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FCC RADIO TEST REPORT

Applicant's company	**Motorola, Inc.**
Applicant Address	One Motorola Plaza Holtsville NY 111742 USA
FCC ID	**UZ7MB82**
Manufacturer's company	**Wistron NeWeb Corporation**
Manufacturer Address	No.10-1,Li-hsin Road I,Hsinchu Science Park,Hsinchu 300,Taiwan, R.O.C.

Product Name	MB82 Access Point Radio Module
Brand Name	Motorola
Model Name	MB82
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5150 ~ 5250MHz
Received Date	Aug. 22, 2012
Final Test Date	Oct. 09, 2012
Submission Type	Class II Change
Operating Mode	Master

Statement

Test result included is for the IEEE 802.11n and IEEE 802.11a (5150 ~ 5250MHz) 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 E** and KDB 789033 D01 v01r02.

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

Testing Laboratory
1190

Table of Contents

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR282211AB	Rev. 01	Initial issue of report	Nov. 23, 2012

Certificate No.: CB10110138

1. CERTIFICATE OF COMPLIANCE

Product Name	:	**MB82 Access Point Radio Module**
Brand Name	:	**Motorola**
Model Name	:	**MB82**
Applicant	:	**Motorola, Inc.**
Test Rule Part(s)	:	**47 CFR FCC Part 15 Subpart E § 15.407**

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Aug. 22, 2012 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.

Jordan Hsiao

Jordan Hsiao

SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart E				
Part	**Rule Section**	**Description of Test**	**Result**	**Under Limit**
4.1	15.207	AC Power Line Conducted Emissions	Complies	10.74 dB
4.2	15.407(a)	26dB Spectrum Bandwidth	Complies	-
4.3	15.407(a)	Maximum Conducted Output Power	Complies	0.05 dB
4.4	15.407(a)	Power Spectral Density	Complies	0.67 dB
4.5	15.407(a)	Peak Excursion	Complies	0.82 dB
4.6	15.407(b)	Radiated Emissions	Complies	0.54 dB
4.7	15.407(b)	Band Edge Emissions	Complies	0.02 dB
4.8	15.407(g)	Frequency Stability	Complies	-
4.9	15.203	Antenna Requirements	Complies	-

Test Items	Uncertainty	Remark
AC Power Line Conducted Emissions	±2.3dB	Confidence levels of 95%
Maximum Conducted Output Power	±0.5dB	Confidence levels of 95%
Power Spectral Density	±0.5dB	Confidence levels of 95%
Peak Excursion	±0.5dB	Confidence levels of 95%
26dB Spectrum Bandwidth / Frequency Stability	$\pm 8.5\times10^{-8}$	Confidence levels of 95%
Radiated Emissions (9kHz~30MHz)	±0.8dB	Confidence levels of 95%
Radiated Emissions (30MHz~1000MHz)	±1.9dB	Confidence levels of 95%
Radiated / Band Edge Emissions (1GHz~18GHz)	±1.9dB	Confidence levels of 95%
Radiated Emissions (18GHz~40GHz)	±1.9dB	Confidence levels of 95%
Temperature	±0.7℃	Confidence levels of 95%
Humidity	±3.2%	Confidence levels of 95%
DC / AC Power Source	±1.4%	Confidence levels of 95%

Note: This module is intended for OEM integrator only and limited to host with brand: Motorola and model: AP-650. There were including professional installation in antenna part.

3. GENERAL INFORMATION

3.1. Product Details

IEEE 802.11n

Items	Description
Product Type	WLAN (1/2TX, 3RX)
Radio Type	Intentional Transceiver
Power Type	From Host System
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	5150 ~ 5250MHz
Channel Number	4 for 20MHz bandwidth ; 2 for 40MHz bandwidth
Channel Band Width (99%)	**Ant. 4 :** MCS0 (20MHz): 18.08 MHz ; MCS0 (40MHz): 37.76 MHz ; MCS8 (20MHz): 17.92 MHz ; MCS8 (40MHz): 37.76 MHz **Ant. 5 :** MCS0 (20MHz): 18.24 MHz ; MCS0 (40MHz): 38.40 MHz **Ant. 6 :** MCS0 (20MHz): 18.08MHz ; MCS0 (40MHz): 37.76 MHz ; MCS8 (20MHz): 18.08 MHz ; MCS8 (40MHz): 37.76 MHz **Ant. 10:** MCS0 (20MHz): 18.08 MHz ; MCS0 (40MHz): 38.08 MHz ; MCS8 (20MHz): 19.36 MHz ; MCS8 (40MHz): 37.76 MHz
Conducted Output Power	**Ant. 4 :** MCS0 (20MHz): 11.73 dBm ; MCS0 (40MHz): 11.71 dBm ; MCS8 (20MHz): 14.82 dBm ; MCS8 (40MHz): 14.48 dBm **Ant. 5 :** MCS0 (20MHz): 13.80 dBm ; MCS0 (40MHz): 13.51 dBm **Ant. 6 :** MCS0 (20MHz): 7.09 dBm ; MCS0 (40MHz): 7.18 dBm ; MCS8 (20MHz): 10.29 dBm ; MCS8 (40MHz): 10.09 dBm **Ant. 10:** MCS0 (20MHz): 16.21 dBm ; MCS0 (40MHz): 16.36 dBm ; MCS8 (20MHz): 16.58 dBm ; MCS8 (40MHz): 16.22 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

IEEE 802.11a

Items	Description
Product Type	WLAN (1/2TX, 3RX)
Radio Type	Intentional Transceiver
Power Type	From Host System
Modulation	OFDM for IEEE 802.11a
Data Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data Rate (Mbps)	OFDM (6/9/12/18/24/36/48/54)
Frequency Range	5150 ~ 5250MHz
Channel Number	4
Channel Band Width (99%)	**Ant. 5 :** 17.28 MHz
Conducted Output Power	**Ant. 4 :** 11.88 dBm **Ant. 5 :** 13.84 dBm **Ant. 6 :** 7.38 dBm **Ant. 10:** 16.36 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Antenna & Band width

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

IEEE 802.11n spec

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

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

3.2. Accessories

N/A

3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Antenna Gain (dBi)	
					2.4GHz	5GHz
1	MOTOROLA	ML-2499-BPNA3-01R	Directional Panel Antenna	N-Type Female	15.5	-
2	MOTOROLA	ML-2499-FHPA9-01R	Dipole Omni Antenna	Type-N-Male	10.5	-
3	MOTOROLA	ML-2499-PNAHD-02R	Patch Antenna	RP-SMAMale	7.5	-
4	MOTOROLA	ML-5299-HPA10-01	Omni-Directional Antenna	N male	-	10.5
5	MOTOROLA	ML-5299-BYGA15-012	Yagi Antenna	N-Type Female	-	10.5
6	MOTOROLA	ML-5299-WPNA1-01R	Directional Panel Antenna	RP-SMAMale	-	14
7	MOTOROLA	ML-2452-PNL9M3-036	3-Port Dual-Band Dir Panel Antenna (2 Vert and 1 Hor ports)	RP-SMAMale x 3	11	10.7
8	MOTOROLA	ML-2452-APAG2A1-01	Omni-Directional Antenna	SMA male RP	2.7	2
9	MOTOROLA	ML-2452-HPA6X6-036	6-Port Omni Patch Array Antenna	Type-N, Male x 6	4	6
10	MOTOROLA	ML-2452-PTA6X6-036	Dual-band MIMO omni patch array, three 2.4G elements, three 5G element Antenna	RP-SMA Male x 6	3	5

Ant.	Loss of External Cable (dB)		True Gain (dBi)		Remark
	2.4GHz	5GHz	2.4GHz	5GHz	
1	0.65	-	14.85	-	2TX, 3RX
2	1.15	-	9.35	-	2TX, 3RX
3	0.65	-	6.85	-	2TX, 3RX
4	-	2.42	-	8.08	2TX, 3RX
5	-	1.42	-	9.08	1TX, 1RX
6	-	1.42	-	12.58	2TX, 3RX
7	0.65	1.42	10.35	9.28	2TX, 3RX
8	0.65	1.42	2.05	0.58	2TX, 3RX
9	1.15	2.42	2.85	3.58	2TX, 3RX
10	0.65	1.42	2.35	3.58	2TX, 3RX

Note: 1. There is no hardware or electrical modification made to the applying modular transmitter itself. Adding ten antennas.

2. Because Ant. 1 and Ant. 7 are the same type antennas, only the higher gain antenna "Ant.1" was tested and recorded in the report.
3. Because Ant. 6 and Ant. 7 are the same type antennas, only the higher gain antenna "Ant.6" was tested and recorded in the report.
4. Because Ant. 8 and original project's Ant. 4 (Model: ML-2499-HPA3-01R) are the same type antennas, only the higher gain antenna original project's Ant.4 (Model: ML-2499-HPA3-01R) was tested and recorded in the Sporton project number: FR972826AB.
5. Because Ant. 9 and original project's Ant. 4 (Model: ML-5299-HPA1-01R) are the same type antennas, only the higher gain antenna original project's Ant. 4 (Model: ML-5299-HPA1-01R) was tested and recorded in the Sporton project number: FR972826AA.
6. Because Ant. 10 and original project's Ant. 3 (Model: ML-2499-SD3-01R) are the same type antennas, only the higher gain antenna original project's Ant. 3 (Model: ML-2499-SD3-01R) was tested and recorded in the Sporton project number: FR972826AB.

Module	Required 1TX Port
2.4G / 5G	Chain 1

Module	Required 2TX Port
2.4G / 5G	Chain 1 and Chain 3

Note: The EUT has can support both 1TX and 2TX functions.

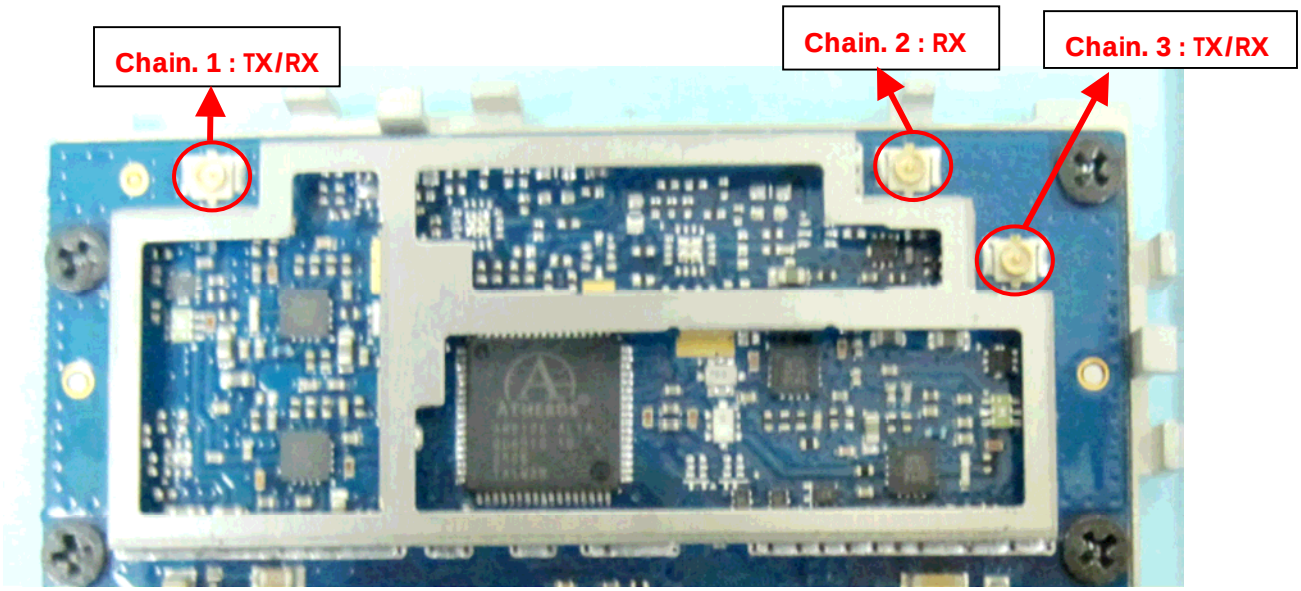
For IEEE 802.11a/n mode (1/2TX, 3RX):

1. For 2TX function:

   Chan. 1 and Chan. 3 could transmit simultaneously, but Chan. 1, Chan. 2 and Chan. 3 could receive simultaneously.

2. For 1TX function:

   Only Chan. 1 can be used as transmitting, but Chan. 1, Chan. 2 and Chan. 3 could receive simultaneously.



3.4. Table for Carrier Frequencies

For IEEE 802.11a, use Channel 36, 40, 44, 48.

There are two bandwidth systems for IEEE 802.11n.

For both 20MHz bandwidth systems, use Channel 36, 40, 44, 48.

For both 40MHz bandwidth systems, use Channel 38, 46.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5150~5250 MHz Band 1	36	5180 MHz	44	5220 MHz
	38	5190 MHz	46	5230 MHz
	40	5200 MHz	48	5240 MHz

3.5. Table for Test Modes

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

Test Items	Mode		Data Rate	Channel	Chain.
AC Power Conducted Emission	CTX		Auto	-	-
Max. Conducted Output Power	MCS0/20MHz	Band 1	6.5 Mbps	36/40/48	1/3
	MCS0/40MHz	Band 1	13.5 Mbps	38/46	1/3
	MCS8/20MHz	Band 1	13 Mbps	36/40/48	1/3
	MCS8/40MHz	Band 1	27 Mbps	38/46	1/3
	11a/BPSK	Band 1	6 Mbps	36/40/48	1/3
Power Spectral Density	MCS0/20MHz	Band 1	6.5 Mbps	36/40/48	1/3
	MCS0/40MHz	Band 1	13.5 Mbps	38/46	1/3
	MCS8/20MHz	Band 1	13 Mbps	36/40/48	1/3
	MCS8/40MHz	Band 1	27 Mbps	38/46	1/3
	11a/BPSK	Band 1	6 Mbps	36/40/48	1
26dB Spectrum Bandwidth 99% Occupied Bandwidth Measurement Peak Excursion	MCS0/20MHz	Band 1	6.5 Mbps	36/40/48	1/3
	MCS0/40MHz	Band 1	13.5 Mbps	38/46	1/3
	MCS8/20MHz	Band 1	13 Mbps	36/40/48	1/3
	MCS8/40MHz	Band 1	27 Mbps	38/46	1/3
	11a/BPSK	Band 1	6 Mbps	36/40/48	1
Radiated Emission Below 1GHz	CTX		Auto	-	-

Radiated Emission Above 1GHz	MCS0/20MHz	Band 1	6.5 Mbps	36/40/48	1/3
	MCS0/40MHz	Band 1	13.5 Mbps	38/46	1/3
	MCS8/20MHz	Band 1	13 Mbps	36/40/48	1/3
	MCS8/40MHz	Band 1	27 Mbps	38/46	1/3
	11a/BPSK	Band 1	6 Mbps	36/40/48	1
Band Edge Emission	MCS0/20MHz	Band 1	6.5 Mbps	36/40/48	1/3
	MCS0/40MHz	Band 1	13.5 Mbps	38/46	1/3
	MCS8/20MHz	Band 1	13 Mbps	36/40/48	1/3
	MCS8/40MHz	Band 1	27 Mbps	38/46	1/3
	11a/BPSK	Band 1	6 Mbps	36/40/48	1/3
Frequency Stability	Un-modulation		-	40	N/A

The following test modes were performed for all tests:

For Conducted Emission test:

Mode 1. EUT + Ant. 1

Mode 2. EUT + Ant. 6

For Radiated Emission Below 1GHz test:

Mode 1. EUT + Ant. 1

Mode 2. EUT + Ant. 6

For Radiated Emission Above 1GHz test:

Mode 1. EUT + Ant. 4

Mode 2. EUT + Ant. 5

Mode 3. EUT + Ant. 6

Mode 4. EUT + Ant. 10

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)).

Please refer section 6 for Test Site Address.

3.7. Table for Class II Change

This product is an extension of original one reported under Sporton project number: FR972826AA

Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking
1. Adding ten antennas, please refer to the section 3.3 for detail. 2. Adding the 1TX function. (Only for Ant. 5)	1. AC Power Line Conducted Emissions 2. 99% Occupied Bandwidth 3. Maximum Conducted Output Power 4. Power Spectral Density 5. Peak Excursion 6. Radiated Emissions Below 1GHz 7. Radiated Emissions Above 1GHz 8. Band Edge Emissions 9. Frequency Stability

3.8. Table for Supporting Units

Support Unit	Brand	Model	FCC ID
Notebook	DELL	D520	E2KWM3945ABG

3.9. Table for Parameters of Test Software Setting

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

Power Parameters of IEEE 802.11n / Ant. 4: Chain. 1 + Chain. 3 (2TX)

Test Software Version	ART		
Frequency	5180 MHz	5200 MHz	5240 MHz
MCS0 20MHz	10.00	10.00	10.00
MCS8 20MHz	12.50	13.00	13.00
Frequency	5190 MHz	5230 MHz	
MCS0 40MHz	10.00	10.00	
MCS8 40MHz	13.00	13.00	

Power Parameters of IEEE 802.11a / Ant. 4: Chain. 1 + Chain. 3 (2TX)

Test Software Version	ART		
Frequency	5180 MHz	5200 MHz	5240 MHz
IEEE 802.11a	7.50	8.00	8.50

Power Parameters of IEEE 802.11n / Ant. 5: Chain. 1 (1TX)

Test Software Version	ART		
Frequency	5180 MHz	5200 MHz	5240 MHz
MCS0 20MHz	14.50	15.00	15.00
Frequency	5190 MHz	5230 MHz	
MCS0 40MHz	14.50	14.50	

Power Parameters of IEEE 802.11a / Ant. 5: Chain. 1 (1TX)

Test Software Version	ART		
Frequency	5180 MHz	5200 MHz	5240 MHz
IEEE 802.11a	14.50	15.00	15.00

Power Parameters of IEEE 802.11n / Ant. 6: Chain. 1 + Chain. 3 (2TX)

Test Software Version	ART		
Frequency	5180 MHz	5200 MHz	5240 MHz
MCS0 20MHz	5.50	5.50	5.00
MCS8 20MHz	9.00	8.50	8.00
Frequency	5190 MHz	5230 MHz	
MCS0 40MHz	5.00	5.00	
MCS8 40MHz	8.00	8.50	

Power Parameters of IEEE 802.11a / Ant. 6: Chain. 1 + Chain. 3 (2TX)

Test Software Version	ART		
Frequency	5180 MHz	5200 MHz	5240 MHz
IEEE 802.11a	3.50	3.50	3.50

Power Parameters of IEEE 802.11n / Ant. 10: Chain. 1 + Chain. 3 (2TX)

Test Software Version	ART		
Frequency	5180 MHz	5200 MHz	5240 MHz
MCS0 20MHz	14.00	14.50	14.50
MCS8 20MHz	15.00	15.00	15.00
Frequency	5190 MHz	5230 MHz	
MCS0 40MHz	14.50	14.50	
MCS8 40MHz	14.50	14.50	

Power Parameters of IEEE 802.11a / Ant. 10: Chain. 1 + Chain. 3 (2TX)

Test Software Version	ART		
Frequency	5180 MHz	5200 MHz	5240 MHz
IEEE 802.11a	14.00	14.50	14.50

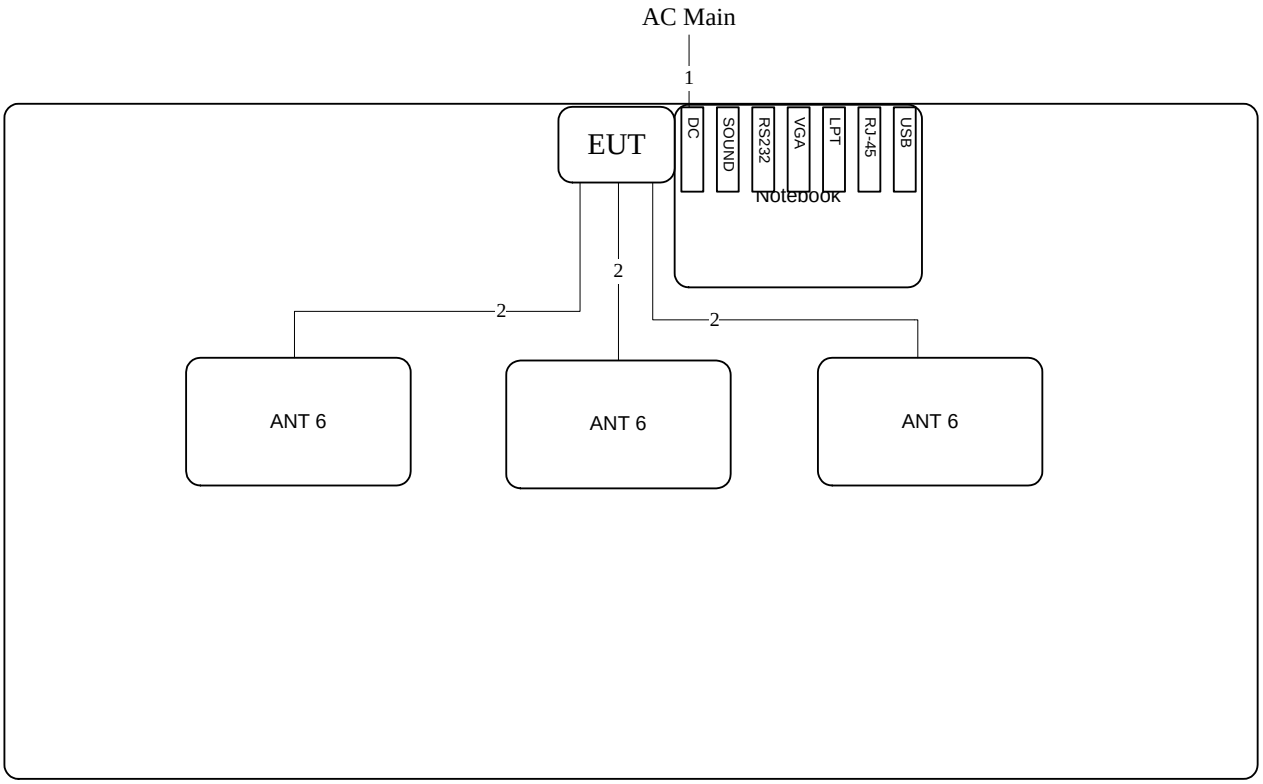
During the test, "ART" under WIN XP was executed the test program to control the EUT continuously transmit RF signal.

3.10. Test Configurations

3.10.1. Radiation Emissions Test Configuration

Test Configuration: 30MHz~1GHz

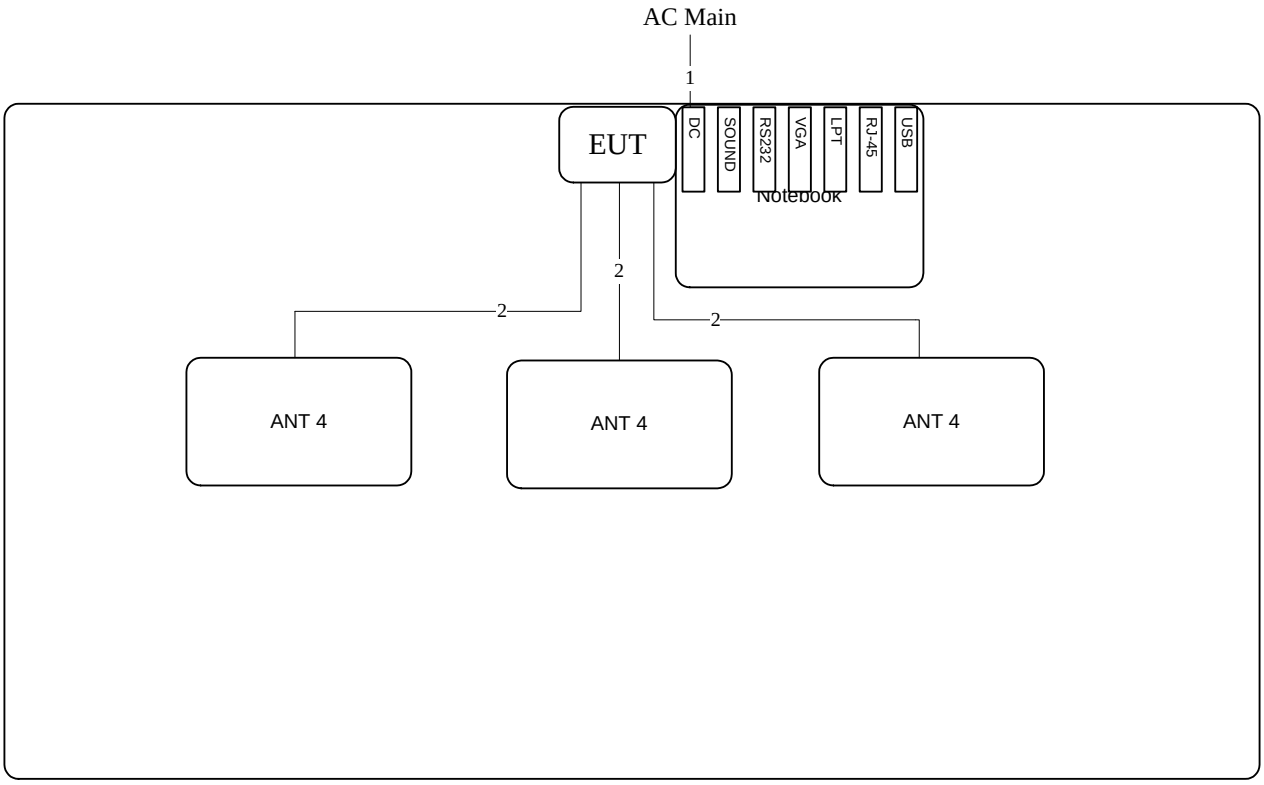
<For Ant. 6>:



Item	Connection	Shield	Length
1	Power Cable	No	2.6M
2	Ant Cable	Yes	0.9M

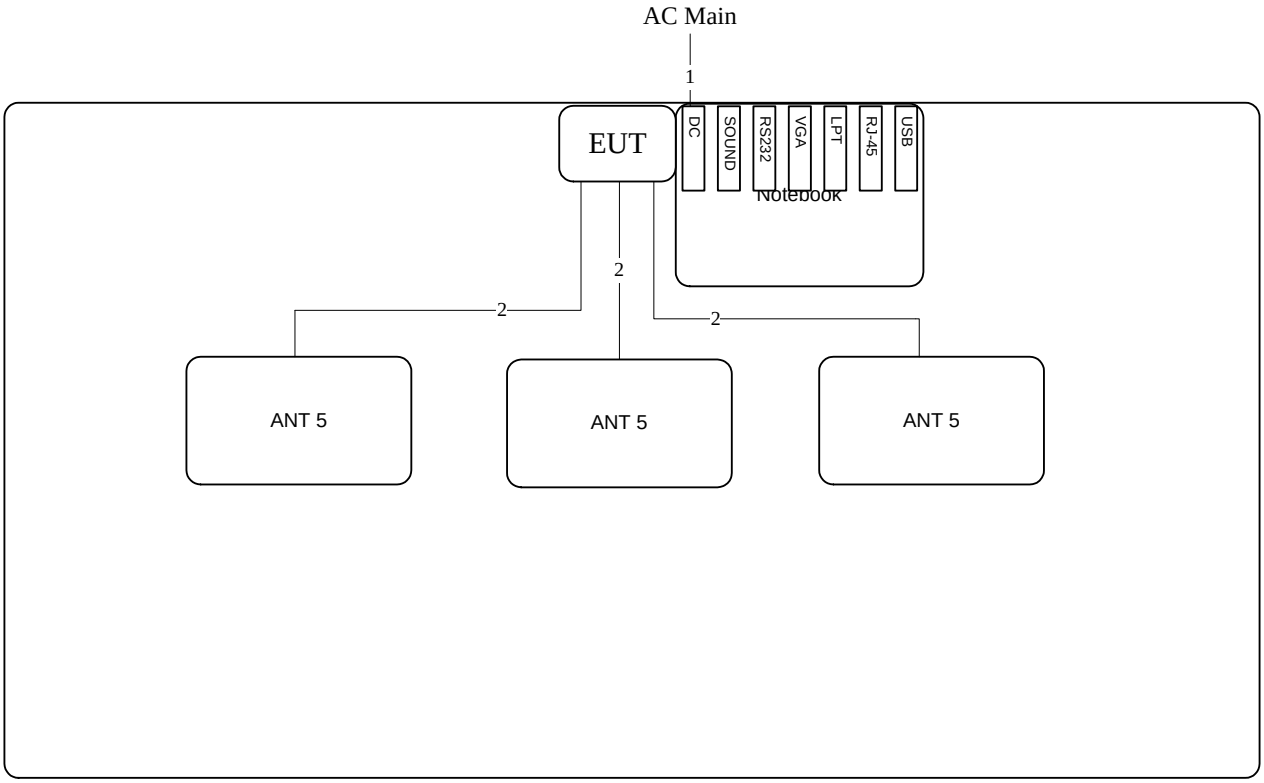
Test Configuration: above 1GHz

<For Ant. 4>:



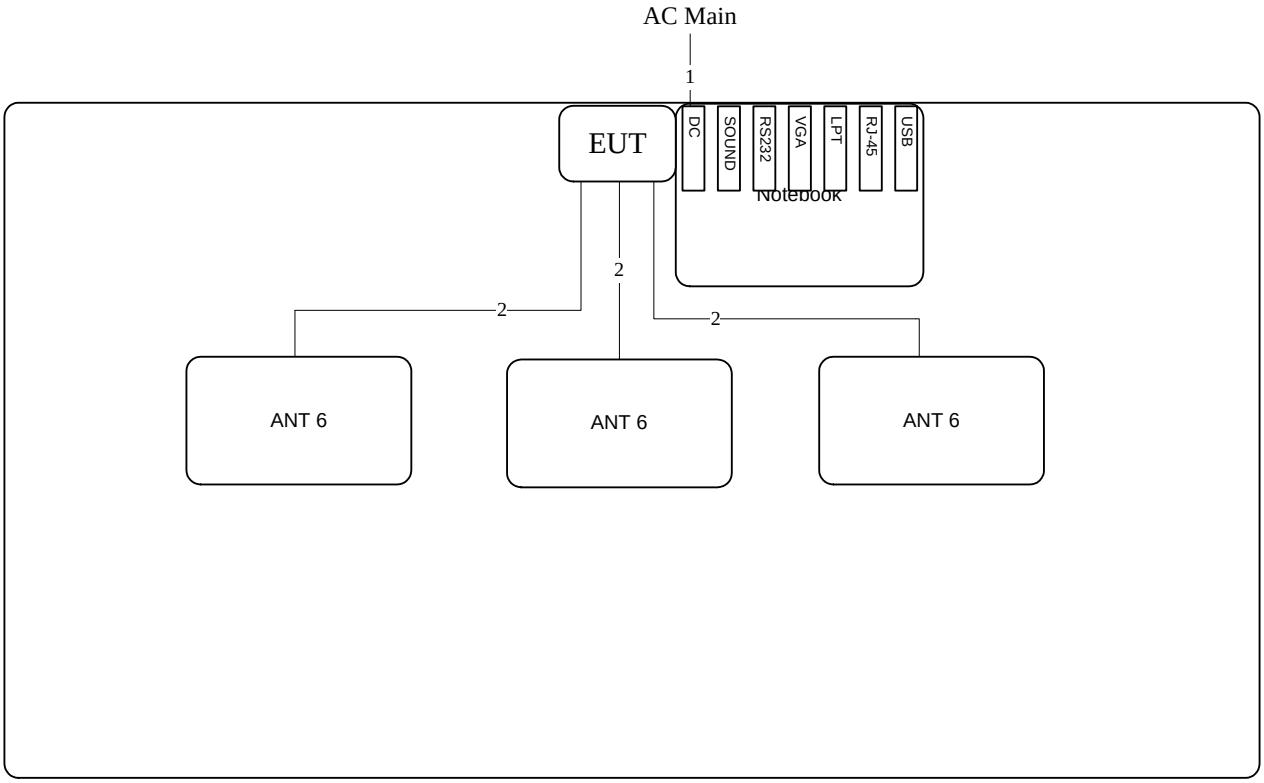
Item	Connection	Shield	Length
1	Power Cable	No	2.6M
2	Ant Cable	Yes	1M

<For Ant. 5>:



