

MEASUREMENT REPORT ***of*** ***Matias Bluetooth Folding Keyboard***

Applicant : Matias Corporation
EUT : Matias OneKeyboard
FCC ID : WKMONEKEYBOARD
Model : FK3XXPI-XX, FK3XXMI-XX, FK3XXPB-XX,
FK3XXMB-XX, FK3XXPA-XX, FK3XXMA-XX
FK3XXPBN-XX, FK3XXMBN-XX, FK3XXPIN-XX
FK3XXMIN-XX, FK3XXPBN-XX, FK3XXMBN-XX
FK3XXPAN-XX, FK3XXMAN-XX, (X=0-9, A-Z)

Tested by :

Training Research Co., Ltd.

TEL : 886-2-26935155

FAX : 886-2-26934440

No. 255, Nanyang Street, Shijr, Taipei Hsien 221, Taiwan, R.O.C.

CERTIFICATION

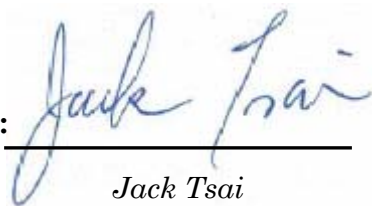
We here by verify that:

The test data, data evaluation, test procedures and equipment configurations shown in this report were made mainly in accordance with the procedures given in ANSI C63.4 (2003) as a reference. All test were conducted by **Training Research Co., Ltd.**, No. 255, Nanyang Street, Shijr, Taipei Hsien 221, Taiwan, R.O.C. Also, we attest to the accuracy of each.

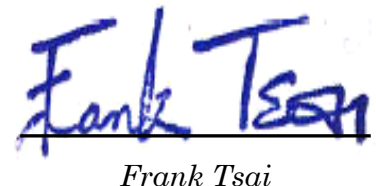
We further submit that the energy emitted by the sample EUT tested as described in the report is **in compliance with** the technical requirements set forth in the FCC Rules Part 15 Subpart C Section 15.247.

Applicant : Matias Corporation
Applicant address : 221 Narinia Cres Newmarket, Ontario, L3X 2E1 Canada
FCC ID : WKMONEKEYBOARD
Report No. : A9215110165
Test Date : November 16, 2011

Prepared by:


 Jack Tsai

Approved by:


 Frank Tsai

Conditions of issue :

- (1) **This test report shall not be reproduced except in full, without written approval of TRC. And the test result contained within this report only relate to the sample submitted for testing.**

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I . GENERAL

1.1 Introduction

The following measurement report is submitted on behalf of applicant in support that the certification in accordance with Part 2 Subpart J and Part 15 Subpart A and C of the Commission's Rules and Regulations.

1.2 Description of EUT

FCC ID : WKMONEKEYBOARD

Product Name : Matias OneKeyboard

Model : FK3XXPI-XX, FK3XXMI-XX, FK3XXPB-XX,
FK3XXMB-XX, FK3XXPA-XX, FK3XXMA-XX
FK3XXPBN-XX, FK3XXMBN-XX, FK3XXPIN-XX
FK3XXMIN-XX, FK3XXPBN-XX, FK3XXMBN-XX
FK3XXPAN-XX, FK3XXMAN-XX, (X=0-9, A-Z)

Frequency Range : 2402MHz to 2480MHz

Support Channel : 79 Channels

Channel Spacing : 1MHz

Modulation Skill : GFSK

Power Type : Powered by PC

USB Cable : 150cm length, shielded, without ferrite core

USB Connector#1 : Connected to USB Webcam.

USB Connector#2 : Connected to USB Gamepad.

1.3 Test method

- 1 The notebook PC and test fixture is connected by USB and parallel cables, and then test fixture connected with EUT setting test mode.
- 2 The Notebook PC and test fixture is moving when test mode set finish. The software provided by the manufacturer, the test is performed under the specific conditions.
- 3 Set different channel (CH1/CH40/CH79) and making EUT to the mode of continuous transmission.

1.4 Description of Support Equipment

PC : **DELL OPTIPLEX 755**
Model No. : DC8M
Serial No. : 58Y9T1S
FCC ID : Doc Approved
BSMI : R33002
Power type : 100 ~ 127VAC/200 ~ 240VAC, 6A/3A, 50 ~ 60Hz, Switching
Power cord : Non-shielded, 1.80m length, Plastic hood, without ferrite core

Monitor : **HP**
Model No. : L1760
Serial No. : CND71008CV
FCC ID : Doc Approved
BSMI : R43346
Data cable : Shielded, 1.80 m length, Plastic hood, two ferrite cores
Power type : 100 ~ 240VAC, 1.5A, 50/60Hz, Switching
Power cord : Non-shielded, 1.80 m length, Plastic hood, without ferrite core

Printer : **EPSON**
Model No. : B241A
Serial No. : FAPY155090
FCC ID : None (DoC Approved)
BSMI : R33126
Power type : Switching adaptor
Power cord : Non-shielded, 173cm length, without ferrite core
Data cable : Shielded, 1.70m length, without ferrite core

USB Mouse : Logitech
Model No. : M-U0003
Serial No. : 810-001851
FCC ID : DoC Approved
BSMI : T41126
Power type : By PC
Power cord : Shielded, 1.82m length, without ferrite core

Fax/Modem : Aceex
Model No. : XDM-56V14
FCC ID : IFAXDM-56V14
Power type : Linear
Power cord : Non-shielded, 1.9m length, without ferrite cord
Data cable : RS232, Shielded, 1.2m length, without ferrite core
RJ11C x 2, 7' length non-shielded, without ferrite core

USB Gamepad : Logitech
Model No. : G-U0001
Serial No. : 840-000058
FCC ID : DoC Approved
BSMI : T41126
Power type : By PC
Data Cable : Shielded, 1.90m length, with ferrite core

Webcam : Logitech
Model No. : V-U0011
Serial No. : 860-000277
FCC ID : DoC Approved
Power type : By PC
Power cord : Shielded, 1.53m length, with ferrite cord

Mobile Phone : BlackBerry

Model No. : 8120

Serial No. : 20708305

FCC ID : L6ARBR40GW

Power type : By Battery

Notebook : DELL

Model No. : JX285 (PP26L)

Serial No. : 410362204

FCC ID : Doc Approved

BSMI : R33002

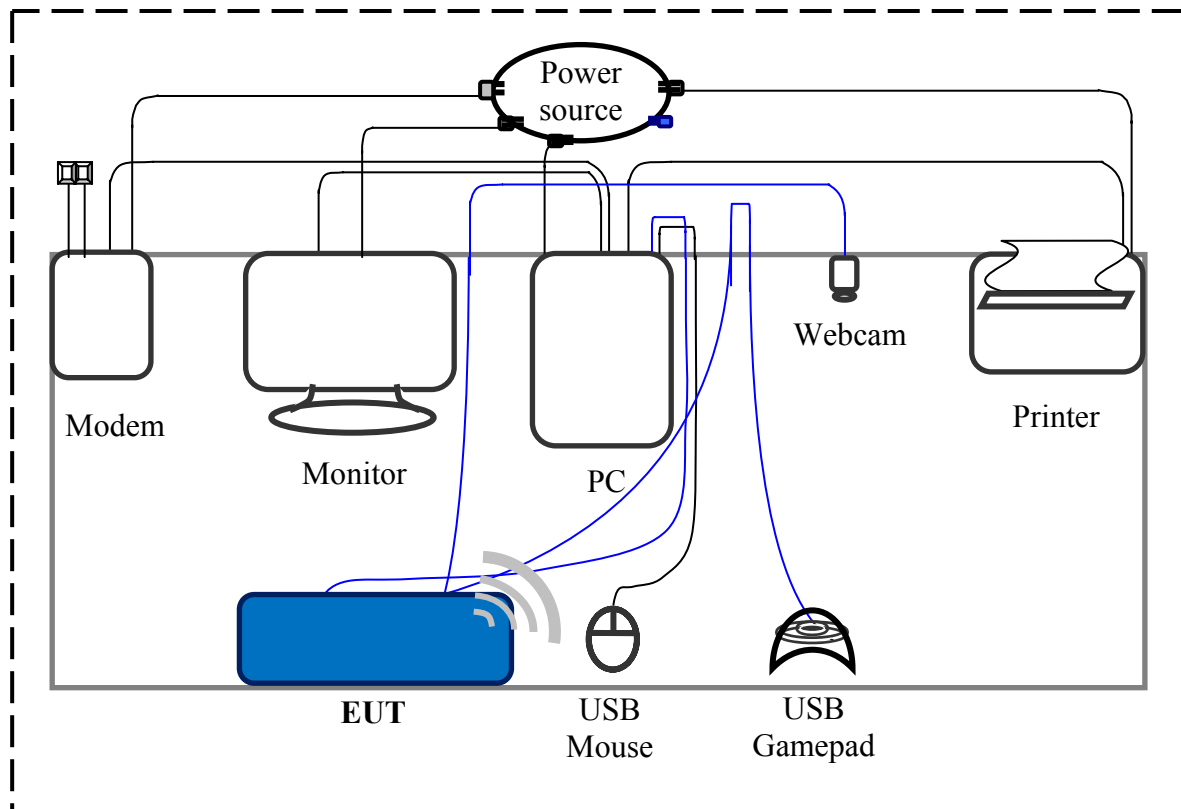
Test fixture : Ione Technology Inc.

Model No. : YFBT-01 Firmwear_updata_Board

Power type : By Notebook PC

Data cable : Shielded, 1.2m length, without ferrite core

1.5 Configuration of System Under Test



The tests below are carried with the EUT transmitter set at high power in TDD mode. The EUT is forced to select of output power level and channel number by parallel and USB interface of NB.

The setting up procedure was recorded in 1.3 test method.

1.6 Verify the Frequency (MHz) and Channel

| CH | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----|------|------|------|------|------|------|------|------|------|------|
| 0 | | 2402 | 2403 | 2404 | 2405 | 2406 | 2407 | 2408 | 2409 | 2410 |
| 1 | 2411 | 2412 | 2413 | 2414 | 2415 | 2416 | 2417 | 2418 | 2419 | 2420 |
| 2 | 2421 | 2422 | 2423 | 2424 | 2425 | 2426 | 2427 | 2428 | 2429 | 2430 |
| 3 | 2431 | 2432 | 2433 | 2434 | 2435 | 2436 | 2437 | 2438 | 2439 | 2440 |
| 4 | 2441 | 2442 | 2443 | 2444 | 2445 | 2446 | 2447 | 2448 | 2449 | 2450 |
| 5 | 2451 | 2452 | 2453 | 2454 | 2455 | 2456 | 2457 | 2458 | 2459 | 2460 |
| 6 | 2461 | 2462 | 2463 | 2464 | 2465 | 2466 | 2467 | 2468 | 2469 | 2470 |
| 7 | 2471 | 2472 | 2473 | 2474 | 2475 | 2476 | 2477 | 2478 | 2479 | 2480 |

Note:

1. This is for confirming that all frequencies are in 2.402GHz to 2.480GHz.
2. Section 15.31(m): Measurements on intentional radiators or receivers shall be performed at three frequencies for operating frequency range over 10 MHz.
(The locations of these frequencies one near the top, one near the middle and one near the bottom.)
3. After test, the EUT operating frequencies are in 2.402GHz to 2.480GHz. So all the items as followed in testing report are need to test these three frequencies:
Top: Channel – 01; Middle: Channel – 40; Bottom: Channel – 79.

1.7 Test Procedure

All measurements contained in this report were performed mainly according to the techniques described in ANSI C63.4 (2003) and the pre-setup was written on 1.3 test method, the detail setup was written on each test item.

1.8 Location of the Test Site

The radiated emissions measurements required by the rules were performed on the **three-meter, Anechoic Chamber (FCC Registration Number: 93906)** maintained by *Training Research Co., Ltd.* 1F, No. 255 Nanyang Street, Shijr, Taipei Hsien 221, Taiwan, R.O.C. Complete description and measurement data have been placed on file with the commission. The conducted power line emissions tests and other test items were performed in a anechoic chamber also located at Training Research Co., Ltd.

No. 255 Nanyang Street, Shijr, Taipei Hsien 221, Taiwan, R.O.C. *Training Research Co., Ltd.* is listed by the FCC as a facility available to do measurement work for others on a contract basis.

1.9 General Test Condition

The conditions under which the EUT operates were varied to determine their effect on the equipment's emission characteristics. The final configuration of the test system and the mode of operation used during these tests were chosen as that which produced the highest emission levels. However, only those conditions, which the EUT was considered likely to encounter in normal use were investigated.

There is a test condition apply in this test item, the test procedure description as <1.3 test method>. Three channels were tested, one in the top (CH1), one in the middle (CH40) and the other in bottom (CH79).

II. Section 15.203: Antenna requirement

The EUT has an integrated antenna permanently attached on the PCB, which inside the housing. In addition, there is no external antenna or connector employed. The antenna requirement stated in Sect.15.203 is inapplicable to this EUT.

III. Section 15.207: Power Line Conducted Emissions for AC Powered Units

3.1 Test Condition & Setup

The power line conducted emission measurements were performed in an semi-anechoic chamber. The EUT was assembled on a wooden table, which is 80 centimeters high, was placed 40 centimeters from the backwall and at least 1 meter from the sidewall.

Power was fed to the EUT from the public utility power grid through a line filter and Line Impedance Stabilization Networks (LISNs). The LISN housing, measuring instrumentation case, ground plane, etc., were electrically bonded together at the same RF potential. The Spectrum analyzer (or EMI receiver) was connected to the AC line through an isolation transformer. The 50-ohm output of the LISN was connected to the spectrum analyzer directly. Conducted emission levels were in the CISPR quasi-peak and average detection mode. The analyzer's 6 dB bandwidth was set to 9 KHz. No post-detector video filter was used.

The spectrum was scanned from 150 KHz to 30 MHz. The physical arrangement of the test system and associated cabling was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude and frequency. All spurious emission frequencies were observed. The highest emission amplitudes relative to the appropriate limit were measured and have been recorded in paragraph 4.3

There is a test condition apply in this test item, the test procedure description as <1.3>. Three channels were tested, one in the top, one in the middle and the other in bottom.

3.2 List of Test Instruments

| Instrument Name | Model | Brand | Serial No. | Calibration Date |
|------------------------------|---------------------|--------|------------|------------------|
| | | | | Next time |
| EMI Receiver | 8546A | HP | 3520A00242 | 03/12/12 |
| RF Filter Section | 85460A | HP | 3448A00217 | 03/12/12 |
| LISN (EUT) | 3816/2 | EMCO | 00042976 | 02/10/12 |
| LISN (Support E.) | 3816/2 | EMCO | 00042989 | 01/26/12 |
| Coaxial Cable (2.0 meter) | A30A30-0058-50FS-2M | Jyebao | SMA-08 | 04/06/12 |
| Coaxial Cable (1.1 meter) | A30A30-0058-50FS-1M | Jyebao | SMA-09 | 04/06/12 |
| Coaxial Cable (20 meter) | RG-214/U | Jyebao | NP-01 | 04/06/12 |
| Coaxial Cable (20 meter) | RG-214/U | Jyebao | NP-02 | 04/06/12 |
| Auto Switch Box (< 30MHz) | ASB-01 | TRC | 9904-01 | 04/06/12 |

3.3 Test Result of Power Line Conducted Emissions

The following table shows a summary of the highest emissions of power line conducted emissions on the LIVE and NETURAL conductors of the EUT power cord. Show as follows.

