

(Configuration 1: Notebook only with WLAN & Bluetooth)

Test Report
for
FCC Part 15 Subpart B & C

of

Product Name

Notebook Personal Computer;
Notebook Personal Computer with Office Docking;
Notebook Personal Computer with Vehicle Docking

Model

ML900;
ML900 Office Docking;
ML900 Vehicle Docking
(Brand:MOTOROLA)

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-05LR022FC

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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

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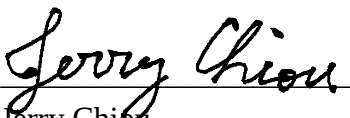
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1. General

1.1 Certification of Accuracy of Test Data

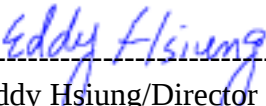
Standards:	CFR 47 Part 15 Subpart B Class B CFR 47 Part 15 Subpart C (Section 15.247)
Test Procedure:	ANSI C63.4:2003
Equipment Tested:	Notebook Personal Computer; Notebook Personal Computer with Office Docking; Notebook Personal Computer with Vehicle Docking ML900;ML900 Office Docking;ML900 Vehicle Docking
Model:	
Applied by:	MITAC Technology Corporation
Sample received Date:	2005/07/26
Final test Date :	2005/08/08-2005/09/05
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: 
Jerry Chien

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 108 pages, including 1 cover page , 4 contents page, and 104 pages for the test description. This report must not be use 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).

International Standards Laboratory

Report Number: 05LR022FC

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

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	

The Bluetooth 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(a)	AC Power Line Emissions	Pass	
15.247(b) (1)	Max. Peak Output Power	Pass	
15.209(a)	Radiated Emissions 30MHz – 25 GHz	Pass	
15.247 (c)	Band Edge Measurement	Pass	
15.247(a)(1)(iii)	Number of Hopping Frequency Used	Pass	
15.247(a) (1)(ii)	Spectrum Bandwidth Of FHSS device	Pass	
15.247(a)(1)	Hopping Channel Separation	Pass	
15.247(a)(1)(iii)	Dwell Time	Pass	

3. Description of Equipment Under Test (EUT)

EUT 1:

Description:	Notebook Personal Computer (with Intel PRO/Wireless 2200BG Network Connection & RainSun Bluetooth Module BT-20 inside)
Model:	ML900
Brand:	MOTOROLA
FCC ID:	MAU017
Wireless LAN Module:	Intel, Model: WM3B2200BG
Bluetooth Wireless Card:	RainSun, Model: BT-20
Frequency Range 802.11b/g:	2412 - 2462 MHz
Frequency Range of bluetooth:	2402 - 2480 MHz
Support channel:	
802.11b/g:	11 Channels
bluetooth:	79 Channels
Modulation Skill:	
802.11b:	DBPSK(1Mbps), DQPSK(2Mbps), CCK(5.5/11Mbps)
802.11g:	OFDM (6M - 54Mbps)
bluetooth:	GFSK
Antennas Type:	
WLAN Left antenna:	DualBand PIFA Antenna (44*7.8*4.85 mm), made by JOINSOON ELECTRONICS MFG. CO., LTD.
WLAN Right antenna:	DualBand PIFA Antenna (44*7.8*4.85 mm), made by JOINSOON ELECTRONICS MFG. CO., LTD.
Bluetooth antenna:	Ceramic Patch Antenna (CABPB0715A(7×7×1.5mm Type)), made by TDK
Antenna Connected:	Connected to RF connector on the PCB of the 802.11b/g WLAN Adapter and bluetooth card. The user is not possible to change the antenna without disassembling the notebook computer.
Antenna peak Gain:	
WLAN Left antenna:	1.83 dBi (11b,11g)
WLAN Right antenna:	1.77 dBi (11b,11g)
Bluetooth antenna:	-3 dBi
Power Type of WLAN module:	3.3V DC from Notebook PC
Power Type of Bluetooth 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		

The channel and the operation frequency of bluetooth is listed below:

Channel	Frequency(MHz)	Channel	Frequency(MHz)
00	2402	01	2403
02	2404	03	2405
.....			
.....			
77	2479	78	2480

Adapter Type:	EPS AC Adapter (Model: F10903-A) INPUT:100-240V~1.2A 50/60Hz DC OUTPUT:19V---4.75A or DELTA AC Adapter(Model:ADP-90SB) INPUT:100-240V~1.5A 50/60Hz DC OUTPUT:19V---4.74A
Hard Disk Driver:	Toshiba(Model: MK8025GAS) 80GB or Toshiba(Model: MK6025GAS) 60GB or Toshiba(Model: MK4025GAS) 40GB or
DVD Combo Driver:	Panasonic (Model:UJDA770 or Panasonic (Model:UJ840)
Modem Module:	ASKEY(Model:1456V4A)
Wireless Modem Module:	Motorola(Model:PRM240)
Memory:	Apacer (Model:UNB PC 2700 CL2.5) 1G or Kingston 1G Apacer (Model:UNB PC 2700 CL2.5) 512MB or Micron 512MB or Kingston 256MB or Micron 256MB
RJ11 Port:	one
USB Port:	two
RJ45 Port:	one
DVI Port:	one
COM Port:	one
Docking Connector:	one
Video capture:	one
DC IN Port:	one
Battery:	Mitac Computer (Model: EMC 202S-20)
LCD:	TOSHIBA (Model: LTD121EA41)
Touch Screen:	GUNZE Electronics (Model:MTA-11-1D)

EUT2:

Description:	Notebook Personal Computer with Office Docking;
Condition:	Pre-Production
Model:	ML900 Office Docking
Serial Number:	N/A
BNC Port:	one
VGA Port:	one
COM Port:	two
Parallel Port:	one
RJ45 Port:	one
USB Port:	two
All Purpose Connector:	one
Power Input:	one
Docking Connector:	one

EUT3:

Description:	Notebook Personal Computer with Vehicle Docking
Condition:	Pre-Production
Model:	ML900 Vehicle Docking
Serial Number:	N/A
BNC Port:	one
VGA Port:	one
COM Port:	two
Parallel Port:	one
RJ45 Port:	one
USB Port:	two
All Purpose Connector:	one
Power Input:	one
Docking Connector:	one

Display:	LCD (1024X 768) or CRT (1024X 768) or LCD12”(1024X 768) or 12”(800X 600) or 8”(800X600)
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CPU

Intel Dothan(745) 1.8GHz

All types of LCD and Power Type have been tested. We present the worst case test data in the report. The test configuration is listed below:

Configuration	CPU	Resolution	External LCD	Power Type
1.NB Only	Intel Dothan(745) 1.8GHz	NB LCD 1024x768	none	EPS AC Adapter (Model: F10903-A)
2.NB+Office Docking	Intel Dothan(745) 1.8GHz	NB LCD 1024x768	none	EPS AC Adapter (Model: F10903-A)
3.NB+ Vehicle Docking	Intel Dothan(745) 1.8GHz	NB LCD 1024x768	MOTOROLA12.1" LCD display (Model:3135A)SXGA	ACDelco Battery(Model:S55B24L)
4.NB+ Vehicle Docking	Intel Dothan(745) 1.8GHz	NB LCD 800x600	MOTOROLA12.1" LCD display (Model:3134A)SXGA	ACDelco Battery(Model:S55B24L)
5 NB+ Vehicle Docking	Intel Dothan(745) 1.8GHz	NB LCD 800x600	MOTOROLA8.4" LCD display (Model:3318A)SVGA	ACDelco Battery(Model:S55B24L)

EMI Noise Source:

Crystal:

EUT1:

24.576MHz(X6),24MHz(Y2),32.768KHz(X801),28.63636MHz(X800),25MHz(X5)

14.318MHZ(X4), 14.318MHZ(Y1),16MHZ(X1)

Clock Generator:

U27

EUT2:

25MHZ(X2),30MHZ(X1)

EUT3:

25MHZ(X2),30MHZ(X1)

EMI Solution:

1.Adding Spring on the Charger board

2.Adding Gasket on the Charger board

3.Adding shielding cap for Docking port & DVI + COM

4.Adding Gasket on HDD Case

5.Adding a ferrite clip antenna cable(include Wireless Modem, GPS and WLAN) below panel .

6.Adding Six Spring on Mother board

7.Adding Spring onUSB port and LAN port

8.Adding Gasket on Modem port

9.Adding Gasket on Vehicle Docking PCB I/O connector

4. TEST RESULTS (802.11b)

4.1 Powerline Conducted Emissions [Section 15.207]

4.1.1 EUT Configuration

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 used.

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:

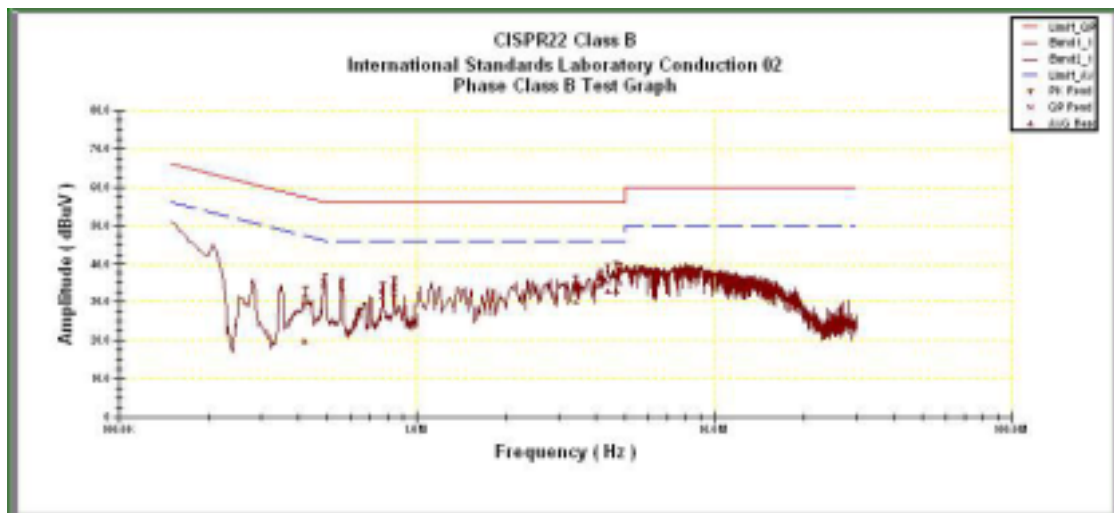
Power Line Conducted Emissions (Hot) Channel 1, 6, 11

Operator: Jerry Chiou

Temperature (C): 26

Humidity (%): 55

Frequency	LISN Loss	Cable Loss	QPCorrt.	QPLimit	QPMargin	AVECorrt.	AVELimit	AVEMargin
MHz	(dB)	(dB)	Amp.(dBuV)	(dBuV)	(dB)	Amp.(dBuV)	(dBuV)	(dB)
0.4178	0.1	0.08	28.92	58.35	-29.43	19.82	48.35	-28.53
0.48738	0.11	0.07	35.45	56.36	-20.91	34.55	46.36	-11.81
0.55645	0.13	0.07	34.59	56	-21.41	33.75	46	-12.25
0.76628	0.16	0.07	32.65	56	-23.35	31.22	46	-14.78
0.83561	0.17	0.07	33.97	56	-22.03	32.36	46	-13.64
3.41682	0.2	0.13	32.28	56	-23.72	29.98	46	-16.02
4.11272	0.2	0.14	36.59	56	-19.41	34.56	46	-11.44
4.39406	0.21	0.14	35.24	56	-20.76	32.64	46	-13.36
4.67116	0.21	0.15	36.74	56	-19.26	32.78	46	-13.22
4.81143	0.21	0.15	38.18	56	-17.82	35	46	-11



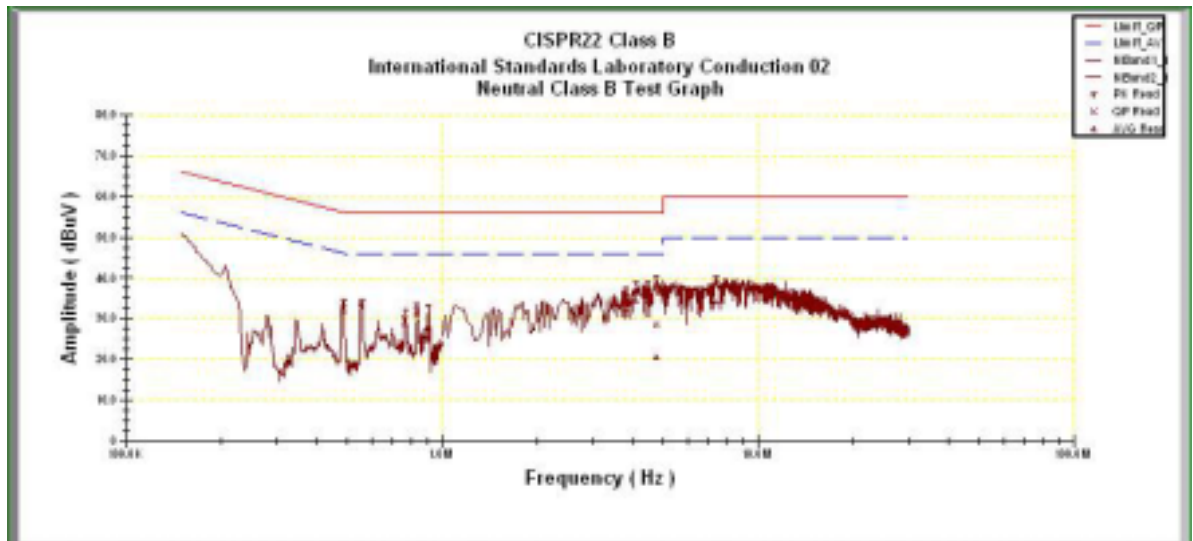
Power Line Conducted Emissions (Neutral) Channel 1, 6, 11

Operator: Jerry Chiou

Temperature (C): 26

Humidity (%): 55

Frequency	LISN Loss	Cable Loss	QPCorrt.	QPLimit	QPMargin	AVECorrt.	AVELimit	AVEMargin
MHz	(dB)	(dB)	Amp.(dBuV)	(dBuV)	(dB)	Amp.(dBuV)	(dBuV)	(dB)
0.48616	0.11	0.07	32.83	56.4	-23.57	32.04	46.4	-14.35
0.55343	0.13	0.07	33.62	56	-22.38	33.25	46	-12.75
0.7616	0.16	0.07	30.12	56	-25.88	28.86	46	-17.14
0.83051	0.17	0.07	32.21	56	-23.79	31.21	46	-14.79
0.89856	0.18	0.07	27.2	56	-28.8	24.77	46	-21.23
3.81228	0.2	0.14	35.51	56	-20.49	32.18	46	-13.82
4.09238	0.2	0.14	36.48	56	-19.52	34.61	46	-11.39
4.43948	0.2	0.15	37.45	56	-18.55	34.91	46	-11.09
4.75723	0.19	0.15	28.54	56	-27.46	20.5	46	-25.5
7.3569	0.17	0.18	38.55	60	-21.45	34.02	50	-15.98



