

Test Report for FCC Part 15 Subpart B & C

of

Product Name

**Notebook Personal Computer
(with Intel PRO/Wireless 2200BG Network Connection inside)**

Model

**W130
(Brand:MITAC)**

Applied by:

MITAC Technology Corporation
4F, No.1, R&D Road 2,
Hsinchu Science-Based industrial Park, Hsinchu 300
Taiwan,R. O. C.

Test Performed by:

International Standards Laboratory

No. 120, Lane 180, San Ho Tsuen, Hsin Ho Rd.
Lung-Tan Hsiang, Tao Yuan County 325
Taiwan, R.O.C.
Tel:(03)407-1718 Fax:(03)407-1738

Report Number: ISL-05LR001FC

Issue Date: 2005/01/21

HC LAB:NVLAP:200234-0;VCCI: R-341,C-354;NEMKO:ELA 113a,113c;BSMI:SL2-IN-E-0037;SL2-R1-E-0037;CNLA:1178

LT LAB:NVLAP:200234-0;VCCI: R-1435,C-1440;NEMKO:ELA 113b,113d;BSMI:SL2-IN-E-0013;CNLA:0997

ISL-T10-R29-1

Contents of Report

1.	General	1
1.1	Certification of Accuracy of Test Data.....	1
2.	Test Results Summary.....	2
3.	Description of Equipment Under Test (EUT)	3
4.	TEST RESULTS (802.11b).....	5
4.1	Powerline Conducted Emissions [Section 15.207]	5
4.1.1	EUT Configuration.....	5
4.1.2	Test Procedure	5
4.1.3	EMI Receiver/Spectrum Analyzer Configuration (for the frequencies tested).....	5
4.1.4	Test Data:	6
4.2	Bandwidth for DSSS [Section 15.247 (a)(2)].....	8
4.2.1	Test Procedure	8
4.2.2	Test Setup	8
4.2.3	Test Data:	8
4.3	DSSS Maximum Peak Output Power [Section 15.247 (b)(1)].....	11
4.3.1	Test Procedure	11
4.3.2	Test Setup	11
4.3.3	Test Data.....	11
4.4	Radiated Emission Measurement [Section [15.247(c)(4)]	12
4.4.1	EUT Configuration.....	12
4.4.2	Test Procedure	12
4.4.3	EMI Receiver/Spectrum Analyzer Configuration (for the frequencies tested).....	12
4.4.4	Test Data (30MHz – 1GHz):	13
4.4.5	Test Data (1GHz – 25 GHz)	14
4.5	Band Edge Measurement	17
4.5.1	Test Procedure (Conducted).....	17
4.5.2	Test Setup (Conducted).....	17
4.5.3	Test Data:	17
4.5.4	Test Procedure (Radiated)	19
4.5.5	Test Setup (Radiated)	19
4.5.6	Test Data.....	20
4.6	RF Exposure Measurement [Section 15.247(b)(4) & 1.1307(b)].....	23
4.7	DSSS Peak Power Spectral Density [Section 15.247(d)]	24
4.7.1	Test Procedure	24
4.7.2	Test Setup	24
4.7.3	Test Data.....	24
5.	TEST RESULTS (802.11g)	27
5.1	Powerline Conducted Emissions [Section 15.207]	27
5.1.1	EUT Configuration.....	27
5.1.2	Test Procedure	27

5.1.3	EMI Receiver/Spectrum Analyzer Configuration (for the frequencies tested)	27
5.1.4	Test Data:	28
5.2	Bandwidth for DSSS [Section 15.247 (a)(2)]	30
5.2.1	Test Procedure	30
5.2.2	Test Setup	30
5.2.3	Test Data:	30
5.3	DSSS Maximum Peak Output Power [Section 15.247 (b)(1)]	33
5.3.1	Test Procedure	33
5.3.2	Test Setup	33
5.3.3	Test Data.....	33
5.4	Radiated Emission Measurement [Section [15.247(c)(4)]	34
5.4.1	EUT Configuration.....	34
5.4.2	Test Procedure	34
5.4.3	EMI Receiver/Spectrum Analyzer Configuration (for the frequencies tested)	34
5.4.4	Test Data (30MHz – 1GHz):	35
5.4.5	Test Data (1GHz – 25 GHz)	36
5.5	Band Edge Measurement	39
5.5.1	Test Procedure (Conducted).....	39
5.5.2	Test Setup (Conducted).....	39
5.5.3	Test Data:	39
5.5.4	Test Procedure (Radiated)	41
5.5.5	Test Setup (Radiated)	41
5.5.6	Test Data.....	42
5.6	RF Exposure Measurement [Section 15.247(b)(4) & 1.1307(b)].....	45
5.7	DSSS Peak Power Spectral Density [Section 15.247(d)]	46
5.7.1	Test Procedure	46
5.7.2	Test Setup	46
5.7.3	Test Data.....	46
6.	Appendix	49
6.1	Appendix A: Measurement Procedure for Power line Conducted Emissions	49
6.2	Appendix B: Test Procedure for Radiated Emissions.....	50
6.3	Appendix C: Test Equipment.....	51
6.3.1	Test Equipment List.....	51
6.3.2	Software for Controlling Spectrum/Receiver and Calculating Test Data	51
6.4	Appendix D: Layout of EUT and Support Equipment.....	52
6.4.1	General Conducted Test Configuration	52
6.4.2	General Radiation Test Configuration.....	53
6.5	Appendix E: Description of Support Equipment	54
6.5.1	Description of Support Equipment	54
6.5.2	Software for Controlling Support Unit	54
6.5.3	I/O Cable Condition of EUT and Support Units	55
6.6	Appendix F: Accuracy of Measurement.....	56
6.7	Appendix G: Photographs of EUT Configuration Test Set Up	58
6.8	Appendix H: Antenna Spec.....	61

1. General

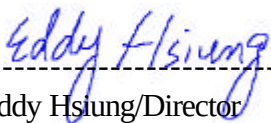
1.1 Certification of Accuracy of Test Data

Standards:	CFR 47 Part 15 Subpart B Class B CFR 47 Part 15 Subpart C (Section 15.247)
Test Procedure:	ANSI C63.4:2003
Equipment Tested:	Notebook Personal Computer (with Intel PRO/Wireless 2200BG Network Connection inside)
Model:	W130
Applied by:	MITAC Technology Corporation
Sample received Date:	2005/01/17
Final test Date :	2005/01/21
Test Result	PASS
Test Site:	Chamber 02, Conduction 02
Temperature	Refer to each site test data
Humidity:	Refer to each site test data
Test Engineer:	Mailes Hsieh

All the tests in this report have been performed and recorded in accordance with the standards described above and performed by an independent electromagnetic compatibility consultant, International Standards Laboratory.

The test results contained in this report accurately represent the measurements of the characteristics and the energy generated by sample equipment under test at the time of the test. The sample equipment tested as described in this report is in compliance with the limits of above standards.

Approve & Signature



Eddy Hsiung/Director

Test results given in this report apply only to the specific sample(s) tested under stated test conditions. This report shall not be reproduced other than in full without the explicit written consent of ISL. This report totally contains 64 pages, including 1 cover page, 2 contents page, and 61 pages for the test description. This report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government.

This test data shown below is traceable to NIST or national or international standard. International Standards Laboratory certifies that no party to this application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 853(a).

2. Test Results Summary

The 802.11b functions of EUT has been tested according to the FCC regulations listed below:

Tested Standards: 47 CFR Part 15 Subpart C			
Standard Section	Test Type	Result	Remarks
15.207	AC Power Line Emissions	Pass	
15.247(a)(2)	Spectrum Bandwidth Of DSSS device	Pass	
15.247(b)	Max. Peak Output Power	Pass	
15.247(c)	Radiated Emissions 30MHz – 25 GHz	Pass	
15.247 (c)	Band Edge Measurement	Pass	
15.247(b)(4)	Radiation Exposure	Pass	MPE report attached
15.247 (d)	Power Spectral Density	Pass	

The 802.11g functions of EUT has been tested according to the FCC regulations listed below:

Tested Standards: 47 CFR Part 15 Subpart C			
Standard Section	Test Type	Result	Remarks
15.207	AC Power Line Emissions	Pass	
15.247(a)(2)	Spectrum Bandwidth Of DSSS device	Pass	
15.247(b)	Max. Peak Output Power	Pass	
15.247(c)	Radiated Emissions 30MHz – 25 GHz	Pass	
15.247 (c)	Band Edge Measurement	Pass	
15.247(b)(4)	Radiation Exposure	Pass	MPE report attached
15.247 (d)	Power Spectral Density	Pass	

3. Description of Equipment Under Test (EUT)

Description:	Notebook Personal Computer (with Intel PRO/Wireless 2200BG Network Connection inside)
Model No.:	W130
FCC ID:	MAU014
Brand:	MITAC
Wireless LAN Module:	Intel, Model: WM3B2200BG
Frequency Range 802.11b/g:	2400 - 2483.5 MHz
Support channel: 802.11b/g	11 Channels
Modulation Skill:	802.11b DBPSK(1Mbps), DQPSK(2Mbps), CCK(5.5/11Mbps) 802.11g OFDM (6M - 54Mbps)
Antennas Type:	PIFA Type in Metal made by Tonyo Electronics Co., Ltd.
Antenna Connected:	Connected to RF connector on the PCB of the 802.11b/g WLAN Adapter. The user is not possible to change the antenna without disassembling the notebook computer.
Antenna peak Gain:	
Main antenna	0.15 dBi (11b/g)
Power Type of LAN module:	3.3V DC from Notebook PC

The channel and the operation frequency of 802.11b and 802.11g is listed below:

Channel	Frequency(MHz)	Channel	Frequency(MHz)
01	2412	07	2442
02	2417	08	2447
03	2422	09	2452
04	2427	10	2457
05	2432	11	2462
06	2437		

Adapter Type:	Delta (Model:ADP-90FB REV:F)
Hard Disk Driver:	Toshiba (Model:MK4021GAS)
Modem Card:	Askey (Model: V1456 VQL-P1(INT))
SDRAM :	Infineon (Model:HYB25D256800BT-7)
USB Connector:	two 4 Pins
RJ11 Connector:	one 2 Pins
RJ45 Connector:	one 8 Pins
VGA Connector:	one 15 Pins
PCMCIA Slot:	one
Line out Port:	one
Line-in Port:	one
Serial Port:	one
DC IN Port:	one
Battery:	Li-ION, DC 11.1Volt 6000mAh REV: R00032412007
LCD:	(Model: 12X12054DT037)
Display:	LCD & CRT (1024*768)
Maximum Resolution :	LCD & CRT (1024*768)
Speed & CPU	
Speed	CPU
100MHz	Pentium 3 1GHz

EMI Noise Source:

Crystal: 25.0MHz (X2), 14.318MHz (X3), 16.0MHz (X5)

Clock Generator: U24

EMI Solution:

1. Add one filter core in RJ11 cable.
2. Add gasket in low case and contact with I/O bracket near the RJ45 connector.
3. Add gasket in low case and contact with I/O bracket near the USB connector.
4. Add gasket in low case and contact with Hard disk Cable.

