SPORTON International Inc.
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
Ph: 886-3-327-3456 / FAX: 886-3-327-0973 / www.sporton.com.tw

FCC RADIO TEST REPORT

Applicant's company	**D-Link Corporation**
Applicant Address	No.289, Sinhu 3rd Rd., Neihu District, Taipei City 114, Taiwan, R.O.C.
FCC ID	KA2IR859A1

Product Name	AC1750 High Power Wi-Fi Gigabit Router
Brand Name	D-Link
Model No.	DIR-859
Test Rule Part(s)	47 CFR FCC Part 15 Subpart C § 15.247
Test Freq. Range	2400 ~ 2483.5MHz / 5725 ~ 5850MHz
Received Date	Dec. 17, 2014
Final Test Date	Jan. 27, 2015
Submission Type	Original Equipment

Statement

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

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

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

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.10-2013**, **47 CFR FCC Part 15 Subpart C**, **KDB 558074 D01 v03r02**, **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
FR4D3130AA	Rev. 01	Initial issue of report	Feb. 10, 2015

1. VERIFICATION OF COMPLIANCE

Product Name	:	AC1750 High Power Wi-Fi Gigabit Router
Brand Name	:	D-Link
Model No.	:	DIR-859
Applicant	:	D-Link Corporation
Test Rule Part(s)	:	47 CFR FCC Part 15 Subpart C § 15.247

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Dec. 17, 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	16.47 dB
4.2	15.247(b)(3)	Maximum Conducted Output Power	Complies	0.03 dB
4.3	15.247(e)	Power Spectral Density	Complies	0.84 dB
4.4	15.247(a)(2)	6dB Spectrum Bandwidth	Complies	-
4.5	15.247(d)	Radiated Emissions	Complies	1.93 dB
4.6	15.247(d)	Band Edge Emissions	Complies	0.15 dB
4.7	15.203	Antenna Requirements	Complies	-

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Product Type	WLAN (3TX, 3RX)
Radio Type	Intentional Transceiver
Power Type	From power adapter
Modulation	IEEE 802.11b: DSSS IEEE 802.11a/g: OFDM IEEE 802.11n/ac: see the below table
Data Modulation	IEEE 802.11b: DSSS (BPSK / QPSK / CCK) IEEE 802.11a/g/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) IEEE 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)
Data Rate (Mbps)	IEEE 802.11b: DSSS (1/ 2/ 5.5/11) IEEE 802.11a/g: OFDM (6/9/12/18/24/36/48/54) IEEE 802.11n/ac: see the below table
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 2.4GHz Band: IEEE 802.11b: 14.01 MHz IEEE 802.11g: 16.32 MHz IEEE 802.11n MCS0 (HT20): 18.64 MHz IEEE 802.11n MCS0 (HT40): 36.01 MHz For 5GHz Band: IEEE 802.11a: 19.45 MHz IEEE 802.11ac MCS0/Nss1 (VHT20): 23.01 MHz IEEE 802.11ac MCS0/Nss1 (VHT40): 39.07 MHz IEEE 802.11ac MCS0/Nss1 (VHT80): 76.12 MHz

Maximum Conducted Output Power	For 2.4GHz Band: IEEE 802.11b: 29.27 dBm IEEE 802.11g: 27.98 dBm IEEE 802.11n MCS0 (HT20): 27.08 dBm IEEE 802.11n MCS0 (HT40): 27.53 dBm For 5GHz Band: IEEE 802.11a: 29.79 dBm IEEE 802.11ac MCS0/Nss1 (VHT20): 29.97 dBm IEEE 802.11ac MCS0/Nss1 (VHT40): 29.72 dBm IEEE 802.11ac MCS0/Nss1 (VHT80): 26.77 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Items	Description	
Beamforming Function	☐ With beamforming	☒ Without beamforming

Antenna and Band width

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

IEEE 802.11n/ac Spec.

Protocol		Number of Transmit Chains (NTX)	Data Rate / MCS
2.4GHz	802.11n (HT20)	3	MCS0-23
	802.11n (HT40)	3	MCS0-23
5GHz	802.11n (HT20)	3	MCS0-23
	802.11n (HT40)	3	MCS0-23
	802.11ac (VHT20)	3	MCS 0-9/Nss1-3
	802.11ac (VHT40)	3	MCS 0-9/Nss1-3
	802.11ac (VHT80)	3	MCS 0-9/Nss1-3
Note 1: IEEE Std. 802.11n modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT support HT20 and HT40. Note 2: IEEE Std. 802.11ac modulation consists of VHT20, VHT40, VHT80 and VHT160 (VHT: Very High Throughput). Then EUT support VHT20, VHT40 and VHT80. Note 3: Modulation modes consist of below configuration: HT20/HT40: IEEE 802.11n, VHT20/VHT40/VHT80: IEEE 802.11ac			

3.2. Accessories

Power	Brand Holder	Model	Rating
Adapter 1	AMIGO	AMS3-1201500FU	Input: 100-240VAC, 50/60Hz, 0.5A Output: 12VDC, 1.5A
Adapter 2	PHIHONG	PSAC18A-120D	Input: 100-240VAC, 0.6A, 50-60Hz Output: 12VDC, 1.5A

3.3. Table for Filed Antenna

Ant.	Brand	Model No.	Antenna Type	Connector		Gain (dBi)	
1	Nienyi Industrial Corp.	NYS1050	Dipole	2.4GHz	N/A	2.4GHz	2.6
				5GHz	I-PEX	5GHz	3.6
2	Nienyi Industrial Corp.	NYS1049	Dipole	2.4GHz	N/A	2.4GHz	2.6
				5GHz	I-PEX	5GHz	3.6
3	Nienyi Industrial Corp.	NYS1051	Dipole	2.4GHz	N/A	2.4GHz	2.6
				5GHz	I-PEX	5GHz	3.6

Note: There are three sets of antenna provided to this EUT and all of them can be used as transmitting and receiving antenna.

For 5GHz Band:

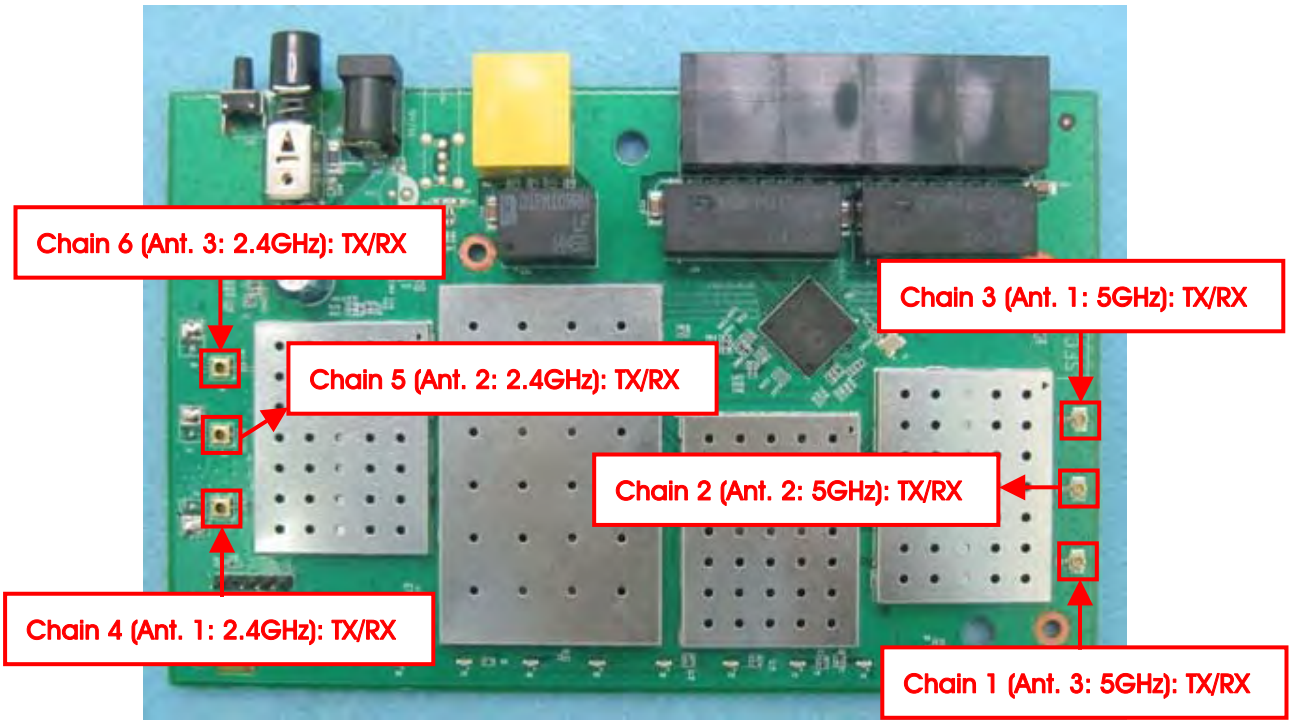
For IEEE 802.11a/n/ac mode (3TX/3RX):

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

For 2.4GHz Band:

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

Chain 4, Chain 5 and Chain 6 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	11b/CCK	1 Mbps	1/6/11	4+5+6
	11g/BPSK	6 Mbps	1/6/11	4+5+6
	11n HT20	MCS0	1/6/11	4+5+6
	11n HT40	MCS0	3/6/9	4+5+6
Power Spectral Density	11b/CCK	1 Mbps	1/6/11	4+5+6
	11g/BPSK	6 Mbps	1/6/11	4+5+6
	11n HT20	MCS0	1/6/11	4+5+6
	11n HT40	MCS0	3/6/9	4+5+6
6dB Spectrum Bandwidth	11b/CCK	1 Mbps	1/6/11	4+5+6
	11g/BPSK	6 Mbps	1/6/11	4+5+6
	11n HT20	MCS0	1/6/11	4+5+6
	11n HT40	MCS0	3/6/9	4+5+6
Radiated Emissions Below 1GHz	CTX	-	-	-
Radiated Emissions Above 1GHz	11b/CCK	1 Mbps	1/6/11	4+5+6
	11g/BPSK	6 Mbps	1/6/11	4+5+6
	11n HT20	MCS0	1/6/11	4+5+6
	11n HT40	MCS0	3/6/9	4+5+6
Band Edge Emissions	11b/CCK	1 Mbps	1/6/11	4+5+6
	11g/BPSK	6 Mbps	1/6/11	4+5+6
	11n HT20	MCS0	1/6/11	4+5+6
	11n HT40	MCS0	3/6/9	4+5+6

For 5GHz Band:

Test Items	Mode	Data Rate	Channel	Chain
AC Power Line Conducted Emissions	CTX	-	-	-
Maximum Conducted Output Power	11a/BPSK	6 Mbps	149/157/165	1+2+3
	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
Power Spectral Density	11a/BPSK	6 Mbps	149/157/165	1+2+3
	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
6dB Spectrum Bandwidth	11a/BPSK	6 Mbps	149/157/165	1+2+3
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3
	11ac VHT40	MCS0/Nss1	151/159	1+2+3
	11ac VHT80	MCS0/Nss1	155	1+2+3
Radiated Emissions Below 1GHz	CTX	-	-	-
Radiated Emissions Above 1GHz	11a/BPSK	6 Mbps	149/157/165	1+2+3
	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
Band Edge Emissions	11a/BPSK	6 Mbps	149/157/165	1+2+3
	11ac VHT20	MCS0/Nss1	149/157/165	1+2+3
	11ac VHT40	MCS0/Nss1	151/159	1+2+3
	11ac VHT80	MCS0/Nss1	155	1+2+3

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

The following test modes were performed for all tests:

For Conducted Emission test:

Mode 1. CTX 2.4GHz + Adapter 1

Mode 2. CTX 5GHz + Adapter 1

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

Mode 3. CTX 2.4GHz + Adapter 2

Mode 3 is the worst case, so it was selected to record in this test report.

For Radiated Emission below 1GHz test:

Mode 1. CTX 2.4GHz + Adapter 1

Mode 2. CTX 5GHz + Adapter 1

Mode 3. CTX 2.4GHz + Adapter 2

Mode 4. CTX 5GHz + Adapter 2

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

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

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

3.6. Table for Testing Locations

Test Site Location				
Address:	No.8, Lane 724, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C.			
TEL:	886-3-656-9065			
FAX:	886-3-656-9085			
Test Site No.	**Site Category**	**Location**	**FCC Reg. No.**	**IC File No.**
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 Supporting Units

For Test Site No: CO01-CB and 03CH01-CB

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E6430	DoC

For Test Site No: TH01-CB

Support Unit	Brand	Model	FCC ID
Notebook	DELL	D420	E2KWM3945ABG

3.8. Table for Parameters of Test Software Setting

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

For 2.4GHz Band

Test Software Version	DOS					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		
	2412 MHz	2437 MHz	2462 MHz	2422 MHz	2437 MHz	2452 MHz
802.11b	23	23	22.5	-	-	-
802.11g	19.5	21.5	22	-	-	-
802.11n MCS0 HT20	21.5	20.5	21	-	-	-
802.11n MCS0 HT40	-	-	-	17.5	21	17.5

For 5GHz Band

Test Software Version	DOS					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		NCB: 80MHz
	5745 MHz	5785 MHz	5825 MHz	5755 MHz	5795 MHz	5775 MHz
802.11a	23	25.5	25	-	-	-
802.11ac MCS0/Nss1 VHT20	25	26	26.5	-	-	-
802.11ac MCS0/Nss1 VHT40	-	-	-	24.5	26	-
802.11ac MCS0/Nss1 VHT80	-	-	-	-	-	23

3.9. EUT Operation during Test

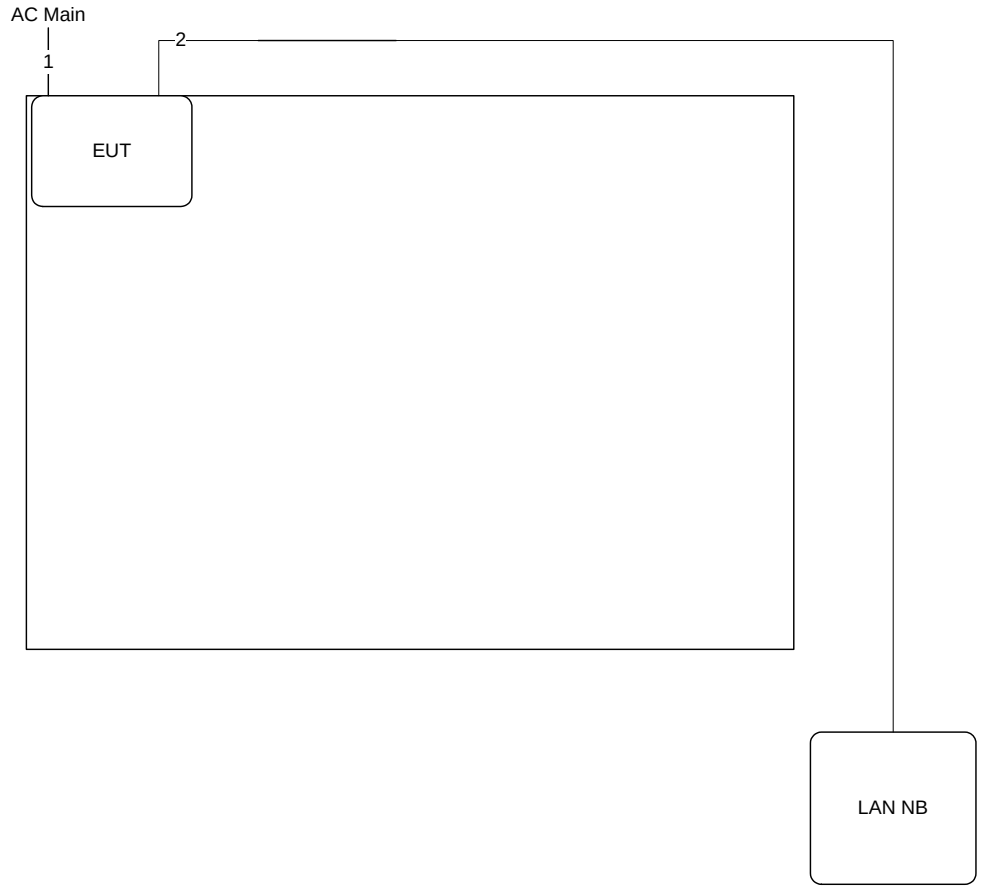
The EUT was programmed to be in continuously transmitting mode.

3.10. Duty Cycle

Band	Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
2.4GHz	802.11b	1.000	1.000	100.00%	0.00	0.01
	802.11g	2.024	2.070	97.78%	0.10	0.49
	802.11n MCS0 HT20	1.881	1.939	97.01%	0.13	0.53
	802.11n MCS0 HT40	0.868	0.940	92.34%	0.35	1.15
5GHz	802.11a	2.030	2.100	96.67%	0.15	0.49
	802.11ac MCS0/Nss1 VHT20	1.900	1.970	96.45%	0.16	0.53
	802.11ac MCS0/Nss1 VHT40	0.898	0.991	90.62%	0.43	1.11
	802.11ac MCS0/Nss1 VHT80	0.460	0.527	87.29%	0.59	2.17

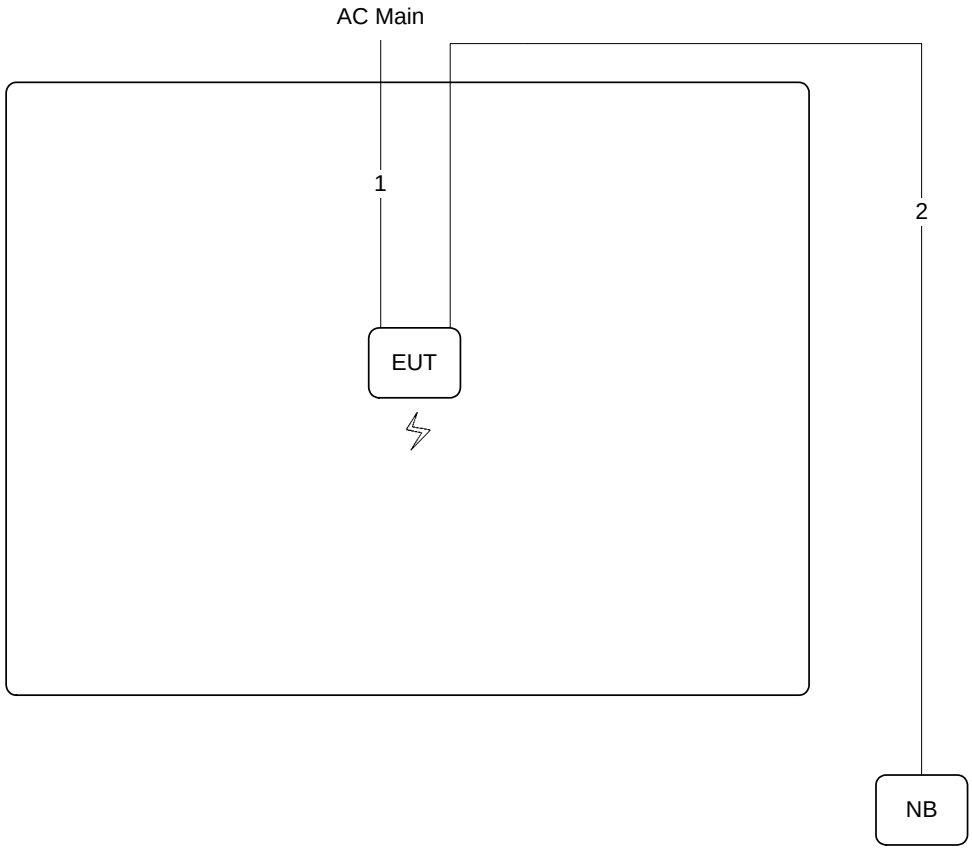
3.11. Test Configurations

3.11.1. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length (m)
1	Power cable	No	1.2m
2	RJ-45 cable	No	10m

3.11.2. Radiation Emissions Test Configuration



Item	Connection	Shielded	Length (m)
1	Power cable	No	1.3m
2	RJ-45 cable	No	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

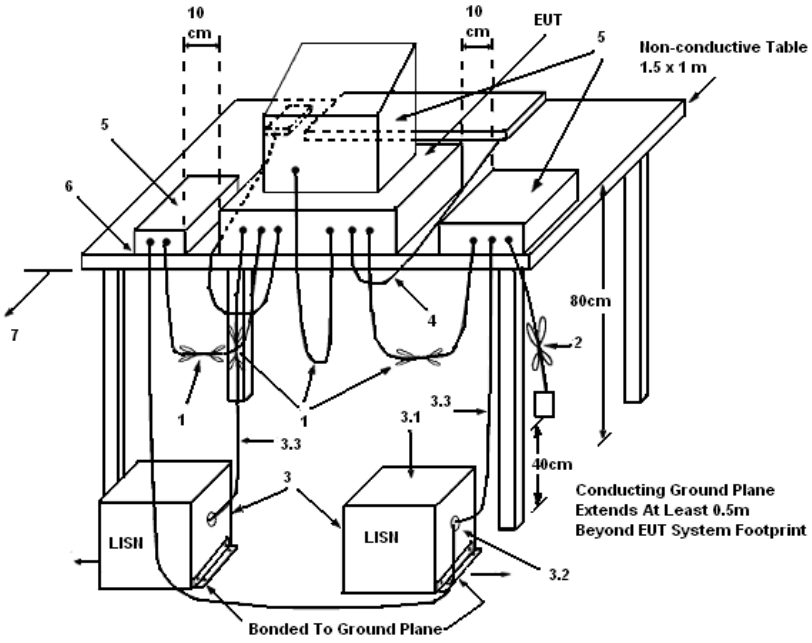
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