Test Conditions: Temperature : 25 °C Humidity : 73 % RH

Test mode: BT Channel 01

| <i>Power Connected Emissions</i> | | | | | <i>Class B</i> | | |
|----------------------------------|----------------------------|------------------------|----------------------|---------------------------|----------------------------|-----------------------------|------------------------|
| <i>Conductor</i> | <i>Frequency (KHz)</i> | <i>Peak (dBμV)</i> | <i>QP (dBμV)</i> | <i>Average (dBμV)</i> | <i>QP-limit (dBμV)</i> | <i>AVG-limit (dBμV)</i> | <i>Margin (dB)</i> |
| Line 1 | 267.000 | 38.63 | --- | --- | 62.66 | 52.66 | -14.03 |
| | 373.000 | 32.94 | --- | --- | 59.63 | 49.63 | -16.69 |
| | 537.000 | 34.51 | --- | --- | 56.00 | 46.00 | -11.49 |
| | 645.000 | 30.69 | --- | --- | 56.00 | 46.00 | -15.31 |
| | 963.000 | 30.67 | --- | --- | 56.00 | 46.00 | -15.33 |
| | 21740.000 | 38.86 | --- | --- | 60.00 | 50.00 | -11.14 |
| Line 2 | 267.000 | 37.85 | --- | --- | 62.66 | 52.66 | -14.81 |
| | 537.000 | 33.42 | --- | --- | 56.00 | 46.00 | -12.58 |
| | 695.000 | 29.82 | --- | --- | 56.00 | 46.00 | -16.18 |
| | 911.000 | 30.36 | --- | --- | 56.00 | 46.00 | -15.64 |
| | 9780.000 | 34.70 | --- | --- | 60.00 | 50.00 | -15.30 |
| | 21740.000 | 38.51 | --- | --- | 60.00 | 50.00 | -11.49 |

NOTE:

- (1)Margin = Peak Amplitude – Limit, *The reading amplitudes are all under limit.*
- (2)A "+" sign in the margin column means the emission is OVER the Class B Limit and "-" sign of means UNDER the Class B limit

Test mode: BT Channel 40

| Power Connected Emissions | | | | | Class B | | |
|----------------------------------|----------------------------|------------------------|----------------------|---------------------------|----------------------------|-----------------------------|------------------------|
| Conductor | Frequency (KHz) | Peak (dBμV) | QP (dBμV) | Average (dBμV) | QP-limit (dBμV) | AVG-limit (dBμV) | Margin (dB) |
| Line 1 | 267.000 | 38.65 | --- | --- | 62.66 | 52.66 | -14.01 |
| | 430.000 | 32.69 | --- | --- | 58.00 | 48.00 | -15.31 |
| | 480.000 | 31.78 | --- | --- | 56.57 | 46.57 | -14.79 |
| | 537.000 | 33.72 | --- | --- | 56.00 | 46.00 | -12.28 |
| | 963.000 | 30.72 | --- | --- | 56.00 | 46.00 | -15.28 |
| | 21960.000 | 38.77 | --- | --- | 60.00 | 50.00 | -11.23 |
| Line 2 | 264.000 | 38.44 | --- | --- | 62.74 | 52.74 | -14.30 |
| | 426.000 | 32.02 | --- | --- | 58.11 | 48.11 | -16.09 |
| | 537.000 | 32.13 | --- | --- | 56.00 | 46.00 | -13.87 |
| | 802.000 | 30.94 | --- | --- | 56.00 | 46.00 | -15.06 |
| | 9290.000 | 34.98 | --- | --- | 60.00 | 50.00 | -15.02 |
| | 21630.000 | 38.66 | --- | --- | 60.00 | 50.00 | -11.34 |

Test mode: BT Channel 79

| Power Connected Emissions | | | | | Class B | | |
|----------------------------------|----------------------------|------------------------|----------------------|---------------------------|----------------------------|-----------------------------|------------------------|
| Conductor | Frequency (KHz) | Peak (dBμV) | QP (dBμV) | Average (dBμV) | QP-limit (dBμV) | AVG-limit (dBμV) | Margin (dB) |
| Line 1 | 267.000 | 36.99 | --- | --- | 62.66 | 52.66 | -15.67 |
| | 919.000 | 27.97 | --- | --- | 56.00 | 46.00 | -18.03 |
| | 4952.000 | 29.51 | --- | --- | 56.00 | 46.00 | -16.49 |
| | 9100.000 | 33.57 | --- | --- | 60.00 | 50.00 | -16.43 |
| | 16910.000 | 32.36 | --- | --- | 60.00 | 50.00 | -17.64 |
| | 21630.000 | 38.51 | --- | --- | 60.00 | 50.00 | -11.49 |
| Line 2 | 264.000 | 35.83 | --- | --- | 62.74 | 52.74 | -16.91 |
| | 919.000 | 28.28 | --- | --- | 56.00 | 46.00 | -17.72 |
| | 3094.000 | 30.26 | --- | --- | 56.00 | 46.00 | -15.74 |
| | 10090.000 | 34.47 | --- | --- | 60.00 | 50.00 | -15.53 |
| | 16830.000 | 33.57 | --- | --- | 60.00 | 50.00 | -16.43 |
| | 21960.000 | 38.75 | --- | --- | 60.00 | 50.00 | -11.25 |

IV. Section 15.247 (a): Technical description of the EUT

Based on the Section 2.1, *Frequency Hopping Spectrum System* is a spread spectrum system in which the carrier has been modulated by a *high speed spreading code* and an *information data stream* with its *known hopping algorithm* and *avoidance method*. The high speed code sequence dominates the “modulating function” and is the direct cause of the wide spreading of the transmitted signal. In the *operational description* demonstrates the operation principles of the base-band processor employed by the EUT, shows that which is a complete FHSS base-band processor and meets the definition of the *Frequency Hopping Spectrum System*.

V. Section 15.247(a)(1): Carrier Frequency Separation

5.1 Test Condition

The EUT must have its hopping function enabled. Use the following spectrum analyzer setting

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

Resolution (or IF) bandwidth (RBW) \geq 1% of the span

Video (or Average) Bandwidth (VBW) \geq RBW

Sweep = Auto

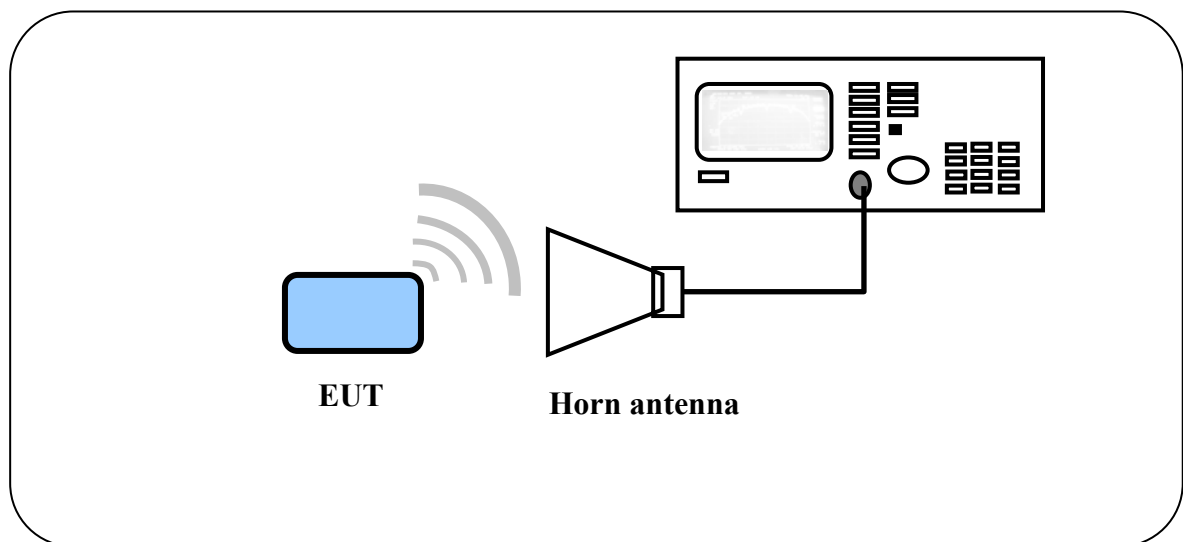
Detector Function = peak

Trace = max hold

Setting up procedure is written on 1.3 test method.

Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channel. The limit is specified in one of the subparagraphs of this section. Submit this plot.

5.2 Test Instruments Configuration



Test Configuration of carrier frequency separation

5.3 List of Test Instruments

| | | | | <u>Calibration Date</u> |
|------------------------|------------------|--------------|-------------------|-------------------------|
| <u>Instrument Name</u> | <u>Model No.</u> | <u>Brand</u> | <u>Serial No.</u> | <u>Next time</u> |
| Spectrum Analyzer | MS2665C | ANRITSU | 6200175476 | 03/15/12 |
| Horn Antenna | 3115 | EMCO | 9104-3668 | 02/11/12 |

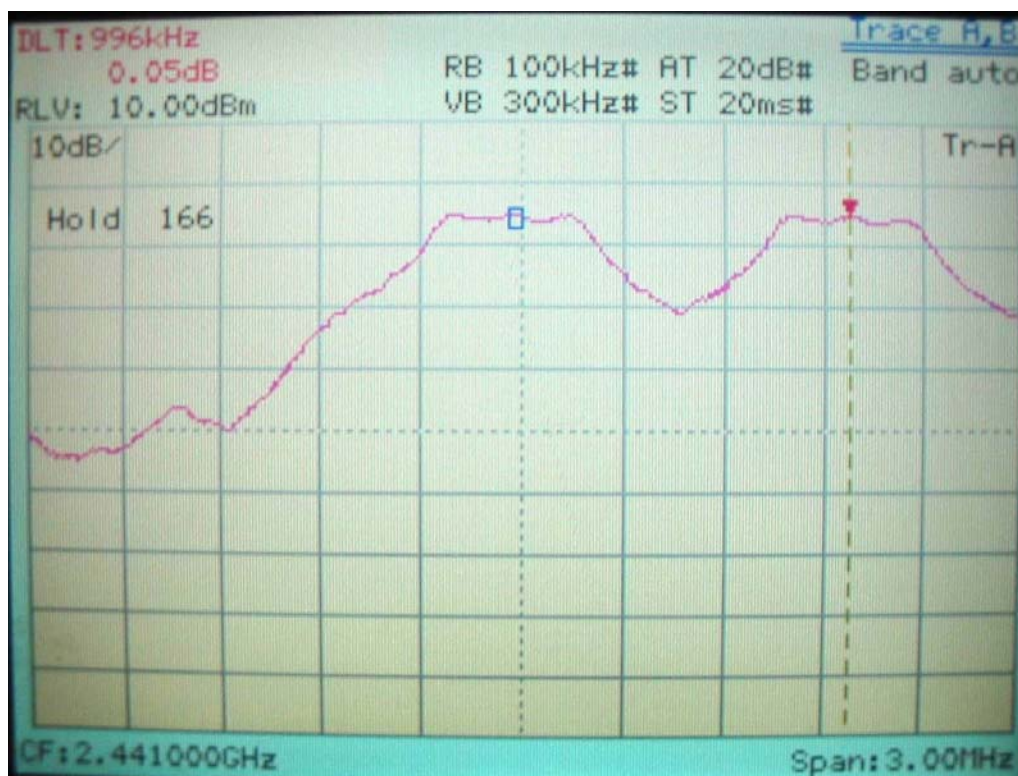
5.4 Test Results

| Channel | Bluetooth |
|---------|-----------|
| 01 | 990 kHz |
| 40 | 996 kHz |
| 79 | 990 kHz |

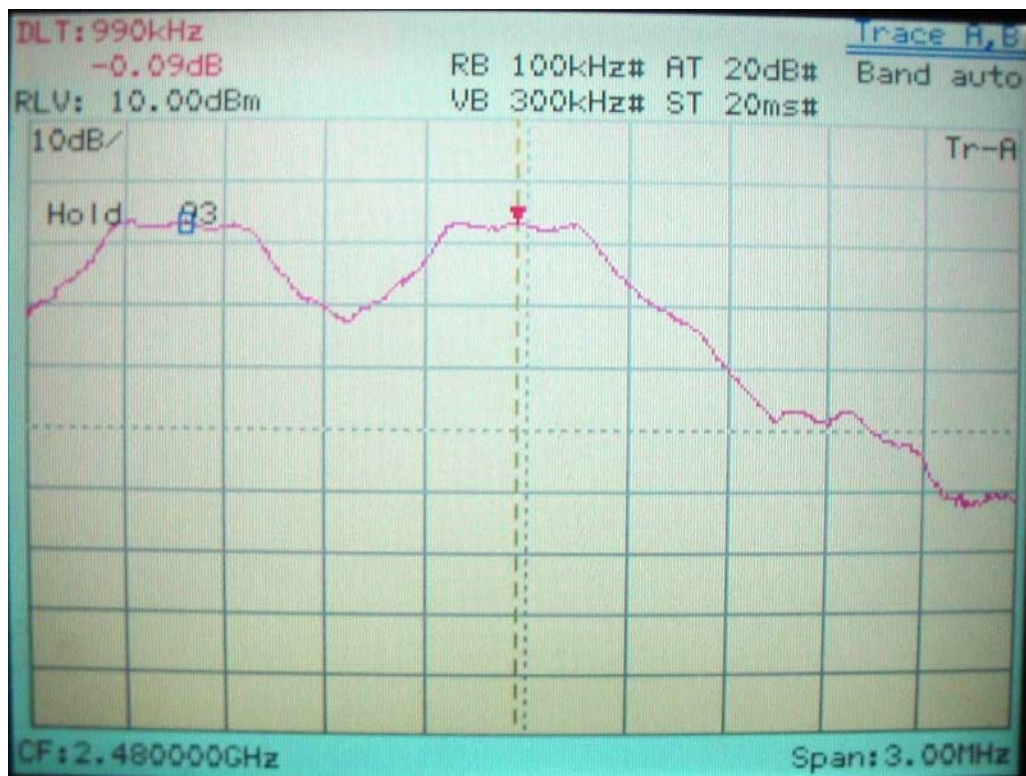
Carrier Frequency Separation for CH01



Carrier Frequency Separation for CH40



Carrier Frequency Separation for CH79



VI. Section 15.247(a)(1)(ii) Number of Hopping Frequencies

6.1 Test Condition

The EUT must have its Hopping function enabled. Use the following spectrum analyzer setting:

Span = the frequency band of operation

RBW \geq 1% of the span

VBW \geq RBW

Sweep = auto

Detector function = peak

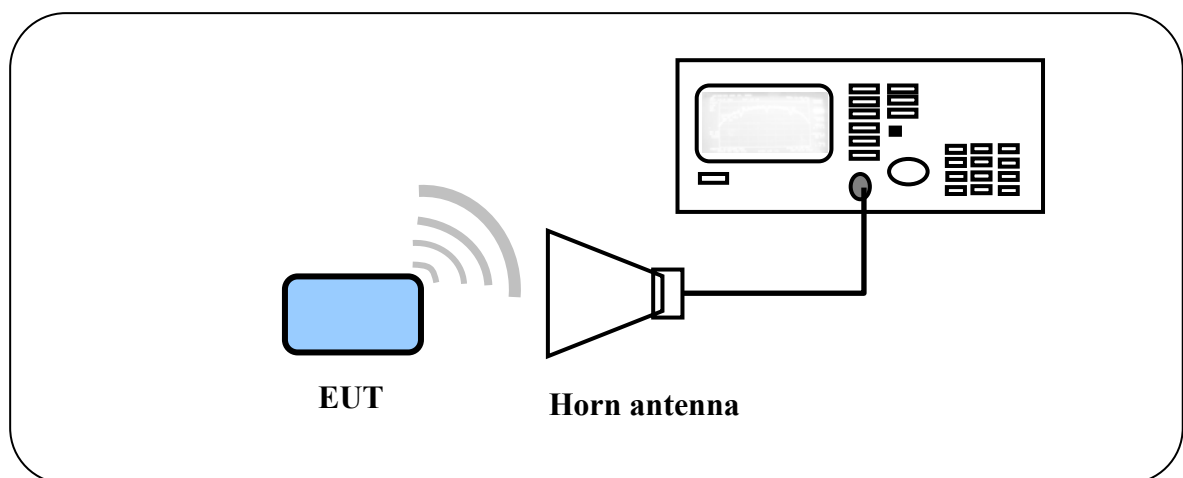
Trace = max hold

Allow the trace to stabilize. It may prove necessary to break the span up to sections. In order to clearly show all of the hopping frequencies. The limit is specified in one of the subparagraphs of this section.

