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FCC RADIO TEST REPORT

Applicant's company	**Wistron NeWeb Corporation**
Applicant Address	20 Park Avenue II, Hsinchu Science Park, Hsinchu 308,Taiwan,R.O.C.
FCC ID	**NKR-DNUBAT1**
Manufacturer's company	**Wistron NeWeb Corporation**
Manufacturer Address	20 Park Avenue II, Hsinchu Science Park, Hsinchu 308,Taiwan,R.O.C.

Product Name	802.11 a/b/g/n 2x2 USB Dongle
Brand Name	VESTEL
Model No.	VEZZY110
Test Rule Part(s)	47 CFR FCC Part 15 Subpart E § 15.407
Test Freq. Range	5150 ~ 5350 MHz / 5470 ~ 5725 MHz
Received Date	Oct. 08, 2015
Final Test Date	Oct. 18, 2015
Submission Type	Original Equipment

Statement

Test result included is for the IEEE 802.11n and IEEE 802.11a 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 v01r04, KDB662911 D01 v02r01.**

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
FR273144-14AB	Rev. 01	Initial issue of report	Nov. 14, 2017

1. VERIFICATION OF COMPLIANCE

Product Name	:	802.11 a/b/g/n 2x2 USB Dongle
Brand Name	:	VESTEL
Model No.	:	VEZZY110
Applicant	:	Wistron NeWeb Corporation
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. 08, 2015 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.

Cliff Chang
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**
4.1	15.207	AC Power Line Conducted Emissions	Complies
4.2	15.407(a)	26dB Spectrum Bandwidth and 99% Occupied Bandwidth	Complies
4.3	15.407(a)	Maximum Conducted Output Power	Complies
4.4	15.407(a)	Power Spectral Density	Complies
4.5	15.407(b)	Radiated Emissions	Complies
4.6	15.407(b)	Band Edge Emissions	Complies
4.7	15.407(g)	Frequency Stability	Complies
4.8	15.203	Antenna Requirements	Complies

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Product Type	IEEE 802.11a: WLAN (1TX, 1RX) IEEE 802.11n: WLAN (2TX, 2RX)
Radio Type	Intentional Transceiver
Power Type	From host system
Modulation	IEEE 802.11a: OFDM IEEE 802.11n: see the below table
Data Modulation	IEEE 802.11a/n: OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data Rate (Mbps)	IEEE 802.11a: OFDM (6/9/12/18/24/36/48/54) IEEE 802.11n: see the below table
Frequency Range	5150 ~ 5350 MHz / 5470 ~ 5725 MHz
Channel Number	19 for 20MHz bandwidth ; 9 for 40MHz bandwidth
Channel Band Width (99%)	Band 1: IEEE 802.11a: 27.00 MHz IEEE 802.11n MCS0 (HT20): 23.44 MHz IEEE 802.11n MCS0 (HT40): 38.35 MHz Band 2: IEEE 802.11a: 28.22 MHz IEEE 802.11n MCS0 (HT20): 24.66 MHz IEEE 802.11n MCS0 (HT40): 49.93 MHz Band 3: IEEE 802.11a: 18.76 MHz IEEE 802.11n MCS0 (HT20): 20.41 MHz IEEE 802.11n MCS0 (HT40): 56.73 MHz
Maximum Conducted Output Power	Band 1: IEEE 802.11a: 19.99 dBm IEEE 802.11n MCS0 (HT20): 21.48 dBm IEEE 802.11n MCS0 (HT40): 18.01 dBm Band 2: IEEE 802.11a: 19.96 dBm IEEE 802.11n MCS0 (HT20): 21.68 dBm IEEE 802.11n MCS0 (HT40): 21.14 dBm Band 3: IEEE 802.11a: 18.50 dBm IEEE 802.11n MCS0 (HT20): 21.27 dBm IEEE 802.11n MCS0 (HT40): 21.99 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	☒ Without beamforming
Operating Mode	☐ Outdoor access point	
	☐ Indoor access point	
	☐ Fixed point-to-point access points	
	☒ Mobile and portable client devices	

Antenna and Bandwidth

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

IEEE 11n Spec.

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

3.2. Accessories

N/A

3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector
1	-	-	Printed Antenna	N/A
2	-	-	Printed Antenna	N/A

Gain (dBi)					
Chain/Port	2.4GHz	5GHz Band 1	5GHz Band 2	5GHz Band 3	5GHz Band 4
1	-0.46	2.41	3.98	4.70	3.90
2	0.29	1.14	2.05	3.04	2.96

Note: The EUT has two antennas.

<For 2.4GHz Band>

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

Chain 1 and Chain 2 could transmit/receive simultaneously.

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

The EUT supports the antenna with TX and RX diversity functions.

Both Chain 1 and Chain 2 support transmit and receive functions, but only one of them will be used at one time.

Chain 1 is the worst case, so it was selected to test and record in the report.

<For 5GHz Band>

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

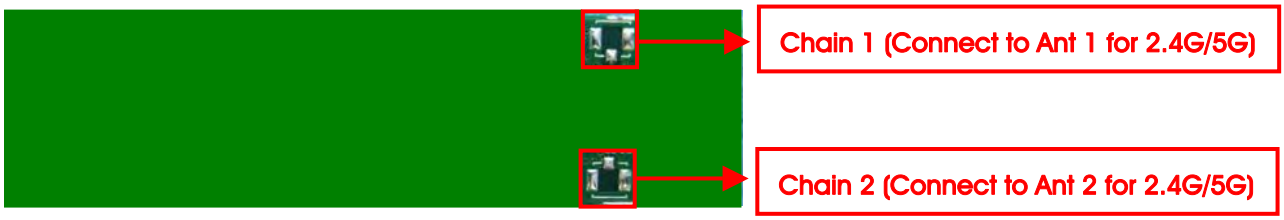
Chain 1 and Chain 2 could transmit/receive simultaneously.

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

The EUT supports the antenna with TX and RX diversity functions.

Both Chain 1 and Chain 2 support transmit and receive functions, but only one of them will be used at one time.

Chain 2 is the worst case, so it was selected to test and record in the report.



3.4. Table for Carrier Frequencies

The EUT has two bandwidth system.

For 20MHz bandwidth systems, use Channel 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140.

For 40MHz bandwidth systems, use Channel 38, 46, 54, 62, 102, 110, 118, 126, 134.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5150~5250 MHz Band 1	36	5180 MHz	44	5220 MHz
	38	5190 MHz	46	5230 MHz
	40	5200 MHz	48	5240 MHz
5250~5350 MHz Band 2	52	5260 MHz	60	5300 MHz
	54	5270 MHz	62	5310 MHz
	56	5280 MHz	64	5320 MHz
5470~5725 MHz Band 3	100	5500 MHz	120	5600 MHz
	102	5510 MHz	124	5620 MHz
	104	5520 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
AC Power Conducted Emission	Normal Link		-	-	-
Max. Conducted Output Power	11a/BPSK	Band 1-3	6Mbps	36/40/48/52/60/64 /100/116/140	2
	11n HT20	Band 1-3	MCS0	36/40/48/52/60/64 /100/116/140	1+2
	11n HT40	Band 1-3	MCS0	38/46/54/62/ 102/110/134	1+2
Power Spectral Density	11a/BPSK	Band 1-3	6Mbps	36/40/48/52/60/64 /100/116/140	2
	11n HT20	Band 1-3	MCS0	36/40/48/52/60/64 /100/116/140	1+2
	11n HT40	Band 1-3	MCS0	38/46/54/62/ 102/110/134	1+2
26dB Spectrum Bandwidth & 99% Occupied Bandwidth Measurement	11a/BPSK	Band 1-3	6Mbps	36/40/48/52/60/64 /100/116/140	2
	11n HT20	Band 1-3	MCS0	36/40/48/52/60/64 /100/116/140	1+2
	11n HT40	Band 1-3	MCS0	38/46/54/62/ 102/110/134	1+2
Radiated Emission Below 1GHz	Normal Link		-	-	-
Radiated Emission Above 1GHz	11a/BPSK	Band 1-3	6Mbps	36/40/48/52/60/64 /100/116/140	2
	11n HT20	Band 1-3	MCS0	36/40/48/52/60/64 /100/116/140	1+2
	11n HT40	Band 1-3	MCS0	38/46/54/62/ 102/110/134	1+2
Band Edge Emission	11a/BPSK	Band 1-3	6Mbps	36/40/48/52/60/64 /100/116/140	2
	11n HT20	Band 1-3	MCS0	36/40/48/52/60/64 /100/116/140	1+2
	11n HT40	Band 1-3	MCS0	38/46/54/62/ 102/110/134	1+2
Frequency Stability	20 MHz	Band 1-3	-	40/60/116	1
	40 MHz	Band 1-3	-	38/62/110	1

Note: The EUT can bundle with mobile device only.

The following test modes were performed for all tests:

For Conducted Emission test:

Mode 1. Normal Link - 2.4G

Mode 2. Normal Link - 5G

Mode 1 is the worst case, so it was selected to record in this test report.

For Radiated Emission Below 1GHz test:

Mode 1. Normal Link - EUT in Z axis + 2.4G

Mode 2. Normal Link - EUT in Z axis + 5G

Mode 1 is the worst case, so it was selected to record in this test report.

For Radiated Emission Above 1GHz test:

The EUT was performed at Y axis and Z axis position for Radiated emission above 1GHz test, and the worst case was found at Z axis. So the measurement will follow this same test configuration.

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 Designation No.**	**IC File No.**	**VCCI Reg. No**
03CH01-CB	SAC	Hsin Chu	TW0006	IC 4086D	-
CO02-CB	Conduction	Hsin Chu	TW0006	IC 4086D	-
TH01-CB	OVEN Room	Hsin Chu	-	-	-

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

3.7. Table for Supporting Units

For Test Site No: CO02-CB

Support Unit	Brand	Model	FCC ID
NB	DELL	E6430	DoC
AP Router	Planex	GW-AP54SGX	KA220030603014-1
Mouse	Logitech	M-U0026	DoC
Earphone	SHYARO CHI	MIC-04	N/A

For Test Site No: 03CH01-CB (For Below 1GHz)

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	DoC
Wireless ac AP	Netgear	R6300V2	PY313200227
Mouse	Logitech	M-U0026	DoC
Earphone	SHYARO CHI	MIC-04	N/A

For Test Site No: 03CH01-CB (For Above 1GHz) and TH01-CB

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	DoC

3.8. Table for Parameters of Test Software Setting

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

Test Software Version	Mtool 1.0.0.9								
Mode	Test Frequency (MHz)								
	NCB: 20MHz								
	5180 MHz	5200 MHz	5240 MHz	5260 MHz	5300 MHz	5320 MHz	5500 MHz	5580 MHz	5700 MHz
802.11a	66	73	70	73	73	59	63	73	65
802.11n MCS0 HT20	61	73	70	73	73	50	52	73	56

Mode	NCB: 40MHz						
802.11n MCS0 HT40	5190 MHz	5230 MHz	5270 MHz	5310 MHz	5510 MHz	5550 MHz	5670 MHz
	42	57	73	39	37	73	58

3.9. EUT Operation during Test

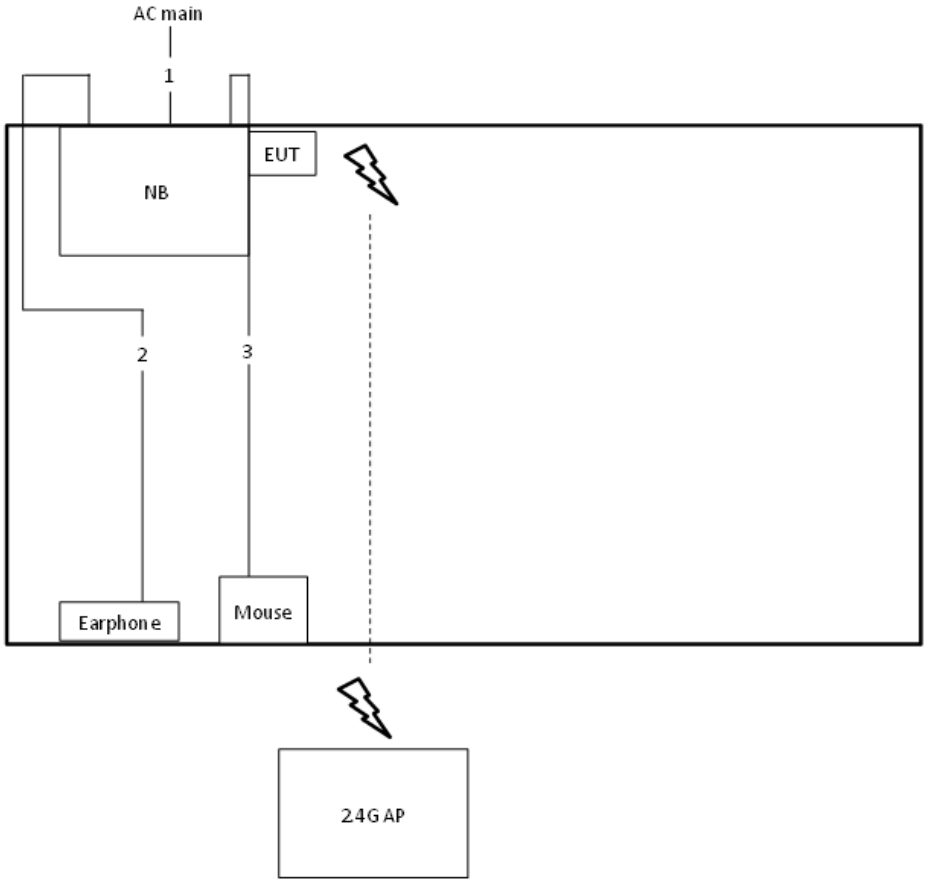
The EUT was programmed to be in continuously transmitting mode.

3.10. Duty Cycle

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	2.060	2.102	98.00	0.09	0.01
802.11n MCS0 HT20	1.890	2.000	94.50	0.25	0.53
802.11n MCS0 HT40	0.907	1.032	87.89	0.56	1.10

3.11. Test Configurations

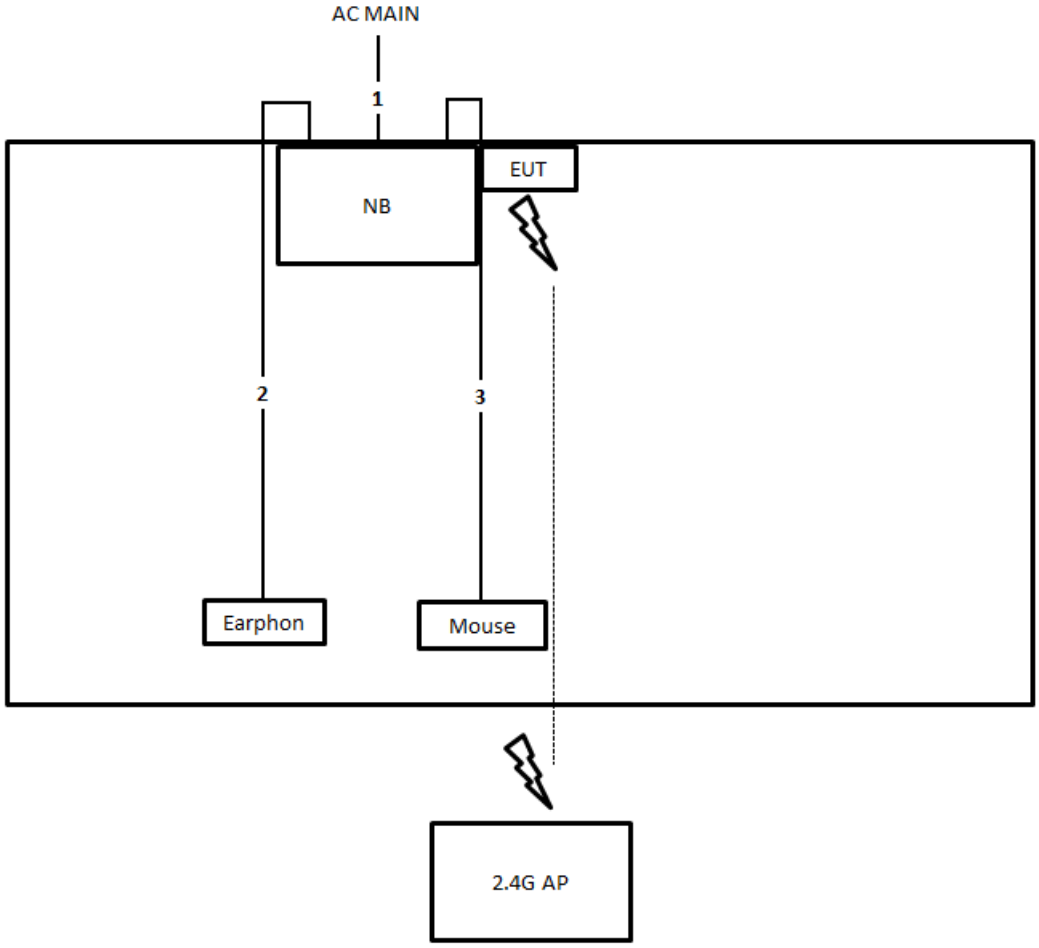
3.11.1. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	3.6m
2	Audio cable	No	1.1m
3	USB cable	Yes	1.8m

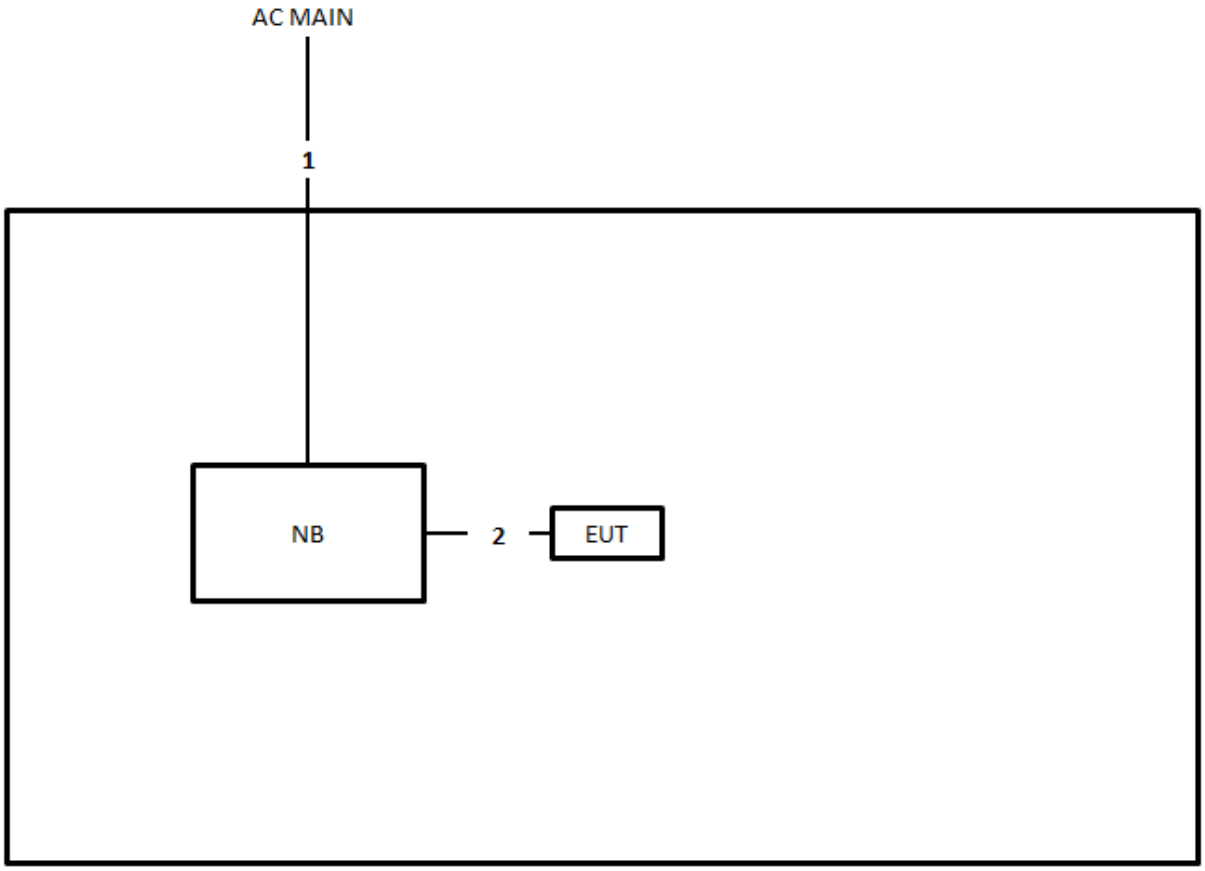
3.11.2. Radiation Emissions Test Configuration

Test Configuration: 30MHz ~1GHz



Item	Connection	Shielded	Length
1	Power cable	No	3.6m
2	Audio cable	No	1.1m
3	USB cable	Yes	1.8m

