Test Report
for
FCC Part 15 Subpart B & C

of

Product Name

802.11g WLAN USB Adapter with Flash Disk

Model

DMUZ

(Brand: Wistron Neweb)

Applied by:

Wistron Neweb Corporation
No. 10-1, Li-hsin Road 1,
Science-based Industrial Park,Hsinchu 300,
Taiwan, R. O. C.

Test Performed by:

International Standards Laboratory

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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:	802.11g WLAN USB Adapter with Flash Disk
Model:	DMUZ
Applied by:	Wistron Neweb Corporation
Sample received Date:	2005/06/10
Final test Date :	2005/06/16
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 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).

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	SAR 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	SAR report attached
15.247 (d)	Power Spectral Density	Pass	

3. Description of Equipment Under Test (EUT)

Description:	802.11g WLAN USB Adapter with Flash Disk
FCC ID:	NKRDMUZ
Brand:	Wistron NeWeb
Condition:	Pre-Production
Model:	DMUZ
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:	Chip Ceramic Antenna made by Advanced Ceramic X Corp.
Antenna peak Gain:	
Right Antenna:	-0.25 dBi
Left Antenna:	-1.05 dBi
Antenna Connected:	The chip antenna is soldered on the PCB of the EUT. The user is not possible to change the antenna .
Power Type:	5V DC from Notebook PC

The EUT is a USB 802.11g WLAN adapter .
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		

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 6dß 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 6dß 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)

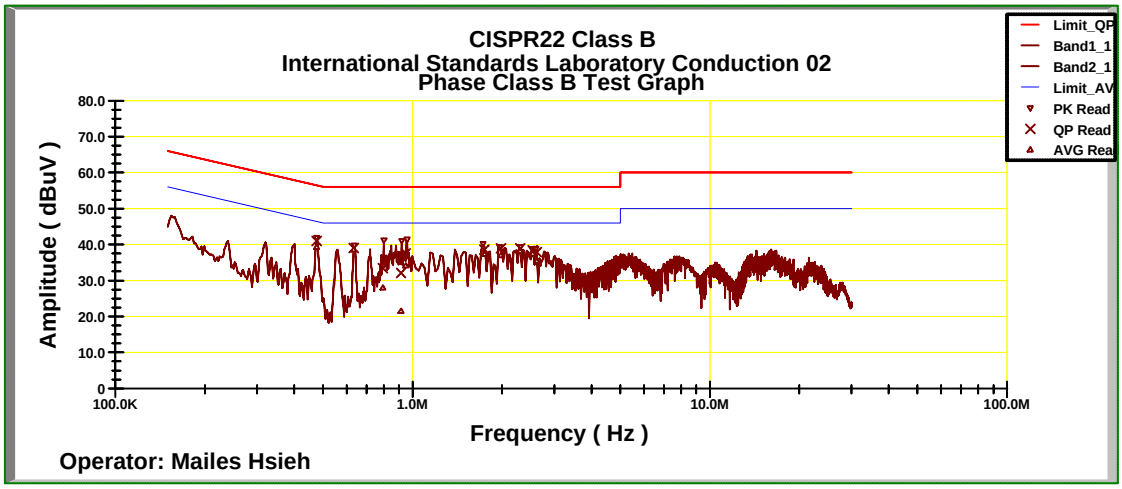
Frequency Range	150 KHz--30MHz
Detector Function	Quasi-Peak/Average
Bandwidth (RBW)	9KHz

4.1.4 Test Data:

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

Operator:MailesHsieh
Temperature(C):29
03:29:12PM,Thursday,June16,2005 Humidity(%):54

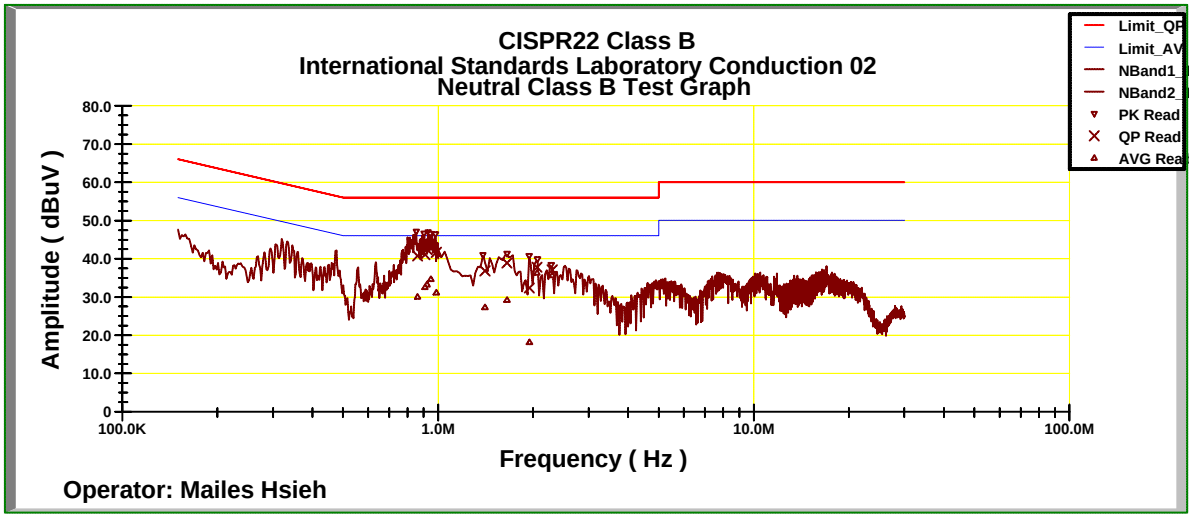
Frequency	LISNLoss	CableLoss	QPCorrct.	QPLimit	QPMargin	AVECorrct.	AVELimit	AVEMargin
MHz	(dB)	(dB)	Amp.(dBuV)	(dBuV)	(dB)	Amp.(dBuV)	(dBuV)	(dB)
0.47520	0.11	0.07	40.95	56.71	-15.76	39.22	46.71	-7.49
0.63386	0.14	0.07	39.03	56.00	-16.97	38.56	46.00	-7.44
0.79403	0.17	0.07	33.37	56.00	-22.63	27.95	46.00	-18.05
0.91341	0.19	0.07	32.04	56.00	-23.96	21.49	46.00	-24.51
0.94836	0.19	0.07	37.52	56.00	-18.48	34.13	46.00	-11.87
1.74331	0.23	0.08	38.54	56.00	-17.46	37.27	46.00	-8.73
1.98070	0.20	0.09	38.91	56.00	-17.09	36.97	46.00	-9.03
2.29841	0.20	0.10	38.90	56.00	-17.10	38.15	46.00	-7.85
2.53616	0.20	0.10	38.36	56.00	-17.64	37.43	46.00	-8.57
2.61646	0.20	0.11	37.88	56.00	-18.12	35.44	46.00	-10.56



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

Operator:MailesHsieh
Temperature(C):29
03:19:15PM,Thursday,June16,2005 Humidity(%):54

