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FCC RADIO TEST REPORT

Applicant's company	Belkin International, Inc.
Applicant Address	501 West Walnut Street, Compton, CA 90220-5221, U.S.A.
FCC ID	K7SF5D8236V2

Product Name	N Wireless Router
Brand Name	Belkin
Model Name	F5D8236-4 v2
Test Rule	47 CFR FCC Part 15 Subpart C § 15.247
Test Freq. Range	2400 ~ 2483.5MHz
Received Date	Oct. 01, 2008
Final Test Date	Oct. 22, 2008
Submission Type	Original Equipment



Statement

Test result included in this report is for the Draft n and 802.11b/g part of the product.

The test result in this report refers exclusively to the presented test model / sample.

Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.4-2003** and **47 CFR FCC Part 15 Subpart C**.

The test equipment used to perform the test is calibrated and traceable to NML/ROC.



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1. CERTIFICATE OF COMPLIANCE

Product Name : N Wireless Router
Brand Name : Belkin
Model Name : F5D8236-4 v2
Applicant : Belkin International, Inc.
Test Rule Part(s) : 47 CFR FCC Part 15 Subpart C § 15.247

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Oct. 01, 2008 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.

A handwritten signature in blue ink that reads 'Wayne Hsu 2/10/08'. The signature is written over a horizontal line.

Wayne Hsu

SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart C				
Part	Rule Section	Description of Test	Result	Under Limit
4.1	15.207	AC Power Line Conducted Emissions	Complies	5.53 dB
4.2	15.247(b)(3)	Maximum Conducted Output Power	Complies	9.91 dB
4.3	15.247(e)	Power Spectral Density	Complies	13.03 dB
4.4	15.247(a)(2)	6dB Spectrum Bandwidth	Complies	-
4.5	15.247(d)	Radiated Emissions	Complies	0.41 dB
4.6	15.247(d)	Band Edge Emissions	Complies	0.08 dB
4.7	15.203	Antenna Requirements	Complies	-

Test Items	Uncertainty	Remark
AC Power Line Conducted Emissions	±2.3dB	Confidence levels of 95%
Maximum Conducted Output Power	±0.8dB	Confidence levels of 95%
Power Spectral Density	±0.5dB	Confidence levels of 95%
6dB Spectrum Bandwidth	±8.5×10 ⁻⁸	Confidence levels of 95%
Radiated Emissions (9kHz~30MHz)	±0.8dB	Confidence levels of 95%
Radiated Emissions (30MHz~1000MHz)	±1.9dB	Confidence levels of 95%
Radiated / Band Edge Emissions (1GHz~18GHz)	±1.9dB	Confidence levels of 95%
Radiated Emissions (18GHz~40GHz)	±1.9dB	Confidence levels of 95%
Temperature	±0.7°C	Confidence levels of 95%
Humidity	±3.2%	Confidence levels of 95%
DC / AC Power Source	±1.4%	Confidence levels of 95%

3. GENERAL INFORMATION

3.1. Product Details

Draft n

Items	Description
Product Type	WLAN (2TX, 2RX)
Radio Type	Intentional Transceiver
Power Type	Power Adapter
Modulation	see the below table for draft n
Data Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data Rate (Mbps)	see the below table for Draft n
Frequency Range	2400 ~ 2483.5MHz
Channel Number	11 for 20MHz bandwidth ; 7 for 40MHz bandwidth
Channel Band Width (99%)	MCS8 (20MHz) : 17.40 MHz MCS8 (40MHz) : 36.08 MHz
Conducted Output Power	MCS8 (20MHz) : 20.09 dBm MCS8 (40MHz) : 18.31 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

802.11b/g

Items	Description
Product Type	802.11b/g :WLAN (1TX, 2RX)
Radio Type	Intentional Transceiver
Power Type	Power Adapter
Modulation	DSSS for IEEE 802.11b ; OFDM for IEEE 802.11g
Data Modulation	DSSS (BPSK / QPSK / CCK) ; OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data Rate (Mbps)	DSSS (1/ 2/ 5.5/11) ; OFDM (6/9/12/18/24/36/48/54)
Frequency Range	2400 ~ 2483.5MHz
Channel Number	11
Channel Band Width (99%)	11b: 15.00 MHz ; 11g: 16.48 MHz
Conducted Output Power	11b: 17.99 dBm ; 11g: 19.32 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Antenna & Band width

Antenna	Single (TX)		Two (TX)	
	20 MHz	40 MHz	20 MHz	40 MHz
Band width Mode				
802.11b	V	X	X	X
802.11g	V	X	X	X
Draft n	X	X	V	V

Draft n spec

MCS Index	Nss	Modulation	R	NBPS	NCBPS		NDBPS		Datarate(Mbps)			
					20MHz	40MHz	20MHz	40MHz	800nsGI		400nsGI	
									20MHz	40MHz	20MHz	40MHz
0	1	BPSK	1/2	1	52	108	26	54	6.5	13.5	7.200	15
1	1	QPSK	1/2	2	104	216	52	108	13.0	27.0	14.400	30
2	1	QPSK	3/4	2	104	216	78	162	19.5	40.5	21.700	45
3	1	16-QAM	1/2	4	208	432	104	216	26.0	54.0	28.900	60
4	1	16-QAM	3/4	4	208	432	156	324	39.0	81.0	43.300	90
5	1	64-QAM	2/3	6	312	648	208	432	52.0	108.0	57.800	120
6	1	64-QAM	3/4	6	312	648	234	486	58.5	121.5	65.000	135
7	1	64-QAM	5/6	6	312	648	260	540	65.0	135.0	72.200	150
8	2	BPSK	1/2	1	104	216	52	108	13.0	27.0	14.444	30
9	2	QPSK	1/2	2	208	432	104	216	26.0	54.0	28.889	60
10	2	QPSK	3/4	2	208	432	156	324	39.0	81.0	43.333	90
11	2	16-QAM	1/2	4	416	864	208	432	52.0	108.0	57.778	120
12	2	16-QAM	3/4	4	416	864	312	648	78.0	162.0	86.667	180
13	2	64-QAM	2/3	6	624	1296	416	864	104.0	216.0	115.556	240
14	2	64-QAM	3/4	6	624	1296	468	972	117.0	243.0	130.000	270
15	2	64-QAM	5/6	6	624	1296	520	1080	130.0	270.0	144.444	300

Symbol	Explanation
NSS	Number of spatial streams
R	Code rate
NBPSC	Number of coded bits per single carrier
NCBPS	Number of coded bits per symbol
NDBPS	Number of data bits per symbol
GI	guard interval

3.2. Accessories

Power	Brand	Model	Rating
Adapter 1	DVE	DSA-12R-12 AUS 120120	Input:100-120VAC, 50/60Hz, 0.3A Output:12VDC, 1A
Adapter 2	Leader	MT12-Y120100-A1	Input:100-120VAC, 60Hz, 0.3A Output:12VDC, 1A

3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Remark
A (0)	Lite	120300027200J	Dipole Antenna	N/A	2	TX / RX Ant.
B (1)	Lite	120300027300J	Dipole Antenna	N/A	2	TX / RX Ant.

Note: The EUT has two antennas (2TX, 2RX).

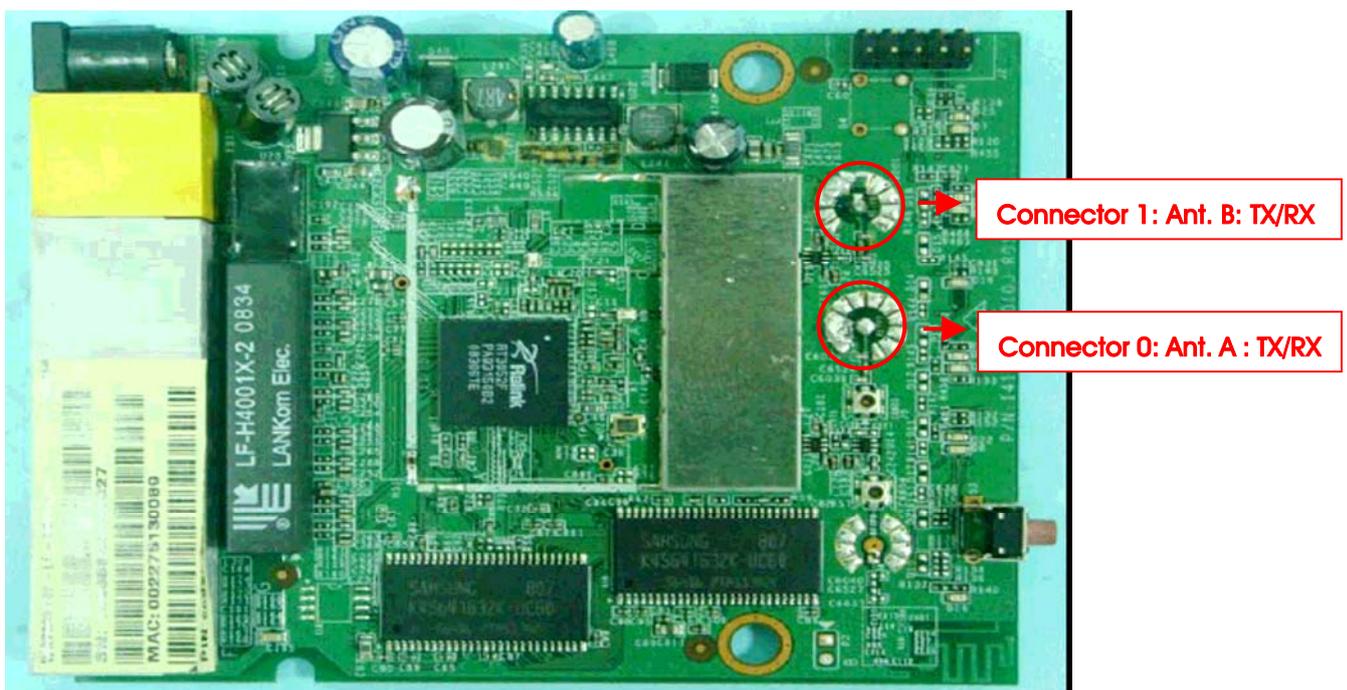
For 802.11b/g mode:

Only antenna A can be used as transmitting antenna.

Both antenna A and B can be used as receiving antenna.

For Draft n mode:

Ant. A & Ant. B could transmit/receive simultaneously.



3.4. Table for Carrier Frequencies

There are two bandwidth systems for draft n.

For both 20MHz bandwidth systems, use Channel 1~Channel 11.

For both 40MHz bandwidth systems, use Channel 3~Channel 9.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
2400~2483.5MHz	1	2412 MHz	7	2442 MHz
	2	2417 MHz	8	2447 MHz
	3	2422 MHz	9	2452 MHz
	4	2427 MHz	10	2457 MHz
	5	2432 MHz	11	2462 MHz
	6	2437 MHz		

3.5. Table for Test Modes

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Data Rate	Channel	Antenna
AC Power Line Conducted Emissions	Normal Link	-	-	-
Maximum Peak Conducted Output Power	MCS8/20MHz	13 Mbps	1/6/11	A / B / A+B
	MCS8/40MHz	27 Mbps	3/6/9	A / B / A+B
	11b/BPSK	1 Mbps	1/6/11	A
	11g/BPSK	6 Mbps	1/6/11	A
Power Spectral Density 6dB Spectrum Bandwidth	MCS8/20MHz	13 Mbps	1/6/11	A+B
	MCS8/40MHz	27 Mbps	3/6/9	A+B
	11b/BPSK	1 Mbps	1/6/11	A
	11g/BPSK	6 Mbps	1/6/11	A
Radiated Emissions 9kHz~1GHz	Normal Link	-	-	-
Radiated Emissions 1GHz~10 th Harmonic	MCS8/20MHz	13 Mbps	1/6/11	A+B
	MCS8/40MHz	27 Mbps	3/6/9	A+B
	11b/BPSK	1 Mbps	1/6/11	A
	11g/BPSK	6 Mbps	1/6/11	A
Band Edge Emissions	MCS8/20MHz	13 Mbps	1/11	A+B
	MCS8/40MHz	27 Mbps	3/9	A+B
	11b/BPSK	1 Mbps	1/11	A
	11g/BPSK	6 Mbps	1/11	A

Note:

The following test modes were performed for all tests:

Mode 1: EUT + Adapter 1

Mode 2: EUT + Adapter 2

3.6. Table for Testing Locations

Test Site No.	Site Category	Location	FCC Reg. No.	IC File No.	VCCI Reg. No
03CH03-HY	SAC	Hwa Ya	101377	IC 4088	-
CO04-HY	Conduction	Hwa Ya	101377	IC 4088	-
TH01-HY	OVEN Room	Hwa Ya	-	-	-

Open Area Test Site (OATS); Semi Anechoic Chamber (SAC); Fully Anechoic Chamber (FAC).

Please refer section 6 for Test Site Address.

3.7. Table for Supporting Units

Support Unit	Brand	Model	FCC ID
Notebook	DELL	M1330	E2KWM3945ABG
Notebook	DELL	M1330	E2KWM3945ABG
Notebook	DELL	M1330	E2KWM3945ABG
Hub	N/A	N/A	N/A

3.8. Table for Parameters of Test Software Setting

During testing, Channel & Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

Power Parameters of Draft n MCS8 20MHz

Test Software Version	QA		
Frequency	2412 MHz	2437 MHz	2462 MHz
Draft n Ant. A	0F	12	13
Draft n Ant. B	1F	1F	1F

Power Parameters of Draft n MCS8 40MHz

Test Software Version	QA		
Frequency	2422 MHz	2437 MHz	2452 MHz
Draft n Ant. A	0F	11	0F
Draft n Ant. B	1E	1F	1A

Power Parameters of IEEE 802.11b/g

Test Software Version	QA		
Frequency	2412 MHz	2437 MHz	2462 MHz
IEEE 802.11b Ant. A	12	14	0E
IEEE 802.11g Ant. A	1C	19	18

During the test, "Ping.exe" under WIN XP was executed to link with the remote workstation to receive and transmit signal by LAN and WLAN

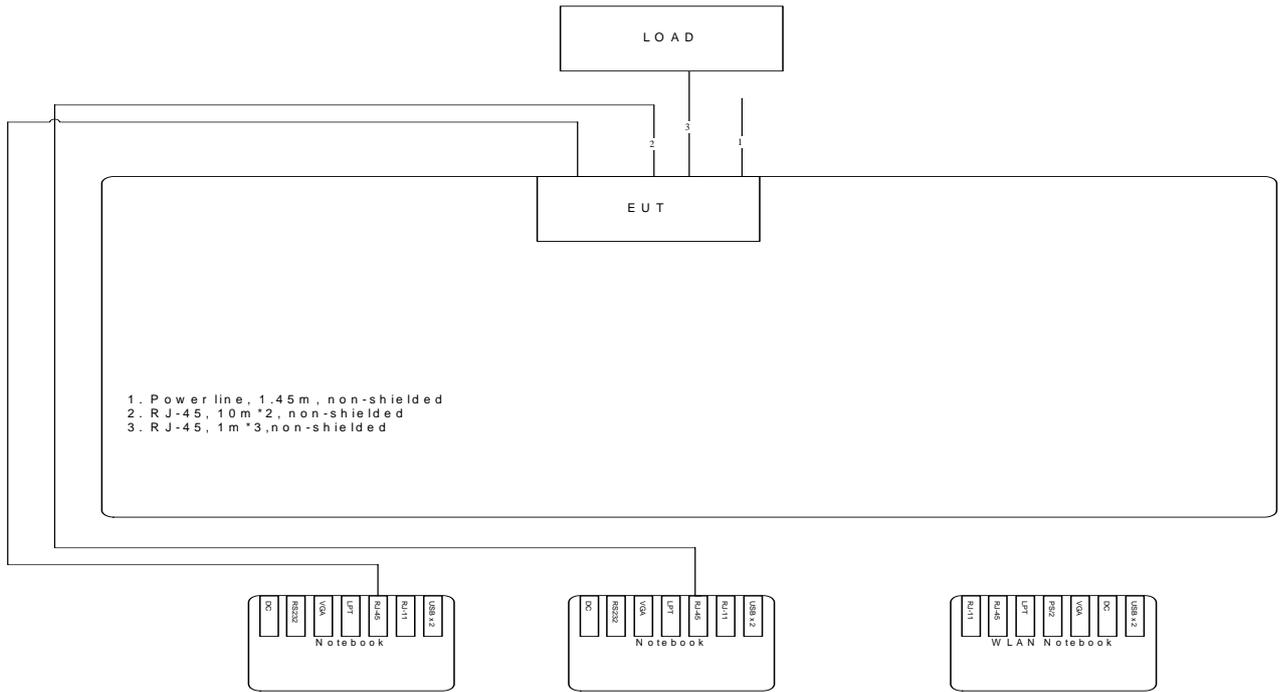
At the same time, "QA" was executed the test program to control the EUT continuously transmit RF signal.

3.9. Test Configurations

3.9.1. Radiation Emissions Test Configuration

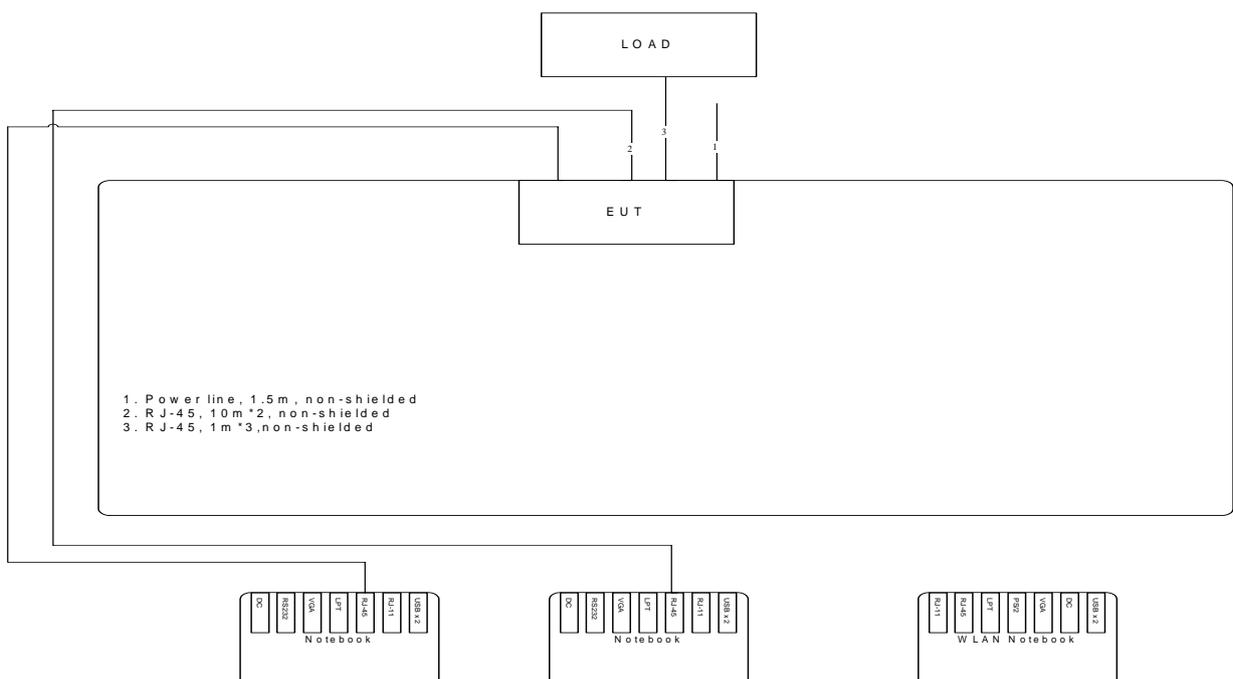
Test Configuration: 30KHz~1GHz

Test Mode: Mode 1

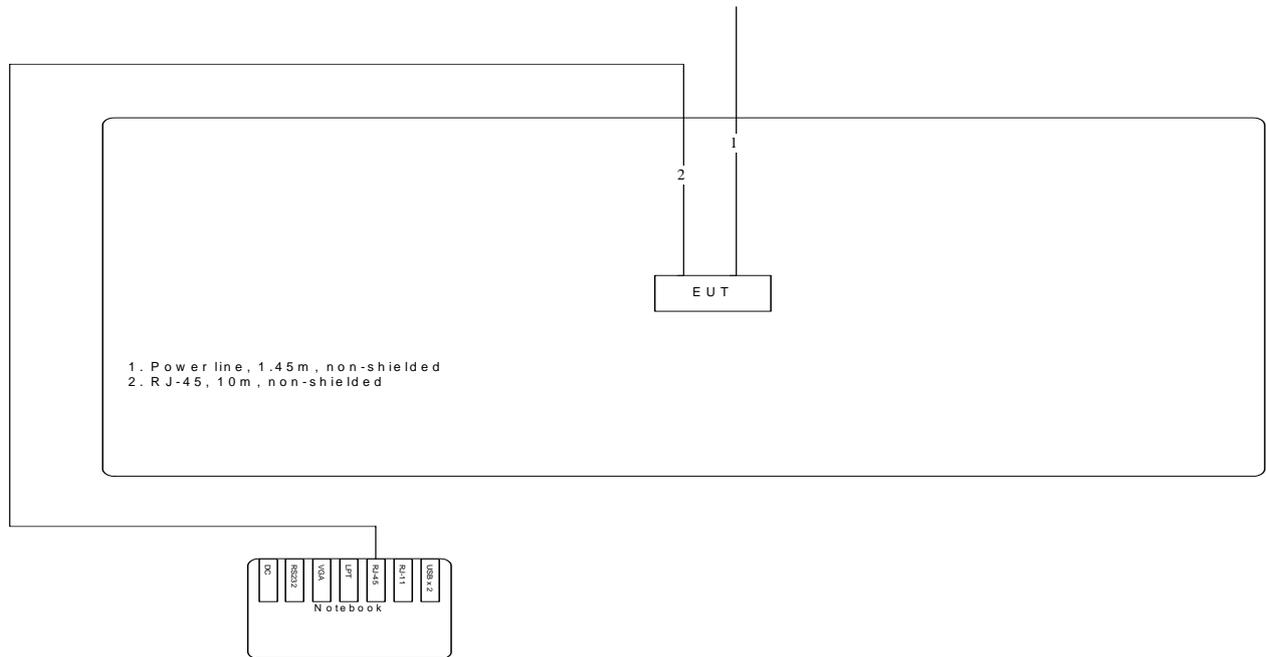


Test Configuration: 30KHz~1GHz

Test Mode: Mode 2

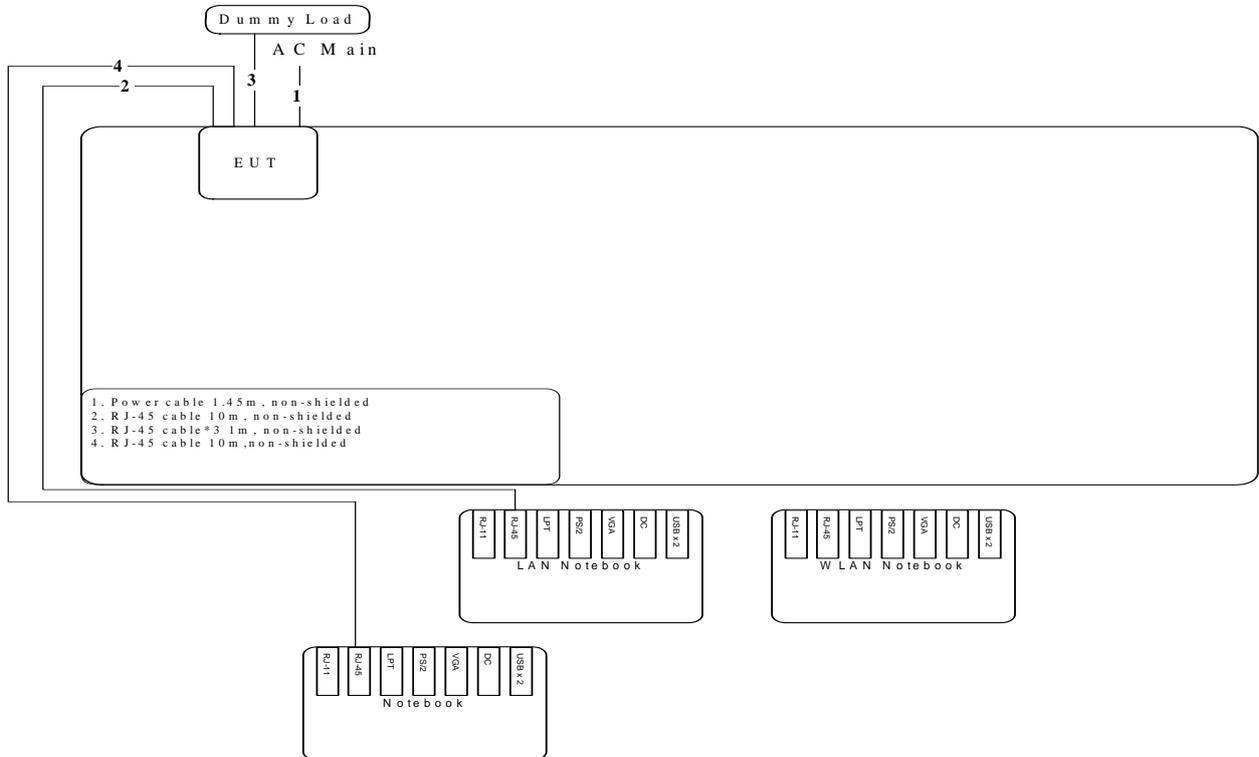


Test Configuration: above 1GHz

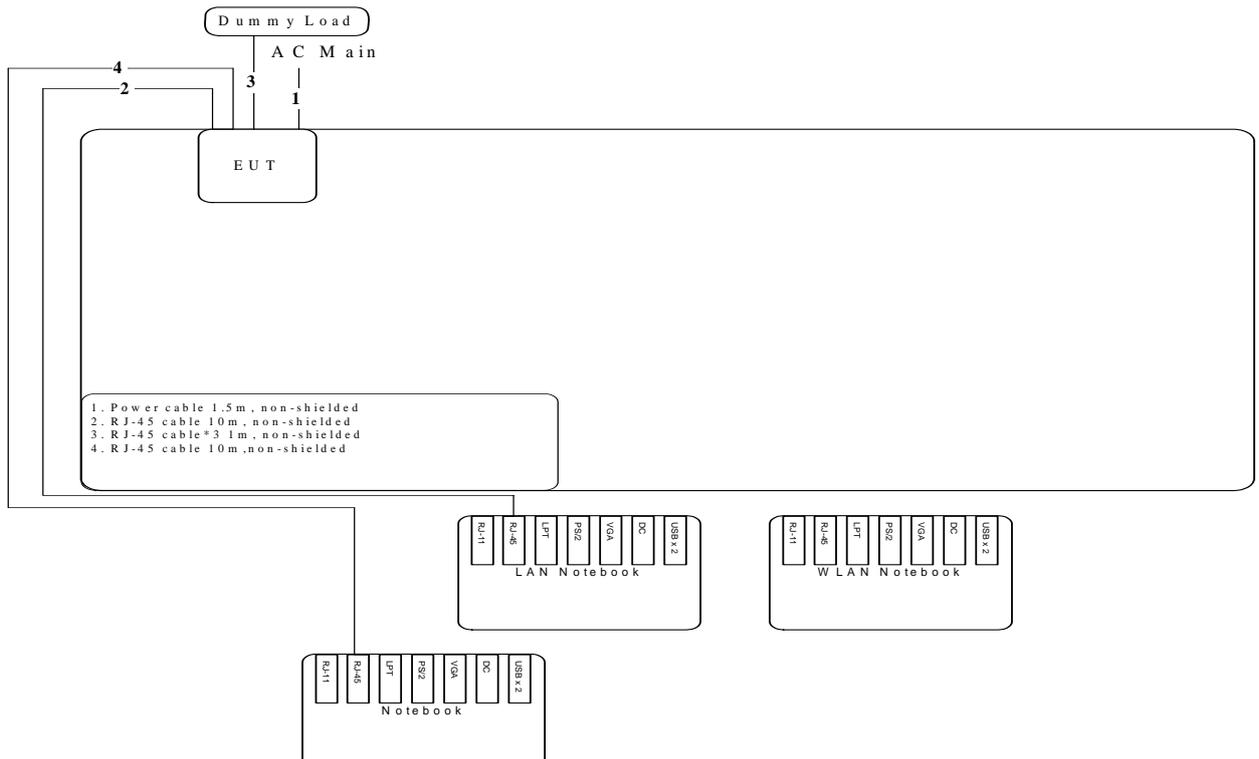


3.9.2. AC Power Line Conduction Emissions Test Configuration

Test Mode: Mode 1



Test Mode: Mode 2



4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

For this product which is designed to be connected to the AC power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed below limits table.