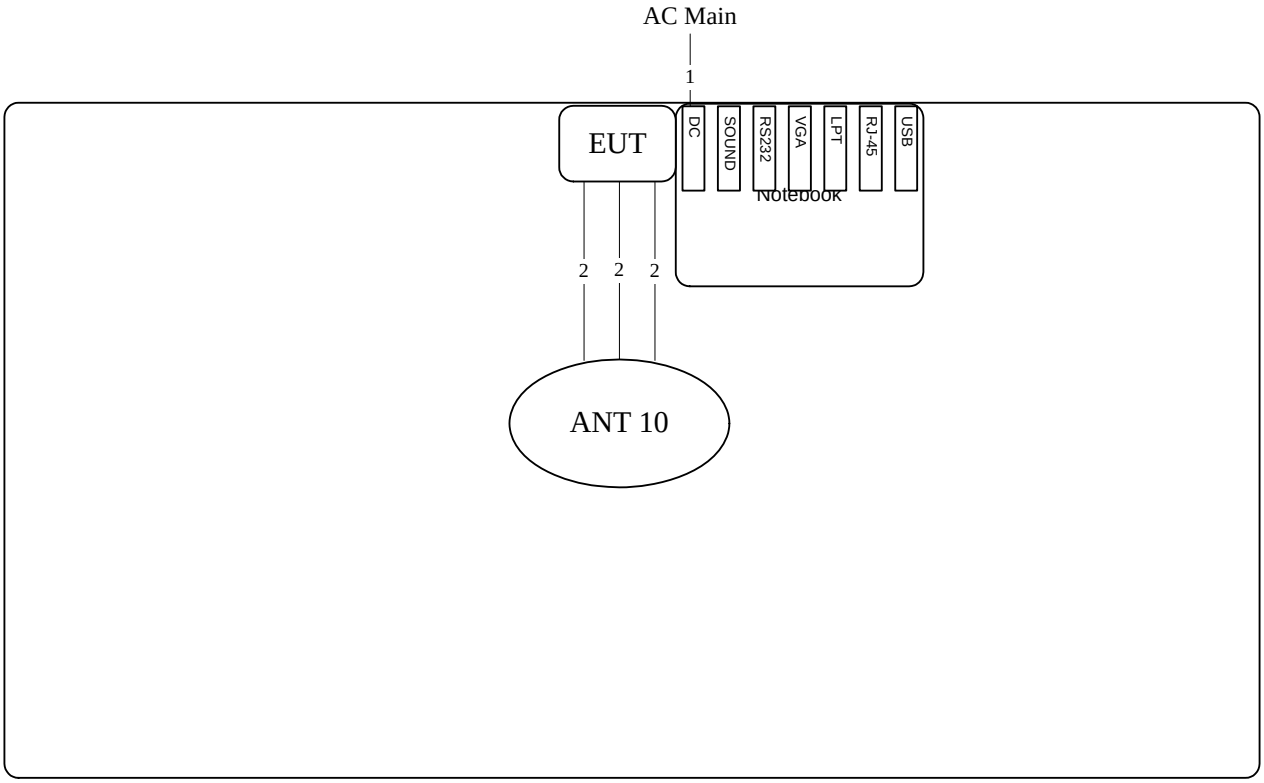
Item	Connection	Shield	Length
1	Power Cable	No	2.6M
2	Ant Cable	Yes	0.9M

<For Ant. 6>:



Item	Connection	Shield	Length
1	Power Cable	No	2.6M
2	Ant Cable	Yes	0.9M

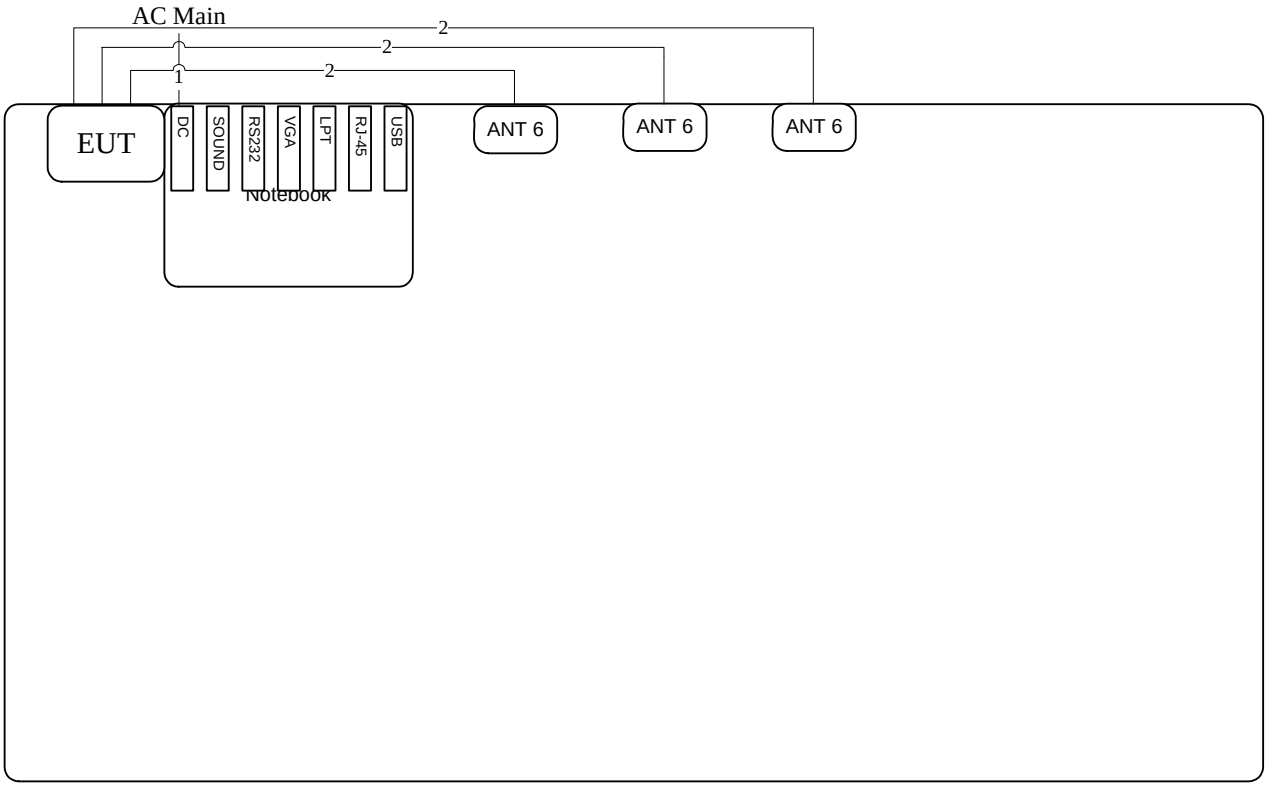
<For Ant. 10>:



Item	Connection	Shield	Length
1	Power Cable	No	2.6M
2	Ant cable	Yes	0.9M

3.10.2. AC Power Line Conduction Emissions Test Configuration

<For Ant. 6>:



Item	Connection	Shield	Length
1	Power Cable	No	2.6M
2	Ant Cable	Yes	0.9M

4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

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

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

4.1.2. Measuring Instruments and Setting

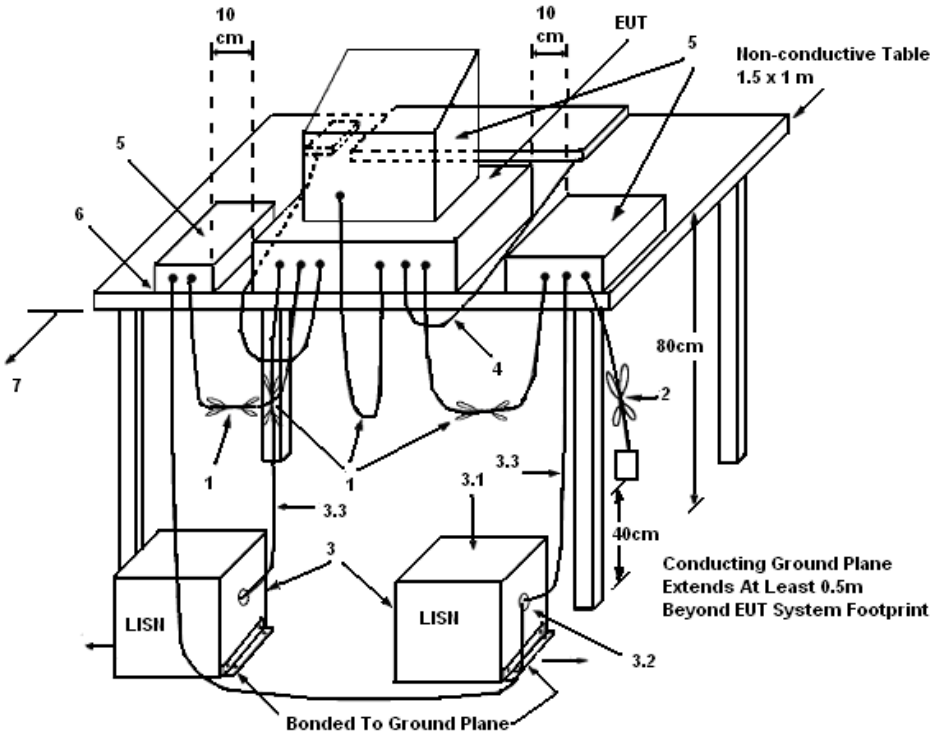
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

4.1.3. Test Procedures

1. Configure the EUT according to ANSI C63.10. The EUT or host of EUT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT or host of EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connected to the other LISNs. The LISN should provide 50uH/50ohms coupling impedance.
4. The frequency range from 150 KHz to 30 MHz was searched.
5. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. The measurement has to be done between each power line and ground at the power terminal.

4.1.4. Test Setup Layout



LEGEND:

(1) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

(2) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

(3) EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω. LISN can be placed on top of, or immediately beneath, reference ground plane.

(3.1) All other equipment powered from additional LISN(s).

(3.2) Multiple outlet strip can be used for multiple power cords of non-EUT equipment.

(3.3) LISN at least 80 cm from nearest part of EUT chassis.

(4) Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.

(5) Non-EUT components of EUT system being tested.

(6) Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.

(7) Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

4.1.5. Test Deviation

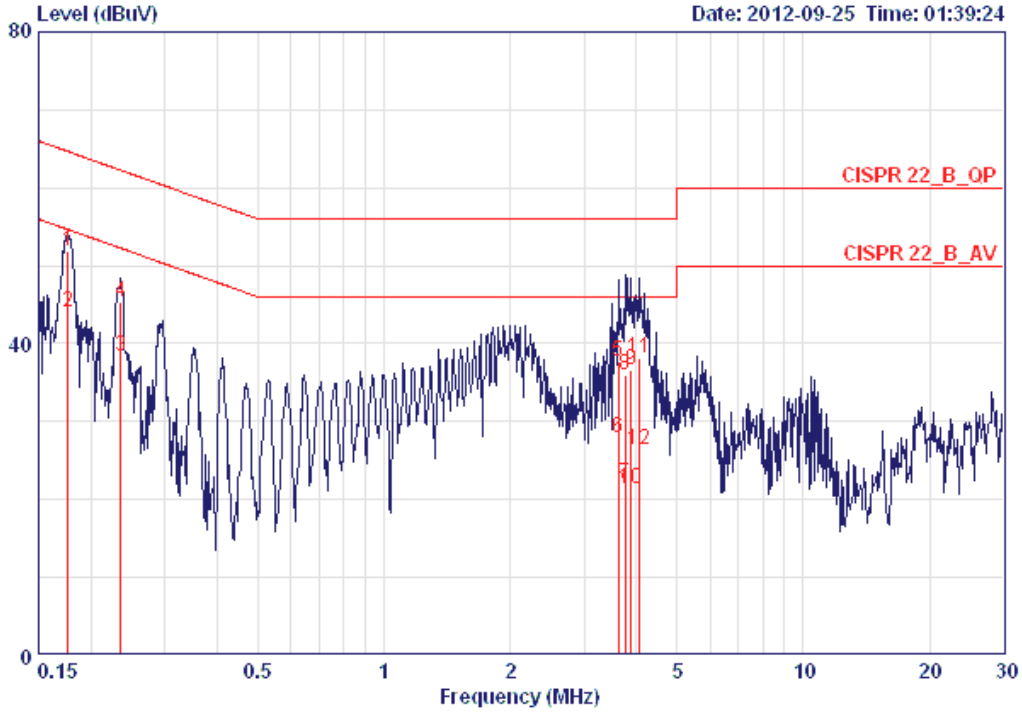
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

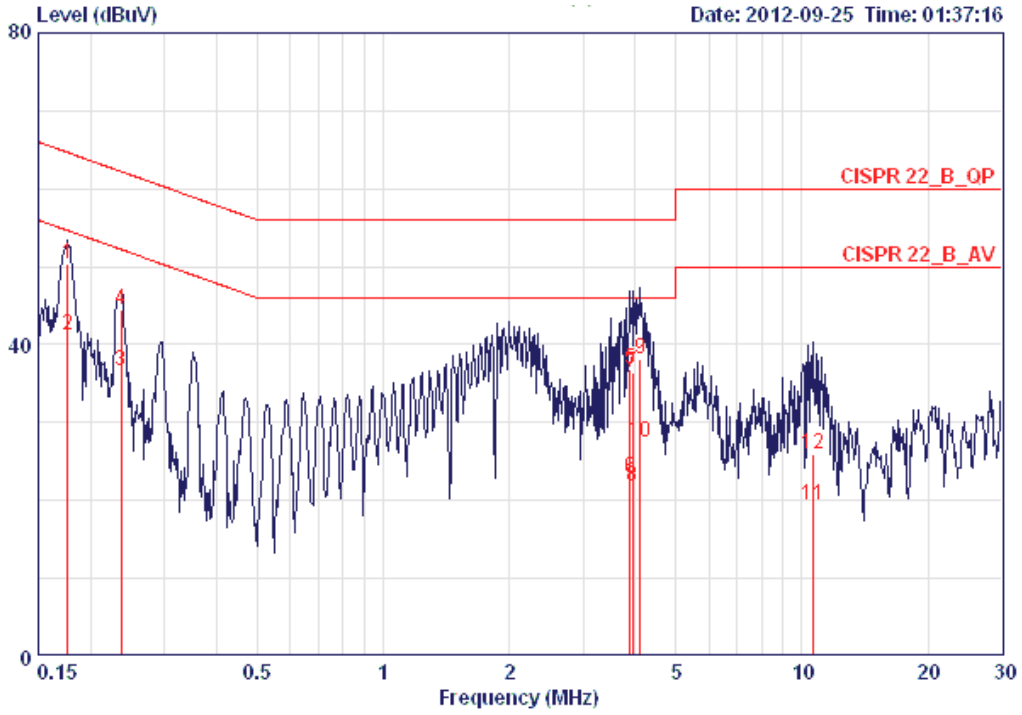
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	23℃	Humidity	51%
Test Engineer	Sin Chang	Phase	Line
Configuration	CTX	Test Mode	Mode 1.



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.17584	51.86	-12.82	64.68	51.51	0.15	0.20	LINE	QP
2 @	0.17584	43.94	-10.74	54.68	43.59	0.15	0.20	LINE	AVERAGE
3	0.23533	38.46	-13.80	52.26	38.11	0.15	0.20	LINE	AVERAGE
4	0.23533	45.35	-16.91	62.26	45.00	0.15	0.20	LINE	QP
5	3.623	37.71	-18.29	56.00	37.20	0.21	0.30	LINE	QP
6	3.623	27.96	-18.04	46.00	27.45	0.21	0.30	LINE	AVERAGE
7	3.759	21.93	-24.07	46.00	21.41	0.22	0.30	LINE	AVERAGE
8	3.759	35.92	-20.08	56.00	35.40	0.22	0.30	LINE	QP
9	3.881	36.62	-19.38	56.00	36.10	0.22	0.30	LINE	QP
10	3.881	21.27	-24.73	46.00	20.75	0.22	0.30	LINE	AVERAGE
11	4.049	38.23	-17.77	56.00	37.71	0.22	0.30	LINE	QP
12	4.049	26.41	-19.59	46.00	25.89	0.22	0.30	LINE	AVERAGE

Temperature	23℃	Humidity	51%
Test Engineer	Sin Chang	Phase	Neutral
Configuration	CTX	Test Mode	Mode 1.



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.17584	50.40	-14.28	64.68	50.12	0.08	0.20	NEUTRAL	QP
2	0.17584	41.25	-13.43	54.68	40.97	0.08	0.20	NEUTRAL	AVERAGE
3	0.23658	36.52	-15.70	52.22	36.24	0.08	0.20	NEUTRAL	AVERAGE
4	0.23658	44.47	-17.75	62.22	44.19	0.08	0.20	NEUTRAL	QP
5	3.881	36.79	-19.21	56.00	36.36	0.13	0.30	NEUTRAL	QP
6	3.881	22.98	-23.02	46.00	22.55	0.13	0.30	NEUTRAL	AVERAGE
7	3.943	36.48	-19.52	56.00	36.05	0.13	0.30	NEUTRAL	QP
8	3.943	21.85	-24.15	46.00	21.42	0.13	0.30	NEUTRAL	AVERAGE
9	4.114	38.24	-17.76	56.00	37.81	0.13	0.30	NEUTRAL	QP
10	4.114	27.44	-18.56	46.00	27.01	0.13	0.30	NEUTRAL	AVERAGE
11	10.620	19.40	-30.60	50.00	18.75	0.25	0.40	NEUTRAL	AVERAGE
12	10.620	25.93	-34.07	60.00	25.28	0.25	0.40	NEUTRAL	QP

Note:

Level = Read Level + LISN Factor + Cable Loss.

4.2. 99% Occupied Bandwidth Measurement

4.2.1. Limit

No restriction limits. But resolution bandwidth within band edge measurement is 1% of the 99% occupied bandwidth.

4.2.2. Measuring Instruments and Setting

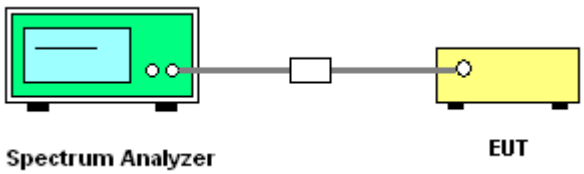
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 26dB Bandwidth
RB	300 kHz
VB	1000 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.2.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
2. The resolution bandwidth of 300 kHz and the video bandwidth of 1000 kHz were used.
3. Measured the spectrum width with power higher than 26dB below carrier.

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 99% Occupied Bandwidth

Temperature	26℃	Humidity	60%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n

Configuration IEEE 802.11n MCS0 20MHz / Ant. 4: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180 MHz	23.52	18.08
40	5200 MHz	23.68	18.08
48	5240 MHz	23.52	18.08

Configuration IEEE 802.11n MCS8 20MHz / Ant. 4: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180 MHz	22.88	17.92
40	5200 MHz	23.36	17.92
48	5240 MHz	23.04	17.92

Configuration IEEE 802.11n MCS0 40MHz / Ant. 4: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
38	5190 MHz	49.92	37.44
46	5230 MHz	49.28	37.76

Configuration IEEE 802.11n MCS8 40MHz / Ant. 4: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
38	5190 MHz	48.96	37.76
46	5230 MHz	48.64	37.76

Configuration IEEE 802.11n MCS0 20MHz / Ant. 5: Chain. 1 (1TX)

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180 MHz	25.44	18.24
40	5200 MHz	24.96	18.24
48	5240 MHz	24.96	18.24

Configuration IEEE 802.11n MCS0 40MHz / Ant. 5: Chain. 1 (1TX)

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
38	5190 MHz	67.84	38.08
46	5230 MHz	65.92	38.40

Configuration IEEE 802.11n MCS0 20MHz / Ant. 6: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180 MHz	24.48	18.08
40	5200 MHz	23.68	18.08
48	5240 MHz	23.52	18.08

Configuration IEEE 802.11n MCS8 20MHz / Ant. 6: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180 MHz	23.36	18.08
40	5200 MHz	23.36	17.92
48	5240 MHz	22.88	17.92

Configuration IEEE 802.11n MCS0 40MHz / Ant. 6: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
38	5190 MHz	48.64	37.76
46	5230 MHz	48.96	37.76

Configuration IEEE 802.11n MCS8 40MHz / Ant. 6: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
38	5190 MHz	49.28	37.76
46	5230 MHz	47.04	37.76

Configuration IEEE 802.11n MCS0 20MHz / Ant. 10: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180 MHz	23.68	18.08
40	5200 MHz	24.00	18.08
48	5240 MHz	25.12	18.08

Configuration IEEE 802.11n MCS8 20MHz / Ant. 10: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180 MHz	34.08	19.36
40	5200 MHz	23.68	17.92
48	5240 MHz	24.00	17.92

Configuration IEEE 802.11n MCS0 40MHz / Ant. 10: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
38	5190 MHz	67.20	37.76
46	5230 MHz	67.20	38.08

Configuration IEEE 802.11n MCS8 40MHz / Ant. 10: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
38	5190 MHz	50.56	37.76
46	5230 MHz	53.12	37.76

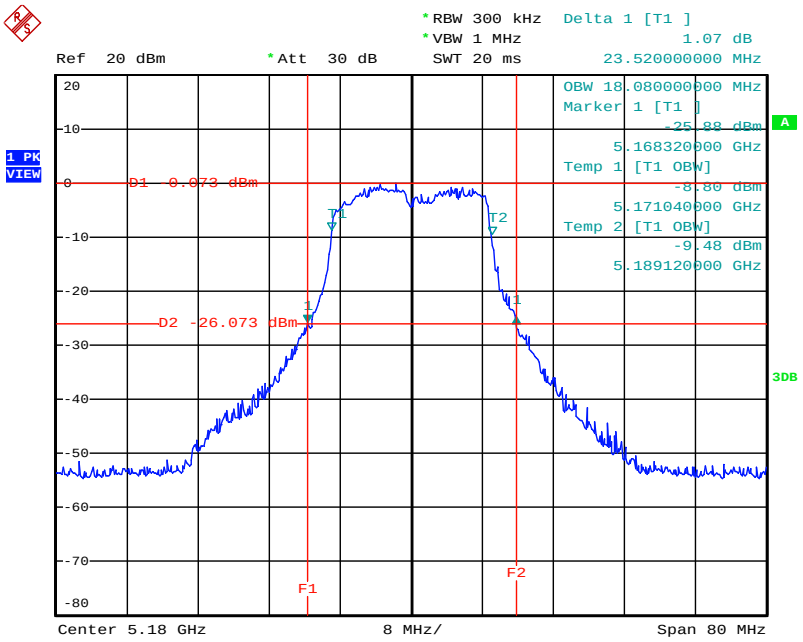
Temperature	26℃	Humidity	60%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a

Configuration IEEE 802.11a / Ant. 5: Chain. 1 (1TX)

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180 MHz	24.48	17.28
40	5200 MHz	24.80	17.28
48	5240 MHz	24.32	17.28

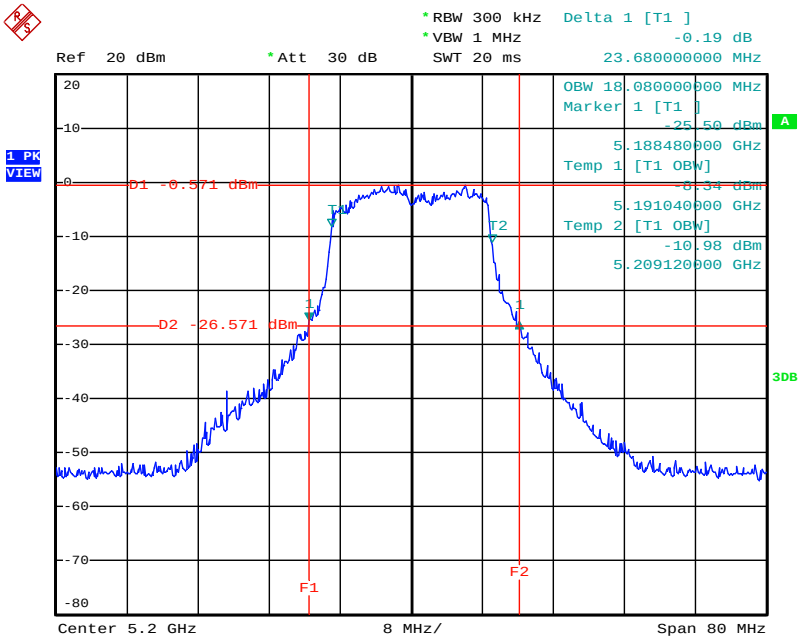
<For Ant. 4>:

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 5180 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 11:37:07

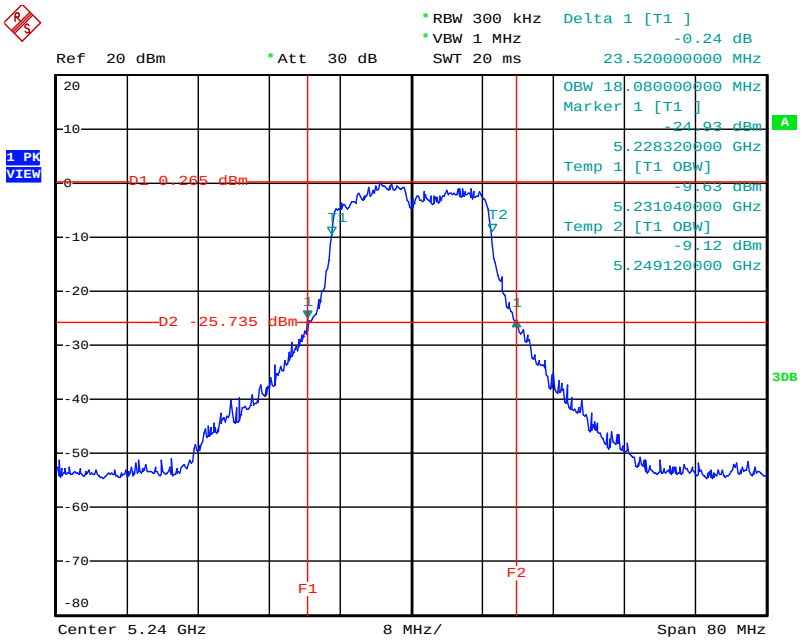
26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 5200 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 11:38:25

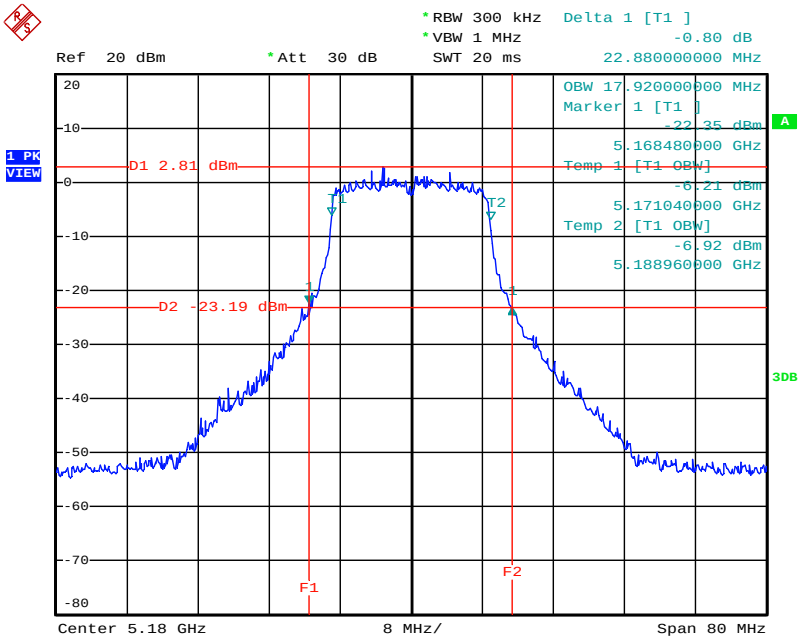
<For Ant. 4>:

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 5240 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 11:39:00

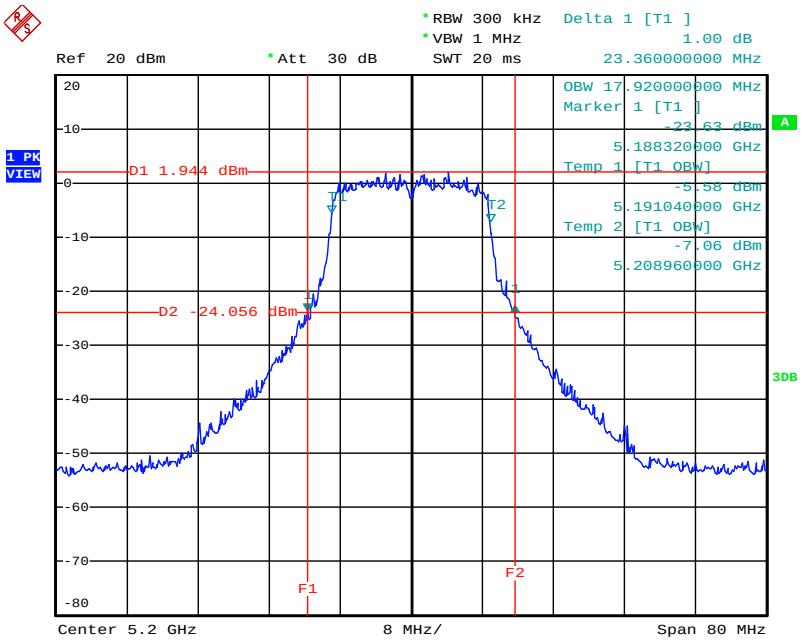
26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS8 20MHz / 5180 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 11:50:21

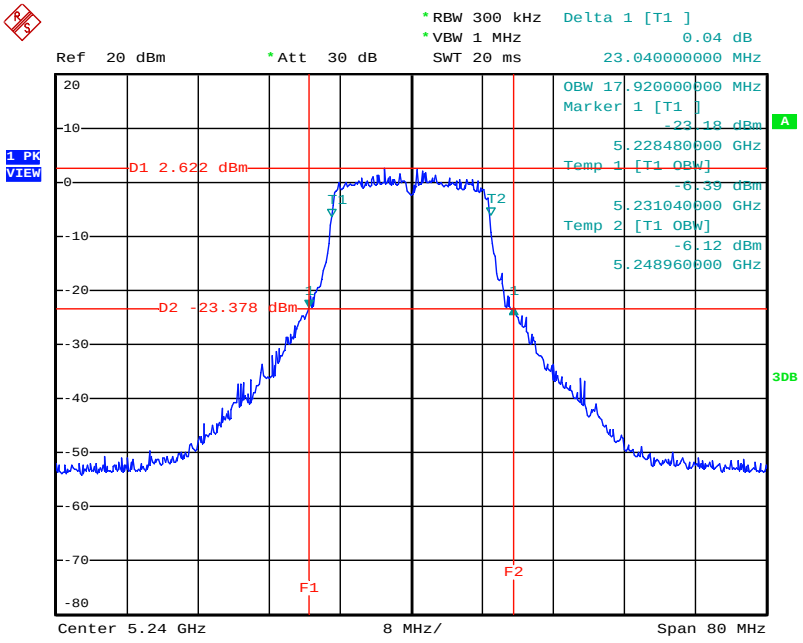
<For Ant. 4>:

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS8 20MHz / 5200 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 11:49:52

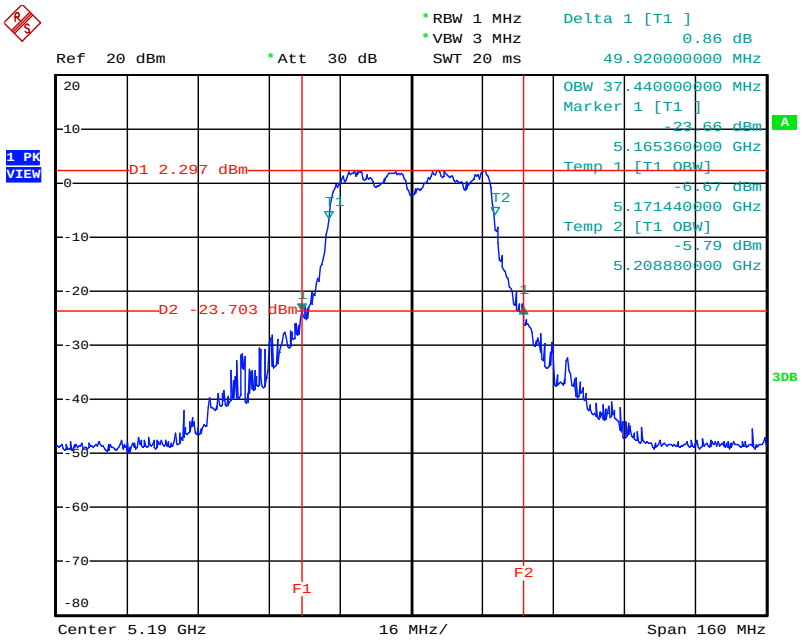
26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS8 20MHz / 5240 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 11:49:17

