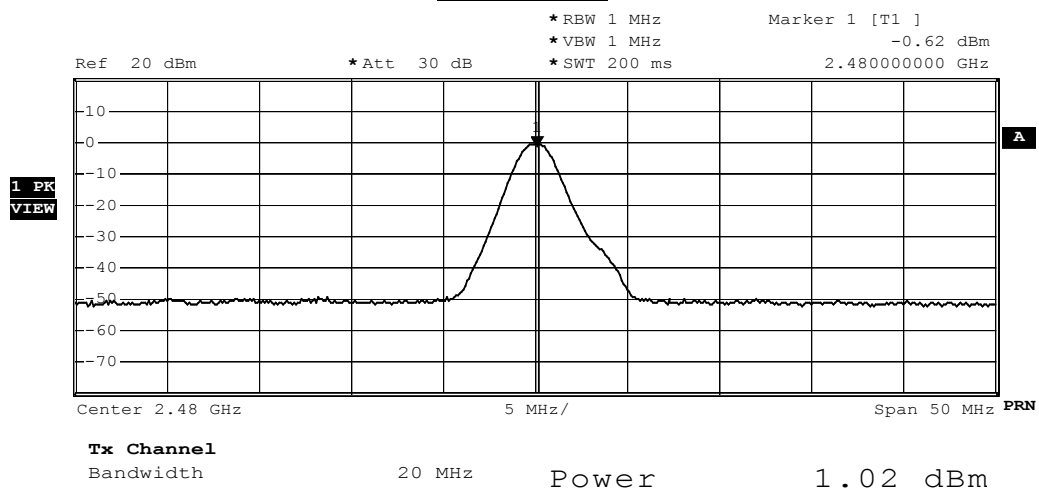
Date: 7.JAN.2008 01:30:00

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Peak Power Output                                  |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

## 3M-8DPSK Modulation, PRBS Packet Type

| Channel No. | Frequency (MHz) | Measure Level (dBm) | Limit (dBm)   | Result |
|-------------|-----------------|---------------------|---------------|--------|
| 78          | 2480.           | 1.02                | 1Watt= 30 dBm | Pass   |

### Channel 78



Date: 7.JAN.2008 01:33:26

## 4. Radiated Emission

### 4.1. Test Equipment

The following test equipment are used during the test:

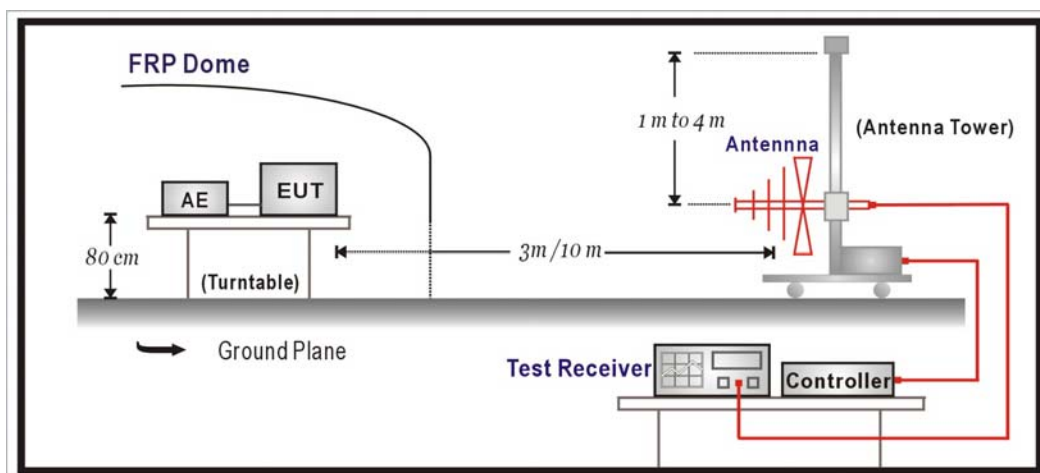
Radiated Emission / Site1

| Instrument        | Manufacturer    | Type No. | Serial No  | Cal. Date  |
|-------------------|-----------------|----------|------------|------------|
| Bilog Antenna     | Schaffner Chase | CBL6112B | 2895       | 2007/09/03 |
| Horn Antenna      | Electro Metrics | EM-6961  | 103325     | 2007/03/15 |
| Pre-Amplifier     | HP              | 8449B    | 3008A01123 | 2007/11/15 |
| Pre-Amplifier     | Quietek         | AP-025C  | N/A        | N/A        |
| Spectrum Analyzer | R & S           | FSP40    | 100005     | 2007/08/25 |
| Spectrum Analyzer | Advantest       | R3162    | 120300649  | 2006/11/24 |
| Test Receiver     | R & S           | ESCS 30  | 825442/017 | 2007/02/13 |

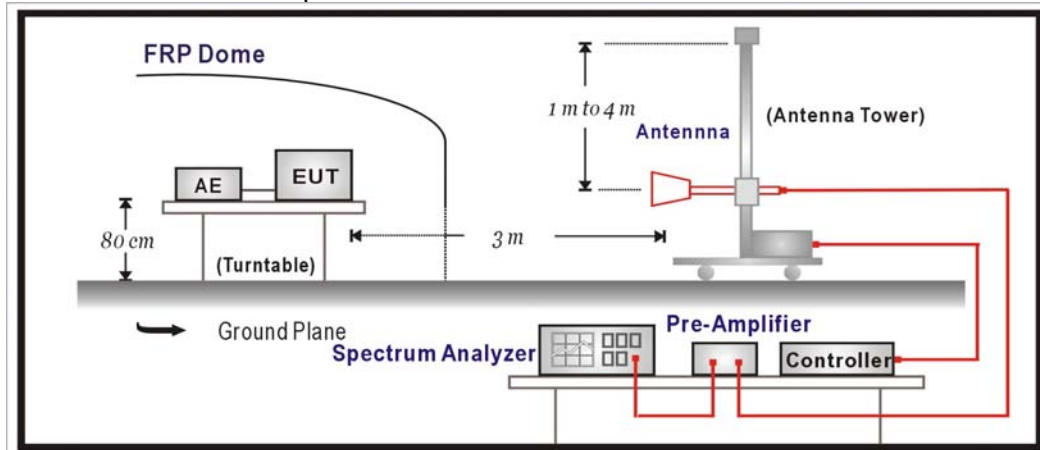
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.  
2. "N/A" Ca1.Date is used to Pre-test, not final test.

### 4.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



### 4.3. Limits

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

| FCC Part 15 Subpart C Paragraph 15.209 Limits |      |        |
|-----------------------------------------------|------|--------|
| Frequency<br>MHz                              | uV/m | dBuV/m |
| 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 was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

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 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.

On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit. The bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

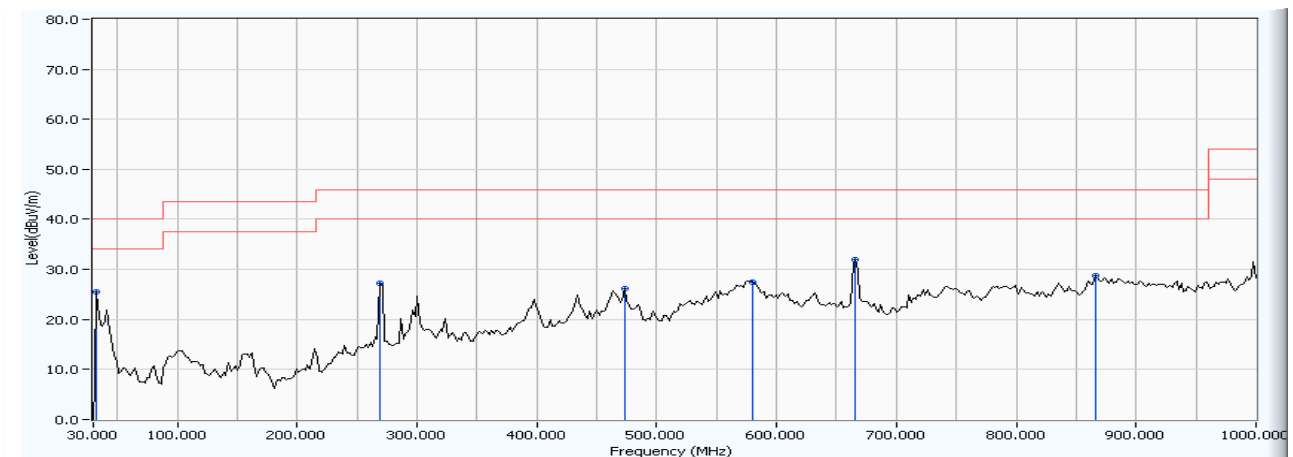
### 4.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2006

## 4.6. Test Result

### 30MHz-1GHz Spurious:

|                                                             |                                          |
|-------------------------------------------------------------|------------------------------------------|
| Site : QuieTek Site1                                        | Time : 2008/01/03 - 22:08                |
| Limit : FCC_CLASS_B_03M_QP                                  | Margin : 6                               |
| EUT : IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS<br>MiniCard | Probe : CB3_FCC_30-1G(2008) - HORIZONTAL |
| Power : Power by PC                                         | Note : TX                                |

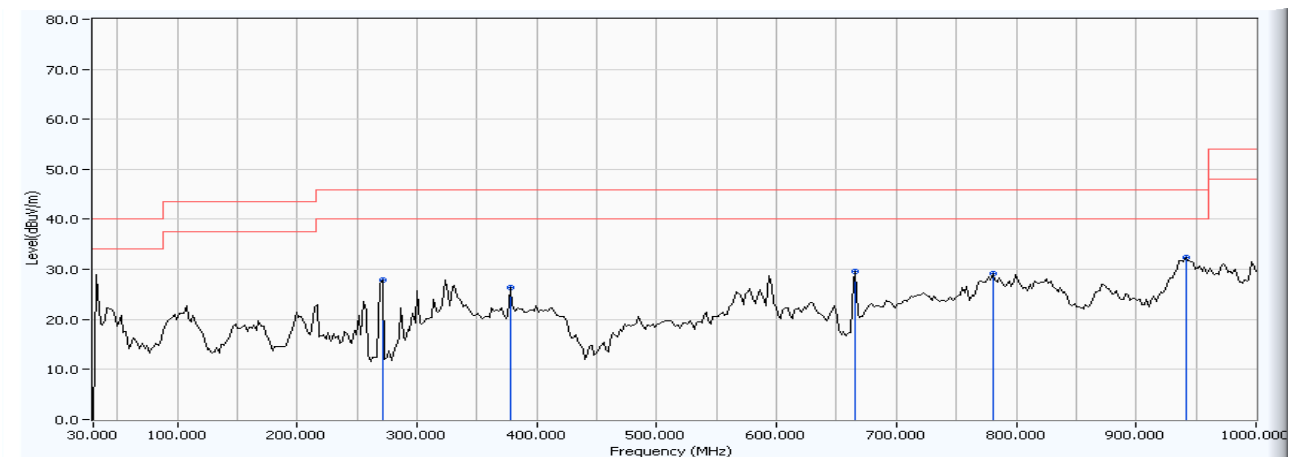


|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV/m) | Margin<br>(dB) | Limit<br>(dBuV/m) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|---------------------------|----------------|-------------------|---------------|
| 1 |   | 31.944             | 3.144                  | 22.460                  | 25.604                    | -14.396        | 40.000            | QUASIPeAK     |
| 2 |   | 269.098            | -7.085                 | 34.331                  | 27.245                    | -18.755        | 46.000            | QUASIPeAK     |
| 3 |   | 473.206            | 2.161                  | 24.083                  | 26.244                    | -19.756        | 46.000            | QUASIPeAK     |
| 4 |   | 580.120            | 5.370                  | 22.144                  | 27.513                    | -18.487        | 46.000            | QUASIPeAK     |
| 5 | * | 665.651            | 1.750                  | 30.267                  | 32.017                    | -13.983        | 46.000            | QUASIPeAK     |
| 6 |   | 865.872            | 4.750                  | 23.943                  | 28.693                    | -17.307        | 46.000            | QUASIPeAK     |

#### Note:

1. All Reading Levels below 1GHz are Quasi-Peak value.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

|                                                             |                                        |
|-------------------------------------------------------------|----------------------------------------|
| Site : QuieTek Site1                                        | Time : 2008/01/03 - 22:11              |
| Limit : FCC_CLASS_B_03M_QP                                  | Margin : 6                             |
| EUT : IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS<br>MiniCard | Probe : CB3_FCC_30-1G(2008) - VERTICAL |
| Power : Power by PC                                         | Note : TX                              |



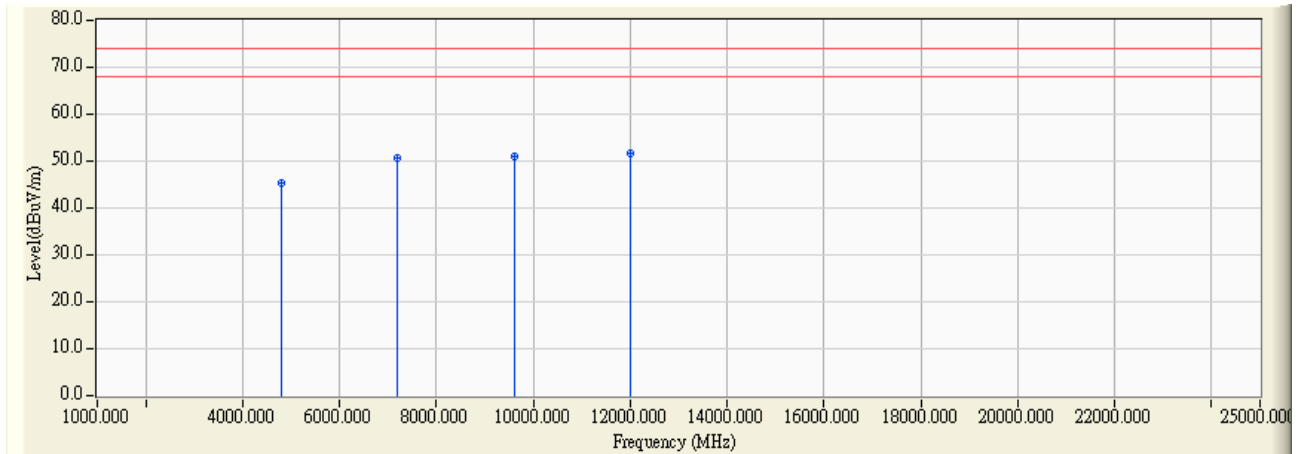
|   |   | Frequency<br>(MHz) | Correct Factor<br>(dB) | Reading Level<br>(dBuV) | Measure Level<br>(dBuV/m) | Margin<br>(dB) | Limit<br>(dBuV/m) | Detector Type |
|---|---|--------------------|------------------------|-------------------------|---------------------------|----------------|-------------------|---------------|
| 1 |   | 271.042            | -12.170                | 40.084                  | 27.914                    | -18.086        | 46.000            | QUASIPeAK     |
| 2 |   | 377.956            | -1.210                 | 27.641                  | 26.431                    | -19.569        | 46.000            | QUASIPeAK     |
| 3 |   | 665.651            | -2.858                 | 32.382                  | 29.524                    | -16.476        | 46.000            | QUASIPeAK     |
| 4 |   | 780.341            | 5.743                  | 23.425                  | 29.168                    | -16.832        | 46.000            | QUASIPeAK     |
| 5 | * | 941.683            | 8.727                  | 23.596                  | 32.323                    | -13.677        | 46.000            | QUASIPeAK     |

## Note:

1. All Reading Levels below 1GHz are Quasi-Peak value.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

## Harmonic & Spurious:

|                                                          |                                          |
|----------------------------------------------------------|------------------------------------------|
| Site : QuieTek Site1                                     | Time : 2008/01/04 - 21:20                |
| Limit : FCC_SpartC_15.247_H_03M_PK                       | Margin : 6                               |
| EUT : IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard | Probe : CB4_FCC_1-18G(2007) - HORIZONTAL |
| Power : Power by PC                                      | Note : TX-CH00                           |

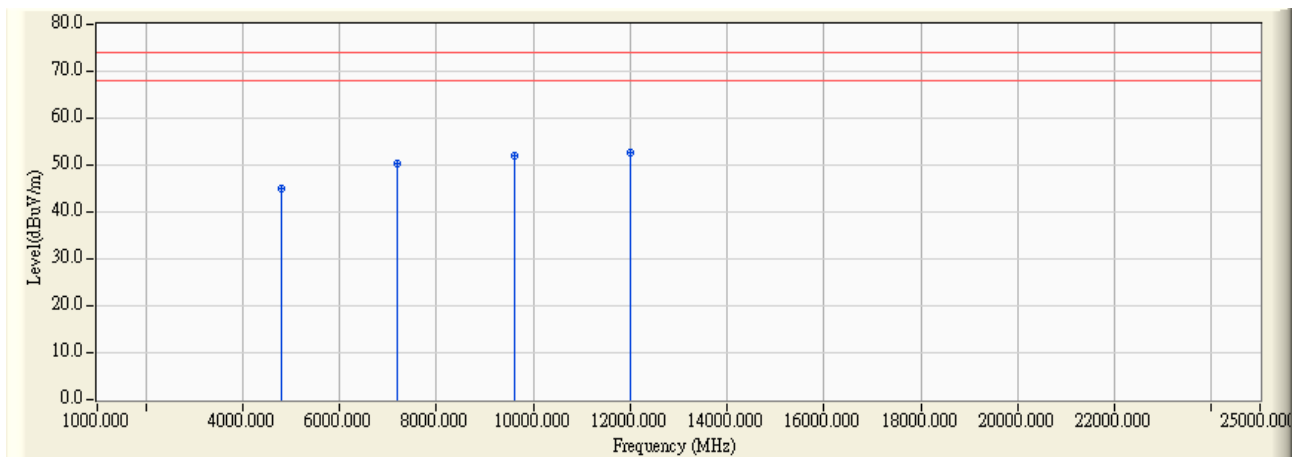


|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|-------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 4804.260           | 3.899                  | 41.510                  | 45.409                       | -28.591        | 74.000                    | 54.00                        | PEAK             |
| 2 |   | 7206.860           | 11.364                 | 39.240                  | 50.604                       | -23.396        | 74.000                    | 54.00                        | PEAK             |
| 3 |   | 9608.640           | 15.954                 | 35.060                  | 51.013                       | -22.987        | 74.000                    | 54.00                        | PEAK             |
| 4 | * | 12010.640          | 17.385                 | 34.370                  | 51.754                       | -22.246        | 74.000                    | 54.00                        | PEAK             |

### Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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.

|                                                             |                                        |
|-------------------------------------------------------------|----------------------------------------|
| Site : Quietek Site1                                        | Time : 2008/01/04 - 21:30              |
| Limit : FCC_SpartC_15.247_H_03M_PK                          | Margin : 6                             |
| EUT : IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS<br>MiniCard | Probe : CB4_FCC_1-18G(2007) - VERTICAL |
| Power : Power by PC                                         | Note : TX-CH00                         |

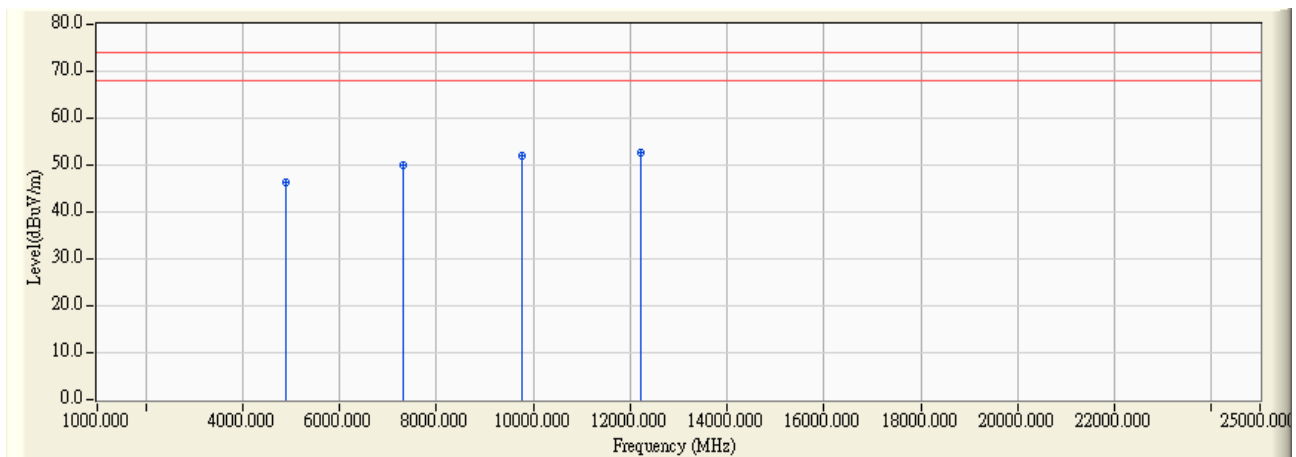


|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|-------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 4804.150           | 3.899                  | 41.240                  | 45.139                       | -28.861        | 74.000                    | 54.00                        | PEAK             |
| 2 |   | 7206.880           | 11.778                 | 38.630                  | 50.408                       | -23.592        | 74.000                    | 54.00                        | PEAK             |
| 3 |   | 9608.550           | 14.738                 | 37.310                  | 52.048                       | -21.952        | 74.000                    | 54.00                        | PEAK             |
| 4 | * | 12010.530          | 17.364                 | 35.150                  | 52.514                       | -21.486        | 74.000                    | 54.00                        | PEAK             |

## Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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.

|                                                             |                                          |
|-------------------------------------------------------------|------------------------------------------|
| Site : QuieTek Site1                                        | Time : 2008/01/04 - 21:47                |
| Limit : FCC_SpartC_15.247_H_03M_PK                          | Margin : 6                               |
| EUT : IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS<br>MiniCard | Probe : CB4_FCC_1-18G(2007) - HORIZONTAL |
| Power : Power by PC                                         | Note : TX-CH39                           |

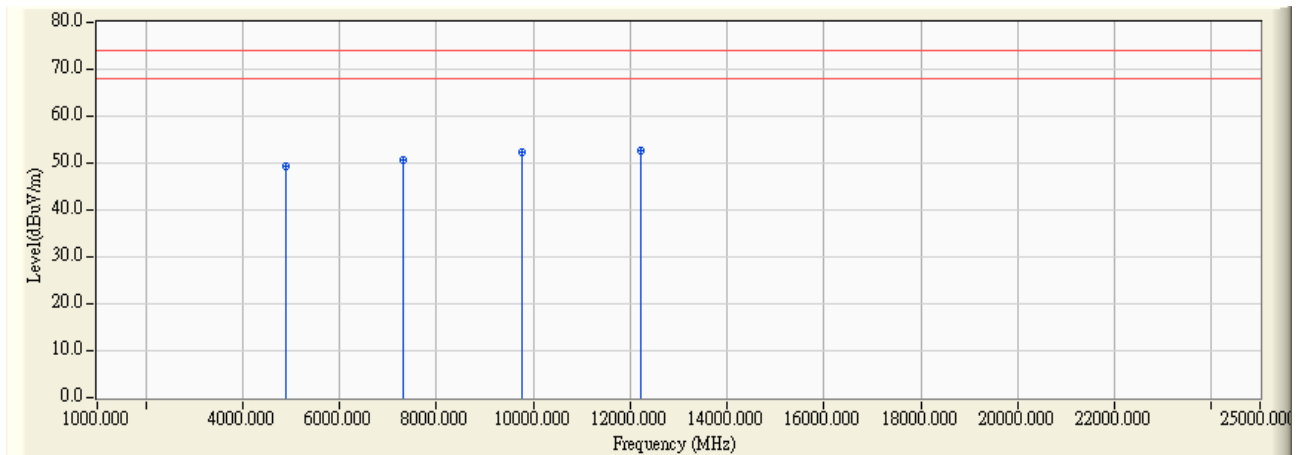


|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|-------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 4882.280           | 4.169                  | 42.270                  | 46.438                       | -27.562        | 74.000                    | 54.00                        | PEAK             |
| 2 |   | 7322.750           | 11.667                 | 38.190                  | 49.857                       | -24.143        | 74.000                    | 54.00                        | PEAK             |
| 3 |   | 9763.900           | 16.461                 | 35.440                  | 51.901                       | -22.099        | 74.000                    | 54.00                        | PEAK             |
| 4 | * | 12206.410          | 17.950                 | 34.660                  | 52.610                       | -21.390        | 74.000                    | 54.00                        | PEAK             |

## Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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.

|                                                             |                                        |
|-------------------------------------------------------------|----------------------------------------|
| Site : QuieTek Site1                                        | Time : 2008/01/04 - 22:00              |
| Limit : FCC_SpartC_15.247_H_03M_PK                          | Margin : 6                             |
| EUT : IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS<br>MiniCard | Probe : CB4_FCC_1-18G(2007) - VERTICAL |
| Power : Power by PC                                         | Note : TX-CH39                         |

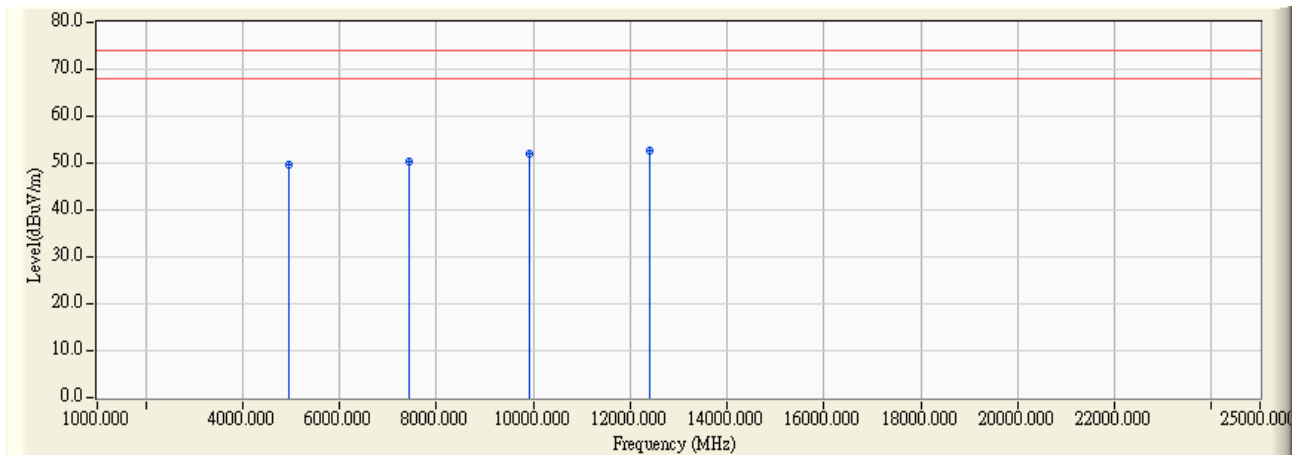


|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|-------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 4882.160           | 38.988                 | 45.220                  | 49.388                       | -24.612        | 74.000                    | 54.00                        | PEAK             |
| 2 |   | 7322.630           | 47.343                 | 38.250                  | 50.564                       | -23.436        | 74.000                    | 54.00                        | PEAK             |
| 3 |   | 9763.810           | 14.935                 | 37.450                  | 52.385                       | -21.615        | 74.000                    | 54.00                        | PEAK             |
| 4 | * | 12205.140          | 17.533                 | 35.080                  | 52.613                       | -21.387        | 74.000                    | 54.00                        | PEAK             |

## Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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.

|                                                             |                                          |
|-------------------------------------------------------------|------------------------------------------|
| Site : QuieTek Site1                                        | Time : 2008/01/04 - 22:17                |
| Limit : FCC_SpartC_15.247_H_03M_PK                          | Margin : 6                               |
| EUT : IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS<br>MiniCard | Probe : CB4_FCC_1-18G(2007) - HORIZONTAL |
| Power : Power by PC                                         | Note : TX-CH78                           |

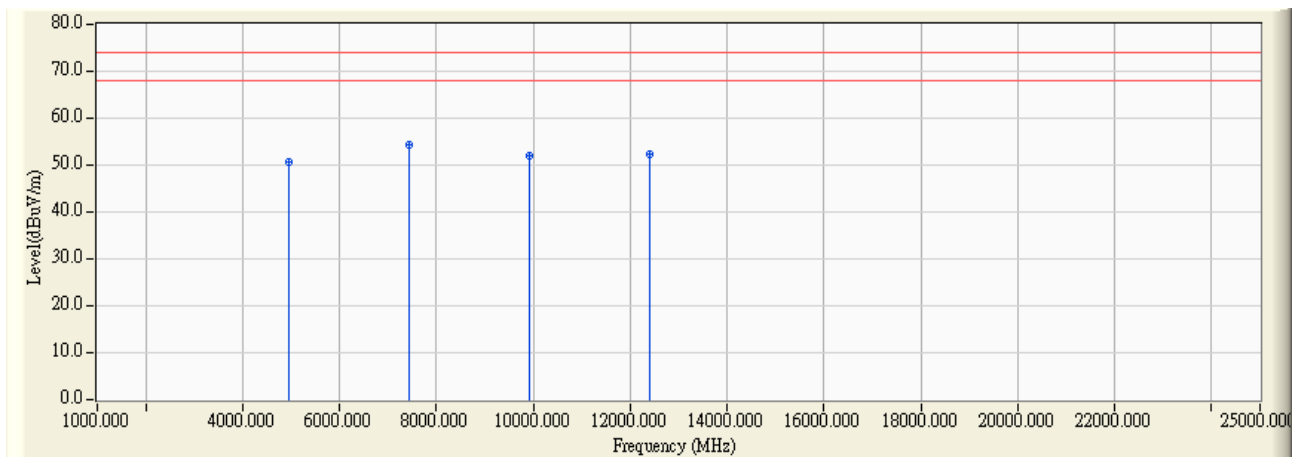


|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|-------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 4960.330           | 4.428                  | 45.130                  | 49.558                       | -24.442        | 74.000                    | 54.00                        | PEAK             |
| 2 |   | 7440.010           | 12.001                 | 38.330                  | 50.331                       | -23.669        | 74.000                    | 54.00                        | PEAK             |
| 3 |   | 9919.940           | 16.975                 | 35.060                  | 52.035                       | -21.965        | 74.000                    | 54.00                        | PEAK             |
| 4 | * | 12400.210          | 18.520                 | 34.060                  | 52.580                       | -21.420        | 74.000                    | 54.00                        | PEAK             |

## Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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.

|                                                             |                                        |
|-------------------------------------------------------------|----------------------------------------|
| Site : QuieTek Site1                                        | Time : 2008/01/04 - 22:39              |
| Limit : FCC_SpartC_15.247_H_03M_PK                          | Margin : 6                             |
| EUT : IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS<br>MiniCard | Probe : CB4_FCC_1-18G(2007) - VERTICAL |
| Power : Power by PC                                         | Note : TX-CH78                         |

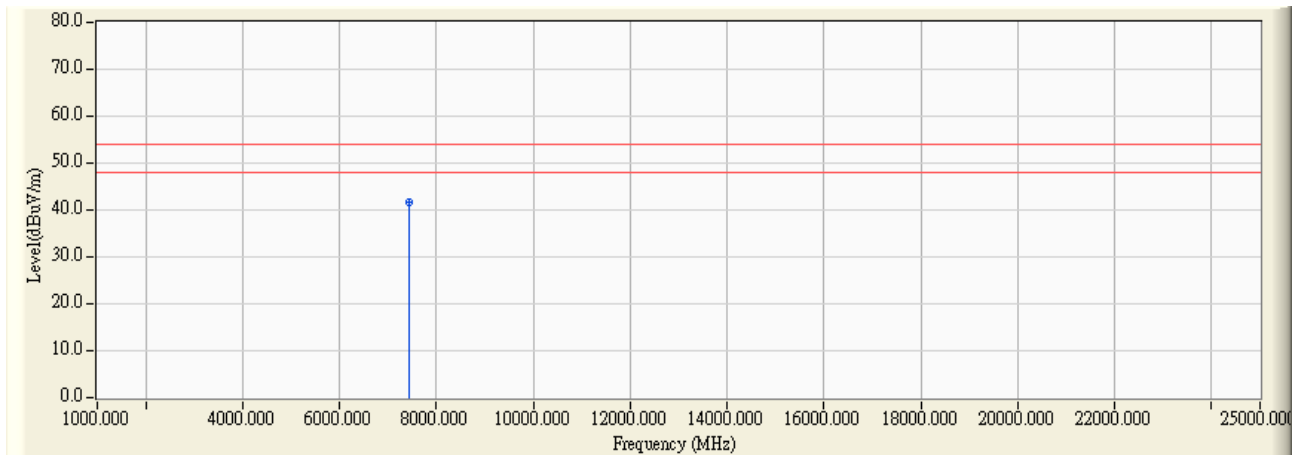


|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|-------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 4960.260           | 4.428                  | 46.120                  | 50.548                       | -23.452        | 74.000                    | 54.00                        | PEAK             |
| 2 | * | 7440.010           | 12.884                 | 41.370                  | 54.254                       | -19.746        | 74.000                    | 54.00                        | PEAK             |
| 3 |   | 9919.870           | 15.134                 | 36.790                  | 51.924                       | -22.076        | 74.000                    | 54.00                        | PEAK             |
| 4 |   | 12400.140          | 17.722                 | 34.720                  | 52.442                       | -21.558        | 74.000                    | 54.00                        | PEAK             |

## Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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.

|                                                             |                                        |
|-------------------------------------------------------------|----------------------------------------|
| Site : Quietek Site1                                        | Time : 2008/01/04 - 22:44              |
| Limit : FCC_SpartC_15.247_H_03M_AV                          | Margin : 6                             |
| EUT : IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS<br>MiniCard | Probe : CB4_FCC_1-18G(2007) - VERTICAL |
| Power : Power by PC                                         | Note : BT-TX-CH78                      |



|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|-------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 | * | 7440.200           | 12.886                 | 28.630                  | 41.515                       | -12.485        | 74.000                    | 54.00                        | AVERAGE          |

## Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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.

## 5. RF Conducted Emission

### 5.1. Test Equipment

The following test equipments are used during the test:

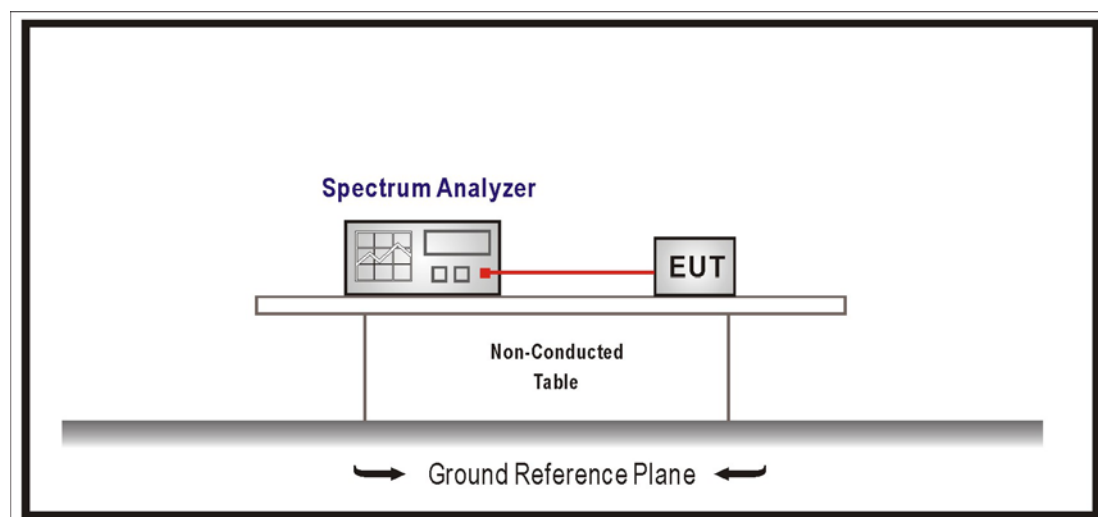
| RF Conducted Measurement: |                   |              |                        |            |
|---------------------------|-------------------|--------------|------------------------|------------|
| Item                      | Equipment         | Manufacturer | Model No. / Serial No. | Last Cal.  |
| 1                         | Spectrum Analyzer | R & S        | FSP / 100561           | Mar., 2007 |
| 2                         | No.1 OATS         |              |                        | Sep., 2007 |

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

2. Mark "X" test instruments are used to measure the final test results.

### 5.2. Test Setup

RF Conducted Measurement:



**5.3. Limits**

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

**5.4. Test Procedure**

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

**5.5. Test Specification**

According to FCC Part 15 Subpart C Paragraph 15.247: 2006

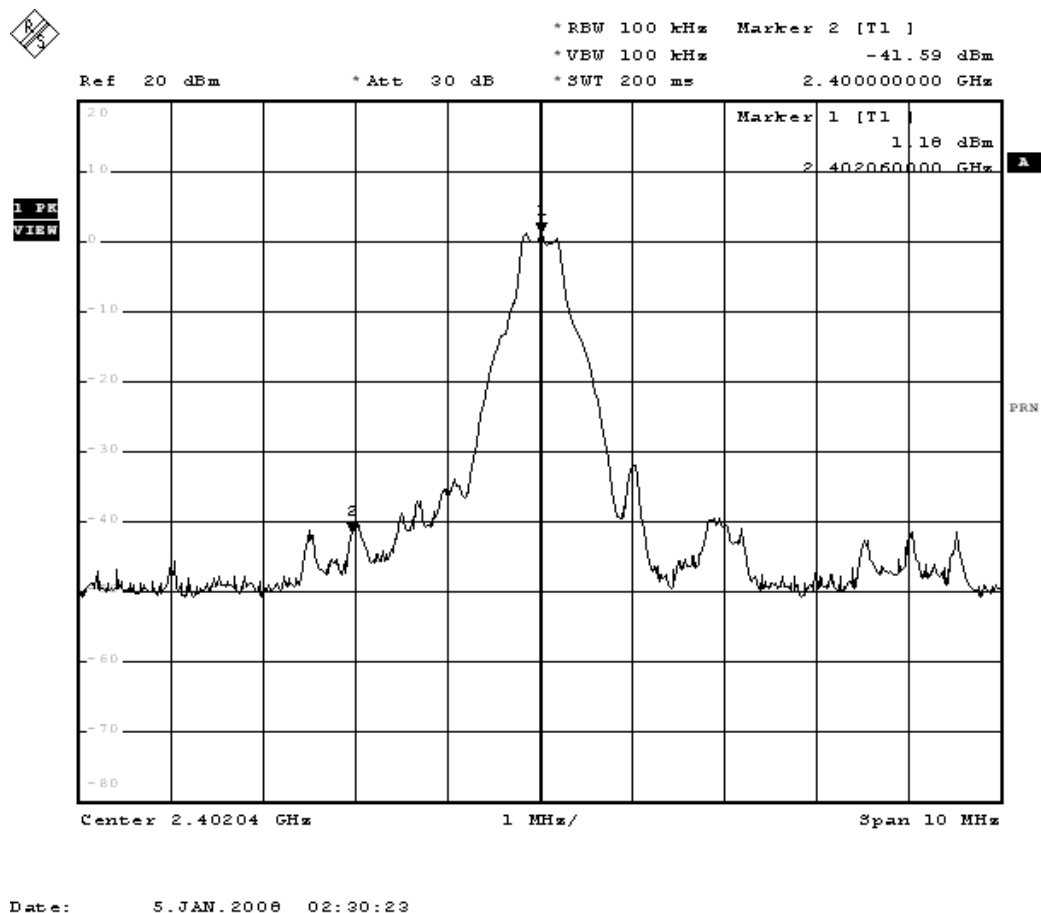
## 5.6. Test Result

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | RF Conducted Emissions                             |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/05                                         | Test Site | No.1 OATS |

| Channel No. | Frequency (MHz) | Required Limit (dBc) | Result |
|-------------|-----------------|----------------------|--------|
| 1           | 2402            | >20                  | Pass   |

Figure Channel 1:

Channel 1

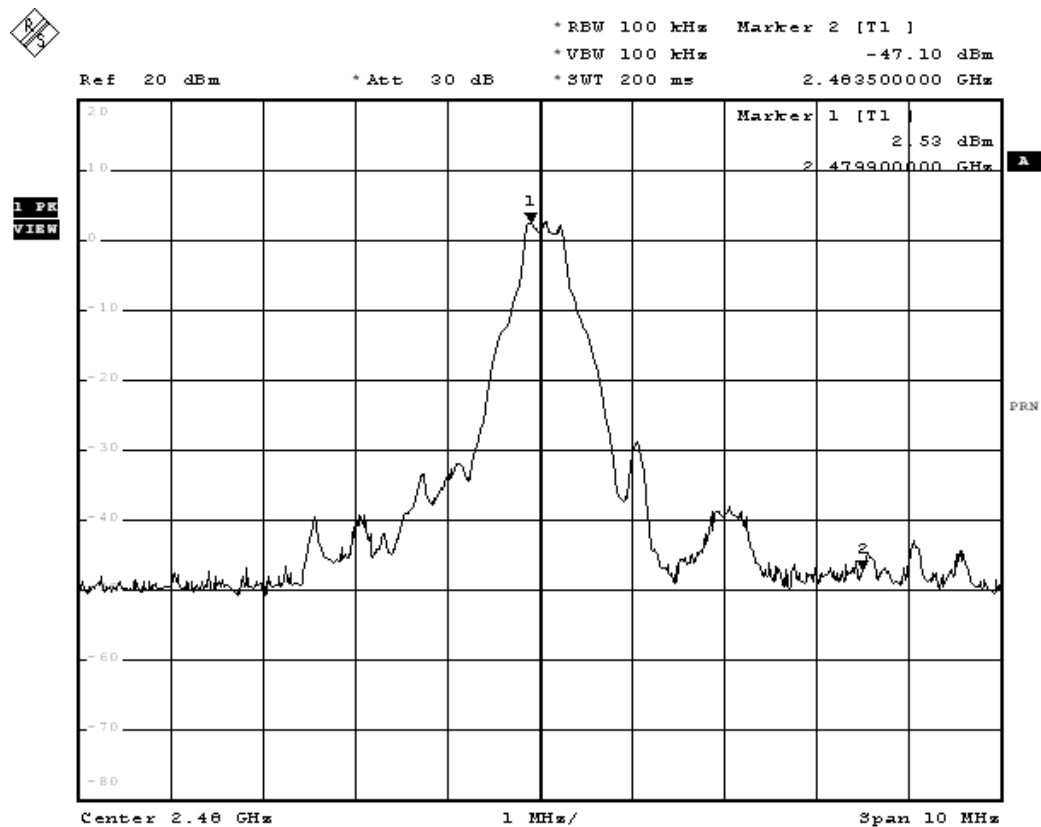


|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | RF Conducted Emissions                             |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/05                                         | Test Site | No.1 OATS |

| Channel No. | Frequency (MHz) | Required Limit (dBc) | Result |
|-------------|-----------------|----------------------|--------|
| 78          | 2480            | >20                  | Pass   |

Figure Channel 1:

### Channel 78



Date: 5.JAN.2008 02:35:37

## 6. Band Edge

### 6.1. Test Equipment

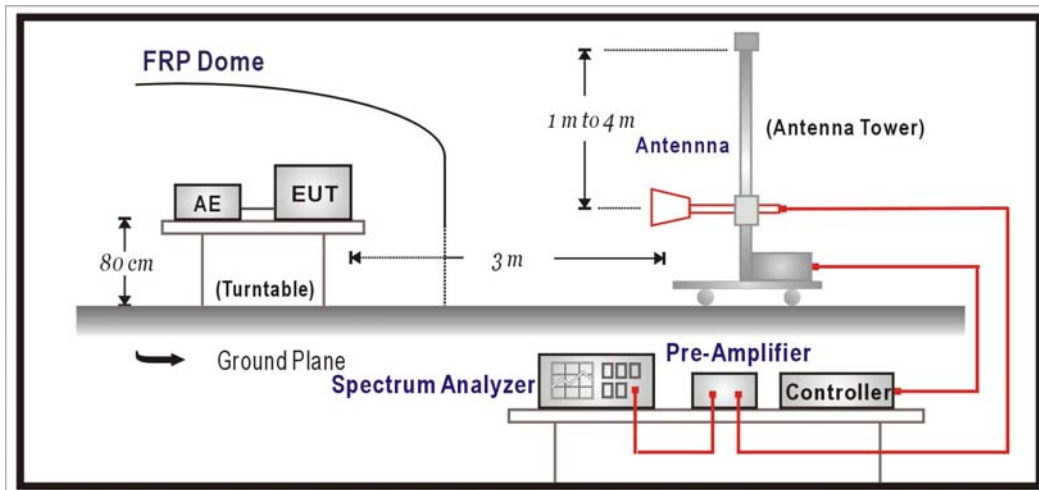
The following test equipments are used during the test:

| RF Radiated Measurement: |           |                   |              |                              |            |
|--------------------------|-----------|-------------------|--------------|------------------------------|------------|
| Item                     | Equipment |                   | Manufacturer | Model No. / Serial No.       | Last Cal.  |
| 1                        | X         | Spectrum Analyzer | R & S        | FSP40 / 100005               | Aug., 2007 |
| 2                        | X         | Pre-Amplifier     | HP           | 8449B / 3008A01123           | Feb., 2007 |
| 3                        |           | Loop Antenna      | R & S        | HFH2-Z2 / 833799/004         | Sep., 2007 |
| 4                        |           | BiconiLog Antenna | Schwarzbeck  | VULB 9166 / 1061             | Sep., 2007 |
| 5                        |           | Bilog Antenna     | Chase        | CBL6112B / 2455              | Sep., 2007 |
| 6                        | X         | Horn Antenna      | Schwarzbeck  | BBHA 9120D /<br>BBHA9120D312 | Sep., 2007 |
| 7                        | No.1 OATS |                   |              |                              | Sep., 2007 |

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.  
2. Mark "X" test instruments are used to measure the final test results.

### 6.2. Test Setup

RF Radiated Measurement:



### 6.3. Limits

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

### 6.4. Test Procedure

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

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.

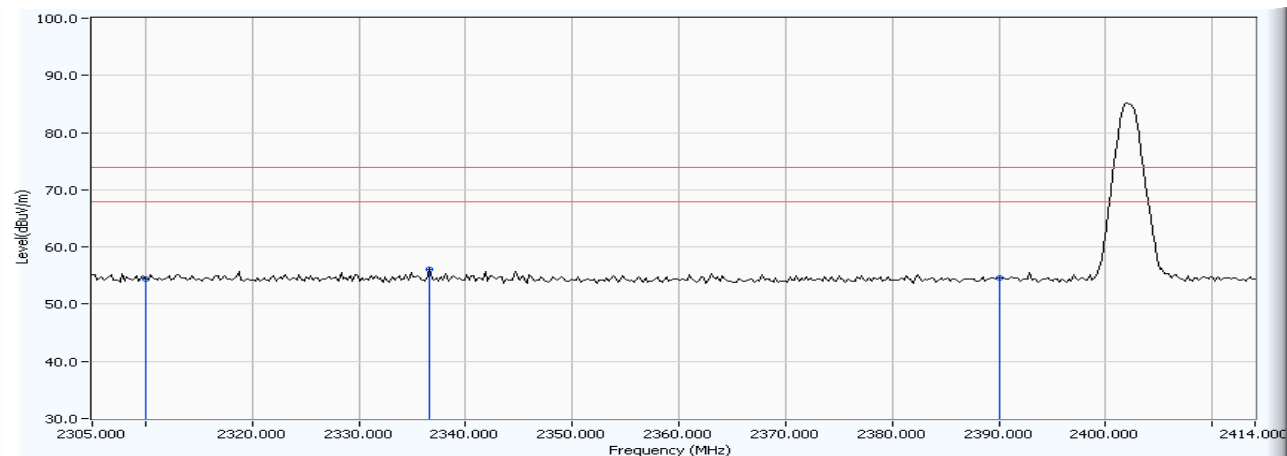
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2003 on radiated measurement.