Frequency	LISNLoss	CableLoss	QPCorrct.	QPLimit	QPMargin	AVECorrct.	AVELimit	AVEMargin
MHz	(dB)	(dB)	Amp.(dBuV)	(dBuV)	(dB)	Amp.(dBuV)	(dBuV)	(dB)
0.86133	0.18	0.07	40.73	56.00	-15.27	30.04	46.00	-15.96
0.90885	0.18	0.07	41.07	56.00	-14.93	32.56	46.00	-13.44
0.92293	0.19	0.07	42.43	56.00	-13.57	33.27	46.00	-12.73
0.94945	0.19	0.07	43.14	56.00	-12.86	34.62	46.00	-11.38
0.98740	0.20	0.07	41.67	56.00	-14.33	31.15	46.00	-14.85
1.40812	0.20	0.08	36.83	56.00	-19.17	27.27	46.00	-18.73
1.65213	0.20	0.08	38.87	56.00	-17.13	29.23	46.00	-16.77
1.94476	0.20	0.09	32.34	56.00	-23.66	18.13	46.00	-27.87
2.05643	0.20	0.09	37.76	56.00	-18.24	36.32	46.00	-9.68
2.29644	0.20	0.10	37.07	56.00	-18.93	35.62	46.00	-10.38



* 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

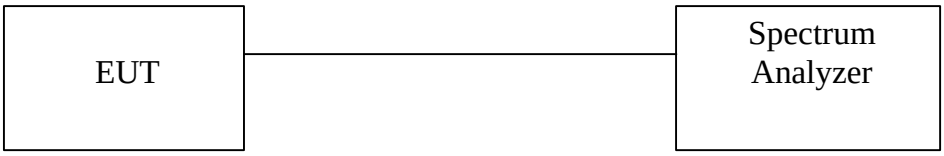
4.2 Bandwidth for DSSS [Section 15.247 (a)(2)]

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:

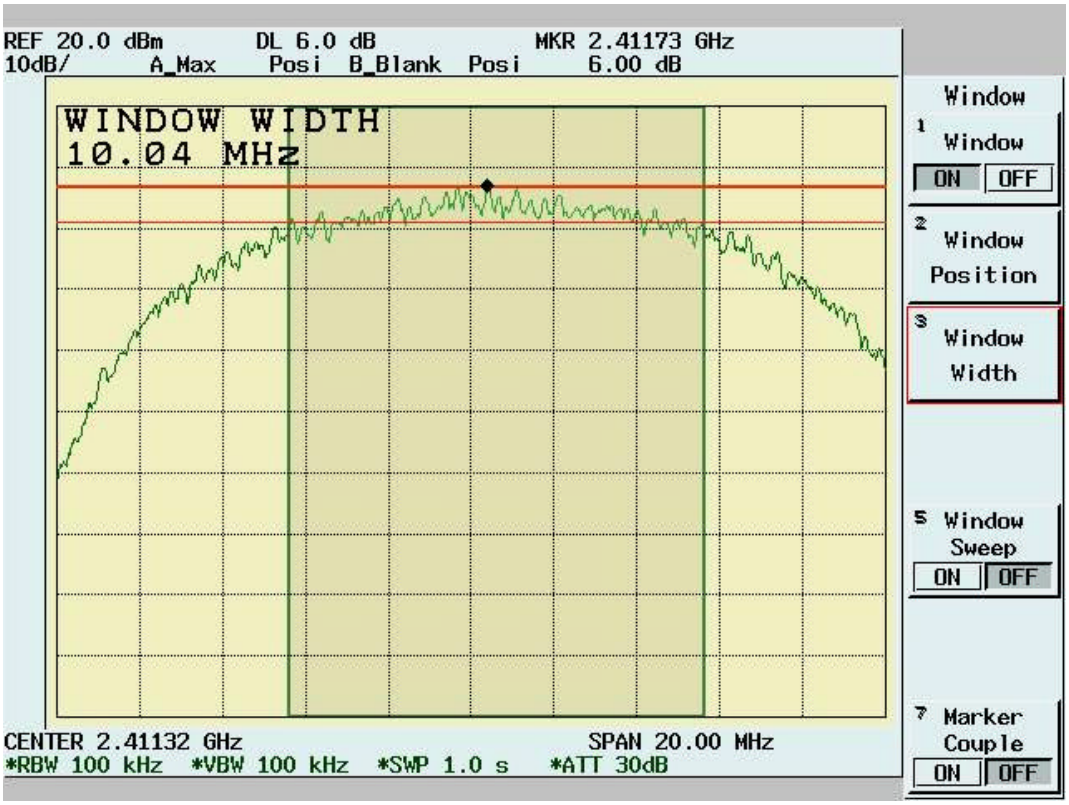
6dB Bandwidth

Test Engineer:Mailes Hsieh Temperature (°C):27

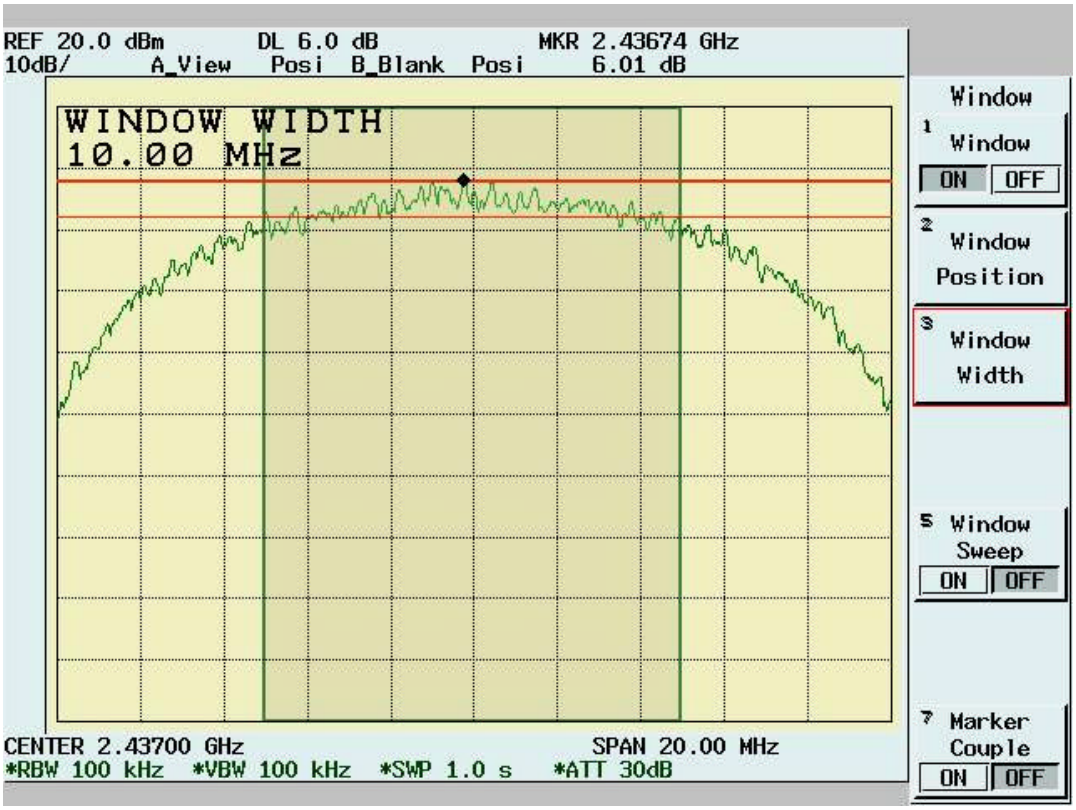
Humidity (%):55

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Pass/Fail
1	**2412**	10.04	0.5	Pass
6	**2437**	10.00	0.5	Pass
11	**2462**	10.04	0.5	Pass

