

***MEASUREMENT REPORT***  
***of***  
***Portable Navigation Device***

**Applicant** : ASUSTek Computer Inc.  
**EUT** : Portable Navigation Device  
**Model** : R600  
**FCC ID** : MSQR600  
**Report No.** : A5415061153

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.



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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, C of the Commission's Rules and Regulations.

### 1.2 Description of EUT

**FCC ID** : MSQR600

**Product Name** : Portable Navigation Device

**Model Name** : R600

**Frequency Range** : 2402MHz to 2480MHz

**Support Channel** : 79 Channels

**Channel Spacing** : 1 MHz

**Modulation Skill** : GFSK,  $\pi/4$ -DQPSK, 8DPSK

**Power Type** : (1) Power adapter  
Manufacture: TPT  
Model: JSP050090UU  
I/P: 100-240VAC, 50/60Hz, 0.3A ;  
O/P: 5VDC, 0.9A, 4.5W  
Power cable:  
155cm length, Shielded, without ferrite core

(2) Car charger by vehicle battery  
I/P: 12/24VAC  
O/P: 5VDC, 900mA  
210cm length, non-shielded, without ferrite core

### **1.3 Test method**

**A) EUT connected to Vehicle Battery by Car charger:**

- (1) The POWER jack (Mini USB) of EUT is connected with Vehicle Battery via a Car charger.
- (2) The HEADPHONE jack of EUT is connected with the earphone.

**B) EUT with AC Adaptor (EUT Stand on three orthogonal planes respectively, record worst-case in report):**

- (1) The POWER jack (Mini USB) of EUT is connected with the AC power source via a power adaptor.
- (2) The HEADPHONE jack of EUT is connected with the earphone.

Notes: A modes were pre-tested, the B mode worst case one, was chosen for final test.:

Test setting:

- (1) Using software and hardware provided by the applicant to linking EUT and Bluetooth test set. The software is operated under the Windows to control the EUT in the conducted emission and radiated emission test.
- (2) Set different data rate and channel <CH00/CH39/CH78> being tested and repeat the procedures above.
  - (a) Conducted and radiated test:  
making EUT to the mode of continuous transmission

#### **1.4 Description of Support Equipment**

In order to construct the minimum testing, following equipment were used as the support units.

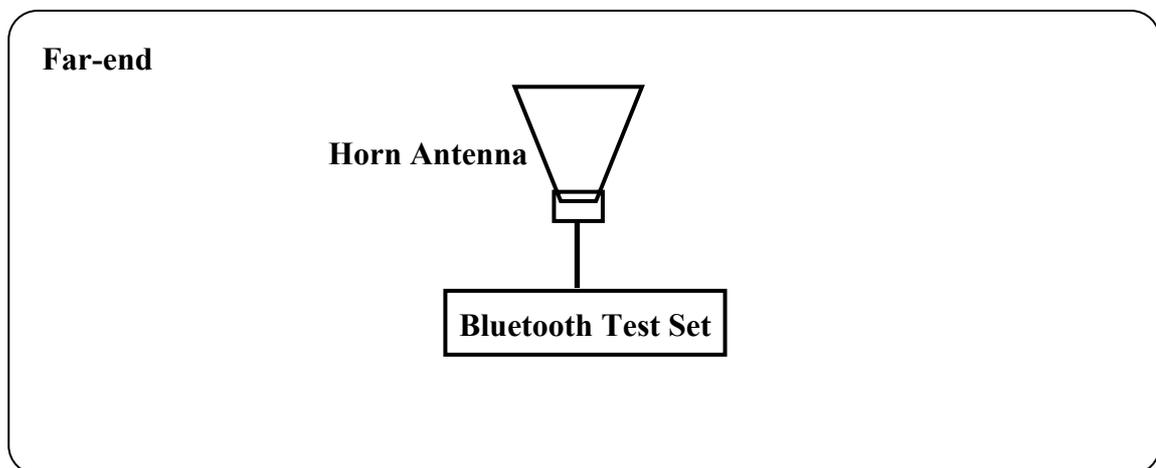
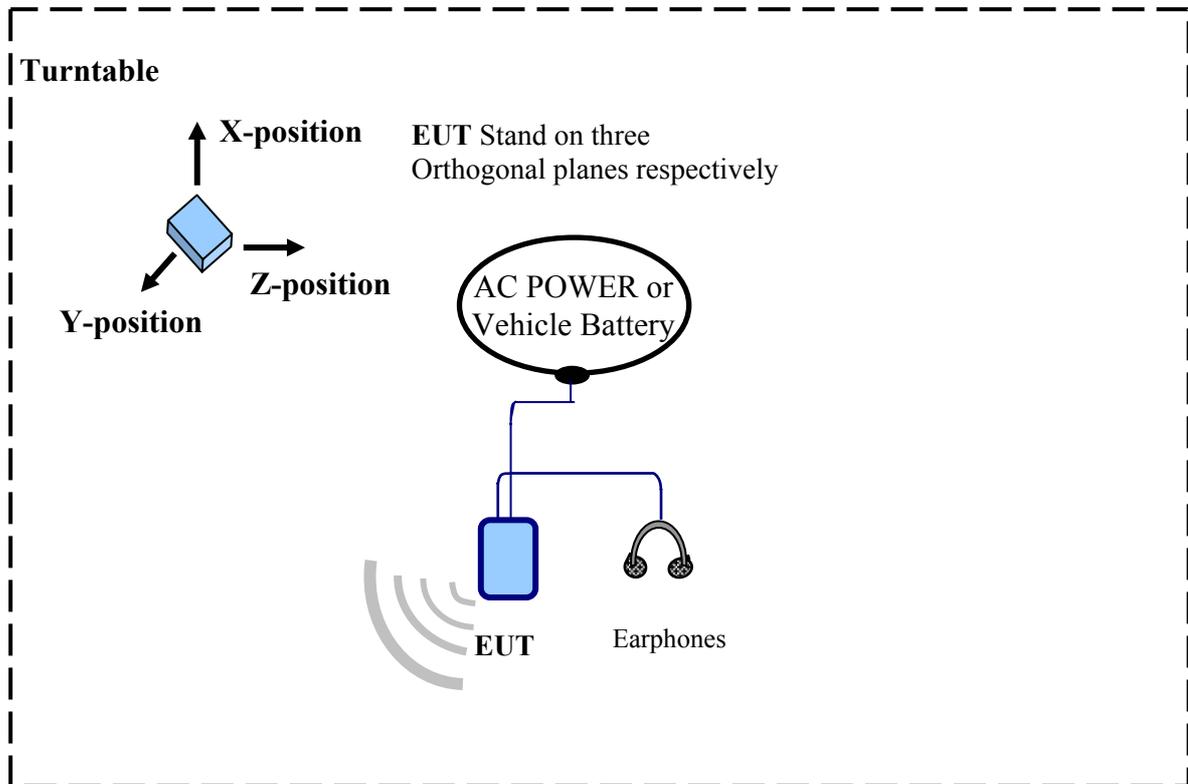
**Earphones** : **PHILIPS**  
Model No : SBC-HE033  
Serial No. : 670904  
Power type : By EUT  
Data Cable : Non-shielded, 1.05 m length, Plastic hood, No ferrite core

**Bluetooth Test Set** : **ANRITSU**  
Model No. : MT8552A  
Serial No. : 6k00001241  
Power type : 120Vac

**Horn Antenna** : **EMCO**  
Model No. : 3115  
Serial No. : 9104-3668

### 1.5 Configuration of System Under Test

#### 1.5.1 Conducted and Radiated



**1.6 Verify the Frequency and Channel**

CH	0	1	2	3	4	5	6	7	8	9
0	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411
1	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421
2	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431
3	2432	2433	2434	2435	2436	2437	2438	2439	2440	2441
4	2442	2443	2444	2445	2446	2447	2448	2449	2450	2451
5	2452	2453	2454	2455	2456	2457	2458	2459	2460	2461
6	2462	2463	2464	2465	2466	2467	2468	2469	2470	2471
7	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 – 00; Middle: Channel – 39; Bottom: Channel – 78.

### 1.7 Test Procedure

All measurements contained in this report were performed mainly according to the techniques described in ANSI C63.4 (1992) 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 (CH00), one in the middle (CH39) and the other in bottom (CH78).

## **II. Section 15.203: Antenna requirement**

The EUT's integral film type inverted F antennas on PCB. In addition, there is no external antenna or external connector employed. The antenna requirement stated in Sect.15.203 is inapplicable to this EUT.

The antenna specification of list as below:

Antenna Type : Film Type Inverted F Antennas  
Antenna Gain : 0dBi (Max.)

### **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 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 150KHz to 30MHz. 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 test method>. Three channels were tested, one in the top (CH00), one in the middle (CH39) and the other in bottom (CH78).

### 3.2 List of Test Instruments

Instrument Name	Model	Brand	Serial No.	<u>Calibration Date</u>
				Next time
EMI Receiver	8546A	HP	3520A00242	09/06/07
RF Filter Section	85460A	HP	3448A00217	09/06/07
LISN (EUT)	LISN-01	TRC	99-05	05/10/08
LISN (Support E.)	LISN-01	TRC	9912-03, 04	06/22/08
Pre-amplifier	15542 ZFL-500	Mini – Circuits	0 0117	04/10/08
6dB Attenuator	MCL BW-S6W2	Mini – Circuits	9915 – Conducted	04/10/08
10dB Attenuator	A5542 VAT010	Mini – Circuits	0215 – Conducted	04/10/08
Coaxial Cable (2 meter)	A30A30-0058-50FS-2M	Jyebao	SMA-08	04/10/08
Coaxial Cable (1.1 meter)	A30A30-0058-50FS-1M	Jyebao	SMA-09	04/10/08
Coaxial Cable (20 meter)	RG-214/U	Jyebao	NP-01	04/10/08
Coaxial Cable (20 meter)	RG-214/U	Jyebao	NP-02	04/10/08
Auto Switch Box (< 30MHz)	ASB-01	TRC	9904-01	04/10/08

### 3.3 Test Results of 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. The test data only recorded worst case in report.

