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FCC RADIO TEST REPORT

Applicant's company	Linksys LLC
Applicant Address	121 Theory Drive, Irvine, CA 92617, USA
FCC ID	Q87-EA9500V11

Product Name	Linksys Tri-Band Wireless-AC Router
Brand Name	LINKSYS
Model No.	EA9500 V1.1 , EA9400
Test Rule	47 CFR FCC Part 15 Subpart C § 15.247
Test Freq. Range	2400 ~ 2483.5MHz
Received Date	Aug. 05, 2015
Final Test Date	May 17, 2016
Submission Type	Original Equipment

Statement

Test result included in this report is for the IEEE 802.11n/ac and IEEE 802.11b/g of the product.

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

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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 v03r05 and KDB 662911 D01 v02r01.**

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



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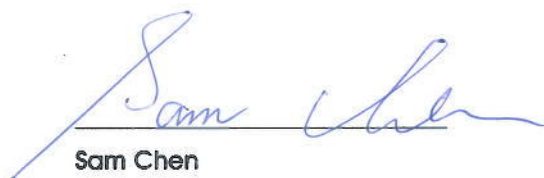
History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR581108-01AA	Rev. 01	Initial issue of report	Jun. 06, 2016

1. VERIFICATION OF COMPLIANCE

Product Name : Linksys Tri-Band Wireless-AC Router
Brand Name : LINKSYS
Model No. : EA9500 V1.1 , EA9400
Applicant : Linksys LLC
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 Aug. 05, 2015 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.



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	16.67 dB
4.2	15.247(b)(3)	Maximum Conducted Output Power	Complies	0.06 dB
4.3	15.247(e)	Power Spectral Density	Complies	3.15 dB
4.4	15.247(a)(2)	6dB Spectrum Bandwidth	Complies	-
4.5	15.247(d)	Radiated Emissions	Complies	0.65 dB
4.6	15.247(d)	Band Edge Emissions	Complies	0.06 dB
4.7	15.203	Antenna Requirements	Complies	-

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Product Type	WLAN (4TX, 4RX)
Radio Type	Intentional Transceiver
Power Type	From power adapter
Modulation	IEEE 802.11b: DSSS IEEE 802.11g: OFDM IEEE 802.11n/ac: see the below table
Data Modulation	IEEE 802.11b: DSSS (BPSK / QPSK / CCK) IEEE 802.11g/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) IEEE 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM, 1024QAM)
Data Rate (Mbps)	IEEE 802.11b: DSSS (1/ 2/ 5.5/11) IEEE 802.11g: OFDM (6/9/12/18/24/36/48/54) IEEE 802.11n/ac: see the below table
Frequency Range	2400 ~ 2483.5MHz
Channel Number	11 for 20MHz bandwidth ; 7 for 40MHz bandwidth
Channel Band Width (99%)	<For Non-beamforming mode> IEEE 802.11b: 10.42 MHz IEEE 802.11g: 15.80 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 17.19 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 36.47 MHz <For beamforming mode> IEEE 802.11ac MCS0/Nss1 (VHT40): 17.71 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 36.90 MHz
Maximum Conducted Output Power	<For Non-beamforming mode> IEEE 802.11b: 29.89dBm IEEE 802.11g: 29.88 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 29.89 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 24.00 dBm <For beamforming mode> IEEE 802.11ac MCS0/Nss1 (VHT20): 27.87 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 23.65 dBm
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	Four (TX)	
Band width Mode	20 MHz	40 MHz
IEEE 802.11b	V	X
IEEE 802.11g	V	X
IEEE 802.11n	V	V
IEEE 802.11ac	V	V

IEEE 11n/ac Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	4	MCS 0-31
802.11n (HT40)	4	MCS 0-31
802.11ac (VHT20)	4	MCS0-11/Nss1-4
802.11ac (VHT40)	4	MCS0-11/Nss1-4
Note 1: IEEE Std. 802.11n modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT supports HT20 and HT40. Note 2: IEEE Std. 802.11ac modulation consists of VHT20, VHT40, VHT80 and VHT160 (VHT: Very High Throughput). Then EUT supports VHT20, VHT40 in 2.4GHz. Note 3: Modulation modes consist of below configuration: HT20/HT40: IEEE 802.11n, VHT20/VHT40: IEEE 802.11ac		

3.2. Accessories

Power	Brand	Model	Rating
Adapter	APD	DA-60M12	Input: 100-240V ~ 50-60Hz 1.5A Max. Output: 12V, 5A
Other			
Power cable*1: Non-shielded, 3m			

3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)		
					2.4GHz	5GHz Band 1	5GHz Band 4
1	ARISTOTLE	RFA-25-F90-1	Dipole Antenna	I-PEX	1.6	2	-
2	ARISTOTLE	RFA-25-F90-2	Dipole Antenna	I-PEX	2.25	1.74	-
3	ARISTOTLE	RFA-25-F90-3	Dipole Antenna	I-PEX	2.1	2.3	-
4	ARISTOTLE	RFA-25-F90-4	Dipole Antenna	I-PEX	2.22	1.77	-
5	ARISTOTLE	RFA-05-F90-1	Dipole Antenna	I-PEX	-	-	2.18
6	ARISTOTLE	RFA-05-F90-2	Dipole Antenna	I-PEX	-	-	2
7	ARISTOTLE	RFA-05-F90-3	Dipole Antenna	I-PEX	-	-	1.9
8	ARISTOTLE	RFA-05-F90-4	Dipole Antenna	I-PEX	-	-	1.9

Note: The EUT has eight antennas.

For 2.4GHz / 5G Band 1 Function:

For IEEE 802.11a/b/g/n/ac mode (4TX/4RX)

Chain 1, Chain 2, Chain 3 and Chain 4 can be used as transmitting/receiving antenna.

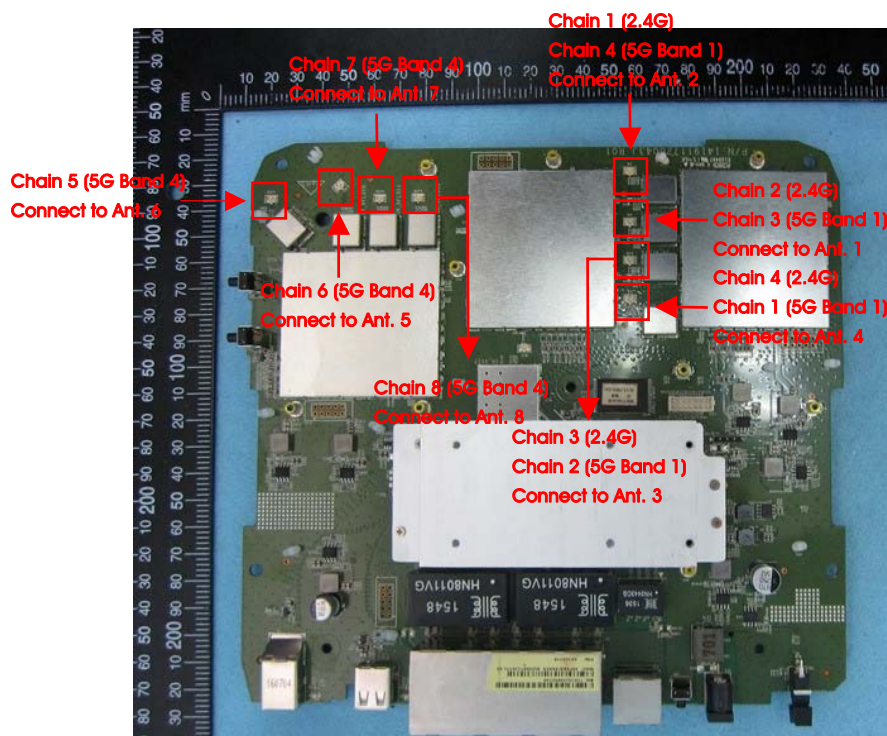
Chain 1, Chain 2, Chain 3 and Chain 4 could transmit/receive simultaneously.

For 5GHz Band 4 Function:

For IEEE 802.11a/n/ac mode (4TX/4RX)

Chain 5, Chain 6, Chain 7 and Chain 8 can be used as transmitting/receiving antenna.

Chain 5, Chain 6, Chain 7 and Chain 8 could transmit/receive simultaneously.



3.4. Table for Carrier Frequencies

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	-	-

3.5. Table for Test Modes

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

Test Items	Mode	Data Rate	Channel	Chain
AC Power Line Conducted Emissions	Normal Link	-	-	-
Maximum Conducted Output Power	<For Non-beamforming mode>			
	11b/CCK	1 Mbps	1/6/11	1+2+3+4
	11g/BPSK	6 Mbps	1/6/11	1+2+3+4
	11ac VHT20	MCS0/Nss1	1/6/11	1+2+3+4
	11ac VHT40	MCS0/Nss1	3/6/9	1+2+3+4
	<For beamforming mode>			
	11ac VHT20	MCS0/Nss1	1/6/11	1+2+3+4
	11ac VHT40	MCS0/Nss1	3/6/9	1+2+3+4
Power Spectral Density	For Non-beamforming mode>			
	11b/CCK	1 Mbps	1/6/11	1+2+3+4
	11g/BPSK	6 Mbps	1/6/11	1+2+3+4
	11ac VHT20	MCS0/Nss1	1/6/11	1+2+3+4
	11ac VHT40	MCS0/Nss1	3/6/9	1+2+3+4
	<For beamforming mode>			
	11ac VHT20	MCS0/Nss1	1/6/11	1+2+3+4
	11ac VHT40	MCS0/Nss1	3/6/9	1+2+3+4
6dB Spectrum Bandwidth	For Non-beamforming mode>			
	11b/CCK	1 Mbps	1/6/11	1+2+3+4
	11g/BPSK	6 Mbps	1/6/11	1+2+3+4
	11ac VHT20	MCS0/Nss1	1/6/11	1+2+3+4
	11ac VHT40	MCS0/Nss1	3/6/9	1+2+3+4
	<For beamforming mode>			
	11ac VHT20	MCS0/Nss1	1/6/11	1+2+3+4
	11ac VHT40	MCS0/Nss1	3/6/9	1+2+3+4

Radiated Emissions 9kHz~1GHz	Normal Link	-	-	-
Radiated Emissions 1GHz~10 th Harmonic	<For Non-beamforming mode>			
	11b/CCK	1 Mbps	1/6/11	1+2+3+4
	11g/BPSK	6 Mbps	1/6/11	1+2+3+4
	11ac VHT20	MCS0/Nss1	1/6/11	1+2+3+4
	11ac VHT40	MCS0/Nss1	3/6/9	1+2+3+4
	<For beamforming mode>			
	11ac VHT20	MCS0/Nss1	1/6/11	1+2+3+4
	11ac VHT40	MCS0/Nss1	3/6/9	1+2+3+4
Band Edge Emissions	<For Non-beamforming mode>			
	11b/CCK	1 Mbps	1/6/11	1+2+3+4
	11g/BPSK	6 Mbps	1/6/11	1+2+3+4
	11ac VHT20	MCS0/Nss1	1/6/11	1+2+3+4
	11ac VHT40	MCS0/Nss1	3/6/9	1+2+3+4
	<For beamforming mode>			
	11ac VHT20	MCS0/Nss1	1/6/11	1+2+3+4
	11ac VHT40	MCS0/Nss1	3/6/9	1+2+3+4

Note:

1. There are two modes of EUT, one is beamforming mode, and the other is non-beamforming mode for 802.11n/ac, Beamforming mode and non-beamforming mode has been test and record in this test report.
2. 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.
3. The EUT can only be used at Z axis position

The following test modes were performed for all tests:

For Conducted Emission test:

Mode 1. Normal Link - EUT 1

Mode 2. Normal Link - EUT 2

Mode 1 generated the worst test result, so it was recorded in this report.

For Radiated Emission test below 1GHz:

Mode 1. Normal Link - EUT 1 in Z axis

Mode 2. Normal Link - EUT 2 in Z axis

Mode 1 generated the worst test result, so it was recorded in this report.

For Radiated Emission test above 1GHz:

The EUT does not affect the test result of RF tests, so only EUT 1 was tested and recorded in this report.

Mode 1. CTX - Place EUT 1 in Z axis

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

The EUT could be applied with WLAN 2.4GHz Band, WLAN 5GHz Band 1 and Band 4; therefore Co-location Maximum Permissible Exposure (Please refer to FA581108-01) and Radiated Emission Co-location (please refer to Appendix B) tests are added for simultaneously transmit among WLAN 2.4GHz Band, WLAN 5GHz Band 1 and Band 4 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 Designation No.	IC File No.
03CH01-CB	SAC	Hsin Chu	TW0006	IC 4086D
CO01-CB	Conduction	Hsin Chu	TW0006	IC 4086D
TH01-CB	OVEN Room	Hsin Chu	-	-

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

3.7. Table for Multiple Listing

The model names in the following table are all refer to the identical product.

Model Name	Description
EA9500 V1.1	All the models are identical, the different model names served as marketing strategy.
EA9400	

Note: Assessed as above, there is only model: EA9500 V1.1 selected to test and recorded in the report as a result.

3.8. Table for the differences of the EUT

The differences of the EUTs as below table:

EUT	Chip	Description
EUT 1	BCM4366C0	The difference is the allocation of the antenna cables.
EUT 2	BCM4366B1	

3.9. Table for Supporting Units

For Test Site No: CO01-CB

Support Unit	Brand	Model	FCC ID
NB*5	DELL	E6430	DoC
Flash disk2.0	Transcend	604108 8255	DoC
Flash disk3.0	ADATA	C103	DoC

For Test Site No: 03CH01-CB

(Radiated Emission below 1GHz test)

Support Unit	Brand	Model	FCC ID
NB*2	DELL	E4300	DoC
NB*3	Apple	Mac Book	DoC
Flash disk	Silicon Power	Touch 835	DoC
Flash disk3.0	Transcend	JF700	DoC

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

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	DoC

(Radiated Emission above 1GHz test) (For Beamforming mode)

Support Unit	Brand	Model	FCC ID
NB*2	DELL	E4300	DoC
RX Device	LINKSYS	EA9500	N/A

For Test Site No: TH01-CB

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	DoC
RX Device	LINKSYS	EA9500	N/A

3.10. Table for Parameters of Test Software Setting

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

<For Non-beamforming mode>

Test Software Version	Mtool 2.0.2.8					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		
	2412 MHz	2437 MHz	2462 MHz	2422 MHz	2437 MHz	2452 MHz
802.11b	97	97	97	-	-	-
802.11g	90	98	89	-	-	-
802.11ac MCS0/Nss1 VHT20	82	99	84	-	-	-
802.11ac MCS0/Nss1 VHT40	-	-	-	60	74	64

<For beamforming mode>

Test Software Version	Mtool 2.0.2.8					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		
	2412 MHz	2437 MHz	2462 MHz	2422 MHz	2437 MHz	2452 MHz
802.11ac MCS0/Nss1 VHT20	79	91	62	-	-	-
802.11ac MCS0/Nss1 VHT40	-	-	-	55	73	60

3.11. EUT Operation during Test

<For Non-beamforming mode>

The EUT was programmed to be in continuously transmitting mode.

<For beamforming mode>

For Conducted Mode:

The EUT was programmed to be in continuously transmitting mode.

For Radiated Mode:

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

The program was executed as follows:

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

3.12. Duty Cycle

<For Non-beamforming mode>

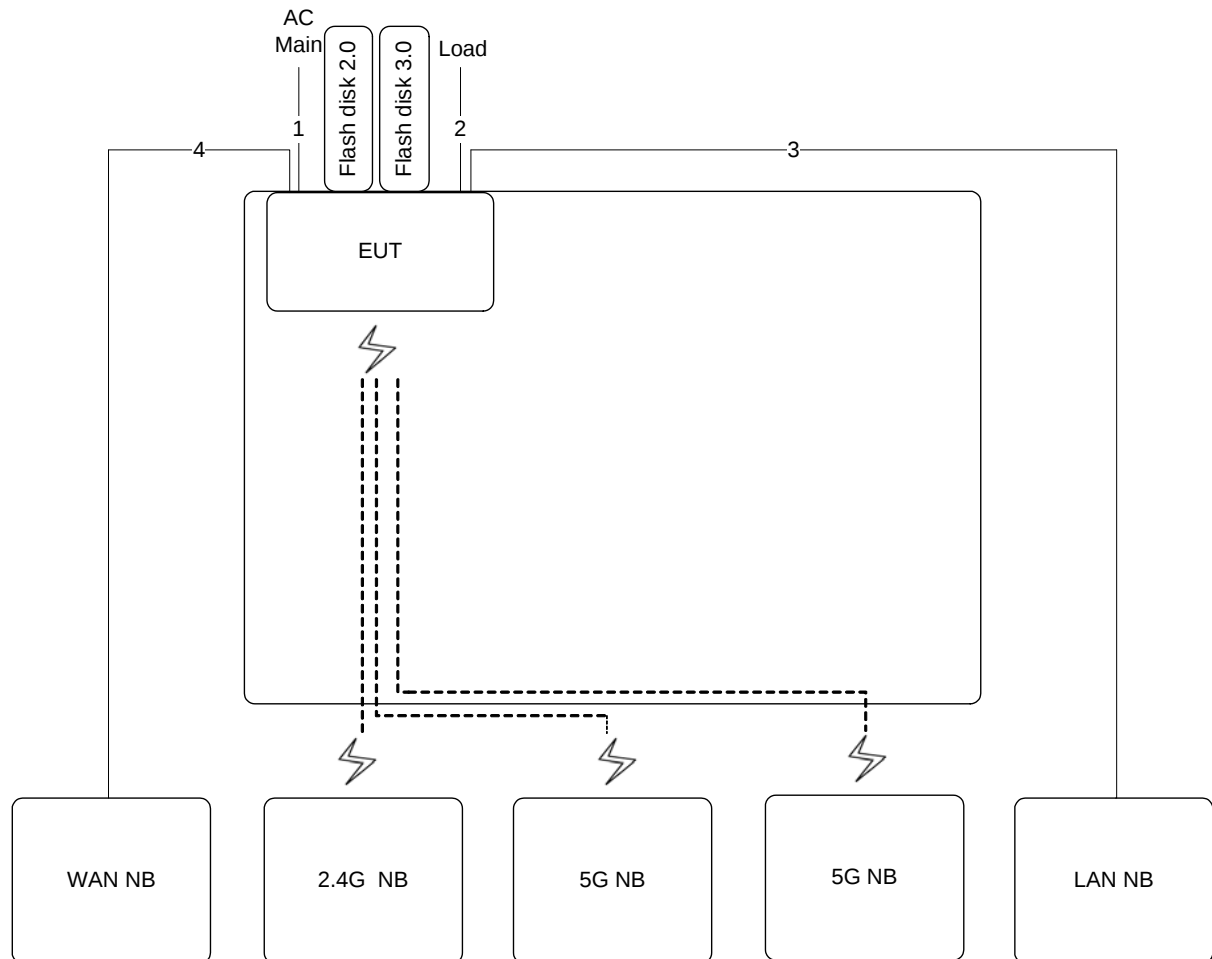
Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11b	1.000	1.000	100.00%	0.00	0.01
802.11g	2.060	2.110	97.63%	0.10	0.49
802.11ac MCS0/Nss1 VHT20	1.920	1.980	100.00%	0.00	0.01
802.11ac MCS0/Nss1 VHT40	0.920	0.980	93.88%	0.27	1.09

<For beamforming mode>

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11ac MCS0/Nss1 VHT20	3.860	4.240	91.04%	0.41	0.26
802.11ac MCS0/Nss1 VHT40	2.760	3.180	86.79%	0.62	0.36

3.13. Test Configurations

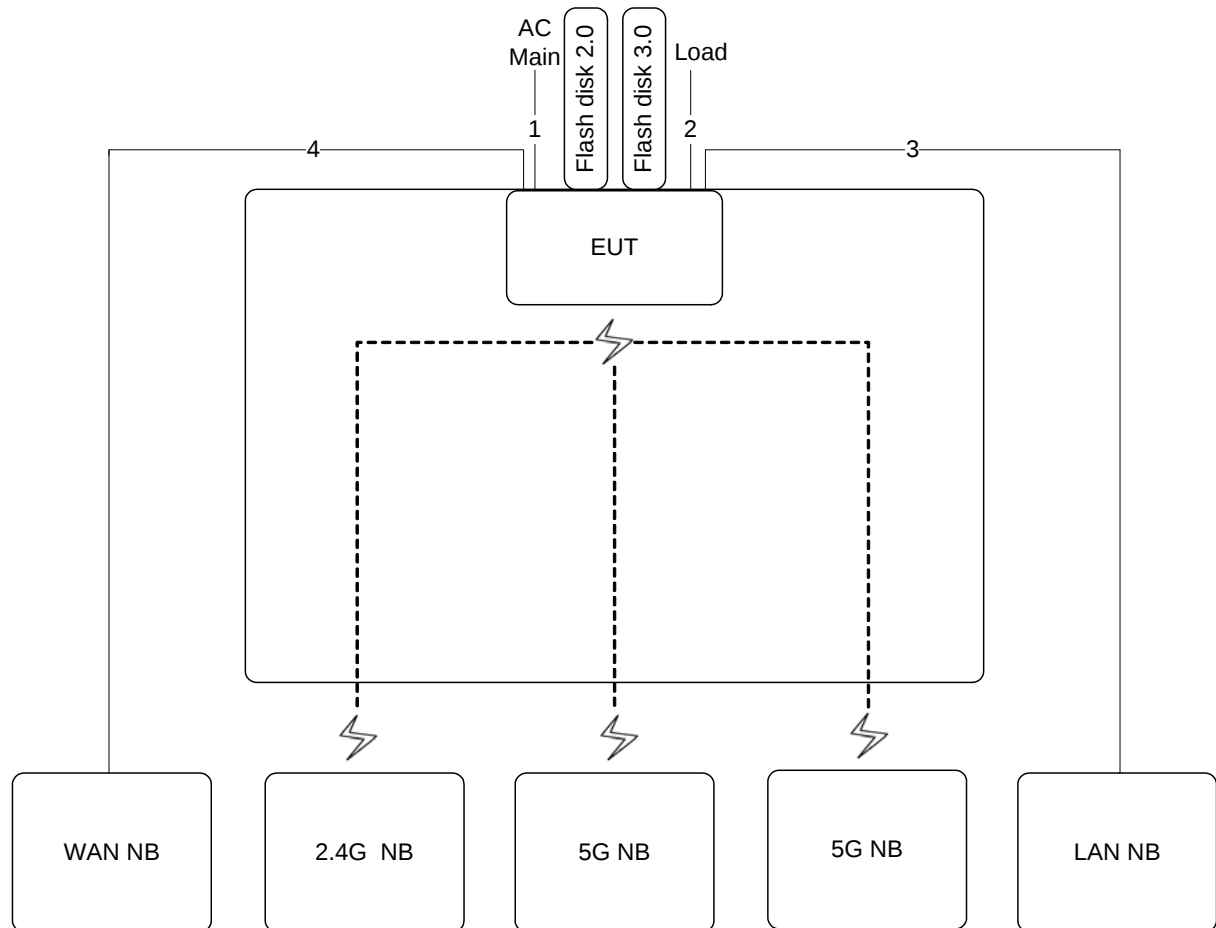
3.13.1. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	3m
2	RJ-45 cable*7	No	1.5m
3	RJ-45 cable	No	10m
4	RJ-45 cable	No	10m

3.13.2. Radiation Emissions Test Configuration

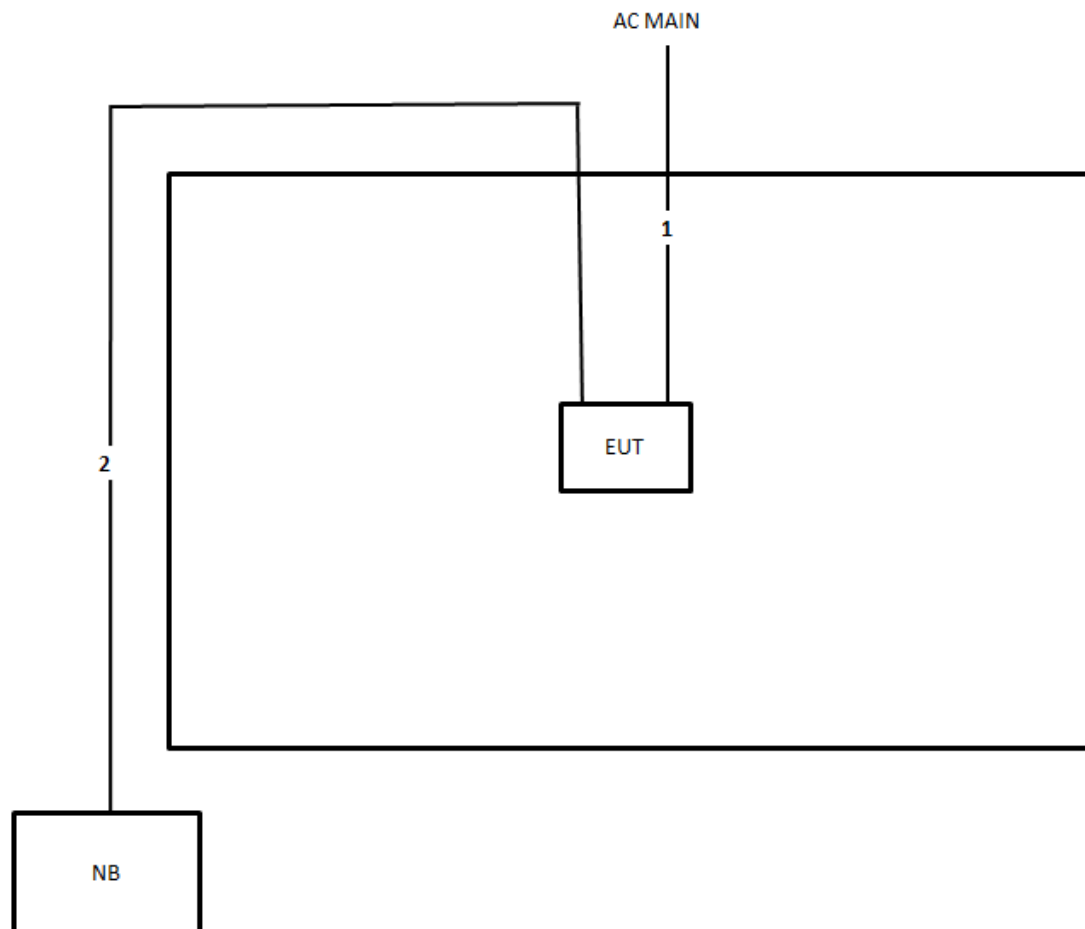
Test Configuration: 30MHz ~1GHz



Item	Connection	Shielded	Length
1	Power cable	No	3m
2	RJ-45 cable*7	No	1.5m
3	RJ-45 cable	No	10m
4	RJ-45 cable	No	10m