4. TEST RESULTS (802.11b)

4.1 Powerline Conducted Emissions [Section 15.207]

4.1.1 EUT Configuration

The conducted emission test setups are in accordance with Figs 9, 10(a) and 10(b) of ANSI C63.4-2001, CFR 47 Part 15 Subpart B; or EN55022:1994/ A1:1995/A2:1997; CISPR 22:1993/A1:1995/A2:1996.

The EUT was set up on the non-conductive table that is 1.0 by 1.5 meter, 80cm above ground. The wall of the shielded room was located 40cm to the rear of the EUT.

Power to the EUT was provided through the LISN. The impedance vs. frequency characteristic of the LISN is complied with the limit shown on the figure 1 of ANSI C63.4-2001.

Both lines (neutral and hot) were connected to the LISN in series at testing. A coaxial-type connector which provides one 50 ohms terminating impedance was provided for connecting the test instrument. The excess length of the power cord was folded back and forth at the center of the lead so as to form a bundle not exceeding 40cm in length.

Any changes made to the configuration, or modifications made to the EUT, during testing are noted in the following test record.

If the EUT is a Personal Computer or a peripheral of personal computer, and the personal computer has an auxiliary AC outlet which can be used for providing power to an external monitor, then all measurements will be made with the monitor power from first the computer-mounted AC outlet and then a floor-mounted AC outlet.

4.1.2 Test Procedure

The system was set up as described above, with the EMI diagnostic software running. The main power line conducted EMI tests were run on the hot and neutral conductors of the power cord and the results were recorded. The effect of varying the position of the interface cables has been investigated to find the configuration that produces maximum emission.

At the frequencies where the peak values of the emissions were higher than 6dB below the applicable limits, the emissions were also measured with the quasi-peak detectors. At the frequencies where the quasi-peak values of the emissions were higher than 6dB below the applicable average limits, the emissions were also measured with the average detectors.

The highest emissions were analyzed in details by operating the spectrum analyzer in fixed tuned mode to determine the nature of the emissions and to provide information which could be useful in reducing their amplitude.

4.1.3 EMI Receiver/Spectrum Analyzer Configuration (for the frequencies tested)

Frequency Range	150 KHz--30MHz
Detector Function	Quasi-Peak/Average
Bandwidth (RBW)	9KHz

4.1.4 Test Data:

Power Line Conducted Emissions (Hot) Channel 1, 6, 11

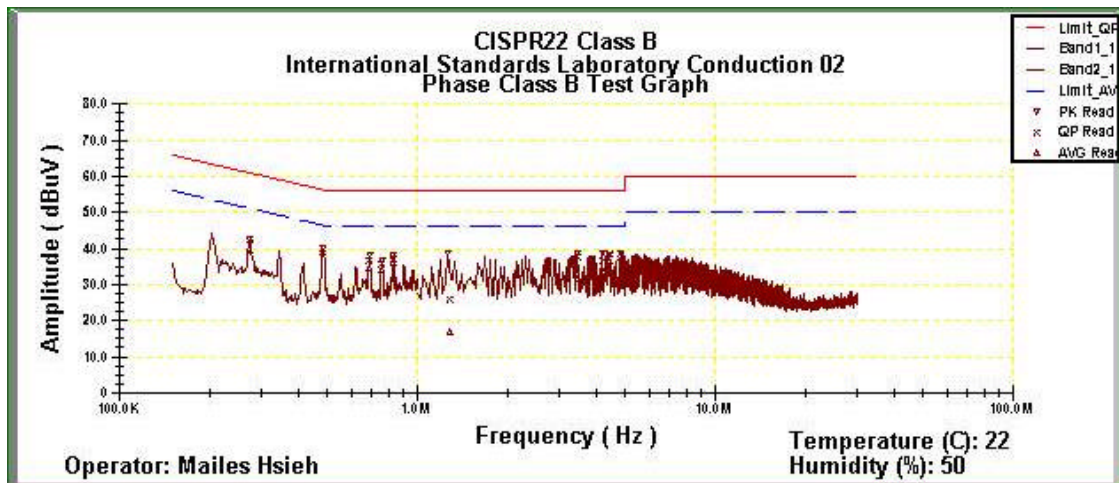
Operator:MailesHsieh

Temperature(C):22

12:39:14PM,Saturday,January22,2005

Humidity(%):50

Frequency	LISNLoss	CableLoss	QPCorrt.	QPLimit	QPMargin	AVECorrt.	AVELimit	AVEMargin
MHz	(dB)	(dB)	Amp.(dBuV)	(dBuV)	(dB)	Amp.(dBuV)	(dBuV)	(dB)
0.27551	0.10	0.09	42.65	62.41	-19.77	39.14	52.41	-13.28
0.48158	0.11	0.07	39.87	56.53	-16.66	38.62	46.53	-7.91
0.68903	0.15	0.07	36.60	56.00	-19.40	34.51	46.00	-11.49
0.75661	0.16	0.07	35.73	56.00	-20.27	34.11	46.00	-11.89
0.82686	0.17	0.07	36.97	56.00	-19.03	35.91	46.00	-10.09
1.28443	0.27	0.08	25.80	56.00	-30.20	16.78	46.00	-29.22
3.44653	0.20	0.13	37.67	56.00	-18.33	31.42	46.00	-14.58
4.19916	0.20	0.14	36.73	56.00	-19.27	33.38	46.00	-12.62
4.40818	0.21	0.14	38.48	56.00	-17.52	36.14	46.00	-9.86
4.81953	0.21	0.15	38.55	56.00	-17.45	37.19	46.00	-8.81



Power Line Conducted Emissions (Neutral) Channel 1, 6, 11

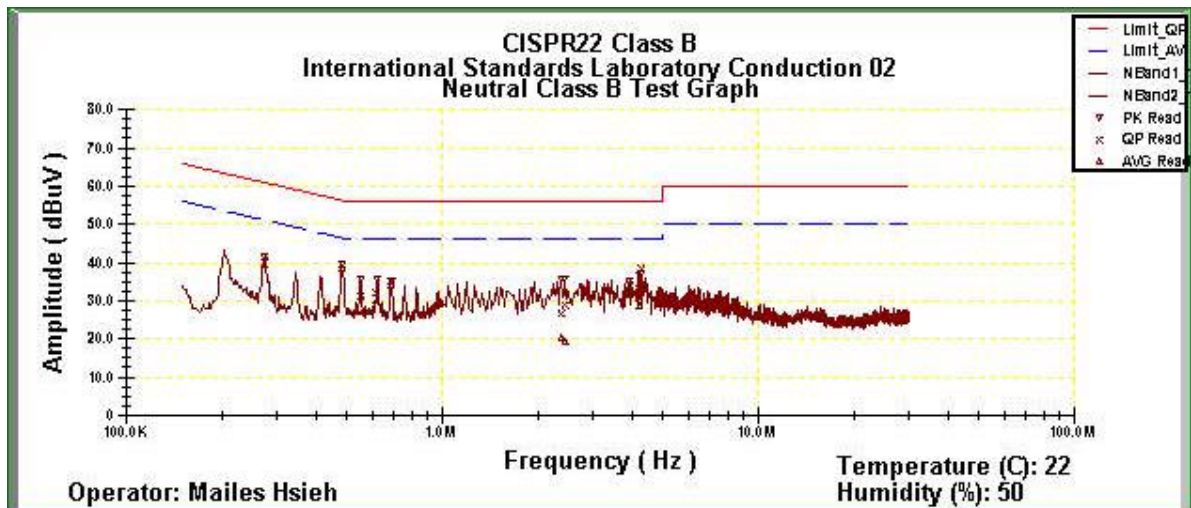
Operator:MailesHsieh

Temperature(C):22

Humidity(%):50

12:10:12PM,Saturday,January22,2005

Frequency	LISN Loss	Cable Loss	QPCorrt.	QPLimit	QPMargin	AVECorrt.	AVELimit	AVEMargin
MHz	(dB)	(dB)	Amp.(dBuV)	(dBuV)	(dB)	Amp.(dBuV)	(dBuV)	(dB)
0.2755	0.10	0.09	41.59	62.41	-20.83	39.14	52.41	-13.28
0.48196	0.11	0.07	39.33	56.52	-17.19	38.43	46.52	-8.09
0.55163	0.13	0.07	31.28	56.00	-24.72	26.90	46.00	-19.10
0.61753	0.14	0.07	32.10	56.00	-23.90	29.88	46.00	-16.12
0.68933	0.15	0.07	35.15	56.00	-20.85	33.94	46.00	-12.06
2.3802	0.20	0.10	26.66	56.00	-29.34	20.18	46.00	-25.82
2.4449	0.20	0.10	28.78	56.00	-27.22	19.24	46.00	-26.76
3.92055	0.20	0.14	33.96	56.00	-22.04	31.24	46.00	-14.76
4.19593	0.20	0.14	32.89	56.00	-23.11	28.65	46.00	-17.35
4.26648	0.20	0.14	38.38	56.00	-17.62	33.84	46.00	-12.16



* NOTE: During the test, the EMI receiver was set to Max. Hold then switch the EUT Channel between 1 , 6, 11 to get the maximum reading of all these channels.
 Margin = Amplitude + Insertion Loss- Limit
 A margin of -8dB means that the emission is 8dB below the limit

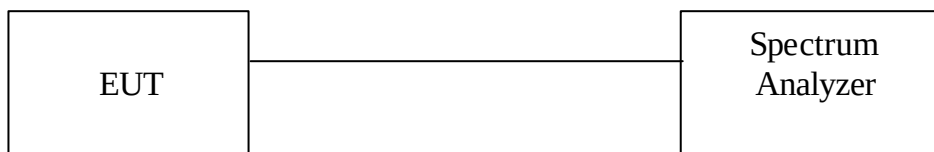
4.2 Bandwidth for DSSS [Section 15.247 (a)(2)]

4.2.1 Test Procedure

The Transmitter output of EUT was connected to the spectrum analyzer. The 6 dB bandwidth of the fundamental frequency was measured. The setting of spectrum analyzer is as follows

Equipment mode	Spectrum analyzer
Detector function	Peak mode
RBW	100KHz
VBW	100KHz