Test Conditions: Temperature : 25.0 °C Humidity : 73.0 % RH

*Test Mode: Standby mode*

<i>Power Connected Emissions</i>					<i>FCC 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	180.000	51.33	---	---	65.14	55.14	-3.81
	240.000	46.56	---	---	63.43	53.43	-6.87
	305.000	48.34	---	---	61.57	51.57	-3.23
	365.235	49.86	44.76	32.88	59.83	49.83	-15.07
	421.000	44.88	---	---	58.26	48.26	-3.38
	724.000	42.85	---	---	56.00	46.00	-3.15
	2051.000	38.90	---	---	56.00	46.00	-7.10
	2532.000	37.93	---	---	56.00	46.00	-8.07
	4406.000	39.00	---	---	56.00	46.00	-7.00
Line 2	180.000	49.67	---	---	65.14	55.14	-5.47
	243.000	45.00	---	---	63.34	53.34	-8.34
	300.000	42.40	---	---	61.71	51.71	-9.31
	366.000	41.53	---	---	59.83	49.83	-8.30
	633.000	34.20	---	---	56.00	46.00	-11.80
	963.000	32.40	---	---	56.00	46.00	-13.60
	1566.000	31.06	---	---	56.00	46.00	-14.94
	2158.000	31.12	---	---	56.00	46.00	-14.88
	4406.000	31.71	---	---	56.00	46.00	-14.29

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 CH00**

<b>Power Connected Emissions</b>					<b>FCC Class B</b>		
<b>Conductor</b>	<b>Frequency (KHz)</b>	<b>Peak (dBµV)</b>	<b>QP (dBµV)</b>	<b>Average (dBµV)</b>	<b>QP-limit (dBµV)</b>	<b>AVG-limit (dBµV)</b>	<b>Margin (dB)</b>
Line 1	190.650	68.62	35.89	24.40	65.06	55.06	-29.17
	302.000	46.81	---	---	61.66	51.66	-4.85
	365.145	50.29	47.73	37.01	59.83	49.83	-12.10
	485.855	44.60	38.91	30.37	56.43	46.43	-16.06
	724.000	42.76	---	---	56.00	46.00	-3.24
	972.000	40.97	---	---	56.00	46.00	-5.03
	2051.000	39.06	---	---	56.00	46.00	-6.94
	3253.000	40.29	---	---	56.00	46.00	-5.71
	4288.000	39.35	---	---	56.00	46.00	-6.65
Line 2	183.000	50.43	---	---	65.06	55.06	-4.63
	243.000	45.71	---	---	63.34	53.34	-7.63
	305.000	43.19	---	---	61.57	51.57	-8.38
	366.000	41.32	---	---	59.83	49.83	-8.51
	547.000	35.25	---	---	56.00	46.00	-10.75
	945.000	33.12	---	---	56.00	46.00	-12.88
	1256.000	33.46	---	---	56.00	46.00	-12.54
	1566.000	33.98	---	---	56.00	46.00	-12.02
	23350.000	36.70	---	---	60.00	50.00	-13.30

**Test Mode: BT CH39**

<i>Power Connected Emissions</i>					<i>FCC 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	179.000	51.88	---	---	65.17	55.17	-3.29
	240.000	47.43	---	---	63.43	53.43	-6.00
	363.810	50.55	47.65	37.27	59.91	49.91	-12.26
	545.560	42.82	40.77	33.59	56.00	46.00	-12.41
	667.985	43.46	41.58	32.88	56.00	46.00	-13.12
	1017.000	41.16	---	---	56.00	46.00	-4.84
	2012.000	40.22	---	---	56.00	46.00	-5.78
	2415.000	39.70	---	---	56.00	46.00	-6.30
	4406.000	40.77	---	---	56.00	46.00	-5.23
Line 2	180.000	50.80	---	---	65.14	55.14	-4.34
	240.000	45.98	---	---	63.43	53.43	-7.45
	300.000	44.23	---	---	61.71	51.71	-7.48
	421.000	36.99	---	---	58.26	48.26	-11.27
	662.000	35.15	---	---	56.00	46.00	-10.85
	1091.000	33.32	---	---	56.00	46.00	-12.68
	1582.000	32.16	---	---	56.00	46.00	-13.84
	4571.000	33.47	---	---	56.00	46.00	-12.53
	23470.000	38.20	---	---	60.00	50.00	-11.80

**Test Mode: BT CH78**

<i>Power Connected Emissions</i>					<i>FCC 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	183.000	50.86	---	---	65.06	55.06	-4.20
	240.000	47.34	---	---	63.43	53.43	-6.09
	364.710	50.41	47.91	37.35	59.91	49.91	-12.00
	666.545	43.62	41.73	33.23	56.00	46.00	-12.77
	1155.000	41.49	---	---	56.00	46.00	-4.51
	1871.000	39.85	---	---	56.00	46.00	-6.15
	2351.000	39.77	---	---	56.00	46.00	-6.23
	3253.000	40.50	---	---	56.00	46.00	-5.50
	4523.000	40.28	---	---	56.00	46.00	-5.72
Line 2	180.000	50.77	---	---	65.14	55.14	-4.37
	238.000	44.31	---	---	63.49	53.49	-9.18
	300.000	43.55	---	---	61.71	51.71	-8.16
	366.000	42.97	---	---	59.83	49.83	-6.86
	604.000	35.26	---	---	56.00	46.00	-10.74
	945.000	33.93	---	---	56.00	46.00	-12.07
	1256.000	33.67	---	---	56.00	46.00	-12.33
	1566.000	31.31	---	---	56.00	46.00	-14.69
	4288.000	33.59	---	---	56.00	46.00	-12.41

#### **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

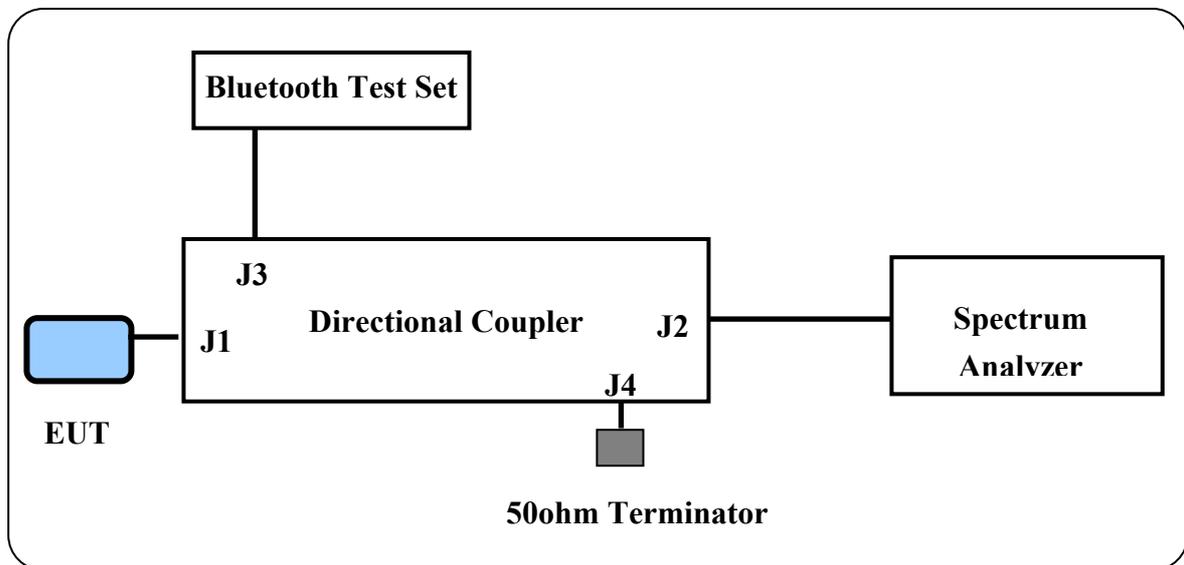
Detector Function = peak

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

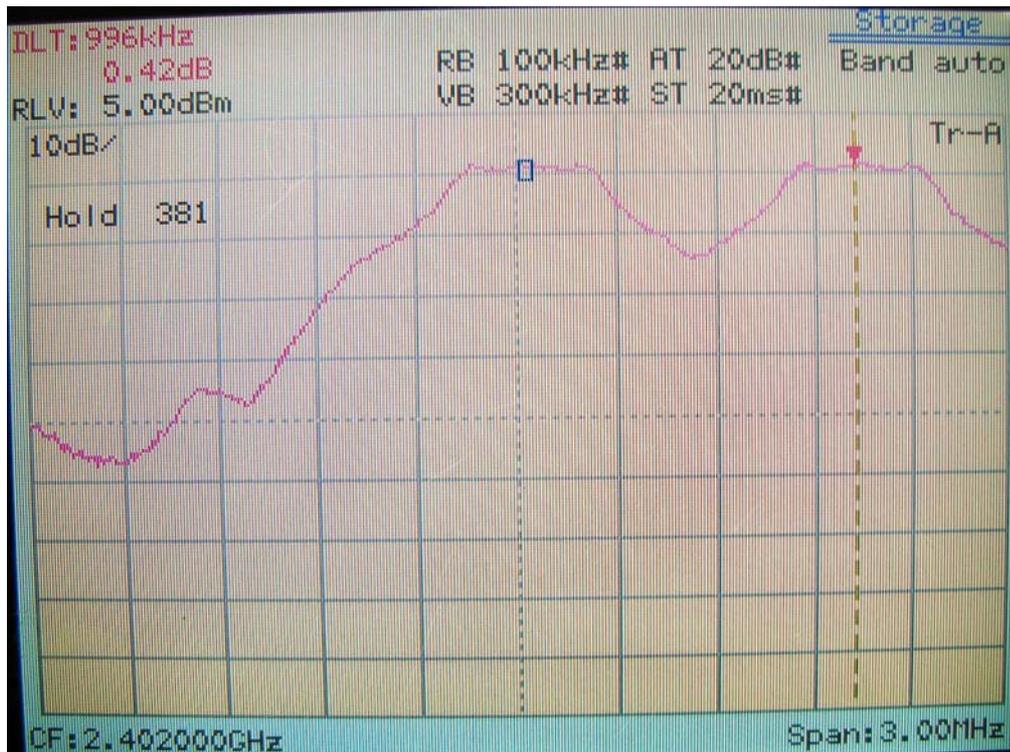
**5.3 List of Test Instruments**

Instrument Name	Model No.	Brand	Serial No.	Next time
Spectrum Analyzer	MS2665C	ANRITSU	6200175476	12/11/07
Bluetooth Test Set	MT8852A	ANRITSU	6k00001241	N/A
Directional Coupler	DC7144	A.R.	N/A	07/01/08

**5.4 Test Results**

Channel	Bluetooth
00	996 kHz
39	996 kHz
78	990 kHz

Carrier Frequency Separation for CH00



Carrier Frequency Separation for CH39



Carrier Frequency Separation for CH78



## 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

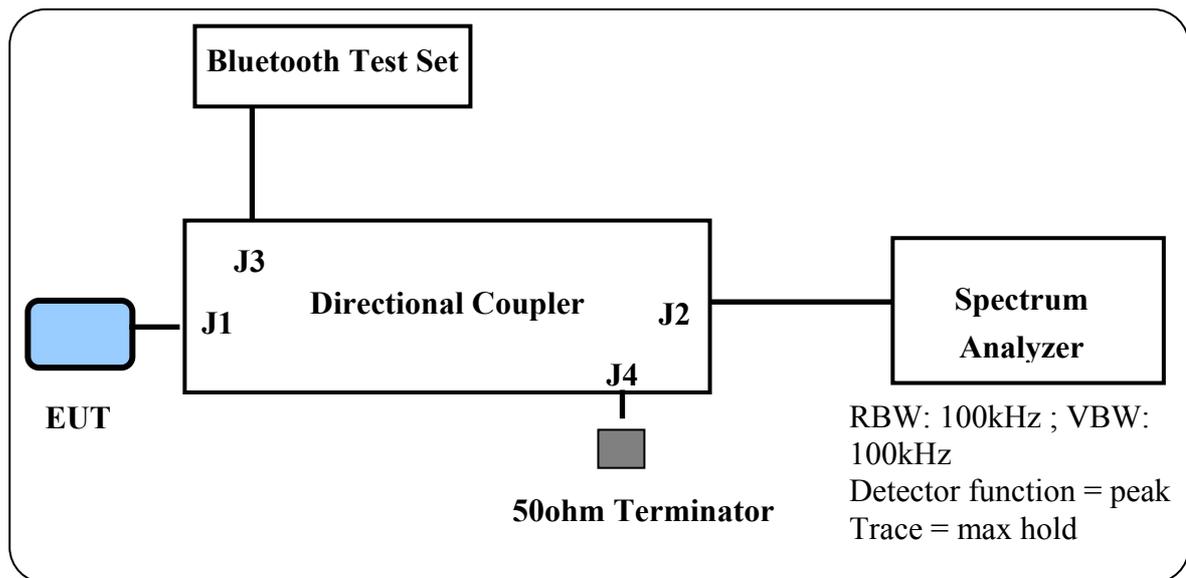
Trace = max hold

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. Submit this plots.