* 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

Test Engineer: Jerry Chiou

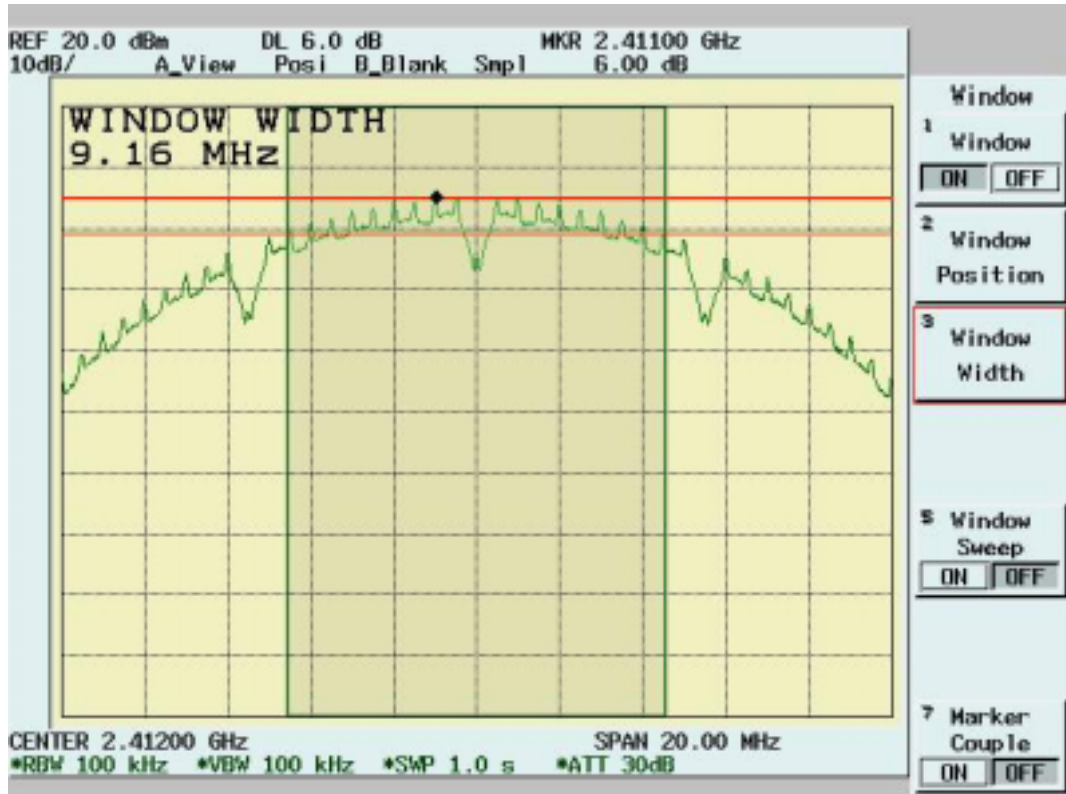
Temperature (): 27

Tx Data Rate=1Mbps

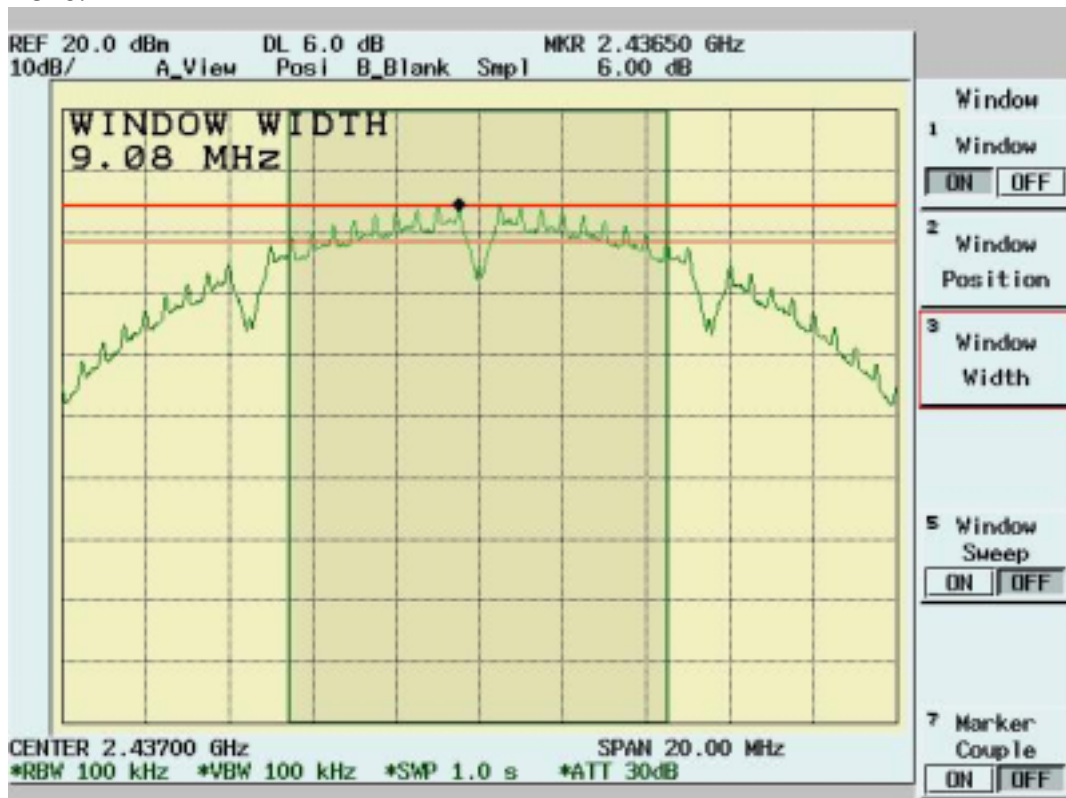
Humidity (%): 55

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Pass/Fail
1	2412	9.16	0.5	Pass
6	2437	9.08	0.5	Pass
11	2462	9.16	0.5	Pass

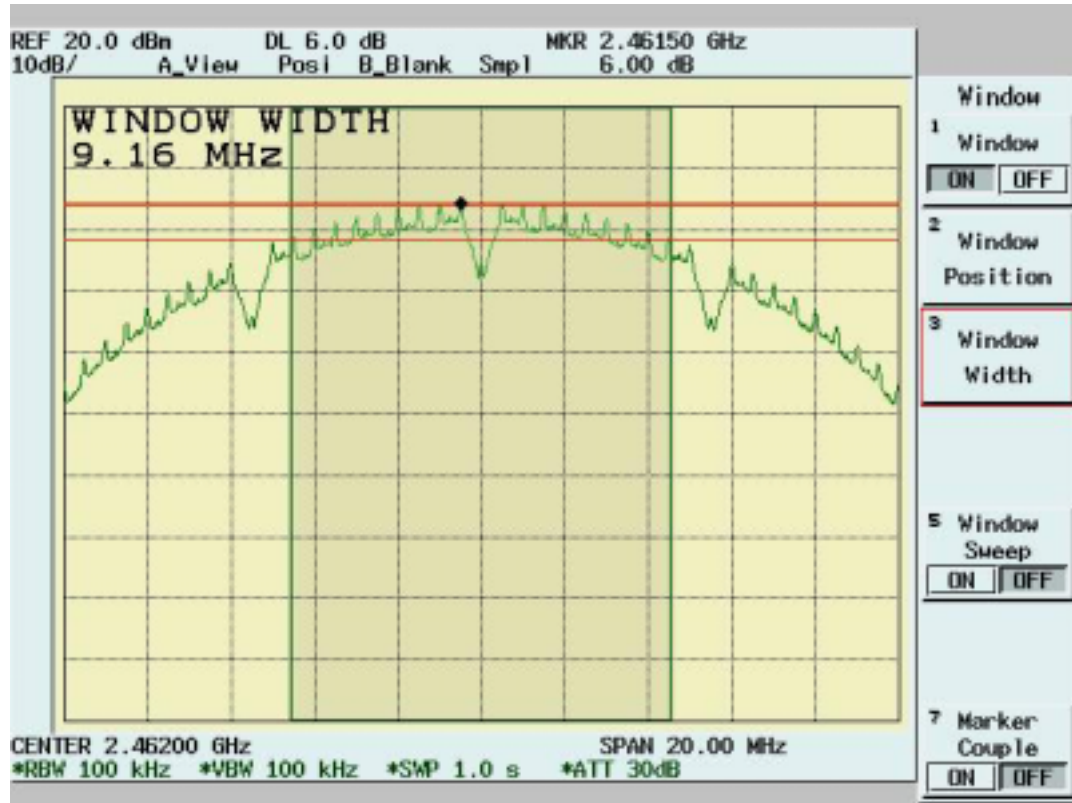
Channel 1:



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

Test Engineer: Jerry
Chiou

Temperature (): 27

Tx Data Rate=1Mbps

Humidity (%): 55

Channel	Frequency (Mhz)	Analyzer Reading (dBm)	Cable Loss (dB)	Peak Power Output (mW)	Peak Power Output (dBm)	Limit (dBm)	Pass/Fail
1	2412	16.91	1.10	63.18	18.01	30	Pass
6	2437	15.97	1.10	50.91	17.07	30	Pass
11	2462	15.53	1.10	46.04	16.63	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: Jerry Chiou

Temperature (C): 23

05:07:17 PM, Friday, August 12, 2005

Humidity (%): 54

Frequency	Rx Amp.	Ant Fact	CableLoss	PreAmpGain	Corrct. Emi.	Limit	Margin	Ant. Pos.	Table Pos.
MHz	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg)
85.29	21.75	7.50	1.76	0.00	31.01	40.00	-8.99	103.00	122.00
96.93	19.22	9.69	1.90	0.00	30.81	43.50	-12.69	103.00	187.00
136.7	21.01	10.63	2.20	0.00	33.84	43.50	-9.66	103.00	171.00
315.18	15.60	15.99	3.77	0.00	35.37	46.00	-10.63	103.00	353.00
332.64	13.18	16.10	3.95	0.00	33.23	46.00	-12.77	196.00	72.00
372.41	15.32	16.07	4.25	0.00	35.64	46.00	-10.36	196.00	23.00
649.83	13.23	19.00	6.31	0.00	38.53	46.00	-7.47	103.00	88.00
666.32	13.75	19.00	6.41	0.00	39.16	46.00	-6.84	103.00	220.00
733.25	8.16	19.80	6.89	0.00	34.84	46.00	-11.16	196.00	352.00

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

Operator: Jerry Chiou

Temperature (C): 23

05:07:17 PM, Friday, August 12, 2005

Humidity (%): 54

Frequency	Rx Amp.	Ant Fact	CableLoss	PreAmpGain	Corrct. Emi.	Limit	Margin	Ant. Pos.	Table Pos.
MHz	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg)
40.67	21.39	11.86	1.13	0.00	34.39	40.00	-5.61	103.00	39.00
45.52	21.48	9.47	1.14	0.00	32.09	40.00	-7.91	103.00	187.00
125.06	19.40	11.45	2.11	0.00	32.96	43.50	-10.54	103.00	154.00
466.5	15.09	16.60	4.96	0.00	36.64	46.00	-9.36	103.00	304.00
649.83	16.59	19.00	6.31	0.00	41.89	46.00	-4.11	103.00	88.00
666.32	16.71	19.00	6.41	0.00	42.12	46.00	-3.88	103.00	220.00
733.25	13.95	19.80	6.89	0.00	40.63	46.00	-5.37	196.00	352.00
833.16	6.14	20.43	7.71	0.00	34.28	46.00	-11.72	196.00	105.00

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

4.4.5 Test Data (1GHz – 25 GHz) .

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

Operator: Jerry Chiou

RBW: 1MHz

Humidity (%): 41

Temperature (C): 27

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
1799.2	40.88 pk	29.31	2.45	34.79	37.85 pk	54.00 av	-16.15	100	57
1829.17	40.64 pk	29.57	2.47	34.85	37.83 pk	54.00 av	-16.17	100	55
2246.25	40.23 pk	30.95	1.85	35.19	37.84 pk	54.00 av	-16.16	101	120
2311.19	45.37 pk	30.94	1.65	35.19	42.76 pk	54.00 av	-11.24	101	141
2328.67	43.31 pk	30.93	1.60	35.19	40.65 pk	54.00 av	-13.35	101	146
2341.16	41.95 pk	30.93	1.56	35.19	39.24 pk	54.00 av	-14.76	101	150
2361.14	42.19 pk	30.93	1.50	35.19	39.42 pk	54.00 av	-14.58	101	156
2371.13	45.86 pk	30.93	1.47	35.19	43.06 pk	54.00 av	-10.94	101	160
2381.12	46.88 pk	30.92	1.44	35.20	44.04 pk	54.00 av	-9.96	101	163
2573.43	40.88 pk	30.93	1.37	35.13	38.05 pk	54.00 av	-15.95	102	223
2583.42	41.25 pk	30.93	1.38	35.12	38.43 pk	54.00 av	-15.57	102	226
2610.89	40.65 pk	30.94	1.38	35.10	37.87 pk	54.00 av	-16.13	102	235
2858.14	40.27 pk	31.04	1.42	34.88	37.86 pk	54.00 av	-16.14	103	312
2978.02	41.08 pk	31.09	1.45	34.77	38.85 pk	54.00 av	-15.15	103	350
4824.04	52.34 pk	34.93	2.12	37.72	51.68 pk	54.00 av	-2.32	100.00	354.00
9647.84	48.63 pk	40.57	3.25	34.33	58.12 pk	74.00 pk	-15.88	100.00	354.00
9647.84	36.98 av	40.57	3.25	34.33	46.47 av	54.00 av	-7.53	100.00	354.00

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

Operator: Jerry Chiou

RBW: 1MHz

Humidity (%): 41

Temperature (C): 27

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
1399.6	46.09 pk	26.34	2.22	34.15	40.50 pk	54.00 av	-13.50	101	84
1806.69	42.09 pk	29.38	2.46	34.80	39.13 pk	54.00 av	-14.87	100	56
1849.15	44.79 pk	29.73	2.49	34.88	42.13 pk	54.00 av	-11.87	100	53
1959.04	40.34 pk	30.66	2.57	35.10	38.46 pk	54.00 av	-15.54	100	46
1964.04	41.63 pk	30.70	2.57	35.11	39.79 pk	54.00 av	-14.21	100	45
2208.79	42.57 pk	30.96	1.96	35.19	40.30 pk	54.00 av	-13.70	101	109
2278.72	43.23 pk	30.94	1.75	35.19	40.73 pk	54.00 av	-13.27	101	131
2293.71	44.21 pk	30.94	1.70	35.19	41.66 pk	54.00 av	-12.34	101	135
2311.19	52.95 pk	30.94	1.65	35.19	50.34 pk	54.00 av	-3.66	101	141
2318.68	48.57 pk	30.94	1.63	35.19	45.94 pk	54.00 av	-8.06	101	143
2343.66	47.05 pk	30.93	1.55	35.19	44.34 pk	54.00 av	-9.66	101	151
2373.63	53.32 pk	30.93	1.46	35.19	50.51 pk	54.00 av	-3.49	101	160
2486.01	43.41 pk	30.90	1.44	35.20	40.55 pk	54.00 av	-13.45	101	196
2610.89	41.81 pk	30.94	1.38	35.10	39.04 pk	54.00 av	-14.96	102	235
4824.24	49.70 pk	34.93	2.12	37.72	49.04 pk	54.00 av	-4.96	100.00	271.00
9648	49.30 pk	40.57	3.25	34.33	58.79 pk	74.00 pk	-15.21	100.00	271.00
9648	37.38 av	40.57	3.25	34.33	46.87 av	54.00 av	-7.13	100.00	271.00

Note:

- According to the standards used, 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: Jerry Chiou

RBW: 1MHz
Humidity (%): 41
Temperature (C): 27

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
1332.17	46.64 pk	26.03	2.21	34.11	40.77 pk	54.00 av	-13.23	101	89
1799.2	44.05 pk	29.31	2.45	34.79	41.03 pk	54.00 av	-12.97	100	57
1829.17	43.38 pk	29.57	2.47	34.85	40.57 pk	54.00 av	-13.43	100	55
1999	42.81 pk	30.99	2.60	35.18	41.23 pk	54.00 av	-12.77	100	43
2231.27	44.53 pk	30.95	1.89	35.19	42.19 pk	54.00 av	-11.81	101	116
2278.72	44.55 pk	30.94	1.75	35.19	42.06 pk	54.00 av	-11.94	101	131
2318.68	47.33 pk	30.94	1.63	35.19	44.70 pk	54.00 av	-9.30	101	143
2333.67	51.63 pk	30.93	1.58	35.19	48.95 pk	54.00 av	-5.05	101	148
2356.14	48.34 pk	30.93	1.51	35.19	45.58 pk	54.00 av	-8.42	101	155
2535.96	45.73 pk	30.91	1.37	35.17	42.85 pk	54.00 av	-11.15	102	211
2613.39	44.56 pk	30.95	1.38	35.10	41.79 pk	54.00 av	-12.21	102	236
2638.36	44.25 pk	30.96	1.38	35.08	41.51 pk	54.00 av	-12.49	102	243
2878.12	43.23 pk	31.05	1.43	34.86	40.85 pk	54.00 av	-13.15	103	319
3357.64	44.39 pk	31.39	1.64	35.53	41.88 pk	54.00 av	-12.12	103	265
4873.94	48.33 pk	35.12	2.14	37.77	47.82 pk	54.00 av	-6.18	100.00	6.00
9747.97	45.11 pk	40.35	3.30	34.37	54.39 pk	74.00 pk	-19.61	100.00	6.00
9747.97	29.18 av	40.35	3.30	34.37	38.46 av	54.00 av	-15.54	100.00	6.00

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

Operator: Jerry Chiou

 RBW: 1MHz
 Humidity (%): 41
 Temperature (C): 27

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
1626.87	46.33 pk	27.87	2.32	34.45	42.07 pk	54.00 av	-11.93	101	69
1799.2	45.00 pk	29.31	2.45	34.79	41.98 pk	54.00 av	-12.02	100	57
1806.69	46.82 pk	29.38	2.46	34.80	43.85 pk	54.00 av	-10.15	100	56
1839.16	49.66 pk	29.65	2.48	34.86	46.92 pk	54.00 av	-7.08	100	54
1999	44.28 pk	30.99	2.60	35.18	42.69 pk	54.00 av	-11.31	100	43
2171.33	45.11 pk	30.97	2.08	35.19	42.97 pk	54.00 av	-11.03	101	97
2231.27	47.71 pk	30.95	1.89	35.19	45.37 pk	54.00 av	-8.63	101	116
2273.73	48.44 pk	30.95	1.76	35.19	45.96 pk	54.00 av	-8.04	101	129
2333.67	54.20 pk	30.93	1.58	35.19	51.52 pk	54.00 av	-2.48	101	148
2353.65	49.52 pk	30.93	1.52	35.19	46.78 pk	54.00 av	-7.22	101	154
2386.11	52.36 pk	30.92	1.42	35.20	49.51 pk	54.00 av	-4.49	101	164
2535.96	47.22 pk	30.91	1.37	35.17	44.33 pk	54.00 av	-9.67	102	211
2598.4	44.61 pk	30.94	1.38	35.11	41.82 pk	54.00 av	-12.18	102	231
3357.64	45.98 pk	31.39	1.64	35.53	43.48 pk	54.00 av	-10.52	103	265
4874.02	49.86 pk	35.12	2.14	37.77	49.35 pk	54.00 av	-4.65	100.00	294.00
9748.06	44.69 pk	40.35	3.30	34.37	53.97 pk	74.00 pk	-20.03	100.00	294.00
9748.06	30.36 av	40.35	3.30	34.37	39.64 av	54.00 av	-14.36	100.00	294.00

Note:

- According to the standards used, 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: Jerry Chiou