4.2.2 Test Setup



4.2.3 Test Data:

6dB Bandwidth

Temp. (deg. C): 25

Test Engr: Mailes Hsieh

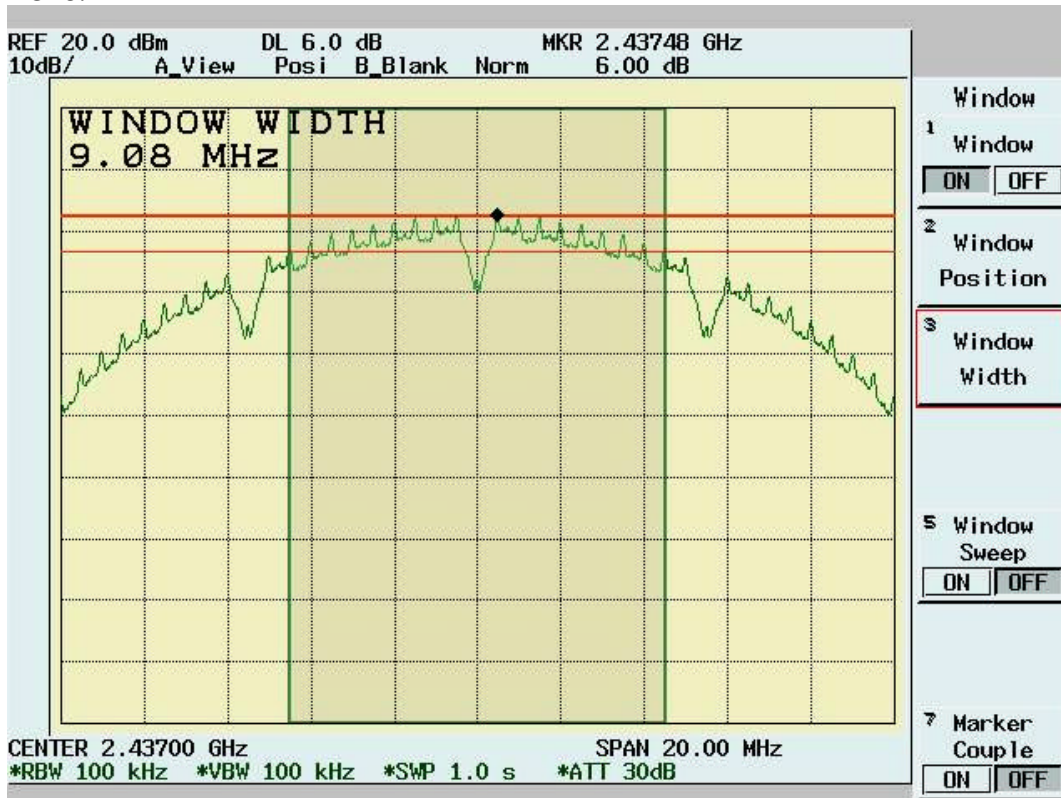
Humidity (%): 50

Chennel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Pass/Fail
1	2412	9.08	0.5	Pass
6	2437	9.08	0.5	Pass
11	2462	9.08	0.5	Pass

Channel 1:



Channel 6:



Channel 11:

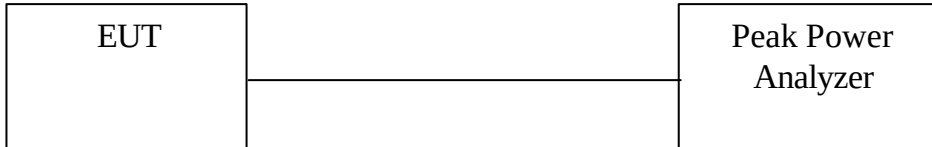


4.3 DSSS Maximum Peak Output Power [Section 15.247 (b)(1)]

4.3.1 Test Procedure

The Transmitter output of EUT was connected to the peak power analyzer.

4.3.2 Test Setup



4.3.3 Test Data

Maximum Peak Output Power

Temp. (deg. C): 25

Test Engr: Mailes Hsieh

Humidity (%): 50

Channel	Frequency (Mhz)	Analyzer Reading (dBm)	Cable Loss (dB)	Peak Power Output (mW)	Peak Power Output (dBm)	Limit (dBm)	Pass/Fail
1	2412	15.237	1.1	43.02	16.337	30	Pass
6	2437	14.406	1.1	35.53	15.506	30	Pass
11	2462	14.115	1.1	33.23	15.215	30	Pass

Note: Two RF output(MAIN & AUX) have been test,the worse data shown above.

4.4 Radiated Emission Measurement [Section [15.247(c)(4)]

4.4.1 EUT Configuration

The equipment under test was set up on the 10 meter chamber with measurement distance of 3 meters. The EUT was placed on a non-conductive table 80cm above ground.

Any changes made to the configuration, or modifications made to the EUT, during testing are noted in the following test record.

4.4.2 Test Procedure

The system was set up as described above, with the EMI diagnostic software running. We found the maximum readings by varying the height of antenna and then rotating the turntable. Both polarization of antenna, horizontal and vertical, are measured.

30M to 1GHz: The highest emissions between 30 MHz to 1000 MHz were also analyzed in details by operating the spectrum analyzer and/or EMI receiver in quasi-peak mode to determine the precise amplitude of the emissions. While doing so, the interconnecting cables and major parts of the system were moved around, the antenna height was varied between one and four meters, its polarization was varied between vertical and horizontal, and the turntable was slowly rotated, to maximize the emission.

1GHz – 25GHz: The highest emissions were also analyzed in details by operating the spectrum analyzer and/or EMI receiver in peak mode to determine the precise amplitude of the emission. While doing so, the interconnecting cables and major parts of the system were moved around, the antenna height was varied between one and four meters, its polarization was varied between vertical and horizontal, and the turntable was slowly rotated, to maximize the emission. During test the EMI receiver and spectrum was setup according to *EMI Receiver/Spectrum Analyzer Configuration*.

For the test of 2nd to 10th harmonics frequencies, the equipment setup was also refer to *EMI Receiver/Spectrum Analyzer Configuration*. The frequencies were tested using Peak mode first, if the test data is higher than the emissions limit, an additional measurement using Average mode will be performed and the average reading will be compared to the limit and record in test report.

4.4.3 EMI Receiver/Spectrum Analyzer Configuration (for the frequencies tested)

Frequency Range Tested:	30MHz~1000MHz
Detector Function:	Quasi-Peak Mode
Resolution Bandwidth (RBW):	120KHz
Video Bandwidth (VBW)	1MHz
Frequency Range Tested:	1GHz – 25 GHz
Detector Function:	Peak Mode
Resolution Bandwidth (RBW):	1MHz
Video Bandwidth (VBW)	3MHz
Frequency Range Tested:	1GHz – 25 GHz
Detector Function:	Average Mode
Resolution Bandwidth (RBW):	1MHz
Video Bandwidth (VBW)	10 Hz

4.4.4 Test Data (30MHz – 1GHz):**30M – 1GHz Open Field Radiated Emissions (Horizontal) Channel 1, 6, 11**

Operator:MailesHsieh

Temperature(C):21

10:50:39AM,Saturday,January22,2005

Humidity(%):53

Frequency	RxAmp.	AntFact	CableLoss	PreAmpGain	Corrct.Emi.	Limit	Margin	Ant.Pos.	TablePos.
MHz	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg)
95.96	23.21	9.49	1.91	0.00	34.61	43.50	-8.89	197.00	39.00
143.49	20.83	9.99	2.21	0.00	33.03	43.50	-10.47	100.00	116.00
194.9	20.52	8.70	2.66	0.00	31.88	43.50	-11.62	197.00	302.00
249.22	18.49	11.49	3.14	0.00	33.12	46.00	-12.88	100.00	311.00
259.89	17.23	12.89	3.18	0.00	33.30	46.00	-12.70	100.00	262.00
292.87	15.45	13.46	3.49	0.00	32.39	46.00	-13.61	100.00	328.00
431.58	14.13	16.15	4.68	0.00	34.96	46.00	-11.04	197.00	171.00
455.83	19.95	16.44	4.90	0.00	41.30	46.00	-4.70	197.00	88.00
716.76	8.70	19.37	6.77	0.00	34.83	46.00	-11.17	100.00	246.00
836.07	5.19	20.46	7.72	0.00	33.36	46.00	-12.64	100.00	165.00
911.73	6.57	20.56	8.16	0.00	35.29	46.00	-10.71	197.00	335.00
933.07	3.81	20.86	8.31	0.00	32.99	46.00	-13.01	100.00	295.00

30M – 1GHz Open Field Radiated Emissions (Vertical) Channel 1, 6, 11

Operator:MailesHsieh

Temperature(C):21

11:00:36AM,Saturday,January22,2005

Humidity(%):53

Frequency	RxAmp.	AntFact	CableLoss	PreAmpGain	Corrct.Emi.	Limit	Margin	Ant.Pos.	TablePos.
MHz	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg)
390.84	14.95	15.61	4.38	0.00	34.93	46.00	-11.07	152.00	23.00
431.58	16.40	16.15	4.68	0.00	37.23	46.00	-8.77	102.00	162.00
455.83	21.17	16.44	4.90	0.00	42.51	46.00	-3.49	102.00	304.00
466.5	14.04	16.70	4.96	0.00	35.70	46.00	-10.30	102.00	112.00
585.81	12.19	18.87	5.78	0.00	36.84	46.00	-9.16	152.00	39.00
599.39	10.27	18.90	5.85	0.00	35.02	46.00	-10.98	102.00	145.00
650.8	15.63	19.00	6.31	0.00	40.95	46.00	-5.05	152.00	204.00
716.76	8.72	19.37	6.77	0.00	34.85	46.00	-11.15	102.00	321.00
719.67	11.48	19.43	6.79	0.00	37.71	46.00	-8.29	152.00	187.00
733.25	10.95	19.73	6.89	0.00	37.57	46.00	-8.43	152.00	187.00
836.07	7.17	20.46	7.72	0.00	35.35	46.00	-10.65	197.00	143.00
933.07	6.52	20.86	8.31	0.00	35.70	46.00	-10.30	102.00	145.00

NOTE:

During the Pre-test, the EUT has been tested for Channel 1, 6, 11 transmit from Main and Aux antenna respectively to get all the critical emission frequencies. In the final test all the critical emission frequencies has been tested and the test data are listed above.

