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FCC RADIO TEST REPORT

Applicant's company	**Broadcom Corporation**
Applicant Address	190 Mathilda Place Sunnyvale CA 94086 U.S.A.
FCC ID	**QDS-BRCM1082**
Manufacturer's company	**Broadcom Corporation**
Manufacturer Address	190 Mathilda Place Sunnyvale CA 94086 U.S.A.

Product Name	802.11abgn/11ac WLAN + Bluetooth PCI-E Mini Card
Brand Name	Broadcom
Model No.	BCM94360HMB
Test Rule Part(s)	47 CFR FCC Part 15 Subpart C § 15.247
Test Freq. Range	2400 ~ 2483.5MHz / 5725 ~ 5850MHz
Received Date	Mar. 12, 2014
Final Test Date	Sep. 02, 2014
Submission Type	Class II Change

Statement

Test result included is only for the IEEE 802.11n, IEEE 802.11b/g and IEEE 802.11a/ac of the product.

The test result in this report refers exclusively to the presented test model / sample.

Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.10-2009**, **47 CFR FCC Part 15 Subpart C**, **KDB 558074 D01 v03r02**, **KDB 662911 D01 v02r01.**

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

Testing Laboratory
1190

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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR431243-03AA	Rev. 01	Initial issue of report	Sep. 18, 2014

Certificate No.: CB10309038

1. CERTIFICATE OF COMPLIANCE

Product Name	:	802.11abgn/11ac WLAN + Bluetooth PCI-E Mini Card
Brand Name	:	Broadcom
Model No.	:	BCM94360HMB
Applicant	:	Broadcom Corporation
Test Rule Part(s)	:	47 CFR FCC Part 15 Subpart C § 15.247

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Mar. 12, 2014 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.

Sam Chen

SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart C				
Part	**Rule Section**	**Description of Test**	**Result**	**Under Limit**
4.1	15.247(b)(3)	Maximum Conducted Output Power	Complies	2.95 dB
4.2	15.247(d)	Radiated Emissions	Complies	3.81 dB
4.3	15.247(d)	Band Edge Emissions	Complies	0.01 dB
4.4	15.203	Antenna Requirements	Complies	-

3. GENERAL INFORMATION

3.1. Product Details

IEEE 802.11n/ac

Items	Description
Product Type	WLAN (3TX, 3RX)
Radio Type	Intentional Transceiver
Power Type	From power adapter
Modulation	see the below table for IEEE 802.11n/ac
Data Modulation	For 802.11n: OFDM (BPSK / QPSK / 16QAM / 64QAM) For 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)
Data Rate (Mbps)	see the below table for IEEE 802.11n/ac
Frequency Range	2400 ~ 2483.5MHz / 5725 ~ 5850MHz
Channel Number	For 2.4GHz Band: 13 for 20MHz bandwidth ; 9 for 40MHz bandwidth For 5GHz Band: 5 for 20MHz bandwidth ; 2 for 40MHz bandwidth ; 1 for 80MHz bandwidth
Maximum Conducted Output Power	For non-beamforming mode: For 2.4GHz Band: MCS0 (HT20): 27.05 dBm ; MCS0 (HT40): 20 dBm For 5GHz Band: 802.11ac MCS0/Nss1 (VHT20): 25.44 dBm ; 802.11ac MCS0/Nss1 (VHT40): 24.70 dBm ; 802.11ac MCS0/Nss1 (VHT80): 20.19 dBm For beamforming mode: For 5GHz Band: 802.11ac MCS0/Nss1 (VHT20): 25.21 dBm ; 802.11ac MCS0/Nss1 (VHT40): 24.70 dBm ; 802.11ac MCS0/Nss1 (VHT80): 20.19 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

IEEE 802.11a/b/g

Items	Description
Product Type	WLAN (3TX, 3RX)
Radio Type	Intentional Transceiver
Power Type	From power adapter
Modulation	DSSS for IEEE 802.11b ; OFDM for IEEE 802.11a/g
Data Modulation	DSSS (BPSK / QPSK / CCK) ; OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data Rate (Mbps)	DSSS (1/ 2/ 5.5/11) ; OFDM (6/9/12/18/24/36/48/54)
Frequency Range	2400 ~ 2483.5MHz / 5725 ~ 5850MHz
Channel Number	11b/g: 13 ; 11a: 5
Maximum Conducted Output Power	11b: 22.99 dBm ; 11g: 26.29 dBm ; 11a: 25.93 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Items	Description	
Beamforming Function	☒ With beamforming	☐ Without beamforming

Note: 1. The product has beamforming function for 802.11n/ac VHT20 VHT40 VHT80 in 5GHz.

2. The MIMO transmission mode is correlated.

Antenna and Band width

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

IEEE 11n/ac Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	3	MCS0-23
802.11n (HT40)	3	MCS0-23
802.11ac (VHT20)	3	MCS 0-9/Nss1-3
802.11ac (VHT40)	3	MCS 0-9/Nss1-3
802.11ac (VHT80)	3	MCS 0-9/Nss1-3
Note 1: IEEE Std. 802.11n modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT support HT20 and HT40. Note 2: IEEE Std. 802.11ac modulation consists of VHT20, VHT40, VHT80 and VHT160 (VHT: Very High Throughput). Then EUT support VHT20, VHT40 and VHT80. Note 3: Modulation modes consist of below configuration: HT20/HT40: IEEE 802.11n, VHT20/VHT40/VHT80: IEEE 802.11ac		

3.2. Accessories

N/A

3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)				
					2.4G	5G B1	5G B2	5G B3	5G B4
1	INPAQ	DAM-I6-H-C3-800-14-17	Dipole	MMCX PLUG	3.59	2.35	3.59	2.66	2.79

Note: The EUT has one antenna.

<For 2.4GHz Band>

For IEEE 802.11b/g/n mode (3TX/3RX)

Chain 1, Chain 2 and Chain 3 can be used as transmitting/receiving antenna.

Chain 1, Chain 2 and Chain 3 could transmit/receive simultaneously.

<For 5GHz Band>

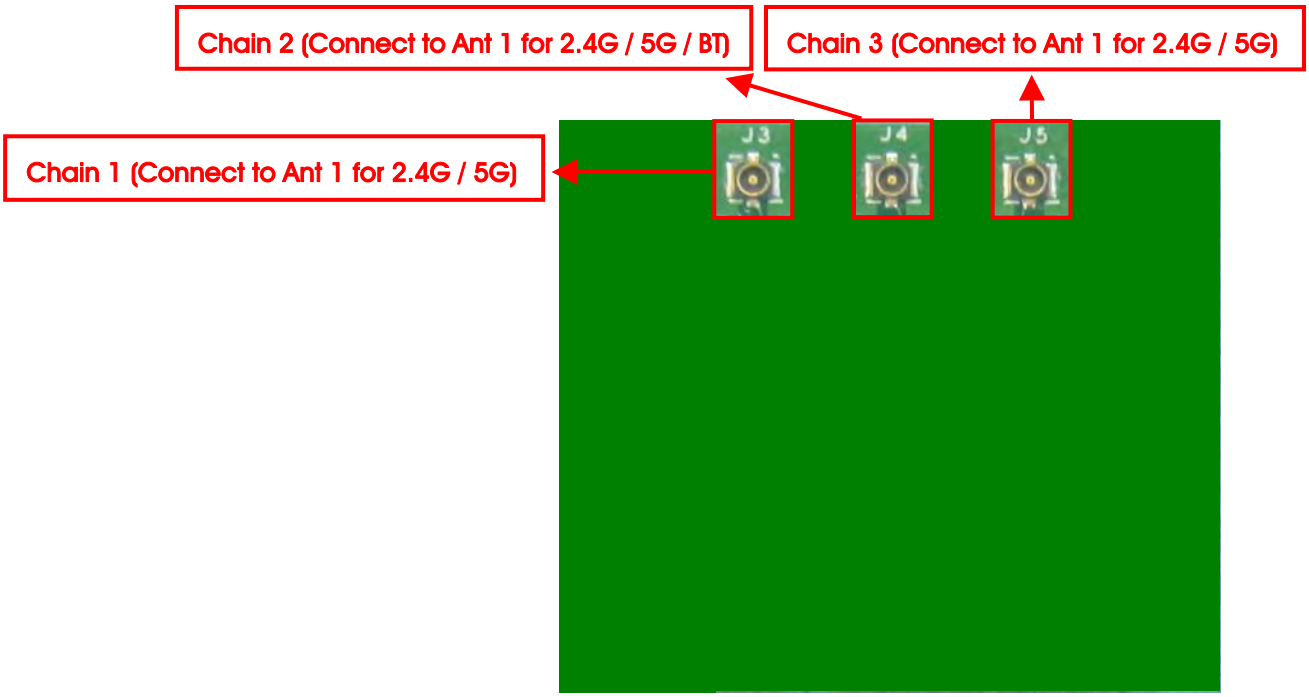
For IEEE 802.11a/n/ac mode (3TX/3RX)

Chain 1, Chain 2 and Chain 3 can be used as transmitting/receiving antenna.

Chain 1, Chain 2 and Chain 3 could transmit/receive simultaneously.

For Bluetooth mode (1TX/1RX)

Only Chain 2 can be used as transmitting/receiving antenna.



3.4. Table for Carrier Frequencies

For 2.4GHz Band:

There are two bandwidth systems.

For 20MHz bandwidth systems, use Channel 1~Channel 13.

For 40MHz bandwidth systems, use Channel 3~Channel 11.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
2400~2483.5MHz	1	2412 MHz	8	2447 MHz
	2	2417 MHz	9	2452 MHz
	3	2422 MHz	10	2457 MHz
	4	2427 MHz	11	2462 MHz
	5	2432 MHz	12	2467 MHz
	6	2437 MHz	13	2472 MHz
	7	2442 MHz	-	-

For 5GHz Band:

There are three bandwidth systems.

For 20MHz bandwidth systems, use Channel 149, 153, 157, 161, 165.

For 40MHz bandwidth systems, use Channel 151, 159.

For 80MHz bandwidth systems, use Channel 155.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5725~5850 MHz Band 4	149	5745 MHz	157	5785 MHz
	151	5755 MHz	159	5795 MHz
	153	5765 MHz	161	5805 MHz
	155	5775 MHz	165	5825 MHz

3.5. Table for Test Modes

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

For 2.4GHz Band:

Test Items	Mode	Data Rate	Channel	Chain
Maximum Conducted Output Power	11n HT20	MCS0	1/6/11/12/13	1+2+3
	11n HT40	MCS0	3/6/9/10/11	1+2+3
	11b/CCK	1 Mbps	1/6/11/12/13	1+2+3
	11g/BPSK	6 Mbps	1/6/11/12/13	1+2+3
Radiated Emissions Below 1GHz	Normal Link	-	-	-
Radiated Emissions Above 1GHz	11n HT20	MCS0	1/6/11/12/13	1+2+3
	11n HT40	MCS0	3/6/9/10/11	1+2+3
	11b/CCK	1 Mbps	1/6/11/12/13	1+2+3
	11g/BPSK	6 Mbps	1/6/11/12/13	1+2+3
Band Edge Emissions	11n HT20	MCS0	1/6/11/12/13	1+2+3
	11n HT40	MCS0	3/6/9/10/11	1+2+3
	11b/CCK	1 Mbps	1/6/11/12/13	1+2+3
	11g/BPSK	6 Mbps	1/6/11/12/13	1+2+3

For 5GHz Band:

Test Items	Mode	Data Rate	Channel	Chain
Maximum Conducted Output Power	For non-beamforming mode			
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3
	11ac VHT40	MCS0/Nss1	151/159	1+2+3
	11ac VHT80	MCS0/Nss1	155	1+2+3
	11a/BPSK	6 Mbps	149/157/165	1+2+3
	For beamforming mode			
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3
	11ac VHT40	MCS0/Nss1	151/159	1+2+3
	11ac VHT80	MCS0/Nss1	155	1+2+3
Radiated Emissions Below 1GHz	Normal Link	-	-	-
Radiated Emissions Above 1GHz	For non-beamforming mode			
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3
	11ac VHT40	MCS0/Nss1	151/159	1+2+3
	11ac VHT80	MCS0/Nss1	155	1+2+3
	11a/BPSK	6 Mbps	149/157/165	1+2+3
Band Edge Emissions	For non-beamforming mode			
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3
	11ac VHT40	MCS0/Nss1	151/159	1+2+3
	11ac VHT80	MCS0/Nss1	155	1+2+3
	11a/BPSK	6 Mbps	149/157/165	1+2+3
	For beamforming mode			
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3
	11ac VHT40	MCS0/Nss1	151/159	1+2+3
	11ac VHT80	MCS0/Nss1	155	1+2+3

Note: VHT20/VHT40 covers HT20/HT40, due to same modulation.

The following test modes were performed for all tests:

For Radiated Emission Below 1GHz test:

Mode 1. 2.4GHz WLAN function + Bluetooth function

Mode 2. 5GHz WLAN function + Bluetooth function

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

For Radiated Emission Above 1GHz test:

Mode 1. CTX-EUT

For Co-location test:

Mode 1. 2.4GHz WLAN function + Bluetooth function

Mode 2. 5GHz WLAN function + Bluetooth function

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

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

3.6. Table for Testing Locations

Test Site Location				
Address:	No.8, Lane 724, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C.			
TEL:	886-3-656-9065			
FAX:	886-3-656-9085			
Test Site No.	**Site Category**	**Location**	**FCC Reg. No.**	**IC File No.**
03CH01-CB	SAC	Hsin Chu	262045	IC 4086D
TH01-CB	OVEN Room	Hsin Chu	-	-

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

3.7. Table for Class II Change

This product is an extension of original one reported under Sporton project number: FR431243AA
Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking
Adding a dipole antenna	1. Maximum Conducted Output Power 2. Radiated Emissions (1GHz~10th Harmonic) 3. Band Edge Emissions 4. Co-location Maximum Permissible Exposure 5. Radiated Emission Co-location

3.8. Table for Supporting Units

For Test Site No: 03CH01-CB

Radiated Emission 30MHz~1GHz test

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	RSE-TG233
Notebook	DELL	M1340	E2K4965AGNM
Mouse	Logitech	M-B0001	HC238HR00XY
Earphone	E-BOOKI	E-EPC040	N/A
Fixture	Broadcom	BCM9MC2EC	N/A
RF module	Broadcom	BCM94360HMB	QDS-BRCM1082

Radiated Emission above 1GHz test (For Non-Beamforming Mode)

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	RSE-TG233
Fixture	Broadcom	BCM9MC2EC	N/A

Radiated Emission above 1GHz test (For Beamforming Mode)

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	RSE-TG233
Fixture	Broadcom	BCM9MC2EC	N/A
Wireless AP	Netgear	R7000	PY313200233

For Test Site No: TH01-CB

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E6430	DoC
Fixture	Broadcom	BCM9MC2EC	N/A

3.9. Table for Parameters of Test Software Setting

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

For non-beamforming mode:

For 2.4GHz Band

Power Parameters of IEEE 802.11n MCS0 HT20

Test Software Version	Manual Tool Version : 2.0.1.6				
Frequency	2412 MHz	2437 MHz	2462 MHz	2467 MHz	2472 MHz
MCS0 HT20	57	100	52	51	48

Power Parameters of IEEE 802.11n MCS0 HT40

Test Software Version	Manual Tool Version : 2.0.1.6				
Frequency	2422 MHz	2437 MHz	2452 MHz	2457 MHz	2462 MHz
MCS0 HT40	51	65	46	45	44

Power Parameters of IEEE 802.11b/g

Test Software Version	Manual Tool Version : 2.0.1.6				
Frequency	2412 MHz	2437 MHz	2462 MHz	2467 MHz	2472 MHz
IEEE 802.11b	73	72	75	67	62
IEEE 802.11g	60	100	60	56	46

For non-beamforming mode:

For 5GHz Band

Power Parameters of IEEE 802.11ac MCS0/Nss1 VHT20

Test Software Version	Manual Tool Version : 2.0.1.6		
Frequency	5745 MHz	5785 MHz	5825 MHz
MCS0/Nss1 VHT20	91	100	91

Power Parameters of IEEE 802.11ac MCS0/Nss1 VHT40

Test Software Version	Manual Tool Version : 2.0.1.6	
Frequency	5755 MHz	5795 MHz
MCS0/Nss1 VHT40	74	100

Power Parameters of IEEE 802.11ac MCS0/Nss1 VHT80

Test Software Version	Manual Tool Version : 2.0.1.6
Frequency	5775 MHz
MCS0/Nss1 VHT80	66

Power Parameters of IEEE 802.11a

Test Software Version	Manual Tool Version : 2.0.1.6		
Frequency	5745 MHz	5785 MHz	5825 MHz
IEEE 802.11a	100	100	100

For beamforming mode:

For 5GHz Band

Power Parameters of IEEE 802.11ac MCS0/Nss1 VHT20

Test Software Version	Manual Tool Version : 2.0.1.6		
Frequency	5745 MHz	5785 MHz	5825 MHz
MCS0/Nss1 VHT20	91	90	91

Power Parameters of IEEE 802.11ac MCS0/Nss1 VHT40

Test Software Version	Manual Tool Version : 2.0.1.6	
Frequency	5755 MHz	5795 MHz
MCS0/Nss1 VHT40	74	100

Power Parameters of IEEE 802.11ac MCS0/Nss1 VHT80

Test Software Version	Manual Tool Version : 2.0.1.6
Frequency	5775 MHz
MCS0/Nss1 VHT80	66

3.10. EUT Operation during Test

For non-beamforming mode:

The EUT was programmed to be in continuously transmitting mode.

For beamforming mode:

For Conducted Mode:

The EUT was programmed to be in continuously transmitting mode.

For Radiated Mode:

During the test, the following programs under WIN 7 were executed.

The program was executed as follows:

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

3.11. Duty Cycle

For non-beamforming mode:

Band	Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
2.4G	802.11n MCS0 HT20	1.928	1.952	98.77	0.05	0.01
	802.11n MCS0 HT40	0.942	0.966	97.52	0.11	1.06
	802.11b	1.000	1.000	100.00	0.00	0.01
	802.11g	2.062	2.086	98.85	0.05	0.01
5G	802.11ac MCS0/Nss1 VHT20	1.906	2.004	95.11	0.22	0.52
	802.11ac MCS0/Nss1 VHT40	0.954	0.978	97.55	0.11	1.05
	802.11ac MCS0/Nss1 VHT80	0.457	0.481	95.01	0.22	2.19
	802.11a	2.060	2.092	98.47	0.07	0.01

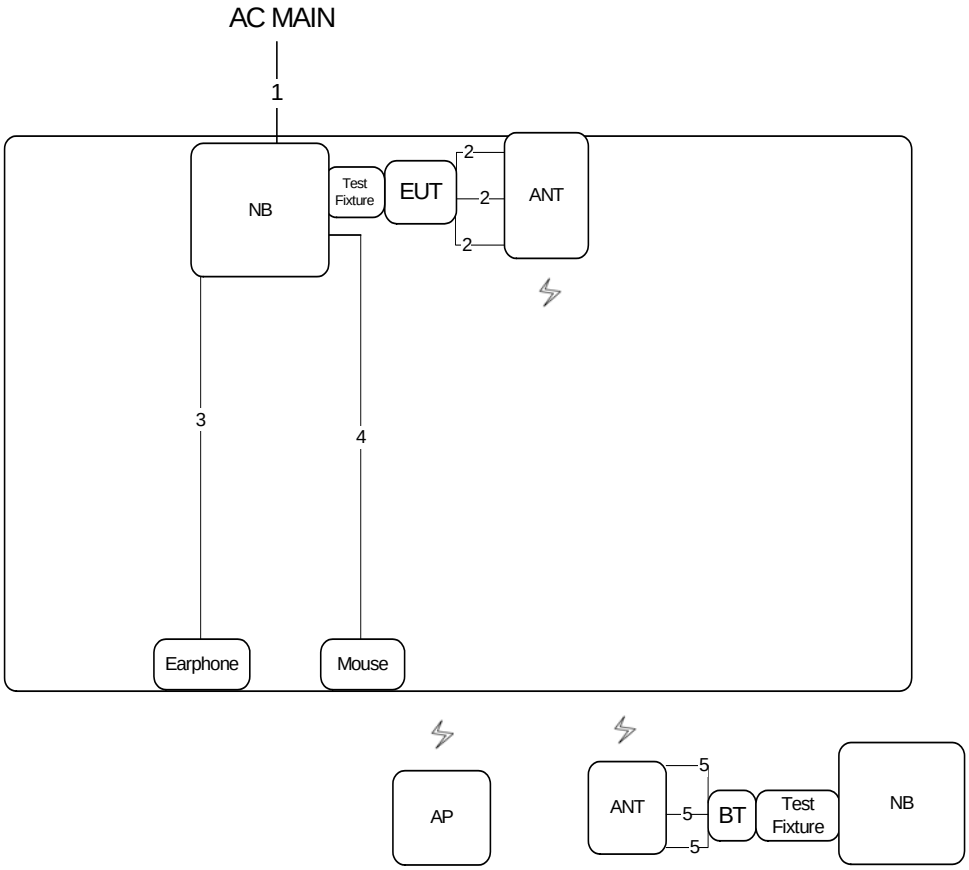
For beamforming mode:

Band	Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
5G	802.11ac MCS0/Nss1 VHT20	1.841	1.928	95.49	0.20	0.54
	802.11ac MCS0/Nss1 VHT40	0.942	1.014	92.90	0.32	1.06
	802.11ac MCS0/Nss1 VHT80	0.449	0.486	92.39	0.34	2.23

3.12. Test Configurations

3.12.1. Radiation Emissions Test Configuration

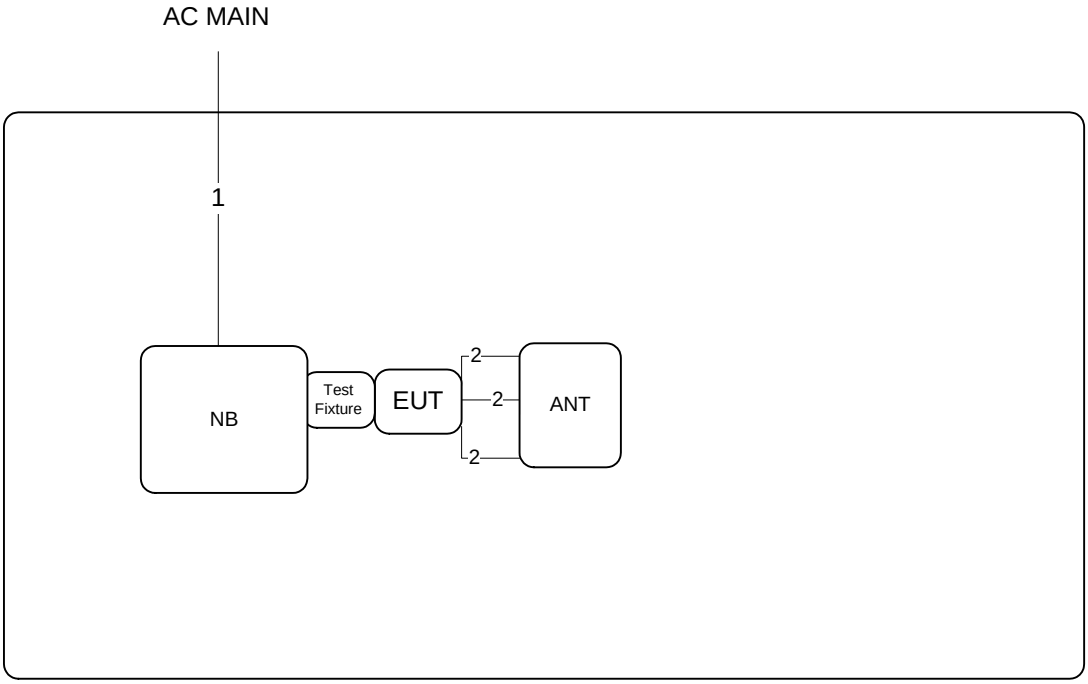
Test Configuration: 30MHz~1GHz



Item	Connection	Shielded	Length(m)
1	AC power cable	No	2.6m
2	ANT cable *3	Yes	0.2m
3	Audio cable	No	1.1m
4	USB cable	Yes	1.8m
5	ANT cable*3	Yes	0.2m

