



FCC Test Report

According to

47 CFR Part 15 Subpart C

Equipment : EQ5, Ultra-Portable Bluetooth Music Speaker(Bluetooth Class 2)

Trade Name : Motorola

Model No. : SYN2379A

FCC ID : IHDT6JK1

Filing Type : Certification

Applicant : MOTOROLA, Inc.

600 N. U.S. Highway 45, Libertyville, IL 60048 U.S.A.

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- The data shown in this test report were carried out on Feb. 16, 2008 at **Sporton International Inc. LAB.**
- Report No.: FR820209, Report Version: Rev.01

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1. General Description of Equipment under Test

1.1 Applicant

MOTOROLA, Inc.
600 N. U.S. Highway 45, Libertyville, IL 60048 U.S.A.

1.2 Manufacturer

MERRY ELECTRONIC CO., LTD.
50 Mei Bao Road, Dalang Industrial Park, Dalang, BaoAn, Shen zhen, China

1.3 Basic Description of Equipment under Test

| | | |
|-------------------|---------------------------|--|
| Equipment | | EQ5, Ultra-Portable Bluetooth Music Speaker(Bluetooth Class 2) |
| Trade Name | | Motorola |
| Model Name | | SYN2379A |
| FCC ID | | IHDT6JK1 |
| AC Adapter | Brand Name | MOTOROLA |
| | Model Name | FMP5202A |
| | Power Rating | I/P : 100-240Vac, 50-60Hz, 0.15A; O/P : 5Vdc, 850mA |
| | AC Power Cord Type | 1.91 meter shielded cable without ferrite core |
| Battery | Brand Name | MOTOROLA |
| | Model Name | MOTBAT-2 |
| | Power Rating | 3.7Vdc, 900mAh |
| | Type | Li-ion |
| Audio Line | Brand Name | WECO |
| | Signal Line Type | 1.845 meter shielded cable without ferrite core |

Remark: Above EUT's information was declared by manufacturer. Please refer to the specifications of manufacturer or User's Manual for more detailed features description.



1.4 Feature of Equipment under Test

| Product Feature & Specification | | | |
|-----------------------------------|--|--|---------------|
| DUT Type | EQ5, Ultra-Portable Bluetooth Music Speaker(Bluetooth Class 2) | | |
| Trade Name | Motorola | | |
| Model Name | SYN2379A | | |
| FCC ID | IHDT6JK1 | | |
| Tx Frequency | Bluetooth : 2400 MHz ~ 2483.5 MHz | | |
| Rx Frequency | Bluetooth : 2400 MHz ~ 2483.5 MHz | | |
| Number of Channels | Bluetooth : 79 | | |
| Carrier Frequency of Each Channel | Bluetooth : 2402+n*1 MHz; n=0~78 | | |
| Channel Spacing | Bluetooth : 1 MHz | | |
| Maximum Output Power to Antenna | Bluetooth : 2.41 dBm (1Mbps) Bluetooth EDR : 2.91 dBm (2Mbps) / 2.86 dBm (3Mbps) | | |
| Type of Antenna Connector | Bluetooth : N/A | | |
| Antenna Type | Bluetooth : PIFA Antenna | | |
| Antenna Gain | Bluetooth : -3 dBi | | |
| Type of Modulation | Bluetooth (1Mbps) : GFSK Bluetooth EDR (2Mbps) : $\pi/4$ -DQPSK Bluetooth EDR (3Mbps) : 8-DPSK | | |
| Function Type | Transmitter | | Transceiver V |
| DUT Stage | Production Unit | | |

2. Test Configuration of Equipment under Test

2.1 Test Manner

- a. The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.
- b. The data rate, 2Mbps, was chosen to being tested, due to the highest RF output power.

| Channel | Frequency | Data Rate / Modulation | | |
|---------|-----------|------------------------|----------|----------|
| | | GFSK | /4-DQPSK | 8-DPSK |
| | | 1Mbps | 2Mbps | 3Mbps |
| Ch00 | 2400MHz | 1.25 dBm | 1.49 dBm | 1.41 dBm |
| Ch39 | 2441MHz | 2.41 dBm | 2.91 dBm | 2.86 dBm |
| Ch78 | 2480MHz | 1.99 dBm | 2.39 dBm | 2.48 dBm |

Bluetooth uses frequency hopping spread spectrum (FHSS) operation which also facilitates Bluetooth multiple access and coexistence among other types of wireless systems. The basic frequency-hopping pattern is a pseudo-random ordering of 79 channel frequencies in the ISM band and the hopping rate is nominally 1600 hops per second. The EDR modulation format uses one of two types of DPSK (Pi/4-DQPSK or 8-DPSK) in the payload section of the packet. As shown in figure, the EDR packet begins using GFSK modulation during the access code and header portions of the packet but changes to DPSK modulation after the guard time. Changing to a DPSK format allows increased data rates of 2 Mb/s or 3 Mb/s.

- c. The EUT is programmed to transmit signal continuously for all testings.
- d. Frequency range investigated: conduction 150 kHz to 30 MHz, radiation 30 MHz to 25000MHz.

2.2 Test Mode

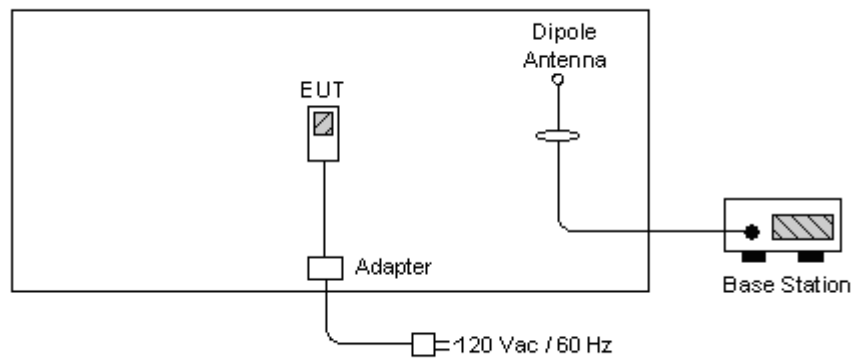
| Application | | | |
|--------------------|---------------------------|---|-----------------------|
| | BT Tx | BT Tx(EDR 2Mbps) | BT Tx(EDR 3Mbps) |
| Radiated Emission | Mode 1: CH78_2480 MHz | Mode 2: CH00_2402 MHz Mode 3: CH39_2441 MHz Mode 4: CH78_2480 MHz | Mode 5: CH78_2480 MHz |
| Conducted Emission | Mode 1: BT Link + Adapter | | |

2.3 Ancillary Equipment List

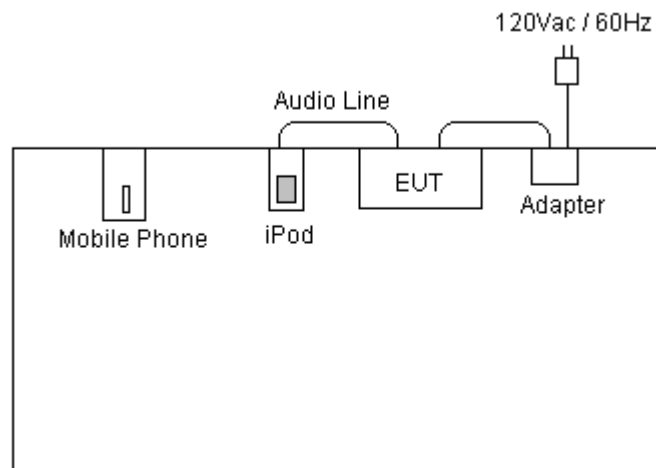
| Item | Equipment | Trade Name | Model Name | FCC ID | Data Cable / Power Cord |
|------|-----------------|---------------|------------|-------------|-------------------------|
| 1. | BT Base Station | Anritus | 8852A | N/A | Unshielded, 1.8 m |
| 2. | iPod | Apple | A1199 | DoC | Shielded, 1.2 m |
| 3. | Mobile Phone | Sony Ericsson | W660i | PY7A3022071 | N/A |

2.4 Connection Diagram of Test System

<Radiated Emission>



<Conducted Emission>





3. RF Utility

The EUT is in BT Link mode with mobile phone for conducted emission or in BT continuous Tx Mode controlled by base station simulator for radiation emission.



4. General Information of Test

Test Site Location : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park,
Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
TEL : 886-3-327-3456
FAX : 886-3-328-4978

Test Site No : CO01-HY, 03CH06-HY

4.1 Test Voltage

AC 120V / 60Hz

4.2 Standard for Methods of Measurement

ANSI C63.4-2003

4.3 Test Compliance

47 CFR Part 15 Subpart C

4.4 Frequency Range

- a. Conduction: from 150 kHz to 30 MHz
- b. Radiation: from 30 MHz to 25000 MHz

4.5 Test Distance

The test distance of radiated emission from antenna to EUT is 3 m.



5. Test Data and Test Result

5.1 List of Measurements and Examinations

The Emission Mode: Bluetooth

| FCC Rule | Description of Test | Result |
|------------------------|---|--------|
| 15.207 | Conducted Emission | Pass |
| 15.247(a)(1)(iii) | Hopping Channel Bandwidth | Pass |
| 15.247(a)(1) | Hopping Channel Separation | Pass |
| 15.247(a)(1)(iii) | Number of Hopping Frequency | Pass |
| 15.247(a)(1)(iii) | Dwell Time of Each Frequency | Pass |
| 15.247(b)(1) | Output Power | Pass |
| 15.247(d) | 100 KHz Bandwidth of Frequency Band Edges | Pass |
| 15.209(a) 15.247(d) | Radiated Emission | Pass |
| 15.203 15.247(b)(4) | Antenna Requirement | Pass |



5.2 Band Edges Measurement

5.2.1 Measuring Instruments

As described in chapter 6 of this test report.

5.2.2 Test Procedure

1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100 kHz bandwidth from band edge.
3. The band edges was measured and recorded.

5.2.3 Test Result

- Application Type : Bluetooth
- Temperature : 21~24
- Relative Humidity : 50~55%
- Test Enginner : Sun

- Test Result in BT lower band : PASS
- Test Result in BT higher band : PASS
- Test Result in BT EDR(2Mbps) lower band : PASS
- Test Result in BT EDR(2Mbps) higher band : PASS
- Test Result in BT EDR(3Mbps) lower band : PASS
- Test Result in BT EDR(3Mbps) higher band : PASS

5.2.4 Note on Band Edge Emission

> BT(1Mbps)

CH78 (Horizontal)

| Frequency (MHz) | Level (dBuV/m) | Over Limit (dB) | Limit Line (dBuV/m) | Read Level (dBuV) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Remark |
|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 2483.50 | 61.13 | -12.87 | 74.00 | 60.80 | 31.98 | 4.05 | 35.70 | 100 | 0 | Peak |
| 2483.50 | 49.57 | -4.43 | 54.00 | 49.24 | 31.98 | 4.05 | 35.70 | 100 | 291 | Average |

CH78 (Vertical)

| Frequency (MHz) | Level (dBuV/m) | Over Limit (dB) | Limit Line (dBuV/m) | Read Level (dBuV) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Remark |
|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 2483.50 | 63.03 | -10.97 | 74.00 | 62.70 | 31.98 | 4.05 | 35.70 | 100 | 0 | Peak |
| 2483.50 | 46.68 | -7.32 | 54.00 | 46.35 | 31.98 | 4.05 | 35.70 | 127 | 237 | Average |



➤ BT EDR(2Mbps)

CH00 (Horizontal)

| Frequency (MHz) | Level (dBuV/m) | Over Limit (dB) | Limit Line (dBuV/m) | Read Level (dBuV) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Remark |
|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 2388.85 | 46.35 | -27.65 | 74.00 | 46.25 | 31.86 | 3.92 | 35.68 | 100 | 0 | Peak |
| 2388.85 | 32.56 | -21.45 | 54.00 | 32.45 | 31.86 | 3.92 | 35.68 | 100 | 127 | Average |

CH00 (Vertical)

| Frequency (MHz) | Level (dBuV/m) | Over Limit (dB) | Limit Line (dBuV/m) | Read Level (dBuV) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Remark |
|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 2349.14 | 47.30 | -26.70 | 74.00 | 47.33 | 31.78 | 3.86 | 35.67 | 100 | 0 | Peak |
| 2349.14 | 32.03 | -21.97 | 54.00 | 32.06 | 31.78 | 3.86 | 35.67 | 100 | 240 | Average |

CH78 (Horizontal)

| Frequency (MHz) | Level (dBuV/m) | Over Limit (dB) | Limit Line (dBuV/m) | Read Level (dBuV) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Remark |
|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 2483.50 | 59.27 | -14.73 | 74.00 | 58.94 | 31.98 | 4.05 | 35.70 | 100 | 0 | Peak |
| 2483.50 | 47.31 | -6.69 | 54.00 | 46.98 | 31.98 | 4.05 | 35.70 | 100 | 104 | Average |

CH78 (Vertical)

| Frequency (MHz) | Level (dBuV/m) | Over Limit (dB) | Limit Line (dBuV/m) | Read Level (dBuV) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Remark |
|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 2483.50 | 64.58 | -9.42 | 74.00 | 64.25 | 31.98 | 4.05 | 35.70 | 100 | 0 | Peak |
| 2483.50 | 44.38 | -9.62 | 54.00 | 44.05 | 31.98 | 4.05 | 35.70 | 100 | 238 | Average |

➤ BT EDR(3Mbps)

CH78 (Horizontal)

| Frequency (MHz) | Level (dBuV/m) | Over Limit (dB) | Limit Line (dBuV/m) | Read Level (dBuV) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Remark |
|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 2483.50 | 63.35 | -10.65 | 74.00 | 63.02 | 31.98 | 4.05 | 35.70 | 100 | 0 | Peak |
| 2483.50 | 50.36 | -3.64 | 54.00 | 50.03 | 31.98 | 4.05 | 35.70 | 107 | 165 | Average |

CH78 (Vertical)

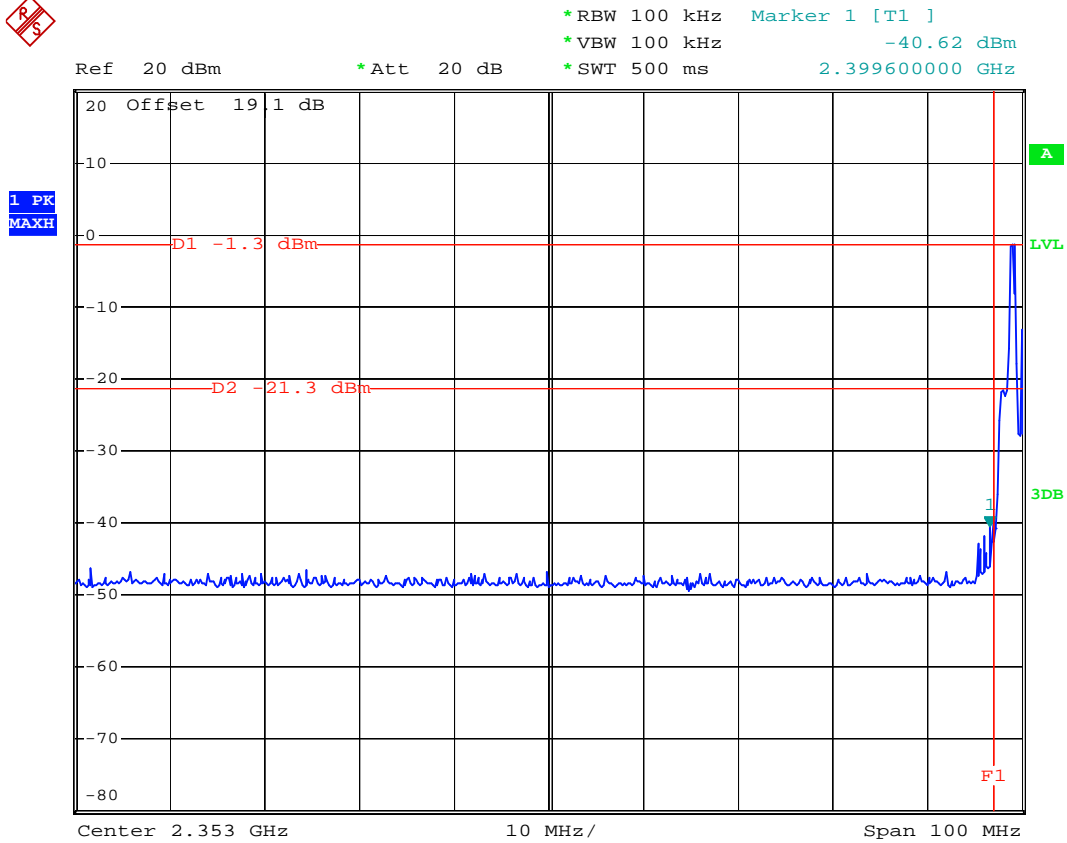
| Frequency (MHz) | Level (dBuV/m) | Over Limit (dB) | Limit Line (dBuV/m) | Read Level (dBuV) | Antenna Factor (dB) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Remark |
|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-----------------------------|-------------------------|----------------------------|----------------------|-------------------------|---------|
| 2483.50 | 64.23 | -9.77 | 74.00 | 63.90 | 31.98 | 4.05 | 35.70 | 100 | 0 | Peak |
| 2483.50 | 45.35 | -8.65 | 54.00 | 45.02 | 31.98 | 4.05 | 35.70 | 129 | 239 | Average |



5.2.5 20dB Band Edge

BT

CH00



Date: 13.FEB.2008 08:51:49



CH78

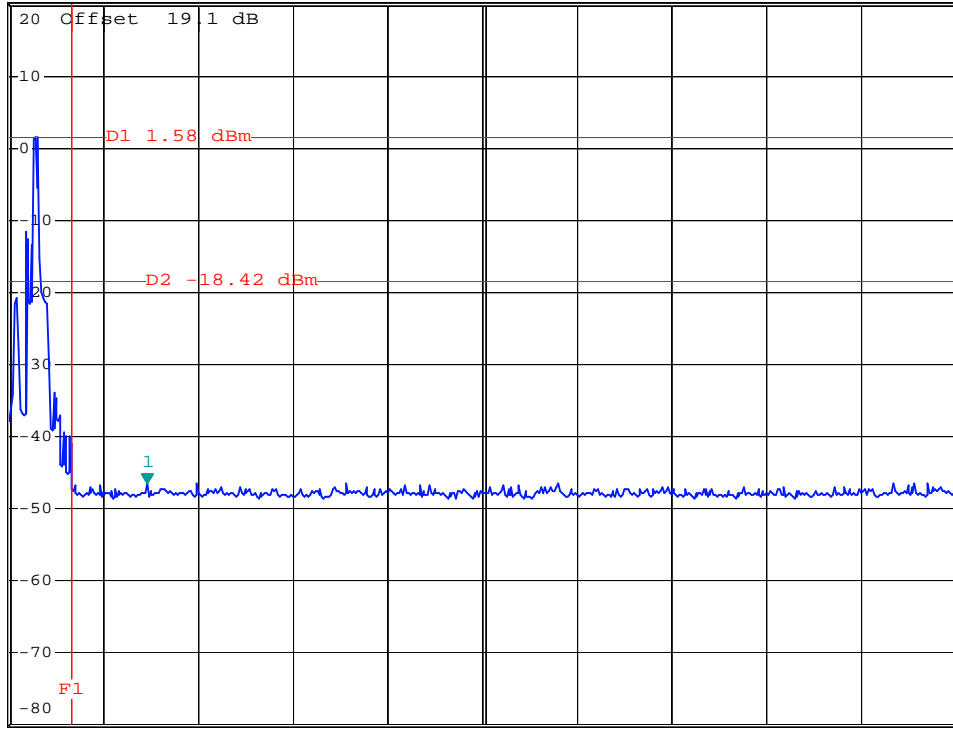


*RBW 100 kHz Marker 1 [T1]
*VBW 100 kHz -46.48 dBm
*SWT 500 ms 2.491600000 GHz

Ref 20 dBm

*Att 20 dB

1 PK
MAXH



Center 2.527 GHz 10 MHz/ Span 100 MHz

Date: 13.FEB.2008 08:57:44

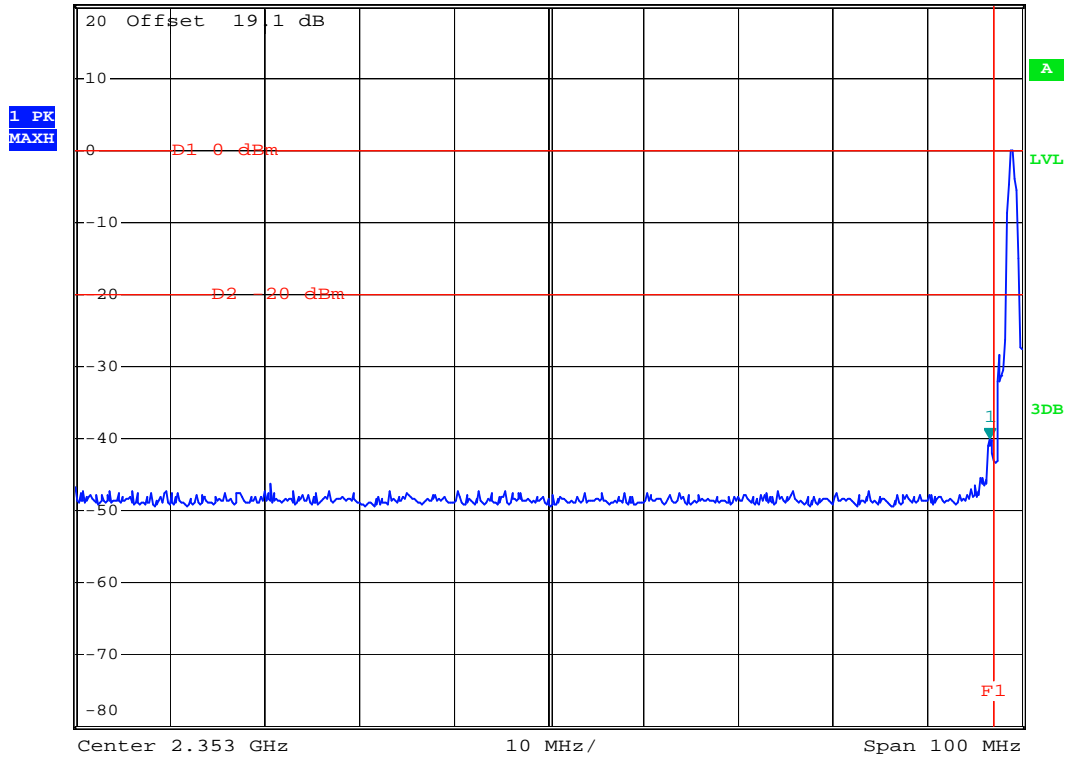


BT EDR(2Mbps)

CH00



*RBW 100 kHz Marker 1 [T1]
 *VBW 100 kHz -40.03 dBm
 *SWT 500 ms 2.399600000 GHz
 Ref 20 dBm *Att 20 dB



Date: 13.FEB.2008 03:41:50



CH78

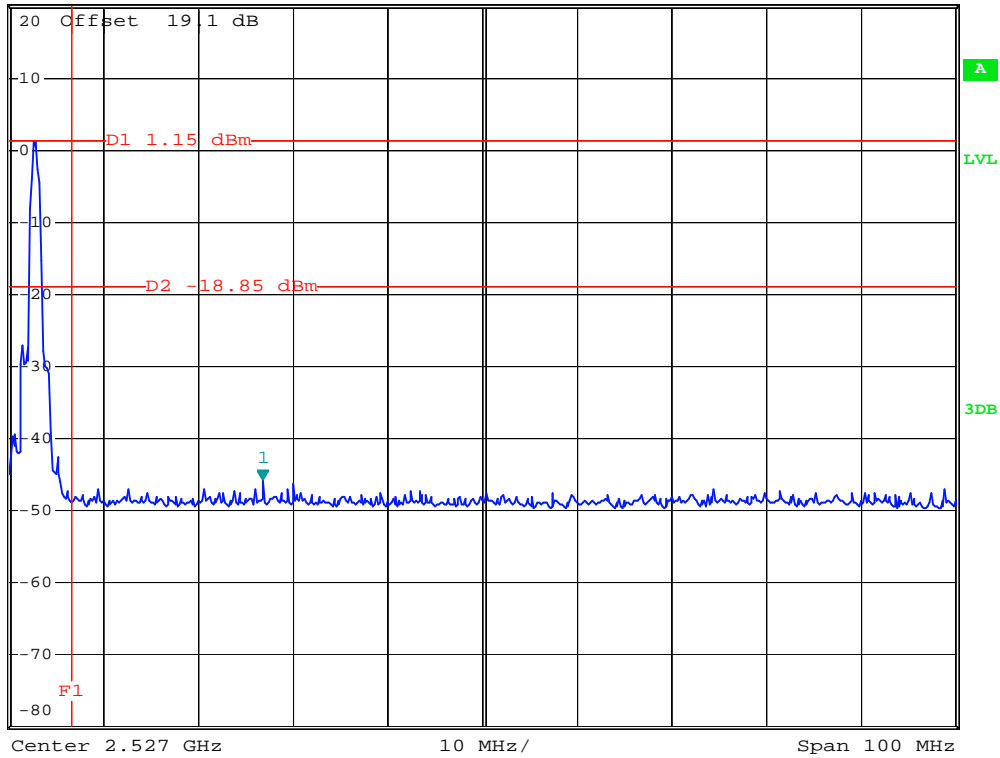


*RBW 100 kHz Marker 1 [T1]
*VBW 100 kHz -45.86 dBm
*SWT 500 ms 2.503800000 GHz

Ref 20 dBm

*Att 20 dB

1 PK
MAXH



Date: 13.FEB.2008 03:46:58

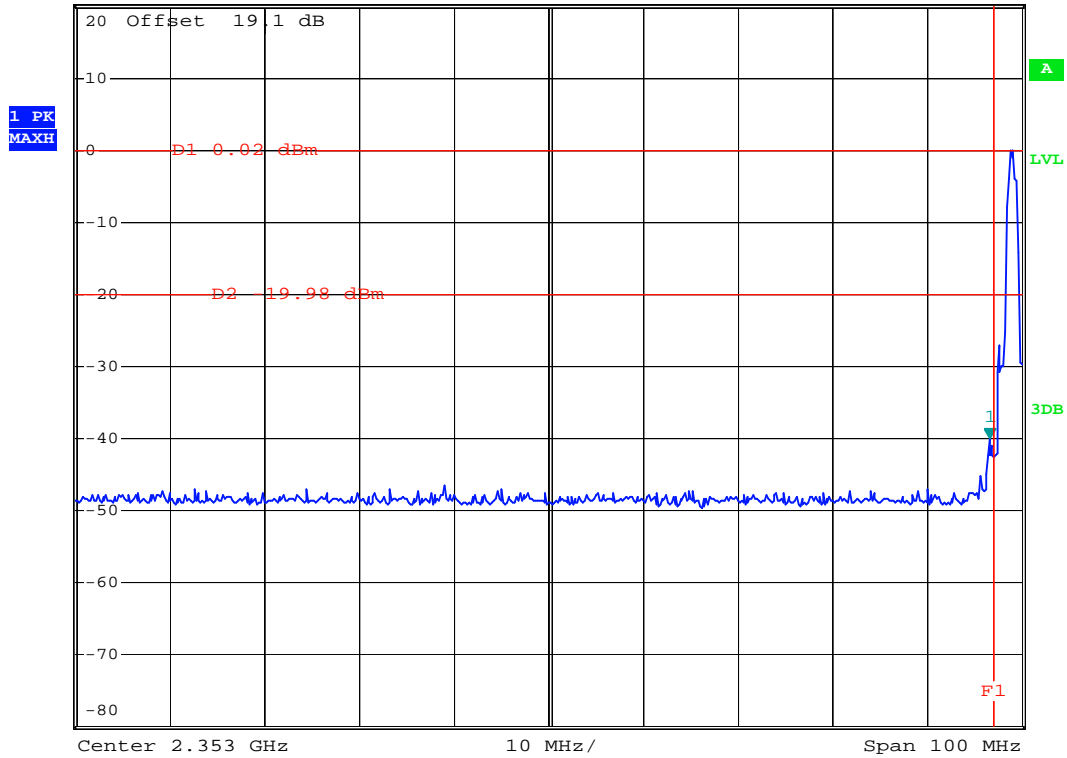


BT EDR(3Mbps)

CH00



*RBW 100 kHz Marker 1 [T1]
 *VBW 100 kHz -40.10 dBm
 *SWT 500 ms 2.399600000 GHz
 Ref 20 dBm *Att 20 dB



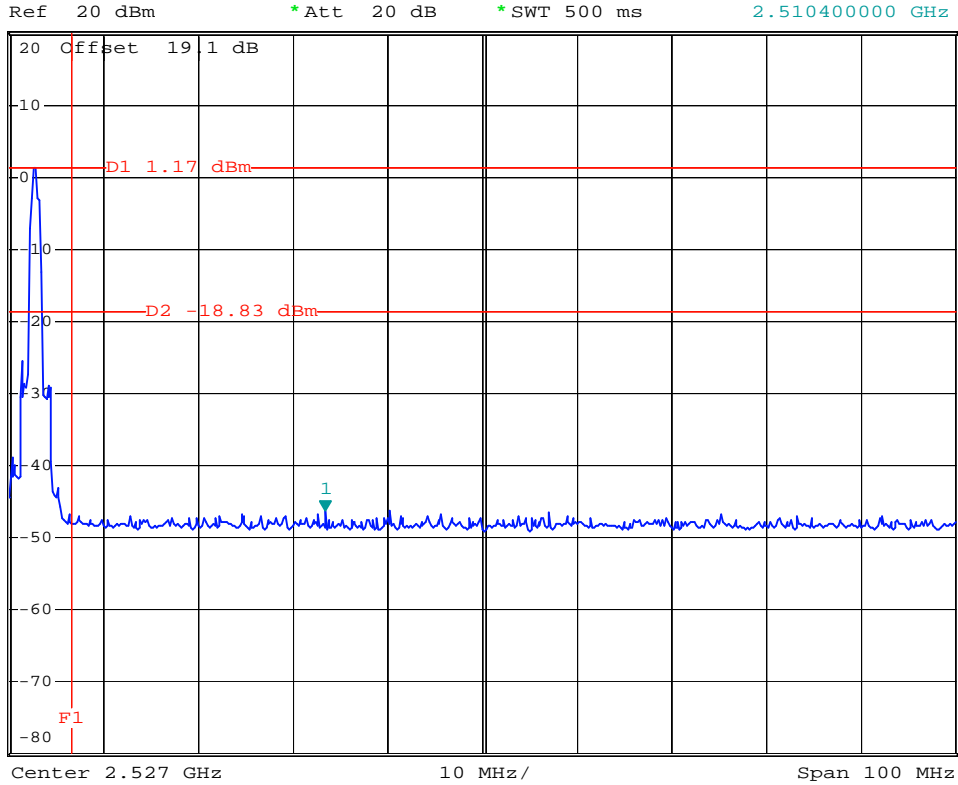
Date: 13.FEB.2008 03:42:57



CH78



*RBW 100 kHz Marker 1 [T1]
*VBW 100 kHz -46.24 dBm
*SWT 500 ms 2.510400000 GHz



Date: 13.FEB.2008 03:46:16

5.3 Hopping Channel Separation

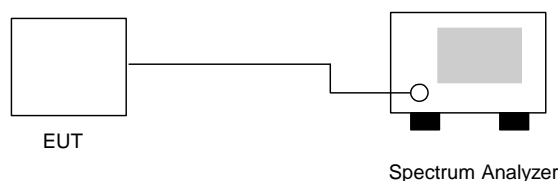
5.3.1 Measuring Instruments

As described in chapter 9 of this test report.

5.3.2 Test Procedure

1. The output of EUT was connected to the spectrum analyzer by a low loss cable..
2. Set RBW of spectrum analyzer to 30kHz and VBW to 100kHz.
3. The Hopping Channel Separation is defined as the channel is separated with the next channel.

5.3.3 Test Setup Layout



5.3.4 Test Result : The spectrum analyzer plots are attached as below

- Application Type : BT
- Temperature : 21~24
- Relative Humidity : 50~55%
- Test Enginner : Sun

| Channel | Frequency (MHz) | Carrier Frequency Separation (MHz) | Limits (MHz) | Plot Ref. No. |
|---------|--------------------|--|-----------------|------------------|
| 00 | 2402 | 1.004 | 0.491 | Plot 1 |
| 39 | 2441 | 1.004 | 0.491 | Plot 2 |
| 78 | 2480 | 1.004 | 0.488 | Plot 3 |

Note: Hopping Channel Separation shall be greater 2/3 of 20dB bandwidth. Refer the result of 20dB bandwidth to section 5.7.



- Application Type : BT EDR(2Mbps)
- Temperature : 21~24
- Relative Humidity : 50~55%
- Test Enginner : Sun

| Channel | Frequency (MHz) | Carrier Frequency Separation (MHz) | Limits (MHz) | Plot Ref. No. |
|---------|--------------------|--|-----------------|------------------|
| 00 | 2402 | 1.000 | 0.821 | Plot 4 |
| 39 | 2441 | 1.000 | 0.821 | Plot 5 |
| 78 | 2480 | 1.000 | 0.824 | Plot 6 |

Note: Hopping Channel Separation shall be greater 2/3 of 20dB bandwidth. Refer the result of 20dB bandwidth to section 5.7.