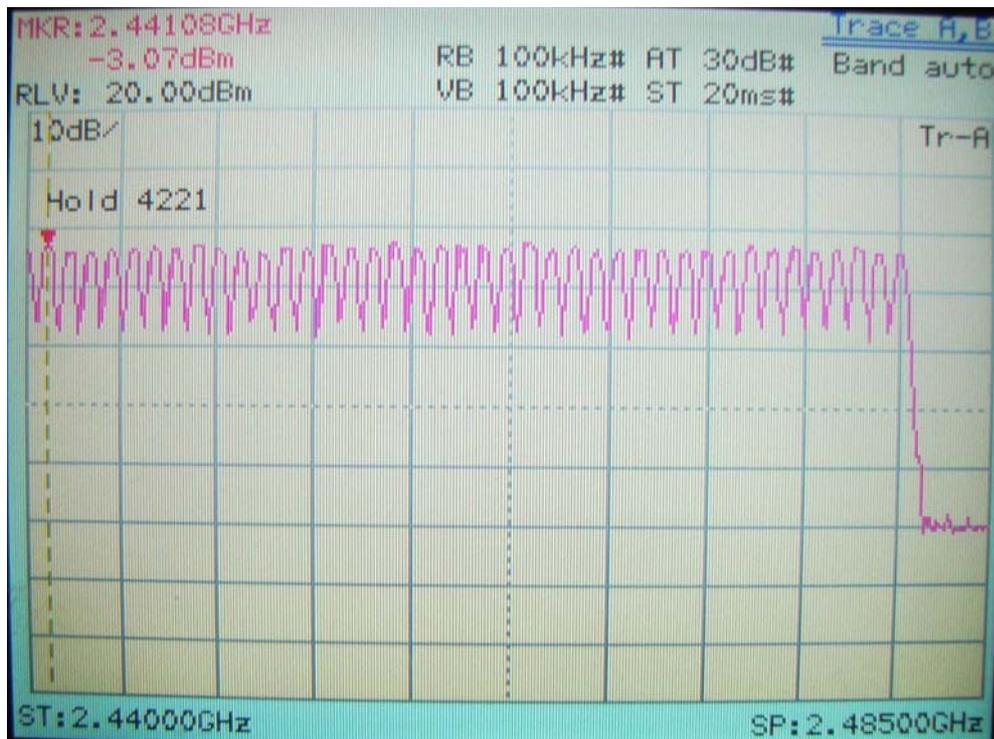
### 6.2 List of Test Instruments

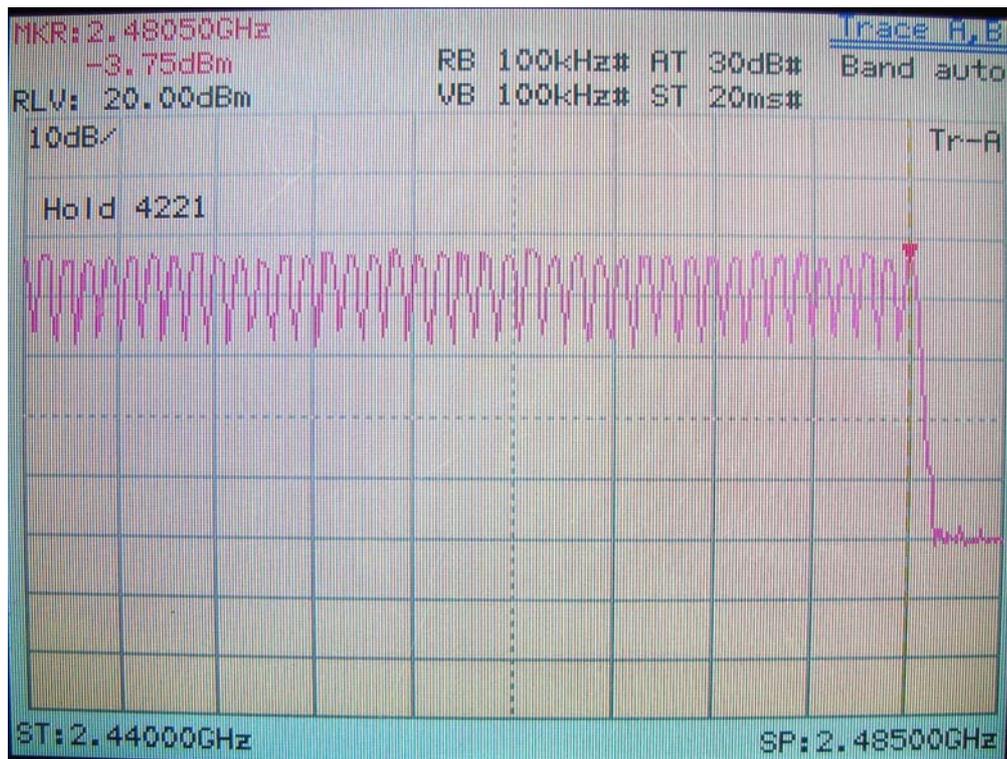
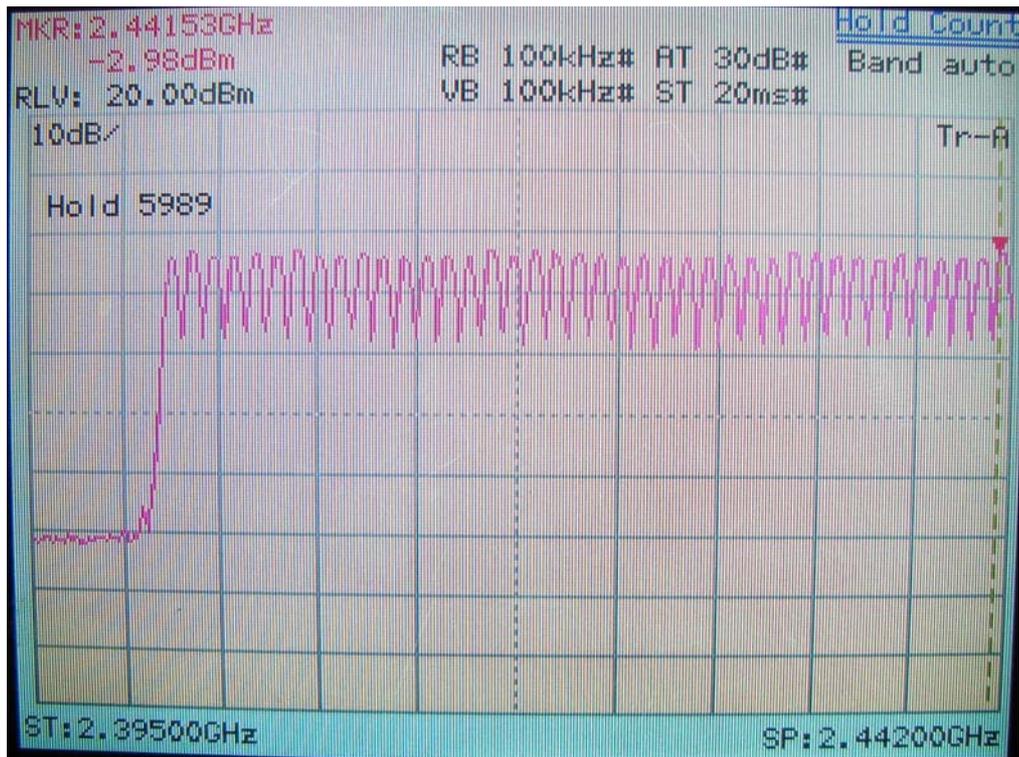
Instrument Name	Model No.	Brand	Serial No.	Next time
Spectrum Analyzer	MS2665C	ANRITSU	6200175476	12/11/07
Bluetooth Test Set	MT8852A	ANRITSU	6k00001241	N/A
Directional Coupler	DC7144	A.R.	N/A	07/01/08

### 6.3 Test Instruments Configuration



### 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

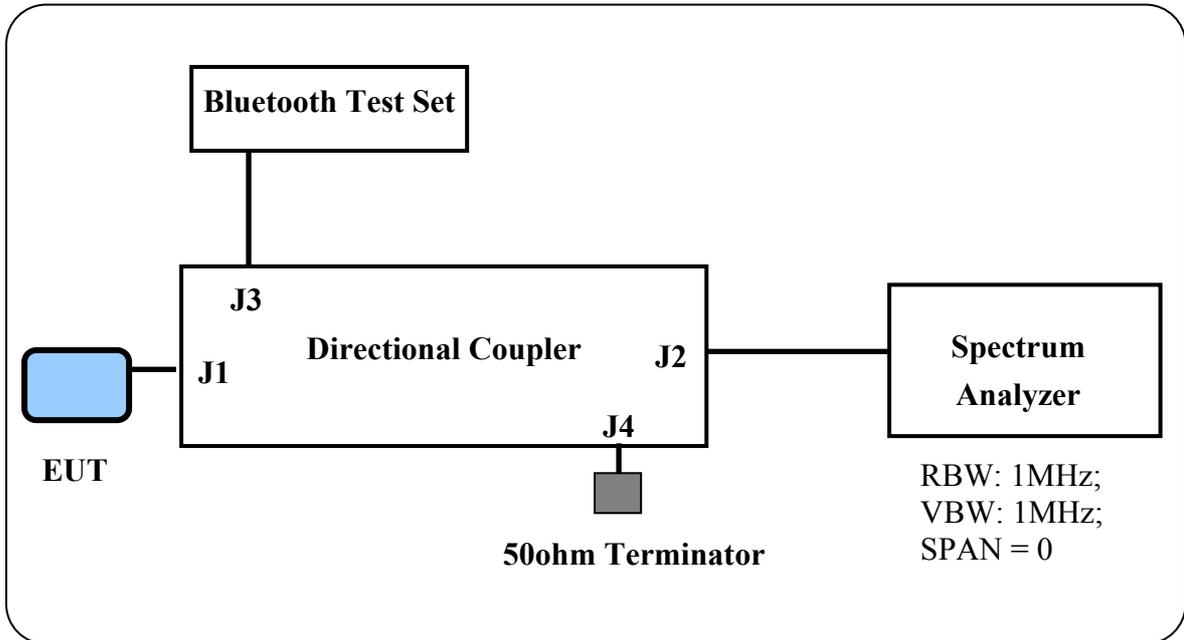
Trace = max hold

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>Instrument Name</u>	<u>Model No</u>	<u>Brand</u>	<u>Serial No.</u>	<u>Next time</u>
Spectrum Analyzer	MS2665C	ANRITSU	6200175476	12/11/07
Bluetooth Test Set	MT8852A	ANRITSU	6k00001241	N/A
Directional Coupler	DC7144	A.R.	N/A	07/01/08

