MEASUREMENT REPORT
of
Bluetooth GPS Receiver

Applicant	**:**	ASUSTek Computer Inc.
EUT	**:**	Bluetooth GPS Receiver
Model	**:**	GPS-BT100
FCC ID	**:**	MSQGPSBT100
Report No.	**:**	A5415668

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 (1992) 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 B (Declaration of Conformity) and C Section 15.247.

Applicant	**:**	ASUSTek Computer Inc.
Applicant address	**:**	4Fl., No. 150, Li-Te Rd., Peitou, Taipei, Taiwan
Product Name	**:**	ASUS Bluetooth GPS Receiver
Model Name	**:**	GPS-BT100
FCC ID	**:**	MSQGPSBT100
Report No.	**:**	A5415668
Test Date	**:**	September 10, 2004

Prepared by: Jack Tsai *Jack Tsai* **Approved by:** Frank Tsai *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.

(2) This report must not be used by the client to claim product endorsement by NVLAP or any agency of U.S. Government.

(3) This test report, measurements made by TRC are traceable to the NIST only Conducted and Radiated Method.

★ NVLAP LAB CODE: 200174-0

Federal Communications Commission
Declaration of Conformity
(DoC)

For the Following Equipment:

Product name : Bluetooth GPS Receiver

Model name : GPS-BT100

Trade name : ASUS

Is herewith confirmed and found to comply with the requirements of CFR 47 part15 Subpart B - Unintentional Radiators regulation. The results of electromagnetic mission evaluation are shown in the report number : A5415074

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation

Manufacturer	***USA local representative***
Company name: ASUSTeK Computer Inc.	To be determined
Computer address: 4/F, 150, Li-Te Rd., Peitou, Taipei, Taiwan	
ZIP / Postal code: 112	
Contact person: Lawrence Yu	
Title: Manager	
Internet e-mail address: Lawrence_yu@asus.com.tw	
Tel / Fax: 886-2-28943447 / 886-2-28950113	

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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, B and C of the Commission's Rules and Regulations.

1.2 Description of EUT

FCC ID	:	MSQGPSBT100
Product Name	:	Bluetooth GPS Receiver
Model Name	:	GPS-BT100
Frequency Range	:	2402MHz to 2480MHz
Support Channel	:	79 Channels
Channel Spacing	:	1 MHz
Modulation Skill	:	GFSK
GPS Antenna Cable	:	207cm length, shielded, no ferrite core
Power Type	:	(1) Built-in rechargeable Lithium-Ion battery (5VDC)

(2) Power adapter
Manufacture: Sunfone Electronics, Co.
Model: ACGN-14
I/P: 100-240VAC, 50-60Hz, 0.2A；
O/P: 5VDC, 0.5A
Power cable: 148cm length, non-shielded, no ferrite core

(3) Travel charger (5VDC, 0.65A)
Power cable: 260cm length, shielded, no ferrite core

(4) Travel charger with Y cable (5VDC, 2A)
Power cable: 224cm length, non-shielded, no ferrite core
Power Y-cable (Dc jack to DC plug):
122m length, shielded, no ferrite core
Power Y-cable (DC jack to mini-USB connector):
122cm length, shielded, no ferrite core

1.3 Test method

A) *GPS using Travel charger adapter: Charging mode*

(1) Put the GPS receiver antenna into the external antenna port of GPS device.

(2) The mini-USB port of GPS device is connected with the travel charger to DC power source (rechargeable battery).

B) *GPS using Travel charger adapter (with Y-cable): Charging mode*

(3) Put the GPS receiver antenna into the external antenna port of GPS device.

(4) The mini-USB plug of Y-cable is connected with the mini-USB port of GPS device.

(5) The other RCA power plug of Y-cable is connected to PDA power socket.

(6) Y-cable socket is connected with the travel charger to DC power source (rechargeable battery).

C) *GPS using Power adapter:*

(EUT Stand on three orthogonal planes respectively, record worst-case in report)

(7) Put the GPS receiver antenna into the external antenna port of GPS device.

(8) The mini-USB port of GPS device is connected with the AC power source via a power adaptor.

(9) The notebook PC and test jig is connected by RS-232 cable, and then test jig connected with EUT setting test mode.

(10) The Notebook PC and test jig is moving when test mode set finish. The software provided by the manufacturer, the test is performed under the specific conditions.

(11) Set different channels (CH01/CH40/CH79), being tested and repeat the procedures above.

(a) Radiated for intentional test:
making EUT to the mode of continuous TX or RX

(b) Conducted and radiated for unintentional test:
making EUT to the linking mode with BT PDA. And charging mode.

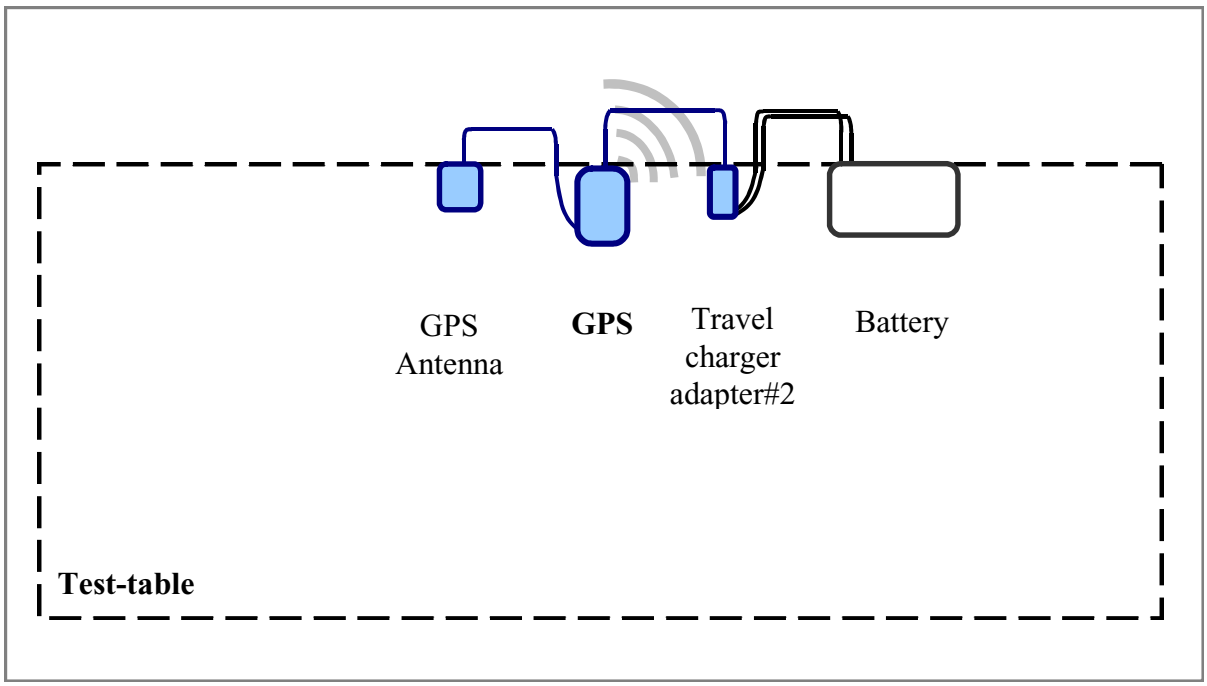
1.4 Description of Support Equipment

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

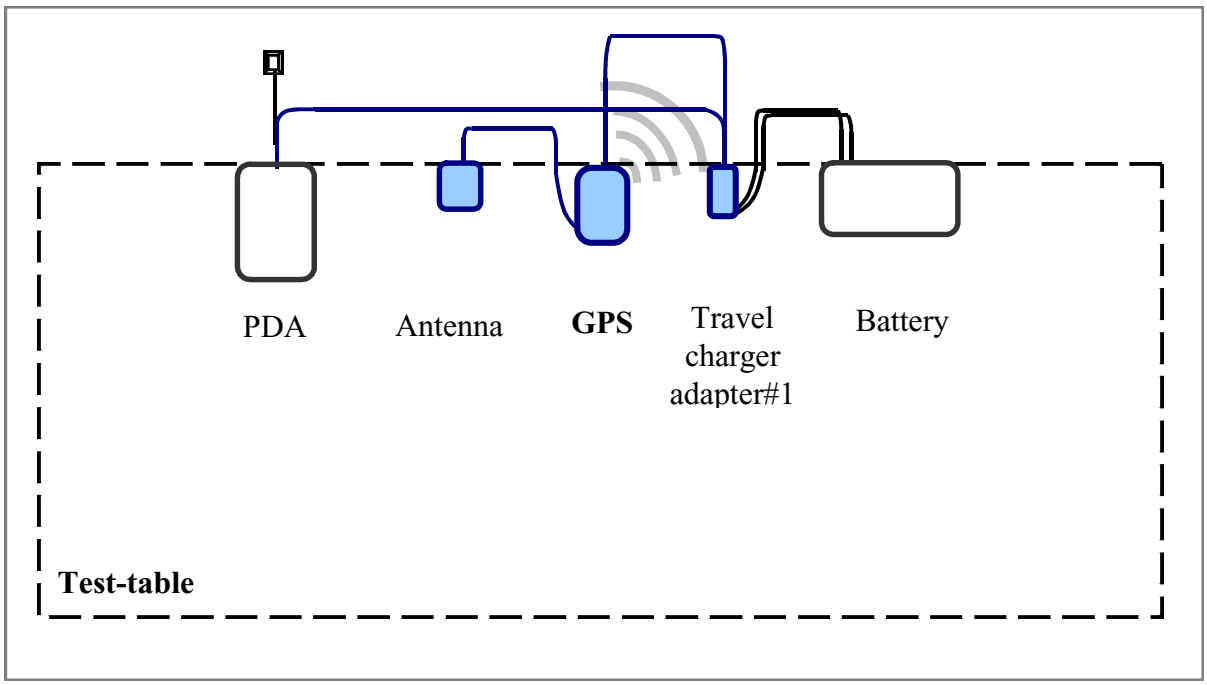
Pocket PC	**:**	**ASUS Computer Inc.**
Model No	:	A730
FCC ID	:	MSQA730
Power cable	:	Shielded, 110cm length, no ferrite core
Power type	:	By battery
Battery	**:**	**YUASA**
Model No.	:	NP7-12
Serial No.	:	9911153P
Power type	:	12V, 7Ah
Power cable	:	Non-shielded, 93cm length, no ferrite core
Notebook	**:**	**IBM Think Pad X20**
Model No.	:	2662-11T
Serial No.	:	FX-1192200/09
FCC ID	:	N/A, DoC Approved
BSMI	:	3892B565
Adaptor	**:**	**IBM**
Model No.	:	PA2450U
Serial No.	:	02K6654
FCC ID	:	N/A, DoC Approved
Power type	:	I/P: 100 ~ 240vac, 50 ~ 60 Hz, 0.5A ~ 1.2A O/P: 16Vdc, 4.5A
Power cord	:	Non-shielded, 1.80m length, Plastic, with ferrite core
RS232 jig	**:**	**ASUS Computer Inc.**
Model No.	:	TEAN TN2 94V-0
Power type	:	DC-3V (UM-3 battery*2)

