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FCC RADIO TEST REPORT

Applicant's company	**ASUSTeK COMPUTER INC.**
Applicant Address	4F, No. 150, Li-Te Rd., Peitou, Taipei 112, Taiwan
FCC ID	**MSQ-RTAC68UV2**
Manufacturer's company (1)	**Compal Networking (KunShan) Co., LTD.**
Manufacturer Address	No. 520, Nabbang Rd., Economic & Technical Development Zone Kunshan, Jiangsu Province China
Manufacturer's company (2)	**Askey Technology (Jiangsu) Ltd.**
Manufacturer Address	1388, Jiao Tong Road, Wujiang Economic Technological Development Area, Jiang Su Province, P.R.C

Product Name	Wireless-AC1900 Dual Band Gigabit Router
Brand Name	ASUS
Model No.	RT-AC68U, RT-AC68R, RT-AC68W, RT-AC68P, TM-AC1900, RT-AC1900, RT-AC68U V2, RT-AC1900P
Test Rule Part(s)	47 CFR FCC Part 15 Subpart C § 15.247
Test Freq. Range	2400 ~ 2483.5MHz / 5725 ~ 5850MHz
Received Date	Dec. 04, 2014
Final Test Date	Mar. 24, 2016
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 C63.10-2013**, **47 CFR FCC Part 15 Subpart C**, **KDB558074 D01 v03r04**, **KDB 662911 D01 v02r01**, **KDB644545 D01 v01r02.**

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

Testing Laboratory
1190

Table of Contents

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR3D0426-07AA	Rev. 01	Initial issue of report	Mar. 25, 2016

1. VERIFICATION OF COMPLIANCE

Product Name	:	Wireless-AC1900 Dual Band Gigabit Router
Brand Name	:	ASUS
Model No.	:	RT-AC68U, RT-AC68R, RT-AC68W, RT-AC68P, TM-AC1900, RT-AC1900, RT-AC68U V2, RT-AC1900P
Applicant	:	ASUSTeK COMPUTER INC.
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 Dec. 04, 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	15.207	AC Power Line Conducted Emissions	Complies	11.47 dB
4.2	15.247(b)(3)	Maximum Conducted Output Power	Complies	8.4 dB
4.3	15.247(e)	Power Spectral Density	Complies	11.57 dB
4.4	15.247(a)(2)	6dB Spectrum Bandwidth	Complies	-
4.5	15.247(d)	Radiated Emissions	Complies	4.20 dB
4.6	15.247(d)	Band Edge Emissions	Complies	1.01 dB
4.7	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: 11 for 20MHz bandwidth ; 7 for 40MHz bandwidth For 5GHz Band: 5 for 20MHz bandwidth ; 2 for 40MHz bandwidth ; 1 for 80MHz bandwidth
Channel Band Width (99%)	For non-beamforming function: For 2.4GHz Band: 802.11ac MCS0/Nss1 (VHT40): 36.24 MHz For beamforming function: For 2.4GHz Band: 802.11ac MCS0/Nss1 (VHT20): 17.66 MHz ; 802.11ac MCS0/Nss1 (VHT40): 36.24 MHz
Maximum Conducted Output Power	For non-beamforming function: For 2.4GHz Band: 802.11ac MCS0/Nss1 (VHT40): 18.83 dBm For beamforming function: For 2.4GHz Band: 802.11ac MCS0/Nss1 (VHT20): 20.92 dBm ; 802.11ac MCS0/Nss1 (VHT40): 18.83 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: 11 ; 11a: 5
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Items	Description	
Beamforming Function	☒ With beamforming for 802.11n/ac in 2.4GHz/5GHz.	☐ Without beamforming

Antenna and Band width

Antenna		Three (TX)		
Band width Mode		20 MHz	40 MHz	80 MHz
2.4G	IEEE 802.11b	V	X	X
	IEEE 802.11g	V	X	X
	IEEE 802.11n	V	V	X
	IEEE 802.11ac	V	V	X
5G	IEEE 802.11a	V	X	X
	IEEE 802.11n	V	V	X
	IEEE 802.11ac	V	V	V

IEEE 11n/ac Spec.

Protocol		Number of Transmit Chains (NTX)	Data Rate / MCS
2.4G	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
5G	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 supports VHT20, VHT40 in 2.4GHz and supports VHT20, VHT40, VHT80 in 5GHz.

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

3.2. Accessories

Power	Brand	Model	Rating
Adapter 1	PIE	AD890326	Input: 100-240V ~ 50/60Hz 0.8A Output: 19V, 1.75A
Adapter 2	Delta	ADP-33AW B	Input: 100-240V ~ 1A 50-60Hz Output: 19V, 1.75A
Other			
RJ-45 cable*1: Shielded, 1.5m			

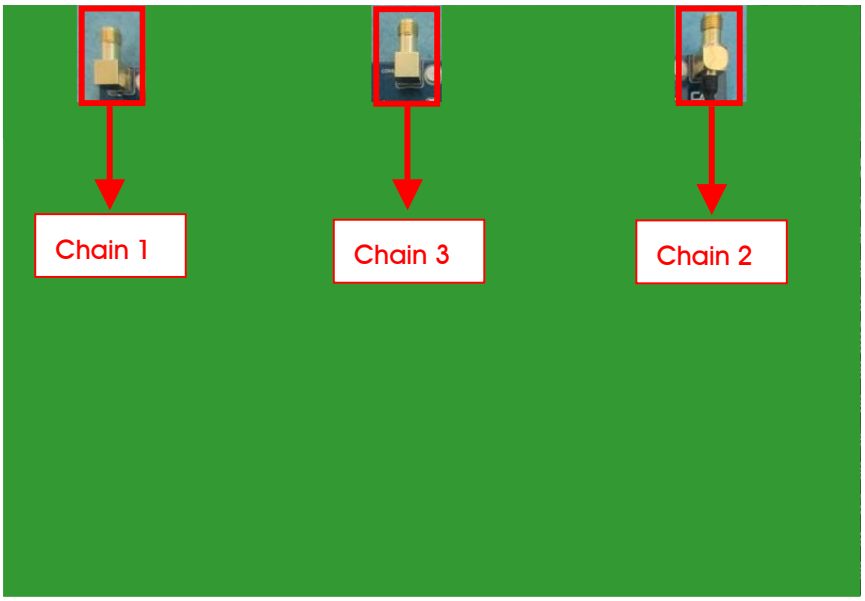
3.3. Table for Filed Antenna

Set	Brand	P/N	Antenna Type	Connector	Gain (dBi)		
					2.4GHz	5GHz	
						Band 1	Band 4
1	PSA	RFDPA141000SBLB802	Dipole Antenna	Reverse SMA	1.91	4.04	3.94
2	M.gear	C660-510333-A	Dipole	Reverse SMA	1.51	2.76	3.29
3	PSA	RFDPA161300SBLB803	Dipole	Reverse SMA	1.61	2.63	3.47

Note: The EUT has three set of antenna and each set has three antennas.

Because above antenna are the same type antennas, only the higher gain antenna "Set 1" was tested.

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



3.4. Table for Carrier Frequencies

For 2.4GHz Band:

There are two bandwidth systems.

For 20MHz bandwidth systems, use Channel 1~Channel 11.

For 40MHz bandwidth systems, use Channel 3~Channel 9.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
2400~2483.5MHz	1	2412 MHz	7	2442 MHz
	2	2417 MHz	8	2447 MHz
	3	2422 MHz	9	2452 MHz
	4	2427 MHz	10	2457 MHz
	5	2432 MHz	11	2462 MHz
	6	2437 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
AC Power Line Conducted Emissions	CTX	-	-	-
Maximum Conducted Output Power	For Non-Beamforming Mode			
	11ac VHT40	MCS0/Nss1	9	1+2+3
	For Beamforming Mode			
	11ac VHT20	MCS0/Nss1	11	1+2+3
	11ac VHT40	MCS0/Nss1	9	1+2+3
Power Spectral Density	For Non-Beamforming Mode			
	11ac VHT40	MCS0/Nss1	9	1+2+3
	For Beamforming Mode			
	11ac VHT20	MCS0/Nss1	11	1+2+3
	11ac VHT40	MCS0/Nss1	9	1+2+3
6dB Spectrum Bandwidth	For Non-Beamforming Mode			
	11ac VHT40	MCS0/Nss1	9	1+2+3
	For Beamforming Mode			
	11ac VHT20	MCS0/Nss1	11	1+2+3
	11ac VHT40	MCS0/Nss1	9	1+2+3
Radiated Emissions Below 1GHz	CTX	-	-	-
Radiated Emissions Above 1GHz and Band Edge Emissions	For Non-Beamforming Mode			
	11ac VHT20	MCS0/Nss1	1/6/11	1+2+3
	11ac VHT40	MCS0/Nss1	3/6/9	1+2+3
	11b/CCK	1 Mbps	1/6/11	1+2+3
	11g/BPSK	6 Mbps	1/6/11	1+2+3
	For Beamforming Mode			
	11ac VHT20	MCS0/Nss1	1/6/11	1+2+3
	11ac VHT40	MCS0/Nss1	3/6/9	1+2+3

For 5GHz Band:

Test Items	Mode	Data Rate	Channel	Chain
AC Power Line Conducted Emissions	CTX	-	-	-
Radiated Emissions Below 1GHz	CTX	-	-	-
Radiated Emissions Above 1GHz and 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: 1.VHT20/VHT40 covers HT20/HT40, due to same modulation. The power setting for 802.11n HT20 and HT40 are the same or lower than 802.11ac VHT20 and VHT40.

2.The EUT has non-beamforming function and beamforming function for 802.11n/ac. They were verified for all tests, and all test results were recorded in the report.

The following test modes were performed for all tests:

For AC Power Line Conducted Emissions and Radiated Emissions Below 1GHz test:

Mode 1. EUT Y axis CTX - 2.4GHz with Adapter 1

Mode 2. EUT Y axis CTX - 5GHz with Adapter 1

Mode 2 has been evaluated to be the worst case between Mode 1～2, thus measurement for Mode 3 will follow this same test mode.

Mode 3. EUT Y axis CTX - 5GHz with Adapter 2

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

For Radiated Emissions Above 1GHz test:

Mode 1. EUT Y axis CTX

For Co-location MPE:

The EUT could be applied with 2.4GHz WLAN function and 5GHz WLAN function; therefore Co-location Maximum Permissible Exposure (Please refer to FA3D0426-07) test is added for simultaneously transmits between 2.4GHz WLAN function and 5GHz WLAN function.

3.6. Table for Testing Locations

Test Site Location				
Address:	No.8, Lane 724, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C.			
TEL:	886-3-656-9065			
FAX:	886-3-656-9085			
Test Site No.	**Site Category**	**Location**	**FCC Reg. No.**	**IC File No.**
03CH01-CB	SAC	Hsin Chu	262045	IC 4086D
CO01-CB	Conduction	Hsin Chu	262045	IC 4086D
TH01-CB	OVEN Room	Hsin Chu	-	-

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

3.7. Table for Multiple Listing

The EUT has eight model names, which are identical to each other in all aspects except for the following table:

Brand Name	Model Name	Description
ASUS	RT-AC68U	All the models are identical; the different model numbers served as marketing strategy.
	RT-AC68R	
	RT-AC68W	
	RT-AC68P	
	TM-AC1900	
	RT-AC1900	
	RT-AC68U V2	
	RT-AC1900P	

From the above models, model: RT-AC68U was selected as representative model for the test and its data was recorded in this report.

3.8. Table for SKU information

SKU 3 information			
Vendor	**LAN port transformer (Model No.)**	**WAN port transformer (Model No.)**	**Spec**
NET SWAPN(FCE)	FCE_NS773602	FCE_NS771802	DIP 10/100/1000 BASE-T

3.9. Table for Class II Change

This product is an extension of original one reported under Sporton project number: FR3D0426AA

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

Modifications	Performance Checking
1. Adding two sets of same type antenna (dipole antenna) with lower gain: Brand: M.gear, P/N: C660-510333-A. Brand: PSA, P/N: RFDPA161300SBLB803. 2. Adding two model names: RT-AC68U V2 and RT-AC1900P.	Original and additional antennas have similar in-band and out-of-band characteristics, so it is not necessary to re-test all test items.
3. Changing the adapters to model: AD890326 and ADP-33AW B. (1) For model: AD890326, the adapter updates to LV6 from LV5 but the model name remains the same. 4. Changing the CPU clock from external oscillator to external crystal. 5. Adding TVS at power connector. 6. Changing the type of LED on/off button. 7. CPU from 1.0GHz to 1.4GHz.	AC Power Line Conducted Emissions Radiated Emissions Below 1GHz
8. Changing Low Noise Amplifier for 2.4GHz and 5GHz.	Radiated Emissions Above 1GHz Band Edge Emissions

Note: 1.Above changes made are the SKU 3 of the EUT.

2.For item 8 the above test items will be based on original output power to re-test.

3.For item 8 configuration IEEE 802.11ac MCS0/Nss1 VHT40 CH9 (for non-beamforming Mode) and 802.11ac MCS0/Nss1 VHT20 CH11, 802.11ac MCS0/Nss1 VHT40 CH9 (for beamforming Mode) power reduced due to limitation of Band Edge Emissions, so the Maximum Conducted Output Power Measurement、Power Spectral Density Measurement and 6dB Spectrum Bandwidth Measurement were retested.

3.10. Table for Supporting Units

For Test Site No: CO01-CB

Support Unit	Brand	Model	FCC ID
NB	DELL	E6430	DoC
Flash Disk 3.0	ADATA	C103	DoC
Flash Disk	Silicon	I-Series	DoC

For Test Site No: 03CH01-CB (below 1GHz) and 03CH01-CB (above 1GHz) / <u>For non-beamforming function:</u>

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	DoC

For Test Site No:

03CH01-CB (above 1GHz) / For Beamforming function:

Support Unit	Brand	Model	FCC ID
NB*2	DELL	E4300	DoC
WLAN module	Boardcom	BCM943162ZP	QDS-BRCM1075

3.11. 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 2.4GHz Band

For non-beamforming function:

Test Software Version	Mtool 2.0.0.7
Frequency	2452 MHz
802.11ac MCS0/Nss1 VHT40	62

For beamforming function:

Test Software Version	Mtool 2.0.0.7	
Frequency	2462 MHz	2452 MHz
802.11ac MCS0/Nss1 VHT20	66	-
802.11ac MCS0/Nss1 VHT40	-	62

3.12. EUT Operation during Test

For non-beamforming function:

The EUT was programmed to be in continuously transmitting mode.

For beamforming function:

For Conducted Mode:

The EUT was programmed to be in continuously transmitting mode.

For Radiated Mode:

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

The program was executed as follows:

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

3.13. Duty Cycle

For non-beamforming mode:

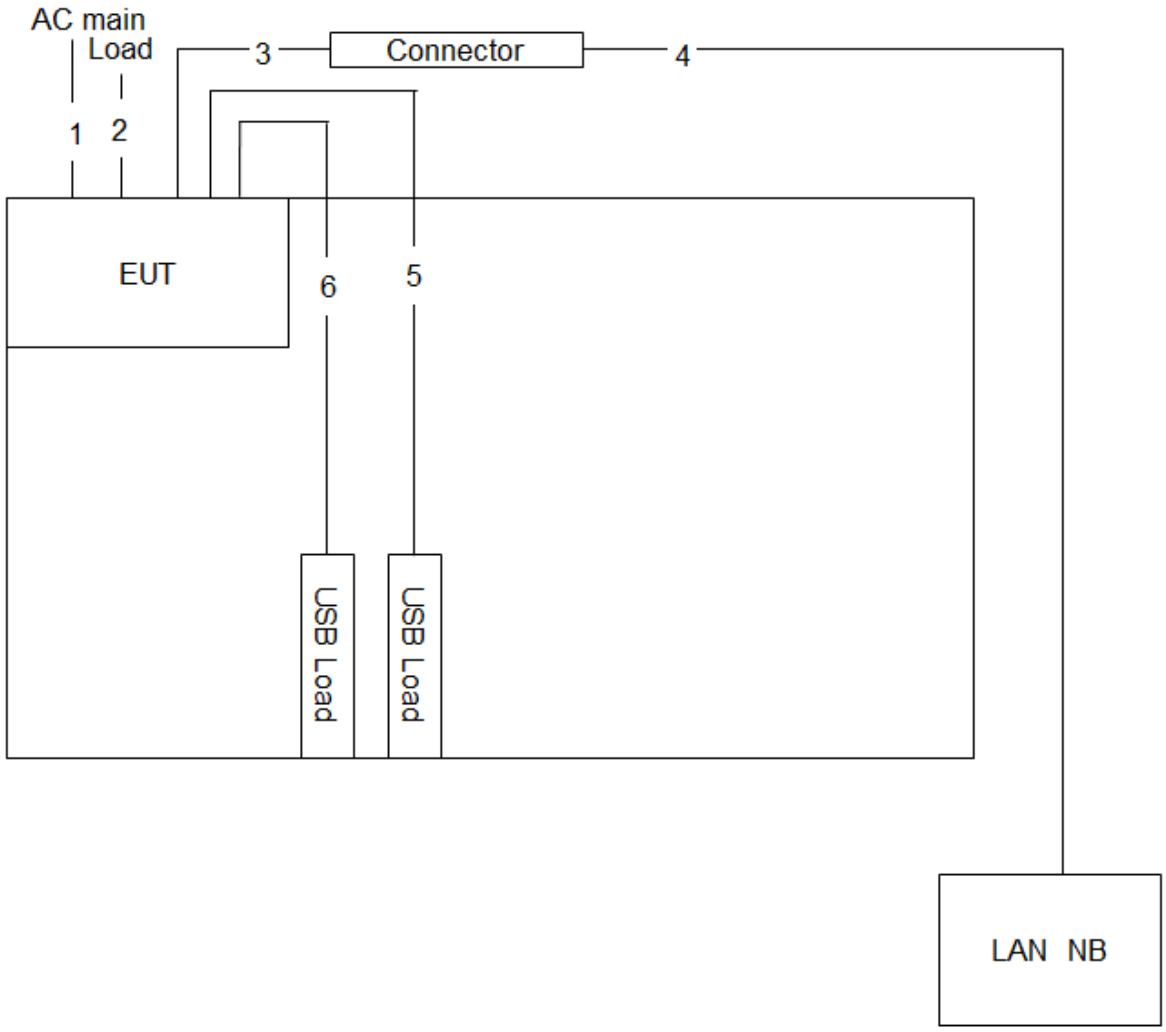
Band	Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
2.4G	802.11b	1.000	1.000	100.00%	0.00	0.01
	802.11g	2.064	2.100	98.29%	0.08	0.01
	802.11ac MCS0/Nss1 VHT40	1.918	1.946	98.56%	0.06	0.01
	802.11ac MCS0/Nss1 VHT80	0.950	0.980	96.94%	0.14	1.05
5G	802.11a	2.060	2.100	98.10%	0.08	0.01
	802.11ac MCS0/Nss1 VHT20	1.930	1.960	98.47%	0.07	0.01
	802.11ac MCS0/Nss1 VHT40	0.950	0.985	96.45%	0.16	1.05
	802.11ac MCS0/Nss1 VHT80	0.441	0.493	89.45%	0.48	2.27

For beamforming mode:

Band	Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
2.4G	802.11ac MCS0/Nss1 VHT40	3.82	4.180	91.39%	0.39	0.26
	802.11ac MCS0/Nss1 VHT80	3.660	3.960	92.42%	0.34	0.27
5G	802.11ac MCS0/Nss1 VHT20	3.725	4.230	88.06%	0.55	0.27
	802.11ac MCS0/Nss1 VHT40	3.653	4.038	90.47%	0.44	0.27
	802.11ac MCS0/Nss1 VHT80	5.052	5.482	92.15%	0.36	0.20

3.14. Test Configurations

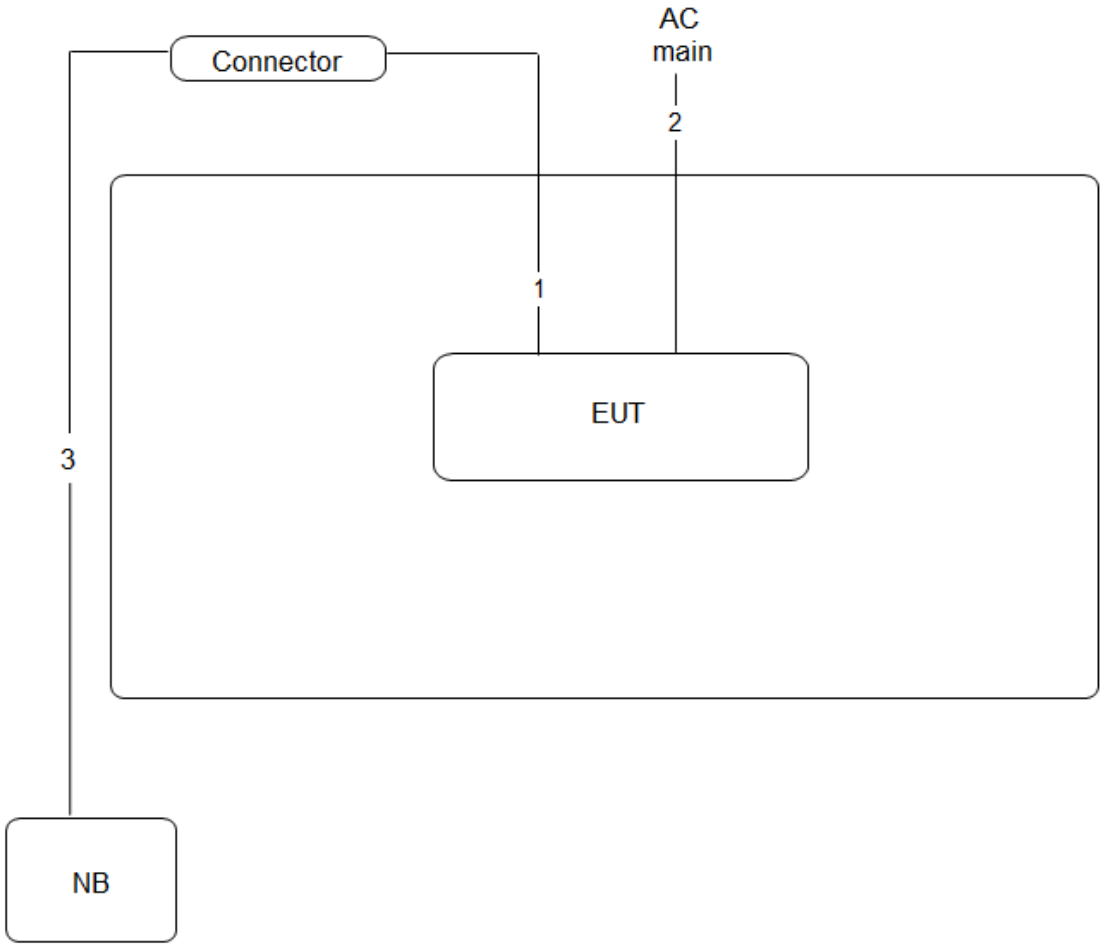
3.14.1. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	2.2m
2	RJ-45 cable*4	No	1.5m
3	RJ-45 cable	Yes	1.5m
4	RJ-45 cable	Yes	10m
5	USB cable	Yes	1.8m
6	USB cable	Yes	1.8m

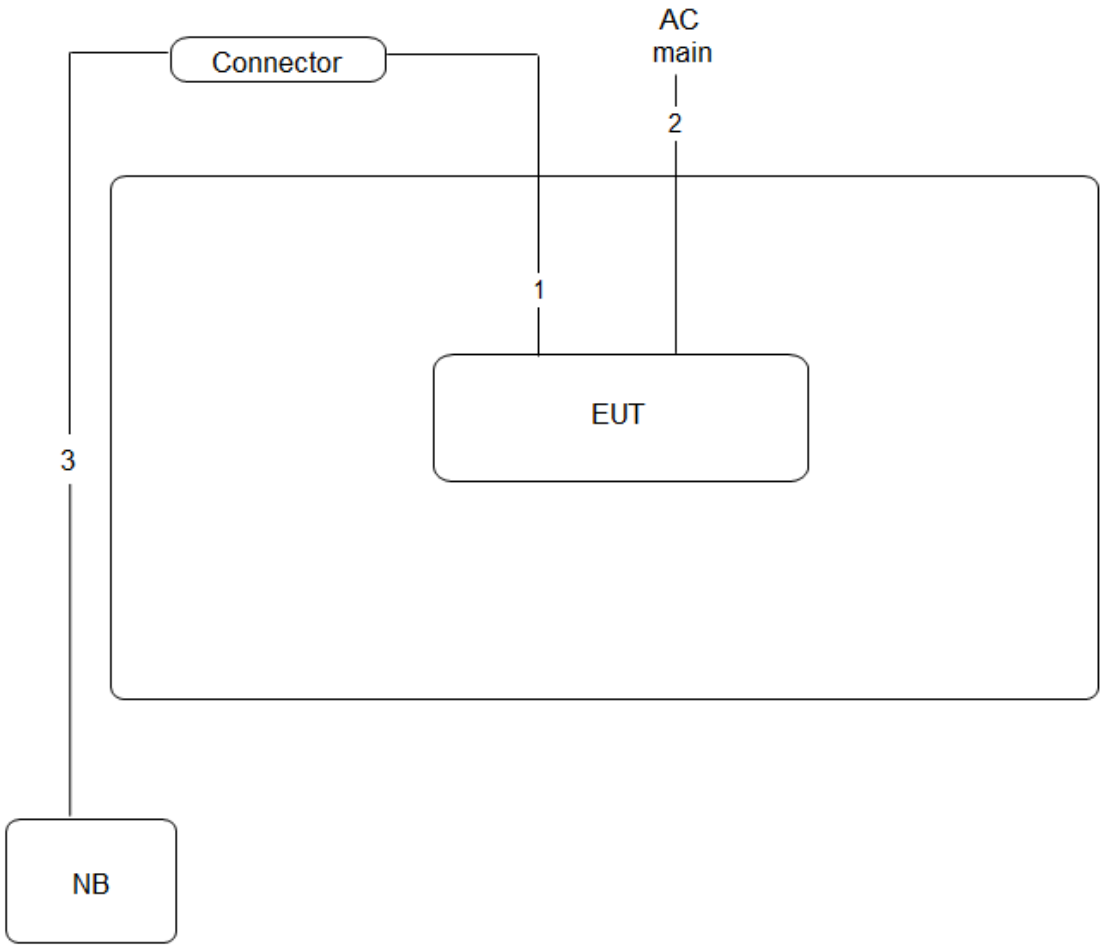
3.14.2. Radiation Emissions Test Configuration