For Non-Beamforming Mode

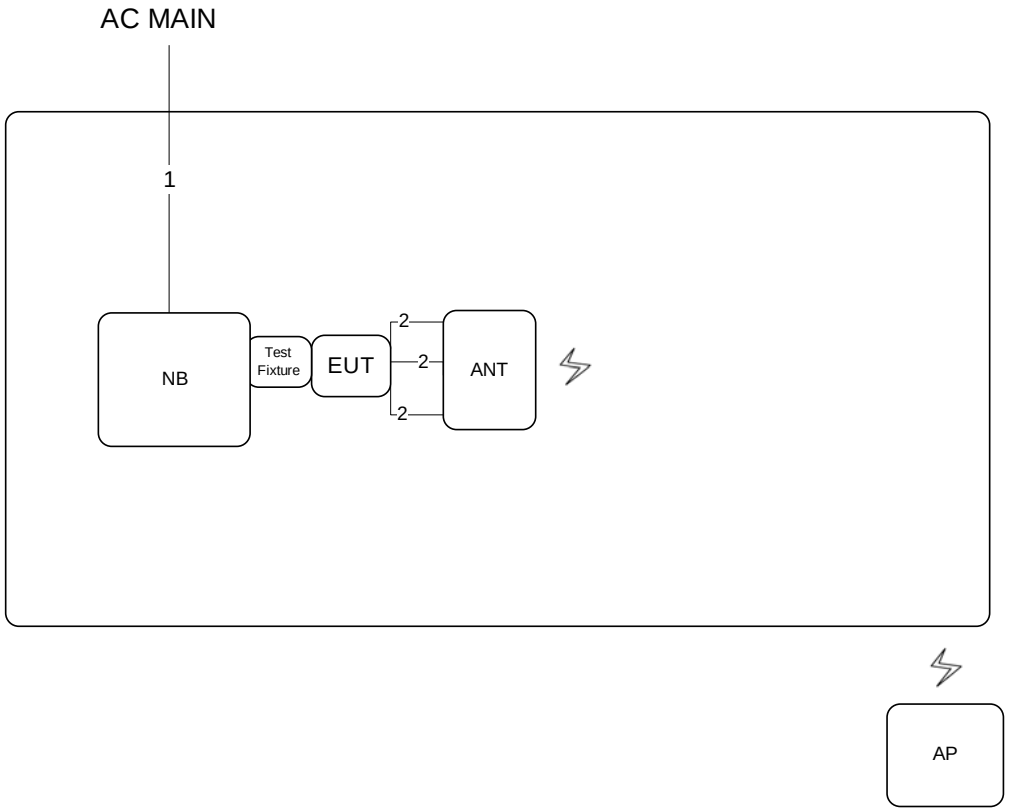
Test Configuration: above 1GHz



Item	Connection	Shielded	Length(m)
1	AC power cable	No	1.8m
2	ANT cable *3	Yes	0.2m

For Beamforming Mode

Test Configuration: above 1GHz



Item	Connection	Shielded	Length(m)
1	AC power cable	No	1.8m
2	ANT cable *3	Yes	0.2m

4. TEST RESULT

4.1. Maximum Conducted Output Power Measurement

4.1.1. Limit

For systems using digital modulation in the 2400-2483.5MHz, the limit for output power is 30dBm. The limited has to be reduced by the amount in dB that the gain of the antenna exceed 6dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi. Systems operating in the 5725-5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter output power.

4.1.2. Measuring Instruments and Setting

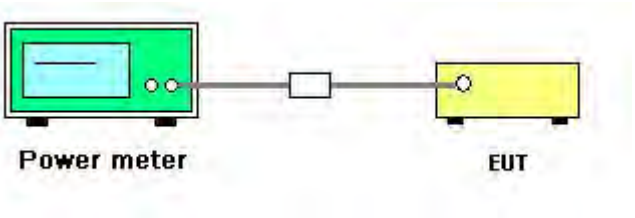
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Detector	Average

4.1.3. Test Procedures

1. Test procedures refer KDB 558074 D01 v03r02 section 9.2.3.2 Measurement using a power meter (PM).
2. Multiple antenna system was performed in accordance with KDB 662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
3. This procedure provides an alternative for determining the RMS output power using a broadband RF average power meter with a thermocouple detector.

4.1.4. Test Setup Layout



4.1.5. Test Deviation

There is no deviation with the original standard.

4.1.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.1.7. Test Result of Maximum Conducted Output Power

Temperature	20°C	Humidity	52%
Test Engineer	Jim Huang	Configurations	IEEE 802.11b/g/n
Test Date	Sep. 02, 2014		

For non-beamforming mode:

For 2.4GHz Band

Configuration IEEE 802.11n MCS0 HT20 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
1	2412 MHz	13.51	14.47	13.62	18.66	30.00	Complies
6	2437 MHz	22.27	21.64	22.84	27.05	30.00	Complies
11	2462 MHz	12.03	12.54	12.47	17.12	30.00	Complies
12	2467 MHz	11.48	11.48	11.71	16.33	30.00	Complies
13	2472 MHz	10.91	10.64	11.01	15.63	30.00	Complies

Configuration IEEE 802.11n MCS0 HT40 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
3	2422 MHz	12.13	11.75	12.42	16.88	30.00	Complies
6	2437 MHz	15.53	14.15	15.83	20.00	30.00	Complies
9	2452 MHz	11.04	10.13	11.34	15.64	30.00	Complies
10	2457 MHz	10.65	9.07	10.54	14.92	30.00	Complies
11	2462 MHz	10.48	8.79	10.46	14.75	30.00	Complies

Configuration IEEE 802.11b / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
1	2412 MHz	17.76	17.64	17.91	22.54	30.00	Complies
6	2437 MHz	17.53	17.02	17.69	22.19	30.00	Complies
11	2462 MHz	18.42	17.47	18.67	22.99	30.00	Complies
12	2467 MHz	15.8	15.33	15.84	20.43	30.00	Complies
13	2472 MHz	14.79	14.33	14.80	19.42	30.00	Complies

Configuration IEEE 802.11g / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
1	2412 MHz	13.79	14.72	13.81	18.90	30.00	Complies
6	2437 MHz	21.71	20.49	22.18	26.29	30.00	Complies
11	2462 MHz	13.83	13.89	14.02	18.69	30.00	Complies
12	2467 MHz	12.58	12.63	12.79	17.44	30.00	Complies
13	2472 MHz	10.27	10.25	10.28	15.04	30.00	Complies

Temperature	20°C	Humidity	52%
Test Engineer	Jim Huang	Configurations	IEEE 802.11a/ac
Test Date	Sep. 02, 2014		

For non-beamforming mode:

For 5GHz Band

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
149	5745 MHz	20.71	19.66	20.15	24.97	30.00	Complies
157	5785 MHz	21.04	20.62	20.32	25.44	30.00	Complies
165	5825 MHz	20.79	19.35	20.12	24.90	30.00	Complies

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
151	5755 MHz	17.52	17.39	18.07	22.44	30.00	Complies
159	5795 MHz	20.15	19.18	20.36	24.70	30.00	Complies

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
155	5775 MHz	15.56	15.10	15.58	20.19	30.00	Complies

Configuration IEEE 802.11a / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
149	5745 MHz	20.98	20.62	21.78	25.93	30.00	Complies
157	5785 MHz	21.29	19.88	20.32	25.31	30.00	Complies
165	5825 MHz	20.72	19.38	20.48	25.00	30.00	Complies

Temperature	20°C	Humidity	52%
Test Engineer	Jim Huang	Configurations	IEEE 802.11ac
Test Date	Sep. 02, 2014		

For beamforming mode:

For 5GHz Band

Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
149	5745 MHz	20.71	19.66	20.15	24.97	28.44	Complies
157	5785 MHz	20.84	20.32	20.12	25.21	28.44	Complies
165	5825 MHz	20.79	19.35	20.12	24.90	28.44	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{ANT}}\left\{\sum_{k=1}^{N_{SS}} x_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.56dBi >6dBi,So Band4 Limit =30-(7.56-6)=28.44dBm

Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
151	5755 MHz	17.52	17.39	18.07	22.44	28.44	Complies
159	5795 MHz	20.15	19.18	20.36	24.70	28.44	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{ANT}}\left\{\sum_{k=1}^{N_{SS}} x_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.56dBi >6dBi,So Band4 Limit =30-(7.56-6)=28.44dBm

Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Chain 1 + Chain 2 + Chain 3

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
155	5775 MHz	15.56	15.10	15.58	20.19	28.44	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{ANT}}\left\{\sum_{k=1}^{N_{SS}} x_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.56dBi >6dBi,So Band4 Limit =30-(7.56-6)=28.44dBm

4.2. Radiated Emissions Measurement

4.2.1. Limit

30dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

4.2.2. Measuring Instruments and Setting

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

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average
RBW / VBW (Emission in non-restricted band)	100kHz / 300kHz for peak

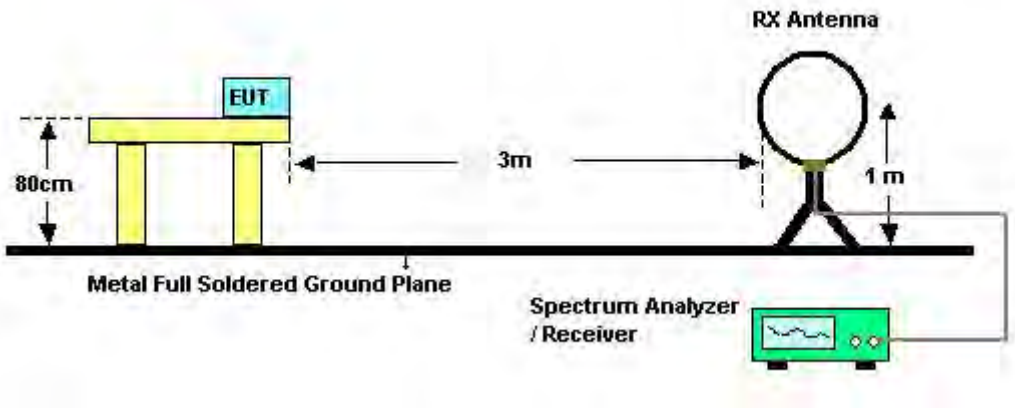
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1GHz / RBW 120kHz for QP

4.2.3. Test Procedures

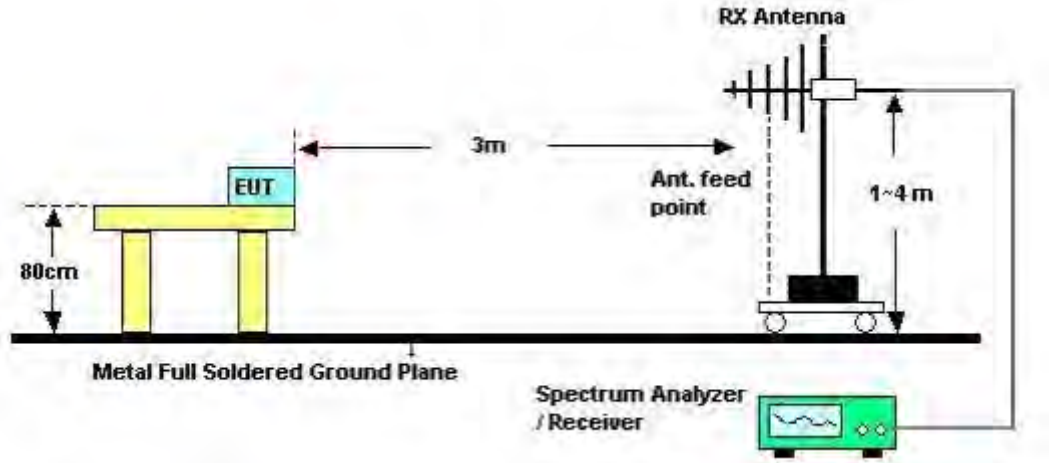
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and 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.

4.2.4. Test Setup Layout

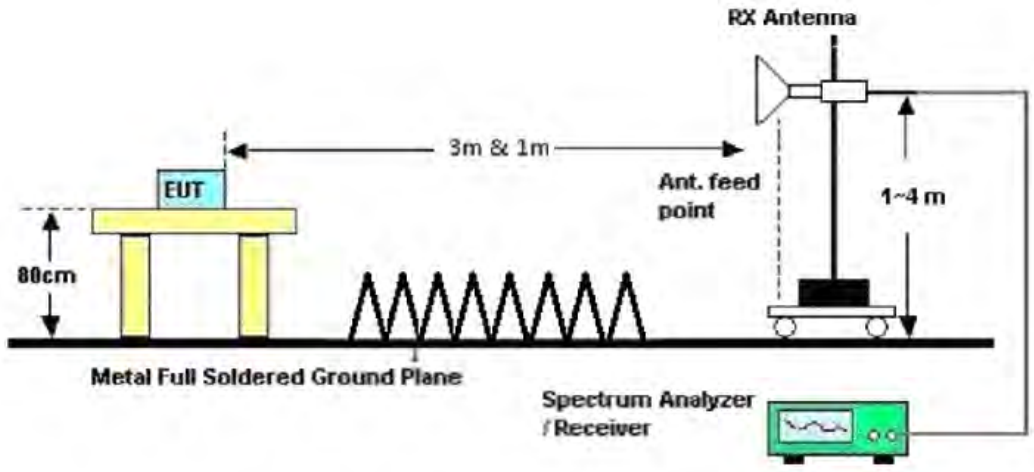
For Radiated Emissions: 9kHz ~30MHz



For Radiated Emissions: 30MHz~1GHz



For Radiated Emissions: Above 1GHz



4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. EUT Operation during Test

For non-beamforming mode:

The EUT was programmed to be in continuously transmitting mode.

For beamforming mode:

The EUT was programmed to be in beamforming transmitting mode.

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

Temperature	24°C	Humidity	51%
Test Engineer	Jim Huang	Configurations	Normal Link
Test Date	Sep. 02, 2014		

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 20 dB below the permissible value has no need to be reported.

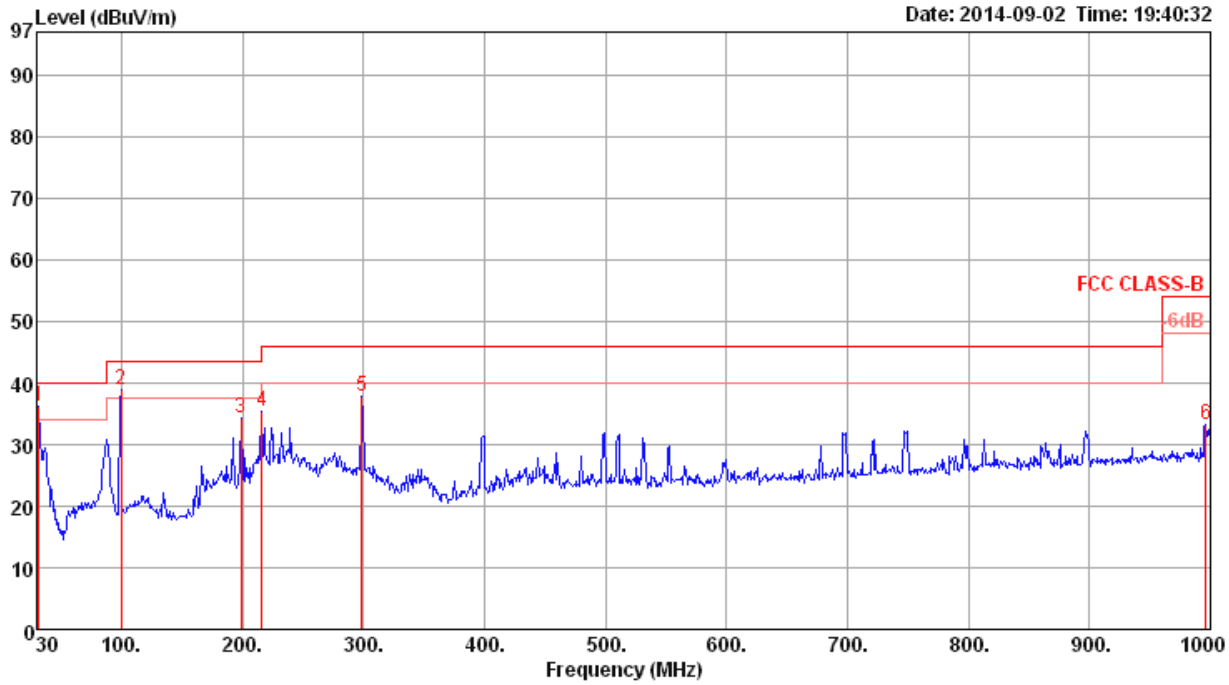
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

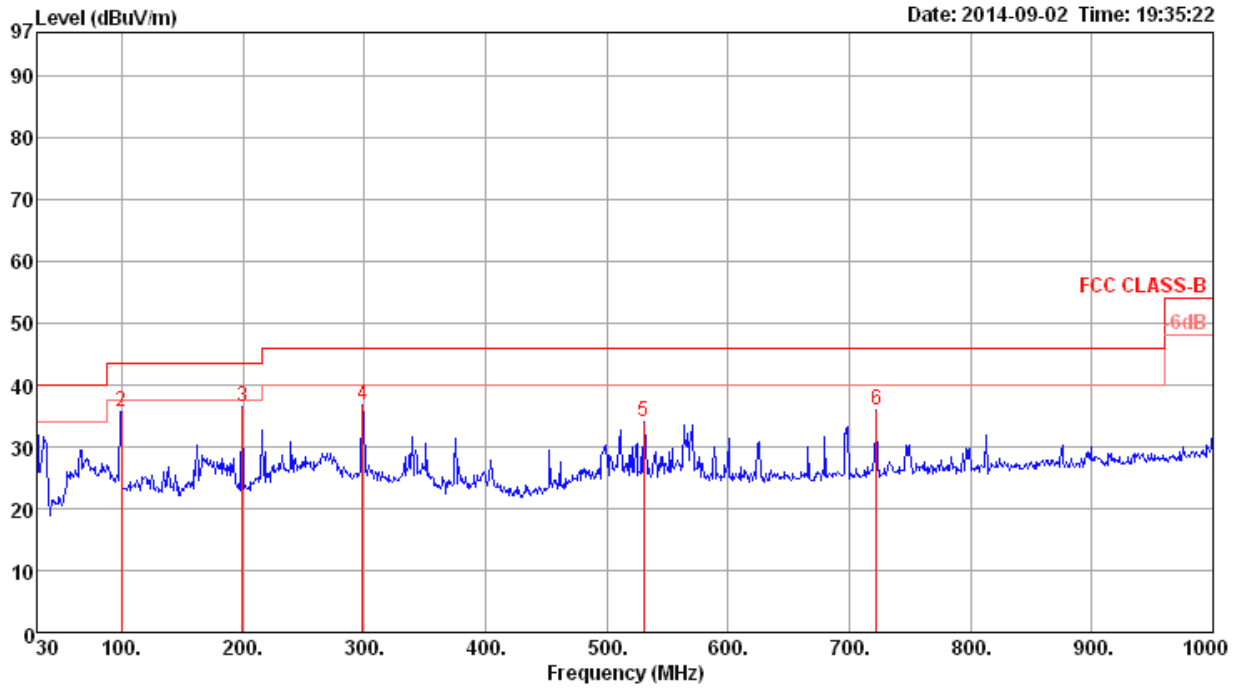
Temperature	24°C	Humidity	51%
Test Engineer	Jim Huang	Configurations	Normal Link

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	31.94	36.19	40.00	-3.81	45.65	0.65	17.69	27.80	Peak	100	0	HORIZONTAL
2	99.84	38.83	43.50	-4.67	54.27	1.17	10.99	27.60	Peak	100	0	HORIZONTAL
3	198.78	34.33	43.50	-9.17	50.53	1.66	9.25	27.11	Peak	100	0	HORIZONTAL
4	216.24	35.28	46.00	-10.72	50.38	1.70	10.27	27.07	Peak	100	0	HORIZONTAL
5	298.69	37.84	46.00	-8.16	49.36	2.03	13.35	26.90	Peak	100	0	HORIZONTAL
6	996.12	33.14	54.00	-20.86	35.21	3.69	21.26	27.02	Peak	100	0	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	30.00	33.85	40.00	-6.15	42.28	0.61	18.76	27.80	Peak	400	0	VERTICAL
2	99.84	35.70	43.50	-7.80	51.14	1.17	10.99	27.60	Peak	400	0	VERTICAL
3	199.75	36.54	43.50	-6.96	52.93	1.66	9.05	27.10	Peak	400	0	VERTICAL
4	298.69	36.84	46.00	-9.16	48.36	2.03	13.35	26.90	Peak	400	0	VERTICAL
5	530.52	33.98	46.00	-12.02	41.37	2.74	17.97	28.10	Peak	400	0	VERTICAL
6	722.58	36.05	46.00	-9.95	41.57	3.15	19.24	27.91	Peak	400	0	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.