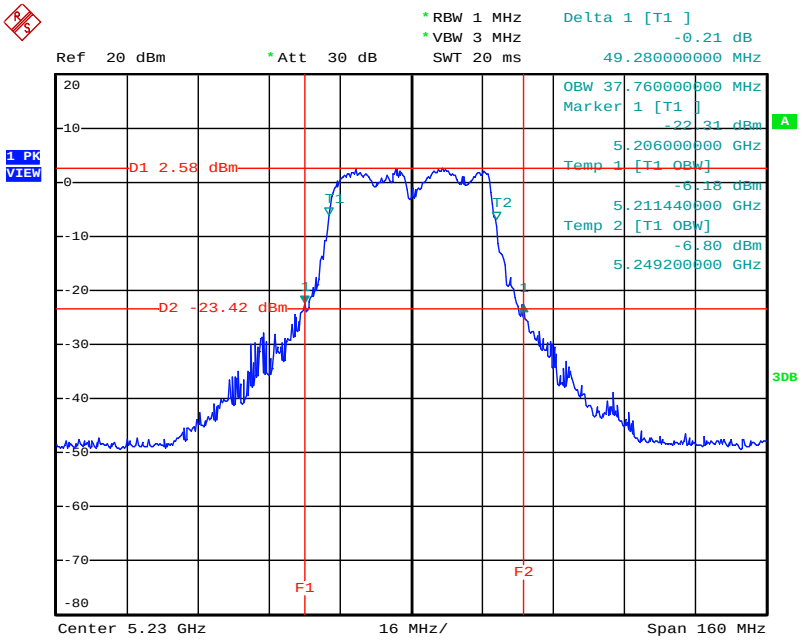
<For Ant. 4>:

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / 5190 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 12:01:50

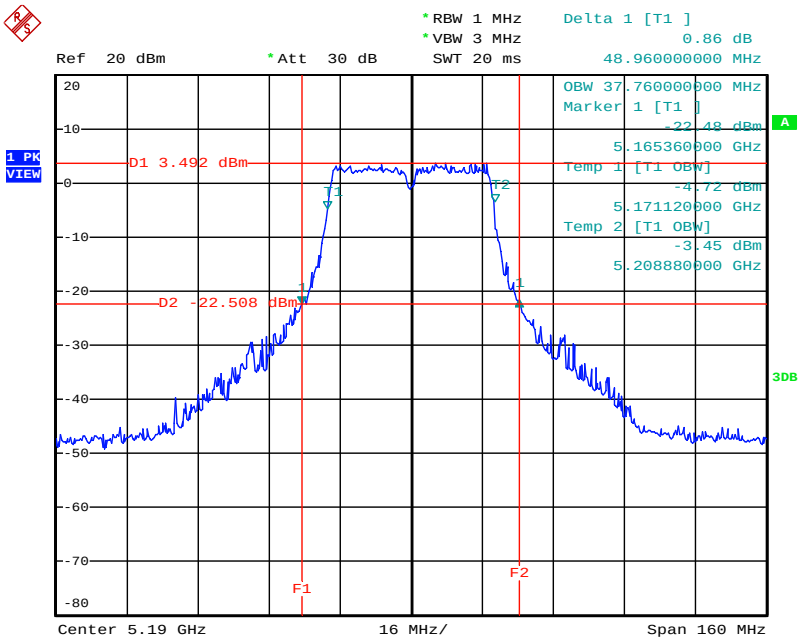
26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / 5230 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 12:01:15

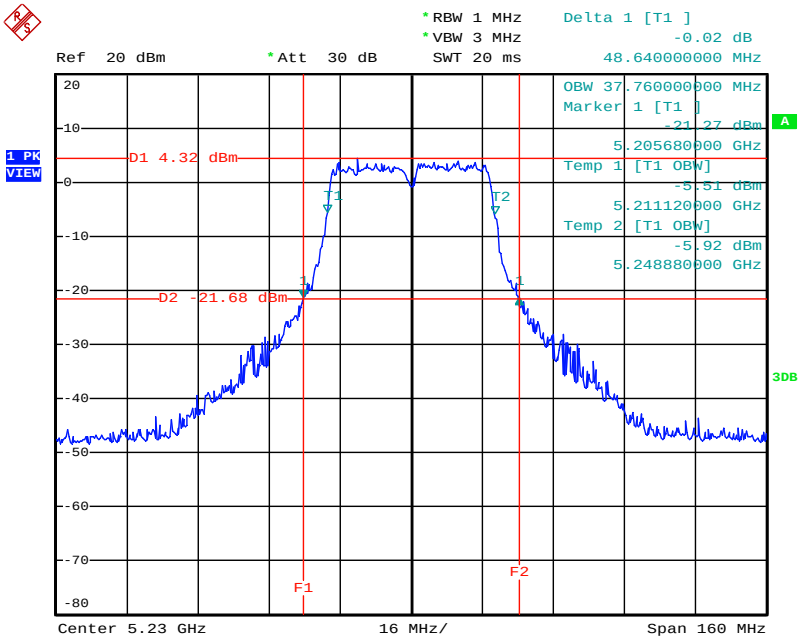
<For Ant. 4>:

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS8 40MHz / 5190 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 11:51:46

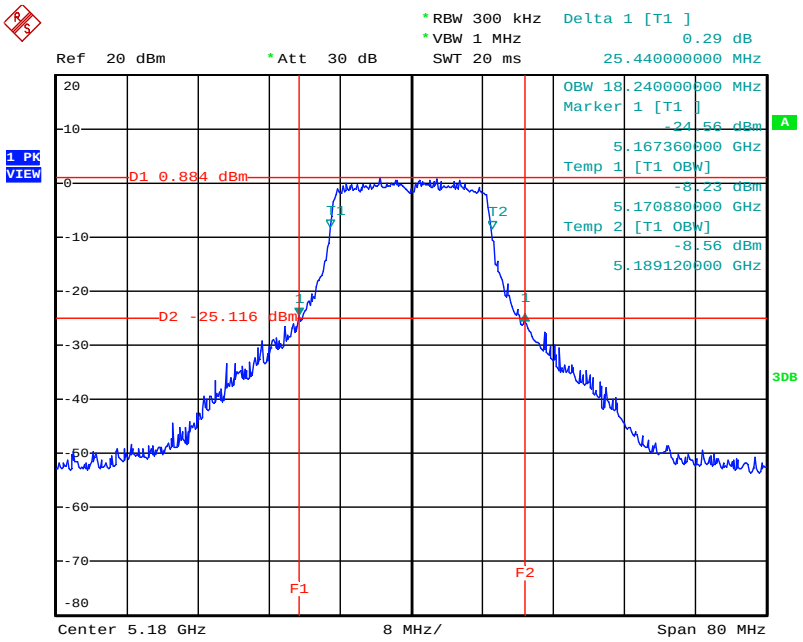
26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS8 40MHz / 5230 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 11:52:24

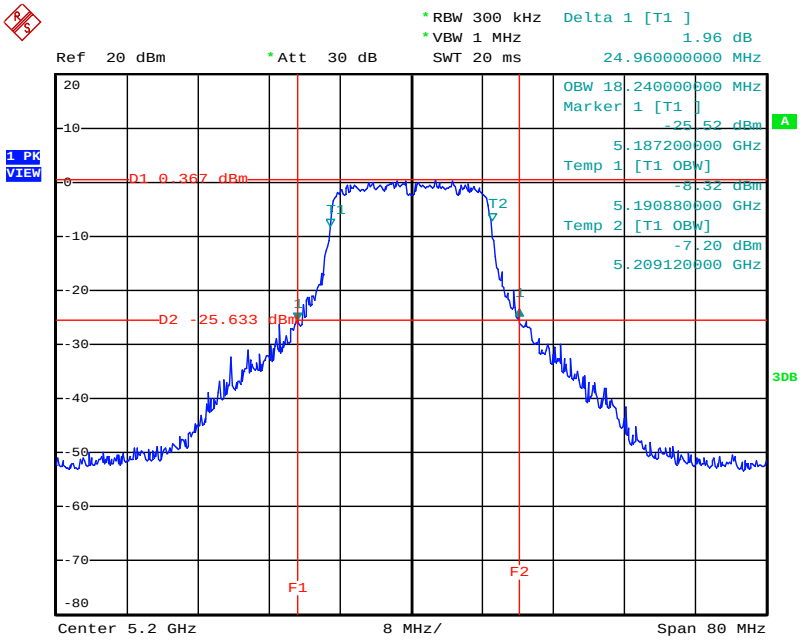
<For Ant. 5>:

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 5180 MHz / Chain. 1 (1X)



Date: 20.SEP.2012 04:18:33

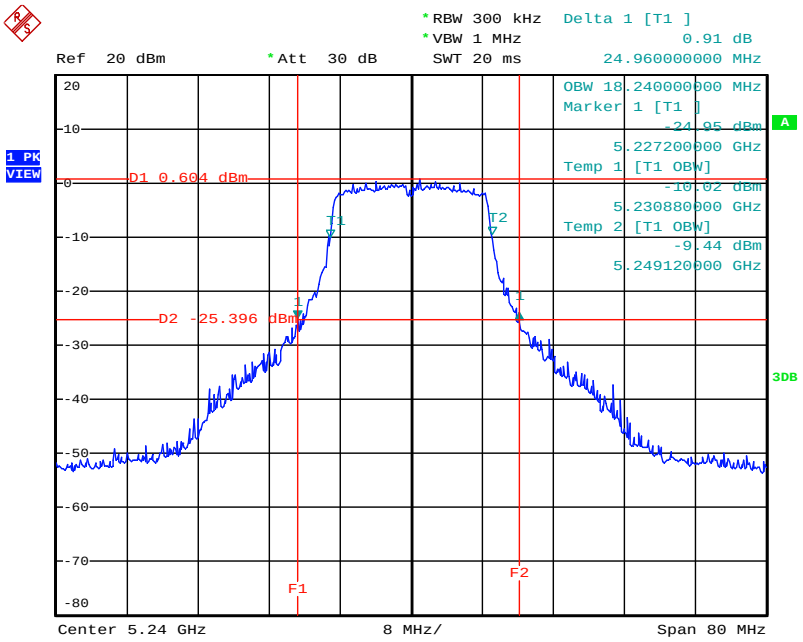
26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 5200 MHz / Chain. 1 (1X)



Date: 20.SEP.2012 04:19:01

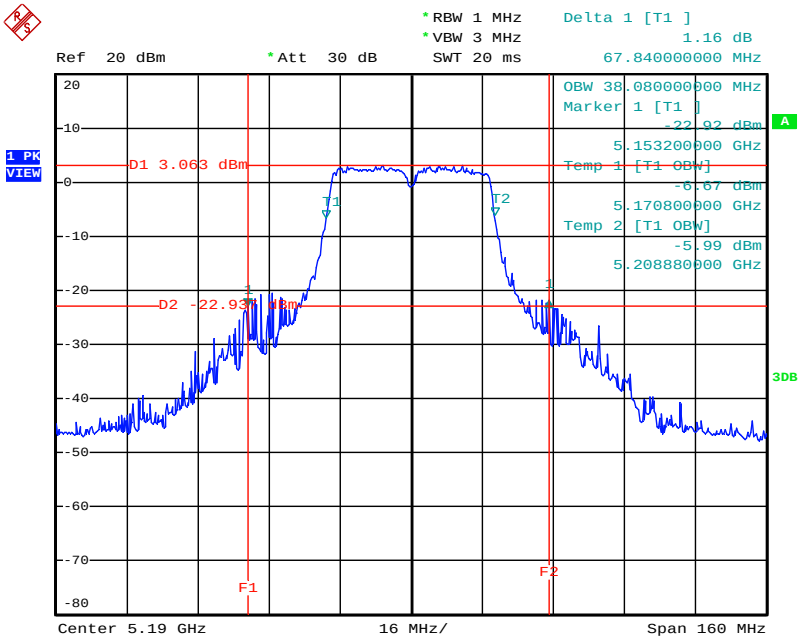
<For Ant. 5>:

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 5240 MHz / Chain. 1 (1X)



Date: 20.SEP.2012 04:19:49

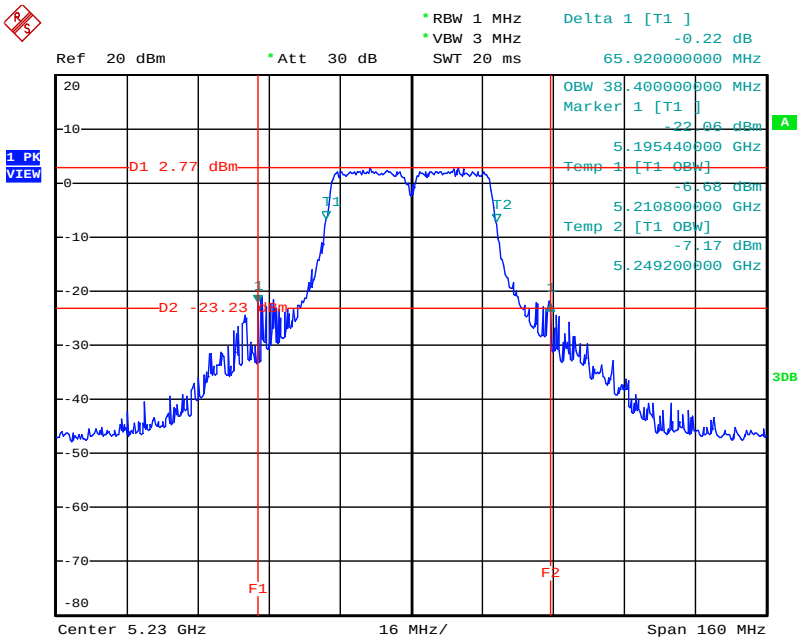
26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / 5190 MHz / Chain. 1 (1X)



Date: 20.SEP.2012 04:16:33

<For Ant. 5>:

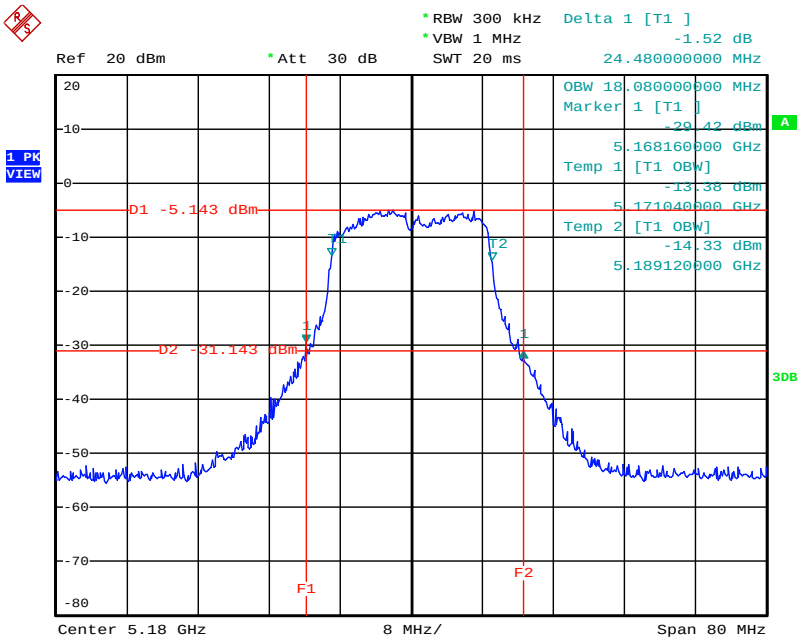
26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / 5230 MHz / Chain. 1 (1X)



Date: 20.SEP.2012 04:15:53

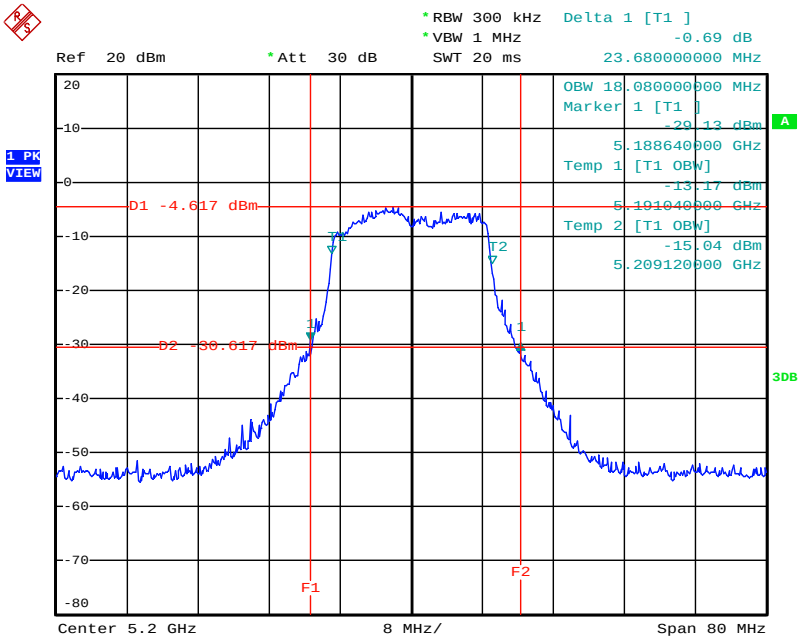
<For Ant. 6>:

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 5180 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 12:41:41

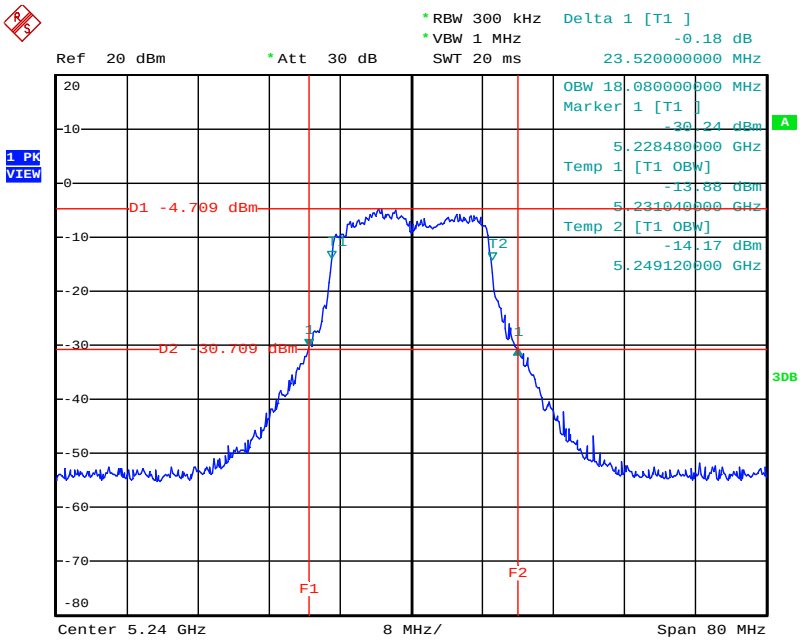
26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 5200 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 12:43:22

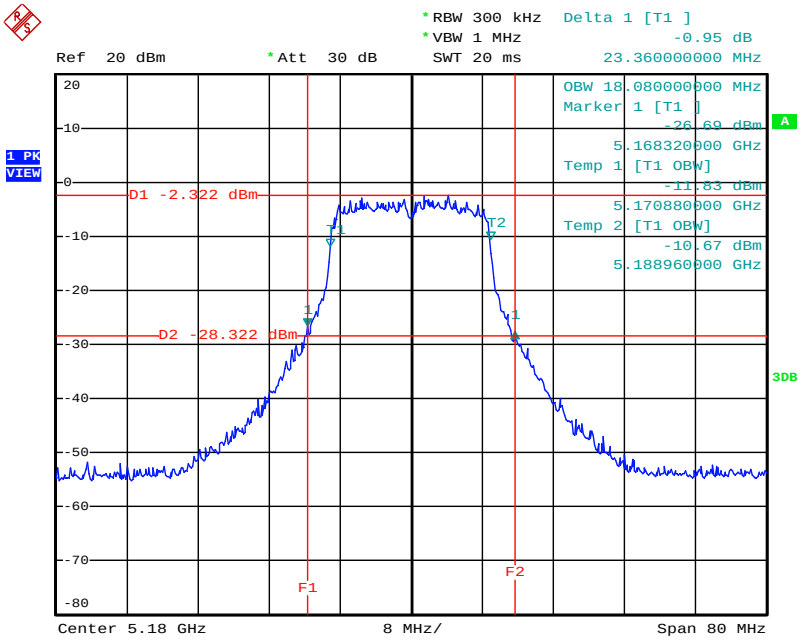
<For Ant. 6>:

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 5240 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 12:43:49

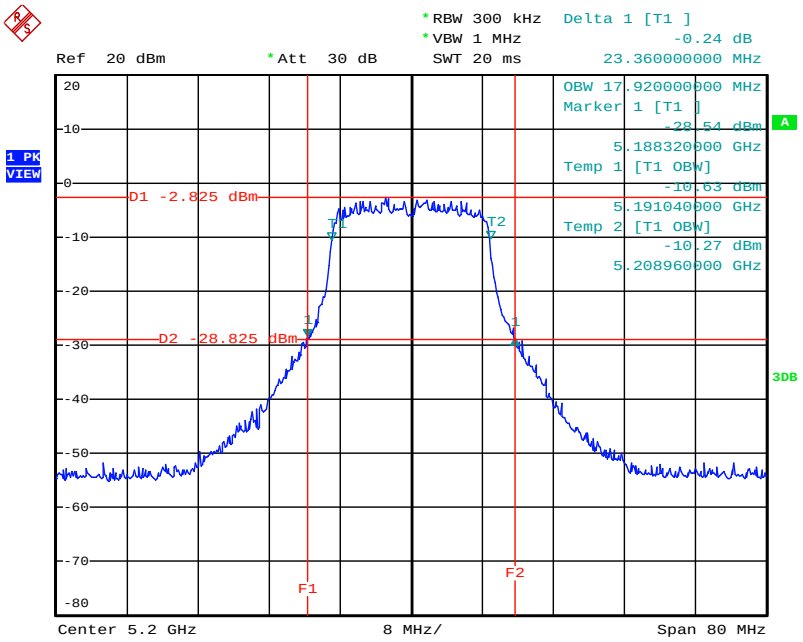
26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS8 20MHz / 5180 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 12:52:55

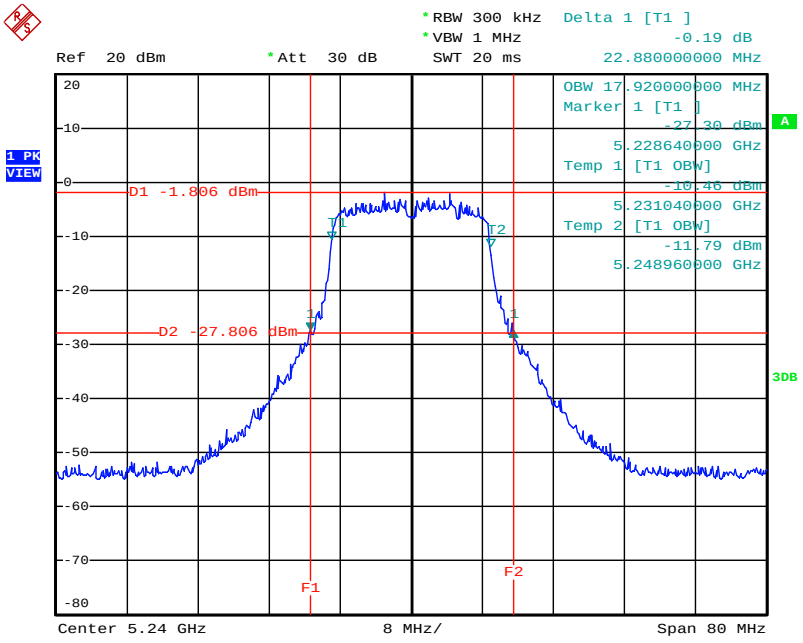
<For Ant. 6>:

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS8 20MHz / 5200 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 12:52:28

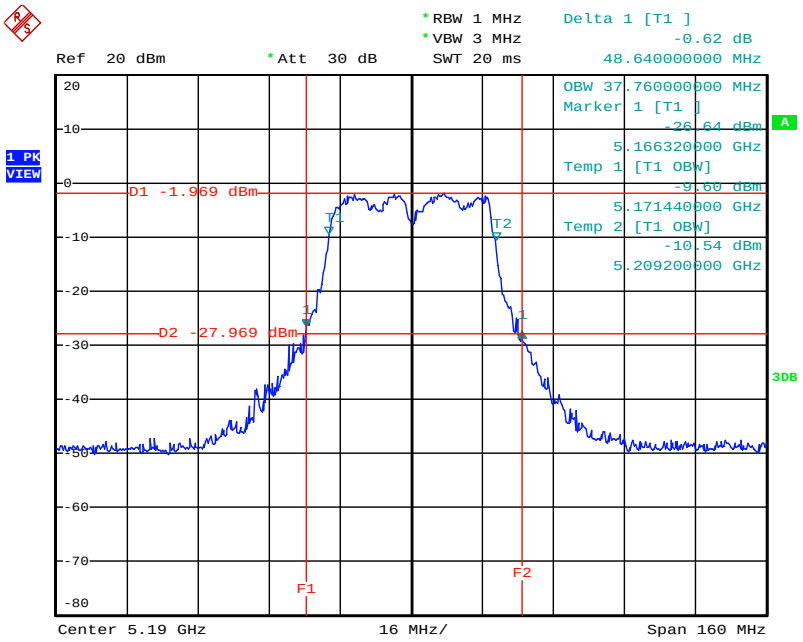
26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS8 20MHz / 5240 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 12:51:54

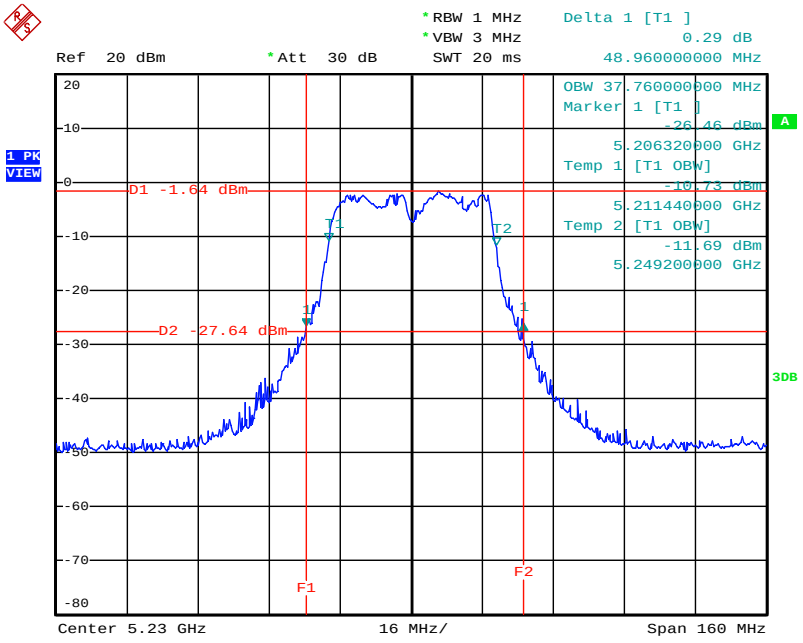
<For Ant. 6>:

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / 5190 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 13:05:59

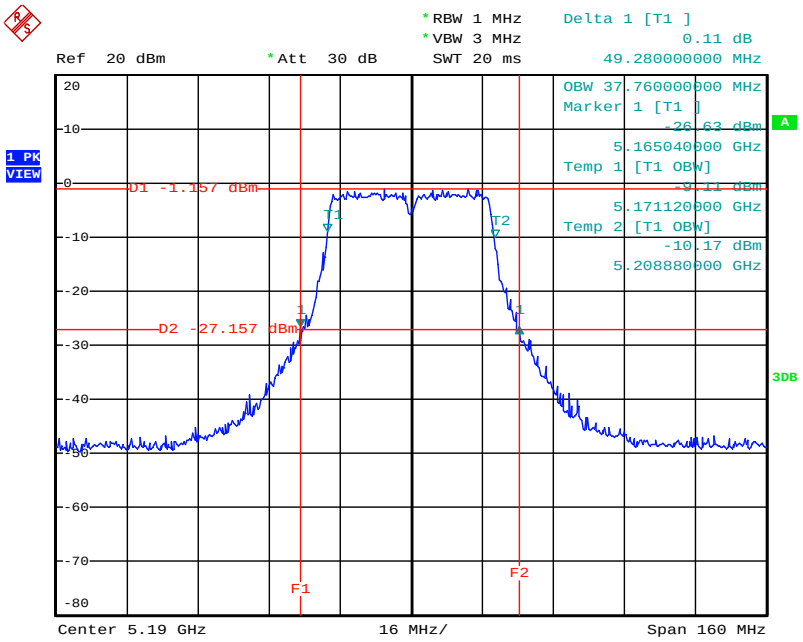
26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / 5230 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 13:05:31

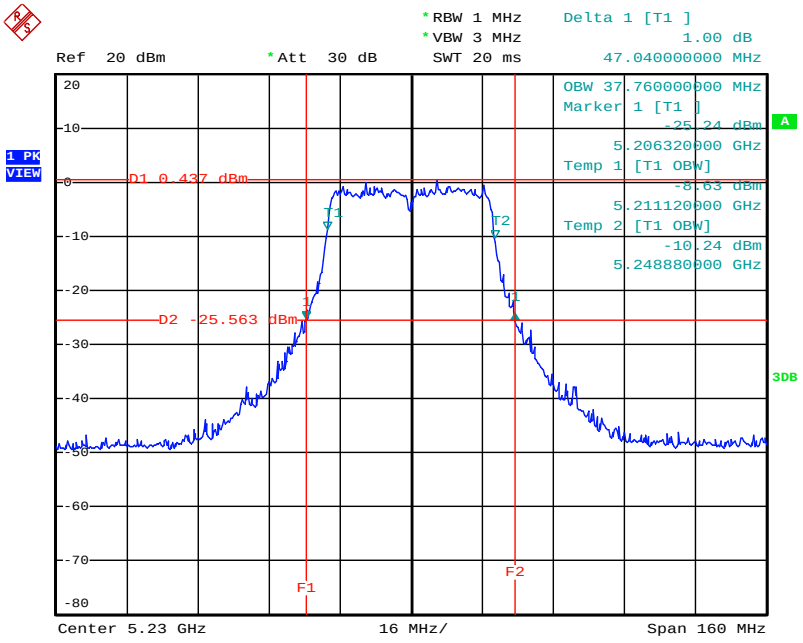
<For Ant. 6>:

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS8 40MHz / 5190 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 12:57:47

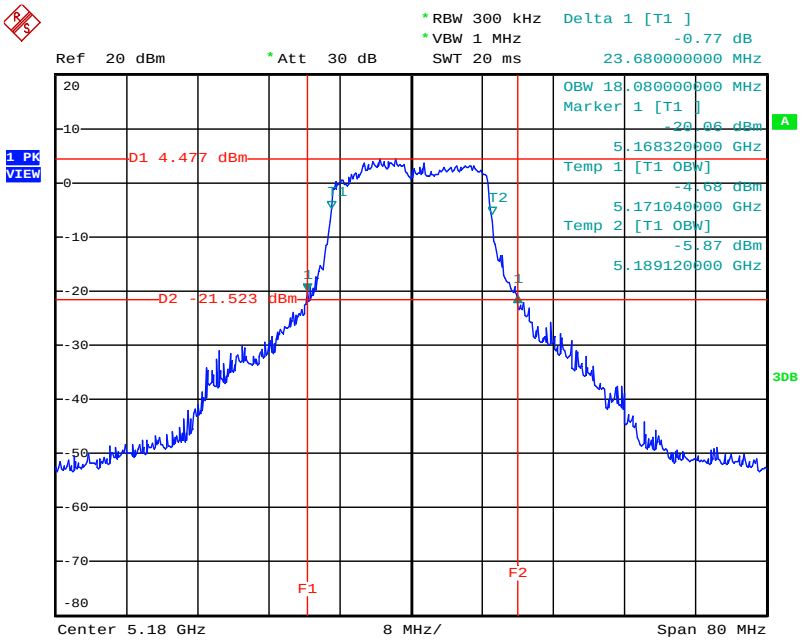
26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS8 40MHz / 5230 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 12:58:18