Frequency (MHz)	QP Limit (dBuV)	AV Limit (dBuV)
0.15~0.5	66~56	56~46
0.5~5	56	46
5~30	60	50

4.1.2. Measuring Instruments and Setting

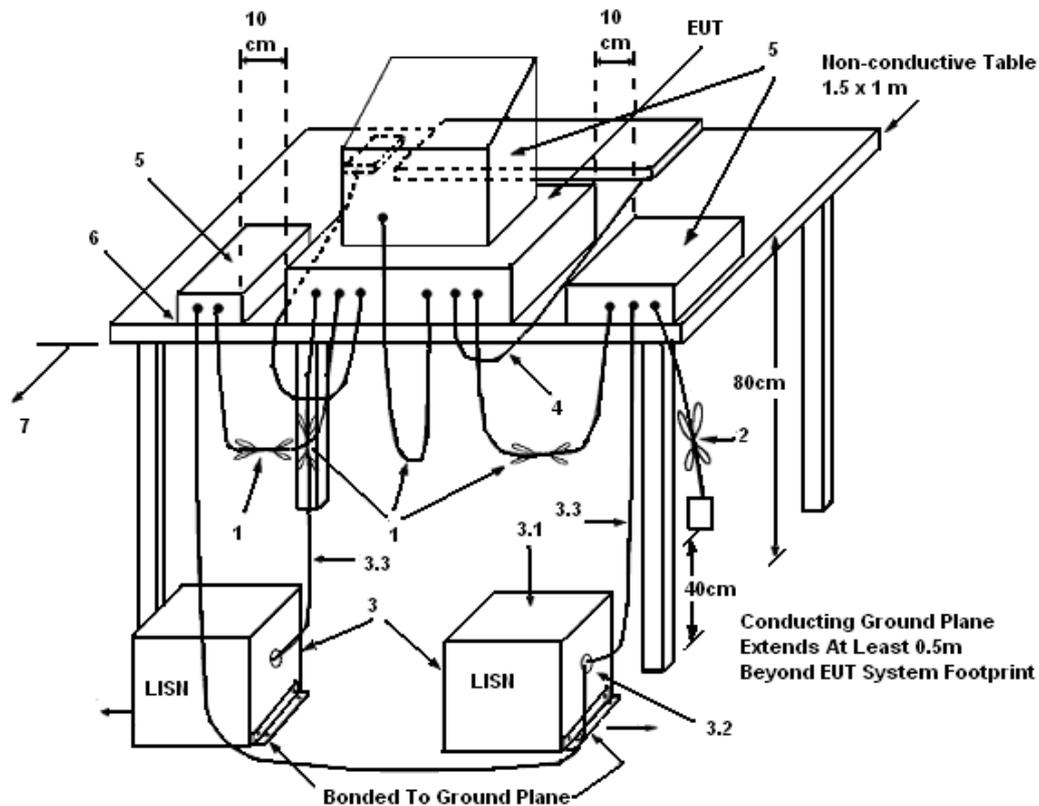
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 KHz

4.1.3. Test Procedures

1. Configure the EUT according to ANSI C63.4. The EUT or host of EUT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT or host of EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connected to the other LISNs. The LISN should provide 50uH/50ohms coupling impedance.
4. The frequency range from 150 KHz to 30 MHz was searched.
5. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. The measurement has to be done between each power line and ground at the power terminal.

4.1.4. Test Setup Layout



LEGEND:

- (1) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- (2) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- (3) EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω. LISN can be placed on top of, or immediately beneath, reference ground plane.
 - (3.1) All other equipment powered from additional LISN(s).
 - (3.2) Multiple outlet strip can be used for multiple power cords of non-EUT equipment.
 - (3.3) LISN at least 80 cm from nearest part of EUT chassis.
- (4) Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.
- (5) Non-EUT components of EUT system being tested.
- (6) Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.
- (7) Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

4.1.5. Test Deviation

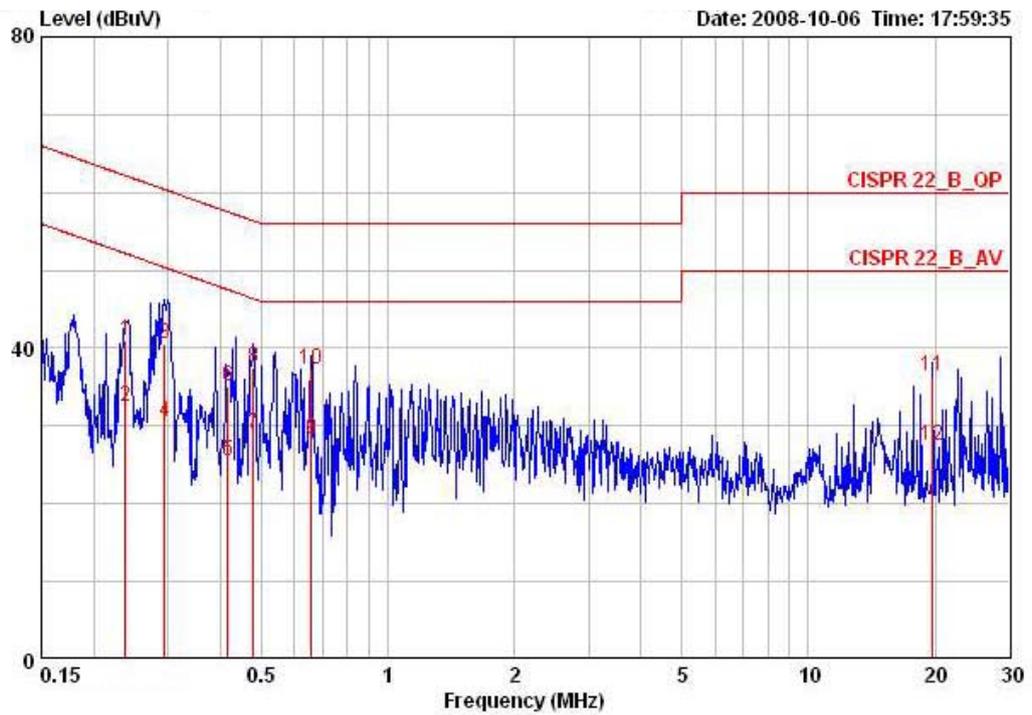
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

The EUT was placed on the test table and programmed in normal function.

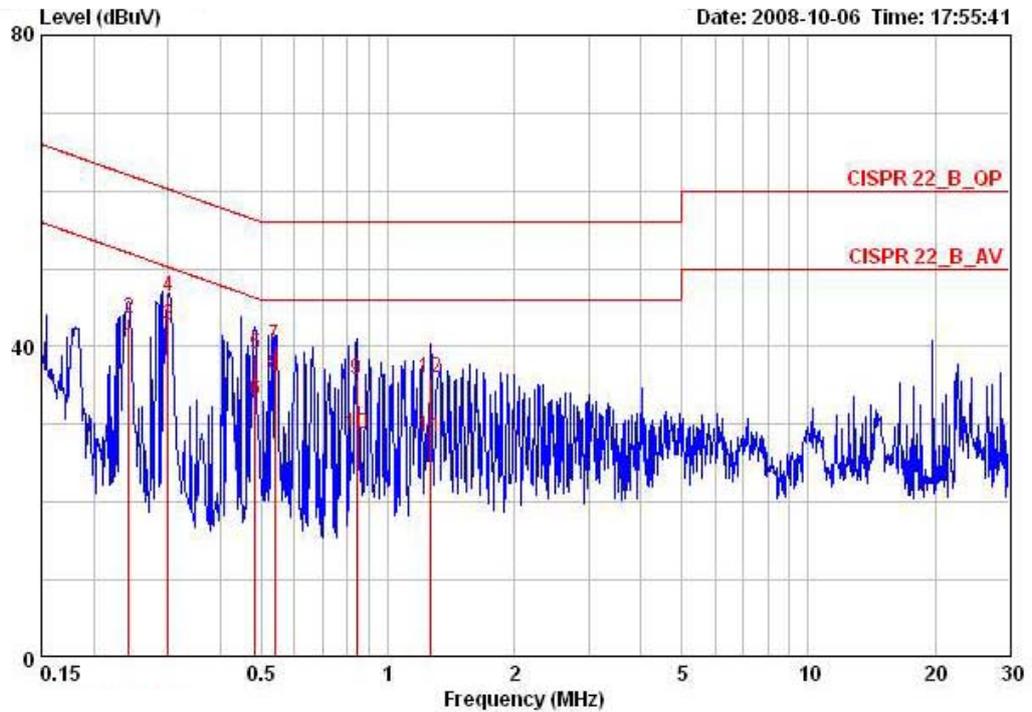
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	23.4°C	Humidity	56.9%
Test Engineer	Aric Li	Phase	Line
Configuration	Normal Link / Mode 1		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.23784	41.00	-21.17	62.17	40.76	0.04	0.20	QP
2	0.23784	32.39	-19.78	52.17	32.15	0.04	0.20	AVERAGE
3	0.29398	40.47	-19.94	60.41	40.23	0.04	0.20	QP
4	0.29398	30.44	-19.97	50.41	30.20	0.04	0.20	AVERAGE
5	0.41661	25.58	-21.94	47.52	25.35	0.03	0.20	AVERAGE
6	0.41661	35.04	-22.48	57.52	34.81	0.03	0.20	QP
7	0.47911	28.90	-17.46	46.35	28.74	0.03	0.13	AVERAGE
8	0.47911	37.56	-18.80	56.35	37.40	0.03	0.13	QP
9	0.65778	28.40	-17.60	46.00	28.17	0.03	0.20	AVERAGE
10	0.65778	37.32	-18.68	56.00	37.09	0.03	0.20	QP
11	19.708	36.32	-23.68	60.00	35.01	0.81	0.50	QP
12	19.708	27.42	-22.58	50.00	26.11	0.81	0.50	AVERAGE

Temperature	23.4°C	Humidity	56.9%
Test Engineer	Aric Li	Phase	Neutral
Configuration	Normal Link / Mode 1		

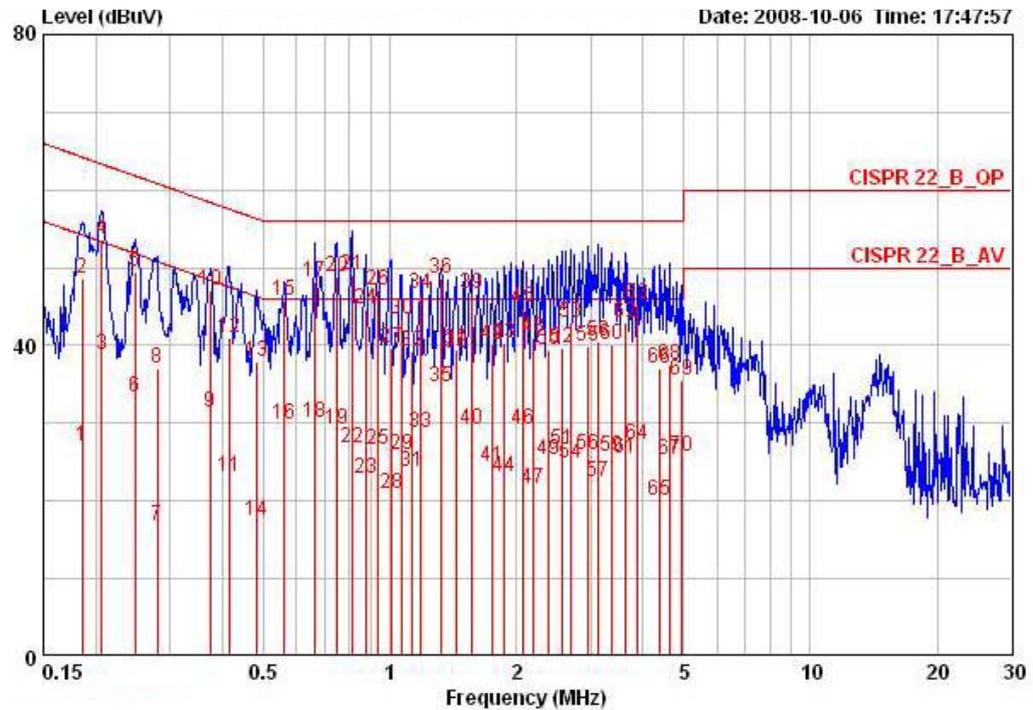


	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.24165	39.91	-12.13	52.04	39.63	0.08	0.20	AVERAGE
2	0.24165	43.62	-18.42	62.04	43.34	0.08	0.20	QP
3	0.29993	42.75	-7.49	50.24	42.48	0.07	0.20	AVERAGE
4	0.29993	46.38	-13.86	60.24	46.11	0.07	0.20	QP
5	0.48279	39.06	-17.23	56.29	38.89	0.07	0.10	QP
6	0.48279	33.08	-13.21	46.29	32.91	0.07	0.10	AVERAGE
7	0.53734	40.17	-15.83	56.00	39.90	0.07	0.20	QP
8	0.53734	36.50	-9.50	46.00	36.23	0.07	0.20	AVERAGE
9	0.84378	35.65	-20.35	56.00	35.38	0.07	0.20	QP
10	0.84378	28.84	-17.16	46.00	28.57	0.07	0.20	AVERAGE
11	1.262	28.43	-17.57	46.00	28.21	0.08	0.14	AVERAGE
12	1.262	35.89	-20.11	56.00	35.67	0.08	0.14	QP

Note:

Level = Read Level + LISN Factor + Cable Loss.

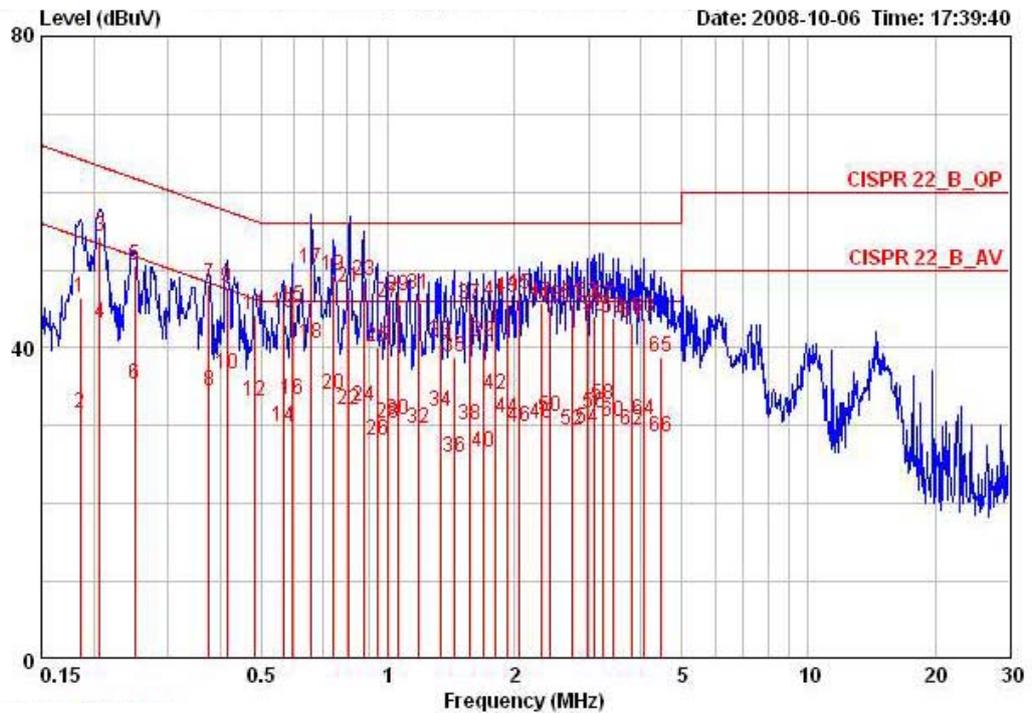
Temperature	23.4°C	Humidity	56.9%
Test Engineer	Aric Li	Phase	Line
Configuration	Normal Link / Mode 2		



	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	0.18541	27.02	-27.22	54.24	26.73	0.09	0.20	AVERAGE
2	0.18541	48.53	-15.71	64.24	48.24	0.09	0.20	QP
3	0.20614	38.91	-14.45	53.36	38.63	0.08	0.20	AVERAGE
4	0.20614	53.65	-9.71	63.36	53.37	0.08	0.20	QP
5	0.24814	49.58	-12.24	61.82	49.30	0.08	0.20	QP
6	0.24814	33.42	-18.40	51.82	33.14	0.08	0.20	AVERAGE
7	0.28029	16.80	-34.01	50.81	16.52	0.08	0.20	AVERAGE
8	0.28029	37.03	-23.78	60.81	36.75	0.08	0.20	QP
9	0.37314	31.36	-17.07	48.43	31.09	0.07	0.20	AVERAGE
10	0.37314	47.07	-11.36	58.43	46.80	0.07	0.20	QP
11	0.41485	23.20	-24.35	47.55	22.93	0.07	0.20	AVERAGE
12	0.41485	41.04	-16.51	57.55	40.77	0.07	0.20	QP
13	0.48119	38.02	-18.30	56.32	37.85	0.07	0.10	QP
14	0.48119	17.45	-28.87	46.32	17.28	0.07	0.10	AVERAGE
15	0.56111	45.77	-10.23	56.00	45.50	0.07	0.20	QP
16	0.56111	29.89	-16.11	46.00	29.62	0.07	0.20	AVERAGE
17	0.66478	48.12	-7.88	56.00	47.85	0.07	0.20	QP
18	0.66478	30.16	-15.84	46.00	29.89	0.07	0.20	AVERAGE
19	0.74697	29.16	-16.84	46.00	28.89	0.07	0.20	AVERAGE
20	0.74697	48.92	-7.08	56.00	48.65	0.07	0.20	QP
21	0.81737	49.00	-7.00	56.00	48.73	0.07	0.20	QP
22	0.81737	26.84	-19.16	46.00	26.57	0.07	0.20	AVERAGE

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
23	0.88031	22.83	-23.17	46.00	22.56	0.07	0.20	AVERAGE
24	0.88031	44.67	-11.33	56.00	44.40	0.07	0.20	QP
25	0.93810	26.65	-19.35	46.00	26.38	0.07	0.20	AVERAGE
26	0.93810	47.00	-9.00	56.00	46.73	0.07	0.20	QP
27	1.005	39.58	-16.42	56.00	39.31	0.07	0.20	QP
28	1.005	20.91	-25.09	46.00	20.64	0.07	0.20	AVERAGE
29	1.065	25.85	-20.15	46.00	25.59	0.07	0.18	AVERAGE
30	1.065	43.48	-12.52	56.00	43.22	0.07	0.18	QP
31	1.129	23.86	-22.14	46.00	23.62	0.07	0.17	AVERAGE
32	1.129	39.18	-16.82	56.00	38.94	0.07	0.17	QP
33	1.184	28.67	-17.33	46.00	28.44	0.07	0.16	AVERAGE
34	1.184	46.66	-9.34	56.00	46.43	0.07	0.16	QP
35	1.324	34.65	-11.35	46.00	34.44	0.08	0.13	AVERAGE
36	1.324	48.57	-7.43	56.00	48.36	0.08	0.13	QP
37	1.441	39.45	-16.55	56.00	39.26	0.08	0.11	QP
38	1.441	38.96	-17.04	56.00	38.77	0.08	0.11	QP
39	1.560	46.62	-9.38	56.00	46.42	0.08	0.11	QP
40	1.560	29.32	-16.68	46.00	29.12	0.08	0.11	AVERAGE
41	1.753	24.33	-21.67	46.00	24.09	0.09	0.15	AVERAGE
42	1.753	40.15	-15.85	56.00	39.91	0.09	0.15	QP
43	1.878	40.39	-15.61	56.00	40.12	0.09	0.18	QP
44	1.878	23.01	-22.99	46.00	22.74	0.09	0.18	AVERAGE
45	2.066	44.83	-11.17	56.00	44.54	0.09	0.20	QP
46	2.066	29.11	-16.89	46.00	28.82	0.09	0.20	AVERAGE
47	2.190	21.68	-24.32	46.00	21.38	0.10	0.20	AVERAGE
48	2.190	40.94	-15.06	56.00	40.64	0.10	0.20	QP
49	2.384	25.32	-20.68	46.00	25.02	0.10	0.20	AVERAGE
50	2.384	39.49	-16.51	56.00	39.19	0.10	0.20	QP
51	2.567	26.49	-19.51	46.00	26.18	0.11	0.20	AVERAGE
52	2.567	39.61	-16.39	56.00	39.30	0.11	0.20	QP
53	2.692	42.90	-13.10	56.00	42.59	0.11	0.20	QP
54	2.692	24.89	-21.11	46.00	24.58	0.11	0.20	AVERAGE
55	2.946	39.84	-16.16	56.00	39.52	0.12	0.20	QP
56	2.946	25.86	-20.14	46.00	25.54	0.12	0.20	AVERAGE
57	3.140	22.46	-23.54	46.00	22.11	0.12	0.23	AVERAGE
58	3.140	40.51	-15.49	56.00	40.16	0.12	0.23	QP
59	3.381	25.69	-20.31	46.00	25.29	0.13	0.28	AVERAGE
60	3.381	40.11	-15.89	56.00	39.71	0.13	0.28	QP
61	3.623	25.51	-20.49	46.00	25.08	0.13	0.30	AVERAGE
62	3.623	42.95	-13.05	56.00	42.52	0.13	0.30	QP
63	3.860	45.31	-10.69	56.00	44.87	0.14	0.30	QP
64	3.860	27.28	-18.72	46.00	26.84	0.14	0.30	AVERAGE
65	4.384	20.15	-25.85	46.00	19.68	0.17	0.30	AVERAGE
66	4.384	37.14	-18.86	56.00	36.67	0.17	0.30	QP
67	4.622	25.30	-20.70	46.00	24.82	0.18	0.30	AVERAGE
68	4.622	37.57	-18.43	56.00	37.09	0.18	0.30	QP
69	4.952	35.57	-20.43	56.00	35.07	0.20	0.30	QP
70	4.952	25.83	-20.17	46.00	25.33	0.20	0.30	AVERAGE

