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FCC RADIO TEST REPORT

Applicant's company	**NETGEAR, Inc.**
Applicant Address	350 East Plumeria Drive, San Jose, California 95134, USA
FCC ID	**PY313200230**

Product Name	WiFi Range Extender
Brand Name	NETGEAR
Model No.	EX6200
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5250 ~ 5350MHz / 5470 ~ 5725MHz
Received Date	Oct. 25, 2013
Final Test Date	Nov. 27, 2015
Submission Type	Class II Change

Statement

Test result included is for the IEEE 802.11n and IEEE 802.11a/ac 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 C63.10-2013**, **47 CFR FCC Part 15 Subpart E, KDB789033 D02 v01, KDB662911 D01 v02r01, KDB644545 D03 v01.**

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
FR3N0906-01	Rev. 01	Initial issue of report	Jan. 11, 2016

1. VERIFICATION OF COMPLIANCE

Product Name	:	WiFi Range Extender
Brand Name	:	NETGEAR
Model No.	:	EX6200
Applicant	:	NETGEAR, 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 Oct. 25, 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	15.407(a)	26dB Spectrum Bandwidth and 99% Occupied Bandwidth	Complies	-
4.2	15.407(a)	Maximum Conducted Output Power	Complies	0.03 dB
4.3	15.407(a)	Power Spectral Density	Complies	0.03 dB
4.4	15.407(b)	Radiated Emissions	Complies	4.04 dB
4.5	15.407(b)	Band Edge Emissions	Complies	0.04 dB
4.6	15.407(g)	Frequency Stability	Complies	-
4.7	15.203	Antenna Requirements	Complies	-

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Product Type	WLAN (2TX, 2RX)
Radio Type	Intentional Transceiver
Power Type	From power adapter
Modulation	IEEE 802.11a: OFDM IEEE 802.11n/ac: see the below table
Data Modulation	IEEE 802.11a/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) IEEE 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)
Data Rate (Mbps)	IEEE 802.11a: OFDM (6/9/12/18/24/36/48/54) IEEE 802.11n/ac: see the below table
Frequency Range	5250 ~ 5350MHz / 5470 ~ 5725MHz
Channel Number	15 for 20MHz bandwidth ; 7 for 40MHz bandwidth 3 for 80MHz bandwidth
Channel Band Width (99%)	Band 2: <For Non-Beamforming Mode> IEEE 802.11a: 17.28 MHz IEEE 802.11n MCS0 HT20: 18.12 MHz IEEE 802.11n MCS0 HT40: 36.60 MHz <For Beamforming Mode> IEEE 802.11ac MCS0/Nss1 (VHT20): 18.00 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.00 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.40 MHz Band 3: <For Non-Beamforming Mode> IEEE 802.11a: 17.40 MHz IEEE 802.11n MCS0 HT20: 18.24 MHz IEEE 802.11n MCS0 HT40: 36.80 MHz <For Beamforming Mode> IEEE 802.11ac MCS0/Nss1 (VHT20): 18.24 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 37.00 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.00 MHz

Maximum Conducted Output Power	Band 2: **<For Non-Beamforming Mode>** IEEE 802.11a: 23.86 dBm IEEE 802.11n MCS0 HT20: 23.29 dBm IEEE 802.11n MCS0 HT40: 23.85 dBm **<For Beamforming Mode>** IEEE 802.11ac MCS0/Nss1 (VHT20): 23.81 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 23.91 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 18.28 dBm Band 3: **<For Non-Beamforming Mode>** IEEE 802.11a: 23.87 dBm IEEE 802.11n MCS0 HT20: 23.66 dBm IEEE 802.11n MCS0 HT40: 23.34 dBm **<For Beamforming Mode>** IEEE 802.11ac MCS0/Nss1 (VHT20): 23.23 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 22.86 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 21.78 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

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 for 802.11ac in 5GHz	☐ Without beamforming
Operating Mode	☐ Outdoor access point	
	☒ Indoor access point	
	☐ Fixed point-to-point access points	
	☐ Mobile and portable client devices	

Antenna and Band width

Antenna	Two (TX)		
Band width Mode	20 MHz	40 MHz	80 MHz
IEEE 802.11a	V	X	X
IEEE 802.11n	V	V	X
IEEE 802.11ac	V	V	V

IEEE 11n/ac Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	2	MCS 0-15
802.11n (HT40)	2	MCS 0-15
802.11ac (VHT20)	2	MCS 0-9/Nss1-2
802.11ac (VHT40)	2	MCS 0-9/Nss1-2
802.11ac (VHT80)	2	MCS 0-9/Nss1-2

Note 1: IEEE Std. 802.11n modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT supports HT20 and HT40.

Note 2: IEEE Std. 802.11ac modulation consists of VHT20, VHT40, VHT80 and VHT160 (VHT: Very High Throughput). Then EUT supports VHT20, VHT40 and VHT80.

Note 3: Modulation modes consist of below configuration:
HT20/HT40: IEEE 802.11n, VHT20/VHT40/VHT80: IEEE 802.11ac

3.2. Accessories

Power	Brand	Model No.	P/N	Rating
Adapter 1	NETGEAR	P030WF120B 11200-6LF	332-10200-02	Input: 100-240V~50/60Hz 1.0A Output: 12.0V, 2.5A
Adapter 2	NETGEAR	MU30-5120250 -A1	332-10234-01	Input: 100-240V~50/60Hz 0.8A Output: 12V, 2.5A
Adapter 3	NETGEAR	ADS-40FPA-12 12030GPCU	332-10757-01	Input: 100-240Vac, 50/60Hz, Max. 1.0A Output: 12Vdc, 2.5A
Adapter 4	NETGEAR	2ABL030F NA	332-10756-01	Input: 100-240Vac, 50/60Hz, 1.0A Output: 12.0Vdc, 2.5A
Adapter 5	NETGEAR	2ABL030F 1 NA	332-10758-01	Input: 100-120Vac, 50/60Hz, 1.0A Output: 12.0Vdc, 2.5A
Adapter 6	NETGEAR	ADS-40FPA-12 12030GPCU-L	332-10759-01	Input: 100-120Vac, 60Hz, Max. 1.0A Output: 12Vdc, 2.5A
Others				
RJ-45 Cable*1: Shielded, 1.5m Cradle*1				

3.3. Table for Filed Antenna

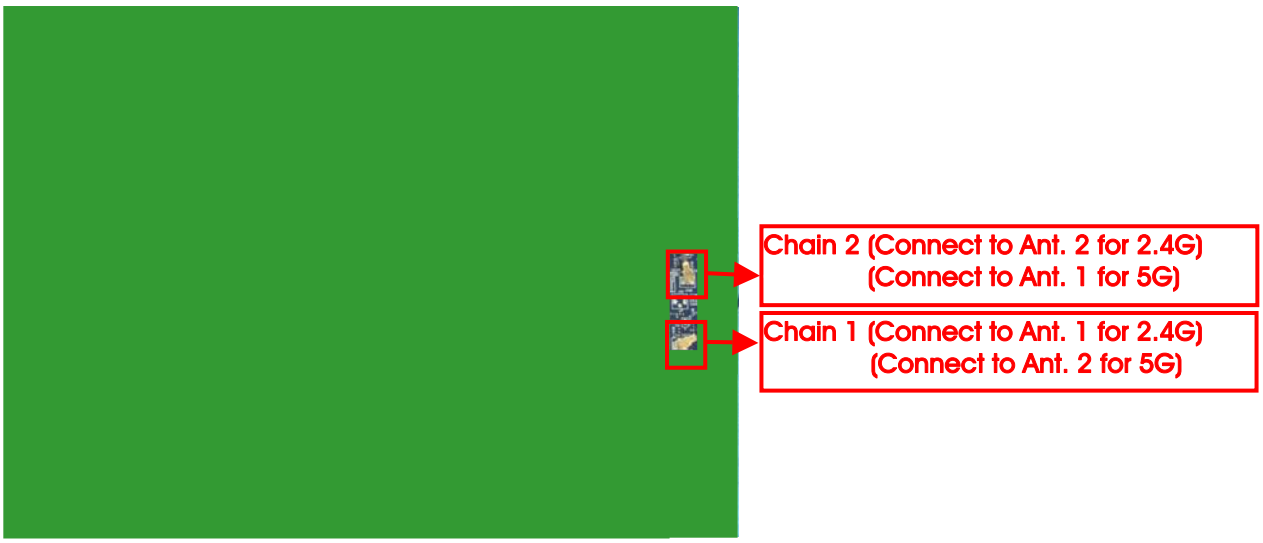
Ant.	Brand	Model Name	Antenna Type	Connector
1	NETGEAR	EX6200	Dipole Antenna	I-PEX
2	NETGEAR	EX6200	Dipole Antenna	I-PEX

Ant.	Frequency	Gain (dBi)			Cable loss			True Gain (dBi)		
		5GHz			5GHz			5GHz		
		20MHz	40MHz	80MHz	20MHz	40MHz	80MHz	20MHz	40MHz	80MHz
1	5260	4.0	-	-	1.1	-	-	2.9	-	-
	5270	-	4.0	-	-	1.1	-	-	2.9	-
	5290	-	-	4.3	-	-	1.1	-	-	3.2
	5300	4.3	-		1.1	-	-	3.2	-	-
	5310	-	4.5	-	-	1.1	-	-	3.4	-
	5320	4.5	-	-	1.1	-	-	3.4	-	-
	5500	4.2	-	-	1.1	-	-	3.1	-	-
	5510	-	4.5	-	-	1.1	-	-	3.4	-
	5530	-	-	4.9	-	-	1.1	-	-	3.8
	5550	-	4.9	-	-	1.1	-	-	3.8	-
	5580	4.3	-	-	1.1	-	-	3.2	-	-
	5610	-	-	5.0	-	-	1.1	-	-	3.9
	5670	-	5.1	-	-	1.1	-	-	4	-
	5700	5.1	-	-	1.1	-	-	4	-	-
2	5260	4.0	-	-	0.8	-	-	3.2	-	-
	5270	-	4.0	-	-	0.8	-	-	3.2	-
	5290	-	-	4.3	-	-	0.8	-	-	3.5
	5300	4.3	-		0.8	-	-	3.5	-	-
	5310	-	4.5	-	-	0.8	-	-	3.7	-
	5320	4.5	-	-	0.8	-	-	3.7	-	-
	5500	4.2	-	-	0.8	-	-	3.4	-	-
	5510	-	4.5	-	-	0.8	-	-	3.7	-
	5530	-	-	4.9	-	-	0.8	-	-	4.1
	5550	-	4.9	-	-	0.8	-	-	4.1	-
	5580	4.3	-	-	0.8	-	-	3.5	-	-
	5610	-	-	5.0	-	-	0.8	-	-	4.2
	5670	-	5.1	-	-	0.8	-	-	4.3	-
	5700	5.1	-	-	0.8	-	-	4.3	-	-

Note: The EUT has two antennas.

For IEEE 802.11a/n/ac mode (2TX/2RX):

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



3.4. Table for Carrier Frequencies

There are three bandwidth systems.

For 20MHz bandwidth systems, use Channel 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140.

For 40MHz bandwidth systems, use Channel 54, 62, 102, 110, 118, 126, 134.

For 80MHz bandwidth systems, use Channel 58, 106, 122.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5250~5350 MHz Band 2	52	5260 MHz	60	5300 MHz
	54	5270 MHz	62	5310 MHz
	56	5280 MHz	64	5320 MHz
	58	5290 MHz	-	-
5470~5725 MHz Band 3	100	5500 MHz	120	5600 MHz
	102	5510 MHz	122	5610 MHz
	104	5520 MHz	124	5620 MHz
	106	5530 MHz	126	5630 MHz
	108	5540 MHz	128	5640 MHz
	110	5550 MHz	132	5660 MHz
	112	5560 MHz	134	5670 MHz
	116	5580 MHz	136	5680 MHz
	118	5590 MHz	140	5700 MHz

3.5. Table for Test Modes

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

Test Items	Mode		Data Rate	Channel	Chain
Max. Conducted Output Power	<For Non-Beamforming Mode>				
	11a/BPSK	Band 2-3	6Mbps	52/60/64/100/116/140	1+2
	11n HT20	Band 2-3	MCS0	52/60/64/100/116/140	1+2
	11n HT40	Band 2-3	MCS0	54/62/102/110/134	1+2
	<For Beamforming Mode>				
	11ac VHT20	Band 2-3	MCS0/Nss1	52/60/64/100/116/140	1+2
	11ac VHT40	Band 2-3	MCS0/Nss1	54/62/102/110/134	1+2
	11ac VHT80	Band 2-3	MCS0/Nss1	58/106/122	1+2
Power Spectral Density	<For Non-Beamforming Mode>				
	11a/BPSK	Band 2-3	6Mbps	52/60/64/100/116/140	1+2
	11n HT20	Band 2-3	MCS0	52/60/64/100/116/140	1+2
	11n HT40	Band 2-3	MCS0	54/62/102/110/134	1+2
	<For Beamforming Mode>				
	11ac VHT20	Band 2-3	MCS0/Nss1	52/60/64/100/116/140	1+2
	11ac VHT40	Band 2-3	MCS0/Nss1	54/62/102/110/134	1+2
	11ac VHT80	Band 2-3	MCS0/Nss1	58/106/122	1+2

26dB Spectrum Bandwidth 99% Occupied Bandwidth Measurement	<For Non-Beamforming Mode>				
	11a/BPSK	Band 2-3	6Mbps	52/60/64/100/116/140	1+2
	11n HT20	Band 2-3	MCS0	52/60/64/100/116/140	
	11n HT40	Band 2-3	MCS0	54/62/102/110/134	
	<For Beamforming Mode>				
	11ac VHT20	Band 2-3	MCS0/Nss1	52/60/64/100/116/140	1+2
	11ac VHT40	Band 2-3	MCS0/Nss1	54/62/102/110/134	1+2
	11ac VHT80	Band 2-3	MCS0/Nss1	58/106/122	1+2
Radiated Emission Above 1GHz	<For Non-Beamforming Mode>				
	11a/BPSK	Band 2-3	6Mbps	52/60/64/100/116/140	1+2
	11n HT20	Band 2-3	MCS0	52/60/64/100/116/140	
	11n HT40	Band 2-3	MCS0	54/62/102/110/134	
	<For Beamforming Mode>				
	11ac VHT20	Band 2-3	MCS0/Nss1	52/60/64/100/116/140	1+2
	11ac VHT40	Band 2-3	MCS0/Nss1	54/62/102/110/134	1+2
	11ac VHT80	Band 2-3	MCS0/Nss1	58/106/122	1+2

Band Edge Emission	<For Non-Beamforming Mode>				
	11a/BPSK	Band 2-3	6Mbps	52/60/64/100/ /140	1+2
	11n HT20	Band 2-3	MCS0	52/60/64/100/ /140	1+2
	11n HT40	Band 2-3	MCS0	54/62/102/110/ 134	1+2
	<For Beamforming Mode>				
	11ac VHT20	Band 2-3	MCS0/Nss1	52/60/64/100/ /140	1+2
	11ac VHT40	Band 2-3	MCS0/Nss1	54/62/102/110/ 134	1+2
	11ac VHT80	Band 2-3	MCS0/Nss1	58/106/122	1+2
Frequency Stability	20 MHz	Band 2-3	-	60/116	1+2
	40 MHz	Band 2-3	-	62/110	1+2
	80 MHz	Band 2-3	-	58/106/122	1+2

Note: There are two modes of EUT, one is beamforming mode, and the other is non-beamforming mode for 802.11ac 20/40/80, after evaluating, beamforming mode has been evaluated to be the worst case, so it was selected to test and record in this test report.

The following test modes were performed for all tests:

For Radiated Emission test:

There are two modes of EUT, one is standing, and the other one is Laying position. Standing has been evaluated to be the worst case, thus measurement will follow this same test mode.

Mode 1. CTX - EUT standing

For Co-location MPE and Radiated Emission Co-location Test:

The EUT could be applied with 2.4GHz WLAN function and 5GHz WLAN function; therefore Co-location Maximum Permissible Exposure (Please refer to FA3N0906-01) and Radiated Emission Co-location (please refer to Appendix B) tests are added for simultaneously transmit between 2.4GHz WLAN function and 5GHz WLAN function.

3.6. Table for Testing Locations

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

Open Area Test Site (OATS); Semi Anechoic Chamber (SAC).

3.7. Table for Class II Change

This product is an extension of original one reported under Sporton project number: FR3N0906-04

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

Description	Performance Checking
Add 5 GHz Band 2 and Band 3 (5250~5350 MHz, 5470~5725 MHz) for this device.	26dB Spectrum Bandwidth and 99% Occupied Bandwidth Maximum Conducted Output Power Power Spectral Density Radiated Emissions (Above 1GHz) Band Edge Emissions Frequency Stability Measurement

3.8. Table for Supporting Units

For Test Site No: 03CH01-CB

<For Non-Beamforming Mode>

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC

<For Beamforming Mode>

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC
WLAN ac Dongle	NETGEAR	A6200	PY31220200

For Test Site No: TH01-CB

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC

3.9. 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.

<For Non-Beamforming Mode>

Test Software Version	Mtool 2.0.1.0					
Mode	Test Frequency (MHz)					
	NCB: 20MHz					
	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz
802.11a	76	77	72	73	79	78
802.11n MCS0 HT20	76	78	72	73	83	79
Mode	NCB: 40MHz					
802.11n MCS0 HT40	5270 MHz	5310 MHz	5510 MHz	5550 MHz	5670 MHz	
	80	60	52	80	80	

<For Beamforming Mode>

Test Software Version	Mtool 2.0.1.0					
Mode	Test Frequency (MHz)					
	NCB: 20MHz					
	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz
802.11ac MCS0/Nss1 VHT20	80	78	66	75	81	79
Mode	NCB: 40MHz					
802.11ac MCS0/Nss1 VHT40	5270 MHz	5310 MHz	5510 MHz	5550 MHz	5670 MHz	
	81	60	66	80	80	
Mode	NCB: 80MHz					
802.11ac MCS0/Nss1 VHT80	5290 MHz		5530 MHz		5610 MHz	
	61		48		73	

3.10. EUT Operation during Test

<For Non-Beamforming Mode>

The EUT was programmed to be in continuously transmitting mode.

<For Beamforming Mode>

For Conducted Mode:

The EUT was programmed to be in continuously transmitting mode.

For Radiated Mode:

During the test, the following programs under WIN XP were executed.