Test Configuration: above 1GHz



Item	Connection	Shielded	Length
1	Power cable	No	3.6m
2	USB cable	Yes	1.8m

4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

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

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

4.1.2. Measuring Instruments and Setting

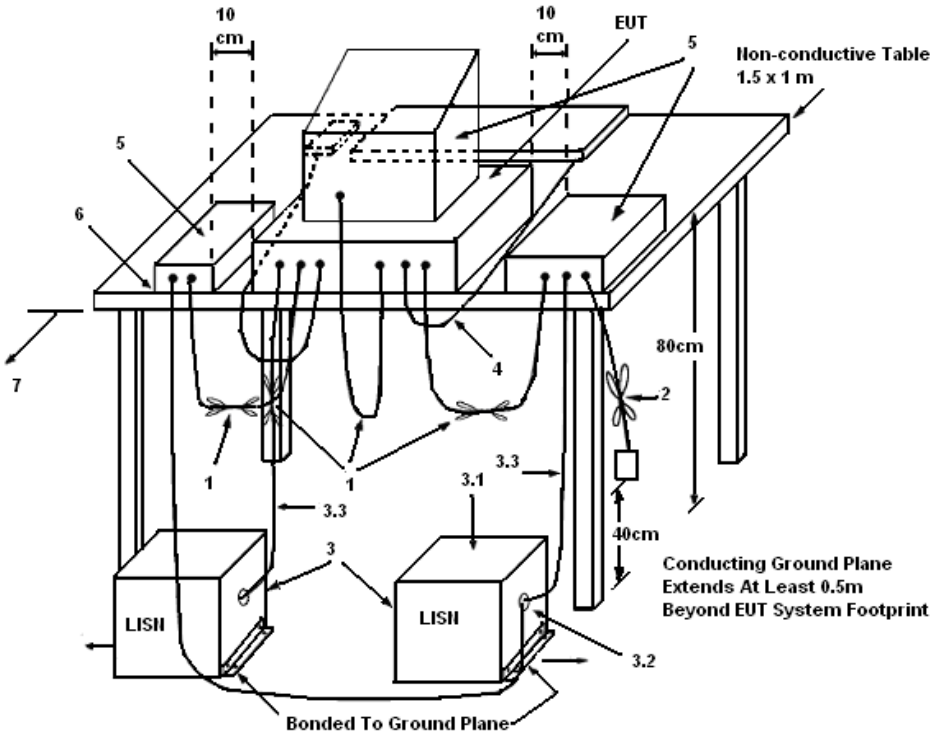
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

4.1.3. Test Procedures

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

4.1.4. Test Setup Layout



LEGEND:

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

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

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

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

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

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

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

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

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

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

4.1.5. Test Deviation

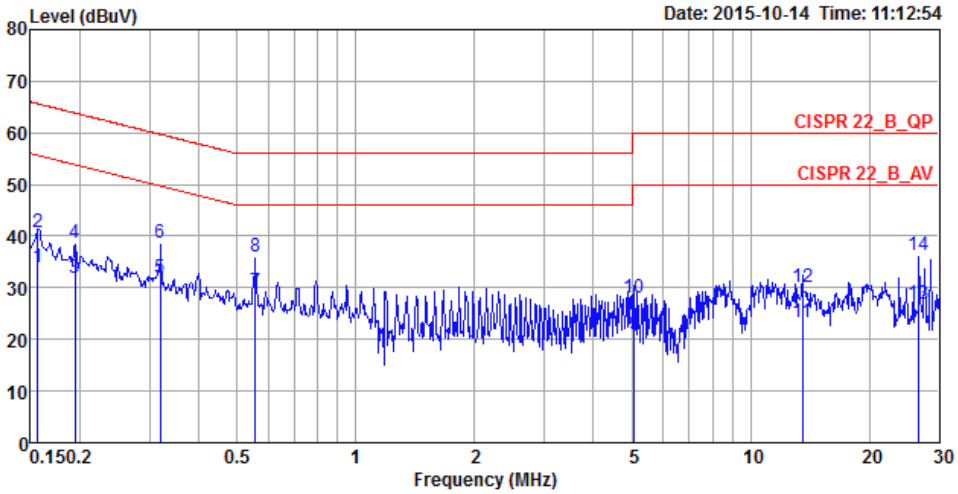
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

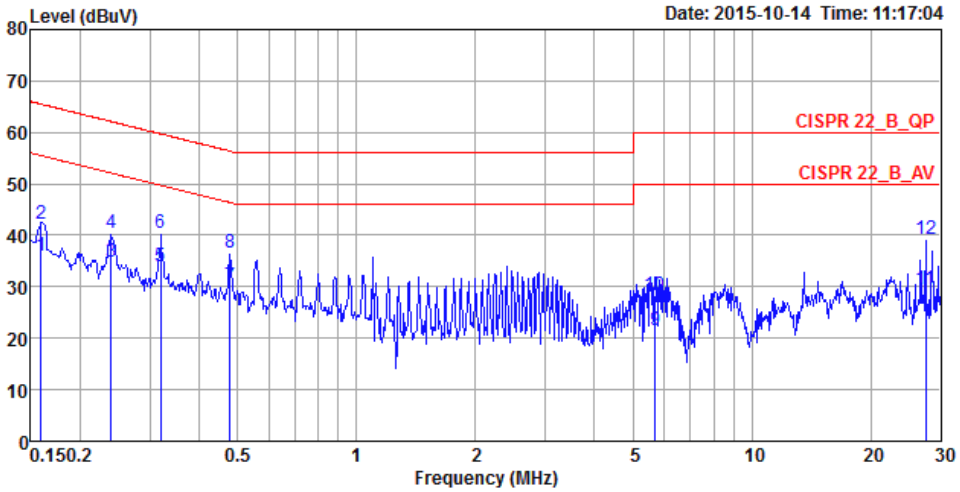
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	24°C	Humidity	61%
Test Engineer	Ryo Fan	Phase	Line
Configuration	Normal Link	Test Mode	Mode 1



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.1565	34.03	-21.62	55.65	23.86	10.00	Average	LINE
2	0.1565	40.71	-24.94	65.65	30.54	10.00	QP	LINE
3	0.1945	31.85	-21.99	53.84	21.65	10.01	Average	LINE
4	0.1945	38.67	-25.17	63.84	28.47	10.01	QP	LINE
5	0.3200	31.97	-17.74	49.71	21.76	10.01	Average	LINE
6	0.3200	38.75	-20.96	59.71	28.54	10.01	QP	LINE
7	0.5552	29.13	-16.87	46.00	18.91	10.02	Average	LINE
8	0.5552	35.88	-20.12	56.00	25.66	10.02	QP	LINE
9	5.0848	21.01	-28.99	50.00	10.57	10.12	Average	LINE
10	5.0848	27.90	-32.10	60.00	17.46	10.12	QP	LINE
11	13.5509	23.25	-26.75	50.00	12.54	10.29	Average	LINE
12	13.5509	30.05	-29.95	60.00	19.34	10.29	QP	LINE
13	26.6022	26.96	-23.04	50.00	15.94	10.48	Average	LINE
14	26.6022	36.16	-23.84	60.00	25.14	10.48	QP	LINE

Temperature	24°C	Humidity	61%
Test Engineer	Ryo Fan	Phase	Neutral
Configuration	Normal Link	Test Mode	Mode 1



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.1590	36.04	-19.48	55.52	25.87	10.00	Average	NEUTRAL
2	0.1590	42.26	-23.26	65.52	32.09	10.00	QP	NEUTRAL
3	0.2391	34.95	-17.18	52.13	24.75	10.01	Average	NEUTRAL
4	0.2391	40.47	-21.66	62.13	30.27	10.01	QP	NEUTRAL
5	0.3200	33.93	-15.78	49.71	23.72	10.01	Average	NEUTRAL
6	0.3200	40.42	-19.29	59.71	30.21	10.01	QP	NEUTRAL
7	0.4786	30.07	-16.29	46.36	19.86	10.01	Average	NEUTRAL
8	0.4786	36.63	-19.73	56.36	26.42	10.01	QP	NEUTRAL
9	5.6833	21.44	-28.56	50.00	10.98	10.13	Average	NEUTRAL
10	5.6833	28.30	-31.70	60.00	17.84	10.13	QP	NEUTRAL
11	27.5436	29.59	-20.41	50.00	18.55	10.49	Average	NEUTRAL
12	27.5436	39.34	-20.66	60.00	28.30	10.49	QP	NEUTRAL

Note:

Level = Read Level + LISN Factor + Cable Loss.

4.2. 26dB Bandwidth and 99% Occupied Bandwidth Measurement

4.2.1. Limit

No restriction limits.

4.2.2. Measuring Instruments and Setting

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

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

4.2.3. Test Procedures

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

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

4.2.4. Test Setup Layout

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

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

4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. EUT Operation during Test

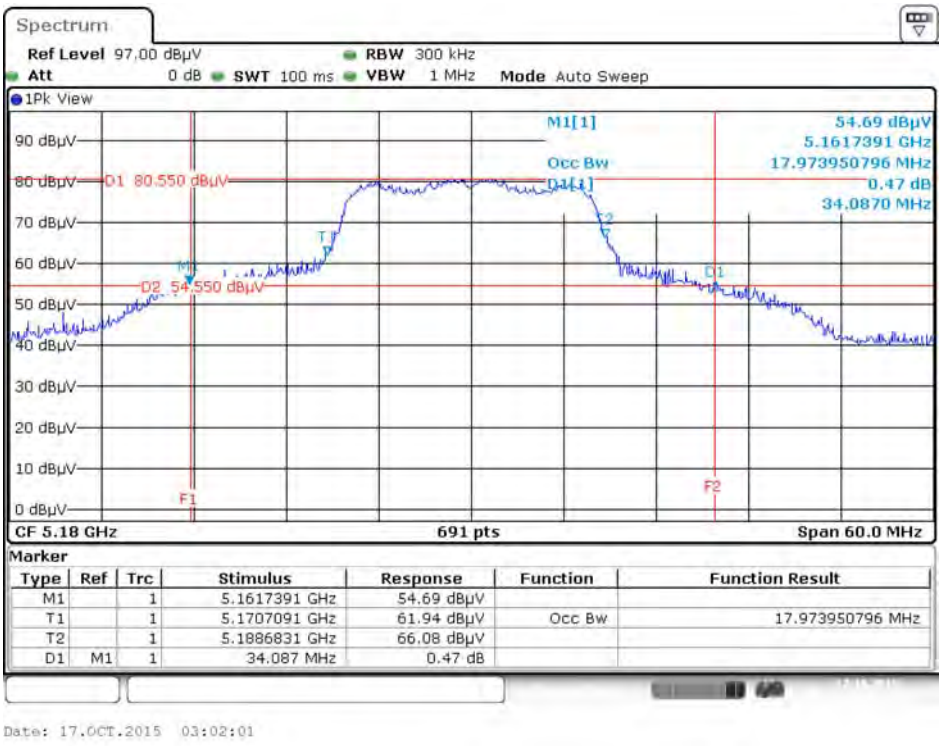
The EUT was programmed to be in continuously transmitting mode.

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

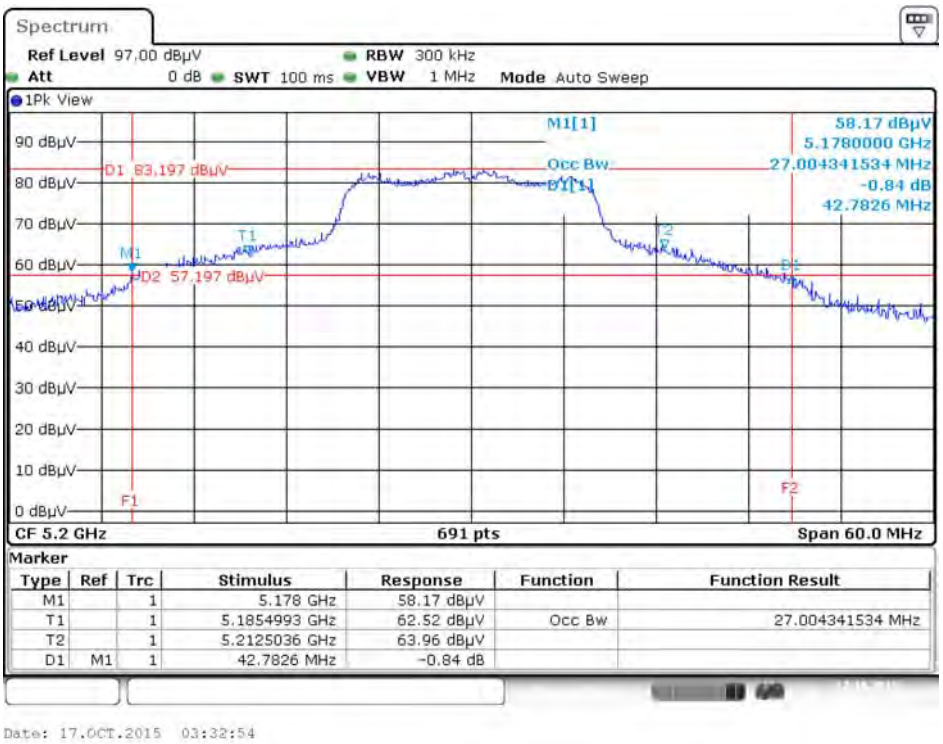
Temperature	25℃	Humidity	45%
Test Engineer	Kenneth Huang		

Mode	Frequency	26dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11a	5180 MHz	34.09	17.97
	5200 MHz	42.78	27.00
	5240 MHz	35.04	19.10
	5260 MHz	43.13	25.53
	5300 MHz	43.65	28.22
	5320 MHz	26.96	17.02
	5500 MHz	29.30	17.11
	5580 MHz	37.22	18.76
	5700 MHz	31.48	17.11
802.11n MCS0 HT20	5180 MHz	37.39	17.80
	5200 MHz	40.87	23.44
	5240 MHz	40.26	19.88
	5260 MHz	39.91	21.01
	5300 MHz	41.13	24.66
	5320 MHz	28.00	17.19
	5500 MHz	27.30	17.28
	5580 MHz	40.61	20.41
	5700 MHz	30.00	17.37
802.11n MCS0 HT40	5190 MHz	45.07	37.19
	5230 MHz	90.58	38.35
	5270 MHz	92.75	49.93
	5310 MHz	41.16	37.05
	5510 MHz	43.04	37.19
	5550 MHz	95.36	56.73
	5670 MHz	87.68	38.35

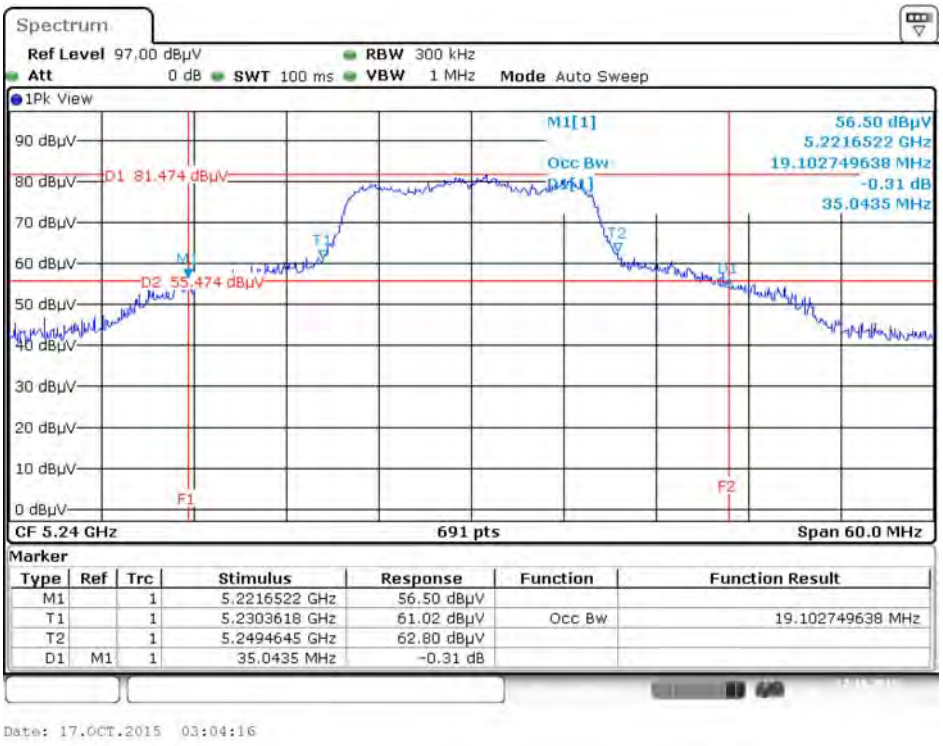
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 2 / 5180 MHz



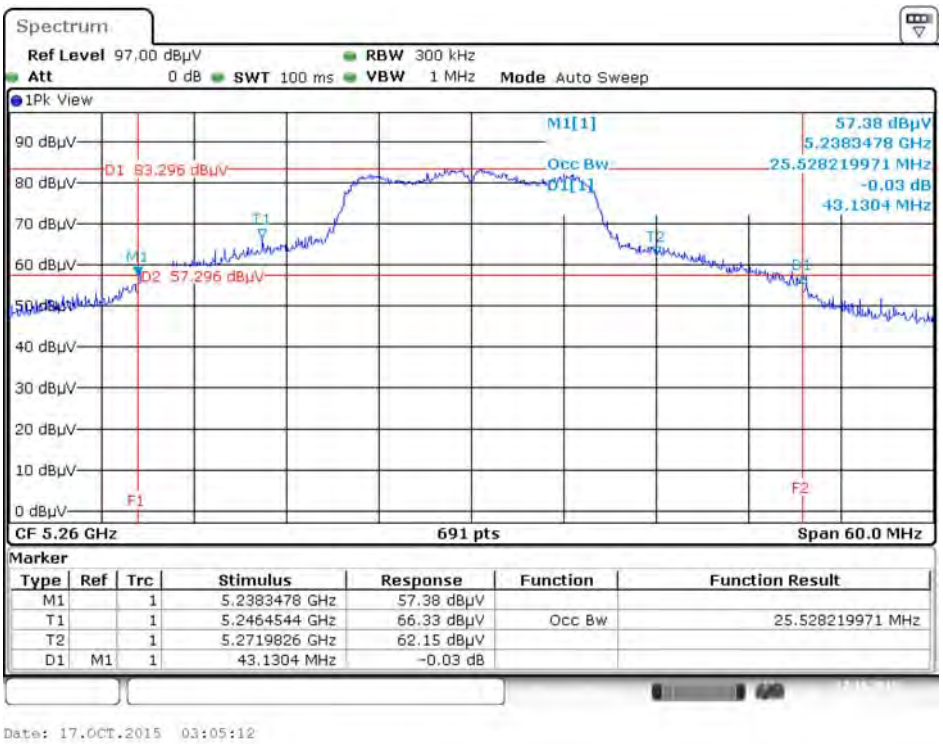
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 2 / 5200 MHz



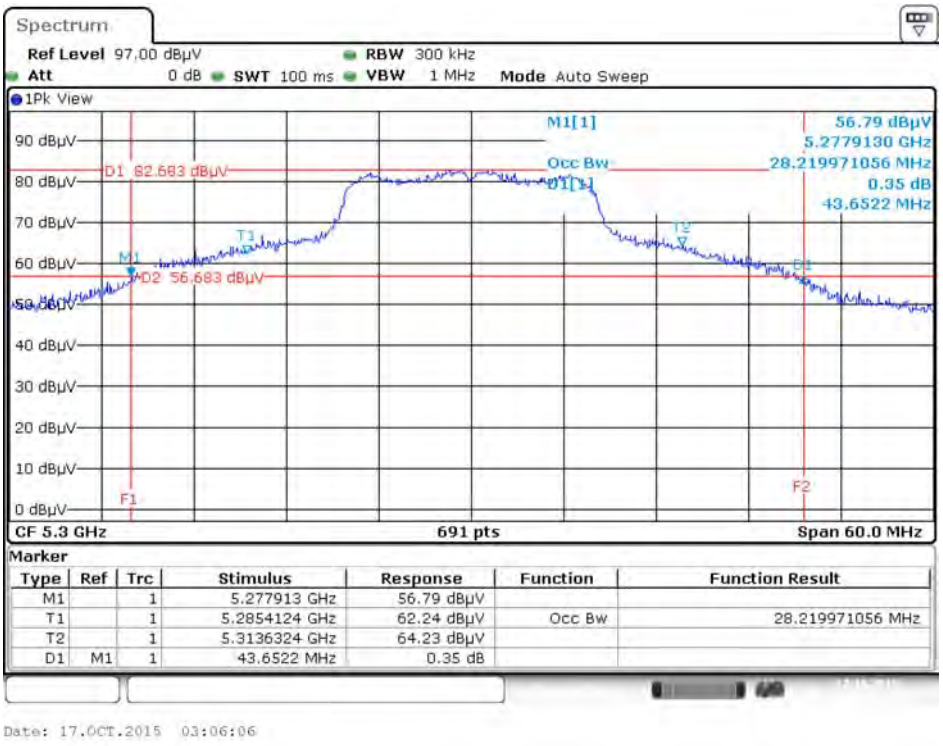
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 2 / 5240 MHz