6.2 List of Test Instruments

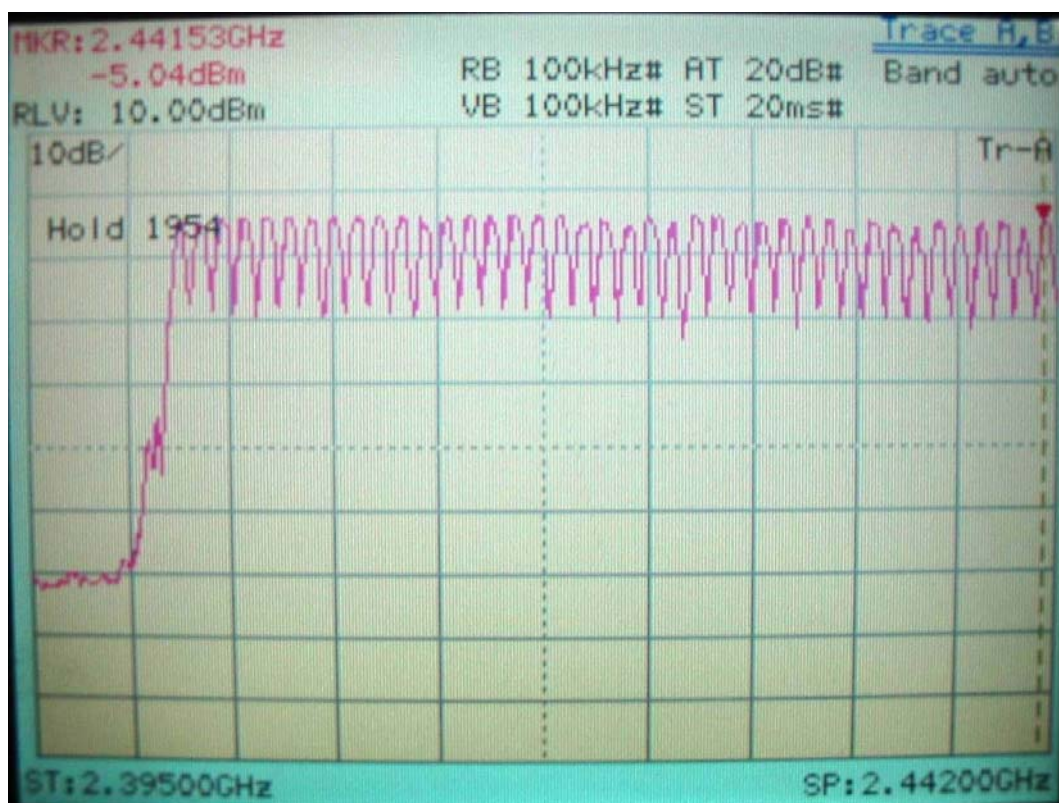
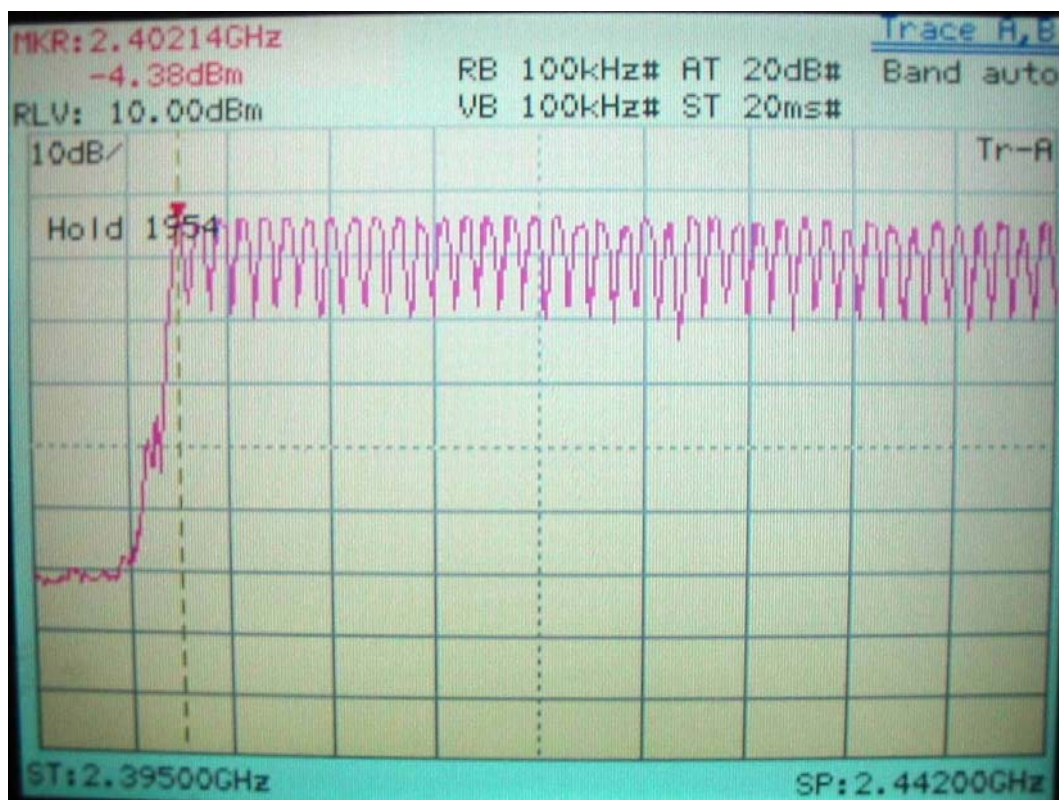
| Instrument Name | Model No. | Brand | Serial No. | <u>Calibration Date</u> |
|-------------------|-----------|---------|------------|-------------------------|
| | | | | Next time |
| Spectrum Analyzer | MS2665C | ANRITSU | 6200175476 | 03/15/12 |
| Horn Antenna | 3115 | EMCO | 9104-3668 | 02/11/12 |

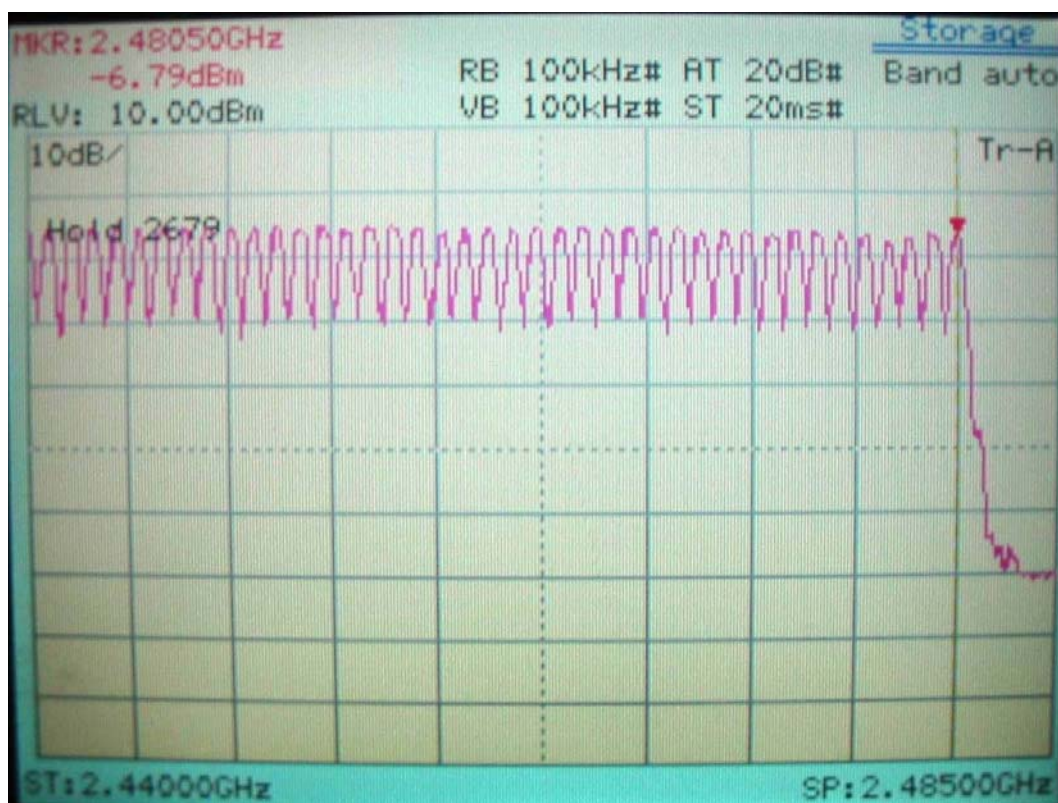
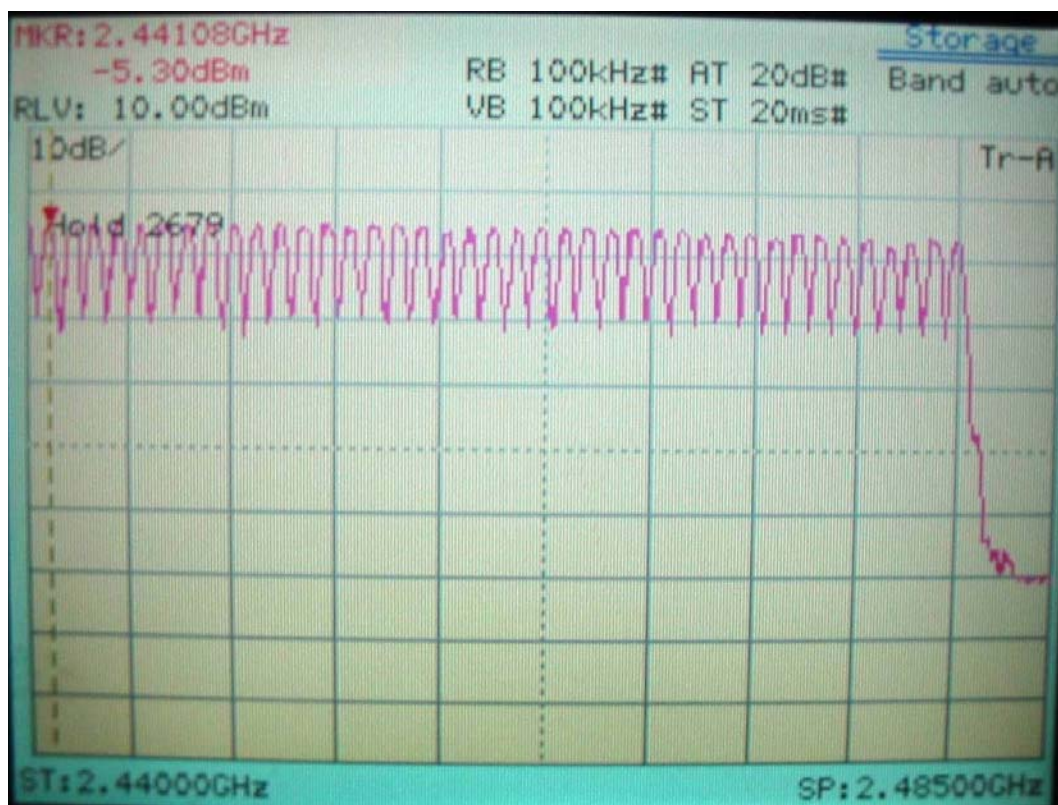
6.3 Test Instruments Configuration



Test Configuration for number of hopping frequencies

6.4 Test Results





VII. Section 15.247(a)(1)(ii) Time of Occupancy (Dwell Time)**7.1 Test Condition**

The EUT must have its hopping function enabled. Use the following spectrum analyzer setting:

Span = zero span, centered on a hopping channel

RBW = 1M

VBW \geq RBW

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

Detector function = peak

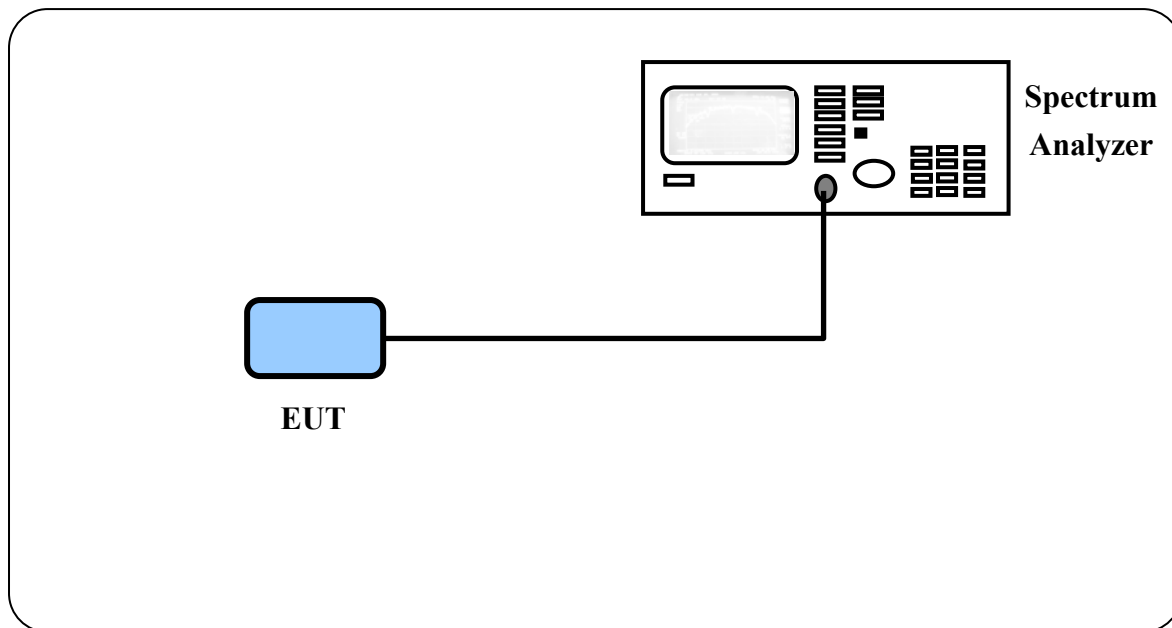
Trace = max hold

If possible, use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation. The limit is specified in one of the subparagraphs of this section. Submit this plot(s). An oscilloscope may be used instead of a spectrum analyzer.