### 7.3 Test Instruments Configuration



### 7.4 Test Results

CH	DH1-Packet (ms)	DH3-Packet (ms)	DH5-Packet (ms)
00	$0.432 \times 31.6 \times 10.12 = 138.15$	$1.700 \times 31.6 \times 5.06 = 271.82$	$2.960 \times 31.6 \times 3.37 = 315.22$
39	$0.436 \times 31.6 \times 10.12 = 139.43$	$1.704 \times 31.6 \times 5.06 = 272.46$	$2.960 \times 31.6 \times 3.37 = 315.22$
78	$0.432 \times 31.6 \times 10.12 = 138.15$	$1.700 \times 31.6 \times 5.06 = 271.82$	$2.960 \times 31.6 \times 3.37 = 315.22$

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

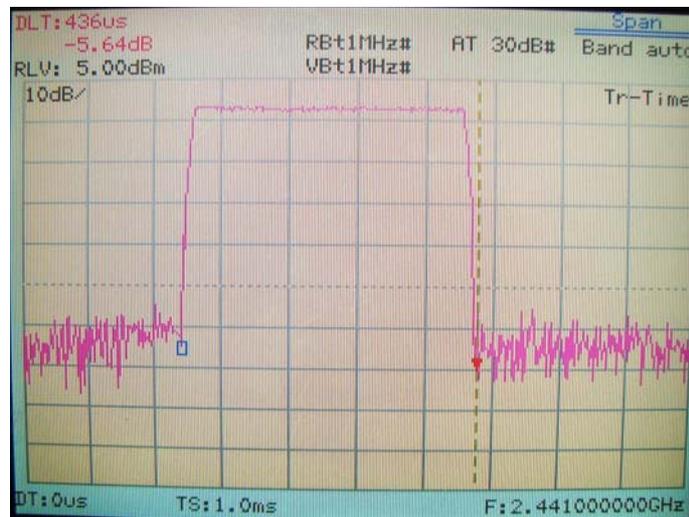
5. Show as following page.

DH1-Packet :

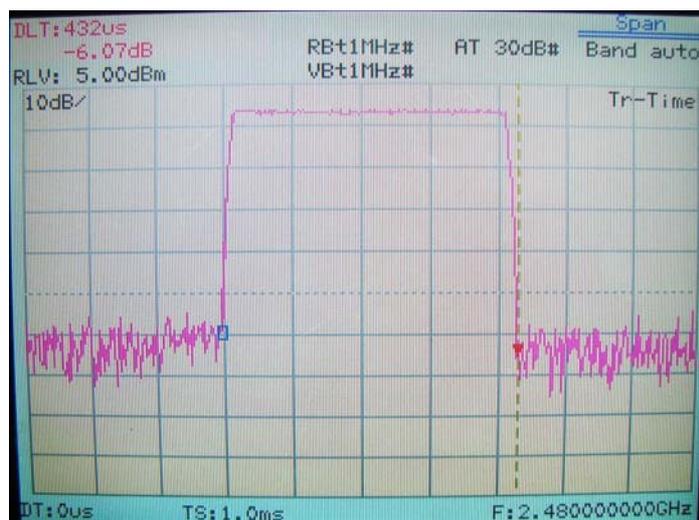
Ch00



Ch39



Ch78

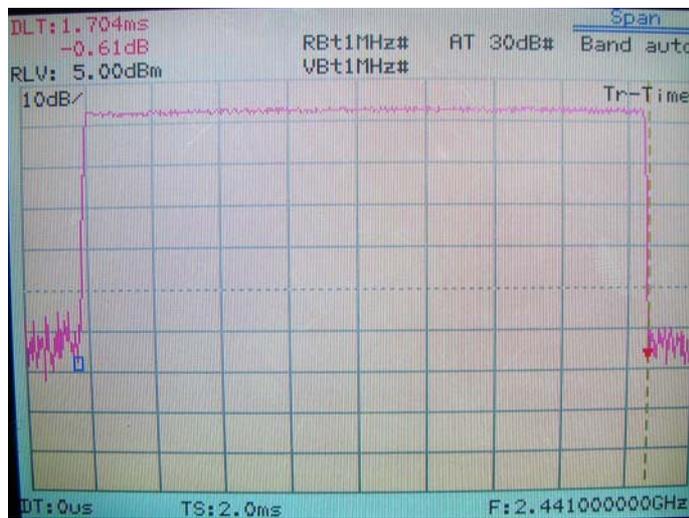


DH3-Packet :

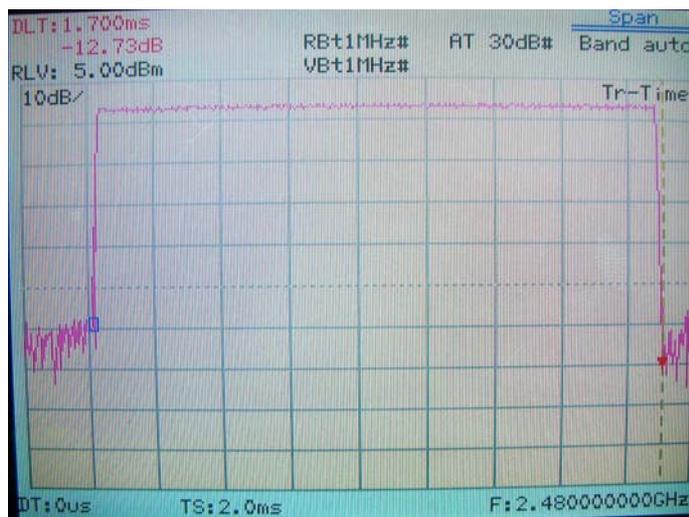
Ch00



Ch39



Ch78

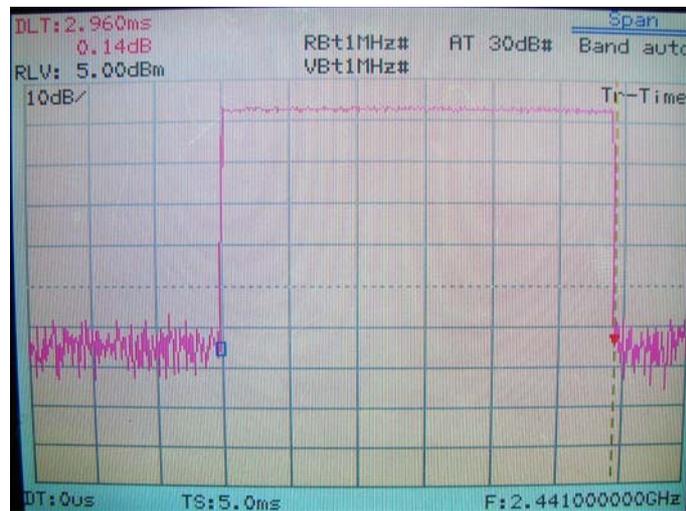


DH5-Packet :

Ch00



Ch39



Ch78



## 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

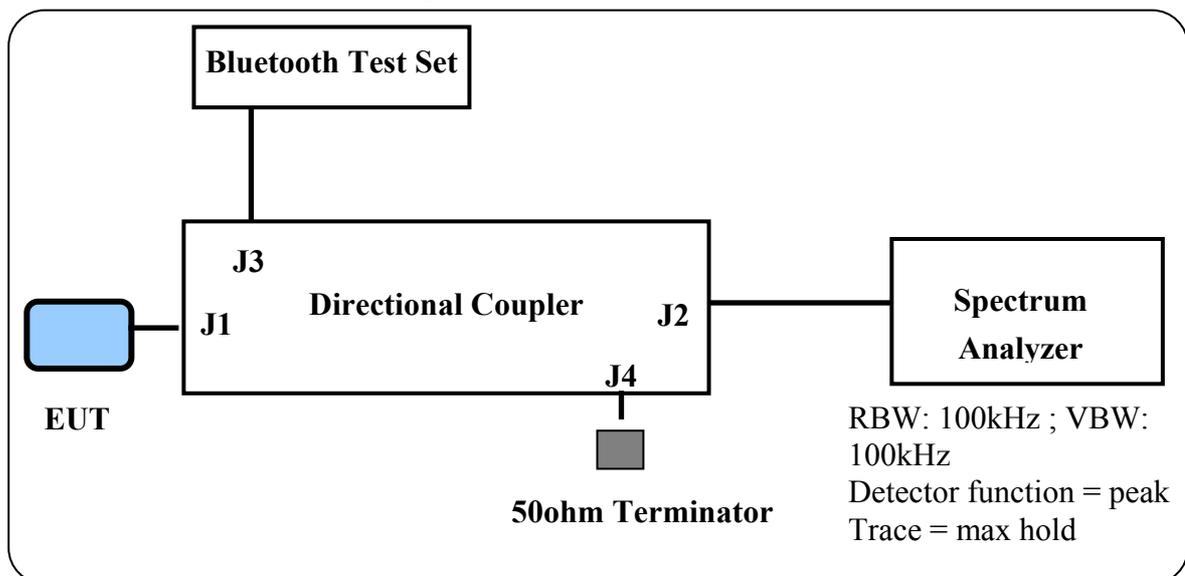
Sweep = auto

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

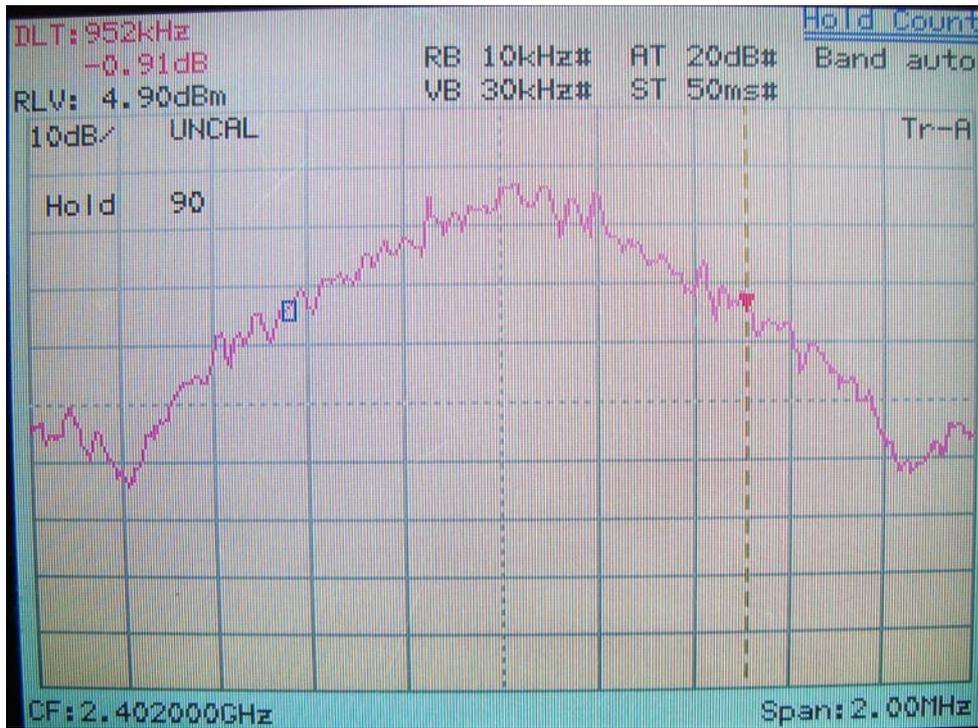
Instrument Name	Model No.	Brand	Serial No.	Next time
Spectrum Analyzer	MS2665C	ANRITSU	6200175476	12/11/07
Bluetooth Test Set	MT8852A	ANRITSU	6k00001241	N/A
Directional Coupler	DC7144	A.R.	N/A	07/01/08

