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FCC RADIO TEST REPORT

Applicant's company	**Atop Technologies, Inc**
Applicant Address	2F, No. 146, Sec. 1, Tung-Hsing Rd., Jubei, Hsinchu 30261, Taiwan, R.O.C.
FCC ID	**RPV-AW-SW5502**
Manufacturer's company	**Atop Technologies, Inc**
Manufacturer Address	2F, No. 146, Sec. 1, Tung-Hsing Rd., Jubei, Hsinchu 30261, Taiwan, R.O.C.

Product Name	Industrial Wireless Access Point, Industrial Wireless Serial Device Server, Industrial Wireless Modbus Gateway
Brand Name	ATOP
Model Name	SW5501.SW5501-TB.SW5501-Sis.SW5502.SW5502-TB.SW5502-Sis.AW5500.AW5501.AW5501-TB.AW5501-Sis.AW5502.AW5502-TB.AW5502-Sis.MW5501.MW5501-TB.MW5501-Sis.MW5502.MW5502-TB.MW5502-Sis.SW1501T, SW1501, SW1502T, SW1502, AW1500
Test Rule Part(s)	47 CFR FCC Part 15 Subpart C § 15.247
Test Freq. Range	2400 ~ 2483.5MHz / 5725 ~ 5850MHz
Received Date	Nov. 09, 2011
Final Test Date	Dec. 02, 2011
Submission Type	Original Equipment

Statement

Test result included is only for the IEEE 802.11n, IEEE 802.11b/g part and IEEE 802.11a (5725 ~ 5850MHz) 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 C63.10-2009** and **47 CFR FCC Part 15 Subpart C**.

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

Testing Laboratory
1190

Table of Contents

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR1N0918AB	Rev. 01	Initial issue of report	Dec. 14, 2011

Certificate No.: CB10011205

1. CERTIFICATE OF COMPLIANCE

Product Name	:	Industrial Wireless Access Point, Industrial Wireless Serial Device Server, Industrial Wireless Modbus Gateway
Brand Name	:	ATOP
Model Name	:	SW5501.SW5501-TB.SW5501-Sis.SW5502.SW5502-TB.SW5502-Sis.AW5500.AW5501.AW5501-TB.AW5501-Sis.AW5502.AW5502-TB.AW5502-Sis.MW5501.MW5501-TB.MW5501-Sis.MW5502.MW5502-TB.MW5502-Sis.SW1501T, SW1501, SW1502T, SW1502, AW1500
Applicant	:	Atop Technologies, 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 Nov. 09, 2011 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.

Jordan Hsiao 2011.12.14

Jordan Hsiao

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	24.17 dB
4.2	15.247(b)(3)	Peak Output Power	Complies	1.04 dB
4.3	-	Average Output Power	-	-
4.4	15.247(e)	Power Spectral Density	Complies	9.43 dB
4.5	15.247(a)(2)	6dB Spectrum Bandwidth	Complies	-
4.6	15.247(d)	Radiated Emissions	Complies	0.10 dB
4.7	15.247(d)	Band Edge Emissions	Complies	0.16 dB
4.8	15.203	Antenna Requirements	Complies	-

Test Items	Uncertainty	Remark
AC Power Line Conducted Emissions	±2.3dB	Confidence levels of 95%
Maximum Peak Output Power	±0.8dB	Confidence levels of 95%
Power Spectral Density	±0.5dB	Confidence levels of 95%
6dB Spectrum Bandwidth	$\pm 8.5\times10^{-8}$	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℃	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

IEEE 802.11n

Items	Description
Product Type	WLAN (2TX, 2RX)
Radio Type	Intentional Transceiver
Power Type	From Adapter
Modulation	see the below table for IEEE 802.11n
Data Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data Rate (Mbps)	see the below table for IEEE 802.11n
Frequency Range	2400 ~ 2483.5MHz / 5725 ~ 5850MHz
Channel Number	For 2.4GHz Band: 11 for 20MHz bandwidth ; 7 for 40MHz bandwidth For 5GHz Band: 5 for 20MHz bandwidth ; 2 for 40MHz bandwidth
Channel Band Width (99%)	For 2.4GHz Band: MCS8 (20MHz): 17.88 MHz ; MCS8 (40MHz): 36.40 MHz For 5GHz Band: MCS8 (20MHz): 18.16 MHz ; MCS8 (40MHz): 36.16 MHz
Peak Output Power	For 2.4GHz Band: MCS8 (20MHz): 28.96 dBm ; MCS8 (40MHz): 26.43 dBm For 5GHz Band: MCS8 (20MHz): 26.11 dBm ; MCS8 (40MHz): 25.83 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

802.11a/b/g

Items	Description
Product Type	WLAN (1TX, 1RX)
Radio Type	Intentional Transceiver
Power Type	Power Adapter
Modulation	DSSS for IEEE 802.11b ; OFDM for IEEE 802.11a/g
Data Modulation	DSSS (DBPSK / DQPSK / 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 / 5725 ~ 5850MHz
Channel Number	11b/g: 11 ; 11a: 5
Channel Band Width (99%)	11b:14.00 MHz ; 11g:16.56 MHz ; 11a: 17.64MHz
Peak Output Power	11b: 22.13 dBm ; 11g: 26.40 dBm ; 11a: 24.30 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Antenna & Band width

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

IEEE 802.11n spec

MCS Index	Nss	Modulation	R	NBPSC	NCBPS		NDBPS		Datarate(Mbps)			
									800nsGI		400nsGI	
					20MHz	40MHz	20MHz	40MHz	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	AD1724C	Input: 100V~240V~0.5A 50-60Hz Output: 24V-0.63A Max. 15W

3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)		Remark
					2.4G	5G	
1	-	TWX-614XRSXX-999	OMNI Antenna	Reversed-SMA	3.0	5.0	TX / RX
2	-	TWX-614XRSXX-999	OMNI Antenna	Reversed-SMA	3.0	5.0	TX / RX

Note: The EUT has two antennas.

For IEEE 802.11n mode (2TX/2RX) for 2.4GH Band:

Ant. 1 and Ant. 2 could transmit/receive simultaneously.

For IEEE 802.11b/g mode (1TX/1RX):

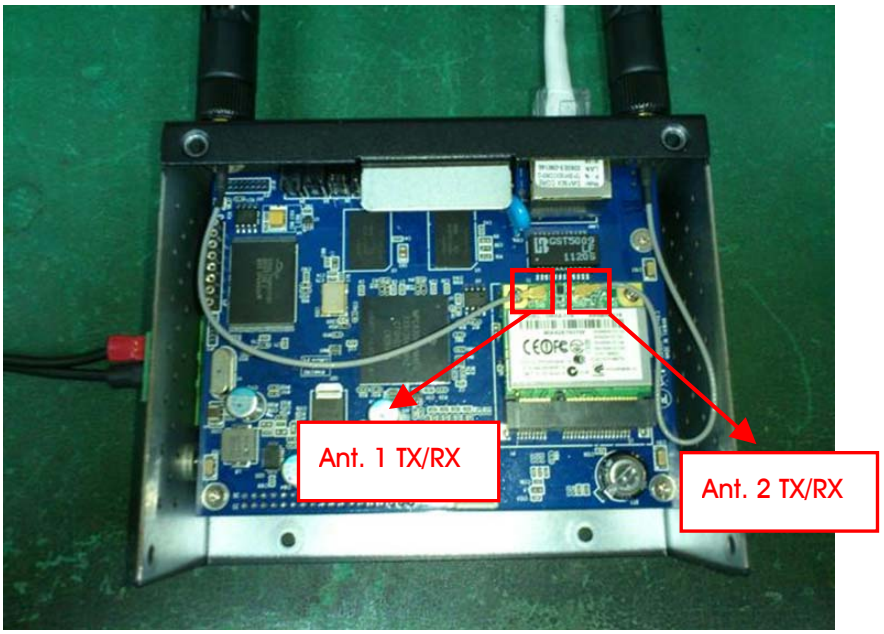
Ant. 1 can be used as transmitting/receiving antenna.

For IEEE 802.11n mode (2TX/2RX) for 5GH Band:

Ant. 1 and Ant. 2 could transmit/receive simultaneously.

For IEEE 802.11a mode (1TX/1RX):

Ant. 1 can be used as transmitting/receiving antenna.



3.4. Table for Carrier Frequencies

For 2.4GHz Band:

For IEEE 802.11b/g, use Channel 1~Channel 11.

There are two bandwidth systems for IEEE 802.11n.

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	-	-

For 5GHz Band:

For IEEE 802.11a, use Channel 149, 153, 157, 161, 165.

There are two bandwidth systems for IEEE 802.11n.

For 20MHz bandwidth systems, use Channel 149, 153, 157, 161, 165.

For 40MHz bandwidth systems, use Channel 151, 159.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5725~5850 MHz Band 4	149	5745 MHz	159	5795 MHz
	151	5755 MHz	161	5805 MHz
	153	5765 MHz	165	5825 MHz
	157	5785 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.

For 2.4GHz Band

Test Items	Mode	Data Rate	Channel	Antenna
AC Power Line Conducted Emissions	Normal Link	Auto	-	-
Peak Output Power Average Output Power Power Spectral Density	MCS8/20MHz	13 Mbps	1/6/11	1/2/1+2
	MCS8/40MHz	27 Mbps	3/6/9	1/2/1+2
	11b/CCK	1 Mbps	1/6/11	1/2/1+2
	11g/BPSK	6 Mbps	1/6/11	1/2/1+2
6dB Spectrum Bandwidth	MCS8/20MHz	13 Mbps	1/6/11	1+2
	MCS8/40MHz	27 Mbps	3/6/9	1+2
	11b/CCK	1 Mbps	1/6/11	1+2
	11g/BPSK	6 Mbps	1/6/11	1+2
Radiated Emissions Below 1GHz	Normal Link or CTX	Auto	-	-
Radiated Emissions Above 1GHz	MCS8/20MHz	13 Mbps	1/6/11	1+2
	MCS8/40MHz	27 Mbps	3/6/9	1+2
	11b/CCK	1 Mbps	1/6/11	1
	11g/BPSK	6 Mbps	1/6/11	1
Band Edge Emissions	MCS8/20MHz	13 Mbps	1/11	1+2
	MCS8/40MHz	27 Mbps	3/9	1+2
	11b/CCK	1 Mbps	1/11	1
	11g/BPSK	6 Mbps	1/11	1

For 5GHz Band

Test Items	Mode	Data Rate	Channel	Antenna
AC Power Line Conducted Emissions	CTX	Auto	-	-
Peak Output Power Average Output Power Power Spectral Density	MCS8/20MHz	13 Mbps	149/157/165	1/2/1+2
	MCS8/40MHz	27 Mbps	151/159	1/2/1+2
	11a/BPSK	6 Mbps	149/157/165	1
6dB Spectrum Bandwidth	MCS8/20MHz	13 Mbps	149/157/165	1+2
	MCS8/40MHz	27 Mbps	151/159	1+2
	11a/BPSK	6 Mbps	149/157/165	1
Radiated Emissions Below 1GHz	Normal Link	Auto	-	-
Radiated Emissions Above 1GHz	MCS8/20MHz	13 Mbps	149/157/165	1+2
	MCS8/40MHz	27 Mbps	151/159	1+2
	11a/BPSK	6 Mbps	149/157/165	1
Band Edge Emissions	MCS8/20MHz	13 Mbps	149/157/165	1+2
	MCS8/40MHz	27 Mbps	151/159	1+2
	11a/BPSK	6 Mbps	149/157/165	1

The following test modes were performed for Conducted test:

Mode 1: EUT 1 (Model: AW5502-TB)

Mode 2: EUT 2 (Model: AW5502-Sis)

Due to Mode 1 generated the worse result and its test results were recorded in this report.

<For MPE Test>:

The EUT could be applied with 2.4GHz WLAN function and 5GHz WLAN function; therefore Maximum Permissible Exposure (Please refer to Appendix B).

3.6. Table for Testing Locations

Test Site No.	Site Category	Location	FCC Reg. No.	IC File No.	VCCI Reg. No
03CH01-CB	SAC	Hsin Chu	262045	IC 4086D	-
CO01-CB	Conduction	Hsin Chu	262045	IC 4086D	-
TH01-CB	OVEN Room	Hsin Chu	-	-	-

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 Multiple Listing

The brand/model names in the following table are all refer to the identical product.

Product Name: Industrial Wireless Access Point

Wireless Mode: Master

Software: Access Point

Model Name	Top Board	Bottom Board	Serial DB9 type	Serial TB5 type
AW5500 AW1500	Same	Same (No Serial)	No	No
AW5501	Same	Same (One Serial)	Yes	No
AW5501-TB	Same	Same (One Serial)	No	Yes
AW5501-Sis	Same	Same, (One Serial, isolation function)	No	Yes
AW5502	Same	Same (Two Serial)	Yes	No
AW5502-TB	Same	Same (Two Serial)	No	Yes
AW5502-Sis	Same	Slight different (Two Serial, isolation function)	No	Yes

Product Name: Industrial Wireless Serial Device Server

Wireless Mode: Client

Software: Serial Device Server

Model Name	Top Board	Bottom Board	Serial DB9 type	Serial TB5 type
SW5501 SW1501	Same	Same (One Serial)	Yes	No
SW5501-TB	Same	Same(One Serial)	No	Yes
SW5501-Sis	Same	Same (One Serial, isolation function)	No	Yes
SW5502 SW1502	Same	Same (Two Serial)	Yes	No
SW5502-TB	Same	Same (Two Serial)	No	Yes
SW5502-Sis	Same	Slight Different (Two Serial, isolation function)	No	Yes
SW1501T	Reverse male and female connector of top and bottom			
SW1502T	Reverse male and female connector of top and bottom			

Product Name: Industrial Wireless Modbus Gateway

Wireless Mode: Client

Software: Modbus Gateway

Model Name	Top Board	Bottom Board	Serial DB9 type	Serial TB5 type
MW5501	Same	Same (One Serial)	Yes	No
MW5501-TB	Same	Same(One Serial)	No	Yes
MW5501-Sis	Same	Same, (One Serial, isolation function)	No	Yes
MW5502	Same	Same (Two Serial)	Yes	No
MW5502-TB	Same	Same (Two Serial)	No	Yes
MW5502-Sis	Same	Slight Different (Two Serial, isolation function)	No	Yes

3.8. Table for Supporting Units

Support Unit	Brand	Model	FCC ID
Notebook	DELL	M1330	E2KWM3945ABG
Notebook	DELL	D400	E2K24GBRL

3.9. 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.