RBW: 1MHz
Humidity (%): 41
Temperature (C): 27

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
1332.17	47.66 pk	26.03	2.21	34.11	41.78 pk	54.00 av	-12.22	101	89
1799.2	45.09 pk	29.31	2.45	34.79	42.06 pk	54.00 av	-11.94	100	57
2196.3	43.38 pk	30.96	2.00	35.19	41.16 pk	54.00 av	-12.84	101	105
2253.75	45.67 pk	30.95	1.83	35.19	43.26 pk	54.00 av	-10.74	101	123
2286.21	49.78 pk	30.94	1.73	35.19	47.26 pk	54.00 av	-6.74	101	133
2298.7	48.30 pk	30.94	1.69	35.19	45.74 pk	54.00 av	-8.26	101	137
2336.16	47.54 pk	30.93	1.57	35.19	44.85 pk	54.00 av	-9.15	101	149
2356.14	50.78 pk	30.93	1.51	35.19	48.03 pk	54.00 av	-5.97	101	155
2378.62	47.79 pk	30.92	1.44	35.20	44.96 pk	54.00 av	-9.04	101	162
2398.6	46.80 pk	30.92	1.46	35.20	43.98 pk	54.00 av	-10.02	101	168
2543.46	44.11 pk	30.92	1.37	35.16	41.23 pk	54.00 av	-12.77	102	214
2618.38	44.00 pk	30.95	1.38	35.09	41.24 pk	54.00 av	-12.76	102	237
3357.64	43.77 pk	31.39	1.64	35.53	41.27 pk	54.00 av	-12.73	103	265
4923.76	49.23 pk	35.31	2.15	37.83	48.86 pk	54.00 av	-5.14	100.00	34.00
9848.02	45.83 pk	40.13	3.35	34.41	54.91 pk	74.00 pk	-19.09	100.00	184.00
9848.02	33.36 av	40.13	3.35	34.41	42.43 av	54.00 av	-11.57	100.00	184.00

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

Operator: Jerry Chiou

RBW: 1MHz
Humidity (%): 41
Temperature (C): 27

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
1332.17	48.16 pk	26.03	2.21	34.11	42.28 pk	54.00 av	-11.72	101	89
1799.2	45.20 pk	29.31	2.45	34.79	42.17 pk	54.00 av	-11.83	100	57
1806.69	46.73 pk	29.38	2.46	34.80	43.77 pk	54.00 av	-10.23	100	56
1829.17	46.30 pk	29.57	2.47	34.85	43.50 pk	54.00 av	-10.50	100	55
1849.15	50.92 pk	29.73	2.49	34.88	48.26 pk	54.00 av	-5.74	100	53
2193.81	44.09 pk	30.96	2.01	35.19	41.87 pk	54.00 av	-12.13	101	104
2253.75	46.46 pk	30.95	1.83	35.19	44.05 pk	54.00 av	-9.95	101	123
2286.21	50.70 pk	30.94	1.73	35.19	48.17 pk	54.00 av	-5.83	101	133
2298.7	49.06 pk	30.94	1.69	35.19	46.50 pk	54.00 av	-7.50	101	137
2358.64	50.96 pk	30.93	1.51	35.19	48.20 pk	54.00 av	-5.80	101	156
2383.62	48.59 pk	30.92	1.43	35.20	45.75 pk	54.00 av	-8.25	101	163
2618.38	44.62 pk	30.95	1.38	35.09	41.85 pk	54.00 av	-12.15	102	237
3357.64	46.42 pk	31.39	1.64	35.53	43.91 pk	54.00 av	-10.09	103	265
4924.23	48.41 pk	35.31	2.15	37.83	48.05 pk	54.00 av	-5.95	100.00	355.00
9847.87	46.56 pk	40.13	3.35	34.41	55.64 pk	74.00 pk	-18.36	100.00	287.00
9847.87	34.66 av	40.13	3.35	34.41	43.73 av	54.00 av	-10.27	100.00	287.00

Note:

- According to the standards used, 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.

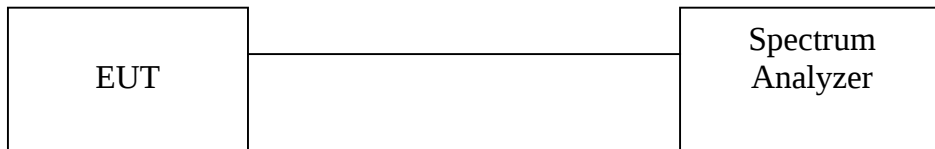
All frequencies from 1GHz to 25 GHz have been tested.

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)

Test Engineer: Jerry Chiou

Temperature (): 27

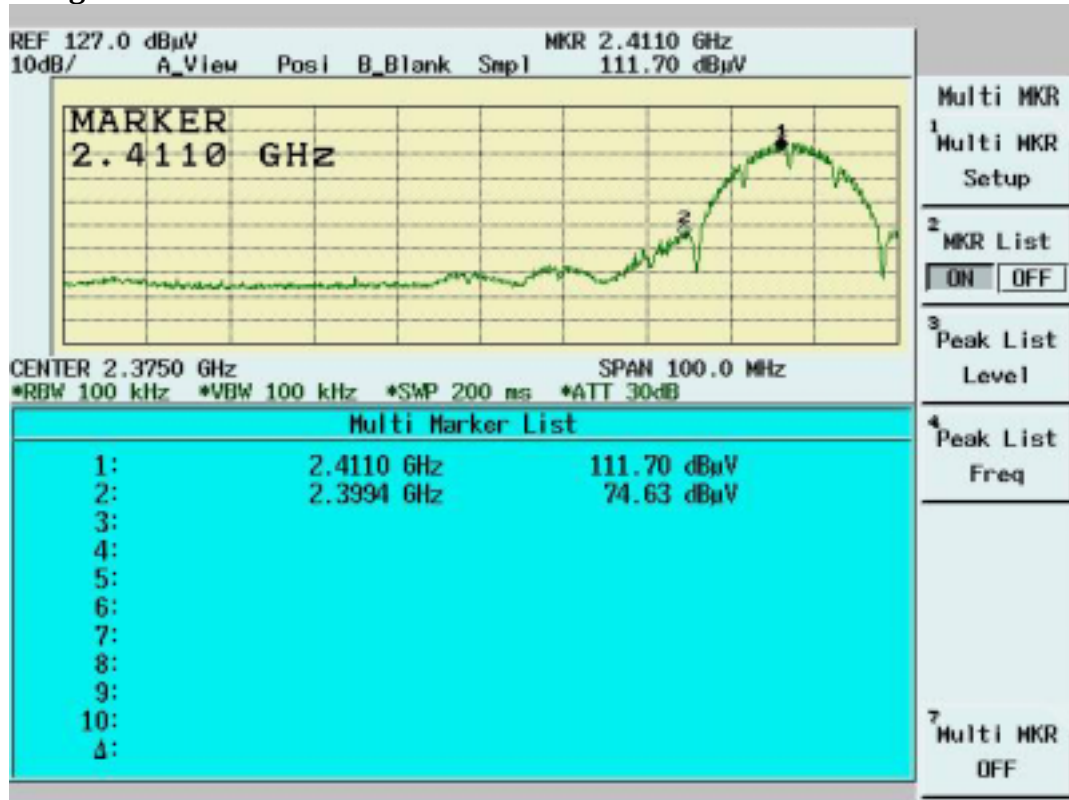
Tx Data Rate=1Mbps

Humidity (%): 55

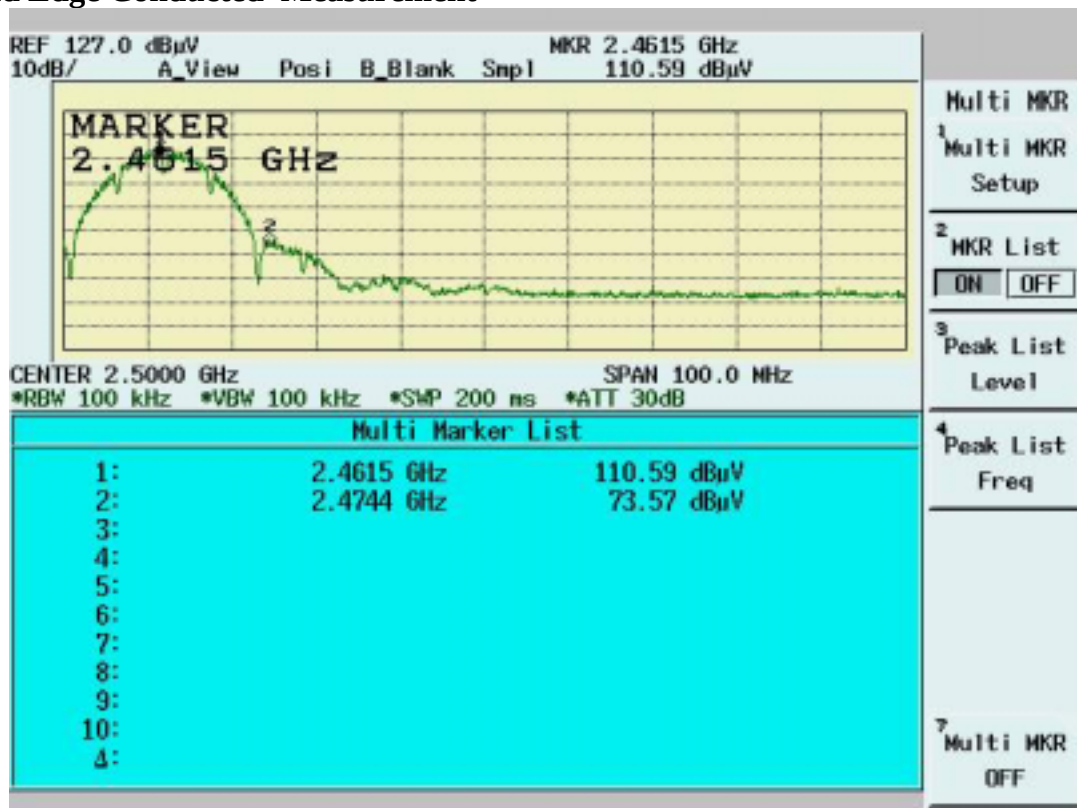
Channel	Frequency (MHz)	Spectrum Reading (dBuV)	Carrier - Outsideband Limit: >20dB (dB)	Pass/Fail
1	2411.0	111.70	---	---
Outside band	2399.4	74.63	37.07	Pass
11	2461.5	110.59	---	---
Outside band	2474.4	73.57	37.02	Pass

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)

Test Engineer: Jerry Chiou

Temperature (): 26

Tx Data Rate=1Mbps

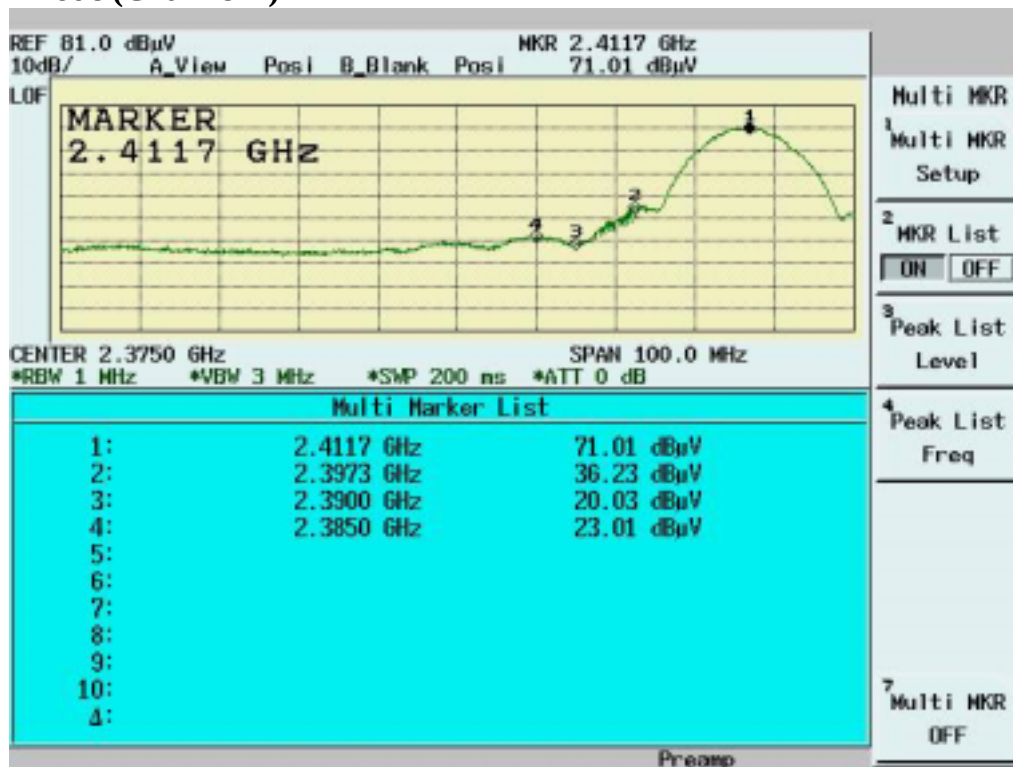
Humidity (%): 43

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)	2410.7	64.30	35.48	99.78	---	---	10Hz	---
Channel_1 (peak mode)	2411.7	71.01	35.48	106.49	---	---	3MHz	---
Outside band (peak mode)	2397.3	36.23	35.48	71.71	34.78	---	3MHz	Pass
Channel_11 (average mode)	2462.7	60.69	35.50	96.19	---	---	10Hz	---
Channel_11 (peak mode)	2462.9	67.72	35.50	103.22	---	---	3MHz	---
Outside band (peak mode)	2474.6	32.98	35.51	68.49	34.73	---	3MHz	Pass
Channel_1 Restricted band (peak mode)	2385.0	23.01	35.47	58.48	---	74	3MHz	Pass
Restricted band (average mode)	2385.4	13.53	35.47	49.00	---	54	10Hz	Pass
Channel_11 Restricted band (peak mode)	2488.0	21.72	35.51	57.23	---	74	3MHz	Pass
Restricted band (average mode)	2488.4	10.98	35.51	46.49	---	54	10Hz	Pass

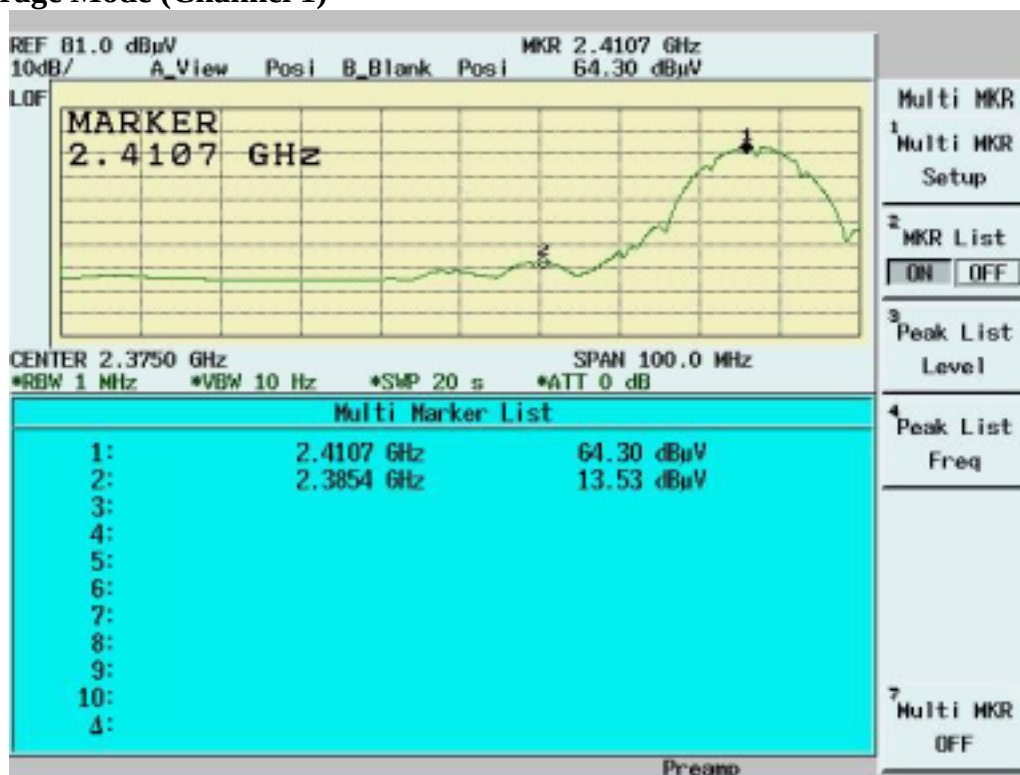
Note:

- 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.

