



# SPORTON International Inc.

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## FCC RADIO TEST REPORT

Applicant's company	NETGEAR, Inc.
Applicant Address	350 East Plumeria Drive, San Jose, California 95134-1911
FCC ID	PY311300171
Manufacturer's company	Ambit Microsystems (Shanghai) Ltd.
Manufacturer Address	No. 1925, Nanle Road, Songjiang Export Processing Zone, Shanghai, China

Product Name	Universal Dual Band WiFi Range Extender
Brand Name	NETGEAR
Model Name	WN2500RP
Test Rule Part(s)	47 CFR FCC Part 15 Subpart C § 15.247
Test Freq. Range	2400 ~ 2483.5MHz / 5725 ~ 5850MHz
Received Date	May 15, 2011
Final Test Date	Nov. 04, 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.





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## History of This Test Report

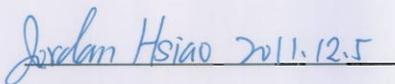
REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR1N1910AB	Rev. 01	Initial issue of report	Dec. 05, 2011



## 1. CERTIFICATE OF COMPLIANCE

Product Name : Universal Dual Band WiFi Range Extender  
Brand Name : NETGEAR  
Model Name : WN2500RP  
Applicant : NETGEAR, 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 May 15, 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.

Handwritten signature of Jordan Hsiao in blue ink, dated 2011.12.5.

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	7.85 dB
4.2	15.247(b)(3)	Peak Output Power	Complies	1.78 dB
4.3	-	Average Output Power	-	-
4.4	15.247(e)	Power Spectral Density	Complies	8.64 dB
4.5	15.247(a)(2)	6dB Spectrum Bandwidth	Complies	-
4.6	15.247(d)	Radiated Emissions	Complies	0.05 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	±8.5×10 <sup>-8</sup>	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

##### IEEE 802.11n

Items	Description
Product Type	WLAN (2TX, 2RX)
Radio Type	Intentional Transceiver
Power Type	From power 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 Chip 1 (eth 1)> For 2.4GHz Band: MCS0 (20MHz): 17.44 MHz ; MCS0 (40MHz): 36.24 MHz <For Chip 2 (eth 2)> For 2.4GHz Band: MCS0 (20MHz): 16.68 MHz ; MCS0 (40MHz): 36.24 MHz For 5GHz Band: MCS0 (20MHz): 16.76 MHz ; MCS0 (40MHz): 36.32 MHz
Peak Output Power	<For Chip 1 (eth 1)> For 2.4GHz Band: MCS0 (20MHz): 28.22 dBm ; MCS0 (40MHz): 26.92 dBm <For Chip 2 (eth 2)> For 2.4GHz Band: MCS0 (20MHz): 28.20 dBm ; MCS0 (40MHz): 23.30 dBm For 5GHz Band: MCS0 (20MHz): 27.36 dBm ; MCS0 (40MHz): 27.15 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

**802.11a/b/g**

Items	Description
Product Type	11b: WLAN (1TX, 1RX) 11a/g/n: WLAN (2TX, 2RX)
Radio Type	Intentional Transceiver
Power Type	From power adapter
Modulation	DSSS for IEEE 802.11b ; OFDM for IEEE 802.11a/g
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 / 5725 ~ 5850MHz
Channel Number	11b/g: 11 ; 11a: 5
Channel Band Width (99%)	<For Chip 1 (eth 1)> 11b: 10.56 MHz ; 11g: 16.32 MHz <For Chip 2 (eth 2)> 11b: 10.12 MHz ; 11g: 15.20 MHz ; 11a: 15.56 MHz
Peak Output Power	<For Chip 1 (eth 1)> 11b: 23.28 dBm ; 11g: 27.80 dBm <For Chip 2 (eth 2)> 11b: 20.45 dBm ; 11g: 28.19 dBm ; 11a: 27.42 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

**Antenna & Band width**

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

## IEEE 802.11n spec

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

Symbol	Explanation
NSS	Number of spatial streams
R	Code rate
NBPS	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	P/N	Rating
Adapter 1	NETGEAR	MT12-N120100-A1	332-10252-01	Input: 120VAC, 60Hz, 0.5A Output: 12VDC, 1A
Adapter 2	NETGEAR	AD810F10	332-10329-01	Input: 100-120VAC, 50/60Hz, 0.3A Output: 12VDC, 1A
<b>Others</b>				
Foot Holder				

### 3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	
					2.4GHz	5GHz
1	-	-	PCB Antenna	I-PEX	2.84	2.67
					2.44	2.96
2	Foxconn	FX01B86-0G-EF	PCB Antenna	I-PEX	2.59	
3	-	-	PIFA Antenna	I-PEX	2.44	2.96
					2.80	
4	Foxconn	FX01B82-0G-EF	PCB Antenna	I-PEX	2.80	

Note: The EUT has two RF chips.

Chip 1 (eth 1). Brand Name / Model No.: Broadcom / BCM5358U, only supports 2.4GHz function.

Chip 2 (eth 2). Brand Name / Model No.: Broadcom / BCM43236, supports 2.4GHz / 5GHz functions.

The EUT has four antennas.

<For Chip 1 (eth 1)>

**For 02.11b Mode:**

Only Ant. 4 can be used as transmitting/receiving antenna.

**For 802.11g/n Mode:**

Both Ant. 2 and Ant. 4 can be used as transmitting/receiving antennas.

Ant. 2 and Ant. 4 could transmit/receive simultaneously.

<For Chip 2 (eth 2)>

**For 02.11b Mode:**

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

**For 802.11g/n Mode:**

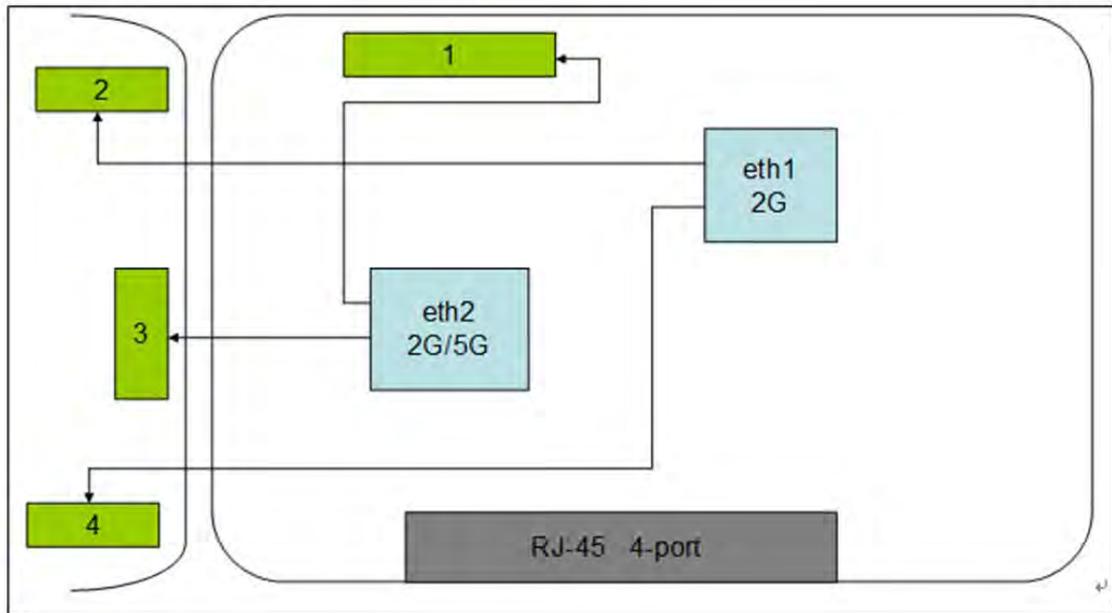
Both Ant. 1 and Ant. 3 can be used as transmitting/receiving antennas.

Ant. 1 and Ant. 3 could transmit/receive simultaneously.

**For 802.11a/n Mode:**

Both Ant. 1 and Ant. 3 can be used as transmitting/receiving antennas.

Ant. 1 and Ant. 3 could transmit/receive simultaneously.



### 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	MCS0/20MHz	7.2 Mbps	1/6/11	1/3/1+3, 2/4/2+4
Average Output Power	MCS0/40MHz	14.4 Mbps	3/6/9	1/3/1+3, 2/4/2+4
Power Spectral Density	11b/CCK	1 Mbps	1/6/11	1/4
	11g/BPSK	6 Mbps	1/6/11	1/3/1+3, 2/4/2+4
6dB Spectrum Bandwidth	MCS0/20MHz	7.2 Mbps	1/6/11	1+3, 2+4
	MCS0/40MHz	14.4 Mbps	3/6/9	1+3, 2+4
	11b/CCK	1 Mbps	1/6/11	1/4
	11g/BPSK	6 Mbps	1/6/11	1+3, 2+4
Radiated Emissions Below 1GHz	Normal Link	Auto	-	-
Radiated Emissions Above 1GHz	MCS0/20MHz	7.2 Mbps	1/6/11	1+3, 2+4
	MCS0/40MHz	14.4 Mbps	3/6/9	1+3, 2+4
	11b/CCK	1 Mbps	1/6/11	1/4
	11g/BPSK	6 Mbps	1/6/11	1+3, 2+4
Band Edge Emissions	MCS0/20MHz	7.2 Mbps	1/11	1+3, 2+4
	MCS0/40MHz	14.4 Mbps	3/9	1+3, 2+4
	11b/CCK	1 Mbps	1/11	1/4
	11g/BPSK	6 Mbps	1/11	1+3, 2+4

**For 5GHz Band**

Test Items	Mode	Data Rate	Channel	Antenna
AC Power Line Conducted Emissions	Normal Link	Auto	-	-
Peak Output Power	MCS0/20MHz	7.2 Mbps	149/157/165	1/3/1+3
Average Output Power	MCS0/40MHz	14.4 Mbps	151/159	1/3/1+3
Power Spectral Density	11a/BPSK	6 Mbps	149/157/165	1/3/1+3
6dB Spectrum Bandwidth	MCS0/20MHz	7.2 Mbps	149/157/165	1+3
	MCS0/40MHz	14.4 Mbps	151/159	1+3
	11a/BPSK	6 Mbps	149/157/165	1+3
Radiated Emissions Below 1GHz	Normal Link	Auto	-	-
Radiated Emissions Above 1GHz	MCS0/20MHz	7.2 Mbps	149/157/165	1+3
	MCS0/40MHz	14.4 Mbps	151/159	1+3
	11a/BPSK	6 Mbps	149/157/165	1+3
Band Edge Emissions	MCS0/20MHz	7.2 Mbps	149/157/165	1+3
	MCS0/40MHz	14.4 Mbps	151/159	1+3
	11a/BPSK	6 Mbps	149/157/165	1+3

The following test modes were performed for all tests:

Mode 1. EUT + Adapter 1

Mode 2. EUT + Adapter 2

**For Conducted Emission test:**

Due to Mode 1 generated the worst test result, so it was recorded in this report.

**For Radiated Emission test:**

Due to Mode 2 generated the worst test result, so it was recorded in this report.

**For MPE and Co-location Test:**

The EUT could be applied with 2.4GHz WLAN function and 5GHz WLAN function; therefore Maximum Permissible Exposure (Please refer to Appendix B) and Co-location (please refer to Appendix C) tests are added for simultaneously transmit between 2.4GHz WLAN function and 5GHz WLAN function.

**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 Supporting Units

Support Unit	Brand	Model	FCC ID
Notebook	DELL	D400	QDS-BRCM1005-D
Notebook	DELL	D400	QDS-BRCM1005-D
Notebook	DELL	D420	E2KWM3945ABG
Notebook	DELL	1200	E2K4965AGNM

### 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.

<For Chip 1 (eth 1)>

For 2.4GHz Band

Power Parameters of IEEE 802.11n MCS0 20MHz

Test Software Version	Telnet		
Frequency	2412 MHz	2437 MHz	2462 MHz
Ant. 2 + Ant. 4	54	79	60

Power Parameters of IEEE 802.11n MCS0 40MHz

Test Software Version	Telnet		
Frequency	2422 MHz	2437 MHz	2452 MHz
Ant. 2 + Ant. 4	42	57	52

Power Parameters of IEEE 802.11b

Test Software Version	Telnet		
Frequency	2412 MHz	2437 MHz	2462 MHz
Ant. 4	76	77	77

Power Parameters of IEEE 802.11g

Test Software Version	Telnet		
Frequency	2412 MHz	2437 MHz	2462 MHz
Ant. 2 + Ant. 4	58	78	64

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

<For Chip 2 (eth 2)>

For 2.4GHz Band

Power Parameters of IEEE 802.11n MCS0 20MHz

Test Software Version	DOS		
Frequency	2412 MHz	2437 MHz	2462 MHz
Ant. 1 + Ant. 3	40	65	56

Power Parameters of IEEE 802.11n MCS0 40MHz

Test Software Version	DOS		
Frequency	2422 MHz	2437 MHz	2452 MHz
Ant. 1 + Ant. 3	38	48	46

Power Parameters of IEEE 802.11b

Test Software Version	DOS		
Frequency	2412 MHz	2437 MHz	2462 MHz
Ant. 1	64	62	62

Power Parameters of IEEE 802.11g

Test Software Version	DOS		
Frequency	2412 MHz	2437 MHz	2462 MHz
Ant. 1 + Ant. 3	48	65	54

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

<For Chip 2 (eth 2)>

For 5GHz Band

Power Parameters of IEEE 802.11n MCS0 20MHz

Test Software Version	DOS		
Frequency	5745 MHz	5785 MHz	5825 MHz
Ant. 1 + Ant. 3	76	76	76

Power Parameters of IEEE 802.11n MCS0 40MHz

Test Software Version	DOS	
Frequency	5755 MHz	5795 MHz
Ant. 1 + Ant. 3	76	76

Power Parameters of IEEE 802.11a

Test Software Version	DOS		
Frequency	5745 MHz	5785 MHz	5825 MHz
Ant. 1 + Ant. 3	76	76	76

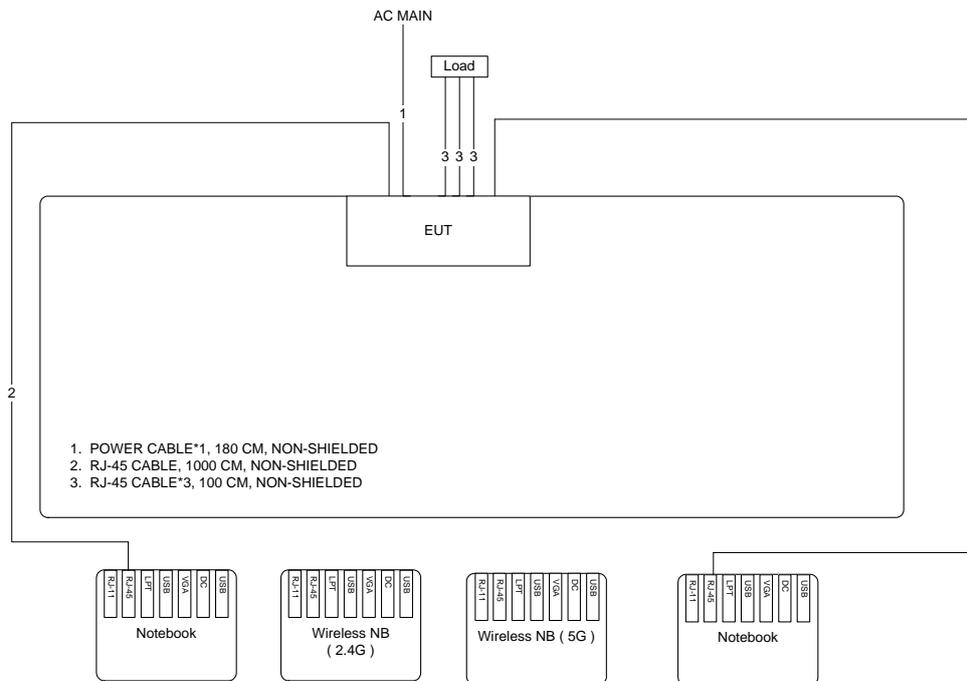
During the test, "DOS" under WIN XP was executed the test program to control the EUT continuously transmit RF signal.

### 3.9. Test Configurations

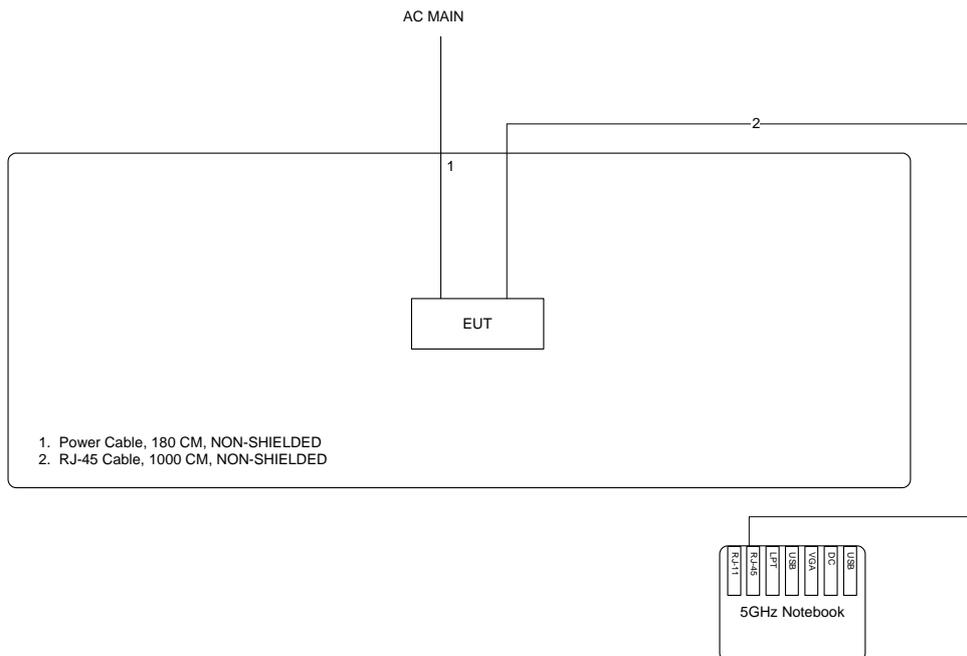
#### 3.9.1. Radiation Emissions Test Configuration

Test Mode: Mode 2

Test Configuration: 30MHz ~ 1GHz

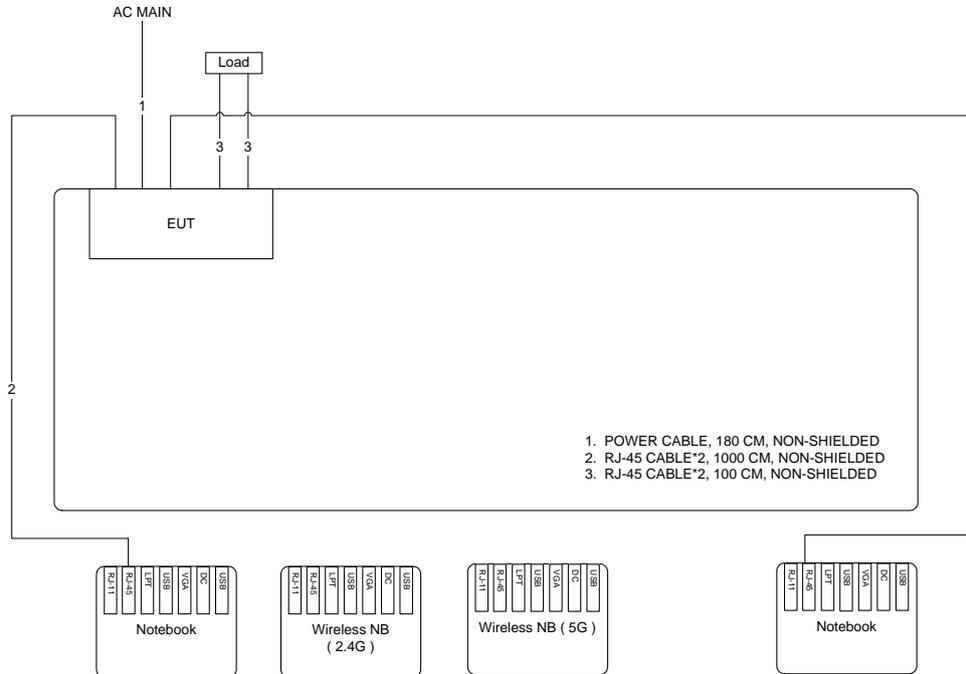


Test Configuration: above 1GHz



### 3.9.2. AC Power Line Conduction Emissions Test Configuration

Test Mode: Mode 1



## 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

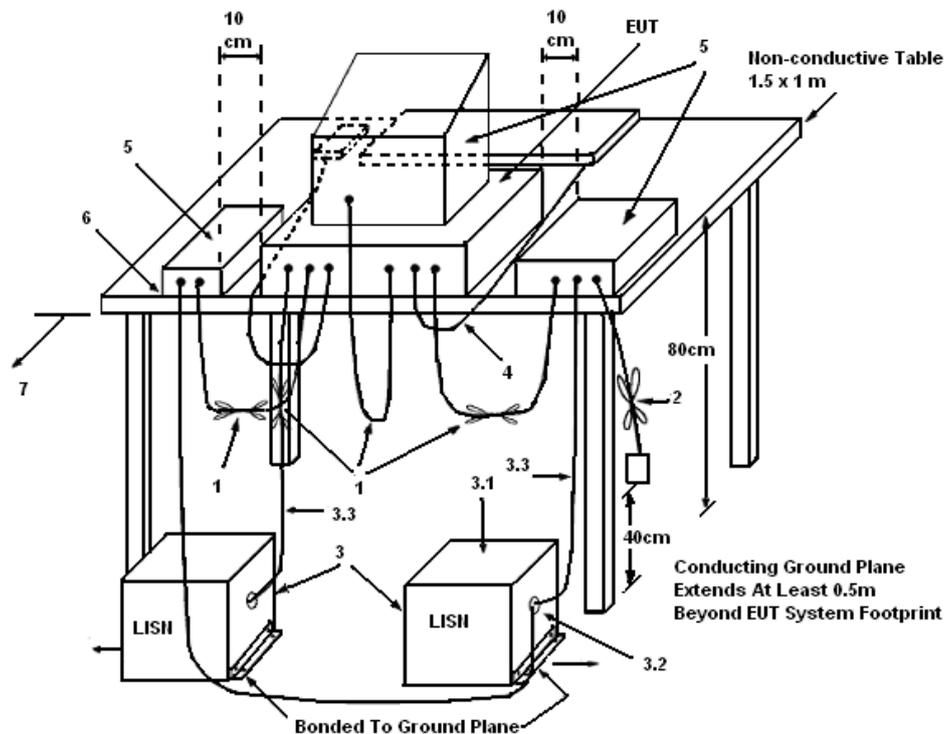
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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  $\Omega$ . 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

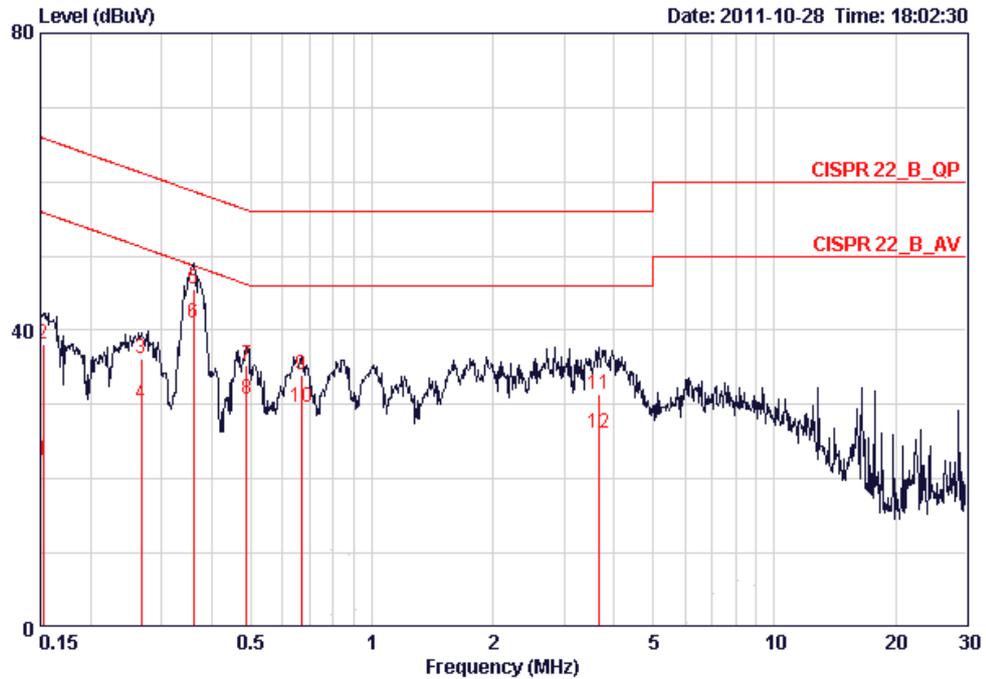
There is no deviation with the original standard.

