






**CONFORMANCE TEST REPORT
 FOR
 FCC 47 CFR, Part 15 Subpart C**

Report No.: 12-04-MAS-120-02

Client: **Orange Electronic Co., Ltd.**
 Product: **TPMS Monitor**
 Model: **P418RX**
 FCC ID: **TH9P418RX**
 Manufacturer: **Orange Electronic Co., Ltd.**

Date test item received: 2012/04/16
 Date test campaign completed: 2012/07/17
 Date of issue: 2012/08/16

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Total number of pages of this test report: 75 pages
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Internal photos 4 pages
Setup photos 2 pages

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Manufacturer : Orange Electronic Co., Ltd.
Address : No. 15, Lane 81, Sec 2, Tanfu Rd., Tanzih, Taichung, Taiwan
EUT : TPMS Monitor
Brand/Trade name : TIRE VITALS
Model No. : P418RX
Power Source : 12Vdc

Regulations applied : FCC 47 CFR, Part 15 Subpart C

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1 GENERAL INFORMATION

1.1 Product Description

- a) Type of EUT : TPMS Monitor
 b) Trade Name : TIRE VITALS
 c) Model No. : P418RX
 d) FCC ID : TH9P418RX

1.2 Characteristics of Device

The EUT is a TPMS Monitor based on the Bluetooth technology. Bluetooth is a short-range radio link intended to be a cable replacement between portable or fixed electronic devices. Bluetooth operates in the unlicensed ISM Band at 2.4GHz. In this band, 79 RF channels spaced 1MHz apart are defined. The rated output power is 2.07 dBm (1.61 mW).

1.3 Test Methodology

All testing were performed according to the procedures in ANSI C63.4 (2003) an FCC CFR 47 Part 2 and Part 15.

1.4 Modification List of EUT

N/A

1.5 Test Facility

The semi-anechoic chamber and conducted measurement facility used to collect the radiated and conducted data are located inside the Building at No.8, Lane 29, Wen-ming Road, Lo-shan Tsun, Kweishan Hsiang, Taoyuan, Taiwan, R.O.C.

This site has been accreditation as a FCC filing site.

1.6 Test Summary

| Requirement | FCC Paragraph # | Test Pass |
|---|--------------------|-------------------------------------|
| Radiated Emission | 15.209 | <input checked="" type="checkbox"/> |
| Conducted Emission | 15.207 | N/A |
| Antenna Requirement | 15.203 | <input checked="" type="checkbox"/> |
| 20dB Emission Bandwidth | 15.247 (a)(1) | <input checked="" type="checkbox"/> |
| Output Power | 15.247 (b)(1) | <input checked="" type="checkbox"/> |
| OUT-OF-BAND RF Conducted Spurious Emission | 15.247 (c) | <input checked="" type="checkbox"/> |
| Number of Hopping Channels | 15.247 (b)(1) | <input checked="" type="checkbox"/> |
| Hopping Channel Carrier Frequency Separated | 15.247 (a)(1) | <input checked="" type="checkbox"/> |
| Dwell Time | 15.247 (a)(1)(iii) | <input checked="" type="checkbox"/> |

2 PROVISIONS APPLICABLE

2.1 Definition

Unintentional radiator:

A device that intentionally generates and radio frequency energy for use within the device, or that sends radio frequency signals by conduction to associated equipment via connecting wiring, but which is not intended to emit RF energy by radiation or induction.

Class A Digital Device:

A digital device which is marketed for use in commercial or business environment; exclusive of a device which is market for use by the general public, or which is intended to be used in the home.

Class B Digital Device :

A digital device which is marketed for use in a residential environment notwithstanding use in a commercial, business or industrial environment. Example of such devices that are marketed for the general public.

Note : A manufacturer may also qualify a device intended to be marketed in a commercial, business, or industrial environment as a Class B digital device, and in fact is encouraged to do so, provided the device complies with the technical specifications for a Class B Digital Device. In the event that a particular type of device has been found to repeatedly cause harmful interference to radio communications, the Commission may classify such a digital device as a Class B Digital Device, Regardless of its intended use.

Intentional radiator:

A device that intentionally generates and emits radio frequency energy by radiation or induction.

2.2 Requirement for Compliance

(1) Conducted Emission Requirement

For unintentional device, according to §15.107(a) Line Conducted Emission Limits is as following:

| Frequency MHz | Quasi Peak dB μ V | Average dB μ V |
|------------------|--------------------------|-----------------------|
| 0.15 - 0.5 | 66-56* | 56-46* |
| 0.5 - 5.0 | 56 | 46 |
| 5.0 - 30.0 | 60 | 50 |

*Decreases with the logarithm of the frequency.

For intentional device, according to §15.207(a) Line Conducted Emission Limits is same as above table.

(2) Radiated Emission Requirement

For unintentional device, according to §15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

| Frequency MHz | Distance Meters | Radiated dB μ V/m | Radiated μ V/m |
|------------------|--------------------|--------------------------|-----------------------|
| 30 - 88 | 3 | 40.0 | 100 |
| 88 - 216 | 3 | 43.5 | 150 |
| 216 - 960 | 3 | 46.0 | 200 |
| above 960 | 3 | 54.0 | 500 |

For intentional device, according to §15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

(3) Antenna Requirement

For intentional device, according to §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to §15.247 (c),(i) Systems operating in the 2400-2483.5 MHz band that are used exclusively for fixed, point-to point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. (ii) Systems operating in the 5725-5850 MHz band that are used exclusively for fixed, point-to point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted output power.

(4) 20dB Bandwidth Requirement

For frequency hopping systems, according to 15.247(a)(1), hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of hopping channel, whichever is greater.

(5) Output Power Requirement

For frequency hopping systems, according to 15.247(b)(1), operating in the 2400-2483.5MHz band employing at least 75 hopping channels. The maximum peak output power of the transmitter shall not exceed 1 Watt. If transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(6) 100 kHz Bandwidth of Frequency Band Edges Requirement

According to 15.247(c), if any 100 kHz bandwidth outside these frequency bands, the radio frequency power that is produced by the modulation products of the spreading sequence, the information sequence and the carrier frequency shall be either at least 20 dB below that in any 100 kHz bandwidth within the band that contains the highest level of the desired power or shall not exceed the general levels specified in §15.209(a), whichever results in the lesser attenuation.

(7) Number of Hopping Channels

According to 15.247(b)(1), for frequency hopping systems, operating in the 2400-2483.5MHz band employing at least 75 hopping channels.

(8) Channel Carrier Frequencies Separation

According to 15.247(a)(1)(iii), the frequency hopping systems shall have hopping channel carrier frequencies separated by minimum of 25kHz or the 20dB bandwidth of hopping channel, whichever is greater.

(9) Dwell Time

According to 15.247(a)(1)(iii), frequency hopping system in the 2400-2483.5MHz band employing at least 15 non-overlapping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 second multiplied by the number of hopping channels employed.

(10) Power Spectral Density

According to 15.247(d), for bluetooth device, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

2.3 Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below :

| MHz | MHz | MHz | GHz |
|-------------------|-----------------------|---------------|-------------|
| 0.090 - 0.110 | 16.42-16.423 | 399.9-410 | 4.5-5.25 |
| 0.495 - 0.505 ** | 16.69475 - 16.69525 | 608-614 | 5.35-5.46 |
| 2.1735 - 2.1905 | 16.80425 - 16.80475 | 960-1240 | 7.25-7.75 |
| 4.125-4.128 | 25.5-25.67 | 1300-1427 | 8.025-8.5 |
| 4.17725-4.17775 | 37.5-38.25 | 1435-1626.5 | 9.0-9.2 |
| 4.20725-4.20775 | 73-74.6 | 1645.5-1646.5 | 9.3-9.5 |
| 6.215-6.218 | 74.8-75.2 | 1660-1710 | 10.6-12.7 |
| 6.26775-6.26825 | 108-121.94 | 1718.8-1722.2 | 13.25-13.4 |
| 6.31175-6.31225 | 123-138 | 2200-2300 | 14.47-14.5 |
| 8.291-8.294 | 149.9-150.05 | 2310-2390 | 15.35-16.2 |
| 8.362-8.366 | 156.52475 - 156.52525 | 2483.5-2500 | 17.7-21.4 |
| 8.37625-8.38675 | 156.7-156.9 | 2655-2900 | 22.01-23.12 |
| 8.41425-8.41475 | 162.0125-167.17 | 3260-3267 | 23.6-24.0 |
| 12.29-12.293 | 167.72-173.2 | 3332-3339 | 31.2-31.8 |
| 12.51975-12.52025 | 240-285 | 3345.8-3358 | 36.43-36.5 |
| 12.57675-12.57725 | 322-335.4 | 3600-4400 | Above 38.6 |
| 13.36-13.41 | | | |

** : Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

2.4 Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device :

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

2.5 User Information

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual.

The Federal Communications Commission Radio Frequency Interference Statement includes the following paragraph.

This equipment has been tested and found to comply with the limits for a Class B Digital Device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio / TV technician for help.

To comply with the FCC RF exposure compliance requirement, this device and its antenna must not be co-located or operating to conjunction with any other antenna or transmitter.

3. SYSTEM TEST CONFIGURATION

3.1 Justification

For the purposes of this test report ancillary equipment is defined as equipment which is used in conjunction with the EUT to provide operational and control features to the EUT during the test. Notebook PC was used to control the RF channel under the highest, middle and lowest frequency and transmit the maximum RF power. Customer would not use it. But never the less ancillary equipment can influence the test results..

3.2 Devices for Tested System

3.2.1

| Device | Manufacture | Model | Cable Description |
|----------------|--------------------------------|--------|-------------------|
| * TPMS Monitor | Orange Electronic Co., Ltd. | P418RX | ---- |

Remark : "*" means equipment under test.

3.2.2 Test Mode Description

3.2.2.1 Modulation Type

| Test Mode | Type | Note |
|-----------|---------|---------------------------------|
| A | NON-EDR | GFSK |
| B | EDR | $\pi/4$ -DQPSK, 8-DPSK (note 1) |

| Test Channel | Frequency (MHz) |
|----------------|-----------------|
| Channel Low(L) | 2402 |
| Channel Mid(M) | 2441 |
| Channel Low(H) | 2480 |

3.2.2.2 Test Mode and Worse Case Determination

| Item | Test Item | Test Mode | Test Frequency (MHz) |
|------|--------------------------------|-----------------|----------------------|
| 1 | Output Power | A | L, M, H |
| | | B | L, M, H |
| | Worse Case | Mode A (note 1) | |
| 2. | 20dB Emission Bandwidth | A | M (Worse Case) |
| 3 | Conducted Emission | - | - |
| 4 | Out of Band Conducted Emission | A | L, M, H |
| 5.1 | Number of Channel | A | L~H |
| 5.2 | Channel Separation | A | M (note 2) |
| 5.3 | Dwell Time | A | M (note 2) |
| 6.1 | Radiated Emission (below 1GHz) | A | M (Worse Case) |
| 6.2 | Radiated Emission (above 1GHz) | A | L, M, H |
| 6.3 | Radiated Emission (BandEdge) | A, B | L, H |

note:

1. The worse case is determined as the modulation with highest output power.
2. Pretest result is no difference in three test modes by channel low, middle and high. Choose one for final testing and record the result.

4 RADIATED EMISSION MEASUREMENT

4.1 Applicable Standard

For unintentional radiator, the radiated emission shall comply with §15.109(a).

For intentional radiators, according to §15.247 (a), operation under this provision is limited to frequency hopping and digitally modulated, and the out band emission shall be comply with § 15.247 (c)

4.2 Measurement Procedure

A.Preliminary Measurement For Portable Devices.

For movable devices, the following procedure was performed to determine the maximum emission axis of EUT (X,Y and Z axis):

1. With the receiving antenna is H polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
2. With the receiving antenna is V polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
3. Compare the results derived from above two steps. The axis of maximum emission from EUT was determined and the configuration was used to perform the final measurement.
4. The position in which the maximum noise occurred was “Y axis”. (Please see the test setup photos.)

B. Final Measurement

1. Setup the configuration per figure 1 and 2 for frequencies measured below and above 1 GHz respectively. Turn on EUT and make sure that it is in continuous operating function.
2. For emission frequencies measured below 1 GHz, a pre-scan is performed in a semi-anechoic chamber to determine the accurate frequencies of higher emissions and then each selected frequency is precisely measured. As the same purpose, for emission measured above 1 GHz, a pre-scan also be performed with a 1 meter measuring distance before final test.
3. For emission measured below and above 1 GHz, set the spectrum analyzer on a 120 kHz and 1 MHz resolution bandwidth respectively for each frequency measured in step 2.
4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 ° to 360 ° with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading. A RF test receiver is also used to confirm emissions measured.

Figure 1 : Frequencies measured below 1 GHz configuration

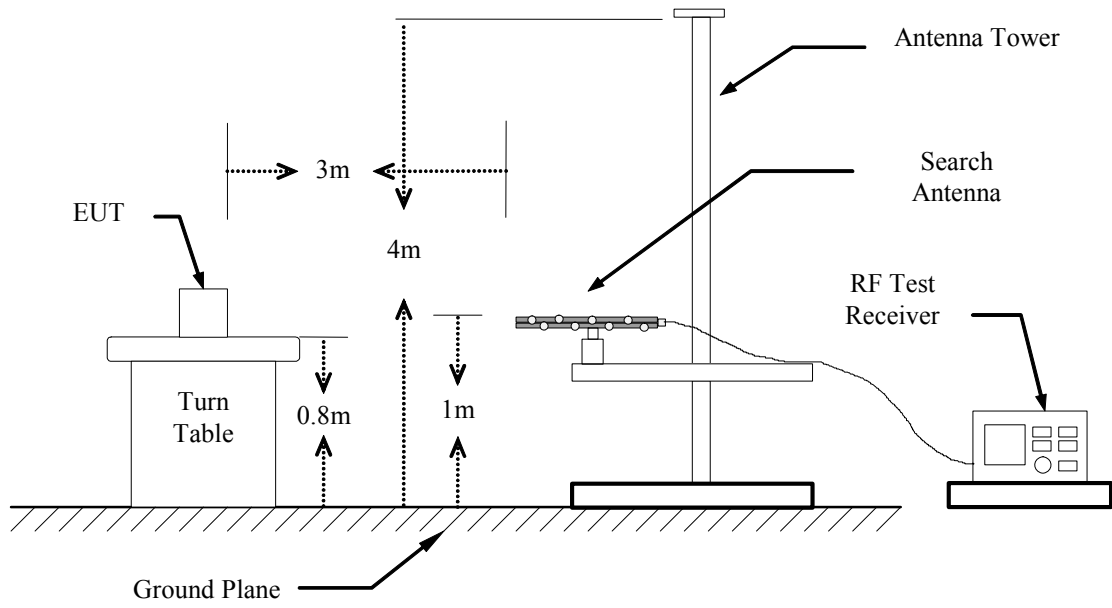
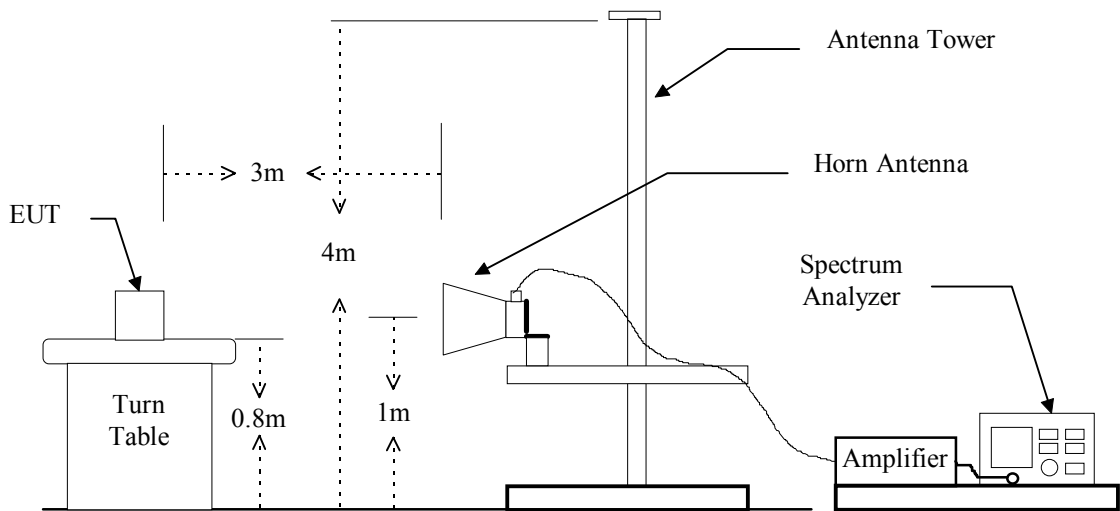


Figure 2 : Frequencies measured above 1 GHz configuration



4.3 Measuring Instrument

The following instrument are used for radiated emissions measurement :

| Equipment | Manufacturer | Model No. | Next Cal. Due |
|-------------------|-----------------|-----------|---------------|
| EMI Test Receiver | R&S | ESIB7 | 07/25/2012 |
| Spectrum Analyzer | Rohde & Schwarz | FSU46 | 01/08/2013 |
| Horn Antenna | EMCO | 3115 | 07/21/2012 |
| BiLog Antenna | ETC | MCTD2986 | 11/24/2012 |
| Horn Antenna | EMCO | 3116 | 07/21/2012 |
| Preamplifier | Hewlett-Packard | 8449B | 10/25/2012 |

Measuring instrument setup in measured frequency band when specified detector function is used :

| Frequency Band (MHz) | Instrument | Function | Resolution Bandwidth | Video Bandwidth |
|----------------------|-------------------|------------|----------------------|-----------------|
| 30 to 1000 | RF Test Receiver | Quasi-Peak | 120 kHz | 300 kHz |
| | RF Test Receiver | Peak | 120 kHz | 300 kHz |
| Above 1000 | Spectrum Analyzer | Peak | 1 MHz | 1 MHz |
| | Spectrum Analyzer | Average | 1 MHz | 10 Hz |

4.4 Radiated Emission Data

4.4.1 RF Portion

a) Channel 0

Operation Mode : Transmitting

Fundamental Frequency : 2402 MHz

Test Date : May 29, 2012 Temperature : 23°C

Humidity : 58%

| Frequency (MHz) | Reading (dBuV) | | | | Factor (dB) Corr. | Result @3m (dBuV/m) Peak Ave (H/V Max.) | | Limit @3m (dBuV/m) Peak Ave. | |
|--------------------|----------------|-----|------|-----|-------------------------|--|-----|------------------------------------|------|
| | H | | V | | | Peak | Ave | Peak | Ave |
| 1201.000 | --- | --- | --- | --- | -12.9 | --- | --- | 74.0 | 54.0 |
| 4804.000 | --- | --- | 50.6 | --- | -2.37 | 48.2 | --- | 74.0 | 54.0 |
| 7206.000 | 49.8 | --- | 49.7 | --- | 0.49 | 50.3 | --- | 74.0 | 54.0 |
| 12010.000 | --- | --- | --- | --- | 4.50 | --- | --- | 74.0 | 54.0 |
| 19216.000 | --- | --- | --- | --- | -4.70 | --- | --- | 74.0 | 54.0 |

b) Channel 39

Fundamental Frequency : 2441 MHz

| Frequency (MHz) | Reading (dBuV) | | | | Factor (dB) Corr. | Result @3m (dBuV/m) Peak Ave (H/V Max.) | | Limit @3m (dBuV/m) Peak Ave. | |
|--------------------|----------------|-----|------|-----|-------------------------|--|-----|------------------------------------|------|
| | H | | V | | | Peak | Ave | Peak | Ave |
| 1220.500 | --- | --- | --- | --- | -12.9 | --- | --- | 74.0 | 54.0 |
| 4882.000 | --- | --- | --- | --- | -2.36 | --- | --- | 74.0 | 54.0 |
| 7323.000 | --- | --- | 49.9 | --- | 0.78 | 50.7 | --- | 74.0 | 54.0 |
| 12205.000 | --- | --- | --- | --- | 4.58 | --- | --- | 74.0 | 54.0 |
| 19528.000 | --- | --- | --- | --- | -5.49 | --- | --- | 74.0 | 54.0 |

c) Channel 78

Fundamental Frequency : 2480 MHz

| Frequency (MHz) | Reading (dBuV) | | | | Factor (dB) Corr. | Result @3m (dBuV/m) Peak Ave (H/V Max.) | | Limit @3m (dBuV/m) Peak Ave. | |
|--------------------|----------------|-----|------|-----|-------------------------|--|-----|------------------------------------|------|
| | H | | V | | | Peak | Ave | Peak | Ave |
| 1240.000 | --- | --- | --- | --- | -12.9 | --- | --- | 74.0 | 54.0 |
| 4960.000 | --- | --- | --- | --- | -2.19 | --- | --- | 74.0 | 54.0 |
| 7440.000 | 49.8 | --- | 52.4 | --- | 1.06 | 53.5 | --- | 74.0 | 54.0 |
| 12400.000 | --- | --- | --- | --- | 4.66 | --- | --- | 74.0 | 54.0 |
| 19840.000 | --- | --- | --- | --- | -5.50 | --- | --- | 74.0 | 54.0 |
| 22320.000 | --- | --- | --- | --- | -3.94 | --- | --- | 74.0 | 54.0 |

- Note :
1. Item of margin shown in above table refer to average limit.
 2. Remark “---” means that the emissions level is too low to be measured.
 3. Item “Margin” referred to Average limit while there is only peak result.
 4. The radiation emissions have been measured to beyond the tenth harmonic of the fundamental frequency and show the significant frequencies, other means the value is too low to be detected.