- Application Type : BT EDR(3Mbps)
- Temperature : 21~24
- Relative Humidity : 50~55%
- Test Enginner : Sun

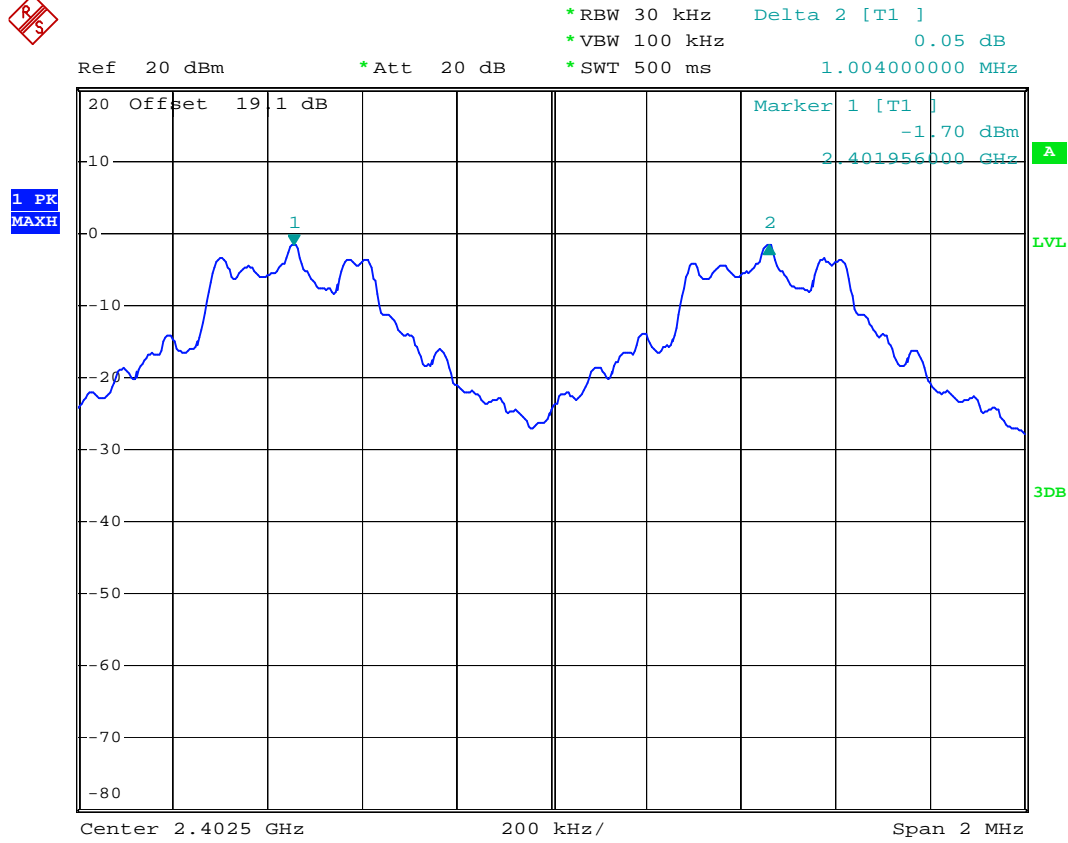
| Channel | Frequency (MHz) | Carrier Frequency Separation (MHz) | Limits (MHz) | Plot Ref. No. |
|---------|--------------------|--|-----------------|------------------|
| 00 | 2402 | 1.000 | 0.808 | Plot 7 |
| 39 | 2441 | 1.000 | 0.808 | Plot 8 |
| 78 | 2480 | 1.000 | 0.811 | Plot 9 |

Note: Hopping Channel Separation shall be greater 2/3 of 20dB bandwidth. Refer the result of 20dB bandwidth to section 5.7.



5.3.5 Hopping Channel Separation

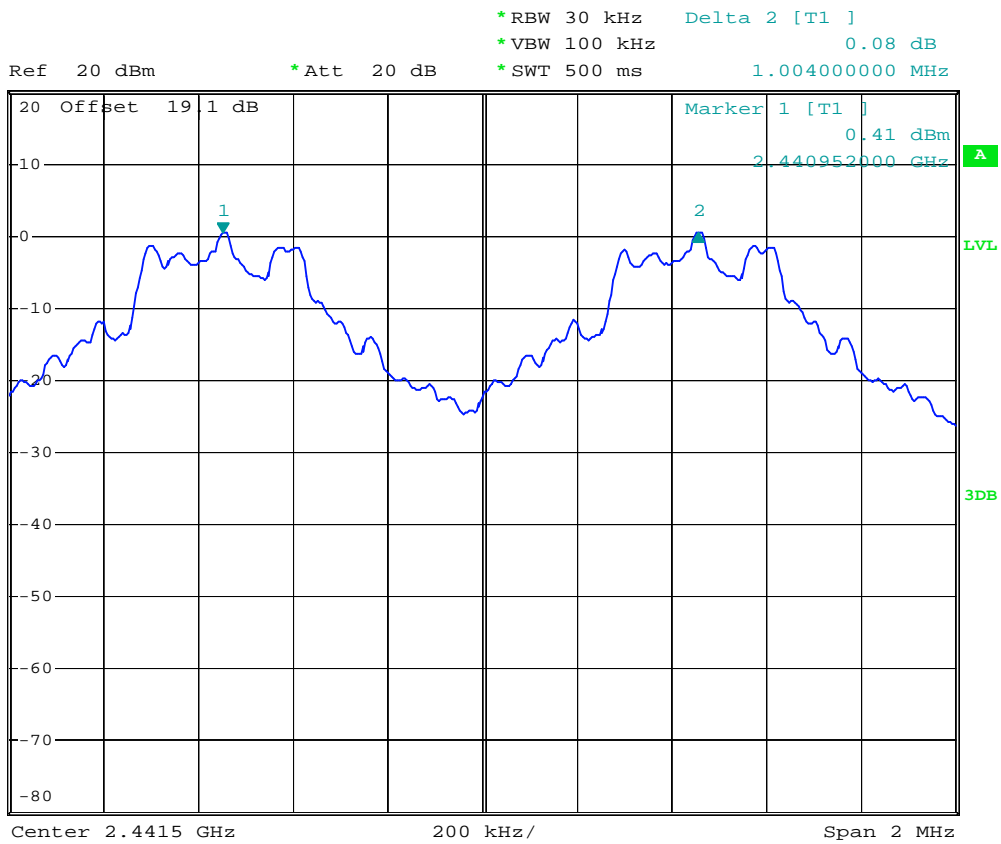
Plot 1



Date: 13.FEB.2008 08:59:34



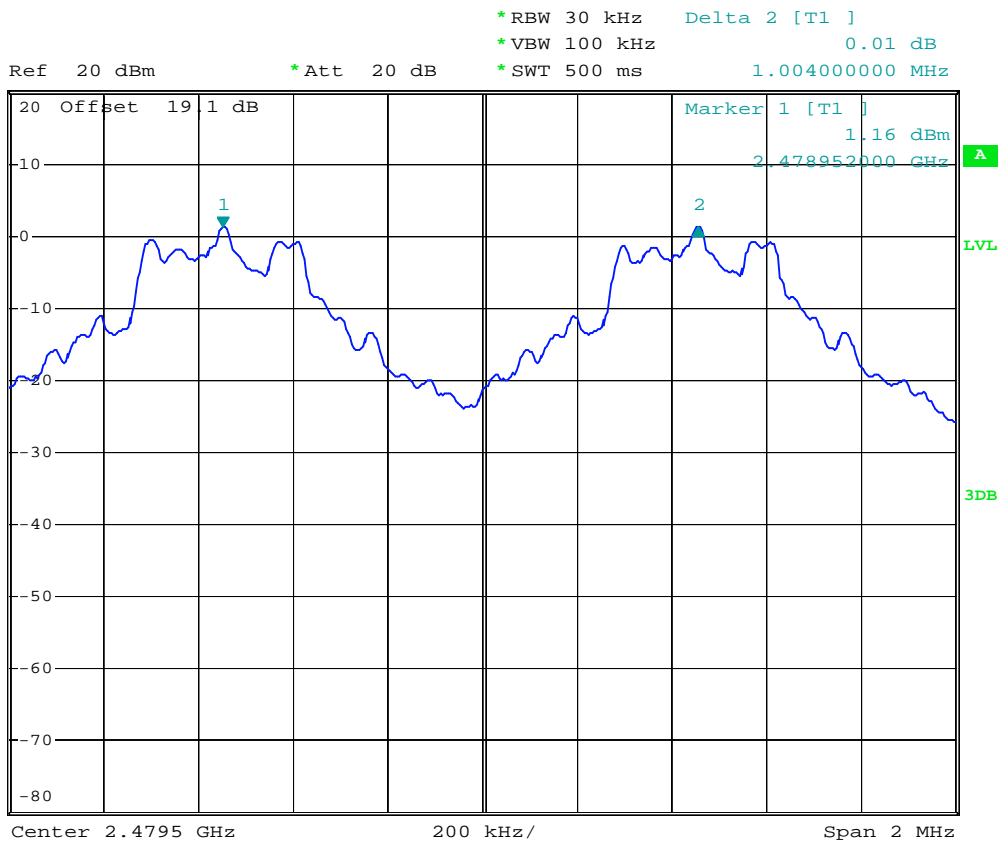
Plot 2



Date: 13.FEB.2008 09:02:35



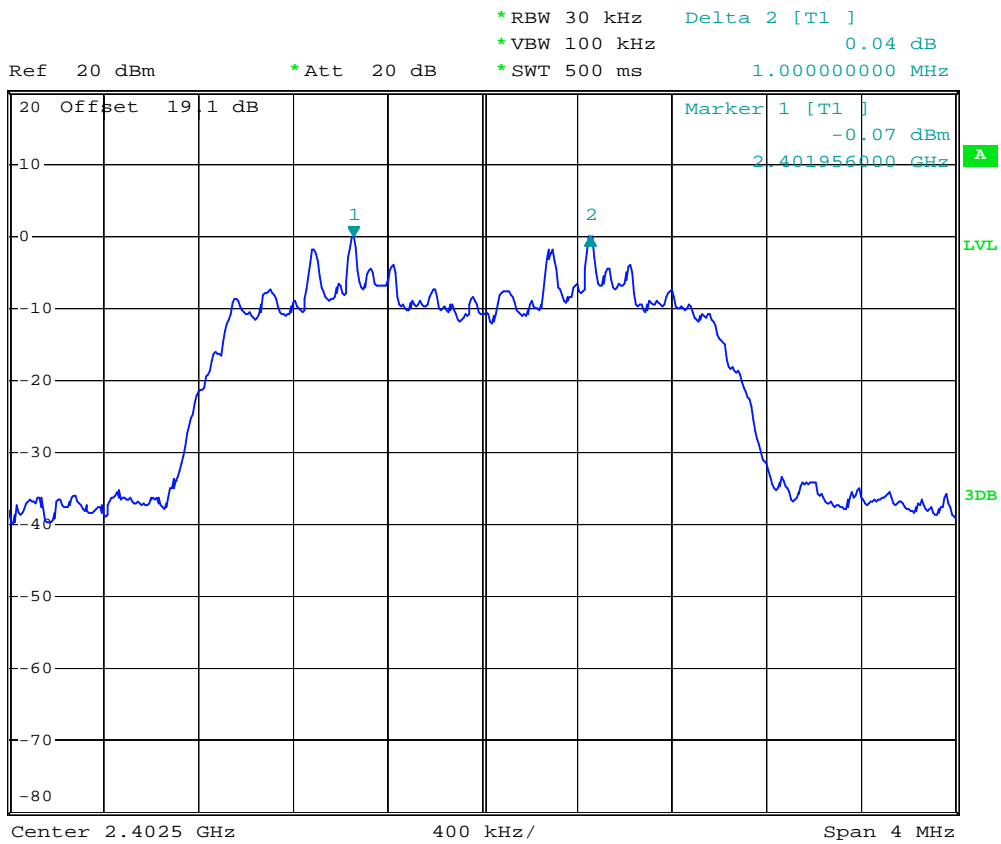
Plot 3



Date: 13.FEB.2008 09:03:23



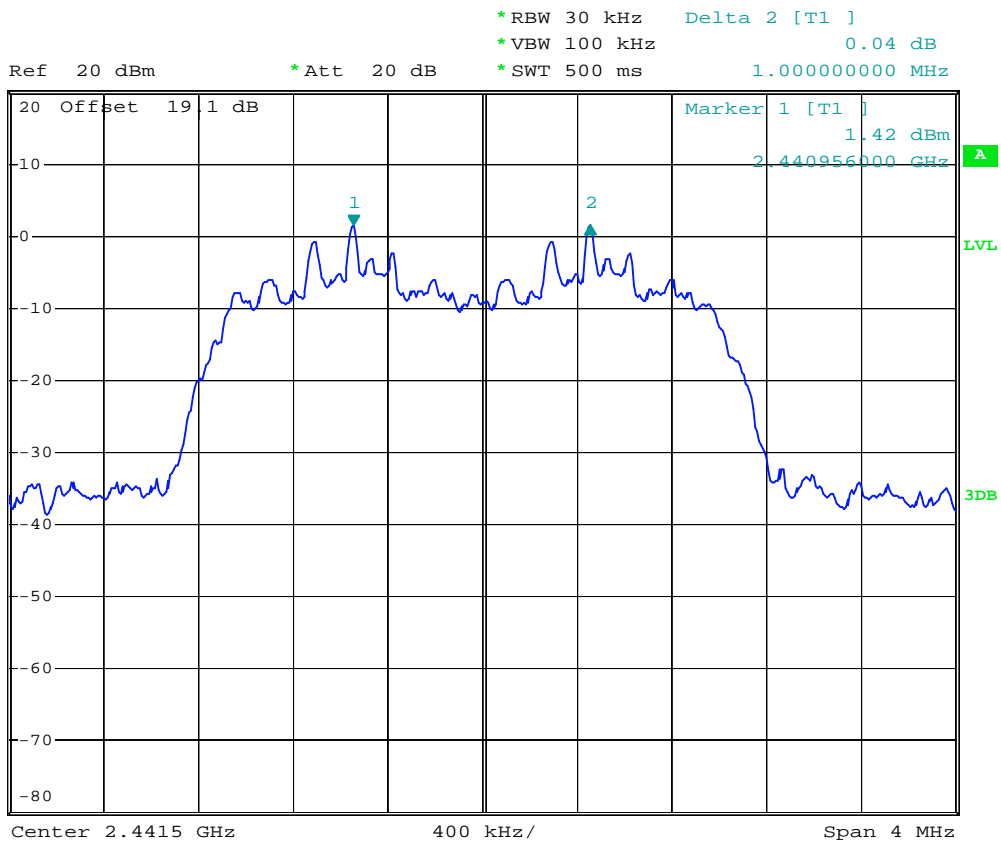
Plot 4



Date: 13.FEB.2008 03:48:14



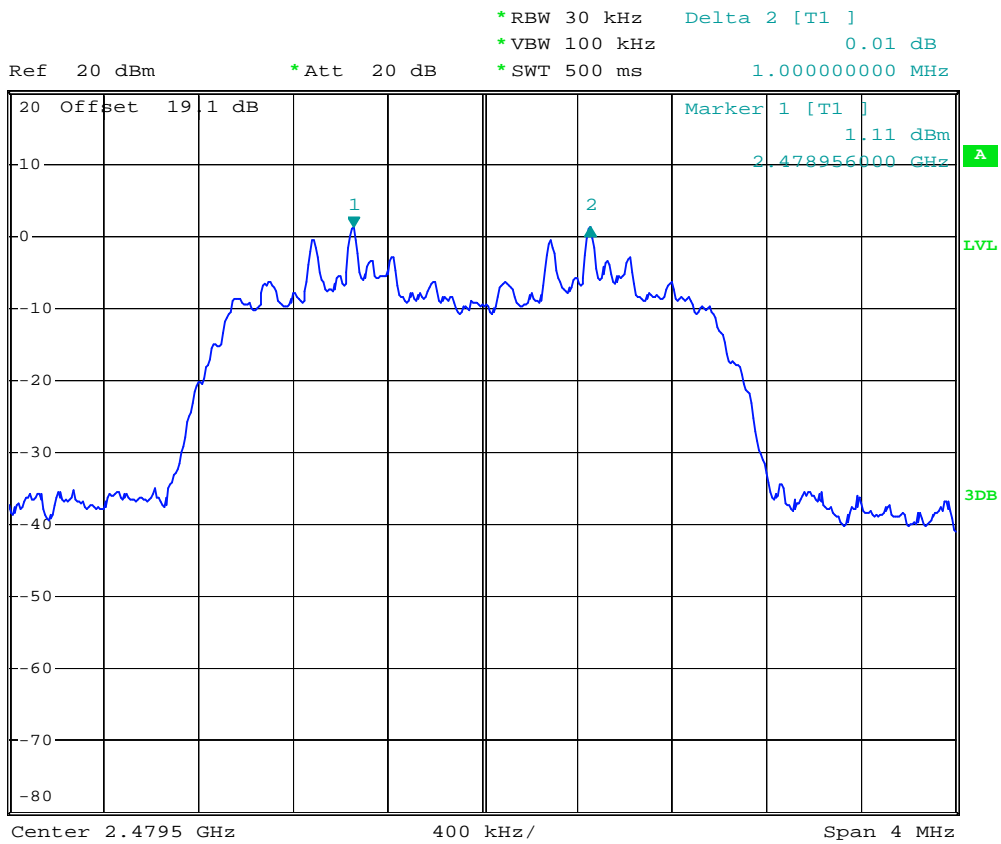
Plot 5



Date: 13.FEB.2008 03:49:10



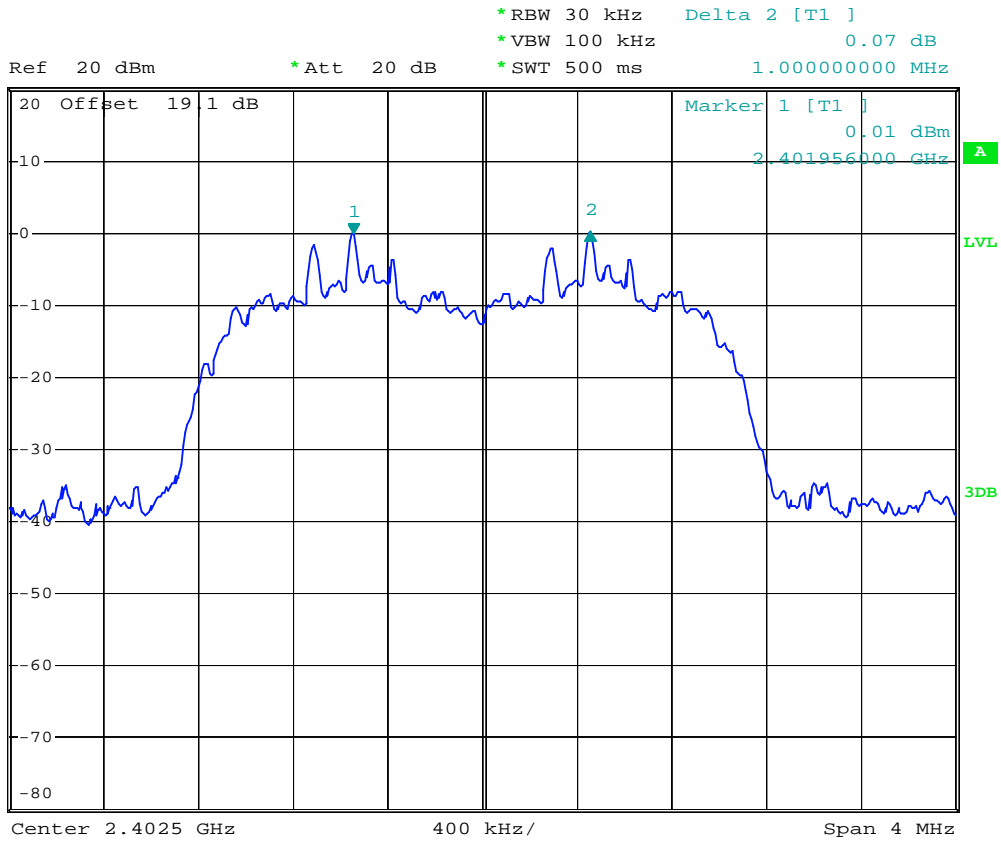
Plot 6



Date: 13.FEB.2008 03:50:00



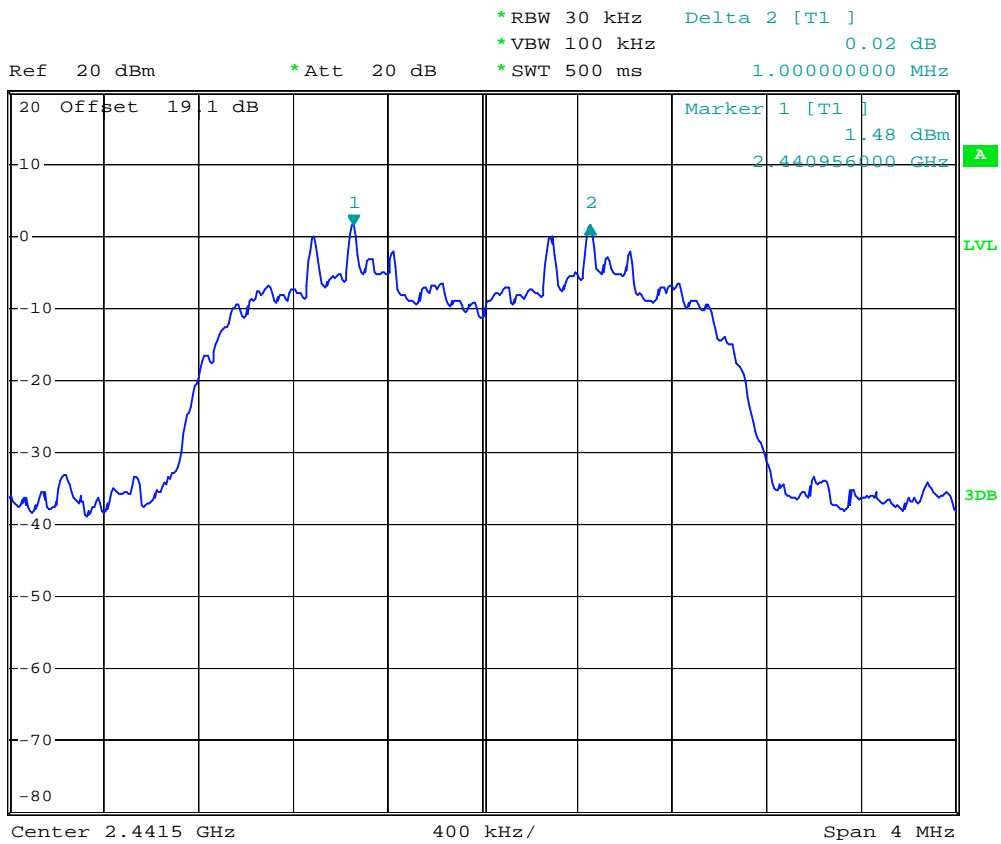
Plot 7



Date: 13.FEB.2008 03:51:02



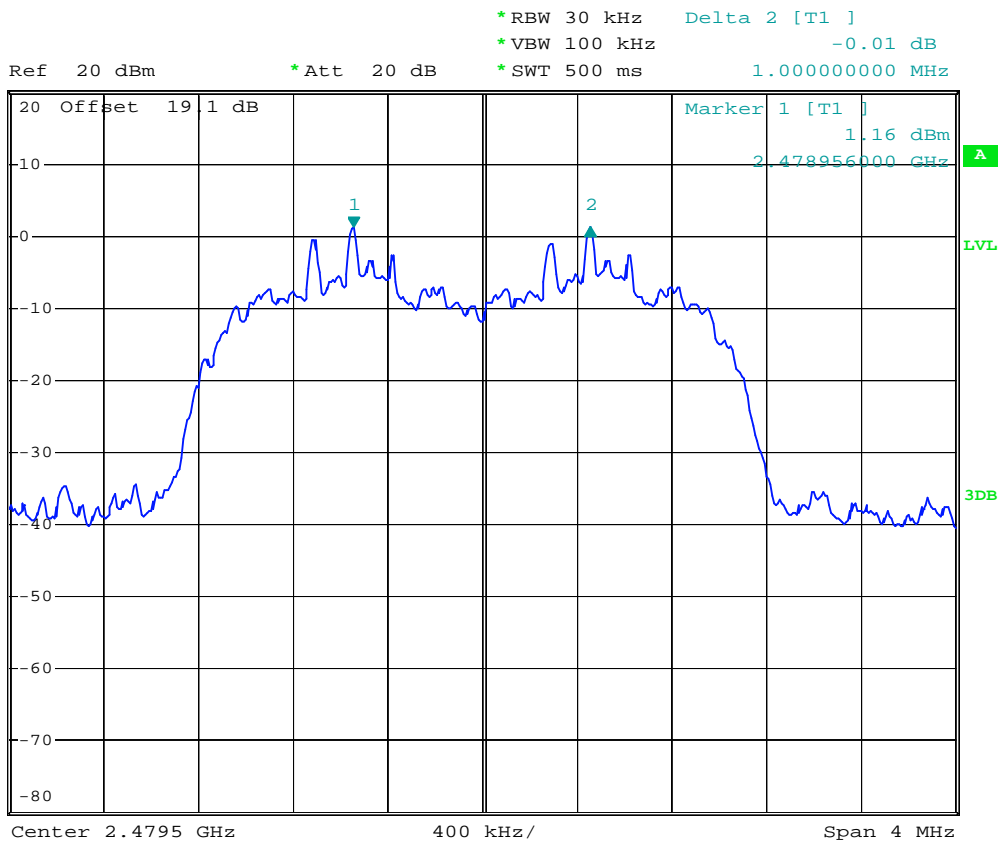
Plot 8



Date: 13.FEB.2008 03:52:02



Plot 9



Date: 13.FEB.2008 03:52:51

5.4 Number of Hopping Frequency

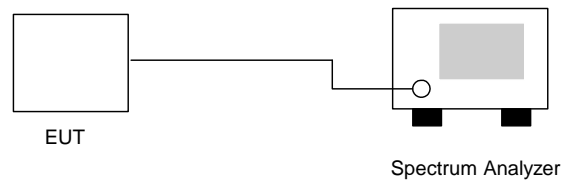
5.4.1 Measuring Instruments

As described in chapter 9 of this test report.

5.4.2 Test Procedure

1. The output of EUT was connected to the spectrum analyzer by a low loss cable.
2. Set RBW of spectrum analyzer to 100kHz and VBW to 100kHz.
3. The number of hopping frequency used is defined as the device has the numbers of total channel.

5.4.3 Test Setup Layout





5.4.4 Test Result : See spectrum analyzer plots below

- Application Type : BT
- Temperature : 21~24
- Relative Humidity : 50~55%
- Test Engineer : Sun

| Number of Hopping Frequency (Channel) | Limits (Channel) |
|--|---------------------|
| 79 | 15 |

- Application Type : BT EDR(2Mbps)
- Temperature : 21~24
- Relative Humidity : 50~55%
- Test Engineer : Sun

| Number of Hopping Frequency (Channel) | Limits (Channel) |
|--|---------------------|
| 79 | 15 |

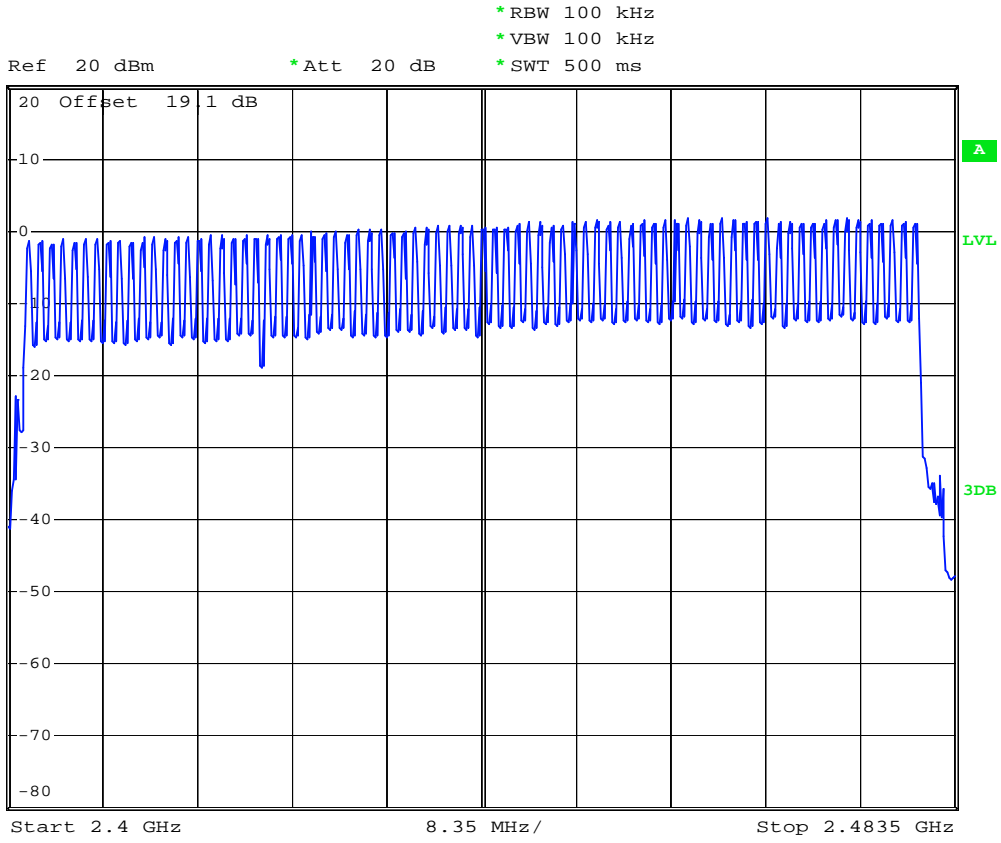
- Application Type : BT EDR(3Mbps)
- Temperature : 21~24
- Relative Humidity : 50~55%
- Test Engineer : Sun

| Number of Hopping Frequency (Channel) | Limits (Channel) |
|--|---------------------|
| 79 | 15 |



5.4.5 Number of Hopping Frequency

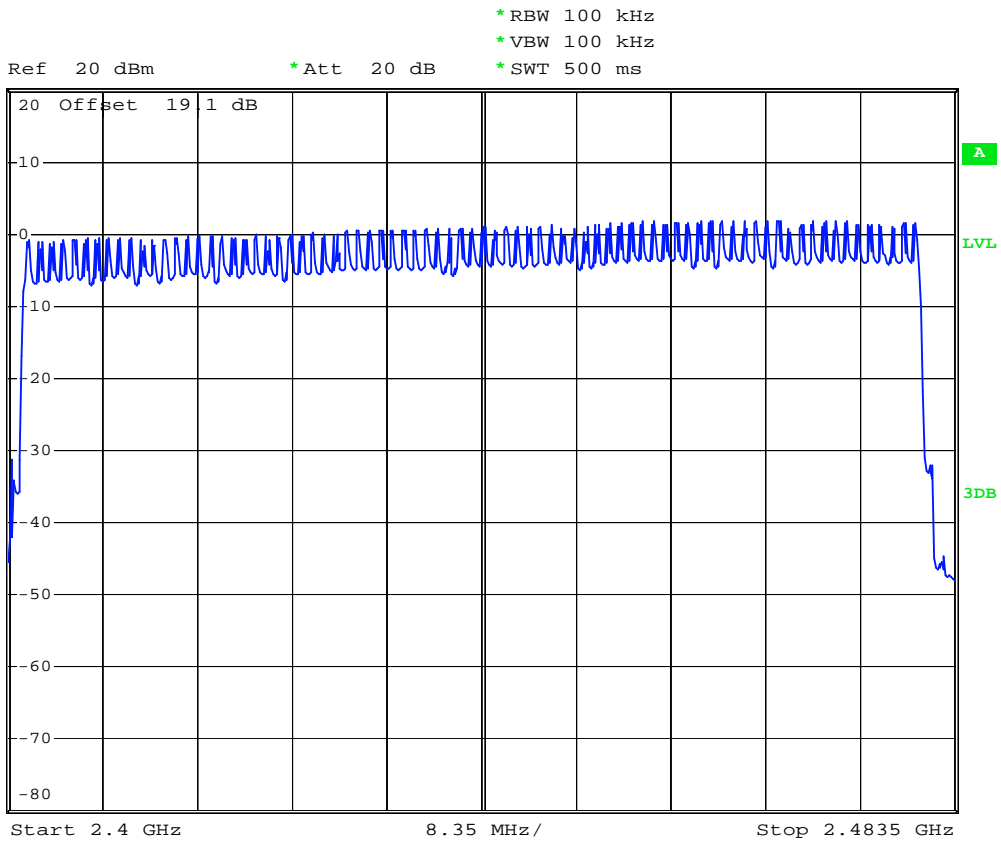
BT



Date: 13.FEB.2008 09:19:45



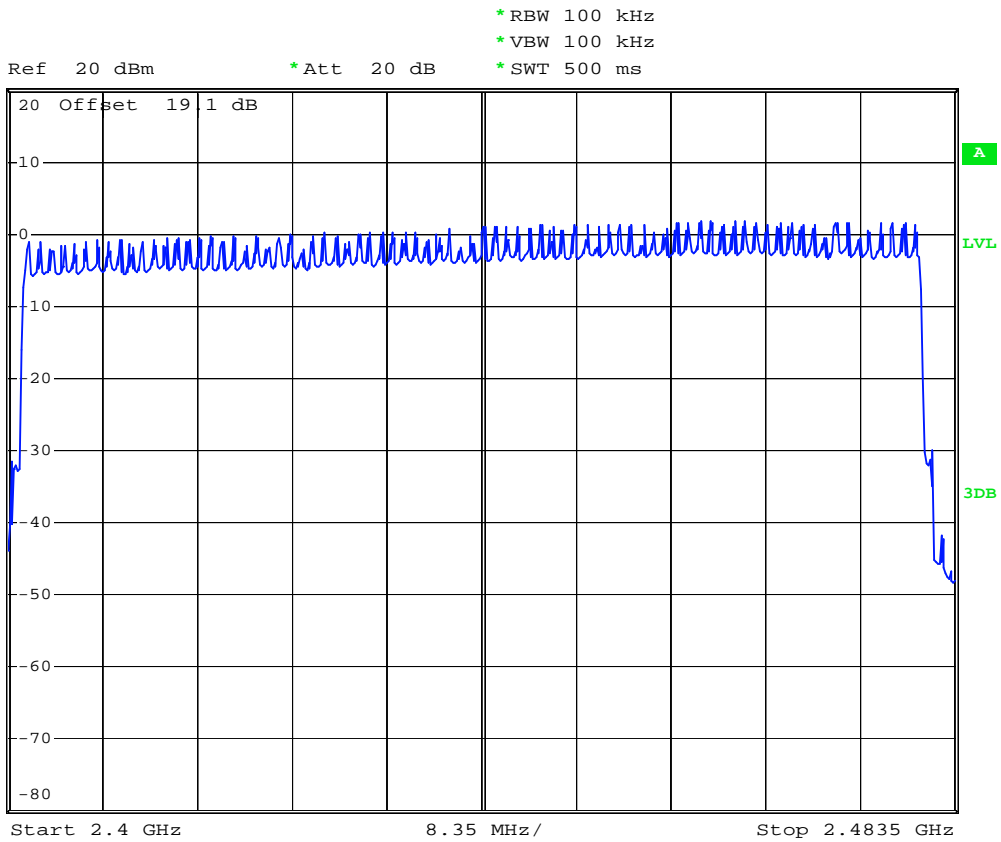
BT EDR(2Mbps)



Date: 13.FEB.2008 09:53:06



BT EDR(3Mbps)



Date: 13.FEB.2008 09:46:50

5.5 Hopping Channel Bandwidth

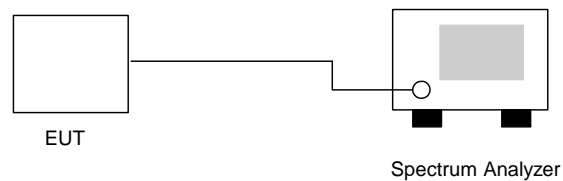
5.5.1 Measuring Instruments

As described in chapter 9 of this test report.