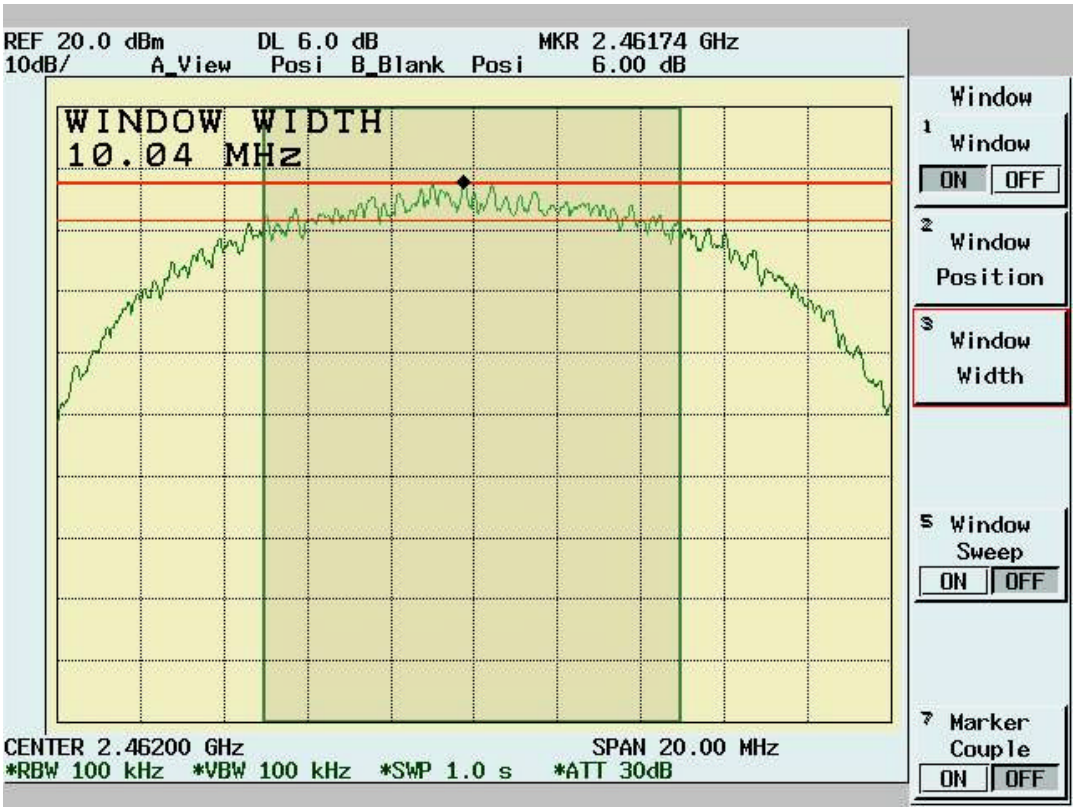
Channel 1:



Channel 6:



Channel 11:

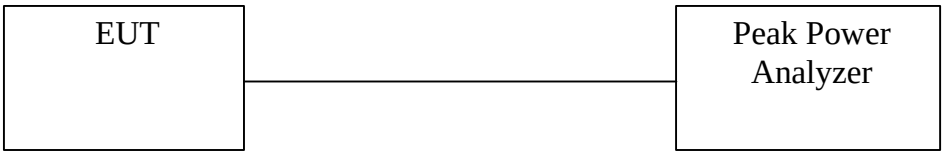

REF 20.0 dBm
DL 6.0 dB
MKR 2.46174 GHz
10dB/
A_View
Posi
B_Blank
Posi
6.00 dB
WINDOW WIDTH
10.04 MHz
CENTER 2.46200 GHz
SPAN 20.00 MHz
*RBW 100 kHz
*VBW 100 kHz
*SWP 1.0 s
*ATT 30dB
Window
1 Window
ON
OFF
2 Window Position
3 Window Width
5 Window Sweep
ON
OFF
7 Marker Couple
ON
OFF

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:Mailes Hsieh

Temperature (℃):27

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**	16.00	1.30	53.70	17.30	30	Pass
6	**2437**	17.06	1.30	68.55	18.36	30	Pass
11	**2462**	16.73	1.30	63.53	18.03	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 ac*cording to EMI Receiver/Spectrum Analyzer Configuration.*

For the test of 2^{nd} to 10^{th} 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):27
Humidity(%):44

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)
215.27	16.99	8.35	2.82	0.00	28.16	43.50	-15.34	103.00	285.00
257.95	16.48	12.63	3.17	0.00	32.29	46.00	-13.71	103.00	6.00
323.91	13.31	13.93	3.87	0.00	31.12	46.00	-14.88	103.00	39.00
386.96	12.60	15.48	4.35	0.00	32.44	46.00	-13.56	103.00	39.00
443.22	8.15	16.25	4.80	0.00	29.19	46.00	-16.81	103.00	39.00
453.89	7.86	16.39	4.89	0.00	29.14	46.00	-16.86	103.00	39.00
480.08	20.07	17.02	5.07	0.00	42.16	46.00	-3.84	103.00	105.00
515.97	5.95	17.92	5.32	0.00	29.18	46.00	-16.82	103.00	170.00

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

Operator:MailesHsieh
Temperature(C):27
Humidity(%):44

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)
62.98	17.20	5.40	1.38	0.00	23.98	40.00	-16.02	103.00	121.00
386.96	13.48	15.48	4.35	0.00	33.31	46.00	-12.69	103.00	39.00
453.89	12.30	16.39	4.89	0.00	33.58	46.00	-12.42	103.00	39.00
480.08	19.51	17.02	5.07	0.00	41.60	46.00	-4.40	103.00	105.00
517.91	8.27	17.97	5.33	0.00	31.56	46.00	-14.44	103.00	203.00
531.49	5.20	18.32	5.39	0.00	28.91	46.00	-17.09	103.00	137.00
581.93	3.90	18.86	5.76	0.00	28.52	46.00	-17.48	103.00	170.00
647.89	7.66	19.00	6.29	0.00	32.95	46.00	-13.05	103.00	187.00