### 6.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2006

## 6.6. Test Result

|                                                             |                                          |
|-------------------------------------------------------------|------------------------------------------|
| Site : QuieTek Site1                                        | Time : 2008/01/04 - 20:32                |
| Limit : FCC_SpartC_15.247_H_03M_PK                          | Margin : 6                               |
| EUT : IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS<br>MiniCard | Probe : CB3_FCC_1-18G(2007) - HORIZONTAL |
| Power : Power by PC                                         | Note : BT-CH00                           |

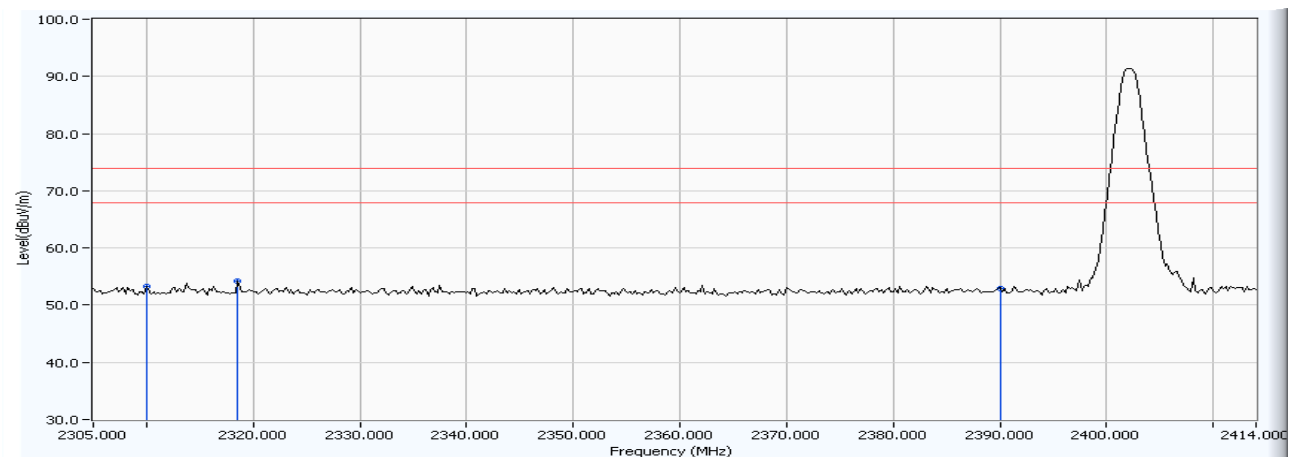


|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|-------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 2310.000           | 30.412                 | 23.990                  | 54.401                       | -19.599        | 74.000                    | 54.00                        | PEAK             |
| 2 | * | 2336.610           | 30.448                 | 25.552                  | 56.001                       | -17.999        | 74.000                    | 54.00                        | PEAK             |
| 3 |   | 2390.000           | 30.543                 | 23.996                  | 54.539                       | -19.461        | 74.000                    | 54.00                        | PEAK             |

### Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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.

|                                                             |                                        |
|-------------------------------------------------------------|----------------------------------------|
| Site : QuieTek Site1                                        | Time : 2008/01/04 - 20:22              |
| Limit : FCC_SpartC_15.247_H_03M_PK                          | Margin : 6                             |
| EUT : IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS<br>MiniCard | Probe : CB3_FCC_1-18G(2007) - VERTICAL |
| Power : Power by PC                                         | Note : BT-CH00                         |

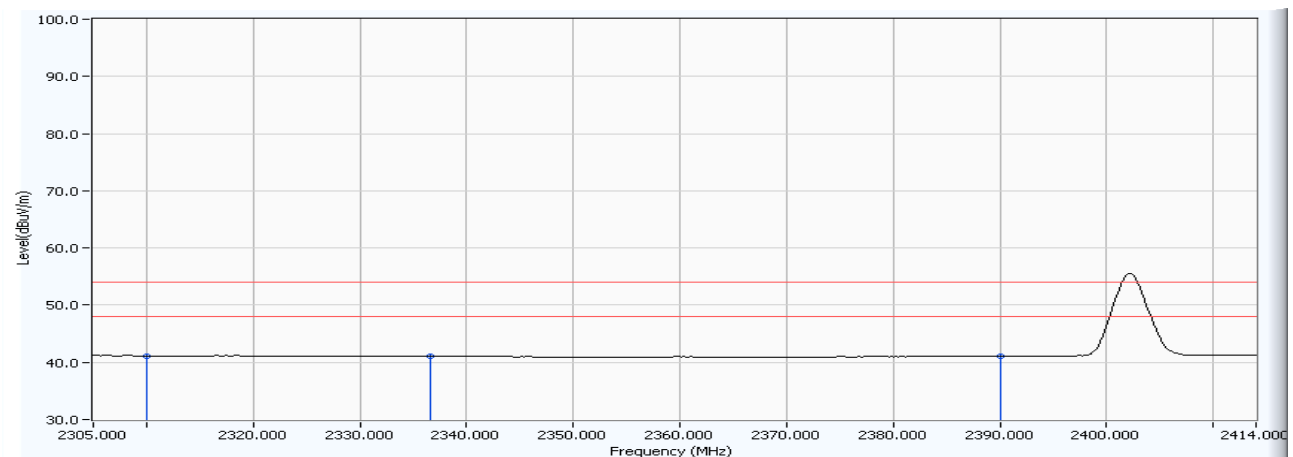


|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|-------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 2310.000           | 28.433                 | 24.768                  | 53.201                       | -20.799        | 74.000                    | 54.00                        | PEAK             |
| 2 | * | 2318.516           | 28.458                 | 25.730                  | 54.188                       | -19.812        | 74.000                    | 54.00                        | PEAK             |
| 3 |   | 2390.000           | 28.724                 | 24.260                  | 52.984                       | -21.016        | 74.000                    | 54.00                        | PEAK             |

## Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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.

|                                                             |                                          |
|-------------------------------------------------------------|------------------------------------------|
| Site : Quietek Site1                                        | Time : 2008/01/04 - 20:33                |
| Limit : FCC_SpartC_15.247_H_03M_AV                          | Margin : 6                               |
| EUT : IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS<br>MiniCard | Probe : CB3_FCC_1-18G(2007) - HORIZONTAL |
| Power : Power by PC                                         | Note : BT-CH00                           |

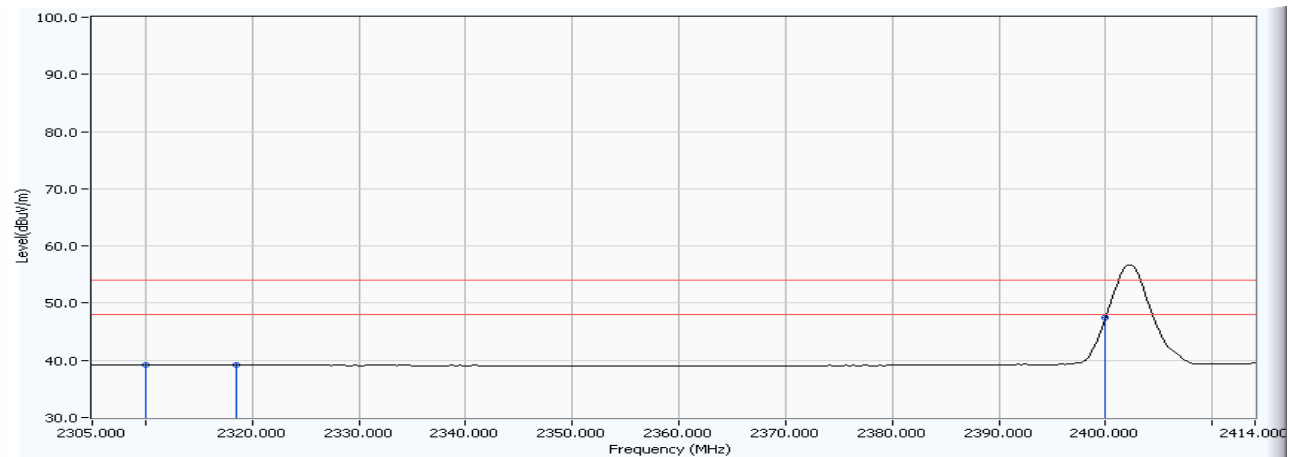


|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|-------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 2310.000           | 30.412                 | 10.724                  | 41.135                       | -12.865        | 74.000                    | 54.00                        | AVERAGE          |
| 2 | * | 2336.610           | 30.448                 | 10.579                  | 41.028                       | -12.972        | 74.000                    | 54.00                        | AVERAGE          |
| 3 |   | 2390.000           | 30.543                 | 10.560                  | 41.103                       | -12.897        | 74.000                    | 54.00                        | AVERAGE          |

## Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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.

|                                                             |                                        |
|-------------------------------------------------------------|----------------------------------------|
| Site : QuieTek Site1                                        | Time : 2008/01/04 - 20:25              |
| Limit : FCC_SpartC_15.247_H_03M_AV                          | Margin : 6                             |
| EUT : IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS<br>MiniCard | Probe : CB3_FCC_1-18G(2007) - VERTICAL |
| Power : Power by PC                                         | Note : BT-CH00                         |

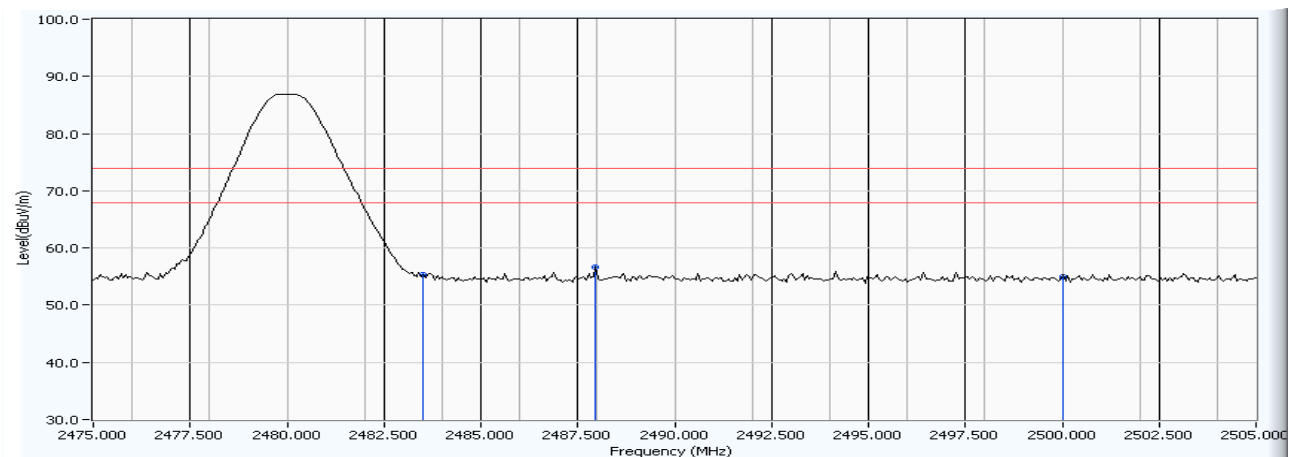


|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|-------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 2310.000           | 28.433                 | 10.744                  | 39.177                       | -14.823        | 74.000                    | 54.00                        | AVERAGE          |
| 2 | * | 2318.516           | 28.458                 | 10.685                  | 39.143                       | -14.857        | 74.000                    | 54.00                        | AVERAGE          |
| 3 |   | 2400.000           | 28.765                 | 18.686                  | 47.451                       | -6.549         | 74.000                    | 54.00                        | AVERAGE          |

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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.

|                                                             |                                          |
|-------------------------------------------------------------|------------------------------------------|
| Site : QuieTek Site1                                        | Time : 2008/01/04 - 20:43                |
| Limit : FCC_SpartC_15.247_H_03M_PK                          | Margin : 6                               |
| EUT : IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS<br>MiniCard | Probe : CB3_FCC_1-18G(2007) - HORIZONTAL |
| Power : Power by PC                                         | Note : BT-CH78                           |

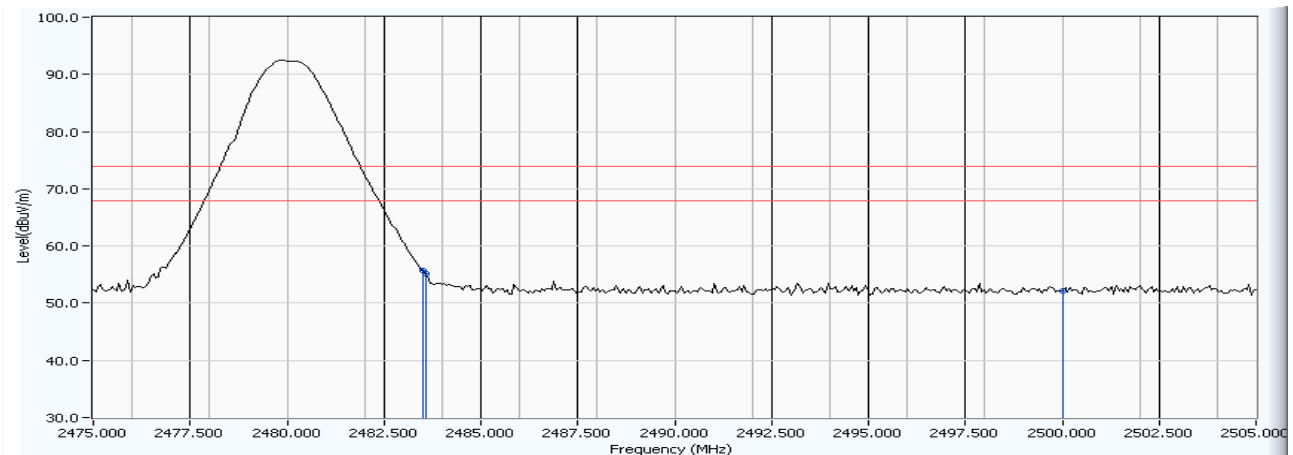


|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|-------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 2483.500           | 30.696                 | 24.570                  | 55.265                       | -18.735        | 74.000                    | 54.00                        | PEAK             |
| 2 | * | 2487.960           | 30.700                 | 25.987                  | 56.688                       | -17.312        | 74.000                    | 54.00                        | PEAK             |
| 3 |   | 2500.000           | 30.722                 | 24.265                  | 54.987                       | -19.013        | 74.000                    | 54.00                        | PEAK             |

**Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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.

|                                                             |                                        |
|-------------------------------------------------------------|----------------------------------------|
| Site : QuieTek Site1                                        | Time : 2008/01/04 - 20:52              |
| Limit : FCC_SpartC_15.247_H_03M_PK                          | Margin : 6                             |
| EUT : IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS<br>MiniCard | Probe : CB3_FCC_1-18G(2007) - VERTICAL |
| Power : Power by PC                                         | Note : BT-CH78                         |

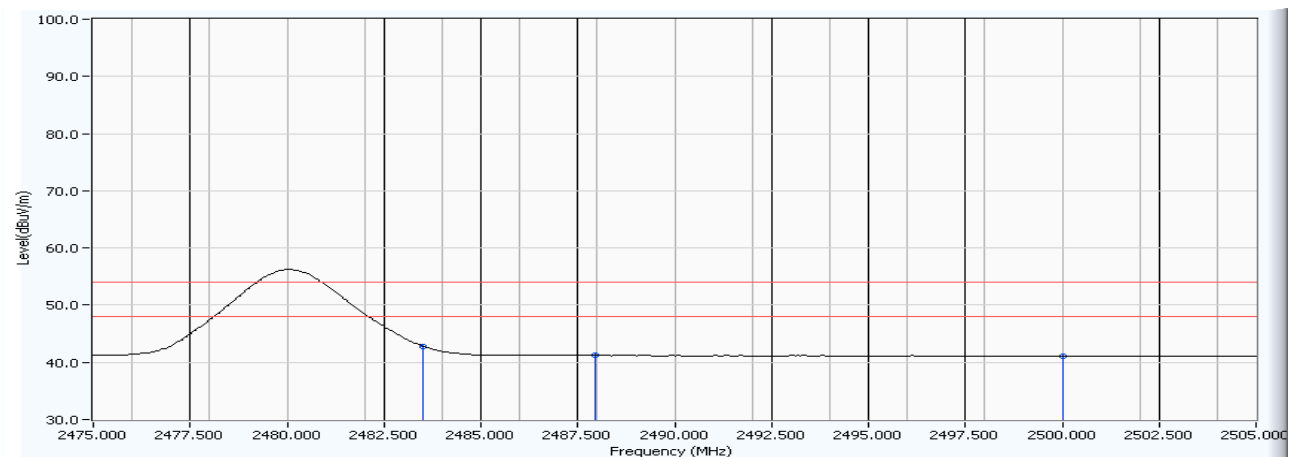


|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|-------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 2483.500           | 29.064                 | 26.649                  | 55.712                       | -18.288        | 74.000                    | 54.00                        | PEAK             |
| 2 | * | 2483.580           | 29.064                 | 26.056                  | 55.119                       | -18.881        | 74.000                    | 54.00                        | PEAK             |
| 3 |   | 2500.000           | 29.114                 | 23.037                  | 52.151                       | -21.849        | 74.000                    | 54.00                        | PEAK             |

## Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " \* ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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.

|                                                             |                                          |
|-------------------------------------------------------------|------------------------------------------|
| Site : Quietek Site1                                        | Time : 2008/01/04 - 20:45                |
| Limit : FCC_SpartC_15.247_H_03M_AV                          | Margin : 6                               |
| EUT : IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS<br>MiniCard | Probe : CB3_FCC_1-18G(2007) - HORIZONTAL |
| Power : Power by PC                                         | Note : BT-CH78                           |

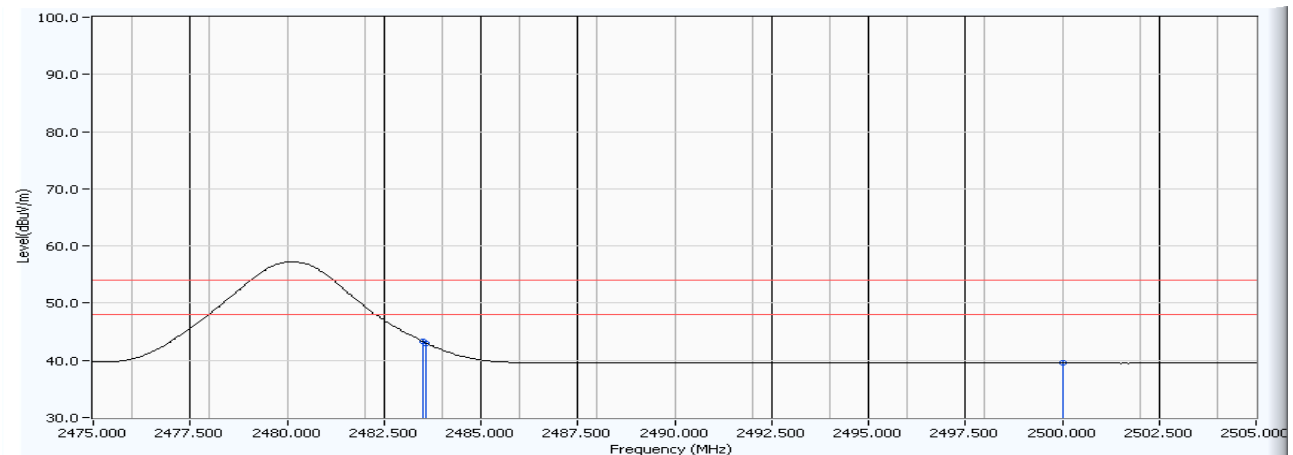


|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|-------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 2483.500           | 30.696                 | 12.087                  | 42.782                       | -11.218        | 74.000                    | 54.00                        | AVERAGE          |
| 2 | * | 2487.960           | 30.700                 | 10.476                  | 41.177                       | -12.823        | 74.000                    | 54.00                        | AVERAGE          |
| 3 |   | 2500.000           | 30.722                 | 10.342                  | 41.064                       | -12.936        | 74.000                    | 54.00                        | AVERAGE          |

## Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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.

|                                                             |                                        |
|-------------------------------------------------------------|----------------------------------------|
| Site : QuieTek Site1                                        | Time : 2008/01/04 - 20:53              |
| Limit : FCC_SpartC_15.247_H_03M_AV                          | Margin : 6                             |
| EUT : IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS<br>MiniCard | Probe : CB3_FCC_1-18G(2007) - VERTICAL |
| Power : Power by PC                                         | Note : BT-CH78                         |



|   |   | Frequency<br>(MHz) | Correct<br>Factor (dB) | Reading Level<br>(dBuV) | Measure<br>Level<br>(dBuV/m) | Margin<br>(dB) | Peak<br>Limit<br>(dBuV/m) | Average<br>Limit<br>(dBuV/m) | Detector<br>Type |
|---|---|--------------------|------------------------|-------------------------|------------------------------|----------------|---------------------------|------------------------------|------------------|
| 1 |   | 2483.500           | 29.064                 | 14.228                  | 43.291                       | -10.709        | 74.000                    | 54.00                        | AVERAGE          |
| 2 | * | 2483.580           | 29.064                 | 13.954                  | 43.017                       | -10.983        | 74.000                    | 54.00                        | AVERAGE          |
| 3 |   | 2500.000           | 29.114                 | 10.401                  | 39.515                       | -14.485        | 74.000                    | 54.00                        | AVERAGE          |

## Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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. Number of hopping frequency

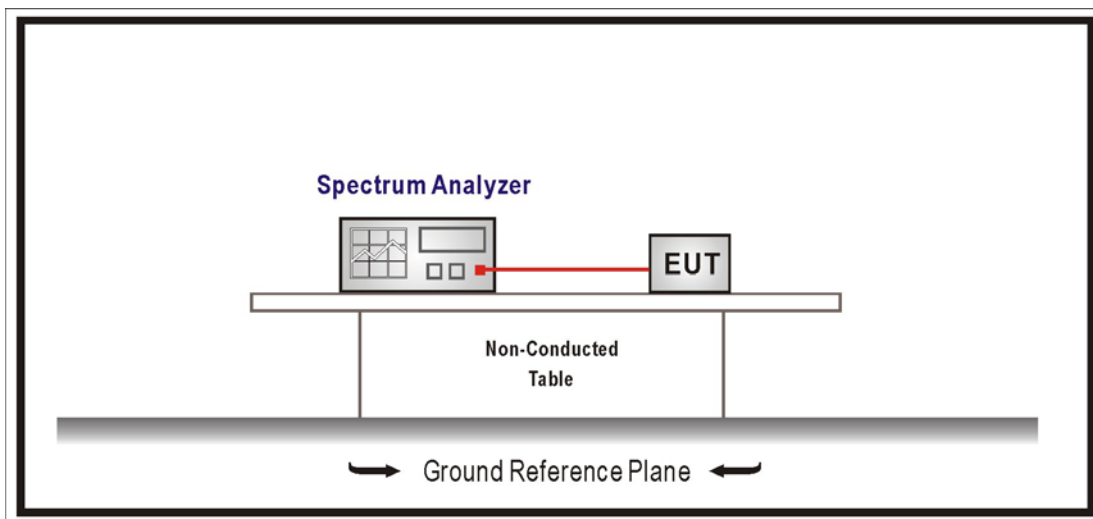
### 7.1. Test Equipment

The following test equipments are used during the test:

| Item | Equipment         | Manufacturer | Model No. / Serial No. | Last Cal.  |
|------|-------------------|--------------|------------------------|------------|
| 1    | Spectrum Analyzer | R & S        | FSP / 100561           | Mar., 2007 |
| 2    | No.1 OATS         |              |                        | Sep., 2007 |

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 7.2. Test Setup



### **7.3. Limits**

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

For frequency hopping systems operating in the 2400-2483.5 MHz bands, which use fewer than 75 hopping frequencies, may employ intelligent hopping techniques to avoid interference to other transmissions. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 non-overlapping channels are used.

For frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies.