5.5.2 Test Procedure

1. The transmitter output was connected to the spectrum analyzer by a low loss cable.
2. Set RBW of spectrum analyzer to 30kHz and VBW to 300kHz.
3. The Hopping Channel bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20 dB.

5.5.3 Test Setup Layout





5.5.4 Test Result : See spectrum analyzer plots below

- Application Type : BT
- Temperature : 21~24
- Relative Humidity : 50~55%
- Test Enginner : Sun

| Channel | Frequency (MHz) | Hopping Channel Bandwidth (MHz) | Plot Ref. No. |
|---------|--------------------|------------------------------------|------------------|
| 00 | 2402 | 0.736 | Plot 1 |
| 39 | 2441 | 0.736 | Plot 2 |
| 78 | 2480 | 0.732 | Plot 3 |

- Application Type : BT EDR(2Mbps)
- Temperature : 21~24
- Relative Humidity : 50~55%
- Test Enginner : Sun

| Channel | Frequency (MHz) | Hopping Channel Bandwidth (MHz) | Plot Ref. No. |
|---------|--------------------|------------------------------------|------------------|
| 00 | 2402 | 1.232 | Plot 4 |
| 39 | 2441 | 1.232 | Plot 5 |
| 78 | 2480 | 1.236 | Plot 6 |

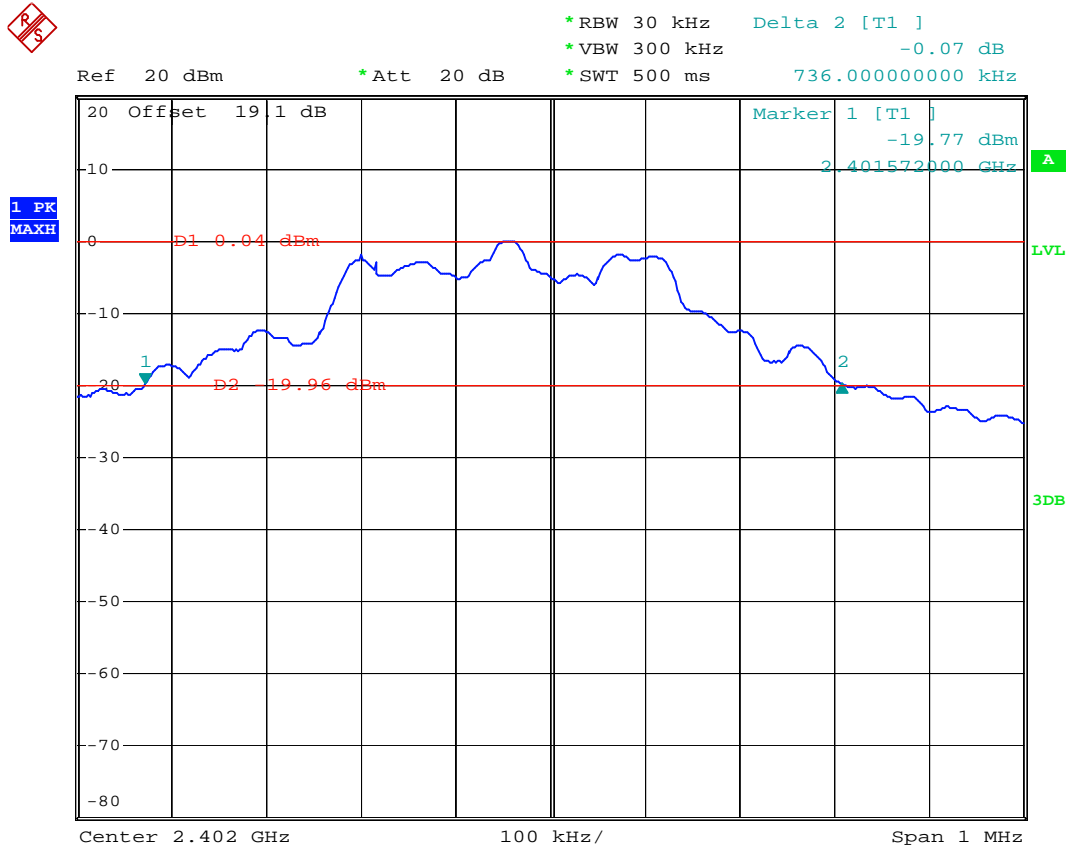
- Application Type : BT EDR(3Mbps)
- Temperature : 21~24
- Relative Humidity : 50~55%
- Test Enginner : Sun

| Channel | Frequency (MHz) | Hopping Channel Bandwidth (MHz) | Plot Ref. No. |
|---------|--------------------|------------------------------------|------------------|
| 00 | 2402 | 1.212 | Plot 7 |
| 39 | 2441 | 1.212 | Plot 8 |
| 78 | 2480 | 1.216 | Plot 9 |



5.5.5 Hopping Channel Bandwidth

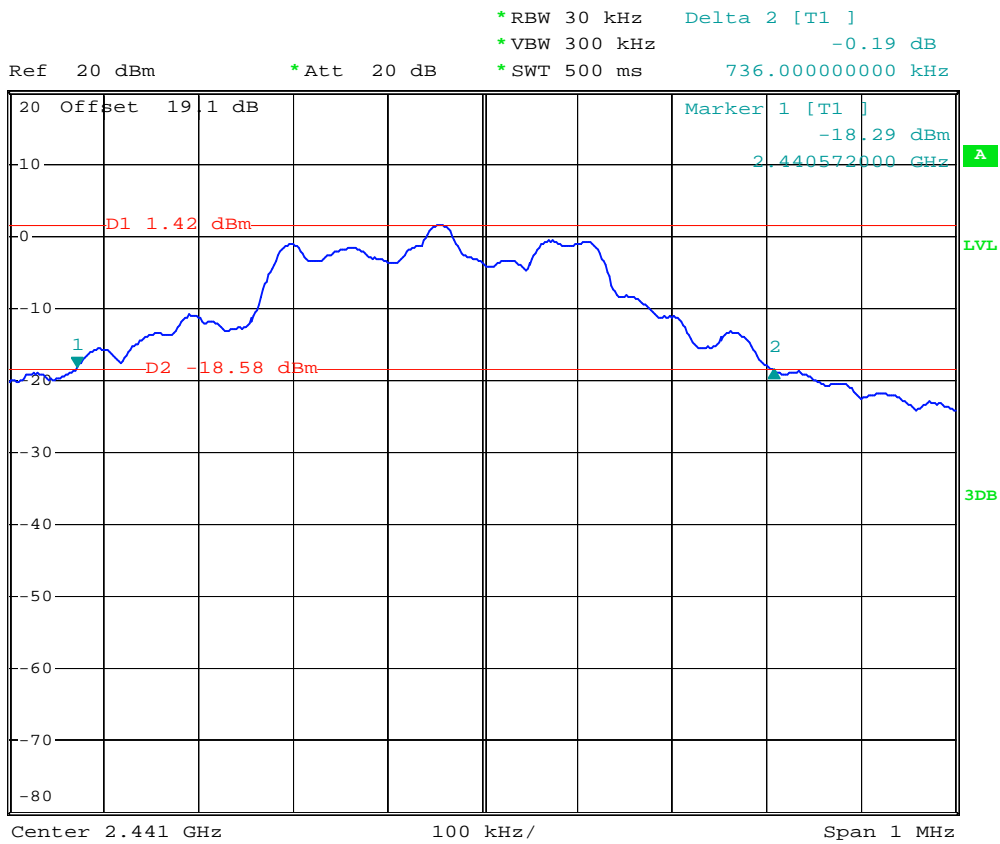
Plot 1



Date: 13.FEB.2008 03:14:35



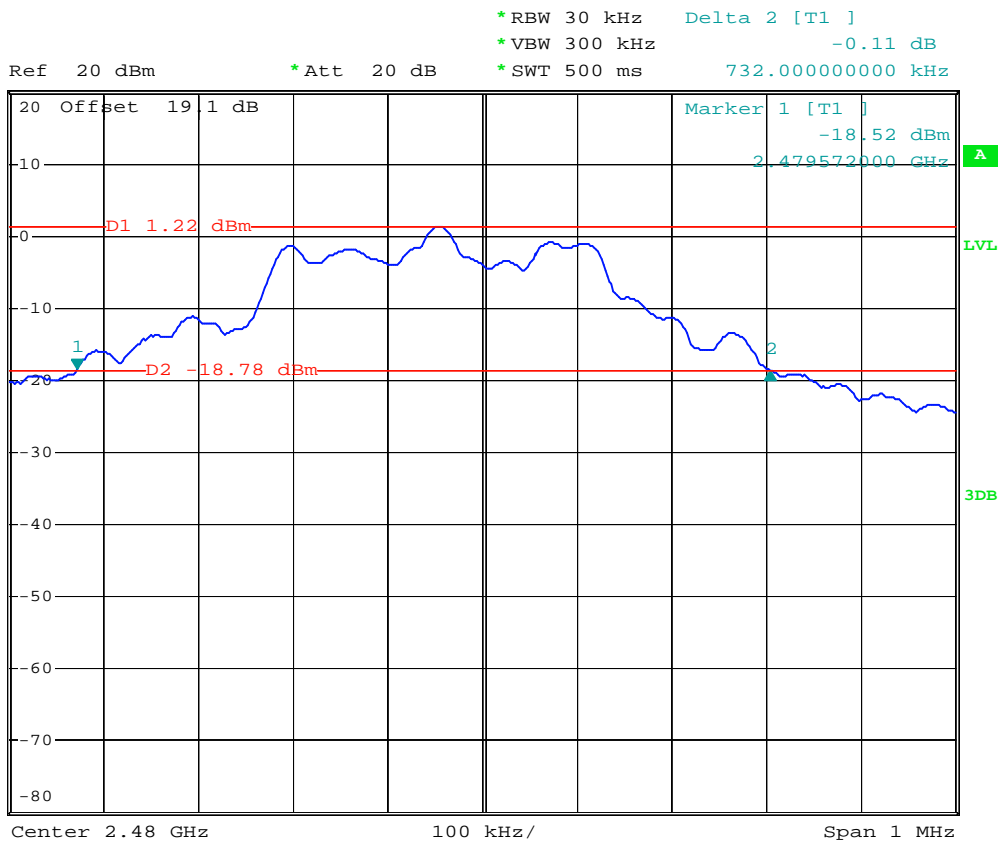
Plot 2



Date: 13.FEB.2008 03:23:08



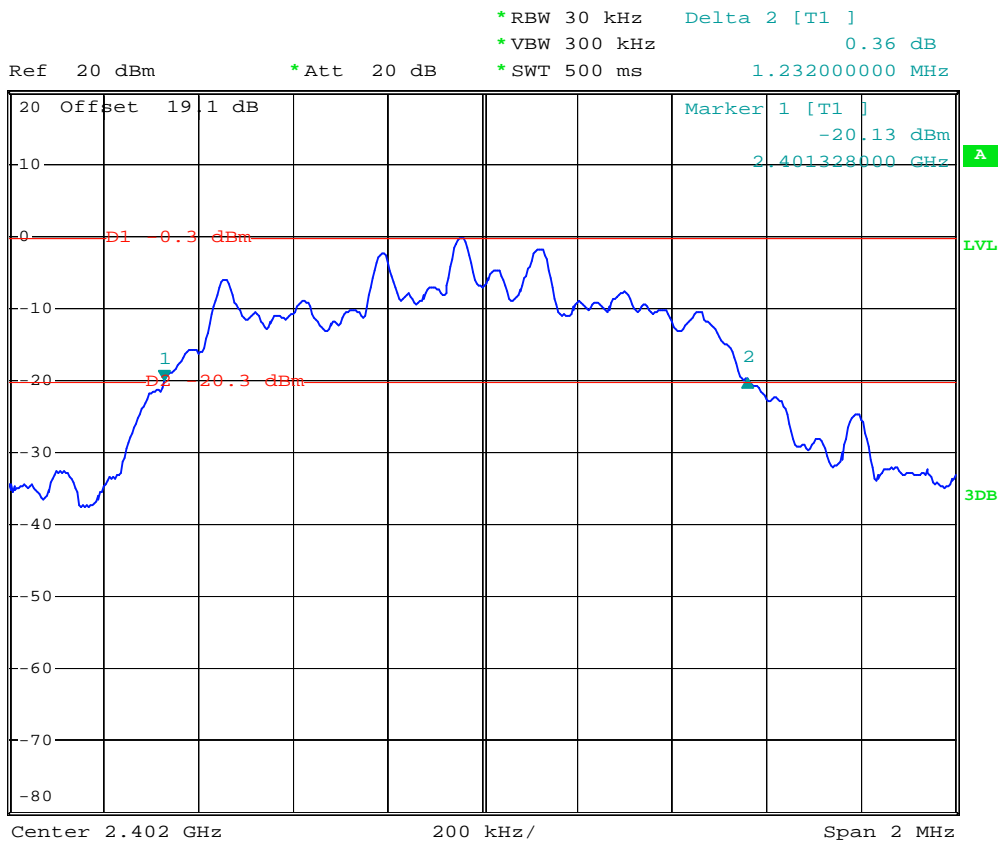
Plot 3



Date: 13.FEB.2008 03:24:27



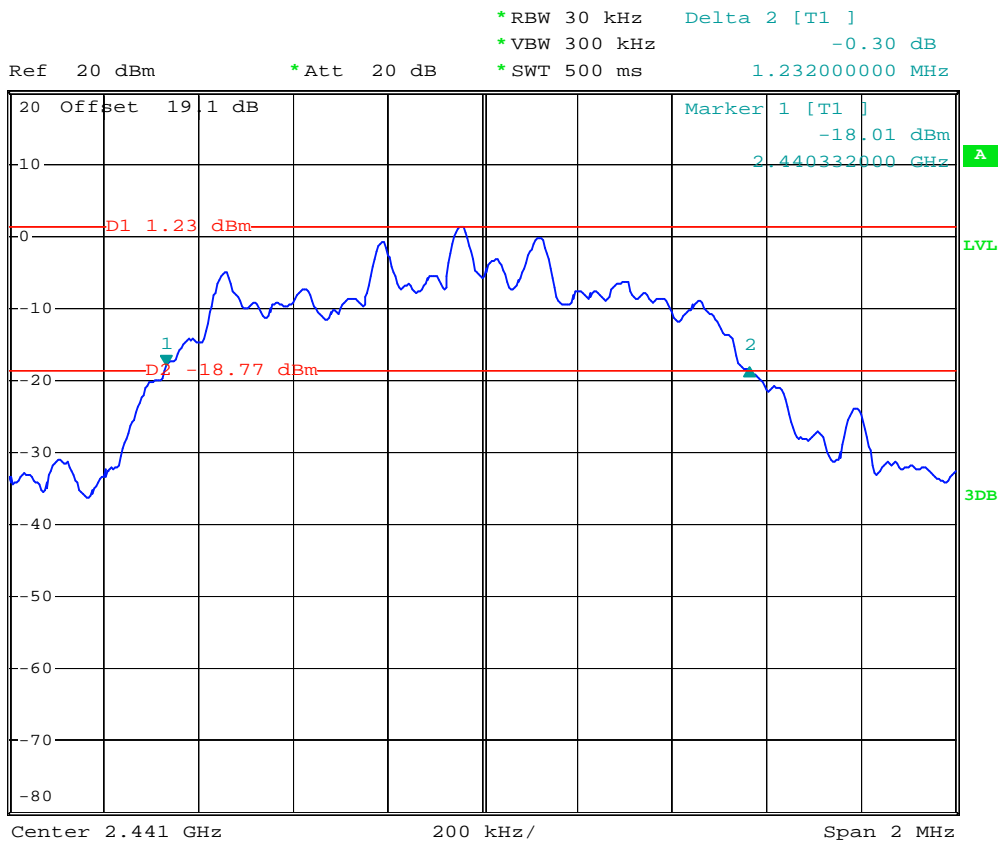
Plot 4



Date: 13.FEB.2008 03:26:35



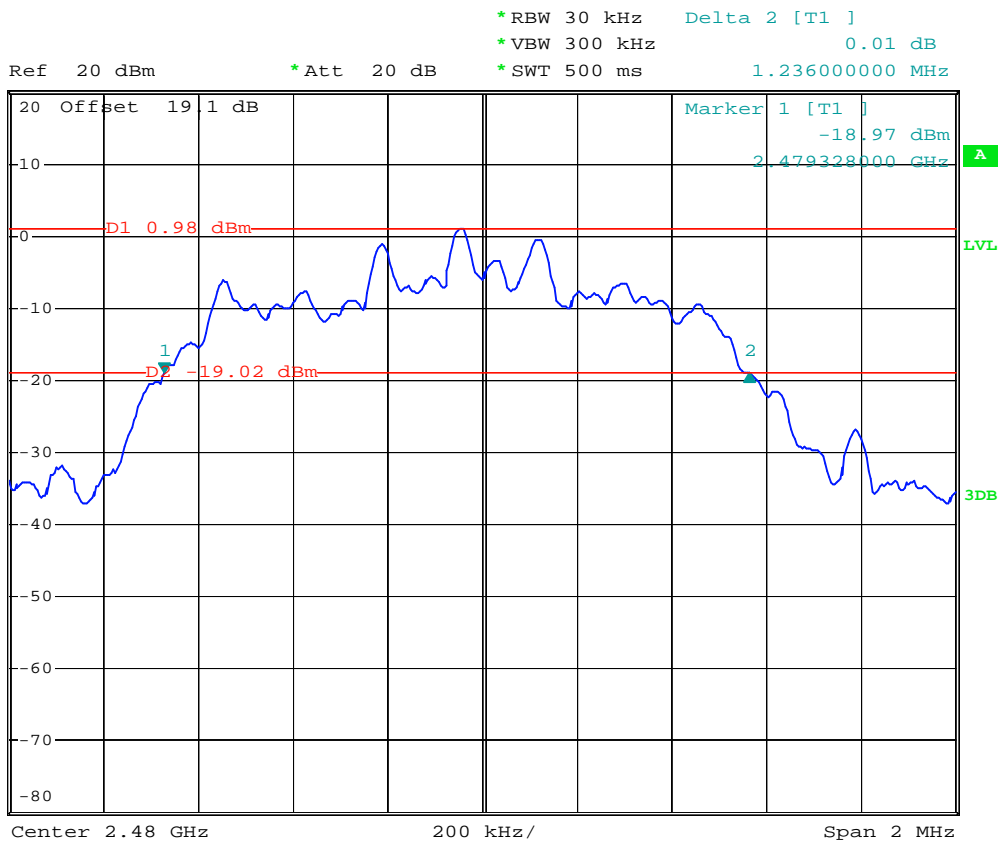
Plot 5



Date: 13.FEB.2008 03:28:38



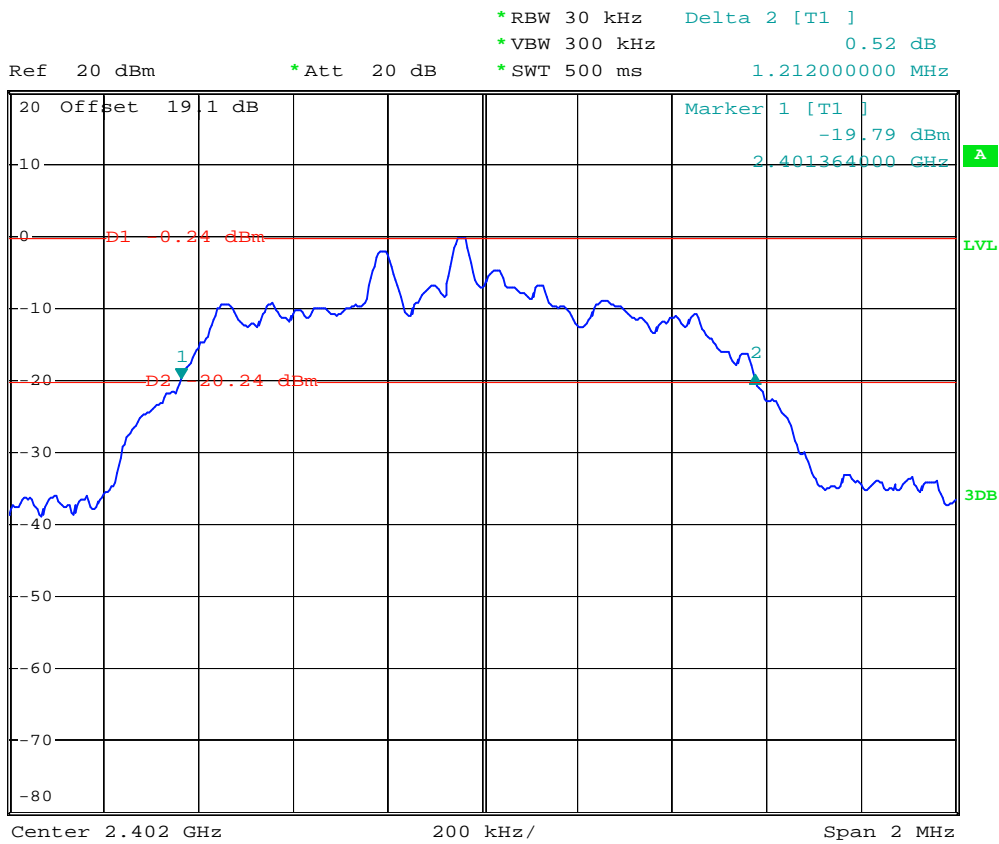
Plot 6



Date: 13.FEB.2008 03:30:28



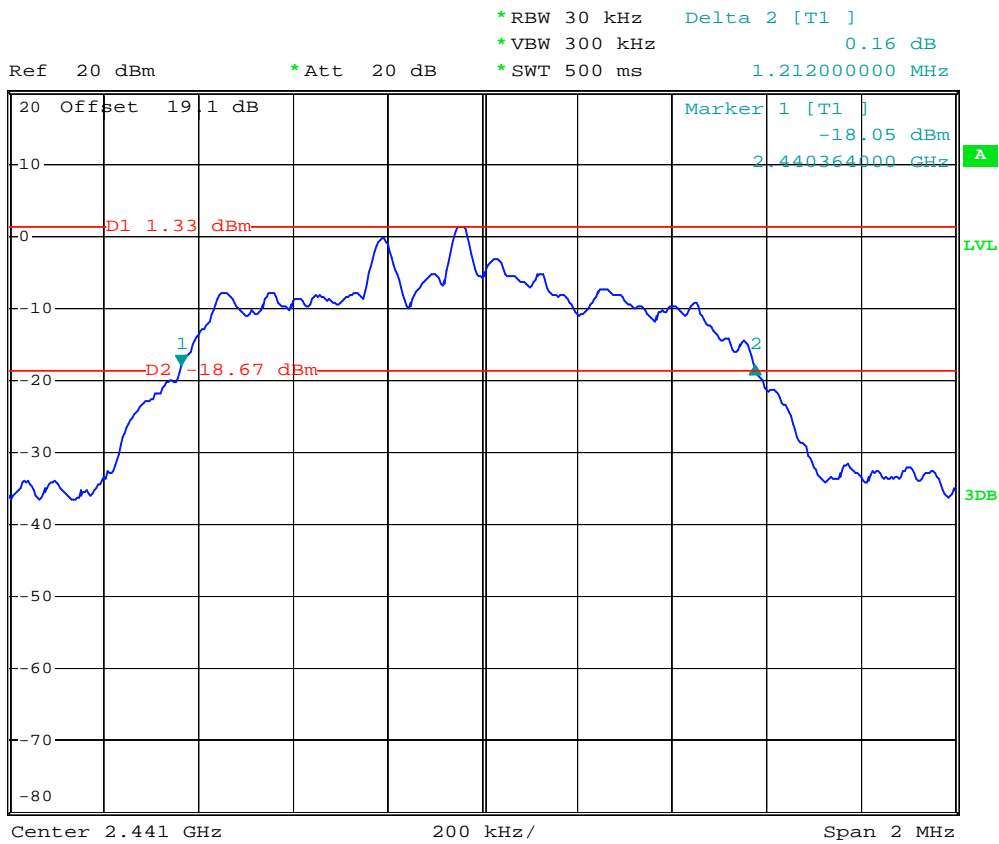
Plot 7



Date: 13.FEB.2008 03:34:22



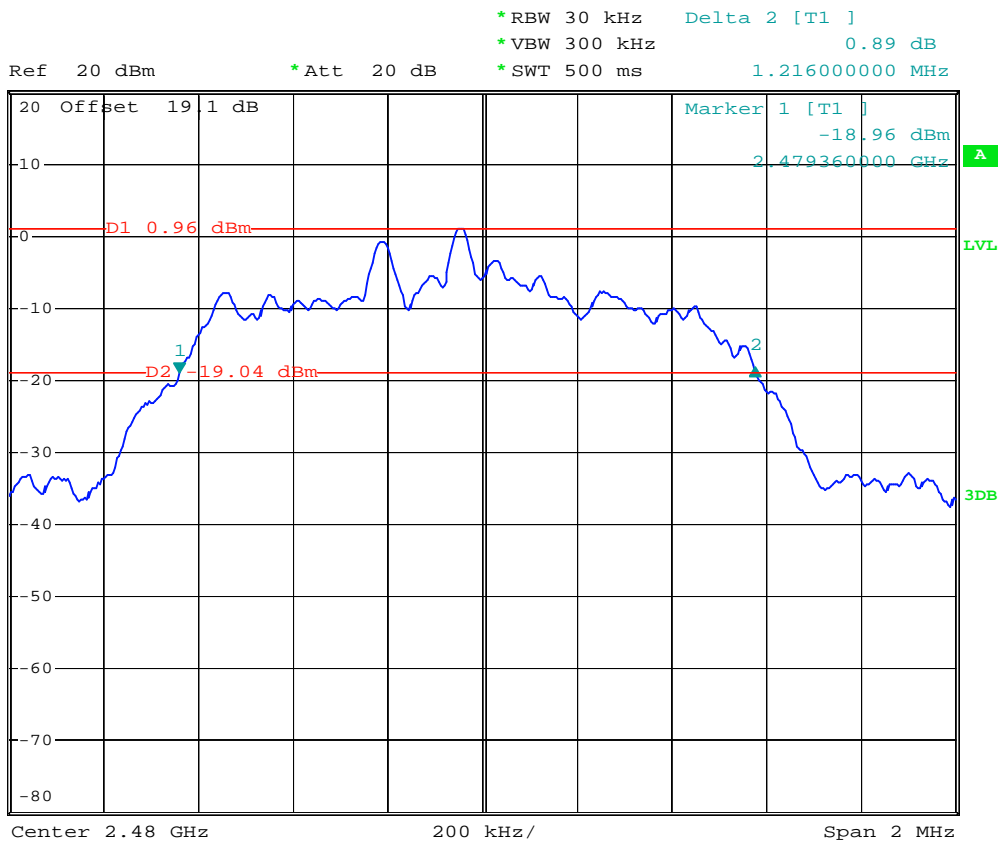
Plot 8



Date: 13.FEB.2008 03:32:45



Plot 9



Date: 13.FEB.2008 03:31:26

5.6 Dwell Time of Each Frequency

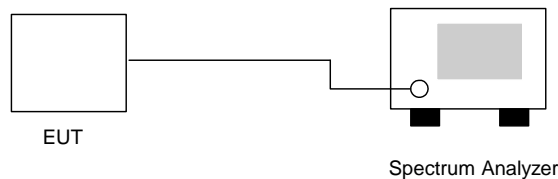
5.6.1 Measuring Instruments

As described in chapter 9 of this test report.