### 8.4 Test Results

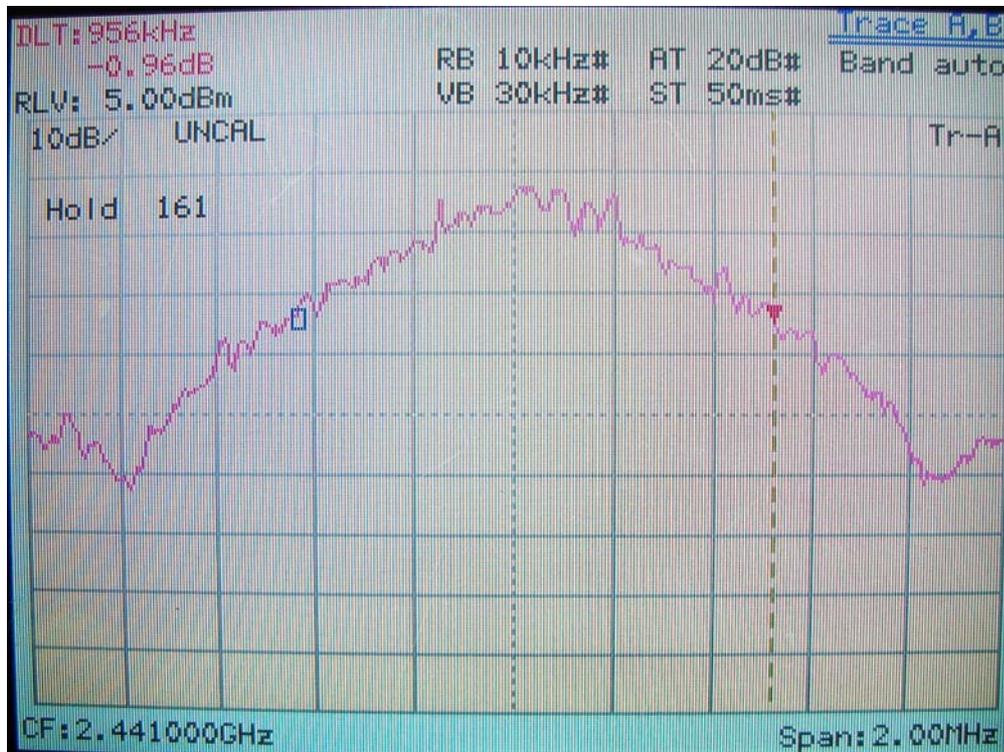
Channel	Bluetooth mode
00	952 kHz
39	956 kHz
78	952 kHz

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

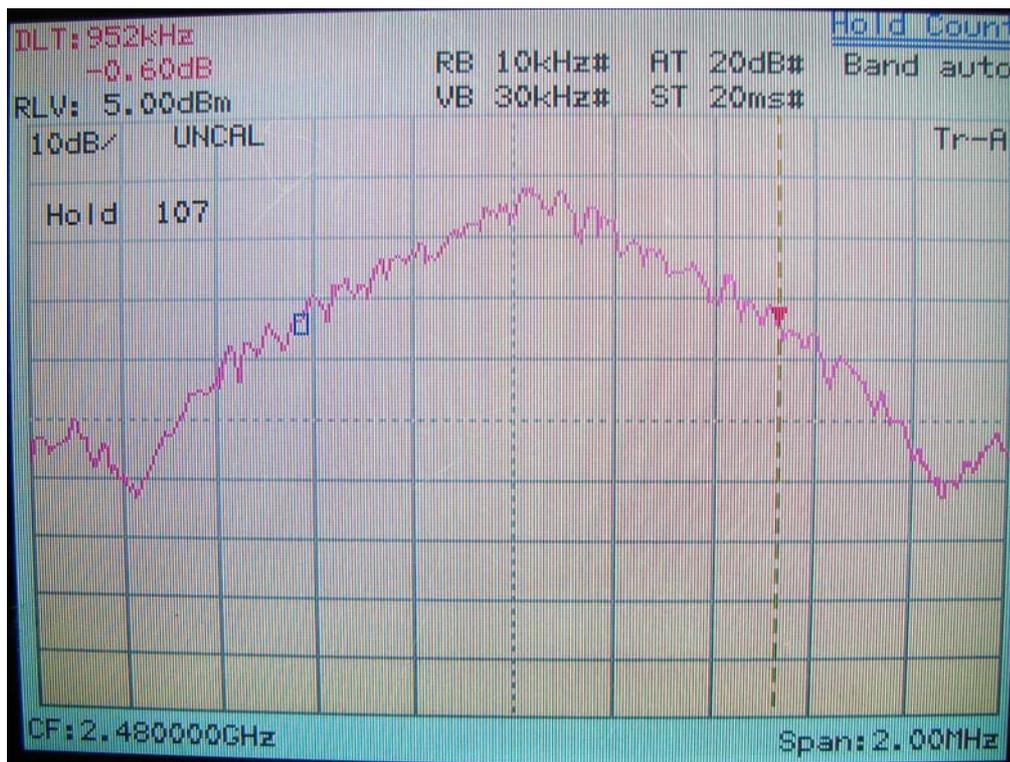
**Bandwidth of Channel 00:**



**Bandwidth of Channel 39:**

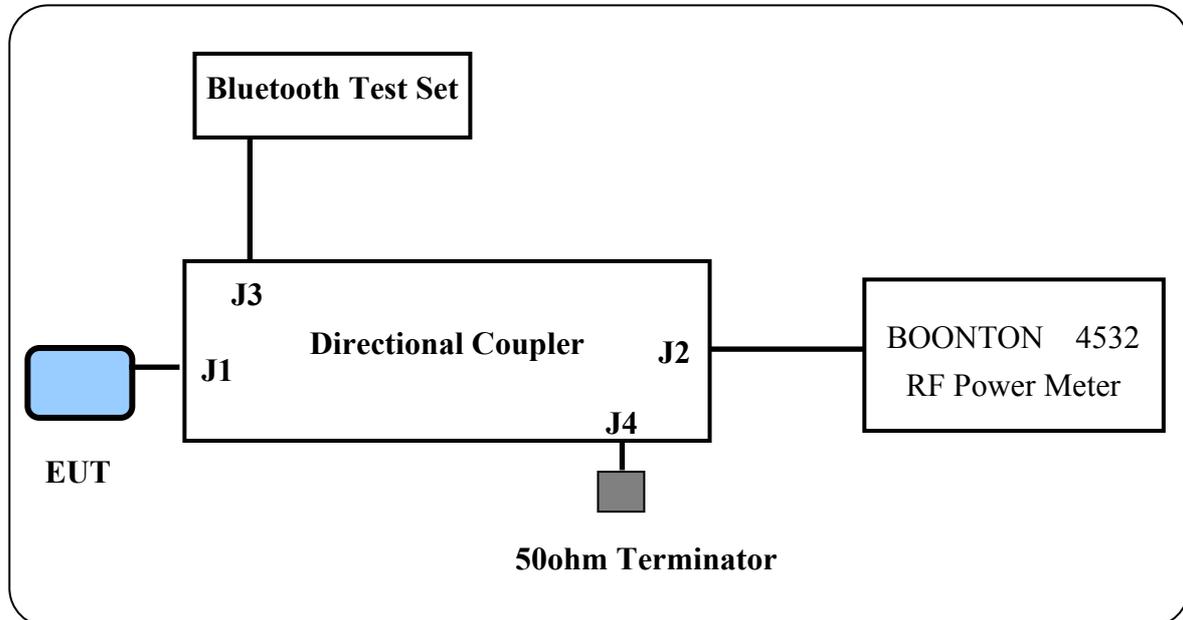


**Bandwidth of Channel 78:**



## 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	Brand	Serial No.	Next time
RF Power Meter	4532	BOONTON	117501	06/11/08
Peak Power Sensor	57340	BOONTON	2698	06/11/08
Bluetooth Test Set	MT8852A	ANRITSU	6k00001241	N/A
Directional Coupler	DC7144	A.R.	N/A	07/01/08

**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	mW
CH00	-1.86	1.40	-0.46	0.899
CH39	-1.06	1.40	0.34	1.081
CH78	-1.02	1.40	0.38	1.091

## X. Section 15.247(c) Band-edge Compliance

### 10.1 Test Condition

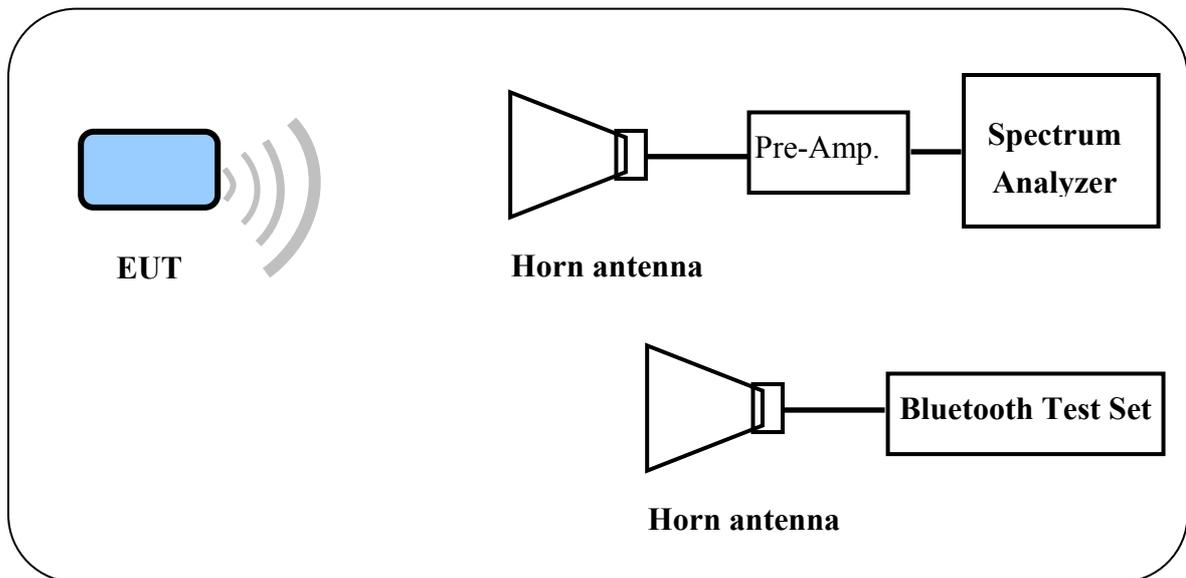
If any 100 kHz bandwidth outside these frequency bands, the radio frequency power that is produced by the modulation products of the spreading sequence, the information sequence and the carrier frequency shall be either *at least 20 dB below that in any 100 kHz bandwidth within the band that contains 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 10<sup>th</sup> 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.	Next time
Spectrum Analyzer	8564E	H P	3720A00840	12/11/07
Spectrum Analyzer	MS2665C	ANRITSU	6200175476	12/11/07
Microwave Preamplifier	84125C	HP	US36433002	11/07/07
Horn Antenna	3115	EMCO	9704 – 5178	02/12/08
Horn Antenna	3115	EMCO	9104 – 3668	02/05/08
Bluetooth Test Set	MT8852A	ANRITSU	6k00001241	N/A
Directional Coupler	DC7144	A.R.	N/A	07/01/08