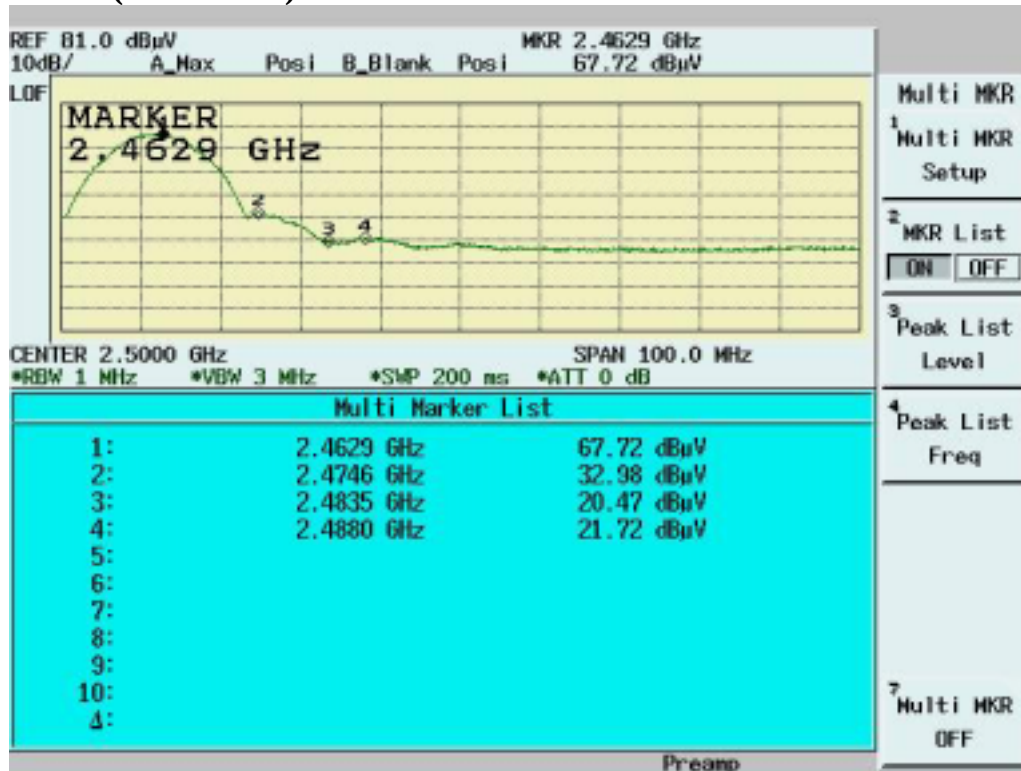
**Band Edge measurement for radiated emission in Restricted Band(Radiated)
Peak Mode (Channel 1)**



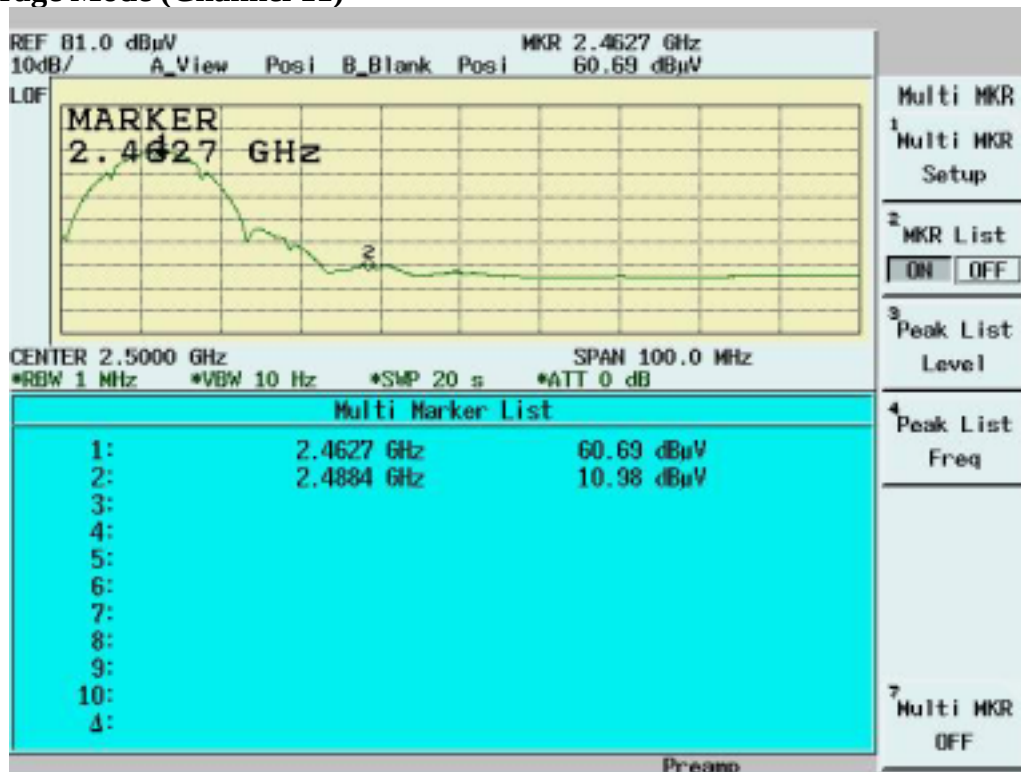
**Band Edge measurement for radiated emission in Restricted Band(Radiated)
Average Mode (Channel 1)**



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



Band Edge measurement for radiated emission in Restricted 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

Test Engineer: Jerry
Chiou

Temperature (): 27

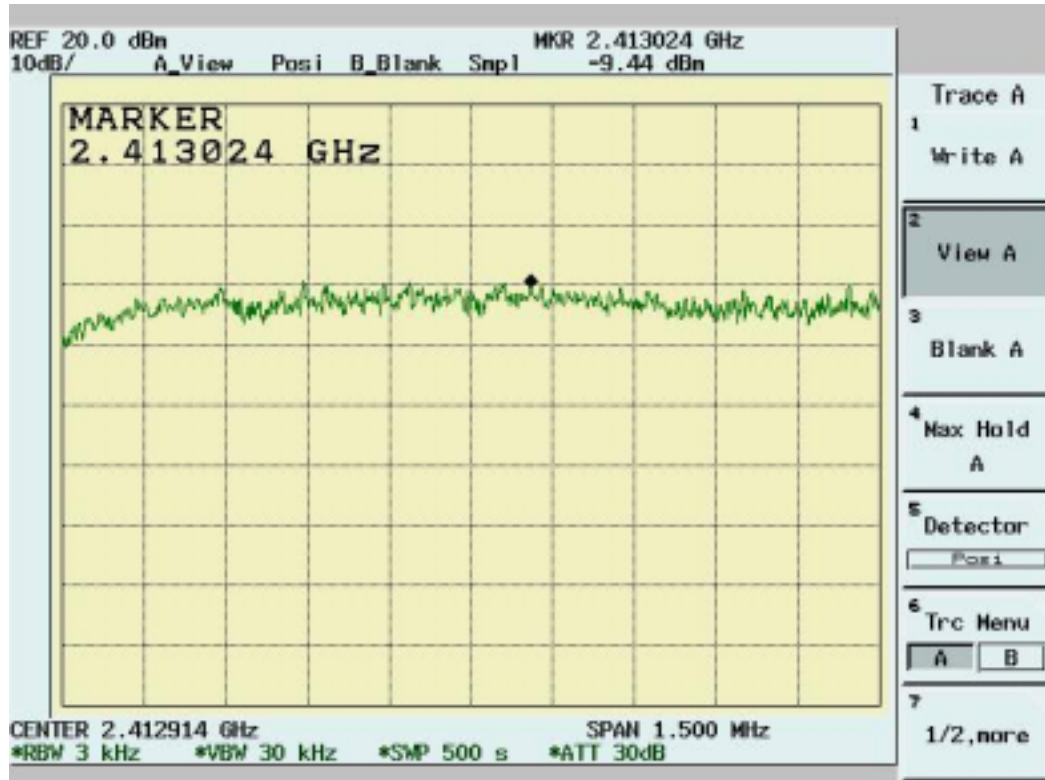
Tx Data Rate=1Mbps

Humidity (%): 55

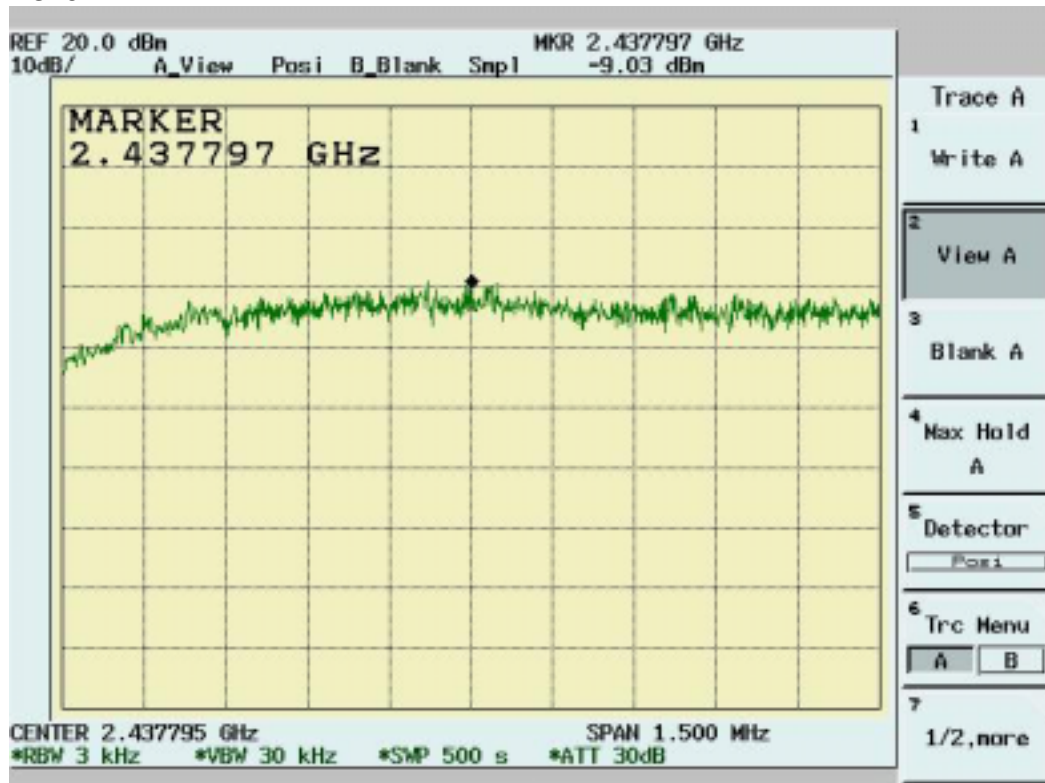
Channel	Frequency (MHz)	Spectrum Reading (dBm/3KHz)	Cable Loss (dB)	Peak Power Output (dBm/3KHz)	Limit (dBm/3KHz)	Pass/Fail
1	2412	-9.44	1.10	-8.34	8	Pass
6	2437	-9.03	1.10	-7.93	8	Pass
11	2462	-9.34	1.10	-8.24	8	Pass

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

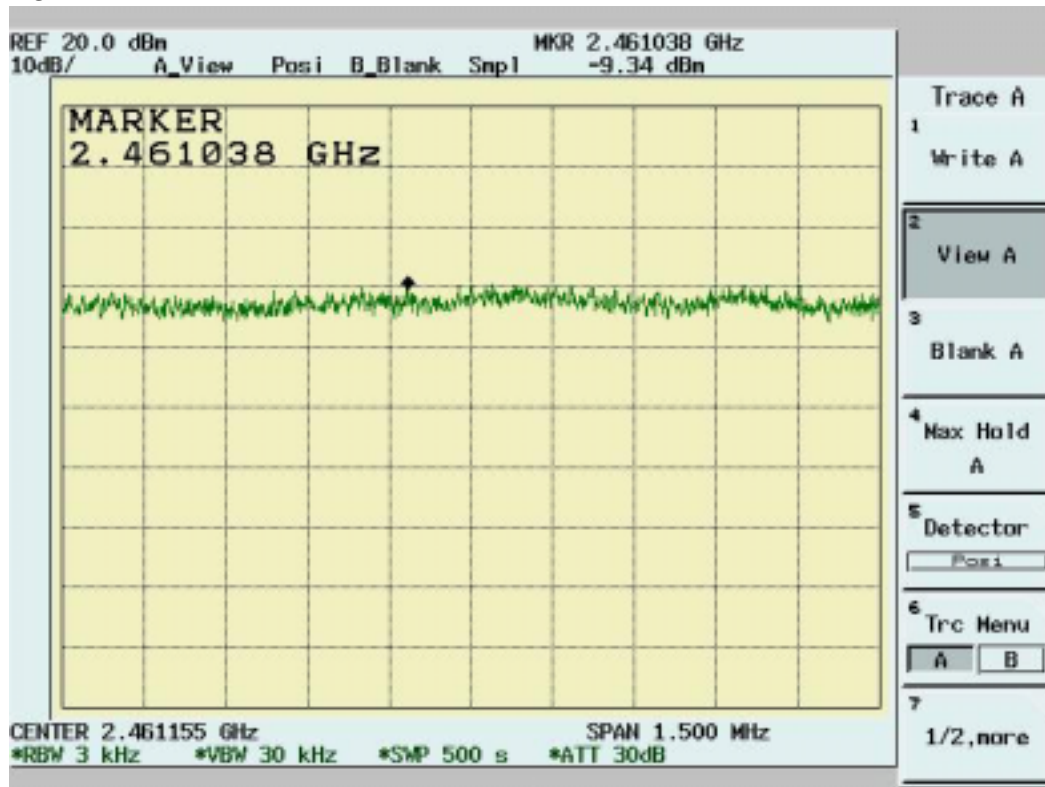
Channel 1



Channel 6



Channel 11



5. TEST RESULTS (802.11g)

5.1 Powerline Conducted Emissions [Section 15.207]

5.1.1 EUT Configuration

The 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 used.

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

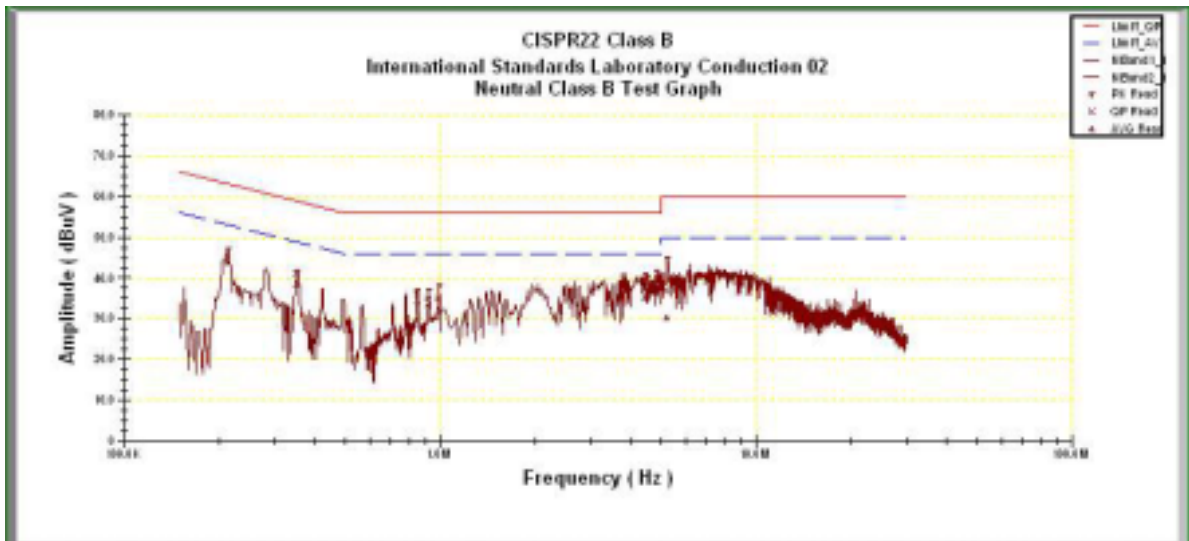
Power Line Conducted Emissions (Neutral) Channel 1, 6, 11

Operator: Jerry Chiou

Temperature (C): 26

Humidity (%): 55

Frequency	LISN Loss	Cable Loss	QPCorrt.	QPLimit	QPMargin	AVECorrt.	AVELimit	AVEMargin
MHz	(dB)	(dB)	Amp.(dBuV)	(dBuV)	(dB)	Amp.(dBuV)	(dBuV)	(dB)
0.21098	0.1	0.05	45.52	64.26	-18.74	43.82	54.26	-10.44
0.35158	0.1	0.09	41.08	60.24	-19.16	38.41	50.24	-11.83
0.84363	0.17	0.07	35.97	56	-20.03	34.19	46	-11.81
0.91388	0.19	0.07	34.91	56	-21.09	33.33	46	-12.67
0.9858	0.2	0.07	34.84	56	-21.16	32.11	46	-13.89
3.80056	0.2	0.14	39.04	56	-16.96	37.06	46	-8.94
4.43603	0.2	0.15	39.5	56	-16.5	35.28	46	-10.72
4.50717	0.2	0.15	39.51	56	-16.49	37.63	46	-8.37
4.85812	0.19	0.15	39.92	56	-16.08	38.25	46	-7.75
5.21012	0.19	0.15	36.75	60	-23.25	30.13	50	-19.87



