SPORTON International Inc.
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FCC RADIO TEST REPORT

Applicant's company	**CyberTAN Technology, Inc.**
Applicant Address	No. 99, Park Avenue III, Science-based Industrial Park, Hsinchu, 308 Taiwan
FCC ID	**N89-ISB7105W**
Manufacturer's company	**CyberTAN Technology, Inc.**
Manufacturer Address	No. 99, Park Avenue III, Science-based Industrial Park, Hsinchu, 308 Taiwan

Product Name	Internet Protocal Set Top Box Basic SD/HD with WiFi
Brand Name	Cisco
Model No.	ISB7105W
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5150 ~ 5350MHz / 5470 ~ 5725MHz
Received Date	Sep. 11, 2013
Final Test Date	Nov. 27, 2013
Submission Type	Original Equipment
Operating Mode	Client (without radar detection function)

Statement

Test result included is for the IEEE 802.11n (5150 ~ 5350MHz / 5470 ~ 5725MHz) 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**, **47 CFR FCC Part 15 Subpart E, KDB 789033 D01 v01r03, KDB 662911 D01 v02.**

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
FR2O0812-01AB	Rev. 01	Initial issue of report	Dec. 25, 2013

Certificate No.: CB10212011

1. CERTIFICATE OF COMPLIANCE

Product Name	:	Internet Protocal Set Top Box Basic SD/HD with WiFi
Brand Name	:	Cisco
Model No.	:	ISB7105W
Applicant	:	CyberTAN Technology, 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 Sep. 11, 2013 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.

Sam Chen

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	10.11 dB
4.2	15.407(a)	26dB Spectrum Bandwidth and 99% Occupied Bandwidth	Complies	-
4.3	15.407(a)	Maximum Conducted Output Power	Complies	0.02 dB
4.4	15.407(a)	Power Spectral Density	Complies	0.04 dB
4.5	15.407(a)	Peak Excursion	Complies	2.84 dB
4.6	15.407(b)	Radiated Emissions	Complies	3.13 dB
4.7	15.407(b)	Band Edge Emissions	Complies	1.04 dB
4.8	15.407(g)	Frequency Stability	Complies	-
4.9	15.203	Antenna Requirements	Complies	-

3. GENERAL INFORMATION

3.1. Product Details

IEEE 802.11n

Items	Description
Product Type	WLAN (2TX, 4RX)
Radio Type	Intentional Transceiver
Power Type	From power adapter
Modulation	see the below table for IEEE 802.11n
Data Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data Rate (Mbps)	see the below table for IEEE 802.11n
Frequency Range	5150 ~ 5350MHz / 5470 ~ 5725MHz
Channel Number	16 for 20MHz bandwidth ; 7 for 40MHz bandwidth
Channel Band Width (99%)	Test Mode: Mode 1. EUT 1 MCS0 (20MHz): 19.04 MHz ; MCS0 (40MHz): 37.44 MHz Test Mode: Mode 2. EUT 2 MCS0 (20MHz): 18.40 MHz ; MCS0 (40MHz): 37.12 MHz
Maximum Conducted Output Power	Test Mode: Mode 1. EUT 1 Band 1: MCS0 (20MHz): 16.56 dBm ; MCS0 (40MHz): 16.98 dBm Band 2: MCS0 (20MHz): 22.93 dBm ; MCS0 (40MHz): 22.64 dBm Band 3: MCS0 (20MHz): 22.79 dBm ; MCS0 (40MHz): 22.94 dBm Test Mode: Mode 2. EUT 2 Band 1: MCS0 (20MHz): 16.55 dBm ; MCS0 (40MHz): 16.85 dBm Band 2: MCS0 (20MHz): 22.84 dBm ; MCS0 (40MHz): 22.90 dBm Band 3: MCS0 (20MHz): 22.47 dBm ; MCS0 (40MHz): 22.66 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Antenna and Band width

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

IEEE 11n Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	2	MCS0-15
802.11n (HT40)	2	MCS0-15
Note 1: IEEE Std. 802.11n modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT support HT20 and HT40. Note 2: Modulation modes consist of below configuration: HT20/HT40: IEEE 802.11n		

3.2. Accessories

Power	Brand	Model No.	Rating
Adapter	LITEON	PB-1240-6SA1	Input: 100-120Vac, 0.6A, 50/60Hz Output: 12Vdc, 2.0A, 24W

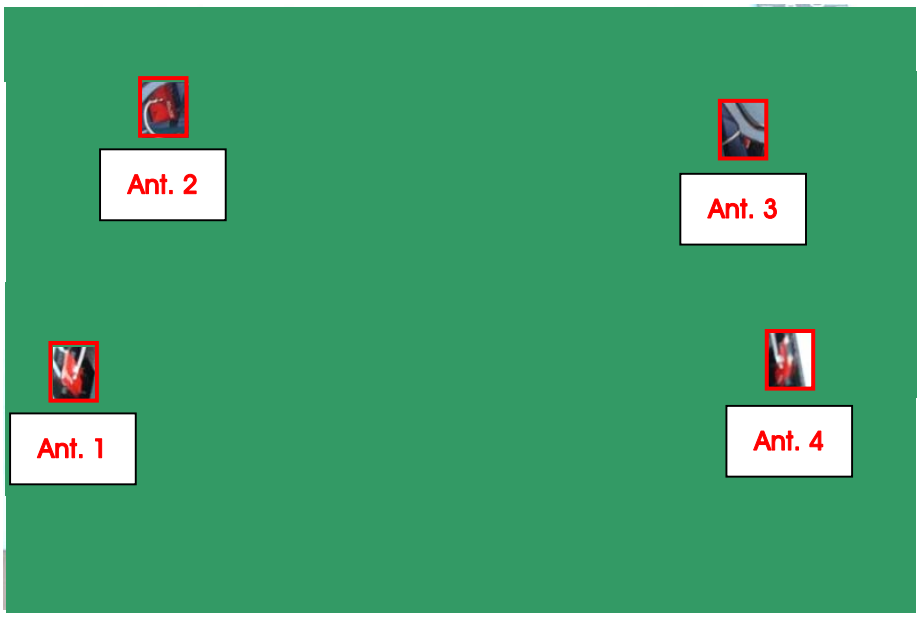
3.3. Table for Filed Antenna

For EUT 1

Ant.	Brand	Model No.	Antenna Type	Connector	Gain (dBi)
1	-	-	PCB Antenna	I-PEX	3.6
2	-	-	PCB Antenna	I-PEX	3.9
3	-	-	PCB Antenna	I-PEX	4.5
4	-	-	PCB Antenna	I-PEX	3.7

Note: The EUT has four antennas.

Ant. 1 and Ant. 2 could transmit simultaneously, but Ant. 1, Ant. 2, Ant. 3 and Ant. 4 could receive simultaneously.

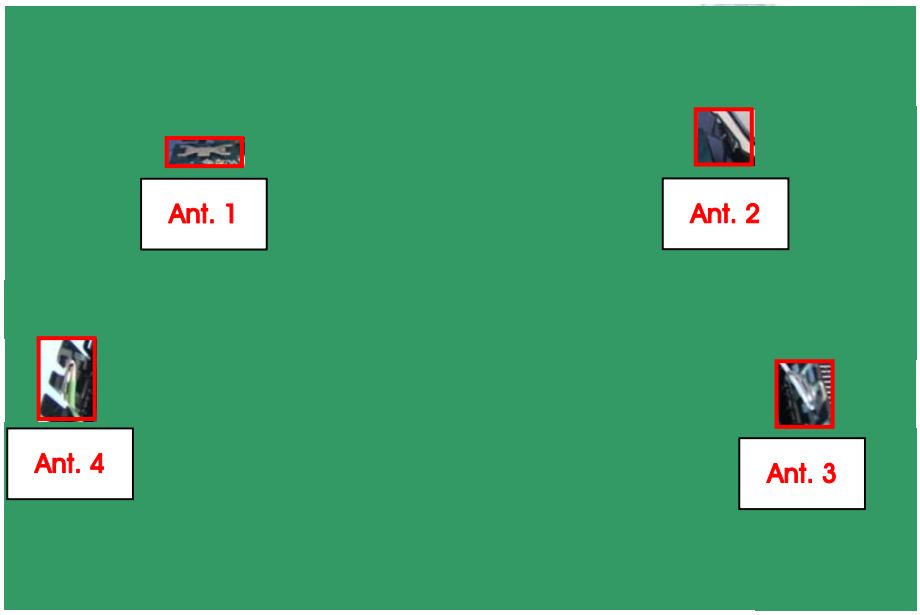


For EUT 2

Ant.	Brand	Model No.	Antenna Type	Connector	Gain (dBi)
1	-	-	PIFA Antenna	Murata	3.45
2	-	-	PIFA Antenna	I-PEX	4.80
3	-	-	PIFA Antenna	I-PEX	4.01
4	-	-	PIFA Antenna	I-PEX	3.83

Note: The EUT has four antennas.

Ant. 1 and Ant. 3 could transmit simultaneously, but Ant. 1, Ant. 2, Ant. 3 and Ant. 4 could receive simultaneously.



3.4. Table for Carrier Frequencies

The EUT has two bandwidth system.

For 20MHz bandwidth systems, use Channel 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 132, 136, 140.

For 40MHz bandwidth systems, use Channel 38, 46, 54, 62, 102, 110, 134.

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
5250~5350 MHz Band 2	52	5260 MHz	60	5300 MHz
	54	5270 MHz	62	5310 MHz
	56	5280 MHz	64	5320 MHz
5470~5725 MHz Band 3	100	5500 MHz	116	5580 MHz
	102	5510 MHz	132	5660 MHz
	104	5520 MHz	134	5670 MHz
	108	5540 MHz	136	5680 MHz
	110	5550 MHz	140	5700 MHz
	112	5560 MHz	-	-

3.5. Table for Product Information

Items	Description	
Communication Mode	☒ IP Based (Load Based)	☐ Frame Based
TPC Function	☐ With TPC	☒ Without TPC
Weather Band (5600~5650MHz)	☐ With 5600~5650MHz	☒ Without 5600~5650MHz
Beamforming Function	☐ With beamforming	☒ Without beamforming

3.6. 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 Mode: Mode 1. EUT 1

Test Items	Mode		Data Rate	Channel	Antenna
AC Power Conducted Emission	CTX		-	-	-
Max. Conducted Output Power	11n 20MHz	Band 1-3	MCS0	36/40/48/52/60/64 /100/116/140	1+2
	11n 40MHz	Band 1-3	MCS0	38/46/54/62/ 102/110/134	1+2
Power Spectral Density	11n 20MHz	Band 1-3	MCS0	36/40/48/52/60/64 /100/116/140	1+2
	11n 40MHz	Band 1-3	MCS0	38/46/54/62/ 102/110/134	1+2
26dB Spectrum Bandwidth 99% Occupied Bandwidth Measurement	11n 20MHz	Band 1-3	MCS0	36/40/48/52/60/64 /100/116/140	1+2
	11n 40MHz	Band 1-3	MCS0	38/46/54/62/ 102/110/134	1+2
Peak Excursion	11n 20MHz	Band 1-3	MCS0	36/40/48/52/60/64 /100/116/140	1+2
	11n 40MHz	Band 1-3	MCS0	38/46/54/62/ 102/110/134	1+2
Radiated Emission Below 1GHz	CTX		-	-	-
Radiated Emission Above 1GHz	11n 20MHz	Band 1-3	MCS0	36/40/48/52/60/64 /100/116/140	1+2
	11n 40MHz	Band 1-3	MCS0	38/46/54/62/ 102/110/134	1+2
Band Edge Emission	11n 20MHz	Band 1-3	MCS0	36/40/48/52/60/64 /100/116/140	1+2
	11n 40MHz	Band 1-3	MCS0	38/46/54/62/ 102/110/134	1+2
Frequency Stability	Un-modulation		-	40/60/100	N/A

Test Mode: Mode 2. EUT 2

Test Items	Mode		Data Rate	Channel	Antenna
AC Power Conducted Emission	CTX		-	-	-
Max. Conducted Output Power	11n 20MHz	Band 1-3	MCS0	36/40/48/52/60/64 /100/116/140	1+3
	11n 40MHz	Band 1-3	MCS0	38/46/54/62/ 102/110/134	1+3
Power Spectral Density	11n 20MHz	Band 1-3	MCS0	36/40/48/52/60/64 /100/116/140	1+3
	11n 40MHz	Band 1-3	MCS0	38/46/54/62/ 102/110/134	1+3
26dB Spectrum Bandwidth 99% Occupied Bandwidth Measurement	11n 20MHz	Band 1-3	MCS0	36/40/48/52/60/64 /100/116/140	1+3
	11n 40MHz	Band 1-3	MCS0	38/46/54/62/ 102/110/134	1+3
Peak Excursion	11n 20MHz	Band 1-3	MCS0	36/40/48/52/60/64 /100/116/140	1+3
	11n 40MHz	Band 1-3	MCS0	38/46/54/62/ 102/110/134	1+3
Radiated Emission Below 1GHz	CTX		-	-	-
Radiated Emission Above 1GHz	11n 20MHz	Band 1-3	MCS0	36/40/48/52/60/64 /100/116/140	1+3
	11n 40MHz	Band 1-3	MCS0	38/46/54/62/ 102/110/134	1+3
Band Edge Emission	11n 20MHz	Band 1-3	MCS0	36/40/48/52/60/64 /100/116/140	1+3
	11n 40MHz	Band 1-3	MCS0	38/46/54/62/ 102/110/134	1+3
Frequency Stability	Un-modulation		-	40/60/100	N/A

The following test modes were performed for all tests:

Mode 1. EUT 1

Mode 2. EUT 2

3.7. 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	-
CO02-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.

3.8. Table for Multiple Listing

There are two antenna types of EUT which are identical to each other in all aspects except for the following table:

Model No.	Antenna Type	Remark
ISB7105W	PCB Antenna	EUT 1
	PIFA Antenna	EUT 2

3.9. Table for Supporting Units

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E6430	DoC
Flash Disk	Sandisk	SDCZ50-032G	DoC

3.10. Table for Parameters of Test Software Setting

During testing, Channel and 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.

Test Mode: Mode 1. EUT 1

Power Parameters of IEEE 802.11n MCS0 20MHz

Test Software Version	DOS								
Frequency	5180 MHz	5200 MHz	5240 MHz	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz
MCS0 20MHz	13	13	13	20	20	20	20	20	17

Power Parameters of IEEE 802.11n MCS0 40MHz

Test Software Version	DOS						
Frequency	5190 MHz	5230 MHz	5270 MHz	5310 MHz	5510 MHz	5550 MHz	5670 MHz
MCS0 40MHz	14	14	20	16	15	20	20

Test Mode: Mode 2. EUT 2

Power Parameters of IEEE 802.11n MCS0 20MHz

Test Software Version	DOS								
Frequency	5180 MHz	5200 MHz	5240 MHz	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz
MCS0 20MHz	12	12	12	18	19	19	19	19	19

Power Parameters of IEEE 802.11n MCS0 40MHz

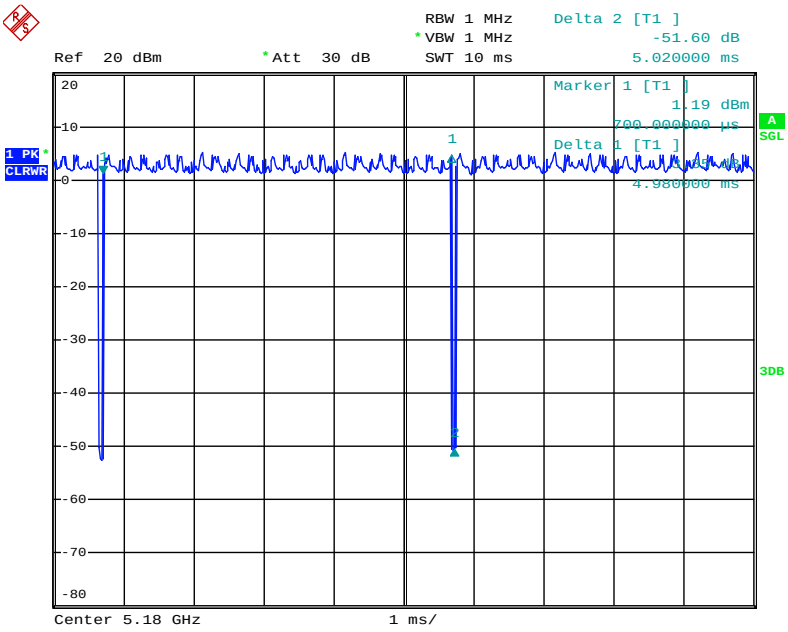
Test Software Version	DOS						
Frequency	5190 MHz	5230 MHz	5270 MHz	5310 MHz	5510 MHz	5550 MHz	5670 MHz
MCS0 40MHz	13	13	19	15	15	19	19

3.11. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

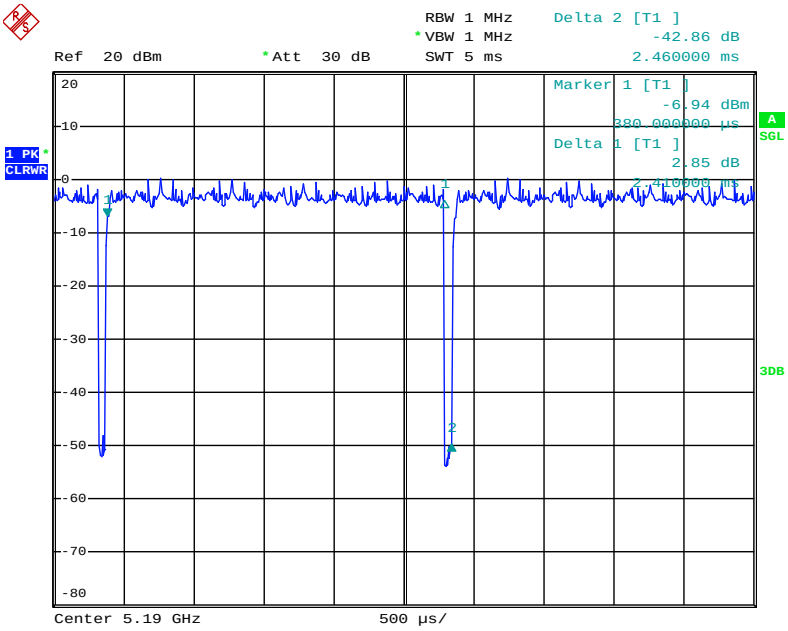
3.12. Duty Cycle

IEEE 802.11n MCS0 20MHz / Test Mode: Mode 1. EUT 1



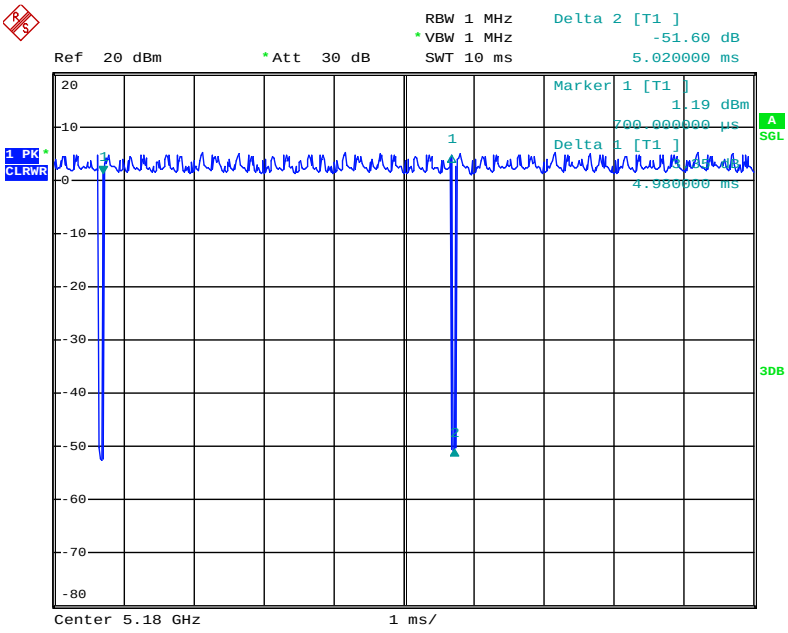
Date: 29.OCT.2013 07:35:17

IEEE 802.11n MCS0 40MHz / Test Mode: Mode 1. EUT 1



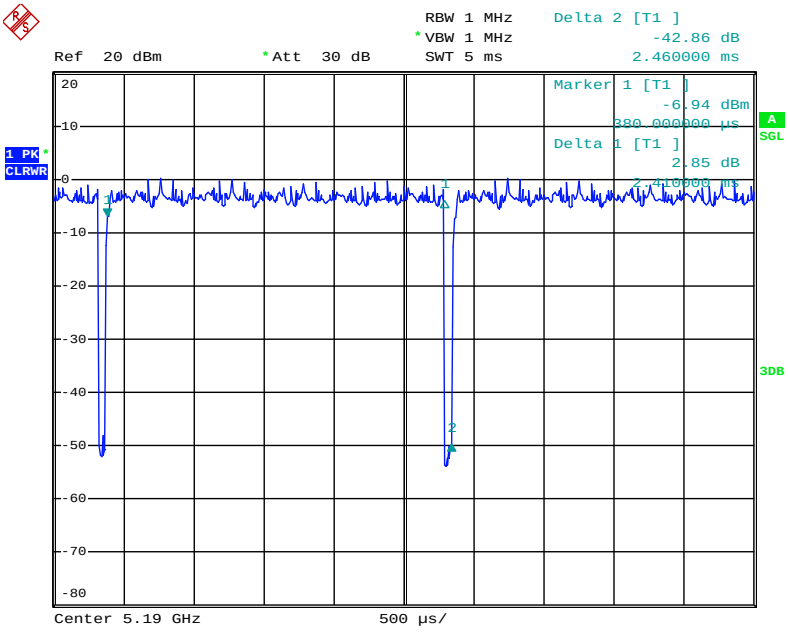
Date: 29.OCT.2013 07:36:28

IEEE 802.11n MCS0 20MHz / Test Mode: Mode 2. EUT 2



Date: 29.OCT.2013 07:35:17

IEEE 802.11n MCS0 40MHz / Test Mode: Mode 2. EUT 2



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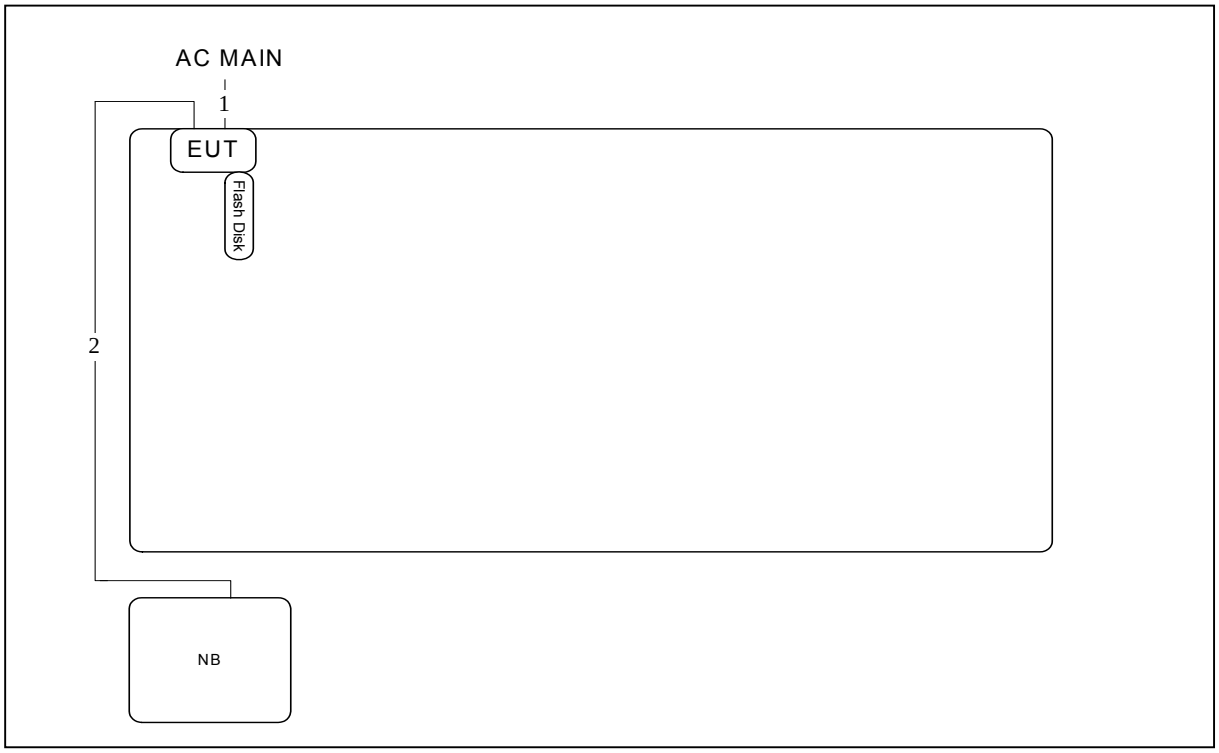
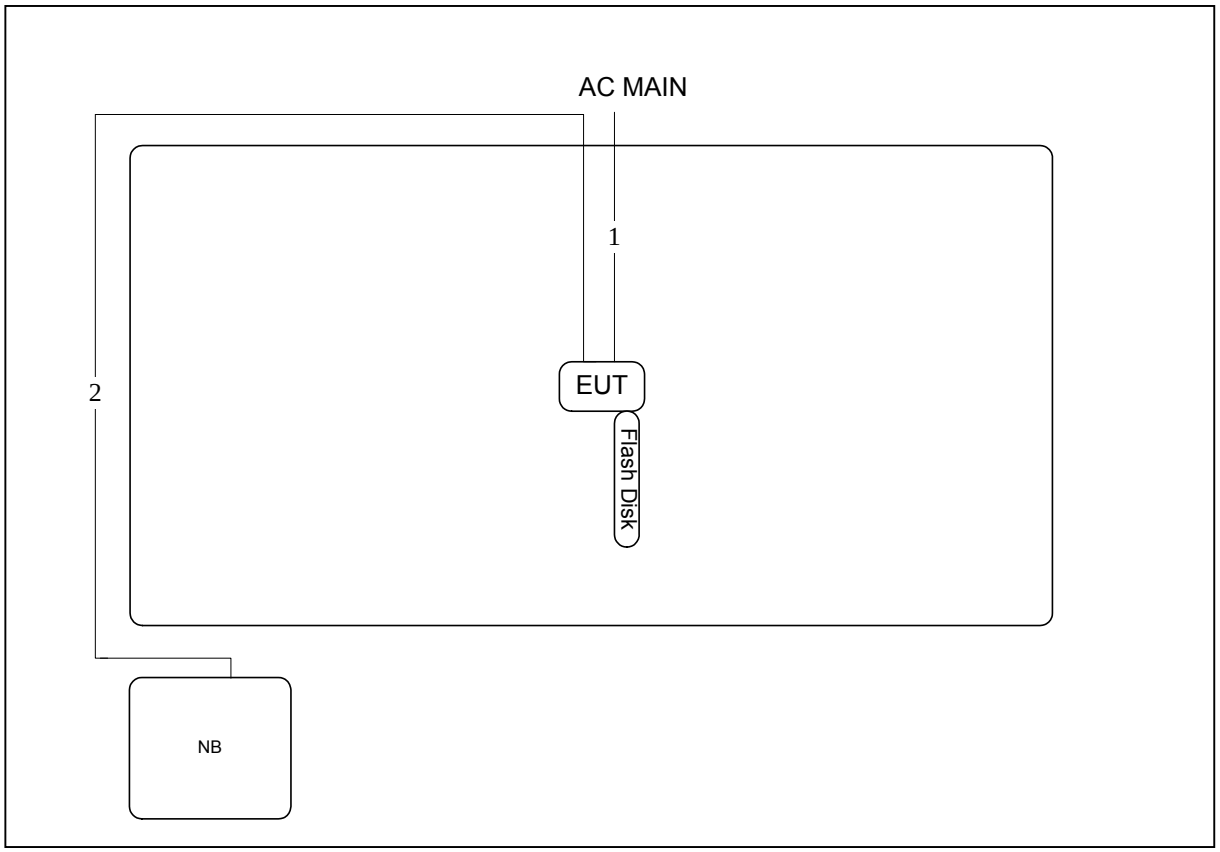
3.13. Test Configurations

3.13.1. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	2m
2	RJ-45 cable	No	10m

3.13.2. Radiation Emissions Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	2m
2	RJ-45 cable	No	10m

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

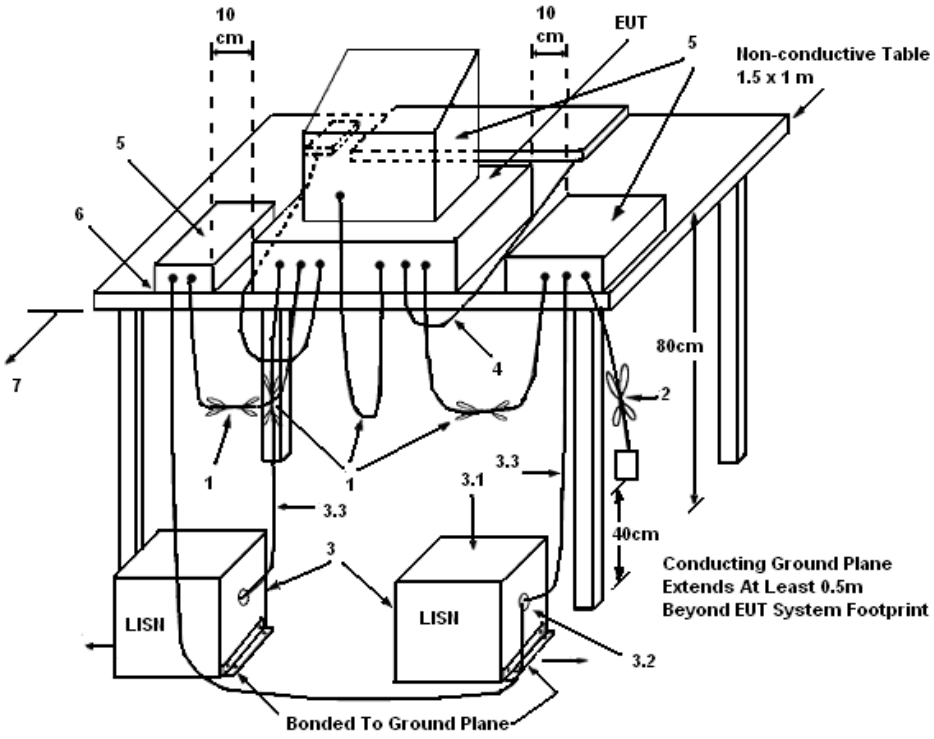
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