1.5 Configuration of System Under Test

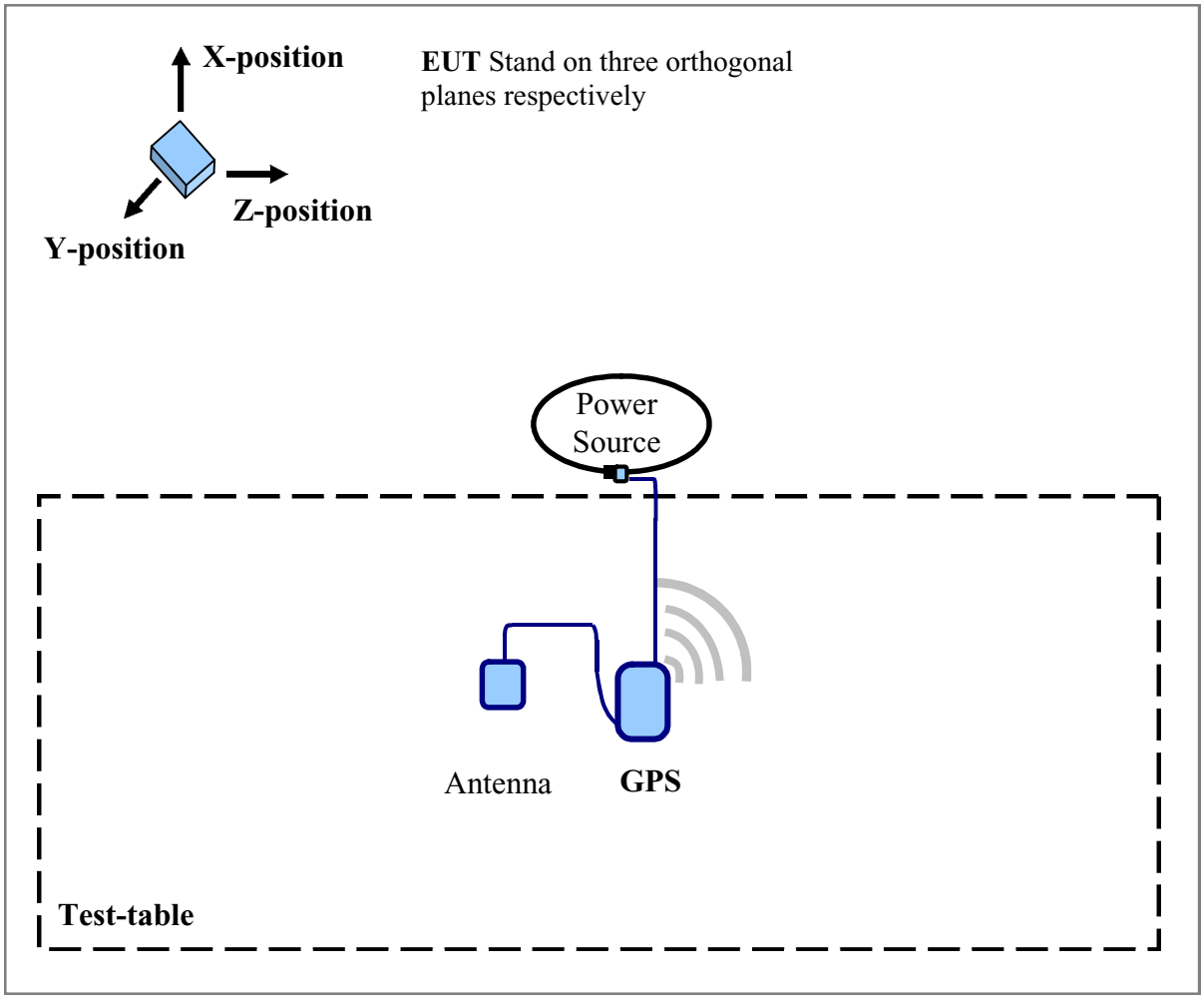
1.5.1 A – mode: GPS using Travel charger adapter



1.5.2 B – mode: GPS using Travel charger adapter with Y-cable



1.5.3 C – mode: GPS only



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 NB PC.

The setting up procedure was recorded in 1.3 test method.

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
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 (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 (CH1), one in the middle (CH40) and the other in bottom (CH79).

II. Section 15.101(a): Equipment authorization of unintentional radiators

The EUT combined with a GPS receiver. It was categorized to *all other receivers subject to part 15.* It has been verified to comply with FCC part 15 subpart B, class B. The authorization requires **Declaration of Conformity (DoC)** and test report has been issued separately (Report No: A5415074).

III. Section 15.203: Antenna requirement

A) 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.

The antenna specification of list as below:

Antenna Type : Patch Antenna

Antenna Gain : 2.24dBi (Max.)

B) The EUT's external antenna is employability for GPS.

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

4.1 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 (CH1), one in the middle (CH40) and the other in bottom (CH79).

4.2 List of Test Instruments

Calibration Date

Instrument Name	Model	Brand	Serial No.	Next time
EMI Receiver	8546A	HP	3520A00242	08/05/05
RF Filter Section	85460A	HP	3448A00217	08/05/05
LISN (EUT)	LISN-01	TRC	99-05	09/21/04
LISN (Support E.)	LISN-01	TRC	9912-03, 04	10/21/04
Pre-amplifier	15542 ZFL-500	Mini – Circuits	0 0117	05/20/05
6dB Attenuator	MCL BW-S6W2	Mini – Circuits	9915 – Conducted	05/20/05
10dB Attenuator	A5542 VAT010	Mini – Circuits	0215 – Conducted	05/20/05
Coaxial Cable (2 meter)	A30A30-0058-50FS-2M	Jyebao	SMA-08	05/20/05
Coaxial Cable (1.1 meter)	A30A30-0058-50FS-1M	Jyebao	SMA-09	05/20/05
Coaxial Cable (20 meter)	RG-214/U	Jyebao	NP-01	05/20/05
Coaxial Cable (20 meter)	RG-214/U	Jyebao	NP-02	05/20/05
Auto Switch Box (< 30MHz)	ASB-01	TRC	9904-01	05/20/05

4.3 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 °C Humidity : 73 % RH

Test Mode: Using Power adapter for Standby

Power Connected Emissions					*FCC Class B*		
Conductor	***Frequency (KHz)***	***Peak (dBμV)***	***QP (dBμV)***	***Average (dBμV)***	***QP-limit (dBμV)***	***AVG-limit (dBμV)***	***Margin (dB)***
Line 1	179.000	44.54	---	---	65.17	55.17	-10.63
	238.000	42.58	---	---	63.49	53.49	-10.91
	300.000	46.16	---	---	61.71	51.71	-5.55
	537.000	40.01	---	---	56.00	46.00	-5.99
	954.000	38.89	---	---	56.00	46.00	-7.11
	1801.000	38.04	---	---	56.00	46.00	-7.96
	2689.000	39.38	---	---	56.00	46.00	-6.62
	3094.000	41.03	---	---	56.00	46.00	-4.97
	4199.125	44.33	42.00	31.23	56.00	46.00	-14.00
	5034.410	48.36	46.65	36.51	60.00	50.00	-13.35
Line 2	180.000	39.38	---	---	65.14	55.14	-15.76
	238.000	38.62	---	---	63.49	53.49	-14.87
	302.000	47.43	---	---	61.66	51.66	-4.23
	480.000	37.99	---	---	56.57	46.57	-8.58
	657.000	35.57	---	---	56.00	46.00	-10.43
	1256.000	36.76	---	---	56.00	46.00	-9.24
	1731.000	37.59	---	---	56.00	46.00	-8.41
	2872.000	37.81	---	---	56.00	46.00	-8.19
	4614.570	44.67	42.06	29.77	56.00	46.00	-13.94
	5180.000	47.32	---	---	60.00	50.00	-2.68

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: Using Power adapter for BT CH01

Power Connected Emissions					*FCC Class B*		
Conductor	*Frequency (KHz)*	*Peak (dBμV)*	*QP (dBμV)*	*Average (dBμV)*	*QP-limit (dBμV)*	*AVG-limit (dBμV)*	*Margin (dB)*
Line 1	180.405	57.09	52.63	41.78	65.14	55.14	-12.51
	240.630	53.39	50.36	37.82	63.43	53.43	-13.07
	300.000	47.73	---	---	61.71	51.71	-3.98
	359.000	45.11	---	---	60.03	50.03	-4.92
	781.000	42.07	---	---	56.00	46.00	-3.93
	1198.000	41.35	---	---	56.00	46.00	-4.65
	2201.000	41.38	---	---	56.00	46.00	-4.62
	3702.000	42.72	---	---	56.00	46.00	-3.28
	4852.745	48.13	46.05	36.27	56.00	46.00	-9.73
	5570.000	47.83	---	---	60.00	50.00	-2.17
Line 2	179.880	54.97	50.43	38.68	65.23	55.23	-14.80
	238.000	51.33	---	---	63.49	53.49	-2.16
	359.000	47.01	---	---	60.03	50.03	-3.02
	480.000	40.75	---	---	56.57	46.57	-5.82
	657.000	39.43	---	---	56.00	46.00	-6.57
	774.000	38.69	---	---	56.00	46.00	-7.31
	1198.000	39.71	---	---	56.00	46.00	-6.29
	2741.000	39.22	---	---	56.00	46.00	-6.78
	4492.635	44.67	45.55	31.63	56.00	46.00	-10.45
	5103.790	48.30	47.56	36.28	60.00	50.00	-12.44

Test Mode: Using Power adapter for BT CH40

Power Connected Emissions					*FCC Class B*		
Conductor	***Frequency (KHz)***	***Peak (dBμV)***	***QP (dBμV)***	***Average (dBμV)***	***QP-limit (dBμV)***	***AVG-limit (dBμV)***	***Margin (dB)***
Line 1	179.000	46.78	---	---	65.17	55.17	-8.39
	238.000	46.89	---	---	63.49	53.49	-6.60
	359.000	46.25	---	---	60.03	50.03	-3.78
	657.000	42.74	---	---	56.00	46.00	-3.26
	1134.000	41.56	---	---	56.00	46.00	-4.44
	1256.000	42.14	---	---	56.00	46.00	-3.86
	1801.000	41.77	---	---	56.00	46.00	-4.23
	2506.000	43.18	---	---	56.00	46.00	-2.82
	4386.420	50.05	46.61	29.41	56.00	46.00	-9.39
	5039.585	50.96	47.24	37.28	60.00	50.00	-12.72
Line 2	179.000	47.34	---	---	65.17	55.17	-7.83
	302.000	44.83	---	---	61.66	51.66	-6.83
	480.000	40.80	---	---	56.57	46.57	-5.77
	657.000	41.63	---	---	56.00	46.00	-4.37
	1198.000	39.19	---	---	56.00	46.00	-6.81
	1550.000	41.33	---	---	56.00	46.00	-4.67
	2094.000	41.31	---	---	56.00	46.00	-4.69
	3477.000	42.83	---	---	56.00	46.00	-3.17
	4669.635	48.41	43.66	31.58	56.00	46.00	-12.34
	5390.830	49.28	45.62	33.82	60.00	50.00	-14.38

Test Mode: Using Power adapter for BT CH79

Power Connected Emissions					*FCC Class B*		
Conductor	***Frequency (KHz)***	***Peak (dBμV)***	***QP (dBμV)***	***Average (dBμV)***	***QP-limit (dBμV)***	***AVG-limit (dBμV)***	***Margin (dB)***
Line 1	180.000	46.23	---	---	65.14	55.14	-8.91
	297.000	46.14	---	---	61.80	51.80	-5.66
	359.000	42.55	---	---	60.03	50.03	-7.48
	717.000	41.52	---	---	56.00	46.00	-4.48
	1134.000	40.06	---	---	56.00	46.00	-5.94
	1613.000	39.57	---	---	56.00	46.00	-6.43
	2458.000	41.28	---	---	56.00	46.00	-4.72
	3221.000	41.26	---	---	56.00	46.00	-4.74
	4367.440	47.43	44.87	34.94	56.00	46.00	-11.06
	5089.015	49.94	48.17	39.01	60.00	50.00	-10.99
Line 2	179.000	46.61	---	---	65.17	55.17	-8.56
	300.000	46.35	---	---	61.71	51.71	-5.36
	359.000	41.28	---	---	60.03	50.03	-8.75
	480.000	40.10	---	---	56.057	46.06	-5.96
	537.000	41.01	---	---	56.00	46.00	-4.99
	1017.000	37.72	---	---	56.00	46.00	-8.28
	1550.000	40.21	---	---	56.00	46.00	-5.79
	3349.000	40.61	---	---	56.00	46.00	-5.39
	4624.115	46.32	38.76	25.94	56.00	46.00	-17.24
	5204.755	48.80	45.56	30.39	60.00	50.00	-14.44

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

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.*

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

6.1 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) ≧ 1% of the span

Video (or Average) Bandwidth (VBW) ≧ RBW

Sweep = Auto

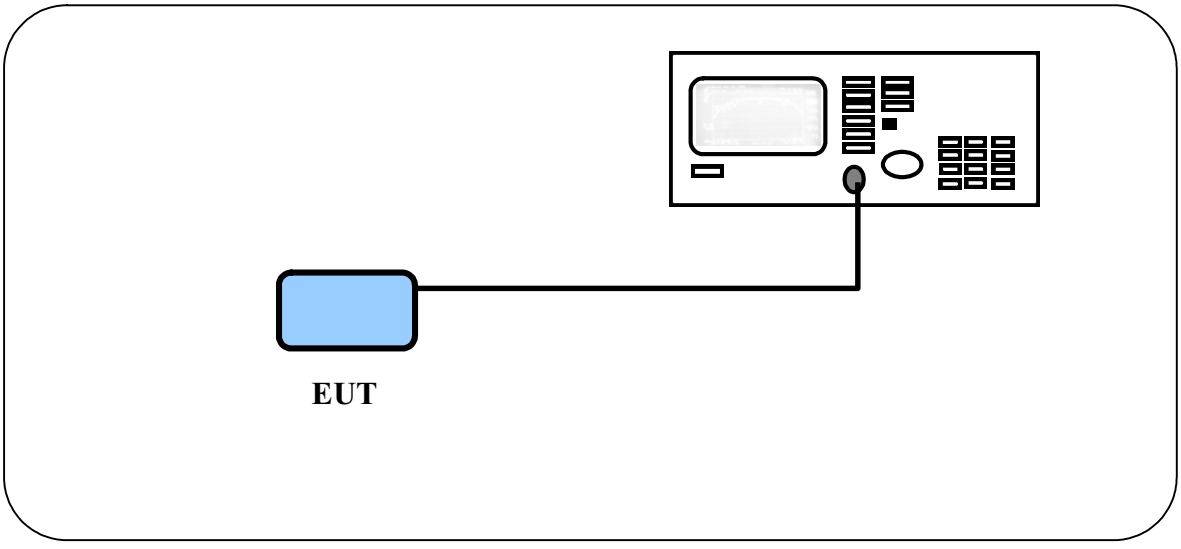
Detector Function = peak

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.