7.2 List of Test Instruments

| | | | | <u>Calibration Date</u> |
|------------------------|------------------|--------------|-------------------|-------------------------|
| <u>Instrument Name</u> | <u>Model No.</u> | <u>Brand</u> | <u>Serial No.</u> | <u>Next time</u> |
| Spectrum Analyzer | MS2665C | ANRITSU | 6200175476 | 03/15/12 |

7.3 Test Instruments Configuration



Note:

1. Running Bluetooth test set for Test mode.
2. Spectrum Analyzer record test results.

7.4 Test Results

| CH | DH1-Packet (ms) | DH3-Packet (ms) | DH5-Packet (ms) |
|----|---|--|---|
| 01 | $0.520 \times 31.6 \times 10.12 = 166.29$ | $1.780 \times 31.6 \times 5.06 = 284.62$ | $3.05 \times 31.6 \times 3.37 = 324.80$ |
| 40 | $0.518 \times 31.6 \times 10.12 = 165.65$ | $1.780 \times 31.6 \times 5.06 = 284.62$ | $3.05 \times 31.6 \times 3.37 = 324.80$ |
| 79 | $0.520 \times 31.6 \times 10.12 = 166.29$ | $1.780 \times 31.6 \times 5.06 = 284.62$ | $3.06 \times 31.6 \times 3.37 = 325.87$ |

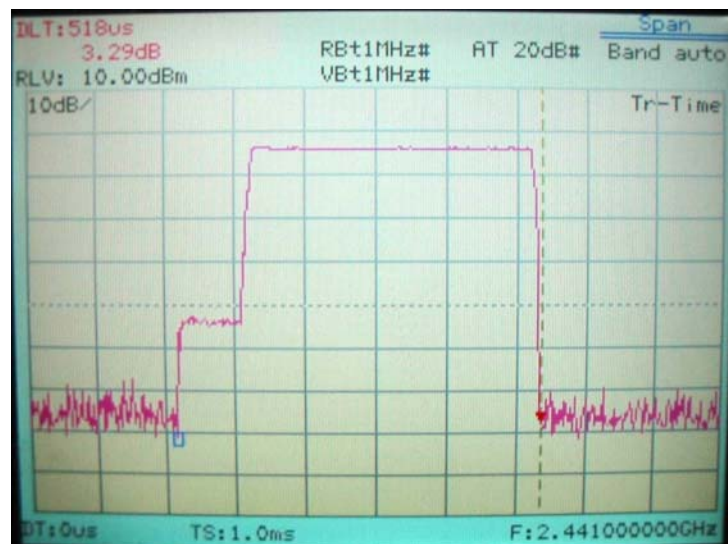
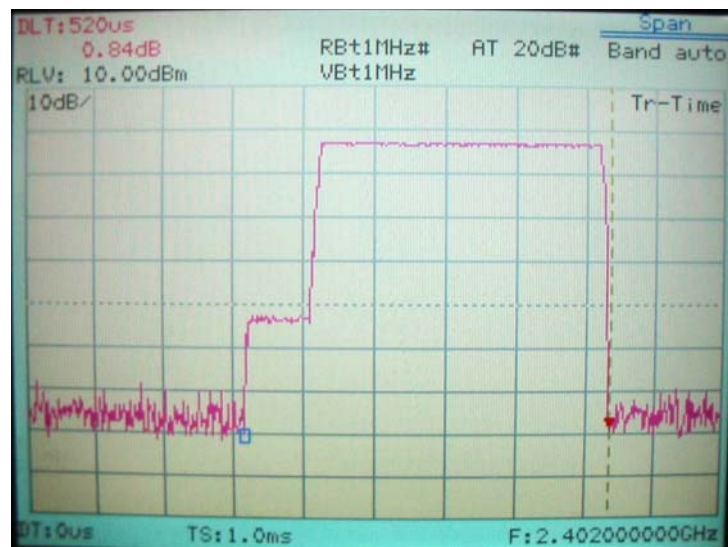
備註：1. $0.4 \times 79 = 31.6$ s

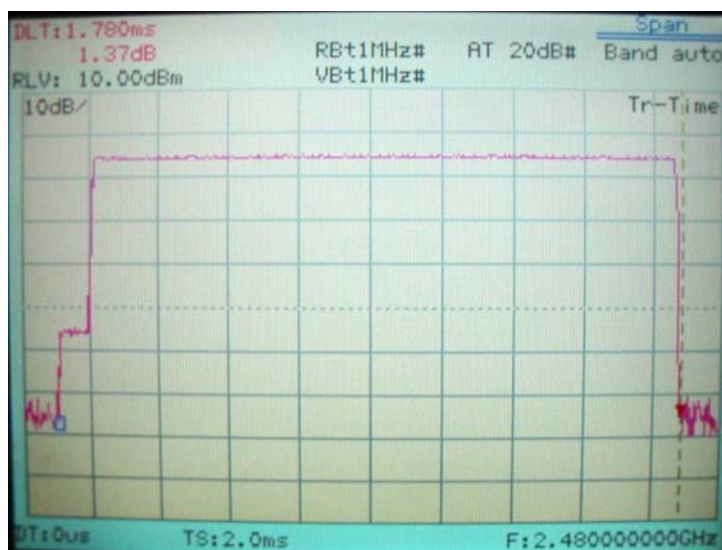
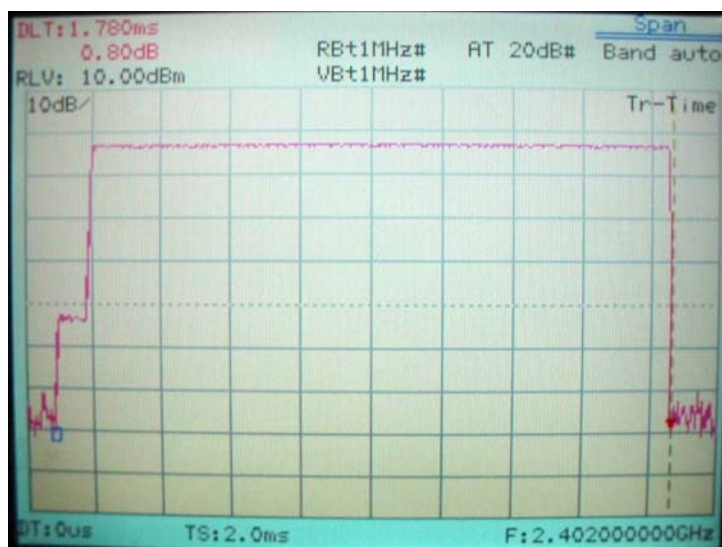
2. DH1: $1600 \div 79 \div 2 = 10.12$ ms

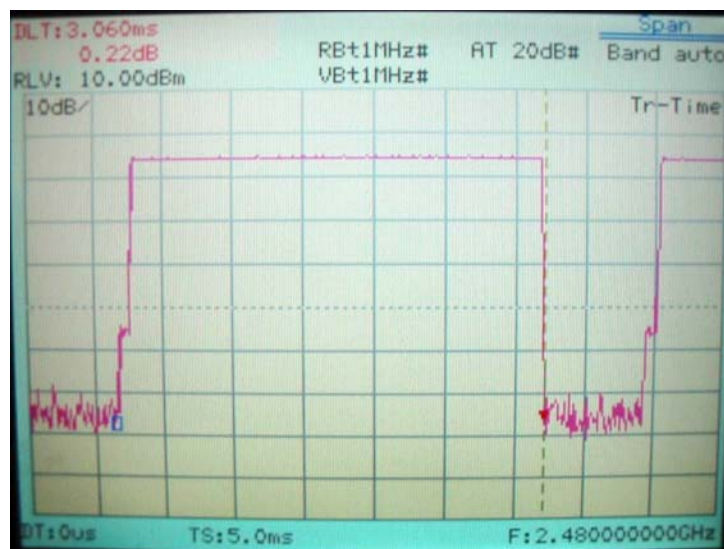
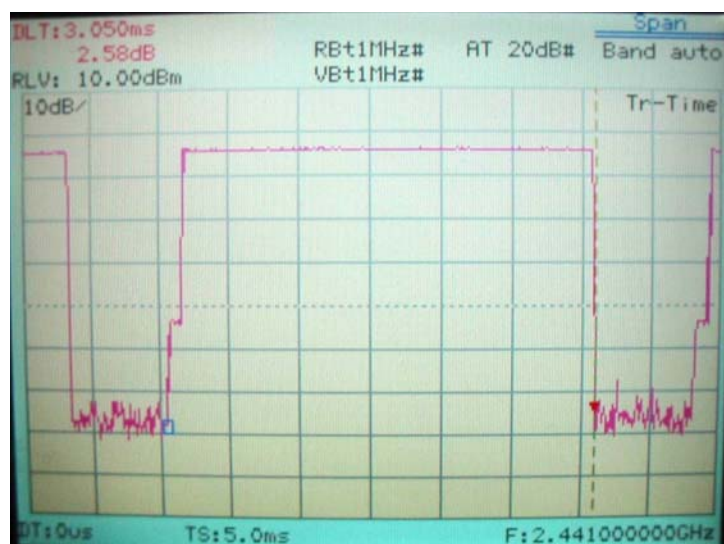
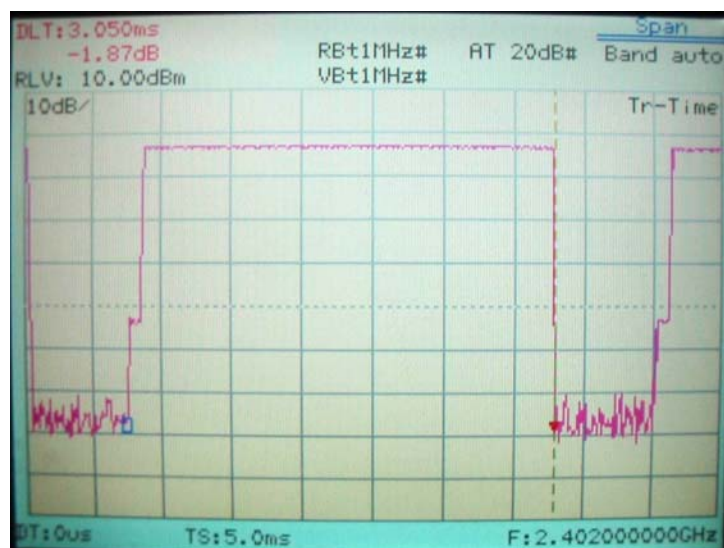
3. DH3: $1600 \div 79 \div 4 = 5.06$ ms

4. DH5: $1600 \div 79 \div 6 = 3.37$ ms

5. Show as following page.

DH1-Packet :

DH3-Packet :

DH5-Packet :

VIII. Section 15.247(a)(1)(ii) 20dB Bandwidth

8.1 Test Condition

Use the following spectrum analyzer setting:

Span = the frequency band of operation

RBW \geq 1% of the emission bandwidth

VBW \geq RBW

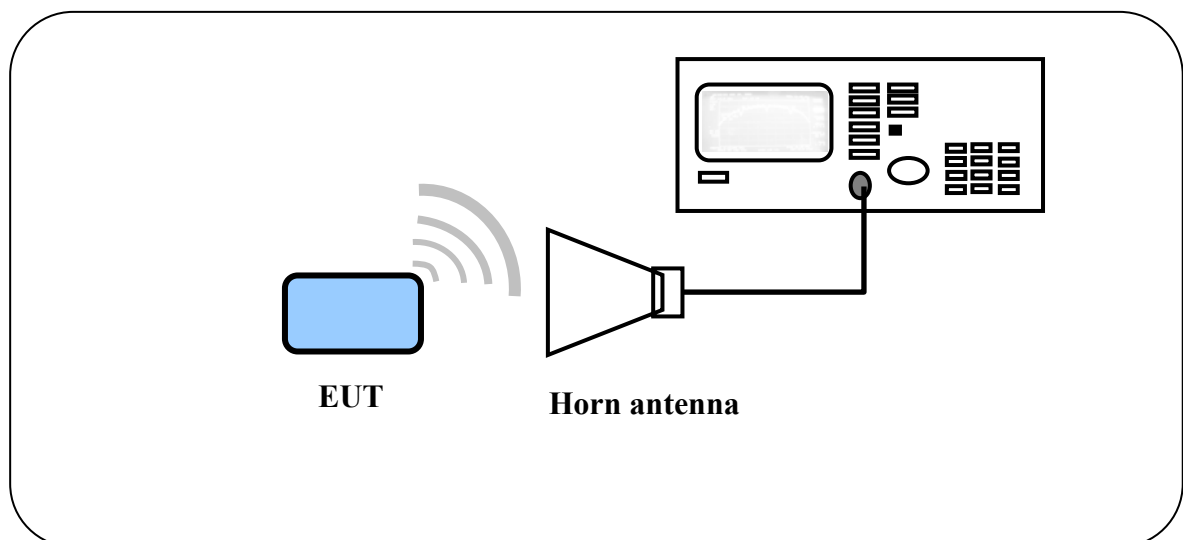
Sweep = auto

Detector function = peak

Trace = max hold

The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of emission. Use the marker-delta function to measure 20dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20dB bandwidth of the emission. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation. The limit is specified in one of the subparagraphs of this section. Submit this plot(s).

8.2 Test Instruments Configuration



Test Configuration of Bandwidth for Frequency Hopping Spread Spectrum System

8.3 List of Test Instruments

| | | | | <u>Calibration Date</u> |
|-------------------|-----------|---------|------------|-------------------------|
| Instrument Name | Model No. | Brand | Serial No. | Next time |
| Spectrum Analyzer | MS2665C | ANRITSU | 6200175476 | 03/15/12 |
| Horn Antenna | 3115 | EMCO | 9104-3668 | 02/11/12 |

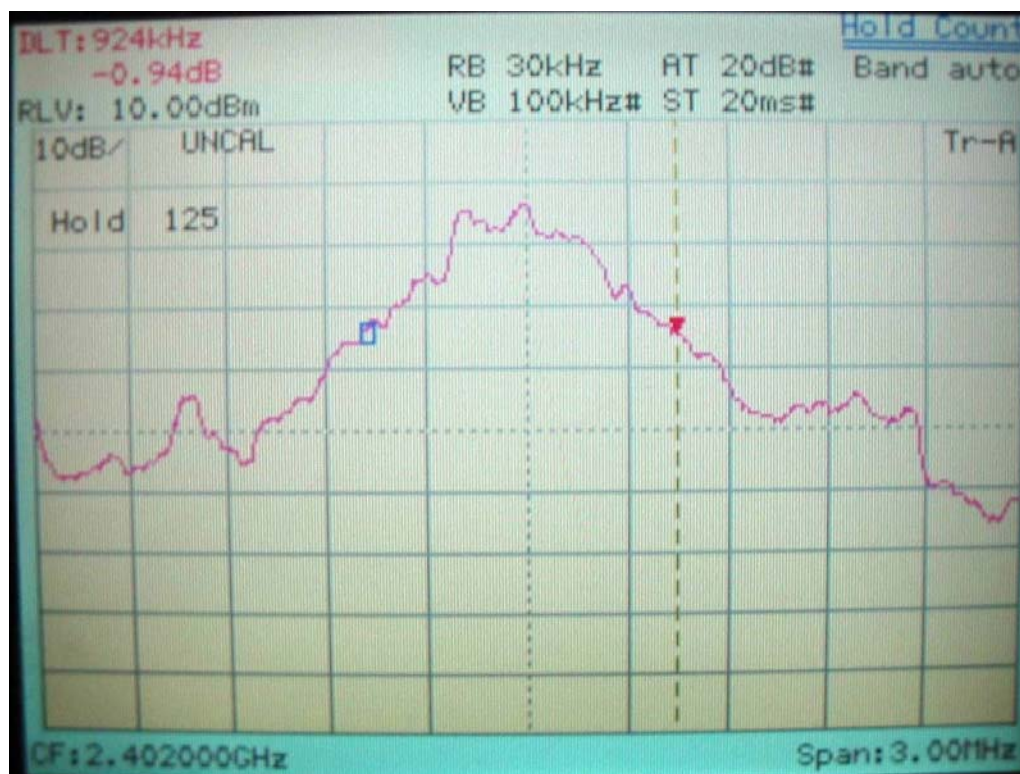
8.4 Test Results

| Channel | Bluetooth |
|---------|-----------|
| 01 | 924 kHz |
| 40 | 918 kHz |
| 79 | 918 kHz |

