



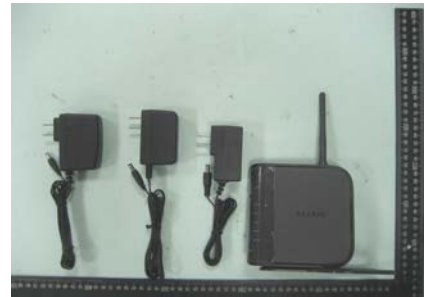
SPORTON International Inc.

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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	K7SF6D4230V2

Product Name	Enhanced Wireless Router
Brand Name	Belkin
Model Name	F6D4230-4 v2
Test Rule	47 CFR FCC Part 15 Subpart C § 15.247
Test Freq. Range	2400 ~ 2483.5MHz
Received Date	Jan. 22, 2009
Final Test Date	Apr. 22, 2009
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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History of This Test Report

Original Issue Date: Apr. 22, 2009

Report No.: FR912225

- No additional attachment.
- Additional attachment were issued as following record:

Attachment No.	Issue Date	Description



1. CERTIFICATE OF COMPLIANCE

Product Name : Enhanced Wireless Router
Brand Name : Belkin
Model Name : F6D4230-4 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 Jan. 22, 2009 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.

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	3.39 dB
4.2	15.247(b)(3)	Maximum Conducted Output Power	Complies	3.75 dB
4.3	15.247(e)	Power Spectral Density	Complies	8.75 dB
4.4	15.247(a)(2)	6dB Spectrum Bandwidth	Complies	-
4.5	15.247(d)	Radiated Emissions	Complies	4.38 dB
4.6	15.247(d)	Band Edge Emissions	Complies	0.19 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 (1TX, 1RX)
Radio Type	Intentional Transceiver
Power Type	From 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%)	MCS0 (20MHz) : 17.48 MHz MCS0 (40MHz) : 36.24 MHz
Conducted Output Power	MCS0 (20MHz) : 22.25 dBm MCS0 (40MHz) : 20.30 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

802.11b/g

Items	Description
Product Type	WLAN (1TX, 1RX)
Radio Type	Intentional Transceiver
Power Type	From 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: 15.20 MHz ; 11g: 16.40 MHz
Conducted Output Power	11b: 26.25 dBm ; 11g: 23.94 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Antenna & Band width

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

Draft n spec

MCS Index	Nss	Modulation	R	NBPSC	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

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	Leader	MT12-Y120100-A1	Input: 120VAC, 60Hz, 0.3A Output:12VDC, 1A
Adapter 2	DVE	DSA-12R-12 AUS 120120	Input:100-120VAC, 50/60Hz, 0.3A Output:12VDC, 1A
Adapter 3	Foxlink	FA-1201000SUC	Input:100-240VAC, 50/60Hz, 0.5A Output:12VDC, 1A

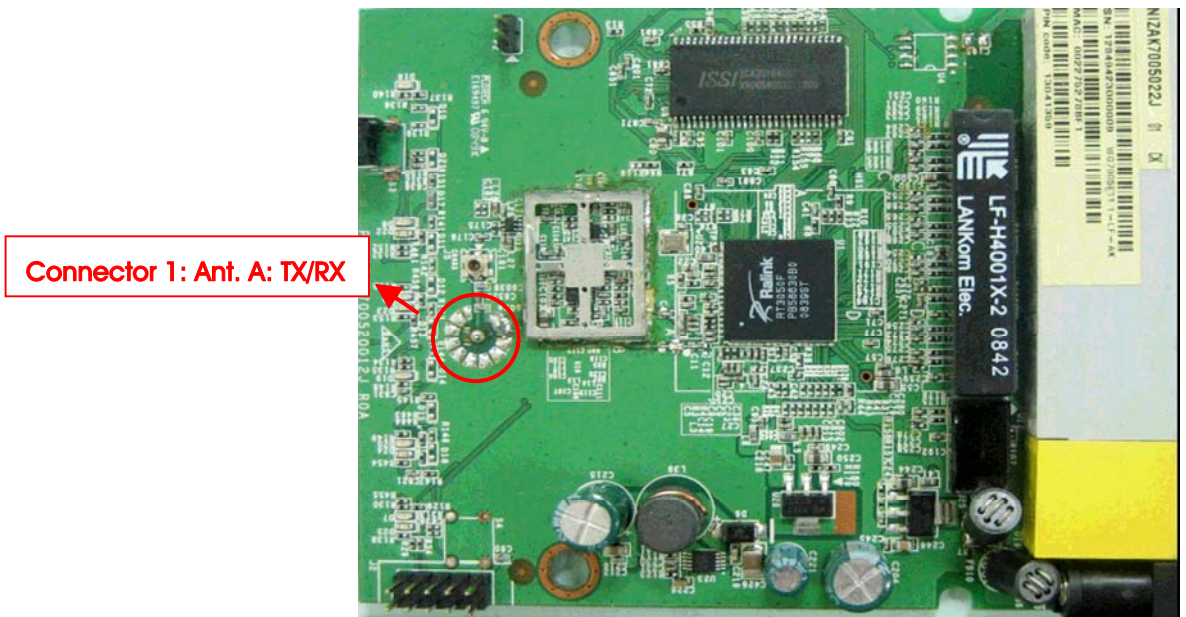
3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Remark
A (1)	Lite	120300023700J	Dipole Antenna	N/A	2	TX / RX Ant.

Note: The EUT has one antenna (1TX, 1RX).

For 802.11b/g mode and Draft n mode:

Ant. A can be used as transmitting and receiving antenna.



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	MCS0/20MHz	6.5 Mbps	1/6/11	A
	MCS0/40MHz	13.5 Mbps	3/6/9	A
	11b/BPSK	1 Mbps	1/6/11	A
	11g/BPSK	6 Mbps	1/6/11	A
Power Spectral Density 6dB Spectrum Bandwidth	MCS0/20MHz	6.5 Mbps	1/6/11	A
	MCS0/40MHz	13.5 Mbps	3/6/9	A
	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	MCS0/20MHz	6.5 Mbps	1/6/11	A
	MCS0/40MHz	13.5 Mbps	3/6/9	A
	11b/BPSK	1 Mbps	1/6/11	A
	11g/BPSK	6 Mbps	1/6/11	A
Band Edge Emissions	MCS0/20MHz	6.5 Mbps	1/11	A
	MCS0/40MHz	13.5 Mbps	3/9	A
	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

Mode 3: EUT + Adapter 3

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	PP25L	E2K4965AGNM
Notebook	DELL	D400	E2K24GBRL
Notebook	DELL	D400	E2K24GBRL
HUB	Lanreed	LD-LSW16C/AT	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 MCS0 20MHz

Test Software Version	QA		
Frequency	2412 MHz	2437 MHz	2462 MHz
Draft n	1A	1A	11

Power Parameters of Draft n MCS0 40MHz

Test Software Version	QA		
Frequency	2422 MHz	2437 MHz	2452 MHz
Draft n	0A	16	7

Power Parameters of IEEE 802.11b/g

Test Software Version	QA		
Frequency	2412 MHz	2437 MHz	2462 MHz
IEEE 802.11b	10	1E	0F
IEEE 802.11g	18	1E	15

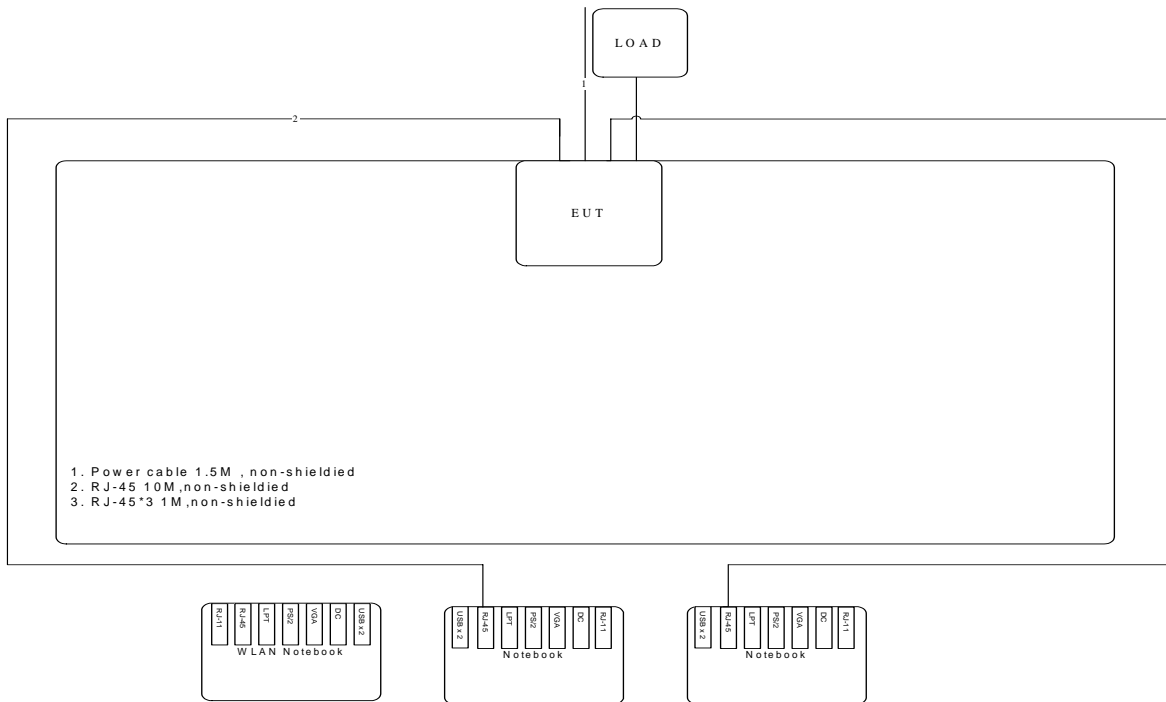
Executed "QA" to control the EUT continuously transmit RF signal.