The program was executed as follows:

1. During the test, the EUT operation to normal function.
2. Executed command fixed test channel under DOS.
3. Executed "Lantest.exe " to link with the remote workstation to receive and transmit packet by WLAN ac Dongle and transmit duty cycle no less 98%

3.11. Duty Cycle

<For Non-Beamforming Mode>

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	2.070	2.090	99.04%	0.04	0.01
802.11n MCS0 HT20	1.930	1.950	98.97%	0.04	0.01
802.11n MCS0 HT40	0.945	0.970	97.42%	0.11	1.06

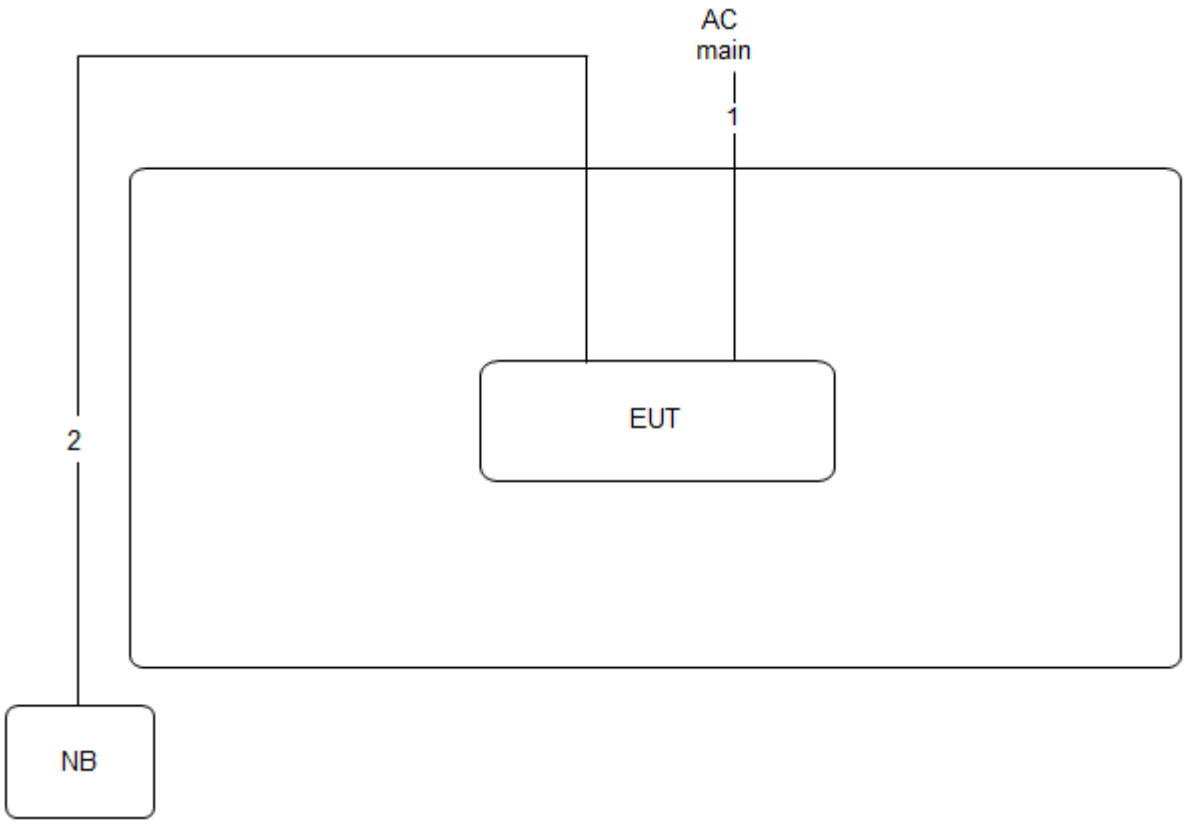
<For Beamforming Mode>

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11ac MCS0/Nss1 VHT20	1.940	1.950	99.49%	0.02	0.01
802.11ac MCS0/Nss1 VHT40	0.950	0.990	95.96%	0.18	1.05
802.11ac MCS0/Nss1 VHT80	0.464	0.484	95.87%	0.18	2.16

3.12. Test Configurations

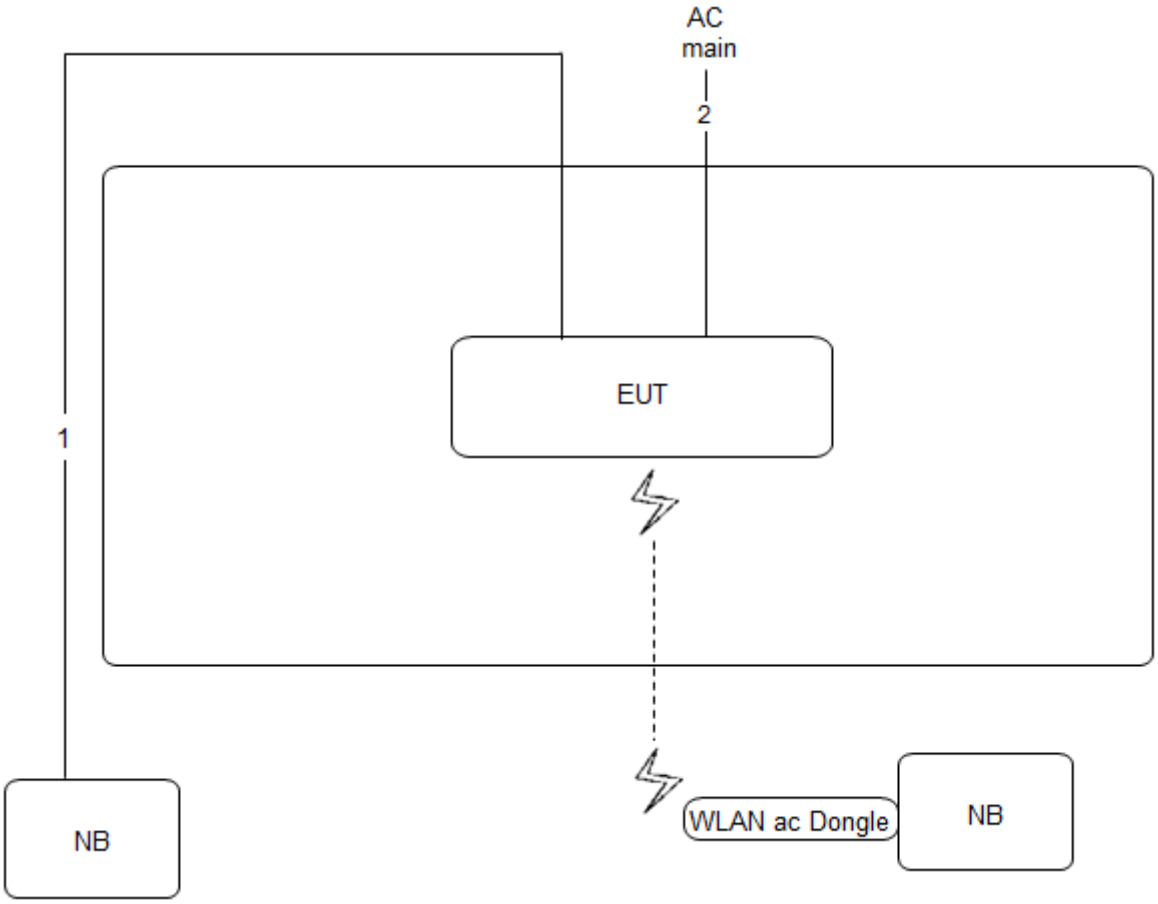
3.12.1. Radiation Emissions Test Configuration

<For Non-Beamforming Mode>



Item	Connection	Shielded	Length
1	Power cable	No	1.8m
2	RJ-45 cable	No	10m

<For Beamforming Mode>



Item	Connection	Shielded	Length
1	RJ-45 cable	No	10m
2	Power cable	No	1.8m

4. TEST RESULT

4.1. 26dB Bandwidth and 99% Occupied Bandwidth Measurement

4.1.1. Limit

No restriction limits.

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 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

4.1.3. 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%.

4.1.4. Test Setup Layout

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

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

4.1.5. Test Deviation

There is no deviation with the original standard.

4.1.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.1.7. Test Result of 26dB Bandwidth and 99% Occupied Bandwidth

Temperature	25°C	Humidity	45%
Test Engineer	Roki Liu		

<For Non-Beamforming Mode>

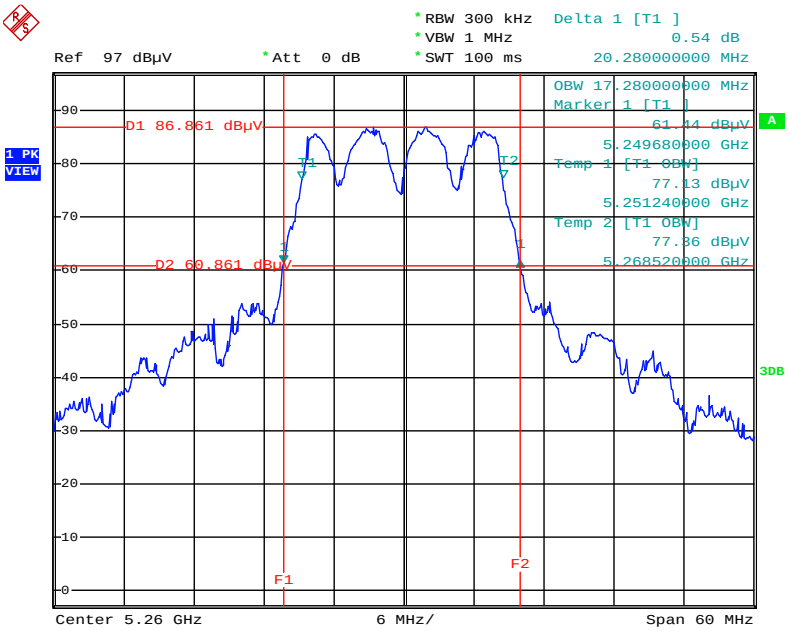
Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5260 MHz	20.28	17.28
	5300 MHz	20.28	17.28
	5320 MHz	20.40	17.28
	5500 MHz	20.52	17.40
	5580 MHz	20.52	17.40
	5700 MHz	20.52	17.40
802.11n MCS0 HT20	5260 MHz	20.52	18.12
	5300 MHz	20.64	18.12
	5320 MHz	20.40	18.12
	5500 MHz	20.76	18.12
	5580 MHz	24.36	18.24
	5700 MHz	20.52	18.12
802.11n MCS0 HT40	5270 MHz	41.20	36.60
	5310 MHz	41.00	36.60
	5510 MHz	41.00	36.60
	5550 MHz	41.40	36.80
	5670 MHz	40.80	36.80

<For Beamforming Mode>

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11ac MCS0/Nss1 VHT20	5260 MHz	20.52	18.00
	5300 MHz	20.76	18.00
	5320 MHz	20.52	18.00
	5500 MHz	20.76	18.24
	5580 MHz	20.76	18.12
	5700 MHz	20.64	18.00
802.11ac MCS0/Nss1 VHT40	5270 MHz	41.00	36.80
	5310 MHz	41.20	37.00
	5510 MHz	41.40	37.00
	5550 MHz	41.20	36.80
	5670 MHz	41.40	37.00
802.11ac MCS0/Nss1 VHT80	5290 MHz	82.00	76.40
	5530 MHz	82.00	76.00
	5610 MHz	81.60	76.00

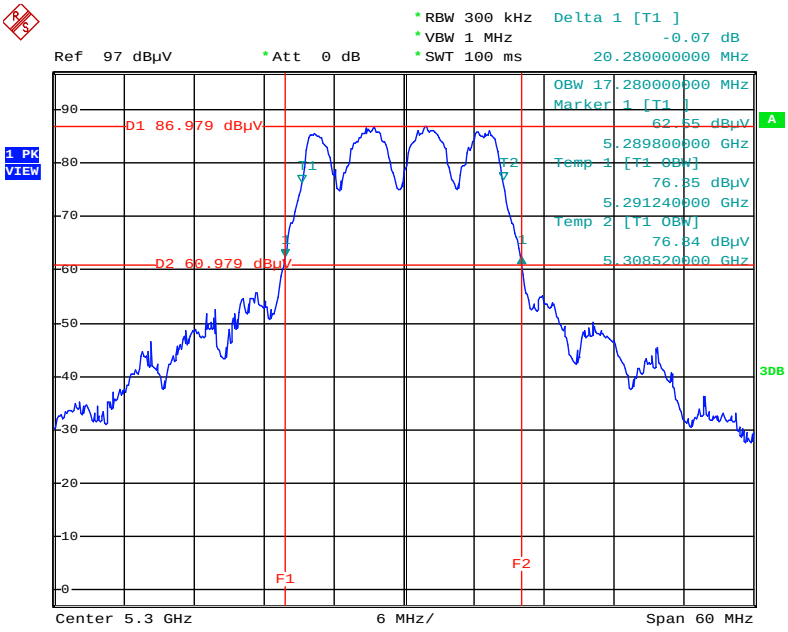
<For Non-Beamforming Mode>

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5260 MHz



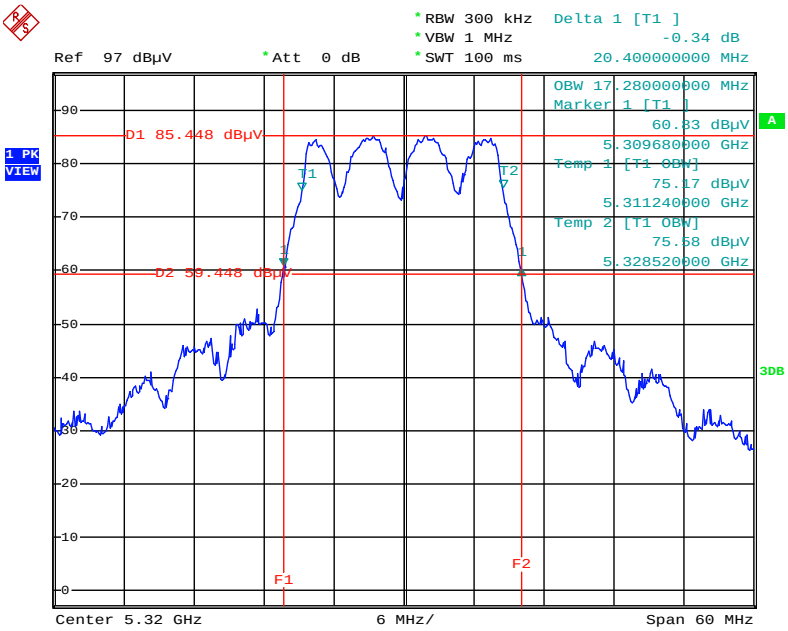
Date: 26.NOV.2015 23:26:34

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5300 MHz



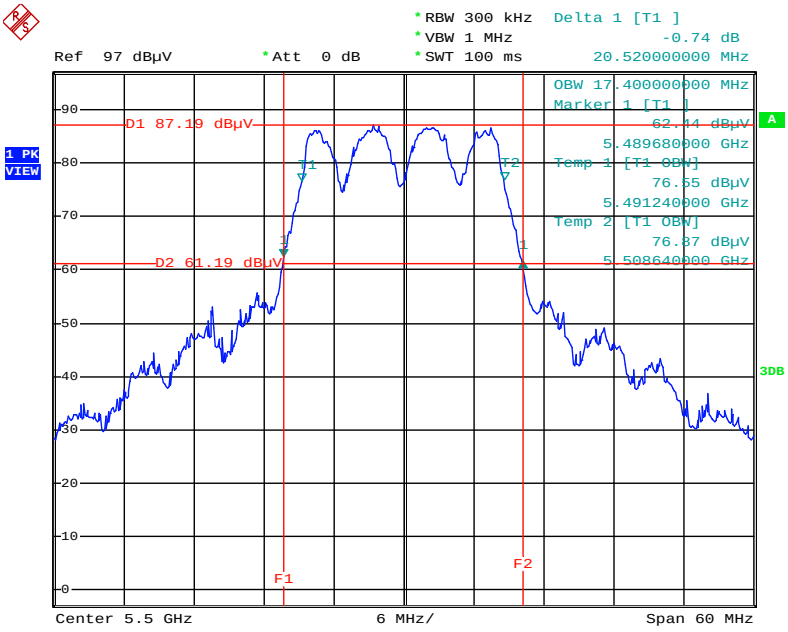
Date: 26.NOV.2015 23:27:43

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5320 MHz



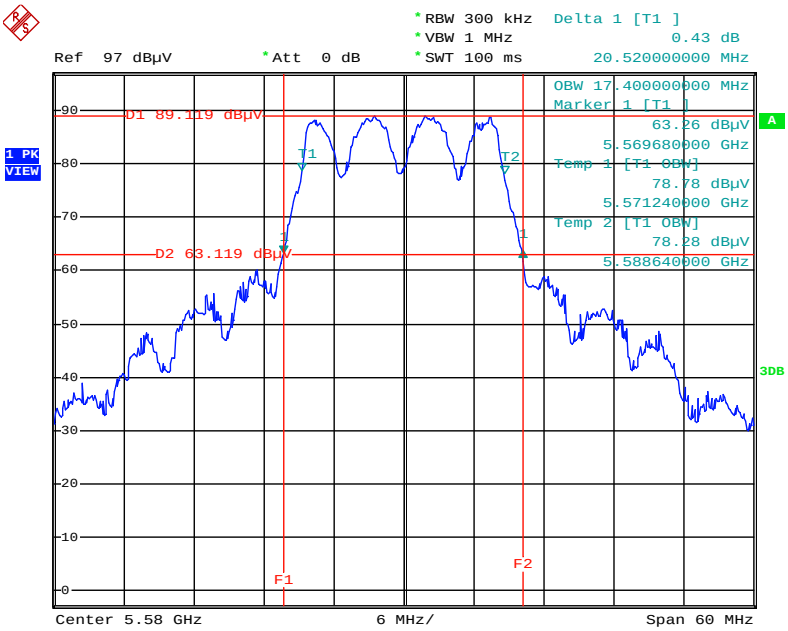
Date: 26.NOV.2015 23:28:59

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5500 MHz



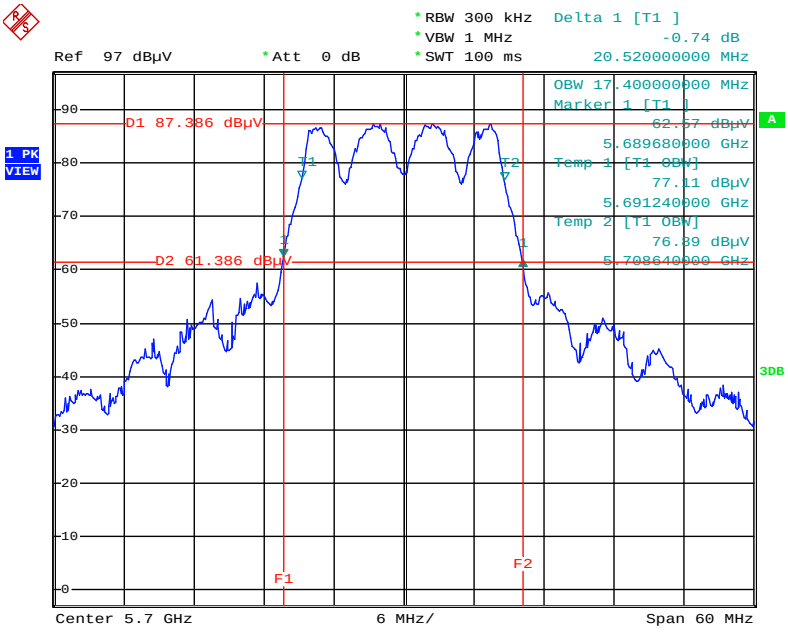
Date: 26.NOV.2015 23:29:44

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5580 MHz



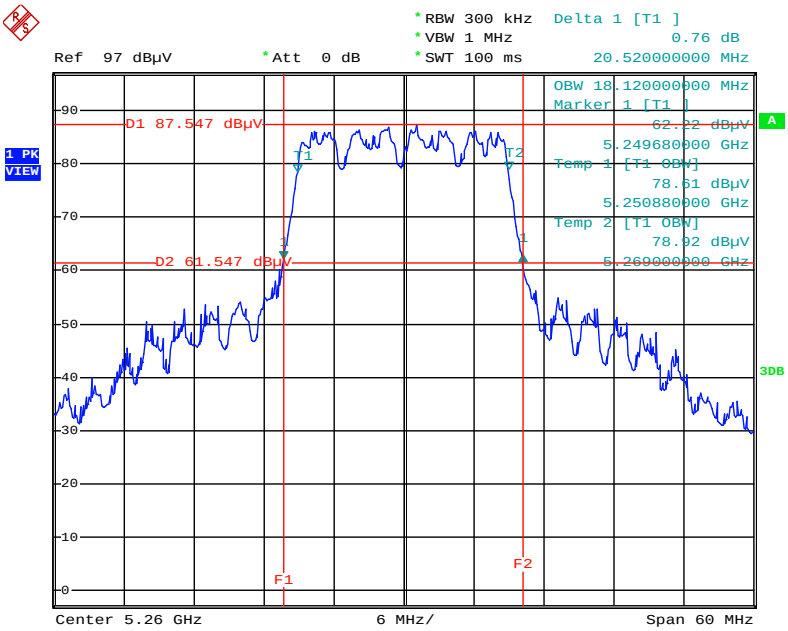
Date: 26.NOV.2015 23:30:50

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5700 MHz



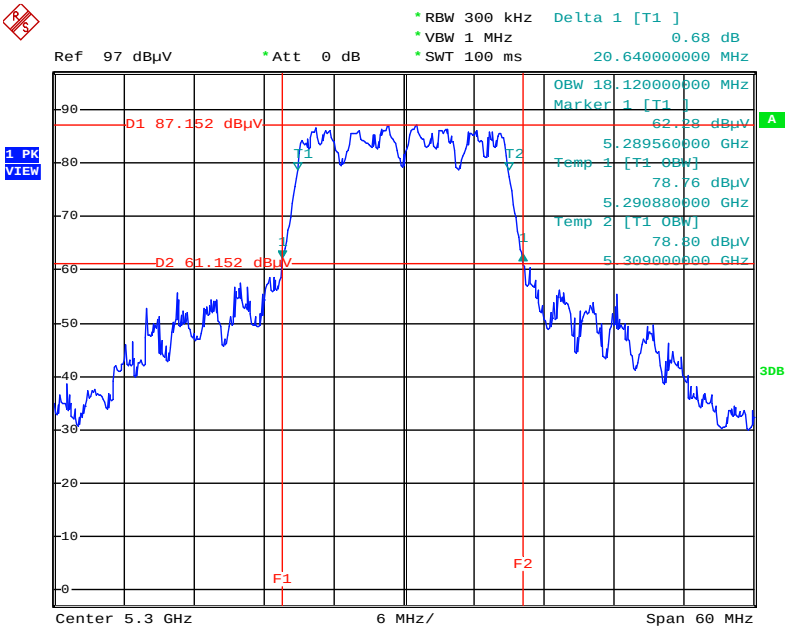
Date: 26.NOV.2015 23:31:38

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20/ Chain 1 + Chain 2 / 5260 MHz