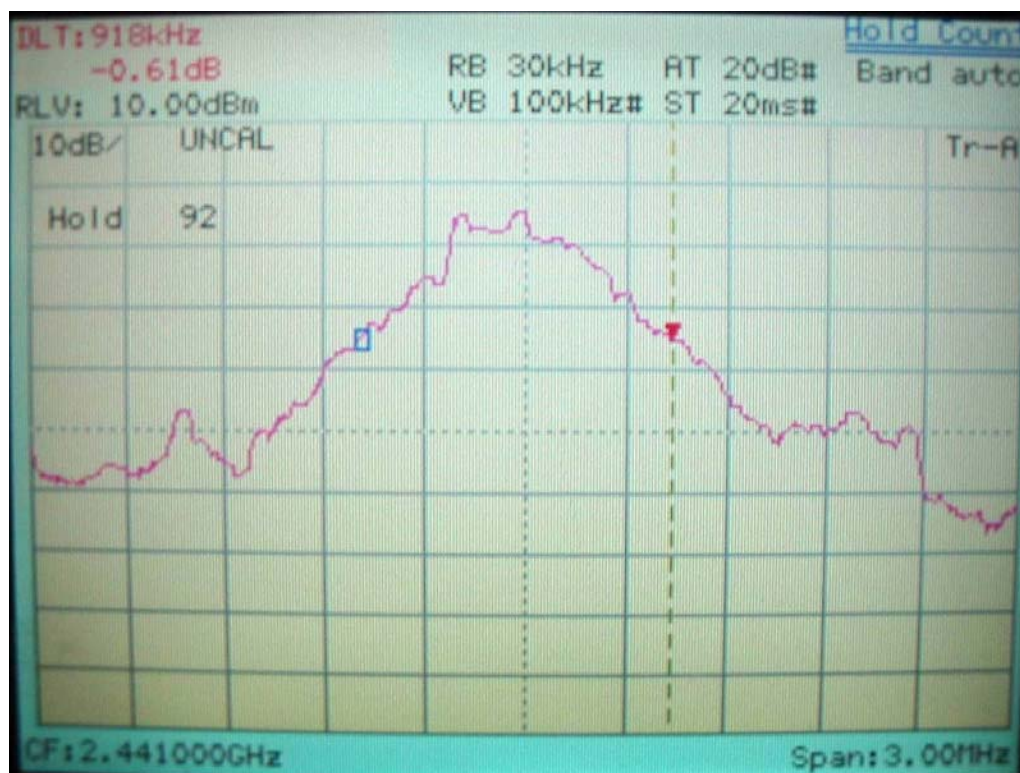
Note:

The data in the above table are summarizing the following attachment spectrum analyzer.

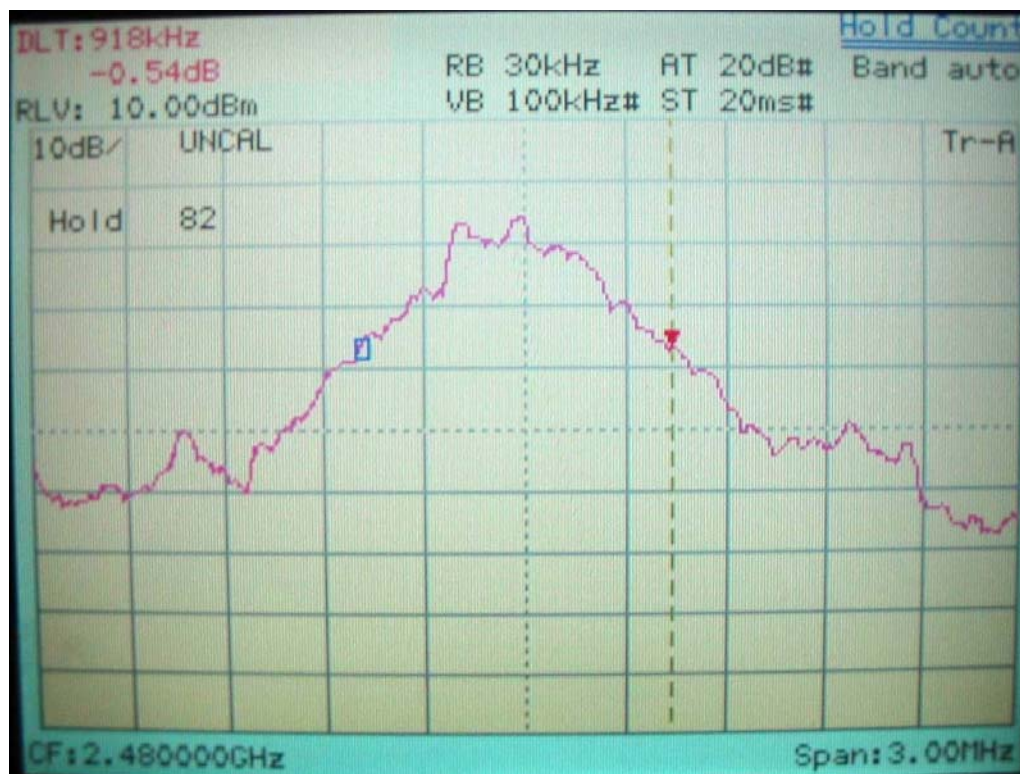
Bandwidth of Channel 1:



Bandwidth of Channel 40:

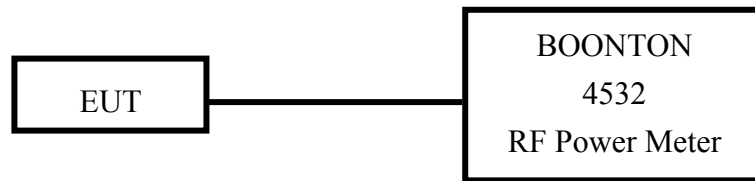


Bandwidth of Channel 79:



IX. Section 15.247(b) Peak Output Power

9.1 Test Condition & Setup



1. The output of the transmitter is connected to the BOONTON RF Power Meter.
2. The calibration is performed before every test. The values of the output power of the EUT will shown in the dBm directly are the transmitter output peak power. Recording as follows.

9.2 List of Test Instruments

| Instrument Name | Model No. | Brand | Serial No. | Calibration Date |
|-------------------|-----------|---------|------------|------------------|
| | | | | Next time |
| RF Power Meter | 4532 | BOONTON | 117501 | 03/06/12 |
| Peak Power Sensor | 57340 | BOONTON | 2696 | 04/26/12 |

9.3 Test Result

Formula:

RF output power of EUT + |Cable loss| = Output peak power

| Channel | RF Output | Cable Loss | Output Peak Power | |
|---------|-----------|------------|-------------------|-------|
| | dBm | dBm | dBm | mW |
| CH01 | -2.436 | 2.0 | -0.44 | 0.904 |
| CH40 | -3.182 | 2.0 | -1.18 | 0.762 |
| CH79 | -4.725 | 2.0 | -2.73 | 0.533 |

X. Section 15.247(c) Band-edge Compliance

10.1 Test Condition

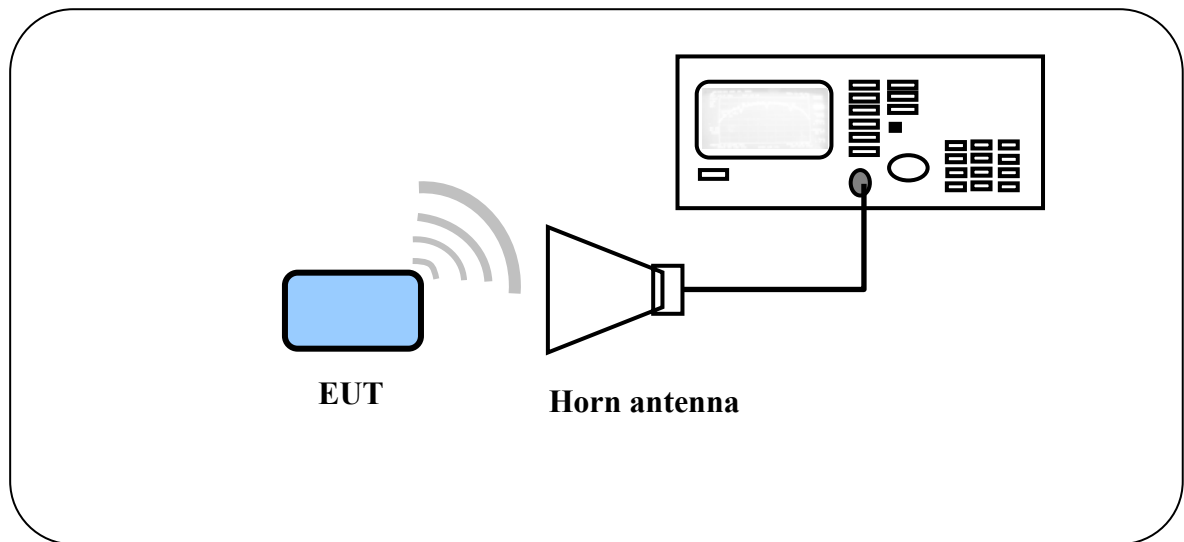
If any 100 kHz bandwidth outside these frequency bands, the radio frequency power that is produced by the modulation products of the spreading sequence, the information sequence and the carrier frequency shall be either *at least 20 dB below that in any 100 kHz bandwidth within the band that contains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

We perform this section by the *radiated manner*, the RBW is set to 100kHz and VBW>RBW. We'd made the observation *up to 10th harmonics and the criterion is all the harmonic/spurious emissions must be 20dB below the highest emission level measured*. If the emissions fall in the restricted bands stated in the Part15.205(a) must also *comply with the radiated emission limits specified in Part15.209(a)*. (Peak mode: RBW=VBW=1MHz, Average mode: RBW=1MHz; VBW=10Hz)

10.2 List of Test Instruments

| Instrument Name | Model No. | Brand | Serial No. | <u>Calibration Date</u> |
|------------------------|-----------|---------|------------|-------------------------|
| | | | | Next time |
| Spectrum Analyzer | MS2665C | ANRITSU | 6200175476 | 03/15/12 |
| Spectrum Analyzer | 8564E | HP | 3720A00840 | 04/12/12 |
| Microwave Preamplifier | 84125C | HP | US36433002 | 04/19/12 |
| Horn Antenna | 3115 | EMCO | 9104-3668 | 02/11/12 |

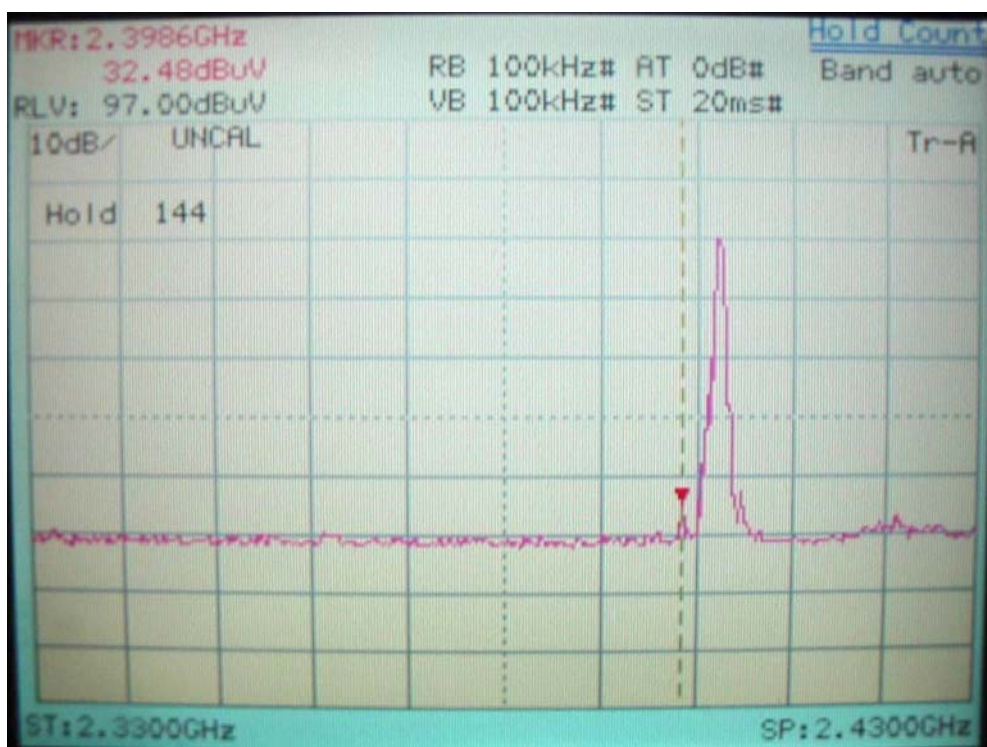
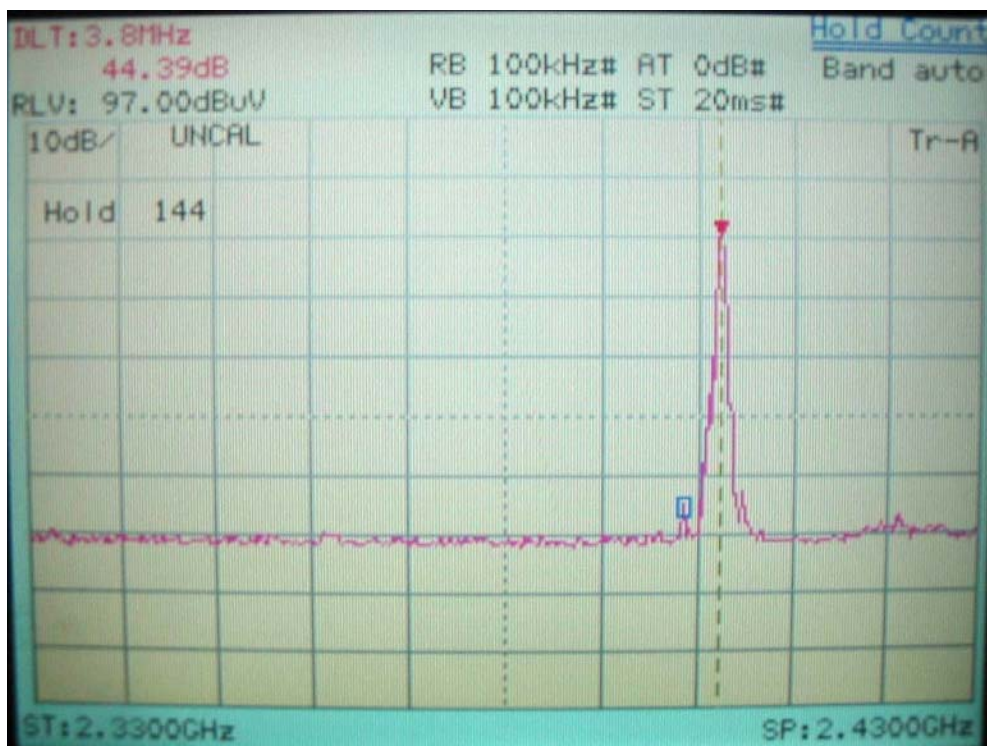
10.3 Test Instruments Configuration



10.4 Test Result of the Bandedge

The following pages show our observations referring to the channel 1 and 79 respectively.