3.9. Test Configurations

3.9.1. Radiation Emissions Test Configuration

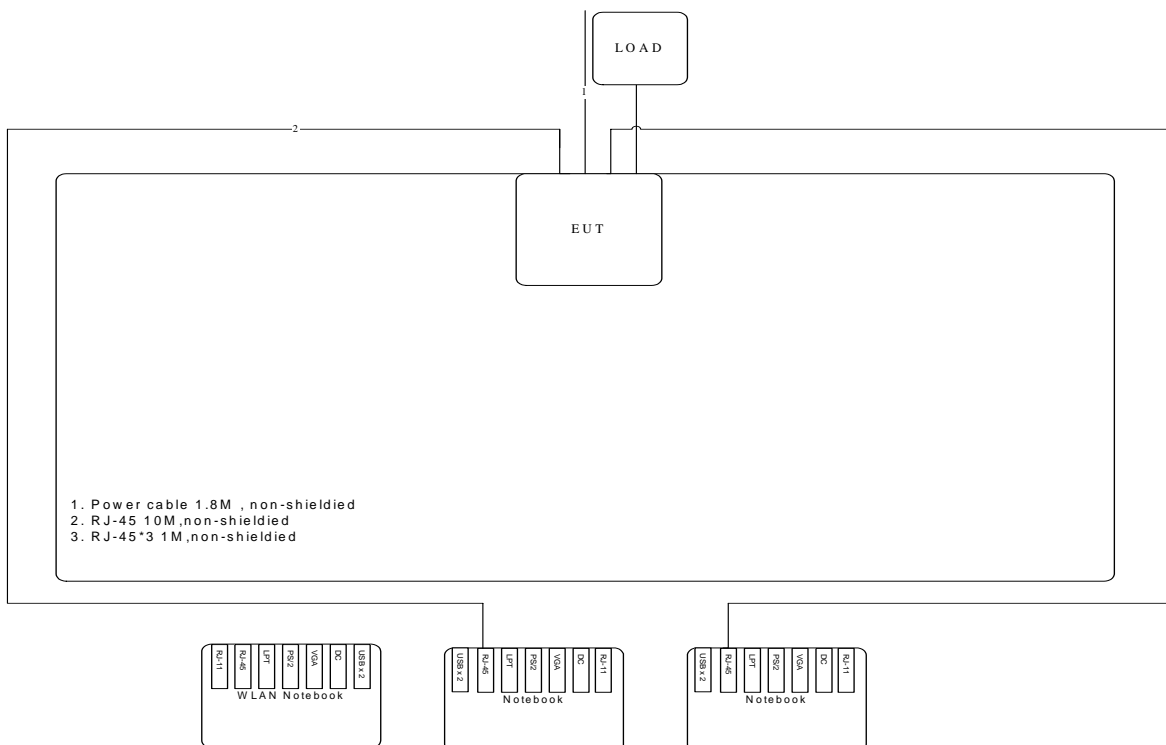
Test Configuration: 30KHz~1GHz

Test Mode: Mode 1



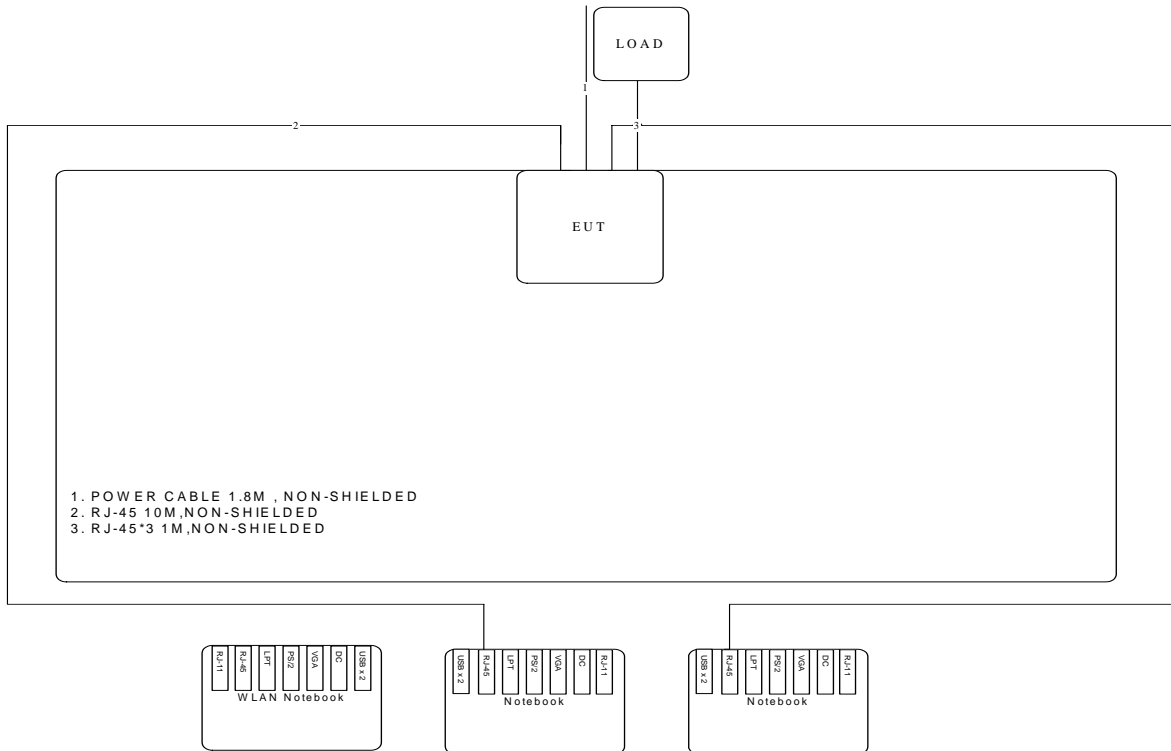
Test Configuration: 30KHz~1GHz

Test Mode: Mode 2

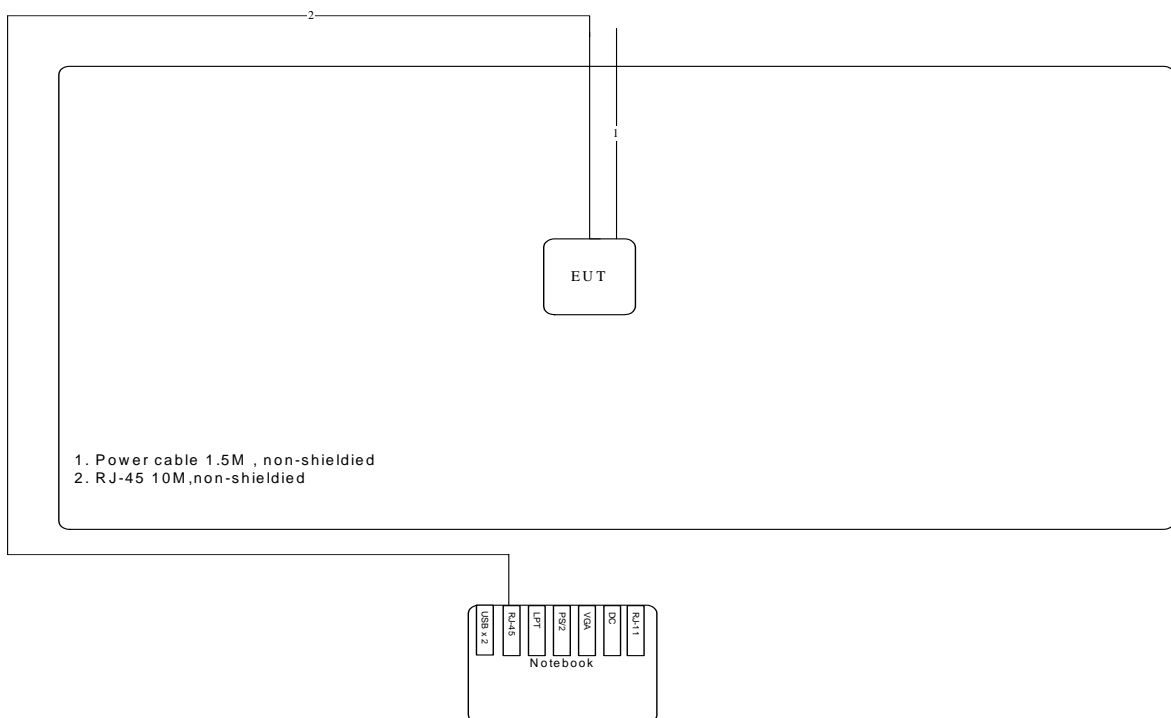


Test Configuration: 30KHz~1GHz

Test Mode: Mode 3

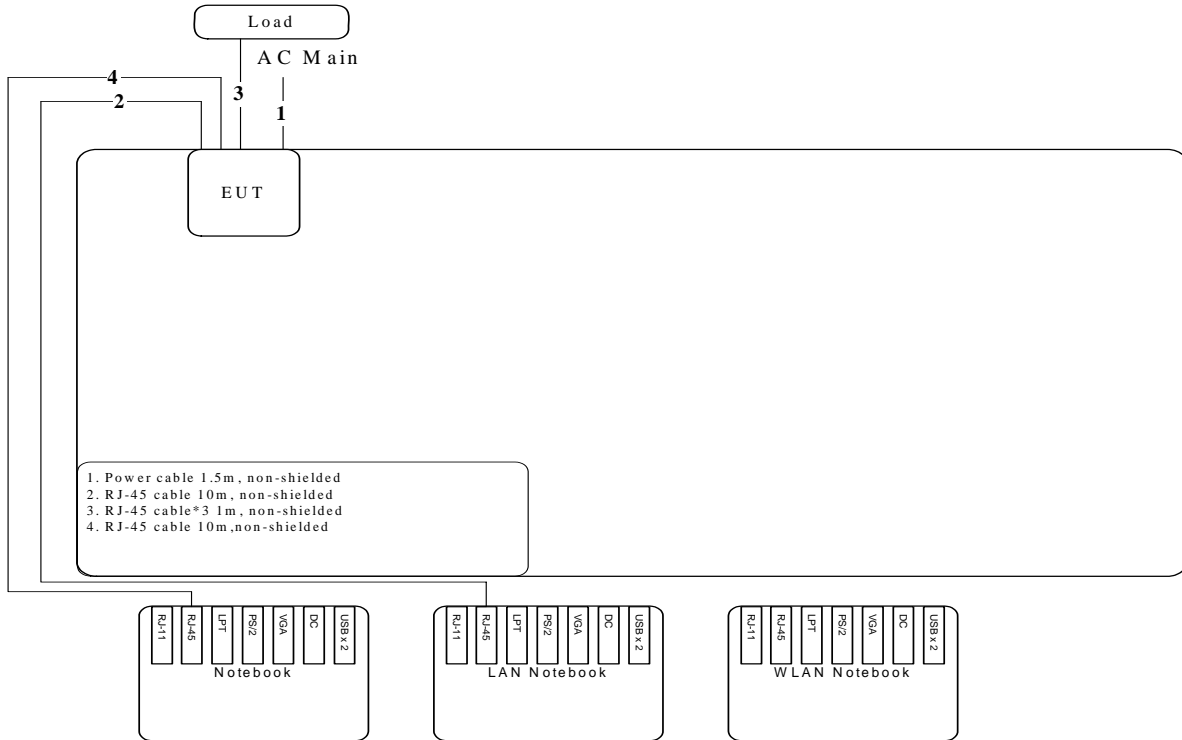


Test Configuration: above 1GHz

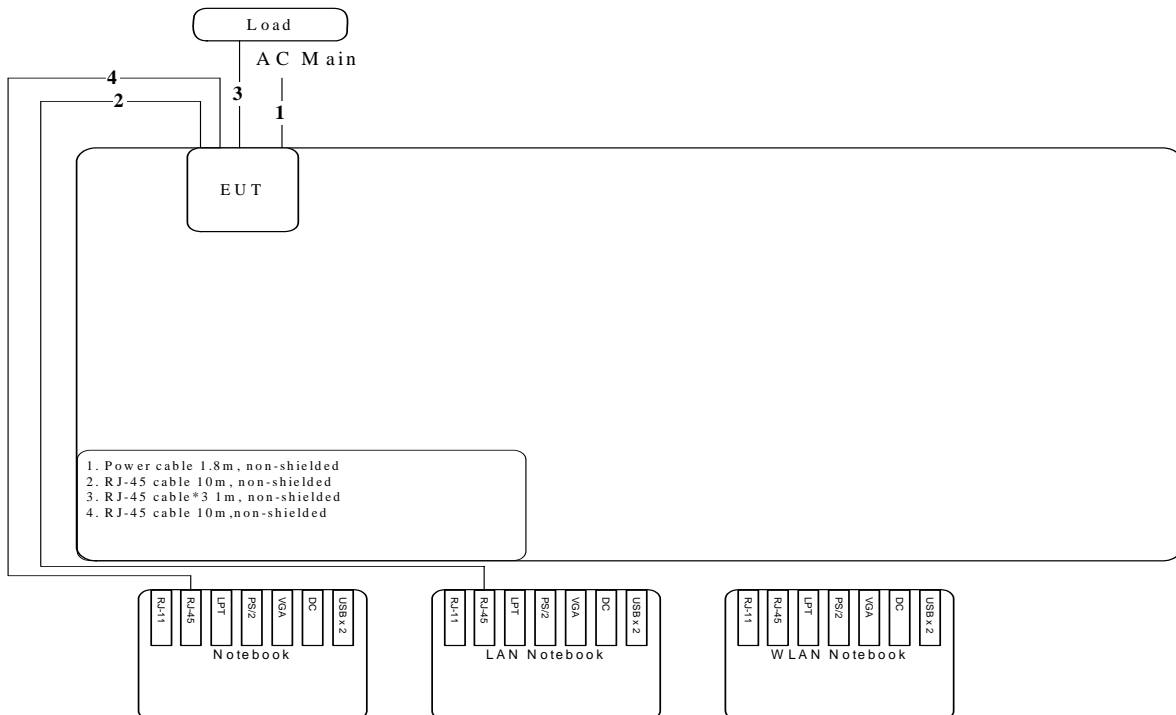


3.9.2. AC Power Line Conduction Emissions Test Configuration

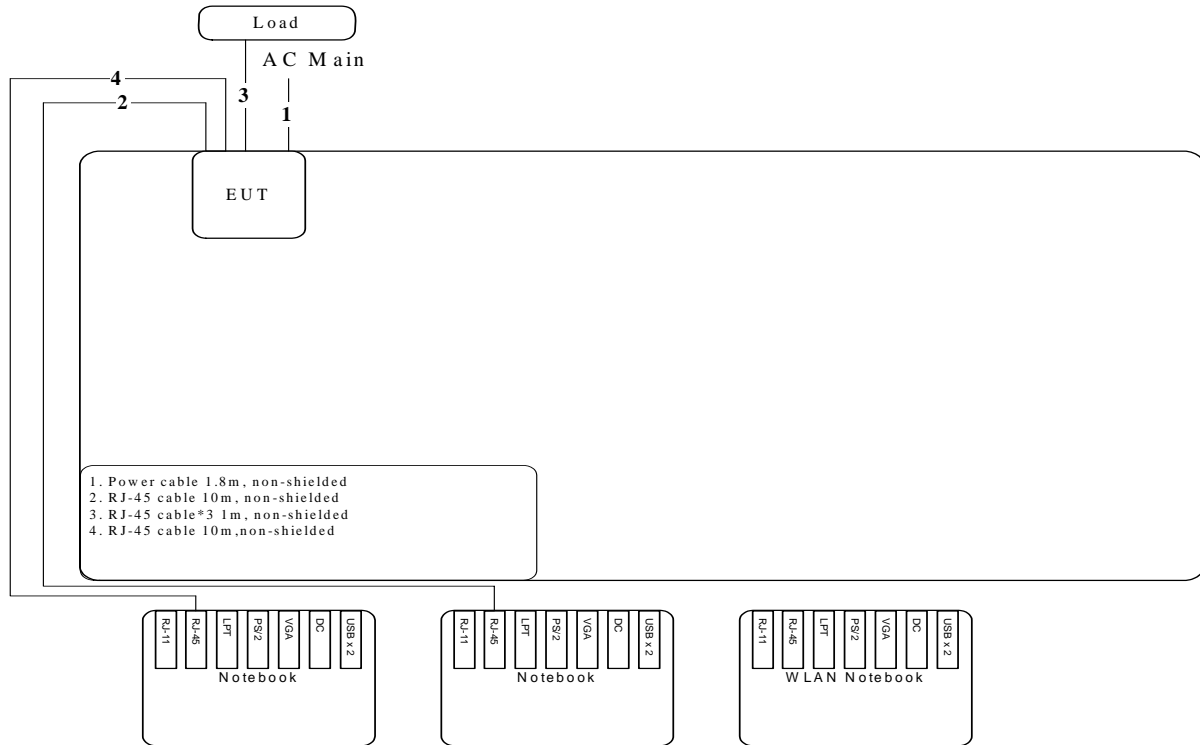
Test Mode: Mode 1



Test Mode: Mode 2



Test Mode: Mode 3



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

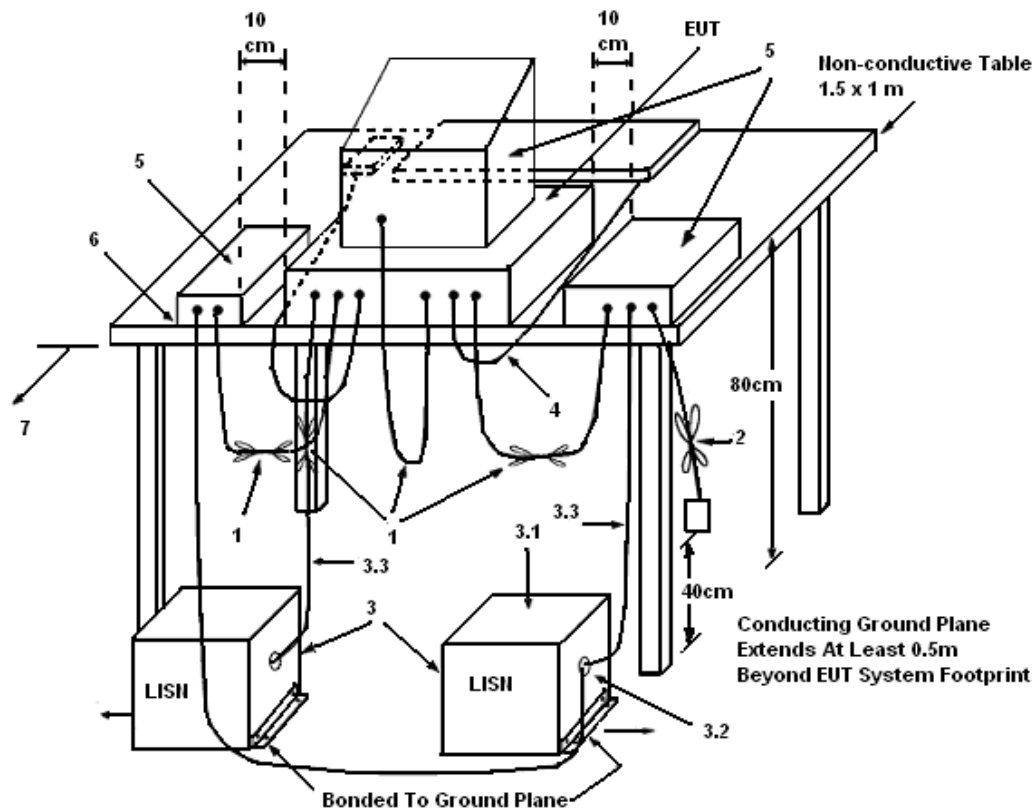
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

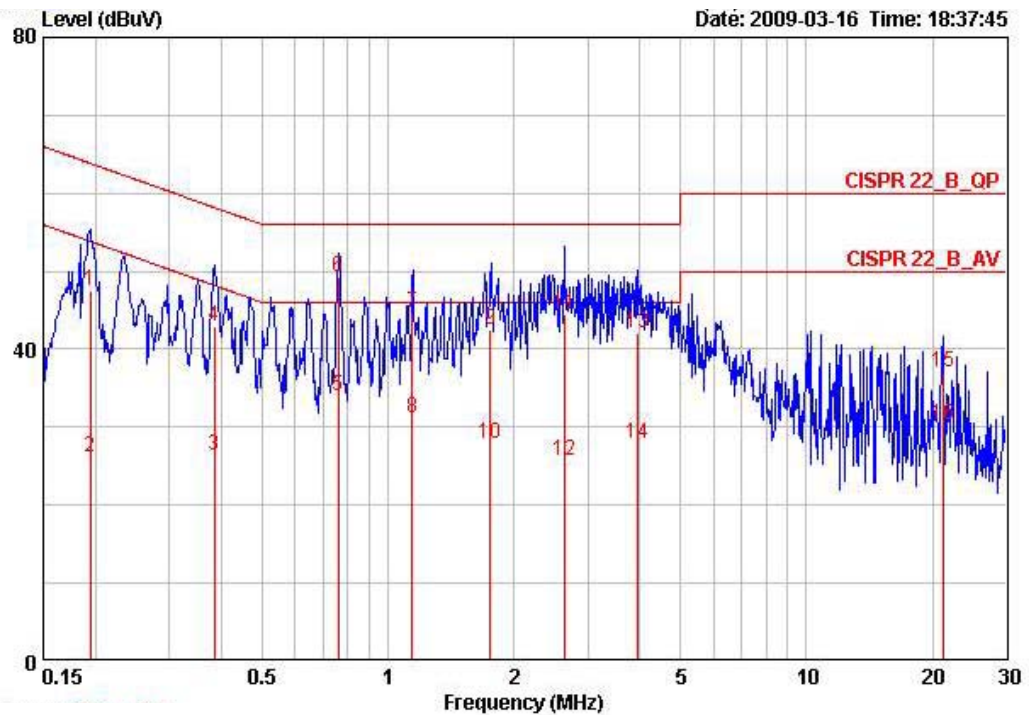
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

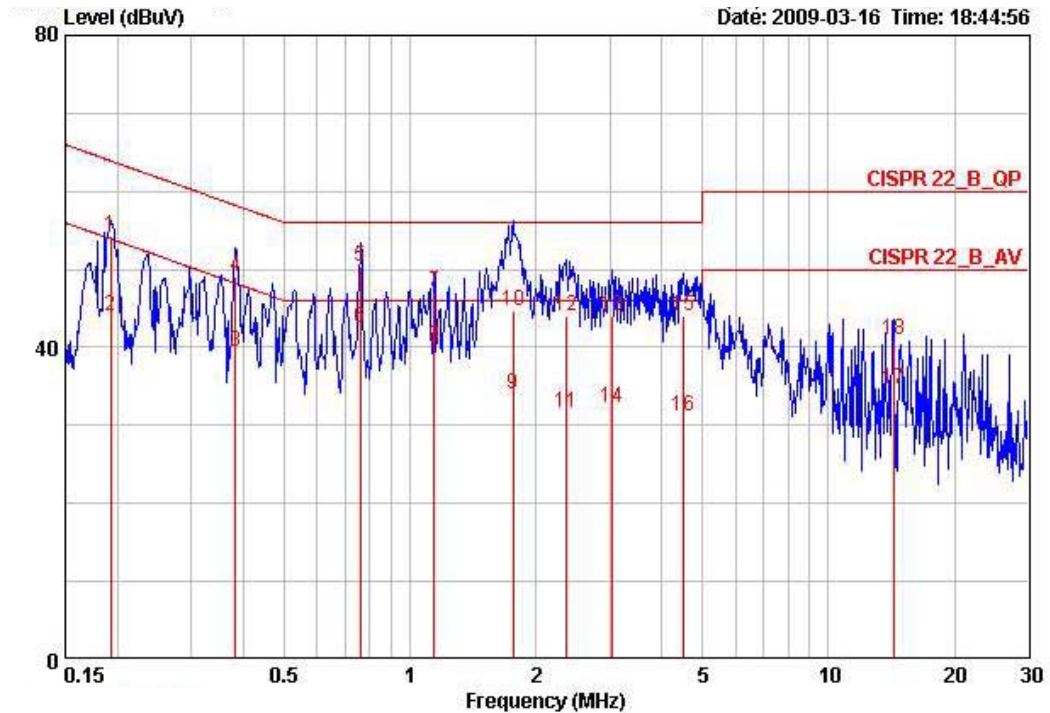
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	24°C	Humidity	56.1%