6.2 Test Instruments Configuration



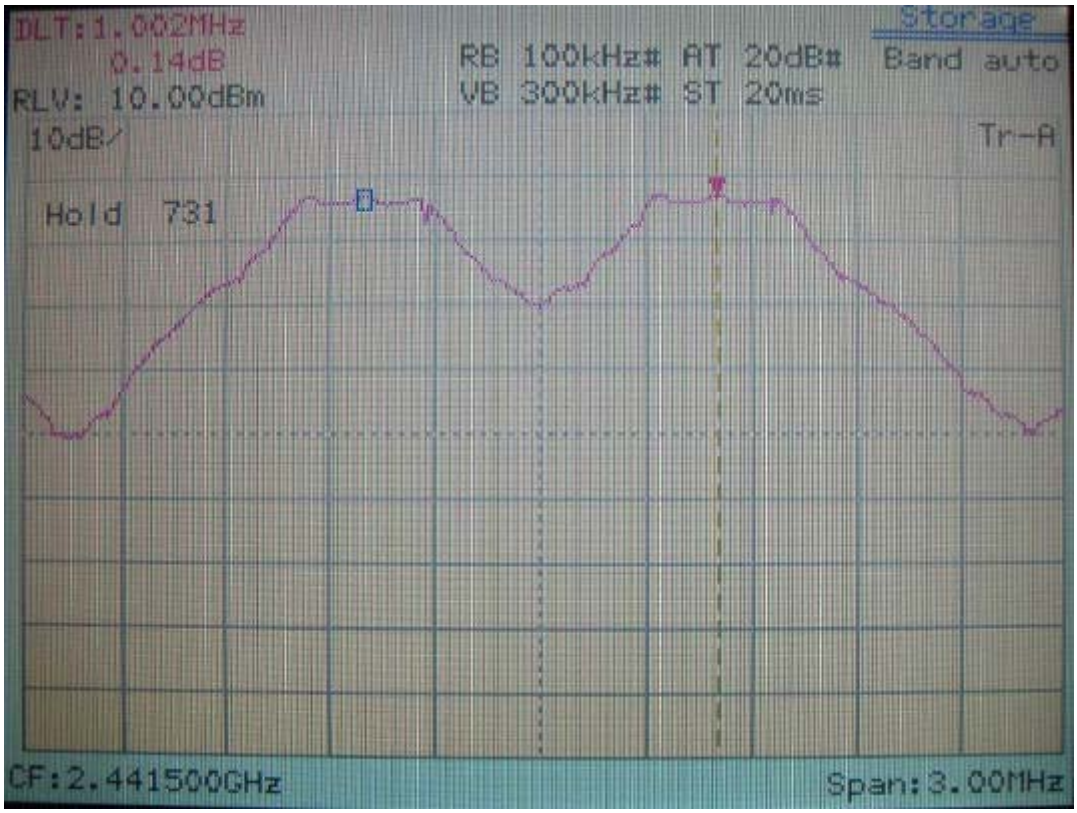
Test Configuration of carrier frequency separation

6.3 List of Test Instruments

Instrument Name	Model No.	Brand	Serial No.	Last time	Next time
Spectrum Analyzer	MS2665C	ANRITSU	6200175476	09/30/03	09/30/04

6.4 Test Results

Channel Separation: 1.002MHz



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

7.1 Test Condition

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

Span = the frequency band of operation

RBW ≧ 1% of the span

VBW ≧ RBW

Sweep = auto

Detector function = peak

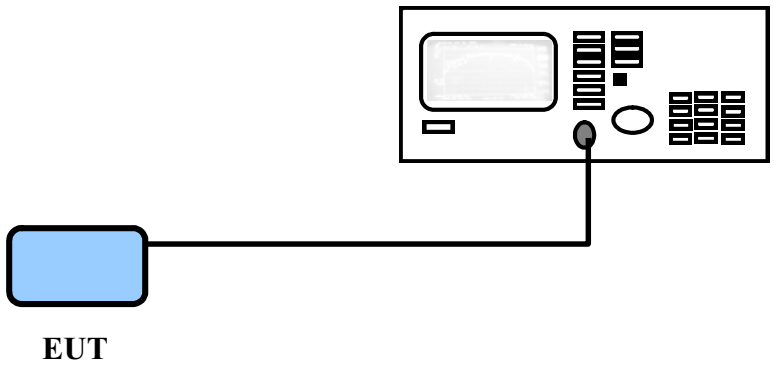
Trace = max hold

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.

7.2 List of Test Instruments

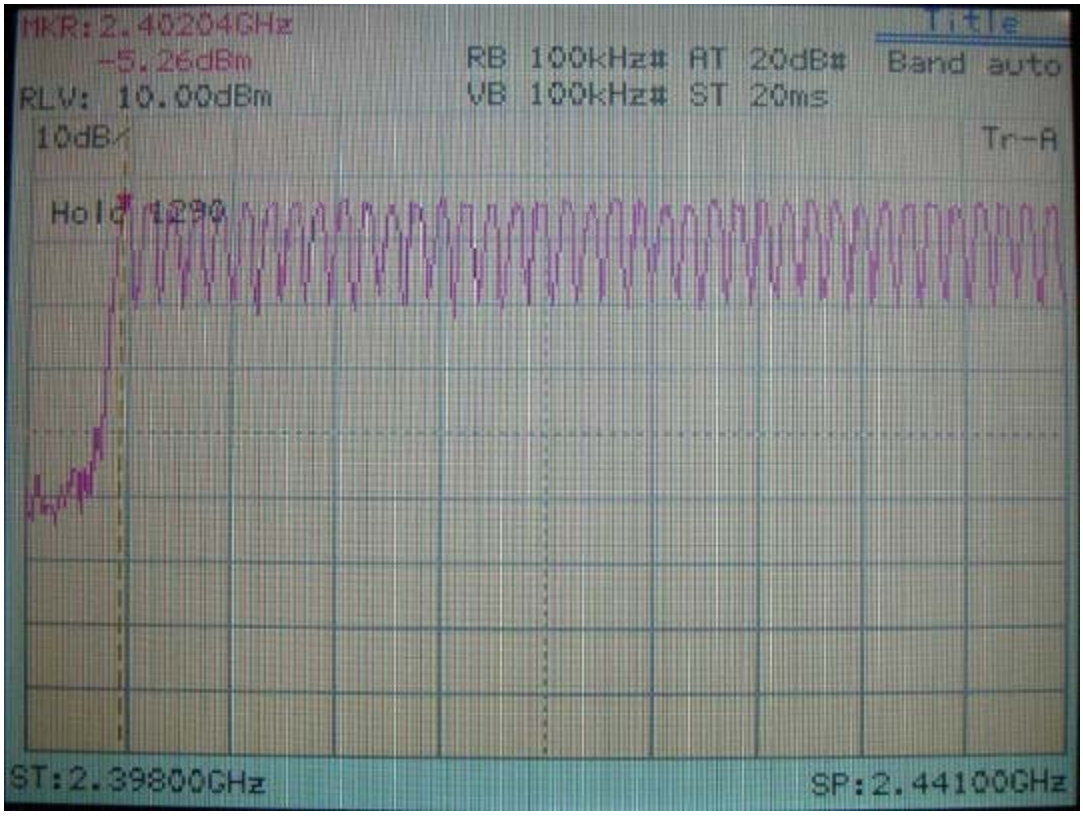
Instrument Name	Model No.	Brand	Serial No.	Last time	Next time
Spectrum Analyzer	MS2665C	ANRITSU	6200175476	09/30/03	09/30/04