#### 4.1.6. EUT Operation during Test

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

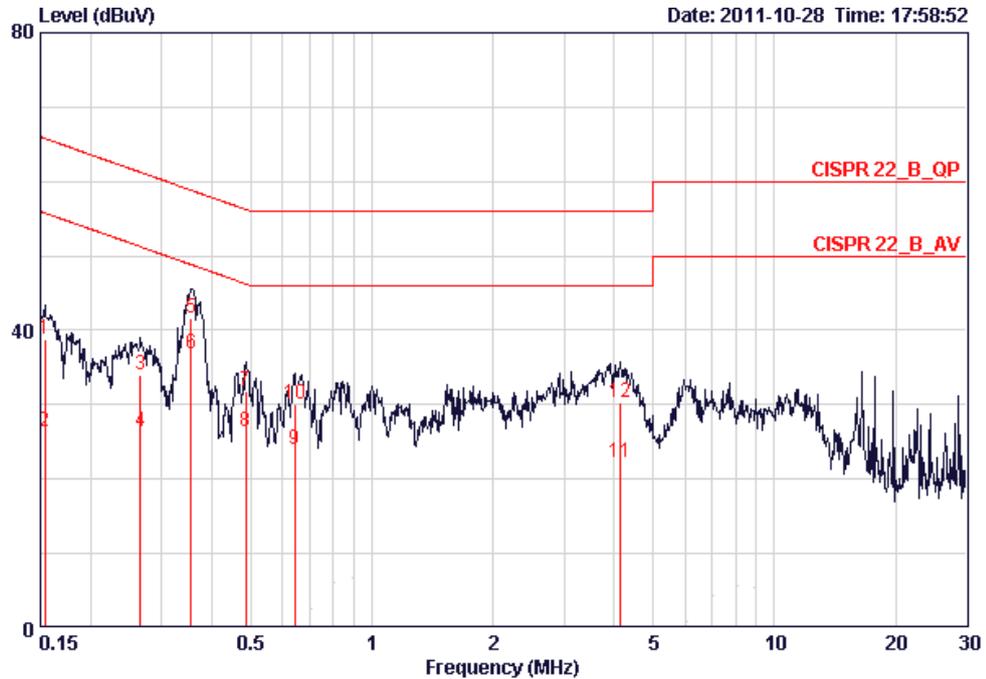
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	21°C	Humidity	61%
Test Engineer	Simon Yang	Phase	Line
Configuration	Normal Link	Test Mode	Mode 1



	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.15240	22.53	-33.33	55.87	22.26	0.07	0.20	AVERAGE
2	0.15240	38.04	-27.82	65.87	37.77	0.07	0.20	QP
3	0.26724	36.17	-25.03	61.20	35.93	0.04	0.20	QP
4	0.26724	30.07	-21.13	51.20	29.83	0.04	0.20	AVERAGE
5	0.35955	45.59	-13.15	58.74	45.36	0.03	0.20	QP
6	0.35955	40.89	-7.85	48.74	40.66	0.03	0.20	AVERAGE
7	0.48890	35.36	-20.82	56.19	35.22	0.03	0.11	QP
8	0.48890	30.83	-15.35	46.19	30.69	0.03	0.11	AVERAGE
9	0.66832	34.06	-21.94	56.00	33.83	0.03	0.20	QP
10	0.66832	29.73	-16.27	46.00	29.50	0.03	0.20	AVERAGE
11	3.661	31.49	-24.51	56.00	31.10	0.09	0.30	QP
12	3.661	26.20	-19.80	46.00	25.81	0.09	0.30	AVERAGE

Temperature	21°C	Humidity	61%
Test Engineer	Simon Yang	Phase	Neutral
Configuration	Normal Link	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	0.15403	38.85	-26.93	65.78	38.55	0.10	0.20	QP
2	0.15403	26.27	-29.51	55.78	25.97	0.10	0.20	AVERAGE
3	0.26583	33.97	-27.28	61.25	33.69	0.08	0.20	QP
4	0.26583	26.39	-24.86	51.25	26.11	0.08	0.20	AVERAGE
5	0.35576	41.53	-17.30	58.83	41.26	0.07	0.20	QP
6	0.35576	36.87	-11.96	48.83	36.60	0.07	0.20	AVERAGE
7	0.48632	31.91	-24.32	56.23	31.73	0.07	0.11	QP
8	0.48632	26.30	-19.93	46.23	26.12	0.07	0.11	AVERAGE
9	0.64398	23.89	-22.11	46.00	23.62	0.07	0.20	AVERAGE
10	0.64398	30.07	-25.93	56.00	29.80	0.07	0.20	QP
11	4.136	22.16	-23.84	46.00	21.71	0.15	0.30	AVERAGE
12	4.136	30.33	-25.67	56.00	29.88	0.15	0.30	QP

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

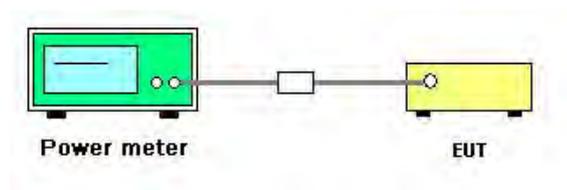
Please refer to section 5 of equipments list in this report. The following table is the setting of the peak power meter.

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	<input checked="" type="checkbox"/> ANSI C63.10 clause 6.10.2.1 (a) power meter method
RF Output Power Method	<input type="checkbox"/> ANSI C63.10 clause 6.10.2.1 (b) channel integration method
RF Output Power Method	<input type="checkbox"/> ANSI C63.10 clause 6.10.3.1 Method 1 - spectral trace averaging
RF Output Power Method	<input type="checkbox"/> 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

<For Chip 1 (eth 1)>

Temperature	25°C	Humidity	63%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n
Test Date	May 20, 2011		

##### Configuration IEEE 802.11n MCS0 20MHz

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Ant. 2	Ant. 4			
1	2412 MHz	23.76	23.56	26.67	30.00	Complies
6	2437 MHz	25.53	24.87	28.22	30.00	Complies
11	2462 MHz	24.33	23.42	26.91	30.00	Complies

##### Configuration IEEE 802.11n MCS0 40MHz

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Ant. 2	Ant. 4			
3	2422 MHz	22.28	18.93	23.93	30.00	Complies
6	2437 MHz	24.05	23.76	26.92	30.00	Complies
9	2452 MHz	22.36	22.15	26.27	30.00	Complies

<b>Temperature</b>	25°C	<b>Humidity</b>	63%
<b>Test Engineer</b>	Johnson Chang	<b>Configurations</b>	IEEE 802.11b/g
<b>Test Date</b>	May 20, 2011		

**Configuration IEEE 802.11b / Ant. 4**

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	22.92	30.00	Complies
6	2437 MHz	23.28	30.00	Complies
11	2462 MHz	23.22	30.00	Complies

**Configuration IEEE 802.11g**

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Ant. 2	Ant. 4			
1	2412 MHz	23.92	23.16	26.57	30.00	Complies
6	2437 MHz	24.61	24.96	27.80	30.00	Complies
11	2462 MHz	24.81	23.85	27.37	30.00	Complies

<For Chip 2 (eth 2)>

Temperature	25°C	Humidity	60%
Test Engineer	Sean Ku	Configurations	IEEE 802.11n
Test Date	Nov. 02, 2011		

For 2.4GHz Band

Configuration IEEE 802.11n MCS0 20MHz

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Ant. 1	Ant. 3			
1	2412 MHz	19.88	20.48	23.20	30.00	Complies
6	2437 MHz	25.30	25.07	28.20	30.00	Complies
11	2462 MHz	23.16	23.92	26.57	30.00	Complies

Configuration IEEE 802.11n MCS0 40MHz

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Ant. 1	Ant. 3			
3	2422 MHz	19.08	18.95	22.03	30.00	Complies
6	2437 MHz	20.23	20.35	23.30	30.00	Complies
9	2452 MHz	19.21	19.75	22.50	30.00	Complies

For 5GHz Band

Configuration IEEE 802.11n MCS0 20MHz

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Ant. 1	Ant. 3			
149	5745 MHz	24.40	24.29	27.36	30.00	Complies
157	5785 MHz	24.05	24.42	27.25	30.00	Complies
165	5825 MHz	24.11	24.10	27.12	30.00	Complies

Configuration IEEE 802.11n MCS0 40MHz

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Ant. 1	Ant. 3			
151	5755 MHz	24.11	24.02	27.08	30.00	Complies
159	5795 MHz	24.18	24.09	27.15	30.00	Complies

<b>Temperature</b>	25°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Sean Ku	<b>Configurations</b>	IEEE 802.11a/b/g
<b>Test Date</b>	Nov. 02, 2011		

**Configuration IEEE 802.11b / Ant. 1**

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	20.15	30.00	Complies
6	2437 MHz	20.45	30.00	Complies
11	2462 MHz	20.45	30.00	Complies

**Configuration IEEE 802.11g**

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Ant. 1	Ant. 3			
1	2412 MHz	22.65	22.15	25.42	30.00	Complies
6	2437 MHz	25.17	25.19	28.19	30.00	Complies
11	2462 MHz	24.81	24.04	27.45	30.00	Complies

**Configuration IEEE 802.11a**

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Ant. 1	Ant. 3			
149	5745 MHz	24.34	24.42	27.39	30.00	Complies
157	5785 MHz	24.22	24.10	27.17	30.00	Complies
165	5825 MHz	24.42	24.40	27.42	30.00	Complies

### 4.3. Average Output Power Measurement

#### 4.3.1. Measuring Instruments and Setting

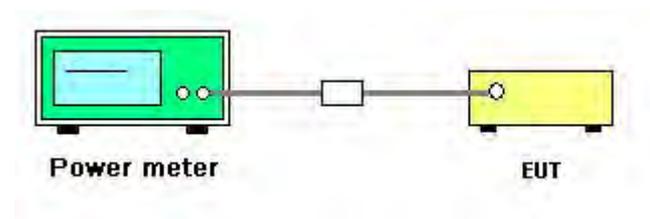
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

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	<input checked="" type="checkbox"/> ANSI C63.10 clause 6.10.2.1 (a) power meter method
RF Output Power Method	<input type="checkbox"/> ANSI C63.10 clause 6.10.2.1 (b) channel integration method
RF Output Power Method	<input type="checkbox"/> ANSI C63.10 clause 6.10.3.1 Method 1 - spectral trace averaging
RF Output Power Method	<input type="checkbox"/> 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.

Note: Average output power is only for Maximum Permissible Exposure use.

#### 4.3.6. Test Result of Average Output Power

<For Chip 1 (eth 1)>

Temperature	25°C	Humidity	63%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n
Test Date	May 20, 2011		

##### Configuration IEEE 802.11n MCS0 20MHz

Channel	Frequency	Average Conducted Power (dBm)		
		Ant. 2	Ant. 4	Total
1	2412 MHz	14.08	14.02	17.06
6	2437 MHz	19.25	18.74	22.01
11	2462 MHz	14.61	14.15	17.40

##### Configuration IEEE 802.11n MCS0 40MHz

Channel	Frequency	Average Conducted Power (dBm)		
		Ant. 2	Ant. 4	Total
3	2422 MHz	11.88	11.75	14.83
6	2437 MHz	15.12	15.09	18.12
9	2452 MHz	12.48	12.17	15.34

<b>Temperature</b>	25°C	<b>Humidity</b>	63%
<b>Test Engineer</b>	Johnson Chang	<b>Configurations</b>	IEEE 802.11b/g
<b>Test Date</b>	May 20, 2011		

**Configuration IEEE 802.11b / Ant. 4**

Channel	Frequency	Average Conducted Power (dBm)
1	2412 MHz	19.02
6	2437 MHz	19.51
11	2462 MHz	19.38

**Configuration IEEE 802.11g**

Channel	Frequency	Average Conducted Power (dBm)		
		Ant. 2	Ant. 4	Total
1	2412 MHz	14.26	13.65	16.98
6	2437 MHz	18.31	18.63	21.48
11	2462 MHz	15.58	15.13	18.37

<For Chip 2 (eth 2)>

Temperature	25°C	Humidity	60%
Test Engineer	Sean Ku	Configurations	IEEE 802.11n
Test Date	Nov. 02, 2011		

For 2.4GHz Band

Configuration IEEE 802.11n MCS0 20MHz

Channel	Frequency	Average Conducted Power (dBm)		
		Ant. 1	Ant. 3	Total
1	2412 MHz	10.61	10.41	13.52
6	2437 MHz	16.55	16.49	19.53
11	2462 MHz	14.77	14.74	17.77

Configuration IEEE 802.11n MCS0 40MHz

Channel	Frequency	Average Conducted Power (dBm)		
		Ant. 1	Ant. 3	Total
3	2422 MHz	10.14	9.91	13.04
6	2437 MHz	12.75	12.73	15.75
9	2452 MHz	12.05	12.33	15.20

For 5GHz Band

Configuration IEEE 802.11n MCS0 20MHz

Channel	Frequency	Average Conducted Power (dBm)		
		Ant. 1	Ant. 3	Total
149	5745 MHz	18.20	18.15	21.19
157	5785 MHz	18.14	18.21	21.19
165	5825 MHz	18.40	18.03	21.23

Configuration IEEE 802.11n MCS0 40MHz

Channel	Frequency	Average Conducted Power (dBm)		
		Ant. 1	Ant. 3	Total
151	5755 MHz	18.33	18.32	21.34
159	5795 MHz	18.17	18.13	21.16

<b>Temperature</b>	25°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Sean Ku	<b>Configurations</b>	IEEE 802.11a/b/g
<b>Test Date</b>	Nov. 02, 2011		

**Configuration IEEE 802.11b / Ant. 1**

Channel	Frequency	Average Conducted Power (dBm)
1	2412 MHz	16.53
6	2437 MHz	16.64
11	2462 MHz	16.72

**Configuration IEEE 802.11g**

Channel	Frequency	Average Conducted Power (dBm)		
		Ant. 1	Ant. 3	Total
1	2412 MHz	12.67	12.54	15.62
6	2437 MHz	16.65	16.53	19.60
11	2462 MHz	13.97	13.51	16.76

**Configuration IEEE 802.11a**

Channel	Frequency	Average Conducted Power (dBm)		
		Ant. 1	Ant. 3	Total
149	5745 MHz	18.20	18.12	21.17
157	5785 MHz	18.34	18.05	21.21
165	5825 MHz	18.31	18.03	21.18

## 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

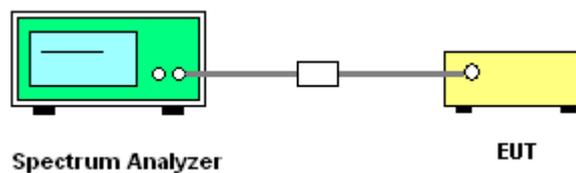
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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

<For Chip 1 (eth 1)>

Temperature	25°C	Humidity	63%
Test Engineer	Johnson Chang	Configurations	IEEE 802.11n

##### Configuration IEEE 802.11n MCS0 20MHz

Channel	Frequency	Power Density (dBm/3kHz)		Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
		Ant. 2	Ant. 4			
1	2412 MHz	-12.13	-14.33	-10.08	8.00	Complies
6	2437 MHz	-7.41	-7.65	-4.52	8.00	Complies
11	2462 MHz	-9.51	-11.47	-7.37	8.00	Complies

##### Configuration IEEE 802.11n MCS0 40MHz

Channel	Frequency	Power Density (dBm/3kHz)		Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
		Ant. 2	Ant. 4			
3	2422 MHz	-18.98	-20.91	-16.83	8.00	Complies
6	2437 MHz	-14.08	-16.51	-12.12	8.00	Complies
9	2452 MHz	-14.77	-17.45	-12.90	8.00	Complies

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

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

<b>Temperature</b>	25°C	<b>Humidity</b>	63%
<b>Test Engineer</b>	Johnson Chang	<b>Configurations</b>	IEEE 802.11b/g

**Configuration IEEE 802.11b / Ant. 4**

Channel	Frequency	Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
1	2412 MHz	-6.19	8.00	Complies
6	2437 MHz	-5.90	8.00	Complies
11	2462 MHz	-3.97	8.00	Complies

**Configuration IEEE 802.11g**

Channel	Frequency	Power Density (dBm/3kHz)		Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
		Ant. 2	Ant. 4			
3	2422 MHz	-10.53	-14.91	-9.18	8.00	Complies
6	2437 MHz	-7.24	-9.15	-5.08	8.00	Complies
9	2452 MHz	-9.78	-12.59	-7.95	8.00	Complies

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

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

<For Chip 2 (eth 2)>

Temperature	25°C	Humidity	60%
Test Engineer	Sean Ku	Configurations	IEEE 802.11n

For 2.4GHz Band

Configuration IEEE 802.11n MCS0 20MHz

Channel	Frequency	Power Density (dBm/3kHz)		Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
		Ant. 1	Ant. 3			
1	2412 MHz	-14.02	-14.83	-11.40	8.00	Complies
6	2437 MHz	-8.54	-9.09	-5.80	8.00	Complies
11	2462 MHz	-10.02	-11.81	-7.81	8.00	Complies

Configuration IEEE 802.11n MCS0 40MHz

Channel	Frequency	Power Density (dBm/3kHz)		Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
		Ant. 1	Ant. 3			
3	2422 MHz	-19.03	-18.65	-15.83	8.00	Complies
6	2437 MHz	-16.08	-16.05	-13.05	8.00	Complies
9	2452 MHz	-17.79	-18.15	-14.96	8.00	Complies

For 5GHz Band

Configuration IEEE 802.11n MCS0 20MHz

Channel	Frequency	Power Density (dBm/3kHz)		Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
		Ant. 1	Ant. 3			
149	5745 MHz	-7.19	-10.10	-5.40	8.00	Complies
157	5785 MHz	-7.36	-9.82	-5.41	8.00	Complies
165	5825 MHz	-6.63	-7.85	-4.19	8.00	Complies

Configuration IEEE 802.11n MCS0 40MHz

Channel	Frequency	Power Density (dBm/3kHz)		Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
		Ant. 1	Ant. 3			
151	5755 MHz	-9.44	-9.90	-6.65	8.00	Complies
159	5795 MHz	-7.96	-10.06	-5.87	8.00	Complies

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

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

Temperature	25°C	Humidity	60%
Test Engineer	Sean Ku	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	-0.64	8.00	Complies
6	2437 MHz	-8.43	8.00	Complies
11	2462 MHz	-9.09	8.00	Complies

**Configuration IEEE 802.11g**

Channel	Frequency	Power Density (dBm/3kHz)		Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
		Ant. 1	Ant. 3			
3	2422 MHz	-12.25	-14.81	-10.33	8.00	Complies
6	2437 MHz	-9.35	-9.30	-6.31	8.00	Complies
9	2452 MHz	-10.34	-11.35	-7.81	8.00	Complies

**Configuration IEEE 802.11a**

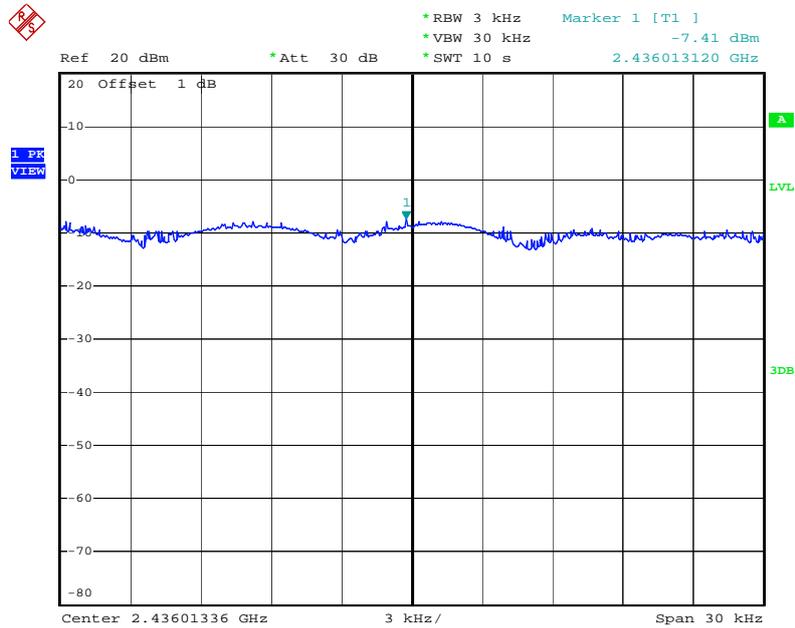
Channel	Frequency	Power Density (dBm/3kHz)		Total Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
		Ant. 1	Ant. 3			
149	5745 MHz	-5.95	-7.21	-3.52	8.00	Complies
157	5785 MHz	-7.75	-8.46	-5.08	8.00	Complies
165	5825 MHz	-8.73	-6.59	-4.52	8.00	Complies

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

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

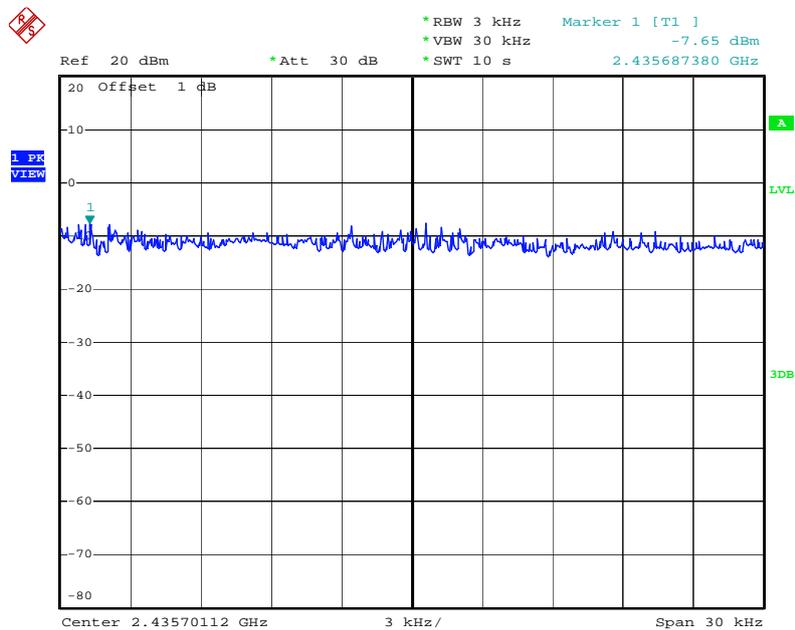
<For Chip 1 (eth 1)>

Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 2 / 2437 MHz



Date: 18.MAY.2011 16:01:33

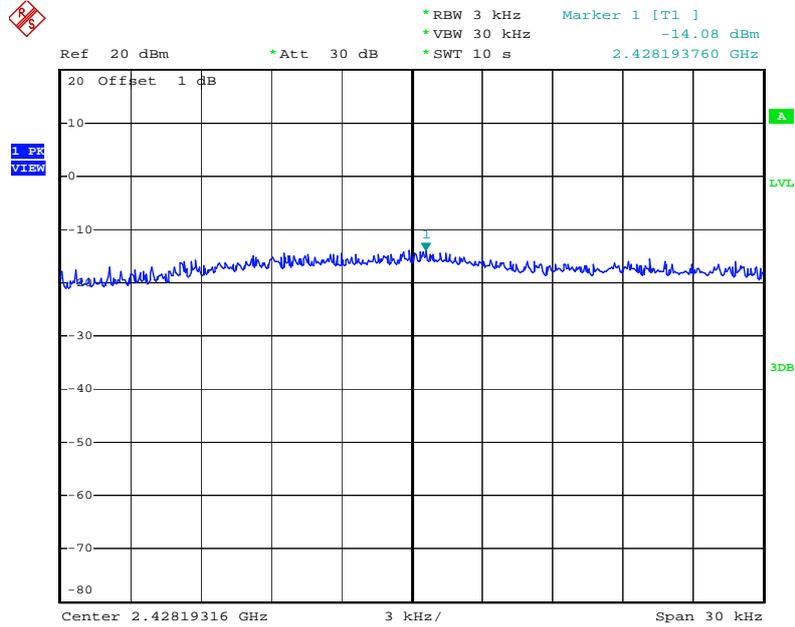
Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 4 / 2437 MHz