For 2.4GHz Band

Power Parameters of IEEE 802.11n MCS8 20MHz

Test Software Version	DOS		
Frequency	2412 MHz	2437 MHz	2462 MHz
MCS8 20MHz	13	24	18

Power Parameters of IEEE 802.11n MCS8 40MHz

Test Software Version	DOS		
Frequency	2422 MHz	2437 MHz	2452 MHz
MCS8 40MHz	10	15	14

Power Parameters of IEEE 802.11b/g

Test Software Version	DOS		
Frequency	2412 MHz	2437 MHz	2462 MHz
IEEE 802.11b	18	20	20
IEEE 802.11g	14	21	17

For 5GHz Band

Power Parameters of IEEE 802.11n MCS8 **20MHz**

Test Software Version	DOS		
Frequency	5745 MHz	5785 MHz	5825 MHz
MCS8 20MHz	25	27	27

Power Parameters of IEEE 802.11n MCS8 **40MHz**

Test Software Version	DOS	
Frequency	5755 MHz	5795 MHz
MCS8 40MHz	21	25

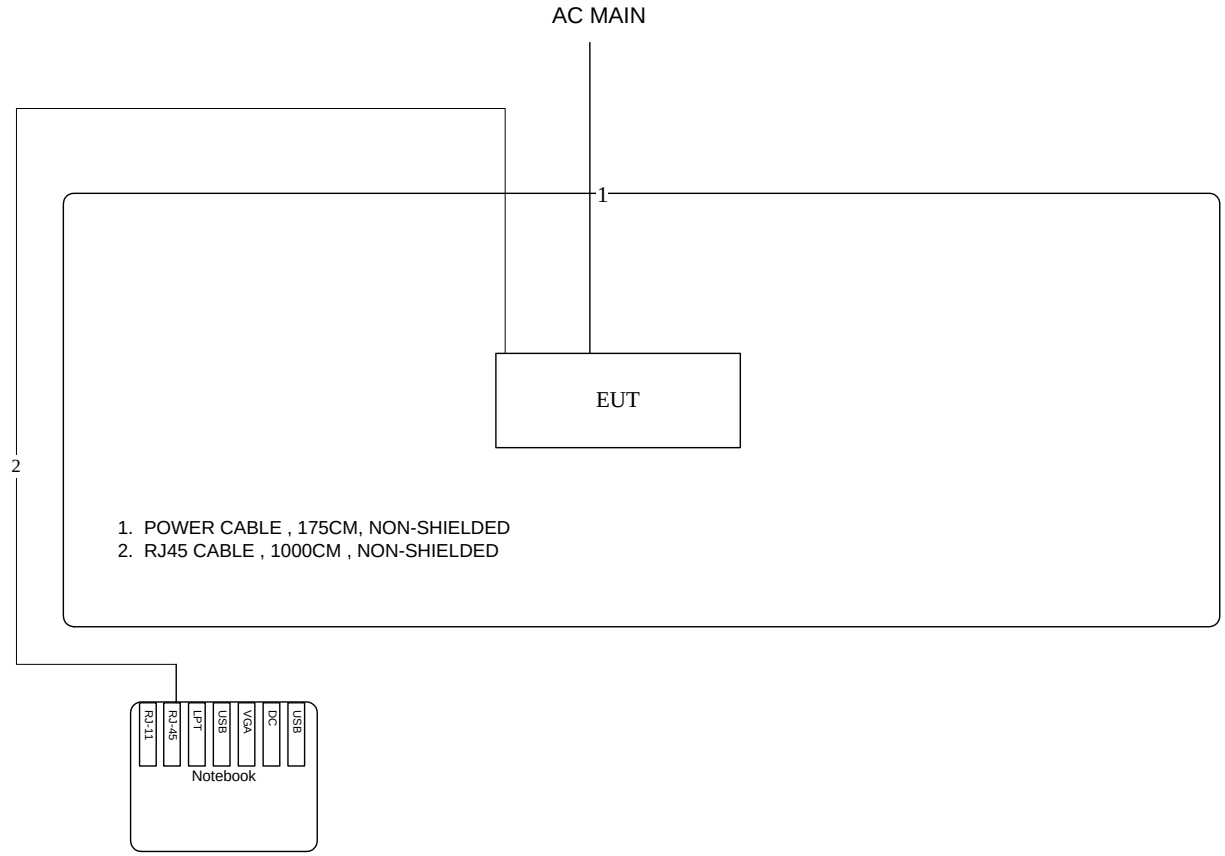
Power Parameters of IEEE 802.11a

Test Software Version	DOS		
Frequency	5745 MHz	5785 MHz	5825 MHz
IEEE 802.11a	27	27	27

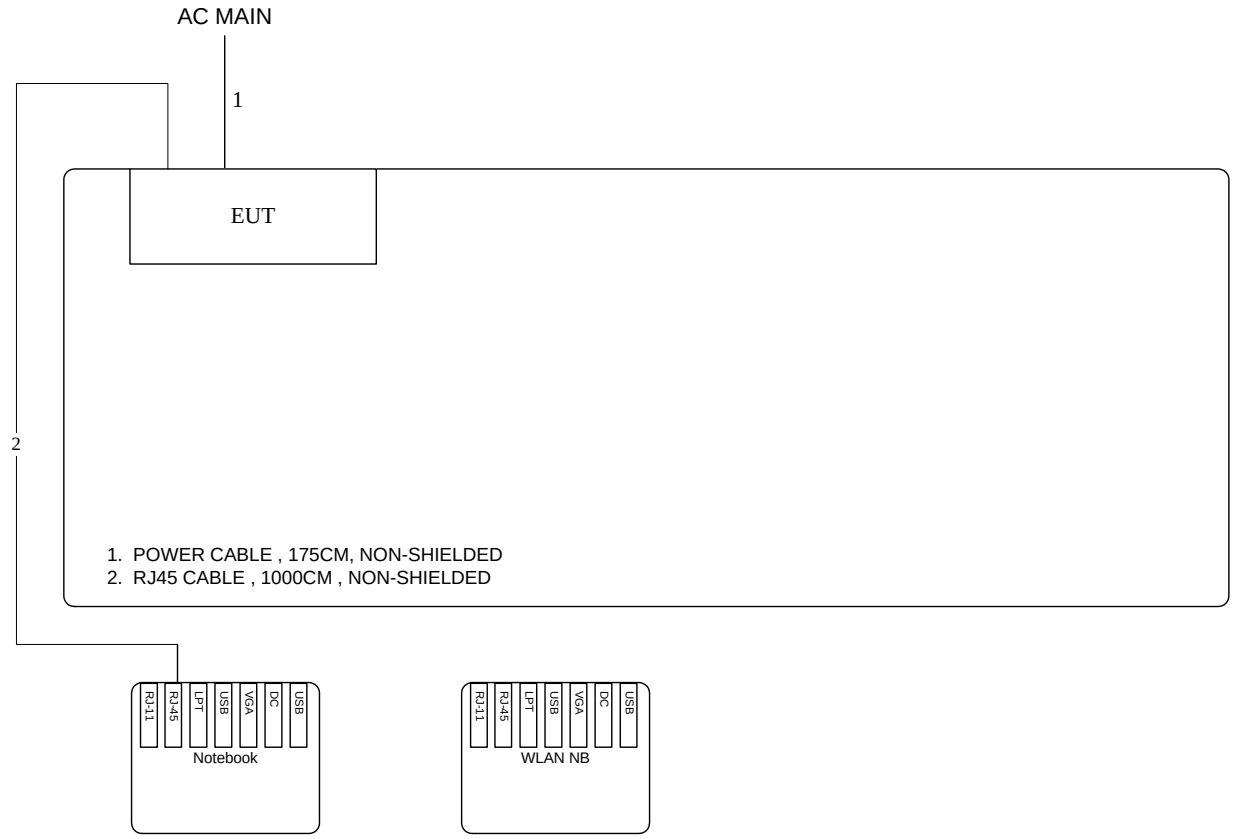
During the test, "**DOS**" under WIN XP was executed the test program to control the EUT continuously transmit RF signal.

3.10. Test Configurations

3.10.1. Radiation Emissions Test Configuration



3.10.2. AC Power Line Conduction Emissions Test Configuration



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

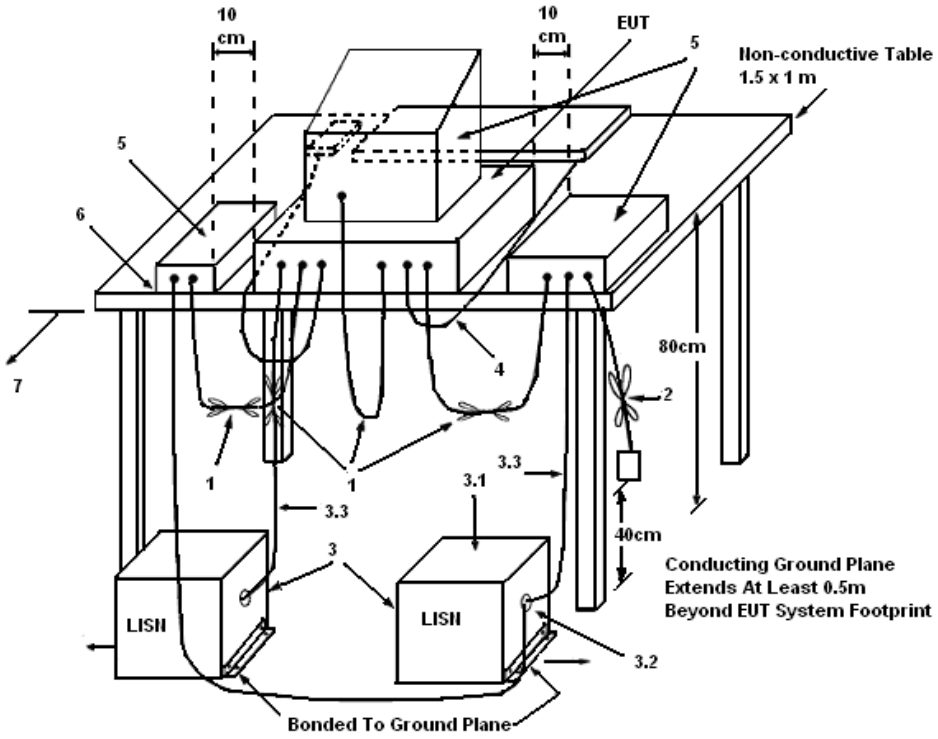
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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 C63.10. 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

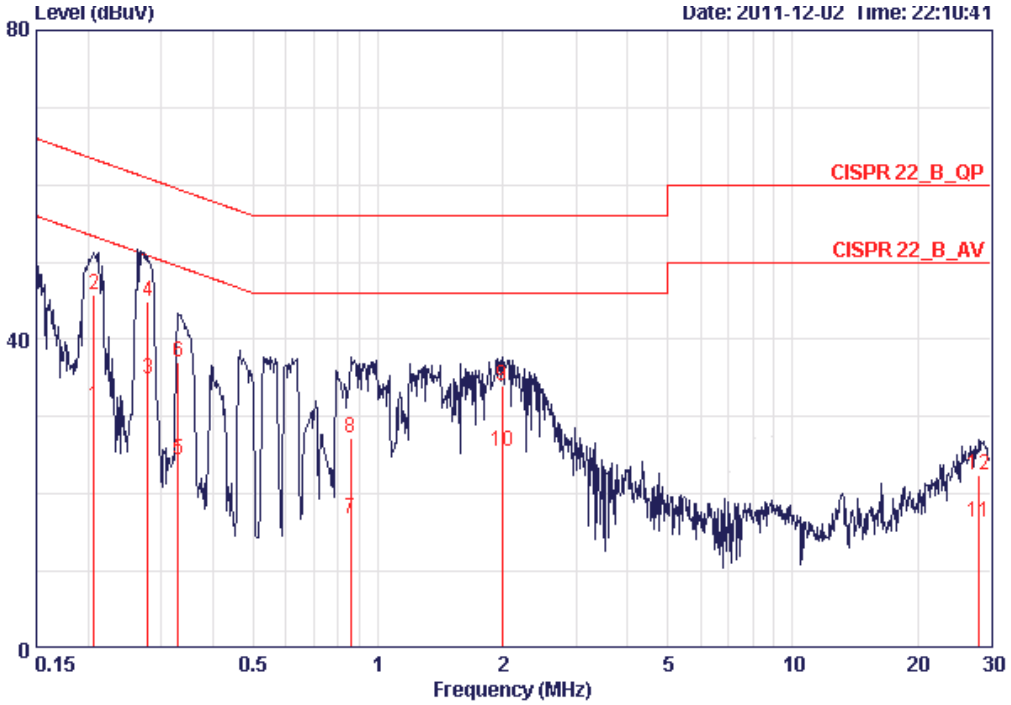
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

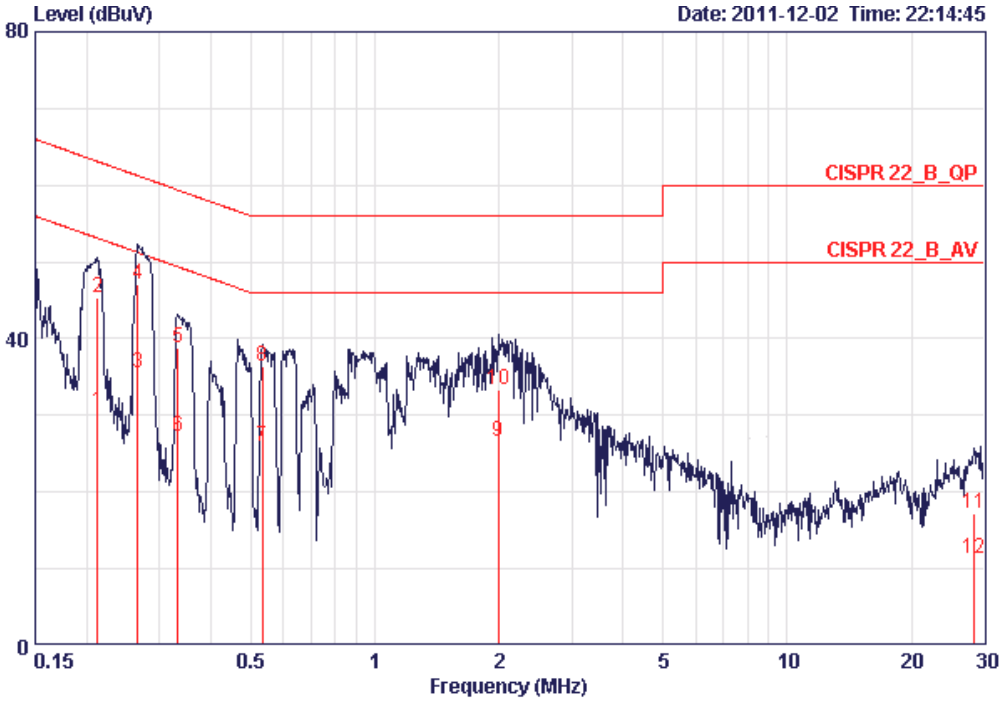
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	21°C	Humidity	61%
Test Engineer	Sin Chang	Phase	Line
Configuration	CTX	Test Mode	Mode 1



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.20614	31.41	-21.95	53.36	31.16	0.05	0.20	AVERAGE
2	0.20614	45.85	-17.51	63.36	45.60	0.05	0.20	QP
3	0.27903	34.93	-15.91	50.84	34.69	0.04	0.20	AVERAGE
4	0.27903	44.95	-15.89	60.84	44.71	0.04	0.20	QP
5	0.33033	24.31	-25.14	49.44	24.07	0.04	0.20	AVERAGE
6	0.33033	36.97	-22.48	59.44	36.73	0.04	0.20	QP
7	0.85730	16.84	-29.16	46.00	16.61	0.03	0.20	AVERAGE
8	0.85730	27.17	-28.83	56.00	26.94	0.03	0.20	QP
9	1.991	33.97	-22.03	56.00	33.72	0.05	0.20	QP
10	1.991	25.52	-20.48	46.00	25.27	0.05	0.20	AVERAGE
11	28.152	16.26	-33.74	50.00	14.33	1.33	0.60	AVERAGE
12	28.152	22.42	-37.58	60.00	20.49	1.33	0.60	QP

Temperature	21°C	Humidity	61%
Test Engineer	Sin Chang	Phase	Neutral
Configuration	CTX	Test Mode	Mode 1



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.21279	30.44	-22.66	53.10	30.16	0.08	0.20	AVERAGE
2	0.21279	45.31	-17.79	63.10	45.03	0.08	0.20	QP
3	0.26583	35.57	-15.68	51.25	35.29	0.08	0.20	AVERAGE
4 @	0.26583	47.19	-14.06	61.25	46.91	0.08	0.20	QP
5	0.33208	38.70	-20.70	59.40	38.43	0.07	0.20	QP
6	0.33208	27.29	-22.11	49.40	27.02	0.07	0.20	AVERAGE
7	0.53215	25.86	-20.14	46.00	25.59	0.07	0.20	AVERAGE
8	0.53215	36.38	-19.62	56.00	36.11	0.07	0.20	QP
9	1.991	26.52	-19.48	46.00	26.23	0.09	0.20	AVERAGE
10	1.991	33.41	-22.59	56.00	33.12	0.09	0.20	QP
11	28.302	17.26	-42.74	60.00	15.27	1.39	0.60	QP
12	28.302	11.27	-38.73	50.00	9.28	1.39	0.60	AVERAGE

Note:

Level = Read Level + LISN Factor + Cable Loss

4.2. Peak 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. Systems operating in the 5725-5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter peak output power.

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 peak power meter.