* 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

Test Engineer: Jerry Chiou

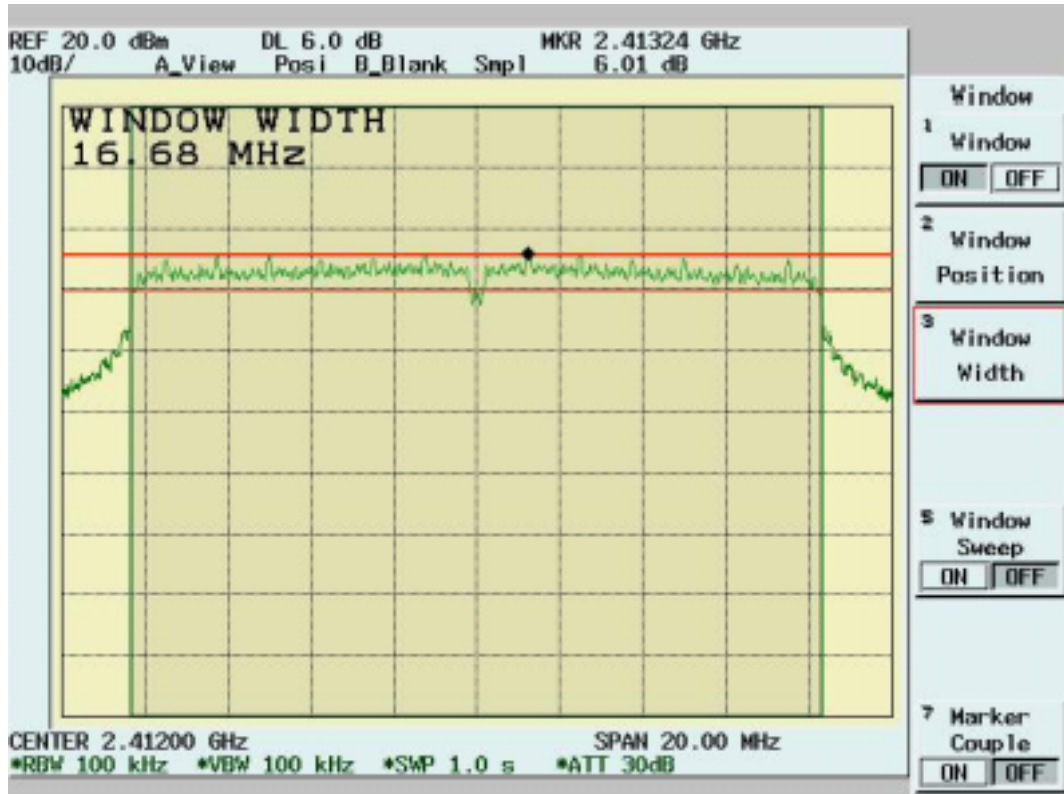
Temperature (): 27

Tx Data Rate=6Mbps

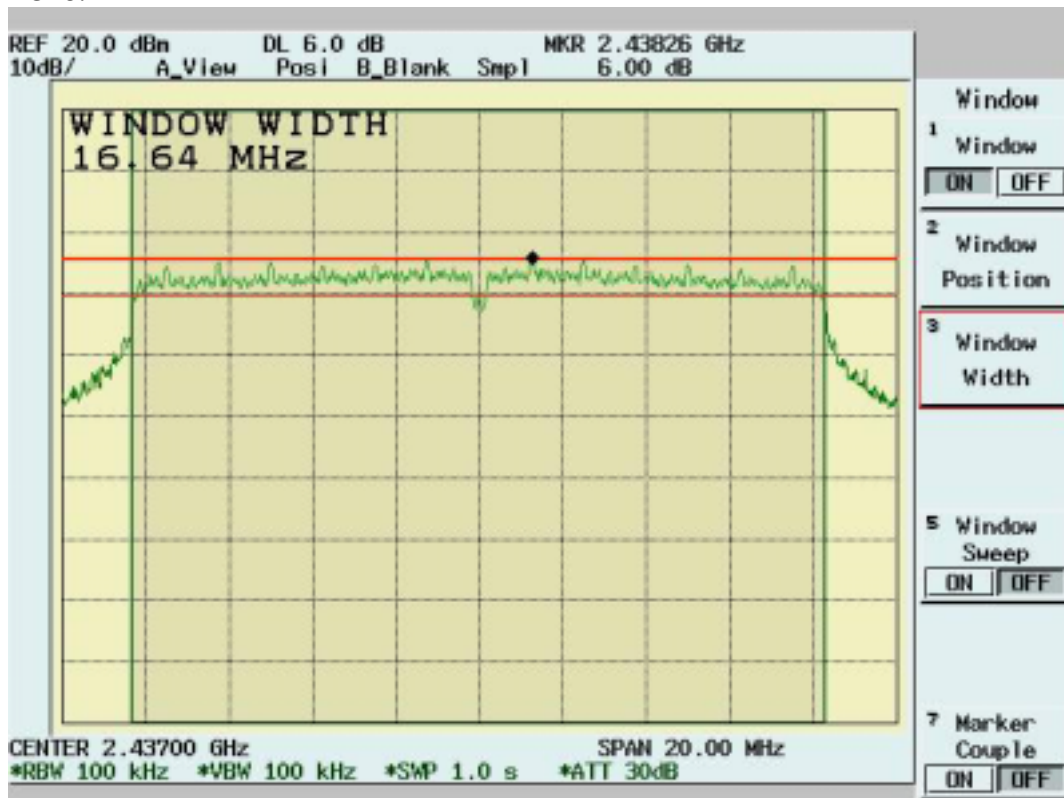
Humidity (%): 55

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Pass/Fail
1	2412	16.68	0.5	Pass
6	2437	16.64	0.5	Pass
11	2462	16.56	0.5	Pass

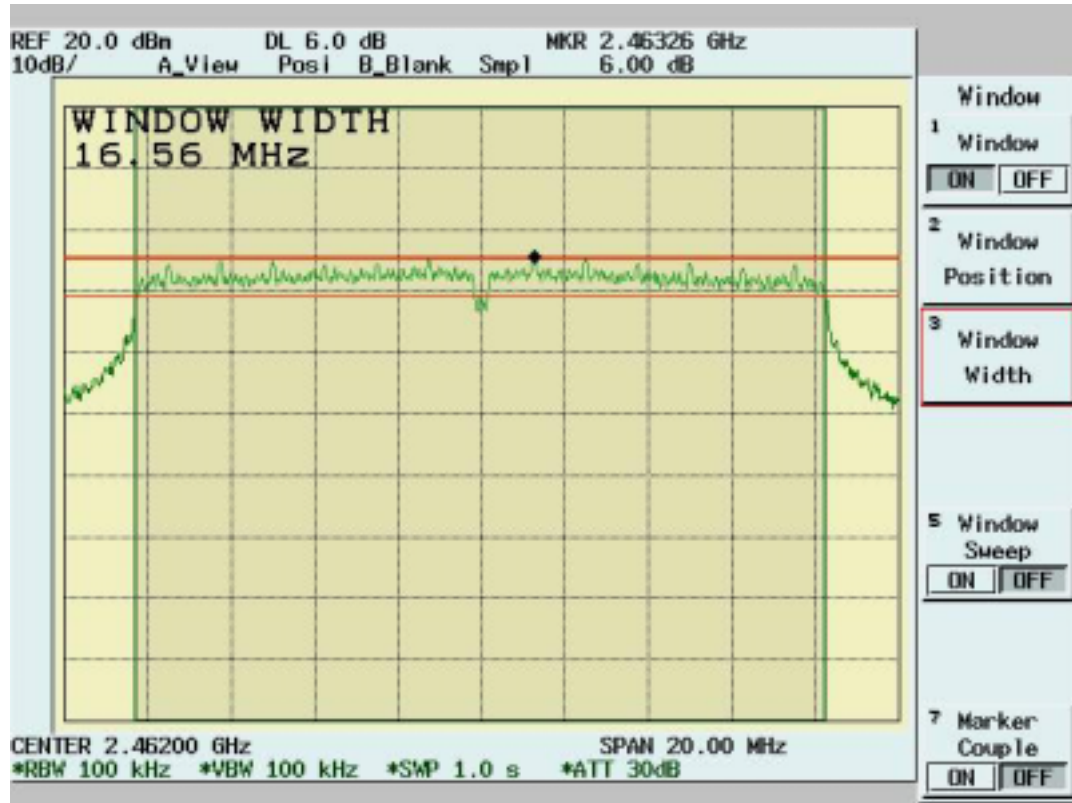
Channel 1:



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

Test Engineer: Jerry
Chiou

Temperature (): 27

Tx Data Rate=6Mbps

Humidity (%): 55

Channel	Frequency (Mhz)	Analyzer Reading (dBm)	Cable Loss (dB)	Peak Power Output (mW)	Peak Power Output (dBm)	Limit (dBm)	Pass/Fail
1	2412	14.41	1.10	35.53	15.51	30	Pass
6	2437	15.84	1.10	49.47	16.94	30	Pass
11	2462	14.81	1.10	39.01	15.91	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: Jerry Chiou

Temperature (C): 23

05:21:26 PM, Friday, August 12, 2005

Humidity (%): 54

Frequency	Rx Amp.	Ant Fact	CableLoss	PreAmpGain	Corrct. Emi.	Limit	Margin	Ant. Pos.	Table Pos.
MHz	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg)
136.7	21.34	10.63	2.20	0.00	34.17	43.50	-9.33	103.00	157.00
139.61	22.62	10.34	2.20	0.00	35.16	43.50	-8.34	103.00	91.00
314.21	17.75	15.99	3.76	0.00	37.50	46.00	-8.50	103.00	353.00
372.41	13.57	16.07	4.25	0.00	33.89	46.00	-12.11	103.00	10.00
649.83	10.67	19.00	6.31	0.00	35.98	46.00	-10.02	103.00	91.00
666.32	15.80	19.00	6.41	0.00	41.21	46.00	-4.79	103.00	222.00
733.25	8.95	19.80	6.89	0.00	35.64	46.00	-10.36	196.00	351.00
749.74	7.77	20.19	6.99	0.00	34.96	46.00	-11.04	103.00	157.00

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

Operator: Jerry Chiou

Temperature (C): 23

05:21:26 PM, Friday, August 12, 2005

Humidity (%): 54

Frequency	Rx Amp.	Ant Fact	CableLoss	PreAmpGain	Corrct. Emi.	Limit	Margin	Ant. Pos.	Table Pos.
MHz	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg)
40.67	18.27	11.86	1.13	0.00	31.26	40.00	-8.74	103.00	337.00
55.22	21.95	6.40	1.29	0.00	29.64	40.00	-10.36	103.00	337.00
125.06	20.45	11.45	2.11	0.00	34.00	43.50	-9.50	103.00	321.00
466.5	14.55	16.60	4.96	0.00	36.11	46.00	-9.89	103.00	304.00
649.83	16.02	19.00	6.31	0.00	41.33	46.00	-4.67	103.00	91.00
666.32	16.61	19.00	6.41	0.00	42.02	46.00	-3.98	103.00	222.00
733.25	14.07	19.80	6.89	0.00	40.76	46.00	-5.24	196.00	351.00
749.74	7.94	20.19	6.99	0.00	35.12	46.00	-10.88	103.00	157.00

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

5.4.5 Test Data (1GHz – 25 GHz) .

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

Operator: Jerry Chiou

RBW: 1MHz

Humidity (%): 41

Temperature (C): 27

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
1332.17	51.13pk	26.03	2.21	34.11	45.26pk	54.00av	-8.74	101	89
2208.79	46.32pk	30.96	1.96	35.19	44.05pk	54.00av	-9.95	101	109
2253.75	48.09pk	30.95	1.83	35.19	45.68pk	54.00av	-8.32	101	123
2278.72	48.17pk	30.94	1.75	35.19	45.67pk	54.00av	-8.33	101	131
2288.71	48.56pk	30.94	1.72	35.19	46.03pk	54.00av	-7.97	101	134
2316.18	52.54pk	30.94	1.64	35.19	49.92pk	54.00av	-4.08	101	142
2510.99	53.98pk	30.90	1.36	35.19	51.05pk	54.00av	-2.95	102	203
2563.44	48.73pk	30.93	1.37	35.14	45.89pk	54.00av	-8.11	102	220
2598.4	47.48pk	30.94	1.38	35.11	44.69pk	54.00av	-9.31	102	231
2610.89	48.94pk	30.94	1.38	35.10	46.16pk	54.00av	-7.84	102	235
2640.86	47.99pk	30.96	1.39	35.07	45.26pk	54.00av	-8.74	102	244
2678.32	45.80pk	30.97	1.39	35.04	43.13pk	54.00av	-10.87	102	256
4823.8	45.83pk	34.93	2.12	37.72	45.17pk	54.00av	-8.83	100.00	336.00
9649.19	42.71pk	40.57	3.25	34.33	52.20pk	54.00av	-1.80	100.00	205.00

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

Operator: Jerry Chiou

 RBW: 1MHz
 Humidity (%): 41
 Temperature (C): 27

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
2173.83	44.99pk	30.97	2.07	35.19	42.84 pk	54.00 av	-11.16	101	98
2208.79	47.40pk	30.96	1.96	35.19	45.13 pk	54.00 av	-8.87	101	109
2253.75	49.23pk	30.95	1.83	35.19	46.81 pk	54.00 av	-7.19	101	123
2278.72	47.80pk	30.94	1.75	35.19	45.30 pk	54.00 av	-8.70	101	131
2318.68	51.47pk	30.94	1.63	35.19	48.84 pk	54.00 av	-5.16	101	143
2356.14	52.55pk	30.93	1.51	35.19	49.80 pk	54.00 av	-4.20	101	155
2491.01	48.76pk	30.90	1.41	35.20	45.87 pk	54.00 av	-8.13	101	197
2510.99	51.79pk	30.90	1.36	35.19	48.87 pk	54.00 av	-5.13	102	203
2528.47	48.43pk	30.91	1.37	35.17	45.53 pk	54.00 av	-8.47	102	209
2565.93	46.73pk	30.93	1.37	35.14	43.88 pk	54.00 av	-10.12	102	221
2610.89	45.84pk	30.94	1.38	35.10	43.06 pk	54.00 av	-10.94	102	235
2648.35	46.80pk	30.96	1.39	35.07	44.08 pk	54.00 av	-9.92	102	247
2655.84	46.02pk	30.96	1.39	35.06	43.31 pk	54.00 av	-10.69	102	249
4825.37	46.91pk	34.94	2.12	37.72	46.25 pk	54.00 av	-7.75	100.00	12.00
9645.92	42.70pk	40.58	3.25	34.33	52.19 pk	54.00 av	-1.81	100.00	169.00

Note:

- According to the standards used, 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: Jerry Chiou

RBW: 1MHz

Humidity (%): 41

Temperature (C): 27

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
1299.7	45.71 pk	25.88	2.21	34.09	39.70 pk	54.00 av	-14.30	101	91
1332.17	49.07 pk	26.03	2.21	34.11	43.20 pk	54.00 av	-10.80	101	89
2191.31	42.64 pk	30.96	2.02	35.19	40.43 pk	54.00 av	-13.57	101	103
2231.27	50.91 pk	30.95	1.89	35.19	48.57 pk	54.00 av	-5.43	101	116
2278.72	49.25 pk	30.94	1.75	35.19	46.75 pk	54.00 av	-7.25	101	131
2318.68	50.41 pk	30.94	1.63	35.19	47.78 pk	54.00 av	-6.22	101	143
2358.64	50.93 pk	30.93	1.51	35.19	48.17 pk	54.00 av	-5.83	101	156
2518.48	49.93 pk	30.91	1.36	35.18	47.02 pk	54.00 av	-6.98	102	206
2535.96	51.64 pk	30.91	1.37	35.17	48.75 pk	54.00 av	-5.25	102	211
2603.4	48.30 pk	30.94	1.38	35.11	45.52 pk	54.00 av	-8.48	102	232
2635.86	45.42 pk	30.95	1.38	35.08	42.68 pk	54.00 av	-11.32	102	243
2655.84	43.12 pk	30.96	1.39	35.06	40.41 pk	54.00 av	-13.59	102	249
2738.26	42.32 pk	31.00	1.40	34.99	39.73 pk	54.00 av	-14.27	102	275
4872.52	46.76 pk	35.12	2.14	37.77	46.24 pk	54.00 av	-7.76	100.00	210.00
9746.91	42.67 pk	40.36	3.30	34.37	51.96 pk	54.00 av	-2.04	100.00	160.00

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

Operator: Jerry Chiou

 RBW: 1MHz
 Humidity (%): 41
 Temperature (C): 27

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
1064.94	47.21 pk	24.80	2.18	33.97	40.22 pk	54.00 av	-13.78	102	108
1299.7	46.09 pk	25.88	2.21	34.09	40.08 pk	54.00 av	-13.92	101	91
2201.3	44.59 pk	30.96	1.99	35.19	42.34 pk	54.00 av	-11.66	101	106
2231.27	53.09 pk	30.95	1.89	35.19	50.74 pk	54.00 av	-3.26	101	116
2278.72	53.01 pk	30.94	1.75	35.19	50.51 pk	54.00 av	-3.49	101	131
2318.68	53.71 pk	30.94	1.63	35.19	51.08 pk	54.00 av	-2.92	101	143
2518.48	52.02 pk	30.91	1.36	35.18	49.11 pk	54.00 av	-4.89	102	206
2535.96	52.45 pk	30.91	1.37	35.17	49.57 pk	54.00 av	-4.43	102	211
2568.43	47.66 pk	30.93	1.37	35.14	44.82 pk	54.00 av	-9.18	102	221
2598.4	48.71 pk	30.94	1.38	35.11	45.92 pk	54.00 av	-8.08	102	231
2618.38	46.63 pk	30.95	1.38	35.09	43.87 pk	54.00 av	-10.13	102	237
2638.36	46.18 pk	30.96	1.38	35.08	43.44 pk	54.00 av	-10.56	102	243
2738.26	42.53 pk	31.00	1.40	34.99	39.94 pk	54.00 av	-14.06	102	275
4871.59	45.09 pk	35.11	2.14	37.77	44.57 pk	54.00 av	-9.43	100.00	7.00
9747.67	42.91 pk	40.36	3.30	34.37	52.19 pk	54.00 av	-1.81	100.00	143.00