Date: 18.MAY.2011 15:59:25

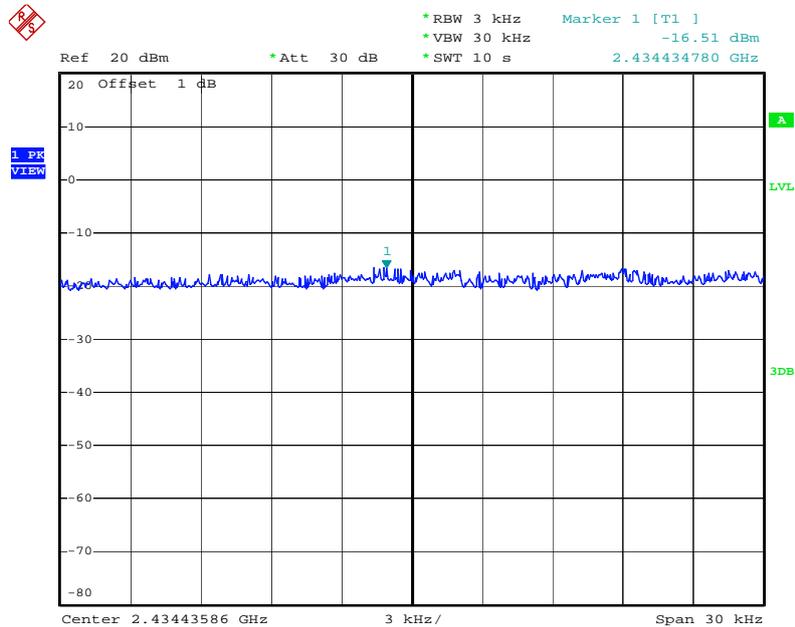
<For Chip 1 (eth 1)>

**Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 2 / 2437 MHz**



Date: 18.MAY.2011 16:15:52

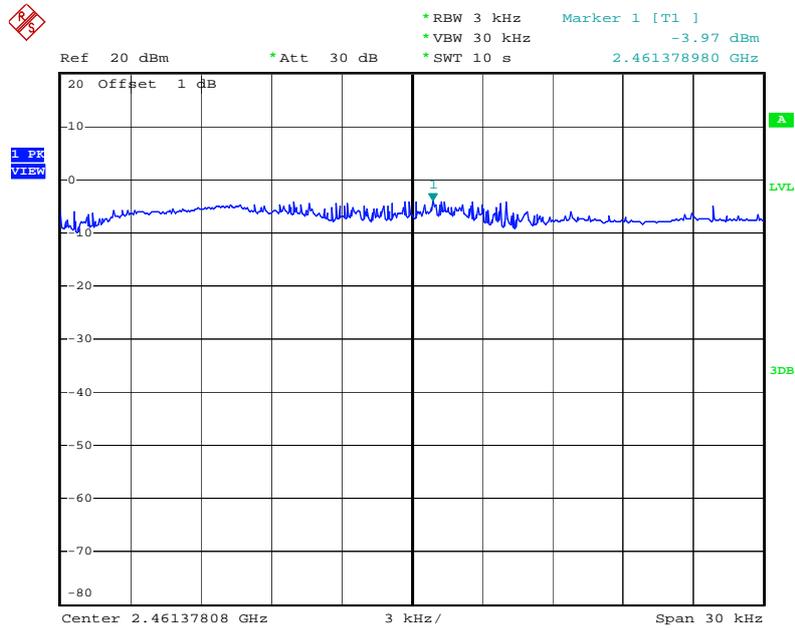
**Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 4 / 2437 MHz**



Date: 18.MAY.2011 16:18:01

<For Chip 1 (eth 1)>

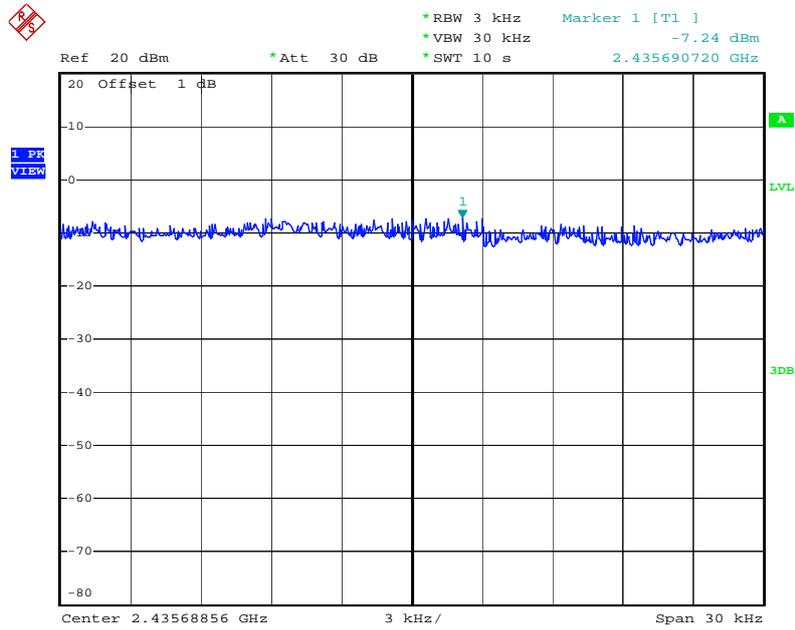
Power Density Plot on Configuration IEEE 802.11b / Ant. 4 / 2462 MHz



Date: 18.MAY.2011 09:38:02

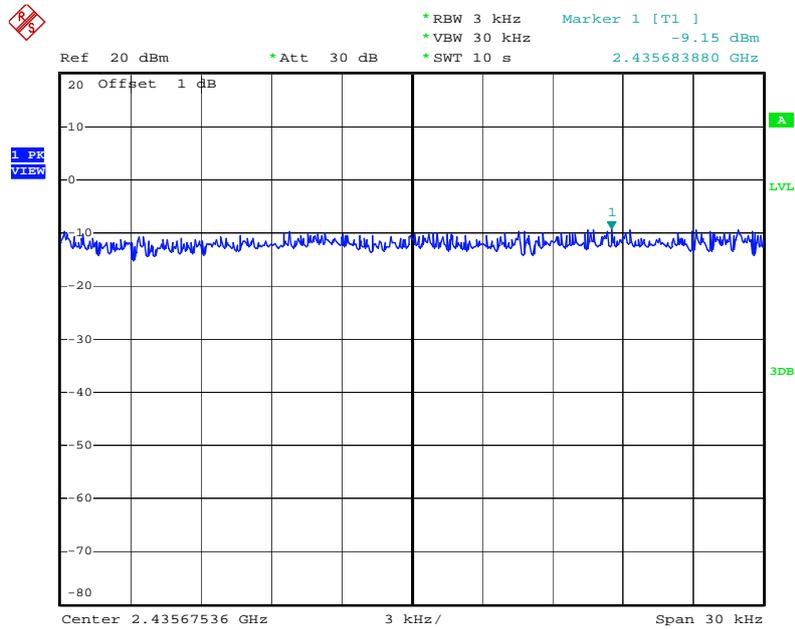
<For Chip 1 (eth 1)>

**Power Density Plot on Configuration IEEE 802.11g / Ant. 2 / 2437 MHz**



Date: 18.MAY.2011 16:33:12

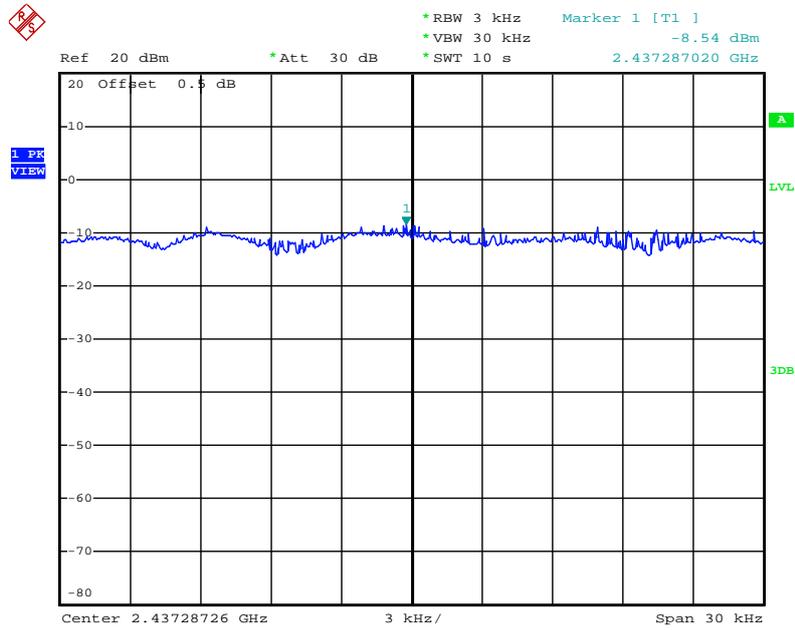
**Power Density Plot on Configuration IEEE 802.11g / Ant. 4 / 2437 MHz**



Date: 18.MAY.2011 16:31:08

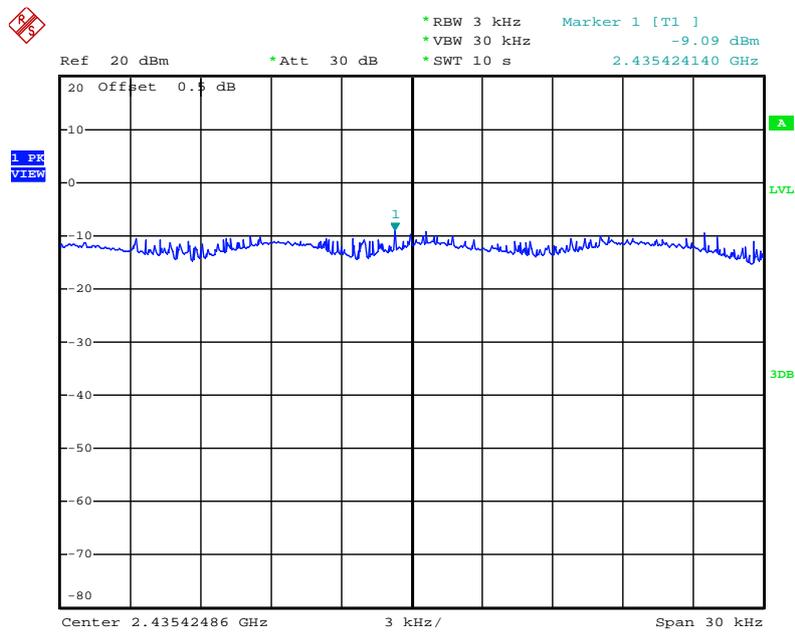
<For Chip 2 (eth 2)>

**Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 / 2437 MHz**



Date: 2.NOV.2011 22:26:42

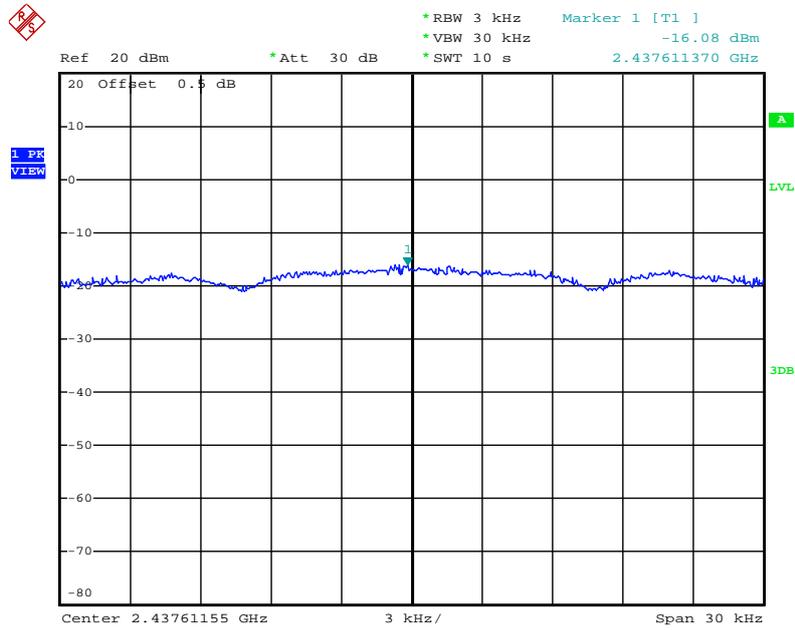
**Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 3 / 2437 MHz**



Date: 2.NOV.2011 22:24:50

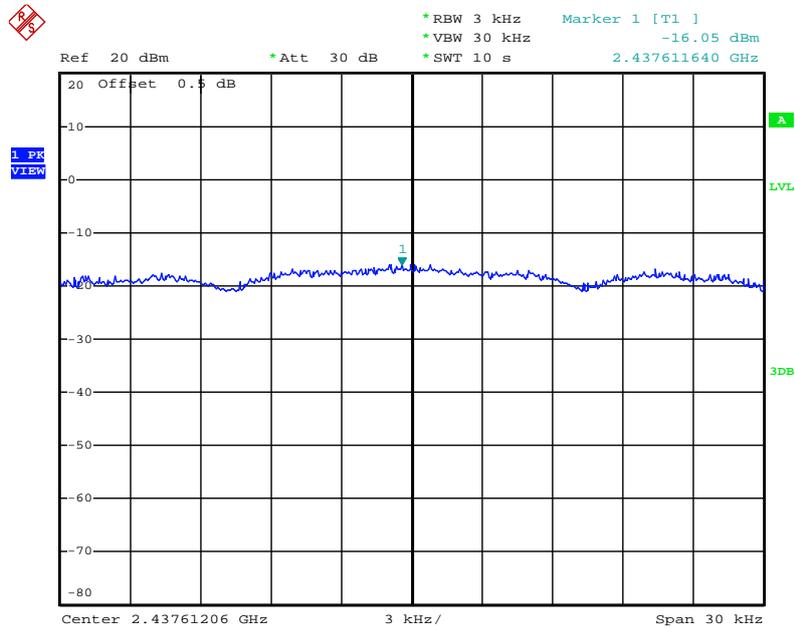
<For Chip 2 (eth 2)>

Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 / 2437 MHz



Date: 2.NOV.2011 22:14:00

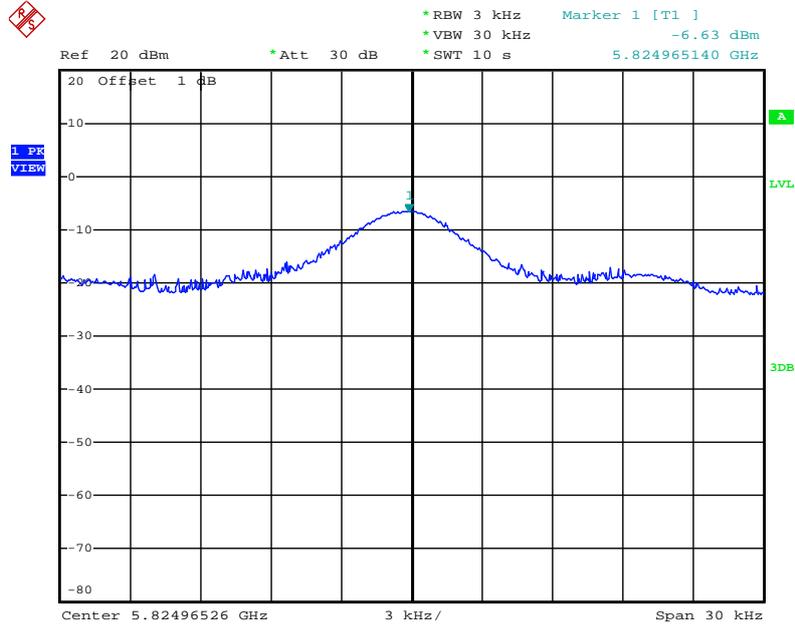
Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 3 / 2437 MHz



Date: 2.NOV.2011 22:12:19

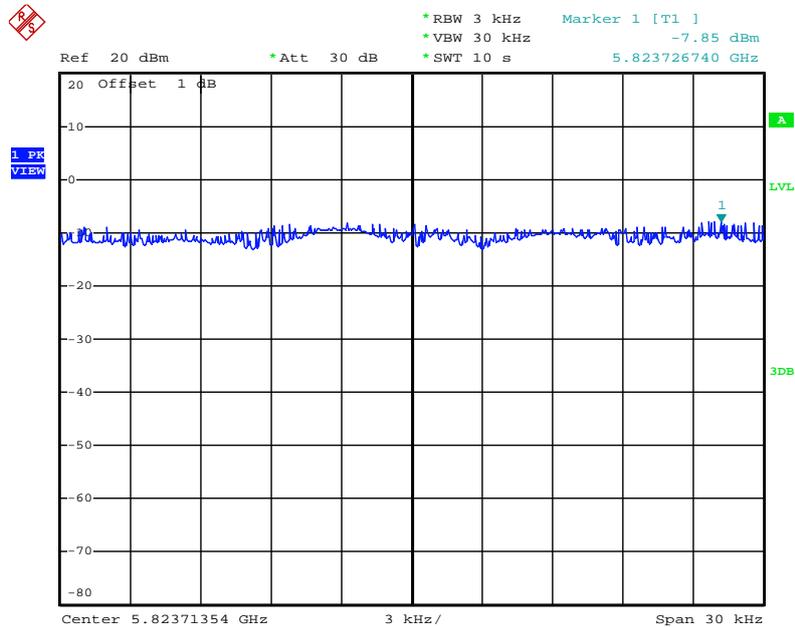
<For Chip 2 (eth 2)>

**Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 / 5825 MHz**



Date: 2.NOV.2011 23:43:09

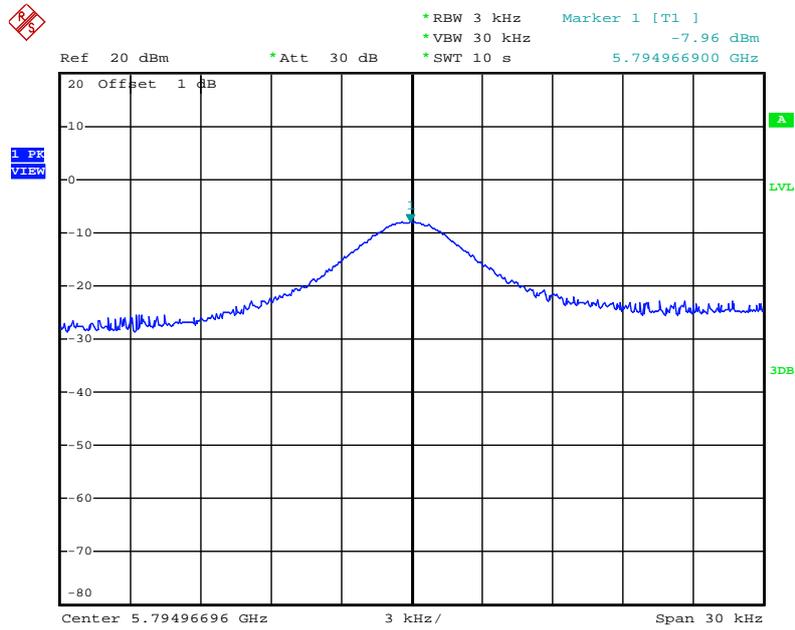
**Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 3 / 5825 MHz**



Date: 2.NOV.2011 23:59:01

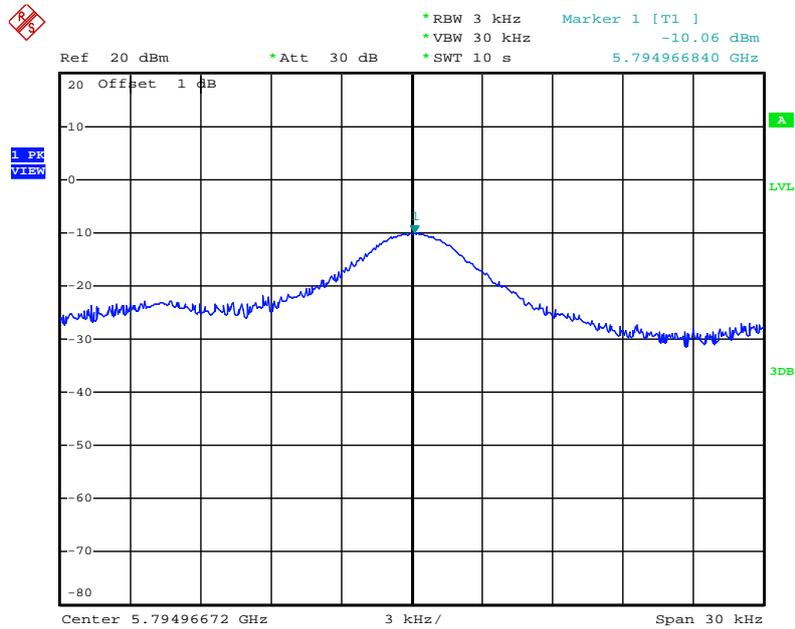
<For Chip 2 (eth 2)>

**Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 / 5795 MHz**



Date: 2.NOV.2011 23:20:56

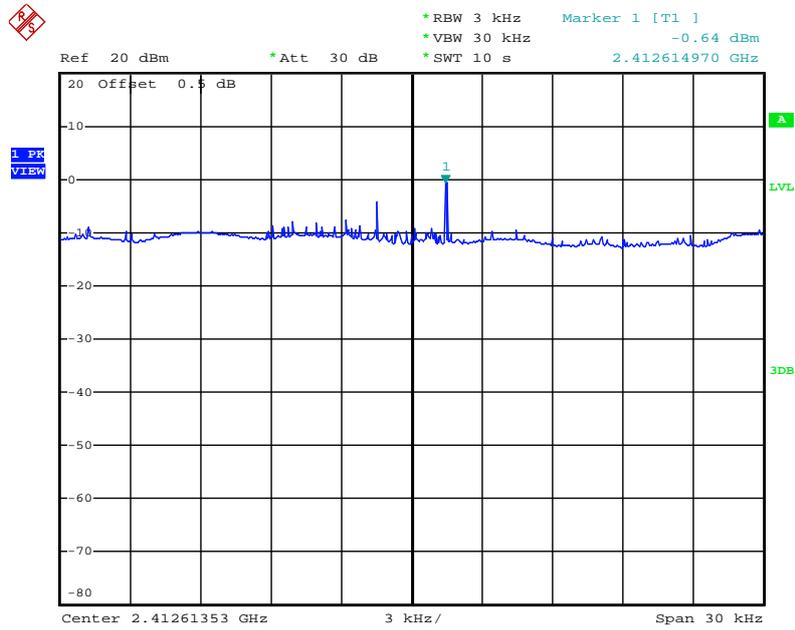
**Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 3 / 5795 MHz**



Date: 2.NOV.2011 23:23:18

<For Chip 2 (eth 2)>

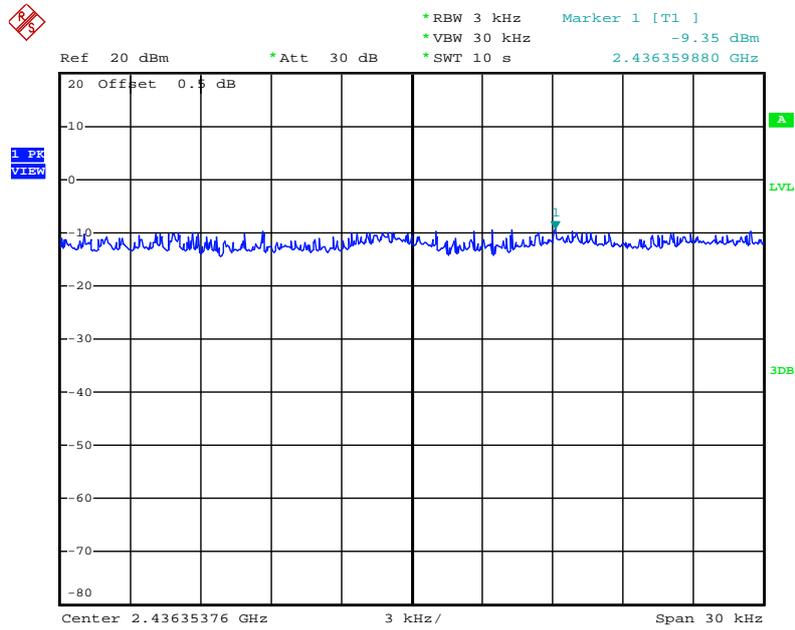
Power Density Plot on Configuration IEEE 802.11b / Ant. 1 / 2412 MHz