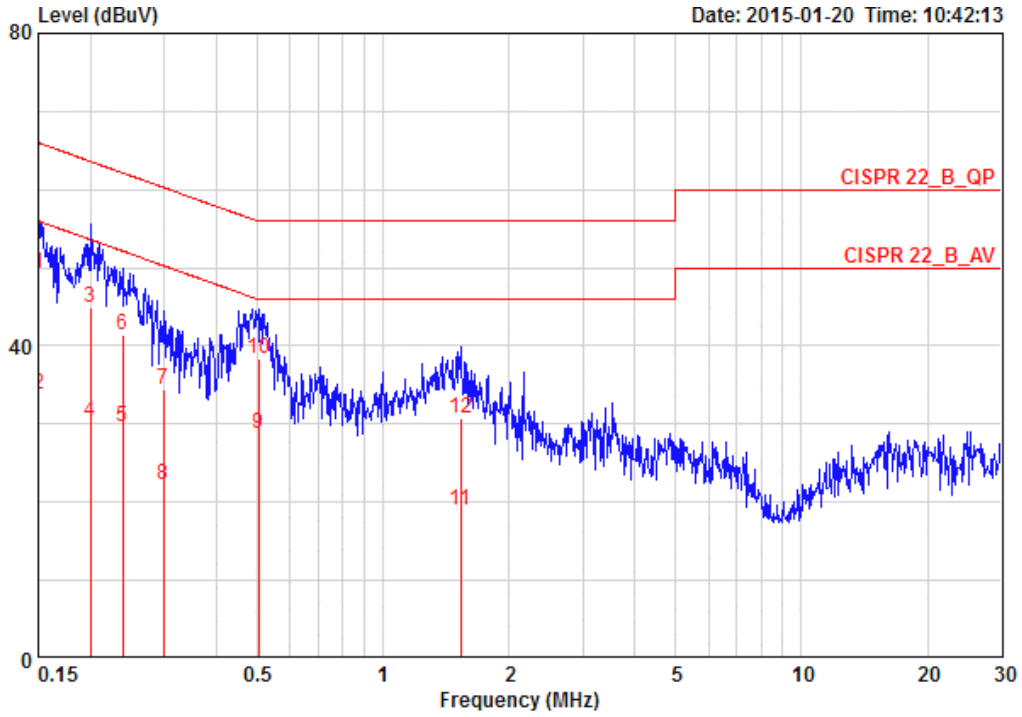
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

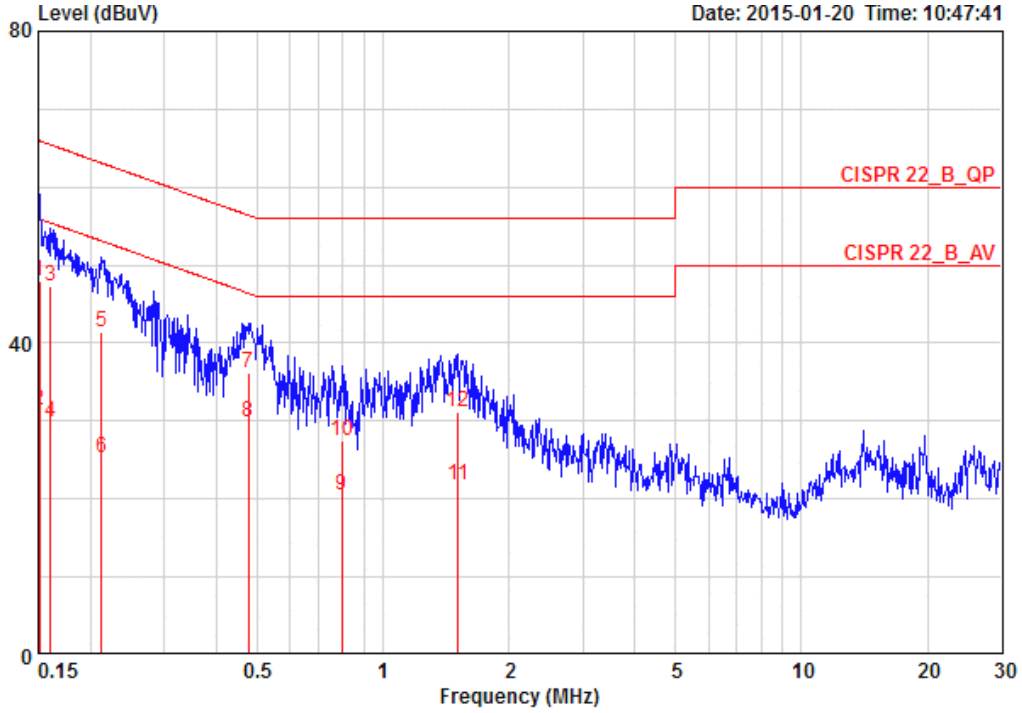
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	22°C	Humidity	56%
Test Engineer	Kane Liu	Phase	Line
Configuration	CTX	Test Mode	Mode 3



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1 @	0.15000	49.37	-16.63	66.00	39.40	9.77	0.20	QP	LINE
2 @	0.15000	33.88	-22.12	56.00	23.91	9.77	0.20	AVERAGE	LINE
3 @	0.19969	44.80	-18.82	63.62	34.77	9.78	0.25	QP	LINE
4 @	0.19969	30.30	-23.32	53.62	20.27	9.78	0.25	AVERAGE	LINE
5 @	0.23910	29.67	-22.46	52.13	19.63	9.78	0.26	AVERAGE	LINE
6 @	0.23910	41.33	-20.80	62.13	31.29	9.78	0.26	QP	LINE
7	0.29869	34.37	-25.91	60.28	24.32	9.77	0.28	QP	LINE
8	0.29869	22.24	-28.04	50.28	12.19	9.77	0.28	AVERAGE	LINE
9 @	0.50469	28.77	-17.23	46.00	18.69	9.77	0.31	AVERAGE	LINE
10 @	0.50469	38.39	-17.61	56.00	28.31	9.77	0.31	QP	LINE
11	1.535	18.95	-27.05	46.00	8.85	9.76	0.34	AVERAGE	LINE
12	1.535	30.68	-25.32	56.00	20.58	9.76	0.34	QP	LINE

Temperature	22°C	Humidity	56%
Test Engineer	Kane Liu	Phase	Neutral
Configuration	CTX	Test Mode	Mode 3



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1 @	0.15080	48.01	-17.95	65.96	37.89	9.92	0.20	QP	NEUTRAL
2	0.15080	31.37	-24.59	55.96	21.25	9.92	0.20	AVERAGE	NEUTRAL
3 @	0.16070	47.36	-18.07	65.43	37.23	9.92	0.21	QP	NEUTRAL
4	0.16070	29.89	-25.54	55.43	19.76	9.92	0.21	AVERAGE	NEUTRAL
5 @	0.21279	41.42	-21.67	63.10	31.25	9.92	0.25	QP	NEUTRAL
6	0.21279	25.39	-27.70	53.10	15.22	9.92	0.25	AVERAGE	NEUTRAL
7 @	0.47612	36.18	-20.23	56.41	25.96	9.91	0.31	QP	NEUTRAL
8 @	0.47612	29.94	-16.47	46.41	19.72	9.91	0.31	AVERAGE	NEUTRAL
9	0.79601	20.47	-25.53	46.00	10.23	9.92	0.32	AVERAGE	NEUTRAL
10	0.79601	27.49	-28.51	56.00	17.25	9.92	0.32	QP	NEUTRAL
11 @	1.511	21.86	-24.14	46.00	11.61	9.91	0.34	AVERAGE	NEUTRAL
12	1.511	31.20	-24.80	56.00	20.95	9.91	0.34	QP	NEUTRAL

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

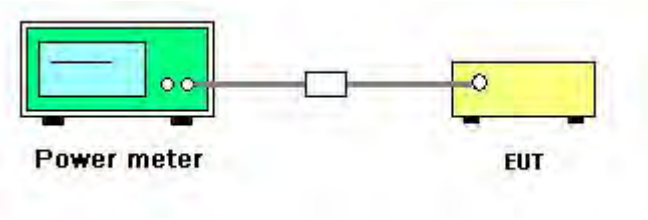
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Detector	Average

4.2.3. Test Procedures

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

4.2.4. Test Setup Layout



4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.2.7. Test Result of Maximum Conducted Output Power

Temperature	26°C	Humidity	63%
Test Engineer	Mars Lin / Magic Lai	Test Date	Jan. 15, 2015

For 2.4GHz Band

Mode	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 4	Chain 5	Chain 6	Total		
802.11b	2412 MHz	24.73	24.29	23.38	28.94	30.00	Complies
	2437 MHz	24.86	24.08	24.51	29.27	30.00	Complies
	2462 MHz	24.42	23.56	24.67	29.01	30.00	Complies
802.11g	2412 MHz	21.36	20.78	20.97	25.81	30.00	Complies
	2437 MHz	22.76	22.10	23.26	27.50	30.00	Complies
	2462 MHz	22.85	22.48	24.13	27.98	30.00	Complies
802.11n MCS0 HT20	2412 MHz	22.52	22.16	22.24	27.08	30.00	Complies
	2437 MHz	21.96	21.29	22.48	26.71	30.00	Complies
	2462 MHz	21.23	21.38	23.49	26.93	30.00	Complies
802.11n MCS0 HT40	2422 MHz	19.97	19.76	20.01	24.69	30.00	Complies
	2437 MHz	22.58	22.27	23.36	27.53	30.00	Complies
	2452 MHz	19.70	19.14	21.36	24.94	30.00	Complies

For 5GHz Band

Mode	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
802.11a	5745 MHz	23.31	23.86	23.36	28.29	30.00	Complies
	5785 MHz	24.94	25.36	24.74	29.79	30.00	Complies
	5825 MHz	24.92	25.02	24.31	29.53	30.00	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	24.79	25.52	24.83	29.83	30.00	Complies
	5785 MHz	25.02	25.43	25.14	29.97	30.00	Complies
	5825 MHz	24.72	25.38	25.25	29.90	30.00	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	23.95	24.92	24.57	29.27	30.00	Complies
	5795 MHz	24.86	25.15	24.83	29.72	30.00	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	21.81	22.24	21.93	26.77	30.00	Complies

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

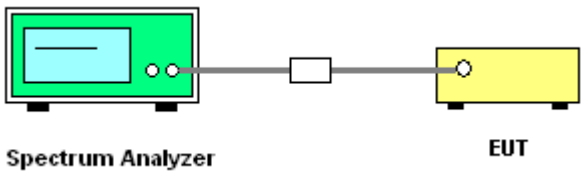
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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 KDB 558074 D01 v03r02 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

Temperature	26°C	Humidity	63%
Test Engineer	Mars Lin / Magic Lai		

For 2.4GHz Band

Mode	Frequency	Power Density (dBm/3kHz)				Power Density Limit (dBm/3kHz)	Result
		Chain 4	Chain 5	Chain 6	Total		
802.11b	2412 MHz	1.99	2.24	1.08	6.57	6.63	Complies
	2437 MHz	2.04	1.61	1.00	6.34	6.63	Complies
	2462 MHz	1.80	1.23	1.53	6.30	6.63	Complies
802.11g	2412 MHz	-2.75	-2.10	-2.33	2.39	6.63	Complies
	2437 MHz	-2.09	-2.14	-1.25	2.96	6.63	Complies
	2462 MHz	-1.15	-1.13	-0.72	3.78	6.63	Complies
802.11n MCS0 HT20	2412 MHz	-1.58	-0.88	-2.65	3.13	6.63	Complies
	2437 MHz	-2.55	-3.92	-2.06	2.00	6.63	Complies
	2462 MHz	-2.90	-3.07	-1.08	2.52	6.63	Complies
802.11n MCS0 HT40	2422 MHz	-6.94	-6.23	-6.54	-1.79	6.63	Complies
	2437 MHz	-4.61	-4.01	-4.91	0.28	6.63	Complies
	2452 MHz	-6.75	-8.64	-5.88	-2.17	6.63	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{ss}}\left\{\sum_{k=1}^{N_{ANT}} g_{jk}\right\}^2}{N_{ANT}}\right]$ =7.37dBi>6dBi, so limit=8-(7.37-6)=6.63dBm/3kHz.

For 5GHz Band

Mode	Frequency	Power Density (dBm/3kHz)				Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Chain 3	Total		
802.11a	5745 MHz	-2.50	-1.24	-1.01	3.24	5.63	Complies
	5785 MHz	-1.07	-0.43	-0.22	4.21	5.63	Complies
	5825 MHz	-0.66	-2.55	-1.81	3.17	5.63	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	-1.46	-1.62	-1.64	3.20	5.63	Complies
	5785 MHz	-1.02	-0.18	-0.35	4.27	5.63	Complies
	5825 MHz	-0.89	1.46	-0.96	4.79	5.63	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	-4.21	-4.69	-4.66	0.26	5.63	Complies
	5795 MHz	-4.37	-4.17	-4.60	0.39	5.63	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	-10.16	-9.29	-9.80	-4.96	5.63	Complies

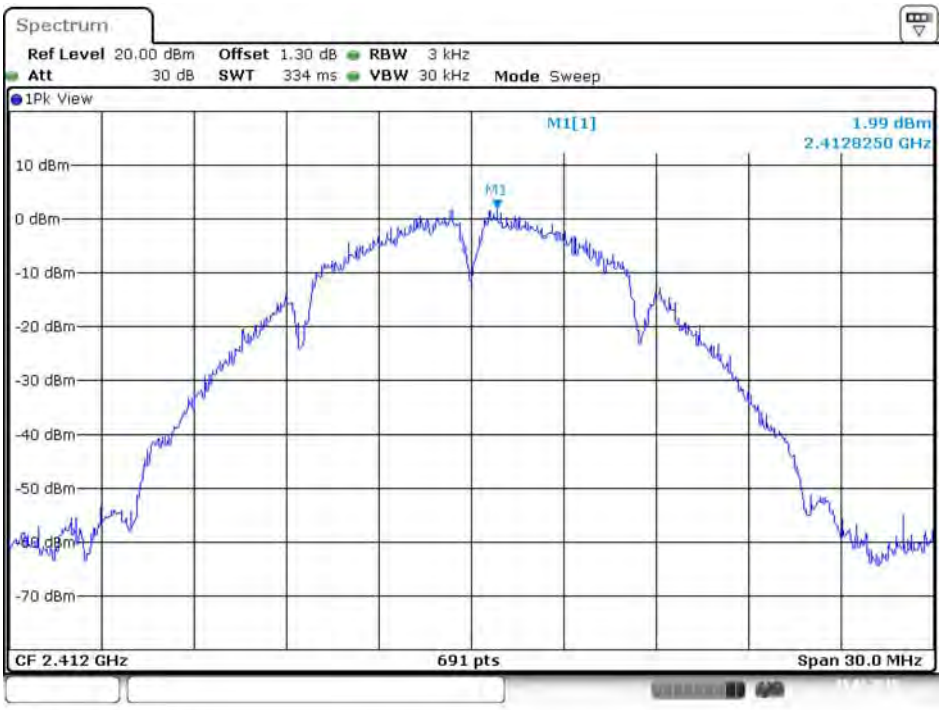
Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{sp}}\left\{\sum_{k=1}^{N_{ANT}} g_{jk}\right\}^2}{N_{ANT}}\right]$=8.37dBi>6dBi, so limit=8-(8.37-6)=5.63dBm/3kHz.