Note:

- According to the standards used, 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: Jerry Chiou

RBW: 1MHz
Humidity (%): 41
Temperature (C): 27

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
2226.27	45.30 pk	30.95	1.91	35.19	42.97 pk	54.00 av	-11.03	101	114
2256.24	53.26 pk	30.95	1.82	35.19	50.83 pk	54.00 av	-3.17	101	123
2318.68	51.34 pk	30.94	1.63	35.19	48.71 pk	54.00 av	-5.29	101	143
2333.67	50.87 pk	30.93	1.58	35.19	48.19 pk	54.00 av	-5.81	101	148
2386.11	53.63 pk	30.92	1.42	35.20	50.78 pk	54.00 av	-3.22	101	164
2518.48	51.05 pk	30.91	1.36	35.18	48.14 pk	54.00 av	-5.86	102	206
2540.96	48.79 pk	30.92	1.37	35.16	45.91 pk	54.00 av	-8.09	102	213
2560.94	50.38 pk	30.92	1.37	35.15	47.53 pk	54.00 av	-6.47	102	219
2578.42	48.09 pk	30.93	1.37	35.13	45.26 pk	54.00 av	-8.74	102	225
2603.4	47.35 pk	30.94	1.38	35.11	44.56 pk	54.00 av	-9.44	102	232
2623.38	46.84 pk	30.95	1.38	35.09	44.09 pk	54.00 av	-9.91	102	239
4924	45.81 pk	35.31	2.15	37.83	45.45 pk	54.00 av	-8.55	100.00	58.00
9848	42.84 pk	40.13	3.35	34.41	51.92 pk	54.00 av	-2.08	100.00	323.00

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

Operator: Jerry Chiou

 RBW: 1MHz
 Humidity (%): 41
 Temperature (C): 27

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
1132.37	46.42 pk	25.11	2.19	34.00	39.72 pk	54.00 av	-14.28	102	103
1264.74	46.19 pk	25.72	2.20	34.07	40.03 pk	54.00 av	-13.97	101	94
1497	44.82 pk	26.79	2.23	34.20	39.64 pk	54.00 av	-14.36	101	78
2153.85	43.05 pk	30.97	2.13	35.19	40.97 pk	54.00 av	-13.03	100	91
2256.24	53.40 pk	30.95	1.82	35.19	50.98 pk	54.00 av	-3.02	101	123
2386.11	53.49 pk	30.92	1.42	35.20	50.64 pk	54.00 av	-3.36	101	164
2518.48	51.53 pk	30.91	1.36	35.18	48.62 pk	54.00 av	-5.38	102	206
2530.97	47.92 pk	30.91	1.37	35.17	45.03 pk	54.00 av	-8.97	102	210
2560.94	49.20 pk	30.92	1.37	35.15	46.35 pk	54.00 av	-7.65	102	219
2598.4	47.54 pk	30.94	1.38	35.11	44.74 pk	54.00 av	-9.26	102	231
2653.35	45.41 pk	30.96	1.39	35.06	42.70 pk	54.00 av	-11.30	102	248
4924	45.01 pk	35.31	2.15	37.83	44.65 pk	54.00 av	-9.35	100.00	22.00
9848	42.87 pk	40.13	3.35	34.41	51.95 pk	54.00 av	-2.05	100.00	272.00

Note:

- According to the standards used, 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.

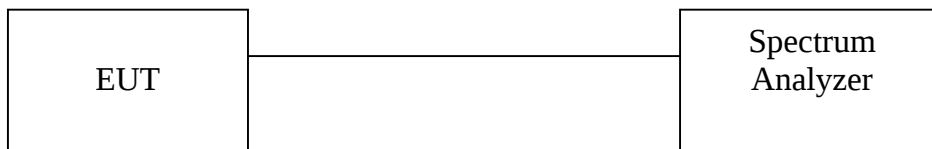
All frequencies from 1GHz to 25 GHz have been tested.

5.5 Band Edge Measurement

5.5.1 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

5.5.2 Test Setup (Conducted)



5.5.3 Test Data:

Table: Band Edge measurement (Conducted)

Test Engineer: Jerry Chiou

Temperature (): 27

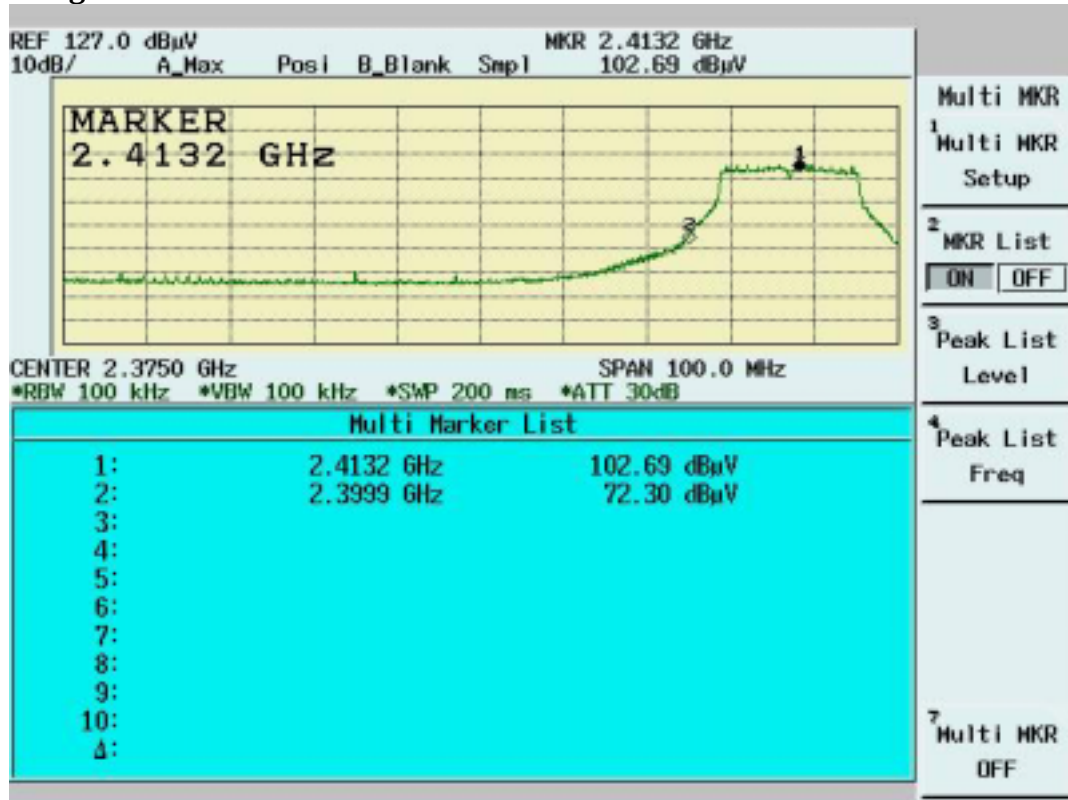
Tx Data Rate=6Mbps

Humidity (%): 55

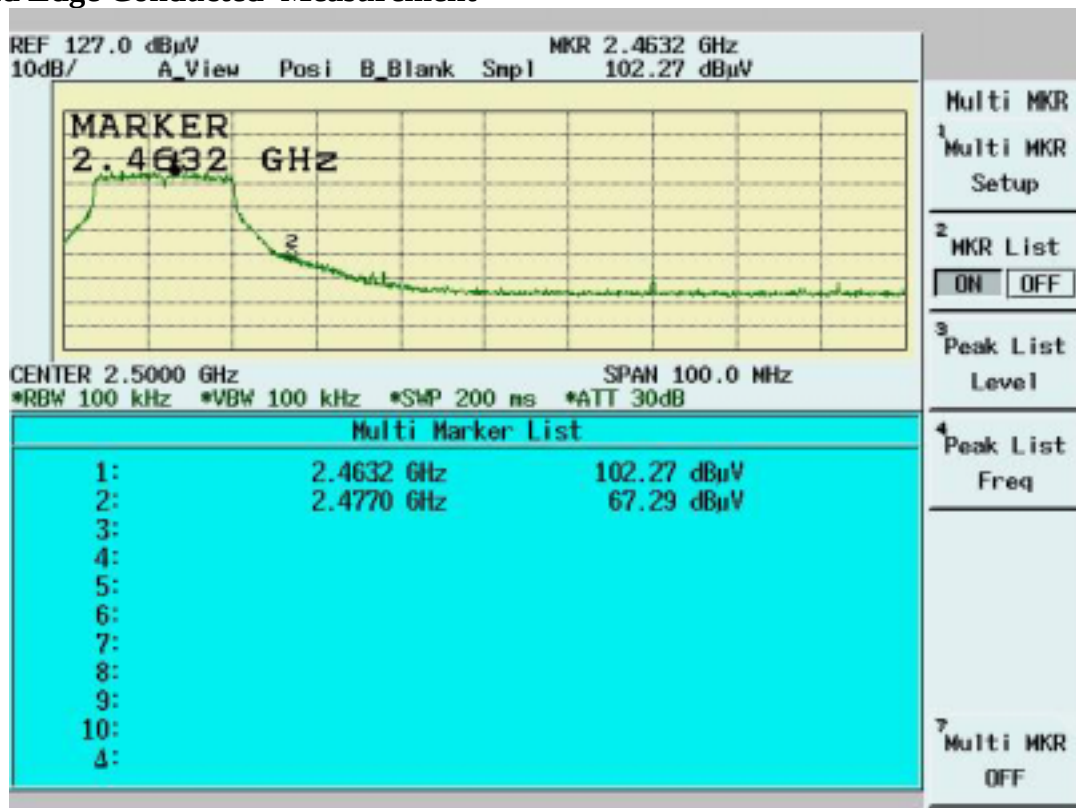
Channel	Frequency (MHz)	Spectrum Reading (dBuV)	Carrier - Outsideband Limit: >20dB (dB)	Pass/Fail
1	2413.2	102.69	---	---
Outside band	2399.9	72.30	30.39	Pass
11	2463.2	102.27	---	---
Outside band	2447.0	67.29	34.98	Pass

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

Band Edge Conducted measurement



Band Edge Conducted Measurement



5.5.4 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.

5.5.5 Test Setup (Radiated)

Same as *Radiated Emission Measurement*

5.5.6 Test Data

Table Band Edge measurement (Radiated)

Test Engineer: Jerry Chiou

Temperature (): 26

Tx Data Rate=6Mbps

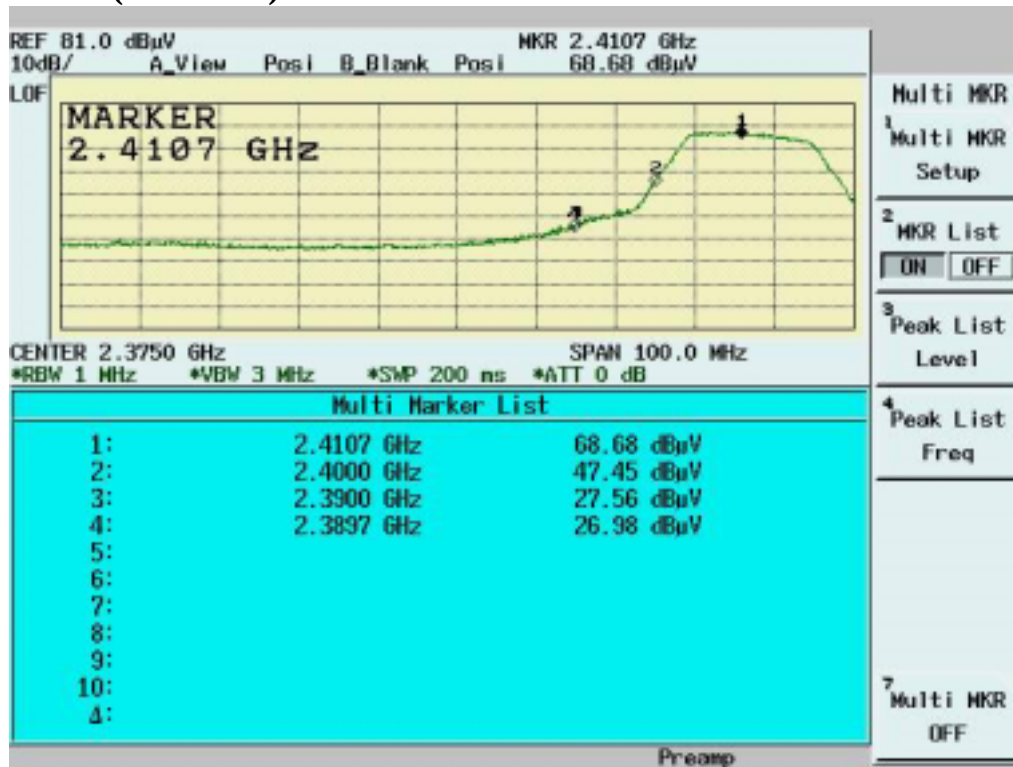
Humidity (%): 43

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)	2409.9	53.85	35.48	89.33	---	---	10Hz	---
Channel_1 (peak mode)	2410.7	68.68	35.48	104.16	---	---	3MHz	---
Outside band (peak mode)	2400.0	47.45	35.48	82.93	21.23	---	3MHz	Pass
Channel_11 (average mode)	2463.5	50.32	35.50	85.82	---	---	10Hz	---
Channel_11 (peak mode)	2464.0	64.77	35.50	100.27	---	---	3MHz	---
Outside band (peak mode)	2477.1	32.88	35.51	68.39	31.88	---	3MHz	Pass
Channel_1 Restricted band (peak mode)	2389.7	26.98	35.47	62.45	---	74	3MHz	Pass
Restricted band (average mode)	2390.0	10.17	35.47	45.64	---	54	10Hz	Pass
Channel_11 Restricted band (peak mode)	2483.8	29.34	35.51	64.85	---	74	3MHz	Pass
Restricted band (average mode)	2483.5	10.97	35.51	46.48	---	54	10Hz	Pass

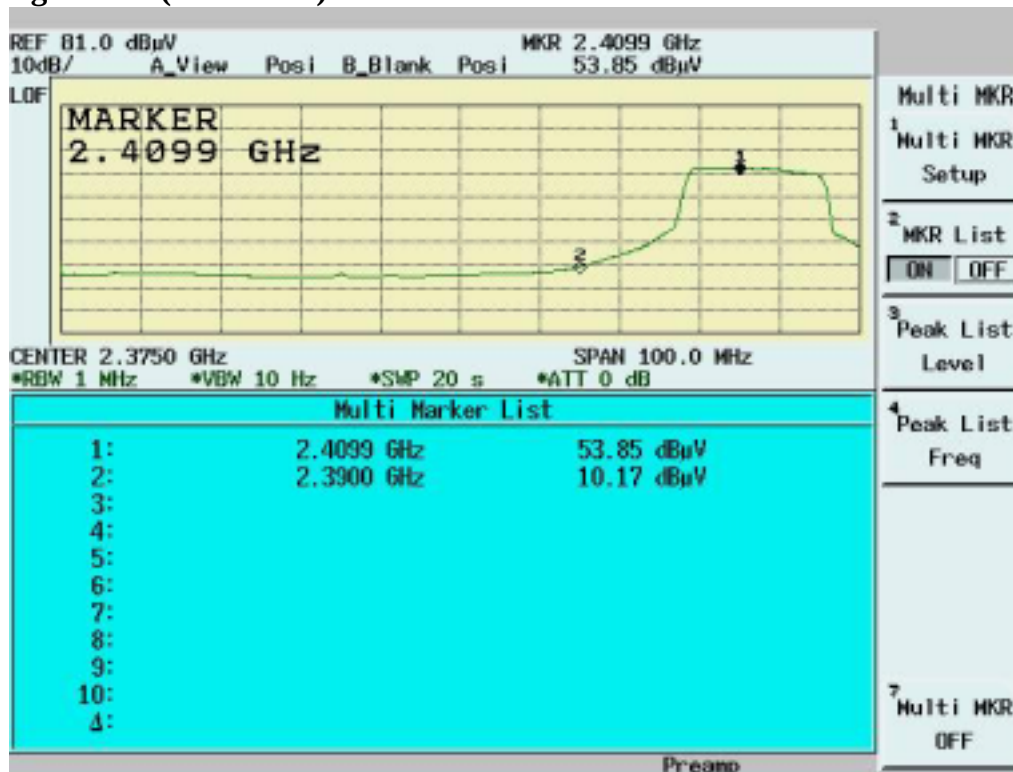
Note:

- 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.