4.2.9. Results for Radiated Emissions (1GHz~10th Harmonic)

For non-beamforming mode:

For 2.4GHz Band

Temperature	24°C	**Humidity**	51%
Test Engineer	Satoshi Yang	**Configurations**	IEEE 802.11n MCS0 HT20 CH 1 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 29, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4824.00	44.31	74.00	-29.69	42.23	4.21	32.56	34.69	Peak	323	100	HORIZONTAL
2	4824.00	31.28	54.00	-22.72	29.20	4.21	32.56	34.69	Average	323	100	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4824.00	46.02	74.00	-27.98	43.94	4.21	32.56	34.69	Peak	145	100	VERTICAL
2	4824.00	32.29	54.00	-21.71	30.21	4.21	32.56	34.69	Average	145	100	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11n MCS0 HT20 CH 6 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 29, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4874.00	51.43	74.00	-22.57	49.22	4.22	32.66	34.67	Peak	315	109	HORIZONTAL
2	4874.00	36.92	54.00	-17.08	34.71	4.22	32.66	34.67	Average	315	109	HORIZONTAL
3	7311.00	51.49	74.00	-22.51	44.01	5.34	37.07	34.93	Peak	331	109	HORIZONTAL
4	7311.00	39.55	54.00	-14.45	32.07	5.34	37.07	34.93	Average	331	109	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4874.00	55.67	74.00	-18.33	53.46	4.22	32.66	34.67	Peak	269	109	VERTICAL
2	4874.00	39.47	54.00	-14.53	37.26	4.22	32.66	34.67	Average	269	109	VERTICAL
3	7311.00	53.91	74.00	-20.09	46.43	5.34	37.07	34.93	Peak	130	109	VERTICAL
4	7311.00	38.76	54.00	-15.24	31.28	5.34	37.07	34.93	Average	130	109	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11n MCS0 HT20 CH 11 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 29, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4920.87	46.38	74.00	-27.62	44.04	4.23	32.76	34.65	Peak	259	100	HORIZONTAL
2	4924.71	31.14	54.00	-22.86	28.80	4.23	32.76	34.65	Average	259	100	HORIZONTAL
3	7381.73	36.37	54.00	-17.63	28.81	5.36	37.16	34.96	Average	39	100	HORIZONTAL
4	7385.84	50.12	74.00	-23.88	42.54	5.36	37.18	34.96	Peak	39	100	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4924.07	32.54	54.00	-21.46	30.20	4.23	32.76	34.65	Average	145	100	VERTICAL
2	4926.06	45.89	74.00	-28.11	43.55	4.23	32.76	34.65	Peak	145	100	VERTICAL
3	7381.67	36.35	54.00	-17.65	28.79	5.36	37.16	34.96	Average	86	100	VERTICAL
4	7384.64	51.25	74.00	-22.75	43.67	5.36	37.18	34.96	Peak	86	100	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11n MCS0 HT20 CH 12 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 29, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4932.99	45.61	74.00	-28.39	43.27	4.23	32.76	34.65	Peak	352	100	HORIZONTAL
2	4935.38	31.19	54.00	-22.81	28.85	4.23	32.76	34.65	Average	352	100	HORIZONTAL
3	7397.66	36.19	54.00	-17.81	28.61	5.36	37.18	34.96	Average	248	100	HORIZONTAL
4	7399.06	50.58	74.00	-23.42	43.00	5.36	37.18	34.96	Peak	248	100	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4932.97	32.47	54.00	-21.53	30.13	4.23	32.76	34.65	Average	76	100	VERTICAL
2	4936.91	45.04	74.00	-28.96	42.66	4.23	32.80	34.65	Peak	76	100	VERTICAL
3	7396.63	36.15	54.00	-17.85	28.57	5.36	37.18	34.96	Average	129	100	VERTICAL
4	7397.50	50.62	74.00	-23.38	43.04	5.36	37.18	34.96	Peak	129	100	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11n MCS0 HT20 CH 13 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4940.17	31.01	54.00	-22.99	28.62	4.23	32.80	34.64	Average	123	100	HORIZONTAL
2	4948.95	45.26	74.00	-28.74	42.87	4.23	32.80	34.64	Peak	123	100	HORIZONTAL
3	7419.08	49.84	74.00	-24.16	42.22	5.37	37.22	34.97	Peak	245	100	HORIZONTAL
4	7420.66	37.30	54.00	-16.70	29.68	5.37	37.22	34.97	Average	245	100	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4942.63	45.36	74.00	-28.64	42.97	4.23	32.80	34.64	Peak	142	100	VERTICAL
2	4948.60	31.21	54.00	-22.79	28.82	4.23	32.80	34.64	Average	142	100	VERTICAL
3	7414.21	50.59	74.00	-23.41	43.00	5.36	37.20	34.97	Peak	261	100	VERTICAL
4	7418.53	36.25	54.00	-17.75	28.63	5.37	37.22	34.97	Average	261	100	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11n MCS0 HT40 CH 3 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4842.37	30.58	54.00	-23.42	28.46	4.21	32.59	34.68	Average	123	100	HORIZONTAL
2	4847.82	45.11	74.00	-28.89	42.99	4.21	32.59	34.68	Peak	123	100	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4840.48	44.47	74.00	-29.53	42.35	4.21	32.59	34.68	Peak	213	100	VERTICAL
2	4841.44	31.77	54.00	-22.23	29.65	4.21	32.59	34.68	Average	213	100	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11n MCS0 HT40 CH 6 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4872.78	45.85	74.00	-28.15	43.64	4.22	32.66	34.67	Peak	245	100	HORIZONTAL
2	4876.55	30.81	54.00	-23.19	28.60	4.22	32.66	34.67	Average	245	100	HORIZONTAL
3	7306.08	36.91	54.00	-17.09	29.43	5.34	37.07	34.93	Average	104	100	HORIZONTAL
4	7309.78	51.12	74.00	-22.88	43.64	5.34	37.07	34.93	Peak	104	100	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4871.15	44.70	74.00	-29.30	42.49	4.22	32.66	34.67	Peak	160	100	VERTICAL
2	4878.79	30.91	54.00	-23.09	28.70	4.22	32.66	34.67	Average	160	100	VERTICAL
3	7309.50	36.87	54.00	-17.13	29.39	5.34	37.07	34.93	Average	18	100	VERTICAL
4	7310.31	51.68	74.00	-22.32	44.20	5.34	37.07	34.93	Peak	18	100	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11n MCS0 HT40 CH 9 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4903.80	45.72	74.00	-28.28	43.43	4.22	32.73	34.66	Peak	248	100	HORIZONTAL
2	4908.07	30.81	54.00	-23.19	28.52	4.22	32.73	34.66	Average	248	100	HORIZONTAL
3	7354.81	36.70	54.00	-17.30	29.17	5.35	37.13	34.95	Average	4	100	HORIZONTAL
4	7358.81	50.63	74.00	-23.37	43.10	5.35	37.13	34.95	Peak	4	100	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4901.24	44.18	74.00	-29.82	41.93	4.22	32.69	34.66	Peak	202	100	VERTICAL
2	4908.33	32.04	54.00	-21.96	29.75	4.22	32.73	34.66	Average	202	100	VERTICAL
3	7354.25	51.69	74.00	-22.31	44.16	5.35	37.13	34.95	Peak	56	100	VERTICAL
4	7360.50	36.66	54.00	-17.34	29.13	5.35	37.13	34.95	Average	56	100	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11n MCS0 HT40 CH 10 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4912.48	45.49	74.00	-28.51	43.20	4.22	32.73	34.66	Peak	183	100	HORIZONTAL
2	4918.92	31.05	54.00	-22.95	28.71	4.23	32.76	34.65	Average	183	100	HORIZONTAL
3	7367.61	50.40	74.00	-23.60	42.84	5.36	37.16	34.96	Peak	335	100	HORIZONTAL
4	7368.27	36.74	54.00	-17.26	29.18	5.36	37.16	34.96	Average	335	100	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4913.41	44.39	74.00	-29.61	42.10	4.22	32.73	34.66	Peak	141	100	VERTICAL
2	4917.52	32.15	54.00	-21.85	29.85	4.22	32.73	34.65	Average	141	100	VERTICAL
3	7370.96	36.68	54.00	-17.32	29.12	5.36	37.16	34.96	Average	245	100	VERTICAL
4	7374.55	51.31	74.00	-22.69	43.75	5.36	37.16	34.96	Peak	245	100	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11n MCS0 HT40 CH 11 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4921.37	31.30	54.00	-22.70	28.96	4.23	32.76	34.65	Average	53	100	HORIZONTAL
2	4925.01	44.83	74.00	-29.17	42.49	4.23	32.76	34.65	Peak	53	100	HORIZONTAL
3	7382.57	36.57	54.00	-17.43	29.01	5.36	37.16	34.96	Average	159	100	HORIZONTAL
4	7385.87	51.29	74.00	-22.71	43.71	5.36	37.18	34.96	Peak	159	100	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4926.29	45.28	74.00	-28.72	42.94	4.23	32.76	34.65	Peak	304	100	VERTICAL
2	4928.08	32.43	54.00	-21.57	30.09	4.23	32.76	34.65	Average	304	100	VERTICAL
3	7381.59	36.53	54.00	-17.47	28.97	5.36	37.16	34.96	Average	212	100	VERTICAL
4	7387.66	51.27	74.00	-22.73	43.69	5.36	37.18	34.96	Peak	212	100	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11b CH 1 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 29, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4823.90	38.16	54.00	-15.84	36.08	4.21	32.56	34.69	Average	298	102	HORIZONTAL
2	4824.13	45.74	74.00	-28.26	43.66	4.21	32.56	34.69	Peak	298	102	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4823.88	49.77	74.00	-24.23	47.69	4.21	32.56	34.69	Peak	144	100	VERTICAL
2	4823.91	45.34	54.00	-8.66	43.26	4.21	32.56	34.69	Average	144	100	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11b CH 6 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 29, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4873.94	44.04	54.00	-9.96	41.83	4.22	32.66	34.67	Average	1	128	HORIZONTAL
2	4873.96	49.20	74.00	-24.80	46.99	4.22	32.66	34.67	Peak	1	128	HORIZONTAL
3	7308.22	50.12	74.00	-23.88	42.64	5.34	37.07	34.93	Peak	342	100	HORIZONTAL
4	7310.02	37.98	54.00	-16.02	30.50	5.34	37.07	34.93	Average	342	100	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4873.91	47.87	54.00	-6.13	45.66	4.22	32.66	34.67	Average	270	112	VERTICAL
2	4874.13	51.74	74.00	-22.26	49.53	4.22	32.66	34.67	Peak	270	112	VERTICAL
3	7306.31	37.86	54.00	-16.14	30.38	5.34	37.07	34.93	Average	223	112	VERTICAL
4	7307.05	50.94	74.00	-23.06	43.46	5.34	37.07	34.93	Peak	223	112	VERTICAL

Temperature	24℃	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11b CH 11 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 29, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4923.93	45.44	54.00	-8.56	43.10	4.23	32.76	34.65	Average	346	115	HORIZONTAL
2	4924.04	50.08	74.00	-23.92	47.74	4.23	32.76	34.65	Peak	346	115	HORIZONTAL
3	7385.00	37.98	54.00	-16.02	30.40	5.36	37.18	34.96	Average	16	115	HORIZONTAL
4	7385.28	51.25	74.00	-22.75	43.67	5.36	37.18	34.96	Peak	16	115	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4923.93	46.00	54.00	-8.00	43.66	4.23	32.76	34.65	Average	93	115	VERTICAL
2	4924.10	50.33	74.00	-23.67	47.99	4.23	32.76	34.65	Peak	93	115	VERTICAL
3	7385.23	40.87	54.00	-13.13	33.29	5.36	37.18	34.96	Average	110	115	VERTICAL
4	7387.80	51.28	74.00	-22.72	43.70	5.36	37.18	34.96	Peak	110	115	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11b CH 12 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 29, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4933.91	41.32	54.00	-12.68	38.98	4.23	32.76	34.65	Average	332	104	HORIZONTAL
2	4934.22	47.47	74.00	-26.53	45.13	4.23	32.76	34.65	Peak	332	104	HORIZONTAL
3	7397.25	37.16	54.00	-16.84	29.58	5.36	37.18	34.96	Average	26	100	HORIZONTAL
4	7398.42	50.04	74.00	-23.96	42.46	5.36	37.18	34.96	Peak	26	100	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4933.94	46.53	54.00	-7.47	44.19	4.23	32.76	34.65	Average	158	126	VERTICAL
2	4934.01	50.87	74.00	-23.13	48.53	4.23	32.76	34.65	Peak	158	126	VERTICAL
3	7398.37	51.12	74.00	-22.88	43.54	5.36	37.18	34.96	Peak	130	126	VERTICAL
4	7399.94	38.84	54.00	-15.16	31.26	5.36	37.18	34.96	Average	130	126	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11b CH 13 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 29, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4943.88	46.85	74.00	-27.15	44.46	4.23	32.80	34.64	Peak	334	100	HORIZONTAL
2	4943.90	39.00	54.00	-15.00	36.61	4.23	32.80	34.64	Average	334	100	HORIZONTAL
3	7412.30	50.12	74.00	-23.88	42.52	5.36	37.20	34.96	Peak	345	100	HORIZONTAL
4	7415.44	37.18	54.00	-16.82	29.59	5.36	37.20	34.97	Average	345	100	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4943.96	44.06	54.00	-9.94	41.67	4.23	32.80	34.64	Average	104	114	VERTICAL
2	4944.09	49.49	74.00	-24.51	47.10	4.23	32.80	34.64	Peak	104	114	VERTICAL
3	7415.35	37.98	54.00	-16.02	30.39	5.36	37.20	34.97	Average	159	114	VERTICAL
4	7419.63	50.27	74.00	-23.73	42.65	5.37	37.22	34.97	Peak	159	114	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11g CH 1 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 29, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4826.61	31.32	54.00	-22.68	29.24	4.21	32.56	34.69	Average	168	101	HORIZONTAL
2	4828.01	45.09	74.00	-28.91	43.01	4.21	32.56	34.69	Peak	168	101	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4819.14	32.51	54.00	-21.49	30.43	4.21	32.56	34.69	Average	271	101	VERTICAL
2	4822.86	44.44	74.00	-29.56	42.36	4.21	32.56	34.69	Peak	271	101	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11g CH 6 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 29, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4872.00	38.07	54.00	-15.93	35.86	4.22	32.66	34.67	Average	149	101	HORIZONTAL
2	4872.16	52.39	74.00	-21.61	50.18	4.22	32.66	34.67	Peak	149	101	HORIZONTAL
3	7310.86	38.49	54.00	-15.51	31.01	5.34	37.07	34.93	Average	333	100	HORIZONTAL
4	7314.69	50.92	74.00	-23.08	43.45	5.34	37.07	34.94	Peak	333	100	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4873.87	55.19	74.00	-18.81	52.98	4.22	32.66	34.67	Peak	270	112	VERTICAL
2	4873.96	42.33	54.00	-11.67	40.12	4.22	32.66	34.67	Average	270	112	VERTICAL
3	7309.26	38.25	54.00	-15.75	30.77	5.34	37.07	34.93	Average	305	100	VERTICAL
4	7314.31	51.28	74.00	-22.72	43.81	5.34	37.07	34.94	Peak	305	100	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11g CH 11 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 29, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4919.85	32.43	54.00	-21.57	30.09	4.23	32.76	34.65	Average	342	100	HORIZONTAL
2	4926.74	46.68	74.00	-27.32	44.34	4.23	32.76	34.65	Peak	342	100	HORIZONTAL
3	7381.37	50.99	74.00	-23.01	43.43	5.36	37.16	34.96	Peak	82	100	HORIZONTAL
4	7383.69	37.43	54.00	-16.57	29.85	5.36	37.18	34.96	Average	82	100	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4925.91	45.30	74.00	-28.70	42.96	4.23	32.76	34.65	Peak	40	100	VERTICAL
2	4926.74	33.18	54.00	-20.82	30.84	4.23	32.76	34.65	Average	40	100	VERTICAL
3	7382.93	37.31	54.00	-16.69	29.75	5.36	37.16	34.96	Average	160	100	VERTICAL
4	7386.61	51.04	74.00	-22.96	43.46	5.36	37.18	34.96	Peak	160	100	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11g CH 12 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 29, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4929.27	45.74	74.00	-28.26	43.40	4.23	32.76	34.65	Peak	284	100	HORIZONTAL
2	4930.35	32.20	54.00	-21.80	29.86	4.23	32.76	34.65	Average	284	100	HORIZONTAL
3	7397.05	37.45	54.00	-16.55	29.87	5.36	37.18	34.96	Average	102	100	HORIZONTAL
4	7400.23	50.51	74.00	-23.49	42.93	5.36	37.18	34.96	Peak	102	100	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4934.16	45.24	74.00	-28.76	42.90	4.23	32.76	34.65	Peak	63	100	VERTICAL
2	4936.39	32.48	54.00	-21.52	30.10	4.23	32.80	34.65	Average	63	100	VERTICAL
3	7398.02	50.71	74.00	-23.29	43.13	5.36	37.18	34.96	Peak	153	100	VERTICAL
4	7400.41	37.08	54.00	-16.92	29.50	5.36	37.18	34.96	Average	153	100	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11g CH 13 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 29, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4944.00	45.76	74.00	-28.24	43.37	4.23	32.80	34.64	Peak	284	100	HORIZONTAL
2	4944.00	34.57	54.00	-19.43	32.18	4.23	32.80	34.64	Average	284	100	HORIZONTAL
3	7416.00	49.76	74.00	-24.24	42.17	5.36	37.20	34.97	Peak	136	100	HORIZONTAL
4	7416.00	35.93	54.00	-18.07	28.34	5.36	37.20	34.97	Average	136	100	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	4944.00	45.13	74.00	-28.87	42.74	4.23	32.80	34.64	Peak	3	100	VERTICAL
2	4944.00	32.41	54.00	-21.59	30.02	4.23	32.80	34.64	Average	3	100	VERTICAL
3	7416.00	50.33	74.00	-23.67	42.74	5.36	37.20	34.97	Peak	65	100	VERTICAL
4	7416.00	35.88	54.00	-18.12	28.29	5.36	37.20	34.97	Average	65	100	VERTICAL

For 5GHz Band:

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 29, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	11490.43	57.61	74.00	-16.39	47.39	6.74	38.30	34.82	Peak	75	125	HORIZONTAL
2	11490.68	44.28	54.00	-9.72	34.06	6.74	38.30	34.82	Average	75	125	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	11491.23	46.10	54.00	-7.90	35.88	6.74	38.30	34.82	Average	264	118	VERTICAL
2	11491.72	60.71	74.00	-13.29	50.49	6.74	38.30	34.82	Peak	264	118	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 29, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	11572.03	43.53	54.00	-10.47	33.28	6.77	38.33	34.85	Average	58	100	HORIZONTAL
2	11573.52	55.46	74.00	-18.54	45.21	6.77	38.33	34.85	Peak	58	100	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	11570.71	45.83	54.00	-8.17	35.58	6.77	38.33	34.85	Average	272	117	VERTICAL
2	11571.03	58.71	74.00	-15.29	48.46	6.77	38.33	34.85	Peak	272	117	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 29, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	11650.38	44.89	54.00	-9.11	34.60	6.80	38.36	34.87	Average	316	100	HORIZONTAL
2	11650.93	56.20	74.00	-17.80	45.91	6.80	38.36	34.87	Peak	316	100	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	11651.68	47.50	54.00	-6.50	37.21	6.80	38.36	34.87	Average	264	117	VERTICAL
2	11653.37	61.96	74.00	-12.04	51.67	6.80	38.36	34.87	Peak	264	117	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 29, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	11509.12	55.29	74.00	-18.71	45.06	6.75	38.30	34.82	Peak	268	100	HORIZONTAL
2	11514.78	40.74	54.00	-13.26	30.49	6.76	38.31	34.82	Average	268	100	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	11508.41	55.06	74.00	-18.94	44.83	6.75	38.30	34.82	Peak	145	100	VERTICAL
2	11511.46	41.88	54.00	-12.12	31.65	6.75	38.30	34.82	Average	145	100	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	11588.78	54.36	74.00	-19.64	44.10	6.78	38.33	34.85	Peak	0	100	HORIZONTAL
2	11589.33	41.79	54.00	-12.21	31.53	6.78	38.33	34.85	Average	0	100	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	11587.15	57.34	74.00	-16.66	47.08	6.78	38.33	34.85	Peak	263	183	VERTICAL
2	11591.52	44.17	54.00	-9.83	33.91	6.78	38.33	34.85	Average	263	183	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	11545.95	50.87	74.00	-23.13	40.64	6.76	38.31	34.84	Peak	243	100	HORIZONTAL
2	11545.95	40.37	54.00	-13.63	30.14	6.76	38.31	34.84	Average	243	100	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	11547.74	41.61	54.00	-12.39	31.38	6.76	38.31	34.84	Average	258	100	VERTICAL
2	11549.45	54.28	74.00	-19.72	44.03	6.77	38.32	34.84	Peak	258	100	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11a CH 149 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 28, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	11490.01	55.63	74.00	-18.37	45.41	6.74	38.30	34.82	Peak	309	115	HORIZONTAL
2	11491.17	42.21	54.00	-11.79	31.99	6.74	38.30	34.82	Average	309	115	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	11492.20	45.88	54.00	-8.12	35.66	6.74	38.30	34.82	Average	256	118	VERTICAL
2	11492.88	58.73	74.00	-15.27	48.51	6.74	38.30	34.82	Peak	256	118	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11a CH 157 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 29, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	11566.35	56.47	74.00	-17.53	46.21	6.77	38.33	34.84	Peak	66	100	HORIZONTAL
2	11572.14	43.34	54.00	-10.66	33.09	6.77	38.33	34.85	Average	66	100	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	11572.21	46.46	54.00	-7.54	36.21	6.77	38.33	34.85	Average	263	112	VERTICAL
2	11573.30	60.66	74.00	-13.34	50.41	6.77	38.33	34.85	Peak	263	112	VERTICAL

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11a CH 165 / Chain 1 + Chain 2 + Chain 3
Test Date	Aug. 29, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	11648.42	44.47	54.00	-9.53	34.18	6.80	38.36	34.87	Average	39	115	HORIZONTAL
2	11649.00	57.66	74.00	-16.34	47.37	6.80	38.36	34.87	Peak	39	115	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	11652.14	48.05	54.00	-5.95	37.76	6.80	38.36	34.87	Average	262	117	VERTICAL
2	11652.84	61.42	74.00	-12.58	51.13	6.80	38.36	34.87	Peak	262	117	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.

4.3. Emissions Measurement

4.3.1. Limit

30dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

4.3.2. Measuring Instruments and Setting

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

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average
RBW / VBW (30dBc in any 100 kHz bandwidth emission)	100 kHz / 300 kHz for Peak

4.3.3. Test Procedures

For Radiated band edges Measurement:

1. The test procedure is the same as section 4.2.3, only the frequency range investigated is limited to 100MHz around band edges.

For Radiated Out of Band Emission Measurement:

1. Test was performed in accordance with KDB 558074 D01 v03r02 for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 section 10.1 Unwanted Emissions into Non-Restricted Frequency Bands Measurement Procedure
2. The radiated emission test is performed on each TX port of operating mode without summing or adding 10log (N) since the limit is relative emission limit.
   Only worst data of each operating mode is presented.

4.3.4. Test Setup Layout

For Radiated band edges Measurement:

This test setup layout is the same as that shown in section 4.2.4.

For Radiated Out of Band Emission Measurement:

This test setup layout is the same as that shown in section 4.2.4.

4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

For non-beamforming mode:

The EUT was programmed to be in continuously transmitting mode.

For beamforming mode:

The EUT was programmed to be in beamforming transmitting mode.

4.3.7. Test Result of Band Edge and Fundamental Emissions

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11n MCS0 HT20 CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3
Test date	Aug. 28, 2014		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	2390.00	72.17	74.00	-1.83	41.34	2.91	27.92	0.00	Peak	100	100	VERTICAL
2	2390.00	52.87	54.00	-1.13	22.04	2.91	27.92	0.00	Average	100	100	VERTICAL
3	2419.81	102.98			72.17	2.93	27.88	0.00	Average	100	100	VERTICAL
4	2420.10	114.70			83.89	2.93	27.88	0.00	Peak	100	100	VERTICAL

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

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	2388.26	70.78	74.00	-3.22	39.95	2.91	27.92	0.00	Peak	84	100	VERTICAL
2	2390.00	53.28	54.00	-0.72	22.45	2.91	27.92	0.00	Average	84	100	VERTICAL
3	2439.60	122.12			91.32	2.94	27.86	0.00	Peak	84	100	VERTICAL
4	2439.89	110.19			79.39	2.94	27.86	0.00	Average	84	100	VERTICAL
5	2483.50	70.99	74.00	-3.01	40.21	2.96	27.82	0.00	Peak	84	100	VERTICAL
6	2483.50	50.78	54.00	-3.22	20.00	2.96	27.82	0.00	Average	84	100	VERTICAL

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

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	2459.54	113.98			83.19	2.95	27.84	0.00	Peak	101	100	VERTICAL
2	2459.83	101.71			70.92	2.95	27.84	0.00	Average	101	100	VERTICAL
3	2483.50	49.12	54.00	-4.88	18.34	2.96	27.82	0.00	Average	101	100	VERTICAL
4	2484.22	68.58	74.00	-5.42	37.80	2.96	27.82	0.00	Peak	101	100	VERTICAL

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

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11n MCS0 HT20 CH 12, 13 / Chain 1 + Chain 2 + Chain 3
Test date	Aug. 28, 2014		

Channel 12

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	2469.39	113.28			82.49	2.95	27.84	0.00	Peak	101	100	VERTICAL
2	2469.75	101.63			70.84	2.95	27.84	0.00	Average	101	100	VERTICAL
3	2483.50	53.40	54.00	-0.60	22.62	2.96	27.82	0.00	Average	101	100	VERTICAL
4	2483.93	73.60	74.00	-0.40	42.82	2.96	27.82	0.00	Peak	101	100	VERTICAL

Item 1, 2 are the fundamental frequency at 2467 MHz.