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

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

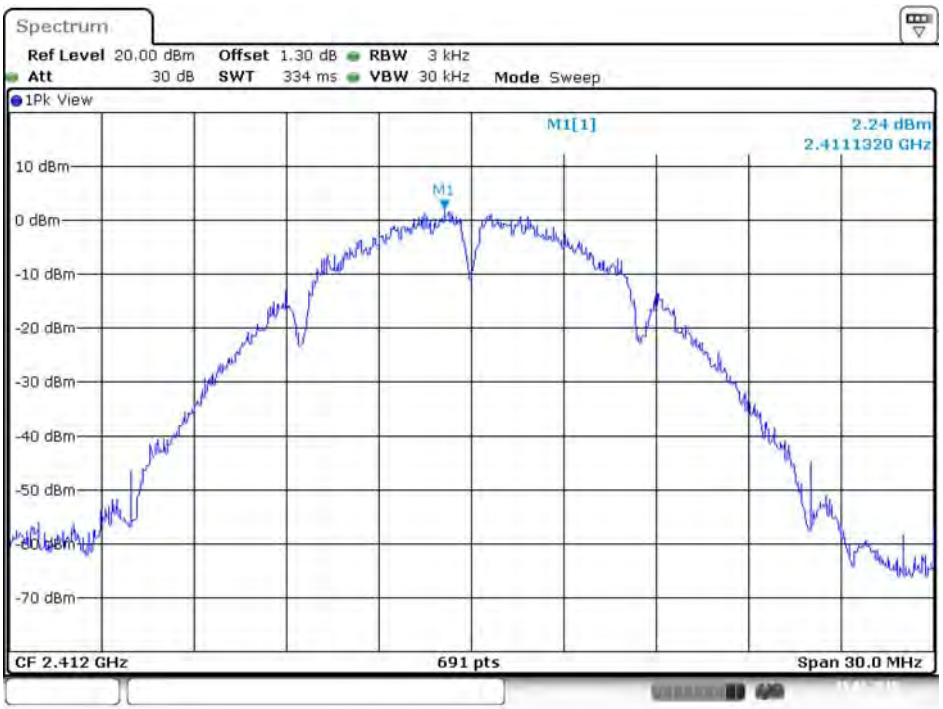
For 2.4GHz Band

Power Density Plot on Configuration IEEE 802.11b / 2412 MHz / Chain 4



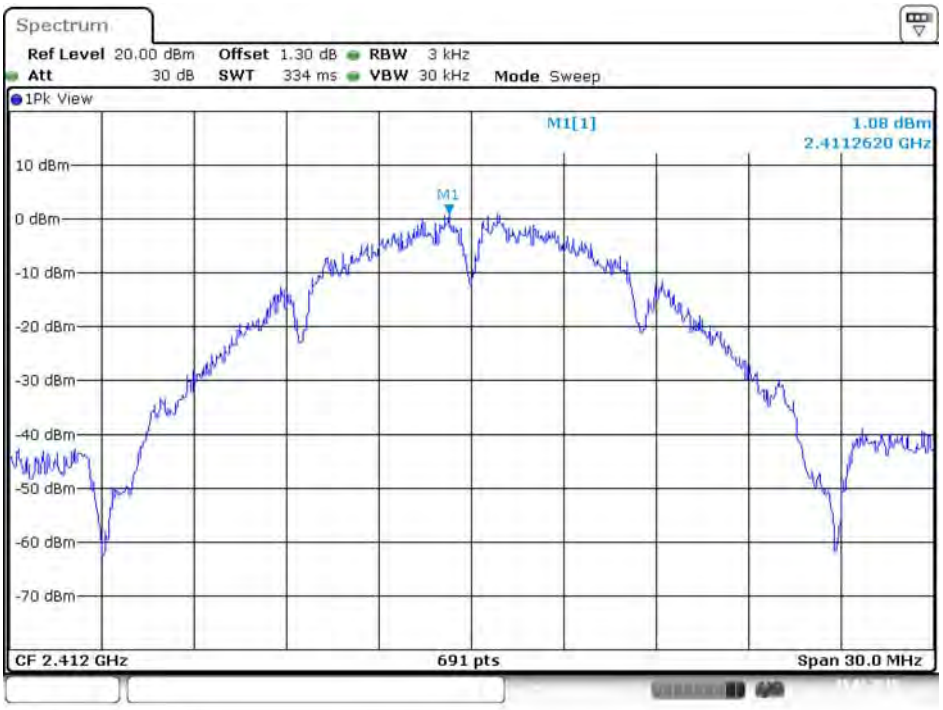
Date: 15.JAN.2015 20:02:11

Power Density Plot on Configuration IEEE 802.11b / 2412 MHz / Chain 5



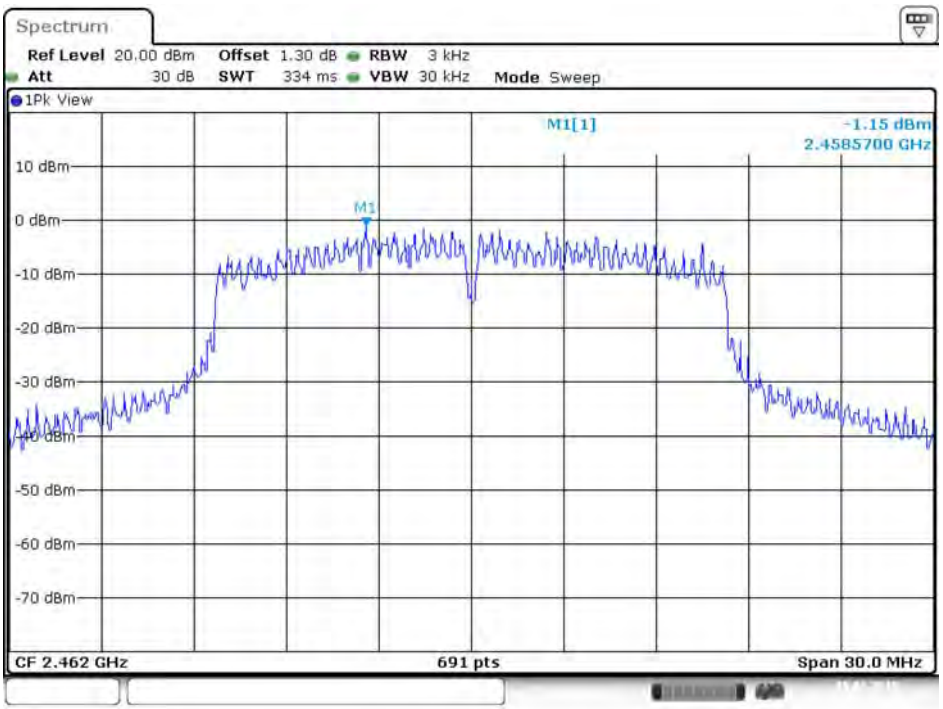
Date: 15.JAN.2015 20:02:51

Power Density Plot on Configuration IEEE 802.11b / 2412 MHz / Chain 6



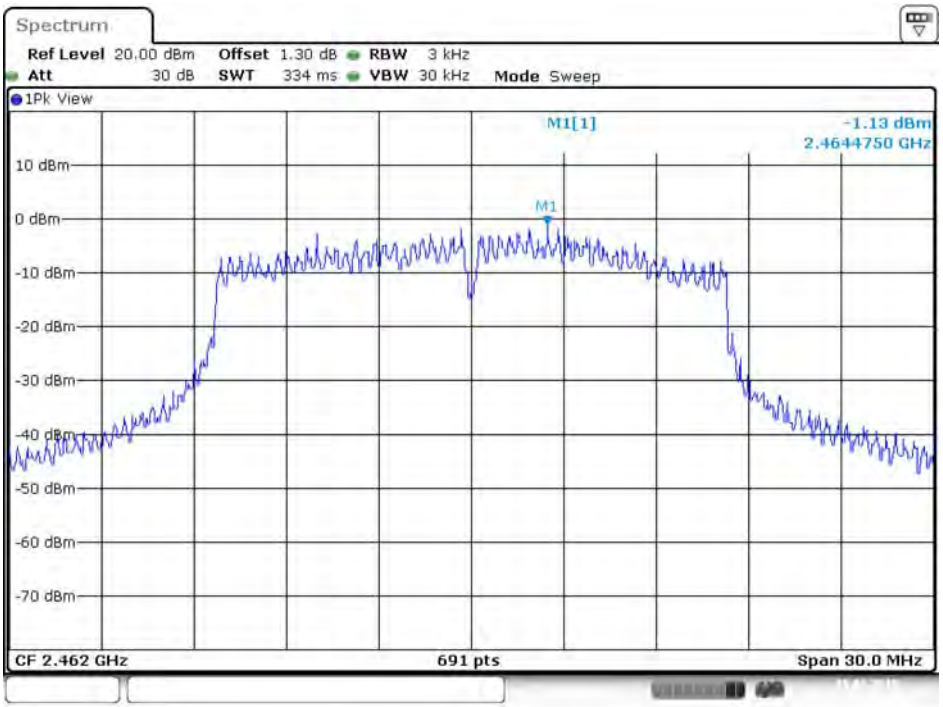
Date: 15.JAN.2015 20:03:44

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



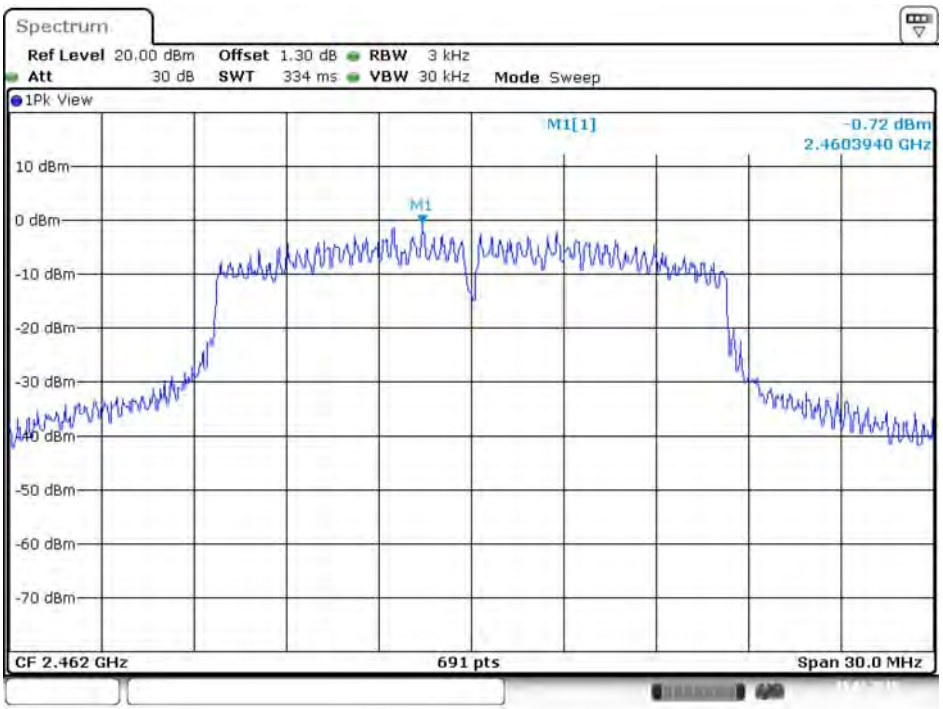
Date: 15.JAN.2015 20:18:43

Power Density Plot on Configuration IEEE 802.11g / 2462 MHz / Chain 5



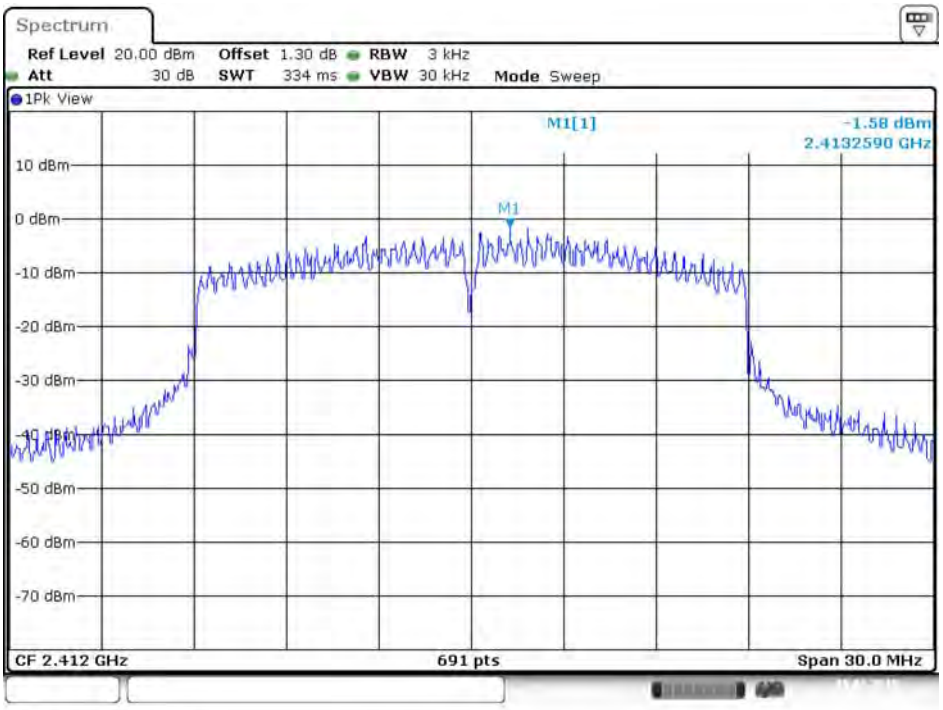
Date: 15.JAN.2015 20:19:26

Power Density Plot on Configuration IEEE 802.11g / 2462 MHz / Chain 6



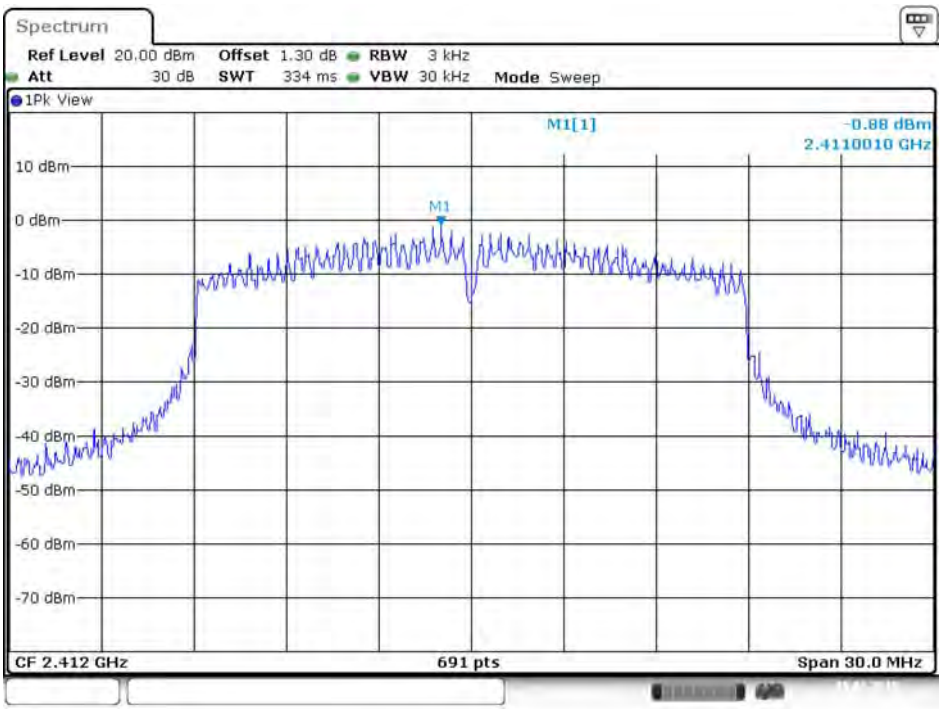
Date: 15.JAN.2015 20:20:04

Power Density Plot on Configuration IEEE 802.11n MCS0 HT20 / 2412 MHz / Chain 4



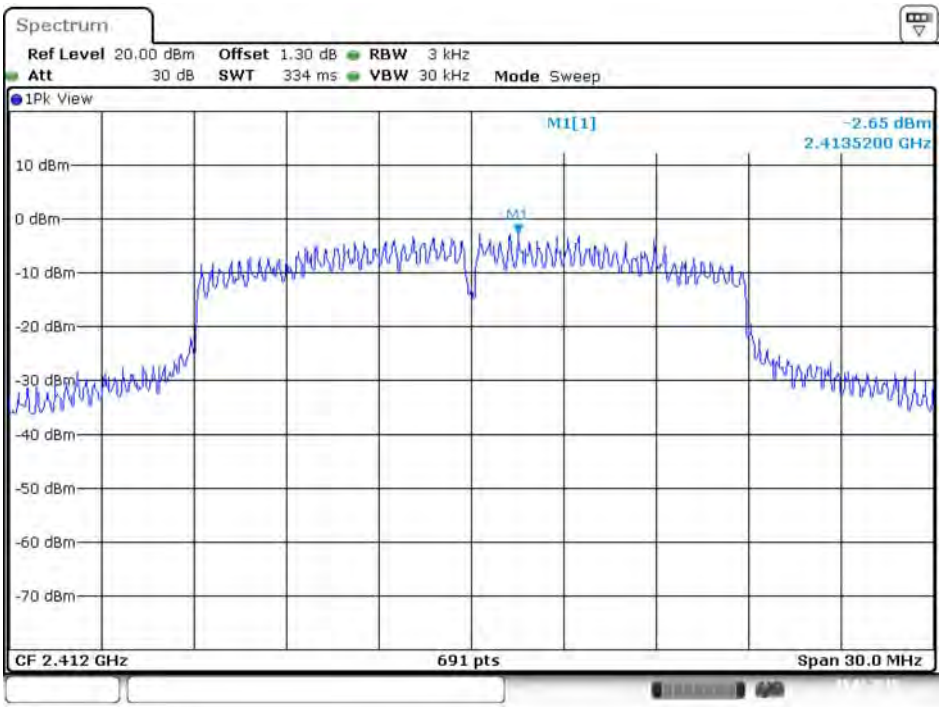
Date: 15.JAN.2015 20:29:44

Power Density Plot on Configuration IEEE 802.11n MCS0 HT20 / 2412 MHz / Chain 5



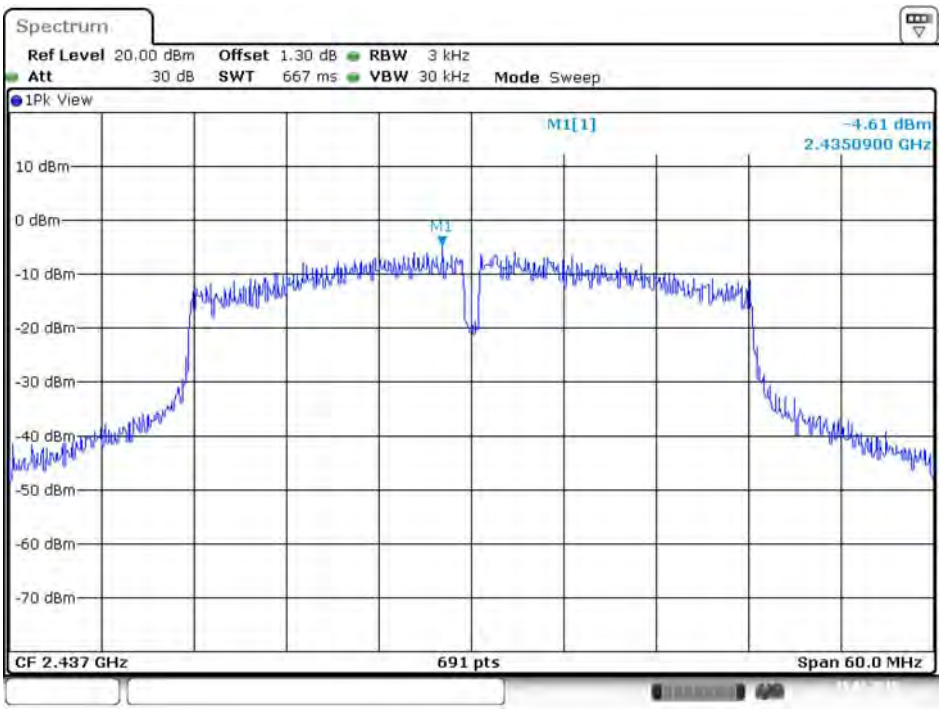
Date: 15.JAN.2015 20:30:13

Power Density Plot on Configuration IEEE 802.11n MCS0 HT20 / 2412 MHz / Chain 6



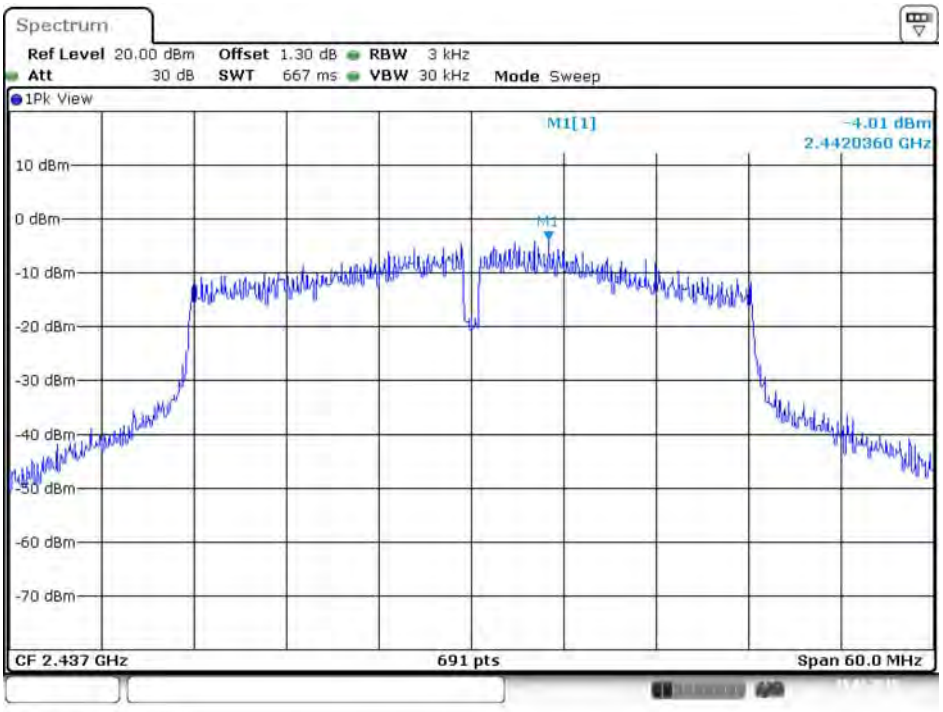
Date: 15.JAN.2015 20:30:37

Power Density Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437 MHz / Chain 4



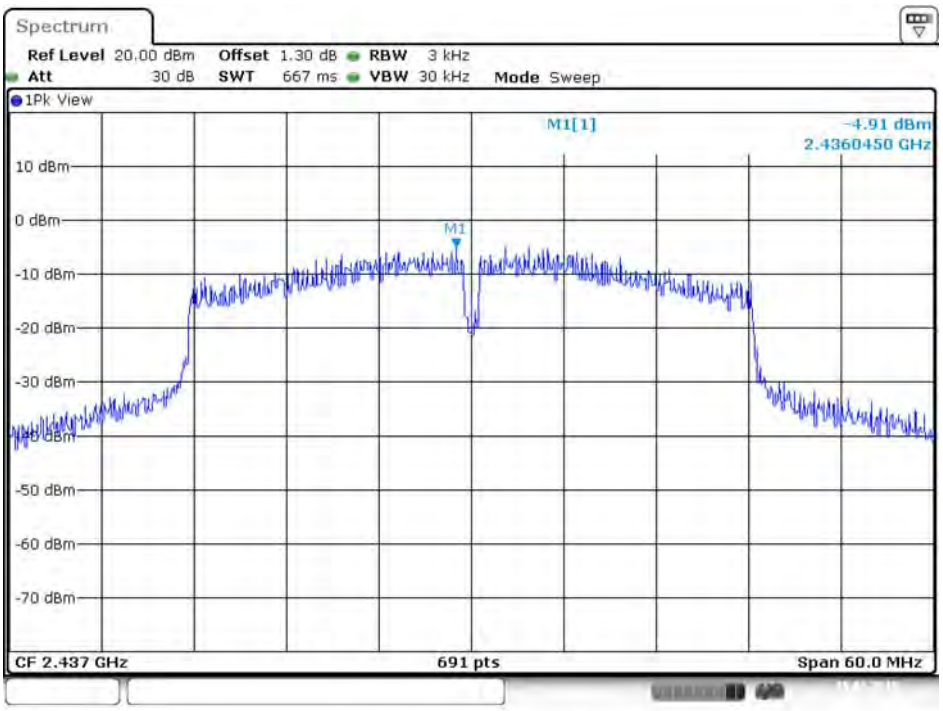
Date: 15.JAN.2015 20:38:53

Power Density Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437 MHz / Chain 5



Date: 15.JAN.2015 20:39:28

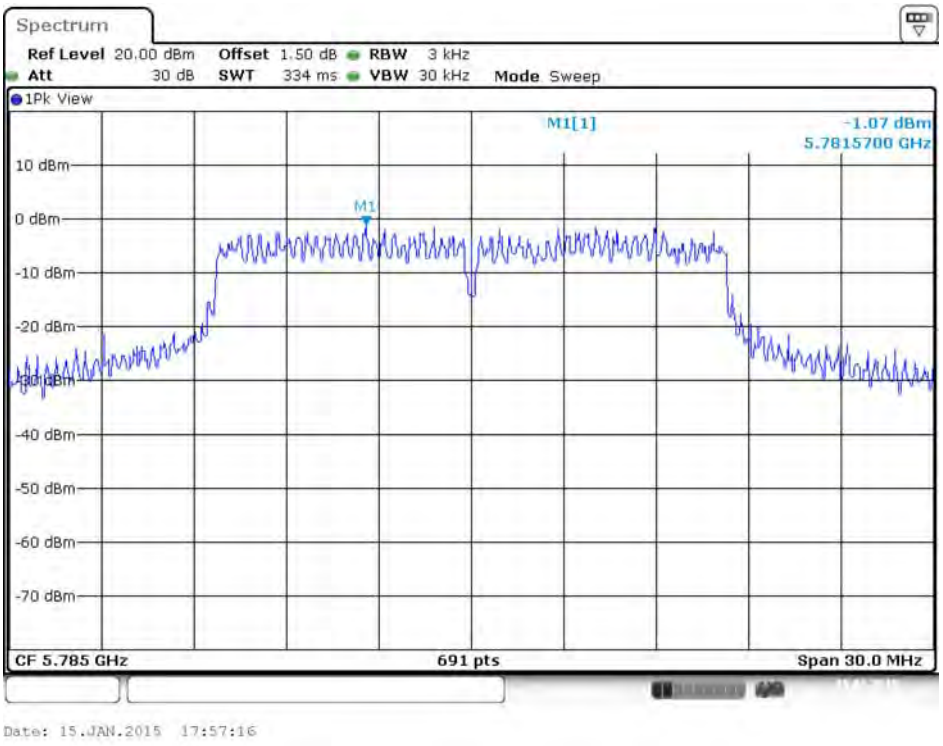
Power Density Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437 MHz / Chain 6