Receiver Parameters	Setting
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

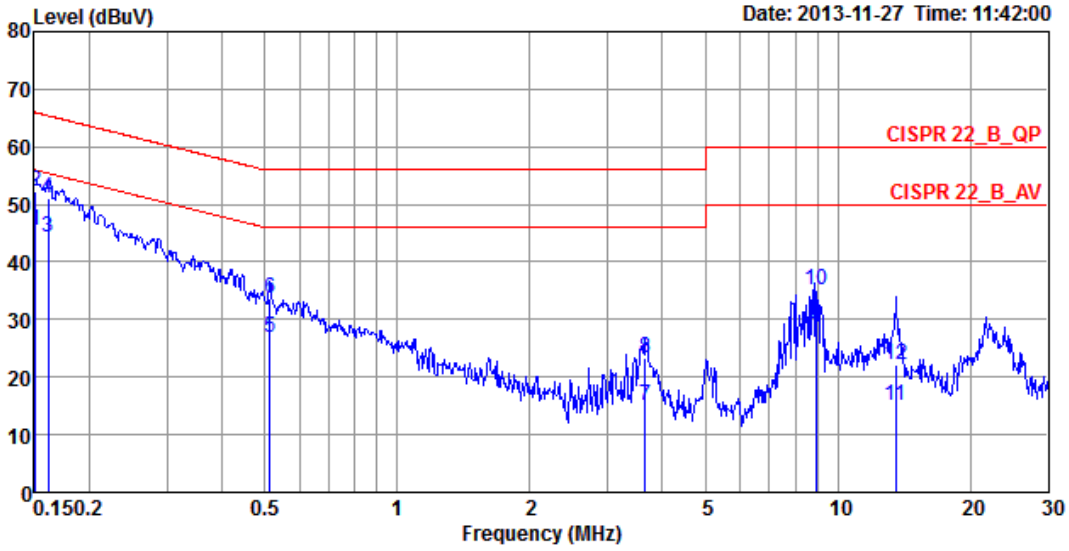
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

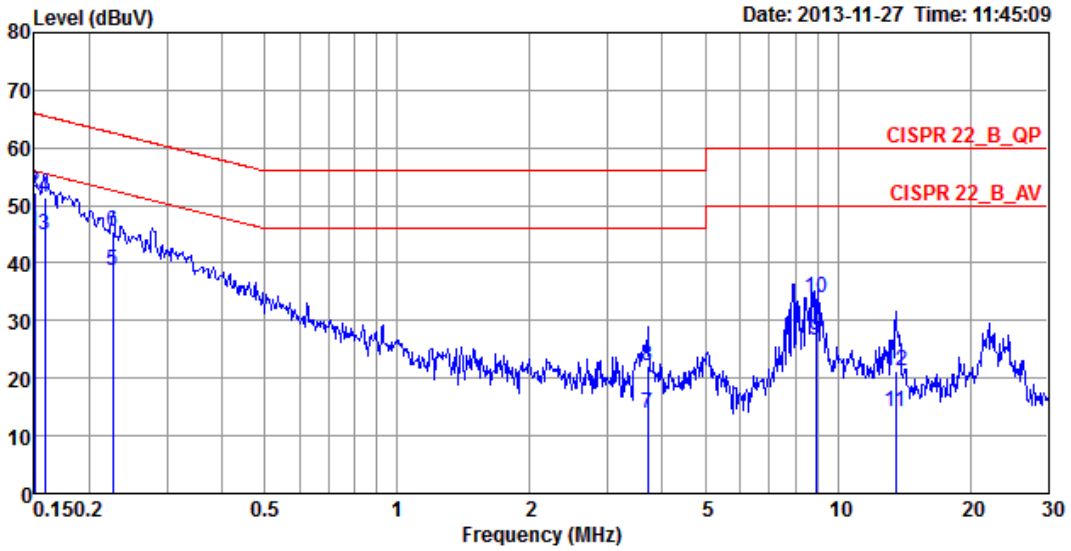
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	26°C	Humidity	55%
Test Engineer	Justin Chiu	Phase	Line
Configuration	CTX	Test Mode	Mode 1. EUT 1



		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
		MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	a	0.1508	45.41	-10.55	55.96	45.14	0.22	0.05	Average	LINE
2	q	0.1508	52.26	-13.70	65.96	51.99	0.22	0.05	QP	LINE
3		0.1616	44.38	-11.00	55.38	44.11	0.22	0.05	Average	LINE
4		0.1616	51.01	-14.37	65.38	50.74	0.22	0.05	QP	LINE
5		0.5128	26.86	-19.14	46.00	26.59	0.22	0.05	Average	LINE
6		0.5128	33.65	-22.35	56.00	33.38	0.22	0.05	QP	LINE
7		3.6611	15.04	-30.96	46.00	14.64	0.28	0.12	Average	LINE
8		3.6611	23.45	-32.55	56.00	23.05	0.28	0.12	QP	LINE
9		8.9123	29.26	-20.74	50.00	28.68	0.41	0.17	Average	LINE
10		8.9123	35.25	-24.75	60.00	34.67	0.41	0.17	QP	LINE
11		13.5509	15.03	-34.97	50.00	14.34	0.56	0.13	Average	LINE
12		13.5509	22.02	-37.98	60.00	21.33	0.56	0.13	QP	LINE

Temperature	26°C	Humidity	55%
Test Engineer	Justin Chiu	Phase	Neutral
Configuration	CTX	Test Mode	Mode 1. EUT 1

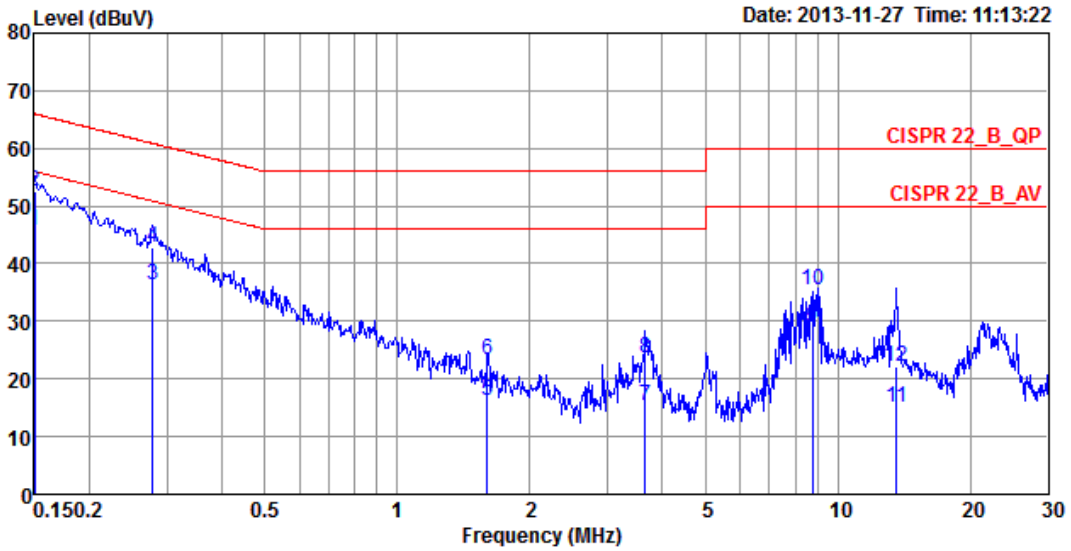


		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
		MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	a	0.1500	45.40	-10.60	56.00	45.26	0.09	0.05	Average	NEUTRAL
2	q	0.1500	52.21	-13.79	66.00	52.07	0.09	0.05	QP	NEUTRAL
3		0.1582	44.78	-10.78	55.56	44.64	0.09	0.05	Average	NEUTRAL
4		0.1582	51.42	-14.14	65.56	51.28	0.09	0.05	QP	NEUTRAL
5		0.2256	38.77	-13.84	52.61	38.63	0.07	0.07	Average	NEUTRAL
6		0.2256	45.56	-17.05	62.61	45.42	0.07	0.07	QP	NEUTRAL
7		3.7001	13.90	-32.10	46.00	13.63	0.15	0.12	Average	NEUTRAL
8		3.7001	22.06	-33.94	56.00	21.79	0.15	0.12	QP	NEUTRAL
9		8.9142	26.46	-23.54	50.00	26.02	0.27	0.17	Average	NEUTRAL
10		8.9142	34.00	-26.00	60.00	33.56	0.27	0.17	QP	NEUTRAL
11		13.5509	14.12	-35.88	50.00	13.61	0.38	0.13	Average	NEUTRAL
12		13.5509	21.32	-38.68	60.00	20.81	0.38	0.13	QP	NEUTRAL

Note:

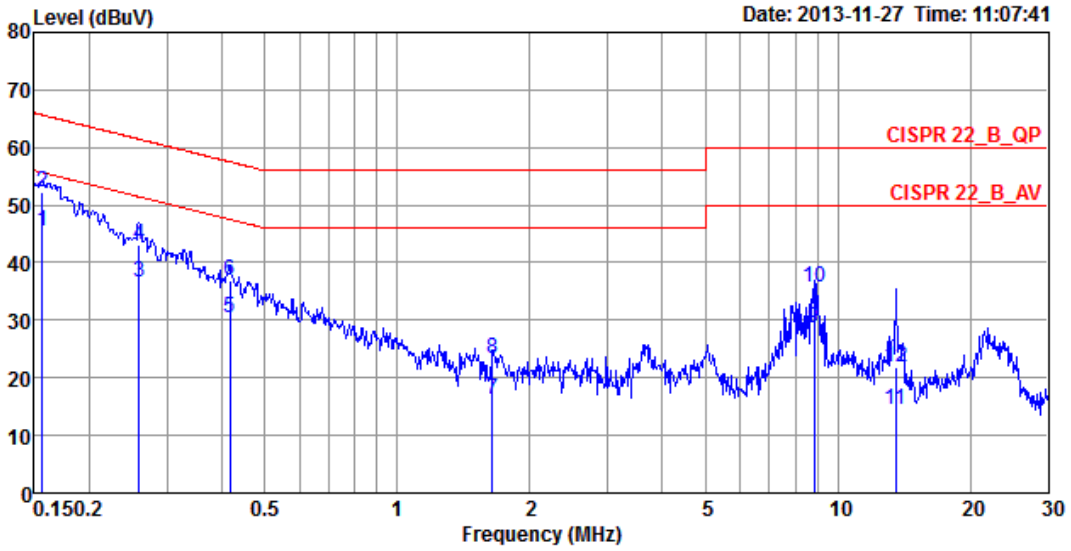
Level = Read Level + LISN Factor + Cable Loss

Temperature	26°C	Humidity	55%
Test Engineer	Justin Chiu	Phase	Line
Configuration	CTX	Test Mode	Mode 2. EUT 2



		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
		MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	a	0.1500	45.61	-10.39	56.00	45.34	0.22	0.05	Average	LINE
2	q	0.1500	52.46	-13.54	66.00	52.19	0.22	0.05	QP	LINE
3		0.2788	36.24	-14.61	50.85	35.97	0.21	0.06	Average	LINE
4		0.2788	42.84	-18.01	60.85	42.57	0.21	0.06	QP	LINE
5		1.6020	16.17	-29.83	46.00	15.85	0.24	0.08	Average	LINE
6		1.6020	23.28	-32.72	56.00	22.96	0.24	0.08	QP	LINE
7		3.6611	15.49	-30.51	46.00	15.09	0.28	0.12	Average	LINE
8		3.6611	23.70	-32.30	56.00	23.30	0.28	0.12	QP	LINE
9		8.7413	28.84	-21.16	50.00	28.26	0.41	0.17	Average	LINE
10		8.7413	35.47	-24.53	60.00	34.89	0.41	0.17	QP	LINE
11		13.6228	15.02	-34.98	50.00	14.33	0.56	0.13	Average	LINE
12		13.6228	22.04	-37.96	60.00	21.35	0.56	0.13	QP	LINE

Temperature	26°C	Humidity	55%
Test Engineer	Justin Chiu	Phase	Neutral
Configuration	CTX	Test Mode	Mode 2. EUT 2



		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
		MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	a	0.1565	45.54	-10.11	55.65	45.40	0.09	0.05	Average	NEUTRAL
2	q	0.1565	52.15	-13.50	65.65	52.01	0.09	0.05	QP	NEUTRAL
3		0.2589	36.73	-14.74	51.47	36.60	0.07	0.06	Average	NEUTRAL
4		0.2589	43.12	-18.35	61.47	42.99	0.07	0.06	QP	NEUTRAL
5		0.4171	30.54	-16.97	47.51	30.41	0.08	0.05	Average	NEUTRAL
6		0.4171	37.04	-20.47	57.51	36.91	0.08	0.05	QP	NEUTRAL
7		1.6450	16.13	-29.87	46.00	15.94	0.11	0.08	Average	NEUTRAL
8		1.6450	23.28	-32.72	56.00	23.09	0.11	0.08	QP	NEUTRAL
9		8.8223	28.78	-21.22	50.00	28.34	0.27	0.17	Average	NEUTRAL
10		8.8223	35.62	-24.38	60.00	35.18	0.27	0.17	QP	NEUTRAL
11		13.5509	14.47	-35.53	50.00	13.96	0.38	0.13	Average	NEUTRAL
12		13.5509	21.98	-38.02	60.00	21.47	0.38	0.13	QP	NEUTRAL

Note:

Level = Read Level + LISN Factor + Cable Loss

4.2. 26dB Bandwidth and 99% Occupied Bandwidth Measurement

4.2.1. Limit

No restriction limits.

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.

26dB Bandwidth	
Spectrum Parameters	**Setting**
Attenuation	Auto
Span Frequency	> 26dB Bandwidth
RBW	Approximately 1% of the emission bandwidth
VBW	VBW > RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto
99% Occupied Bandwidth	
Spectrum Parameters	**Setting**
Span	1.5 times to 5.0 times the OBW
RBW	1 % to 5 % of the OBW
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold

4.2.3. Test Procedures

For Radiated 26dB Bandwidth and 99% Occupied Bandwidth Measurement:

1. The transmitter was radiated to the spectrum analyzer in peak hold mode.
2. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

4.2.4. Test Setup Layout

For Radiated 26dB Bandwidth and 99% Occupied Bandwidth Measurement:

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

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 26dB Bandwidth and 99% Occupied Bandwidth

Temperature	26°C	Humidity	60%
Test Engineer	Kenneth Huang	Configurations	IEEE 802.11n
Test Mode	Mode 1. EUT 1		

Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 2

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180 MHz	22.40	18.24
40	5200 MHz	23.36	18.24
48	5240 MHz	22.56	18.24
52	5260 MHz	26.08	18.56
60	5300 MHz	24.64	18.24
64	5320 MHz	26.24	18.72
100	5500 MHz	25.44	19.04
116	5580 MHz	25.12	18.72
140	5700 MHz	23.20	18.40

Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 2

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
38	5190 MHz	42.88	37.12
46	5230 MHz	43.20	37.44
54	5270 MHz	41.92	36.48
62	5310 MHz	42.24	36.48
102	5510 MHz	41.60	35.84
110	5550 MHz	40.32	36.16
134	5670 MHz	42.88	37.12

Temperature	26℃	Humidity	60%
Test Engineer	Benson Peng	Configurations	IEEE 802.11n
Test Mode	Mode 2. EUT 2		

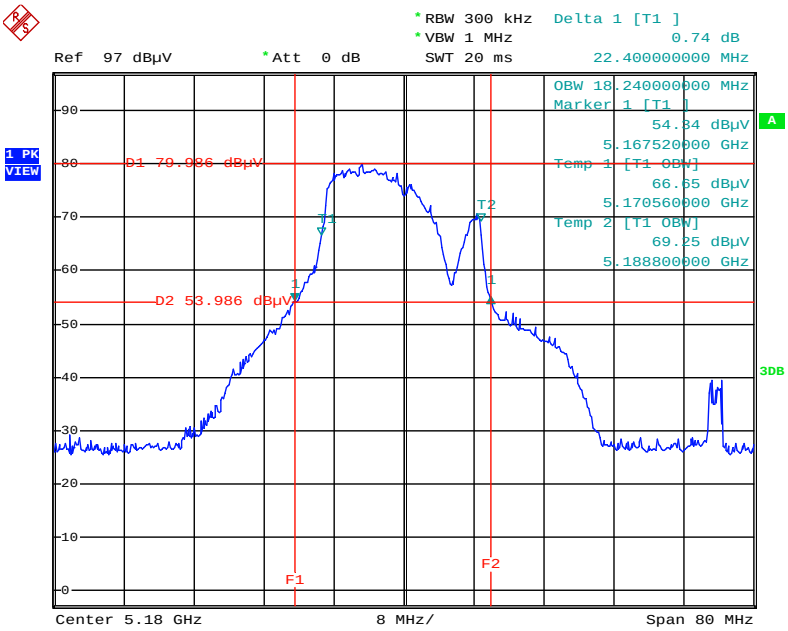
Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 3

Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
36	5180 MHz	23.36	18.24
40	5200 MHz	23.36	18.24
48	5240 MHz	22.72	18.08
52	5260 MHz	22.08	17.92
60	5300 MHz	23.20	17.92
64	5320 MHz	22.88	17.92
100	5500 MHz	23.20	18.08
116	5580 MHz	23.68	18.40
140	5700 MHz	22.56	17.92

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

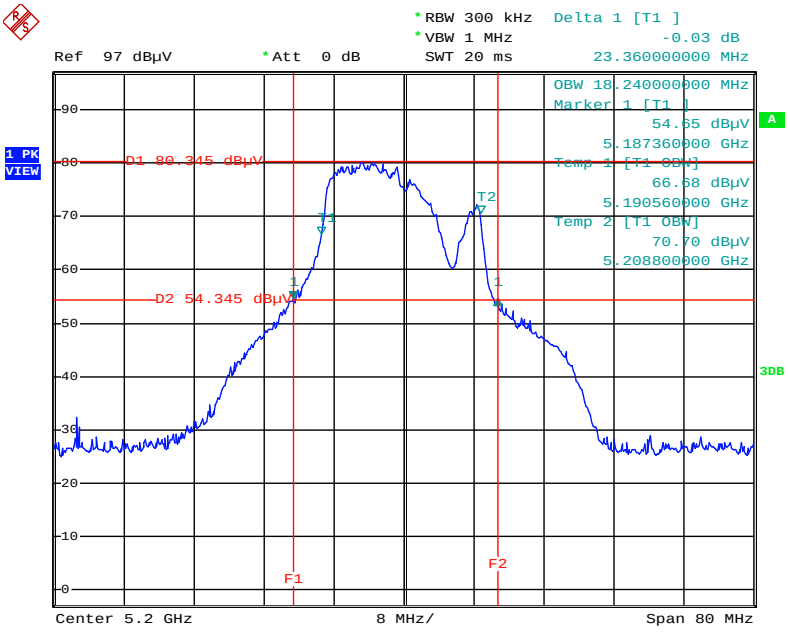
Channel	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
38	5190 MHz	40.32	36.16
46	5230 MHz	39.68	36.48
54	5270 MHz	42.56	36.80
62	5310 MHz	40.96	36.80
102	5510 MHz	44.48	37.12
110	5550 MHz	42.56	36.80
134	5670 MHz	44.48	36.80

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 2 / 5180 MHz / Test Mode: Mode 1. EUT 1



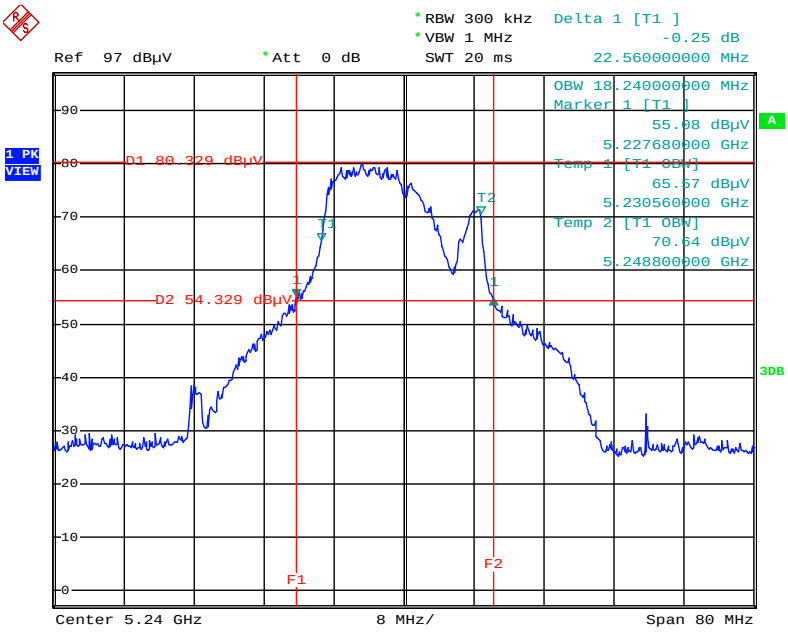
Date: 29.OCT.2013 15:00:35

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 2 / 5200 MHz / Test Mode: Mode 1. EUT 1



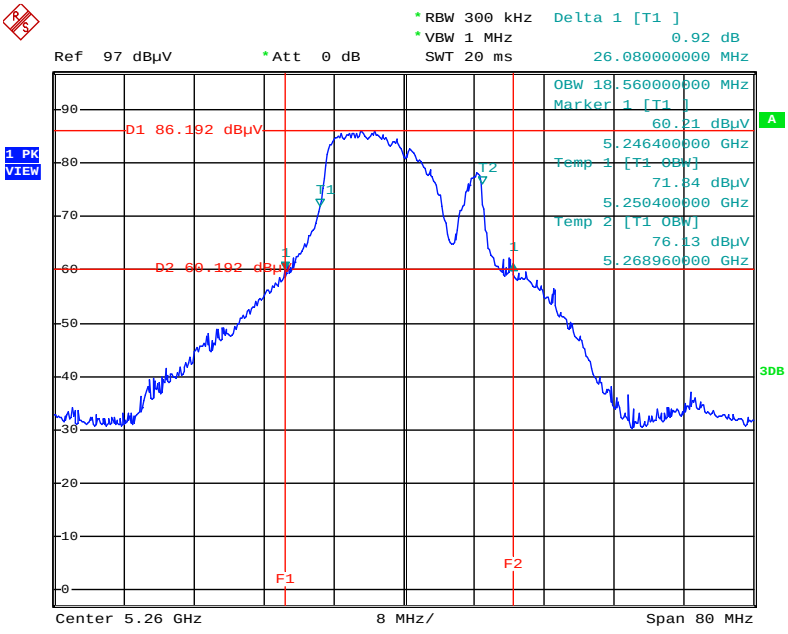
Date: 29.OCT.2013 15:01:17

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 2 / 5240 MHz / Test Mode: Mode 1. EUT 1



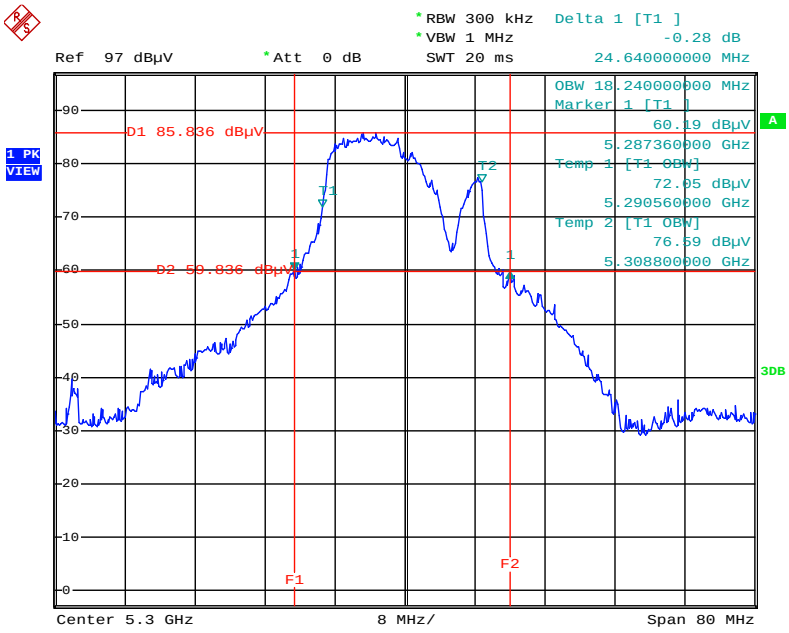
Date: 29.OCT.2013 15:01:51

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 2 / 5260 MHz / Test Mode: Mode 1. EUT 1



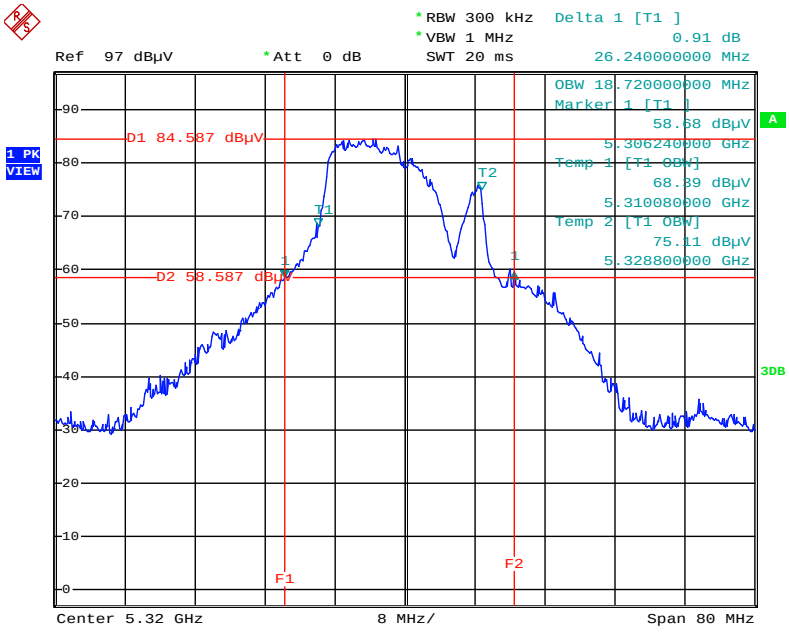
Date: 29.OCT.2013 15:05:11

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 2 / 5300 MHz / Test Mode: Mode 1. EUT 1



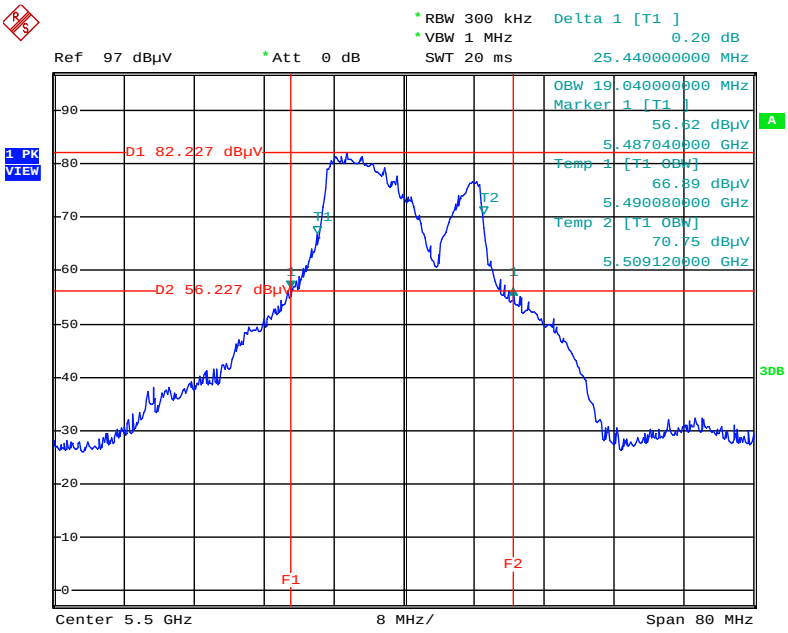
Date: 29.OCT.2013 15:07:33

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 2 / 5320 MHz / Test Mode: Mode 1. EUT 1