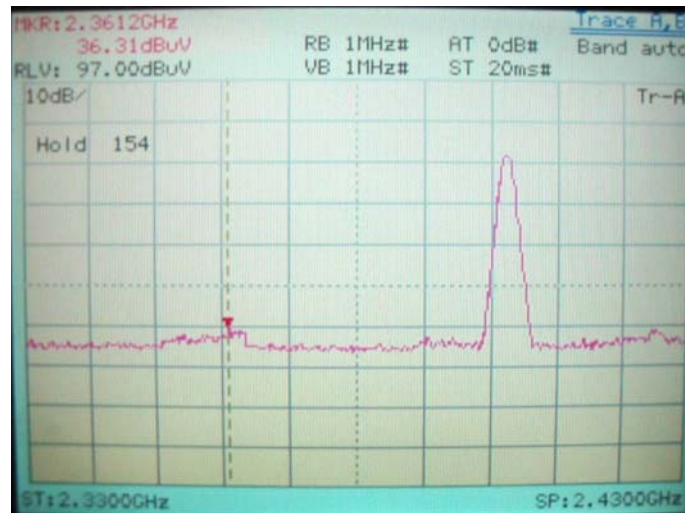
Channel 1



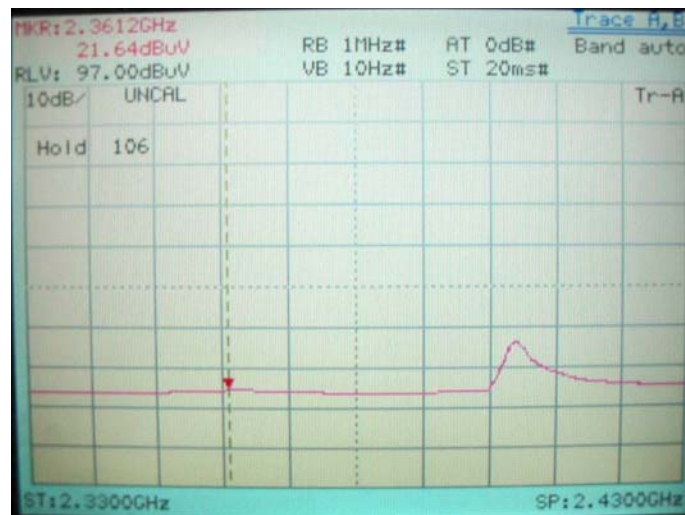
This is the hard copy of our bandedge measurement generated by our bandedge testing program. The plot shown above is the bandedge of channel 1.

1. The lobe left by the fundamental side is already 20dB below the highest emission level.
2. The emissions recorded in the restricted band is do comply with the Part 15.209(a) – as below.

Horizontal: Peak

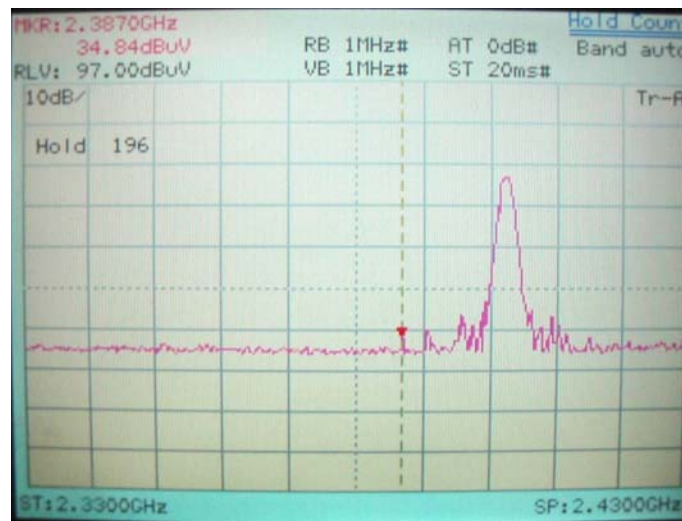


Horizontal: Average

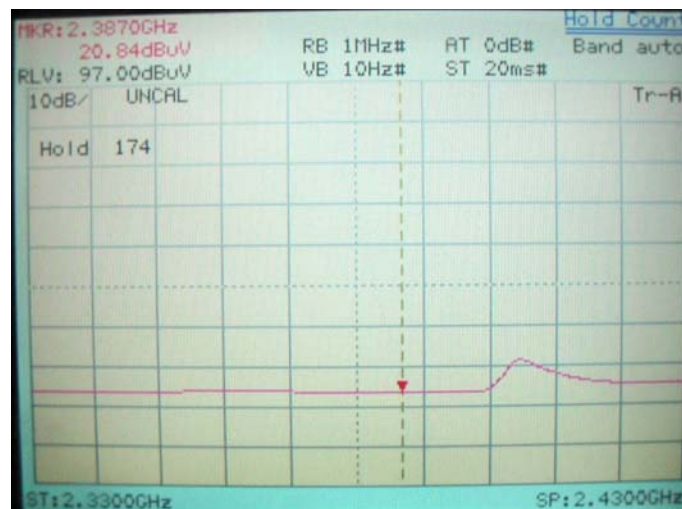


| Frequency | Ant. H. | Table | Amplitude | | Correction Factor | Corrected Amplitude | | Limit | | Margin |
|-----------|------------|--------|-------------|-------|----------------------|------------------------|-------|-------------|-------|--------|
| | | | Peak / Ave. | | | Peak / Ave. | | Peak / Ave. | | |
| MHz | m | degree | dBμV | | dB/m | dBμV/m | | dBμV/m | | dB |
| 2361.20 | 1.00 | 142 | 36.31 | 21.64 | 9.10 | 45.41 | 30.74 | 73.96 | 53.96 | -23.22 |

Vertical: Peak

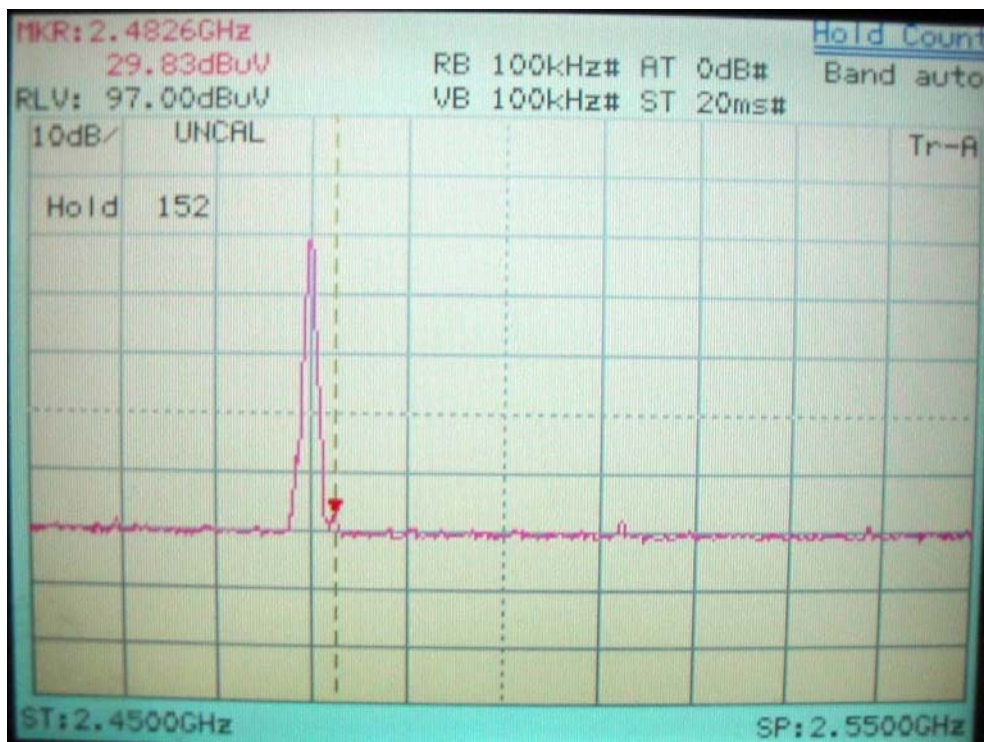
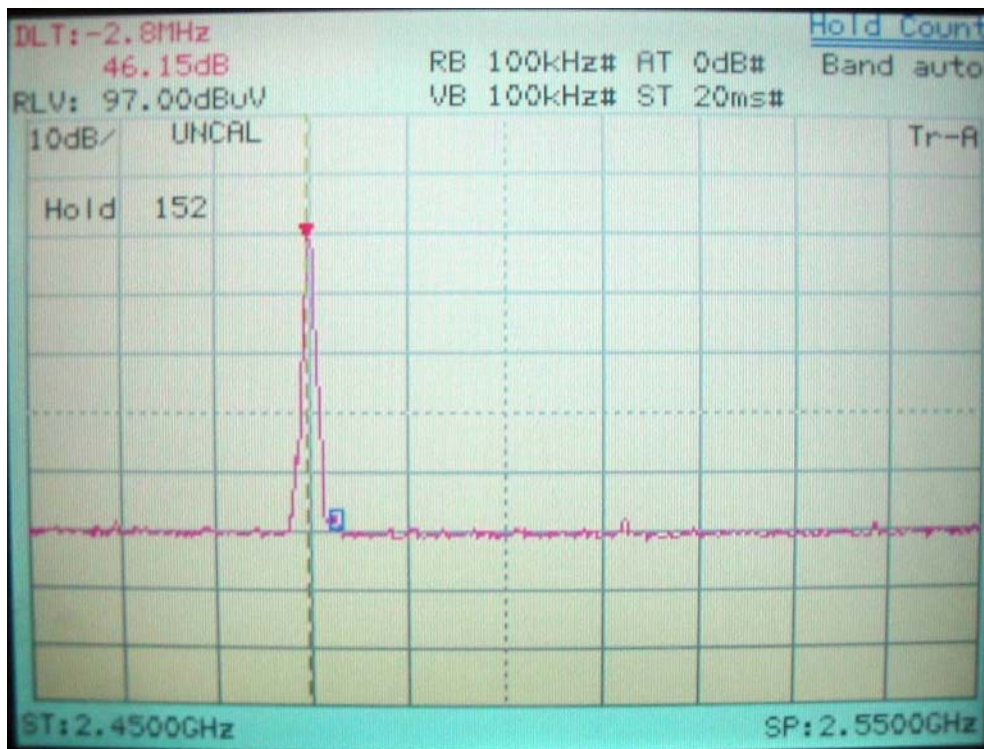


Vertical: Average



| Frequency | Ant. H. | Table | Amplitude | | Correction | Corrected | | Limit | | Margin |
|-----------|------------|--------|-------------|-------|------------|-------------|-------|-------------|-------|--------|
| | | | Peak / Ave. | | Factor | Peak / Ave. | | Peak / Ave. | | |
| MHz | m | degree | dBμV | | dB/m | dBμV/m | | dBμV/m | | dB |
| 2387.00 | 1.00 | 220 | 34.84 | 20.84 | 9.17 | 44.01 | 30.01 | 73.96 | 53.96 | -23.95 |

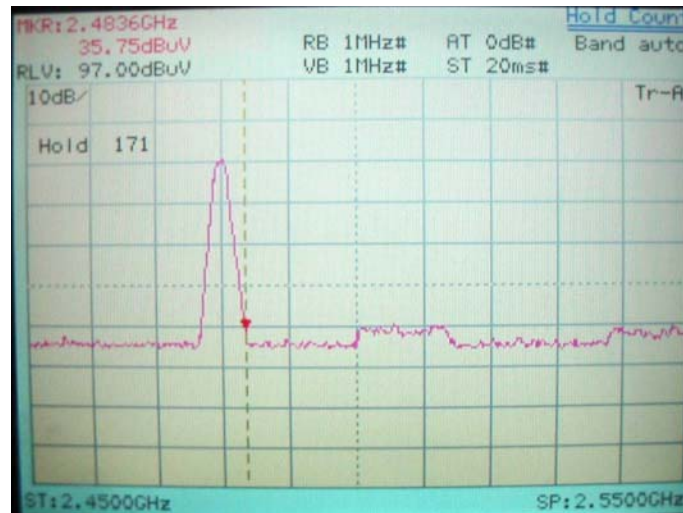
Channel 79



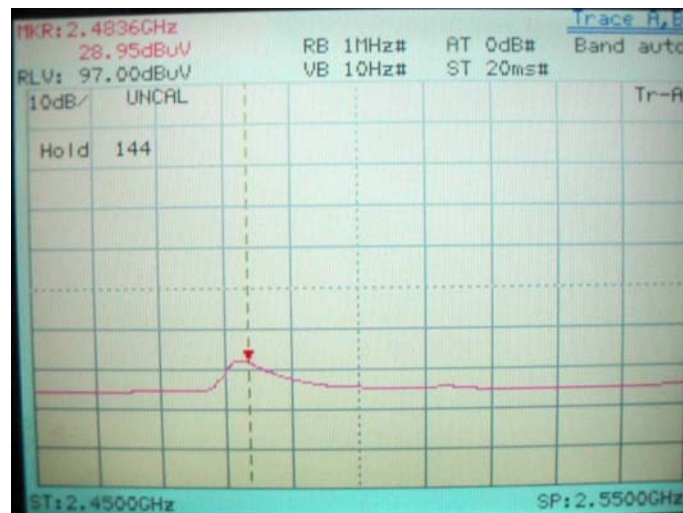
This is the hard copy of our bandedge measurement generated by our bandedge testing program. The plot shown above is the bandedge of channel 79.

3. The lobe left by the fundamental side is already 20dB below the highest emission level.
4. The emissions recorded in the restricted band is do comply with the Part 15.209(a) – as below.

Horizontal: Peak

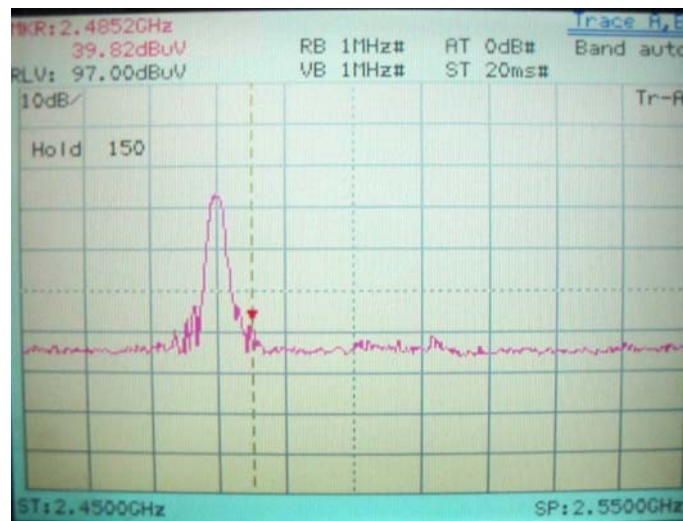


Horizontal: Average

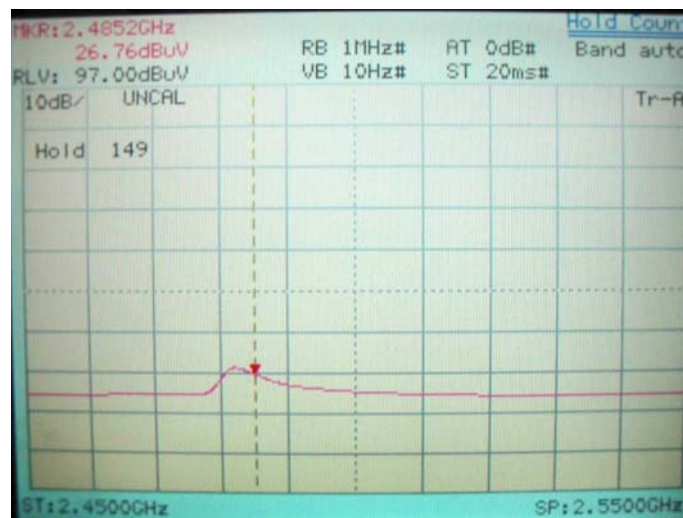


| Frequency | Ant. H. | Table | Amplitude | | Correction Factor | Corrected Amplitude | | Limit | | Margin |
|-----------|------------|--------|-------------|-------|----------------------|------------------------|-------|-------------|-------|--------|
| | | | Peak / Ave. | | | Peak / Ave. | | Peak / Ave. | | |
| MHz | m | degree | dBμV | | dB/m | dBμV/m | | dBμV/m | | dB |
| 2483.60 | 1.00 | 105 | 35.75 | 28.95 | 9.44 | 45.19 | 38.39 | 73.96 | 53.96 | -15.57 |

Vertical: Peak



Vertical: Average



| Frequency | Ant. H. | Table | Amplitude | | Correction | Corrected | | Limit | | Margin |
|-----------|------------|--------|-------------|-------|------------|-----------|-------|-------------|-------|--------|
| | | | Peak / Ave. | | Factor | Amplitude | | Peak / Ave. | | |
| MHz | m | degree | dBμV | | dB/m | dBμV/m | | dBμV/m | | dB |
| 2385.20 | 1.00 | 101 | 39.82 | 26.76 | 9.45 | 49.27 | 36.21 | 73.96 | 53.96 | -17.75 |

XI. Section 15.247(c) Spurious Radiated Emissions

11.1 Test Condition and Setup

We'd performed the test by the *radiated emission skill*: The EUT was placed in an anechoic chamber, and set the EUT transmitting continuously and scanned at 3-meter distance to determine its emission characteristics. The physical arrangement of the EUT was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude, directivity, and frequency. The exact system configuration, which produced the highest emissions was noted so it could be reproduced later during the final tests. For the measurement above 1GHz, according to the guidance we'd set the spectrum analyzer's 6dB bandwidth RBW to 1MHz.