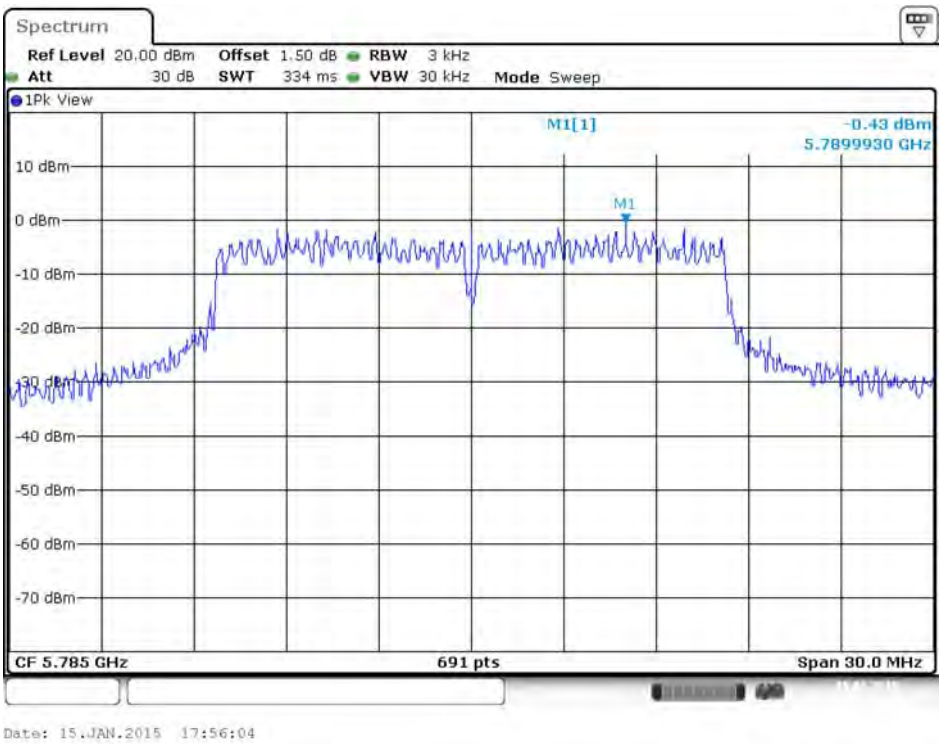
Date: 15.JAN.2015 20:40:03

For 5GHz Band

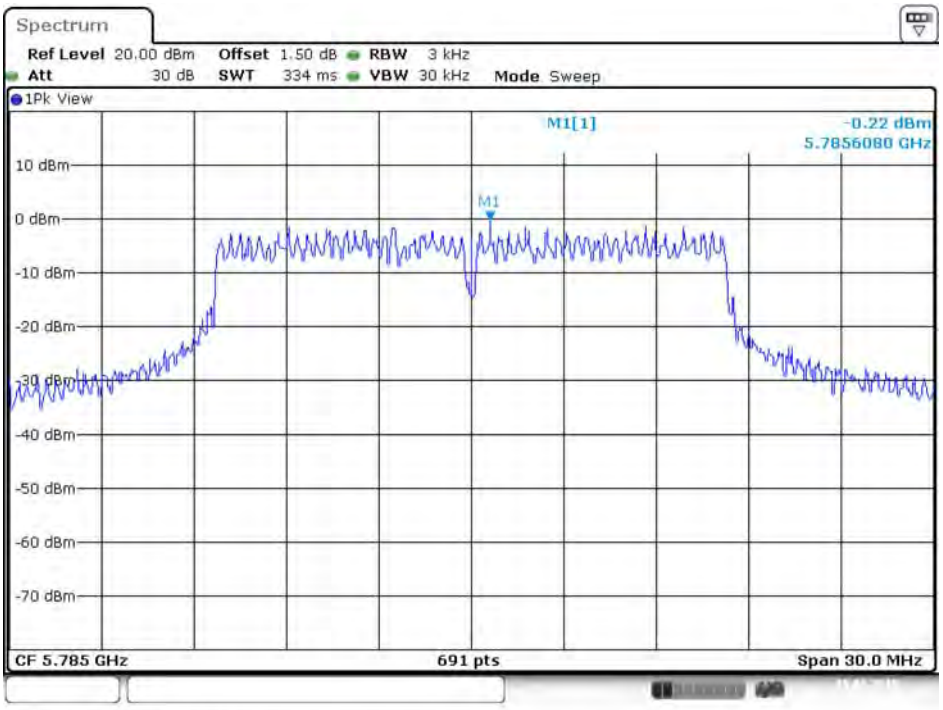
Power Density Plot on Configuration IEEE 802.11a / 5785 MHz / Chain 1



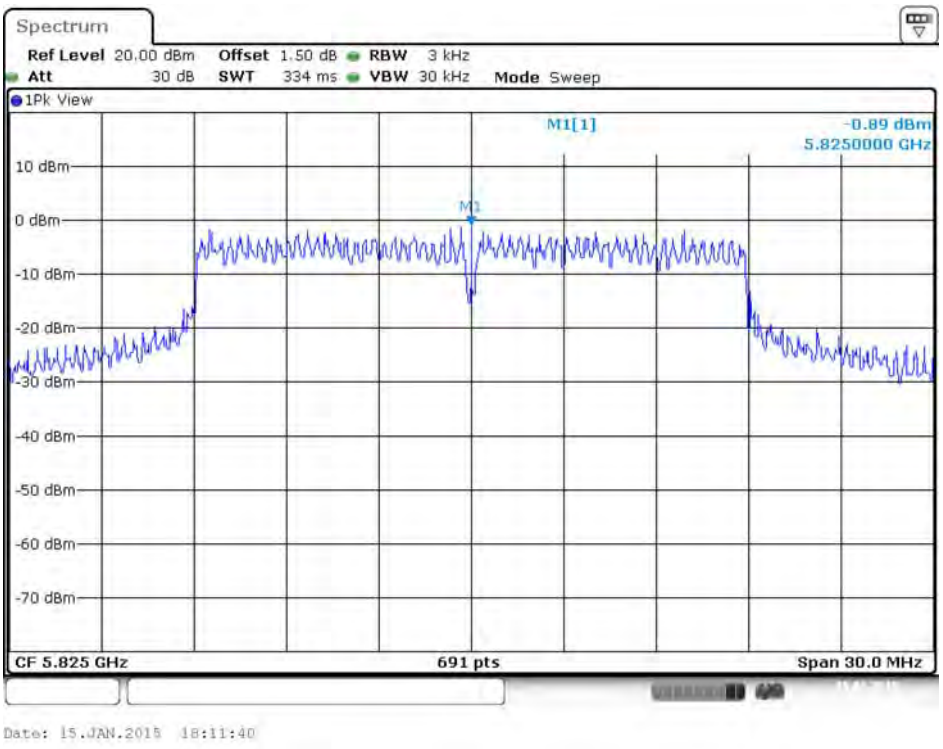
Power Density Plot on Configuration IEEE 802.11a / 5785 MHz / Chain 2



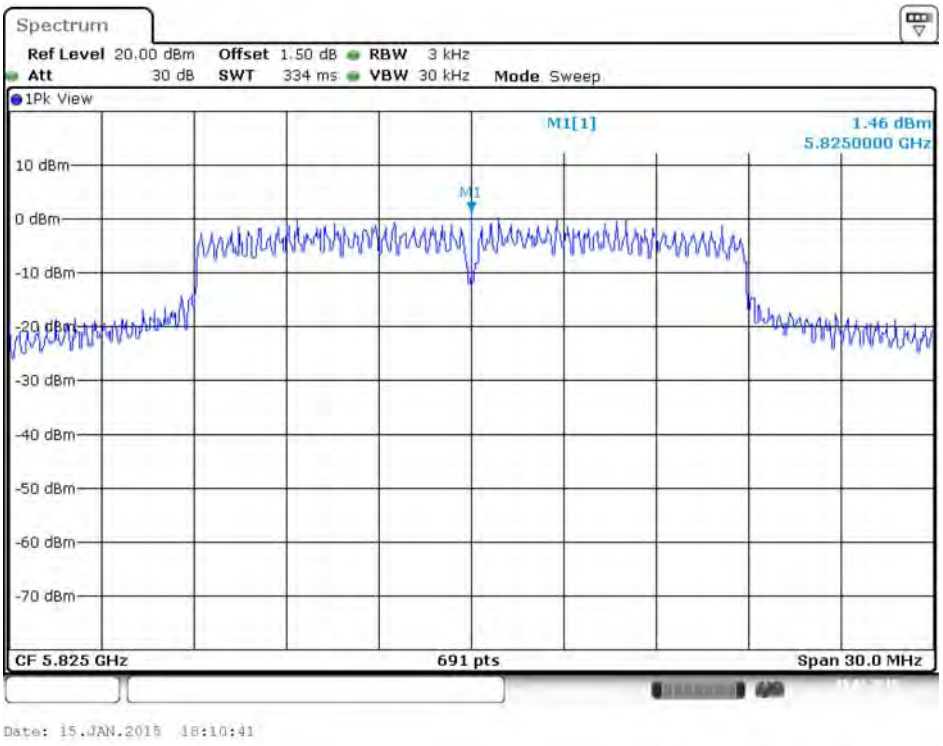
Power Density Plot on Configuration IEEE 802.11a / 5785 MHz / Chain 3



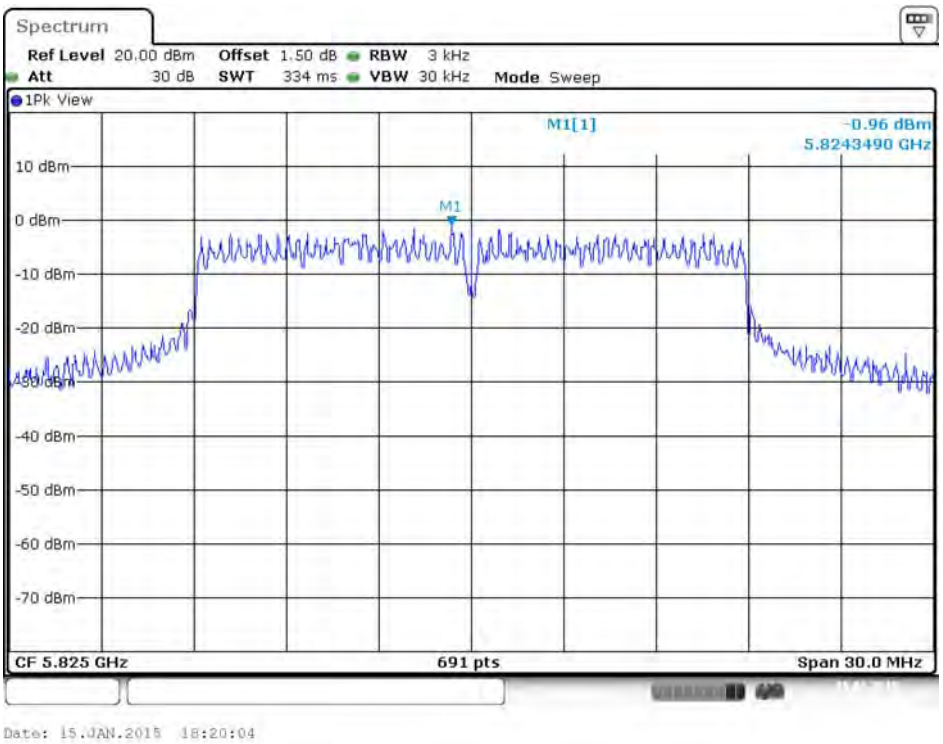
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5825 MHz / Chain 1



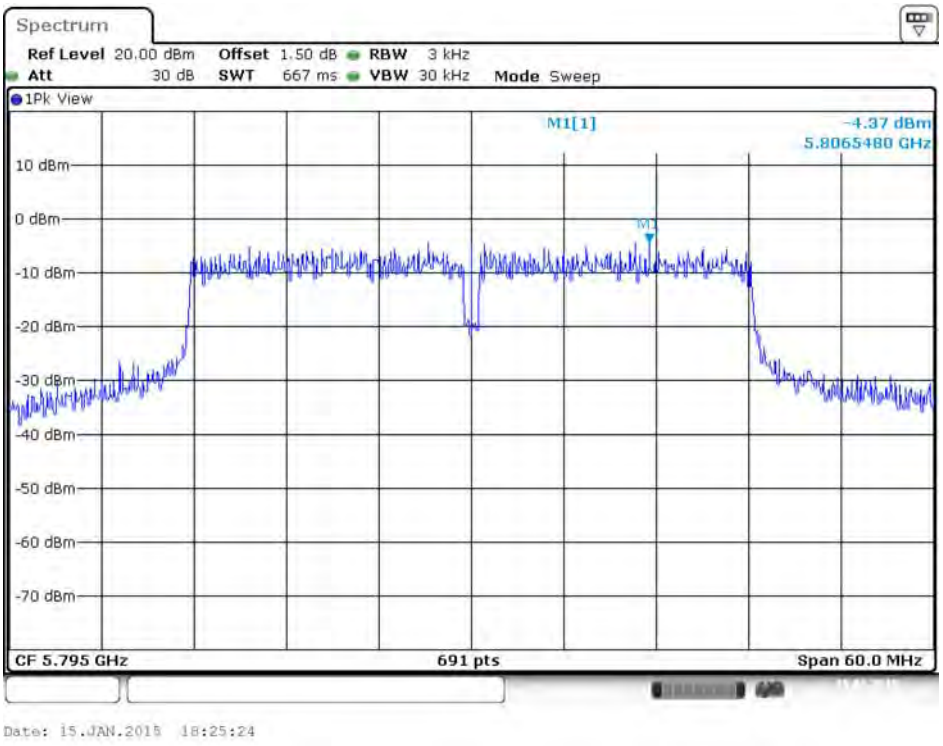
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5825 MHz / Chain 2



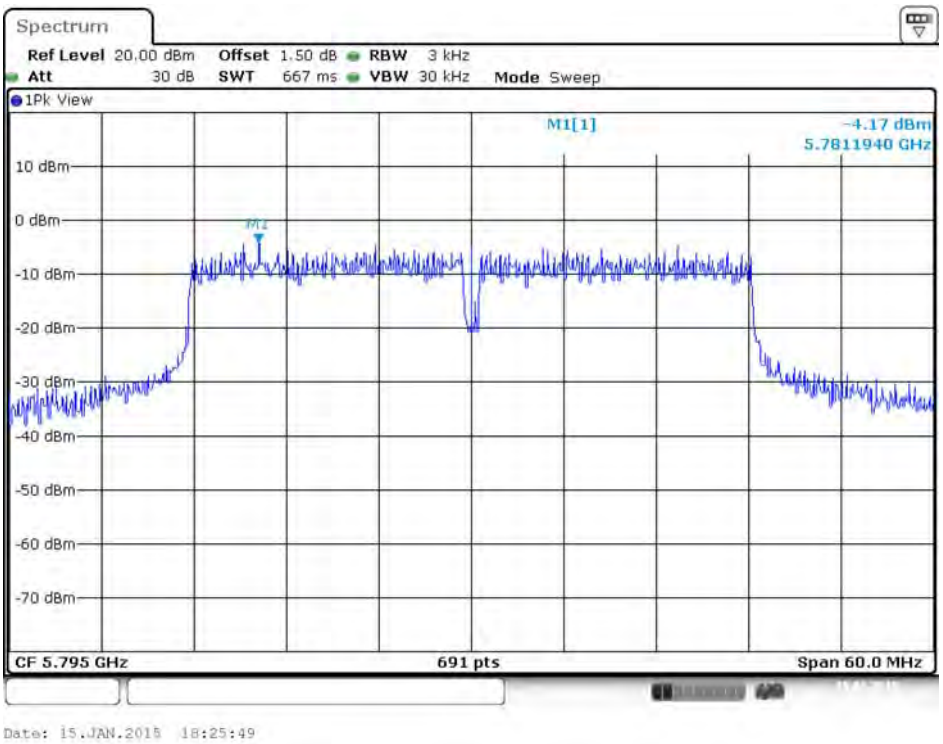
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5825 MHz / Chain 3



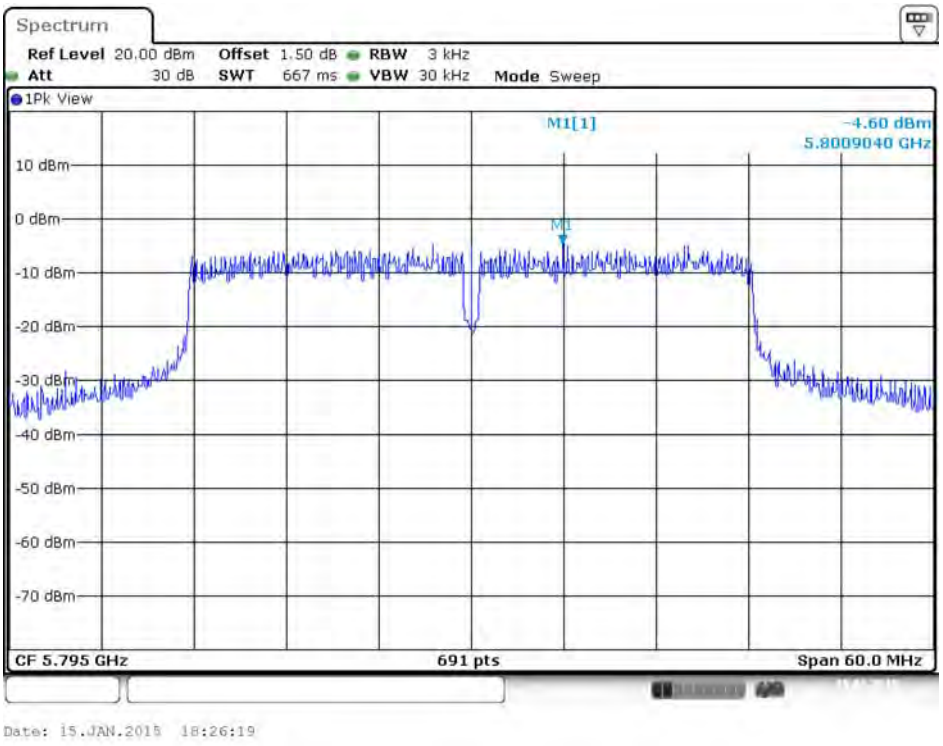
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 5795 MHz / Chain 1



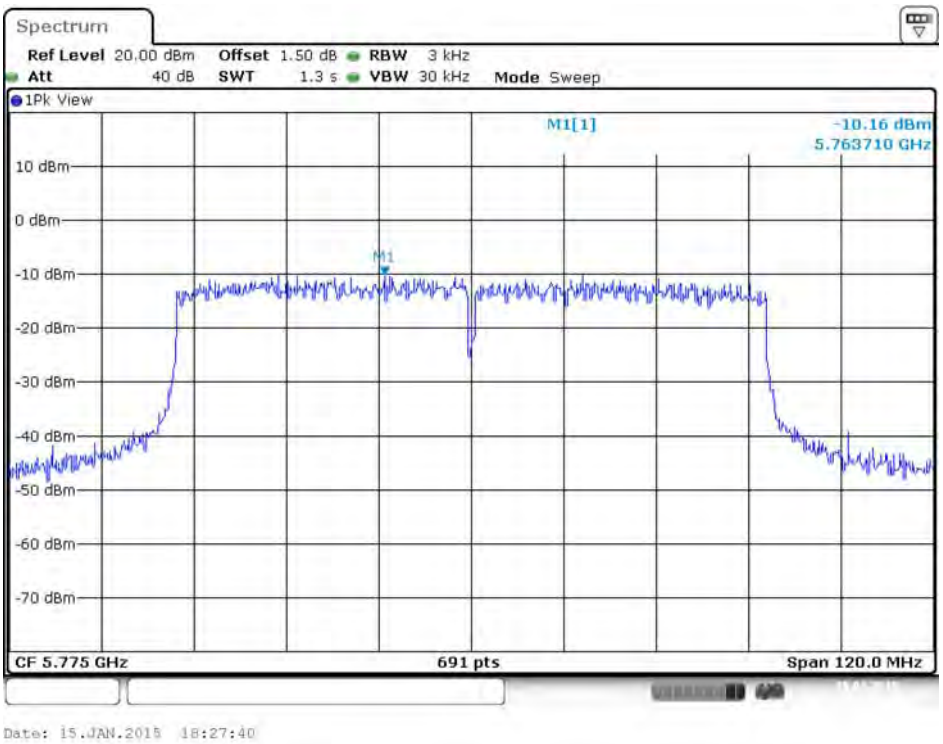
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 5795 MHz / Chain 2



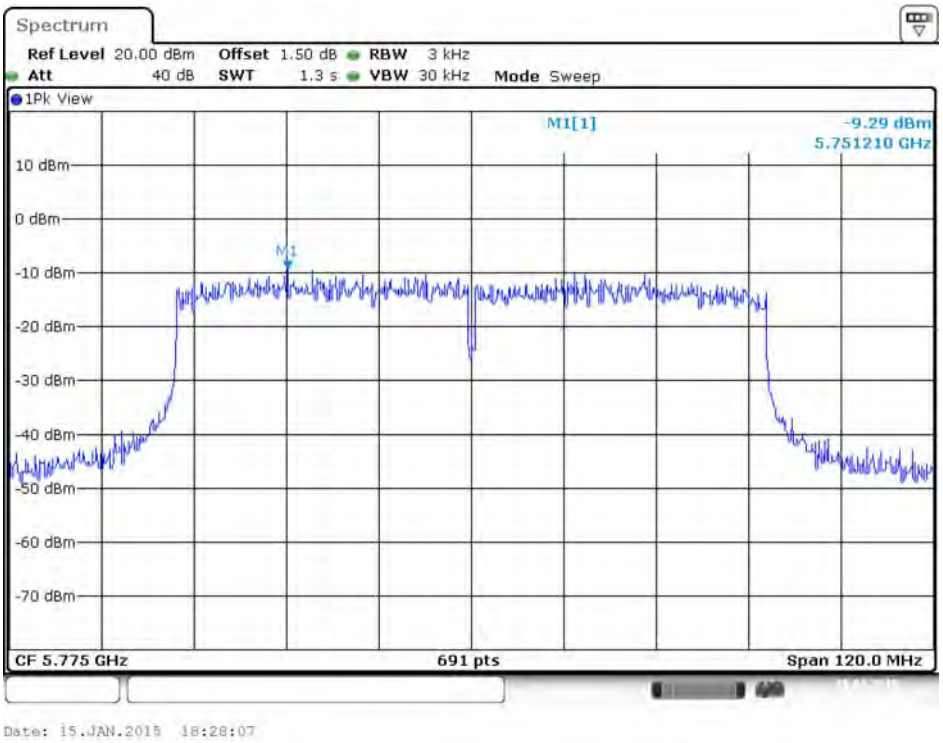
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 5795 MHz / Chain 3



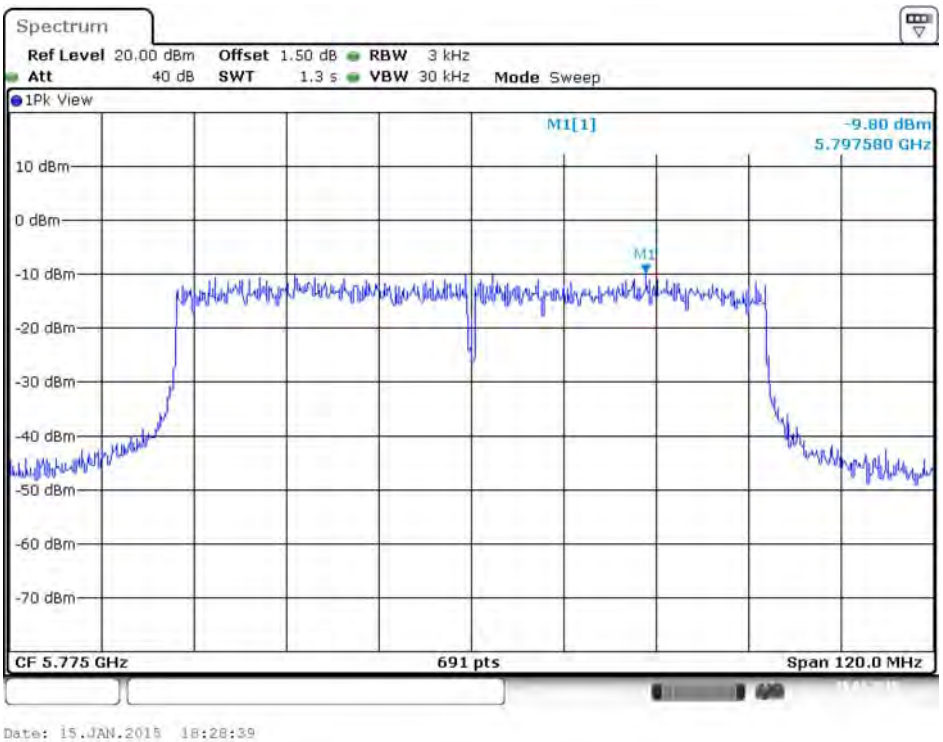
Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / 5775 MHz / Chain 1



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / 5775 MHz / Chain 2



Power Density Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / 5775 MHz / Chain 3



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.