Temperature	23.4°C	Humidity	56.9%
Test Engineer	Aric Li	Phase	Neutral
Configuration	Normal Link / Mode 2		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.18541	46.54	-17.70	64.24	46.25	0.09	0.20	QP
2	0.18541	31.64	-22.60	54.24	31.35	0.09	0.20	AVERAGE
3	0.20614	54.26	-9.10	63.36	53.98	0.08	0.20	QP
4	0.20614	43.21	-10.15	53.36	42.93	0.08	0.20	AVERAGE
5	0.25078	50.67	-11.06	61.73	50.39	0.08	0.20	QP
6	0.25078	35.41	-16.32	51.73	35.13	0.08	0.20	AVERAGE
7	0.37512	48.09	-10.30	58.39	47.82	0.07	0.20	QP
8	0.37512	34.54	-13.85	48.39	34.27	0.07	0.20	AVERAGE
9	0.41485	47.77	-9.78	57.55	47.50	0.07	0.20	QP
10	0.41485	36.62	-10.93	47.55	36.35	0.07	0.20	AVERAGE
11	0.48119	44.19	-12.13	56.32	44.02	0.07	0.10	QP
12	0.48119	33.15	-13.17	46.32	32.98	0.07	0.10	AVERAGE
13	0.56409	44.57	-11.43	56.00	44.30	0.07	0.20	QP
14	0.56409	29.78	-16.22	46.00	29.51	0.07	0.20	AVERAGE
15	0.59164	45.24	-10.76	56.00	44.97	0.07	0.20	QP
16	0.59164	33.25	-12.75	46.00	32.98	0.07	0.20	AVERAGE
17	0.65778	50.22	-5.78	56.00	49.95	0.07	0.20	QP
18	0.65778	40.47	-5.53	46.00	40.20	0.07	0.20	AVERAGE
19	0.74302	49.16	-6.84	56.00	48.89	0.07	0.20	QP
20	0.74302	33.90	-12.10	46.00	33.63	0.07	0.20	AVERAGE
21	0.80449	47.73	-8.27	56.00	47.46	0.07	0.20	QP
22	0.80449	32.11	-13.89	46.00	31.84	0.07	0.20	AVERAGE

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
23	0.87566	48.59	-7.41	56.00	48.32	0.07	0.20	QP
24	0.87566	32.39	-13.61	46.00	32.12	0.07	0.20	AVERAGE
25	0.94308	40.17	-15.83	56.00	39.90	0.07	0.20	QP
26	0.94308	28.08	-17.92	46.00	27.81	0.07	0.20	AVERAGE
27	0.99968	45.70	-10.30	56.00	45.43	0.07	0.20	QP
28	0.99968	30.33	-15.67	46.00	30.06	0.07	0.20	AVERAGE
29	1.060	46.63	-9.37	56.00	46.37	0.07	0.19	QP
30	1.060	30.68	-15.32	46.00	30.42	0.07	0.19	AVERAGE
31	1.184	46.79	-9.21	56.00	46.56	0.07	0.16	QP
32	1.184	29.58	-16.42	46.00	29.35	0.07	0.16	AVERAGE
33	1.331	40.77	-15.23	56.00	40.56	0.08	0.13	QP
34	1.331	31.92	-14.08	46.00	31.71	0.08	0.13	AVERAGE
35	1.441	38.72	-17.28	56.00	38.53	0.08	0.11	QP
36	1.441	25.96	-20.04	46.00	25.77	0.08	0.11	AVERAGE
37	1.560	45.67	-10.33	56.00	45.47	0.08	0.11	QP
38	1.560	30.18	-15.82	46.00	29.98	0.08	0.11	AVERAGE
39	1.689	40.67	-15.33	56.00	40.44	0.09	0.14	QP
40	1.689	26.60	-19.40	46.00	26.37	0.09	0.14	AVERAGE
41	1.810	46.06	-9.94	56.00	45.81	0.09	0.16	QP
42	1.810	34.04	-11.96	46.00	33.79	0.09	0.16	AVERAGE
43	1.928	46.41	-9.59	56.00	46.13	0.09	0.19	QP
44	1.928	31.00	-15.00	46.00	30.72	0.09	0.19	AVERAGE
45	2.055	46.91	-9.09	56.00	46.62	0.09	0.20	QP
46	2.055	29.91	-16.09	46.00	29.62	0.09	0.20	AVERAGE
47	2.309	45.76	-10.24	56.00	45.46	0.10	0.20	QP
48	2.309	30.29	-15.71	46.00	29.99	0.10	0.20	AVERAGE
49	2.435	45.33	-10.67	56.00	45.03	0.10	0.20	QP
50	2.435	31.21	-14.79	46.00	30.91	0.10	0.20	AVERAGE
51	2.736	45.46	-10.54	56.00	45.15	0.11	0.20	QP
52	2.736	29.50	-16.50	46.00	29.19	0.11	0.20	AVERAGE
53	2.993	45.88	-10.12	56.00	45.56	0.12	0.20	QP
54	2.993	29.55	-16.45	46.00	29.23	0.12	0.20	AVERAGE
55	3.107	44.04	-11.96	56.00	43.69	0.12	0.22	QP
56	3.107	31.51	-14.49	46.00	31.16	0.12	0.22	AVERAGE
57	3.241	45.29	-10.71	56.00	44.92	0.12	0.25	QP
58	3.241	32.60	-13.40	46.00	32.23	0.12	0.25	AVERAGE
59	3.417	43.86	-12.14	56.00	43.45	0.13	0.28	QP
60	3.417	30.49	-15.51	46.00	30.08	0.13	0.28	AVERAGE
61	3.799	43.15	-12.85	56.00	42.71	0.14	0.30	QP
62	3.799	29.48	-16.52	46.00	29.04	0.14	0.30	AVERAGE
63	4.049	43.76	-12.24	56.00	43.32	0.14	0.30	QP
64	4.049	30.70	-15.30	46.00	30.26	0.14	0.30	AVERAGE
65	4.478	38.87	-17.13	56.00	38.40	0.17	0.30	QP
66	4.478	28.60	-17.40	46.00	28.13	0.17	0.30	AVERAGE

4.2.7. Test Result of Maximum Conducted Output Power

Temperature	24°C	Humidity	60%
Test Engineer	Roy Huang	Configurations	Draft n
Test Date	Oct. 22, 2008		

Configuration Draft n MCS8 20MHz Ant. A

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	16.24	30.00	Complies
6	2437 MHz	17.02	30.00	Complies
11	2462 MHz	17.76	30.00	Complies

Configuration Draft n MCS8 20MHz Ant. B

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	14.59	30.00	Complies
6	2437 MHz	15.49	30.00	Complies
11	2462 MHz	16.27	30.00	Complies

Configuration Draft n MCS8 20MHz Ant. A + Ant. B

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	18.50	30.00	Complies
6	2437 MHz	19.33	30.00	Complies
11	2462 MHz	20.09	30.00	Complies

Configuration Draft n MCS8 40MHz Ant. A

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
3	2422 MHz	14.95	30.00	Complies
6	2437 MHz	15.93	30.00	Complies
9	2452 MHz	13.95	30.00	Complies

Configuration Draft n MCS8 40MHz Ant. B

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
3	2422 MHz	13.86	30.00	Complies
6	2437 MHz	14.57	30.00	Complies
9	2452 MHz	12.30	30.00	Complies

Configuration Draft n MCS8 40MHz Ant. A + Ant. B

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
3	2422 MHz	17.45	30.00	Complies
6	2437 MHz	18.31	30.00	Complies
9	2452 MHz	16.21	30.00	Complies

Temperature	24°C	Humidity	60%
Test Engineer	Roy Huang	Configurations	802.11b/g
Test Date	Oct. 22, 2008		

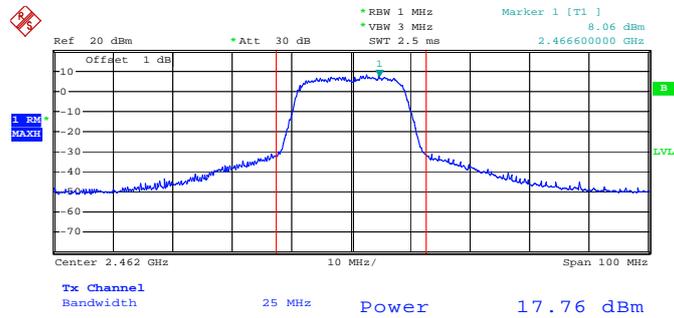
Configuration IEEE 802.11b Ant. A

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	17.12	30.00	Complies
6	2437 MHz	17.99	30.00	Complies
11	2462 MHz	16.10	30.00	Complies

Configuration IEEE 802.11g Ant. A

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	19.32	30.00	Complies
6	2437 MHz	18.57	30.00	Complies
11	2462 MHz	18.33	30.00	Complies

Conducted Output Power Plot on Configuration Draft n MCS8 20MHz Ant. A / 2462 MHz



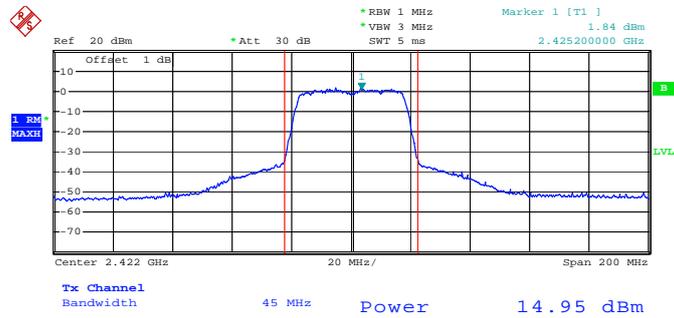
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Conducted Output Power Plot on Configuration Draft n MCS8 20MHz Ant. B / 2412 MHz



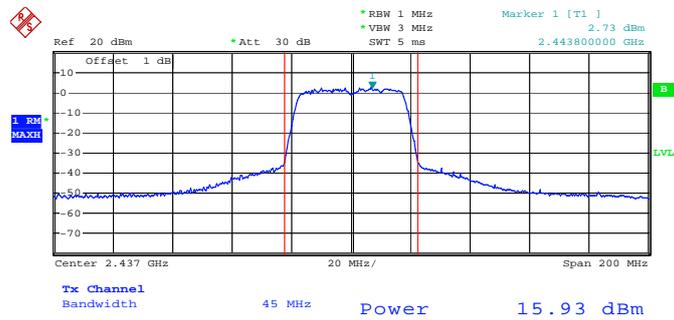
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Conducted Output Power Plot on Configuration Draft n MCS8 40MHz Ant. A / 2422 MHz



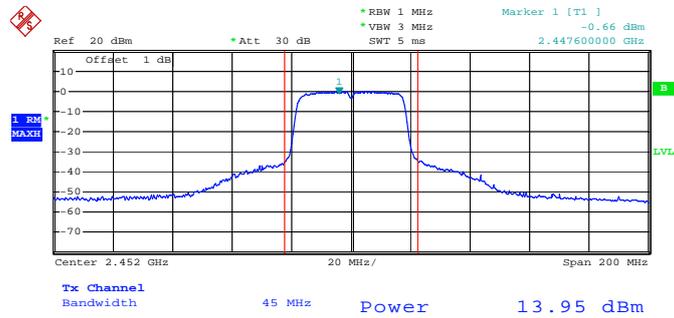
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Conducted Output Power Plot on Configuration Draft n MCS8 40MHz Ant. A / 2437 MHz



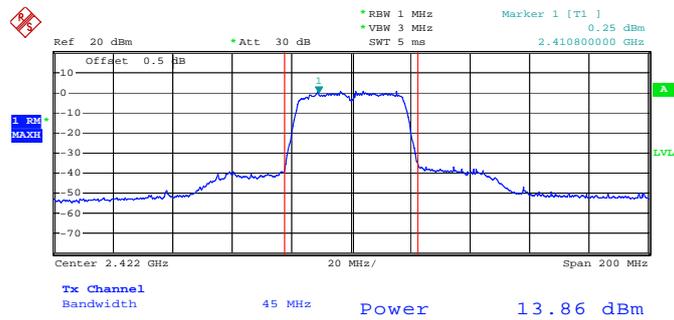
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Conducted Output Power Plot on Configuration Draft n MCS8 40MHz Ant. A / 2452 MHz



Date: 20.OCT.2008 21:13:42

Conducted Output Power Plot on Configuration Draft n MCS8 40MHz Ant. B / 2422 MHz



Date: 20.OCT.2008 20:59:59

Conducted Output Power Plot on Configuration IEEE 802.11b Ant. A / 2412 MHz



Date: 17.OCT.2008 23:34:45

Conducted Output Power Plot on Configuration IEEE 802.11b Ant. A / 2437 MHz



Date: 17.OCT.2008 23:44:10

4.3. Power Spectral Density Measurement

4.3.1. Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

4.3.2. Measuring Instruments and Setting

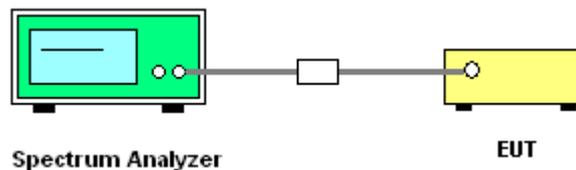
Please refer to section 5 of equipments list in this report. The following table is the setting of Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	30kHz
RB	3 kHz
VB	30 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	10s

4.3.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyser.
2. Set RBW of spectrum analyzer to 3kHz and VBW to 30kHz. Set Detector to Peak, Trace to Max Hold.
3. Mark the frequency with maximum peak power as the center of the display of the spectrum.
4. Set the span to 1.5MHz and the sweep time to 500s and record the maximum peak value.
5. Measuring multiple antennas, the connector is required to link with spectrum analyser through a combiner.

4.3.4. Test Setup Layout



4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.3.7. Test Result of Power Spectral Density

Temperature	24°C	Humidity	60%
Test Engineer	Roy Huang	Configurations	Draft n
Test Date	Oct. 22, 2008		

Configuration Draft n MCS8 20MHz Ant. A + Ant. B

Channel	Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	-7.30	8.00	Complies
6	2437 MHz	-8.36	8.00	Complies
11	2462 MHz	-5.03	8.00	Complies

Configuration Draft n MCS8 40MHz Ant. A + Ant. B

Channel	Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
3	2422 MHz	-19.68	8.00	Complies
6	2437 MHz	-5.99	8.00	Complies
9	2452 MHz	-19.03	8.00	Complies

Temperature	24°C	Humidity	60%
Test Engineer	Roy Huang	Configurations	802.11b/g
Test Date	Oct. 22, 2008		

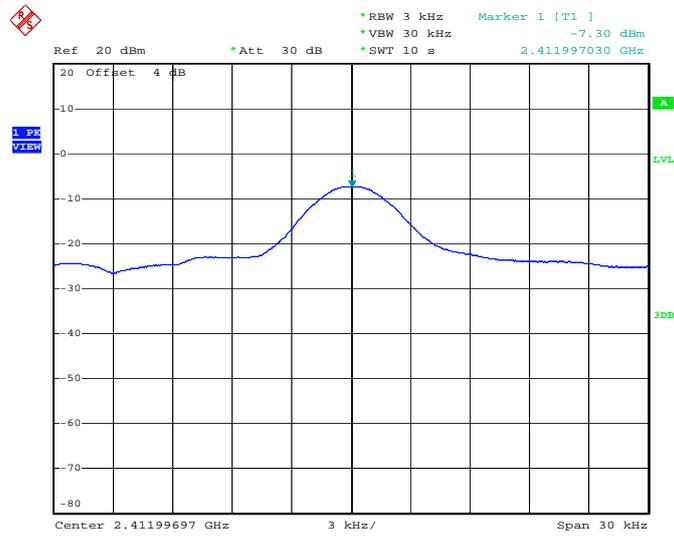
Configuration IEEE 802.11b Ant. A

Channel	Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	-10.51	8.00	Complies
6	2437 MHz	-16.32	8.00	Complies
11	2462 MHz	-12.24	8.00	Complies

Configuration IEEE 802.11g Ant. A

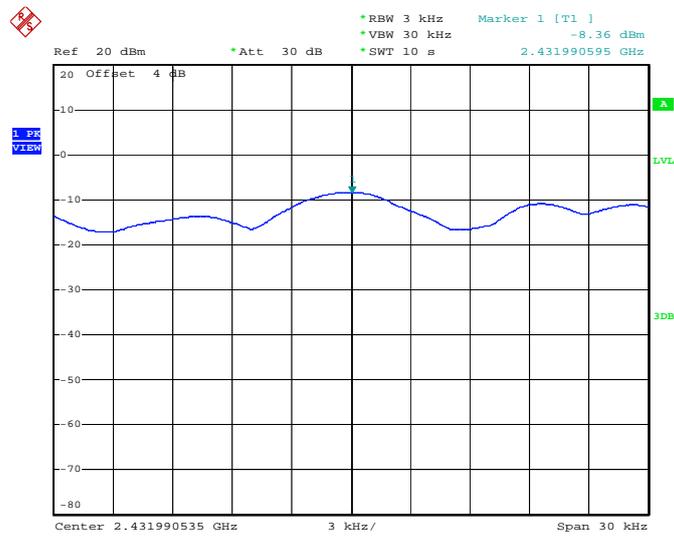
Channel	Frequency	Power Density (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	-8.30	8.00	Complies
6	2437 MHz	-10.87	8.00	Complies
11	2462 MHz	-8.91	8.00	Complies

Power Density Plot on Configuration Drafft n MCS8 20MHz Ant. A + Ant. B / 2412 MHz



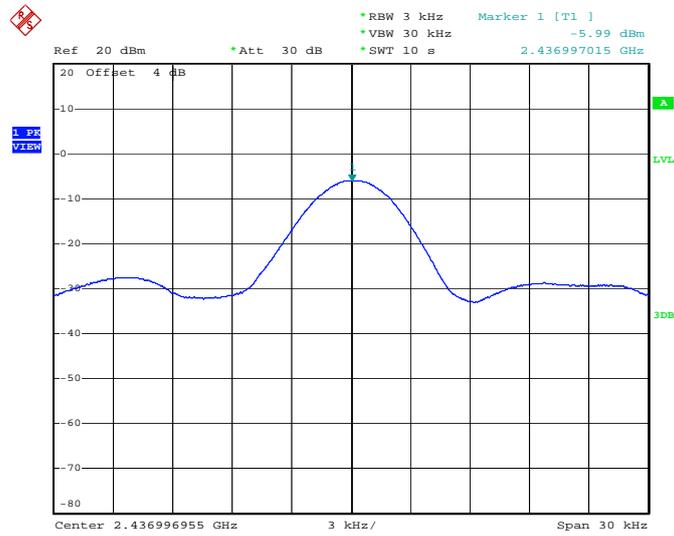
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Power Density Plot on Configuration Drafft n MCS8 20MHz Ant. A + Ant. B / 2437 MHz



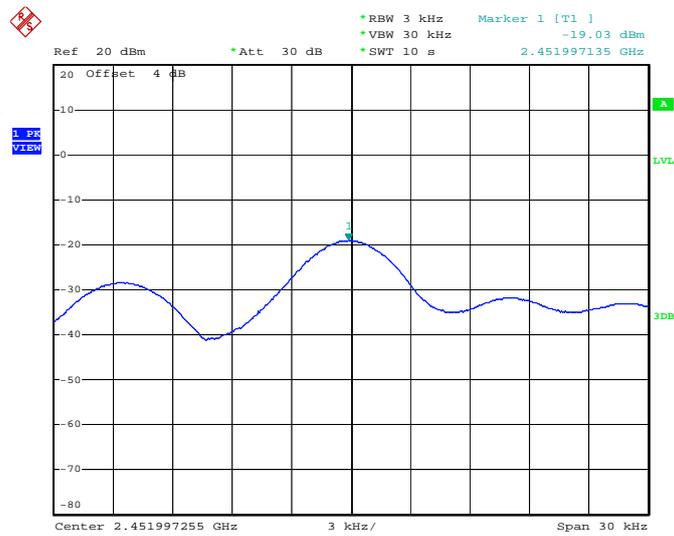
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Power Density Plot on Configuration Drafft n MCS8 40MHz Ant. A + Ant. B / 2437 MHz



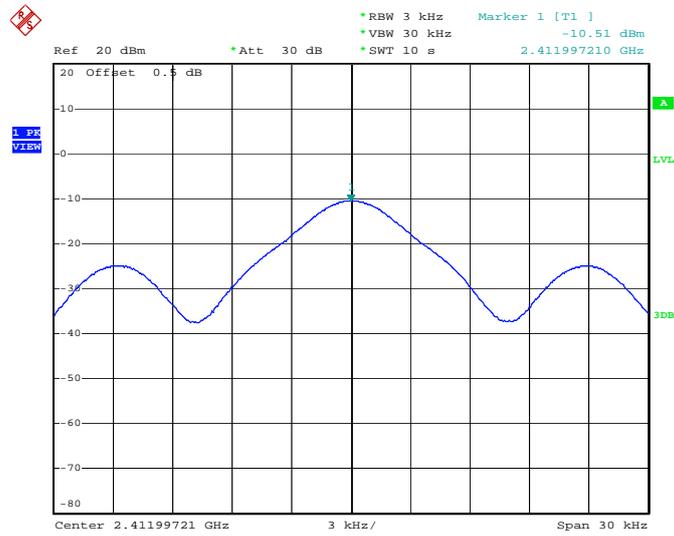
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Power Density Plot on Configuration Drafft n MCS8 40MHz Ant. A + Ant. B / 2452 MHz



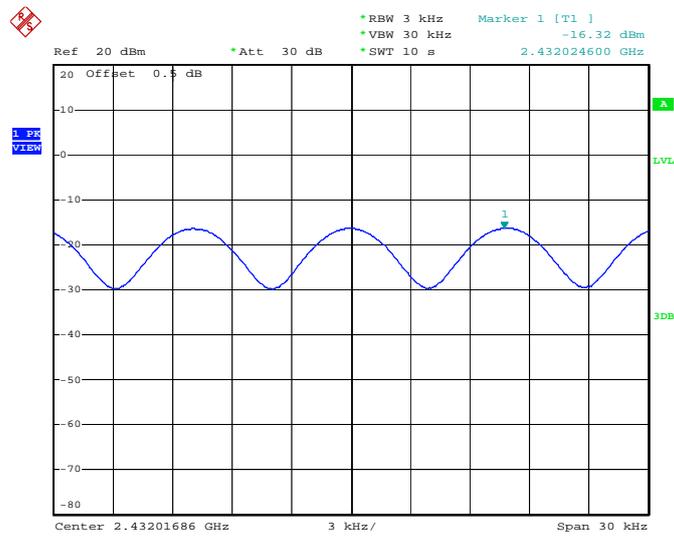
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Power Density Plot on Configuration IEEE 802.11b Ant. A / 2412 MHz



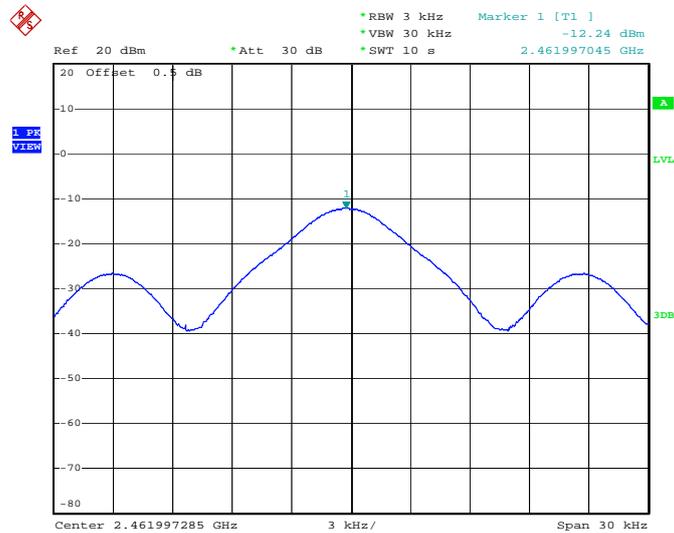
Date: 22.OCT.2008 15:45:41

Power Density Plot on Configuration IEEE 802.11b Ant. A / 2437 MHz



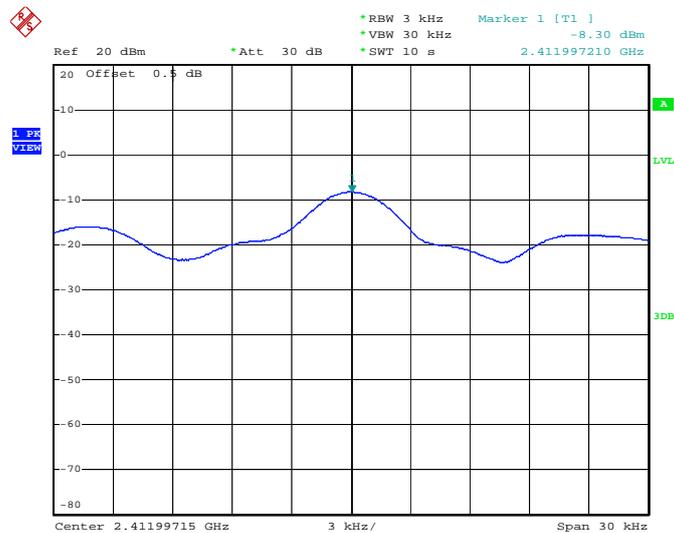
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Power Density Plot on Configuration IEEE 802.11b Ant. A / 2462 MHz



Date: 22.OCT.2008 15:52:11

Power Density Plot on Configuration IEEE 802.11g Ant. A / 2412 MHz



Date: 22.OCT.2008 15:54:58

4.4. 6dB Spectrum Bandwidth Measurement

4.4.1. Limit

For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

4.4.2. Measuring Instruments and Setting

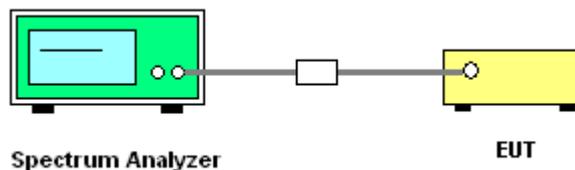
Please refer to section 5 of equipments list in this report. The following table is the setting of the Spectrum Analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 6dB Bandwidth
RB	100 kHz
VB	100 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.4.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
2. The resolution bandwidth of 100 kHz and the video bandwidth of 100 kHz were used.
3. Measured the spectrum width with power higher than 6dB below carrier.
4. Measuring multiple antennas, the connector is required to link with spectrum analyzer through a combiner.