### **7.4. Test Procedures**

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

Span = the frequency band of operation

$RBW \geq 1\%$  of the span ,  $VBW \geq RBW$

Sweep = auto, Detector function = peak, Trace = max hold

### **7.5. Test Specification**

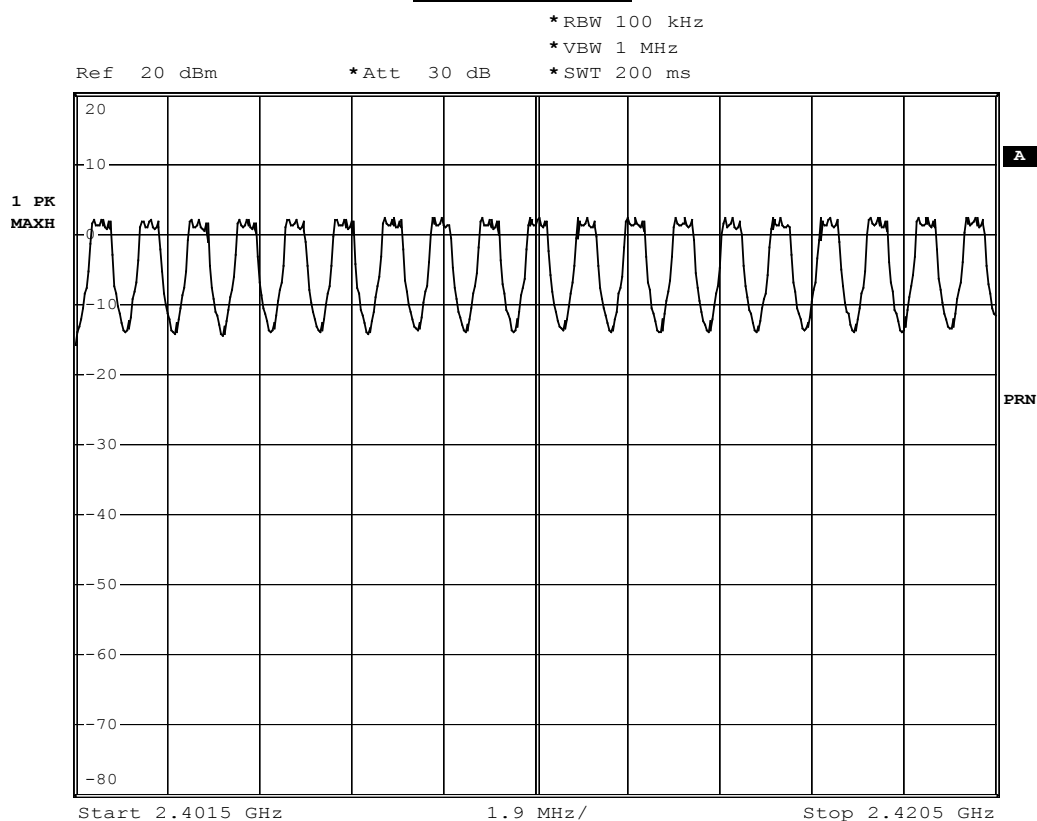
According to FCC Part 15 Subpart C Paragraph 15.247: 2006

## 7.6. Test Result

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Number of hopping frequency                        |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/06                                         | Test Site | No.1 OATS |

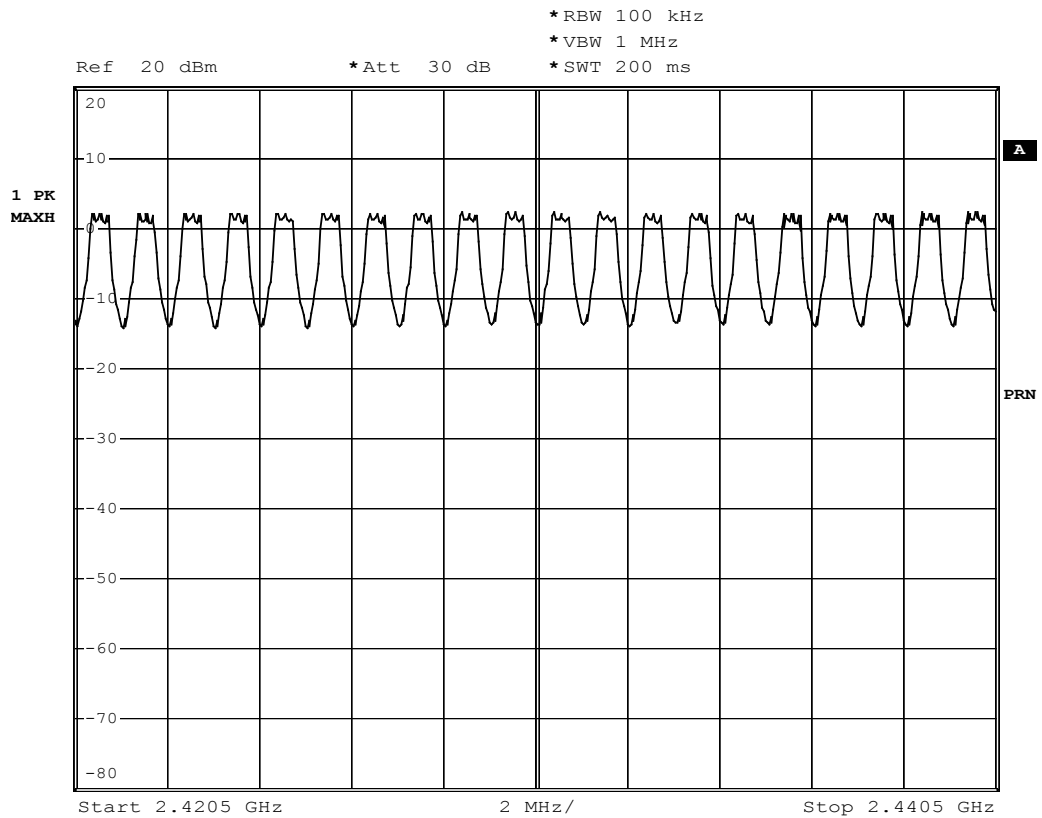
| Frequency Range<br>(MHz) | Measure Level<br>(Hopping Channel) | Limit<br>(Hopping Channel) | Result |
|--------------------------|------------------------------------|----------------------------|--------|
| 2402 ~ 2480              | 79                                 | >75                        | Pass   |

### 2402-2420MHz



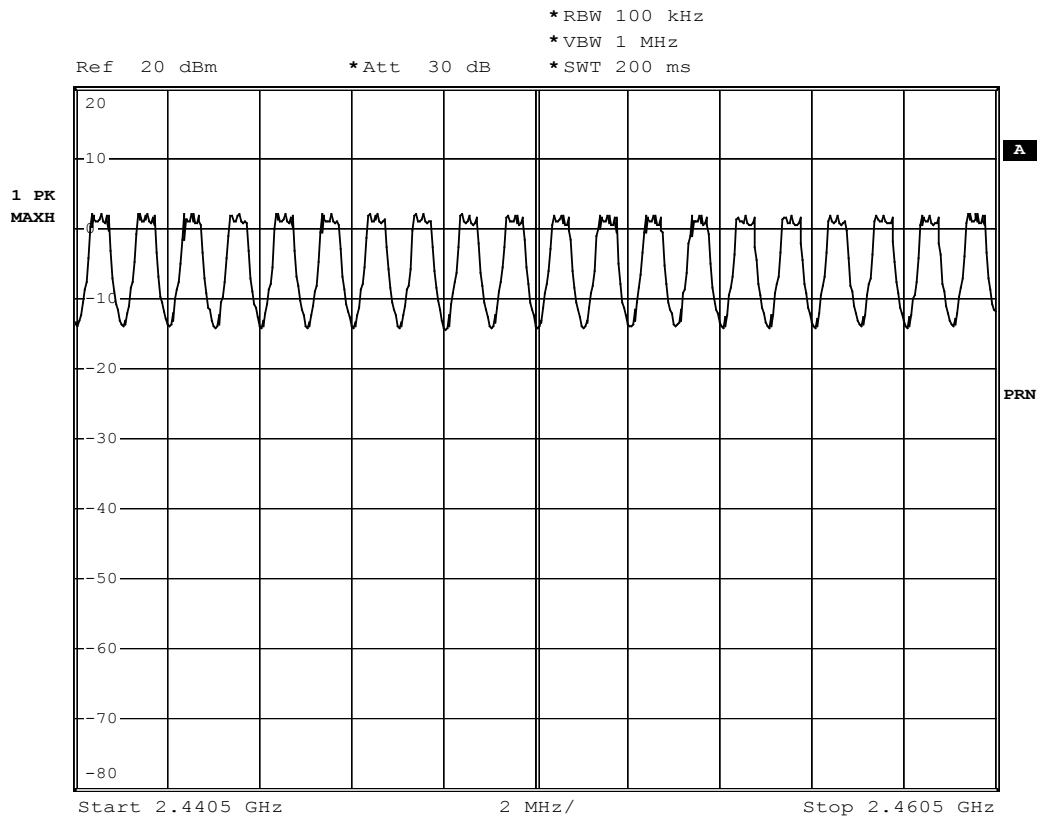
Date: 6.JAN.2008 06:51:53

# 2421-2440MHz



Date: 6.JAN.2008 06:56:27

# 2441-2460MHz



Date: 6.JAN.2008 06:58:48

# 2461-2480MHz

\*RBW 100 kHz

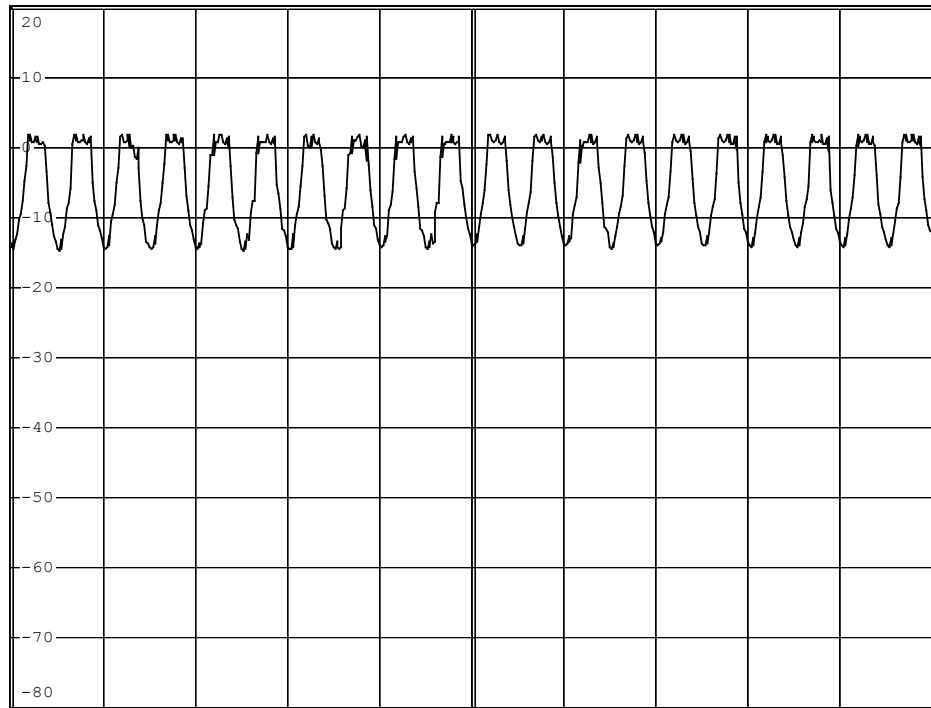
\*VBW 1 MHz

\*SWT 200 ms

Ref 20 dBm

\*Att 30 dB

1 PK  
VIEW



Start 2.4605 GHz

2 MHz/

Stop 2.4805 GHz

Date: 6.JAN.2008 07:02:21

## 8. Carrier Frequency Separation

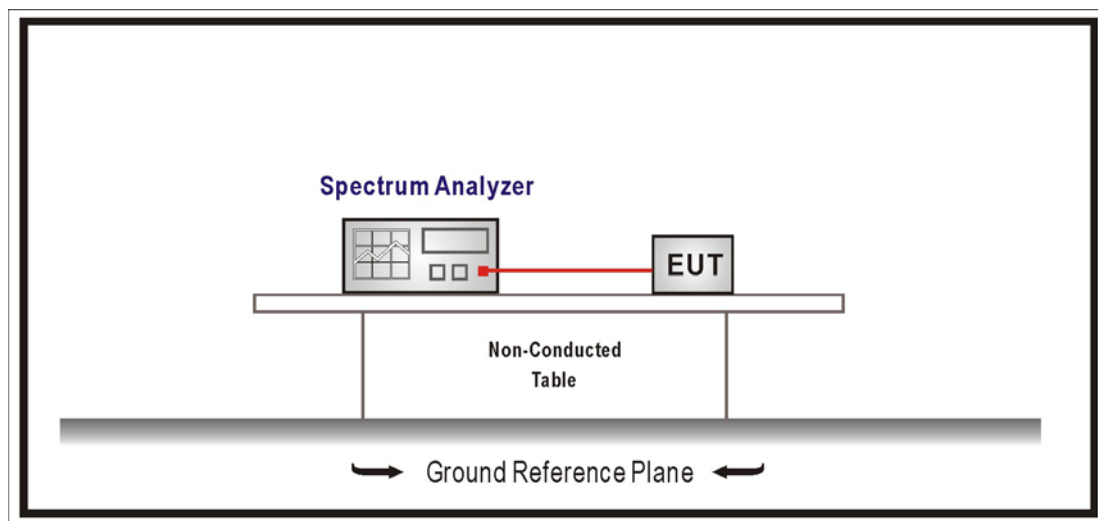
### 8.1. Test Equipment

The following test equipment are used during the test:

| Item | Equipment         | Manufacturer | Model No. / Serial No. | Last Cal.  |
|------|-------------------|--------------|------------------------|------------|
| 1    | Spectrum Analyzer | R & S        | FSP / 100561           | Mar., 2007 |
| 2    | No.1 OATS         |              |                        | Sep., 2007 |

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 8.2. Test Setup



### 8.3. Limits

For 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 Procedures

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

Span = wide enough to capture the peaks of two adjacent channels

Resolution Bandwidth (RBW)  $\geq$  1% of the span, VBW  $\geq$  RBW

Sweep = auto, Detector function = peak, Trace = max hold

### 8.5. Test Specification

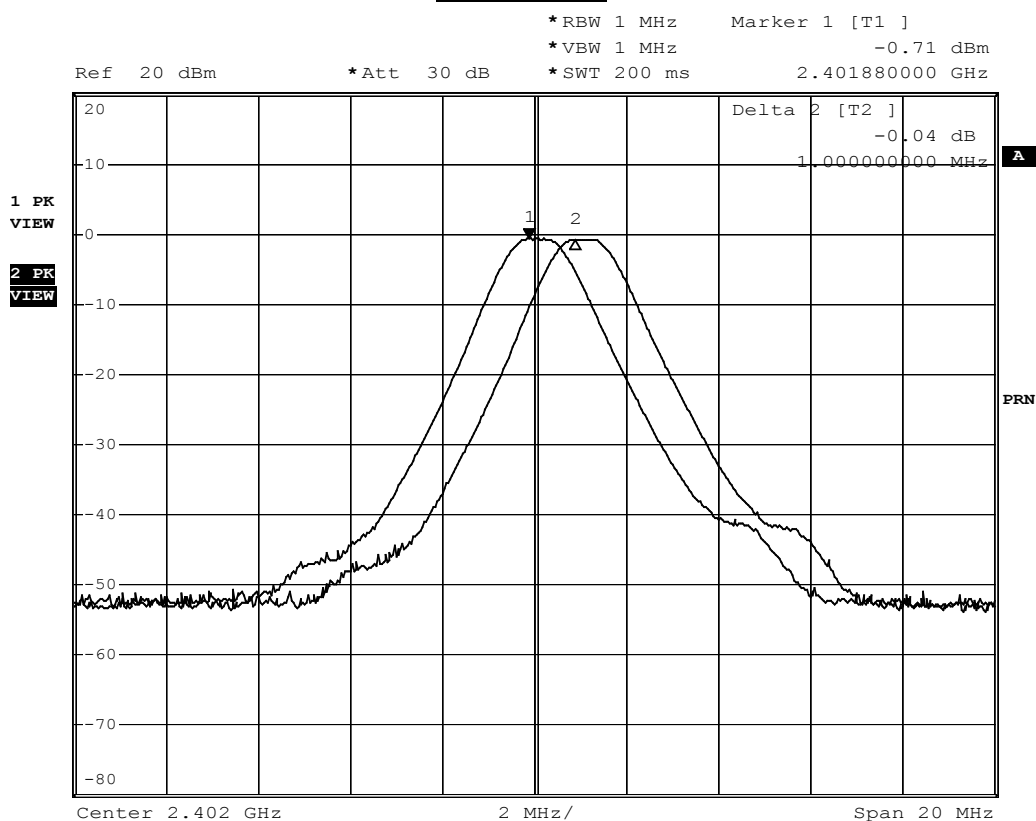
According to FCC Part 15 Subpart C Paragraph 15.247: 2006

## 8.6. Test Result

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Carrier Frequency Separation                       |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

| Channel No. | Frequency (MHz) | Measure Level (kHz) | Limit (kHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 00          | 2402.00         | 1000                | >830        | Pass   |

### Channel 00

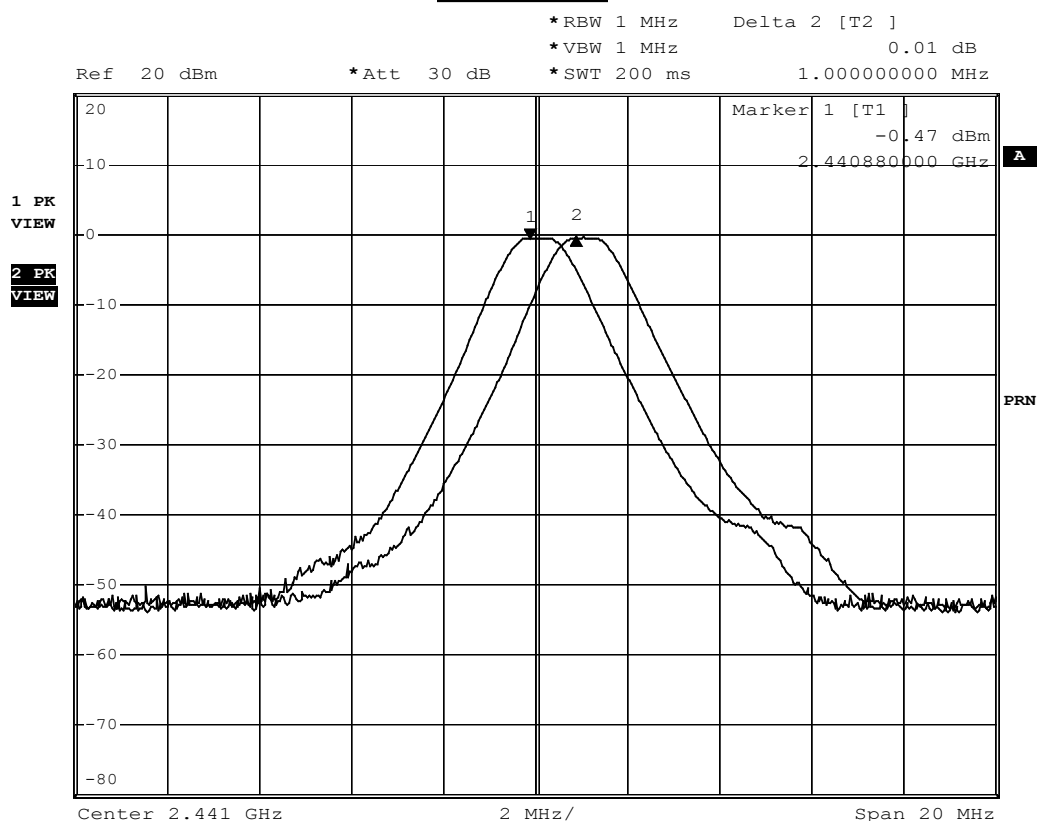


Date: 7.JAN.2008 03:25:44

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Carrier Frequency Separation                       |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

| Channel No. | Frequency (MHz) | Measure Level (kHz) | Limit (kHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 39          | 2441.00         | 1000                | >830        | Pass   |

## Channel 39

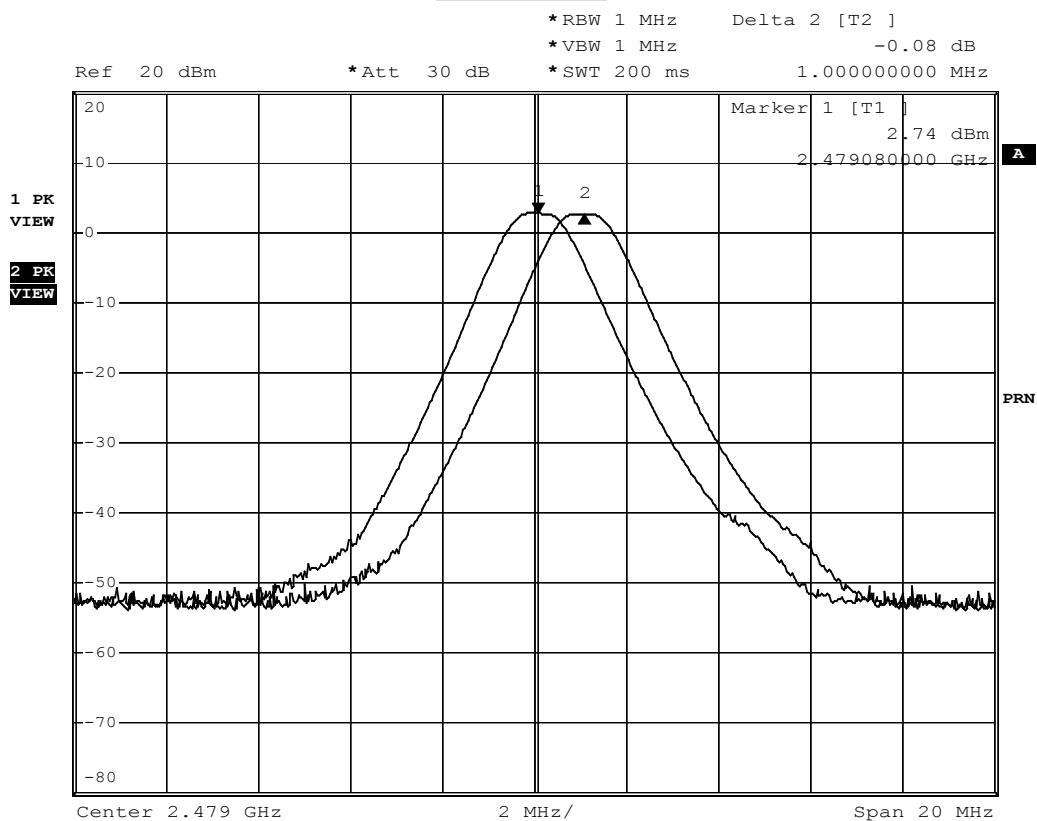


Date: 7.JAN.2008 03:23:07

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Carrier Frequency Separation                       |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

| Channel No. | Frequency (MHz) | Measure Level (kHz) | Limit (kHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 78          | 2480.00         | 1000                | >820        | Pass   |

## Channel 78



Date: 7.JAN.2008 03:27:27

## 9. Occupied Bandwidth

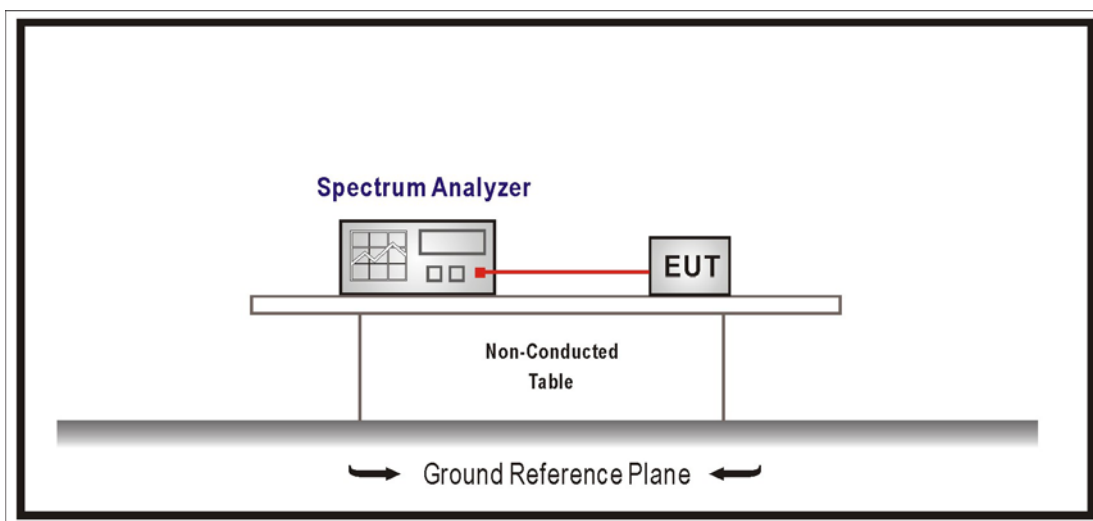
### 9.1. Test Equipment

The following test equipment are used during the test:

| Item | Equipment         | Manufacturer | Model No. / Serial No. | Last Cal.  |
|------|-------------------|--------------|------------------------|------------|
| 1    | Spectrum Analyzer | R & S        | FSP / 100561           | Mar., 2007 |
| 2    | No.1 OATS         |              |                        | Sep., 2007 |

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 9.2. Test Setup



### **9.3. Limits**

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

For frequency hopping systems operating in the 5725-5850 MHz bands. The maximum 20 dB bandwidth of the hopping channel is 1 MHz.