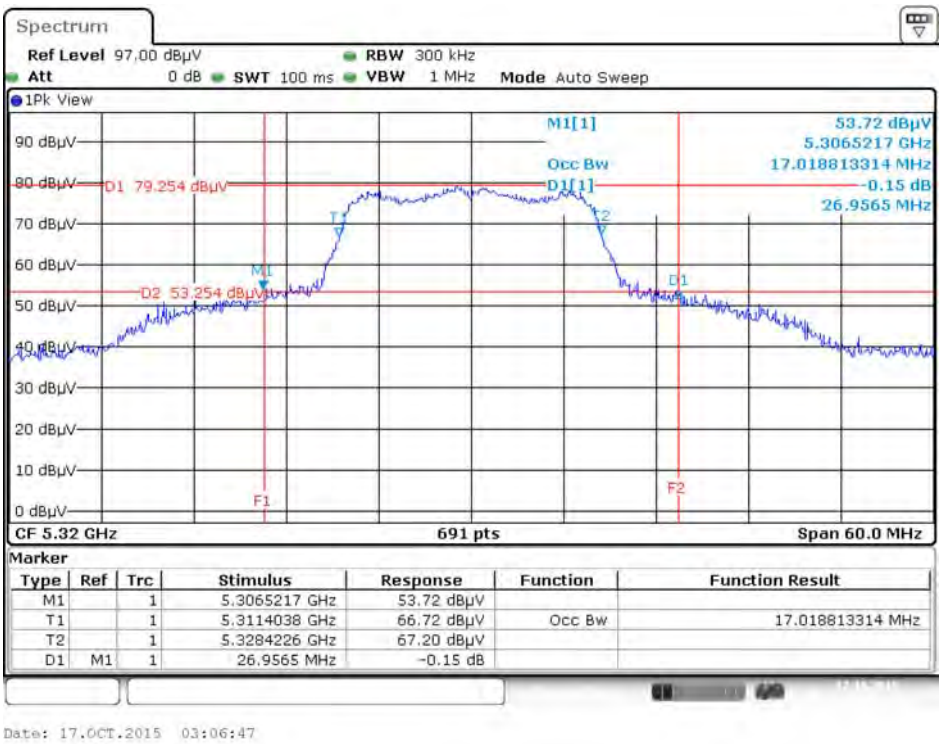
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 2 / 5260 MHz



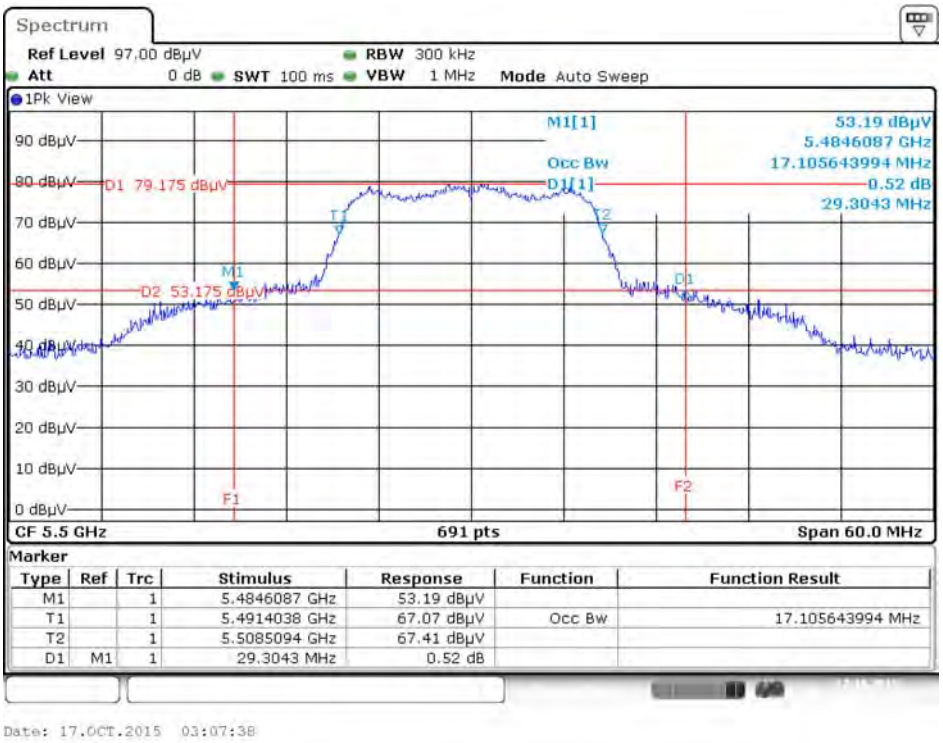
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 2 / 5300 MHz



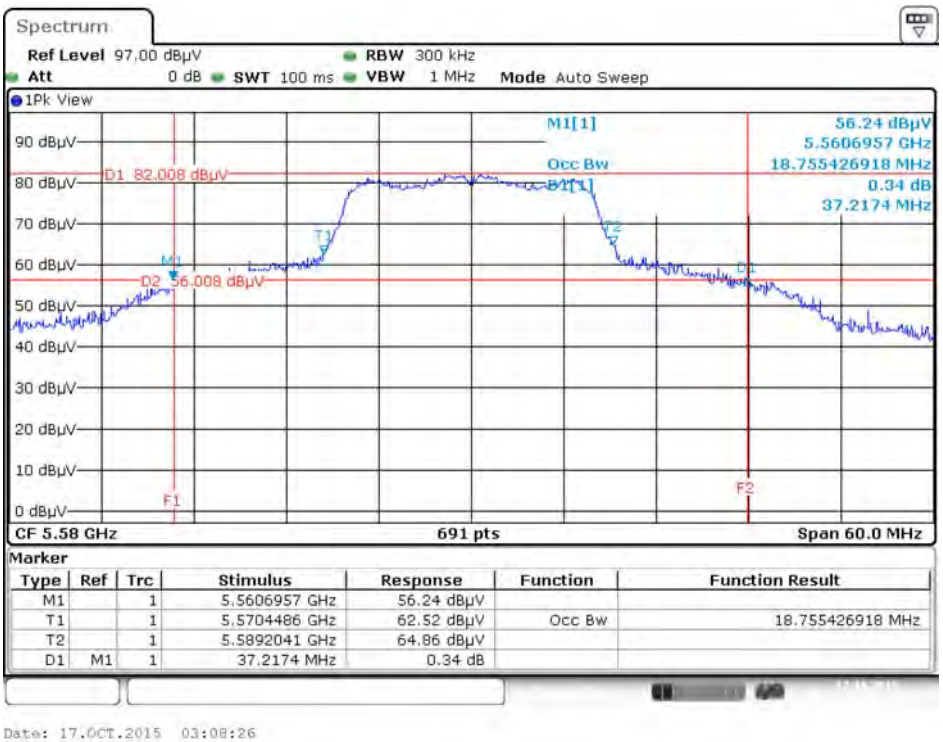
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 2 / 5320 MHz



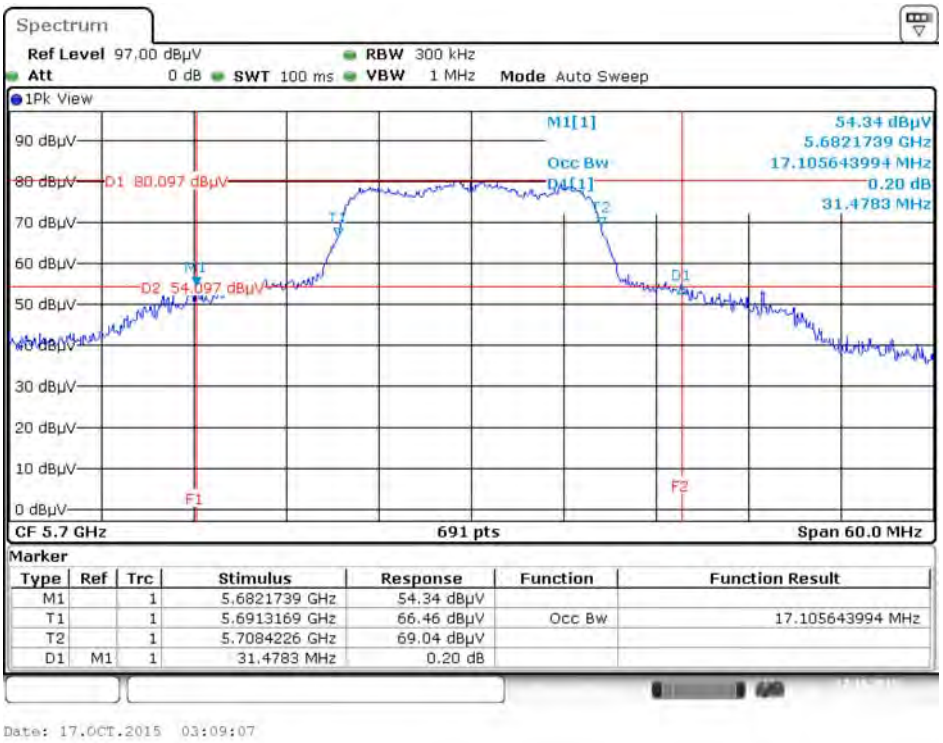
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 2 / 5500 MHz



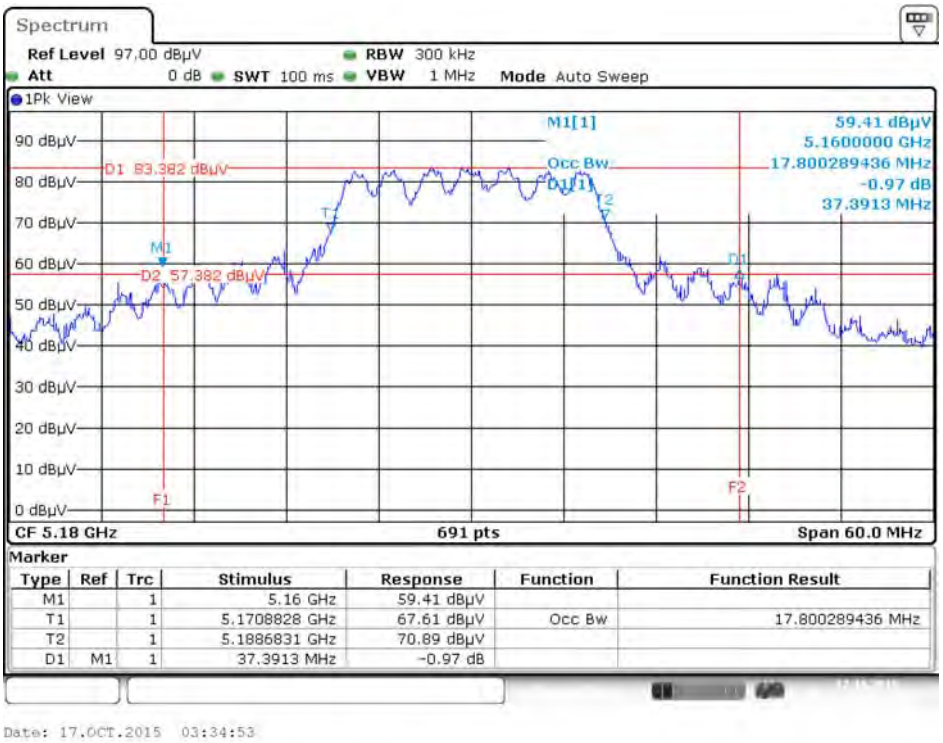
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 2 / 5580 MHz



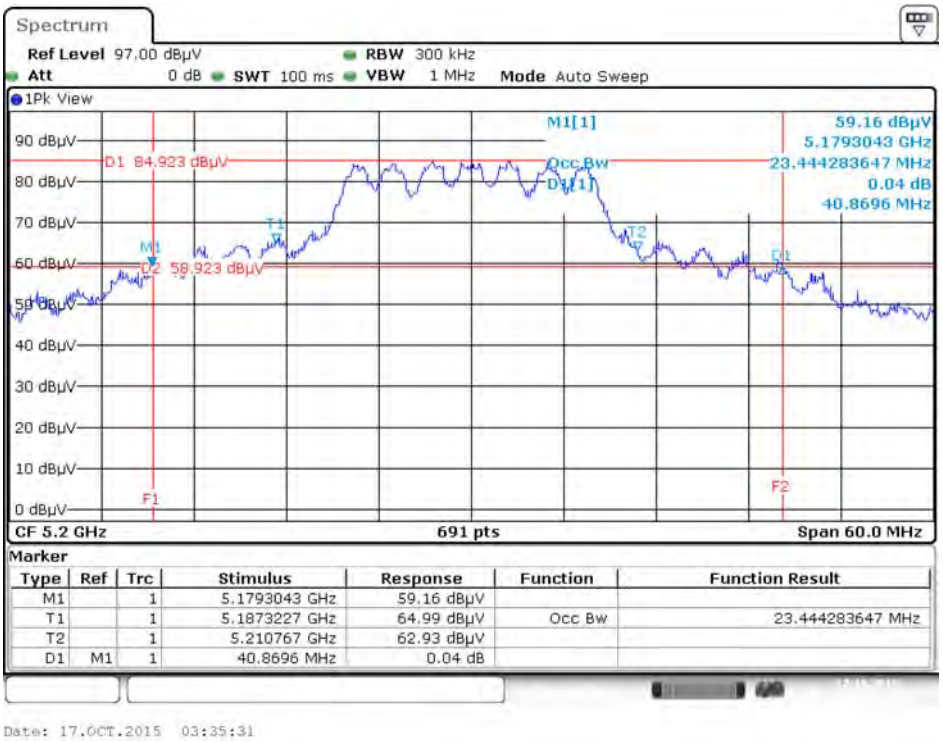
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / Chain 2 / 5700 MHz



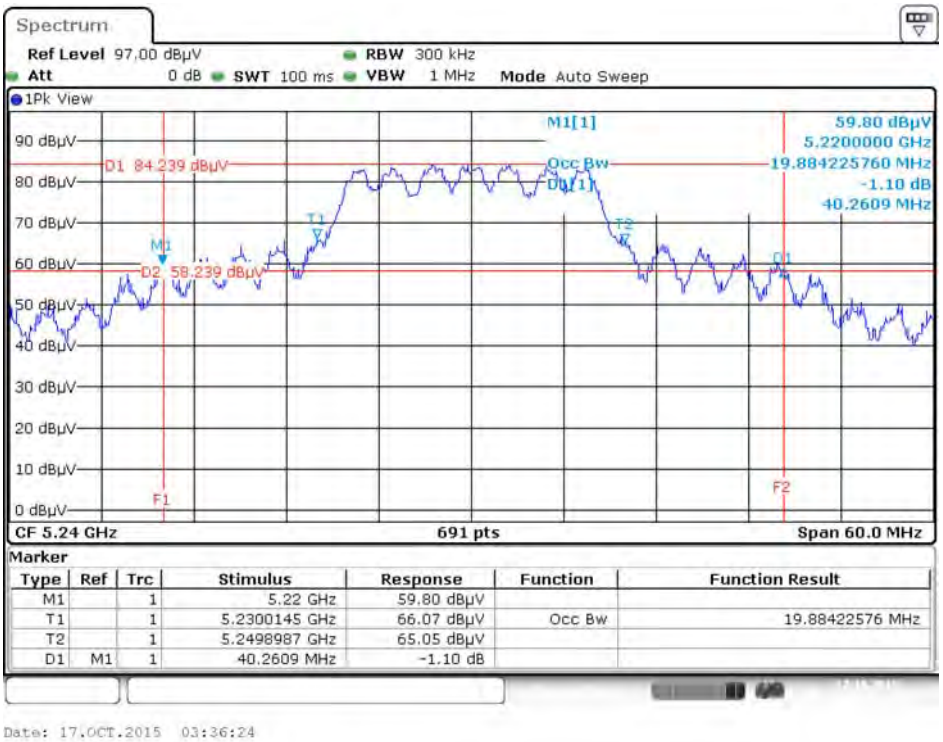
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / Chain 1 + Chain 2 / 5180 MHz



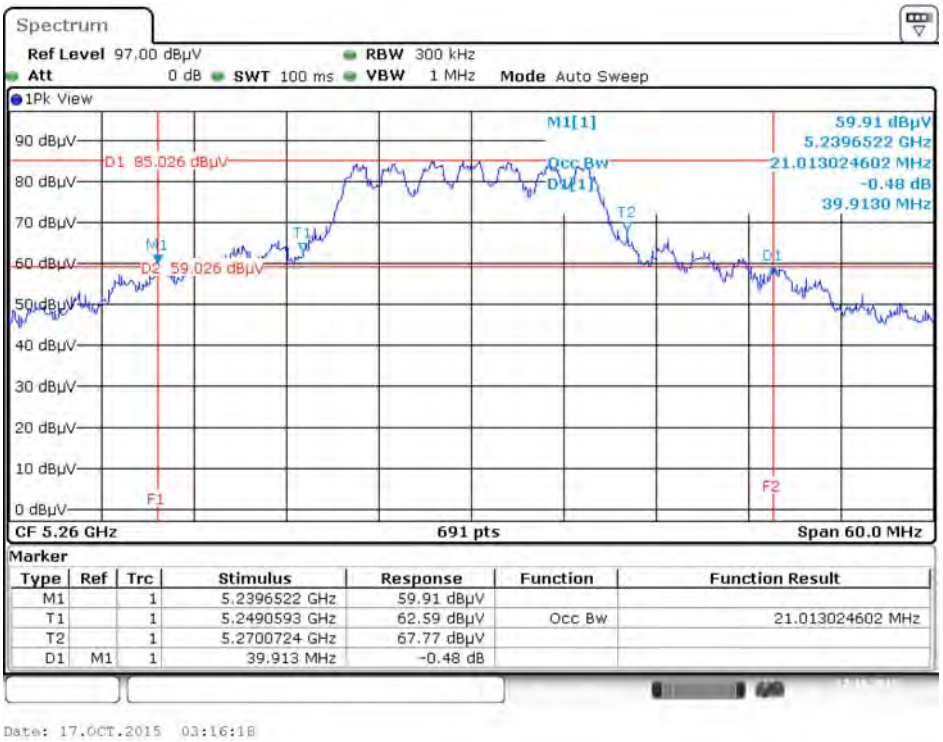
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / Chain 1 + Chain 2 / 5200 MHz



26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / Chain 1 + Chain 2 / 5240 MHz

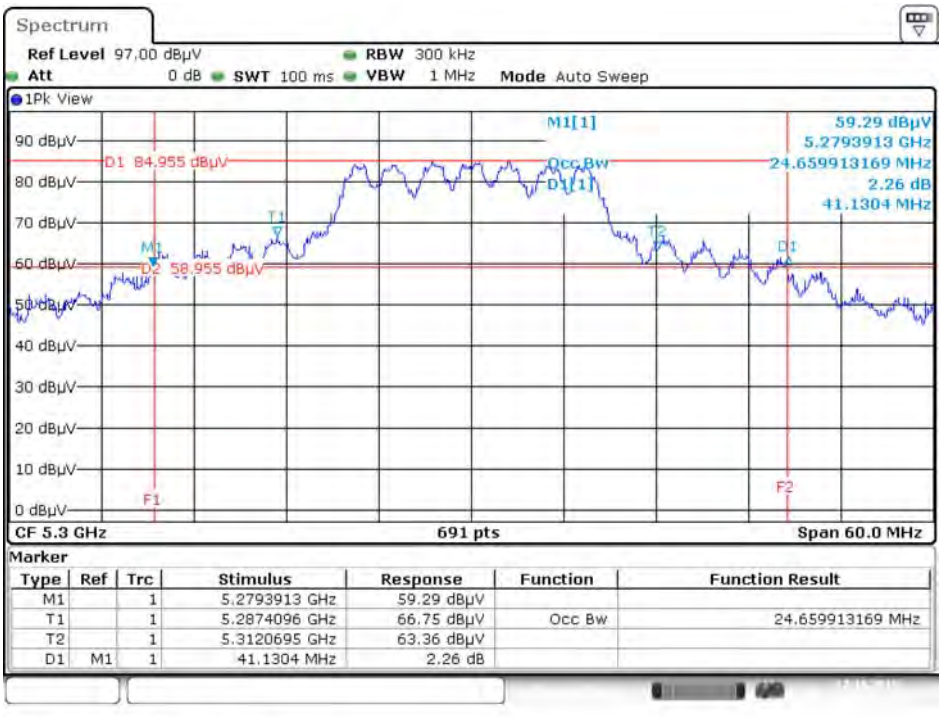


26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / Chain 1 + Chain 2 / 5260 MHz