6dB Spectrum Bandwidth	
Spectrum Parameters	**Setting**
Attenuation	Auto
Span Frequency	> 6dB Bandwidth
RBW	100kHz
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto
99% Occupied Bandwidth	
Spectrum Parameters	**Setting**
Span	1.5 times to 5.0 times the OBW
RBW	1 % to 5 % of the OBW
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold

4.4.3. 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 KDB 558074 D01 v03r02 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

Temperature	26°C	Humidity	63%
Test Engineer	Mars Lin / Magic Lai		

For 2.4GHz Band

Mode	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11b	2412 MHz	9.03	13.08	500	Complies
	2437 MHz	9.73	13.72	500	Complies
	2462 MHz	10.07	14.01	500	Complies
802.11g	2412 MHz	3.91	15.11	500	Complies
	2437 MHz	13.63	16.21	500	Complies
	2462 MHz	12.94	16.32	500	Complies
802.11n MCS0 HT20	2412 MHz	14.24	17.08	500	Complies
	2437 MHz	7.21	15.34	500	Complies
	2462 MHz	16.59	18.64	500	Complies
802.11n MCS0 HT40	2422 MHz	21.13	35.54	500	Complies
	2437 MHz	15.77	36.01	500	Complies
	2452 MHz	15.20	36.01	500	Complies

For 5GHz Band

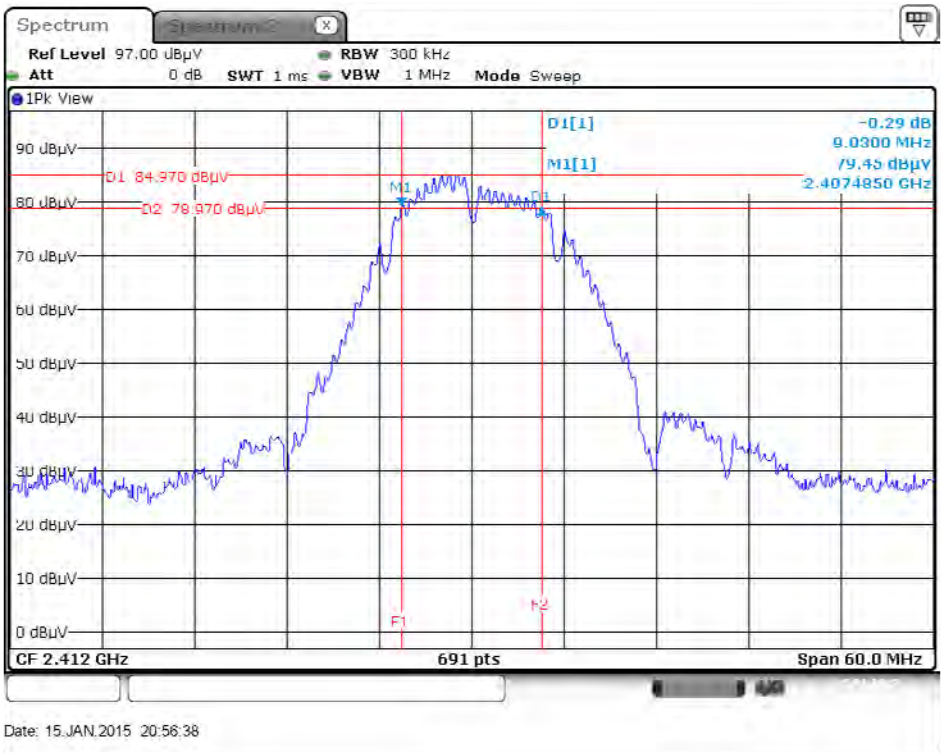
Mode	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11a	5745 MHz	12.93	16.50	500	Complies
	5785 MHz	12.93	19.45	500	Complies
	5825 MHz	12.99	17.28	500	Complies
802.11ac MCS0/Nss1 VHT20	5745 MHz	17.57	19.10	500	Complies
	5785 MHz	17.57	20.41	500	Complies
	5825 MHz	17.57	23.01	500	Complies
802.11ac MCS0/Nss1 VHT40	5755 MHz	34.55	37.77	500	Complies
	5795 MHz	35.71	39.07	500	Complies
802.11ac MCS0/Nss1 VHT80	5775 MHz	73.33	76.12	500	Complies

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

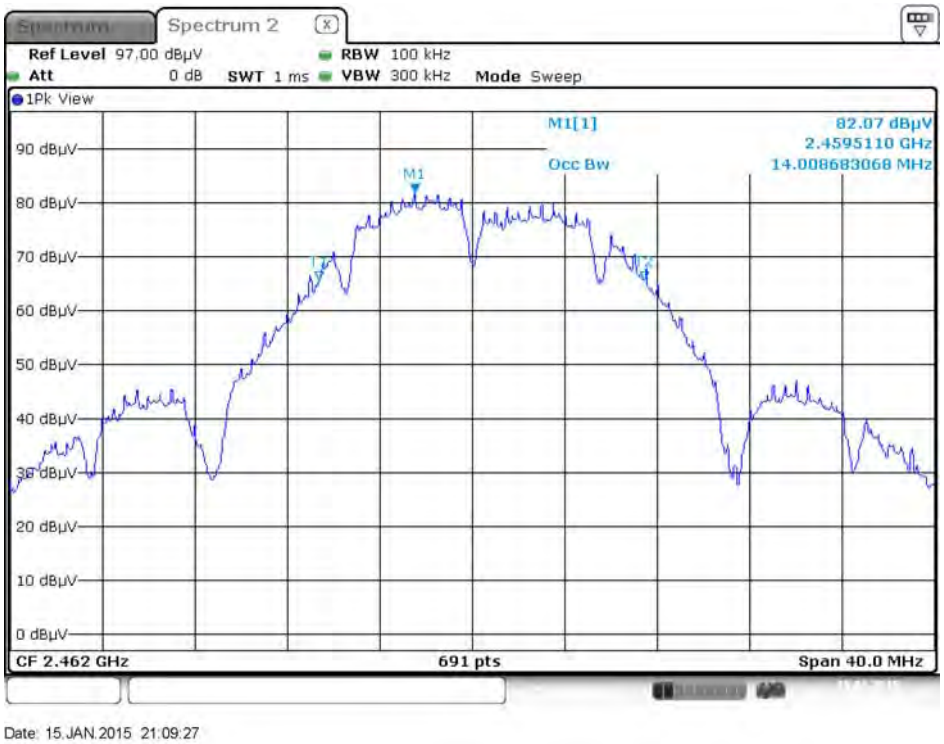
For plots, only the channel with worse result was shown.

For 2.4GHz Band

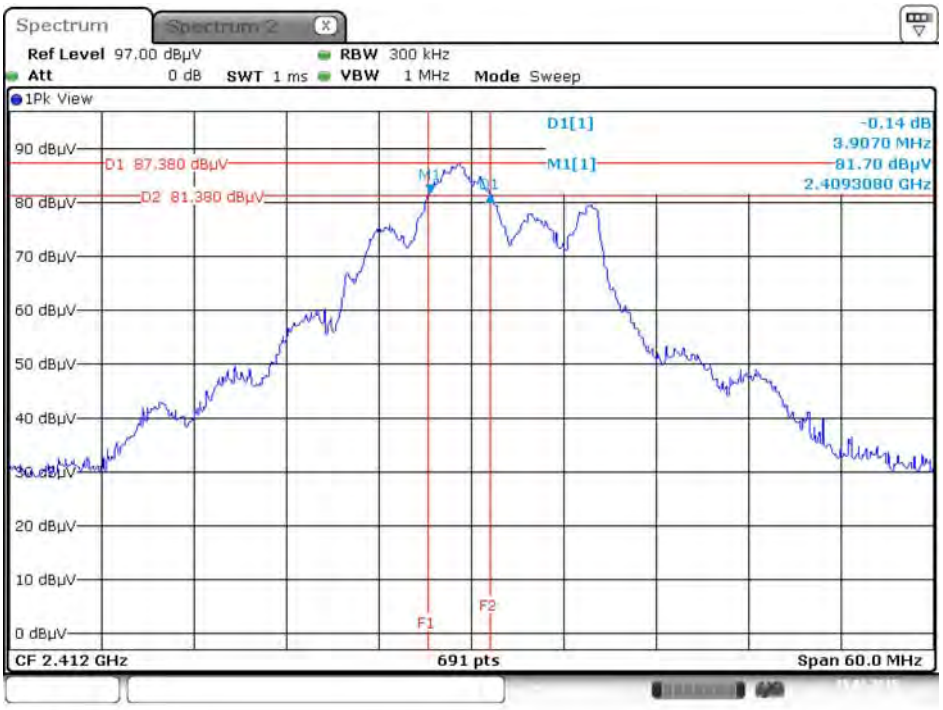
6 dB Bandwidth Plot on Configuration IEEE 802.11b / 2412 MHz / Chain 4 + Chain 5 + Chain 6



99% Occupied Bandwidth Plot on Configuration IEEE 802.11b / 2462 MHz / Chain 4 + Chain 5 + Chain 6

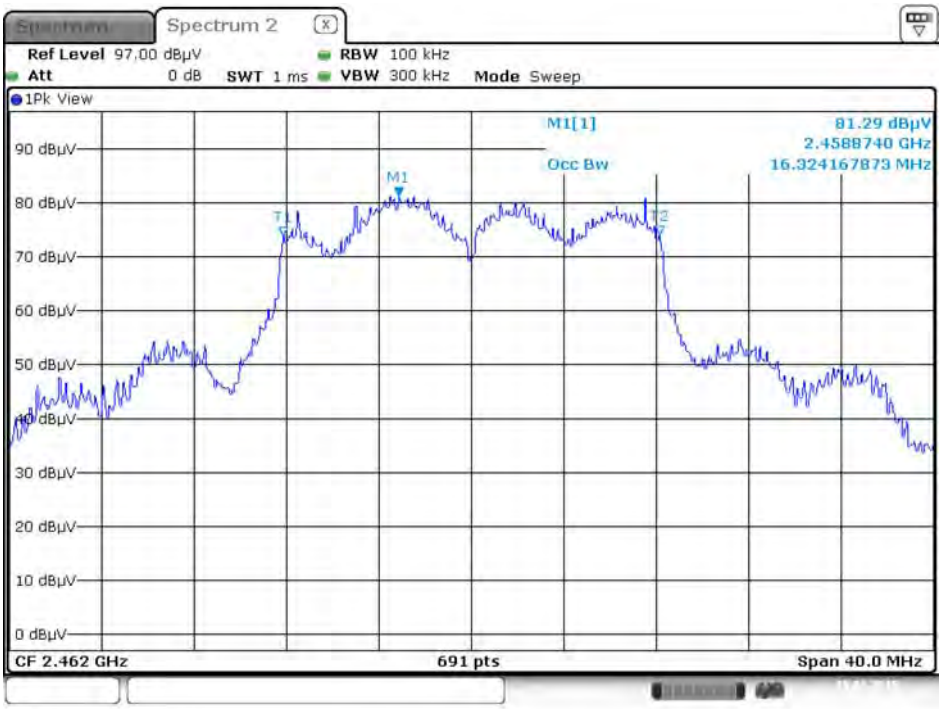


6 dB Bandwidth Plot on Configuration IEEE 802.11g / 2412 MHz / Chain 4 + Chain 5 + Chain 6



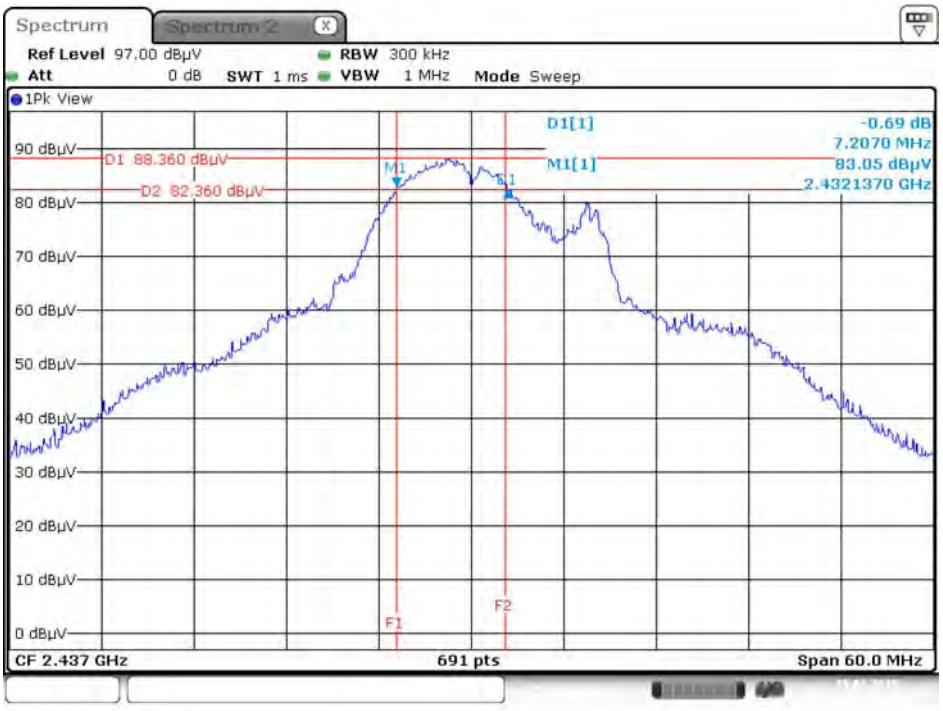
Date: 15.JAN.2015 21:12:25

99% Occupied Bandwidth Plot on Configuration IEEE 802.11g / 2462 MHz / Chain 4 + Chain 5 + Chain 6



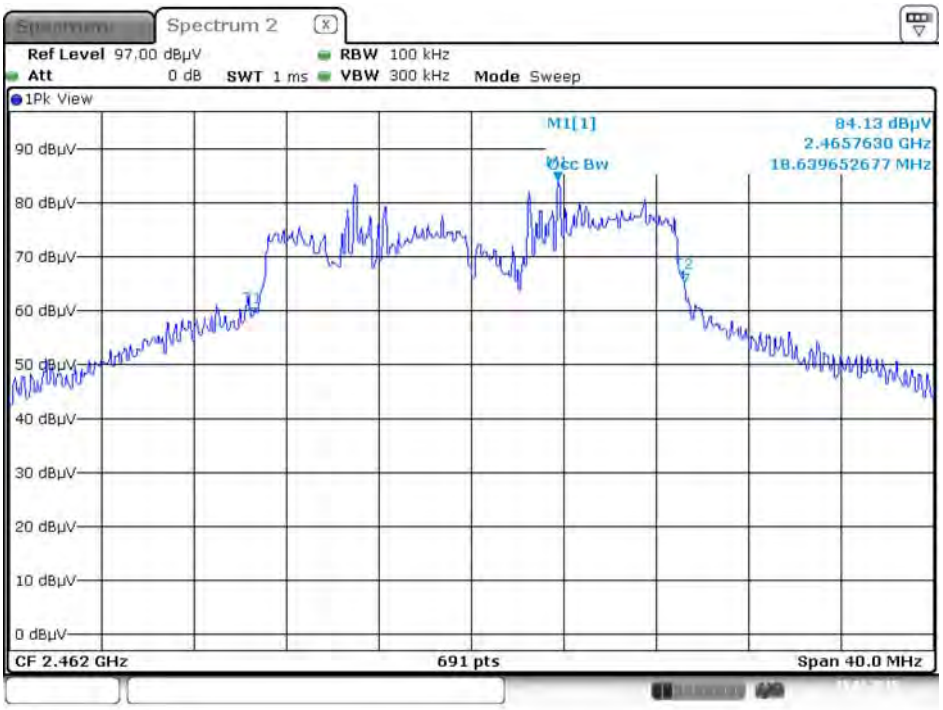
Date: 15.JAN.2015 21:18:44

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / 2437 MHz / Chain 4 + Chain 5 + Chain 6



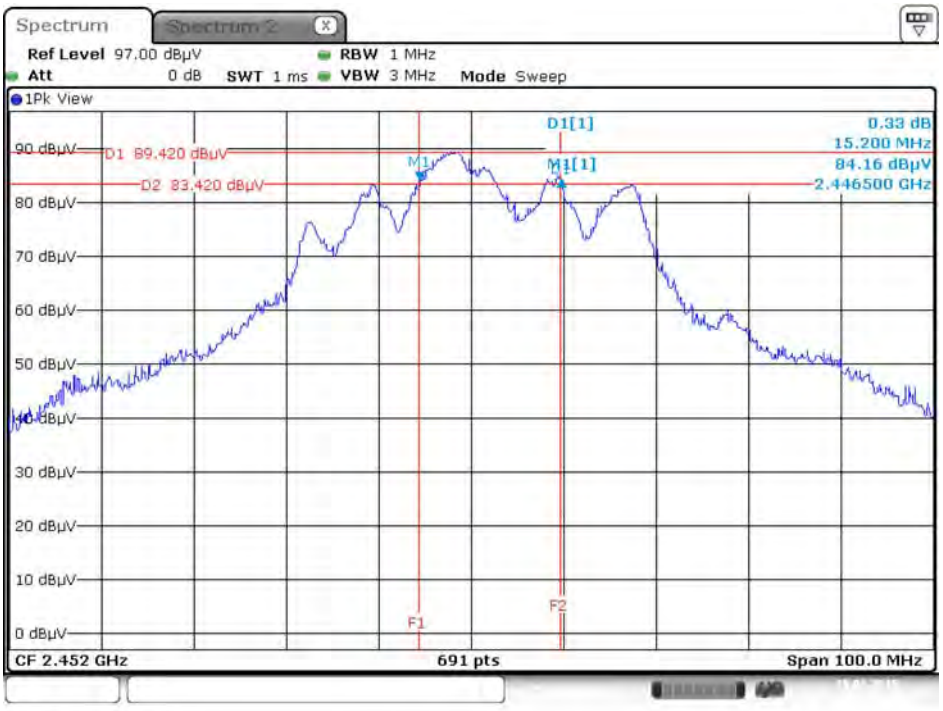
Date: 15.JAN.2015 21:23:15

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / 2462 MHz / Chain 4 + Chain 5 + Chain 6



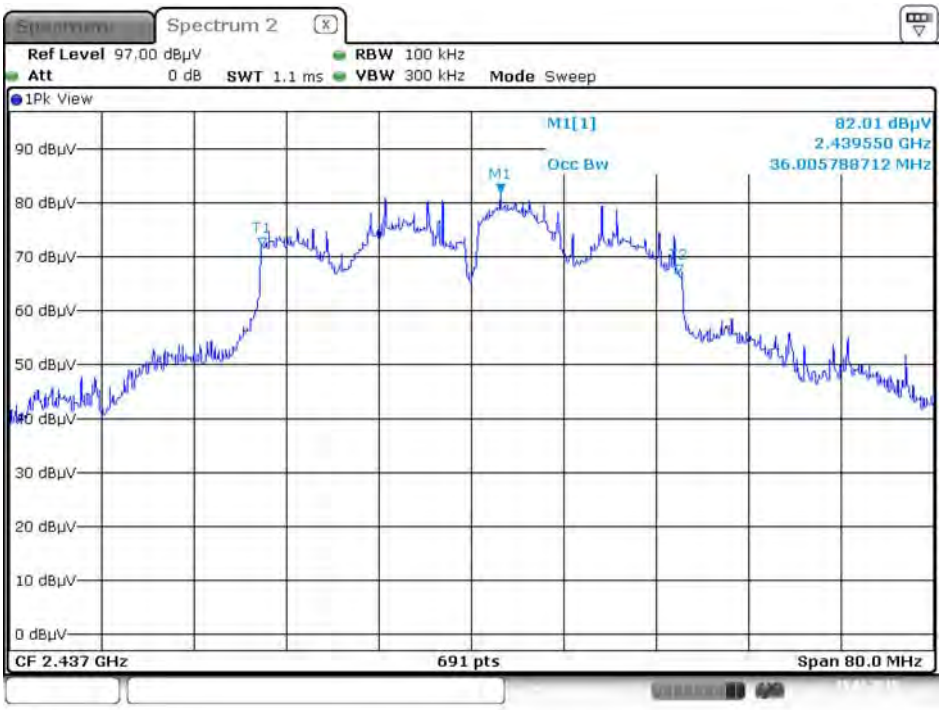
Date: 15.JAN.2015 21:26:12

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / 2452 MHz / Chain 4 + Chain 5 + Chain 6