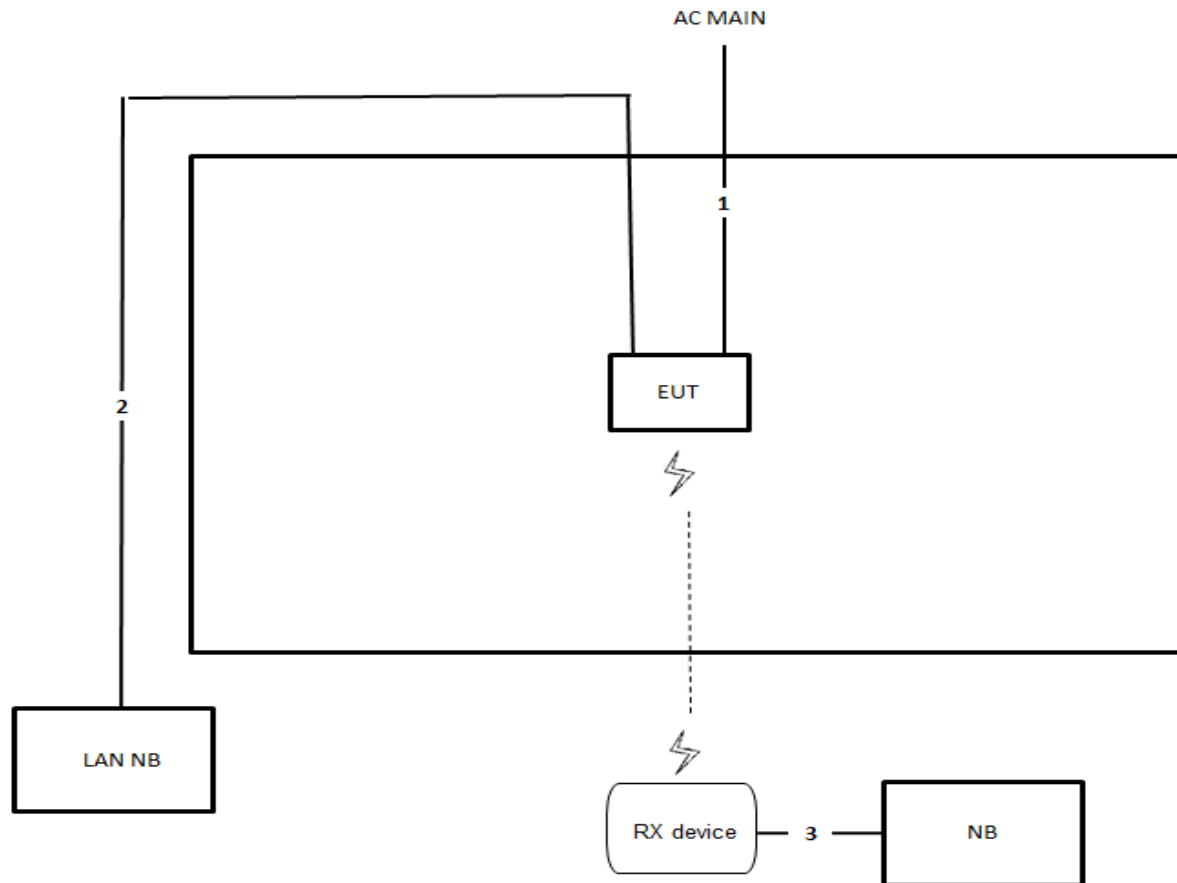
Test Configuration: above 1GHz

<For Non-beamforming mode>



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

<For beamforming mode>



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

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

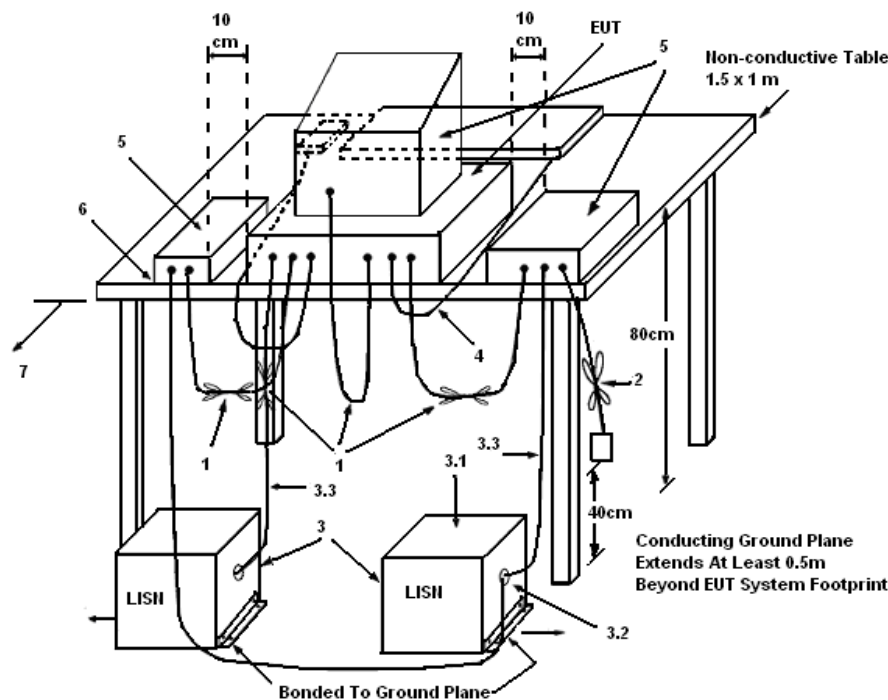
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

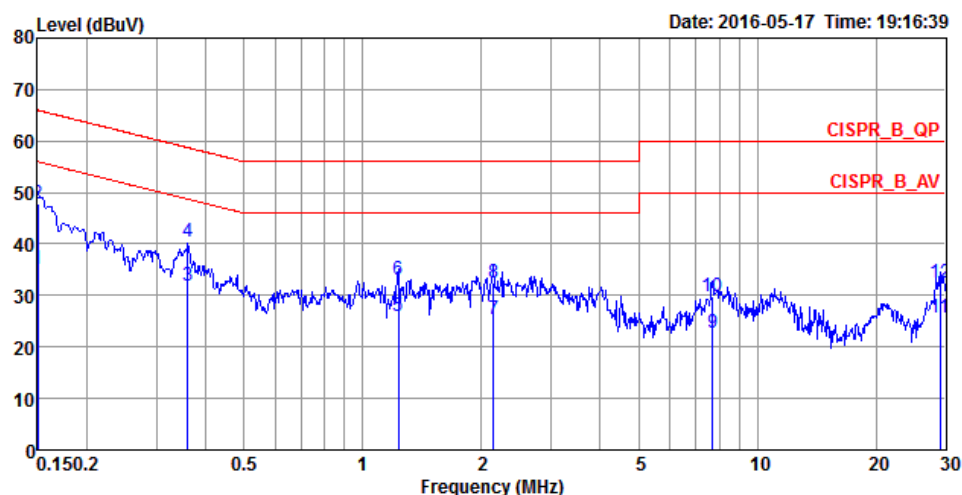
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

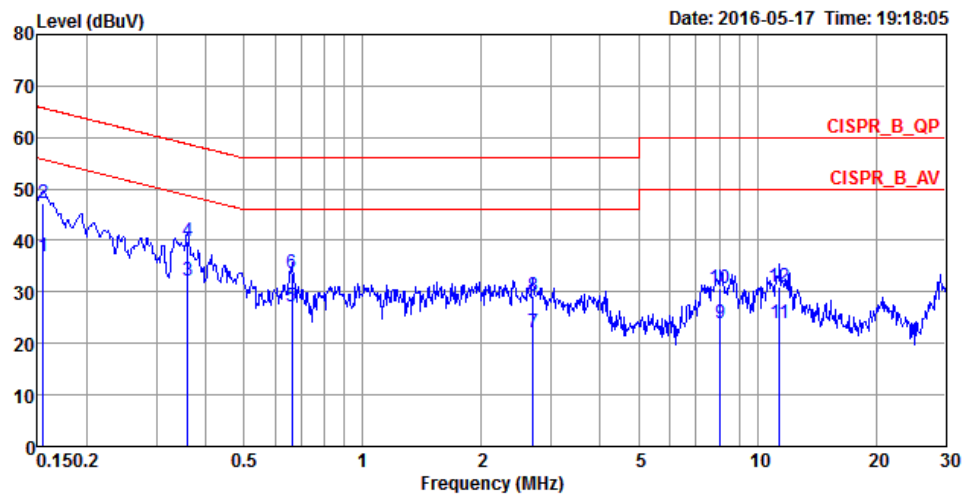
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	24°C	Humidity	68%
Test Engineer	Deven Huang	Phase	Line
Configuration	Normal Link	Test Mode	Mode 1



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1500	35.15	-20.85	56.00	25.11	10.02	0.02	LINE	Average
2	0.1500	47.83	-18.17	66.00	37.79	10.02	0.02	LINE	QP
3	0.3596	31.92	-16.82	48.74	21.96	9.92	0.04	LINE	Average
4	0.3596	40.36	-18.38	58.74	30.40	9.92	0.04	LINE	QP
5	1.2291	25.96	-20.04	46.00	15.97	9.94	0.05	LINE	Average
6	1.2291	33.08	-22.92	56.00	23.09	9.94	0.05	LINE	QP
7	2.1439	25.50	-20.50	46.00	15.48	9.96	0.06	LINE	Average
8	2.1439	32.53	-23.47	56.00	22.51	9.96	0.06	LINE	QP
9	7.6870	22.79	-27.21	50.00	12.55	10.09	0.15	LINE	Average
10	7.6870	29.75	-30.25	60.00	19.51	10.09	0.15	LINE	QP
11	29.0613	25.64	-24.36	50.00	14.81	10.55	0.28	LINE	Average
12	29.0613	32.44	-27.56	60.00	21.61	10.55	0.28	LINE	QP

Temperature	24°C	Humidity	68%
Test Engineer	Deven Huang	Phase	Neutral
Configuration	Normal Link	Test Mode	Mode 1



	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	36.97	-18.77	55.74	26.93	10.02	0.02	NEUTRAL	Average
2	0.1548	47.09	-18.65	65.74	37.05	10.02	0.02	NEUTRAL	QP
3	0.3596	32.07	-16.67	48.74	22.11	9.92	0.04	NEUTRAL	Average
4	0.3596	39.80	-18.94	58.74	29.84	9.92	0.04	NEUTRAL	QP
5	0.6613	27.21	-18.79	46.00	17.24	9.93	0.04	NEUTRAL	Average
6	0.6613	33.72	-22.28	56.00	23.75	9.93	0.04	NEUTRAL	QP
7	2.7068	22.20	-23.80	46.00	12.18	9.97	0.05	NEUTRAL	Average
8	2.7068	29.30	-26.70	56.00	19.28	9.97	0.05	NEUTRAL	QP
9	8.0624	23.77	-26.23	50.00	13.50	10.10	0.17	NEUTRAL	Average
10	8.0624	30.84	-29.16	60.00	20.57	10.10	0.17	NEUTRAL	QP
11	11.3771	23.81	-26.19	50.00	13.39	10.17	0.25	NEUTRAL	Average
12	11.3771	30.91	-29.09	60.00	20.49	10.17	0.25	NEUTRAL	QP

Note:

Level = Read Level + LISN Factor + Cable Loss

4.2. Maximum Conducted Output Power Measurement

4.2.1. Limit

The limit for output power is 30dBm.

4.2.2. Measuring Instruments and Setting

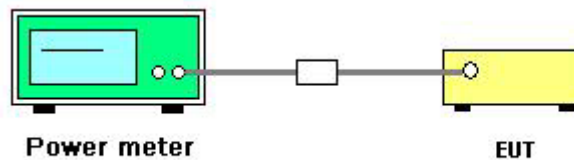
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

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

4.2.3. Test Procedures

1. Test procedures refer KDB558074 D01 v03r05 section 9.2.3.2 Measurement using a power meter (PM).
2. Multiple antenna systems 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 Non-beamforming mode>

Temperature	25°C	Humidity	56%
Test Engineer	Serway Li	Test Date	Feb. 23, 2016~Mar. 30, 2016

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11b	2412 MHz	23.73	23.76	24.12	23.86	29.89	30.00	Complies
	2437 MHz	23.65	23.65	24.16	23.97	29.88	30.00	Complies
	2462 MHz	23.82	23.73	24.09	23.84	29.89	30.00	Complies
802.11g	2412 MHz	21.69	22.10	21.85	21.52	27.82	30.00	Complies
	2437 MHz	23.87	24.02	24.09	23.44	29.88	30.00	Complies
	2462 MHz	21.51	21.69	21.48	21.47	27.56	30.00	Complies
802.11ac MCS0/Nss1 VHT20	2412 MHz	19.81	19.79	19.51	19.89	25.77	30.00	Complies
	2437 MHz	23.89	24.22	23.86	23.49	29.89	30.00	Complies
	2462 MHz	20.41	20.29	20.05	20.02	26.22	30.00	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	14.51	14.12	14.88	14.26	20.47	30.00	Complies
	2437 MHz	17.73	17.70	18.59	17.84	24.00	30.00	Complies
	2452 MHz	15.21	15.89	15.92	15.57	21.68	30.00	Complies

<For beamforming mode>

Temperature	25°C	Humidity	56%
Test Engineer	Serway Li	Test Date	Feb. 23, 2016~Mar. 30, 2016

Mode	Frequency	Conducted Power (dBm)					Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac MCS0/Nss1 VHT20	2412 MHz	18.46	18.62	18.93	18.73	24.71	27.93	Complies
	2437 MHz	21.69	21.84	21.93	21.92	27.87	27.93	Complies
	2462 MHz	14.49	14.67	14.92	14.20	20.60	27.93	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	13.01	13.79	13.21	12.92	19.27	27.93	Complies
	2437 MHz	17.36	18.19	17.52	17.41	23.65	27.93	Complies
	2452 MHz	14.57	15.03	14.25	14.42	20.60	27.93	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{K=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 8.07 \text{ dBi}$, so limit = 30-(8.07-6)=27.93 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 8 dBm in any 3 kHz band during any time interval of continuous transmission.

4.3.2. Measuring Instruments and Setting

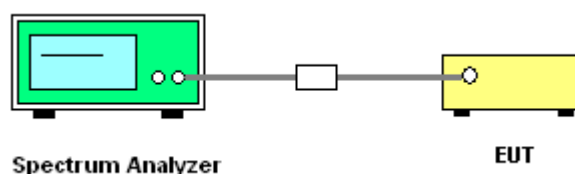
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Set the span to 1.5 times the DTS channel bandwidth.
RBW	$3 \text{ kHz} \leq \text{RBW} \leq 100\text{kHz}$
VBW	$\geq 3 \times \text{RBW}$
Detector	Peak
Trace	Max Hold
Sweep Time	Auto couple

4.3.3. Test Procedures

1. Test was performed in accordance with KDB558074 D01 v03r05 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 $\geq 2 \times \text{span/RBW}$ (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 $\leq 8 \text{ dBm}$.

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 Non-beamforming mode>

Temperature	25°C	Humidity	56%
Test Engineer	Serway Li		

Mode	Frequency	Power Density (dBm/3kHz)					Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11b	2412 MHz	-8.75	-8.68	-8.06	-8.37	-2.44	5.93	Complies
	2437 MHz	-8.72	-8.60	-8.17	-8.50	-2.47	5.93	Complies
	2462 MHz	-8.31	-8.57	-8.08	-8.30	-2.29	5.93	Complies
802.11g	2412 MHz	-12.56	-12.41	-12.27	-12.52	-6.42	5.93	Complies
	2437 MHz	-10.09	-9.87	-9.85	-10.41	-4.03	5.93	Complies
	2462 MHz	-12.72	-12.66	-12.72	-12.48	-6.62	5.93	Complies
802.11ac MCS0/Nss1 VHT20	2412 MHz	-15.18	-15.44	-15.19	-15.34	-9.27	5.93	Complies
	2437 MHz	-10.62	-10.12	-10.60	-11.38	-4.64	5.93	Complies
	2462 MHz	-14.51	-14.76	-14.67	-14.57	-8.61	5.93	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	-23.81	-24.08	-24.23	-23.74	-17.94	5.93	Complies
	2437 MHz	-21.38	-21.14	-20.36	-21.43	-15.04	5.93	Complies
	2452 MHz	-23.57	-23.30	-22.91	-23.84	-17.37	5.93	Complies

Note: $Directional\ Gain = 10\log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{K=1}^{N_{ANT}}g_{j,k}\right\}^2}{N_{ANT}}\right] = 8.07\text{dBi}$, so limit = 8-(8.07-6)=5.93 dBm/3kHz

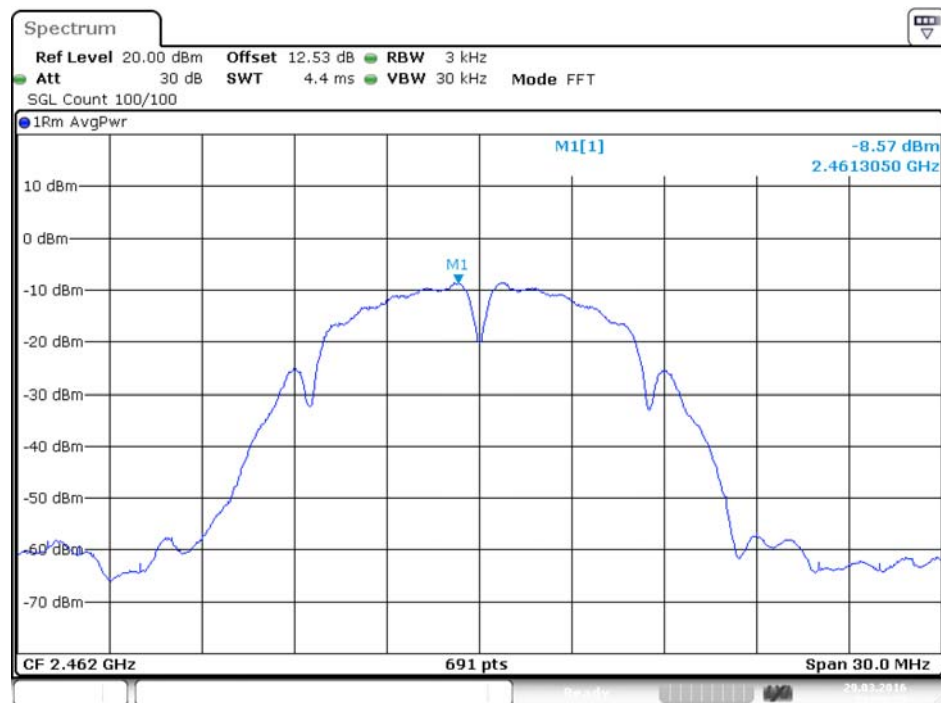
Note: All the test values were listed in the report.

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

Power Density Plot on Configuration IEEE 802.11b / 2462 MHz / Chain 1



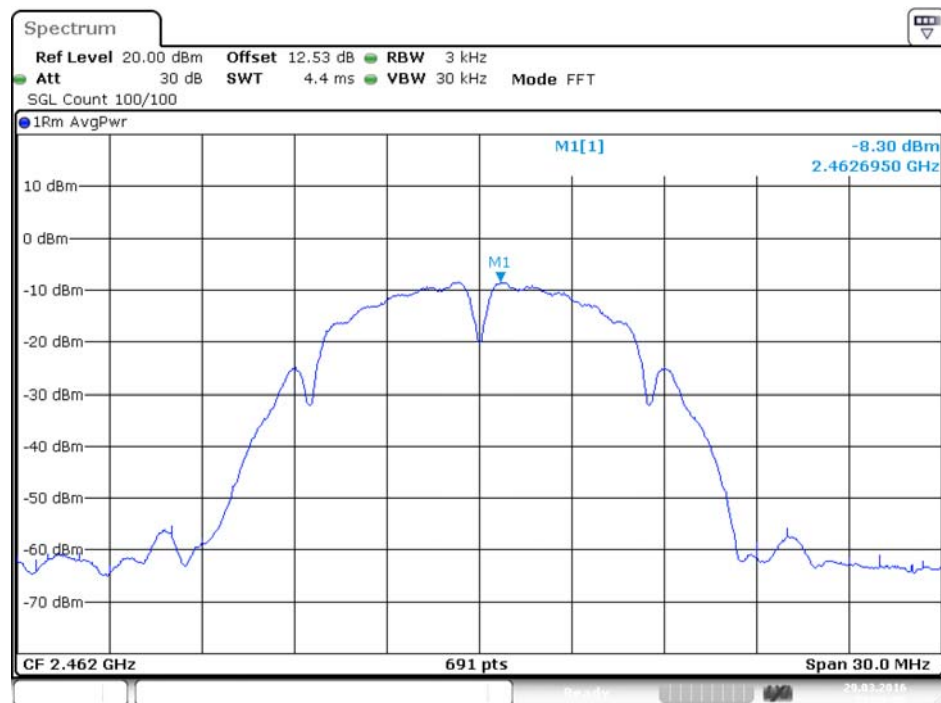
Power Density Plot on Configuration IEEE 802.11b / 2462 MHz / Chain 2



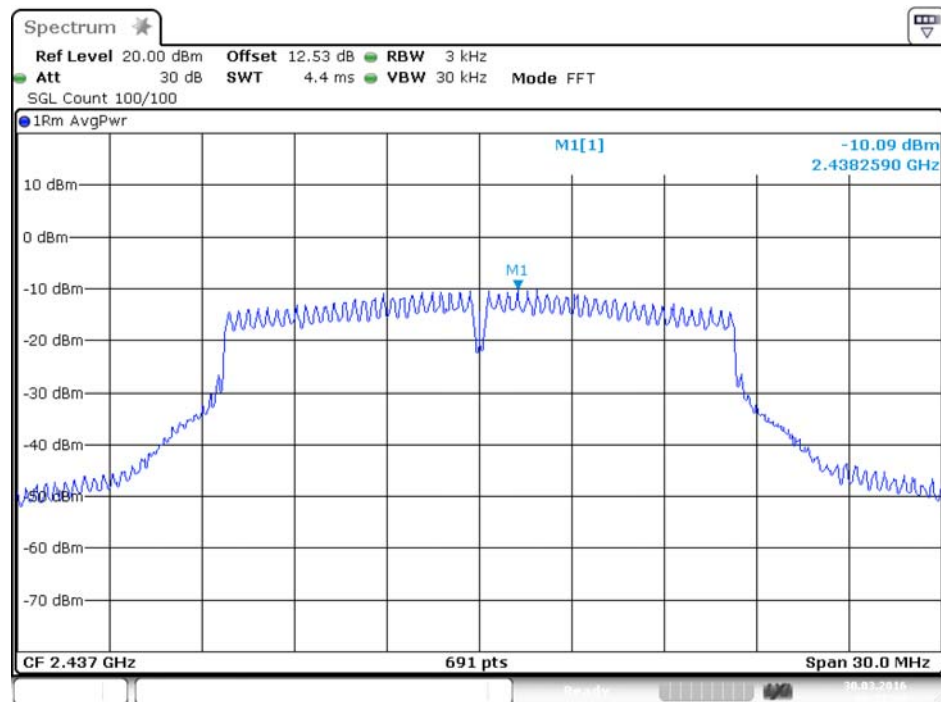
Power Density Plot on Configuration IEEE 802.11b / 2462 MHz / Chain 3