Test Engineer	Peter Wu	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	0.19447	47.54	-16.30	63.84	47.29	0.05	0.20	QP
2	0.19447	26.22	-27.62	53.84	25.97	0.05	0.20	AVERAGE
3	0.38519	26.46	-21.71	48.17	26.23	0.03	0.20	AVERAGE
4	0.38519	42.93	-15.24	58.17	42.70	0.03	0.20	QP
5	0.76134	34.04	-11.96	46.00	33.81	0.03	0.20	AVERAGE
6	0.76134	49.16	-6.84	56.00	48.93	0.03	0.20	QP
7	1.143	44.61	-11.39	56.00	44.41	0.03	0.17	QP
8	1.143	31.22	-14.78	46.00	31.02	0.03	0.17	AVERAGE
9	1.753	42.61	-13.39	56.00	42.41	0.05	0.15	QP
10	1.753	28.01	-17.99	46.00	27.81	0.05	0.15	AVERAGE
11	2.637	44.55	-11.45	56.00	44.28	0.07	0.20	QP
12	2.637	25.77	-20.23	46.00	25.50	0.07	0.20	AVERAGE
13	3.954	42.02	-13.98	56.00	41.62	0.10	0.30	QP
14	3.954	27.92	-18.08	46.00	27.52	0.10	0.30	AVERAGE
15	21.175	37.03	-22.97	60.00	35.63	0.90	0.50	QP
16	21.175	30.38	-19.62	50.00	28.98	0.90	0.50	AVERAGE

Temperature	24°C	Humidity	56.1%
Test Engineer	Peter Wu	Phase	Neutral
Configuration	Normal Link / Mode 1		