Date: 15.JAN.2015 21:35:20

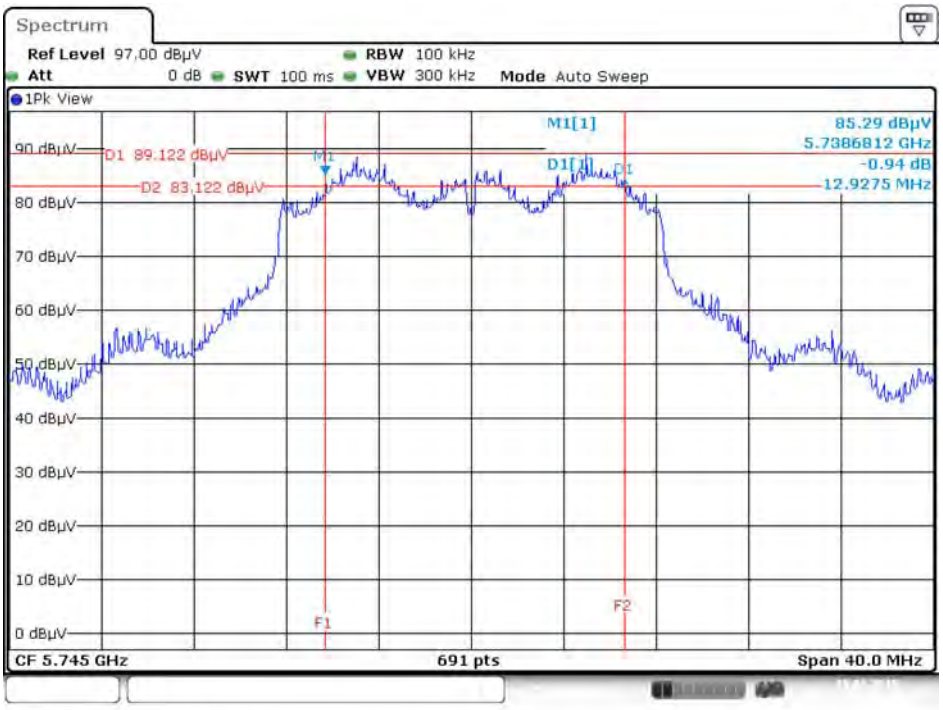
99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437 MHz / Chain 4 + Chain 5 + Chain 6



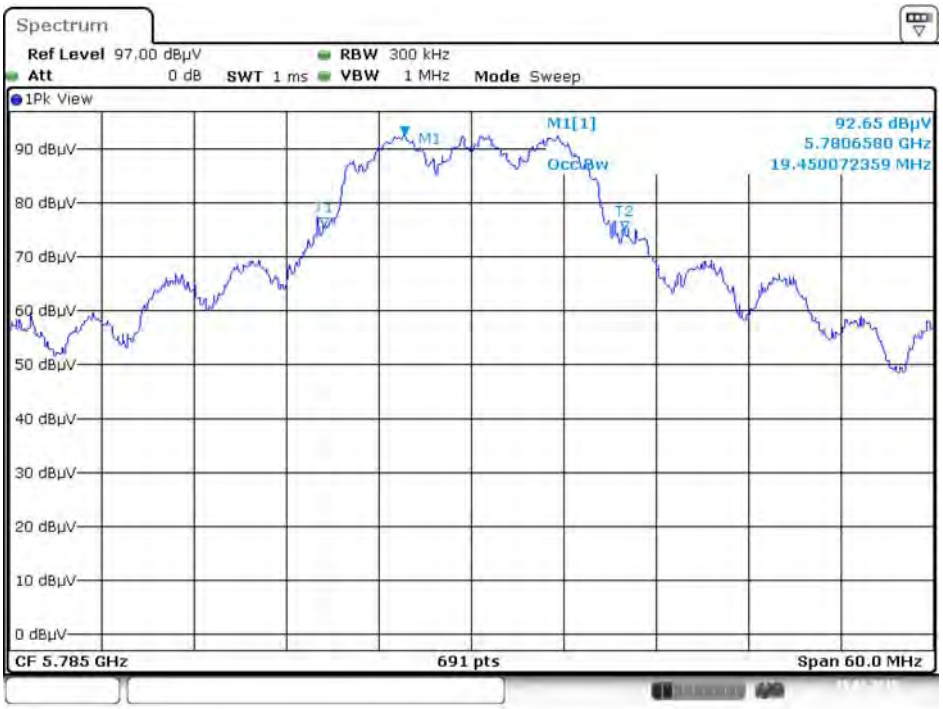
Date: 15.JAN.2015 21:32:42

For 5GHz Band

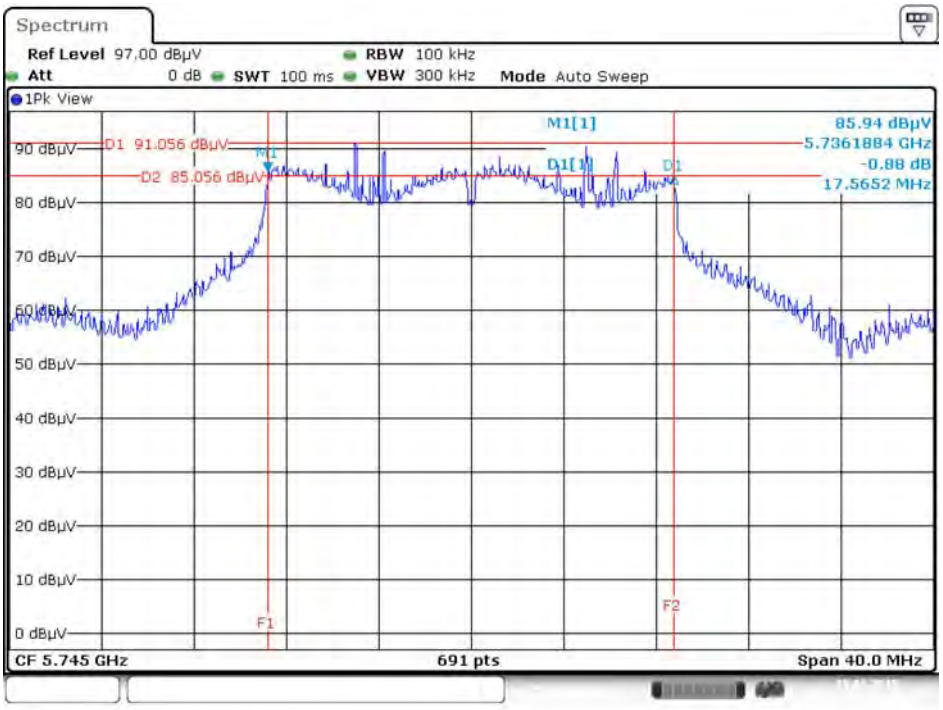
6 dB Bandwidth Plot on Configuration IEEE 802.11a / 5745 MHz / Chain 1 + Chain 2 + Chain 3



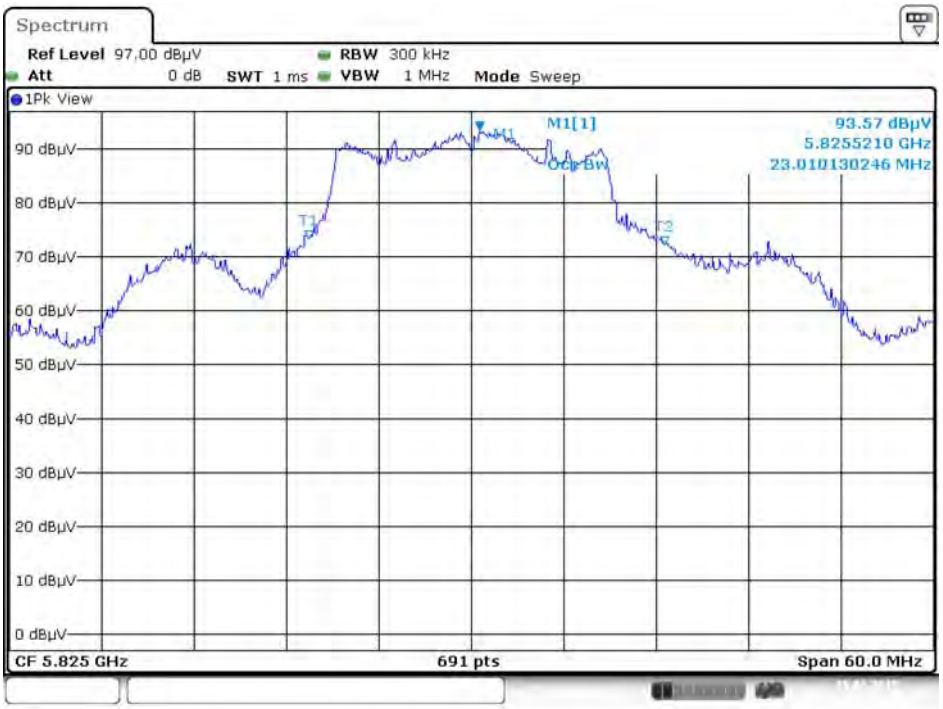
99% Occupied Bandwidth Plot on Configuration IEEE 802.11a / 5785 MHz / Chain 1 + Chain 2 + Chain 3



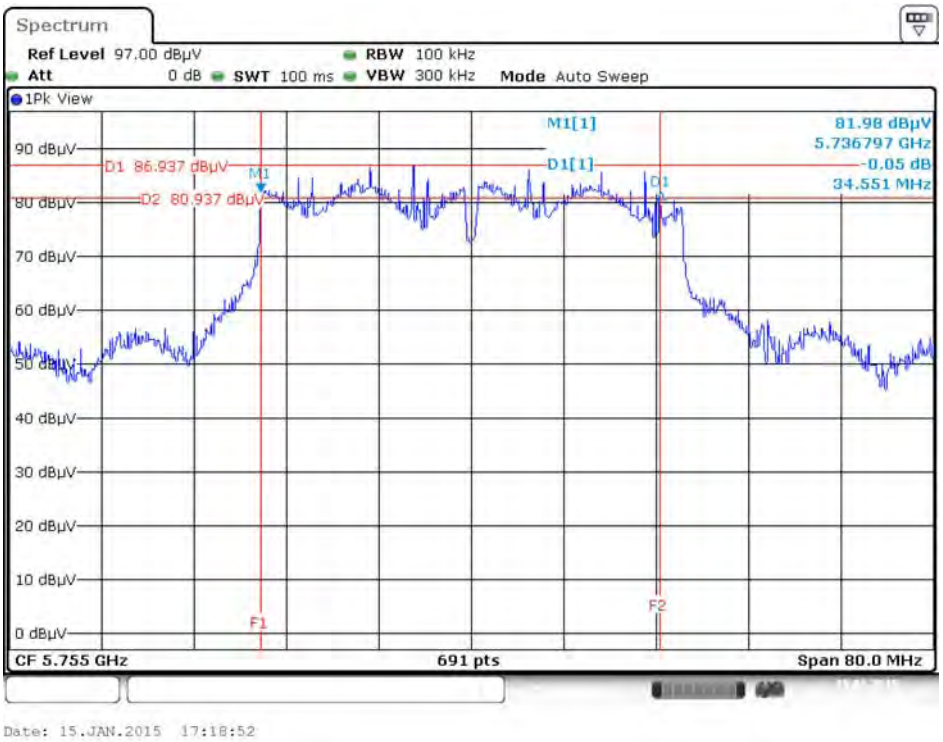
6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5745 MHz / Chain 1 + Chain 2 + Chain 3



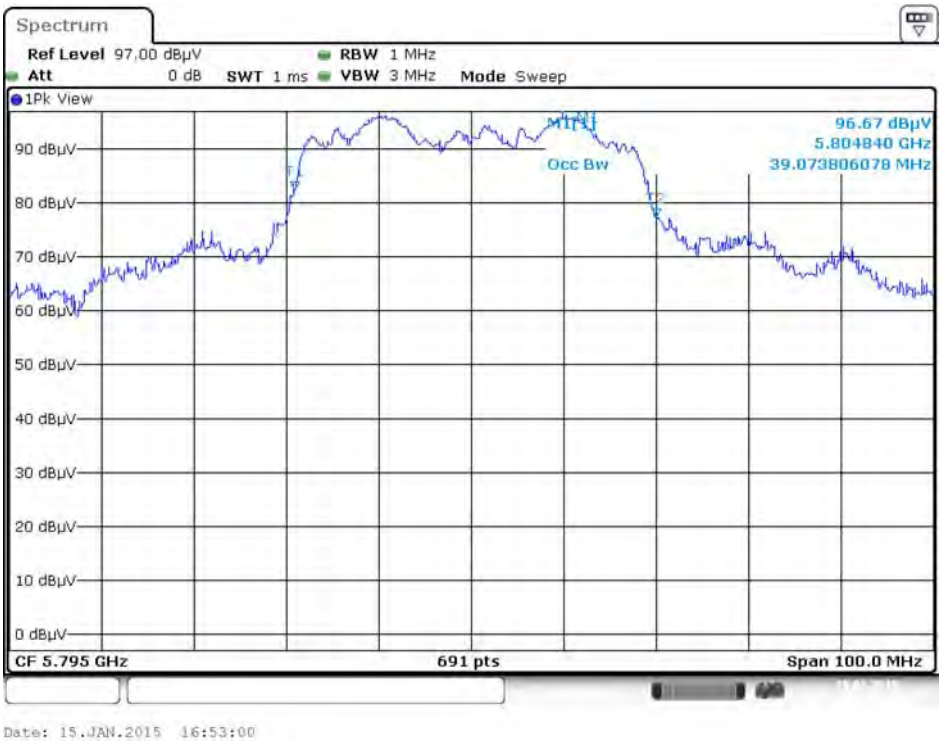
99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / 5825 MHz / Chain 1 + Chain 2 + Chain 3



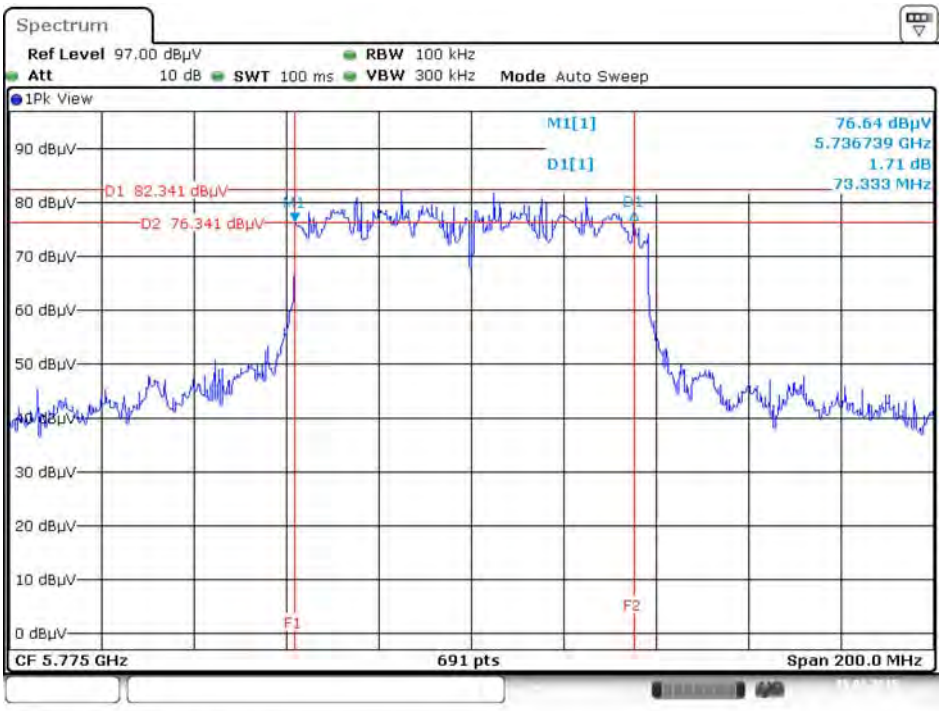
6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 5755MHz / Chain 1 + Chain 2 + Chain 3



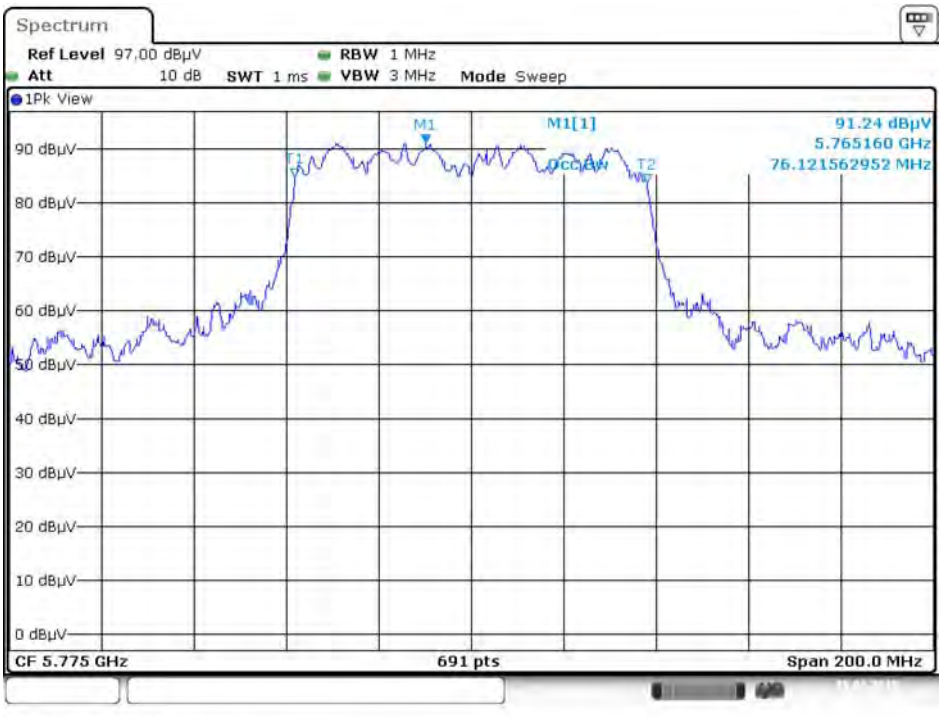
99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / 5795MHz / Chain 1 + Chain 2 + Chain 3



6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / 5775 MHz / Chain 1 + Chain 2 + Chain 3



99% Occupied Bandwidth Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT80 / 5775 MHz / Chain 1 + Chain 2 + Chain 3



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

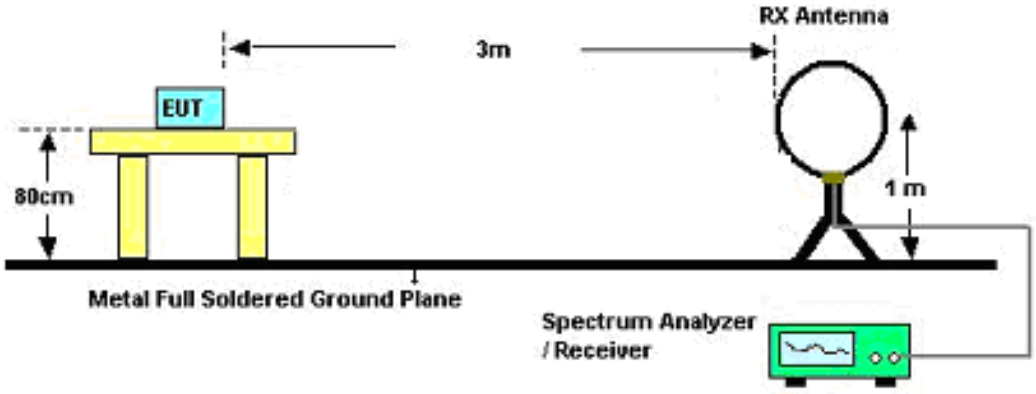
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1GHz / RBW 120kHz for QP

4.5.3. Test Procedures

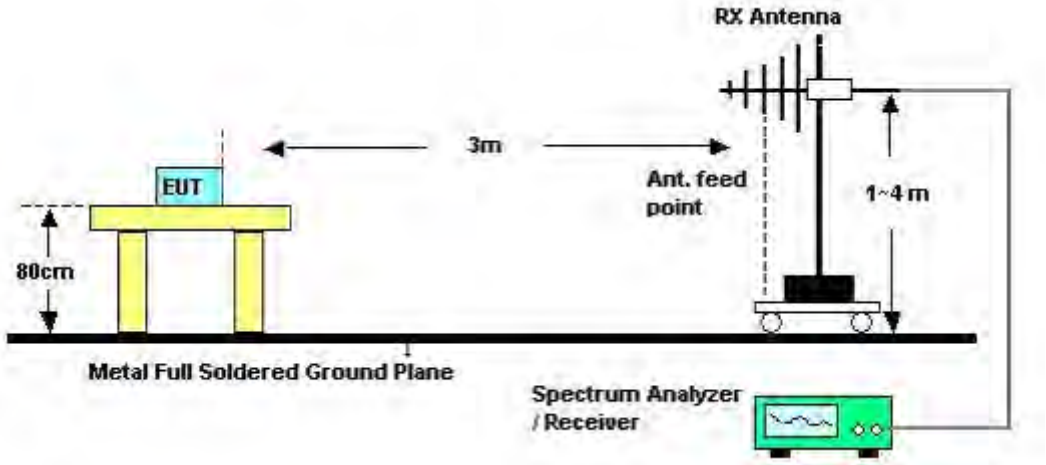
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting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

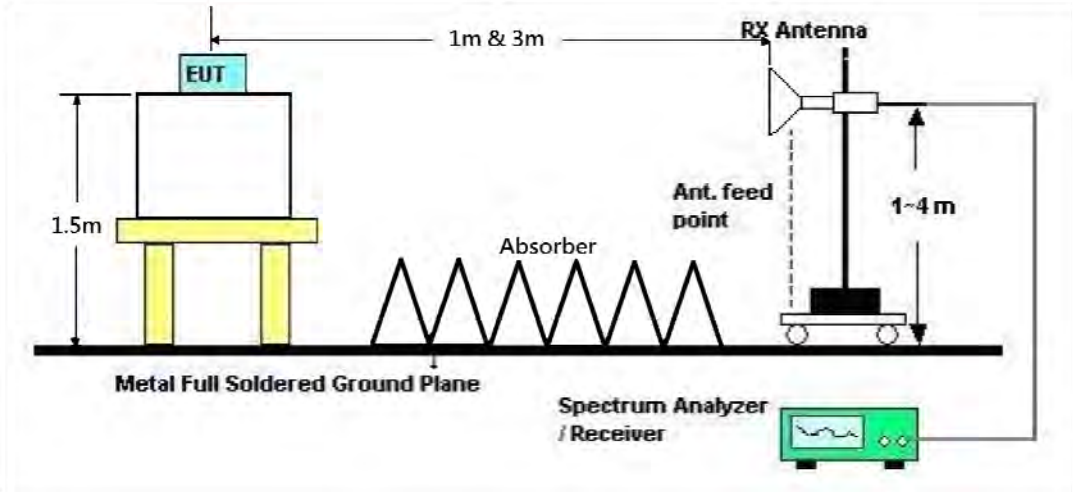
For Radiated Emissions: 9kHz ~30MHz



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

The EUT was programmed to be in continuously transmitting mode.