5.6.2 Test Procedure

1. The transmitter output was connected to the spectrum analyzer by a low loss cable.
2. Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
3. Set the center frequency on any frequency would be measure and set the frequency span to zero span.
4. The calculate = $79 * 0.4 * (1600/79) * t$ (t = the time duration of one single pulse)

5.6.3 Test Setup Layout



5.6.4 Test Result : See spectrum analyzer plots below

- Application Type : BT
- Temperature : 21~24
- Relative Humidity : 50~55%
- Test Enginner : Sun

CH39

| Package Mode | Average Hopping Channel | Package Transfer Time (us) | Dwell Time (s) | Limit (s) |
|--------------|-------------------------|----------------------------|----------------|-----------|
| DH1 | 9 | 440 | 0.125 | 0.4 |
| DH3 | 5.1 | 1730 | 0.279 | 0.4 |
| DH5 | 3.6 | 2960 | 0.337 | 0.4 |



- Application Type : BT EDR(2Mbps)
- Temperature : 21~24
- Relative Humidity : 50~55%
- Test Enginner : Sun

CH39

| Package Mode | Average Hopping Channel | Package Transfer Time (us) | Dwell Time (s) | Limit (s) |
|--------------|-------------------------|----------------------------|----------------|-----------|
| DH1 | 8.9 | 440 | 0.124 | 0.4 |
| DH3 | 5.2 | 1730 | 0.284 | 0.4 |
| DH5 | 3.5 | 3000 | 0.332 | 0.4 |

- Application Type : BT EDR(3Mbps)
- Temperature : 21~24
- Relative Humidity : 50~55%
- Test Enginner : Sun

CH39

| Package Mode | Average Hopping Channel | Package Transfer Time (us) | Dwell Time (s) | Limit (s) |
|--------------|-------------------------|----------------------------|----------------|-----------|
| DH1 | 8.6 | 440 | 0.120 | 0.4 |
| DH3 | 4.9 | 1720 | 0.266 | 0.4 |
| DH5 | 3 | 3020 | 0.286 | 0.4 |

Remark:

1. Dwell Time=79(channels) x 0.4(s) x average hopping channel x package transfer time
2. 79 channels come from the Hopping Channel number.
3. Average Hopping Channel = hops/sweep time
4. t: Package Transfer Time(us)

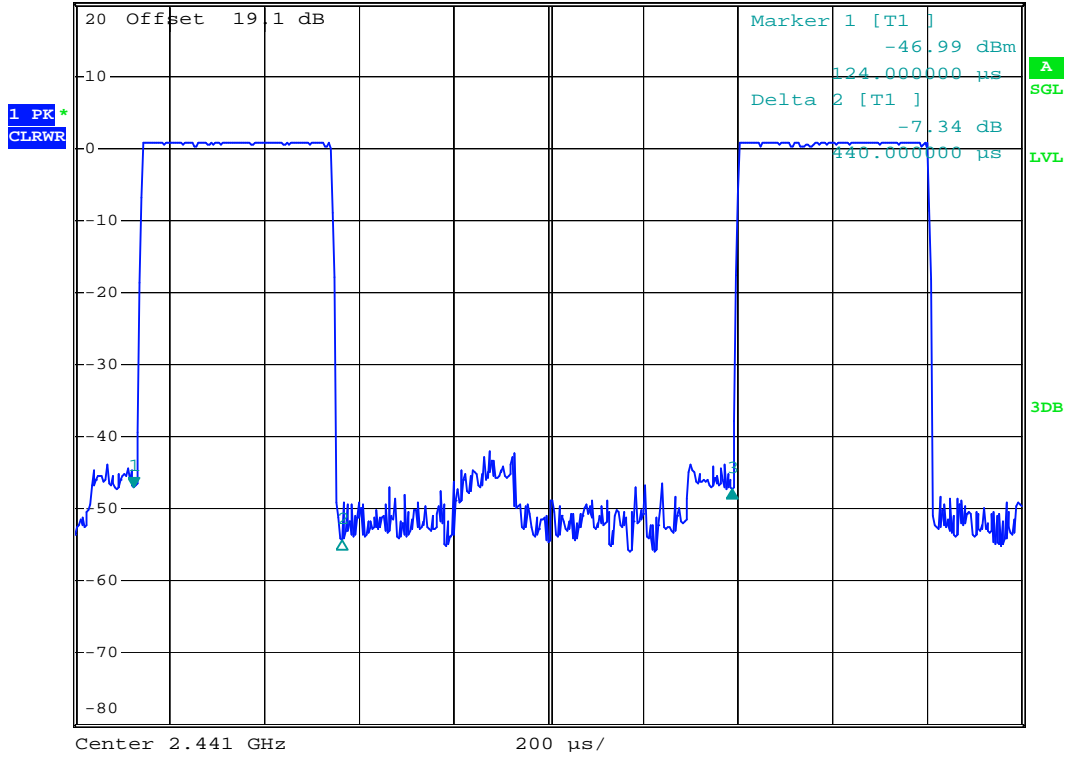


5.6.5 Dwell Time

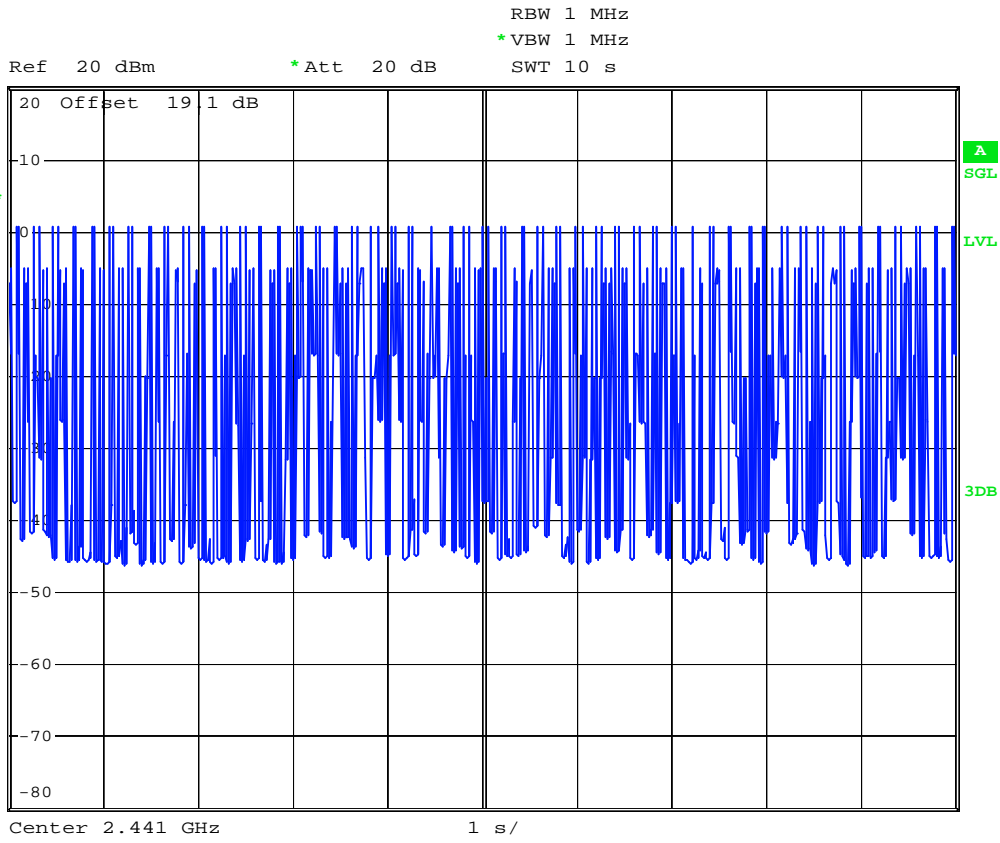
DH1 (CH39)



Ref 20 dBm *Att 20 dB RBW 1 MHz Delta 3 [T1] -0.23 dB
 *VBW 1 MHz SWT 2 ms 1.264000 ms



Date: 13.FEB.2008 09:05:24



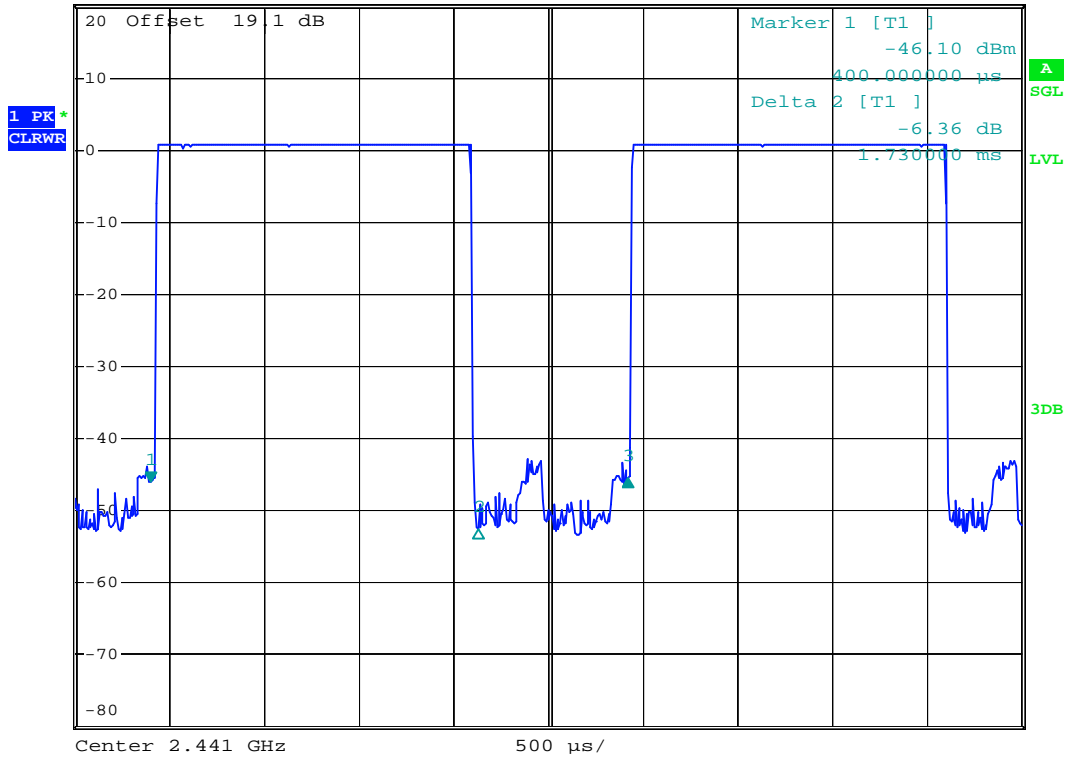
Date: 13.FEB.2008 09:13:03



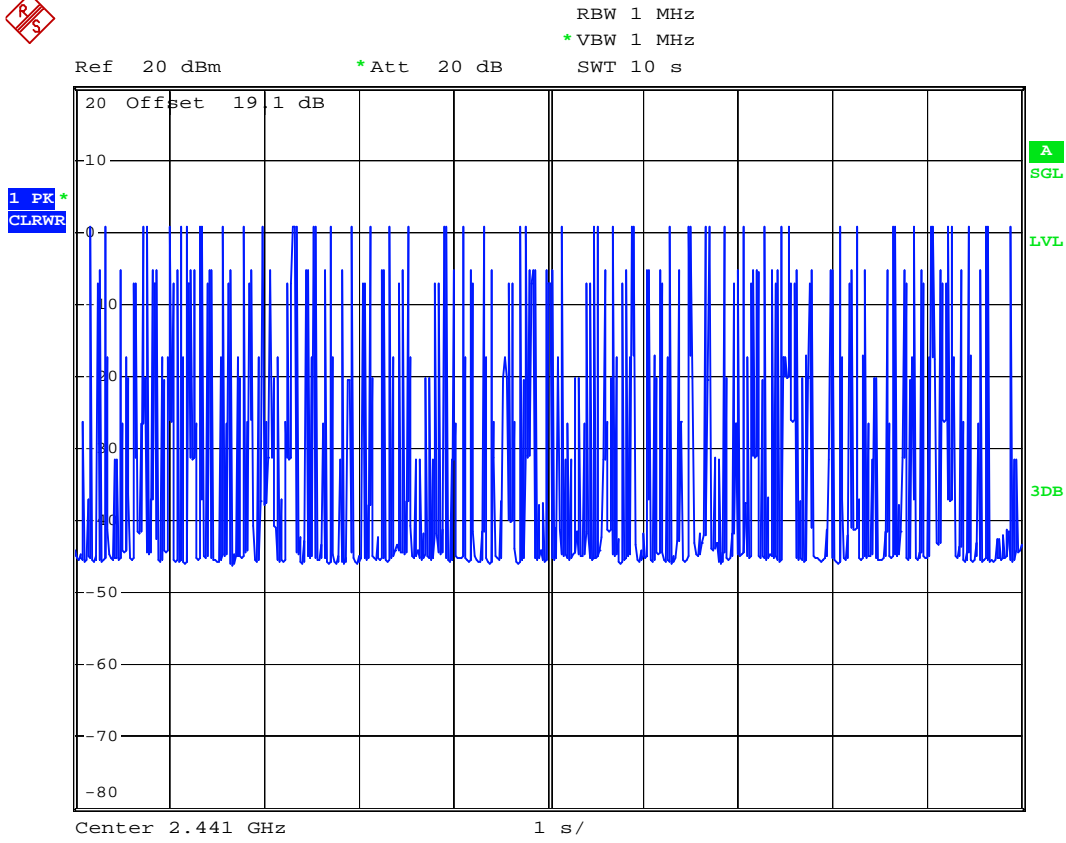
DH3 (CH39)



RBW 1 MHz Delta 3 [T1]
 *VBW 1 MHz 0.53 dB
 Ref 20 dBm *Att 20 dB SWT 5 ms 2.520000 ms



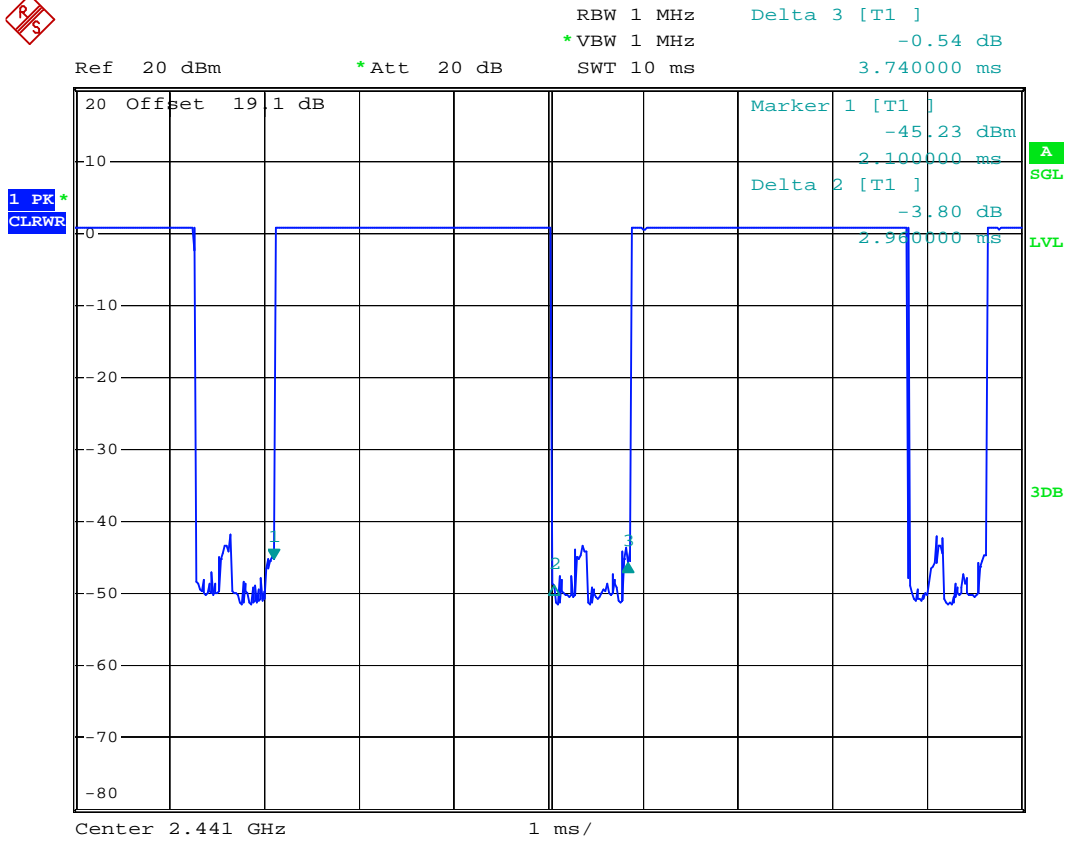
Date: 13.FEB.2008 09:07:40



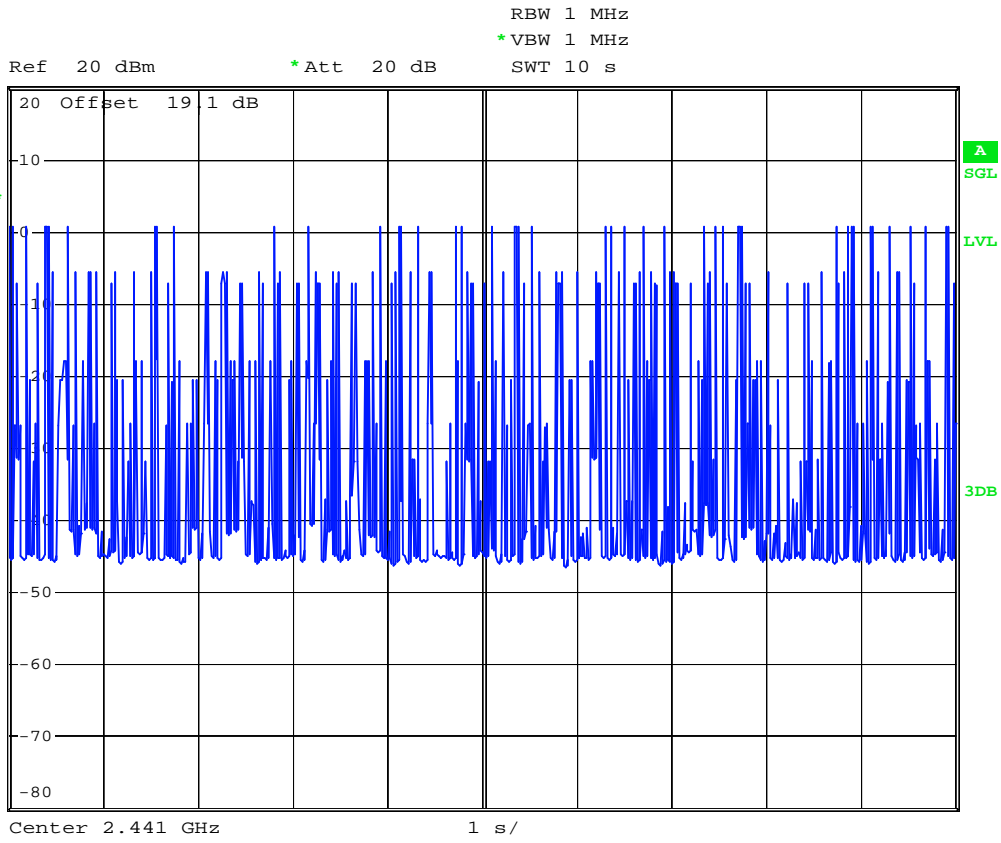
Date: 13.FEB.2008 09:13:30



DH5 (CH39)



Date: 13.FEB.2008 09:12:04



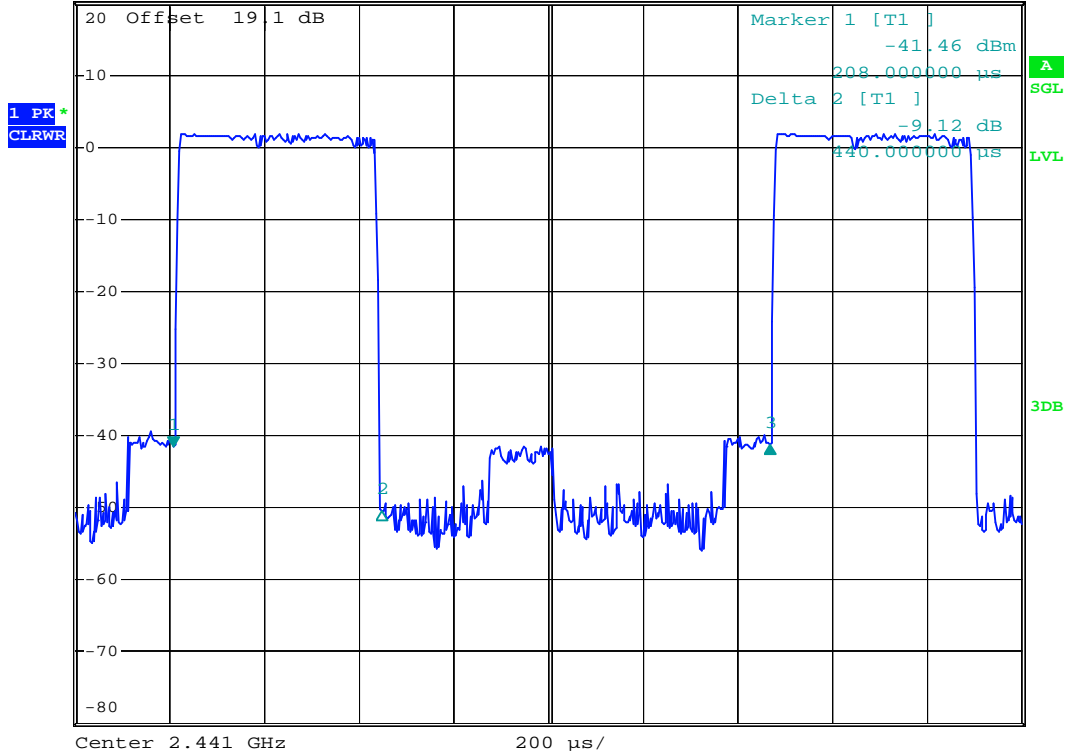
Date: 13.FEB.2008 09:14:05



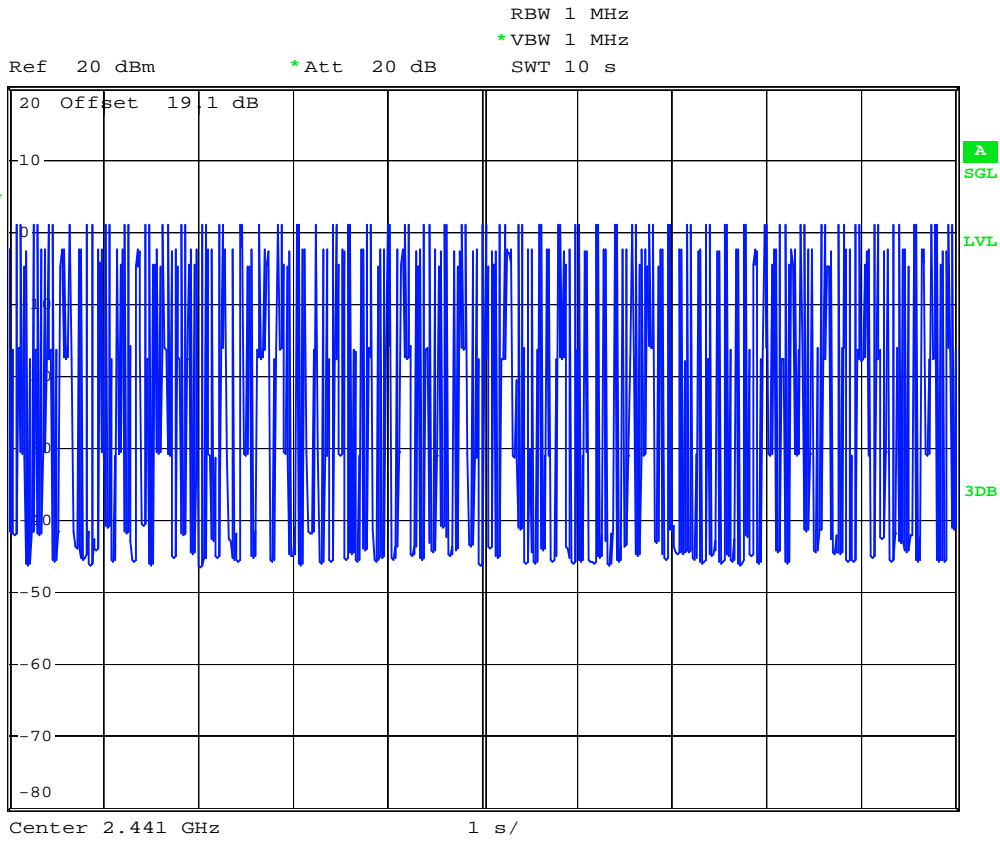
2DH1 (CH39)



Ref 20 dBm *Att 20 dB RBW 1 MHz Delta 3 [T1] 0.19 dB
 *VBW 1 MHz SWT 2 ms 1.260000 ms



Date: 13.FEB.2008 03:54:59



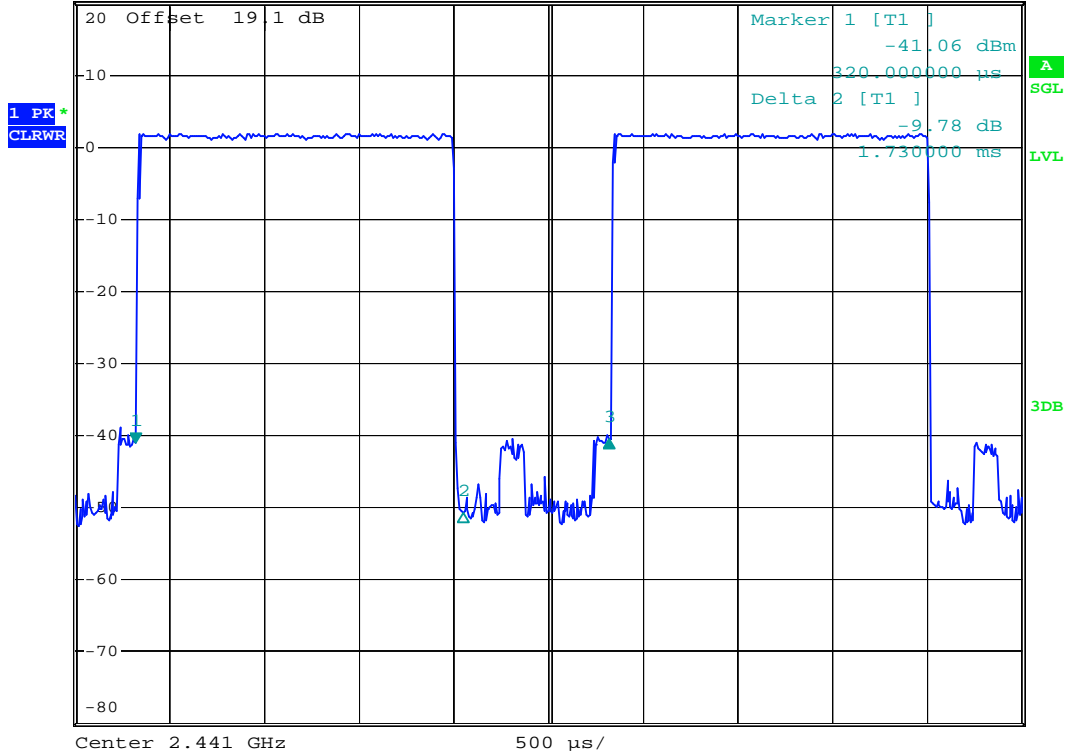
Date: 13.FEB.2008 09:37:44



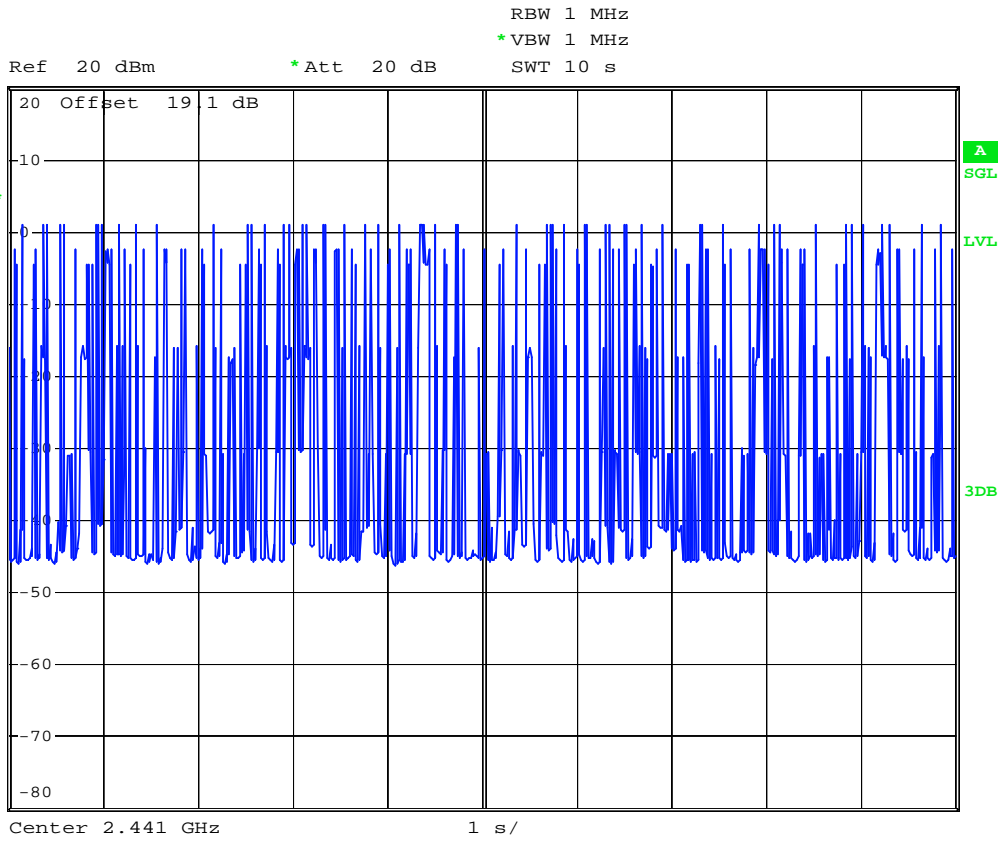
2 DH3 (CH39)



RBW 1 MHz Delta 3 [T1]
 *VBW 1 MHz 0.59 dB
 Ref 20 dBm *Att 20 dB SWT 5 ms 2.500000 ms



Date: 13.FEB.2008 03:55:47



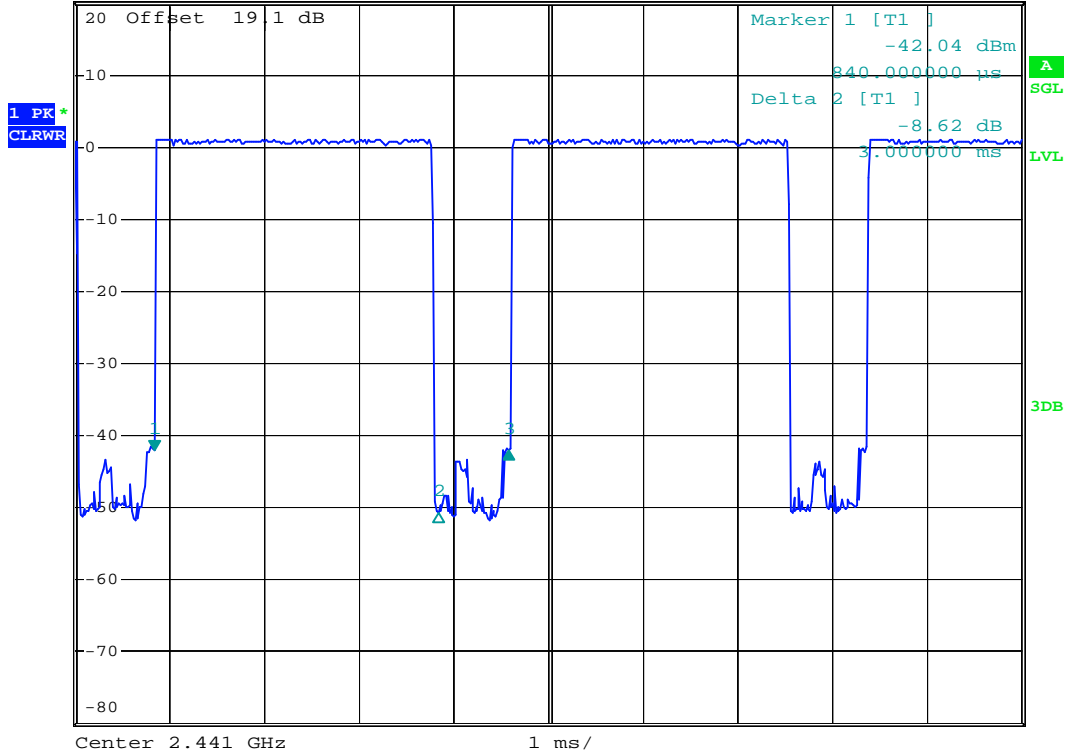
Date: 13.FEB.2008 09:38:07



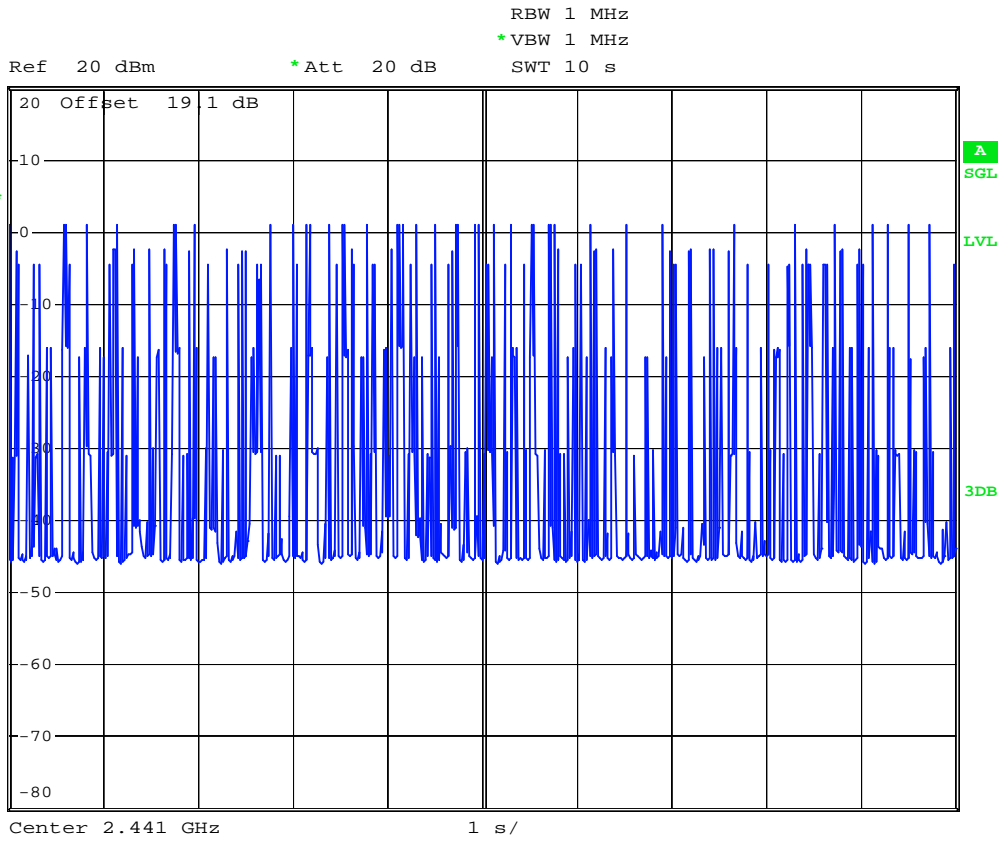
2 DH5 (CH39)



Ref 20 dBm *Att 20 dB RBW 1 MHz Delta 3 [T1] 0.03 dB
 *VBW 1 MHz SWT 10 ms 3.740000 ms