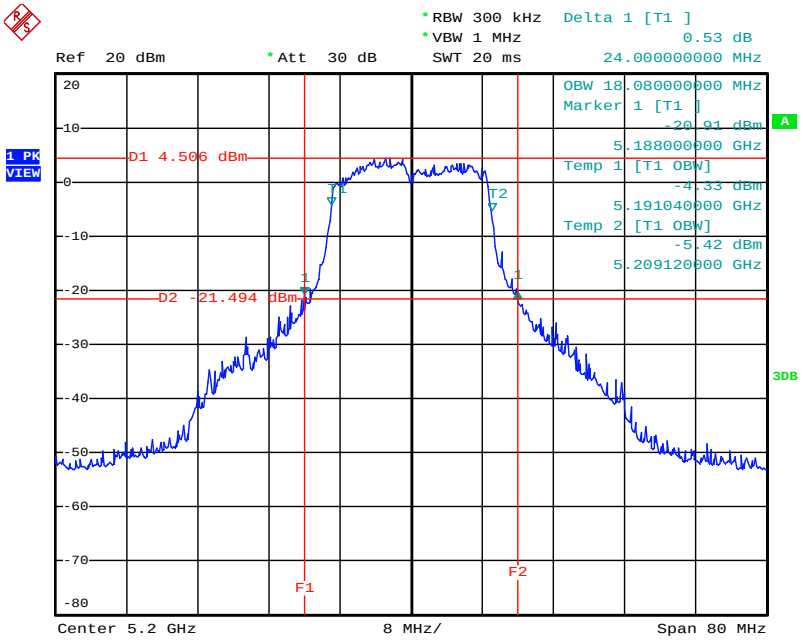
<For Ant. 10>:

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 5180 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 13:47:26

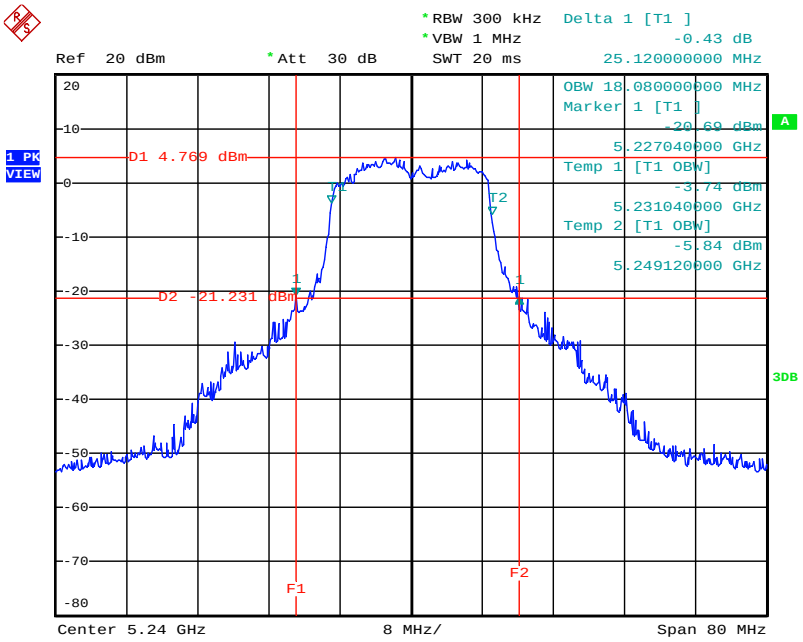
26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 5200 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 13:47:00

<For Ant. 10>:

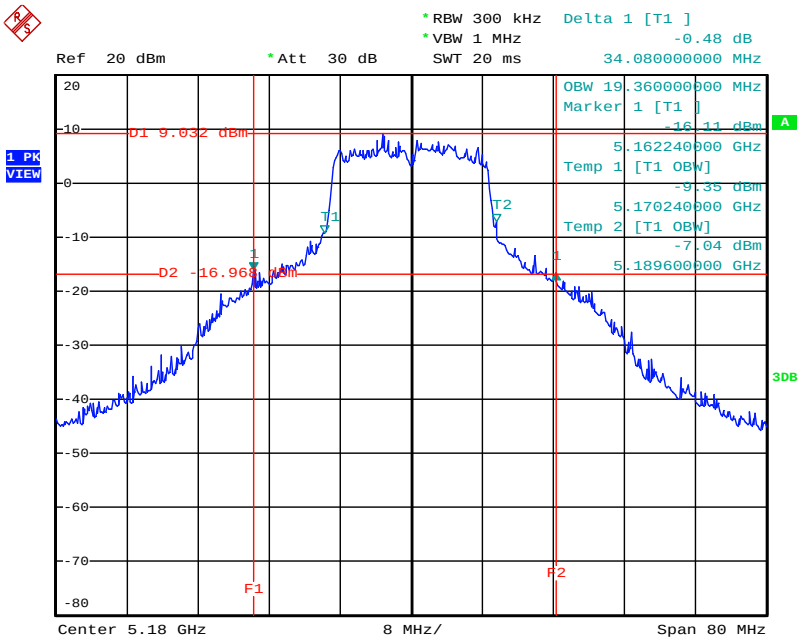
26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / 5240 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 13:46:34

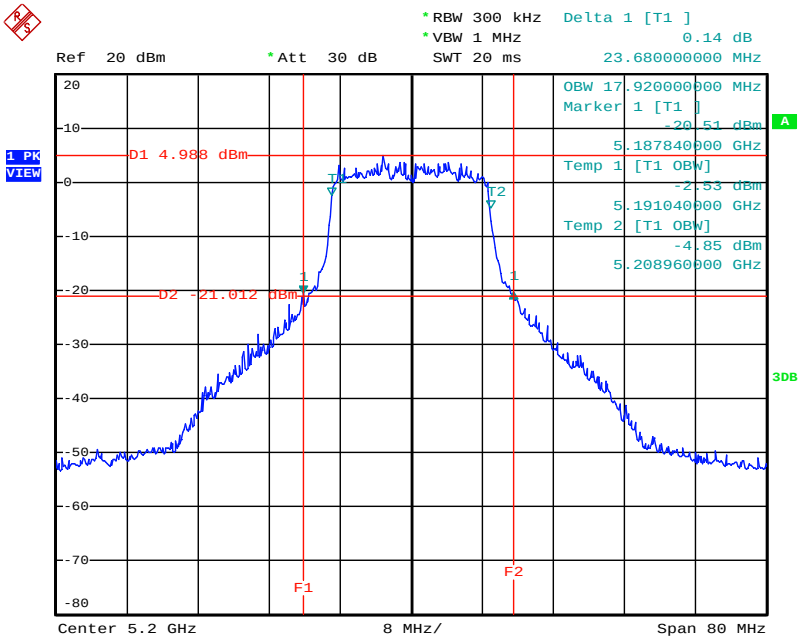
<For Ant. 10>:

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS8 20MHz / 5180 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 13:36:42

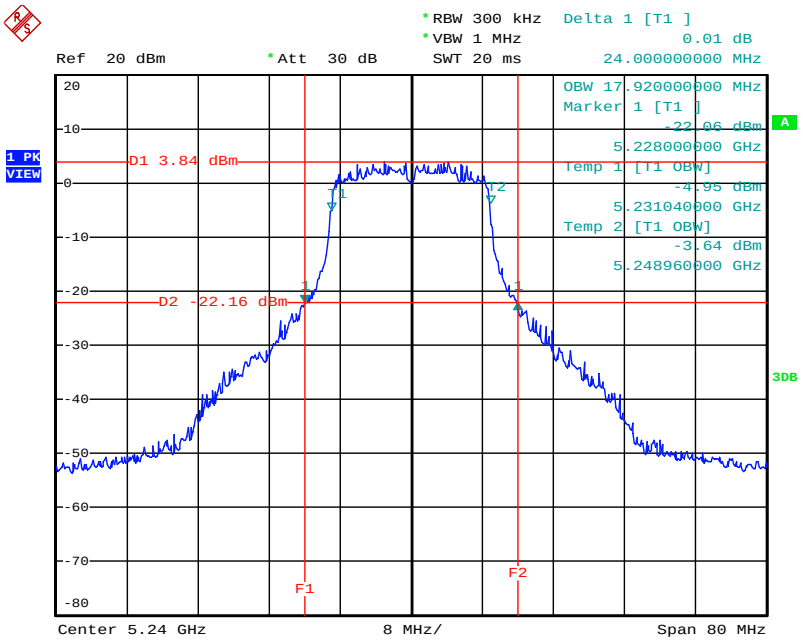
26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS8 20MHz / 5200 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 13:37:12

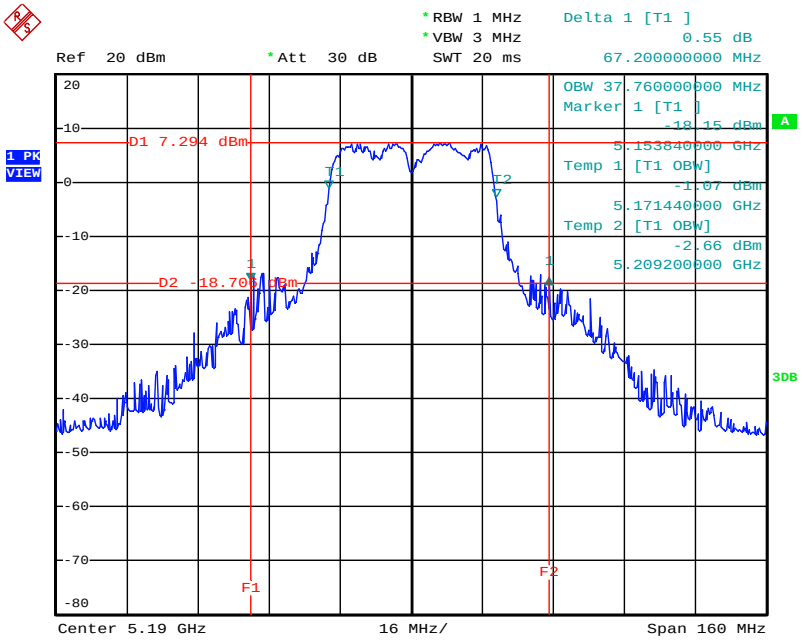
<For Ant. 10>:

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS8 20MHz / 5240 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 13:37:39

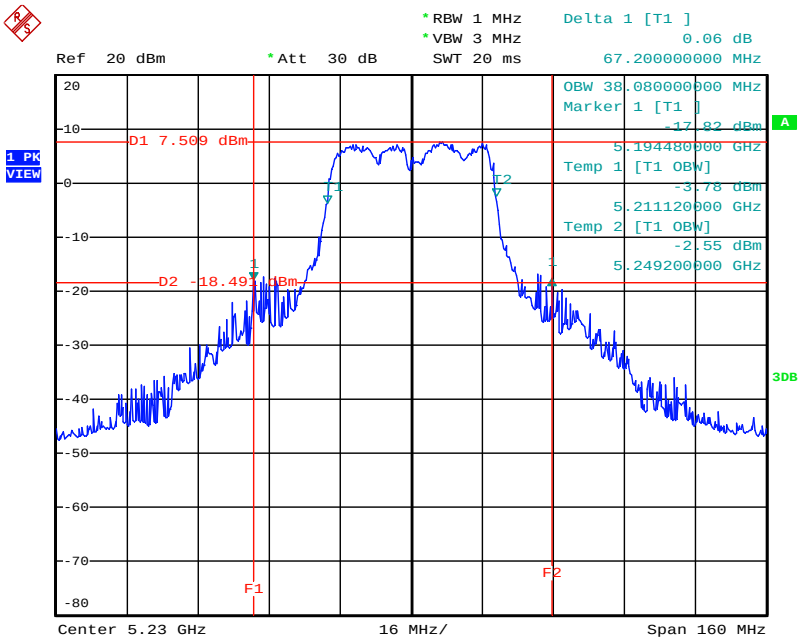
26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / 5190 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 13:20:31

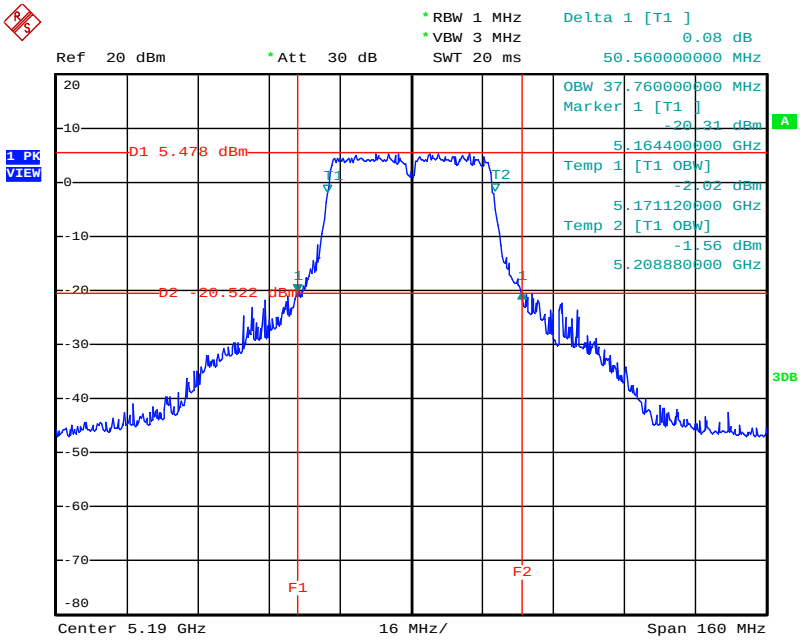
<For Ant. 10>:

26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / 5230 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 13:21:32

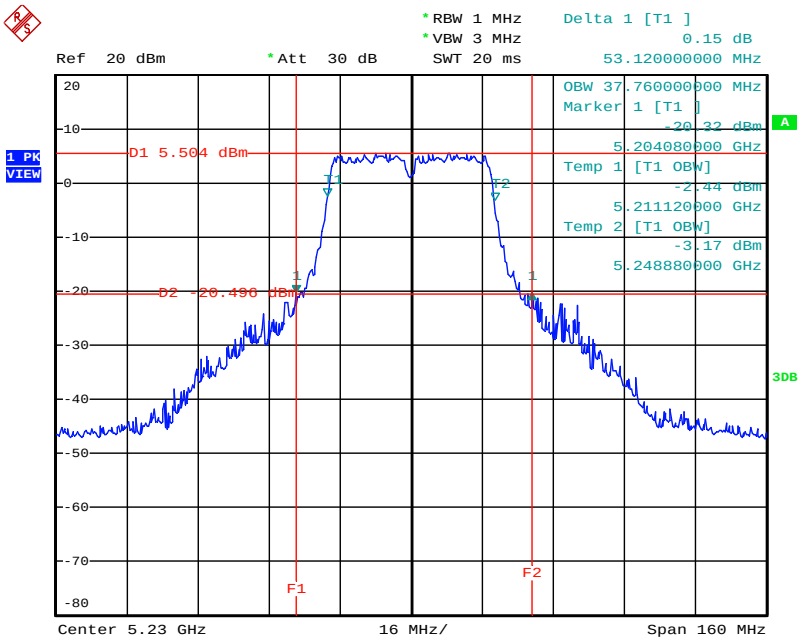
26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS8 40MHz / 5190 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 13:35:49

<For Ant. 10>:

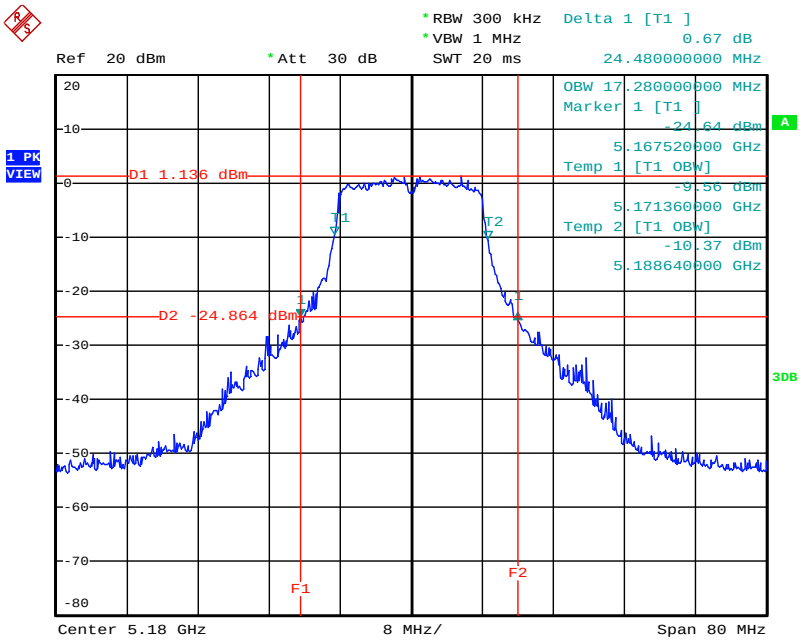
26 dB Bandwidth Plot on Configuration IEEE 802.11n MCS8 40MHz / 5230 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 13:35:15

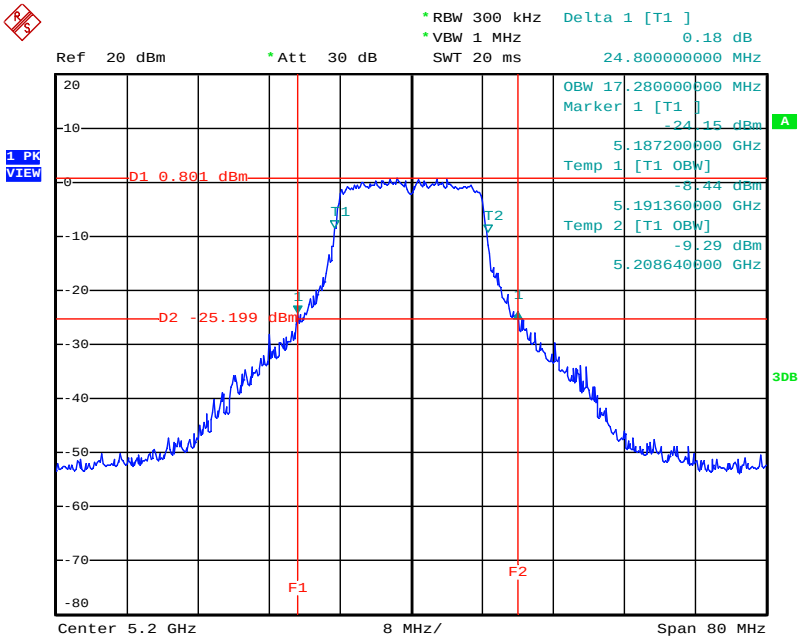
<For Ant. 5>:

26 dB Bandwidth Plot on Configuration IEEE 802.11a/ 5180 MHz / Chain. 1 (1X)



Date: 20.SEP.2012 04:32:58

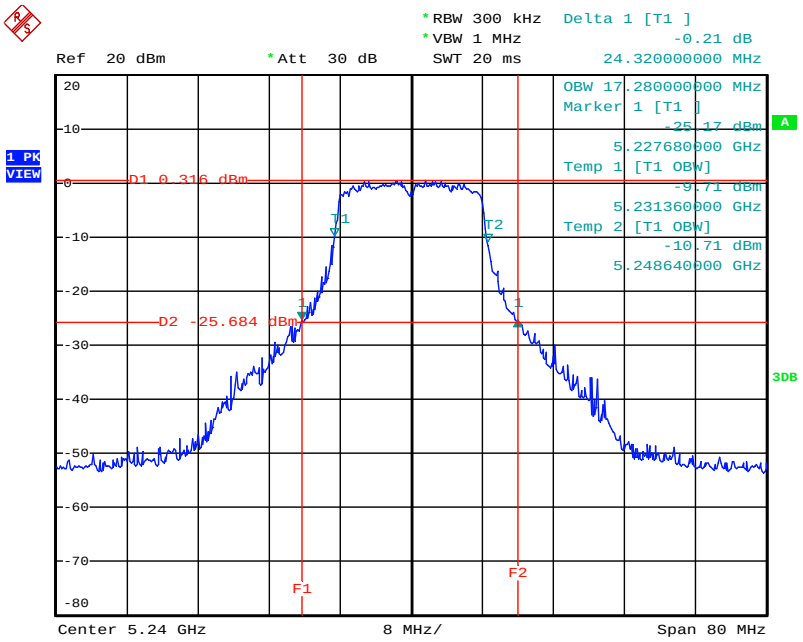
26 dB Bandwidth Plot on Configuration IEEE 802.11a/ 5200 MHz / Chain. 1 (1X)



Date: 20.SEP.2012 04:32:31

<For Ant. 5>:

26 dB Bandwidth Plot on Configuration IEEE 802.11a / 5240 MHz / Chain. 1 (1X)



Date: 20.SEP.2012 04:32:04

4.3. Maximum Conducted Output Power Measurement

4.3.1. Limit

For the band 5.15~5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW (17dBm) or 4 dBm + 10log B, where B is the 26 dB emissions bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

4.3.2. Measuring Instruments and Setting

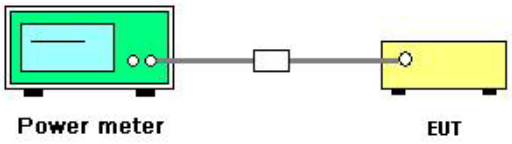
The following table is the setting of the peak power meter.

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

4.3.3. Test Procedures

1. The transmitter output (antenna port) was connected to the power meter.
2. Test was performed in accordance with KDB 789033 Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E,section (C) Maximum conducted output power =>(4) Method PM (Measurement using an RF average power meter) Multiple antenna systems was performed in accordance with KDB 662911 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
3. When measuring maximum conducted output power with multiple antenna systems,add every result of the values by mathematic formula.

4.3.4. Test Setup Layout



4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.3.7. Test Result of Maximum Conducted Output Power

Temperature	26℃	Humidity	60%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n
Test Date	Sep. 18, 2012		

Configuration IEEE 802.11n MCS0 20MHz / Ant. 4: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain. 1	Chain. 3			
36	5180 MHz	8.58	8.85	11.73	11.91	**Complies**
40	5200 MHz	7.82	8.71	11.30	11.91	**Complies**
48	5240 MHz	8.04	9.20	11.67	11.91	**Complies**

Note: $\text{Directional gain} = G_{ANT} + 10\log(N)\ \text{dBi}$ =11.09dBi > 6dBi, so the conducted power limit =(17 or 4+10log B)-(11.09dBi-6)=11.91dBm.

Configuration IEEE 802.11n MCS8 20MHz / Ant. 4: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain. 1	Chain. 3			
36	5180 MHz	11.28	11.45	14.38	14.92	**Complies**
40	5200 MHz	11.12	11.81	14.49	14.92	**Complies**
48	5240 MHz	11.47	12.13	14.82	14.92	**Complies**

Configuration IEEE 802.11n MCS0 40MHz / Ant. 4: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain. 1	Chain. 3			
38	5190 MHz	8.17	8.99	11.61	11.91	**Complies**
46	5230 MHz	8.33	9.04	11.71	11.91	**Complies**

Note: $\text{Directional gain} = G_{ANT} + 10\log(N)\ \text{dBi}$ =11.09dBi > 6dBi, so the conducted power limit =(17 or 4+10log B)-(11.09dBi-6)=11.91dBm.

Configuration IEEE 802.11n MCS8 40MHz / Ant. 4: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain. 1	Chain. 3			
38	5190 MHz	11.20	11.46	14.34	14.92	**Complies**
46	5230 MHz	11.26	11.67	14.48	14.92	**Complies**

Configuration IEEE 802.11n MCS0 20MHz / Ant. 5: Chain. 1 (1TX)

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
36	5180 MHz	13.80	13.92	**Complies**
40	5200 MHz	13.71	13.92	**Complies**
48	5240 MHz	13.77	13.92	**Complies**

Configuration IEEE 802.11n MCS0 40MHz / Ant. 5: Chain. 1 (1TX)

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
38	5190 MHz	13.42	13.92	**Complies**
46	5230 MHz	13.51	13.92	**Complies**

Configuration IEEE 802.11n MCS0 20MHz / Ant. 6: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain. 1	Chain. 3			
36	5180 MHz	4.22	3.82	7.03	7.41	**Complies**
40	5200 MHz	4.15	4.01	7.09	7.41	**Complies**
48	5240 MHz	3.72	4.25	7.00	7.41	**Complies**

Note: $\text{Directional gain} = G_{ANT} + 10\log(N)\ \text{dBi}$ =15.59dBi > 6dBi, so the conducted power limit =(17 or 4+10log B)-(15.59dBi-6)=7.41dBm.

Configuration IEEE 802.11n MCS8 20MHz / Ant. 6: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain. 1	Chain. 3			
36	5180 MHz	7.24	7.31	10.29	10.42	**Complies**
40	5200 MHz	7.25	7.16	10.22	10.42	**Complies**
48	5240 MHz	6.95	7.11	10.04	10.42	**Complies**

Configuration IEEE 802.11n MCS0 40MHz / Ant. 6: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain. 1	Chain. 3			
38	5190 MHz	4.09	3.91	7.01	7.41	**Complies**
46	5230 MHz	4.00	4.33	7.18	7.41	**Complies**

Note: $\text{Directional gain} = G_{ANT} + 10\log(N)\ \text{dBi}$ =15.59dBi > 6dBi, so the conducted power limit =(17 or 4+10log B)-(15.59dBi-6)=7.41dBm.

Configuration IEEE 802.11n MCS8 40MHz / Ant. 6: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain. 1	Chain. 3			
38	5190 MHz	5.83	6.89	9.40	10.42	**Complies**
46	5230 MHz	6.44	7.64	10.09	10.42	**Complies**

Configuration IEEE 802.11n MCS0 20MHz / Ant. 10: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain. 1	Chain. 3			
36	5180 MHz	12.94	13.44	16.21	16.41	**Complies**
40	5200 MHz	13.02	13.16	16.10	16.41	**Complies**
48	5240 MHz	12.91	13.46	16.20	16.41	**Complies**

Note: $\text{Directional gain} = G_{ANT} + 10\log(N)\ \text{dBi}$ =6.59dBi > 6dBi, so the conducted power limit =(17 or 4+10log B)-(6.59dBi-6)=16.41dBm.

Configuration IEEE 802.11n MCS8 20MHz / Ant. 10: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain. 1	Chain. 3			
36	5180 MHz	13.48	13.42	16.46	17.00	**Complies**
40	5200 MHz	13.39	13.73	16.57	17.00	**Complies**
48	5240 MHz	13.31	13.81	16.58	17.00	**Complies**

Configuration IEEE 802.11n MCS0 40MHz / Ant. 10: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain. 1	Chain. 3			
38	5190 MHz	13.04	13.41	16.24	16.41	**Complies**
46	5230 MHz	13.17	13.52	16.36	16.41	**Complies**

Note: $\text{Directional gain} = G_{ANT} + 10\log(N)\ \text{dBi}$ =6.59dBi > 6dBi, so the conducted power limit =(17 or 4+10log B)-(6.59dBi-6)=16.41dBm.

Configuration IEEE 802.11n MCS8 40MHz / Ant. 10: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain. 1	Chain. 3			
38	5190 MHz	13.02	13.27	16.16	17.00	**Complies**
46	5230 MHz	12.99	13.41	16.22	17.00	**Complies**

Temperature	26℃	Humidity	60%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a
Test Date	Sep. 18, 2012		

Configuration IEEE 802.11a / Ant. 4: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain. 1	Chain. 3			
36	5180 MHz	8.30	8.39	11.36	11.91	**Complies**
40	5200 MHz	8.52	8.69	11.62	11.91	**Complies**
48	5240 MHz	8.55	9.17	11.88	11.91	**Complies**

Note: $\text{Directional gain} = G_{ANT} + 10\log(N)\ \text{dBi}$ =11.09dBi > 6dBi, so the conducted power limit =(17 or 4+10log B)-(11.09dBi-6)=11.91dBm.

Configuration IEEE 802.11a / Ant. 5: Chain. 1 (1TX)

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
36	5180 MHz	13.77	13.92	**Complies**
40	5200 MHz	13.75	13.92	**Complies**
48	5240 MHz	13.84	13.92	**Complies**

Configuration IEEE 802.11a / Ant. 6: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain. 1	Chain. 3			
36	5180 MHz	4.09	4.49	7.30	7.41	**Complies**
40	5200 MHz	4.21	4.53	7.38	7.41	**Complies**
48	5240 MHz	3.82	4.44	7.15	7.41	**Complies**

Note: $\text{Directional gain} = G_{ANT} + 10\log(N)\ \text{dBi}$ =15.59dBi > 6dBi, so the conducted power limit =(17 or 4+10log B)-(15.59dBi-6)=7.41dBm.

Configuration IEEE 802.11a / Ant. 10: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain. 1	Chain. 3			
36	5180 MHz	12.92	13.09	16.02	16.41	**Complies**
40	5200 MHz	13.10	13.50	16.31	16.41	**Complies**
48	5240 MHz	13.15	13.54	16.36	16.41	**Complies**

Note: $\text{Directional gain} = G_{ANT} + 10\log(N)\ \text{dBi}$ =6.59dBi > 6dBi, so the conducted power limit =(17 or 4+10log B)-(6.59dBi-6)=16.41dBm.

4.4. Power Spectral Density Measurement

4.4.1. Limit

The power spectral density is defined as the highest level of power in dBm per MHz generated by the transmitter within the power envelope. The following table is power spectral density limits and decrease power density limit rule refer to section 4.3.1.

Frequency Range	Power Spectral Density limit (dBm/MHz)
5.15~5.25 GHz	4

4.4.2. Measuring Instruments and Setting

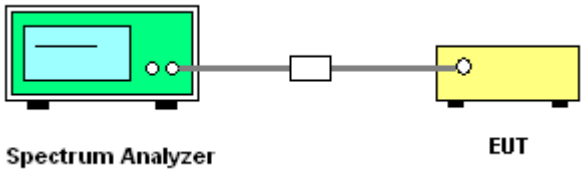
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RB	1000 kHz
VB	3000 kHz
Detector	RMS
Trace	AVERAGE
Sweep Time	Auto
Trace Average	100 times

4.4.3. Test Procedures

1. The transmitter output (antenna port) was connected RF switch to the spectrum analyzer.
2. Test was performed in accordance with KDB 789033 Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E,section (C) Maximum conducted output power => (d) Method SA-2 (trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).
3. Multiple antenna systems was performed in accordance with KDB 662911 in-Band Power Spectral Density (PSD) Measurements (1) Measure and sum the spectra across the outputs.
4. When measuring first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3 and so on up to the Nth output to obtain the value for the first frequency bin of the summed spectrum. The summed spectrum value for each of the other frequency bins is computed in the same way.

4.4.4. Test Setup Layout



4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.4.7. Test Result of Power Spectral Density

Temperature	26℃	Humidity	60%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n
Test Date	Sep. 18, 2012		

Configuration IEEE 802.11n MCS0 20MHz / Ant. 4: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	-1.92	-1.09	**Complies**
40	5200 MHz	-2.12	-1.09	**Complies**
48	5240 MHz	-1.96	-1.09	**Complies**

Note: $\text{Directional gain} = G_{ANT} + 10\log(N)\ \text{dBi}$ =11.09dBi > 6dBi, so the power density limit =4-(11.09dBi-6)=-1.09dBm.

Configuration IEEE 802.11n MCS8 20MHz / Ant. 4: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	0.52	1.92	**Complies**
40	5200 MHz	0.73	1.92	**Complies**
48	5240 MHz	0.92	1.92	**Complies**

Configuration IEEE 802.11n MCS0 40MHz / Ant. 4: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	-5.76	-1.09	**Complies**
46	5230 MHz	-5.65	-1.09	**Complies**

Note: $\text{Directional gain} = G_{ANT} + 10\log(N)\ \text{dBi}$ =11.09dBi > 6dBi, so the power density limit =4-(11.09dBi-6)=-1.09dBm.

Configuration IEEE 802.11n MCS8 40MHz / Ant. 4: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	-2.93	1.92	**Complies**
46	5230 MHz	-2.65	1.92	**Complies**

Configuration IEEE 802.11n MCS0 20MHz / Ant. 5: Chain. 1 (1TX)

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	-0.88	0.92	**Complies**
40	5200 MHz	-0.69	0.92	**Complies**
48	5240 MHz	-0.38	0.92	**Complies**

Configuration IEEE 802.11n MCS0 40MHz / Ant. 5: Chain. 1 (1TX)

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	-4.39	0.92	**Complies**
46	5230 MHz	-3.94	0.92	**Complies**

Configuration IEEE 802.11n MCS0 20MHz / Ant. 6: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	-6.93	-5.59	**Complies**
40	5200 MHz	-6.86	-5.59	**Complies**
48	5240 MHz	-7.08	-5.59	**Complies**

Note: $\text{Directional gain} = G_{ANT} + 10\log(N)\ \text{dBi}$ =15.59dBi > 6dBi, so the power density limit =4-(15.59dBi-6)=-5.59dBm.