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

Temperature	26°C	Humidity	68%
Test Engineer	Eason Chen	Configurations	CTX
Test Date	Jan. 19, 2015	Test Mode	Mode 1

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

Note:

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

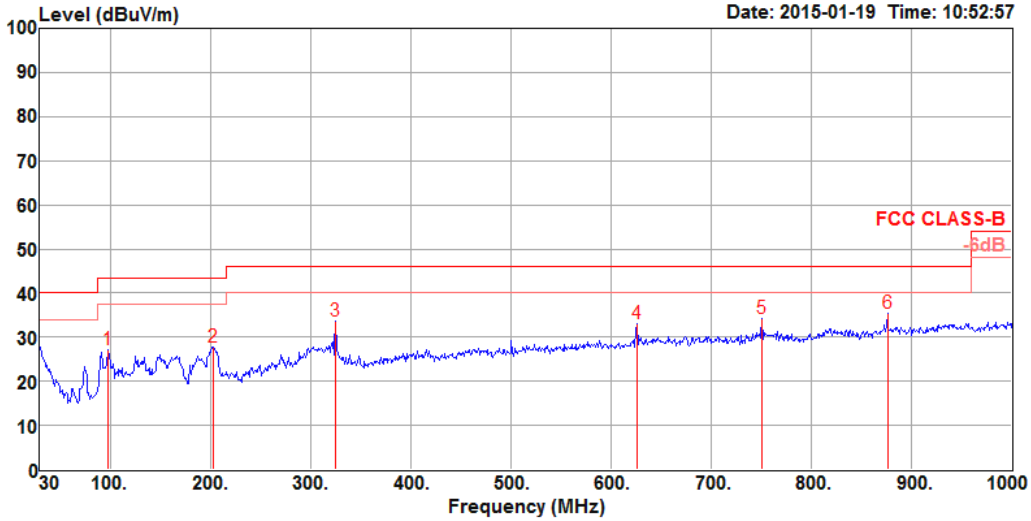
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

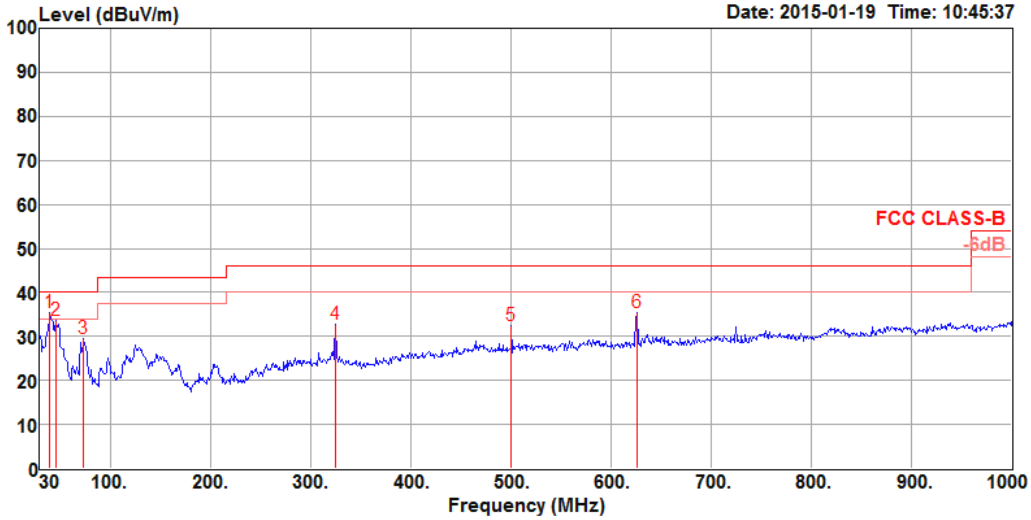
Temperature	26°C	Humidity	68%
Test Engineer	Eason Chen	Configurations	CTX
Test Mode	Mode 1		

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	97.90	27.21	43.50	-16.29	47.85	0.86	10.72	32.22	Peak	400	128	HORIZONTAL
2	202.66	27.84	43.50	-15.66	48.14	1.24	10.51	32.05	Peak	150	135	HORIZONTAL
3	324.88	33.55	46.00	-12.45	49.45	1.56	14.60	32.06	Peak	100	99	HORIZONTAL
4	625.58	32.93	46.00	-13.07	43.64	2.18	19.35	32.24	Peak	150	141	HORIZONTAL
5	750.71	34.15	46.00	-11.85	43.43	2.38	20.41	32.07	Peak	125	173	HORIZONTAL
6	875.84	35.43	46.00	-10.57	43.01	2.59	21.51	31.68	Peak	100	206	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	39.70	35.50	40.00	-4.50	52.98	0.56	14.27	32.31	Peak	100	188	VERTICAL
2	45.52	33.73	40.00	-6.27	54.34	0.58	11.05	32.24	Peak	100	359	VERTICAL
3	73.65	29.61	40.00	-10.39	53.98	0.74	7.10	32.21	Peak	150	160	VERTICAL
4	324.88	32.76	46.00	-13.24	48.64	1.56	14.62	32.06	Peak	100	29	VERTICAL
5	500.45	32.60	46.00	-13.40	44.98	1.96	17.81	32.15	Peak	100	264	VERTICAL
6	625.58	35.28	46.00	-10.72	45.98	2.18	19.36	32.24	Peak	100	125	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)

Temperature	26°C	Humidity	68%
Test Engineer	Eason Chen	Configurations	IEEE 802.11b CH 1 / Chain 4 + Chain 5 + Chain 6
Test Date	Jan. 10, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4819.22	32.59	54.00	-21.41	26.62	6.11	33.56	33.70	248	164	Average	HORIZONTAL
2	4825.82	46.10	74.00	-27.90	40.13	6.11	33.56	33.70	248	164	Peak	HORIZONTAL
3	12059.44	56.92	74.00	-17.08	41.34	10.97	39.64	35.03	201	182	Peak	HORIZONTAL
4	12064.36	43.21	54.00	-10.79	27.63	10.97	39.64	35.03	201	182	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4823.78	46.66	74.00	-27.34	40.69	6.11	33.56	33.70	320	171	Peak	VERTICAL
2	4824.00	34.96	54.00	-19.04	28.99	6.11	33.56	33.70	320	171	Average	VERTICAL
3	12062.48	56.86	74.00	-17.14	41.28	10.97	39.64	35.03	185	201	Peak	VERTICAL
4	12064.54	43.21	54.00	-10.79	27.63	10.97	39.64	35.03	185	201	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Eason Chen	Configurations	IEEE 802.11b CH 6 / Chain 4 + Chain 5 + Chain 6
Test Date	Jan. 10, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4869.22	46.94	74.00	-27.06	40.89	6.08	33.66	33.69	103	163	Peak	HORIZONTAL
2	4877.16	32.37	54.00	-21.63	26.31	6.08	33.66	33.68	103	163	Average	HORIZONTAL
3	7310.30	38.67	54.00	-15.33	27.75	8.28	36.64	34.00	188	183	Average	HORIZONTAL
4	7313.36	52.66	74.00	-21.34	41.72	8.30	36.64	34.00	188	183	Peak	HORIZONTAL
5	12186.46	44.38	54.00	-9.62	28.88	10.94	39.55	34.99	186	200	Average	HORIZONTAL
6	12188.50	58.20	74.00	-15.80	42.70	10.94	39.55	34.99	186	200	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4873.98	39.48	54.00	-14.52	33.42	6.08	33.66	33.68	330	183	Average	VERTICAL
2	4874.24	49.02	74.00	-24.98	42.96	6.08	33.66	33.68	330	183	Peak	VERTICAL
3	7310.22	42.07	54.00	-11.93	31.15	8.28	36.64	34.00	270	221	Average	VERTICAL
4	7311.06	53.31	74.00	-20.69	42.39	8.28	36.64	34.00	270	221	Peak	VERTICAL
5	12186.70	45.50	54.00	-8.50	30.00	10.94	39.55	34.99	287	221	Average	VERTICAL
6	12187.18	58.89	74.00	-15.11	43.39	10.94	39.55	34.99	287	221	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Eason Chen	Configurations	IEEE 802.11b CH 11 / Chain 4 + Chain 5 + Chain 6
Test Date	Jan. 10, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4919.34	46.40	74.00	-27.60	40.26	6.05	33.76	33.67	182	194	Peak	HORIZONTAL
2	4924.20	32.48	54.00	-21.52	26.34	6.05	33.76	33.67	182	194	Average	HORIZONTAL
3	7382.78	51.74	74.00	-22.26	40.66	8.34	36.81	34.07	198	172	Peak	HORIZONTAL
4	7384.26	38.21	54.00	-15.79	27.09	8.34	36.85	34.07	198	172	Average	HORIZONTAL
5	12305.12	57.73	74.00	-16.27	42.32	10.92	39.45	34.96	279	182	Peak	HORIZONTAL
6	12313.30	43.33	54.00	-10.67	27.92	10.91	39.45	34.95	279	182	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4923.94	47.94	74.00	-26.06	41.80	6.05	33.76	33.67	347	179	Peak	VERTICAL
2	4923.98	35.91	54.00	-18.09	29.77	6.05	33.76	33.67	347	179	Average	VERTICAL
3	7385.26	40.29	54.00	-13.71	29.17	8.34	36.85	34.07	339	208	Average	VERTICAL
4	7385.36	53.33	74.00	-20.67	42.21	8.34	36.85	34.07	339	208	Peak	VERTICAL
5	12310.74	45.76	54.00	-8.24	30.35	10.91	39.45	34.95	280	252	Average	VERTICAL
6	12311.62	58.20	74.00	-15.80	42.79	10.91	39.45	34.95	280	252	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Eason Chen	Configurations	IEEE 802.11g CH 1 / Chain 4 + Chain 5 + Chain 6
Test Date	Jan. 10, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4824.12	33.05	54.00	-20.95	27.08	6.11	33.56	33.70	351	136	Average	HORIZONTAL
2	4824.26	46.03	74.00	-27.97	40.06	6.11	33.56	33.70	351	136	Peak	HORIZONTAL
3	12059.80	57.43	74.00	-16.57	41.85	10.97	39.64	35.03	265	188	Peak	HORIZONTAL
4	12062.18	43.55	54.00	-10.45	27.97	10.97	39.64	35.03	265	188	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4849.48	46.53	74.00	-27.47	40.53	6.10	33.59	33.69	177	193	Peak	VERTICAL
2	4852.98	33.12	54.00	-20.88	27.09	6.10	33.62	33.69	177	193	Average	VERTICAL
3	12059.30	57.38	74.00	-16.62	41.80	10.97	39.64	35.03	259	202	Peak	VERTICAL
4	12064.06	43.56	54.00	-10.44	27.98	10.97	39.64	35.03	259	202	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Eason Chen	Configurations	IEEE 802.11g CH 6 / Chain 4 + Chain 5 + Chain 6
Test Date	Jan. 10, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4873.70	46.18	74.00	-27.82	40.12	6.08	33.66	33.68	291	151	Peak	HORIZONTAL
2	4874.18	33.63	54.00	-20.37	27.57	6.08	33.66	33.68	291	151	Average	HORIZONTAL
3	7310.88	38.73	54.00	-15.27	27.81	8.28	36.64	34.00	306	170	Average	HORIZONTAL
4	7311.96	51.93	74.00	-22.07	40.99	8.30	36.64	34.00	306	170	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4876.24	33.28	54.00	-20.72	27.22	6.08	33.66	33.68	275	187	Average	VERTICAL
2	4876.34	46.23	74.00	-27.77	40.17	6.08	33.66	33.68	275	187	Peak	VERTICAL
3	7306.40	51.65	74.00	-22.35	40.73	8.28	36.64	34.00	292	199	Peak	VERTICAL
4	7312.74	38.84	54.00	-15.16	27.90	8.30	36.64	34.00	292	199	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Eason Chen	Configurations	IEEE 802.11g CH 11 / Chain 4 + Chain 5 + Chain 6
Test Date	Jan. 10, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4926.66	33.55	54.00	-20.45	27.41	6.05	33.76	33.67	302	131	Average	HORIZONTAL
2	4926.76	46.17	74.00	-27.83	40.03	6.05	33.76	33.67	302	131	Peak	HORIZONTAL
3	7382.20	39.12	54.00	-14.88	28.04	8.34	36.81	34.07	323	152	Average	HORIZONTAL
4	7384.64	52.53	74.00	-21.47	41.41	8.34	36.85	34.07	323	152	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4921.64	45.94	74.00	-28.06	39.80	6.05	33.76	33.67	266	186	Peak	VERTICAL
2	4921.68	33.63	54.00	-20.37	27.49	6.05	33.76	33.67	266	186	Average	VERTICAL
3	7381.98	51.78	74.00	-22.22	40.70	8.34	36.81	34.07	335	197	Peak	VERTICAL
4	7384.18	39.29	54.00	-14.71	28.17	8.34	36.85	34.07	335	197	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Eason Chen	Configurations	IEEE 802.11n MCS0 HT20 CH 1 / Chain 4 + Chain 5 + Chain 6
Test Date	Jan. 10, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4819.88	33.63	54.00	-20.37	27.66	6.11	33.56	33.70	183	177	Average	HORIZONTAL
2	4825.16	46.34	74.00	-27.66	40.37	6.11	33.56	33.70	183	177	Peak	HORIZONTAL
3	12059.86	57.18	74.00	-16.82	41.60	10.97	39.64	35.03	268	160	Peak	HORIZONTAL
4	12064.24	43.68	54.00	-10.32	28.10	10.97	39.64	35.03	268	160	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4820.12	33.62	54.00	-20.38	27.65	6.11	33.56	33.70	230	198	Average	VERTICAL
2	4826.76	46.50	74.00	-27.50	40.53	6.11	33.56	33.70	230	198	Peak	VERTICAL
3	12056.48	44.02	54.00	-9.98	28.42	10.97	39.66	35.03	228	165	Average	VERTICAL
4	12056.56	57.21	74.00	-16.79	41.61	10.97	39.66	35.03	228	165	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Eason Chen	Configurations	IEEE 802.11n MCS0 HT20 CH 6 / Chain 4 + Chain 5 + Chain 6
Test Date	Jan. 10, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4877.68	33.44	54.00	-20.56	27.38	6.08	33.66	33.68	149	243	Average	HORIZONTAL
2	4877.76	46.37	74.00	-27.63	40.31	6.08	33.66	33.68	149	243	Peak	HORIZONTAL
3	7306.00	51.72	74.00	-22.28	40.79	8.28	36.64	33.99	90	135	Peak	HORIZONTAL
4	7307.24	39.07	54.00	-14.93	28.15	8.28	36.64	34.00	90	135	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4869.48	46.29	74.00	-27.71	40.24	6.08	33.66	33.69	191	246	Peak	VERTICAL
2	4875.36	33.39	54.00	-20.61	27.33	6.08	33.66	33.68	191	246	Average	VERTICAL
3	7309.16	52.54	74.00	-21.46	41.62	8.28	36.64	34.00	277	181	Peak	VERTICAL
4	7310.56	38.99	54.00	-15.01	28.07	8.28	36.64	34.00	277	181	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Eason Chen	Configurations	IEEE 802.11n MCS0 HT20 CH 11 / Chain 4 + Chain 5 + Chain 6
Test Date	Jan. 10, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4915.76	33.09	54.00	-20.91	26.98	6.05	33.73	33.67	232	246	Average	HORIZONTAL
2	4924.48	47.08	74.00	-26.92	40.94	6.05	33.76	33.67	232	246	Peak	HORIZONTAL
3	7381.88	39.33	54.00	-14.67	28.25	8.34	36.81	34.07	296	123	Average	HORIZONTAL
4	7390.00	52.14	74.00	-21.86	40.99	8.37	36.85	34.07	296	123	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4925.84	46.29	74.00	-27.71	40.15	6.05	33.76	33.67	150	184	Peak	VERTICAL
2	4931.04	33.72	54.00	-20.28	27.57	6.05	33.76	33.66	150	184	Average	VERTICAL
3	7378.80	39.37	54.00	-14.63	28.28	8.34	36.81	34.06	30	158	Average	VERTICAL
4	7391.72	52.35	74.00	-21.65	41.21	8.37	36.85	34.08	30	158	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Eason Chen	Configurations	IEEE 802.11n MCS0 HT40 CH 3 / Chain 4 + Chain 5 + Chain 6
Test Date	Jan. 10, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4834.08	33.46	54.00	-20.54	27.46	6.11	33.59	33.70	222	181	Average	HORIZONTAL
2	4836.00	46.69	74.00	-27.31	40.69	6.11	33.59	33.70	222	181	Peak	HORIZONTAL
3	7257.08	39.06	54.00	-14.94	28.25	8.24	36.52	33.95	190	137	Average	HORIZONTAL
4	7263.60	52.44	74.00	-21.56	41.61	8.26	36.52	33.95	190	137	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4837.92	46.89	74.00	-27.11	40.90	6.10	33.59	33.70	104	146	Peak	VERTICAL
2	4852.40	34.15	54.00	-19.85	28.12	6.10	33.62	33.69	104	146	Average	VERTICAL
3	7256.80	39.09	54.00	-14.91	28.28	8.24	36.52	33.95	143	192	Average	VERTICAL
4	7258.68	51.93	74.00	-22.07	41.12	8.24	36.52	33.95	143	192	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Eason Chen	Configurations	IEEE 802.11n MCS0 HT40 CH 6 / Chain 4 + Chain 5 + Chain 6
Test Date	Jan. 10, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4868.84	47.21	74.00	-26.79	41.16	6.08	33.66	33.69	157	204	Peak	HORIZONTAL
2	4877.60	34.17	54.00	-19.83	28.11	6.08	33.66	33.68	157	204	Average	HORIZONTAL
3	7312.84	52.38	74.00	-21.62	41.44	8.30	36.64	34.00	226	195	Peak	HORIZONTAL
4	7314.88	39.51	54.00	-14.49	28.57	8.30	36.64	34.00	226	195	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4876.60	33.85	54.00	-20.15	27.79	6.08	33.66	33.68	175	166	Average	VERTICAL
2	4883.56	46.92	74.00	-27.08	40.86	6.08	33.66	33.68	175	166	Peak	VERTICAL
3	7305.28	39.50	54.00	-14.50	28.57	8.28	36.64	33.99	339	200	Average	VERTICAL
4	7307.12	52.40	74.00	-21.60	41.48	8.28	36.64	34.00	339	200	Peak	VERTICAL

Temperature	26℃	Humidity	68%
Test Engineer	Eason Chen	Configurations	IEEE 802.11n MCS0 HT40 CH 9 / Chain 4 + Chain 5 + Chain 6
Test Date	Jan. 10, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4897.08	46.88	74.00	-27.12	40.80	6.07	33.69	33.68	215	100	Peak	HORIZONTAL
2	4911.08	34.47	54.00	-19.53	28.34	6.07	33.73	33.67	215	100	Average	HORIZONTAL
3	7363.96	39.36	54.00	-14.64	28.30	8.34	36.77	34.05	259	153	Average	HORIZONTAL
4	7364.64	52.44	74.00	-21.56	41.38	8.34	36.77	34.05	259	153	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4912.36	34.94	54.00	-19.06	28.81	6.07	33.73	33.67	360	169	Average	VERTICAL
2	4913.08	48.13	74.00	-25.87	42.00	6.07	33.73	33.67	360	169	Peak	VERTICAL
3	7359.92	52.71	74.00	-21.29	41.67	8.32	36.77	34.05	255	171	Peak	VERTICAL
4	7362.32	39.78	54.00	-14.22	28.72	8.34	36.77	34.05	255	171	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Eason Chen	Configurations	IEEE 802.11a CH 149 / Chain 1 + Chain 2 + Chain 3
Test Date	Jan. 06, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	11483.50	59.20	74.00	-14.80	42.52	39.10	12.43	34.85	148	348	HORIZONTAL	Peak
2	11489.10	47.15	54.00	-6.85	30.47	39.10	12.43	34.85	148	348	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	11490.40	64.91	74.00	-9.09	48.23	39.10	12.43	34.85	213	15	VERTICAL	Peak
2	11491.30	51.41	54.00	-2.59	34.73	39.10	12.43	34.85	213	15	VERTICAL	Average

Temperature	26°C	Humidity	68%
Test Engineer	Eason Chen	Configurations	IEEE 802.11a CH 157 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 18, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11572.32	61.00	74.00	-13.00	45.83	10.76	39.44	35.03	154	202	Peak	HORIZONTAL
2	11573.18	47.64	54.00	-6.36	32.47	10.76	39.44	35.03	154	202	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11567.25	50.71	54.00	-3.29	35.55	10.75	39.44	35.03	293	195	Average	VERTICAL
2	11567.25	63.81	74.00	-10.19	48.65	10.75	39.44	35.03	293	195	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Eason Chen	Configurations	IEEE 802.11a CH 165 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 18, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11651.77	45.83	54.00	-8.17	30.57	10.81	39.49	35.04	167	232	Average	HORIZONTAL
2	11652.46	59.13	74.00	-14.87	43.87	10.81	39.49	35.04	167	232	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11648.55	62.79	74.00	-11.21	47.54	10.81	39.48	35.04	37	185	Peak	VERTICAL
2	11648.58	50.09	54.00	-3.91	34.84	10.81	39.48	35.04	37	185	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 18, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11486.89	60.97	74.00	-13.03	45.90	10.71	39.39	35.03	80	235	Peak	HORIZONTAL
2	11487.76	48.12	54.00	-5.88	33.05	10.71	39.39	35.03	80	235	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11488.55	65.79	74.00	-8.21	50.72	10.71	39.39	35.03	294	211	Peak	VERTICAL
2	11489.49	51.99	54.00	-2.01	36.92	10.71	39.39	35.03	294	211	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 18, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11568.41	45.71	54.00	-8.29	30.55	10.75	39.44	35.03	52	172	Average	HORIZONTAL
2	11569.57	57.43	74.00	-16.57	42.27	10.75	39.44	35.03	52	172	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11570.00	52.07	54.00	-1.93	36.90	10.76	39.44	35.03	355	167	Average	VERTICAL
2	11571.30	62.69	74.00	-11.31	47.52	10.76	39.44	35.03	355	167	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 18, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11641.03	58.39	74.00	-15.61	43.16	10.79	39.48	35.04	257	220	Peak	HORIZONTAL
2	11651.16	46.48	54.00	-7.52	31.22	10.81	39.49	35.04	257	220	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11645.95	63.91	74.00	-10.09	48.68	10.79	39.48	35.04	38	179	Peak	VERTICAL
2	11646.38	50.92	54.00	-3.08	35.67	10.81	39.48	35.04	38	179	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 18, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11499.44	58.79	74.00	-15.21	43.70	10.72	39.40	35.03	7	189	Peak	HORIZONTAL
2	11499.58	46.43	54.00	-7.57	31.34	10.72	39.40	35.03	7	189	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11502.19	50.08	54.00	-3.92	34.99	10.72	39.40	35.03	85	179	Average	VERTICAL
2	11503.05	62.38	74.00	-11.62	47.29	10.72	39.40	35.03	85	179	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Chain 1 + Chain 2 + Chain 3
Test Date	Dec. 18, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11586.82	59.64	74.00	-14.36	44.46	10.76	39.45	35.03	133	188	Peak	HORIZONTAL
2	11588.70	46.76	54.00	-7.24	31.58	10.76	39.45	35.03	133	188	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	11583.92	49.34	54.00	-4.66	34.16	10.76	39.45	35.03	293	203	Average	VERTICAL
2	11586.67	62.10	74.00	-11.90	46.92	10.76	39.45	35.03	293	203	Peak	VERTICAL

Temperature	26℃	Humidity	68%
Test Engineer	Eason Chen	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 1 + Chain 2 + Chain 3
Test Date	Jan. 06, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	11548.38	59.47	74.00	-14.53	42.83	39.06	12.43	34.85	154	179	HORIZONTAL	Peak
2	11550.08	46.66	54.00	-7.34	30.02	39.06	12.43	34.85	154	179	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	cm	deg		
1	11547.40	48.02	54.00	-5.98	31.38	39.06	12.43	34.85	186	36	VERTICAL	Average
2	11571.40	59.16	74.00	-14.84	42.58	39.01	12.42	34.85	186	36	VERTICAL	Peak

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 KDB 558074 D01 v03r02 for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 section 10.1 Unwanted Emissions into Non-Restricted Frequency Bands Measurement Procedure

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

The EUT was programmed to be in continuously transmitting mode.