Test Configuration: 30MHz~1GHz



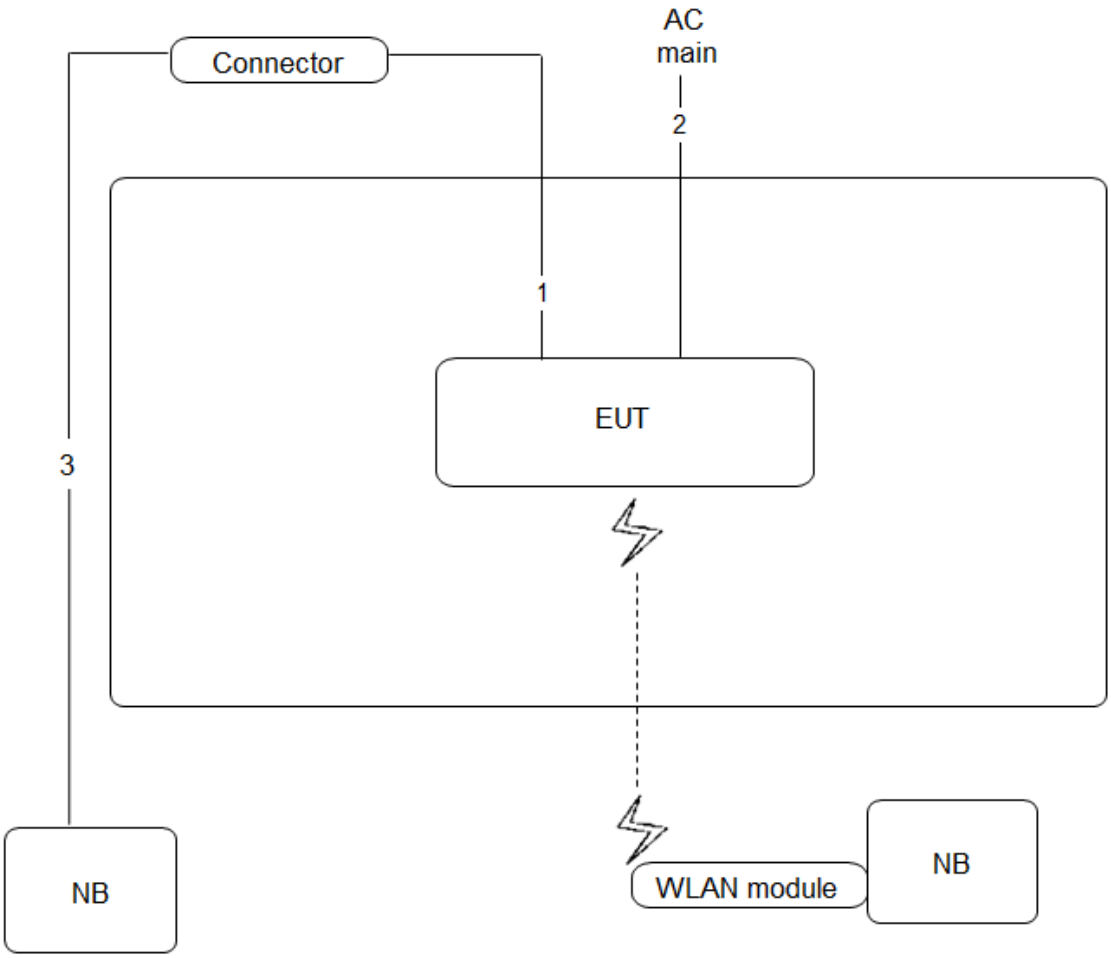
Item	Connection	Shielded	Length
1	RJ-45 cable	Yes	1.5m
2	Power cable	No	2.2m
3	RJ-45 cable	Yes	10m

Test Configuration: above 1GHz / <u>For non-beamforming function:</u>



Item	Connection	Shielded	Length
1	RJ-45 cable	Yes	1.5m
2	Power cable	No	2.2m
3	RJ-45 cable	Yes	10m

Test Configuration: above 1GHz / For beamforming function:



Item	Connection	Shielded	Length
1	RJ-45 cable	Yes	1.5m
2	Power cable	No	2.2m
3	RJ-45 cable	Yes	10m

4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

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

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

4.1.2. Measuring Instruments and Setting

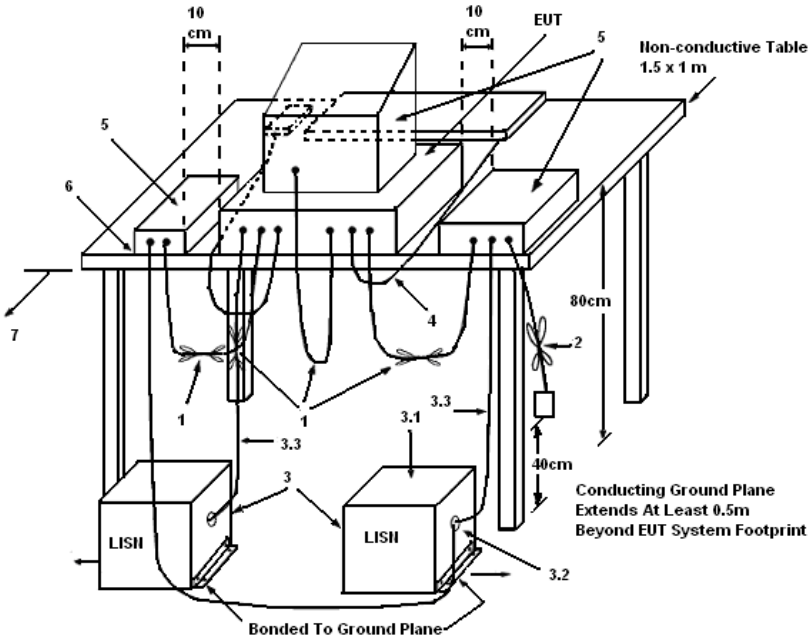
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

4.1.3. Test Procedures

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

4.1.4. Test Setup Layout



LEGEND:

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

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

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

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

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

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

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

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

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

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

4.1.5. Test Deviation

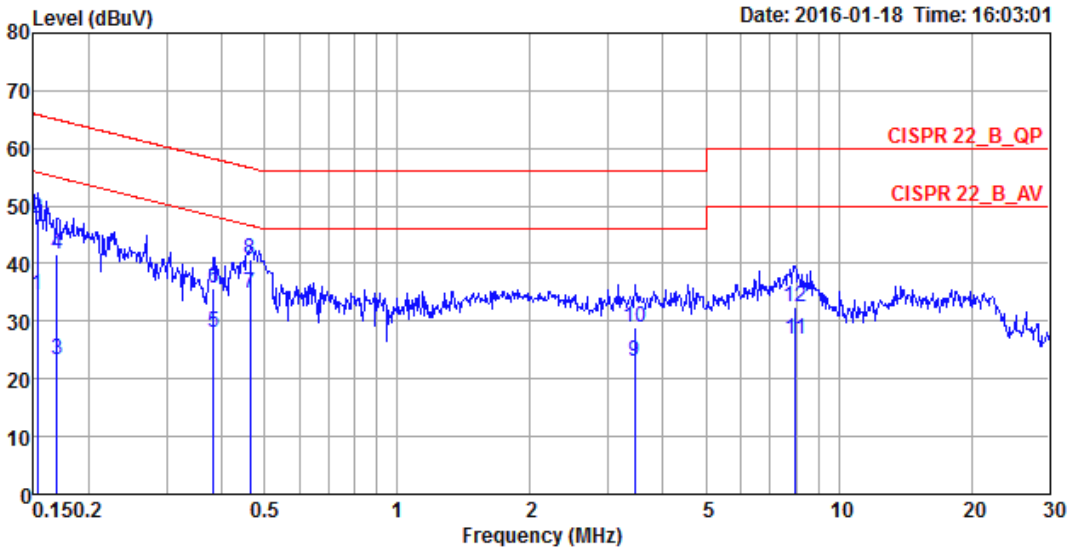
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

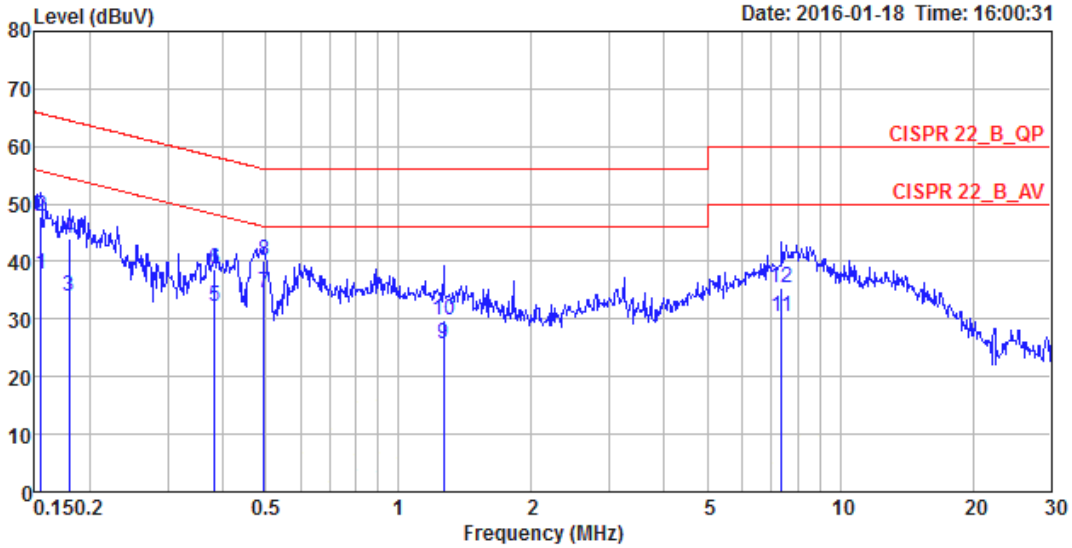
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	23°C	Humidity	64%
Test Engineer	Deven Huang	Phase	Line
Configuration	CTX	Test Mode	Mode 2



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1532	34.57	-21.25	55.82	24.62	9.93	0.02	LINE	Average
2	0.1532	47.86	-17.96	65.82	37.91	9.93	0.02	LINE	QP
3	0.1694	23.20	-31.79	54.99	13.25	9.93	0.02	LINE	Average
4	0.1694	41.60	-23.39	64.99	31.65	9.93	0.02	LINE	QP
5	0.3832	28.06	-20.15	48.21	18.09	9.93	0.04	LINE	Average
6	0.3832	35.68	-22.53	58.21	25.71	9.93	0.04	LINE	QP
7	0.4637	34.75	-11.88	46.63	24.78	9.93	0.04	LINE	Average
8	0.4637	40.88	-15.75	56.63	30.91	9.93	0.04	LINE	QP
9	3.4538	23.14	-22.86	46.00	13.07	10.01	0.06	LINE	Average
10	3.4538	28.87	-27.13	56.00	18.80	10.01	0.06	LINE	QP
11	7.9774	26.87	-23.13	50.00	16.56	10.14	0.17	LINE	Average
12	7.9774	32.45	-27.55	60.00	22.14	10.14	0.17	LINE	QP

Temperature	23°C	Humidity	64%
Test Engineer	Deven Huang	Phase	Neutral
Configuration	CTX	Test Mode	Mode 2



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1548	37.70	-18.04	55.74	27.90	9.78	0.02	NEUTRAL	Average
2	0.1548	47.87	-17.87	65.74	38.07	9.78	0.02	NEUTRAL	QP
3	0.1796	33.86	-20.64	54.50	24.05	9.79	0.02	NEUTRAL	Average
4	0.1796	43.95	-20.55	64.50	34.14	9.79	0.02	NEUTRAL	QP
5	0.3832	32.28	-15.93	48.21	22.45	9.79	0.04	NEUTRAL	Average
6	0.3832	38.53	-19.68	58.21	28.70	9.79	0.04	NEUTRAL	QP
7	0.4967	34.58	-11.47	46.05	24.75	9.79	0.04	NEUTRAL	Average
8	0.4967	40.19	-15.86	56.05	30.36	9.79	0.04	NEUTRAL	QP
9	1.2621	25.77	-20.23	46.00	15.90	9.82	0.05	NEUTRAL	Average
10	1.2621	29.70	-26.30	56.00	19.83	9.82	0.05	NEUTRAL	QP
11	7.3680	30.37	-19.63	50.00	20.27	9.96	0.14	NEUTRAL	Average
12	7.3680	35.31	-24.69	60.00	25.21	9.96	0.14	NEUTRAL	QP

Note:

Level = Read Level + LISN Factor + Cable Loss.

4.2. Maximum Conducted Output Power Measurement

4.2.1. 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.

4.2.2. Measuring Instruments and Setting

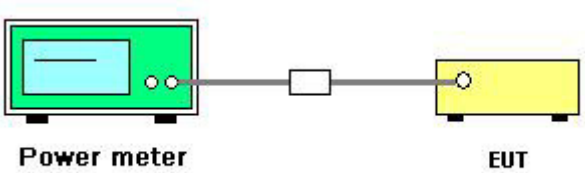
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Detector	Average

4.2.3. Test Procedures

1. Test procedures refer KDB558074 D01 v03r04 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.

4.2.4. Test Setup Layout



4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.2.7. Test Result of Maximum Conducted Output Power

For 2.4GHz Band

Temperature	23°C	Humidity	60%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11ac
Test Date	Mar. 22, 2016 ~ Mar. 23, 2016		

For Non-beamforming function

Configuration IEEE 802.11ac MCS0/Nss1 VHT40

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
9	2452 MHz	13.85	14.73	13.51	18.83	30.00	Complies

For beamforming function

Configuration IEEE 802.11ac MCS0/Nss1 VHT20

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
11	2462 MHz	16.08	16.59	15.72	20.92	29.32	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.68dBi, so limit=30-(6.68-6)= 29.32 dBm.

Configuration IEEE 802.11ac MCS0/Nss1 VHT40

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
9	2452 MHz	13.85	14.73	13.51	18.83	29.32	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.68dBi, so limit=30-(6.68-6)= 29.32 dBm.

4.3. Power Spectral Density Measurement

4.3.1. Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

4.3.2. Measuring Instruments and Setting

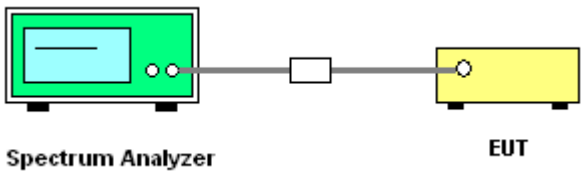
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Set the span to 1.5 times the DTS channel bandwidth.
RBW	3 kHz ≤ RBW ≤ 100kHz
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto couple

4.3.3. Test Procedures

1. Test was performed in accordance with KDB558074 D01 v03r04 for Performing Compliance Measurements on Digital Transmission Systems (DTS) - section 10.2 Method PKPSD (peak PSD) and KDB 662911 D01 v02r01 section In-Band Power Spectral Density (PSD) Measurements option (b) Measure and sum spectral maximal across the outputs.
2. Use this procedure when the maximum conducted output power in the fundamental emission is used to demonstrate compliance. The EUT must be configured to transmit continuously at full power over the measurement duration.
3. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW (use of a greater number of measurement points than this minimum requirement is recommended).
4. Use the peak marker function to determine the maximum level in any 3 kHz band segment within the fundamental EBW.
5. The resulting PSD level must be ≤ 8 dBm.

4.3.4. Test Setup Layout



4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.3.7. Test Result of Power Spectral Density

For 2.4GHz Band

Temperature	23℃	Humidity	60%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11ac

For Non-beamforming function

Configuration IEEE 802.11ac MCS0/Nss1 VHT40

Channel	Frequency	Power Density (dBm/3kHz)				Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Chain 3	Total		
9	2452 MHz	-13.60	-13.33	-13.85	-8.82	7.32	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.68dBi, so limit=8-(6.68-6)= 7.32 dBm/3kHz.

For beamforming function

Configuration IEEE 802.11ac MCS0/Nss1 VHT20

Channel	Frequency	Power Density (dBm/3kHz)				Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Chain 3	Total		
11	2462 MHz	-9.13	-9.44	-8.53	-4.25	7.32	Complies

Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.68dBi, so limit=8-(6.68-6)= 7.32 dBm/3kHz.

Configuration IEEE 802.11ac MCS0/Nss1 VHT40

Channel	Frequency	Power Density (dBm/3kHz)				Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Chain 3	Total		
9	2452 MHz	-13.60	-13.33	-13.85	-8.82	7.32	Complies

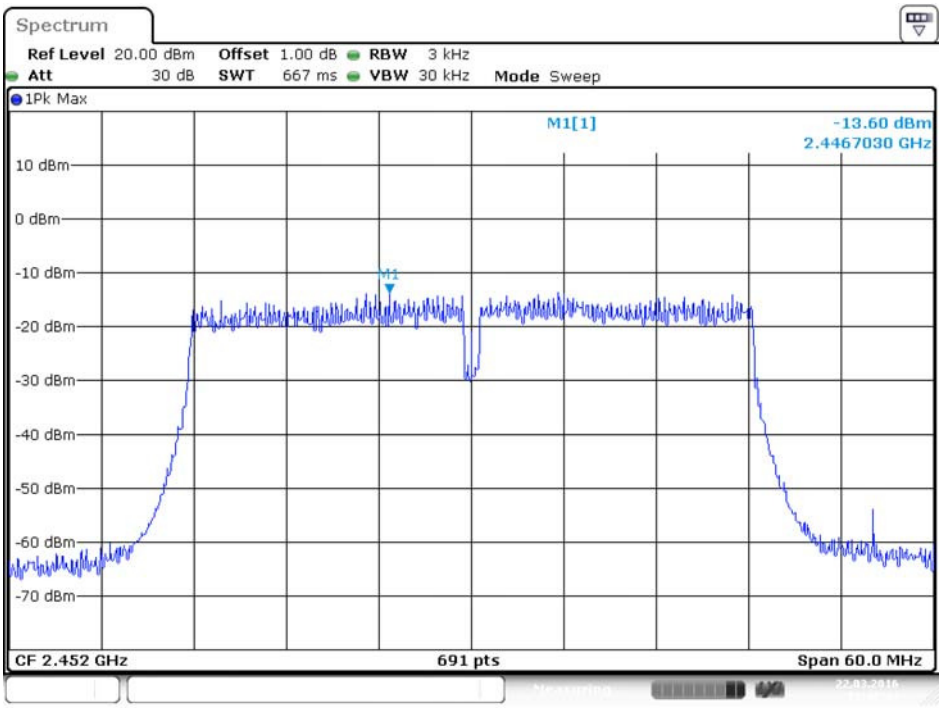
Note: $DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.68dBi, so limit=8-(6.68-6)= 7.32 dBm/3kHz.