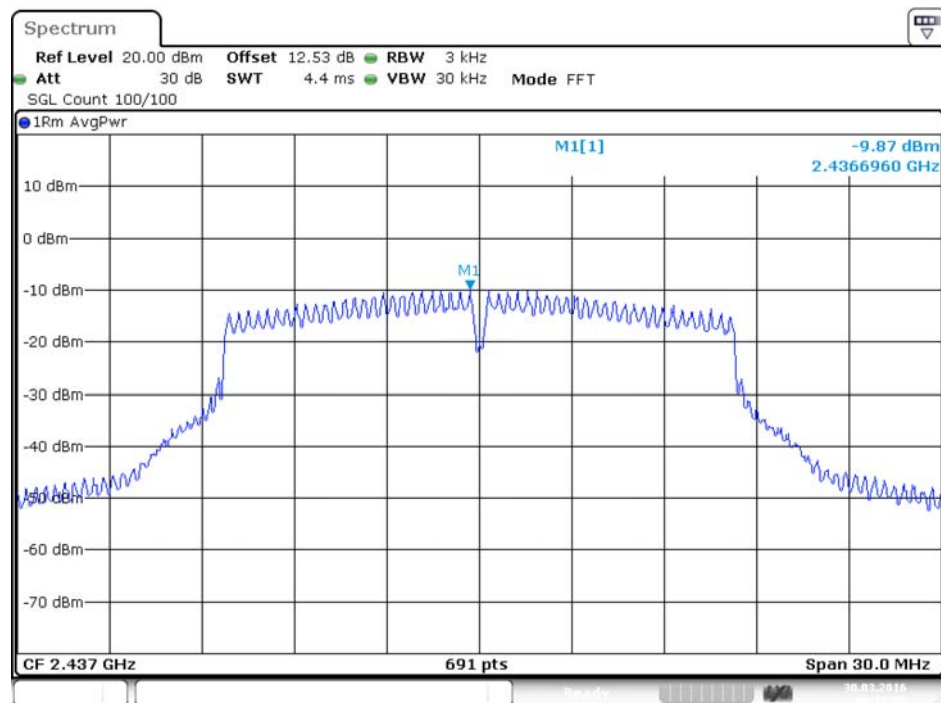
Power Density Plot on Configuration IEEE 802.11b / 2462 MHz / Chain 4



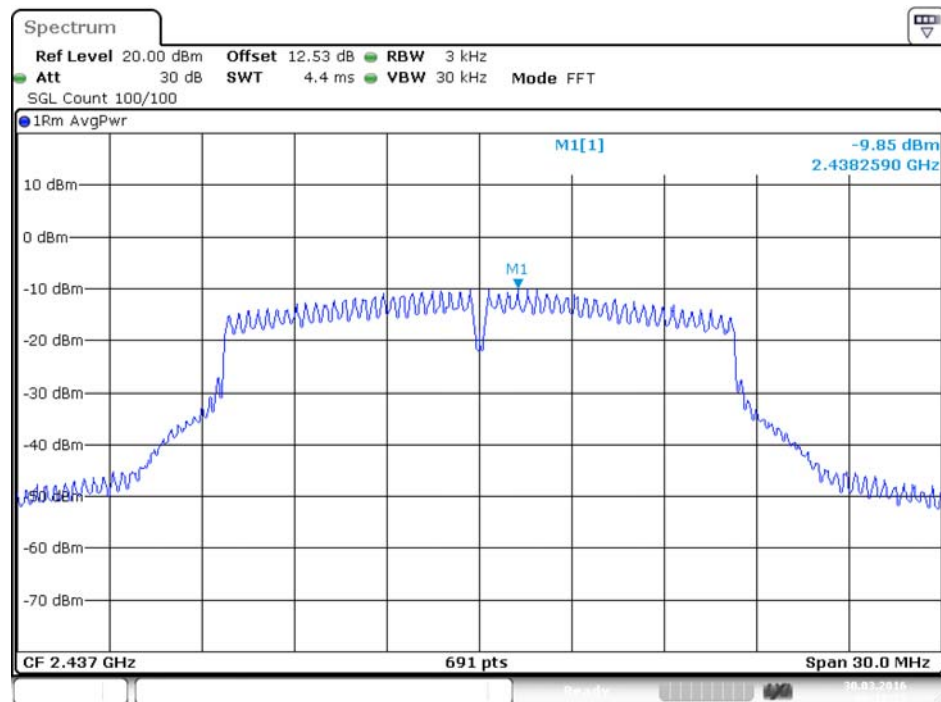
Power Density Plot on Configuration IEEE 802.11g / 2437 MHz / Chain 1



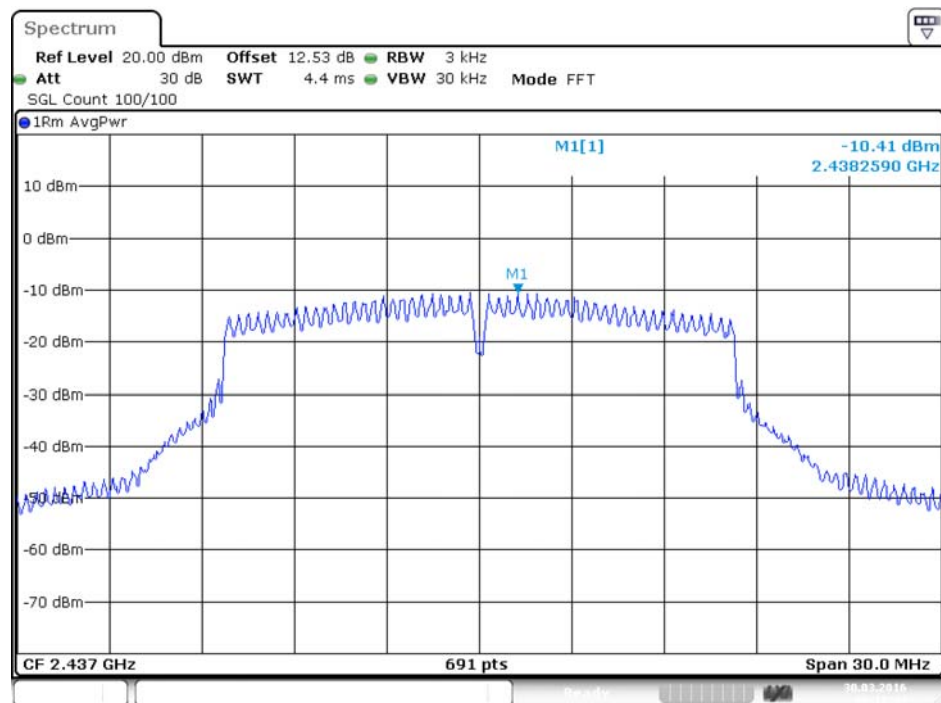
Power Density Plot on Configuration IEEE 802.11g / 2437 MHz / Chain 2



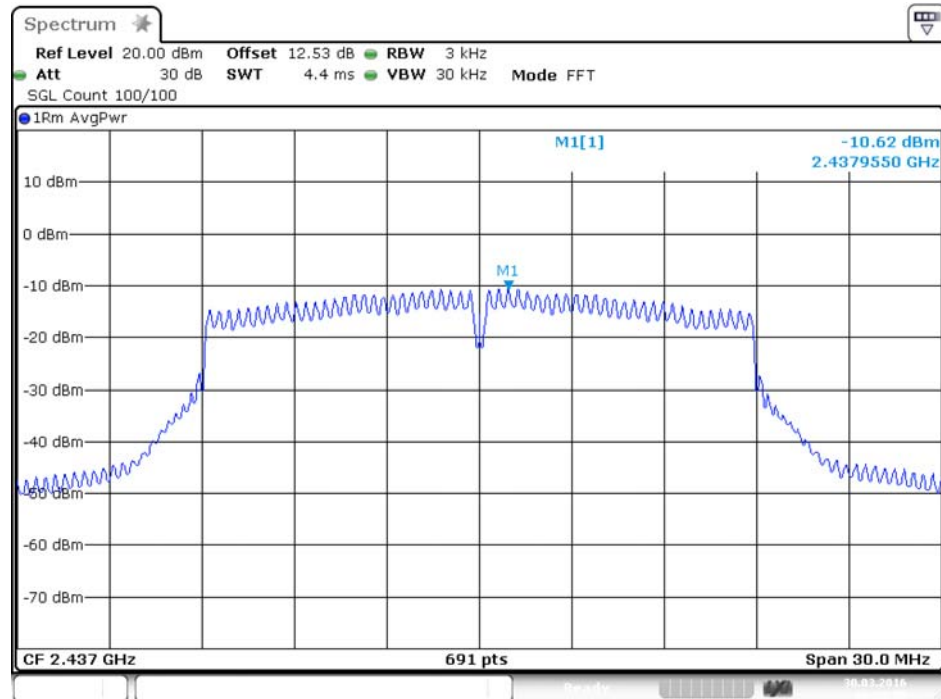
Power Density Plot on Configuration IEEE 802.11g / 2437 MHz / Chain 3



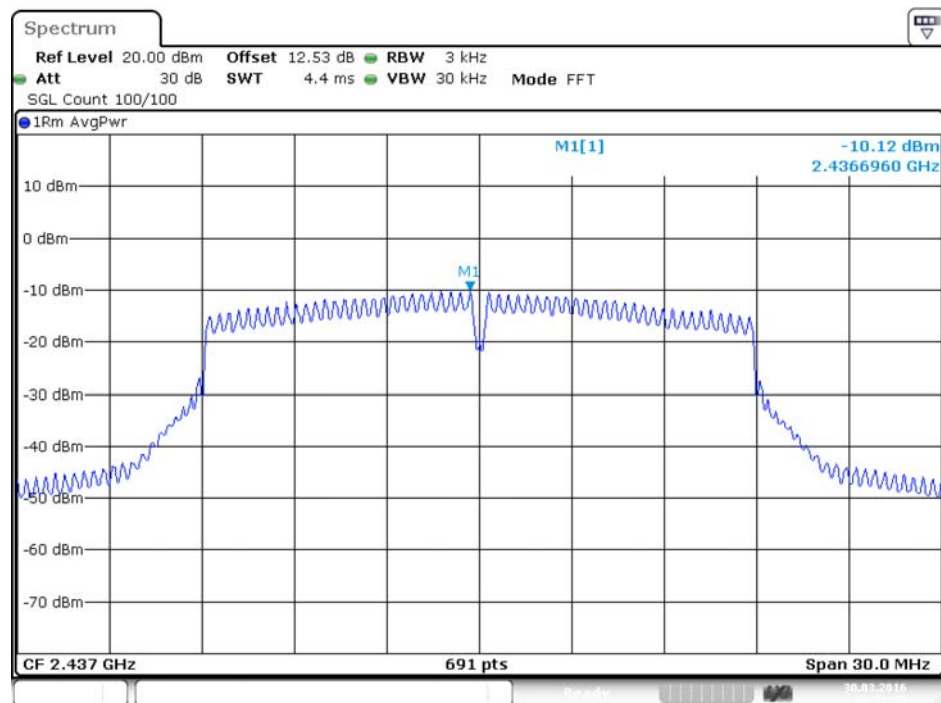
Power Density Plot on Configuration IEEE 802.11g / 2437 MHz / Chain 4



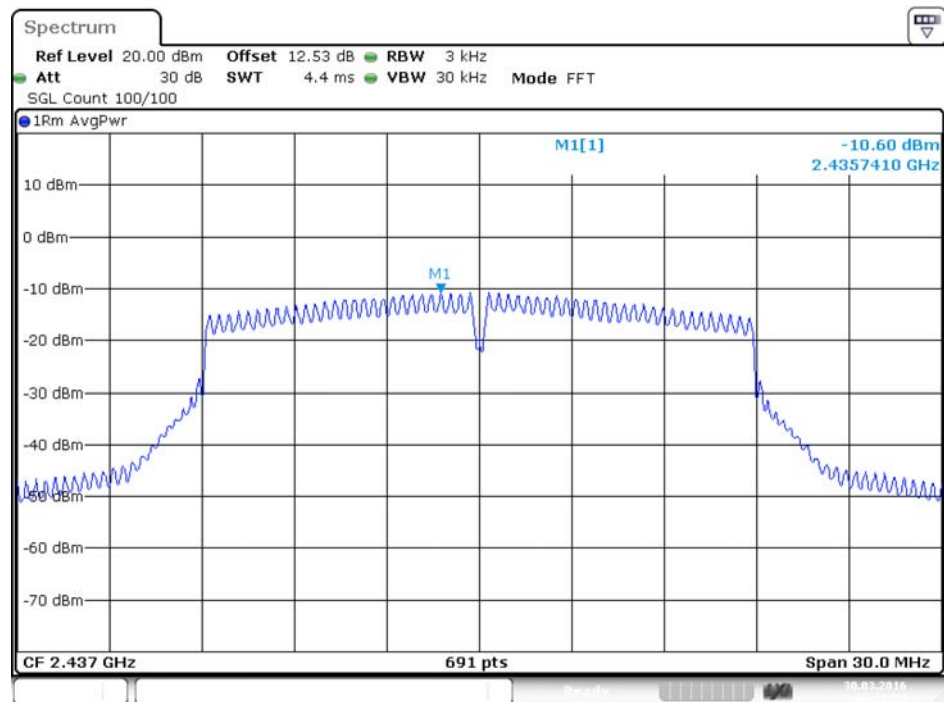
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 1



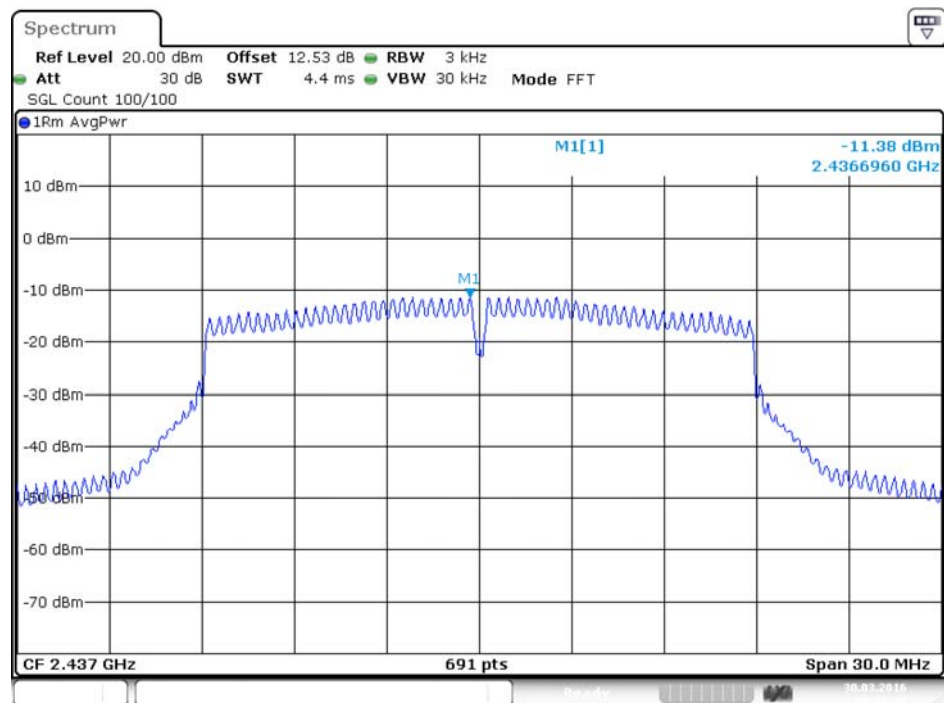
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 2



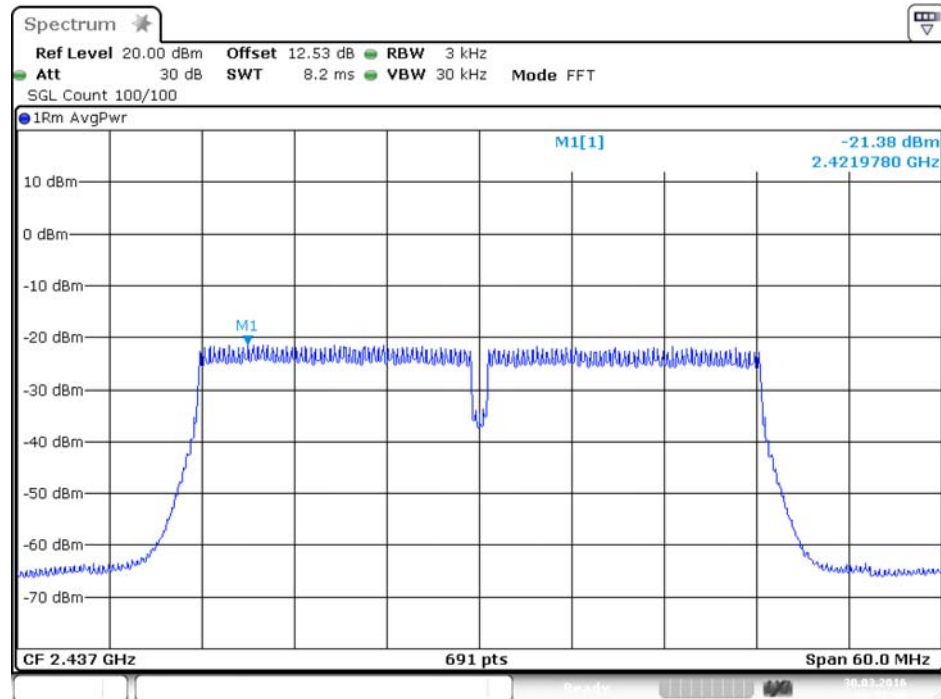
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 3



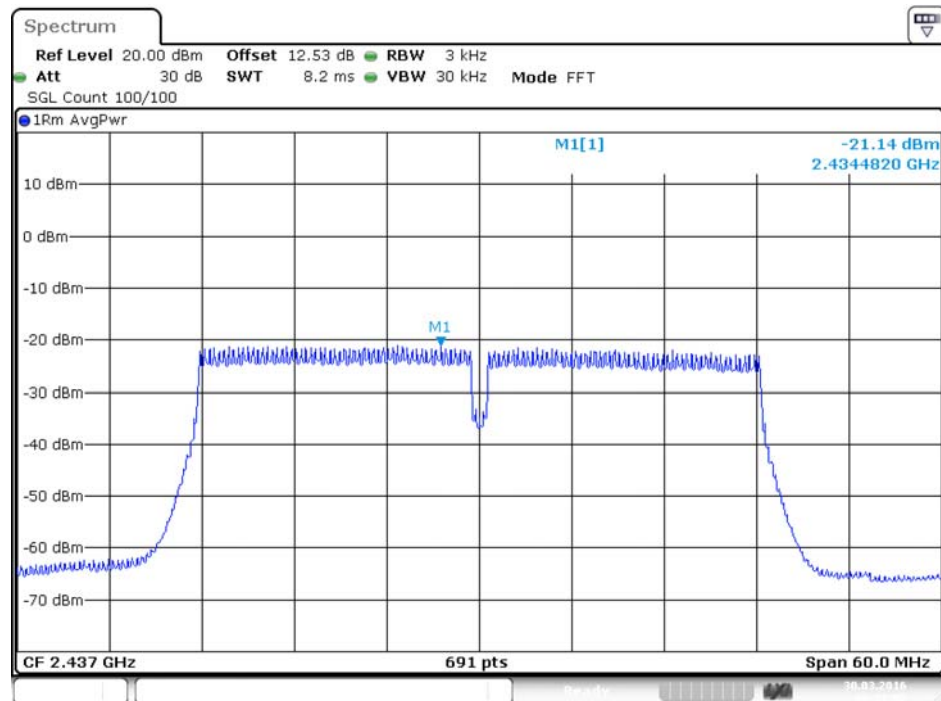
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 4



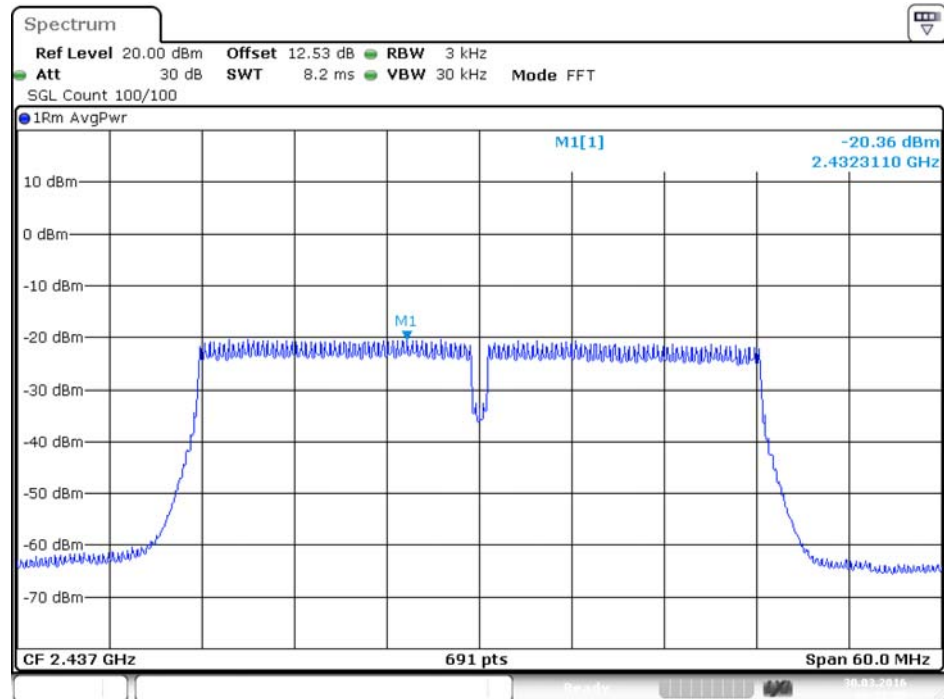
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 1



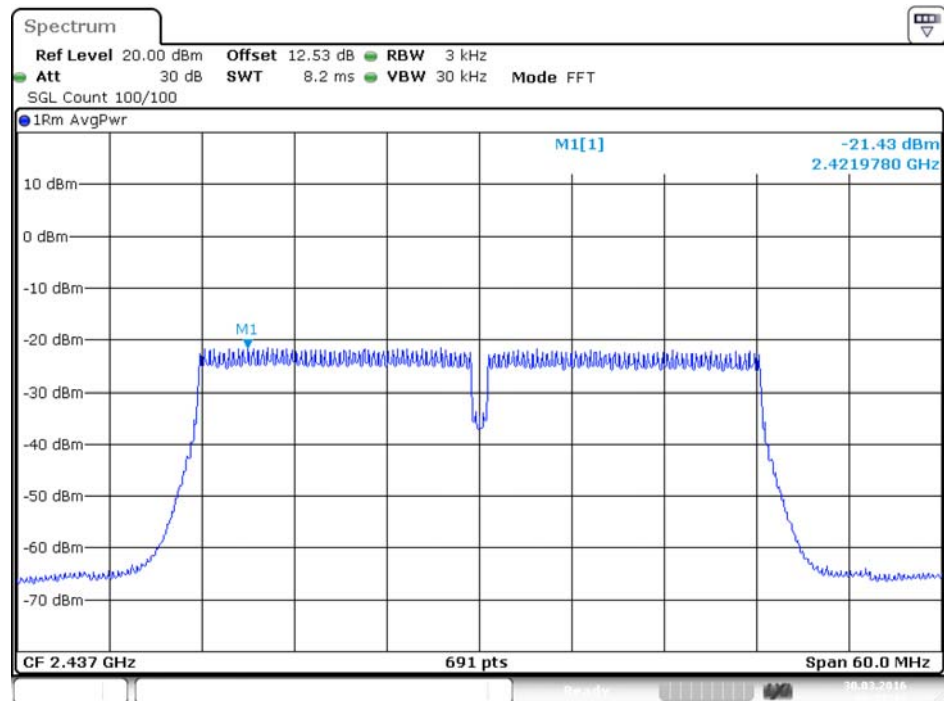
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 2