Margin = Corrected Amplitude – Limit

Corrected Amplitude = Radiated Amplitude + Antenna Correction Factor + Cable Loss - Pre-Amplifier Gain

A margin of -8dB means that the emission is 8dB below the limit

All frequencies from 30MHz to 1GHz have been tested

International Standards Laboratory

Report Number: 05LR001FC

HC LAB: NVLAP:200234-0; VCCI: R-341, C-354; NEMKO: ELA 113a, 113c; BSMI: SL2-IN-E-0037; SL2-R1-E-0037; CNLA: 1178

LT LAB: NVLAP:200234-0; VCCI: R-1435, C-1440; NEMKO: ELA 113b, 113d; BSMI: SL2-IN-E-0013; CNLA: 0997

4.4.5 Test Data (1GHz – 25 GHz) .**1GHz~ 25 GHz (Horizontal), Channel 1: 2412 MHz**

Operator:MailesHsieh

RBW:1MHz

Humidity(%):37

Temperature(C):22

Frequency	Rx_R.	Ant_F.	Cab_L.	PreAmpl	Emission	Limit	Margin	A.Tower	T.Table
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg
2206.29	46.09pk	30.96	1.97	35.40	43.63pk	54.00av	-10.37	101	108
2316.18	46.35pk	30.94	1.64	35.44	43.48pk	54.00av	-10.52	101	142
2610.89	45.63pk	30.94	1.38	35.48	42.47pk	54.00av	-11.53	102	235
2653.35	45.73pk	30.96	1.39	35.47	42.60pk	54.00av	-11.40	102	248
6937.06	40.60pk	38.76	3.14	37.35	45.15pk	54.00av	-8.85	101	120
9643.36	40.49pk	40.58	3.24	34.13	50.20pk	54.00av	-3.80	102	7

1GHz~ 25 GHz (Vertical), Channel 1: 2412 MHz

Operator:MailesHsieh

RBW:1MHz

Humidity(%):37

Temperature(C):22

Frequency	Rx_R.	Ant_F.	Cab_L.	PreAmpl	Emission	Limit	Margin	A.Tower	T.Table
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg
2018.98	45.45pk	31.00	2.54	35.32	43.67pk	54.00av	-10.33	100	49
2041.46	45.06pk	30.99	2.47	35.33	43.20pk	54.00av	-10.80	100	56
2808.19	45.85pk	31.02	1.42	35.42	42.87pk	54.00av	-11.13	102	297
6821.68	44.34pk	38.14	3.21	37.79	47.90pk	54.00av	-6.10	101	141
9643.36	41.27pk	40.58	3.24	34.13	50.97pk	54.00av	-3.03	102	7

Note:

According to ANSI C63.4-2001 8.3.1.2 Notes(1):Where limits are specified by agencies for both average and peak (or quasi-peak) detection , if the peak (or quasi-peak) measured value complies with the average limit , it is unnecessary to perform an average measurement.

“ * ”: Fundamental Frequency

“ *** ”: Not in the restricted band, Limit level=Fundamental Emission-20dB

“ pk ”: peak mode

“ av ”: average mode

“ --- ”: No meter reading data due to the emission level is smaller than spectrum noise level.

The Spectrum noise level+Correction Factor < Limit - 6 dB

Margin=Corrected Amplitude – Limit

Corrected Amplitude=Radiated Amplitude+Antenna Correction Factor+Cable Loss-Pre-Amplifier Gain

A margin of -8dB means that the emission is 8dB below the limit.

All frequencies from 1GHz to 25 GHz have been tested.

1GHz~ 25 GHz (Horizontal) , Channel 6 : 2437 MHz

Operator:MailesHsieh

RBW:1MHz

Humidity(%):37

Temperature(C):22

Frequency	Rx_R.	Ant_F.	Cab_L.	PreAmpl	Emission	Limit	Margin	A.Tower	T.Table
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg
2103.90	44.75pk	30.98	2.28	35.35	42.66pk	54.00av	-11.34	100	76
2598.40	46.37pk	30.94	1.38	35.49	43.20pk	54.00av	-10.80	102	231
2905.59	45.72pk	31.06	1.43	35.39	42.82pk	54.00av	-11.18	103	327
6870.63	40.30pk	38.40	3.18	37.60	44.27pk	54.00av	-9.73	101	132
9745.25	40.23pk	40.36	3.30	33.75	50.14pk	54.00av	-3.86	102	5

1GHz~ 25 GHz (Vertical), Channel 6 : 2437 MHz

Operator:MailesHsieh

RBW:1MHz

Humidity(%):37

Temperature(C):22

Frequency	Rx_R.	Ant_F.	Cab_L.	PreAmpl	Emission	Limit	Margin	A.Tower	T.Table
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg
1996.50	44.91pk	30.97	2.60	35.31	43.17pk	54.00av	-10.83	100	43
2266.23	45.71pk	30.95	1.79	35.42	43.02pk	54.00av	-10.98	101	127
6825.17	44.56pk	38.16	3.20	37.78	48.15pk	54.00av	-5.85	101	140
9745.25	40.30pk	40.36	3.30	33.75	50.20pk	54.00av	-3.80	102	5

Note:

According to ANSI C63.4-2001 8.3.1.2 Notes(1):Where limits are specified by agencies for both average and peak (or quasi-peak) detection , if the peak (or quasi-peak) measured value complies with the average limit , it is unnecessary to perform an average measurement.

“ * ”: Fundamental Frequency

“**”: Not in the restricted band, Limit level=Fundamental Emission-20dB

“ pk”: peak mode

“av”: average mode

“---“: No meter reading data due to the emission level is smaller than spectrum noise level.

The Spectrum noise level+Correction Factor < Limit - 6 dB

Margin=Corrected Amplitude – Limit

Corrected Amplitude=Radiated Amplitude+Antenna Correction Factor+Cable Loss-Pre-Amplifier Gain

A margin of -8dB means that the emission is 8dB below the limit.

All frequencies from 1GHz to 25 GHz have been tested.

1GHz~ 25 GHz (Horizontal), Channel 11: 2462 MHz

Operator:MailesHsieh

RBW:1MHz

Humidity(%):37

Temperature(C):22

Frequency	Rx_R.	Ant_F.	Cab_L.	PreAmpl	Emission	Limit	Margin	A.Tower	T.Table
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg
2151.35	45.34pk	30.97	2.14	35.37	43.07pk	54.00av	-10.93	100	91
2261.24	45.78pk	30.95	1.80	35.42	43.11pk	54.00av	-10.89	101	125
2958.04	45.87pk	31.08	1.44	35.37	43.02pk	54.00av	-10.98	103	344
6832.17	40.52pk	38.19	3.20	37.75	44.16pk	54.00av	-9.84	101	139
9841.16	40.09pk	40.15	3.35	33.40	50.18pk	54.00av	-3.82	101	3

1GHz~ 25 GHz (Vertical), Channel 11 : 2462 MHz

Operator:MailesHsieh

RBW:1MHz

Humidity(%):37

Temperature(C):22

Frequency	Rx_R.	Ant_F.	Cab_L.	PreAmpl	Emission	Limit	Margin	A.Tower	T.Table
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg
2008.99	45.08pk	31.00	2.57	35.31	43.34pk	54.00av	-10.66	100	46
2181.32	45.43pk	30.96	2.05	35.39	43.05pk	54.00av	-10.95	101	100
4923.08	41.09pk	35.31	2.15	39.20	39.35pk	54.00av	-14.65	100	8
6821.68	43.73pk	38.14	3.21	37.79	47.28pk	54.00av	-6.72	101	141
9841.16	40.70pk	40.15	3.35	33.40	50.79pk	54.00av	-3.21	101	3

Note:

According to ANSI C63.4-2001 8.3.1.2 Notes(1):Where limits are specified by agencies for both average and peak (or quasi-peak) detection , if the peak (or quasi-peak) measured value complies with the average limit , it is unnecessary to perform an average measurement.

“ * ”: Fundamental Frequency

“ *** ”: Not in the restricted band, Limit level=Fundamental Emission-20dB

“ pk ”: peak mode

“ av ”: average mode

“ --- ”: No meter reading data due to the emission level is smaller than spectrum noise level.

The Spectrum noise level+Correction Factor < Limit - 6 dB

Margin=Corrected Amplitude – Limit

Corrected Amplitude=Radiated Amplitude+Antenna Correction Factor+Cable Loss-Pre-Amplifier Gain

A margin of -8dB means that the emission is 8dB below the limit.

All frequencies from 1GHz to 25 GHz have been tested.

4.5 Band Edge Measurement

4.5.1 Test Procedure (Conducted)

1. The transmitter output of EUT was connected to the spectrum analyzer.
Equipment mode: Spectrum analyzer
Detector function: Peak mode
SPAN: 100MHz
RBW: 100KHz
VBW: 100KHz
Center frequency: 2.4GHz, 2.4835GHz.
2. Using Peak Search to read the peak power of Carrier frequencies after Maximum Hold function is completed
3. Find the next peak frequency outside the operation frequency band

4.5.2 Test Setup (Conducted)



4.5.3 Test Data:

Table: Band Edge measurement (Conducted)

Temp. (deg. C): 25
Humidity (%): 50
Test Engr: Mailes Hsieh

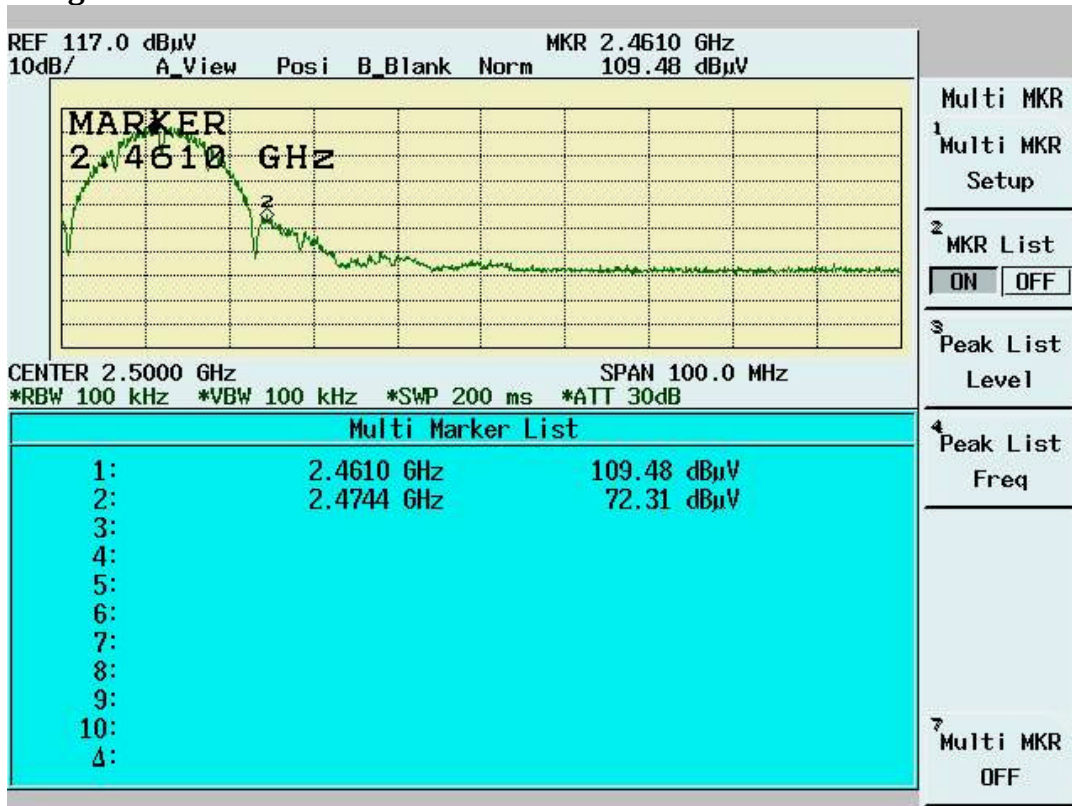
Channel	Frequency (MHz)	Spectrum Reading (dBuV)	Carrier - Outsideband Limit: >20dB (dB)	Pass/Fail
1	2410.9	110.32	---	---
Outside band	2399.5	74.39	35.93	Pass
11	2461	109.48	---	---
Outside band	2474.4	72.31	37.17	Pass

Note: Two RF output(MAIN & AUX) have been test,the worse data shown above.