Channel 13

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	2469.76	99.25			68.46	2.95	27.84	0.00	Average	101	100	VERTICAL
2	2470.19	111.26			80.47	2.95	27.84	0.00	Peak	101	100	VERTICAL
3	2483.50	73.76	74.00	-0.24	42.98	2.96	27.82	0.00	Peak	101	100	VERTICAL
4	2483.50	53.26	54.00	-0.74	22.48	2.96	27.82	0.00	Average	101	100	VERTICAL

Item 1, 2 are the fundamental frequency at 2472 MHz.

Temperature	24℃	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11n MCS0 HT40 CH 3, 6, 9 / Chain 1 + Chain 2 + Chain 3
Test date	Aug. 28, 2014		

Channel 3

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	2390.00	69.52	74.00	-4.48	38.69	2.91	27.92	0.00	Peak	99	100	VERTICAL
2	2390.00	53.63	54.00	-0.37	22.80	2.91	27.92	0.00	Average	99	100	VERTICAL
3	2425.18	99.93			69.12	2.93	27.88	0.00	Average	99	100	VERTICAL
4	2430.10	109.92			79.11	2.93	27.88	0.00	Peak	99	100	VERTICAL

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

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	2388.84	72.34	74.00	-1.66	41.51	2.91	27.92	0.00	Peak	99	100	VERTICAL
2	2390.00	53.99	54.00	-0.01	23.16	2.91	27.92	0.00	Average	99	100	VERTICAL
3	2434.68	113.58			82.77	2.93	27.88	0.00	Peak	99	100	VERTICAL
4	2454.66	103.10			72.31	2.95	27.84	0.00	Average	99	100	VERTICAL
5	2484.08	53.94	54.00	-0.06	23.16	2.96	27.82	0.00	Average	99	100	VERTICAL
6	2484.66	73.97	74.00	-0.03	43.19	2.96	27.82	0.00	Peak	99	100	VERTICAL

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

Channel 9

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	2455.18	108.11			77.32	2.95	27.84	0.00	Peak	38	100	VERTICAL
2	2455.18	98.56			67.77	2.95	27.84	0.00	Average	38	100	VERTICAL
3	2484.95	67.48	74.00	-6.52	36.70	2.96	27.82	0.00	Peak	38	100	VERTICAL
4	2484.95	51.96	54.00	-2.04	21.18	2.96	27.82	0.00	Average	38	100	VERTICAL

Item 1, 2 are the fundamental frequency at 2452 MHz.

Temperature	24℃	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11n MCS0 HT40 CH 10, 11 / Chain 1 + Chain 2 + Chain 3
Test date	Aug. 28, 2014		

Channel 10

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	2454.68	98.57			67.78	2.95	27.84	0.00	Average	100	100	VERTICAL
2	2459.60	108.79			78.00	2.95	27.84	0.00	Peak	100	100	VERTICAL
3	2484.08	52.06	54.00	-1.94	21.28	2.96	27.82	0.00	Average	100	100	VERTICAL
4	2485.53	67.18	74.00	-6.82	36.40	2.96	27.82	0.00	Peak	100	100	VERTICAL

Item 1, 2 are the fundamental frequency at 2457 MHz.

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	2459.40	108.18			77.39	2.95	27.84	0.00	Peak	101	100	VERTICAL
2	2459.68	97.87			67.08	2.95	27.84	0.00	Average	101	100	VERTICAL
3	2483.50	71.43	74.00	-2.57	40.65	2.96	27.82	0.00	Peak	101	100	VERTICAL
4	2483.50	53.64	54.00	-0.36	22.86	2.96	27.82	0.00	Average	101	100	VERTICAL

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

Note:

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

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

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11b CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3
Test date	Aug. 29, 2014		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	2390.00	57.93	74.00	-16.07	27.10	2.91	27.92	0.00	Peak	184	107	VERTICAL
2	2390.00	46.34	54.00	-7.66	15.51	2.91	27.92	0.00	Average	184	107	VERTICAL
3	2411.28	114.82			84.00	2.92	27.90	0.00	Peak	184	107	VERTICAL
4	2412.58	112.36			81.54	2.92	27.90	0.00	Average	184	107	VERTICAL

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

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	2358.45	47.21	54.00	-6.79	16.35	2.89	27.97	0.00	Average	198	103	VERTICAL
2	2358.74	58.98	74.00	-15.02	28.12	2.89	27.97	0.00	Peak	198	103	VERTICAL
3	2437.58	113.56			82.76	2.94	27.86	0.00	Average	198	103	VERTICAL
4	2437.87	116.05			85.25	2.94	27.86	0.00	Peak	198	103	VERTICAL

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

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	2461.13	113.02			82.23	2.95	27.84	0.00	Average	187	100	VERTICAL
2	2461.28	115.50			84.71	2.95	27.84	0.00	Peak	187	100	VERTICAL
3	2483.50	48.97	54.00	-5.03	18.19	2.96	27.82	0.00	Average	187	100	VERTICAL
4	2483.79	61.41	74.00	-12.59	30.63	2.96	27.82	0.00	Peak	187	100	VERTICAL

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

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11g CH 12, 13 / Chain 1 + Chain 2 + Chain 3
Test date	Aug. 29, 2014		

Channel 12

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	2467.72	112.18			81.39	2.95	27.84	0.00	Average	197	100	VERTICAL
2	2468.01	114.63			83.84	2.95	27.84	0.00	Peak	197	100	VERTICAL
3	2483.93	48.60	54.00	-5.40	17.82	2.96	27.82	0.00	Average	197	100	VERTICAL
4	2484.08	60.16	74.00	-13.84	29.38	2.96	27.82	0.00	Peak	197	100	VERTICAL

Item 1, 2 are the fundamental frequency at 2467 MHz.

Channel 13

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	2472.72	110.64			79.86	2.96	27.82	0.00	Average	188	100	VERTICAL
2	2472.87	112.86			82.08	2.96	27.82	0.00	Peak	188	100	VERTICAL
3	2483.50	63.37	74.00	-10.63	32.59	2.96	27.82	0.00	Peak	188	100	VERTICAL
4	2485.82	53.32	54.00	-0.68	22.54	2.96	27.82	0.00	Average	188	100	VERTICAL

Item 1, 2 are the fundamental frequency at 2472 MHz.

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11g CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3
Test date	Aug. 28, 2014		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	Cm	
1	2390.00	68.44	74.00	-5.56	37.61	2.91	27.92	0.00	Peak	99	100	VERTICAL
2	2390.00	50.10	54.00	-3.90	19.27	2.91	27.92	0.00	Average	99	100	VERTICAL
3	2416.20	104.55			73.73	2.92	27.90	0.00	Average	99	100	VERTICAL
4	2416.34	115.33			84.51	2.92	27.90	0.00	Peak	99	100	VERTICAL

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

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	Cm	
1	2388.84	67.51	74.00	-6.49	36.68	2.91	27.92	0.00	Peak	99	100	VERTICAL
2	2390.00	51.28	54.00	-2.72	20.45	2.91	27.92	0.00	Average	99	100	VERTICAL
3	2440.76	121.73			90.93	2.94	27.86	0.00	Peak	99	100	VERTICAL
4	2441.34	110.54			79.74	2.94	27.86	0.00	Average	99	100	VERTICAL
5	2483.55	66.23	74.00	-7.77	35.45	2.96	27.82	0.00	Peak	99	100	VERTICAL
6	2483.55	49.85	54.00	-4.15	19.07	2.96	27.82	0.00	Average	99	100	VERTICAL

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

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	Cm	
1	2455.49	103.67			72.88	2.95	27.84	0.00	Average	100	100	VERTICAL
2	2456.93	114.63			83.84	2.95	27.84	0.00	Peak	100	100	VERTICAL
3	2483.50	72.20	74.00	-1.80	41.42	2.96	27.82	0.00	Peak	100	100	VERTICAL
4	2483.50	50.37	54.00	-3.63	19.59	2.96	27.82	0.00	Average	100	100	VERTICAL

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

Temperature	24°C	Humidity	51%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11g CH 12, 13 / Chain 1 + Chain 2 + Chain 3
Test date	Aug. 28, 2014		

Channel 12

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	2469.89	102.79			72.00	2.95	27.84	0.00	Average	36	100	VERTICAL
2	2471.27	113.99			83.21	2.96	27.82	0.00	Peak	36	100	VERTICAL
3	2483.50	69.00	74.00	-5.00	38.22	2.96	27.82	0.00	Peak	36	100	VERTICAL
4	2483.50	53.35	54.00	-0.65	22.57	2.96	27.82	0.00	Average	36	100	VERTICAL

Item 1, 2 are the fundamental frequency at 2467 MHz.

Channel 13

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg	cm	
1	2474.75	111.20			80.42	2.96	27.82	0.00	Peak	35	100	VERTICAL
2	2475.18	100.49			69.71	2.96	27.82	0.00	Average	35	100	VERTICAL
3	2483.50	72.79	74.00	-1.21	42.01	2.96	27.82	0.00	Peak	35	100	VERTICAL
4	2485.38	53.98	54.00	-0.02	23.20	2.96	27.82	0.00	Average	35	100	VERTICAL

Item 1, 2 are the fundamental frequency at 2472 MHz.

Note:

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

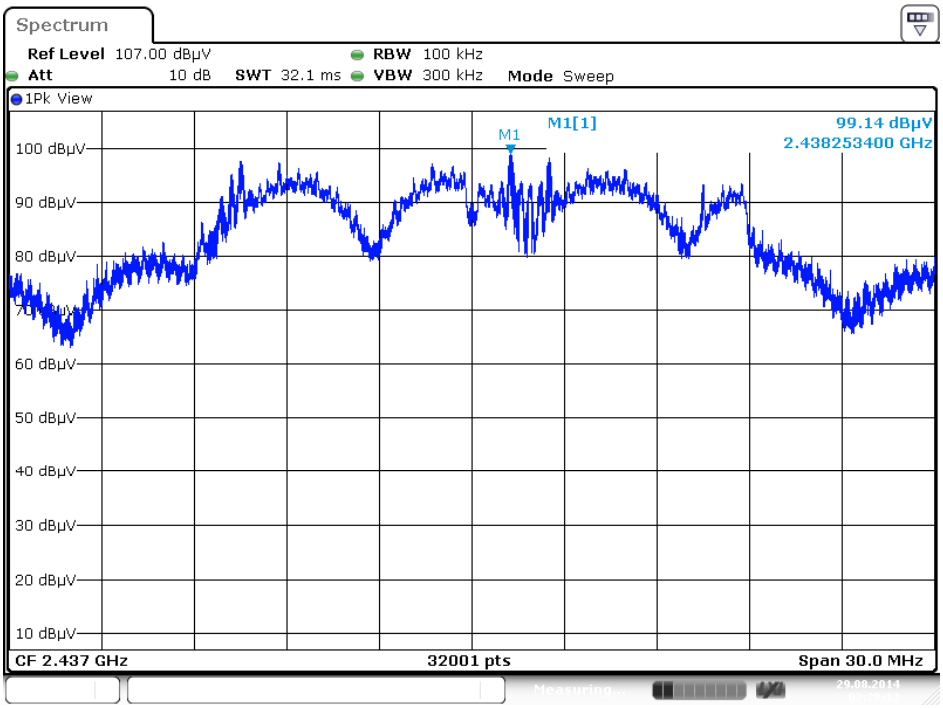
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

For non-beamforming mode:

For 2.4GHz Band:

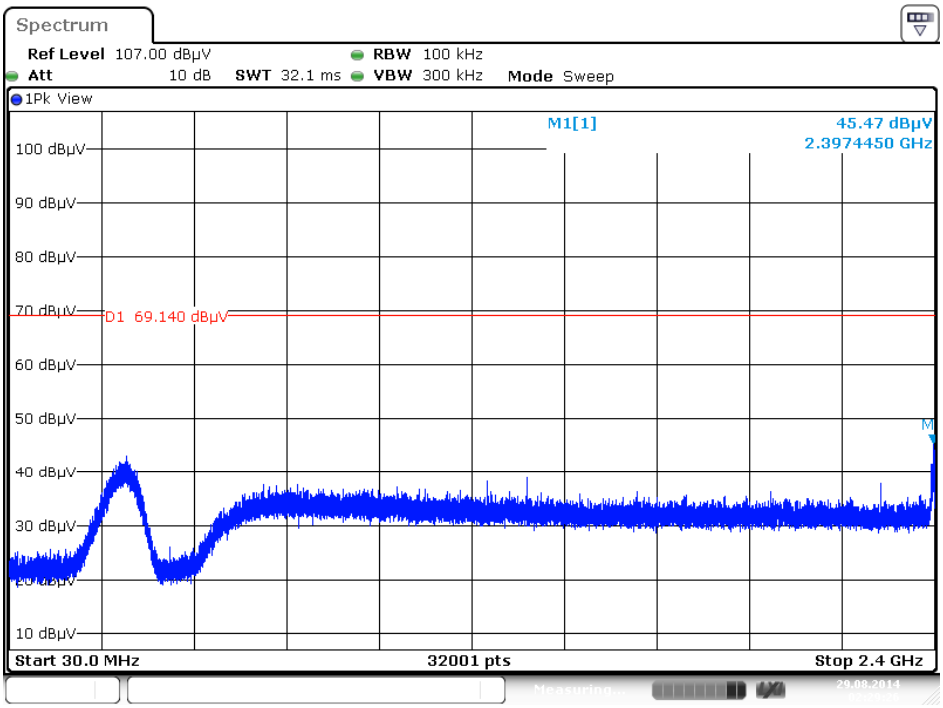
For Emission not in Restricted Band

Plot on Configuration IEEE 802.11n MCS0 HT20 / Reference Level



Date: 29.AUG.2014 02:28:12

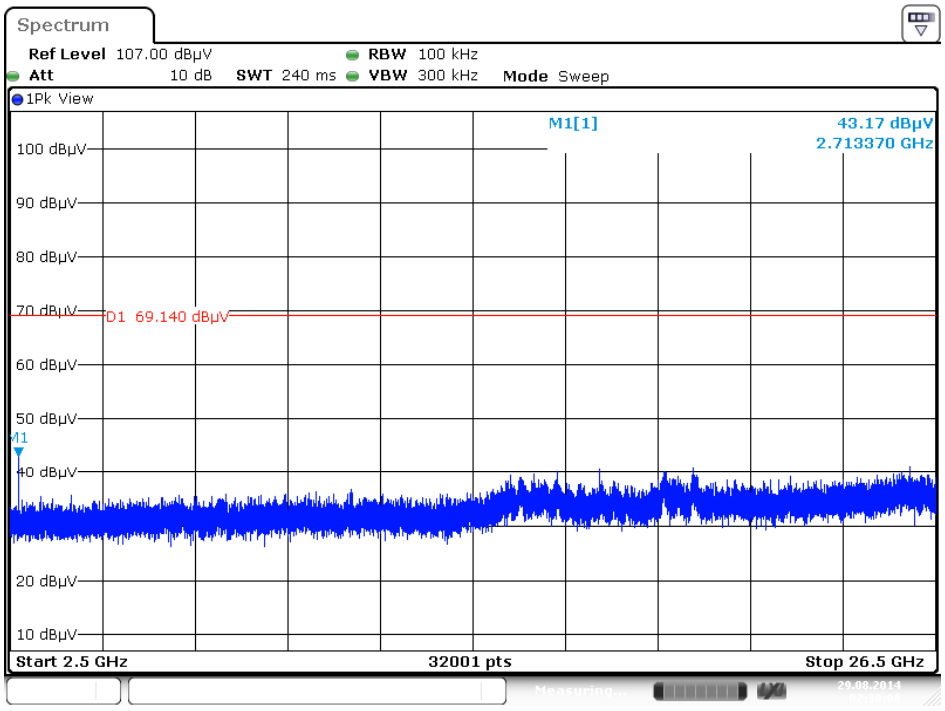
Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 1 / 30MHz~2400MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 02:29:26

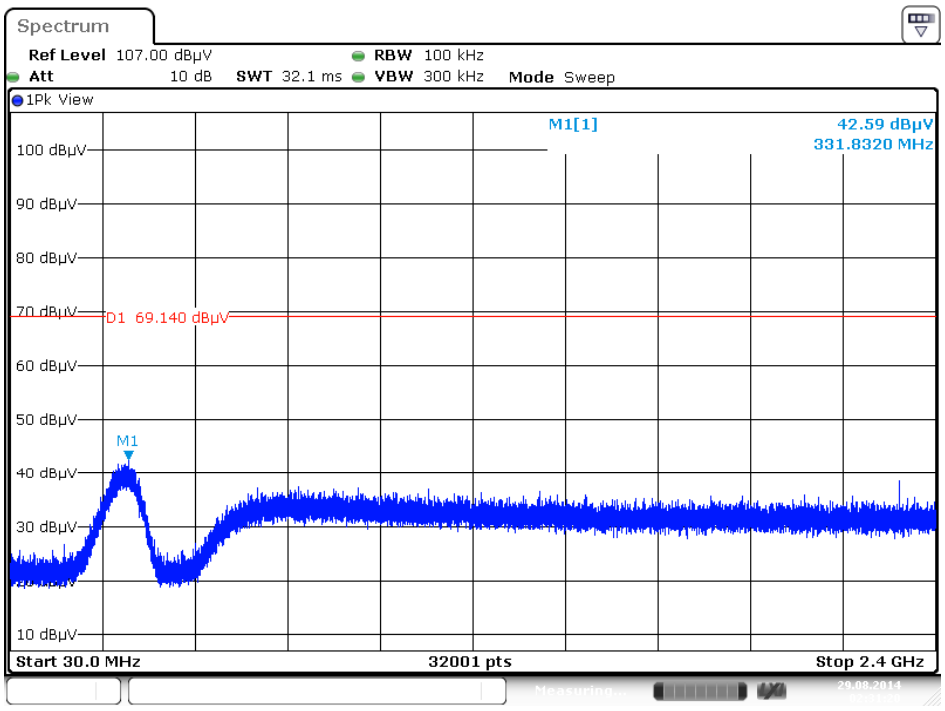
Note: Only the worse polarization (Vertical) is tested and recorded in test report.

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 1 / 2500MHz~26500MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 02:30:08

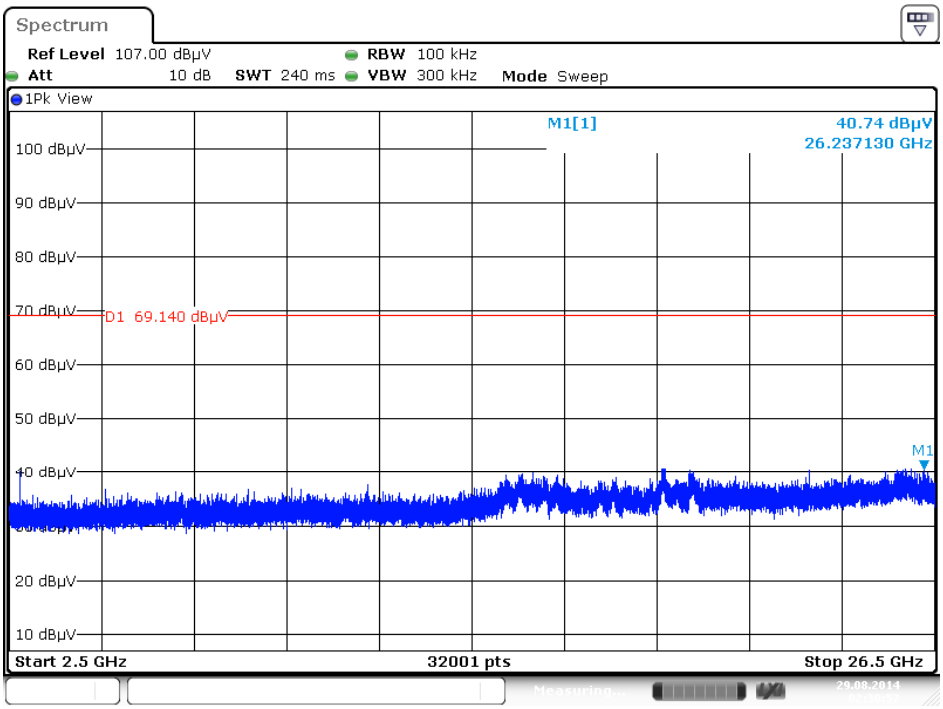
Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 11 / 30MHz~2400MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 02:31:21

Note: Only the worse polarization (Vertical) is tested and recorded in test report.