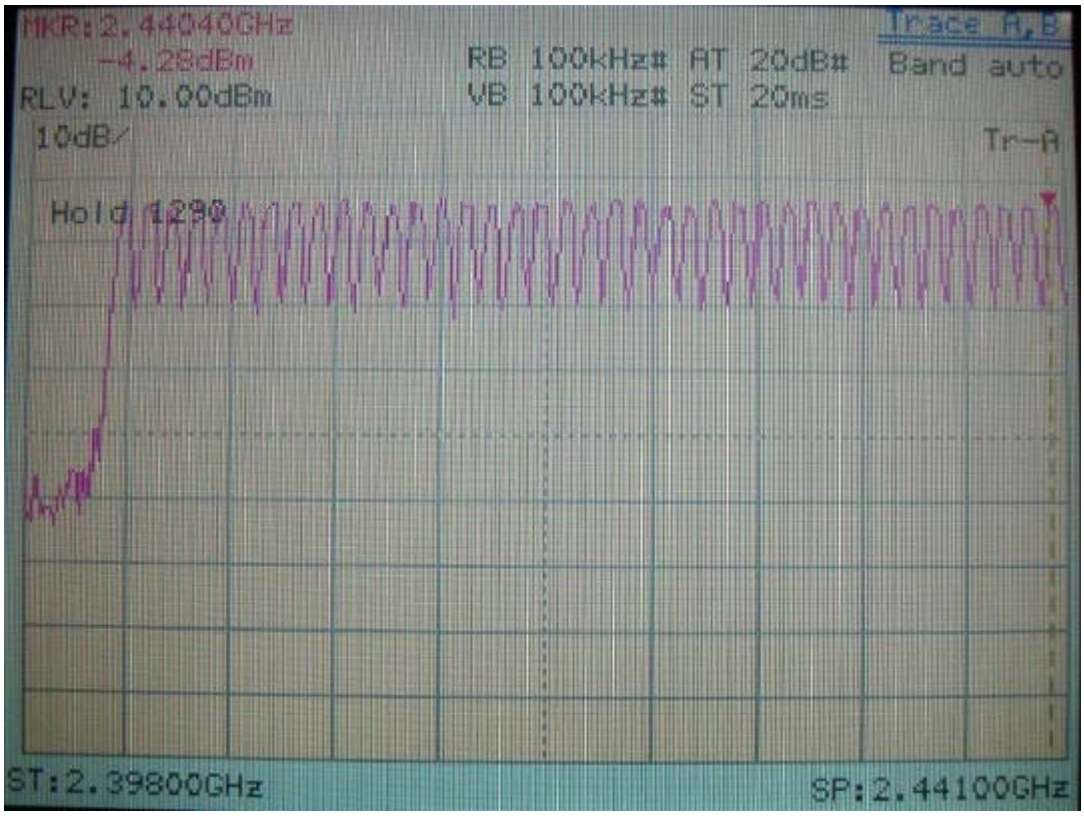
7.3 Test Instruments Configuration

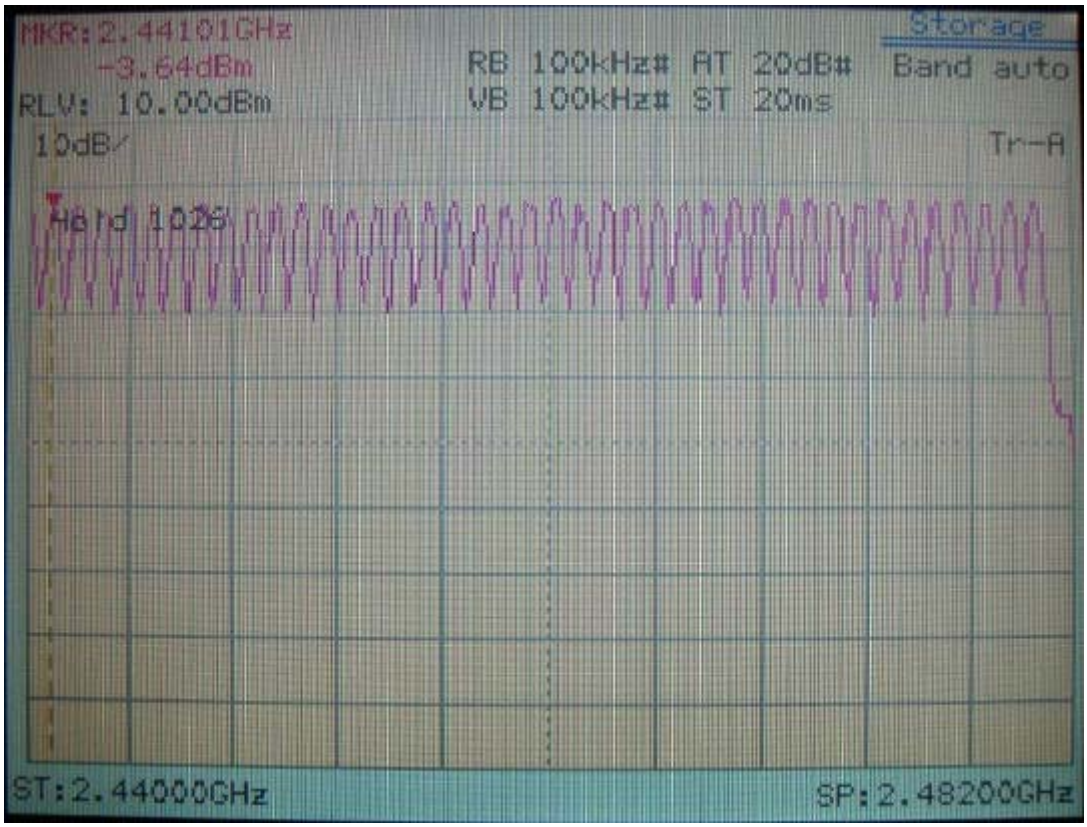


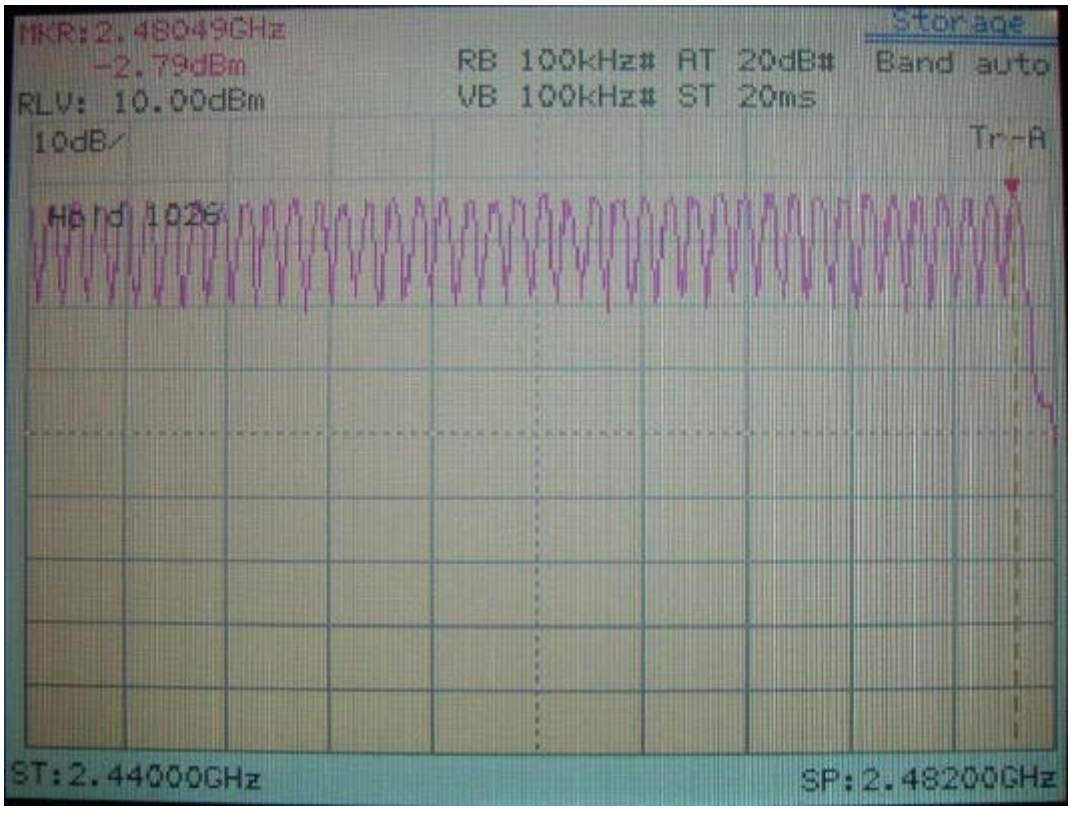
Test Configuration for number of hopping frequencies

7.4 Test Results






MKR:2.44101GHz
-3.64dBm
RLV: 10.00dBm
10dB/
RB 100kHz# AT 20dB#
VB 100kHz# ST 20ms
Storage
Band auto
Tr-A
Hold 1026
ST:2.44000GHz
SP:2.48200GHz


MKR:2.48049GHz
-2.79dBm
RLV: 10.00dBm
10dB/
RB 100kHz# AT 20dB#
VB 100kHz# ST 20ms
Storage
Band auto
Tr-A
Hold 1026
ST:2.44000GHz
SP:2.48200GHz

VIII. Section 15.247(a)(1)(ii) Time of Occupancy (Dwell Time)

8.1 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 ≧ RBW

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

Detector function = peak

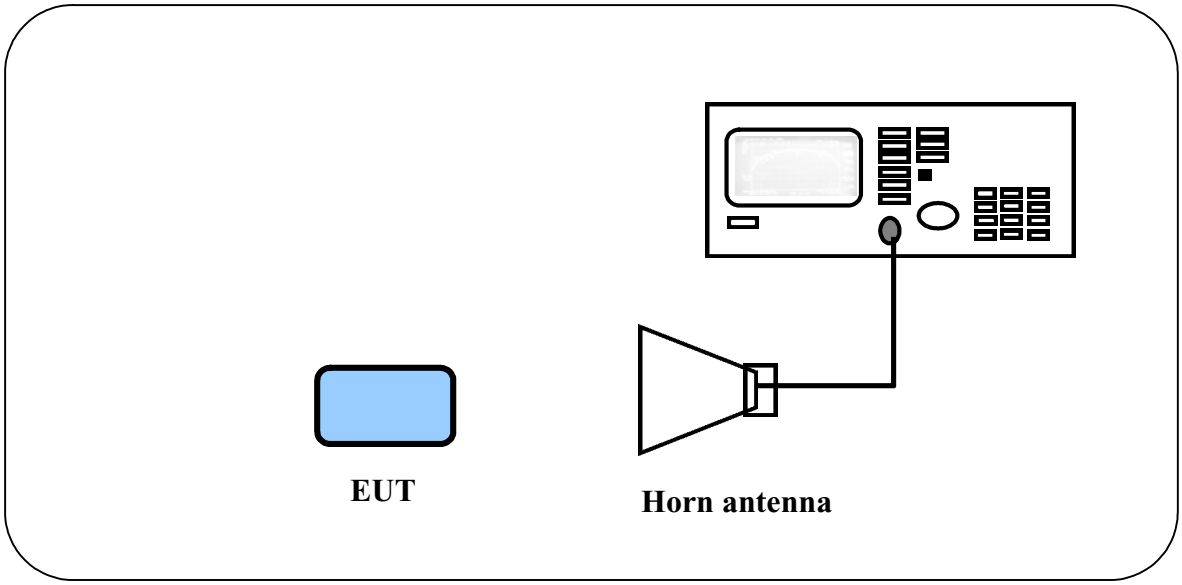
Trace = max hold

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.

8.2 List of Test Instruments

Instrument Name	Model	Brand	Serial No.	Next time
Spectrum Analyzer	8564E	H P	3720A00840	08/13/05
Spectrum Analyzer	MS2665C	ANRITSU	6200175476	09/30/04
Microwave Preamplifier	84125C	HP	US36433002	08/13/05
Horn Antenna	3115	EMCO	9704 – 5178	12/12/04

8.3 Test Instruments Configuration



8.4 Test Results

CH	DH1-Packet (ms)	DH3-Packet (ms)	DH5-Packet (ms)
01	0.418x31.6x10.12 = 133.67	1.672x31.6x5.06 = 267.35	2.910x31.6x3.37 = 309.89
40	0.418x31.6x10.12 = 133.67	1.672x31.6x5.06 = 267.35	2.920x31.6x3.37 = 310.96
79	0.418x31.6x10.12 = 133.67	1.672x31.6x5.06 = 267.35	2.910x31.6x3.37 = 309.89

備註： 1. 0.4 x 79 = 31.6 s

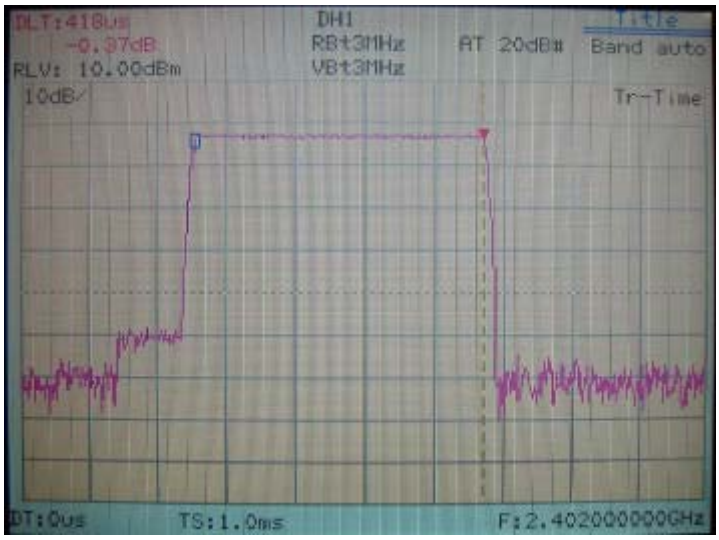
2. DH1: $1600 \div 79 \div 2 = 10.12$ ms

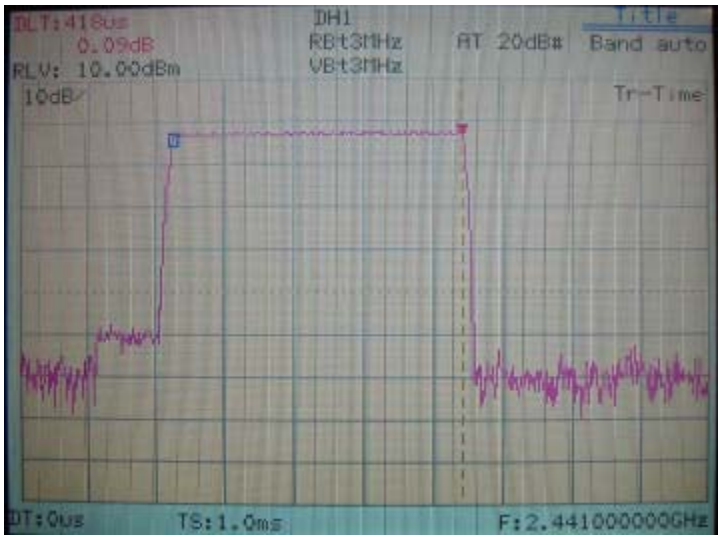
3. DH3: $1600 \div 79 \div 4 = 5.06$ ms

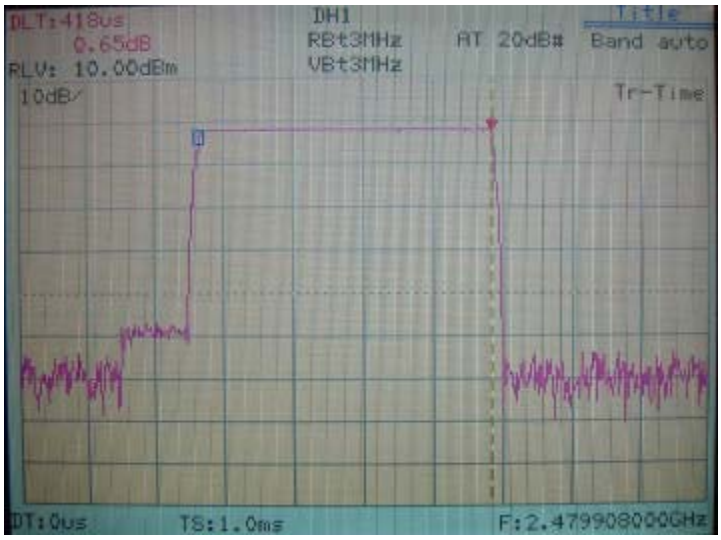
4. DH5: $1600 \div 79 \div 6 = 3.37$ ms

5. Show as following page.

DH1-Packet：


DLT:418us
-0.97dB
RLV: 10.00dBm
10dB/
DH1
RBt3MHz
VBt3MHz
AT 20dB
Title
Band auto
Tr-Time
DT:0us
TS:1.0ms
F:2.402000000GHz