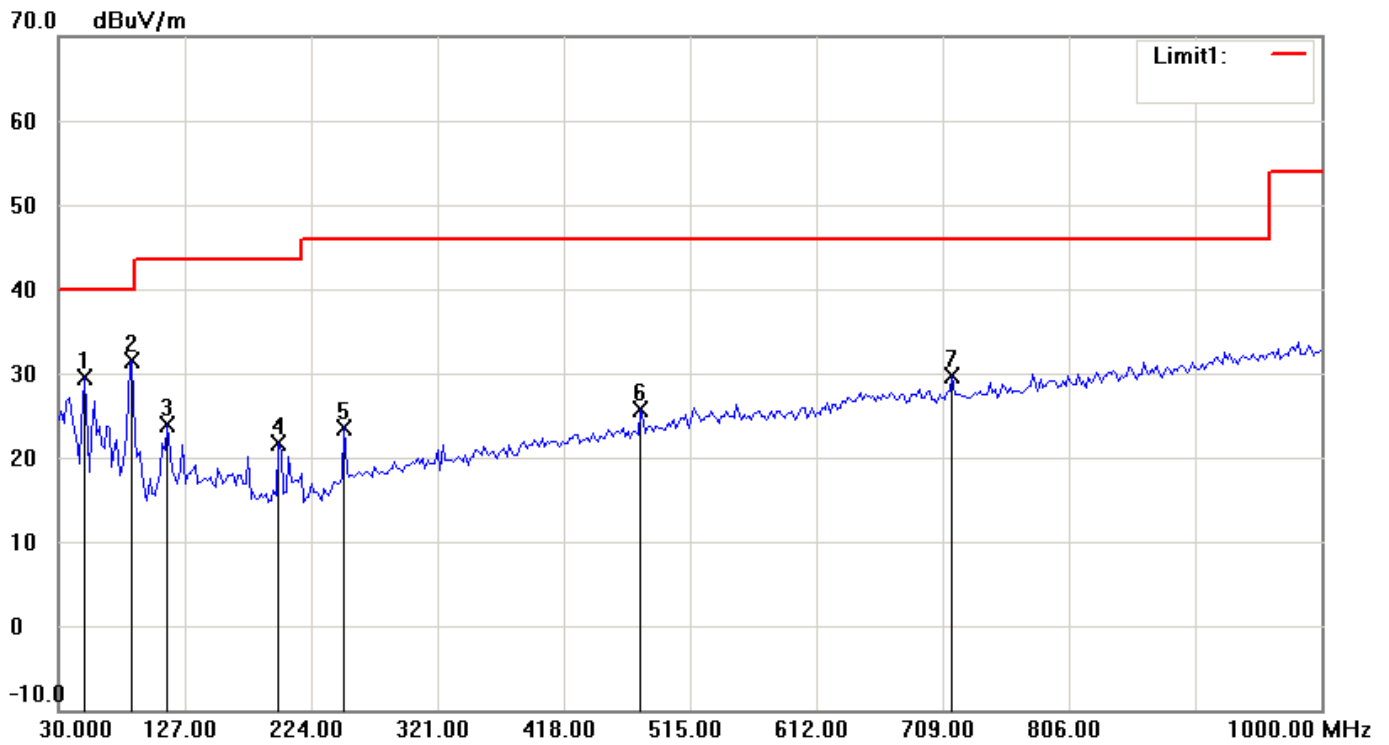
File: FCC_BT_TX Data: #2

Date: 2012/5/29

Temperature: 23 °C

Time: AM 10:05:21

Humidity: 58 %



Condition:

Polarization:

Vertical

EUT:

Distance:

3m

Model:

Test Mode:

| No. | Frequency (MHz) | Reading (dBuV/m) | Detector | Corrected dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----|--------------------|---------------------|----------|-------------------|--------------------|-------------------|----------------|
| 1 | 49.4388 | 18.66 | peak | 10.87 | 29.53 | 40.00 | -10.47 |
| 2 | 86.3726 | 21.43 | peak | 10.01 | 31.44 | 40.00 | -8.56 |
| 3 | 113.5871 | 11.19 | peak | 12.70 | 23.89 | 43.50 | -19.61 |
| 4 | 199.1182 | 8.17 | peak | 13.61 | 21.78 | 43.50 | -21.72 |
| 5 | 249.6593 | 7.10 | peak | 16.50 | 23.60 | 46.00 | -22.40 |
| 6 | 477.0942 | 3.71 | peak | 21.92 | 25.63 | 46.00 | -20.37 |
| 7 | 716.1924 | 3.97 | peak | 25.70 | 29.67 | 46.00 | -16.33 |

4.4.2.2 above 1GHz

4.4.2.2.1 Fundamental Frequency : 2402 MHz

| Frequency (MHz) | Ant Pol | Reading (dBuV) @3m | | Factor (dB/m) | Result (dBuV) @3m | | Limit (dBuV/m) @3m | |
|--------------------|------------|-----------------------|------|------------------|----------------------|------|-----------------------|------|
| | | Peak | AVG | | Peak | AVG | Peak | AVG |
| 1186.2180 | V | 50.1 | --- | -10.82 | 39.3 | --- | 74.0 | 54.0 |
| 1735.8974 | V | 49.1 | --- | -9.94 | 39.2 | --- | 74.0 | 54.0 |
| 1881.7308 | V | 50.7 | --- | -7.35 | 43.4 | --- | 74.0 | 54.0 |
| 1899.6794 | H | 50.0 | --- | -13.60 | 36.4 | --- | 74.0 | 54.0 |
| 2682.4295 | V | 50.6 | --- | -7.47 | 43.11 | --- | 74.0 | 54.0 |
| 13772.7484 | H | 49.5 | 32.3 | 9.4 | 58.9 | 41.7 | 74.0 | 54.0 |

4.4.2.2.2 Fundamental Frequency : 2441 MHz

| Frequency (MHz) | Ant Pol | Reading (dBuV) @3m | | Factor (dB/m) | Result (dBuV) @3m | | Limit (dBuV/m) @3m | |
|--------------------|------------|-----------------------|------|------------------|----------------------|------|-----------------------|------|
| | | Peak | AVG | | Peak | AVG | Peak | AVG |
| 1094.2308 | H | 50.2 | --- | -14.05 | 36.2 | --- | 74.0 | 54.0 |
| 1327.5641 | H | 50.1 | --- | -11.59 | 38.5 | --- | 74.0 | 54.0 |
| 1594.5513 | V | 49.6 | --- | -12.92 | 36.7 | --- | 74.0 | 54.0 |
| 1843.5896 | V | 49.5 | --- | -10.24 | 39.3 | --- | 74.0 | 54.0 |
| 1978.2050 | H | 49.3 | --- | -9.51 | 39.8 | --- | 74.0 | 54.0 |
| 2657.5632 | H | 50.0 | --- | -6.07 | 43.9 | --- | 74.0 | 54.0 |
| 3055.4222 | V | 49.7 | --- | -7.43 | 42.3 | --- | 74.0 | 54.0 |
| 12255.9110 | V | 49.3 | --- | 4.61 | 53.9 | --- | 74.0 | 54.0 |
| 14618.1987 | H | 49.2 | 33.2 | 8.48 | 57.7 | 41.7 | 74.0 | 54.0 |

4.4.2.2.3 Fundamental Frequency : 2480 MHz

| Frequency (MHz) | Ant Pol | Reading (dBuV) @3m | | Factor (dB/m) | Result (dBuV) @3m | | Limit (dBuV/m) @3m | |
|--------------------|------------|-----------------------|------|------------------|----------------------|------|-----------------------|------|
| | | Peak | AVG | | Peak | AVG | Peak | AVG |
| 1074.0385 | H | 50.4 | --- | -14.15 | 36.3 | --- | 74.0 | 54.0 |
| 1195.1922 | V | 50.7 | --- | -13.56 | 37.1 | --- | 74.0 | 54.0 |
| 1376.9230 | V | 51.0 | --- | -12.39 | 38.6 | --- | 74.0 | 54.0 |
| 1439.7436 | V | 49.8 | --- | -11.44 | 38.4 | --- | 74.0 | 54.0 |
| 1480.1282 | H | 49.8 | --- | -12.68 | 37.1 | --- | 74.0 | 54.0 |
| 1623.7180 | H | 49.5 | --- | -12.20 | 37.3 | --- | 74.0 | 54.0 |
| 2707.2957 | H | 49.6 | --- | -7.26 | 42.3 | --- | 74.0 | 54.0 |
| 15040.9238 | H | 49.7 | 33.9 | 11.61 | 61.3 | 45.5 | 74.0 | 54.0 |
| 17676.7396 | V | 50.8 | 32.7 | 6.27 | 57.1 | 39.0 | 74.0 | 54.0 |

Note:

1. Place of Measurement: Measuring site of the ETC.
2. If the data table appeared symbol of "***" means the value was too low to be measured.
3. The estimated measurement uncertainty of the result measurement is
 - ±4.6dB (30MHz ≤ f < 300MHz).
 - ±4.4dB (300MHz ≤ f < 1000MHz).
 - ±4.1dB (1GHz ≤ f ≤ 18GHz).
 - ±4.4dB (18GHz < f ≤ 40GHz).
- 4 Remark "----" means that the emissions level is too low to be measured.

4.4.3 Radiated Measurement at Bandedge with Fundamental Frequencies

4.4.3.1 Operation Mode : NON-EDR

(A) Channel 0

Fundamental Frequency : 2402 MHz

Test Date: May 29, 2012 Temperature : 23°C

Humidity : 58%

| Frequency (MHz) | Reading (dBuV) | | | | Factor (dB) Corr. | Result @3m (dBuV/m) Peak Ave (H/V Max.) | | Limit @3m (dBuV/m) Peak Ave. | |
|--------------------|----------------|------|------|------|-------------------------|--|------|------------------------------------|------|
| | H | | V | | | Peak | Ave | Peak | Ave |
| 2390.000 | 27.9 | 14.2 | 27.9 | 14.2 | 29.8 | 57.7 | 44.0 | 74.0 | 54.0 |

Note:

The result is the highest value of radiated emission from restrict band of 2310 ~2390 MHz.

(B) Channel 78

Operation Mode : Transmitting

Fundamental Frequency : 2480 MHz

| Frequency (MHz) | Reading (dBuV) | | | | Factor (dB) Corr. | Result @3m (dBuV/m) Peak Ave (H/V Max.) | | Limit @3m (dBuV/m) Peak Ave. | |
|--------------------|----------------|------|------|------|-------------------------|--|------|------------------------------------|------|
| | H | | V | | | Peak | Ave | Peak | Ave |
| 2483.500 | 28.9 | 15.6 | 28.1 | 15.0 | 29.8 | 58.7 | 45.4 | 74.0 | 54.0 |

Note:

The result is the highest value of radiated emission from restrict band of 2483.5 ~2500 MHz.

4.4.3.2 Operation Mode : EDR

(A) Channel 0

Fundamental Frequency : 2402 MHz

Test Date: May 29, 2012

Temperature : 23°C

Humidity : 58%

| Frequency (MHz) | Reading (dBuV) | | | | Factor (dB) Corr. | Result @3m (dBuV/m) Peak Ave (H/V Max.) | | Limit @3m (dBuV/m) Peak Ave. | |
|--------------------|----------------|------|------|------|-------------------------|--|------|------------------------------------|------|
| | Peak | Ave | Peak | Ave | | Peak | Ave | Peak | Ave |
| 2390.000 | 27.8 | 14.1 | 27.5 | 14.1 | 29.8 | 57.6 | 43.9 | 74.0 | 54.0 |

Note:

The result is the highest value of radiated emission from restrict band of 2310 ~2390 MHz.

(B) Channel 78

Operation Mode : Transmitting

Fundamental Frequency : 2480 MHz

| Frequency (MHz) | Reading (dBuV) | | | | Factor (dB) Corr. | Result @3m (dBuV/m) Peak Ave (H/V Max.) | | Limit @3m (dBuV/m) Peak Ave. | |
|--------------------|----------------|------|------|------|-------------------------|--|------|------------------------------------|------|
| | Peak | Ave | Peak | Ave | | Peak | Ave | Peak | Ave |
| 2483.500 | 28.1 | 15.4 | 28.1 | 14.8 | 29.8 | 57.9 | 45.2 | 74.0 | 54.0 |

Note:

The result is the highest value of radiated emission from restrict band of 2483.5 ~2500 MHz.

4.5 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor, High Pass Filter Loss(if used) and Cable Loss, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation calculation is as follows:

$$Result = Reading + Corrected Factor$$

where

$$Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Amplifier Gain$$

5 CONDUCTED EMISSION MEASUREMENT

This EUT is excused from investigation of conducted emission, for it is powered by battery only. According to §15.207 (d), measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines.

6 ANTENNA REQUIREMENT

6.1 Standard Applicable

For intentional device, according to §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to §15.247 (c),(i) Systems operating in the 2400-2483.5 MHz band that are used exclusively for fixed, point-to point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. (ii) Systems operating in the 5725-5850 MHz band that are used exclusively for fixed, point-to point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted output power.

6.2 Antenna Construction and Directional Gain

The peak gain of antenna used is 5.16 dBi.

| | |
|-------------------|----------------------------|
| Antenna Type | YAGEO Ceramic Chip Antenna |
| Peak Antenna Gain | 5.16 dBi |

The directional gain of antenna doesn't greater than 6 dBi, the power won't be reduced.

7 20dB EMISSION BANDWIDTH MEASUREMENT

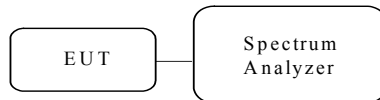
7.1 Standard Applicable

According to 15.247(a)(1), for frequency hopping systems, hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of hopping channel, whichever is greater.

7.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. The setup of the EUT as shown in figure 3. Turn on the EUT and connect it to measurement instrument. Then set it to any convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

Figure 3: Emission bandwidth measurement configuration.



7.3 Measurement Equipment

| Equipment | Manufacturer | Model No. | Next Cal. Due |
|-------------------|--------------|-----------|---------------|
| Spectrum Analyzer | Agilent | E4446A | 09/18/2012 |

7.4 Measurement Data

7.4.1 Operation Mode: NON-EDR

Test Date: May 29, 2012

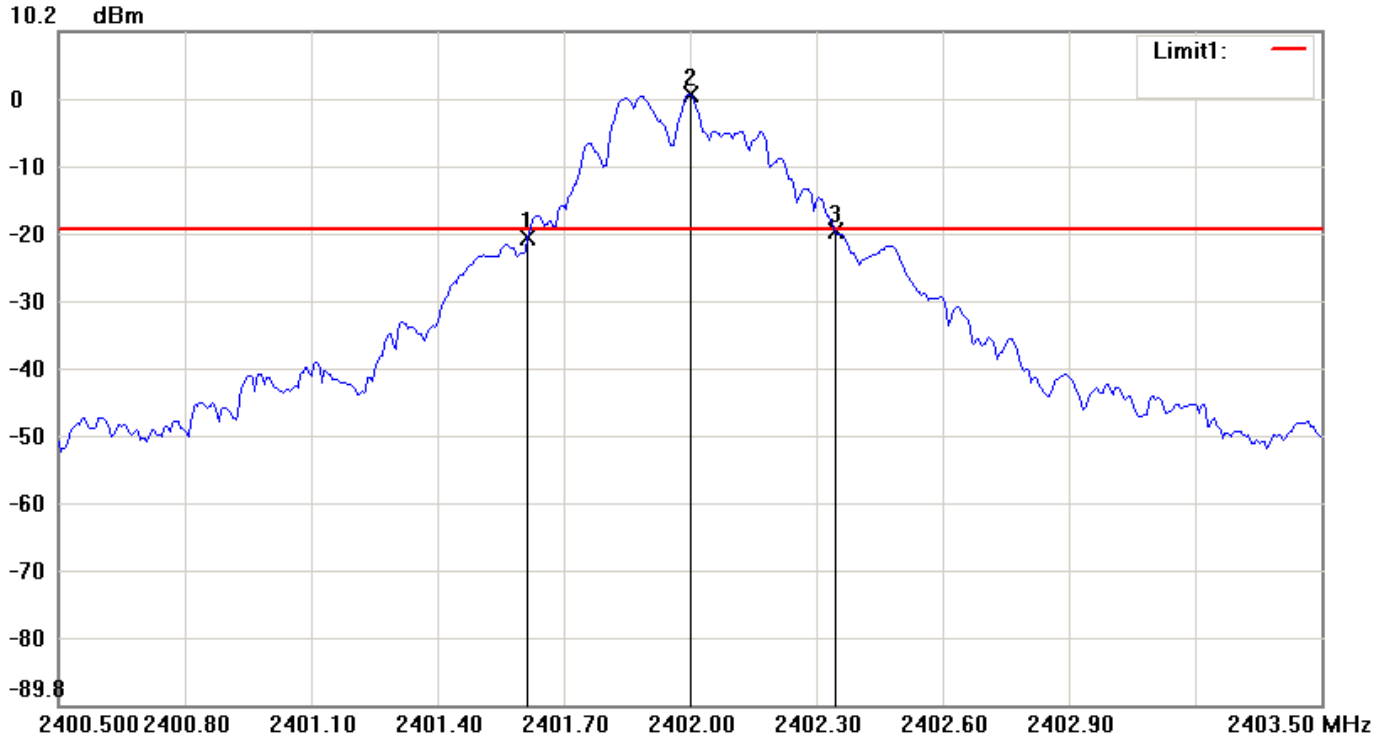
Temperature : 20°C

Humidity: 54%

| Channel | 20 dB Bandwidth (MHz) | Chart |
|---------|--------------------------|---------|
| L | 0.730 | Page 27 |
| M | 0.680 | Page 28 |
| H | 0.690 | Page 29 |

Note: Please refer to page 27 to page 29 for chart.