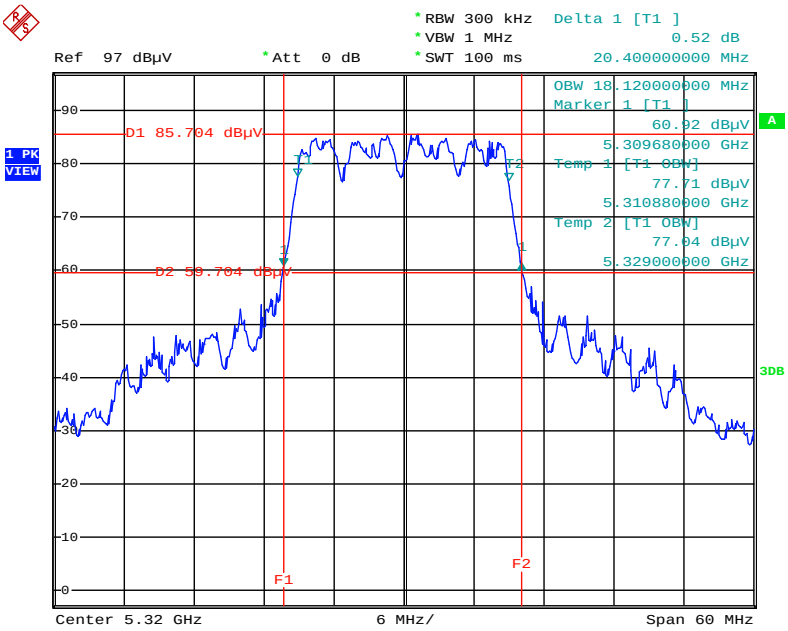
Date: 26.NOV.2015 23:33:31

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20/ Chain 1 + Chain 2 / 5300 MHz



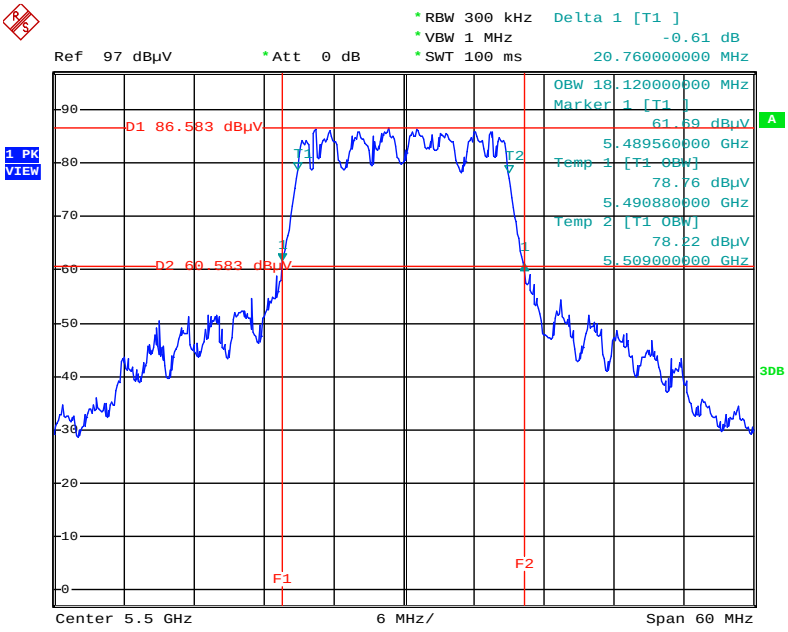
Date: 26.NOV.2015 23:34:29

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration 802.11n MCS0 HT20/ Chain 1 + Chain 2 / 5320 MHz



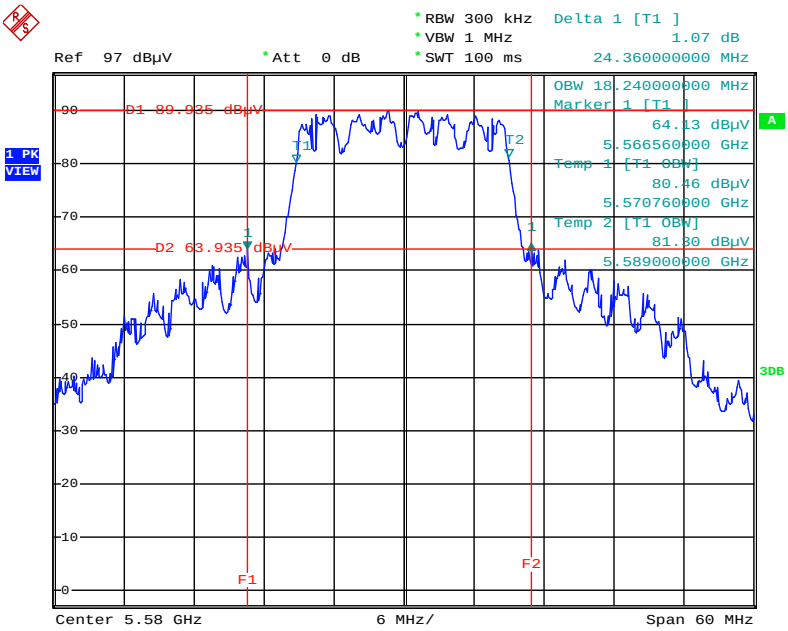
Date: 26.NOV.2015 23:35:17

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20/ Chain 1 + Chain 2 / 5500 MHz



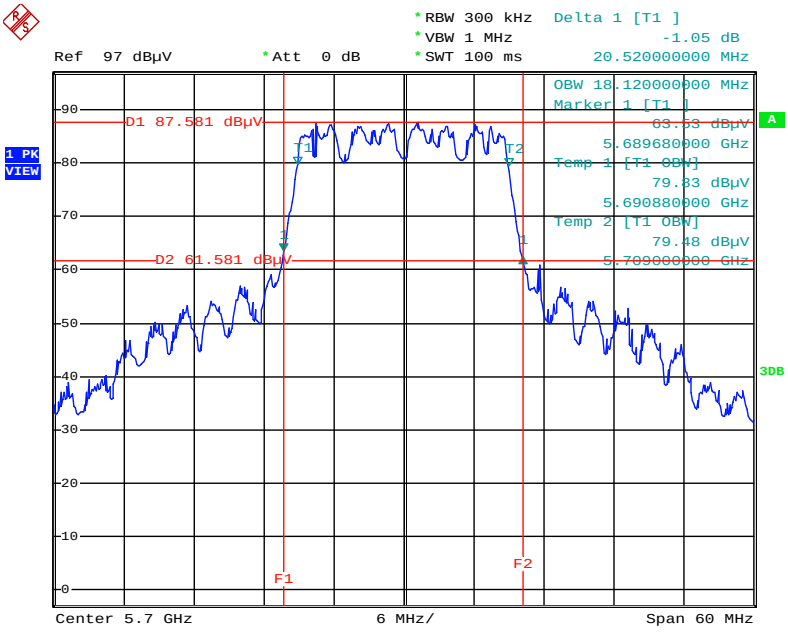
Date: 26.NOV.2015 23:35:53

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20/ Chain 1 + Chain 2 / 5580 MHz



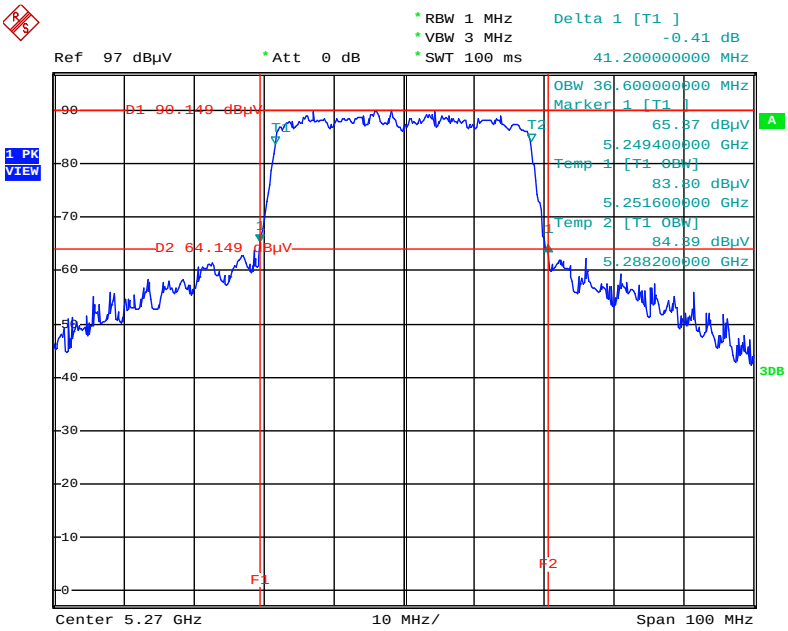
Date: 26.NOV.2015 23:36:48

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20/ Chain 1 + Chain 2 / 5700 MHz



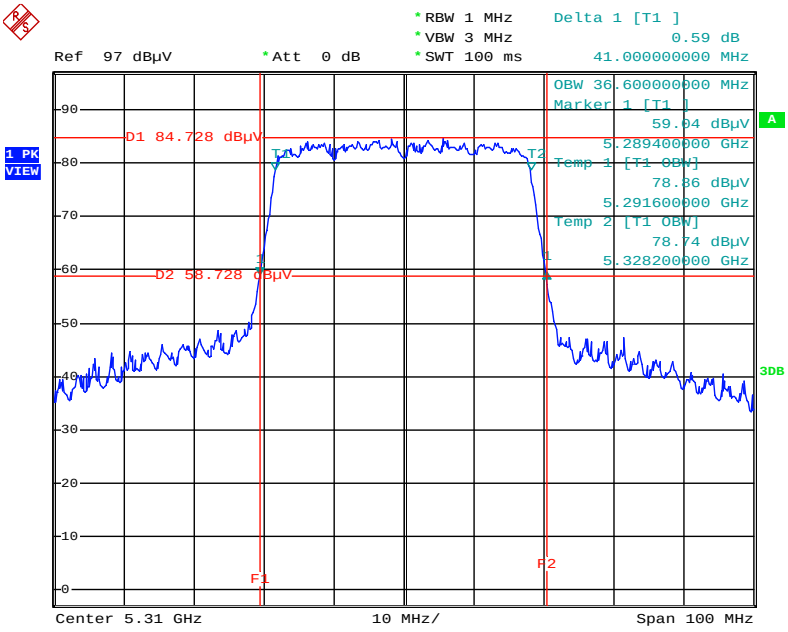
Date: 26.NOV.2015 23:37:56

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / Chain 1 + Chain 2 / 5270 MHz



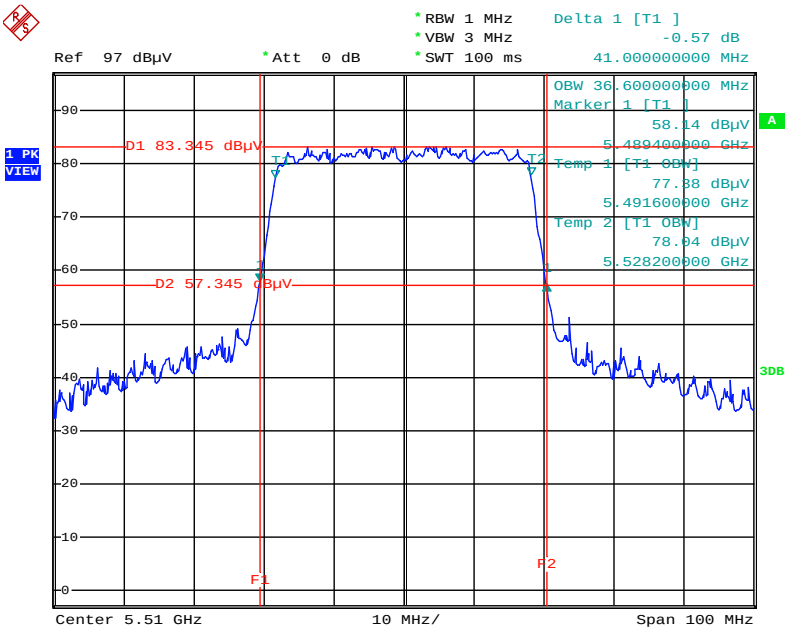
Date: 26.NOV.2015 23:39:21

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / Chain 1 + Chain 2 / 5310 MHz



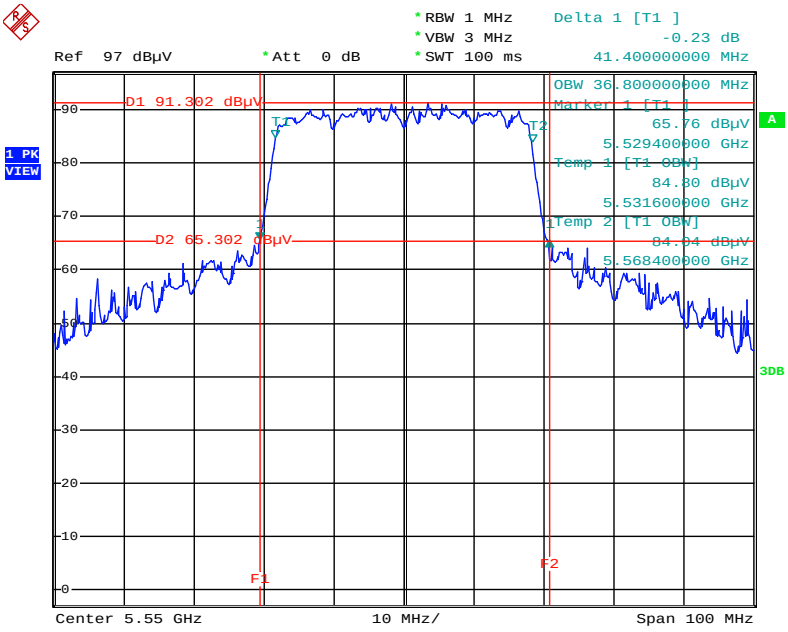
Date: 26.NOV.2015 23:40:49

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / Chain 1 + Chain 2 / 5510 MHz



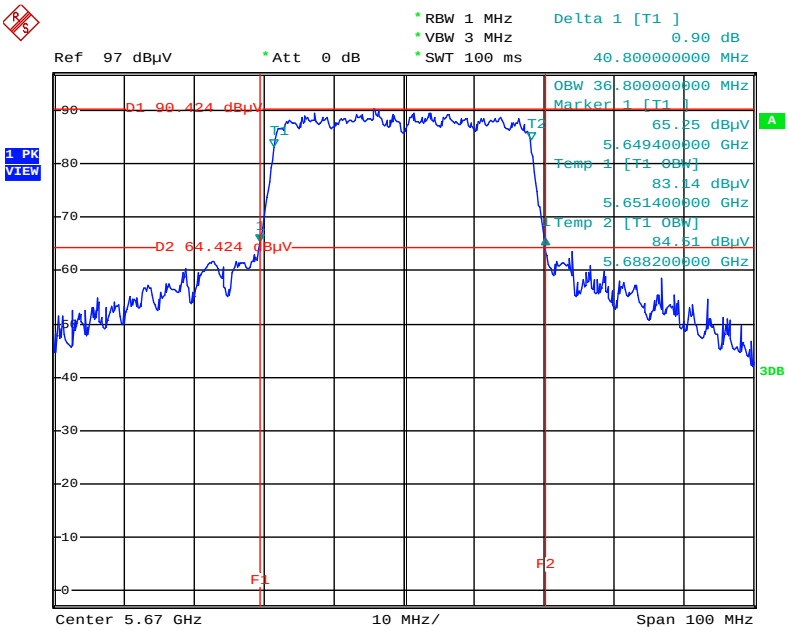
Date: 26.NOV.2015 23:41:36

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / Chain 1 + Chain 2 / 5550 MHz



Date: 26.NOV.2015 23:42:34

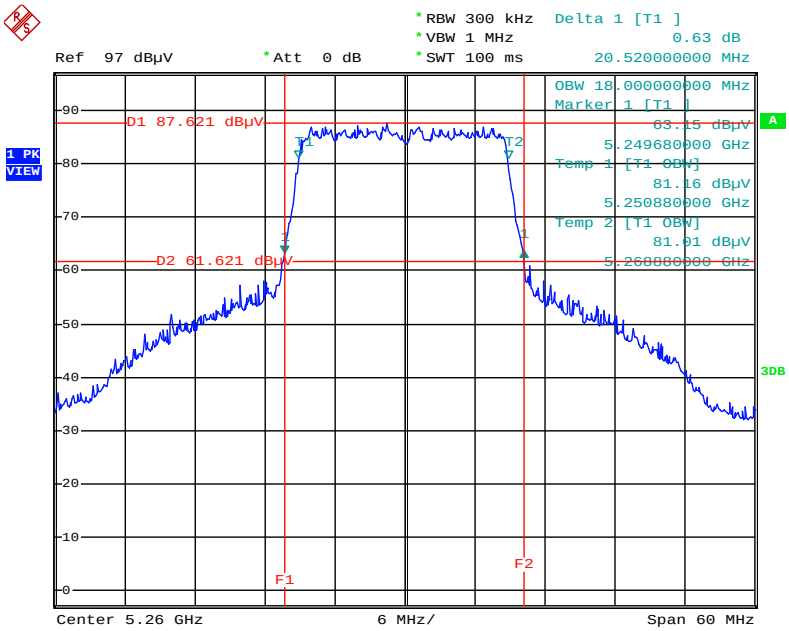
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / Chain 1 + Chain 2 / 5670 MHz