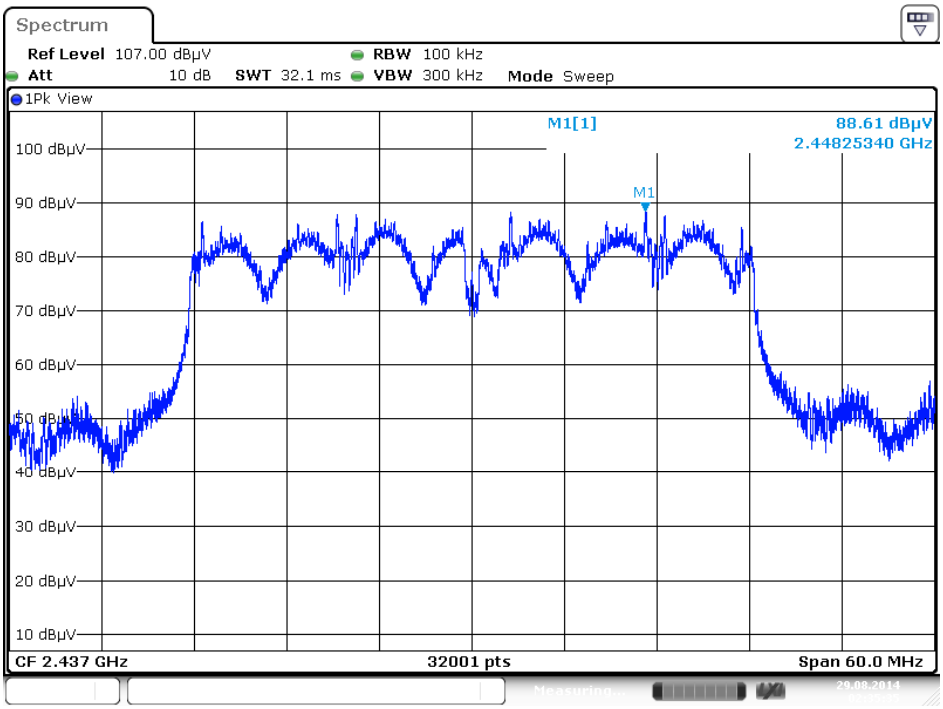
Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 11 / 2500MHz~26500MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 02:30:52

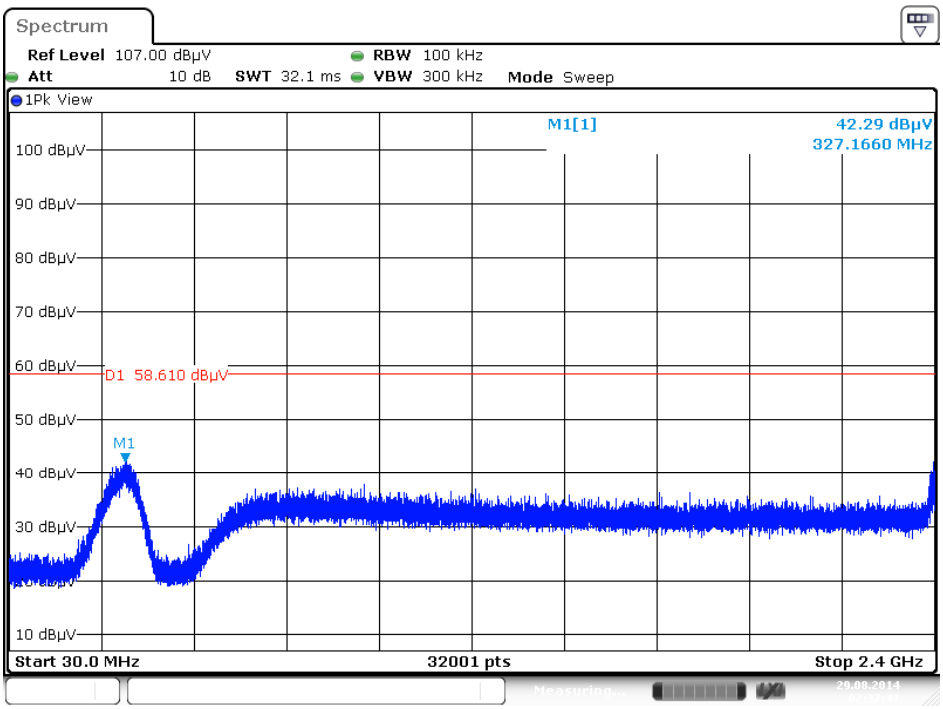
Note: Only the worse polarization (Vertical) is tested and recorded in test report.

Plot on Configuration IEEE 802.11n MCS0 HT40 / Reference Level



Date: 29.AUG.2014 02:35:35

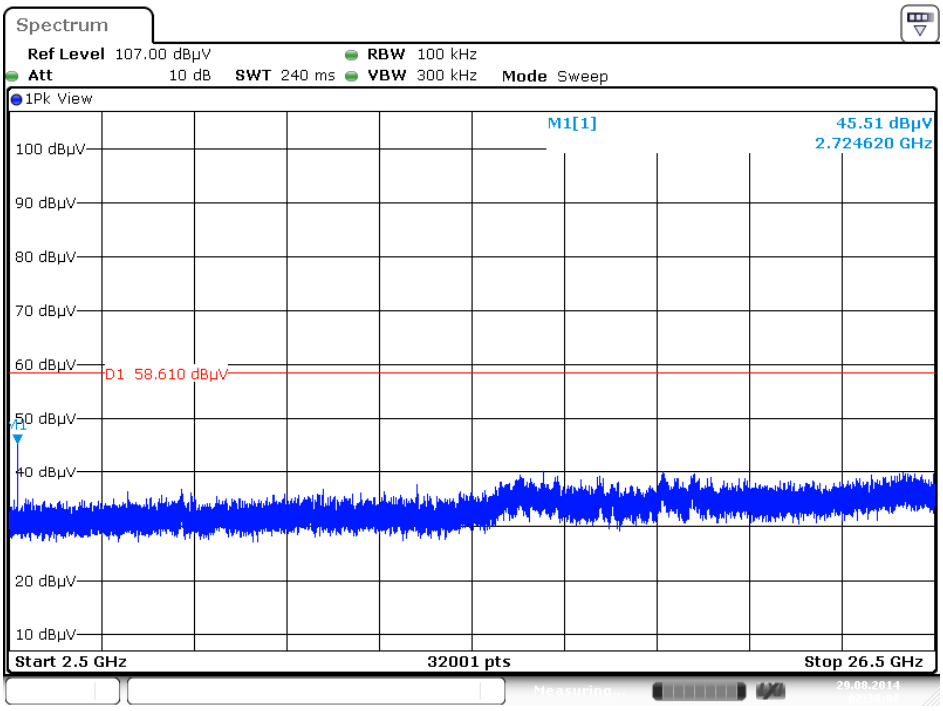
Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 3 / 30MHz~2400MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 02:37:41

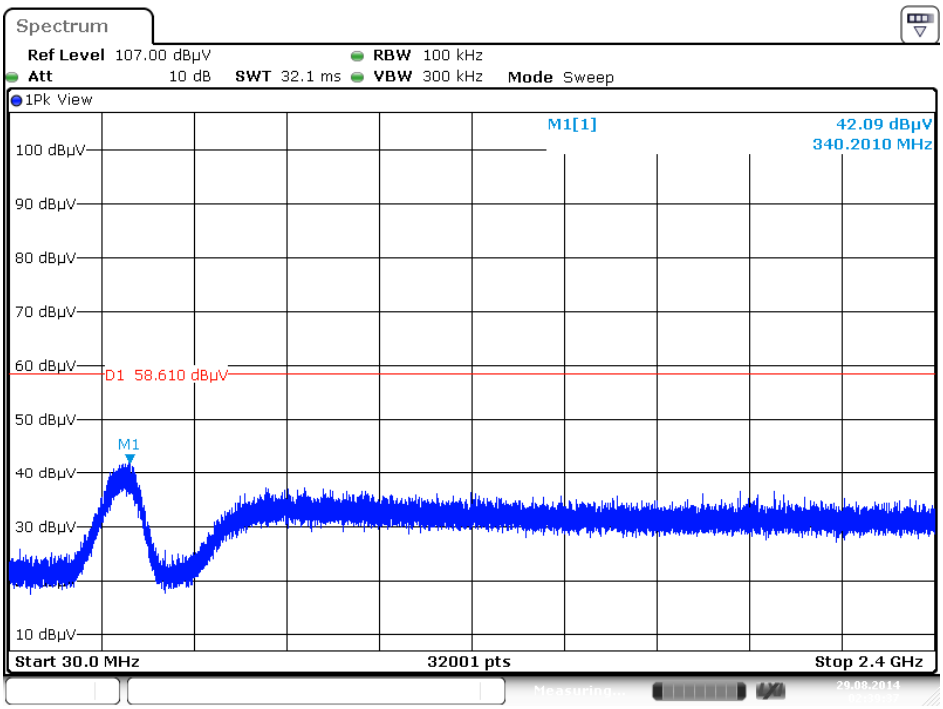
Note: Only the worse polarization (Vertical) is tested and recorded in test report.

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 3 / 2500MHz~26500MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 02:38:08

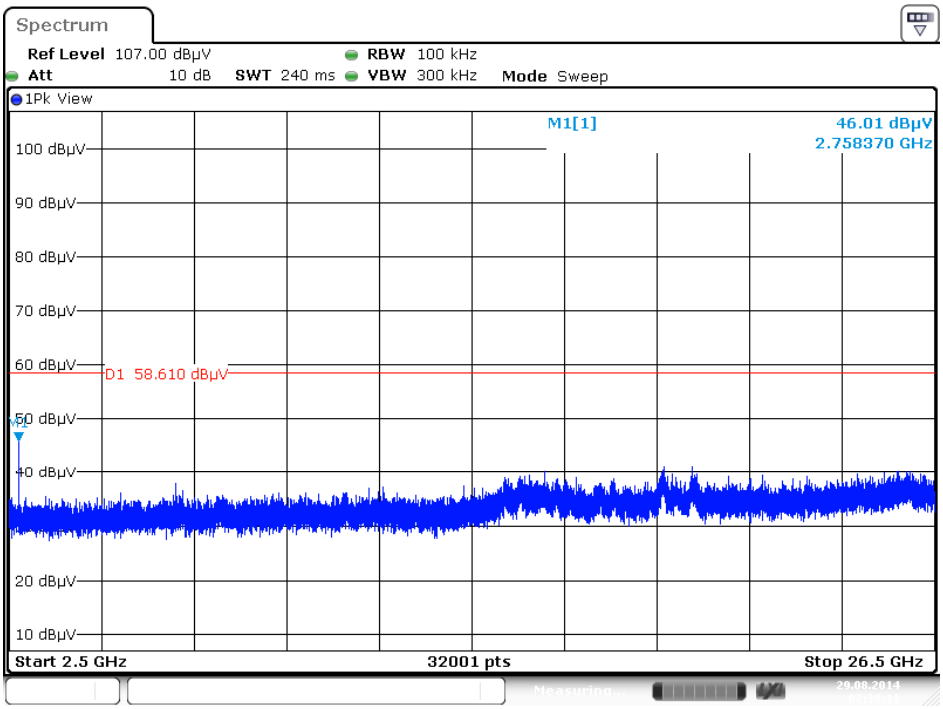
Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 9 / 30MHz~2400MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 02:39:37

Note: Only the worse polarization (Vertical) is tested and recorded in test report.

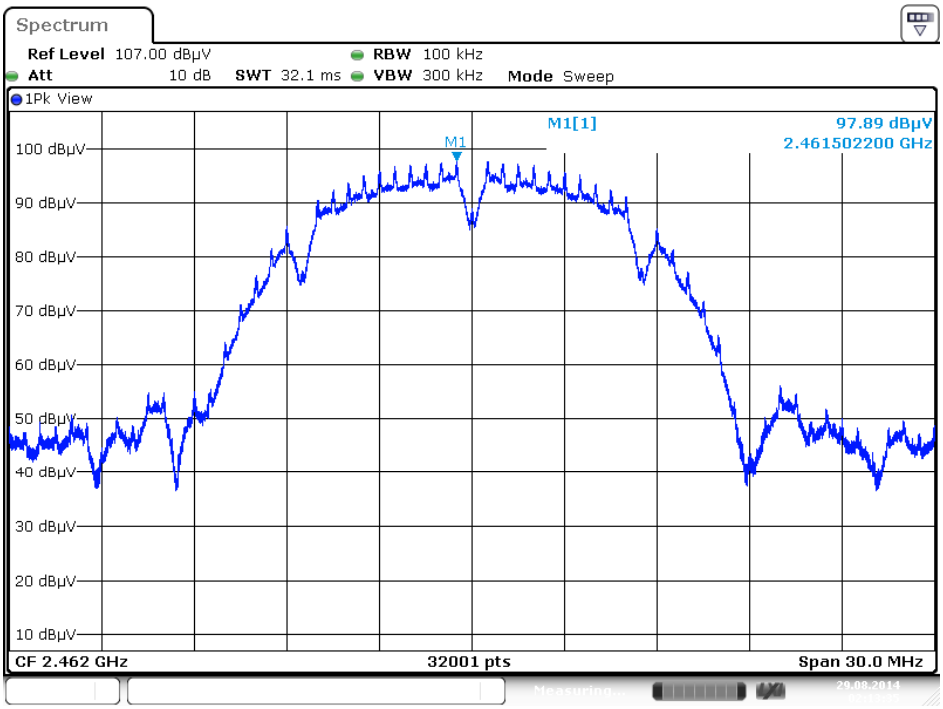
Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 9 / 2500MHz~26500MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 02:39:11

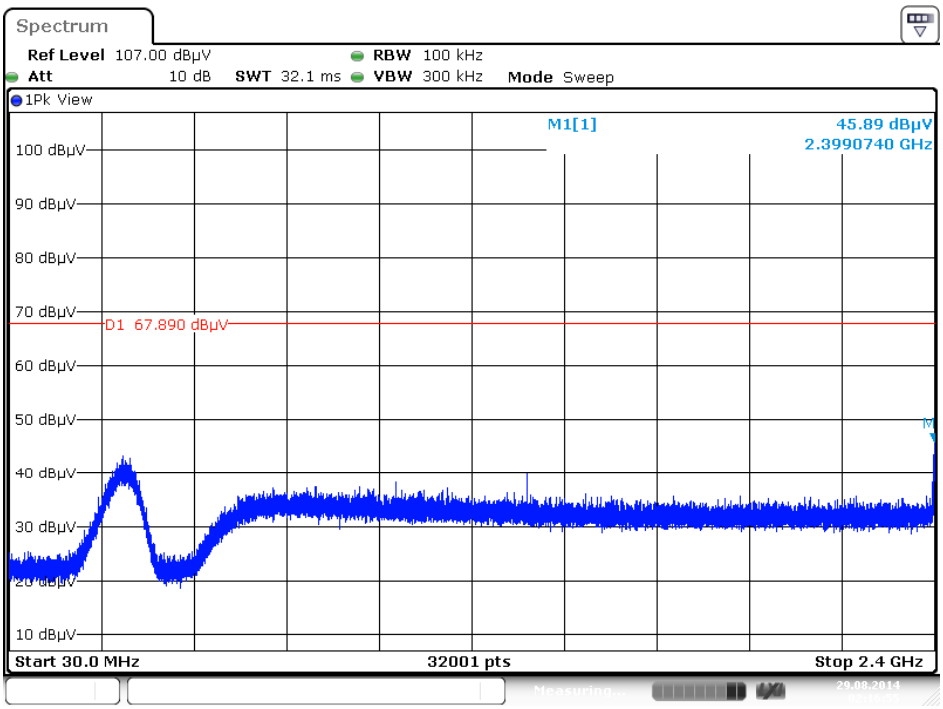
Note: Only the worse polarization (Vertical) is tested and recorded in test report.

Plot on Configuration IEEE 802.11b / Reference Level



Date: 29.AUG.2014 02:13:35

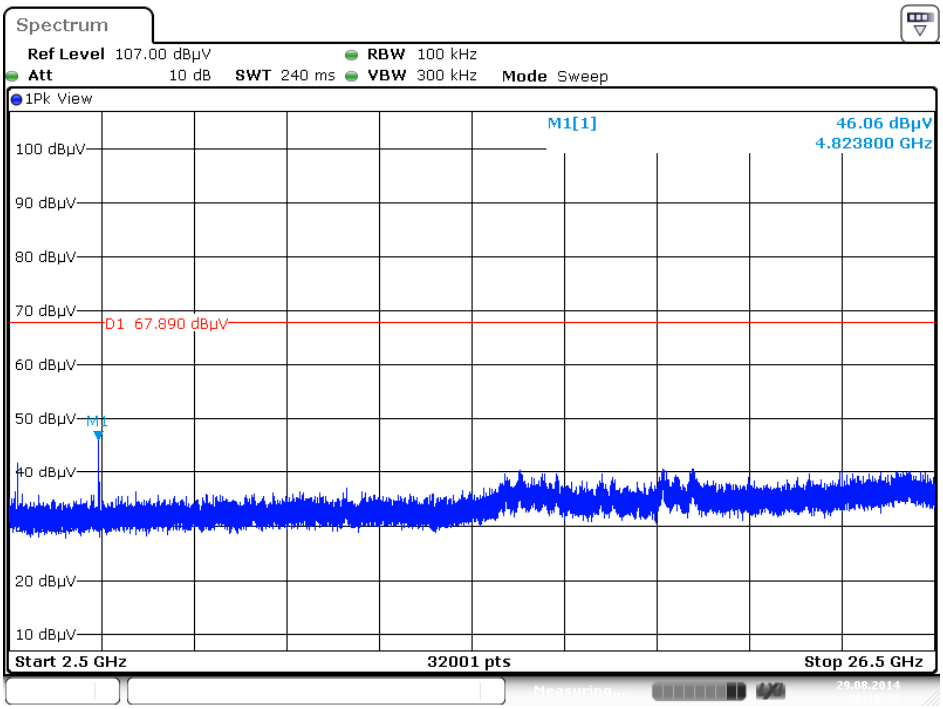
Plot on Configuration IEEE 802.11b / CH 1 / 30MHz~2400MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 02:16:55

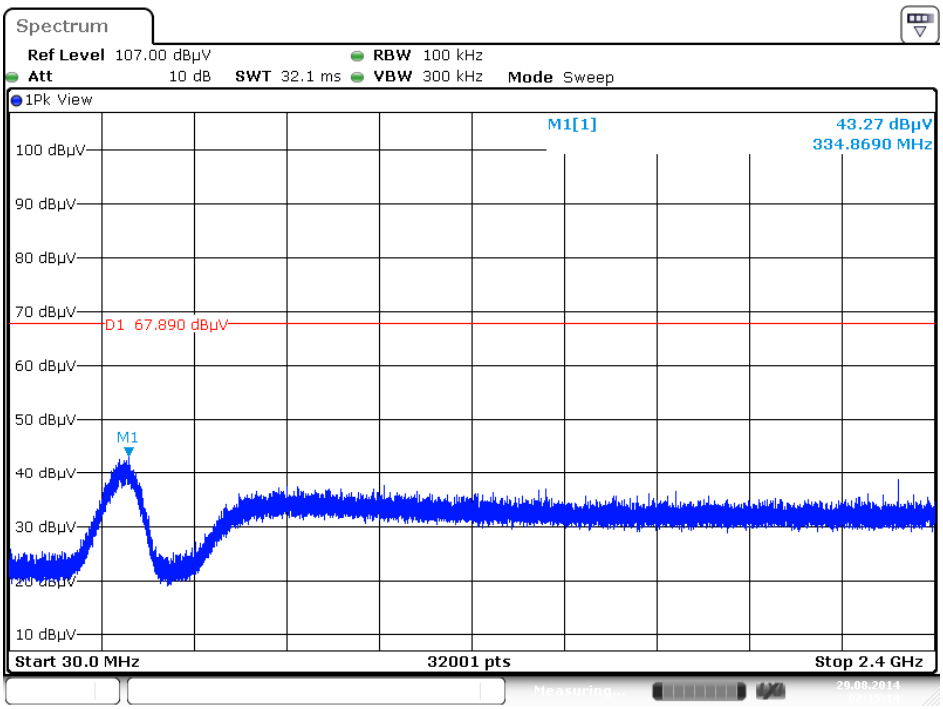
Note: Only the worse polarization (Vertical) is tested and recorded in test report.

Plot on Configuration IEEE 802.11b / CH 1 / 2500MHz~26500MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 02:16:22

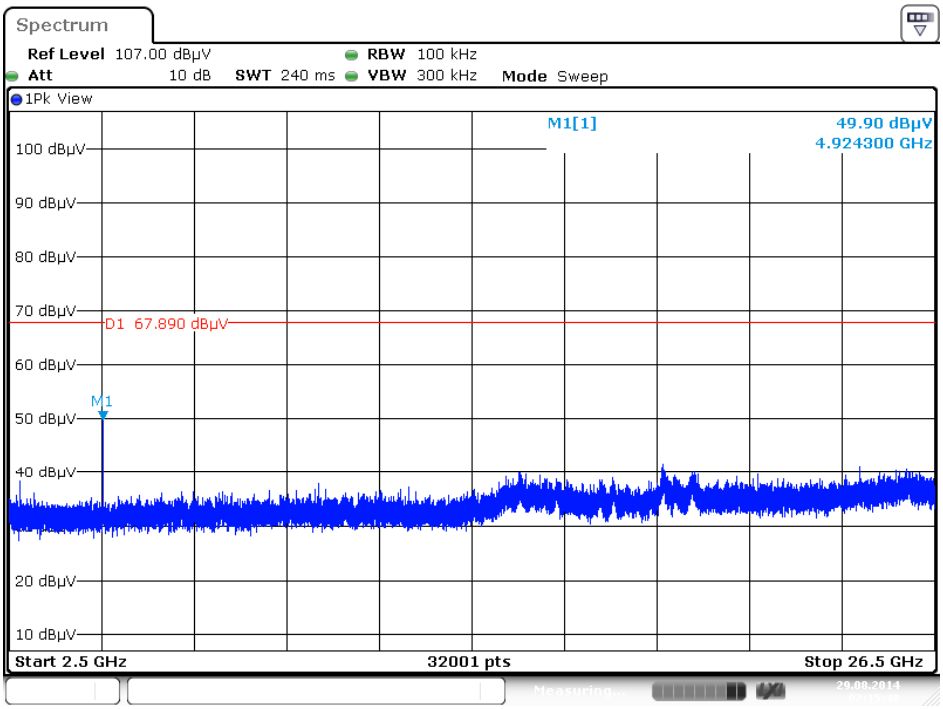
Plot on Configuration IEEE 802.11b / CH 11 / 30MHz~2400MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 02:15:14

Note: Only the worse polarization (Vertical) is tested and recorded in test report.

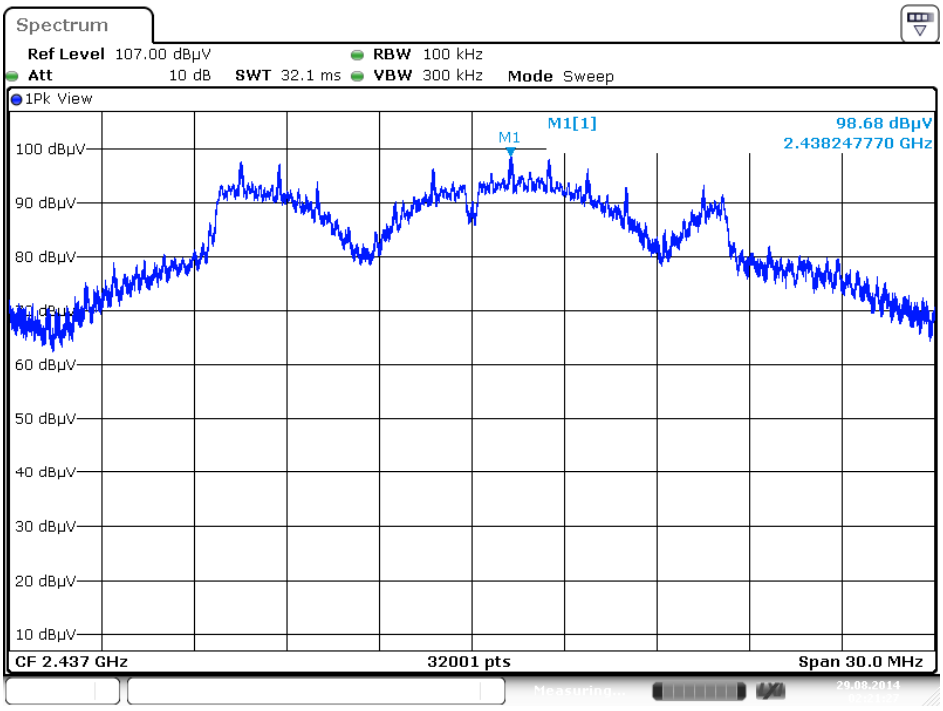
Plot on Configuration IEEE 802.11b / CH 11 / 2500MHz~26500MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 02:15:48

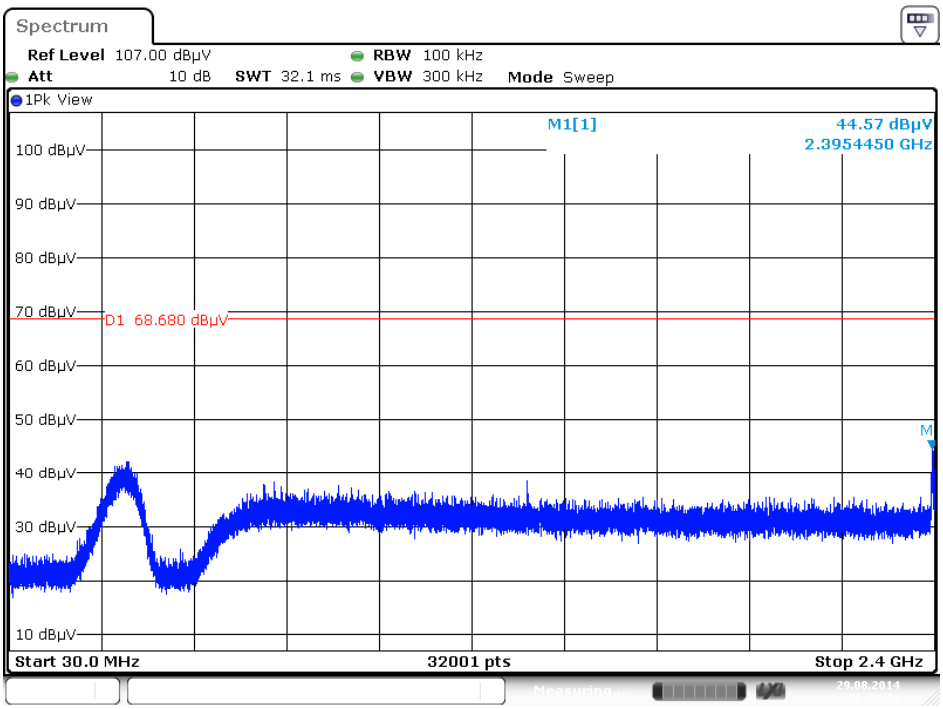
Note: Only the worse polarization (Vertical) is tested and recorded in test report.