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

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

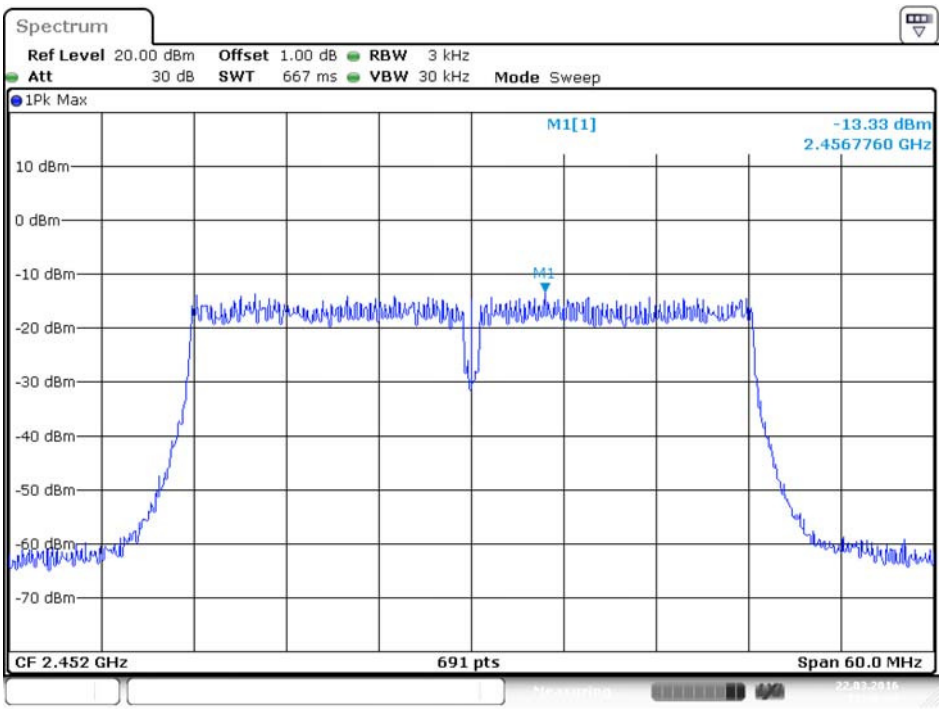
For Non-beamforming function

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2452 MHz / Chain 1



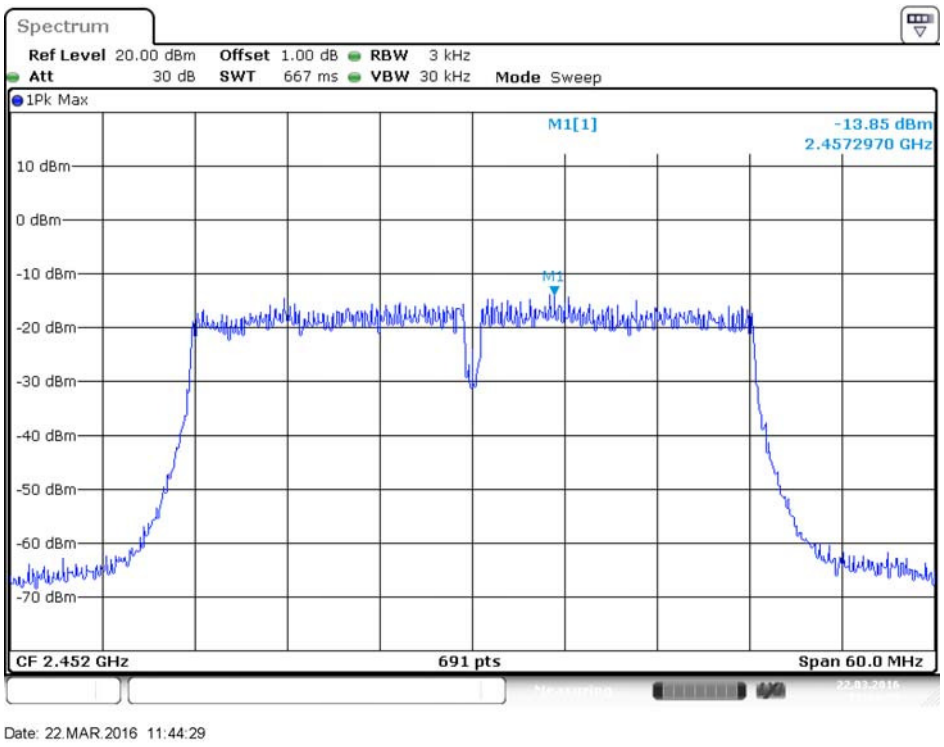
Date: 22.MAR.2016 11:47:43

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2452 MHz / Chain 2



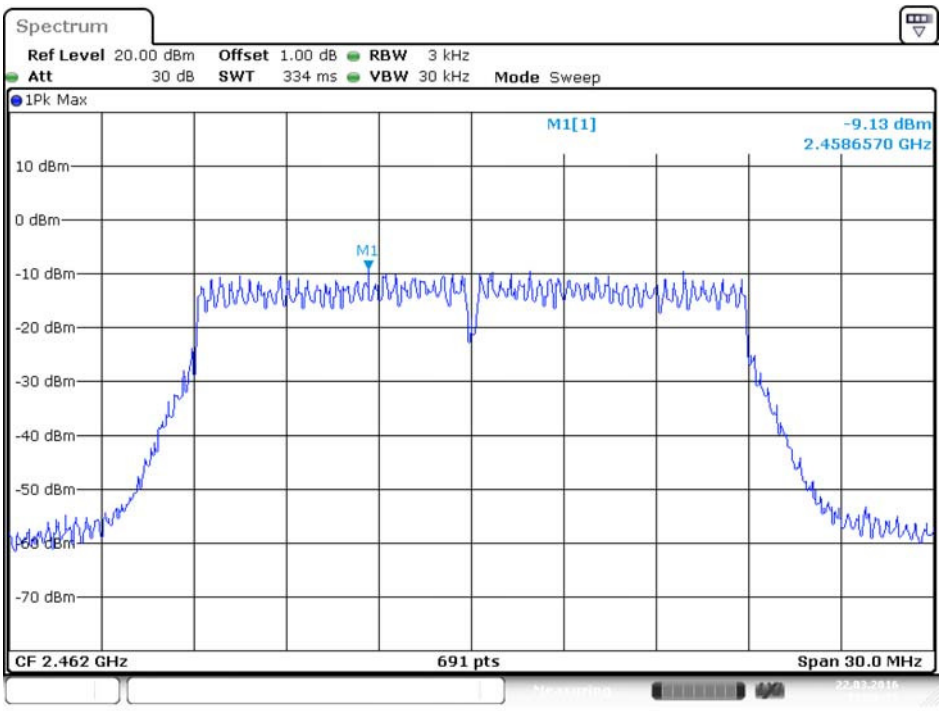
Date: 22.MAR.2016 11:46:34

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2452 MHz / Chain 3



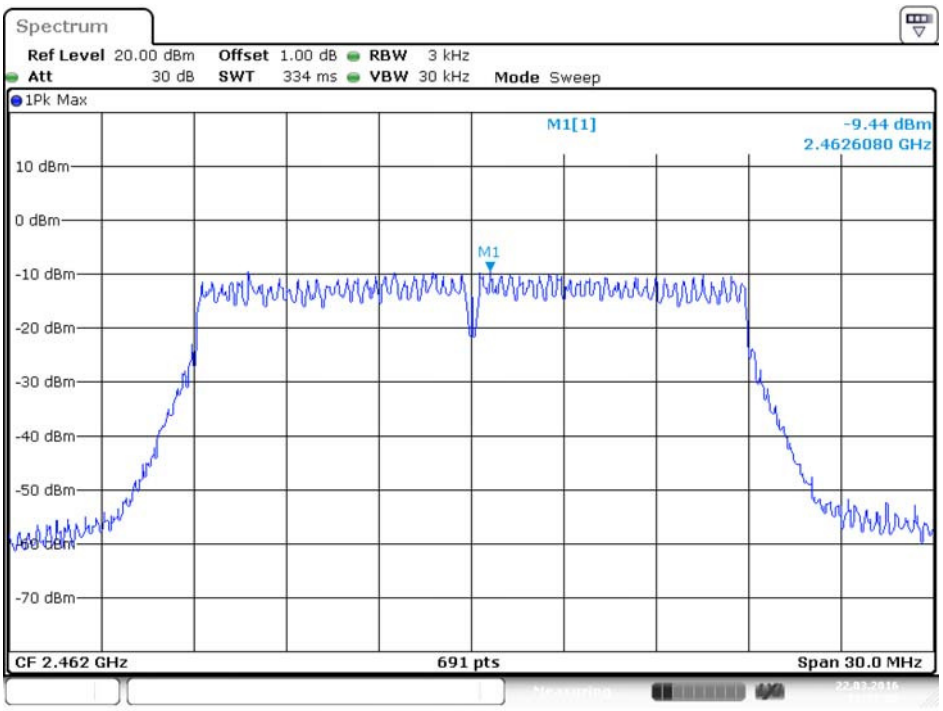
For beamforming function

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2462 MHz / Chain 1



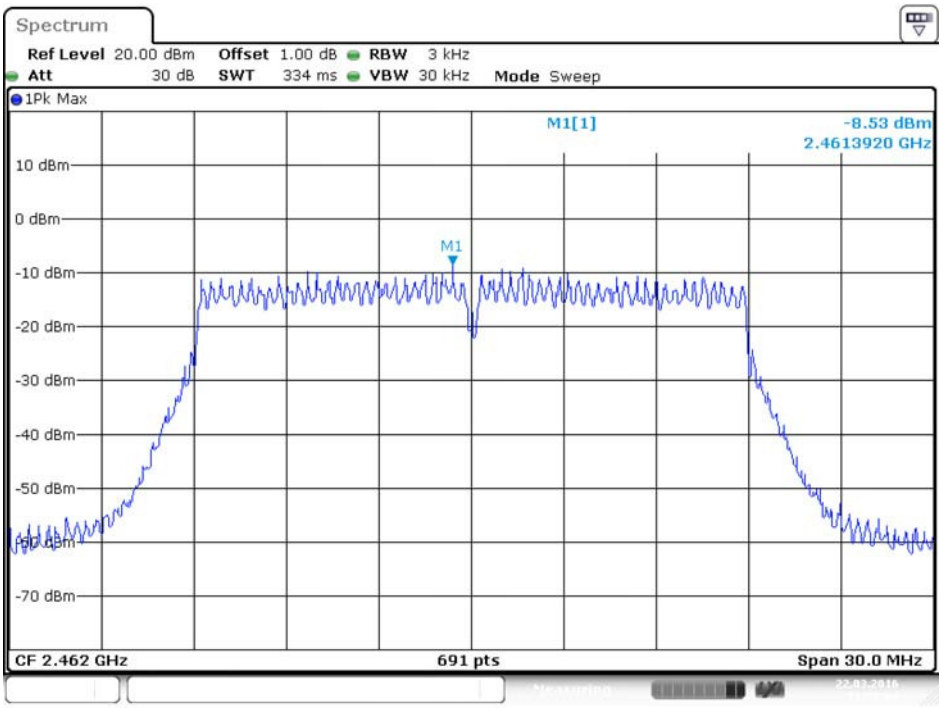
Date: 22.MAR.2016 11:56:51

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2462 MHz / Chain 2



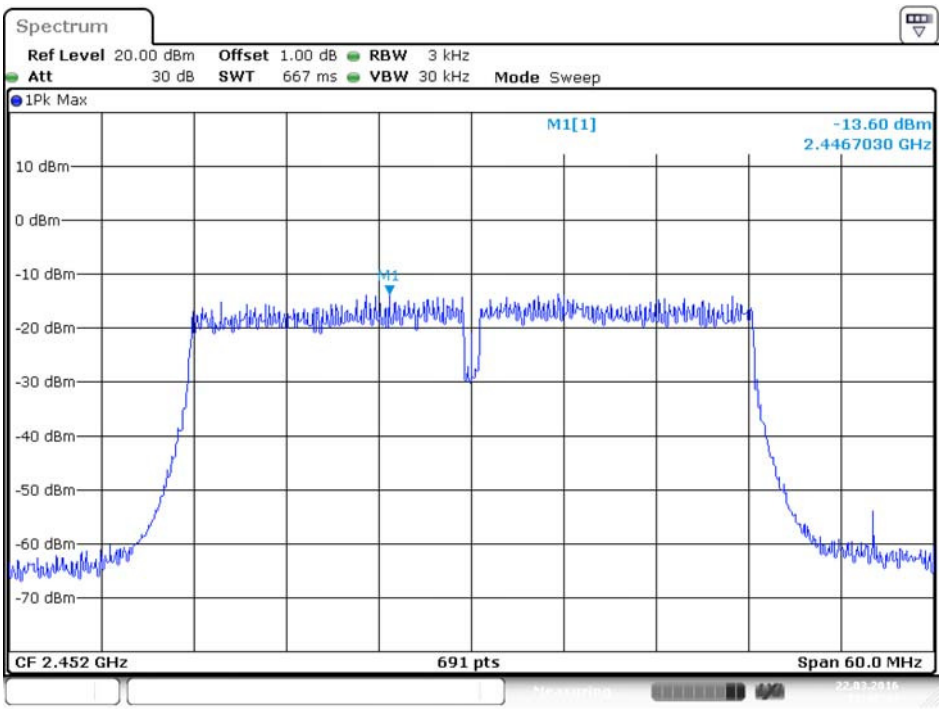
Date: 22.MAR.2016 11:57:29

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2462 MHz / Chain 3



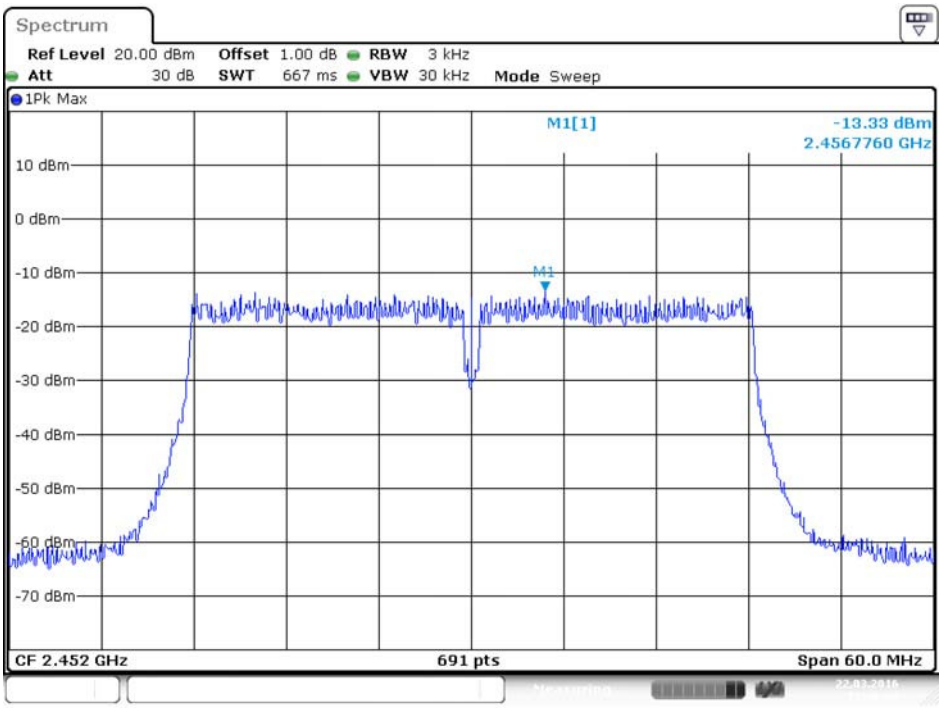
Date: 22.MAR.2016 11:58:03

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2452 MHz / Chain 1



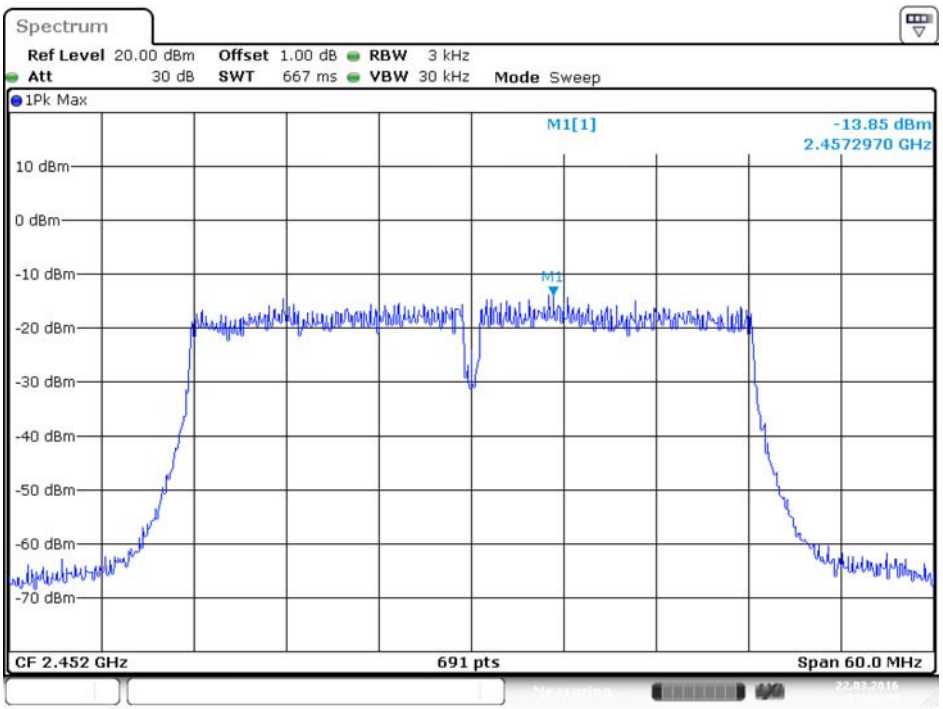
Date: 22.MAR.2016 11:47:43

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2452 MHz / Chain 2



Date: 22.MAR.2016 11:46:34

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2452 MHz / Chain 3



Date: 22.MAR.2016 11:44:29

4.4. 6dB Spectrum Bandwidth Measurement

4.4.1. Limit

For digital modulation systems, the minimum 6dB bandwidth shall be at least 500 kHz.

4.4.2. Measuring Instruments and Setting

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

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 6dB Bandwidth
RBW	100kHz
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.4.3. Test Procedures

For Radiated 6dB Bandwidth Measurement:

1. The transmitter was radiated to the spectrum analyzer in peak hold mode.
2. Test was performed in accordance with KDB558074 D01 v03r04 for Performing Compliance Measurements on Digital Transmission Systems (DTS) - section 8.0 DTS bandwidth=> 8.1 Option 1.
3. Multiple antenna system was performed in accordance with KDB 662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
4. Measured the spectrum width with power higher than 6dB below carrier.

4.4.4. Test Setup Layout

For Radiated 6dB Bandwidth Measurement:

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

4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.4.7. Test Result of 6dB Spectrum Bandwidth

For 2.4GHz Band

Temperature	23°C	Humidity	60%
Test Engineer	Eddie Weng	Configurations	IEEE 802.11ac

For Non-beamforming function

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

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
9	2452 MHz	36.06	36.24	500	Complies

For beamforming function

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

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
11	2462 MHz	16.58	17.66	500	Complies

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

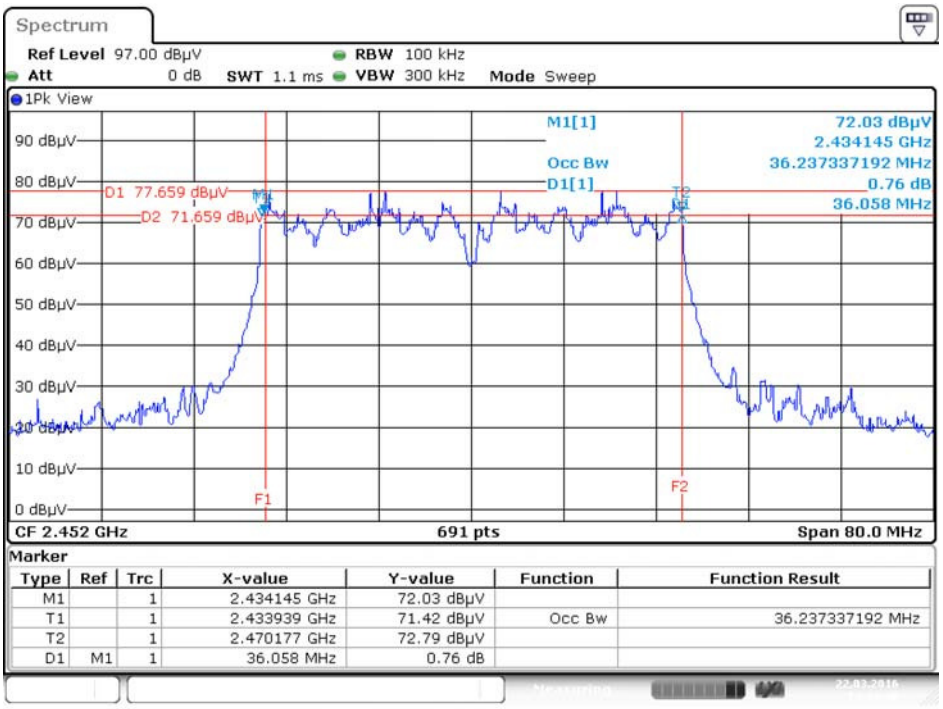
Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
9	2452 MHz	35.48	36.24	500	Complies

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

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

For Non-beamforming function

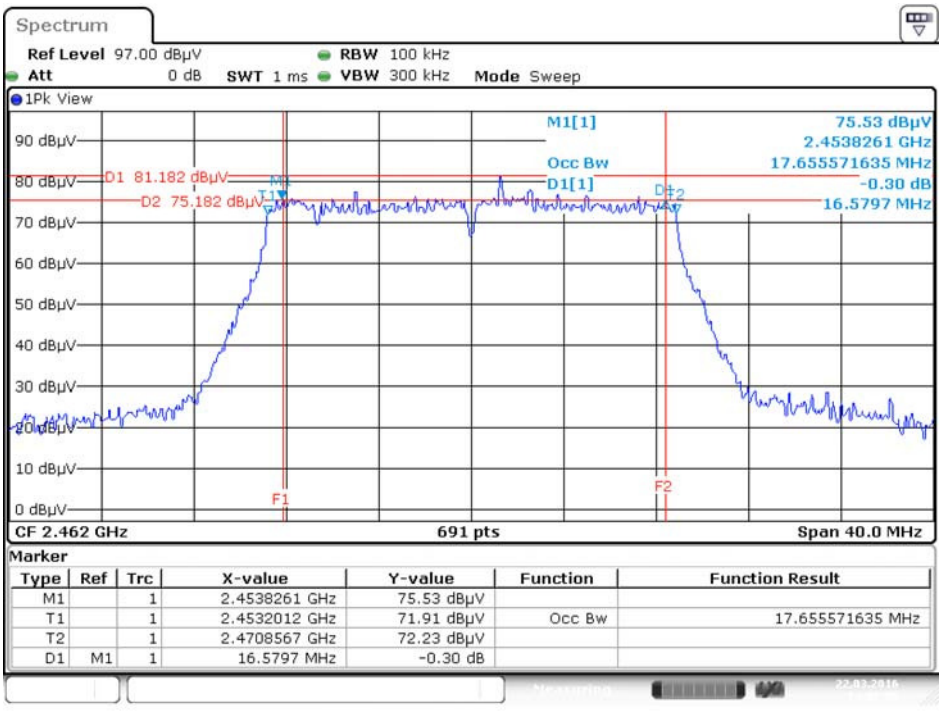
6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2452 MHz / Chain 1 + Chain 2 + Chain 3



Date: 22.MAR.2016 14:04:48

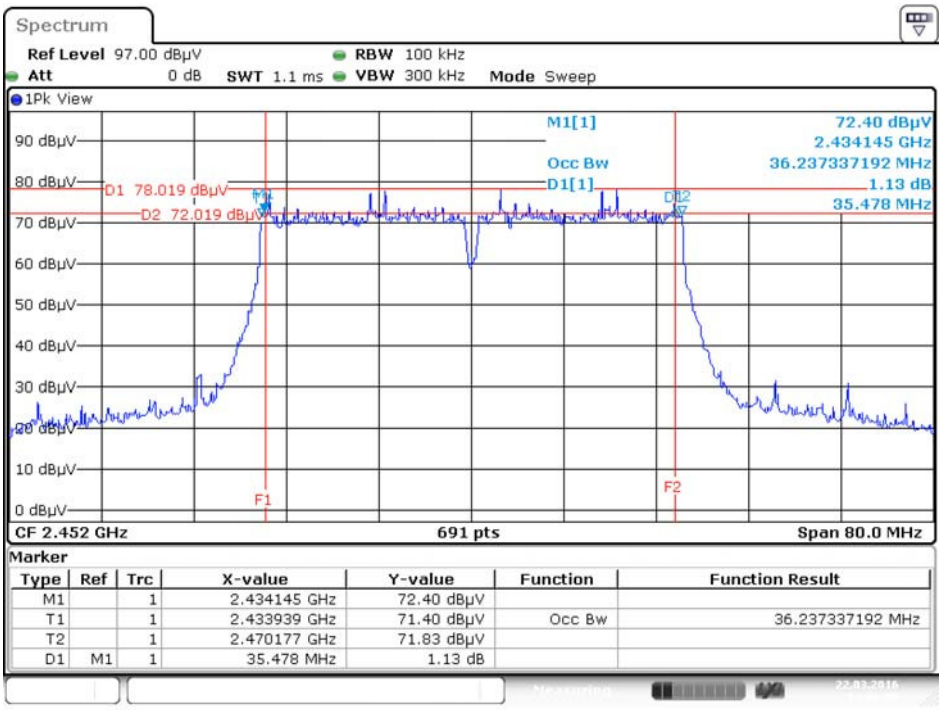
For beamforming function

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2462 MHz / Chain 1 + Chain 2 + Chain 3



Date: 22.MAR.2016 14:07:56

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2452 MHz / Chain 1 + Chain 2 + Chain 3



Date: 22.MAR.2016 14:06:57

4.5. Radiated Emissions Measurement

4.5.1. 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

4.5.2. Measuring Instruments and Setting

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

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	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

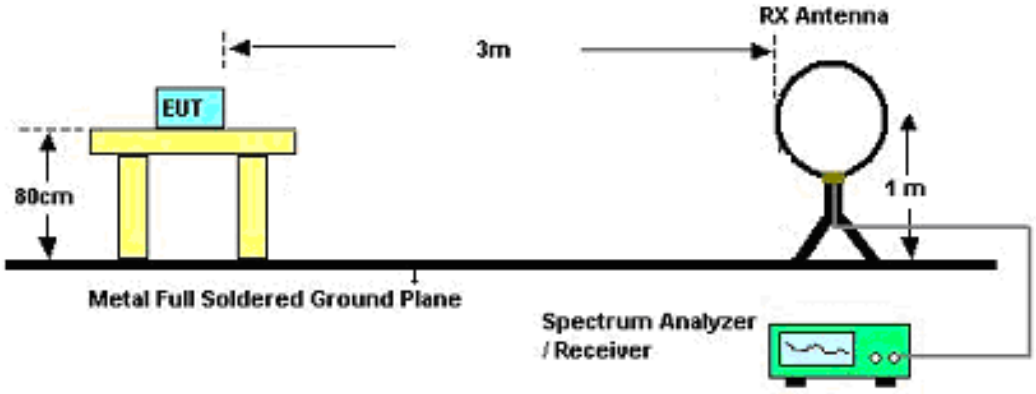
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1GHz / RBW 120kHz for QP

4.5.3. Test Procedures

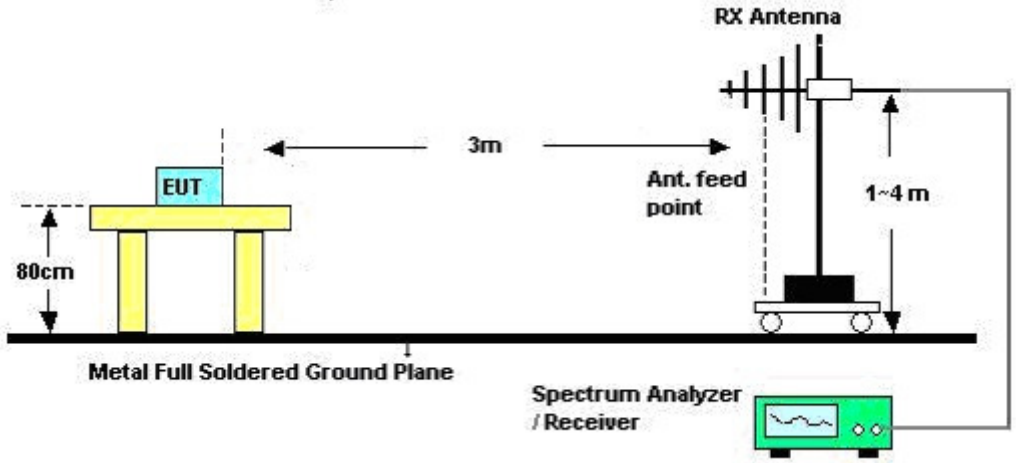
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting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

4.5.4. Test Setup Layout

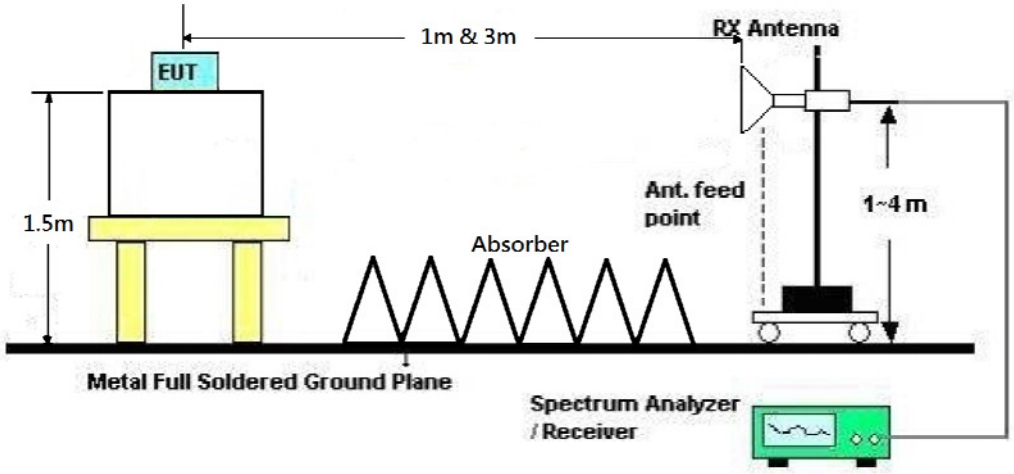
For Radiated Emissions: 9kHz ~30MHz



For Radiated Emissions: 30MHz~1GHz



For Radiated Emissions: Above 1GHz



4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. EUT Operation during Test

For non-beamforming function:

The EUT was programmed to be in continuously transmitting mode.

For beamforming function:

The EUT was programmed to be in beamforming transmitting mode.

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

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	CTX
Test Date	Mar. 24, 2016	Test Mode	Mode 2

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

Note:

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

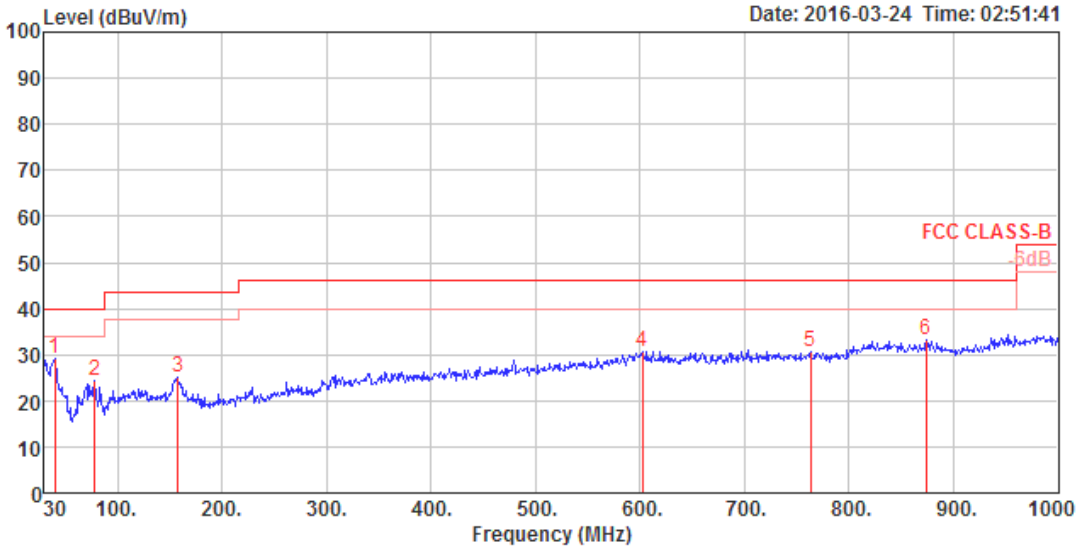
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

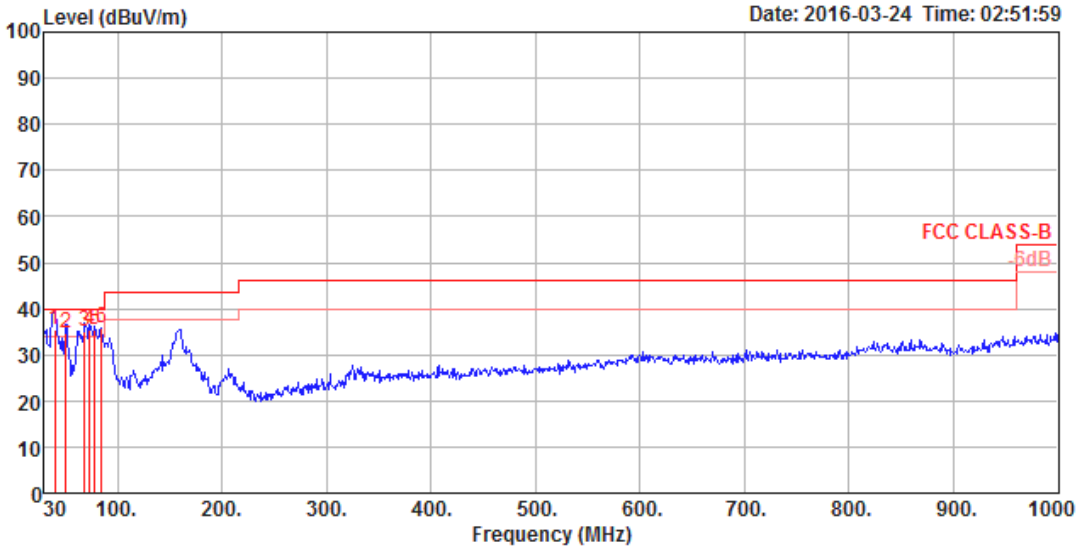
Temperature	24.3℃	Humidity	62%
Test Engineer	Eason Chen	Configurations	CTX
Test Mode	Mode 2		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	39.70	29.26	40.00	-10.74	40.77	0.54	20.36	32.41	175	97	Peak	HORIZONTAL
2	78.50	24.40	40.00	-15.60	42.54	0.77	13.49	32.40	150	226	Peak	HORIZONTAL
3	158.04	25.14	43.50	-18.36	39.45	1.07	16.97	32.35	112	283	Peak	HORIZONTAL
4	602.30	30.64	46.00	-15.36	35.50	2.12	25.43	32.41	158	129	Peak	HORIZONTAL
5	763.32	30.52	46.00	-15.48	33.91	2.39	26.51	32.29	125	199	Peak	HORIZONTAL
6	873.90	33.23	46.00	-12.77	34.99	2.55	27.55	31.86	100	63	Peak	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	39.70	35.57	40.00	-4.43	47.08	0.54	20.36	32.41	125	257	QP	VERTICAL
2	50.37	34.65	40.00	-5.35	51.60	0.61	14.85	32.41	100	298	QP	VERTICAL
3	68.80	34.93	40.00	-5.07	53.62	0.72	12.99	32.40	175	98	QP	VERTICAL
4	73.65	35.41	40.00	-4.59	53.91	0.74	13.16	32.40	150	182	QP	VERTICAL
5	78.50	35.30	40.00	-4.70	53.44	0.77	13.49	32.40	100	203	QP	VERTICAL
6	84.32	35.80	40.00	-4.20	52.93	0.80	14.46	32.39	145	203	Peak	VERTICAL

Note:

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

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

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

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

For Non-beamforming function

Temperature	24.3℃	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11b CH 1 / Chain 1 + Chain 2 + Chain 3
Test Date	Jan. 21, 2016		