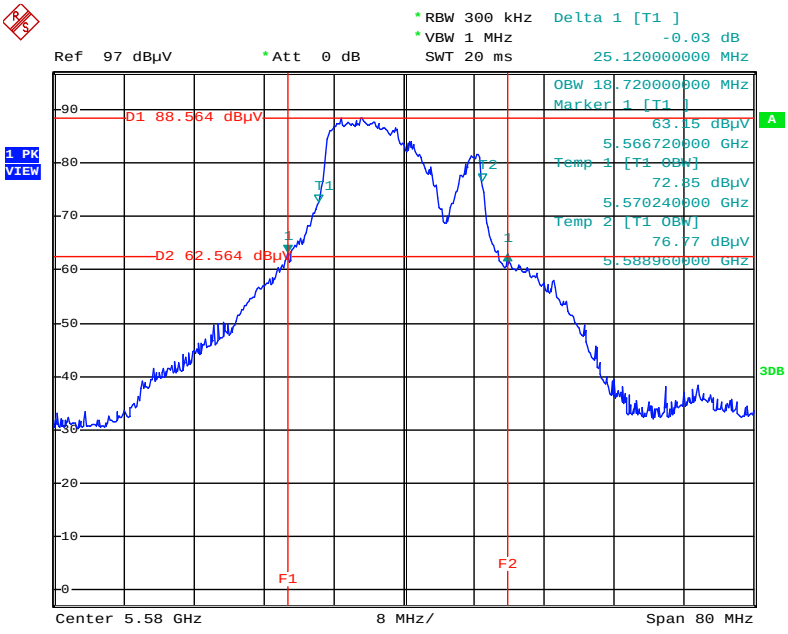
Date: 29.OCT.2013 15:08:06

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 2 / 5500 MHz / Test Mode: Mode 1. EUT 1



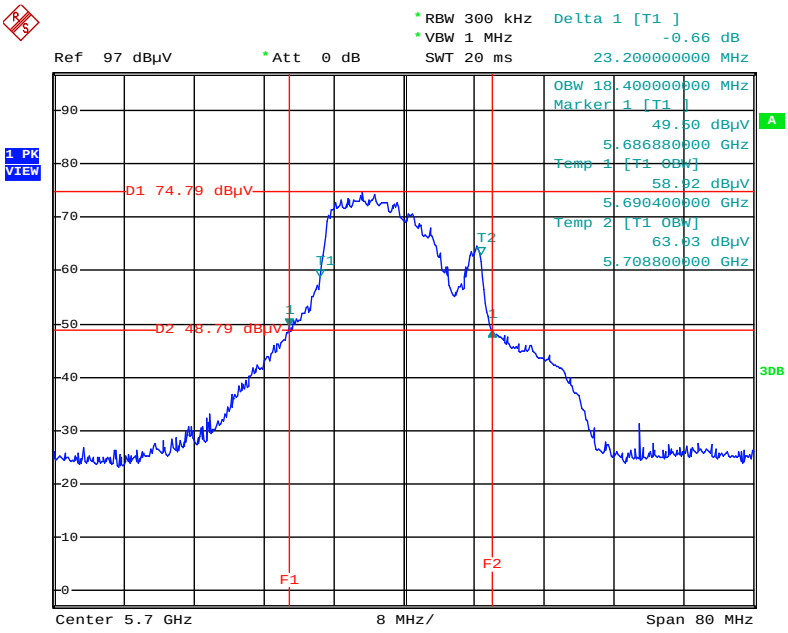
Date: 29.OCT.2013 15:10:41

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 2 / 5580 MHz / Test Mode: Mode 1. EUT 1



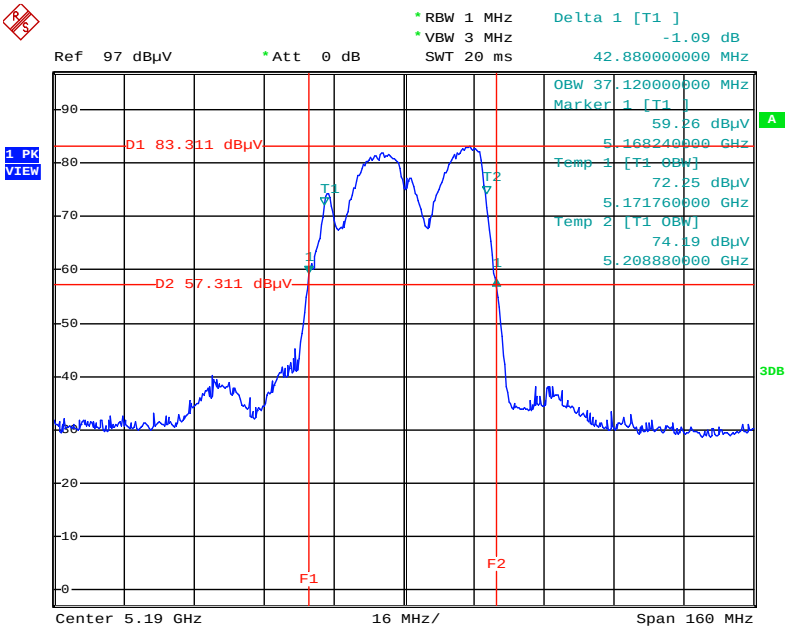
Date: 29.OCT.2013 15:29:59

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 2 / 5700 MHz / Test Mode: Mode 1. EUT 1



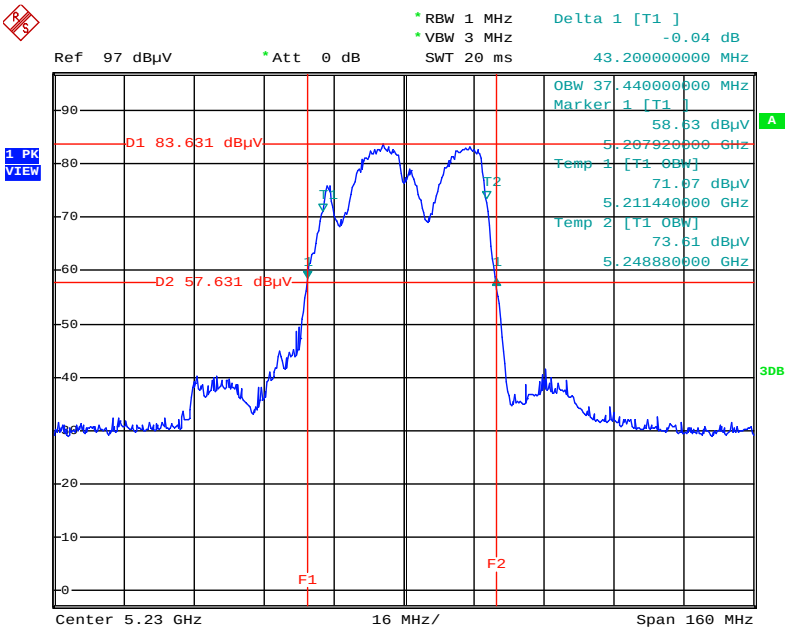
Date: 29.OCT.2013 15:11:46

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 2 / 5190 MHz / Test Mode: Mode 1. EUT 1



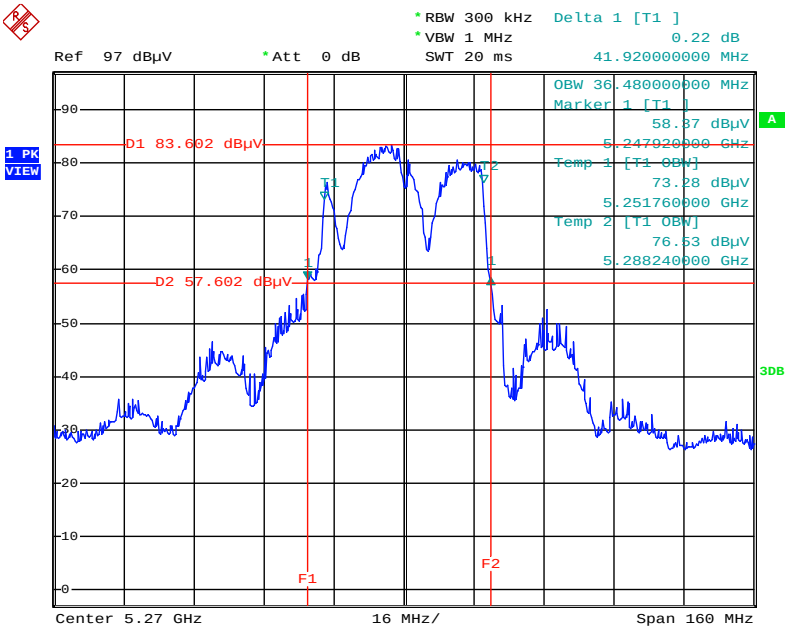
Date: 29.OCT.2013 15:15:43

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 2 / 5230 MHz / Test Mode: Mode 1. EUT 1



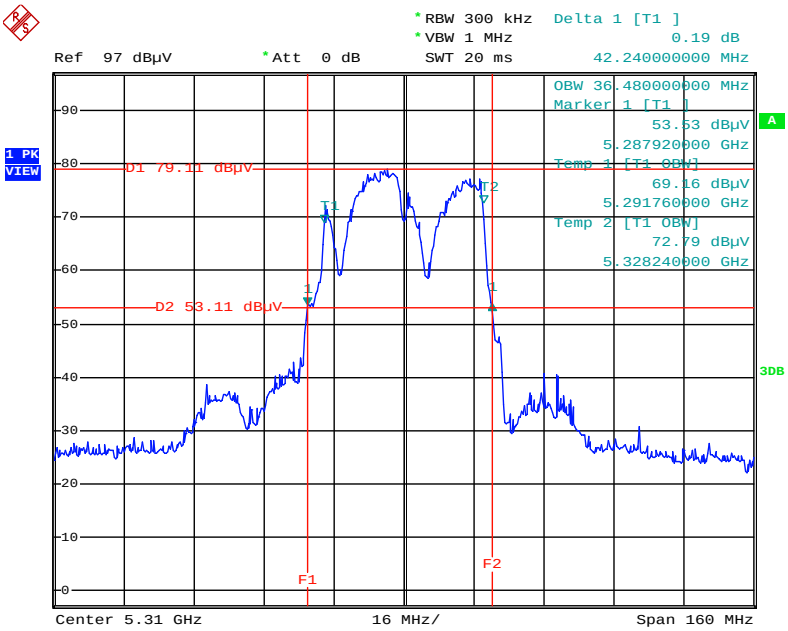
Date: 29.OCT.2013 15:16:17

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 2 / 5270 MHz / Test Mode: Mode 1. EUT 1



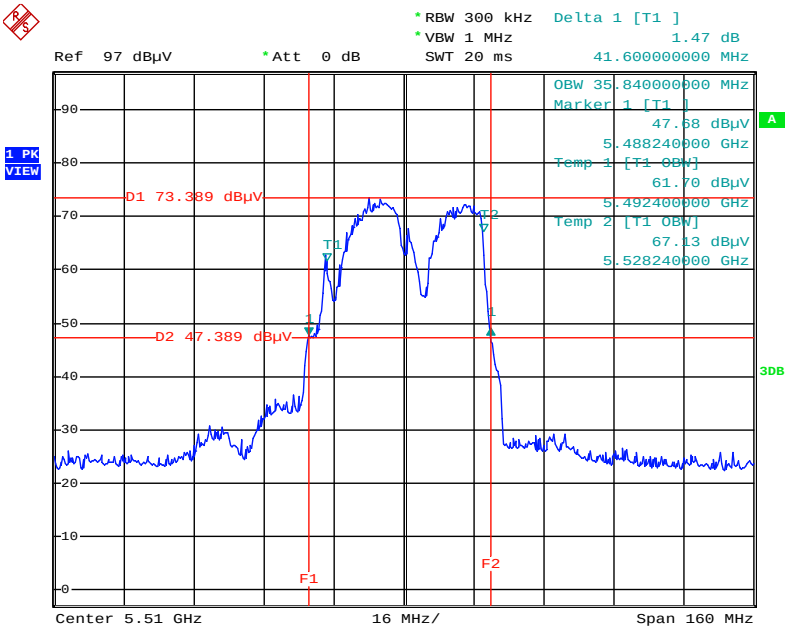
Date: 29.OCT.2013 15:17:04

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 2 / 5310 MHz / Test Mode: Mode 1. EUT 1



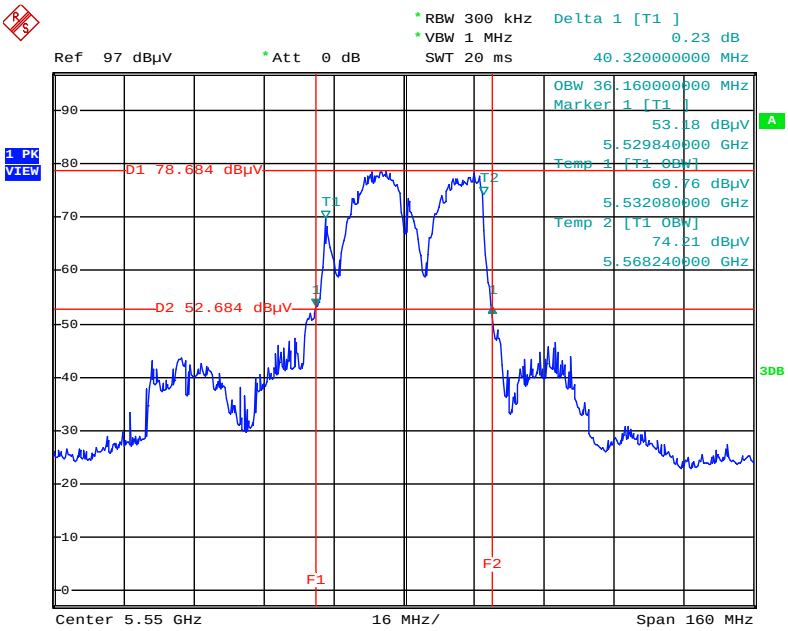
Date: 29.OCT.2013 15:17:39

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 2 / 5510 MHz / Test Mode: Mode 1. EUT 1



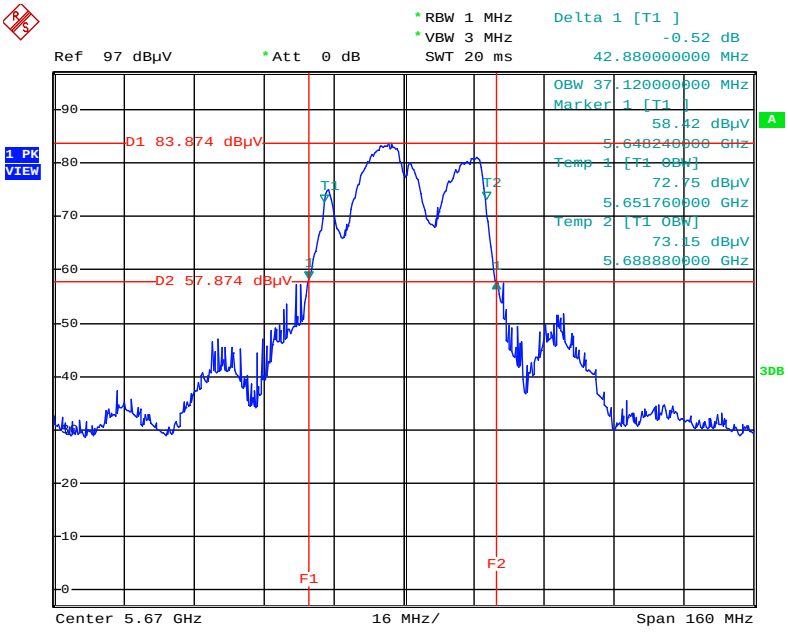
Date: 29.OCT.2013 15:18:38

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 2 / 5550 MHz / Test Mode: Mode 1. EUT 1



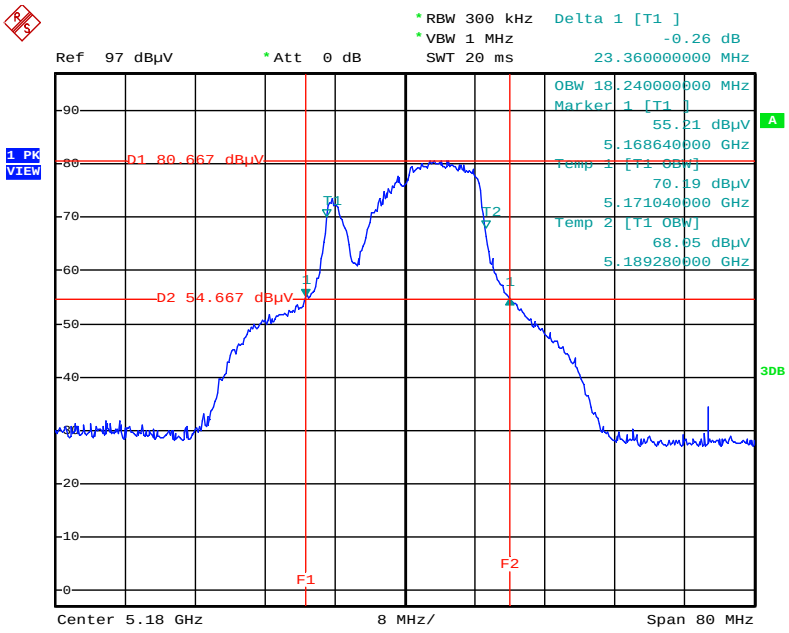
Date: 29.OCT.2013 15:19:18

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 2 / 5670 MHz / Test Mode: Mode 1. EUT 1



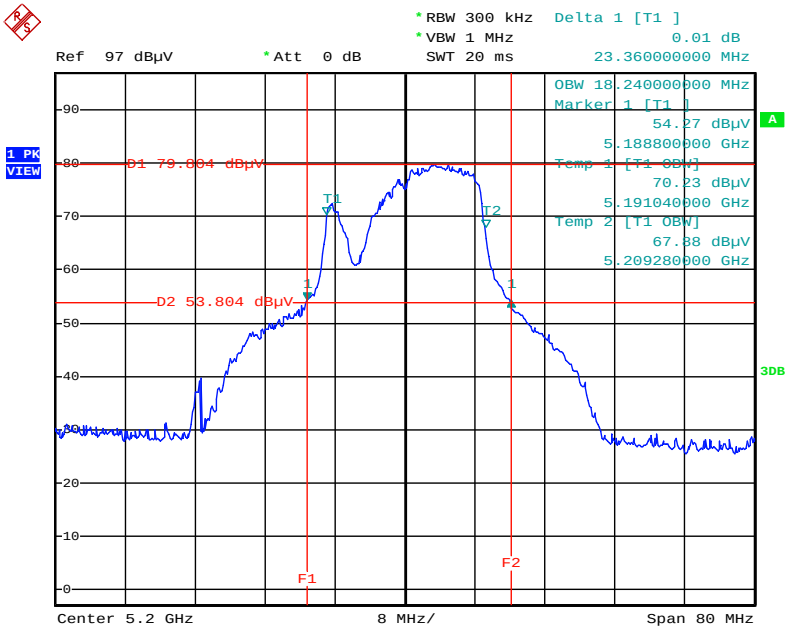
Date: 29.OCT.2013 16:15:34

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 3 / 5180 MHz / Test Mode: Mode 2. EUT 2



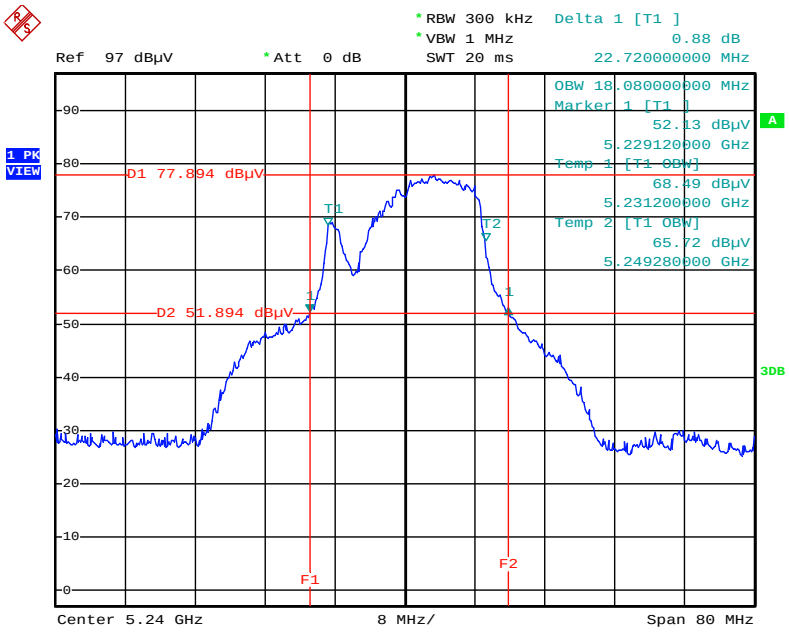
Date: 29.OCT.2013 10:43:04

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 3 / 5200 MHz / Test Mode: Mode 2. EUT 2



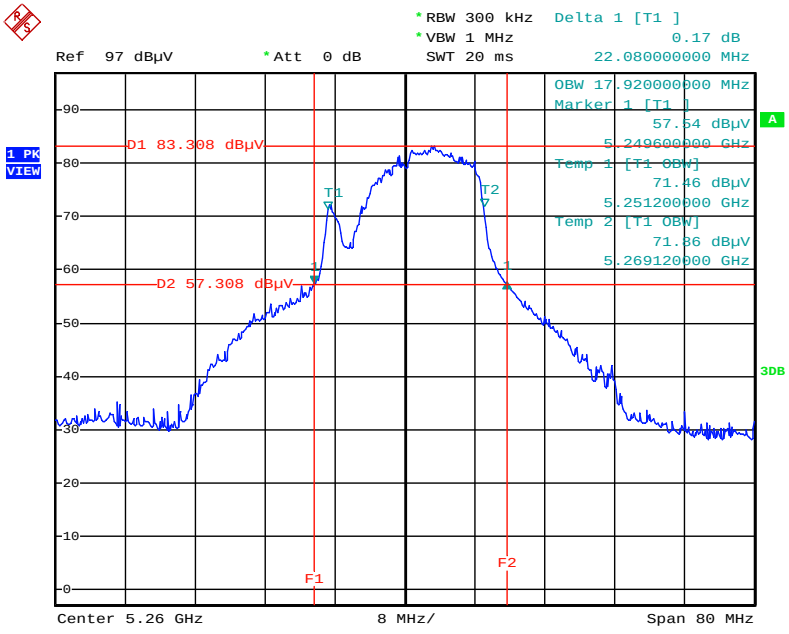
Date: 29.OCT.2013 10:46:02

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 3 / 5240 MHz / Test Mode: Mode 2. EUT 2



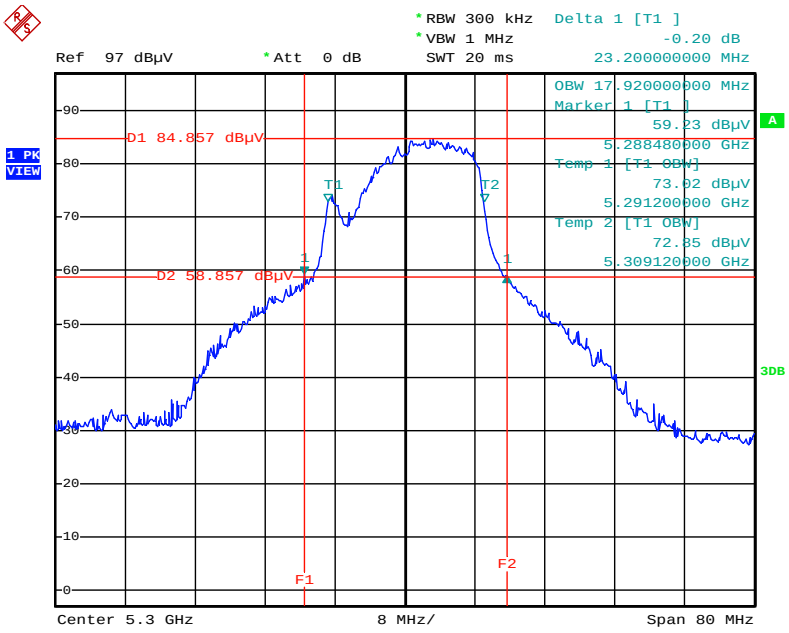
Date: 29.OCT.2013 10:46:27

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 3 / 5260 MHz / Test Mode: Mode 2. EUT 2



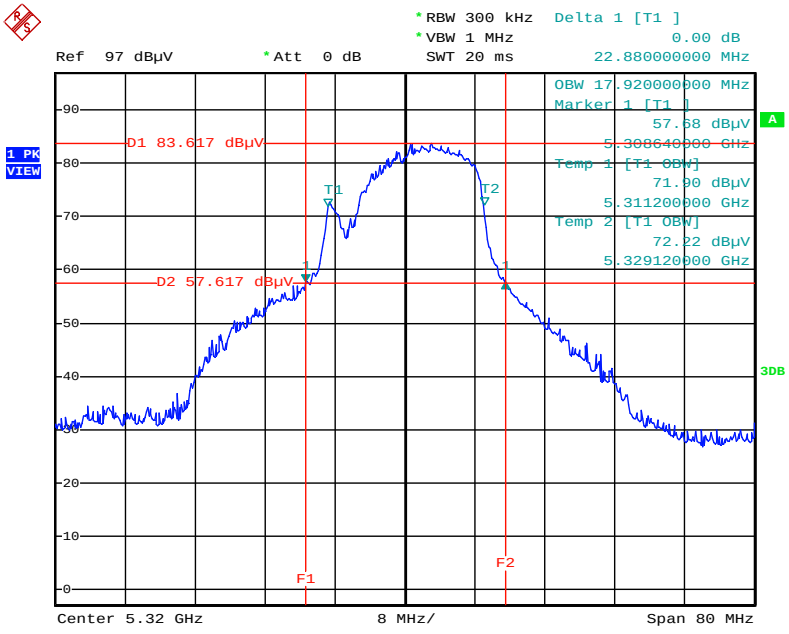
Date: 29.OCT.2013 10:46:57

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 3 / 5300 MHz / Test Mode: Mode 2. EUT 2



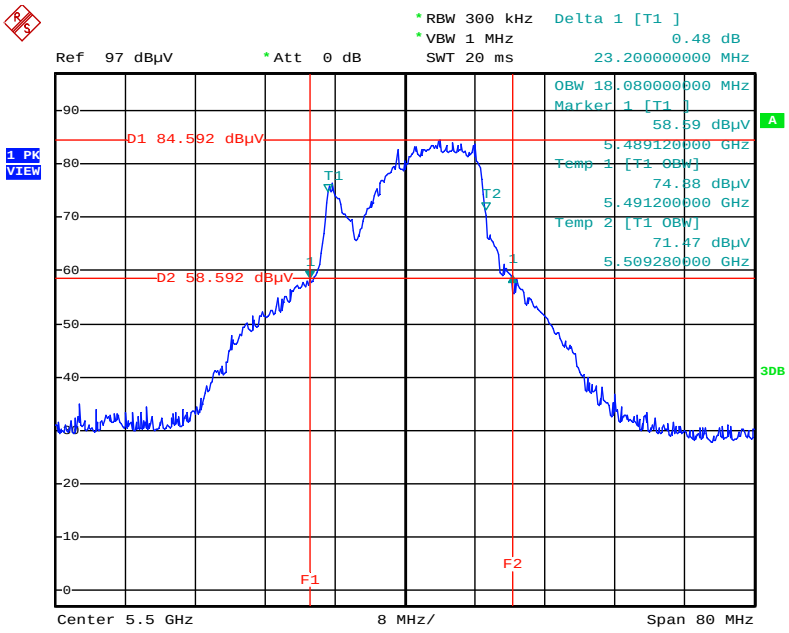
Date: 29.OCT.2013 10:47:22

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 3 / 5320 MHz / Test Mode: Mode 2. EUT 2



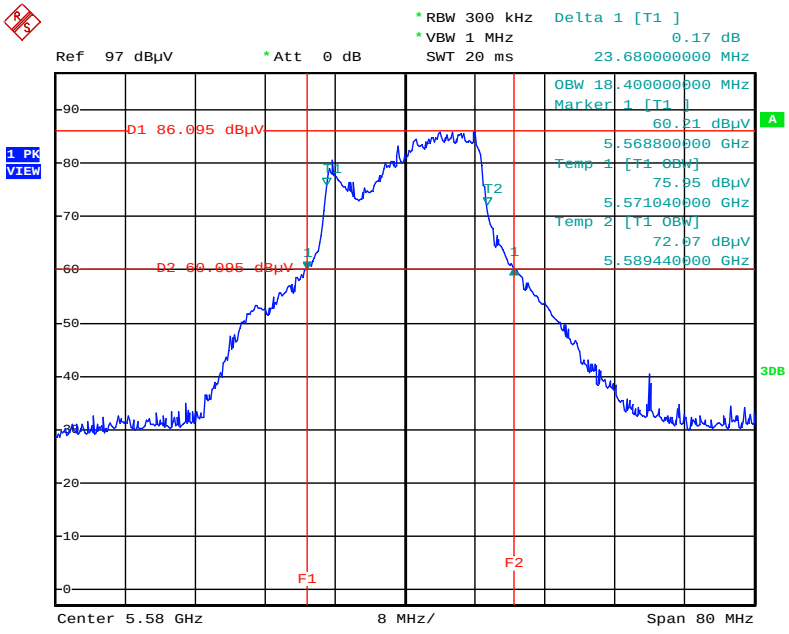
Date: 29.OCT.2013 10:47:46

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 3 / 5500 MHz / Test Mode: Mode 2. EUT 2