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 3



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 4



<For beamforming mode>

Temperature	25°C	Humidity	56%
Test Engineer	Serway Li		

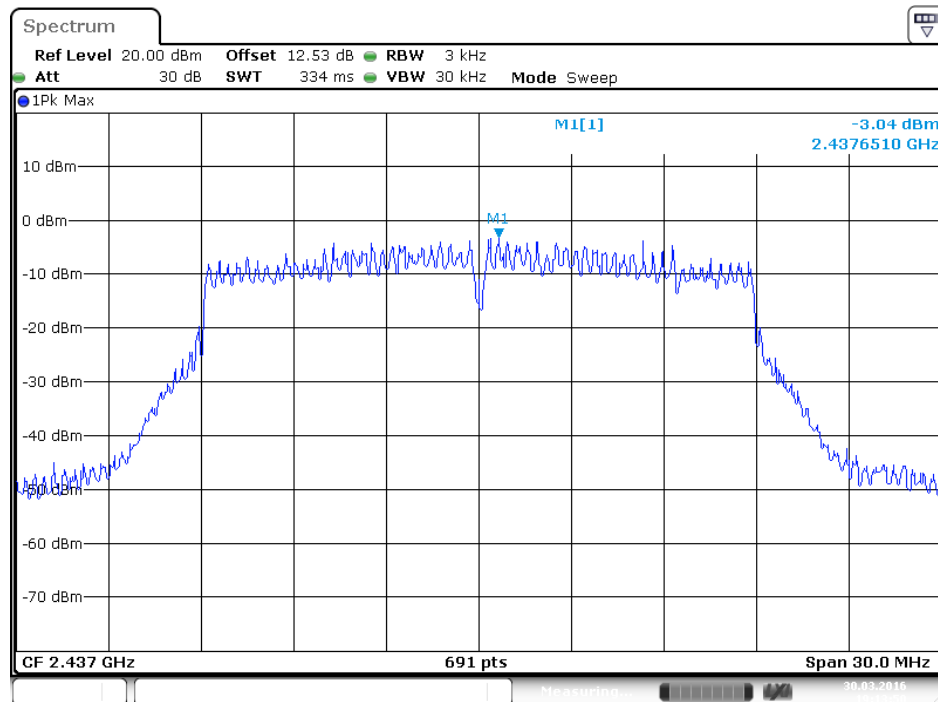
Mode	Frequency	Power Density (dBm/3kHz)					Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Chain 3	Chain 4	Total		
802.11ac	2412 MHz	-6.73	-6.02	-5.13	-6.21	0.04	5.93	Complies
MCS0/Nss1	2437 MHz	-3.04	-3.46	-3.14	-3.33	2.78	5.93	Complies
VHT20	2462 MHz	-10.19	-11.70	-10.33	-11.05	-4.76	5.93	Complies
802.11ac	2422 MHz	-14.49	-16.12	-16.54	-15.99	-9.69	5.93	Complies
MCS0/Nss1	2437 MHz	-12.24	-11.58	-11.78	-10.76	-5.54	5.93	Complies
VHT40	2452 MHz	-13.87	-15.13	-14.22	-13.88	-8.23	5.93	Complies

Note: $Directional\ Gain = 10 \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{K=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right] = 8.07 \text{ dBi}$, so limit = 8-(8.07-6)=5.93 dBm/3kHz

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

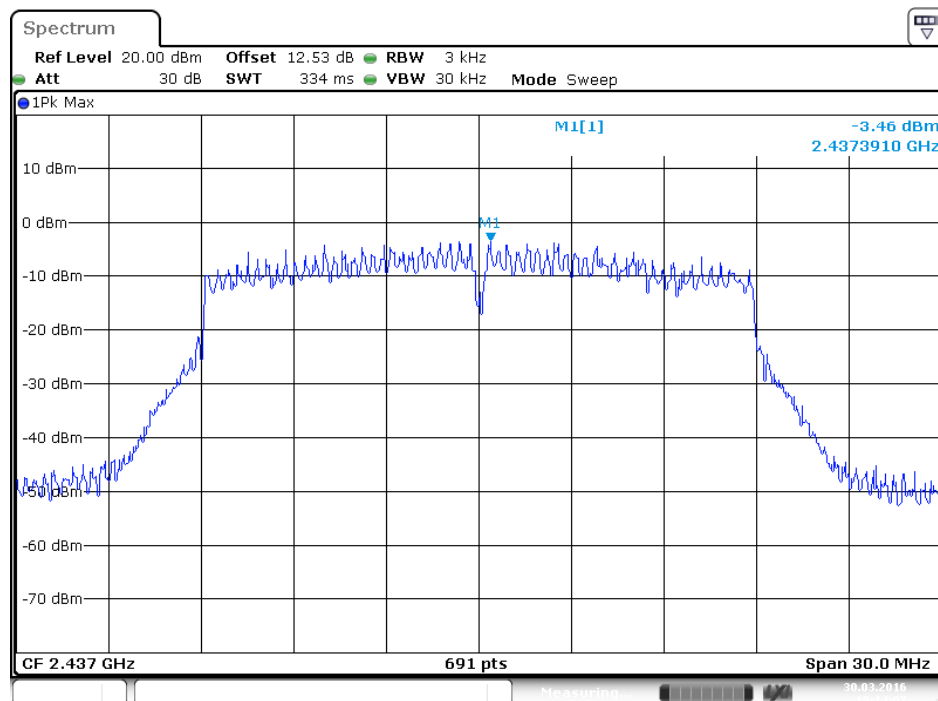
For plots, only the channel with worse result was shown.

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 1



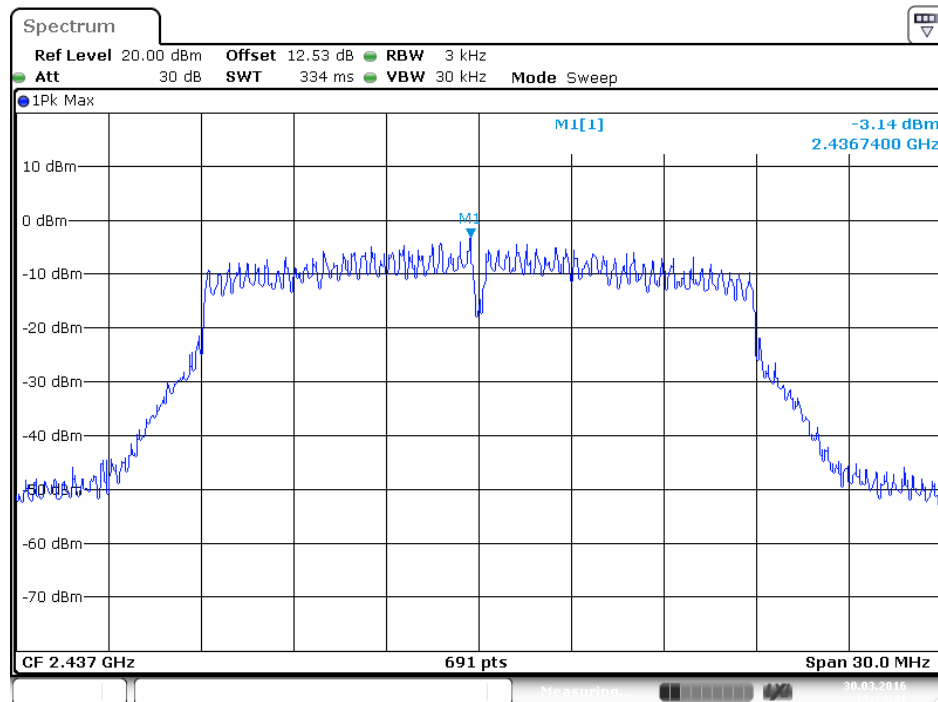
Date: 30.MAR.2016 19:13:50

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 2



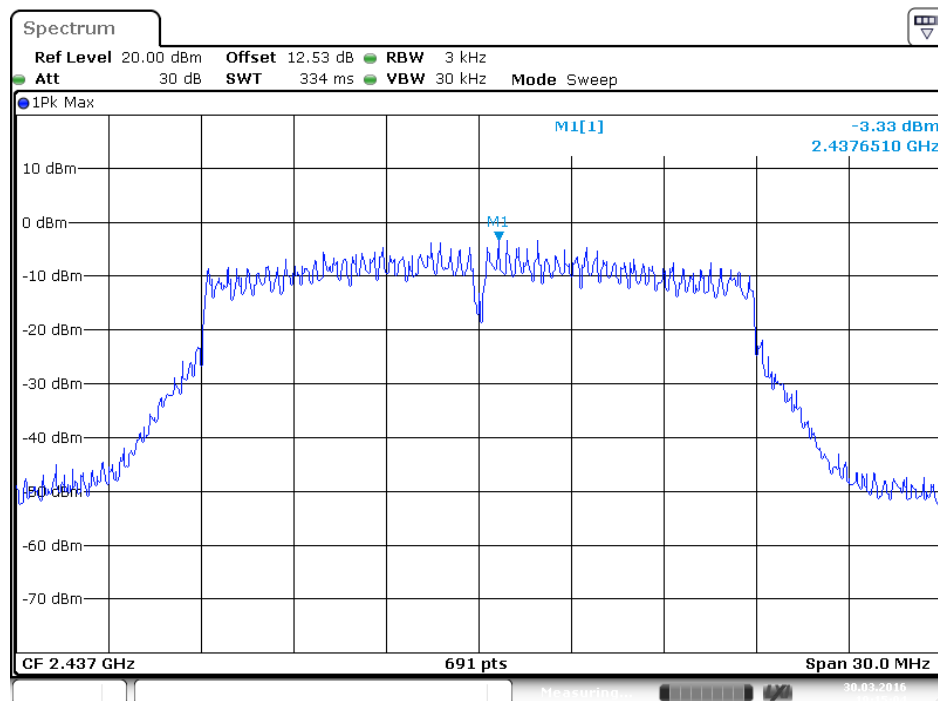
Date: 30.MAR.2016 19:14:06

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 3



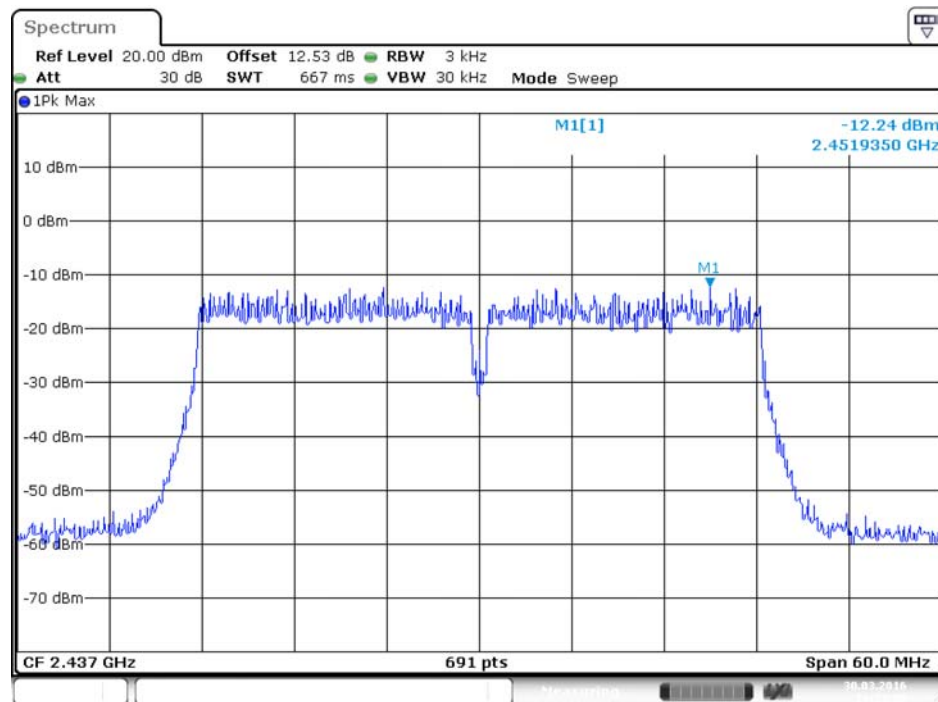
Date: 30.MAR.2016 19:14:41

Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 4

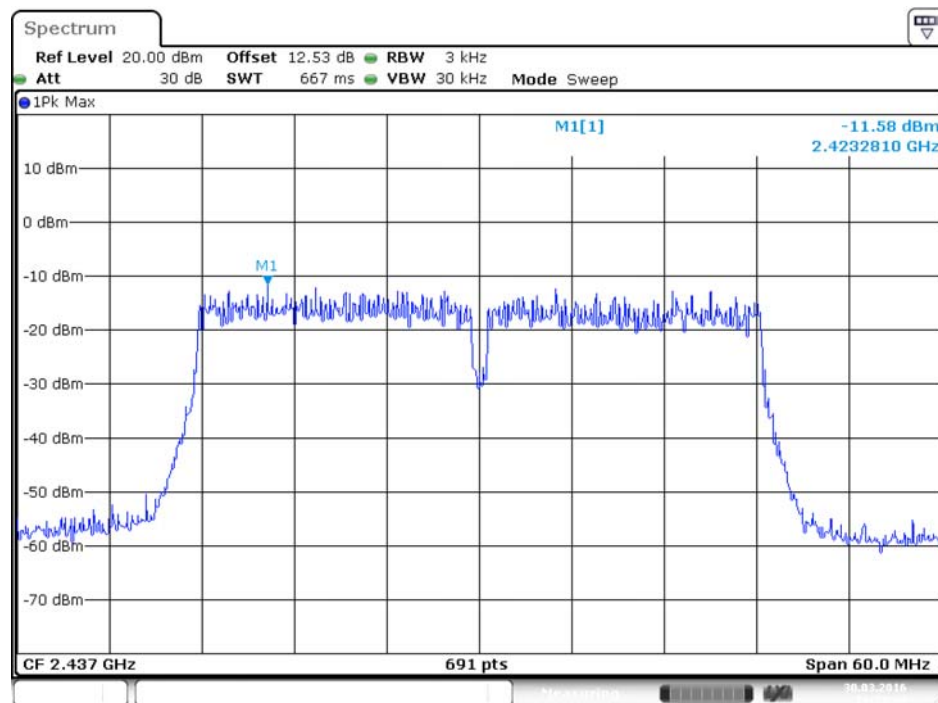


Date: 30.MAR.2016 19:15:04

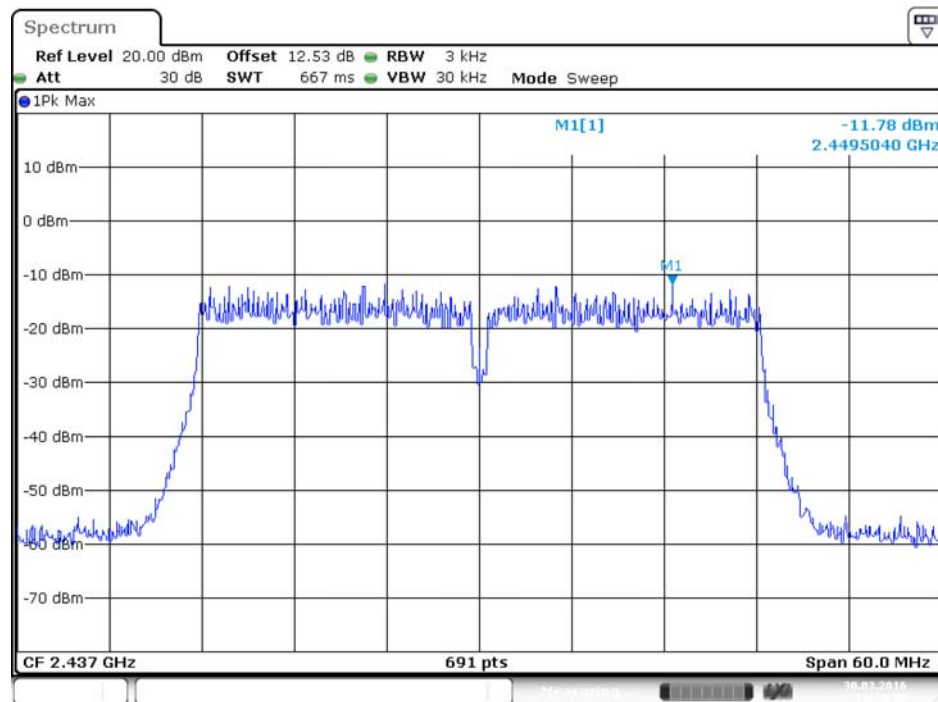
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 1



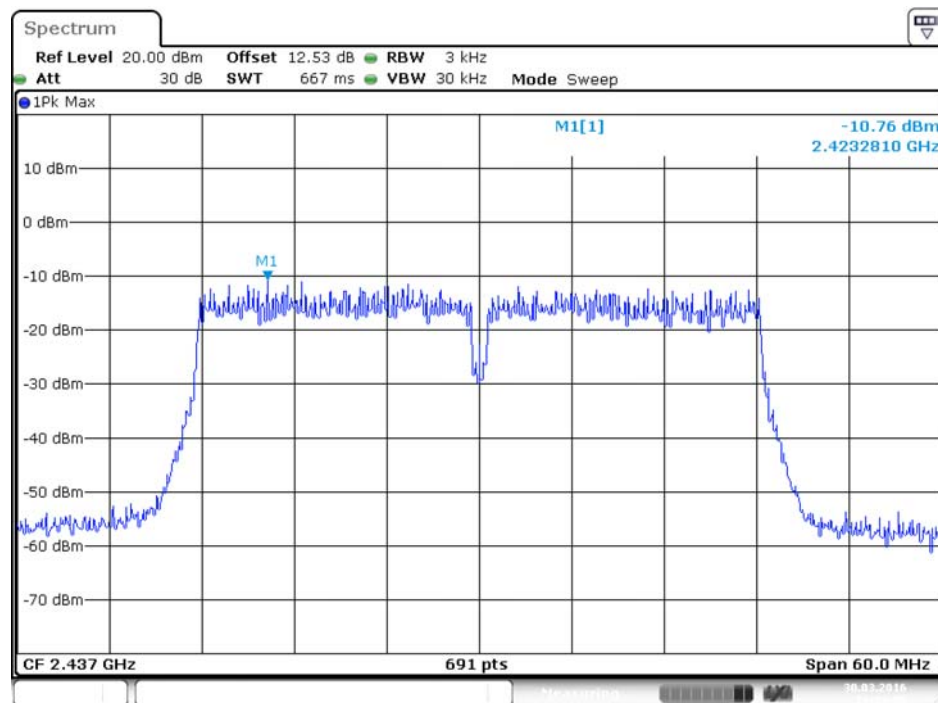
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 2



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 3



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 4



4.4. 6dB Spectrum Bandwidth Measurement

4.4.1. Limit

For digital modulation systems, the minimum 6 dB 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 the Spectrum Analyzer.

6dB Spectrum Bandwidth	
Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 6dB Bandwidth
RBW	100kHz
VBW	$\geq 3 \times \text{RBW}$
Detector	Peak
Trace	Max Hold
Sweep Time	Auto
99% Occupied Bandwidth	
Spectrum Parameters	Setting
Span	1.5 times to 5.0 times the OBW
RBW	1 % to 5 % of the OBW
VBW	$\geq 3 \times \text{RBW}$
Detector	Peak
Trace	Max Hold

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 v03r05 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 Non-beamforming mode>

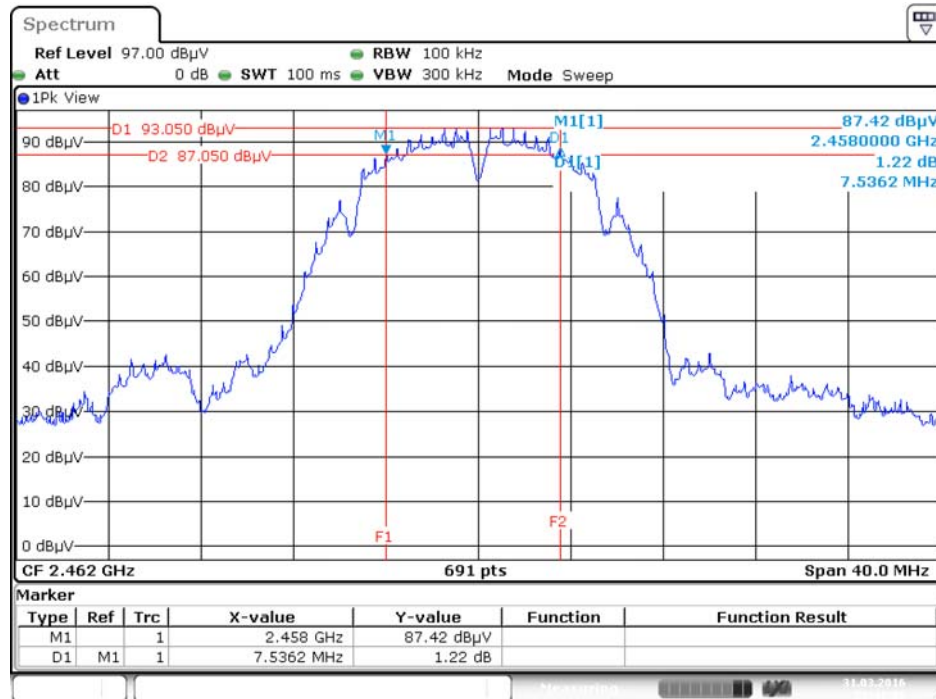
Temperature	25°C	Humidity	56%
Test Engineer	Serway Li		

Mode	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11b	2412 MHz	7.59	10.42	500	Complies
	2437 MHz	7.59	10.42	500	Complies
	2462 MHz	7.54	10.42	500	Complies
802.11g	2412 MHz	7.25	15.46	500	Complies
	2437 MHz	7.19	15.46	500	Complies
	2462 MHz	7.54	15.80	500	Complies
802.11ac MCS0/Nss1 VHT20	2412 MHz	10.67	16.67	500	Complies
	2437 MHz	11.65	17.19	500	Complies
	2462 MHz	11.07	16.50	500	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	35.71	36.32	500	Complies
	2437 MHz	35.01	36.32	500	Complies
	2452 MHz	35.71	36.47	500	Complies

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

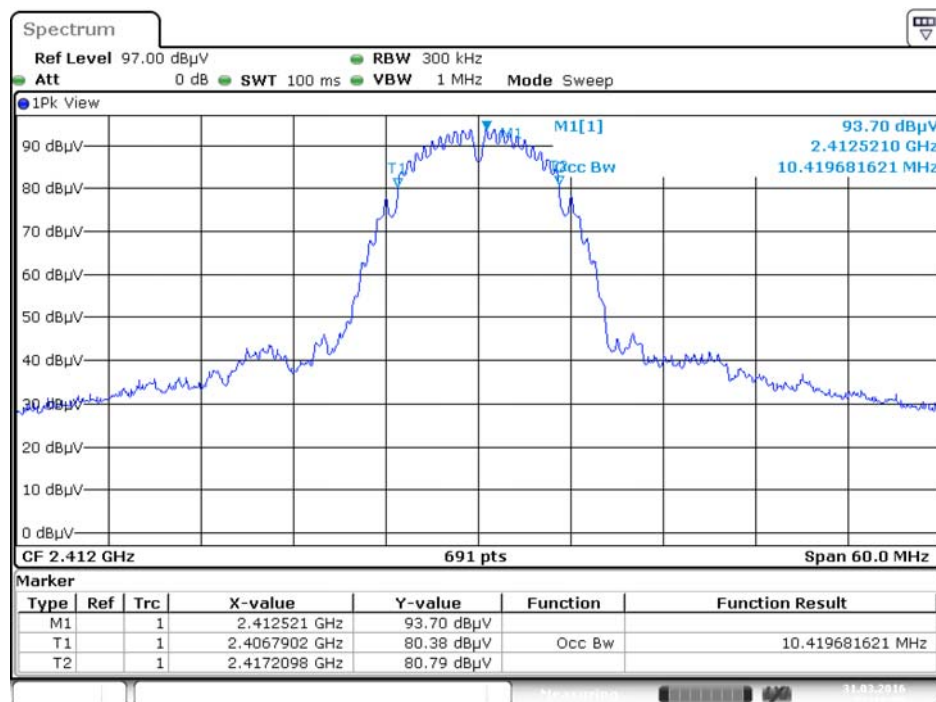
For plots, only the channel with worse result was shown.