4.4.4. Test Setup Layout



4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.4.7. Test Result of 6dB Spectrum Bandwidth

Temperature	24°C	Humidity	60%
Test Engineer	Roy Huang	Configurations	Draft n
Test Date	Oct. 22, 2008		

Configuration Draft n MCS8 20MHz Ant. A + Ant. B

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	15.28	17.40	500	Complies
6	2437 MHz	15.76	17.32	500	Complies
11	2462 MHz	14.76	17.32	500	Complies

Configuration Draft n MCS8 40MHz Ant. A + Ant. B

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
3	2422 MHz	36.40	36.08	500	Complies
6	2437 MHz	35.44	35.76	500	Complies
9	2452 MHz	35.52	35.68	500	Complies

Temperature	24°C	Humidity	60%
Test Engineer	Roy Huang	Configurations	802.11b/g
Test Date	Oct. 22, 2008		

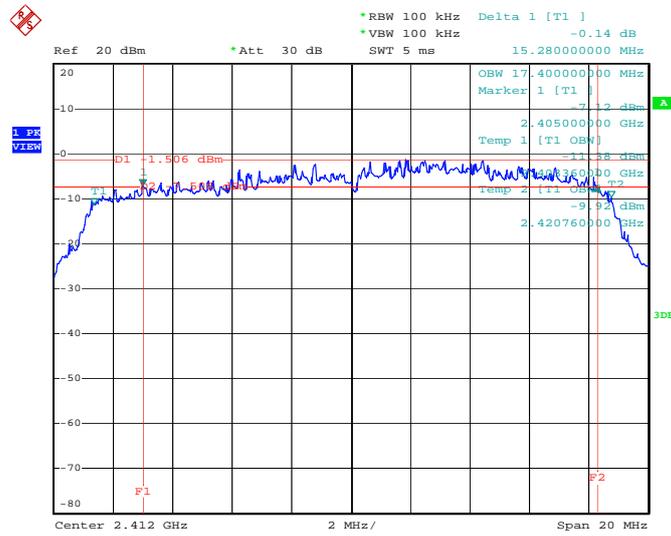
Configuration IEEE 802.11b Ant. A

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	12.12	14.96	500	Complies
6	2437 MHz	12.12	14.96	500	Complies
11	2462 MHz	12.08	15.00	500	Complies

Configuration IEEE 802.11g Ant. A

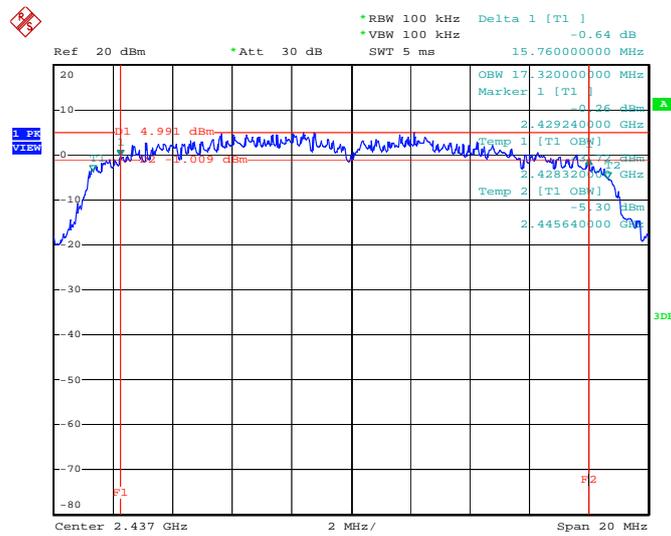
Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	16.40	16.48	500	Complies
6	2437 MHz	16.40	16.48	500	Complies
11	2462 MHz	16.40	16.44	500	Complies

6 dB Bandwidth Plot on Configuration Drafft n MCS8 20MHz Ant. A + Ant. B / 2412 MHz



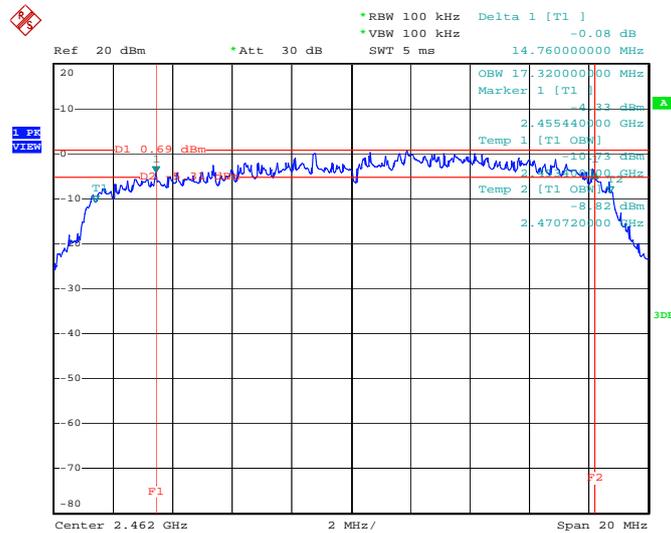
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6 dB Bandwidth Plot on Configuration Drafft n MCS8 20MHz Ant. A + Ant. B / 2437 MHz



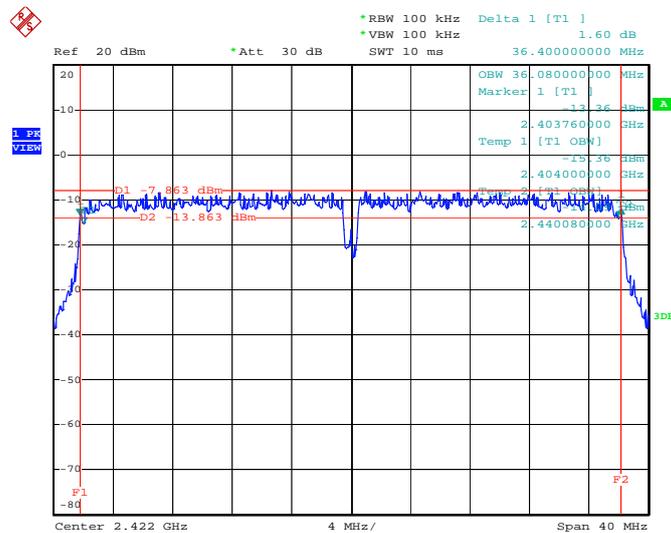
Date: 22.OCT.2008 15:18:00

6 dB Bandwidth Plot on Configuration Drafft n MCS8 20MHz Ant. A + Ant. B / 2462 MHz



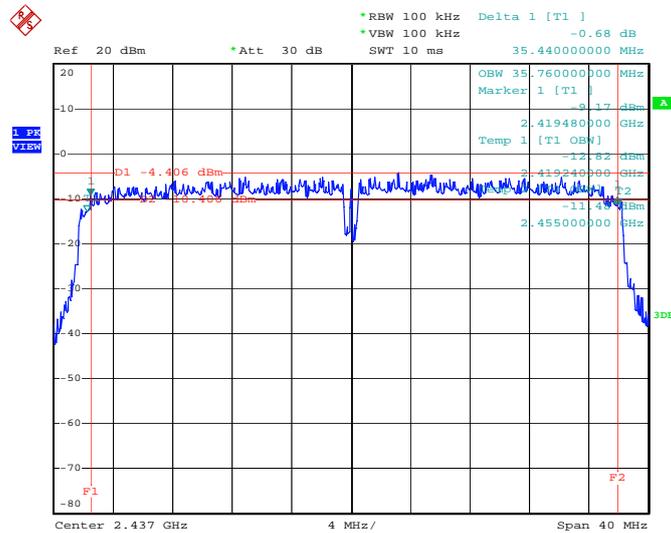
Date: 22.OCT.2008 15:20:45

6 dB Bandwidth Plot on Configuration Drafft n MCS8 40MHz Ant. A + Ant. B / 2422 MHz



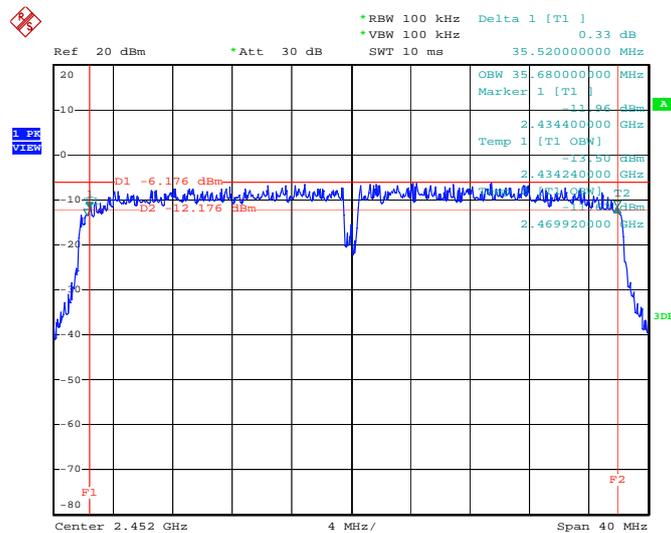
Date: 19.OCT.2008 14:15:45

6 dB Bandwidth Plot on Configuration Draft n MCS8 40MHz Ant. A + Ant. B / 2437 MHz



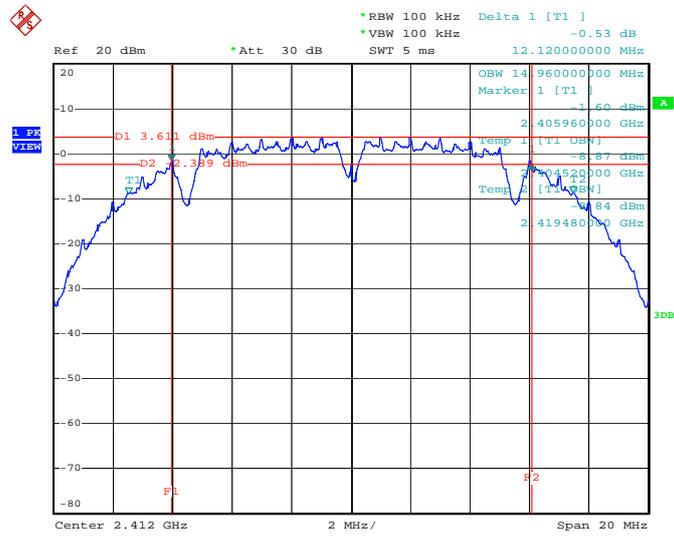
Date: 22.OCT.2008 15:26:31

6 dB Bandwidth Plot on Configuration Draft n MCS8 40MHz Ant. A + Ant. B / 2452 MHz



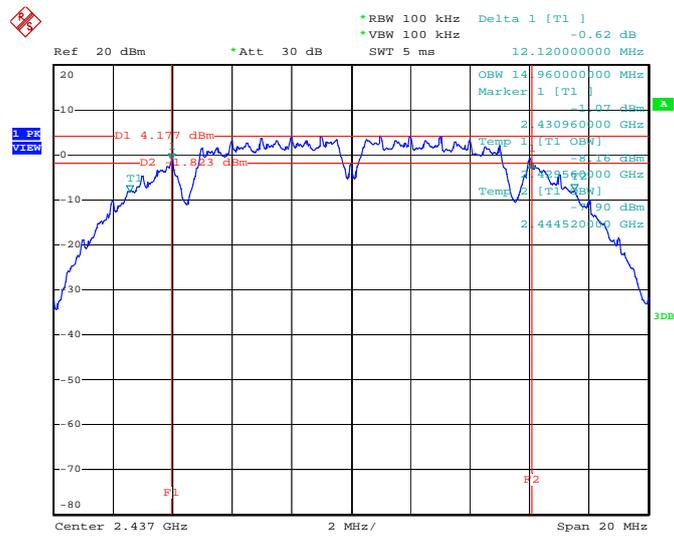
Date: 22.OCT.2008 15:30:36

6 dB Bandwidth Plot on Configuration IEEE 802.11b Ant. A / 2412 MHz



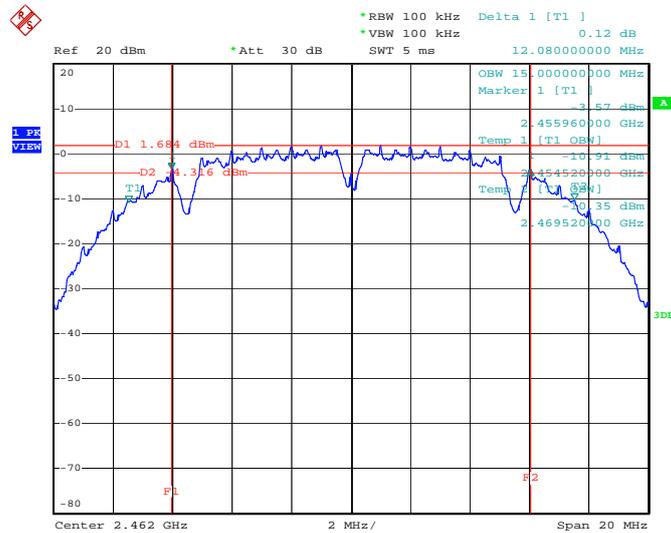
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6 dB Bandwidth Plot on Configuration IEEE 802.11b Ant. A / 2437 MHz



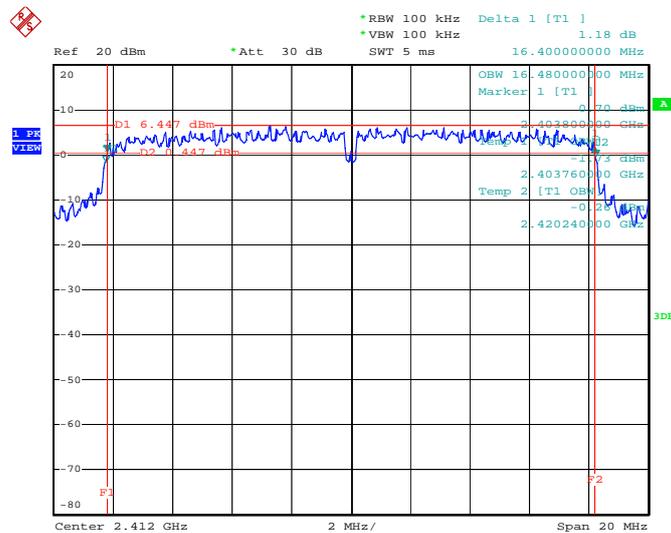
Date: 22.OCT.2008 15:46:58

6 dB Bandwidth Plot on Configuration IEEE 802.11b Ant. A / 2462 MHz



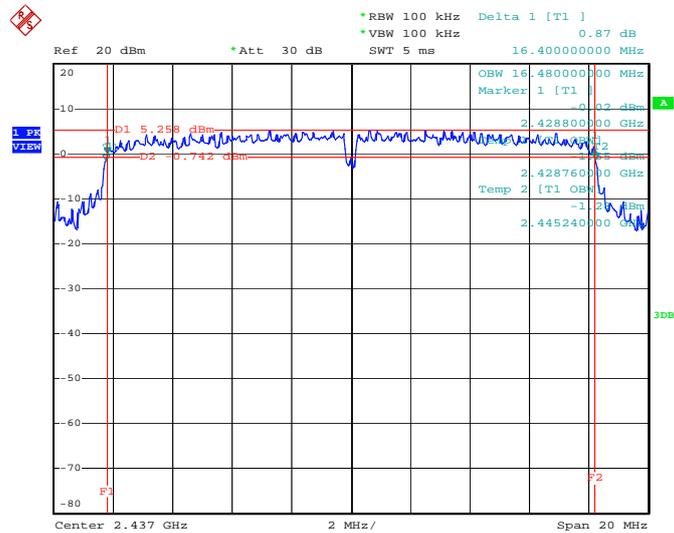
Date: 22.OCT.2008 15:50:44

6 dB Bandwidth Plot on Configuration IEEE 802.11g Ant. A / 2412 MHz



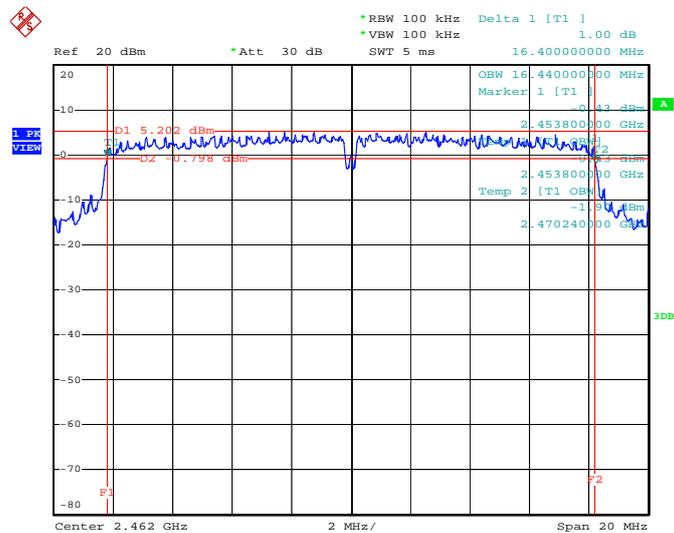
Date: 22.OCT.2008 15:53:31

6 dB Bandwidth Plot on Configuration IEEE 802.11g Ant. A / 2437 MHz



Date: 22.OCT.2008 15:56:38

6 dB Bandwidth Plot on Configuration IEEE 802.11g Ant. A / 2462 MHz



Date: 22.OCT.2008 15:59:33

4.5. Radiated Emissions Measurement

4.5.1. Limit

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

4.5.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	1000KHz / 1000KHz for peak

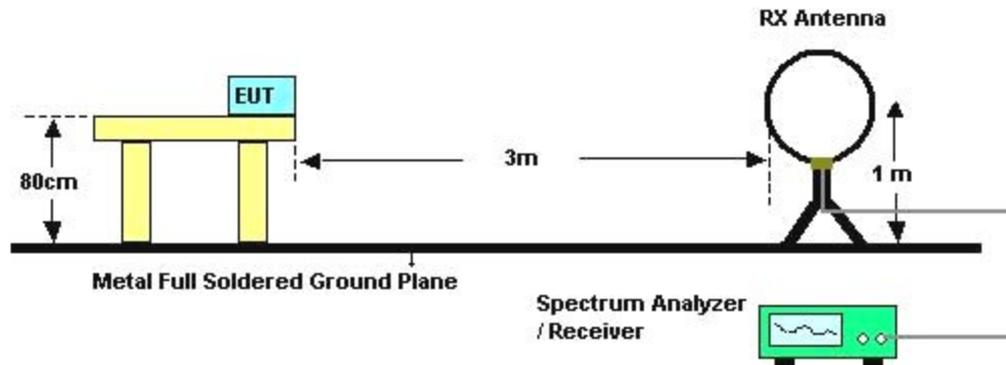
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

4.5.3. Test Procedures

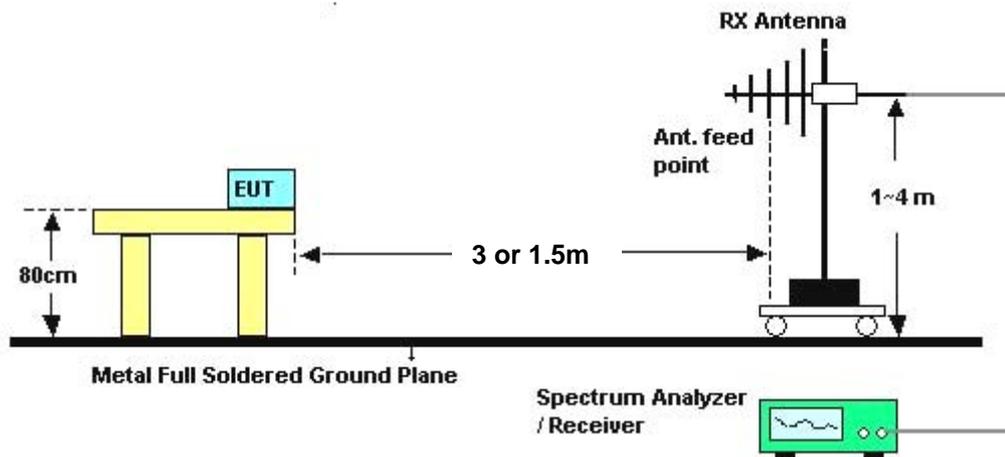
1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 m to 4 m) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

4.5.4. Test Setup Layout

For radiated emissions below 30MHz



For radiated emissions above 30MHz



Above 10 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1.5m.

Distance extrapolation factor = $20 \log (\text{specific distance [3m]} / \text{test distance [1.5m]})$ (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.5.7. Results of Radiated Emissions (9kHz~30MHz)

Temperature	25°C	Humidity	58%
Test Engineer	Jacky Ho	Configurations	Normal Link

Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

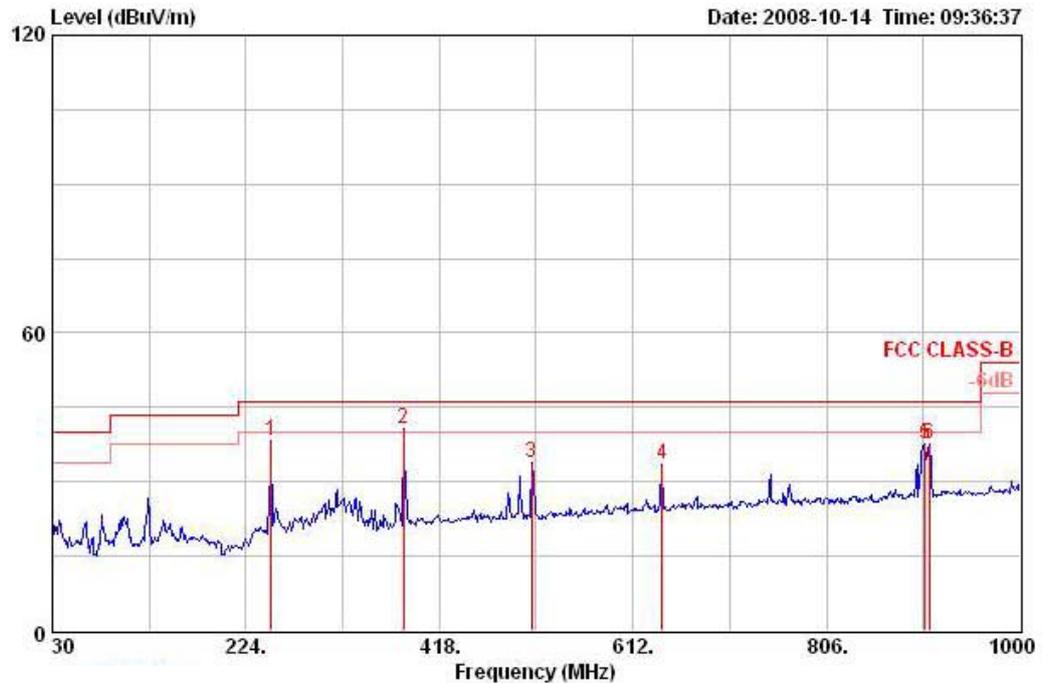
Distance extrapolation factor = $40 \log(\text{specific distance} / \text{test distance})$ (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

4.5.8. Results of Radiated Emissions (30MHz~1GHz)

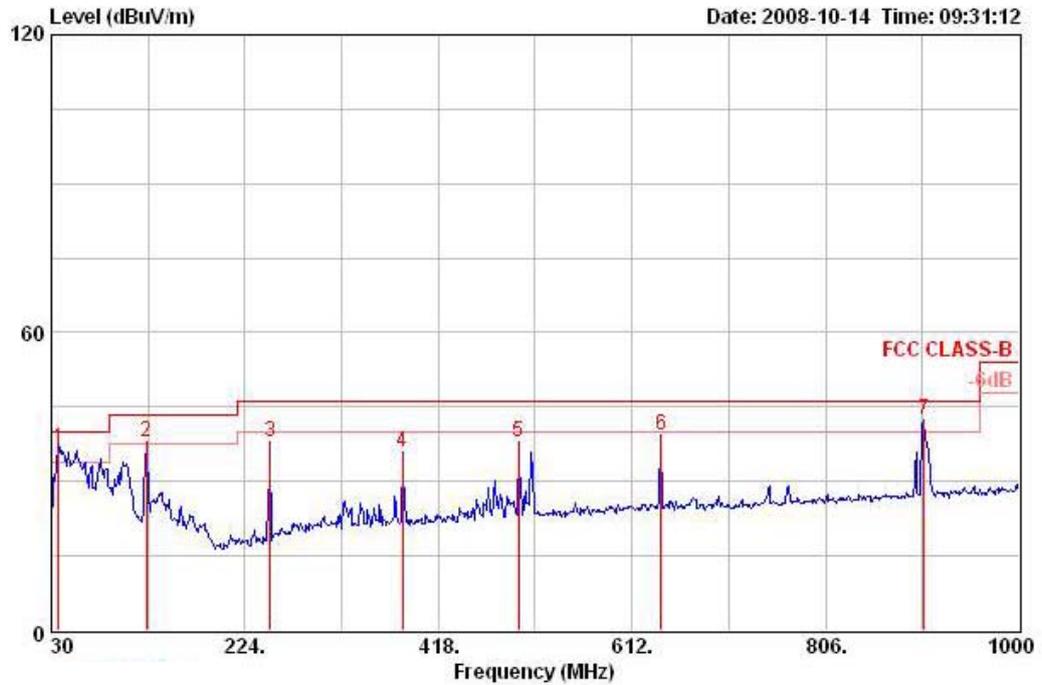
Temperature	25°C	Humidity	58%
Test Engineer	Jacky Ho	Configurations	Normal Link / Mode 1