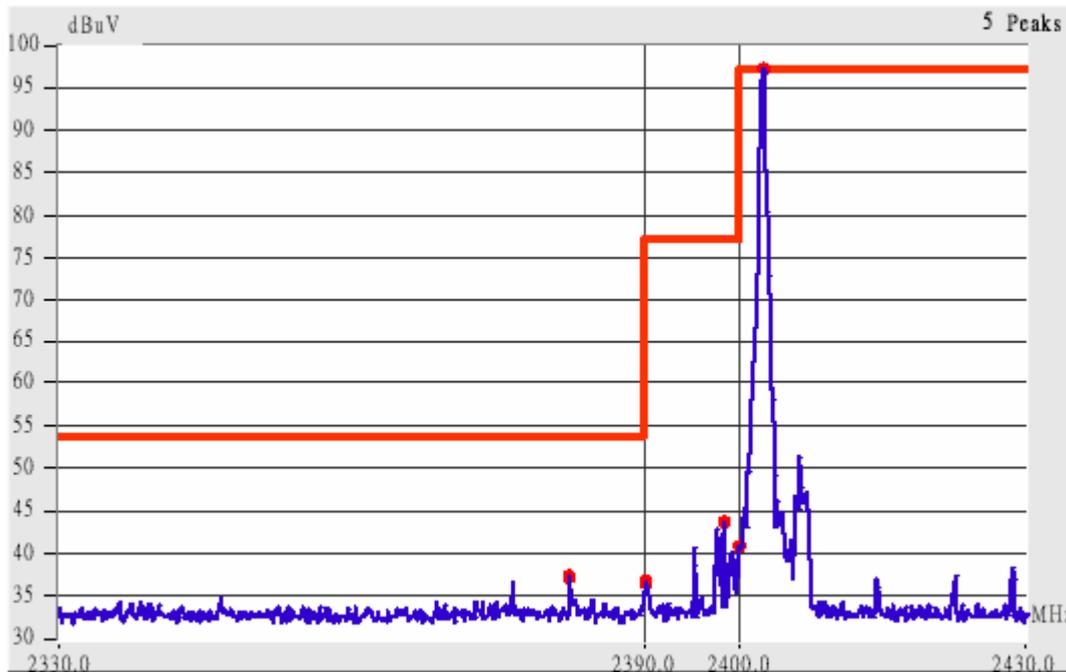
### 10.3 Test Instruments Configuration



### 10.4 Test Result of the Bandedge

The following pages show our observations referring to the channel 00 and 78 respectively.

**Channel 00**

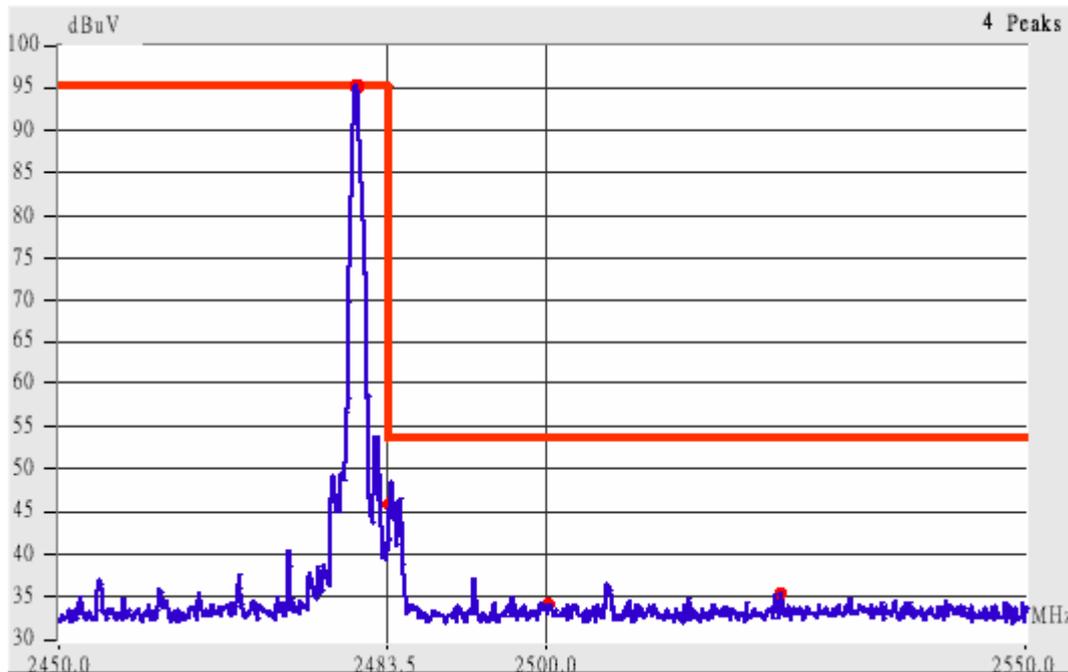


This is the hard copy of our bandedge measurement generated by our bandedge testing program. The plot shown above is the bandedge of channel 00.

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.

<i>Radiated Emission</i>					<i>Corrected Amplitude (dBµV/m)</i>		<i>Class B</i>		
<i>Frequency (MHz)</i>	<i>Ant. P.</i>	<i>Ant. H. (m)</i>	<i>Table ( )</i>	<i>Factors (dB)</i>	<i>Peak</i>	<i>Average</i>	<i>Limit (dBµV/m)</i>		<i>Margin (dB)</i>
							<i>Peak</i>	<i>Ave.</i>	
2370.08	Hor	1.00	41	9.13	43.46	---	74.00	53.96	-10.50
2390.02	Hor	1.00	152	9.18	45.52	---	74.00	53.96	-8.44
2366.89	Ver	1.00	58	9.12	44.12	---	74.00	53.96	-9.84
2390.02	Ver	1.00	291	9.18	42.18	---	74.00	53.96	-11.78

Channel 78



This is the hard copy of our bandedge measurement generated by our bandedge testing program. The plot shown above is the bandedge of channel 78.

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.

<i>Radiated Emission</i>					<i>Corrected Amplitude (dBµV/m)</i>		<i>Class B</i>		
<i>Frequency (MHz)</i>	<i>Ant. P.</i>	<i>Ant. H. (m)</i>	<i>Table ( )</i>	<i>Factors (dB)</i>	<i>Peak</i>	<i>Average</i>	<i>Limit (dBµV/m)</i>		<i>Margin (dB)</i>
							<i>Peak</i>	<i>Ave.</i>	
2483.99	Hor	1.00	204	9.45	53.61	39.78	74.00	53.96	-14.18
2492.25	Hor	1.00	281	9.47	44.13	---	74.00	53.96	-9.83
2500.01	Hor	1.00	201	9.49	43.32	---	74.00	53.96	-10.64
2514.24	Hor	1.00	86	9.52	44.52	---	74.00	53.96	-9.44
2483.50	Ver	1.00	287	9.44	50.28	---	74.00	53.96	-3.68
2493.01	Ver	1.00	348	9.47	44.64	---	74.00	53.96	-9.32
2500.01	Ver	1.00	248	9.49	42.82	---	74.00	53.96	-11.14
2519.67	Ver	1.00	16	9.53	44.53	---	74.00	53.96	-9.43

## 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 - 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 (CH00), one in the middle (CH39) and the other in bottom (CH78). 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 $\mu$ V/m) is determined by algebraically adding the measured reading in dB $\mu$ 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**

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

F<sub>Ia</sub> : Actual Field Intensity

F<sub>Ir</sub> : Reading of the Field Intensity

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

**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<sub>Ia</sub> : Actual Field Intensity

F<sub>Ir</sub> : Reading of the Field Intensity

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

## 11.2 List of Test Instruments

				<u>Calibration Date</u>
Instrument Name	Model	Brand	Serial No.	Next time
EMI Receiver	8546A	HP	3520A00242	09/06/07
RF Filter Section	85460A	HP	3448A00217	09/06/07
Small Biconical Antenna	UBAA9114 & BBVU9135	SCHWARZECK	127	12/07/07
Pre-amplifier	PA1F	TRC	1FAC	04/10/08
Auto Switch Box (>30MHz)	ASB-01	TRC	9904-01	04/10/08
Coaxial Cable (Double shielded, 15 meter)	A30A30-0058-50FS-15M	JYEBAO	SMA-01	04/10/08
Coaxial Cable (1.1 meter)	A30A30-0058-50FS-1M	JYEBAO	SMA-02	04/10/08
Spectrum Analyzer	8564E	HP	3720A00840	12/11/07
Microwave Preamplifier	84125C	HP	US36433002	11/07/07
Horn Antenna	3115	EMCO	9104-3668	02/05/08
Standard Guide Horn Antenna	84125-80008	HP	18-26.5GHz	12/12/07
Standard Guide Horn Antenna	84125-80001	HP	26.5-40GHz	12/12/07
Pre-amplifier	84125C	HP	US36433002	11/07/07
Horn Antenna	1196E (3115)	HP (EMCO)	9704-5178	02/12/08
Pre-amplifier	PA2F	TRC	2F1GZ	04/10/08
Coaxial Cable (3 miter)	A30A30-0058-50FS T118	JYEBAO	MSA-05	04/10/08
Coaxial Cable (1 meter)	A30A30-0058-50FS T118	JYEBAO	MSA-04	04/10/08

### 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 : 25.0 ° C Humidity : 73.0 % RH

*Test mode: Standby for 30MHz to 1GHz [Horizontal]*

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dBμV/m)	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table ( )			Limit (dBμV/m)	Margin (dB)
111.24	32.00	1.00	102	-1.93	30.07	43.50	-13.43
120.94	35.34	1.00	241	-2.45	32.89	43.50	-10.61
179.14	30.40	1.00	63	-3.99	26.41	43.50	-17.09
187.62	30.04	1.00	221	-3.79	26.25	43.50	-17.25
533.19	28.11	1.00	135	3.94	32.05	46.00	-13.95

*Test mode: Standby for 30MHz to 1GHz [Vertical]*

Radiated Emission				Correction Factors (dB)	Corrected Amplitude (dBμV/m)	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table ( )			Limit (dBμV/m)	Margin (dB)
120.94	30.74	1.00	281	-2.45	28.29	43.50	-15.21
159.74	31.87	1.00	320	-4.06	27.81	43.50	-15.69
169.44	33.25	1.00	13	-4.11	29.14	43.50	-14.36
268.86	30.57	1.00	320	-3.91	26.66	46.00	-19.34
533.19	22.23	1.00	104	3.94	26.17	46.00	-19.83