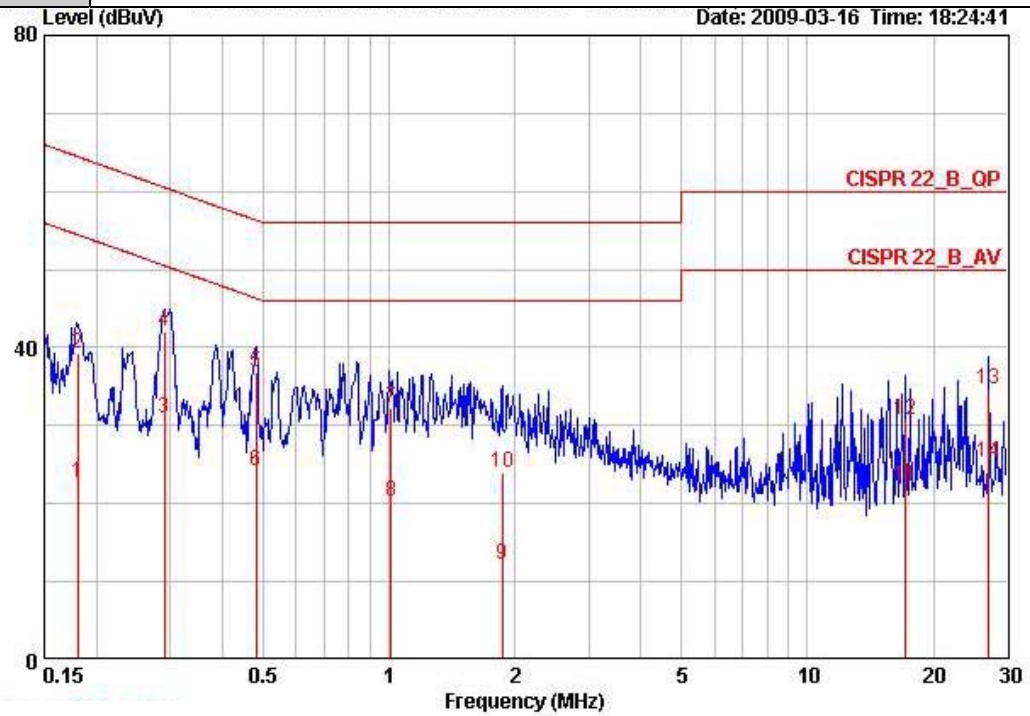


	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.19242	54.30	-9.63	63.93	54.02	0.08	0.20	QP
2	0.19242	43.95	-9.98	53.93	43.67	0.08	0.20	AVERAGE
3	0.38315	39.41	-8.80	48.21	39.14	0.07	0.20	AVERAGE
4	0.38315	49.07	-9.14	58.21	48.80	0.07	0.20	QP
5	0.76057	50.38	-5.62	56.00	50.11	0.07	0.20	QP
6	0.76057	42.61	-3.39	46.00	42.34	0.07	0.20	AVERAGE
7	1.141	47.09	-8.91	56.00	46.85	0.07	0.17	QP
8	1.141	40.09	-5.91	46.00	39.85	0.07	0.17	AVERAGE
9	1.762	33.99	-12.01	46.00	33.75	0.09	0.16	AVERAGE
10	1.762	44.65	-11.35	56.00	44.41	0.09	0.16	QP
11	2.367	31.62	-14.38	46.00	31.32	0.10	0.20	AVERAGE
12	2.367	43.96	-12.04	56.00	43.66	0.10	0.20	QP
13	3.041	44.14	-11.86	56.00	43.81	0.12	0.21	QP
14	3.041	32.30	-13.70	46.00	31.97	0.12	0.21	AVERAGE
15	4.501	43.99	-12.01	56.00	43.52	0.17	0.30	QP
16	4.501	31.23	-14.77	46.00	30.76	0.17	0.30	AVERAGE
17	14.273	34.63	-15.37	50.00	33.68	0.55	0.40	AVERAGE
18	14.273	41.07	-18.93	60.00	40.12	0.55	0.40	QP

Note:

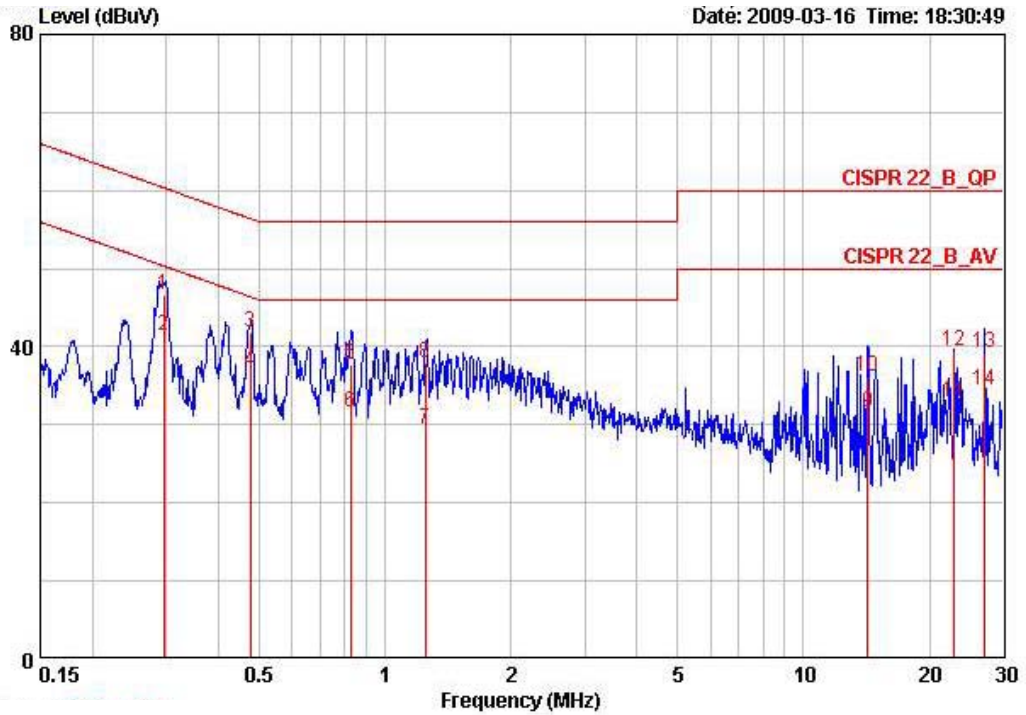
Level = Read Level + LISN Factor + Cable Loss.

Temperature	24°C	Humidity	56.1%
Test Engineer	Peter Wu	Phase	Line
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	0.18026	22.76	-31.71	54.47	22.50	0.06	0.20	AVERAGE
2	0.18026	39.17	-25.30	64.47	38.91	0.06	0.20	QP
3	0.29088	30.92	-19.58	50.50	30.68	0.04	0.20	AVERAGE
4	0.29088	42.14	-18.36	60.50	41.90	0.04	0.20	QP
5	0.48119	36.86	-19.46	56.32	36.73	0.03	0.10	QP
6	0.48119	24.25	-22.07	46.32	24.12	0.03	0.10	AVERAGE
7	1.013	32.28	-23.72	56.00	32.05	0.03	0.20	QP
8	1.013	20.31	-25.69	46.00	20.08	0.03	0.20	AVERAGE
9	1.868	12.29	-33.71	46.00	12.07	0.05	0.18	AVERAGE
10	1.868	24.02	-31.98	56.00	23.80	0.05	0.18	QP
11	17.145	22.26	-27.74	50.00	21.08	0.68	0.50	AVERAGE
12	17.145	30.72	-29.28	60.00	29.54	0.68	0.50	QP
13	27.157	34.70	-25.30	60.00	32.82	1.28	0.60	QP
14	27.157	25.33	-24.67	50.00	23.45	1.28	0.60	AVERAGE

Temperature	24°C	Humidity	56.1%
Test Engineer	Peter Wu	Phase	Neutral
Configuration	Normal Link / Mode 2		

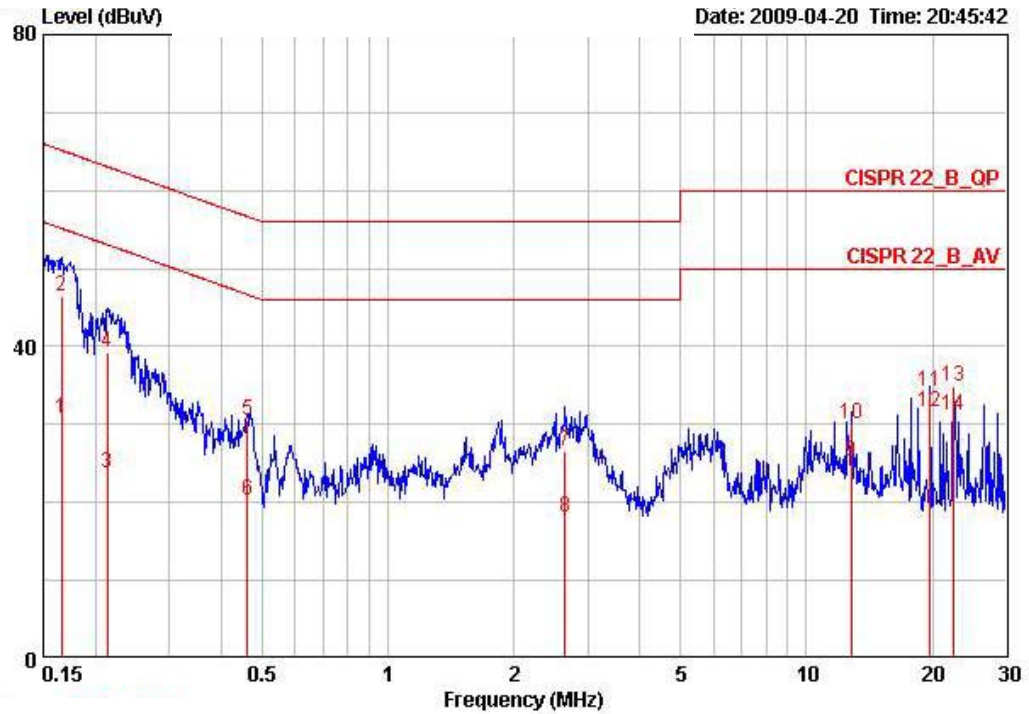


	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.29622	46.64	-13.70	60.35	46.37	0.07	0.20	QP
2	0.29622	41.32	-9.02	50.35	41.05	0.07	0.20	AVERAGE
3	0.47665	41.84	-14.56	56.40	41.62	0.07	0.15	QP
4	0.47665	36.90	-9.50	46.40	36.68	0.07	0.15	AVERAGE
5	0.82608	37.82	-18.18	56.00	37.55	0.07	0.20	QP
6	0.82608	31.61	-14.39	46.00	31.34	0.07	0.20	AVERAGE
7	1.249	29.37	-16.63	46.00	29.15	0.08	0.15	AVERAGE
8	1.249	37.98	-18.02	56.00	37.76	0.08	0.15	QP
9	14.213	31.63	-18.37	50.00	30.68	0.55	0.40	AVERAGE
10	14.213	36.13	-23.87	60.00	35.18	0.55	0.40	QP
11	22.884	33.01	-16.99	50.00	31.49	1.02	0.50	AVERAGE
12	22.884	39.37	-20.63	60.00	37.85	1.02	0.50	QP
13	27.159	39.31	-20.69	60.00	37.39	1.32	0.60	QP
14	27.159	34.38	-15.62	50.00	32.46	1.32	0.60	AVERAGE

Note:

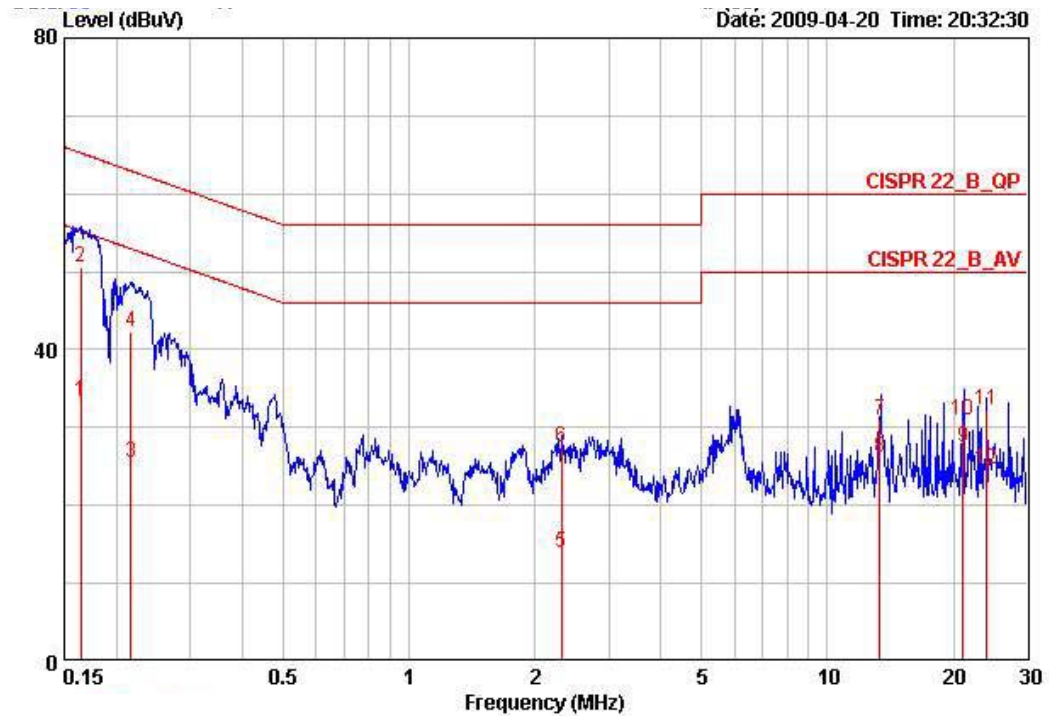
Level = Read Level + LISN Factor + Cable Loss.

Temperature	24°C	Humidity	56.1%
Test Engineer	Howar Sung	Phase	Line
Configuration	Normal Link / Mode 3		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.16589	30.83	-24.34	55.16	30.56	0.07	0.20	AVERAGE
2	0.16589	46.47	-18.70	65.16	46.20	0.07	0.20	QP
3	0.21392	23.72	-29.33	53.05	23.47	0.05	0.20	AVERAGE
4	0.21392	39.14	-23.91	63.05	38.89	0.05	0.20	QP
5	0.46122	30.54	-26.13	56.67	30.31	0.03	0.20	QP
6	0.46122	20.29	-26.38	46.67	20.06	0.03	0.20	AVERAGE
7	2.650	26.53	-29.47	56.00	26.26	0.07	0.20	QP
8	2.650	18.12	-27.88	46.00	17.85	0.07	0.20	AVERAGE
9	12.808	25.18	-24.82	50.00	24.31	0.47	0.40	AVERAGE
10	12.808	30.15	-29.85	60.00	29.28	0.47	0.40	QP
11	19.709	34.30	-25.70	60.00	32.99	0.81	0.50	QP
12	19.709	31.56	-18.44	50.00	30.25	0.81	0.50	AVERAGE
13	22.457	34.95	-25.05	60.00	33.46	0.99	0.50	QP
14	22.457	31.17	-18.83	50.00	29.68	0.99	0.50	AVERAGE

Temperature	24°C	Humidity	56.1%
Test Engineer	Howar Sung	Phase	Neutral
Configuration	Normal Link / Mode 3		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.16414	33.42	-21.83	55.25	33.12	0.10	0.20	AVERAGE
2	0.16414	50.61	-14.64	65.25	50.31	0.10	0.20	QP
3	0.21620	25.41	-27.55	52.96	25.13	0.08	0.20	AVERAGE
4	0.21620	42.39	-20.57	62.96	42.11	0.08	0.20	QP
5	2.314	13.90	-32.10	46.00	13.60	0.10	0.20	AVERAGE
6	2.314	27.48	-28.52	56.00	27.18	0.10	0.20	QP
7	13.359	30.98	-29.02	60.00	30.06	0.52	0.40	QP
8	13.359	26.07	-23.93	50.00	25.15	0.52	0.40	AVERAGE
9	21.113	27.42	-22.58	50.00	26.03	0.89	0.50	AVERAGE
10	21.113	30.99	-29.01	60.00	29.60	0.89	0.50	QP
11	24.045	32.26	-27.74	60.00	30.66	1.10	0.50	QP
12	24.045	24.66	-25.34	50.00	23.06	1.10	0.50	AVERAGE

Note:

Level = Read Level + LISN Factor + Cable Loss.

4.2. Maximum Conducted Output Power Measurement

4.2.1. Limit

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. The limited has to be reduced by the amount in dB that the gain of the antenna exceed 6dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

4.2.2. Measuring Instruments and Setting

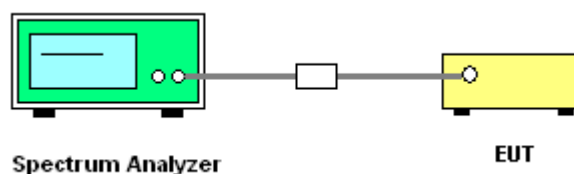
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RB	1000 kHz
VB	3000 kHz
Detector	RMS
Trace	Max Hold
Sweep Time	Auto

4.2.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Test was performed in accordance with Measurement of Digital Transmission Systems Operating under Section 15.247 March 23, 2005.

4.2.4. Test Setup Layout



4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.2.7. Test Result of Maximum Conducted Output Power

Temperature	24°C	Humidity	56%
Test Engineer	Allen Liu	Configurations	Draft n
Test Date	Mar. 08, 2009		

Configuration Draft n MCS0 20MHz Ant. A

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	22.24	30.00	Complies
6	2437 MHz	22.25	30.00	Complies
11	2462 MHz	18.30	30.00	Complies

Configuration Draft n MCS0 40MHz Ant. A

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
3	2422 MHz	14.40	30.00	Complies
6	2437 MHz	20.30	30.00	Complies
9	2452 MHz	13.34	30.00	Complies

Temperature	24°C	Humidity	56%
Test Engineer	Allen Liu	Configurations	802.11b/g
Test Date	Mar. 07, 2009		

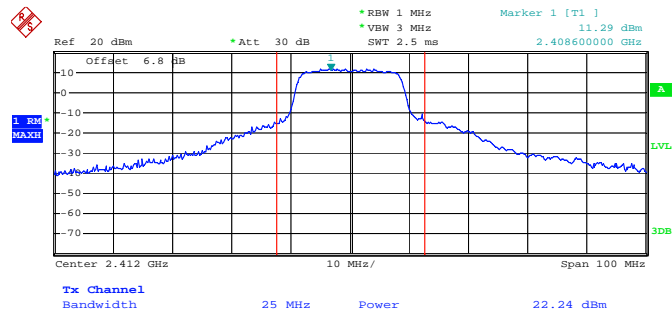
Configuration IEEE 802.11b Ant. A

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	20.81	30.00	Complies
6	2437 MHz	26.25	30.00	Complies
11	2462 MHz	20.15	30.00	Complies

Configuration IEEE 802.11g Ant. A

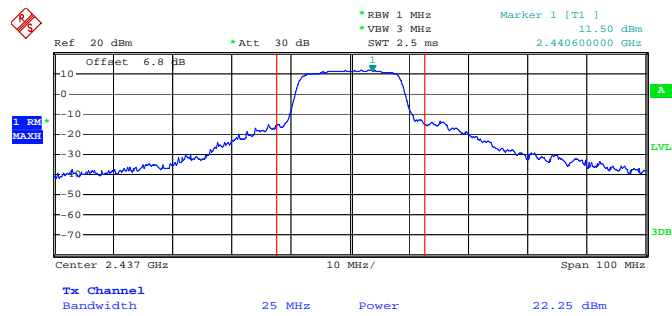
Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	21.32	30.00	Complies
6	2437 MHz	23.94	30.00	Complies
11	2462 MHz	20.04	30.00	Complies

Conducted Output Power Plot on Configuration Draft n MCS0 20MHz Ant. A / 2412 MHz



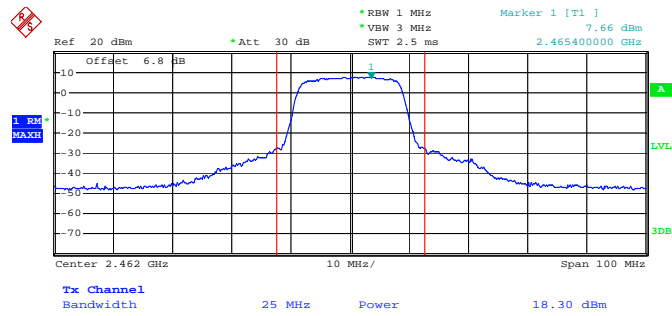
Date: 7.MAR.2009 09:24:47

Conducted Output Power Plot on Configuration Draft n MCS0 20MHz Ant. A / 2437 MHz



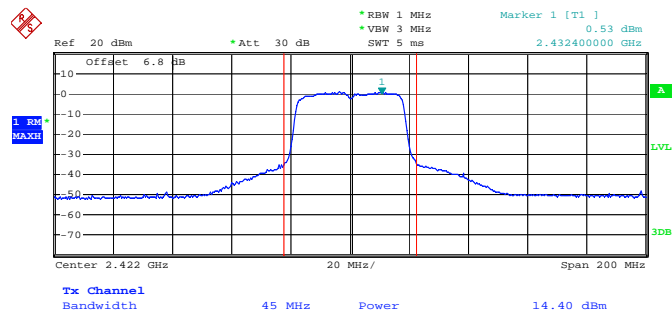
Date: 7.MAR.2009 09:26:38

Conducted Output Power Plot on Configuration Draft n MCS0 20MHz Ant. A / 2462 MHz



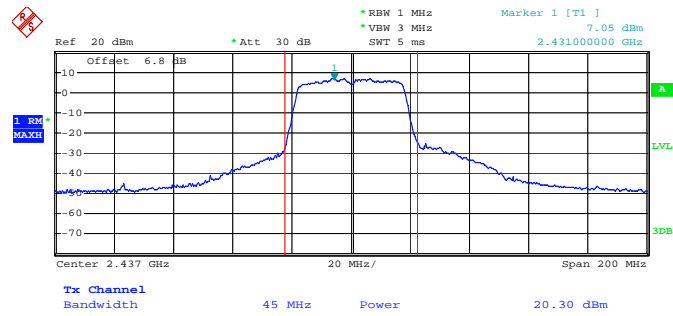
Date: 7.MAR.2009 09:28:05

Conducted Output Power Plot on Configuration Draft n MCS0 40MHz Ant. A / 2422 MHz



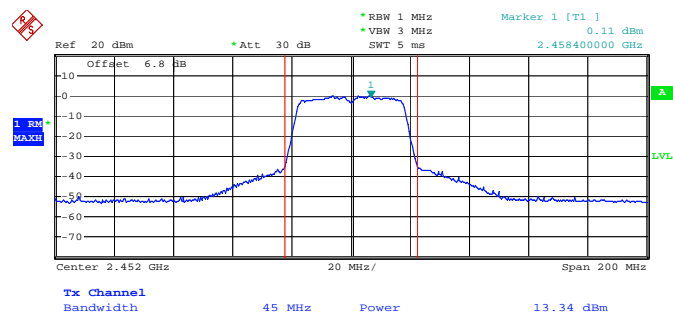
Date: 7.MAR.2009 09:30:14

Conducted Output Power Plot on Configuration Draft n MCS0 40MHz Ant. A / 2437 MHz



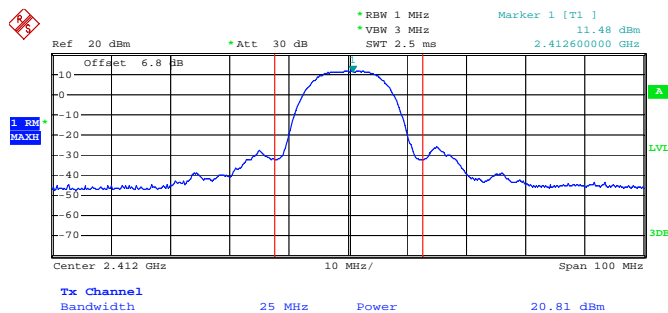
Date: 7.MAR.2009 09:31:22

Conducted Output Power Plot on Configuration Draft n MCS0 40MHz Ant. A / 2452 MHz