File: P-418_BT Data: #49 Date: 2012/5/29 Temperature: 20 °C
Time: AM 09:11:52 Humidity: 54 %

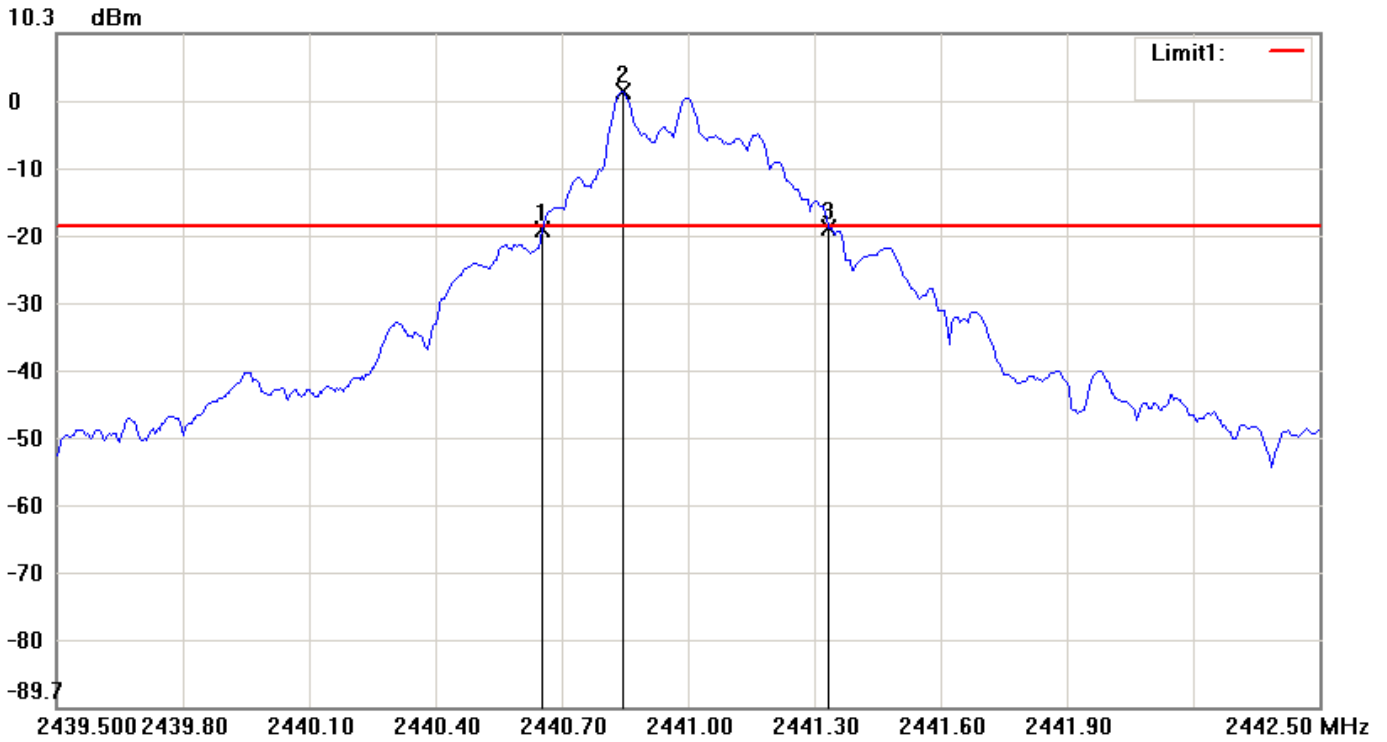


Condition: -19.21dBm RF Conducted
EUT: Sweep Time: 3.2ms Att.: 10dB
Model: RBW: 30 KHz VBW: 100 KHz
Test Mode:
Note: FCC-Bluetooth Channel 00-20dB EBW

| No. | Frequency(MHz) | Level(dBm) |
|-----|----------------|------------|
| 1 | 2401.61500 | -20.48 |
| 2 | 2402.00000 | 0.79 |
| 3 | 2402.34500 | -19.51 |

| No. | | ΔFrequency(MHz) | ΔLevel(dB) |
|-----|---------|-----------------|------------|
| 1 | mk3-mk1 | 0.73 | 0.97 |

File: P-418_BT Data: #45 Date: 2012/5/29 Temperature: 20 °C
Time: AM 09:03:54 Humidity: 54 %

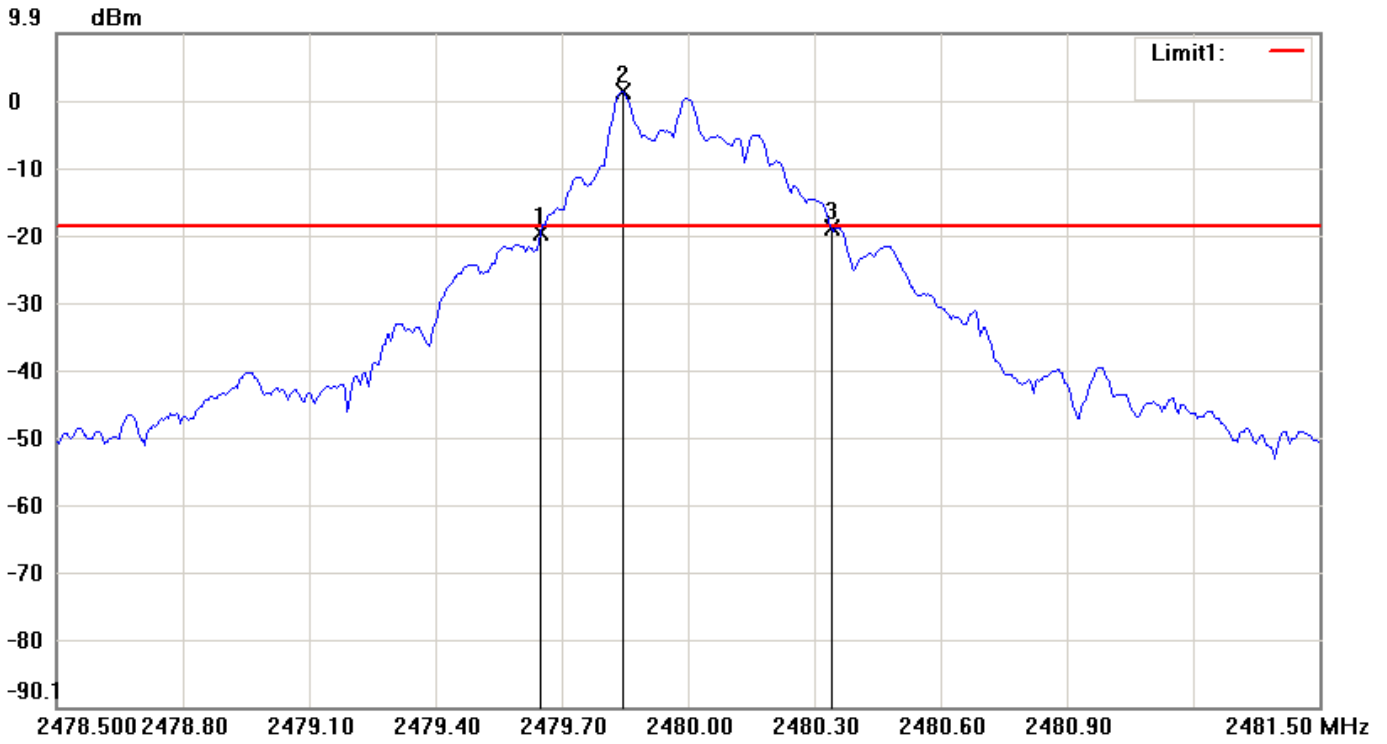


Condition: -18.4dBm RF Conducted
EUT: Sweep Time: 3.2ms Att.: 10dB
Model: RBW: 30 KHz VBW: 100 KHz
Test Mode:
Note: FCC-Bluetooth Channel 39-20dB EBW

| No. | Frequency(MHz) | Level(dBm) |
|-----|----------------|------------|
| 1 | 2440.65500 | -18.70 |
| 2 | 2440.84500 | 1.60 |
| 3 | 2441.33500 | -18.59 |

| No. | | ΔFrequency(MHz) | ΔLevel(dB) |
|-----|---------|-----------------|------------|
| 1 | mk3-mk1 | 0.68 | 0.11 |

File: P-418_BT Data: #51 Date: 2012/5/29 Temperature: 20 °C
Time: AM 09:14:52 Humidity: 54 %



Condition: -18.76dBm RF Conducted
EUT: Sweep Time: 3.2ms Att.: 10dB
Model: RBW: 30 KHz VBW: 100 KHz
Test Mode:
Note: FCC-Bluetooth Channel 78-20dB EBW

| No. | Frequency(MHz) | Level(dBm) |
|-----|----------------|------------|
| 1 | 2479.65000 | -19.79 |
| 2 | 2479.84500 | 1.24 |
| 3 | 2480.34000 | -18.94 |

| No. | | ΔFrequency(MHz) | ΔLevel(dB) |
|-----|---------|-----------------|------------|
| 1 | mk3-mk1 | 0.69 | 0.85 |

7.4.2 Operation Mode: EDR

Test Date: May 29, 2012

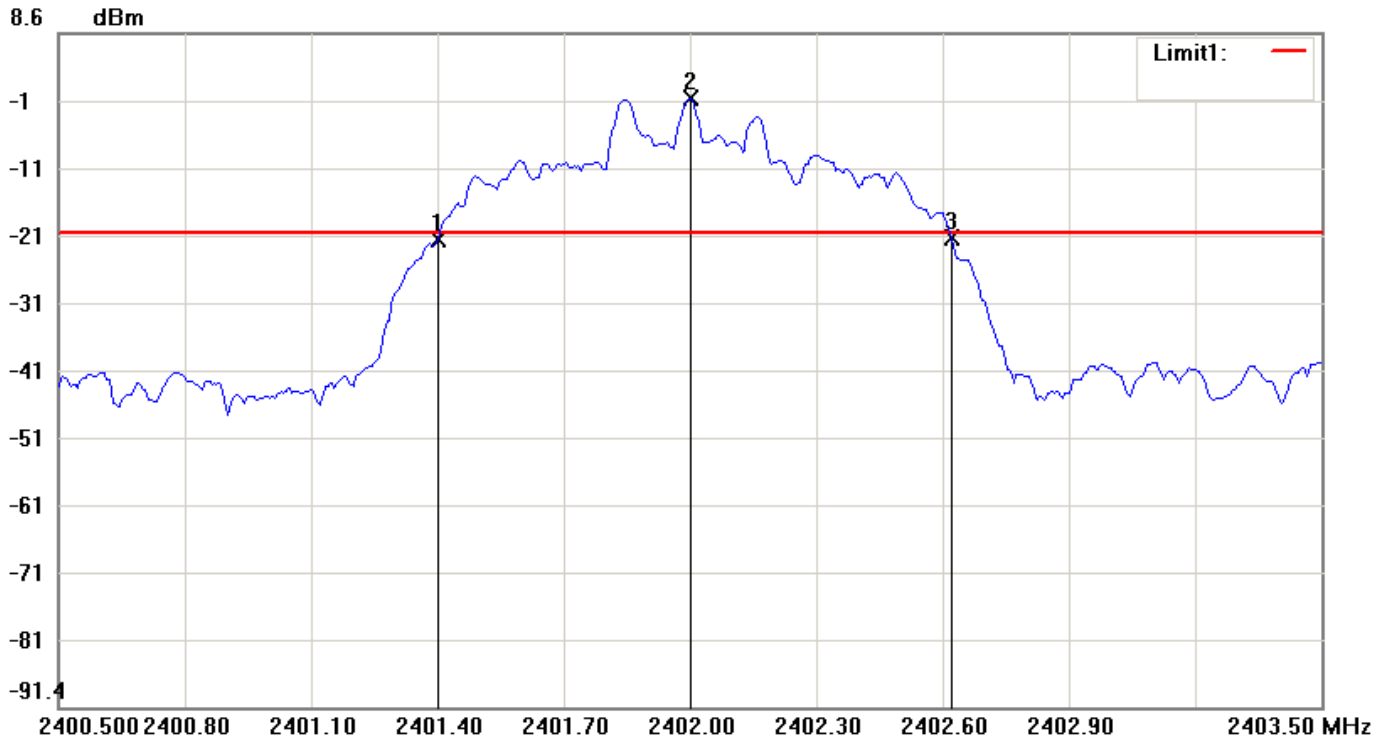
Temperature : 20°C

Humidity: 54%

| Channel | 20 dB Bandwidth (MHz) | Chart |
|---------|--------------------------|---------|
| L | 1.22 | Page 31 |
| M | 1.22 | Page 32 |
| H | 1.22 | Page 33 |

Note: Please refer to page 31 to page 33 for chart.

File: P-418_BT Data: #46 Date: 2012/5/29 Temperature: 20 °C
Time: AM 09:05:55 Humidity: 54 %

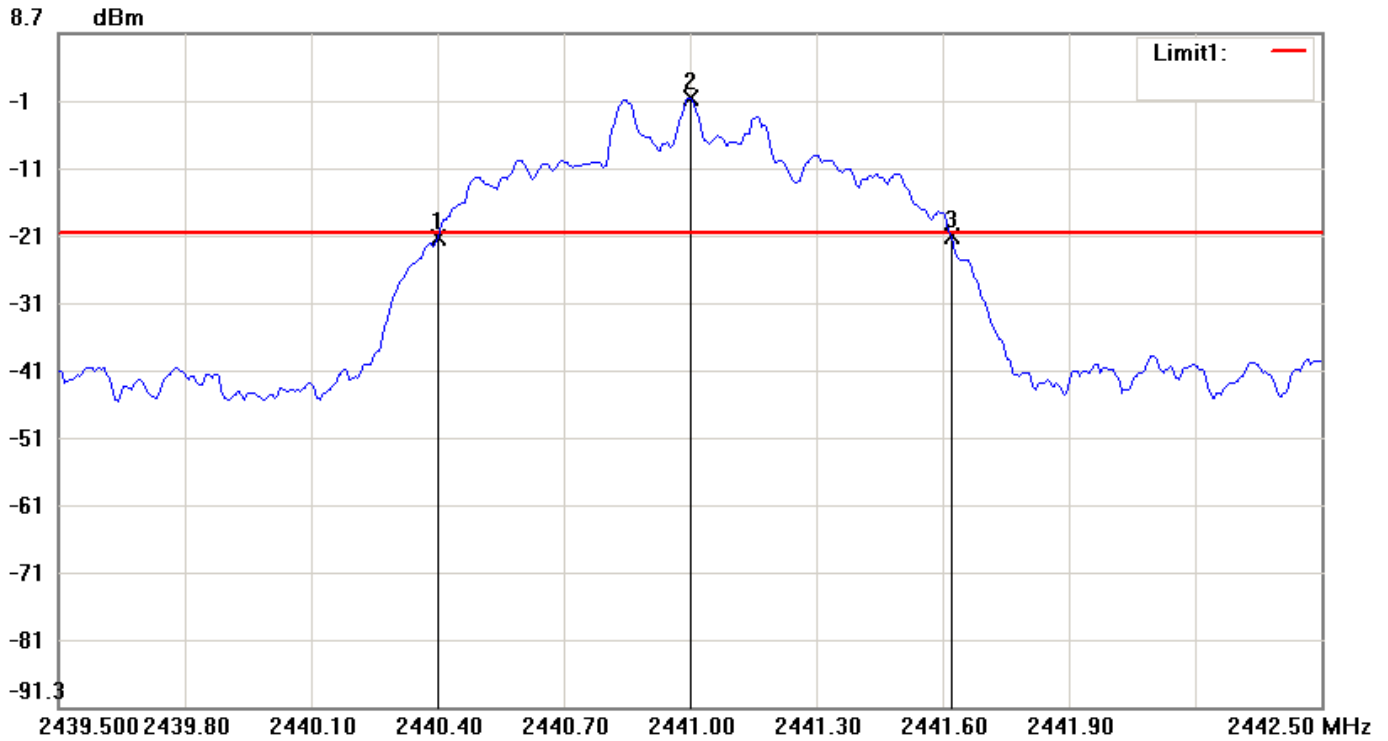


Condition: -21.17dBm RF Conducted
EUT: Sweep Time: 3.2ms Att.: 10dB
Model: RBW: 30 KHz VBW: 100 KHz
Test Mode:
Note: FCC-Bluetooth Channel 00-20dB EBW

| No. | Frequency(MHz) | Level(dBm) |
|-----|----------------|------------|
| 1 | 2401.40000 | -22.02 |
| 2 | 2402.00000 | -1.17 |
| 3 | 2402.62000 | -21.68 |

| No. | | ΔFrequency(MHz) | ΔLevel(dB) |
|-----|---------|-----------------|------------|
| 1 | mk3-mk1 | 1.22 | 0.34 |

File: P-418_BT Data: #48 Date: 2012/5/29 Temperature: 20 °C
Time: AM 09:08:29 Humidity: 54 %

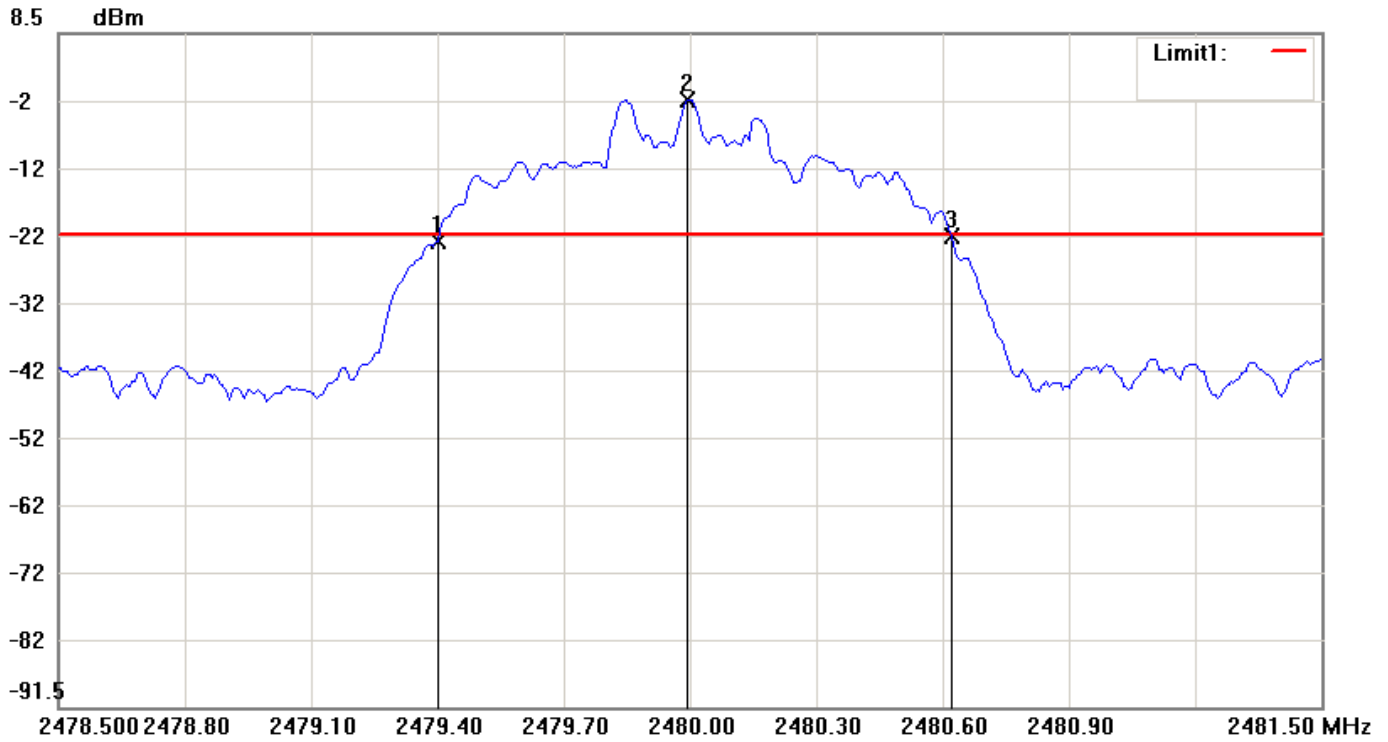


Condition: -21.01dBm RF Conducted
EUT: Sweep Time: 3.2ms Att.: 10dB
Model: RBW: 30 KHz VBW: 100 KHz
Test Mode:
Note: FCC-Bluetooth Channel 39-20dB EBW

| No. | Frequency(MHz) | Level(dBm) |
|-----|----------------|------------|
| 1 | 2440.40000 | -21.68 |
| 2 | 2441.00000 | -1.01 |
| 3 | 2441.62000 | -21.40 |

| No. | | ΔFrequency(MHz) | ΔLevel(dB) |
|-----|---------|-----------------|------------|
| 1 | mk3-mk1 | 1.22 | 0.28 |

File: P-418_BT Data: #47 Date: 2012/5/29 Temperature: 20 °C
Time: AM 09:07:14 Humidity: 54 %



Condition: -21.38dBm RF Conducted
EUT: Sweep Time: 3.2ms Att.: 10dB
Model: RBW: 30 KHz VBW: 100 KHz
Test Mode:
Note: FCC-Bluetooth Channel 78-20dB EBW

| No. | Frequency(MHz) | Level(dBm) |
|-----|----------------|------------|
| 1 | 2479.40000 | -22.44 |
| 2 | 2479.99500 | -1.38 |
| 3 | 2480.62000 | -21.70 |

| No. | | ΔFrequency(MHz) | ΔLevel(dB) |
|-----|---------|-----------------|------------|
| 1 | mk3-mk1 | 1.22 | 0.74 |

8 OUTPUT POWER MEASUREMENT

8.1 Standard Applicable

For frequency hopping system, according to 15.247(b), the maximum peak output power of the transmitter shall not exceed 1 Watt. If Receiving antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

8.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. The setup of the EUT as shown in figure 3. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz and VBW to 3 MHz.
4. Measure the highest amplitude appearing on spectral display and record the level to calculate result data.
5. Repeat above procedures until all frequencies measured were complete.