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	4822.70	49.00	74.00	-25.00	43.50	7.10	33.41	35.01	Peak	150	281	HORIZONTAL
2	4824.08	34.85	54.00	-19.15	29.35	7.10	33.41	35.01	Average	150	281	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4825.73	34.80	54.00	-19.20	29.26	7.11	33.44	35.01	Average	150	42	VERTICAL
2	4826.21	49.08	74.00	-24.92	43.54	7.11	33.44	35.01	Peak	150	42	VERTICAL

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11b CH 6 / Chain 1 + Chain 2 + Chain 3
Test Date	Jan. 21, 2016		

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	4874.08	37.26	54.00	-16.74	31.62	7.12	33.53	35.01	Average	196	287	HORIZONTAL
2	4874.13	49.00	74.00	-25.00	43.36	7.12	33.53	35.01	Peak	196	287	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	4873.99	40.19	54.00	-13.81	34.55	7.12	33.53	35.01	Average	311	164	VERTICAL
2	4874.24	49.85	74.00	-24.15	44.21	7.12	33.53	35.01	Peak	311	164	VERTICAL

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11b CH 11 / Chain 1 + Chain 2 + Chain 3
Test Date	Jan. 21, 2016		

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	4921.76	49.34	74.00	-24.66	43.59	7.14	33.62	35.01	Peak	222	55	HORIZONTAL
2	4924.06	35.82	54.00	-18.18	30.04	7.14	33.65	35.01	Average	222	55	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4924.00	49.92	74.00	-24.08	44.14	7.14	33.65	35.01	Peak	246	176	VERTICAL
2	4924.03	37.40	54.00	-16.60	31.62	7.14	33.65	35.01	Average	246	176	VERTICAL

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11g CH 1 / Chain 1 + Chain 2 + Chain 3
Test Date	Jan. 21, 2016		

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	4824.54	34.67	54.00	-19.33	29.17	7.10	33.41	35.01	Average	150	98	HORIZONTAL
2	4824.73	48.02	74.00	-25.98	42.52	7.10	33.41	35.01	Peak	150	98	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	4821.90	48.61	74.00	-25.39	43.11	7.10	33.41	35.01	Peak	150	68	VERTICAL
2	4825.30	34.53	54.00	-19.47	28.99	7.11	33.44	35.01	Average	150	68	VERTICAL

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11g CH 6 / Chain 1 + Chain 2 + Chain 3
Test Date	Jan. 21, 2016		

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	4871.96	49.44	74.00	-24.56	43.80	7.12	33.53	35.01	Peak	150	306	HORIZONTAL
2	4875.74	35.25	54.00	-18.75	29.61	7.12	33.53	35.01	Average	150	306	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	4873.48	35.40	54.00	-18.60	29.76	7.12	33.53	35.01	Average	150	352	VERTICAL
2	4876.25	48.62	74.00	-25.38	42.98	7.12	33.53	35.01	Peak	150	352	VERTICAL

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11g CH 11 / Chain 1 + Chain 2 + Chain 3
Test Date	Jan. 21, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4929.45	34.80	54.00	-19.20	26.73	7.78	33.35	33.06	158	101	Average	HORIZONTAL
2	4934.06	46.85	74.00	-27.15	38.78	7.78	33.35	33.06	158	101	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4930.09	48.23	74.00	-25.77	40.16	7.78	33.35	33.06	148	33	Peak	VERTICAL
2	4942.01	34.89	54.00	-19.11	26.83	7.74	33.38	33.06	148	33	Average	VERTICAL

Temperature	24.3℃	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 1 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 08, 2016		

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	4825.18	34.84	54.00	-19.16	29.30	7.11	33.44	35.01	Average	150	244	HORIZONTAL
2	4826.35	48.02	74.00	-25.98	42.48	7.11	33.44	35.01	Peak	150	244	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	4825.42	34.80	54.00	-19.20	29.26	7.11	33.44	35.01	Average	150	269	VERTICAL
2	4825.63	48.87	74.00	-25.13	43.33	7.11	33.44	35.01	Peak	150	269	VERTICAL

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802. 11ac MCS0/Nss1 VHT20 CH 6 / Chain 1 + Chain 2 + Chain 3
Test Date	Jan. 21, 2016		

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	4874.43	34.91	54.00	-19.09	29.27	7.12	33.53	35.01	Average	150	212	HORIZONTAL
2	4876.39	48.07	74.00	-25.93	42.43	7.12	33.53	35.01	Peak	150	212	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	4875.40	49.24	74.00	-24.76	43.60	7.12	33.53	35.01	Peak	150	224	VERTICAL
2	4875.55	34.95	54.00	-19.05	29.31	7.12	33.53	35.01	Average	150	224	VERTICAL

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 11 / Chain 1 + Chain 2 + Chain 3
Test Date	Jan. 21, 2016		

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	4921.85	35.18	54.00	-18.82	29.43	7.14	33.62	35.01	Average	150	168	HORIZONTAL
2	4922.78	48.53	74.00	-25.47	42.78	7.14	33.62	35.01	Peak	150	168	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4924.82	49.01	74.00	-24.99	43.23	7.14	33.65	35.01	Peak	150	189	VERTICAL
2	4926.47	35.27	54.00	-18.73	29.49	7.14	33.65	35.01	Average	150	189	VERTICAL

Temperature	24.3℃	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 3 / Chain 1 + Chain 2 + Chain 3
Test Date	Jan. 21, 2016		

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	4845.92	47.87	74.00	-26.13	42.30	7.11	33.47	35.01	Peak	150	147	HORIZONTAL
2	4846.40	34.56	54.00	-19.44	28.99	7.11	33.47	35.01	Average	150	147	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	4844.48	34.60	54.00	-19.40	29.03	7.11	33.47	35.01	Average	150	154	VERTICAL
2	4846.23	48.13	74.00	-25.87	42.56	7.11	33.47	35.01	Peak	150	154	VERTICAL

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 6 / Chain 1 + Chain 2 + Chain 3
Test Date	Jan. 21, 2016		

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	4872.13	48.59	74.00	-25.41	42.95	7.12	33.53	35.01	Peak	150	116	HORIZONTAL
2	4875.81	34.97	54.00	-19.03	29.33	7.12	33.53	35.01	Average	150	116	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	4872.25	35.04	54.00	-18.96	29.40	7.12	33.53	35.01	Average	150	124	VERTICAL
2	4873.72	48.53	74.00	-25.47	42.89	7.12	33.53	35.01	Peak	150	124	VERTICAL

Temperature	24.3℃	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 9 / Chain 1 + Chain 2 + Chain 3
Test Date	Jan. 21, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4911.95	47.91	74.00	-26.09	39.84	7.82	33.32	33.07	167	104	Peak	HORIZONTAL
2	4927.46	35.46	54.00	-18.54	27.39	7.78	33.35	33.06	167	104	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4923.17	47.73	74.00	-26.27	39.66	7.82	33.32	33.07	163	54	Peak	VERTICAL
2	4929.00	35.80	54.00	-18.20	27.73	7.78	33.35	33.06	163	54	Average	VERTICAL

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11a CH 149 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 08, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11486.50	62.35	74.00	-11.65	42.28	14.24	39.20	33.37	167	240	Peak	HORIZONTAL
2	11491.80	48.56	54.00	-5.44	28.49	14.24	39.20	33.37	167	240	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11485.36	61.21	74.00	-12.79	41.14	14.24	39.20	33.37	177	140	Peak	VERTICAL
2	11491.98	48.35	54.00	-5.65	28.28	14.24	39.20	33.37	177	140	Average	VERTICAL

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11a CH 157 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 15, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11571.02	61.41	74.00	-12.59	41.25	14.35	39.20	33.39	158	298	Peak	HORIZONTAL
2	11571.50	48.42	54.00	-5.58	28.26	14.35	39.20	33.39	158	298	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11568.36	61.98	74.00	-12.02	41.82	14.35	39.20	33.39	134	164	Peak	VERTICAL
2	11569.06	47.79	54.00	-6.21	27.63	14.35	39.20	33.39	134	164	Average	VERTICAL

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11a CH 165 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 15, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11650.18	60.98	74.00	-13.02	40.74	14.45	39.20	33.41	154	316	Peak	HORIZONTAL
2	11650.76	48.13	54.00	-5.87	27.83	14.51	39.20	33.41	154	316	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11651.26	48.12	54.00	-5.88	27.82	14.51	39.20	33.41	163	124	Average	VERTICAL
2	11653.94	61.09	74.00	-12.91	40.79	14.51	39.20	33.41	163	124	Peak	VERTICAL

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 15, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11446.46	61.18	74.00	-12.82	41.33	14.13	39.09	33.37	142	310	Peak	HORIZONTAL
2	11446.98	48.23	54.00	-5.77	28.38	14.13	39.09	33.37	142	310	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11450.20	48.07	54.00	-5.93	28.22	14.13	39.09	33.37	167	250	Average	VERTICAL
2	11453.58	61.48	74.00	-12.52	41.51	14.19	39.15	33.37	167	250	Peak	VERTICAL

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 15, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11566.44	61.59	74.00	-12.41	41.43	14.35	39.20	33.39	168	195	Peak	HORIZONTAL
2	11572.42	48.07	54.00	-5.93	27.91	14.35	39.20	33.39	168	195	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11566.44	48.15	54.00	-5.85	27.99	14.35	39.20	33.39	181	104	Average	VERTICAL
2	11567.38	61.32	74.00	-12.68	41.16	14.35	39.20	33.39	181	104	Peak	VERTICAL

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 15, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11647.88	60.61	74.00	-13.39	40.37	14.45	39.20	33.41	152	304	Peak	HORIZONTAL
2	11650.58	48.26	54.00	-5.74	28.02	14.45	39.20	33.41	152	304	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11645.56	47.90	54.00	-6.10	27.66	14.45	39.20	33.41	166	173	Average	VERTICAL
2	11651.30	61.22	74.00	-12.78	40.92	14.51	39.20	33.41	166	173	Peak	VERTICAL

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 15, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11513.12	47.33	54.00	-6.67	27.27	14.24	39.20	33.38	169	235	Average	HORIZONTAL
2	11517.88	61.38	74.00	-12.62	41.27	14.29	39.20	33.38	169	235	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11502.60	59.90	74.00	-14.10	39.83	14.24	39.20	33.37	158	128	Peak	VERTICAL
2	11508.84	48.33	54.00	-5.67	28.27	14.24	39.20	33.38	158	128	Average	VERTICAL

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 15, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11577.20	47.77	54.00	-6.23	27.61	14.35	39.20	33.39	206	157	Average	HORIZONTAL
2	11583.04	59.88	74.00	-14.12	39.72	14.35	39.20	33.39	206	157	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11584.28	47.67	54.00	-6.33	27.46	14.40	39.20	33.39	170	87	Average	VERTICAL
2	11596.00	61.13	74.00	-12.87	40.93	14.40	39.20	33.40	170	87	Peak	VERTICAL

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 09, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11535.52	59.71	74.00	-14.29	39.60	14.29	39.20	33.38	194	177	Peak	HORIZONTAL
2	11558.40	47.97	54.00	-6.03	27.81	14.35	39.20	33.39	194	177	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11559.76	60.11	74.00	-13.89	39.95	14.35	39.20	33.39	184	231	Peak	VERTICAL
2	11567.84	47.58	54.00	-6.42	27.42	14.35	39.20	33.39	184	231	Average	VERTICAL

For beamforming function

Temperature	24.3℃	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 1 / Chain 1 + Chain 2 + Chain 3
Test Date	Feb. 06, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4827.12	45.37	74.00	-28.63	42.14	7.16	32.61	36.54	136	9	Peak	HORIZONTAL
2	4828.44	32.53	54.00	-21.47	29.30	7.16	32.61	36.54	136	9	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4827.80	44.88	74.00	-29.12	41.65	7.16	32.61	36.54	143	321	Peak	VERTICAL
2	4831.08	32.81	54.00	-21.19	29.58	7.16	32.61	36.54	143	321	Average	VERTICAL

Temperature	24.3℃	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802. 11ac MCS0/Nss1 VHT20 CH 6 / Chain 1 + Chain 2 + Chain 3
Test Date	Feb. 06, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4870.68	31.75	54.00	-22.25	28.48	7.12	32.68	36.53	144	115	Average	HORIZONTAL
2	4873.92	44.64	74.00	-29.36	41.37	7.12	32.68	36.53	144	115	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4874.12	32.07	54.00	-21.93	28.80	7.12	32.68	36.53	155	138	Average	VERTICAL
2	4875.16	44.67	74.00	-29.33	41.40	7.12	32.68	36.53	155	138	Peak	VERTICAL

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 11 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 08, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4918.10	48.04	74.00	-25.96	39.97	7.82	33.32	33.07	158	141	Peak	HORIZONTAL
2	4922.97	35.62	54.00	-18.38	27.55	7.82	33.32	33.07	158	141	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4925.99	47.76	74.00	-26.24	39.69	7.78	33.35	33.06	164	123	Peak	VERTICAL
2	4940.54	35.89	54.00	-18.11	27.83	7.74	33.38	33.06	164	123	Average	VERTICAL

Temperature	24.3℃	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 3 / Chain 1 + Chain 2 + Chain 3
Test Date	Feb. 06, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4839.40	45.44	74.00	-28.56	42.21	7.14	32.63	36.54	193	109	Peak	HORIZONTAL
2	4847.52	32.37	54.00	-21.63	29.13	7.14	32.63	36.53	193	109	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4847.56	45.07	74.00	-28.93	41.83	7.14	32.63	36.53	214	141	Peak	VERTICAL
2	4848.56	33.45	54.00	-20.55	30.21	7.14	32.63	36.53	214	141	Average	VERTICAL

Temperature	24.3℃	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 6 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 08, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4873.24	35.95	54.00	-18.05	27.86	7.94	33.23	33.08	168	172	Average	HORIZONTAL
2	4874.86	47.87	74.00	-26.13	39.78	7.94	33.23	33.08	168	172	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4873.50	35.76	54.00	-18.24	27.67	7.94	33.23	33.08	174	148	Average	VERTICAL
2	4875.60	47.96	74.00	-26.04	39.87	7.94	33.23	33.08	174	148	Peak	VERTICAL

Temperature	24.3℃	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 9 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 08, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4923.55	48.30	74.00	-25.70	40.23	7.82	33.32	33.07	153	152	Peak	HORIZONTAL
2	4929.96	35.41	54.00	-18.59	27.34	7.78	33.35	33.06	153	152	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4930.03	35.64	54.00	-18.36	27.57	7.78	33.35	33.06	148	133	Average	VERTICAL
2	4930.99	47.41	74.00	-26.59	39.34	7.78	33.35	33.06	148	133	Peak	VERTICAL

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 09, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11482.37	62.04	74.00	-11.96	42.07	14.19	39.15	33.37	165	134	Peak	HORIZONTAL
2	11486.06	48.90	54.00	-5.10	28.83	14.24	39.20	33.37	165	134	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11490.71	48.92	54.00	-5.08	28.85	14.24	39.20	33.37	149	180	Average	VERTICAL
2	11498.62	61.59	74.00	-12.41	41.52	14.24	39.20	33.37	149	180	Peak	VERTICAL

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 09, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11484.62	62.02	74.00	-11.98	41.95	14.24	39.20	33.37	156	279	Peak	HORIZONTAL
2	11487.98	48.59	54.00	-5.41	28.52	14.24	39.20	33.37	156	279	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11481.12	48.68	54.00	-5.32	28.71	14.19	39.15	33.37	143	338	Average	VERTICAL
2	11498.91	60.27	74.00	-13.73	40.20	14.24	39.20	33.37	143	338	Peak	VERTICAL

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 09, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11654.36	61.42	74.00	-12.58	41.12	14.51	39.20	33.41	193	187	Peak	HORIZONTAL
2	11657.98	48.80	54.00	-5.20	28.50	14.51	39.20	33.41	193	187	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11655.03	48.90	54.00	-5.10	28.60	14.51	39.20	33.41	173	237	Average	VERTICAL
2	11657.21	61.15	74.00	-12.85	40.85	14.51	39.20	33.41	173	237	Peak	VERTICAL

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 09, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11500.45	61.54	74.00	-12.46	41.47	14.24	39.20	33.37	195	290	Peak	HORIZONTAL
2	11501.22	48.47	54.00	-5.53	28.40	14.24	39.20	33.37	195	290	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11501.54	48.61	54.00	-5.39	28.54	14.24	39.20	33.37	186	126	Average	VERTICAL
2	11512.21	61.80	74.00	-12.20	41.74	14.24	39.20	33.38	186	126	Peak	VERTICAL

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 09, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11583.11	48.33	54.00	-5.67	28.17	14.35	39.20	33.39	177	236	Average	HORIZONTAL
2	11586.79	61.33	74.00	-12.67	41.13	14.40	39.20	33.40	177	236	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11584.42	60.80	74.00	-13.20	40.59	14.40	39.20	33.39	170	302	Peak	VERTICAL
2	11591.44	48.57	54.00	-5.43	28.37	14.40	39.20	33.40	170	302	Average	VERTICAL

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 1 + Chain 2 + Chain 3
Test Date	Mar. 09, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11556.31	61.92	74.00	-12.08	41.76	14.35	39.20	33.39	189	314	Peak	HORIZONTAL
2	11556.99	48.42	54.00	-5.58	28.26	14.35	39.20	33.39	189	314	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	11540.58	48.37	54.00	-5.63	28.26	14.29	39.20	33.38	176	108	Average	VERTICAL
2	11549.97	60.72	74.00	-13.28	40.62	14.29	39.20	33.39	176	108	Peak	VERTICAL

Note:

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

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

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

4.6. Emissions Measurement

4.6.1. 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

4.6.2. Measuring Instruments and Setting

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

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

4.6.3. Test Procedures

For Radiated band edges Measurement:

1. The test procedure is the same as section 4.5.3, 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 KDB558074 D01 v03r04 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.

4.6.4. Test Setup Layout

For Radiated band edges Measurement:

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

For Radiated Out of Band Emission Measurement:

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

4.6.5. Test Deviation

There is no deviation with the original standard.

4.6.6. EUT Operation during Test

For non-beamforming function:

The EUT was programmed to be in continuously transmitting mode.

For beamforming function:

The EUT was programmed to be in beamforming transmitting mode.

4.6.7. Test Result of Band Edge and Fundamental Emissions

For Non-beamforming function

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11b CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3
Test Date	Jan. 20, 2016		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2389.60	60.19	74.00	-13.81	27.02	4.96	28.21	0.00	Peak	232	40	VERTICAL
2	2390.00	45.86	54.00	-8.14	12.69	4.96	28.21	0.00	Average	232	40	VERTICAL
3	2411.20	111.34			78.09	4.99	28.26	0.00	Average	232	40	VERTICAL
4	2411.20	115.45			82.20	4.99	28.26	0.00	Peak	232	40	VERTICAL
5	2491.20	50.04	54.00	-3.96	16.58	5.07	28.39	0.00	Average	232	40	VERTICAL
6	2494.40	60.64	74.00	-13.36	27.18	5.07	28.39	0.00	Peak	232	40	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	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2387.40	58.10	74.00	-15.90	24.93	4.96	28.21	0.00	Peak	273	39	VERTICAL
2	2390.00	46.29	54.00	-7.71	13.12	4.96	28.21	0.00	Average	273	39	VERTICAL
3	2436.20	115.33			82.03	5.01	28.29	0.00	Average	273	39	VERTICAL
4	2436.20	119.19			85.89	5.01	28.29	0.00	Peak	273	39	VERTICAL
5	2484.30	47.58	54.00	-6.42	14.14	5.06	28.38	0.00	Average	273	39	VERTICAL
6	2484.70	60.10	74.00	-13.90	26.66	5.06	28.38	0.00	Peak	273	39	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	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2382.40	52.34	54.00	-1.66	19.18	4.96	28.20	0.00	Average	232	37	VERTICAL
2	2386.00	61.35	74.00	-12.65	28.18	4.96	28.21	0.00	Peak	232	37	VERTICAL
3	2461.20	113.74			80.36	5.04	28.34	0.00	Average	232	37	VERTICAL
4	2463.20	117.66			84.28	5.04	28.34	0.00	Peak	232	37	VERTICAL
5	2493.20	47.07	54.00	-6.93	13.61	5.07	28.39	0.00	Average	232	37	VERTICAL
6	2494.40	58.89	74.00	-15.11	25.43	5.07	28.39	0.00	Peak	232	37	VERTICAL

Item 3, 4 are the fundamental frequency at 2462 MHz.

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11g CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3
Test Date	Jan. 20, 2016 / Jan. 21, 2016 / Jan. 26, 2016		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2389.60	66.66	74.00	-7.34	33.49	4.96	28.21	0.00	Peak	182	3	VERTICAL
2	2390.00	50.18	54.00	-3.82	17.01	4.96	28.21	0.00	Average	182	3	VERTICAL
3	2414.00	110.54			77.29	4.99	28.26	0.00	Average	182	3	VERTICAL
4	2414.40	120.62			87.37	4.99	28.26	0.00	Peak	182	3	VERTICAL
5	2484.80	62.17	74.00	-11.83	28.73	5.06	28.38	0.00	Peak	182	3	VERTICAL
6	2487.60	50.81	54.00	-3.19	17.37	5.06	28.38	0.00	Average	182	3	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	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2390.00	48.44	54.00	-5.56	15.27	4.96	28.21	0.00	Average	245	5	VERTICAL
2	2390.00	60.72	74.00	-13.28	27.55	4.96	28.21	0.00	Peak	245	5	VERTICAL
3	2439.00	114.26			80.96	5.01	28.29	0.00	Average	245	5	VERTICAL
4	2439.00	124.36			91.06	5.01	28.29	0.00	Peak	245	5	VERTICAL
5	2483.50	51.23	54.00	-2.77	17.79	5.06	28.38	0.00	Average	245	5	VERTICAL
6	2484.70	64.62	74.00	-9.38	31.18	5.06	28.38	0.00	Peak	245	5	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2463.44	104.33			72.45	4.05	27.83	0.00	237	7	Average	VERTICAL
2	2463.44	114.66			82.78	4.05	27.83	0.00	237	7	Peak	VERTICAL
3	2483.50	52.47	54.00	-1.53	20.59	4.07	27.81	0.00	237	7	Average	VERTICAL
4	2484.44	67.35	74.00	-6.65	35.47	4.07	27.81	0.00	237	7	Peak	VERTICAL

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

Temperature	24.3℃	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3
Test date	Jan. 21, 2016		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2389.60	68.71	74.00	-5.29	35.54	4.96	28.21	0.00	Peak	216	359	VERTICAL
2	2390.00	52.96	54.00	-1.04	19.79	4.96	28.21	0.00	Average	216	359	VERTICAL
3	2409.60	107.69			74.46	4.98	28.25	0.00	Average	216	359	VERTICAL
4	2409.60	118.19			84.96	4.98	28.25	0.00	Peak	216	359	VERTICAL
5	2484.40	49.75	54.00	-4.25	16.31	5.06	28.38	0.00	Average	216	359	VERTICAL
6	2484.80	61.34	74.00	-12.66	27.90	5.06	28.38	0.00	Peak	216	359	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	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2389.40	60.27	74.00	-13.73	27.10	4.96	28.21	0.00	Peak	197	2	VERTICAL
2	2389.80	48.16	54.00	-5.84	14.99	4.96	28.21	0.00	Average	197	2	VERTICAL
3	2439.80	111.56			78.23	5.02	28.31	0.00	Average	197	2	VERTICAL
4	2440.60	121.83			88.50	5.02	28.31	0.00	Peak	197	2	VERTICAL
5	2483.50	51.49	54.00	-2.51	18.05	5.06	28.38	0.00	Average	197	2	VERTICAL
6	2484.20	65.16	74.00	-8.84	31.72	5.06	28.38	0.00	Peak	197	2	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	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2389.60	48.26	54.00	-5.74	15.09	4.96	28.21	0.00	Average	193	1	VERTICAL
2	2390.00	59.73	74.00	-14.27	26.56	4.96	28.21	0.00	Peak	193	1	VERTICAL
3	2464.00	116.71			83.33	5.04	28.34	0.00	Peak	193	1	VERTICAL
4	2464.80	106.40			73.02	5.04	28.34	0.00	Average	193	1	VERTICAL
5	2483.50	72.85	74.00	-1.15	39.41	5.06	28.38	0.00	Peak	193	1	VERTICAL
6	2484.40	52.15	54.00	-1.85	18.71	5.06	28.38	0.00	Average	193	1	VERTICAL

Item 3, 4 are the fundamental frequency at 2462 MHz.