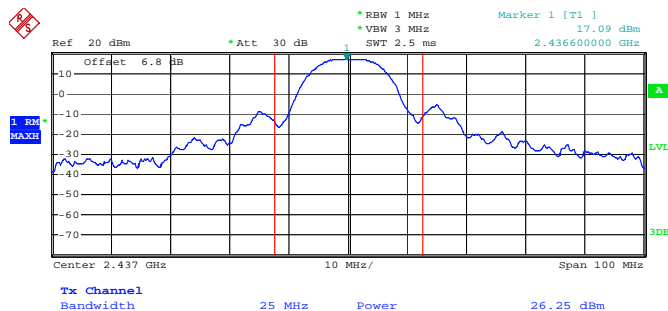
Date: 8.MAR.2009 17:52:54

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



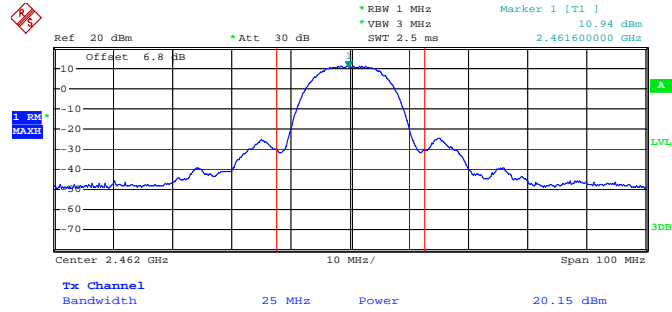
Date: 7.MAR.2009 09:14:14

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



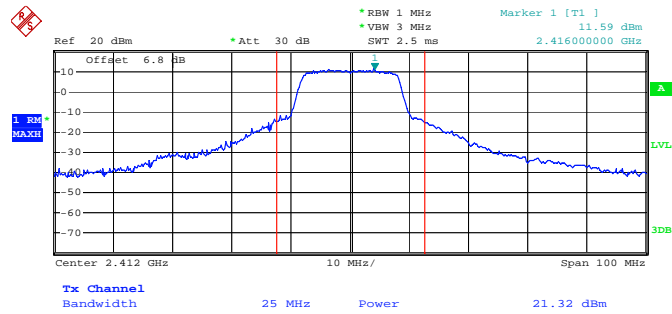
Date: 7.MAR.2009 09:15:57

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



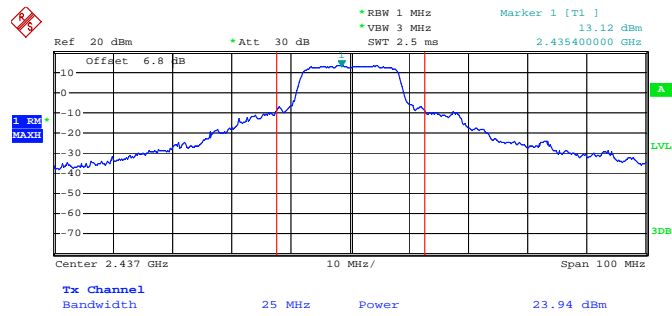
Date: 7.MAR.2009 09:16:56

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



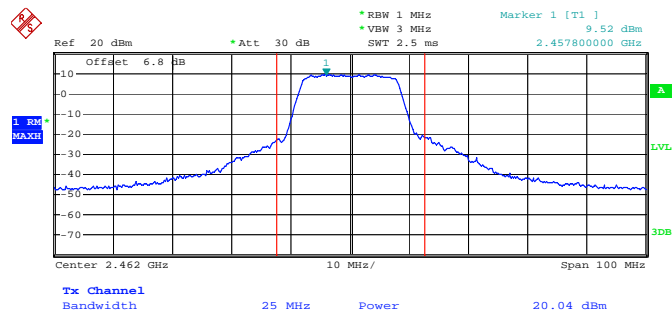
Date: 7.MAR.2009 09:18:30

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



Date: 7.MAR.2009 09:19:39

Conducted Output Power Plot on Configuration IEEE 802.11g Ant. A / 2462 MHz



Date: 7.MAR.2009 09:20:39

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

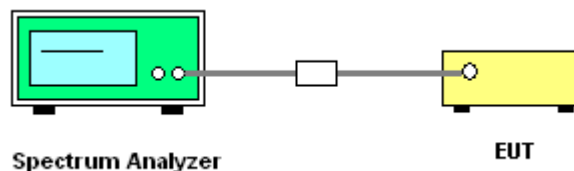
Please refer to section 5 of equipments list in this report. The following table is the setting of Spectrum Analyzer.

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 30kHz and the sweep time to 10s and record the maximum peak value.

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	56%
Test Engineer	Allen Liu	Configurations	Draft n
Test Date	Mar. 24, 2009		

Configuration Draft n MCS0 20MHz Ant. A

Channel	Frequency	Power Density (dBm / 3kHz)	Max. Limit (dBm / 3kHz)	Result
1	2412 MHz	-0.74	8.00	Complies
6	2437 MHz	-0.57	8.00	Complies
11	2462 MHz	-5.00	8.00	Complies

Configuration Draft n MCS0 40MHz Ant. A

Channel	Frequency	Power Density (dBm / 3kHz)	Max. Limit (dBm / 3kHz)	Result
3	2422 MHz	-7.98	8.00	Complies
6	2437 MHz	-2.70	8.00	Complies
9	2452 MHz	-9.95	8.00	Complies

Temperature	24°C	Humidity	56%
Test Engineer	Allen Liu	Configurations	802.11b/g
Test Date	Mar. 24, 2009		

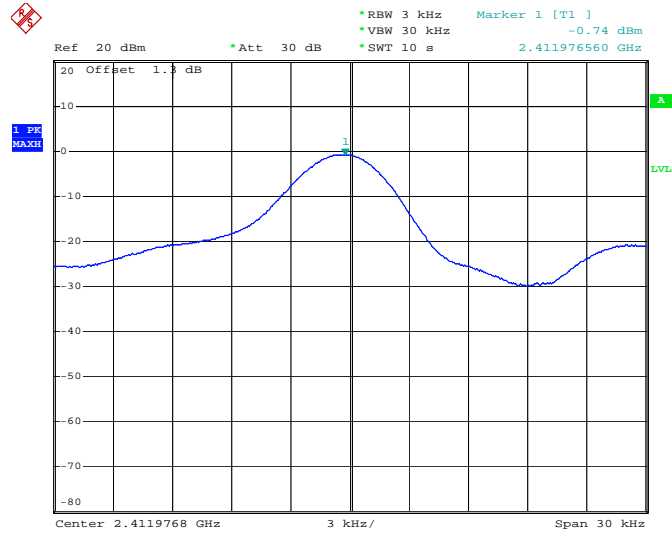
Configuration IEEE 802.11b Ant. A

Channel	Frequency	Power Density (dBm / 3kHz)	Max. Limit (dBm / 3kHz)	Result
1	2412 MHz	-4.71	8.00	Complies
6	2437 MHz	-0.58	8.00	Complies
11	2462 MHz	-5.56	8.00	Complies

Configuration IEEE 802.11g Ant. A

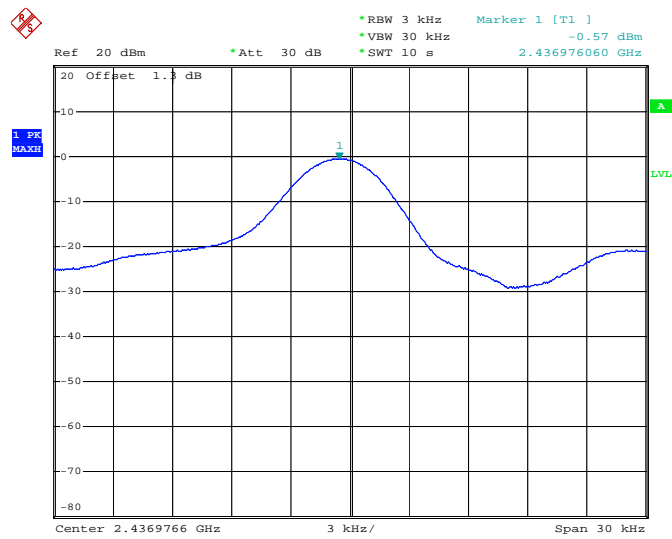
Channel	Frequency	Power Density (dBm / 3kHz)	Max. Limit (dBm / 3kHz)	Result
1	2412 MHz	-0.80	8.00	Complies
6	2437 MHz	0.75	8.00	Complies
11	2462 MHz	-2.18	8.00	Complies