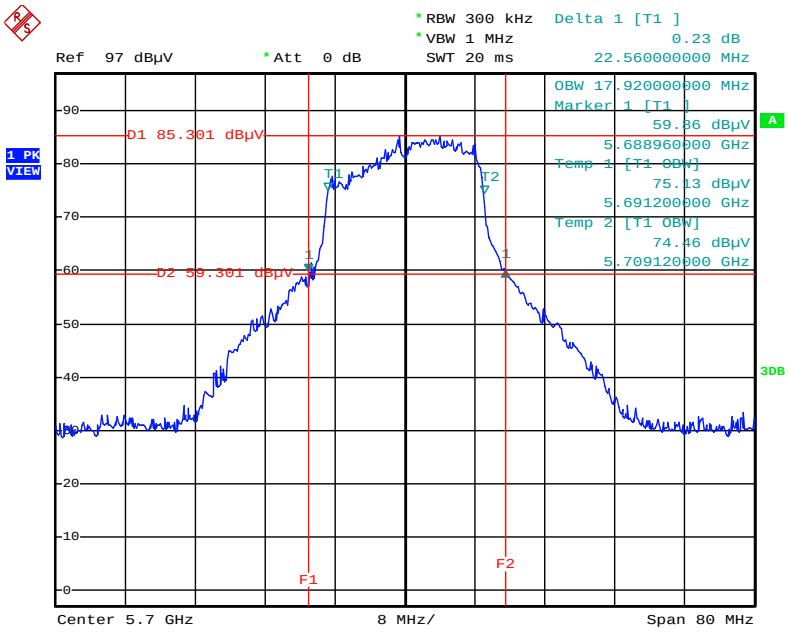
Date: 29.OCT.2013 11:55:13

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 3 / 5580 MHz / Test Mode: Mode 2. EUT 2



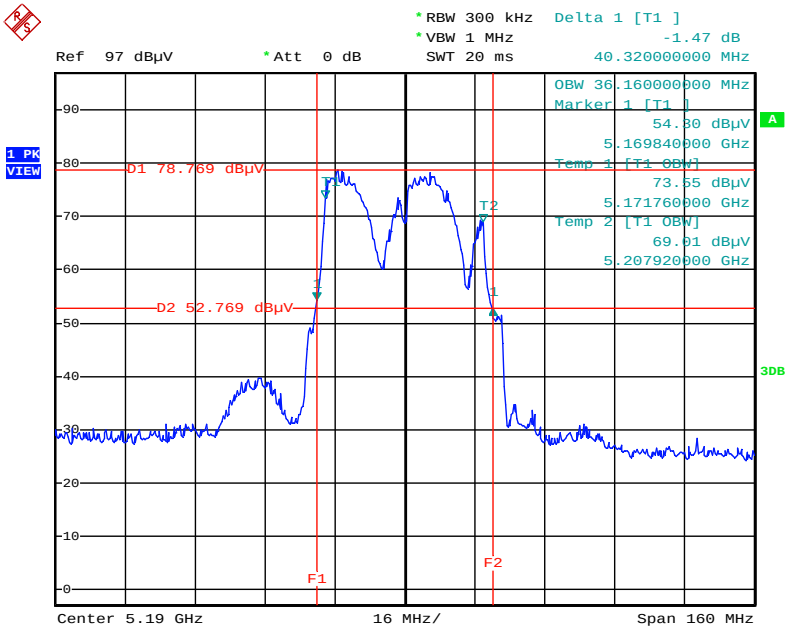
Date: 29.OCT.2013 11:55:55

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 3 / 5700 MHz / Test Mode: Mode 2. EUT 2



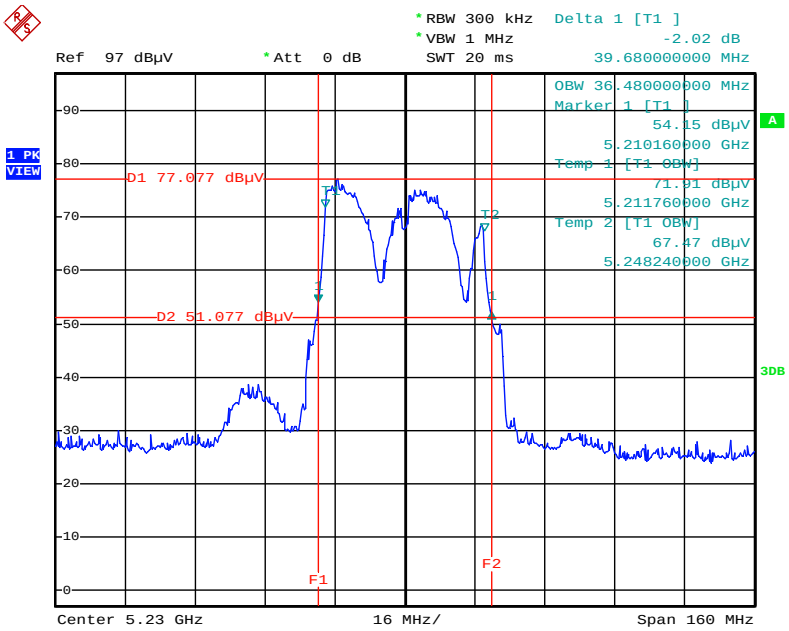
Date: 29.OCT.2013 11:56:19

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 3 / 5190 MHz / Test Mode: Mode 2. EUT 2



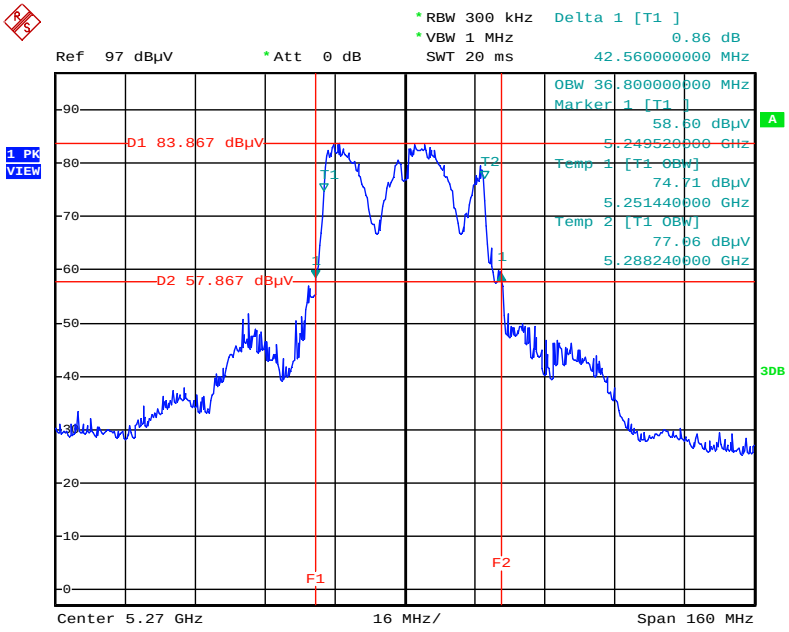
Date: 29.OCT.2013 10:58:18

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 3 / 5230 MHz / Test Mode: Mode 2. EUT 2



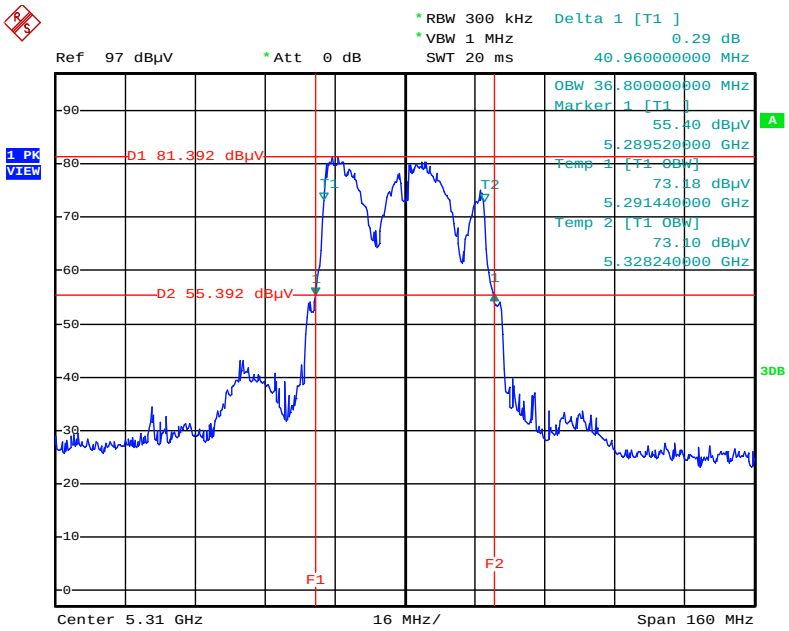
Date: 29.OCT.2013 10:59:08

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 3 / 5270 MHz / Test Mode: Mode 2. EUT 2



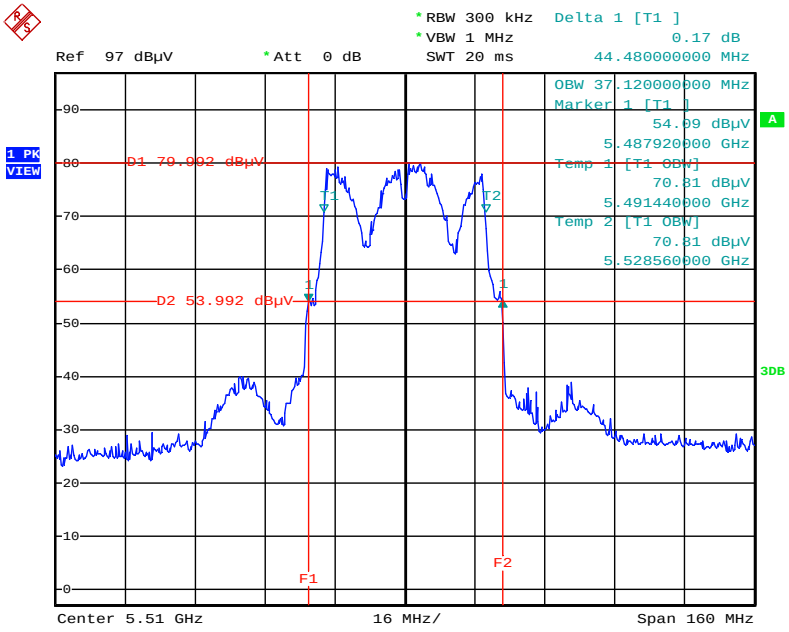
Date: 29.OCT.2013 10:59:53

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 3 / 5310 MHz / Test Mode: Mode 2. EUT 2



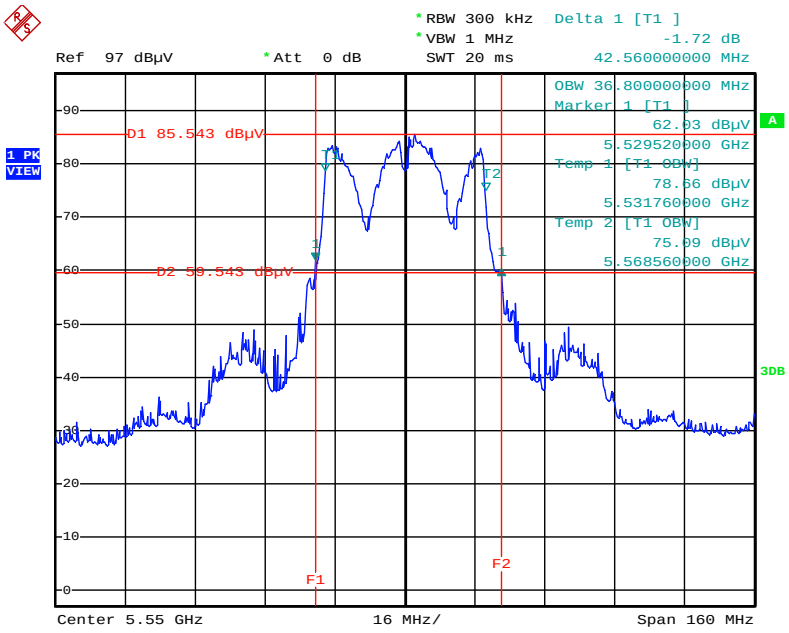
Date: 29.OCT.2013 11:00:21

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 3 / 5510 MHz / Test Mode: Mode 2. EUT 2



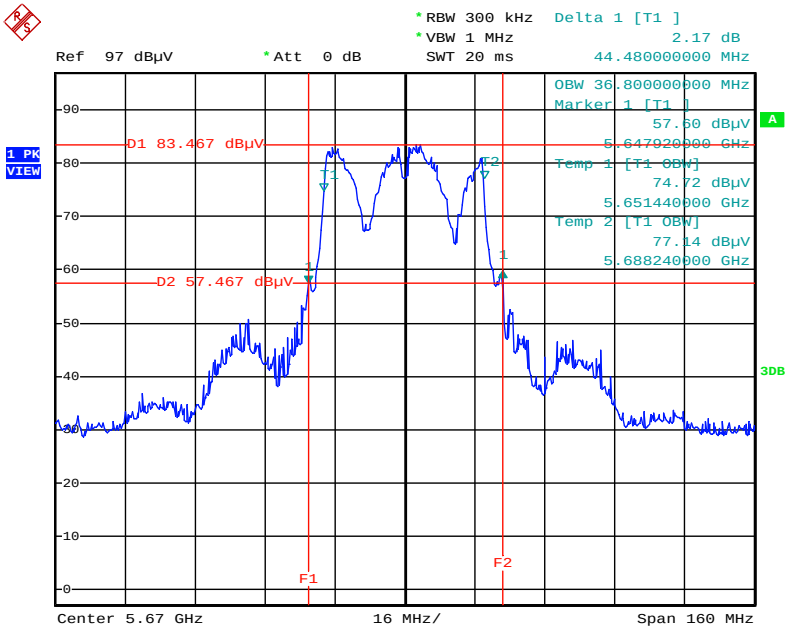
Date: 29.OCT.2013 11:00:50

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 3 / 5550 MHz / Test Mode: Mode 2. EUT 2



Date: 29.OCT.2013 11:01:19

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 3 / 5670 MHz / Test Mode: Mode 2. EUT 2



Date: 29.OCT.2013 11:01:43

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.

For the 5.25-5.35 GHz and 5.470-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW (24dBm) or 11 dBm + 10log B, where B is the 26-dB emission 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.

For the band 5.725~5.825 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 1 W or 17 dBm + 10 log B, where B is the 26-dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 17 dBm in any 1ŕMHz band. 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. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain up to 23 dBi without any corresponding reduction in the transmitter peak output power or peak power spectral density. For fixed, point-to-point U-NII transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in peak transmitter power and peak power spectral density for each 1 dB of antenna gain in excess of 23 dBi would be required.

4.3.2. Measuring Instruments and Setting

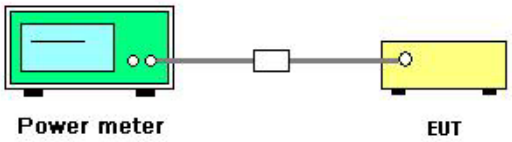
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

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 D01 v01r03 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E,section (E) Maximum conducted output power =>(3) Method PM (Measurement using an RF average power meter) Multiple antenna systems was performed in accordance with KDB 662911 D01 v02 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°C	Humidity	60%
Test Engineer	Kenneth Huang	Configurations	IEEE 802.11n
Test Date	Oct. 29, 2013	Test Mode	Mode 1. EUT 1

Configuration IEEE 802.11n MCS0 20MHz

Channel	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Ant. 1	Ant. 2	Total		
36	5180 MHz	13.77	13.32	16.56	17.00	Complies
40	5200 MHz	13.67	13.17	16.44	17.00	Complies
48	5240 MHz	13.70	13.15	16.44	17.00	Complies
52	5260 MHz	20.21	19.60	22.93	24.00	Complies
60	5300 MHz	20.03	19.63	22.84	24.00	Complies
64	5320 MHz	20.12	19.50	22.83	24.00	Complies
100	5500 MHz	19.99	19.56	22.79	24.00	Complies
116	5580 MHz	19.99	19.38	22.71	24.00	Complies
140	5700 MHz	16.91	16.78	19.86	24.00	Complies

Configuration IEEE 802.11n MCS0 40MHz

Channel	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Ant. 1	Ant. 2	Total		
38	5190 MHz	14.15	13.79	16.98	17.00	Complies
46	5230 MHz	14.01	13.90	16.97	17.00	Complies
54	5270 MHz	19.79	19.46	22.64	24.00	Complies
62	5310 MHz	16.04	15.94	19.00	24.00	Complies
102	5510 MHz	15.02	14.41	17.74	24.00	Complies
110	5550 MHz	19.62	19.49	22.57	24.00	Complies
134	5670 MHz	20.02	19.83	22.94	24.00	Complies

Temperature	26°C	Humidity	60%
Test Engineer	Benson Peng	Configurations	IEEE 802.11n
Test Date	Oct. 29, 2013	Test Mode	Mode 2. EUT 2

Configuration IEEE 802.11n MCS0 20MHz

Channel	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Ant. 1	Ant. 3	Total		
36	5180 MHz	13.01	14.01	16.55	17.00	Complies
40	5200 MHz	12.83	13.90	16.41	17.00	Complies
48	5240 MHz	12.82	13.86	16.38	17.00	Complies
52	5260 MHz	18.92	19.72	22.35	24.00	Complies
60	5300 MHz	19.60	20.04	22.84	24.00	Complies
64	5320 MHz	19.45	20.11	22.80	24.00	Complies
100	5500 MHz	19.15	19.39	22.28	24.00	Complies
116	5580 MHz	19.29	19.62	22.47	24.00	Complies
140	5700 MHz	18.86	19.07	21.98	24.00	Complies

Configuration IEEE 802.11n MCS0 40MHz

Channel	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Ant. 1	Ant. 3	Total		
38	5190 MHz	13.54	14.12	16.85	17.00	Complies
46	5230 MHz	13.34	14.02	16.70	17.00	Complies
54	5270 MHz	19.47	20.28	22.90	24.00	Complies
62	5310 MHz	15.44	16.52	19.02	24.00	Complies
102	5510 MHz	15.13	15.75	18.46	24.00	Complies
110	5550 MHz	19.11	19.79	22.47	24.00	Complies
134	5670 MHz	18.82	20.35	22.66	24.00	Complies

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
5.25-5.35 GHz	11
5.470-5.725 GHz	11

4.4.2. Measuring Instruments and Setting

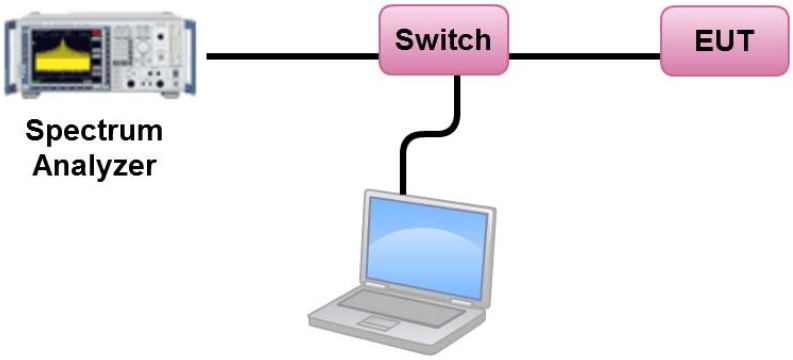
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RBW	1000 kHz
VBW	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 D01 v01r03 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 KDB 662911 D01 v02 in-Band Power Spectral Density (PSD) Measurements (a) 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°C	Humidity	60%
Test Engineer	Kenneth Huang	Configurations	IEEE 802.11n
Test Date	Oct. 29, 2013	Test Mode	Mode 1. EUT 1

Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 2

Channel	Frequency	Total Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	2.85	3.24	Complies
40	5200 MHz	2.88	3.24	Complies
48	5240 MHz	3.01	3.24	Complies
52	5260 MHz	9.72	10.24	Complies
60	5300 MHz	9.91	10.24	Complies
64	5320 MHz	10.20	10.24	Complies
100	5500 MHz	10.03	10.24	Complies
116	5580 MHz	10.17	10.24	Complies
140	5700 MHz	6.47	10.24	Complies

Note:

Directional gain= $10\log[(10^{G1/20}+10^{G2/20}+\ldots+10^{GN/20})^2/N_{ANT}]$ =6.76dBi >6dBi,

so Band 1 Limit=4-(6.76-6)=3.24dBm/MHz.

Directional gain= $10\log[(10^{G1/20}+10^{G2/20}+\ldots+10^{GN/20})^2/N_{ANT}]$ =6.76dBi >6dBi,

so Band 2、3 Limit=11-(6.76-6)=10.24dBm/MHz.

Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 2

Channel	Frequency	Total Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	0.39	3.24	Complies
46	5230 MHz	0.43	3.24	Complies
54	5270 MHz	5.94	10.24	Complies
62	5310 MHz	2.05	10.24	Complies
102	5510 MHz	2.21	10.24	Complies
110	5550 MHz	5.67	10.24	Complies
134	5670 MHz	5.40	10.24	Complies

Note:

Directional gain= $10\log[(10^{G1/20}+10^{G2/20}+\ldots+10^{GN/20})^2/N_{ANT}]$ =6.76dBi >6dBi,

so Band 1 Limit=4-(6.76-6)=3.24dBm/MHz.

Directional gain= $10\log[(10^{G1/20}+10^{G2/20}+\ldots+10^{GN/20})^2/N_{ANT}]$ =6.76dBi >6dBi,

so Band 2、3 Limit=11-(6.76-6)=10.24dBm/MHz.

Temperature	26°C	Humidity	60%
Test Engineer	Benson Peng	Configurations	IEEE 802.11n
Test Date	Oct. 29, 2013	Test Mode	Mode 2. EUT 2

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

Channel	Frequency	Total Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	2.41	3.25	Complies
40	5200 MHz	2.61	3.25	Complies
48	5240 MHz	2.90	3.25	Complies
52	5260 MHz	8.73	10.25	Complies
60	5300 MHz	9.66	10.25	Complies
64	5320 MHz	10.20	10.25	Complies
100	5500 MHz	9.84	10.25	Complies
116	5580 MHz	9.62	10.25	Complies
140	5700 MHz	8.39	10.25	Complies

Note:

Directional gain= $10\log[(10^{G1/20}+10^{G2/20}+\ldots+10^{GN/20})^2/N_{ANT}]$ =6.75dBi >6dBi,

so Band 1 Limit=4-(6.75-6)=3.25dBm/MHz.

Directional gain= $10\log[(10^{G1/20}+10^{G2/20}+\ldots+10^{GN/20})^2/N_{ANT}]$ =6.75dBi >6dBi,

so Band 2、3 Limit=11-(6.75-6)=10.25dBm/MHz.

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

Channel	Frequency	Total Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	0.17	3.25	Complies
46	5230 MHz	0.44	3.25	Complies
54	5270 MHz	6.47	10.25	Complies
62	5310 MHz	3.04	10.25	Complies
102	5510 MHz	2.83	10.25	Complies
110	5550 MHz	5.84	10.25	Complies
134	5670 MHz	5.93	10.25	Complies

Note:

Directional gain= $10\log[(10^{G1/20}+10^{G2/20}+\ldots+10^{GN/20})^2/N_{ANT}]$ =6.75dBi >6dBi,

so Band 1 Limit=4-(6.75-6)=3.25dBm/MHz.

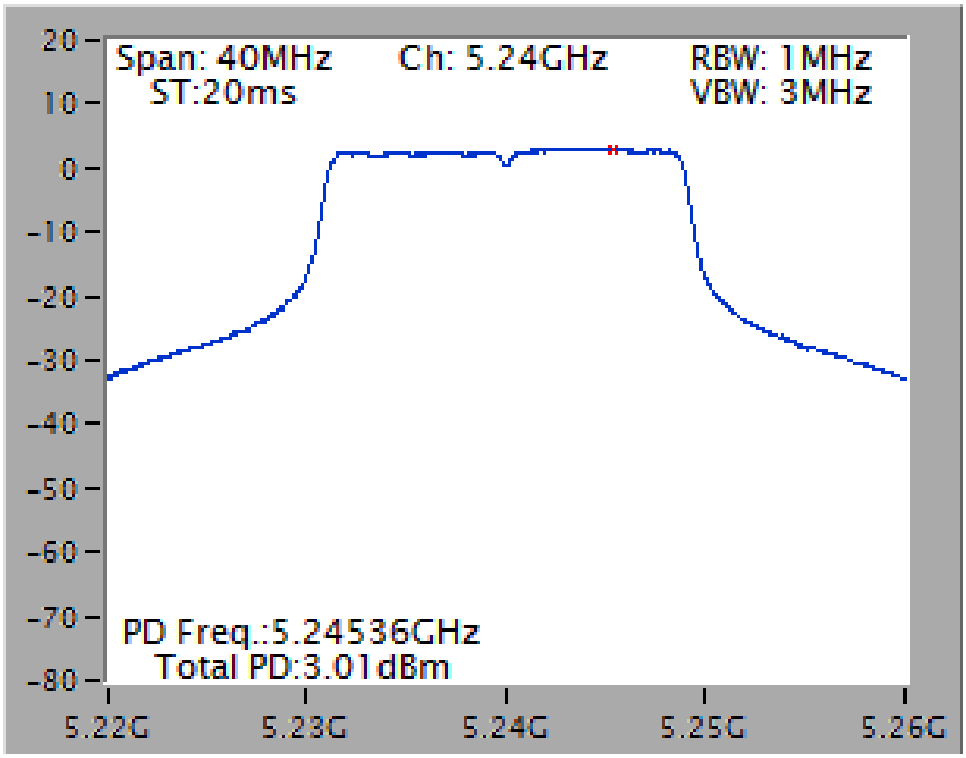
Directional gain= $10\log[(10^{G1/20}+10^{G2/20}+\ldots+10^{GN/20})^2/N_{ANT}]$ =6.75dBi >6dBi,

so Band 2、3 Limit=11-(6.75-6)=10.25dBm/MHz.

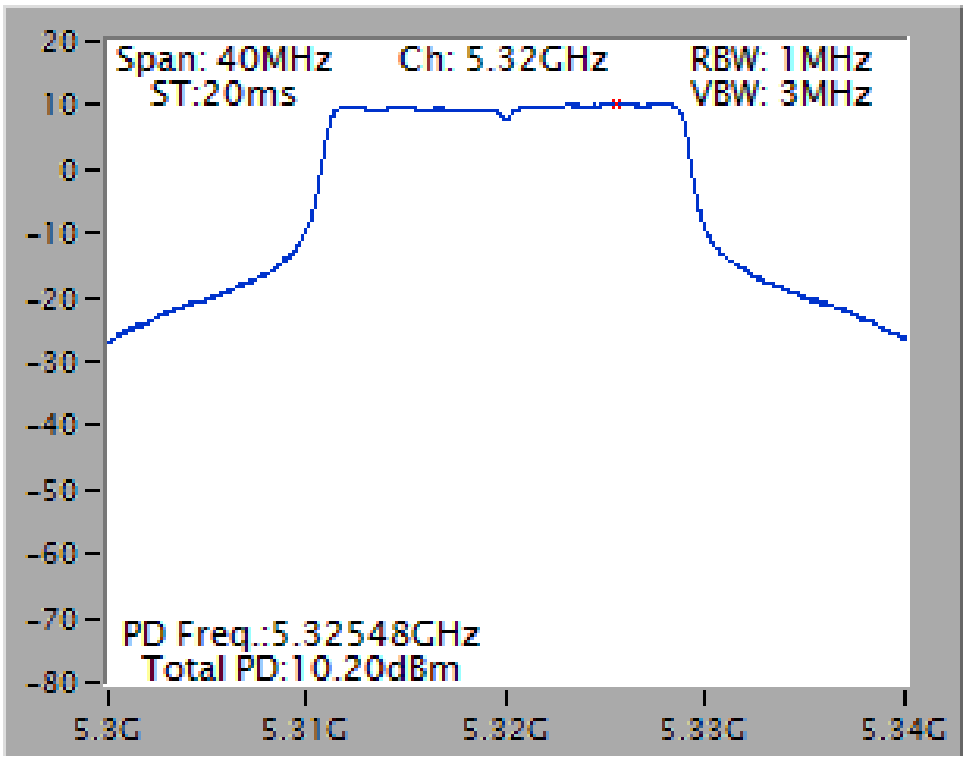
Note: All the test values were listed in the report.

For plots, only the channel with worse result was shown.