Plot on Configuration IEEE 802.11g / Reference Level



Date: 29.AUG.2014 02:21:27

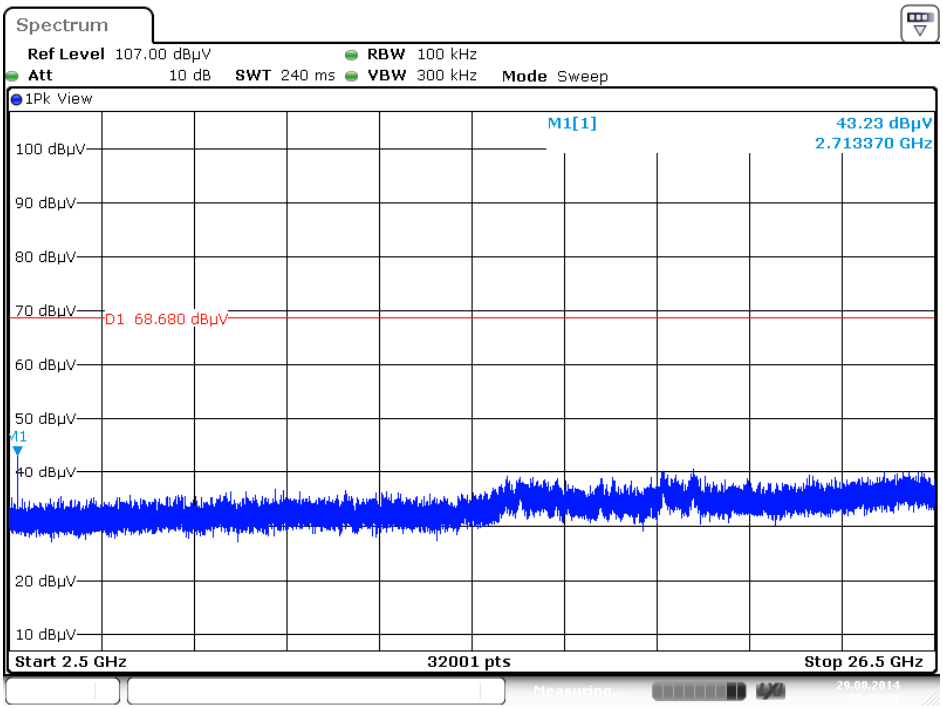
Plot on Configuration IEEE 802.11g / CH 1 / 30MHz~2400MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 02:22:44

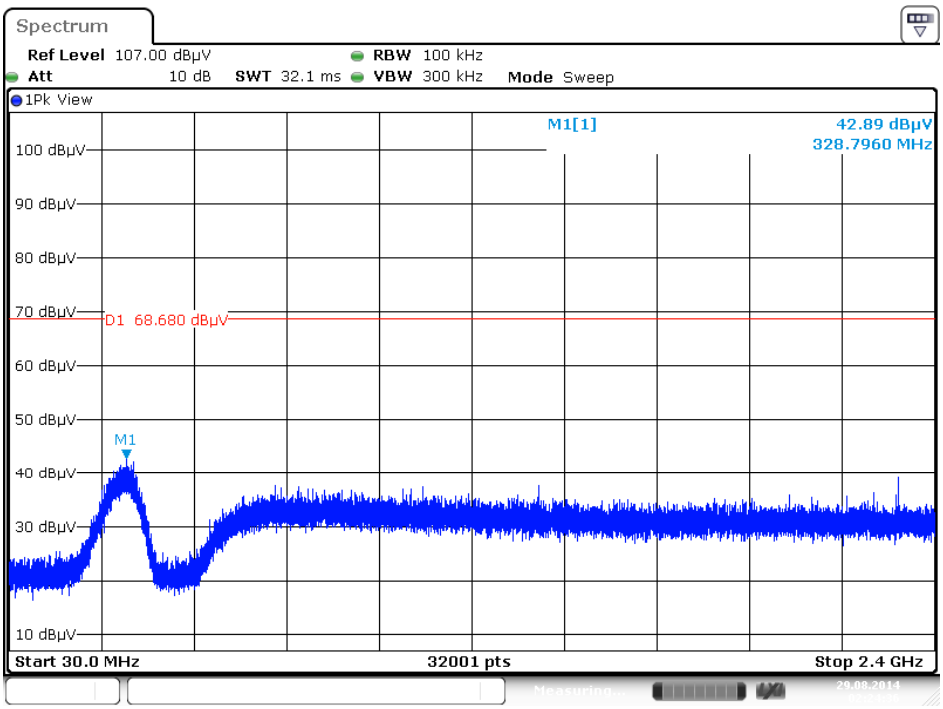
Note: Only the worse polarization (Vertical) is tested and recorded in test report.

Plot on Configuration IEEE 802.11g / CH 1 / 2500MHz~26500MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 02:23:31

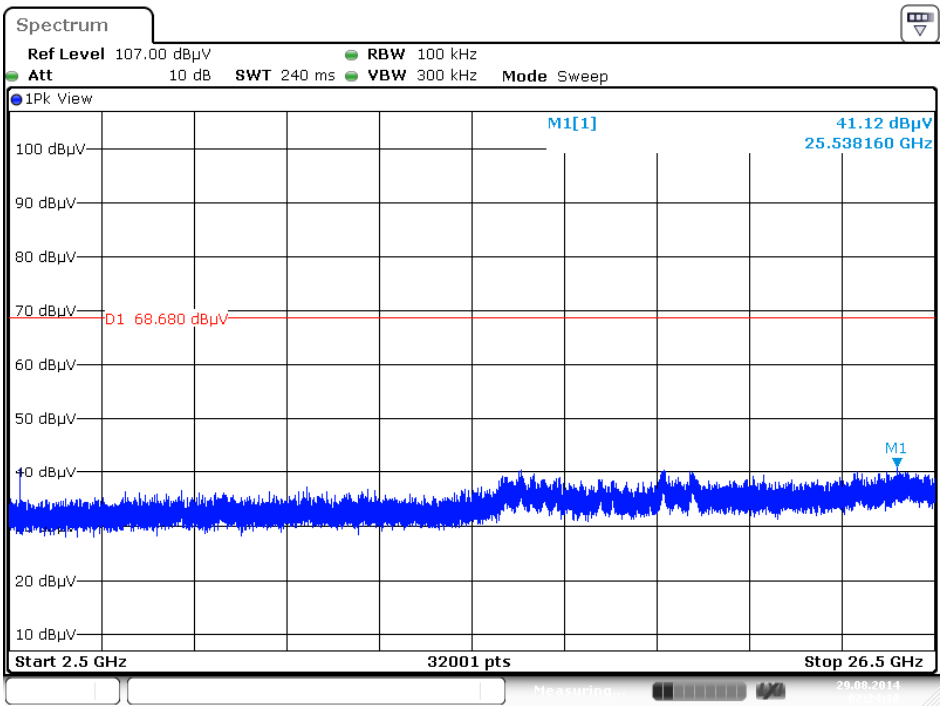
Plot on Configuration IEEE 802.11g / CH 11 / 30MHz~2400MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 02:24:36

Note: Only the worse polarization (Vertical) is tested and recorded in test report.

Plot on Configuration IEEE 802.11g / CH 11 / 2500MHz~26500MHz (down 30dBc) (Vertical)



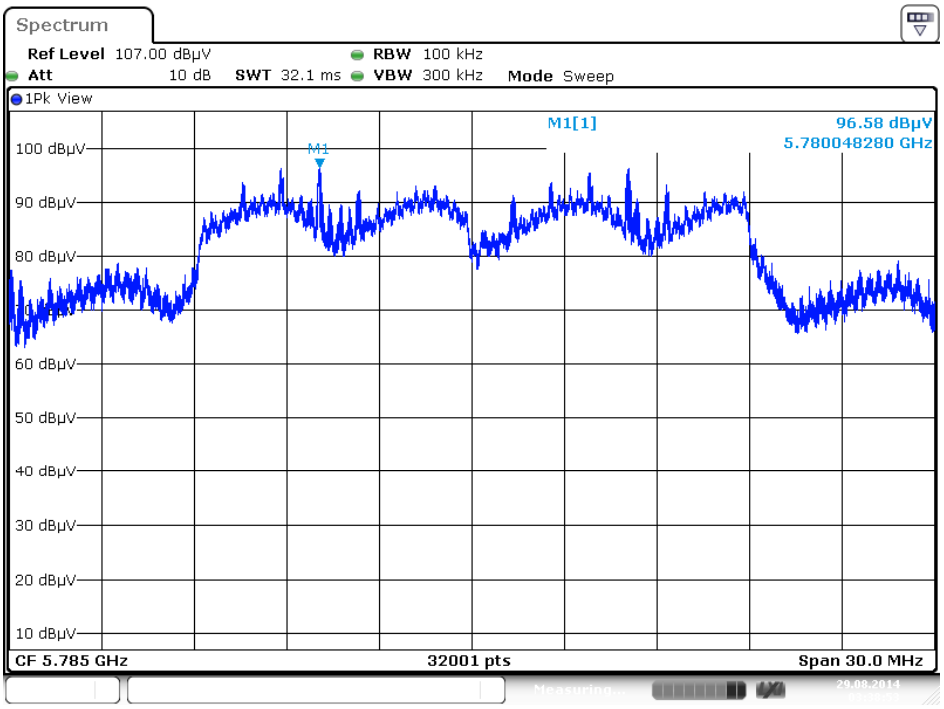
Date: 29.AUG.2014 02:24:10

Note: Only the worse polarization (Vertical) is tested and recorded in test report.

For non-beamforming mode:

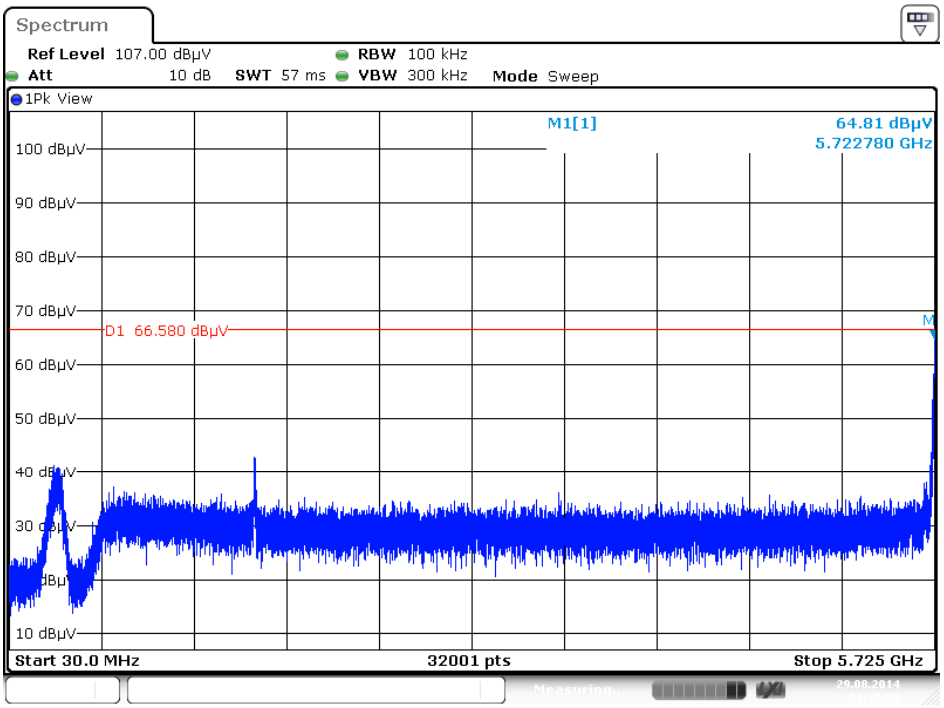
For 5GHz Band:

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Reference Level



Date: 29.AUG.2014 03:38:53

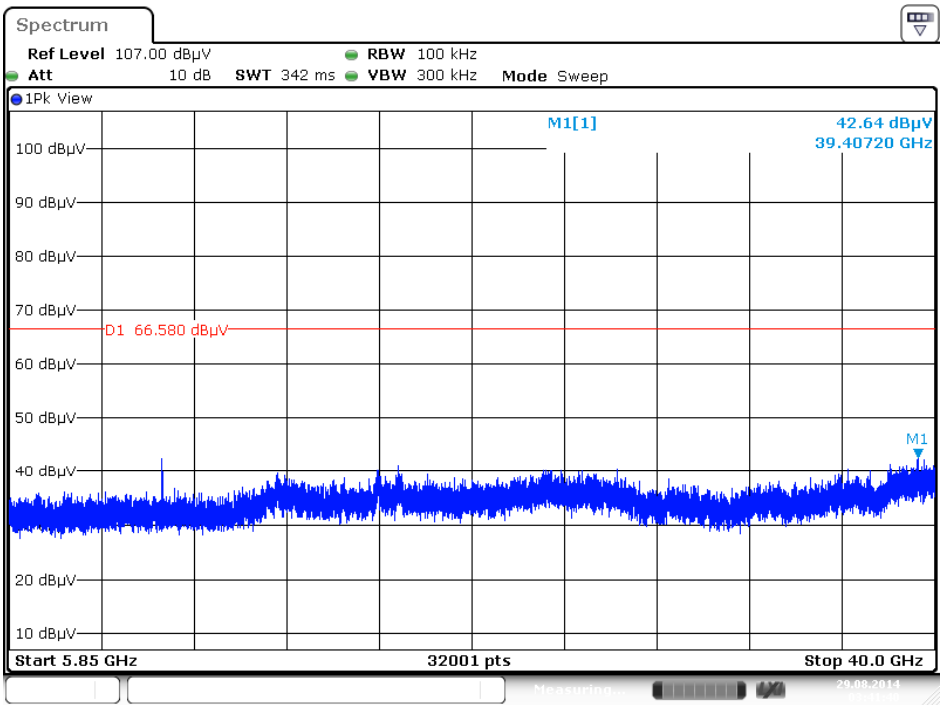
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 149 / 30MHz~5725MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 03:39:59

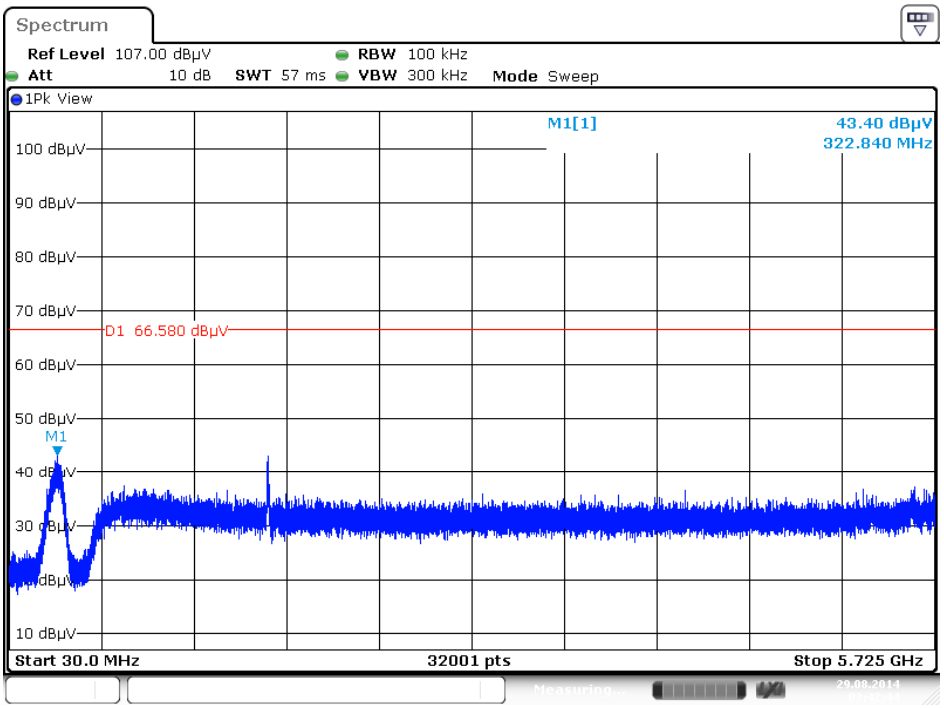
Note: Only the worse polarization (Vertical) is tested and recorded in test report.

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 149 / 5850MHz~40000MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 03:41:40

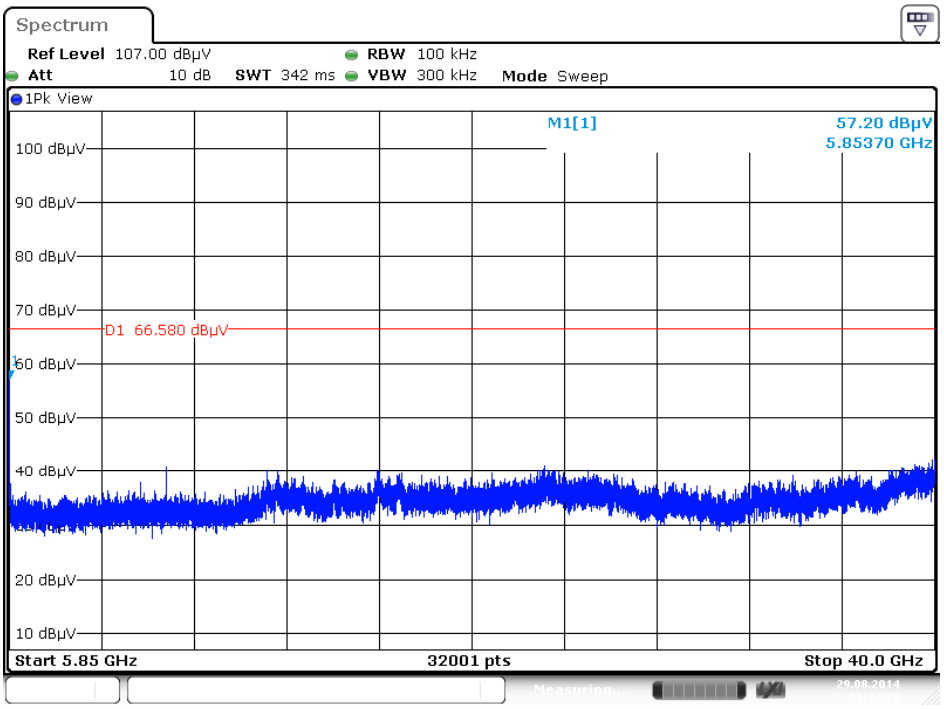
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 165 / 30MHz~5725MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 03:42:44

Note: Only the worse polarization (Vertical) is tested and recorded in test report.

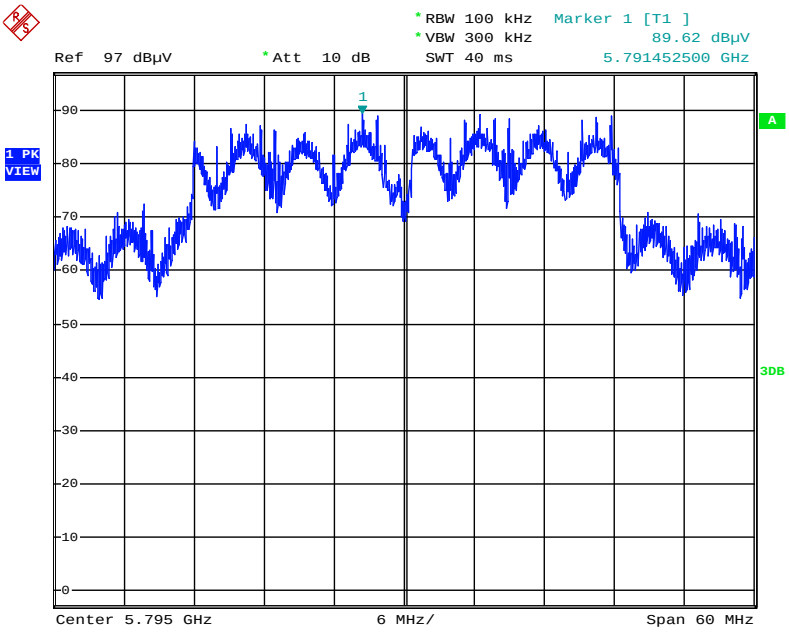
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 165 / 5850MHz~40000MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 03:42:20

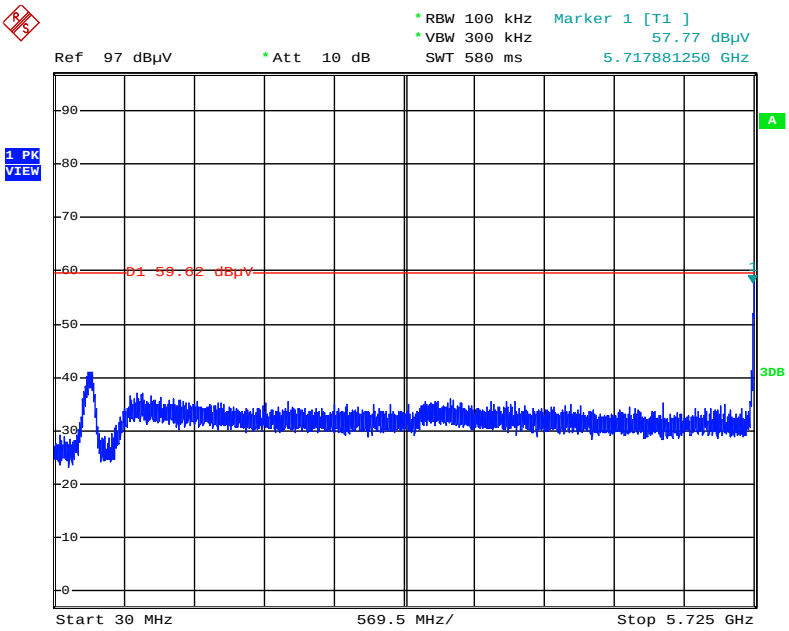
Note: Only the worse polarization (Vertical) is tested and recorded in test report.