Date: 26.NOV.2015 23:43:32

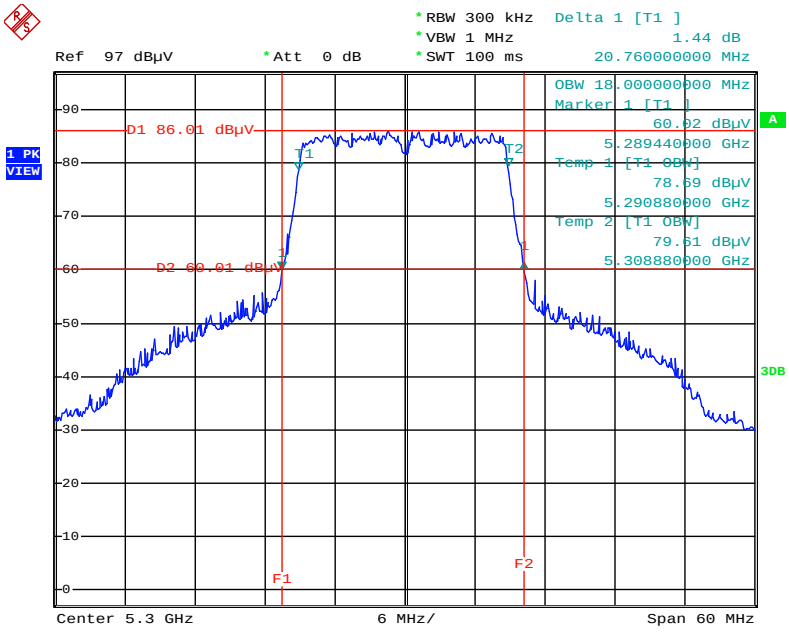
<For Beamforming Mode>

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5260 MHz



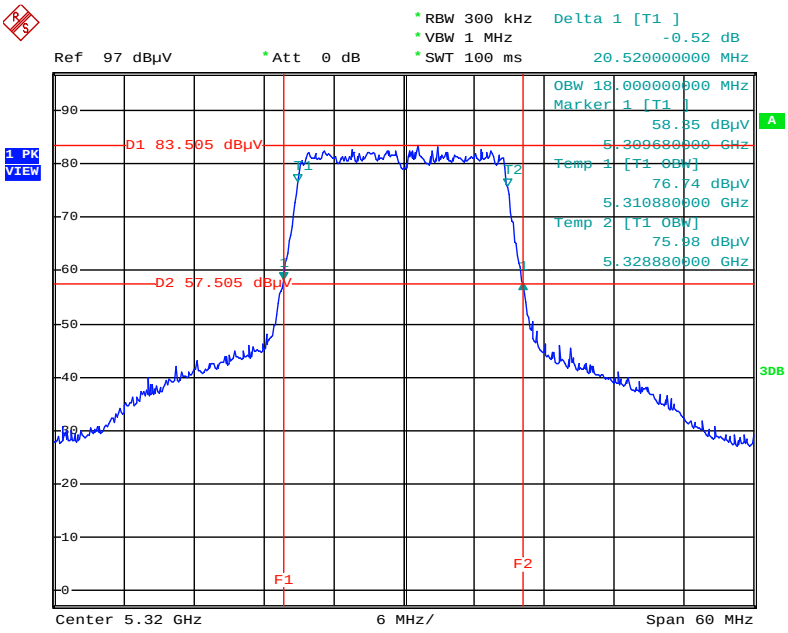
Date: 26.NOV.2015 23:45:11

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5300 MHz



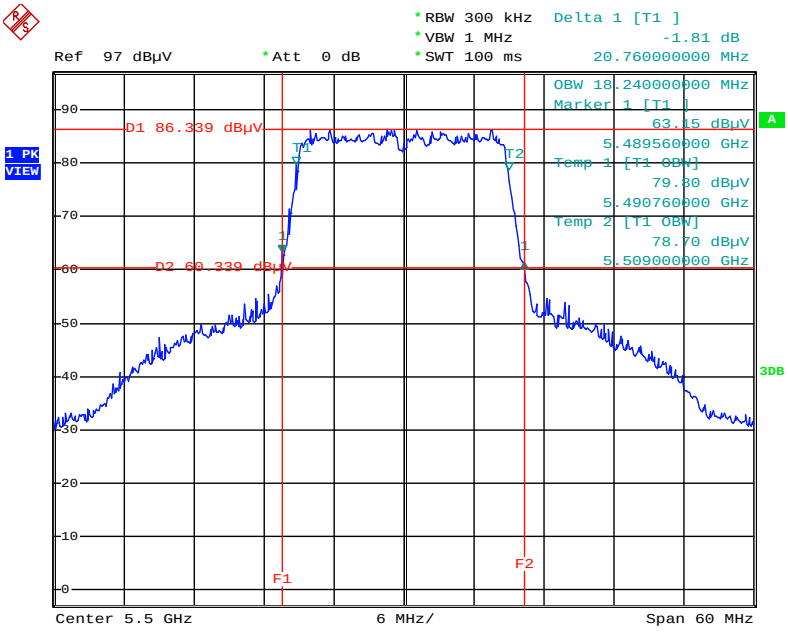
Date: 26.NOV.2015 23:46:36

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5320 MHz



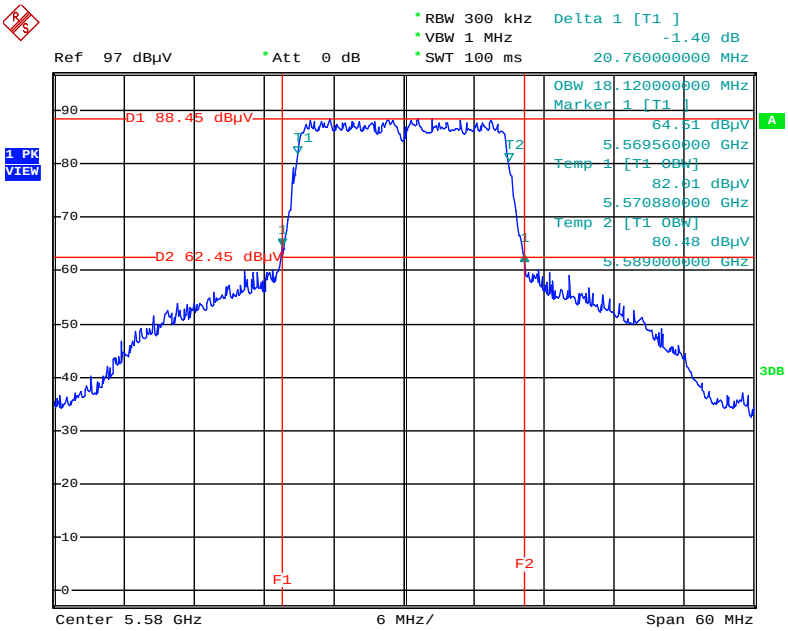
Date: 26.NOV.2015 23:49:20

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5500 MHz



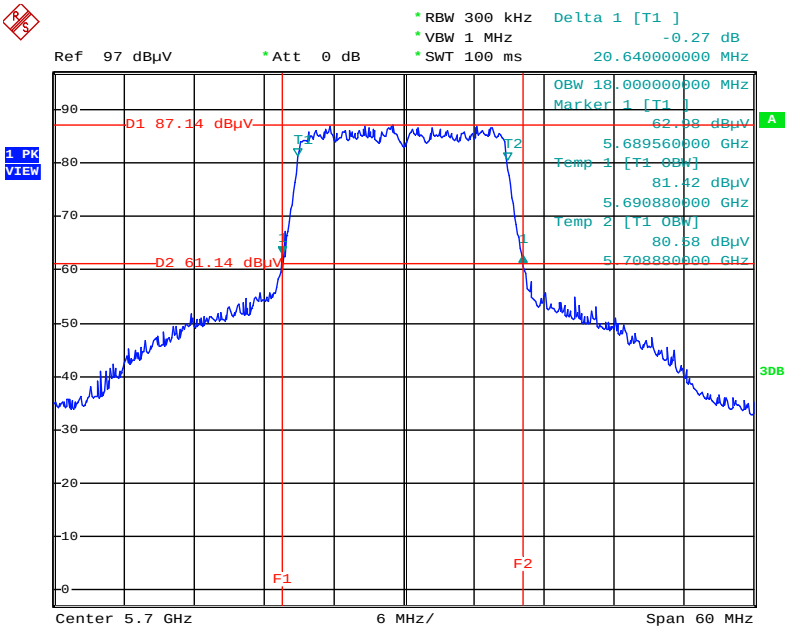
Date: 26.NOV.2015 23:49:58

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5580 MHz



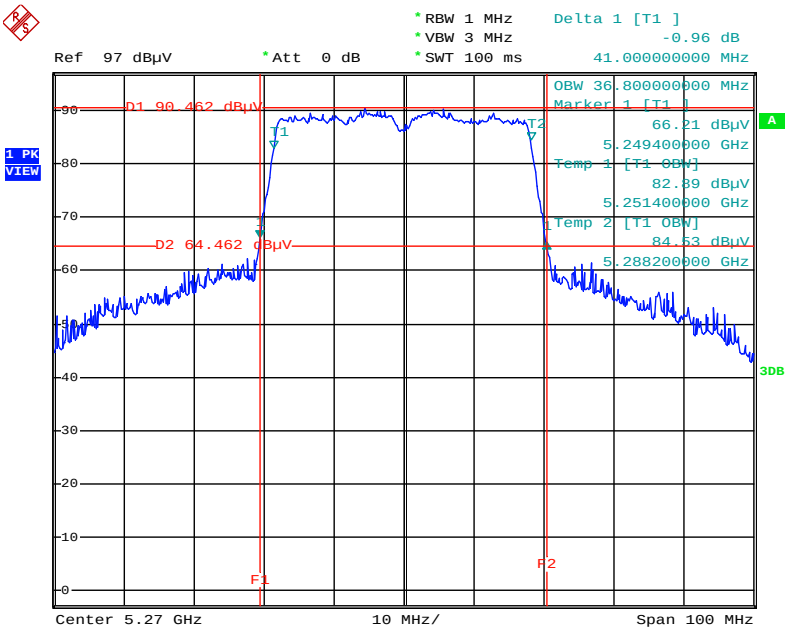
Date: 26.NOV.2015 23:50:52

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5700 MHz



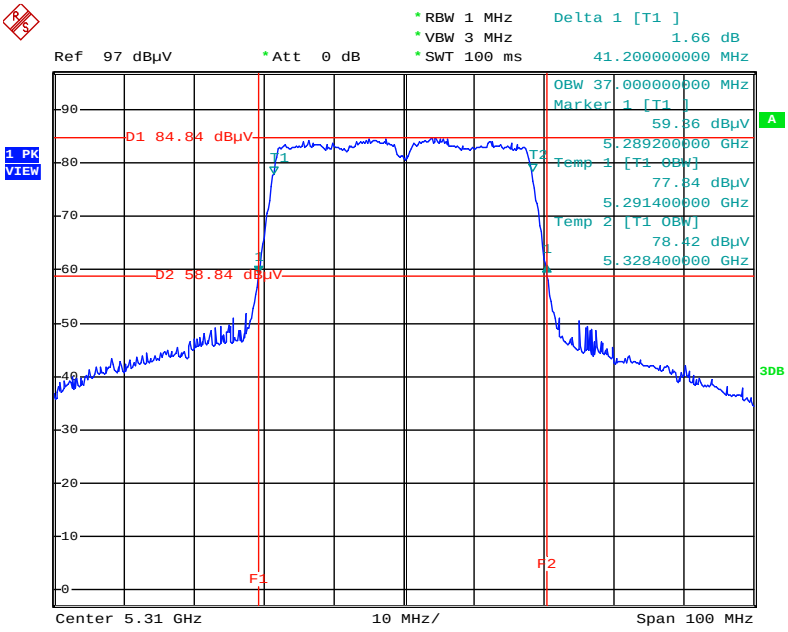
Date: 26.NOV.2015 23:51:31

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5270 MHz



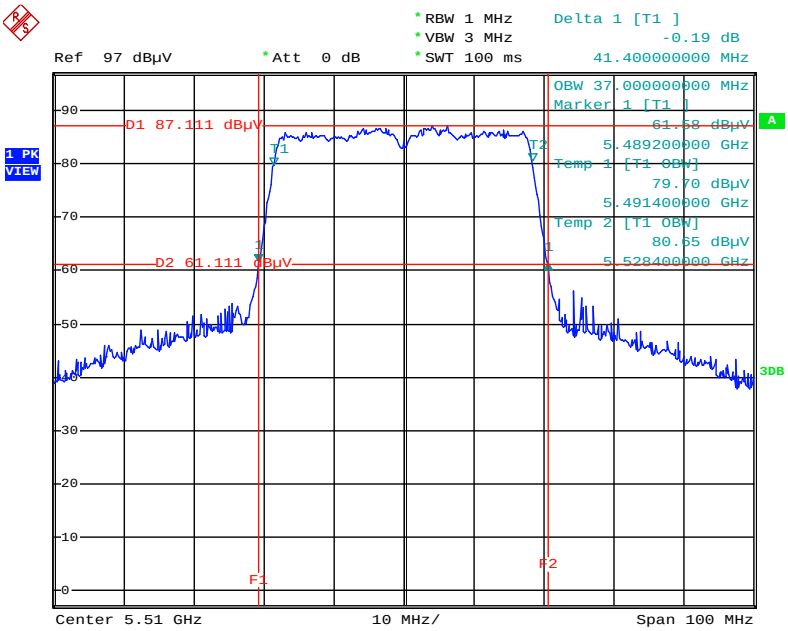
Date: 26.NOV.2015 23:54:43

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5310 MHz



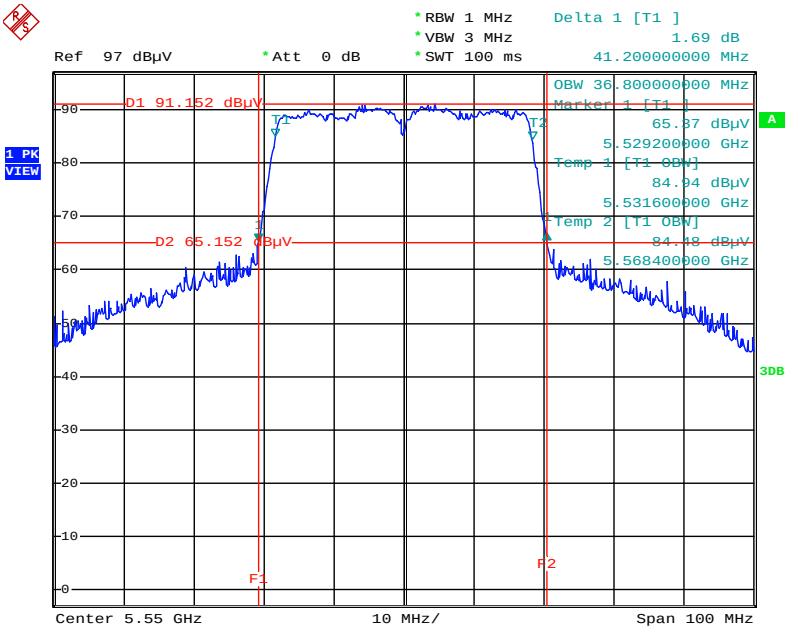
Date: 26.NOV.2015 23:56:31

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5510 MHz



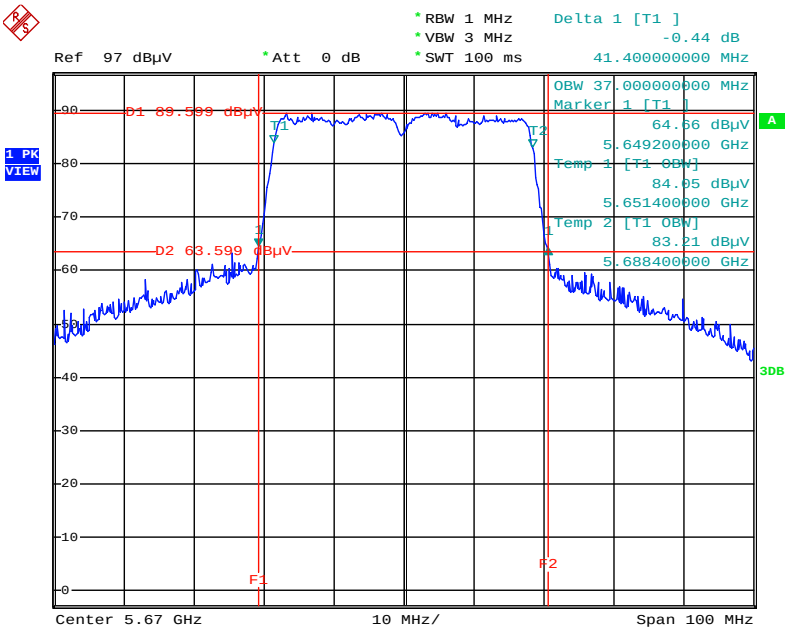
Date: 26.NOV.2015 23:58:11

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5550 MHz



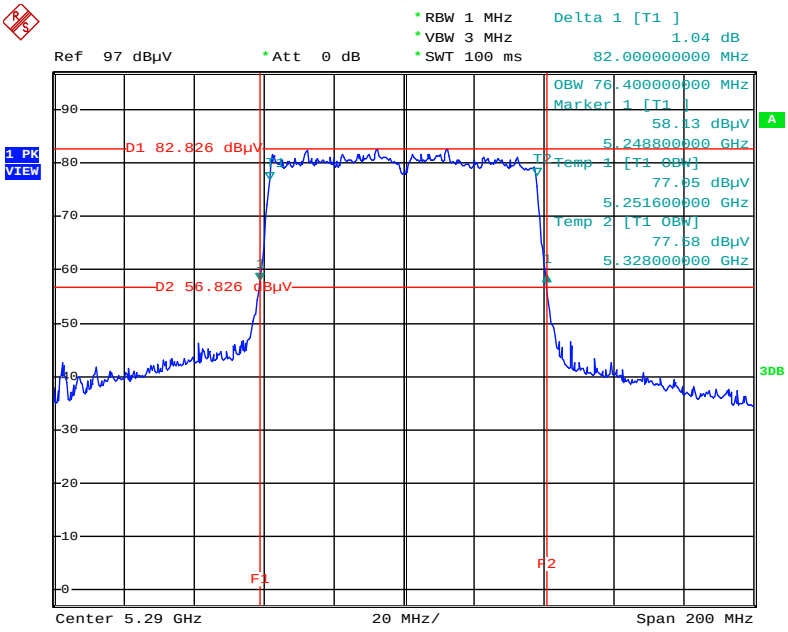
Date: 26.NOV.2015 23:58:56

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5670 MHz



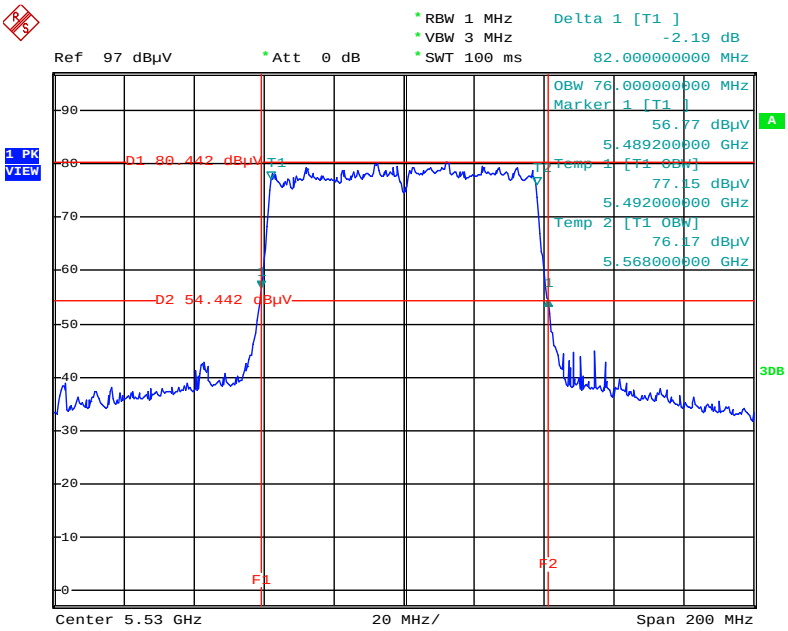
Date: 26.NOV.2015 23:59:57

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 / 5290 MHz



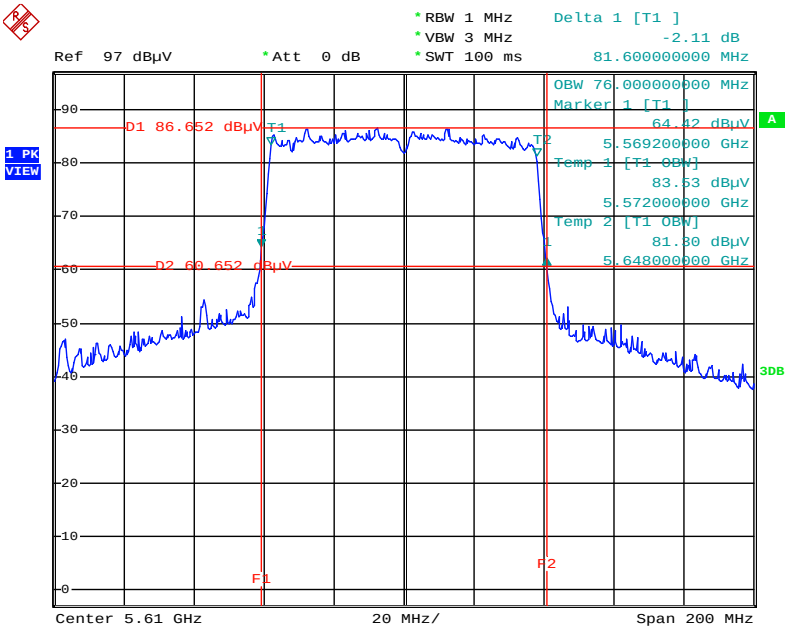
Date: 27.NOV.2015 00:01:00

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 / 5530 MHz



Date: 27.NOV.2015 00:02:11

26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 / 5610 MHz



Date: 27.NOV.2015 00:03:12

4.2. Maximum Conducted Output Power Measurement

4.2.1. Limit

Frequency Band		Limit
☒	5.25-5.35 GHz	The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW (24dBm) or 11 dBm 10 log B, where B is the 26 dB emission bandwidth in megahertz. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
☒	5.470-5.725 GHz	

4.2.2. Measuring Instruments and Setting

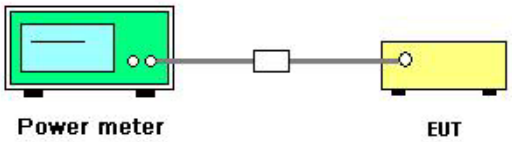
Please refer to section 5 of equipments list in this report The following table is the setting of the power meter.

Power Meter Parameter	Setting
Detector	AVERAGE

4.2.3. Test Procedures

1. The transmitter output (antenna port) was connected to the power meter.
2. Test was performed in accordance with KDB789033 D02 v01 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (E) Maximum conducted output power =>3. Measurement using a Power Meter (PM) =>b) Method PM-G (Measurement using a gated RF average power meter).
3. Multiple antenna systems was performed in accordance with KDB662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
4. When measuring maximum conducted output power with multiple antenna systems,add every result of the values by mathematic formula.

4.2.4. Test Setup Layout



4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.2.7. Test Result of Maximum Conducted Output Power

Temperature	25°C	Humidity	45%
Test Engineer	Roki Liu	Test Date	Nov. 26, 2015

<For Non-Beamforming Mode>

Mode	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Chain 1	Chain 2	Total		
802.11a	5260 MHz	20.59	20.72	23.67	24.00	Complies
	5300 MHz	20.81	20.89	23.86	24.00	Complies
	5320 MHz	19.56	19.62	22.60	24.00	Complies
	5500 MHz	19.42	19.78	22.61	24.00	Complies
	5580 MHz	20.71	21.01	23.87	24.00	Complies
	5700 MHz	19.97	20.28	23.14	24.00	Complies
802.11n MCS0 HT20	5260 MHz	20.28	20.18	23.24	24.00	Complies
	5300 MHz	20.02	20.52	23.29	24.00	Complies
	5320 MHz	18.70	18.60	21.66	24.00	Complies
	5500 MHz	18.52	18.81	21.68	24.00	Complies
	5580 MHz	20.35	20.93	23.66	24.00	Complies
	5700 MHz	19.92	20.42	23.19	24.00	Complies
802.11n MCS0 HT40	5270 MHz	20.75	20.92	23.85	24.00	Complies
	5310 MHz	15.41	15.83	18.64	24.00	Complies
	5510 MHz	13.34	13.47	16.42	24.00	Complies
	5550 MHz	20.11	20.53	23.34	24.00	Complies
	5670 MHz	19.86	20.45	23.18	24.00	Complies

<For Beamforming Mode>

Mode	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Chain 1	Chain 2	Total		
802.11ac MCS0/Nss1 VHT20	5260 MHz	20.84	20.75	23.81	23.94	Complies
	5300 MHz	20.22	20.02	23.13	23.64	Complies
	5320 MHz	17.21	16.95	20.09	23.44	Complies
	5500 MHz	18.72	18.94	21.84	23.74	Complies
	5580 MHz	19.95	20.48	23.23	23.64	Complies
	5700 MHz	19.13	19.68	22.42	22.84	Complies

Note:

5260 MHz $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.06dBi, so limit =24-(6.06-6)= 23.94 dBm.

5300 MHz $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.36dBi, so limit =24-(6.36-6)= 23.64 dBm.

5320 MHz $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.56dBi, so limit =24-(6.56-6)= 23.44 dBm.

5500 MHz $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.26dBi, so limit =24-(6.26-6)= 23.74 dBm.

5580 MHz $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.36dBi, so limit =24-(6.36-6)= 23.64 dBm.

5700 MHz $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.16dBi, so limit =24-(7.16-6)= 22.84 dBm.

Mode	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Chain 1	Chain 2	Total		
802.11ac MCS0/Nss1 VHT40	5270 MHz	20.98	20.82	23.91	23.94	Complies
	5310 MHz	15.73	15.44	18.60	23.44	Complies
	5510 MHz	16.45	16.62	19.55	23.44	Complies
	5550 MHz	19.68	20.02	22.86	23.04	Complies
	5670 MHz	19.38	20.04	22.73	22.84	Complies

Note:

5270 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.06dBi, so limit =24-(6.06-6)= 23.94 dBm.

5310 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.56dBi, so limit =24-(6.56-6)= 23.44 dBm.

5510 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.56dBi, so limit =24-(6.56-6)= 23.44 dBm.

5550 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.96dBi, so limit =24-(6.96-6)= 23.04 dBm.

5670 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =7.16dBi, so limit =24-(7.16-6)= 28.84 dBm.

Mode	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Chain 1	Chain 2	Total		
802.11ac MCS0/Nss1 VHT80	5290 MHz	15.62	14.88	18.28	23.64	Complies
	5530 MHz	11.81	10.85	14.37	23.04	Complies
	5610 MHz	18.91	18.63	21.78	22.94	Complies

Note:

5290 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.36dBi, so limit =24-(6.36-6)= 23.64 dBm.

5530 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.96dBi, so limit =24-(6.96-6)= 23.04 dBm.

5610 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =7.06dBi, so limit =24-(6.06-6)= 22.94 dBm.

4.3. Power Spectral Density Measurement

4.3.1. Limit

The following table is power spectral density limits and decrease power density limit rule refer to section 4.2.1.

Frequency Band		Limit
☒	5.25-5.35 GHz	11 dBm/MHz
☒	5.470-5.725 GHz	11 dBm/MHz

4.3.2. Measuring Instruments and Setting

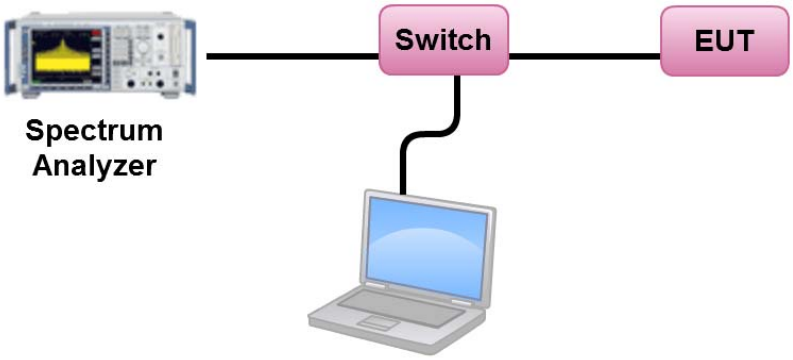
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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

4.3.3. Test Procedures

1. The transmitter output (antenna port) was connected RF switch to the spectrum analyzer.
2. Test was performed in accordance with KDB789033 D02 v01 for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - section (F) Maximum Power Spectral Density (PSD).
3. Multiple antenna systems was performed in accordance KDB662911 D01 v02r01 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.

4.3.4. Test Setup Layout



4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.3.7. Test Result of Power Spectral Density

Temperature	25°C	Humidity	45%
Test Engineer	Roki Liu		

<For Non-Beamforming Mode>

Mode	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
802.11a	5260 MHz	10.36	10.94	Complies
	5300 MHz	10.61	10.64	Complies
	5320 MHz	9.29	10.44	Complies
	5500 MHz	9.11	10.74	Complies
	5580 MHz	10.47	10.64	Complies
	5700 MHz	9.78	9.84	Complies

Note:

5260 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.06dBi, so limit =11-(6.06-6)= 10.94 dBm/MHz.

5300 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.36dBi, so limit =11-(6.36-6)= 10.64 dBm/MHz.

5320 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.56dBi, so limit =11-(6.56-6)= 10.44 dBm/MHz.

5500 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.26dBi, so limit =11-(6.26-6)= 10.74 dBm/MHz.

5580 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.36dBi, so limit =11-(6.36-6)= 10.64 dBm/MHz.

5700 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =7.16dBi, so limit =11-(7.16-6)= 9.84 dBm/MHz.

Mode	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
802.11n MCS0 HT20	5260 MHz	9.66	10.94	Complies
	5300 MHz	9.76	10.64	Complies
	5320 MHz	8.39	10.44	Complies
	5500 MHz	8.94	10.74	Complies
	5580 MHz	10.00	10.64	Complies
	5700 MHz	8.97	9.84	Complies

Note:

5260 MHz $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.06dBi, so limit =11-(6.06-6)= 10.94 dBm/MHz.

5300 MHz $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.36dBi, so limit =11-(6.36-6)= 10.64 dBm/MHz.

5320 MHz $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.56dBi, so limit =11-(6.56-6)= 10.44 dBm/MHz.

5500 MHz $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.26dBi, so limit =11-(6.26-6)= 10.74 dBm/MHz.

5580 MHz $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.36dBi, so limit =11-(6.36-6)= 10.64 dBm/MHz.

5700 MHz $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.16dBi, so limit =11-(7.16-6)= 9.84 dBm/MHz.

Mode	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
802.11n MCS0 HT40	5270 MHz	6.31	10.94	Complies
	5310 MHz	1.17	10.44	Complies
	5510 MHz	-0.17	10.44	Complies
	5550 MHz	6.03	10.04	Complies
	5670 MHz	5.28	9.84	Complies

Note:

5270 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.06dBi, so limit =11-(6.06-6)= 10.94 dBm.

5310 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.56dBi, so limit =11-(6.56-6)= 10.44 dBm.

5510 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.56dBi, so limit =11-(6.56-6)= 10.44 dBm.

5550 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.96dBi, so limit =11-(6.96-6)= 10.04 dBm.

5670 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =7.16dBi, so limit =11-(7.16-6)= 9.84 dBm.

<For Beamforming Mode>

Mode	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
802.11ac MCS0/Nss1 VHT20	5260 MHz	10.73	10.94	Complies
	5300 MHz	10.19	10.64	Complies
	5320 MHz	7.13	10.44	Complies
	5500 MHz	8.71	10.74	Complies
	5580 MHz	9.96	10.64	Complies
	5700 MHz	8.39	9.84	Complies

Note:

5260 MHz $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.06dBi, so limit =11-(6.06-6)= 10.94 dBm/MHz.

5300 MHz $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.36dBi, so limit =11-(6.36-6)= 10.64 dBm/MHz.

5320 MHz $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.56dBi, so limit =11-(6.56-6)= 10.44 dBm/MHz.

5500 MHz $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.26dBi, so limit =11-(6.26-6)= 10.74 dBm/MHz.

5580 MHz $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.36dBi, so limit =11-(6.36-6)= 10.64 dBm/MHz.

5700 MHz $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.16dBi, so limit =11-(7.16-6)= 9.84 dBm/MHz.

Mode	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
802.11ac MCS0/Nss1 VHT40	5270 MHz	7.97	10.94	Complies
	5310 MHz	2.78	10.44	Complies
	5510 MHz	3.34	10.44	Complies
	5550 MHz	6.94	10.04	Complies
	5670 MHz	5.96	9.84	Complies

Note:

5270 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.06dBi, so limit =11-(6.06-6)= 10.94 dBm.

5310 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.56dBi, so limit =11-(6.56-6)= 10.44 dBm.

5510 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.56dBi, so limit =11-(6.56-6)= 10.44 dBm.

5550 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.96dBi, so limit =11-(6.96-6)= 10.04 dBm.

5670 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =7.16dBi, so limit =11-(7.16-6)= 9.84 dBm.

Mode	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
802.11ac MCS0/Nss1 VHT80	5290 MHz	-0.28	10.64	Complies
	5530 MHz	-4.72	10.04	Complies
	5610 MHz	1.13	9.94	Complies

Note:

5290 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.36dBi, so limit =11-(6.36-6)= 10.64 dBm.

5530 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.96dBi, so limit =11-(6.96-6)= 10.04 dBm.

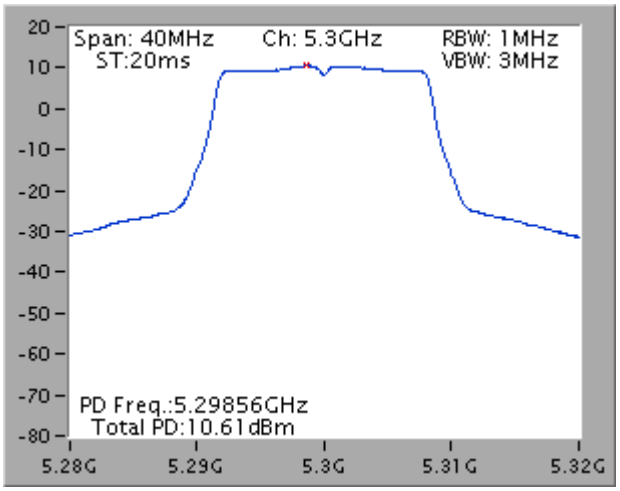
5610 MHz $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =7.16dBi, so limit =11-(7.16-6)= 9.84 dBm.

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

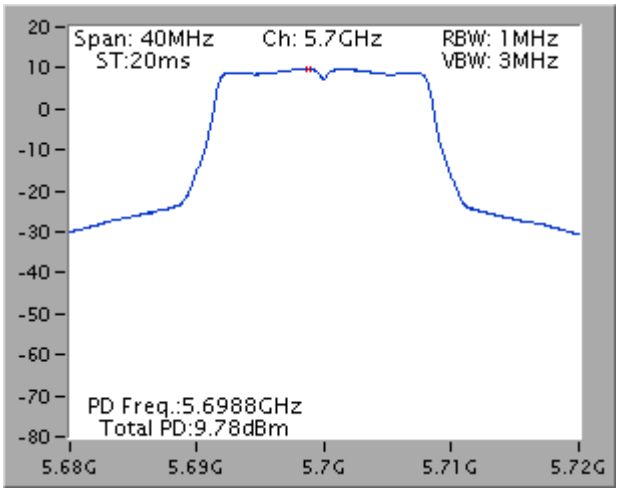
For plots, only the channel with worse result was shown.