8.3 Measurement Equipment

| Equipment | Manufacturer | Model No. | Next Cal. Due |
|-------------------|--------------|-----------|---------------|
| Spectrum Analyzer | Agilent | E4446A | 09/18/2012 |
| Power Meter | Agilent | N1922A | 11/09/2012 |
| Peak Power Sensor | Agilent | N1912A | 11/09/2012 |

8.4 Measurement Data8.4.1 Operation Mode: NON-EDR

Test Date: May 28, 2012

Temperature : 20°C

Humidity: 54%

Test Date: May 30, 2012

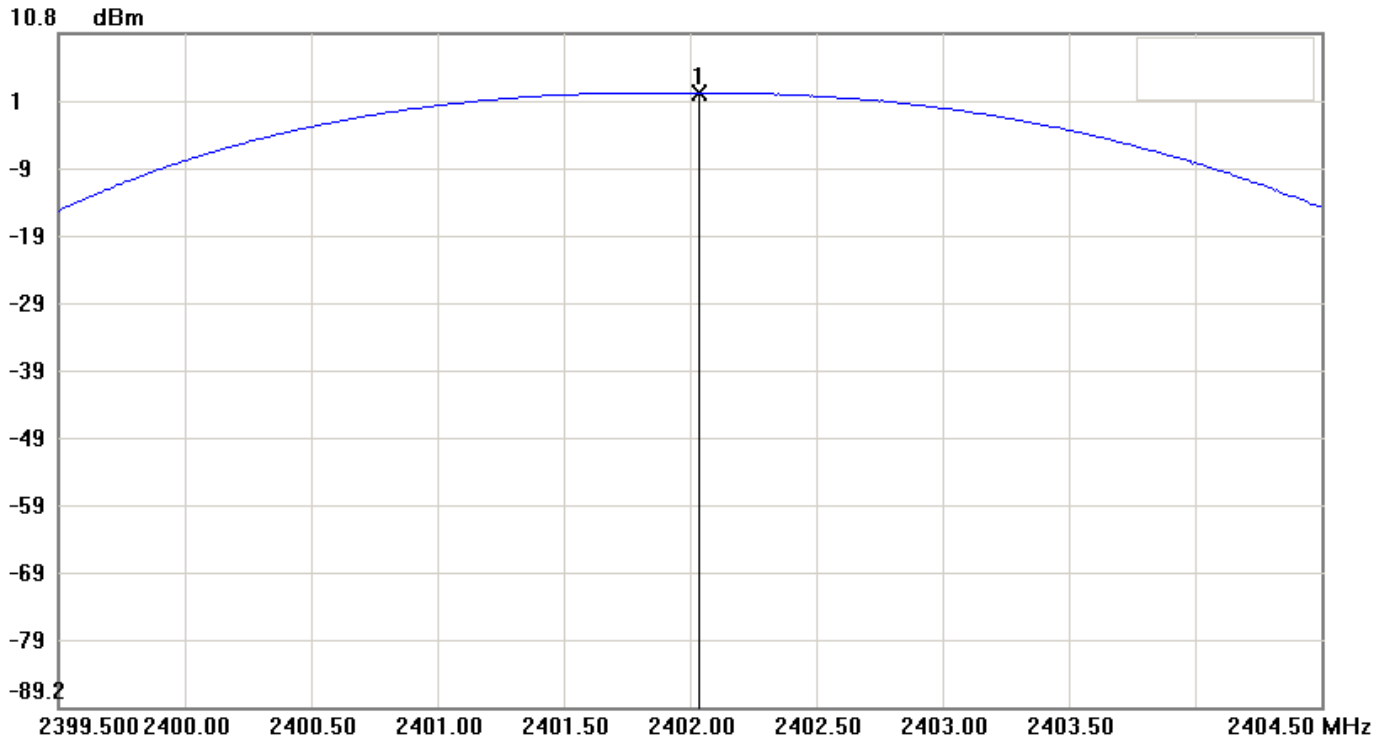
Temperature : 20°C

Humidity: 54%

| Channel | Maximum Peak Output Power (dBm) | Maximum Peak Output Power (mW) | FCC Limit (mW) | Chart |
|---------|---------------------------------------|--------------------------------------|-------------------|---------|
| L | 2.03 | 1.60 | 125 | Page 36 |
| M | 2.07 | 1.61 | 125 | Page 37 |
| H | 1.77 | 1.50 | 125 | Page 38 |

Note: Please refer to page 36 to page 38 for chart.

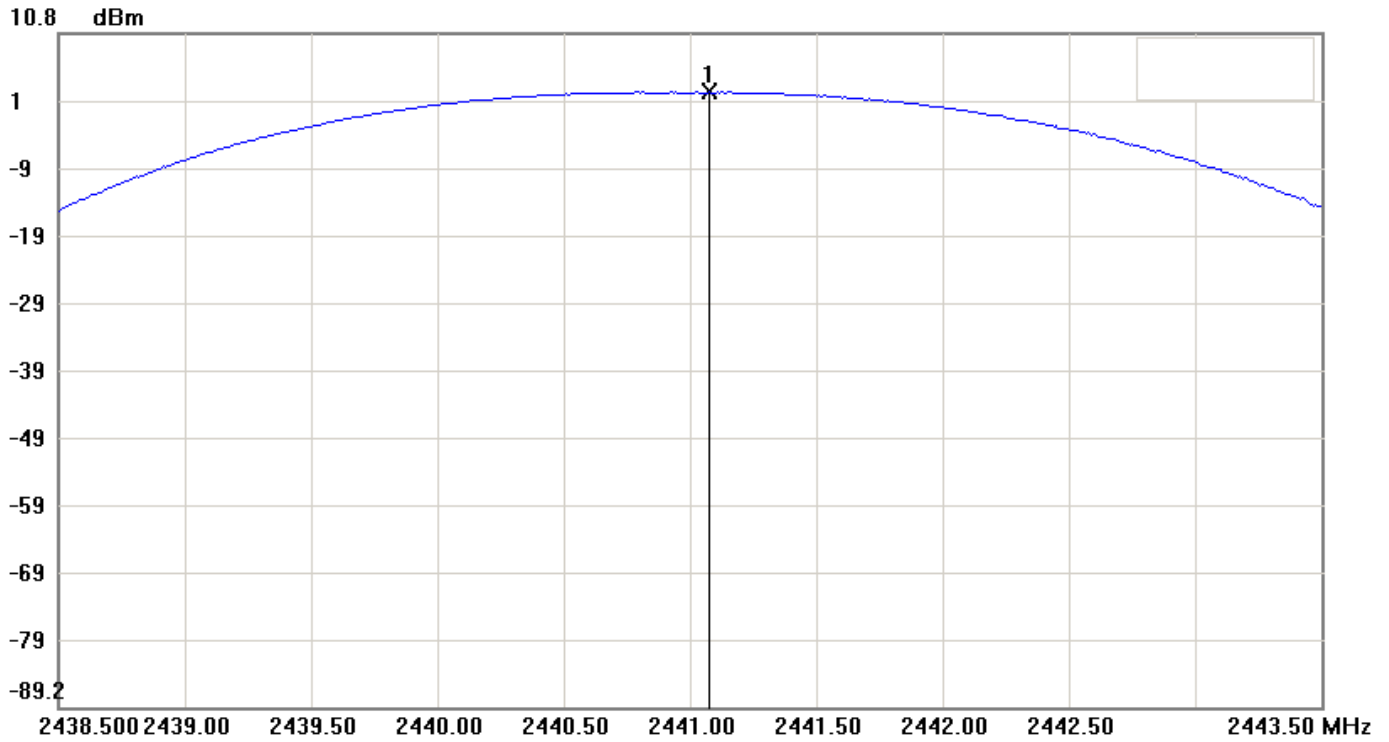
File: P-418_BT Data: #60 Date: 2012/5/30 Temperature: 20 °C
Time: PM 04:15:12 Humidity: 54 %



Condition: RF Conducted
EUT: Sweep Time: 1ms Att.: 20dB
Model: RBW: 2000 KHz VBW: 2000 KHz
Test Mode:
Note: FCC Bluetooth CH00 Output Power (NON-EDR)

| No. | Frequency(MHz) | Level(dBm) |
|-----|----------------|------------|
| 1 | 2402.03330 | 2.03 |

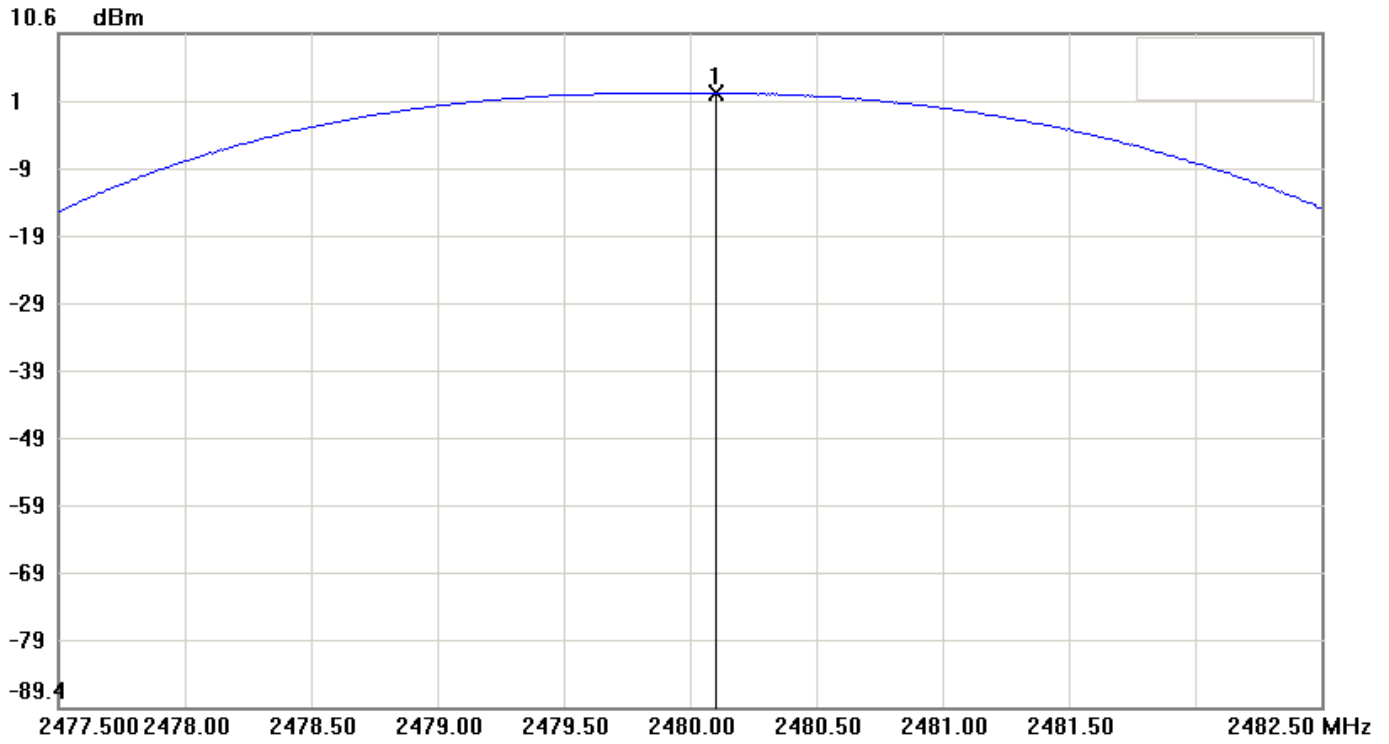
File: P-418_BT Data: #9 Date: 2012/5/28 Temperature: 20 °C
Time: PM 07:31:43 Humidity: 54 %



Condition: RF Conducted
EUT: Sweep Time: 1ms Att.: 20dB
Model: RBW: 2000 KHz VBW: 2000 KHz
Test Mode:
Note: FCC Bluetooth CH39 Output Power (NON-EDR)

| No. | Frequency(MHz) | Level(dBm) |
|-----|----------------|------------|
| 1 | 2441.07500 | 2.07 |

File: P-418_BT Data: #5 Date: 2012/5/28 Temperature: 20 °C
Time: PM 07:25:18 Humidity: 54 %



Condition: RF Conducted
 EUT: Sweep Time: 1ms Att.: 20dB
 Model: RBW: 2000 KHz VBW: 2000 KHz
 Test Mode:
 Note: FCC Bluetooth CH78 Output Power (NON-EDR)

| No. | Frequency(MHz) | Level(dBm) |
|-----|----------------|------------|
| 1 | 2480.10000 | 1.77 |

8.4.2 Operation Mode: EDR

Test Date: May 28, 2012

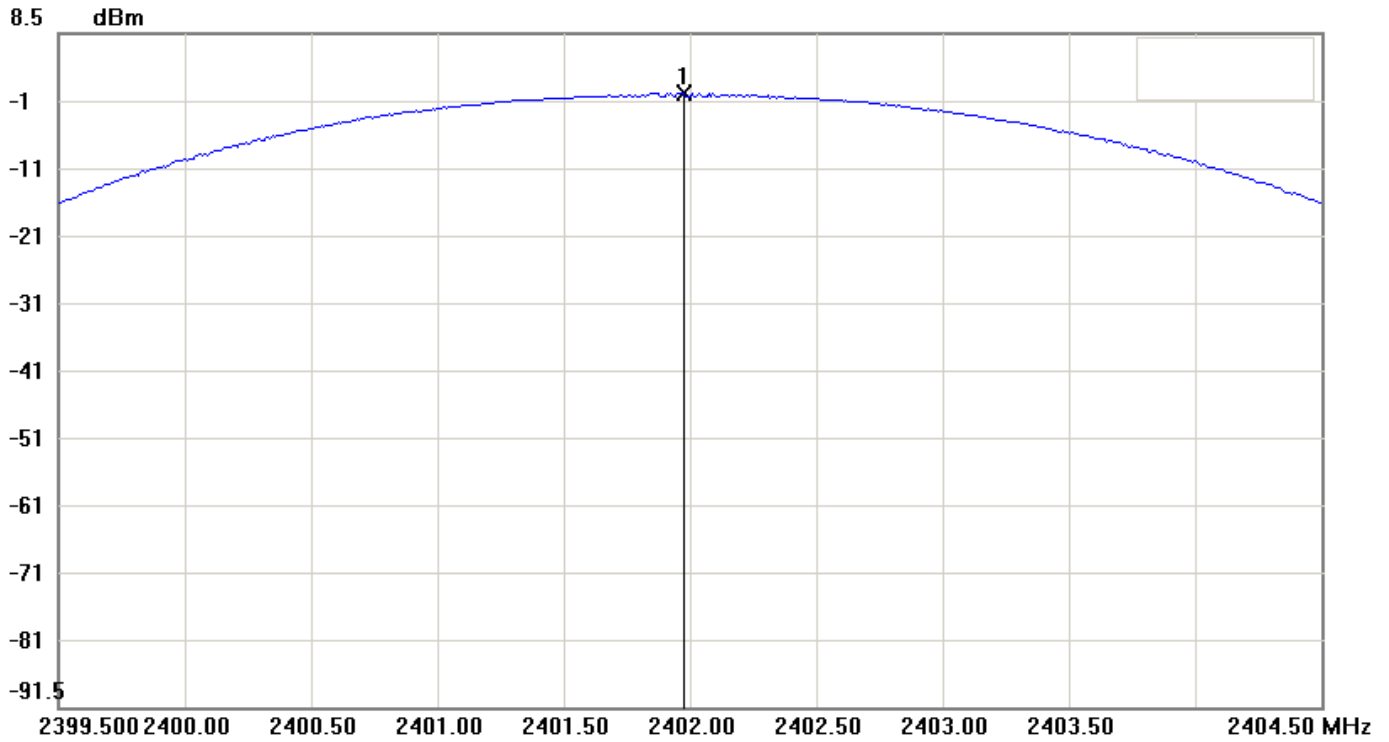
Temperature : 20°C

Humidity: 54%

| Channel | Maximum Peak Output Power (dBm) | Maximum Peak Output Power (mW) | FCC Limit (mW) | Chart |
|---------|---------------------------------|--------------------------------|----------------|---------|
| L | -0.43 | 0.91 | 125 | Page 40 |
| M | -0.17 | 0.96 | 125 | Page 41 |
| H | -0.39 | 0.91 | 125 | Page 42 |

Note: Please refer to page 40 to page 42 for chart.

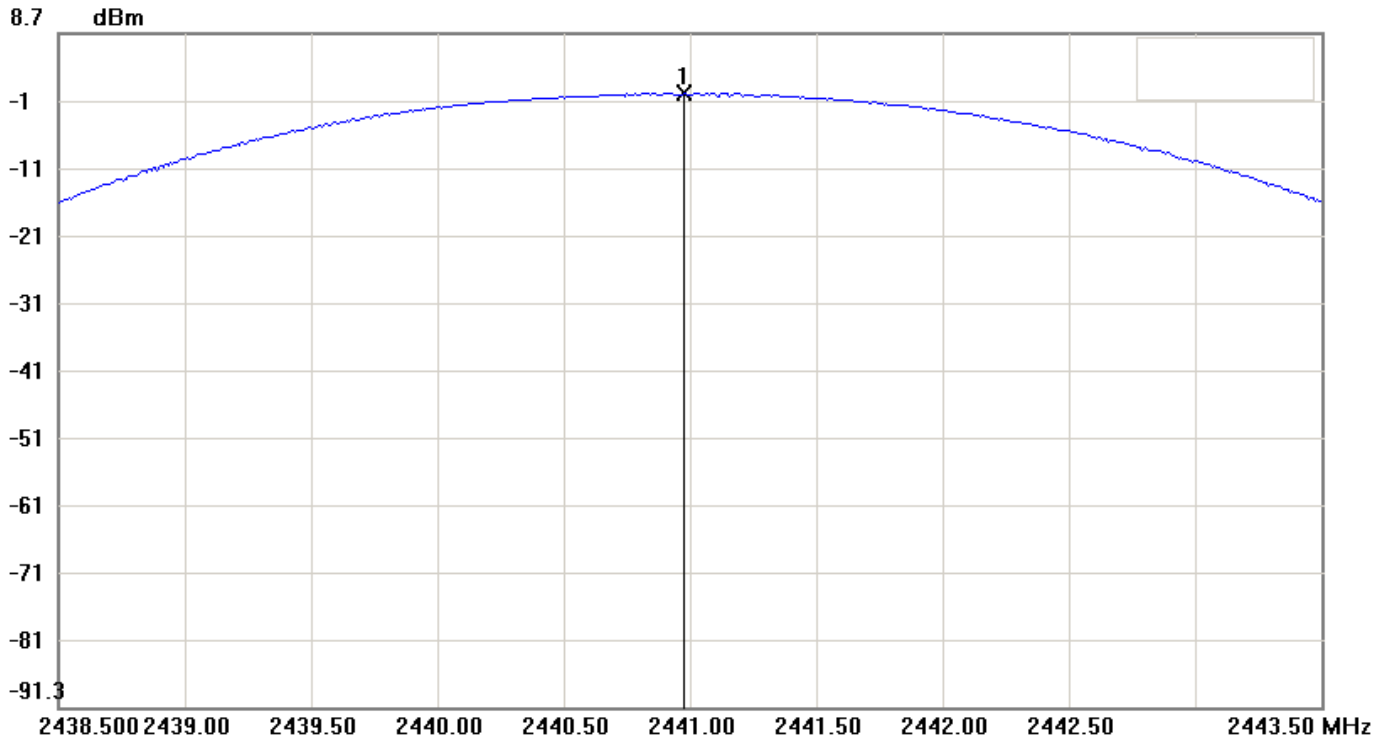
File: P-418_BT Data: #29 Date: 2012/5/28 Temperature: 20 °C
 Time: PM 08:06:15 Humidity: 54 %



Condition: RF Conducted
EUT: Sweep Time: 1ms Att.: 10dB
Model: RBW: 2000 KHz VBW: 2000 KHz
Test Mode:
Note: FCC Bluetooth CH00 Output Power (EDR)

| No. | Frequency(MHz) | Level(dBm) |
|-----|----------------|------------|
| 1 | 2401.97500 | -0.43 |

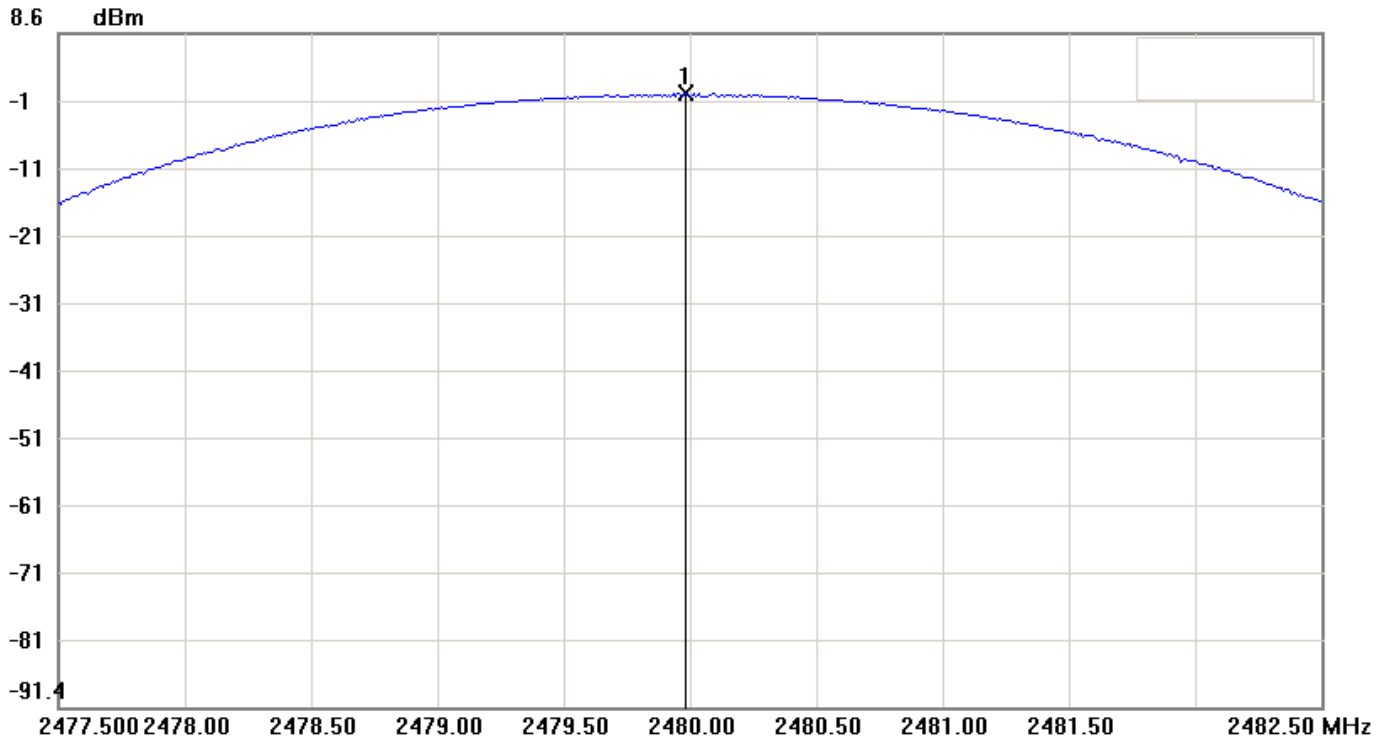
File: P-418_BT Data: #37 Date: 2012/5/28 Temperature: 20 °C
 Time: PM 08:18:10 Humidity: 54 %



Condition: RF Conducted
 EUT: Sweep Time: 1ms Att.: 10dB
 Model: RBW: 2000 KHz VBW: 2000 KHz
 Test Mode:
 Note: FCC Bluetooth CH39 Output Power (EDR)

| No. | Frequency(MHz) | Level(dBm) |
|-----|----------------|------------|
| 1 | 2440.97500 | -0.17 |

File: P-418_BT Data: #33 Date: 2012/5/28 Temperature: 20 °C
Time: PM 08:11:00 Humidity: 54 %



Condition: RF Conducted
EUT: Sweep Time: 1ms Att.: 10dB
Model: RBW: 2000 KHz VBW: 2000 KHz
Test Mode:
Note: FCC Bluetooth CH78 Output Power (EDR)

| No. | Frequency(MHz) | Level(dBm) |
|-----|----------------|------------|
| 1 | 2479.98330 | -0.39 |

9 OUT-OF-BAND RF CONDUCTED SPURIOUS EMISSION MEASUREMENT

9.1 Standard Applicable

According to 15.247(c), if any 100 kHz bandwidth outside these frequency bands, the radio frequency power that is produced by the modulation products of the spreading sequence, the information sequence and the carrier frequency shall be either at least 20 dB below that in any 100 kHz bandwidth within the band that contains the highest level of the desired power or shall not exceed the general levels specified in §15.209(a), whichever results in the lesser attenuation.