For 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 Procedures**

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

Use the following spectrum analyzer settings:

Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel

RBW  $\geq$  1% of the 20 dB bandwidth, VBW  $\geq$  RBW

Sweep = auto, Detector function = peak, Trace = max hold

The EUT should be transmitting at its maximum data rate.

### **9.5. Test Specification**

According to FCC Part 15 Subpart C Paragraph 15.247: 2006

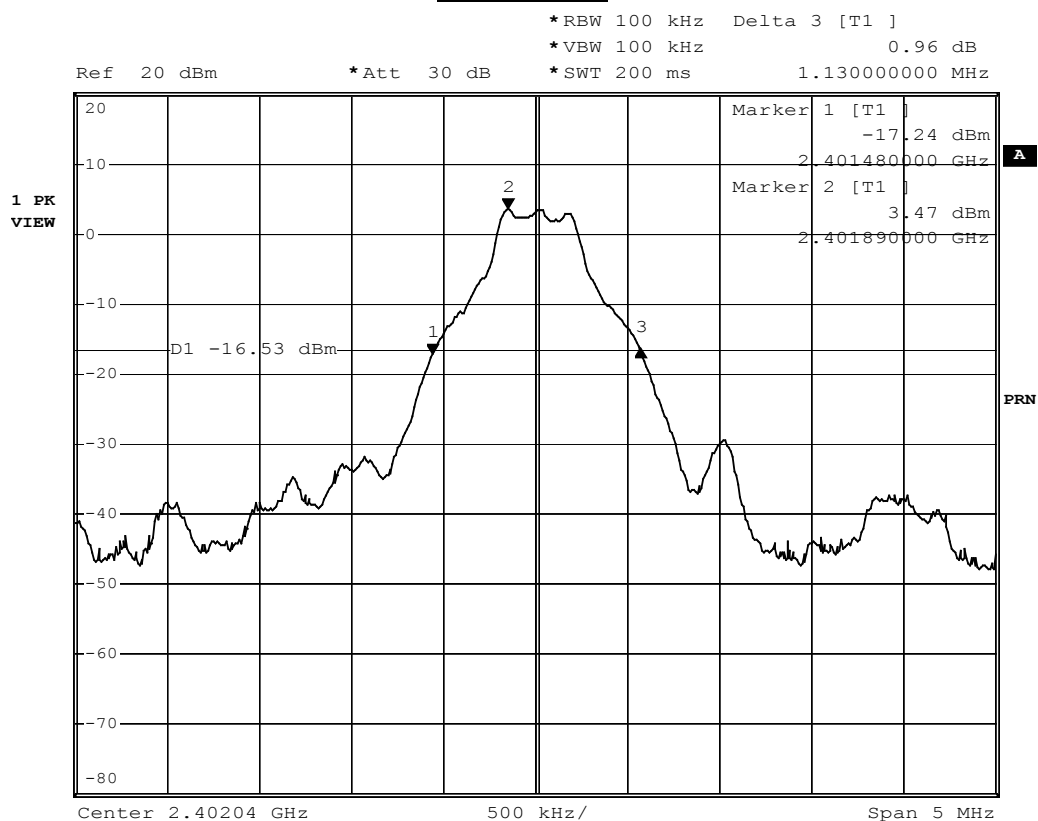
## 9.6. Test Result

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Occupied Bandwidth                                 |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

1M-GFSK Modulation, PRBS Packet Type

| Channel No. | Frequency (MHz) | Measure Level (MHz) | Limit (MHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 00          | 2402.00         | 1.13                | 1           | Pass   |

### Channel 00



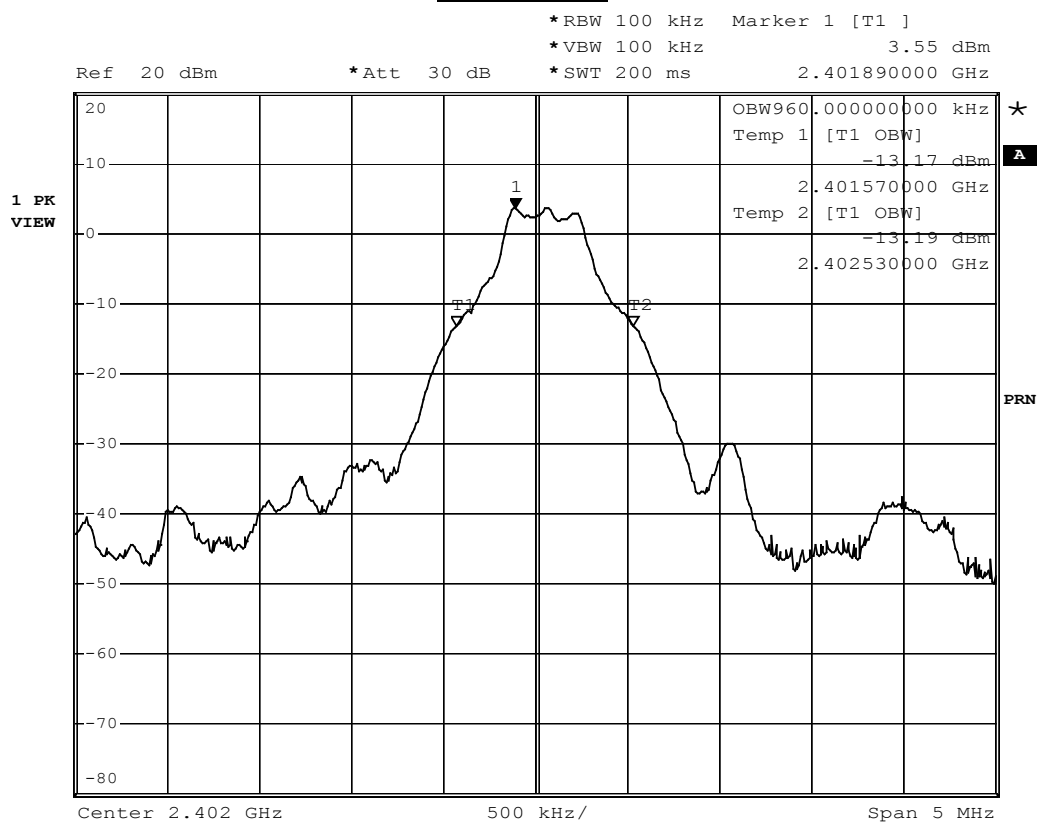
Date: 7.JAN.2008 00:11:16

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Occupied Bandwidth                                 |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

1M-GFSK Modulation, PRBS Packet Type (99%)

| Channel No. | Frequency (MHz) | Measure Level (kHz) | Limit (kHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 00          | 2402.00         | 960                 | --          | Pass   |

## Channel 00



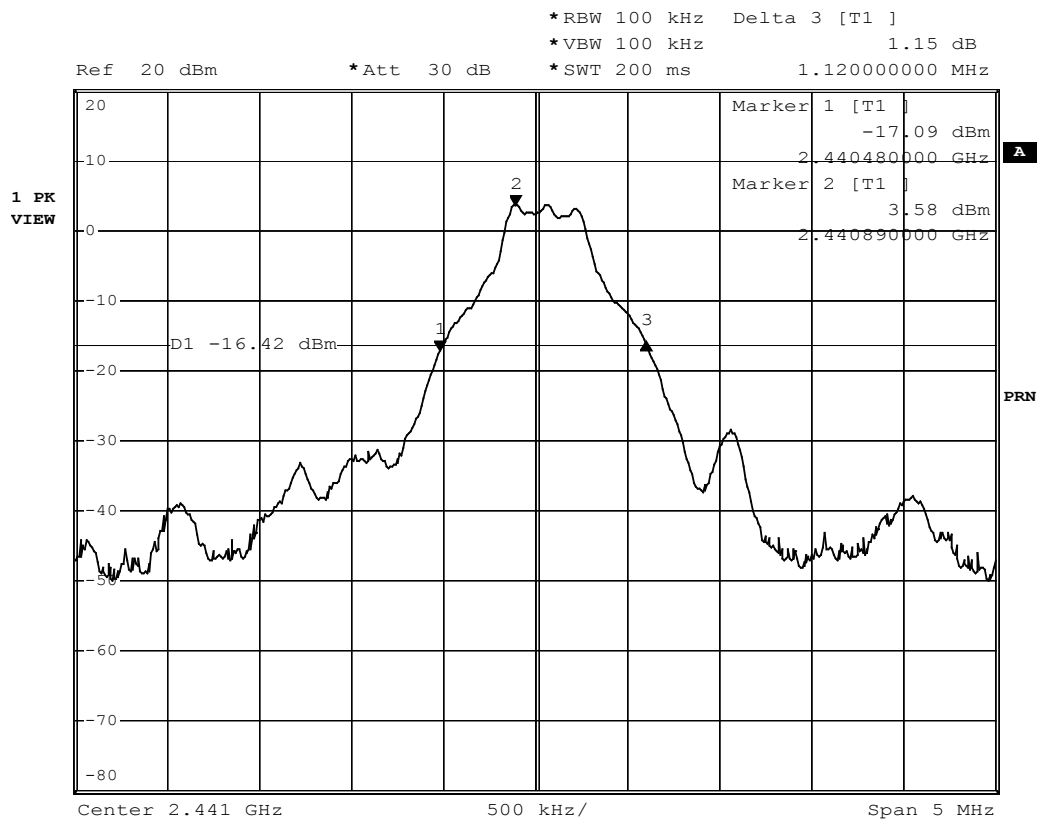
Date: 7.JAN.2008 00:24:49

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Occupied Bandwidth                                 |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

## 1M-GFSK Modulation, PRBS Packet Type

| Channel No. | Frequency (MHz) | Measure Level (MHz) | Limit (MHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 39          | 2441.00         | 1.12                | 1           | Pass   |

### Channel 39



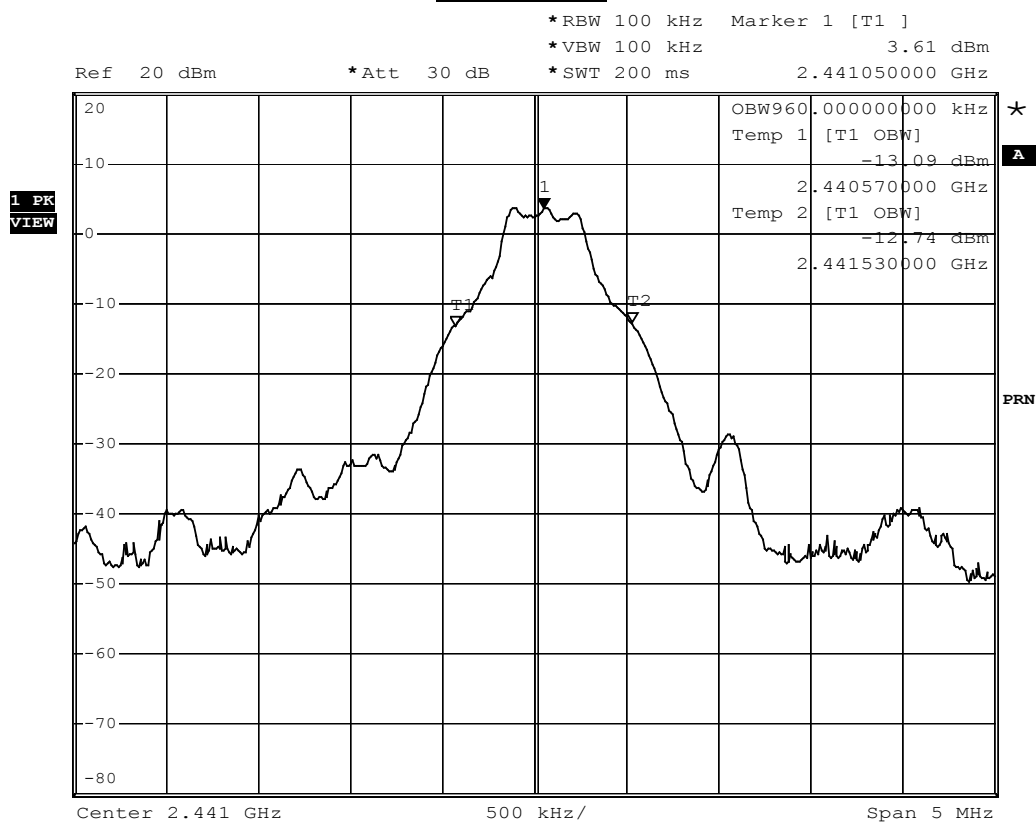
Date: 7.JAN.2008 00:13:38

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Occupied Bandwidth                                 |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

1M-GFSK Modulation, PRBS Packet Type (99%)

| Channel No. | Frequency (MHz) | Measure Level (kHz) | Limit (kHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 39          | 2441.00         | 960                 | --          | Pass   |

## Channel 39



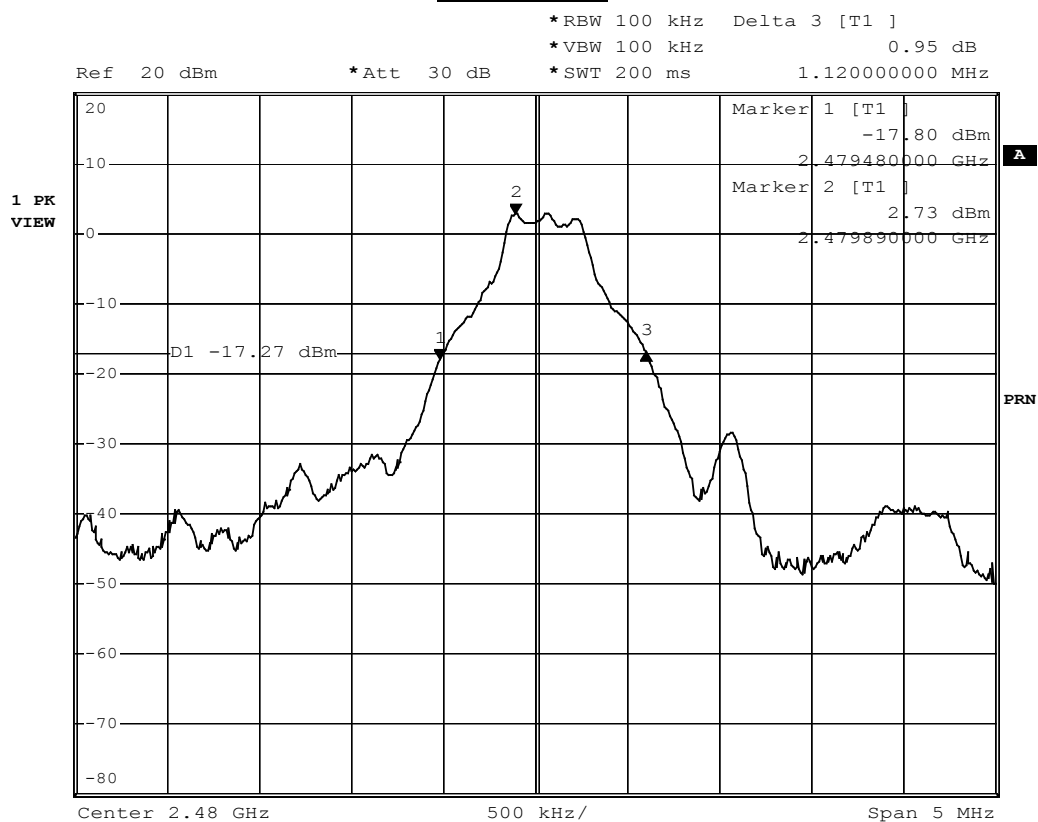
Date: 7.JAN.2008 00:25:47

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Occupied Bandwidth                                 |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

## 1M-GFSK Modulation, PRBS Packet Type

| Channel No. | Frequency (MHz) | Measure Level (MHz) | Limit (MHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 78          | 2480.00         | 1.12                | 1           | Pass   |

### Channel 78



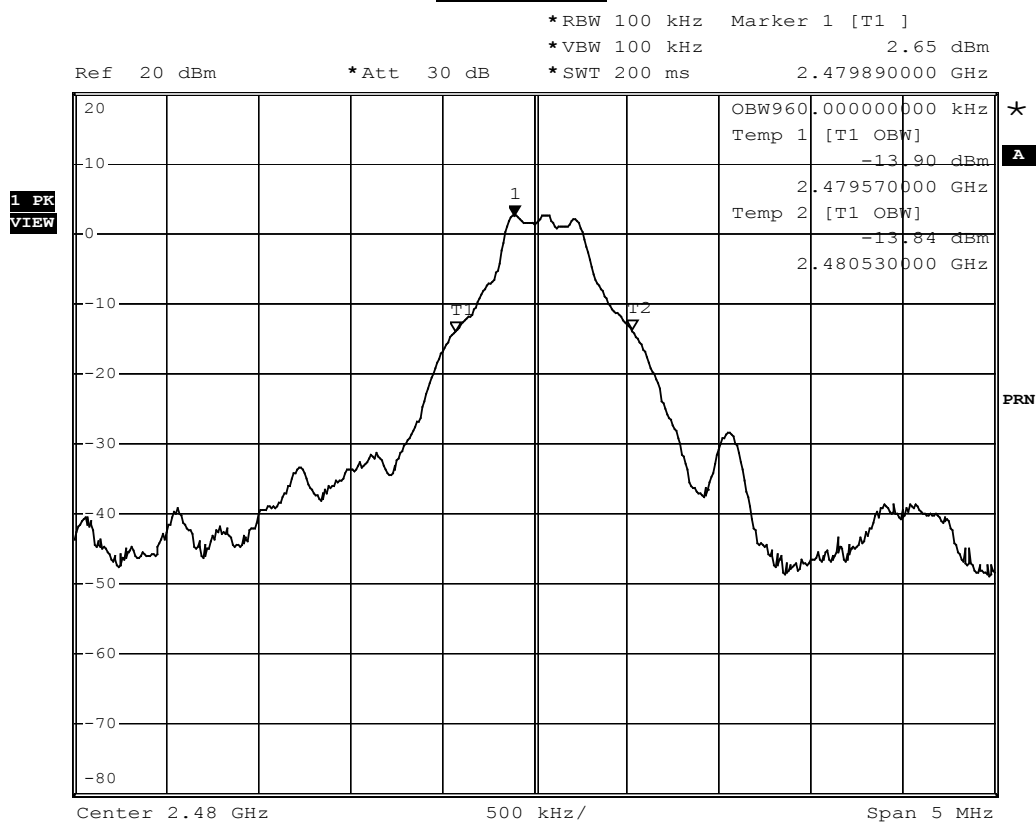
Date: 7.JAN.2008 00:15:19

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Occupied Bandwidth                                 |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

1M-GFSK Modulation, PRBS Packet Type (99%)

| Channel No. | Frequency (MHz) | Measure Level (kHz) | Limit (kHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 78          | 2480.00         | 960                 | --          | Pass   |

## Channel 78



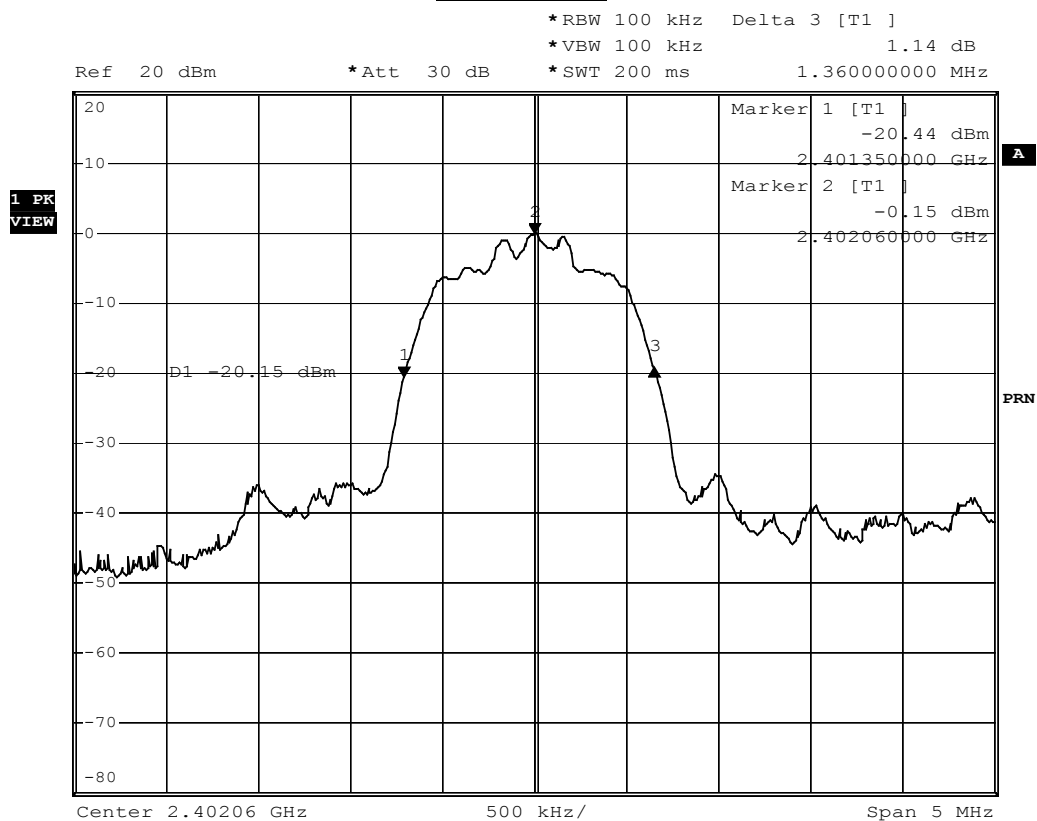
Date: 7.JAN.2008 00:26:38

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Occupied Bandwidth                                 |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

2M-pi/4DQPSK Modulation, PRBS Packet Type

| Channel No. | Frequency (MHz) | Measure Level (MHz) | Limit (MHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 00          | 2402.00         | 1.36                | 1           | Pass   |

### Channel 00



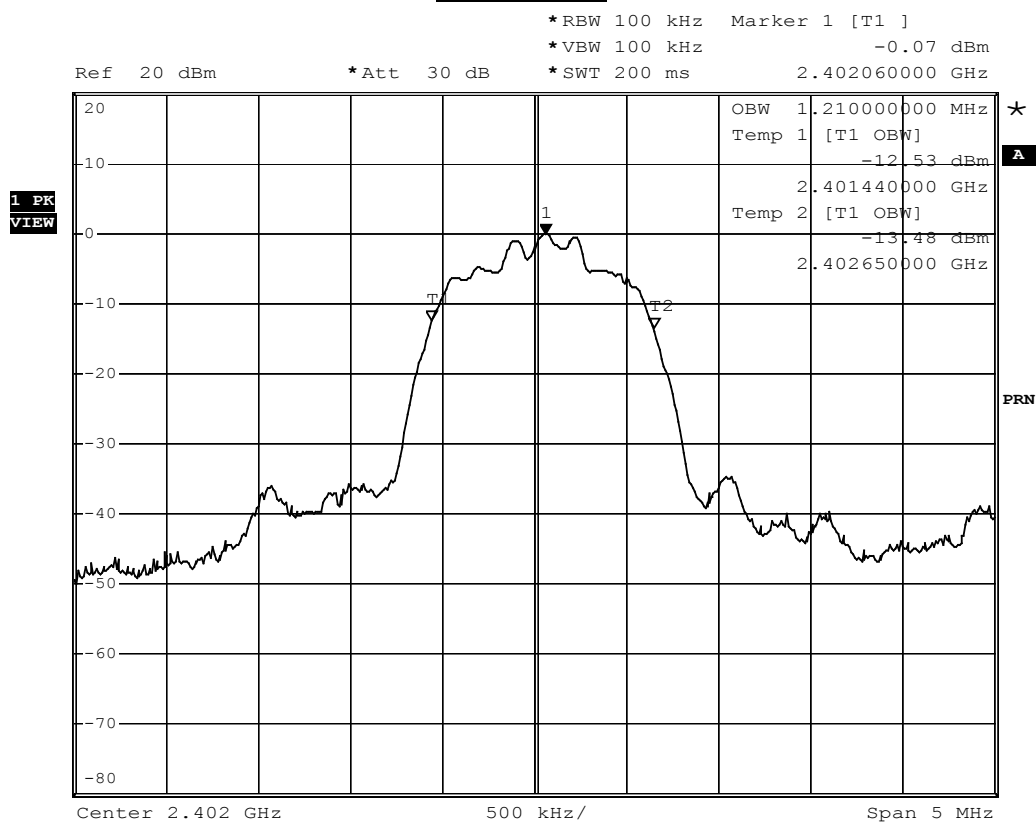
Date: 7.JAN.2008 00:50:44

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Occupied Bandwidth                                 |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