Band Edge Conducted measurement



Band Edge Conducted Measurement



4.5.4 Test Procedure (Radiated)

1. Antenna and Turntable test procedure same as Radiated Emission Measurement.
Equipment mode: Spectrum analyzer
Detector function: Peak mode
SPAN: 100MHz
RBW: 1MHz
VBW: 3MHz
Center frequency: 2.395GHz, 2.48GHz.
2. Using Peak Search to read the peak power of Carrier frequencies after Maximum Hold function is completed.
3. Find the next peak frequency outside the operation frequency band
4. For peak frequency emission level measurement in Restricted Band ,
Change RBW: 1MHz
VBW: 10Hz
Span: 100MHz.
5. Get the spectrum reading after Maximum Hold function is completed.

4.5.5 Test Setup (Radiated)

Same as *Radiated Emission Measurement*

4.5.6 Test Data

Table Band Edge measurement (Radiated)

Temp. (deg. C): 25

Test Engr: Mailes
Hsieh

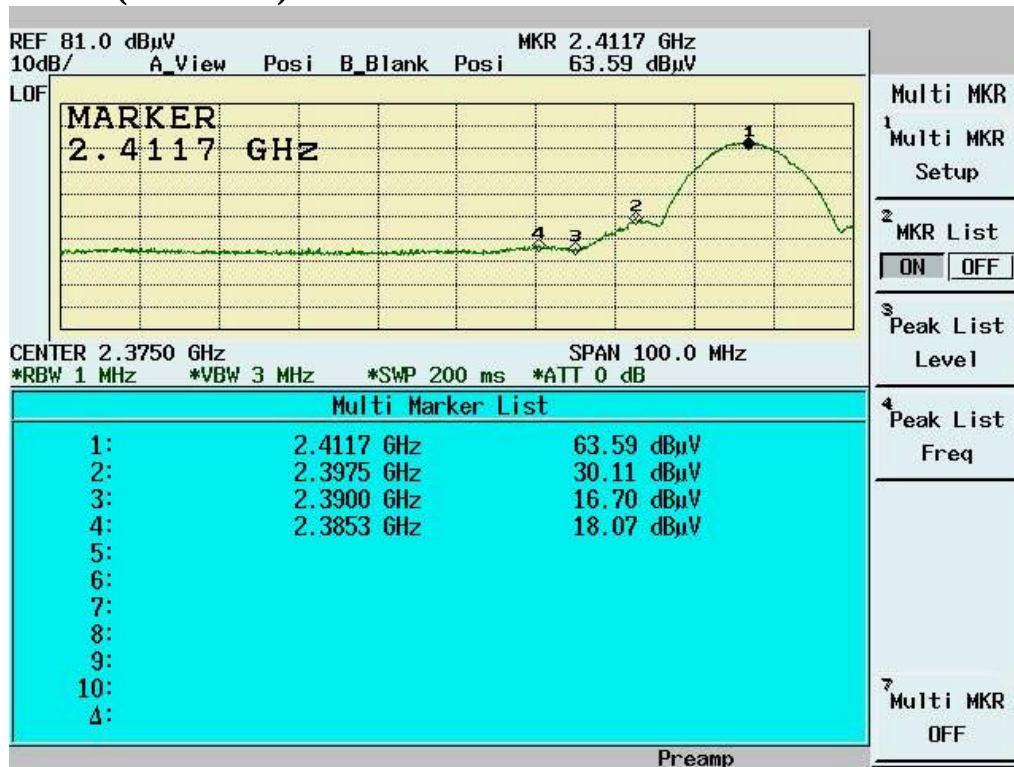
Humidity (%): 50

Description	Frequency (MHz)	Spectrum Reading (dBuV)	Correction Factor (dB/m)	Emission Level (dBuV/m)	dBc (Limit: > 20dBc)	Limit (dBuV/m)	Equip. Setup VBW	Pass or Fail
Channel_1 (average mode)	2410.8	56.45	35.48	91.93	---	---	10Hz	---
Channel_1 (peak mode)	2411.7	63.59	35.48	99.07	---	---	3MHz	---
Outside band (peak mode)	2397.5	30.11	35.48	65.59	33.48	---	3MHz	Pass
Channel_11 (average mode)	2462.8	52.16	35.5	87.66	---	---	10Hz	---
Channel_11 (peak mode)	2462.9	58.47	35.5	93.97	---	---	3MHz	---
Outside band (peak mode)	2474.8	27.23	35.51	62.74	31.23	---	3MHz	Pass
Channel_1 Restricted band (peak mode)	2385.3	18.07	35.47	53.54	---	74	3MHz	Pass
Restricted band (average mode)	2385.5	6.88	35.47	42.35	---	54	10Hz	Pass
Channel_11 Restricted band (peak mode)	2486.9	18.42	35.51	53.93	---	74	3MHz	Pass
Restricted band (average mode)	2488.4	7.67	35.51	43.18	---	54	10Hz	Pass

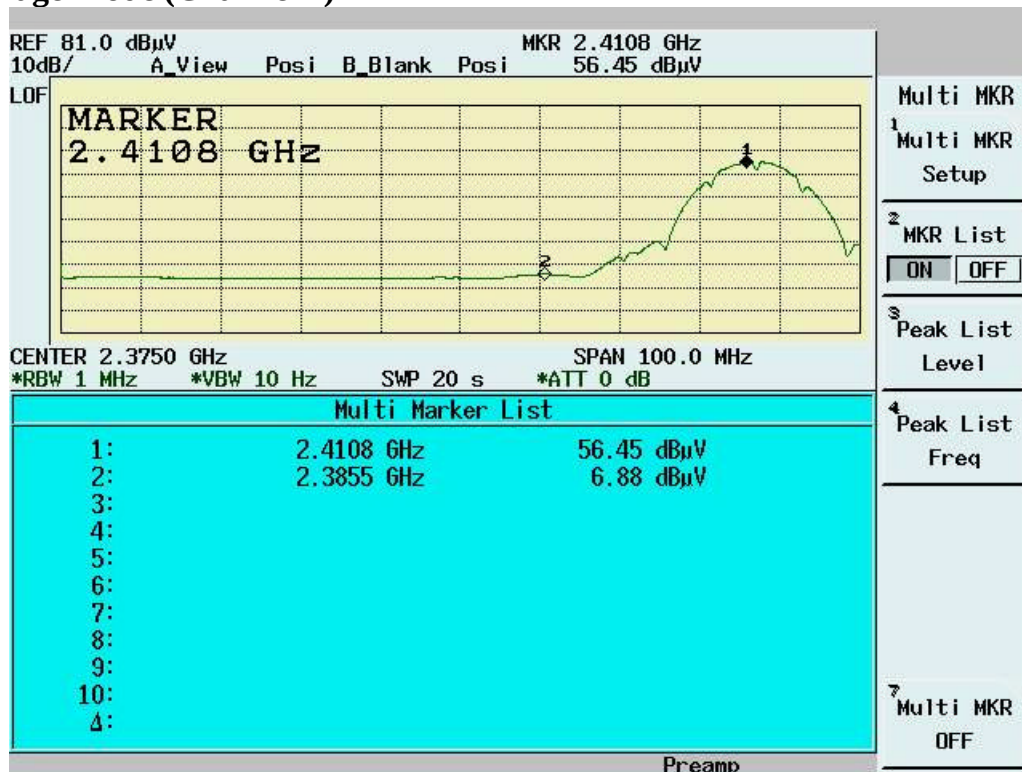
Note:

- The Spectrum plot of emission level measurement in Restricted band is attached.
 Emission Level=Spectrum Reading+Correction Factor
 Correction Factor=Antenna Factor+cable loss–amplifier gain
 Both Horizontal and Vertical polarizaion have been tested and the worst data is listed above.

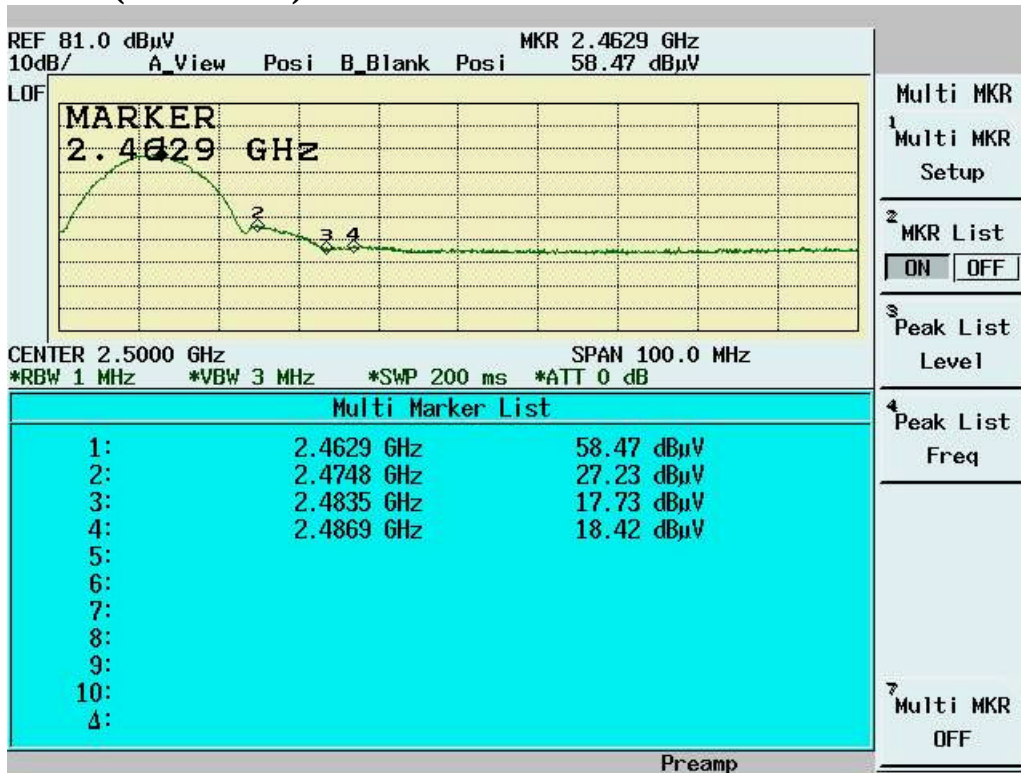
**Band Edge measurement for radiated emission in Restricted Band(Radiated)
Peak Mode (Channel 1)**