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 3, 6, 9 / Chain 1 + Chain 2 + Chain 3
Test date	Jan. 21, 2016 / Feb. 26, 2016		

Channel 3

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2385.20	62.23	74.00	-11.77	29.06	4.96	28.21	0.00	Peak	225	1	VERTICAL
2	2389.60	49.51	54.00	-4.49	16.34	4.96	28.21	0.00	Average	225	1	VERTICAL
3	2410.00	101.87			68.64	4.98	28.25	0.00	Average	225	1	VERTICAL
4	2414.80	111.36			78.11	4.99	28.26	0.00	Peak	225	1	VERTICAL
5	2484.80	48.05	54.00	-5.95	14.61	5.06	28.38	0.00	Average	225	1	VERTICAL
6	2485.20	58.88	74.00	-15.12	25.44	5.06	28.38	0.00	Peak	225	1	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	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2389.00	61.71	74.00	-12.29	28.54	4.96	28.21	0.00	Peak	249	0	VERTICAL
2	2389.80	48.50	54.00	-5.50	15.33	4.96	28.21	0.00	Average	249	0	VERTICAL
3	2439.80	114.44			81.11	5.02	28.31	0.00	Peak	249	0	VERTICAL
4	2440.20	104.90			71.57	5.02	28.31	0.00	Average	249	0	VERTICAL
5	2484.20	67.75	74.00	-6.25	34.31	5.06	28.38	0.00	Peak	249	0	VERTICAL
6	2484.60	52.41	54.00	-1.59	18.97	5.06	28.38	0.00	Average	249	0	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2449.44	111.35			79.47	4.03	27.85	0.00	216	358	Peak	VERTICAL
2	2454.56	102.23			70.35	4.04	27.84	0.00	216	358	Average	VERTICAL
3	2484.05	52.52	54.00	-1.48	20.64	4.07	27.81	0.00	216	358	Average	VERTICAL
4	2484.37	65.95	74.00	-8.05	34.07	4.07	27.81	0.00	216	358	Peak	VERTICAL

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

Note:

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

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

For beamforming function

Temperature	24.3℃	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3
Test date	Jan. 21, 2016		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2390.00	51.73	54.00	-2.27	19.31	4.52	27.90	0.00	221	6	Average	VERTICAL
2	2390.00	68.08	74.00	-5.92	35.66	4.52	27.90	0.00	221	6	Peak	VERTICAL
3	2414.00	119.29			86.86	4.55	27.88	0.00	221	6	Peak	VERTICAL
4	2418.80	109.57			77.14	4.56	27.87	0.00	221	6	Average	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2390.00	48.76	54.00	-5.24	16.34	4.52	27.90	0.00	198	359	Average	VERTICAL
2	2390.00	60.18	74.00	-13.82	27.76	4.52	27.90	0.00	198	359	Peak	VERTICAL
3	2439.40	115.27			82.85	4.57	27.85	0.00	198	359	Average	VERTICAL
4	2439.40	125.56			93.14	4.57	27.85	0.00	198	359	Peak	VERTICAL
5	2485.60	63.52	74.00	-10.48	31.10	4.61	27.81	0.00	198	359	Peak	VERTICAL
6	2509.00	52.22	54.00	-1.78	19.77	4.63	27.82	0.00	198	359	Average	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2453.83	107.53			75.65	4.04	27.84	0.00	218	0	Average	VERTICAL
2	2457.19	117.02			85.14	4.04	27.84	0.00	218	0	Peak	VERTICAL
3	2483.50	52.85	54.00	-1.15	20.97	4.07	27.81	0.00	218	0	Average	VERTICAL
4	2483.64	69.95	74.00	-4.05	38.07	4.07	27.81	0.00	218	0	Peak	VERTICAL

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

Temperature	24.3°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 3, 6, 9 / Chain 1 + Chain 2 + Chain 3
Test date	Jan. 21, 2016 / Feb. 26, 2016		

Channel 3

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2387.20	64.27	74.00	-9.73	31.85	4.52	27.90	0.00	205	359	Peak	VERTICAL
2	2390.00	51.94	54.00	-2.06	19.52	4.52	27.90	0.00	205	359	Average	VERTICAL
3	2417.20	104.94			72.51	4.55	27.88	0.00	205	359	Average	VERTICAL
4	2425.60	115.43			83.01	4.56	27.86	0.00	205	359	Peak	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2388.60	60.15	74.00	-13.85	28.28	3.97	27.90	0.00	220	357	Peak	VERTICAL
2	2390.00	48.10	54.00	-5.90	16.23	3.97	27.90	0.00	220	357	Average	VERTICAL
3	2450.14	106.25			74.37	4.03	27.85	0.00	220	357	Average	VERTICAL
4	2451.74	115.50			83.62	4.03	27.85	0.00	220	357	Peak	VERTICAL
5	2483.50	51.80	54.00	-2.20	19.92	4.07	27.81	0.00	220	357	Average	VERTICAL
6	2485.08	66.10	74.00	-7.90	34.22	4.07	27.81	0.00	220	357	Peak	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2448.15	113.26			81.38	4.03	27.85	0.00	220	356	Peak	VERTICAL
2	2449.76	104.09			72.21	4.03	27.85	0.00	220	356	Average	VERTICAL
3	2483.73	52.99	54.00	-1.01	21.11	4.07	27.81	0.00	220	356	Average	VERTICAL
4	2487.58	68.43	74.00	-5.57	36.55	4.07	27.81	0.00	220	356	Peak	VERTICAL

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

Note:

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

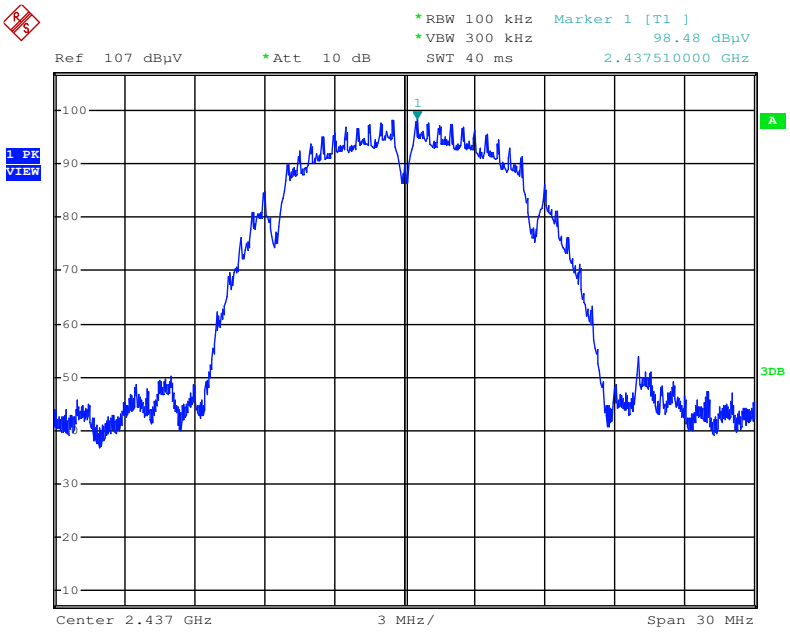
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

For Emission not in Restricted Band

For Non-beamforming function

For 2.4GHz Band:

Plot on Configuration IEEE 802.11b / Reference Level



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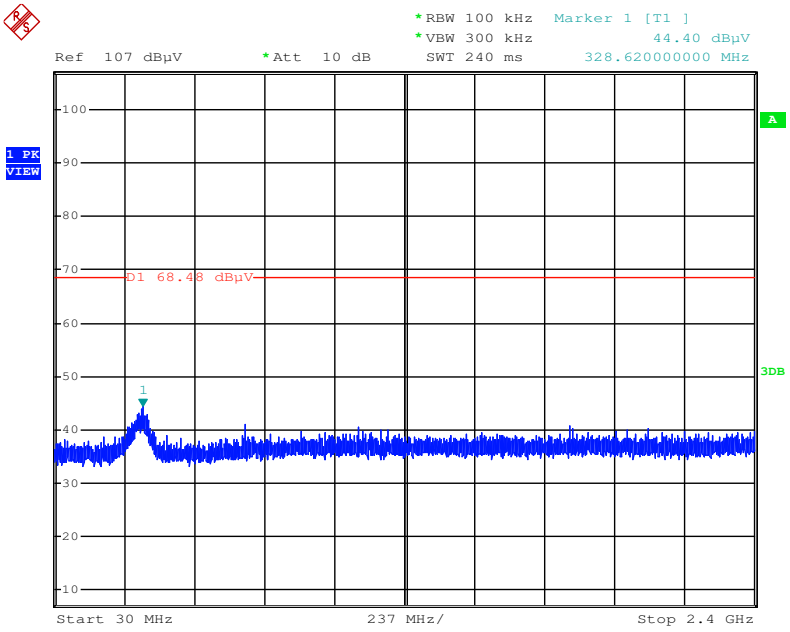
Plot on Configuration IEEE 802.11b / CH 1 / 30MHz~2400MHz (down 30dBc)



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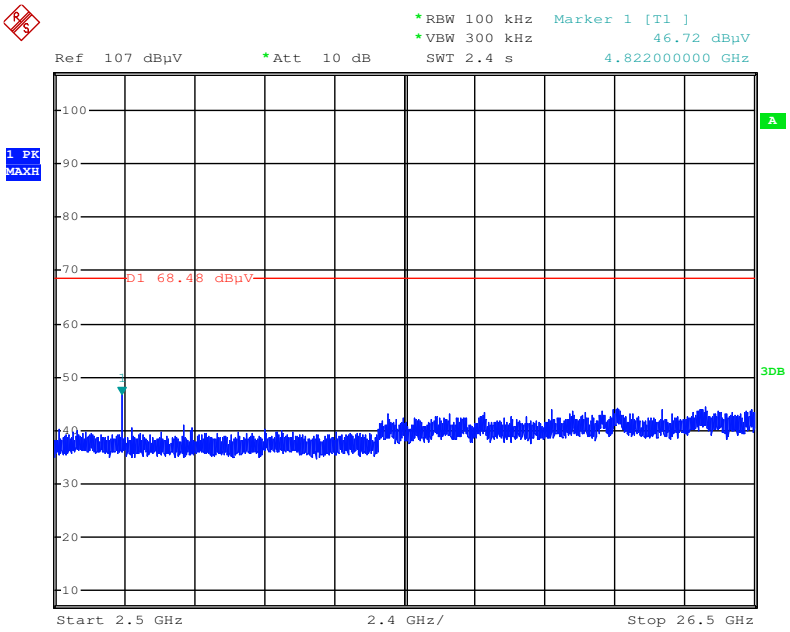
Plot on Configuration IEEE 802.11b / CH 1 / 2500MHz~26500MHz (down 30dBc)



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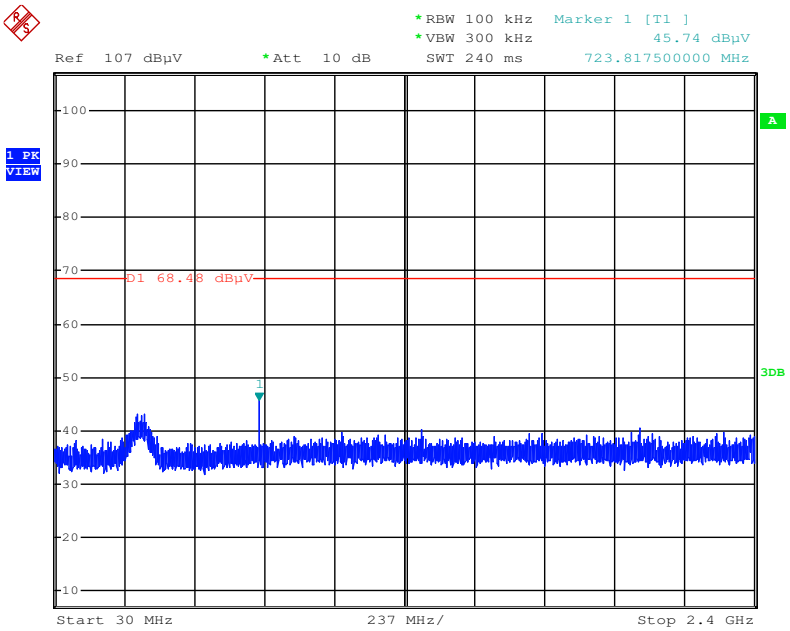
Plot on Configuration IEEE 802.11b / CH 11 / 30MHz~2400MHz (down 30dBc)



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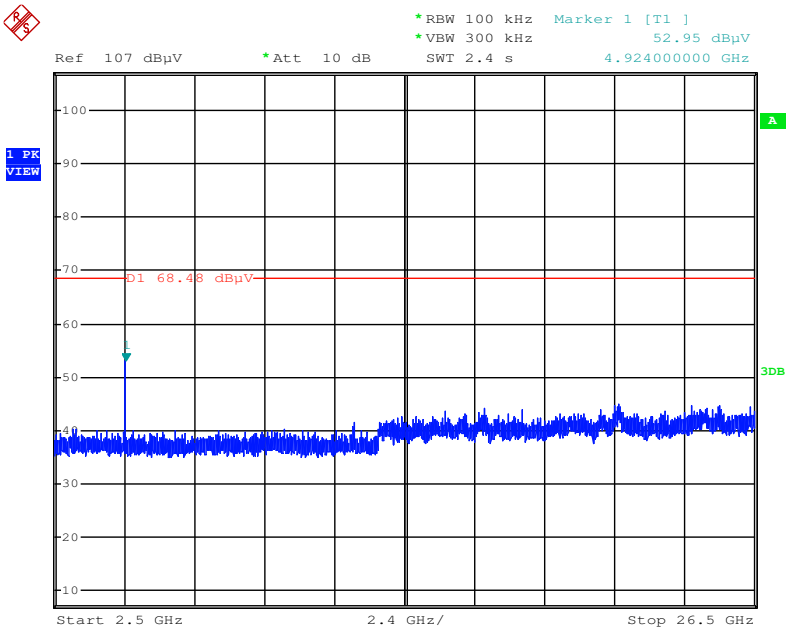

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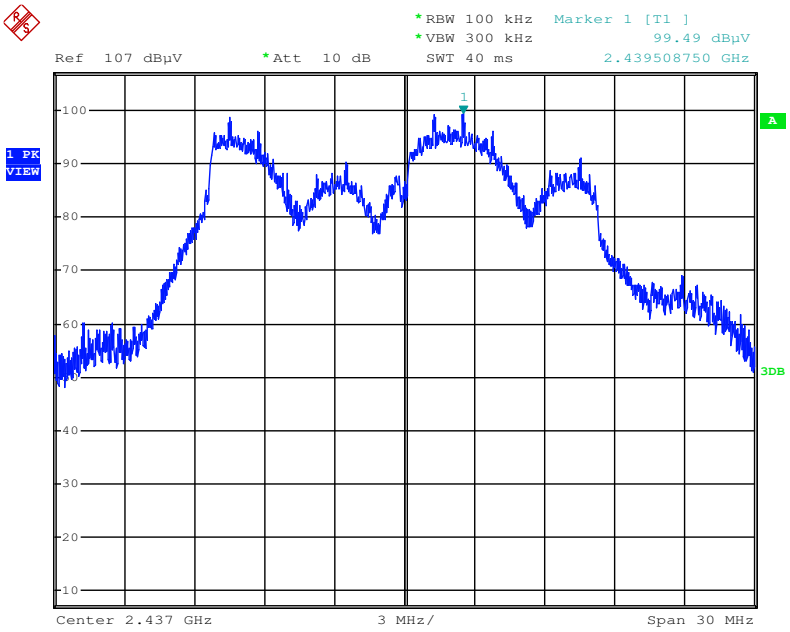
Plot on Configuration IEEE 802.11g / Reference Level



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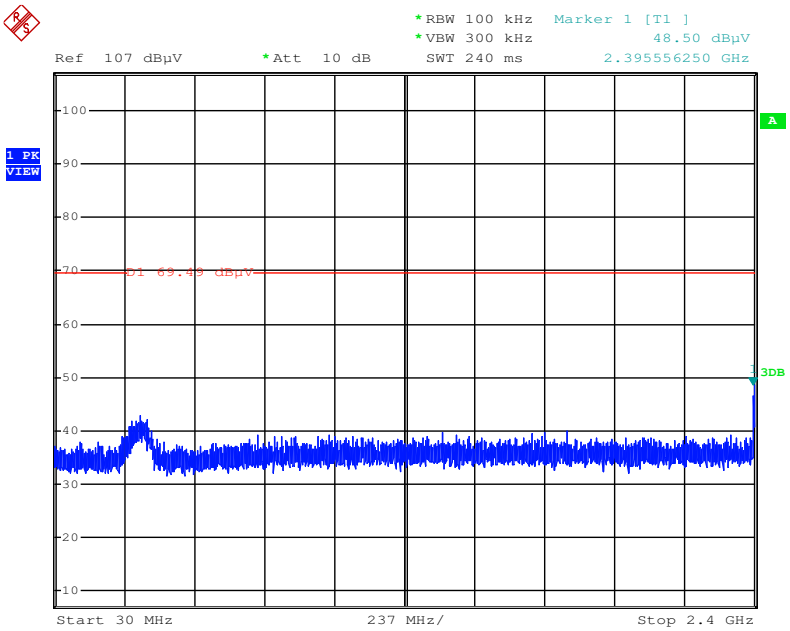
Plot on Configuration IEEE 802.11g / CH 1 / 30MHz~2400MHz (down 30dBc)



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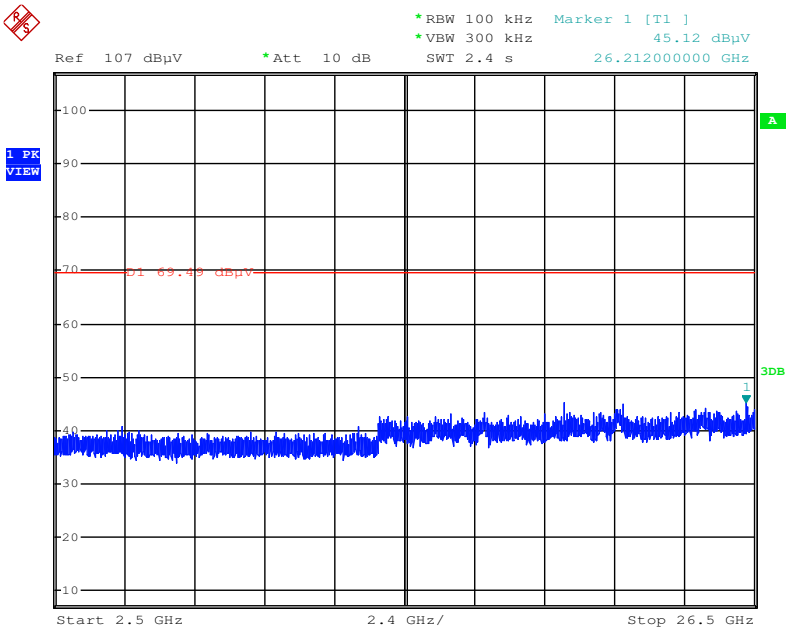
Plot on Configuration IEEE 802.11g / CH 1 / 2500MHz~26500MHz (down 30dBc)



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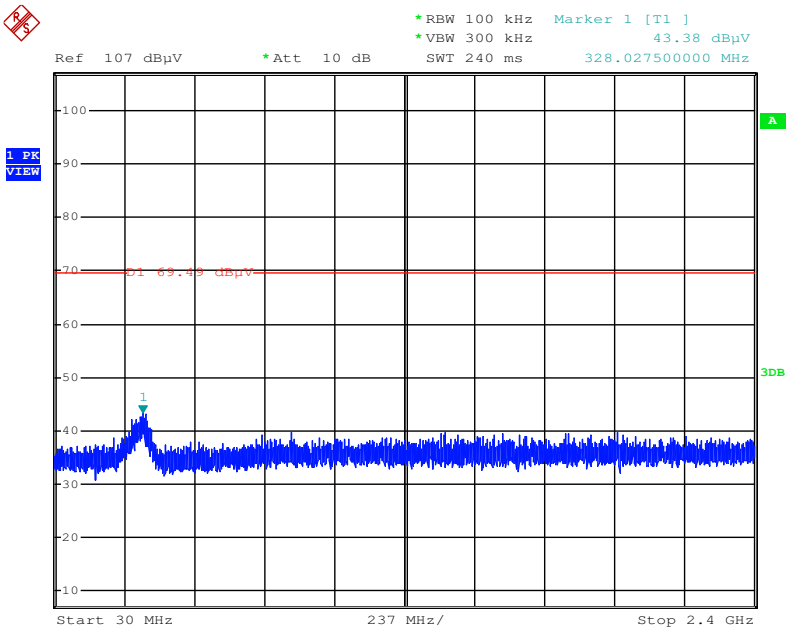

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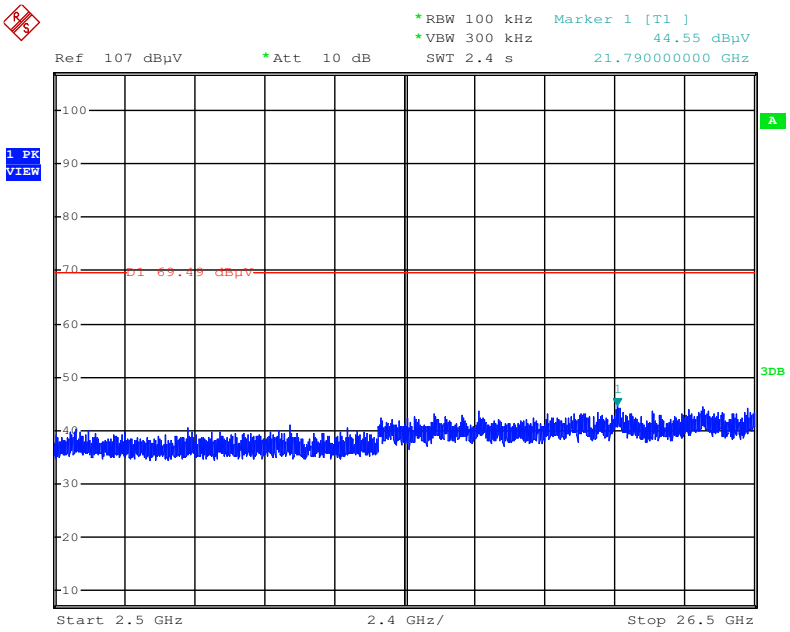
Plot on Configuration IEEE 802.11g / CH 11 / 2500MHz~26500MHz (down 30dBc)



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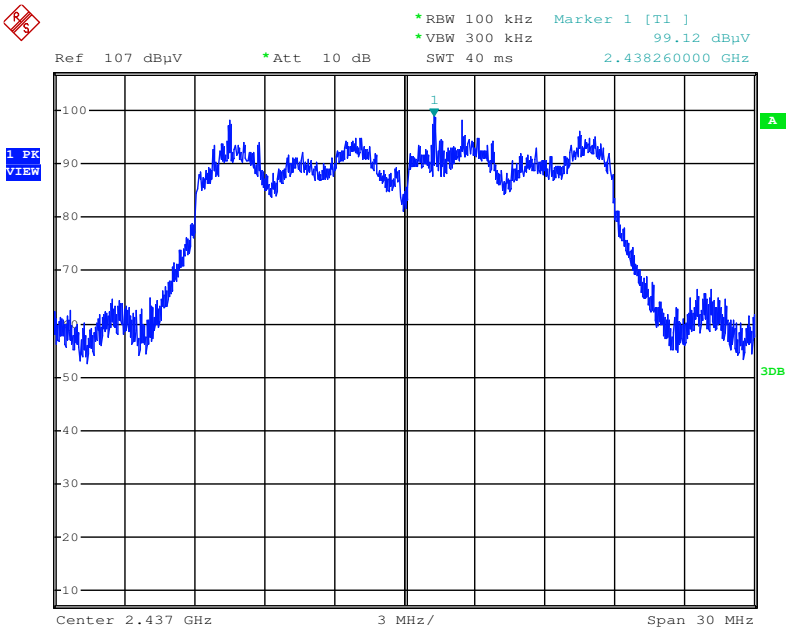
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / Reference Level



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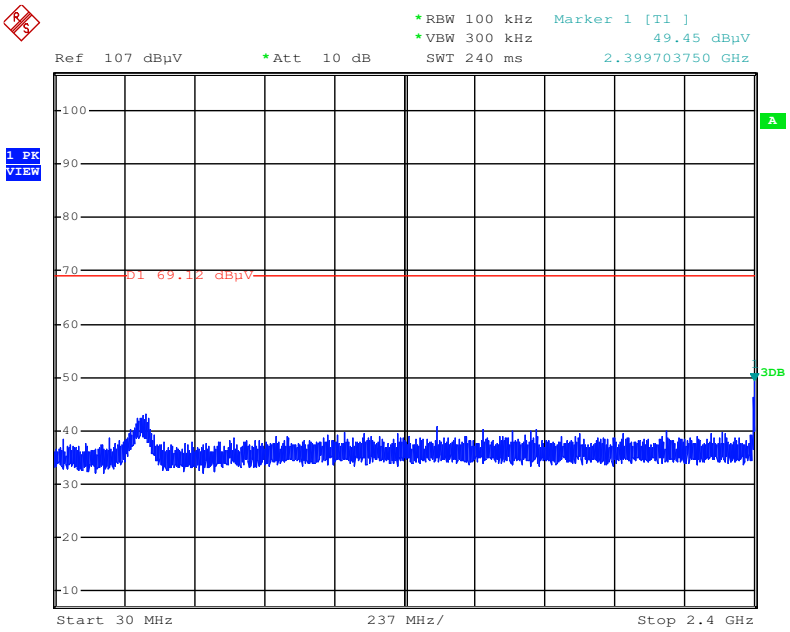
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 1 / 30MHz~2400MHz (down 30dBc)



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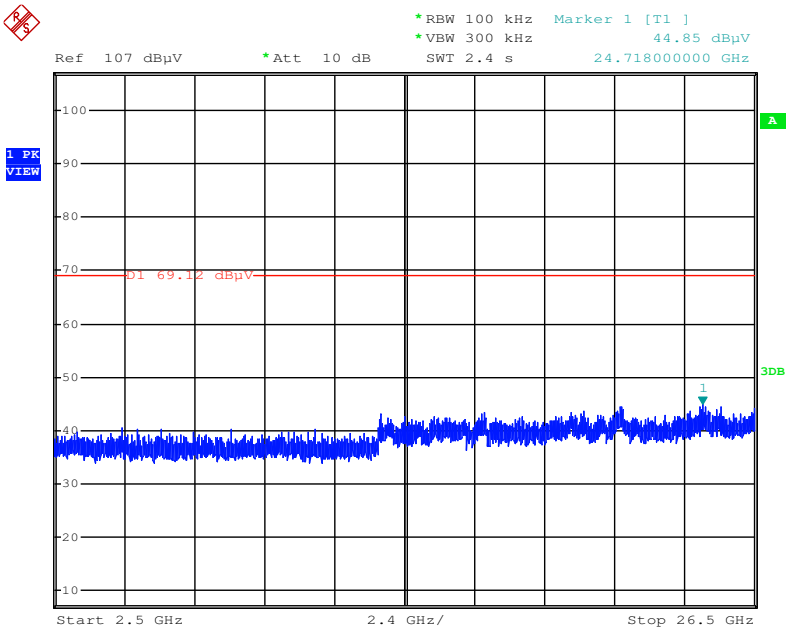
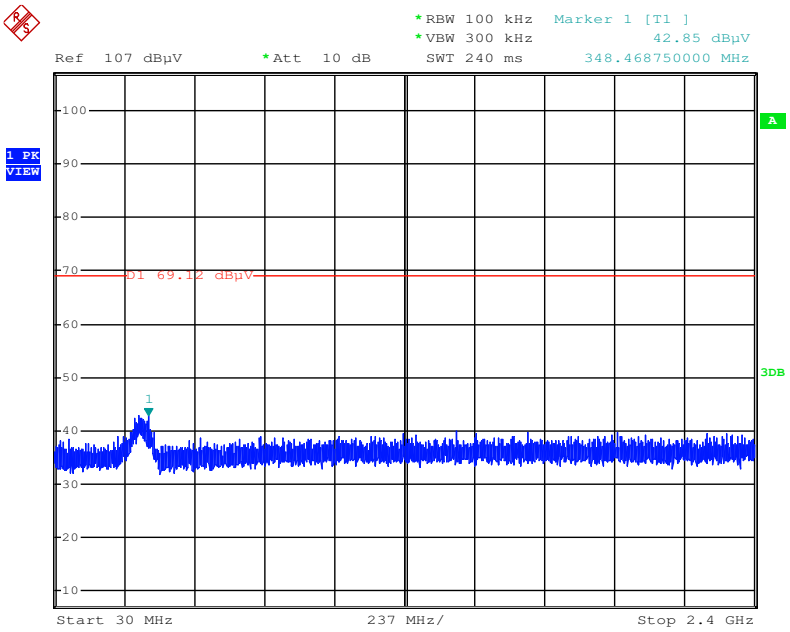
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 1 / 2500MHz~26500MHz (down 30dBc)



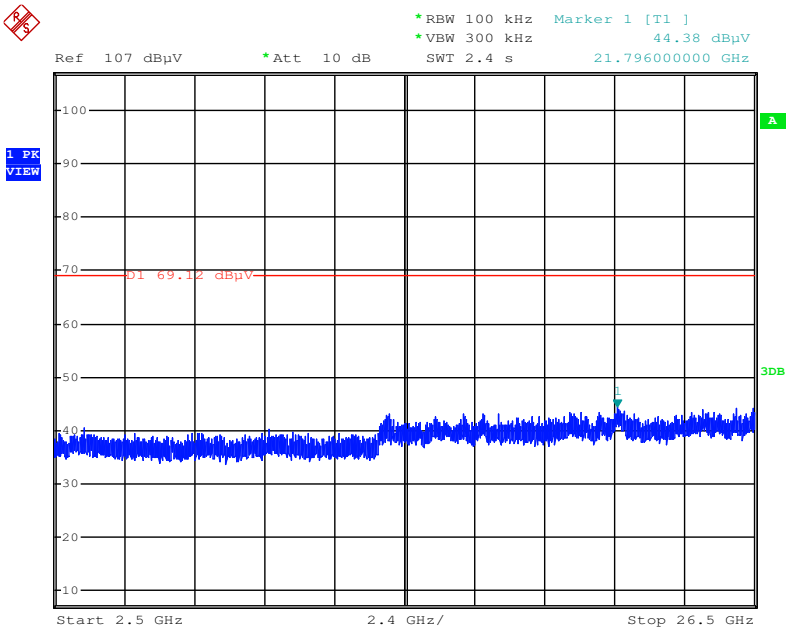
Date: 21.JAN.2016 02:42:17

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 11 / 30MHz~2400MHz (down 30dBc)