Power Meter Parameter	Setting
Bandwidth	50MHz bandwidth is greater than the EUT emission bandwidth
Detector	Peak

4.2.3. Test Procedures

Spectrum Parameter	Setting
RF Output Power Method	☒ ANSI C63.10 clause 6.10.2.1 (a) power meter method
RF Output Power Method	☐ ANSI C63.10 clause 6.10.2.1 (b) channel integration method
RF Output Power Method	☐ ANSI C63.10 clause 6.10.3.1 Method 1 - spectral trace averaging
RF Output Power Method	☐ ANSI C63.10 clause 6.10.3.2 Method 2 - zero-span mode with trace averaging

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 Peak Output Power

Temperature	23°C	Humidity	61%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n
Test Date	Nov. 16, 2011		

For 2.4GHz Band

Configuration IEEE 802.11n MCS8 20MHz

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Ant. 1	Ant. 2			
1	2412 MHz	21.54	21.72	24.64	30.00	Complies
6	2437 MHz	26.06	25.83	28.96	30.00	Complies
11	2462 MHz	25.09	24.00	27.59	30.00	Complies

Configuration IEEE 802.11n MCS8 40MHz

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Ant. 1	Ant. 2			
3	2422 MHz	18.66	19.07	21.88	30.00	Complies
6	2437 MHz	23.69	23.13	26.43	30.00	Complies
9	2452 MHz	22.94	22.61	25.79	30.00	Complies

For 5GHz Band

Configuration IEEE 802.11n MCS8 20MHz

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Ant. 1	Ant. 2			
149	5745 MHz	23.64	22.49	26.11	30.00	Complies
157	5785 MHz	23.41	22.28	25.89	30.00	Complies
165	5825 MHz	23.26	22.07	25.72	30.00	Complies

Configuration IEEE 802.11n MCS8 40MHz

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Ant. 1	Ant. 2			
151	5755 MHz	23.40	21.99	25.76	30.00	Complies
159	5795 MHz	23.33	22.23	25.83	30.00	Complies

Temperature	20°C	Humidity	70%
Test Engineer	Magic Lai	Configurations	IEEE 802.11a/b/g
Test Date	Nov. 16, 2011		

Configuration IEEE 802.11b / Ant. 1

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	19.62	30.00	Complies
6	2437 MHz	22.13	30.00	Complies
11	2462 MHz	21.86	30.00	Complies

Configuration IEEE 802.11g / Ant. 1

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	22.50	30.00	Complies
6	2437 MHz	26.40	30.00	Complies
11	2462 MHz	25.01	30.00	Complies

Configuration IEEE 802.11a / Ant. 1

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
149	5745 MHz	24.30	30.00	Complies
157	5785 MHz	24.16	30.00	Complies
165	5825 MHz	24.04	30.00	Complies

4.3. Average Output Power Measurement

4.3.1. Measuring Instruments and Setting

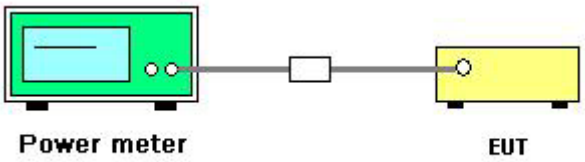
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Bandwidth	50MHz bandwidth is greater than the EUT emission bandwidth
Detector	Average

4.3.2. Test Procedures

Spectrum Parameter	Setting
RF Output Power Method	☒ ANSI C63.10 clause 6.10.2.1 (a) power meter method
RF Output Power Method	☐ ANSI C63.10 clause 6.10.2.1 (b) channel integration method
RF Output Power Method	☐ ANSI C63.10 clause 6.10.3.1 Method 1 - spectral trace averaging
RF Output Power Method	☐ ANSI C63.10 clause 6.10.3.2 Method 2 - zero-span mode with trace averaging

4.3.3. Test Setup Layout



4.3.4. Test Deviation

There is no deviation with the original standard.

4.3.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.3.6. Test Result of Average Output Power

Temperature	20°C	Humidity	61%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n
Test Date	Nov. 16, 2011		

For 2.4GHz Band

Configuration IEEE 802.11n MCS8 20MHz

Channel	Frequency	Average Conducted Power (dBm)		
		Ant. 1	Ant. 2	Total
1	2412 MHz	12.61	13.05	15.85
6	2437 MHz	20.46	22.28	24.47
11	2462 MHz	17.45	17.30	20.39

Configuration IEEE 802.11n MCS8 40MHz

Channel	Frequency	Average Conducted Power (dBm)		
		Ant. 1	Ant. 2	Total
3	2422 MHz	9.33	10.00	12.69
6	2437 MHz	15.09	15.45	18.28
9	2452 MHz	13.98	14.78	17.41

For 5GHz Band

Configuration IEEE 802.11n MCS8 20MHz

Channel	Frequency	Average Conducted Power (dBm)		
		Ant. 1	Ant. 2	Total
149	5745 MHz	21.16	20.05	23.65
157	5785 MHz	21.09	20.14	23.65
165	5825 MHz	20.67	19.93	23.33

Configuration IEEE 802.11n MCS8 40MHz

Channel	Frequency	Average Conducted Power (dBm)		
		Ant. 1	Ant. 2	Total
151	5755 MHz	19.12	17.77	21.51
159	5795 MHz	21.04	19.81	23.48

Temperature	20°C	Humidity	61%
Test Engineer	Magic Lai	Configurations	IEEE 802.11a/b/g
Test Date	Nov. 16, 2011		

Configuration IEEE 802.11b / Ant. 1

Channel	Frequency	Average Conducted Power (dBm)
1	2412 MHz	17.42
6	2437 MHz	20.00
11	2462 MHz	19.70

Configuration IEEE 802.11g / Ant. 1

Channel	Frequency	Average Conducted Power (dBm)
1	2412 MHz	13.54
6	2437 MHz	20.96
11	2462 MHz	16.93

Configuration IEEE 802.11a / Ant. 1

Channel	Frequency	Average Conducted Power (dBm)
149	5745 MHz	22.13
157	5785 MHz	22.03
165	5825 MHz	21.77

4.4. Power Spectral Density Measurement

4.4.1. Limit

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

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

4.4.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
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.
5. When measuring power spectral density with multiple antenna systems, add every result of the values by mathematic formula.

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 Power Spectral Density

Temperature	23°C	Humidity	61%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n

For 2.4GHz Band

Configuration IEEE 802.11n MCS8 20MHz

Channel	Frequency	Power Density (dBm/3kHz)		Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
		Ant. 1	Ant. 2			
1	2412 MHz	-11.97	-12.59	-9.26	8.00	Complies
6	2437 MHz	-5.43	-3.64	-1.43	8.00	Complies
11	2462 MHz	-8.24	-7.97	-5.09	8.00	Complies

Configuration IEEE 802.11n MCS8 40MHz

Channel	Frequency	Power Density (dBm/3kHz)		Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
		Ant. 1	Ant. 2			
3	2422 MHz	-18.37	-18.03	-15.19	8.00	Complies
6	2437 MHz	-12.87	-11.81	-9.30	8.00	Complies
9	2452 MHz	-14.80	-13.83	-11.28	8.00	Complies

For 5GHz Band

Configuration IEEE 802.11n MCS8 20MHz

Channel	Frequency	Power Density (dBm/3kHz)		Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
		Ant. 1	Ant. 2			
149	5745 MHz	-6.10	-6.04	-3.06	8.00	Complies
157	5785 MHz	-6.23	-5.87	-3.04	8.00	Complies
165	5825 MHz	-5.79	-5.37	-2.56	8.00	Complies

Configuration IEEE 802.11n MCS8 40MHz

Channel	Frequency	Power Density (dBm/3kHz)		Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
		Ant. A	Ant. 2			
151	5755 MHz	-11.43	-11.55	-8.48	8.00	Complies
159	5795 MHz	-8.76	-9.22	-5.97	8.00	Complies

Temperature	20°C	Humidity	70%
Test Engineer	Magic Lai	Configurations	IEEE 802.11a/b/g

Configuration IEEE 802.11b / Ant. 1

Channel	Frequency	Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
1	2412 MHz	-5.31	8.00	Complies
6	2437 MHz	-3.23	8.00	Complies
11	2462 MHz	-3.45	8.00	Complies

Configuration IEEE 802.11g / Ant. 1

Channel	Frequency	Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
1	2412 MHz	-11.33	8.00	Complies
6	2437 MHz	-4.39	8.00	Complies
11	2462 MHz	-8.53	8.00	Complies

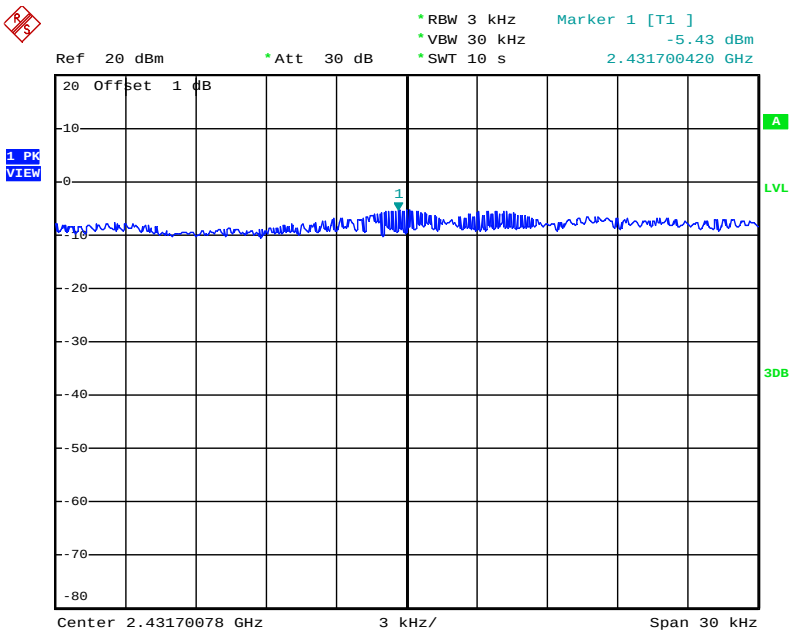
Configuration IEEE 802.11a / Ant. 1

Channel	Frequency	Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
149	5745 MHz	-3.86	8.00	Complies
157	5785 MHz	-4.77	8.00	Complies
165	5825 MHz	-4.74	8.00	Complies

Note: All the test values were listed in the report.

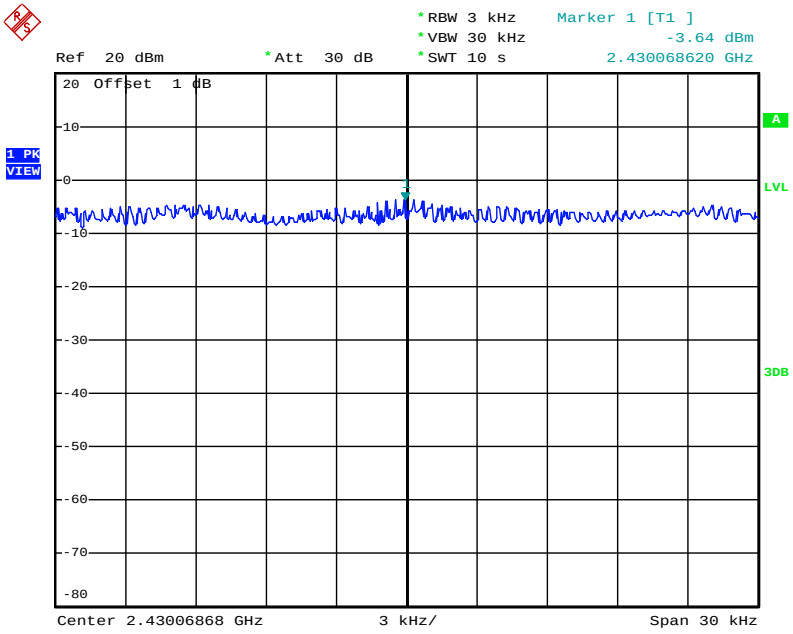
For plots, only the channel with maximum results was shown.