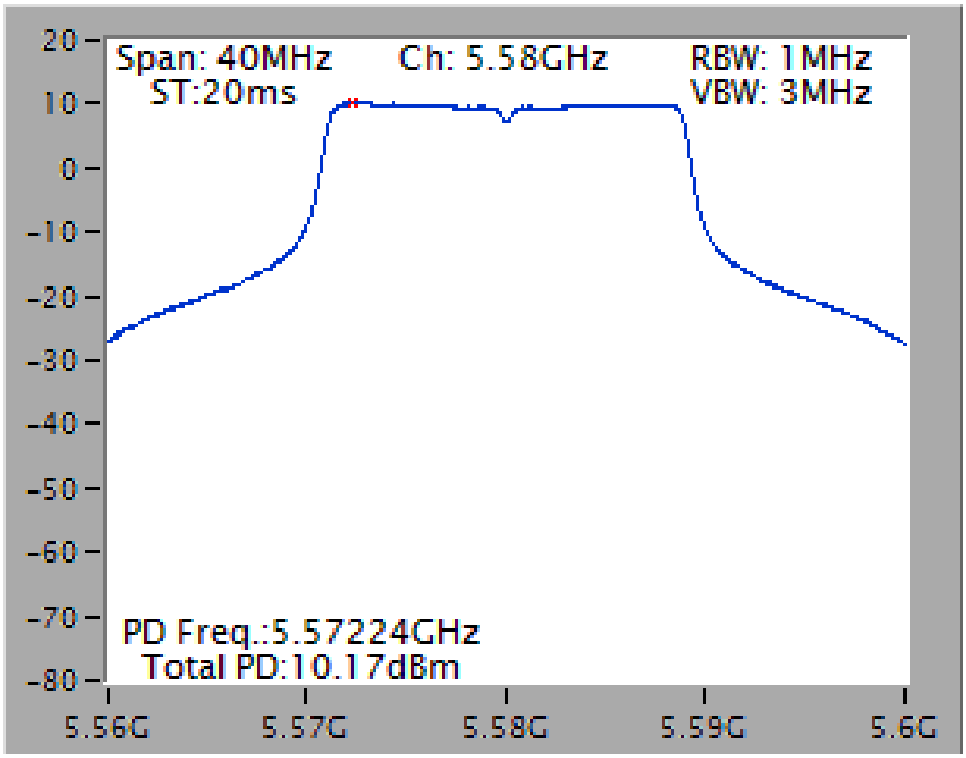
Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 2 / 5240 MHz / Test Mode: Mode 1. EUT 1



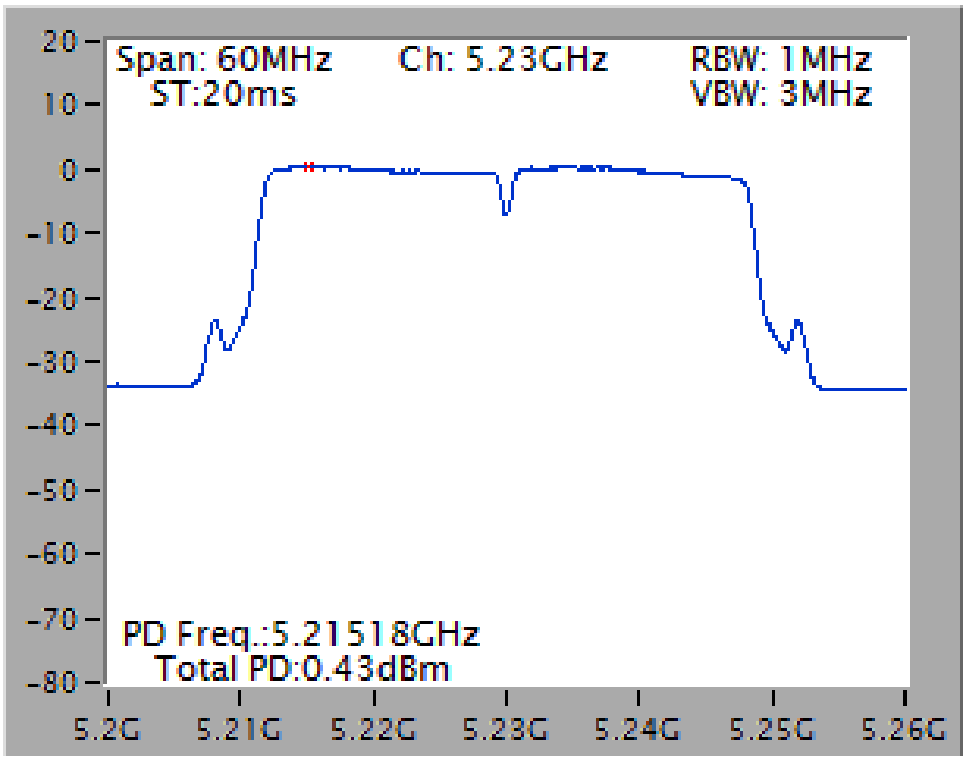
Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 2 / 5320 MHz / Test Mode: Mode 1. EUT 1



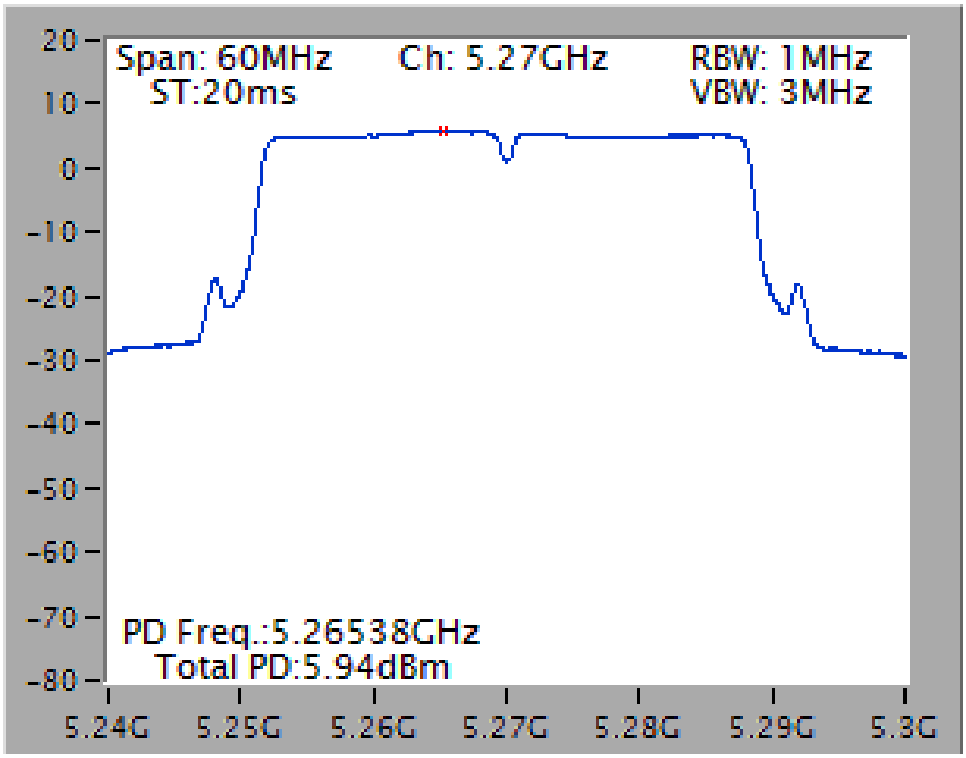
Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 2 / 5580 MHz / Test Mode: Mode 1. EUT 1



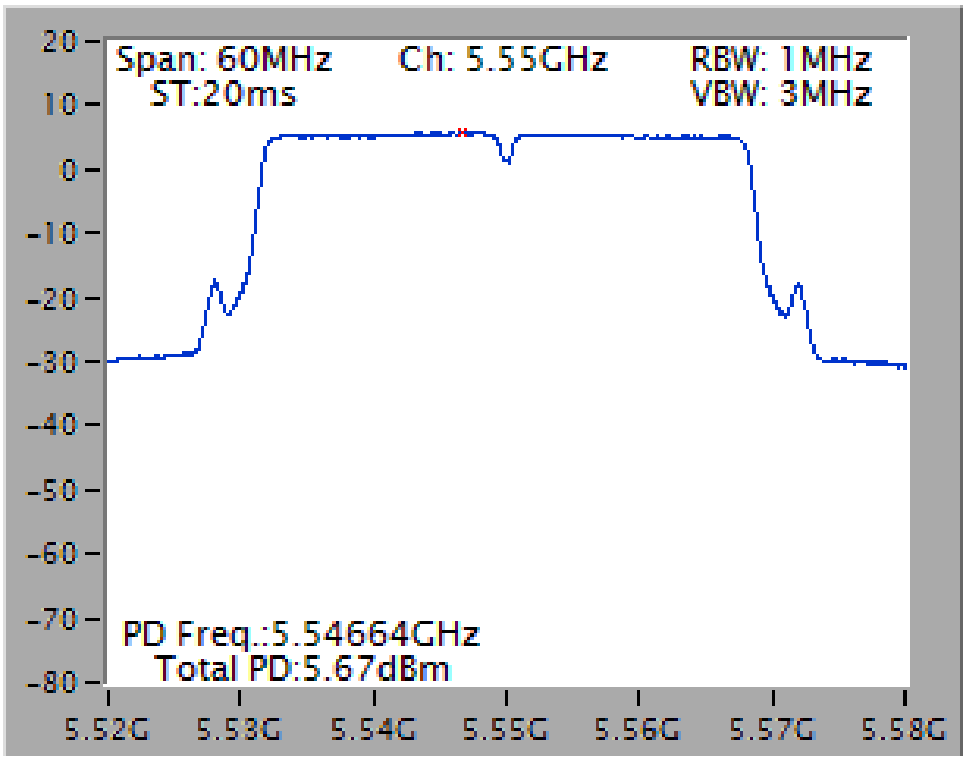
Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 2 / 5230 MHz / Test Mode: Mode 1. EUT 1



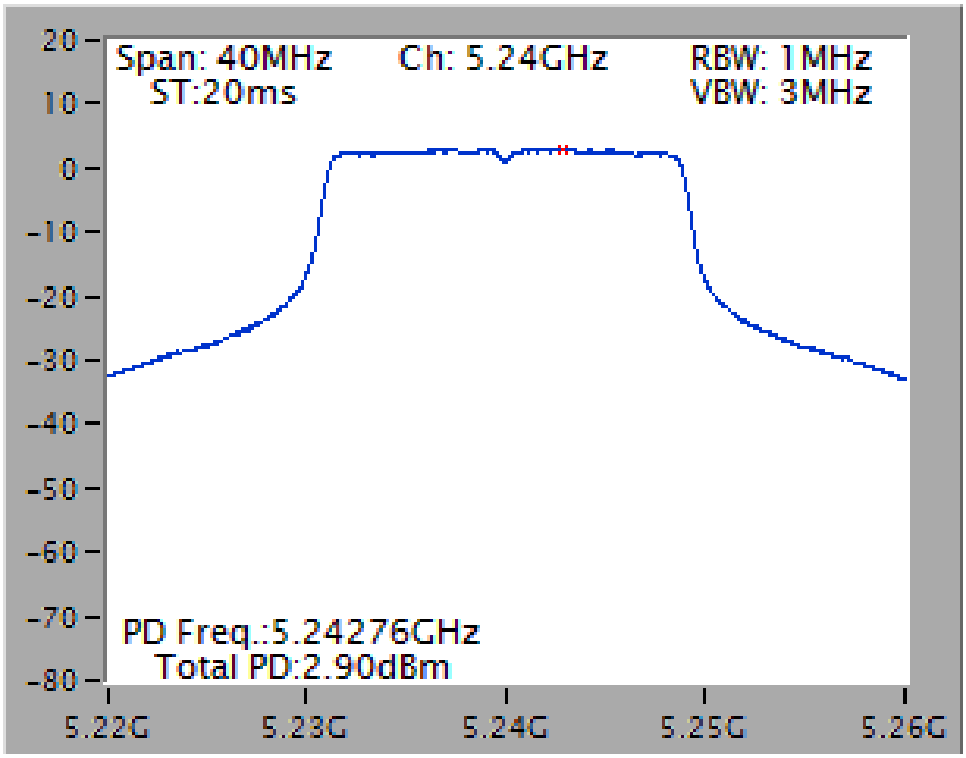
Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 2 / 5270 MHz / Test Mode: Mode 1. EUT 1



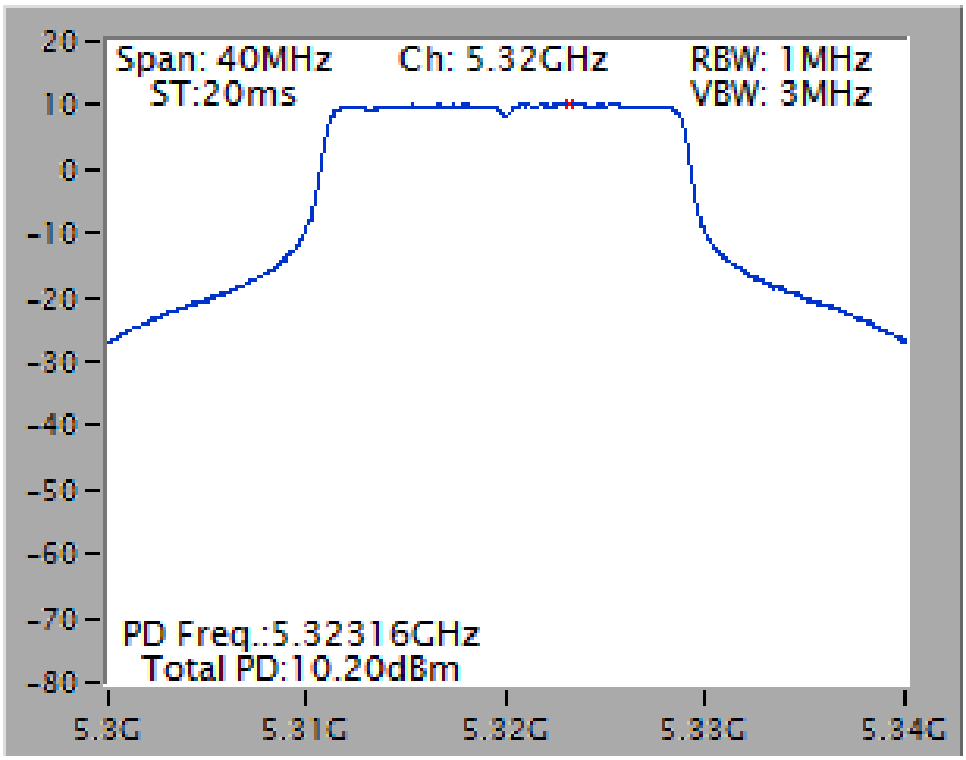
Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 2 / 5550 MHz / Test Mode: Mode 1. EUT 1



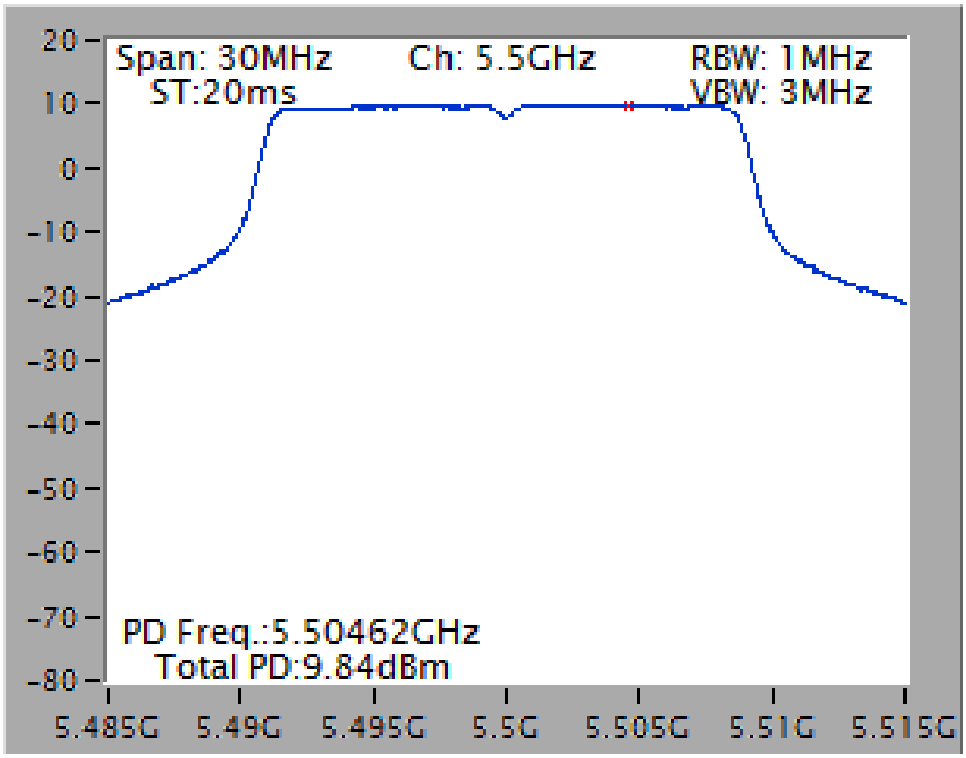
Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 3 / 5240 MHz / Test Mode: Mode 2. EUT 2



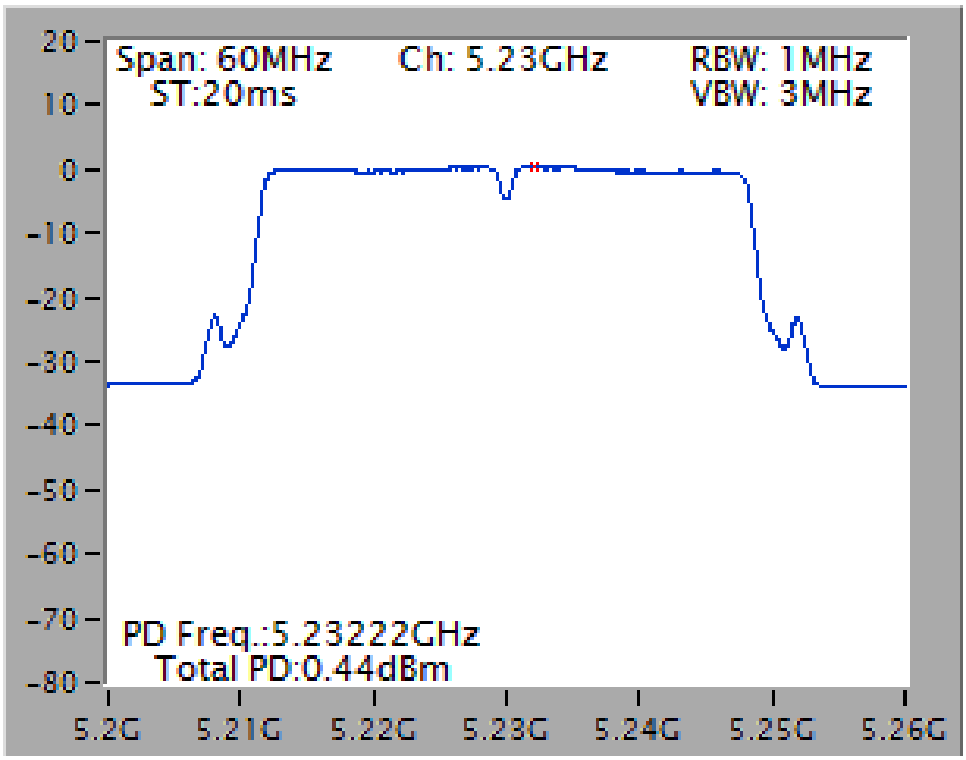
Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 3 / 5320 MHz / Test Mode: Mode 2. EUT 2



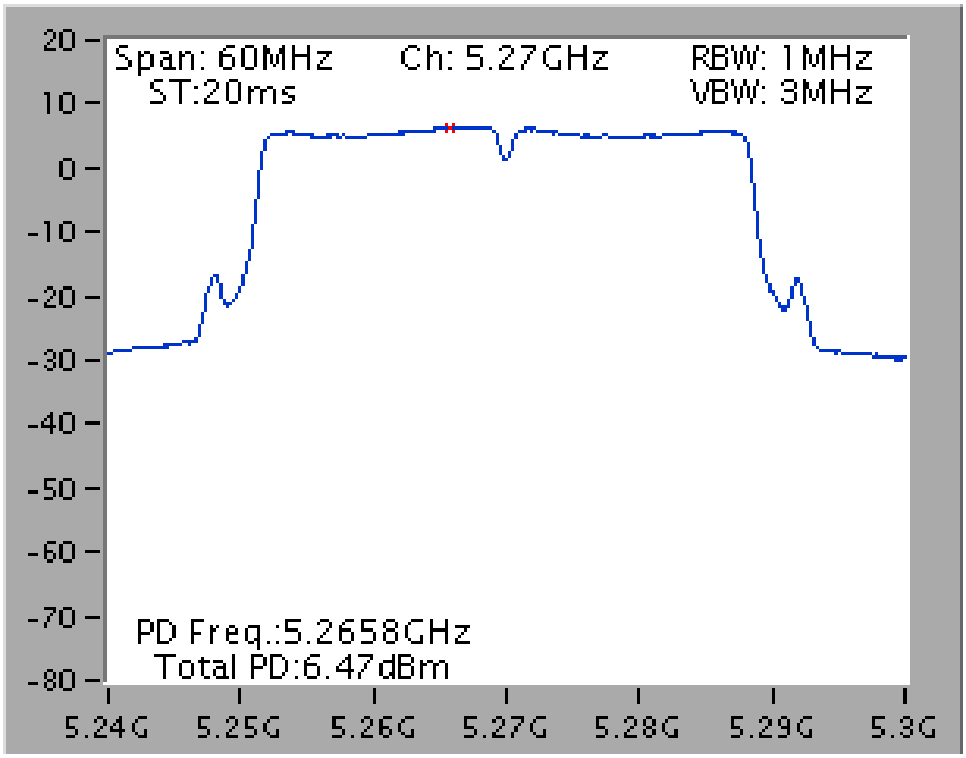
Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 3 / 5500 MHz / Test Mode: Mode 2. EUT 2



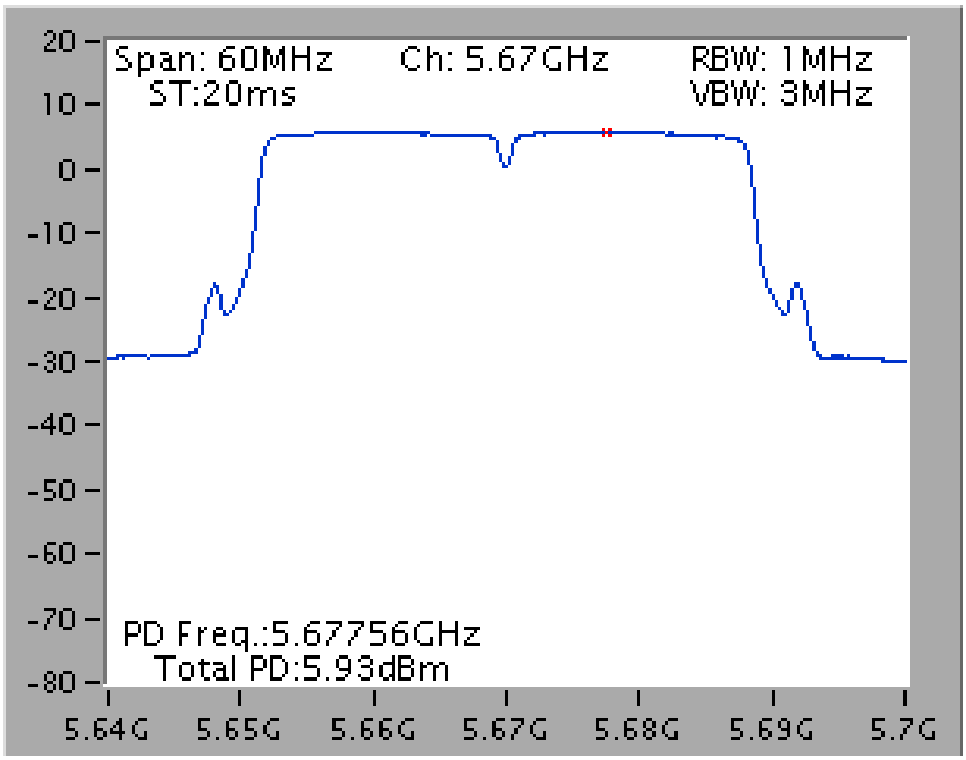
Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 3 / 5230 MHz / Test Mode: Mode 2. EUT 2



Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 3 / 5270 MHz / Test Mode: Mode 2. EUT 2



Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 3 / 5670 MHz / Test Mode: Mode 2. EUT 2



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
RBW	1MHz (Peak Trace) / 1MHz (Average Trace)
VBW	≥ 3MHz (Peak Trace) / ≥ 3MHz (Average Trace)
Detector	Peak (Peak Trace) / RMS (Average Trace)
Trace	Trace: Max hold (Peak Trace) / Trace Average Sweep Count 100 (Average Trace)
Sweep Time	AUTO

4.5.3. Test Procedures

1. Trace A, Set RBW =1MHz, VBW = 3MHz, Span >26dB bandwidth, Max. hold.
2. Delta Mark trace A Maximum frequency and trace B same frequency.
3. Repeat the above procedure until measurements for all frequencies were complete.
4. Testing each modulation mode on a single channel in single operating band at single output port. All signal types need test (DSSS, OFDM). All modulation types need test (BPSK, QPSK, 16-QAM, 64-QAM). All bandwidth modes need test.

4.5.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.4.4.

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°C	Humidity	60%
Test Engineer	Kenneth Huang	Configurations	IEEE 802.11n
Test Mode	Mode 1. EUT 1		

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

Modulation	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
BPSK (MCS0)	5180 MHz	8.60	13	Complies
QPSK (MCS1)	5180 MHz	8.60	13	Complies
16QAM (MCS3)	5180 MHz	8.99	13	Complies
64QAM (MCS5)	5180 MHz	9.72	13	Complies
BPSK (MCS0)	5260 MHz	8.58	13	Complies
QPSK (MCS1)	5260 MHz	9.09	13	Complies
16QAM (MCS3)	5260 MHz	8.88	13	Complies
64QAM (MCS5)	5260 MHz	9.72	13	Complies
BPSK (MCS0)	5500 MHz	9.12	13	Complies
QPSK (MCS1)	5500 MHz	9.44	13	Complies
16QAM (MCS3)	5500 MHz	9.05	13	Complies
64QAM (MCS5)	5500 MHz	9.80	13	Complies

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

Modulation	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
BPSK (MCS0)	5190 MHz	8.29	13	Complies
QPSK (MCS1)	5190 MHz	8.48	13	Complies
16QAM (MCS3)	5190 MHz	9.33	13	Complies
64QAM (MCS5)	5190 MHz	9.87	13	Complies
BPSK (MCS0)	5270 MHz	8.41	13	Complies
QPSK (MCS1)	5270 MHz	8.57	13	Complies
16QAM (MCS3)	5270 MHz	9.35	13	Complies
64QAM (MCS5)	5270 MHz	10.13	13	Complies
BPSK (MCS0)	5670 MHz	8.43	13	Complies
QPSK (MCS1)	5670 MHz	8.33	13	Complies
16QAM (MCS3)	5670 MHz	8.99	13	Complies
64QAM (MCS5)	5670 MHz	9.94	13	Complies

Temperature	26°C	Humidity	60%
Test Engineer	Benson Peng	Configurations	IEEE 802.11n
Test Mode	Mode 2. EUT 2		

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

Modulation	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
BPSK (MCS0)	5180 MHz	8.59	13	Complies
QPSK (MCS1)	5180 MHz	9.58	13	Complies
16QAM (MCS3)	5180 MHz	8.88	13	Complies
64QAM (MCS5)	5180 MHz	9.90	13	Complies
BPSK (MCS0)	5300 MHz	8.57	13	Complies
QPSK (MCS1)	5300 MHz	8.99	13	Complies
16QAM (MCS3)	5300 MHz	8.79	13	Complies
64QAM (MCS5)	5300 MHz	9.64	13	Complies
BPSK (MCS0)	5580 MHz	9.14	13	Complies
QPSK (MCS1)	5580 MHz	9.44	13	Complies
16QAM (MCS3)	5580 MHz	8.90	13	Complies
64QAM (MCS5)	5580 MHz	9.73	13	Complies

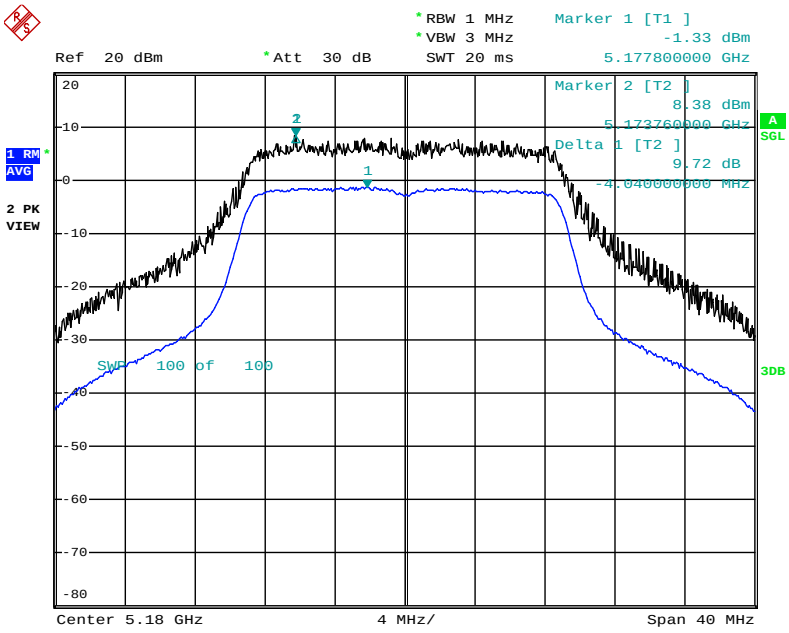
Configuration IEEE 802.11n 40MHz / Ant. 1 + Ant. 3

Modulation	Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
BPSK (MCS0)	5190 MHz	8.42	13	Complies
QPSK (MCS1)	5190 MHz	8.41	13	Complies
16QAM (MCS3)	5190 MHz	9.68	13	Complies
64QAM (MCS5)	5190 MHz	9.97	13	Complies
BPSK (MCS0)	5270 MHz	8.26	13	Complies
QPSK (MCS1)	5270 MHz	8.15	13	Complies
16QAM (MCS3)	5270 MHz	9.47	13	Complies
64QAM (MCS5)	5270 MHz	9.85	13	Complies
BPSK (MCS0)	5670 MHz	8.39	13	Complies
QPSK (MCS1)	5670 MHz	8.34	13	Complies
16QAM (MCS3)	5670 MHz	9.12	13	Complies
64QAM (MCS5)	5670 MHz	10.16	13	Complies

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

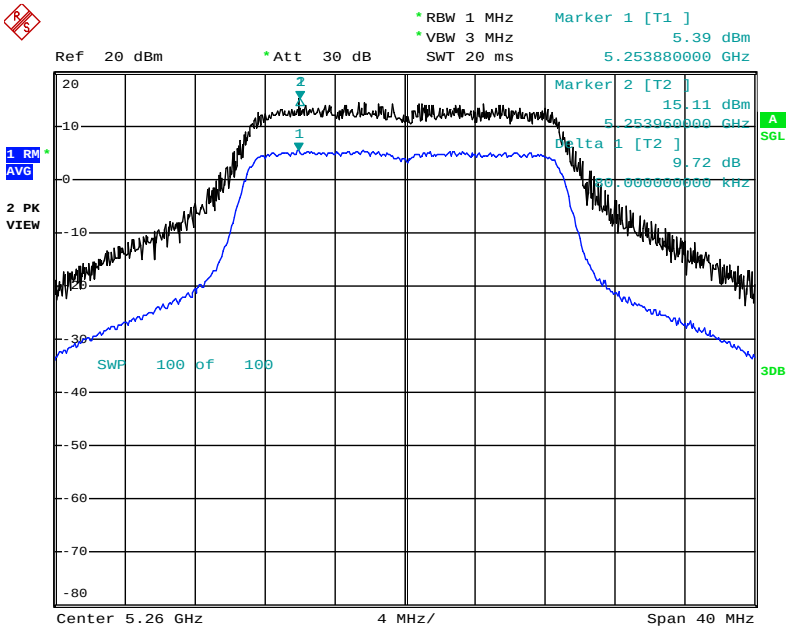
For plots, only the modulation with worse result was shown.