2M-pi/4DQPSK Modulation, PRBS Packet Type (99%)

| Channel No. | Frequency (MHz) | Measure Level (kHz) | Limit (kHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 00          | 2402.00         | 1210                | --          | Pass   |

## Channel 00



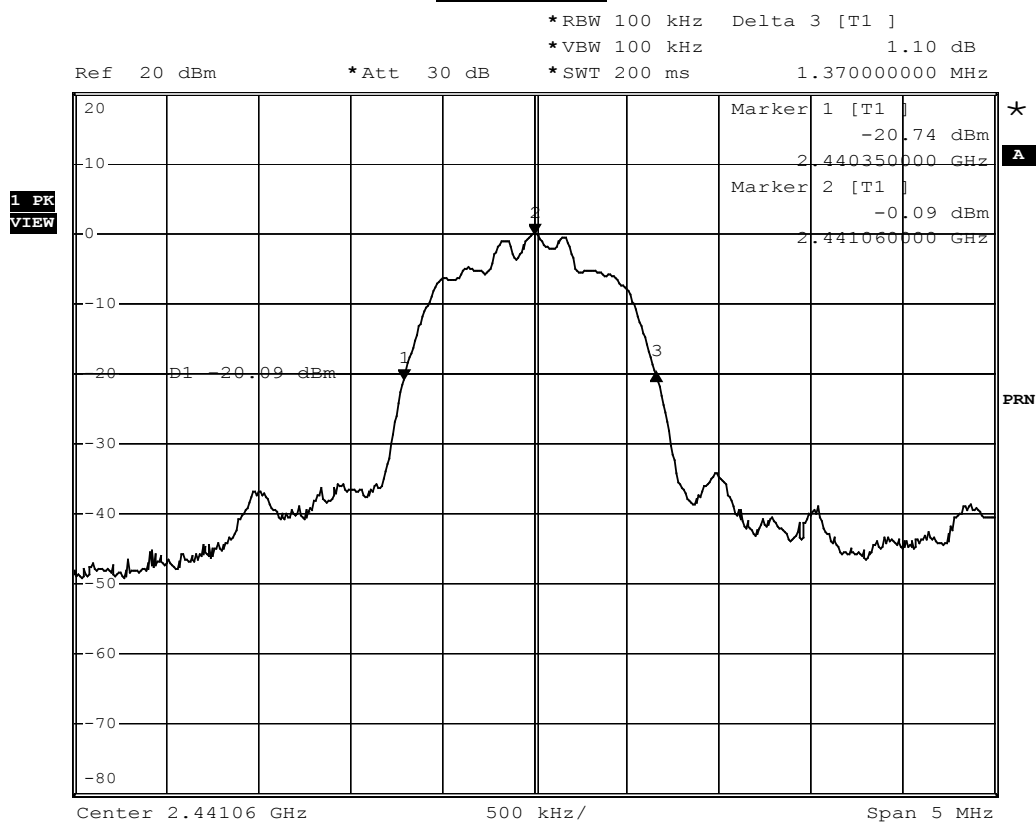
Date: 7.JAN.2008 00:33:00

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Occupied Bandwidth                                 |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

## 2M-pi/4DQPSK Modulation, PRBS Packet Type

| Channel No. | Frequency (MHz) | Measure Level (MHz) | Limit (MHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 39          | 2441.00         | 1.37                | 1           | Pass   |

### Channel 39



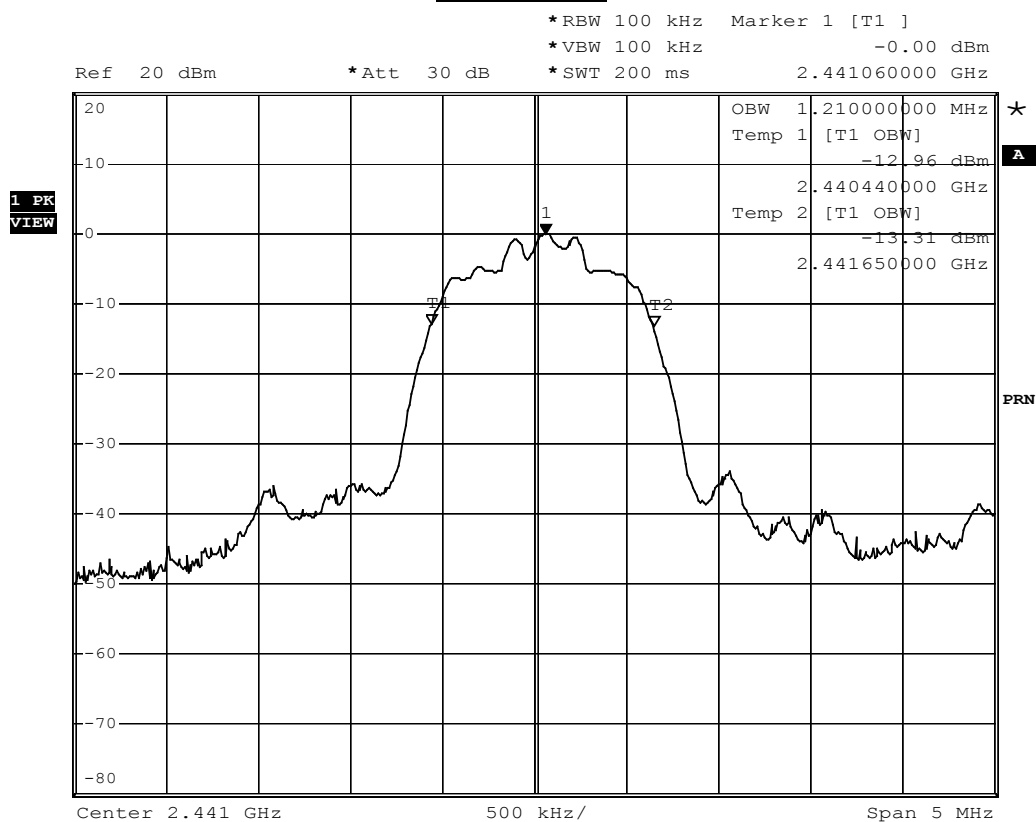
Date: 7.JAN.2008 00:54:29

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Occupied Bandwidth                                 |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

2M-pi/4DQPSK Modulation, PRBS Packet Type (99%)

| Channel No. | Frequency (MHz) | Measure Level (kHz) | Limit (kHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 39          | 2441.00         | 1210                | --          | Pass   |

## Channel 39



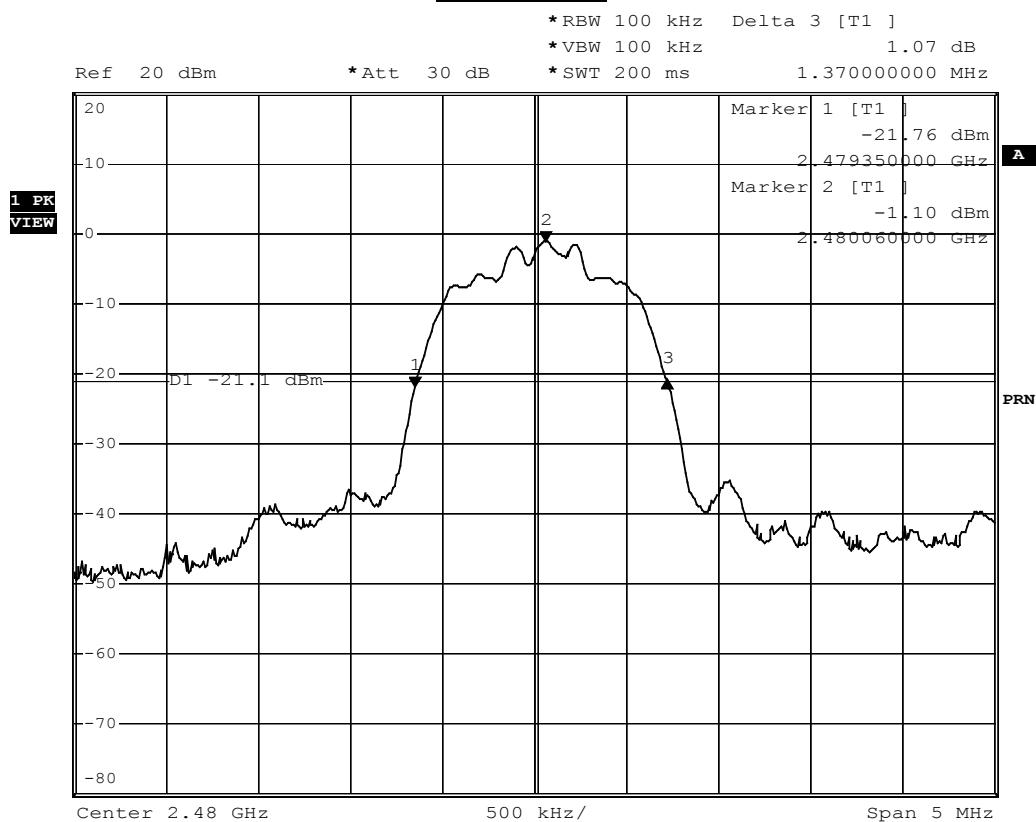
Date: 7.JAN.2008 00:36:03

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Occupied Bandwidth                                 |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

## 2M-pi/4DQPSK Modulation, PRBS Packet Type

| Channel No. | Frequency (MHz) | Measure Level (MHz) | Limit (MHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 78          | 2480.00         | 1.37                | 1           | Pass   |

### Channel 78



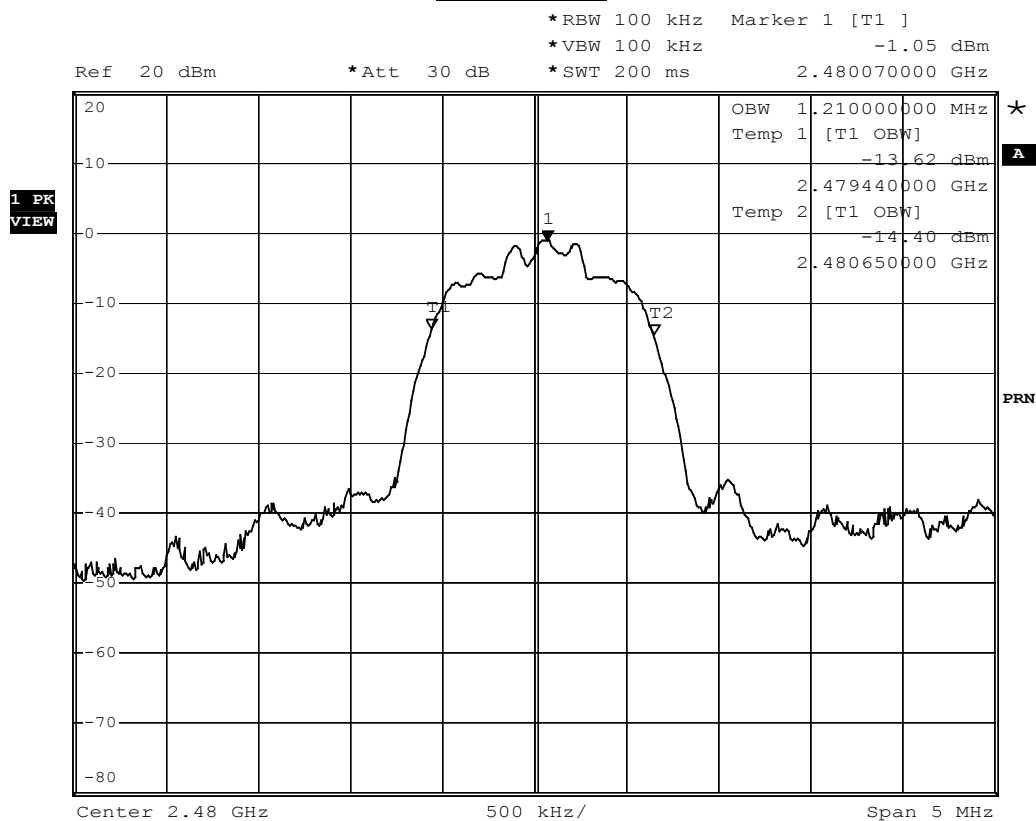
Date: 7.JAN.2008 00:57:36

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Occupied Bandwidth                                 |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

2M-pi/4DQPSK Modulation, PRBS Packet Type (99%)

| Channel No. | Frequency (MHz) | Measure Level (kHz) | Limit (kHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 78          | 2480.00         | 1210                | --          | Pass   |

### Channel 78



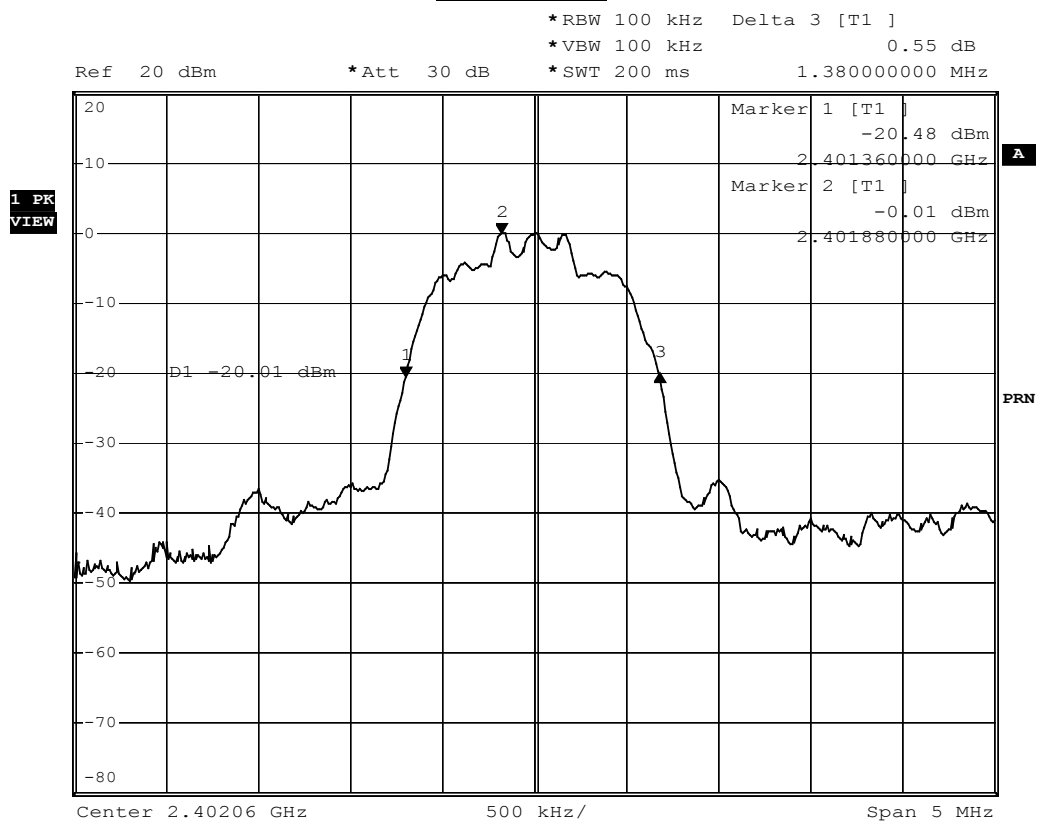
Date: 7.JAN.2008 00:38:14

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Occupied Bandwidth                                 |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

## 3M-8DPSK Modulation, PRBS Packet Type

| Channel No. | Frequency (MHz) | Measure Level (MHz) | Limit (MHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 00          | 2402.00         | 1.38                | 1           | Pass   |

### Channel 00



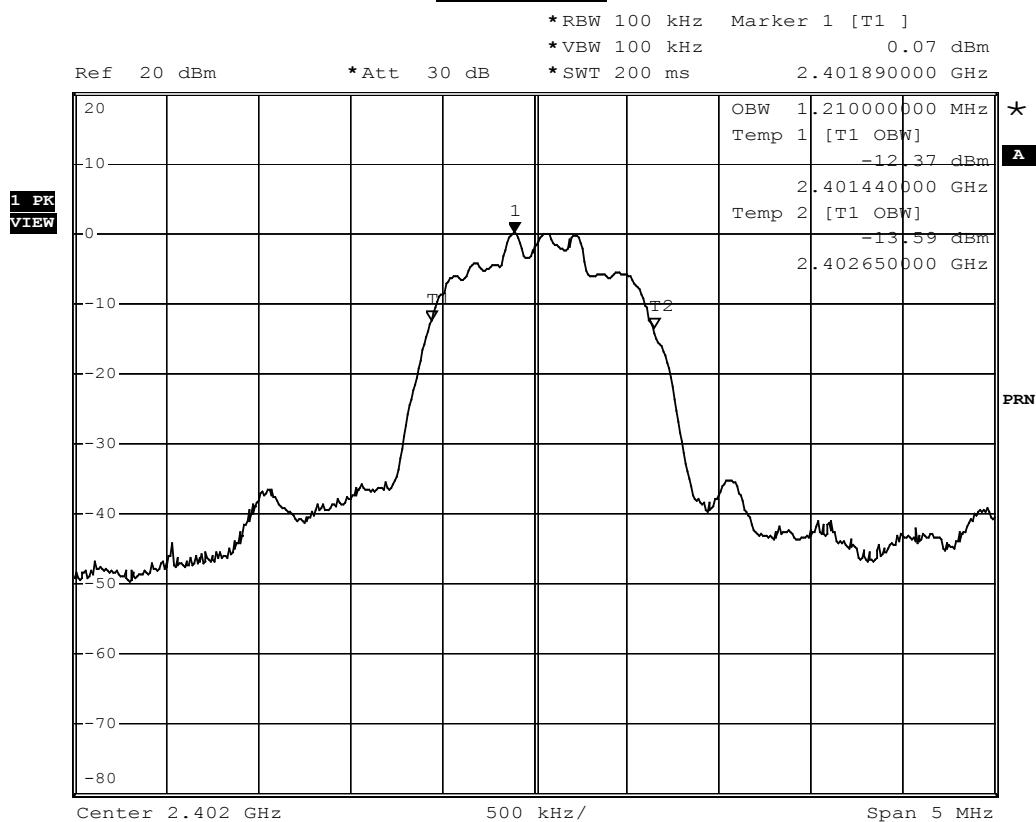
Date: 7.JAN.2008 00:52:25

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Occupied Bandwidth                                 |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

## 3M-8DPSK Modulation, PRBS Packet Type (99%)

| Channel No. | Frequency (MHz) | Measure Level (kHz) | Limit (kHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 00          | 2402.00         | 1210                | -           | Pass   |

### Channel 00



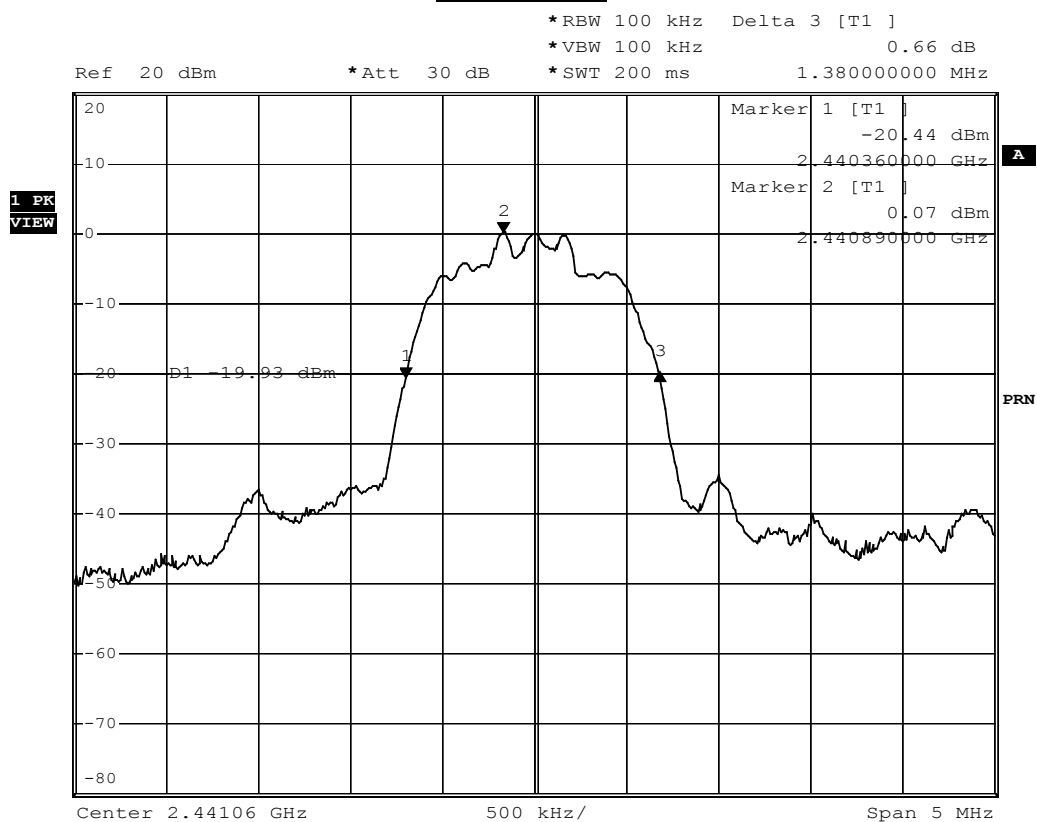
Date: 7.JAN.2008 00:34:03

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Occupied Bandwidth                                 |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

## 3M-8DPSK Modulation, PRBS Packet Type

| Channel No. | Frequency (MHz) | Measure Level (MHz) | Limit (MHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 39          | 2441.00         | 1.38                | 1           | Pass   |

### Channel 39



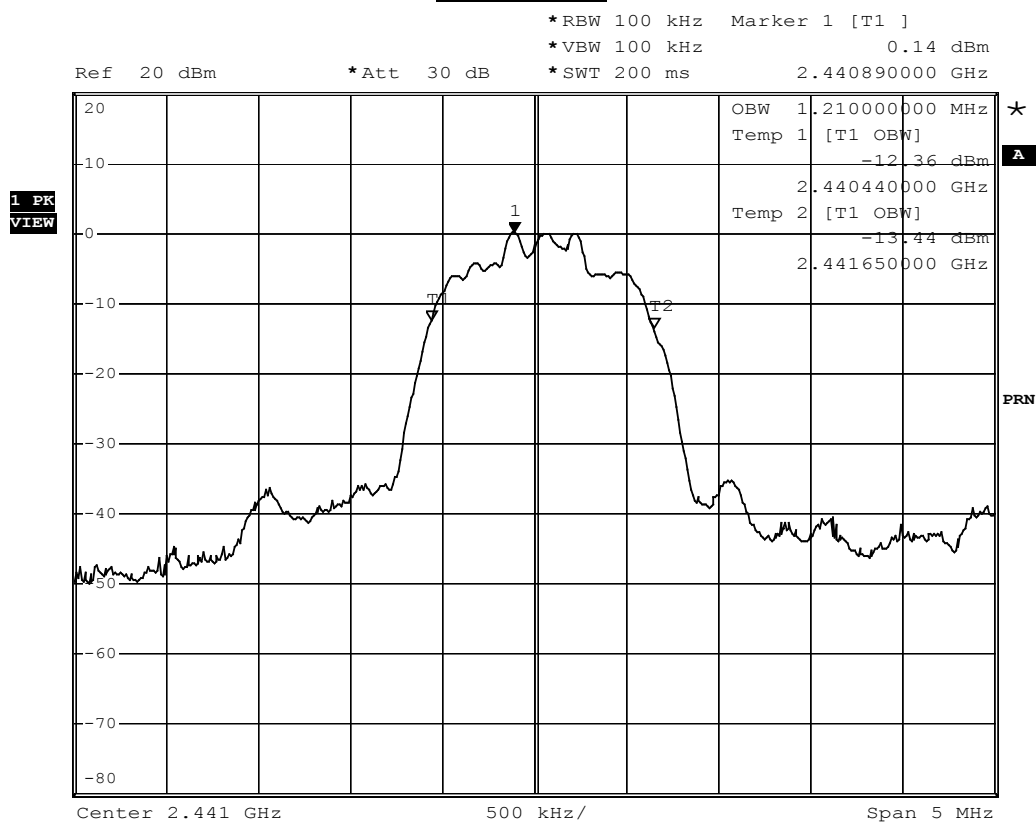
Date: 7.JAN.2008 00:55:54

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Occupied Bandwidth                                 |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