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: Standby for 1GHz to 25GHz [Horizontal]**

<b>Frequency</b>	<b>Ant. H.</b>	<b>Table</b>	<b>Amplitude</b>		<b>Correction Factor</b>	<b>Corrected Amplitude</b>		<b>Limit</b>		<b>Margin</b>
			<b>Peak / Ave.</b>			<b>Peak / Ave.</b>		<b>Peak / Ave.</b>		
<b>MHz</b>	<b>m</b>	<b>degree</b>	<b>dBμV</b>		<b>dB/m</b>	<b>dBμV/m</b>		<b>dBμV/m</b>		<b>dB</b>
9209.58	1.00	102	21.57	---	23.51	45.08	---	73.96	53.96	-8.88
12560.00	1.00	73	24.74	---	20.18	44.92	---	73.96	53.96	-9.04
19636.25	1.00	153	46.92	---	1.71	48.63	---	73.96	53.96	-5.33
22111.87	1.00	77	45.98	---	3.07	49.05	---	73.96	53.96	-4.91
24442.29	1.00	262	47.90	---	2.88	50.78	---	73.96	53.96	-3.18

**Test mode: Standby for 1GHz to 25GHz [Vertical]**

<b>Frequency</b>	<b>Ant. H.</b>	<b>Table</b>	<b>Amplitude</b>		<b>Correction Factor</b>	<b>Corrected Amplitude</b>		<b>Limit</b>		<b>Margin</b>
			<b>Peak / Ave.</b>			<b>Peak / Ave.</b>		<b>Peak / Ave.</b>		
<b>MHz</b>	<b>m</b>	<b>degree</b>	<b>dBμV</b>		<b>dB/m</b>	<b>dBμV/m</b>		<b>dBμV/m</b>		<b>dB</b>
8047.92	1.00	319	22.24	---	22.52	44.76	---	73.96	53.96	-9.20
11773.75	1.00	51	23.57	---	21.39	44.96	---	73.96	53.96	-9.00
19859.37	1.00	167	46.62	---	1.90	48.52	---	73.96	53.96	-5.44
21963.12	1.00	272	46.85	---	2.98	49.83	---	73.96	53.96	-4.13
24382.08	1.00	38	45.89	---	3.29	49.18	---	73.96	53.96	-4.78

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 CH00 for 30MHz to 1GHz [Horizontal]*

<i>Radiated Emission</i>				<i>Correction Factors</i>	<i>Corrected Amplitude</i>	<i>Class B (3 m)</i>	
<i>Frequency (MHz)</i>	<i>Amplitude (dB<math>\mu</math>V)</i>	<i>Ant. H. (m)</i>	<i>Table ( )</i>			<i>Limit (dB<math>\mu</math>V/m)</i>	<i>Margin (dB)</i>
120.94	28.44	1.00	230	-2.45	25.99	43.50	-17.51
186.41	26.78	1.00	79	-3.82	22.96	43.50	-20.54
268.86	28.82	1.00	233	-3.91	24.91	46.00	-21.09
533.19	22.53	1.00	141	3.94	26.47	46.00	-19.53
865.41	20.83	1.00	82	13.85	34.68	46.00	-11.32

*Test mode: BT CH00 for 30MHz to 1GHz [Vertical]*

<i>Radiated Emission</i>				<i>Correction Factors</i>	<i>Corrected Amplitude</i>	<i>Class B (3 m)</i>	
<i>Frequency (MHz)</i>	<i>Amplitude (dB<math>\mu</math>V)</i>	<i>Ant. H. (m)</i>	<i>Table ( )</i>			<i>Limit (dB<math>\mu</math>V/m)</i>	<i>Margin (dB)</i>
111.24	26.09	1.00	213	-1.93	24.16	43.50	-19.34
122.15	29.55	1.00	253	-2.53	27.02	43.50	-16.48
270.07	30.99	1.00	97	-3.91	27.08	46.00	-18.92
290.69	26.87	1.00	107	-3.34	23.53	46.00	-22.47
307.66	26.81	1.00	97	-2.80	24.01	46.00	-21.99
533.19	23.65	1.00	339	3.94	27.59	46.00	-18.41

*Test mode: BT CH00 for 1GHz to 25GHz [Horizontal]*

<i>Frequency</i>	<i>Ant. H.</i>	<i>Table</i>	<i>Amplitude</i>		<i>Correction Factor</i>	<i>Corrected Amplitude</i>		<i>Limit</i>		<i>Margin</i>
			<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>
2479.85	1.00	333	47.83	35.33	9.43	57.26	44.76	73.96	53.96	-9.20
9608.12	1.00	286	35.41	---	11.47	46.88	---	73.96	53.96	-7.08
12012.71	1.00	90	38.30	---	10.01	48.31	---	73.96	53.96	-5.65
19218.33	1.00	247	45.94	---	1.60	47.54	---	73.96	53.96	-6.42
21616.04	1.00	27	44.45	---	2.78	47.23	---	73.96	53.96	-6.73
24020.83	1.00	278	45.55	---	3.14	48.69	---	73.96	53.96	-5.27

*Test mode: BT CH00 for 1GHz to 25GHz [Vertical]*

<i>Frequency</i>	<i>Ant. H.</i>	<i>Table</i>	<i>Amplitude</i>		<i>Correction Factor</i>	<i>Corrected Amplitude</i>		<i>Limit</i>		<i>Margin</i>
			<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>
2154.17	1.00	263	38.50	---	8.52	47.02	---	73.96	53.96	-6.94
2479.91	1.00	270	46.67	34.33	9.43	56.10	43.76	73.96	53.96	-10.20
12012.71	1.00	69	38.07	---	10.01	48.08	---	73.96	53.96	-5.88
19218.33	1.00	251	45.98	---	1.60	47.58	---	73.96	53.96	-6.38
21616.04	1.00	33	44.61	---	2.78	47.39	---	73.96	53.96	-6.57
24020.83	1.00	265	46.00	---	3.14	49.14	---	73.96	53.96	-4.82

*Test mode: BT CH39 for 30MHz to 1GHz [Horizontal]*

<b>Radiated Emission</b>				<b>Correction Factors</b>	<b>Corrected Amplitude</b>	<b>Class B (3 m)</b>	
<b>Frequency (MHz)</b>	<b>Amplitude (dBμV)</b>	<b>Ant. H. (m)</b>	<b>Table (°)</b>			<b>Limit (dBμV/m)</b>	<b>Margin (dB)</b>
122.15	24.82	1.00	195	-2.53	22.29	43.50	-21.21
194.90	26.70	1.00	185	-3.52	23.18	43.50	-20.32
204.60	26.04	1.00	7	-3.49	22.55	43.50	-20.95
268.86	32.02	1.00	20	-3.91	28.11	46.00	-17.89
467.71	22.42	1.00	357	1.38	23.80	46.00	-22.20
533.19	21.99	1.00	278	3.94	25.93	46.00	-20.07

*Test mode: BT CH39 for 30MHz to 1GHz [Vertical]*

<b>Radiated Emission</b>				<b>Correction Factors</b>	<b>Corrected Amplitude</b>	<b>Class B (3 m)</b>	
<b>Frequency (MHz)</b>	<b>Amplitude (dBμV)</b>	<b>Ant. H. (m)</b>	<b>Table (°)</b>			<b>Limit (dBμV/m)</b>	<b>Margin (dB)</b>
123.36	28.49	1.00	310	-2.61	25.88	43.50	-17.62
140.34	28.03	1.00	10	-3.49	24.54	43.50	-18.96
168.22	25.77	1.00	350	-4.10	21.67	43.50	-21.83
200.96	25.71	1.00	320	-3.34	22.37	43.50	-21.13
270.07	31.51	1.00	323	-3.91	27.60	46.00	-18.40
533.19	22.58	1.00	166	3.94	26.52	46.00	-19.48

*Test mode: BT CH39 for 1GHz to 25GHz [Horizontal]*

<i>Frequency</i>	<i>Ant. H.</i>	<i>Table</i>	<i>Amplitude</i>		<i>Correction Factor</i>	<i>Corrected Amplitude</i>		<i>Limit</i>		<i>Margin</i>
			<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>
2400.50	1.00	5	46.83	29.50	9.21	56.04	38.71	73.96	53.96	-15.25
9765.21	1.00	82	34.78	---	11.90	46.68	---	73.96	53.96	-7.28
12206.04	1.00	30	39.28	---	9.79	49.07	---	73.96	53.96	-4.89
19530.00	1.00	173	45.41	---	1.70	47.11	---	73.96	53.96	-6.85
21970.21	1.00	241	46.21	---	2.95	49.16	---	73.96	53.96	-4.80
24410.42	1.00	117	45.77	---	3.10	48.87	---	73.96	53.96	-5.09

*Test mode: BT CH39 for 1GHz to 25GHz [Vertical]*

<i>Frequency</i>	<i>Ant. H.</i>	<i>Table</i>	<i>Amplitude</i>		<i>Correction Factor</i>	<i>Corrected Amplitude</i>		<i>Limit</i>		<i>Margin</i>
			<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>
2400.50	1.00	217	46.50	27.00	9.21	55.71	36.21	73.96	53.96	-17.75
9765.21	1.00	77	34.79	---	11.90	46.69	---	73.96	53.96	-7.27
12206.04	1.00	34	39.02	---	9.79	48.81	---	73.96	53.96	-5.15
19530.00	1.00	170	45.65	---	1.70	47.35	---	73.96	53.96	-6.61
21970.21	1.00	256	46.17	---	2.95	49.12	---	73.96	53.96	-4.84
24410.42	1.00	127	45.40	---	3.10	48.50	---	73.96	53.96	-5.46

*Test mode: BT CH78 for 30MHz to 1GHz [Horizontal]*

<b>Radiated Emission</b>				<b>Correction Factors</b>	<b>Corrected Amplitude</b>	<b>Class B (3 m)</b>	
<b>Frequency (MHz)</b>	<b>Amplitude (dB<math>\mu</math>V)</b>	<b>Ant. H. (m)</b>	<b>Table ( )</b>			<b>Limit (dB<math>\mu</math>V/m)</b>	<b>Margin (dB)</b>
113.66	30.08	1.00	92	-2.06	28.02	43.50	-15.48
120.94	27.23	1.00	201	-2.45	24.78	43.50	-18.72
188.84	28.13	1.89	83	-3.77	24.36	43.50	-19.14
270.07	34.70	1.00	251	-3.91	30.79	46.00	-15.21
290.69	29.58	1.00	244	-3.34	26.24	46.00	-19.76
308.87	28.94	1.00	185	-2.79	26.15	46.00	-19.85

*Test mode: BT CH78 for 30MHz to 1GHz [Vertical]*

<b>Radiated Emission</b>				<b>Correction Factors</b>	<b>Corrected Amplitude</b>	<b>Class B (3 m)</b>	
<b>Frequency (MHz)</b>	<b>Amplitude (dB<math>\mu</math>V)</b>	<b>Ant. H. (m)</b>	<b>Table ( )</b>			<b>Limit (dB<math>\mu</math>V/m)</b>	<b>Margin (dB)</b>
119.72	32.73	1.00	40	-2.88	29.85	43.50	-13.65
129.43	29.20	1.00	13	-2.99	26.21	43.50	-17.29
137.91	29.85	1.00	0	-3.37	26.48	43.50	-17.02
268.86	32.70	1.00	170	-3.91	28.79	46.00	-17.21
533.19	28.52	1.00	58	3.94	32.46	46.00	-13.54
565.92	26.60	1.00	79	5.51	32.11	46.00	-13.89