DLT:418us
0.09dB
RLV: 10.00dBm
10dB/
DH1
RBt3MHz
VBt3MHz
AT 20dB
Title
Band auto
Tr-Time
DT:0us
TS:1.0ms
F:2.441000000GHz


DLT:418us
0.65dB
RLV: 10.00dBm
10dB/
DH1
RBt3MHz
VBt3MHz
AT 20dB
Title
Band auto
Tr-Time
DT:0us
TS:1.0ms
F:2.479908000GHz

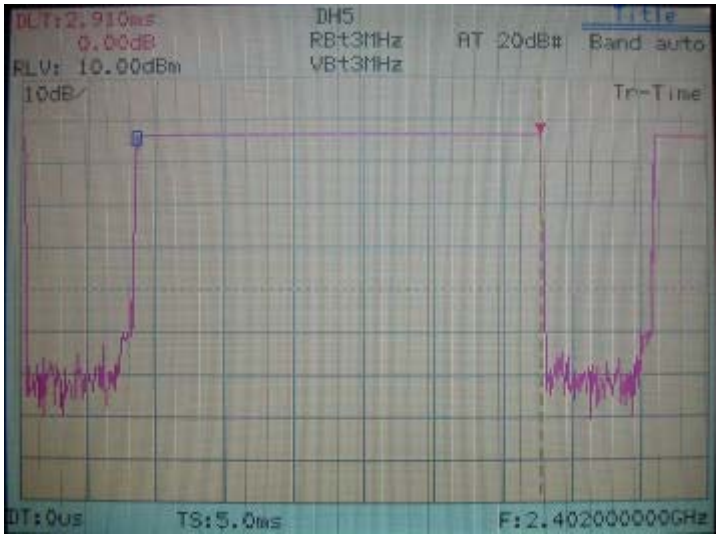
DH3-Packet：

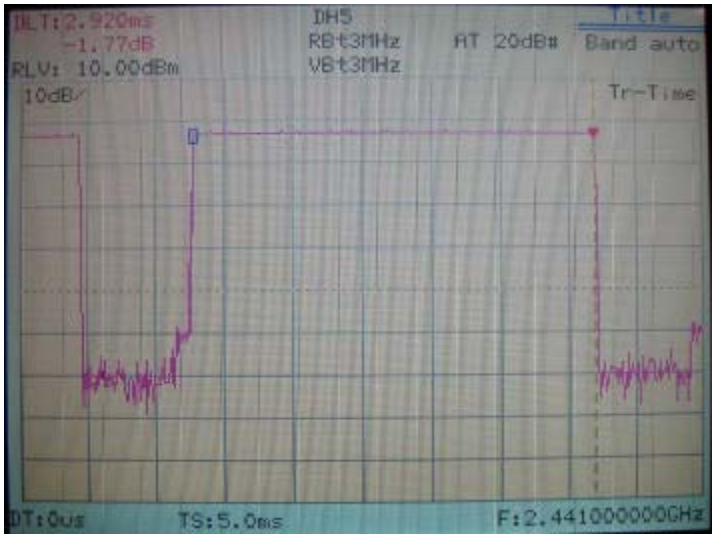

DLT:1.672ms
0.27dB
RLV: 10.00dBm
10dB/
DH3
RBt3MHz
VBt3MHz
AT 20dB
Title
Band auto
Tr-Time
DT:0us
TS:2.0ms
F:2.402000000GHz

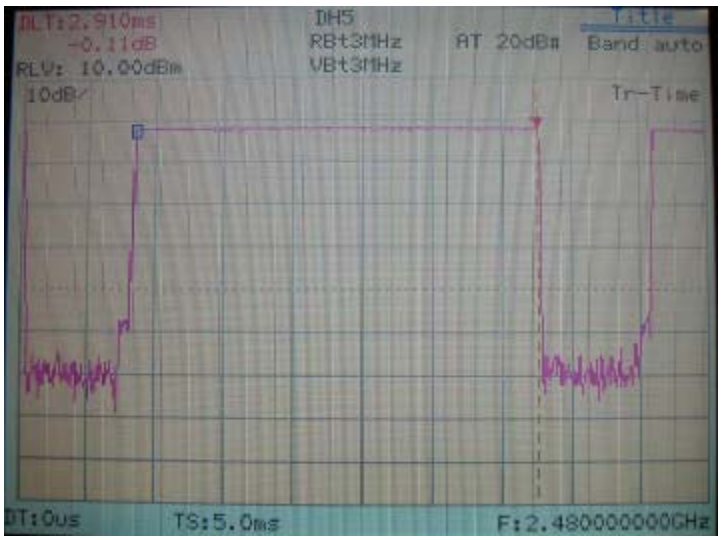

DLT:1.672ms
-0.74dB
RLV: 10.00dBm
10dB/
DH3
RBt3MHz
VBt3MHz
AT 20dB
Title
Band auto
Tr-Time
DT:0us
TS:2.0ms
F:2.441000000GHz


DLT:1.672ms
-0.83dB
RLV: 10.00dBm
10dB/
DH3
RBt3MHz
VBt3MHz
AT 20dB
Title
Band auto
Tr-Time
DT:0us
TS:2.0ms
F:2.480000000GHz

DH5-Packet：


DH5
RBt3MHz
VBt3MHz
AT 20dB
Band auto
RLV: 10.00dBm
10dB/
Tr-Time
DT:0us
TS:5.0ms
F:2.402000000GHz


DH5
RBt3MHz
VBt3MHz
AT 20dB
Band auto
RLV: 10.00dBm
10dB/
Tr-Time
DT:0us
TS:5.0ms
F:2.441000000GHz


DH5
RBt3MHz
VBt3MHz
AT 20dB
Band auto
RLV: 10.00dBm
10dB/
Tr-Time
DT:0us
TS:5.0ms
F:2.480000000GHz

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

9.1 Test Condition

Use the following spectrum analyzer setting:

Span = the frequency band of operation

RBW ≧ 1% of the emission bandwidth

VBW ≧ RBW

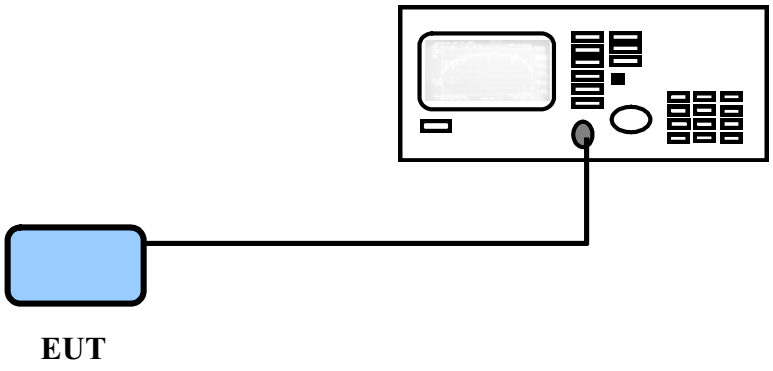
Sweep = auto

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).

9.2 Test Instruments Configuration



Test Configuration of Bandwidth for Frequency Hopping Spread Spectrum System

9.3 List of Test Instruments

Instrument Name	Model No.	Brand	Serial No.	Last time	Next time
Spectrum Analyzer	MS2665C	ANRITSU	6200175476	09/30/03	09/30/04

9.4 Test Results

Channel	Bandwidth
Channel 01	884 kHz
Channel 40	884 kHz
Channel 79	848 kHz

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

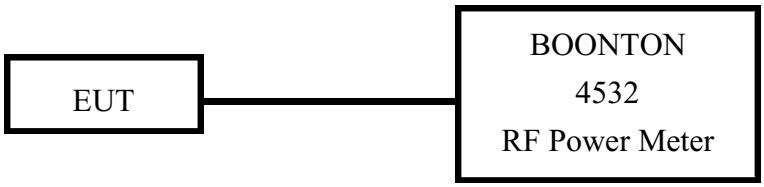
Bandwidth of Channel 1:

Bandwidth of Channel 40:

Bandwidth of Channel 79:

X. Section 15.247(b) Peak Output Power

10.1 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.

10.2 List of Test Instruments

				Calibration Date
Instrument Name	Model	Brand	Serial No.	Next time
RF Power Meter	4532	BOONTON	117501	04/16/05
Peak Power Sensor	57340	BOONTON	2698	04/16/05

10.3 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**
CH 01	-0.61	1.00	0.39	1.09
CH 40	-0.59	1.00	0.41	1.10
CH 79	-0.03	1.00	0.97	1.25

XI. Section 15.247(c) Band-edge Compliance

11.1 Test Condition

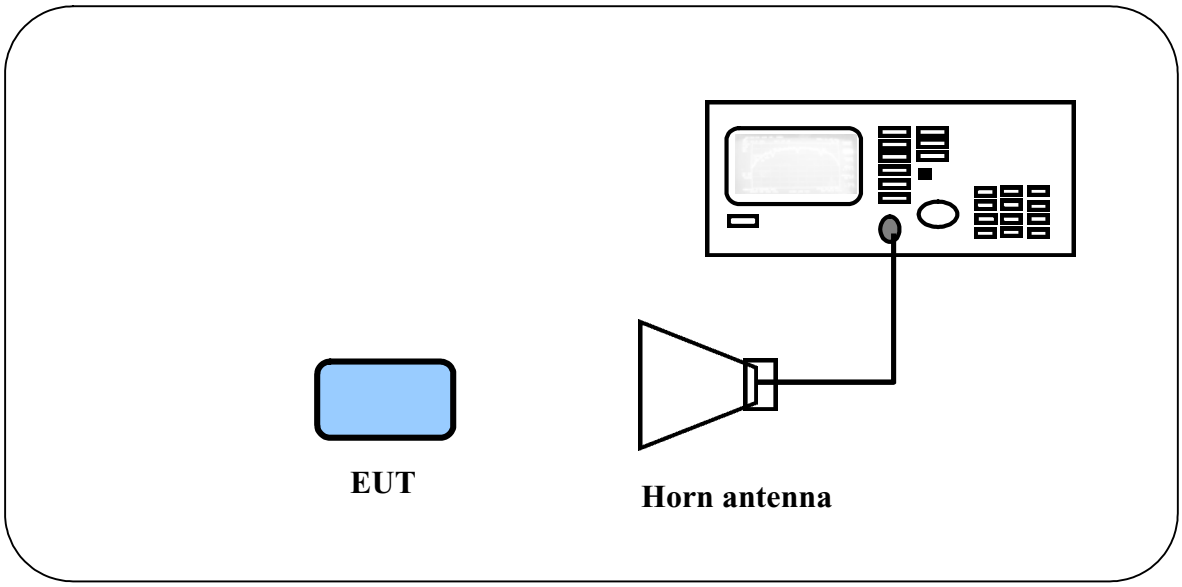
If any 100 kHz bandwidth outside these frequency bands, the radio frequency power that is produced by the modulation products of the spreading sequence, the information sequence and the carrier frequency shall be either *at least 20 dB below that in any 100 kHz bandwidth within the band that contains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

11.2 List of Test Instruments

				Calibration Date
Instrument Name	Model No.	Brand	Serial No.	Next time
Spectrum Analyzer	8564E	H P	3720A00840	08/13/05
Spectrum Analyzer	MS2665C	ANRITSU	6200175476	09/30/04
Microwave Preamplifier	84125C	HP	US36433002	08/13/05
Horn Antenna	3115	EMCO	9704 – 5178	12/12/04