Power Density Plot on Configuration Drafft n MCS0 20MHz Ant. A / 2412 MHz



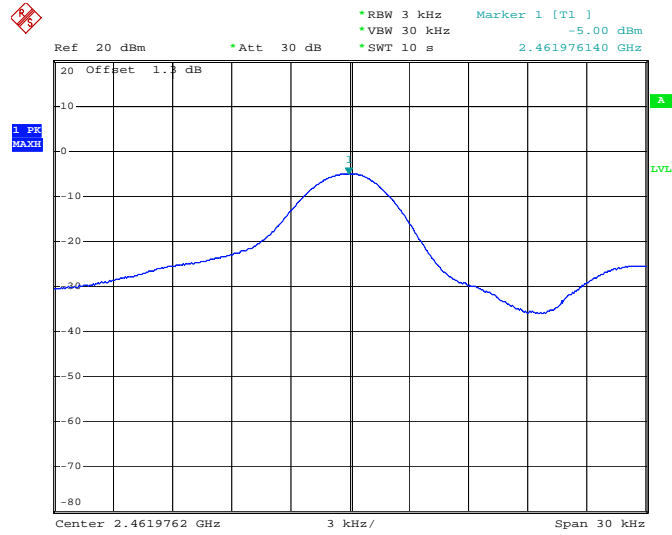
Date: 24.MAR.2009 18:45:34

Power Density Plot on Configuration Drafft n MCS0 20MHz Ant. A / 2437 MHz



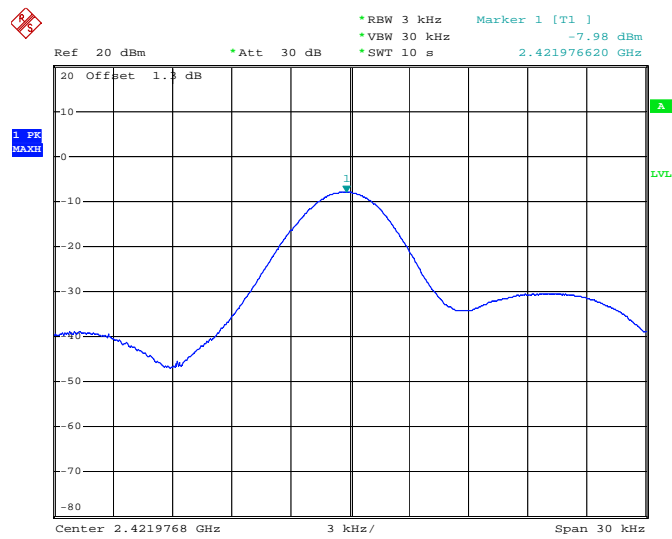
Date: 24.MAR.2009 18:44:19

Power Density Plot on Configuration Drafft n MCS0 20MHz Ant. A / 2462 MHz



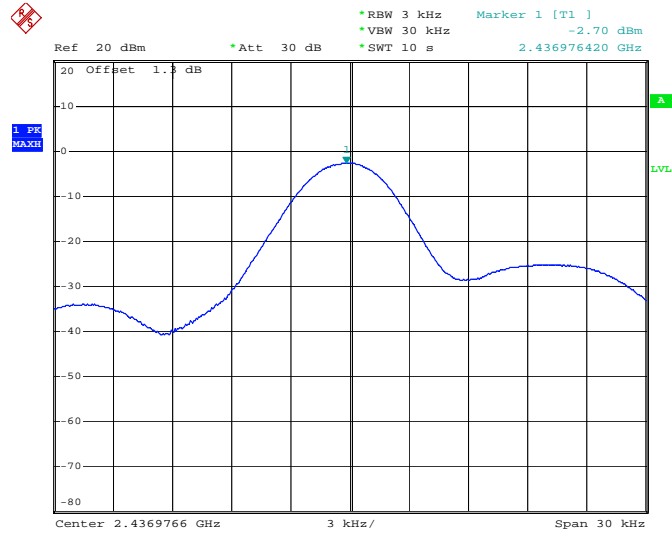
Date: 24.MAR.2009 18:47:11

Power Density Plot on Configuration Drafft n MCS0 40MHz Ant. A / 2422 MHz



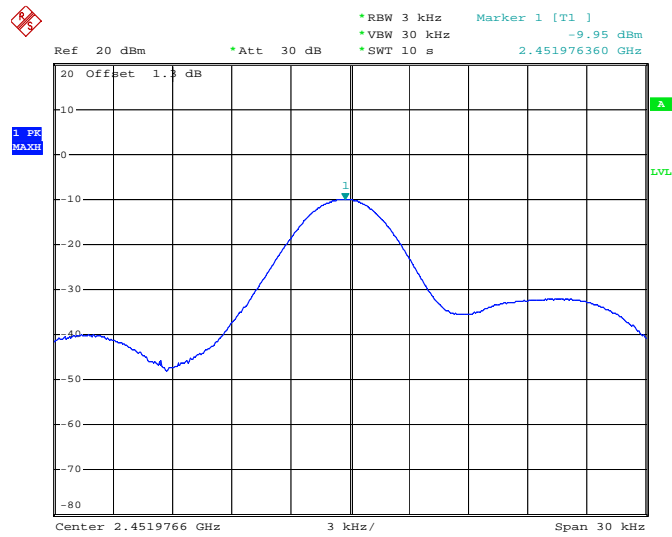
Date: 24.MAR.2009 18:49:07

Power Density Plot on Configuration Drafft n MCS0 40MHz Ant. A / 2437 MHz



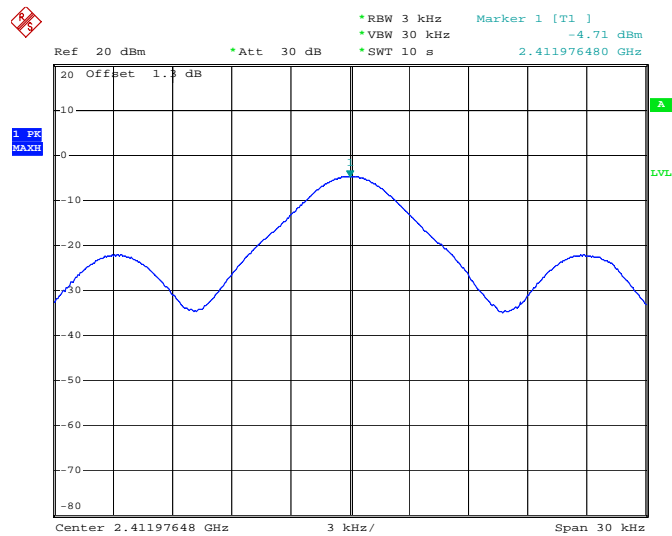
Date: 24.MAR.2009 18:50:29

Power Density Plot on Configuration Drafft n MCS0 40MHz Ant. A / 2452 MHz



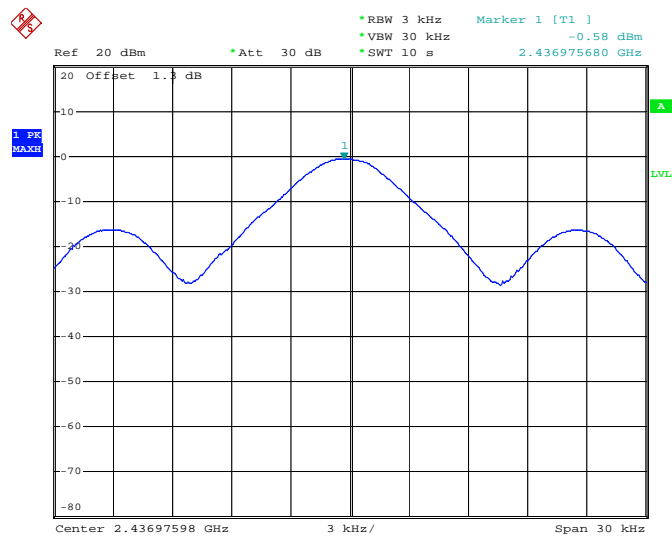
Date: 24.MAR.2009 18:51:49

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



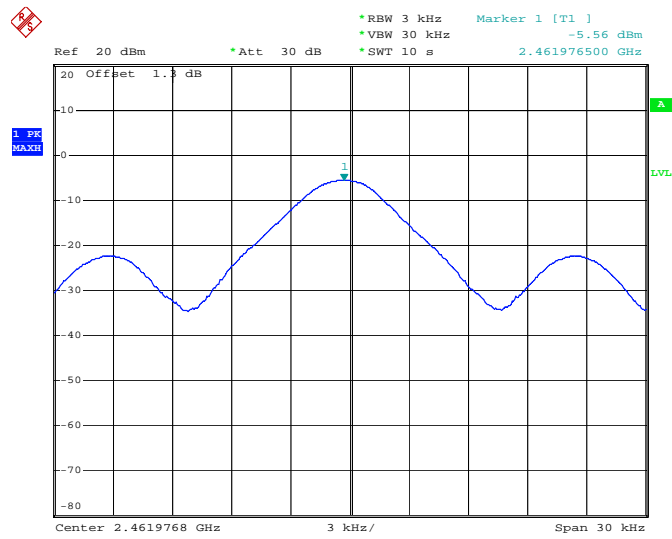
Date: 24.MAR.2009 17:30:33

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



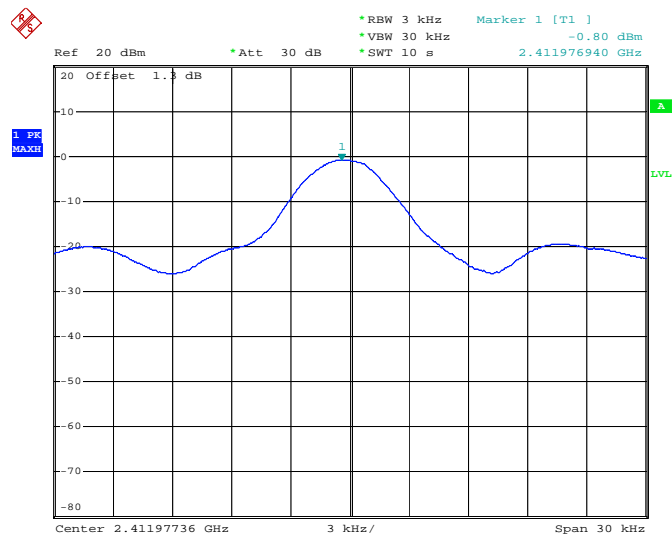
Date: 24.MAR.2009 17:31:57

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



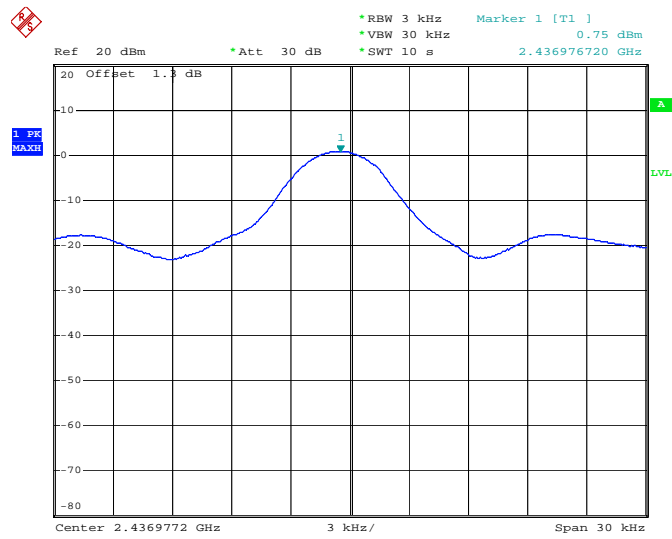
Date: 24.MAR.2009 17:33:46

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



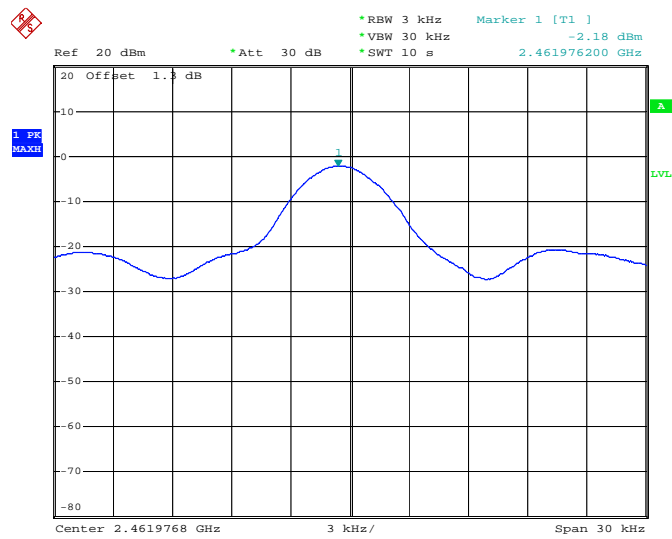
Date: 24.MAR.2009 17:35:04

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



Date: 24.MAR.2009 17:36:04

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



Date: 24.MAR.2009 17:37:26

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

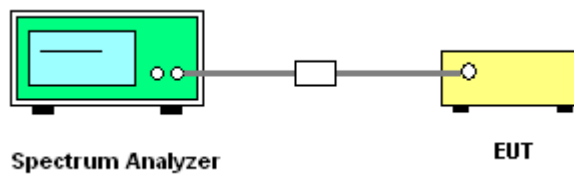
Please refer to section 5 of equipments list in this report. The following table is the setting of the Spectrum Analyzer.

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.

4.4.4. 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	56%
Test Engineer	Allen Liu	Configurations	Draft n
Test Date	Mar. 24 2009		

Configuration Draft n MCS0 20MHz Ant. A

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	17.04	17.44	500	Complies
6	2437 MHz	17.56	17.44	500	Complies
11	2462 MHz	17.60	17.48	500	Complies

Configuration Draft n MCS0 40MHz Ant. A

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
3	2422 MHz	35.76	36.24	500	Complies
6	2437 MHz	35.60	36.24	500	Complies
9	2452 MHz	34.88	36.08	500	Complies

Temperature	24°C	Humidity	56%
Test Engineer	Allen Liu	Configurations	802.11b/g
Test Date	Mar. 07, 2009		

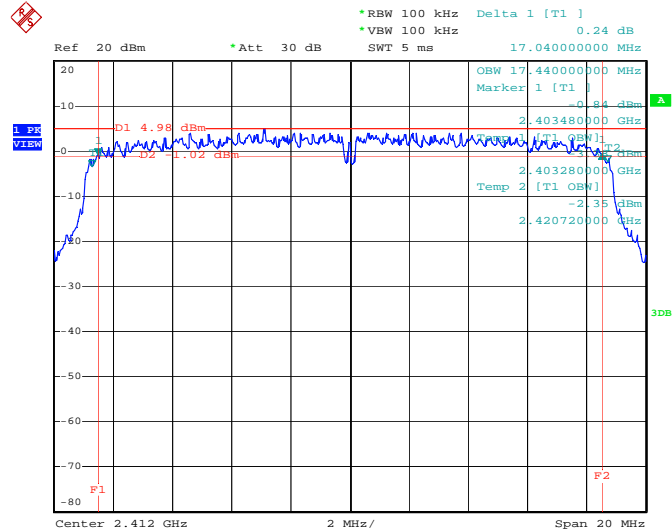
Configuration IEEE 802.11b Ant. A

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	12.12	15.00	500	Complies
6	2437 MHz	12.12	15.20	500	Complies
11	2462 MHz	12.12	15.04	500	Complies