3M-8DPSK Modulation, PRBS Packet Type (99%)

| Channel No. | Frequency (MHz) | Measure Level (kHz) | Limit (kHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 39          | 2441.00         | 1210                | -           | Pass   |

## Channel 39



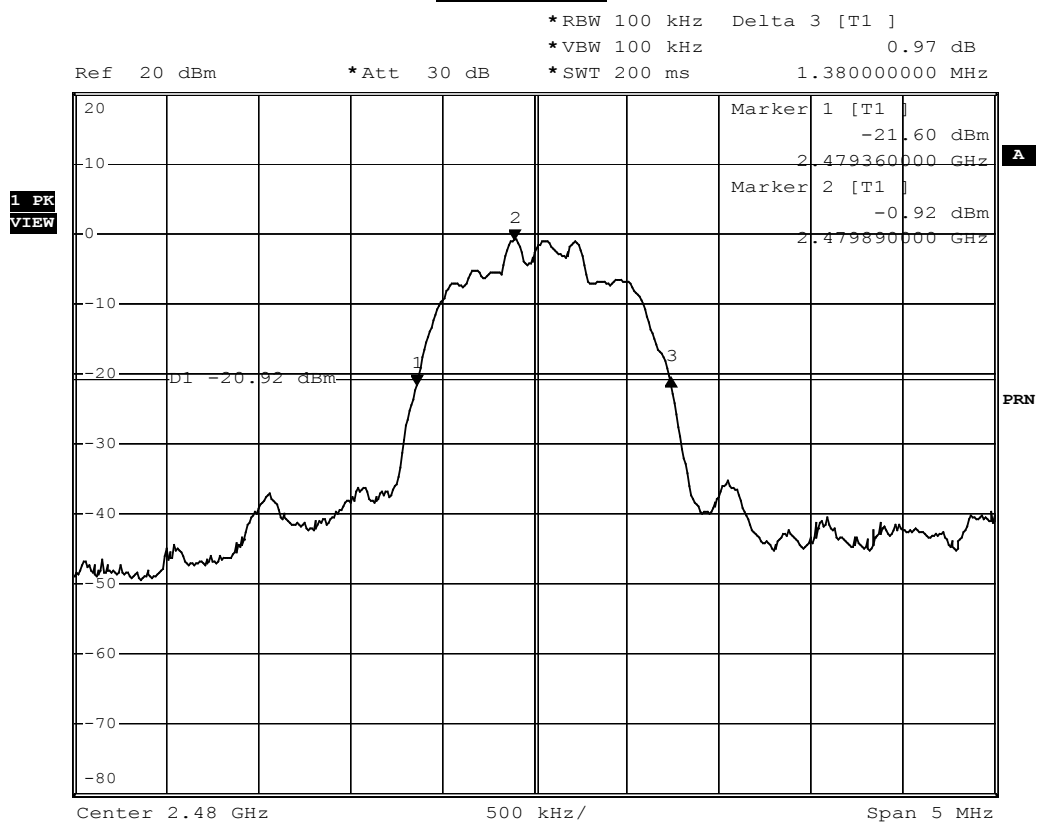
Date: 7.JAN.2008 00:36:58

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Occupied Bandwidth                                 |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

## 3M-8DPSK Modulation, PRBS Packet Type

| Channel No. | Frequency (MHz) | Measure Level (MHz) | Limit (MHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 78          | 2480.00         | 1.38                | 1           | Pass   |

### Channel 78



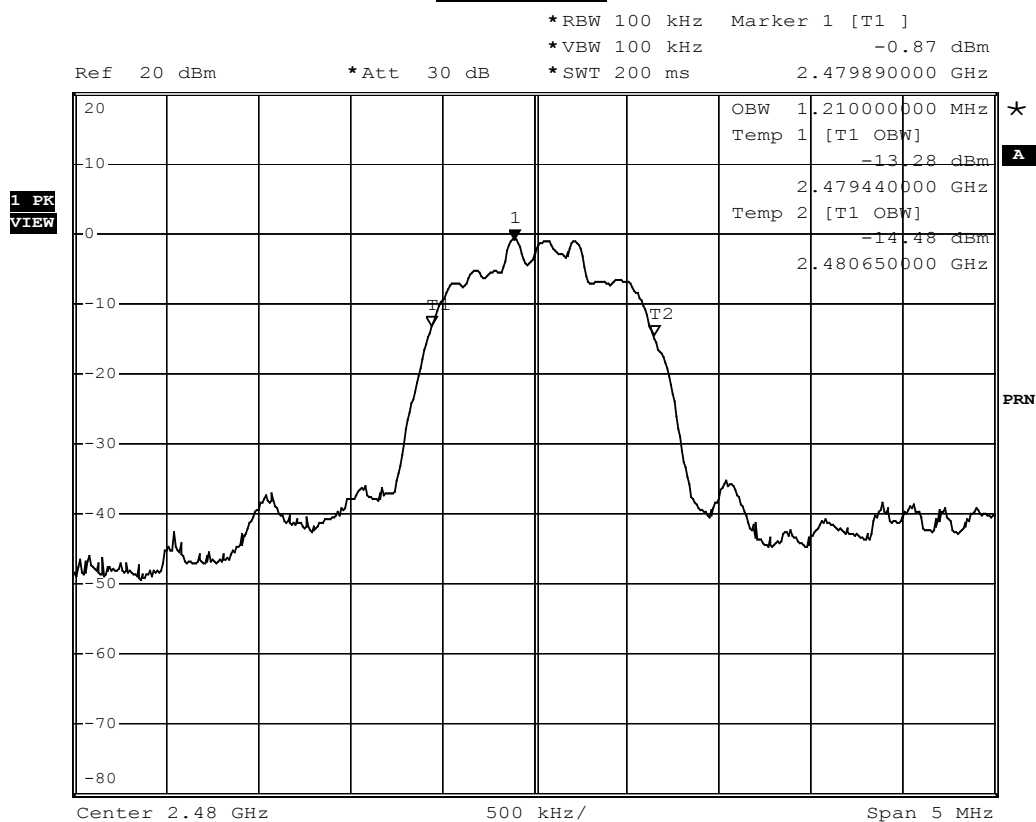
Date: 7.JAN.2008 00:59:17

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Occupied Bandwidth                                 |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/07                                         | Test Site | No.1 OATS |

3M-8DPSK Modulation, PRBS Packet Type (99%)

| Channel No. | Frequency (MHz) | Measure Level (kHz) | Limit (kHz) | Result |
|-------------|-----------------|---------------------|-------------|--------|
| 78          | 2480.00         | 1210                | -           | Pass   |

## Channel 78



Date: 7.JAN.2008 00:40:06

## 10. Dwell Time

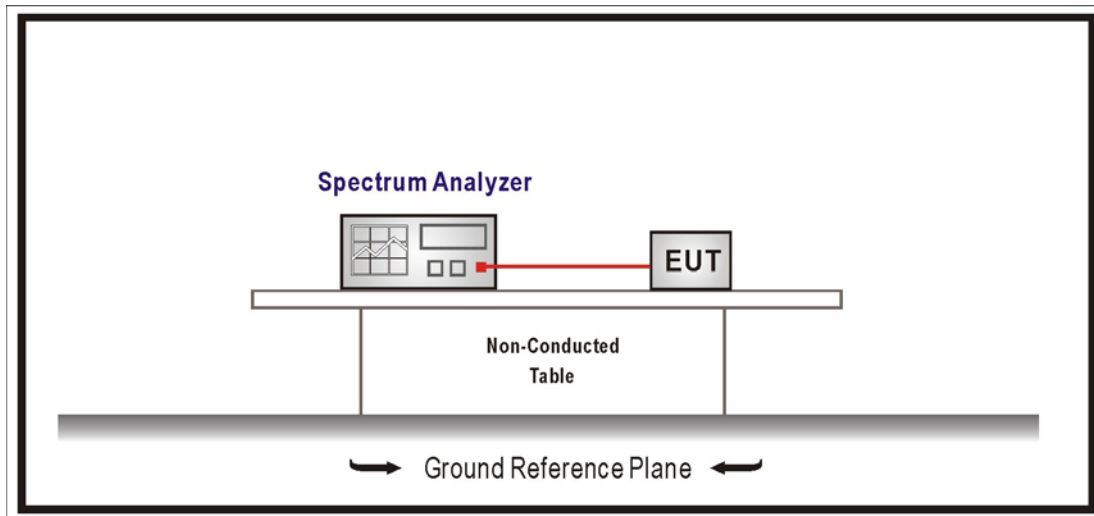
### 10.1. Test Equipment

The following test equipment are used during the test:

| Item | Equipment         | Manufacturer | Model No. / Serial No. | Last Cal.  |
|------|-------------------|--------------|------------------------|------------|
| 1    | Spectrum Analyzer | R & S        | FSP / 100561           | Mar., 2007 |
| 2    | No.1 OATS         |              |                        | Sep., 2007 |

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

### 10.2. Test Setup



### **10.3. Limits**

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. For frequency hopping systems operating in the 2400-2483.5 MHz bands. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. For frequency hopping systems operating in the 5725-5850 MHz bands. The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

### **10.4. Test Procedures**

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

Span = zero span, centered on a hopping channel

RBW = 1 MHz, VBW  $\geq$  RBW

Sweep = as necessary to capture the entire dwell time per hopping channel

Detector function = peak, Trace = max hold

### **10.5. Test Specification**

According to FCC Part 15 Subpart C Paragraph 15.247: 2006

## 10.6. Test Result

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Dwell Time                                         |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/06                                         | Test Site | No.1 OATS |

Occupancy Time of Frequency Hopping System-DH 1

A) 2402MHz Test Time Period:  $0.4 \times 79 = 31.6\text{sec}$  , Hopping Times Within 1sec:  $16/20\text{msec} = 800 / \text{sec}$

The Maximum Occupancy Time Within 31.6sec:  $0.0004 \times (800/79) \times 31.6 = 0.128\text{sec}$  .

B) 2441MHz Test Time Period:  $0.4 \times 79 = 31.6\text{sec}$  , Hopping Times Within 1sec:  $16/20\text{msec} = 800 / \text{sec}$

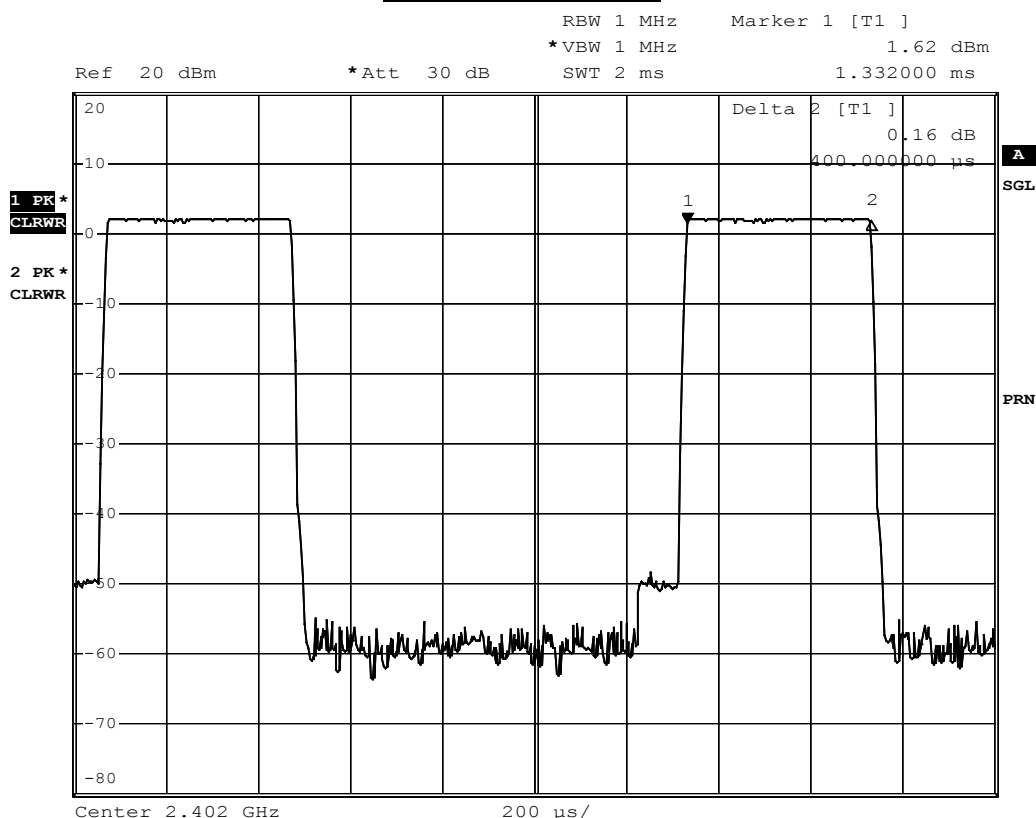
The Maximum Occupancy Time Within 31.6sec:  $0.0004 \times (800/79) \times 31.6 = 0.128\text{sec}$  .

C) 2480MHz Test Time Period:  $0.4 \times 79 = 31.6\text{sec}$  , Hopping Times Within 1sec:  $16/20\text{msec} = 800 / \text{sec}$

The Maximum Occupancy Time Within 31.6sec:  $0.0004 \times (800/79) \times 31.6 = 0.128\text{sec}$  .

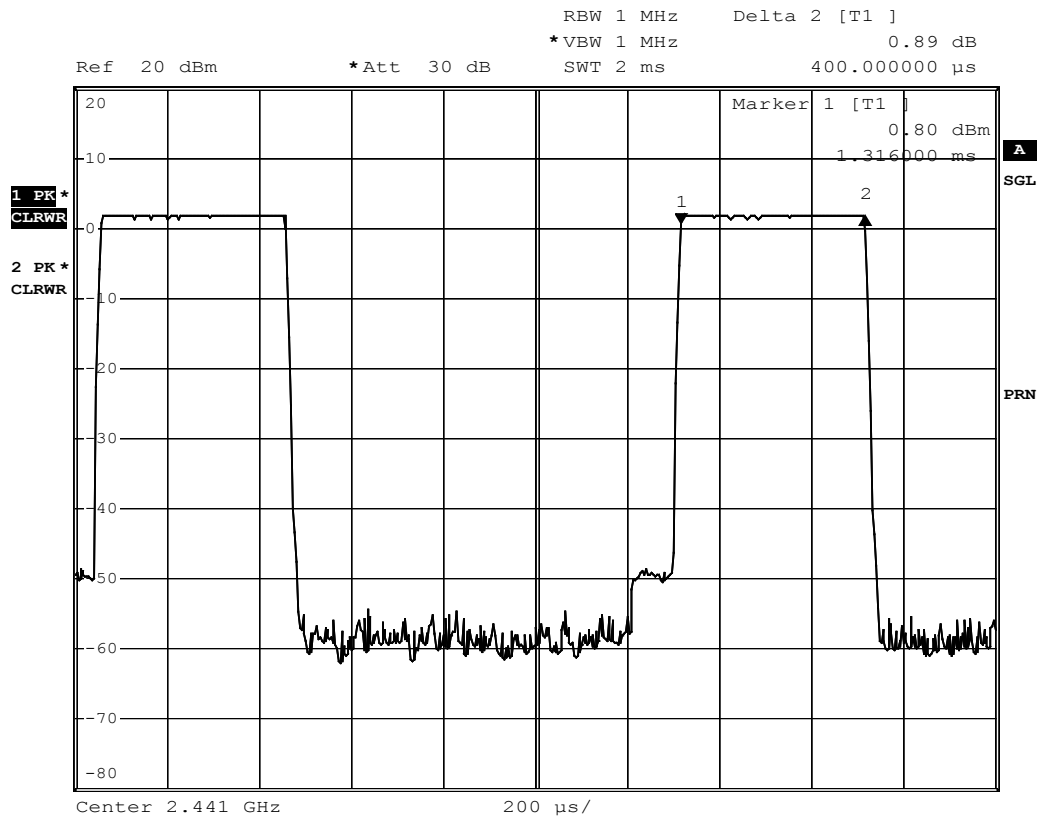
Test Result: The Average Occupancy Time of Each Highest , Middle and Lowest Channel Is Less Than 0.4sec , And Corresponds to The Standard .

### Hop rate-2402MHz



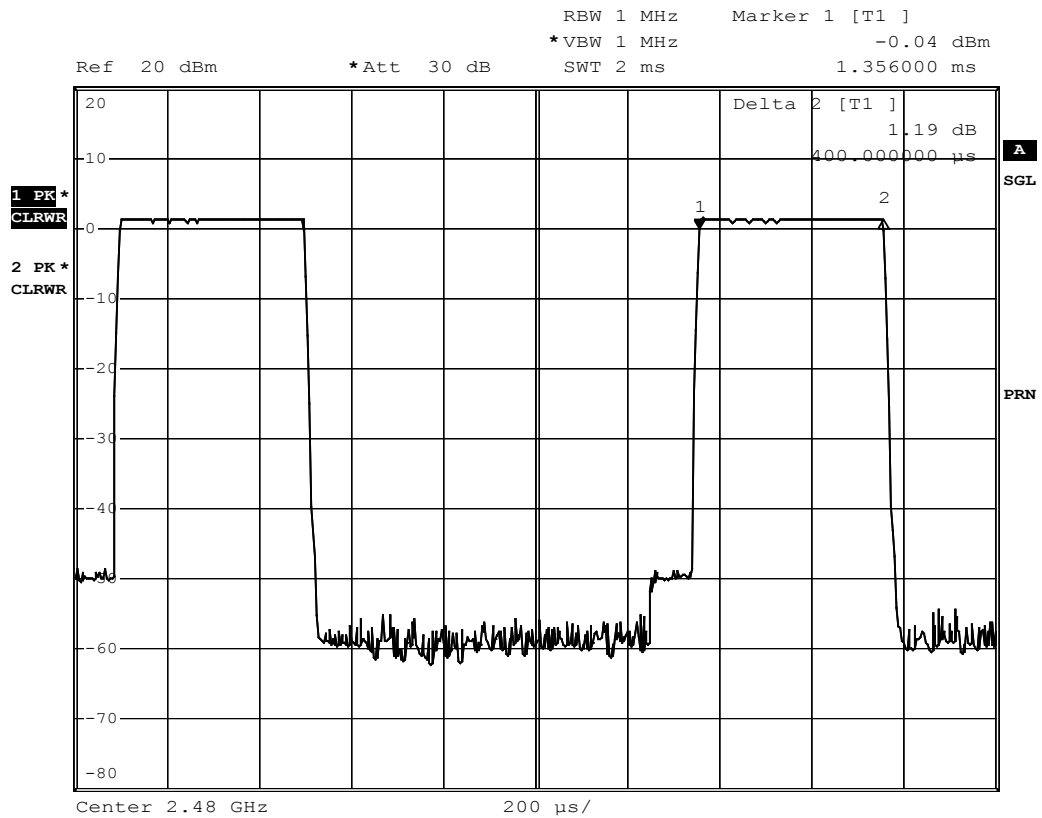
Date: 6.JAN.2008 05:55:47

# Hop rate-2441MHz



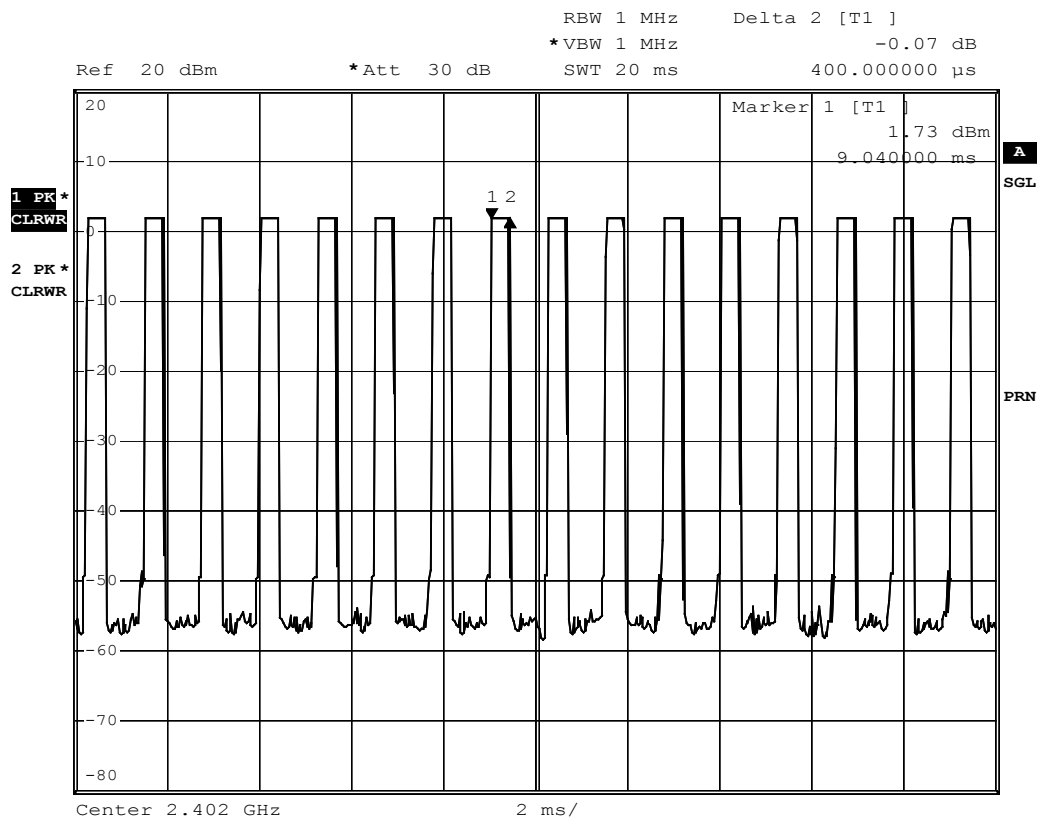
Date: 6.JAN.2008 06:09:04

# Hop rate-2480MHz



Date: 6.JAN.2008 06:12:55

### Time slot length



Date: 6.JAN.2008 05:46:44

Note: Dwell time=time slot length \* hop rate / number of hopping channels \* period

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Dwell Time                                         |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/06                                         | Test Site | No.1 OATS |

#### Occupancy Time of Frequency Hopping System-DH 3

A) 2402MHz Test Time Period:  $0.4 \times 79 = 31.6\text{sec}$  , Hopping Times Within 1sec:  $8/20\text{msec} = 400/\text{sec}$

The Maximum Occupancy Time Within 31.6sec:  $0.00165 \times (400/79) \times 31.6 = 0.264\text{sec}$  .