Power Density Plot on Configuration IEEE 802.11n MCS8 20MHz / Ant. 1 / 2437 MHz



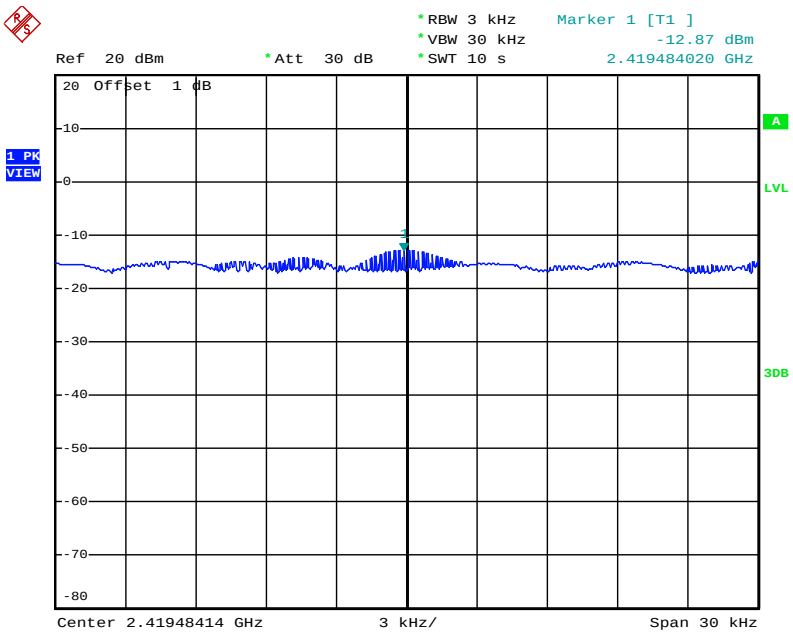
Date: 16.NOV.2011 16:23:21

Power Density Plot on Configuration IEEE 802.11n MCS8 20MHz / Ant. 2 / 2437 MHz



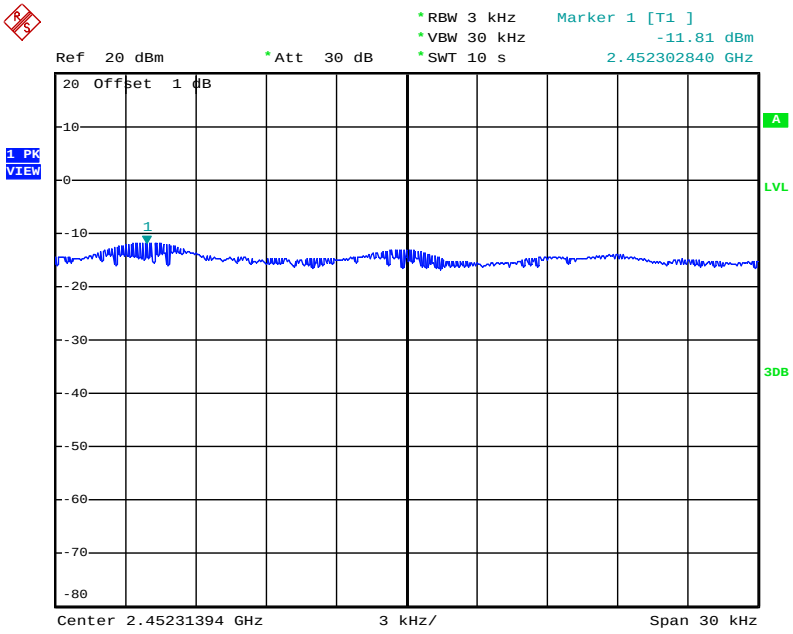
Date: 16.NOV.2011 16:36:57

Power Density Plot on Configuration IEEE 802.11n MCS8 40MHz / Ant. 1 / 2437 MHz



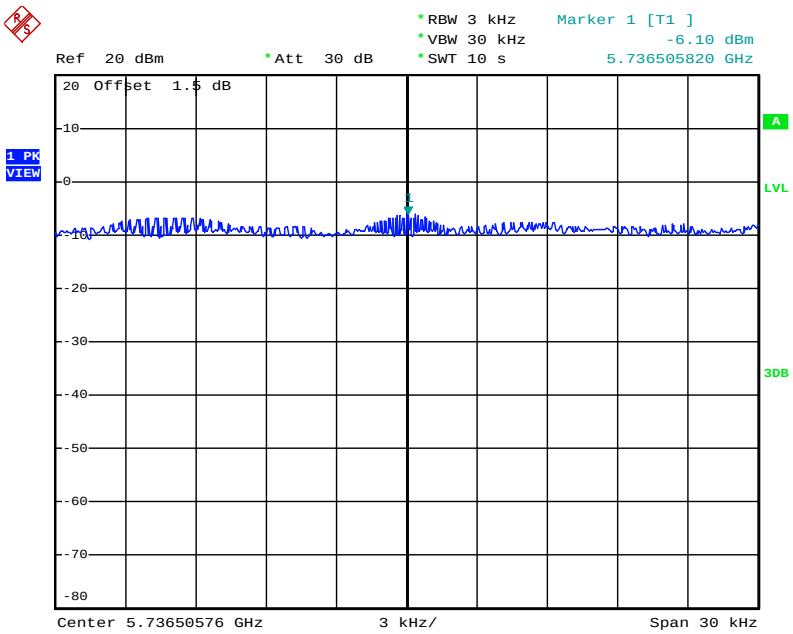
Date: 16.NOV.2011 16:55:25

Power Density Plot on Configuration IEEE 802.11n MCS8 40MHz / Ant. 2 / 2437 MHz



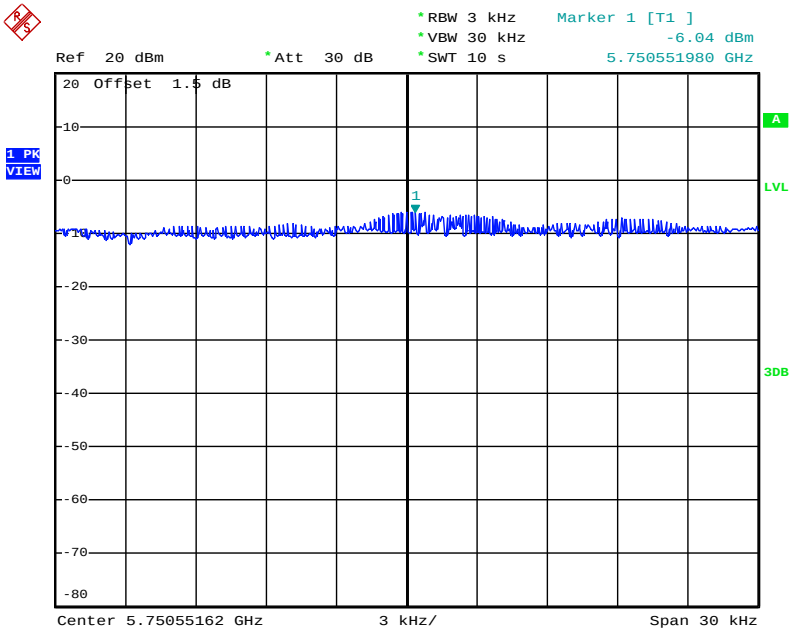
Date: 16.NOV.2011 16:53:23

Power Density Plot on Configuration IEEE 802.11n MCS8 20MHz / Ant. 1 / 5745 MHz



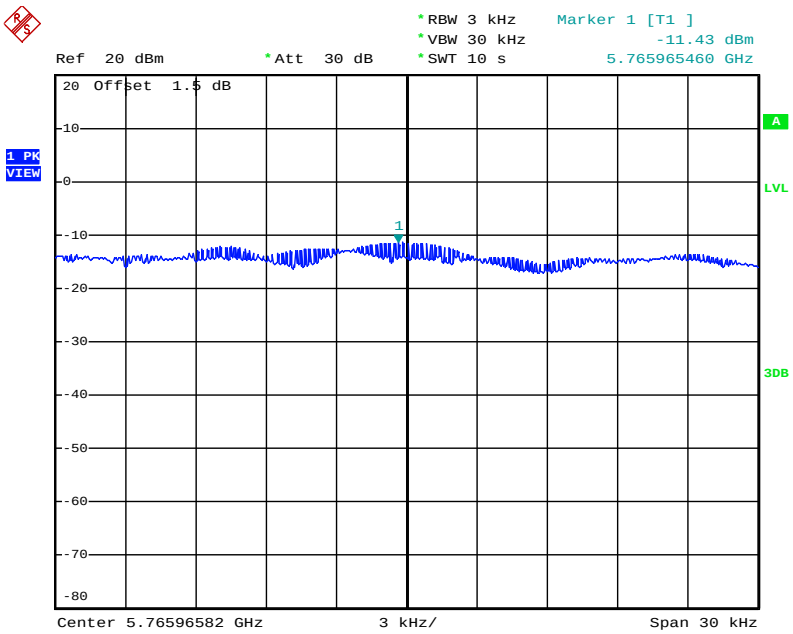
Date: 16.NOV.2011 18:01:24

Power Density Plot on Configuration IEEE 802.11n MCS8 20MHz / Ant. 2 / 5745 MHz



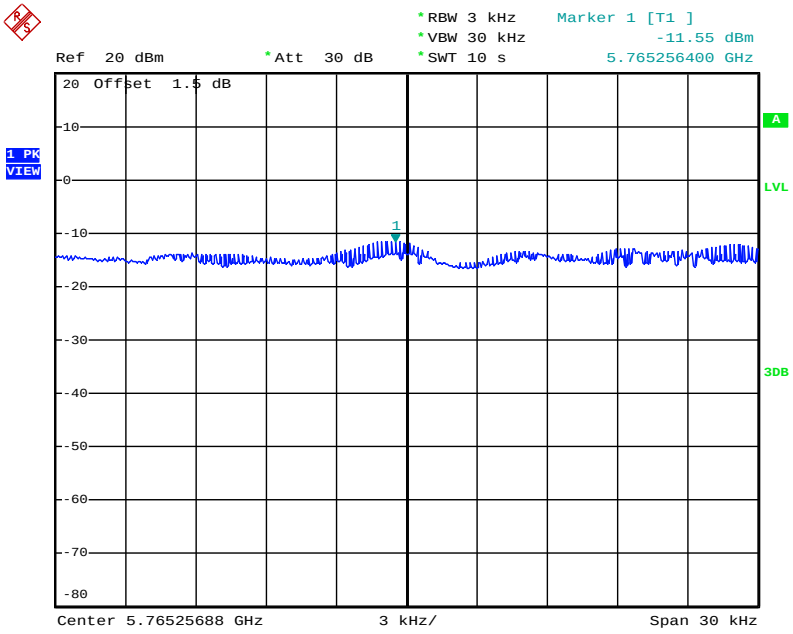
Date: 16.NOV.2011 18:03:41

Power Density Plot on Configuration IEEE 802.11n MCS8 40MHz / Ant. 1 / 5755 MHz



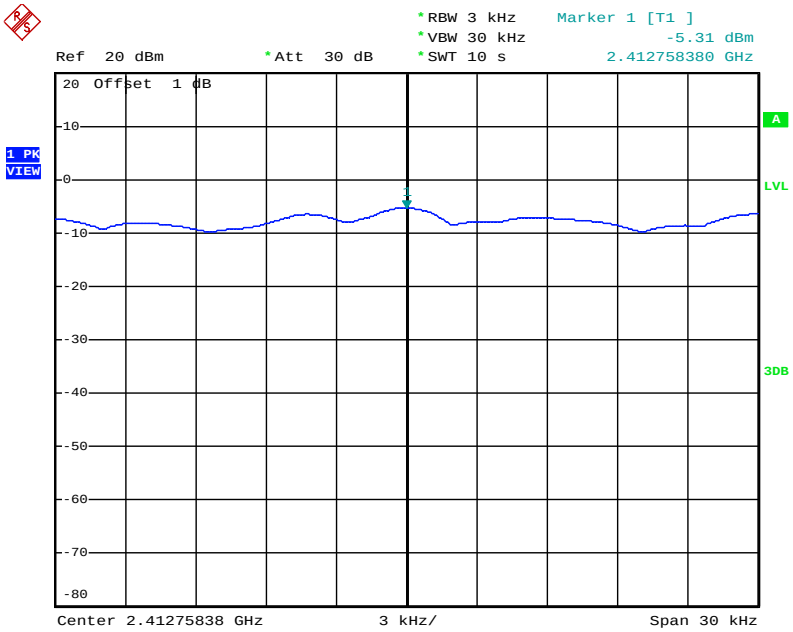
Date: 16.NOV.2011 17:58:10

Power Density Plot on Configuration IEEE 802.11n MCS8 40MHz / Ant. 2 / 5755 MHz



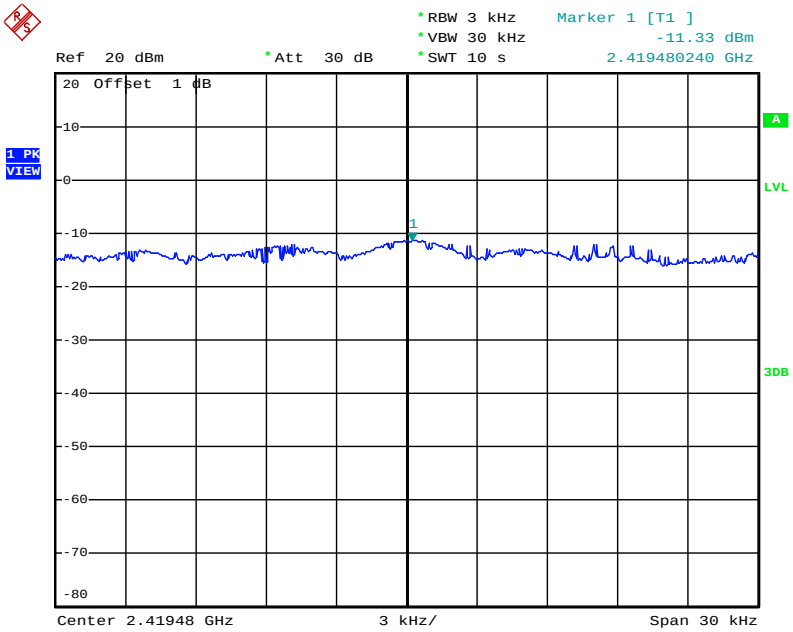
Date: 16.NOV.2011 17:56:02

Power Density Plot on Configuration IEEE 802.11b / Ant. 1/ 2412 MHz



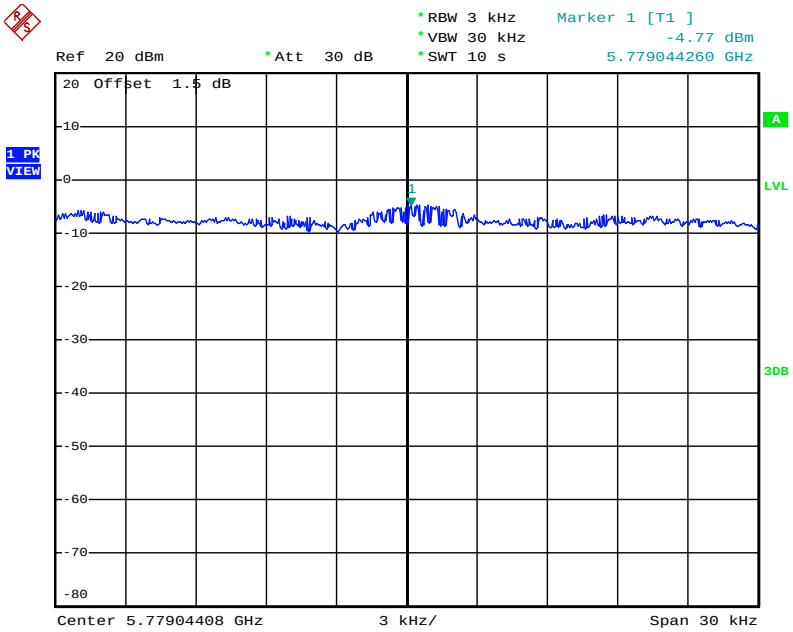
Date: 16.NOV.2011 15:14:59

Power Density Plot on Configuration IEEE 802.11g / Ant. 1 / 2412 MHz



Date: 16.NOV.2011 15:25:04

Power Density Plot on Configuration IEEE 802.11a / Ant. 1 / 5785 MHz



Date: 16.NOV.2011 17:14:12

4.5. 6dB Spectrum Bandwidth Measurement

4.5.1. Limit

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

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 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

4.5.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer 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.

4.5.4. Test Setup Layout

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. Test Result of 6dB Spectrum Bandwidth

Temperature	23°C	Humidity	61%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n

For 2.4GHz Band

Configuration IEEE 802.11n MCS8 20MHz / Ant. 1+ Ant. 2

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	17.64	17.80	500	Complies
6	2437 MHz	17.60	17.88	500	Complies
11	2462 MHz	17.64	17.80	500	Complies

Configuration IEEE 802.11n MCS8 40MHz / Ant. 1 + Ant. 2

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
3	2422 MHz	34.56	36.40	500	Complies
6	2437 MHz	35.76	36.40	500	Complies
9	2452 MHz	36.16	36.32	500	Complies

For 5GHz Band

Configuration IEEE 802.11n MCS8 20MHz / Ant. 1+ Ant. 2

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
149	5745 MHz	16.96	18.04	500	Complies
157	5785 MHz	16.96	18.16	500	Complies
165	5825 MHz	16.36	18.08	500	Complies

Configuration IEEE 802.11n MCS8 40MHz / Ant. 1+ Ant. 2

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
151	5755 MHz	35.76	36.16	500	Complies
159	5795 MHz	35.52	36.16	500	Complies

Temperature	20°C	Humidity	70%
Test Engineer	Magic Lai	Configurations	IEEE 802.11a/b/g

Configuration IEEE 802.11b / Ant. 1

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	10.12	14.00	500	Complies
6	2437 MHz	10.08	14.00	500	Complies
11	2462 MHz	10.04	14.00	500	Complies

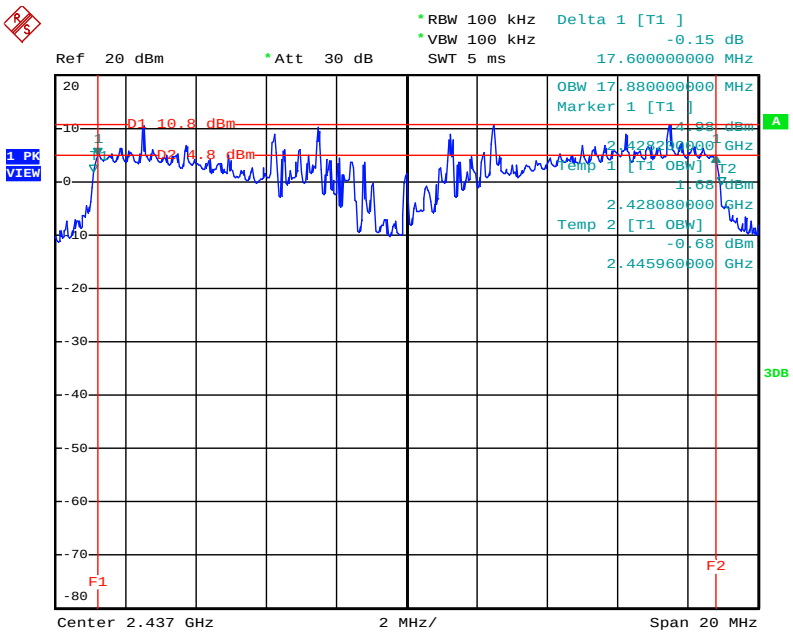
Configuration IEEE 802.11g / Ant. 1

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	16.36	16.52	500	Complies
6	2437 MHz	16.36	16.56	500	Complies
11	2462 MHz	16.36	16.52	500	Complies

Configuration IEEE 802.11a / Ant. 1

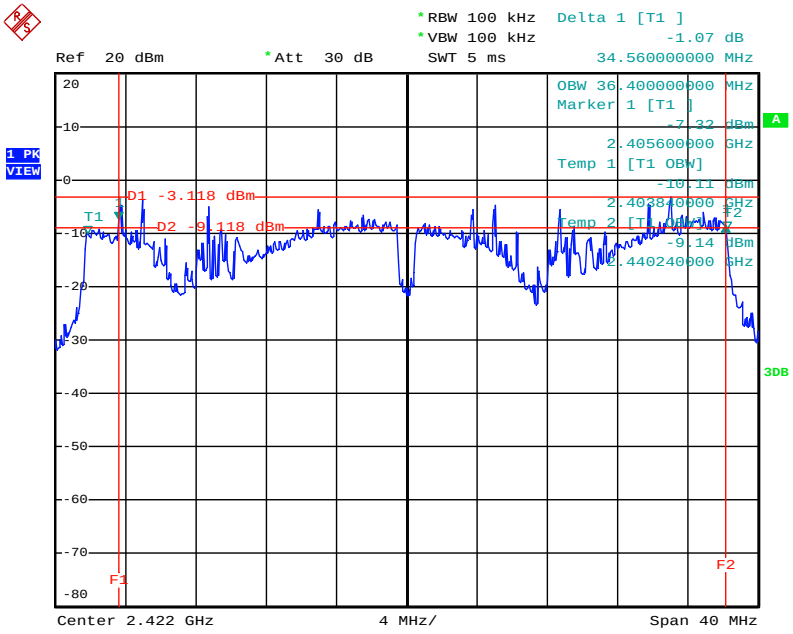
Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
149	5745 MHz	16.36	17.64	500	Complies
157	5785 MHz	16.32	17.64	500	Complies
165	5825 MHz	16.32	17.52	500	Complies

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS8 20MHz / Ant. 1 + Ant. 2 / 2437 MHz



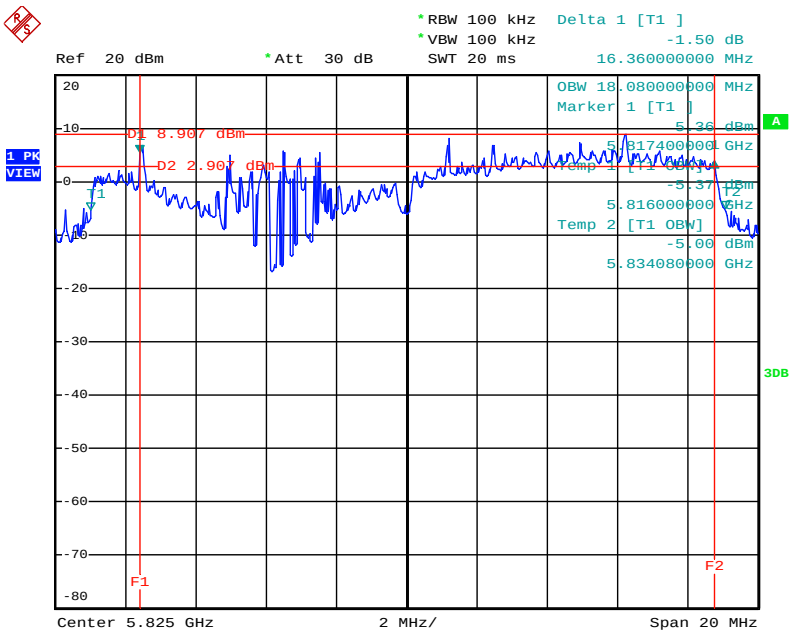
Date: 16.NOV.2011 15:50:09

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS8 40MHz / Ant. 1 + Ant. 2 / 2422 MHz