Peak Excursion Plot on Configuration IEEE 802.11n 20MHz / Ant. 1 + Ant. 2 / 64QAM (MCS5) / 5180 MHz / Test Mode: Mode 1. EUT 1



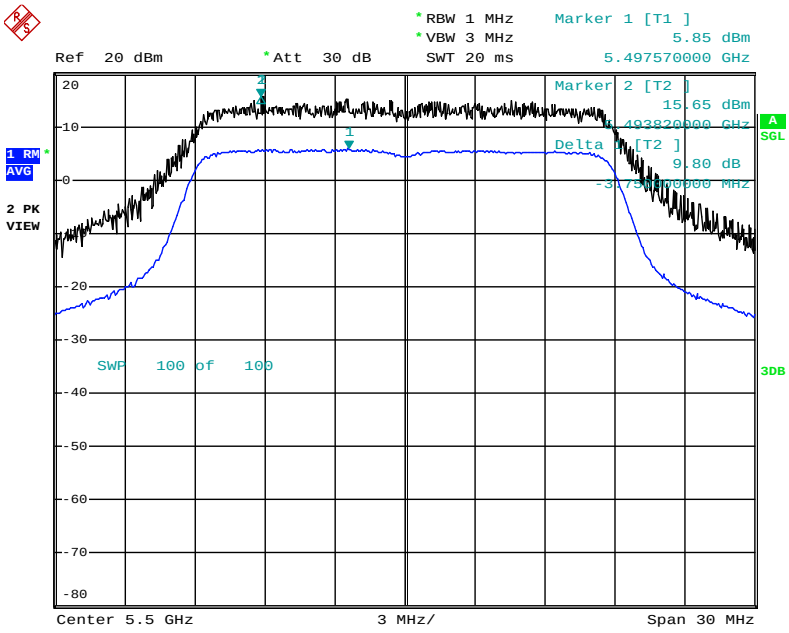
Date: 29.OCT.2013 15:54:47

Peak Excursion Plot on Configuration IEEE 802.11n 20MHz / Ant. 1 + Ant. 2 / 64QAM (MCS5) / 5260 MHz / Test Mode: Mode 1. EUT 1



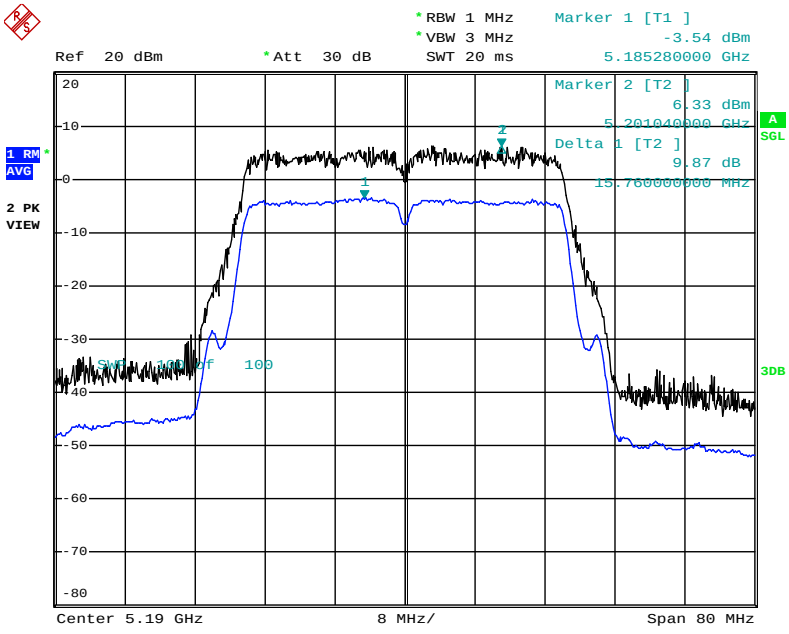
Date: 29.OCT.2013 15:55:38

Peak Excursion Plot on Configuration IEEE 802.11n 20MHz / Ant. 1 + Ant. 2 / 64QAM (MCS5) / 5500 MHz / Test Mode: Mode 1. EUT 1



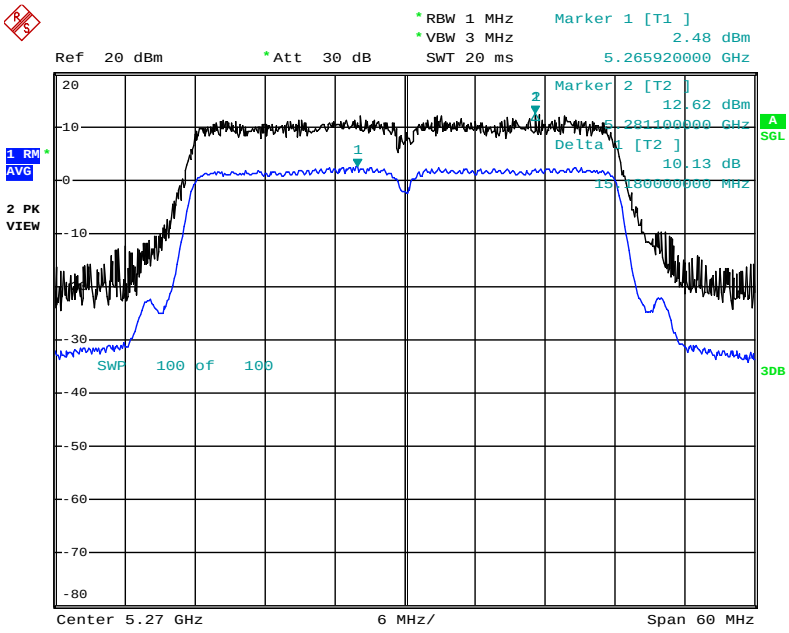
Date: 29.OCT.2013 16:00:13

Peak Excursion Plot on Configuration IEEE 802.11n 40MHz / Ant. 1 + Ant. 2 / 64QAM (MCS5) / 5190 MHz / Test Mode: Mode 1. EUT 1



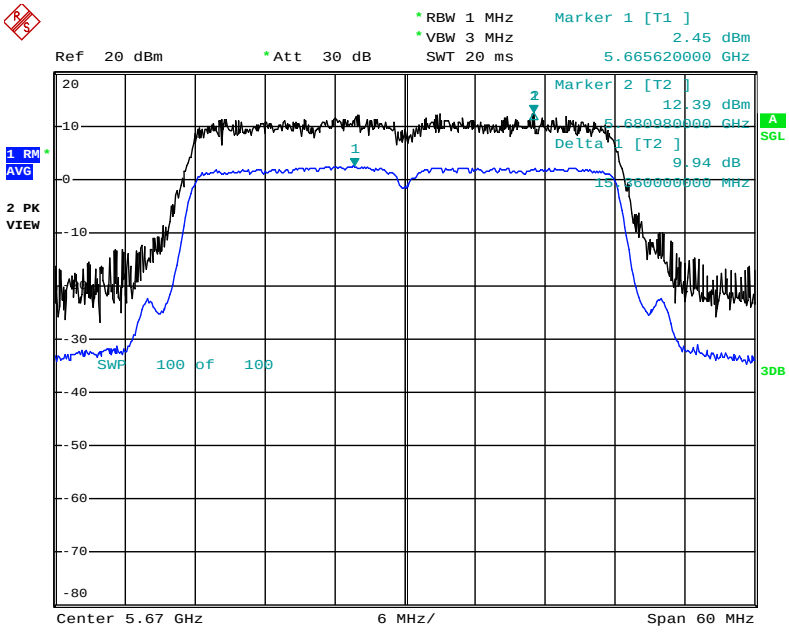
Date: 29.OCT.2013 16:06:59

Peak Excursion Plot on Configuration IEEE 802.11n 40MHz / Ant. 1 + Ant. 2 / 64QAM (MCS5) / 5270 MHz / Test Mode: Mode 1. EUT 1



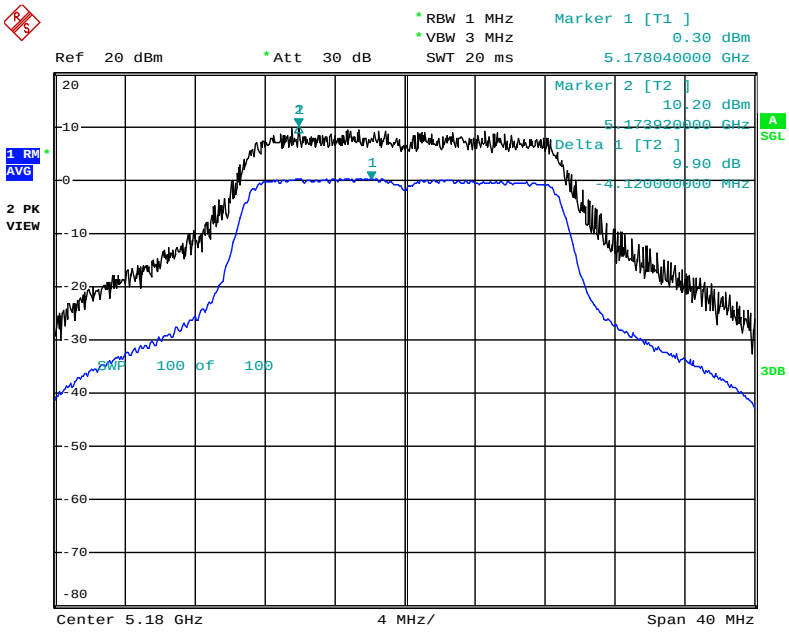
Date: 29.OCT.2013 16:07:51

Peak Excursion Plot on Configuration IEEE 802.11n 40MHz / Ant. 1 + Ant. 2 / 64QAM (MCS5) / 5670 MHz / Test Mode: Mode 1. EUT 1



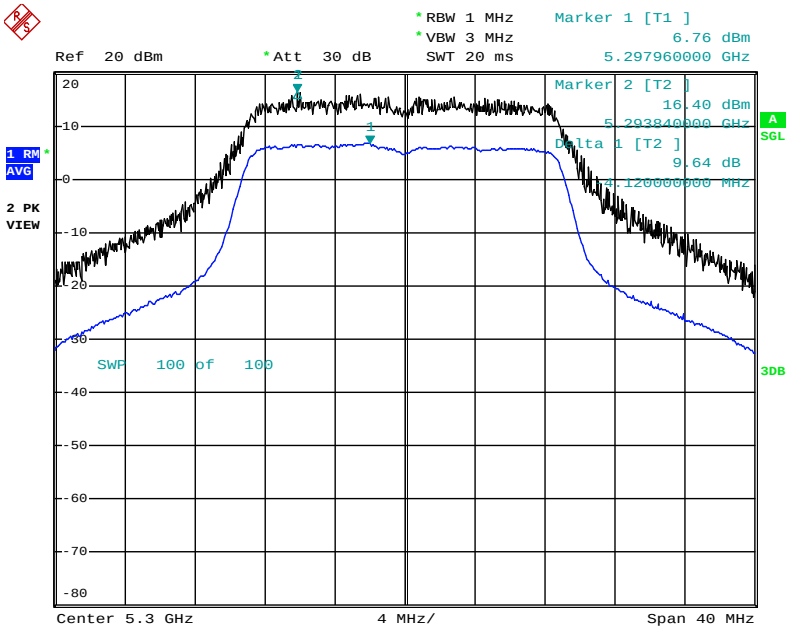
Date: 29.OCT.2013 16:02:53

Peak Excursion Plot on Configuration IEEE 802.11n 20MHz / Ant. 1 + Ant. 3 / 64QAM (MCS5) / 5180 MHz / Test Mode: Mode 2. EUT 2



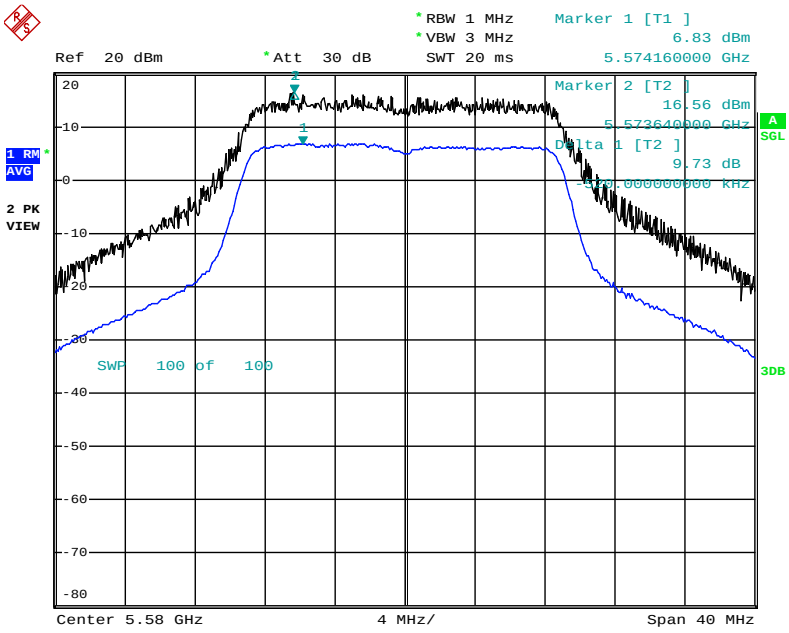
Date: 29.OCT.2013 11:23:18

Peak Excursion Plot on Configuration IEEE 802.11n 20MHz / Ant. 1 + Ant. 3 / 64QAM (MCS5) / 5300 MHz / Test Mode: Mode 2. EUT 2



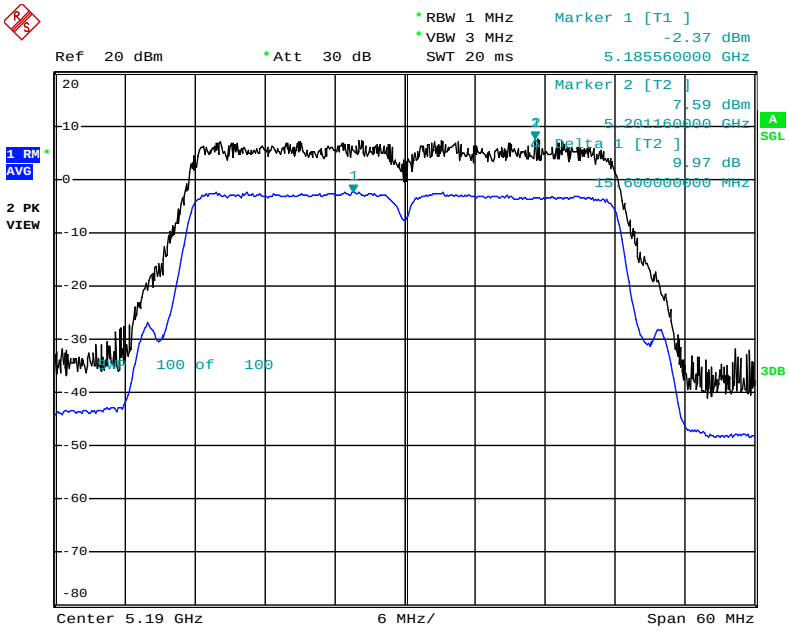
Date: 29.OCT.2013 11:24:11

Peak Excursion Plot on Configuration IEEE 802.11n 20MHz / Ant. 1 + Ant. 3 / 64QAM (MCS5) / 5580 MHz / Test Mode: Mode 2. EUT 2



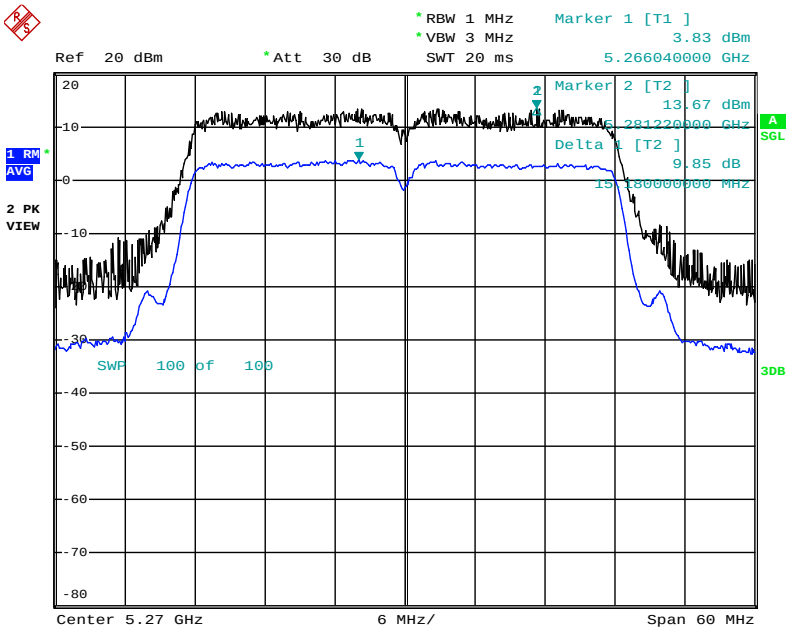
Date: 29.OCT.2013 11:28:43

Peak Excursion Plot on Configuration IEEE 802.11n 40MHz / Ant. 1 + Ant. 3 / 64QAM (MCS5) / 5190 MHz / Test Mode: Mode 2. EUT 2



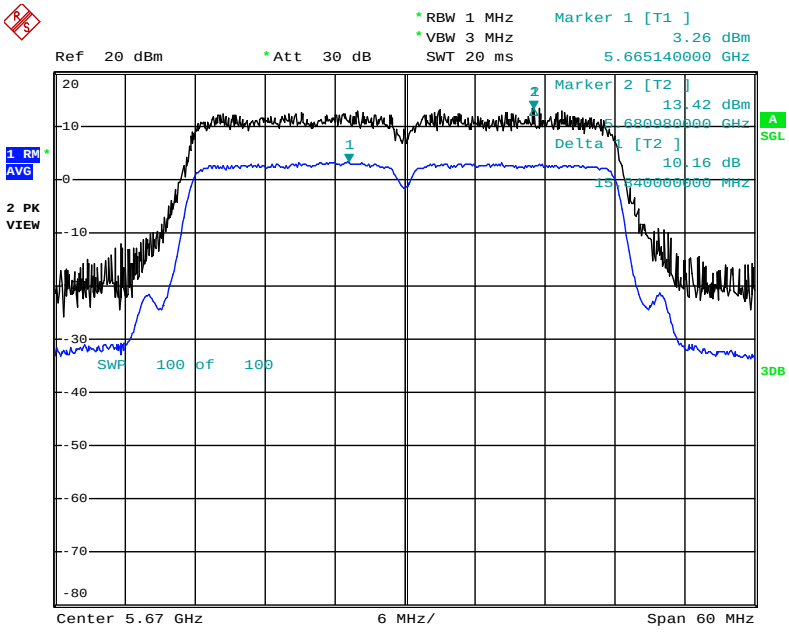
Date: 29.OCT.2013 11:36:07

Peak Excursion Plot on Configuration IEEE 802.11n 40MHz / Ant. 1 + Ant. 3 / 64QAM (MCS5) / 5270 MHz / Test Mode: Mode 2. EUT 2



Date: 29.OCT.2013 11:32:28

Peak Excursion Plot on Configuration IEEE 802.11n 40MHz / Ant. 1 + Ant. 3 / 64QAM (MCS5) / 5670 MHz / Test Mode: Mode 2. EUT 2



Date: 29.OCT.2013 11:31:32

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 a -27dBm peak limit or average 54dBuV/m and peak 74dBuV/m limits. For transmitters operating in the 5.470-5.725 GHz band: all emissions outside of the 5.470-5.725 GHz band shall not exceed a -27dBm peak limit or average 54dBuV/m and peak 74dBuV/m limits. For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz (78.3dBuV/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

4.6.2. 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
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 10Hz for Average
RBW / VBW (Emission in non-restricted band)	1MHz / 3MHz for peak

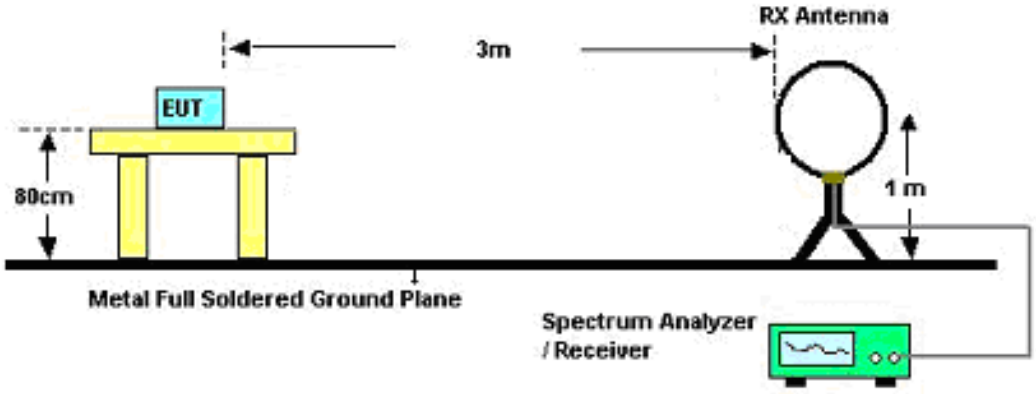
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.6.3. Test Procedures

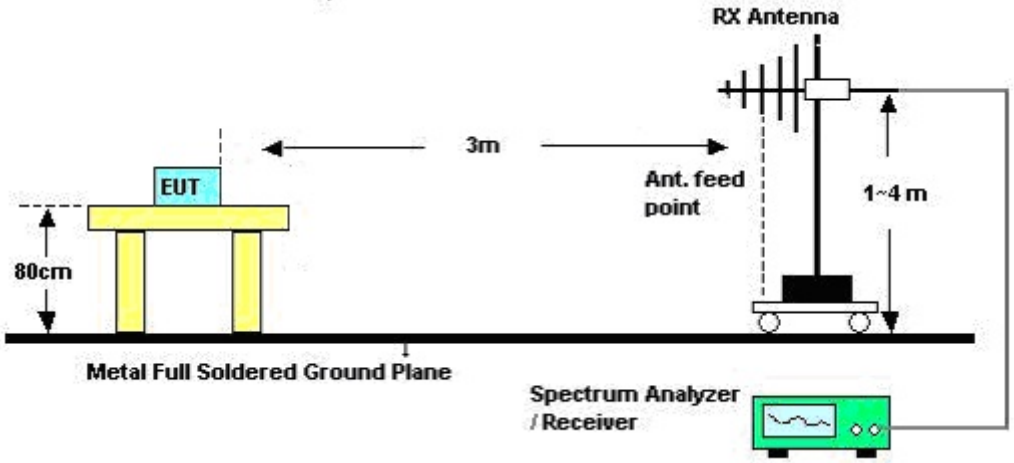
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting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

4.6.4. Test Setup Layout

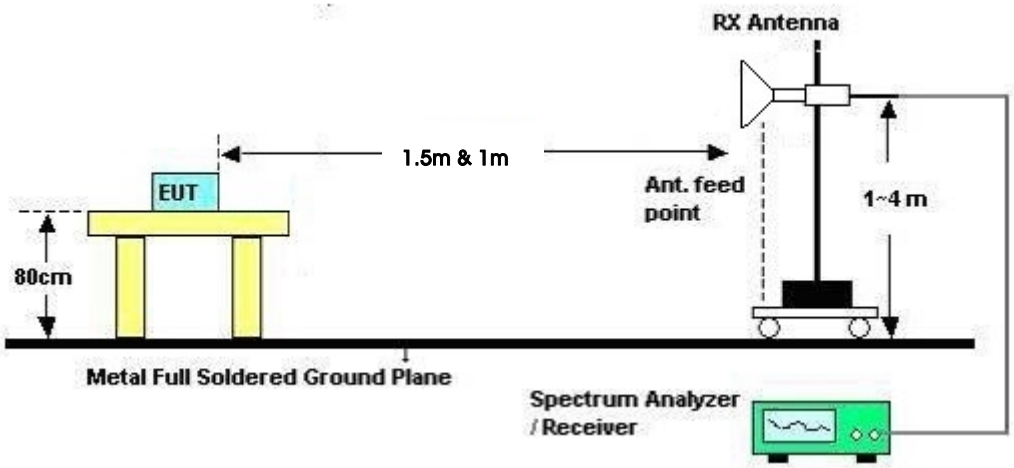
For Radiated Emissions: 9kHz ~30MHz



For Radiated Emissions: 30MHz~1GHz



For Radiated Emissions: Above 1GHz



Note :

1. Above 1 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1.5m.
   Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1.5m]) (dB);
   Limit line = specific limits (dBuV) + distance extrapolation factor [6.02 dB].
2. Above 1 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1m.
   Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1m]) (dB);
   Limit line = specific limits (dBuV) + distance extrapolation factor [9.54 dB].

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	23°C	Humidity	55%
Test Engineer	David Tseng	Configurations	CTX
Test Date	Oct. 31, 2013	Test Mode	Mode 1. EUT 1

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.

Temperature	23°C	Humidity	55%
Test Engineer	David Tseng	Configurations	CTX
Test Date	Nov. 14, 2013	Test Mode	Mode 2. EUT 2

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.