Configuration IEEE 802.11n MCS8 20MHz / Ant. 6: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	-3.23	-2.58	**Complies**
40	5200 MHz	-3.51	-2.58	**Complies**
48	5240 MHz	-3.67	-2.58	**Complies**

Configuration IEEE 802.11n MCS0 40MHz / Ant. 6: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	-10.35	-5.59	**Complies**
46	5230 MHz	-10.06	-5.59	**Complies**

Note: $\text{Directional gain} = G_{ANT} + 10\log(N)\ \text{dBi}$ =15.59dBi > 6dBi, so the power density limit =4-(15.59dBi-6)=-5.59dBm.

Configuration IEEE 802.11n MCS8 40MHz / Ant. 6: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	-7.82	-2.58	**Complies**
46	5230 MHz	-6.97	-2.58	**Complies**

Configuration IEEE 802.11n MCS0 20MHz / Ant. 10: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	2.08	3.41	**Complies**
40	5200 MHz	2.16	3.41	**Complies**
48	5240 MHz	2.36	3.41	**Complies**

Note: $\text{Directional gain} = G_{ANT} + 10\log(N)\ \text{dBi}$ =11.09dBi > 6dBi, so the power density limit =4-(6.59dBi-6)=3.41dBm.

Configuration IEEE 802.11n MCS8 20MHz / Ant. 10: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	2.86	4.00	**Complies**
40	5200 MHz	2.59	4.00	**Complies**
48	5240 MHz	2.68	4.00	**Complies**

Configuration IEEE 802.11n MCS0 40MHz / Ant. 10: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	-1.23	3.41	**Complies**
46	5230 MHz	-1.00	3.41	**Complies**

Note: $\text{Directional gain} = G_{ANT} + 10\log(N)\ \text{dBi}$ =11.09dBi > 6dBi, so the power density limit =4-(6.59dBi-6)=3.41dBm.

Configuration IEEE 802.11n MCS8 40MHz / Ant. 10: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	-1.13	4.00	**Complies**
46	5230 MHz	-0.89	4.00	**Complies**

Temperature	26℃	Humidity	60%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a
Test Date	Sep. 18, 2012		

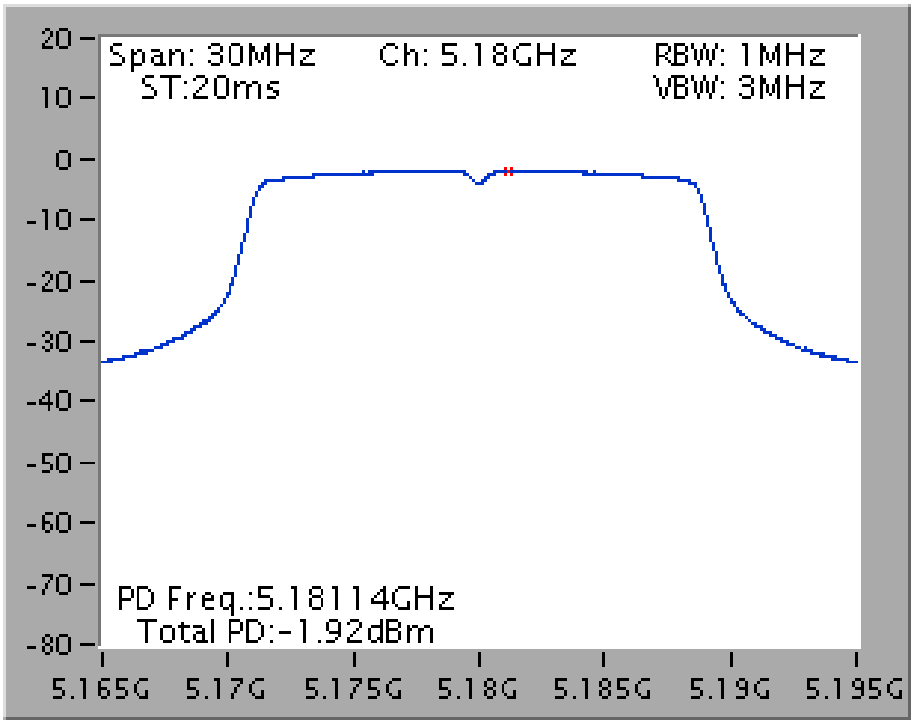
Configuration IEEE 802.11a / Ant. 5: Chain. 1 (1TX)

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	-0.36	0.92	**Complies**
40	5200 MHz	0.23	0.92	**Complies**
48	5240 MHz	0.25	0.92	**Complies**

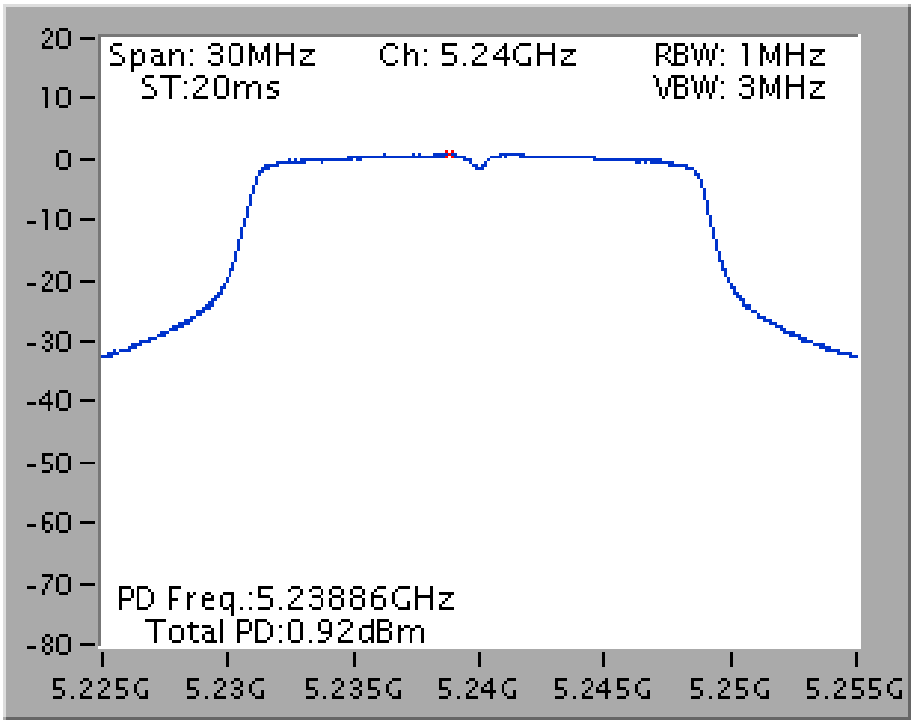
Note: All the test values were listed in the report.

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

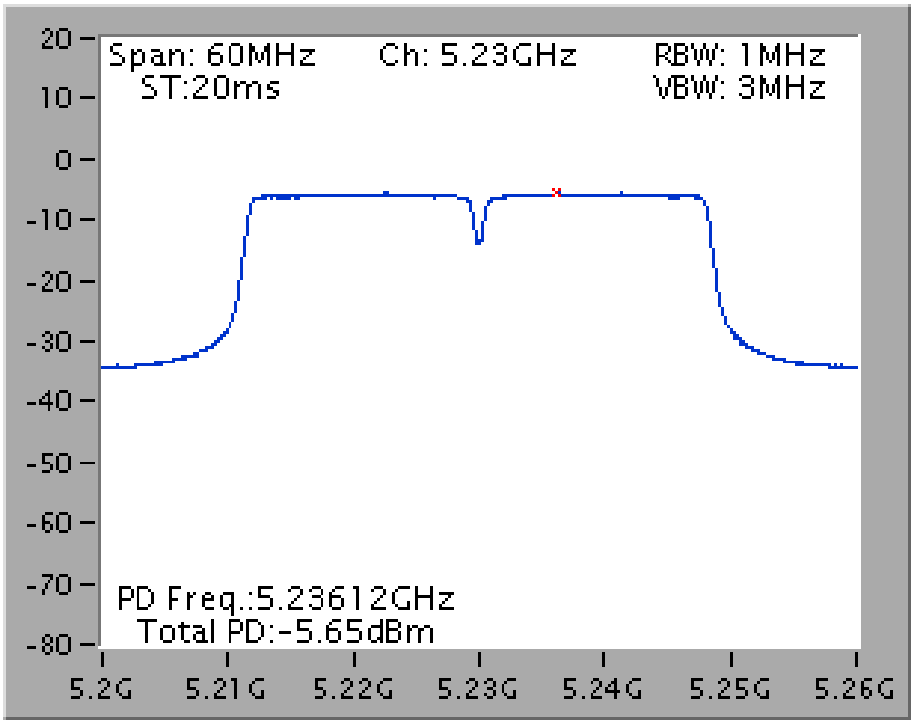
Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / 5180 MHz / Ant. 4: Chain. 1 + Chain. 3 (2TX)



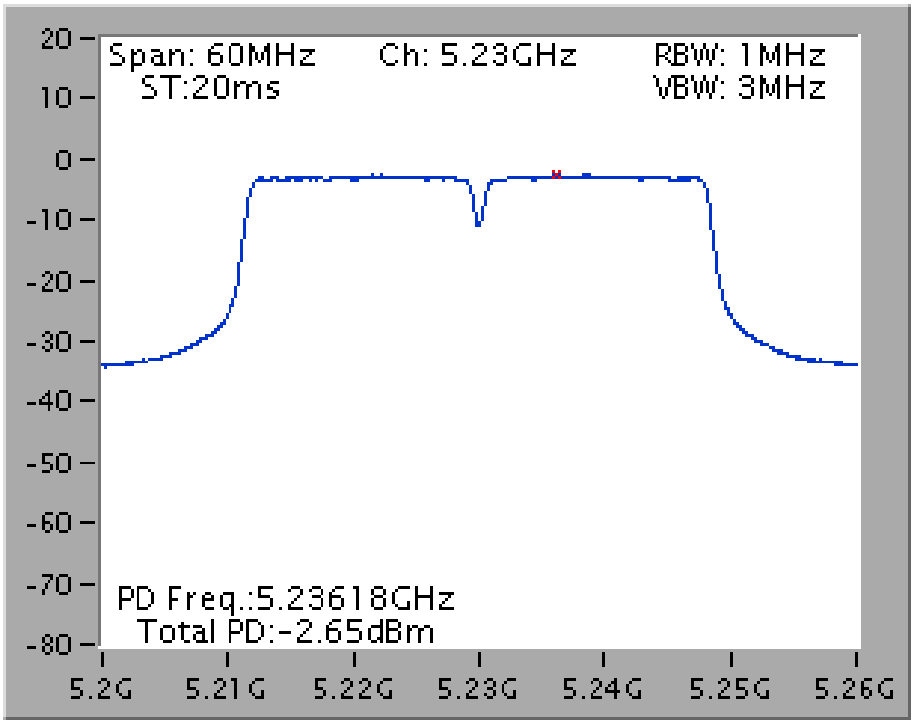
Power Density Plot on Configuration IEEE 802.11n MCS8 20MHz / 5240MHz / Ant. 4: Chain. 1 + Chain. 3 (2TX)



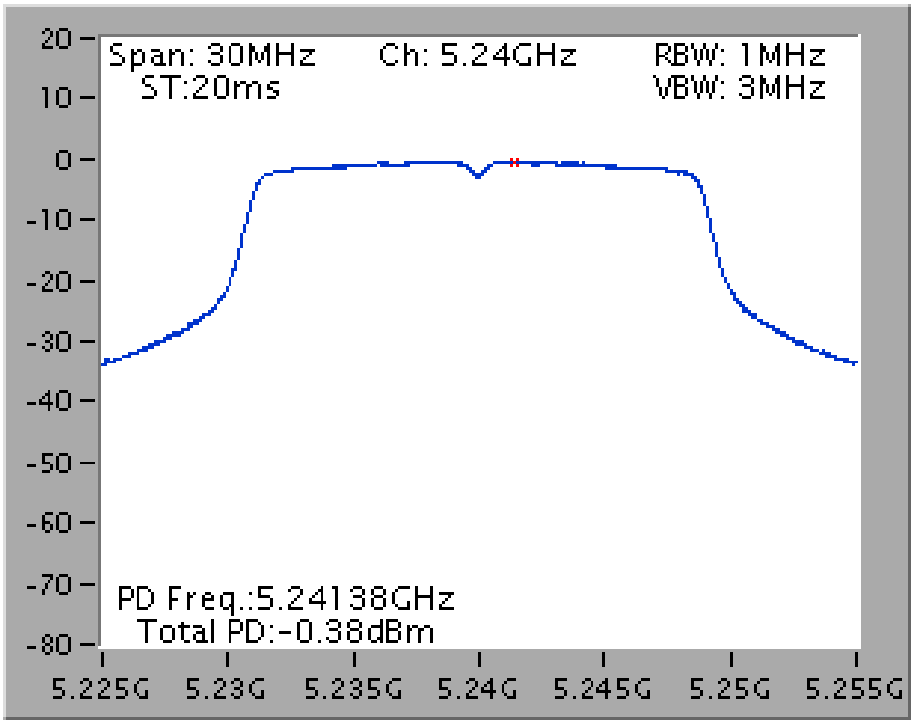
Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / 5230MHz / Ant. 4: Chain. 1 + Chain. 3 (2TX)



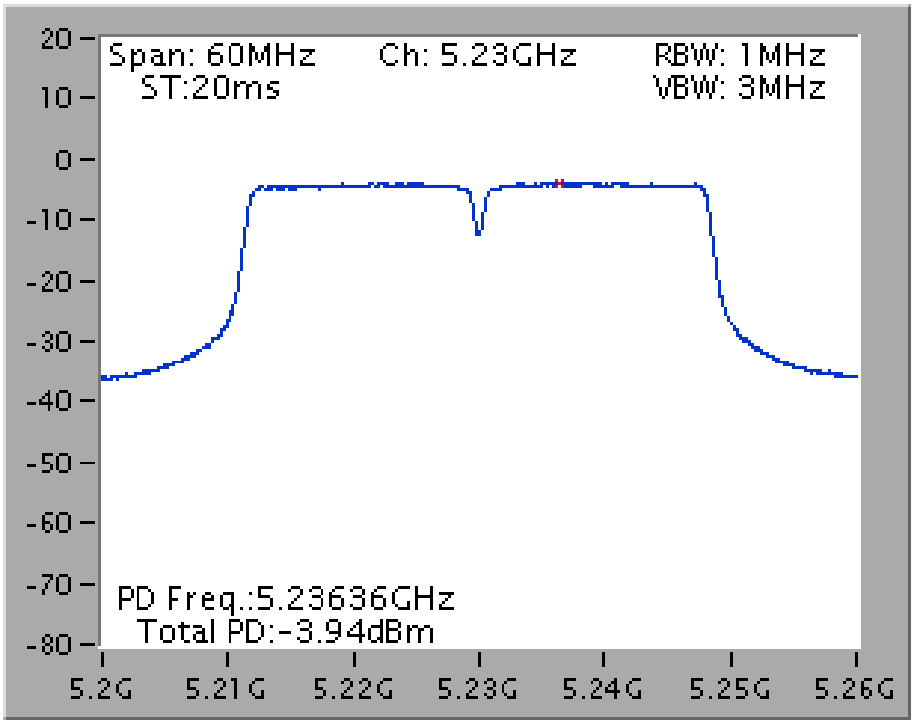
Power Density Plot on Configuration IEEE 802.11n MCS8 40MHz / 5230MHz / Ant. 4: Chain. 1 + Chain. 3 (2TX)



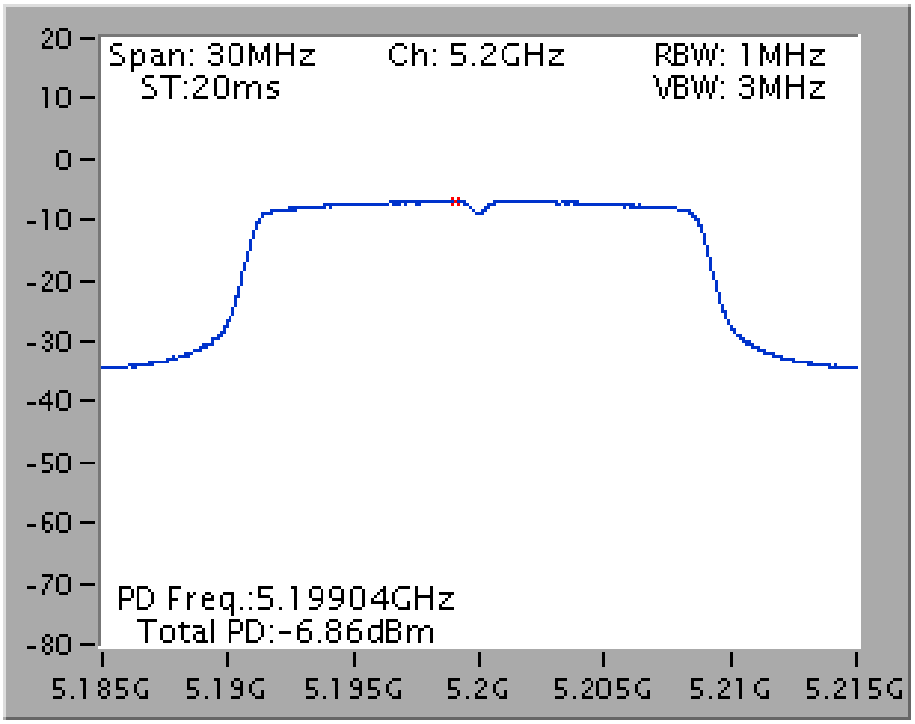
Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / 5240MHz / Ant. 5: Chain. 1 (1TX)



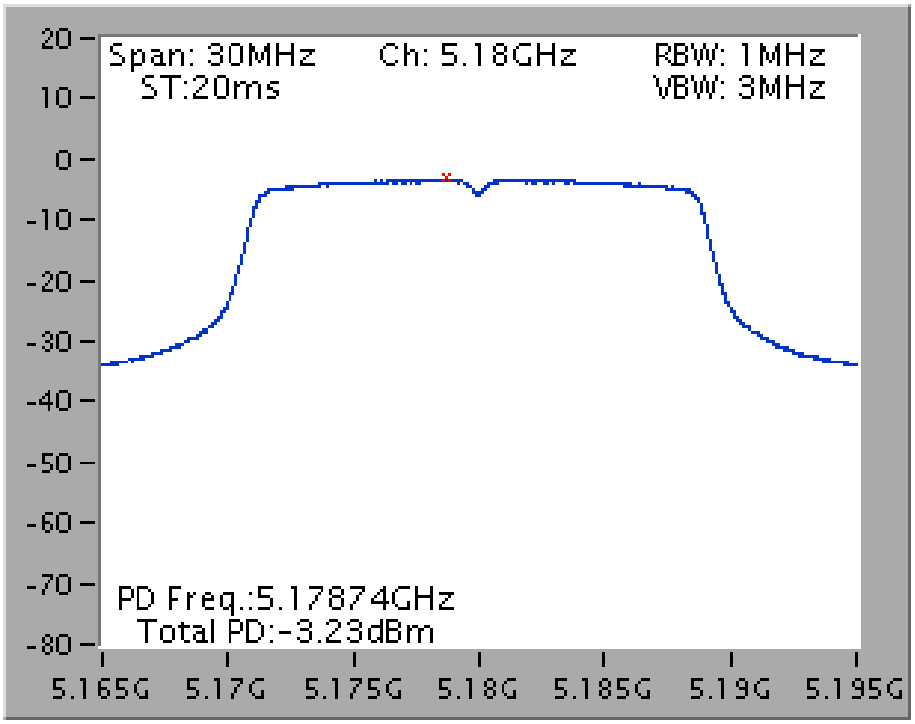
Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / 5230MHz / Ant. 5: Chain. 1 (1TX)



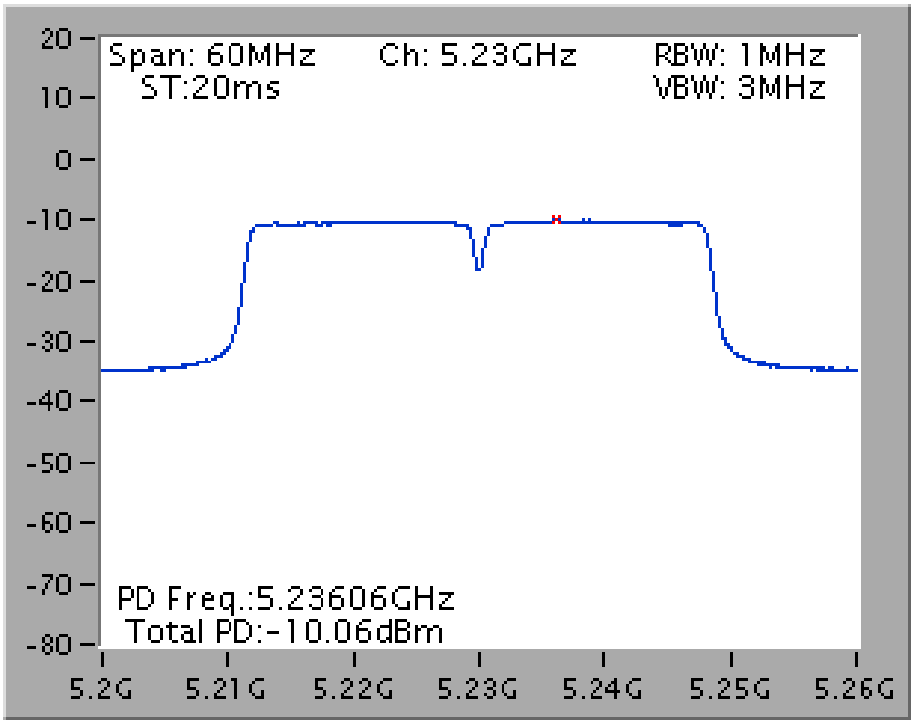
Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / 5200MHz / Ant. 6: Chain. 1 + Chain. 3 (2TX)



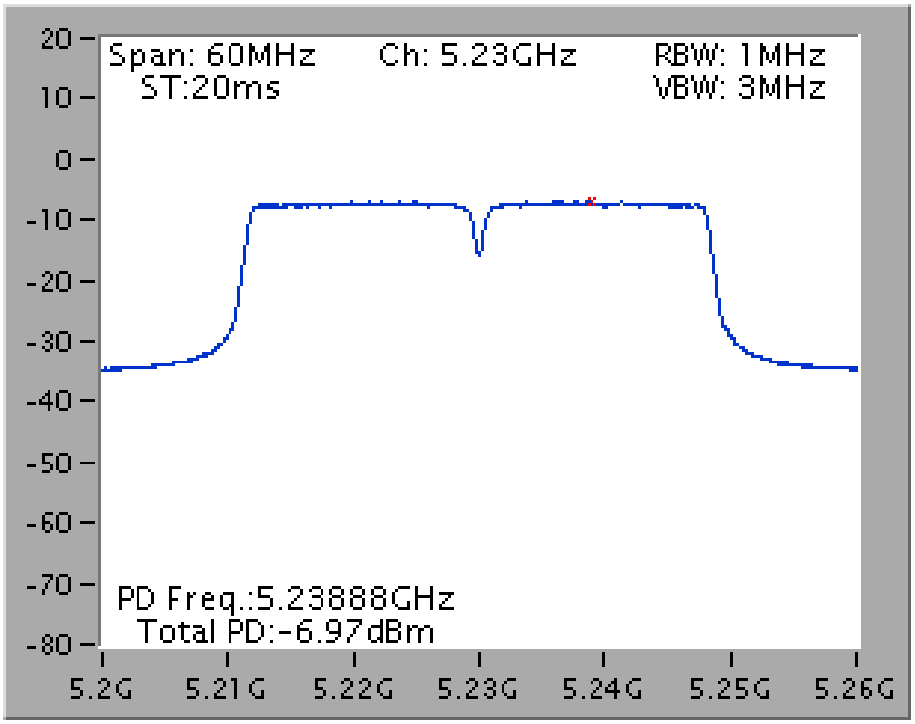
Power Density Plot on Configuration IEEE 802.11n MCS8 20MHz / 5180MHz / Ant. 6: Chain. 1 + Chain. 3 (2TX)



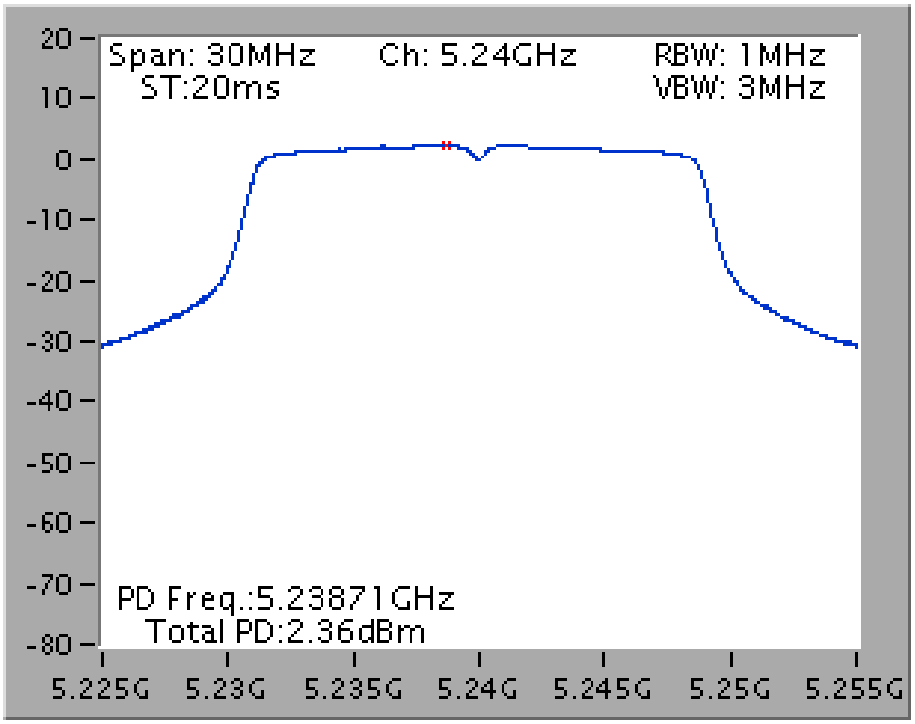
Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / 5230MHz / Ant. 6: Chain. 1 + Chain. 3 (2TX)



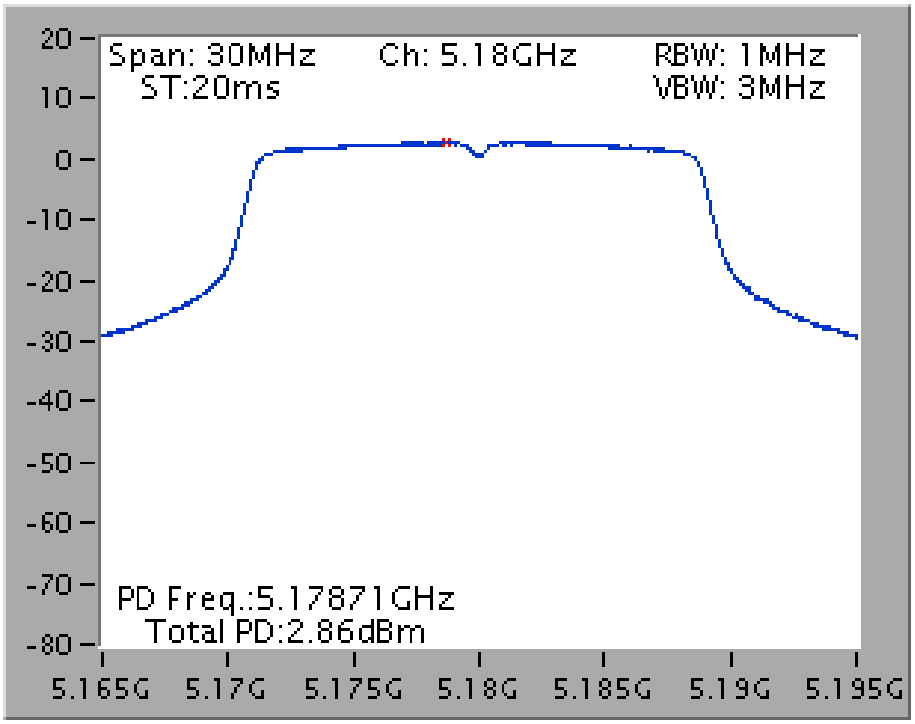
Power Density Plot on Configuration IEEE 802.11n MCS8 40MHz / 5230MHz / Ant. 6: Chain. 1 + Chain. 3 (2TX)



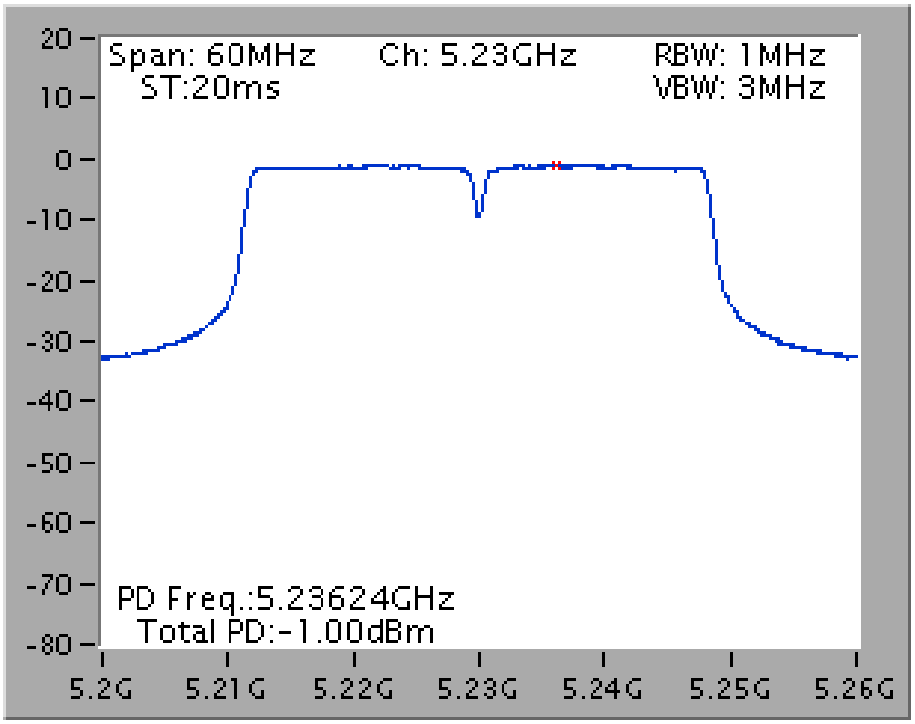
Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / 5240MHz / Ant. 10: Chain. 1 + Chain. 3 (2TX)



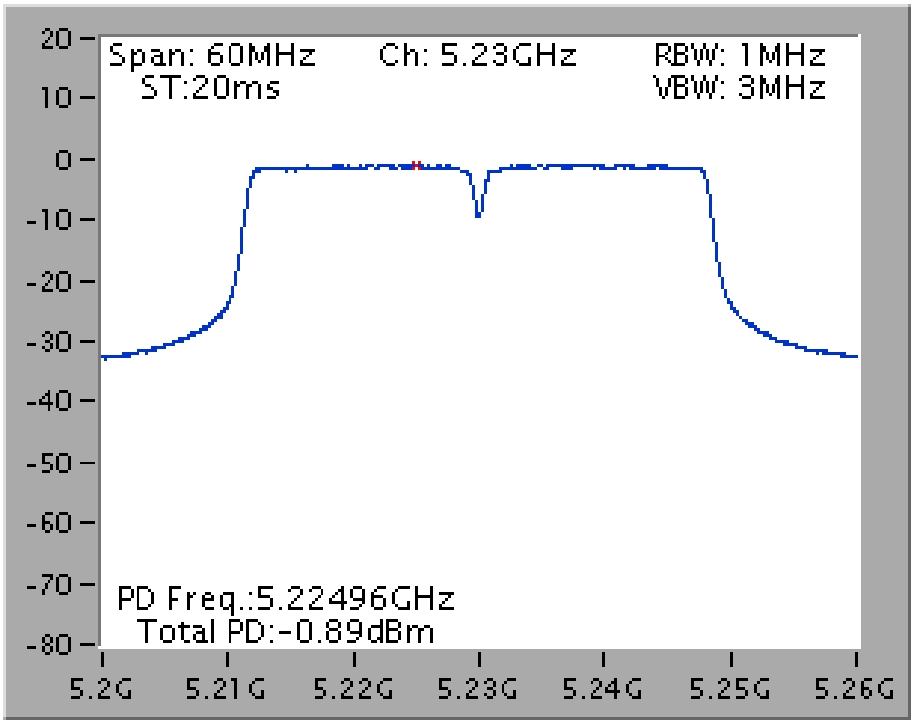
Power Density Plot on Configuration IEEE 802.11n MCS8 20MHz / 5180MHz / Ant. 10: Chain. 1 + Chain. 3 (2TX)



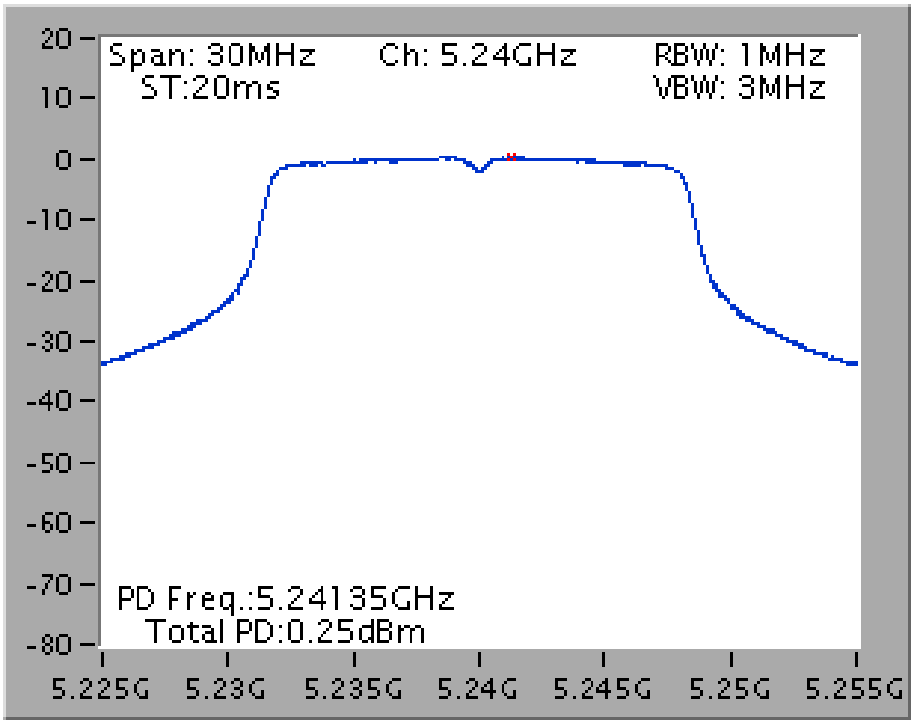
Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / 5230MHz / Ant. 10: Chain. 1 + Chain. 3 (2TX)



Power Density Plot on Configuration IEEE 802.11n MCS8 40MHz / 5230MHz / Ant. 10: Chain. 1 + Chain. 3 (2TX)



Power Density Plot on Configuration IEEE 802.11a / 5240MHz / Ant. 5: Chain. 1 (1TX)



4.5. Peak Excursion Measurement

4.5.1. Limit

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emissions bandwidth whichever is less.