6 dB Bandwidth Plot on Configuration IEEE 802.11b / 2462 MHz / Chain 1 + Chain 2 + Chain 3 + Chain 4



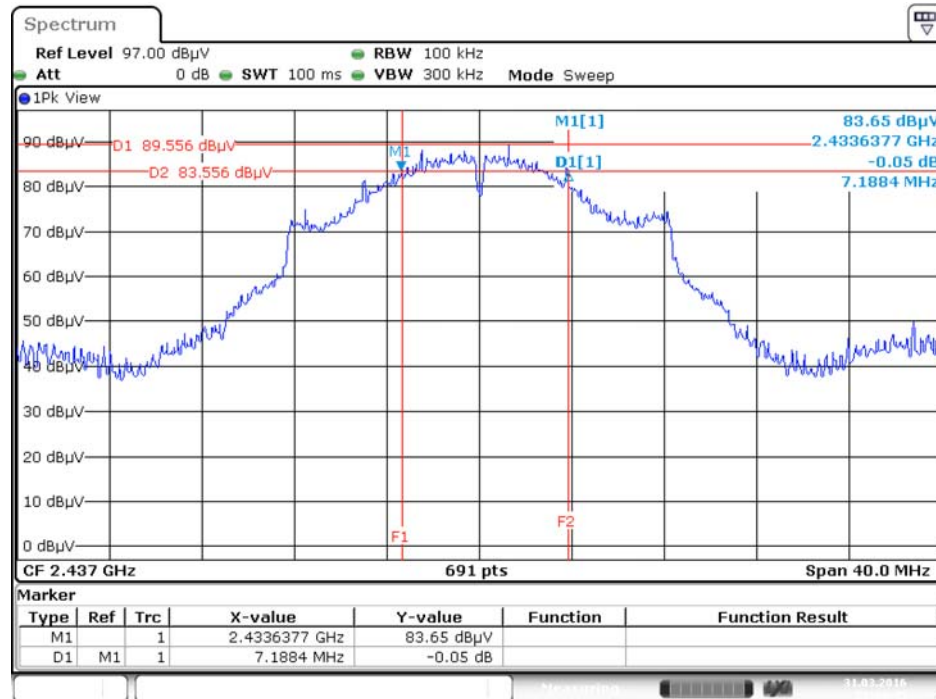
Date: 31.MAR.2016 21:41:16

99% Occupied Bandwidth Plot on Configuration IEEE 802.11b / 2412 MHz / Chain 1 + Chain 2 + Chain 3 + Chain 4

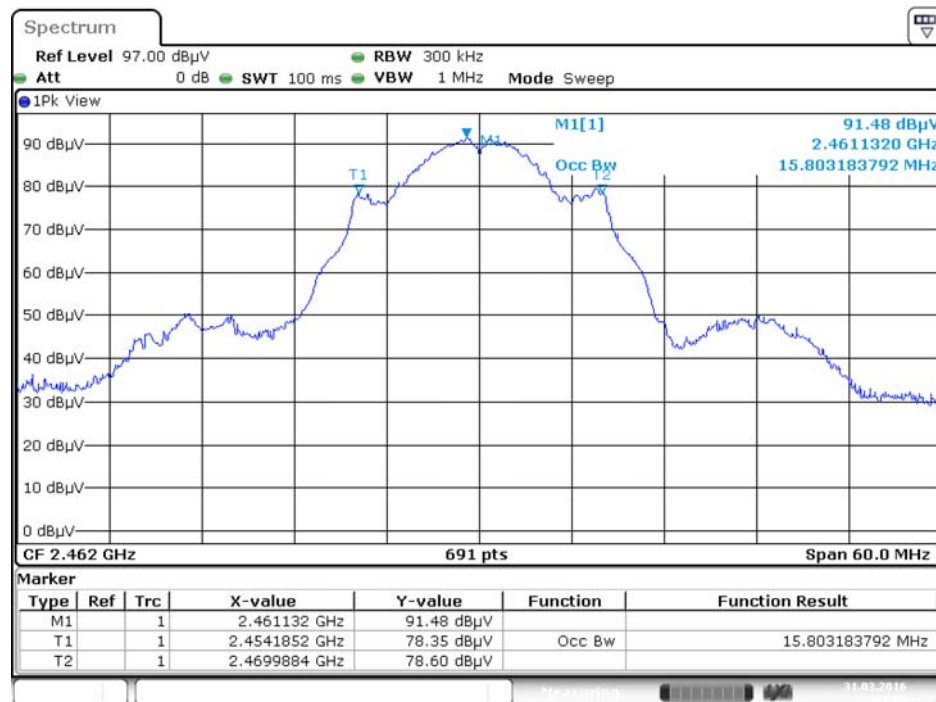


Date: 31.MAR.2016 22:18:58

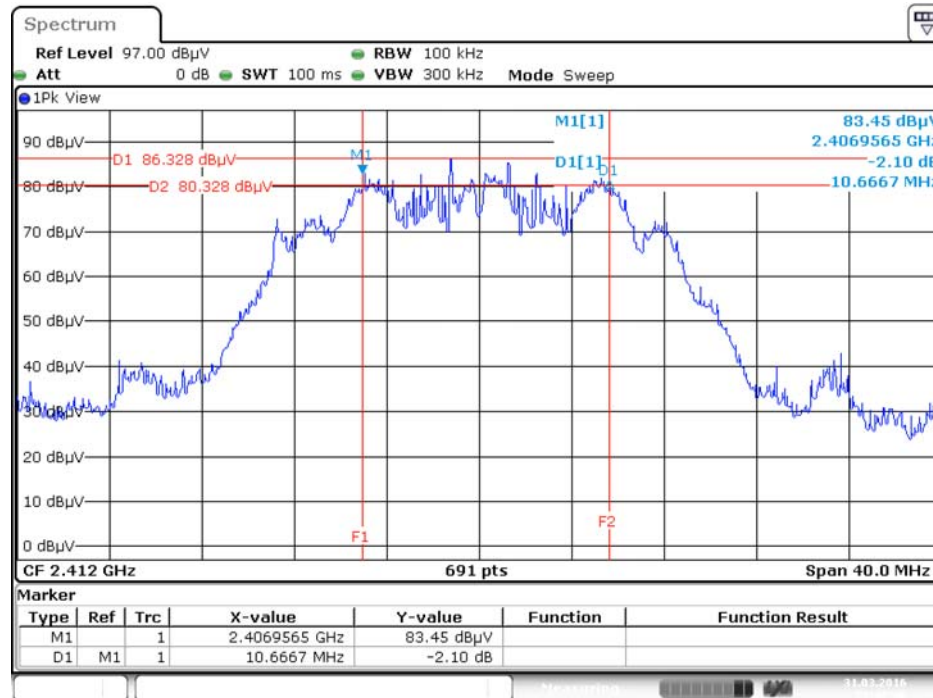
6 dB Bandwidth Plot on Configuration IEEE 802.11g / 2437 MHz / Chain 1 + Chain 2 + Chain 3 + Chain 4



99% Occupied Bandwidth Plot on Configuration IEEE 802.11g / 2462 MHz / Chain 1 + Chain 2 + Chain 3 + Chain 4



6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2412 MHz / Chain 1 + Chain 2 + Chain 3 + Chain 4



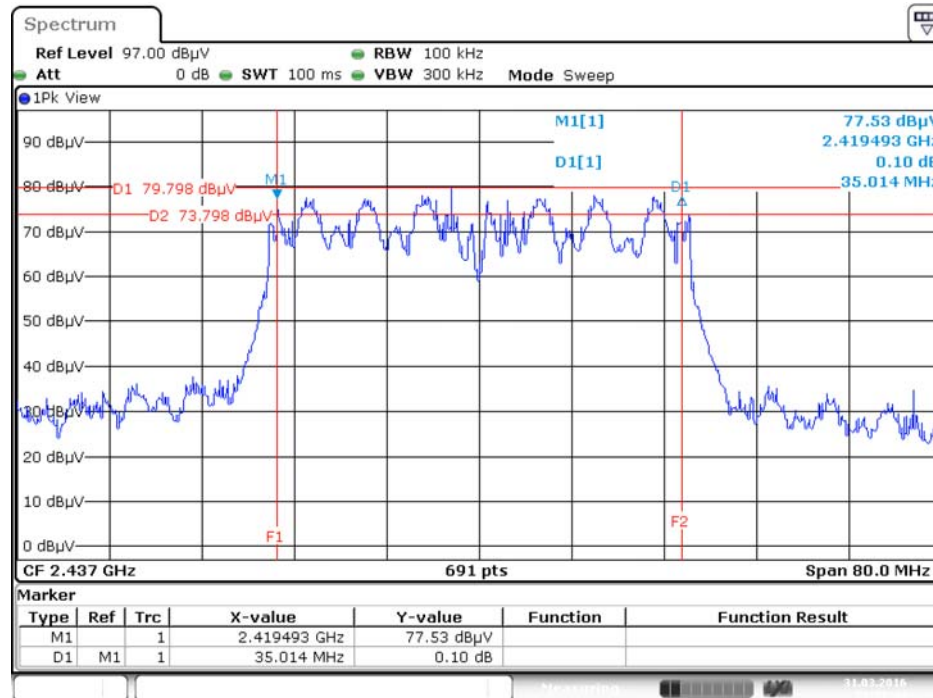
Date: 31.MAR.2016 21:47:46

99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 1 + Chain 2 + Chain 3 + Chain 4



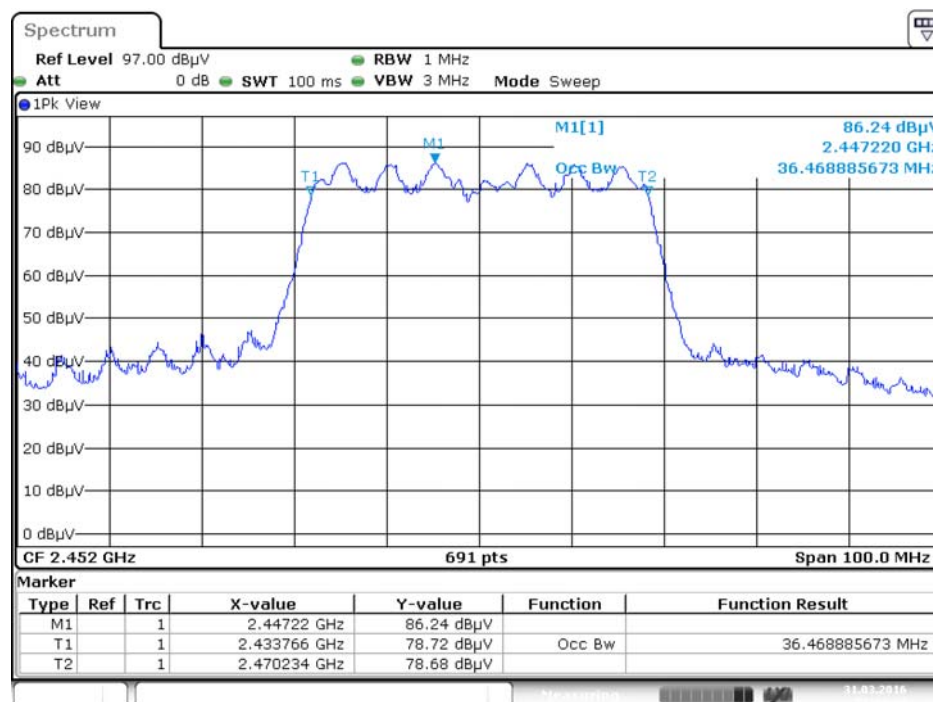
Date: 31.MAR.2016 22:27:48

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2437 MHz / Chain 1 + Chain 2 + Chain 3 + Chain 4



Date: 31.MAR.2016 21:52:45

99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2452 MHz / Chain 1 + Chain 2 + Chain 3 + Chain 4



Date: 31.MAR.2016 22:34:34

<For beamforming mode>

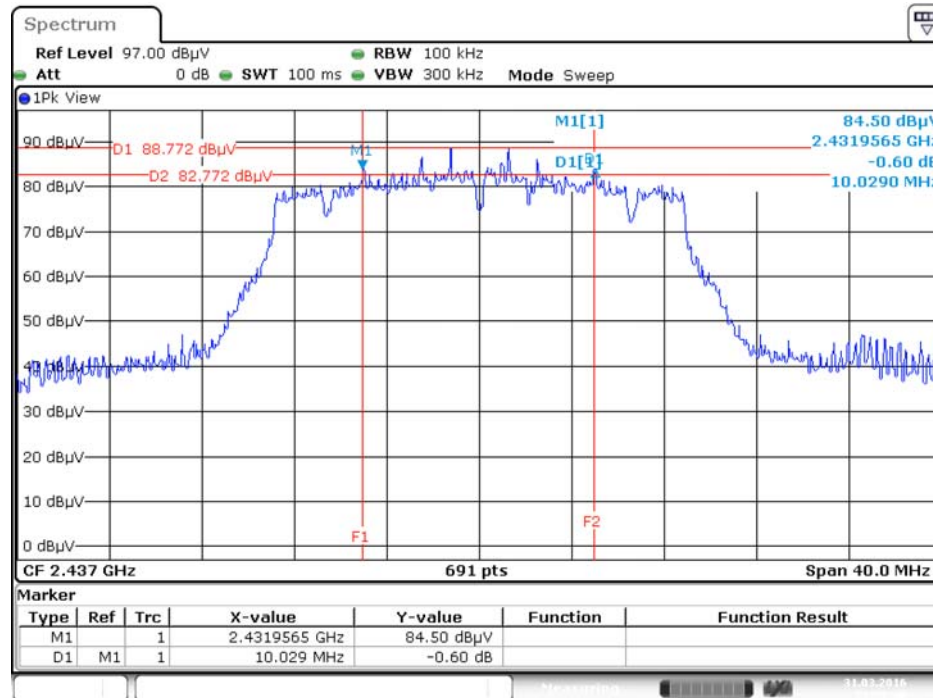
Temperature	25°C	Humidity	56%
Test Engineer	Serway Li		

Mode	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11ac MCS0/Nss1 VHT20	2412 MHz	10.09	17.63	500	Complies
	2437 MHz	10.03	17.71	500	Complies
	2462 MHz	10.14	17.63	500	Complies
802.11ac MCS0/Nss1 VHT40	2422 MHz	36.29	36.90	500	Complies
	2437 MHz	36.17	36.76	500	Complies
	2452 MHz	35.71	36.90	500	Complies

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

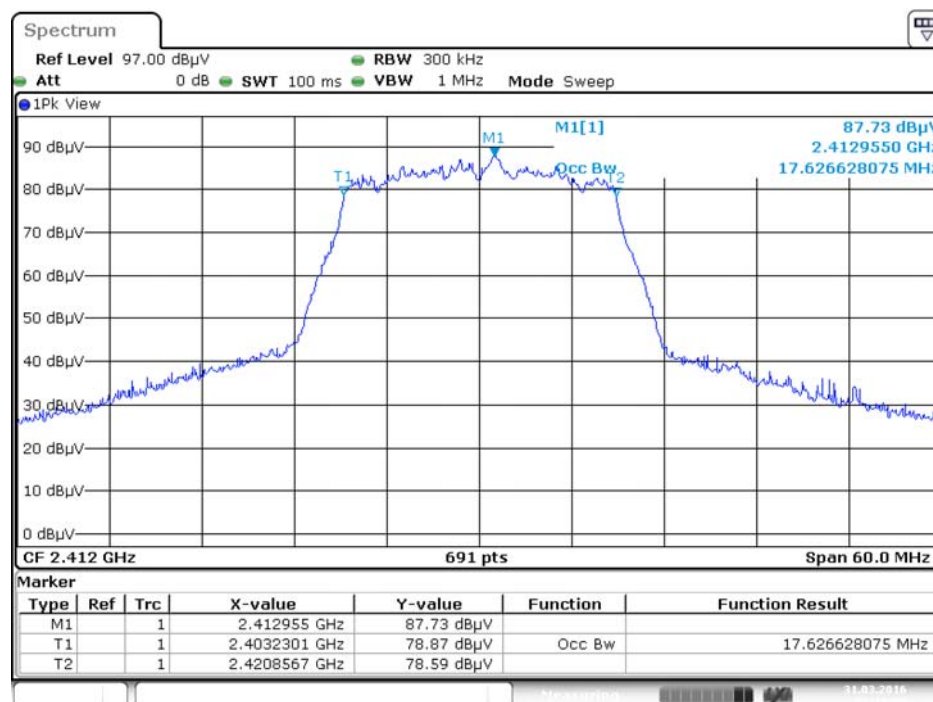
For plots, only the channel with worse result was shown.

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2437 MHz / Chain 1 + Chain 2 + Chain 3 + Chain 4



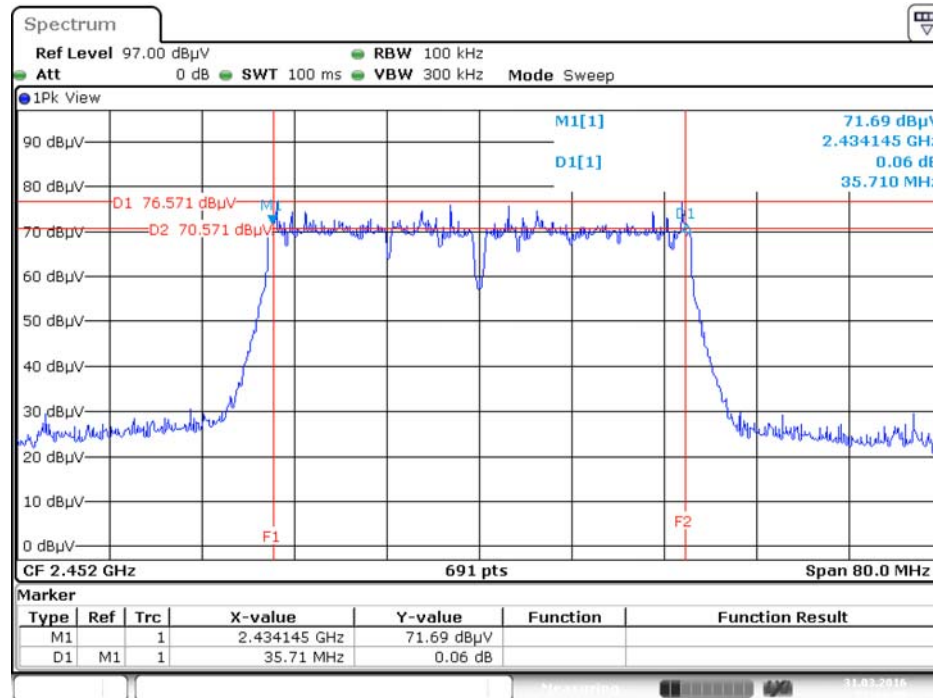
Date: 31.MAR.2016 21:58:48

99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 2412 MHz / Chain 1 + Chain 2 + Chain 3 + Chain 4

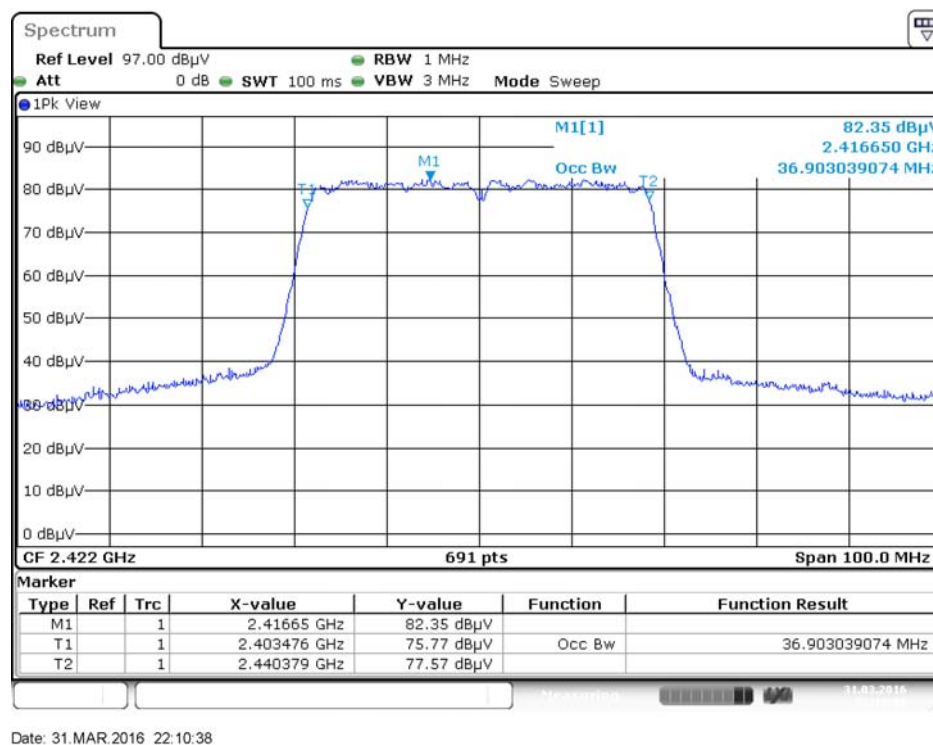


Date: 31.MAR.2016 22:12:53

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2452 MHz / Chain 1 + Chain 2 + Chain 3 + Chain 4



99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 2422 MHz / Chain 1 + Chain 2 + Chain 3 + Chain 4



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 (microvolt/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

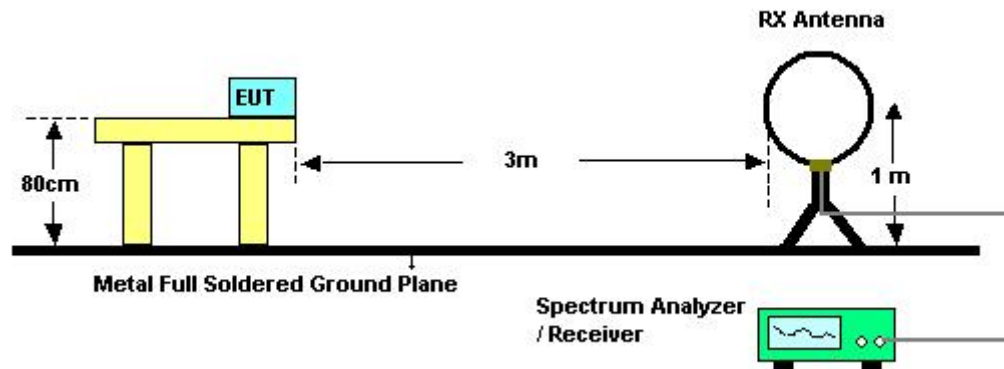
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.5.3. Test Procedures

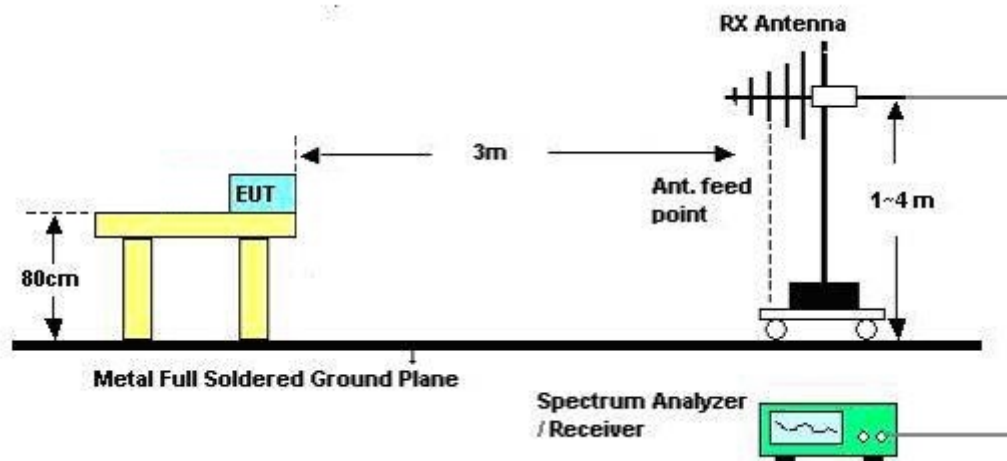
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1m & 3m far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 m to 4 m) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and 3MHz RBW for peak reading. Then 1MHz RBW and 1/T VBW for average reading in spectrum analyzer.
7. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
8. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
9. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

4.5.4. Test Setup Layout

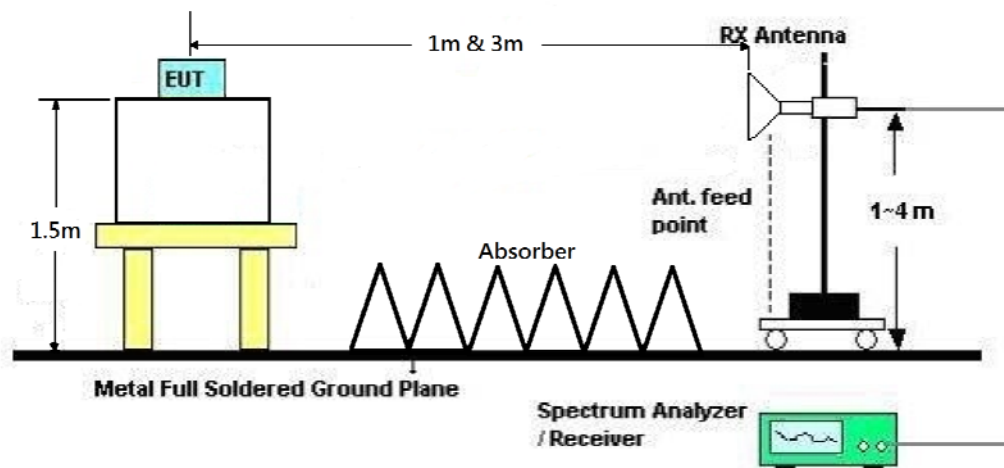
For Radiated Emissions: 9kHz ~30MHz



For Radiated Emissions: 30MHz~1GHz



For Radiated Emissions: Above 1GHz



4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. EUT Operation during Test

For non-beamforming mode:

The EUT was programmed to be in continuously transmitting mode.

For beamforming mode:

The EUT was programmed to be in beamforming transmitting mode.