Date: 13.FEB.2008 09:27:54



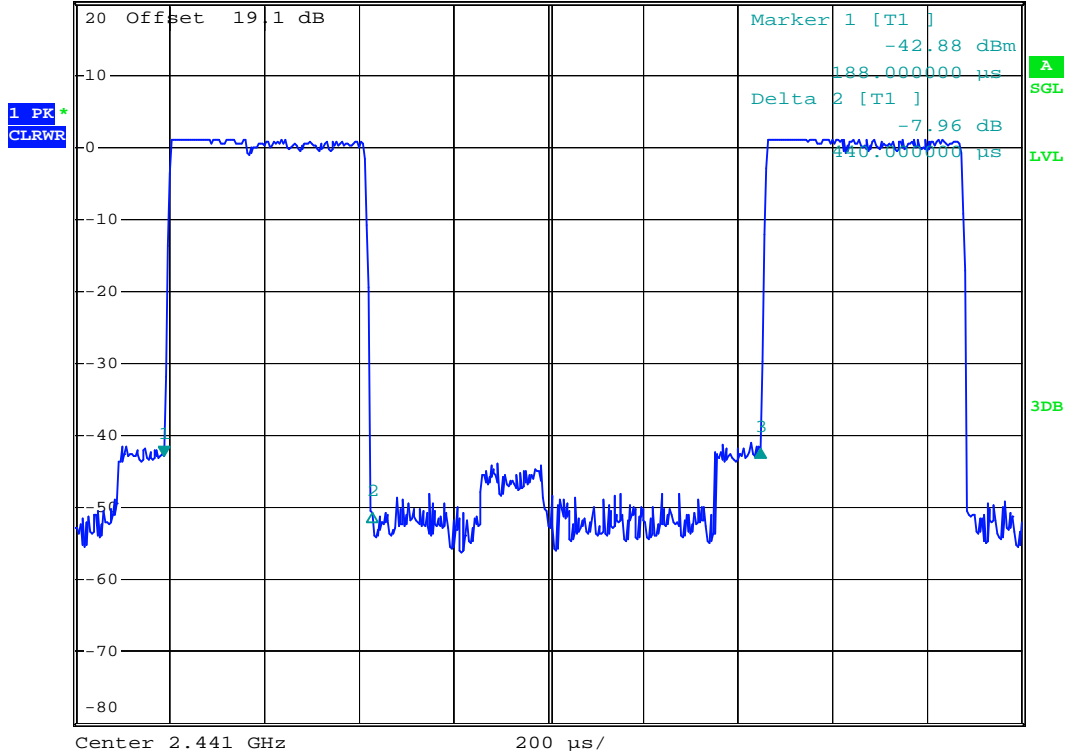
Date: 13.FEB.2008 09:38:31



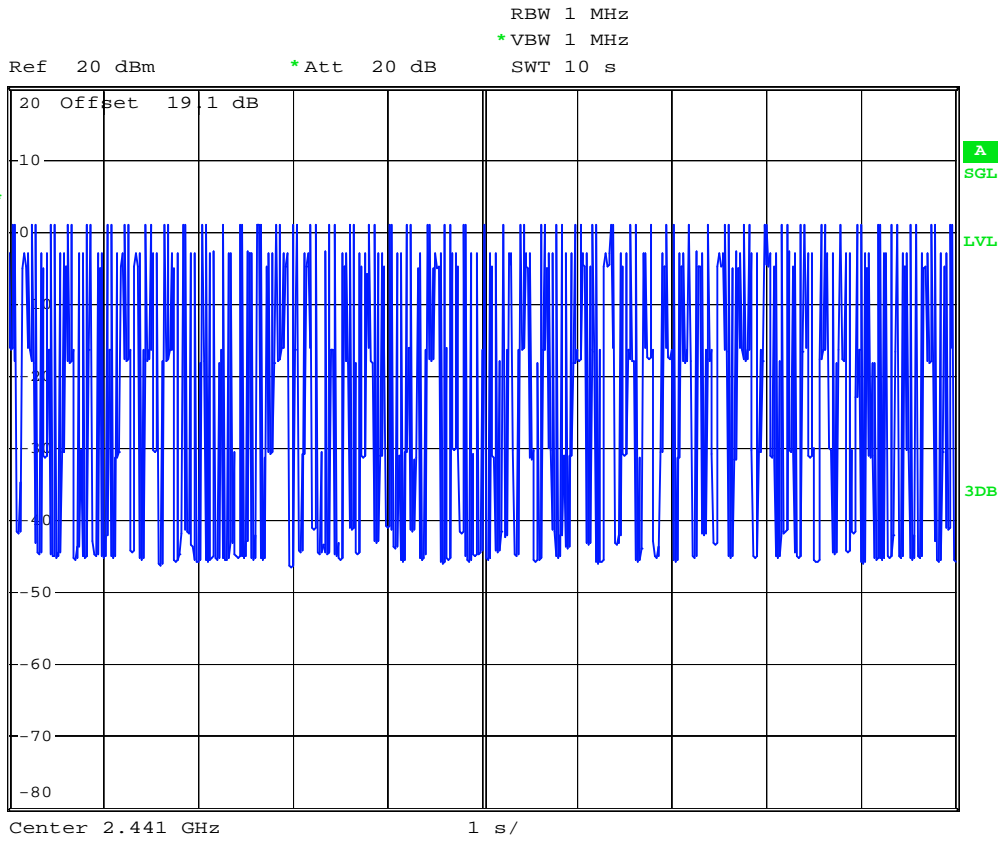
3DH1 (CH39)



Ref 20 dBm *Att 20 dB RBW 1 MHz Delta 3 [T1] 1.18 dB
 *VBW 1 MHz 1.260000 ms
 SWT 2 ms



Date: 13.FEB.2008 09:31:35



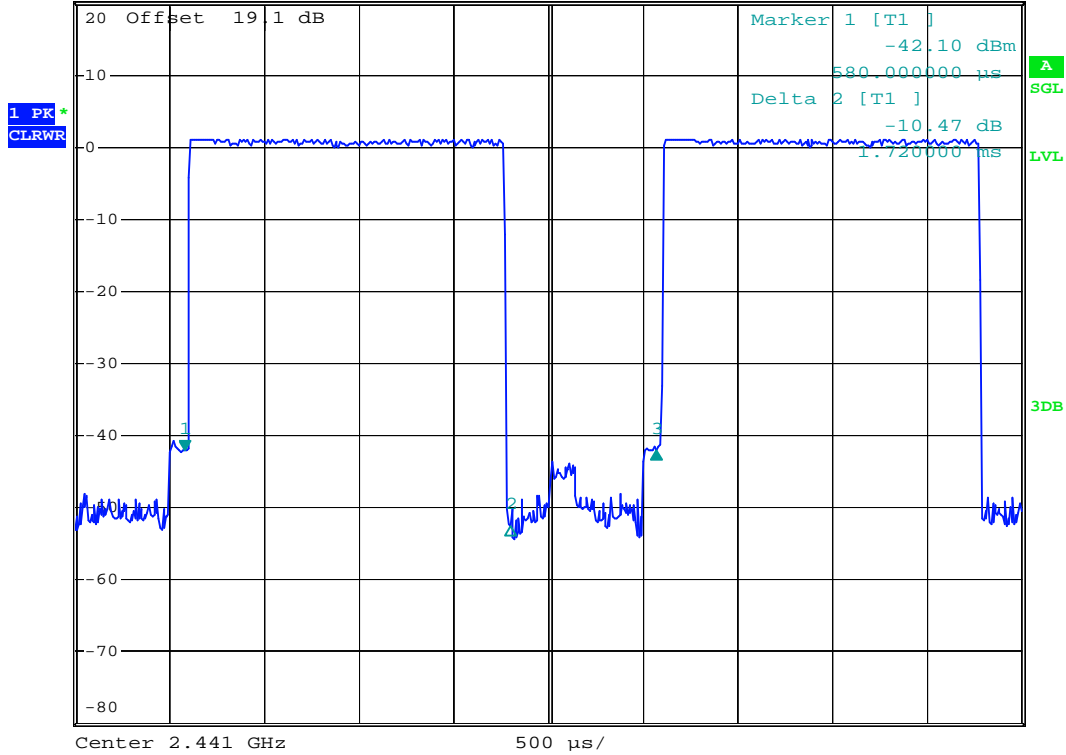
Date: 13.FEB.2008 09:39:09



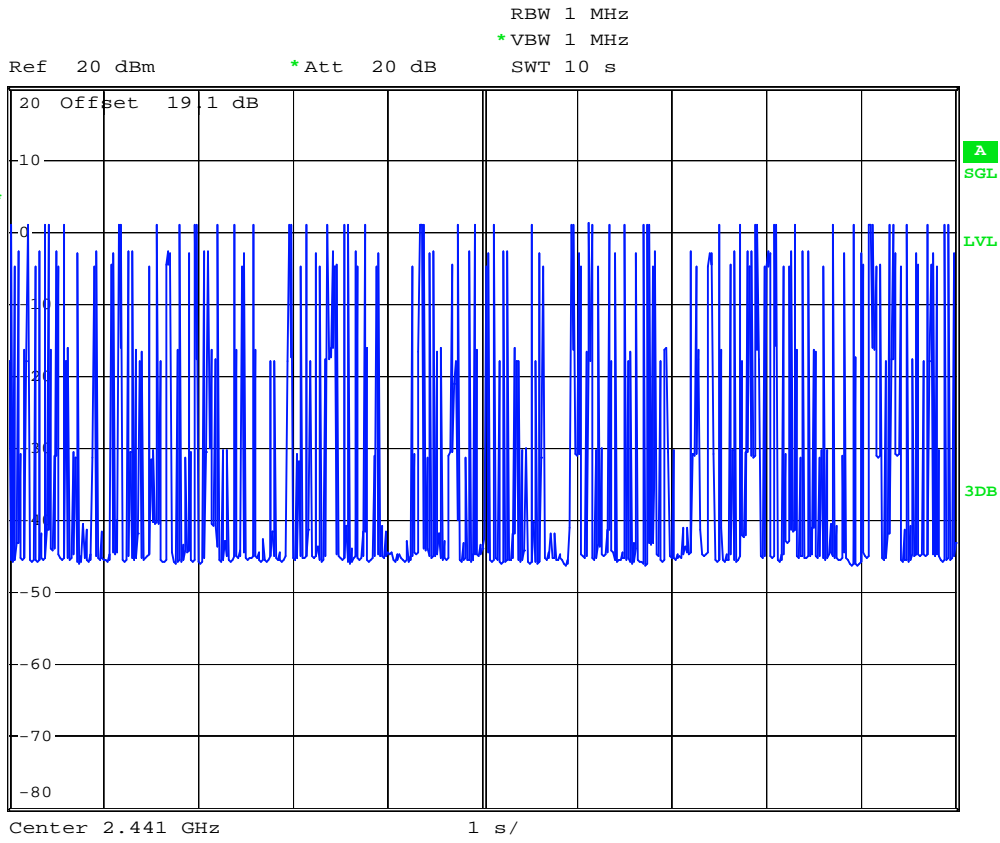
3DH3 (CH39)



RBW 1 MHz Delta 3 [T1]
 *VBW 1 MHz 0.02 dB
 Ref 20 dBm *Att 20 dB SWT 5 ms 2.490000 ms



Date: 13.FEB.2008 09:34:14



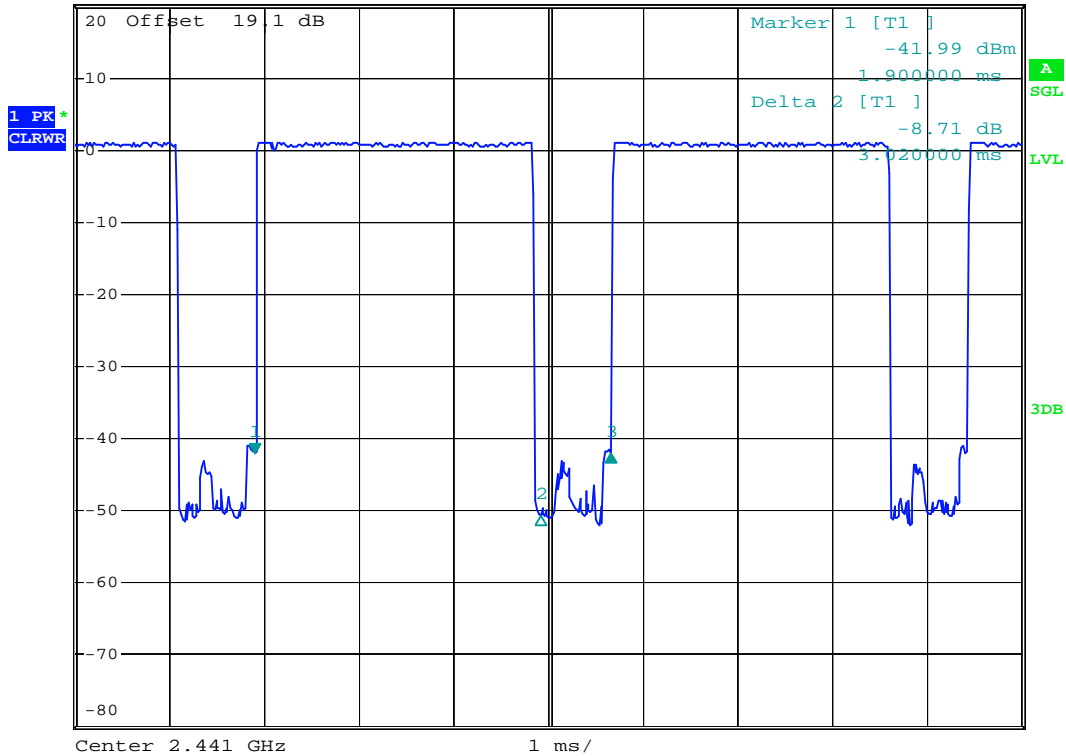
Date: 13.FEB.2008 09:39:43



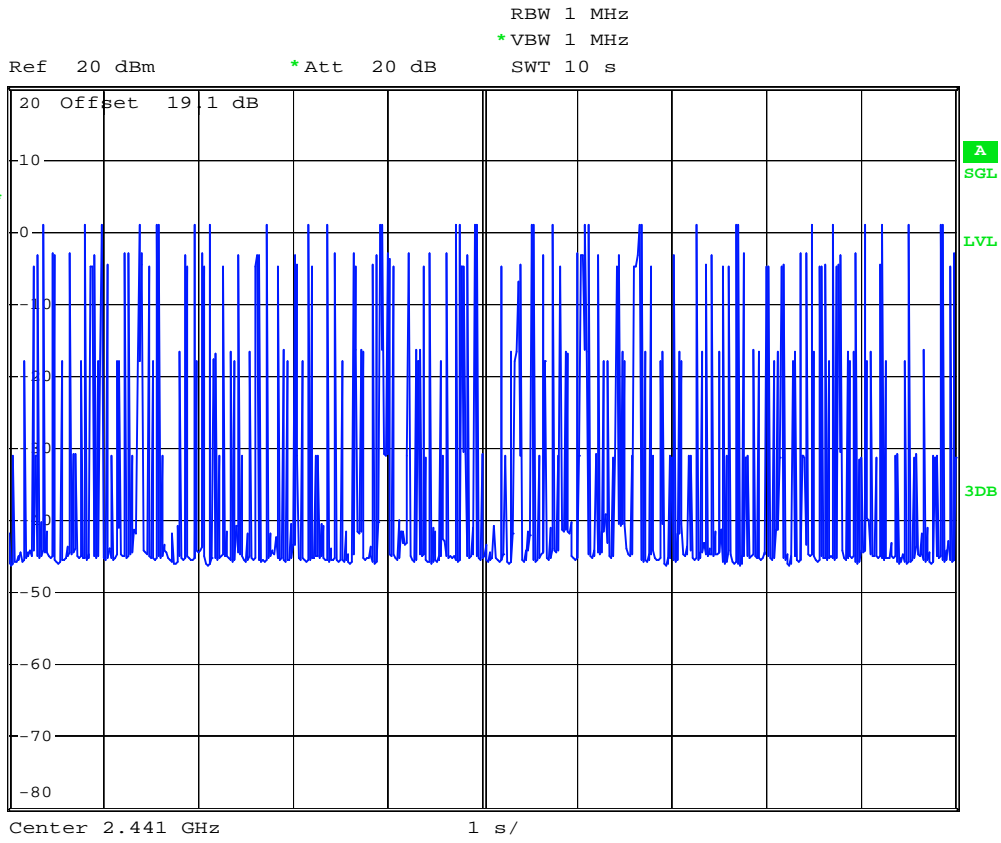
3DH5 (CH39)



Ref 20 dBm *Att 20 dB RBW 1 MHz Delta 3 [T1] -0.20 dB
 *VBW 1 MHz SWT 10 ms 3.760000 ms



Date: 13.FEB.2008 09:35:14



Date: 13.FEB.2008 09:40:18

5.7 Peak Output Power Measurement

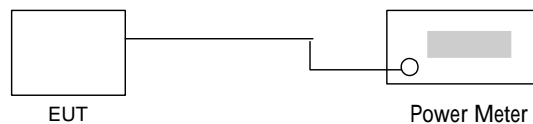
5.7.1 Measuring Instruments

As described in chapter 6 of this test report.

5.7.2 Test Procedure

The antenna port (RF output) of the EUT was connected to the input (RF input) of a spectrum analyzer for BT measurement. RBW and VBW are set to 3MHz. The cable loss has been offset before testing.

5.7.3 Test Setup Layout





5.7.4 Test Result

- Application Type : BT
- Temperature : 21~24
- Relative Humidity : 50~55%
- Test Engineer : Sun

▪ BT(1Mbps)

| Channel | Frequency (MHz) | Measured Output Power (dBm) | Limits (Watt / dBm) |
|---------|-----------------|-----------------------------|---------------------|
| 00 | 2402 | 1.25 | 1W / 30dBm |
| 39 | 2441 | 2.41 | 1W / 30dBm |
| 78 | 2480 | 1.99 | 1W / 30dBm |

▪ BT EDR(2Mbps)

| Channel | Frequency (MHz) | Measured Output Power (dBm) | Limits (Watt / dBm) |
|---------|-----------------|-----------------------------|---------------------|
| 00 | 2402 | 1.49 | 1W / 30dBm |
| 39 | 2441 | 2.91 | 1W / 30dBm |
| 78 | 2480 | 2.39 | 1W / 30dBm |

▪ BT EDR(3Mbps)

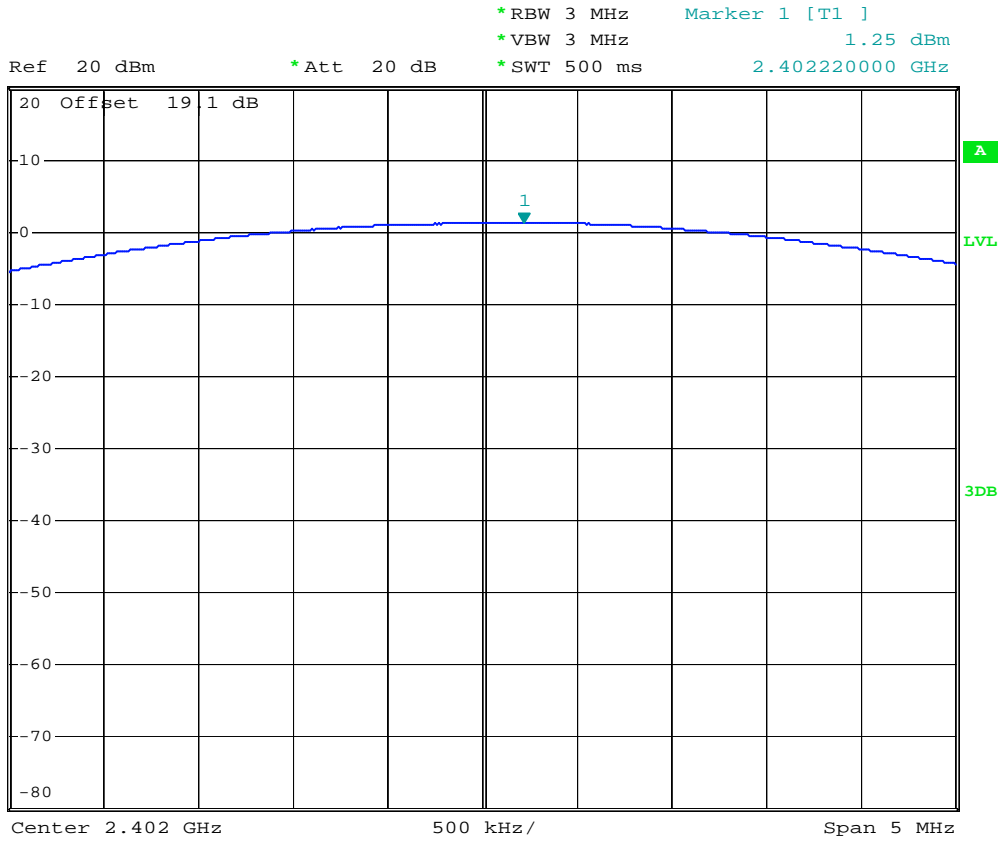
| Channel | Frequency (MHz) | Measured Output Power (dBm) | Limits (Watt / dBm) |
|---------|-----------------|-----------------------------|---------------------|
| 00 | 2402 | 1.41 | 1W / 30dBm |
| 39 | 2441 | 2.86 | 1W / 30dBm |
| 78 | 2480 | 2.48 | 1W / 30dBm |



5.7.5 Output Power

BT(1Mbps)

Mode : CH00 (2402MHz)



Date: 13.FEB.2008 02:41:35

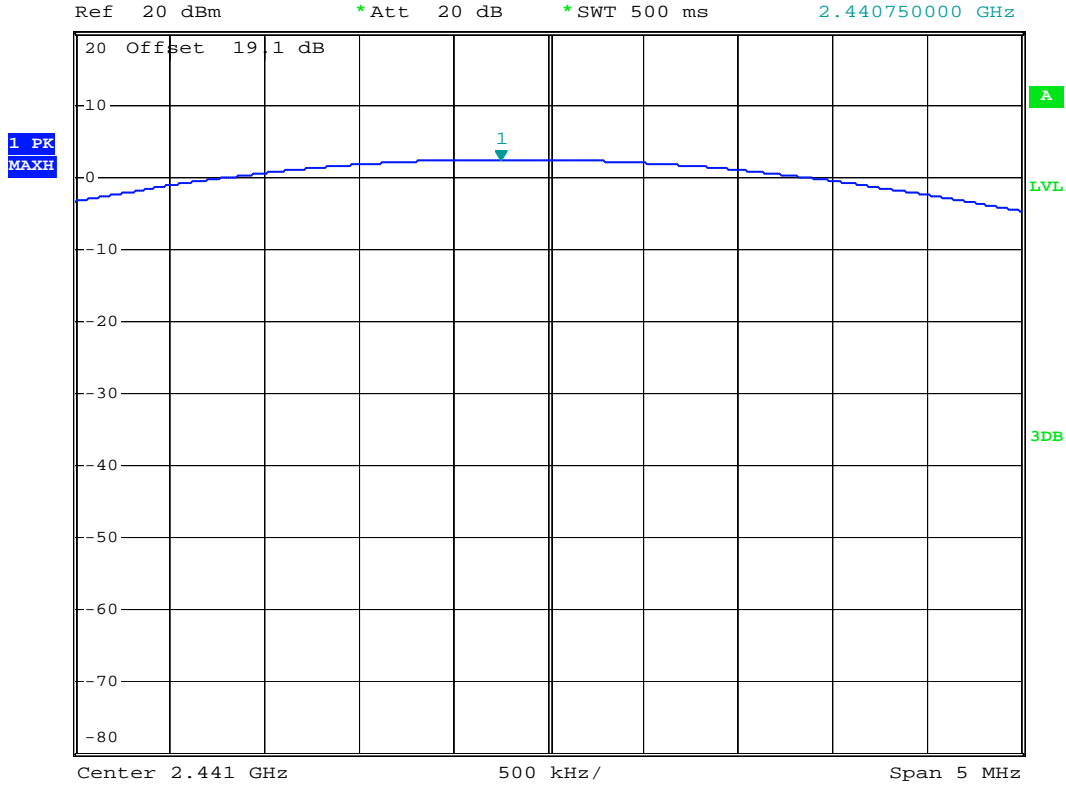


BT(1Mbps)

Mode : CH39 (2441MHz)



*RBW 3 MHz Marker 1 [T1]
 *VBW 3 MHz 2.41 dBm
 *SWT 500 ms 2.440750000 GHz



Date: 13.FEB.2008 02:43:51

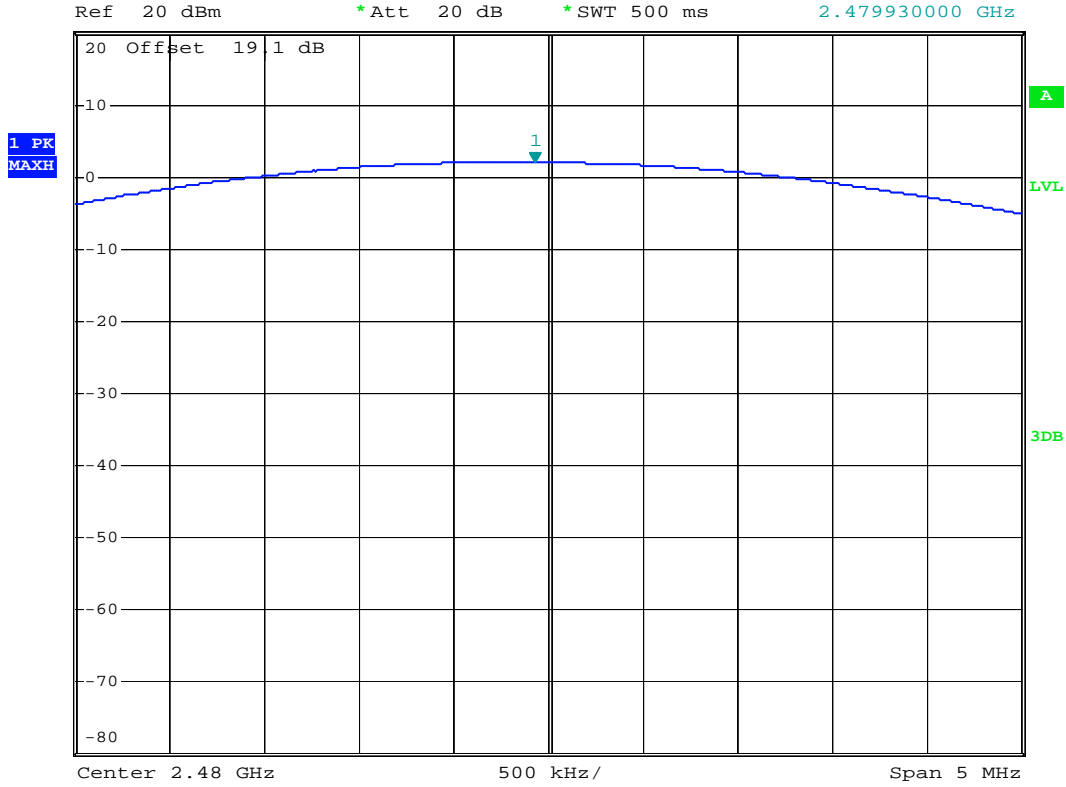


Bluetooth(1Mbps)

Mode : CH78 (2480MHz)



*RBW 3 MHz Marker 1 [T1]
 *VBW 3 MHz 1.99 dBm
 *SWT 500 ms 2.479930000 GHz



Date: 13.FEB.2008 02:48:02

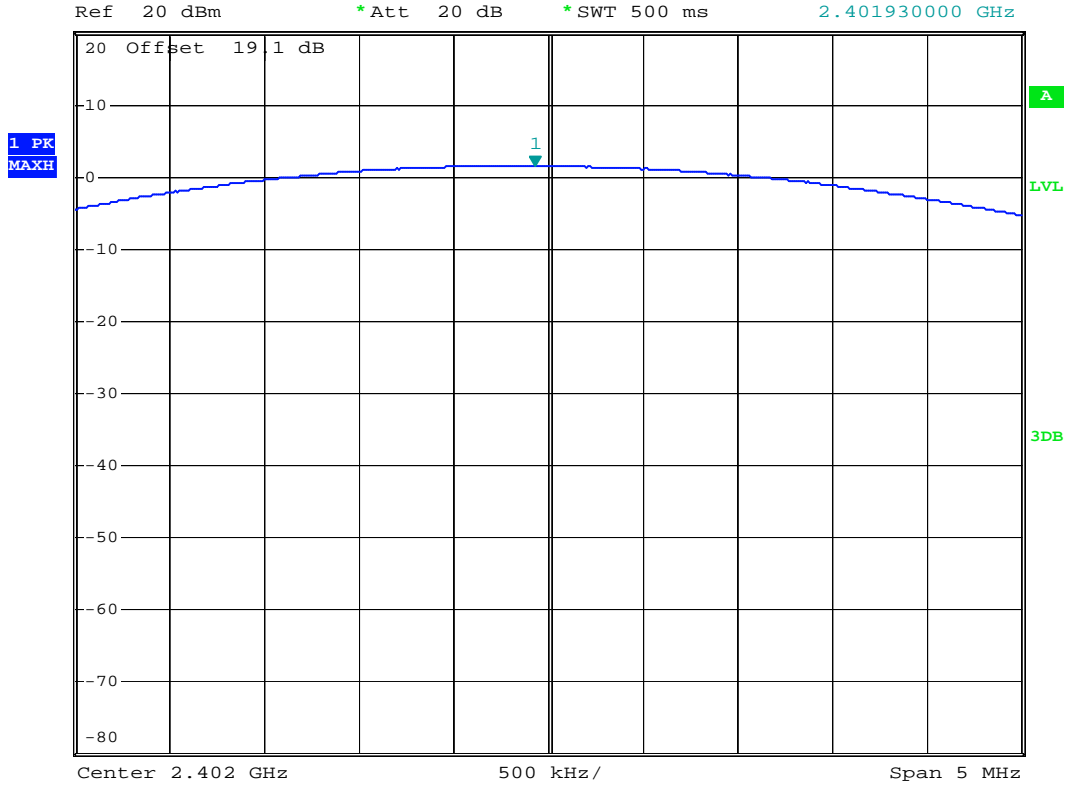


Bluetooth(2Mbps)

Mode : CH00 (2402MHz)



*RBW 3 MHz Marker 1 [T1]
 *VBW 3 MHz 1.49 dBm
 *SWT 500 ms 2.401930000 GHz



Date: 13.FEB.2008 02:17:08



Bluetooth(2Mbps)

Mode : CH39 (2441MHz)

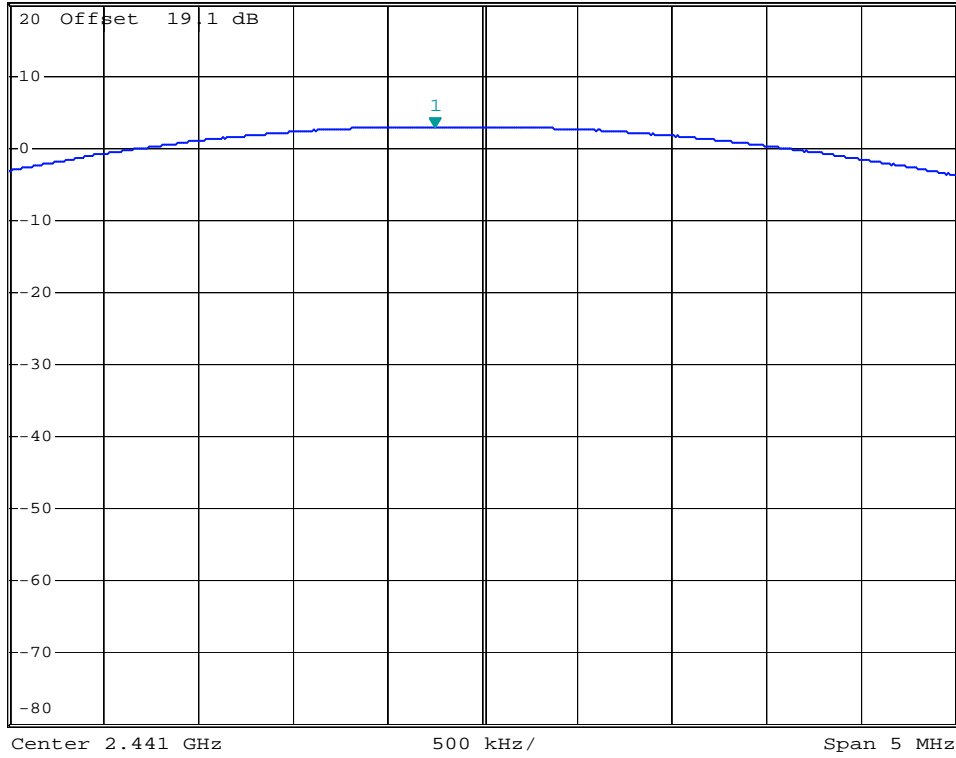


*RBW 3 MHz Marker 1 [T1]
 *VBW 3 MHz 2.91 dBm
 *SWT 500 ms 2.440750000 GHz

Ref 20 dBm

*Att 20 dB

1 PK
MAXH



Date: 13.FEB.2008 02:18:30

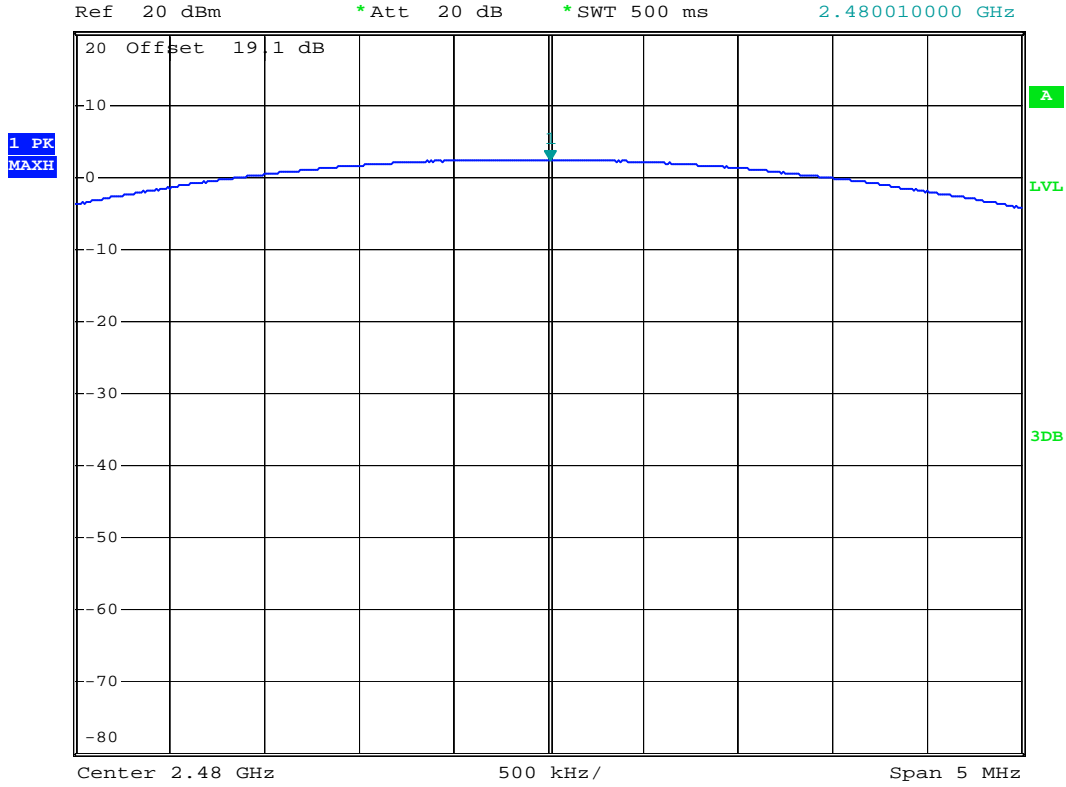


Bluetooth(2Mbps)