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Reference Level



Date: 29.AUG.2014 19:30:54

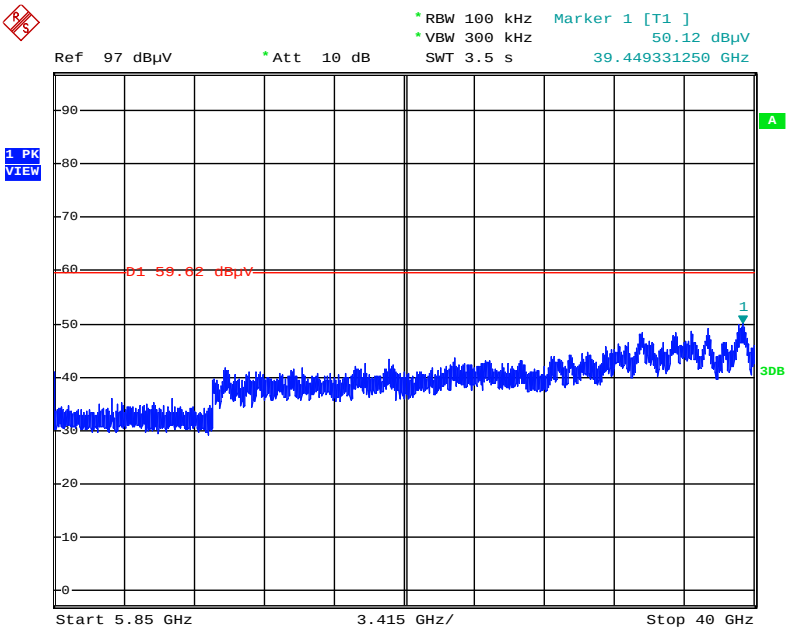
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 151 / 30MHz~5725MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 19:33:46

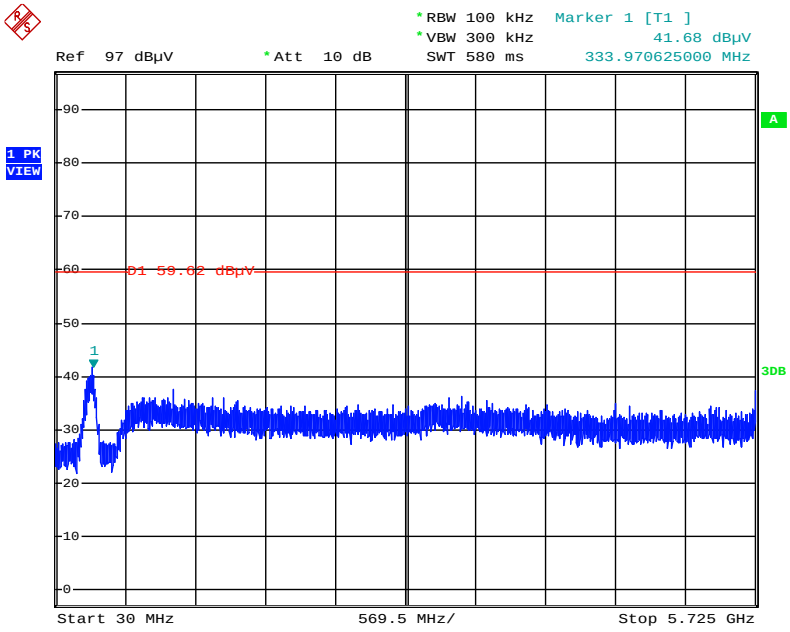
Note: Only the worse polarization (Vertical) is tested and recorded in test report.

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 151 / 5850MHz~40000MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 19:32:17

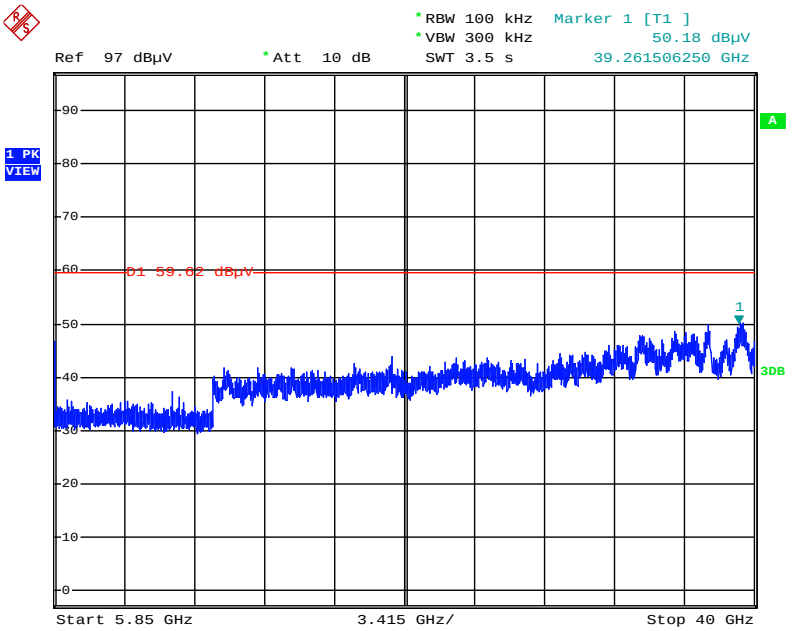
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 159 / 30MHz~5725MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 19:31:14

Note: Only the worse polarization (Vertical) is tested and recorded in test report.

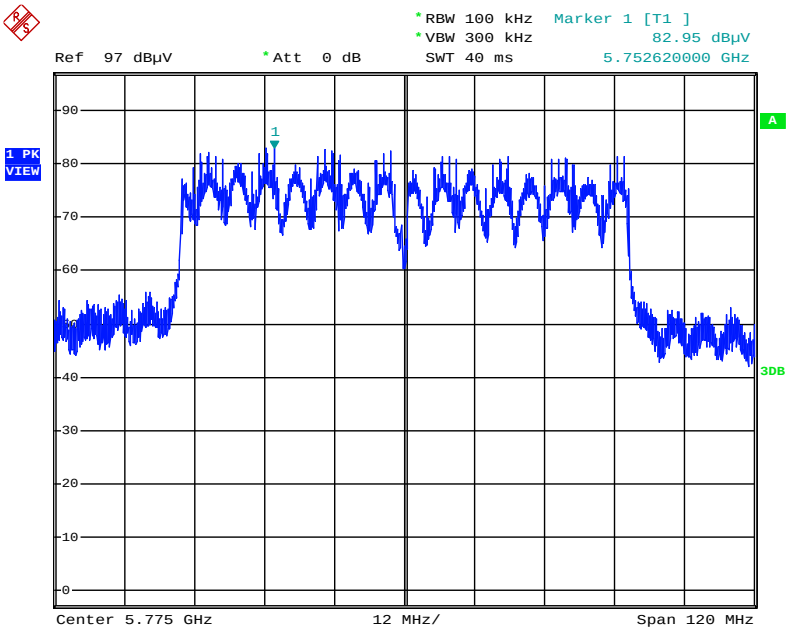
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 159 / 5850MHz~40000MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 19:31:33

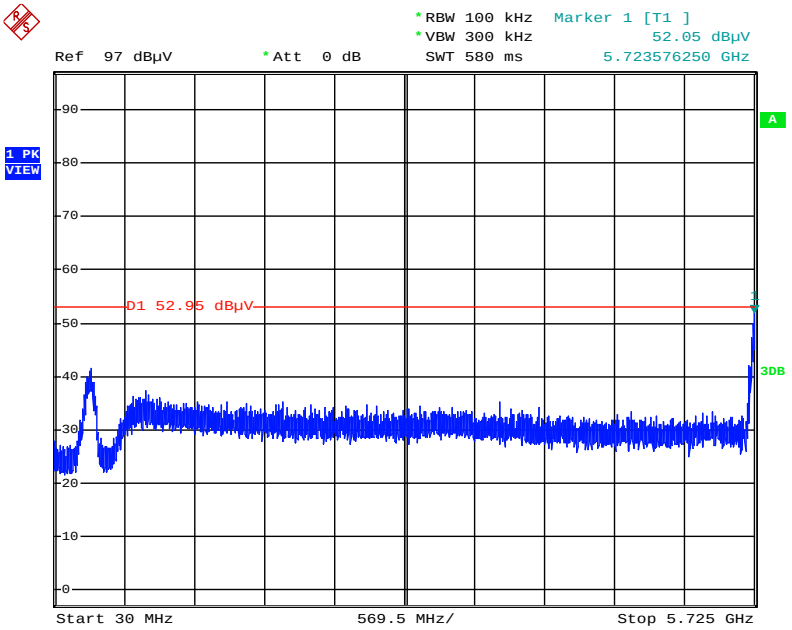
Note: Only the worse polarization (Vertical) is tested and recorded in test report.

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Reference Level



Date: 29.AUG.2014 19:24:09

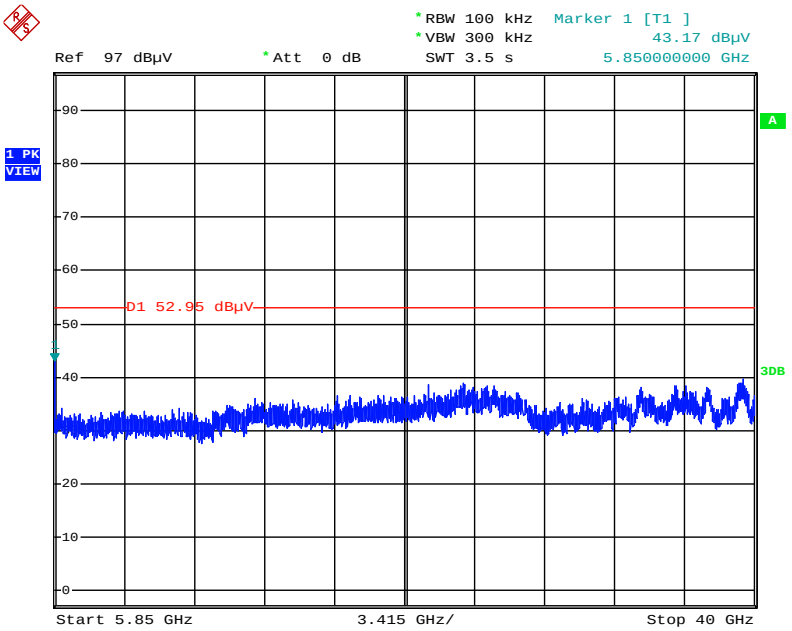
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / CH 155 / 30MHz~5725MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 19:24:42

Note: Only the worse polarization (Vertical) is tested and recorded in test report.

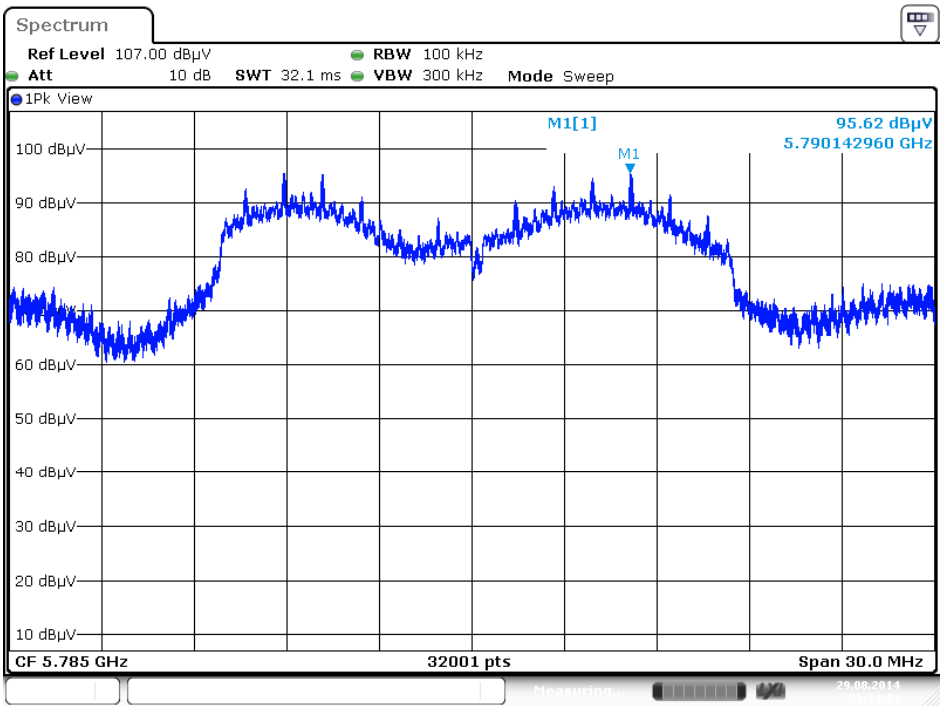
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / CH 155 / 5850MHz~40000MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 19:26:01

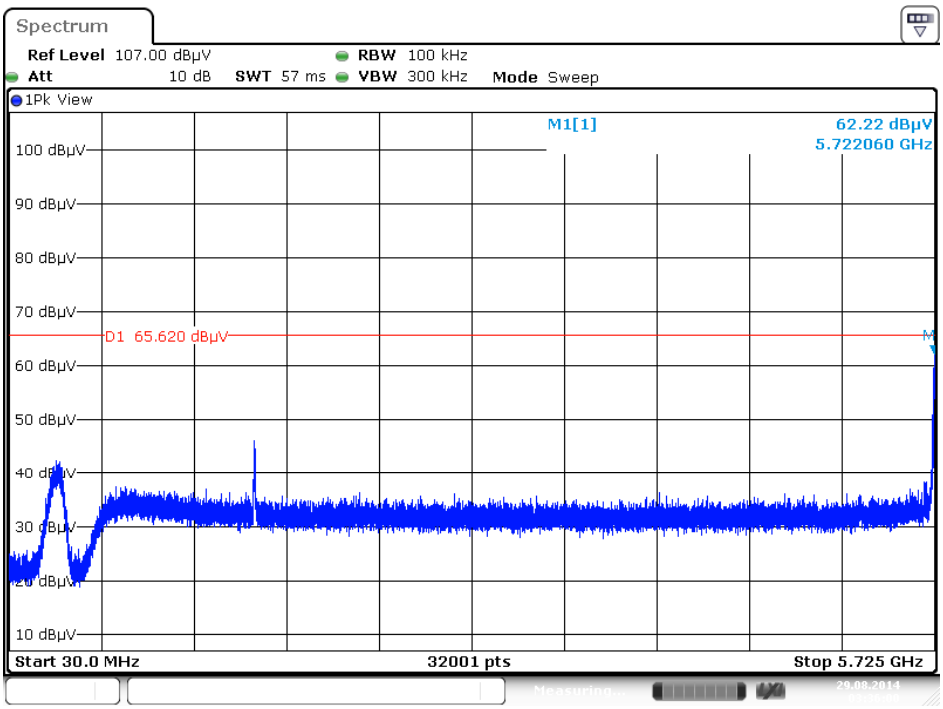
Note: Only the worse polarization (Vertical) is tested and recorded in test report.

Plot on Configuration IEEE 802.11a / Reference Level



Date: 29.AUG.2014 03:34:14

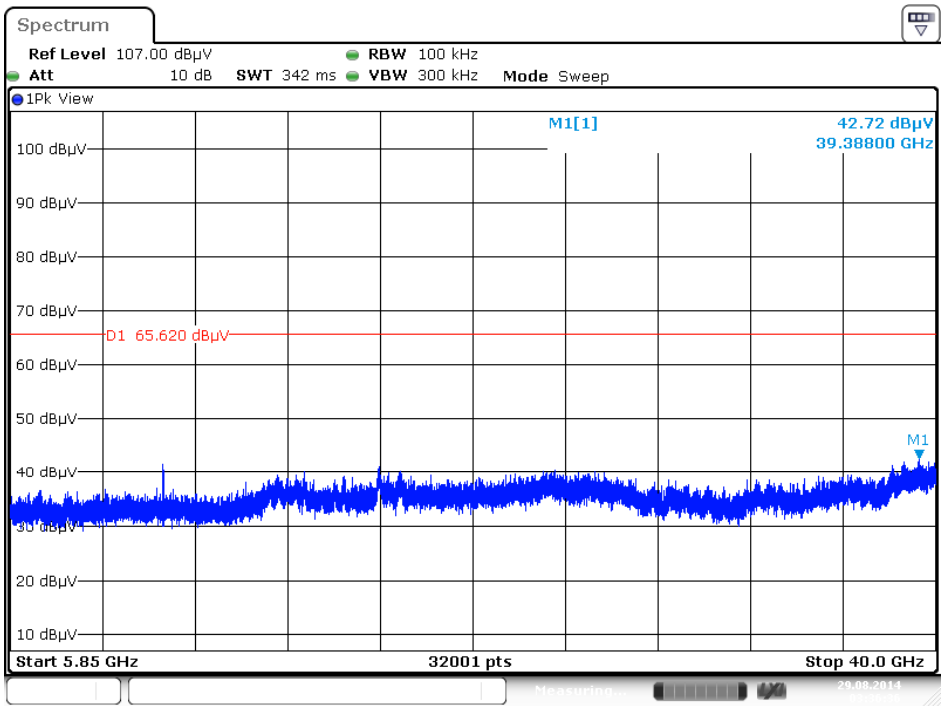
Plot on Configuration IEEE 802.11a / CH 149 / 30MHz~5725MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 03:36:00

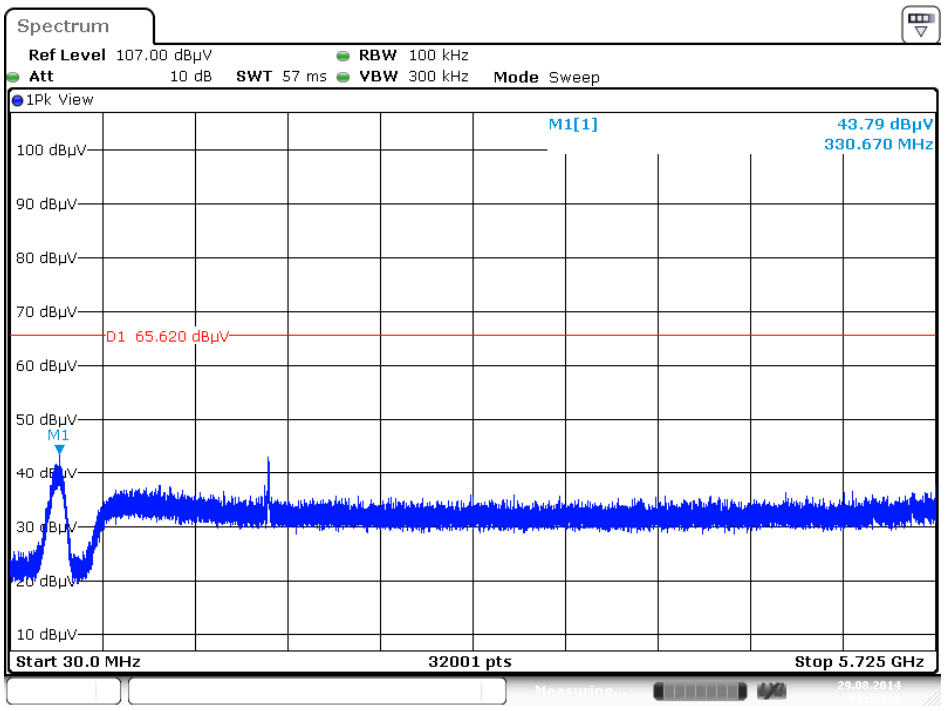
Note: Only the worse polarization (Vertical) is tested and recorded in test report.

Plot on Configuration IEEE 802.11a / CH 149 / 5850MHz~40000MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 03:36:36

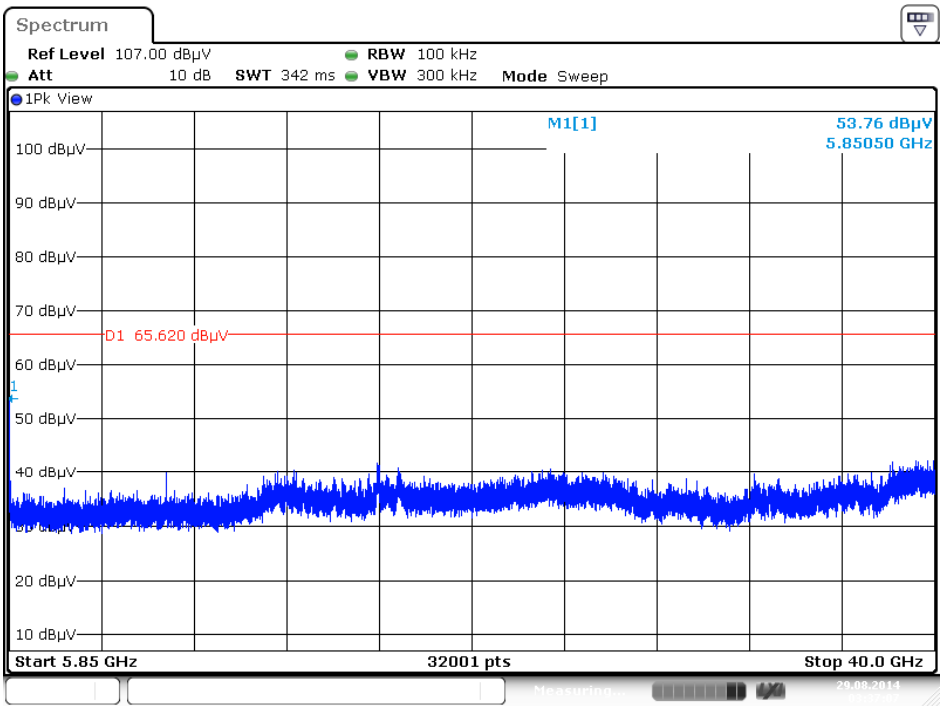
Plot on Configuration IEEE 802.11a / CH 165 / 30MHz~5725MHz (down 30dBc) (Vertical)



Date: 29.AUG.2014 03:37:37

Note: Only the worse polarization (Vertical) is tested and recorded in test report.

Plot on Configuration IEEE 802.11a / CH 165 / 5850MHz~40000MHz (down 30dBc) (Vertical)



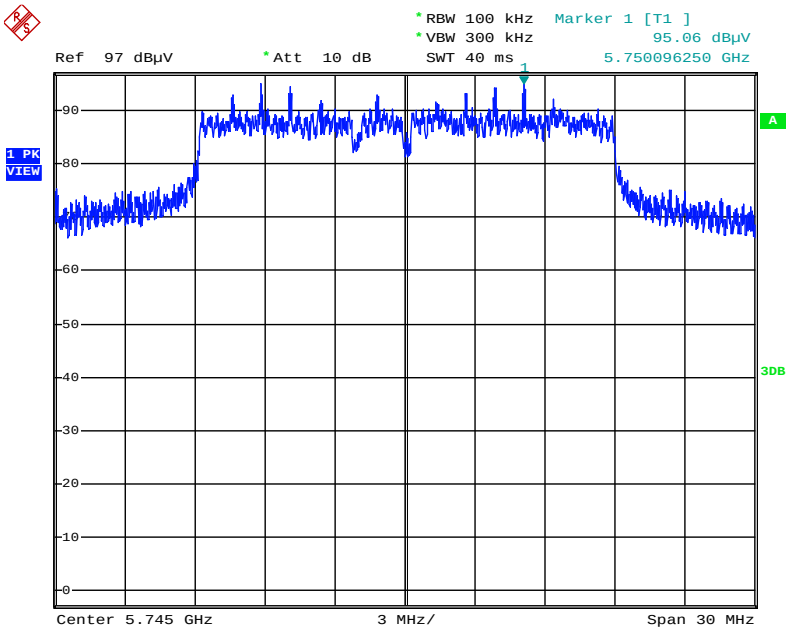
Date: 29.AUG.2014 03:37:07

Note: Only the worse polarization (Vertical) is tested and recorded in test report.