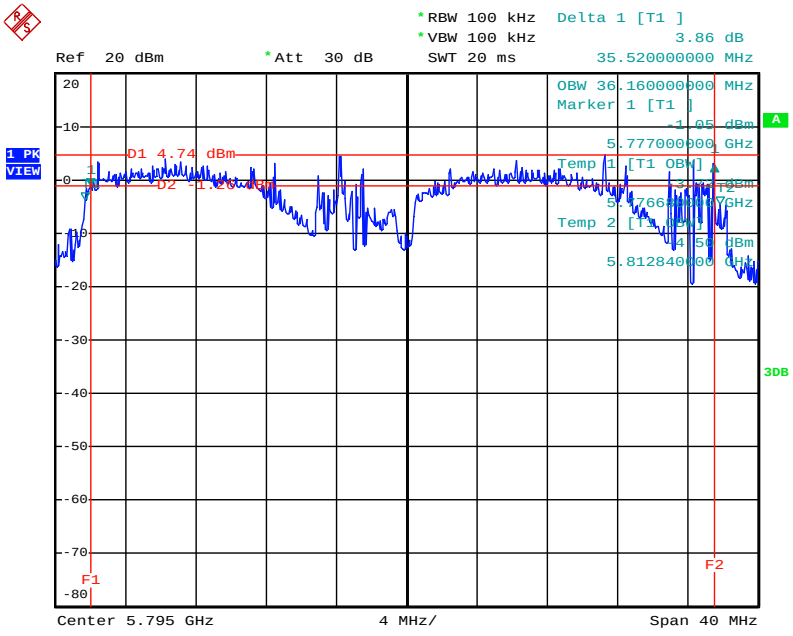
Date: 16.NOV.2011 15:54:46

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS8 20MHz / Ant. 1+ Ant. 2 / 5825 MHz



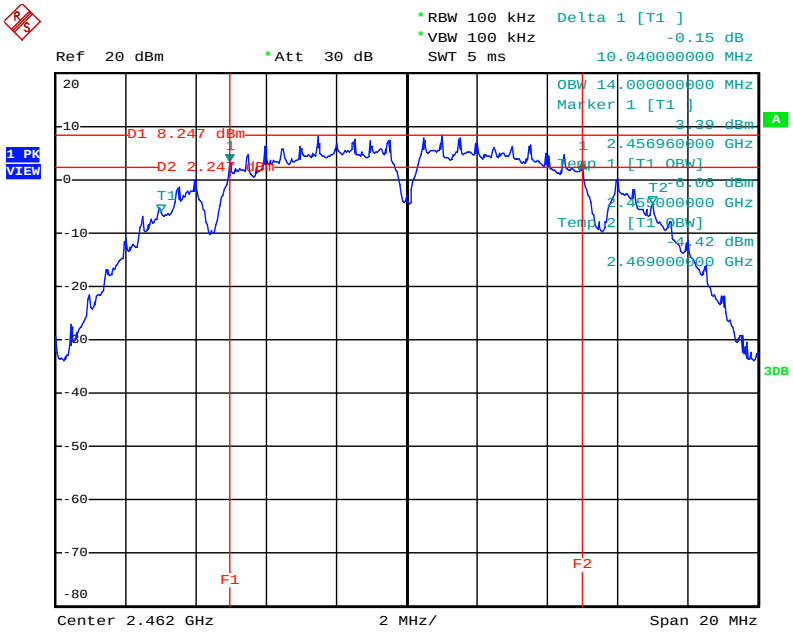
Date: 16.NOV.2011 17:28:23

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS8 40MHz / Ant. 1+ Ant. 2 / 5795 MHz



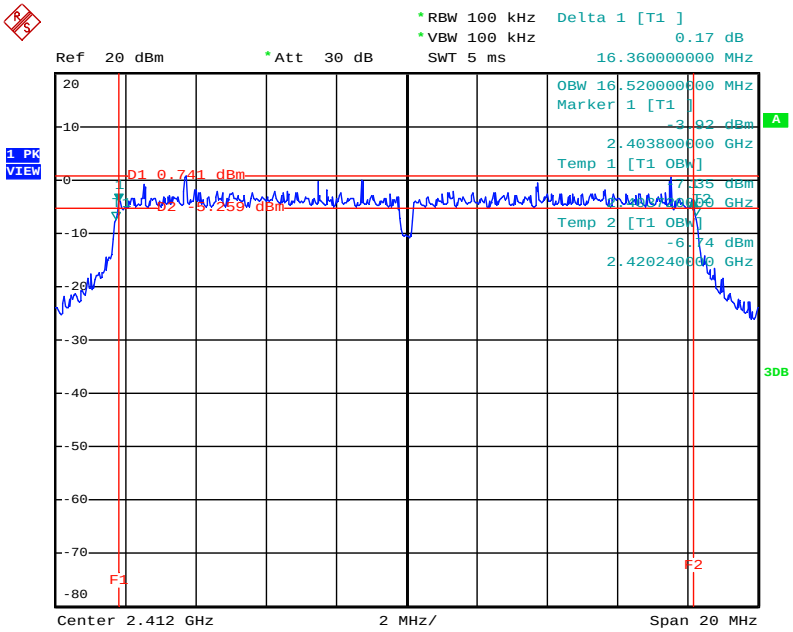
Date: 16.NOV.2011 17:32:52

6 dB Bandwidth Plot on Configuration IEEE 802.11b / Ant. 1 / 2462 MHz



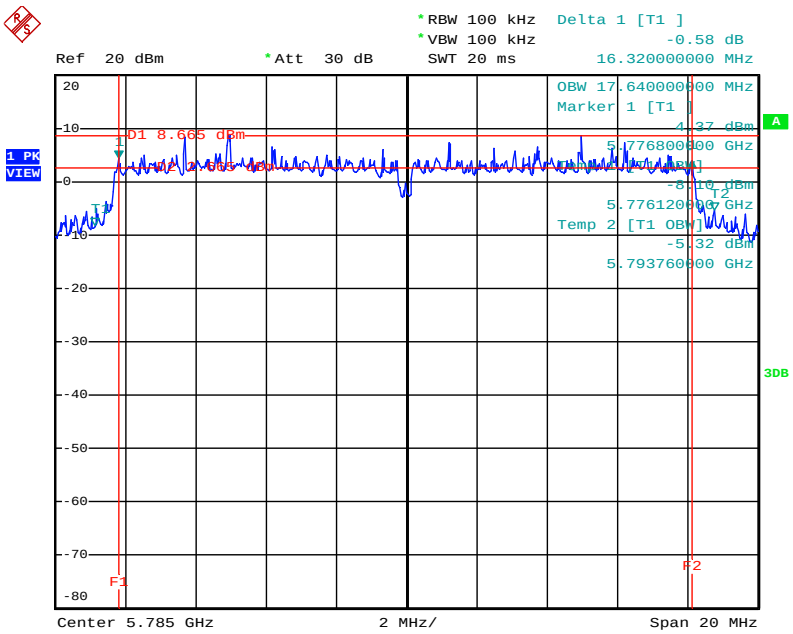
Date: 16.NOV.2011 15:20:29

6 dB Bandwidth Plot on Configuration IEEE 802.11g / Ant. 1 / 2412 MHz



Date: 16.NOV.2011 15:23:36

6 dB Bandwidth Plot on Configuration IEEE 802.11a / Ant. 1 / 5785 MHz



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4.6. Radiated 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 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)	1MHz / 1MHz for peak

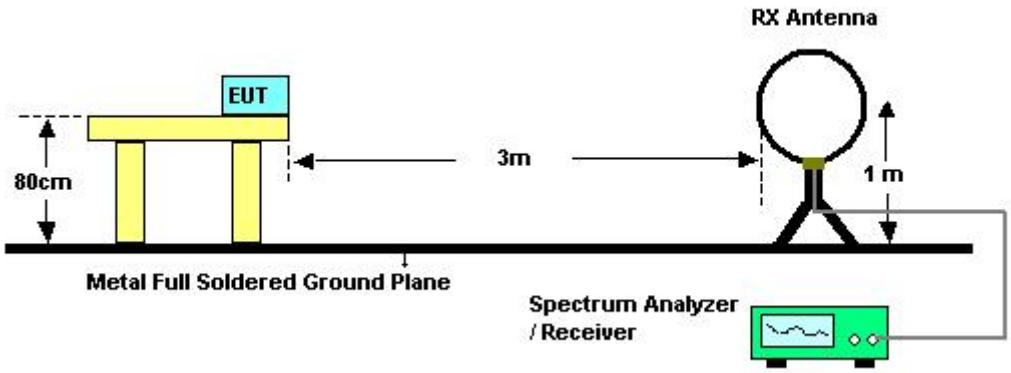
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

4.6.3. Test Procedures

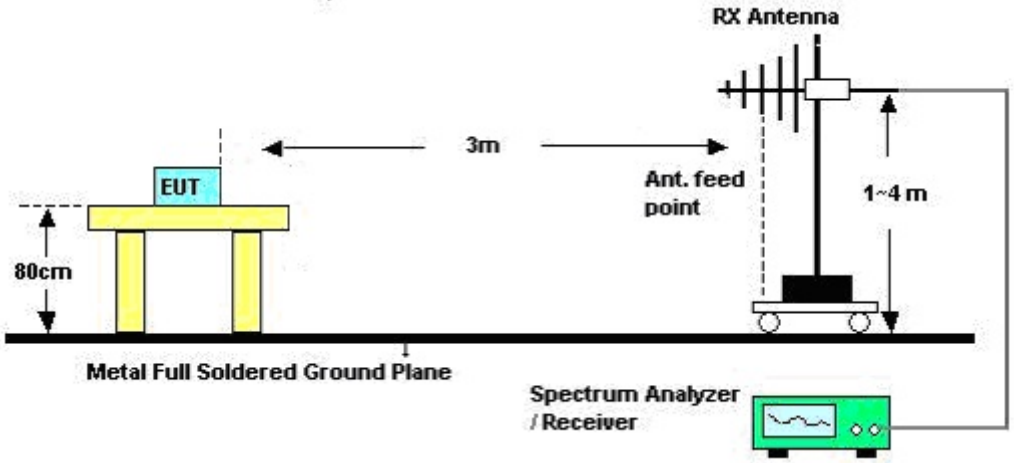
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting 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.

4.6.4. Test Setup Layout

For radiated emissions below 1GHz



For radiated emissions above 1GHz



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

Temperature	20°C	Humidity	70%
Test Engineer	Robert Chang	Configurations	Normal Link
Test Date	Nov. 16, 2011		

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

Note:

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

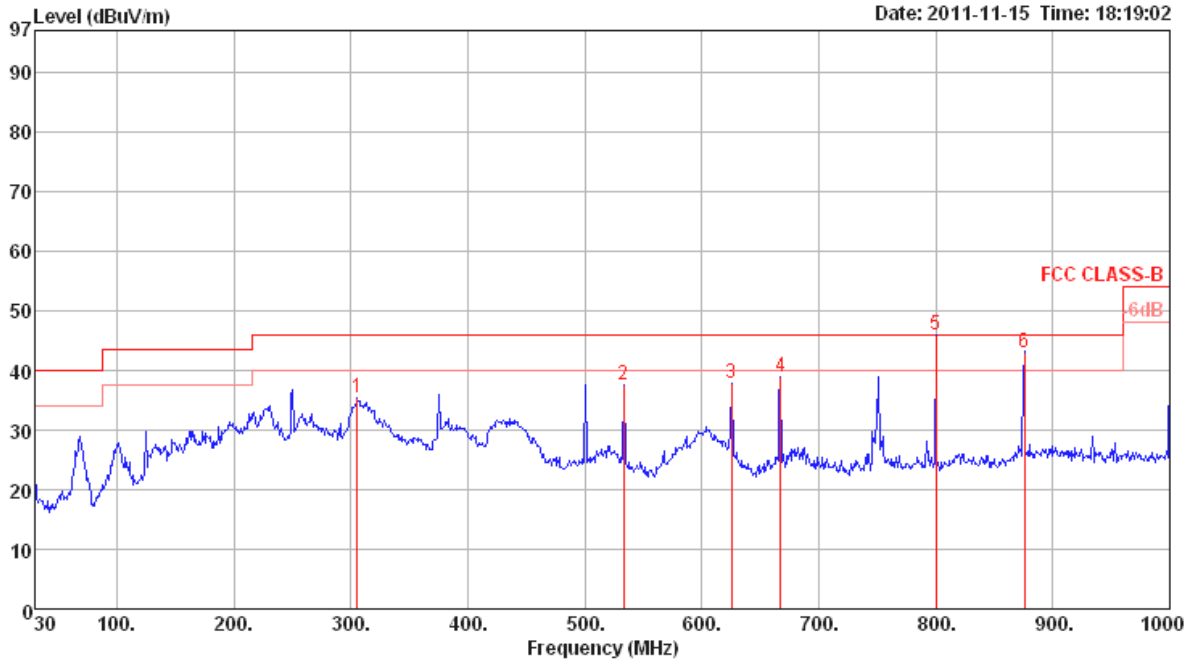
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

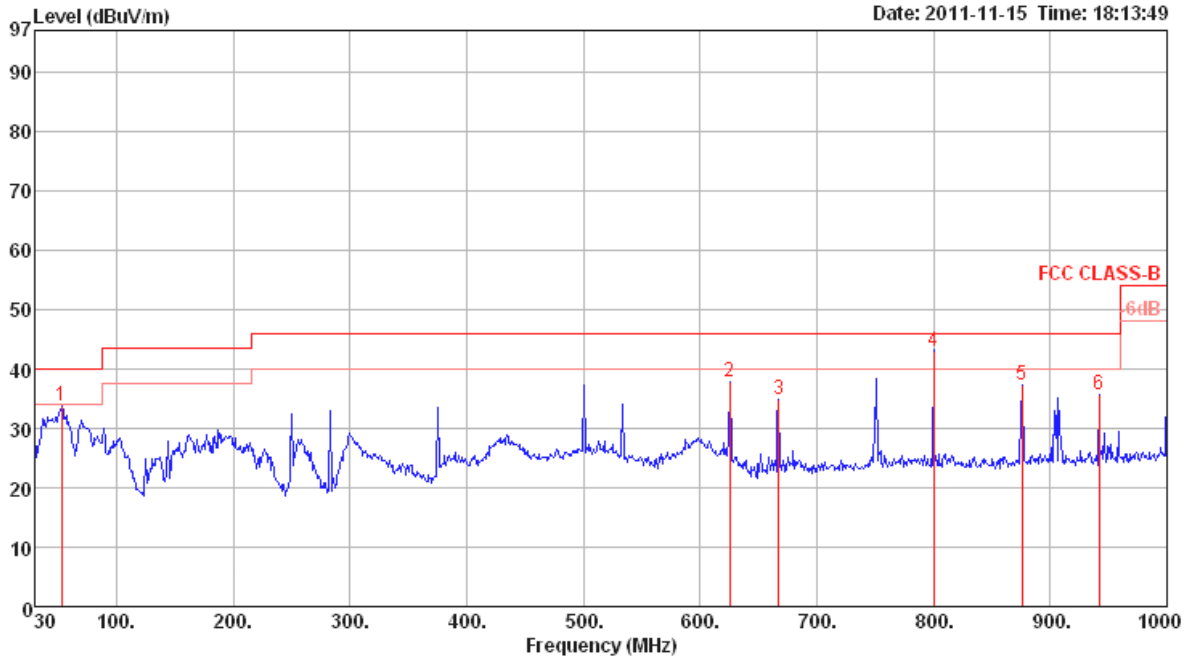
Temperature	20°C	Humidity	70%
Test Engineer	Benson Peng	Configurations	Normal Lin

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	305.48	35.31	46.00	-10.69	46.62	2.11	13.52	26.94	Peak	100	0	HORIZONTAL
2	533.43	37.52	46.00	-8.48	44.84	2.77	18.01	28.10	Peak	100	0	HORIZONTAL
3	625.58	37.81	46.00	-8.19	43.98	3.05	18.85	28.07	Peak	100	0	HORIZONTAL
4	667.29	38.92	46.00	-7.08	44.54	3.43	18.98	28.03	Peak	100	0	HORIZONTAL
5	800.00	45.90	46.00	-0.10	50.43	3.30	19.77	27.60	QP	104	199	HORIZONTAL
6	875.84	42.99	46.00	-3.01	46.59	3.50	20.35	27.45	QP	100	285	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	53.28	33.78	40.00	-6.22	52.81	0.76	8.00	27.79	Peak	400	0	VERTICAL
2	625.58	37.72	46.00	-8.28	43.89	3.05	18.85	28.07	Peak	400	0	VERTICAL
3	667.29	34.86	46.00	-11.14	40.48	3.43	18.98	28.03	Peak	400	0	VERTICAL
4	800.18	43.04	46.00	-2.96	47.57	3.30	19.77	27.60	QP	100	128	VERTICAL
5	875.84	37.18	46.00	-8.82	40.78	3.50	20.35	27.45	Peak	400	0	VERTICAL
6	941.80	35.67	46.00	-10.33	38.45	3.60	20.85	27.23	Peak	400	0	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.