Mode : CH78 (2480MHz)



*RBW 3 MHz Marker 1 [T1]
 *VBW 3 MHz 2.39 dBm
 *SWT 500 ms 2.480010000 GHz



Date: 13.FEB.2008 02:20:09

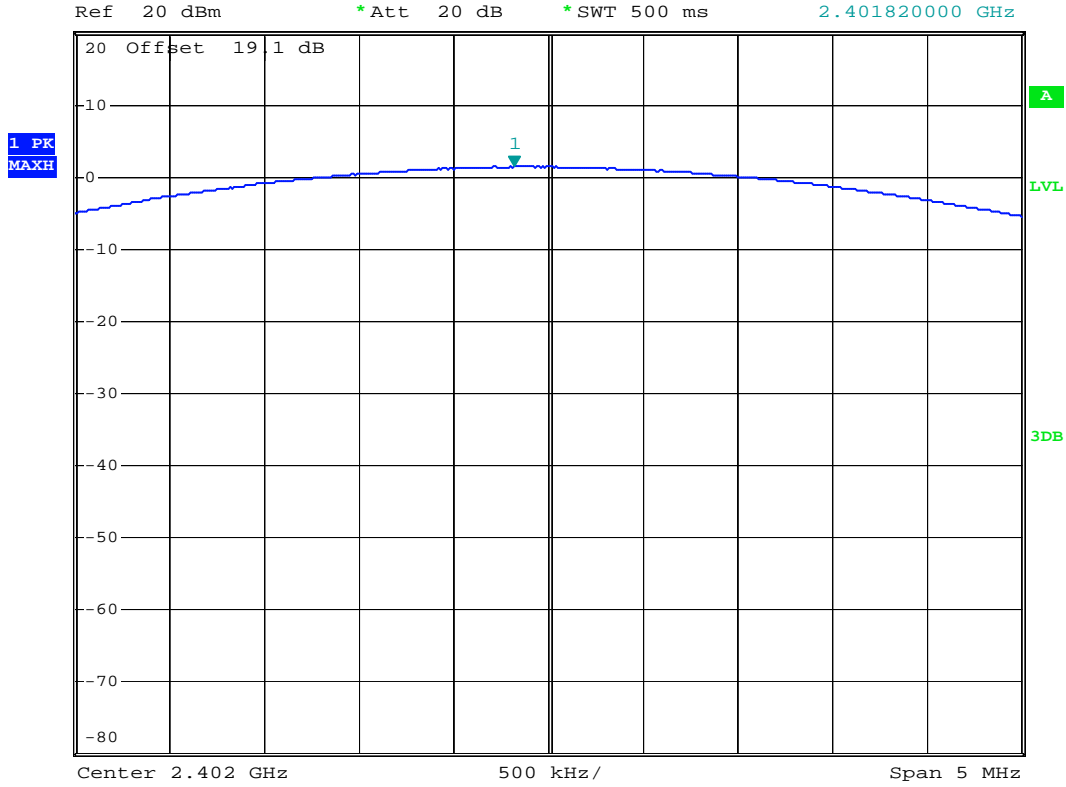


Bluetooth(3Mbps)

Mode : CH00 (2402MHz)



*RBW 3 MHz Marker 1 [T1]
 *VBW 3 MHz 1.41 dBm
 *SWT 500 ms 2.401820000 GHz



Date: 13.FEB.2008 02:21:09



Bluetooth(3Mbps)

Mode : CH39 (2441MHz)

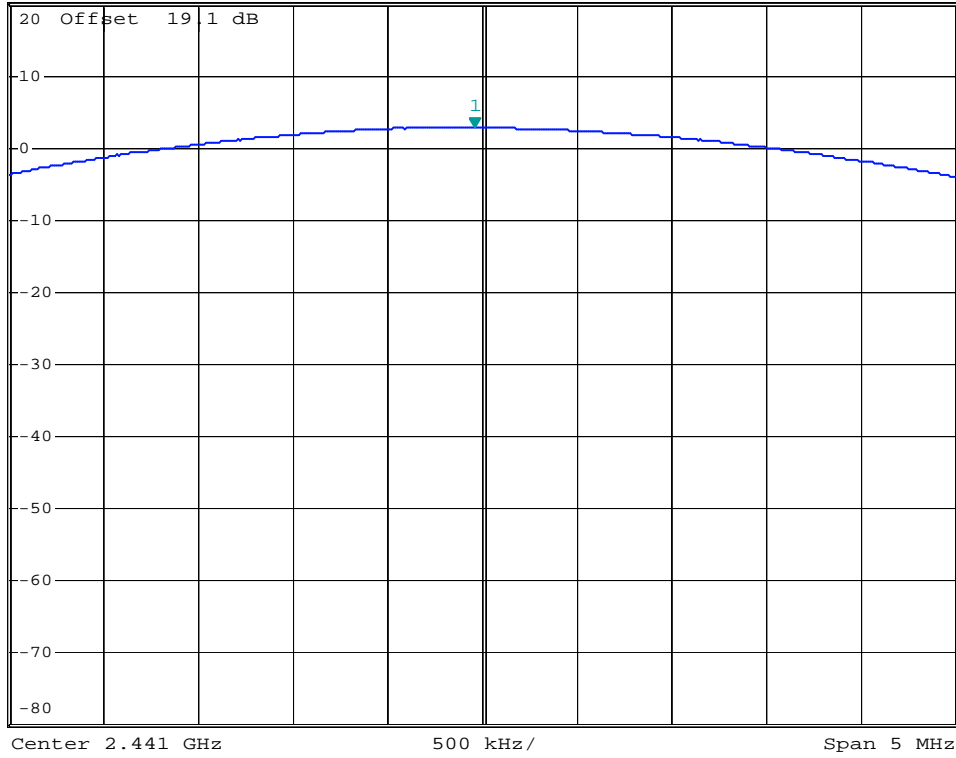


*RBW 3 MHz Marker 1 [T1]
 *VBW 3 MHz 2.86 dBm
 *SWT 500 ms 2.44096000 GHz

Ref 20 dBm

*Att 20 dB

1 PK
MAXH



Date: 13.FEB.2008 02:22:33

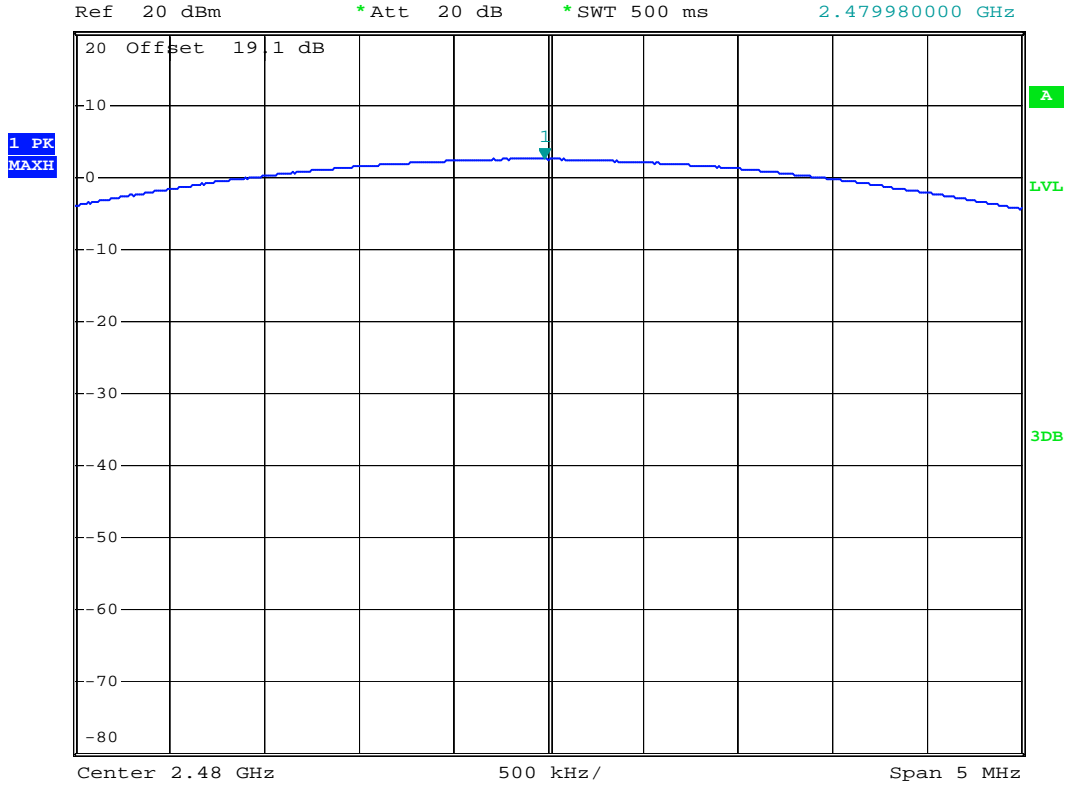


Bluetooth(3Mbps)

Mode : CH78 (2480MHz)



*RBW 3 MHz Marker 1 [T1]
 *VBW 3 MHz 2.48 dBm
 *SWT 500 ms 2.479980000 GHz



Date: 13.FEB.2008 02:23:27



5.8 Conducted Emission

5.8.1 Measuring Instruments

As described in chapter 6 of this test Report.

5.8.2 Test Procedures

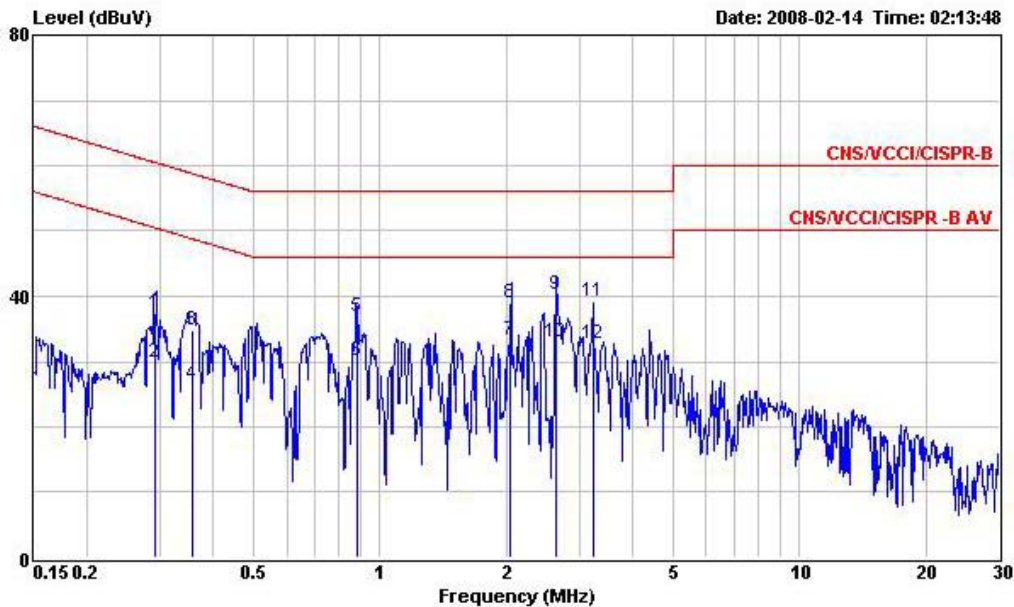
- a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- b. Connect EUT to the power port of a line impedance stabilization network (LISN).
- c. All the support units are connected to the other LISN.
- d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- e. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
- f. Both sides of AC line were checked for maximum conducted interference.
- g. The frequency range from 150 kHz to 30 MHz was searched.
- h. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.



5.8.3 Test Data

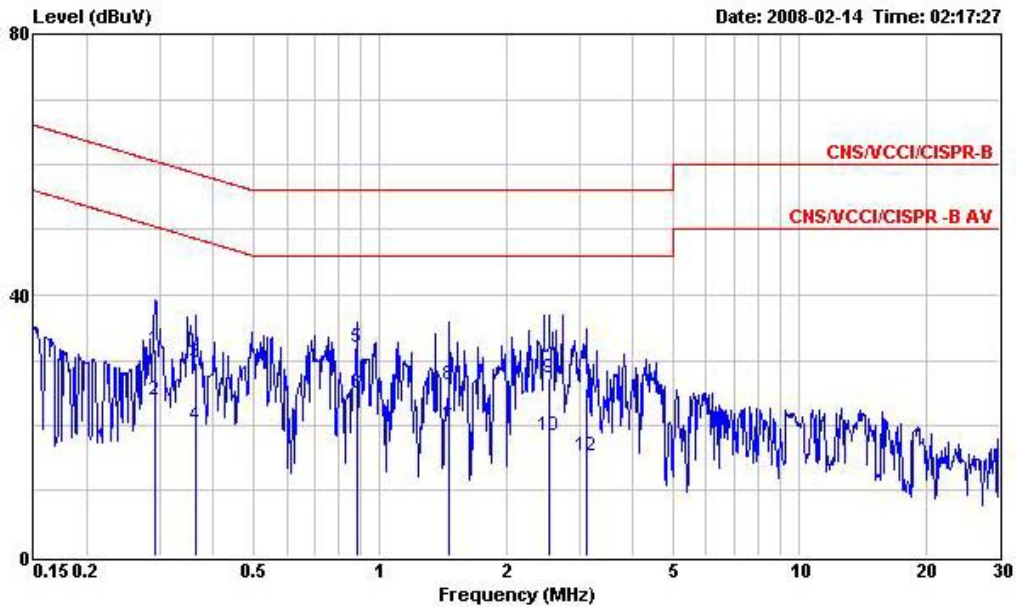
- Temperature : 21~24
- Relative Humidity : 50~55%
- Test Enginner : Sun
- Test Mode : Mode 1

The test that passed at minimum margin was marked by the frame in the following table.



Site : CO01-HY
 Condition : CNS/VCCI/CISPR-B 2001/004 200604 LINE
 EUT : Bluetooth Speaker
 Power : 120Vac/60Hz
 Model : FR 820209
 Memo : BT Link + Adaptor + I-Pod

| | Freq | Level | Over | Limit | Read | Probe | Cable | |
|----|-------|-------|--------|-------|-------|--------|-------|---------|
| | MHz | dBuV | Limit | Line | Level | Factor | Loss | Remark |
| | | | dB | dBuV | dBuV | dB | dB | |
| 1 | 0.292 | 37.52 | -22.95 | 60.47 | 37.32 | 0.10 | 0.10 | QP |
| 2 | 0.292 | 29.74 | -20.73 | 50.47 | 29.54 | 0.10 | 0.10 | Average |
| 3 | 0.358 | 34.85 | -23.92 | 58.77 | 34.64 | 0.10 | 0.11 | QP |
| 4 | 0.358 | 26.49 | -22.28 | 48.77 | 26.28 | 0.10 | 0.11 | Average |
| 5 | 0.881 | 37.00 | -19.00 | 56.00 | 36.74 | 0.10 | 0.16 | QP |
| 6 | 0.881 | 30.14 | -15.86 | 46.00 | 29.88 | 0.10 | 0.16 | Average |
| 7 | 2.050 | 33.14 | -12.86 | 46.00 | 32.90 | 0.10 | 0.14 | Average |
| 8 | 2.050 | 39.08 | -16.92 | 56.00 | 38.84 | 0.10 | 0.14 | QP |
| 9 | 2.640 | 40.13 | -15.87 | 56.00 | 39.78 | 0.14 | 0.21 | QP |
| 10 | 2.640 | 33.08 | -12.92 | 46.00 | 32.73 | 0.14 | 0.21 | Average |
| 11 | 3.220 | 39.16 | -16.84 | 56.00 | 38.72 | 0.17 | 0.27 | QP |
| 12 | 3.220 | 32.84 | -13.16 | 46.00 | 32.40 | 0.17 | 0.27 | Average |



Site : CO01-HY
 Condition : CNS/VCCI/CISPR-B 2001/004 200604 NEUTRAL
 EUT : Bluetooth Speaker
 Power : 120Vac/60Hz
 Model : FR 820209
 Memo : BT Link + Adaptor + I-Pod

| | Over | Limit | Read | Probe | Cable | | | |
|------|-------|-------|--------|-------|--------|------|------|---------|
| Freq | Level | Limit | Line | Level | Factor | Loss | | |
| MHz | dBuV | dB | dBuV | dBuV | dB | dB | | |
| 1 | 0.291 | 31.63 | -28.87 | 60.50 | 31.43 | 0.10 | 0.10 | QP |
| 2 | 0.291 | 23.92 | -26.58 | 50.50 | 23.72 | 0.10 | 0.10 | Average |
| 3 | 0.363 | 29.57 | -29.09 | 58.66 | 29.36 | 0.10 | 0.11 | QP |
| 4 | 0.363 | 20.07 | -28.59 | 48.66 | 19.86 | 0.10 | 0.11 | Average |
| 5 | 0.880 | 31.90 | -24.10 | 56.00 | 31.64 | 0.10 | 0.16 | QP |
| 6 | 0.880 | 24.93 | -21.07 | 46.00 | 24.67 | 0.10 | 0.16 | Average |
| 7 | 1.460 | 19.84 | -26.16 | 46.00 | 19.59 | 0.10 | 0.15 | Average |
| 8 | 1.460 | 26.12 | -29.88 | 56.00 | 25.87 | 0.10 | 0.15 | QP |
| 9 | 2.540 | 27.32 | -28.68 | 56.00 | 27.02 | 0.10 | 0.20 | QP |
| 10 | 2.540 | 18.31 | -27.69 | 46.00 | 18.01 | 0.10 | 0.20 | Average |
| 11 | 3.120 | 25.77 | -30.23 | 56.00 | 25.41 | 0.10 | 0.26 | QP |
| 12 | 3.120 | 15.28 | -30.72 | 46.00 | 14.92 | 0.10 | 0.26 | Average |



5.9 Radiated Emission Measurement

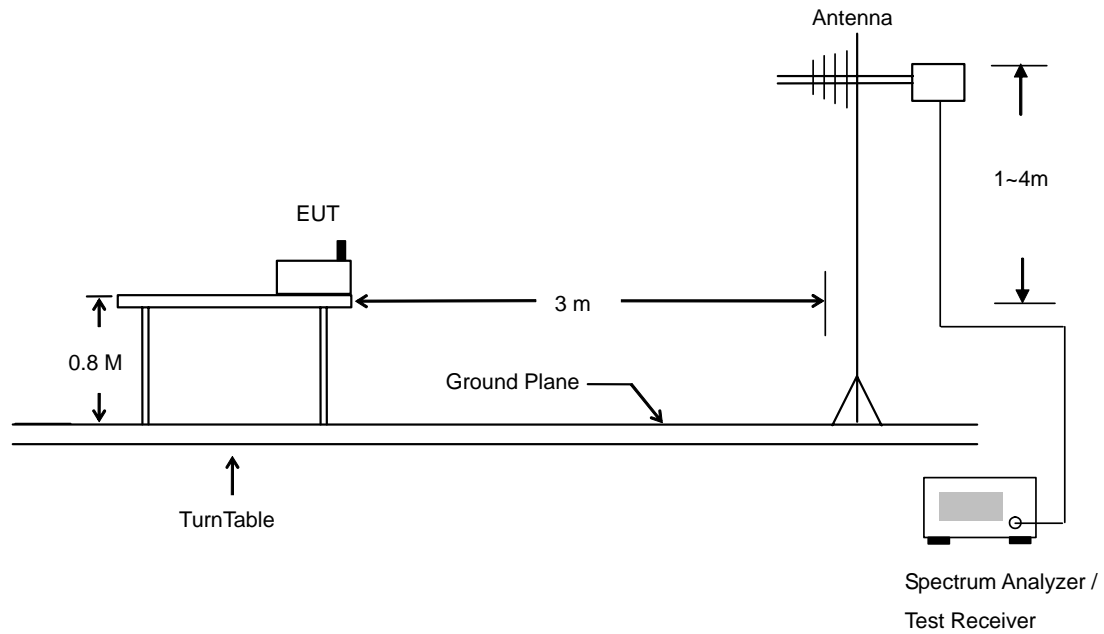
5.9.1 Measuring Instruments

As described in chapter 6 of this Report.

5.9.2 Test Procedures

- a. The EUT was placed on a rotatable table top 0.8 meter above ground.
- b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
- e. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
- f. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
- g. For testing below 1GHz, If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the quasi-peak method and reported.
- h. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

5.9.3 Typical Test Setup Layout of Radiated Emission

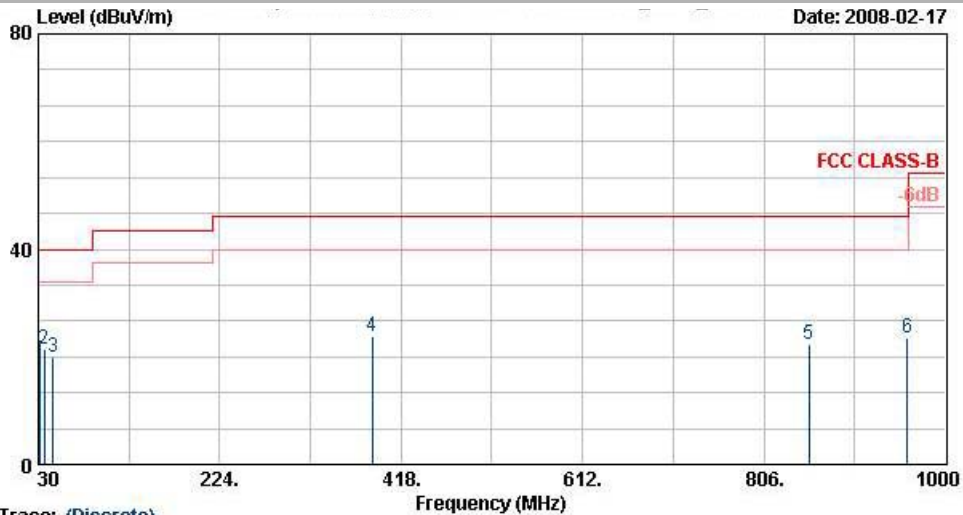




5.9.4 Test Data

- Temperature : 21~24°C
- Relating Humidity : 49~51%
- Test Enginner : Sun
- Test Mode : Mode 1
- Polarization : Horizontal (30MHz-1GHz)

The test that passed at minimum margin was marked by the boldface in the following table.



Trace: (Discrete)

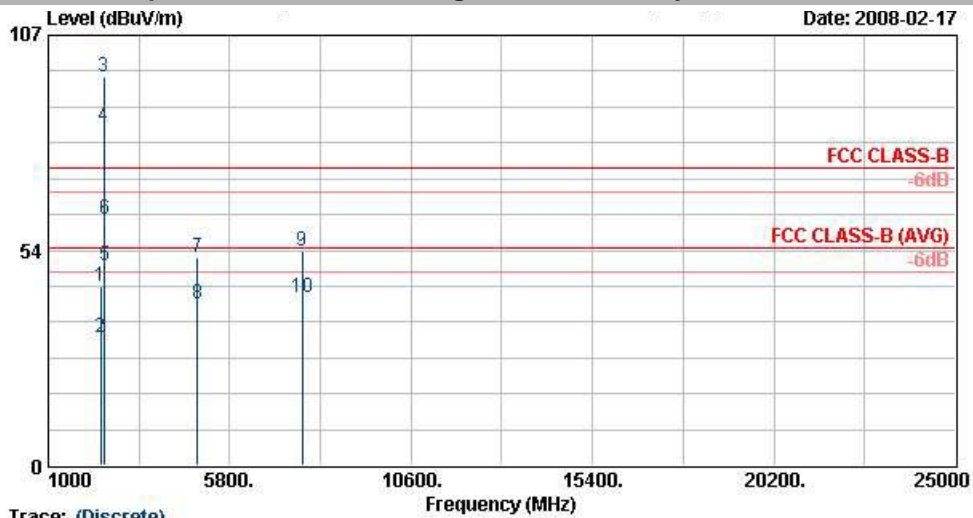
Site : 03CH06-HY
 Condition : FCC CLASS-B 3m LF-ANT(951121) HORIZONTAL
 EUT : Bluetooth Speaker
 Power : 120Vac/60Hz
 Model : FR 820209
 Memo : BT Tx_Ch78 ; 2480MHz + Adaptor
 Data Rate : DH5
 Plane : E2
 Sample : 1

| | Freq | Level | Over | Limit | ReadAntenna | Cable | Preamp | Ant | Table | Remark |
|---|--------|--------|--------|--------|-------------|-------|--------|-------|-------|----------|
| | MHz | dBUV/m | Limit | Line | Level | Loss | Factor | Pos | Pos | |
| | | | dB | dBUV/m | dBUV | dB | dB | cm | deg | |
| 1 | 31.08 | 23.32 | -16.68 | 40.00 | 37.53 | 18.95 | 0.30 | 33.46 | 100 | 214 Peak |
| 2 | 36.48 | 21.29 | -18.71 | 40.00 | 39.17 | 15.08 | 0.30 | 33.26 | --- | --- |
| 3 | 45.93 | 19.84 | -20.16 | 40.00 | 42.12 | 10.53 | 0.30 | 33.12 | --- | --- |
| 4 | 386.80 | 23.70 | -22.30 | 46.00 | 40.51 | 15.44 | 0.83 | 33.09 | --- | --- |
| 5 | 854.40 | 22.33 | -23.67 | 46.00 | 33.61 | 20.21 | 1.20 | 32.69 | --- | --- |
| 6 | 959.40 | 23.49 | -22.51 | 46.00 | 33.62 | 20.95 | 1.29 | 32.37 | --- | --- |



- Polarization : Horizontal (1GHz-25GHz)

The test that passed at minimum margin was marked by the boldface in the following table.



Trace: (Discrete)
 Site : D3CH06-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 EUT : Bluetooth Speaker
 Power : 120Vac/60Hz
 Model : FR 820209
 Memo : BT Tx_Ch78 ; 2480MHz + Adaptor
 Data Rate : DHS
 Plane : E2
 Sample : 1

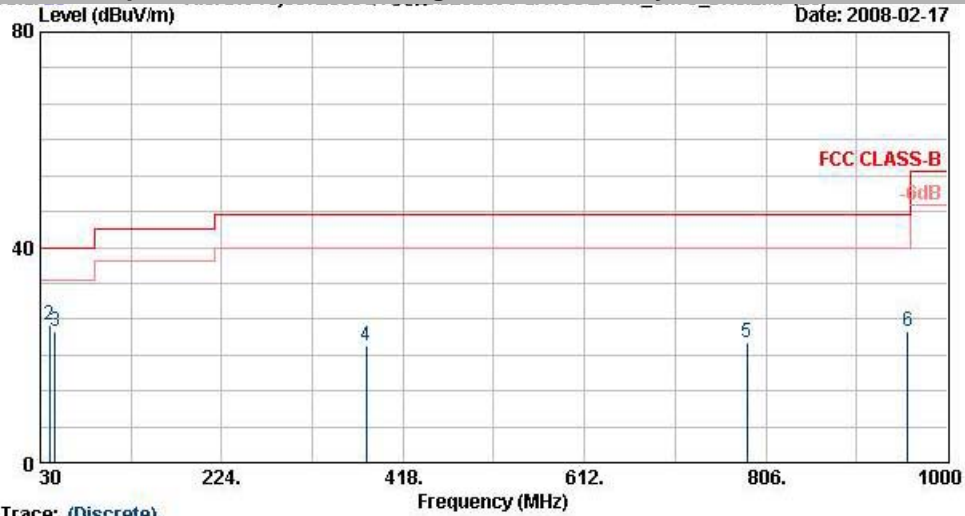
| | Freq | Level | Over | Limit | Read | Antenna | Cable | Preamp | Ant | Table | Remark |
|------------|----------------|--------------|--------------|--------------|--------------|--------------|-------------|--------------|------------|------------|----------------|
| | MHz | dBUV/m | Limit | Line | Level | Factor | Loss | Factor | Pos | Pos | |
| | | | dB | dBUV/m | dBUV | dB/m | dB | dB | cm | deg | |
| 1 | 2388.00 | 44.65 | -29.35 | 74.00 | 44.55 | 31.86 | 3.92 | 35.68 | 100 | 0 | Peak |
| 2 | 2388.00 | 31.72 | -22.28 | 54.00 | 31.62 | 31.86 | 3.92 | 35.68 | 100 | 291 | Average |
| 3 X | 2480.00 | 96.75 | | | 96.42 | 31.98 | 4.05 | 35.70 | 100 | 0 | Peak |
| 4 @ | 2480.00 | 84.37 | | | 84.04 | 31.98 | 4.05 | 35.70 | 100 | 291 | Average |
| 5 ! | 2483.50 | 49.57 | -4.43 | 54.00 | 49.24 | 31.98 | 4.05 | 35.70 | 100 | 291 | Average |
| 6 | 2483.50 | 61.13 | -12.87 | 74.00 | 60.80 | 31.98 | 4.05 | 35.70 | 100 | 0 | Peak |
| 7 | 4956.00 | 51.69 | -22.31 | 74.00 | 47.26 | 34.19 | 5.87 | 35.62 | 100 | 0 | Peak |
| 8 | 4956.00 | 40.21 | -13.79 | 54.00 | 35.78 | 34.19 | 5.87 | 35.62 | 100 | 187 | Average |
| 9 | 7716.00 | 53.11 | -20.89 | 74.00 | 46.33 | 35.64 | 7.38 | 36.24 | 100 | 0 | Peak |
| 10 | 7716.00 | 41.57 | -12.43 | 54.00 | 34.79 | 35.64 | 7.38 | 36.24 | 100 | 168 | Average |

Remark: #3 and #4 are Fundamental Signals



- Polarization : Vertical (30MHz-1GHz)

The test that passed at minimum margin was marked by the boldface in the following table.



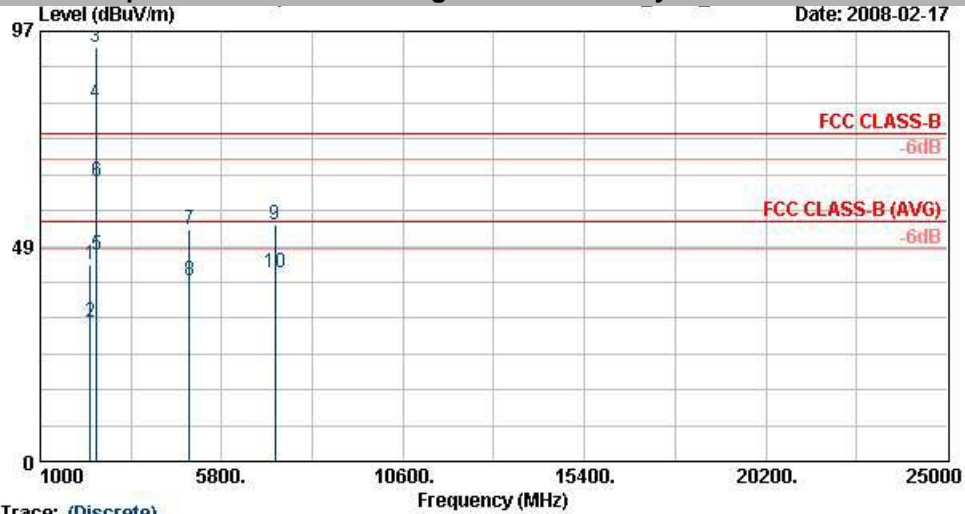
Trace: (Discrete)
 Site : D3CH06-HY
 Condition : FCC CLASS-B 3m LF-ANT(951121) VERTICAL
 EUT : Bluetooth Speaker
 Power : 120Vac/60Hz
 Model : FR 820209
 Memo : BT Tx_Ch78 ; 2480MHz + Adaptor
 Data Rate : DH5
 Plane : E2
 Sample : 1

| | Freq | Level | Over Limit | Limit Line | ReadAntenna Level | Antenna Factor | Cable Loss | Preamp Factor | Ant Pos | Table Pos | Remark |
|---|--------|--------|------------|------------|-------------------|----------------|------------|---------------|---------|-----------|--------|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg | |
| 1 | 30.00 | 26.18 | -13.82 | 40.00 | 39.72 | 19.66 | 0.30 | 33.50 | 100 | 147 | Peak |
| 2 | 39.99 | 25.48 | -14.52 | 40.00 | 44.87 | 13.51 | 0.30 | 33.20 | --- | --- | Peak |
| 3 | 45.93 | 24.26 | -15.74 | 40.00 | 46.55 | 10.53 | 0.30 | 33.12 | --- | --- | Peak |
| 4 | 378.40 | 21.78 | -24.22 | 46.00 | 38.79 | 15.22 | 0.88 | 33.11 | --- | --- | Peak |
| 5 | 785.80 | 22.38 | -23.62 | 46.00 | 34.14 | 19.68 | 1.20 | 32.65 | --- | --- | Peak |
| 6 | 957.30 | 24.39 | -21.61 | 46.00 | 34.56 | 20.94 | 1.27 | 32.38 | --- | --- | Peak |



- Polarization : Vertical (1GHz-25GHz)

The test that passed at minimum margin was marked by the boldface in the following table.