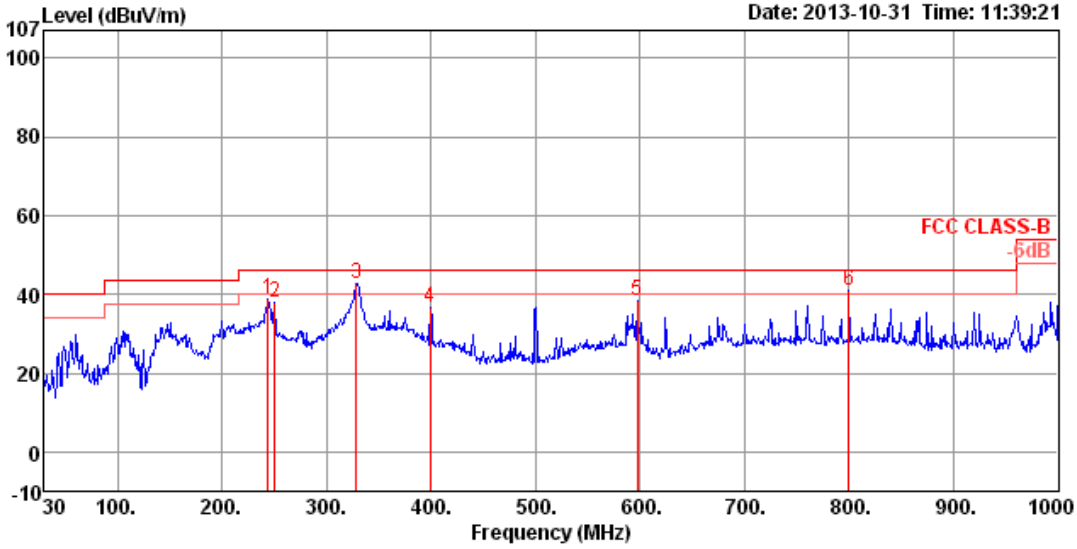
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

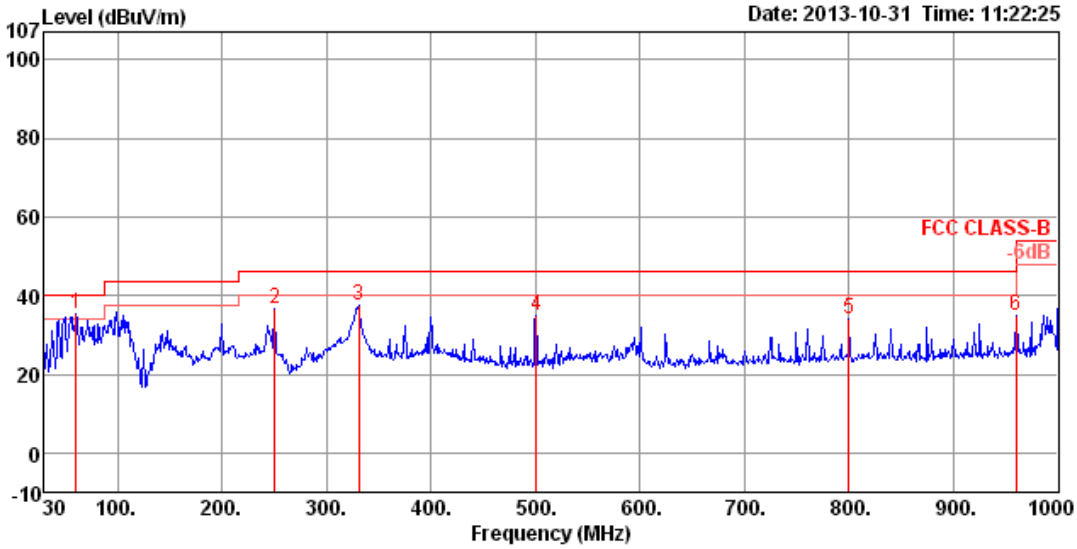
Temperature	23°C	Humidity	55%
Test Engineer	David Tseng	Configurations	CTX
Test Mode	Mode 1. EUT 1		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	244.37	38.76	46.00	-7.24	57.05	1.88	11.29	31.46	125	229	HORIZONTAL	Peak
2	250.19	38.01	46.00	-7.99	55.69	1.90	11.91	31.49	125	108	HORIZONTAL	Peak
3	328.76	42.51	46.00	-3.49	57.95	2.24	13.74	31.42	100	193	HORIZONTAL	Peak
4	399.57	36.76	46.00	-9.24	49.87	2.49	15.86	31.46	100	143	HORIZONTAL	Peak
5	597.45	38.37	46.00	-7.63	48.08	3.11	18.41	31.23	150	358	HORIZONTAL	Peak
6	800.18	40.92	46.00	-5.08	48.76	3.67	19.76	31.27	100	148	HORIZONTAL	Peak

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	60.07	35.19	40.00	-4.81	61.16	0.89	4.92	31.78	125	354	VERTICAL	Peak
2	250.19	36.66	46.00	-9.34	54.34	1.90	11.91	31.49	150	176	VERTICAL	Peak
3	330.70	37.43	46.00	-8.57	52.82	2.25	13.78	31.42	125	141	VERTICAL	Peak
4	500.45	35.00	46.00	-11.00	46.67	2.82	16.92	31.41	100	152	VERTICAL	Peak
5	800.18	33.93	46.00	-12.07	41.77	3.67	19.76	31.27	150	317	VERTICAL	Peak
6	960.23	34.72	54.00	-19.28	40.66	4.10	21.05	31.09	150	268	VERTICAL	Peak

Note:

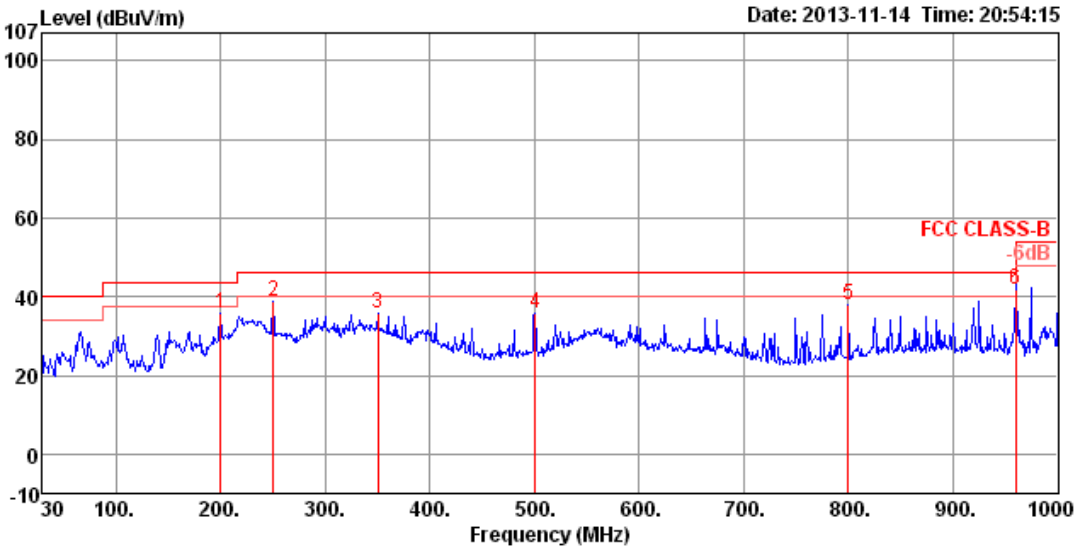
The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

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

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

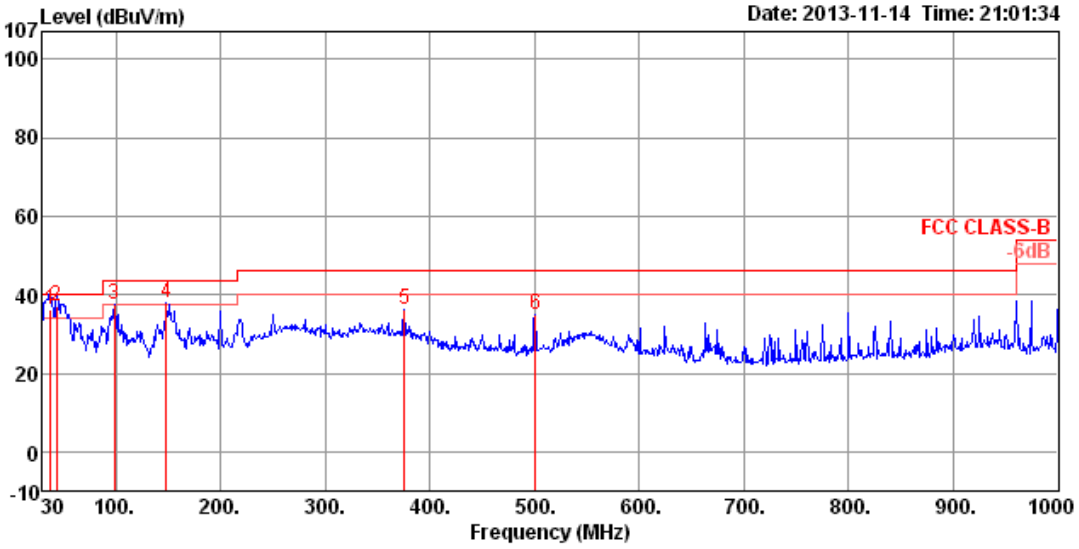
Temperature	23°C	Humidity	55%
Test Engineer	David Tseng	Configurations	CTX
Test Mode	Mode 2. EUT 2		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	199.75	35.72	43.50	-7.78	56.78	1.70	8.75	31.51	125	284	HORIZONTAL	Peak
2	250.19	38.72	46.00	-7.28	56.40	1.90	11.91	31.49	125	237	HORIZONTAL	Peak
3	350.10	35.67	46.00	-10.33	50.37	2.31	14.33	31.34	100	175	HORIZONTAL	Peak
4	500.45	35.62	46.00	-10.38	47.29	2.82	16.92	31.41	125	146	HORIZONTAL	Peak
5	800.18	37.82	46.00	-8.18	45.66	3.67	19.76	31.27	150	266	HORIZONTAL	Peak
6	959.98	41.95	46.00	-4.05	47.89	4.10	21.05	31.09	112	286	HORIZONTAL	QP

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	37.76	36.40	40.00	-3.60	53.78	0.72	13.78	31.88	100	84	VERTICAL	QP
2	43.58	36.87	40.00	-3.13	57.68	0.78	10.25	31.84	100	340	VERTICAL	QP
3	98.87	37.42	43.50	-6.08	57.68	1.17	10.17	31.60	125	196	VERTICAL	Peak
4	148.34	37.86	43.50	-5.64	57.81	1.46	10.14	31.55	100	264	VERTICAL	Peak
5	375.32	36.00	46.00	-10.00	50.06	2.44	14.93	31.43	125	187	VERTICAL	Peak
6	500.45	34.70	46.00	-11.30	46.37	2.82	16.92	31.41	100	176	VERTICAL	Peak

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	23°C	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 36 / Ant. 1 + Ant. 2
Test Date	Sep. 20, 2013	Test Mode	Mode 1. EUT 1

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	15543.84	57.77	80.00	-22.23	49.30	6.13	37.65	35.31	Peak	100	128	HORIZONTAL
2	15544.56	43.37	60.00	-16.63	34.90	6.13	37.65	35.31	Average	100	128	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	15540.72	46.38	60.00	-13.62	37.87	6.13	37.69	35.31	Average	100	134	VERTICAL
2	15541.36	60.14	80.00	-19.86	51.63	6.13	37.69	35.31	Peak	100	134	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 40 / Ant. 1 + Ant. 2
Test Date	Sep. 20, 2013	Test Mode	Mode 1. EUT 1

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	15604.84	41.11	60.00	-18.89	32.72	6.13	37.60	35.34	Average	100	162	HORIZONTAL
2	15606.88	54.27	80.00	-25.73	45.90	6.13	37.58	35.34	Peak	100	162	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15601.40	60.32	80.00	-19.68	51.93	6.13	37.60	35.34	Peak	100	215	VERTICAL
2	15602.12	46.37	60.00	-13.63	37.98	6.13	37.60	35.34	Average	100	215	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 48 / Ant. 1 + Ant. 2
Test Date	Sep. 21, 2013	Test Mode	Mode 1. EUT 1

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	15718.24	45.27	60.00	-14.73	37.04	6.14	37.48	35.39	Average	100	94	HORIZONTAL
2	15721.32	59.57	80.00	-20.43	51.34	6.14	37.48	35.39	Peak	100	94	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	15718.00	60.47	80.00	-19.53	52.24	6.14	37.48	35.39	Peak	100	223	VERTICAL
2	15718.28	46.02	60.00	-13.98	37.79	6.14	37.48	35.39	Average	100	223	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 52 / Ant. 1 + Ant. 2
Test Date	Sep. 21, 2013	Test Mode	Mode 1. EUT 1

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	15784.60	44.37	60.00	-15.63	36.24	6.14	37.41	35.42	Average	100	129	HORIZONTAL
2	15786.56	59.38	80.00	-20.62	51.25	6.14	37.41	35.42	Peak	100	129	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	15775.08	63.61	80.00	-16.39	55.47	6.14	37.42	35.42	Peak	100	109	VERTICAL
2	15775.60	48.56	60.00	-11.44	40.42	6.14	37.42	35.42	Average	100	109	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 60 / Ant. 1 + Ant. 2
Test Date	Sep. 21, 2013	Test Mode	Mode 1. EUT 1

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	10608.16	57.48	80.00	-22.52	49.51	5.01	38.38	35.42	Peak	100	95	HORIZONTAL
2	10609.44	44.08	60.00	-15.92	36.11	5.01	38.38	35.42	Average	100	95	HORIZONTAL
3	15897.72	42.41	60.00	-17.59	34.41	6.15	37.29	35.44	Average	100	143	HORIZONTAL
4	15898.24	56.35	80.00	-23.65	48.35	6.15	37.29	35.44	Peak	100	143	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	10602.56	66.59	80.00	-13.41	58.62	5.01	38.38	35.42	Peak	107	125	VERTICAL
2	10603.64	52.43	60.00	-7.57	44.46	5.01	38.38	35.42	Average	107	125	VERTICAL
3	15902.80	47.52	60.00	-12.48	39.52	6.15	37.29	35.44	Average	100	131	VERTICAL
4	15902.84	60.62	80.00	-19.38	52.62	6.15	37.29	35.44	Peak	100	131	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 64 / Ant. 1 + Ant. 2
Test Date	Sep. 21, 2013	Test Mode	Mode 1. EUT 1

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	10638.20	58.11	80.00	-21.89	50.12	5.01	38.37	35.39	Peak	100	98	HORIZONTAL
2	10639.56	44.10	60.00	-15.90	36.11	5.01	38.37	35.39	Average	100	98	HORIZONTAL
3	15958.44	59.98	80.00	-20.02	52.04	6.15	37.23	35.44	Peak	100	121	HORIZONTAL
4	15960.88	44.68	60.00	-15.32	36.74	6.15	37.23	35.44	Average	100	121	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	10642.72	65.24	80.00	-14.76	57.25	5.01	38.37	35.39	Peak	100	123	VERTICAL
2	10643.80	50.19	60.00	-9.81	42.20	5.01	38.37	35.39	Average	100	123	VERTICAL
3	15959.04	63.09	80.00	-16.91	55.15	6.15	37.23	35.44	Peak	100	143	VERTICAL
4	15960.96	47.30	60.00	-12.70	39.36	6.15	37.23	35.44	Average	100	143	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 100 / Ant. 1 + Ant. 2
Test Date	Sep. 21, 2013	Test Mode	Mode 1. EUT 1

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	10999.88	46.11	60.00	-13.89	37.88	5.01	38.32	35.10	Average	100	109	HORIZONTAL
2	11002.56	60.20	80.00	-19.80	51.97	5.01	38.32	35.10	Peak	100	109	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	11002.60	68.65	80.00	-11.35	60.44	5.01	38.30	35.10	Peak	100	124	VERTICAL
2	11003.64	54.10	60.00	-5.90	45.89	5.01	38.30	35.10	Average	100	124	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 116 / Ant. 1 + Ant. 2
Test Date	Sep. 21, 2013	Test Mode	Mode 1. EUT 1

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	11158.08	60.45	80.00	-19.55	52.12	5.04	38.45	35.16	Peak	100	112	HORIZONTAL
2	11159.92	46.34	60.00	-13.66	38.00	5.04	38.47	35.17	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	11162.56	67.79	80.00	-12.21	59.44	5.05	38.47	35.17	Peak	100	77	VERTICAL
2	11163.76	53.12	60.00	-6.88	44.77	5.05	38.47	35.17	Average	100	77	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 140 / Ant. 1 + Ant. 2
Test Date	Sep. 21, 2013	Test Mode	Mode 1. EUT 1

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	11396.48	54.44	80.00	-25.56	45.91	5.10	38.68	35.25	Peak	100	114	HORIZONTAL
2	11399.56	41.44	60.00	-18.56	32.89	5.10	38.70	35.25	Average	100	114	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	11398.96	61.93	80.00	-18.07	53.38	5.10	38.70	35.25	Peak	100	347	VERTICAL
2	11399.88	48.03	60.00	-11.97	39.48	5.10	38.70	35.25	Average	100	347	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz CH 38 / Ant. 1 + Ant. 2
Test Date	Sep. 21, 2013	Test Mode	Mode 1. EUT 1

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	15560.80	51.03	80.00	-28.97	42.58	6.13	37.63	35.31	Peak	100	223	HORIZONTAL
2	15564.36	38.36	60.00	-21.64	29.93	6.13	37.63	35.33	Average	100	223	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	15570.12	39.99	60.00	-20.01	31.54	6.13	37.65	35.33	Average	100	337	VERTICAL
2	15570.60	51.09	80.00	-28.91	42.64	6.13	37.65	35.33	Peak	100	337	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz CH 46 / Ant. 1 + Ant. 2
Test Date	Sep. 21, 2013	Test Mode	Mode 1. EUT 1

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	15685.24	42.61	60.00	-17.39	34.33	6.14	37.51	35.37	Average	100	95	HORIZONTAL
2	15687.84	55.91	80.00	-24.09	47.63	6.14	37.51	35.37	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	15692.64	56.41	80.00	-23.59	48.16	6.14	37.49	35.38	Peak	100	217	VERTICAL
2	15693.84	43.89	60.00	-16.11	35.64	6.14	37.49	35.38	Average	100	217	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz CH 54 / Ant. 1 + Ant. 2
Test Date	Sep. 21, 2013	Test Mode	Mode 1. EUT 1

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	15803.40	56.09	80.00	-23.91	47.99	6.14	37.39	35.43	Peak	100	104	HORIZONTAL
2	15805.56	42.42	60.00	-17.58	34.32	6.14	37.39	35.43	Average	100	104	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	15801.28	47.25	60.00	-12.75	39.15	6.14	37.39	35.43	Average	100	110	VERTICAL
2	15802.80	60.74	80.00	-19.26	52.64	6.14	37.39	35.43	Peak	100	110	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz CH 62 / Ant. 1 + Ant. 2
Test Date	Sep. 21, 2013	Test Mode	Mode 1. EUT 1

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	10616.20	50.08	80.00	-29.92	42.11	5.01	38.38	35.42	Peak	100	13	HORIZONTAL
2	10619.76	37.64	60.00	-22.36	29.67	5.01	38.38	35.42	Average	100	13	HORIZONTAL
3	15925.60	39.55	60.00	-20.45	31.57	6.15	37.27	35.44	Average	100	206	HORIZONTAL
4	15932.40	52.03	80.00	-27.97	44.07	6.15	37.25	35.44	Peak	100	206	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	10619.68	55.82	80.00	-24.18	47.85	5.01	38.38	35.42	Peak	100	112	VERTICAL
2	10620.12	43.41	60.00	-16.59	35.44	5.01	38.38	35.42	Average	100	112	VERTICAL
3	15930.00	40.31	60.00	-19.69	32.35	6.15	37.25	35.44	Average	100	165	VERTICAL
4	15935.12	52.56	80.00	-27.44	44.60	6.15	37.25	35.44	Peak	100	165	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz CH 102 / Ant. 1 + Ant. 2
Test Date	Sep. 21, 2013	Test Mode	Mode 1. EUT 1

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	11028.32	49.37	80.00	-30.63	41.12	5.02	38.34	35.11	Peak	100	299	HORIZONTAL
2	11029.04	38.35	60.00	-21.65	30.10	5.02	38.34	35.11	Average	100	299	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	11019.92	45.29	60.00	-14.71	37.06	5.02	38.32	35.11	Average	100	128	VERTICAL
2	11020.32	56.57	80.00	-23.43	48.34	5.02	38.32	35.11	Peak	100	128	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz CH 110 / Ant. 1 + Ant. 2
Test Date	Sep. 21, 2013	Test Mode	Mode 1. EUT 1

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	11099.64	58.01	80.00	-21.99	49.72	5.03	38.40	35.14	Peak	100	222	HORIZONTAL
2	11100.08	47.73	60.00	-12.27	39.44	5.03	38.40	35.14	Average	100	169	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	11099.88	64.63	80.00	-15.37	56.34	5.03	38.40	35.14	Peak	100	127	VERTICAL
2	11100.00	52.12	60.00	-7.88	43.83	5.03	38.40	35.14	Average	100	127	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz CH 134 / Ant. 1 + Ant. 2
Test Date	Sep. 21, 2013	Test Mode	Mode 1. EUT 1

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	11339.56	53.87	80.00	-26.13	45.40	5.08	38.63	35.24	Peak	100	307	HORIZONTAL
2	11340.00	42.39	60.00	-17.61	33.92	5.08	38.63	35.24	Average	100	307	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11336.76	63.79	80.00	-16.21	55.32	5.08	38.63	35.24	Peak	100	347	VERTICAL
2	11339.60	51.80	60.00	-8.20	43.33	5.08	38.63	35.24	Average	100	347	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	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 36 / Ant. 1 + Ant. 3
Test Date	Sep. 20, 2013	Test Mode	Mode 2. EUT 2

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	15536.28	52.02	80.00	-27.98	43.51	6.13	37.67	35.29	Peak	100	177	HORIZONTAL
2	15542.08	40.20	60.00	-19.80	31.73	6.13	37.65	35.31	Average	100	177	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	15538.37	42.69	60.00	-17.31	34.18	6.13	37.69	35.31	Average	100	287	VERTICAL
2	15544.49	54.21	80.00	-25.79	45.70	6.13	37.69	35.31	Peak	100	287	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 40 / Ant. 1 + Ant. 3
Test Date	Sep. 20, 2013	Test Mode	Mode 2. EUT 2

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	15602.85	40.81	60.00	-19.19	32.42	6.13	37.60	35.34	Average	100	134	HORIZONTAL
2	15603.21	53.62	80.00	-26.38	45.23	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	15595.13	60.76	80.00	-19.24	52.37	6.13	37.60	35.34	Peak	100	259	VERTICAL
2	15595.22	46.19	60.00	-13.81	37.80	6.13	37.60	35.34	Average	100	259	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 48 / Ant. 1 + Ant. 3
Test Date	Sep. 20, 2013	Test Mode	Mode 2. EUT 2

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	15717.95	41.33	60.00	-18.67	33.10	6.14	37.48	35.39	Average	100	281	HORIZONTAL
2	15721.41	56.03	80.00	-23.97	47.80	6.14	37.48	35.39	Peak	100	281	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	15715.38	47.50	60.00	-12.50	39.26	6.14	37.48	35.38	Average	100	260	VERTICAL
2	15715.96	61.90	80.00	-18.10	53.66	6.14	37.48	35.38	Peak	100	260	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 52 / Ant. 1 + Ant. 3
Test Date	Sep. 20, 2013	Test Mode	Mode 2. EUT 2

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	15775.19	39.14	60.00	-20.86	31.00	6.14	37.42	35.42	Average	100	160	HORIZONTAL
2	15784.49	50.97	80.00	-29.03	42.84	6.14	37.41	35.42	Peak	100	160	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	15775.29	46.84	60.00	-13.16	38.70	6.14	37.42	35.42	Average	100	259	VERTICAL
2	15775.93	61.37	80.00	-18.63	53.23	6.14	37.42	35.42	Peak	100	259	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 60 / Ant. 1 + Ant. 3
Test Date	Sep. 20, 2013	Test Mode	Mode 2. EUT 2

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	10602.69	61.03	80.00	-18.97	53.06	5.01	38.38	35.42	Peak	100	96	HORIZONTAL
2	10603.81	47.20	60.00	-12.80	39.23	5.01	38.38	35.42	Average	100	96	HORIZONTAL
3	15896.22	38.98	60.00	-21.02	30.98	6.15	37.29	35.44	Average	100	159	HORIZONTAL
4	15903.75	51.76	80.00	-28.24	43.76	6.15	37.29	35.44	Peak	100	159	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	10602.50	67.69	80.00	-12.31	59.72	5.01	38.38	35.42	Peak	100	235	VERTICAL
2	10604.97	52.75	60.00	-7.25	44.78	5.01	38.38	35.42	Average	100	235	VERTICAL
3	15895.74	43.15	60.00	-16.85	35.15	6.15	37.29	35.44	Average	100	230	VERTICAL
4	15895.99	57.23	80.00	-22.77	49.23	6.15	37.29	35.44	Peak	100	230	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 64 / Ant. 1 + Ant. 3
Test Date	Sep. 20, 2013	Test Mode	Mode 2. EUT 2

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	10638.00	61.15	80.00	-18.85	53.16	5.01	38.37	35.39	Peak	100	245	HORIZONTAL
2	10640.08	47.08	60.00	-12.92	39.09	5.01	38.37	35.39	Average	100	245	HORIZONTAL
3	15955.83	52.17	80.00	-27.83	44.23	6.15	37.23	35.44	Peak	100	200	HORIZONTAL
4	15964.57	40.05	60.00	-19.95	32.12	6.15	37.22	35.44	Average	100	200	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	10642.40	66.02	80.00	-13.98	58.03	5.01	38.37	35.39	Peak	100	238	VERTICAL
2	10644.97	52.31	60.00	-7.69	44.32	5.01	38.37	35.39	Average	100	238	VERTICAL
3	15955.35	45.59	60.00	-14.41	37.65	6.15	37.23	35.44	Average	100	120	VERTICAL
4	15966.41	59.21	80.00	-20.79	51.28	6.15	37.22	35.44	Peak	100	120	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 100 / Ant. 1 + Ant. 3
Test Date	Sep. 20, 2013	Test Mode	Mode 2. EUT 2

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	10997.84	63.51	80.00	-16.49	55.28	5.01	38.32	35.10	Peak	100	250	HORIZONTAL
2	10999.68	49.16	60.00	-10.84	40.93	5.01	38.32	35.10	Average	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	10998.08	69.29	80.00	-10.71	61.08	5.01	38.30	35.10	Peak	100	250	VERTICAL
2	10999.60	54.95	60.00	-5.05	46.74	5.01	38.30	35.10	Average	100	250	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 116 / Ant. 1 + Ant. 3
Test Date	Sep. 20, 2013	Test Mode	Mode 2. EUT 2

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	11162.00	61.28	80.00	-18.72	52.93	5.05	38.47	35.17	Peak	100	242	HORIZONTAL
2	11163.61	47.76	60.00	-12.24	39.41	5.05	38.47	35.17	Average	100	242	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	11158.08	68.88	80.00	-11.12	60.55	5.04	38.45	35.16	Peak	100	247	VERTICAL
2	11159.60	55.25	60.00	-4.75	46.91	5.04	38.47	35.17	Average	100	247	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 140 / Ant. 1 + Ant. 3
Test Date	Sep. 20, 2013	Test Mode	Mode 2. EUT 2

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	11399.20	57.19	80.00	-22.81	48.64	5.10	38.70	35.25	Peak	100	258	HORIZONTAL
2	11399.36	43.31	60.00	-16.69	34.76	5.10	38.70	35.25	Average	100	258	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	11399.04	66.30	80.00	-13.70	57.75	5.10	38.70	35.25	Peak	100	236	VERTICAL
2	11399.60	52.88	60.00	-7.12	44.33	5.10	38.70	35.25	Average	100	236	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz CH 38 / Ant. 1 + Ant. 3
Test Date	Sep. 20, 2013	Test Mode	Mode 2. EUT 2

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	15562.55	38.04	60.00	-21.96	29.59	6.13	37.63	35.31	Average	100	107	HORIZONTAL
2	15564.47	50.61	80.00	-29.39	42.18	6.13	37.63	35.33	Peak	100	107	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	15569.92	39.49	60.00	-20.51	31.04	6.13	37.65	35.33	Average	100	59	VERTICAL
2	15570.00	50.14	80.00	-29.86	41.69	6.13	37.65	35.33	Peak	100	59	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz CH 46 / Ant. 1 + Ant. 3
Test Date	Sep. 20, 2013	Test Mode	Mode 2. EUT 2

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	15683.99	52.88	80.00	-27.12	44.60	6.14	37.51	35.37	Peak	100	282	HORIZONTAL
2	15691.60	40.17	60.00	-19.83	31.92	6.14	37.49	35.38	Average	100	282	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	15685.11	43.87	60.00	-16.13	35.59	6.14	37.51	35.37	Average	100	260	VERTICAL
2	15687.68	58.30	80.00	-21.70	50.02	6.14	37.51	35.37	Peak	100	260	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz CH 54 / Ant. 1 + Ant. 3
Test Date	Sep. 20, 2013	Test Mode	Mode 2. EUT 2

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	15806.79	37.50	60.00	-22.50	29.40	6.14	37.39	35.43	Average	100	162	HORIZONTAL
2	15813.69	51.05	80.00	-28.95	42.97	6.14	37.37	35.43	Peak	100	162	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15799.90	37.63	60.00	-22.37	29.53	6.14	37.39	35.43	Average	100	183	VERTICAL
2	15806.88	49.94	80.00	-30.06	41.84	6.14	37.39	35.43	Peak	100	183	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz CH 62 / Ant. 1 + Ant. 3
Test Date	Sep. 20, 2013	Test Mode	Mode 2. EUT 2

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	10625.61	44.72	60.00	-15.28	36.72	5.01	38.38	35.39	Average	100	238	HORIZONTAL
2	10626.33	57.14	80.00	-22.86	49.14	5.01	38.38	35.39	Peak	100	238	HORIZONTAL
3	15935.61	40.69	60.00	-19.31	32.73	6.15	37.25	35.44	Average	100	200	HORIZONTAL
4	15945.61	51.69	80.00	-28.31	43.73	6.15	37.25	35.44	Peak	100	200	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	10614.63	53.00	80.00	-27.00	45.03	5.01	38.38	35.42	Peak	100	252	VERTICAL
2	10619.92	40.61	60.00	-19.39	32.64	5.01	38.38	35.42	Average	100	252	VERTICAL
3	15934.63	50.00	80.00	-30.00	42.04	6.15	37.25	35.44	Peak	100	201	VERTICAL
4	15944.63	38.00	60.00	-22.00	30.04	6.15	37.25	35.44	Average	100	201	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz CH 102 / Ant. 1 + Ant. 3
Test Date	Sep. 20, 2013	Test Mode	Mode 2. EUT 2

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	11024.49	54.36	80.00	-25.64	46.11	5.02	38.34	35.11	Peak	100	250	HORIZONTAL
2	11027.45	41.83	60.00	-18.17	33.58	5.02	38.34	35.11	Average	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	11019.92	47.58	60.00	-12.42	39.35	5.02	38.32	35.11	Average	100	251	VERTICAL
2	11020.08	58.92	80.00	-21.08	50.69	5.02	38.32	35.11	Peak	100	251	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz CH 110 / Ant. 1 + Ant. 3
Test Date	Sep. 20, 2013	Test Mode	Mode 2. EUT 2

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	11100.00	46.95	60.00	-13.05	38.66	5.03	38.40	35.14	Average	100	238	HORIZONTAL
2	11103.69	58.53	80.00	-21.47	50.24	5.03	38.40	35.14	Peak	100	238	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	11096.79	65.37	80.00	-14.63	57.08	5.03	38.40	35.14	Peak	100	249	VERTICAL
2	11100.00	54.10	60.00	-5.90	45.81	5.03	38.40	35.14	Average	100	249	VERTICAL

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz CH 134 / Ant. 1 + Ant. 3
Test Date	Sep. 20, 2013	Test Mode	Mode 2. EUT 2

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	11332.31	46.12	60.00	-13.88	37.64	5.08	38.63	35.23	Average	100	239	HORIZONTAL
2	11347.13	58.99	80.00	-21.01	50.49	5.09	38.65	35.24	Peak	100	239	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	11339.52	54.84	60.00	-5.16	46.37	5.08	38.63	35.24	Average	100	237	VERTICAL
2	11340.48	66.40	80.00	-13.60	57.92	5.09	38.63	35.24	Peak	100	237	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 a -27dBm peak limit or average 54dBuV/m and peak 74dBuV/m limits. For transmitters operating in the 5.470-5.725 GHz band: all emissions outside of the 5.470-5.725 GHz band shall not exceed a -27dBm peak limit or average 54dBuV/m and peak 74dBuV/m limits. 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
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 10Hz for Average
RBW / VBW (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	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 36, 40, 48 / Ant. 1 + Ant. 2
Test Date	Sep. 20, 2013	Test Mode	Mode 1. EUT 1

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	57.37	60.00	-2.63	20.27	3.43	33.67	0.00	Average	100	74	VERTICAL
2	5150.00	72.59	80.00	-7.41	35.49	3.43	33.67	0.00	Peak	100	74	VERTICAL
3	5187.60	116.73			79.56	3.44	33.73	0.00	Peak	100	74	VERTICAL
4	5188.20	106.80			69.63	3.44	33.73	0.00	Average	100	74	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	5150.00	50.13	60.00	-9.87	13.03	3.43	33.67	0.00	Average	100	114	VERTICAL
2	5150.00	67.13	80.00	-12.87	30.03	3.43	33.67	0.00	Peak	100	114	VERTICAL
3	5193.60	117.27			80.10	3.44	33.73	0.00	Peak	100	114	VERTICAL
4	5194.40	107.10			69.93	3.44	33.73	0.00	Average	100	114	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	5136.20	61.94	80.00	-18.06	24.87	3.43	33.64	0.00	Peak	100	150	VERTICAL
2	5138.00	48.74	60.00	-11.26	11.67	3.43	33.64	0.00	Average	100	150	VERTICAL
3	5234.60	106.70			69.42	3.46	33.82	0.00	Average	100	150	VERTICAL
4	5235.20	116.74			79.46	3.46	33.82	0.00	Peak	100	150	VERTICAL
5	5350.00	44.23	60.00	-15.77	6.71	3.49	34.03	0.00	Average	100	150	VERTICAL
6	5372.80	57.70	80.00	-22.30	20.15	3.49	34.06	0.00	Peak	100	150	VERTICAL

Item 3, 4 are the fundamental frequency at 5240 MHz.