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:MailesHsieh RBW:1MHz
Humidity(%):44
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
1199.80	56.85pk	25.42	2.19	34.04	50.43pk	54.00av	-3.57	102	98
1811.69	48.84pk	29.42	2.46	34.81	45.90pk	54.00av	-8.10	100	56
2995.50	44.80pk	31.10	1.45	34.75	42.60pk	54.00av	-11.40	103	356
4821.68	49.62av	34.92	2.12	37.71	48.95av	54.00av	-5.05	100	18
7233.77	38.13av	39.47	2.69	36.83	43.45av	54.00av	-10.55	101	143
9643.36	34.31av	40.58	3.24	34.33	43.81av	54.00av	-10.19	102	7

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

Operator:MailesHsieh RBW:1MHz
Humidity(%):44
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
1202.30	52.36pk	25.43	2.19	34.04	45.94pk	54.00av	-8.06	102	98
2333.67	50.32pk	30.93	1.58	35.19	47.64pk	54.00av	-6.36	101	148
2995.50	43.60pk	31.10	1.45	34.75	41.39pk	54.00av	-12.61	103	356
4821.68	50.89av	34.92	2.12	37.71	50.22av	54.00av	-3.78	100	18
7233.77	34.49av	39.47	2.69	36.83	39.82av	54.00av	-14.18	101	143
9643.36	30.70av	40.58	3.24	34.33	40.20av	54.00av	-13.80	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(%):44
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
1197.30	56.49pk	25.41	2.19	34.04	50.06pk	54.00av	-3.94	102	98
1681.82	48.48pk	28.33	2.36	34.56	44.61pk	54.00av	-9.39	101	65
2990.51	44.95pk	31.10	1.45	34.76	42.74pk	54.00av	-11.26	103	354
4870.63	50.70av	35.11	2.14	37.77	50.18av	54.00av	-3.82	100	13
7311.69	35.87av	39.60	2.55	36.70	41.32av	54.00av	-12.68	101	155
9745.25	35.53av	40.36	3.30	34.37	44.82av	54.00av	-9.18	102	5

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

Operator:MailesHsieh 0RBW:1MHz
Humidity(%):44
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
1199.80	52.20pk	25.42	2.19	34.04	45.78pk	54.00av	-8.22	102	98
1596.90	45.40pk	27.61	2.30	34.39	40.92pk	54.00av	-13.08	101	71
2993.01	42.10pk	31.10	1.45	34.76	39.89pk	54.00av	-14.11	103	355
4870.63	51.02av	35.11	2.14	37.77	50.49av	54.00av	-3.51	100	13
7305.69	32.84av	39.59	2.56	36.71	38.29av	54.00av	-15.71	101	154
9745.25	32.14av	40.36	3.30	34.37	41.43av	54.00av	-12.57	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(%):44
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
1199.80	56.95pk	25.42	2.19	34.04	50.52pk	54.00av	-3.48	102	98
1679.32	48.23pk	28.31	2.36	34.55	44.35pk	54.00av	-9.65	101	65
2995.50	44.83pk	31.10	1.45	34.75	42.62pk	54.00av	-11.38	103	356
4923.08	49.76av	35.31	2.15	37.83	49.39av	54.00av	-4.61	100	8
7383.62	35.38av	39.71	2.42	36.57	40.95av	54.00av	-13.05	101	165
9841.16	38.80av	40.15	3.35	34.40	47.90av	54.00av	-6.10	101	3

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

Operator:MailesHsieh RBW:1MHz
Humidity(%):44
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
1202.30	51.69pk	25.43	2.19	34.04	45.27pk	54.00av	-8.73	102	98
2278.72	43.71pk	30.94	1.75	35.19	41.21pk	54.00av	-12.79	101	131
2990.51	41.77pk	31.10	1.45	34.76	39.55pk	54.00av	-14.45	103	354
4919.58	51.37av	35.29	2.15	37.82	50.99av	54.00av	-3.01	100	8
9841.16	33.90av	40.15	3.35	34.40	42.99av	54.00av	-11.01	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.

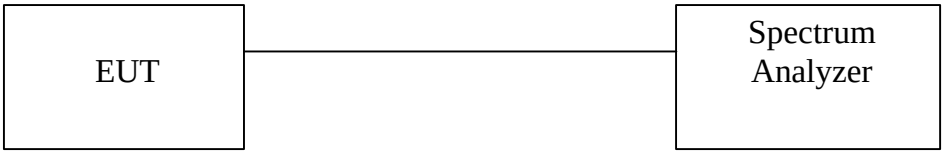
All frequencies from 1GHz to 25 GHz have been tested.

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)

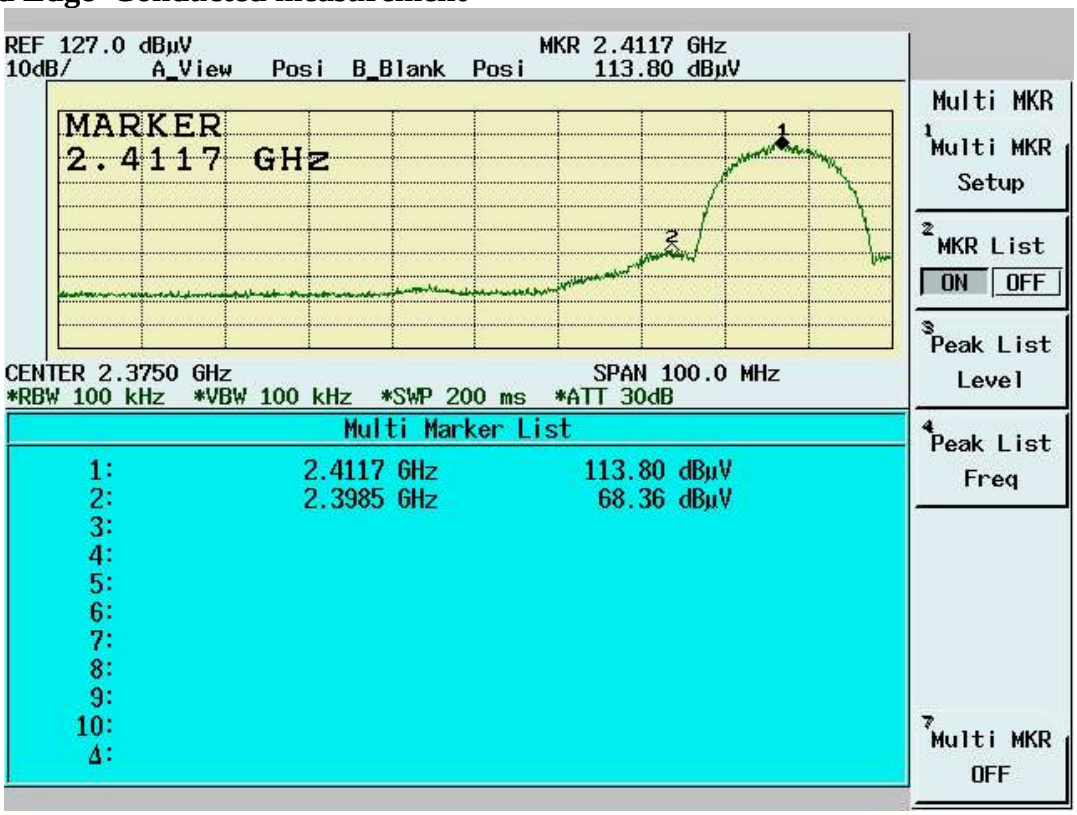
Test Engineer:Mailes Hsieh Temperature (℃):27