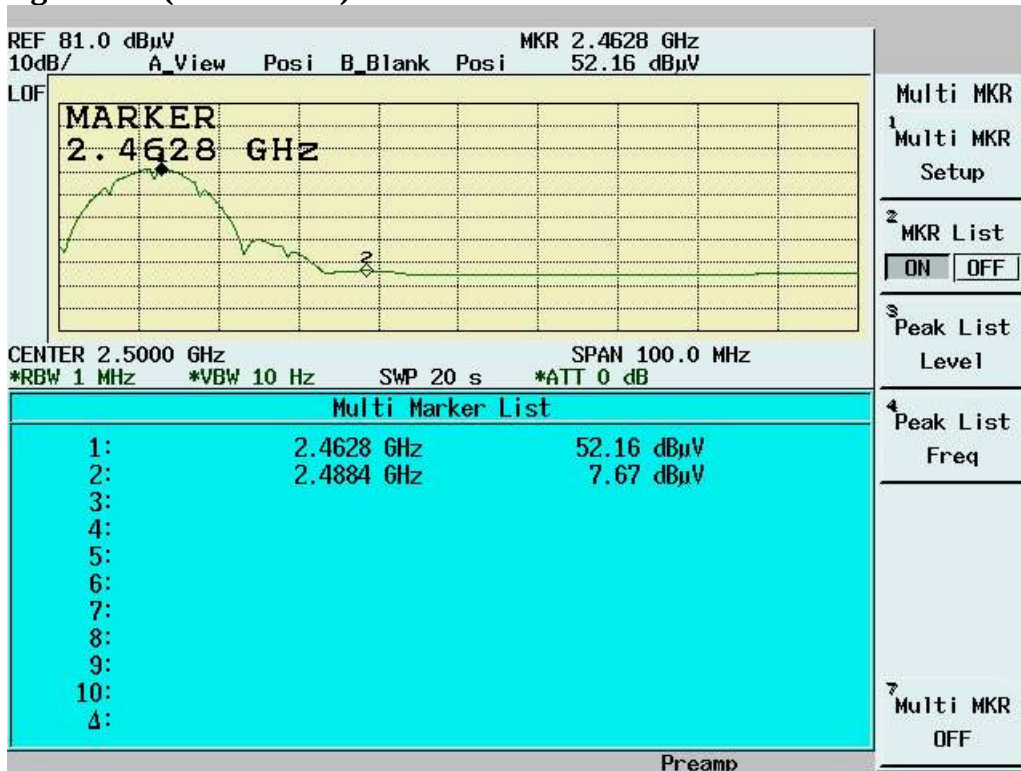
**Band Edge measurement for radiated emission in Restricted Band(Radiated)
Average Mode (Channel 1)**



Band Edge measurement for radiated emission in Restricted Band(Radiated) Peak Mode (Channel 11)



Band Edge measurement for radiated emission in Ristricted Band(Radiated) Average Mode (Channel 11)



4.6 RF Exposure Measurement [Section 15.247(b)(4) & 1.1307(b)]

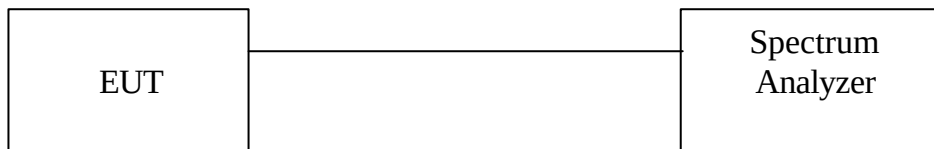
See MPE report

4.7 DSSS Peak Power Spectral Density [Section 15.247(d)]

4.7.1 Test Procedure

1. The Transmitter output of EUT was connected to the spectrum analyzer.
Equipment mode: Spectrum analyzer
Detector function: Peak mode
SPAN:1.5MHz
RBW: 3KHz
VBW: 30KHz
Center frequency: fundamental frequency tested.
Sweep time= 500 sec.
2. Using Peak Search to read the peak power after Maximum Hold function is completed.

4.7.2 Test Setup



4.7.3 Test Data

Maximum Peak Output Power Density

Temp. (deg. C): 25

Test Engr:

Mailes Hsieh

Humidity (%): 50

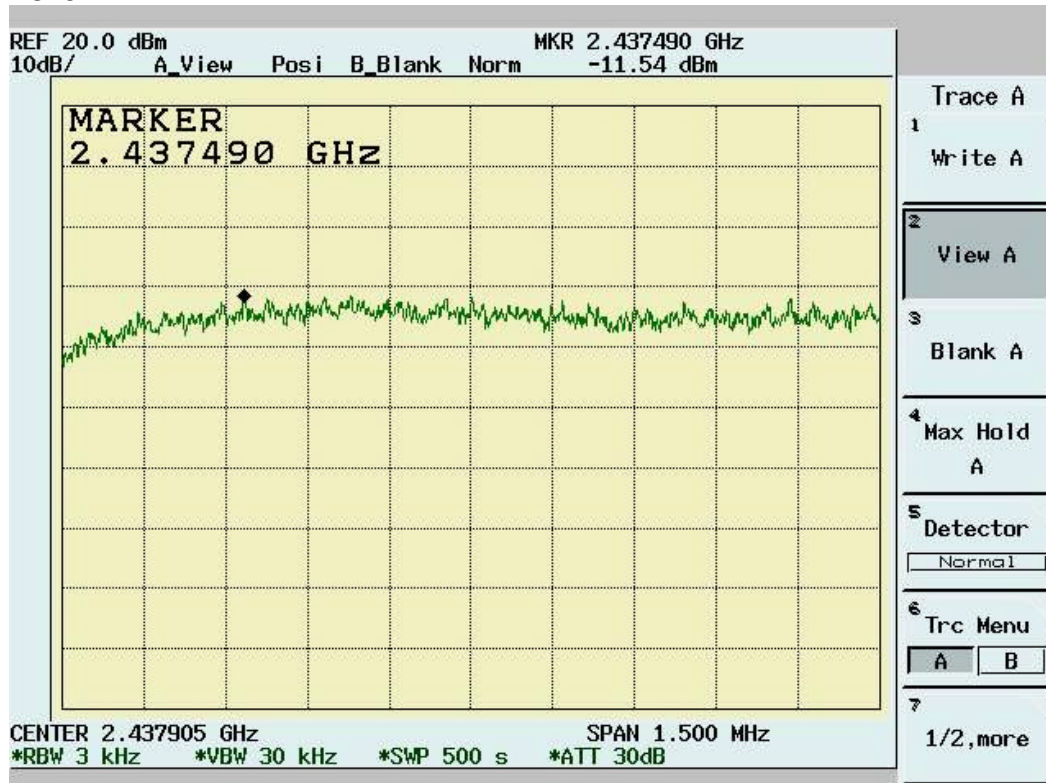
Chennel	Frequency (MHz)	Spectrum Reading (dBm/3KHz)	Cable Loss (dB)	Peak Power Output (dBm/3KHz)	Limit (dBm/3KHz)	Pass/Fail
1	2412	-10.15	1.1	-9.05	8	Pass
6	2437	-11.54	1.1	-10.44	8	Pass
11	2462	-10.61	1.1	-9.51	8	Pass

Note: Two RF output(MAIN & AUX) have been test,the worse data shown above.

Channel 1



Channel 6



Channel 11



5. TEST RESULTS (802.11g)

5.1 Powerline Conducted Emissions [Section 15.207]

5.1.1 EUT Configuration

The conducted emission test setups are in accordance with Figs 9, 10(a) and 10(b) of ANSI C63.4-2001, CFR 47 Part 15 Subpart B; or EN55022:1994/ A1:1995/A2:1997; CISPR 22:1993/A1:1995/A2:1996.

The EUT was set up on the non-conductive table that is 1.0 by 1.5 meter, 80cm above ground. The wall of the shielded room was located 40cm to the rear of the EUT.

Power to the EUT was provided through the LISN. The impedance vs. frequency characteristic of the LISN is complied with the limit shown on the figure 1 of ANSI C63.4-2001.

Both lines (neutral and hot) were connected to the LISN in series at testing. A coaxial-type connector which provides one 50 ohms terminating impedance was provided for connecting the test instrument. The excess length of the power cord was folded back and forth at the center of the lead so as to form a bundle not exceeding 40cm in length.

Any changes made to the configuration, or modifications made to the EUT, during testing are noted in the following test record.

If the EUT is a Personal Computer or a peripheral of personal computer, and the personal computer has an auxiliary AC outlet which can be used for providing power to an external monitor, then all measurements will be made with the monitor power from first the computer-mounted AC outlet and then a floor-mounted AC outlet.

5.1.2 Test Procedure

The system was set up as described above, with the EMI diagnostic software running. The main power line conducted EMI tests were run on the hot and neutral conductors of the power cord and the results were recorded. The effect of varying the position of the interface cables has been investigated to find the configuration that produces maximum emission.

At the frequencies where the peak values of the emissions were higher than 6dB below the applicable limits, the emissions were also measured with the quasi-peak detectors. At the frequencies where the quasi-peak values of the emissions were higher than 6dB below the applicable average limits, the emissions were also measured with the average detectors.

The highest emissions were analyzed in details by operating the spectrum analyzer in fixed tuned mode to determine the nature of the emissions and to provide information which could be useful in reducing their amplitude.

5.1.3 EMI Receiver/Spectrum Analyzer Configuration (for the frequencies tested)

Frequency Range	150 KHz--30MHz
Detector Function	Quasi-Peak/Average
Bandwidth (RBW)	9KHz

5.1.4 Test Data:

Power Line Conducted Emissions (Hot) Channel 1, 6, 11

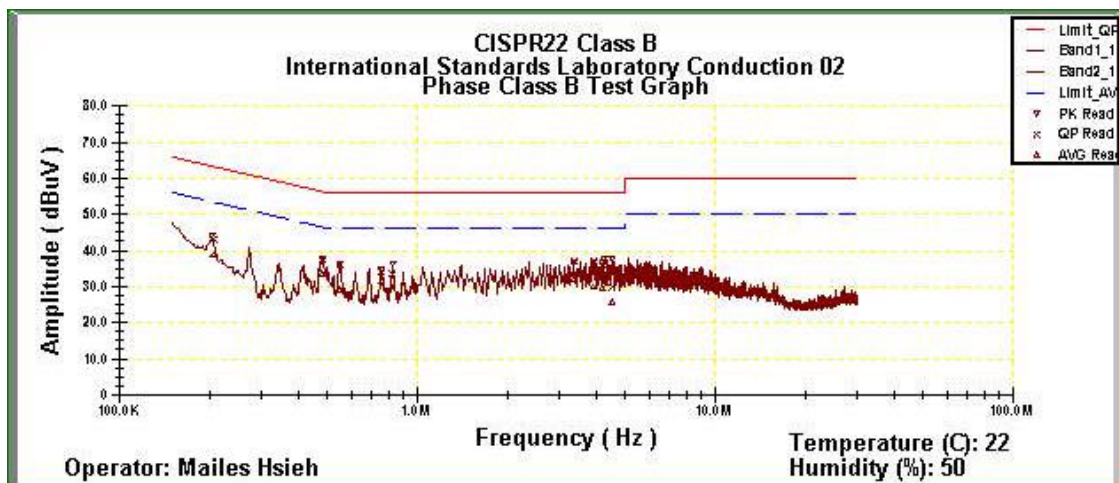
Operator:MailesHsieh

Temperature(C):22

11:43:15AM,Saturday,January22,2005

Humidity(%):50

Frequency	LISN Loss	Cable Loss	QPCorrt.	QPLimit	QPMargin	AVECorrt.	AVELimit	AVEMargin
MHz	(dB)	(dB)	Amp.(dBuV)	(dBuV)	(dB)	Amp.(dBuV)	(dBuV)	(dB)
0.20675	0.10	0.05	43.19	64.38	-21.19	38.73	54.38	-15.65
0.47941	0.11	0.07	37.47	56.59	-19.12	33.47	46.59	-13.12
0.54973	0.12	0.07	36.19	56.00	-19.81	29.05	46.00	-16.95
0.75585	0.16	0.07	33.92	56.00	-22.08	31.52	46.00	-14.48
0.82155	0.17	0.07	33.49	56.00	-22.51	29.91	46.00	-16.09
3.36277	0.20	0.12	36.84	56.00	-19.16	31.71	46.00	-14.29
3.91111	0.20	0.14	37.01	56.00	-18.99	29.78	46.00	-16.22
4.18526	0.20	0.14	36.00	56.00	-20.00	29.47	46.00	-16.53
4.25686	0.20	0.14	36.46	56.00	-19.54	31.32	46.00	-14.68
4.50874	0.21	0.15	29.79	56.00	-26.21	25.53	46.00	-20.47