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

Temperature	24°C	Humidity	54%
Test Engineer	Eason Chen / John Tang	Configurations	Normal Link
Test Date	May 13, 2016	Test Mode	Mode 1

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

Note:

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

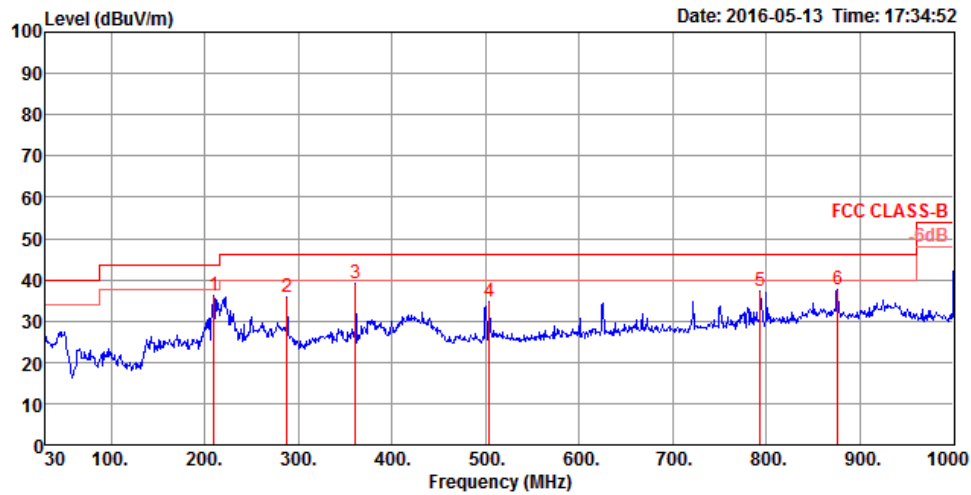
Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB);

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

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

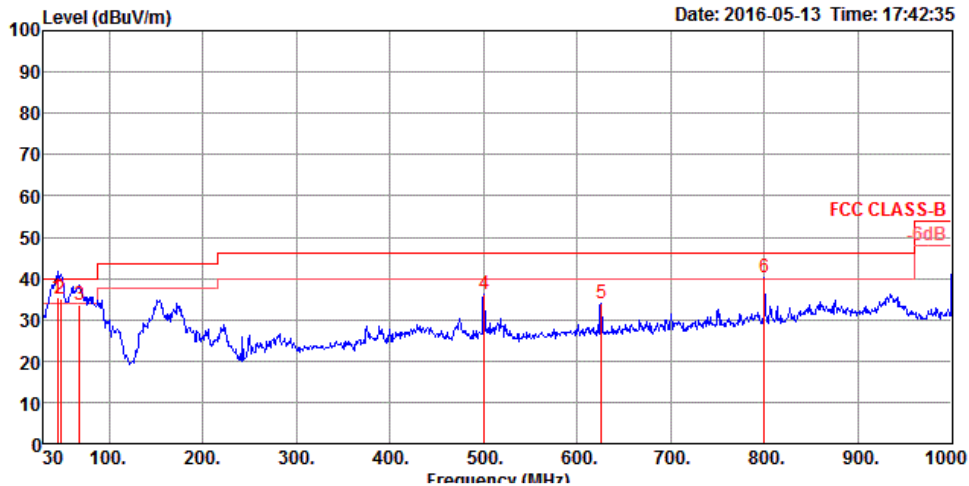
Temperature	24°C	Humidity	54%
Test Engineer	Eason Chen / John Tang	Configurations	Normal Link
Test Mode	Mode 1		

Horizontal



	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	209.45	36.31	43.50	-7.19	50.69	1.24	16.70	32.32	125	181 Peak	HORIZONTAL
2	288.02	35.73	46.00	-10.27	46.79	1.45	19.78	32.29	125	0 Peak	HORIZONTAL
3	360.77	39.08	46.00	-6.92	48.08	1.64	21.67	32.31	100	360 Peak	HORIZONTAL
4	504.33	34.54	46.00	-11.46	40.85	1.95	24.09	32.35	150	59 Peak	HORIZONTAL
5	793.39	37.38	46.00	-8.62	40.42	2.45	26.76	32.25	125	359 Peak	HORIZONTAL
6	875.84	37.56	46.00	-8.44	39.32	2.55	27.55	31.86	100	183 Peak	HORIZONTAL

Vertical



	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	44.55	35.59	40.00	-4.41	50.04	0.59	17.37	32.41	100	230 QP	VERTICAL
2	48.43	35.02	40.00	-4.98	51.26	0.61	15.56	32.41	100	21 QP	VERTICAL
3	68.80	33.42	40.00	-6.58	52.11	0.72	12.99	32.40	150	105 QP	VERTICAL
4	500.45	36.23	46.00	-9.77	42.61	1.94	24.03	32.35	150	3 Peak	VERTICAL
5	625.58	33.89	46.00	-12.11	38.36	2.16	25.77	32.40	100	51 Peak	VERTICAL
6	800.18	40.13	46.00	-5.87	43.11	2.46	26.80	32.24	100	66 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 mode>

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11b CH 1 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	4824.04	45.60	54.00	-8.40	37.31	8.11	33.11	32.93	104	44	Average	HORIZONTAL
2	4824.10	51.73	74.00	-22.27	43.44	8.11	33.11	32.93	104	44	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	4823.98	55.24	74.00	-18.76	46.95	8.11	33.11	32.93	100	0	Peak	VERTICAL
2	4824.06	50.91	54.00	-3.09	42.62	8.11	33.11	32.93	100	0	Average	VERTICAL

Temperature	22°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11b CH 6 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	4873.90	54.05	74.00	-19.95	45.81	7.94	33.23	32.93	100	45	Peak	HORIZONTAL
2	4874.04	49.36	54.00	-4.64	41.12	7.94	33.23	32.93	100	45	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	4873.94	56.91	74.00	-17.09	48.67	7.94	33.23	32.93	100	0	Peak	VERTICAL
2	4874.06	53.35	54.00	-0.65	45.11	7.94	33.23	32.93	100	0	Average	VERTICAL

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11b CH 11 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	4923.74	50.55	74.00	-23.45	42.34	7.78	33.35	32.92	100	43	Peak	HORIZONTAL
2	4924.02	39.10	54.00	-14.90	30.89	7.78	33.35	32.92	100	43	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	4923.98	42.60	54.00	-11.40	34.39	7.78	33.35	32.92	100	0	Average	VERTICAL
2	4924.15	51.24	74.00	-22.76	43.03	7.78	33.35	32.92	100	0	Peak	VERTICAL

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11g CH 1 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	4802.90	48.91	74.00	-25.09	40.62	8.15	33.08	32.94	108	324	Peak	HORIZONTAL
2	4837.90	35.96	54.00	-18.04	27.68	8.07	33.14	32.93	108	324	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	4825.80	37.23	54.00	-16.77	28.95	8.07	33.14	32.93	100	0	Average	VERTICAL
2	4827.70	49.23	74.00	-24.77	40.95	8.07	33.14	32.93	100	0	Peak	VERTICAL

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11g CH 6 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	4875.70	39.51	54.00	-14.49	31.27	7.94	33.23	32.93	100	282	Average	HORIZONTAL
2	4877.90	52.47	74.00	-21.53	44.23	7.94	33.23	32.93	100	282	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	4872.80	58.79	74.00	-15.21	50.55	7.94	33.23	32.93	100	0	Peak	VERTICAL
2	4875.80	44.10	54.00	-9.90	35.86	7.94	33.23	32.93	100	0	Average	VERTICAL

Temperature	22°C	Humidity	62%
Test Engineer	Eason Chen	Configurations	IEEE 802.11g CH 11 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	4923.68	36.19	54.00	-17.81	27.98	7.78	33.35	32.92	136	330	Average	HORIZONTAL
2	4926.40	49.22	74.00	-24.78	41.01	7.78	33.35	32.92	136	330	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	4923.64	49.02	74.00	-24.98	40.81	7.78	33.35	32.92	112	354	Peak	VERTICAL
2	4926.92	36.66	54.00	-17.34	28.45	7.78	33.35	32.92	112	354	Average	VERTICAL

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 1 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	4830.40	48.97	74.00	-25.03	40.69	8.07	33.14	32.93	120	30	Peak	HORIZONTAL
2	4832.90	35.69	54.00	-18.31	27.41	8.07	33.14	32.93	120	30	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	4820.80	36.50	54.00	-17.50	28.21	8.11	33.11	32.93	103	6	Average	VERTICAL
2	4832.90	48.47	74.00	-25.53	40.19	8.07	33.14	32.93	103	6	Peak	VERTICAL

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 6 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4867.80	53.20	74.00	-20.80	44.96	7.94	33.23	32.93	330	283	Peak	HORIZONTAL
2	4873.10	39.58	54.00	-14.42	31.34	7.94	33.23	32.93	330	283	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4873.76	58.19	74.00	-15.81	49.95	7.94	33.23	32.93	100	360	Peak	VERTICAL
2	4873.96	42.76	54.00	-11.24	34.52	7.94	33.23	32.93	100	360	Average	VERTICAL

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 11 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	4922.12	49.04	74.00	-24.96	40.82	7.82	33.32	32.92	140	53	Peak	HORIZONTAL
2	4924.90	36.33	54.00	-17.67	28.12	7.78	33.35	32.92	140	53	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	4924.18	36.39	54.00	-17.61	28.18	7.78	33.35	32.92	148	36	Average	VERTICAL
2	4926.18	49.15	74.00	-24.85	40.94	7.78	33.35	32.92	148	36	Peak	VERTICAL

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 3 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	4840.08	35.92	54.00	-18.08	27.65	8.03	33.17	32.93	157	338	Average	HORIZONTAL
2	4845.26	48.14	74.00	-25.86	39.87	8.03	33.17	32.93	157	338	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	4841.34	48.83	74.00	-25.17	40.56	8.03	33.17	32.93	146	343	Peak	VERTICAL
2	4841.36	35.95	54.00	-18.05	27.68	8.03	33.17	32.93	146	343	Average	VERTICAL

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 6 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4872.90	48.84	74.00	-25.16	40.60	7.94	33.23	32.93	137	352	Peak	HORIZONTAL
2	4875.82	36.05	54.00	-17.95	27.81	7.94	33.23	32.93	137	352	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4872.36	36.22	54.00	-17.78	27.98	7.94	33.23	32.93	131	336	Average	VERTICAL
2	4878.46	48.76	74.00	-25.24	40.52	7.94	33.23	32.93	131	336	Peak	VERTICAL

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 9 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 2016		

Horizontal

	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4905.70	35.88	54.00	-18.12	27.65	7.86	33.29	32.92	122	49	Average	HORIZONTAL
2	4908.36	48.69	74.00	-25.31	40.46	7.86	33.29	32.92	122	49	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4905.04	35.94	54.00	-18.06	27.71	7.86	33.29	32.92	112	14	Average	VERTICAL
2	4906.80	49.14	74.00	-24.86	40.91	7.86	33.29	32.92	112	14	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.

<For beamforming mode>

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 1 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	4823.17	36.46	54.00	-17.54	28.17	8.11	33.11	32.93	142	233	Average	HORIZONTAL
2	4824.04	50.30	74.00	-23.70	42.01	8.11	33.11	32.93	142	233	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	4823.52	36.93	54.00	-17.07	28.64	8.11	33.11	32.93	136	284	Average	VERTICAL
2	4823.98	50.98	74.00	-23.02	42.69	8.11	33.11	32.93	136	284	Peak	VERTICAL

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 6 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	4873.86	50.40	74.00	-23.60	42.16	7.94	33.23	32.93	115	198	Peak	HORIZONTAL
2	4874.86	36.93	54.00	-17.07	28.69	7.94	33.23	32.93	115	198	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	4873.12	37.37	54.00	-16.63	29.13	7.94	33.23	32.93	156	233	Average	VERTICAL
2	4873.84	51.32	74.00	-22.68	43.08	7.94	33.23	32.93	156	233	Peak	VERTICAL

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 11 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	4923.23	51.29	74.00	-22.71	43.07	7.82	33.32	32.92	100	0	Peak	HORIZONTAL
2	4924.08	37.04	54.00	-16.96	28.83	7.78	33.35	32.92	100	0	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4923.77	50.71	74.00	-23.29	42.50	7.78	33.35	32.92	100	0	Peak	VERTICAL
2	4924.51	37.24	54.00	-16.76	29.03	7.78	33.35	32.92	100	0	Average	VERTICAL

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 3 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4843.20	51.62	74.00	-22.38	43.35	8.03	33.17	32.93	132	158	Peak	HORIZONTAL
2	4844.62	36.46	54.00	-17.54	28.19	8.03	33.17	32.93	132	158	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4843.08	50.15	74.00	-23.85	41.88	8.03	33.17	32.93	148	252	Peak	VERTICAL
2	4844.00	36.67	54.00	-17.33	28.40	8.03	33.17	32.93	148	252	Average	VERTICAL

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 6 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	4874.28	50.30	74.00	-23.70	42.06	7.94	33.23	32.93	112	223	Peak	HORIZONTAL
2	4874.66	36.88	54.00	-17.12	28.64	7.94	33.23	32.93	112	223	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	4873.21	51.23	74.00	-22.77	42.99	7.94	33.23	32.93	162	148	Peak	VERTICAL
2	4874.84	36.80	54.00	-17.20	28.56	7.94	33.23	32.93	162	148	Average	VERTICAL

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 9 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 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	4899.69	50.60	74.00	-23.40	42.37	7.86	33.29	32.92	185	198	Peak	HORIZONTAL
2	4899.95	36.52	54.00	-17.48	28.29	7.86	33.29	32.92	185	198	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	4899.62	36.53	54.00	-17.47	28.30	7.86	33.29	32.92	109	201	Average	VERTICAL
2	4899.70	50.13	74.00	-23.87	41.90	7.86	33.29	32.92	109	201	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:

- The test procedure is the same as section 4.5.3.

For Radiated Out of Band Emission Measurement:

- Test was performed in accordance with KDB558074 D01 v03r05 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.

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 mode:

The EUT was programmed to be in continuously transmitting mode.

For beamforming mode:

The EUT was programmed to be in beamforming transmitting mode.

4.6.7. Test Result of Band Edge and Fundamental Emissions

<For Non-beamforming mode>

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11b CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 25, 2016		

Channel 1

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	2390.00	63.95	74.00	-10.05	31.26	4.38	28.31	0.00	180	161 Peak	VERTICAL
2	2390.00	53.86	54.00	-0.14	21.17	4.38	28.31	0.00	180	161 Average	VERTICAL
3	2411.20	120.10			87.33	4.41	28.36	0.00	180	161 Average	VERTICAL
4	2413.20	124.18			91.41	4.41	28.36	0.00	180	161 Peak	VERTICAL

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

Channel 6

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	2389.80	60.33	74.00	-13.67	27.64	4.38	28.31	0.00	214	149 Peak	VERTICAL
2	2390.00	52.28	54.00	-1.72	19.59	4.38	28.31	0.00	214	149 Average	VERTICAL
3	2436.20	126.11			93.28	4.44	28.39	0.00	214	149 Peak	VERTICAL
4	2436.20	122.40			89.57	4.44	28.39	0.00	214	149 Average	VERTICAL
5	2483.80	53.47	54.00	-0.53	20.49	4.50	28.48	0.00	214	149 Average	VERTICAL
6	2485.80	61.66	74.00	-12.34	28.68	4.50	28.48	0.00	214	149 Peak	VERTICAL

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

Channel 11

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	2461.20	118.89			85.98	4.47	28.44	0.00	181	156 Average	VERTICAL
2	2463.20	122.89			89.98	4.47	28.44	0.00	181	156 Peak	VERTICAL
3	2483.50	63.72	74.00	-10.28	30.74	4.50	28.48	0.00	181	156 Peak	VERTICAL
4	2483.50	53.86	54.00	-0.14	20.88	4.50	28.48	0.00	181	156 Average	VERTICAL

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

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11g CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 25, 2016		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	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	72.23	74.00	-1.77	39.54	4.38	28.31	0.00	175	155	Peak	VERTICAL
2	2390.00	53.75	54.00	-0.25	21.06	4.38	28.31	0.00	175	155	Average	VERTICAL
3	2412.40	120.93			88.16	4.41	28.36	0.00	175	155	Peak	VERTICAL
4	2412.80	111.62			78.85	4.41	28.36	0.00	175	155	Average	VERTICAL

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

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2389.60	66.22	74.00	-7.78	33.53	4.38	28.31	0.00	176	146	Peak	VERTICAL
2	2390.00	53.50	54.00	-0.50	20.81	4.38	28.31	0.00	176	146	Average	VERTICAL
3	2436.40	126.81			93.98	4.44	28.39	0.00	176	146	Peak	VERTICAL
4	2436.40	117.82			84.99	4.44	28.39	0.00	176	146	Average	VERTICAL
5	2489.20	67.07	74.00	-6.93	34.07	4.51	28.49	0.00	176	146	Peak	VERTICAL
6	2489.80	51.42	54.00	-2.58	18.42	4.51	28.49	0.00	176	146	Average	VERTICAL

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

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2461.20	118.99			86.08	4.47	28.44	0.00	180	149	Peak	VERTICAL
2	2461.20	108.63			75.72	4.47	28.44	0.00	180	149	Average	VERTICAL
3	2483.50	72.72	74.00	-1.28	39.74	4.50	28.48	0.00	180	149	Peak	VERTICAL
4	2483.50	53.82	54.00	-0.18	20.84	4.50	28.48	0.00	180	149	Average	VERTICAL

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

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 25, 2016		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	2385.60	68.53	74.00	-5.47	35.84	4.38	28.31	0.00	189	279 Peak	VERTICAL
2	2390.00	53.76	54.00	-0.24	21.07	4.38	28.31	0.00	189	279 Average	VERTICAL
3	2410.40	120.76			88.01	4.40	28.35	0.00	189	279 Peak	VERTICAL
4	2410.40	109.56			76.81	4.40	28.35	0.00	189	279 Average	VERTICAL

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

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	2389.80	53.51	54.00	-0.49	20.82	4.38	28.31	0.00	176	280 Average	VERTICAL
2	2390.00	70.66	74.00	-3.34	37.97	4.38	28.31	0.00	176	280 Peak	VERTICAL
3	2435.40	126.43			93.60	4.44	28.39	0.00	176	280 Peak	VERTICAL
4	2435.40	115.51			82.68	4.44	28.39	0.00	176	280 Average	VERTICAL
5	2486.20	69.84	74.00	-4.16	36.86	4.50	28.48	0.00	176	280 Peak	VERTICAL
6	2486.20	52.39	54.00	-1.61	19.41	4.50	28.48	0.00	176	280 Average	VERTICAL

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

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	2460.40	110.39			77.50	4.46	28.43	0.00	178	280 Average	VERTICAL
2	2460.80	120.87			87.96	4.47	28.44	0.00	178	280 Peak	VERTICAL
3	2485.20	53.67	54.00	-0.33	20.69	4.50	28.48	0.00	178	280 Average	VERTICAL
4	2485.60	70.91	74.00	-3.09	37.93	4.50	28.48	0.00	178	280 Peak	VERTICAL

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

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 3, 6, 9 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 25, 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	2386.00	64.99	74.00	-9.01	32.30	4.38	28.31	0.00	186	278	Peak	VERTICAL
2	2390.00	53.89	54.00	-0.11	21.20	4.38	28.31	0.00	186	278	Average	VERTICAL
3	2415.40	102.37			69.60	4.41	28.36	0.00	186	278	Average	VERTICAL
4	2425.00	111.75			78.96	4.42	28.37	0.00	186	278	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	2390.00	70.51	74.00	-3.49	37.82	4.38	28.31	0.00	182	283	Peak	VERTICAL
2	2390.00	53.85	54.00	-0.15	21.16	4.38	28.31	0.00	182	283	Average	VERTICAL
3	2420.20	105.39			72.60	4.42	28.37	0.00	182	283	Average	VERTICAL
4	2423.80	115.53			82.74	4.42	28.37	0.00	182	283	Peak	VERTICAL
5	2485.40	50.49	54.00	-3.51	17.51	4.50	28.48	0.00	182	283	Average	VERTICAL
6	2486.20	65.43	74.00	-8.57	32.45	4.50	28.48	0.00	182	283	Peak	VERTICAL

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

Channel 9

	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2445.60	102.32			69.46	4.45	28.41	0.00	176	279	Average	VERTICAL
2	2458.80	112.27			79.38	4.46	28.43	0.00	176	279	Peak	VERTICAL
3	2485.60	66.46	74.00	-7.54	33.48	4.50	28.48	0.00	176	279	Peak	VERTICAL
4	2485.60	53.94	54.00	-0.06	20.96	4.50	28.48	0.00	176	279	Average	VERTICAL

Item 3, 4 are the fundamental frequency at 2452 MHz.

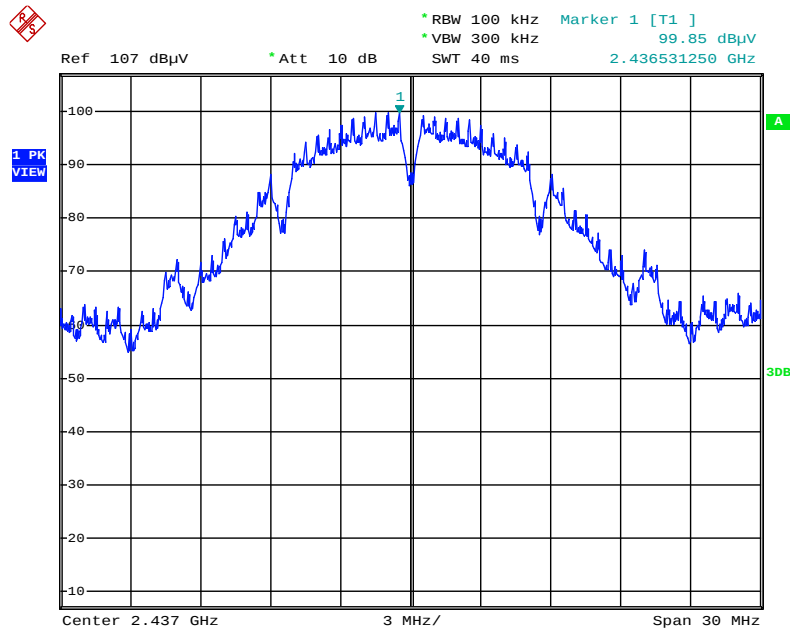
Note:

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

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

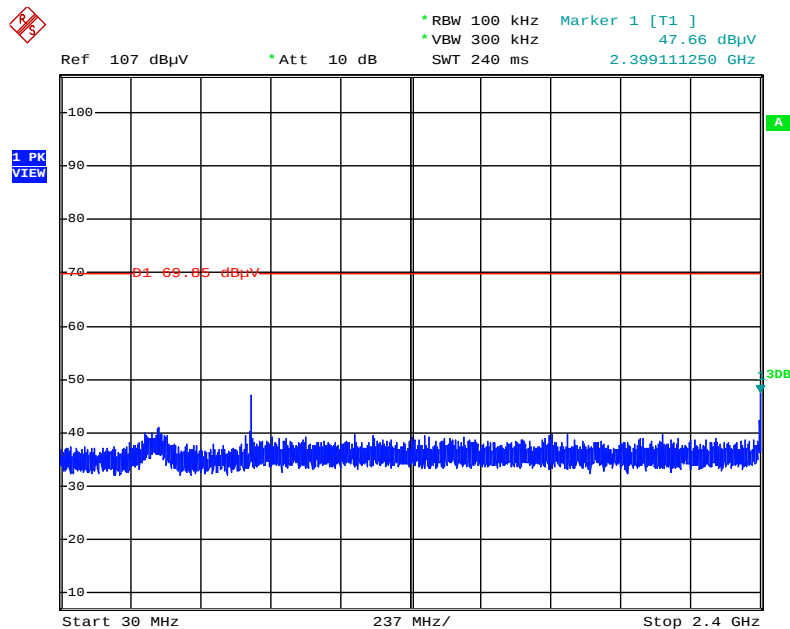
For Emission not in Restricted Band

Plot on Configuration IEEE 802.11b / Reference Level



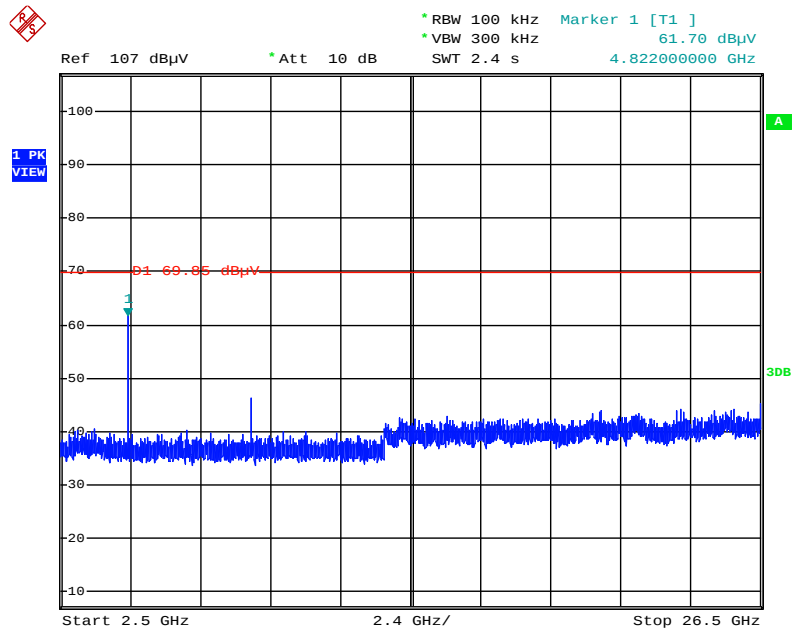
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Plot on Configuration IEEE 802.11b / CH 1 / 30MHz~2400MHz (down 30dBc)