Date: 2.NOV.2011 21:29:23

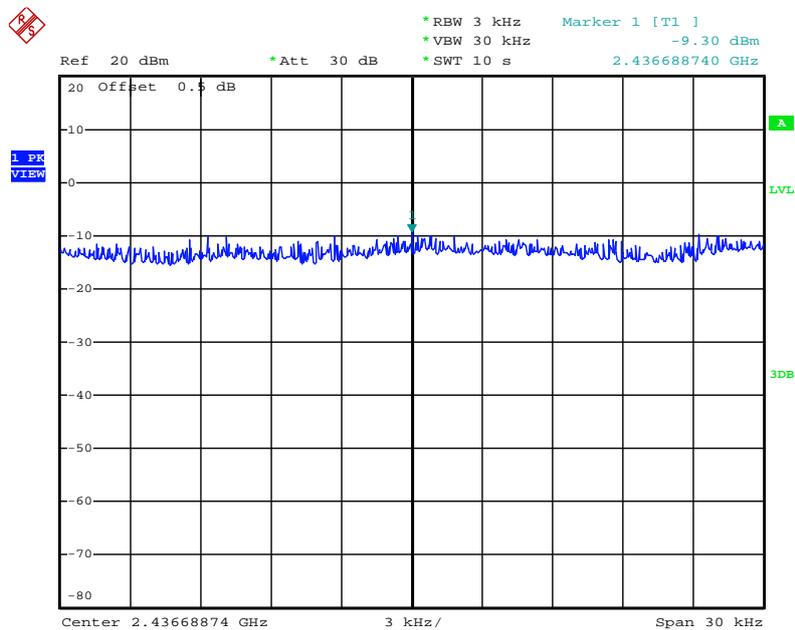
<For Chip 2 (eth 2)>

**Power Density Plot on Configuration IEEE 802.11g / Ant. 1 / 2437 MHz**



Date: 2.NOV.2011 22:44:25

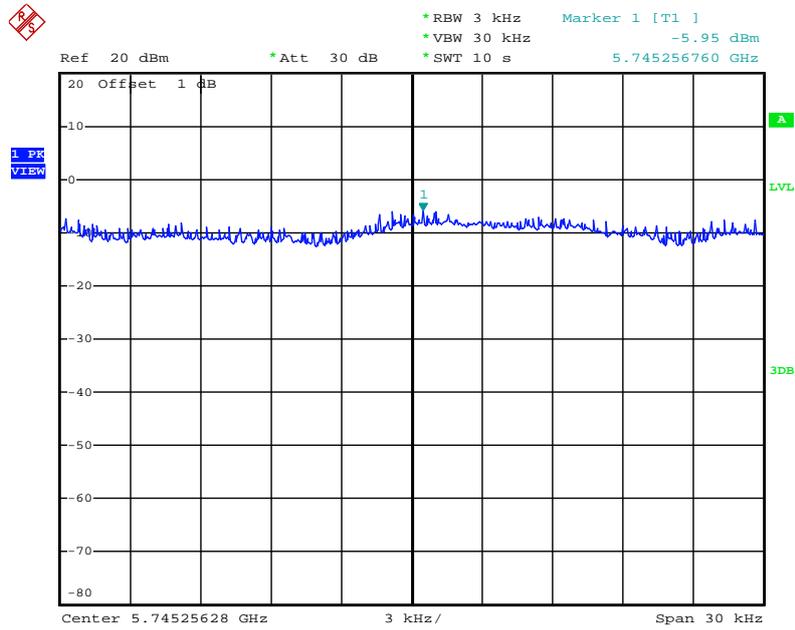
**Power Density Plot on Configuration IEEE 802.11g / Ant. 3 / 2437 MHz**



Date: 2.NOV.2011 22:46:44

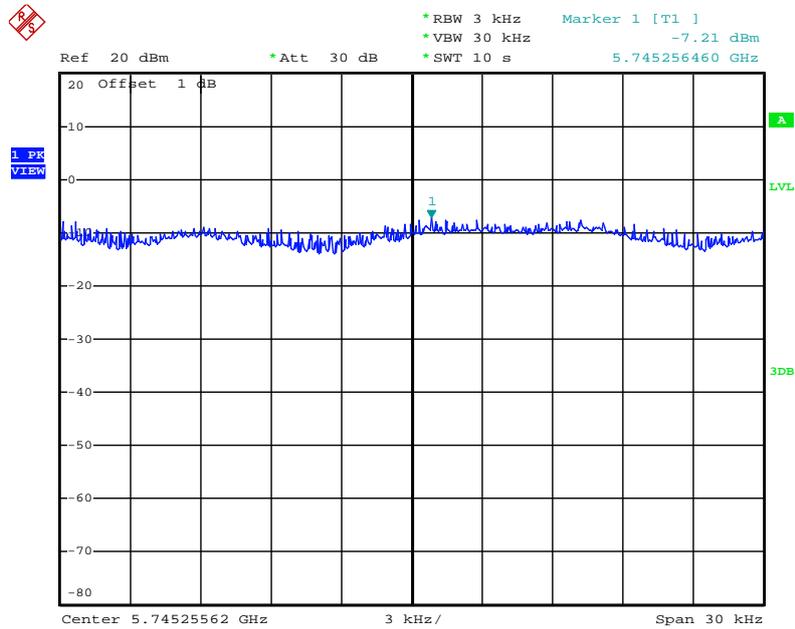
<For Chip 2 (eth 2)>

**Power Density Plot on Configuration IEEE 802.11a / Ant. 1 / 5745 MHz**



Date: 3.NOV.2011 00:03:18

**Power Density Plot on Configuration IEEE 802.11a / Ant. 3 / 5745 MHz**



Date: 3.NOV.2011 00:01:24

## 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

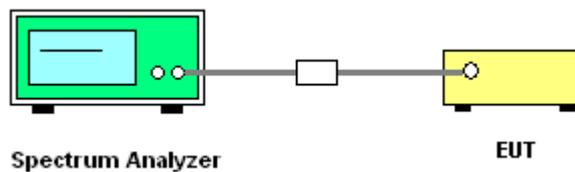
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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

<For Chip 1 (eth 1)>

<b>Temperature</b>	25°C	<b>Humidity</b>	63%
<b>Test Engineer</b>	Johnson Chang	<b>Configurations</b>	IEEE 802.11n

##### Configuration IEEE 802.11n MCS0 20MHz / Ant. 2 + Ant. 4

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	16.12	17.40	500	Complies
6	2437 MHz	16.08	17.44	500	Complies
11	2462 MHz	16.08	17.40	500	Complies

##### Configuration IEEE 802.11n MCS0 40MHz / Ant. 2 + Ant. 4

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
3	2422 MHz	35.84	35.76	500	Complies
6	2437 MHz	36.32	36.24	500	Complies
9	2452 MHz	34.48	35.68	500	Complies

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

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

<b>Temperature</b>	25°C	<b>Humidity</b>	63%
<b>Test Engineer</b>	Johnson Chang	<b>Configurations</b>	IEEE 802.11b/g

**Configuration IEEE 802.11b / Ant. 4**

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	8.56	10.56	500	Complies
6	2437 MHz	8.56	10.16	500	Complies
11	2462 MHz	8.04	10.16	500	Complies

**Configuration IEEE 802.11g / Ant. 2 + Ant. 4**

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	11.96	16.24	500	Complies
6	2437 MHz	11.96	16.32	500	Complies
11	2462 MHz	11.92	16.32	500	Complies

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

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

<For Chip 2 (eth 2)>

<b>Temperature</b>	25°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Sean Ku	<b>Configurations</b>	IEEE 802.11n

For 2.4GHz Band

Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 3

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	15.48	16.68	500	Complies
6	2437 MHz	15.44	16.68	500	Complies
11	2462 MHz	15.00	16.68	500	Complies

Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 3

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
3	2422 MHz	32.64	35.60	500	Complies
6	2437 MHz	36.24	36.16	500	Complies
9	2452 MHz	36.08	36.24	500	Complies

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

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

**For 5GHz Band**
**Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 3**

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
149	5745 MHz	15.64	16.72	500	Complies
157	5785 MHz	15.32	16.76	500	Complies
165	5825 MHz	15.80	16.76	500	Complies

**Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 3**

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
151	5755 MHz	35.04	36.32	500	Complies
159	5795 MHz	35.04	36.32	500	Complies

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

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

<b>Temperature</b>	25°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Sean Ku	<b>Configurations</b>	IEEE 802.11 a/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	8.04	10.08	500	Complies
6	2437 MHz	8.52	10.08	500	Complies
11	2462 MHz	8.08	10.12	500	Complies

**Configuration IEEE 802.11g / Ant. 1 + Ant. 3**

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	12.88	15.12	500	Complies
6	2437 MHz	12.72	15.20	500	Complies
11	2462 MHz	12.60	15.16	500	Complies

**Configuration IEEE 802.11a / Ant. 1 + Ant. 3**

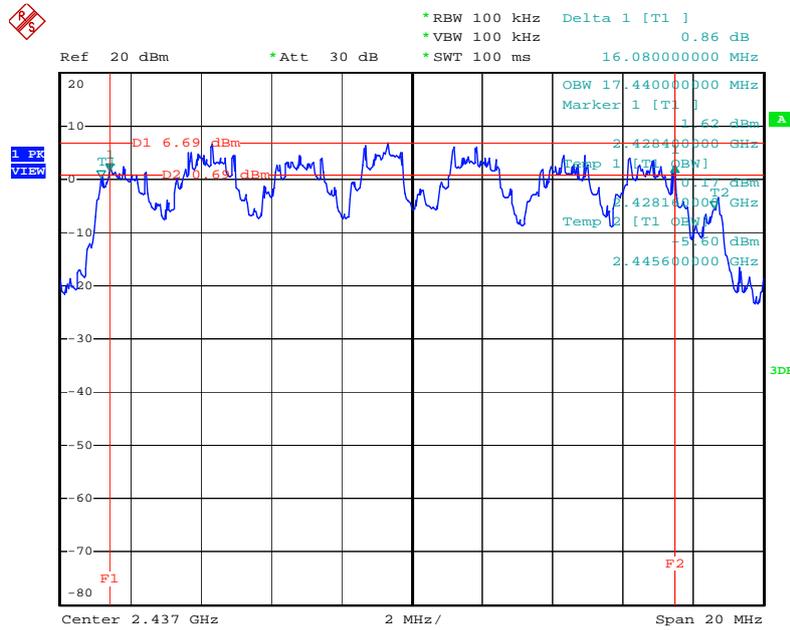
Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
149	5745 MHz	12.96	15.52	500	Complies
157	5785 MHz	13.00	15.52	500	Complies
165	5825 MHz	13.16	15.56	500	Complies

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

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

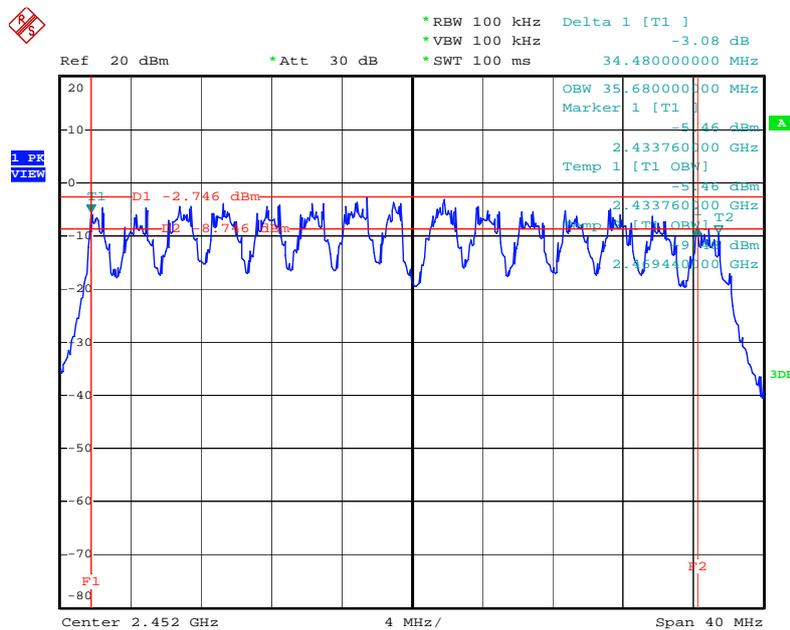
<For Chip 1 (eth 1)>

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 2 + Ant. 4 / 2437 MHz



Date: 18.MAY.2011 09:55:43

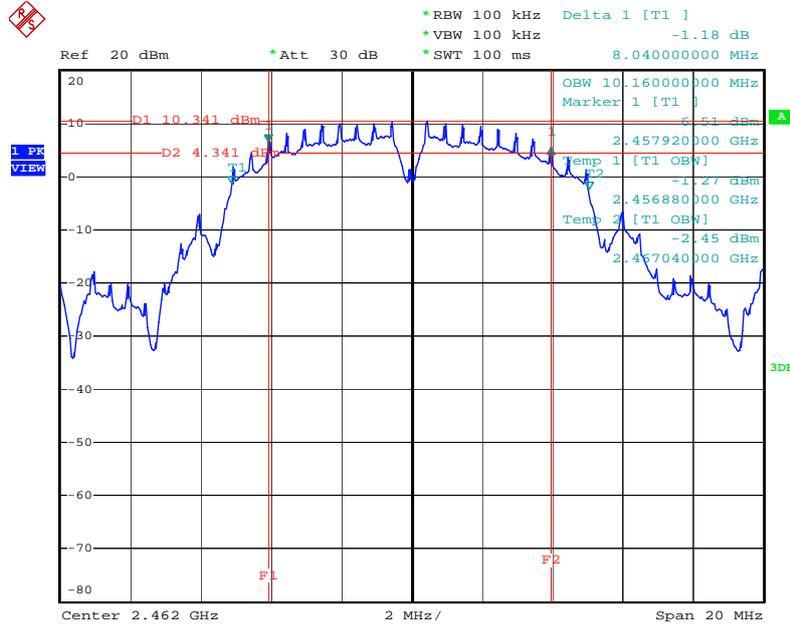
6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 2 + Ant. 4 / 2452 MHz



Date: 18.MAY.2011 09:57:26

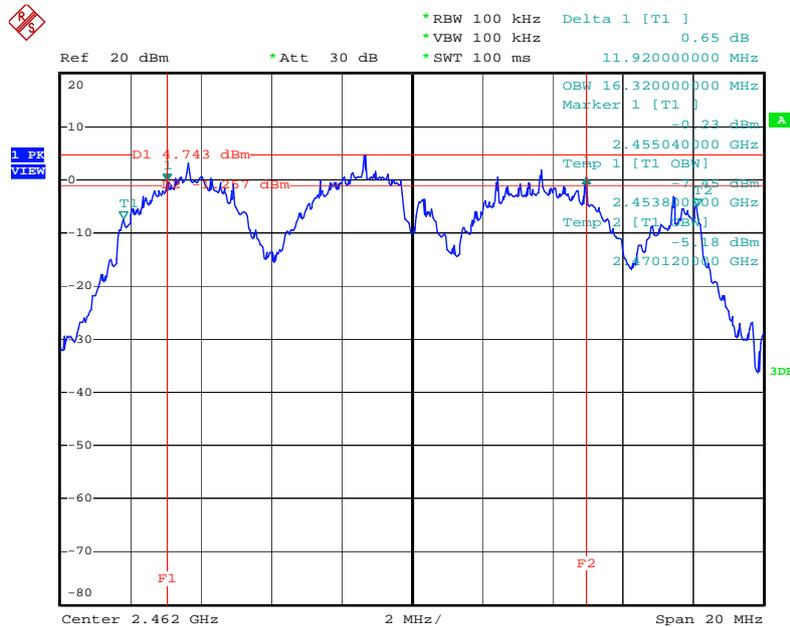
<For Chip 1 (eth 1)>

6 dB Bandwidth Plot on Configuration IEEE 802.11b / Ant. 4 / 2462 MHz



Date: 18.MAY.2011 09:36:32

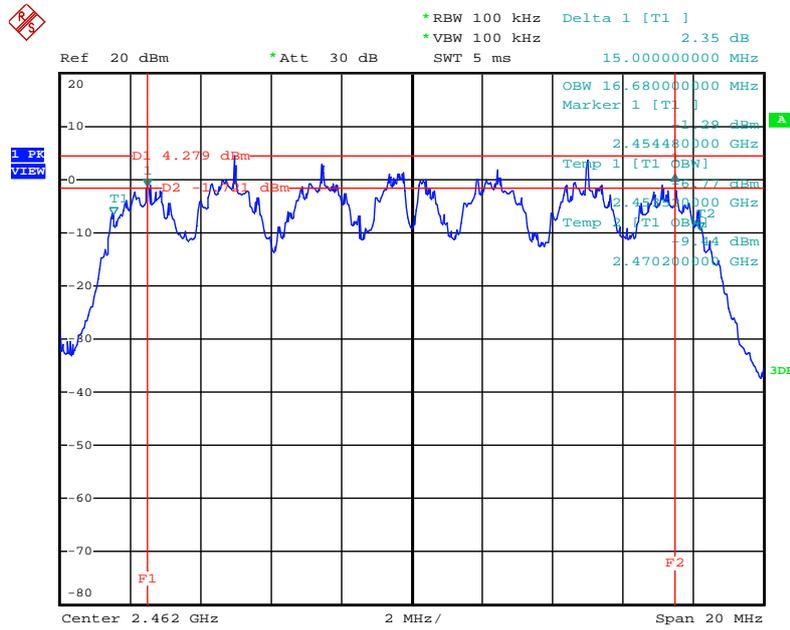
6 dB Bandwidth Plot on Configuration IEEE 802.11g / Ant. 2 + Ant. 4 / 2462 MHz



Date: 18.MAY.2011 09:54:17

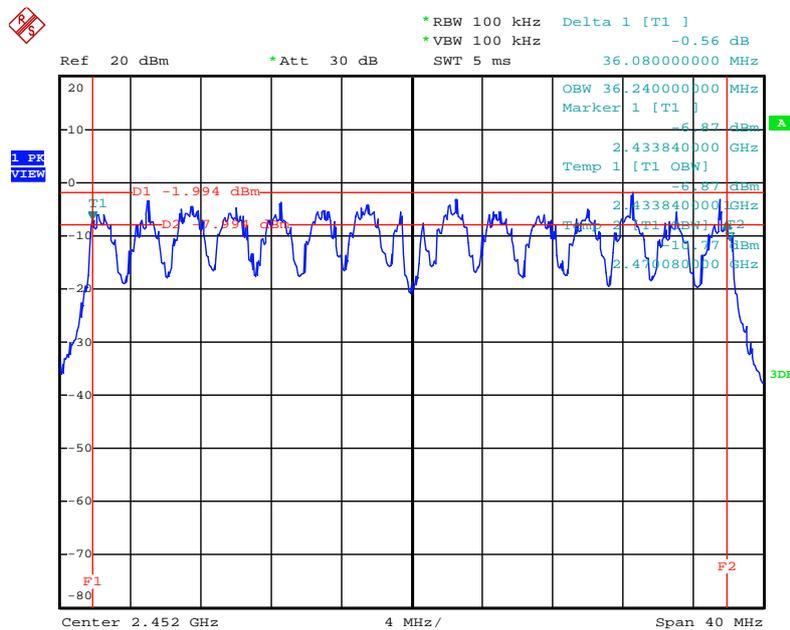
<For Chip 2 (eth 2)>

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 3 / 2462 MHz



Date: 2.NOV.2011 21:51:07

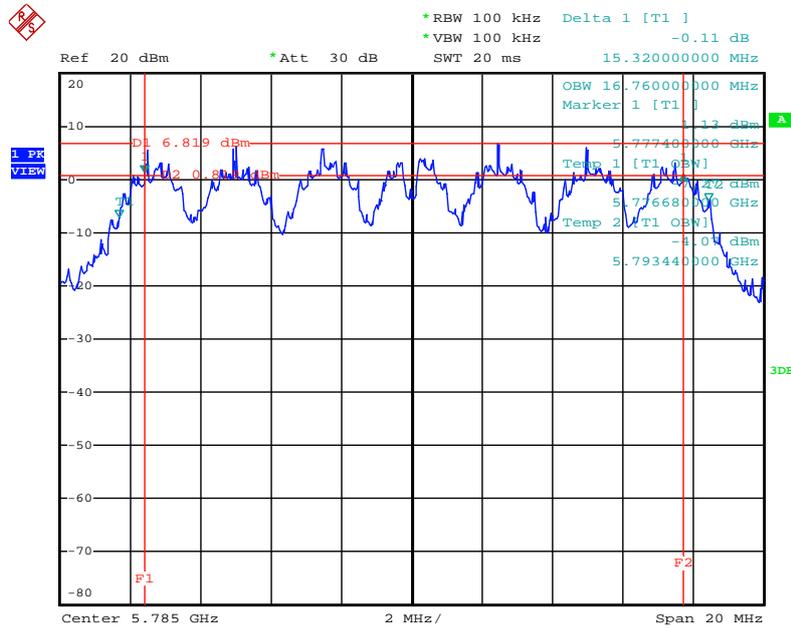
6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 3 / 2452 MHz



Date: 2.NOV.2011 21:54:49

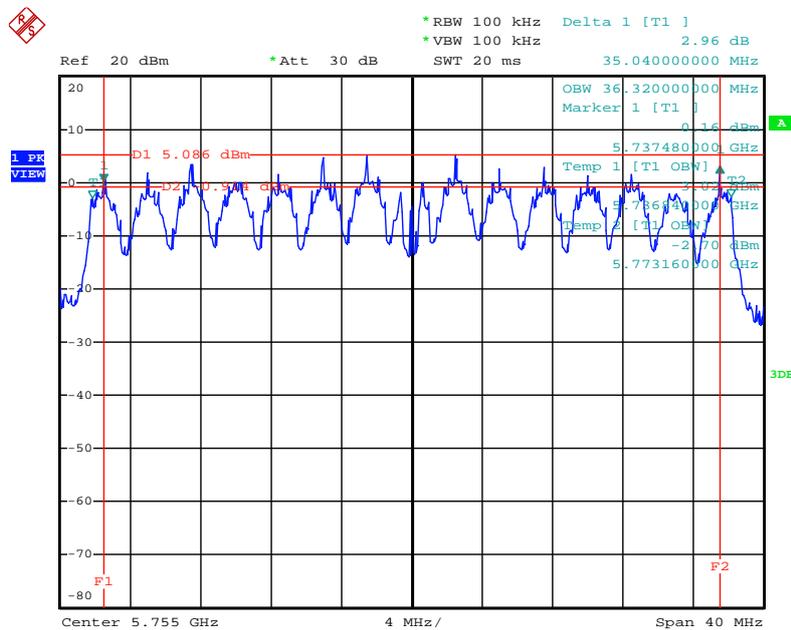
<For Chip 2 (eth 2)>

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 3 / 5785MHz



Date: 2.NOV.2011 23:13:58

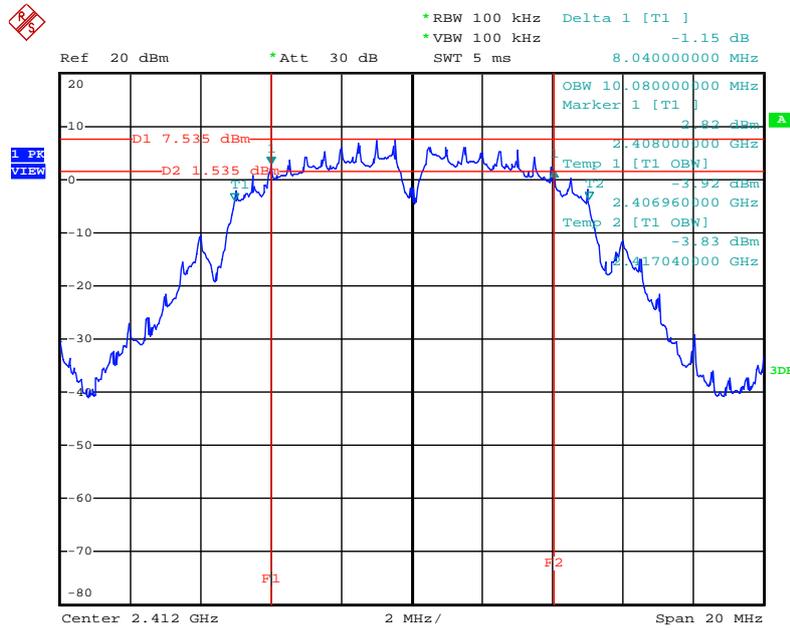
6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 3 / 5755MHz