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 52, 60, 64 / Ant. 1 + Ant. 2
Test Date	Sep. 20, 2013	Test Mode	Mode 1. EUT 1

Channel 52

	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	5141.00	48.77	60.00	-11.23	11.70	3.43	33.64	0.00	Average	100	153	VERTICAL
2	5142.80	62.22	80.00	-17.78	25.15	3.43	33.64	0.00	Peak	100	153	VERTICAL
3	5252.20	108.02			70.71	3.46	33.85	0.00	Average	100	153	VERTICAL
4	5254.00	118.24			80.93	3.46	33.85	0.00	Peak	100	153	VERTICAL
5	5380.00	46.93	60.00	-13.07	9.37	3.50	34.06	0.00	Average	100	153	VERTICAL
6	5380.00	58.31	80.00	-21.69	20.75	3.50	34.06	0.00	Peak	100	153	VERTICAL

Item 3, 4 are the fundamental frequency at 5260 MHz.

Channel 60

	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	5294.80	108.66			71.28	3.47	33.91	0.00	Average	124	158	VERTICAL
2	5296.00	119.68			82.30	3.47	33.91	0.00	Peak	124	158	VERTICAL
3	5352.40	50.95	60.00	-9.05	13.43	3.49	34.03	0.00	Average	124	158	VERTICAL
4	5352.80	65.01	80.00	-14.99	27.49	3.49	34.03	0.00	Peak	124	158	VERTICAL

Item 1, 2 are the fundamental frequency at 5300 MHz.

Channel 64

	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	5322.00	121.47			84.02	3.48	33.97	0.00	Peak	127	135	VERTICAL
2	5323.20	111.28			73.82	3.49	33.97	0.00	Average	127	135	VERTICAL
3	5350.00	57.26	60.00	-2.74	19.74	3.49	34.03	0.00	Average	127	135	VERTICAL
4	5350.00	74.97	80.00	-5.03	37.45	3.49	34.03	0.00	Peak	127	135	VERTICAL

Item 1, 2 are the fundamental frequency at 5320 MHz.

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 100, 140 / Ant. 1 + Ant. 2
Test Date	Sep. 20, 2013	Test Mode	Mode 1. EUT 1

Channel 100

	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	5460.00	53.31	60.00	-6.69	15.58	3.52	34.21	0.00	Average	127	351	VERTICAL
2	5460.00	65.04	80.00	-14.96	27.31	3.52	34.21	0.00	Peak	127	351	VERTICAL
3	5466.60	75.40	80.00	-4.60	37.67	3.52	34.21	0.00	Peak	127	351	VERTICAL
4	5467.20	57.82	60.00	-2.18	20.06	3.52	34.24	0.00	Average	127	351	VERTICAL
5	5503.20	109.30			71.48	3.54	34.28	0.00	Average	127	351	VERTICAL
6	5503.40	119.04			81.22	3.54	34.28	0.00	Peak	127	351	VERTICAL

Item 5, 6 are the fundamental frequency at 5500 MHz.

Channel 140

	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	5705.00	116.53			78.59	3.60	34.34	0.00	Peak	119	80	VERTICAL
2	5705.40	106.53			68.59	3.60	34.34	0.00	Average	119	80	VERTICAL
3	5725.00	57.06	60.00	-2.94	19.12	3.60	34.34	0.00	Average	119	80	VERTICAL
4	5725.00	75.09	80.00	-4.91	37.15	3.60	34.34	0.00	Peak	119	80	VERTICAL

Item 1, 2 are the fundamental frequency at 5700 MHz.

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz CH 38, 46 / Ant. 1 + Ant. 2
Test Date	Sep. 20, 2013	Test Mode	Mode 1. EUT 1

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	56.99	60.00	-3.01	19.89	3.43	33.67	0.00	Average	132	151	VERTICAL
2	5150.00	70.66	80.00	-9.34	33.56	3.43	33.67	0.00	Peak	132	151	VERTICAL
3	5184.80	111.89			74.72	3.44	33.73	0.00	Peak	132	151	VERTICAL
4	5185.60	101.34			64.17	3.44	33.73	0.00	Average	132	151	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	5150.00	53.95	60.00	-6.05	16.85	3.43	33.67	0.00	Average	134	152	VERTICAL
2	5150.00	67.74	80.00	-12.26	30.64	3.43	33.67	0.00	Peak	134	152	VERTICAL
3	5224.80	117.09			79.84	3.46	33.79	0.00	Peak	134	152	VERTICAL
4	5226.00	106.27			69.02	3.46	33.79	0.00	Average	134	152	VERTICAL

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

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz CH 54, 62 / Ant. 1 + Ant. 2
Test Date	Sep. 20, 2013 ~ Sep. 30, 2013	Test Mode	Mode 1. EUT 1

Channel 54

	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	5268.40	117.16			79.82	3.46	33.88	0.00	Peak	132	13	VERTICAL
2	5271.60	106.16			68.81	3.47	33.88	0.00	Average	132	13	VERTICAL
3	5350.00	50.38	60.00	-9.62	12.86	3.49	34.03	0.00	Average	132	13	VERTICAL
4	5350.00	65.36	80.00	-14.64	27.84	3.49	34.03	0.00	Peak	132	13	VERTICAL

Item 1, 2 are the fundamental frequency at 5270 MHz.

Channel 62

	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	5326.99	104.44			66.98	3.49	33.97	0.00	Average	131	138	VERTICAL
2	5326.99	115.80			78.34	3.49	33.97	0.00	Peak	131	138	VERTICAL
3	5350.00	58.96	60.00	-1.04	21.44	3.49	34.03	0.00	Average	131	138	VERTICAL
4	5350.00	74.10	80.00	-5.90	36.58	3.49	34.03	0.00	Peak	131	138	VERTICAL

Item 1, 2 are the fundamental frequency at 5310 MHz.

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz CH 102, 110, 134 / Ant. 1 + Ant. 2
Test Date	Sep. 20, 2013	Test Mode	Mode 1. EUT 1

Channel 102

	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	5460.00	49.28	60.00	-10.72	11.55	3.52	34.21	0.00	Average	137	85	VERTICAL
2	5460.00	60.86	80.00	-19.14	23.13	3.52	34.21	0.00	Peak	137	85	VERTICAL
3	5470.00	57.72	60.00	-2.28	19.96	3.52	34.24	0.00	Average	137	85	VERTICAL
4	5470.00	71.76	80.00	-8.24	34.00	3.52	34.24	0.00	Peak	137	85	VERTICAL
5	5508.00	112.23			74.41	3.54	34.28	0.00	Peak	137	85	VERTICAL
6	5527.20	101.71			63.86	3.55	34.30	0.00	Average	137	85	VERTICAL

Item 5, 6 are the fundamental frequency at 5510 MHz.

Channel 110

	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	5460.00	50.36	60.00	-9.64	12.63	3.52	34.21	0.00	Average	130	143	VERTICAL
2	5460.00	62.04	80.00	-17.96	24.31	3.52	34.21	0.00	Peak	130	143	VERTICAL
3	5470.00	54.23	60.00	-5.77	16.47	3.52	34.24	0.00	Average	130	143	VERTICAL
4	5470.00	67.94	80.00	-12.06	30.18	3.52	34.24	0.00	Peak	130	143	VERTICAL
5	5547.60	117.73			79.87	3.55	34.31	0.00	Peak	130	143	VERTICAL
6	5548.00	106.65			68.79	3.55	34.31	0.00	Average	130	143	VERTICAL

Item 5, 6 are the fundamental frequency at 5550 MHz.

Channel 134

	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	5668.00	107.47			69.55	3.59	34.33	0.00	Average	110	112	VERTICAL
2	5668.80	118.26			80.34	3.59	34.33	0.00	Peak	110	112	VERTICAL
3	5725.00	57.91	60.00	-2.09	19.97	3.60	34.34	0.00	Average	110	112	VERTICAL
4	5727.00	78.25	80.00	-1.75	40.31	3.60	34.34	0.00	Peak	110	112	VERTICAL

Item 1, 2 are the fundamental frequency at 5670 MHz.

Note:

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

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

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 36, 40, 48 / Ant. 1 + Ant. 3
Test Date	Sep. 20, 2013	Test Mode	Mode 2. EUT 2

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	58.44	60.00	-1.56	21.34	3.43	33.67	0.00	Average	129	154	HORIZONTAL
2	5150.00	74.82	80.00	-5.18	37.72	3.43	33.67	0.00	Peak	129	154	HORIZONTAL
3	5184.97	116.23			79.06	3.44	33.73	0.00	Peak	129	154	HORIZONTAL
4	5185.45	106.25			69.08	3.44	33.73	0.00	Average	129	154	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	5149.68	65.16	80.00	-14.84	28.06	3.43	33.67	0.00	Peak	130	185	VERTICAL
2	5150.00	51.99	60.00	-8.01	14.89	3.43	33.67	0.00	Average	130	185	VERTICAL
3	5196.15	119.86			82.65	3.45	33.76	0.00	Peak	130	185	VERTICAL
4	5196.80	109.14			71.93	3.45	33.76	0.00	Average	130	185	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	5141.83	50.54	60.00	-9.46	13.47	3.43	33.64	0.00	Average	127	192	VERTICAL
2	5150.00	62.55	80.00	-17.45	25.45	3.43	33.67	0.00	Peak	127	192	VERTICAL
3	5244.81	119.13			81.85	3.46	33.82	0.00	Peak	127	192	VERTICAL
4	5245.29	109.69			72.41	3.46	33.82	0.00	Average	127	192	VERTICAL
5	5350.96	47.48	60.00	-12.52	9.96	3.49	34.03	0.00	Average	127	192	VERTICAL
6	5350.96	59.96	80.00	-20.04	22.44	3.49	34.03	0.00	Peak	127	192	VERTICAL

Item 3, 4 are the fundamental frequency at 5240 MHz.

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 52, 60, 64 / Ant. 1 + Ant. 3
Test Date	Sep. 20, 2013	Test Mode	Mode 2. EUT 2

Channel 52

	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	50.68	60.00	-9.32	13.58	3.43	33.67	0.00	Average	100	188	VERTICAL
2	5150.00	61.81	80.00	-18.19	24.71	3.43	33.67	0.00	Peak	100	188	VERTICAL
3	5259.04	117.59			80.28	3.46	33.85	0.00	Peak	100	188	VERTICAL
4	5261.44	107.84			70.53	3.46	33.85	0.00	Average	100	188	VERTICAL
5	5350.00	47.57	60.00	-12.43	10.05	3.49	34.03	0.00	Average	100	188	VERTICAL
6	5351.92	59.17	80.00	-20.83	21.65	3.49	34.03	0.00	Peak	100	188	VERTICAL

Item 3, 4 are the fundamental frequency at 5260 MHz.

Channel 60

	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	5302.89	110.42			73.00	3.48	33.94	0.00	Average	131	262	VERTICAL
2	5302.89	118.58			81.16	3.48	33.94	0.00	Peak	131	262	VERTICAL
3	5350.00	51.20	60.00	-8.80	13.68	3.49	34.03	0.00	Average	131	262	VERTICAL
4	5350.96	64.54	80.00	-15.46	27.02	3.49	34.03	0.00	Peak	131	262	VERTICAL

Item 1, 2 are the fundamental frequency at 5300 MHz.

Channel 64

	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	5315.99	120.66			83.21	3.48	33.97	0.00	Peak	130	252	VERTICAL
2	5317.12	110.08			72.63	3.48	33.97	0.00	Average	130	252	VERTICAL
3	5350.00	58.31	60.00	-1.69	20.79	3.49	34.03	0.00	Average	130	252	VERTICAL
4	5350.16	77.95	80.00	-2.05	40.43	3.49	34.03	0.00	Peak	130	252	VERTICAL

Item 1, 2 are the fundamental frequency at 5320 MHz.

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 20MHz CH 100, 140 / Ant. 1 + Ant. 3
Test Date	Sep. 20, 2013	Test Mode	Mode 2. EUT 2

Channel 100

	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	5456.96	69.42	80.00	-10.58	31.69	3.52	34.21	0.00	Peak	104	252	VERTICAL
2	5460.00	55.12	60.00	-4.88	17.39	3.52	34.21	0.00	Average	104	252	VERTICAL
3	5469.36	74.70	80.00	-5.30	36.94	3.52	34.24	0.00	Peak	104	252	VERTICAL
4	5470.00	58.46	60.00	-1.54	20.70	3.52	34.24	0.00	Average	104	252	VERTICAL
5	5494.71	108.38			70.59	3.53	34.26	0.00	Average	104	252	VERTICAL
6	5494.71	108.32			70.53	3.53	34.26	0.00	Average	104	252	VERTICAL
7	5495.51	118.57			80.78	3.53	34.26	0.00	Peak	104	252	VERTICAL

Item 5, 6, 7 are the fundamental frequency at 5500 MHz.

Channel 140

	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	5703.21	104.83			66.90	3.59	34.34	0.00	Average	130	138	HORIZONTAL
2	5703.37	114.99			77.06	3.59	34.34	0.00	Peak	130	138	HORIZONTAL
3	5725.00	58.16	60.00	-1.84	20.22	3.60	34.34	0.00	Average	130	138	HORIZONTAL
4	5725.00	77.38	80.00	-2.62	39.44	3.60	34.34	0.00	Peak	130	138	HORIZONTAL

Item 1, 2 are the fundamental frequency at 5700 MHz.

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz CH 38, 46 / Ant. 1 + Ant. 3
Test Date	Sep. 20, 2013	Test Mode	Mode 2. EUT 2

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	58.36	60.00	-1.64	21.26	3.43	33.67	0.00	Average	138	223	VERTICAL
2	5150.00	73.80	80.00	-6.20	36.70	3.43	33.67	0.00	Peak	138	223	VERTICAL
3	5173.01	99.52			62.38	3.44	33.70	0.00	Average	138	223	VERTICAL
4	5173.65	110.04			72.90	3.44	33.70	0.00	Peak	138	223	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	5148.08	66.52	80.00	-13.48	29.42	3.43	33.67	0.00	Peak	100	190	VERTICAL
2	5150.00	52.40	60.00	-7.60	15.30	3.43	33.67	0.00	Average	100	190	VERTICAL
3	5213.33	114.96			77.72	3.45	33.79	0.00	Peak	100	190	VERTICAL
4	5234.49	103.78			66.50	3.46	33.82	0.00	Average	100	190	VERTICAL

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

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz CH 54, 62 / Ant. 1 + Ant. 3
Test Date	Sep. 20, 2013	Test Mode	Mode 2. EUT 2

Channel 54

	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	5260.39	107.65			70.34	3.46	33.85	0.00	Average	101	252	VERTICAL
2	5262.31	116.96			79.65	3.46	33.85	0.00	Peak	101	252	VERTICAL
3	5350.00	51.75	60.00	-8.25	14.23	3.49	34.03	0.00	Average	101	252	VERTICAL
4	5351.60	63.98	80.00	-16.02	26.46	3.49	34.03	0.00	Peak	101	252	VERTICAL

Item 1, 2 are the fundamental frequency at 5270 MHz.

Channel 62

	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	5311.92	102.43			65.01	3.48	33.94	0.00	Average	120	263	VERTICAL
2	5314.17	113.18			75.73	3.48	33.97	0.00	Peak	120	263	VERTICAL
3	5350.00	58.47	60.00	-1.53	20.95	3.49	34.03	0.00	Average	120	263	VERTICAL
4	5350.32	74.28	80.00	-5.72	36.76	3.49	34.03	0.00	Peak	120	263	VERTICAL

Item 1, 2 are the fundamental frequency at 5310 MHz.

Temperature	23℃	Humidity	55%
Test Engineer	David Tseng	Configurations	IEEE 802.11n MCS0 40MHz CH 102, 110, 134 / Ant. 1 + Ant. 3
Test Date	Sep. 20, 2013	Test Mode	Mode 2. EUT 2

Channel 102

	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	5458.40	62.88	80.00	-17.12	25.15	3.52	34.21	0.00	Peak	128	189	VERTICAL
2	5460.00	50.45	60.00	-9.55	12.72	3.52	34.21	0.00	Average	128	189	VERTICAL
3	5467.76	74.07	80.00	-5.93	36.31	3.52	34.24	0.00	Peak	128	189	VERTICAL
4	5470.00	58.38	60.00	-1.62	20.62	3.52	34.24	0.00	Average	128	189	VERTICAL
5	5507.12	110.83			73.01	3.54	34.28	0.00	Peak	128	189	VERTICAL
6	5508.08	99.99			62.17	3.54	34.28	0.00	Average	128	189	VERTICAL

Item 5, 6 are the fundamental frequency at 5510 MHz.

Channel 110

	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	5458.72	63.07	80.00	-16.93	25.34	3.52	34.21	0.00	Peak	130	199	VERTICAL
2	5459.68	51.53	60.00	-8.47	13.80	3.52	34.21	0.00	Average	130	199	VERTICAL
3	5470.00	53.21	60.00	-6.79	15.45	3.52	34.24	0.00	Average	130	199	VERTICAL
4	5470.00	70.55	80.00	-9.45	32.79	3.52	34.24	0.00	Peak	130	199	VERTICAL
5	5555.45	108.24			70.38	3.55	34.31	0.00	Average	130	199	VERTICAL
6	5556.73	117.55			79.69	3.55	34.31	0.00	Peak	130	199	VERTICAL

Item 5, 6 are the fundamental frequency at 5550 MHz.

Channel 134

	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	5685.71	106.65			68.73	3.59	34.33	0.00	Average	125	345	VERTICAL
2	5686.03	117.41			79.49	3.59	34.33	0.00	Peak	125	345	VERTICAL
3	5725.00	56.81	60.00	-3.19	18.87	3.60	34.34	0.00	Average	125	345	VERTICAL
4	5725.32	77.40	80.00	-2.60	39.46	3.60	34.34	0.00	Peak	125	345	VERTICAL

Item 1, 2 are the fundamental frequency at 5670 MHz.

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

In-band emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

The transmitter center frequency tolerance shall be ± 20 ppm maximum for the 5 GHz band (IEEE 802.11n specification).

4.8.2. Measuring Instruments and Setting

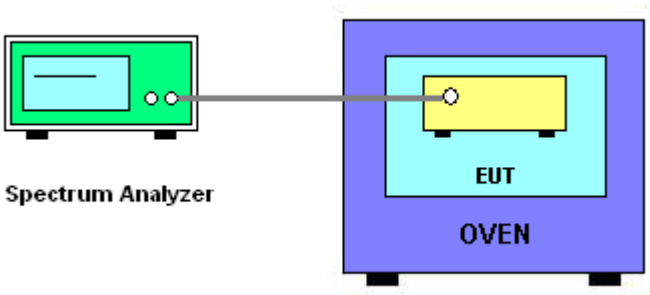
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Entire absence of modulation emissions bandwidth
RBW	10 kHz
VBW	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 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

Temperature	26°C	Humidity	60%
Test Engineer	Kenneth Huang	Test Date	Oct. 29, 2013
Test Mode	Mode 1. EUT 1		

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)		
(V)	5200 MHz	5300 MHz	5500 MHz
126.50	5199.9982	5299.9972	5499.9963
110.00	5199.9961	5299.9951	5499.9949
93.50	5199.9954	5299.9933	5499.9945
Max. Deviation (MHz)	0.004600	0.006700	0.005500
Max. Deviation (ppm)	**0.88**	**1.26**	**1.00**

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)		
(°C)	5200 MHz	5300 MHz	5500 MHz
-30	5199.9981	5299.9994	5499.9971
-20	5199.9977	5299.9991	5499.9985
-10	5199.9968	5299.9986	5499.9969
0	5199.9961	5299.9980	5499.9968
10	5199.9951	5299.9976	5499.9961
20	5199.9961	5299.9951	5499.9949
30	5199.9939	5299.9973	5499.9945
40	5199.9927	5299.9962	5499.9942
50	5199.9912	5299.9945	5499.9935
Max. Deviation (MHz)	0.008800	0.005500	0.006500
Max. Deviation (ppm)	**1.69**	**1.04**	**1.18**

Temperature	26°C	Humidity	60%
Test Engineer	Benson Peng	Test Date	Oct. 29, 2013
Test Mode	Mode 2. EUT 2		

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)		
(V)	5200 MHz	5300 MHz	5500 MHz
126.50	5199.9986	5299.9960	5499.9960
110.00	5199.9950	5299.9970	5499.9952
93.50	5199.9942	5299.9924	5499.9940
Max. Deviation (MHz)	0.005800	0.007600	0.006000
Max. Deviation (ppm)	**1.12**	**1.43**	**1.09**

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)		
(°C)	5200 MHz	5300 MHz	5500 MHz
-30	5199.9984	5299.9992	5499.9976
-20	5199.9978	5299.9986	5499.9982
-10	5199.9988	5299.9988	5499.9972
0	5199.9956	5299.9980	5499.9970
10	5199.9954	5299.9976	5499.9960
20	5199.9950	5299.9970	5499.9952
30	5199.9940	5299.9974	5499.9950
40	5199.9926	5299.9962	5499.9942
50	5199.9922	5299.9942	5499.9938
Max. Deviation (MHz)	0.007800	0.005800	0.006200
Max. Deviation (ppm)	**1.50**	**1.09**	**1.13**

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
Arifical Mains Network	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Nov. 11, 2013	Conduction (CO02-CB)
Arifical Mains Network	Schwarzbeck	NSLK 8127	8127650	9kHz ~ 30MHz	Nov. 11, 2013	Conduction (CO02-CB)
MXE EMI Reciver	Agilent	N9038A	MY52260140	9kHz ~ 30MHz	Dec.25, 2012	Conduction (CO02-CB)
COND Cable	Woken	Cable	01	0.15MHz~30MHz	Dec. 04, 2012	Conduction (CO02-CB)
Software	Audix	E3	5.410e	-	-	Conduction (CO02-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	Apr. 16, 2013	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9 kHz - 30 MHz	Nov. 05, 2012*	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz~18GHz	Nov. 27, 2012	Radiation (03CH01-CB)
Horn Antenna	SCHWARZBEAK	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Nov. 23, 2012	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Nov. 27, 2012	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Nov. 23, 2012	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26.5GHz ~ 40GHz	Oct. 24, 2012	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Oct. 23, 2013	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSP40	100056	9kHz~40GHz	Nov. 16, 2012	Radiation (03CH01-CB)
EMI Test Receiver	Agilent	N9038A	MY52260123	9kHz ~ 8GHz	Nov. 26, 2012	Radiation (03CH01-CB)
Turn Table	INN CO	CO 2000	N/A	0 ~ 360 degree	N.C.R	Radiation (03CH01-CB)
Antenna Mast	INN CO	CO2000	N/A	1 m - 4 m	N.C.R	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz - 1 GHz	Nov. 18, 2012	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-1	N/A	1 GHz – 26.5 GHz	Nov. 18, 2012	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-2	N/A	1 GHz – 26.5 GHz	Nov. 18, 2012	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-3	N/A	1 GHz - 40 GHz	Nov. 18, 2012	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-4	N/A	1 GHz - 40 GHz	Nov. 18, 2012	Radiation (03CH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 04, 2013	Conducted (TH01-CB)
RF Power Divider	Woken	2 Way	0120A02056002D	2GHz ~ 18GHz	Nov. 18, 2012	Conducted (TH01-CB)
RF Power Divider	Woken	3 Way	MDC2366	2GHz ~ 18GHz	Nov. 18, 2012	Conducted (TH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
RF Power Divider	Woken	4 Way	0120A04056002D	2GHz ~ 18GHz	Nov. 18, 2012	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-7	-	1 GHz – 26.5 GHz	Nov. 19, 2012	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-8	-	1 GHz – 26.5 GHz	Nov. 19, 2012	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-9	-	1 GHz – 26.5 GHz	Nov. 19, 2012	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-10	-	1 GHz – 26.5 GHz	Nov. 19, 2012	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-11	-	1 GHz – 26.5 GHz	Nov. 19, 2012	Conducted (TH01-CB)
Power Sensor	Anritsu	MA2411B	0917223	300MHz~40GHz	Sep. 18, 2013	Conducted (TH01-CB)
Power Meter	Anritsu	ML2495A	1035008	300MHz~40GHz	Sep. 18, 2013	Conducted (TH01-CB)

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

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

NCR means Non-Calibration required.

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. MEASUREMENT UNCERTAINTY

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Contribution	Uncertainty of x_i			$u(x_i)$
	Value	Unit	Probability Distribution k	
Receiver reading	0.026	dB	normal(k=2)	0.013
Cable loss	0.002	dB	normal(k=2)	0.001
AMN/LISN specification	1.200	dB	normal(k=2)	0.600
Mismatch Receiver VSWR 1= AMN/LISN VSWR 2=	-0.080	dB	U-shaped	0.060
Combined standard uncertainty Uc(y)				1.2
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)				2.4

Uncertainty of Radiated Emission Measurement (30MHz ~ 1,000MHz)

Contribution	Uncertainty of x_i			$u(x_i)$
	Value	Unit	Probability Distribution k	
Receiver reading	±0.173	dB	K=1	0.086
Cable loss	±0.174	dB	K=2	0.087
Antenna gain	±0.169	dB	K=2	0.084
Site imperfection	±0.433	dB	Triangular	0.214
Pre-amplifier gain	±0.366	dB	K=2	0.183
Transmitter antenna	±1.200	dB	Rectangular	0.600
Signal generator	±0.461	dB	Rectangular	0.231
Mismatch	±0.080	dB	U-shape	0.040
Spectrum analyzer	±0.500	dB	Rectangular	0.250
Combined standard uncertainty Uc(y)				1.778
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)				3.555

Uncertainty of Radiated Emission Measurement (1GHz ~ 18GHz)

Contribution	Uncertainty of x_i			$u(x_i)$
	Value	Unit	Probability Distribution k	
Receiver reading	±0.191	dB	K=1	0.095
Cable loss	±0.169	dB	K=2	0.084
Antenna gain	±0.191	dB	K=2	0.096
Site imperfection	±0.582	dB	Triangular	0.291
Pre-amplifier gain	±0.304	dB	K=2	0.152
Transmitter antenna	±1.200	dB	Rectangular	0.600
Signal generator	±0.461	dB	Rectangular	0.231
Mismatch	±0.080	dB	U-shape	0.040
Spectrum analyzer	±0.500	dB	Rectangular	0.250
Combined standard uncertainty Uc(y)				1.839
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)				3.678

Uncertainty of Radiated Emission Measurement (18GHz ~ 40GHz)

Contribution	Uncertainty of x_i			$u(x_i)$
	Value	Unit	Probability Distribution k	
Receiver reading	±0.186	dB	K=1	0.093
Cable loss	±0.167	dB	K=2	0.083
Antenna gain	±0.190	dB	K=2	0.095
Site imperfection	±0.488	dB	Triangular	0.244
Pre-amplifier gain	±0.269	dB	K=2	0.134
Transmitter antenna	±1.200	dB	Rectangular	0.600
Signal generator	±0.461	dB	Rectangular	0.231
Mismatch	±0.080	dB	U-shape	0.040
Spectrum analyzer	±0.500	dB	Rectangular	0.250
Combined standard uncertainty Uc(y)				1.771
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)				3.541

Uncertainty of Conducted Emission Measurement

Contribution	Uncertainty of x_i			$u(x_i)$
	Value	Unit	Probability Distribution k	
Cable loss	±0.038	dB	K=2	0.019
Attenuator	±0.047	dB	K=2	0.024
Power Meter specification	±0.300	dB	Triangular	0.150
Power Sensor specification	±0.300	dB	Rectangular	0.150
Signal generator	±0.461	dB	Rectangular	0.231
Mismatch	±0.080	dB	U-shape	0.040
Spectrum analyzer	±0.500	dB	Rectangular	0.250
Combined standard uncertainty Uc(y)				0.863
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)				1.726