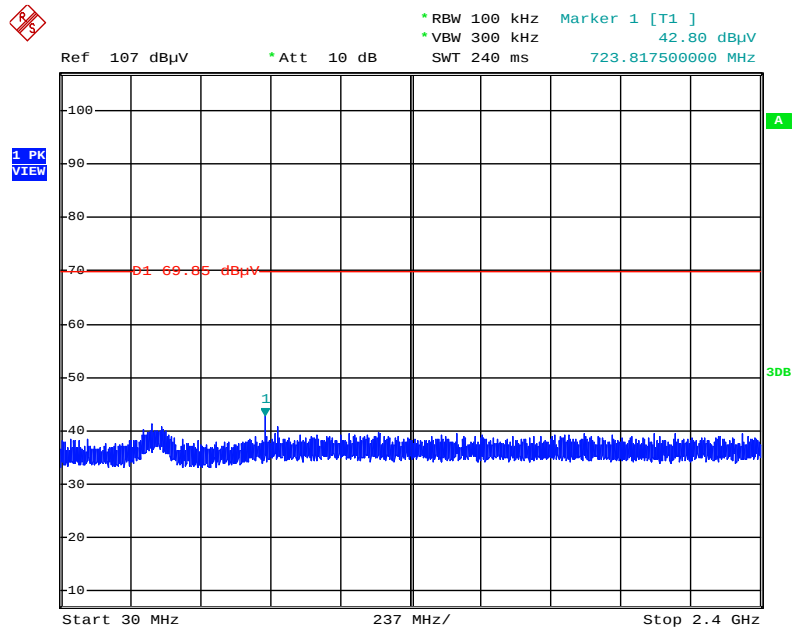
Date: 26.FEB.2016 00:59:50

Plot on Configuration IEEE 802.11b / CH 1 / 2483.5MHz~26500MHz (down 30dBc)



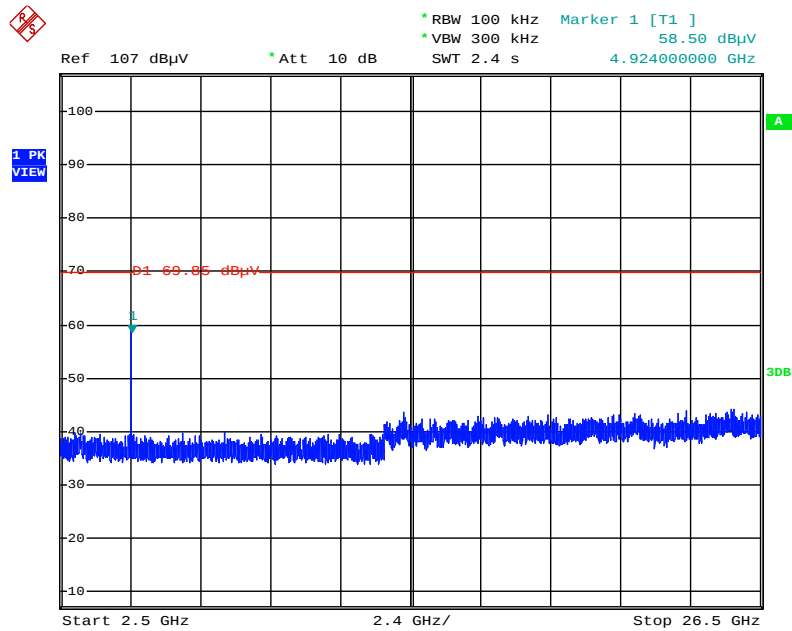
Date: 26.FEB.2016 01:00:15

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



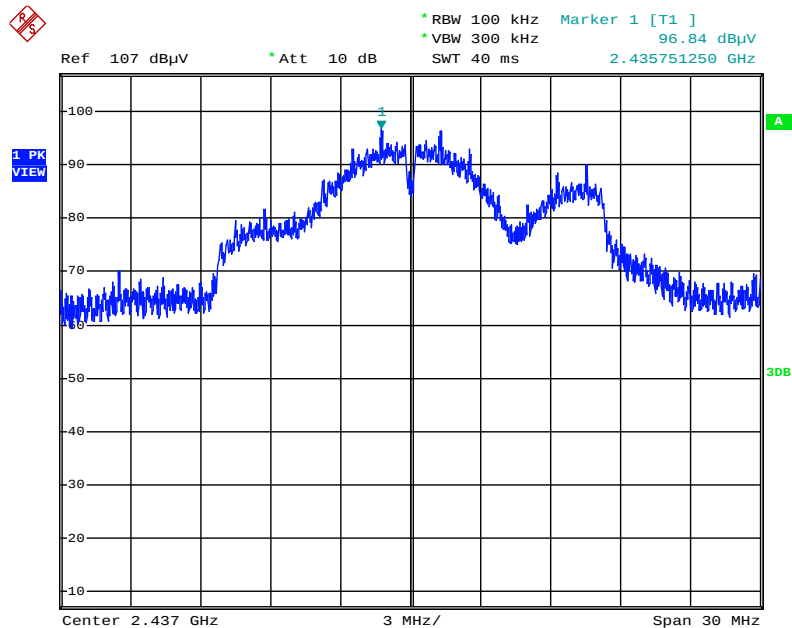
Date: 26.FEB.2016 01:01:15

Plot on Configuration IEEE 802.11b / CH 11 / 2483.5MHz~26500MHz (down 30dBc)



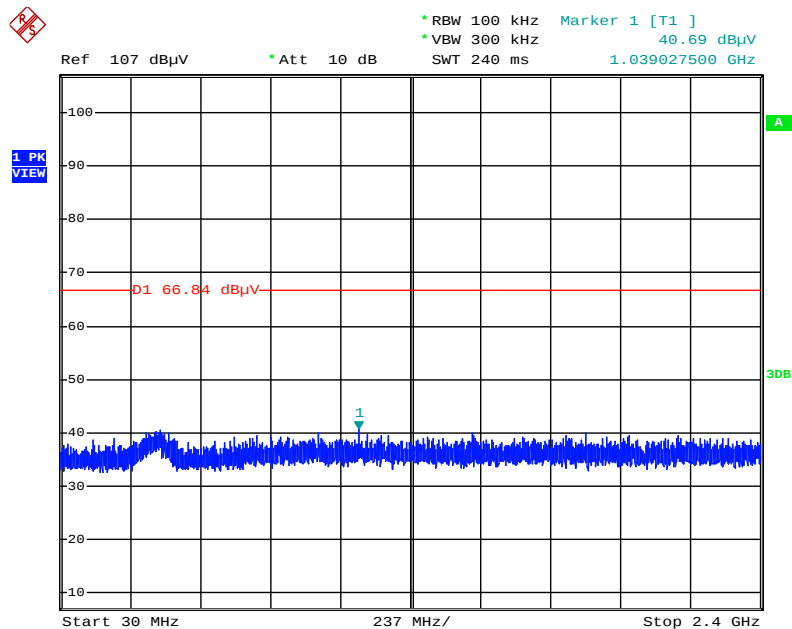
Date: 26.FEB.2016 01:01:41

Plot on Configuration IEEE 802.11g / Reference Level



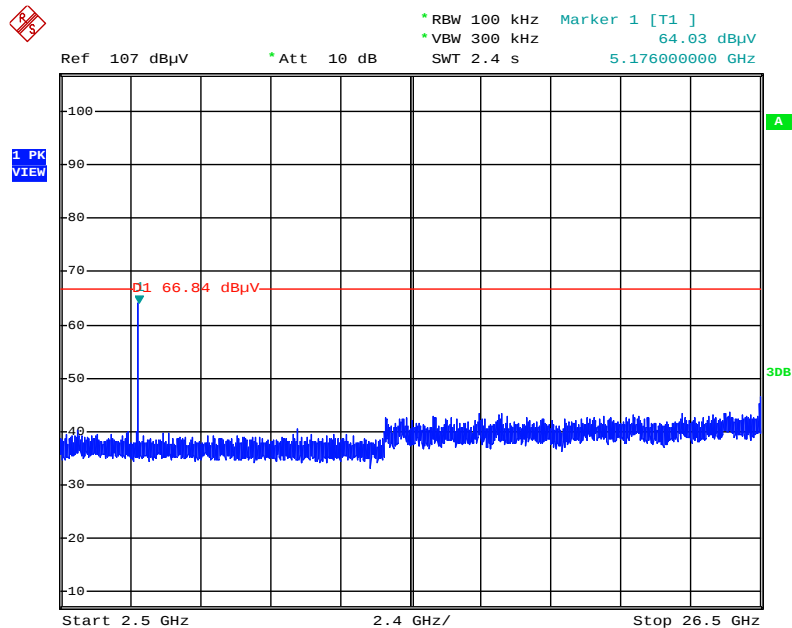
Date: 26.FEB.2016 01:02:48

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



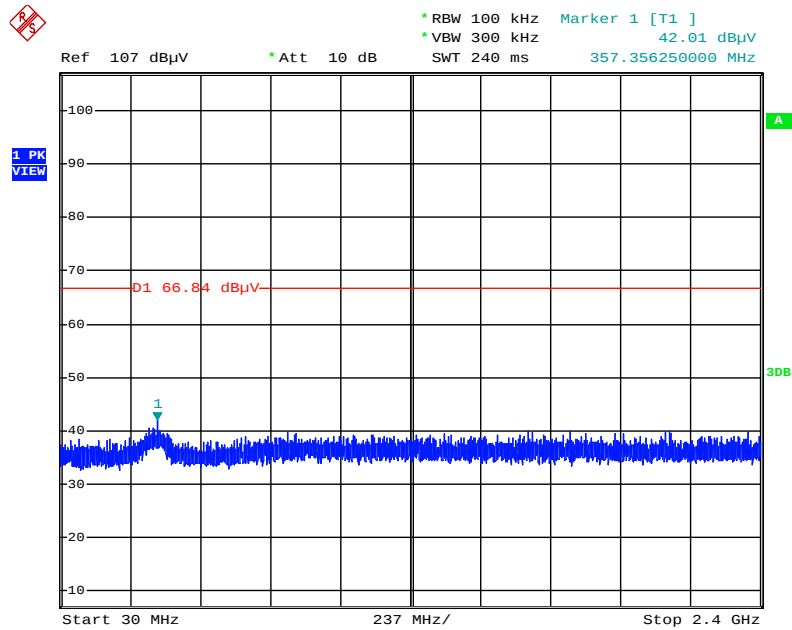
Date: 26.FEB.2016 01:04:09

Plot on Configuration IEEE 802.11g / CH 1 / 2483.5MHz~26500MHz (down 30dBc)



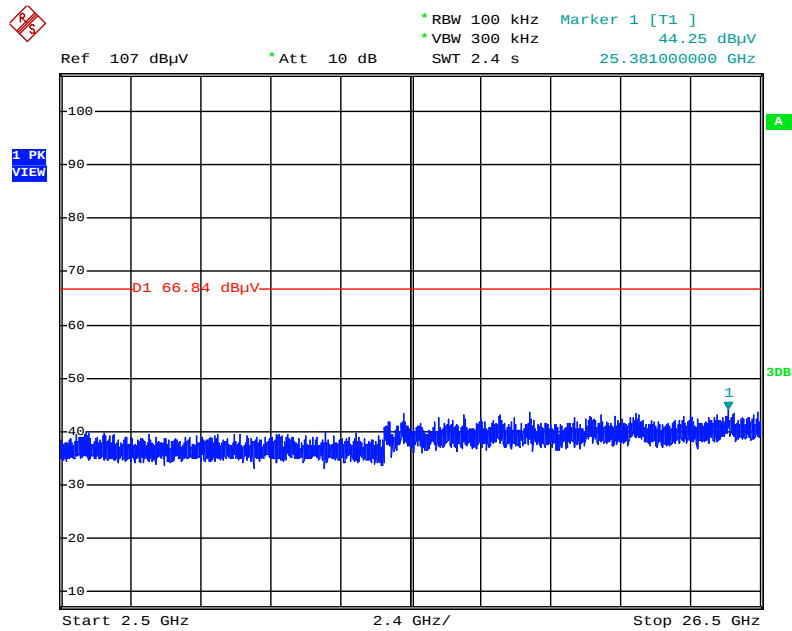
Date: 26.FEB.2016 01:05:02

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



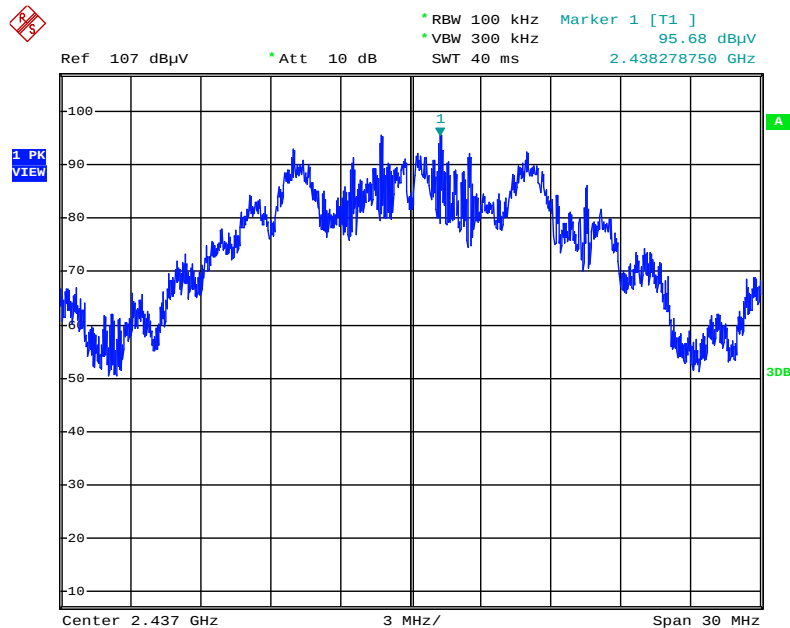
Date: 26.FEB.2016 01:06:33

Plot on Configuration IEEE 802.11g / CH 11 / 2483.5MHz~26500MHz (down 30dBc)



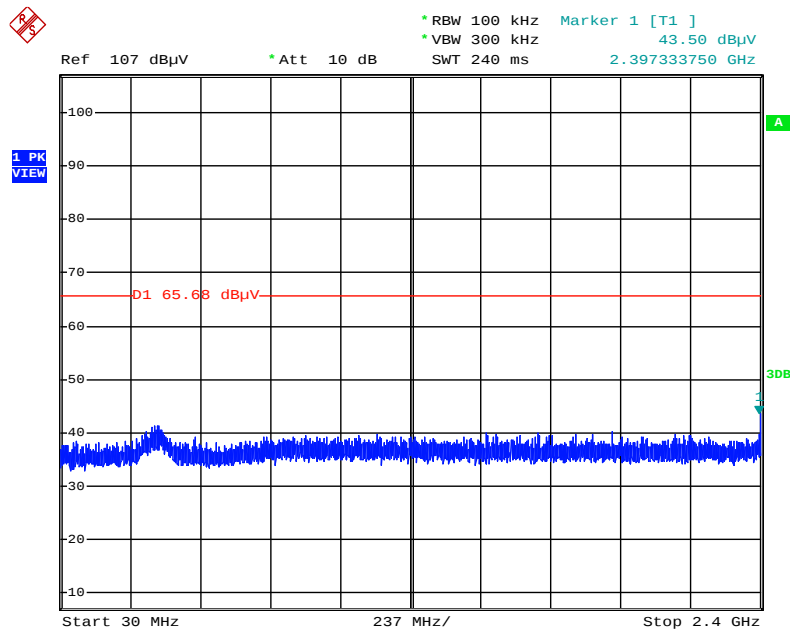
Date: 26.FEB.2016 01:07:10

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



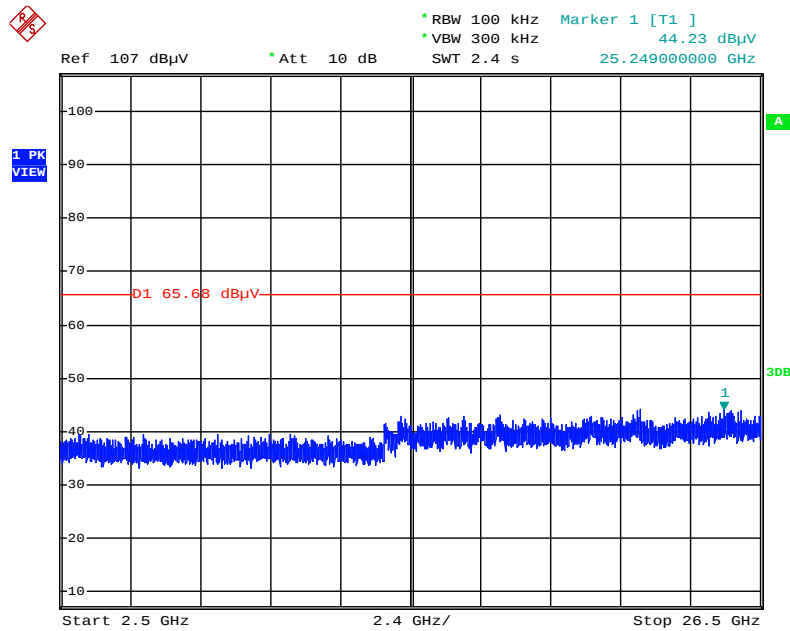
Date: 26.FEB.2016 01:09:01

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



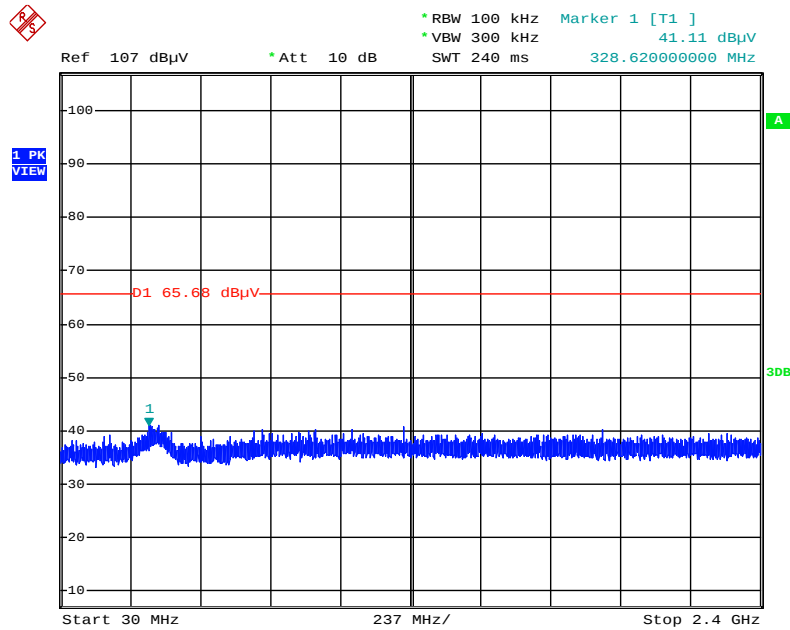
Date: 26.FEB.2016 01:10:16

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 1 / 2483.5MHz~26500MHz (down 30dBc)



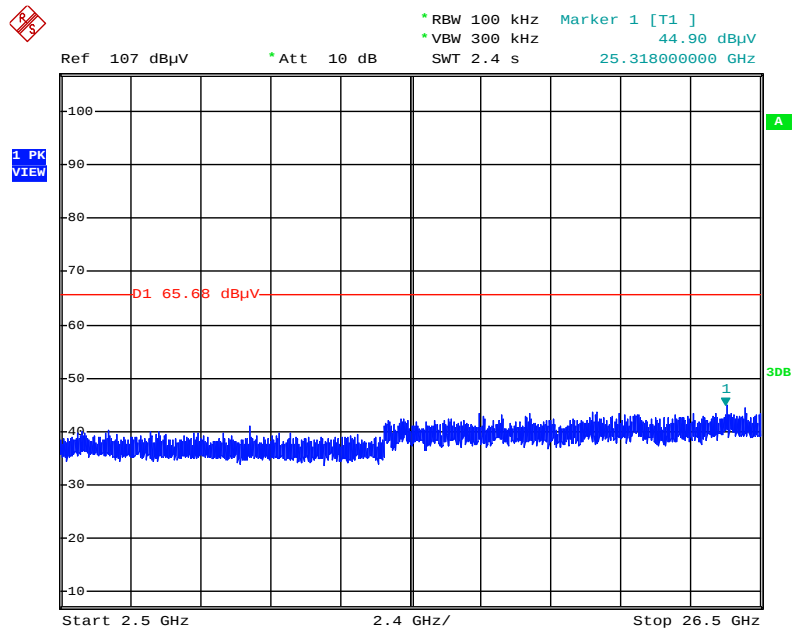
Date: 26.FEB.2016 01:10:52

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



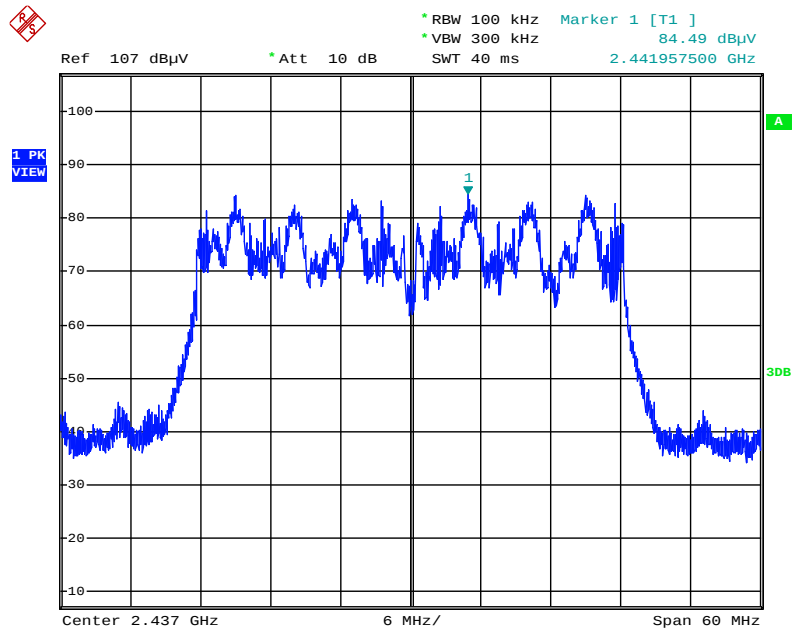
Date: 26.FEB.2016 01:11:35

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 11 / 2483.5MHz~26500MHz (down 30dBc)



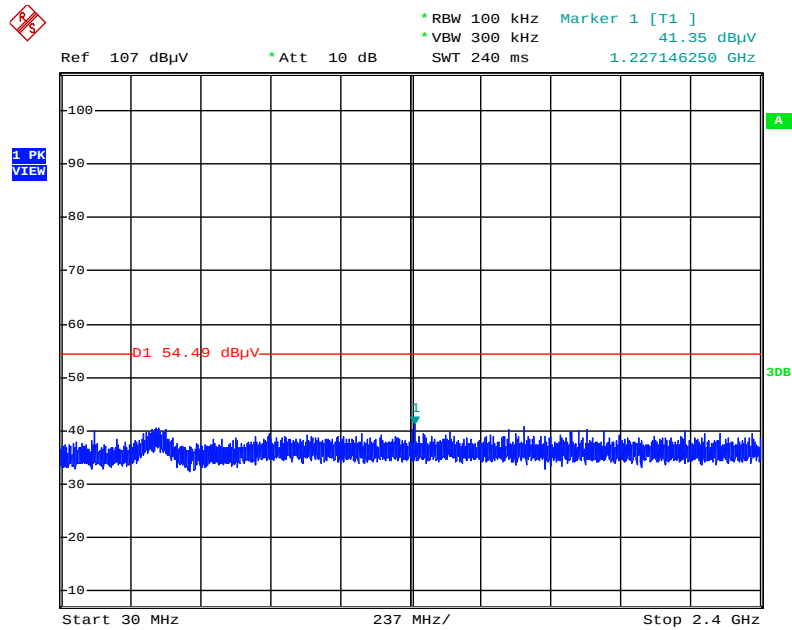
Date: 26.FEB.2016 01:12:05

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



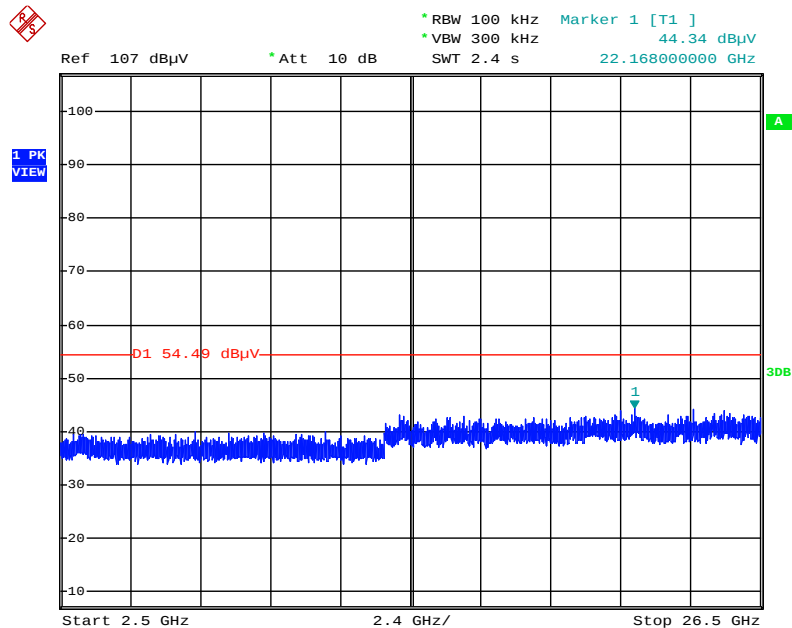
Date: 26.FEB.2016 01:14:02

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



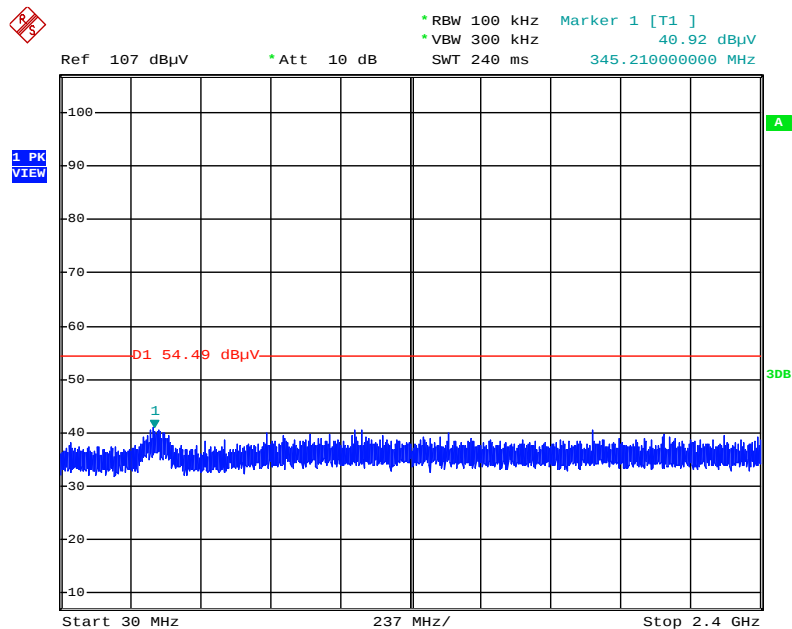
Date: 26.FEB.2016 01:15:08

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 3 / 2483.5MHz~26500MHz (down 30dBc)