Trace: (Discrete)
 Site : 03CH06-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
 EUT : Bluetooth Speaker
 Power : 120Vac/60Hz
 Model : FR 820209
 Memo : BT Tx_Ch78 ; 2480MHz + Adaptor
 Data Rate : DH5
 Plane : E2
 Sample : 1

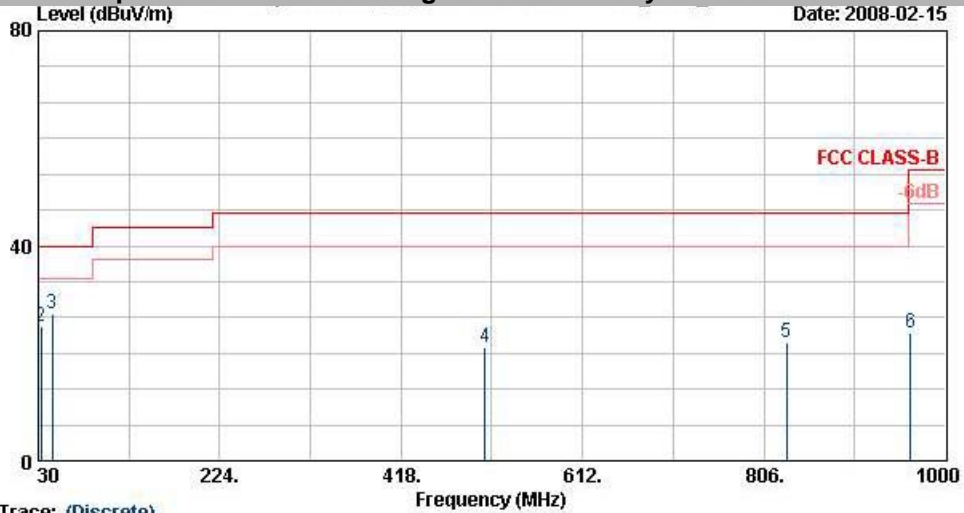
| | Freq | Level | Over Limit | Limit Line | ReadAntenna | Cable | Preamp | Ant | Table | Remark |
|-----|---------|--------|------------|------------|-------------|-------|--------|-------|-------|-------------|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB | dB | cm | deg | |
| 1 | 2316.00 | 44.25 | -29.75 | 74.00 | 44.36 | 31.73 | 3.82 | 35.67 | 100 | 0 Peak |
| 2 | 2316.00 | 31.39 | -22.61 | 54.00 | 31.50 | 31.73 | 3.82 | 35.67 | 127 | 237 Average |
| 3 X | 2480.00 | 93.41 | | | 93.08 | 31.98 | 4.05 | 35.70 | 100 | 0 Peak |
| 4 @ | 2480.00 | 80.89 | | | 80.56 | 31.98 | 4.05 | 35.70 | 127 | 237 Average |
| 5 | 2483.50 | 46.68 | -7.32 | 54.00 | 46.35 | 31.98 | 4.05 | 35.70 | 127 | 237 Average |
| 6 | 2483.50 | 63.03 | -10.97 | 74.00 | 62.70 | 31.98 | 4.05 | 35.70 | 100 | 0 Peak |
| 7 | 4956.00 | 52.39 | -21.61 | 74.00 | 47.95 | 34.19 | 5.87 | 35.62 | 100 | 0 Peak |
| 8 | 4956.00 | 40.87 | -13.13 | 54.00 | 36.44 | 34.19 | 5.87 | 35.62 | 100 | 217 Average |
| 9 | 7206.00 | 53.43 | -20.57 | 74.00 | 46.63 | 35.72 | 7.17 | 36.08 | 100 | 0 Peak |
| 10 | 7206.00 | 42.55 | -11.45 | 54.00 | 35.75 | 35.72 | 7.17 | 36.08 | 100 | 157 Average |

Remark: #3 and #4 are Fundamental Signals



- Test Mode : Mode 2
- Polarization : Horizontal (30MHz-1GHz)

The test that passed at minimum margin was marked by the boldface in the following table.



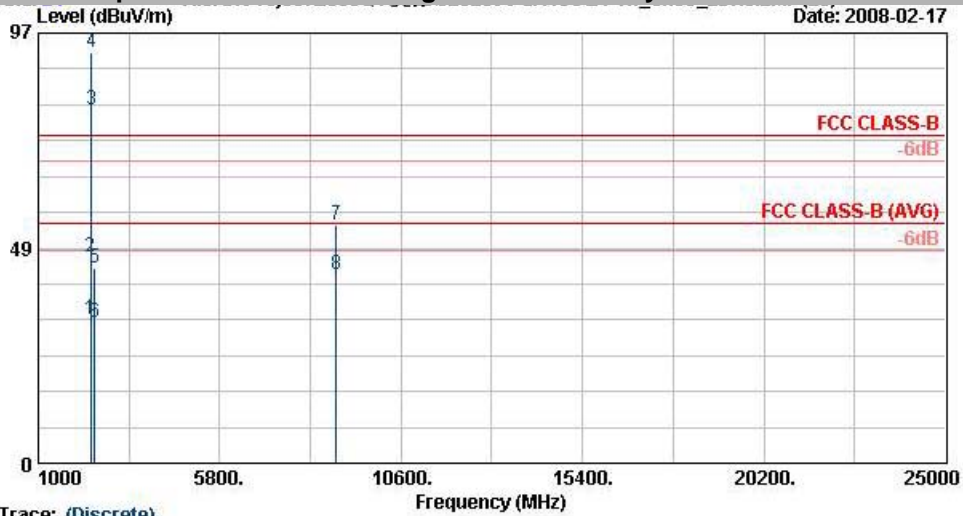
Trace: (Discrete)
 Site : 03CH06-HY
 Condition : FCC CLASS-B 3m LF-ANT(051121) HORIZONTAL
 EUT : Bluetooth Speaker
 Power : 120Vac/60Hz
 Model : FR 820209
 Memo : BT Tx_CH00 ; 2402MHz + Adaptor
 Data Rate : 2-DH5
 Plane : E2
 Sample : 1

| | Freq | Level | Over | Limit | Read | Antenna | Cable | Preamp | Ant | Table | Remark |
|-----|--------|--------|--------|--------|-------|---------|-------|--------|-----|-------|--------|
| | MHz | dBuV/m | Limit | Line | Level | Factor | Loss | Factor | Pos | Pos | |
| | | | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg | |
| 1 | 30.00 | 24.67 | -15.33 | 40.00 | 38.21 | 19.66 | 0.30 | 33.50 | --- | --- | Peak |
| 2 | 33.24 | 24.96 | -15.04 | 40.00 | 40.50 | 17.54 | 0.30 | 33.38 | --- | --- | Peak |
| 3 @ | 44.58 | 27.33 | -12.67 | 40.00 | 49.12 | 11.02 | 0.30 | 33.11 | 100 | 116 | Peak |
| 4 | 507.90 | 21.03 | -24.97 | 46.00 | 35.83 | 17.51 | 1.00 | 33.31 | --- | --- | Peak |
| 5 | 830.60 | 22.10 | -23.90 | 46.00 | 33.50 | 20.03 | 1.20 | 32.63 | --- | --- | Peak |
| 6 | 962.90 | 23.70 | -30.30 | 54.00 | 33.76 | 20.98 | 1.30 | 32.34 | --- | --- | Peak |



- Polarization : Horizontal (1GHz-25GHz)

The test that passed at minimum margin was marked by the boldface in the following table.



Trace: (Discrete)
 Site : 08CH06-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 EUT : Bluetooth Speaker
 Power : 120Vac/60Hz
 Model : FR 820209
 Memo : BT Tx_Ch00 ; 2402MHz + Adaptor
 Data Rate : 2-DH5
 Plane : E2
 Sample : 1

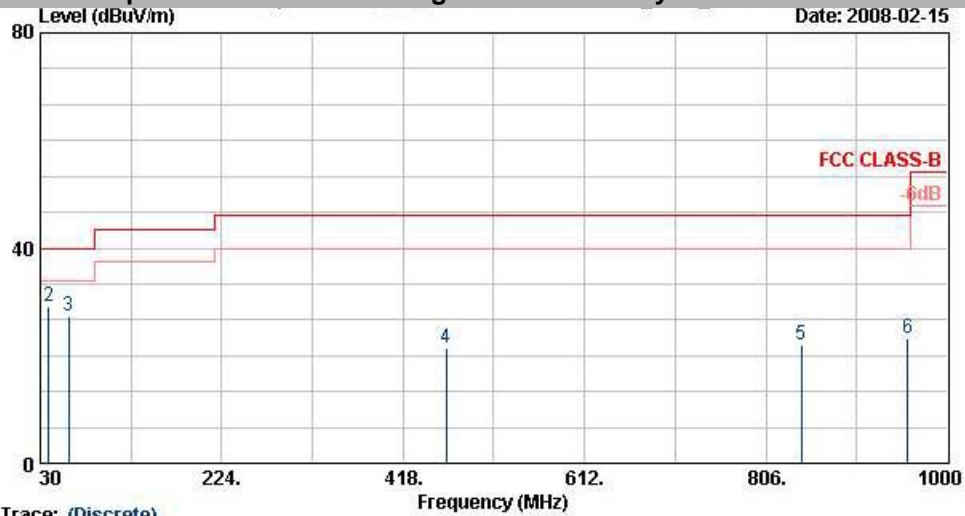
| | Freq | Level | Over | Limit | Read | Antenna | Cable | Preamp | Ant | Table | Remark |
|-----|---------|--------|--------|--------|-------|---------|-------|--------|-----|-------|---------|
| | MHz | dBuV/m | Limit | Line | Level | Factor | Loss | Factor | Pos | Pos | |
| | | | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg | |
| 1 | 2388.85 | 32.55 | -21.45 | 54.00 | 32.45 | 31.86 | 3.92 | 35.68 | 100 | 127 | Average |
| 2 | 2388.85 | 46.35 | -27.65 | 74.00 | 46.25 | 31.86 | 3.92 | 35.68 | 100 | 0 | Peak |
| 3 @ | 2402.00 | 79.87 | | | 79.77 | 31.86 | 3.92 | 35.68 | 100 | 127 | Average |
| 4 @ | 2402.00 | 92.76 | | | 92.67 | 31.86 | 3.92 | 35.68 | 100 | 0 | Peak |
| 5 | 2500.00 | 44.06 | -29.94 | 74.00 | 43.71 | 32.00 | 4.05 | 35.70 | 100 | 0 | Peak |
| 6 | 2500.00 | 31.69 | -22.31 | 54.00 | 31.34 | 32.00 | 4.05 | 35.70 | 100 | 127 | Average |
| 7 | 8886.00 | 53.66 | -20.34 | 74.00 | 46.17 | 36.34 | 7.68 | 36.53 | 100 | 0 | Peak |
| 8 @ | 8886.00 | 42.55 | -11.45 | 54.00 | 35.06 | 36.34 | 7.68 | 36.53 | 100 | 75 | Average |

Remark: #3 and #4 are Fundamental Signals



- Polarization : Vertical (30MHz-1GHz)

The test that passed at minimum margin was marked by the boldface in the following table.



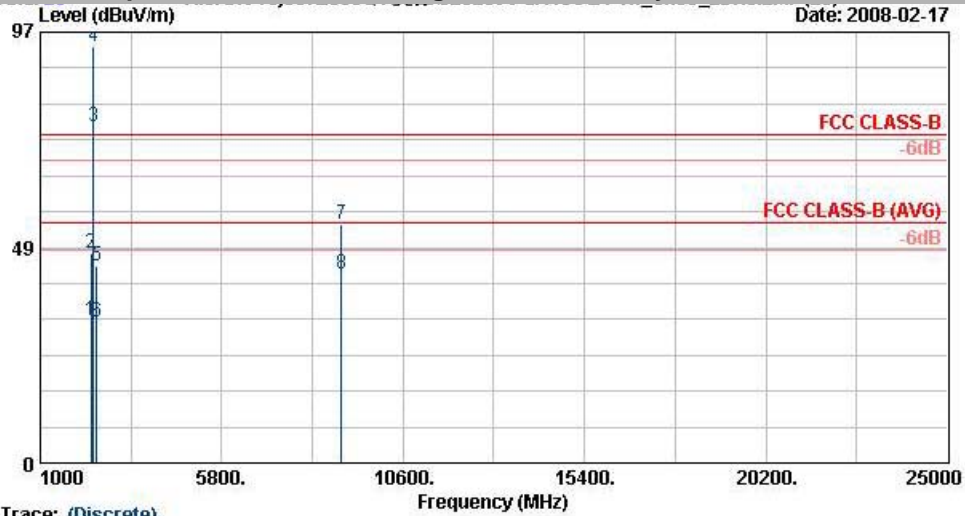
Trace: (Discrete)
 Site : 03CH06-HY
 Condition : FCC CLASS-B 3m LF-ANT(951121) VERTICAL
 EUT : Bluetooth Speaker
 Power : 120Vac/60Hz
 Model : FR 820209
 Memo : BT Tx_Ch00 ; 2402MHz + Adaptor
 Data Rate : 2-DH5
 Plane : E2
 Sample : 1

| | Freq | Level | Over | Limit | Read | Antenna | Cable | Preamp | Ant | Table | Remark |
|-----|--------|--------|--------|--------|-------|---------|-------|--------|-----|-------|--------|
| | MHz | dBUV/m | Limit | Line | Level | Factor | Loss | Factor | Pos | Pos | |
| | | | dB | dBUV/m | dBUV | dB/m | dB | dB | cm | deg | |
| 1 @ | 30.00 | 29.26 | -10.74 | 40.00 | 42.80 | 19.66 | 0.30 | 33.50 | 100 | 216 | Peak |
| 2 @ | 38.64 | 29.12 | -10.88 | 40.00 | 48.01 | 14.03 | 0.30 | 33.22 | --- | --- | Peak |
| 3 @ | 60.78 | 27.45 | -12.55 | 40.00 | 53.83 | 6.65 | 0.40 | 33.42 | --- | --- | Peak |
| 4 | 463.80 | 21.47 | -24.53 | 46.00 | 37.05 | 16.82 | 0.84 | 33.24 | --- | --- | Peak |
| 5 | 843.90 | 22.08 | -23.92 | 46.00 | 33.41 | 20.13 | 1.20 | 32.66 | --- | --- | Peak |
| 6 | 957.30 | 23.22 | -22.78 | 46.00 | 33.40 | 20.94 | 1.27 | 32.38 | --- | --- | Peak |



- Polarization : Vertical (1GHz-25GHz)

The test that passed at minimum margin was marked by the boldface in the following table.



Trace: (Discrete)
 Site : D3CH06-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
 EUT : Bluetooth Speaker
 Power : 120Vac/60Hz
 Model : FR 820209
 Memo : BT Tx_Ch00 ; 2402MHz + Adaptor
 Data Rate : 2-DH5
 Plane : E2
 Sample : 1

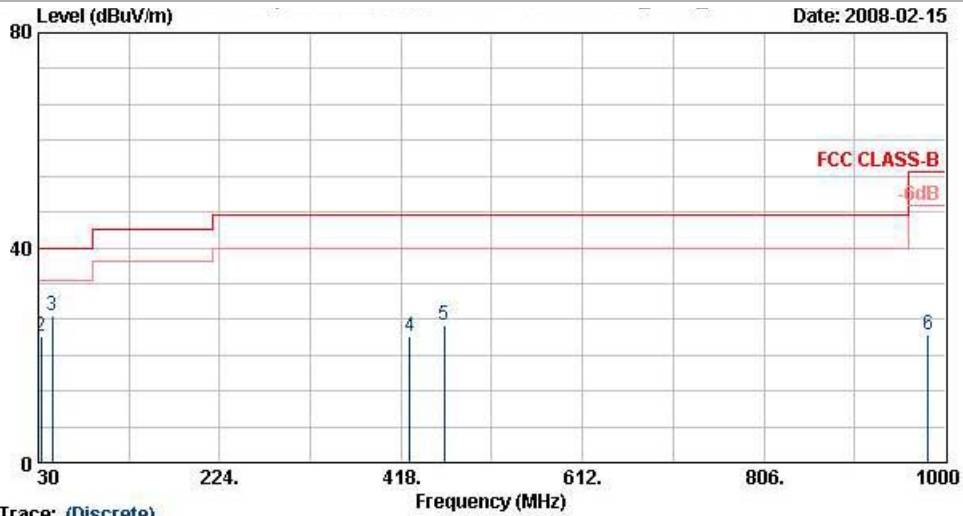
| | Freq | Level | Over | Limit | Read | Antenna | Cable | Preamp | Ant | Table | Remark |
|-----|---------|--------|--------|--------|-------|---------|-------|--------|-----|-------|---------|
| | MHz | dBuV/m | Limit | Line | Level | Factor | Loss | Factor | Pos | Pos | |
| | | | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg | |
| 1 | 2349.14 | 32.03 | -21.97 | 54.00 | 32.06 | 31.78 | 3.86 | 35.67 | 100 | 240 | Average |
| 2 | 2349.14 | 47.30 | -26.70 | 74.00 | 47.33 | 31.78 | 3.86 | 35.67 | 100 | 0 | Peak |
| 3 @ | 2402.00 | 75.59 | | | 75.49 | 31.86 | 3.92 | 35.68 | 100 | 240 | Average |
| 4 @ | 2402.00 | 93.93 | | | 93.83 | 31.86 | 3.92 | 35.68 | 100 | 0 | Peak |
| 5 | 2484.00 | 44.22 | -29.78 | 74.00 | 43.89 | 31.98 | 4.05 | 35.70 | 100 | 0 | Peak |
| 6 | 2484.00 | 31.70 | -22.30 | 54.00 | 31.37 | 31.98 | 4.05 | 35.70 | 100 | 240 | Average |
| 7 | 8961.00 | 53.64 | -20.36 | 74.00 | 46.01 | 36.43 | 7.77 | 36.57 | 100 | 0 | Peak |
| 8 @ | 8961.00 | 42.56 | -11.44 | 54.00 | 34.93 | 36.43 | 7.77 | 36.57 | 100 | 257 | Average |

Remark: #3 and #4 are Fundamental Signals



- Test Mode : Mode 3
- Polarization : Horizontal (30MHz-1GHz)

The test that passed at minimum margin was marked by the boldface in the following table.



Trace: (Discrete)

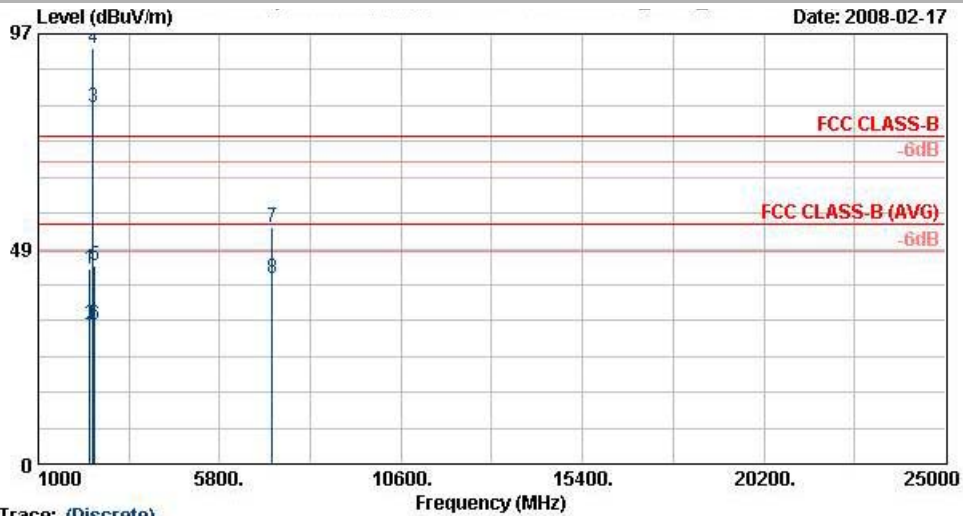
Site : 03CH06-HY
 Condition : FCC CLASS-B 3m LP-ANT(951121) HORIZONTAL
 EUT : Bluetooth Speaker
 Power : 120Vac/60Hz
 Model : FR 820209
 Memo : BT Tx_Ch39 ; 2441MHz + Adaptor
 Data Rate : 2-DH5
 Plane : E2
 Sample : 1

| | Freq | Level | Over | Limit | ReadAntenna | Cable | Preamp | Ant | Table | Remark |
|---|--------|--------|--------|--------|-------------|-------|--------|-------|-------|----------|
| | MHz | dBuV/m | Limit | Line | Level | Loss | Factor | Pos | Pos | |
| | | | dB | dBuV/m | dBuV | dB | dB | cm | deg | |
| 1 | 30.00 | 23.60 | -16.40 | 40.00 | 37.14 | 19.66 | 0.30 | 33.50 | --- | Peak |
| 2 | 33.24 | 23.52 | -16.48 | 40.00 | 39.06 | 17.54 | 0.30 | 33.38 | --- | Peak |
| 3 | 44.58 | 27.24 | -12.76 | 40.00 | 49.03 | 11.02 | 0.30 | 33.11 | 100 | 219 Peak |
| 4 | 427.40 | 23.50 | -22.50 | 46.00 | 39.61 | 16.23 | 0.80 | 33.13 | --- | Peak |
| 5 | 463.80 | 25.47 | -20.53 | 46.00 | 41.06 | 16.82 | 0.84 | 33.24 | --- | Peak |
| 6 | 981.80 | 23.77 | -30.23 | 54.00 | 33.56 | 21.11 | 1.30 | 32.20 | --- | Peak |



- Polarization : Horizontal (1GHz-25GHz)

The test that passed at minimum margin was marked by the boldface in the following table.



Trace: (Discrete)
 Site : 03CH06-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 EUT : Bluetooth Speaker
 Power : 120Vac/60Hz
 Model : FR 820209
 Memo : BT Tx_Ch39 ; 2441MHz + Adaptor
 Data Rate : 2-DH5
 Plane : E2
 Sample : 1

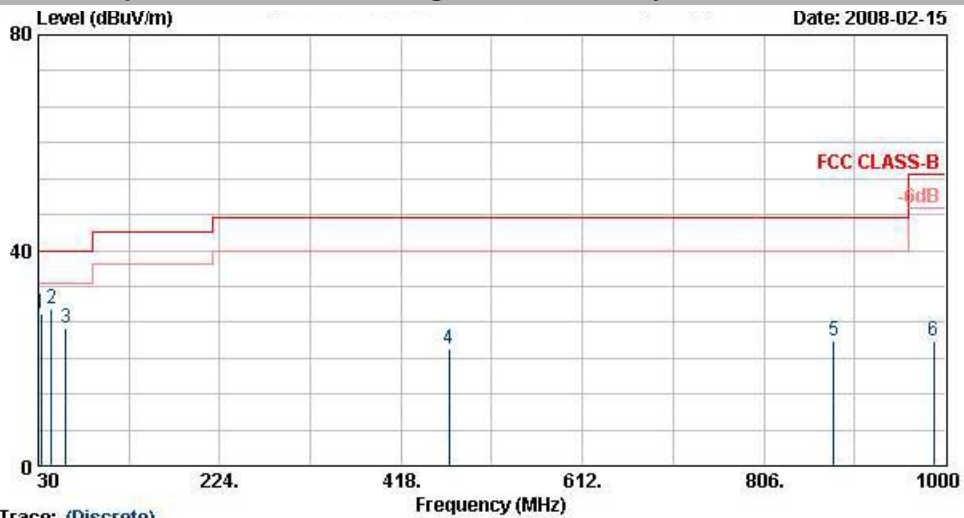
| | Freq | Level | Over | Limit | Read | Antenna | Cable | Preamp | Ant | Table | Remark |
|-----|---------|--------|--------|--------|-------|---------|-------|--------|-----|-------|---------|
| | MHz | dBuV/m | Limit | Line | Level | Factor | Loss | Factor | Pos | Pos | |
| | | | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg | |
| 1 | 2356.00 | 44.05 | -29.95 | 74.00 | 44.06 | 31.81 | 3.86 | 35.67 | 100 | 0 | Peak |
| 2 | 2356.00 | 31.26 | -22.74 | 54.00 | 31.27 | 31.81 | 3.86 | 35.67 | 100 | 142 | Average |
| 3 @ | 2441.00 | 80.45 | | | 80.23 | 31.93 | 3.99 | 35.69 | 100 | 142 | Average |
| 4 X | 2441.00 | 93.71 | | | 93.48 | 31.93 | 3.99 | 35.69 | 100 | 0 | Peak |
| 5 | 2492.00 | 44.66 | -29.34 | 74.00 | 44.31 | 32.00 | 4.05 | 35.70 | 100 | 0 | Peak |
| 6 | 2492.00 | 31.43 | -22.57 | 54.00 | 31.08 | 32.00 | 4.05 | 35.70 | 100 | 142 | Average |
| 7 | 7197.00 | 53.53 | -20.47 | 74.00 | 46.74 | 35.72 | 7.16 | 36.08 | 100 | 0 | Peak |
| 8 | 7197.00 | 41.87 | -12.13 | 54.00 | 35.07 | 35.72 | 7.16 | 36.08 | 100 | 104 | Average |

Remark: #3 and #4 are Fundamental Signals



- Polarization : Vertical (30MHz-1GHz)

The test that passed at minimum margin was marked by the boldface in the following table.



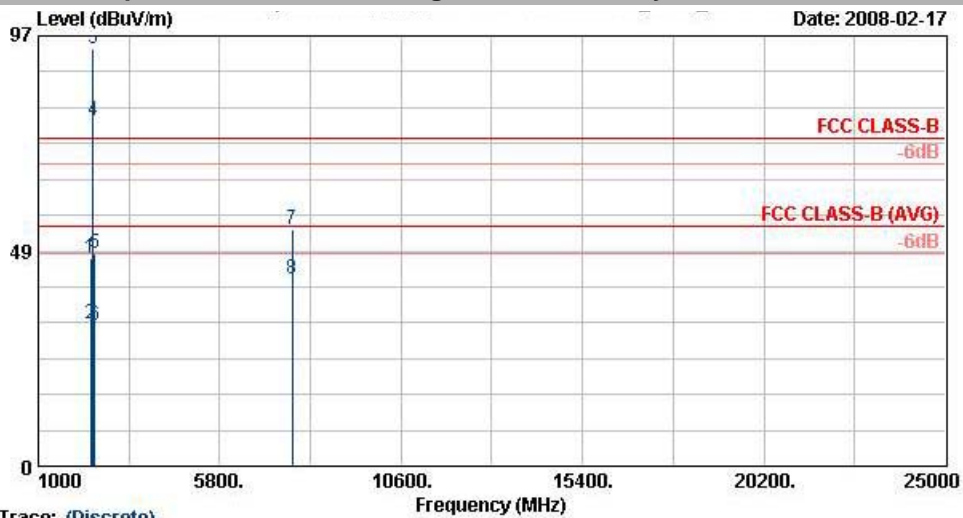
Trace: (Discrete)
 Site : 03CH06-HY
 Condition : FCC CLASS-B 3m LF-ANT(951121) VERTICAL
 EUT : Bluetooth Speaker
 Power : 120Vac/60Hz
 Model : FR 820209
 Memo : BT Tx_Ch39 ; 2441MHz + Adaptor
 Data Rate : 2-DH5
 Plane : E2
 Sample : 1

| | Freq | Level | Over | Limit | ReadAntenna | Cable | Preamp | Ant | Table | Remark |
|----------|--------------|--------------|---------------|--------------|--------------|--------------|-------------|--------------|------------|-----------------|
| | MHz | dBUV/m | Limit | Line | Level | Loss | Factor | Pos | Pos | |
| | | | dB | dBUV/m | dBuV | dB | dB | cm | deg | |
| 1 | 33.24 | 28.16 | -11.84 | 40.00 | 43.69 | 17.54 | 0.30 | 33.38 | --- | Peak |
| 2 | 44.04 | 29.18 | -10.82 | 40.00 | 50.49 | 11.52 | 0.30 | 33.13 | 100 | 157 Peak |
| 3 | 59.43 | 25.65 | -14.35 | 40.00 | 51.87 | 6.77 | 0.40 | 33.39 | --- | Peak |
| 4 | 469.40 | 21.72 | -24.28 | 46.00 | 37.17 | 16.92 | 0.89 | 33.26 | --- | Peak |
| 5 | 880.30 | 23.32 | -22.68 | 46.00 | 34.38 | 20.39 | 1.30 | 32.75 | --- | Peak |
| 6 | 987.40 | 23.19 | -30.81 | 54.00 | 32.90 | 21.15 | 1.30 | 32.16 | --- | Peak |



- Polarization : Vertical (1GHz-25GHz)

The test that passed at minimum margin was marked by the boldface in the following table.



Trace: (Discrete)
 Site : 03CH06-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
 EUT : Bluetooth Speaker
 Power : 120Vac/60Hz
 Model : FR 820209
 Memo : BT Tx_Ch39 ; 2441MHz + Adaptor
 Data Rate : 2-DH5
 Plane : E2
 Sample : 1

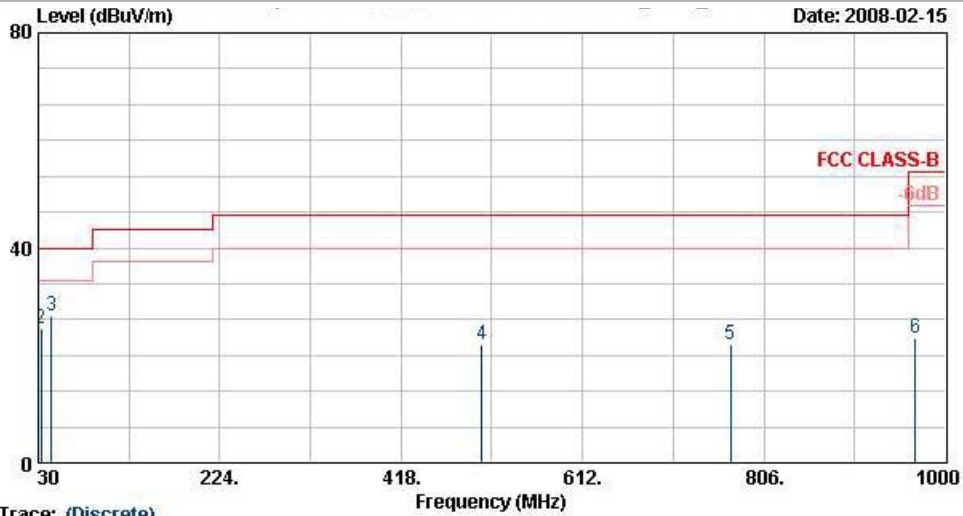
| | Freq | Level | Over | Limit | Read | Antenna | Cable | Preamp | Ant | Table | Remark |
|---|---------|--------|--------|--------|-------|---------|-------|--------|-----|-------|---------|
| | MHz | dBuV/m | Limit | Line | Level | Factor | Loss | Factor | Pos | Pos | |
| | | | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg | |
| 1 | 2388.00 | 46.96 | -27.04 | 74.00 | 46.86 | 31.86 | 3.92 | 35.68 | 100 | 0 | Peak |
| 2 | 2388.00 | 31.94 | -22.06 | 54.00 | 31.84 | 31.86 | 3.92 | 35.68 | 100 | 238 | Average |
| 3 | 2441.00 | 94.28 | | | 94.06 | 31.93 | 3.99 | 35.69 | 100 | 0 | Peak |
| 4 | 2441.00 | 77.89 | | | 77.67 | 31.93 | 3.99 | 35.69 | 100 | 238 | Average |
| 5 | 2494.00 | 47.81 | -26.19 | 74.00 | 47.46 | 32.00 | 4.05 | 35.70 | 100 | 0 | Peak |
| 6 | 2494.00 | 31.88 | -22.12 | 54.00 | 31.53 | 32.00 | 4.05 | 35.70 | 100 | 238 | Average |
| 7 | 7716.00 | 53.24 | -20.76 | 74.00 | 46.46 | 35.64 | 7.38 | 36.24 | 100 | 0 | Peak |
| 8 | 7716.00 | 42.04 | -11.96 | 54.00 | 35.26 | 35.64 | 7.38 | 36.24 | 100 | 334 | Average |

Remark: #3 and #4 are Fundamental Signals



- Test Mode : Mode 4
- Polarization : Horizontal (30MHz-1GHz)

The test that passed at minimum margin was marked by the boldface in the following table.