Power Line Conducted Emissions (Neutral) Channel 1, 6, 11

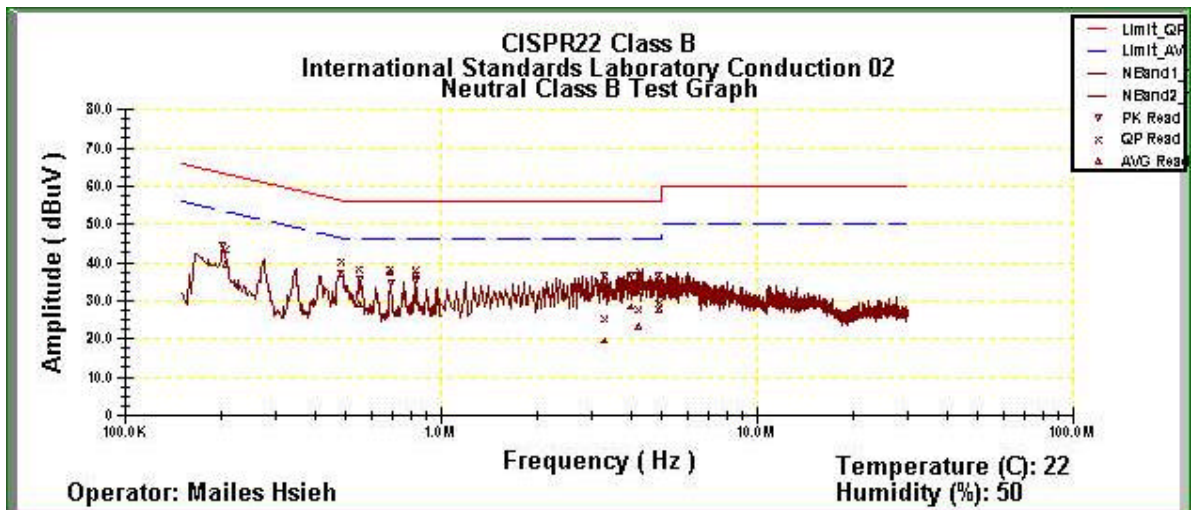
Operator:MailesHsieh

Temperature(C):22

Humidity(%):50

11:54:06AM,Saturday,January22,2005

Frequency	LISN Loss	Cable Loss	QPCorrt.	QPLimit	QPMargin	AVECorrt.	AVELimit	AVEMargin
MHz	(dB)	(dB)	Amp.(dBuV)	(dBuV)	(dB)	Amp.(dBuV)	(dBuV)	(dB)
0.20755	0.10	0.05	43.31	64.36	-21.05	39.52	54.36	-14.84
0.48108	0.11	0.07	40.04	56.54	-16.50	36.96	46.54	-9.58
0.55088	0.13	0.07	38.25	56.00	-17.75	29.01	46.00	-16.99
0.68708	0.15	0.07	38.06	56.00	-17.94	37.27	46.00	-8.73
0.82615	0.17	0.07	37.90	56.00	-18.10	36.98	46.00	-9.02
3.28487	0.20	0.12	25.02	56.00	-30.98	19.43	46.00	-26.57
3.97663	0.20	0.14	32.33	56.00	-23.67	28.37	46.00	-17.63
4.19368	0.20	0.14	27.61	56.00	-28.39	23.31	46.00	-22.69
4.26611	0.20	0.14	37.49	56.00	-18.51	32.49	46.00	-13.51
4.88242	0.19	0.15	29.31	56.00	-26.69	27.59	46.00	-18.41



* NOTE: During the test, the EMI receiver was set to Max. Hold then switch the EUT Channel between 1 , 6, 11 to get the maximum reading of all these channels .
 Margin = Amplitude + Insertion Loss- Limit
 A margin of -8dB means that the emission is 8dB below the limit

5.2 Bandwidth for DSSS [Section 15.247 (a)(2)]

5.2.1 Test Procedure

The Transmitter output of EUT was connected to the spectrum analyzer. The 6 dB bandwidth of the fundamental frequency was measured. The setting of spectrum analyzer is as follows

Equipment mode	Spectrum analyzer
Detector function	Peak mode
RBW	100KHz
VBW	100KHz

5.2.2 Test Setup



5.2.3 Test Data:

6dB Bandwidth

Temp. (deg. C): 25

Test Engr: Mailes Hsieh

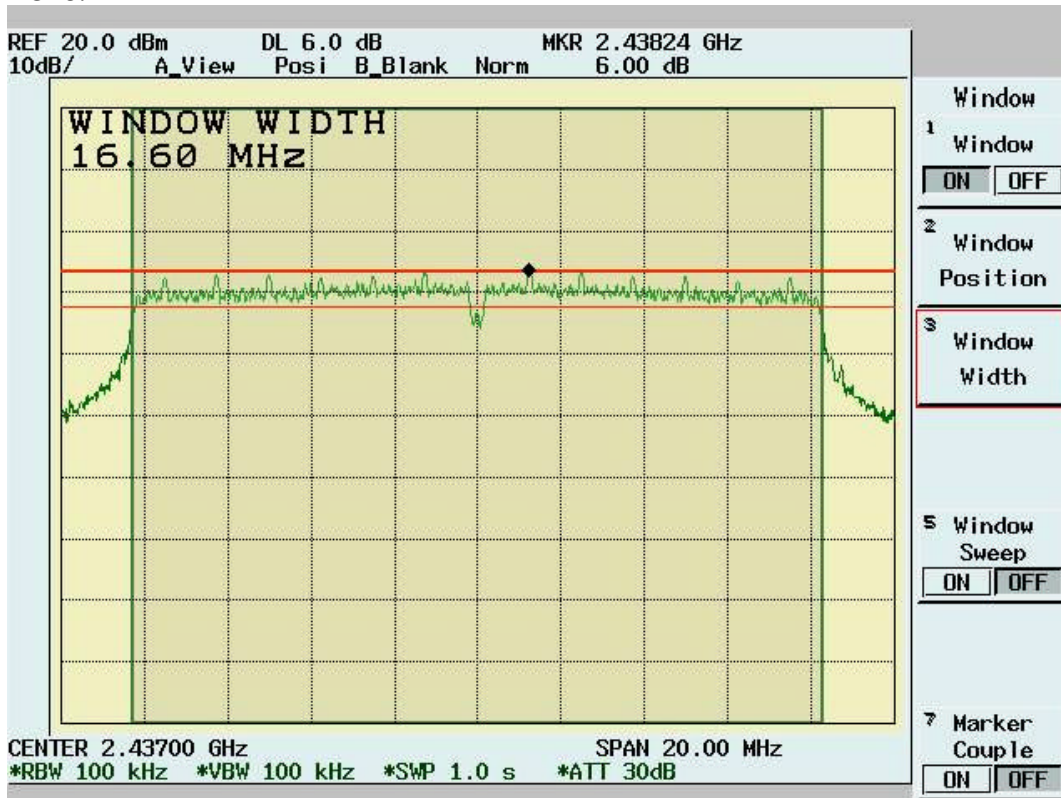
Humidity (%): 50

Chennel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Pass/Fail
1	2412	16.6	0.5	Pass
6	2437	16.6	0.5	Pass
11	2462	16.6	0.5	Pass

Channel 1:



Channel 6:



Channel 11:

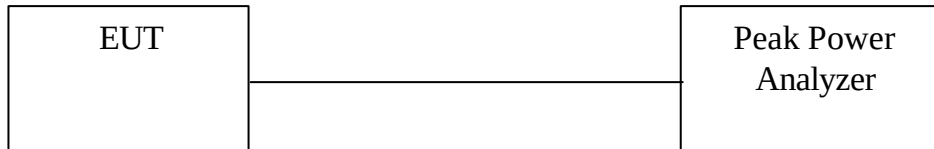


5.3 DSSS Maximum Peak Output Power [Section 15.247 (b)(1)]

5.3.1 Test Procedure

The Transmitter output of EUT was connected to the peak power analyzer.

5.3.2 Test Setup



5.3.3 Test Data

Maximum Peak Output Power

Temp. (deg. C): 25

Test Engr: Mailes Hsieh

Humidity (%): 50

Channel	Frequency (Mhz)	Analyzer Reading (dBm)	Cable Loss (dB)	Peak Power Output (mW)	Peak Power Output (dBm)	Limit (dBm)	Pass/Fail
1	2412	15.724	1.1	48.13	16.824	30	Pass
6	2437	15.185	1.1	42.51	16.285	30	Pass
11	2462	14.703	1.1	38.05	15.803	30	Pass

Note: Two RF output(MAIN & AUX) have been test,the worse data shown above.

5.4 Radiated Emission Measurement [Section [15.247(c)(4)]

5.4.1 EUT Configuration

The equipment under test was set up on the 10 meter chamber with measurement distance of 3 meters. The EUT was placed on a non-conductive table 80cm above ground.

Any changes made to the configuration, or modifications made to the EUT, during testing are noted in the following test record.

5.4.2 Test Procedure

The system was set up as described above, with the EMI diagnostic software running. We found the maximum readings by varying the height of antenna and then rotating the turntable. Both polarization of antenna, horizontal and vertical, are measured.

30M to 1GHz: The highest emissions between 30 MHz to 1000 MHz were also analyzed in details by operating the spectrum analyzer and/or EMI receiver in quasi-peak mode to determine the precise amplitude of the emissions. While doing so, the interconnecting cables and major parts of the system were moved around, the antenna height was varied between one and four meters, its polarization was varied between vertical and horizontal, and the turntable was slowly rotated, to maximize the emission.