Date: 2.NOV.2011 23:15:30

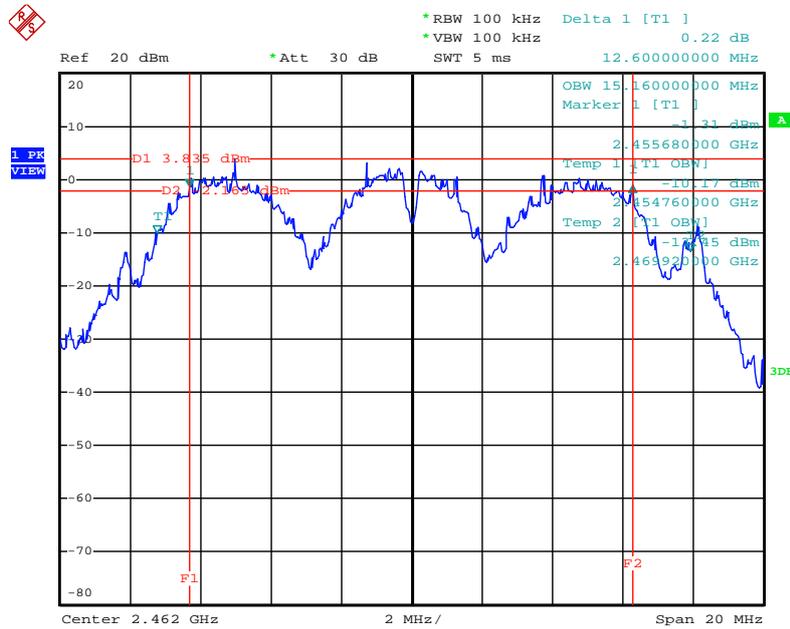
<For Chip 2 (eth 2)>

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



Date: 2.NOV.2011 21:27:55

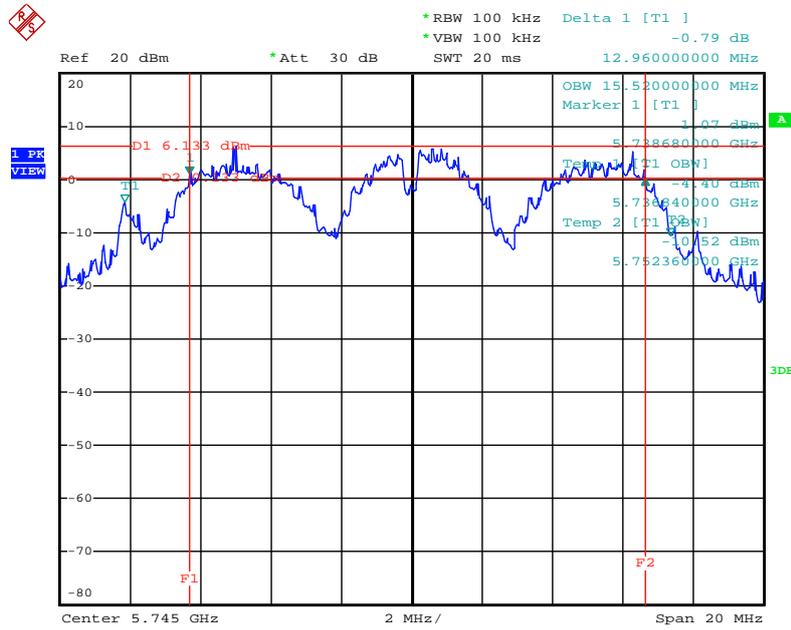
6 dB Bandwidth Plot on Configuration IEEE 802.11g / Ant. 1 + Ant. 3 / 2462 MHz



Date: 2.NOV.2011 21:45:34

<For Chip 2 (eth 2)>

6 dB Bandwidth Plot on Configuration IEEE 802.11a / Ant. 1 + Ant. 3 / 5745 MHz



Date: 2.NOV.2011 23:12:04

## 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

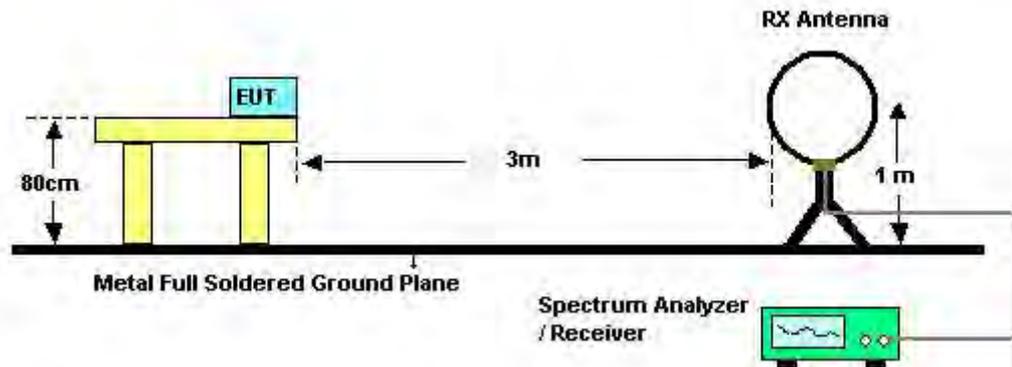
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

#### 4.6.3. Test Procedures

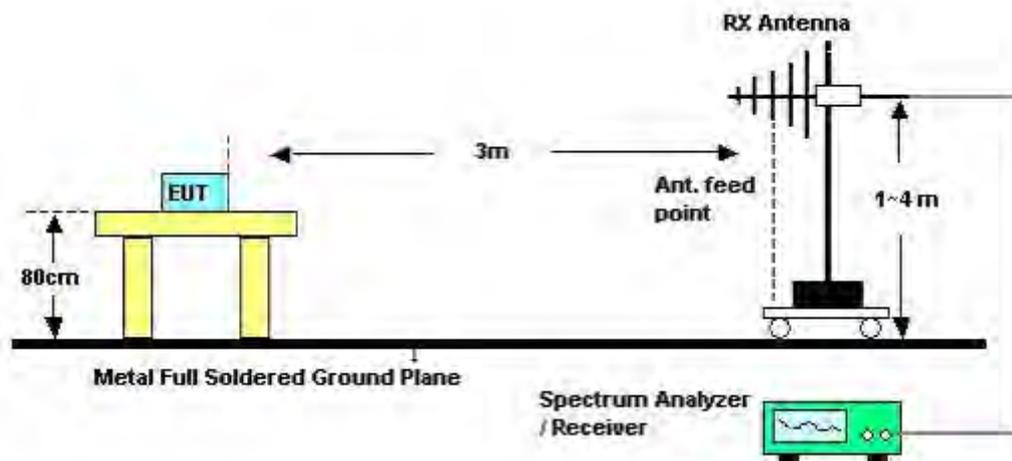
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting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

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	Normal Link
<b>Test Date</b>	Nov. 03, 2011		

<b>Freq. (MHz)</b>	<b>Level (dBuV)</b>	<b>Over Limit (dB)</b>	<b>Limit Line (dBuV)</b>	<b>Remark</b>
-	-	-	-	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.

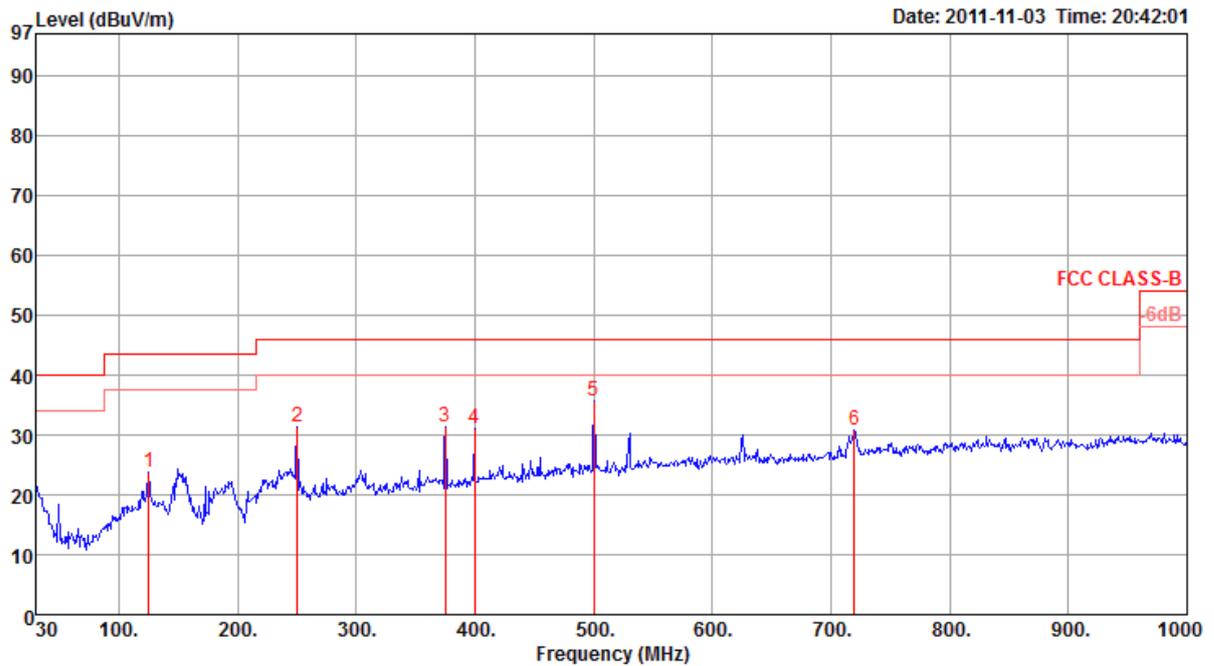
Distance extrapolation factor =  $40 \log(\text{specific distance} / \text{test distance})$  (dB);

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

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

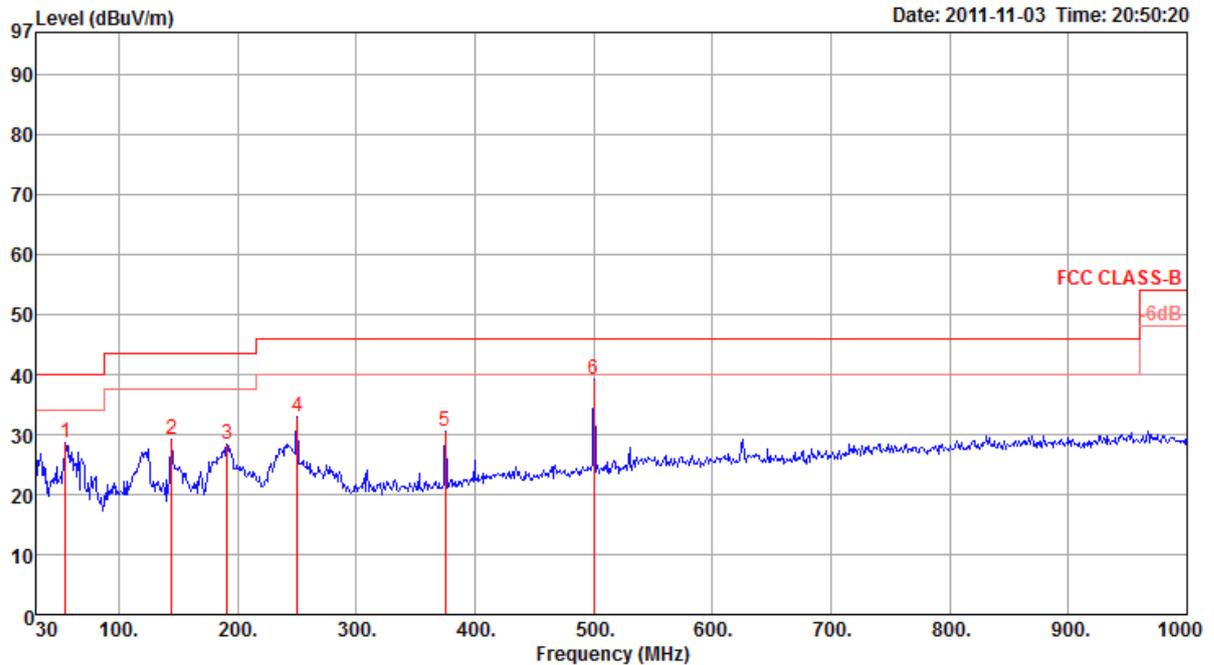
Temperature	26°C	Humidity	60%
Test Engineer	Denis Su	Configurations	Normal Link
Test Mode	Mode 2		

Horizontal



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	125.06	23.78	43.50	-19.72	37.08	1.65	27.48	12.53	0	400	Peak	HORIZONTAL
2	250.19	31.34	46.00	-14.66	43.21	2.38	27.00	12.75	0	400	Peak	HORIZONTAL
3	375.32	31.45	46.00	-14.55	40.38	2.89	27.43	15.61	0	400	Peak	HORIZONTAL
4	399.57	31.08	46.00	-14.92	39.21	2.99	27.60	16.48	0	400	Peak	HORIZONTAL
5 P	500.45	35.62	46.00	-10.38	42.24	3.38	28.10	18.10	0	400	Peak	HORIZONTAL
6	719.67	30.75	46.00	-15.25	34.26	4.18	27.92	20.23	0	400	Peak	HORIZONTAL

**Vertical**



	Freq	Level	Limit	Over	Read	Cable	Preamp	Antenna	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	deg	cm		
1	55.22	28.75	40.00	-11.25	48.47	1.13	27.78	6.93	0	400	Peak	VERTICAL
2	144.46	29.25	43.50	-14.25	44.03	1.75	27.38	10.85	0	400	Peak	VERTICAL
3	191.02	28.46	43.50	-15.04	44.22	2.05	27.14	9.33	0	400	Peak	VERTICAL
4	250.19	32.86	46.00	-13.14	44.73	2.38	27.00	12.75	0	400	Peak	VERTICAL
5	375.32	30.51	46.00	-15.49	39.44	2.89	27.43	15.61	0	400	Peak	VERTICAL
6 p	500.45	39.04	46.00	-6.96	45.66	3.38	28.10	18.10	0	400	Peak	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~10<sup>th</sup> Harmonic)

<For Chip 1 (eth 1)>

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11n MCS0 20MHz Ch 1 / Ant. 2 + Ant. 4
<b>Test Date</b>	Oct. 20, 2011		

##### Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	4824.09	31.51	54.00	-22.49	30.17	3.31	33.06	35.03	Average	100	178	HORIZONTAL
2	4824.99	42.51	74.00	-31.49	41.17	3.31	33.06	35.03	Peak	100	178	HORIZONTAL

##### Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	4823.35	44.93	74.00	-29.07	43.59	3.31	33.06	35.03	Peak	100	247	VERTICAL
2	4824.07	30.25	54.00	-23.75	28.91	3.31	33.06	35.03	Average	100	247	VERTICAL

## &lt;For Chip 1 (eth 1)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11n MCS0 20MHz Ch 6 / Ant. 2 + Ant. 4
<b>Test Date</b>	Oct. 20, 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	4873.28	37.04	54.00	-16.96	35.58	3.33	33.16	35.03	Average	130	239	HORIZONTAL
2	4876.00	54.41	74.00	-19.59	52.95	3.33	33.16	35.03	Peak	130	239	HORIZONTAL
3	7307.88	48.53	54.00	-5.47	43.91	4.06	35.96	35.40	Average	120	217	HORIZONTAL
4	7310.44	66.40	74.00	-7.60	61.78	4.06	35.96	35.40	Peak	120	217	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	4874.08	35.90	54.00	-18.10	34.44	3.33	33.16	35.03	Average	100	215	VERTICAL
2	4877.69	48.46	74.00	-25.54	47.00	3.33	33.16	35.03	Peak	100	215	VERTICAL
3	7308.44	44.41	54.00	-9.59	39.79	4.06	35.96	35.40	Average	122	268	VERTICAL
4	7308.76	61.54	74.00	-12.46	56.92	4.06	35.96	35.40	Peak	122	268	VERTICAL

## &lt;For Chip 1 (eth 1)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11n MCS0 20MHz Ch 11 / Ant. 2 + Ant. 4
<b>Test Date</b>	Oct. 20, 2011		

**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	4924.13	32.28	54.00	-21.72	30.68	3.35	33.26	35.01	Average	118	226	HORIZONTAL
2	4925.97	47.50	74.00	-26.50	45.90	3.35	33.26	35.01	Peak	118	226	HORIZONTAL
3	7382.49	37.15	54.00	-16.85	32.40	4.06	36.09	35.40	Average	100	209	HORIZONTAL
4	7389.99	57.88	74.00	-16.12	53.13	4.06	36.09	35.40	Peak	100	209	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	4921.50	44.35	74.00	-29.65	42.78	3.35	33.23	35.01	Peak	100	244	VERTICAL
2	4924.14	30.71	54.00	-23.29	29.11	3.35	33.26	35.01	Average	100	244	VERTICAL
3	7385.92	37.01	54.00	-16.99	32.26	4.06	36.09	35.40	Average	104	252	VERTICAL
4	7391.00	56.97	74.00	-17.03	52.22	4.06	36.09	35.40	Peak	104	252	VERTICAL

## &lt;For Chip 1 (eth 1)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11n MCS0 40MHz Ch 3 / Ant. 2 + Ant. 4
<b>Test Date</b>	Oct. 20, 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	4844.08	29.94	54.00	-24.06	28.56	3.32	33.09	35.03	Average	100	172	HORIZONTAL
2	4844.26	41.93	74.00	-32.07	40.55	3.32	33.09	35.03	Peak	100	172	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	4843.20	42.72	74.00	-31.28	41.34	3.32	33.09	35.03	Peak	100	224	VERTICAL
2	4844.11	30.81	54.00	-23.19	29.43	3.32	33.09	35.03	Average	100	224	VERTICAL

## &lt;For Chip 1 (eth 1)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11n MCS0 40MHz Ch 6 / Ant. 2 + Ant. 4
<b>Test Date</b>	Oct. 20, 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	4873.97	43.00	74.00	-31.00	41.54	3.33	33.16	35.03	Peak	100	245	HORIZONTAL
2	4874.03	30.83	54.00	-23.17	29.37	3.33	33.16	35.03	Average	100	245	HORIZONTAL
3	7310.76	35.05	54.00	-18.95	30.43	4.06	35.96	35.40	Average	100	217	HORIZONTAL
4	7310.98	53.64	74.00	-20.36	49.02	4.06	35.96	35.40	Peak	100	217	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	4874.12	31.45	54.00	-22.55	29.99	3.33	33.16	35.03	Average	100	247	VERTICAL
2	4874.16	43.27	74.00	-30.73	41.81	3.33	33.16	35.03	Peak	100	247	VERTICAL
3	7310.74	49.28	74.00	-24.72	44.66	4.06	35.96	35.40	Peak	100	235	VERTICAL
4	7310.83	33.90	54.00	-20.10	29.28	4.06	35.96	35.40	Average	100	235	VERTICAL

## &lt;For Chip 1 (eth 1)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11n MCS0 40MHz Ch 9 / Ant. 2 + Ant. 4
<b>Test Date</b>	Oct. 20, 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	4904.02	41.50	74.00	-32.50	39.99	3.34	33.19	35.02	Peak	100	161	HORIZONTAL
2	4904.14	30.87	54.00	-23.13	29.36	3.34	33.19	35.02	Average	100	161	HORIZONTAL
3	7355.69	46.55	74.00	-27.45	41.87	4.06	36.02	35.40	Peak	100	280	HORIZONTAL
4	7356.14	33.62	54.00	-20.38	28.94	4.06	36.02	35.40	Average	100	280	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	4903.90	42.92	74.00	-31.08	41.41	3.34	33.19	35.02	Peak	100	251	VERTICAL
2	4904.06	31.23	54.00	-22.77	29.72	3.34	33.19	35.02	Average	100	251	VERTICAL
3	7356.05	33.70	54.00	-20.30	29.02	4.06	36.02	35.40	Average	100	194	VERTICAL
4	7356.23	46.05	74.00	-27.95	41.37	4.06	36.02	35.40	Peak	100	194	VERTICAL

## &lt;For Chip 1 (eth 1)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11b CH 1 / Ant. 4
<b>Test Date</b>	Oct. 20, 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	4824.06	48.40	74.00	-25.60	47.06	3.31	33.06	35.03	Peak	123	181	HORIZONTAL
2	4824.10	43.41	54.00	-10.59	42.07	3.31	33.06	35.03	Average	123	181	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	4824.03	48.45	74.00	-25.55	47.11	3.31	33.06	35.03	Peak	103	244	VERTICAL
2	4824.09	43.87	54.00	-10.13	42.53	3.31	33.06	35.03	Average	103	244	VERTICAL

## &lt;For Chip 1 (eth 1)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11b CH 6 / Ant. 4
<b>Test Date</b>	Oct. 20, 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	4874.07	44.39	54.00	-9.61	42.93	3.33	33.16	35.03	Average	121	213	HORIZONTAL
2	4874.08	48.61	74.00	-25.39	47.15	3.33	33.16	35.03	Peak	121	213	HORIZONTAL
3	7310.22	57.31	74.00	-16.69	52.69	4.06	35.96	35.40	Peak	100	255	HORIZONTAL
4	7310.38	52.88	54.00	-1.12	48.26	4.06	35.96	35.40	Average	100	255	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	4874.08	43.68	54.00	-10.32	42.22	3.33	33.16	35.03	Average	100	243	VERTICAL
2	4874.11	48.42	74.00	-25.58	46.96	3.33	33.16	35.03	Peak	100	243	VERTICAL
3	7310.11	57.14	74.00	-16.86	52.52	4.06	35.96	35.40	Peak	100	252	VERTICAL
4	7310.37	52.61	54.00	-1.39	47.99	4.06	35.96	35.40	Average	100	252	VERTICAL

## &lt;For Chip 1 (eth 1)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11b CH 11 / Ant. 4
<b>Test Date</b>	Oct. 20, 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	7385.28	56.49	74.00	-17.51	51.74	4.06	36.09	35.40	Peak	122	277	HORIZONTAL
2	7385.41	51.93	54.00	-2.07	47.18	4.06	36.09	35.40	Average	122	277	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	7385.38	49.16	54.00	-4.84	44.41	4.06	36.09	35.40	Average	111	257	VERTICAL
2	7385.81	54.81	74.00	-19.19	50.06	4.06	36.09	35.40	Peak	111	257	VERTICAL

## &lt;For Chip 1 (eth 1)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11g CH 1 / Ant. 2 + Ant. 4
<b>Test Date</b>	Oct. 20, 2011		

**Horizontal**

	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4824.00	31.25	54.00	-22.75	29.91	3.31	33.06	35.03	Average	100	171	HORIZONTAL
2	4826.40	43.25	74.00	-30.75	41.91	3.31	33.06	35.03	Peak	100	171	HORIZONTAL

**Vertical**

	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4822.72	31.02	54.00	-22.98	29.68	3.31	33.06	35.03	Average	100	232	VERTICAL
2	4822.96	44.53	74.00	-29.47	43.19	3.31	33.06	35.03	Peak	100	232	VERTICAL

## &lt;For Chip 1 (eth 1)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11g CH 6 / Ant. 2 + Ant. 4
<b>Test Date</b>	Oct. 20, 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	4873.76	51.66	74.00	-22.34	50.20	3.33	33.16	35.03	Peak	130	276	HORIZONTAL
2	4874.00	36.20	54.00	-17.80	34.74	3.33	33.16	35.03	Average	130	276	HORIZONTAL
3	7309.88	48.93	54.00	-5.07	44.31	4.06	35.96	35.40	Average	111	219	HORIZONTAL
4	7310.20	65.44	74.00	-8.56	60.82	4.06	35.96	35.40	Peak	111	219	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	4872.00	48.08	74.00	-25.92	46.62	3.33	33.16	35.03	Peak	112	213	VERTICAL
2	4875.52	36.64	54.00	-17.36	35.18	3.33	33.16	35.03	Average	112	213	VERTICAL
3	7310.04	45.11	54.00	-8.89	40.49	4.06	35.96	35.40	Average	110	236	VERTICAL
4	7310.12	61.02	74.00	-12.98	56.40	4.06	35.96	35.40	Peak	110	236	VERTICAL

## &lt;For Chip 1 (eth 1)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11g CH 11 / Ant. 2 + Ant. 4
<b>Test Date</b>	Oct. 20, 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	4923.01	45.80	74.00	-28.20	44.20	3.35	33.26	35.01	Peak	130	238	HORIZONTAL
2	4924.08	31.64	54.00	-22.36	30.04	3.35	33.26	35.01	Average	130	238	HORIZONTAL
3	7384.00	35.72	54.00	-18.28	30.97	4.06	36.09	35.40	Average	117	214	HORIZONTAL
4	7389.38	56.80	74.00	-17.20	52.05	4.06	36.09	35.40	Peak	117	214	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	4924.06	30.93	54.00	-23.07	29.33	3.35	33.26	35.01	Average	111	251	VERTICAL
2	4924.24	45.96	74.00	-28.04	44.36	3.35	33.26	35.01	Peak	111	251	VERTICAL
3	7385.15	33.35	54.00	-20.65	28.60	4.06	36.09	35.40	Average	112	250	VERTICAL
4	7385.87	54.82	74.00	-19.18	50.07	4.06	36.09	35.40	Peak	112	250	VERTICAL