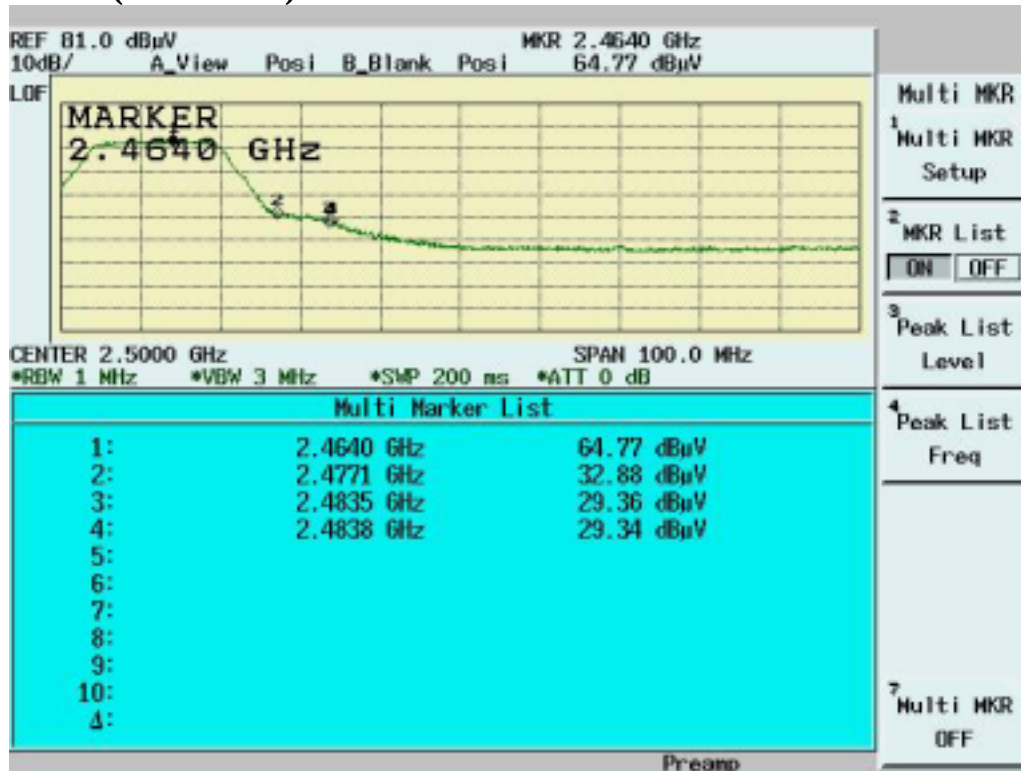
**Band Edge measurement for radiated emission in Restricted Band(Radiated)
Peak Mode (Channel 1)**



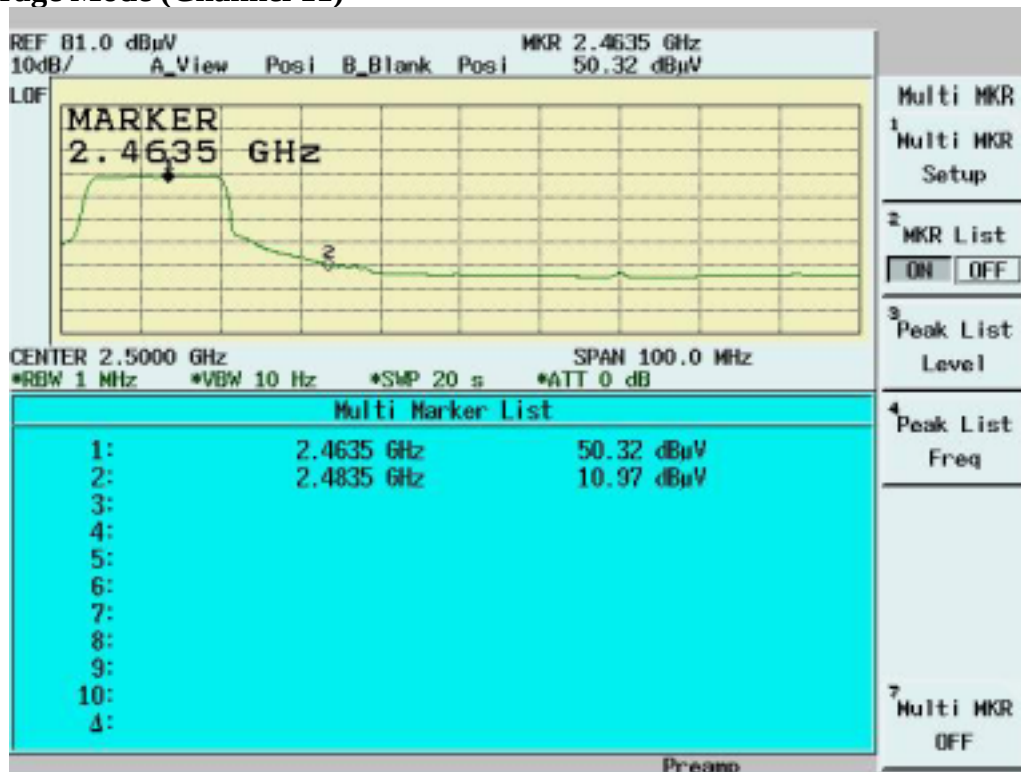
**Band Edge measurement for radiated emission in Restricted Band(Radiated)
Average Mode (Channel 1)**



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



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



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

See MPE report

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

5.7.1 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.

5.7.2 Test Setup



5.7.3 Test Data

Maximum Peak Output Power Density

Test Engineer: Jerry
Chiou

Temperature (): 27

Tx Data Rate=6Mbps

Humidity (%): 55

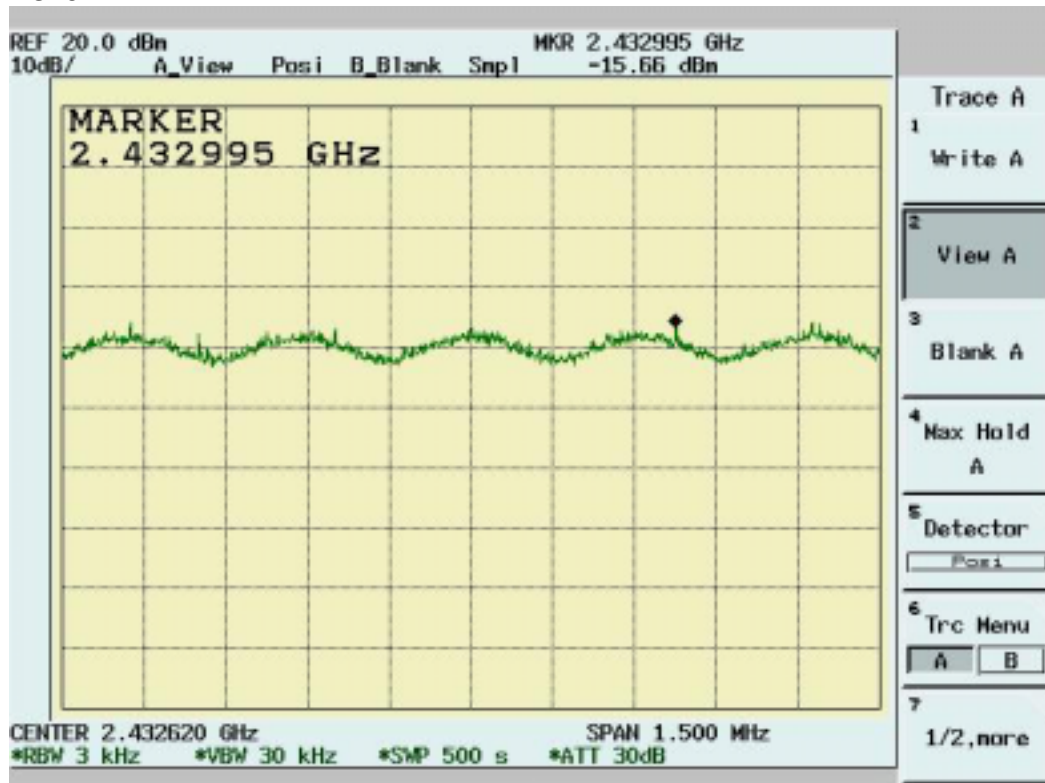
Channel	Frequency (MHz)	Spectrum Reading (dBm/3KHz)	Cable Loss (dB)	Peak Power Output (dBm/3KHz)	Limit (dBm/3KHz)	Pass/Fail
1	2412	-14.94	1.10	-13.84	8	Pass
6	2437	-15.66	1.10	-14.56	8	Pass
11	2462	-15.63	1.10	-14.53	8	Pass

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

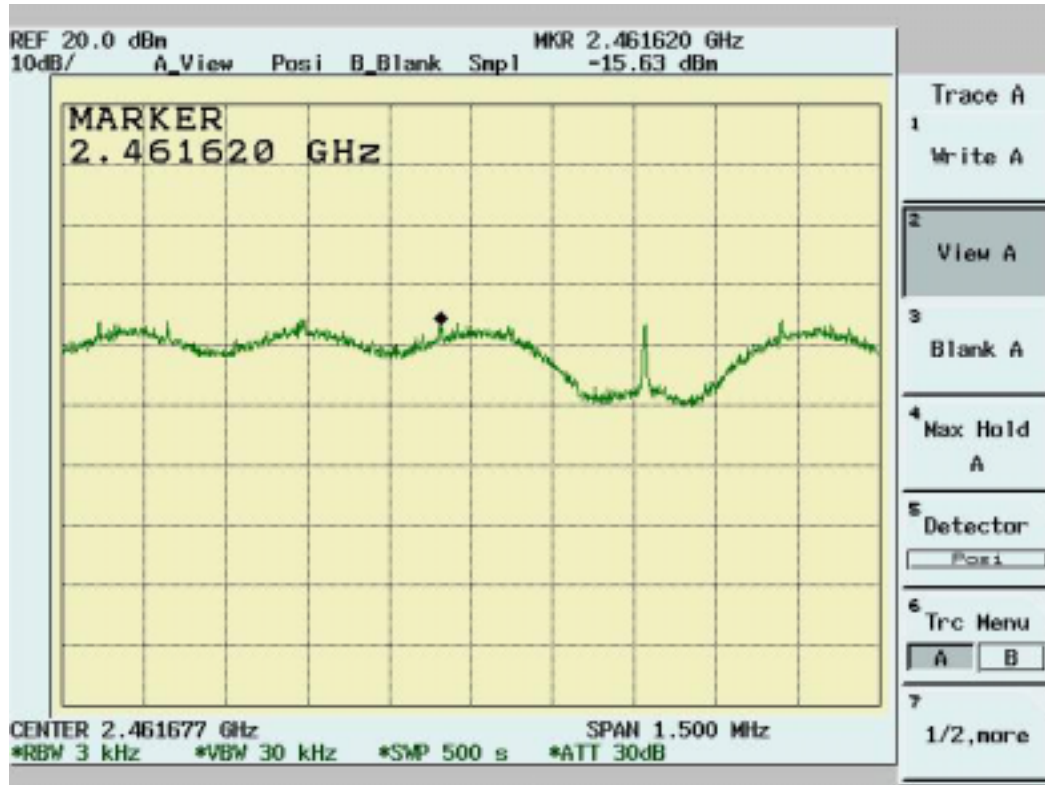
Channel 1



Channel 6



Channel 11



6. TEST RESULTS (Bluetooth)

6.1 Powerline Conducted Emissions

6.1.1 EUT Configuration

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 used.

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.

6.1.2 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.

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

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

6.1.4 Test Data:

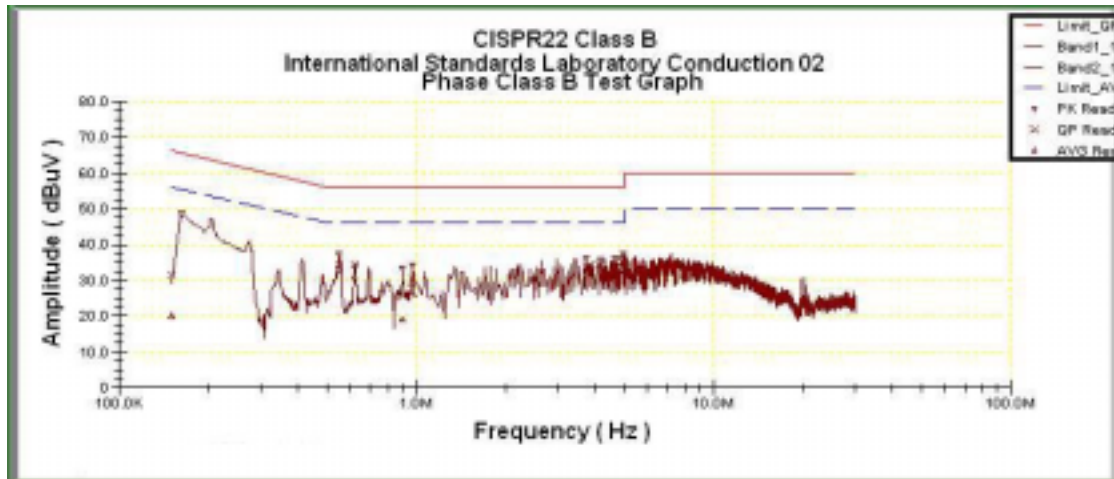
Power Line Conducted Emissions (Hot) Channel 00, 39, 78

Operator: Jerry Chiou

Temperature(C): 26

Humidity(%): 60

Frequency	LISN Loss	Cable Loss	QPCorrt.	QPLimit	QPMargin	AVECorrt.	AVELimit	AVEMargin
MHz	(dB)	(dB)	Amp.(dBuV)	(dBuV)	(dB)	Amp.(dBuV)	(dBuV)	(dB)
0.15004	0.1	0.02	31.55	66	-34.45	20.03	56	-35.97
0.54928	0.12	0.07	34.34	56	-21.66	32.69	46	-13.31
0.61868	0.14	0.07	34.39	56	-21.61	30.92	46	-15.08
0.89998	0.18	0.07	25.85	56	-30.15	19.12	46	-26.88
0.96566	0.19	0.07	30.41	56	-25.59	29.1	46	-16.9
3.71868	0.2	0.13	33.72	56	-22.28	31.84	46	-14.16
4.13282	0.2	0.14	34.42	56	-21.58	32.65	46	-13.35
4.61585	0.21	0.15	32.99	56	-23.01	29.94	46	-16.06
4.89101	0.22	0.15	35.17	56	-20.83	33.41	46	-12.59
4.96124	0.22	0.15	34.92	56	-21.08	33.14	46	-12.86



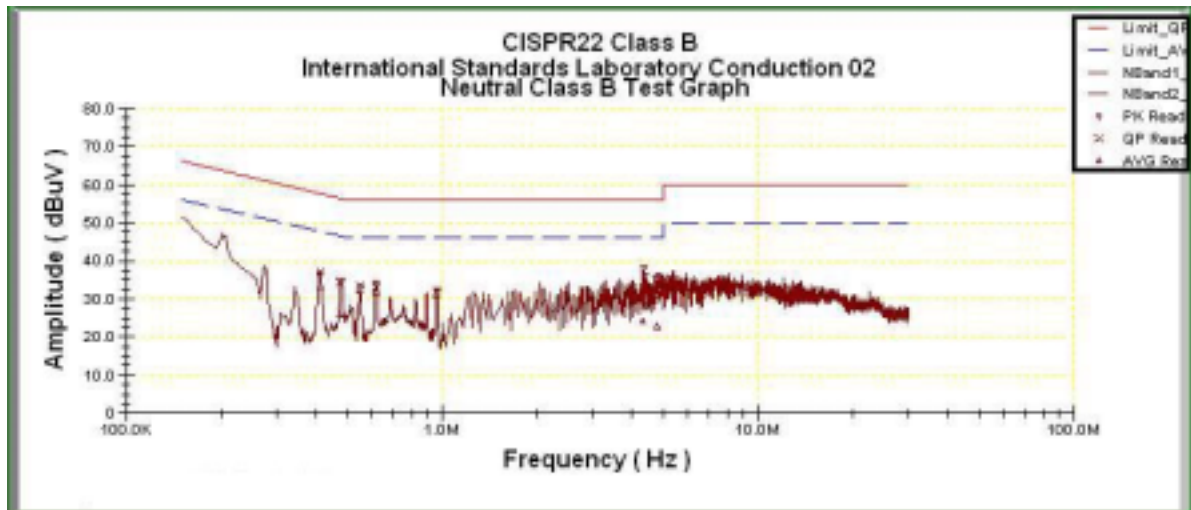
Power Line Conducted Emissions (Neutral) Channel 00, 39, 78

Operator: Jerry Chiou

Temperature(C): 26

Humidity(%): 60

Frequency	LISN Loss	Cable Loss	QPCorrt.	QPLimit	QPMargin	AVECorrt.	AVELimit	AVEMargin
MHz	(dB)	(dB)	Amp.(dBuV)	(dBuV)	(dB)	Amp.(dBuV)	(dBuV)	(dB)
0.41106	0.1	0.08	37.06	58.54	-21.49	33.44	48.54	-15.1
0.47646	0.11	0.07	34.45	56.67	-22.23	25.6	46.67	-21.07
0.54825	0.12	0.07	33.41	56	-22.59	32.15	46	-13.85
0.61653	0.14	0.07	32.93	56	-23.07	31.86	46	-14.14
0.96031	0.19	0.07	31.98	56	-24.02	31	46	-15
4.31581	0.2	0.14	30.44	56	-25.56	24.25	46	-21.75
4.38363	0.2	0.14	33.57	56	-22.43	27.89	46	-18.11
4.72634	0.19	0.15	31.54	56	-24.46	30.8	46	-15.2
4.79208	0.19	0.15	31.69	56	-24.31	22.77	46	-23.23
4.87044	0.19	0.15	35.36	56	-20.64	32.53	46	-13.47



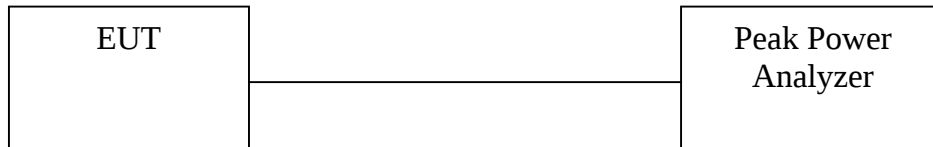
* NOTE: During the test, the EMI receiver was set to Max. Hold then switch the EUT Channel between 00, 39, 78 to get the maximum reading of all these channels.
 Margin = Amplitude + Insertion Loss- Limit
 A margin of -8dB means that the emission is 8dB below the limit