<For Non-Beamforming Mode>

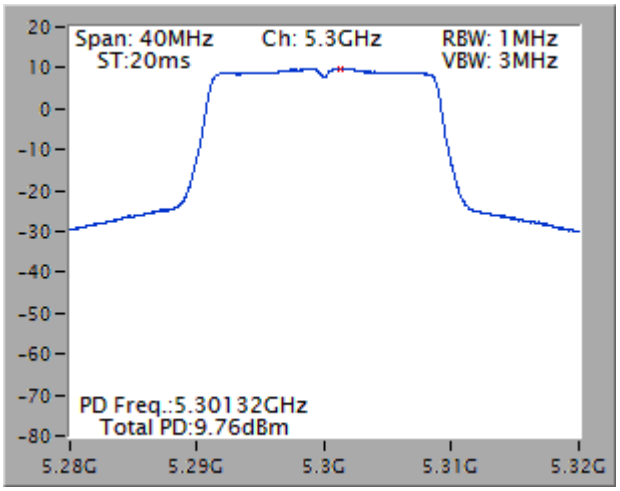
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5300 MHz



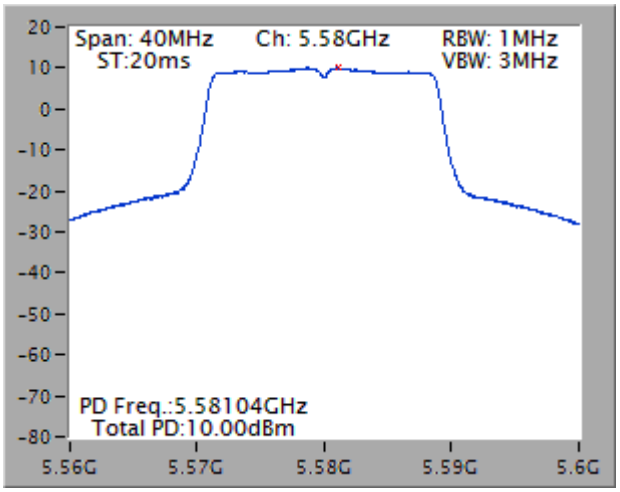
Power Density Plot on Configuration IEEE 802.11a / Chain 1 + Chain 2 / 5700 MHz



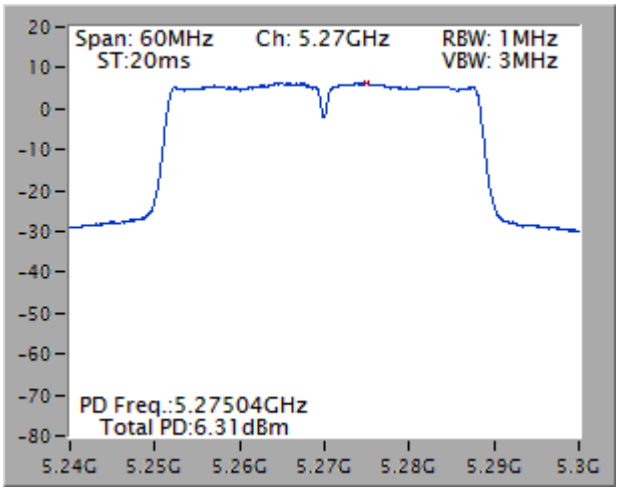
Power Density Plot on Configuration IEEE 802.11n MCS0 HT20 / Chain 1 + Chain 2 / 5300 MHz



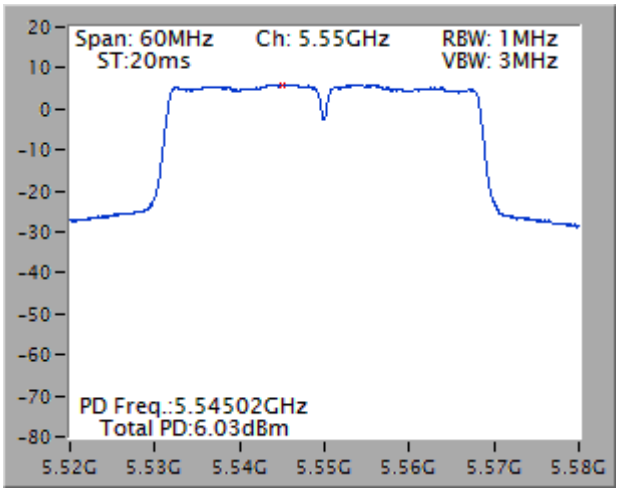
Power Density Plot on Configuration IEEE 802.11n MCS0 HT20 / Chain 1 + Chain 2 / 5580 MHz



Power Density Plot on Configuration IEEE 802.11ac 802.11n MCS0 HT40 / Chain 1 + Chain 2 / 5270 MHz

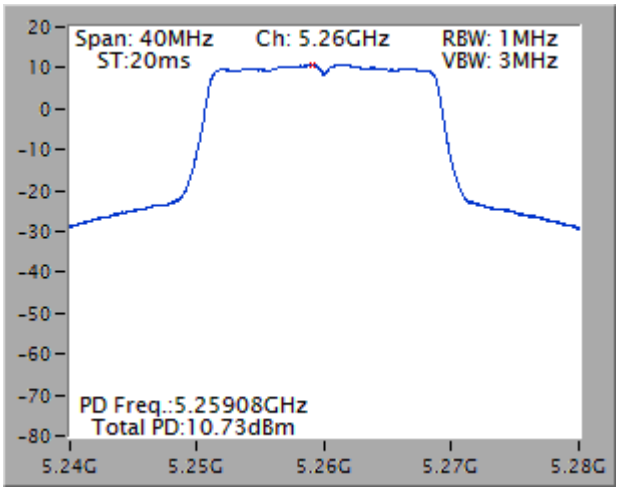


Power Density Plot on Configuration IEEE 802.11ac 802.11n MCS0 HT40 / Chain 1 + Chain 2 / 5550 MHz

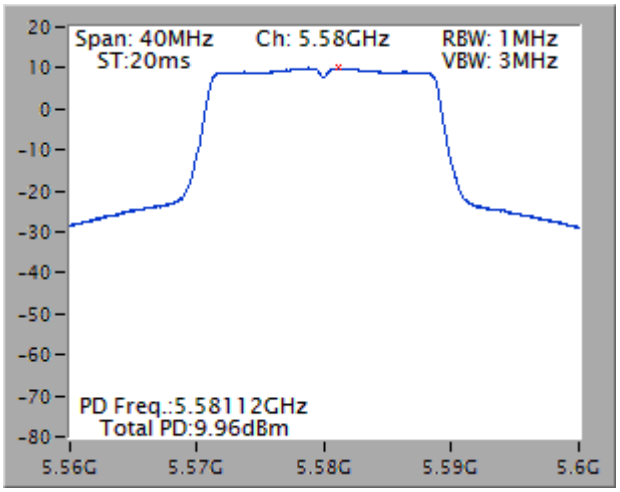


<For Beamforming Mode>

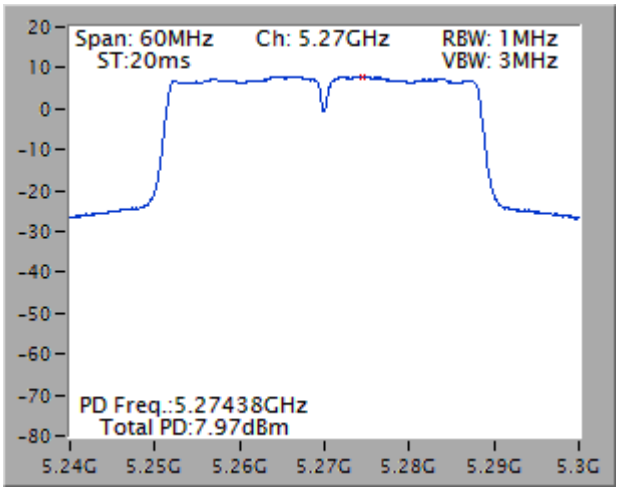
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5260 MHz



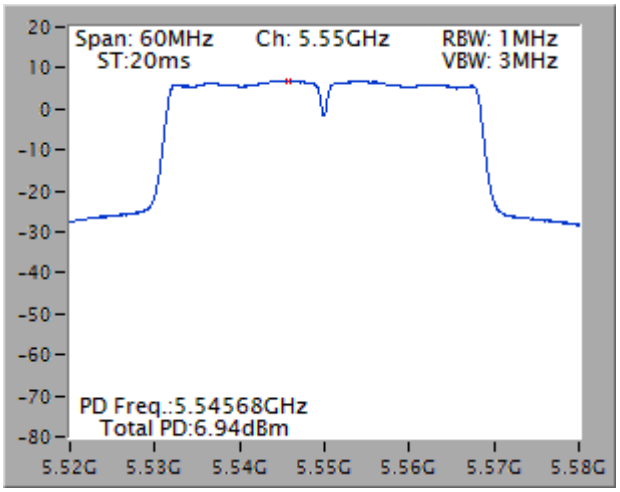
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 / 5580 MHz



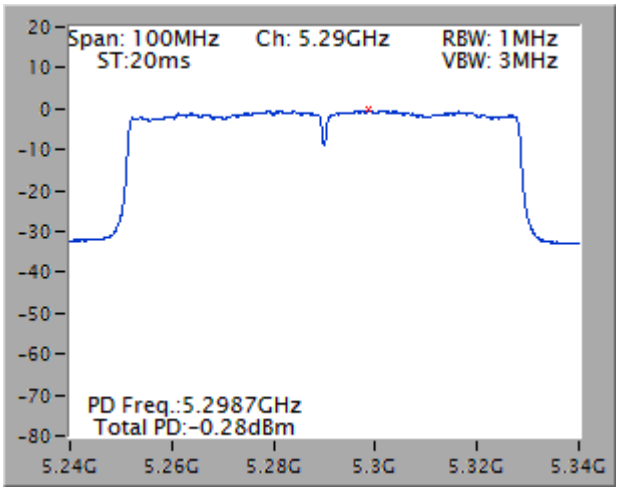
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5270 MHz



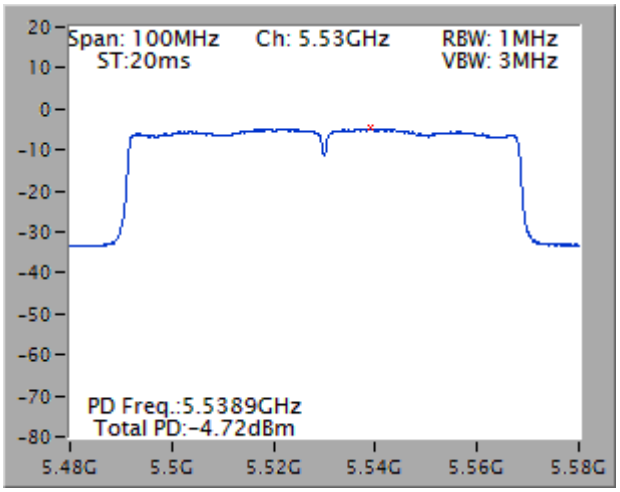
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 / 5550 MHz



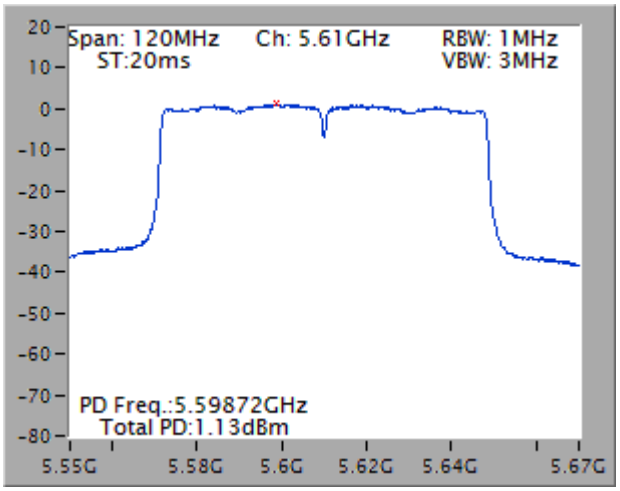
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 / 5290 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 / 5530 MHz



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 / 5610 MHz



4.4. Radiated Emissions Measurement

4.4.1. Limit

For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

For transmitters operating in the 5.470-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

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

4.4.2. 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 / 1/T for Average
RBW / VBW (Emission in non-restricted band)	1MHz / 3MHz for peak

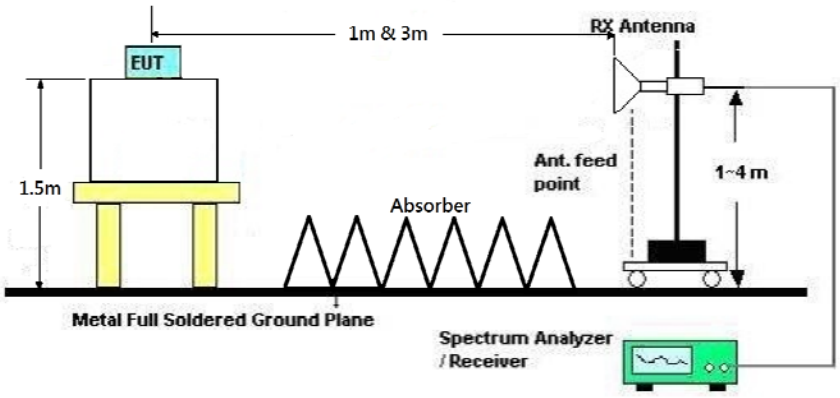
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.4.3. Test Procedures

1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1m & 3m 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 3MHz RBW for peak reading. Then 1MHz RBW and 1/T VBW for average reading in spectrum analyzer.
7. 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.
8. 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.
9. 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.

4.4.4. Test Setup Layout

For Radiated Emissions: Above 1GHz



4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

<For Non-Beamforming Mode>

The EUT was programmed to be in continuously transmitting mode.

<For Beamforming Mode>

The EUT was programmed to be in beamforming transmitting mode.

4.4.7. Results for Radiated Emissions (1GHz~40GHz)

<For Non-Beamforming Mode>

Temperature	25°C	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11a CH 52 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014		

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	15772.56	39.57	54.00	-14.43	30.55	6.14	38.11	35.23	Average	100	222	HORIZONTAL
2	15782.64	51.88	74.00	-22.12	42.89	6.14	38.09	35.24	Peak	100	222	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	15772.40	39.41	54.00	-14.59	30.39	6.14	38.11	35.23	Average	100	118	VERTICAL
2	15774.32	52.36	74.00	-21.64	43.34	6.14	38.11	35.23	Peak	100	118	VERTICAL

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11a CH 60 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014		

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	10600.04	37.91	54.00	-16.09	29.23	5.01	38.92	35.25	Average	100	154	HORIZONTAL
2	10603.90	49.84	74.00	-24.16	41.14	5.01	38.92	35.23	Peak	100	154	HORIZONTAL
3	15901.20	53.06	74.00	-20.94	44.25	6.15	37.92	35.26	Peak	100	66	HORIZONTAL
4	15901.48	40.42	54.00	-13.58	31.61	6.15	37.92	35.26	Average	100	66	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	10600.16	38.11	54.00	-15.89	29.43	5.01	38.92	35.25	Average	100	250	VERTICAL
2	10600.52	50.81	74.00	-23.19	42.13	5.01	38.92	35.25	Peak	100	250	VERTICAL
3	15900.12	53.67	74.00	-20.33	44.84	6.15	37.94	35.26	Peak	100	170	VERTICAL
4	15902.92	40.65	54.00	-13.35	31.84	6.15	37.92	35.26	Average	100	170	VERTICAL

Temperature	25°C	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11a CH 64 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014		

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	10636.12	50.71	74.00	-23.29	41.99	5.01	38.93	35.22	Peak	100	200	HORIZONTAL
2	10640.00	38.12	54.00	-15.88	29.40	5.01	38.93	35.22	Average	100	200	HORIZONTAL
3	15962.28	40.37	54.00	-13.63	31.65	6.15	37.85	35.28	Average	100	111	HORIZONTAL
4	15962.60	52.95	74.00	-21.05	44.23	6.15	37.85	35.28	Peak	100	111	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	10633.20	37.40	54.00	-16.60	28.68	5.01	38.93	35.22	Average	100	278	VERTICAL
2	10637.36	50.79	74.00	-23.21	42.07	5.01	38.93	35.22	Peak	100	278	VERTICAL
3	15962.32	52.97	74.00	-21.03	44.25	6.15	37.85	35.28	Peak	100	187	VERTICAL
4	15965.52	40.27	54.00	-13.73	31.55	6.15	37.85	35.28	Average	100	187	VERTICAL

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11a CH 100 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014		

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	10999.16	48.70	74.00	-25.30	39.67	5.01	39.00	34.98	Peak	106	168	HORIZONTAL
2	11001.40	37.12	54.00	-16.88	28.09	5.01	39.00	34.98	Average	106	168	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	10992.56	35.85	54.00	-18.15	26.82	5.01	39.00	34.98	Average	100	120	VERTICAL
2	10993.28	48.68	74.00	-25.32	39.65	5.01	39.00	34.98	Peak	100	120	VERTICAL

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11a CH 116 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014		

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	11156.04	45.41	54.00	-8.59	36.25	5.04	39.12	35.00	Average	177	36	HORIZONTAL
2	11160.28	56.62	74.00	-17.38	47.45	5.04	39.13	35.00	Peak	177	36	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	11163.84	55.72	74.00	-18.28	46.54	5.05	39.13	35.00	Peak	115	99	VERTICAL
2	11164.80	42.49	54.00	-11.51	33.31	5.05	39.13	35.00	Average	115	99	VERTICAL

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11a CH 140 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014		

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	11396.60	41.68	54.00	-12.32	32.30	5.10	39.32	35.04	Average	114	264	HORIZONTAL
2	11405.88	53.76	74.00	-20.24	44.38	5.10	39.32	35.04	Peak	114	264	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	11401.12	40.15	54.00	-13.85	30.77	5.10	39.32	35.04	Average	100	71	VERTICAL
2	11401.56	53.32	74.00	-20.68	43.94	5.10	39.32	35.04	Peak	100	71	VERTICAL

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11n MCS0 HT20 CH 52 / Chain 1 + Chain 2
Test Date	Apr. 24, 2014		

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	15779.55	55.26	74.00	-18.74	42.25	10.80	37.75	35.54	Peak	100	162	HORIZONTAL
2	15780.09	42.62	54.00	-11.38	29.61	10.80	37.75	35.54	Average	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	15779.61	56.22	74.00	-17.78	43.21	10.80	37.75	35.54	Peak	106	214	VERTICAL
2	15780.26	42.95	54.00	-11.05	29.94	10.80	37.75	35.54	Average	106	214	VERTICAL

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11n MCS0 HT20 CH 60 / Chain 1 + Chain 2
Test Date	Apr. 24, 2014		

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	10600.02	54.51	74.00	-19.49	41.11	8.64	39.90	35.14	Peak	100	194	HORIZONTAL
2	10600.04	43.14	54.00	-10.86	29.74	8.64	39.90	35.14	Average	100	194	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	10600.15	55.04	74.00	-18.96	41.64	8.64	39.90	35.14	Peak	111	199	VERTICAL
2	10601.81	42.25	54.00	-11.75	28.83	8.64	39.90	35.12	Average	111	199	VERTICAL

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11n MCS0 HT20 CH 64 / Chain 1 + Chain 2
Test Date	Apr. 24, 2014		

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	10639.66	42.13	54.00	-11.87	28.70	8.66	39.86	35.09	Average	100	132	HORIZONTAL
2	10640.32	55.10	74.00	-18.90	41.67	8.66	39.86	35.09	Peak	100	132	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	10640.36	42.37	54.00	-11.63	28.94	8.66	39.86	35.09	Average	100	217	VERTICAL
2	10640.37	55.31	74.00	-18.69	41.88	8.66	39.86	35.09	Peak	100	217	VERTICAL

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11n MCS0 HT20 CH 100 / Chain 1 + Chain 2
Test Date	Apr. 24, 2014		

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	10639.66	42.13	54.00	-11.87	28.70	8.66	39.86	35.09	Average	100	132	HORIZONTAL
2	10640.32	55.10	74.00	-18.90	41.67	8.66	39.86	35.09	Peak	100	132	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	10640.36	42.37	54.00	-11.63	28.94	8.66	39.86	35.09	Average	100	217	VERTICAL
2	10640.37	55.31	74.00	-18.69	41.88	8.66	39.86	35.09	Peak	100	217	VERTICAL

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11n MCS0 HT20 CH 116 / Chain 1 + Chain 2
Test Date	Apr. 24, 2014		

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	10999.71	55.36	74.00	-18.64	41.73	8.93	39.50	34.80	Peak	100	158	HORIZONTAL
2	11000.23	42.54	54.00	-11.46	28.91	8.93	39.50	34.80	Average	100	158	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	10999.74	42.39	54.00	-11.61	28.76	8.93	39.50	34.80	Average	100	260	VERTICAL
2	11000.44	55.77	74.00	-18.23	42.14	8.93	39.50	34.80	Peak	100	260	VERTICAL

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11n MCS0 HT20 CH 140 / Chain 1 + Chain 2
Test Date	Apr. 24, 2014		

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	11160.22	59.26	74.00	-14.74	45.61	9.04	39.50	34.89	Peak	101	44	HORIZONTAL
2	11160.29	45.45	54.00	-8.55	31.80	9.04	39.50	34.89	Average	101	44	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	11159.91	56.65	74.00	-17.35	43.00	9.04	39.50	34.89	Peak	115	219	VERTICAL
2	11160.01	43.70	54.00	-10.30	30.05	9.04	39.50	34.89	Average	115	219	VERTICAL