Horizontal



	Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Remark	Pol/Phase	Table	Ant
	MHz	dBuV/m	Limit	Line	Level	Factor	Factor	Loss			Pos	Pos
			dB	dBuV/m	dBuV	dB/m	dB	dB			deg	cm
1	249.220	38.12	-7.88	46.00	50.53	12.70	27.00	1.90	Peak	HORIZONTAL	0	100
2	382.110	40.76	-5.24	46.00	50.38	15.59	27.47	2.26	Peak	HORIZONTAL	0	100
3	510.150	34.01	-11.99	46.00	41.65	17.74	28.10	2.72	Peak	HORIZONTAL	0	100
4	641.100	33.61	-12.39	46.00	39.62	18.90	28.06	3.15	Peak	HORIZONTAL	0	100
5	904.940	37.55	-8.45	46.00	40.77	20.57	27.38	3.60	Peak	HORIZONTAL	0	100
6	908.820	37.51	-8.49	46.00	40.68	20.60	27.36	3.60	Peak	HORIZONTAL	0	100

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Remark	Pol/Phase	Table Pos	Ant Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB			deg	cm
1	37.000	36.67	-3.33	40.00	49.00	14.89	27.80	0.58	QP	VERTICAL	280	100
2	125.060	38.02	-5.48	43.50	52.03	12.21	27.48	1.25	Peak	VERTICAL	0	400
3	249.220	37.81	-8.19	46.00	50.22	12.70	27.00	1.90	Peak	VERTICAL	0	400
4	382.110	35.86	-10.14	46.00	45.48	15.59	27.47	2.26	Peak	VERTICAL	0	400
5	498.510	37.82	-8.18	46.00	45.62	17.60	28.09	2.70	Peak	VERTICAL	0	400
6	641.100	39.39	-6.61	46.00	45.40	18.90	28.06	3.15	Peak	VERTICAL	0	400
7	904.940	42.39	-3.61	46.00	45.60	20.57	27.38	3.60	Peak	VERTICAL	0	400

Note:

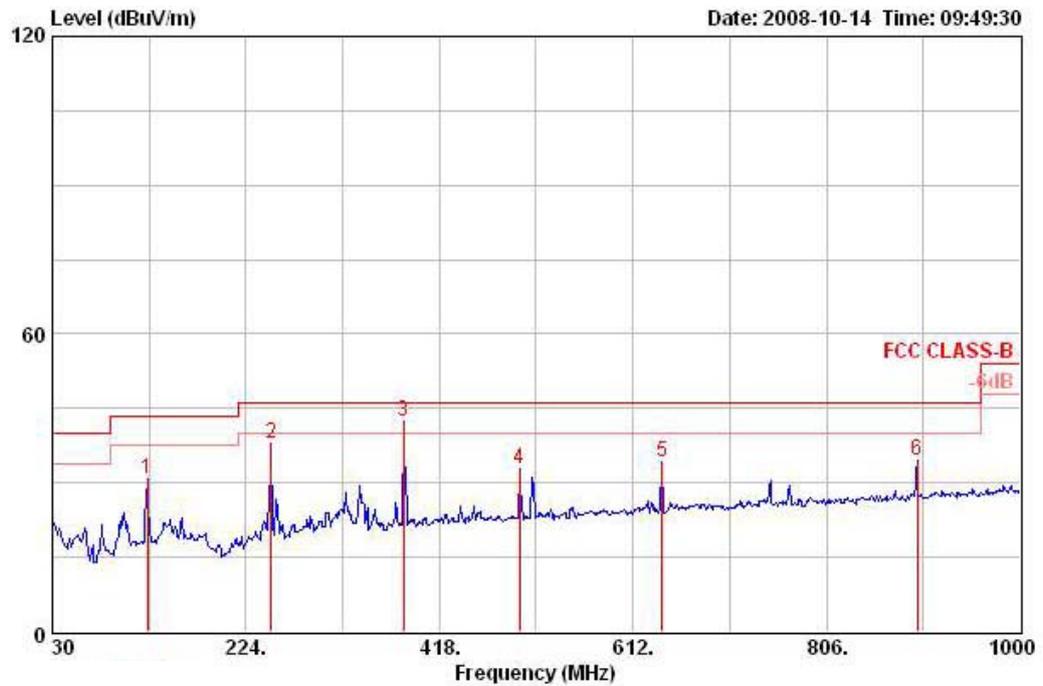
The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

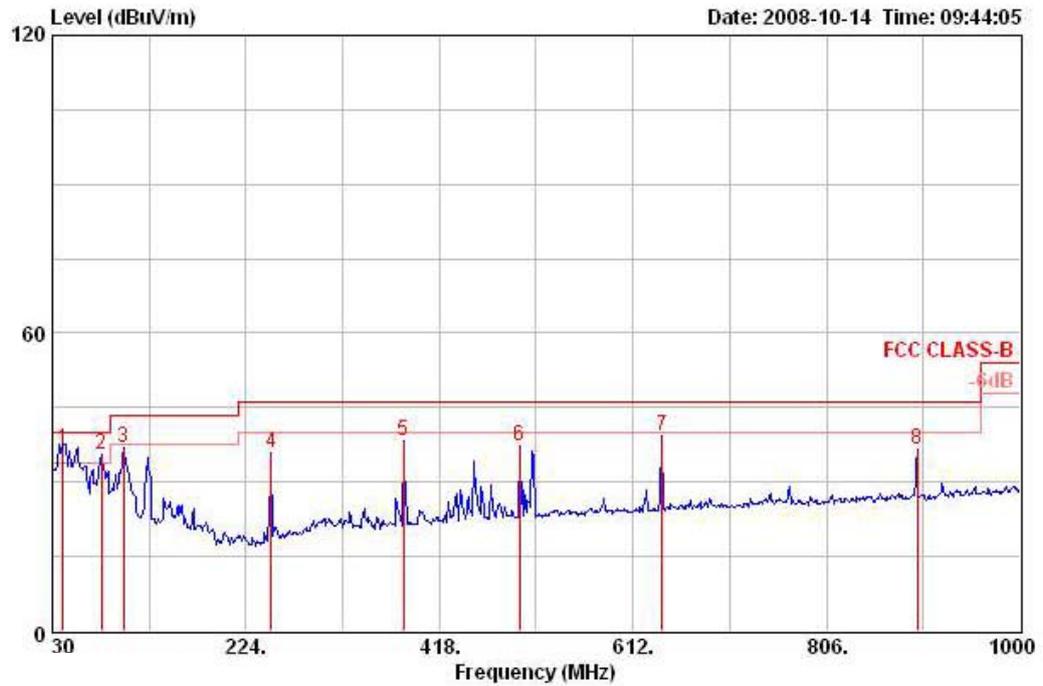
Temperature	25°C	Humidity	58%
Test Engineer	Jacky Ho	Configurations	Normal Link / Mode 2

Horizontal



	Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Remark	Pol/Phase	Table	Ant
	MHz	dBuV/m	Limit	Line	Level	Factor	Factor	Loss			Pos	Pos
			dB	dBuV/m	dBuV	dB/m	dB	dB			deg	cm
1	125.060	30.91	-12.59	43.50	44.93	12.21	27.48	1.25	Peak	HORIZONTAL	0	100
2	249.220	37.86	-8.14	46.00	50.26	12.70	27.00	1.90	Peak	HORIZONTAL	0	100
3	382.110	42.33	-3.67	46.00	51.96	15.59	27.47	2.26	Peak	HORIZONTAL	0	100
4	498.510	32.94	-13.06	46.00	40.73	17.60	28.09	2.70	Peak	HORIZONTAL	0	100
5	641.100	34.07	-11.93	46.00	40.08	18.90	28.06	3.15	Peak	HORIZONTAL	0	100
6	897.180	34.58	-11.42	46.00	37.88	20.51	27.41	3.59	Peak	HORIZONTAL	0	100

Vertical



	Freq	Level	Over	Limit	Read	Antenna	Preamp	Cable	Remark	Pol/Phase	Table	Ant
	MHz	dBuV/m	Limit	Line	Level	Factor	Factor	Loss			Pos	Pos
			dB	dBuV/m	dBuV	dB/m	dB	dB			deg	cm
1 !	41.000	36.45	-3.55	40.00	51.00	12.55	27.80	0.70	QP	VERTICAL	129	100
2 !	79.470	35.68	-4.32	40.00	55.17	7.12	27.68	1.07	Peak	VERTICAL	0	400
3	101.780	37.07	-6.43	43.50	52.32	11.14	27.59	1.20	Peak	VERTICAL	0	400
4	249.220	35.92	-10.08	46.00	48.32	12.70	27.00	1.90	Peak	VERTICAL	0	400
5	382.110	38.12	-7.88	46.00	47.74	15.59	27.47	2.26	Peak	VERTICAL	0	400
6	498.510	37.30	-8.70	46.00	45.09	17.60	28.09	2.70	Peak	VERTICAL	0	400
7	641.100	39.34	-6.66	46.00	45.36	18.90	28.06	3.15	Peak	VERTICAL	0	400
8	897.180	36.53	-9.47	46.00	39.83	20.51	27.41	3.59	Peak	VERTICAL	0	400

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

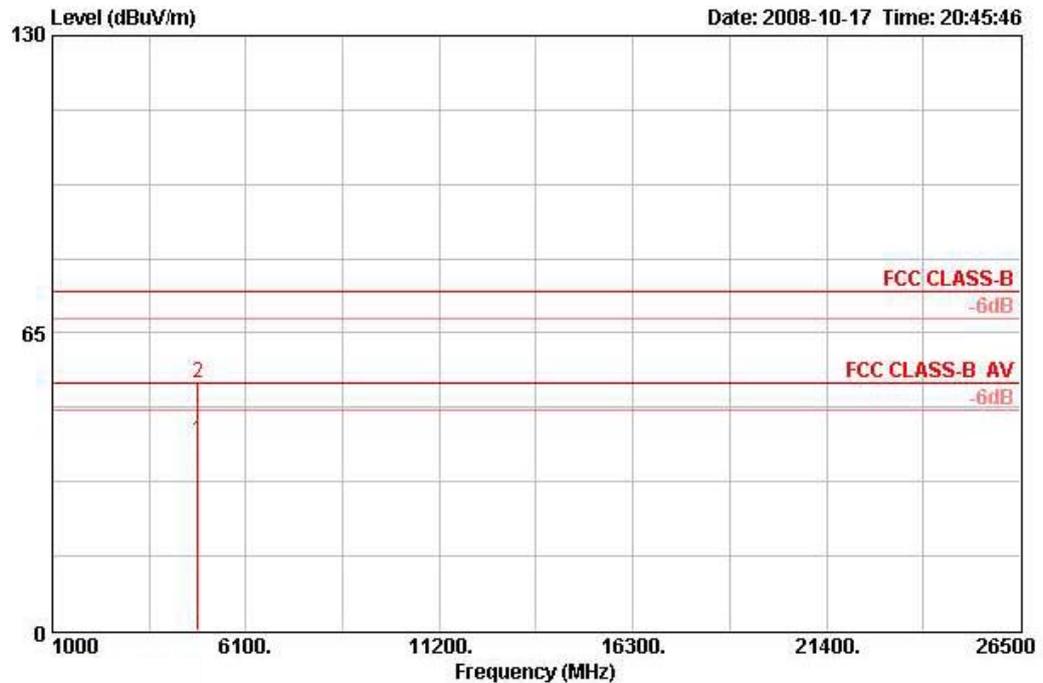
Emission level (dBUV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

4.5.9. Results for Radiated Emissions (1GHz~10th Harmonic)

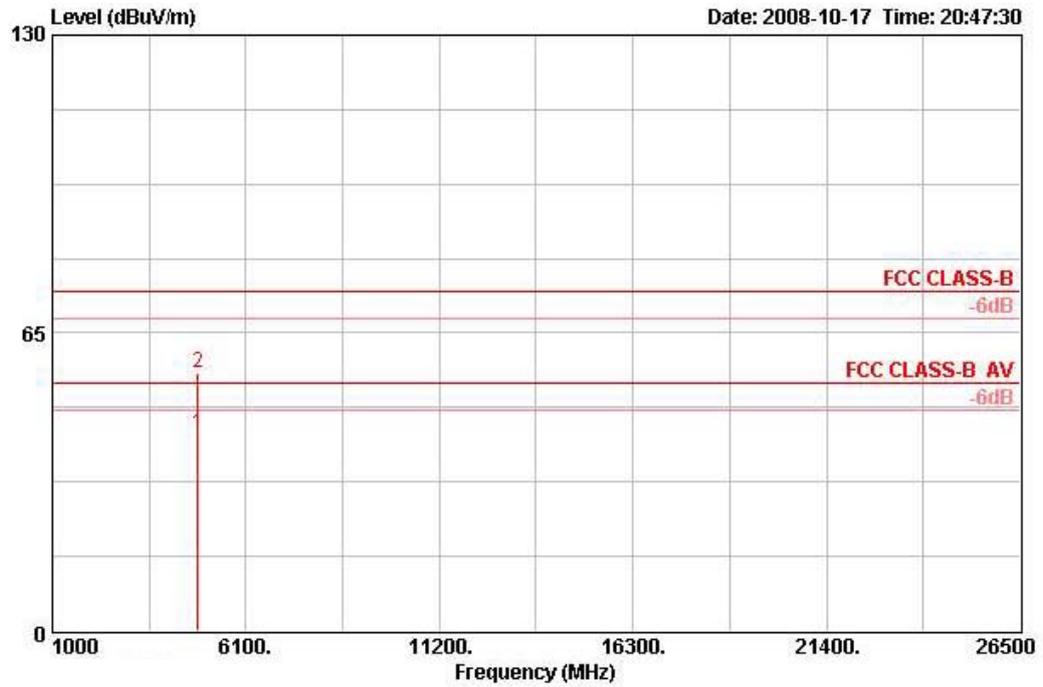
Temperature	25°C	Humidity	58%
Test Engineer	Jacky Ho	Configurations	Draft n MCS8 20MHz Ch 1 Ant. A + Ant. B

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBUV/m	dB	dBUV/m	dBuV	dB/m	dB	dB		cm	deg	
1	4823.700	41.49	-12.51	54.00	39.66	33.06	3.94	35.16	AVERAGE	156	249	HORIZONTAL
2	4824.500	54.13	-19.87	74.00	52.30	33.06	3.94	35.16	PEAK	156	249	HORIZONTAL

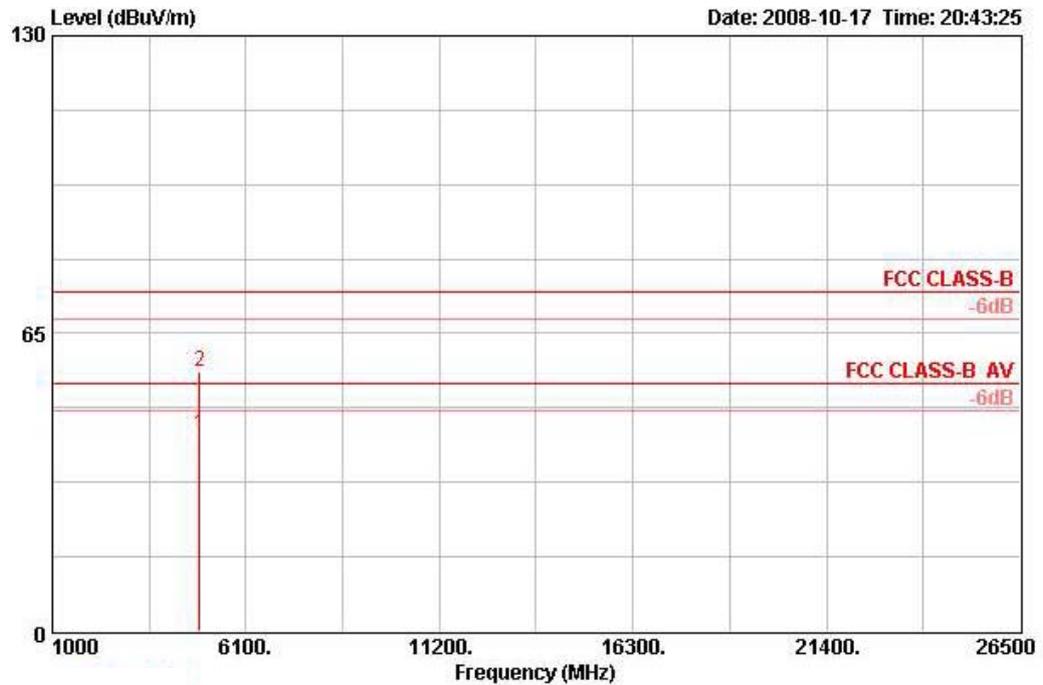
Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	4823.600	42.96	-11.04	54.00	41.13	33.06	3.94	35.16	AVERAGE	119	221	VERTICAL
2	4824.100	56.29	-17.71	74.00	54.46	33.06	3.94	35.16	PEAK	119	221	VERTICAL

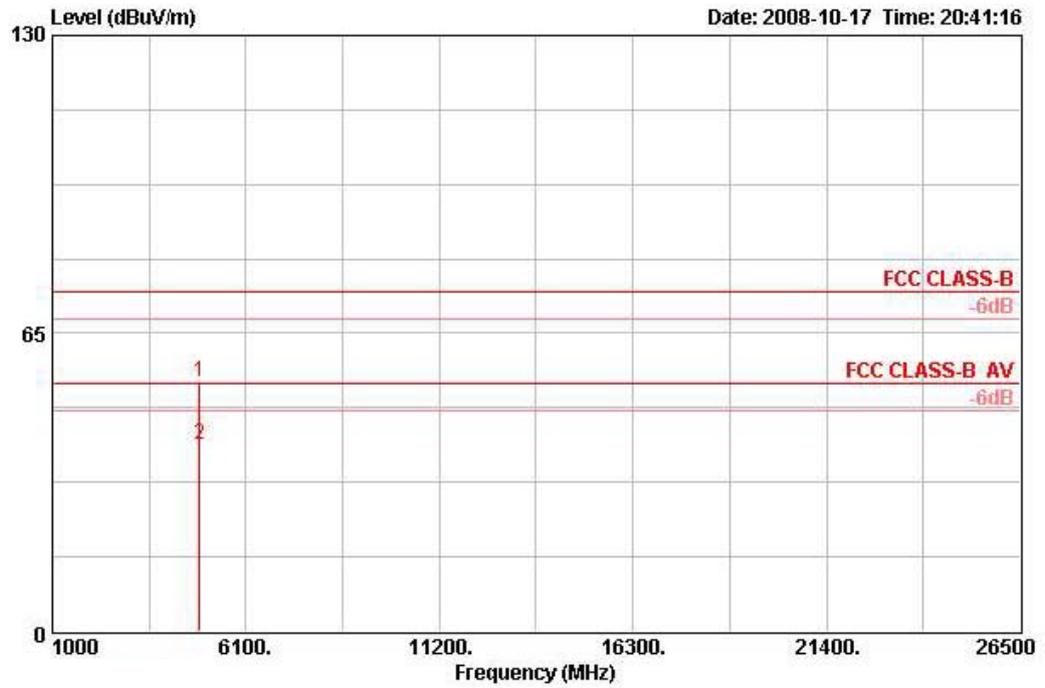
Temperature	25°C	Humidity	58%
Test Engineer	Jacky Ho	Configurations	Draft n MCS8 20MHz Ch 6 Ant. A + Ant. B

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	4873.900	42.88	-11.12	54.00	40.92	33.16	3.96	35.15	AVERAGE	176	247	HORIZONTAL
2	4874.200	56.67	-17.33	74.00	54.70	33.16	3.96	35.15	PEAK	176	247	HORIZONTAL

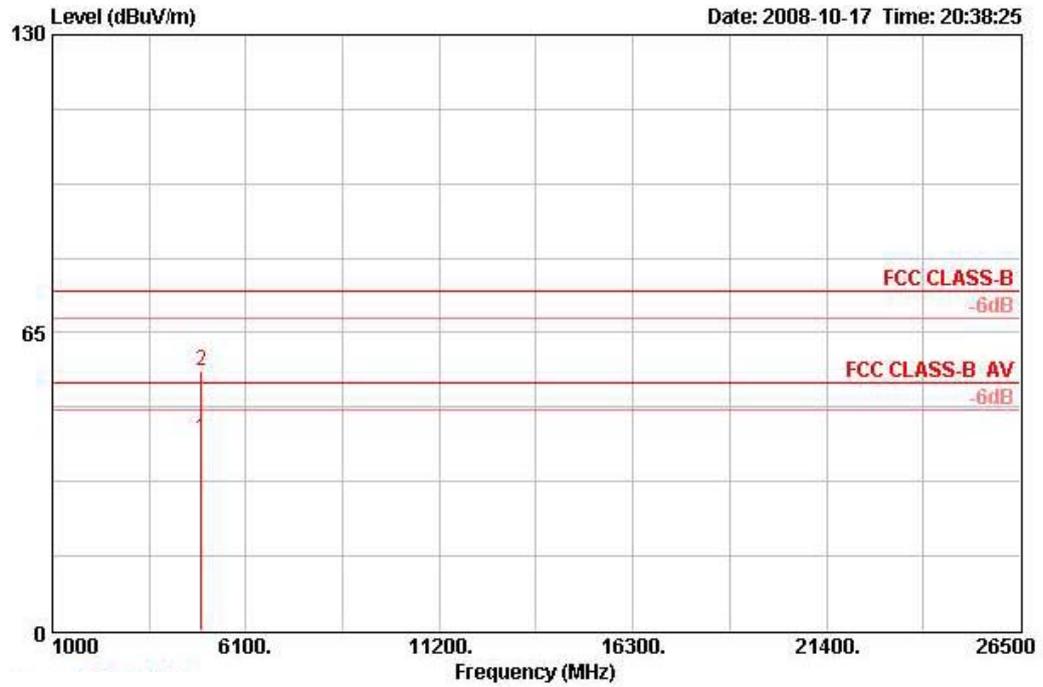
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	4873.400	54.51	-19.49	74.00	52.55	33.16	3.96	35.15	PEAK	102	260	VERTICAL
2	4873.800	40.71	-13.29	54.00	38.74	33.16	3.96	35.15	AVERAGE	102	260	VERTICAL

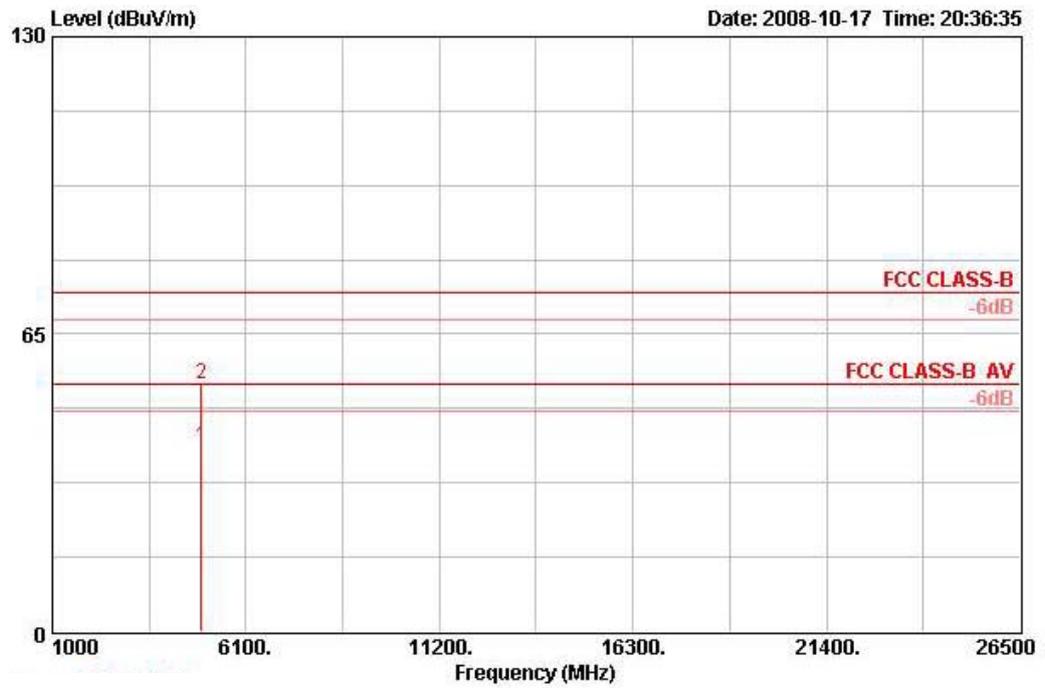
Temperature	25°C	Humidity	58%
Test Engineer	Jacky Ho	Configurations	Drafft n MCS8 20MHz Ch1 1 Ant. A + Ant. B