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

Temperature	26°C	Humidity	56%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n MCS8 20MHz Ch 1 / Ant. 1 + Ant. 2
Test Date	Nov. 16, 2011		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4823.22	41.08	74.00	-32.92	38.63	4.26	33.39	35.20	Peak	100	123	HORIZONTAL
2	4824.89	27.81	54.00	-26.19	25.36	4.26	33.39	35.20	Average	100	123	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4823.74	46.79	74.00	-27.21	44.34	4.26	33.39	35.20	Peak	100	145	VERTICAL
2	4824.87	33.07	54.00	-20.93	30.62	4.26	33.39	35.20	Average	100	145	VERTICAL

Temperature	26°C	Humidity	56%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n MCS8 20MHz Ch 6 / Ant. 1 + Ant. 2
Test Date	Nov. 16, 2011		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4873.31	42.66	74.00	-31.34	40.05	4.33	33.48	35.20	Peak	100	229	HORIZONTAL
2	4874.42	28.83	54.00	-25.17	26.22	4.33	33.48	35.20	Average	100	229	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4873.76	52.81	74.00	-21.19	50.20	4.33	33.48	35.20	Peak	100	148	VERTICAL
2	4874.92	39.53	54.00	-14.47	36.92	4.33	33.48	35.20	Average	100	148	VERTICAL

Temperature	26°C	Humidity	56%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n MCS8 20MHz Ch11 / Ant. 1 + Ant. 2
Test Date	Nov. 16, 2011		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4923.39	28.64	54.00	-25.36	25.87	4.39	33.58	35.20	Average	100	173	HORIZONTAL
2	4924.37	42.01	74.00	-31.99	39.24	4.39	33.58	35.20	Peak	100	173	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4923.28	34.62	54.00	-19.38	31.85	4.39	33.58	35.20	Average	100	142	VERTICAL
2	4924.70	48.25	74.00	-25.75	45.48	4.39	33.58	35.20	Peak	100	142	VERTICAL

Temperature	26°C	Humidity	56%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n MCS8 40MHz Ch 3 / Ant. 1 + Ant. 2
Test Date	Nov. 16, 2011		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4844.49	41.47	74.00	-32.53	38.96	4.29	33.42	35.20	Peak	100	110	HORIZONTAL
2	4846.21	27.65	54.00	-26.35	25.14	4.29	33.42	35.20	Average	100	110	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4843.08	42.52	74.00	-31.48	40.01	4.29	33.42	35.20	Peak	100	141	VERTICAL
2	4844.35	28.56	54.00	-25.44	26.05	4.29	33.42	35.20	Average	100	141	VERTICAL

Temperature	26°C	Humidity	56%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n MCS8 40MHz Ch 6 / Ant. 1 + Ant. 2
Test Date	Nov. 16, 2011		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4874.50	42.51	74.00	-31.49	39.90	4.33	33.48	35.20	Peak	100	307	HORIZONTAL
2	4874.69	28.14	54.00	-25.86	25.53	4.33	33.48	35.20	Average	100	307	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4875.10	32.44	54.00	-21.56	29.83	4.33	33.48	35.20	Average	100	146	VERTICAL
2	4875.27	46.20	74.00	-27.80	43.59	4.33	33.48	35.20	Peak	100	146	VERTICAL

Temperature	26℃	Humidity	56%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n MCS8 40MHz Ch 9 / Ant. 1 + Ant. 2
Test Date	Nov. 16, 2011		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4904.86	41.77	74.00	-32.23	39.07	4.36	33.54	35.20	Peak	100	323	HORIZONTAL
2	4906.44	28.47	54.00	-25.53	25.77	4.36	33.54	35.20	Average	100	323	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4905.20	29.98	54.00	-24.02	27.28	4.36	33.54	35.20	Average	100	142	VERTICAL
2	4906.29	44.27	74.00	-29.73	41.57	4.36	33.54	35.20	Peak	100	142	VERTICAL

Temperature	24°C	Humidity	56%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n MCS8 20MHz CH 149 / Ant. 1 + Ant. 2
Test Date	Nov. 16, 2011		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11493.69	41.08	54.00	-12.92	29.31	7.35	39.50	35.08	Average	100	171	HORIZONTAL
2	11495.61	52.13	74.00	-21.87	40.38	7.35	39.50	35.10	Peak	100	171	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11491.20	56.67	74.00	-17.33	44.92	7.33	39.50	35.08	Peak	100	273	VERTICAL
2	11491.92	44.80	54.00	-9.20	33.05	7.33	39.50	35.08	Average	100	273	VERTICAL

Temperature	24°C	Humidity	56%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n MCS8 20MHz CH 157 / Ant. 1 + Ant. 2
Test Date	Nov. 16, 2011		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11571.60	53.59	74.00	-20.41	41.92	7.29	39.47	35.09	Peak	100	152	HORIZONTAL
2	11572.00	40.79	54.00	-13.21	29.11	7.29	39.47	35.08	Average	100	156	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11571.68	43.62	54.00	-10.38	31.95	7.29	39.47	35.09	Average	100	119	VERTICAL
2	11573.04	55.05	74.00	-18.95	43.37	7.29	39.47	35.08	Peak	100	119	VERTICAL

Temperature	24°C	Humidity	56%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n MCS8 20MHz CH 165 / Ant. 1 + Ant. 2
Test Date	Nov. 16, 2011		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11653.04	40.42	54.00	-13.58	28.83	7.22	39.44	35.07	Average	100	220	HORIZONTAL
2	11653.45	51.65	74.00	-22.35	40.06	7.22	39.44	35.07	Peak	100	220	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11650.32	55.42	74.00	-18.58	43.83	7.22	39.44	35.07	Peak	100	157	VERTICAL
2	11651.52	43.03	54.00	-10.97	31.44	7.22	39.44	35.07	Average	100	157	VERTICAL

Temperature	24°C	Humidity	56%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n MCS8 40MHz CH 151 / Ant. 1 + Ant. 2
Test Date	Nov. 16, 2011		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11514.33	51.45	74.00	-22.55	39.70	7.35	39.50	35.10	Peak	100	152	HORIZONTAL
2	11515.05	39.89	54.00	-14.11	28.14	7.35	39.50	35.10	Average	100	152	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11508.64	55.15	74.00	-18.85	43.40	7.35	39.50	35.10	Peak	100	277	VERTICAL
2	11510.88	42.31	54.00	-11.69	30.56	7.35	39.50	35.10	Average	8955	277	VERTICAL

Temperature	24°C	Humidity	56%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n MCS8 40MHz CH 159 / Ant. 1 + Ant. 2
Test Date	Nov. 16, 2011		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11570.45	51.80	74.00	-22.20	40.13	7.29	39.47	35.09	Peak	100	186	HORIZONTAL
2	11577.90	39.95	54.00	-14.05	28.27	7.29	39.47	35.08	Average	100	186	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11576.30	54.57	74.00	-19.43	42.89	7.29	39.47	35.08	Peak	100	230	VERTICAL
2	11582.95	43.05	54.00	-10.95	31.37	7.29	39.47	35.08	Average	100	230	VERTICAL

Temperature	20℃	Humidity	70%
Test Engineer	Robert Chang	Configurations	IEEE 802.11b CH 1 / Ant. 1
Test Date	Nov. 16, 2011		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4823.77	44.27	74.00	-29.73	41.82	4.26	33.39	35.20	Peak	102	50	HORIZONTAL
2	4823.96	35.53	54.00	-18.47	33.08	4.26	33.39	35.20	Average	102	50	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4823.89	52.08	74.00	-21.92	49.63	4.26	33.39	35.20	Peak	114	76	VERTICAL
2	4823.94	49.37	54.00	-4.63	46.92	4.26	33.39	35.20	Average	114	76	VERTICAL

Temperature	20°C	Humidity	70%
Test Engineer	Robert Chang	Configurations	IEEE 802.11b CH 6 / Ant. 1
Test Date	Nov. 16, 2011		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4873.94	37.83	54.00	-16.17	35.22	4.33	33.48	35.20	Average	102	124	HORIZONTAL
2	4873.99	45.49	74.00	-28.51	42.88	4.33	33.48	35.20	Peak	102	124	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4873.94	52.69	54.00	-1.31	50.08	4.33	33.48	35.20	Average	114	88	VERTICAL
2	4873.98	54.60	74.00	-19.40	51.99	4.33	33.48	35.20	Peak	114	88	VERTICAL

Temperature	20°C	Humidity	70%
Test Engineer	Robert Chang	Configurations	IEEE 802.11b CH 11 / Ant. 1
Test Date	Nov. 16, 2011		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4923.95	44.55	74.00	-29.45	41.78	4.39	33.58	35.20	Peak	111	207	HORIZONTAL
2	4923.96	35.29	54.00	-18.71	32.52	4.39	33.58	35.20	Average	111	207	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4923.93	50.86	54.00	-3.14	48.09	4.39	33.58	35.20	Average	114	86	VERTICAL
2	4923.96	53.41	74.00	-20.59	50.64	4.39	33.58	35.20	Peak	114	86	VERTICAL

Temperature	20℃	Humidity	70%
Test Engineer	Robert Chang	Configurations	IEEE 802.11g CH 1 / Ant. 1
Test Date	Nov. 16, 2011		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4823.40	41.05	74.00	-32.95	38.60	4.26	33.39	35.20	Peak	100	92	HORIZONTAL
2	4823.69	27.62	54.00	-26.38	25.17	4.26	33.39	35.20	Average	100	92	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4824.46	46.00	74.00	-28.00	43.55	4.26	33.39	35.20	Peak	100	265	VERTICAL
2	4824.99	31.09	54.00	-22.91	28.64	4.26	33.39	35.20	Average	100	265	VERTICAL

Temperature	20°C	Humidity	70%
Test Engineer	Robert Chang	Configurations	IEEE 802.11g CH 6 / Ant. 1
Test Date	Nov. 16, 2011		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4873.93	43.38	74.00	-30.62	40.77	4.33	33.48	35.20	Peak	100	41	HORIZONTAL
2	4874.37	28.76	54.00	-25.24	26.15	4.33	33.48	35.20	Average	100	41	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4873.03	38.39	54.00	-15.61	35.78	4.33	33.48	35.20	Average	100	88	VERTICAL
2	4874.34	53.20	74.00	-20.80	50.59	4.33	33.48	35.20	Peak	100	88	VERTICAL

Temperature	20℃	Humidity	70%
Test Engineer	Robert Chang	Configurations	IEEE 802.11g CH 11 / Ant. 1
Test Date	Nov. 16, 2011		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4923.73	28.47	54.00	-25.53	25.70	4.39	33.58	35.20	Average	100	289	HORIZONTAL
2	4924.94	42.29	74.00	-31.71	39.52	4.39	33.58	35.20	Peak	100	289	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4924.48	33.41	54.00	-20.59	30.64	4.39	33.58	35.20	Average	100	276	VERTICAL
2	4924.84	48.83	74.00	-25.17	46.06	4.39	33.58	35.20	Peak	100	276	VERTICAL

Temperature	20°C	Humidity	70%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a CH 149 / Ant. 1
Test Date	Nov. 16, 2011		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11491.12	52.45	74.00	-21.55	40.70	7.33	39.50	35.08	Peak	127	256	HORIZONTAL
2	11491.68	41.12	54.00	-12.88	29.37	7.33	39.50	35.08	Average	127	256	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11485.67	58.56	74.00	-15.44	46.81	7.33	39.50	35.08	Peak	103	242	VERTICAL
2	11489.68	46.15	54.00	-7.85	34.40	7.33	39.50	35.08	Average	103	242	VERTICAL

Temperature	20°C	Humidity	70%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a CH 157 / Ant. 1
Test Date	Nov. 16, 2011		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11565.43	53.81	74.00	-20.19	42.11	7.31	39.48	35.09	Peak	100	211	HORIZONTAL
2	11569.12	41.41	54.00	-12.59	29.72	7.31	39.47	35.09	Average	100	211	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11567.68	56.07	74.00	-17.93	44.38	7.31	39.47	35.09	Peak	100	151	VERTICAL
2	11569.36	44.42	54.00	-9.58	32.73	7.31	39.47	35.09	Average	100	151	VERTICAL

Temperature	20°C	Humidity	70%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a CH 165 / Ant. 1
Test Date	Nov. 16, 2011		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11638.38	51.68	74.00	-22.32	40.07	7.24	39.44	35.07	Peak	100	304	HORIZONTAL
2	11650.72	39.93	54.00	-14.07	28.34	7.22	39.44	35.07	Average	100	304	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11648.48	43.70	54.00	-10.30	32.11	7.22	39.44	35.07	Average	100	157	VERTICAL
2	11651.04	55.87	74.00	-18.13	44.28	7.22	39.44	35.07	Peak	100	157	VERTICAL

4.7. Band Edge Emissions Measurement

4.7.1. 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

4.7.2. 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)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	100 KHz /100 KHz for Peak

4.7.3. 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.

4.7.4. Test Setup Layout

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

4.7.5. Test Deviation

There is no deviation with the original standard.

4.7.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.7.7. Test Result of Band Edge and Fundamental Emissions

Temperature	26°C	Humidity	56%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n MCS8 20MHz Ch 1, 6, 11 / Ant. 1 + Ant. 2

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2388.88	68.26	74.00	-5.74	37.35	2.86	28.05	0.00	Peak	169	282	VERTICAL
2	2390.00	53.33	54.00	-0.67	22.40	2.88	28.05	0.00	Average	169	282	VERTICAL
3	2405.43	95.47	54.00			2.88	28.09	0.00	Average	169	282	VERTICAL
4	2406.71	107.29	74.00			2.88	28.09	0.00	Peak	169	282	VERTICAL

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

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2389.84	66.74	74.00	-7.26	35.81	2.88	28.05	0.00	Peak	154	281	VERTICAL
2	2390.00	51.93	54.00	-2.07	21.00	2.88	28.05	0.00	Average	154	281	VERTICAL
3	2430.75	104.03	54.00			2.89	28.13	0.00	Average	154	281	VERTICAL
4	2432.67	115.57	74.00			2.89	28.13	0.00	Peak	154	281	VERTICAL
5	2484.14	66.70	74.00	-7.30	35.51	2.93	28.26	0.00	Peak	154	281	VERTICAL
6	2484.78	50.38	54.00	-3.62	19.19	2.93	28.26	0.00	Average	154	281	VERTICAL

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

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2456.87	99.32	54.00			2.91	28.22	0.00	Average	161	268	VERTICAL
2	2457.51	110.84	74.00			2.91	28.22	0.00	Peak	161	268	VERTICAL
3	2483.50	53.24	54.00	-0.76	22.05	2.93	28.26	0.00	Average	161	268	VERTICAL
4	2483.50	70.17	74.00	-3.83	38.98	2.93	28.26	0.00	Peak	161	268	VERTICAL

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

Temperature	26°C	Humidity	56%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n MCS8 40MHz Ch 3, 6, 9 / Ant. 1 + Ant. 2

Channel 3

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2388.08	53.84	54.00	-0.16	22.93	2.86	28.05	0.00	Average	156	280	VERTICAL
2	2388.40	67.21	74.00	-6.79	36.30	2.86	28.05	0.00	Peak	156	280	VERTICAL
3	2406.62	89.15	54.00			2.88	28.09	0.00	Average	156	280	VERTICAL
4	2426.17	100.89	74.00			2.89	28.13	0.00	Peak	156	280	VERTICAL