*Test mode: BT CH78 for 1GHz to 25GHz [Horizontal]*

<i>Frequency</i>	<i>Ant. H.</i>	<i>Table</i>	<i>Amplitude</i>		<i>Correction Factor</i>	<i>Corrected Amplitude</i>		<i>Limit</i>		<i>Margin</i>
			<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>
2400.47	1.00	113	47.67	30.67	9.21	56.88	39.88	73.96	53.96	-14.08
9922.29	1.00	139	34.78	---	11.66	46.44	---	73.96	53.96	-7.52
12399.37	1.00	30	37.60	---	9.02	46.62	---	73.96	53.96	-7.34
19802.71	1.00	192	45.65	---	1.90	47.55	---	73.96	53.96	-6.41
22320.83	1.00	127	45.10	---	3.33	48.43	---	73.96	53.96	-5.53
24800.00	1.00	175	46.95	---	2.22	49.17	---	73.96	53.96	-4.79

*Test mode: BT CH78 for 1GHz to 25GHz [Vertical]*

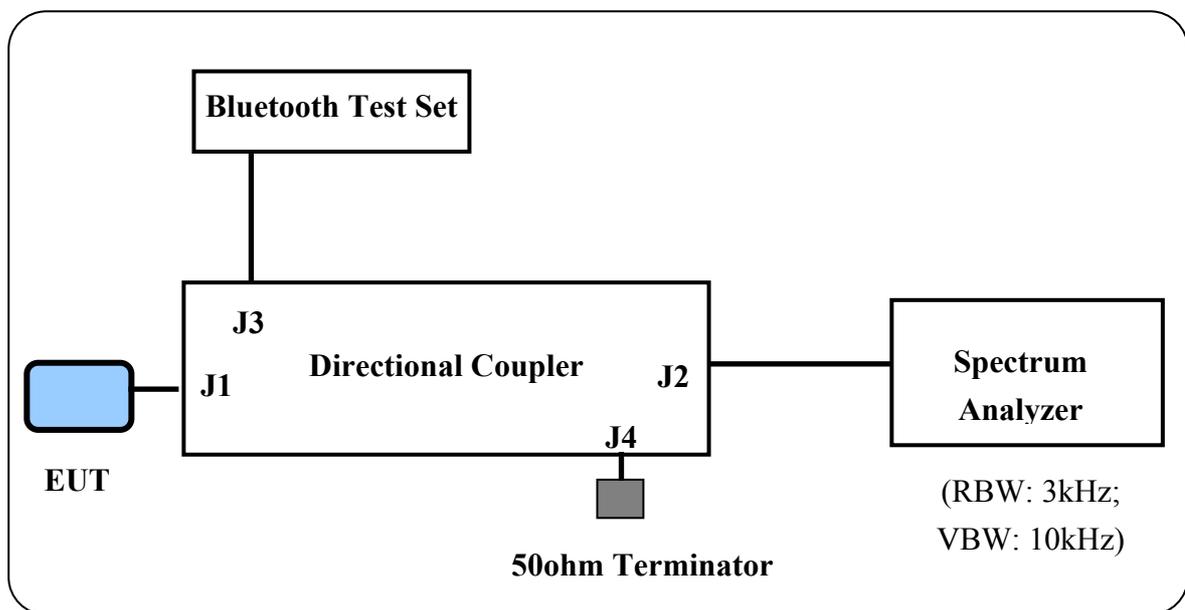
<i>Frequency</i>	<i>Ant. H.</i>	<i>Table</i>	<i>Amplitude</i>		<i>Correction Factor</i>	<i>Corrected Amplitude</i>		<i>Limit</i>		<i>Margin</i>
			<i>Peak / Ave.</i>			<i>Peak / Ave.</i>		<i>Peak / Ave.</i>		
<i>MHz</i>	<i>m</i>	<i>degree</i>	<i>dBμV</i>		<i>dB/m</i>	<i>dBμV/m</i>		<i>dBμV/m</i>		<i>dB</i>
2400.48	1.00	62	46.33	28.33	9.21	55.54	37.54	73.96	53.96	-16.42
9922.29	1.00	138	34.64	---	11.66	46.30	---	73.96	53.96	-7.66
12399.37	1.00	29	37.36	---	9.02	46.38	---	73.96	53.96	-7.58
19802.71	1.00	189	45.63	---	1.90	47.53	---	73.96	53.96	-6.43
22320.83	1.00	117	44.98	---	3.33	48.31	---	73.96	53.96	-5.65
24800.00	1.00	192	46.50	---	2.22	48.72	---	73.96	53.96	-5.24

## 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

Instrument Name	Model No.	Brand	Serial No.	Calibration Date
				Next time
Spectrum Analyzer	MS2665C	ANRITSU	6200175476	02/15/07
Bluetooth Test Set	MT8852A	ANRITSU	6k00001241	N/A
Directional Coupler	DC7144	A.R.	N/A	07/01/08

#### 12.4 Test Result of Power spectral density

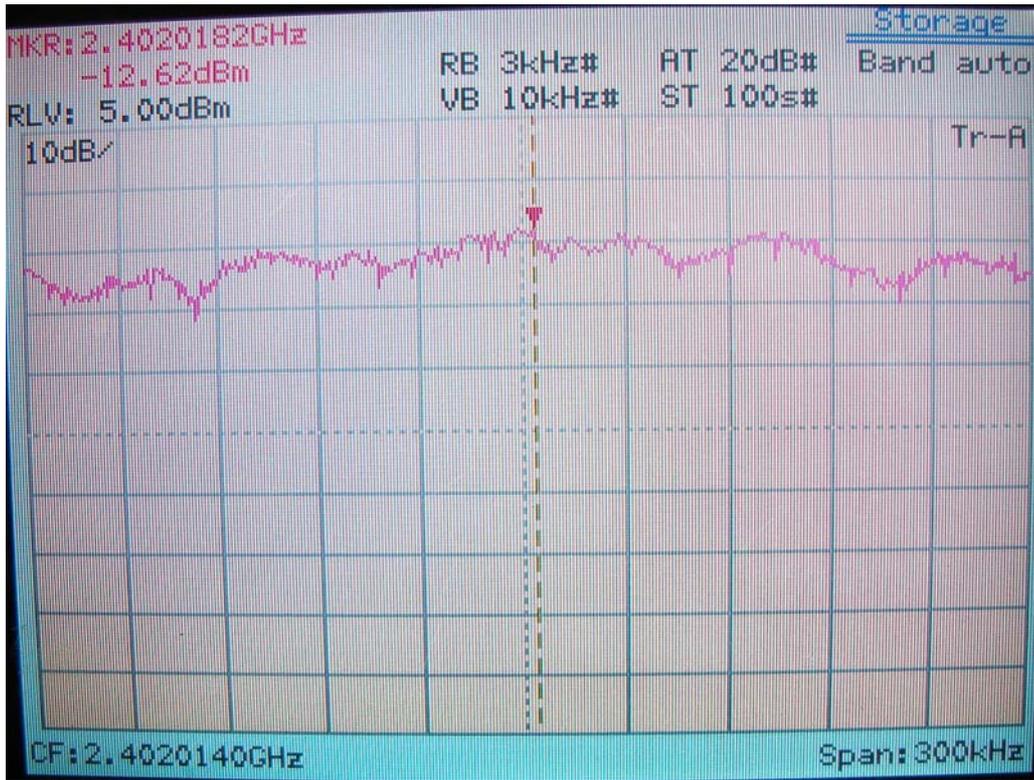
The following table shows a summary of the test results of the Power Spectral Density.

<i>Channel</i>	<i>Ppr</i> <i>(dBm)</i>	<i>Cable Loss</i> <i>(dB)</i>	<i>Ppq</i> <i>(dBm)</i>	<i>Limit</i> <i>(dB)</i>	<i>Margin</i> <i>(dB)</i>
CH 00	-12.62	2.20	-10.42	8.00	-18.42
CH 39	-11.69	2.20	-9.49	8.00	-17.49
CH 78	-11.31	2.20	-9.11	8.00	-17.11

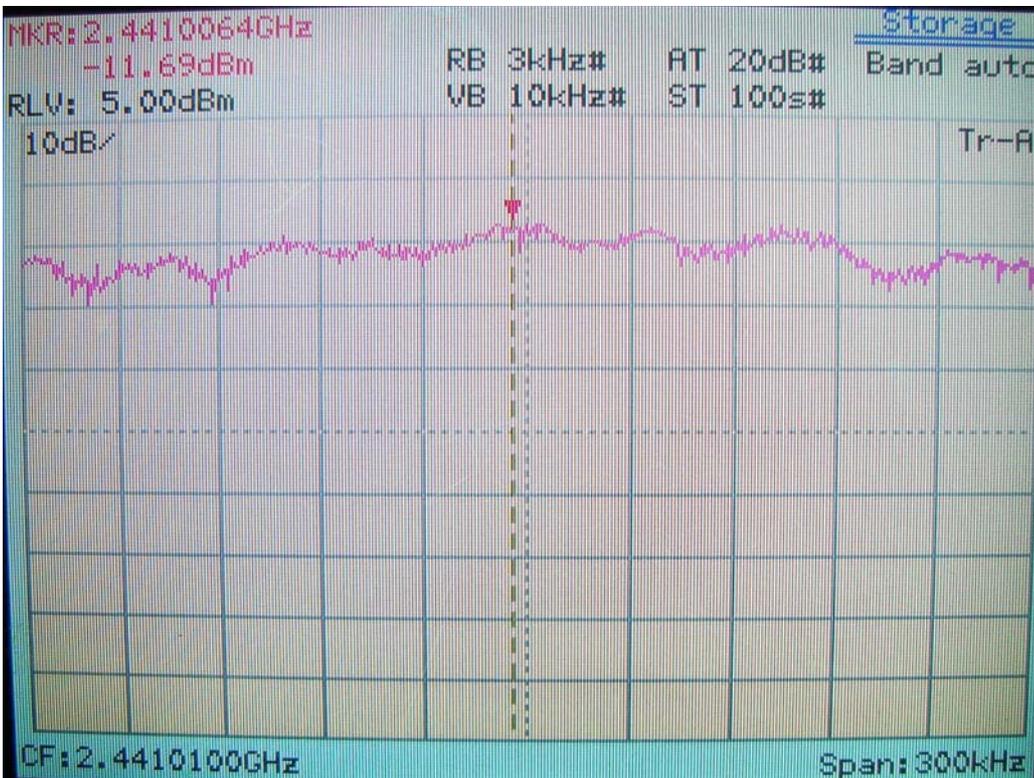
Note:

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.  $Ppq = Ppr + |\text{Cable Loss}|$

**Power Spectral Density for CH00**



**Power Spectral Density for CH39**



Power Spectral Density for CH78