9.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. The setup of the EUT as shown in figure 3. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

9.3 Measurement Equipment

| Equipment | Manufacturer | Model No. | Next Cal. Due |
|-------------------|--------------|-----------|---------------|
| Spectrum Analyzer | Agilent | E4446A | 09/18/2012 |

9.4 Measurement Data

9.4.1 Operation Mode: NON-EDR

Test Date: May 28, 2012

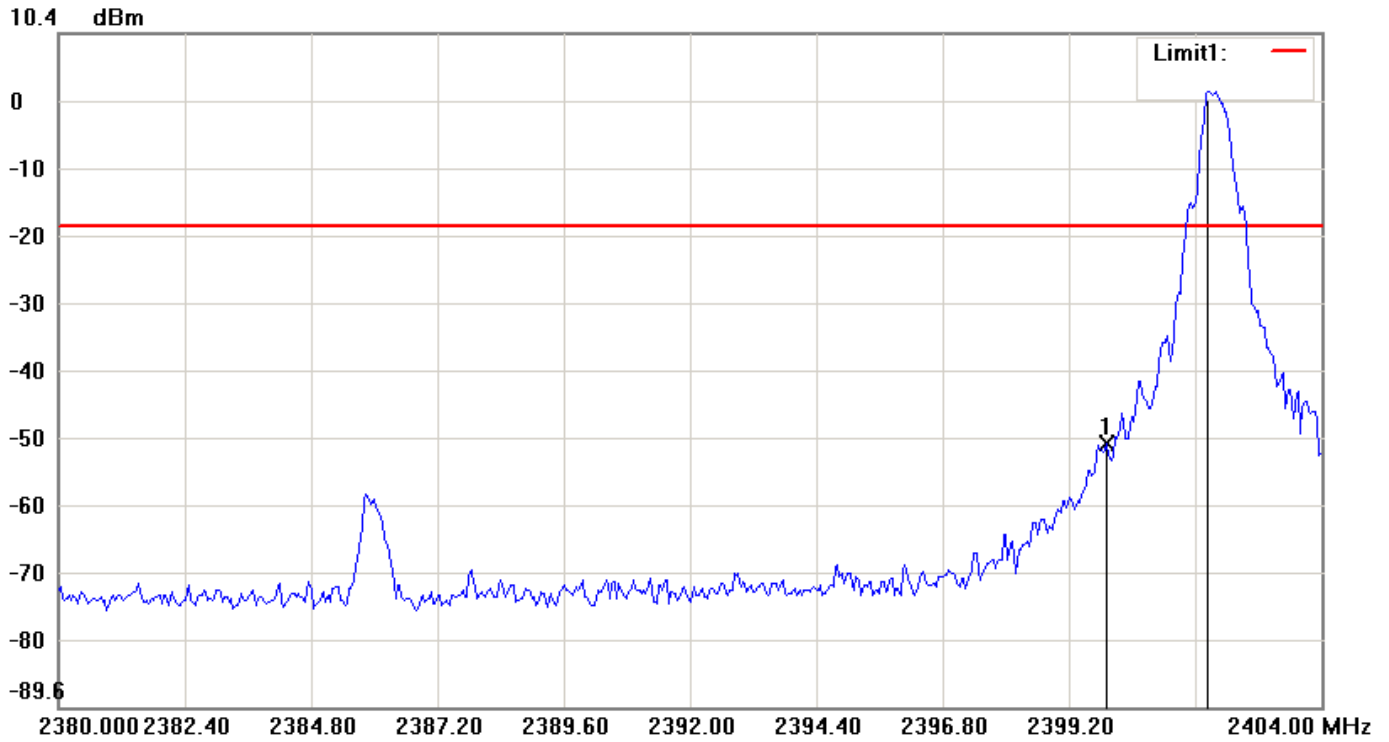
Temperature : 20°C

Humidity: 54%

| Channel | Test Frequency Range | Note | Chart |
|---------|-------------------------|-----------------|------------|
| L | 2350 MHz - 2450 MHz | Lower Band Edge | Page 45-46 |
| H | 2433.5 MHz - 2533.5 MHz | Upper Band Edge | Page 47-48 |
| L | 30 MHz - 25 GHz | | Page 49 |
| M | 30 MHz - 25 GHz | | Page 50 |
| H | 30 MHz - 25 GHz | | Page 51 |

Note: Please refer to page 45 to page 51 for chart.

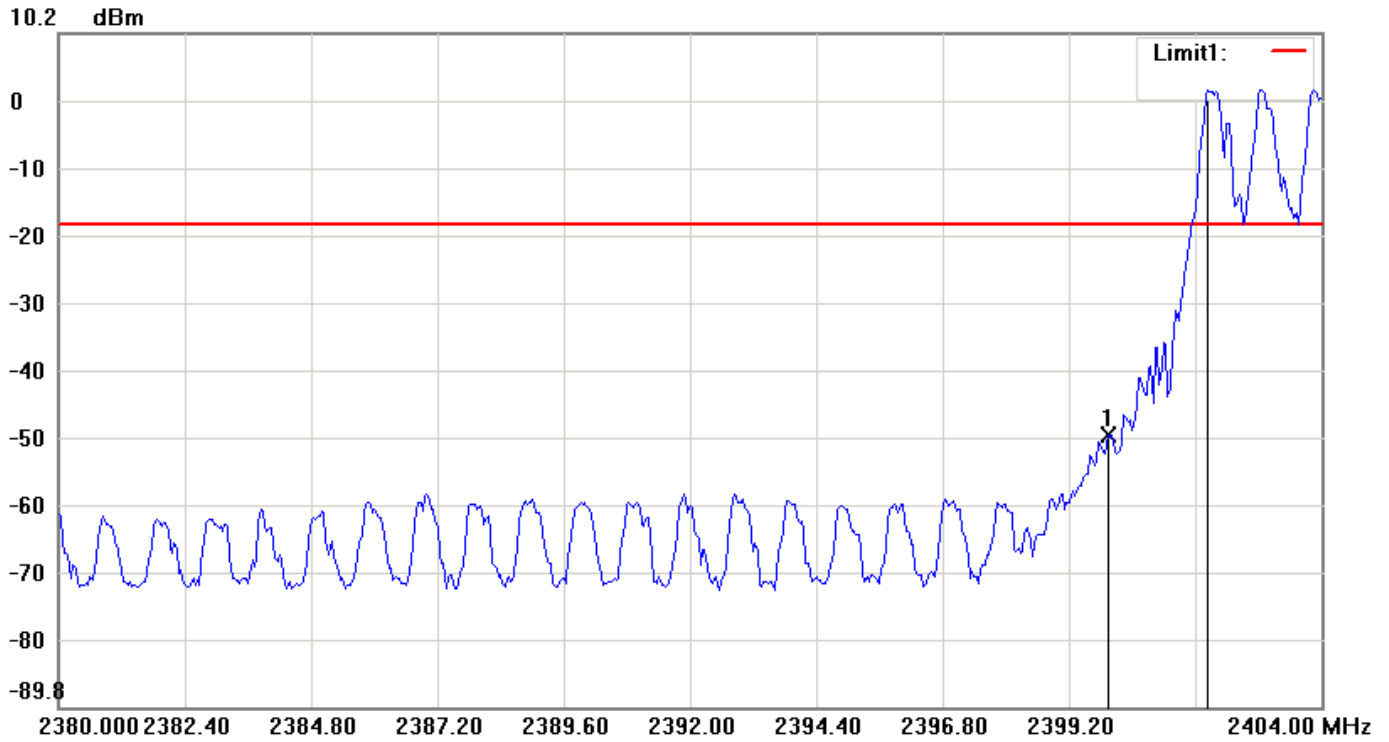
File: P-418_BT Data: #4 Date: 2012/5/28 Temperature: 20 °C
Time: PM 07:22:09 Humidity: 54 %



Condition: -18.22dBm RF Conducted
EUT: Sweep Time: 2.32ms Att.: 10dB
Model: RBW: 100 KHz VBW: 300 KHz
Test Mode:
Note: FCC-Bluetooth Channel 00-Bandedge (Fixed)

| No. | Frequency(MHz) | Level(dBm) |
|-----|----------------|------------|
| 1 | 2399.92000 | -50.41 |
| 2 | 2401.84000 | 1.78 |

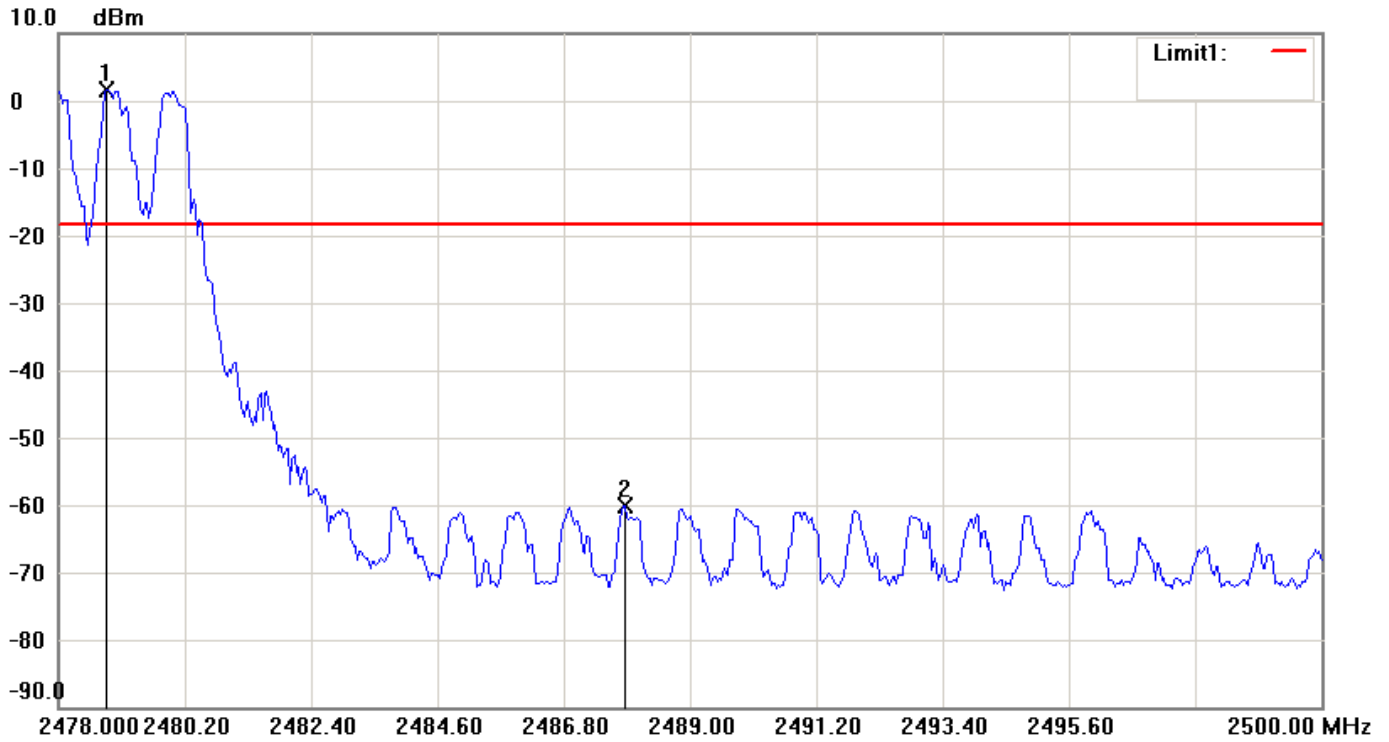
File: P-418_BT Data: #12 Date: 2012/5/28 Temperature: 20 °C
 Time: PM 07:37:15 Humidity: 54 %



Condition: -18.14dBm RF Conducted
 EUT: Sweep Time: 2.32ms Att.: 10dB
 Model: RBW: 100 KHz VBW: 300 KHz
 Test Mode:
 Note: FCC-Bluetooth Channel 00-Bandedge (Hopping)

| No. | Frequency(MHz) | Level(dBm) |
|-----|----------------|------------|
| 1 | 2399.96000 | -49.46 |
| 2 | 2401.84000 | 1.86 |

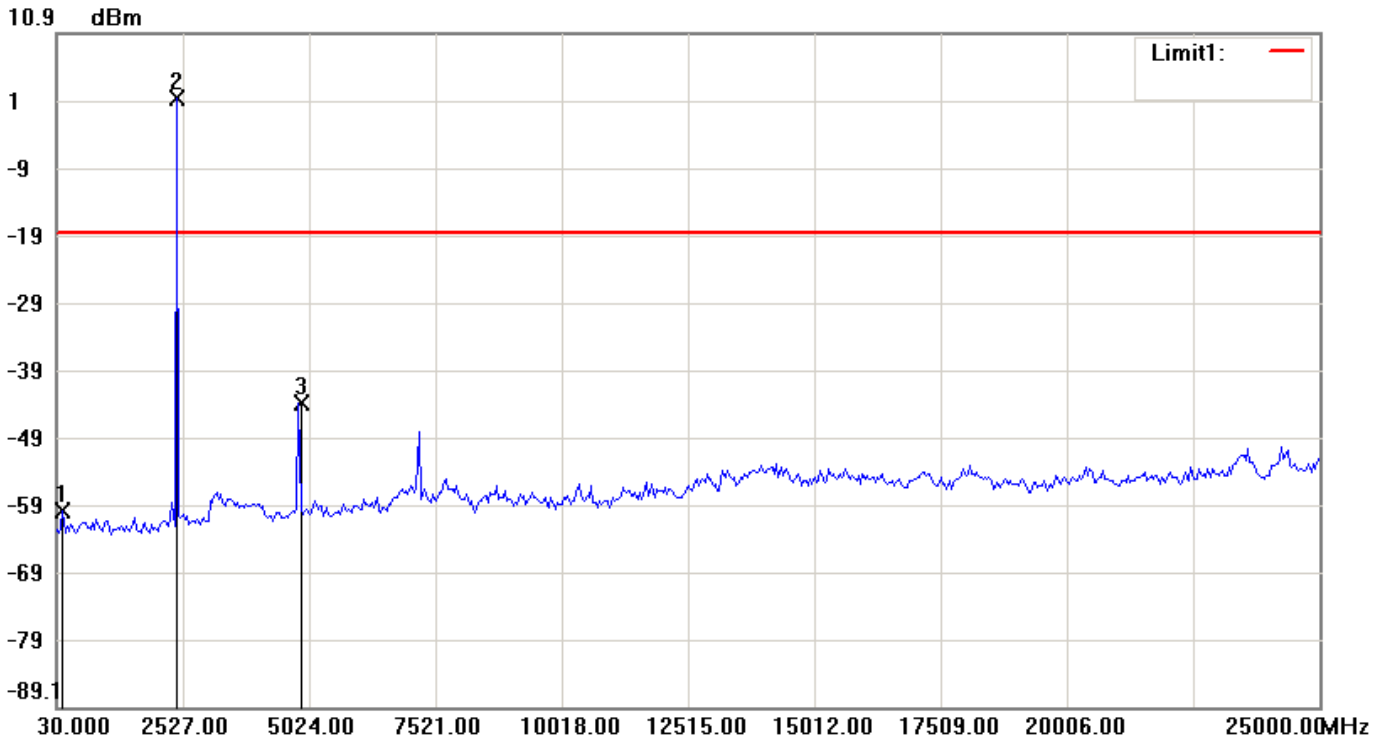
File: P-418_BT Data: #13 Date: 2012/5/28 Temperature: 20 °C
 Time: PM 07:39:01 Humidity: 54 %



Condition: -18.5dBm RF Conducted
 EUT: Sweep Time: 2.12ms Att.: 10dB
 Model: RBW: 100 KHz VBW: 300 KHz
 Test Mode:
 Note: FCC-Bluetooth Channel 78-Bandedge (Hopping)

| No. | Frequency(MHz) | Level(dBm) |
|-----|----------------|------------|
| 1 | 2478.84330 | 1.50 |
| 2 | 2487.86330 | -60.23 |

File: P-418_BT Data: #3 Date: 2012/5/28 Temperature: 20 °C
 Time: PM 07:21:40 Humidity: 54 %



Condition: -18.86dBm RF Conducted
 EUT: Sweep Time: 2386.4ms Att.: 20dB
 Model: RBW: 100 KHz VBW: 300 KHz
 Test Mode:
 Note: FCC-BT Channel 00-Conducted Spurious

| No. | Frequency(MHz) | Level(dBm) |
|-----|----------------|------------|
| 1 | 154.8500 | -60.02 |
| 2 | 2402.15000 | 1.14 |
| 3 | 4815.91670 | -44.06 |

File: P-418_BT

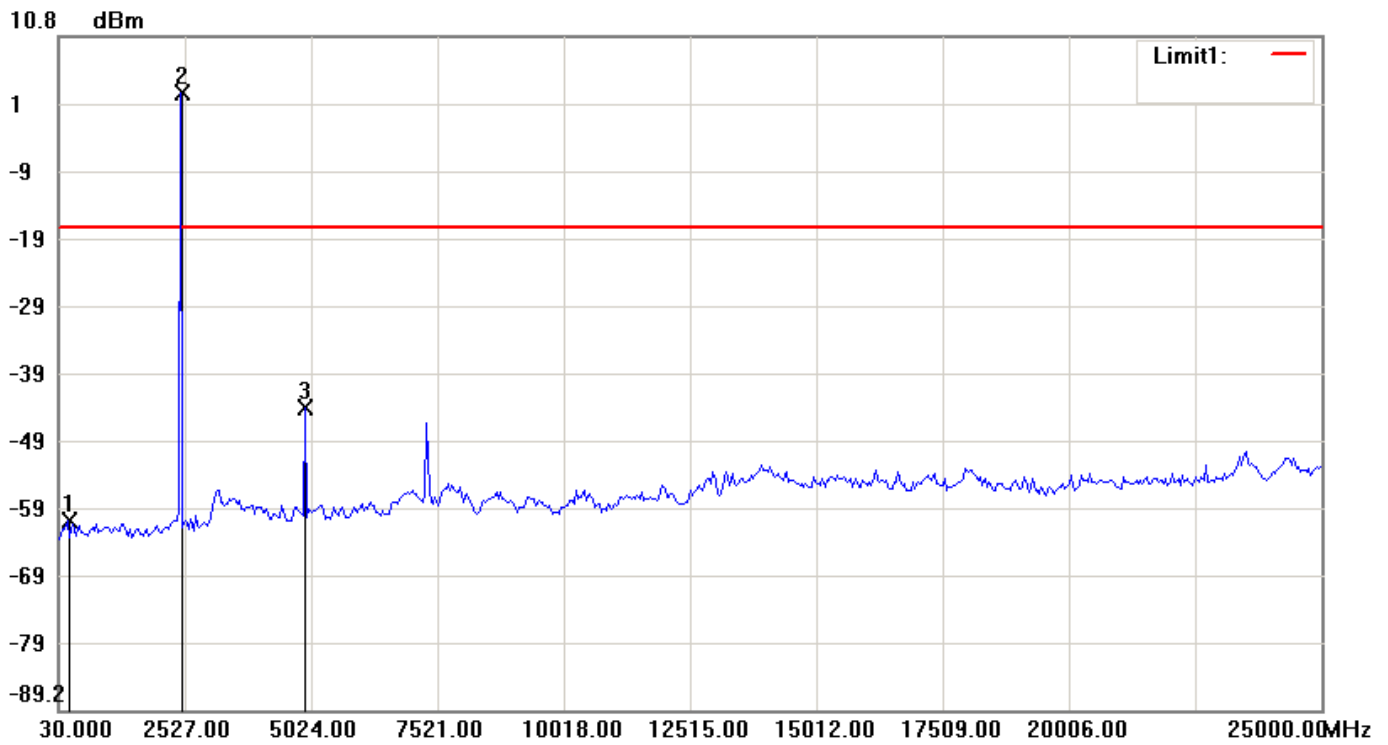
Data: #11

Date: 2012/5/28

Temperature: 20 °C

Time: PM 07:33:43

Humidity: 54 %



Condition: -17.57dBm

RF Conducted

EUT:

Sweep Time: 2386.4ms Att.: 20dB

Model:

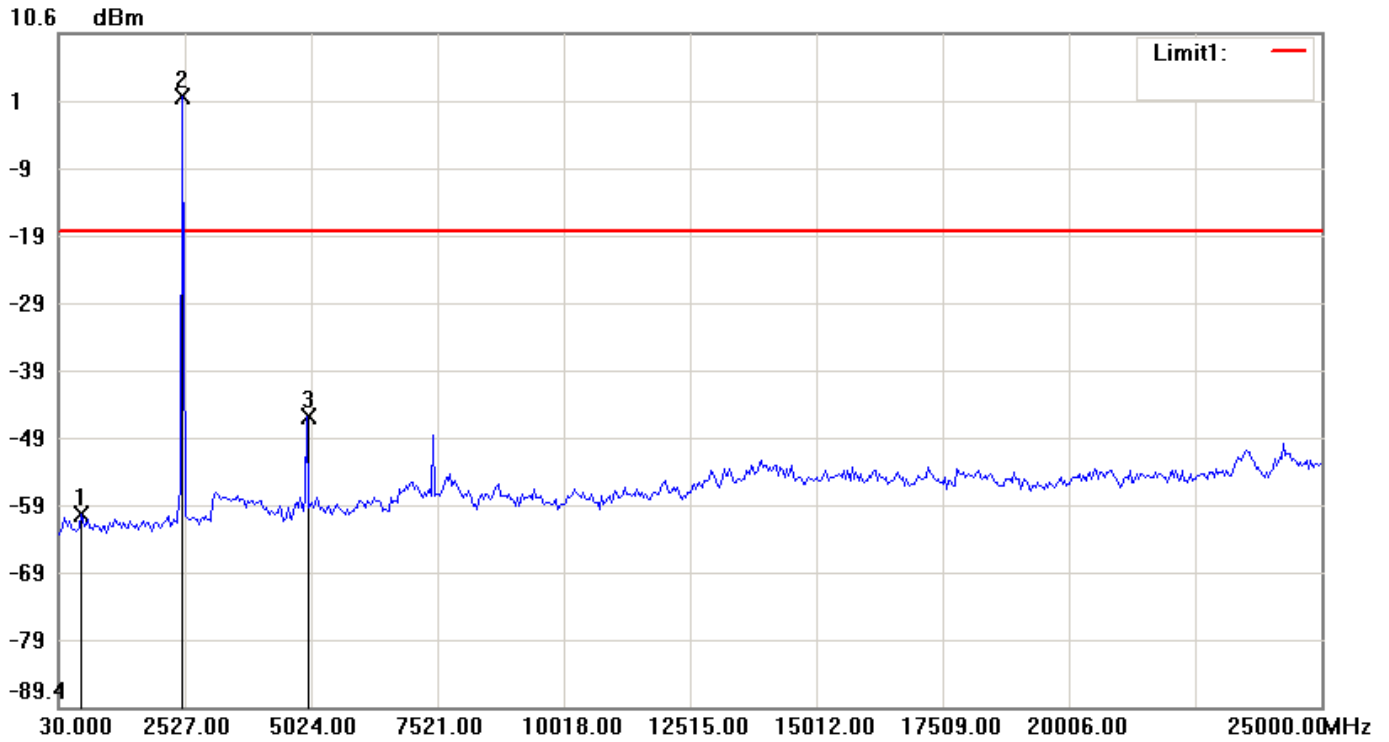
RBW: 100 KHz VBW: 300 KHz

Test Mode:

Note: FCC-BT Channel 39-Conducted Spurious

| No. | Frequency(MHz) | Level(dBm) |
|-----|----------------|------------|
| 1 | 196.4667 | -61.15 |
| 2 | 2443.76670 | 2.43 |
| 3 | 4899.15000 | -44.41 |

File: P-418_BT Data: #7 Date: 2012/5/28 Temperature: 20 °C
Time: PM 07:27:19 Humidity: 54 %



Condition: -18.82dBm RF Conducted
EUT: Sweep Time: 2386.4ms Att.: 20dB
Model: RBW: 100 KHz VBW: 300 KHz
Test Mode:
Note: FCC-BT Channel 78-Conducted Spurious

| No. | Frequency(MHz) | Level(dBm) |
|-----|----------------|------------|
| 1 | 487.7833 | -60.90 |
| 2 | 2485.38330 | 1.18 |
| 3 | 4940.76670 | -46.35 |

9.4.2 Operation Mode: EDR

Test Date: May 28, 2012

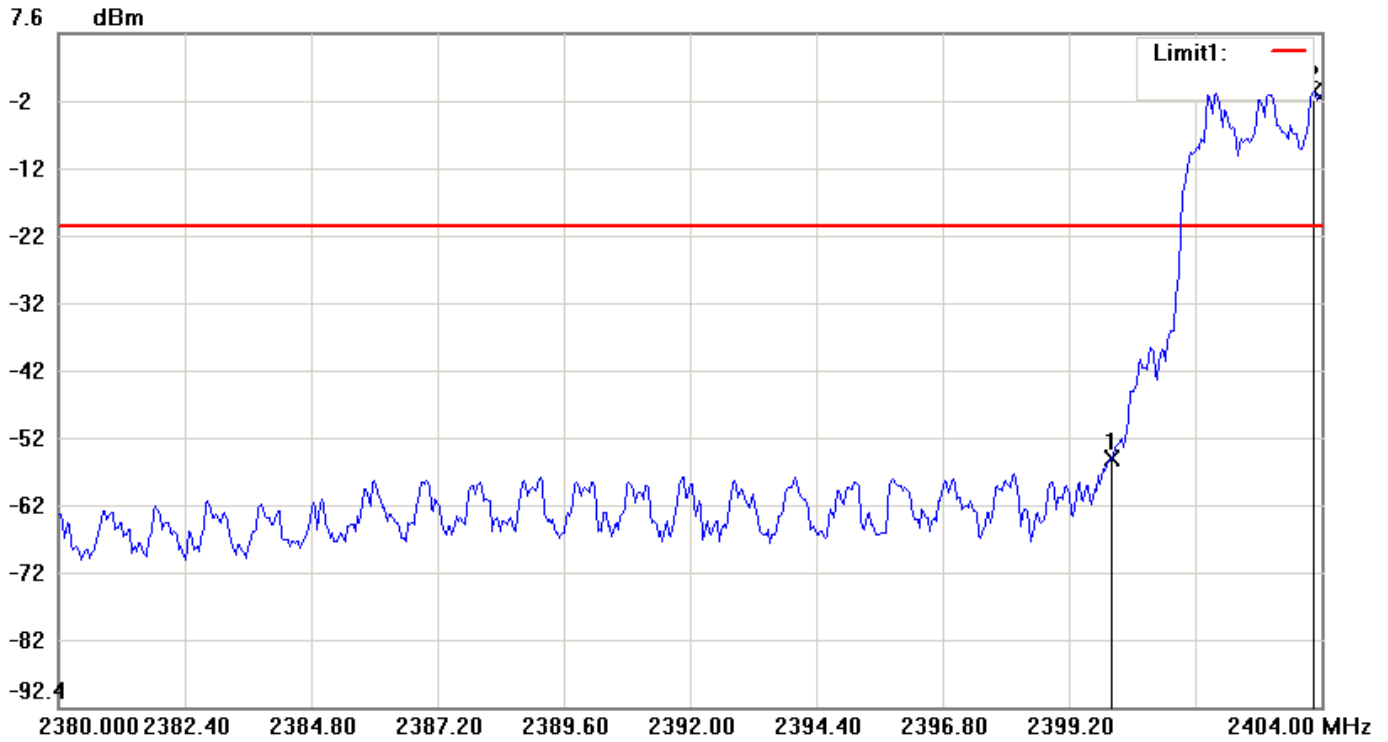
Temperature : 20°C

Humidity: 54%

| Channel | Test Frequency Range | Note | Chart |
|---------|-------------------------|-----------------|------------|
| L | 2350 MHz - 2450 MHz | Lower Band Edge | Page 53-54 |
| H | 2433.5 MHz - 2533.5 MHz | Upper Band Edge | Page 55-56 |
| L | 30 MHz - 25 GHz | | Page 57 |
| M | 30 MHz - 25 GHz | | Page 58 |
| H | 30 MHz - 25 GHz | | Page 59 |

Note: Please refer to page 53 to page 59 for chart.

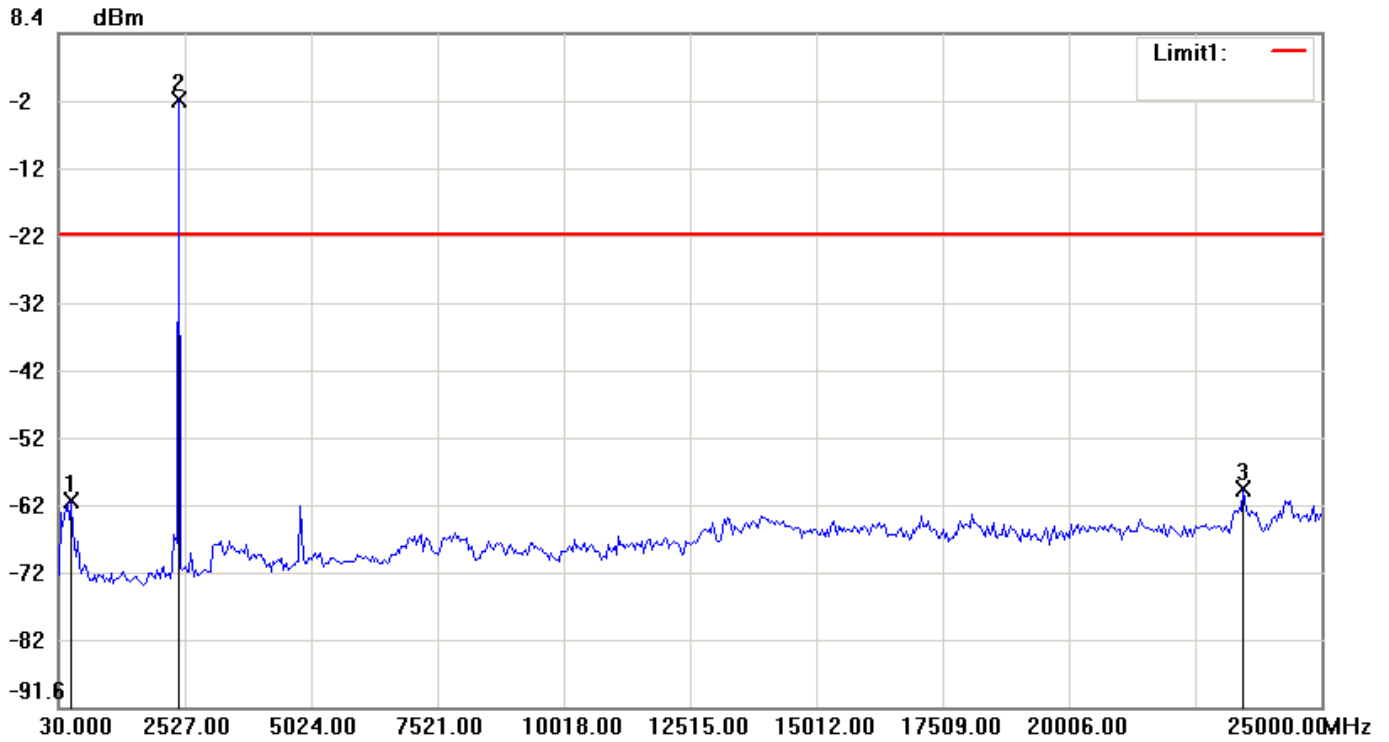
File: P-418_BT Data: #40 Date: 2012/5/28 Temperature: 20 °C
Time: PM 08:23:01 Humidity: 54 %



Condition: -21.07dBm RF Conducted
EUT: Sweep Time: 2.32ms Att.: 10dB
Model: RBW: 100 KHz VBW: 300 KHz
Test Mode:
Note: FCC-Bluetooth Channel 00-Bandedge (Hopping)

| No. | Frequency(MHz) | Level(dBm) |
|-----|----------------|------------|
| 1 | 2400.00000 | -55.64 |
| 2 | 2403.84000 | -1.07 |

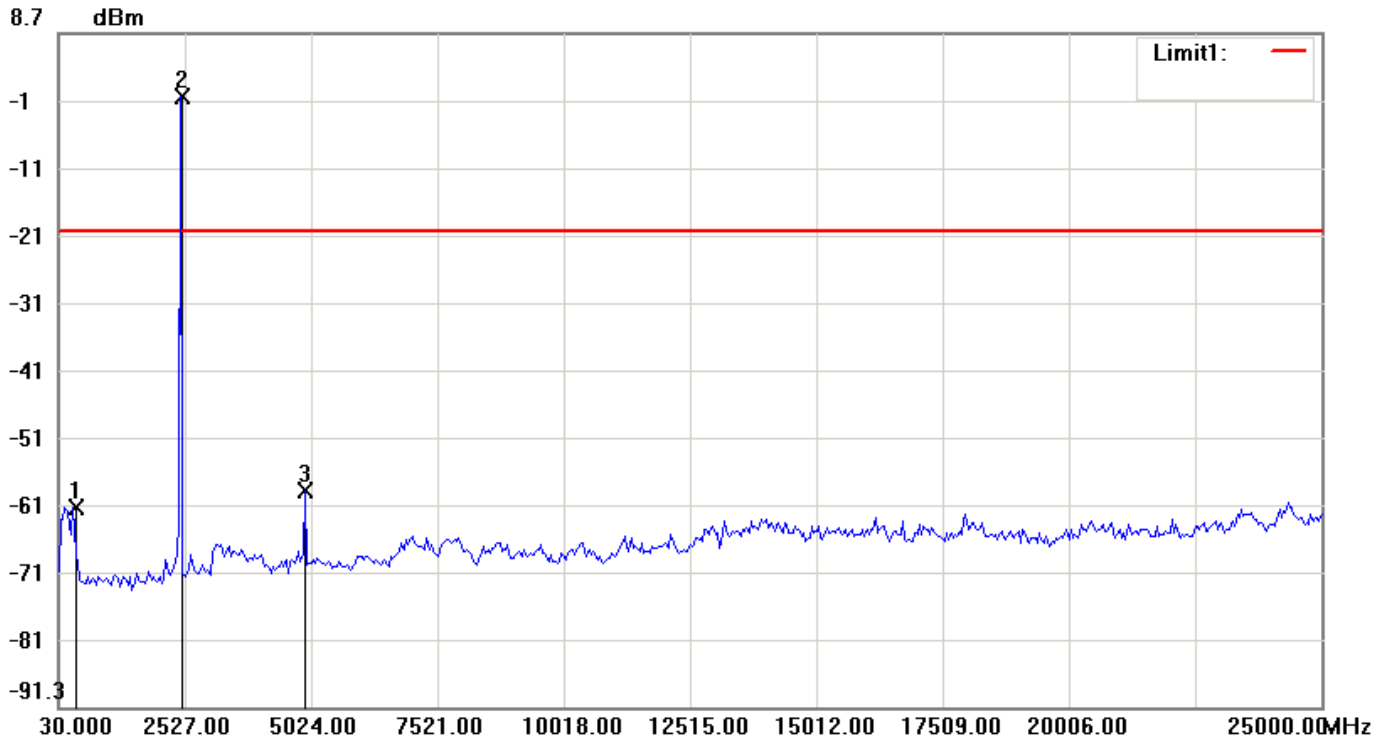
File: P-418_BT Data: #31 Date: 2012/5/28 Temperature: 20 °C
 Time: PM 08:08:15 Humidity: 54 %



Condition: -21.43dBm RF Conducted
 EUT: Sweep Time: 2386.4ms Att.: 10dB
 Model: RBW: 100 KHz VBW: 300 KHz
 Test Mode:
 Note: FCC-BT Channel 00-Conducted Spurious

| No. | Frequency(MHz) | Level(dBm) |
|-----|----------------|------------|
| 1 | 279.7000 | -61.00 |
| 2 | 2402.15000 | -1.43 |
| 3 | 23460.18330 | -59.27 |

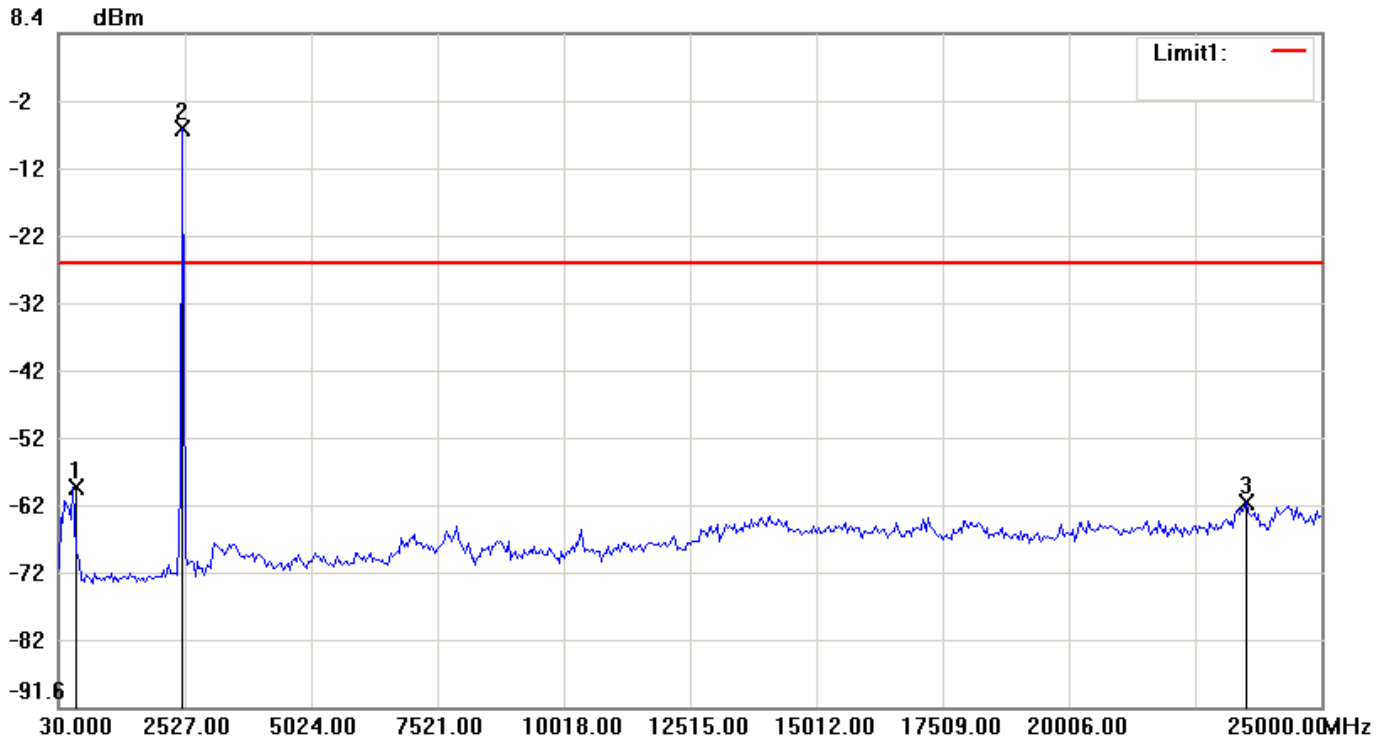
File: P-418_BT Data: #39 Date: 2012/5/28 Temperature: 20 °C
 Time: PM 08:20:10 Humidity: 54 %



Condition: -20.65dBm RF Conducted
 EUT: Sweep Time: 2386.4ms Att.: 10dB
 Model: RBW: 100 KHz VBW: 300 KHz
 Test Mode:
 Note: FCC-BT Channel 39-Conducted Spurious

| No. | Frequency(MHz) | Level(dBm) |
|-----|----------------|------------|
| 1 | 321.3167 | -61.67 |
| 2 | 2443.76670 | -0.65 |
| 3 | 4899.15000 | -59.03 |

File: P-418_BT Data: #35 Date: 2012/5/28 Temperature: 20 °C
Time: PM 08:13:02 Humidity: 54 %



Condition: -25.71dBm RF Conducted
EUT: Sweep Time: 2386.4ms Att.: 10dB
Model: RBW: 100 KHz VBW: 300 KHz
Test Mode:
Note: FCC-BT Channel 78-Conducted Spurious

| No. | Frequency(MHz) | Level(dBm) |
|-----|----------------|------------|
| 1 | 321.3167 | -59.00 |
| 2 | 2485.38330 | -5.71 |
| 3 | 23501.80000 | -61.24 |

10 NUMBER of HOPPING CHANNELS

10.1 Standard Applicable

According to 15.247(b)(1), for frequency hopping systems, operating in the 2400-2483.5MHz band employing at least 75 hopping channels

10.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. The setup of the EUT as shown in figure 3. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set EUT to hopping operating mode and set spectrum analyzer maximum to measure the number of hopping channels.