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

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2381.35	67.06	74.00	-6.94	36.19	2.86	28.01	0.00	Peak	154	269	VERTICAL
2	2383.27	52.81	54.00	-1.19	21.90	2.86	28.05	0.00	Average	154	269	VERTICAL
3	2420.97	106.42	74.00			2.89	28.13	0.00	Peak	154	269	VERTICAL
4	2421.62	93.45	54.00			2.89	28.13	0.00	Average	154	269	VERTICAL
5	2483.50	53.82	54.00	-0.18	22.63	2.93	28.26	0.00	Average	154	269	VERTICAL
6	2484.78	67.56	74.00	-6.44	36.37	2.93	28.26	0.00	Peak	154	269	VERTICAL

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

Channel 9

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2434.37	91.92	54.00			2.89	28.18	0.00	Average	155	281	VERTICAL
2	2434.69	104.94	74.00			2.89	28.18	0.00	Peak	155	281	VERTICAL
3	2483.50	71.08	74.00	-2.92	39.89	2.93	28.26	0.00	Peak	155	281	VERTICAL
4	2489.59	53.11	54.00	-0.89	21.88	2.93	28.30	0.00	Average	155	281	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	20°C	Humidity	70%
Test Engineer	Robert Chang	Configurations	IEEE 802.11b CH 1, 6, 11 / Ant. 1

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2386.15	52.73	54.00	-1.27	21.82	2.86	28.05	0.00	Average	168	282	VERTICAL
2	2386.15	61.08	74.00	-12.92	30.17	2.86	28.05	0.00	Peak	168	282	VERTICAL
3	2412.96	105.28	74.00			2.88	28.09	0.00	Peak	168	282	VERTICAL
4	2413.76	101.98	54.00			2.88	28.09	0.00	Average	168	282	VERTICAL

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

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2389.52	56.68	74.00	-17.32	25.77	2.86	28.05	0.00	Peak	163	280	VERTICAL
2	2390.00	45.94	54.00	-8.06	15.01	2.88	28.05	0.00	Average	163	280	VERTICAL
3	2437.96	106.93	74.00			2.89	28.18	0.00	Peak	163	280	VERTICAL
4	2438.76	103.53	54.00			2.89	28.18	0.00	Average	163	280	VERTICAL
5	2483.98	57.69	74.00	-16.31	26.50	2.93	28.26	0.00	Peak	163	280	VERTICAL
6	2484.62	46.32	54.00	-7.68	15.13	2.93	28.26	0.00	Average	163	280	VERTICAL

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

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2459.44	107.47	74.00			2.91	28.22	0.00	Peak	166	281	VERTICAL
2	2460.24	104.18	54.00			2.91	28.22	0.00	Average	166	281	VERTICAL
3	2487.51	61.51	74.00	-12.49	30.28	2.93	28.30	0.00	Peak	166	281	VERTICAL
4	2487.83	52.21	54.00	-1.79	20.98	2.93	28.30	0.00	Average	166	281	VERTICAL

Item 3, 4 are the fundamental frequency at 2462 MHz.

Temperature	20°C	Humidity	70%
Test Engineer	Robert Chang	Configurations	IEEE 802.11g CH 1, 6, 11 / Ant. 1

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2390.00	52.58	54.00	-1.42	21.65	2.88	28.05	0.00	Average	168	281	VERTICAL
2	2390.00	68.64	74.00	-5.36	37.71	2.88	28.05	0.00	Peak	168	281	VERTICAL
3	2405.11	103.43	74.00			2.88	28.09	0.00	Peak	168	281	VERTICAL
4	2416.33	93.11	54.00			2.89	28.09	0.00	Average	168	281	VERTICAL

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

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2389.84	65.86	74.00	-8.14	34.93	2.88	28.05	0.00	Peak	171	279	VERTICAL
2	2390.00	49.48	54.00	-4.52	18.55	2.88	28.05	0.00	Average	171	279	VERTICAL
3	2443.25	111.02	74.00			2.91	28.18	0.00	Peak	171	279	VERTICAL
4	2443.41	100.46	54.00			2.91	28.18	0.00	Average	171	279	VERTICAL
5	2483.50	46.65	54.00	-7.35	15.46	2.93	28.26	0.00	Average	171	279	VERTICAL
6	2483.50	58.23	74.00	-15.77	27.04	2.93	28.26	0.00	Peak	171	279	VERTICAL

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

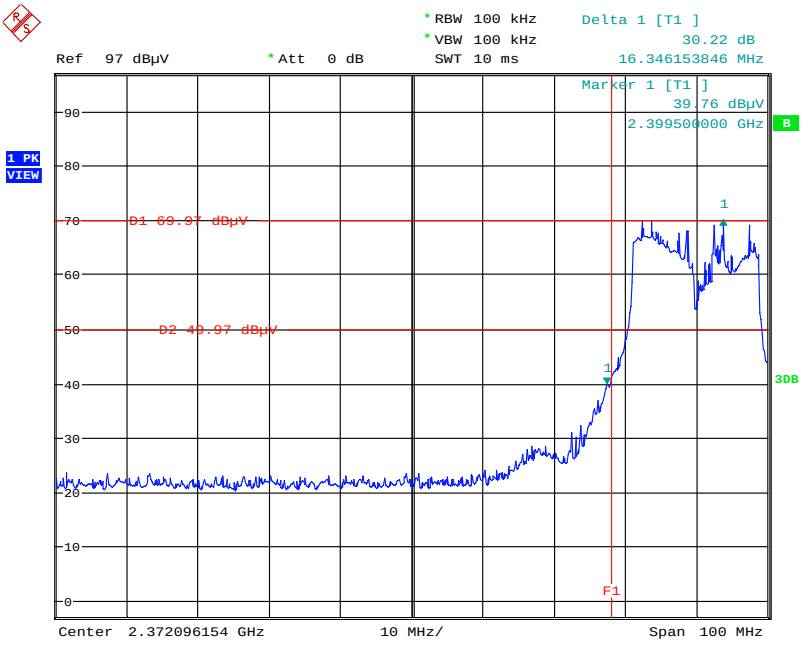
Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2456.23	96.32	54.00			2.91	28.22	0.00	Average	145	284	VERTICAL
2	2457.99	106.71	74.00			2.91	28.22	0.00	Peak	145	284	VERTICAL
3	2483.50	52.44	54.00	-1.56	21.25	2.93	28.26	0.00	Average	145	284	VERTICAL
4	2484.14	68.83	74.00	-5.17	37.64	2.93	28.26	0.00	Peak	145	284	VERTICAL

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

For Emission not in Restricted Band

Low Band Edge Plot on Configuration IEEE 802.11n MCS8 20MHz / Ant. 1 + Ant. 2 / 2412 MHz



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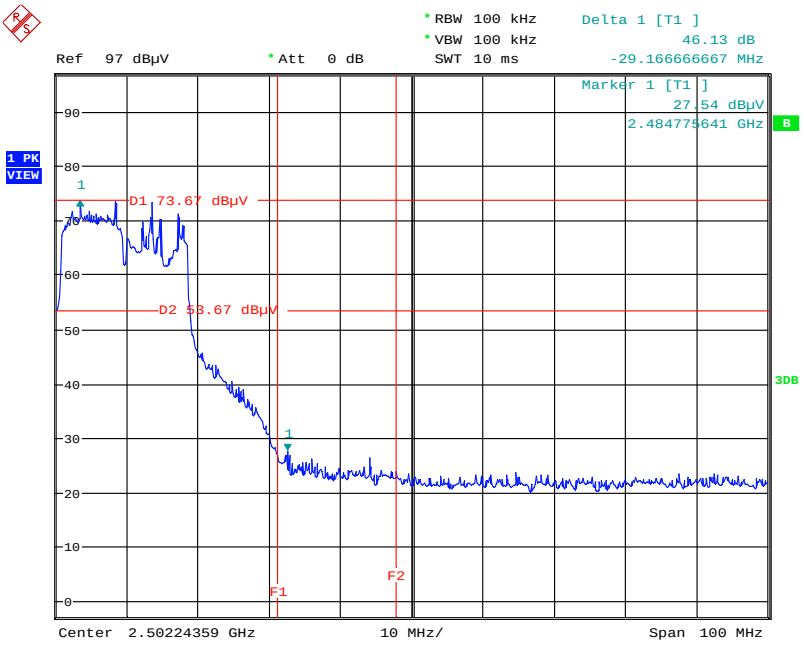
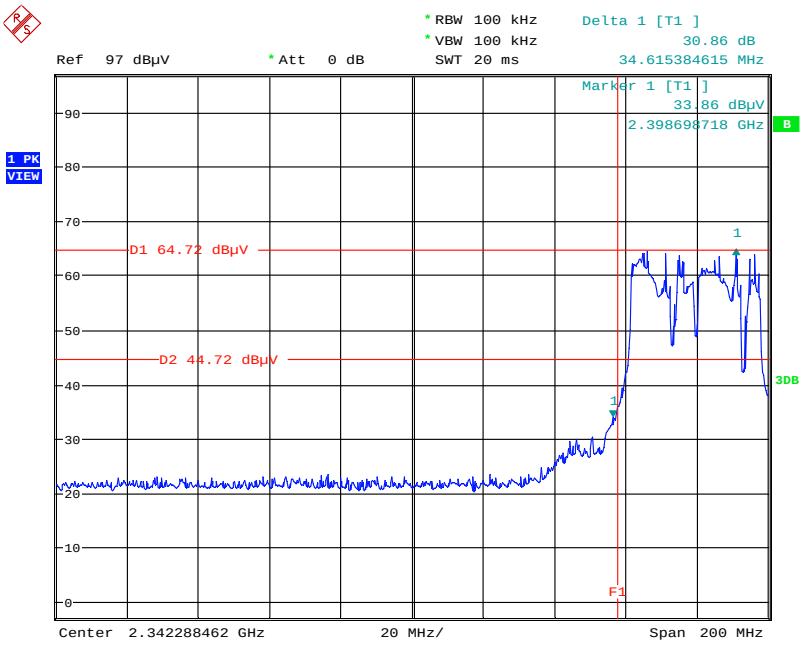
High Band Edge Plot on Configuration IEEE 802.11n MCS8 20MHz / Ant. 1 + Ant. 2 / 2462 MHz



Date: 15.NOV.2011 02:54:30

Low Band Edge Plot on Configuration IEEE 802.11n MCS8 40MHz / Ant. 1 + Ant. 2 / 2422 MHz



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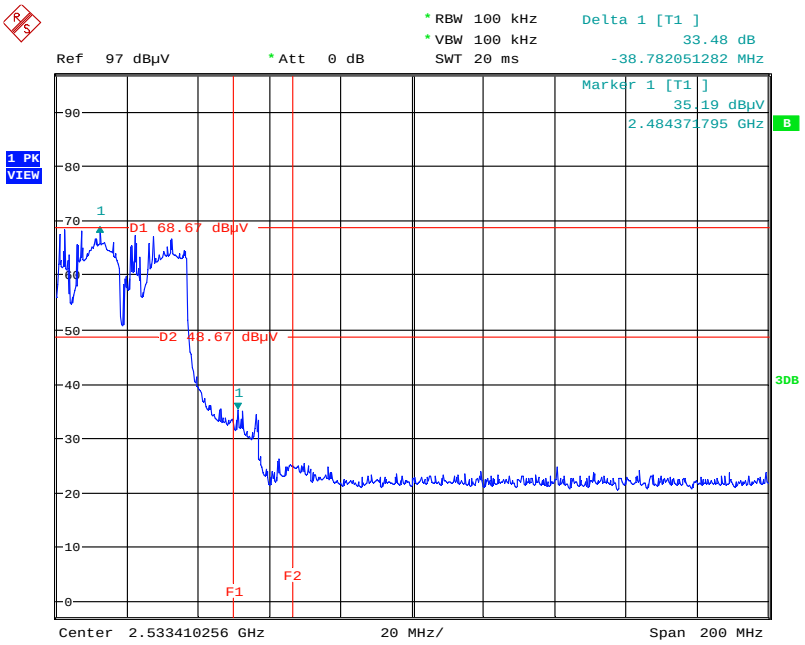
High Band Edge Plot on Configuration IEEE 802.11n MCS8 40MHz / Ant. 1 + Ant. 2 / 2452 MHz



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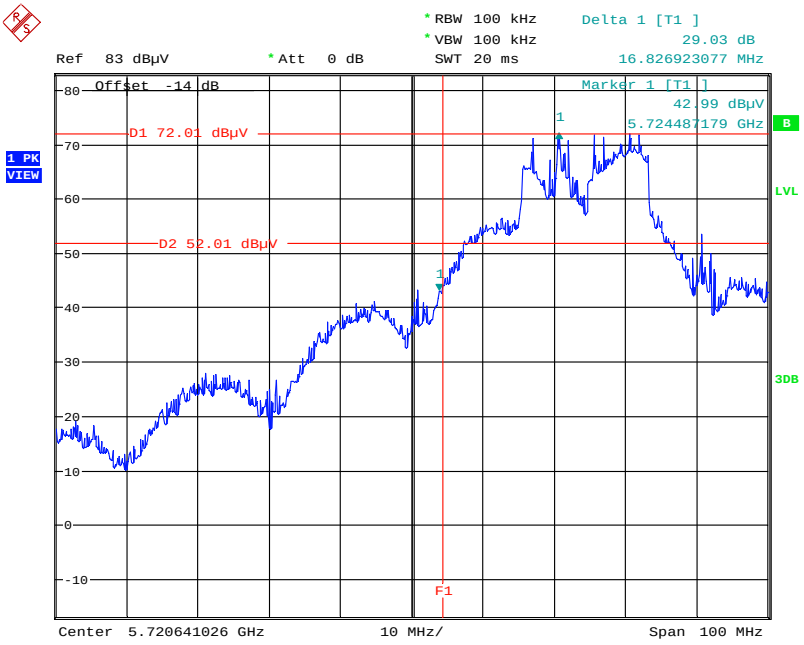
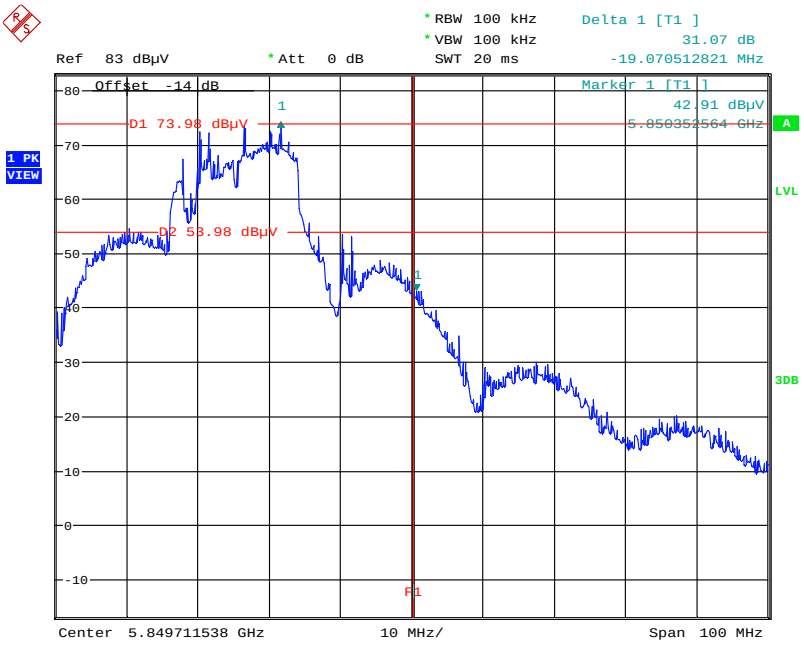
Low Band Edge Plot on Configuration IEEE 802.11n MCS8 20MHz / Ant. 1 + Ant. 2 / 5745 MHz



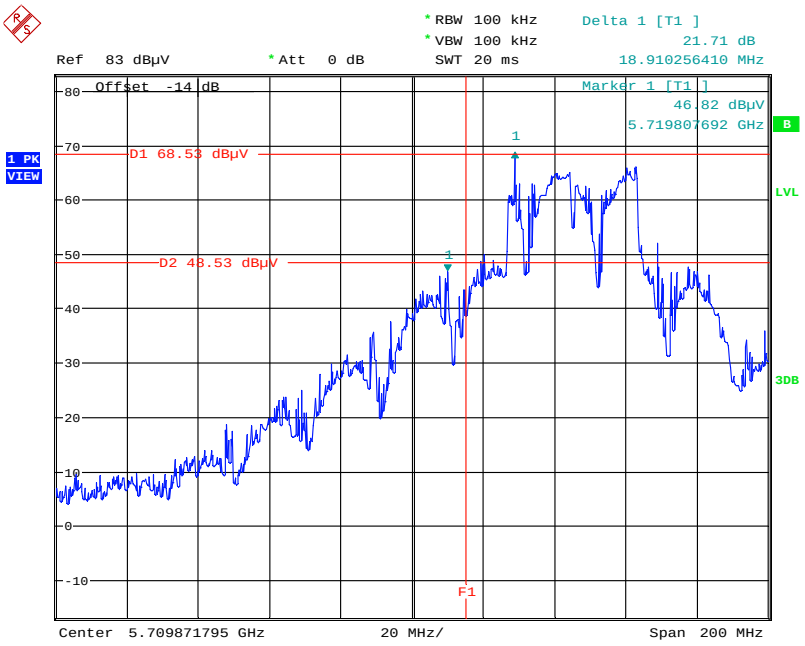
Date: 15.NOV.2011 11:05:59

High Band Edge Plot on Configuration IEEE 802.11n MCS8 20MHz / Ant. 1 + Ant. 2 / 5825 MHz