## &lt;For Chip 2 (eth 2)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11n MCS0 20MHz Ch 1 / Ant. 1 + Ant. 3
<b>Test Date</b>	Oct. 20, 2011		

**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	4824.00	31.79	54.00	-22.21	30.45	3.31	33.06	35.03	Average	101	112	HORIZONTAL
2	4824.08	44.60	74.00	-29.40	43.26	3.31	33.06	35.03	Peak	101	112	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	4824.03	35.52	54.00	-18.48	34.18	3.31	33.06	35.03	Average	100	258	VERTICAL
2	4824.05	45.63	74.00	-28.37	44.29	3.31	33.06	35.03	Peak	100	258	VERTICAL

## &lt;For Chip 2 (eth 2)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11n MCS0 20MHz Ch 6 / Ant. 1 + Ant. 3
<b>Test Date</b>	Oct. 20, 2011		

**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	4872.24	39.70	54.00	-14.30	38.24	3.33	33.16	35.03	Average	101	96	HORIZONTAL
2	4875.12	55.81	74.00	-18.19	54.35	3.33	33.16	35.03	Peak	101	96	HORIZONTAL
3	7312.36	52.74	54.00	-1.26	48.12	4.06	35.96	35.40	Average	137	97	HORIZONTAL
4	7317.49	70.76	74.00	-3.24	66.14	4.06	35.96	35.40	Peak	137	97	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	4869.32	43.60	54.00	-10.40	42.18	3.33	33.12	35.03	Average	100	275	VERTICAL
2	4869.32	59.01	74.00	-14.99	57.59	3.33	33.12	35.03	Peak	100	275	VERTICAL
3	7308.20	52.48	54.00	-1.52	47.86	4.06	35.96	35.40	Average	100	105	VERTICAL
4	7308.28	71.01	74.00	-2.99	66.39	4.06	35.96	35.40	Peak	100	105	VERTICAL

## &lt;For Chip 2 (eth 2)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11n MCS0 20MHz Ch 11 / Ant. 1 + Ant. 3
<b>Test Date</b>	Oct. 20, 2011		

**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	4922.48	33.96	54.00	-20.04	32.36	3.35	33.26	35.01	Average	100	110	HORIZONTAL
2	4925.12	48.55	74.00	-25.45	46.95	3.35	33.26	35.01	Peak	100	110	HORIZONTAL
3	7387.44	44.20	54.00	-9.80	39.45	4.06	36.09	35.40	Average	100	122	HORIZONTAL
4	7389.69	62.86	74.00	-11.14	58.11	4.06	36.09	35.40	Peak	100	122	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	4923.10	53.66	74.00	-20.34	52.06	3.35	33.26	35.01	Peak	100	299	VERTICAL
2	4923.97	38.80	54.00	-15.20	37.20	3.35	33.26	35.01	Average	100	299	VERTICAL
3	7383.28	63.17	74.00	-10.83	58.42	4.06	36.09	35.40	Peak	100	112	VERTICAL
4	7383.44	44.84	54.00	-9.16	40.09	4.06	36.09	35.40	Average	100	112	VERTICAL

## &lt;For Chip 2 (eth 2)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11n MCS0 40MHz Ch 3 / Ant. 1 + Ant. 3
<b>Test Date</b>	Oct. 20, 2011		

**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	4844.08	29.40	54.00	-24.60	28.02	3.32	33.09	35.03	Average	100	261	HORIZONTAL
2	4844.44	40.90	74.00	-33.10	39.52	3.32	33.09	35.03	Peak	100	261	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	4844.97	30.44	54.00	-23.56	29.06	3.32	33.09	35.03	Average	100	142	VERTICAL
2	4844.97	40.44	74.00	-33.56	39.06	3.32	33.09	35.03	Peak	100	142	VERTICAL

## &lt;For Chip 2 (eth 2)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11n MCS0 40MHz Ch 6 / Ant. 1 + Ant. 3
<b>Test Date</b>	Oct. 20, 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	4874.04	45.97	74.00	-28.03	44.51	3.33	33.16	35.03	Peak	100	181	HORIZONTAL
2	4874.10	34.88	54.00	-19.12	33.42	3.33	33.16	35.03	Average	100	181	HORIZONTAL
3	7307.06	36.25	54.00	-17.75	31.67	4.06	35.92	35.40	Average	100	312	HORIZONTAL
4	7307.22	48.55	74.00	-25.45	43.97	4.06	35.92	35.40	Peak	100	312	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	4874.00	34.86	54.00	-19.14	33.40	3.33	33.16	35.03	Average	100	253	VERTICAL
2	4875.04	46.37	74.00	-27.63	44.91	3.33	33.16	35.03	Peak	100	253	VERTICAL
3	7312.09	38.69	54.00	-15.31	34.07	4.06	35.96	35.40	Average	100	246	VERTICAL
4	7314.40	51.44	74.00	-22.56	46.82	4.06	35.96	35.40	Peak	100	246	VERTICAL

## &lt;For Chip 2 (eth 2)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11n MCS0 40MHz Ch 9 / Ant. 1 + Ant. 3
<b>Test Date</b>	Oct. 20, 2011		

**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	4903.48	44.96	74.00	-29.04	43.45	3.34	33.19	35.02	Peak	100	121	HORIZONTAL
2	4903.49	31.74	54.00	-22.26	30.23	3.34	33.19	35.02	Average	100	121	HORIZONTAL
3	7355.36	39.09	54.00	-14.91	34.41	4.06	36.02	35.40	Average	136	117	HORIZONTAL
4	7356.70	56.38	74.00	-17.62	51.70	4.06	36.02	35.40	Peak	136	117	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	4904.46	50.14	74.00	-23.86	48.63	3.34	33.19	35.02	Peak	100	254	VERTICAL
2	4904.95	37.14	54.00	-16.86	35.59	3.34	33.23	35.02	Average	100	254	VERTICAL
3	7356.36	39.22	54.00	-14.78	34.54	4.06	36.02	35.40	Average	100	117	VERTICAL
4	7356.68	57.07	74.00	-16.93	52.39	4.06	36.02	35.40	Peak	100	117	VERTICAL

<For Chip 2 (eth 2)>

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11n MCS0 20MHz CH 149 / Ant. 1 + Ant. 3
<b>Test Date</b>	Oct. 25, 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	11488.24	44.96	54.00	-9.04	36.35	5.11	38.78	35.28	Average	167	166	HORIZONTAL
2	11498.33	59.37	74.00	-14.63	50.75	5.12	38.78	35.28	Peak	167	166	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	11488.08	47.25	54.00	-6.75	38.64	5.11	38.78	35.28	Average	111	88	VERTICAL
2	11490.48	62.71	74.00	-11.29	54.10	5.11	38.78	35.28	Peak	111	88	VERTICAL

<For Chip 2 (eth 2)>

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11n MCS0 20MHz CH 157 / Ant. 1 + Ant. 3
<b>Test Date</b>	Oct. 17, 2011		

**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	11570.64	55.41	74.00	-18.59	46.74	5.14	38.83	35.30	Peak	100	72	HORIZONTAL
2	11570.88	39.92	54.00	-14.08	31.25	5.14	38.83	35.30	Average	100	72	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	11568.08	42.15	54.00	-11.85	33.49	5.13	38.83	35.30	Average	109	77	VERTICAL
2	11570.96	57.11	74.00	-16.89	48.44	5.14	38.83	35.30	Peak	109	77	VERTICAL

<For Chip 2 (eth 2)>

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11n MCS0 20MHz CH 165 / Ant. 1 + Ant. 3
<b>Test Date</b>	Nov. 01, 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	11648.24	45.84	54.00	-8.16	37.12	5.16	38.86	35.30	Average	163	162	HORIZONTAL
2	11650.40	61.46	74.00	-12.54	52.74	5.16	38.86	35.30	Peak	163	162	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	11650.08	65.70	74.00	-8.30	56.98	5.16	38.86	35.30	Peak	110	76	VERTICAL
2	11650.16	49.69	54.00	-4.31	40.97	5.16	38.86	35.30	Average	110	76	VERTICAL

## &lt;For Chip 2 (eth 2)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11n MCS0 40MHz CH 151 / Ant. 1 + Ant. 3
<b>Test Date</b>	Oct. 17, 2011		

**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	11510.87	50.26	74.00	-23.74	41.63	5.12	38.79	35.28	Peak	101	326	HORIZONTAL
2	11511.28	38.06	54.00	-15.94	29.43	5.12	38.79	35.28	Average	101	326	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	11510.00	54.92	74.00	-19.08	46.29	5.12	38.79	35.28	Peak	125	79	VERTICAL
2	11510.08	42.25	54.00	-11.75	33.62	5.12	38.79	35.28	Average	125	79	VERTICAL

<For Chip 2 (eth 2)>

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11n MCS0 40MHz CH 159 / Ant. 1 + Ant. 3
<b>Test Date</b>	Oct. 25, 2011		

**Horizontal**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	11590.24	58.76	74.00	-15.24	50.09	5.14	38.83	35.30	Peak	168	160	HORIZONTAL
2	11590.80	44.28	54.00	-9.72	35.61	5.14	38.83	35.30	Average	168	160	HORIZONTAL

**Vertical**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	11590.16	61.52	74.00	-12.48	52.85	5.14	38.83	35.30	Peak	111	81	VERTICAL
2	11590.24	46.21	54.00	-7.79	37.54	5.14	38.83	35.30	Average	111	81	VERTICAL

## &lt;For Chip 2 (eth 2)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11b CH 1 / Ant. 1
<b>Test Date</b>	Oct. 20, 2011		

**Horizontal**

	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4823.96	49.04	54.00	-4.96	47.70	3.31	33.06	35.03	Average	100	52	HORIZONTAL
2	4823.99	52.62	74.00	-21.38	51.28	3.31	33.06	35.03	Peak	100	52	HORIZONTAL

**Vertical**

	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4823.96	53.73	54.00	-0.27	52.39	3.31	33.06	35.03	Average	109	72	VERTICAL
2	4824.07	56.68	74.00	-17.32	55.34	3.31	33.06	35.03	Peak	109	72	VERTICAL

## &lt;For Chip 2 (eth 2)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11b CH 6 / Ant. 1
<b>Test Date</b>	Oct. 20, 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	4873.98	50.20	74.00	-23.80	48.74	3.33	33.16	35.03	Peak	163	99	HORIZONTAL
2	4873.98	46.91	54.00	-7.09	45.45	3.33	33.16	35.03	Average	163	99	HORIZONTAL
3	7309.99	59.29	74.00	-14.71	54.67	4.06	35.96	35.40	Peak	136	98	HORIZONTAL
4	7311.87	53.95	54.00	-0.05	49.33	4.06	35.96	35.40	Average	136	98	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	4873.95	54.25	74.00	-19.75	52.79	3.33	33.16	35.03	Peak	104	74	VERTICAL
2	4874.01	51.61	54.00	-2.39	50.15	3.33	33.16	35.03	Average	104	74	VERTICAL
3	7309.78	50.83	54.00	-3.17	46.21	4.06	35.96	35.40	Average	100	107	VERTICAL
4	7311.85	56.45	74.00	-17.55	51.83	4.06	35.96	35.40	Peak	100	107	VERTICAL

## &lt;For Chip 2 (eth 2)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11b CH 11 / Ant. 1
<b>Test Date</b>	Oct. 20, 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	4923.97	51.47	54.00	-2.53	49.87	3.35	33.26	35.01	Average	103	74	HORIZONTAL
2	4923.99	54.72	74.00	-19.28	53.12	3.35	33.26	35.01	Peak	103	74	HORIZONTAL
3	7385.02	58.13	74.00	-15.87	53.38	4.06	36.09	35.40	Peak	135	139	HORIZONTAL
4	7385.25	53.58	54.00	-0.42	48.83	4.06	36.09	35.40	Average	135	139	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	4923.98	51.24	54.00	-2.76	49.64	3.35	33.26	35.01	Average	100	73	VERTICAL
2	4924.00	53.84	74.00	-20.16	52.24	3.35	33.26	35.01	Peak	100	73	VERTICAL
3	7385.06	56.31	74.00	-17.69	51.56	4.06	36.09	35.40	Peak	100	110	VERTICAL
4	7385.23	51.20	54.00	-2.80	46.45	4.06	36.09	35.40	Average	100	110	VERTICAL

## &lt;For Chip 2 (eth 2)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11g CH 1 / Ant. 1 + Ant. 3
<b>Test Date</b>	Oct. 20, 2011		

**Horizontal**

	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4824.08	32.12	54.00	-21.88	30.78	3.31	33.06	35.03	Average	100	52	HORIZONTAL
2	4825.36	45.42	74.00	-28.58	44.08	3.31	33.06	35.03	Peak	100	52	HORIZONTAL

**Vertical**

	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4824.00	35.88	54.00	-18.12	34.54	3.31	33.06	35.03	Average	100	270	VERTICAL
2	4825.12	46.91	74.00	-27.09	45.57	3.31	33.06	35.03	Peak	100	270	VERTICAL

## &lt;For Chip 2 (eth 2)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11g CH 6 / Ant. 1 + Ant. 3
<b>Test Date</b>	Oct. 20, 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	4875.28	53.96	74.00	-20.04	52.50	3.33	33.16	35.03	Peak	100	111	HORIZONTAL
2	4875.36	38.19	54.00	-15.81	36.73	3.33	33.16	35.03	Average	100	111	HORIZONTAL
3	7308.12	67.61	74.00	-6.39	62.99	4.06	35.96	35.40	Peak	133	87	HORIZONTAL
4	7308.68	50.73	54.00	-3.27	46.11	4.06	35.96	35.40	Average	133	87	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	4875.36	59.56	74.00	-14.44	58.10	3.33	33.16	35.03	Peak	100	259	VERTICAL
2	4875.52	41.81	54.00	-12.19	40.35	3.33	33.16	35.03	Average	100	259	VERTICAL
3	7310.04	51.45	54.00	-2.55	46.83	4.06	35.96	35.40	Average	101	110	VERTICAL
4	7310.04	69.60	74.00	-4.40	64.98	4.06	35.96	35.40	Peak	101	110	VERTICAL

## &lt;For Chip 2 (eth 2)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11g CH 11 / Ant. 1 + Ant. 3
<b>Test Date</b>	Oct. 20, 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	4921.20	33.59	54.00	-20.41	32.02	3.35	33.23	35.01	Average	100	244	HORIZONTAL
2	4925.20	47.86	74.00	-26.14	46.26	3.35	33.26	35.01	Peak	100	244	HORIZONTAL
3	7383.84	45.07	54.00	-8.93	40.32	4.06	36.09	35.40	Average	100	119	HORIZONTAL
4	7389.21	62.30	74.00	-11.70	57.55	4.06	36.09	35.40	Peak	100	119	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	4916.15	53.43	74.00	-20.57	51.87	3.35	33.23	35.02	Peak	100	301	VERTICAL
2	4923.92	38.99	54.00	-15.01	37.39	3.35	33.26	35.01	Average	100	301	VERTICAL
3	7382.31	59.63	74.00	-14.37	54.88	4.06	36.09	35.40	Peak	100	283	VERTICAL
4	7383.04	42.52	54.00	-11.48	37.77	4.06	36.09	35.40	Average	100	283	VERTICAL

<For Chip 2 (eth 2)>

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11a CH 149 / Ant. 1 + Ant. 3
<b>Test Date</b>	Oct. 25, 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	11486.47	44.74	54.00	-9.26	36.13	5.11	38.78	35.28	Average	168	166	HORIZONTAL
2	11486.79	59.75	74.00	-14.25	51.14	5.11	38.78	35.28	Peak	168	166	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	11486.47	63.45	74.00	-10.55	54.84	5.11	38.78	35.28	Peak	105	88	VERTICAL
2	11491.28	46.87	54.00	-7.13	38.26	5.11	38.78	35.28	Average	105	88	VERTICAL

## &lt;For Chip 2 (eth 2)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11a CH 157 / Ant. 1 + Ant. 3
<b>Test Date</b>	Oct. 25, 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	11566.31	56.11	74.00	-17.89	47.46	5.13	38.82	35.30	Peak	100	69	HORIZONTAL
2	11571.52	40.26	54.00	-13.74	31.59	5.14	38.83	35.30	Average	100	69	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	11566.55	55.81	74.00	-18.19	47.16	5.13	38.82	35.30	Peak	137	54	VERTICAL
2	11571.44	40.99	54.00	-13.01	32.32	5.14	38.83	35.30	Average	137	54	VERTICAL

## &lt;For Chip 2 (eth 2)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11a CH 165 / Ant. 1 + Ant. 3
<b>Test Date</b>	Oct. 25, 2011		

**Horizontal**

	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11651.36	46.32	54.00	-7.68	37.60	5.16	38.86	35.30	Average	162	163	HORIZONTAL
2	11655.93	61.14	74.00	-12.86	52.42	5.16	38.86	35.30	Peak	162	163	HORIZONTAL

**Vertical**

	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11646.55	65.60	74.00	-8.40	56.88	5.16	38.86	35.30	Peak	109	74	VERTICAL
2	11650.16	49.84	54.00	-4.16	41.12	5.16	38.86	35.30	Average	109	74	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.

## 4.7. 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

<For Chip 1 (eth 1)>

Temperature	26°C	Humidity	60%
Test Engineer	Denis Su	Configurations	IEEE 802.11n MCS0 20MHz Ch 1, 6, 11 / Ant. 2 + Ant. 4
Test date	Oct. 20, 2011		

##### 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	2388.72	71.98	74.00	-2.02	41.60	2.21	28.17	0.00	Peak	100	0	VERTICAL
2	2390.00	48.97	54.00	-5.03	18.58	2.22	28.17	0.00	Average	100	0	VERTICAL
3	2410.88	111.27				2.22	28.21	0.00	Peak	100	0	VERTICAL
4	2413.28	89.52				2.22	28.21	0.00	Average	100	0	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	2390.00	47.43	54.00	-6.57	17.04	2.22	28.17	0.00	Average	100	267	VERTICAL
2	2390.00	64.95	74.00	-9.05	34.56	2.22	28.17	0.00	Peak	100	267	VERTICAL
3	2435.56	93.87				2.23	28.29	0.00	Average	100	267	VERTICAL
4	2435.56	115.92				2.23	28.29	0.00	Peak	100	267	VERTICAL
5	2483.50	51.35	54.00	-2.65	20.72	2.26	28.37	0.00	Average	100	267	VERTICAL
6	2483.50	72.09	74.00	-1.91	41.46	2.26	28.37	0.00	Peak	100	267	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	2460.56	90.56				2.24	28.33	0.00	Average	100	14	VERTICAL
2	2461.04	112.49				2.24	28.33	0.00	Peak	100	14	VERTICAL
3	2483.50	51.52	54.00	-2.48	20.89	2.26	28.37	0.00	Average	100	14	VERTICAL
4	2483.50	73.06	74.00	-0.94	42.43	2.26	28.37	0.00	Peak	100	14	VERTICAL

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

<For Chip 1 (eth 1)>

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11n MCS0 40MHz Ch 3, 6, 9 / Ant. 2 + Ant. 4
<b>Test date</b>	Oct. 20, 2011		

### 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	2389.36	51.64	54.00	-2.36	21.26	2.21	28.17	0.00	Average	100	11	VERTICAL
2	2390.00	67.64	74.00	-6.36	37.25	2.22	28.17	0.00	Peak	100	11	VERTICAL
3	2423.28	93.32				2.23	28.25	0.00	Average	100	11	VERTICAL
4	2423.92	104.77				2.23	28.25	0.00	Peak	100	11	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	2389.36	47.98	54.00	-6.02	17.60	2.21	28.17	0.00	Average	101	9	VERTICAL
2	2389.36	66.18	74.00	-7.82	35.80	2.21	28.17	0.00	Peak	101	9	VERTICAL
3	2435.72	95.45				2.23	28.29	0.00	Average	101	9	VERTICAL
4	2438.60	107.07				2.23	28.29	0.00	Peak	101	9	VERTICAL
5	2483.50	52.59	54.00	-1.41	21.96	2.26	28.37	0.00	Average	101	9	VERTICAL
6	2484.78	71.01	74.00	-2.99	40.38	2.26	28.37	0.00	Peak	101	9	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	2450.40	94.32				2.24	28.29	0.00	Average	101	16	VERTICAL
2	2450.40	105.14				2.24	28.29	0.00	Peak	101	16	VERTICAL
3	2485.10	51.72	54.00	-2.28	21.05	2.26	28.41	0.00	Average	101	16	VERTICAL
4	2490.23	73.14	74.00	-0.86	42.47	2.26	28.41	0.00	Peak	101	16	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.

## &lt;For Chip 1 (eth 1)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11b CH 1, 6, 11 / Ant. 4
<b>Test Date</b>	Oct. 20, 2011		

## 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	2386.96	45.58	54.00	-8.42	15.20	2.21	28.17	0.00	Average	100	129	VERTICAL
2	2386.96	56.62	74.00	-17.38	26.24	2.21	28.17	0.00	Peak	100	129	VERTICAL
3	2411.36	103.37				2.22	28.21	0.00	Average	100	129	VERTICAL
4	2412.96	108.46				2.22	28.21	0.00	Peak	100	129	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	2387.28	57.38	74.00	-16.62	27.00	2.21	28.17	0.00	Peak	123	83	VERTICAL
2	2390.00	45.31	54.00	-8.69	14.92	2.22	28.17	0.00	Average	123	83	VERTICAL
3	2435.24	107.92				2.23	28.29	0.00	Average	123	83	VERTICAL
4	2436.20	111.51				2.23	28.29	0.00	Peak	123	83	VERTICAL
5	2483.50	45.11	54.00	-8.89	14.48	2.26	28.37	0.00	Average	123	83	VERTICAL
6	2484.94	57.34	74.00	-16.66	26.71	2.26	28.37	0.00	Peak	123	83	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	2461.17	112.56				2.24	28.33	0.00	Peak	120	270	VERTICAL
2	2461.33	109.03				2.24	28.33	0.00	Average	120	270	VERTICAL
3	2483.50	43.57	54.00	-10.43	12.94	2.26	28.37	0.00	Average	120	270	VERTICAL
4	2483.50	54.12	74.00	-19.88	23.49	2.26	28.37	0.00	Peak	120	270	VERTICAL

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

<For Chip 1 (eth 1)>

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11g CH 1, 6, 11 / Ant. 2 + Ant. 4
<b>Test Date</b>	Oct. 20, 2011		

**Channel 1**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	73.58	74.00	-0.42	43.19	2.22	28.17	0.00	Peak	122	23	VERTICAL
2	2390.00	51.37	54.00	-2.63	20.98	2.22	28.17	0.00	Average	122	23	VERTICAL
3	2410.88	100.45				2.22	28.21	0.00	Average	122	23	VERTICAL
4	2410.88	111.04				2.22	28.21	0.00	Peak	122	23	VERTICAL

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

**Channel 6**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	2389.04	48.43	54.00	-5.57	18.05	2.21	28.17	0.00	Average	100	265	VERTICAL
2	2389.04	63.74	74.00	-10.26	33.36	2.21	28.17	0.00	Peak	100	265	VERTICAL
3	2433.96	115.13				2.23	28.25	0.00	Peak	100	265	VERTICAL
4	2434.44	104.65				2.23	28.29	0.00	Average	100	265	VERTICAL
5	2483.50	52.79	54.00	-1.21	22.16	2.26	28.37	0.00	Average	100	265	VERTICAL
6	2483.82	73.36	74.00	-0.64	42.73	2.26	28.37	0.00	Peak	100	265	VERTICAL

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

**Channel 11**

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna 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	2462.96	94.02				2.24	28.33	0.00	Average	121	271	VERTICAL
2	2462.96	113.34				2.24	28.33	0.00	Peak	121	271	VERTICAL
3	2483.50	50.59	54.00	-3.41	19.96	2.26	28.37	0.00	Average	121	271	VERTICAL
4	2483.66	73.84	74.00	-0.16	43.21	2.26	28.37	0.00	Peak	121	271	VERTICAL

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

<For Chip 2 (eth 2)>

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11n MCS0 20MHz Ch 1, 6, 11 / Ant. 1 + Ant. 3
<b>Test date</b>	Oct. 20, 2011		

#### 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	2389.36	70.62	74.00	-3.38	40.24	2.21	28.17	0.00	Peak	125	264	VERTICAL
2	2390.00	53.58	54.00	-0.42	23.19	2.22	28.17	0.00	Average	125	264	VERTICAL
3	2410.08	112.70				2.22	28.21	0.00	Peak	125	264	VERTICAL
4	2412.32	92.72				2.22	28.21	0.00	Average	125	264	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	2389.36	50.94	54.00	-3.06	20.56	2.21	28.17	0.00	Average	122	263	VERTICAL
2	2389.68	72.63	74.00	-1.37	42.25	2.21	28.17	0.00	Peak	122	263	VERTICAL
3	2437.32	99.52				2.23	28.29	0.00	Average	122	263	VERTICAL
4	2437.80	119.96				2.23	28.29	0.00	Peak	122	263	VERTICAL
5	2484.94	48.23	54.00	-5.77	17.60	2.26	28.37	0.00	Average	122	263	VERTICAL
6	2485.42	65.40	74.00	-8.60	34.73	2.26	28.41	0.00	Peak	122	263	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	2462.32	93.47				2.24	28.33	0.00	Average	119	263	VERTICAL
2	2462.64	114.79				2.24	28.33	0.00	Peak	119	263	VERTICAL
3	2483.50	53.20	54.00	-0.80	22.57	2.26	28.37	0.00	Average	119	263	VERTICAL
4	2483.50	69.08	74.00	-4.92	38.45	2.26	28.37	0.00	Peak	119	263	VERTICAL

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

## &lt;For Chip 2 (eth 2)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11n MCS0 40MHz Ch 3, 6, 9 / Ant. 1 + Ant. 3
<b>Test date</b>	Oct. 20, 2011		

## Channel 3

	Freq	Level	Limit Line	Over Limit	Read Level	CableLoss	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	2389.68	53.07	54.00	-0.93	22.69	2.21	28.17	0.00	Average	126	264	VERTICAL
2	2390.00	71.36	74.00	-2.64	40.97	2.22	28.17	0.00	Peak	126	264	VERTICAL
3	2420.08	80.48				2.23	28.25	0.00	Average	126	264	VERTICAL
4	2424.89	108.45				2.23	28.25	0.00	Peak	126	264	VERTICAL

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

## Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	CableLoss	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	2389.68	72.06	74.00	-1.94	41.68	2.21	28.17	0.00	Peak	121	265	VERTICAL
2	2390.00	52.36	54.00	-1.64	21.97	2.22	28.17	0.00	Average	121	265	VERTICAL
3	2434.76	81.83				2.23	28.29	0.00	Average	121	265	VERTICAL
4	2435.40	111.11				2.23	28.29	0.00	Peak	121	265	VERTICAL
5	2484.78	45.79	54.00	-8.21	15.16	2.26	28.37	0.00	Average	121	265	VERTICAL
6	2485.10	62.17	74.00	-11.83	31.50	2.26	28.41	0.00	Peak	121	265	VERTICAL

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

## Channel 9

	Freq	Level	Limit Line	Over Limit	Read Level	CableLoss	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	2450.40	80.13				2.24	28.29	0.00	Average	111	301	HORIZONTAL
2	2450.40	107.75				2.24	28.29	0.00	Peak	111	301	HORIZONTAL
3	2483.50	53.30	54.00	-0.70	22.66	2.26	28.38	0.00	Average	111	301	HORIZONTAL
4	2483.50	73.12	74.00	-0.88	42.48	2.26	28.38	0.00	Peak	111	301	HORIZONTAL

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.