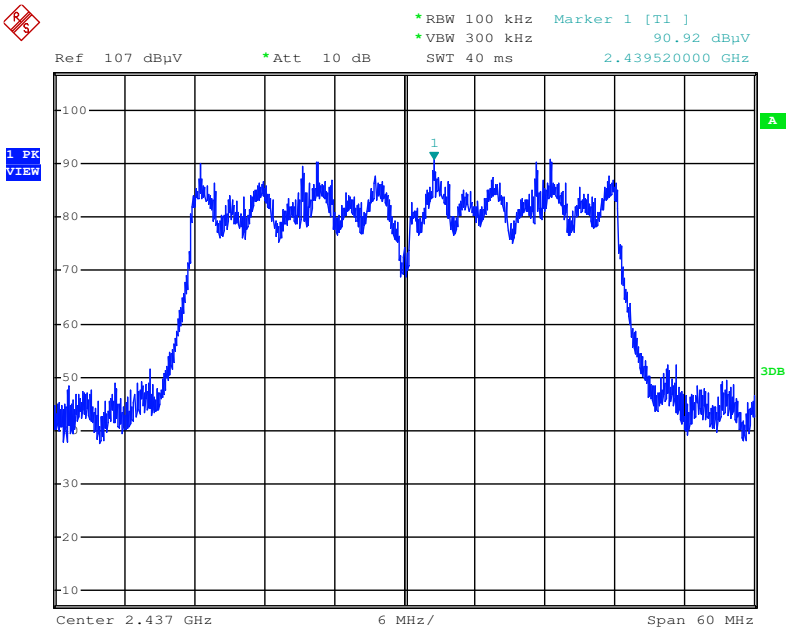
Date: 21.JAN.2016 02:43:06

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 11 / 2500MHz~26500MHz (down 30dBc)



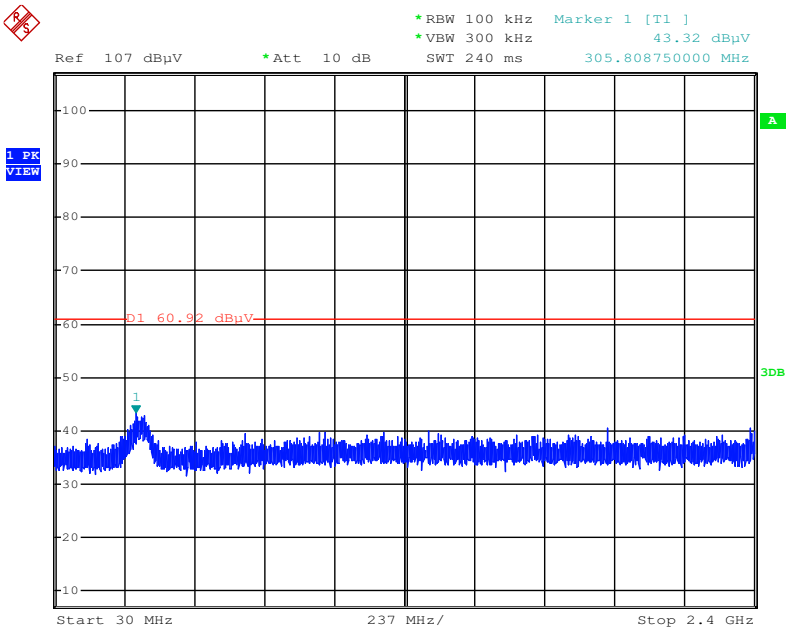
Date: 21.JAN.2016 02:43:36

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHHT40 / Reference Level



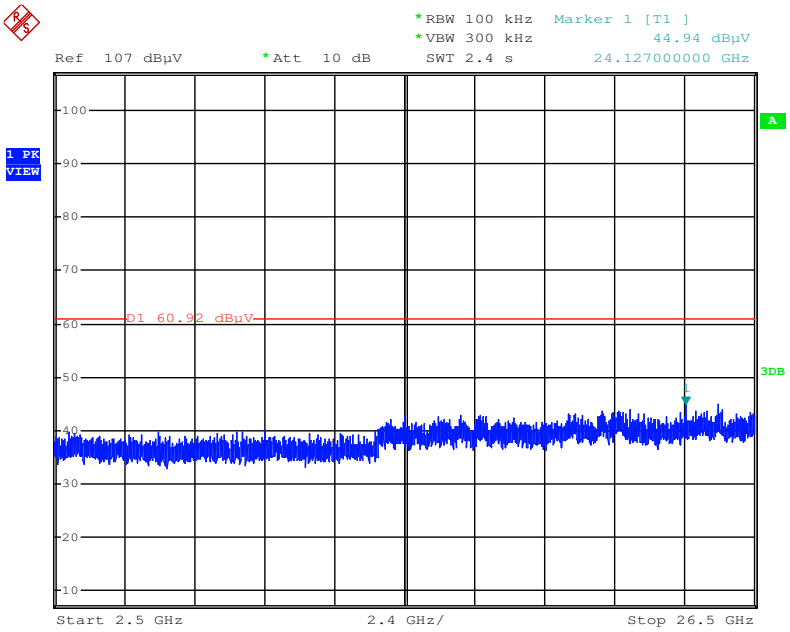
Date: 21.JAN.2016 02:44:48

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 3 / 30MHz~2400MHz (down 30dBc)



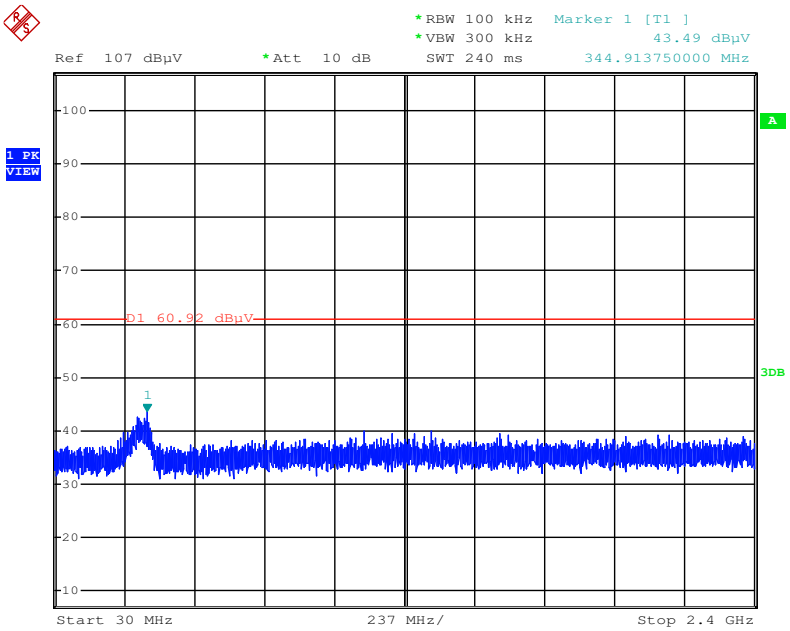
Date: 21.JAN.2016 02:48:11

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 3 / 2500MHz~26500MHz (down 30dBc)



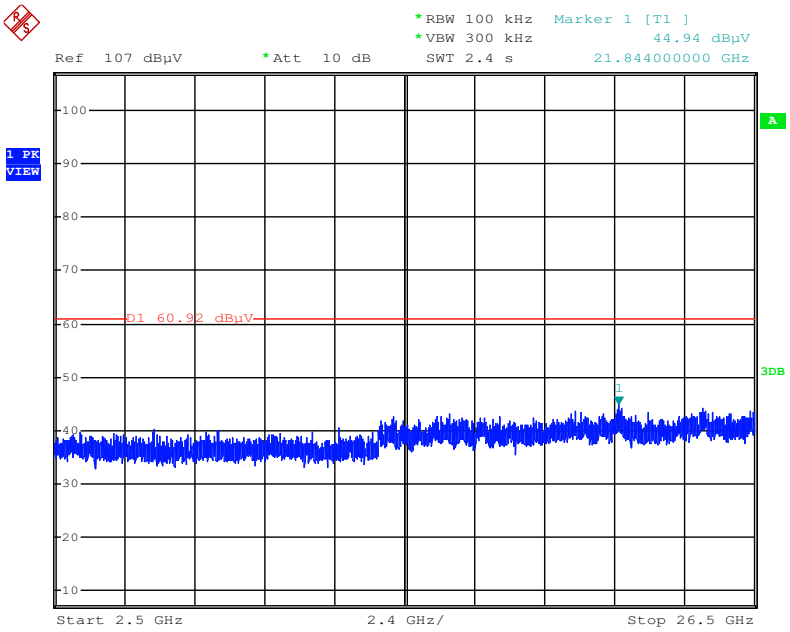
Date: 21.JAN.2016 02:48:41

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 9 / 30MHz~2400MHz (down 30dBc)



Date: 21.JAN.2016 02:49:18

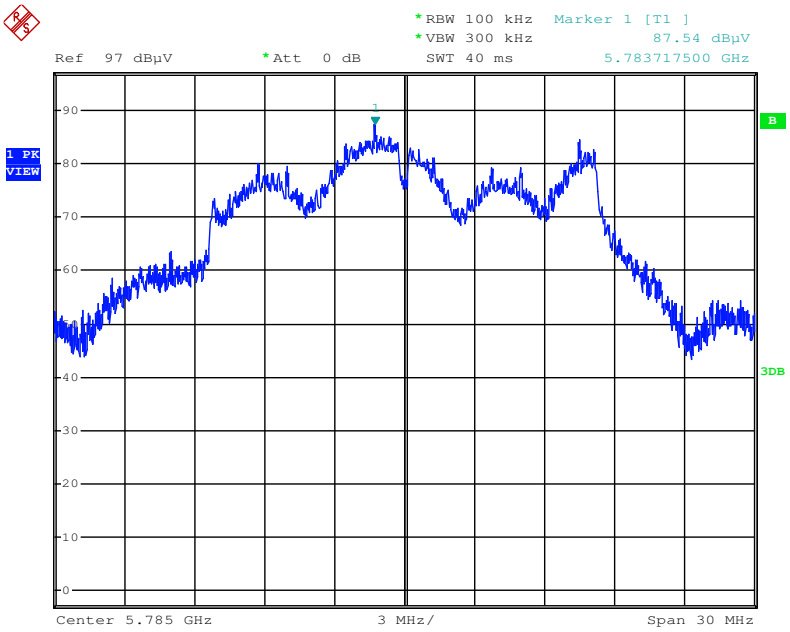
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 9 / 2500MHz~26500MHz (down 30dBc)



Date: 21.JAN.2016 02:49:41

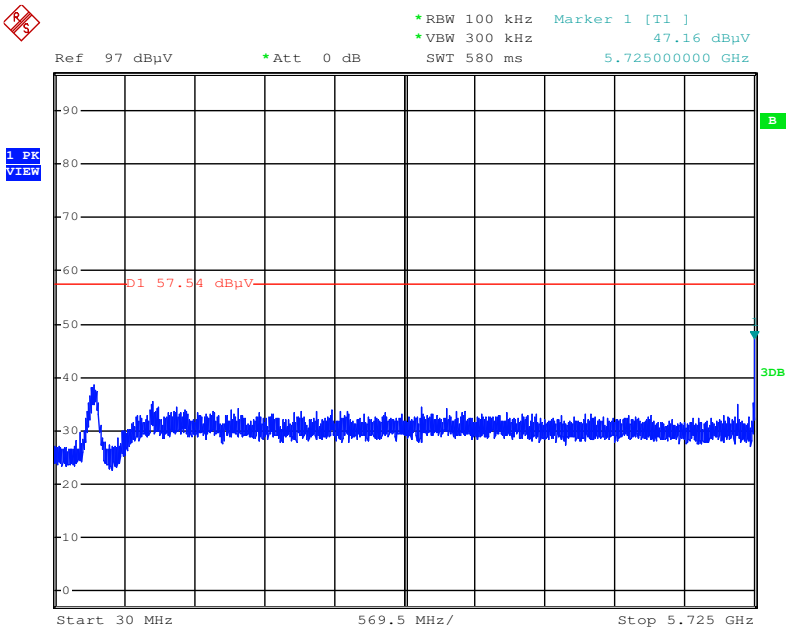
For 5GHz Band:

Plot on Configuration IEEE 802.11a / Reference Level



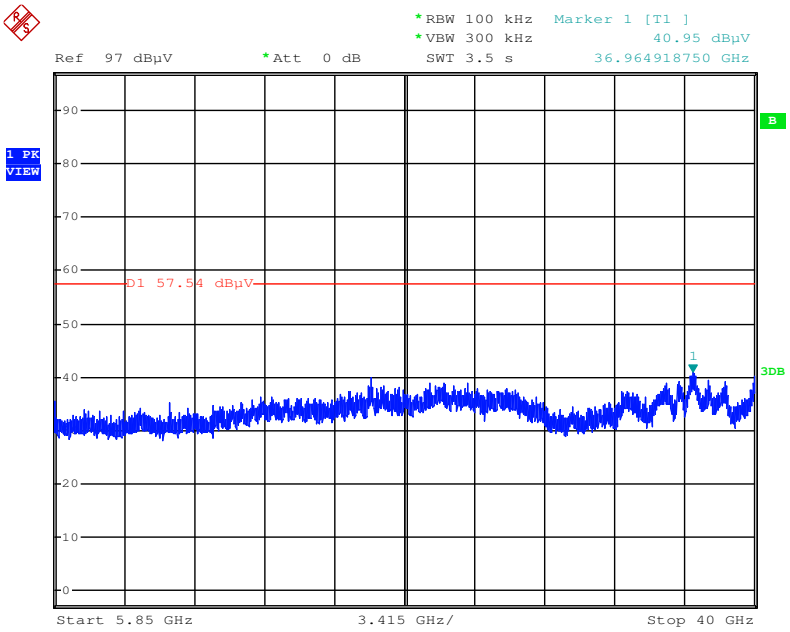
Date: 15.MAR.2016 20:02:53

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



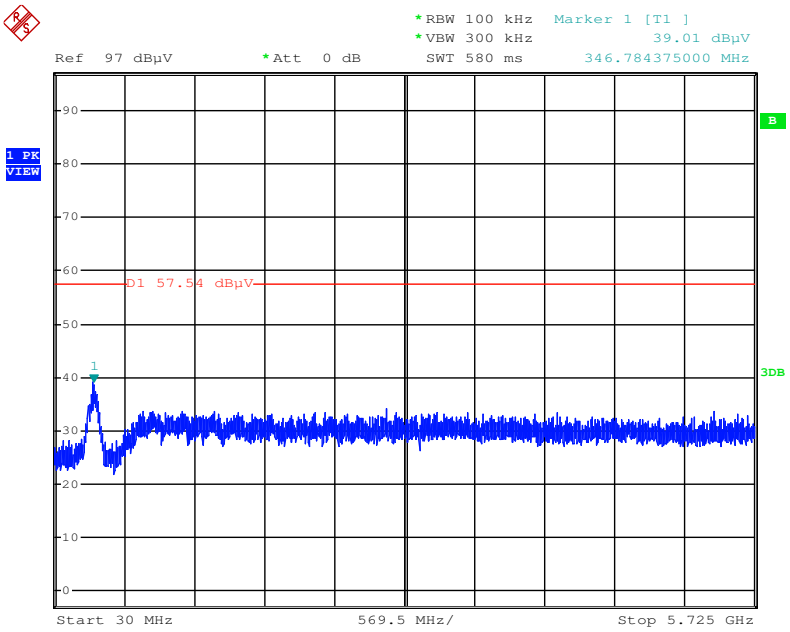
Date: 15.MAR.2016 20:04:26

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



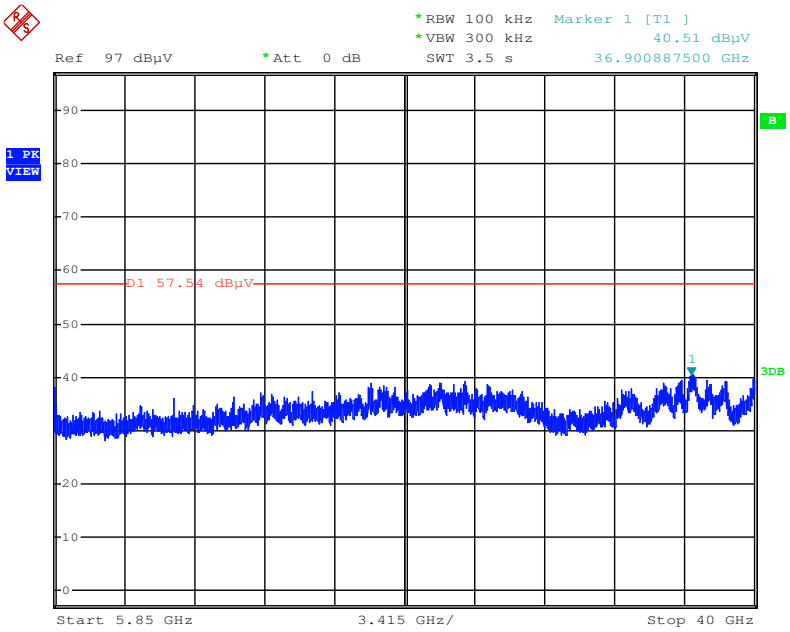
Date: 15.MAR.2016 20:05:28

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



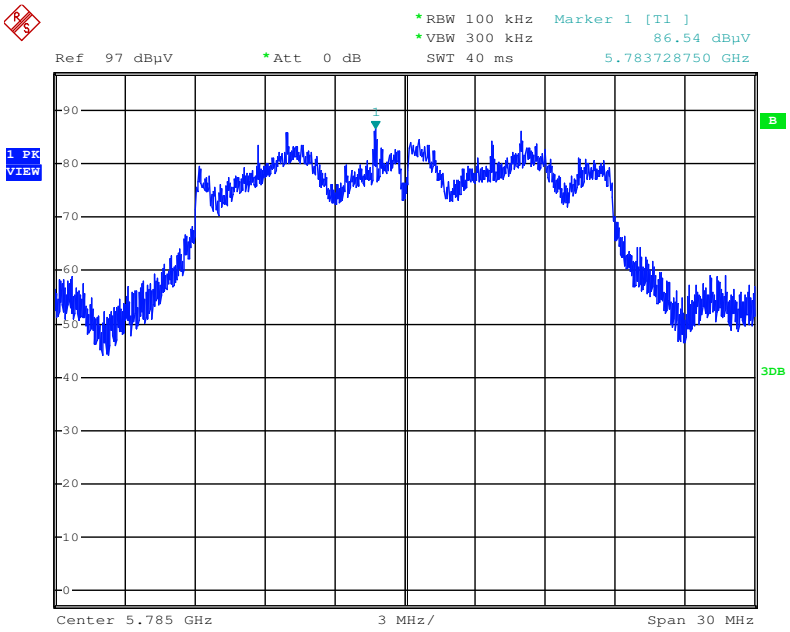
Date: 15.MAR.2016 20:06:56

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



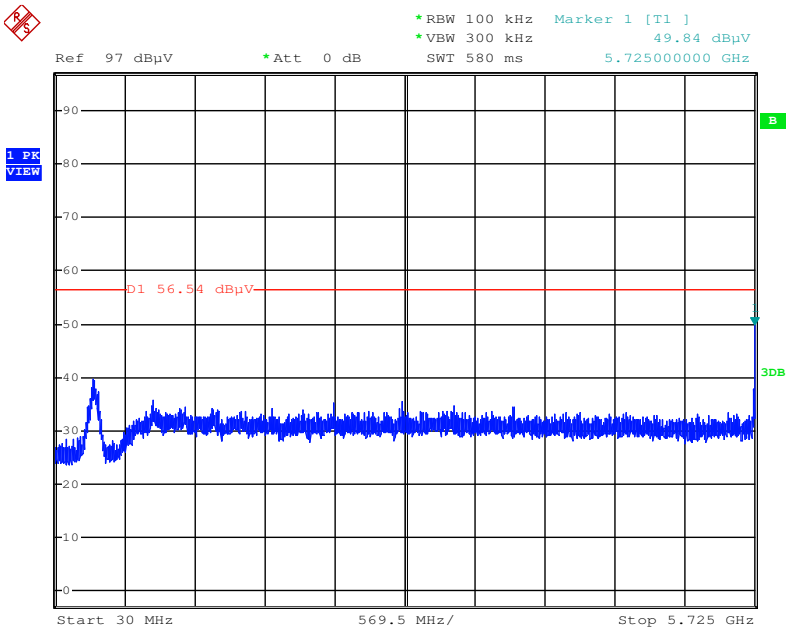
Date: 15.MAR.2016 20:06:17

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



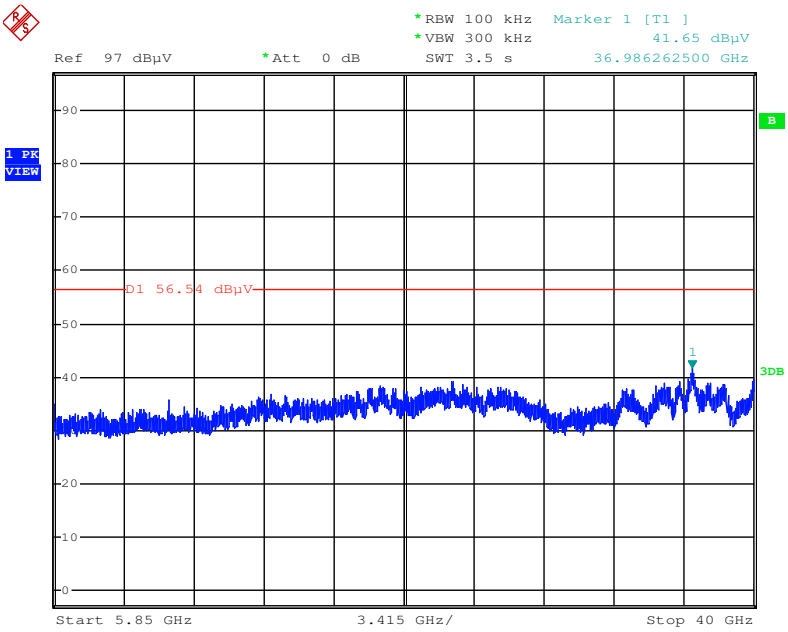
Date: 15.MAR.2016 20:10:36

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



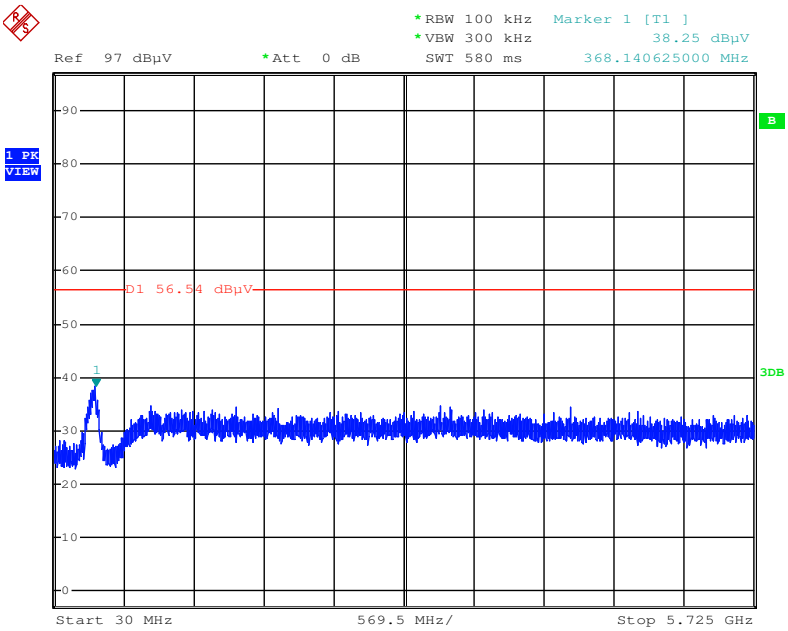
Date: 15.MAR.2016 20:12:48

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



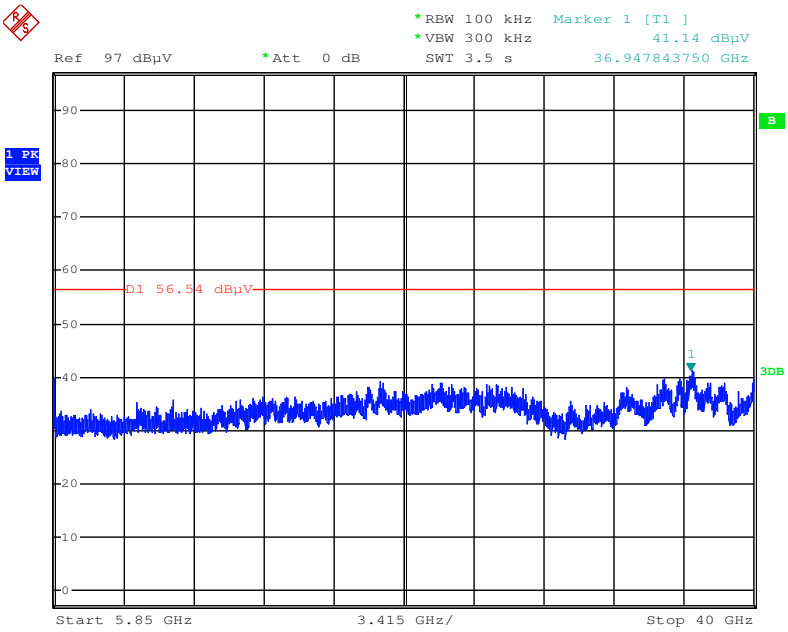
Date: 15.MAR.2016 20:13:53

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



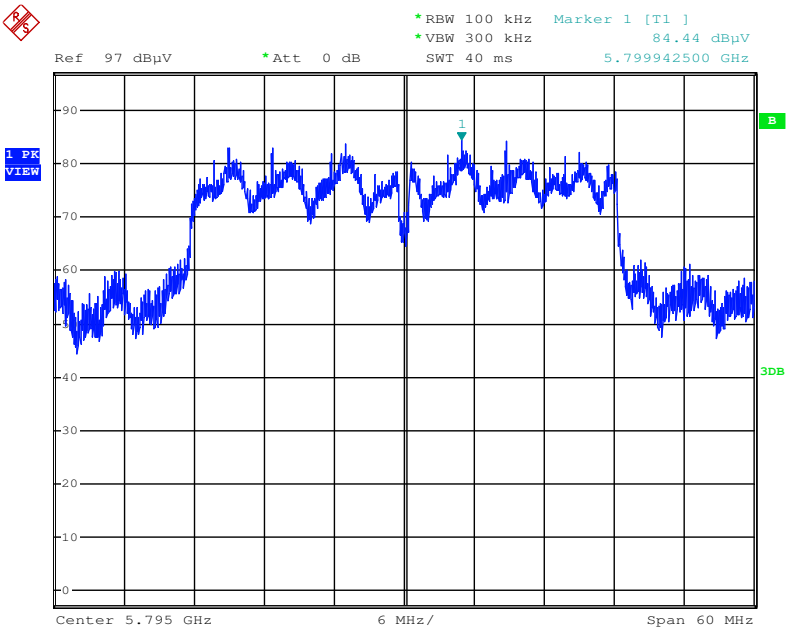
Date: 15.MAR.2016 20:15:22

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



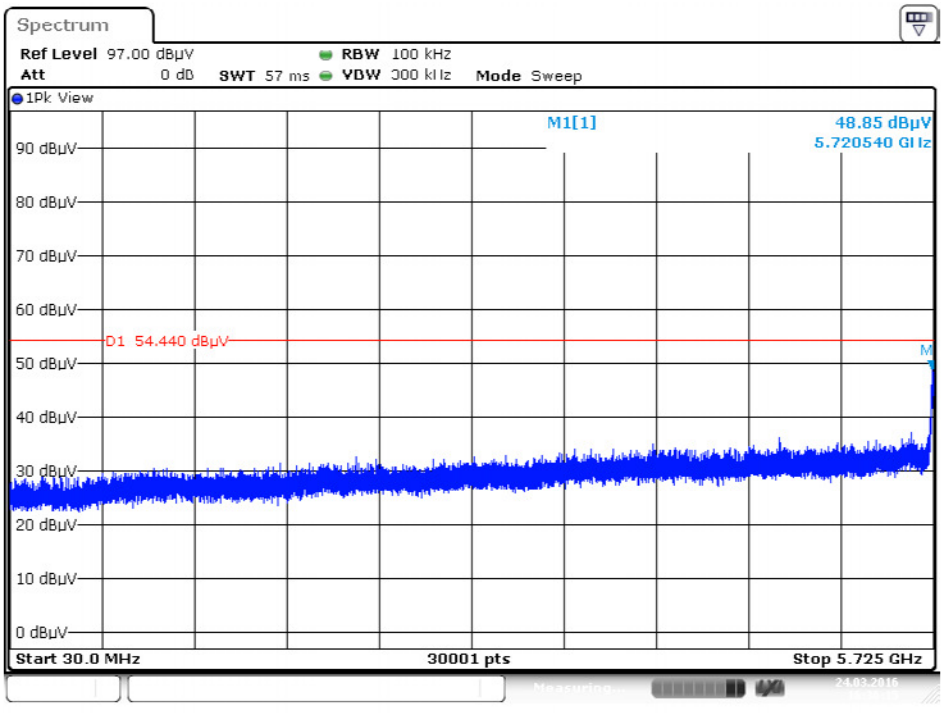
Date: 15.MAR.2016 20:14:42

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



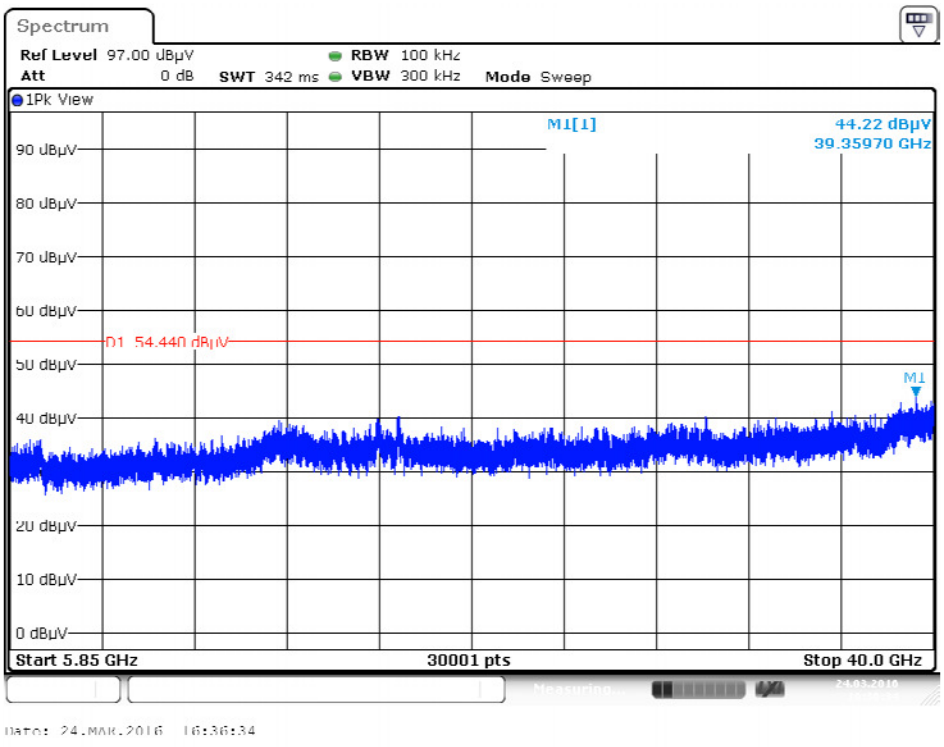
Date: 15.MAR.2016 20:20:37

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

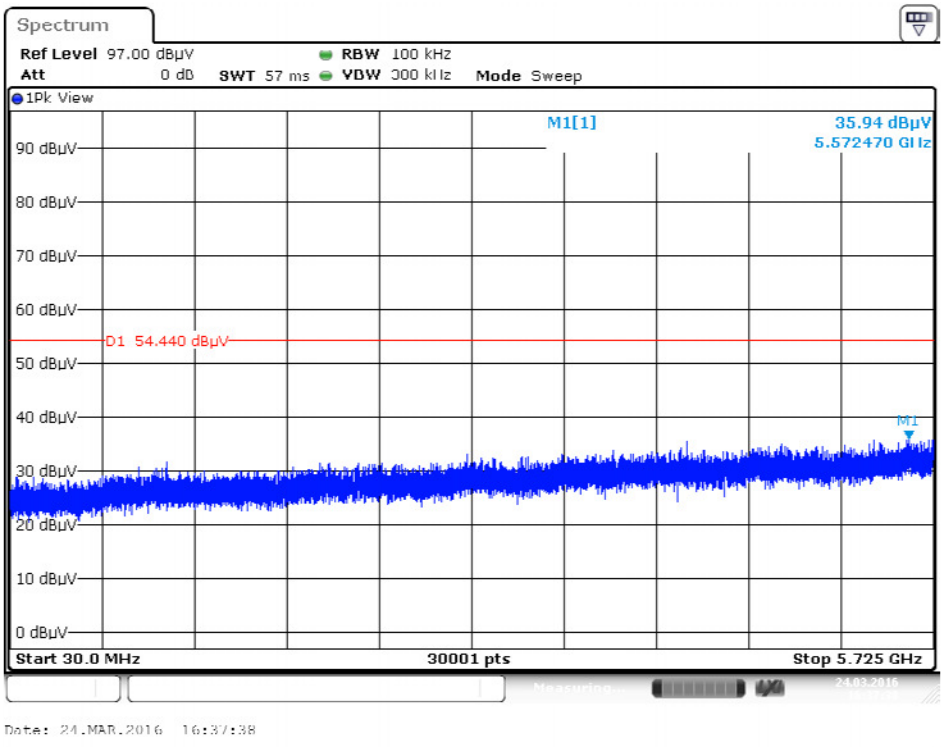


Date: 24.MAR.2016 16:36:15

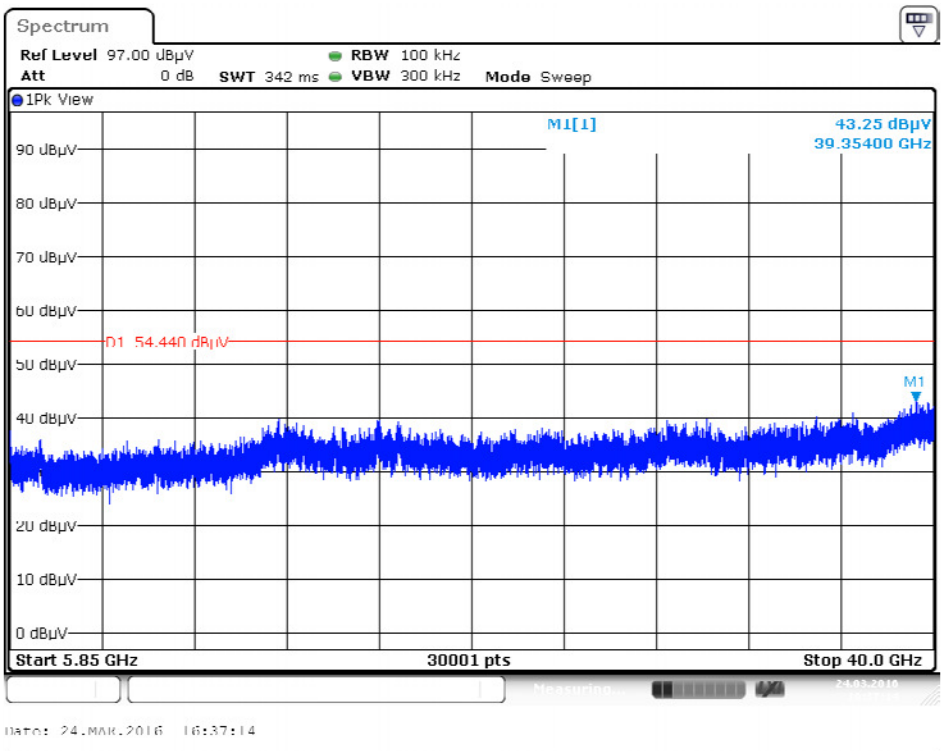
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 151 / 5850MHz~40000MHz (down 30dBc)



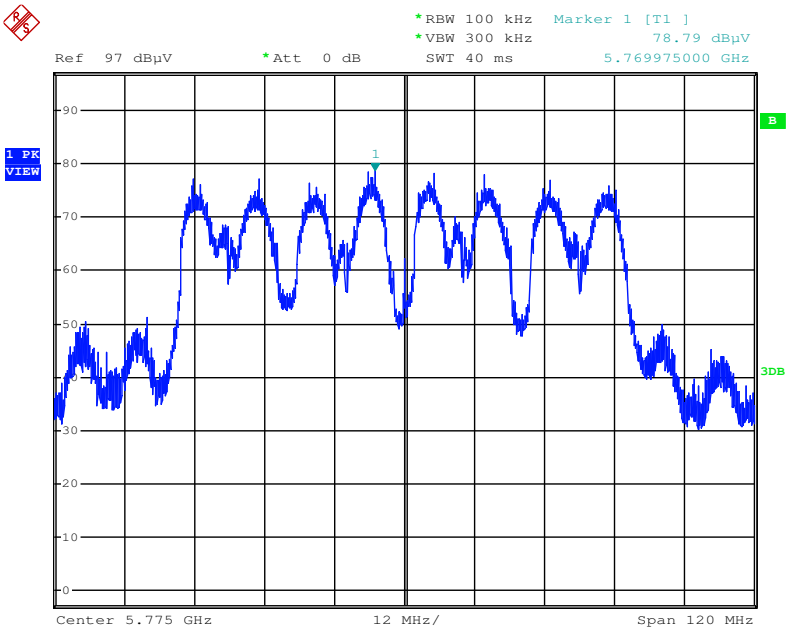
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 159 / 30MHz~5725MHz (down 30dBc)



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

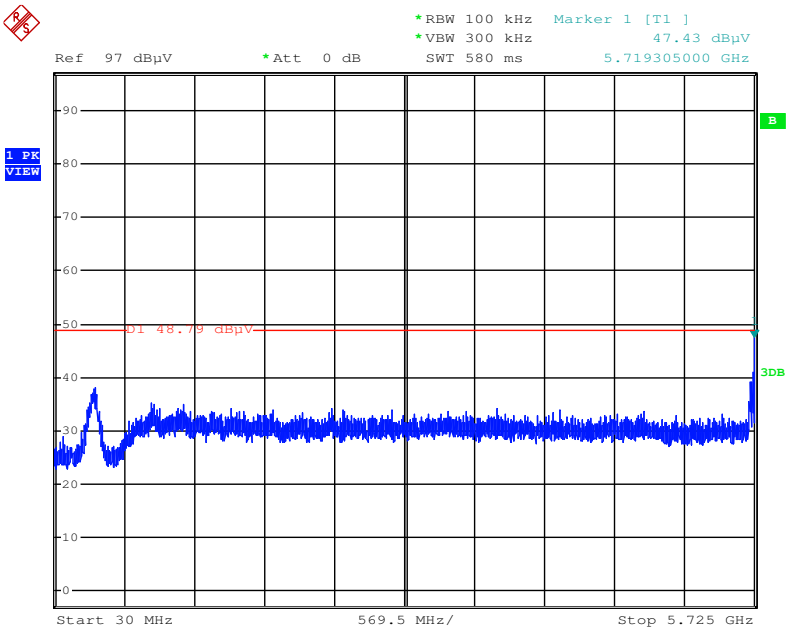


Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / Reference Level



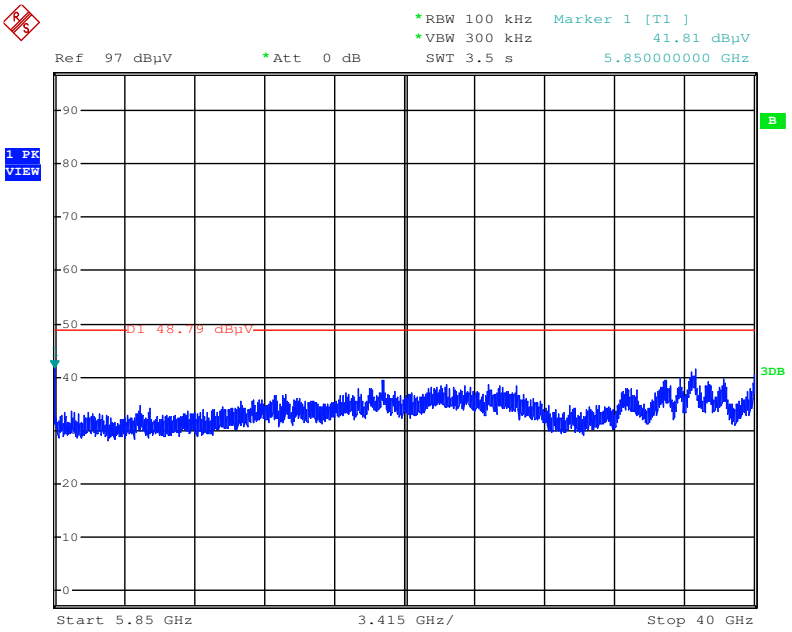
Date: 15.MAR.2016 20:28:22

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



Date: 15.MAR.2016 20:29:11

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

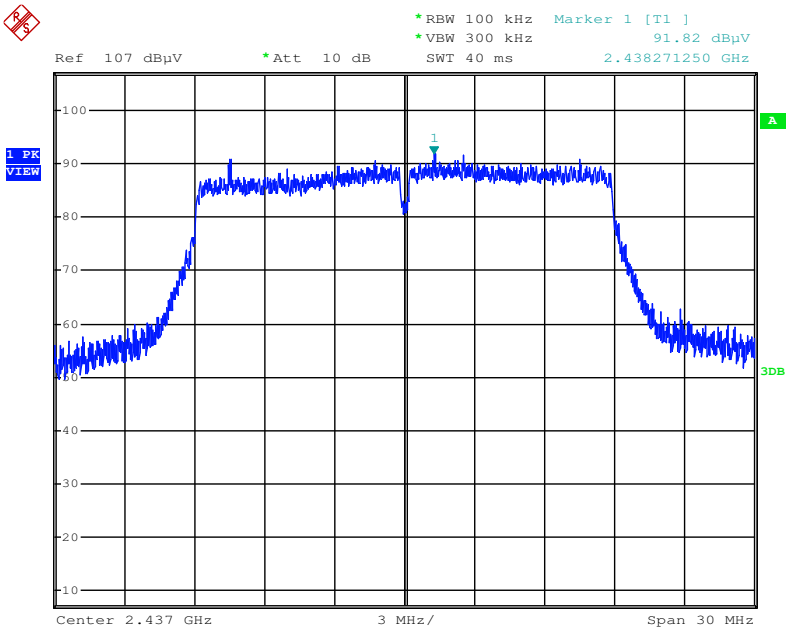


Date: 15.MAR.2016 20:30:07

For beamforming function

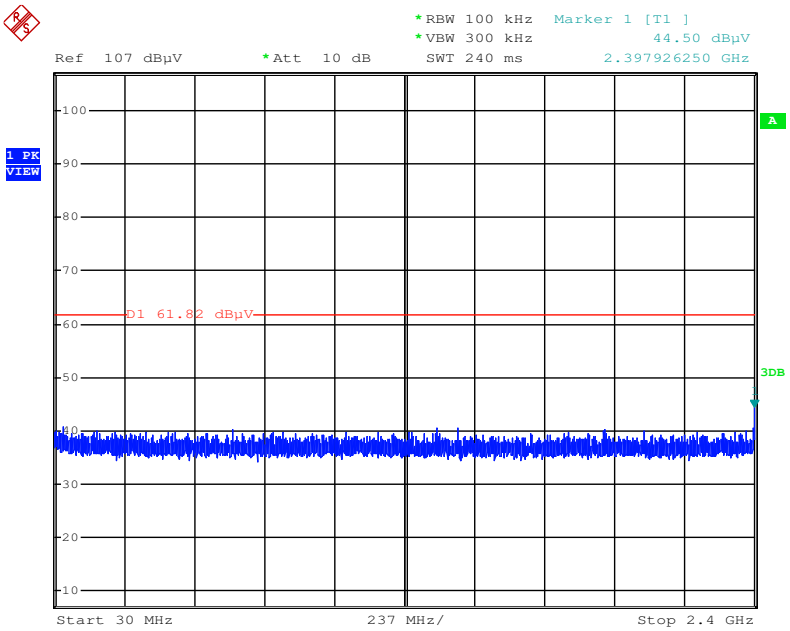
For 2.4GHz Band

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



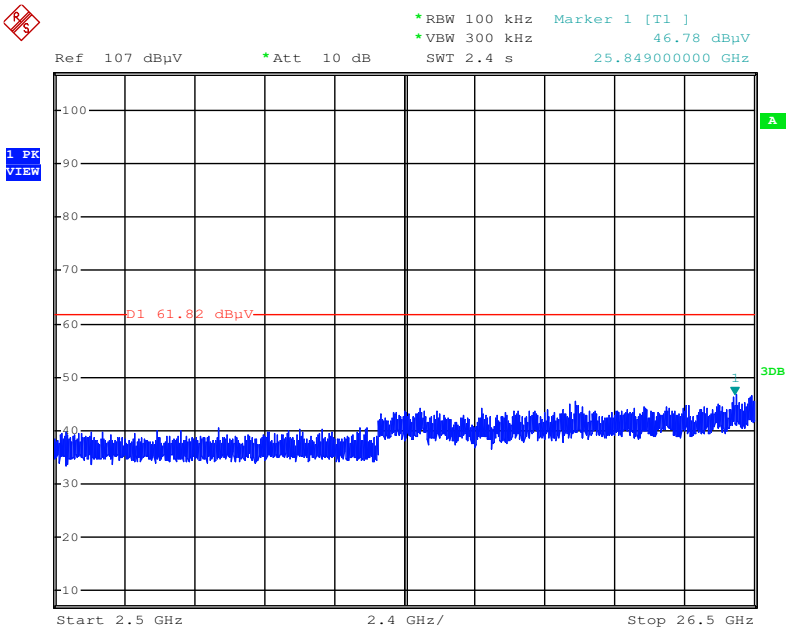
Date: 6.FEB.2016 00:35:46

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 1 / 30MHz~2400MHz (down 30dBc)



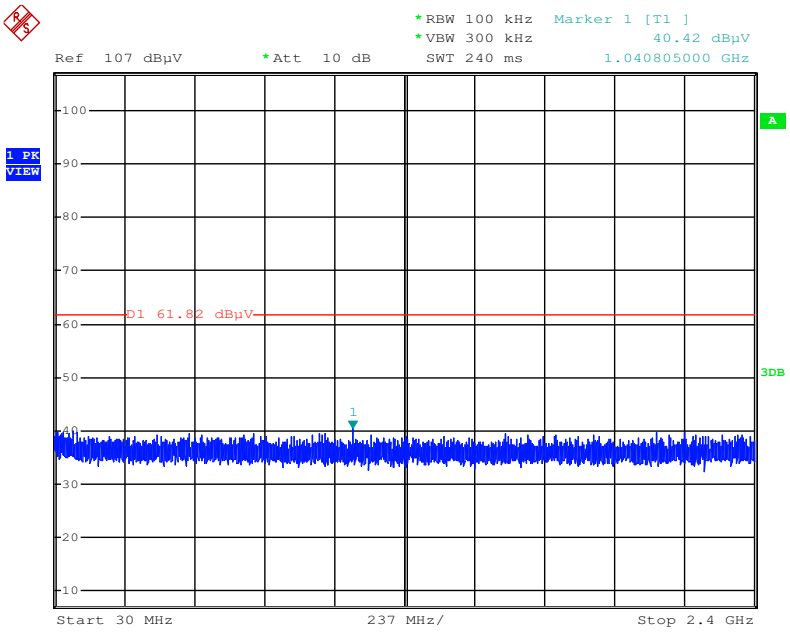
Date: 6.FEB.2016 00:39:45

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 1 / 2500MHz~26500MHz (down 30dBc)



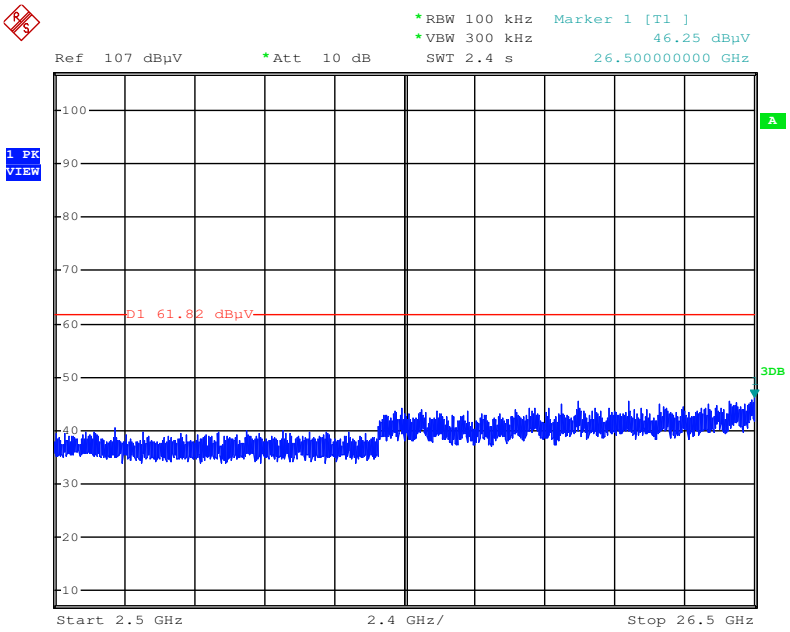
Date: 6.FEB.2016 00:40:41

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 11 / 30MHz~2400MHz (down 30dBc)



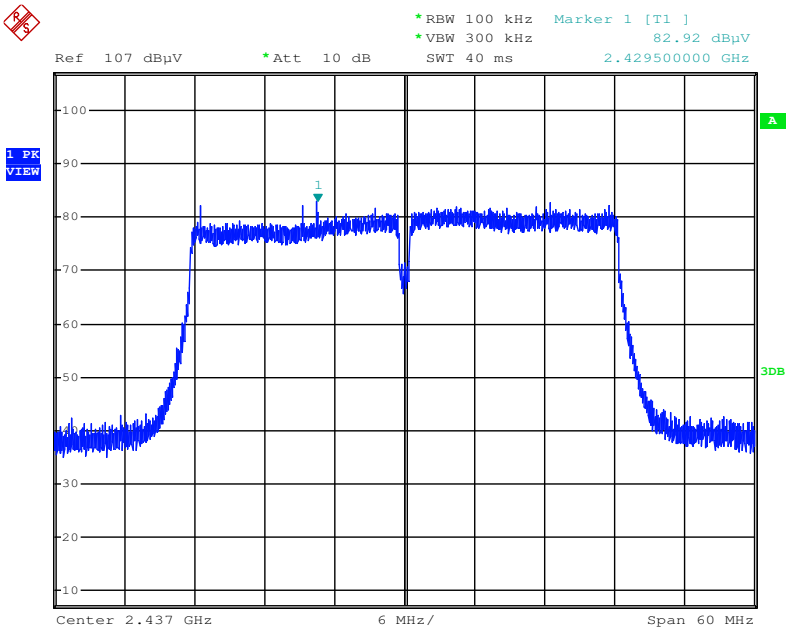
Date: 6.FEB.2016 00:50:10

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 11 / 2500MHz~26500MHz (down 30dBc)



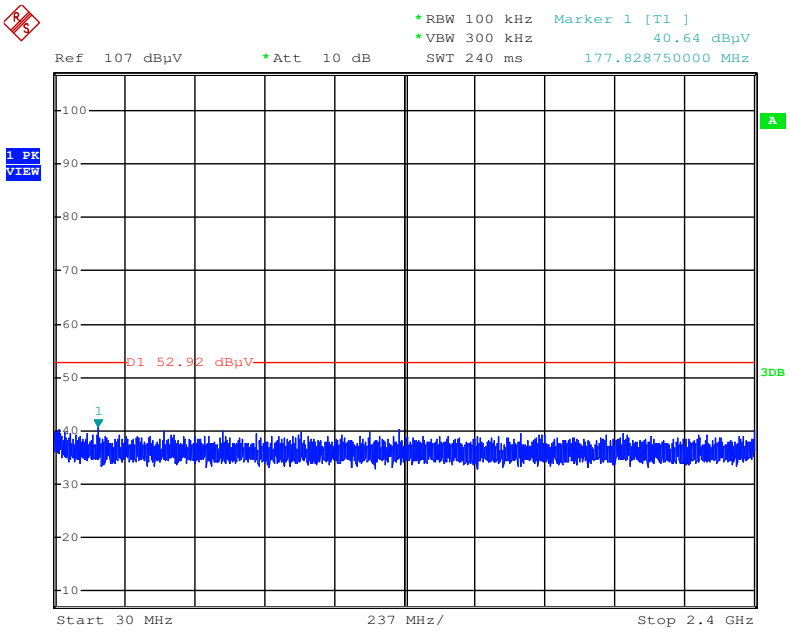
Date: 6.FEB.2016 00:50:37

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHHT40 / Reference Level



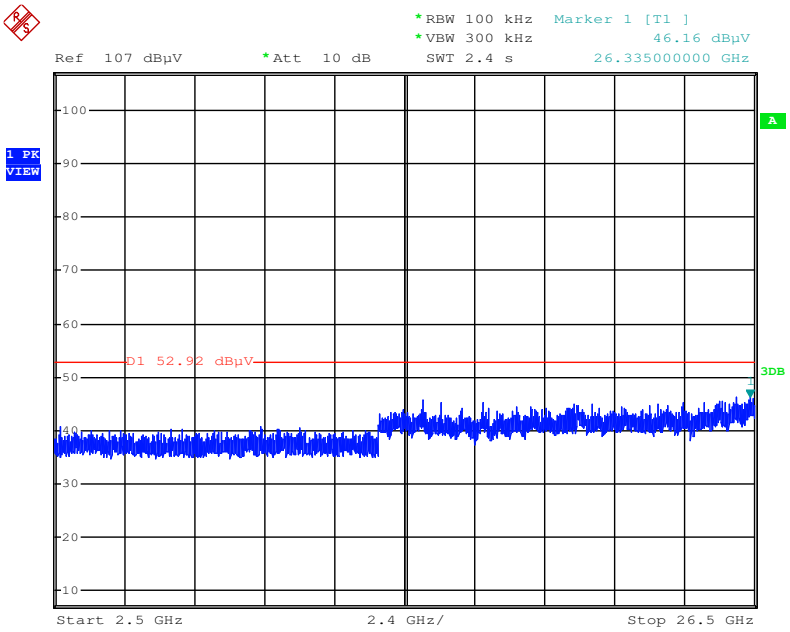
Date: 6.FEB.2016 00:52:50

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 3 / 30MHz~2400MHz (down 30dBc)