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 Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RB	1MHz (Peak Trace) / 1MHz (Average Trace)
VB	3MHz (Peak Trace) / 3MHz (Average Trace)
Detector	Peak (Peak Trace) / RMS
Trace	Peak : Trace :Max hold/Average: Trace Average Sweep Count 100
Sweep Time	AUTO

4.5.3. Test Procedures

1. The test procedure is the same as section 4.6.3.
2. Trace A, Set RBW =1MHz, VBW = 3MHz, Span >26dB bandwidth, Max. hold.
3. Delta Mark trace A Maximum frequency and trace B same frequency.
4. Repeat the above procedure until measurements for all frequencies were complete.

4.5.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.6.4.

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 Peak Excursion

Temperature	26℃	Humidity	60%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n

Configuration IEEE 802.11n MCS0 20MHz / Ant. 4: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
36	5180 MHz	12.18	13	**Complies**
40	5200 MHz	12.00	13	**Complies**
48	5240 MHz	11.59	13	**Complies**

Configuration IEEE 802.11n MCS8 20MHz / Ant. 4: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
36	5180 MHz	10.72	13	**Complies**
40	5200 MHz	10.72	13	**Complies**
48	5240 MHz	10.55	13	**Complies**

Configuration IEEE 802.11n MCS0 40MHz / Ant. 4: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
38	5190 MHz	11.67	13	**Complies**
46	5230 MHz	11.62	13	**Complies**

Configuration IEEE 802.11n MCS8 40MHz / Ant. 4: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
38	5190 MHz	10.52	13	**Complies**
46	5230 MHz	10.23	13	**Complies**

Configuration IEEE 802.11n MCS0 20MHz / Ant. 5: Chain. 1 (1TX)

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
36	5180 MHz	9.55	13	**Complies**
40	5200 MHz	8.84	13	**Complies**
48	5240 MHz	8.72	13	**Complies**

Configuration IEEE 802.11n MCS0 40MHz / Ant. 5: Chain. 1 (1TX)

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
38	5190 MHz	9.37	13	**Complies**
46	5230 MHz	9.25	13	**Complies**

Configuration IEEE 802.11n MCS0 20MHz / Ant. 6: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
36	5180 MHz	11.73	13	**Complies**
40	5200 MHz	11.66	13	**Complies**
48	5240 MHz	11.54	13	**Complies**

Configuration IEEE 802.11n MCS8 20MHz / Ant. 6: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
36	5180 MHz	10.65	13	**Complies**
40	5200 MHz	11.06	13	**Complies**
48	5240 MHz	11.08	13	**Complies**

Configuration IEEE 802.11n MCS0 40MHz / Ant. 6: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
38	5190 MHz	11.78	13	**Complies**
46	5230 MHz	12.16	13	**Complies**

Configuration IEEE 802.11n MCS8 40MHz / Ant. 6: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
38	5190 MHz	10.56	13	**Complies**
46	5230 MHz	11.28	13	**Complies**

Configuration IEEE 802.11n MCS0 20MHz / Ant. 10: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
36	5180 MHz	11.87	13	**Complies**
40	5200 MHz	11.86	13	**Complies**
48	5240 MHz	11.59	13	**Complies**

Configuration IEEE 802.11n MCS8 20MHz / Ant. 10: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
36	5180 MHz	10.40	13	**Complies**
40	5200 MHz	10.55	13	**Complies**
48	5240 MHz	10.93	13	**Complies**

Configuration IEEE 802.11n MCS0 40MHz / Ant. 10: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
38	5190 MHz	12.06	13	**Complies**
46	5230 MHz	11.99	13	**Complies**

Configuration IEEE 802.11n MCS8 40MHz / Ant. 10: Chain. 1 + Chain. 3 (2TX)

Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
38	5190 MHz	10.68	13	**Complies**
46	5230 MHz	10.93	13	**Complies**

Temperature	26℃	Humidity	60%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a

Configuration IEEE 802.11a / Ant. 5: Chain. 1 (1TX)

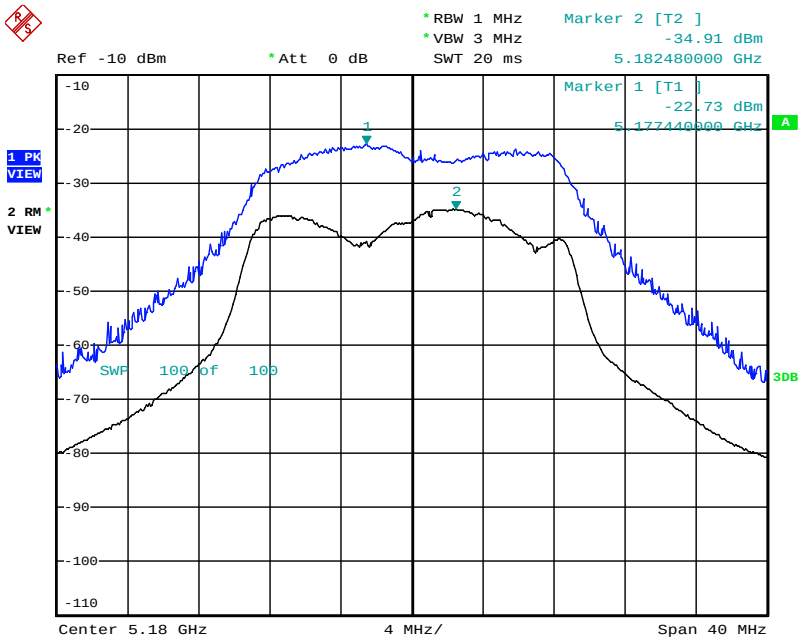
Channel	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
36	5180 MHz	9.26	13	**Complies**
40	5200 MHz	9.63	13	**Complies**
48	5240 MHz	8.82	13	**Complies**

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

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

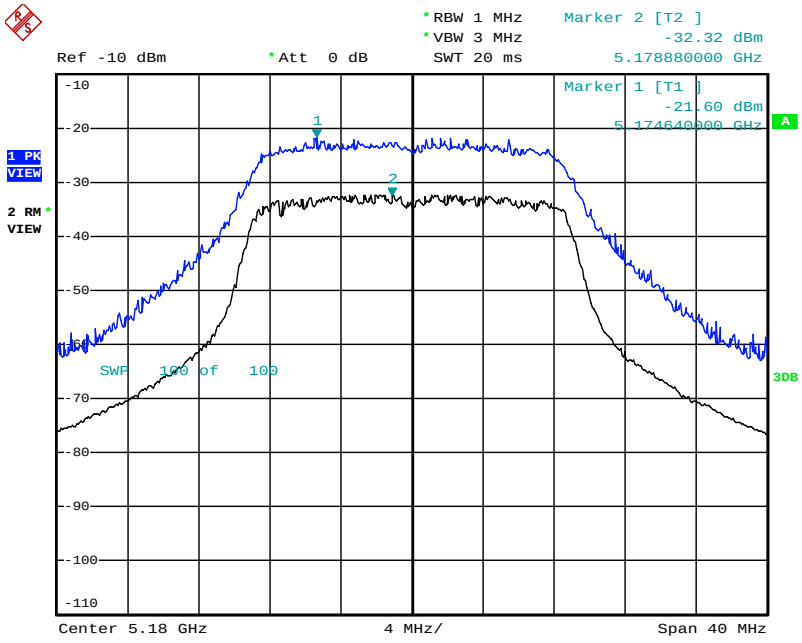
<For Ant. 4>:

Peak Excursion Plot on Configuration IEEE 802.11n MCS0 20MHz / 5180 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 20:21:45

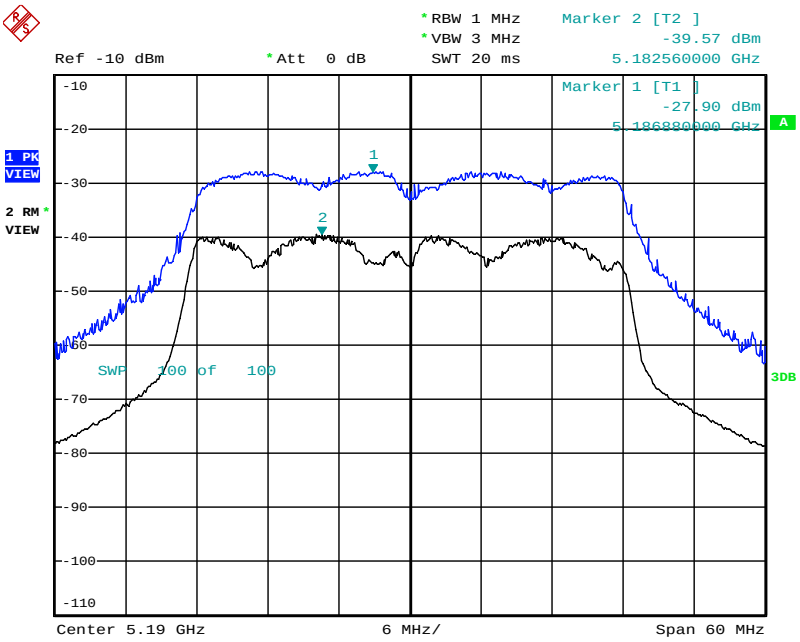
Peak Excursion Plot on Configuration IEEE 802.11n MCS8 20MHz / 5180 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 20:37:38

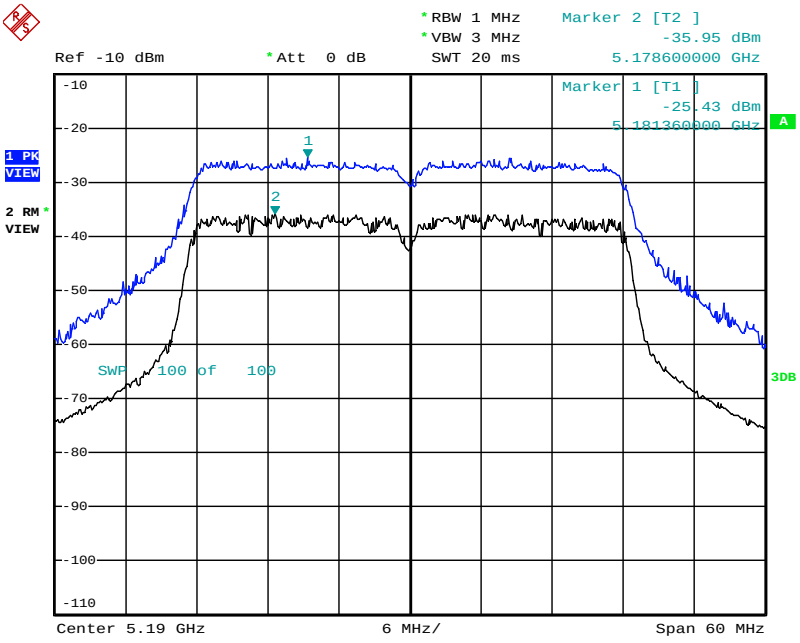
<For Ant. 4>:

Peak Excursion Plot on Configuration IEEE 802.11n MCS0 40MHz / 5190MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 20:49:51

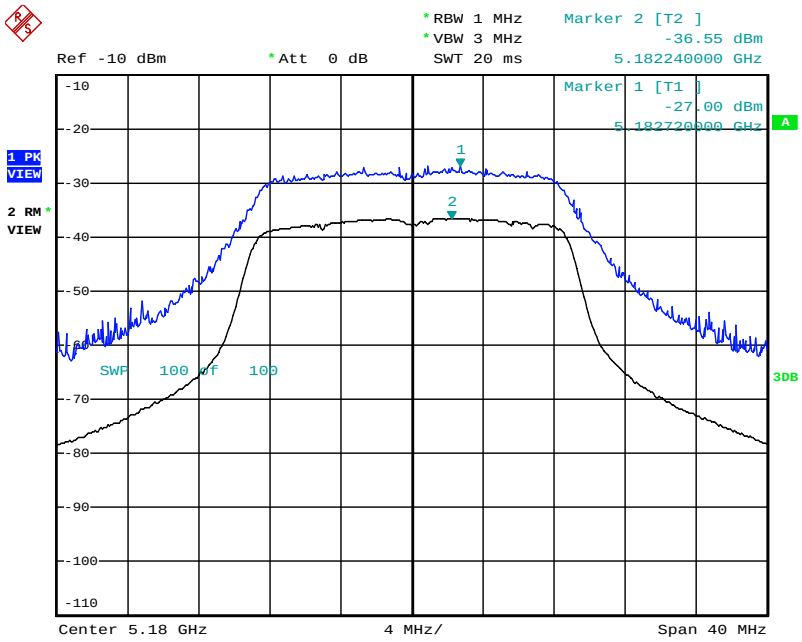
Peak Excursion Plot on Configuration IEEE 802.11n MCS8 40MHz / 5190MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 20:38:42

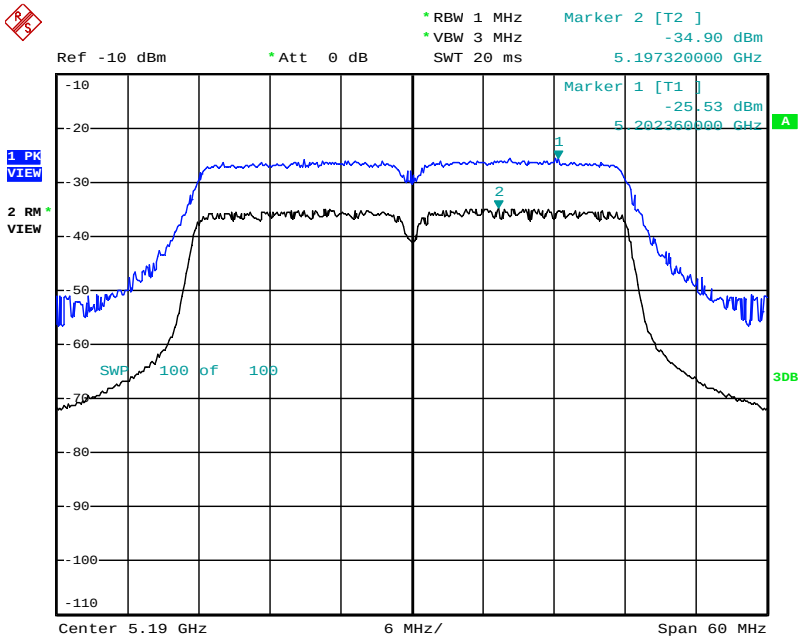
<For Ant. 5>:

Peak Excursion Plot on Configuration IEEE 802.11n MCS0 20MHz / 5180 MHz / Chain. 1 (1TX)



Date: 20.SEP.2012 22:43:30

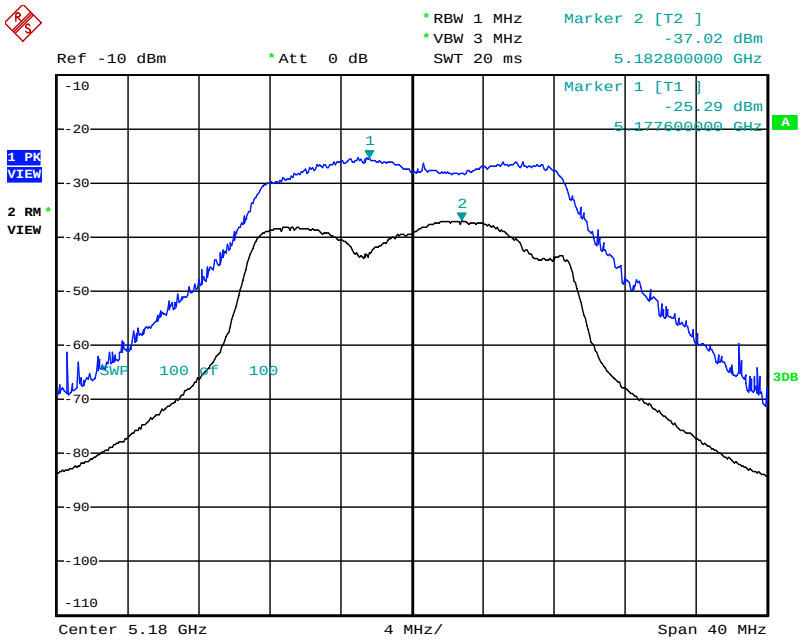
Peak Excursion Plot on Configuration IEEE 802.11n MCS0 40MHz / 5190MHz / Chain. 1 (1TX)



Date: 20.SEP.2012 22:30:46

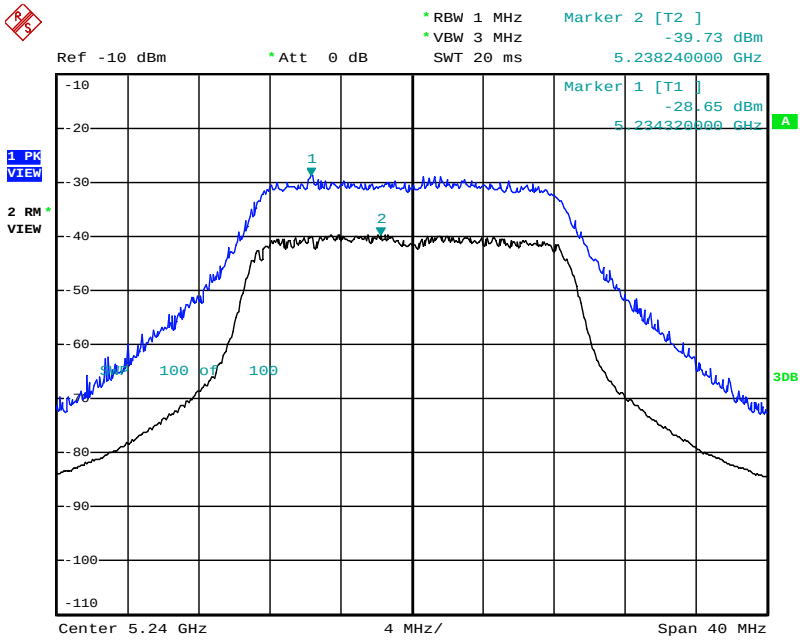
<For Ant. 6>:

Peak Excursion Plot on Configuration IEEE 802.11n MCS0 20MHz / 5180 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 21:28:09

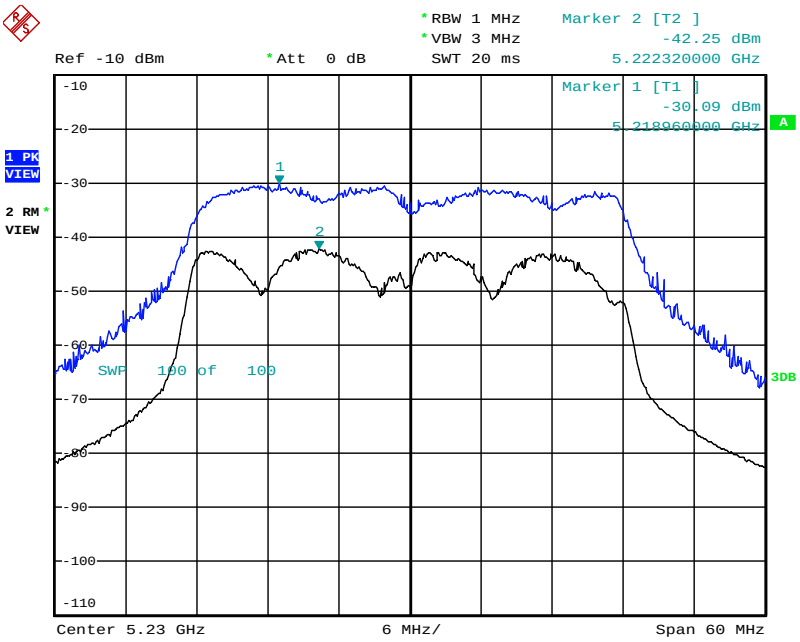
Peak Excursion Plot on Configuration IEEE 802.11n MCS8 20MHz / 5240MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 21:55:04

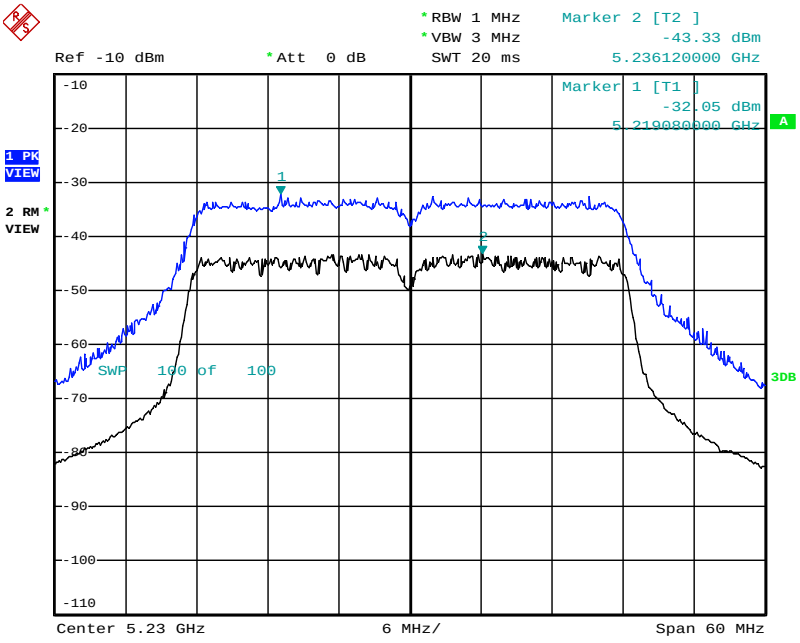
<For Ant. 6>:

Peak Excursion Plot on Configuration IEEE 802.11n MCS0 40MHz / 5230MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 22:23:15

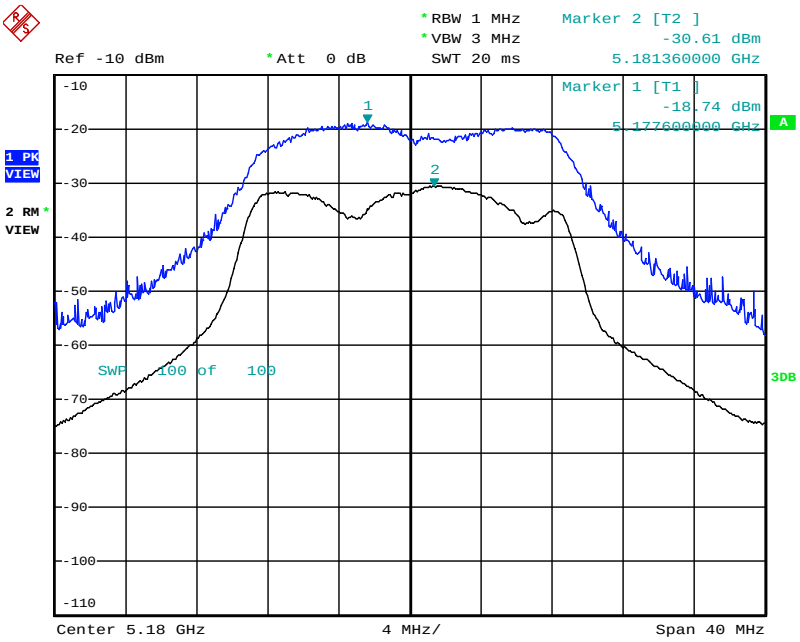
Peak Excursion Plot on Configuration IEEE 802.11n MCS8 40MHz / 5230MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 22:01:39

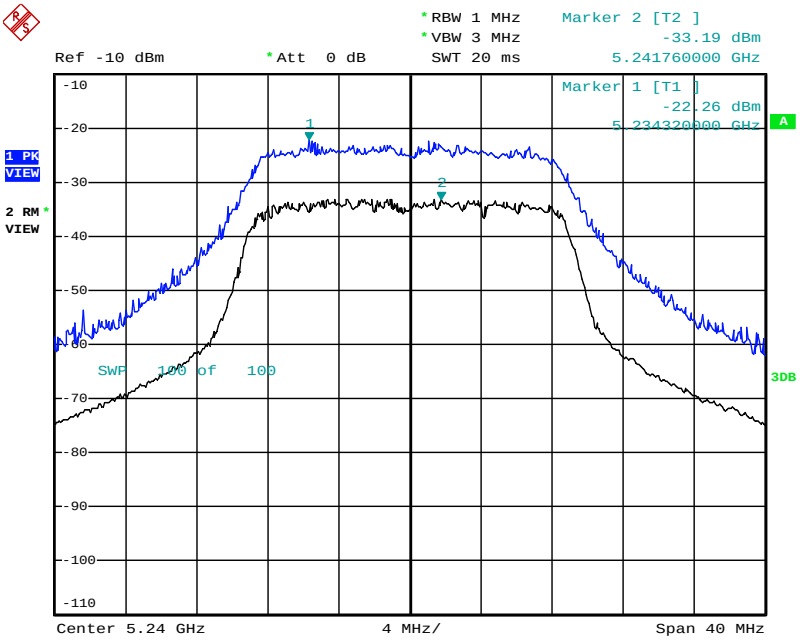
<For Ant. 10>:

Peak Excursion Plot on Configuration IEEE 802.11n MCS0 20MHz / 5180 MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 21:26:41

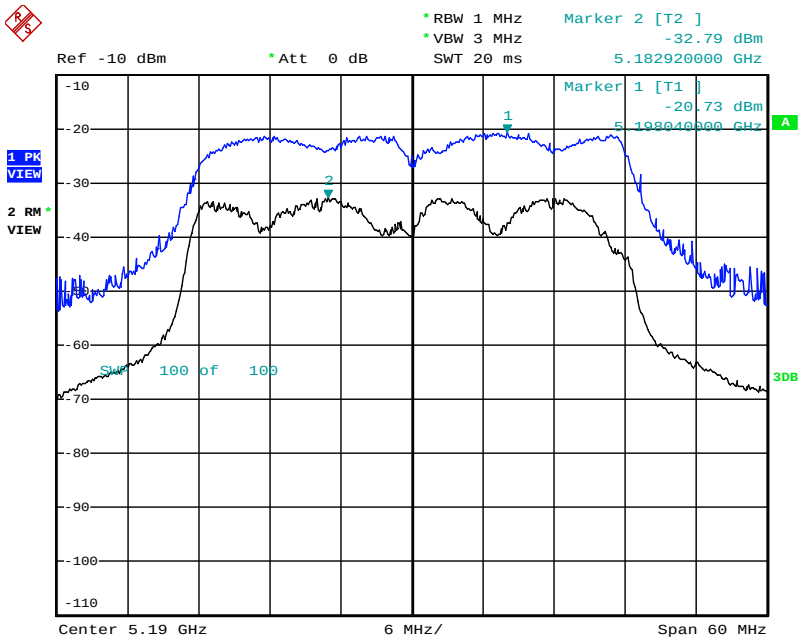
Peak Excursion Plot on Configuration IEEE 802.11n MCS8 20MHz / 5240MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 21:55:38

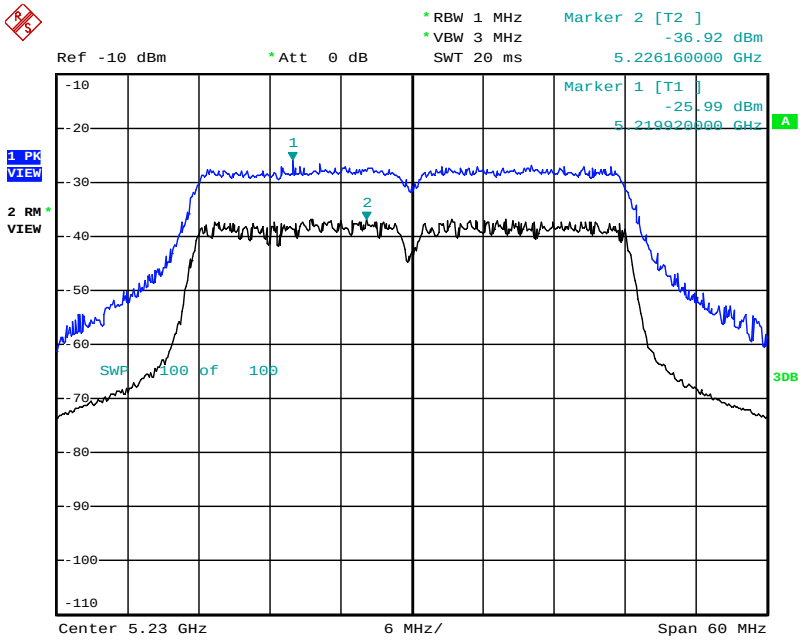
<For Ant. 10>:

Peak Excursion Plot on Configuration IEEE 802.11n MCS0 40MHz / 5190MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 22:24:18

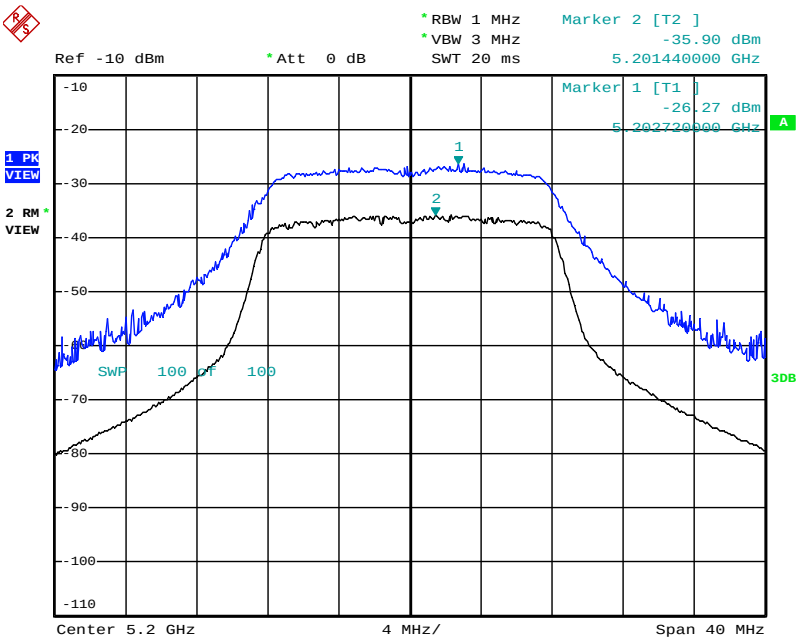
Peak Excursion Plot on Configuration IEEE 802.11n MCS8 40MHz / 5230MHz / Chain. 1 + Chain. 3 (2TX)



Date: 20.SEP.2012 22:02:19

<For Ant. 5>:

Peak Excursion Plot on Configuration IEEE 802.11a / 5200MHz / Chain. 1 (1TX)



Date: 20.SEP.2012 22:42:11

4.6. Radiated Emissions Measurement

4.6.1. Limit

For transmitters operating in the 5.15-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz (68.3dBuV/m at 3m). For transmitters operating in the In addition, 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.