10.3 Measurement Equipment

| Equipment | Manufacturer | Model No. | Next Cal. Due |
|-------------------|--------------|-----------|---------------|
| Spectrum Analyzer | Agilent | E4446A | 09/18/2012 |

10.4 Measurement Data

Test Date: May 29, 2012

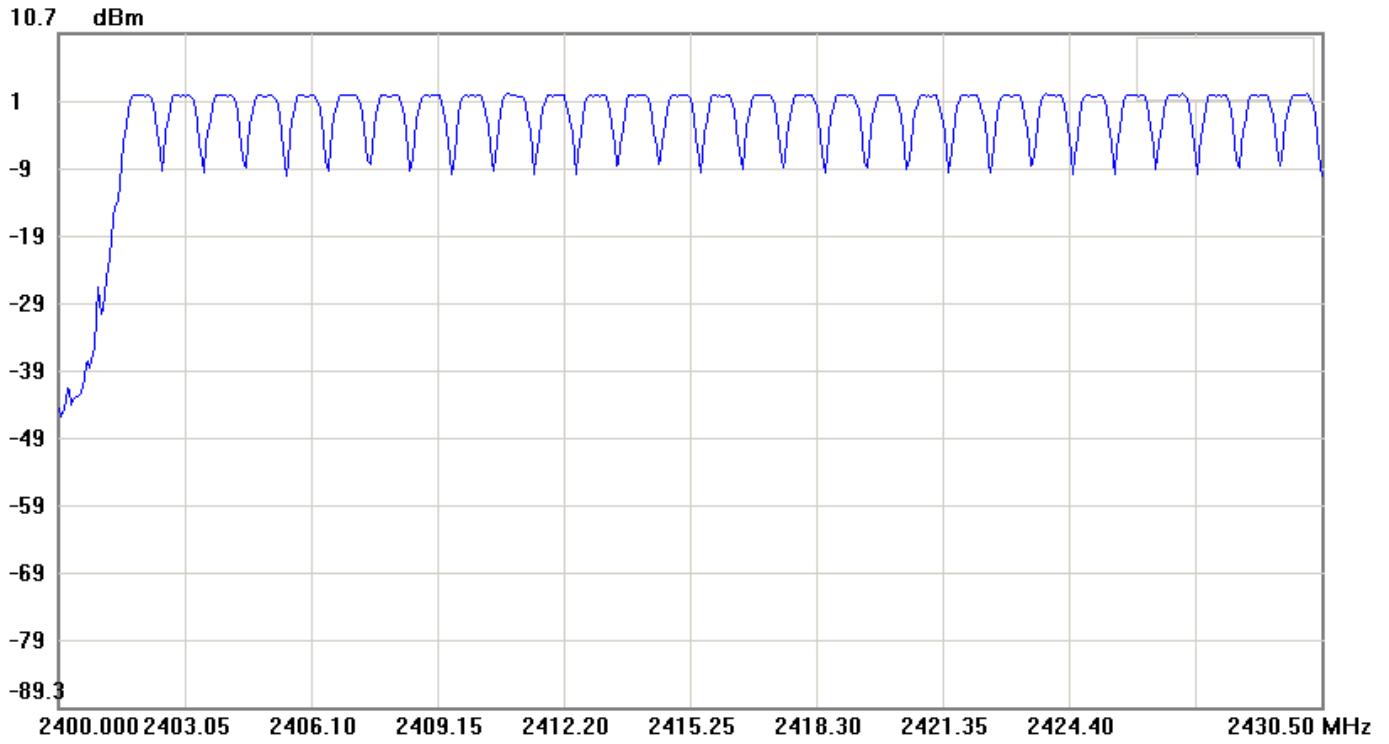
Temperature: 20°C

Humidity: 54%

Number of hopping channels = 79 channels

Note: Please refer to page 61 to page 63 for chart.

File: P-418_BT Data: #26 Date: 2012/5/28 Temperature: 20 °C
Time: PM 08:00:32 Humidity: 54 %



Condition: RF Conducted
EUT: Sweep Time: 1ms Att.: 20dB
Model: RBW: 300 KHz VBW: 300 KHz
Test Mode:
Note: FCC-Bluetooth Number of Hopping Channels -Part1

File: P-418_BT

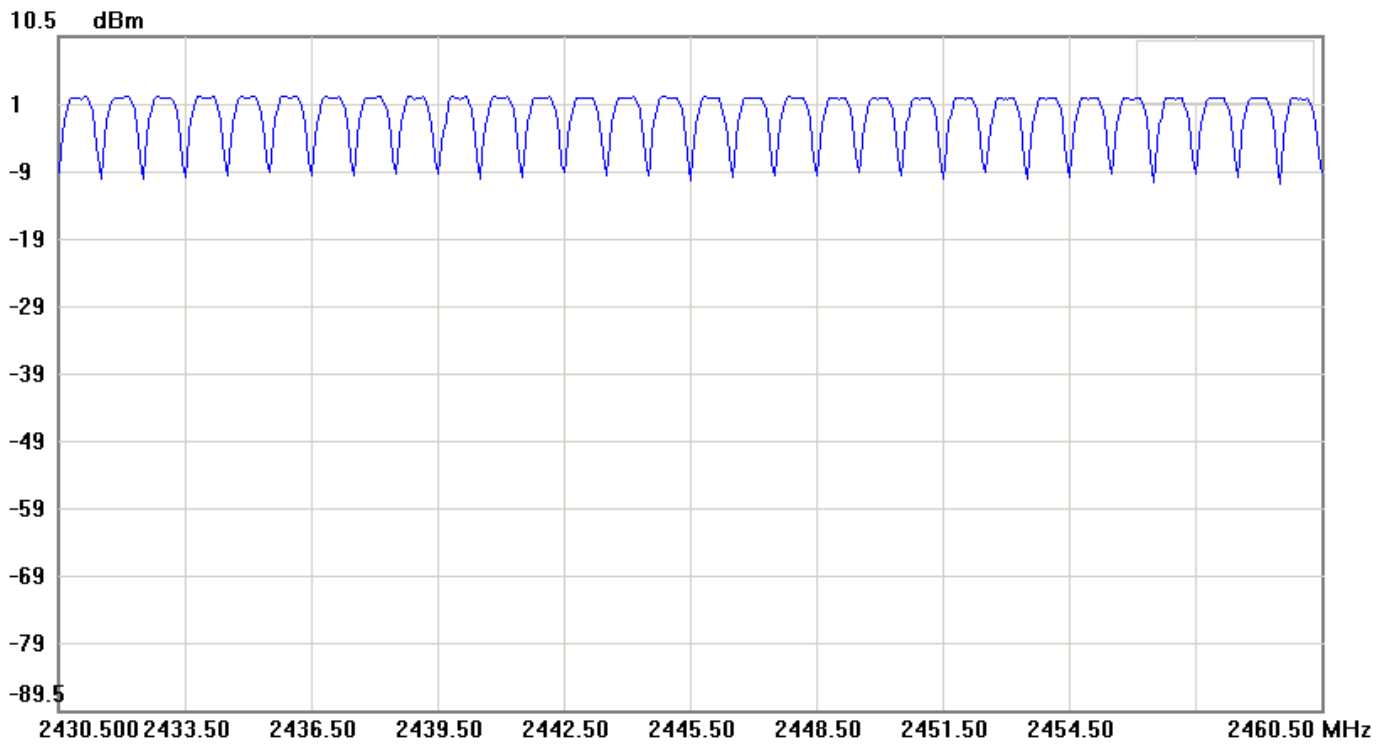
Data: #27

Date: 2012/5/28

Temperature: 20 °C

Time: PM 08:02:19

Humidity: 54 %



Condition:

RF Conducted

EUT:

Sweep Time: 1ms Att.: 20dB

Model:

RBW: 300 KHz VBW: 300 KHz

Test Mode:

Note:

FCC-Bluetooth Number of Hopping Channels -Part2

File: P-418_BT

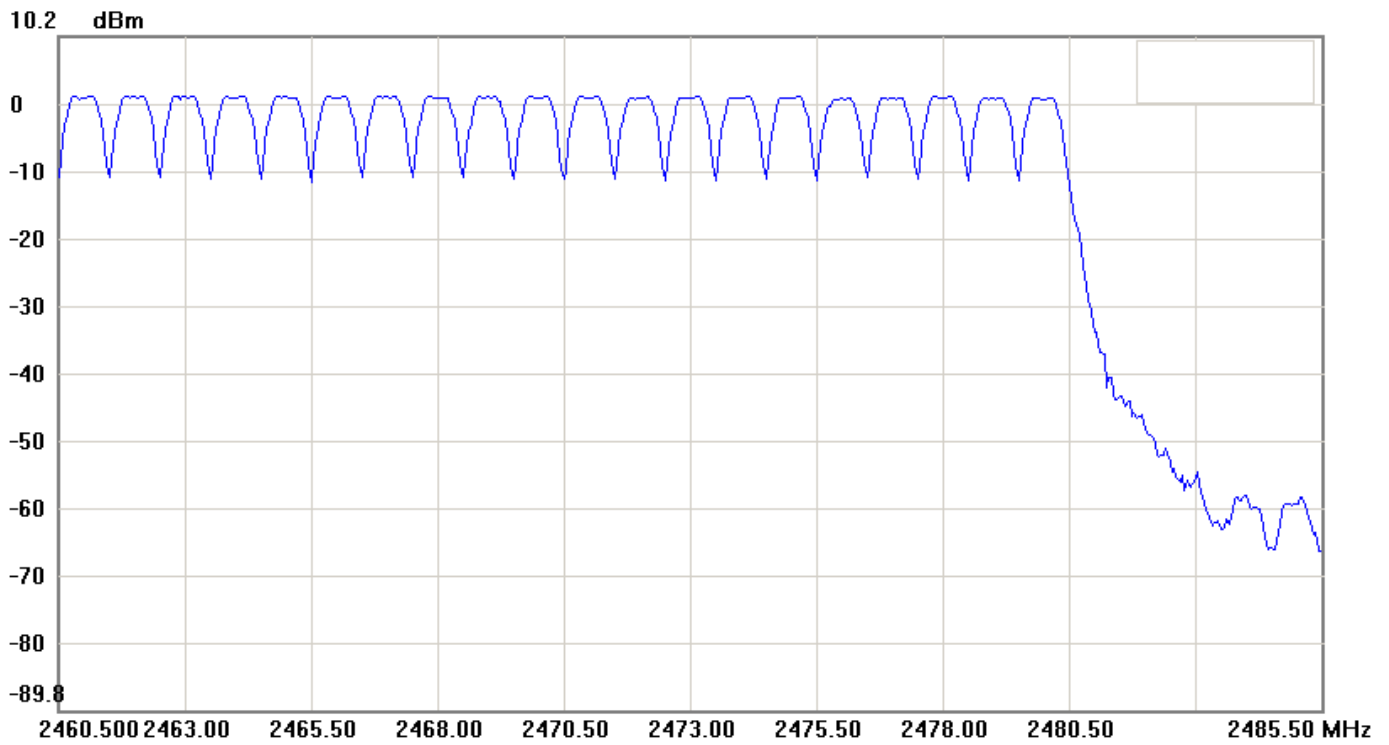
Data: #28

Date: 2012/5/28

Temperature: 20 °C

Time: PM 08:04:08

Humidity: 54 %



Condition:

RF Conducted

EUT:

Sweep Time: 1ms Att.: 10dB

Model:

RBW: 300 KHz VBW: 300 KHz

Test Mode:

Note:

FCC-Bluetooth Number of Hopping Channels -Part3

11 HOPPING CHANNEL CARRIER FREQUENCY SEPARATED

11.1 Standard Applicable

According to 15.247(a)(1), the frequency hopping system shall have hopping channel carrier frequencies separated by minimum of 25kHz or the 20dB bandwidth of hopping channel, whichever is greater.

Alternatively, frequency hopping systems operating in the 2400 – 2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125mW.

11.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. The setup of the EUT as shown in figure 3. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any measurement frequency within its operating range and make sure the instrument is operated in its linear range.
3. Set spectrum analyzer maximum hold to measure channel carrier frequency, then adjust channel carrier frequency to adjacent channel.
4. Repeat above procedure until all measured frequencies were complete.

11.3 Measurement Equipment

| Equipment | Manufacturer | Model No. | Next Cal. Due |
|-------------------|--------------|-----------|---------------|
| Spectrum Analyzer | Agilent | E4446A | 09/18/2012 |

11.4 Measurement Data

Test Date: May 28, 2012

Temperature : 20°C

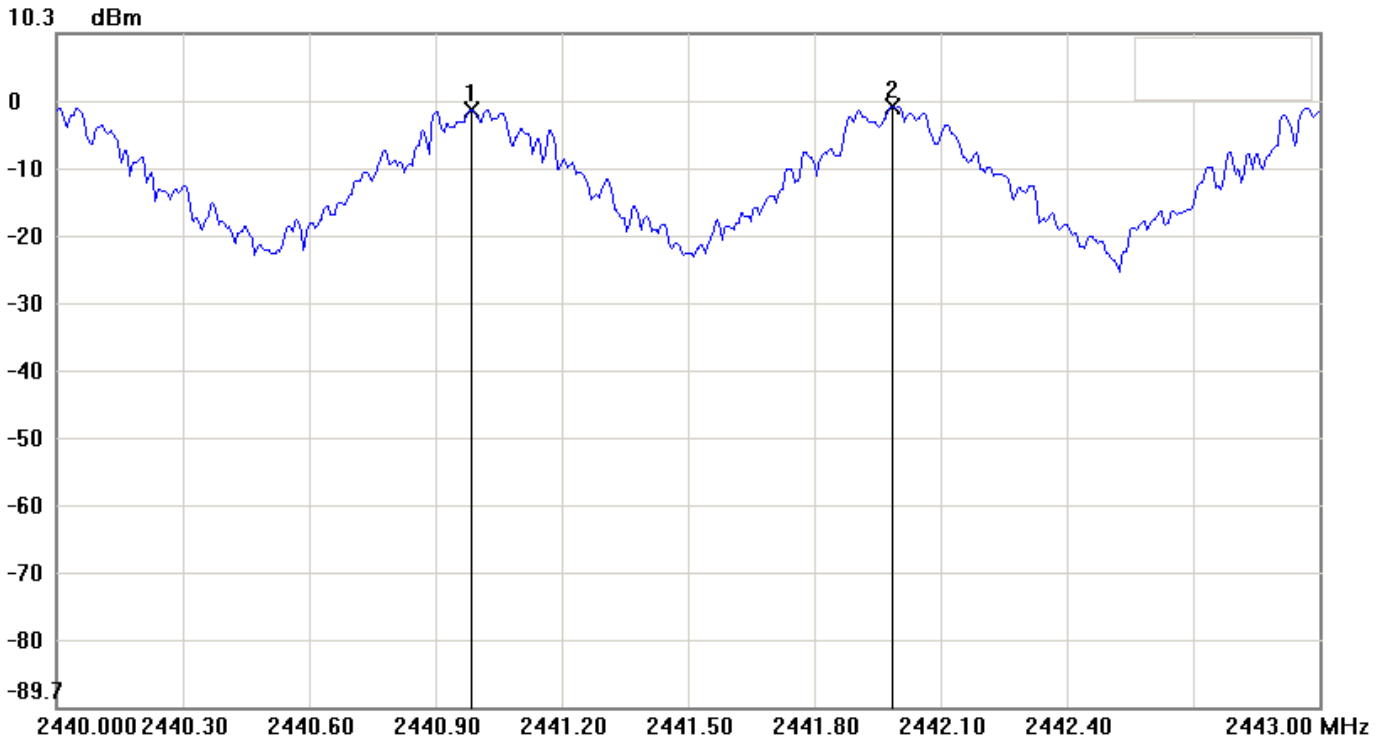
Humidity: 54%

| Channel | Hopping Channel Carrier Frequency Separated (MHz) | Chart |
|---------|---|---------|
| M | 1.000 | Page 66 |

Note: 1. Please refer to page 66 for chart.

2. CH Low, CH Mid and CH High have the same test result. Only Mid test result showed in the test report.

File: P-418_BT Data: #25 Date: 2012/5/28 Temperature: 20 °C
 Time: PM 07:58:40 Humidity: 54 %



Condition: RF Conducted
 EUT: Sweep Time: 3.2ms Att.: 10dB
 Model: RBW: 30 KHz VBW: 100 KHz
 Test Mode:
 Note: FCC-Bluetooth Carrier Frequency Separation

| No. | Frequency(MHz) | Level(dBm) |
|-----|----------------|------------|
| 1 | 2440.98500 | -1.00 |
| 2 | 2441.98500 | -0.54 |

| No. | | Δ Frequency(MHz) | Δ Level(dB) |
|-----|---------|-------------------------|--------------------|
| 1 | mk2-mk1 | 1 | 0.46 |

12 Dwell Time

12.1 Standard Applicable

According to 15.247(a)(1)(iii), frequency hopping system in the 2400-2483.5MHz band employing at least 15 non-overlapping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 second multiplied by the number of hopping channels employed.

12.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. The setup of the EUT as shown in figure 3.

12.3 Measurement Equipment

| Equipment | Manufacturer | Model No. | Next Cal. Due |
|-------------------|--------------|-----------|---------------|
| Spectrum Analyzer | Agilent | E4446A | 09/18/2012 |

12.4 Measurement Data

Test Date: May 30, 2012

Temperature : 20°C

Humidity: 54%

12.4.1 DH1

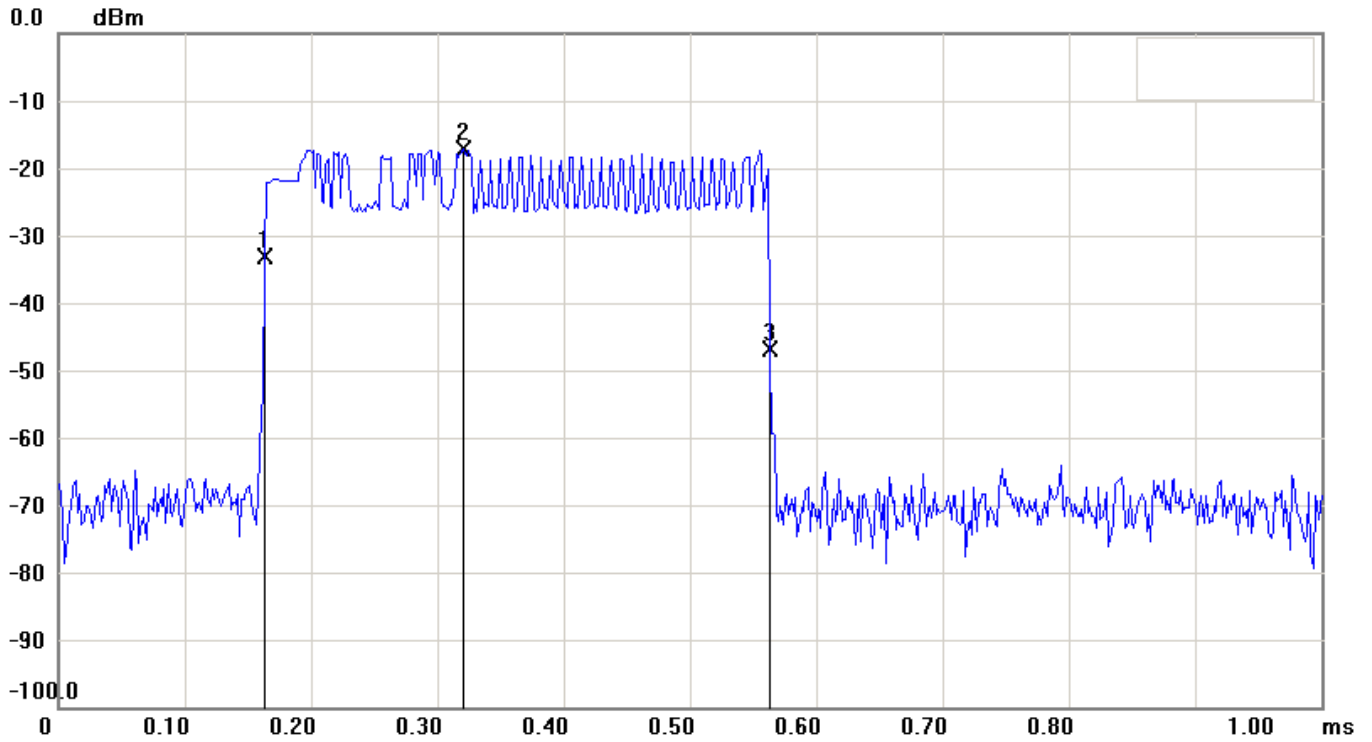
Test period = 0.4(second/channel) × 79 channel = 31.6sec

2402MHz dwell time= 400 us × 330 = 132 ms

Note: 1. Please refer to page 68 to page 69 for chart.