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	4924.500	41.73	-12.27	54.00	39.63	33.26	3.98	35.14	AVERAGE	173	238	HORIZONTAL
2	4924.700	56.52	-17.48	74.00	54.42	33.26	3.98	35.14	PEAK	173	238	HORIZONTAL

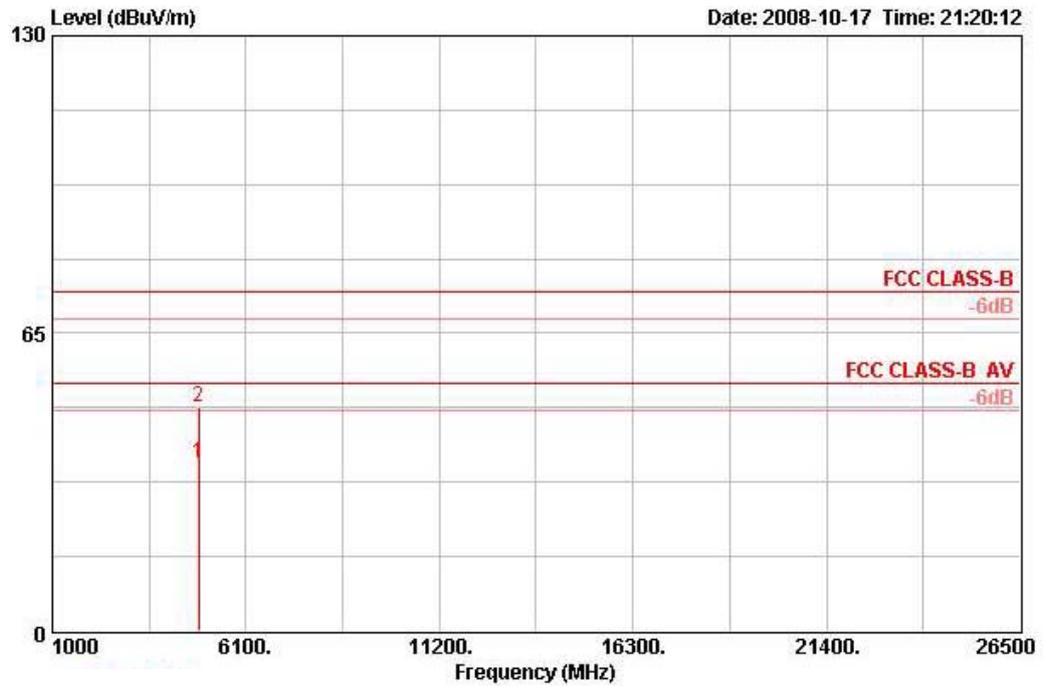
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	4923.600	40.52	-13.48	54.00	38.41	33.26	3.98	35.14	AVERAGE	147	191	VERTICAL
2	4924.400	53.96	-20.04	74.00	51.86	33.26	3.98	35.14	PEAK	147	191	VERTICAL

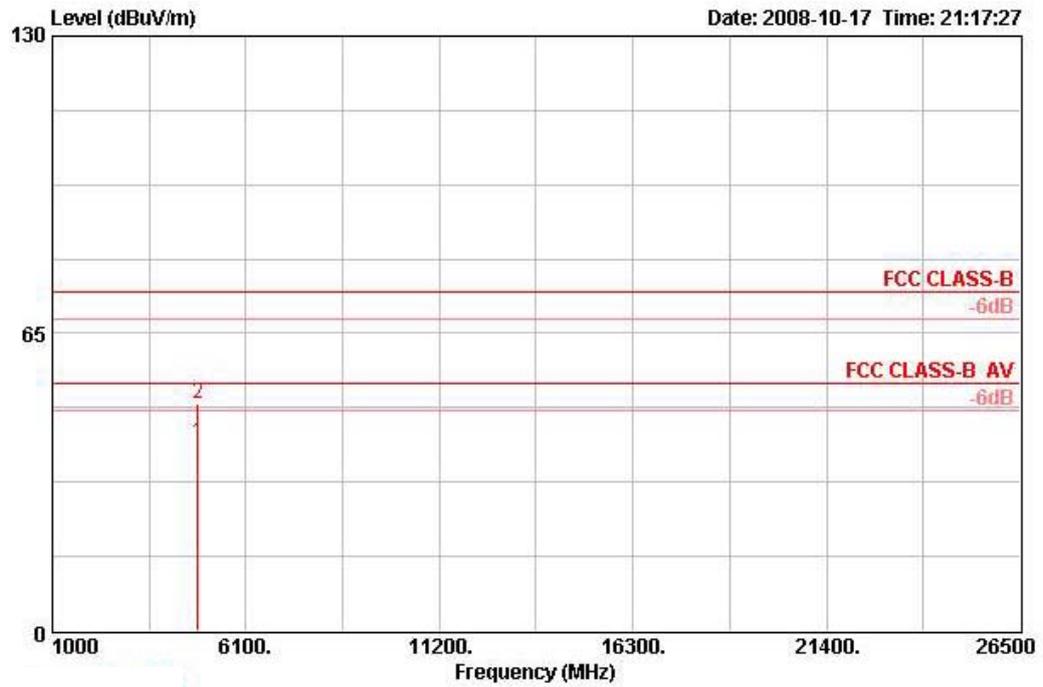
Temperature	25°C	Humidity	58%
Test Engineer	Jacky Ho	Configurations	Draft n MCS8 40MHz Ch 3 Ant. A + Ant. B

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	4847.400	36.51	-17.49	54.00	34.63	33.09	3.95	35.16	AVERAGE	172	244	HORIZONTAL
2	4849.100	48.93	-25.07	74.00	47.05	33.09	3.95	35.16	PEAK	172	244	HORIZONTAL

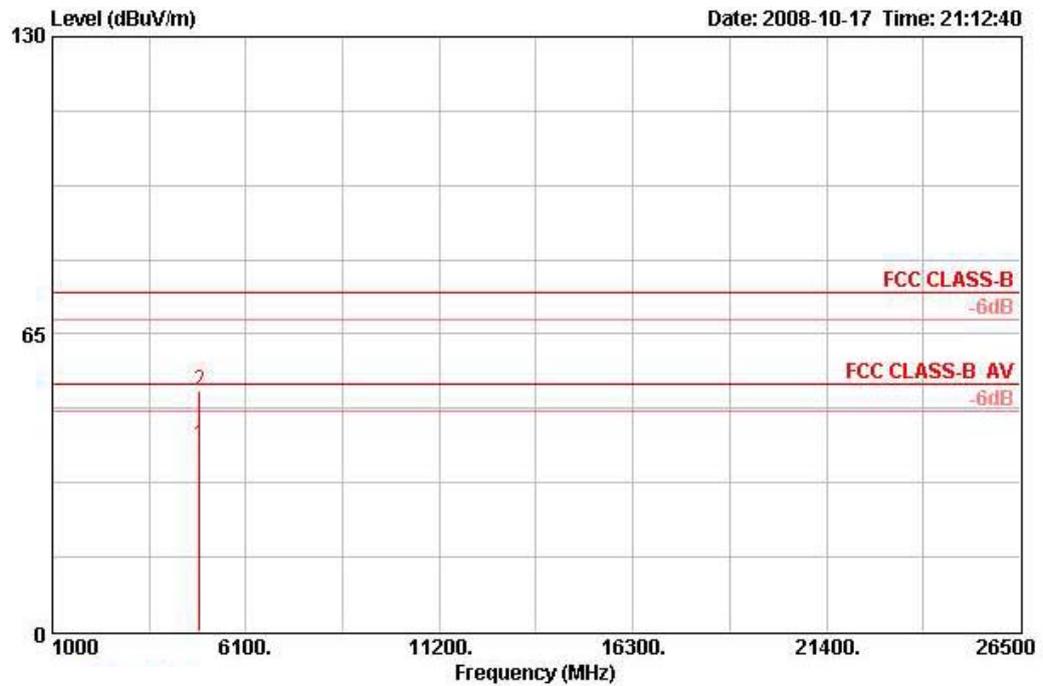
Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	4844.000	41.02	-12.98	54.00	39.15	33.09	3.95	35.16	AVERAGE	165	217	VERTICAL
2	4844.800	49.46	-24.54	74.00	47.58	33.09	3.95	35.16	PEAK	165	217	VERTICAL

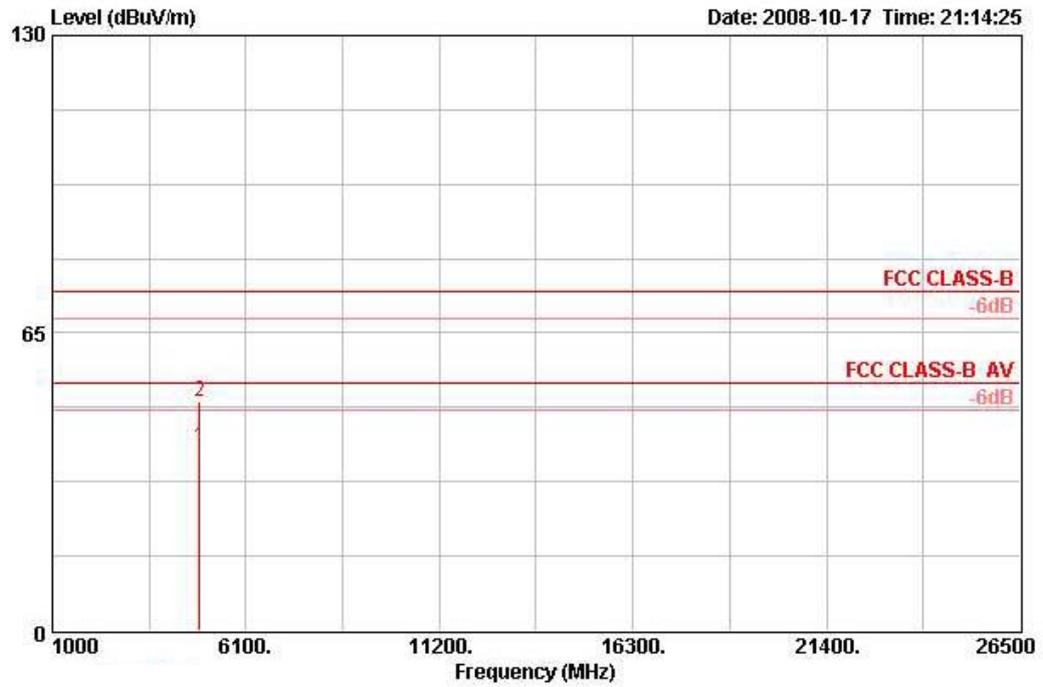
Temperature	25°C	Humidity	58%
Test Engineer	Jacky Ho	Configurations	Draft n MCS8 40MHz Ch 6 Ant. A + Ant. B

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	4874.600	40.64	-13.36	54.00	38.68	33.16	3.96	35.15	AVERAGE	162	251	HORIZONTAL
2	4876.800	52.76	-21.24	74.00	50.79	33.16	3.96	35.15	PEAK	162	251	HORIZONTAL

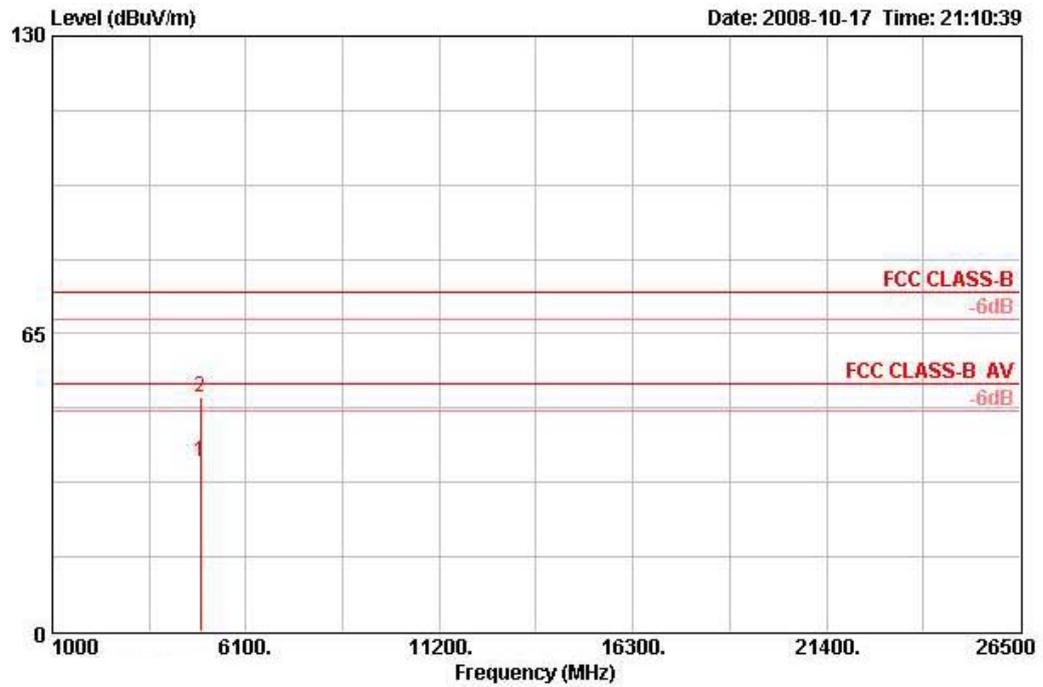
Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	4874.800	40.18	-13.82	54.00	38.21	33.16	3.96	35.15	AVERAGE	147	217	VERTICAL
2	4874.800	50.11	-23.89	74.00	48.15	33.16	3.96	35.15	PEAK	147	217	VERTICAL

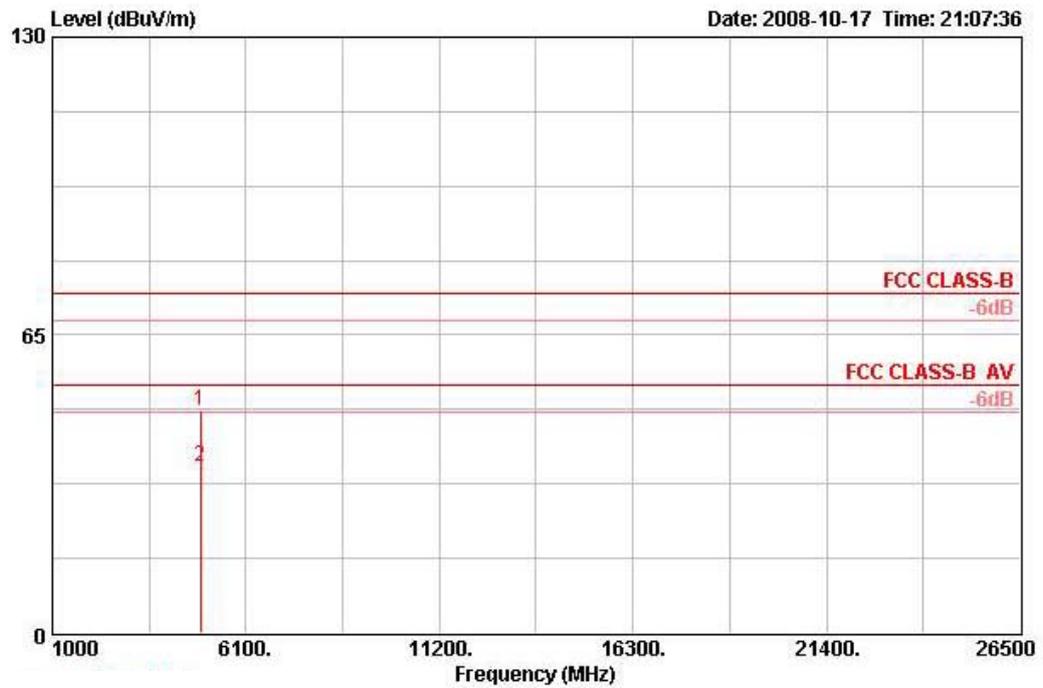
Temperature	25°C	Humidity	58%
Test Engineer	Jacky Ho	Configurations	Draft n MCS8 40MHz Ch 9 Ant. A + Ant. B

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	4904.200	37.05	-16.95	54.00	35.04	33.19	3.97	35.15	AVERAGE	174	243	HORIZONTAL
2	4904.400	50.99	-23.01	74.00	48.98	33.19	3.97	35.15	PEAK	174	243	HORIZONTAL

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Rnt Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	4903.200	48.50	-25.50	74.00	46.48	33.19	3.97	35.15	PEAK	148	209	VERTICAL
2	4904.200	36.25	-17.75	54.00	34.23	33.19	3.97	35.15	AVERAGE	148	209	VERTICAL

Note:

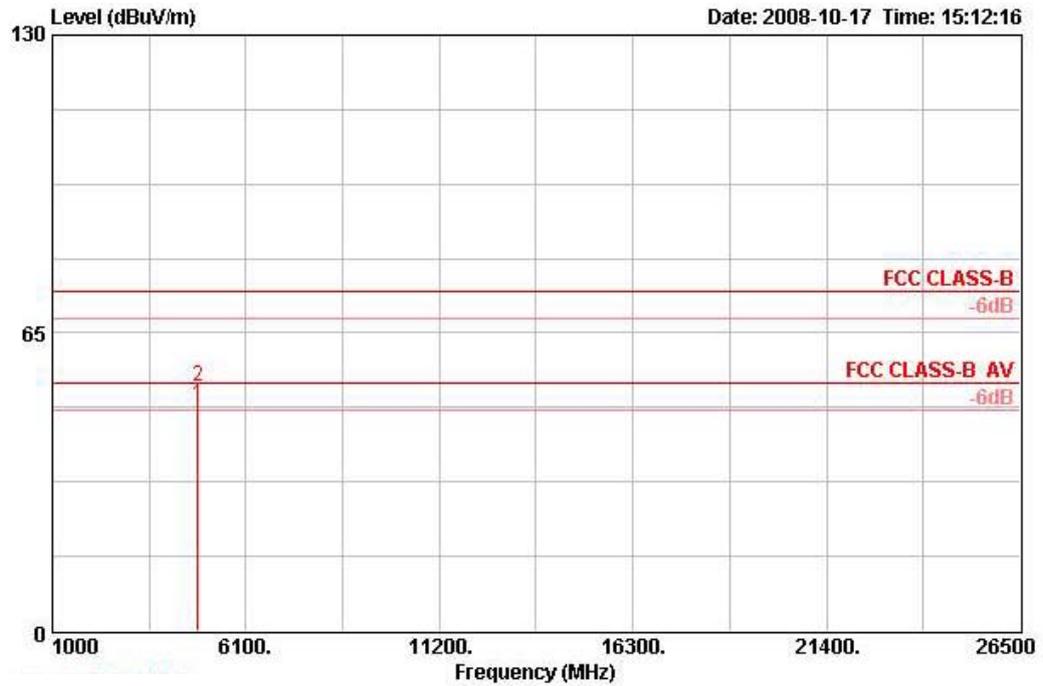
The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

Emission level (dBUV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

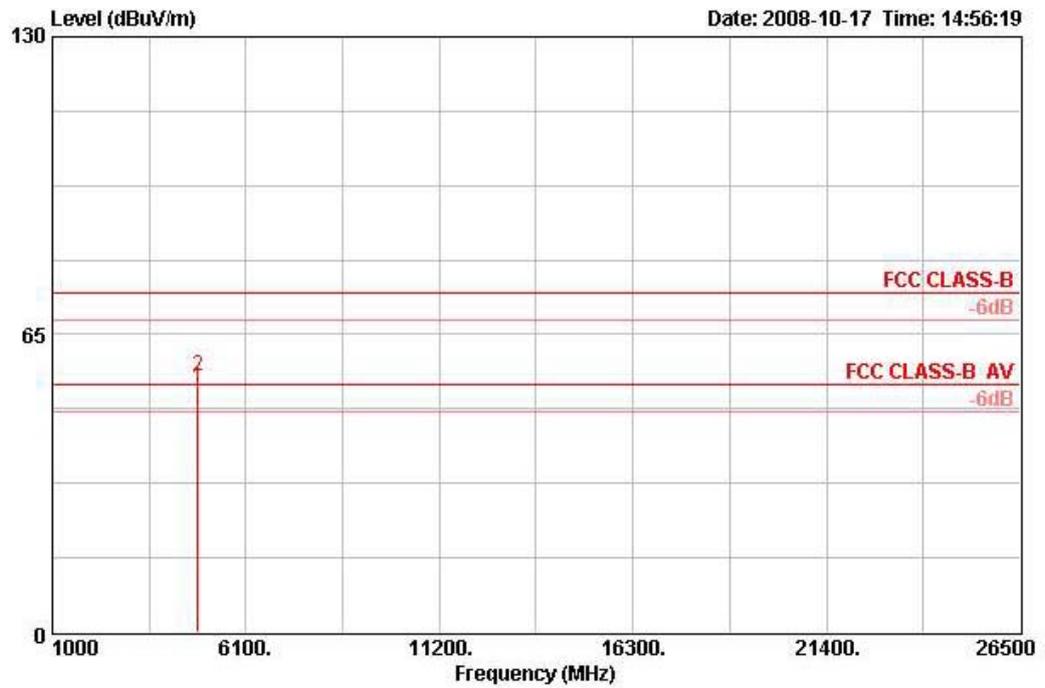
Temperature	25°C	Humidity	58%
Test Engineer	Jacky Ho	Configurations	802.11b CH 1 Ant. A

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBUV/m	dB	dBUV/m	dBuV	dB/m	dB	dB		cm	deg	
1	4824.010	49.32	-4.68	54.00	47.49	33.06	3.94	35.16	AVERAGE	133	253	HORIZONTAL
2	4824.130	53.30	-20.70	74.00	51.48	33.06	3.94	35.16	PEAK	133	253	HORIZONTAL

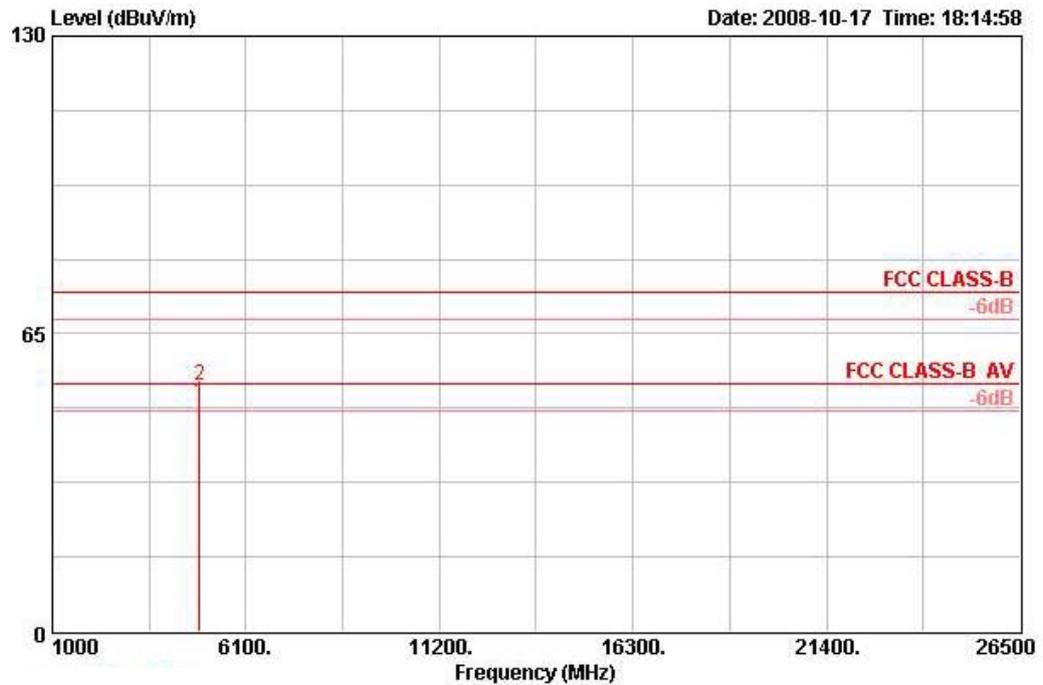
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	4823.990	53.51	-0.49	54.00	51.68	33.06	3.94	35.16	AVERAGE	133	195	VERTICAL
2	4824.050	55.87	-18.13	74.00	54.05	33.06	3.94	35.16	PEAK	133	195	VERTICAL