<For Chip 2 (eth 2)>

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11b CH 1, 6, 11 / Ant. 1
<b>Test Date</b>	Oct. 20, 2011		

#### 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	2389.20	61.61	74.00	-12.39	31.23	2.21	28.17	0.00	Peak	124	202	VERTICAL
2	2390.00	53.62	54.00	-0.38	23.23	2.22	28.17	0.00	Average	124	202	VERTICAL
3	2411.20	106.41				2.22	28.21	0.00	Average	124	202	VERTICAL
4	2411.20	111.74				2.22	28.21	0.00	Peak	124	202	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	2387.12	45.94	54.00	-8.06	15.56	2.21	28.17	0.00	Average	141	46	HORIZONTAL
2	2390.00	57.68	74.00	-16.32	27.29	2.22	28.17	0.00	Peak	141	46	HORIZONTAL
3	2436.04	110.99				2.23	28.29	0.00	Peak	141	46	HORIZONTAL
4	2436.20	106.06				2.23	28.29	0.00	Average	141	46	HORIZONTAL
5	2483.50	40.07	54.00	-13.93	9.43	2.26	28.38	0.00	Average	141	46	HORIZONTAL
6	2483.50	50.61	74.00	-23.39	19.97	2.26	28.38	0.00	Peak	141	46	HORIZONTAL

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	2461.04	109.84				2.24	28.33	0.00	Peak	146	271	VERTICAL
2	2461.36	105.50				2.24	28.33	0.00	Average	146	271	VERTICAL
3	2483.50	49.72	54.00	-4.28	19.09	2.26	28.37	0.00	Average	146	271	VERTICAL
4	2483.50	58.06	74.00	-15.94	27.43	2.26	28.37	0.00	Peak	146	271	VERTICAL

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

## &lt;For Chip 2 (eth 2)&gt;

<b>Temperature</b>	26°C	<b>Humidity</b>	60%
<b>Test Engineer</b>	Denis Su	<b>Configurations</b>	IEEE 802.11g CH 1, 6, 11 / Ant. 1 + Ant. 3
<b>Test Date</b>	Oct. 20, 2011		

## 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	2387.44	69.08	74.00	-4.92	38.70	2.21	28.17	0.00	Peak	126	265	VERTICAL
2	2390.00	53.67	54.00	-0.33	23.28	2.22	28.17	0.00	Average	126	265	VERTICAL
3	2412.32	95.42				2.22	28.21	0.00	Average	126	265	VERTICAL
4	2412.96	113.91				2.22	28.21	0.00	Peak	126	265	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	2387.00	66.98	74.00	-7.02	36.60	2.21	28.17	0.00	Peak	100	265	VERTICAL
2	2390.00	48.57	54.00	-5.43	18.18	2.22	28.17	0.00	Average	100	265	VERTICAL
3	2437.80	96.81				2.23	28.29	0.00	Average	100	265	VERTICAL
4	2437.80	118.15				2.23	28.29	0.00	Peak	100	265	VERTICAL
5	2483.50	44.71	54.00	-9.29	14.08	2.26	28.37	0.00	Average	100	265	VERTICAL
6	2483.98	61.99	74.00	-12.01	31.36	2.26	28.37	0.00	Peak	100	265	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	2462.96	93.40				2.24	28.33	0.00	Peak	100	266	VERTICAL
2	2463.28	113.83				2.24	28.33	0.00	Peak	100	266	VERTICAL
3	2483.50	51.55	54.00	-2.45	20.92	2.26	28.37	0.00	Average	100	266	VERTICAL
4	2483.50	66.62	74.00	-7.38	35.99	2.26	28.37	0.00	Peak	100	266	VERTICAL

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

Note:

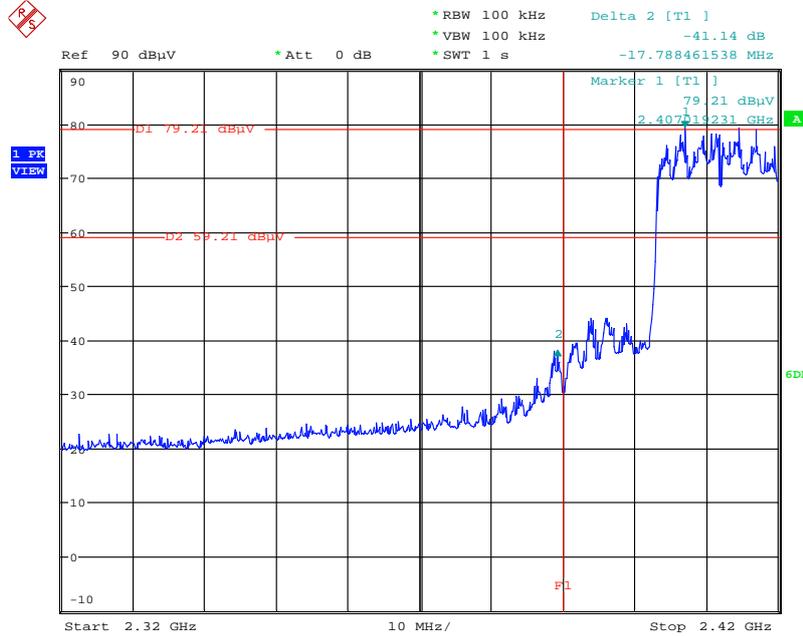
Emission level (dBuV/m) = 20 log Emission level (uV/m)

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

<For Chip 1 (eth 1)>

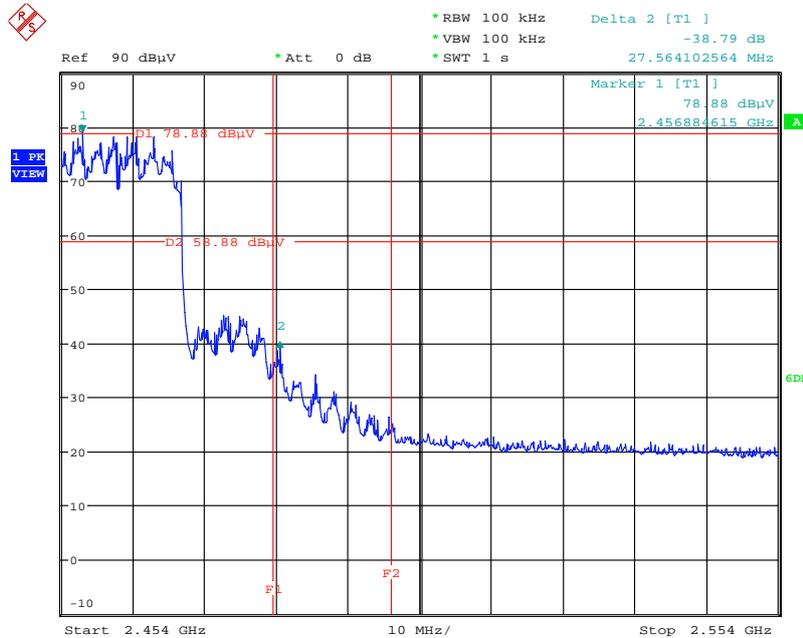
For Emission not in Restricted Band

Low Band Edge Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 2 + Ant. 4 / 2412 MHz



Date: 18.MAY.2011 17:16:38

High Band Edge Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 2 + Ant. 4 / 2462 MHz

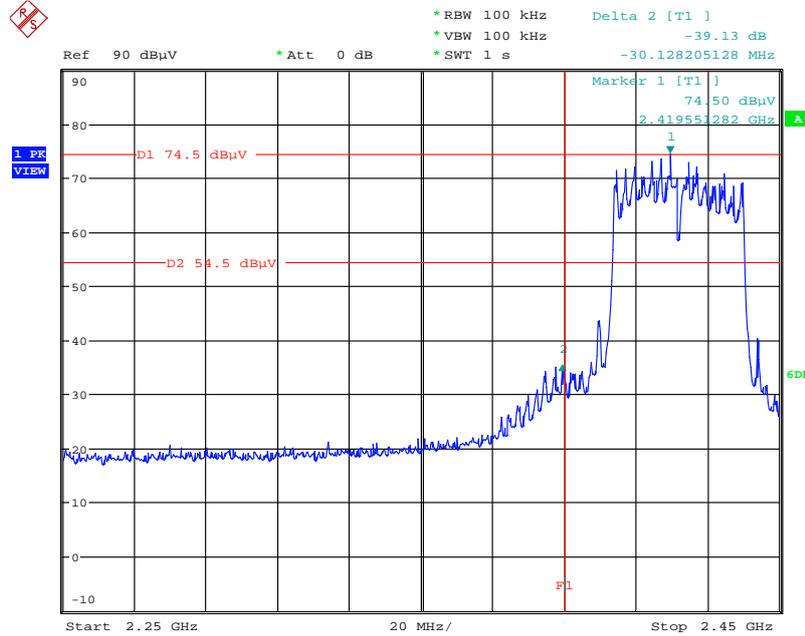


Date: 18.MAY.2011 17:24:55

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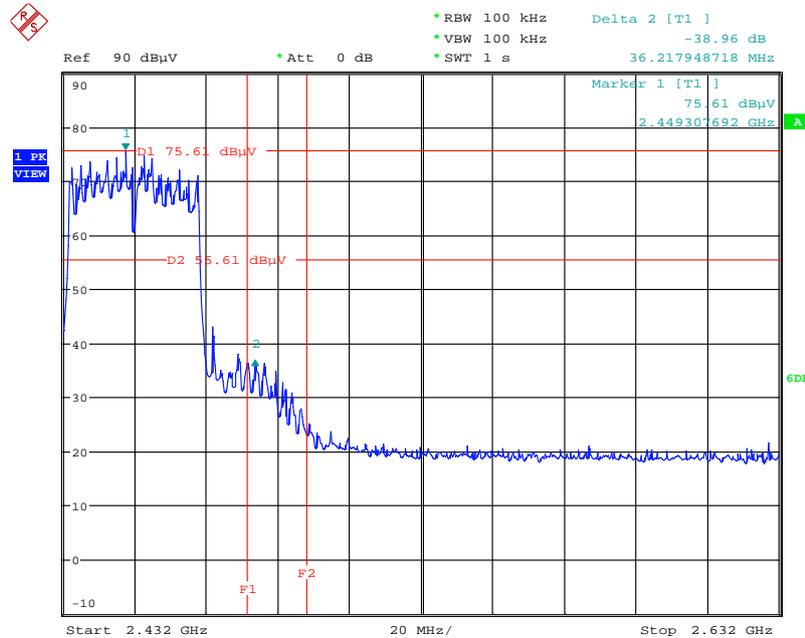
For Emission not in Restricted Band

Low Band Edge Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 2 + Ant. 4 / 2422 MHz



Date: 18.MAY.2011 17:19:39

High Band Edge Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 2 + Ant. 4 / 2452 MHz

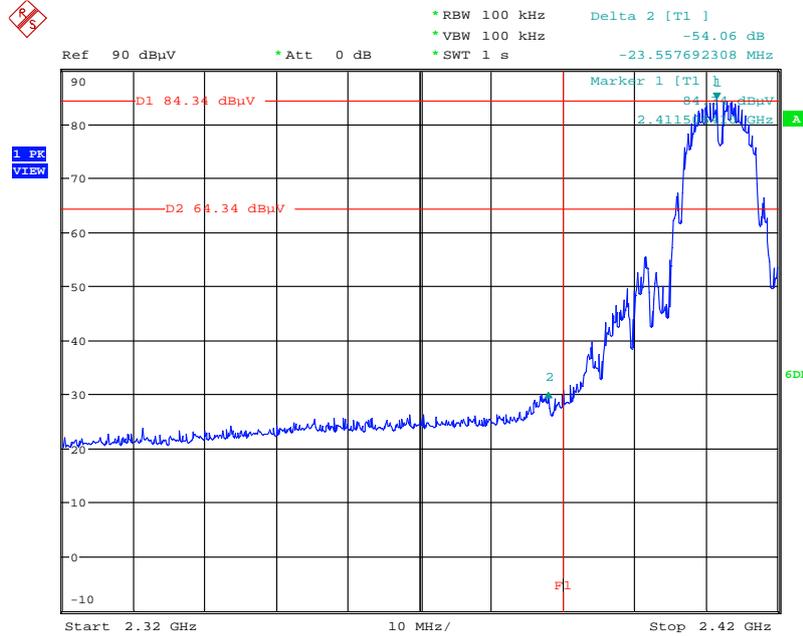


Date: 18.MAY.2011 17:22:13

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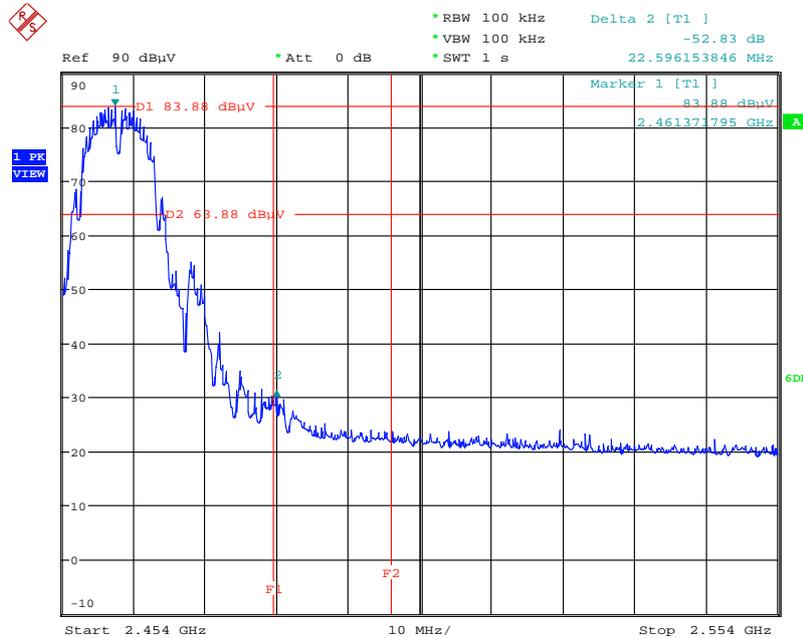
For Emission not in Restricted Band

Low Band Edge Plot on Configuration IEEE 802.11b / Ant. 4 / 2412 MHz



Date: 18.MAY.2011 17:10:59

High Band Edge Plot on Configuration IEEE 802.11b / Ant. 4 / 2462 MHz

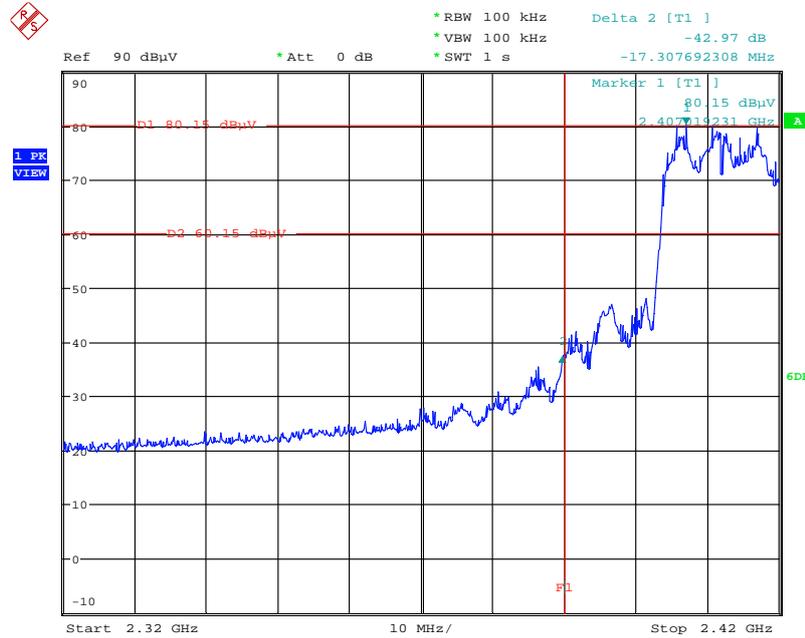


Date: 18.MAY.2011 17:28:43

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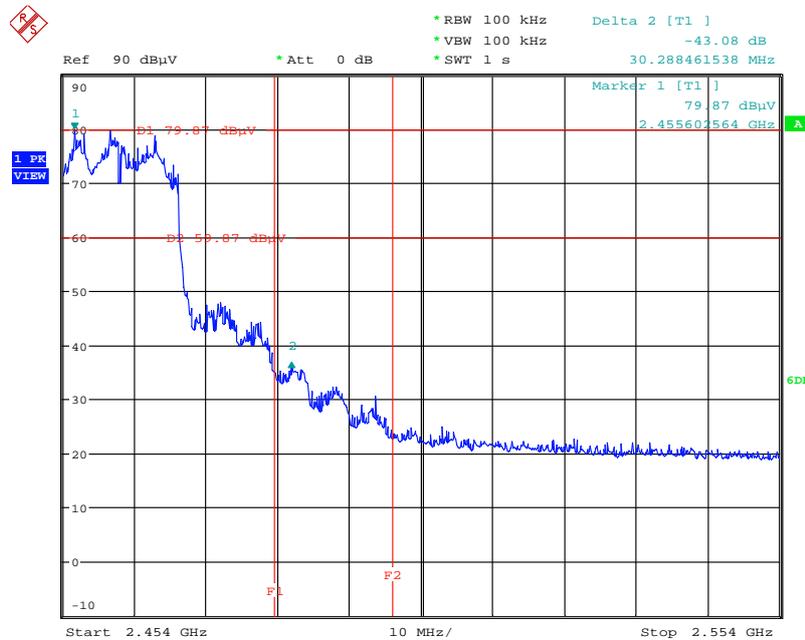
For Emission not in Restricted Band

Low Band Edge Plot on Configuration IEEE 802.11g / Ant. 2 + Ant. 4 / 2412 MHz



Date: 18.MAY.2011 17:14:28

High Band Edge Plot on Configuration IEEE 802.11g / Ant. 2 + Ant. 4 / 2462 MHz

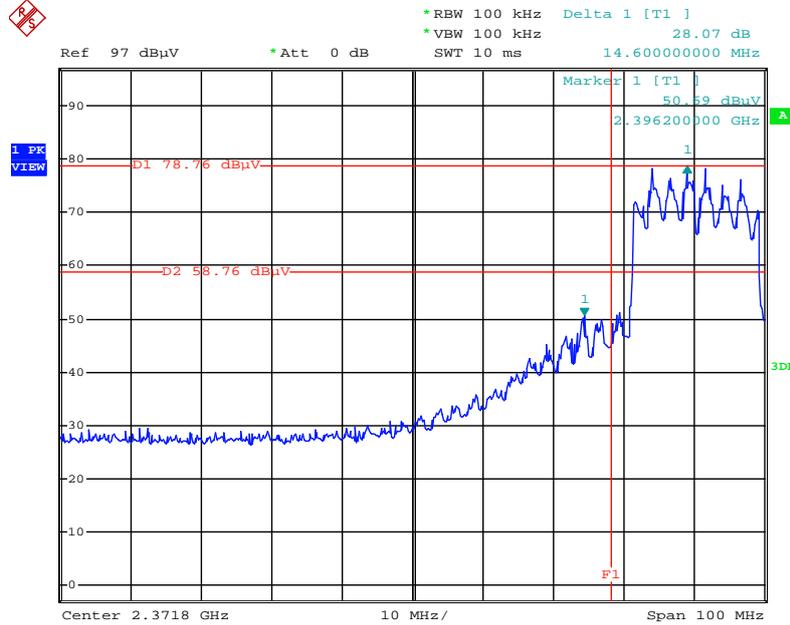


Date: 18.MAY.2011 17:27:06

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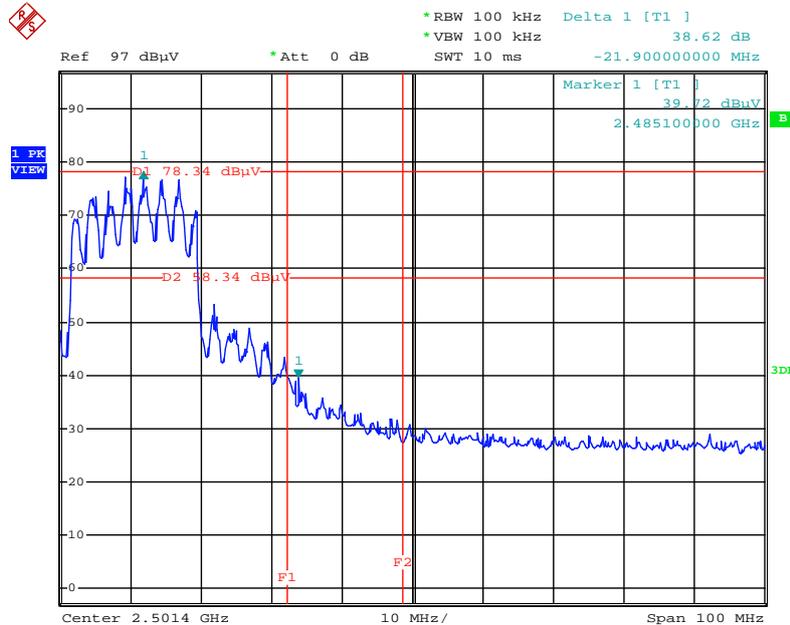
For Emission not in Restricted Band