Humidity (%):55

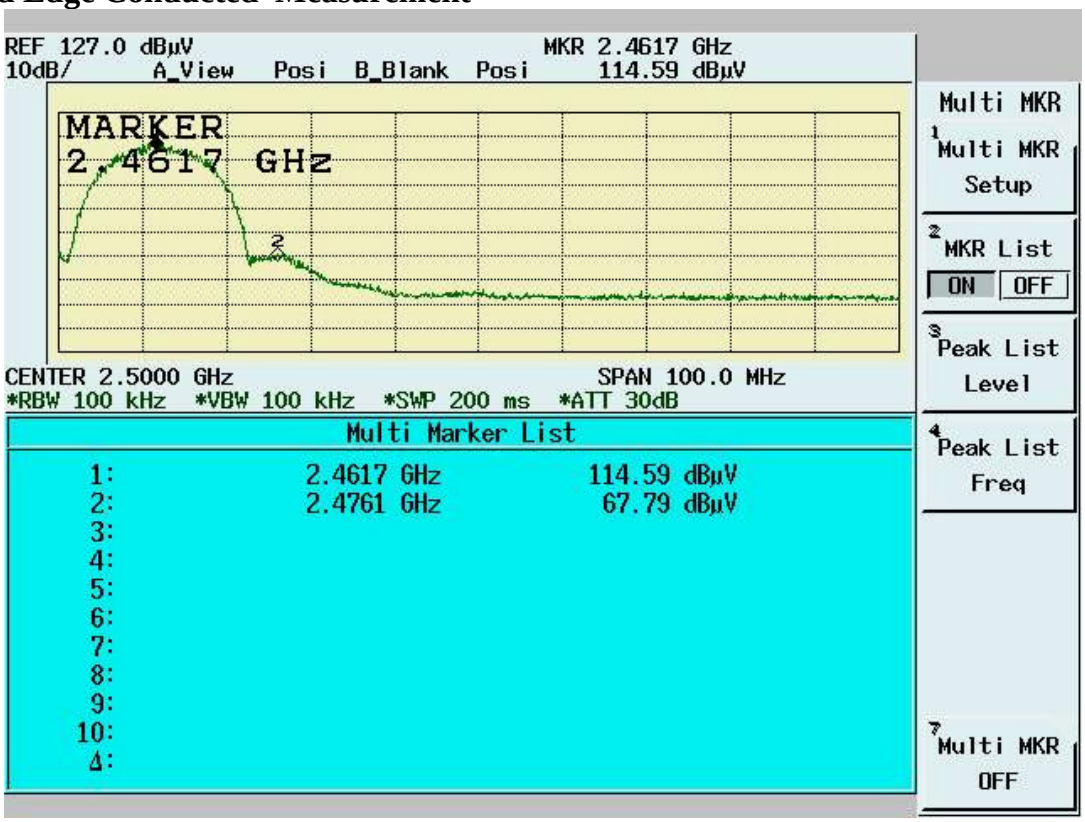
Channel	Frequency (MHz)	Spectrum Reading (dBuV)	Carrier - Outsideband Limit: >20dB (dB)	Pass/Fail
1	2411.7	113.80	---	---
Outside band	2398.5	68.36	45.44	Pass
11	2461.7	114.59	---	---
Outside band	2476.1	67.79	46.80	Pass

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:Mailes Hsieh Temperature (℃):26

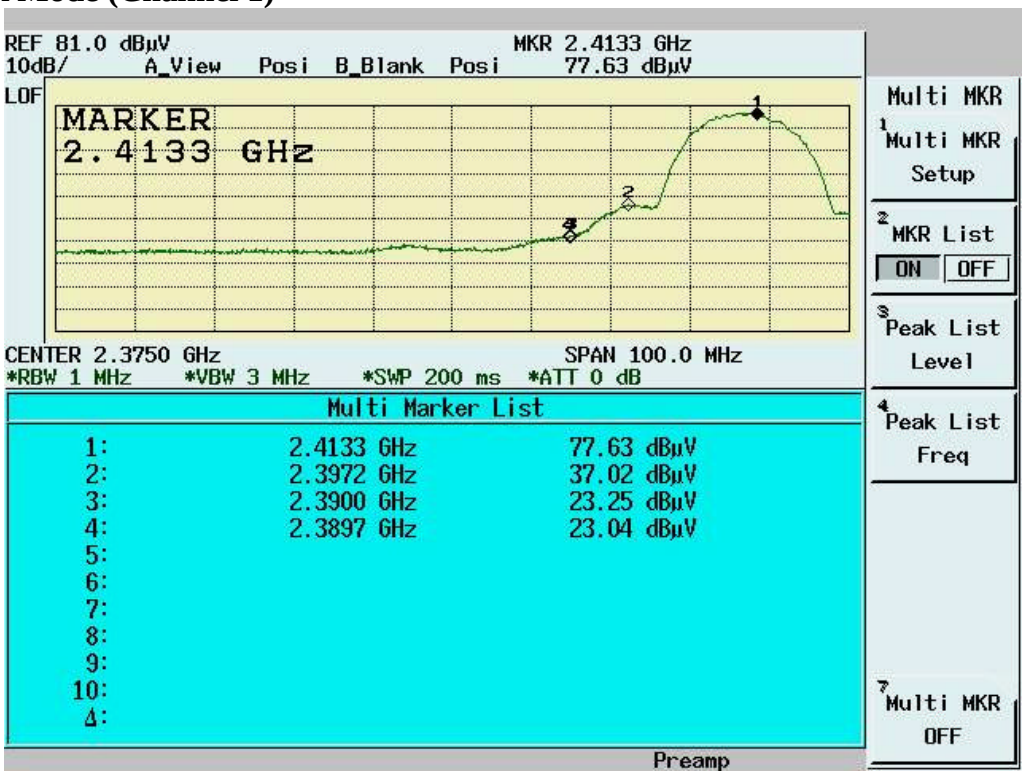
Humidity (%):43

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)	2411.6	68.78	35.48	104.26	---	---	10Hz	---
Channel_1 (peak mode)	2413.3	77.63	35.48	113.11	---	---	3MHz	---
Outside band (peak mode)	2397.2	37.02	35.48	72.50	40.61	---	3MHz	Pass
Channel_11 (average mode)	2461.5	67.80	35.50	103.30	---	---	10Hz	---
Channel_11 (peak mode)	2463.2	76.27	35.50	111.77	---	---	3MHz	---
Outside band (peak mode)	2477.6	32.95	35.51	68.46	43.31	---	3MHz	Pass
Channel_1 Restricted band (peak mode)	2390.0	23.25	35.47	58.72	---	74	3MHz	Pass
Restricted band (average mode)	2390.0	11.28	35.47	46.75	---	54	10Hz	Pass
Channel_11 Restricted band (peak mode)	2483.7	21.63	35.51	57.14	---	74	3MHz	Pass
Restricted band (average mode)	2483.5	10.28	35.51	45.79	---	54	10Hz	Pass