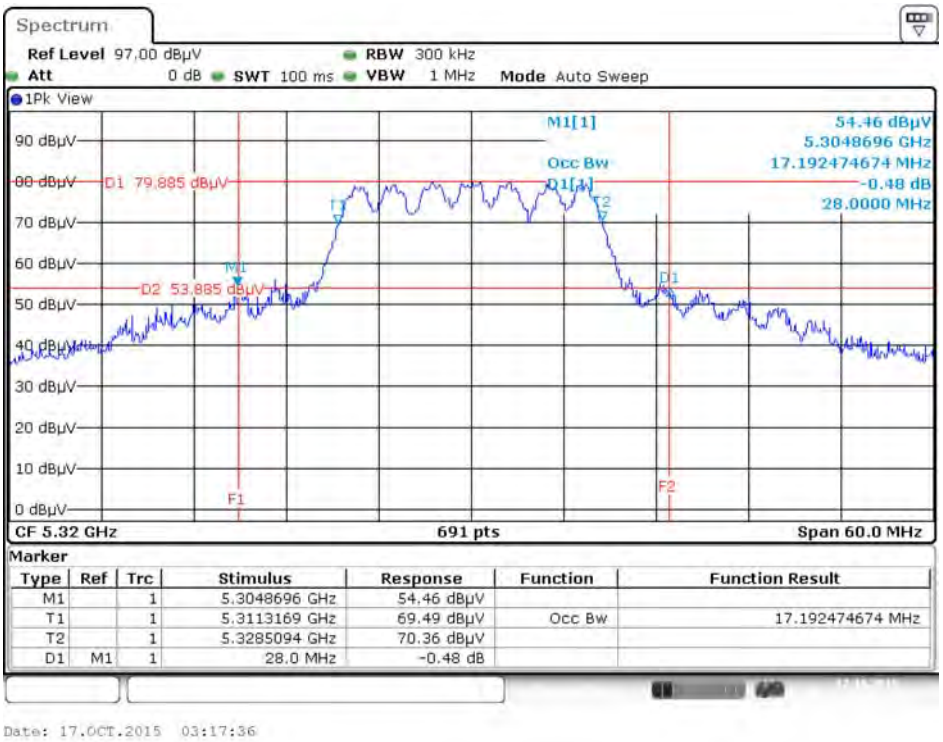
Date: 17.OCT.2015 03:16:18

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

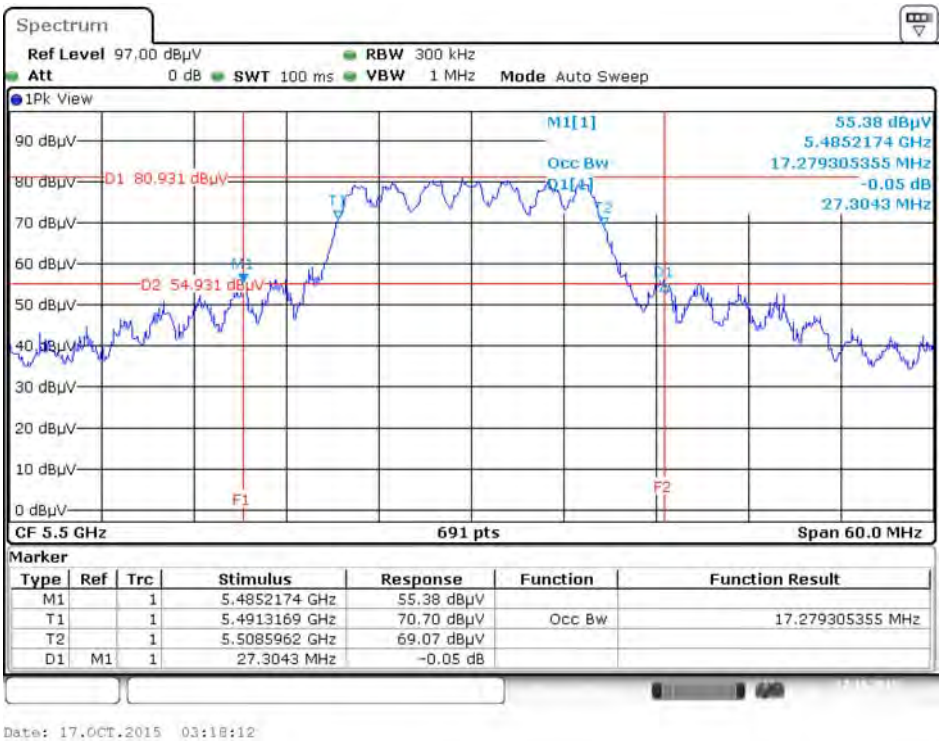


Date: 17.OCT.2015 03:16:53

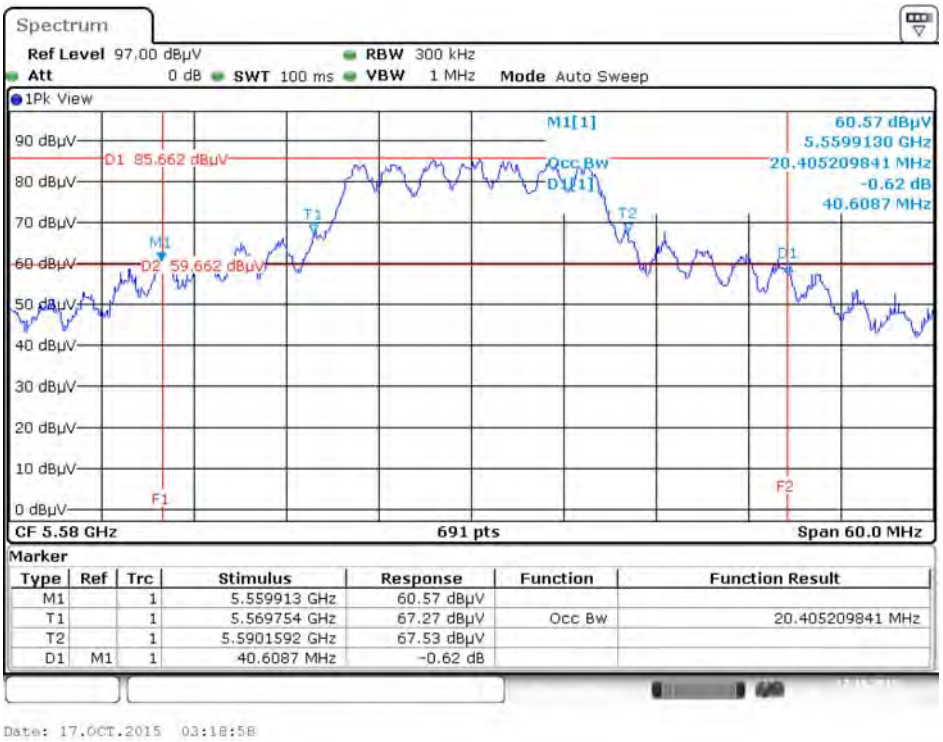
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / Chain 1 + Chain 2 / 5320 MHz



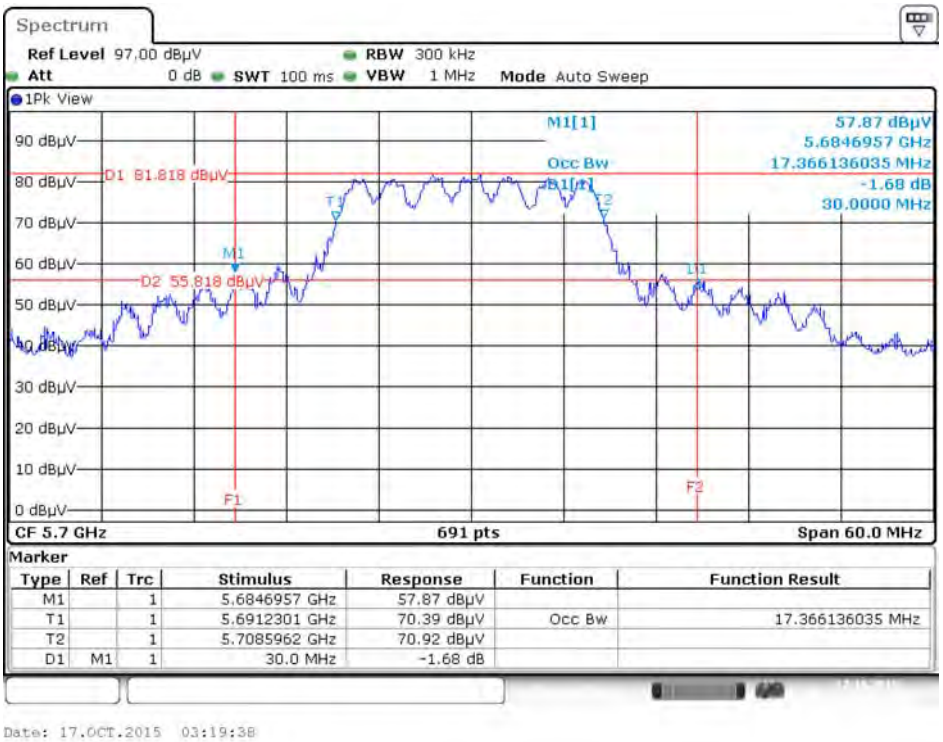
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / Chain 1 + Chain 2 / 5500 MHz



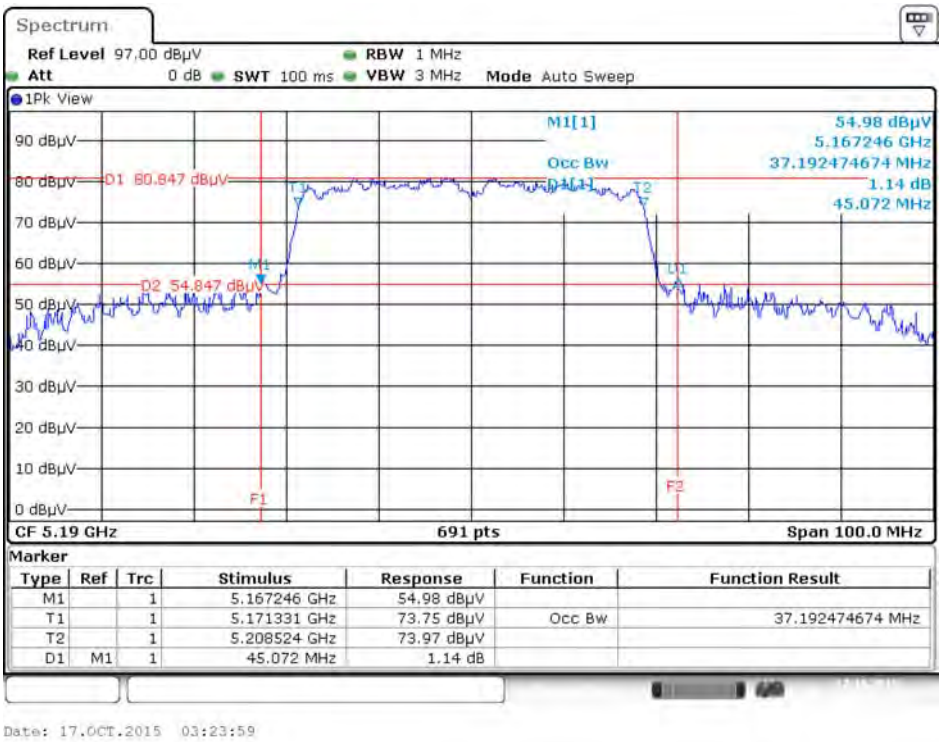
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / Chain 1 + Chain 2 / 5580 MHz



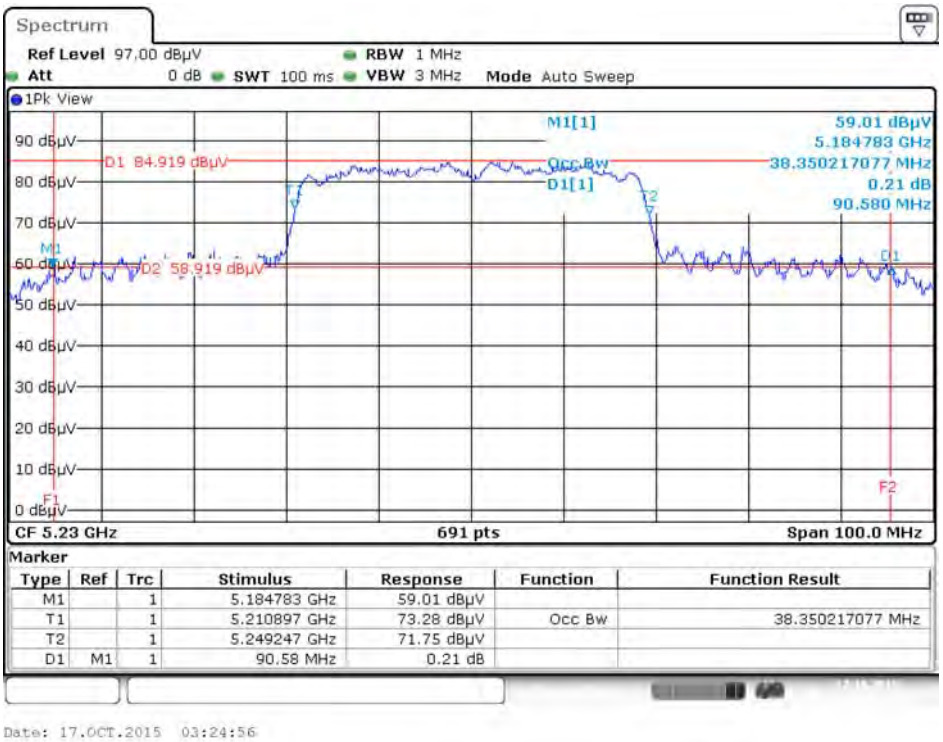
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / Chain 1 + Chain 2 / 5700 MHz



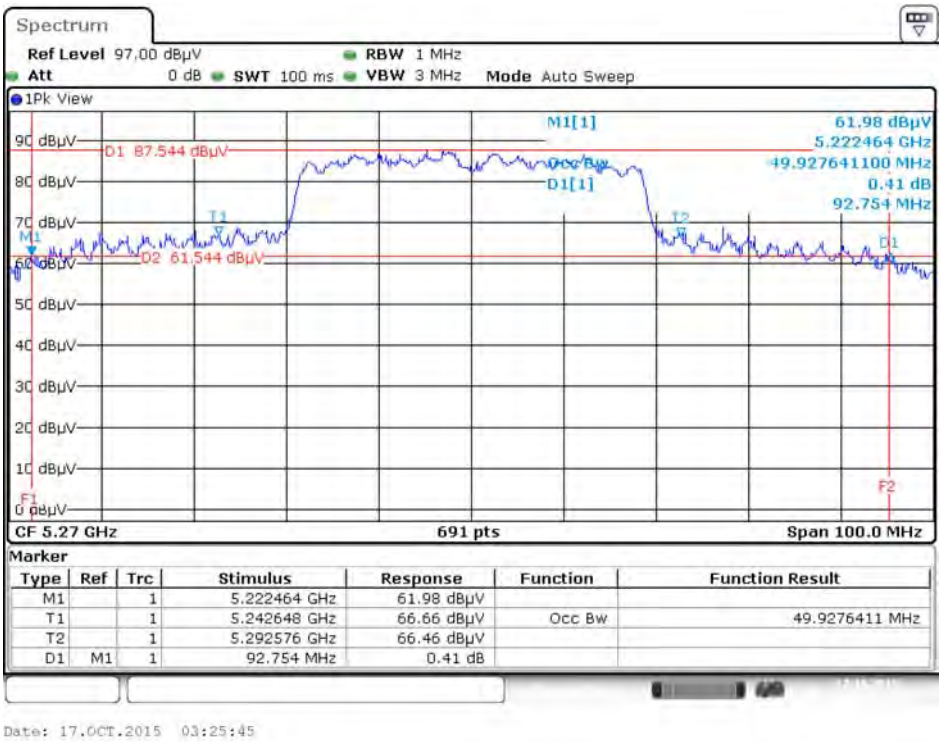
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / Chain 1 + Chain 2 / 5190 MHz



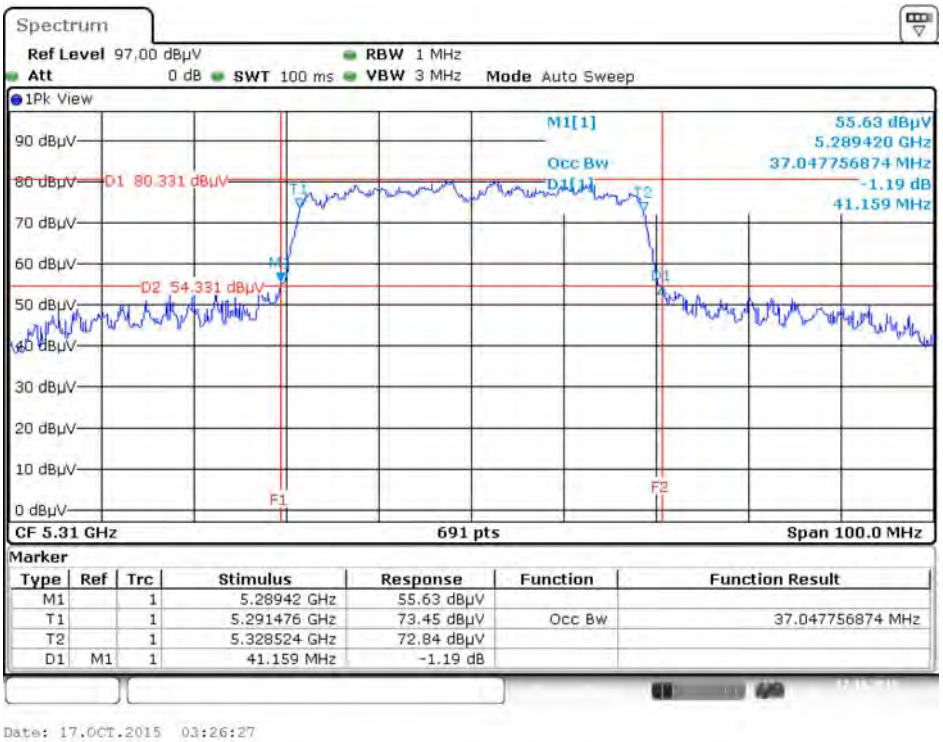
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / Chain 1 + Chain 2 / 5230 MHz



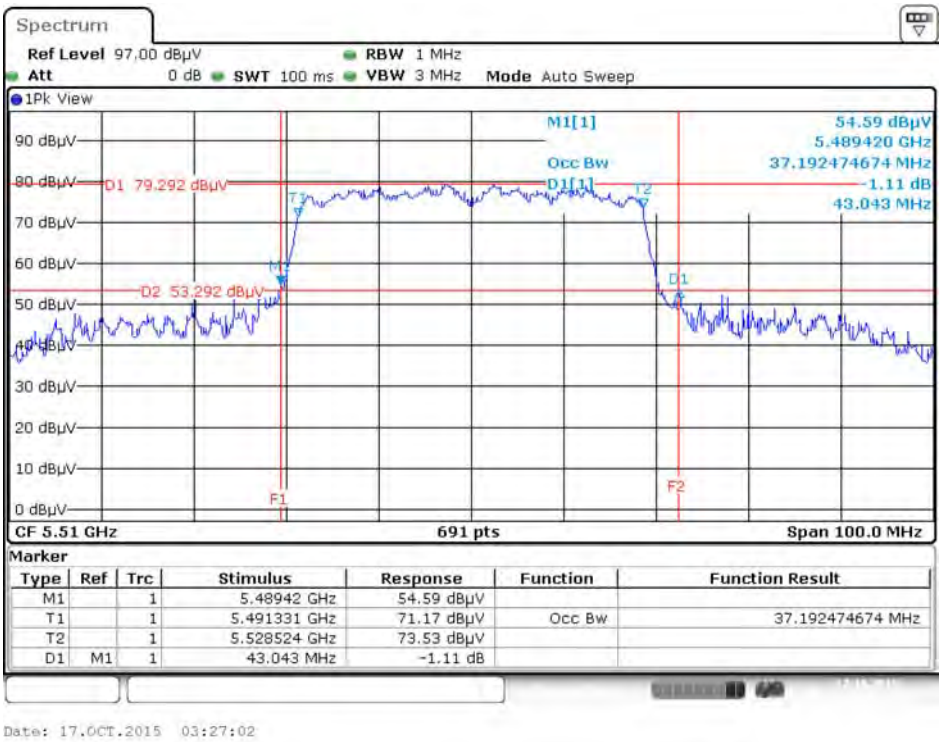
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / Chain 1 + Chain 2 / 5270 MHz