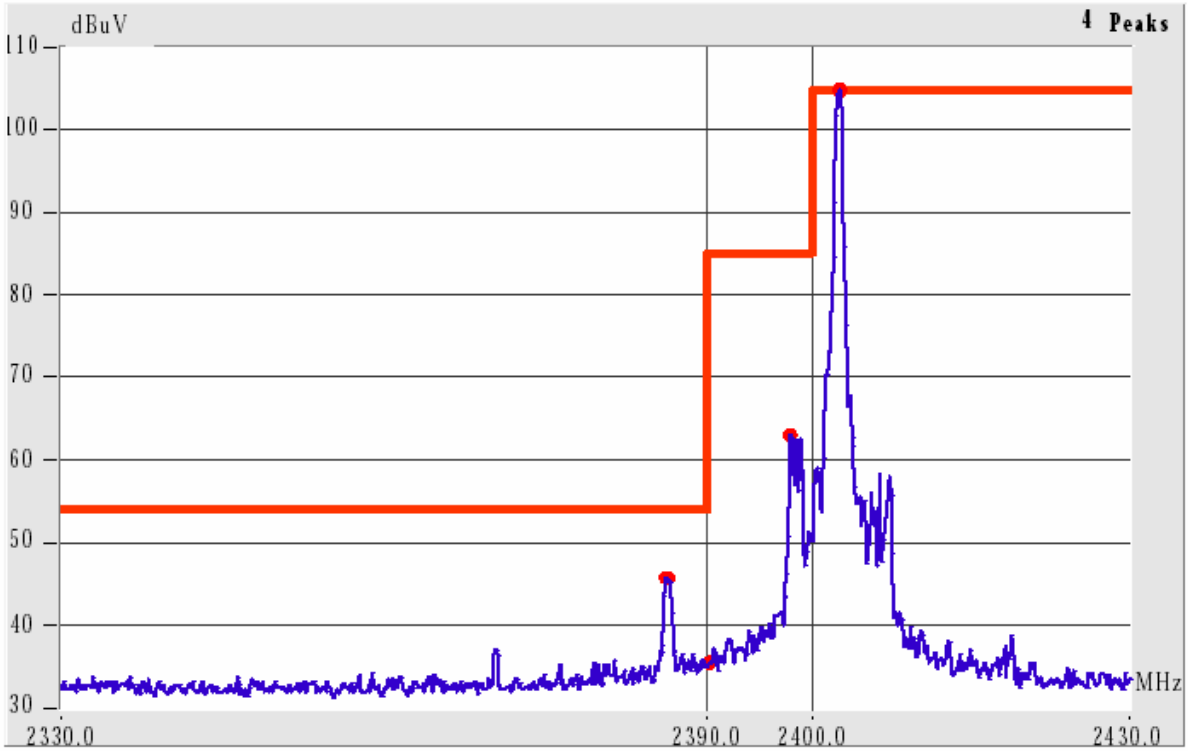
11.3 Test Instruments Configuration



11.4 Test Result of the Bandedge

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

Channel 1

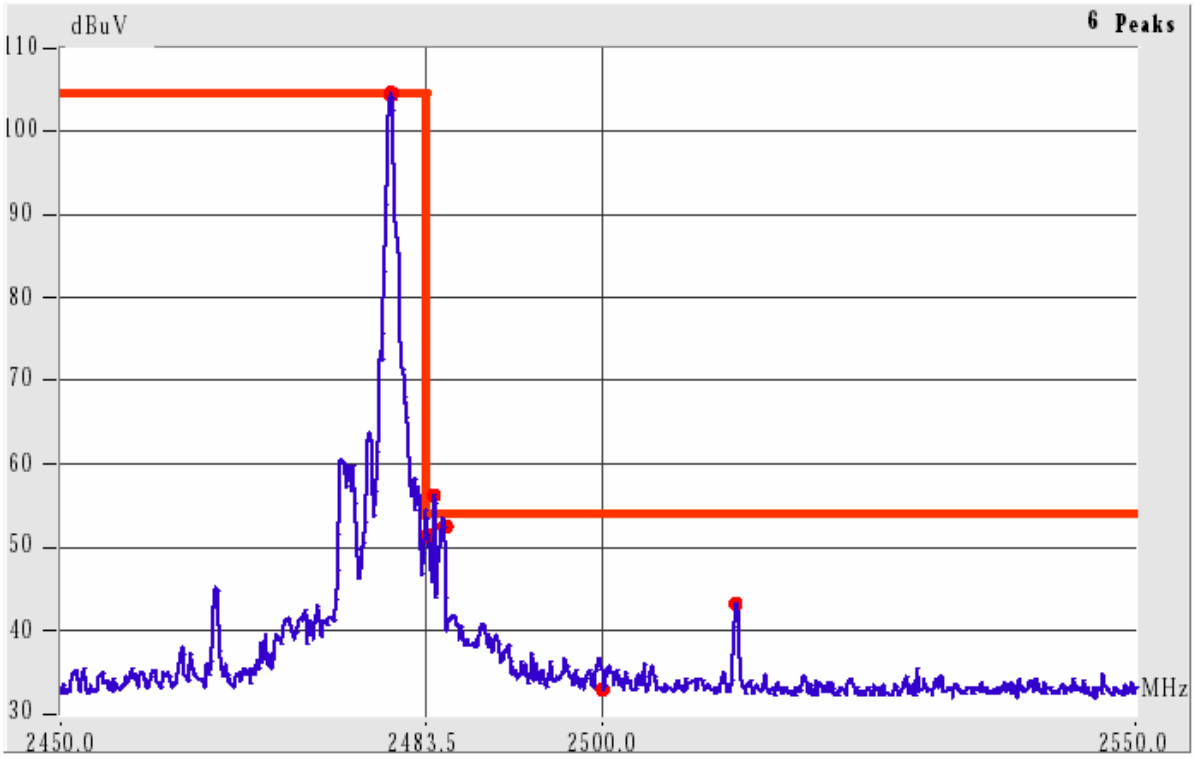


This is the hard copy of our bandedge measurement generated by our bandedge testing program. The plot shown above is the bandedge of channel 1.

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.

Radiated Emission					*Corrected Amplitude (dBμV/m)*		*Class B*		
Frequency (MHz)	*Ant. P.*	*Ant. H. (m)*	*Table (°)*	*Factors (dB)*	*Peak*	*Average*	*Limit (dBμV/m) Peak*	*Ave.*	*Margin (dB)*
2386.06	Hor	1.00	43	9.17	49.67	---	74.00	53.96	-4.29
2390.02	Hor	1.00	143	9.18	44.52	---	74.00	53.96	-9.44
2386.22	Ver	1.00	203	9.17	50.84	---	74.00	53.96	-3.12
2390.02	Ver	1.00	235	9.18	44.52	---	74.00	53.96	-9.44

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.

Radiated Emission					*Corrected Amplitude (dBμV/m)*		*Class B*		
Frequency (MHz)	*Ant. P.*	*Ant. H. (m)*	*Table ( )*	*Factors (dB)*	*Peak*	*Average*	*Limit (dBμV/m) Peak*	*Ave.*	*Margin (dB)*
2483.96	Hor	1.00	242	9.45	56.44	38.12	74.00	53.96	-15.84
2483.98	Hor	1.00	236	9.45	56.45	38.12	74.00	53.96	-15.84
2500.01	Hor	1.00	331	9.49	46.66	---	74.00	53.96	-7.30
2511.91	Hor	1.00	289	9.51	47.51	---	74.00	53.96	-6.45
2483.99	Ver	1.00	318	9.45	57.94	38.62	74.00	53.96	-15.34
2484.78	Ver	1.00	319	9.45	58.61	37.62	74.00	53.96	-15.35
2500.01	Ver	1.00	337	9.49	43.99	---	74.00	53.96	-9.97
2511.85	Ver	1.00	322	9.51	48.01	---	74.00	53.96	-5.95

XII. Section 15.247(c) Spurious Radiated Emissions

12.1 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 (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 (dBμV/m) is determined by algebraically adding the measured reading in dBμV, 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

FIa (dBuV/m) = FIr (dBμV) + Correction Factors

FIa : Actual Field Intensity

FIr : Reading of the Field Intensity

Correction Factors = Antenna Factor + Cable Loss – Amplifier Gain

For frequency between 1GHz to 25GHz

FIa (dBμV/m) = FIr (dBμV) + Correction Factor

FIa : Actual Field Intensity

FIr : Reading of the Field Intensity

Correction Factors = Antenna Factor + Cable Loss – Amplifier Gain

12.2 List of Test Instruments

				Calibration Date
Instrument Name	**Model**	**Brand**	**Serial No.**	**Next time**
EMI Receiver	8546A	HP	3520A00242	08/05/05
RF Filter Section	85460A	HP	3448A00217	08/05/05
Small Biconical Antenna	UBAA9114 & BBVU9135	SCHWARZECK	127	09/21/04
Pre-amplifier	PA1F	TRC	1FAC	05/20/05
Auto Switch Box (>30MHz)	ASB-01	TRC	9904-01	05/20/05
Coaxial Cable (Double shielded, 15 meter)	A30A30-0058-50FS-15M	JYEBAO	SMA-01	05/20/05
Coaxial Cable (1.1 meter)	A30A30-0058-50FS-1M	JYEBAO	SMA-02	05/20/05
Spectrum Analyzer	8564E	HP	3720A00840	08/13/05
Microwave Preamplifier	84125C	HP	US36433002	08/13/05
Horn Antenna	3115	EMCO	9104-3668	12/18/04
Standard Guide Horn Antenna	84125-80008	HP	18-26.5GHz	09/18/04
Standard Guide Horn Antenna	84125-80001	HP	26.5-40GHz	09/18/04
Horn Antenna	1196E (3115)	HP (EMCO)	9704-5178	12/12/04
Pre-amplifier	PA2F	TRC	2F1GZ	03/20/05
Coaxial Cable (3 miter)	A30A30-0058-50FST118	JYEBAO	MSA-05	03/20/05
Coaxial Cable (1 meter)	A30A30-0058-50FST118	JYEBAO	MSA-04	03/20/05

12.3 Test Result of Spurious Radiated Emissions

The highest peak values of radiated emissions form 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: Using travel charger at charging mode for 30MHz to 1GHz [Horizontal]

Radiated Emission				*Correction Factors*	*Corrected Amplitude*	*Class B (3 m)*	
Frequency (MHz)	*Amplitude (dBμV)*	*Ant. H. (m)*	*Table (°)*	*(dB)*	*(dBμV/m)*	*Limit (dBμV/m)*	*Margin (dB)*
71.22	20.32	1.00	219	1.20	21.52	40.00	-18.48
190.05	25.46	1.00	55	-3.66	21.80	43.50	-21.70
289.47	26.11	1.00	95	-3.78	22.33	46.00	-23.67
473.77	21.45	1.00	248	1.91	23.36	46.00	-22.64
644.74	21.51	1.00	145	8.27	29.78	46.00	-16.22
727.19	21.39	1.00	283	10.03	31.42	46.00	-14.58

Test mode: Using travel charger at charging mode for 30MHz to 1GHz [Vertical]

Radiated Emission				*Correction Factors*	*Corrected Amplitude*	*Class B (3 m)*	
Frequency (MHz)	*Amplitude (dBμV)*	*Ant. H. (m)*	*Table (°)*	*(dB)*	*(dBμV/m)*	*Limit (dBμV/m)*	*Margin (dB)*
39.70	26.17	1.00	288	5.83	32.00	40.00	-8.00
94.26	25.11	1.00	3	-0.76	24.35	43.50	-19.15
99.11	24.77	1.00	357	-1.15	23.62	43.50	-19.88
190.05	30.15	1.00	193	-3.66	26.49	43.50	-17.01
202.17	30.15	1.00	184	-3.83	26.32	43.50	-17.18
288.26	33.85	1.00	12	-3.80	30.05	46.00	-15.95

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: Using travel charger at charging mode 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*
3599.58	1.00	354	29.74	---	10.80	40.54	---	73.96	53.96	-13.42
5398.75	1.00	136	27.74	---	16.74	44.48	---	73.96	53.96	-9.48
7205.00	1.00	88	24.40	---	21.36	45.76	---	73.96	53.96	-8.20
9004.17	1.00	233	22.74	---	23.67	46.41	---	73.96	53.96	-7.55
19799.17	1.00	329	46.16	---	1.90	48.06	---	73.96	53.96	-5.90
23397.50	1.00	83	45.16	---	3.23	48.39	---	73.96	53.96	-5.57