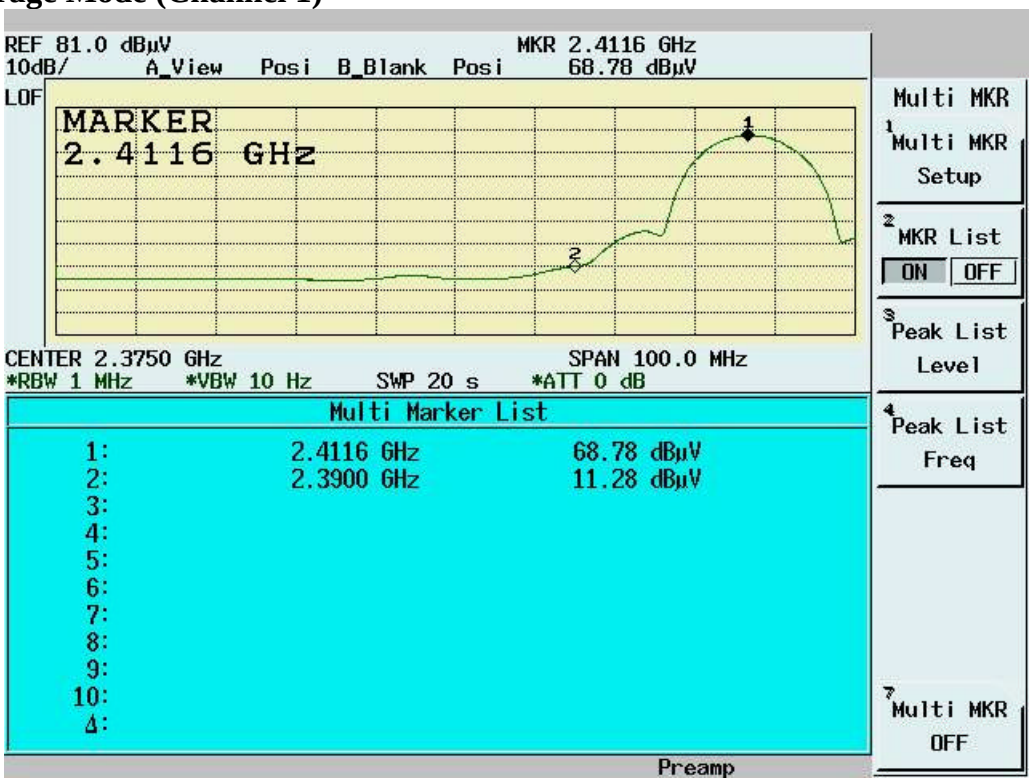
Note:

- ✍✍ 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.

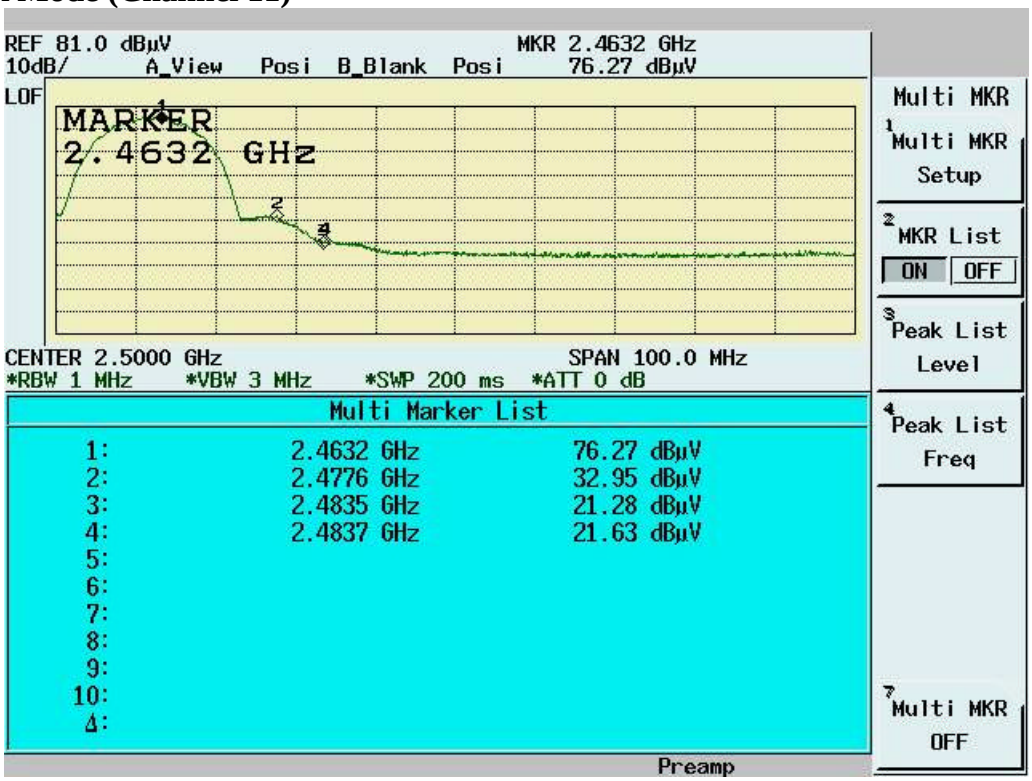
Band Edge measurement for radiated emission in Restricted Band(Radiated) Peak Mode (Channel 1)



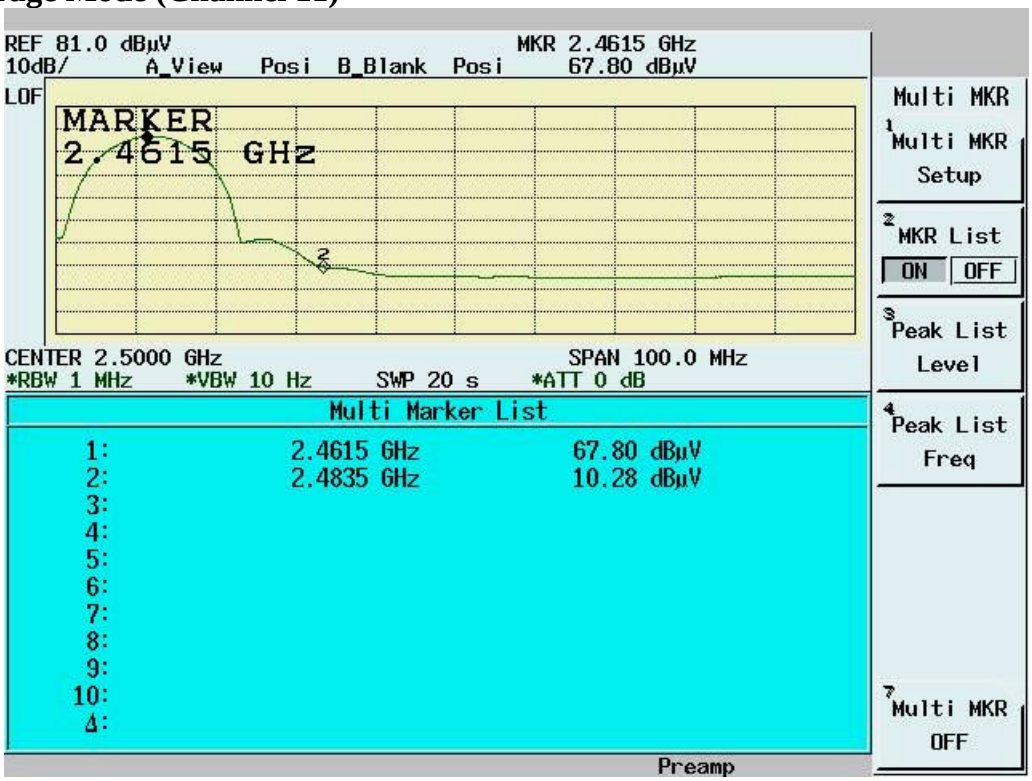
Band Edge measurement for radiated emission in Restricted Band(Radiated) Average Mode (Channel 1)