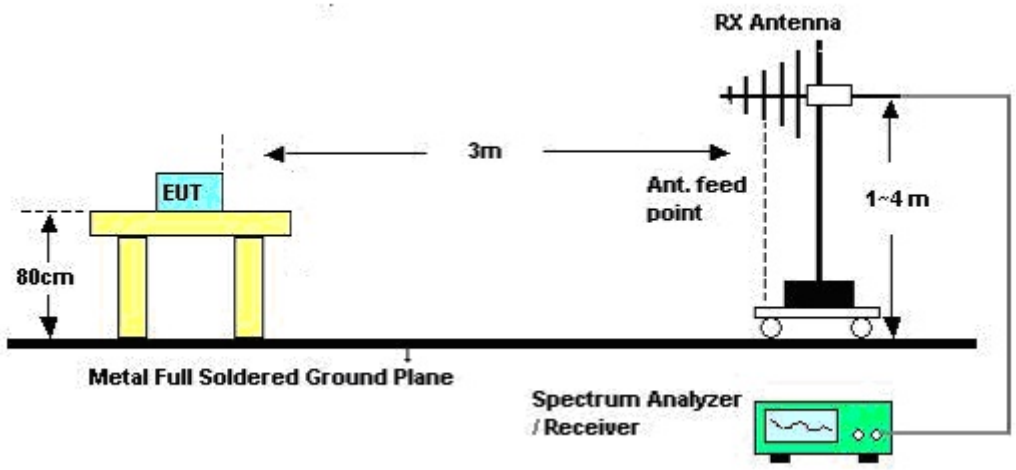
Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	40 GHz
RB / VB (Emission in restricted band)	1MHz / 3MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	1MHz / 3MHz for peak

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



4.6.5. Test Deviation

There is no deviation with the original standard.

4.6.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

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

Temperature	21℃	Humidity	56.4%
Test Engineer	Sean Ku	Configurations	CTX
Test Date	Sep. 22, 2012		

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

Note:

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

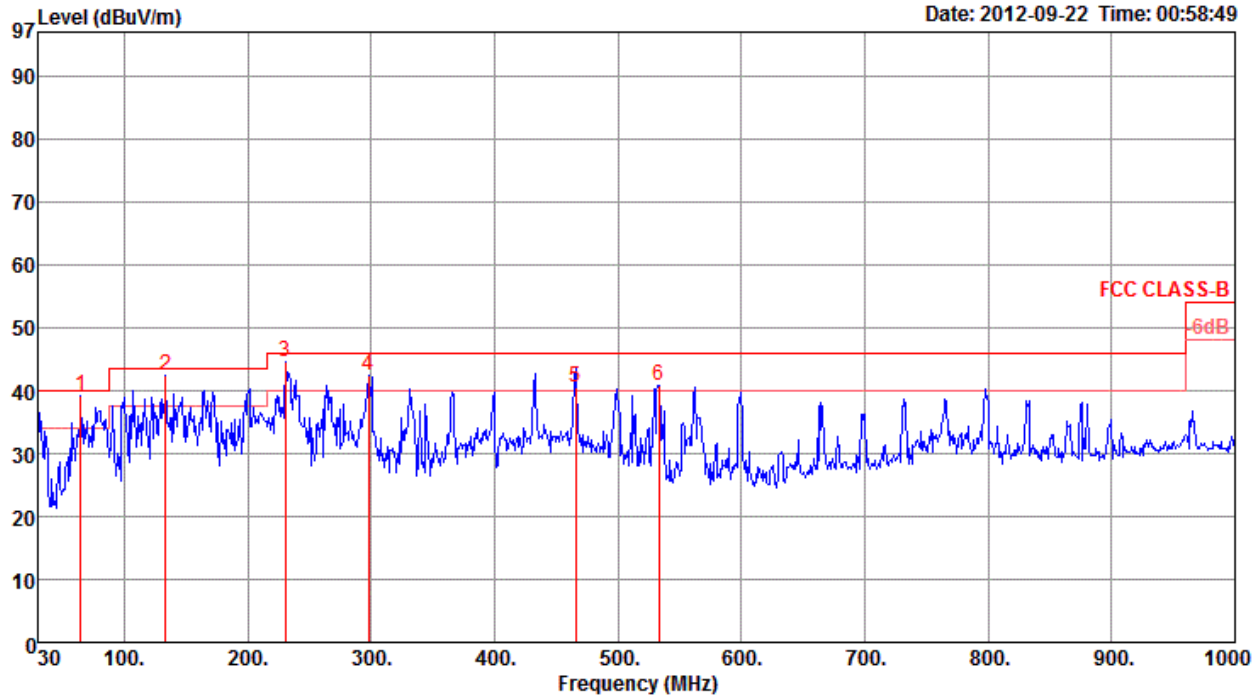
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

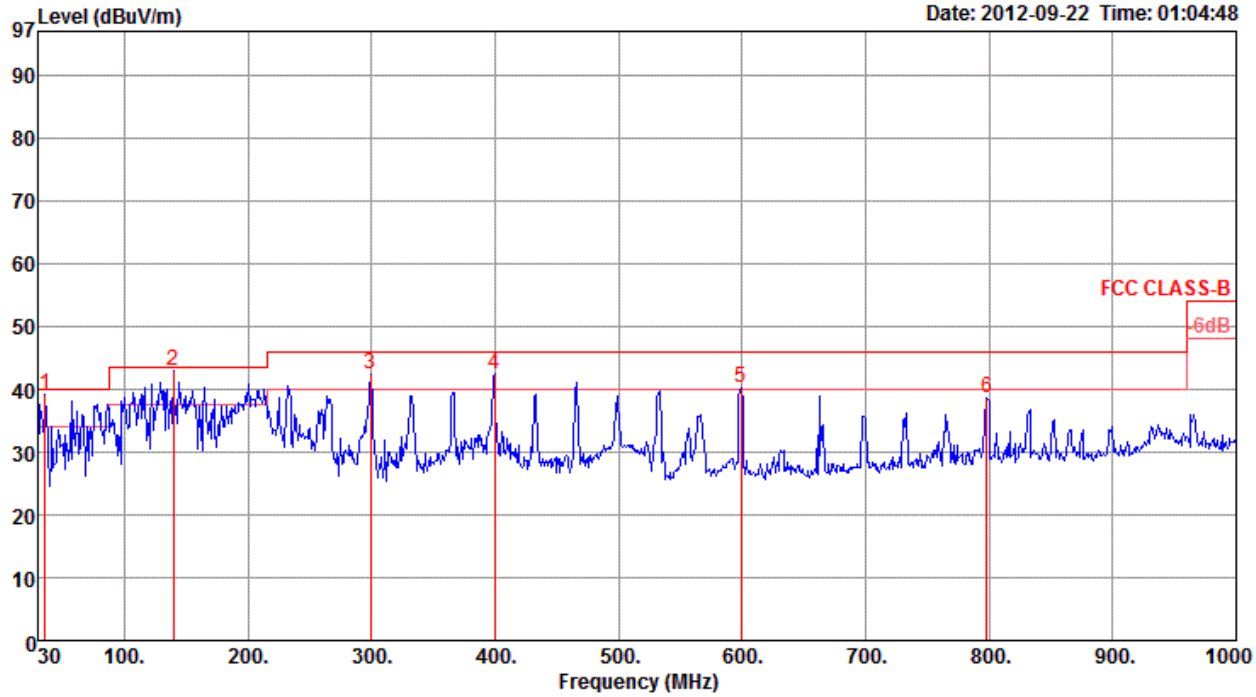
Temperature	21℃	Humidity	56.4%
Test Engineer	Sean Ku	Configurations	CTX
Test Mode	Mode 1.		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1 q	64.92	39.30	40.00	-0.70	59.21	1.20	27.96	6.85	QP	135	125	HORIZONTAL
2 !	133.79	42.43	43.50	-1.07	55.82	1.69	27.60	12.52	QP	185	100	HORIZONTAL
3 !	230.79	44.57	46.00	-1.43	57.93	2.29	27.03	11.38	QP	85	100	HORIZONTAL
4 p	297.72	42.30	46.00	-3.70	52.82	2.51	26.83	13.80	Peak	0	400	HORIZONTAL
5 !	465.53	40.44	46.00	-5.56	47.77	3.28	27.86	17.25	Peak	0	400	HORIZONTAL
6 !	533.43	40.90	46.00	-5.10	46.84	3.49	27.90	18.47	Peak	0	400	HORIZONTAL

Vertical



		Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Remark	T/Pos	A/Pos	Pol/Phase
		MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	!	35.82	39.08	40.00	-0.92	49.89	0.93	28.00	16.26	QP	265	100	VERTICAL
2	q	139.61	42.96	43.50	-0.54	56.71	1.71	27.56	12.10	QP	65	115	VERTICAL
3	!	299.66	42.35	46.00	-3.65	52.87	2.51	26.83	13.80	Peak	0	100	VERTICAL
4	p	399.57	42.52	46.00	-3.48	50.49	2.99	27.46	16.50	Peak	0	100	VERTICAL
5	!	599.39	40.23	46.00	-5.77	44.82	3.73	27.61	19.29	Peak	0	100	VERTICAL
6		798.24	38.63	46.00	-7.37	40.40	4.35	26.90	20.78	Peak	0	100	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~40GHz)

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 20MHz Ch 36 / Ant. 4: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15490.60	40.60	54.00	-13.40	32.01	6.11	37.75	35.27	Average	100	316	HORIZONTAL
2	15541.20	52.61	74.00	-21.39	44.14	6.13	37.65	35.31	Peak	100	316	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	15521.00	53.10	74.00	-20.90	44.53	6.13	37.73	35.29	Peak	100	217	VERTICAL
2	15547.80	40.64	54.00	-13.36	32.13	6.13	37.69	35.31	Average	100	217	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 20MHz Ch 40 / Ant. 4: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15599.20	40.45	54.00	-13.55	32.06	6.13	37.60	35.34	Average	100	202	HORIZONTAL
2	15645.60	52.39	74.00	-21.61	44.07	6.14	37.54	35.36	Peak	100	202	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	15597.80	52.53	74.00	-21.47	44.14	6.13	37.60	35.34	Peak	100	27	VERTICAL
2	15604.40	41.71	54.00	-12.29	33.32	6.13	37.60	35.34	Average	100	27	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 20MHz Ch 48 / Ant. 4: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15725.80	40.05	54.00	-13.95	31.84	6.14	37.46	35.39	Average	100	205	HORIZONTAL
2	15733.80	52.27	74.00	-21.73	44.06	6.14	37.46	35.39	Peak	100	205	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	15719.80	40.88	54.00	-13.12	32.65	6.14	37.48	35.39	Average	100	360	VERTICAL
2	15723.40	52.88	74.00	-21.12	44.65	6.14	37.48	35.39	Peak	100	360	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS8 20MHz Ch 36 / Ant. 4: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15521.80	40.33	54.00	-13.67	31.82	6.13	37.67	35.29	Average	100	234	HORIZONTAL
2	15550.60	54.12	74.00	-19.88	45.65	6.13	37.65	35.31	Peak	100	234	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	15516.90	52.81	74.00	-21.19	44.20	6.13	37.77	35.29	Peak	100	113	VERTICAL
2	15519.80	40.68	54.00	-13.32	32.07	6.13	37.77	35.29	Average	100	113	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS8 20MHz Ch 40 / Ant. 4: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15581.00	51.86	74.00	-22.14	43.45	6.13	37.61	35.33	Peak	100	314	HORIZONTAL
2	15596.40	40.17	54.00	-13.83	31.78	6.13	37.60	35.34	Average	100	314	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	15595.40	52.61	74.00	-21.39	44.22	6.13	37.60	35.34	Peak	100	208	VERTICAL
2	15596.60	41.13	54.00	-12.87	32.74	6.13	37.60	35.34	Average	100	208	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS8 20MHz Ch 48 / Ant. 4: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15720.30	51.85	74.00	-22.15	43.62	6.14	37.48	35.39	Peak	100	286	HORIZONTAL
2	15742.50	39.62	54.00	-14.38	31.45	6.14	37.44	35.41	Average	100	286	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	15725.30	39.97	54.00	-14.03	31.76	6.14	37.46	35.39	Average	100	54	VERTICAL
2	15739.90	52.30	74.00	-21.70	44.09	6.14	37.46	35.39	Peak	100	54	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 40MHz Ch 38 / Ant. 4: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15550.90	39.80	54.00	-14.20	31.33	6.13	37.65	35.31	Average	100	190	HORIZONTAL
2	15554.20	52.48	74.00	-21.52	44.01	6.13	37.65	35.31	Peak	100	190	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	15545.00	39.92	54.00	-14.08	31.41	6.13	37.69	35.31	Average	100	69	VERTICAL
2	15556.40	52.08	74.00	-21.92	43.61	6.13	37.65	35.31	Peak	100	69	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 40MHz Ch 46 / Ant. 4: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15667.10	39.03	54.00	-14.97	30.73	6.14	37.53	35.37	Average	100	308	HORIZONTAL
2	15712.80	52.78	74.00	-21.22	44.54	6.14	37.48	35.38	Peak	100	308	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	15668.10	39.43	54.00	-14.57	31.13	6.14	37.53	35.37	Average	100	210	VERTICAL
2	15695.90	51.87	74.00	-22.13	43.62	6.14	37.49	35.38	Peak	100	210	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS8 40MHz Ch 38 / Ant. 4: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15545.20	39.75	54.00	-14.25	31.28	6.13	37.65	35.31	Average	100	180	HORIZONTAL
2	15587.70	51.77	74.00	-22.23	43.36	6.13	37.61	35.33	Peak	100	180	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	15545.60	39.90	54.00	-14.10	31.39	6.13	37.69	35.31	Average	100	281	VERTICAL
2	15548.00	52.59	74.00	-21.41	44.08	6.13	37.69	35.31	Peak	100	281	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS8 40MHz Ch 46 / Ant. 4: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15665.10	39.26	54.00	-14.74	30.95	6.14	37.53	35.36	Average	100	277	VERTICAL
2	15666.30	51.72	74.00	-22.28	43.42	6.14	37.53	35.37	Peak	100	277	VERTICAL

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	15668.40	39.24	54.00	-14.76	30.94	6.14	37.53	35.37	Average	100	219	HORIZONTAL
2	15690.90	51.66	74.00	-22.34	43.39	6.14	37.51	35.38	Peak	100	219	HORIZONTAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 20MHz Ch 36 / Ant. 5: Chain. 1 (1TX)
Test Date	Sep. 10, 2012		

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	15541.04	36.74	54.00	-17.26	28.27	6.13	37.65	35.31	Average	101	175	HORIZONTAL
2	15541.09	50.05	74.00	-23.95	41.58	6.13	37.65	35.31	Peak	101	175	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	15534.10	51.64	74.00	-22.36	43.07	6.13	37.73	35.29	Peak	101	223	VERTICAL
2	15534.80	37.11	54.00	-16.89	28.54	6.13	37.73	35.29	Average	101	223	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 20MHz Ch 40 / Ant. 5: Chain. 1 (1TX)
Test Date	Sep. 10, 2012		

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	3266.30	57.68	74.00	-16.32	60.34	2.68	30.00	35.34	Peak	101	315	HORIZONTAL
2	3267.00	38.73	54.00	-15.27	41.39	2.68	30.00	35.34	Average	101	315	HORIZONTAL
3	15596.90	49.82	74.00	-24.18	41.43	6.13	37.60	35.34	Peak	100	182	HORIZONTAL
4	15597.10	37.48	54.00	-16.52	29.09	6.13	37.60	35.34	Average	100	183	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	3265.00	66.03	74.00	-7.97	68.69	2.68	30.00	35.34	Peak	142	341	VERTICAL
2	3267.00	46.91	54.00	-7.09	49.57	2.68	30.00	35.34	Average	142	341	VERTICAL
3	15597.10	50.44	74.00	-23.56	42.05	6.13	37.60	35.34	Peak	100	253	VERTICAL
4	15597.50	38.41	54.00	-15.59	30.02	6.13	37.60	35.34	Average	100	253	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 20MHz Ch 48 / Ant. 5: Chain. 1 (1TX)
Test Date	Sep. 10, 2012		

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	3263.90	62.23	74.00	-11.77	64.90	2.68	30.00	35.35	Peak	100	316	HORIZONTAL
2	3266.30	49.30	54.00	-4.70	51.96	2.68	30.00	35.34	Average	100	316	HORIZONTAL
3	15715.60	37.07	54.00	-16.93	28.83	6.14	37.48	35.38	Average	100	79	HORIZONTAL
4	15717.80	49.54	74.00	-24.46	41.31	6.14	37.48	35.39	Peak	100	79	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	3265.40	72.39	74.00	-1.61	75.05	2.68	30.00	35.34	Peak	161	340	VERTICAL
2	3266.80	52.89	54.00	-1.11	55.55	2.68	30.00	35.34	Average	161	340	VERTICAL
3	15712.30	50.73	74.00	-23.27	42.49	6.14	37.48	35.38	Peak	100	242	VERTICAL
4	15715.90	37.90	54.00	-16.10	29.66	6.14	37.48	35.38	Average	100	242	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 40MHz Ch 38 / Ant. 5: Chain. 1 (1TX)
Test Date	Sep. 10, 2012		

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	15557.80	38.91	54.00	-15.09	30.46	6.13	37.63	35.31	Average	100	309	HORIZONTAL
2	15591.60	51.18	74.00	-22.82	42.79	6.13	37.60	35.34	Peak	100	309	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	15558.30	51.14	74.00	-22.86	42.67	6.13	37.65	35.31	Peak	100	256	VERTICAL
2	15567.40	38.92	54.00	-15.08	30.47	6.13	37.65	35.33	Average	100	256	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 40MHz Ch 46 / Ant. 5: Chain. 1 (1TX)
Test Date	Sep. 10, 2012		

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	3276.40	46.28	54.00	-7.72	48.94	2.68	30.00	35.34	Average	180	337	HORIZONTAL
2	3276.80	58.81	74.00	-15.19	61.47	2.68	30.00	35.34	Peak	180	337	HORIZONTAL
3	15640.20	37.79	54.00	-16.21	29.47	6.14	37.54	35.36	Average	100	297	HORIZONTAL
4	15647.20	50.24	74.00	-23.76	41.92	6.14	37.54	35.36	Peak	100	297	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	3272.20	63.79	74.00	-10.21	66.45	2.68	30.00	35.34	Peak	180	338	VERTICAL
2	3287.60	50.64	54.00	-3.36	53.29	2.69	30.00	35.34	Average	180	338	VERTICAL
3	15670.60	38.05	54.00	-15.95	29.75	6.14	37.53	35.37	Average	100	193	VERTICAL
4	15703.80	50.27	74.00	-23.73	42.02	6.14	37.49	35.38	Peak	100	193	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 20MHz Ch 36 / Ant. 6: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15534.90	49.37	74.00	-24.63	40.86	6.13	37.67	35.29	Peak	100	333	HORIZONTAL
2	15551.60	36.60	54.00	-17.40	28.13	6.13	37.65	35.31	Average	100	333	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	15521.60	36.84	54.00	-17.16	28.27	6.13	37.73	35.29	Average	100	234	VERTICAL
2	15529.90	50.09	74.00	-23.91	41.52	6.13	37.73	35.29	Peak	100	234	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 20MHz Ch 40 / Ant. 6: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15582.20	36.45	54.00	-17.55	28.04	6.13	37.61	35.33	Average	100	134	HORIZONTAL
2	15592.80	49.16	74.00	-24.84	40.77	6.13	37.60	35.34	Peak	100	134	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	15576.00	36.62	54.00	-17.38	28.21	6.13	37.61	35.33	Average	100	25	VERTICAL
2	15621.90	50.26	74.00	-23.74	41.90	6.13	37.58	35.35	Peak	100	25	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 20MHz Ch 48 / Ant. 6: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15708.00	50.79	74.00	-23.21	42.54	6.14	37.49	35.38	Peak	100	354	HORIZONTAL
2	15741.50	38.53	54.00	-15.47	30.32	6.14	37.46	35.39	Average	100	354	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	15738.40	39.04	54.00	-14.96	30.83	6.14	37.46	35.39	Average	100	203	VERTICAL
2	15744.00	51.14	74.00	-22.86	42.97	6.14	37.44	35.41	Peak	100	203	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS8 20MHz Ch 36 / Ant. 6: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15562.00	35.65	54.00	-18.35	27.20	6.13	37.63	35.31	Average	100	219	HORIZONTAL
2	15563.20	47.73	74.00	-26.27	39.28	6.13	37.63	35.31	Peak	100	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	15568.80	35.73	54.00	-18.27	27.28	6.13	37.65	35.33	Average	100	328	VERTICAL
2	15573.40	48.53	74.00	-25.47	40.12	6.13	37.61	35.33	Peak	100	328	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS8 20MHz Ch 40 / Ant. 6: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15552.60	49.51	74.00	-24.49	41.04	6.13	37.65	35.31	Peak	100	267	HORIZONTAL
2	15572.60	36.50	54.00	-17.50	28.09	6.13	37.61	35.33	Average	100	267	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	15581.20	36.31	54.00	-17.69	27.90	6.13	37.61	35.33	Average	100	159	VERTICAL
2	15635.20	50.10	74.00	-23.90	41.75	6.14	37.56	35.35	Peak	100	159	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS8 20MHz Ch 48 / Ant. 6: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15717.80	48.72	74.00	-25.28	40.49	6.14	37.48	35.39	Peak	100	45	HORIZONTAL
2	15748.40	35.80	54.00	-18.20	27.63	6.14	37.44	35.41	Average	100	45	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	15695.40	48.86	74.00	-25.14	40.61	6.14	37.49	35.38	Peak	100	162	VERTICAL
2	15718.40	35.93	54.00	-18.07	27.70	6.14	37.48	35.39	Average	100	162	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 40MHz Ch 38 / Ant. 6: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15557.10	36.97	54.00	-17.03	28.52	6.13	37.63	35.31	Average	100	358	HORIZONTAL
2	15580.80	50.46	74.00	-23.54	42.05	6.13	37.61	35.33	Peak	100	358	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	15564.30	50.72	74.00	-23.28	42.27	6.13	37.65	35.33	Peak	100	269	VERTICAL
2	15564.90	37.05	54.00	-16.95	28.60	6.13	37.65	35.33	Average	100	270	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 40MHz Ch 46 / Ant. 6: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15665.30	36.00	54.00	-18.00	27.70	6.14	37.53	35.37	Average	100	151	HORIZONTAL
2	15710.40	48.84	74.00	-25.16	40.60	6.14	37.48	35.38	Peak	100	151	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	15665.30	36.24	54.00	-17.76	27.94	6.14	37.53	35.37	Average	100	322	VERTICAL
2	15692.90	48.56	74.00	-25.44	40.31	6.14	37.49	35.38	Peak	100	322	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS8 40MHz Ch 38 / Ant. 6: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15563.92	51.50	74.00	-22.50	43.07	6.13	37.63	35.33	Peak	100	69	HORIZONTAL
2	15571.36	38.65	54.00	-15.35	30.22	6.13	37.63	35.33	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	15572.40	38.45	54.00	-15.55	30.04	6.13	37.61	35.33	Average	100	348	VERTICAL
2	15580.08	50.81	74.00	-23.19	42.40	6.13	37.61	35.33	Peak	100	348	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS8 40MHz Ch 46 / Ant. 6: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15692.84	38.34	54.00	-15.66	30.09	6.14	37.49	35.38	Average	100	17	HORIZONTAL
2	15696.04	51.86	74.00	-22.14	43.61	6.14	37.49	35.38	Peak	100	17	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	15695.80	38.47	54.00	-15.53	30.22	6.14	37.49	35.38	Average	100	99	VERTICAL
2	15697.80	50.24	74.00	-23.76	41.99	6.14	37.49	35.38	Peak	100	99	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 20MHz Ch 36 / Ant. 10: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15539.60	38.96	54.00	-15.04	30.49	6.13	37.65	35.31	Average	100	343	HORIZONTAL
2	15553.70	50.88	74.00	-23.12	42.41	6.13	37.65	35.31	Peak	100	343	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	15531.50	50.68	74.00	-23.32	42.11	6.13	37.73	35.29	Peak	100	351	VERTICAL
2	15542.10	39.63	54.00	-14.37	31.12	6.13	37.69	35.31	Average	100	351	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 20MHz Ch 40 / Ant. 10: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15591.20	38.31	54.00	-15.69	29.92	6.13	37.60	35.34	Average	100	55	HORIZONTAL
2	15598.80	49.62	74.00	-24.38	41.23	6.13	37.60	35.34	Peak	100	55	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	15555.00	49.94	74.00	-24.06	41.47	6.13	37.65	35.31	Peak	100	72	VERTICAL
2	15591.60	38.70	54.00	-15.30	30.31	6.13	37.60	35.34	Average	100	72	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 20MHz Ch 48 / Ant. 10: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15719.20	39.27	54.00	-14.73	31.04	6.14	37.48	35.39	Average	100	257	VERTICAL
2	15808.00	49.84	74.00	-24.16	41.74	6.14	37.39	35.43	Peak	100	257	VERTICAL

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	15663.60	49.72	74.00	-24.28	41.41	6.14	37.53	35.36	Peak	100	123	HORIZONTAL
2	15716.00	38.63	54.00	-15.37	30.39	6.14	37.48	35.38	Average	100	123	HORIZONTAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS8 20MHz Ch 36 / Ant. 10: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15536.10	49.08	74.00	-24.92	40.57	6.13	37.67	35.29	Peak	100	218	HORIZONTAL
2	15537.00	38.12	54.00	-15.88	29.61	6.13	37.67	35.29	Average	100	218	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	15539.00	39.17	54.00	-14.83	30.66	6.13	37.69	35.31	Average	100	78	VERTICAL
2	15548.90	49.63	74.00	-24.37	41.12	6.13	37.69	35.31	Peak	100	78	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS8 20MHz Ch 40 / Ant. 10: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15586.00	50.87	74.00	-23.13	42.46	6.13	37.61	35.33	Peak	100	323	HORIZONTAL
2	15590.60	37.26	54.00	-16.74	28.87	6.13	37.60	35.34	Average	100	323	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15590.60	38.04	54.00	-15.96	29.65	6.13	37.60	35.34	Average	100	232	VERTICAL
2	15615.80	49.52	74.00	-24.48	41.16	6.13	37.58	35.35	Peak	100	232	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS8 20MHz Ch 48 / Ant. 10: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15710.40	49.03	74.00	-24.97	40.79	6.14	37.48	35.38	Peak	100	112	HORIZONTAL
2	15711.10	36.70	54.00	-17.30	28.46	6.14	37.48	35.38	Average	100	112	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	15702.40	49.30	74.00	-24.70	41.05	6.14	37.49	35.38	Peak	100	189	VERTICAL
2	15707.20	37.62	54.00	-16.38	29.37	6.14	37.49	35.38	Average	100	189	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 40MHz Ch 38 / Ant. 10: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15564.90	49.98	74.00	-24.02	41.55	6.13	37.63	35.33	Peak	100	325	HORIZONTAL
2	15590.50	37.12	54.00	-16.88	28.73	6.13	37.60	35.34	Average	100	325	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	15548.60	49.52	74.00	-24.48	41.01	6.13	37.69	35.31	Peak	100	121	VERTICAL
2	15590.60	37.24	54.00	-16.76	28.85	6.13	37.60	35.34	Average	100	121	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 40MHz Ch 46 / Ant. 10: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15668.50	36.76	54.00	-17.24	28.46	6.14	37.53	35.37	Average	100	95	HORIZONTAL
2	15702.10	48.89	74.00	-25.11	40.64	6.14	37.49	35.38	Peak	100	95	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	15668.40	36.96	54.00	-17.04	28.66	6.14	37.53	35.37	Average	100	29	VERTICAL
2	15682.40	48.50	74.00	-25.50	40.22	6.14	37.51	35.37	Peak	100	29	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS8 40MHz Ch 38 / Ant. 10: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15590.60	36.97	54.00	-17.03	28.58	6.13	37.60	35.34	Average	100	50	HORIZONTAL
2	15594.20	49.76	74.00	-24.24	41.37	6.13	37.60	35.34	Peak	100	50	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15549.50	49.57	74.00	-24.43	41.06	6.13	37.69	35.31	Peak	100	171	VERTICAL
2	15590.60	37.10	54.00	-16.90	28.71	6.13	37.60	35.34	Average	100	171	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS8 40MHz Ch 46 / Ant. 10: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

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	15668.90	36.83	54.00	-17.17	28.53	6.14	37.53	35.37	Average	100	250	HORIZONTAL
2	15677.70	49.28	74.00	-24.72	41.00	6.14	37.51	35.37	Peak	100	250	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	15668.40	36.86	54.00	-17.14	28.56	6.14	37.53	35.37	Average	100	330	VERTICAL
2	15710.50	48.80	74.00	-25.20	40.56	6.14	37.48	35.38	Peak	100	330	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.

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11a Ch 36 / Ant. 5: Chain. 1 (1TX)
Test Date	Sep. 10, 2012		

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	15585.40	50.07	74.00	-23.93	41.66	6.13	37.61	35.33	Peak	100	193	HORIZONTAL
2	15588.20	37.50	54.00	-16.50	29.09	6.13	37.61	35.33	Average	100	193	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	15529.20	49.06	74.00	-24.94	40.49	6.13	37.73	35.29	Peak	100	203	VERTICAL
2	15529.80	37.38	54.00	-16.62	28.81	6.13	37.73	35.29	Average	100	203	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11a Ch 40 / Ant. 5: Chain. 1 (1TX)
Test Date	Sep. 10, 2012		

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	3266.60	56.95	74.00	-17.05	59.61	2.68	30.00	35.34	Peak	100	169	HORIZONTAL
2	3267.00	38.37	54.00	-15.63	41.03	2.68	30.00	35.34	Average	100	169	HORIZONTAL
3	15597.50	39.03	54.00	-14.97	30.64	6.13	37.60	35.34	Average	100	191	HORIZONTAL
4	15599.10	50.35	74.00	-23.65	41.96	6.13	37.60	35.34	Peak	100	191	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	3267.00	47.15	54.00	-6.85	49.81	2.68	30.00	35.34	Average	116	62	VERTICAL
2	3267.00	66.97	74.00	-7.03	69.63	2.68	30.00	35.34	Peak	116	62	VERTICAL
3	15597.64	39.57	54.00	-14.43	31.18	6.13	37.60	35.34	Average	100	150	VERTICAL
4	15598.08	49.86	74.00	-24.14	41.47	6.13	37.60	35.34	Peak	100	150	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11a Ch 48 / Ant. 5: Chain. 1 (1TX)
Test Date	Sep. 10, 2012		

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	3267.00	51.62	54.00	-2.38	54.28	2.68	30.00	35.34	Average	163	97	HORIZONTAL
2	3267.00	65.39	74.00	-8.61	68.05	2.68	30.00	35.34	Peak	163	97	HORIZONTAL
3	15713.88	38.32	54.00	-15.68	30.08	6.14	37.48	35.38	Average	100	215	HORIZONTAL
4	15714.20	48.89	74.00	-25.11	40.65	6.14	37.48	35.38	Peak	100	215	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	3266.20	52.40	54.00	-1.60	55.06	2.68	30.00	35.34	Average	116	60	VERTICAL
2	3266.20	68.46	74.00	-5.54	71.12	2.68	30.00	35.34	Peak	116	60	VERTICAL
3	15729.28	37.14	54.00	-16.86	28.93	6.14	37.46	35.39	Average	100	206	VERTICAL
4	15729.68	52.07	74.00	-21.93	43.86	6.14	37.46	35.39	Peak	100	206	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

For transmitters operating in the 5.15-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz (68.3dBuV/m at 3m). In addition, 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 / 3MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	1MHz / 3MHz for Peak

4.7.3. Test Procedures

1. The test procedure is the same as section 4.6.3, only the frequency range investigated is limited to 100MHz around bandedges.