1GHz – 25GHz: The highest emissions were also analyzed in details by operating the spectrum analyzer and/or EMI receiver in peak mode to determine the precise amplitude of the emission. While doing so, the interconnecting cables and major parts of the system were moved around, the antenna height was varied between one and four meters, its polarization was varied between vertical and horizontal, and the turntable was slowly rotated, to maximize the emission. During test the EMI receiver and spectrum was setup according to *EMI Receiver/Spectrum Analyzer Configuration*.

For the test of 2nd to 10th harmonics frequencies, the equipment setup was also refer to *EMI Receiver/Spectrum Analyzer Configuration*. The frequencies were tested using Peak mode first, if the test data is higher than the emissions limit, an additional measurement using Average mode will be performed and the average reading will be compared to the limit and record in test report.

5.4.3 EMI Receiver/Spectrum Analyzer Configuration (for the frequencies tested)

Frequency Range Tested:	30MHz~1000MHz
Detector Function:	Quasi-Peak Mode
Resolution Bandwidth (RBW):	120KHz
Video Bandwidth (VBW)	1MHz
Frequency Range Tested:	1GHz – 25 GHz
Detector Function:	Peak Mode
Resolution Bandwidth (RBW):	1MHz
Video Bandwidth (VBW)	3MHz
Frequency Range Tested:	1GHz – 25 GHz
Detector Function:	Average Mode
Resolution Bandwidth (RBW):	1MHz
Video Bandwidth (VBW)	10 Hz

5.4.4 Test Data (30MHz – 1GHz):**30M – 1GHz Open Field Radiated Emissions (Horizontal) Channel 1, 6, 11**

Operator:MailesHsieh

Temperature(C):21

11:04:58AM,Saturday,January22,2005

Humidity(%):53

Frequency	RxAmp.	AntFact	CableLoss	PreAmpGain	Corrct.Emi.	Limit	Margin	Ant.Pos.	TablePos.
MHz	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg)
95.96	27.41	9.49	1.91	0.00	38.81	43.50	-4.69	196.00	121.00
143.49	20.45	9.99	2.21	0.00	32.65	43.50	-10.85	146.00	92.00
194.9	20.11	8.70	2.66	0.00	31.47	43.50	-12.03	196.00	302.00
239.52	20.09	10.14	3.03	0.00	33.26	46.00	-12.74	102.00	317.00
249.22	18.79	11.49	3.14	0.00	33.42	46.00	-12.58	102.00	301.00
431.58	14.62	16.15	4.68	0.00	35.46	46.00	-10.54	196.00	170.00
455.83	20.54	16.44	4.90	0.00	41.88	46.00	-4.12	102.00	6.00
487.84	11.66	17.21	5.15	0.00	34.03	46.00	-11.97	102.00	6.00
715.79	7.56	19.35	6.76	0.00	33.67	46.00	-12.33	102.00	252.00
733.25	7.19	19.73	6.89	0.00	33.81	46.00	-12.19	102.00	6.00
799.21	6.28	20.10	7.36	0.00	33.74	46.00	-12.26	102.00	170.00
911.73	5.51	20.56	8.16	0.00	34.23	46.00	-11.77	196.00	335.00

30M – 1GHz Open Field Radiated Emissions (Vertical) Channel 1, 6, 11

Operator:MailesHsieh

Temperature(C):21

11:09:49AM,Saturday,January22,2005

Humidity(%):53

Frequency	RxAmp.	AntFact	CableLoss	PreAmpGain	Corrct.Emi.	Limit	Margin	Ant.Pos.	TablePos.
MHz	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg)
292.87	18.12	13.46	3.49	0.00	35.06	46.00	-10.94	196.00	283.00
390.84	16.00	15.61	4.38	0.00	35.98	46.00	-10.02	103.00	304.00
431.58	15.97	16.15	4.68	0.00	36.80	46.00	-9.20	103.00	124.00
455.83	20.89	16.44	4.90	0.00	42.23	46.00	-3.77	103.00	321.00
466.5	13.55	16.70	4.96	0.00	35.21	46.00	-10.79	103.00	108.00
585.81	9.87	18.87	5.78	0.00	34.52	46.00	-11.48	103.00	353.00
599.39	11.08	18.90	5.85	0.00	35.82	46.00	-10.18	152.00	205.00
719.67	12.14	19.43	6.79	0.00	38.37	46.00	-7.63	152.00	188.00
733.25	11.90	19.73	6.89	0.00	38.52	46.00	-7.48	152.00	188.00
766.23	8.28	20.10	7.07	0.00	35.46	46.00	-10.54	152.00	188.00
799.21	11.62	20.10	7.36	0.00	39.09	46.00	-6.91	196.00	134.00
933.07	5.73	20.86	8.31	0.00	34.90	46.00	-11.10	103.00	190.00

NOTE:

During the Pre-test, the EUT has been tested for Channel 1, 6, 11 transmit from Main and Aux antenna respectively to get all the critical emission frequencies. In the final test all the critical emission frequencies has been tested and the test data are listed above.

Margin = Corrected Amplitude – Limit

Corrected Amplitude = Radiated Amplitude + Antenna Correction Factor + Cable Loss - Pre-Amplifier Gain

A margin of -8dB means that the emission is 8dB below the limit

All frequencies from 30MHz to 1GHz have been tested

International Standards Laboratory

Report Number: 05LR001FC

HC LAB: NVLAP:200234-0; VCCI: R-341, C-354; NEMKO: ELA 113a, 113c; BSMI: SL2-IN-E-0037; SL2-R1-E-0037; CNLA: 1178

LT LAB: NVLAP:200234-0; VCCI: R-1435, C-1440; NEMKO: ELA 113b, 113d; BSMI: SL2-IN-E-0013; CNLA: 0997

5.4.5 Test Data (1GHz – 25 GHz) .**1GHz~ 25 GHz (Horizontal), Channel 1: 2412 MHz**

Operator:MailesHsieh

RBW:1MHz

Humidity(%):37

Temperature(C):22

Frequency	Rx_R.	Ant_F.	Cab_L.	PreAmpl	Emission	Limit	Margin	A.Tower	T.Table
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg
1974.03	45.52pk	30.78	2.58	35.30	43.58pk	54.00av	-10.42	100	45
2001.50	45.13pk	31.00	2.60	35.31	43.41pk	54.00av	-10.59	100	43
2990.51	46.59pk	31.10	1.45	35.36	43.78pk	54.00av	-10.22	103	354
6930.07	40.04pk	38.72	3.14	37.38	44.53pk	54.00av	-9.47	101	121
9835.17	40.59pk	40.16	3.34	33.42	50.68pk	54.00av	-3.32	101	3

1GHz~ 25 GHz (Vertical), Channel 1: 2412 MHz

Operator:MailesHsieh

RBW:1MHz

Humidity(%):37

Temperature(C):22

Frequency	Rx_R.	Ant_F.	Cab_L.	PreAmpl	Emission	Limit	Margin	A.Tower	T.Table
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg
1971.53	45.18pk	30.76	2.58	35.30	43.22pk	54.00av	-10.78	100	45
2303.70	45.98pk	30.94	1.67	35.44	43.16pk	54.00av	-10.84	101	138
2913.09	46.54pk	31.07	1.43	35.39	43.65pk	54.00av	-10.35	103	330
6821.68	45.10pk	38.14	3.21	37.79	48.65pk	54.00av	-5.35	101	141
12772.2	40.77pk	41.65	3.63	36.22	49.83pk	54.00av	-4.17	101	288

Note:

According to ANSI C63.4-2001 8.3.1.2 Notes(1):Where limits are specified by agencies for both average and peak (or quasi-peak) detection , if the peak (or quasi-peak) measured value complies with the average limit , it is unnecessary to perform an average measurement.

“ * ”: Fundamental Frequency

“**”: Not in the restricted band, Limit level=Fundamental Emission-20dB

“ pk”: peak mode

“av”: average mode

“---”: No meter reading data due to the emission level is smaller than spectrum noise level.

The Spectrum noise level+Correction Factor < Limit - 6 dB

Margin=Corrected Amplitude – Limit

Corrected Amplitude=Radiated Amplitude+Antenna Correction Factor+Cable Loss-Pre-Amplifier Gain

A margin of -8dB means that the emission is 8dB below the limit.

All frequencies from 1GHz to 25 GHz have been tested.

1GHz~ 25 GHz (Horizontal) , Channel 6 : 2437 MHz

Operator:MailesHsieh

RBW:1MHz

Humidity(%):37

Temperature(C):22

Frequency	Rx_R.	Ant_F.	Cab_L.	PreAmpl	Emission	Limit	Margin	A.Tower	T.Table
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg
2263.74	45.88pk	30.95	1.80	35.42	43.20pk	54.00av	-10.80	101	126
2283.72	45.85pk	30.94	1.73	35.43	43.10pk	54.00av	-10.90	101	132
2301.20	46.47pk	30.94	1.68	35.44	43.65pk	54.00av	-10.35	101	138
6856.64	41.60pk	38.33	3.19	37.66	45.46pk	54.00av	-8.54	101	135
9871.13	38.35pk	40.08	3.36	33.29	48.51pk	54.00av	-5.49	101	3

1GHz~ 25 GHz (Vertical), Channel 6 : 2437 MHz

Operator:MailesHsieh

RBW:1MHz

Humidity(%):37

Temperature(C):22

Frequency	Rx_R.	Ant_F.	Cab_L.	PreAmpl	Emission	Limit	Margin	A.Tower	T.Table
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	cm	deg
1999.00	44.57pk	30.99	2.60	35.31	42.85pk	54.00av	-11.15	100	43
2278.72	45.69pk	30.94	1.75	35.43	42.95pk	54.00av	-11.05	101	131
3100.40	46.27pk	31.18	1.50	35.54	43.42pk	54.00av	-10.58	103	331
6821.68	45.71pk	38.14	3.21	37.79	49.26pk	54.00av	-4.74	101	141
12556.4	40.80pk	41.69	3.68	36.38	49.79pk	54.00av	-4.21	101	231

Note:

According to ANSI C63.4-2001 8.3.1.2 Notes(1):Where limits are specified by agencies for both average and peak (or quasi-peak) detection , if the peak (or quasi-peak) measured value complies with the average limit , it is unnecessary to perform an average measurement.

“ * ”: Fundamental Frequency

“**”: Not in the restricted band, Limit level=Fundamental Emission-20dB

“ pk”: peak mode

“av”: average mode

“---”: No meter reading data due to the emission level is smaller than spectrum noise level.

The Spectrum noise level+Correction Factor < Limit - 6 dB

Margin=Corrected Amplitude – Limit

Corrected Amplitude=Radiated Amplitude+Antenna Correction Factor+Cable Loss-Pre-Amplifier Gain

A margin of -8dB means that the emission is 8dB below the limit.

All frequencies from 1GHz to 25 GHz have been tested.