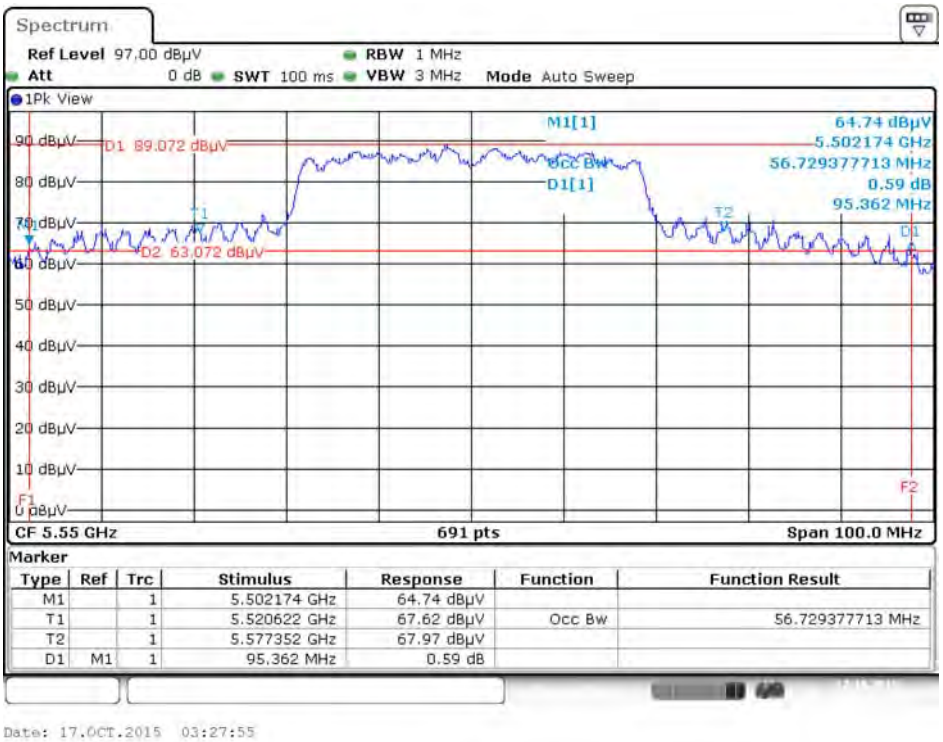
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / Chain 1 + Chain 2 / 5310 MHz



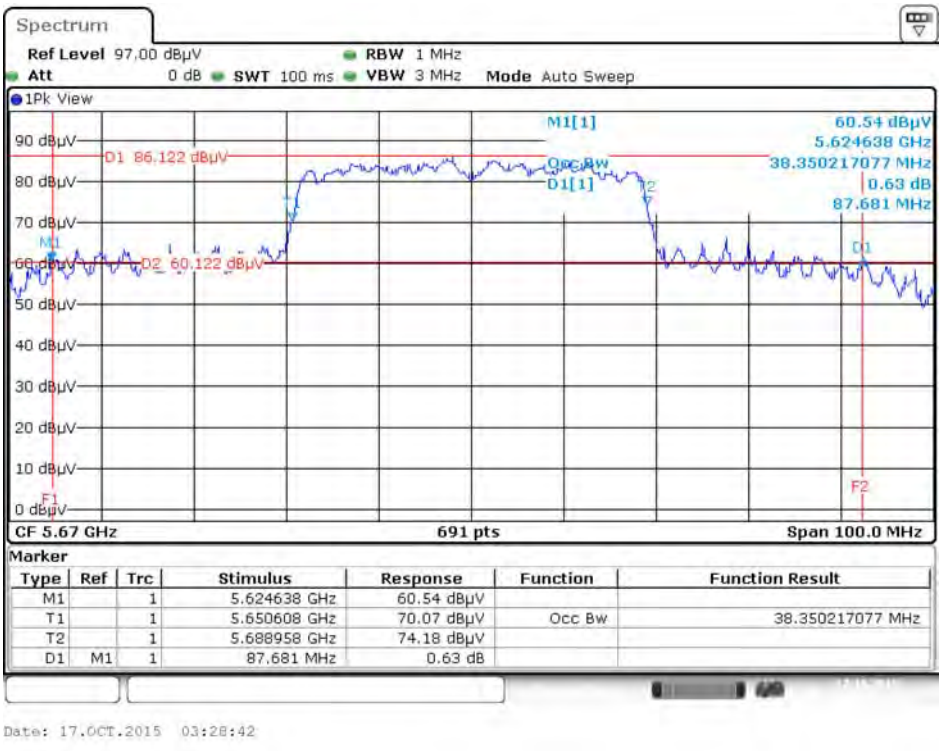
26dB Bandwidth and 99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / Chain 1 + Chain 2 / 5510 MHz



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



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



4.3. Maximum Conducted Output Power Measurement

4.3.1. Limit

Frequency Band			Limit
☐	5.15~5.25 GHz		
	Operating Mode		
	☐	Outdoor access point	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm) provided the maximum antenna gain does not exceed 6 dBi. 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. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).
	☐	Indoor access point	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm) provided the maximum antenna gain does not exceed 6 dBi. 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.
	☐	Fixed point-to-point access points	The maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm). Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi.
	☒	Client devices	The maximum conducted output power over the frequency band of operation shall not exceed 250 mW (24dBm) provided the maximum antenna gain does not exceed 6 dBi. 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.

☒	5.25-5.35 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	

4.3.2. Measuring Instruments and Setting

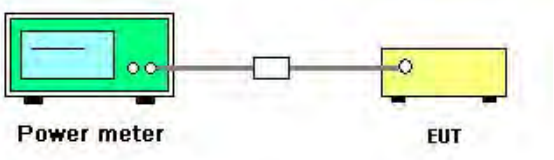
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

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

4.3.3. Test Procedures

1. The transmitter output (antenna port) was connected to the power meter.
2. Test was performed in accordance with KDB789033 D02 v01r04 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.

4.3.4. Test Setup Layout



4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.3.7. Test Result of Maximum Conducted Output Power

Temperature	25°C	Humidity	45%
Test Engineer	Kenneth Huang	Test Date	Oct. 17, 2015

Mode	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 2		
802.11a	5180 MHz	16.85	24.00	Complies
	5200 MHz	19.99	24.00	Complies
	5240 MHz	17.57	24.00	Complies
	5260 MHz	19.88	24.00	Complies
	5300 MHz	19.96	24.00	Complies
	5320 MHz	15.32	24.00	Complies
	5500 MHz	15.31	24.00	Complies
	5580 MHz	18.50	24.00	Complies
	5700 MHz	16.75	24.00	Complies

Mode	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Chain 1	Chain 2	Total		
802.11n MCS0 HT20	5180 MHz	16.37	15.52	18.98	24.00	Complies
	5200 MHz	18.03	18.87	21.48	24.00	Complies
	5240 MHz	18.16	16.78	20.53	24.00	Complies
	5260 MHz	17.44	18.85	21.21	24.00	Complies
	5300 MHz	17.91	19.31	21.68	24.00	Complies
	5320 MHz	13.25	13.91	16.60	24.00	Complies
	5500 MHz	14.46	12.95	16.78	24.00	Complies
	5580 MHz	17.98	18.53	21.27	24.00	Complies
	5700 MHz	15.28	15.29	18.30	24.00	Complies
802.11n MCS0 HT40	5190 MHz	9.75	11.40	13.66	24.00	Complies
	5230 MHz	14.90	15.10	18.01	24.00	Complies
	5270 MHz	16.93	19.07	21.14	24.00	Complies
	5310 MHz	10.12	10.40	13.27	24.00	Complies
	5510 MHz	10.08	9.34	12.74	24.00	Complies
	5550 MHz	19.05	18.90	21.99	24.00	Complies
	5670 MHz	15.86	15.48	18.68	24.00	Complies

4.4. Power Spectral Density Measurement

4.4.1. Limit

The following table is power spectral density limits and decrease power density limit rule refer to section 4.3.1.

Frequency Band			Limit
☒	5.15~5.25 GHz		
	Operating Mode		
	☐	Outdoor access point	17 dBm/MHz
	☐	Indoor access point	17 dBm/MHz
	☐	Fixed point-to-point access points	17 dBm/MHz
	☒	Mobile and portable client devices	11 dBm/MHz
☒	5.25-5.35 GHz		11 dBm/MHz
☒	5.470-5.725 GHz		11 dBm/MHz

4.4.2. Measuring Instruments and Setting

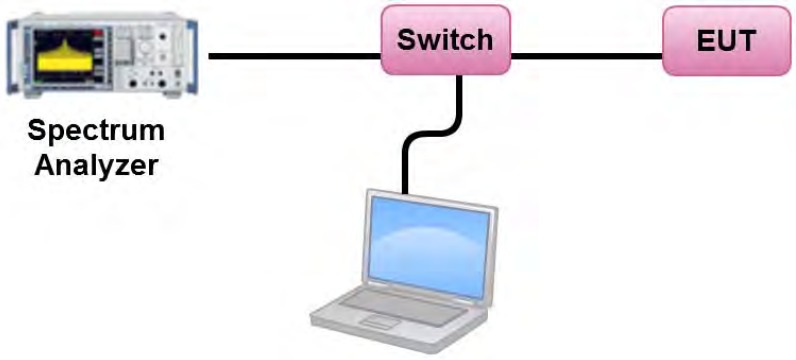
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RBW	1000 kHz
VBW	3000 kHz
Detector	RMS
Trace	AVERAGE
Sweep Time	Auto
Trace Average	100 times
Note: If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10log(500kHz/RBW) to the measured result, whereas RBW (< 500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.	

4.4.3. Test Procedures

1. The transmitter output (antenna port) was connected RF switch to the spectrum analyzer.
2. Test was performed in accordance with KDB789033 D02 v01r04 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.
5. For 5.725~5.85 GHz, the measured result of PSD level must add 10log(500kHz/RBW) and the final result should ≤ 30 dBm.

4.4.4. Test Setup Layout



4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.4.7. Test Result of Power Spectral Density

Temperature	25°C	Humidity	45%
Test Engineer	Kenneth Huang		

Configuration IEEE 802.11a / Chain 2

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	3.54	11.00	Complies
40	5200 MHz	6.72	11.00	Complies
48	5240 MHz	4.27	11.00	Complies
52	5260 MHz	6.57	11.00	Complies
60	5300 MHz	6.74	11.00	Complies
64	5320 MHz	1.99	11.00	Complies
100	5500 MHz	2.18	11.00	Complies
116	5580 MHz	5.13	11.00	Complies
140	5700 MHz	3.65	11.00	Complies

Configuration IEEE 802.11n MCS0 HT20 / Chain 1 + Chain 2

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
36	5180 MHz	5.81	11.00	Complies
40	5200 MHz	8.12	11.00	Complies
48	5240 MHz	7.13	11.00	Complies
52	5260 MHz	7.94	10.92	Complies
60	5300 MHz	8.33	10.92	Complies
64	5320 MHz	3.39	10.92	Complies
100	5500 MHz	3.40	10.08	Complies
116	5580 MHz	8.02	10.08	Complies
140	5700 MHz	5.06	10.08	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =4.81dBi<6dBi, so the B1 limit doesn't reduce.

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.08dBi>6dBi,So B2 Limit =11-(6.08-6)=10.92dBm/MHz.

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.92dBi>6dBi,So B3 Limit =11-(6.92-6)=10.08dBm/MHz.

Configuration IEEE 802.11n MCS0 HT40 / Chain 1 + Chain 2

Channel	Frequency	Power Density (dBm/MHz)	Max. Limit (dBm/MHz)	Result
38	5190 MHz	-2.72	11.00	Complies
46	5230 MHz	1.62	11.00	Complies
54	5270 MHz	4.82	10.92	Complies
62	5310 MHz	-2.94	10.92	Complies
102	5510 MHz	-3.62	10.08	Complies
110	5550 MHz	5.64	10.08	Complies
134	5670 MHz	2.62	10.08	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =4.81dBi<6dBi, so the B1 limit doesn't reduce.

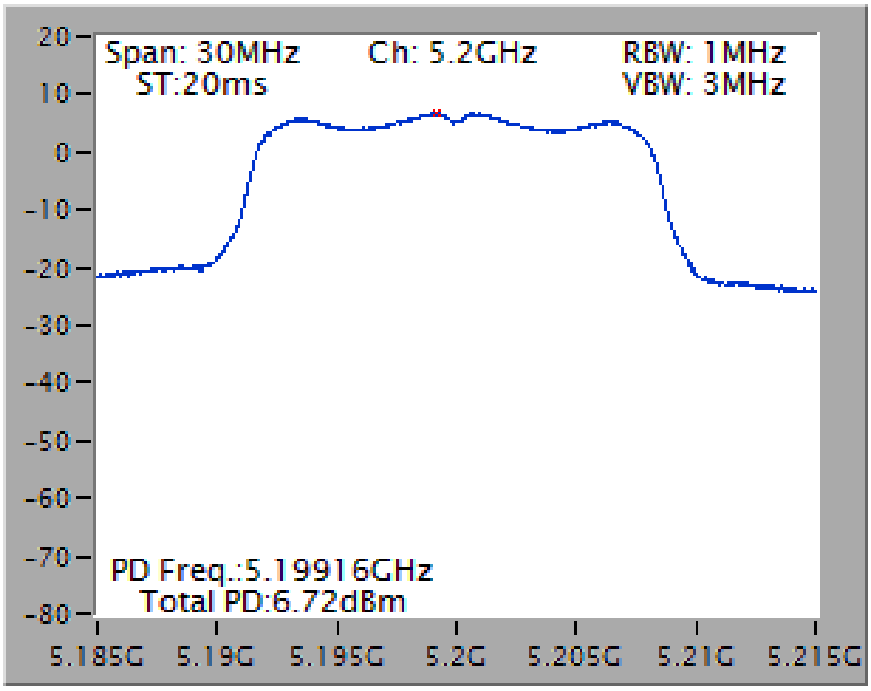
Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.08dBi>6dBi,So B2 Limit =11-(6.08-6)=10.92dBm/MHz.

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.92dBi>6dBi,So B3 Limit =11-(6.92-6)=10.08dBm/MHz.

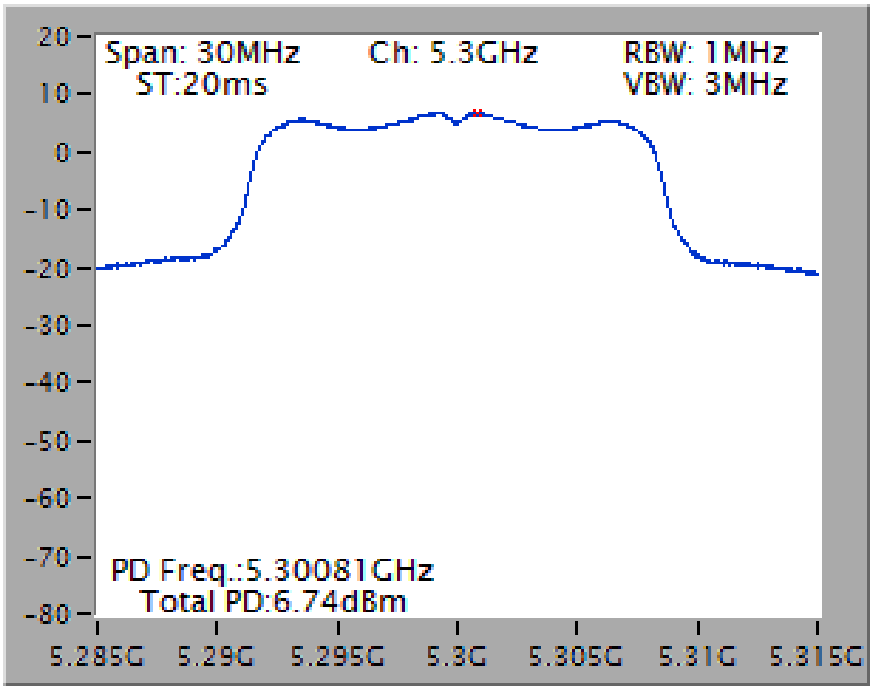
Note: All the test values were listed in the report.

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

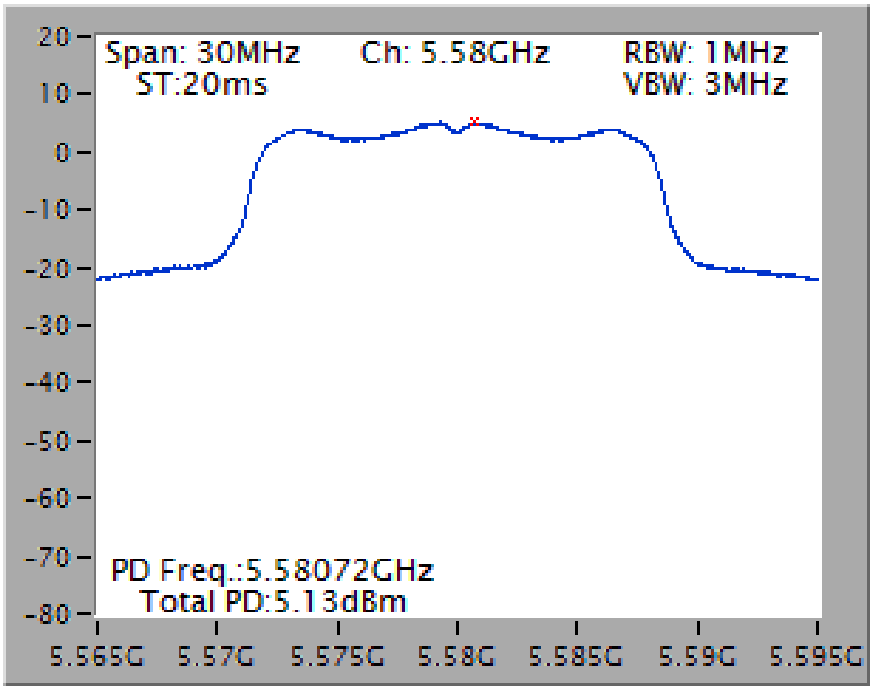
Power Density Plot on Configuration IEEE 802.11a / Chain 2 / 5200 MHz



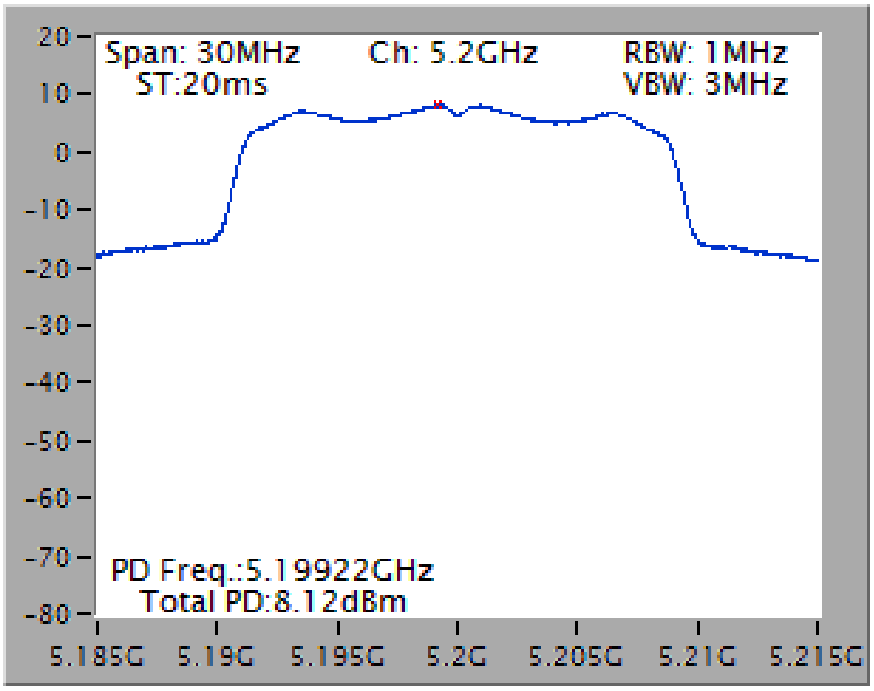
Power Density Plot on Configuration IEEE 802.11a / Chain 2 / 5300 MHz



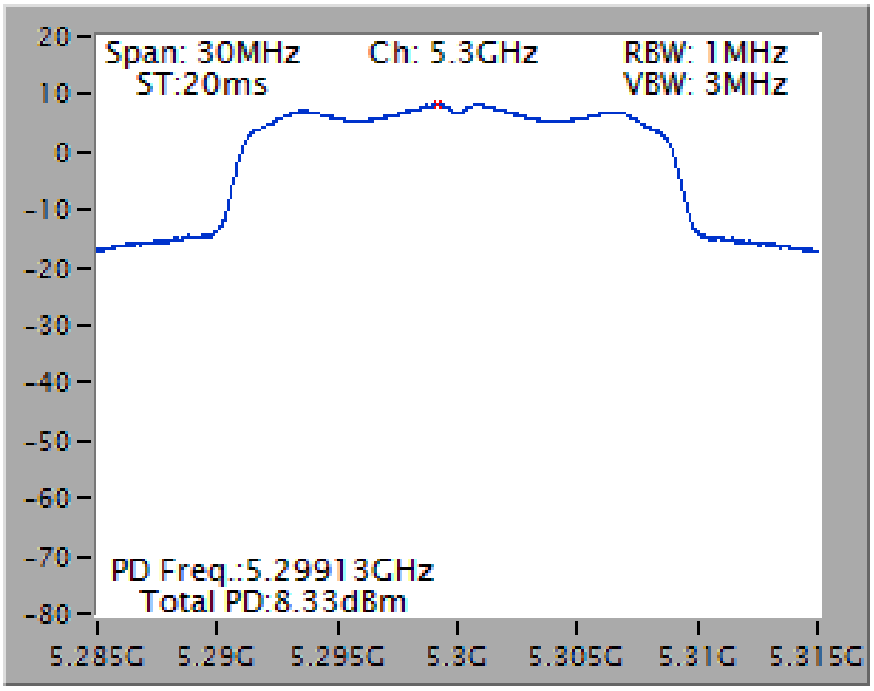
Power Density Plot on Configuration IEEE 802.11a / Chain 2 / 5580 MHz