B) 2441MHz Test Time Period:  $0.4 \times 79 = 31.6\text{sec}$  , Hopping Times Within 1sec:  $8/20\text{msec} = 400/\text{sec}$

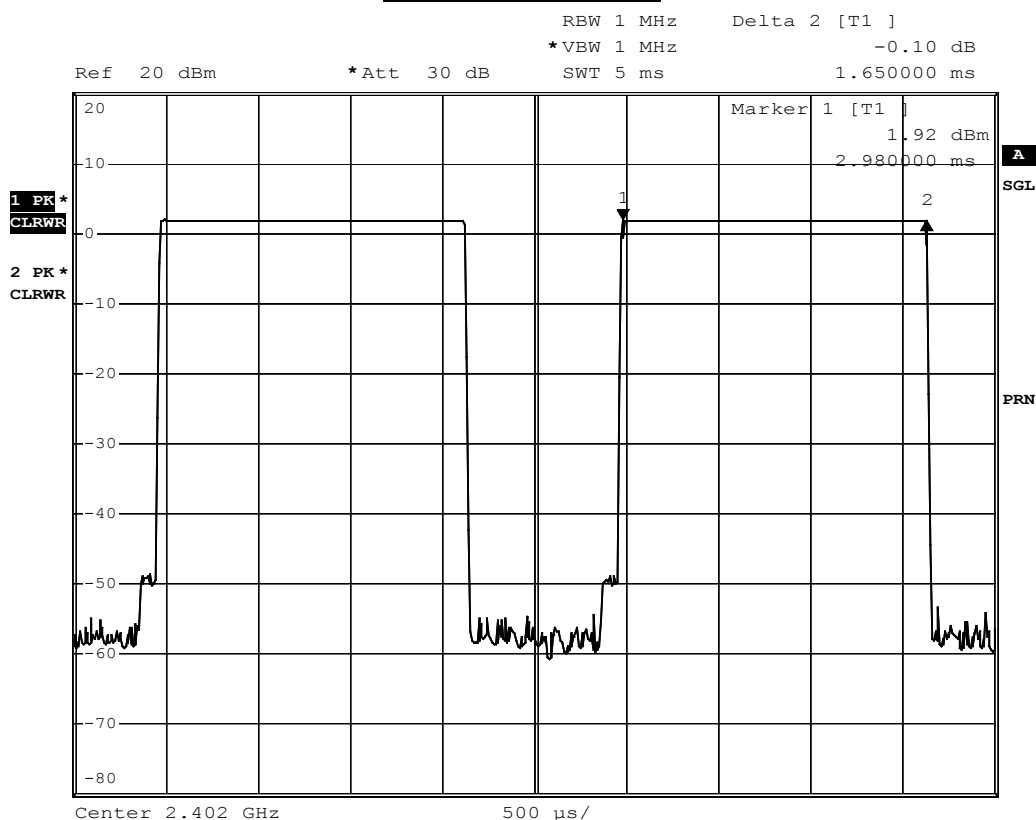
The Maximum Occupancy Time Within 31.6sec:  $0.00166 \times (400/79) \times 31.6 = 0.2656\text{sec}$  .

C) 2480MHz Test Time Period:  $0.4 \times 79 = 31.6\text{sec}$  , Hopping Times Within 1sec:  $8/20\text{msec} = 400/\text{sec}$

The Maximum Occupancy Time Within 31.6sec:  $0.00165 \times (400/79) \times 31.6 = 0.264\text{sec}$  .

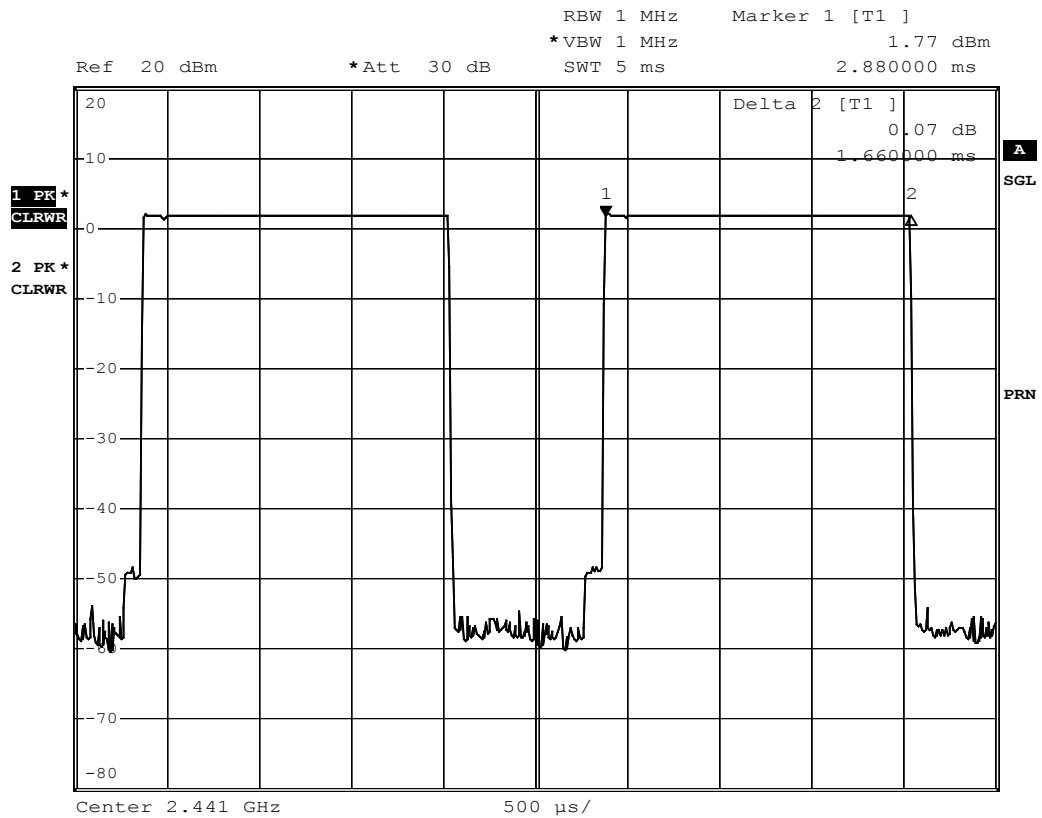
Test Result: The Average Occupancy Time of Each Highest , Middle and Lowest Channel Is Less Than 0.4sec , And Corresponds to The Standard .

#### Hop rate-2402MHz



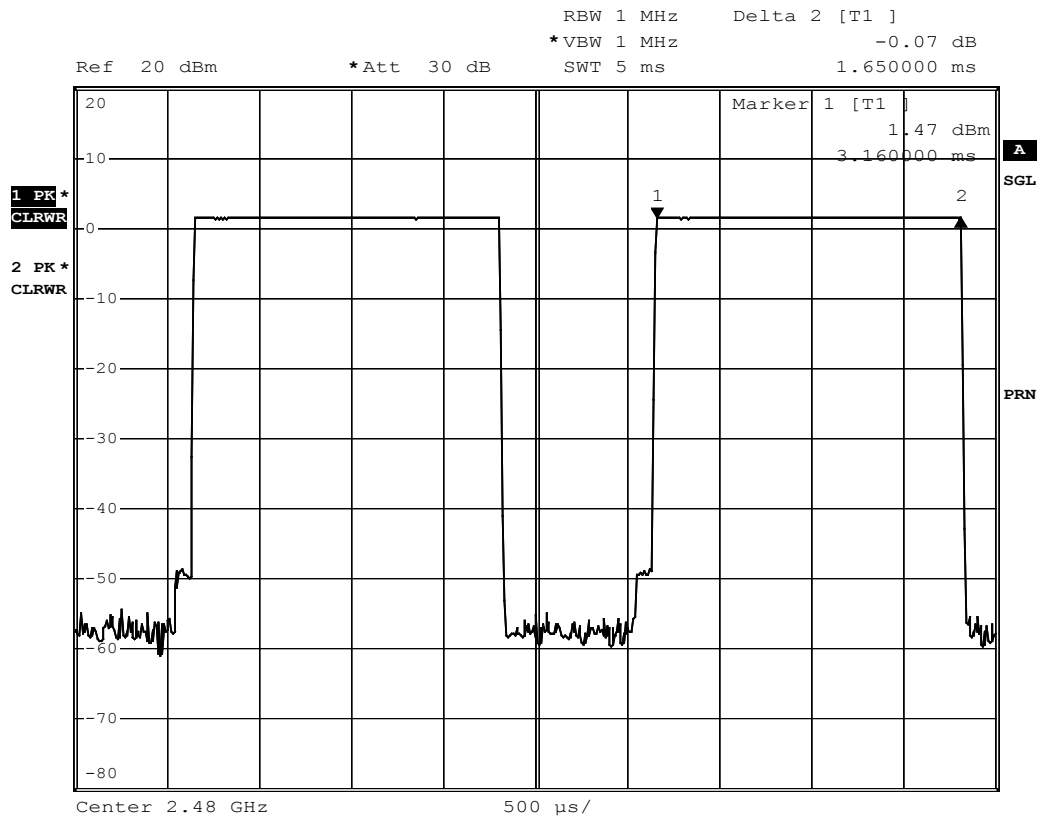
Date: 6.JAN.2008 05:53:50

# Hop rate-2441MHz



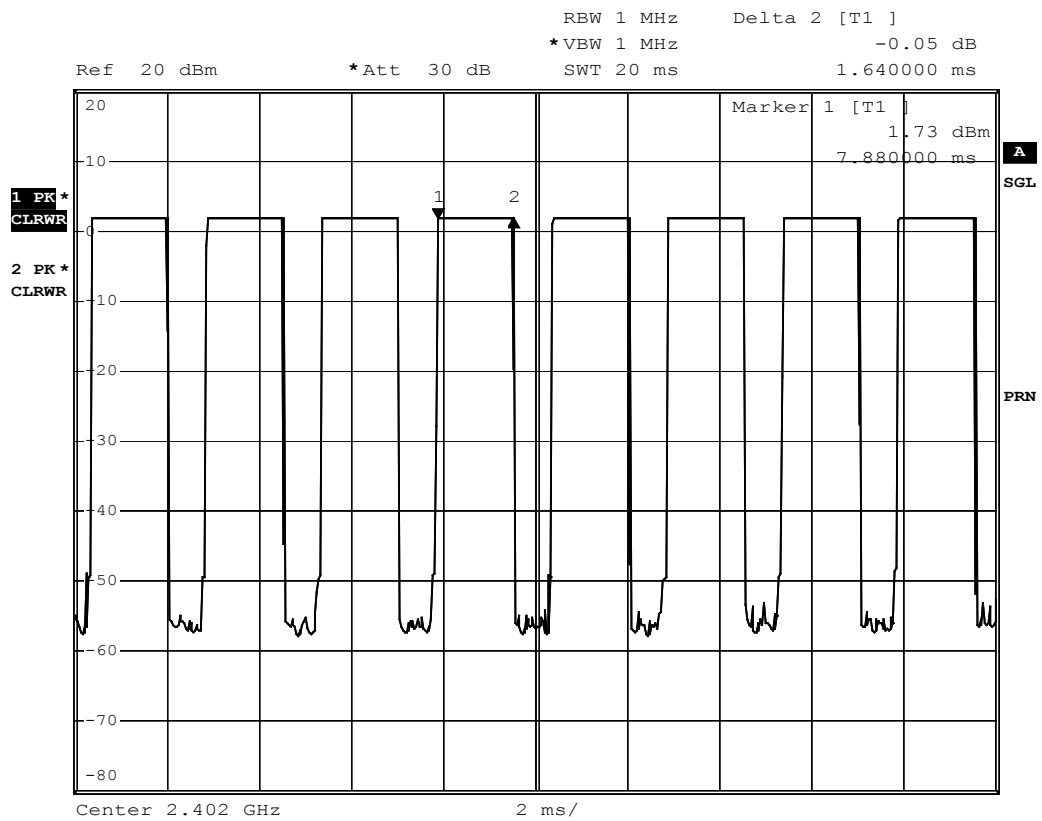
Date: 6.JAN.2008 06:07:37

# Hop rate-2480MHz



Date: 6.JAN.2008 06:14:21

### Time slot length



Date: 6.JAN.2008 05:47:52

Note: Dwell time=time slot length \* hop rate / number of hopping channels \* period

|              |                                                    |           |           |
|--------------|----------------------------------------------------|-----------|-----------|
| Product      | IEEE 802.11b/g Bluetooth 2.0+ EDR and GPS MiniCard |           |           |
| Test Item    | Dwell Time                                         |           |           |
| Test Mode    | Mode 1: Transmit                                   |           |           |
| Date of Test | 2008/01/06                                         | Test Site | No.1 OATS |

Occupancy Time of Frequency Hopping System-DH 5

A) 2402MHz Test Time Period:  $0.4 \times 79 = 31.6\text{sec}$  , Hopping Times Within 1sec:  $5/20\text{msec} = 250 / \text{sec}$

The Maximum Occupancy Time Within 31.6sec:  $0.00292 \times (250/79) \times 31.6 = 0.292\text{sec}$  .

B) 2441MHz Test Time Period:  $0.4 \times 79 = 31.6\text{sec}$  , Hopping Times Within 1sec:  $5/20\text{msec} = 250 / \text{sec}$

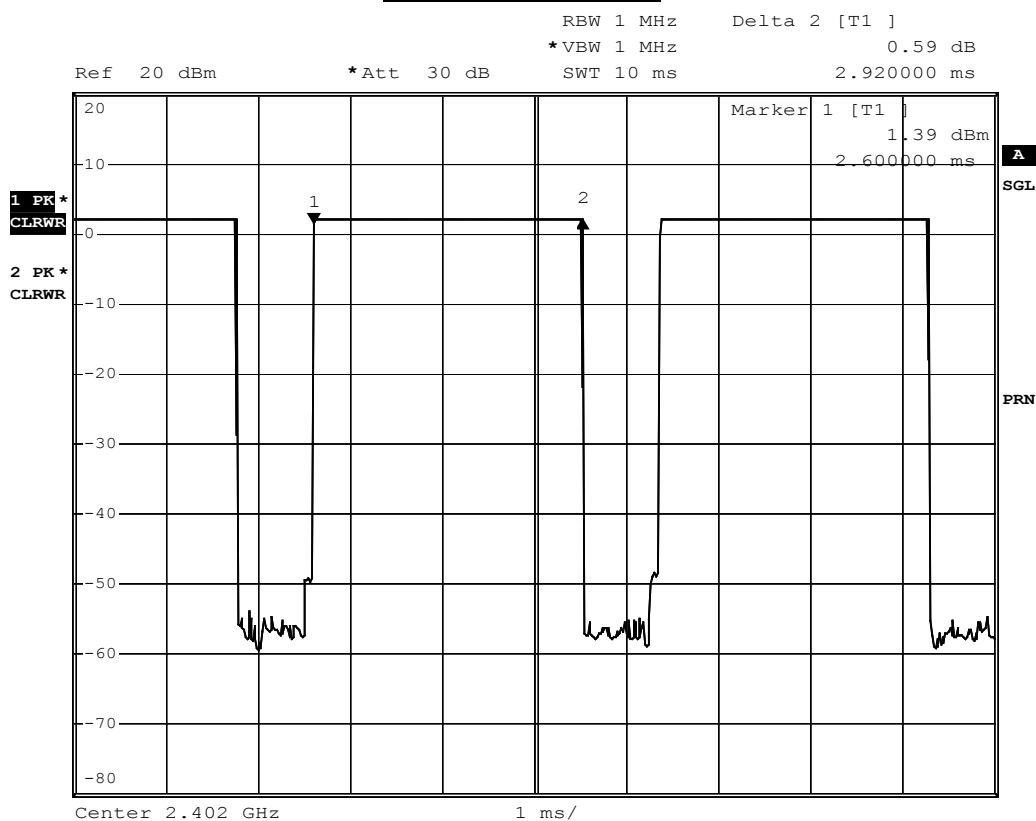
The Maximum Occupancy Time Within 31.6sec:  $0.00292 \times (250/79) \times 31.6 = 0.292\text{sec}$  .

C) 2480MHz Test Time Period:  $0.4 \times 79 = 31.6\text{sec}$  , Hopping Times Within 1sec:  $5/20\text{msec} = 250 / \text{sec}$

The Maximum Occupancy Time Within 31.6sec:  $0.0029 \times (250/79) \times 31.6 = 0.29\text{sec}$  .

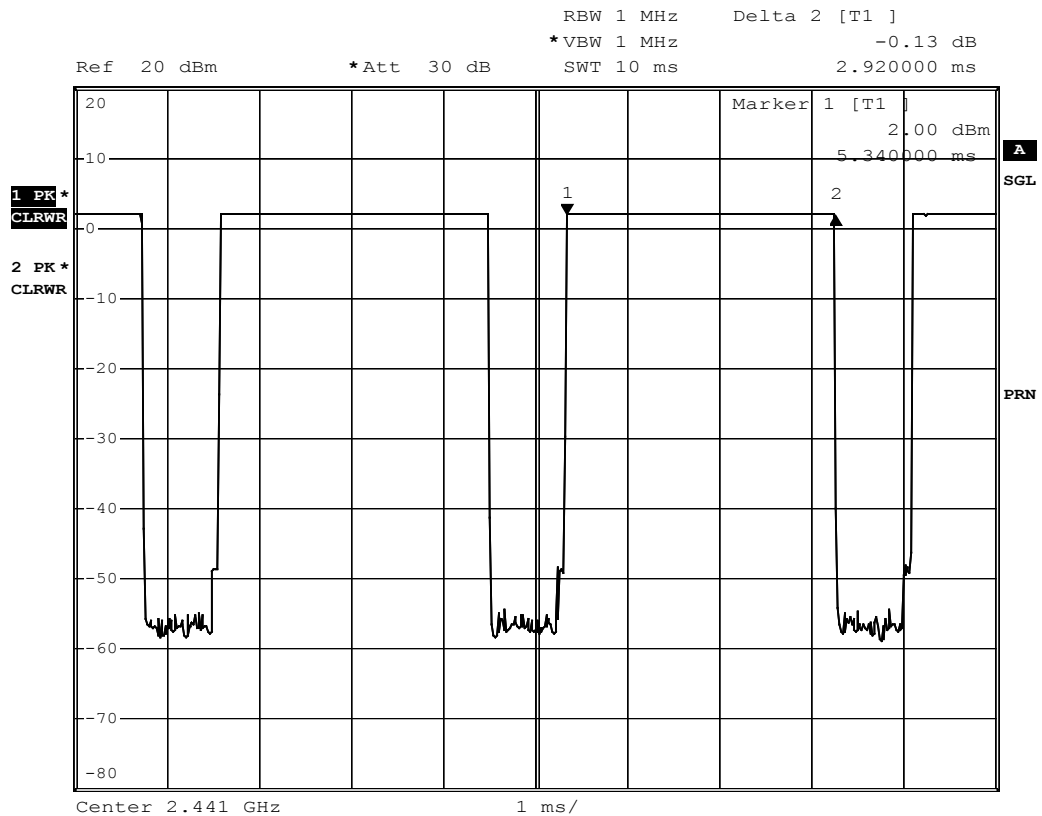
Test Result: The Average Occupancy Time of Each Highest , Middle and Lowest Channel Is Less Than 0.4sec , And Corresponds to The Standard .

### Hop rate-2402MHz



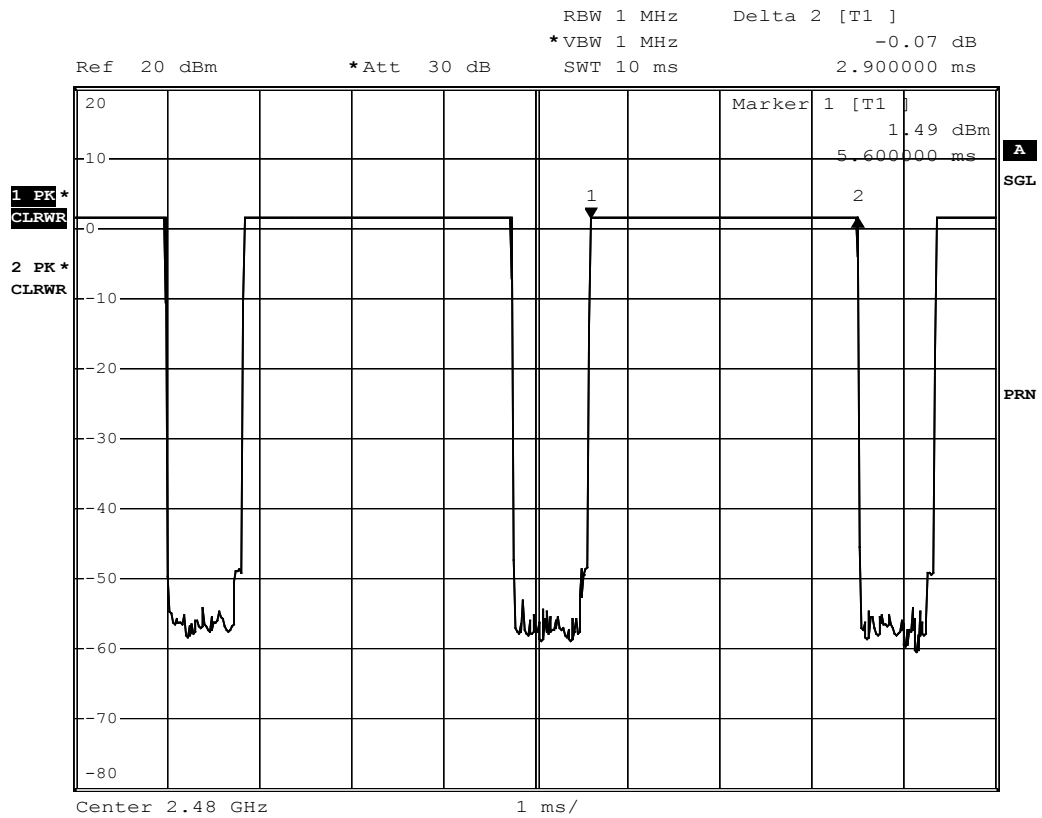
Date: 6.JAN.2008 05:51:40

# Hop rate-2441MHz



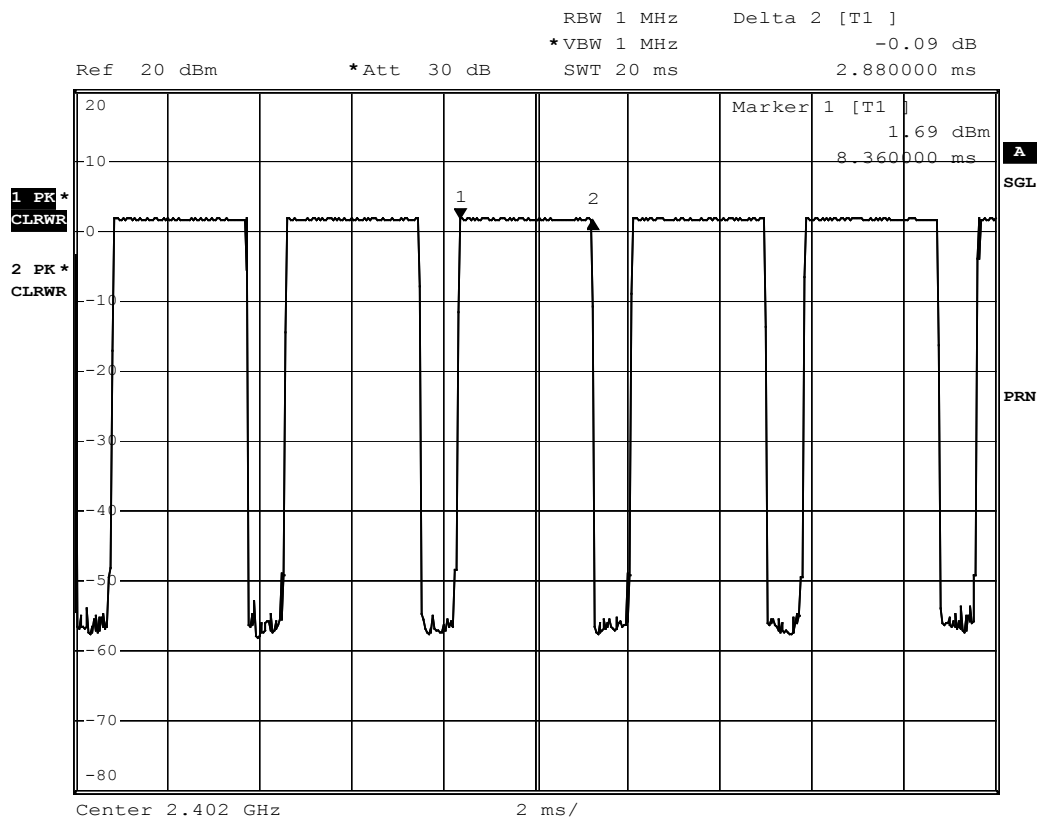
Date: 6.JAN.2008 06:06:01

# Hop rate-2480MHz



Date: 6.JAN.2008 06:16:10

### Time slot length



Date: 6.JAN.2008 05:49:10

Note: Dwell time = time slot length \* hop rate / number of hopping channels \* period