Test mode: Using travel charger at charging mode 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*
3599.58	1.00	176	29.57	---	10.80	40.37	---	73.96	53.96	-13.59
5398.75	1.00	139	25.90	---	16.74	42.64	---	73.96	53.96	-11.32
7205.00	1.00	99	25.24	---	21.36	46.60	---	73.96	53.96	-7.36
9004.17	1.00	12	23.58	---	23.67	47.25	---	73.96	53.96	-6.71
19799.17	1.00	246	46.99	---	1.90	48.89	---	73.96	53.96	-5.07

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: Using travel charger with Y-cable at charging mode for 30MHz to 1GHz [Horizontal]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
39.09	20.04	1.00	20	5.91	25.95	40.00	-14.05
59.71	20.73	1.00	61	2.26	22.99	40.00	-17.01
175.50	21.50	1.00	9	-3.77	17.73	43.50	-25.77
229.46	22.88	1.00	35	-4.08	18.80	46.00	-27.20
288.26	27.50	1.00	17	-3.80	23.70	46.00	-22.30
538.64	21.25	1.00	165	4.53	25.78	46.00	-20.22

Test mode: Using travel charger with Y-cable at charging mode for 30MHz to 1GHz [Vertical]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
39.09	24.16	1.00	319	5.91	30.07	40.00	-9.93
91.84	25.02	1.00	335	-0.57	24.45	43.50	-19.05
160.34	24.62	1.00	297	-3.48	21.14	43.50	-22.36
188.84	26.75	1.00	142	-3.67	23.08	43.50	-20.42
285.84	35.99	1.00	23	-3.85	32.14	46.00	-13.86

Test mode: Using travel charger with Y-cable at charging mode for 1GHz to 25GHz [Horizontal]

Frequency	*Ant. H.*	*Table*	*Amplitude Peak / Ave.*		*Correction Factor*	*Corrected Amplitude Peak / Ave.*		*Limit Peak / Ave.*		*Margin*
MHz	*m*	*degree*	*dBµV*		*dB/m*	*dBµV/m*		*dBµV/m*		*dB*
3599.58	1.00	190	29.57	---	10.80	40.37	---	73.96	53.96	-13.59
5398.75	1.00	49	26.07	---	16.74	42.81	---	73.96	53.96	-11.15
7205.00	1.00	176	23.57	---	21.36	44.93	---	73.96	53.96	-9.03
9004.17	1.00	269	22.58	---	23.67	46.25	---	73.96	53.96	-7.71
19802.71	1.00	234	45.49	---	1.90	47.39	---	73.96	53.96	-6.57
23401.04	1.00	268	44.32	---	3.24	47.56	---	73.96	53.96	-6.40

Test mode: Using travel charger with Y-cable at charging mode for 1GHz to 25GHz [Vertical]

Frequency	*Ant. H.*	*Table*	*Amplitude Peak / Ave.*		*Correction Factor*	*Corrected Amplitude Peak / Ave.*		*Limit Peak / Ave.*		*Margin*
MHz	*m*	*degree*	*dBµV*		*dB/m*	*dBµV/m*		*dBµV/m*		*dB*
3599.58	1.00	335	29.24	---	10.80	40.04	---	73.96	53.96	-13.92
5398.75	1.00	328	26.74	---	16.74	43.48	---	73.96	53.96	-10.48
7205.00	1.00	144	24.40	---	21.36	45.76	---	73.96	53.96	-8.20
9004.17	1.00	313	22.24	---	23.67	45.91	---	73.96	53.96	-8.05
21601.87	1.00	42	44.99	---	2.76	47.75	---	73.96	53.96	-6.21
23401.04	1.00	146	44.99	---	3.24	48.23	---	73.96	53.96	-5.73

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

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
93.05	32.40	1.00	187	-0.66	31.74	43.50	-11.76
100.32	31.26	1.00	259	-1.24	30.02	43.50	-13.48
103.96	29.52	1.00	259	-1.45	28.07	43.50	-15.43
145.19	21.00	1.00	199	-3.00	18.00	43.50	-25.50
586.54	21.42	1.00	113	6.22	27.64	46.00	-18.36
678.69	20.67	1.00	345	9.10	29.77	46.00	-16.23

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

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
93.05	25.16	1.00	60	-0.66	24.50	43.50	-19.00
100.32	26.07	1.00	164	-1.24	24.83	43.50	-18.67
152.46	29.06	1.00	98	-3.22	25.84	43.50	-17.66
205.81	28.00	1.00	343	-3.86	24.14	43.50	-19.36
394.96	28.55	1.00	109	-1.17	27.38	46.00	-18.62
505.30	23.76	1.00	147	3.12	26.88	46.00	-19.12

Test mode: Standby mode 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*
1595.00	1.00	178	35.24	---	0.30	35.54	---	73.96	53.96	-18.42
3987.17	1.00	109	30.74	---	12.45	43.19	---	73.96	53.96	-10.77
4952.50	1.00	200	28.57	---	15.39	43.96	---	73.96	53.96	-10.00
8657.08	1.00	169	24.41	---	22.98	47.39	---	73.96	53.96	-6.57
18722.50	1.00	315	48.26	---	1.30	49.56	---	73.96	53.96	-4.40

Test mode: Standby mode 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*
1467.50	1.00	296	37.91	---	0.13	38.04	---	73.96	53.96	-15.92
3380.00	1.00	292	32.58	---	10.12	42.70	---	73.96	53.96	-11.26
7155.42	1.00	319	25.07	---	21.16	46.23	---	73.96	53.96	-7.73
11277.92	1.00	327	28.08	---	21.77	49.85	---	73.96	53.96	-4.11
18811.04	1.00	297	47.26	---	1.29	48.55	---	73.96	53.96	-5.41

Test mode: BT CH01 for 30MHz to 1GHz, EUT Z-axis [Horizontal]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
93.05	34.59	1.00	105	-0.66	33.93	43.50	-9.57
102.75	27.51	1.00	105	-1.38	26.13	43.50	-17.37
154.89	20.55	1.00	56	-3.30	17.25	43.50	-26.25
259.16	23.90	1.00	249	-4.20	19.70	46.00	-26.30
288.26	23.08	1.00	38	-3.80	19.28	46.00	-26.72
365.86	20.71	1.00	50	-2.18	18.53	46.00	-27.47

Test mode: BT CH01 for 30MHz to 1GHz, EUT Y-axis [Vertical]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
39.70	23.58	1.00	354	5.83	29.41	40.00	-10.59
93.05	24.95	1.00	245	-0.66	24.29	43.50	-19.21
100.32	25.18	1.00	12	-1.24	23.94	43.50	-19.56
162.16	23.97	1.00	340	-3.54	20.43	43.50	-23.07
209.45	23.99	1.00	132	-3.89	20.10	43.50	-23.40
307.66	24.97	1.00	14	-3.56	21.41	46.00	-24.59

Test mode: BT CH01 for 1GHz to 25GHz, EUT Y-axis [Horizontal]

Frequency	*Ant. H.*	*Table*	*Amplitude Peak / Ave.*		*Correction Factor*	*Corrected Amplitude Peak / Ave.*		*Limit Peak / Ave.*		*Margin*
MHz	*m*	*degree*	*dBµV*		*dB/m*	*dBµV/m*		*dBµV/m*		*dB*
4805.00	1.00	167	37.10	---	3.69	40.79	---	73.96	53.96	-13.17
7203.54	1.00	45	36.78	---	9.91	46.69	---	73.96	53.96	-7.27
9608.12	1.00	15	35.11	---	11.47	46.58	---	73.96	53.96	-7.38
12006.67	1.00	128	38.61	---	10.03	48.64	---	73.96	53.96	-5.32
19214.79	1.00	348	45.43	---	1.23	46.66	---	73.96	53.96	-7.30

Test mode: BT CH01 for 1GHz to 25GHz, EUT X-axis [Vertical]

Frequency	*Ant. H.*	*Table*	*Amplitude Peak / Ave.*		*Correction Factor*	*Corrected Amplitude Peak / Ave.*		*Limit Peak / Ave.*		*Margin*
MHz	*m*	*degree*	*dBµV*		*dB/m*	*dBµV/m*		*dBµV/m*		*dB*
4805.00	1.00	54	37.77	---	3.69	41.46	---	73.96	53.96	-12.50
7203.54	1.00	229	35.78	---	9.91	45.69	---	73.96	53.96	-8.27
9608.12	1.00	80	35.11	---	11.47	46.58	---	73.96	53.96	-7.38
12006.67	1.00	90	37.61	---	10.03	47.64	---	73.96	53.96	-6.32
19214.79	1.00	189	45.93	---	1.23	47.16	---	73.96	53.96	-6.80
24020.83	1.00	237	45.27	---	0.55	45.82	---	73.96	53.96	-8.14

Test mode: BT CH40 for 30MHz to 1GHz, EUT Z-axis [Horizontal]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
93.05	34.50	1.00	340	-0.66	33.84	43.50	-9.66
103.96	28.44	1.00	311	-1.45	26.99	43.50	-16.51
188.84	20.83	1.00	156	-3.67	17.16	43.50	-26.34
259.16	23.01	1.00	29	-4.20	18.81	46.00	-27.19
382.84	22.24	1.00	222	-1.59	20.65	46.00	-25.35
648.37	20.99	1.00	339	8.40	29.39	46.00	-16.61

Test mode: BT CH40 for 30MHz to 1GHz, EUT Y-axis [Vertical]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
94.26	26.57	1.00	83	-0.76	25.81	43.50	-17.69
99.11	25.85	1.00	21	-1.15	24.70	43.50	-18.80
162.16	23.15	1.00	142	-3.54	19.61	43.50	-23.89
190.05	22.51	1.00	30	-3.66	18.85	43.50	-24.65
204.60	24.60	1.00	328	-3.85	20.75	43.50	-22.75
564.71	21.57	1.00	270	5.50	27.07	46.00	-18.93

Test mode: BT CH40 for 1GHz to 25GHz, EUT Z-axis [Horizontal]

Frequency	*Ant. H.*	*Table*	*Amplitude Peak / Ave.*		*Correction Factor*	*Corrected Amplitude Peak / Ave.*		*Limit Peak / Ave.*		*Margin*
MHz	*m*	*degree*	*dBµV*		*dB/m*	*dBµV/m*		*dBµV/m*		*dB*
4877.50	1.00	166	38.94	---	3.97	42.91	---	73.96	53.96	-11.05
7318.33	1.00	192	34.78	---	10.31	45.09	---	73.96	53.96	-8.87
9759.17	1.00	28	34.78	---	11.90	46.68	---	73.96	53.96	-7.28
12200.00	1.00	0	39.78	---	9.77	49.55	---	73.96	53.96	-4.41
19526.46	1.00	281	45.60	---	1.18	46.78	---	73.96	53.96	-7.18

Test mode: BT CH40 for 1GHz to 25GHz, EUT Y-axis [Vertical]

Frequency	*Ant. H.*	*Table*	*Amplitude Peak / Ave.*		*Correction Factor*	*Corrected Amplitude Peak / Ave.*		*Limit Peak / Ave.*		*Margin*
MHz	*m*	*degree*	*dBµV*		*dB/m*	*dBµV/m*		*dBµV/m*		*dB*
1587.50	1.00	285	36.00	---	14.53	50.53	---	73.96	53.96	-3.43
4877.50	1.00	360	38.11	---	3.97	42.08	---	73.96	53.96	-11.88
7318.33	1.00	88	35.11	---	10.31	45.42	---	73.96	53.96	-8.54
9759.17	1.00	218	35.78	---	11.90	47.68	---	73.96	53.96	-6.28
12200.00	1.00	245	39.28	---	9.77	49.05	---	73.96	53.96	-4.91
19526.46	1.00	169	47.44	---	1.18	48.62	---	73.96	53.96	-5.34

Test mode: BT CH79 for 30MHz to 1GHz, EUT Z-axis [Horizontal]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
93.05	34.83	1.00	44	-0.66	34.17	43.50	-9.33
103.96	28.65	1.00	287	-1.45	27.20	43.50	-16.30
209.45	21.07	1.00	12	-3.89	17.18	43.50	-26.32
259.16	23.62	1.00	266	-4.20	19.42	46.00	-26.58
346.46	22.59	1.00	357	-2.80	19.79	46.00	-26.21
438.61	21.99	1.00	260	0.55	22.54	46.00	-23.46