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11n MCS0 HT40 CH 54 / Chain 1 + Chain 2
Test Date	Apr. 24, 2014		

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	15809.54	56.44	74.00	-17.56	43.46	10.80	37.72	35.54	Peak	100	248	HORIZONTAL
2	15810.22	43.25	54.00	-10.75	30.27	10.80	37.72	35.54	Average	100	248	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	15809.93	43.40	54.00	-10.60	30.42	10.80	37.72	35.54	Average	100	137	VERTICAL
2	15810.37	55.83	74.00	-18.17	42.88	10.80	37.69	35.54	Peak	100	137	VERTICAL

Temperature	25°C	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11n MCS0 HT40 CH 62 / Chain 1 + Chain 2
Test Date	Apr. 24, 2014		

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	10619.96	55.43	74.00	-18.57	42.02	8.65	39.88	35.12	Peak	100	179	HORIZONTAL
2	10620.27	42.02	54.00	-11.98	28.61	8.65	39.88	35.12	Average	100	179	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	10619.78	42.08	54.00	-11.92	28.67	8.65	39.88	35.12	Average	110	76	VERTICAL
2	10620.30	54.95	74.00	-19.05	41.54	8.65	39.88	35.12	Peak	110	76	VERTICAL

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11n MCS0 HT40 CH 102 / Chain 1 + Chain 2
Test Date	Apr. 24, 2014		

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	11019.67	55.63	74.00	-18.37	42.00	8.94	39.50	34.81	Peak	100	113	HORIZONTAL
2	11019.83	42.13	54.00	-11.87	28.50	8.94	39.50	34.81	Average	100	113	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	11020.42	42.25	54.00	-11.75	28.62	8.94	39.50	34.81	Average	100	202	VERTICAL
2	11020.46	55.16	74.00	-18.84	41.53	8.94	39.50	34.81	Peak	100	202	VERTICAL

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11n MCS0 HT40 CH 110 / Chain 1 + Chain 2
Test Date	Apr. 24, 2014		

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	11099.76	54.93	74.00	-19.07	41.30	8.99	39.50	34.86	Peak	100	171	HORIZONTAL
2	11099.99	41.96	54.00	-12.04	28.33	8.99	39.50	34.86	Average	100	171	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11099.50	42.15	54.00	-11.85	28.52	8.99	39.50	34.86	Average	100	268	VERTICAL
2	11099.78	54.95	74.00	-19.05	41.32	8.99	39.50	34.86	Peak	100	268	VERTICAL

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11n MCS0 HT40 CH 134 / Chain 1 + Chain 2
Test Date	Apr. 24, 2014		

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	11339.59	42.30	54.00	-11.70	28.65	9.14	39.50	34.99	Average	100	126	HORIZONTAL
2	11340.01	54.99	74.00	-19.01	41.34	9.14	39.50	34.99	Peak	100	126	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	11339.57	42.41	54.00	-11.59	28.76	9.14	39.50	34.99	Average	100	223	VERTICAL
2	11339.93	55.46	74.00	-18.54	41.81	9.14	39.50	34.99	Peak	100	223	VERTICAL

<For Beamforming Mode>

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 52 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014		

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	15776.56	52.31	74.00	-21.69	43.29	6.14	38.11	35.23	Peak	101	220	HORIZONTAL
2	15782.08	40.87	54.00	-13.13	31.88	6.14	38.09	35.24	Average	101	220	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15776.88	40.48	54.00	-13.52	31.46	6.14	38.11	35.23	Average	127	245	VERTICAL
2	15779.72	53.12	74.00	-20.88	44.11	6.14	38.11	35.24	Peak	127	245	VERTICAL

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 60 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014		

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	10593.72	50.16	74.00	-23.84	41.48	5.01	38.92	35.25	Peak	100	171	HORIZONTAL
2	10595.32	37.53	54.00	-16.47	28.85	5.01	38.92	35.25	Average	100	171	HORIZONTAL
3	15895.84	40.01	54.00	-13.99	31.18	6.15	37.94	35.26	Average	100	66	HORIZONTAL
4	15906.04	52.71	74.00	-21.29	43.91	6.15	37.92	35.27	Peak	100	66	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	10594.88	50.27	74.00	-23.73	41.59	5.01	38.92	35.25	Peak	100	273	VERTICAL
2	10599.68	38.49	54.00	-15.51	29.81	5.01	38.92	35.25	Average	100	273	VERTICAL
3	15899.68	53.13	74.00	-20.87	44.30	6.15	37.94	35.26	Peak	100	187	VERTICAL
4	15900.12	40.30	54.00	-13.70	31.47	6.15	37.94	35.26	Average	100	187	VERTICAL

Temperature	25°C	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 64 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014		

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	10636.32	50.65	74.00	-23.35	41.93	5.01	38.93	35.22	Peak	100	265	HORIZONTAL
2	10640.16	37.56	54.00	-16.44	28.84	5.01	38.93	35.22	Average	100	265	HORIZONTAL
3	15955.52	39.67	54.00	-14.33	30.95	6.15	37.85	35.28	Average	100	189	HORIZONTAL
4	15961.44	53.10	74.00	-20.90	44.38	6.15	37.85	35.28	Peak	100	189	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	10631.88	37.05	54.00	-16.95	28.33	5.01	38.93	35.22	Average	100	192	VERTICAL
2	10638.64	49.87	74.00	-24.13	41.15	5.01	38.93	35.22	Peak	100	192	VERTICAL
3	15959.84	52.88	74.00	-21.12	44.16	6.15	37.85	35.28	Peak	100	112	VERTICAL
4	15961.32	39.81	54.00	-14.19	31.09	6.15	37.85	35.28	Average	100	112	VERTICAL

Temperature	25°C	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 100 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014		

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	10441.12	36.55	54.00	-17.45	27.96	4.99	38.95	35.35	Average	100	47	HORIZONTAL
2	10450.32	49.06	74.00	-24.94	40.46	5.00	38.94	35.34	Peak	100	47	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	11006.32	36.25	54.00	-17.75	27.21	5.01	39.01	34.98	Average	100	164	VERTICAL
2	11006.76	49.23	74.00	-24.77	40.19	5.01	39.01	34.98	Peak	100	164	VERTICAL

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 116 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014		

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	11158.44	53.58	74.00	-20.42	44.41	5.04	39.13	35.00	Peak	100	111	HORIZONTAL
2	11161.20	40.97	54.00	-13.03	31.80	5.04	39.13	35.00	Average	100	111	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	11166.52	54.08	74.00	-19.92	44.90	5.05	39.13	35.00	Peak	116	135	VERTICAL
2	11168.32	43.13	54.00	-10.87	33.95	5.05	39.13	35.00	Average	116	135	VERTICAL

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 140 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014		

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	11390.60	39.44	54.00	-14.56	30.07	5.09	39.31	35.03	Average	100	41	HORIZONTAL
2	11399.64	51.19	74.00	-22.81	41.81	5.10	39.32	35.04	Peak	100	41	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11391.00	48.76	74.00	-25.24	39.39	5.09	39.31	35.03	Peak	111	234	VERTICAL
2	11396.52	36.70	54.00	-17.30	27.32	5.10	39.32	35.04	Average	111	234	VERTICAL

Temperature	25°C	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 54 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014		

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	15804.84	51.65	74.00	-22.35	42.68	6.14	38.07	35.24	Peak	100	280	HORIZONTAL
2	15810.76	39.06	54.00	-14.94	30.09	6.14	38.07	35.24	Average	100	280	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	15809.32	51.85	74.00	-22.15	42.88	6.14	38.07	35.24	Peak	100	210	VERTICAL
2	15814.92	39.06	54.00	-14.94	30.09	6.14	38.07	35.24	Average	100	210	VERTICAL

Temperature	25°C	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 62 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014		

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	10613.32	50.20	74.00	-23.80	41.50	5.01	38.92	35.23	Peak	100	323	HORIZONTAL
2	10619.84	38.08	54.00	-15.92	29.38	5.01	38.92	35.23	Average	100	323	HORIZONTAL
3	15928.60	39.53	54.00	-14.47	30.75	6.15	37.90	35.27	Average	100	202	HORIZONTAL
4	15930.24	51.87	74.00	-22.13	43.09	6.15	37.90	35.27	Peak	100	202	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	10617.48	50.66	74.00	-23.34	41.96	5.01	38.92	35.23	Peak	100	195	VERTICAL
2	10628.92	37.30	54.00	-16.70	28.59	5.01	38.92	35.22	Average	100	195	VERTICAL
3	15927.92	39.76	54.00	-14.24	30.98	6.15	37.90	35.27	Average	100	74	VERTICAL
4	15935.52	52.13	74.00	-21.87	43.39	6.15	37.87	35.28	Peak	100	74	VERTICAL

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 102 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014		

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	11025.96	48.66	74.00	-25.34	39.59	5.02	39.03	34.98	Peak	100	179	HORIZONTAL
2	11029.80	36.37	54.00	-17.63	27.30	5.02	39.03	34.98	Average	100	179	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	11029.64	36.23	54.00	-17.77	27.16	5.02	39.03	34.98	Average	100	340	VERTICAL
2	11029.80	48.73	74.00	-25.27	39.66	5.02	39.03	34.98	Peak	100	340	VERTICAL

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 110 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014		

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	11099.28	50.12	74.00	-23.88	41.00	5.03	39.08	34.99	Peak	100	241	HORIZONTAL
2	11101.00	38.03	54.00	-15.97	28.91	5.03	39.08	34.99	Average	100	241	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	11099.68	37.77	54.00	-16.23	28.65	5.03	39.08	34.99	Average	100	87	VERTICAL
2	11102.20	49.69	74.00	-24.31	40.57	5.03	39.08	34.99	Peak	100	87	VERTICAL

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 134 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014		

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	11344.88	49.69	74.00	-24.31	40.35	5.09	39.28	35.03	Peak	100	185	HORIZONTAL
2	11345.96	36.58	54.00	-17.42	27.24	5.09	39.28	35.03	Average	100	185	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	11331.12	48.82	74.00	-25.18	39.50	5.08	39.27	35.03	Peak	100	94	VERTICAL
2	11341.32	37.42	54.00	-16.58	28.09	5.09	39.27	35.03	Average	100	94	VERTICAL

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 58 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014		

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	15860.00	38.78	54.00	-15.22	29.91	6.14	37.99	35.26	Average	101	150	HORIZONTAL
2	15877.64	52.70	74.00	-21.30	43.85	6.14	37.97	35.26	Peak	101	150	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	15877.04	52.61	74.00	-21.39	43.76	6.14	37.97	35.26	Peak	101	242	VERTICAL
2	15877.64	39.12	54.00	-14.88	30.27	6.14	37.97	35.26	Average	101	242	VERTICAL

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 106 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014		

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	4915.45	48.93	54.00	-5.07	46.76	3.35	33.73	34.91	Average	101	314	HORIZONTAL
2	4915.52	51.68	74.00	-22.32	49.51	3.35	33.73	34.91	Peak	101	314	HORIZONTAL
3	11060.45	36.25	54.00	-17.75	27.16	5.03	39.05	34.99	Average	101	245	HORIZONTAL
4	11060.48	49.84	74.00	-24.16	40.75	5.03	39.05	34.99	Peak	101	245	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	4915.42	51.67	74.00	-22.33	49.50	3.35	33.73	34.91	Peak	100	207	VERTICAL
2	4915.48	49.96	54.00	-4.04	47.79	3.35	33.73	34.91	Average	100	207	VERTICAL
3	11060.64	36.45	54.00	-17.55	27.36	5.03	39.05	34.99	Average	100	162	VERTICAL
4	11063.96	49.43	74.00	-24.57	40.34	5.03	39.05	34.99	Peak	100	162	VERTICAL

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 122 / Chain 1 + Chain 2
Test Date	Jun. 15, 2015		

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	11217.50	43.59	54.00	-10.41	27.17	10.63	39.17	33.38	Average	144	44	HORIZONTAL
2	11217.50	54.17	74.00	-19.83	37.75	10.63	39.17	33.38	Peak	144	44	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	11217.50	43.25	54.00	-10.75	26.83	10.63	39.17	33.38	Average	125	305	VERTICAL
2	11217.50	53.99	74.00	-20.01	37.57	10.63	39.17	33.38	Peak	125	305	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.

4.5. Band Edge Emissions Measurement

4.5.1. Limit

For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

For transmitters operating in the 5.470-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

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

4.5.2. 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	100 MHz
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average
RBW / VBW (Emission in non-restricted band)	1MHz / 3MHz for Peak

4.5.3. Test Procedures

1. The test procedure is the same as section 4.4.3.

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

<For Non-Beamforming Mode>

The EUT was programmed to be in continuously transmitting mode.

<For Beamforming Mode>

The EUT was programmed to be in beamforming transmitting mode.

4.5.7. Test Result of Band Edge and Fundamental Emissions

<For Non-Beamforming Mode>

Temperature	25°C	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11a CH 52, 60, 64 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014		

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	5094.00	54.55	74.00	-19.45	51.99	3.42	34.04	34.90	Peak	101	161	HORIZONTAL
2	5099.00	44.63	54.00	-9.37	42.07	3.42	34.04	34.90	Average	101	161	HORIZONTAL
3	5259.00	103.49			100.67	3.46	34.27	34.91	Average	101	161	HORIZONTAL
4	5259.00	112.36			109.54	3.46	34.27	34.91	Peak	101	161	HORIZONTAL
5	5419.00	53.71	54.00	-0.29	50.64	3.51	34.48	34.92	Average	101	161	HORIZONTAL
6	5419.00	62.92	74.00	-11.08	59.85	3.51	34.48	34.92	Peak	101	161	HORIZONTAL

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	5139.00	46.55	54.00	-7.45	43.94	3.43	34.09	34.91	Average	100	173	HORIZONTAL
2	5144.00	56.66	74.00	-17.34	54.03	3.43	34.11	34.91	Peak	100	173	HORIZONTAL
3	5294.00	113.92			111.04	3.47	34.32	34.91	Peak	100	173	HORIZONTAL
4	5299.00	105.01			102.12	3.48	34.32	34.91	Average	100	173	HORIZONTAL
5	5384.00	64.26	74.00	-9.74	61.24	3.50	34.44	34.92	Peak	100	173	HORIZONTAL
6	5385.00	53.68	54.00	-0.32	50.66	3.50	34.44	34.92	Average	100	173	HORIZONTAL

Item 3, 4 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	5319.00	105.53			102.62	3.48	34.34	34.91	Average	110	329	VERTICAL
2	5324.00	115.65			112.73	3.49	34.34	34.91	Peak	110	329	VERTICAL
3	5394.00	53.90	54.00	-0.10	50.88	3.50	34.44	34.92	Average	110	329	VERTICAL
4	5394.00	64.51	74.00	-9.49	61.49	3.50	34.44	34.92	Peak	110	329	VERTICAL

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

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11a CH 100, 140 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014		

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	5421.00	53.68	54.00	-0.32	50.61	3.51	34.48	34.92	Average	100	249	VERTICAL
2	5421.00	63.69	74.00	-10.31	60.62	3.51	34.48	34.92	Peak	100	249	VERTICAL
3	5470.00	52.76	54.00	-1.24	49.61	3.52	34.55	34.92	Average	100	249	VERTICAL
4	5470.00	64.39	74.00	-9.61	61.24	3.52	34.55	34.92	Peak	100	249	VERTICAL
5	5501.00	108.61			105.39	3.54	34.60	34.92	Average	100	249	VERTICAL
6	5502.00	117.04			113.82	3.54	34.60	34.92	Peak	100	249	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	5699.00	106.70			103.37	3.59	34.68	34.94	Average	100	215	VERTICAL
2	5699.00	116.84			113.51	3.59	34.68	34.94	Peak	100	215	VERTICAL
3	5725.00	53.69	54.00	-0.31	50.34	3.60	34.69	34.94	Average	100	215	VERTICAL
4	5725.00	66.82	74.00	-7.18	63.47	3.60	34.69	34.94	Peak	100	215	VERTICAL

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

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11n MCS0 HT20 CH 52, 60, 64 / Chain 1 + Chain 2
Test Date	Apr. 24, 2014		

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	5257.44	106.44			101.22	6.20	34.22	35.20	Average	102	263	VERTICAL
2	5258.08	117.10			111.88	6.20	34.22	35.20	Peak	102	263	VERTICAL
3	5414.10	65.55	74.00	-8.45	59.91	6.31	34.53	35.20	Peak	102	263	VERTICAL
4	5418.33	53.32	54.00	-0.68	47.65	6.31	34.56	35.20	Average	102	263	VERTICAL

Item 1, 2 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	5297.44	118.26			112.91	6.23	34.32	35.20	Peak	101	272	VERTICAL
2	5302.56	107.69			102.34	6.23	34.32	35.20	Average	101	272	VERTICAL
3	5377.56	65.82	74.00	-8.18	60.28	6.28	34.46	35.20	Peak	101	272	VERTICAL
4	5378.21	53.54	54.00	-0.46	48.00	6.28	34.46	35.20	Average	101	272	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	5325.13	115.52			110.12	6.24	34.36	35.20	Peak	100	272	VERTICAL
2	5327.69	104.76			99.35	6.25	34.36	35.20	Average	100	272	VERTICAL
3	5398.08	53.68	54.00	-0.32	48.10	6.29	34.49	35.20	Average	100	272	VERTICAL
4	5403.21	64.63	74.00	-9.37	59.01	6.29	34.53	35.20	Peak	100	272	VERTICAL

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

Temperature	25℃	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11n MCS0 HT20 CH 100, 140 / Chain 1 + Chain 2
Test Date	Apr. 24, 2014		

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	5422.18	65.15	74.00	-8.85	59.48	6.31	34.56	35.20	Peak	100	268	VERTICAL
2	5422.56	53.16	54.00	-0.84	47.49	6.31	34.56	35.20	Average	100	268	VERTICAL
3	5470.00	53.48	54.00	-0.52	47.67	6.34	34.67	35.20	Average	100	268	VERTICAL
4	5470.00	66.20	74.00	-7.80	60.39	6.34	34.67	35.20	Peak	100	268	VERTICAL
5	5497.44	107.35			101.49	6.36	34.70	35.20	Average	100	268	VERTICAL
6	5497.76	118.18			112.32	6.36	34.70	35.20	Peak	100	268	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	5699.36	105.22			99.13	6.43	34.86	35.20	Average	100	154	VERTICAL
2	5701.92	115.76			109.66	6.44	34.86	35.20	Peak	100	154	VERTICAL
3	5725.00	53.24	54.00	-0.76	47.10	6.45	34.89	35.20	Average	100	154	VERTICAL
4	5725.00	70.10	74.00	-3.90	63.96	6.45	34.89	35.20	Peak	100	154	VERTICAL

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

Temperature	25°C	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11n MCS0 HT40 CH 54, 62 / Chain 1 + Chain 2
Test Date	Apr. 24, 2014		

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	5274.81	104.73			99.47	6.21	34.25	35.20	Average	101	272	VERTICAL
2	5275.13	116.57			111.31	6.21	34.25	35.20	Peak	101	272	VERTICAL
3	5355.13	64.59	74.00	-9.41	59.11	6.26	34.42	35.20	Peak	101	272	VERTICAL
4	5355.45	53.82	54.00	-0.18	48.34	6.26	34.42	35.20	Average	101	272	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	5304.87	110.44			105.09	6.23	34.32	35.20	Peak	100	281	VERTICAL
2	5305.19	98.84			93.49	6.23	34.32	35.20	Average	100	281	VERTICAL
3	5350.00	53.47	54.00	-0.53	47.99	6.26	34.42	35.20	Average	100	281	VERTICAL
4	5350.00	67.37	74.00	-6.63	61.89	6.26	34.42	35.20	Peak	100	281	VERTICAL