6.2 FHSS Maximum Peak Output Power

6.2.1 Test Procedure

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

6.2.2 Test Setup



6.2.3 Test Data

Maximum Peak Output Power

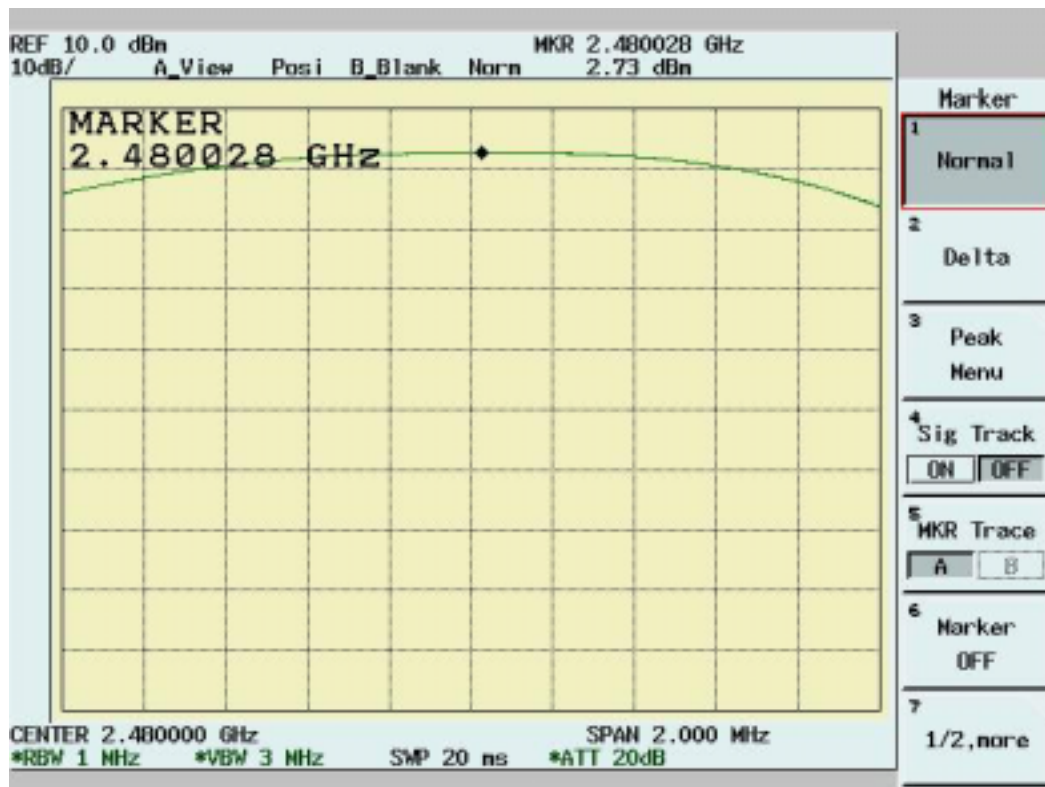
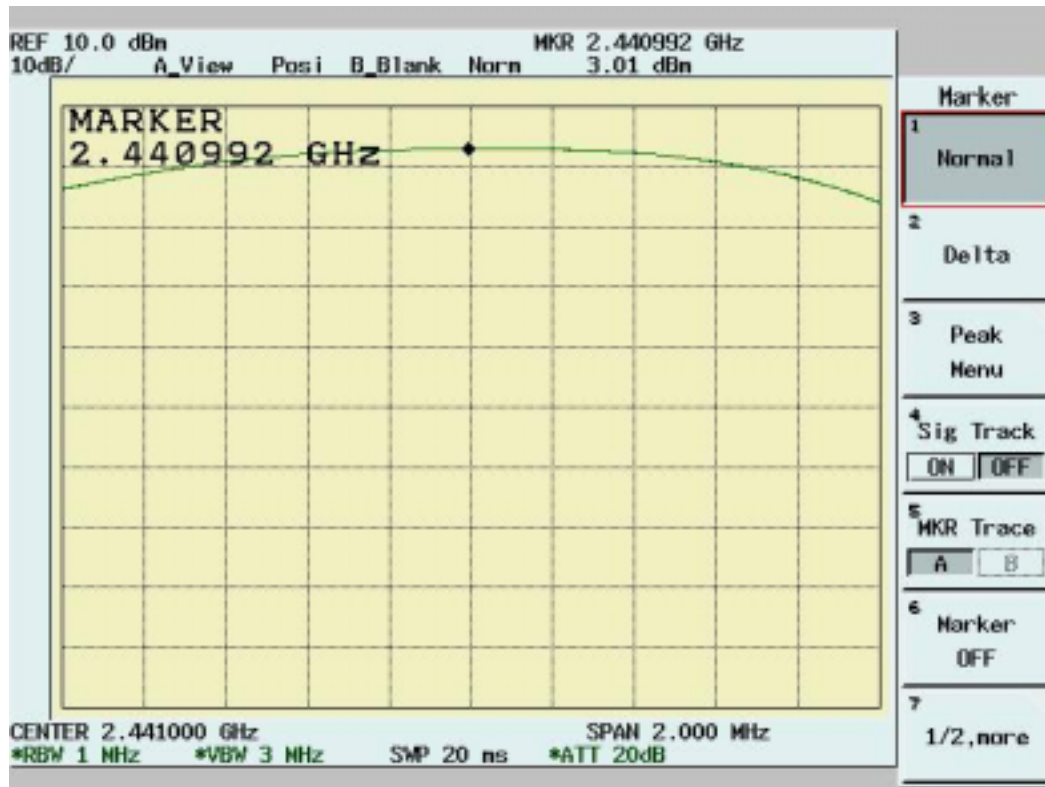
Temperature ():25

Test Engineer:Jerry Chiou

Humidity (%):55

Channel	Frequency (Mhz)	Analyzer Reading (dBm)	Cable Loss (dB)	Peak Power Output (mW)	Peak Power Output (dBm)	Limit (dBm)	Pass/Fail
00	2412	3.55	1.10	2.92	4.65	30	Pass
39	2437	3.01	1.10	2.58	4.11	30	Pass
78	2462	2.73	1.10	2.42	3.83	30	Pass





6.3 Radiated Emission Measurement

6.3.1 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.

6.3.2 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.

6.3.3 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

6.3.4 Test Data (30MHz – 1GHz):**30M – 1GHz Open Field Radiated Emissions (Horizontal) Channel 00, 39, 78**

Operator: Jerry Chiou

Temperature(C): 23

05:59:38PM, Friday, August 12, 2005

Humidity(%): 54

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)
332.64	14.59	16.10	3.95	0.00	34.64	46.00	-11.36	103.00	337.00
366.59	10.99	16.10	4.22	0.00	31.31	46.00	-14.69	103.00	321.00
466.5	9.87	16.60	4.96	0.00	31.43	46.00	-14.57	103.00	304.00
500.45	11.03	17.41	5.29	0.00	33.73	46.00	-12.27	196.00	23.00
532.46	10.77	18.18	5.40	0.00	34.35	46.00	-11.65	103.00	321.00
535.37	8.75	18.25	5.42	0.00	32.42	46.00	-13.58	103.00	223.00
666.32	16.82	19.00	6.41	0.00	42.23	46.00	-3.77	103.00	337.00
699.3	5.80	19.00	6.62	0.00	31.41	46.00	-14.59	103.00	321.00
733.25	9.37	19.80	6.89	0.00	36.06	46.00	-9.94	196.00	350.00

30M – 1GHz Open Field Radiated Emissions (Vertical) Channel 00, 39, 78

Operator: Jerry Chiou

Temperature(C): 23

05:59:38PM, Friday, August 12, 2005

Humidity(%): 54

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)
466.5	13.18	16.60	4.96	0.00	34.74	46.00	-11.26	103.00	304.00
515	10.35	17.76	5.32	0.00	33.43	46.00	-12.57	103.00	353.00
532.46	11.00	18.18	5.40	0.00	34.58	46.00	-11.42	103.00	321.00
599.39	8.29	18.70	5.85	0.00	32.83	46.00	-13.17	196.00	350.00
633.34	8.41	18.90	6.18	0.00	33.49	46.00	-12.51	196.00	350.00
649.83	12.58	19.00	6.31	0.00	37.89	46.00	-8.11	196.00	334.00
666.32	16.61	19.00	6.41	0.00	42.02	46.00	-3.98	103.00	337.00
733.25	13.10	19.80	6.89	0.00	39.79	46.00	-6.21	196.00	350.00
833.16	5.55	20.43	7.71	0.00	33.70	46.00	-12.30	103.00	75.00

NOTE:

- During the Pre-test, the EUT has been tested for Channel 00, 39, 78 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

6.3.5 Test Data (1GHz – 25 GHz) .**1GHz~ 25 GHz (Horizontal), Channel 00: 2402 MHz**

Operator:JerryChiou

RBW:1MHz

Humidity(%):41

Temperature(C):27

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
1132.37	47.26pk	25.11	2.19	34.00	40.55pk	54.00av	-13.45	102	103
1164.84	46.58pk	25.26	2.19	34.02	40.01pk	54.00av	-13.99	102	101
1199.8	46.64pk	25.42	2.19	34.04	40.22pk	54.00av	-13.78	102	98
1232.27	47.02pk	25.57	2.20	34.06	40.73pk	54.00av	-13.27	102	96
1264.74	45.35pk	25.72	2.20	34.07	39.20pk	54.00av	-14.80	101	94
1332.17	46.48pk	26.03	2.21	34.11	40.61pk	54.00av	-13.39	101	89
1999	41.02pk	30.99	2.60	35.18	39.44pk	54.00av	-14.56	100	43
2923.08	41.36pk	31.07	1.44	34.82	39.05pk	54.00av	-14.95	103	333
2985.51	41.16pk	31.09	1.45	34.76	38.93pk	54.00av	-15.07	103	352
4804.04	47.75pk	34.86	2.12	37.69	47.03pk	54.00av	-6.97	100.00	252.00
7205.56	46.87pk	39.43	2.74	36.88	52.15pk	54.00av	-1.85	100.00	163.00
9608.44	43.07pk	40.66	3.23	34.32	52.64pk	54.00av	-1.36	100.00	193.00

1GHz~ 25 GHz (Vertical), Channel 00: 2402 MHz

Operator:JerryChiou

RBW:1MHz

Humidity(%):41

Temperature(C):27

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
1064.94	48.38pk	24.80	2.18	33.97	41.39pk	54.00av	-12.61	102	108
1132.37	48.09pk	25.11	2.19	34.00	41.39pk	54.00av	-12.61	102	103
1164.84	49.88pk	25.26	2.19	34.02	43.30pk	54.00av	-10.70	102	101
1264.74	48.21pk	25.72	2.20	34.07	42.06pk	54.00av	-11.94	101	94
1299.7	46.38pk	25.88	2.21	34.09	40.37pk	54.00av	-13.63	101	91
1332.17	45.98pk	26.03	2.21	34.11	40.11pk	54.00av	-13.89	101	89
1811.69	44.22pk	29.42	2.46	34.81	41.29pk	54.00av	-12.71	100	56
1844.16	48.42pk	29.69	2.48	34.87	45.72pk	54.00av	-8.28	100	54
4803.7	50.46pk	34.85	2.12	37.69	49.74pk	54.00av	-4.26	100.00	355.00
7206.12	47.09pk	39.43	2.74	36.88	52.37pk	54.00av	-1.63	100.00	168.00
9607.97	44.20pk	40.66	3.23	34.32	53.77pk	54.00av	-0.23	100.00	249.00

Note:

- According to the standards used, 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.**International Standards Laboratory****Report Number: 05LR022FC**

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

1GHz~ 25 GHz (Horizontal) , Channel 39 : 2441 MHz

Operator:JerryChiou

RBW:1MHz

Humidity(%):41

Temperature(C):27

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
1132.37	47.34pk	25.11	2.19	34.00	40.63pk	54.00av	-13.37	102	103
1167.33	52.14pk	25.27	2.19	34.02	45.58pk	54.00av	-8.42	102	100
1199.8	46.60pk	25.42	2.19	34.04	40.18pk	54.00av	-13.82	102	98
1232.27	46.65pk	25.57	2.20	34.06	40.36pk	54.00av	-13.64	102	96
1332.17	46.20pk	26.03	2.21	34.11	40.33pk	54.00av	-13.67	101	89
2848.15	41.84pk	31.04	1.42	34.89	39.41pk	54.00av	-14.59	103	309
3062.94	41.69pk	31.15	1.48	34.89	39.43pk	54.00av	-14.57	103	341
4881.78	47.67pk	35.15	2.14	37.78	47.18pk	54.00av	-6.82	100.00	230.00
7322.79	46.18pk	39.62	2.53	36.68	51.65pk	54.00av	-2.35	100.00	157.00
9763.64	43.59pk	40.32	3.31	34.37	52.84pk	54.00av	-1.16	100.00	188.00

1GHz~ 25 GHz (Vertical), Channel 39 : 2441 MHz

Operator:JerryChiou

RBW:1MHz

Humidity(%):41

Temperature(C):27

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
1064.94	47.96pk	24.80	2.18	33.97	40.97pk	54.00av	-13.03	102	108
1132.37	47.49pk	25.11	2.19	34.00	40.79pk	54.00av	-13.21	102	103
1264.74	48.33pk	25.72	2.20	34.07	42.17pk	54.00av	-11.83	101	94
1626.87	44.47pk	27.87	2.32	34.45	40.21pk	54.00av	-13.79	101	69
1841.66	48.26pk	29.67	2.48	34.87	45.54pk	54.00av	-8.46	100	54
1856.64	44.88pk	29.80	2.49	34.90	42.27pk	54.00av	-11.73	100	53
2151.35	41.91pk	30.97	2.14	35.19	39.83pk	54.00av	-14.17	100	91
4881.88	49.35pk	35.15	2.14	37.78	48.86pk	54.00av	-5.14	100.00	351.00
7322.85	45.73pk	39.62	2.53	36.68	51.20pk	54.00av	-2.80	100.00	173.00
9763.94	44.27pk	40.32	3.31	34.38	53.52pk	54.00av	-0.48	100.00	174.00

Note:

- According to the standards used: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 78: 2480 MHz

Operator:JerryChiou

RBW:1MHz

Humidity(%):41

Temperature(C):27

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
1132.37	47.27pk	25.11	2.19	34.00	40.56pk	54.00av	-13.44	102	103
1164.84	47.52pk	25.26	2.19	34.02	40.94pk	54.00av	-13.06	102	101
1199.8	45.59pk	25.42	2.19	34.04	39.16pk	54.00av	-14.84	102	98
1232.27	46.59pk	25.57	2.20	34.06	40.30pk	54.00av	-13.70	102	96
1267.23	45.60pk	25.73	2.20	34.07	39.46pk	54.00av	-14.54	101	94
1332.17	45.91pk	26.03	2.21	34.11	40.03pk	54.00av	-13.97	101	89
1841.66	42.30pk	29.67	2.48	34.87	39.59pk	54.00av	-14.41	100	54
2510.99	43.84pk	30.90	1.36	35.19	40.91pk	54.00av	-13.09	102	203
3260.24	41.53pk	31.31	1.59	35.32	39.11pk	54.00av	-14.89	103	290
4960.25	48.22pk	35.45	2.16	37.87	47.96pk	54.00av	-6.04	100.00	229.00
7440.18	44.67pk	39.80	2.33	36.47	50.33pk	54.00av	-3.67	100.00	214.00
9919.9	42.64pk	39.98	3.39	34.43	51.57pk	54.00av	-2.43	100.00	127.00

1GHz~ 25 GHz (Vertical), Channel 78 : 2480 MHz

Operator:JerryChiou

RBW:1MHz

Humidity(%):41

Temperature(C):27

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
1067.43	47.14pk	24.81	2.18	33.97	40.16pk	54.00av	-13.84	102	107
1132.37	47.64pk	25.11	2.19	34.00	40.93pk	54.00av	-13.07	102	103
1264.74	48.27pk	25.72	2.20	34.07	42.12pk	54.00av	-11.88	101	94
1299.7	45.70pk	25.88	2.21	34.09	39.70pk	54.00av	-14.30	101	91
1332.17	45.50pk	26.03	2.21	34.11	39.63pk	54.00av	-14.37	101	89
1626.87	43.90pk	27.87	2.32	34.45	39.64pk	54.00av	-14.36	101	69
1841.66	47.23pk	29.67	2.48	34.87	44.51pk	54.00av	-9.49	100	54
2510.99	42.56pk	30.90	1.36	35.19	39.64pk	54.00av	-14.36	102	203
2923.08	42.14pk	31.07	1.44	34.82	39.83pk	54.00av	-14.17	103	333
4959.88	49.97pk	35.45	2.16	37.87	49.71pk	54.00av	-4.29	100.00	326.00
7440.21	44.78pk	39.80	2.33	36.47	50.44pk	54.00av	-3.56	100.00	161.00
9920.27	43.22pk	39.98	3.39	34.43	52.15pk	54.00av	-1.85	100.00	184.00

Note:

- According to the standards used, 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.**International Standards Laboratory****Report Number: 05LR022FC**

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