For beamforming mode:

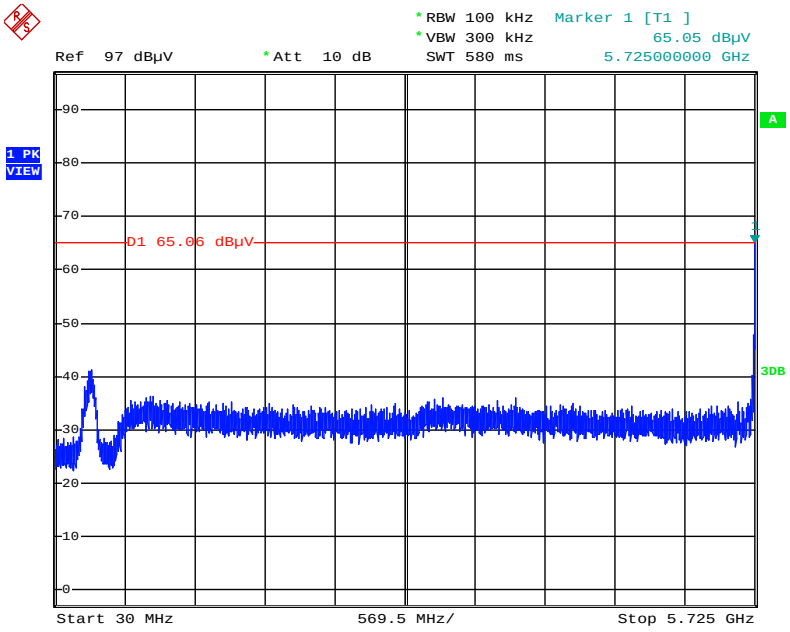
For 5GHz Band:

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Reference Level



Date: 30.AUG.2014 16:59:14

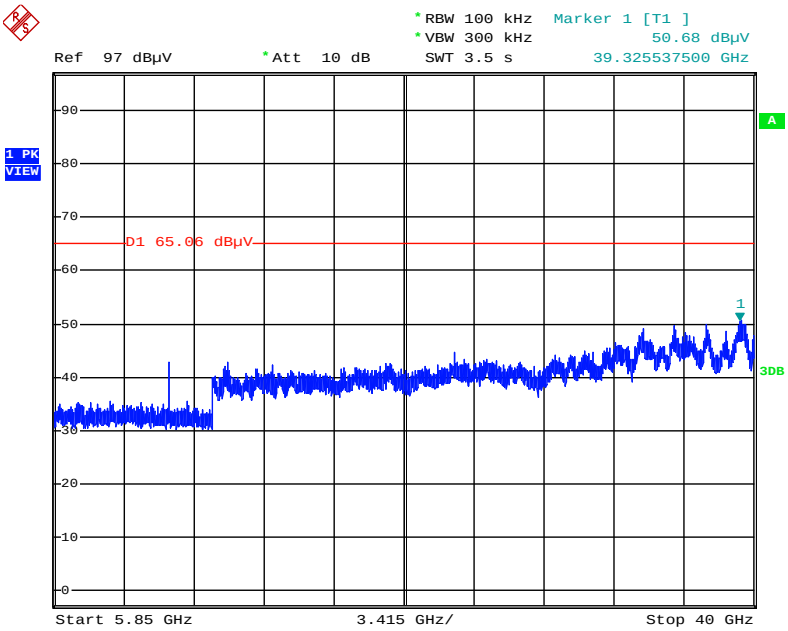
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 149 / 30MHz~5725MHz (down 30dBc) (Vertical)



Date: 30.AUG.2014 16:59:55

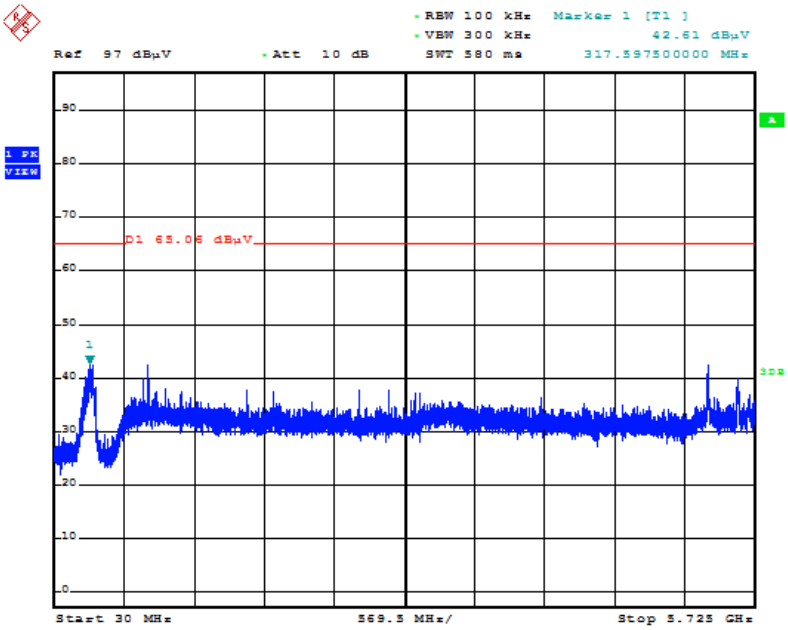
Note: Only the worse polarization (Vertical) is tested and recorded in test report.

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 149 / 5850MHz~40000MHz (down 30dBc) (Vertical)



Date: 30.AUG.2014 17:00:29

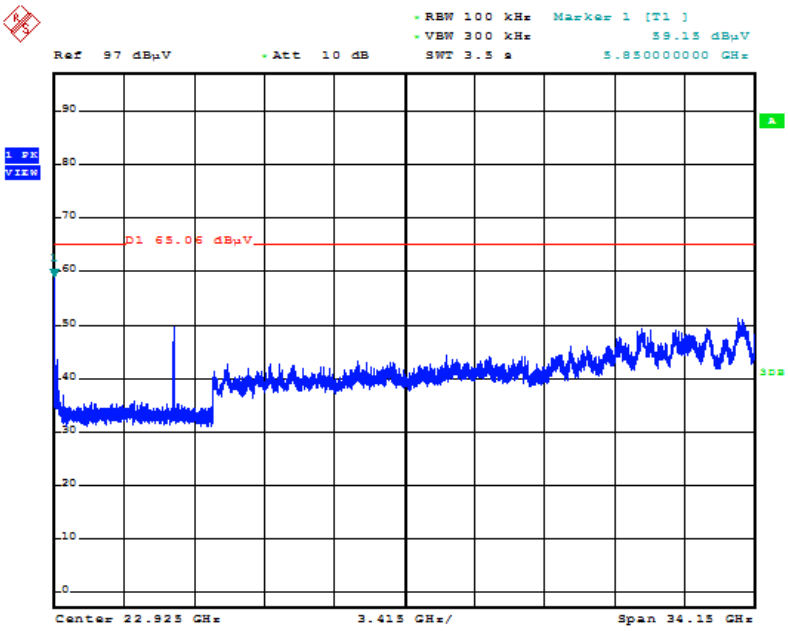
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 165 / 30MHz~5725MHz (down 30dBc) (Vertical)



Date: 30.AUG.2014 17:32:08

Note: Only the worse polarization (Vertical) is tested and recorded in test report.

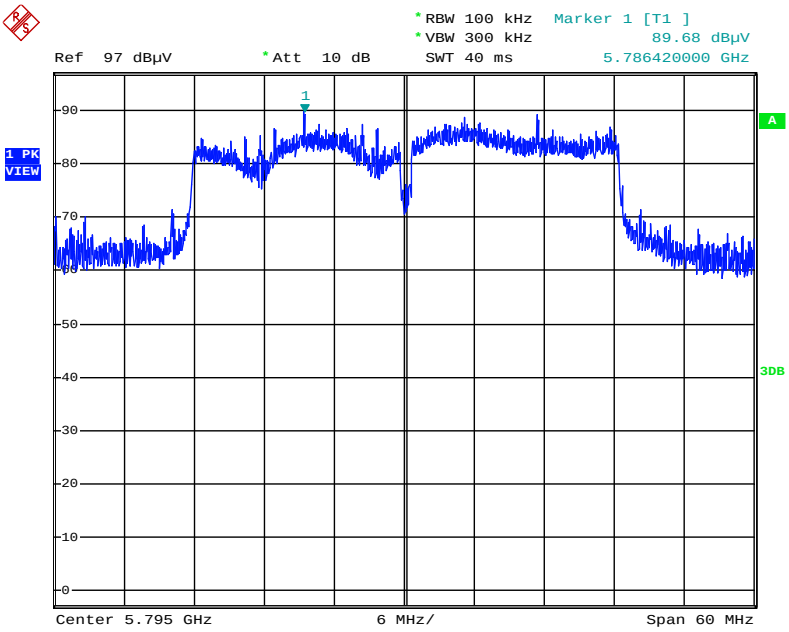
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 165 / 5850MHz~40000MHz (down 30dBc) (Vertical)



Date: 30.AUG.2014 17:30:31

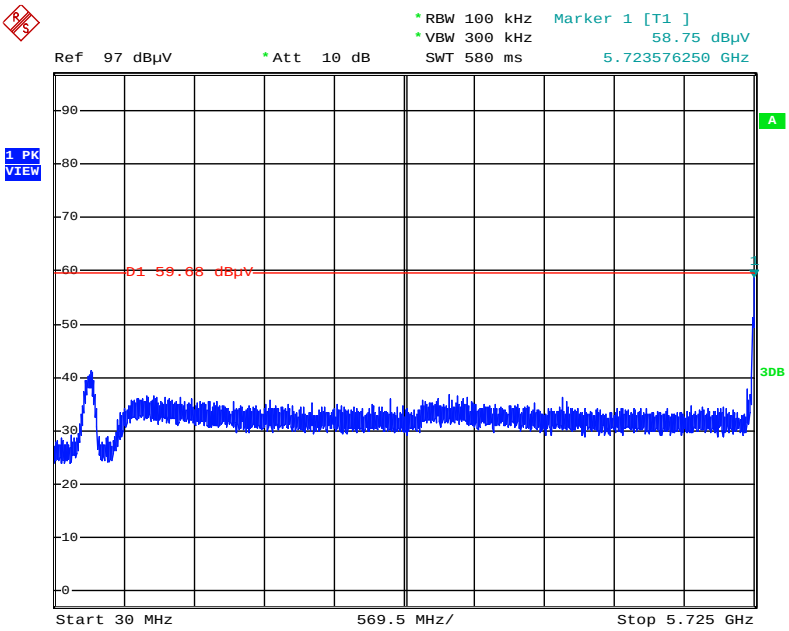
Note: Only the worse polarization (Vertical) is tested and recorded in test report.

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Reference Level



Date: 30.AUG.2014 14:31:58

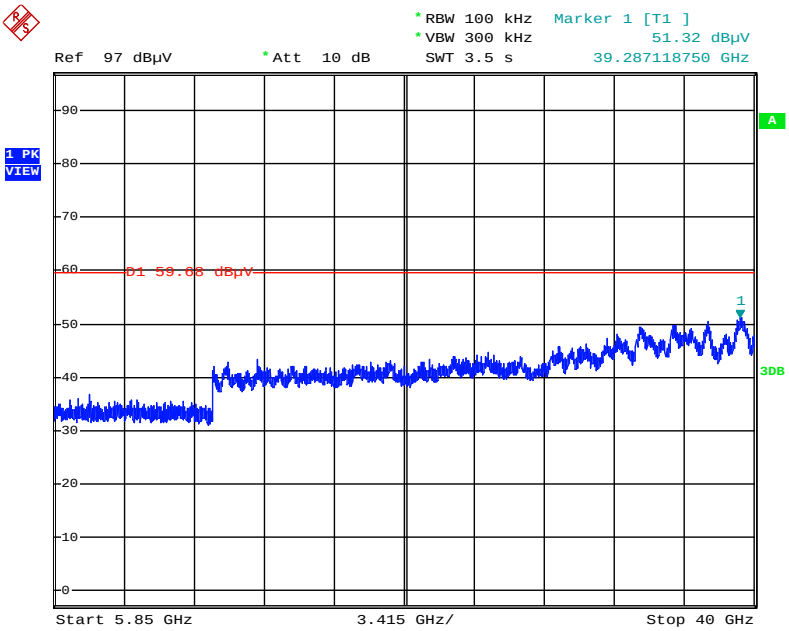
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 151 / 30MHz~5725MHz (down 30dBc) (Vertical)



Date: 30.AUG.2014 14:42:24

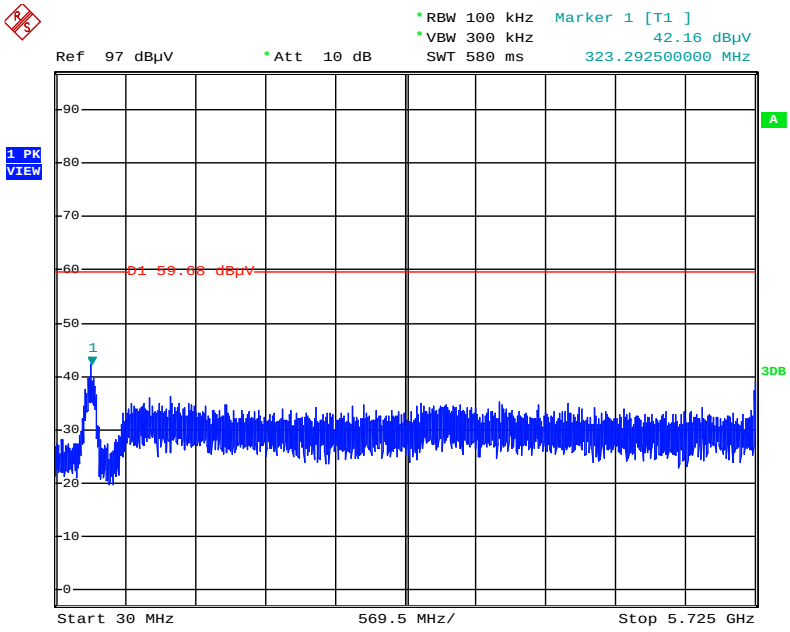
Note: Only the worse polarization (Vertical) is tested and recorded in test report.

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 151 / 5850MHz~40000MHz (down 30dBc) (Vertical)



Date: 30.AUG.2014 14:40:06

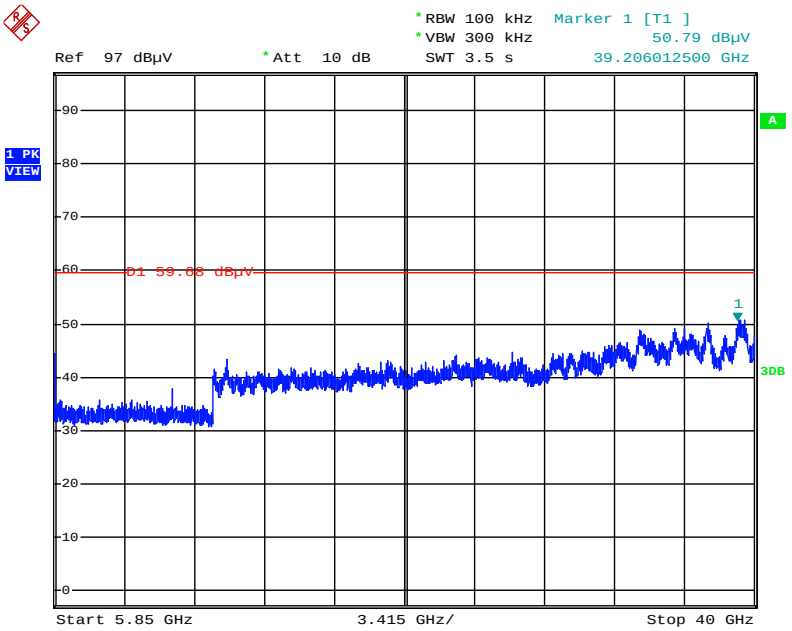
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 159 / 30MHz~5725MHz (down 30dBc) (Vertical)



Date: 30.AUG.2014 14:32:32

Note: Only the worse polarization (Vertical) is tested and recorded in test report.

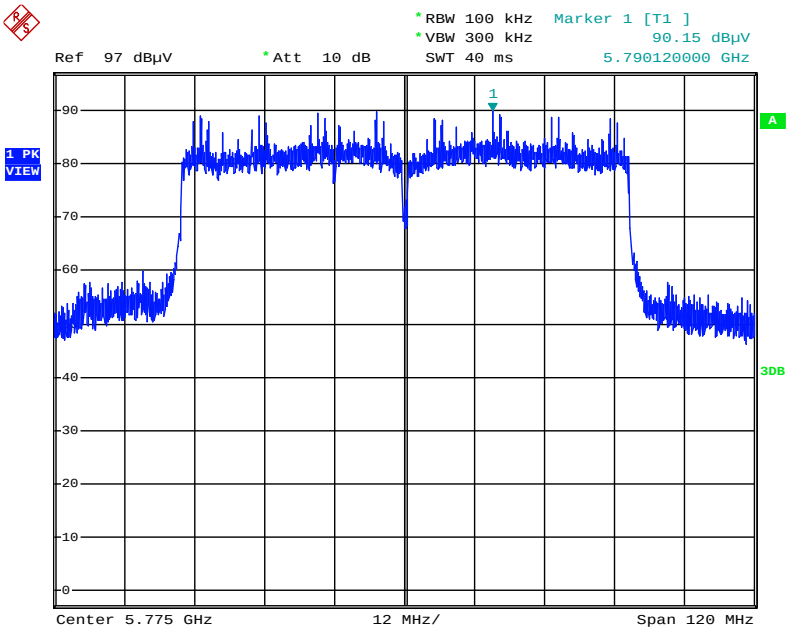
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 159 / 5850MHz~40000MHz (down 30dBc) (Vertical)



Date: 30.AUG.2014 14:33:29

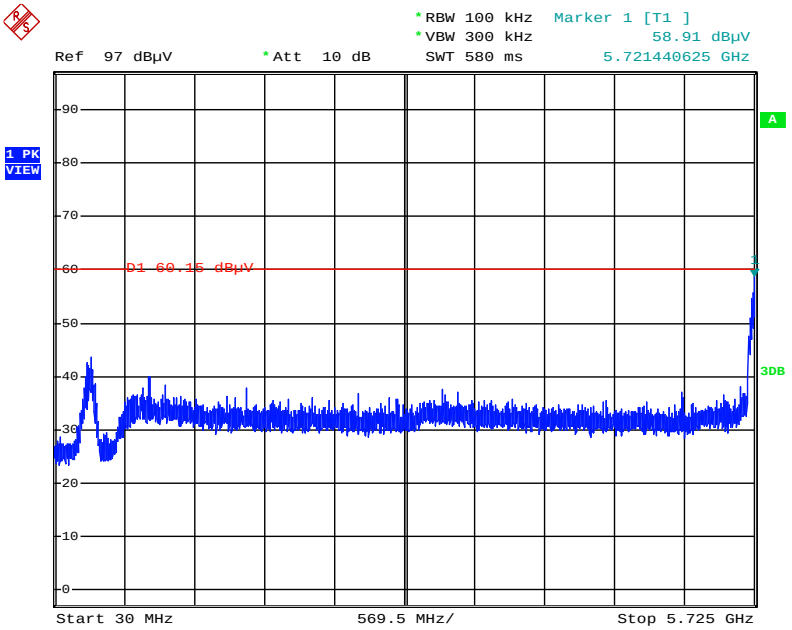
Note: Only the worse polarization (Vertical) is tested and recorded in test report.

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Reference Level



Date: 30.AUG.2014 17:22:19

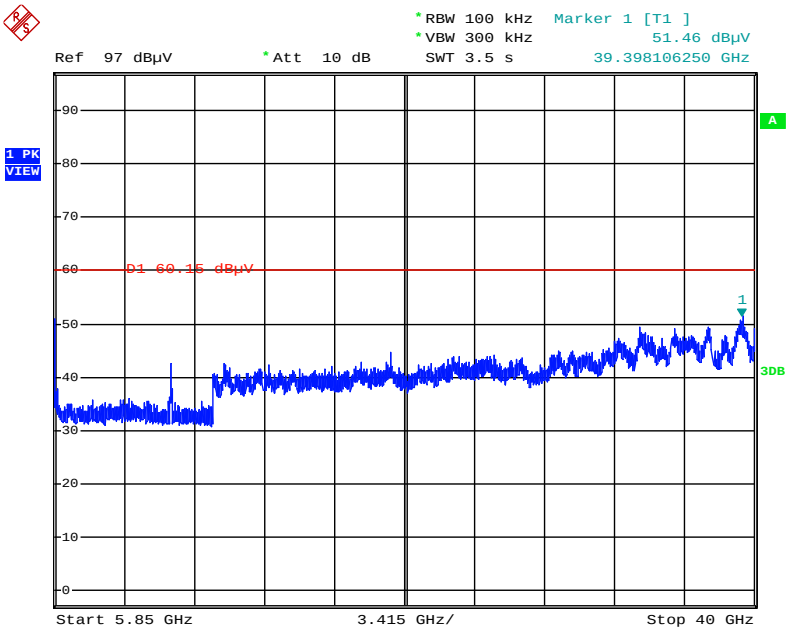
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / CH 155 / 30MHz~5725MHz (down 30dBc) (Vertical)



Date: 30.AUG.2014 17:23:18

Note: Only the worse polarization (Vertical) is tested and recorded in test report.

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / CH 155 / 5850MHz~40000MHz (down 30dBc) (Vertical)



Note: Only the worse polarization (Vertical) is tested and recorded in test report.

4.4. Antenna Requirements

4.4.1. 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.

4.4.2. Antenna Connector Construction

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

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	May 26, 2014	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9 kHz - 30 MHz	Nov. 05, 2012*	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz~18GHz	Nov. 01, 2013	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Dec. 17, 2013	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Nov. 12, 2013	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Dec. 16, 2013	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Oct. 23, 2013	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSP40	100019	9kHz~40GHz	Dec. 02, 2013	Radiation (03CH01-CB)
EMI Test Receiver	Agilent	N9038A	MY52260123	9kHz ~ 8GHz	Dec. 12, 2013	Radiation (03CH01-CB)
Turn Table	INN CO	CO 2000	N/A	0 ~ 360 degree	N.C.R.	Radiation (03CH01-CB)
Antenna Mast	INN CO	CO 2000	N/A	1 m - 4 m	N.C.R.	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz - 1 GHz	Nov. 17, 2013	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-3	N/A	1 GHz - 40 GHz	Nov. 17, 2013	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-4	N/A	1 GHz - 40 GHz	Nov. 17, 2013	Radiation (03CH01-CB)
Signal analyzer	R&S	FSV40	100979	9kHz~40GHz	Nov. 29, 2013	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 03, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-7	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-8	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-9	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-10	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-11	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
Power Sensor	Anritsu	MA2411B	0917223	300MHz~40GHz	Sep. 18, 2013	Conducted (TH01-CB)
Power Meter	Anritsu	ML2495A	1035008	300MHz~40GHz	Sep. 18, 2013	Conducted (TH01-CB)

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

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

N.C.R. means Non-Calibration required.

6. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty	Remark
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%