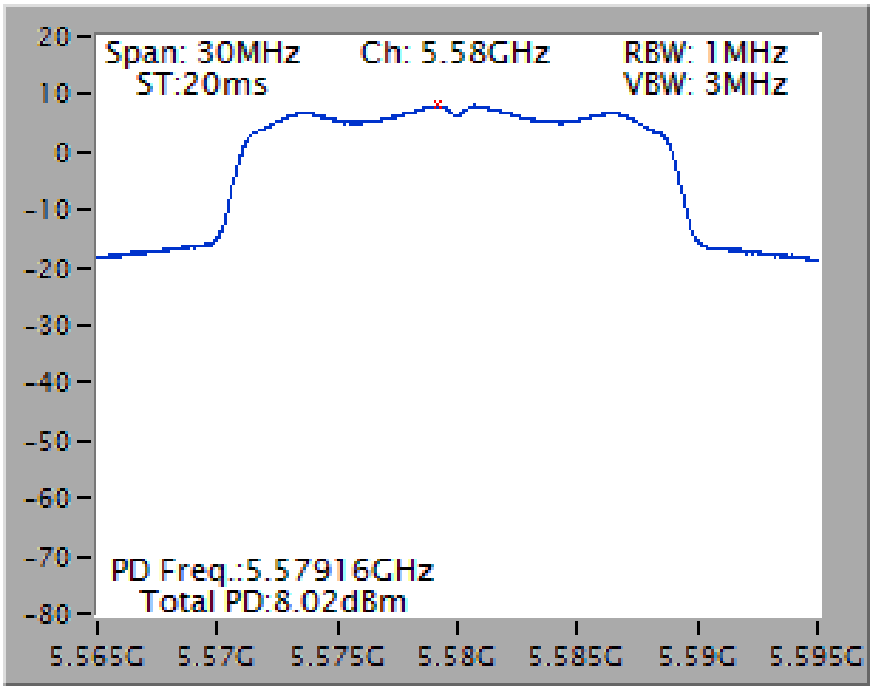
Power Density Plot on Configuration IEEE 802.11n MCS0 HT20 / Chain 1 + Chain 2 / 5200 MHz



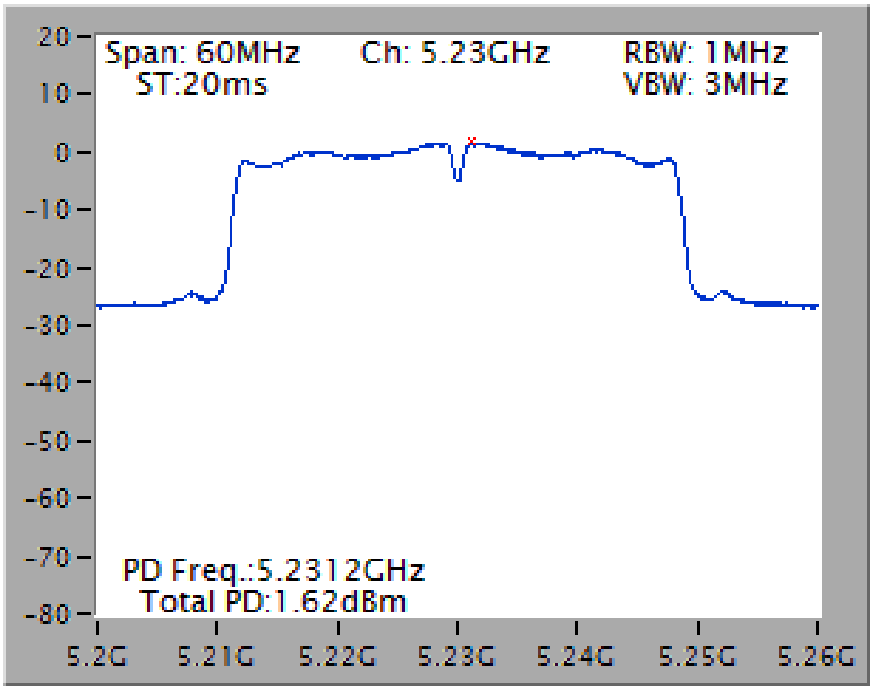
Power Density Plot on Configuration IEEE 802.11n MCS0 HT20 / Chain 1 + Chain 2 / 5300 MHz



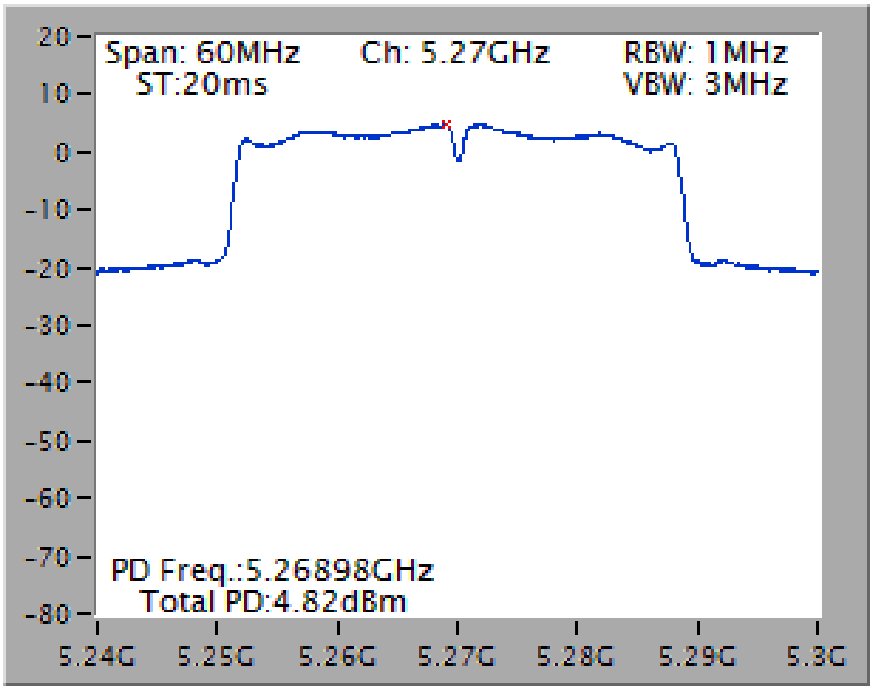
Power Density Plot on Configuration IEEE 802.11n MCS0 HT20 / Chain 1 + Chain 2 / 5580 MHz



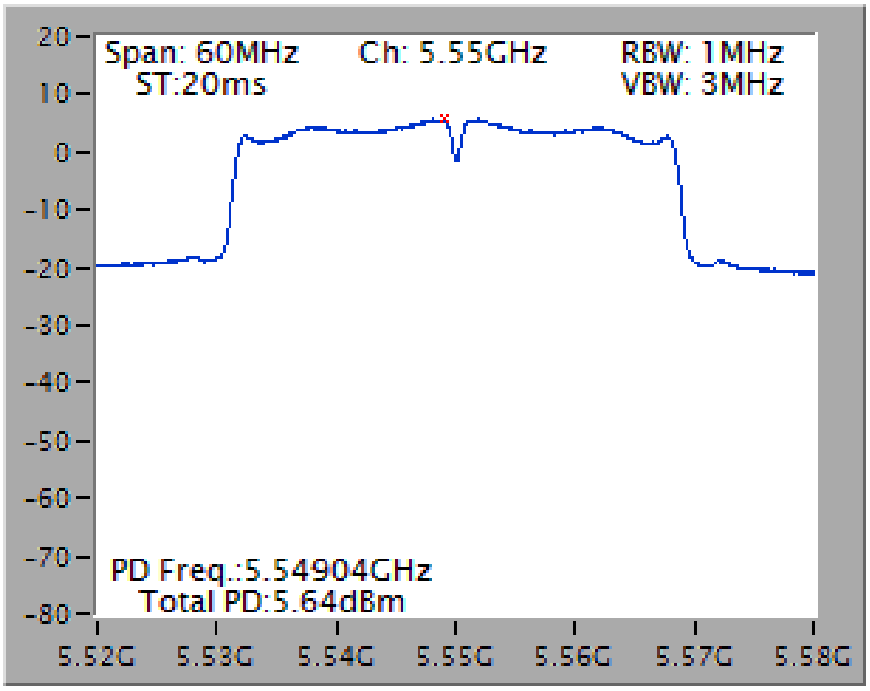
Power Density Plot on Configuration IEEE 802.11n MCS0 HT40 / Chain 1 + Chain 2 / 5230 MHz



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



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



4.5. Radiated Emissions Measurement

4.5.1. Limit

For transmitters operating in the 5.15-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an 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 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

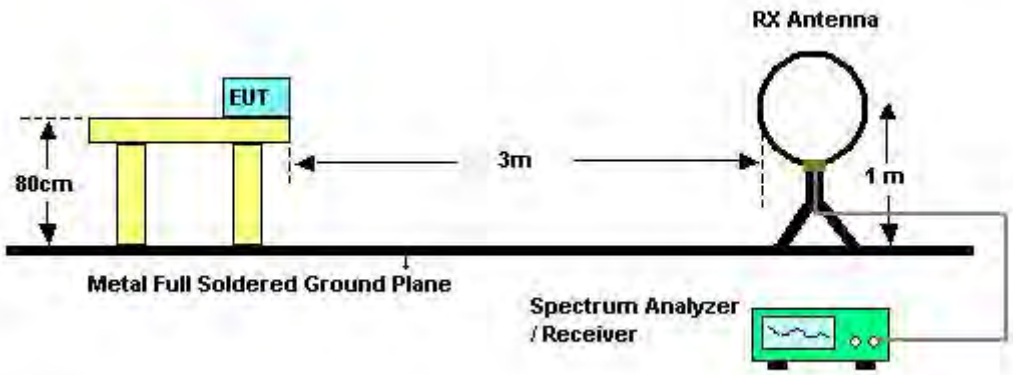
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.5.3. Test Procedures

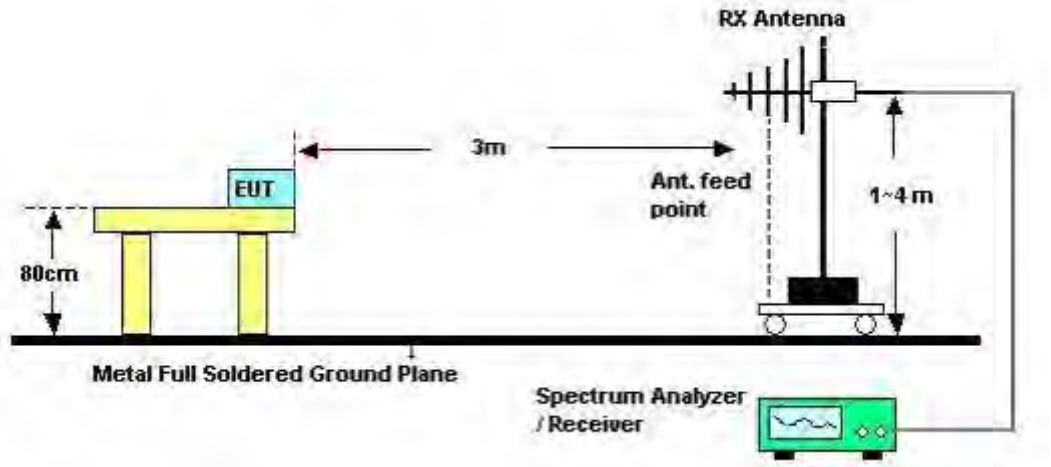
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1m & 3m far away from the turntable.
2. Power on the EUT and all the supporting 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.

4.5.4. Test Setup Layout

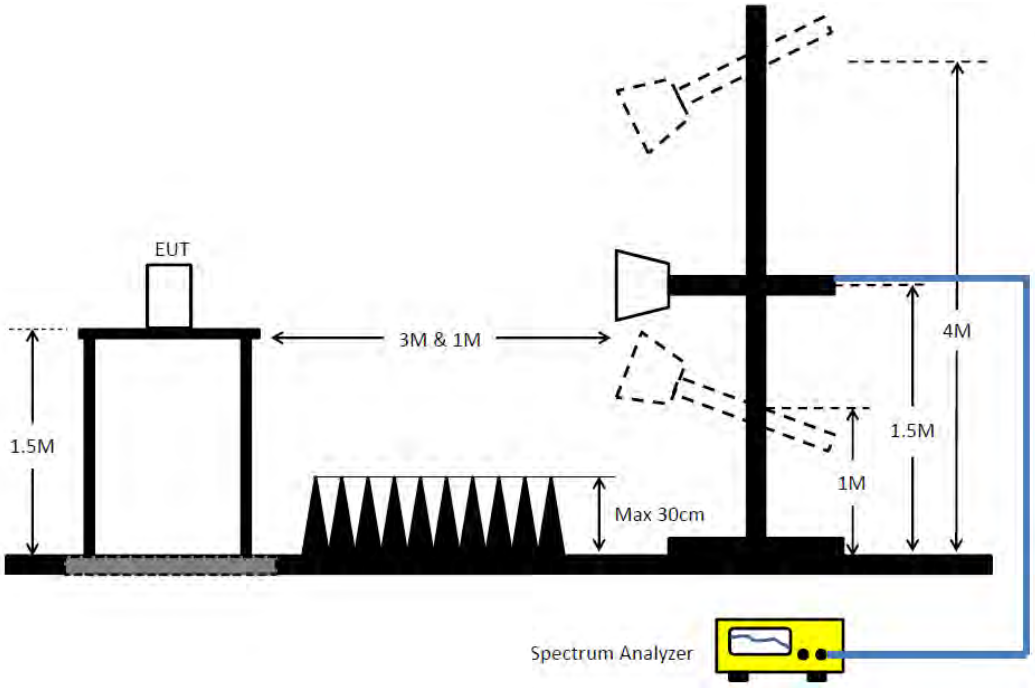
For Radiated Emissions: 9kHz ~30MHz



For Radiated Emissions: 30MHz~1GHz



For Radiated Emissions: Above 1GHz



4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

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

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	Normal Link
Test Date	Oct. 18, 2015	Test Mode	Mode 1

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

Note:

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

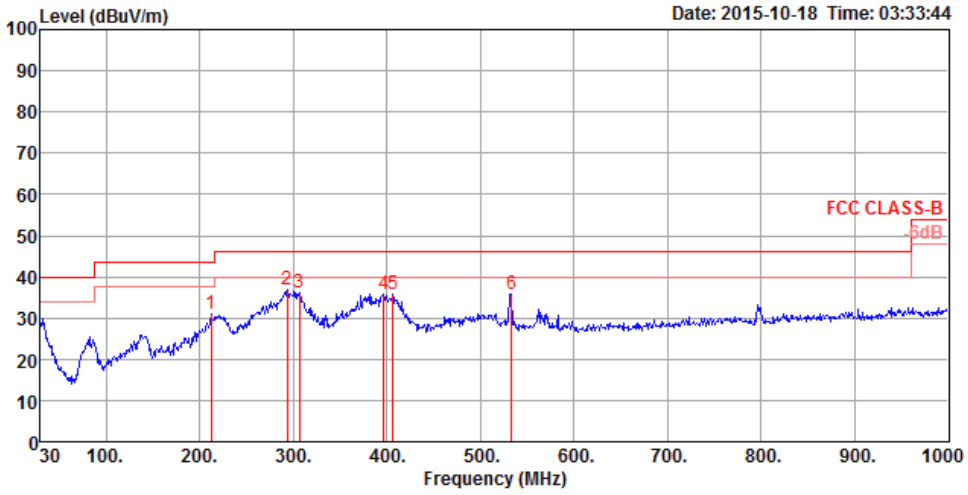
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

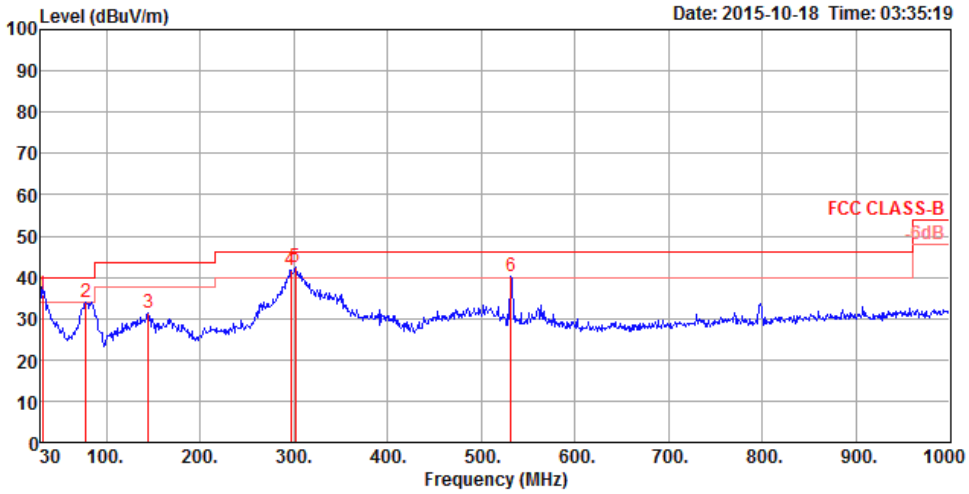
Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	Normal Link
Test Mode	Mode 1		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	212.36	31.13	43.50	-12.37	51.38	1.29	10.78	32.32	200	128	Peak	HORIZONTAL
2	293.84	36.98	46.00	-9.02	54.00	1.48	13.78	32.28	125	155	Peak	HORIZONTAL
3	306.45	36.10	46.00	-9.90	52.78	1.51	14.09	32.28	200	299	Peak	HORIZONTAL
4	396.66	35.91	46.00	-10.09	50.11	1.72	16.41	32.33	100	194	Peak	HORIZONTAL
5	406.36	35.93	46.00	-10.07	49.95	1.74	16.57	32.33	100	185	Peak	HORIZONTAL
6	533.43	35.70	46.00	-10.30	47.70	1.96	18.41	32.37	200	169	Peak	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	31.94	35.77	40.00	-4.23	48.66	0.64	18.87	32.40	133	221	QP	VERTICAL
2	78.50	33.91	40.00	-6.09	57.99	0.85	7.47	32.40	150	225	Peak	VERTICAL
3	144.46	31.31	43.50	-12.19	50.89	1.09	11.69	32.36	100	188	Peak	VERTICAL
4	296.75	41.84	46.00	-4.16	58.80	1.48	13.84	32.28	200	338	Peak	VERTICAL
5	301.60	42.31	46.00	-3.69	59.17	1.49	13.93	32.28	200	341	Peak	VERTICAL
6	531.49	40.23	46.00	-5.77	52.27	1.95	18.38	32.37	125	104	Peak	VERTICAL

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB 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.