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 SAR 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:Mailes Hsieh

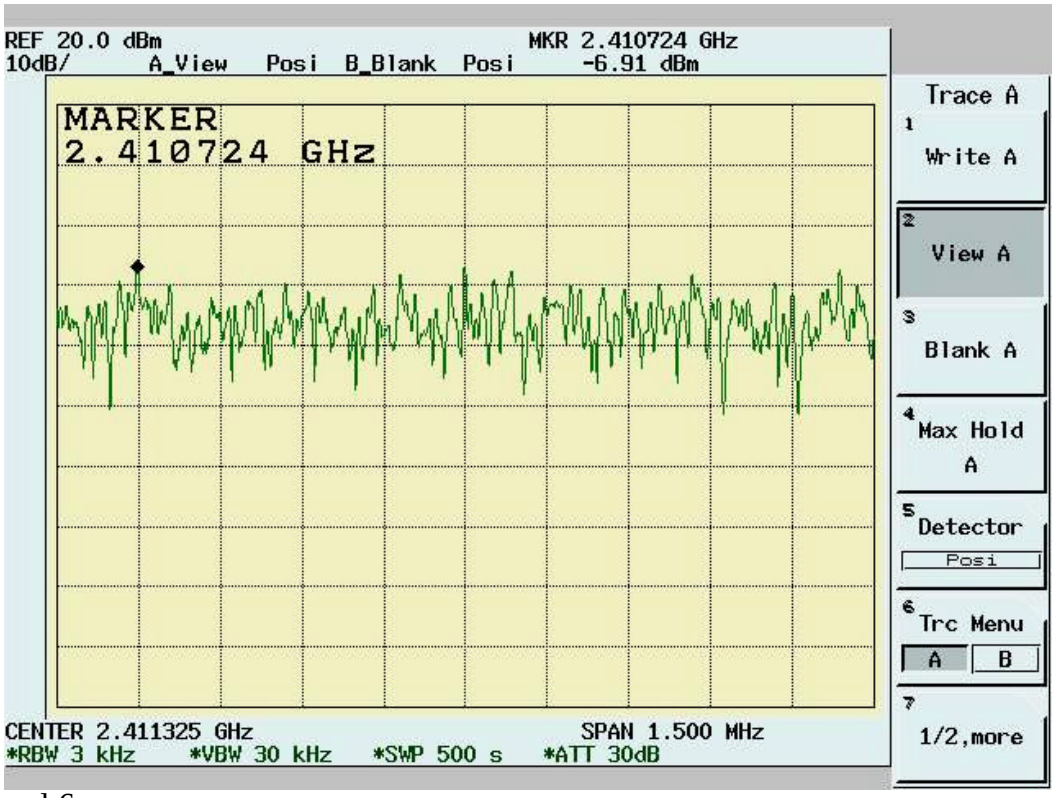
Temperature (℃):27

Humidity (%):55

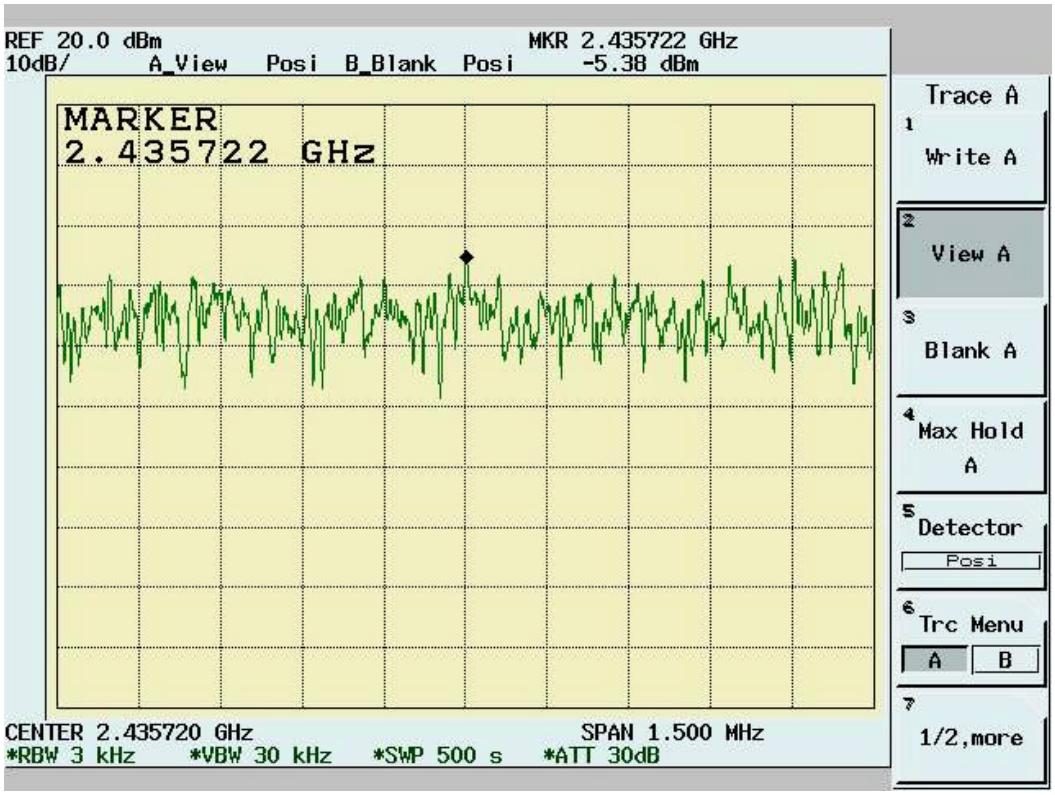
Channel	Frequency (MHz)	Spectrum Reading (dBm/3KHz)	Cable Loss (dB)	Peak Power Output (dBm/3KHz)	Limit (dBm/3KHz)	Pass/Fail
1	**2412**	-6.91	1.30	-5.61	8	Pass
6	**2437**	-5.38	1.30	-4.08	8	Pass
11	**2462**	-5.98	1.30	-4.68	8	Pass