Low Band Edge Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 3 / 2412 MHz



Date: 4.NOV.2011 14:58:18

High Band Edge Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 3 / 2462 MHz

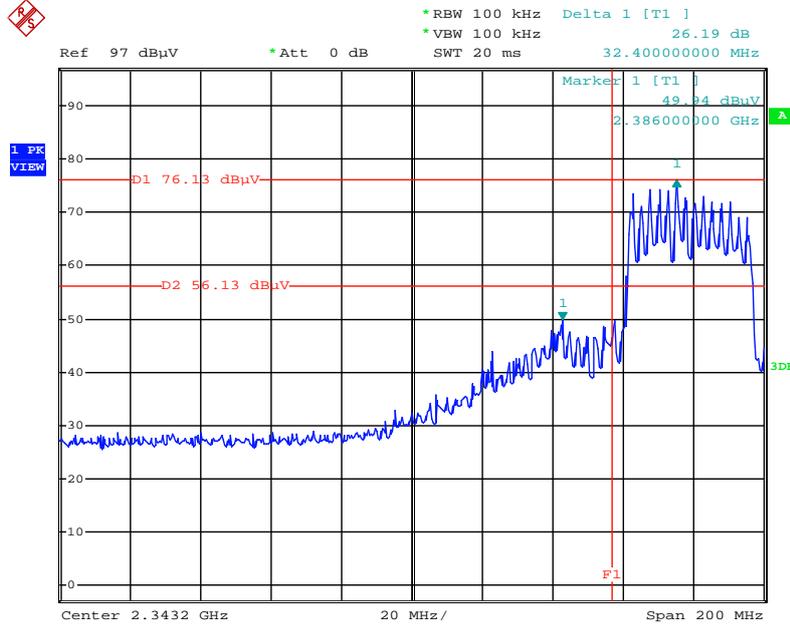


Date: 4.NOV.2011 15:01:17

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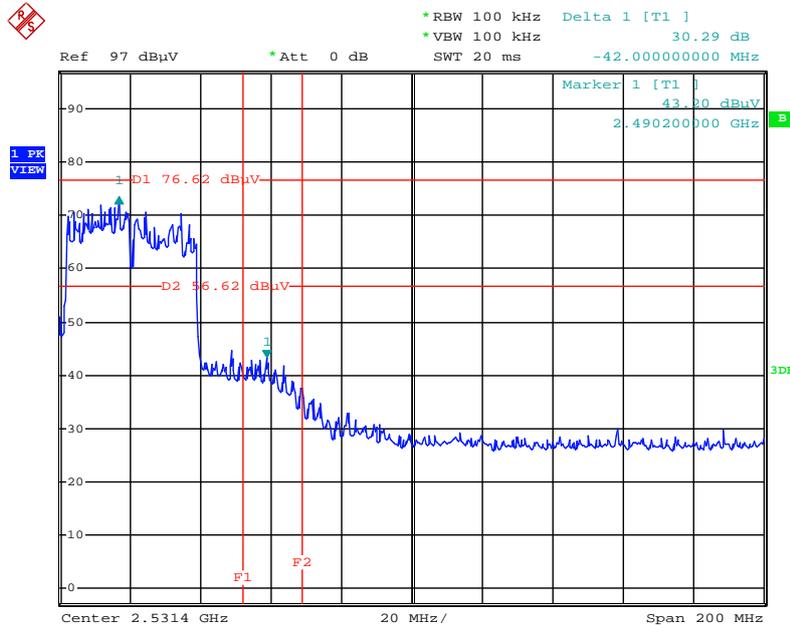
For Emission not in Restricted Band

Low Band Edge Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 3 / 2422 MHz



Date: 4.NOV.2011 15:10:16

High Band Edge Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 3 / 2452 MHz

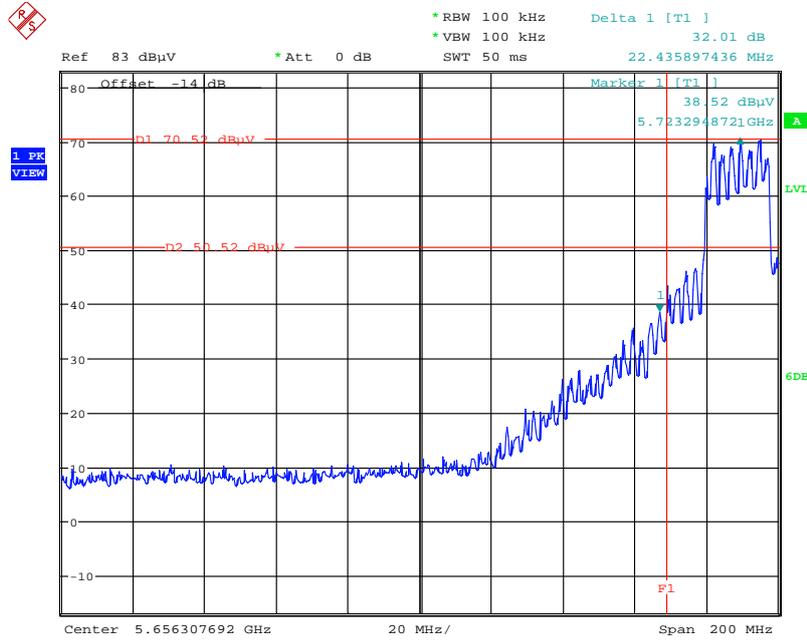


Date: 4.NOV.2011 15:13:57

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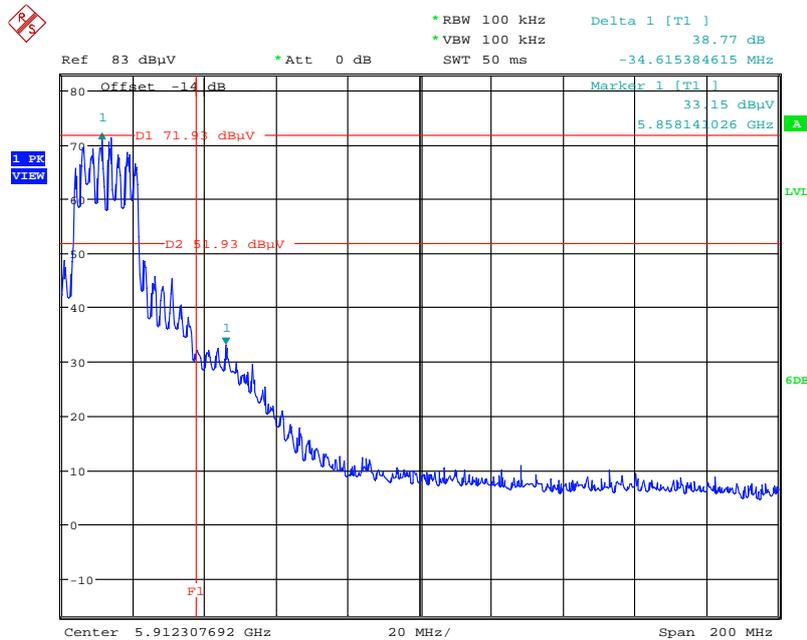
For Emission not in Restricted Band

Low Band Edge Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 3 / 5745 MHz



Date: 25.OCT.2011 21:08:59

High Band Edge Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 3 / 5825 MHz

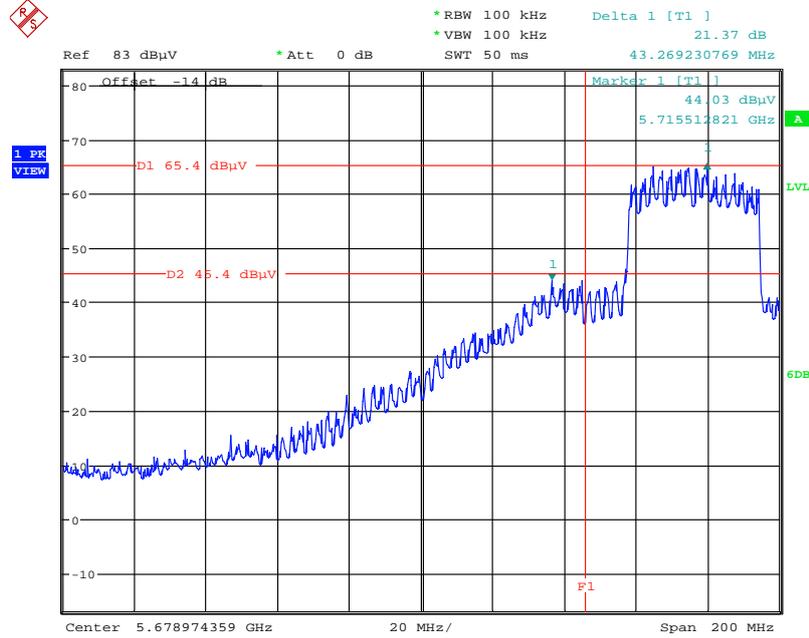


Date: 25.OCT.2011 21:02:33

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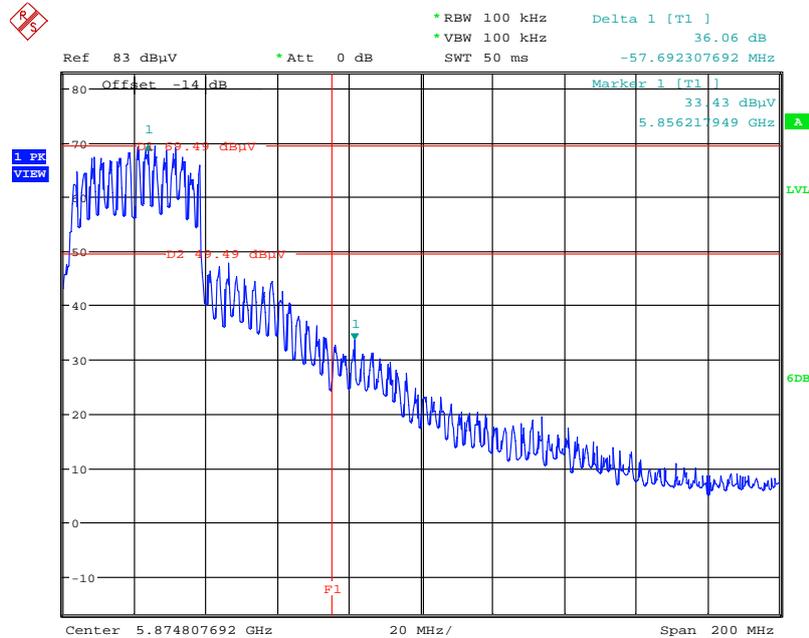
For Emission not in Restricted Band

Low Band Edge Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 3 / 5755 MHz



Date: 25.OCT.2011 20:56:33

High Band Edge Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 3 / 5795 MHz

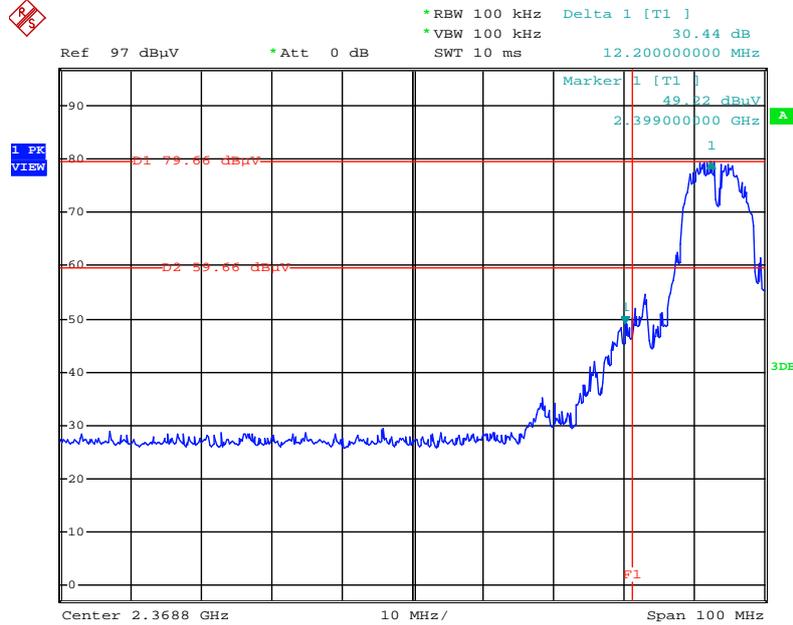


Date: 25.OCT.2011 21:00:24

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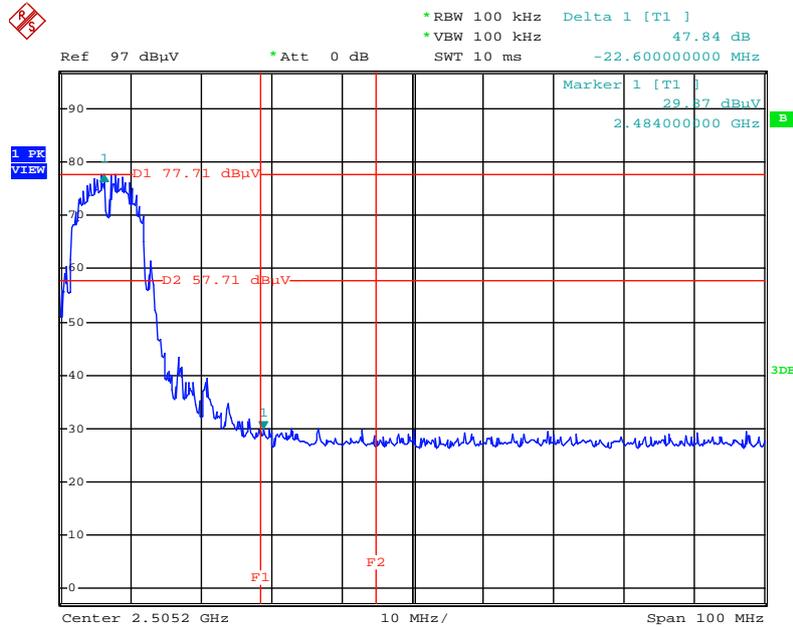
For Emission not in Restricted Band

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



Date: 4.NOV.2011 14:48:46

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

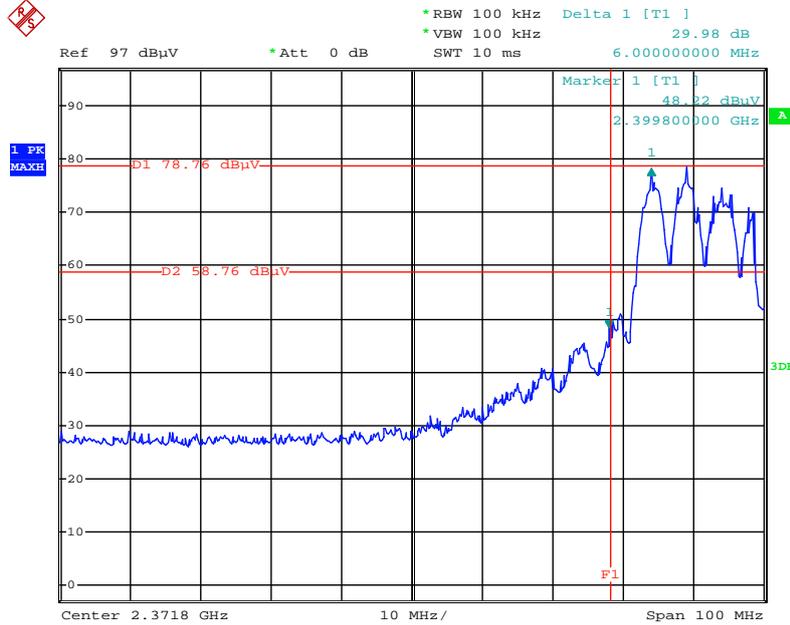


Date: 4.NOV.2011 14:53:56

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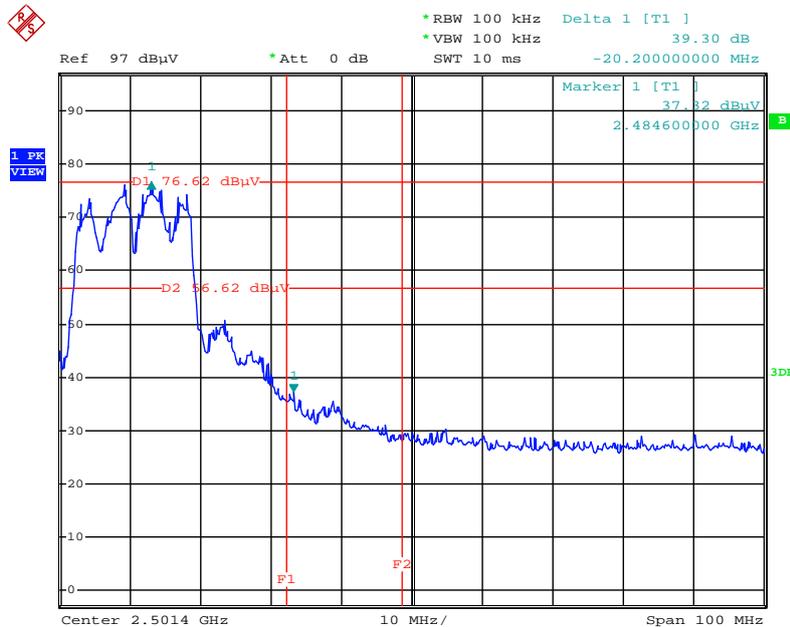
For Emission not in Restricted Band

Low Band Edge Plot on Configuration IEEE 802.11g / Ant. 1 + Ant. 3 / 2412 MHz



Date: 4.NOV.2011 15:07:22

High Band Edge Plot on Configuration IEEE 802.11g / Ant. 1 + Ant. 3 / 2462 MHz

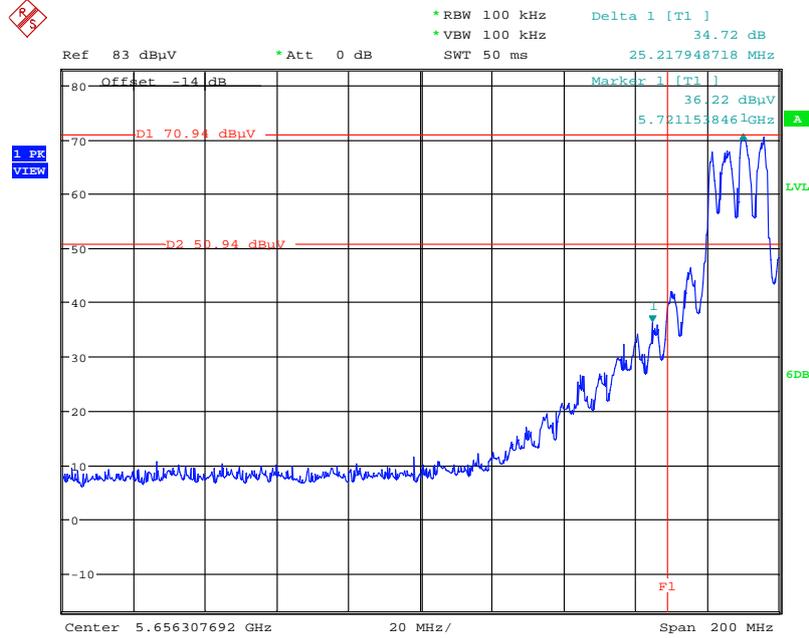


Date: 4.NOV.2011 15:04:06

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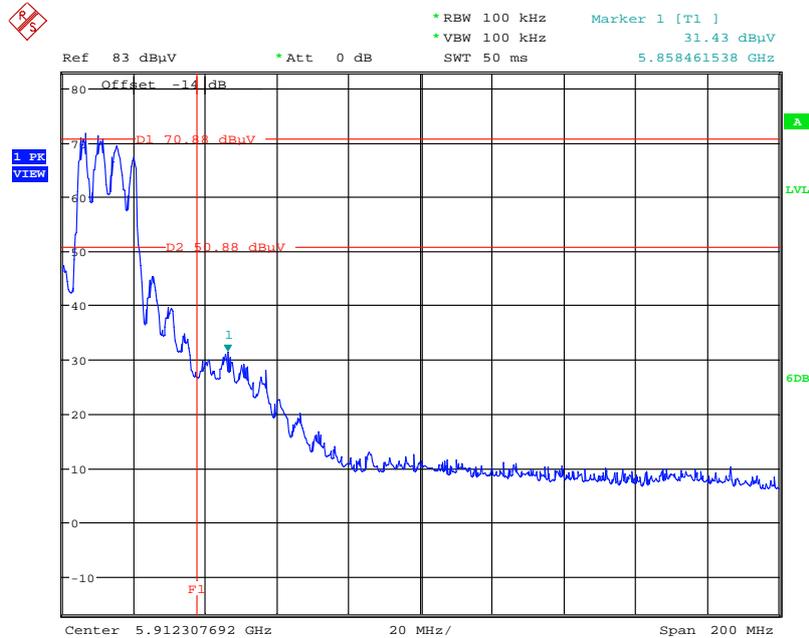
For Emission not in Restricted Band

Low Band Edge Plot on Configuration IEEE 802.11a / Ant. 1 + Ant. 3 / 5745 MHz



Date: 25.OCT.2011 21:10:27

High Band Edge Plot on Configuration IEEE 802.11a / Ant. 1 + Ant. 3 / 5825 MHz



Date: 25.OCT.2011 21:04:36

## 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, 2010	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, 2010	Conduction (CO01-CB)
PULSE LIMITER	R&S	ESH3-Z2	100430	9K-30MHz	Jan. 04, 2011	Conduction (CO01-CB)
COND Cable	-	Cable	-	0.15MHz~30MHz	Dec. 04, 2010	Conduction (CO01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	Oct. 29, 2010	Radiation (03CH01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	Oct. 29, 2011	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz~18GHz	Nov. 22, 2010	Radiation (03CH01-CB)
Horn Antenna	SCHWARZBEAK	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Nov. 22, 2010	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Nov. 17, 2010	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Nov. 23, 2010	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, 2010	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, 2010	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-1	N/A	1 GHz – 26.5 GHz	Nov. 17, 2010	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-2	N/A	1 GHz – 26.5 GHz	Nov. 17, 2010	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-3	N/A	1 GHz - 40 GHz	Nov. 17, 2010	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-4	N/A	1 GHz - 40 GHz	Nov. 17, 2010	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV30	101026	9KHz~30GHz	Jul. 27, 2010	Conducted (TH01-CB)



Spectrum analyzer	R&S	FSV30	101026	9KHz~30GHz	Jul. 27, 2011	Conducted (TH01-CB)
Thermo-Hygro Meter	N/A	HC 520	#1	15~70 degree	Nov. 02, 2010	Conducted (TH01-CB)
Thermo-Hygro Meter	N/A	HC 520	#1	15~70 degree	Nov. 02, 2010	Conducted (TH01-CB)
Thermo-Hygro Meter	N/A	HC 520	#1	15~70 degree	Nov. 02, 2011	Conducted (TH01-CB)
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)
EPM-P Series Power Metter	Agilent	E4416A	GB41291199	50MHz – 18GHz	Sep. 09, 2010	Conducted (TH01-CB)
EPM-P Series Power Metter	Agilent	E4416A	GB41291199	50MHz – 18GHz	Sep. 09, 2011	Conducted (TH01-CB)
Peak an Avg Power Sensor	Agilent	E9327A	US40442088	50MHz – 18GHz	Sep. 09, 2010	Conducted (TH01-CB)
Peak an Avg Power Sensor	Agilent	E9327A	US40442088	50MHz – 18GHz	Sep. 09, 2011	Conducted (TH01-CB)
Horn Antenna	COM-POWER	AH-118	071187	1GHz – 18GHz	Mar. 18, 2011	Conducted (TH01-CB)
Horn Antenna	COM-POWER	AH-118	071042	1GHz – 18GHz	Nov. 01, 2010	Conducted (TH01-CB)
Horn Antenna	COM-POWER	AH-118	071042	1GHz – 18GHz	Nov. 01, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-7	-	1 GHz – 26.5 GHz	Nov. 17, 2010	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-8	-	1 GHz – 26.5 GHz	Nov. 17, 2010	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-9	-	1 GHz – 26.5 GHz	Nov. 17, 2010	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-10	-	1 GHz – 26.5 GHz	Nov. 17, 2010	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-11	-	1 GHz – 26.5 GHz	Nov. 17, 2010	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-12	-	1 GHz – 26.5 GHz	Nov. 17, 2010	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-13	-	1 GHz – 26.5 GHz	Nov. 17, 2010	Conducted (TH01-CB)
Power Sensor	Anritsu	MA2411B	0917223	300MHz~40GHz	Nov. 01, 2010	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, 2010	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 2 <sup>nd</sup> 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**

<b>Accreditation Criteria</b>	: ISO/IEC 17025:2005
<b>Accreditation Number</b>	: 1190
<b>Originally Accredited</b>	: December 15, 2003
<b>Effective Period</b>	: January 10, 2010 to January 09, 2013
<b>Accredited Scope</b>	: Testing Field, see described in the Appendix
<b>Specific Accreditation Program</b>	: Accreditation Program for Designated Testing Laboratory for Commodities Inspection Accreditation Program for Telecommunication Equipment Testing Laboratory Accreditation Program for BSMI Mutual Recognition Arrangement with Foreign Authorities

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

P1, total 22 pages

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