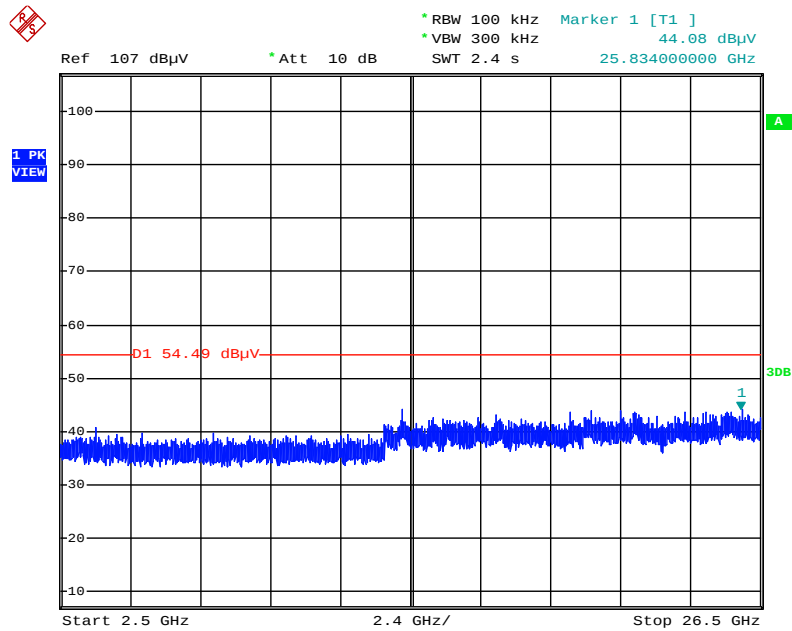
Date: 26.FEB.2016 01:15:41

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



Date: 26.FEB.2016 01:16:51

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 9 / 2483.5MHz~26500MHz (down 30dBc)



Date: 26.FEB.2016 01:17:17

<For beamforming mode>

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 2016		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	2388.20	67.53	74.00	-6.47	34.21	5.01	28.31	0.00	251	285 Peak	VERTICAL
2	2390.00	53.61	54.00	-0.39	20.29	5.01	28.31	0.00	251	285 Average	VERTICAL
3	2410.40	110.86			77.47	5.04	28.35	0.00	251	285 Average	VERTICAL
4	2410.80	120.72			87.33	5.04	28.35	0.00	251	285 Peak	VERTICAL

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

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	2389.40	68.75	74.00	-5.25	35.43	5.01	28.31	0.00	241	286 Peak	VERTICAL
2	2389.80	53.93	54.00	-0.07	20.61	5.01	28.31	0.00	241	286 Average	VERTICAL
3	2435.00	117.83			84.37	5.07	28.39	0.00	241	286 Average	VERTICAL
4	2443.80	128.85			95.36	5.08	28.41	0.00	241	286 Peak	VERTICAL
5	2483.50	53.41	54.00	-0.59	19.81	5.12	28.48	0.00	241	286 Average	VERTICAL
6	2485.80	68.31	74.00	-5.69	34.71	5.12	28.48	0.00	241	286 Peak	VERTICAL

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

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	2460.60	109.67			76.13	5.10	28.44	0.00	236	283 Average	VERTICAL
2	2469.20	120.79			87.23	5.11	28.45	0.00	236	283 Peak	VERTICAL
3	2483.50	53.70	54.00	-0.30	20.10	5.12	28.48	0.00	236	283 Average	VERTICAL
4	2485.60	65.96	74.00	-8.04	32.36	5.12	28.48	0.00	236	283 Peak	VERTICAL

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

Temperature	22°C	Humidity	58%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 3, 6, 9 / Chain 1 + Chain 2 + Chain 3 + Chain 4
Test Date	Feb. 26, 2016		

Channel 3

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2389.80	65.44	74.00	-8.56	32.12	5.01	28.31	0.00	256	284	Peak	VERTICAL
2	2390.00	53.67	54.00	-0.33	20.35	5.01	28.31	0.00	256	284	Average	VERTICAL
3	2408.40	114.39			81.00	5.04	28.35	0.00	256	284	Peak	VERTICAL
4	2415.40	103.55			70.14	5.05	28.36	0.00	256	284	Average	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	2388.20	66.45	74.00	-7.55	33.13	5.01	28.31	0.00	279	276	Peak	VERTICAL
2	2390.00	53.67	54.00	-0.33	20.35	5.01	28.31	0.00	279	276	Average	VERTICAL
3	2430.20	106.36			72.92	5.06	28.38	0.00	279	276	Average	VERTICAL
4	2432.20	121.11			87.65	5.07	28.39	0.00	279	276	Peak	VERTICAL
5	2489.00	51.65	54.00	-2.35	18.05	5.12	28.48	0.00	279	276	Average	VERTICAL
6	2490.60	64.07	74.00	-9.93	30.45	5.13	28.49	0.00	279	276	Peak	VERTICAL

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

Channel 9

	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase	
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2438.60	115.19			81.73	5.07	28.39	0.00	275	279	Peak	VERTICAL
2	2445.40	103.98			70.49	5.08	28.41	0.00	275	279	Average	VERTICAL
3	2484.80	66.30	74.00	-7.70	32.70	5.12	28.48	0.00	275	279	Peak	VERTICAL
4	2485.60	53.19	54.00	-0.81	19.59	5.12	28.48	0.00	275	279	Average	VERTICAL

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

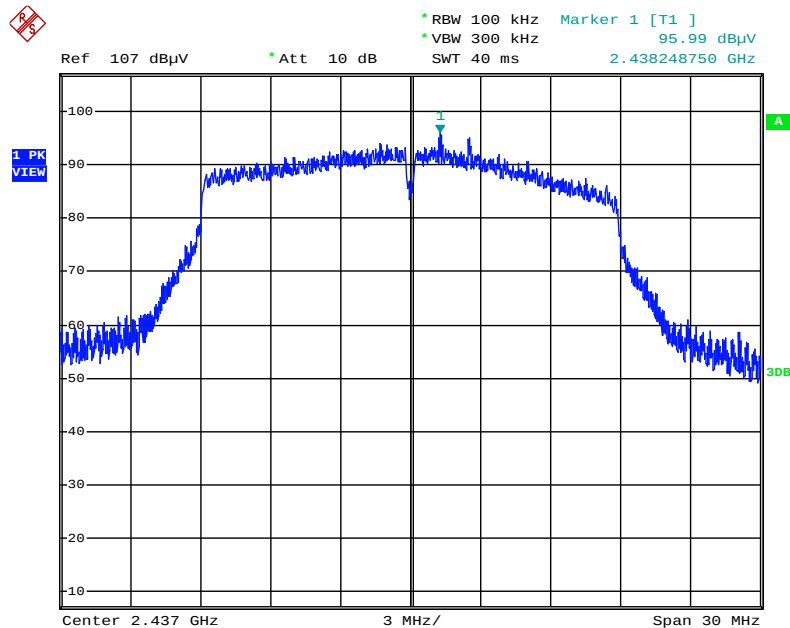
Note:

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

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

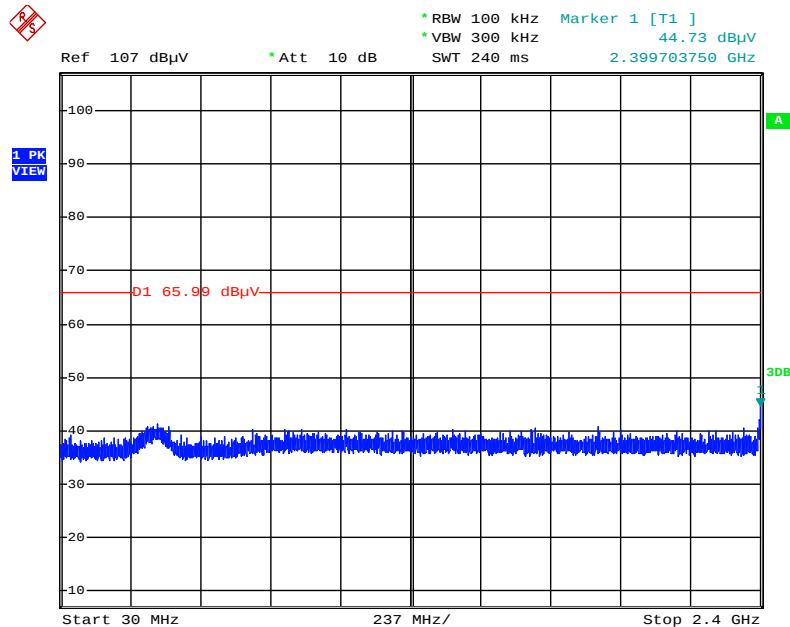
For Emission not in Restricted Band

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



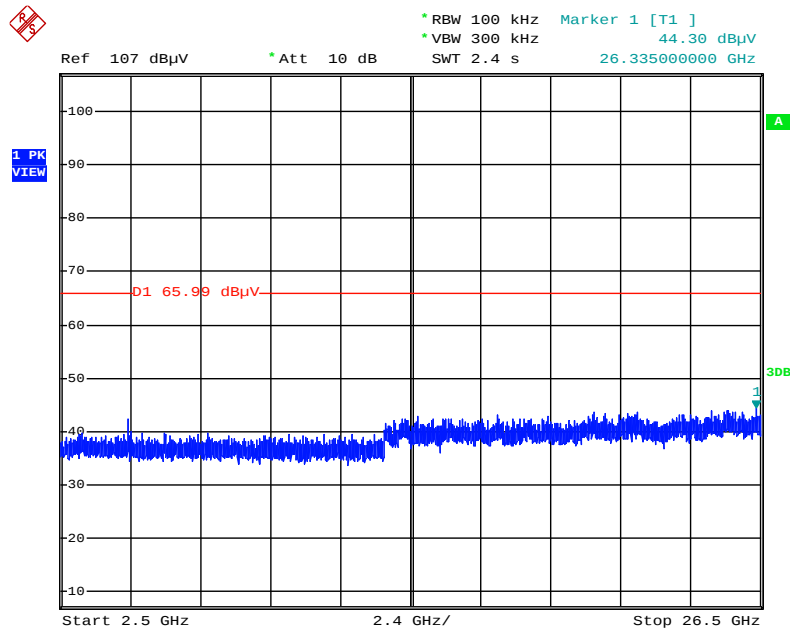
Date: 26.FEB.2016 19:20:25

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



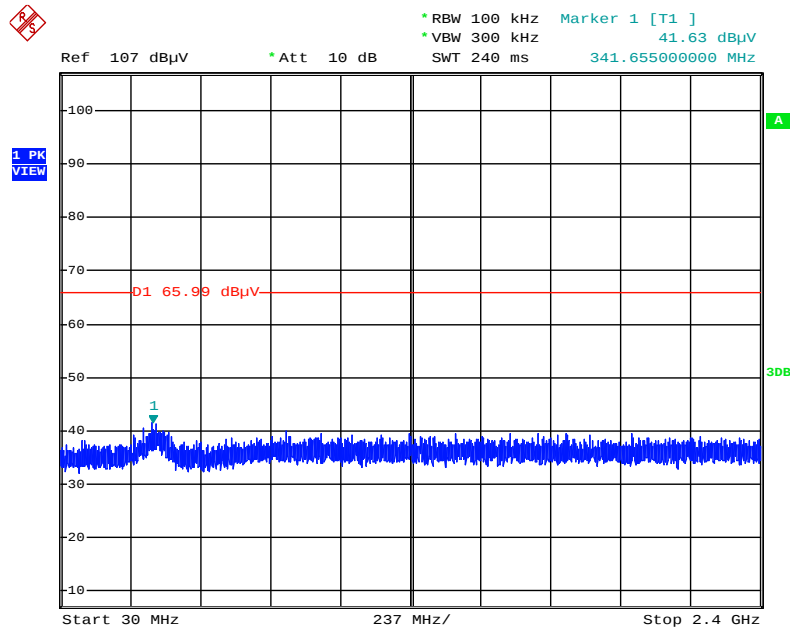
Date: 26.FEB.2016 19:24:14

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 1 / 2483.5MHz~26500MHz (down 30dBc)



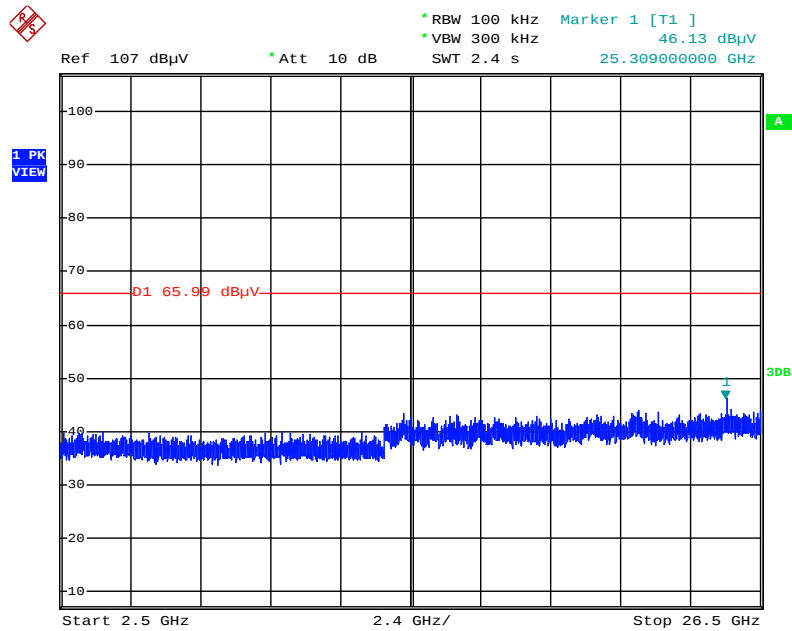
Date: 26.FEB.2016 19:24:47

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



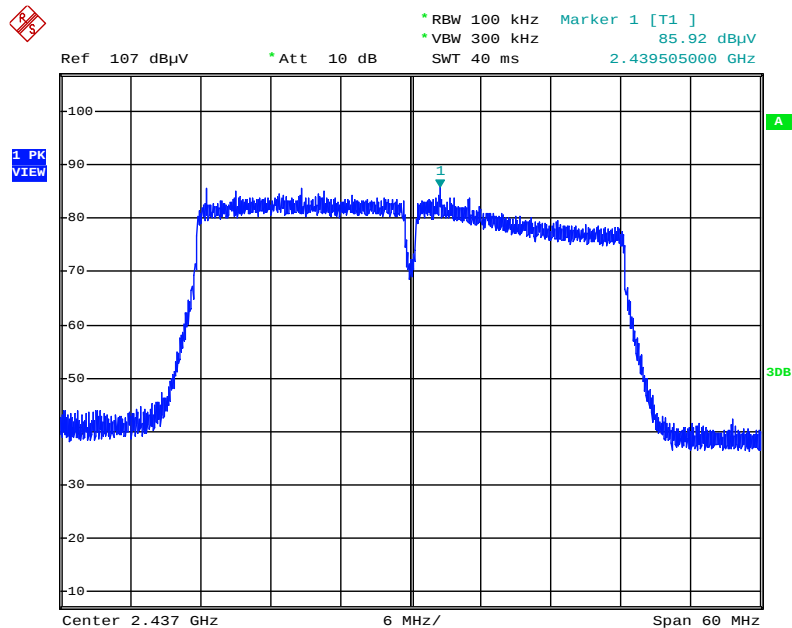
Date: 26.FEB.2016 19:25:53

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 11 / 2483.5MHz~26500MHz (down 30dBc)



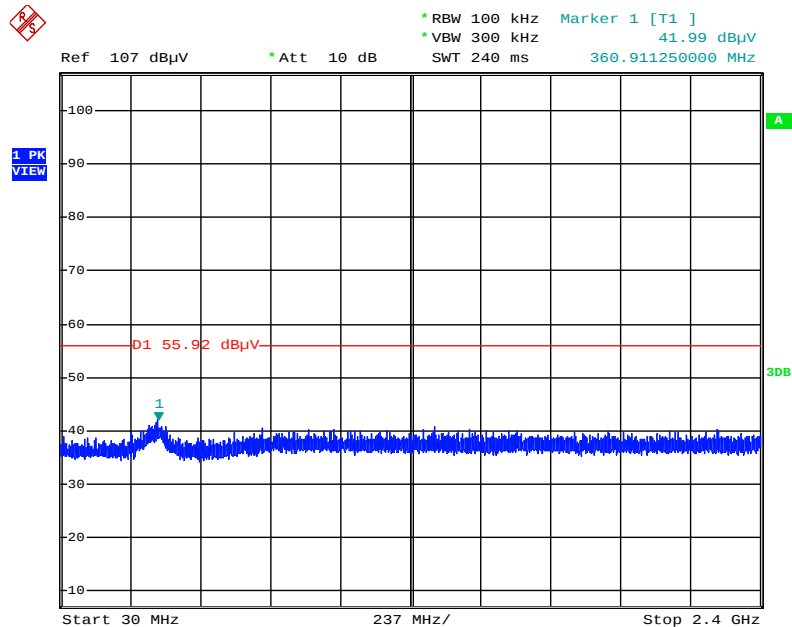
Date: 26.FEB.2016 19:26:22

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



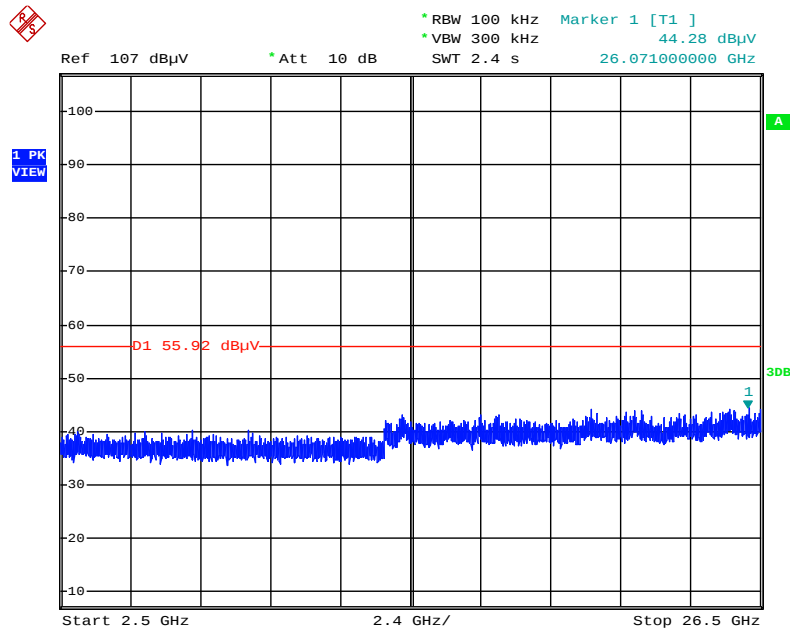
Date: 26.FEB.2016 19:28:39

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



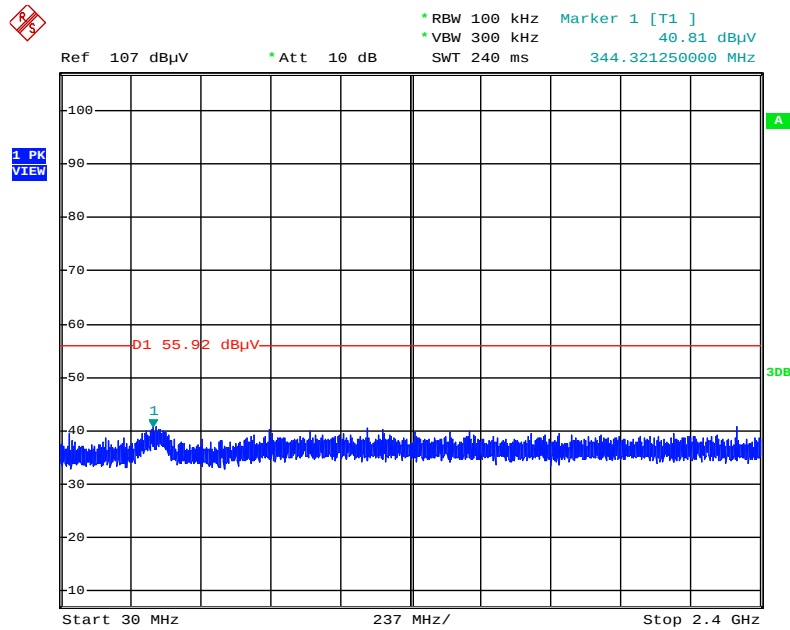
Date: 26.FEB.2016 19:31:08

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 3 / 2483.5MHz~26500MHz (down 30dBc)



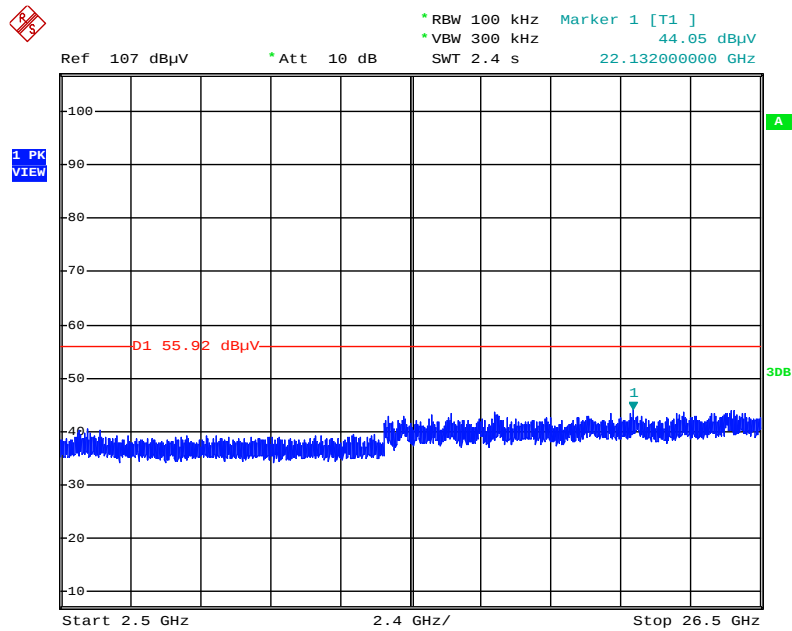
Date: 26.FEB.2016 19:31:54

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



Date: 26.FEB.2016 19:33:10

Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / CH 9 / 2483.5MHz~26500MHz (down 30dBc)



Date: 26.FEB.2016 19:33:48

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)
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	Jan. 27, 2016	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 02, 2014	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. 02, 2014	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Dec. 23, 2015	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	Dec. 03, 2014	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	May 25, 2015	Conduction (CO01-CB)
Software	Audix	E3	5.410e	-	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	May 06, 2015	Radiation (03CH01-CB)
BILOG ANTENNA	TESEQ	CBL6112D	37880	20MHz ~ 2GHz	Sep. 03, 2015	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 12, 2015*	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	2944A10991	0.1MHz ~ 1.3GHz	Mar. 15, 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	Nov. 06, 2014	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Oct. 27, 2015	Radiation (03CH01-CB)
EMI Receiver	Agilent	N9038A	MY52260123	9kHz ~ 8.4GHz	Jan. 21, 2015	Radiation (03CH01-CB)
EMI Receiver	Agilent	N9038A	MY52260123	9kHz ~ 8.4GHz	Jan. 21, 2015	Radiation (03CH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Test	R&S	ESCS	100355	9kHz ~ 2.75GHz	Apr. 22, 2016	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz ~ 1 GHz	Nov. 15, 2014	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-6	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
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%