Configuration IEEE 802.11g Ant. A

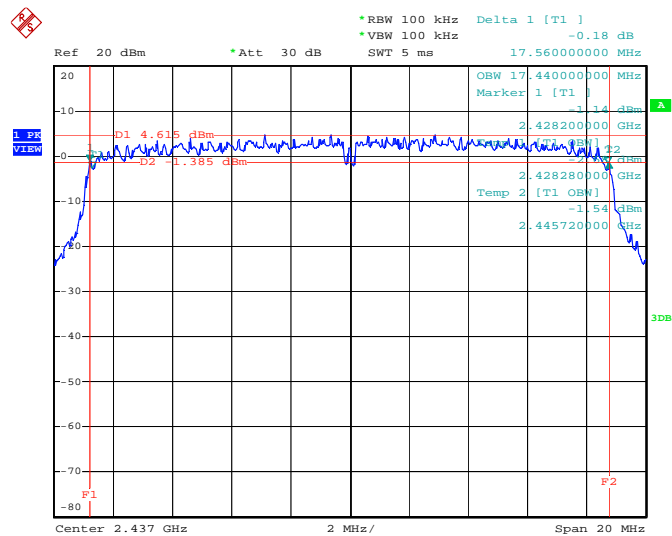
Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	16.44	16.36	500	Complies
6	2437 MHz	16.40	16.40	500	Complies
11	2462 MHz	16.40	16.36	500	Complies

6 dB Bandwidth Plot on Configuration Draft n MCS0 20MHz Ant. A / 2412 MHz



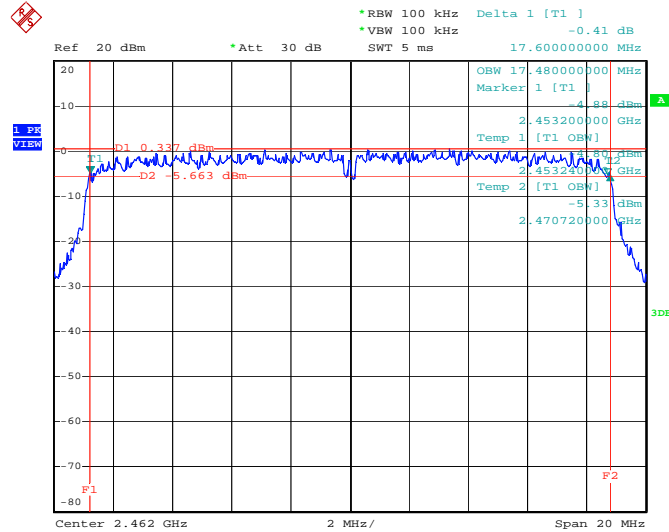
Date: 7.MAR.2009 09:55:13

6 dB Bandwidth Plot on Configuration Draft n MCS0 20MHz Ant. A / 2437 MHz



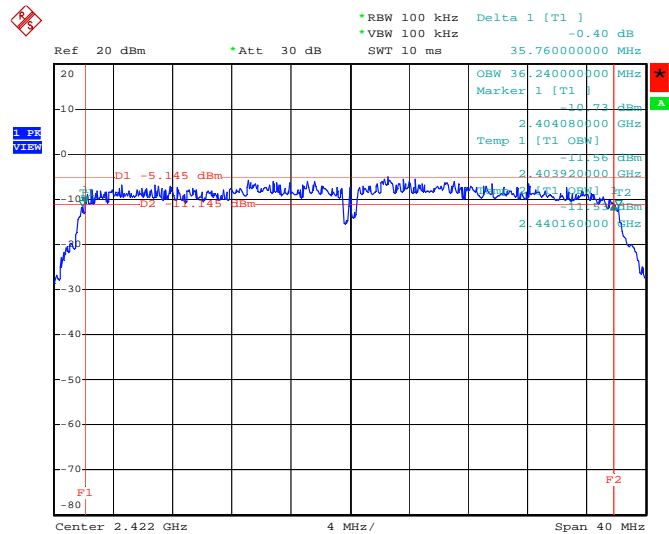
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6 dB Bandwidth Plot on Configuration Draft n MCS0 20MHz Ant. A / 2462 MHz



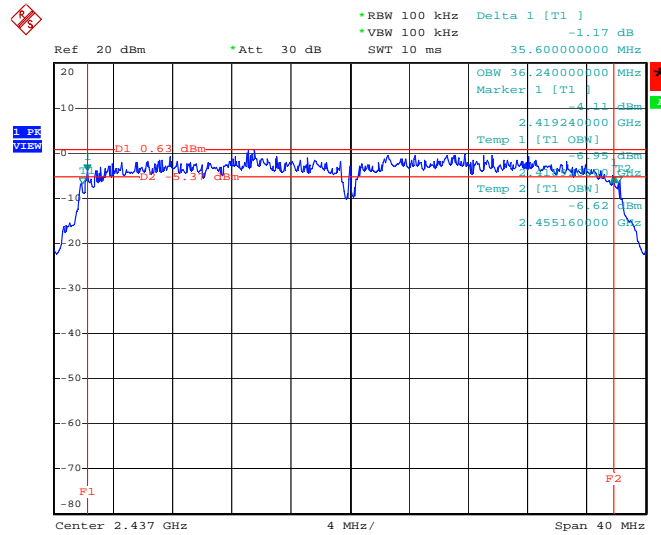
Date: 7.MAR.2009 09:59:42

6 dB Bandwidth Plot on Configuration Draft n MCS0 40MHz Ant. A / 2422 MHz



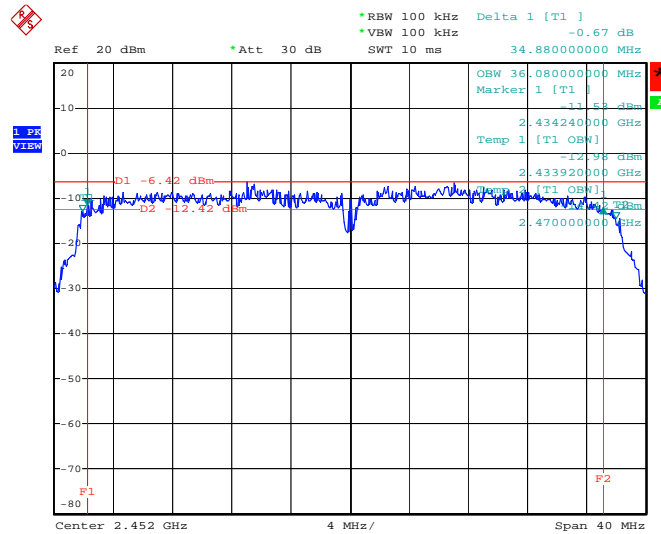
Date: 24.MAR.2009 11:43:21

6 dB Bandwidth Plot on Configuration Draft n MCS0 40MHz Ant. A / 2437 MHz



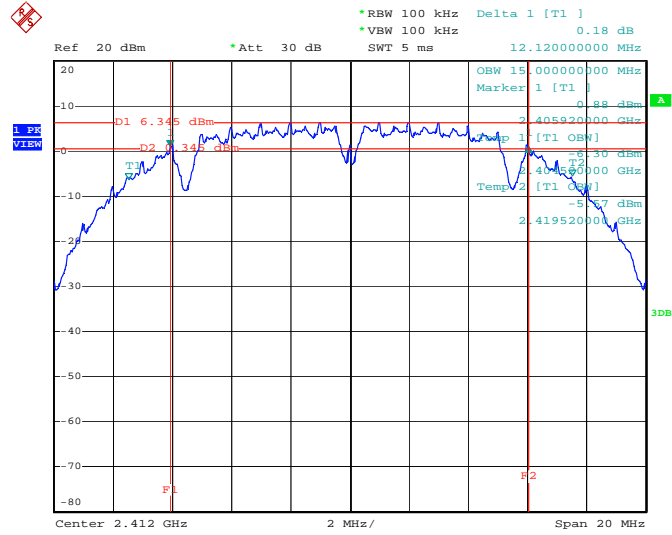
Date: 24.MAR.2009 11:46:49

6 dB Bandwidth Plot on Configuration Draft n MCS0 40MHz Ant. A / 2452 MHz



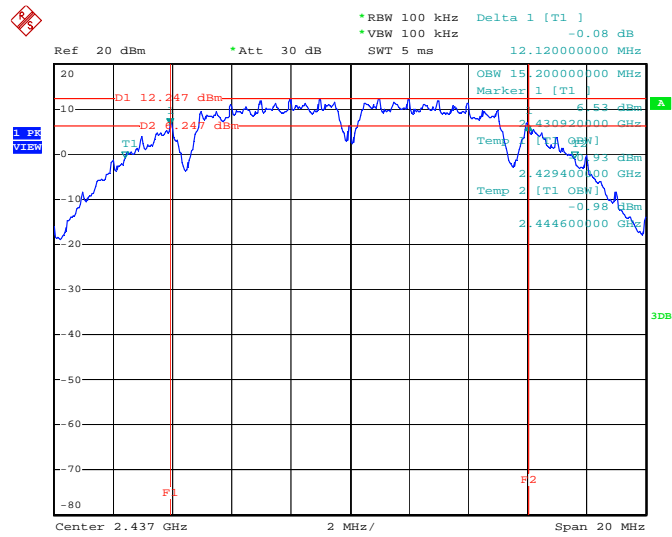
Date: 24.MAR.2009 11:49:16

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



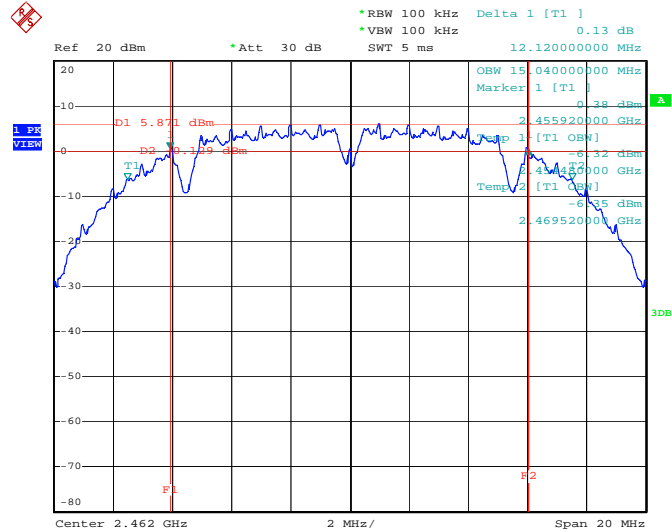
Date: 7.MAR.2009 09:35:42

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



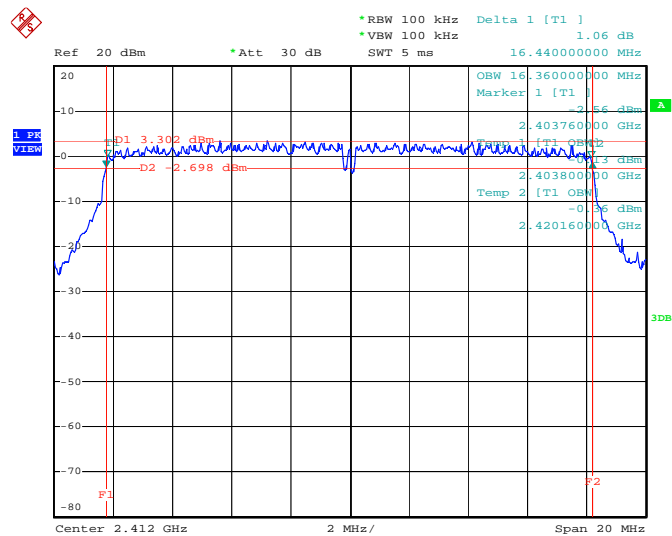
Date: 7.MAR.2009 09:38:13

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



Date: 7.MAR.2009 09:40:17

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



Date: 7.MAR.2009 09:48:14