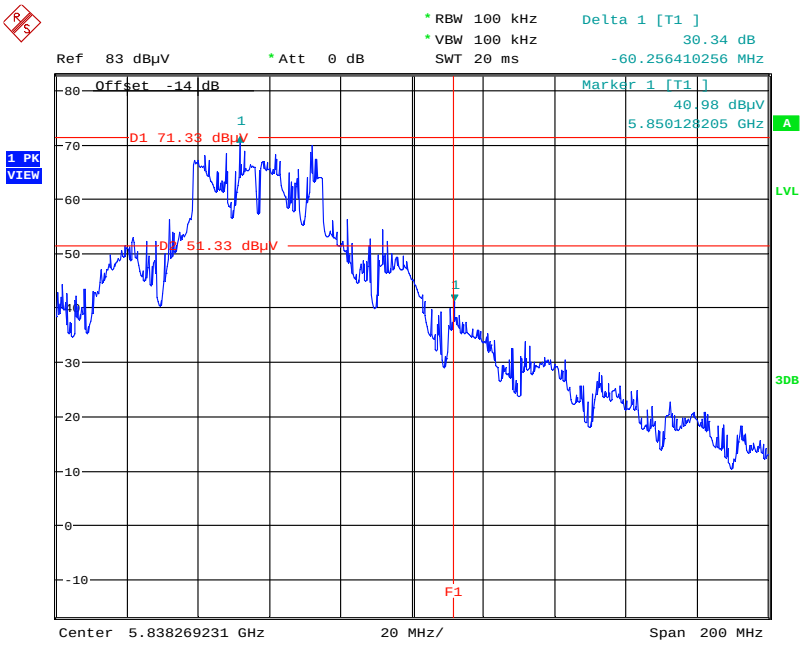
Date: 15.NOV.2011 15:38:04

Low Band Edge Plot on Configuration IEEE 802.11n MCS8 40MHz / Ant. 1 + Ant. 2 / 5755 MHz



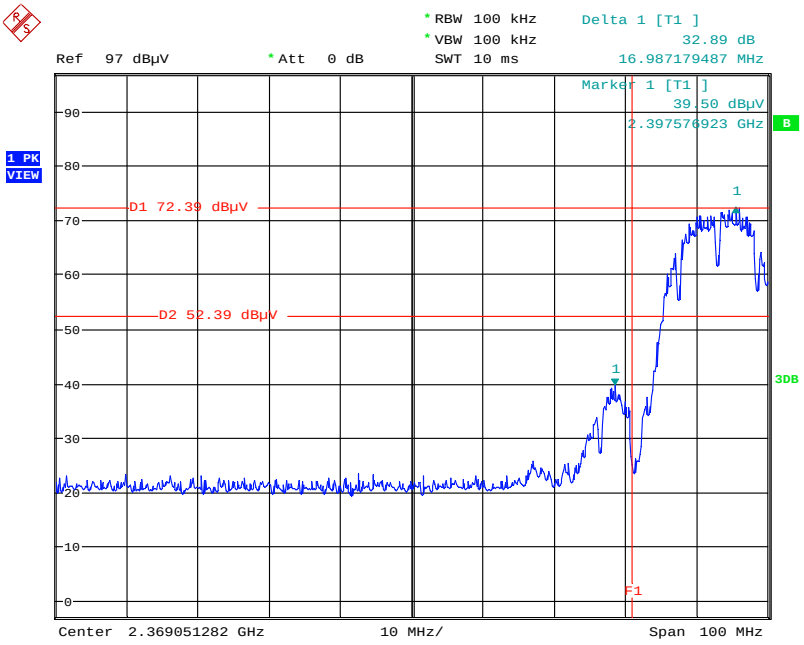
Date: 15.NOV.2011 11:00:30

High Band Edge Plot on Configuration IEEE 802.11n MCS8 40MHz / Ant. 1 + Ant. 2 / 5795 MHz



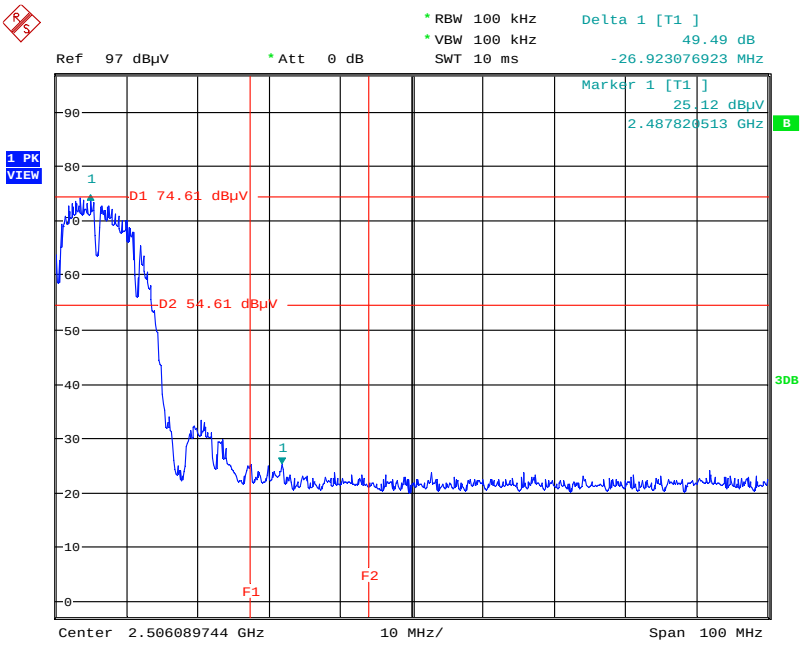
Date: 15.NOV.2011 10:51:59

Low Band Edge Plot on Configuration IEEE 802.11b / Ant. 1 / 2412 MHz



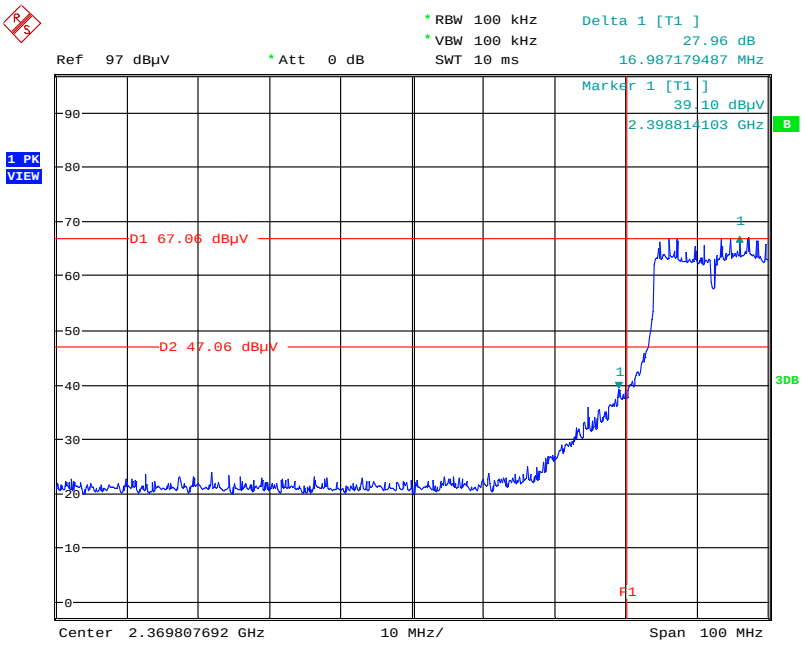
Date: 15.NOV.2011 01:44:26

High Band Edge Plot on Configuration IEEE 802.11b / Ant. 1 / 2462 MHz



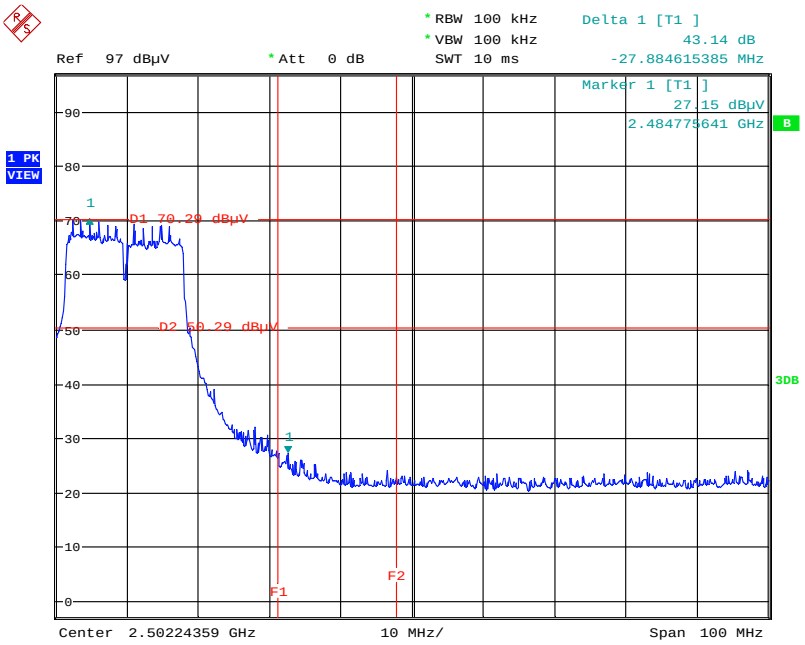
Date: 15.NOV.2011 02:15:09

Low Band Edge Plot on Configuration IEEE 802.11g / Ant. 1 / 2412 MHz



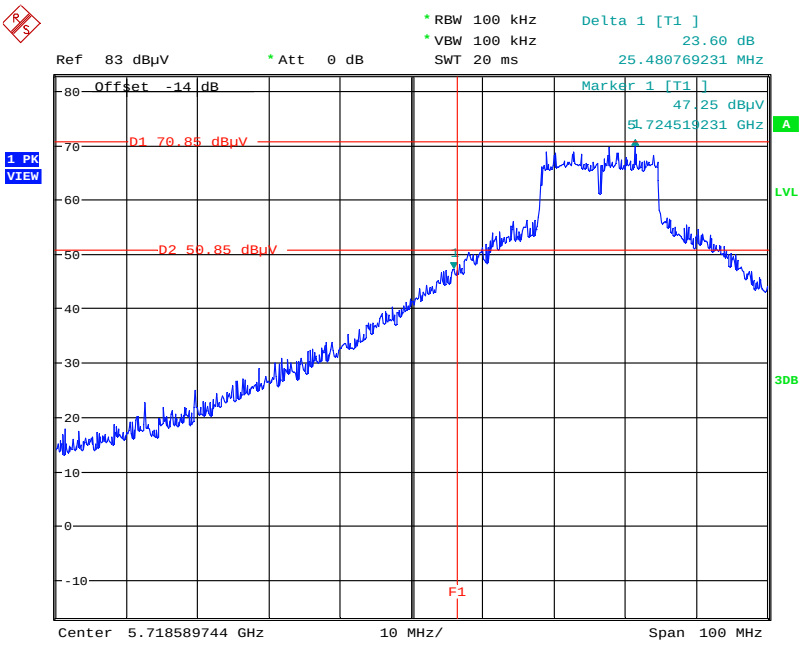
Date: 15.NOV.2011 02:34:02

High Band Edge Plot on Configuration IEEE 802.11g / Ant.1 / 2462 MHz



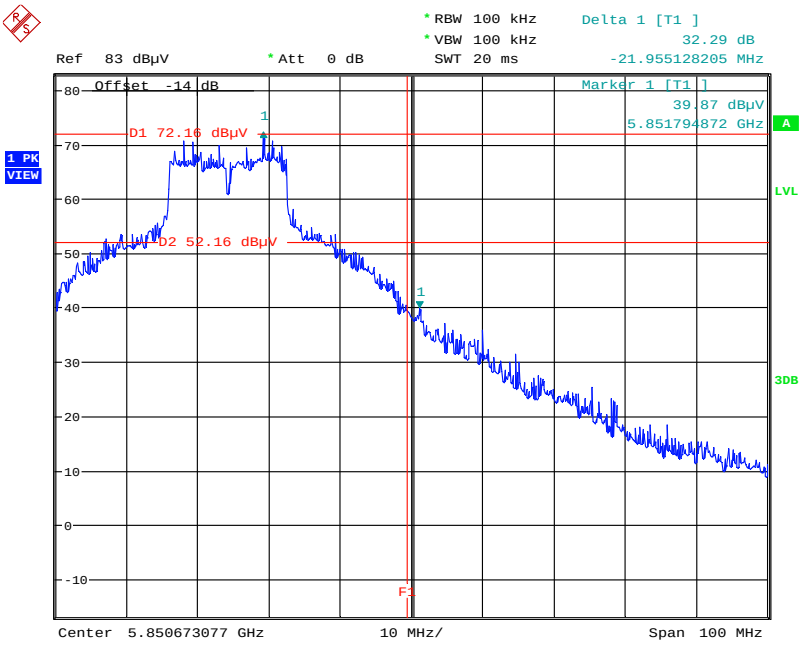
Date: 15.NOV.2011 02:48:28

Low Band Edge Plot on Configuration IEEE 802.11a / Ant. A + Ant. 2 / 5745 MHz



Date: 15.NOV.2011 15:26:24

High Band Edge Plot on Configuration IEEE 802.11a / Ant. A + Ant. 2 / 5825 MHz



Date: 15.NOV.2011 15:32:04

4.8. Antenna Requirements

4.8.1. 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.

4.8.2. 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
EMI Test Receiver	R&S	ESCS 30	100377	9kHz ~ 2.75GHz	Sep. 14, 2011	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Oct. 28, 2011	Conduction (CO01-CB)
V- LISN	Schwarzbeck	NSLK 8127	8127-478	9K ~ 30MHz	Nov. 16, 2011	Conduction (CO01-CB)
COND Cable		Cable		0.15MHz~30MHz	Dec. 4, 2010	Conduction (CO01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	Oct. 29, 2011	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz~18GHz	Nov. 22, 2011	Radiation (03CH01-CB)
Horn Antenna	SCHWARZBEAK	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Nov. 22, 2011	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Nov. 17, 2011	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Nov. 23, 2011	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26.5GHz ~ 40GHz	Jul. 29, 2011	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSP40	100056	9KHz~40GHz	Nov. 03, 2011	Radiation (03CH01-CB)
EMI Test Receiver	R&S	ESCS 30	100355	9KHz ~ 2.75GHz	Mar. 22, 2011	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9 kHz - 30 MHz	Sep. 09, 2010*	Radiation (03CH01-CB)
Turn Table	INN CO	CO 2000	N/A	0 ~ 360 degree	N/A	Radiation (03CH01-CB)
Antenna Mast	INN CO	CO2000	N/A	1 m - 4 m	N/A	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz - 1 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-1	N/A	1 GHz – 26.5 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-2	N/A	1 GHz – 26.5 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-3	N/A	1 GHz - 40 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-4	N/A	1 GHz - 40 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV30	101026	9KHz~30GHz	Jul. 27, 2011	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	May. 20, 2011	Conducted (TH01-CB)
Thermo-Hygro Meter	N/A	HC 520	#1	15~70 degree	Nov. 02, 2011	Conducted (TH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
RF Power Divider	HP	11636A	00306	2GHz ~ 18GHz	N/A	Conducted (TH01-CB)
RF Power Splitter	Anaren	44100	1839	2GHz ~ 18GHz	N/A	Conducted (TH01-CB)
RF Power Splitter	Anaren	42100	17930	2GHz ~ 18GHz	N/A	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-7	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-8	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-9	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-10	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-11	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-12	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-13	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
Power Sensor	Anritsu	MA2411B	0917223	300MHz~40GHz	Nov. 01, 2011	Conducted (TH01-CB)
Power Meter	Anritsu	ML2495A	1035008	300MHz~40GHz	Nov. 01, 2011	Conducted (TH01-CB)

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

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

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 2nd 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.：L1190-110702

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 Road, 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, 2010 to January 09, 2013
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 Accreditation Program for BSMI Mutual Recognition Arrangment with Foreign Authorities

Jay-San Chen
President, Taiwan Accreditation Foundation
Date：July 02, 2011

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