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

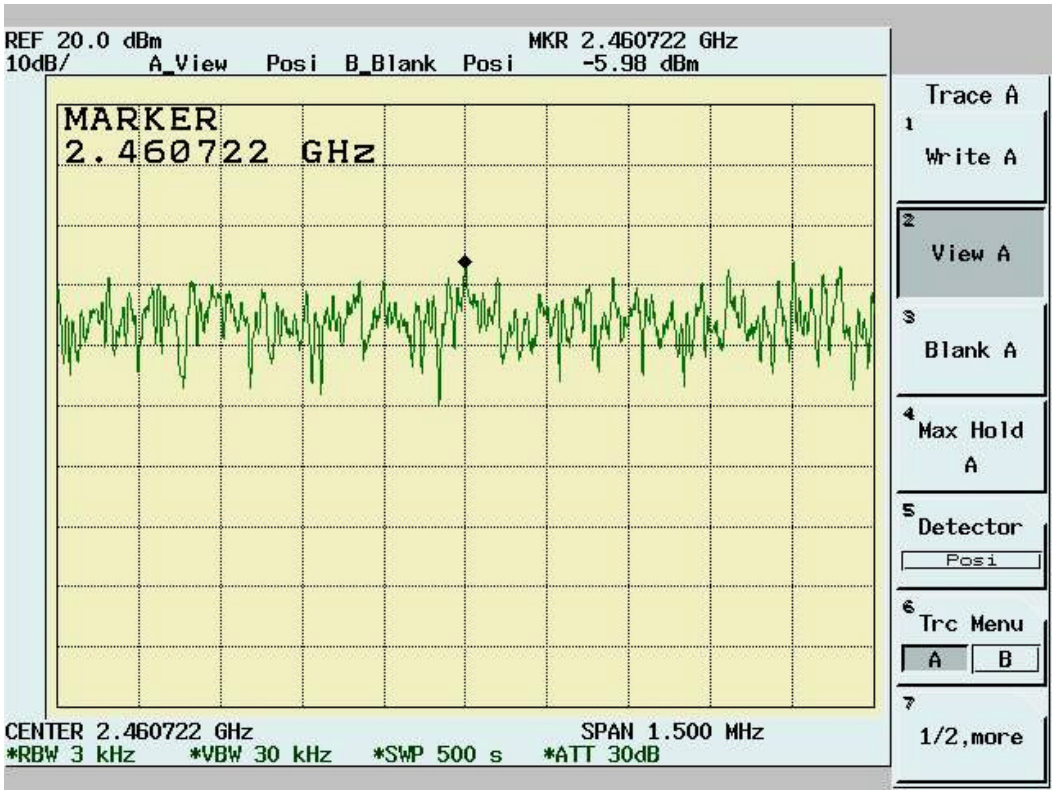
Channel 1



Channel 6



Channel 11


REF 20.0 dBm
10dB/ A_View Posi B_Blank Posi
MKR 2.460722 GHz
-5.98 dBm
MARKER
2.460722 GHz
Trace A
1 Write A
2 View A
3 Blank A
4 Max Hold A
5 Detector
Posi
6 Trc Menu
A B
7 1/2,more
CENTER 2.460722 GHz
SPAN 1.500 MHz
*RBW 3 kHz *VBW 30 kHz *SWP 500 s *ATT 30dB

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 6dß 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 6dß below the applicable average limits, the emissions were also measured with the average detectors.

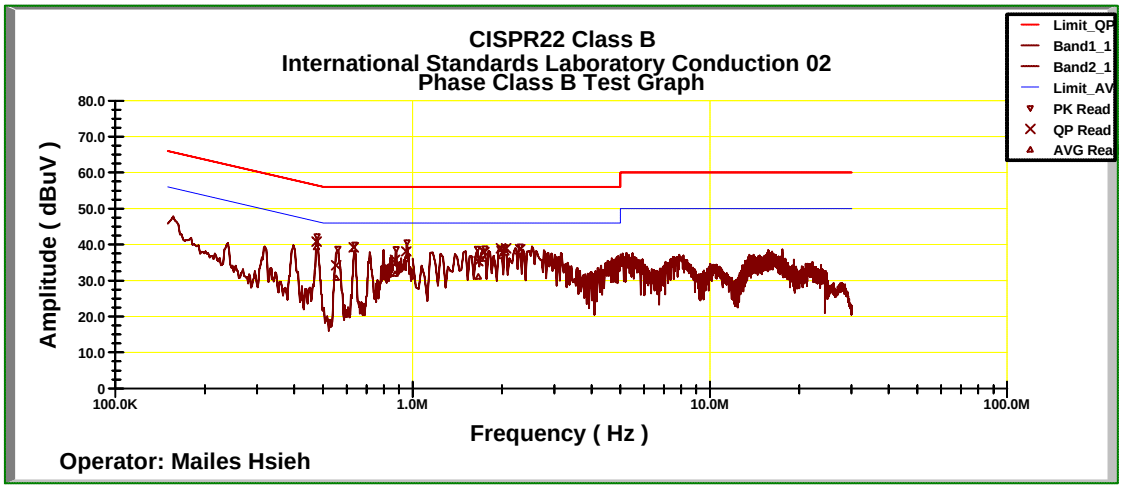
The highest emissions were analyzed in details by operating the spectrum analyzer in fixed tuned mode to determine the nature of the emissions and to provide information which could be useful in reducing their amplitude.

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):29
03:36:36PM,Thursday,June16,2005 Humidity(%):54

Frequency	LISNLoss	CableLoss	QPCorrct.	QPLimit	QPMargin	AVECorrct.	AVELimit	AVEMargin
MHz	(dB)	(dB)	Amp.(dBuV)	(dBuV)	(dB)	Amp.(dBuV)	(dBuV)	(dB)
0.47478	0.11	0.07	40.78	56.72	-15.94	39.17	46.72	-7.55
0.55316	0.13	0.07	34.21	56.00	-21.79	30.60	46.00	-15.40
0.63448	0.14	0.07	39.16	56.00	-16.84	38.63	46.00	-7.37
0.87298	0.18	0.07	35.71	56.00	-20.29	31.76	46.00	-14.24
0.95203	0.19	0.07	38.08	56.00	-17.92	35.91	46.00	-10.09
1.66435	0.23	0.08	35.33	56.00	-20.67	31.02	46.00	-14.98
1.74347	0.23	0.08	37.88	56.00	-18.12	35.93	46.00	-10.07
1.98250	0.20	0.09	38.88	56.00	-17.12	36.67	46.00	-9.33
2.06302	0.20	0.09	38.93	56.00	-17.07	37.63	46.00	-8.37
2.30103	0.20	0.10	38.67	56.00	-17.33	38.02	46.00	-7.98