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

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11a CH 36 / Chain 2
Test Date	Oct. 15, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15539.20	63.28	74.00	-10.72	46.26	12.58	38.14	33.70	101	267	Peak	HORIZONTAL
2	15540.86	49.01	54.00	-4.99	31.99	12.58	38.14	33.70	101	267	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15540.29	48.28	54.00	-5.72	31.26	12.58	38.14	33.70	145	74	Average	VERTICAL
2	15541.21	61.44	74.00	-12.56	44.42	12.58	38.14	33.70	145	74	Peak	VERTICAL

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11a CH 40 / Chain 2
Test Date	Oct. 15, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15598.74	49.22	54.00	-4.78	32.36	12.58	38.03	33.75	101	206	Average	HORIZONTAL
2	15599.13	62.95	74.00	-11.05	46.12	12.58	38.03	33.78	101	206	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15599.54	61.48	74.00	-12.52	44.65	12.58	38.03	33.78	147	80	Peak	VERTICAL
2	15599.87	47.82	54.00	-6.18	30.99	12.58	38.03	33.78	147	80	Average	VERTICAL

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11a CH 48 / Chain 2
Test Date	Oct. 15, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15718.62	62.01	74.00	-11.99	45.48	12.57	37.84	33.88	102	216	Peak	HORIZONTAL
2	15719.20	48.50	54.00	-5.50	31.97	12.57	37.84	33.88	102	216	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15718.92	60.95	74.00	-13.05	44.42	12.57	37.84	33.88	146	74	Peak	VERTICAL
2	15719.33	47.54	54.00	-6.46	31.01	12.57	37.84	33.88	146	74	Average	VERTICAL

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11a CH 52 / Chain 2
Test Date	Oct. 15, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15778.79	61.96	74.00	-12.04	45.58	12.57	37.76	33.95	101	210	Peak	HORIZONTAL
2	15781.16	48.57	54.00	-5.43	32.19	12.57	37.76	33.95	101	210	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15780.14	48.00	54.00	-6.00	31.62	12.57	37.76	33.95	148	74	Average	VERTICAL
2	15780.88	61.22	74.00	-12.78	44.84	12.57	37.76	33.95	148	74	Peak	VERTICAL

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11a CH 60 / Chain 2
Test Date	Oct. 15, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10599.00	46.25	54.00	-7.75	31.32	10.16	38.40	33.63	104	180	Average	HORIZONTAL
2	10599.30	62.57	74.00	-11.43	47.64	10.16	38.40	33.63	104	180	Peak	HORIZONTAL
3	15899.14	62.58	74.00	-11.42	46.49	12.57	37.57	34.05	101	201	Peak	HORIZONTAL
4	15900.98	48.77	54.00	-5.23	32.71	12.57	37.54	34.05	101	201	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10599.50	46.13	54.00	-7.87	31.20	10.16	38.40	33.63	135	170	Average	VERTICAL
2	10600.18	58.90	74.00	-15.10	43.97	10.16	38.40	33.63	135	170	Peak	VERTICAL
3	15898.57	61.14	74.00	-12.86	45.05	12.57	37.57	34.05	146	70	Peak	VERTICAL
4	15901.26	47.87	54.00	-6.13	31.81	12.57	37.54	34.05	146	70	Average	VERTICAL

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11a CH 64 / Chain 2
Test Date	Oct. 15, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10638.97	46.53	54.00	-7.47	31.52	10.21	38.40	33.60	101	180	Average	HORIZONTAL
2	10639.35	61.07	74.00	-12.93	46.06	10.21	38.40	33.60	101	180	Peak	HORIZONTAL
3	15958.54	48.26	54.00	-5.74	32.37	12.56	37.46	34.13	101	200	Average	HORIZONTAL
4	15959.06	61.53	74.00	-12.47	45.64	12.56	37.46	34.13	101	200	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10640.07	44.35	54.00	-9.65	29.34	10.21	38.40	33.60	132	176	Average	VERTICAL
2	10640.82	57.94	74.00	-16.06	42.93	10.21	38.40	33.60	132	176	Peak	VERTICAL
3	15960.47	61.70	74.00	-12.30	45.81	12.56	37.46	34.13	142	75	Peak	VERTICAL
4	15960.67	47.91	54.00	-6.09	32.02	12.56	37.46	34.13	142	75	Average	VERTICAL

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11a CH 100 / Chain 2
Test Date	Oct. 15, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10999.83	57.47	74.00	-16.53	41.90	10.55	38.40	33.38	102	212	Peak	HORIZONTAL
2	11000.37	43.81	54.00	-10.19	28.24	10.55	38.40	33.38	102	212	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10999.44	55.88	74.00	-18.12	40.31	10.55	38.40	33.38	147	76	Peak	VERTICAL
2	11000.10	43.03	54.00	-10.97	27.46	10.55	38.40	33.38	147	76	Average	VERTICAL

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11a CH 116 / Chain 2
Test Date	Oct. 15, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11160.03	64.25	74.00	-9.75	48.46	10.60	38.57	33.38	100	212	Peak	HORIZONTAL
2	11160.37	48.96	54.00	-5.04	33.17	10.60	38.57	33.38	100	212	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11159.51	44.71	54.00	-9.29	28.92	10.60	38.57	33.38	148	75	Average	VERTICAL
2	11160.73	57.98	74.00	-16.02	42.19	10.60	38.57	33.38	148	75	Peak	VERTICAL

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11a CH 140 / Chain 2
Test Date	Oct. 15, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11399.39	62.97	74.00	-11.03	46.85	10.69	38.80	33.37	101	207	Peak	HORIZONTAL
2	11400.02	48.31	54.00	-5.69	32.19	10.69	38.80	33.37	101	207	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11399.30	43.69	54.00	-10.31	27.57	10.69	38.80	33.37	149	75	Average	VERTICAL
2	11401.39	57.48	74.00	-16.52	41.36	10.69	38.80	33.37	149	75	Peak	VERTICAL

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11n MCS0 HT20 CH 36 / Chain 1 + Chain 2
Test Date	Oct. 16, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15540.18	63.16	74.00	-10.84	46.14	12.58	38.14	33.70	101	310	Peak	HORIZONTAL
2	15540.25	50.91	54.00	-3.09	33.89	12.58	38.14	33.70	101	310	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15539.59	61.83	74.00	-12.17	44.81	12.58	38.14	33.70	123	92	Peak	VERTICAL
2	15540.10	48.02	54.00	-5.98	31.00	12.58	38.14	33.70	123	92	Average	VERTICAL

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11n MCS0 HT20 CH 40 / Chain 1 + Chain 2
Test Date	Oct. 16, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15598.51	62.98	74.00	-11.02	46.12	12.58	38.03	33.75	101	311	Peak	HORIZONTAL
2	15598.85	49.68	54.00	-4.32	32.85	12.58	38.03	33.78	101	311	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15598.80	46.69	54.00	-7.31	29.86	12.58	38.03	33.78	123	90	Average	VERTICAL
2	15599.33	60.01	74.00	-13.99	43.18	12.58	38.03	33.78	123	90	Peak	VERTICAL

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11n MCS0 HT20 CH 48 / Chain 1 + Chain 2
Test Date	Oct. 16, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15720.28	50.63	54.00	-3.37	34.10	12.57	37.84	33.88	102	312	Average	HORIZONTAL
2	15720.38	63.19	74.00	-10.81	46.66	12.57	37.84	33.88	102	312	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15719.60	46.84	54.00	-7.16	30.31	12.57	37.84	33.88	147	179	Average	VERTICAL
2	15720.80	59.71	74.00	-14.29	43.18	12.57	37.84	33.88	147	179	Peak	VERTICAL

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11n MCS0 HT20 CH 52 / Chain 1 + Chain 2
Test Date	Oct. 16, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15780.43	62.29	74.00	-11.71	45.91	12.57	37.76	33.95	101	306	Peak	HORIZONTAL
2	15781.50	49.04	54.00	-4.96	32.69	12.57	37.73	33.95	101	306	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15779.25	60.35	74.00	-13.65	43.97	12.57	37.76	33.95	146	180	Peak	VERTICAL
2	15780.67	46.59	54.00	-7.41	30.21	12.57	37.76	33.95	146	180	Average	VERTICAL

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11n MCS0 HT20 CH 60 / Chain 1 + Chain 2
Test Date	Oct. 16, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10599.65	60.14	74.00	-13.86	45.21	10.16	38.40	33.63	101	175	Peak	HORIZONTAL
2	10599.68	46.71	54.00	-7.29	31.78	10.16	38.40	33.63	101	175	Average	HORIZONTAL
3	15899.89	48.99	54.00	-5.01	32.90	12.57	37.57	34.05	101	306	Average	HORIZONTAL
4	15900.28	62.56	74.00	-11.44	46.47	12.57	37.57	34.05	101	306	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10598.54	57.60	74.00	-16.40	42.67	10.16	38.40	33.63	145	177	Peak	VERTICAL
2	10598.92	44.24	54.00	-9.76	29.31	10.16	38.40	33.63	145	177	Average	VERTICAL
3	15899.75	60.12	74.00	-13.88	44.03	12.57	37.57	34.05	146	184	Peak	VERTICAL
4	15899.82	46.88	54.00	-7.12	30.79	12.57	37.57	34.05	146	184	Average	VERTICAL

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11n MCS0 HT20 CH 64 / Chain 1 + Chain 2
Test Date	Oct. 16, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10618.54	56.80	74.00	-17.20	41.83	10.19	38.40	33.62	100	182	Peak	HORIZONTAL
2	10619.62	43.06	54.00	-10.94	28.09	10.19	38.40	33.62	100	182	Average	HORIZONTAL
3	15929.52	60.36	74.00	-13.64	44.37	12.56	37.51	34.08	100	310	Peak	HORIZONTAL
4	15930.72	47.06	54.00	-6.94	31.09	12.56	37.51	34.10	100	310	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10618.80	55.90	74.00	-18.10	40.93	10.19	38.40	33.62	148	176	Peak	VERTICAL
2	10618.98	43.04	54.00	-10.96	28.07	10.19	38.40	33.62	148	176	Average	VERTICAL
3	15928.72	59.73	74.00	-14.27	43.74	12.56	37.51	34.08	147	167	Peak	VERTICAL
4	15930.67	47.09	54.00	-6.91	31.12	12.56	37.51	34.10	147	167	Average	VERTICAL

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11n MCS0 HT20 CH 100 / Chain 1 + Chain 2
Test Date	Oct. 15, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10998.91	57.39	74.00	-16.61	41.82	10.55	38.40	33.38	102	136	Peak	HORIZONTAL
2	10999.15	44.64	54.00	-9.36	29.07	10.55	38.40	33.38	102	136	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10998.67	55.63	74.00	-18.37	40.06	10.55	38.40	33.38	149	317	Peak	VERTICAL
2	11000.48	43.02	54.00	-10.98	27.45	10.55	38.40	33.38	149	317	Average	VERTICAL

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11n MCS0 HT20 CH 116 / Chain 1 + Chain 2
Test Date	Oct. 16, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11158.79	62.96	74.00	-11.04	47.17	10.60	38.57	33.38	101	0	Peak	HORIZONTAL
2	11161.42	47.97	54.00	-6.03	32.18	10.60	38.57	33.38	101	0	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11158.94	45.09	54.00	-8.91	29.30	10.60	38.57	33.38	148	185	Average	VERTICAL
2	11160.29	58.29	74.00	-15.71	42.50	10.60	38.57	33.38	148	185	Peak	VERTICAL

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11n MCS0 HT20 CH 140 / Chain 1 + Chain 2
Test Date	Oct. 16, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11399.21	44.66	54.00	-9.34	28.54	10.69	38.80	33.37	103	0	Average	HORIZONTAL
2	11399.98	58.87	74.00	-15.13	42.75	10.69	38.80	33.37	103	0	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11398.68	42.32	54.00	-11.68	26.20	10.69	38.80	33.37	146	183	Average	VERTICAL
2	11400.63	55.06	74.00	-18.94	38.94	10.69	38.80	33.37	146	183	Peak	VERTICAL

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11n MCS0 HT40 CH 38 / Chain 1 + Chain 2
Test Date	Oct. 16, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15568.62	47.11	54.00	-6.89	30.17	12.58	38.09	33.73	101	75	Average	HORIZONTAL
2	15571.49	60.30	74.00	-13.70	43.36	12.58	38.09	33.73	101	75	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15570.37	59.85	74.00	-14.15	42.91	12.58	38.09	33.73	148	194	Peak	VERTICAL
2	15571.03	46.89	54.00	-7.11	29.95	12.58	38.09	33.73	148	194	Average	VERTICAL

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11n MCS0 HT40 CH 46 / Chain 1 + Chain 2
Test Date	Oct. 16, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15569.11	59.89	74.00	-14.11	42.95	12.58	38.09	33.73	101	232	Peak	HORIZONTAL
2	15571.26	46.91	54.00	-7.09	29.97	12.58	38.09	33.73	101	232	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15569.06	60.26	74.00	-13.74	43.32	12.58	38.09	33.73	146	181	Peak	VERTICAL
2	15571.32	46.79	54.00	-7.21	29.85	12.58	38.09	33.73	146	181	Average	VERTICAL

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11n MCS0 HT40 CH 54 / Chain 1 + Chain 2
Test Date	Oct. 16, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15808.69	46.79	54.00	-7.21	30.50	12.57	37.70	33.98	101	224	Average	HORIZONTAL
2	15811.22	59.77	74.00	-14.23	43.48	12.57	37.70	33.98	101	224	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	15810.66	46.31	54.00	-7.69	30.02	12.57	37.70	33.98	146	183	Average	VERTICAL
2	15810.89	59.66	74.00	-14.34	43.37	12.57	37.70	33.98	146	183	Peak	VERTICAL

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11nMCS0 HT40 CH 62 / Chain 1 + Chain 2
Test Date	Oct. 16, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10618.84	43.10	54.00	-10.90	28.13	10.19	38.40	33.62	100	222	Average	HORIZONTAL
2	10620.87	56.83	74.00	-17.17	41.86	10.19	38.40	33.62	100	222	Peak	HORIZONTAL
3	15930.54	60.15	74.00	-13.85	44.18	12.56	37.51	34.10	100	208	Peak	HORIZONTAL
4	15931.37	46.95	54.00	-7.05	30.98	12.56	37.51	34.10	100	208	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	10618.76	56.32	74.00	-17.68	41.35	10.19	38.40	33.62	148	177	Peak	VERTICAL
2	10619.38	43.01	54.00	-10.99	28.04	10.19	38.40	33.62	148	177	Average	VERTICAL
3	15931.18	46.76	54.00	-7.24	30.79	12.56	37.51	34.10	149	186	Average	VERTICAL
4	15931.21	59.93	74.00	-14.07	43.96	12.56	37.51	34.10	149	186	Peak	VERTICAL

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11n MCS0 HT40 CH 102 / Chain 1 + Chain 2
Test Date	Oct. 16, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11020.43	42.88	54.00	-11.12	27.28	10.56	38.42	33.38	100	217	Average	HORIZONTAL
2	11020.68	55.98	74.00	-18.02	40.38	10.56	38.42	33.38	100	217	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11020.37	56.38	74.00	-17.62	40.78	10.56	38.42	33.38	147	153	Peak	VERTICAL
2	11020.44	42.85	54.00	-11.15	27.25	10.56	38.42	33.38	147	153	Average	VERTICAL

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11n MCS0 HT40 CH 110 / Chain 1 + Chain 2
Test Date	Oct. 16, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11098.98	60.68	74.00	-13.32	44.98	10.58	38.50	33.38	100	356	Peak	HORIZONTAL
2	11099.12	47.57	54.00	-6.43	31.87	10.58	38.50	33.38	100	356	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11098.81	57.28	74.00	-16.72	41.58	10.58	38.50	33.38	146	186	Peak	VERTICAL
2	11099.19	44.48	54.00	-9.52	28.78	10.58	38.50	33.38	146	186	Average	VERTICAL

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11n MCS0 HT40 CH 134 / Chain 1 + Chain 2
Test Date	Oct. 16, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11338.62	58.44	74.00	-15.56	42.42	10.66	38.73	33.37	102	325	Peak	HORIZONTAL
2	11341.22	44.80	54.00	-9.20	28.77	10.67	38.73	33.37	102	325	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11341.31	56.51	74.00	-17.49	40.48	10.67	38.73	33.37	147	182	Peak	VERTICAL
2	11341.33	43.10	54.00	-10.90	27.07	10.67	38.73	33.37	147	182	Average	VERTICAL

Note:

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

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

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

4.6. Band Edge Emissions Measurement

4.6.1. Limit

For transmitters operating in the 5.15-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an 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

4.6.2. 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	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

4.6.3. Test Procedures

The test procedure is the same as section 4.5.3.

4.6.4. Test Setup Layout

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

4.6.5. Test Deviation

There is no deviation with the original standard.

4.6.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.6.7. Test Result of Band Edge and Fundamental Emissions

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11a CH 36, 40, 48 / Chain 2
Test Date	Oct. 15, 2015		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5148.60	69.36	74.00	-4.64	62.46	6.21	33.74	33.05	102	223	Peak	HORIZONTAL
2	5150.00	53.55	54.00	-0.45	46.65	6.21	33.74	33.05	102	223	Average	HORIZONTAL
3	5180.00	106.29			99.31	6.24	33.79	33.05	102	223	Peak	HORIZONTAL
4	5180.60	95.65			88.67	6.24	33.79	33.05	102	223	Average	HORIZONTAL

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

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5142.80	65.05	74.00	-8.95	58.19	6.17	33.74	33.05	100	191	Peak	HORIZONTAL
2	5150.00	48.72	54.00	-5.28	41.82	6.21	33.74	33.05	100	191	Average	HORIZONTAL
3	5199.20	98.36			91.32	6.27	33.82	33.05	100	191	Average	HORIZONTAL
4	5200.00	108.80			101.76	6.27	33.82	33.05	100	191	Peak	HORIZONTAL

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5121.20	55.48	74.00	-18.52	48.67	6.17	33.69	33.05	101	223	Peak	HORIZONTAL
2	5149.40	42.34	54.00	-11.66	35.44	6.21	33.74	33.05	101	223	Average	HORIZONTAL
3	5240.00	102.83			95.71	6.30	33.87	33.05	101	223	Peak	HORIZONTAL
4	5240.60	90.35			83.23	6.30	33.87	33.05	101	223	Average	HORIZONTAL
5	5351.20	44.73	54.00	-9.27	37.26	6.47	34.06	33.06	101	223	Average	HORIZONTAL
6	5381.60	58.31	74.00	-15.69	50.76	6.50	34.11	33.06	101	223	Peak	HORIZONTAL

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

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11a CH 52, 60, 64 / Chain 2
Test Date	Oct. 15, 2015		

Channel 52

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5124.40	45.63	54.00	-8.37	38.80	6.17	33.71	33.05	112	188	Average	HORIZONTAL
2	5140.00	57.84	74.00	-16.16	50.98	6.17	33.74	33.05	112	188	Peak	HORIZONTAL
3	5260.60	99.56			92.35	6.34	33.93	33.06	112	188	Average	HORIZONTAL
4	5261.20	108.76			101.55	6.34	33.93	33.06	112	188	Peak	HORIZONTAL
5	5362.60	47.35	54.00	-6.65	39.85	6.47	34.09	33.06	112	188	Average	HORIZONTAL
6	5394.40	60.19	74.00	-13.81	52.64	6.50	34.11	33.06	112	188	Peak	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5298.40	111.63			104.31	6.40	33.98	33.06	102	222	Peak	HORIZONTAL
2	5299.20	101.15			93.83	6.40	33.98	33.06	102	222	Average	HORIZONTAL
3	5350.00	53.97	54.00	-0.03	46.50	6.47	34.06	33.06	102	222	Average	HORIZONTAL
4	5352.40	69.09	74.00	-4.91	61.62	6.47	34.06	33.06	102	222	Peak	HORIZONTAL

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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5318.80	97.71			90.36	6.40	34.01	33.06	100	222	Average	HORIZONTAL
2	5319.00	108.91			101.56	6.40	34.01	33.06	100	222	Peak	HORIZONTAL
3	5350.20	53.45	54.00	-0.55	45.98	6.47	34.06	33.06	100	222	Average	HORIZONTAL
4	5352.60	71.50	74.00	-2.50	64.03	6.47	34.06	33.06	100	222	Peak	HORIZONTAL

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

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11a CH 100, 116, 140 / Chain 2
Test Date	Oct. 15, 2015		

Channel 100

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5458.60	65.41	74.00	-8.59	57.65	6.60	34.22	33.06	100	185	Peak	HORIZONTAL
2	5460.00	49.90	54.00	-4.10	42.14	6.60	34.22	33.06	100	185	Average	HORIZONTAL
3	5467.60	71.39	74.00	-2.61	63.60	6.60	34.25	33.06	100	185	Peak	HORIZONTAL
4	5470.00	53.41	54.00	-0.59	45.62	6.60	34.25	33.06	100	185	Average	HORIZONTAL
5	5499.40	97.84			89.97	6.63	34.30	33.06	100	185	Average	HORIZONTAL
6	5499.80	110.40			102.53	6.63	34.30	33.06	100	185	Peak	HORIZONTAL

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

Channel 116

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5450.40	59.05	74.00	-14.95	51.29	6.60	34.22	33.06	100	220	Peak	HORIZONTAL
2	5455.80	46.97	54.00	-7.03	39.21	6.60	34.22	33.06	100	220	Average	HORIZONTAL
3	5466.60	59.58	74.00	-14.42	51.79	6.60	34.25	33.06	100	220	Peak	HORIZONTAL
4	5470.00	47.06	54.00	-6.94	39.27	6.60	34.25	33.06	100	220	Average	HORIZONTAL
5	5580.60	99.80			91.83	6.72	34.34	33.09	100	220	Average	HORIZONTAL
6	5580.60	109.59			101.62	6.72	34.34	33.09	100	220	Peak	HORIZONTAL
7	5730.00	46.31	54.00	-7.69	38.18	6.83	34.43	33.13	100	220	Average	HORIZONTAL
8	5730.00	58.67	74.00	-15.33	50.54	6.83	34.43	33.13	100	220	Peak	HORIZONTAL

Item 5, 6 are the fundamental frequency at 5580 MHz.