4.7.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.6.4.

4.7.5. Test Deviation

There is no deviation with the original standard.

4.7.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.7.7. Test Result of Band Edge and Fundamental Emissions

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 20MHz Ch 36, 40, 48 / Ant. 4: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

Channel 36

	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	5146.31	53.23	54.00	-0.77	16.13	3.43	33.67	0.00	Average	101	112	VERTICAL
2	5149.52	71.12	74.00	-2.88	34.02	3.43	33.67	0.00	Peak	101	112	VERTICAL
3	5182.72	107.25				3.44	33.73	0.00	Average	101	112	VERTICAL
4	5183.37	117.48				3.44	33.73	0.00	Peak	101	112	VERTICAL

Item 3, 4 are the fundamental frequency at 5180 MHz.

Channel 40

	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	5144.23	69.18	74.00	-4.82	32.08	3.43	33.67	0.00	Peak	100	135	VERTICAL
2	5150.00	53.05	54.00	-0.95	15.95	3.43	33.67	0.00	Average	100	135	VERTICAL
3	5201.60	109.07				3.45	33.76	0.00	Average	100	135	VERTICAL
4	5202.56	119.53				3.45	33.76	0.00	Peak	100	135	VERTICAL

Item 3, 4 are the fundamental frequency at 5200 MHz.

Channel 48

	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	5007.85	53.25	54.00	-0.75	16.43	3.39	33.43	0.00	Average	106	149	VERTICAL
2	5150.00	72.63	74.00	-1.37	35.53	3.43	33.67	0.00	Peak	106	149	VERTICAL
3	5241.60	108.06				3.46	33.82	0.00	Average	106	149	VERTICAL
4	5241.60	119.87				3.46	33.82	0.00	Peak	106	149	VERTICAL
5	5350.00	49.55	54.00	-4.45	12.03	3.49	34.03	0.00	Average	106	149	VERTICAL
6	5350.00	67.58	74.00	-6.42	30.06	3.49	34.03	0.00	Peak	106	149	VERTICAL

Item 3, 4 are the fundamental frequency at 5240.

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS8 20MHz Ch 36, 40, 48 / Ant. 4: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

Channel 36

	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	5149.80	70.69	74.00	-3.31	33.59	3.43	33.67	0.00	Peak	100	23	VERTICAL
2	5150.00	53.01	54.00	-0.99	15.91	3.43	33.67	0.00	Average	100	23	VERTICAL
3	5177.00	118.78				3.44	33.70	0.00	Peak	100	23	VERTICAL
4	5177.20	106.30				3.44	33.70	0.00	Average	100	23	VERTICAL

Item 3, 4 are the fundamental frequency at 5180 MHz.

Channel 40

	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	5149.60	71.83	74.00	-2.17	34.73	3.43	33.67	0.00	Peak	108	17	VERTICAL
2	5150.00	53.98	54.00	-0.02	16.88	3.43	33.67	0.00	Average	108	17	VERTICAL
3	5193.60	118.42				3.44	33.73	0.00	Peak	108	17	VERTICAL
4	5194.80	108.27				3.45	33.76	0.00	Average	108	17	VERTICAL

Item 3, 4 are the fundamental frequency at 5200 MHz.

Channel 48

	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	5030.00	65.95	74.00	-8.05	29.09	3.40	33.46	0.00	Peak	111	279	VERTICAL
2	5031.00	50.88	54.00	-3.12	14.02	3.40	33.46	0.00	Average	111	279	VERTICAL
3	5238.00	107.28				3.46	33.82	0.00	Average	111	279	VERTICAL
4	5242.00	119.72				3.46	33.82	0.00	Peak	111	279	VERTICAL
5	5350.00	45.86	54.00	-8.14	8.34	3.49	34.03	0.00	Average	111	279	VERTICAL
6	5396.00	59.27	74.00	-14.73	21.68	3.50	34.09	0.00	Peak	111	279	VERTICAL

Item 3, 4 are the fundamental frequency at 5240.

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 40MHz Ch 38, 46 / Ant. 4: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

Channel 38

	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	5150.00	49.97	54.00	-4.03	12.87	3.43	33.67	0.00	Average	100	32	VERTICAL
2	5150.00	73.11	74.00	-0.89	36.01	3.43	33.67	0.00	Peak	100	32	VERTICAL
3	5179.60	99.57				3.44	33.73	0.00	Average	100	32	VERTICAL
4	5181.60	111.05				3.44	33.73	0.00	Peak	100	32	VERTICAL

Item 3, 4 are the fundamental frequency at 5190 MHz.

Channel 46

	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	5149.20	73.36	74.00	-0.64	36.26	3.43	33.67	0.00	Peak	100	24	VERTICAL
2	5150.00	53.81	54.00	-0.19	16.71	3.43	33.67	0.00	Average	100	24	VERTICAL
3	5213.20	104.92				3.45	33.79	0.00	Average	100	24	VERTICAL
4	5215.60	115.96				3.45	33.79	0.00	Peak	100	24	VERTICAL

Item 3, 4 are the fundamental frequency at 5230 MHz.

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS8 40MHz Ch 38, 46 / Ant. 4: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

Channel 38

	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	5148.00	71.62	74.00	-2.38	34.52	3.43	33.67	0.00	Peak	100	11	VERTICAL
2	5150.00	53.04	54.00	-0.96	15.94	3.43	33.67	0.00	Average	100	11	VERTICAL
3	5176.00	98.78				3.44	33.70	0.00	Average	100	11	VERTICAL
4	5179.60	110.32				3.44	33.73	0.00	Peak	100	11	VERTICAL

Item 3, 4 are the fundamental frequency at 5190 MHz.

Channel 46

	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	5146.40	69.58	74.00	-4.42	32.48	3.43	33.67	0.00	Peak	100	15	VERTICAL
2	5150.00	53.36	54.00	-0.64	16.26	3.43	33.67	0.00	Average	100	15	VERTICAL
3	5212.80	101.74				3.45	33.79	0.00	Average	100	15	VERTICAL
4	5214.00	112.95				3.45	33.79	0.00	Peak	100	15	VERTICAL

Item 3, 4 are the fundamental frequency at 5230 MHz.

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 20MHz Ch 36, 40, 48 / Ant. 5: Chain. 1 (1TX)
Test Date	Sep. 10, 2012		

Channel 36

	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	5150.00	53.08	54.00	-0.92	15.98	3.43	33.67	0.00	Average	130	3	VERTICAL
2	5150.00	73.31	74.00	-0.69	36.21	3.43	33.67	0.00	Peak	130	3	VERTICAL
3	5181.60	100.93				3.44	33.73	0.00	Average	130	3	VERTICAL
4	5182.60	111.74				3.44	33.73	0.00	Peak	130	3	VERTICAL

Item 3, 4 are the fundamental frequency at 5180 MHz.

Channel 40

	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	5149.60	68.21	74.00	-5.79	31.11	3.43	33.67	0.00	Peak	130	3	VERTICAL
2	5150.00	49.19	54.00	-4.81	12.09	3.43	33.67	0.00	Average	130	3	VERTICAL
3	5194.40	113.43				3.44	33.73	0.00	Peak	130	3	VERTICAL
4	5197.60	102.83				3.45	33.76	0.00	Average	130	3	VERTICAL

Item 3, 4 are the fundamental frequency at 5200 MHz.

Channel 48

	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	5102.00	55.89	74.00	-18.11	18.89	3.42	33.58	0.00	Peak	132	349	VERTICAL
2	5150.00	41.01	54.00	-12.99	3.91	3.43	33.67	0.00	Average	132	349	VERTICAL
3	5237.60	102.42				3.46	33.82	0.00	Average	132	349	VERTICAL
4	5241.20	113.77				3.46	33.82	0.00	Peak	132	349	VERTICAL
5	5350.00	42.38	54.00	-11.62	4.86	3.49	34.03	0.00	Average	132	349	VERTICAL
6	5366.20	56.30	74.00	-17.70	18.75	3.49	34.06	0.00	Peak	132	349	VERTICAL

Item 3, 4 are the fundamental frequency at 5240.

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 40MHz Ch 38, 46 / Ant. 5: Chain. 1 (1TX)
Test Date	Sep. 10, 2012		

Channel 38

	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	5150.00	53.47	54.00	-0.53	16.37	3.43	33.67	0.00	Average	132	349	VERTICAL
2	5150.00	72.86	74.00	-1.14	35.76	3.43	33.67	0.00	Peak	132	349	VERTICAL
3	5174.00	102.64				3.44	33.70	0.00	Peak	132	349	VERTICAL
4	5177.20	92.29				3.44	33.70	0.00	Average	132	349	VERTICAL

Item 3, 4 are the fundamental frequency at 5190 MHz.

Channel 46

	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	5146.00	70.08	74.00	-3.92	32.98	3.43	33.67	0.00	Peak	144	349	VERTICAL
2	5150.00	52.25	54.00	-1.75	15.15	3.43	33.67	0.00	Average	144	349	VERTICAL
3	5220.40	108.84				3.46	33.79	0.00	Peak	144	349	VERTICAL
4	5221.20	97.85				3.46	33.79	0.00	Average	144	349	VERTICAL

Item 3, 4 are the fundamental frequency at 5230 MHz.

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 20MHz Ch 36, 40, 48 / Ant. 6: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

Channel 36

	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	5149.80	52.58	54.00	-1.42	15.48	3.43	33.67	0.00	Average	110	356	VERTICAL
2	5149.80	73.29	74.00	-0.71	36.19	3.43	33.67	0.00	Peak	110	356	VERTICAL
3	5178.00	108.25				3.44	33.73	0.00	Average	110	356	VERTICAL
4	5178.40	119.28				3.44	33.73	0.00	Peak	110	356	VERTICAL

Item 3, 4 are the fundamental frequency at 5180 MHz.

Channel 40

	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	5149.60	53.64	54.00	-0.36	16.54	3.43	33.67	0.00	Average	120	360	VERTICAL
2	5150.00	69.83	74.00	-4.17	32.73	3.43	33.67	0.00	Peak	120	360	VERTICAL
3	5197.20	121.73				3.45	33.76	0.00	Peak	120	360	VERTICAL
4	5197.60	112.63				3.45	33.76	0.00	Average	120	360	VERTICAL

Item 3, 4 are the fundamental frequency at 5200 MHz.

Channel 48

	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	5146.40	67.70	74.00	-6.30	30.60	3.43	33.67	0.00	Peak	107	349	VERTICAL
2	5150.00	50.80	54.00	-3.20	13.70	3.43	33.67	0.00	Average	107	349	VERTICAL
3	5233.40	113.52				3.46	33.82	0.00	Average	107	349	VERTICAL
4	5243.60	124.70				3.46	33.82	0.00	Peak	107	349	VERTICAL
5	5350.00	48.10	54.00	-5.90	10.58	3.49	34.03	0.00	Average	107	349	VERTICAL
6	5353.00	61.27	74.00	-12.73	23.75	3.49	34.03	0.00	Peak	107	349	VERTICAL

Item 3, 4 are the fundamental frequency at 5240.

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS8 20MHz Ch 36, 40, 48 / Ant. 6: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

Channel 36

	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	5149.04	68.48	74.00	-5.52	31.38	3.43	33.67	0.00	Peak	104	349	VERTICAL
2	5150.00	53.53	54.00	-0.47	16.43	3.43	33.67	0.00	Average	104	349	VERTICAL
3	5179.04	118.98				3.44	33.73	0.00	Peak	104	349	VERTICAL
4	5181.44	105.80				3.44	33.73	0.00	Average	104	349	VERTICAL

Item 3, 4 are the fundamental frequency at 5180 MHz.

Channel 40

	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	5144.87	67.64	74.00	-6.36	30.54	3.43	33.67	0.00	Peak	102	352	VERTICAL
2	5150.00	53.72	54.00	-0.28	16.62	3.43	33.67	0.00	Average	102	352	VERTICAL
3	5198.08	121.09				3.45	33.76	0.00	Peak	102	352	VERTICAL
4	5202.56	110.14				3.45	33.76	0.00	Average	102	352	VERTICAL

Item 3, 4 are the fundamental frequency at 5200 MHz.

Channel 48

	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	5150.00	50.88	54.00	-3.12	13.78	3.43	33.67	0.00	Average	102	0	VERTICAL
2	5150.00	61.26	74.00	-12.74	24.16	3.43	33.67	0.00	Peak	102	0	VERTICAL
3	5237.60	110.51				3.46	33.82	0.00	Average	102	0	VERTICAL
4	5241.44	122.59				3.46	33.82	0.00	Peak	102	0	VERTICAL
5	5350.00	51.02	54.00	-2.98	13.50	3.49	34.03	0.00	Average	102	0	VERTICAL
6	5350.48	61.29	74.00	-12.71	23.77	3.49	34.03	0.00	Peak	102	0	VERTICAL

Item 3, 4 are the fundamental frequency at 5240.

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 40MHz Ch 38, 46 / Ant. 6: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

Channel 38

	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	5150.00	53.79	54.00	-0.21	16.69	3.43	33.67	0.00	Average	106	345	VERTICAL
2	5150.00	68.04	74.00	-5.96	30.94	3.43	33.67	0.00	Peak	106	345	VERTICAL
3	5197.37	97.49				3.45	33.76	0.00	Average	106	345	VERTICAL
4	5199.62	109.26				3.45	33.76	0.00	Peak	106	345	VERTICAL

Item 3, 4 are the fundamental frequency at 5190 MHz.

Channel 46

	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	5149.68	69.30	74.00	-4.70	32.20	3.43	33.67	0.00	Peak	109	346	VERTICAL
2	5150.00	53.22	54.00	-0.78	16.12	3.43	33.67	0.00	Average	109	346	VERTICAL
3	5219.42	119.13				3.45	33.79	0.00	Peak	109	346	VERTICAL
4	5236.41	106.32				3.46	33.82	0.00	Average	109	346	VERTICAL

Item 3, 4 are the fundamental frequency at 5230 MHz.

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS8 40MHz Ch 38, 46 / Ant. 6: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

Channel 38

	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	5150.00	53.25	54.00	-0.75	16.15	3.43	33.67	0.00	Average	104	349	VERTICAL
2	5150.00	69.14	74.00	-4.86	32.04	3.43	33.67	0.00	Peak	104	349	VERTICAL
3	5196.40	96.75				3.45	33.76	0.00	Average	104	349	VERTICAL
4	5205.60	109.13				3.45	33.76	0.00	Peak	104	349	VERTICAL

Item 3, 4 are the fundamental frequency at 5190 MHz.

Channel 46

	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	5148.80	71.42	74.00	-2.58	34.32	3.43	33.67	0.00	Peak	100	348	VERTICAL
2	5150.00	53.36	54.00	-0.64	16.26	3.43	33.67	0.00	Average	100	348	VERTICAL
3	5217.20	116.48				3.45	33.79	0.00	Peak	100	348	VERTICAL
4	5218.80	104.60				3.45	33.79	0.00	Average	100	348	VERTICAL

Item 3, 4 are the fundamental frequency at 5230 MHz.

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 20MHz Ch 36, 40, 48 / Ant. 10: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

Channel 36

	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	5150.00	52.03	54.00	-1.97	14.93	3.43	33.67	0.00	Average	100	322	HORIZONTAL
2	5150.00	71.12	74.00	-2.88	34.02	3.43	33.67	0.00	Peak	100	322	HORIZONTAL
3	5181.20	112.52				3.44	33.73	0.00	Peak	100	322	HORIZONTAL
4	5181.80	101.39				3.44	33.73	0.00	Average	100	322	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5180 MHz.

Channel 40

	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	5148.40	69.55	74.00	-4.45	32.45	3.43	33.67	0.00	Peak	100	313	HORIZONTAL
2	5150.00	53.34	54.00	-0.66	16.24	3.43	33.67	0.00	Average	100	313	HORIZONTAL
3	5199.20	103.31				3.45	33.76	0.00	Average	100	313	HORIZONTAL
4	5201.20	114.84				3.45	33.76	0.00	Peak	100	313	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5200 MHz.

Channel 48

	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	5148.80	72.38	74.00	-1.62	35.28	3.43	33.67	0.00	Peak	100	315	HORIZONTAL
2	5150.00	51.66	54.00	-2.34	14.56	3.43	33.67	0.00	Average	100	315	HORIZONTAL
3	5238.20	116.23				3.46	33.82	0.00	Peak	100	315	HORIZONTAL
4	5240.60	103.47				3.46	33.82	0.00	Average	100	315	HORIZONTAL
5	5350.00	44.69	54.00	-9.31	7.17	3.49	34.03	0.00	Average	100	315	HORIZONTAL
6	5350.60	65.32	74.00	-8.68	27.80	3.49	34.03	0.00	Peak	100	315	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5240.

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS8 20MHz Ch 36, 40, 48 / Ant. 10: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

Channel 36

	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	5150.00	52.34	54.00	-1.66	15.24	3.43	33.67	0.00	Average	100	327	HORIZONTAL
2	5150.00	69.69	74.00	-4.31	32.59	3.43	33.67	0.00	Peak	100	327	HORIZONTAL
3	5177.00	99.12				3.44	33.70	0.00	Average	100	327	HORIZONTAL
4	5178.20	110.99				3.44	33.73	0.00	Peak	100	327	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5180 MHz.

Channel 40

	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	5147.60	50.64	54.00	-3.36	13.54	3.43	33.67	0.00	Average	100	321	HORIZONTAL
2	5148.40	67.18	74.00	-6.82	30.08	3.43	33.67	0.00	Peak	100	321	HORIZONTAL
3	5201.20	101.50				3.45	33.76	0.00	Average	100	321	HORIZONTAL
4	5202.40	114.23				3.45	33.76	0.00	Peak	100	321	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5200 MHz.

Channel 48

	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	5147.60	69.67	74.00	-4.33	32.57	3.43	33.67	0.00	Peak	100	327	HORIZONTAL
2	5150.00	51.54	54.00	-2.46	14.44	3.43	33.67	0.00	Average	100	327	HORIZONTAL
3	5238.80	100.52				3.46	33.82	0.00	Average	100	327	HORIZONTAL
4	5244.80	113.48				3.46	33.82	0.00	Peak	100	327	HORIZONTAL
5	5350.00	43.77	54.00	-10.23	6.25	3.49	34.03	0.00	Average	100	327	HORIZONTAL
6	5353.00	59.66	74.00	-14.34	22.14	3.49	34.03	0.00	Peak	100	327	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5240.

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS0 40MHz Ch 38, 46 / Ant. 10: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

Channel 38

	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	5148.00	73.43	74.00	-0.57	36.33	3.43	33.67	0.00	Peak	100	320	HORIZONTAL
2	5150.00	53.80	54.00	-0.20	16.70	3.43	33.67	0.00	Average	100	320	HORIZONTAL
3	5178.80	105.56				3.44	33.73	0.00	Peak	100	320	HORIZONTAL
4	5179.20	94.03				3.44	33.73	0.00	Average	100	320	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5190 MHz.

Channel 46

	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	5150.00	53.95	54.00	-0.05	16.85	3.43	33.67	0.00	Average	100	324	HORIZONTAL
2	5150.00	71.54	74.00	-2.46	34.44	3.43	33.67	0.00	Peak	100	324	HORIZONTAL
3	5220.00	97.95				3.45	33.79	0.00	Average	100	324	HORIZONTAL
4	5242.00	109.94				3.46	33.82	0.00	Peak	100	324	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5230 MHz.

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11n MCS8 40MHz Ch 38, 46 / Ant. 10: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

Channel 38

	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	5148.80	71.49	74.00	-2.51	34.39	3.43	33.67	0.00	Peak	144	321	HORIZONTAL
2	5150.00	53.41	54.00	-0.59	16.31	3.43	33.67	0.00	Average	144	321	HORIZONTAL
3	5174.80	92.23				3.44	33.70	0.00	Average	144	321	HORIZONTAL
4	5193.20	103.88				3.44	33.73	0.00	Peak	144	321	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5190 MHz.

Channel 46

	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	5148.40	51.66	54.00	-2.34	14.56	3.43	33.67	0.00	Average	100	328	HORIZONTAL
2	5150.00	67.84	74.00	-6.16	30.74	3.43	33.67	0.00	Peak	100	328	HORIZONTAL
3	5221.20	96.24				3.46	33.79	0.00	Average	100	328	HORIZONTAL
4	5225.20	108.12				3.46	33.79	0.00	Peak	100	328	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5230 MHz.

Note:

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

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

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11a Ch 36, 40, 48 / Ant. 4: Chain. 1 + Chain. 3 (2TX)
Test Date	Oct. 19, 2012		

Channel 36

	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	5149.84	53.42	54.00	-0.58	16.32	3.43	33.67	0.00	Average	121	133	VERTICAL
2	5150.00	73.42	74.00	-0.58	36.32	3.43	33.67	0.00	Peak	121	133	VERTICAL
3	5172.47	117.10				3.44	33.70	0.00	Peak	121	133	VERTICAL
4	5178.24	105.08				3.44	33.73	0.00	Average	121	133	VERTICAL

Item 3, 4 are the fundamental frequency at 5180 MHz.

Channel 40

	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	5145.51	70.87	74.00	-3.13	33.77	3.43	33.67	0.00	Peak	107	211	VERTICAL
2	5149.68	53.51	54.00	-0.49	16.41	3.43	33.67	0.00	Average	107	211	VERTICAL
3	5200.64	108.59				3.45	33.76	0.00	Average	107	211	VERTICAL
4	5203.85	120.17				3.45	33.76	0.00	Peak	107	211	VERTICAL

Item 3, 4 are the fundamental frequency at 5200 MHz.

Channel 48

	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	5150.00	47.25	54.00	-6.75	10.15	3.43	33.67	0.00	Average	110	178	VERTICAL
2	5150.00	62.82	74.00	-11.18	25.72	3.43	33.67	0.00	Peak	110	178	VERTICAL
3	5237.60	121.33				3.46	33.82	0.00	Peak	110	178	VERTICAL
4	5239.52	109.53				3.46	33.82	0.00	Average	110	178	VERTICAL
5	5364.90	44.51	54.00	-9.49	6.96	3.49	34.06	0.00	Average	110	178	VERTICAL
6	5365.39	57.53	74.00	-16.47	19.98	3.49	34.06	0.00	Peak	110	178	VERTICAL

Item 3, 4 are the fundamental frequency at 5240.

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11a Ch 36, 40, 48 / Ant. 5: Chain. 1 (1TX)
Test Date	Sep. 10, 2012		

Channel 36

	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	5149.00	72.79	74.00	-1.21	35.69	3.43	33.67	0.00	Peak	110	352	VERTICAL
2	5150.00	52.30	54.00	-1.70	15.20	3.43	33.67	0.00	Average	110	352	VERTICAL
3	5177.60	101.24				3.44	33.73	0.00	Average	110	352	VERTICAL
4	5177.80	112.21				3.44	33.73	0.00	Peak	110	352	VERTICAL

Item 3, 4 are the fundamental frequency at 5180 MHz.

Channel 40

	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	5148.80	64.64	74.00	-9.36	27.54	3.43	33.67	0.00	Peak	125	358	VERTICAL
2	5150.00	49.07	54.00	-4.93	11.97	3.43	33.67	0.00	Average	125	358	VERTICAL
3	5196.80	112.97				3.45	33.76	0.00	Peak	125	358	VERTICAL
4	5197.60	101.89				3.45	33.76	0.00	Average	125	358	VERTICAL

Item 3, 4 are the fundamental frequency at 5200 MHz.

Channel 48

	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	5106.20	44.32	54.00	-9.68	7.32	3.42	33.58	0.00	Average	129	355	VERTICAL
2	5145.20	57.92	74.00	-16.08	20.82	3.43	33.67	0.00	Peak	129	355	VERTICAL
3	5242.40	103.06				3.46	33.82	0.00	Average	129	355	VERTICAL
4	5243.00	114.50				3.46	33.82	0.00	Peak	129	355	VERTICAL
5	5353.00	42.35	54.00	-11.65	4.83	3.49	34.03	0.00	Average	129	355	VERTICAL
6	5353.00	55.52	74.00	-18.48	18.00	3.49	34.03	0.00	Peak	129	355	VERTICAL

Item 3, 4 are the fundamental frequency at 5240.

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11a Ch 36, 40, 48 / Ant. 6: Chain. 1 + Chain. 3 (2TX)
Test Date	Oct. 19, 2012		

Channel 36

	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	5147.92	72.99	74.00	-1.01	35.89	3.43	33.67	0.00	Peak	120	358	VERTICAL
2	5150.00	51.96	54.00	-2.04	14.86	3.43	33.67	0.00	Average	120	358	VERTICAL
3	5176.64	120.34				3.44	33.70	0.00	Peak	120	358	VERTICAL
4	5178.40	107.53				3.44	33.73	0.00	Average	120	358	VERTICAL

Item 3, 4 are the fundamental frequency at 5180 MHz.

Channel 40

	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	5148.72	73.11	74.00	-0.89	36.01	3.43	33.67	0.00	Peak	131	0	VERTICAL
2	5150.00	52.34	54.00	-1.66	15.24	3.43	33.67	0.00	Average	131	0	VERTICAL
3	5202.89	110.54				3.45	33.76	0.00	Average	131	0	VERTICAL
4	5203.21	122.89				3.45	33.76	0.00	Peak	131	0	VERTICAL

Item 3, 4 are the fundamental frequency at 5200 MHz.

Channel 48

	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	5148.56	60.95	74.00	-13.05	23.85	3.43	33.67	0.00	Peak	129	0	VERTICAL
2	5150.00	45.73	54.00	-8.27	8.63	3.43	33.67	0.00	Average	129	0	VERTICAL
3	5237.12	123.93				3.46	33.82	0.00	Peak	129	0	VERTICAL
4	5242.40	113.41				3.46	33.82	0.00	Average	129	0	VERTICAL
5	5350.48	47.39	54.00	-6.61	9.87	3.49	34.03	0.00	Average	129	0	VERTICAL
6	5350.96	61.03	74.00	-12.97	23.51	3.49	34.03	0.00	Peak	129	0	VERTICAL

Item 3, 4 are the fundamental frequency at 5240.

Temperature	25.6℃	Humidity	56%
Test Engineer	Will Tung	Configurations	IEEE 802.11a Ch 36, 40, 48 / Ant. 10: Chain. 1 + Chain. 3 (2TX)
Test Date	Sep. 10, 2012		

Channel 36

	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	5149.20	73.04	74.00	-0.96	35.94	3.43	33.67	0.00	Peak	100	322	HORIZONTAL
2	5150.00	52.09	54.00	-1.91	14.99	3.43	33.67	0.00	Average	100	322	HORIZONTAL
3	5178.20	112.61				3.44	33.73	0.00	Peak	100	322	HORIZONTAL
4	5178.40	101.11				3.44	33.73	0.00	Average	100	322	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5180 MHz.

Channel 40

	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	5150.00	51.21	54.00	-2.79	14.11	3.43	33.67	0.00	Average	100	319	HORIZONTAL
2	5150.00	68.93	74.00	-5.07	31.83	3.43	33.67	0.00	Peak	100	319	HORIZONTAL
3	5195.20	115.59				3.45	33.76	0.00	Peak	100	319	HORIZONTAL
4	5197.20	104.72				3.45	33.76	0.00	Average	100	319	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5200 MHz.

Channel 48

	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	5146.40	71.87	74.00	-2.13	34.77	3.43	33.67	0.00	Peak	100	319	HORIZONTAL
2	5148.80	50.49	54.00	-3.51	13.39	3.43	33.67	0.00	Average	100	319	HORIZONTAL
3	5237.00	103.87				3.46	33.82	0.00	Average	100	319	HORIZONTAL
4	5238.20	116.05				3.46	33.82	0.00	Peak	100	319	HORIZONTAL
5	5350.00	44.60	54.00	-9.40	7.08	3.49	34.03	0.00	Average	100	319	HORIZONTAL
6	5358.40	62.26	74.00	-11.74	24.74	3.49	34.03	0.00	Peak	100	319	HORIZONTAL

Item 3, 4 are the fundamental frequency at 5240.

Note:

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

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

4.8. Frequency Stability Measurement

4.8.1. Limit

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emissions is maintained within the band of operation under all conditions of normal operation as specified in the user's manual or ±20ppm (IEEE 802.11nspecification).

4.8.2. Measuring Instruments and Setting

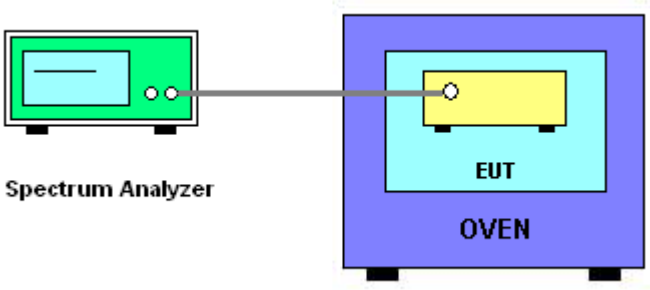
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Entire absence of modulation emissions bandwidth
RB	10 kHz
VB	10 kHz
Sweep Time	Auto

4.8.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5. fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 10^6 ppm and the limit is less than ±20ppm (IEEE 802.11nspecification).
6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
7. Extreme temperature rule is -30°C~50°C.

4.8.4. Test Setup Layout



4.8.5. Test Deviation

There is no deviation with the original standard.

4.8.6. EUT Operation during Test

The EUT was programmed to be in continuously un-modulation transmitting mode.

4.8.7. Test Result of Frequency Stability

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)
(V)	**5200**
126.50	5199.9601
110.00	5199.9603
93.50	5199.9604
Max. Deviation (MHz)	**0.039900**
Max. Deviation (ppm)	**7.67**

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)
(°C)	**5200**
-30	5199.9605
-20	5199.9615
-10	5199.9624
0	5199.9618
10	5199.9623
20	5199.9611
30	5199.9621
40	5199.9616
50	5199.9622
Max. Deviation (MHz)	**0.039500**
Max. Deviation (ppm)	**7.60**

4.9. Antenna Requirements

4.9.1. 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.

4.9.2. 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, 2012	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	4083	150kHz ~ 100MHz	Nov. 14, 2011	Conduction (CO01-CB)
V- LISN	Schwarzbeck	NSLK 8127	8127-478	9K ~ 30MHz	Jun. 22, 2012	Conduction (CO01-CB)
PULSE LIMITER	R&S	ESH3-Z2	100430	9K~30MHz	Feb. 03, 2012	Conduction (CO01-CB)
COND Cable	Woken	Cable	1	0.15MHz~30MHz	Dec. 4, 2011	Conduction (CO01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	Jan. 11, 2012	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz~18GHz	Nov. 25, 2011	Radiation (03CH01-CB)
Horn Antenna	SCHWARZBEAK	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Nov. 22, 2011	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Nov. 29, 2011	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26.5GHz ~ 40GHz	Jul. 31, 2012	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. 20, 2012	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9 kHz - 30 MHz	Sep. 09, 2012*	Radiation (03CH01-CB)
Turn Table	INN CO	CO 2000	N/A	0 ~ 360 degree	N/A	Radiation (03CH01-CB)
Antenna Mast	INN CO	CO2000	N/A	1 m - 4 m	N/A	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz - 1 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-1	N/A	1 GHz – 26.5 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-2	N/A	1 GHz – 26.5 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-3	N/A	1 GHz - 40 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-4	N/A	1 GHz - 40 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
Signal analyzer	R&S	FSV40	100979	9KHz~40GHz	Sep. 26, 2012	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 05, 2012	Conducted (TH01-CB)
Thermo-Hygro Meter	N/A	HC 520	#1	15~70 degree	Nov. 02, 2011	Conducted (TH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Signal Generator	R&S	SMR40	100302	10MHz-40GHz	Nov. 22, 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)
RF Cable-high	Woken	High Cable-7	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-8	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-9	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-10	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-11	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-12	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-13	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
Power Sensor	Anritsu	MA2411B	0917223	300MHz~40GHz	Nov. 01, 2011	Conducted (TH01-CB)
Power Meter	Anritsu	ML2495A	1035008	300MHz~40GHz	Nov. 01, 2011	Conducted (TH01-CB)

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

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

6. TEST LOCATION

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

7. TAF CERTIFICATE OF ACCREDITATION

Certificate No. : L1190-110702

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

Certificate of Accreditation

This is to certify that

Sporton International Inc.
EMC & Wireless Communications Laboratory
No.52, Hwa Ya 1st Road, Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

is accredited in respect of laboratory

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

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

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