Test mode: BT CH79 for 30MHz to 1GHz, EUT Y-axis [Vertical]

Radiated Emission				Correction Factors	Corrected Amplitude	Class B (3 m)	
Frequency (MHz)	Amplitude (dBμV)	Ant. H. (m)	Table (°)	(dB)	(dBμV/m)	Limit (dBμV/m)	Margin (dB)
93.05	26.65	1.00	126	-0.66	25.99	43.50	-17.51
99.11	25.90	1.00	345	-1.15	24.75	43.50	-18.75
162.16	23.18	1.00	175	-3.54	19.64	43.50	-23.86
204.60	24.04	1.00	28	-3.85	20.19	43.50	-23.31
308.87	25.07	1.00	323	-3.54	21.53	46.00	-24.47
441.04	21.77	1.00	49	0.65	22.42	46.00	-23.58

Test mode: BT CH79 for 1GHz to 25GHz, EUT X-axis [Horizontal]

Frequency	Ant. H.	Table	Amplitude Peak / Ave.		Correction Factor	Corrected Amplitude Peak / Ave.		Limit Peak / Ave.		Margin
MHz	m	degree	dBµV		dB/m	dBµV/m		dBµV/m		dB
3164.58	1.00	253	36.17	---	11.22	47.39	---	73.96	53.96	-6.57
4956.04	1.00	50	39.11	---	4.23	43.34	---	73.96	53.96	-10.62
7439.17	1.00	114	33.78	---	10.33	44.11	---	73.96	53.96	-9.85
9916.25	1.00	146	35.44	---	11.70	47.14	---	73.96	53.96	-6.82
12399.37	1.00	169	37.27	---	9.02	46.29	---	73.96	53.96	-7.67
24800.00	1.00	168	46.77	---	0.44	47.21	---	73.96	53.96	-6.75

Test mode: BT CH79 for 1GHz to 25GHz, EUT Z-axis [Vertical]

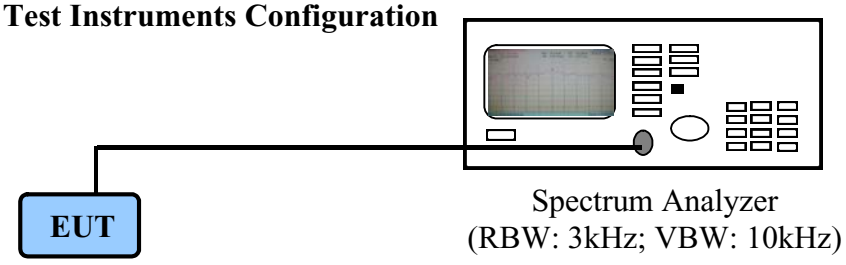
Frequency	Ant. H.	Table	Amplitude Peak / Ave.		Correction Factor	Corrected Amplitude Peak / Ave.		Limit Peak / Ave.		Margin
MHz	m	degree	dBµV		dB/m	dBµV/m		dBµV/m		dB
4956.04	1.00	218	39.78	---	4.23	44.01	---	73.96	53.96	-9.95
7439.17	1.00	79	34.61	---	10.33	44.94	---	73.96	53.96	-9.02
9916.25	1.00	65	35.27	---	11.70	46.97	---	73.96	53.96	-6.99
12399.37	1.00	30	36.44	---	9.02	45.46	---	73.96	53.96	-8.50
19838.12	1.00	197	45.27	---	1.14	46.41	---	73.96	53.96	-7.55
24800.00	1.00	150	45.43	---	0.44	45.87	---	73.96	53.96	-8.09

XIII. Section 15.247(d): Power Spectral Density

13.1 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.

13.2 Test Instruments Configuration



P.S.: Notebook computer to control the EUT at maximal power output and channel Number and set antenna kit

13.3 List of Test Instruments

Instrument Name	Model No.	Brand	Serial No.	Last time	Next time
Spectrum Analyzer	MS2665C	ANRITSU	6200175476	09/30/03	09/30/04

13.4 Test Result of Power spectral density

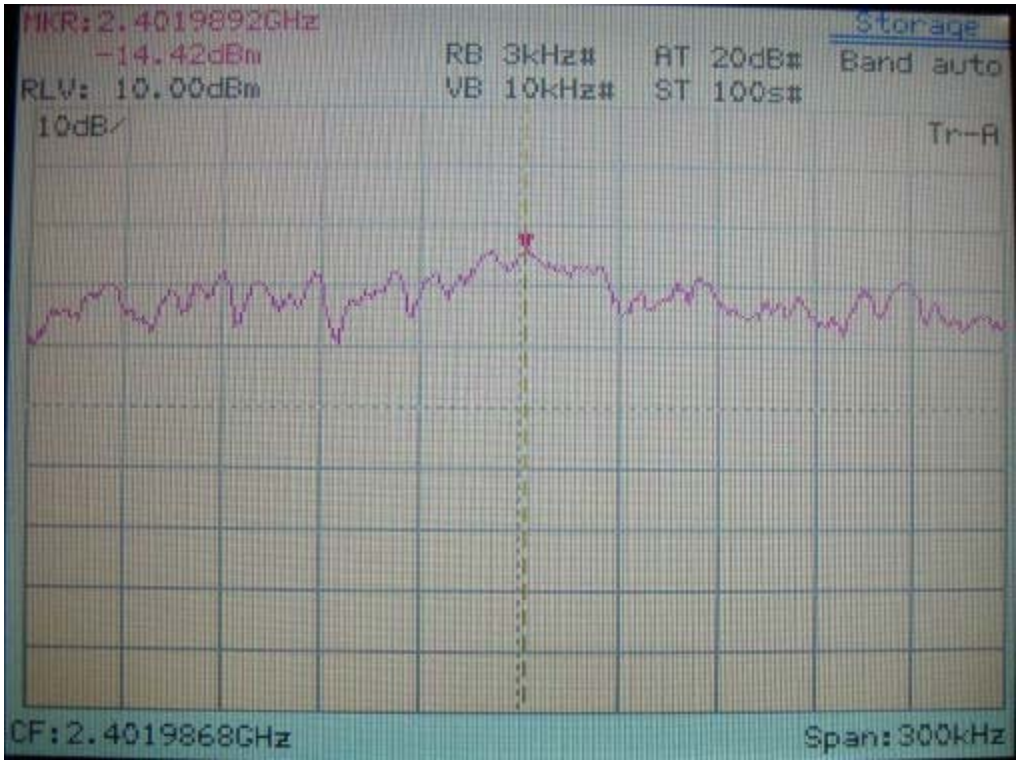
The following table shows a summary of the test results of the Power Spectral Density.

Channel	*Ppr (dBm)*	*Cable Loss (dB)*	*Ppq (dBm)*	*Limit (dB)*	*Margin (dB)*
CH 01	-14.42	1.00	-13.42	8.00	-21.42
CH 40	-13.59	1.00	-12.59	8.00	-20.59
CH 79	-12.75	1.00	-11.75	8.00	-19.75

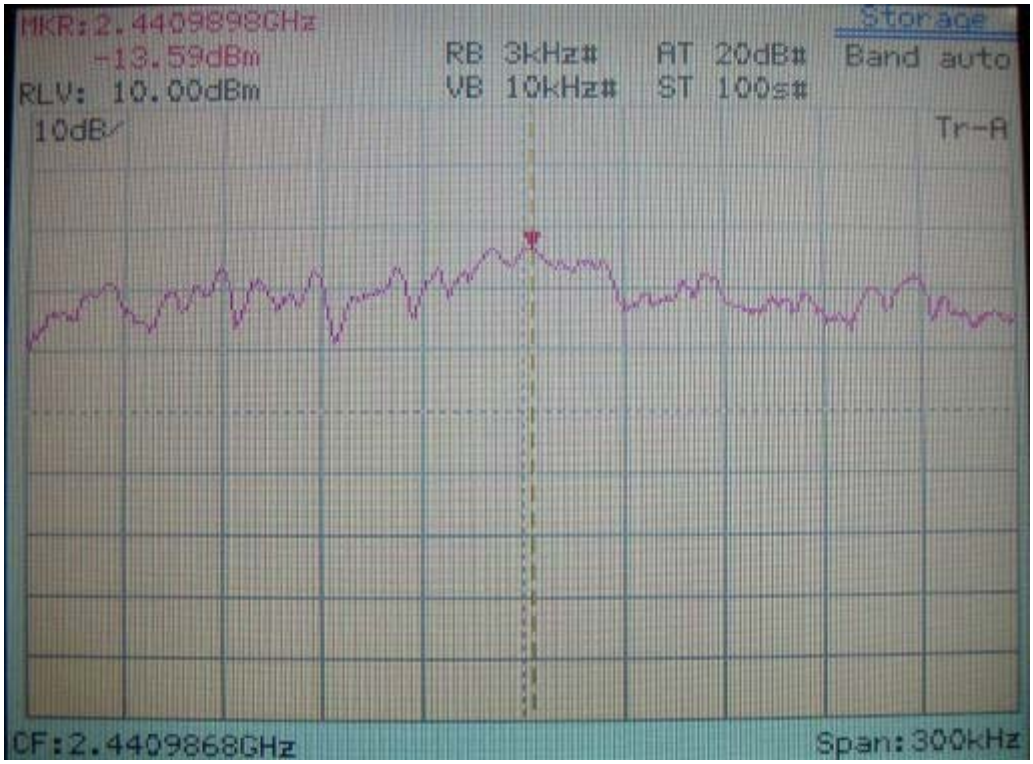
Note:

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|

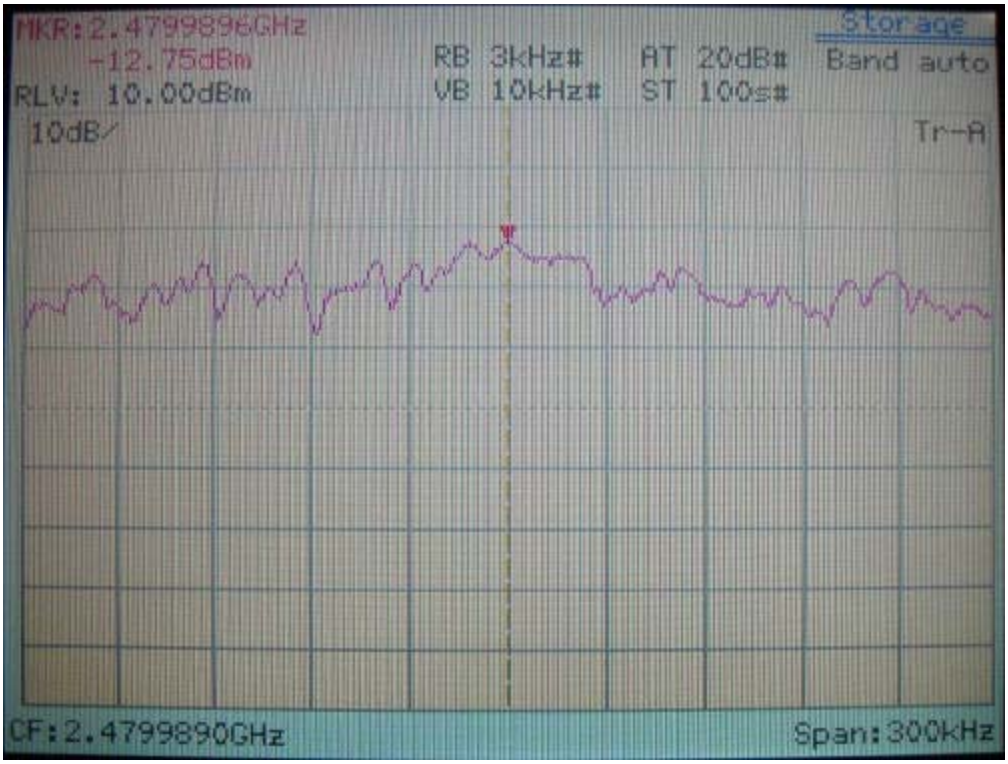
Channel 01



Channel 40



Channel 79


MKR:2.4799896GHz
-12.75dBm
RLV: 10.00dBm
10dB/
RB 3kHz#
VB 10kHz#
AT 20dB#
ST 100s#
Storage
Band auto
Tr-A
CF:2.4799890GHz
Span:300kHz