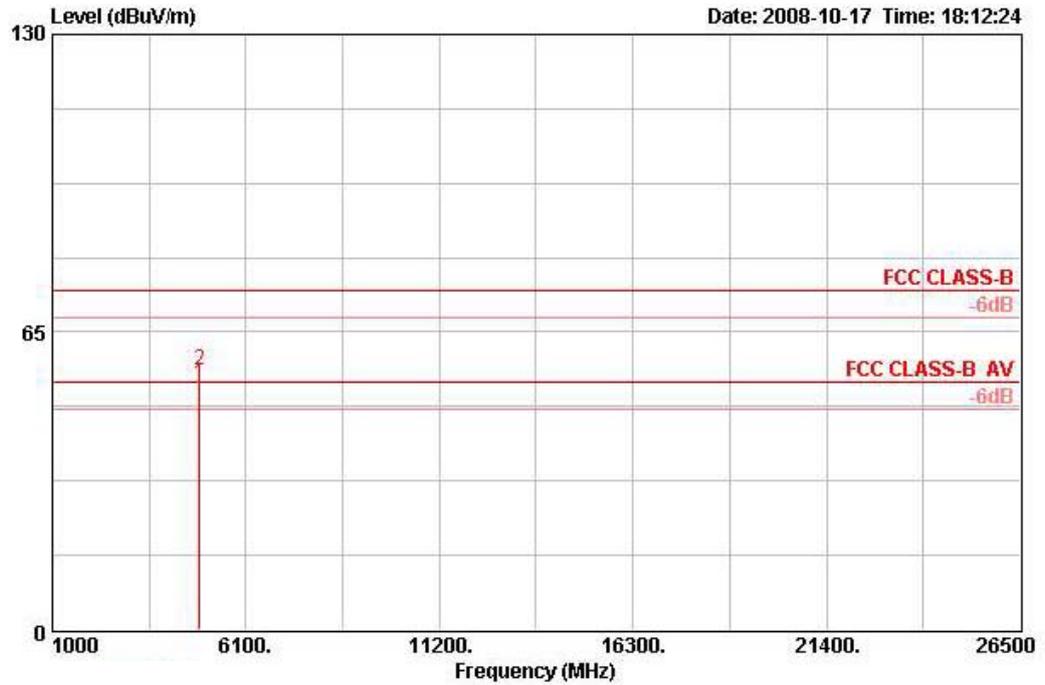
Temperature	25°C	Humidity	58%
Test Engineer	Jacky Ho	Configurations	802.11b CH 6 Ant. A

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	4874.030	49.91	-4.09	54.00	47.94	33.16	3.96	35.15	AVERAGE	153	248	HORIZONTAL
2	4874.030	53.75	-20.25	74.00	51.78	33.16	3.96	35.15	PEAK	153	248	HORIZONTAL

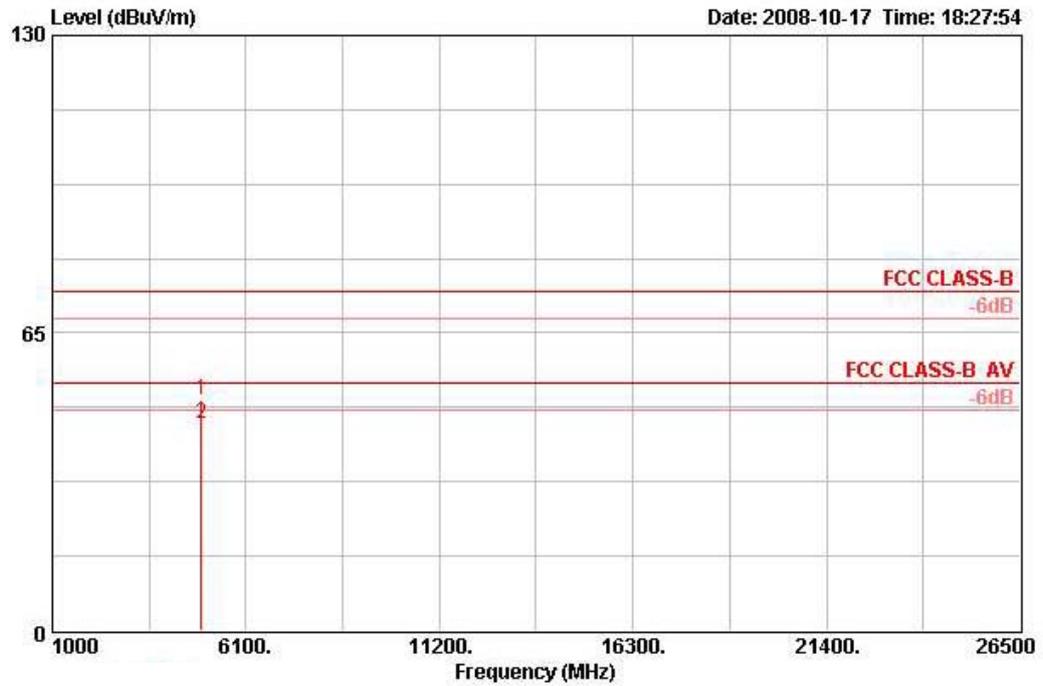
Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	4874.010	53.59	-0.41	54.00	51.62	33.16	3.96	35.15	AVERAGE	132	191	VERTICAL
2	4874.020	56.54	-17.46	74.00	54.58	33.16	3.96	35.15	PEAK	132	191	VERTICAL

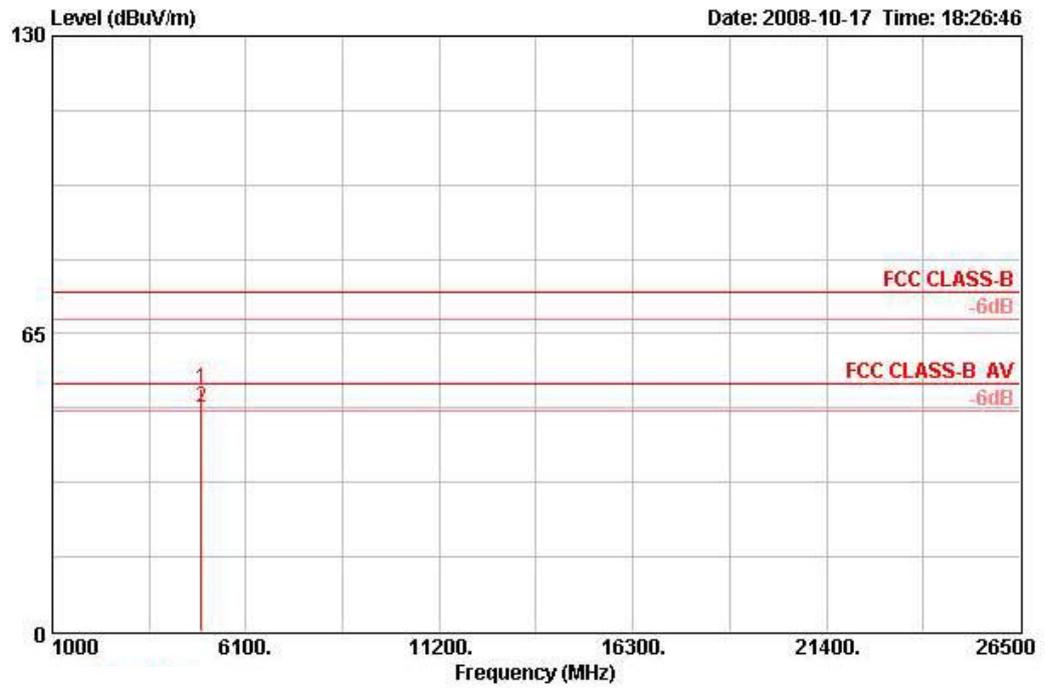
Temperature	25°C	Humidity	58%
Test Engineer	Jacky Ho	Configurations	802.11b CH 11 Ant. A

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBUV/m	dB	dBUV/m	dBuV	dB/m	dB	dB		cm	deg	
1	4923.920	50.55	-23.45	74.00	48.45	33.26	3.98	35.14	PEAK	152	249	HORIZONTAL
2	4923.970	45.14	-8.86	54.00	43.03	33.26	3.98	35.14	AVERAGE	152	249	HORIZONTAL

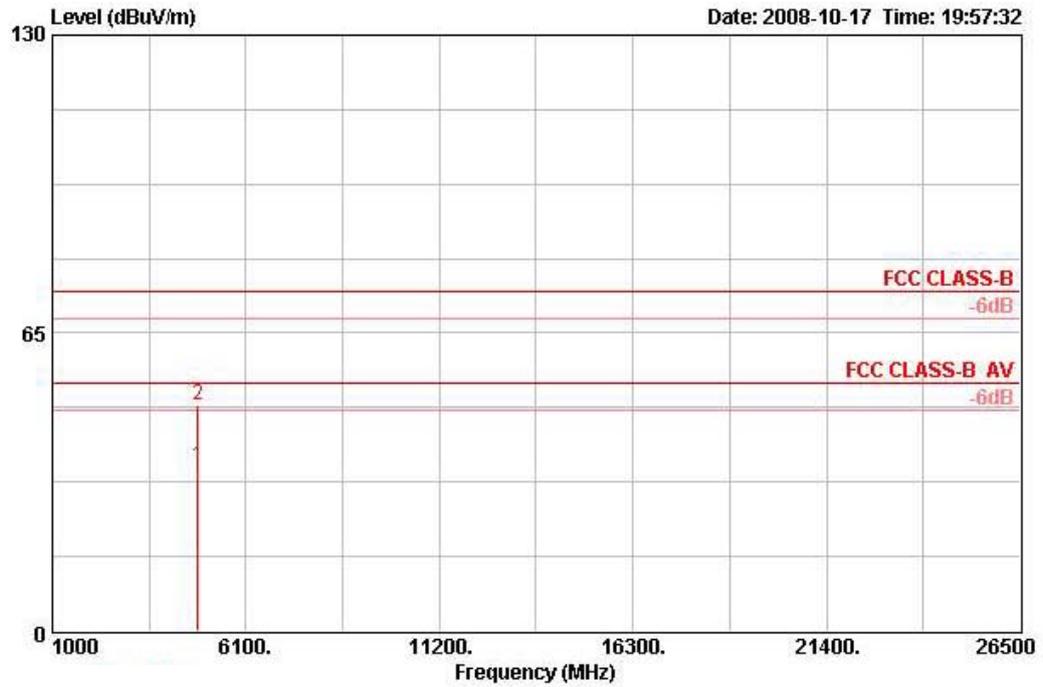
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	4923.950	52.93	-21.07	74.00	50.83	33.26	3.98	35.14	PEAK	116	192	VERTICAL
2	4924.050	48.78	-5.22	54.00	46.68	33.26	3.98	35.14	AVERAGE	116	192	VERTICAL

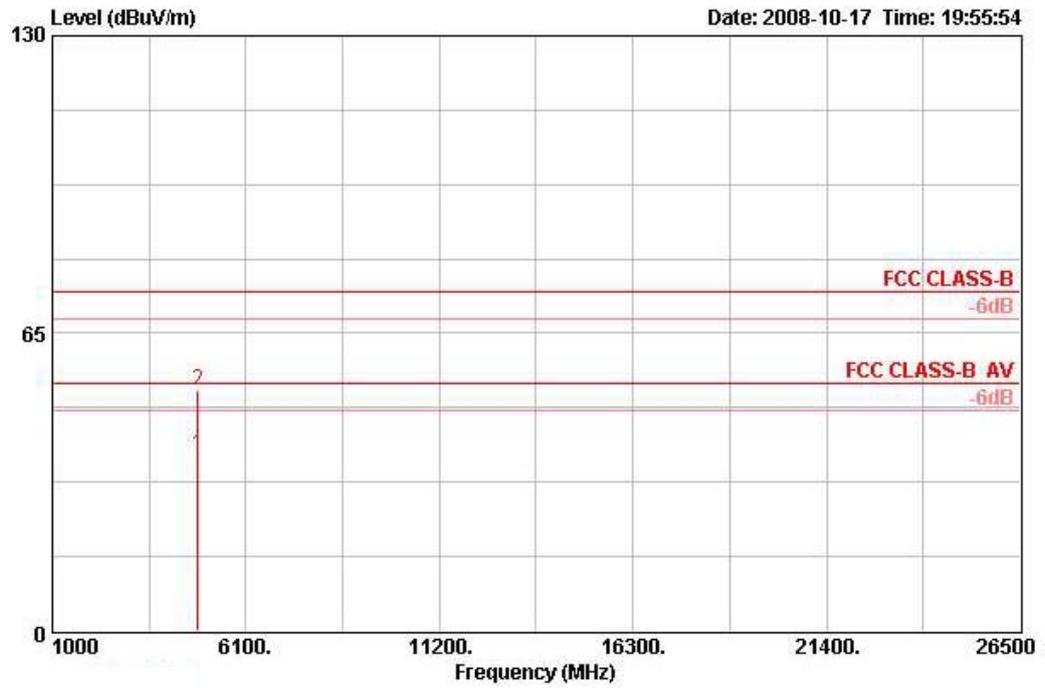
Temperature	25°C	Humidity	58%
Test Engineer	Jacky Ho	Configurations	802.11g CH 1 Ant. A

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	4824.200	35.78	-18.22	54.00	33.96	33.06	3.94	35.16	AVERAGE	158	275	HORIZONTAL
2	4826.800	49.26	-24.74	74.00	47.44	33.06	3.94	35.16	PEAK	158	275	HORIZONTAL

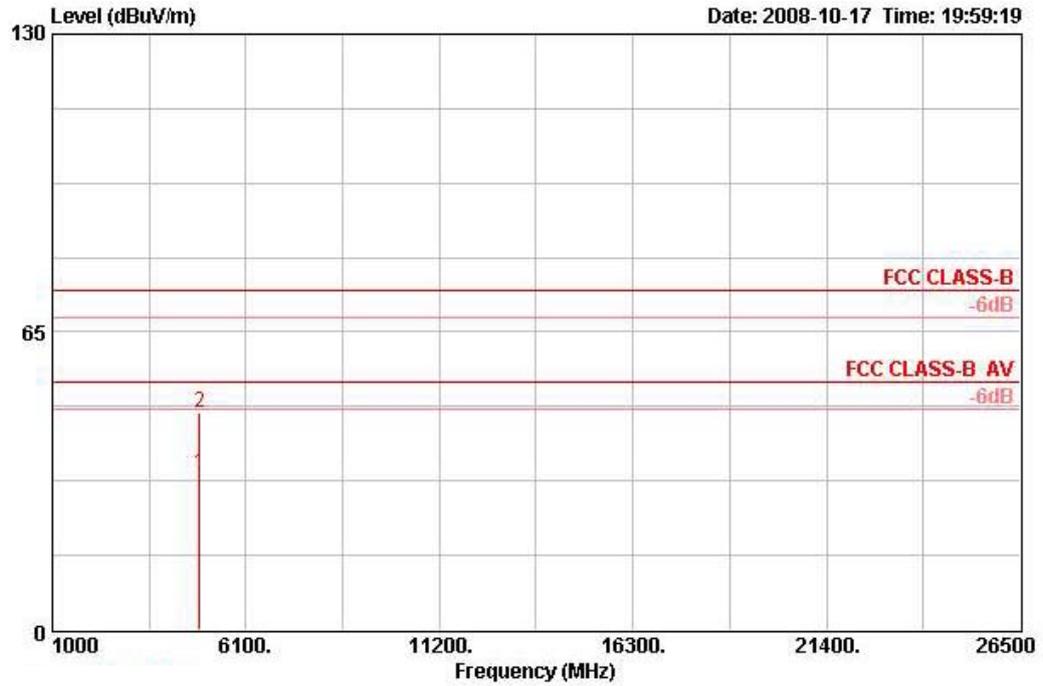
Vertical



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBUV/m	dB	dBUV/m	dBuV	dB/m	dB	dB		cm	deg	
1	4823.900	38.51	-15.49	54.00	36.68	33.06	3.94	35.16	AVERAGE	164	206	VERTICAL
2	4827.100	52.52	-21.48	74.00	50.69	33.06	3.94	35.16	PEAK	164	206	VERTICAL

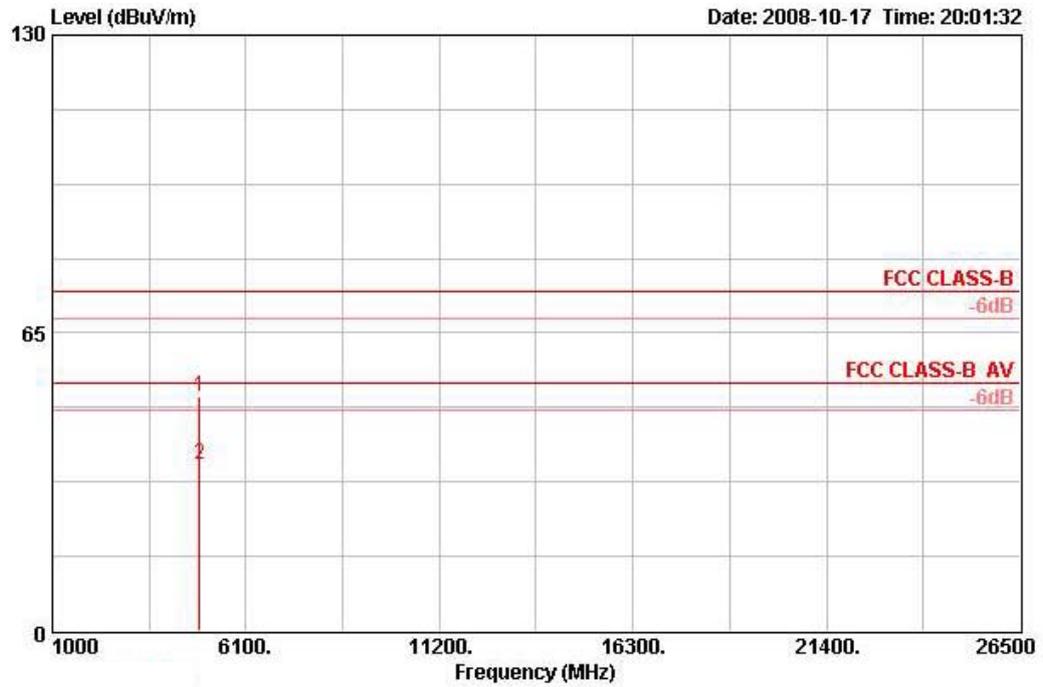
Temperature	25°C	Humidity	58%
Test Engineer	Jacky Ho	Configurations	802.11g CH 6 Ant. A

Horizontal



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	4873.900	33.91	-20.09	54.00	31.95	33.16	3.96	35.15	AVERAGE	157	274	HORIZONTAL
2	4876.600	47.43	-26.57	74.00	45.47	33.16	3.96	35.15	PEAK	157	274	HORIZONTAL

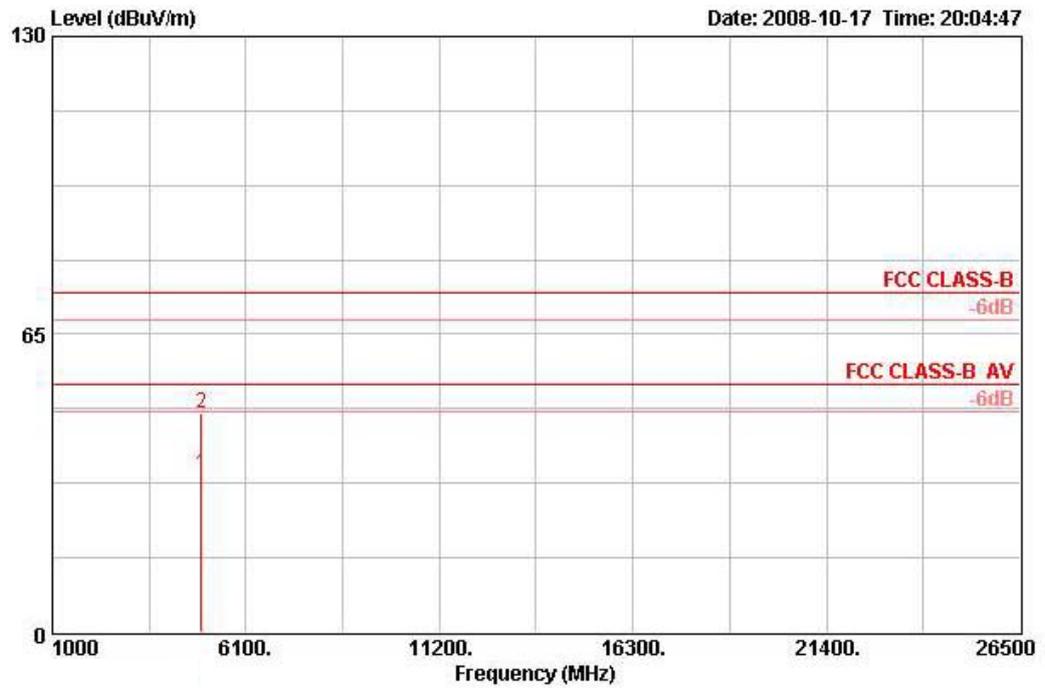
Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	4876.400	51.15	-22.85	74.00	49.18	33.16	3.96	35.15	PEAK	148	186	VERTICAL
2	4877.200	36.17	-17.83	54.00	34.21	33.16	3.96	35.15	AVERAGE	148	186	VERTICAL

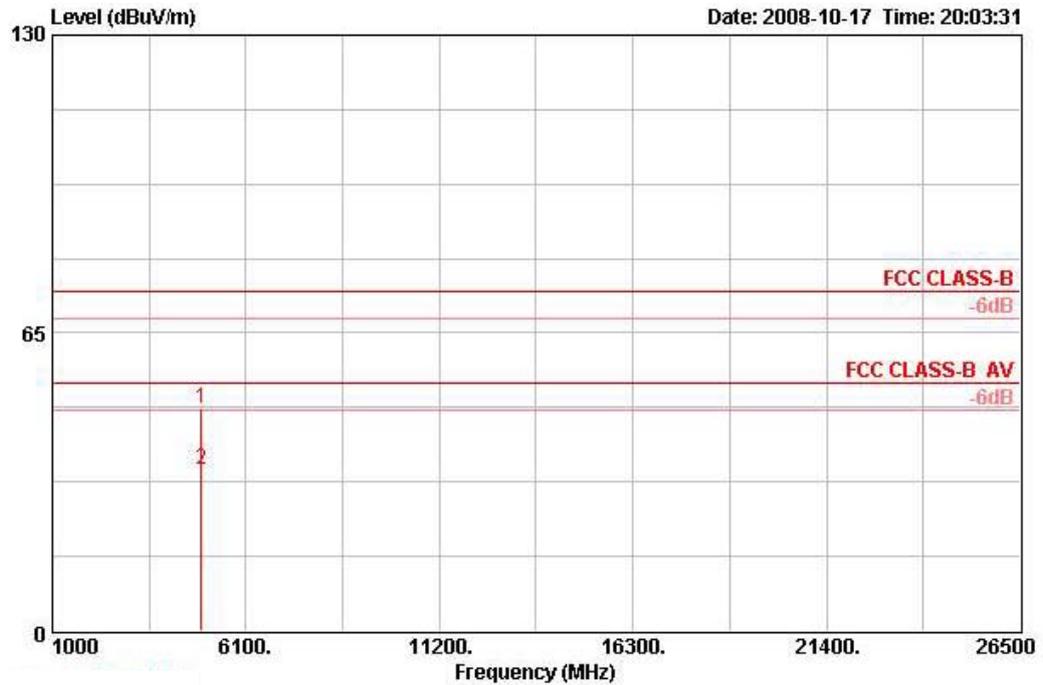
Temperature	25°C	Humidity	58%
Test Engineer	Jacky Ho	Configurations	802.11g CH 11 Ant. A

Horizontal



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	4925.800	34.41	-19.59	54.00	32.31	33.26	3.98	35.14	AVERAGE	159	245	HORIZONTAL
2	4925.900	47.88	-26.12	74.00	45.78	33.26	3.98	35.14	PERK	159	245	HORIZONTAL

Vertical



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	4925.800	48.65	-25.35	74.00	46.55	33.26	3.98	35.14	PEAK	159	192	VERTICAL
2	4926.500	35.30	-18.70	54.00	33.20	33.26	3.98	35.14	AVERAGE	159	192	VERTICAL

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

4.6. Band Edge Emissions Measurement

4.6.1. Limit

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

4.6.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RB / VB (Emission in restricted band)	1 MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	100 KHz /100 KHz for Peak

4.6.3. Test Procedures

1. The test procedure is the same as section 4.5.3, only the frequency range investigated is limited to 100MHz around bandedges.
2. In case the emission is fail due to the used RB/VB is too wide, marker-delta method of FCC Public Notice DA00-705 will be followed.

4.6.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.5.4.

4.6.5. Test Deviation

There is no deviation with the original standard.

4.6.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.6.7. Test Result of Band Edge and Fundamental Emissions

Temperature	25°C	Humidity	58%
Test Engineer	Jacky Ho	Configurations	Draft n MCS8 20MHz Ch 1, 6, 11 Ant. A + Ant. B
Test Date	Oct. 17, 2008		

Channel 1

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1 ☺	2390.000	50.21	-3.79	54.00	19.33	28.17	2.71	0.00	AVERAGE	146	294	VERTICAL
2 ☺	2390.000	64.47	-9.53	74.00	33.58	28.17	2.71	0.00	PEAK	146	294	VERTICAL
3 ☺	2414.200	100.62			69.68	28.21	2.73	0.00	AVERAGE	146	294	VERTICAL
4 ☺	2416.400	113.14			82.21	28.21	2.73	0.00	PEAK	146	294	VERTICAL

Item 3, 4 are the fundamental frequency at 2412 MHz

Channel 6

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	2388.200	58.17	-15.83	74.00	27.28	28.17	2.71	0.00	PEAK	169	311	VERTICAL
2 ☺	2390.000	46.37	-7.64	54.00	15.48	28.17	2.71	0.00	AVERAGE	169	311	VERTICAL
3 ☺	2438.600	113.57			82.54	28.29	2.74	0.00	PEAK	169	311	VERTICAL
4 ☺	2439.000	100.54			69.51	28.29	2.74	0.00	AVERAGE	169	311	VERTICAL
5 ☺	2483.500	47.50	-6.50	54.00	16.35	28.37	2.77	0.00	AVERAGE	169	311	VERTICAL
6	2484.300	59.86	-14.14	74.00	28.72	28.37	2.77	0.00	PEAK	169	311	VERTICAL

Item 3, 4 are the fundamental frequency at 2437MHz.