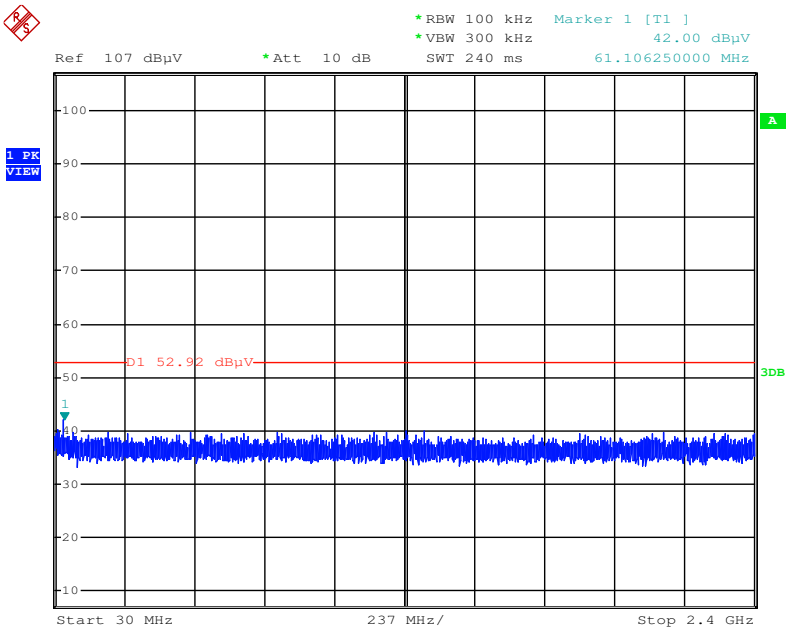
Date: 6.FEB.2016 00:54:44

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 3 / 2500MHz~26500MHz (down 30dBc)



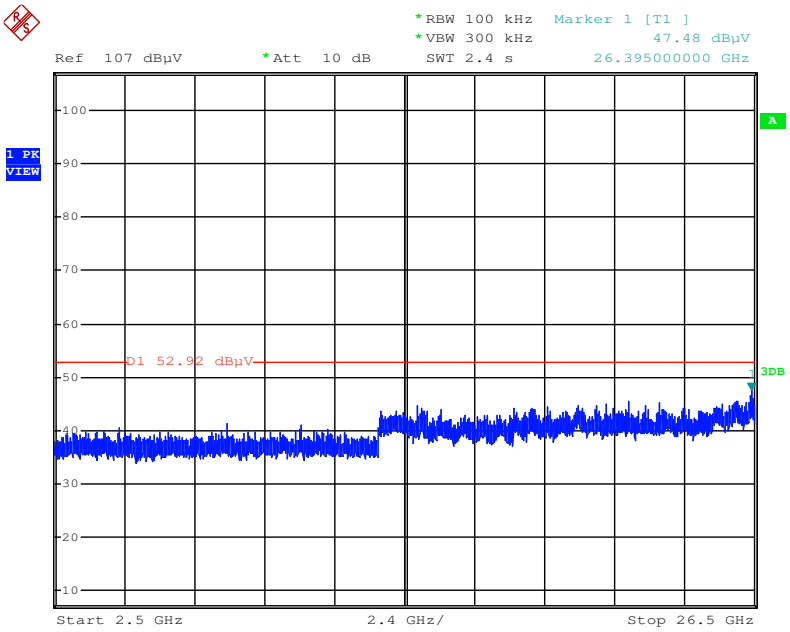
Date: 6.FEB.2016 00:55:14

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 9 / 30MHz~2400MHz (down 30dBc)



Date: 6.FEB.2016 00:56:43

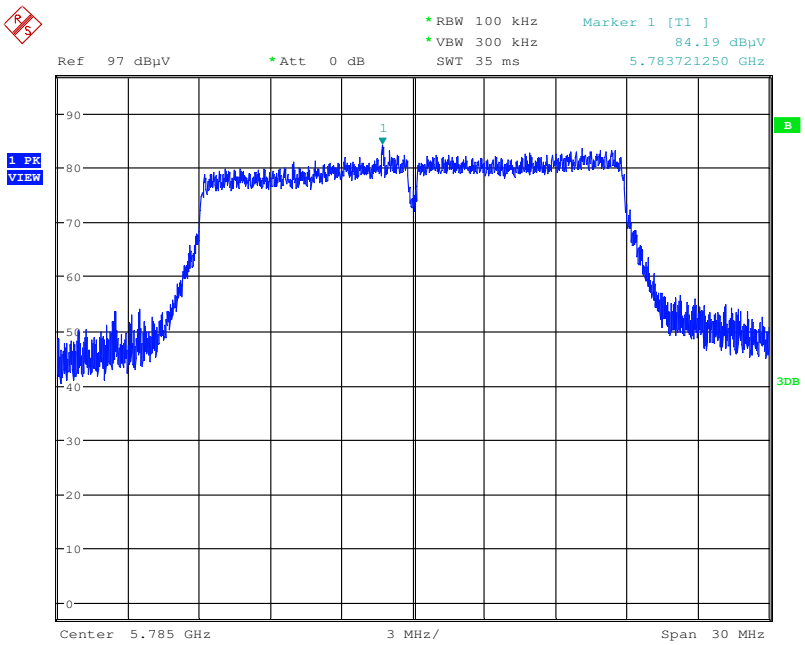
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 9 / 2500MHz~26500MHz (down 30dBc)



Date: 6.FEB.2016 00:57:08

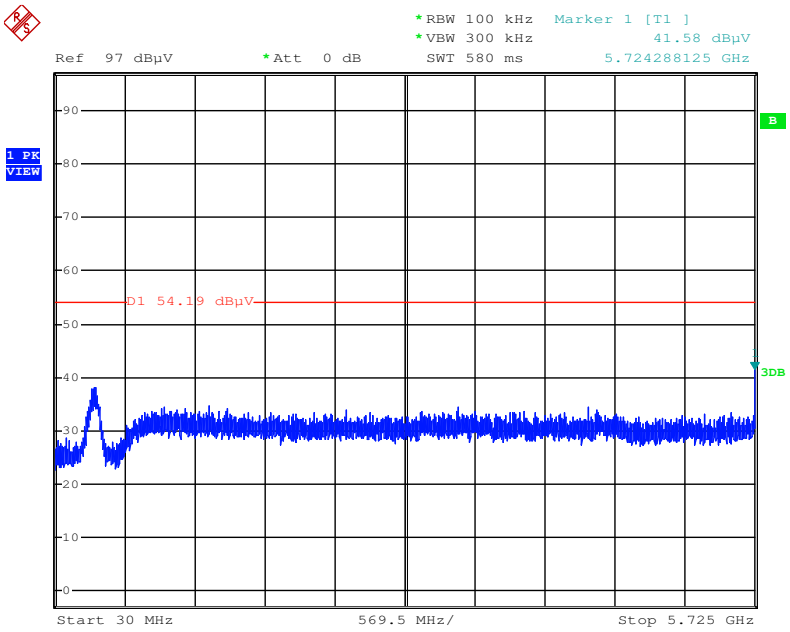
For 5GHz Band:

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



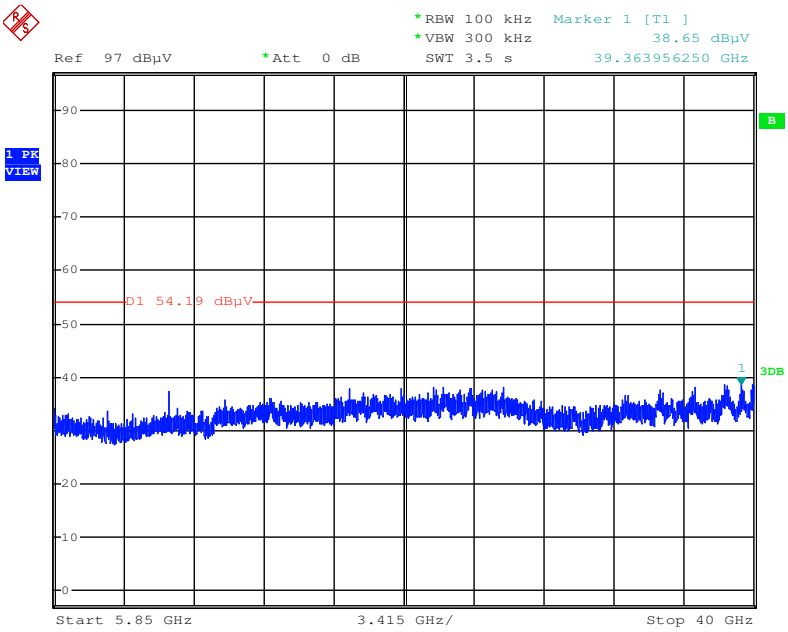
Date: 9.MAR.2016 16:24:01

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



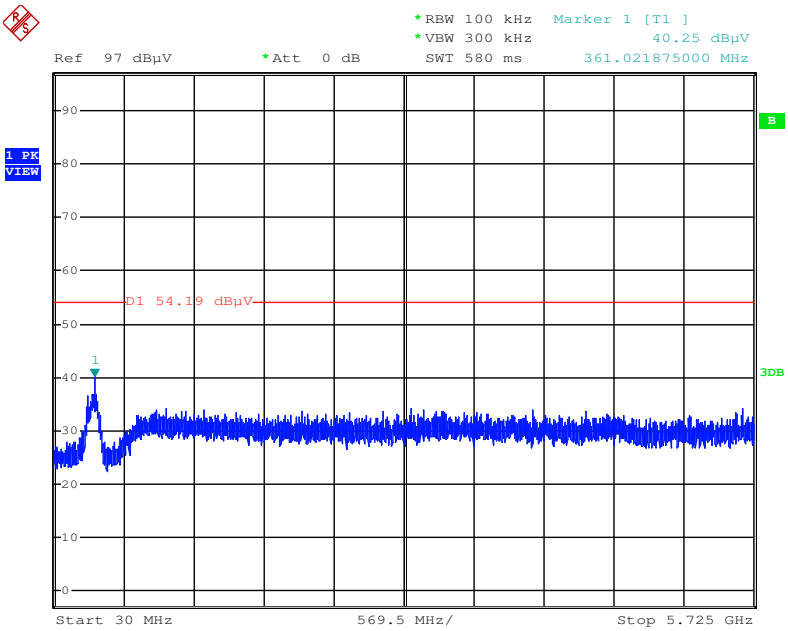
Date: 9.MAR.2016 16:15:11

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



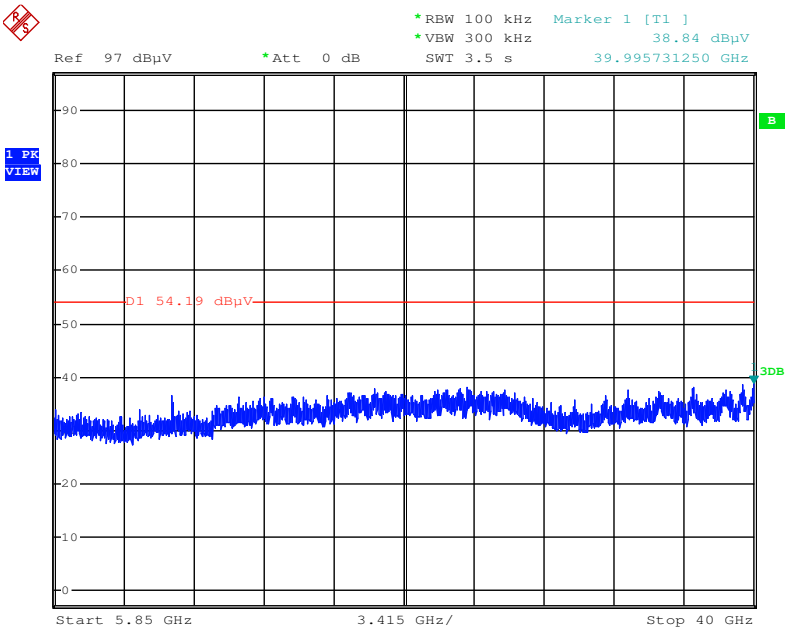
Date: 9.MAR.2016 16:22:43

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



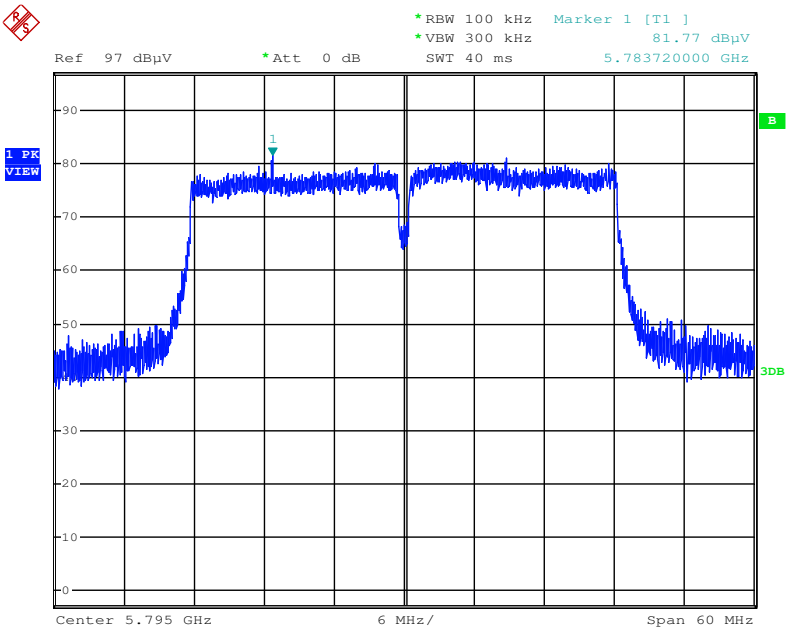
Date: 9.MAR.2016 16:16:53

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



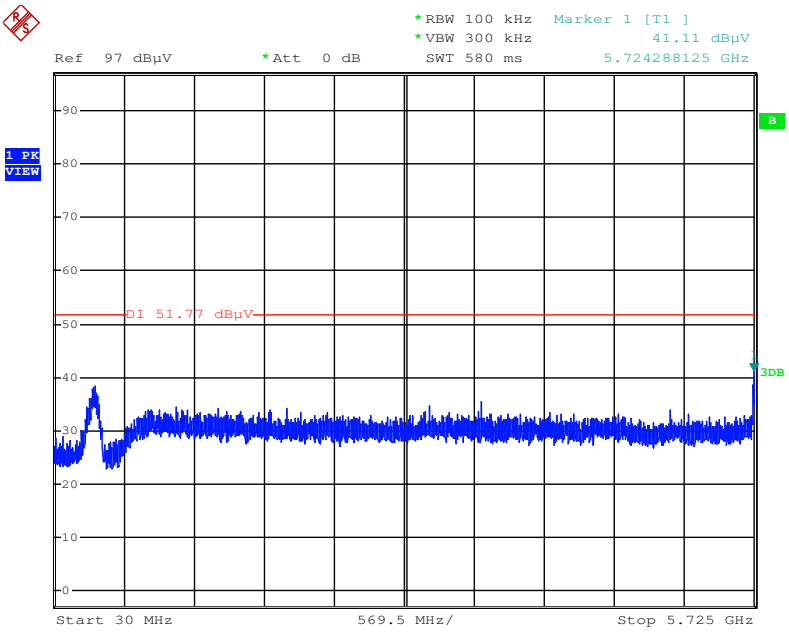
Date: 9.MAR.2016 16:21:43

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



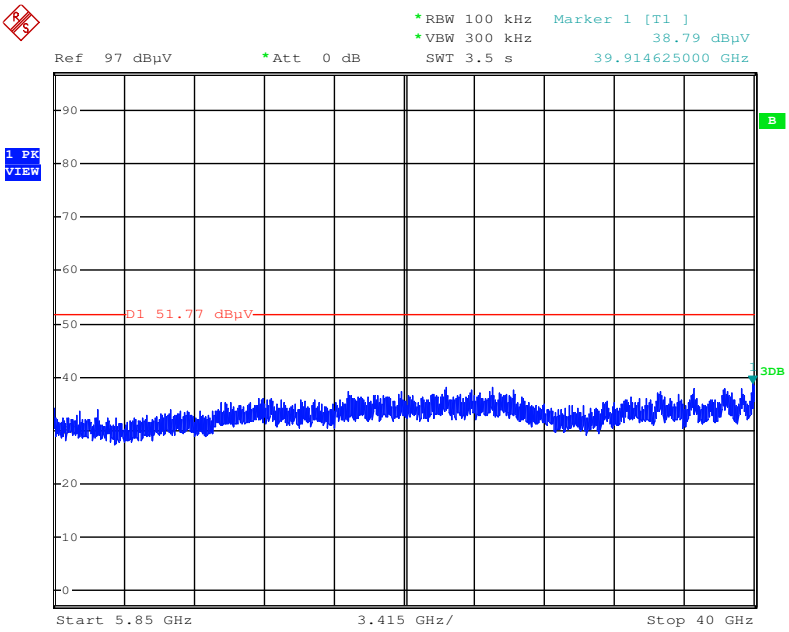
Date: 9.MAR.2016 16:23:48

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



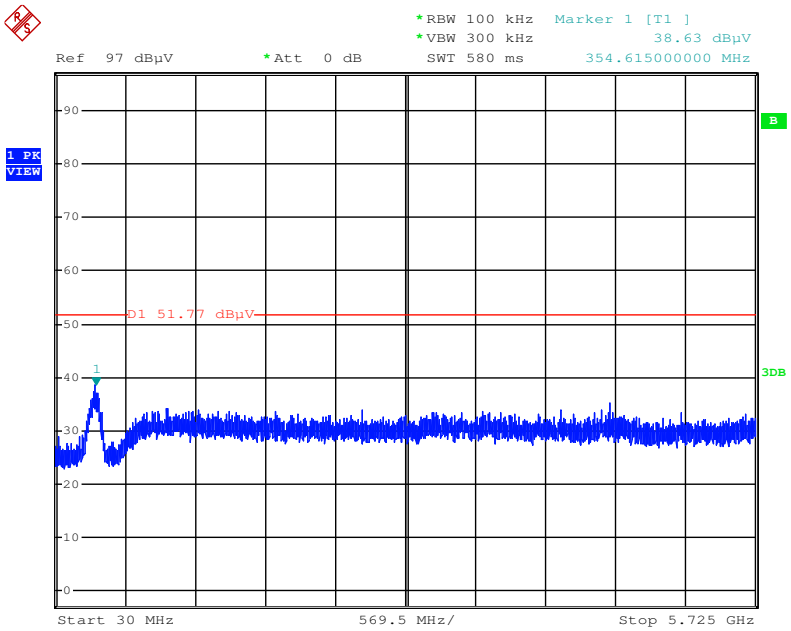
Date: 9.MAR.2016 16:26:41

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



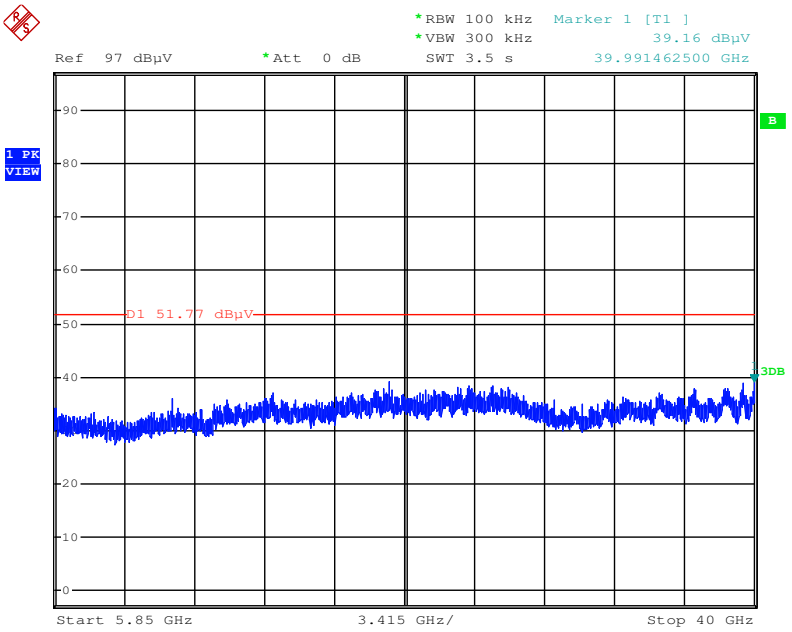
Date: 9.MAR.2016 16:26:09

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



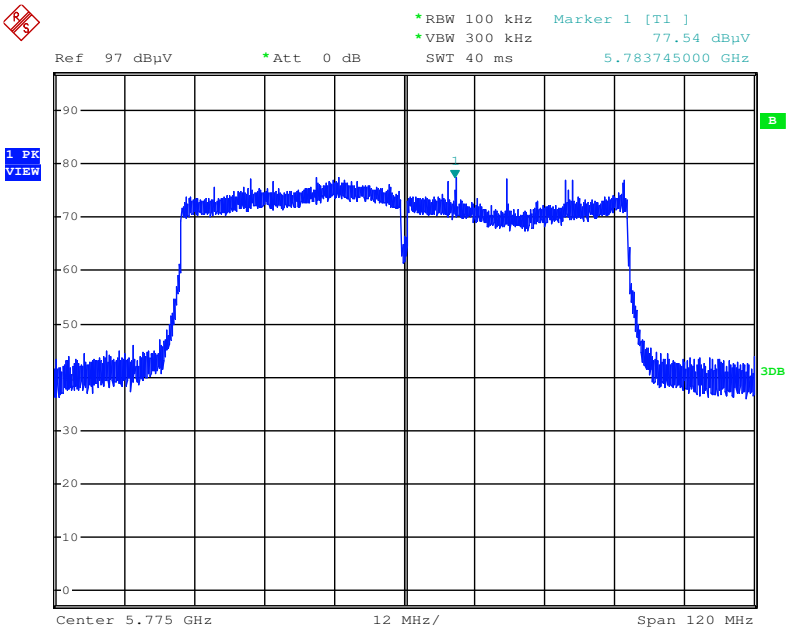
Date: 9.MAR.2016 16:24:29

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



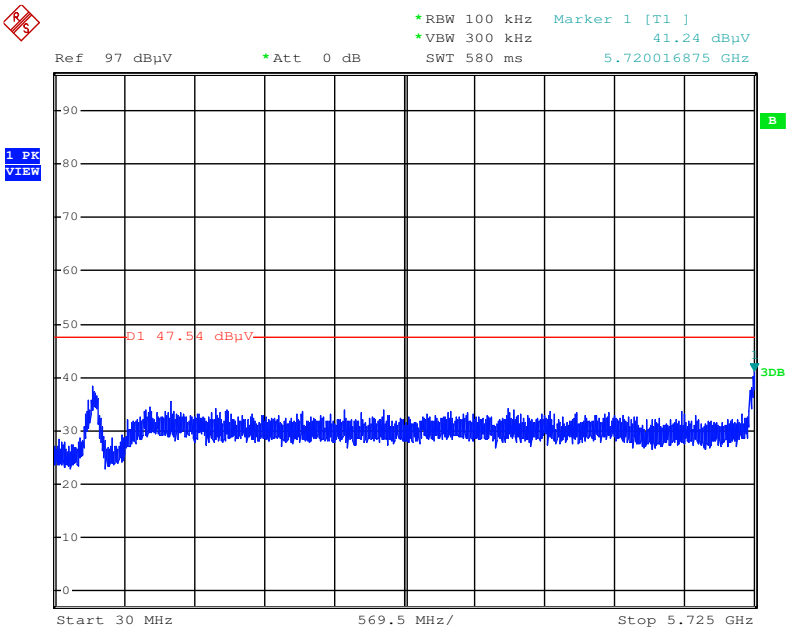
Date: 9.MAR.2016 16:25:10

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



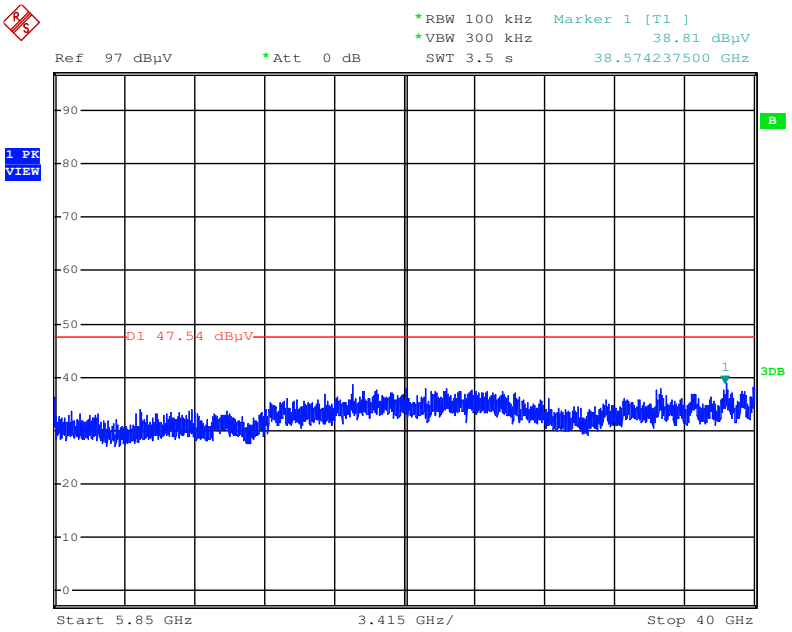
Date: 9.MAR.2016 16:30:32

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



Date: 9.MAR.2016 16:31:25

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



Date: 9.MAR.2016 16:31:56

4.7. Antenna Requirements

4.7.1. Limit

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

4.7.2. Antenna Connector Construction

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

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Test Receiver	R&S	ESCS 30	100355	9kHz ~ 2.75GHz	Apr. 22, 2015	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 08, 2015	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Dec. 23, 2015	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	May 25, 2015	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	37880	20MHz ~ 2GHz	Sep. 03, 2015	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 16, 2016*	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Oct. 22, 2015	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2015	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Feb. 24, 2015	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10940	0.1MHz ~ 1.3GHz	Feb. 24, 2016	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 18, 2016	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 13, 2015	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Oct. 27, 2015	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100142	9kHz~40GHz	Oct. 13, 2015	Radiation (03CH01-CB)
EMI Test Receiver	Rohde&Schwarz	ESCI	100186	9kHz ~ 3GHz	Jul. 14, 2015	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz ~ 1 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-17	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
Test Software	Audix	E3	6.2009-I0-7	N/A	N/A	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 09, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 02, 2015	Conducted (TH01-CB)

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

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

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

6. MEASUREMENT UNCERTAINTY

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