Trace: (Discrete)

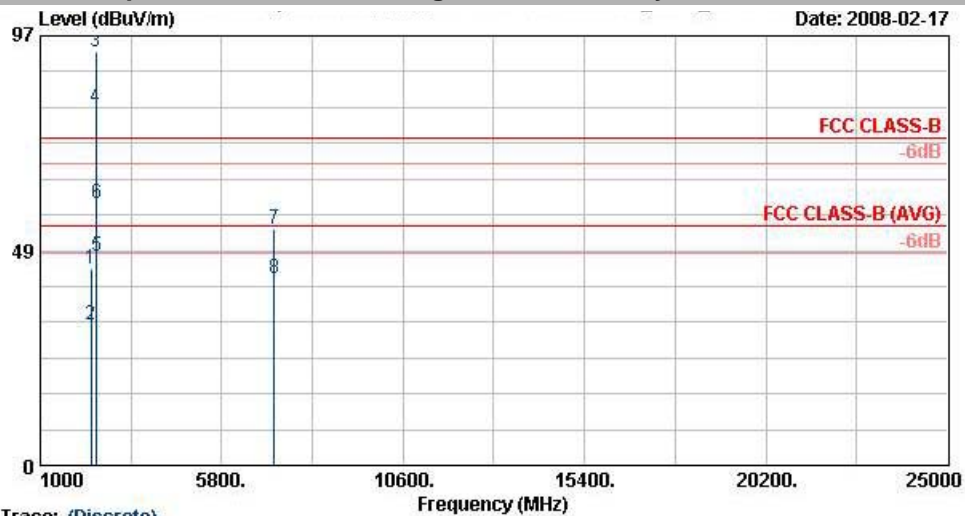
Site : 03CH06-HY
 Condition : FCC CLASS-B 3m LF-ANT(951121) HORIZONTAL
 EUT : Bluetooth Speaker
 Power : 120Vac/60Hz
 Model : FR 820209
 Memo : BT Tx_Ch78 ; 2480MHz + Adaptor
 Data Rate : 2-DH5
 Plane : E2
 Sample : 1

| | Freq | Level | Over | Limit | Read | Antenna | Cable | Preamp | Ant | Table | Remark |
|---|--------|--------|--------|--------|-------|---------|-------|--------|-----|-------|--------|
| | MHz | dBuV/m | Limit | Line | Level | Factor | Loss | Factor | Pos | Pos | |
| | | | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg | |
| 1 | 30.00 | 24.35 | -15.65 | 40.00 | 37.89 | 19.66 | 0.30 | 33.50 | --- | --- | Peak |
| 2 | 33.24 | 25.09 | -14.91 | 40.00 | 40.63 | 17.54 | 0.30 | 33.38 | --- | --- | Peak |
| 3 | 44.04 | 27.26 | -12.74 | 40.00 | 48.57 | 11.52 | 0.30 | 33.13 | 100 | 263 | Peak |
| 4 | 504.40 | 22.13 | -23.87 | 46.00 | 36.99 | 17.47 | 1.00 | 33.33 | --- | --- | Peak |
| 5 | 770.40 | 21.88 | -24.12 | 46.00 | 33.99 | 19.54 | 1.10 | 32.74 | --- | --- | Peak |
| 6 | 967.80 | 23.27 | -30.73 | 54.00 | 33.26 | 21.01 | 1.30 | 32.30 | --- | --- | Peak |



- Polarization : Horizontal (1GHz-25GHz)

The test that passed at minimum margin was marked by the boldface in the following table.



Trace: (Discrete)
 Site : 03CH06-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 EUT : Bluetooth Speaker
 Power : 120Vac/60Hz
 Model : FR 820209
 Memo : BT Tx_Ch78 ; 2480MHz + Adaptor
 Data Rate : 2-DH5
 Plane : E2
 Sample : 1

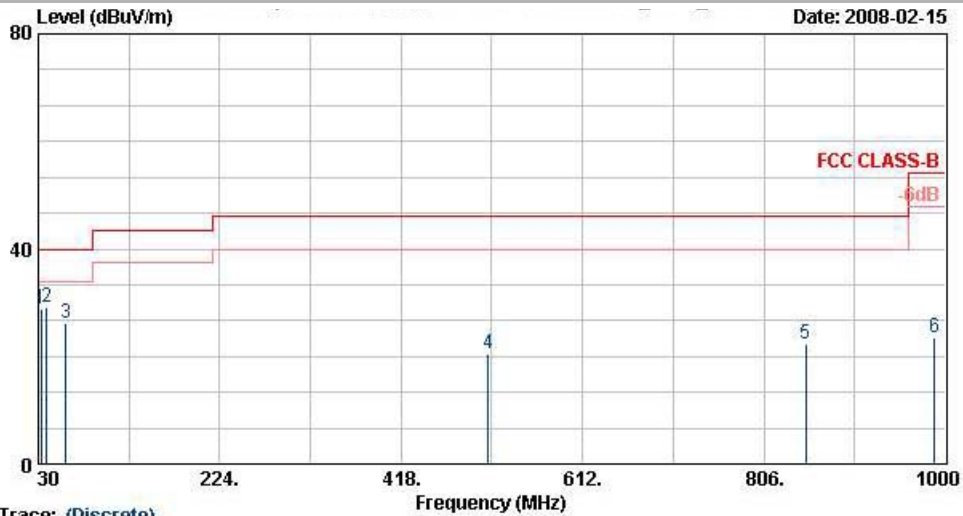
| | Freq | Level | Over | Limit | Read | Antenna | Cable | Preamp | Ant | Table | Remark |
|----------|----------------|--------------|--------------|--------------|--------------|--------------|-------------|--------------|------------|------------|----------------|
| | MHz | dBuV/m | Limit | Line | Level | Factor | Loss | Factor | Pos | Pos | |
| | | | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg | |
| 1 | 2350.00 | 44.20 | -29.80 | 74.00 | 44.24 | 31.78 | 3.86 | 35.67 | 100 | 0 | Peak |
| 2 | 2350.00 | 31.57 | -22.43 | 54.00 | 31.60 | 31.78 | 3.86 | 35.67 | 100 | 104 | Average |
| 3 X | 2480.00 | 93.51 | | | 93.18 | 31.98 | 4.05 | 35.70 | 100 | 0 | Peak |
| 4 @ | 2480.00 | 80.71 | | | 80.38 | 31.98 | 4.05 | 35.70 | 100 | 104 | Average |
| 5 | 2483.50 | 47.31 | -6.69 | 54.00 | 46.98 | 31.98 | 4.05 | 35.70 | 100 | 104 | Average |
| 6 | 2483.50 | 59.27 | -14.73 | 74.00 | 58.94 | 31.98 | 4.05 | 35.70 | 100 | 0 | Peak |
| 7 | 7197.00 | 53.33 | -20.67 | 74.00 | 46.53 | 35.72 | 7.16 | 36.08 | 100 | 0 | Peak |
| 8 | 7197.00 | 42.14 | -11.86 | 54.00 | 35.34 | 35.72 | 7.16 | 36.08 | 100 | 166 | Average |

Remark: #3 and #4 are Fundamental Signals



- Polarization : Vertical (30MHz-1GHz)

The test that passed at minimum margin was marked by the boldface in the following table.



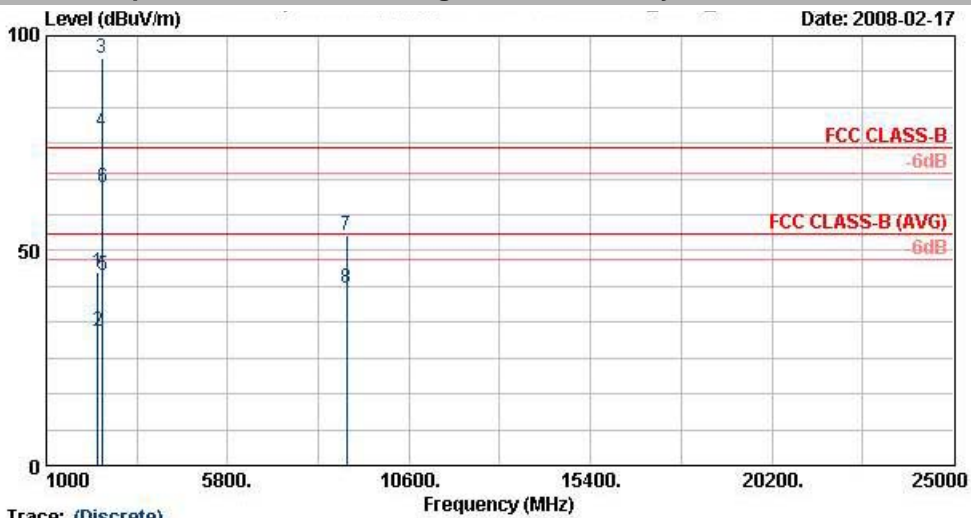
Trace: (Discrete)
 Site : 03CH06-HY
 Condition : FCC CLASS-B 3m LF-ANT(951121) VERTICAL
 EUT : Bluetooth Speaker
 Power : 120Vac/60Hz
 Model : FR 820209
 Memo : BT Tx_Ch78 ; 2480MHz + Adaptor
 Data Rate : 2-DH5
 Plane : E2
 Sample : 1

| | Freq | Level | Over | Limit | ReadAntenna | Cable | Preamp | Ant | Table | Remark |
|---|--------|--------|--------|--------|-------------|-------|--------|-------|-------|----------|
| | MHz | dBuV/m | Limit | Line | Level | Loss | Factor | Pos | Pos | |
| | | | dB | dBuV/m | dBuV | dB | dB | cm | deg | |
| 1 | 33.24 | 28.93 | -11.07 | 40.00 | 44.47 | 17.54 | 0.30 | 33.38 | --- | Peak |
| 2 | 39.18 | 29.16 | -10.84 | 40.00 | 48.05 | 14.03 | 0.30 | 33.22 | 100 | 193 Peak |
| 3 | 59.43 | 26.30 | -13.70 | 40.00 | 52.52 | 6.77 | 0.40 | 33.39 | --- | Peak |
| 4 | 511.40 | 20.62 | -25.38 | 46.00 | 35.38 | 17.54 | 1.00 | 33.30 | --- | Peak |
| 5 | 850.90 | 22.32 | -23.68 | 46.00 | 33.63 | 20.18 | 1.20 | 32.68 | --- | Peak |
| 6 | 988.80 | 23.45 | -30.55 | 54.00 | 33.14 | 21.16 | 1.30 | 32.16 | --- | Peak |



- Polarization : Vertical (1GHz-25GHz)

The test that passed at minimum margin was marked by the boldface in the following table.



Trace: (Discrete)
 Site : 03CH06-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
 EUT : Bluetooth Speaker
 Power : 120Vac/60Hz
 Model : FR 820209
 Memo : BT Tx_Ch78 ; 2480MHz + Adaptor
 Data Rate : 2-DH5
 Plane : E2
 Sample : 1

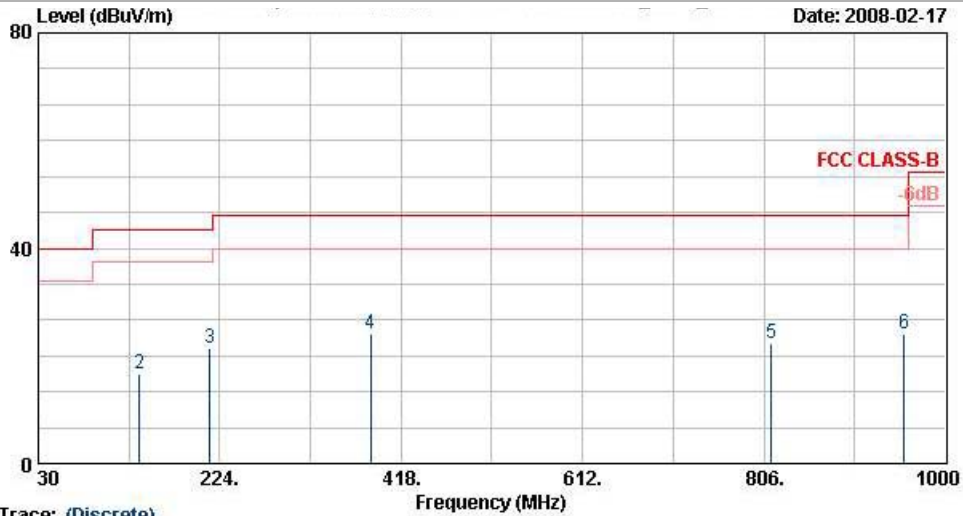
| | Freq | Level | Over | Limit | Read | Antenna | Cable | Preamp | Ant | Table | Remark |
|-----|---------|--------|--------|--------|-------|---------|-------|--------|-----|-------|---------|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg | |
| 1 | 2374.00 | 44.99 | -29.01 | 74.00 | 44.95 | 31.83 | 3.89 | 35.68 | 100 | 0 | Peak |
| 2 | 2374.00 | 31.39 | -22.61 | 54.00 | 31.35 | 31.83 | 3.89 | 35.68 | 100 | 238 | Average |
| 3 X | 2480.00 | 94.64 | | | 94.31 | 31.98 | 4.05 | 35.70 | 100 | 0 | Peak |
| 4 @ | 2480.00 | 77.74 | | | 77.41 | 31.98 | 4.05 | 35.70 | 100 | 238 | Average |
| 5 | 2483.50 | 44.38 | -9.62 | 54.00 | 44.05 | 31.98 | 4.05 | 35.70 | 100 | 238 | Average |
| 6 | 2483.50 | 64.58 | -9.42 | 74.00 | 64.25 | 31.98 | 4.05 | 35.70 | 100 | 0 | Peak |
| 7 | 8952.00 | 53.36 | -20.64 | 74.00 | 45.76 | 36.43 | 7.74 | 36.57 | 100 | 0 | Peak |
| 8 | 8952.00 | 41.25 | -12.75 | 54.00 | 33.65 | 36.43 | 7.74 | 36.57 | 100 | 224 | Average |

Remark: #3 and #4 are Fundamental Signals



- Test Mode : Mode 5
- Polarization : Horizontal (30MHz-1GHz)

The test that passed at minimum margin was marked by the boldface in the following table.



Trace: (Discrete)

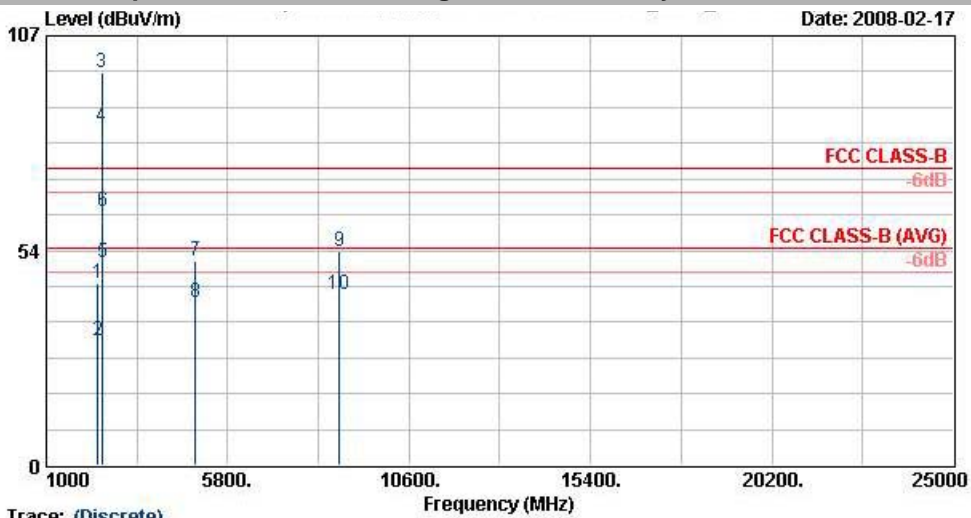
Site : 03CH06-HY
 Condition : FCC CLASS-B 3m LF-ANT(951121) HORIZONTAL
 EUT : Bluetooth Speaker
 Power : 120Vac/60Hz
 Model : FR 820209
 Memo : BT Tx_Ch78 ; 2480MHz + Adaptor
 Data Rate : 3-DH5
 Plane : E2
 Sample : 1

| | Freq | Level | Over Limit | Limit Line | ReadAntenna Level | Antenna Factor | Cable Loss | Preamp Factor | Ant Pos | Table Pos | Remark |
|---|--------|--------|------------|------------|-------------------|----------------|------------|---------------|---------|-----------|--------|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg | |
| 1 | 30.00 | 22.26 | -17.74 | 40.00 | 35.80 | 19.66 | 0.30 | 33.50 | 100 | 188 | Peak |
| 2 | 138.54 | 16.62 | -26.88 | 43.50 | 39.27 | 10.41 | 0.50 | 33.57 | --- | --- | Peak |
| 3 | 213.33 | 21.28 | -22.22 | 43.50 | 44.06 | 10.10 | 0.63 | 33.50 | --- | --- | Peak |
| 4 | 385.40 | 24.06 | -21.94 | 46.00 | 40.91 | 15.39 | 0.85 | 33.09 | --- | --- | Peak |
| 5 | 813.80 | 22.43 | -23.57 | 46.00 | 33.91 | 19.92 | 1.20 | 32.59 | --- | --- | Peak |
| 6 | 955.90 | 24.10 | -21.90 | 46.00 | 34.29 | 20.93 | 1.26 | 32.39 | --- | --- | Peak |



- Polarization : Horizontal (1GHz-25GHz)

The test that passed at minimum margin was marked by the boldface in the following table.



Trace: (Discrete)
 Site : 03CH06-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL
 EUT : Bluetooth Speaker
 Power : 120Vac/60Hz
 Model : FR 820209
 Memo : BT Tx_Ch78 ; 2480MHz + Adaptor
 Data Rate : 3-DH5
 Plane : E2
 Sample : 1

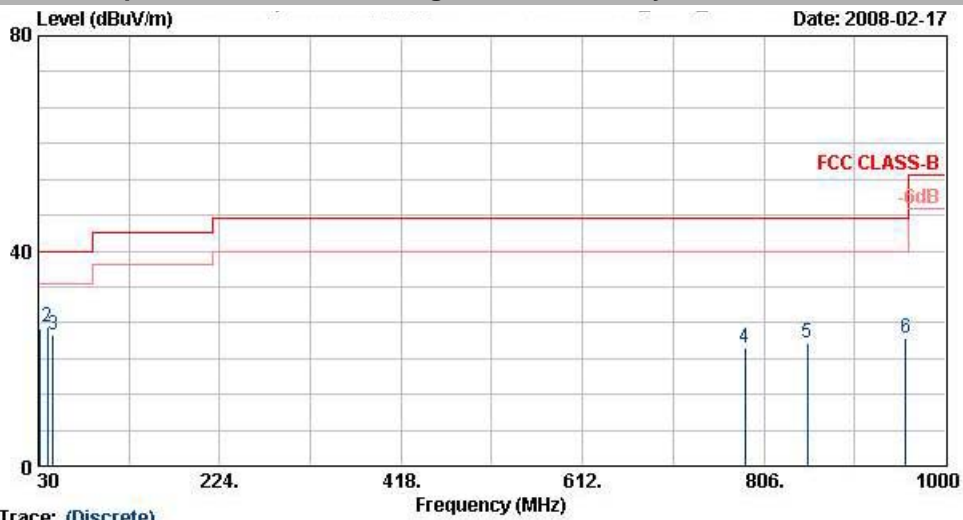
| | Freq | Level | Over | Limit | Read | Antenna | Cable | Preamp | Ant | Table | Remark |
|------------|---------|--------|--------|--------|-------|---------|-------|--------|-----|-------|---------|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg | |
| 1 | 2372.00 | 45.20 | -28.80 | 74.00 | 45.16 | 31.83 | 3.89 | 35.68 | 100 | 0 | Peak |
| 2 | 2372.00 | 31.11 | -22.89 | 54.00 | 31.07 | 31.83 | 3.89 | 35.68 | 107 | 165 | Average |
| 3 X | 2480.00 | 97.94 | | | 97.60 | 31.98 | 4.05 | 35.70 | 100 | 0 | Peak |
| 4 @ | 2480.00 | 84.50 | | | 84.17 | 31.98 | 4.05 | 35.70 | 107 | 165 | Average |
| 5 ! | 2483.50 | 50.36 | -3.64 | 54.00 | 50.03 | 31.98 | 4.05 | 35.70 | 107 | 165 | Average |
| 6 | 2483.50 | 63.35 | -10.65 | 74.00 | 63.02 | 31.98 | 4.05 | 35.70 | 100 | 0 | Peak |
| 7 | 4956.00 | 50.74 | -23.26 | 74.00 | 46.31 | 34.19 | 5.87 | 35.62 | 100 | 0 | Peak |
| 8 | 4956.00 | 40.54 | -13.46 | 54.00 | 36.11 | 34.19 | 5.87 | 35.62 | 100 | 187 | Average |
| 9 | 8757.00 | 53.15 | -20.85 | 74.00 | 45.94 | 36.15 | 7.50 | 36.45 | 100 | 0 | Peak |
| 10 | 8757.00 | 42.54 | -11.46 | 54.00 | 35.34 | 36.15 | 7.50 | 36.45 | 100 | 169 | Average |

Remark: #3 and #4 are Fundamental Signals



- Polarization : Vertical (30MHz-1GHz)

The test that passed at minimum margin was marked by the boldface in the following table.



Trace: (Discrete)

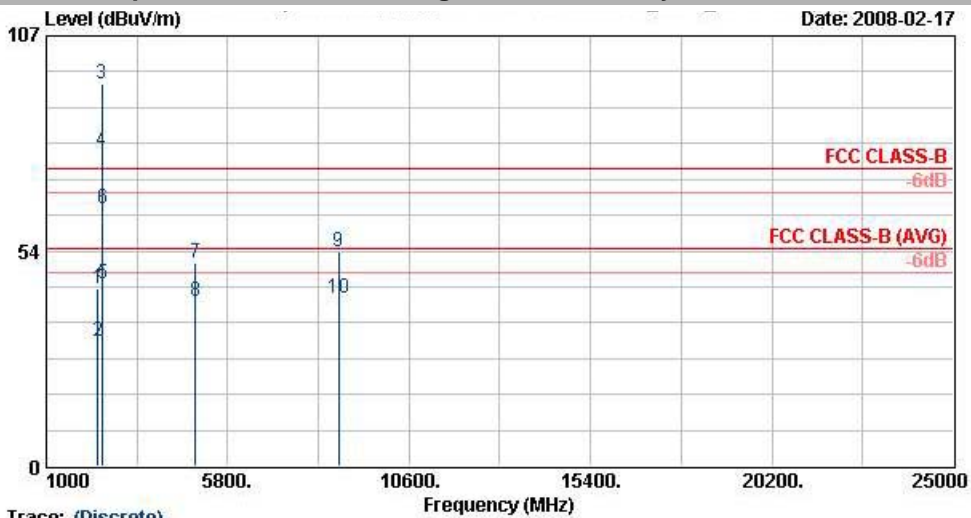
Site : 03CH06-HY
 Condition : FCC CLASS-B 3m LF-ANT(951121) VERTICAL
 EUT : Bluetooth Speaker
 Power : 120Vac/60Hz
 Model : FR 820209
 Memo : BT Tx_Ch78 ; 2480MHz + Adaptor
 Data Rate : 3-DH5
 Plane : E2
 Sample : 1

| | Freq | Level | Over | Limit | ReadAntenna | Cable | Preamp | Ant | Table | Remark |
|---|--------|--------|--------|--------|-------------|-------|--------|-------|-------|----------|
| | MHz | dBuV/m | Limit | Line | Level | Loss | Factor | Pos | Pos | |
| | | | dB | dBuV/m | dBuV | dB | dB | cm | deg | |
| 1 | 31.08 | 25.47 | -14.53 | 40.00 | 39.68 | 18.95 | 0.30 | 33.46 | --- | Peak |
| 2 | 39.99 | 25.76 | -14.24 | 40.00 | 45.15 | 13.51 | 0.30 | 33.20 | 100 | 133 Peak |
| 3 | 45.93 | 24.43 | -15.57 | 40.00 | 46.72 | 10.53 | 0.30 | 33.12 | --- | Peak |
| 4 | 785.80 | 22.15 | -23.85 | 46.00 | 33.91 | 19.68 | 1.20 | 32.65 | --- | Peak |
| 5 | 852.30 | 22.82 | -23.18 | 46.00 | 34.11 | 20.19 | 1.20 | 32.69 | --- | Peak |
| 6 | 957.30 | 23.68 | -22.32 | 46.00 | 33.86 | 20.94 | 1.27 | 32.38 | --- | Peak |



- Polarization : Vertical (1GHz-25GHz)

The test that passed at minimum margin was marked by the boldface in the following table.



Trace: (Discrete)
 Site : 03CH06-HY
 Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL
 EUT : Bluetooth Speaker
 Power : 120Vac/60Hz
 Model : FR 820209
 Memo : BT Tx_Ch78 ; 2480MHz + Adaptor
 Data Rate : 3-DH5
 Plane : E2
 Sample : 1

| | Freq | Level | Over | Limit | Read | Antenna | Cable | Preamp | Ant | Table | Remark |
|-----|---------|--------|--------|--------|-------|---------|-------|--------|-----|-------|---------|
| | MHz | dBuV/m | Limit | Line | Level | Factor | Loss | Factor | Pos | Pos | |
| | | | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg | |
| 1 | 2374.00 | 44.28 | -29.72 | 74.00 | 44.24 | 31.83 | 3.89 | 35.68 | 100 | 0 | Peak |
| 2 | 2374.00 | 31.21 | -22.79 | 54.00 | 31.17 | 31.83 | 3.89 | 35.68 | 129 | 239 | Average |
| 3 X | 2480.00 | 95.15 | | | 94.82 | 31.98 | 4.05 | 35.70 | 100 | 0 | Peak |
| 4 @ | 2480.00 | 78.54 | | | 78.21 | 31.98 | 4.05 | 35.70 | 129 | 239 | Average |
| 5 | 2483.50 | 45.35 | -8.65 | 54.00 | 45.02 | 31.98 | 4.05 | 35.70 | 129 | 239 | Average |
| 6 | 2483.50 | 64.23 | -9.77 | 74.00 | 63.90 | 31.98 | 4.05 | 35.70 | 100 | 0 | Peak |
| 7 | 4956.00 | 50.63 | -23.37 | 74.00 | 46.20 | 34.19 | 5.87 | 35.62 | 100 | 0 | Peak |
| 8 | 4956.00 | 41.14 | -12.86 | 54.00 | 36.71 | 34.19 | 5.87 | 35.62 | 100 | 53 | Average |
| 9 | 8727.00 | 53.38 | -20.62 | 74.00 | 46.21 | 36.13 | 7.48 | 36.44 | 100 | 0 | Peak |
| 10 | 8727.00 | 41.58 | -12.42 | 54.00 | 34.41 | 36.13 | 7.48 | 36.44 | 100 | 46 | Average |

Remark: #3 and #4 are Fundamental Signals



5.10 Antenna Requirements

5.10.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no other antenna except assembled by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi.

5.10.2 Antenna Connected Construction

The antennas used in this product is PIFA antenna without connector. It is considered to meet antenna requirement of FCC.

5.10.3 Antenna Gain

The antenna gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.



6. List of Measuring Equipments

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Due Date | Remark |
|---------------------------------|--------------------|----------------|-------------|-----------------|------------------|---------------|-----------------------|
| EMC Receiver | R&S | ESCS 30 | 100132 | 9kHz – 2.75GHz | Jul. 14, 2007 | Jul. 13, 2008 | Conduction (CO01-HY) |
| LISN | MessTec | NNB-2/16Z | 2001/004 | 9kHz – 30MHz | Mar. 29, 2007 | Mar. 28, 2008 | Conduction (CO01-HY) |
| LISN (Support Unit) | MessTec | NNB-2/16Z | 2001/009 | 9kHz – 30MHz | Mar. 30, 2007 | Mar. 29, 2008 | Conduction (CO01-HY) |
| EMI Filter | LINDGREN | LRE-2060 | 1004 | < 450Hz | N/A | N/A | Conduction (CO01-HY) |
| EMI Filter | LINDGREN | N6006 | 201052 | 0 – 60Hz | N/A | N/A | Conduction (CO01-HY) |
| RF Cable-CON | Suhner Switzerland | RG223/U | CB029 | 9kHz – 30MHz | Dec. 03, 2007 | Dec. 02, 2008 | Conduction (CO01-HY) |
| Isolation Transformer | Erika Fiedler OHG | D-65396 Walluf | 58 | 45MHz-2.15GHz | N/A | N/A | Conduction (CO01-HY) |
| Impedance Stabilization Network | SCHAFFNER | T400 | 21653 | 150kHz – 230MHz | Mar. 28, 2007 | Mar. 27, 2008 | Conduction (CO01-HY) |
| Impedance Stabilization Network | SCHAFFNER | T400 | 23342 | 150kHz – 230MHz | Mar. 05, 2007 | Mar. 04, 2008 | Conduction (CO01-HY) |
| Spectrum Analyzer | Agilent | E4408B | MY44211028 | 9KHz-26.5GHz | Oct. 17, 2007 | Oct. 16, 2008 | Radiation (03CH06-HY) |
| EMI Test Receiver | R&S | ESCS30 | 100356 | 9KHz-2.75GHz | Jul. 26, 2007 | Jul. 25, 2008 | Radiation (03CH06-HY) |
| Bilog Antenna | SCHAFFNER | CBL6112B | 2885 | 30MHz -2GHz | Dec. 01, 2007 | Nov. 30, 2008 | Radiation (03CH06-HY) |
| Double Ridge Horn Antenna | Com-Power | AH118 | 071025 | 1G~18G | Jun. 04, 2007 | Jun. 03, 2008 | Radiation (03CH06-HY) |
| SHF-EHF Horn | SCHWARZBECK | BBHA 9170 | 9170-251 | 14G - 40G | Oct. 17, 2007 | Oct. 16, 2008 | Radiation (03CH06-HY) |
| Pre Amplifier | Agilent | 8449B | 3008A01917 | 1G - 26.5G | Nov. 22, 2007 | Nov. 21, 2008 | Radiation (03CH06-HY) |
| PreAmplifier | EMEC | PA303 | PA303-SMA-0 | 100K~3GHz | Nov. 26, 2007 | Nov. 25, 2008 | Radiation (03CH06-HY) |
| Base Station Simulator | R & S | CMU200 | 103937 | Third-Band | Oct. 19, 2007 | Oct. 18, 2008 | Radiation (03CH06-HY) |



7. Uncertainty Evaluation

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

| Contribution | Uncertainty of x_i | | $u(x_i)$ |
|--|----------------------|--------------------------|----------|
| | dB | Probability Distribution | |
| Receiver reading | 0.10 | Normal(k=2) | 0.05 |
| Cable loss | 0.10 | Normal(k=2) | 0.05 |
| AMN insertion loss | 2.50 | Rectangular | 0.63 |
| Receiver Spec | 1.50 | Rectangular | 0.43 |
| Site imperfection | 1.39 | Rectangular | 0.80 |
| Mismatch | +0.34/-0.35 | U-shape | 0.24 |
| Combined standard uncertainty Uc(y) | 1.13 | | |
| Measuring uncertainty for a level of Confidence of 95% U=2Uc(y) | 2.26 | | |

Uncertainty of Radiated Emission Measurement (30MHz ~ 1000MHz)

| Contribution | Uncertainty of x_i | | $u(x_i)$ |
|--|----------------------|--------------------------|----------|
| | dB | Probability Distribution | |
| Receiver reading | 0.11 | Normal(k=2) | 0.06 |
| Antenna factor calibration | 0.91 | Normal(k=2) | 0.46 |
| Cable loss calibration | 0.12 | Normal(k=2) | 0.06 |
| Pre Amplifier Gain calibration | 0.15 | Normal(k=2) | 0.08 |
| RCV/SPA specification | 2.50 | Rectangular | 0.72 |
| Antenna Factor Interpolation for Frequency | 1.00 | Rectangular | 0.29 |
| Site imperfection | 1.52 | Rectangular | 0.88 |
| Mismatch | +0.45/-0.48 | U-shaped | 0.33 |
| Combined standard uncertainty Uc(y) | 1.30 | | |
| Measuring uncertainty for a level of Confidence of 95% U=2Uc(y) | 2.60 | | |



Uncertainty of Radiated Emission Measurement (1GHz ~ 40GHz)

| Contribution | Uncertainty of x_i | | $u(x_i)$ | C_i | $C_i * u(x_i)$ |
|--|----------------------|--------------------------|----------|-------|----------------|
| | dB | Probability Distribution | | | |
| Receiver reading | ±0.10 | Normal(k=1) | 0.10 | 1 | 0.10 |
| Antenna factor calibration | ±1.70 | Normal(k=2) | 0.85 | 1 | 0.85 |
| Cable loss calibration | ±0.50 | Normal(k=2) | 0.25 | 1 | 0.25 |
| Receiver Correction | ±2.00 | Rectangular | 1.15 | 1 | 1.15 |
| Antenna Factor Directional | ±1.50 | Rectangular | 0.87 | 1 | 0.87 |
| Site imperfection | ±2.80 | Triangular | 1.14 | 1 | 1.14 |
| Mismatch Receiver VSWR $\Gamma_1= 0.197$ Antenna VSWR $\Gamma_2= 0.194$ Uncertainty= $20\log(1-\Gamma_1*\Gamma_2*\Gamma_3)$ | +0.34/-0.35 | U-shaped | 0.244 | 1 | 0.244 |
| Combined standard uncertainty Uc(y) | 2.36 | | | | |
| Measuring uncertainty for a level of Confidence of 95% U=2Uc(y) | 4.72 | | | | |

The measured result is : y dBuV \pm U dB
for a level of confidence of approximately 95% , (k= 2)