Channel 11

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1 ☺	2460.800	99.89			68.81	28.33	2.76	0.00	AVERAGE	121	61	VERTICAL
2 ☺	2466.200	111.29			80.20	28.33	2.76	0.00	PEAK	121	61	VERTICAL
3 ☺	2483.500	51.81	-2.19	54.00	20.67	28.37	2.77	0.00	AVERAGE	121	61	VERTICAL
4 ☺	2483.700	65.13	-8.87	74.00	33.99	28.37	2.77	0.00	PEAK	121	61	VERTICAL

Item 1, 2 are the fundamental frequency at 2462 MHz.

Temperature	25°C	Humidity	58%
Test Engineer	Jacky Ho	Configurations	Draft n MCS8 40MHz Ch 3, 6, 9 Ant. A + Ant. B
Test Date	Oct. 17, 2008		

Channel 3

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1 ☺	2390.000	51.53	-2.47	54.00	20.64	28.17	2.71	0.00	AVERAGE	100	318	VERTICAL
2 ☺	2390.000	64.67	-9.33	74.00	33.79	28.17	2.71	0.00	PEAK	100	318	VERTICAL
3 ☺	2430.400	107.70			76.71	28.25	2.74	0.00	PEAK	100	318	VERTICAL
4 ☺	2432.800	96.44			65.45	28.25	2.74	0.00	AVERAGE	100	318	VERTICAL

Item 3, 4 are the fundamental frequency at 2422 MHz.

Channel 6

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1 ☺	2390.000	49.22	-4.78	54.00	18.34	28.17	2.71	0.00	AVERAGE	100	95	VERTICAL
2	2390.000	63.16	-10.84	74.00	32.28	28.17	2.71	0.00	PEAK	100	95	VERTICAL
3 ☺	2431.000	108.30			77.31	28.25	2.74	0.00	PEAK	100	95	VERTICAL
4 ☺	2435.400	99.88			68.85	28.29	2.74	0.00	AVERAGE	100	95	VERTICAL
5 ☺	2483.500	66.07	-7.93	74.00	34.92	28.37	2.77	0.00	PEAK	100	95	VERTICAL
6 ☺	2483.500	51.40	-2.60	54.00	20.25	28.37	2.77	0.00	AVERAGE	100	95	VERTICAL

Item 3, 4 are the fundamental frequency at 2437MHz.

Channel 9

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1 ☺	2437.200	95.85			64.82	28.29	2.74	0.00	AVERAGE	123	63	VERTICAL
2 ☺	2438.000	104.97			73.94	28.29	2.74	0.00	PEAK	123	63	VERTICAL
3 ☺	2483.500	53.05	-0.95	54.00	21.91	28.37	2.77	0.00	AVERAGE	123	63	VERTICAL
4 ☺	2484.300	67.43	-6.57	74.00	36.28	28.37	2.77	0.00	PEAK	123	63	VERTICAL

Item 1, 2 are the fundamental frequency at 2452 MHz.

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Temperature	25°C	Humidity	58%
Test Engineer	Jacky Ho	Configurations	802.11b CH 1, 6, 11 Ant. A
Test Date	Oct. 17, 2008		

Channel 1

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Remark	Ant	Table	Pol/Phase
			Limit	Line	Level	Factor	Loss	Factor		Pos	Pos	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	2386.200	60.91	-13.09	74.00	30.02	28.17	2.71	0.00	PEAK	100	299	VERTICAL
2 ☉	2386.600	50.10	-3.90	54.00	19.21	28.17	2.71	0.00	AVERAGE	100	299	VERTICAL
3 ☉	2410.600	107.63			76.69	28.21	2.73	0.00	PEAK	100	299	VERTICAL
4 ☉	2411.200	102.90			71.97	28.21	2.73	0.00	AVERAGE	100	299	VERTICAL

Item 3, 4 are the fundamental frequency at 2412 MHz.

Channel 6

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Remark	Ant	Table	Pol/Phase
			Limit	Line	Level	Factor	Loss	Factor		Pos	Pos	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1	2389.000	56.75	-17.25	74.00	25.86	28.17	2.71	0.00	PEAK	100	288	VERTICAL
2 ☉	2390.000	45.52	-8.48	54.00	14.63	28.17	2.71	0.00	AVERAGE	100	288	VERTICAL
3 ☉	2434.400	103.74			72.71	28.29	2.74	0.00	AVERAGE	100	288	VERTICAL
4 ☉	2435.800	108.45			77.42	28.29	2.74	0.00	PEAK	100	288	VERTICAL
5 ☉	2483.500	46.18	-7.82	54.00	15.04	28.37	2.77	0.00	AVERAGE	100	288	VERTICAL
6	2485.700	57.97	-16.03	74.00	26.78	28.41	2.77	0.00	PEAK	100	288	VERTICAL

Item 3, 4 are the fundamental frequency at 2437MHz.

Channel 11

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Remark	Ant	Table	Pol/Phase
			Limit	Line	Level	Factor	Loss	Factor		Pos	Pos	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg	
1 ☉	2459.200	98.54			67.45	28.33	2.76	0.00	AVERAGE	142	325	VERTICAL
2 ☉	2460.600	103.29			72.21	28.33	2.76	0.00	PEAK	142	325	VERTICAL
3 ☉	2487.700	52.83	-1.17	54.00	21.65	28.41	2.77	0.00	AVERAGE	142	325	VERTICAL
4	2488.300	61.60	-12.40	74.00	30.42	28.41	2.77	0.00	PEAK	142	325	VERTICAL

Item 1, 2 are the fundamental frequency at 2462 MHz.

Temperature	25°C	Humidity	58%
Test Engineer	Jacky Ho	Configurations	802.11g CH 1, 6, 11 Ant. A
Test Date	Oct. 17, 2008		

Channel 1

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Remark	Ant	Table
			Limit	Line	Level	Factor	Loss	Factor		Pos	Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 ☺	2390.000	52.57	-1.43	54.00	21.69	28.17	2.71	0.00	AVERAGE	102	292 VERTICAL
2 ☺	2390.000	71.91	-2.09	74.00	41.03	28.17	2.71	0.00	PEAK	102	292 VERTICAL
3 ☺	2411.000	99.09			68.15	28.21	2.73	0.00	AVERAGE	102	292 VERTICAL
4 ☺	2413.600	109.82			78.88	28.21	2.73	0.00	PEAK	102	292 VERTICAL

Item 3, 4 are the fundamental frequency at 2412 MHz.

Channel 6

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Remark	Ant	Table
			Limit	Line	Level	Factor	Loss	Factor		Pos	Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	2383.600	60.48	-13.52	74.00	29.59	28.17	2.71	0.00	PEAK	144	324 VERTICAL
2 ☺	2384.400	48.29	-5.71	54.00	17.41	28.17	2.71	0.00	AVERAGE	144	324 VERTICAL
3 ☺	2433.000	112.78			81.79	28.25	2.74	0.00	PEAK	144	324 VERTICAL
4 ☺	2433.800	102.06			71.07	28.25	2.74	0.00	AVERAGE	144	324 VERTICAL
5 ☺	2489.900	53.92	-0.08	54.00	22.73	28.41	2.77	0.00	AVERAGE	144	324 VERTICAL
6 ☺	2490.300	64.71	-9.29	74.00	33.52	28.41	2.77	0.00	PEAK	144	324 VERTICAL

Item 3, 4 are the fundamental frequency at 2437 MHz.

Channel 11

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Remark	Ant	Table
			Limit	Line	Level	Factor	Loss	Factor		Pos	Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 ☺	2463.400	110.91			79.83	28.33	2.76	0.00	PEAK	100	318 VERTICAL
2 ☺	2464.800	100.13			69.05	28.33	2.76	0.00	AVERAGE	100	318 VERTICAL
3 ☺	2483.500	52.73	-1.27	54.00	21.59	28.37	2.77	0.00	AVERAGE	100	318 VERTICAL
4 ☺	2483.900	71.58	-2.42	74.00	40.44	28.37	2.77	0.00	PEAK	100	318 VERTICAL

Item 1, 2 are the fundamental frequency at 2462 MHz.

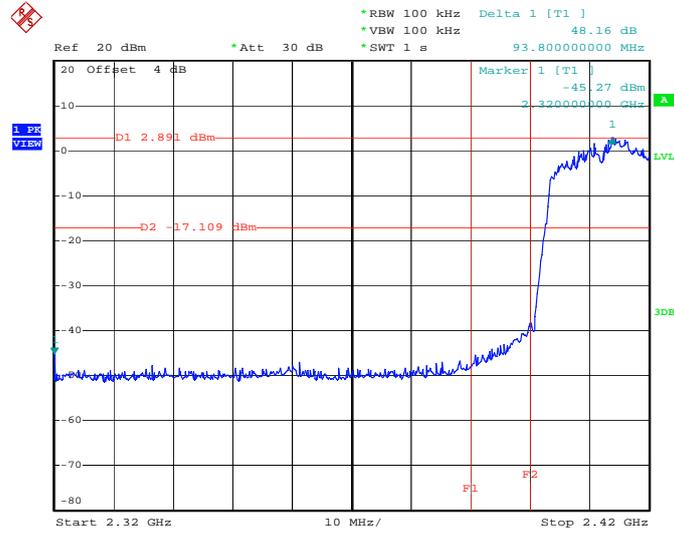
Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

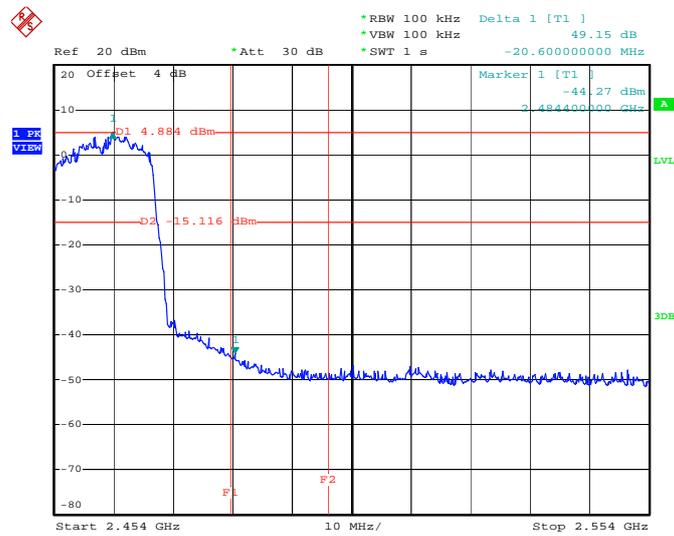
For Emission not in Restricted Band

Low Band Edge Plot on Configuration Drafft n MCS8 20MHz Ant. A + Ant. B / 2412 MHz



Date: 22.OCT.2008 15:16:59

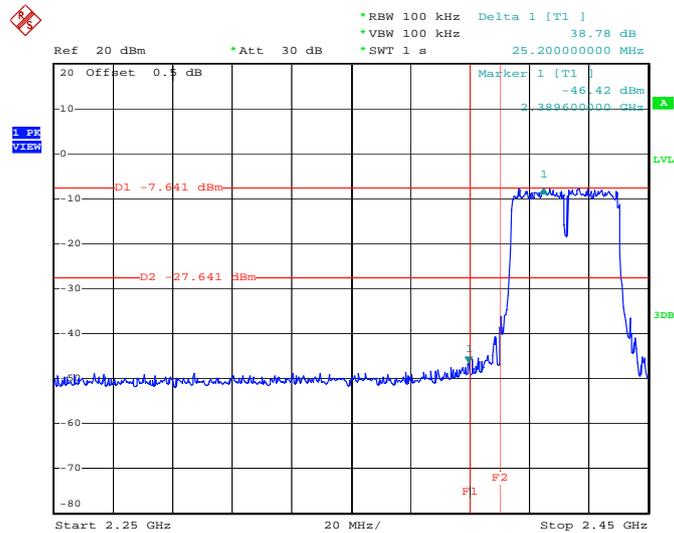
High Band Edge Plot on Configuration Drafft n MCS8 20MHz Ant. A + Ant. B / 2462 MHz



Date: 22.OCT.2008 15:22:21

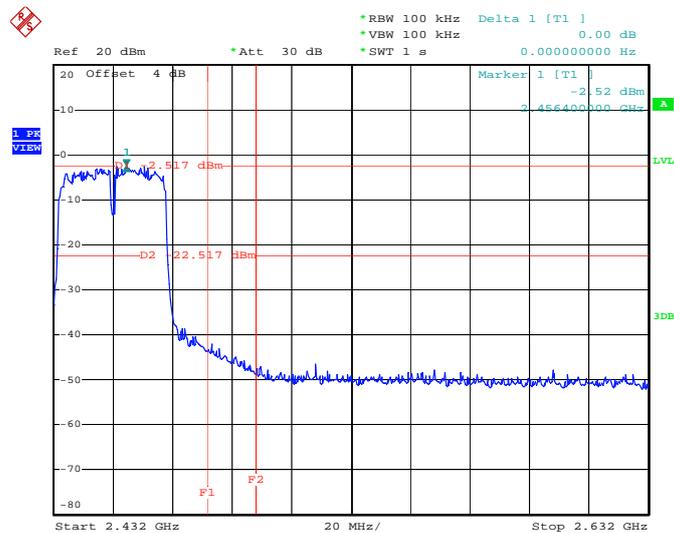
For Emission not in Restricted Band

Low Band Edge Plot on Configuration Drafft n MCS8 40MHz Ant. A + Ant. B / 2422 MHz



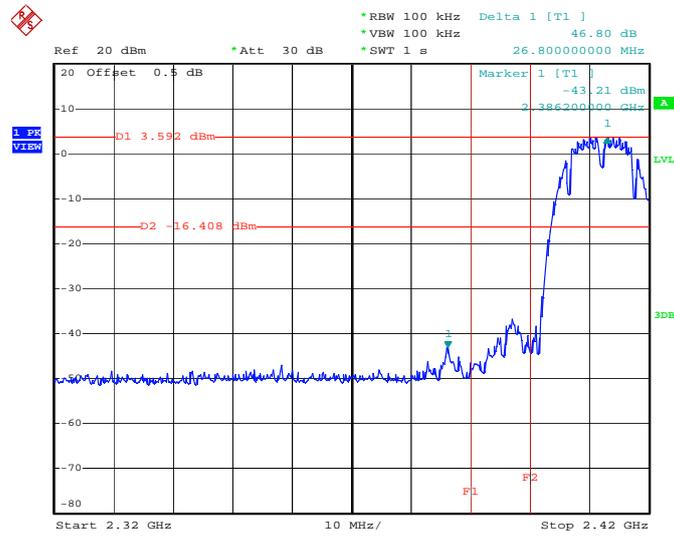
Date: 19.OCT.2008 14:17:20

High Band Edge Plot on Configuration Drafft n MCS8 40MHz Ant. A + Ant. B / 2452 MHz



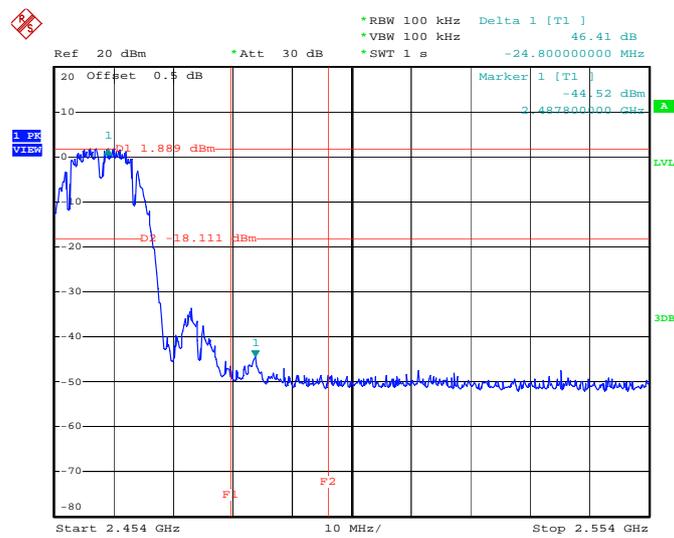
Date: 22.OCT.2008 15:32:12

Low Band Edge Plot on Configuration IEEE 802.11b Ant. A / 2412 MHz



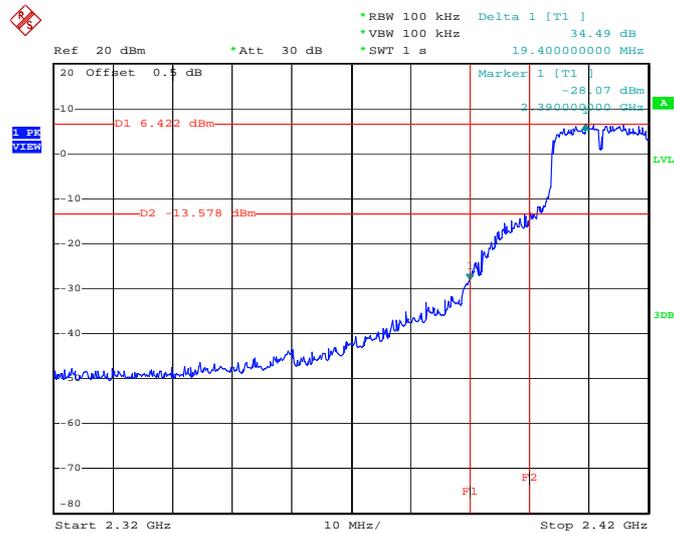
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High Band Edge Plot on Configuration IEEE 802.11b Ant. A / 2462 MHz



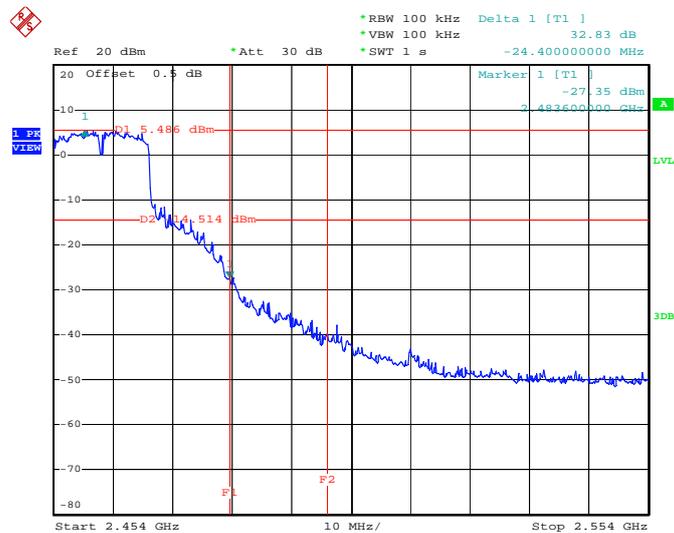
Date: 22.OCT.2008 15:52:19

Low Band Edge Plot on Configuration IEEE 802.11g Ant. A / 2412 MHz



Date: 22.OCT.2008 15:55:06

High Band Edge Plot on Configuration IEEE 802.11g Ant. A / 2462 MHz



Date: 22.OCT.2008 16:01:08

4.7. Antenna Requirements

4.7.1. Limit

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

4.7.2. Antenna Connector Construction

Please refer to section 3.3 in this test report; antenna connector complied with the requirements.

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	Mar. 03, 2008	Conduction (CO04-HY)
LISN	MessTec	NNB-2/16Z	99079	9kHz – 30MHz	Mar. 31, 2008	Conduction (CO04-HY)
LISN (Support Unit)	EMCO	3810/2NM	9703-1839	9kHz – 30MHz	Mar. 22, 2008	Conduction (CO04-HY)
RF Cable-CON	UTIFLEX	3102-26886-4	CB049	9kHz – 30MHz	Apr. 20, 2008	Conduction (CO04-HY)
ISN	SCHAFFNER	ISN T400	21653	9kHz – 30MHz	Mar. 27, 2008	Conduction (CO04-HY)
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	N/A	Conduction (CO04-HY)
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30 MHz - 1 GHz 3m	Jun. 14, 2008	Radiation (03CH03-HY)
Amplifier	SCHAFFNER	COA9231A	18667	9 kHz - 2 GHz	Jan. 14, 2008	Radiation (03CH03-HY)
Amplifier	Agilent	8449B	3008A02120	1 GHz - 26.5 GHz	Jun. 07, 2008	Radiation (03CH03-HY)
Amplifier	MITEQ	AMF-6F-260400	9121372	26.5 GHz - 40 GHz	Jan. 22, 2007*	Radiation (03CH03-HY)
Spectrum Analyzer	R&S	FSP40	100305	9 kHz - 40 GHz	Sep. 27, 2008	Radiation (03CH03-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz - 30 MHz	May 23, 2007*	Radiation (03CH03-HY)
Bilog Antenna	SCHAFFNER	CBL 6112D	22237	30 MHz – 1 GHz	Jul. 21, 2008	Radiation (03CH03-HY)
Horn Antenna	EMCO	3115	6741	1GHz ~ 18GHz	May. 04, 2008	Radiation (03CH03-HY)
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15 GHz - 40 GHz	Jan.18, 2008	Radiation (03CH03-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	30 MHz - 1 GHz	Dec. 03, 2007	Radiation (03CH03-HY)
RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	1 GHz - 40 GHz	Dec. 03, 2007	Radiation (03CH03-HY)
Turn Table	HD	DS 420	420/650/00	0 – 360 degree	N/A	Radiation (03CH03-HY)
Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	Radiation (03CH03-HY)
Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	Radiation (03CH03-HY)
Spectrum Analyzer	R&S	FSP30	100023	9kHz ~ 30GHz	Jan. 10, 2008	Conducted (TH01-HY)
Power Meter	R&S	NRVS	100444	DC ~ 40GHz	Jun. 27, 2008	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z51	100458	DC ~ 30GHz	Jun. 27, 2008	Conducted (TH01-HY)
Power Sensor	R&S	NRV-Z32	100057	30MHz ~ 6GHz	Jun. 27, 2008	Conducted (TH01-HY)
AC Power Source	HPC	HPA-500W	HPA-9100024	AC 0 ~ 300V	May 04, 2007*	Conducted (TH01-HY)
DC Power Source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Mar. 13, 2008	Conducted (TH01-HY)
Temp. and Humidity Chamber	KSON	THS-C3L	612	N/A	Oct. 01, 2008	Conducted (TH01-HY)
RF CABLE-1m	Jye Bao	RG142	CB034-1m	20MHz ~ 7GHz	Dec. 01, 2007	Conducted (TH01-HY)
RF CABLE-2m	Jye Bao	RG142	CB035-2m	20MHz ~ 1GHz	Dec. 01, 2007	Conducted (TH01-HY)
Vector Signal Generator	R&S	SMU200A	102098	100kHz ~ 6GHz	Nov. 14, 2007	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Mar. 10, 2008	Conducted (TH01-HY)

Note: Calibration Interval of instruments listed above is one year.

Note: *Calibration Interval of instruments listed above is two year.

6. TEST LOCATION

SHIJR	ADD : 6Fl., No. 106, Sec. 1, Shintai 5th Rd., Shijr City, Taipei, Taiwan 221, R.O.C. TEL : 886-2-2696-2468 FAX : 886-2-2696-2255
HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-318-0055
LINKOU	ADD : No. 30-2, Dingfu Tsuen, Linkou Shiang, Taipei, Taiwan 244, R.O.C TEL : 886-2-2601-1640 FAX : 886-2-2601-1695
DUNGHU	ADD : No. 3, Lane 238, Kangle St., Neihu Chiu, Taipei, Taiwan 114, R.O.C. TEL : 886-2-2631-4739 FAX : 886-2-2631-9740
JUNGHE	ADD : 7Fl., No. 758, Jungjeng Rd., Junghe City, Taipei, Taiwan 235, R.O.C. TEL : 886-2-8227-2020 FAX : 886-2-8227-2626
NEIHU	ADD : 4Fl., No. 339, Hsin Hu 2 nd Rd., Taipei 114, Taiwan, R.O.C. TEL : 886-2-2794-8886 FAX : 886-2-2794-9777
JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. TEL : 886-3-656-9065 FAX : 886-3-656-9085

7. TAF CERTIFICATE OF ACCREDITATION



Certificate No. : L1190-070110

財團法人全國認證基金會
Taiwan Accreditation Foundation

Certificate of Accreditation

This is to certify that

Sporton International Inc.

EMC & Wireless Communications Laboratory

No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien,
Taiwan, R.O.C.

is accredited in respect of laboratory

Accreditation Criteria	: ISO/IEC 17025:2005
Accreditation Number	: 1190
Originally Accredited	: December 15, 2003
Effective Period	: January 10, 2007 to January 09, 2010
Accredited Scope	: Testing Field, see described in the Appendix
Specific Accreditation Program	: Accreditation Program for Designated Testing Laboratory for Commodities Inspection : Accreditation Program for Telecommunication Equipment Testing Laboratory



Jay-San Chen
President, Taiwan Accreditation Foundation
Date : January 10, 2007

P1, total 9 pages

The Appendix forms an integral part of this Certificate, which shall be invalid when used without the Appendix.