Channel 140

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5701.00	99.01			90.90	6.81	34.42	33.12	100	221	Average	HORIZONTAL
2	5701.00	110.48			102.37	6.81	34.42	33.12	100	221	Peak	HORIZONTAL
3	5725.00	53.47	54.00	-0.53	45.34	6.83	34.43	33.13	100	221	Average	HORIZONTAL
4	5725.20	70.16	74.00	-3.84	62.03	6.83	34.43	33.13	100	221	Peak	HORIZONTAL

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

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11n MCS0 HT20 CH 36, 40, 48 / Chain 1 + Chain 2
Test Date	Oct. 15, 2015		

Channel 36

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5146.20	71.17	74.00	-2.83	64.27	6.21	33.74	33.05	114	170	Peak	HORIZONTAL
2	5150.00	53.78	54.00	-0.22	46.88	6.21	33.74	33.05	114	170	Average	HORIZONTAL
3	5180.60	106.99			100.01	6.24	33.79	33.05	114	170	Peak	HORIZONTAL
4	5180.80	98.00			91.02	6.24	33.79	33.05	114	170	Average	HORIZONTAL

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

Channel 40

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5149.60	47.92	54.00	-6.08	41.02	6.21	33.74	33.05	100	223	Average	HORIZONTAL
2	5149.60	60.09	74.00	-13.91	53.19	6.21	33.74	33.05	100	223	Peak	HORIZONTAL
3	5199.60	99.33			92.29	6.27	33.82	33.05	100	223	Average	HORIZONTAL
4	5199.60	108.27			101.23	6.27	33.82	33.05	100	223	Peak	HORIZONTAL

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

Channel 48

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5101.40	43.48	54.00	-10.52	36.73	6.14	33.66	33.05	100	231	Average	HORIZONTAL
2	5115.80	56.75	74.00	-17.25	49.97	6.14	33.69	33.05	100	231	Peak	HORIZONTAL
3	5239.40	101.27			94.15	6.30	33.87	33.05	100	231	Average	HORIZONTAL
4	5239.40	110.92			103.80	6.30	33.87	33.05	100	231	Peak	HORIZONTAL
5	5358.20	45.43	54.00	-8.57	37.96	6.47	34.06	33.06	100	231	Average	HORIZONTAL
6	5368.40	58.29	74.00	-15.71	50.79	6.47	34.09	33.06	100	231	Peak	HORIZONTAL

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

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11n MCS0 HT20 CH 52, 60, 64 / Chain 1 + Chain 2
Test Date	Oct. 15, 2015		

Channel 52

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5123.80	45.73	54.00	-8.27	38.90	6.17	33.71	33.05	100	222	Average	HORIZONTAL
2	5139.40	57.85	74.00	-16.15	51.02	6.17	33.71	33.05	100	222	Peak	HORIZONTAL
3	5259.40	99.80			92.59	6.34	33.93	33.06	100	222	Average	HORIZONTAL
4	5259.40	108.47			101.26	6.34	33.93	33.06	100	222	Peak	HORIZONTAL
5	5352.40	47.49	54.00	-6.51	40.02	6.47	34.06	33.06	100	222	Average	HORIZONTAL
6	5360.20	60.57	74.00	-13.43	53.10	6.47	34.06	33.06	100	222	Peak	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5299.60	101.08			93.76	6.40	33.98	33.06	102	223	Average	HORIZONTAL
2	5299.60	110.53			103.21	6.40	33.98	33.06	102	223	Peak	HORIZONTAL
3	5350.00	51.42	54.00	-2.58	43.95	6.47	34.06	33.06	102	223	Average	HORIZONTAL
4	5350.80	65.53	74.00	-8.47	58.06	6.47	34.06	33.06	102	223	Peak	HORIZONTAL

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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5319.60	97.72			90.37	6.40	34.01	33.06	100	223	Average	HORIZONTAL
2	5319.60	107.75			100.40	6.40	34.01	33.06	100	223	Peak	HORIZONTAL
3	5350.20	53.58	54.00	-0.42	46.11	6.47	34.06	33.06	100	223	Average	HORIZONTAL
4	5350.60	68.53	74.00	-5.47	61.06	6.47	34.06	33.06	100	223	Peak	HORIZONTAL

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

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11n MCS0 HT20 CH 100, 116, 140 / Chain 1 + Chain 2
Test Date	Oct. 15, 2015		

Channel 100

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5459.20	49.93	54.00	-4.07	42.17	6.60	34.22	33.06	100	229	Average	HORIZONTAL
2	5459.60	62.88	74.00	-11.12	55.12	6.60	34.22	33.06	100	229	Peak	HORIZONTAL
3	5466.80	67.76	74.00	-6.24	59.97	6.60	34.25	33.06	100	229	Peak	HORIZONTAL
4	5469.60	53.32	54.00	-0.68	45.53	6.60	34.25	33.06	100	229	Average	HORIZONTAL
5	5499.20	108.72			100.85	6.63	34.30	33.06	100	229	Peak	HORIZONTAL
6	5499.60	99.33			91.46	6.63	34.30	33.06	100	229	Average	HORIZONTAL

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

Channel 116

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5434.80	58.24	74.00	-15.76	50.55	6.56	34.19	33.06	100	222	Peak	HORIZONTAL
2	5457.00	45.32	54.00	-8.68	37.56	6.60	34.22	33.06	100	222	Average	HORIZONTAL
3	5463.60	45.48	54.00	-8.52	37.69	6.60	34.25	33.06	100	222	Average	HORIZONTAL
4	5465.40	57.27	74.00	-16.73	49.48	6.60	34.25	33.06	100	222	Peak	HORIZONTAL
5	5579.40	100.30			92.33	6.72	34.34	33.09	100	222	Average	HORIZONTAL
6	5579.40	109.75			101.78	6.72	34.34	33.09	100	222	Peak	HORIZONTAL
7	5725.60	43.76	54.00	-10.24	35.63	6.83	34.43	33.13	100	222	Average	HORIZONTAL
8	5725.60	55.74	74.00	-18.26	47.61	6.83	34.43	33.13	100	222	Peak	HORIZONTAL

Item 5, 6 are the fundamental frequency at 5580 MHz.

Channel 140

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5699.60	99.09			90.99	6.81	34.41	33.12	102	222	Average	HORIZONTAL
2	5700.00	108.39			100.29	6.81	34.41	33.12	102	222	Peak	HORIZONTAL
3	5725.00	53.76	54.00	-0.24	45.63	6.83	34.43	33.13	102	222	Average	HORIZONTAL
4	5725.00	69.56	74.00	-4.44	61.43	6.83	34.43	33.13	102	222	Peak	HORIZONTAL

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

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11n MCS0 HT40 CH 38, 46 / Chain 1 + Chain 2
Test Date	Oct. 15, 2015		

Channel 38

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5149.20	53.47	54.00	-0.53	46.57	6.21	33.74	33.05	101	230	Average	HORIZONTAL
2	5150.00	67.88	74.00	-6.12	60.98	6.21	33.74	33.05	101	230	Peak	HORIZONTAL
3	5192.00	89.98			82.97	6.24	33.82	33.05	101	230	Average	HORIZONTAL
4	5192.00	99.66			92.65	6.24	33.82	33.05	101	230	Peak	HORIZONTAL

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

Channel 46

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5146.00	60.76	74.00	-13.24	53.86	6.21	33.74	33.05	100	223	Peak	HORIZONTAL
2	5150.00	46.13	54.00	-7.87	39.23	6.21	33.74	33.05	100	223	Average	HORIZONTAL
3	5231.80	95.77			88.65	6.30	33.87	33.05	100	223	Average	HORIZONTAL
4	5231.80	105.40			98.28	6.30	33.87	33.05	100	223	Peak	HORIZONTAL

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

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11n MCS0 HT40 CH 54, 62 / / Chain 1 + Chain 2
Test Date	Oct. 15, 2015		

Channel 54

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5267.60	95.90			88.69	6.34	33.93	33.06	100	214	Average	HORIZONTAL
2	5272.40	106.68			99.44	6.37	33.93	33.06	100	214	Peak	HORIZONTAL
3	5350.40	52.07	54.00	-1.93	44.60	6.47	34.06	33.06	100	214	Average	HORIZONTAL
4	5350.40	66.68	74.00	-7.32	59.21	6.47	34.06	33.06	100	214	Peak	HORIZONTAL

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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5312.00	88.88			81.53	6.40	34.01	33.06	100	232	Average	HORIZONTAL
2	5312.00	100.62			93.27	6.40	34.01	33.06	100	232	Peak	HORIZONTAL
3	5350.00	53.80	54.00	-0.20	46.33	6.47	34.06	33.06	100	232	Average	HORIZONTAL
4	5352.40	69.66	74.00	-4.34	62.19	6.47	34.06	33.06	100	232	Peak	HORIZONTAL

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

Temperature	24°C	Humidity	55%
Test Engineer	Stim Sung	Configurations	IEEE 802.11n MCS0 HT40 CH 102, 110, 134 / Chain 1 + Chain 2
Test Date	Oct. 15, 2015		

Channel 102

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5459.20	60.97	74.00	-13.03	53.21	6.60	34.22	33.06	100	228	Peak	HORIZONTAL
2	5459.60	47.90	54.00	-6.10	40.14	6.60	34.22	33.06	100	228	Average	HORIZONTAL
3	5467.20	68.37	74.00	-5.63	60.58	6.60	34.25	33.06	100	228	Peak	HORIZONTAL
4	5469.60	53.89	54.00	-0.11	46.10	6.60	34.25	33.06	100	228	Average	HORIZONTAL
5	5512.00	90.04			82.16	6.65	34.30	33.07	100	228	Average	HORIZONTAL
6	5512.00	100.79			92.91	6.65	34.30	33.07	100	228	Peak	HORIZONTAL

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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5454.40	68.20	74.00	-5.80	60.44	6.60	34.22	33.06	101	222	Peak	HORIZONTAL
2	5459.60	49.87	54.00	-4.13	42.11	6.60	34.22	33.06	101	222	Average	HORIZONTAL
3	5467.60	71.60	74.00	-2.40	63.81	6.60	34.25	33.06	101	222	Peak	HORIZONTAL
4	5469.60	52.33	54.00	-1.67	44.54	6.60	34.25	33.06	101	222	Average	HORIZONTAL
5	5552.40	99.55			91.60	6.70	34.33	33.08	101	222	Average	HORIZONTAL
6	5552.40	109.60			101.65	6.70	34.33	33.08	101	222	Peak	HORIZONTAL

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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	5672.40	95.93			87.86	6.79	34.40	33.12	101	220	Average	HORIZONTAL
2	5682.00	106.24			98.15	6.81	34.40	33.12	101	220	Peak	HORIZONTAL
3	5725.00	53.91	54.00	-0.09	45.78	6.83	34.43	33.13	101	220	Average	HORIZONTAL
4	5727.20	71.23	74.00	-2.77	63.10	6.83	34.43	33.13	101	220	Peak	HORIZONTAL

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

Note:

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

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

4.7. Frequency Stability Measurement

4.7.1. 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).

4.7.2. Measuring Instruments and Setting

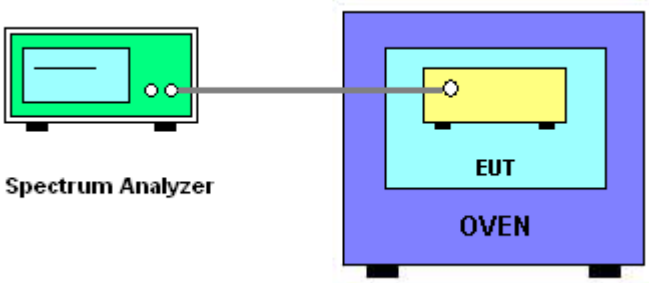
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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

4.7.3. 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.

4.7.4. Test Setup Layout



4.7.5. Test Deviation

There is no deviation with the original standard.

4.7.6. EUT Operation during Test

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

4.7.7. Test Result of Frequency Stability

Temperature	25°C	Humidity	45%
Test Engineer	Kenneth Huang	Test Date	Oct. 17, 2015

Mode: 20 MHz / Chain 1

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5199.9461	5199.9447	5199.9429	5199.9408
110.00	5199.9449	5199.9436	5199.9420	5199.9401
93.50	5199.9435	5199.9424	5199.9412	5199.9390
Max. Deviation (MHz)	0.0565	0.0576	0.0588	0.0610
Max. Deviation (ppm)	10.87	11.08	11.32	11.74
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5200 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-20	5199.9503	5199.9490	5199.9473	5199.9449
-10	5199.9488	5199.9476	5199.9460	5199.9441
0	5199.9474	5199.9462	5199.9443	5199.9421
10	5199.9461	5199.9448	5199.9433	5199.9415
20	5199.9449	5199.9436	5199.9420	5199.9401
30	5199.9435	5199.9424	5199.9410	5199.9394
40	5199.9419	5199.9404	5199.9388	5199.9368
50	5199.9402	5199.9390	5199.9375	5199.9348
Max. Deviation (MHz)	0.0598	0.0610	0.0625	0.0652
Max. Deviation (ppm)	11.51	11.74	12.03	12.55
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5300 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5299.9475	5299.9461	5299.9443	5299.9422
110.00	5299.9463	5299.9450	5299.9434	5299.9415
93.50	5299.9449	5299.9438	5299.9426	5299.9404
Max. Deviation (MHz)	0.0551	0.0562	0.0574	0.0596
Max. Deviation (ppm)	10.39	10.60	10.83	11.24
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5300 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-20	5299.9517	5299.9504	5299.9487	5299.9463
-10	5299.9502	5299.9490	5299.9474	5299.9455
0	5299.9488	5299.9476	5299.9457	5299.9435
10	5299.9475	5299.9462	5299.9447	5299.9429
20	5299.9463	5299.9450	5299.9434	5299.9415
30	5299.9449	5299.9438	5299.9424	5299.9408
40	5299.9433	5299.9418	5299.9402	5299.9382
50	5299.9416	5299.9404	5299.9389	5299.9362
Max. Deviation (MHz)	0.0584	0.0596	0.0611	0.0638
Max. Deviation (ppm)	11.01	11.24	11.52	12.03
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5580 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5579.9370	5579.9356	5579.9338	5579.9317
110.00	5579.9358	5579.9345	5579.9329	5579.9310
93.50	5579.9344	5579.9333	5579.9321	5579.9299
Max. Deviation (MHz)	0.0657	0.0668	0.0680	0.0702
Max. Deviation (ppm)	11.77	11.96	12.18	12.57
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5580 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-20	5579.9412	5579.9399	5579.9382	5579.9358
-10	5579.9397	5579.9385	5579.9369	5579.9350
0	5579.9383	5579.9371	5579.9352	5579.9330
10	5579.9370	5579.9357	5579.9342	5579.9324
20	5579.9358	5579.9345	5579.9329	5579.9310
30	5579.9344	5579.9333	5579.9319	5579.9303
40	5579.9328	5579.9313	5579.9297	5579.9277
50	5579.9311	5579.9299	5579.9284	5579.9257
Max. Deviation (MHz)	0.0689	0.0701	0.0716	0.0743
Max. Deviation (ppm)	12.36	12.57	12.84	13.32
Result	Complies			

Mode: 40 MHz / Chain 1

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5189.9495	5189.9481	5189.9463	5189.9442
110.00	5189.9483	5189.9470	5189.9454	5189.9435
93.50	5189.9469	5189.9458	5189.9446	5189.9424
Max. Deviation (MHz)	0.0531	0.0542	0.0554	0.0576
Max. Deviation (ppm)	10.23	10.44	10.67	11.10
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5190 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-20	5189.9473	5189.9460	5189.9443	5189.9419
-10	5189.9458	5189.9446	5189.9430	5189.9411
0	5189.9444	5189.9432	5189.9413	5189.9391
10	5189.9431	5189.9418	5189.9403	5189.9385
20	5189.9419	5189.9406	5189.9390	5189.9371
30	5189.9405	5189.9394	5189.9380	5189.9364
40	5189.9389	5189.9374	5189.9358	5189.9338
50	5189.9372	5189.9360	5189.9345	5189.9318
Max. Deviation (MHz)	0.0628	0.0640	0.0655	0.0682
Max. Deviation (ppm)	12.11	12.34	12.63	13.15
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5310 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5309.9444	5309.9430	5309.9412	5309.9391
110.00	5309.9432	5309.9419	5309.9403	5309.9384
93.50	5309.9418	5309.9407	5309.9395	5309.9373
Max. Deviation (MHz)	0.0582	0.0593	0.0605	0.0627
Max. Deviation (ppm)	10.96	11.16	11.39	11.80
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5310 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-20	5309.9486	5309.9473	5309.9456	5309.9432
-10	5309.9471	5309.9459	5309.9443	5309.9424
0	5309.9457	5309.9445	5309.9426	5309.9404
10	5309.9444	5309.9431	5309.9416	5309.9398
20	5309.9432	5309.9419	5309.9403	5309.9384
30	5309.9418	5309.9407	5309.9393	5309.9377
40	5309.9402	5309.9387	5309.9371	5309.9351
50	5309.9385	5309.9373	5309.9358	5309.9331
Max. Deviation (MHz)	0.0615	0.0627	0.0642	0.0669
Max. Deviation (ppm)	11.58	11.80	12.09	12.60
Result	Complies			

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)			
(V)	5550 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
126.50	5549.9461	5549.9447	5549.9429	5549.9408
110.00	5549.9449	5549.9436	5549.9420	5549.9401
93.50	5549.9435	5549.9424	5549.9412	5549.9390
Max. Deviation (MHz)	0.0565	0.0576	0.0588	0.0610
Max. Deviation (ppm)	10.19	10.39	10.60	11.00
Result	Complies			

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)			
(°C)	5550 MHz			
	0 Minute	2 Minute	5 Minute	10 Minute
-20	5549.9467	5549.9454	5549.9437	5549.9413
-10	5549.9452	5549.9440	5549.9424	5549.9405
0	5549.9438	5549.9426	5549.9407	5549.9385
10	5549.9425	5549.9412	5549.9397	5549.9379
20	5549.9413	5549.9400	5549.9384	5549.9365
30	5549.9399	5549.9388	5549.9374	5549.9358
40	5549.9383	5549.9368	5549.9352	5549.9332
50	5549.9366	5549.9354	5549.9339	5549.9312
Max. Deviation (MHz)	0.0634	0.0646	0.0661	0.0688
Max. Deviation (ppm)	11.43	11.65	11.92	12.40
Result	Complies			

4.8. Antenna Requirements

4.8.1. Limit

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

4.8.2. Antenna Connector Construction

Please refer to section 3.3 in this test report; antenna connector complied with the requirements.

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
LISN	Schwarzbeck	NSLK 8127	8127650	9kHz ~ 30MHz	Nov. 17, 2014	Nov. 16, 2015	Conduction (CO02-CB)
LISN	Schwarzbeck	NSLK 8127	8127478	9kHz ~ 30MHz	Nov. 17, 2014	Nov. 16, 2015	Conduction (CO02-CB)
EMI Receiver	Agilent	N9038A	MY52260140	9kHz ~ 8.4GHz	Jan. 13, 2015	Jan. 12, 2016	Conduction (CO02-CB)
COND Cable	Woken	Cable	01	0.15MHz ~ 30MHz	Dec. 01, 2014	Nov. 30, 2015	Conduction (CO02-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	N.C.R.	Conduction (CO02-CB)
Pulse Limiter	Schwarzbeck	VTSD 9561F	9561-F073	9kHz ~ 30MHz	Sep. 30, 2015	Sep. 29, 2016	Conduction (CO02-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	May 06, 2015	May 05, 2016	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 12, 2015*	Mar. 11, 2017*	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Oct. 28, 2014	Oct. 27, 2015	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2015	Jul. 20, 2016	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Feb. 24, 2015	Feb. 23, 2016	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 12, 2015	Jan. 11, 2016	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 25, 2014	Nov. 24, 2015	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Nov. 06, 2014	Nov. 05, 2015	Radiation (03CH01-CB)
EMI Receiver	Agilent	N9038A	MY52260123	9kHz ~ 8.4GHz	Jan. 21, 2015	Jan. 20, 2016	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz ~ 1 GHz	Nov. 15, 2014	Nov. 14, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	1 GHz ~ 40 GHz	Nov. 15, 2014	Nov. 14, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	1 GHz ~ 40 GHz	Nov. 15, 2014	Nov. 14, 2015	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 12, 2014	Dec. 11, 2015	Conducted (TH01-CB)
Spectrum analyzer	R&S	FSP40	100080	9kHz~40GHz	Sep. 21, 2015	Sep. 20, 2016	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 02, 2015	Jun. 01, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz – 26.5 GHz	Nov. 15, 2014	Nov. 14, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz – 26.5 GHz	Nov. 15, 2014	Nov. 14, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz – 26.5 GHz	Nov. 15, 2014	Nov. 14, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 26.5 GHz	Nov. 15, 2014	Nov. 14, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Nov. 15, 2014	Nov. 14, 2015	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 03, 2014	Nov. 02, 2015	Conducted (TH01-CB)

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