2. This device complies with the Bluetooth specifications and can operate in hopping mode on N channels, where $20 \leq N \leq 79$. As the same pseudo random hopping channel selection mechanism is used for all cases of N, by complying with the dwell time requirements of channel occupancy < 0.4s in $N \times 0.4s$ for $N = 79$, compliance with any value for N is demonstrated.

File: P-418_BT Data: #53 Date: 2012/5/30 Temperature: 20 °C
Time: AM 10:24:53 Humidity: 54 %

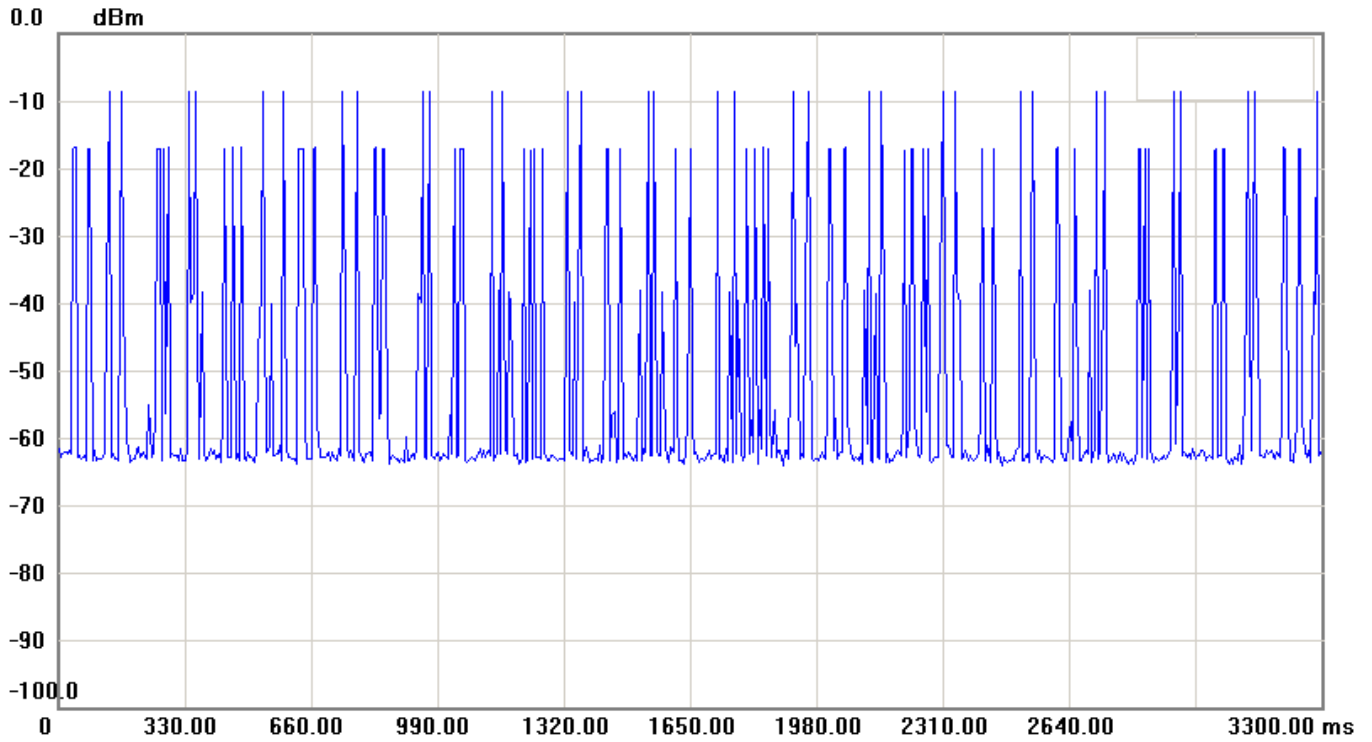


Condition: -27.08dBm RF Conducted
EUT: Sweep Time: 1ms Att.: 20dB
Model: RBW: 1000 KHz VBW: 1000 KHz
Test Mode:
Note: DH1 pulse width

| No. | Sweep time(ms) | Level(dBm) |
|-----|----------------|------------|
| 1 | 0.1633 | -33.08 |
| 2 | 0.3200 | -17.08 |
| 3 | 0.5633 | -46.72 |

| No. | | Δ Time(ms) | Δ Level(dB) |
|-----|---------|-------------------|--------------------|
| 1 | mk3-mk1 | 0.4 | -13.64 |

File: P-418_BT Data: #52 Date: 2012/5/30 Temperature: 20 °C
Time: AM 10:24:39 Humidity: 54 %



Condition:

RF Conducted

EUT:

Sweep Time: 3300ms Att.: 20dB

Model:

RBW: 1000 KHz VBW: 1000 KHz

Test Mode:

Note: DH1 Hops per 3.16 seconds

12.4.2 DH3

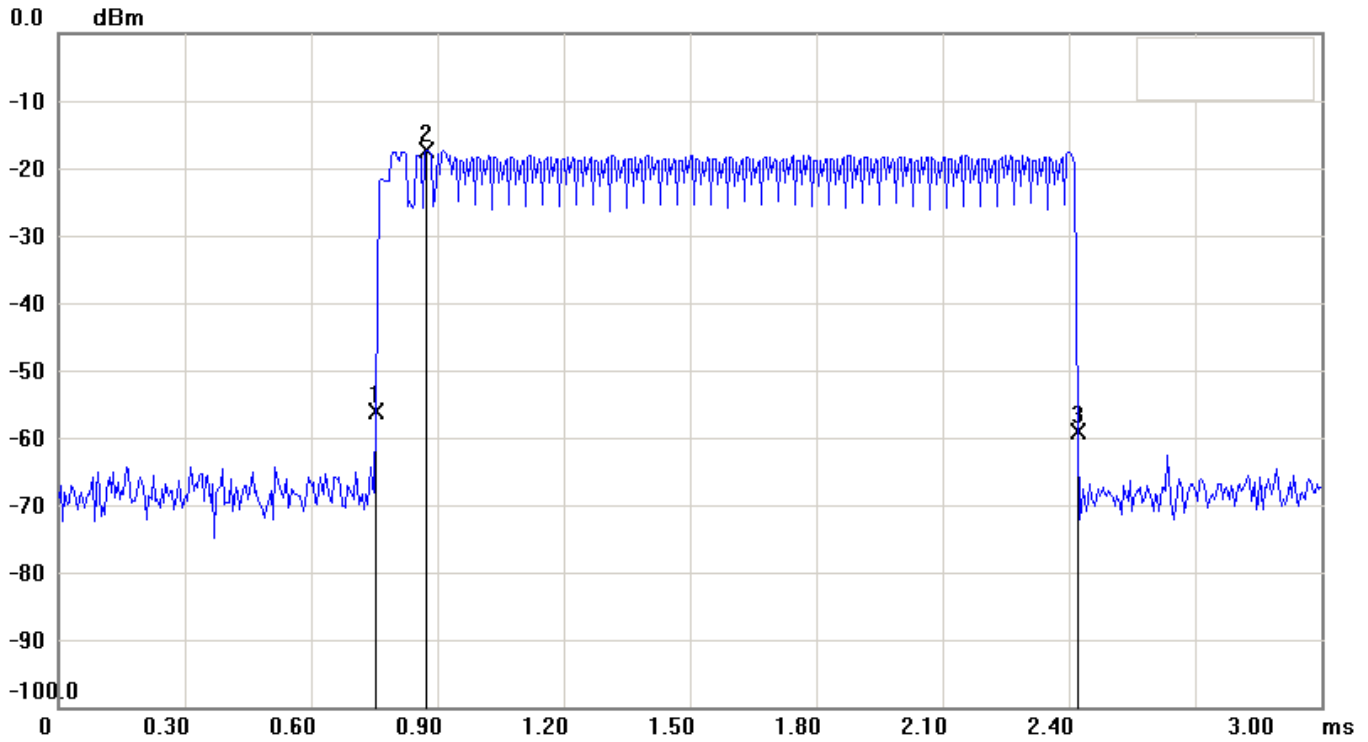
Test period = $0.4(\text{second/channel}) \times 79 \text{ channel} = 31.6\text{sec}$

2441MHz dwell time = $1.665 \text{ ms} \times 180 = 299.7 \text{ ms}$

Note: 1. Please refer to page 71 to page 72 for chart.

2. This device complies with the Bluetooth specifications and can operate in hopping mode on N channels, where $20 \leq N \leq 79$. As the same pseudo random hopping channel selection mechanism is used for all cases of N, by complying with the dwell time requirements of channel occupancy $< 0.4s$ in $N \times 0.4s$ for $N = 79$, compliance with any value for N is demonstrated.

File: P-418_BT Data: #55 Date: 2012/5/30 Temperature: 20 °C
Time: AM 10:26:02 Humidity: 54 %

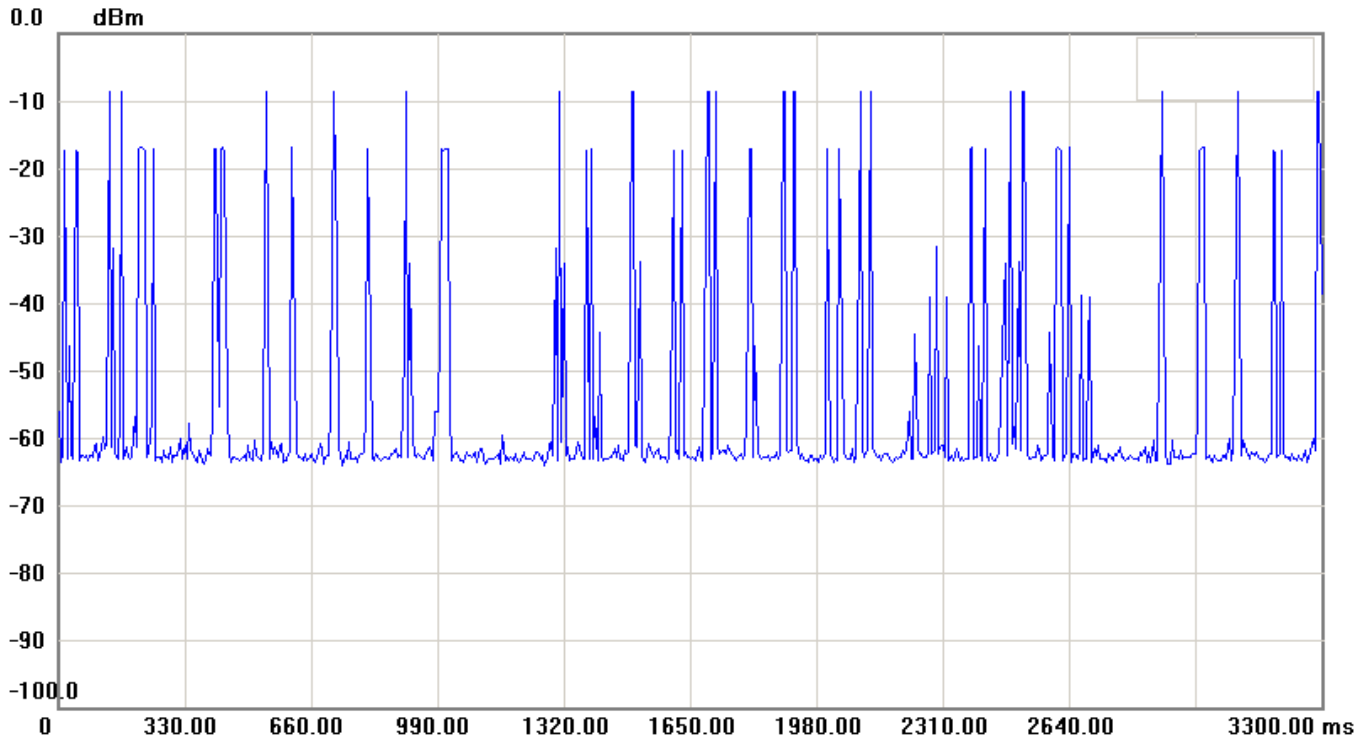


Condition: -27.31dBm RF Conducted
EUT: Sweep Time: 3ms Att.: 20dB
Model: RBW: 1000 KHz VBW: 1000 KHz
Test Mode:
Note: DH3 pusle width

| No. | Sweep time(ms) | Level(dBm) |
|-----|----------------|------------|
| 1 | 0.7550 | -56.15 |
| 2 | 0.8750 | -17.31 |
| 3 | 2.4200 | -59.11 |

| No. | | Δ Time(ms) | Δ Level(dB) |
|-----|---------|-------------------|--------------------|
| 1 | mk3-mk1 | 1.665 | -2.96 |

File: P-418_BT Data: #54 Date: 2012/5/30 Temperature: 20 °C
Time: AM 10:25:49 Humidity: 54 %



Condition:

RF Conducted

EUT:

Sweep Time: 3300ms Att.: 20dB

Model:

RBW: 1000 KHz VBW: 1000 KHz

Test Mode:

Note: DH3 Hops per 3.16 seconds

12.4.3 DH5

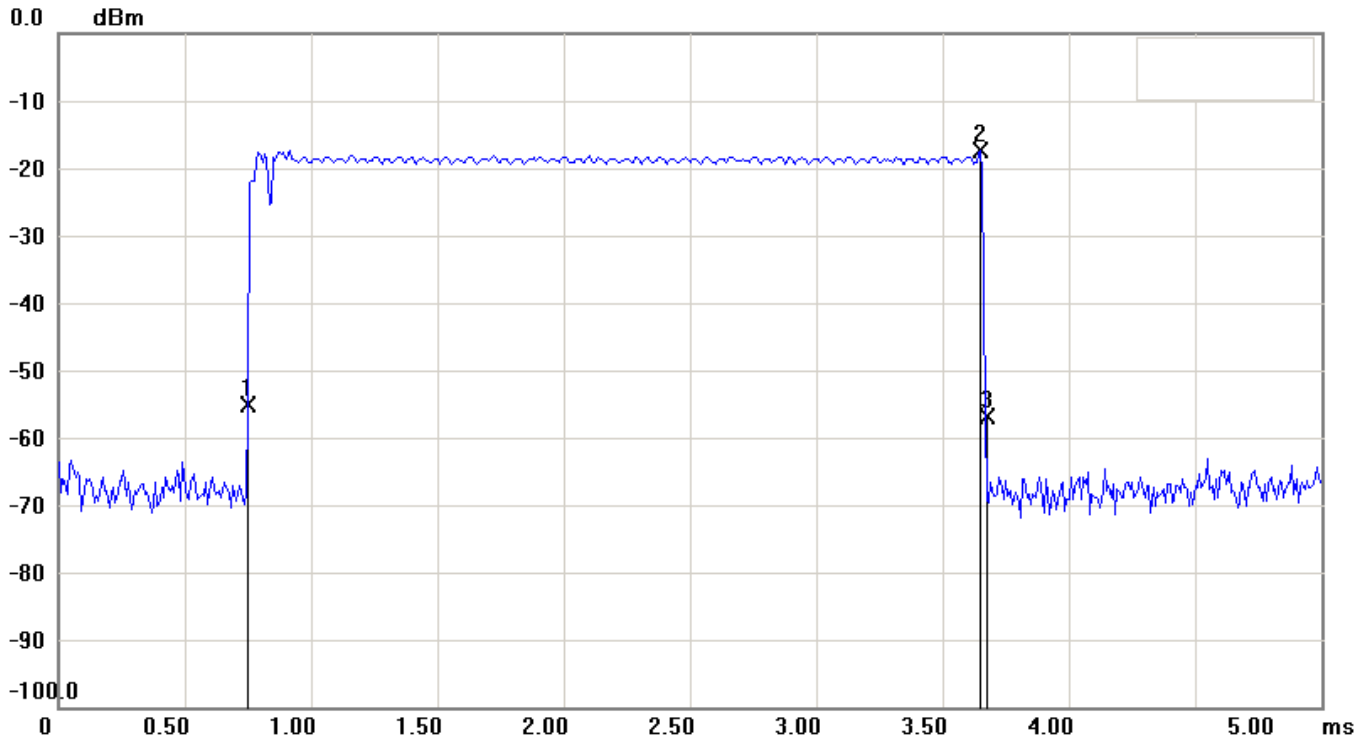
Test period = $0.4(\text{second/channel}) \times 79 \text{ channel} = 31.6\text{sec}$

2480MHz dwell time = $2.9167 \text{ ms} \times 120 = 350.004 \text{ ms}$

Note: 1. Please refer to page 74 to page 75 for chart.

2. This device complies with the Bluetooth specifications and can operate in hopping mode on N channels, where $20 \leq N \leq 79$. As the same pseudo random hopping channel selection mechanism is used for all cases of N, by complying with the dwell time requirements of channel occupancy $< 0.4s$ in $N \times 0.4s$ for $N = 79$, compliance with any value for N is demonstrated.

File: P-418_BT Data: #59 Date: 2012/5/30 Temperature: 20 °C
Time: AM 10:27:53 Humidity: 54 %

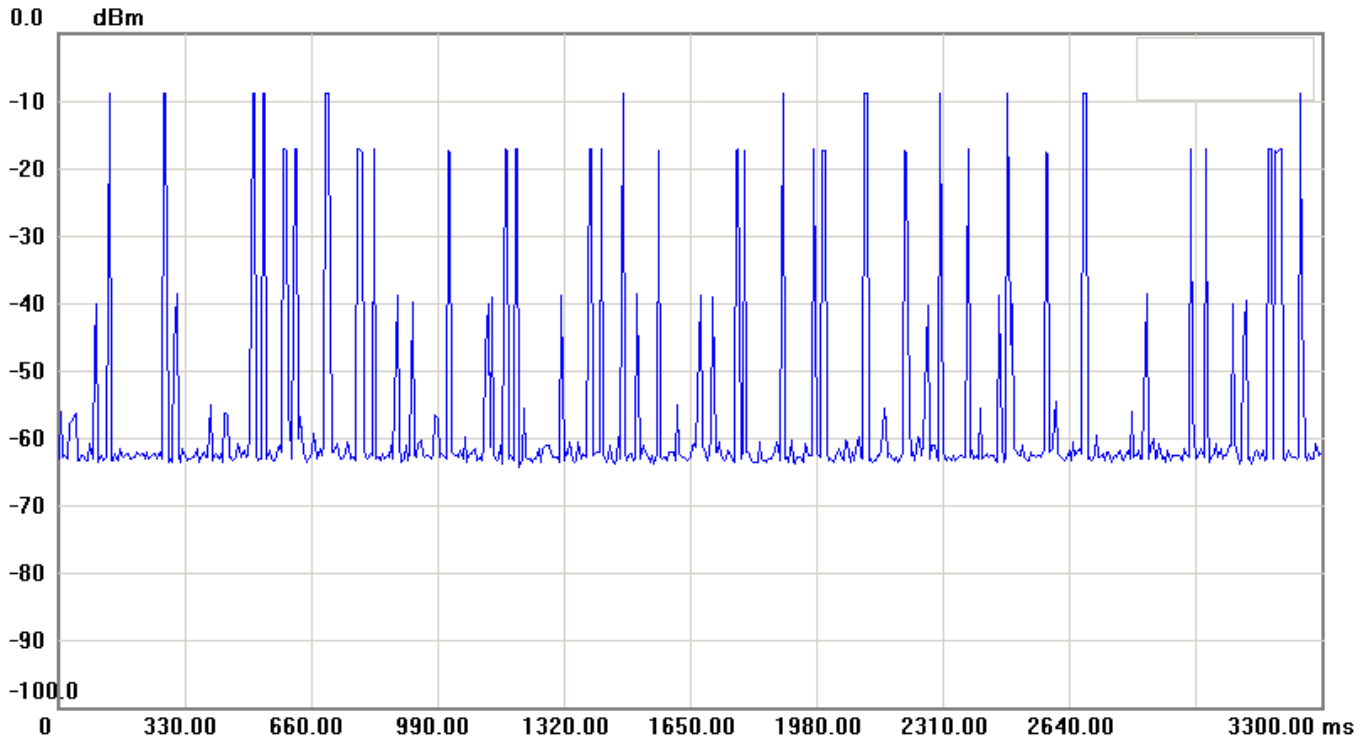


Condition: -27.31dBm RF Conducted
EUT: Sweep Time: 5ms Att.: 20dB
Model: RBW: 1000 KHz VBW: 1000 KHz
Test Mode:
Note: DH5 pulse width

| No. | Sweep time(ms) | Level(dBm) |
|-----|----------------|------------|
| 1 | 0.7500 | -55.02 |
| 2 | 3.6500 | -17.31 |
| 3 | 3.6667 | -56.81 |

| No. | | Δ Time(ms) | Δ Level(dB) |
|-----|---------|-------------------|--------------------|
| 1 | mk3-mk1 | 2.9167 | -1.79 |

File: P-418_BT Data: #58 Date: 2012/5/30 Temperature: 20 °C
Time: AM 10:27:39 Humidity: 54 %



Condition:

RF Conducted

EUT:

Sweep Time: 3300ms Att.: 20dB

Model:

RBW: 1000 KHz VBW: 1000 KHz

Test Mode:

Note: DH5 pulse width