This was done to ensure that the final measurements would demonstrate the worst-case interference potential of the EUT. Final radiation measurements were made on a three-meter, anechoic chamber. The EUT system was placed on a nonconductive turntable, which is 0.8 meters height, top surface 1.0 x 1.5 meter.

The spectrum was examined from 30 MHz to 1000 MHz using an Hewlett Packard 85460A EMI Receiver, SCHWARZECK whole range Small Biconical Antenna (Model No.: UBAA9114 & BBVU9135) is used to measure frequency from 30 MHz to 1GHz. The final test is used the HP 85460A spectrum and 8564E spectrum was examined from 1GHz to 25GHz using an Hewlett Packard Spectrum Analyzer, EMCO/HP Horn Antenna (Model 3115 / 84125-80008) for 1G to 25GHz.

At each frequency, the EUT was rotated 360 degrees, stand on **three orthogonal** planes respectively and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. There are two spectrum analyzers use on this testing, HP 85460A for frequency 30MHz to 1000MHz, and 8564E for frequency 1GHz to 25GHz. No post-detector video filters were used in the test. The spectrum analyzer's 6dB bandwidth was set to 120KHz (spectrum was examined from 30 MHz to 1000 MHz), the spectrum analyzer's 6 dB bandwidth was set to 1 MHz (spectrum was examined from 1GHz to 25GHz) and the analyzer was operated in the maximum hold mode. There is a test condition applies in this test item, the test procedure description as the following:

Three channels were tested, one in the top (CH1), one in the middle (CH40) and the other in bottom (CH79). The setting up procedure is recorded on <1.3 test method>

With the transmitter operating from a AC source and using the internal of EUT, radiates spurious emissions falling within the restricted bands of 15.209 were measured at operating frequencies corresponding to upper, middle and bottom channels in the 2400 ~ 2483.5 MHz band.

The actual field intensity in decibels referenced to 1 microvolt per meter (dB μ V/m) is determined by algebraically adding the measured reading in dB μ V, the antenna factor (dB), and cable loss (dB) at the appropriate frequency. Since the EUT was set to transmit continuously, no *duty cycle* is present.

For frequency between 30MHz to 1000MHz

$$F_{Ia} \text{ (dB}\mu\text{V/m)} = F_{Ir} \text{ (dB}\mu\text{V)} + \text{Correction Factors}$$

F_{Ia} : Actual Field Intensity

F_{Ir} : Reading of the Field Intensity

$$\text{Correction Factors} = \text{Antenna Factor} + (\text{Cable Loss} - \text{Amplifier Gain}) + \text{Switching Box Loss}$$

For frequency between 1GHz to 25GHz

$$F_{Ia} \text{ (dB}\mu\text{V/m)} = F_{Ir} \text{ (dB}\mu\text{V)} + \text{Correction Factor}$$

F_{Ia} : Actual Field Intensity

F_{Ir} : Reading of the Field Intensity

$$\text{Correction Factors} = \text{Antenna Factor} + (\text{Cable Loss} - \text{Amplifier Gain}) + \text{Switching Box Loss}$$

11.2 List of Test Instruments

| Instrument Name | Model | Brand | Serial No. | Calibration Date |
|--|----------------------|------------|------------|------------------|
| | | | | Next time |
| EMI Receiver | 8546A | HP | 3520A00242 | 03/12/12 |
| RF Filter Section | 85460A | HP | 3448A00217 | 03/12/12 |
| Small Biconical Antenna | UBAA9114 & BBVU9135 | SCHWARZECK | 127 | 03/21/12 |
| Pre-amplifier | PA1F | TRC | 1FAC | 04/06/12 |
| Auto Switch Box (>30MHz) | ASB-01 | TRC | SMA-01 | 04/06/12 |
| Coaxial Cable (Double shielded, 15 Meter) | A30A30-0058-50FS-15M | JYEBAO | SMA-02 | 04/06/12 |
| Coaxial Cable (1.1 meter) | A30A30-0058-50FS-1M | JYEBAO | 3720A00840 | 04/12/12 |
| Spectrum Analyzer | 8564E | HP | US36433002 | 04/19/12 |
| Microwave Preamplifier | 84125C | HP | 9104-3668 | 02/11/12 |
| Horn Antenna | 3115 | EMCO | 18-26.5GHz | 01/26/12 |
| Standard Guide Horn Antenna | 84125-80008 | HP | 26.5-40GHz | 01/27/12 |
| Standard Guide Horn Antenna | 84125-80001 | HP | 9704-5178 | 01/31/12 |
| Horn Antenna | 1196E (3115) | HP (EMCO) | 2F1GZ | 04/09/12 |
| Pre-amplifier | PA2F | TRC | SMA-01 | 04/06/12 |
| Coaxial Cable (3 miter) | A30A30-0058-50FST118 | JYEBAO | MSA-05 | 04/09/12 |
| Coaxial Cable (1 meter) | A30A30-0058-50FST118 | JYEBAO | MSA-04 | 04/09/12 |

11.3 Test Result of Spurious Radiated Emissions

The highest peak values of radiated emissions from the EUT at various antenna heights, antenna polarizations, EUT orientation, etc. are recorded on the following. (worst case)

Test Conditions: Temperature : 25° C Humidity : 73% RH

Test mode: BT CH01 for 30MHz to 1GHz [Horizontal]

| Radiated Emission | | | | Correction Factors | Corrected Amplitude | Class B (3 m) | |
|--------------------------|-------------------------|--------------------|------------------|---------------------------|----------------------------|------------------------|--------------------|
| Frequency (MHz) | Amplitude (dBμV) | Ant. H. (m) | Table () | | | Limit (dBμV/m) | Margin (dB) |
| 46.97 | 27.06 | 1.00 | 102 | 4.12 | 31.18 | 40.00 | -8.82 |
| 49.40 | 27.29 | 1.00 | 122 | 4.32 | 31.61 | 40.00 | -8.39 |
| 129.43 | 39.23 | 1.00 | 217 | -2.61 | 36.62 | 43.50 | -6.88 |
| 193.69 | 36.25 | 1.00 | 126 | -3.02 | 33.23 | 43.50 | -10.27 |
| 325.85 | 35.73 | 1.00 | 139 | -2.58 | 33.15 | 46.00 | -12.85 |
| 483.47 | 29.80 | 1.00 | 122 | 2.21 | 32.01 | 46.00 | -13.99 |

Test mode: BT CH01 for 30MHz to 1GHz [Vertical]

| Radiated Emission | | | | Correction Factors | Corrected Amplitude | Class B (3 m) | |
|--------------------------|-------------------------|--------------------|------------------|---------------------------|----------------------------|------------------------|--------------------|
| Frequency (MHz) | Amplitude (dBμV) | Ant. H. (m) | Table () | | | Limit (dBμV/m) | Margin (dB) |
| 33.64 | 28.40 | 1.00 | 82 | 6.35 | 34.75 | 40.00 | -5.25 |
| 45.76 | 31.49 | 1.00 | 61 | 4.01 | 35.50 | 40.00 | -4.50 |
| 48.19 | 31.99 | 1.00 | 265 | 4.22 | 36.21 | 40.00 | -3.79 |
| 129.43 | 34.77 | 1.00 | 19 | -2.61 | 32.16 | 43.50 | -11.34 |
| 193.69 | 32.10 | 1.00 | 156 | -3.02 | 29.08 | 43.50 | -14.42 |
| 502.87 | 26.96 | 1.00 | 295 | 3.08 | 30.04 | 46.00 | -15.96 |

Note:

1. Margin = Amplitude – limit, if margin is minus means under limit.
2. Corrected Amplitude = Reading Amplitude + Correction Factors
3. Correction factor = Antenna factor + (Cable Loss – Amplitude gain) + Switching Box Loss

Test mode: BT CH01 for 1GHz to 25GHz [Horizontal]

| Frequency | Ant. H. | Table | Amplitude | | Correction Factor | Corrected Amplitude | | Limit | | Margin |
|------------------|--------------------|---------------|--------------------|-------|------------------------------|--------------------------------|-------|--------------------|-------|---------------|
| | | | <i>Peak / Ave.</i> | | | <i>Peak / Ave.</i> | | <i>Peak / Ave.</i> | | |
| <i>MHz</i> | <i>m</i> | <i>degree</i> | <i>dBμV</i> | | <i>dB/m</i> | <i>dBμV/m</i> | | <i>dBμV/m</i> | | <i>dB</i> |
| 1601.64 | 1.00 | 211 | 39.50 | 38.00 | 14.93 | 54.43 | 52.30 | 73.96 | 53.96 | -1.66 |
| 4805.00 | 1.00 | 320 | 44.36 | --- | 3.93 | 48.29 | --- | 73.96 | 53.96 | -5.67 |
| 12012.71 | 1.00 | 209 | 35.09 | --- | 10.69 | 45.78 | --- | 73.96 | 53.96 | -8.18 |
| 19214.79 | 1.00 | 274 | 47.16 | --- | 1.60 | 48.76 | --- | 73.96 | 53.96 | -5.20 |
| 21619.58 | 1.00 | 41 | 45.61 | --- | 2.79 | 48.40 | --- | 73.96 | 53.96 | -5.56 |
| 24020.83 | 1.00 | 319 | 46.22 | --- | 3.14 | 49.36 | --- | 73.96 | 53.96 | -4.60 |

Test mode: BT CH01 for 1GHz to 25GHz [Vertical]

| Frequency | Ant. H. | Table | Amplitude | | Correction Factor | Corrected Amplitude | | Limit | | Margin |
|------------------|--------------------|---------------|--------------------|-------|------------------------------|--------------------------------|-------|--------------------|-------|---------------|
| | | | <i>Peak / Ave.</i> | | | <i>Peak / Ave.</i> | | <i>Peak / Ave.</i> | | |
| <i>MHz</i> | <i>m</i> | <i>degree</i> | <i>dBμV</i> | | <i>dB/m</i> | <i>dBμV/m</i> | | <i>dBμV/m</i> | | <i>dB</i> |
| 1601.64 | 1.00 | 191 | 40.13 | 38.33 | 14.30 | 54.43 | 52.63 | 73.96 | 53.96 | -1.33 |
| 4805.00 | 1.00 | 349 | 47.10 | --- | 3.69 | 50.79 | --- | 73.96 | 53.96 | -3.17 |
| 9608.12 | 1.00 | 32 | 35.44 | --- | 11.47 | 46.91 | --- | 73.96 | 53.96 | -7.05 |
| 19214.79 | 1.00 | 290 | 47.12 | --- | 1.60 | 48.72 | --- | 73.96 | 53.96 | -5.24 |
| 21619.58 | 1.00 | 47 | 45.86 | --- | 2.79 | 48.65 | --- | 73.96 | 53.96 | -5.31 |
| 24020.83 | 1.00 | 329 | 46.10 | --- | 3.14 | 49.24 | --- | 73.96 | 53.96 | -4.72 |

Note:

1. Margin = Corrected - Limit.
2. The EUT utilizes a *permanently attached antenna*. In addition the spurious RF radiated emissions levels do comply with the *20dBc limit* both at its bandedges and other spurious emissions.
3. As stated in Section 15.35(b), for any frequencies above 1000MHz, radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. As the results of our test, the peak amplitudes are already below the FCC limit. Thus the average amplitudes of the rest are omitted.

Test mode: BT CH40 for 30MHz to 1GHz [Horizontal]

| Radiated Emission | | | | Correction Factors | Corrected Amplitude | Class B (3 m) | |
|--------------------------|-------------------------|--------------------|------------------|---------------------------|----------------------------|-----------------------|--------------------|
| Frequency (MHz) | Amplitude (dBμV) | Ant. H. (m) | Table () | | | Limit (dBμV/m) | Margin (dB) |
| 49.40 | 27.22 | 1.00 | 81 | 4.32 | 31.54 | 40.00 | -8.46 |
| 68.80 | 27.21 | 1.00 | 165 | 1.40 | 28.61 | 40.00 | -11.39 |
| 114.87 | 35.63 | 1.00 | 54 | -1.75 | 33.88 | 43.50 | -9.62 |
| 130.64 | 36.61 | 1.00 | 3 | -2.69 | 33.92 | 43.50 | -9.58 |
| 193.69 | 37.10 | 1.00 | 336 | -3.02 | 34.08 | 43.50 | -9.42 |
| 482.26 | 30.92 | 1.00 | 121 | 2.15 | 33.07 | 46.00 | -12.93 |

Test mode: BT CH40 for 30MHz to 1GHz [Vertical]

| Radiated Emission | | | | Correction Factors | Corrected Amplitude | Class B (3 m) | |
|--------------------------|-------------------------|--------------------|------------------|---------------------------|----------------------------|-----------------------|--------------------|
| Frequency (MHz) | Amplitude (dBμV) | Ant. H. (m) | Table () | | | Limit (dBμV/m) | Margin (dB) |
| 31.21 | 27.66 | 1.00 | 41 | 7.54 | 35.20 | 40.00 | -4.80 |
| 51.61 | 19.81 | 1.00 | 214 | 3.98 | 23.79 | 40.00 | -16.21 |
| 53.04 | 34.08 | 1.00 | 92 | 3.63 | 37.71 | 40.00 | -2.29 |
| 55.46 | 31.25 | 1.00 | 194 | 3.04 | 34.29 | 40.00 | -5.71 |
| 129.43 | 34.37 | 1.00 | 268 | -2.61 | 31.76 | 43.50 | -11.74 |
| 190.05 | 34.03 | 1.00 | 0 | -3.15 | 30.88 | 43.50 | -12.62 |