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

Temperature	25°C	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11n MCS0 HT40 CH 102, 110, 134 / Chain 1 + Chain 2
Test Date	Apr. 24, 2014		

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	49.22	54.00	-4.78	43.46	6.33	34.63	35.20	Average	100	267	VERTICAL
2	5460.00	64.27	74.00	-9.73	58.51	6.33	34.63	35.20	Peak	100	267	VERTICAL
3	5470.00	53.86	54.00	-0.14	48.05	6.34	34.67	35.20	Average	100	267	VERTICAL
4	5470.00	68.43	74.00	-5.57	62.62	6.34	34.67	35.20	Peak	100	267	VERTICAL
5	5514.81	98.84			92.96	6.37	34.71	35.20	Average	100	267	VERTICAL
6	5515.13	110.58			104.70	6.37	34.71	35.20	Peak	100	267	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	5457.60	53.11	54.00	-0.89	47.35	6.33	34.63	35.20	Average	100	267	VERTICAL
2	5457.60	67.28	74.00	-6.72	61.52	6.33	34.63	35.20	Peak	100	267	VERTICAL
3	5464.71	53.94	54.00	-0.06	48.17	6.34	34.63	35.20	Average	100	267	VERTICAL
4	5467.60	67.25	74.00	-6.75	61.44	6.34	34.67	35.20	Peak	100	267	VERTICAL
5	5545.19	106.88			100.97	6.37	34.74	35.20	Average	100	267	VERTICAL
6	5554.81	118.15			112.22	6.38	34.75	35.20	Peak	100	267	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	5666.80	116.71			110.65	6.43	34.83	35.20	Peak	109	154	VERTICAL
2	5674.17	105.15			99.07	6.43	34.85	35.20	Average	109	154	VERTICAL
3	5733.65	68.65	74.00	-5.35	62.51	6.45	34.89	35.20	Peak	109	154	VERTICAL
4	5733.65	53.33	54.00	-0.67	47.19	6.45	34.89	35.20	Average	109	154	VERTICAL

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

<For Beamforming Mode>

Temperature	25°C	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 52, 60, 64 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014		

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	5101.00	49.11	54.00	-4.89	46.55	3.42	34.04	34.90	Average	100	330	VERTICAL
2	5101.23	61.11	74.00	-12.89	58.55	3.42	34.04	34.90	Peak	100	330	VERTICAL
3	5251.00	108.11			105.31	3.46	34.25	34.91	Average	100	330	VERTICAL
4	5252.00	118.43			115.63	3.46	34.25	34.91	Peak	100	330	VERTICAL
5	5412.00	53.67	54.00	-0.33	50.60	3.51	34.48	34.92	Average	100	330	VERTICAL
6	5413.00	63.05	74.00	-10.95	59.98	3.51	34.48	34.92	Peak	100	330	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	5147.00	60.46	74.00	-13.54	57.83	3.43	34.11	34.91	Peak	100	326	VERTICAL
2	5148.00	50.89	54.00	-3.11	48.26	3.43	34.11	34.91	Average	100	326	VERTICAL
3	5291.00	108.73			105.87	3.47	34.30	34.91	Average	100	326	VERTICAL
4	5291.00	117.38			114.52	3.47	34.30	34.91	Peak	100	326	VERTICAL
5	5468.00	63.76	74.00	-10.24	60.61	3.52	34.55	34.92	Peak	100	326	VERTICAL
6	5469.00	53.90	54.00	-0.10	50.75	3.52	34.55	34.92	Average	100	326	VERTICAL

Item 3, 4 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	5313.00	105.54			102.63	3.48	34.34	34.91	Average	102	269	VERTICAL
2	5314.00	115.97			113.06	3.48	34.34	34.91	Peak	102	269	VERTICAL
3	5350.00	63.14	74.00	-10.86	60.17	3.49	34.39	34.91	Peak	102	269	VERTICAL
4	5393.00	53.89	54.00	-0.11	50.87	3.50	34.44	34.92	Average	102	269	VERTICAL

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

Temperature	25°C	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 100, 140 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014		

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	5427.00	63.18	74.00	-10.82	60.10	3.52	34.48	34.92	Peak	100	263	VERTICAL
2	5428.00	53.31	54.00	-0.69	50.23	3.52	34.48	34.92	Average	100	263	VERTICAL
3	5470.00	53.63	54.00	-0.37	50.48	3.52	34.55	34.92	Average	100	263	VERTICAL
4	5470.00	67.37	74.00	-6.63	64.22	3.52	34.55	34.92	Peak	100	263	VERTICAL
5	5508.00	108.77			105.55	3.54	34.60	34.92	Average	100	263	VERTICAL
6	5508.00	118.10			114.88	3.54	34.60	34.92	Peak	100	263	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	5692.00	106.82			103.49	3.59	34.68	34.94	Average	100	255	VERTICAL
2	5692.00	117.32			113.99	3.59	34.68	34.94	Peak	100	255	VERTICAL
3	5725.00	53.58	54.00	-0.42	50.23	3.60	34.69	34.94	Average	100	255	VERTICAL
4	5725.00	68.74	74.00	-5.26	65.39	3.60	34.69	34.94	Peak	100	255	VERTICAL

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

Temperature	25°C	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 54, 62 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014		

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	5253.00	106.27	54.00			3.46	34.25	34.91	Average	100	331	VERTICAL
2	5265.00	117.57	74.00			3.46	34.27	34.91	Peak	100	331	VERTICAL
3	5367.00	63.75	74.00	-10.25	60.76	3.49	34.41	34.91	Peak	100	331	VERTICAL
4	5435.00	53.69	54.00	-0.31	50.58	3.52	34.51	34.92	Average	100	331	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	5321.00	111.08			108.17	3.48	34.34	34.91	Peak	100	331	VERTICAL
2	5323.00	100.80			97.88	3.49	34.34	34.91	Average	100	331	VERTICAL
3	5350.00	53.88	54.00	-0.12	50.91	3.49	34.39	34.91	Average	100	331	VERTICAL
4	5351.00	65.81	74.00	-8.19	62.84	3.49	34.39	34.91	Peak	100	331	VERTICAL

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

Temperature	25°C	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 102, 110, 134 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014		

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	5435.00	49.66	54.00	-4.34	46.55	3.52	34.51	34.92	Average	100	281	VERTICAL
2	5458.00	61.87	74.00	-12.13	58.74	3.52	34.53	34.92	Peak	100	281	VERTICAL
3	5470.00	53.41	54.00	-0.59	50.26	3.52	34.55	34.92	Average	100	281	VERTICAL
4	5470.00	67.90	74.00	-6.10	64.75	3.52	34.55	34.92	Peak	100	281	VERTICAL
5	5516.00	103.70			100.47	3.54	34.61	34.92	Average	100	281	VERTICAL
6	5516.00	113.13			109.90	3.54	34.61	34.92	Peak	100	281	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	5456.00	64.42	74.00	-9.58	61.29	3.52	34.53	34.92	Peak	100	254	VERTICAL
2	5459.00	51.12	54.00	-2.88	47.99	3.52	34.53	34.92	Average	100	254	VERTICAL
3	5467.00	53.56	54.00	-0.44	50.41	3.52	34.55	34.92	Average	100	254	VERTICAL
4	5467.00	67.21	74.00	-6.79	64.06	3.52	34.55	34.92	Peak	100	254	VERTICAL
5	5536.00	119.55			116.31	3.55	34.61	34.92	Peak	100	254	VERTICAL
6	5553.00	108.09			104.85	3.55	34.62	34.93	Average	100	254	VERTICAL
7	5725.00	49.88	54.00	-4.12	46.53	3.60	34.69	34.94	Average	100	254	VERTICAL
8	5725.00	60.29	74.00	-13.71	56.94	3.60	34.69	34.94	Peak	100	254	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	5675.00	106.06			102.73	3.59	34.67	34.93	Average	100	214	VERTICAL
2	5678.00	115.11			111.78	3.59	34.67	34.93	Average	100	214	VERTICAL
3	5728.00	66.83	54.00	12.83	63.48	3.60	34.69	34.94	Average	100	214	VERTICAL
4	5756.00	53.96	54.00	-0.04	50.58	3.62	34.70	34.94	Average	100	214	VERTICAL

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

Temperature	25°C	Humidity	55%
Test Engineer	Owen Hsu	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 58, 106, 122 / Chain 1 + Chain 2
Test Date	Apr. 12, 2014, Jun. 15, 2015		

Channel 58

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5265.00	109.74			106.92	3.46	34.27	34.91	Peak	108	318	VERTICAL
2	5298.00	98.68			95.79	3.48	34.32	34.91	Average	108	318	VERTICAL
3	5350.00	66.30	74.00	-7.70	63.33	3.49	34.39	34.91	Peak	108	318	VERTICAL
4	5352.00	53.69	54.00	-0.31	50.72	3.49	34.39	34.91	Average	108	318	VERTICAL

Item 1, 2 are the fundamental frequency at 5290 MHz.

Channel 106

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5459.00	65.01	74.00	-8.99	61.88	3.52	34.53	34.92	Peak	115	263	VERTICAL
2	5460.00	51.37	54.00	-2.63	48.24	3.52	34.53	34.92	Average	115	263	VERTICAL
3	5469.00	68.66	74.00	-5.34	65.51	3.52	34.55	34.92	Peak	115	263	VERTICAL
4	5470.00	53.86	54.00	-0.14	50.71	3.52	34.55	34.92	Average	115	263	VERTICAL
5	5493.00	107.93			104.74	3.53	34.58	34.92	Peak	115	263	VERTICAL
6	5539.00	96.74			93.50	3.55	34.61	34.92	Average	115	263	VERTICAL

Item 5, 6 are the fundamental frequency at 5530 MHz.

Channel 122

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	5427.31	62.92	74.00	-11.08	54.94	6.56	34.48	33.06	Peak	225	161	VERTICAL
2	5452.95	50.33	54.00	-3.67	42.26	6.60	34.53	33.06	Average	225	161	VERTICAL
3	5467.37	63.17	68.20	-5.03	55.08	6.60	34.55	33.06	Peak	225	161	VERTICAL
4	5578.75	111.63			103.37	6.72	34.63	33.09	Peak	225	161	VERTICAL
5	5634.84	95.86			87.55	6.76	34.66	33.11	Average	225	161	VERTICAL
6	5732.60	67.92	68.20	-0.28	59.51	6.86	34.69	33.14	Peak	225	161	VERTICAL

Item 4, 5 are the fundamental frequency at 5610 MHz.

Note:

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

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

4.6. Frequency Stability Measurement

4.6.1. 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).

4.6.2. Measuring Instruments and Setting

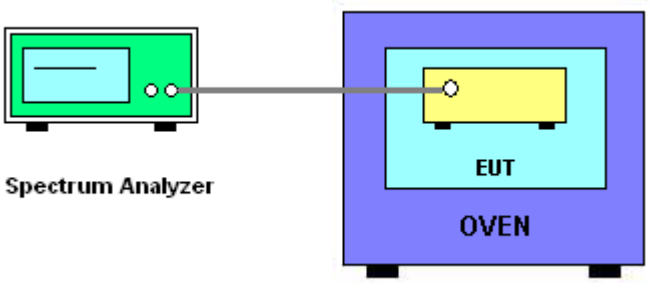
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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

4.6.3. 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. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
7. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
8. Extreme temperature is -20°C~50°C.

4.6.4. Test Setup Layout



4.6.5. Test Deviation

There is no deviation with the original standard.

4.6.6. EUT Operation during Test

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

4.6.7. Test Result of Frequency Stability

Temperature	25°C	Humidity	45%
Test Engineer	Roki Liu	Test Date	Nov. 26, 2015

Mode: 20 MHz / Chain 2

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5300 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5299.9076	5299.9062	5299.9044	5299.9023
110.00	5299.9064	5299.9051	5299.9035	5299.9016
93.50	5299.9050	5299.9039	5299.9027	5299.9005
Max. Deviation (MHz)	**0.0950**	**0.0961**	**0.0973**	**0.0995**
Max. Deviation (ppm)	**17.92**	**18.13**	**18.36**	**18.77**
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5300 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-20	5299.9118	5299.9105	5299.9088	5299.9064
-10	5299.9103	5299.9091	5299.9075	5299.9056
0	5299.9089	5299.9077	5299.9058	5299.9036
10	5299.9076	5299.9063	5299.9048	5299.9030
20	5299.9064	5299.9051	5299.9035	5299.9016
30	5299.9050	5299.9039	5299.9025	5299.9009
40	5299.9034	5299.9019	5299.9003	5299.8983
50	5299.9017	5299.9005	5299.8990	5299.8963
Max. Deviation (MHz)	**0.0983**	**0.0995**	**0.1010**	**0.1037**
Max. Deviation (ppm)	**18.55**	**18.77**	**19.06**	**19.57**
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5580 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5579.9010	5579.8996	5579.8978	5579.8957
110.00	5579.8998	5579.8985	5579.8969	5579.8950
93.50	5579.8984	5579.8973	5579.8961	5579.8939
Max. Deviation (MHz)	**0.1016**	**0.1027**	**0.1039**	**0.1061**
Max. Deviation (ppm)	**18.21**	**18.41**	**18.62**	**19.01**
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5580 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-20	5579.9052	5579.9039	5579.9022	5579.8998
-10	5579.9037	5579.9025	5579.9009	5579.8990
0	5579.9023	5579.9011	5579.8992	5579.8970
10	5579.9010	5579.8997	5579.8982	5579.8964
20	5579.8998	5579.8985	5579.8969	5579.8950
30	5579.8984	5579.8973	5579.8959	5579.8943
40	5579.8968	5579.8953	5579.8937	5579.8917
50	5579.8951	5579.8939	5579.8924	5579.8897
Max. Deviation (MHz)	**0.1049**	**0.1061**	**0.1076**	**0.1103**
Max. Deviation (ppm)	**18.80**	**19.01**	**19.28**	**19.77**
Result	Complies			

Mode: 40 MHz / Chain 2

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5310 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5309.9036	5309.9022	5309.9004	5309.8983
110.00	5309.9024	5309.9011	5309.8995	5309.8976
93.50	5309.9010	5309.8999	5309.8987	5309.8965
Max. Deviation (MHz)	**0.0990**	**0.1001**	**0.1013**	**0.1035**
Max. Deviation (ppm)	**18.64**	**18.85**	**19.08**	**19.49**
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5310 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-20	5309.9098	5309.9085	5309.9068	5309.9044
-10	5309.9083	5309.9071	5309.9055	5309.9036
0	5309.9069	5309.9057	5309.9038	5309.9016
10	5309.9056	5309.9043	5309.9028	5309.9010
20	5309.9044	5309.9031	5309.9015	5309.8996
30	5309.9030	5309.9019	5309.9005	5309.8989
40	5309.9014	5309.8999	5309.8983	5309.8963
50	5309.8997	5309.8985	5309.8970	5309.8943
Max. Deviation (MHz)	**0.1003**	**0.1015**	**0.1030**	**0.1057**
Max. Deviation (ppm)	**18.89**	**19.11**	**19.40**	**19.91**
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5550 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5549.9080	5549.9066	5549.9048	5549.9027
110.00	5549.9068	5549.9055	5549.9039	5549.9020
93.50	5549.9054	5549.9043	5549.9031	5549.9009
Max. Deviation (MHz)	**0.0946**	**0.0957**	**0.0969**	**0.0991**
Max. Deviation (ppm)	**17.05**	**17.24**	**17.46**	**17.86**
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5550 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-20	5549.9122	5549.9109	5549.9092	5549.9068
-10	5549.9107	5549.9095	5549.9079	5549.9060
0	5549.9093	5549.9081	5549.9062	5549.9040
10	5549.9080	5549.9067	5549.9052	5549.9034
20	5549.9068	5549.9055	5549.9039	5549.9020
30	5549.9054	5549.9043	5549.9029	5549.9013
40	5549.9038	5549.9023	5549.9007	5549.8987
50	5549.9021	5549.9009	5549.8994	5549.8967
Max. Deviation (MHz)	**0.0979**	**0.0991**	**0.1006**	**0.1033**
Max. Deviation (ppm)	**17.64**	**17.86**	**18.13**	**18.61**
Result	Complies			

Mode: 80 MHz / Chain 2

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5290 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5289.9049	5289.9035	5289.9017	5289.8996
110.00	5289.9037	5289.9024	5289.9008	5289.8989
93.50	5289.9023	5289.9012	5289.9000	5289.8978
Max. Deviation (MHz)	**0.0977**	**0.0988**	**0.1000**	**0.1022**
Max. Deviation (ppm)	**18.47**	**18.68**	**18.90**	**19.32**
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5290 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-20	5289.9102	5289.9089	5289.9072	5289.9048
-10	5289.9087	5289.9075	5289.9059	5289.9040
0	5289.9073	5289.9061	5289.9042	5289.9020
10	5289.9060	5289.9047	5289.9032	5289.9014
20	5289.9048	5289.9035	5289.9019	5289.9000
30	5289.9034	5289.9023	5289.9009	5289.8993
40	5289.9018	5289.9003	5289.8987	5289.8967
50	5289.9001	5289.8989	5289.8974	5289.8947
Max. Deviation (MHz)	**0.0999**	**0.1011**	**0.1026**	**0.1053**
Max. Deviation (ppm)	**18.88**	**19.11**	**19.40**	**19.91**
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5530 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5529.9067	5529.9053	5529.9035	5529.9014
110.00	5529.9055	5529.9042	5529.9026	5529.9007
93.50	5529.9041	5529.9030	5529.9018	5529.8996
Max. Deviation (MHz)	**0.0959**	**0.0970**	**0.0982**	**0.1004**
Max. Deviation (ppm)	**17.34**	**17.54**	**17.76**	**18.16**
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5530 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-20	5529.9109	5529.9096	5529.9079	5529.9055
-10	5529.9094	5529.9082	5529.9066	5529.9047
0	5529.9080	5529.9068	5529.9049	5529.9027
10	5529.9067	5529.9054	5529.9039	5529.9021
20	5529.9055	5529.9042	5529.9026	5529.9007
30	5529.9041	5529.9030	5529.9016	5529.9000
40	5529.9025	5529.9010	5529.8994	5529.8974
50	5529.9008	5529.8996	5529.8981	5529.8954
Max. Deviation (MHz)	**0.0992**	**0.1004**	**0.1019**	**0.1046**
Max. Deviation (ppm)	**17.94**	**18.16**	**18.43**	**18.92**
Result	Complies			

4.7. Antenna Requirements

4.7.1. 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.

4.7.2. 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
Horn Antenna	EMCO	3115	00075790	750MHz~18GHz	Nov. 01, 2013	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Oct. 28, 2014	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Dec. 17, 2013	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Aug. 22, 2014	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Dec. 16, 2013	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 12, 2015	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Oct. 23, 2013	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 25, 2014	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSP40	100019	9kHz~40GHz	Dec. 02, 2013	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Nov. 06, 2014	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-high	Woken	High Cable-3	N/A	1 GHz - 40 GHz	Nov. 17, 2013	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	1 GHz ~ 40 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-4	N/A	1 GHz - 40 GHz	Nov. 17, 2013	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	1 GHz ~ 40 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100142	9kHz~40GHz	Oct. 13, 2015	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 02, 2015	Conducted (TH01-CB)

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

N.C.R means Non-Calibration required.

6. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.2 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.7 dB	Confidence levels of 95%