Test mode: BT CH40 for 1GHz to 25GHz [Horizontal]

| Frequency | Ant. H. | Table | Amplitude | | Correction Factor | Corrected Amplitude | | Limit | | Margin |
|-----------|------------|--------|-------------|-------|----------------------|------------------------|-------|-------------|-------|--------|
| | | | Peak / Ave. | | | Peak / Ave. | | Peak / Ave. | | |
| MHz | m | degree | dBμV | | dB/m | dBμV/m | | dBμV/m | | dB |
| 1627.64 | 1.00 | 169 | 40.44 | 38.98 | 13.90 | 54.34 | 52.88 | 73.96 | 53.96 | -1.08 |
| 4883.54 | 1.00 | 255 | 45.00 | --- | 3.99 | 48.99 | --- | 73.96 | 53.96 | -4.97 |
| 12206.04 | 1.00 | 185 | 37.86 | --- | 9.79 | 47.65 | --- | 73.96 | 53.96 | -6.31 |
| 19526.46 | 1.00 | 322 | 46.39 | --- | 1.70 | 48.09 | --- | 73.96 | 53.96 | -5.87 |
| 21970.21 | 1.00 | 208 | 45.79 | --- | 2.95 | 48.74 | --- | 73.96 | 53.96 | -5.22 |
| 24410.42 | 1.00 | 114 | 46.04 | --- | 3.10 | 49.14 | --- | 73.96 | 53.96 | -4.82 |

Test mode: BT CH40 for 1GHz to 25GHz [Vertical]

| Frequency | Ant. H. | Table | Amplitude | | Correction Factor | Corrected Amplitude | | Limit | | Margin |
|-----------|------------|--------|-------------|-------|----------------------|------------------------|-------|-------------|-------|--------|
| | | | Peak / Ave. | | | Peak / Ave. | | Peak / Ave. | | |
| MHz | m | degree | dBμV | | dB/m | dBμV/m | | dBμV/m | | dB |
| 1627.65 | 1.00 | 172 | 40.74 | 38.96 | 13.90 | 54.64 | 52.86 | 73.96 | 53.96 | -1.10 |
| 4883.54 | 1.00 | 266 | 44.57 | --- | 3.99 | 48.56 | --- | 73.96 | 53.96 | -5.40 |
| 12206.04 | 1.00 | 184 | 37.84 | --- | 9.79 | 47.63 | --- | 73.96 | 53.96 | -6.33 |
| 19526.46 | 1.00 | 321 | 45.96 | --- | 1.70 | 47.66 | --- | 73.96 | 53.96 | -6.30 |
| 21970.21 | 1.00 | 195 | 45.75 | --- | 2.95 | 48.70 | --- | 73.96 | 53.96 | -5.26 |
| 24410.42 | 1.00 | 127 | 46.30 | --- | 3.10 | 49.40 | --- | 73.96 | 53.96 | -4.56 |

Test mode: BT CH79 for 30MHz to 1GHz [Horizontal]

| Radiated Emission | | | | Correction Factors | Corrected Amplitude | Class B (3 m) | |
|--------------------------|-------------------------|--------------------|------------------|---------------------------|----------------------------|------------------------|--------------------|
| Frequency (MHz) | Amplitude (dBμV) | Ant. H. (m) | Table () | | | Limit (dBμV/m) | Margin (dB) |
| 66.37 | 26.92 | 1.00 | 172 | 1.55 | 28.47 | 40.00 | -11.53 |
| 114.87 | 34.86 | 1.00 | 64 | -1.75 | 33.11 | 43.50 | -10.39 |
| 130.64 | 39.73 | 1.89 | 64 | -2.69 | 37.04 | 43.50 | -6.46 |
| 194.90 | 36.46 | 1.00 | 357 | -2.98 | 33.48 | 43.50 | -10.02 |
| 211.87 | 34.71 | 1.00 | 64 | -2.81 | 31.90 | 43.50 | -11.60 |
| 327.06 | 35.02 | 1.00 | 128 | -2.56 | 32.46 | 46.00 | -13.54 |

Test mode: BT CH79 for 30MHz to 1GHz [Vertical]

| Radiated Emission | | | | Correction Factors | Corrected Amplitude | Class B (3 m) | |
|--------------------------|-------------------------|--------------------|------------------|---------------------------|----------------------------|------------------------|--------------------|
| Frequency (MHz) | Amplitude (dBμV) | Ant. H. (m) | Table () | | | Limit (dBμV/m) | Margin (dB) |
| 32.42 | 28.47 | 1.00 | 170 | 6.94 | 35.41 | 40.00 | -4.59 |
| 45.76 | 34.47 | 1.00 | 147 | 4.01 | 38.48 | 40.00 | -1.52 |
| 50.86 | 19.71 | 1.00 | 178 | 4.16 | 23.87 | 40.00 | -16.13 |
| 125.79 | 32.48 | 1.00 | 143 | -2.40 | 30.08 | 43.50 | -13.42 |
| 182.77 | 31.90 | 1.00 | 50 | -3.40 | 28.50 | 43.50 | -15.00 |
| 194.90 | 34.04 | 1.00 | 348 | -2.98 | 31.06 | 43.50 | -12.44 |

Test mode: BT CH79 for 1GHz to 25GHz [Horizontal]

| Frequency | Ant. H. | Table | Amplitude | | Correction | Corrected Amplitude | | Limit | | Margin |
|-----------|------------|--------|-------------|-----|------------|---------------------|-----|-------------|-------|--------|
| | | | Peak / Ave. | | | Peak / Ave. | | Peak / Ave. | | |
| MHz | m | degree | dBμV | | dB/m | dBμV/m | | dBμV/m | | dB |
| 1666.67 | 1.00 | 271 | 38.17 | --- | 13.29 | 51.46 | --- | 73.96 | 53.96 | -2.50 |
| 2352.08 | 1.00 | 208 | 37.16 | --- | 9.08 | 46.24 | --- | 73.96 | 53.96 | -7.72 |
| 9922.29 | 1.00 | 141 | 34.61 | --- | 11.66 | 46.27 | --- | 73.96 | 53.96 | -7.69 |
| 19799.17 | 1.00 | 343 | 46.91 | --- | 1.90 | 48.81 | --- | 73.96 | 53.96 | -5.15 |
| 22320.83 | 1.00 | 72 | 45.27 | --- | 3.33 | 48.60 | --- | 73.96 | 53.96 | -5.36 |
| 24800.00 | 1.00 | 40 | 47.18 | --- | 2.22 | 49.40 | --- | 73.96 | 53.96 | -4.56 |

Test mode: BT CH79 for 1GHz to 25GHz [Vertical]

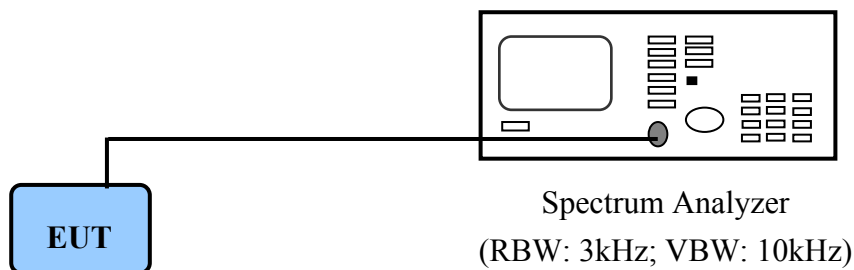
| Frequency | Ant. H. | Table | Amplitude | | Correction | Corrected Amplitude | | Limit | | Margin |
|-----------|------------|--------|-------------|-----|------------|---------------------|-----|-------------|-------|--------|
| | | | Peak / Ave. | | | Peak / Ave. | | Peak / Ave. | | |
| MHz | m | degree | dBμV | | dB/m | dBμV/m | | dBμV/m | | dB |
| 1656.25 | 1.00 | 226 | 37.84 | --- | 13.45 | 51.29 | --- | 73.96 | 53.96 | -2.67 |
| 2177.08 | 1.00 | 317 | 38.16 | --- | 8.59 | 46.75 | --- | 73.96 | 53.96 | -7.21 |
| 9922.29 | 1.00 | 10 | 34.94 | --- | 11.66 | 46.60 | --- | 73.96 | 53.96 | -7.36 |
| 19799.17 | 1.00 | 332 | 46.58 | --- | 1.90 | 48.48 | --- | 73.96 | 53.96 | -5.48 |
| 22320.83 | 1.00 | 72 | 45.39 | --- | 3.33 | 48.72 | --- | 73.96 | 53.96 | -5.24 |
| 24800.00 | 1.00 | 41 | 46.71 | --- | 2.22 | 48.93 | --- | 73.96 | 53.96 | -5.03 |

XII. Section 15.247(d): Power Spectral Density

12.1 Test Condition & Setup

The tests below are running with the EUT transmitter set at high power in TDD mode. The EUT is needed to force selection of output power level and channel number. While testing, the EUT was set to transmit continuously and to be tested by the contact manner with the spectrum analyzer.

12.2 Test Instruments Configuration



PC to control the EUT at maximal power output and channel number and set antenna kit

12.3 List of Test Instruments

| | | | | <u>Calibration Date</u> |
|-------------------------------|-------------------------|---------------------|--------------------------|--------------------------------|
| <u>Instrument Name</u> | <u>Model No.</u> | <u>Brand</u> | <u>Serial No.</u> | <u>Next time</u> |
| Spectrum Analyzer | MS2665C | ANRITSU | 6200175476 | 03/15/12 |

12.4 Test Result of Power spectral density

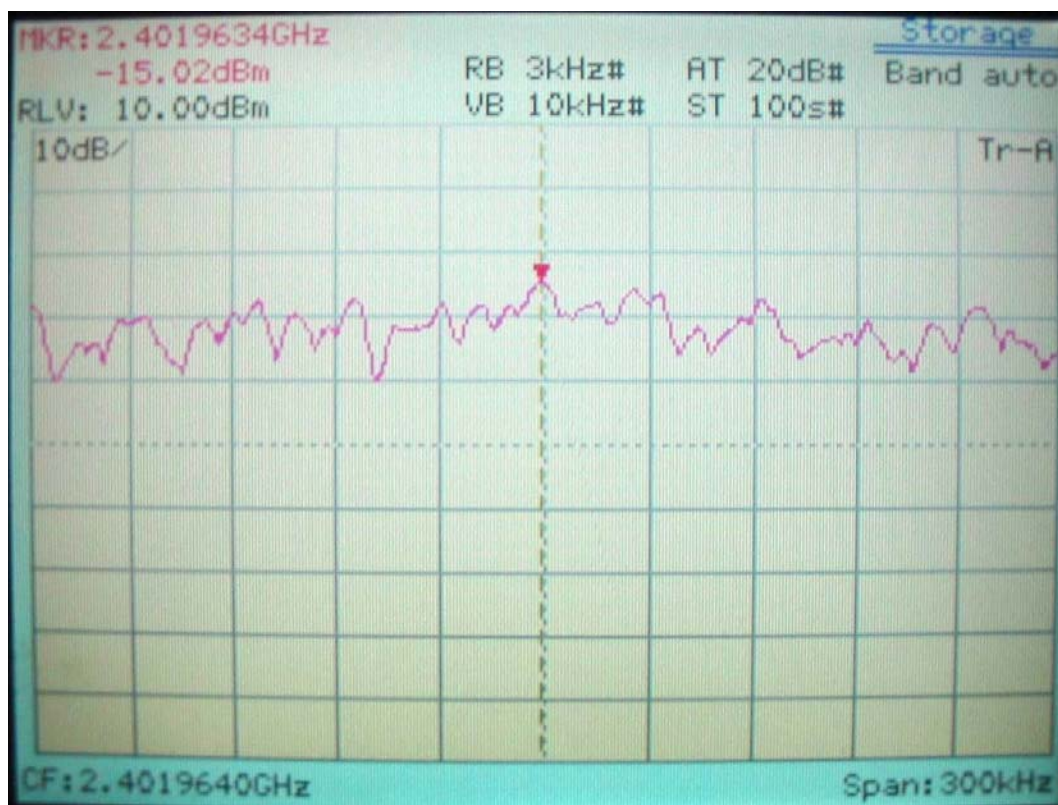
The following table shows a summary of the test results of the Power Spectral Density.

| <i>Channel</i> | <i>Ppr (dBm)</i> | <i>Cable Loss (dB)</i> | <i>Ppq (dBm)</i> | <i>Limit (dB)</i> | <i>Margin (dB)</i> |
|----------------|----------------------|----------------------------|----------------------|-----------------------|------------------------|
| CH 01 | -15.02 | 2.00 | -13.02 | 8.00 | -21.02 |
| CH 40 | -16.02 | 2.00 | -14.02 | 8.00 | -22.02 |
| CH 79 | -17.70 | 2.00 | -15.70 | 8.00 | -23.70 |

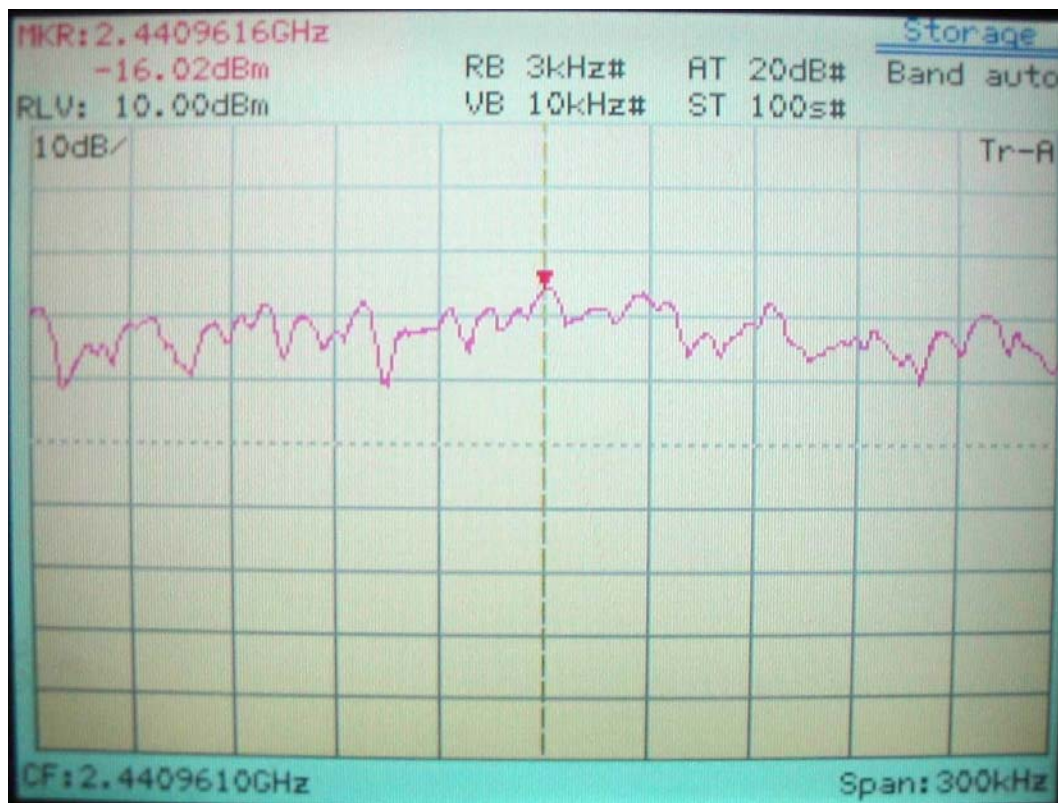
Note:

1. The following pages show the results of spectrum reading.
2. Ppr: spectrum read power density (using peak search mode),
Ppq: actual peak power density in the spread spectrum band.
3. $Ppq = Ppr + |Cable Loss|$

Power Spectral Density for CH01



Power Spectral Density for CH40



Power Spectral Density for CH79