4.6.7. Test Result of Band Edge and Fundamental Emissions

Temperature	26°C	Humidity	68%
Test Engineer	Eason Chen	Configurations	IEEE 802.11b CH 1, 6, 11 / Chain 4 + Chain 5 + Chain 6
Test Date	Jan. 10, 2015		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2387.80	63.31	74.00	-10.69	30.45	4.37	28.49	0.00	339	248	Peak	VERTICAL
2	2389.00	53.05	54.00	-0.95	20.19	4.37	28.49	0.00	339	248	Average	VERTICAL
3	2412.80	111.86			78.92	4.41	28.53	0.00	339	248	Average	VERTICAL
4	2413.00	115.75			82.81	4.41	28.53	0.00	339	248	Peak	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	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2388.80	49.34	54.00	-4.66	16.48	4.37	28.49	0.00	200	271	Average	VERTICAL
2	2388.80	61.08	74.00	-12.92	28.22	4.37	28.49	0.00	200	271	Peak	VERTICAL
3	2437.80	115.48			82.44	4.44	28.60	0.00	200	271	Average	VERTICAL
4	2438.20	119.76			86.72	4.44	28.60	0.00	200	271	Peak	VERTICAL
5	2483.50	48.73	54.00	-5.27	15.55	4.51	28.67	0.00	200	271	Average	VERTICAL
6	2484.30	61.07	74.00	-12.93	27.89	4.51	28.67	0.00	200	271	Peak	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	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2462.60	116.10			82.99	4.48	28.63	0.00	185	221	Average	VERTICAL
2	2463.00	119.97			86.86	4.48	28.63	0.00	185	221	Peak	VERTICAL
3	2486.10	53.73	54.00	-0.27	20.55	4.51	28.67	0.00	185	221	Average	VERTICAL
4	2486.10	63.25	74.00	-10.75	30.07	4.51	28.67	0.00	185	221	Peak	VERTICAL

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

Temperature	26℃	Humidity	68%
Test Engineer	Eason Chen	Configurations	IEEE 802.11g CH 1, 6, 11 / Chain 4 + Chain 5 + Chain 6
Test Date	Jan. 10, 2015		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2367.20	53.85	54.00	-0.15	21.06	4.37	28.42	0.00	360	154	Average	VERTICAL
2	2367.20	64.82	74.00	-9.18	32.03	4.37	28.42	0.00	360	154	Peak	VERTICAL
3	2411.60	102.46			69.52	4.41	28.53	0.00	360	154	Average	VERTICAL
4	2411.60	113.00			80.06	4.41	28.53	0.00	360	154	Peak	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	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2390.00	53.62	54.00	-0.38	20.72	4.41	28.49	0.00	195	209	Average	VERTICAL
2	2390.00	64.57	74.00	-9.43	31.67	4.41	28.49	0.00	195	209	Peak	VERTICAL
3	2435.40	106.88			73.88	4.44	28.56	0.00	195	209	Average	VERTICAL
4	2435.40	116.20			83.20	4.44	28.56	0.00	195	209	Peak	VERTICAL
5	2483.90	52.85	54.00	-1.15	19.67	4.51	28.67	0.00	195	209	Average	VERTICAL
6	2484.70	63.77	74.00	-10.23	30.59	4.51	28.67	0.00	195	209	Peak	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	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2465.60	107.79			74.68	4.48	28.63	0.00	179	217	Average	VERTICAL
2	2466.00	117.61			84.50	4.48	28.63	0.00	179	217	Peak	VERTICAL
3	2485.90	53.29	54.00	-0.71	20.11	4.51	28.67	0.00	179	217	Average	VERTICAL
4	2486.00	70.18	74.00	-3.82	37.00	4.51	28.67	0.00	179	217	Peak	VERTICAL

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

Temperature	26°C	Humidity	68%
Test Engineer	Eason Chen	Configurations	IEEE 802.11n MCS0 HT20 CH 1, 6, 11 / Chain 4 + Chain 5 + Chain 6
Test date	Jan. 10, 2015		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2369.20	53.80	54.00	-0.20	20.97	4.37	28.46	0.00	318	268	Average	VERTICAL
2	2370.40	65.26	74.00	-8.74	32.43	4.37	28.46	0.00	318	268	Peak	VERTICAL
3	2413.60	107.07			74.13	4.41	28.53	0.00	318	268	Average	VERTICAL
4	2413.60	117.68			84.74	4.41	28.53	0.00	318	268	Peak	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	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2389.20	65.04	74.00	-8.96	32.18	4.37	28.49	0.00	62	225	Peak	VERTICAL
2	2390.00	53.71	54.00	-0.29	20.81	4.41	28.49	0.00	62	225	Average	VERTICAL
3	2433.80	104.97			71.97	4.44	28.56	0.00	62	225	Average	VERTICAL
4	2433.80	114.47			81.47	4.44	28.56	0.00	62	225	Peak	VERTICAL
5	2483.50	61.72	74.00	-12.28	28.54	4.51	28.67	0.00	62	225	Peak	VERTICAL
6	2483.80	50.38	54.00	-3.62	17.20	4.51	28.67	0.00	62	225	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	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2464.00	107.47			74.36	4.48	28.63	0.00	176	218	Average	VERTICAL
2	2464.00	117.92			84.81	4.48	28.63	0.00	176	218	Peak	VERTICAL
3	2483.50	53.82	54.00	-0.18	20.64	4.51	28.67	0.00	176	218	Average	VERTICAL
4	2483.50	70.41	74.00	-3.59	37.23	4.51	28.67	0.00	176	218	Peak	VERTICAL

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

Temperature	26°C	Humidity	68%
Test Engineer	Eason Chen	Configurations	IEEE 802.11n MCS0 HT40 CH 3, 6, 9 / Chain 4 + Chain 5 + Chain 6
Test date	Jan. 10, 2015		

Channel 3

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2387.60	66.39	74.00	-7.61	33.53	4.37	28.49	0.00	201	178	Peak	VERTICAL
2	2390.00	53.47	54.00	-0.53	20.57	4.41	28.49	0.00	201	178	Average	VERTICAL
3	2416.40	111.97			79.00	4.44	28.53	0.00	201	178	Peak	VERTICAL
4	2429.60	101.69			68.69	4.44	28.56	0.00	201	178	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	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2385.80	53.47	54.00	-0.53	20.61	4.37	28.49	0.00	203	196	Average	VERTICAL
2	2385.80	66.12	74.00	-7.88	33.26	4.37	28.49	0.00	203	196	Peak	VERTICAL
3	2431.00	114.73			81.73	4.44	28.56	0.00	203	196	Peak	VERTICAL
4	2444.80	103.14			70.06	4.48	28.60	0.00	203	196	Average	VERTICAL
5	2483.50	53.72	54.00	-0.28	20.54	4.51	28.67	0.00	203	196	Average	VERTICAL
6	2483.50	65.20	74.00	-8.80	32.02	4.51	28.67	0.00	203	196	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	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2445.40	99.41			66.33	4.48	28.60	0.00	174	214	Average	VERTICAL
2	2458.60	110.60			77.49	4.48	28.63	0.00	174	214	Peak	VERTICAL
3	2483.50	53.54	54.00	-0.46	20.36	4.51	28.67	0.00	174	214	Average	VERTICAL
4	2483.50	67.34	74.00	-6.66	34.16	4.51	28.67	0.00	174	214	Peak	VERTICAL

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

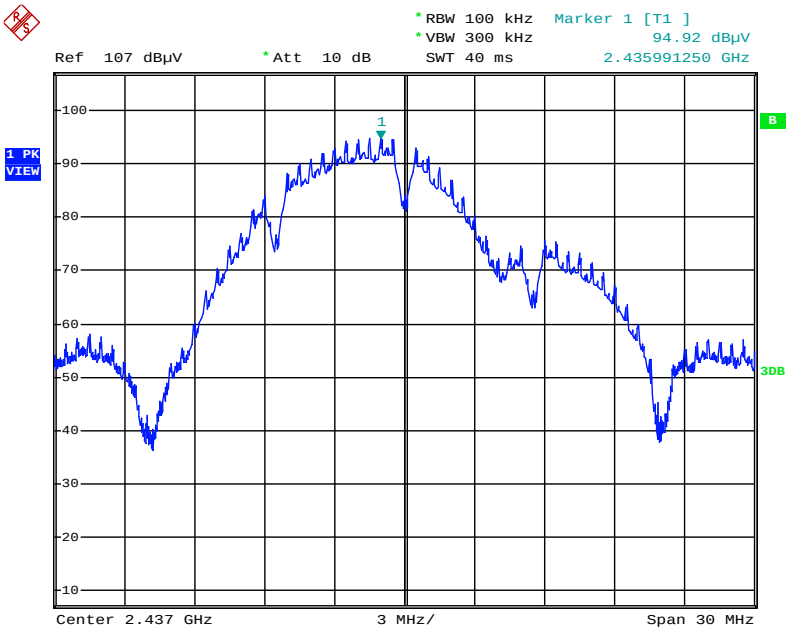
Note:

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

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

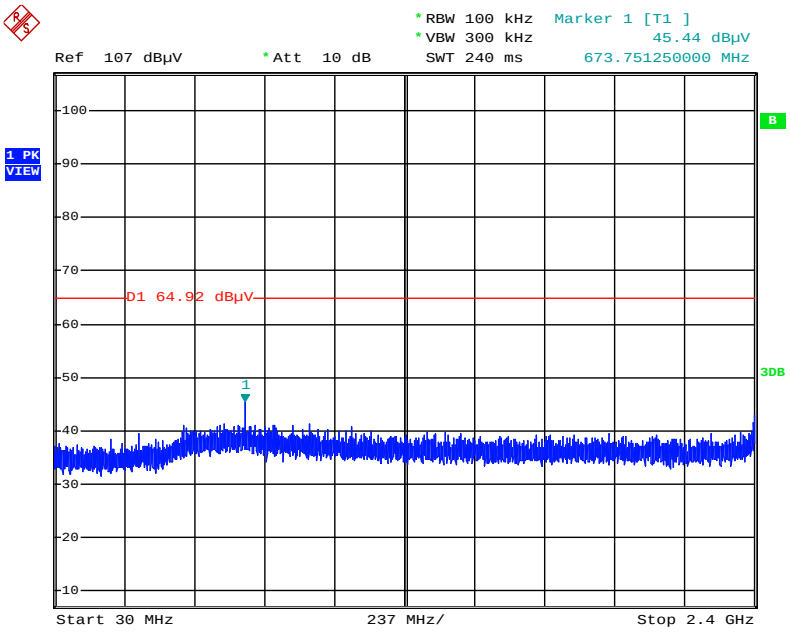
For Emission not in Restricted Band

Plot on Configuration IEEE 802.11b / Reference Level



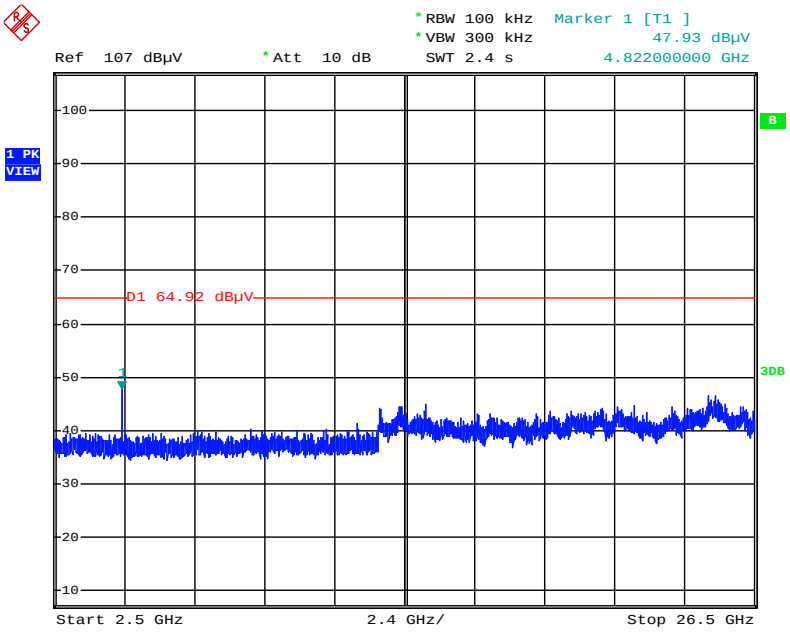
Date: 10.JAN.2015 16:36:48

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



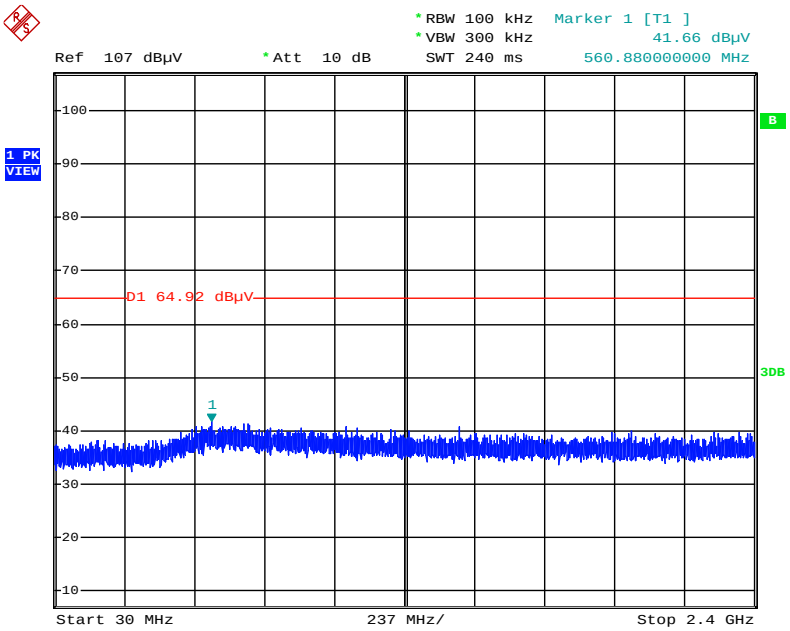
Date: 10.JAN.2015 17:04:01

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



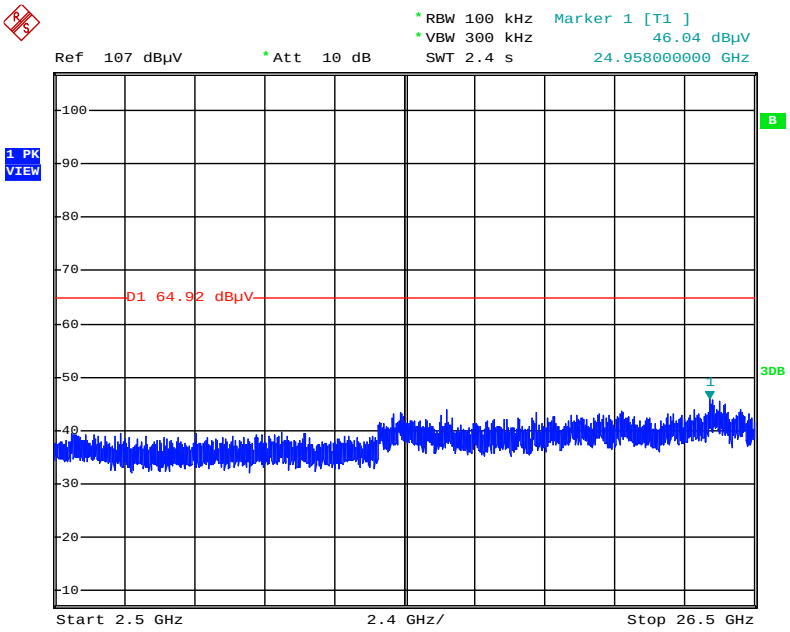
Date: 10.JAN.2015 17:03:41

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



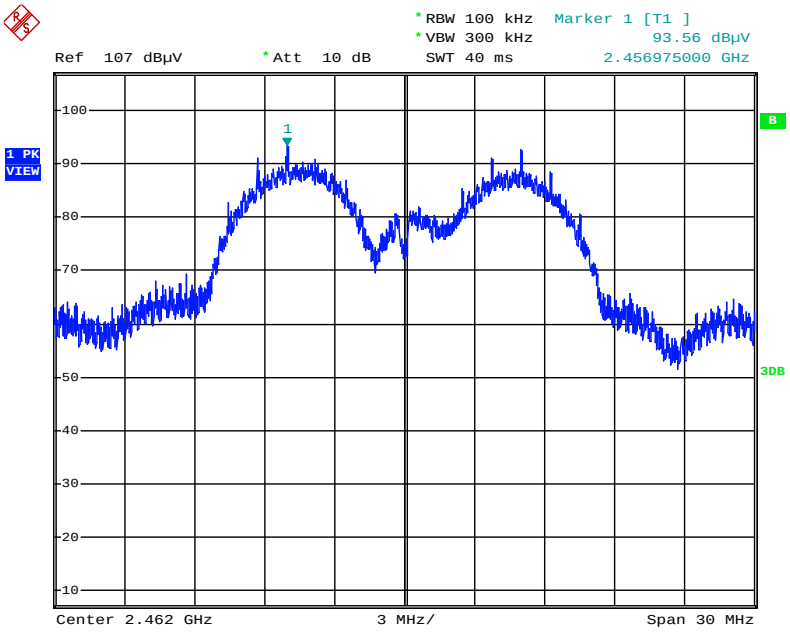
Date: 10.JAN.2015 17:05:15

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



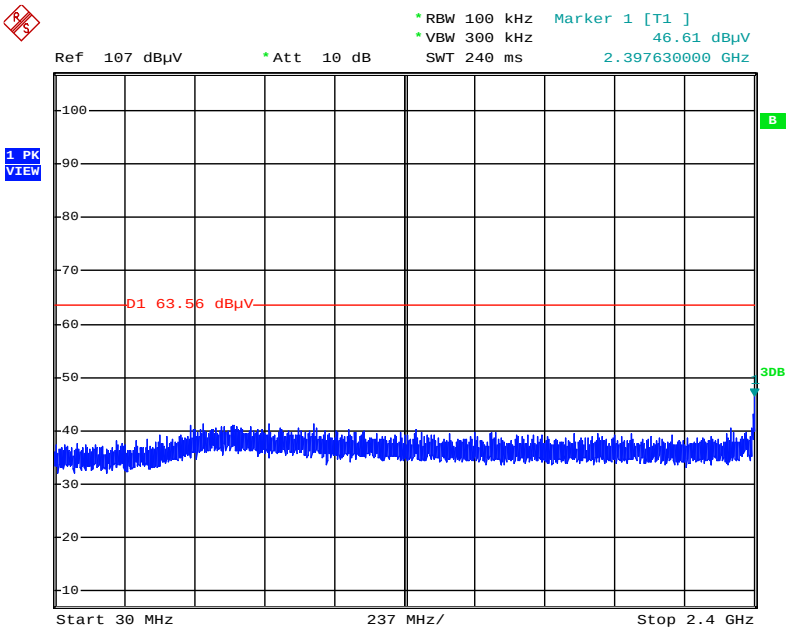
Date: 10.JAN.2015 17:05:48

Plot on Configuration IEEE 802.11g / Reference Level



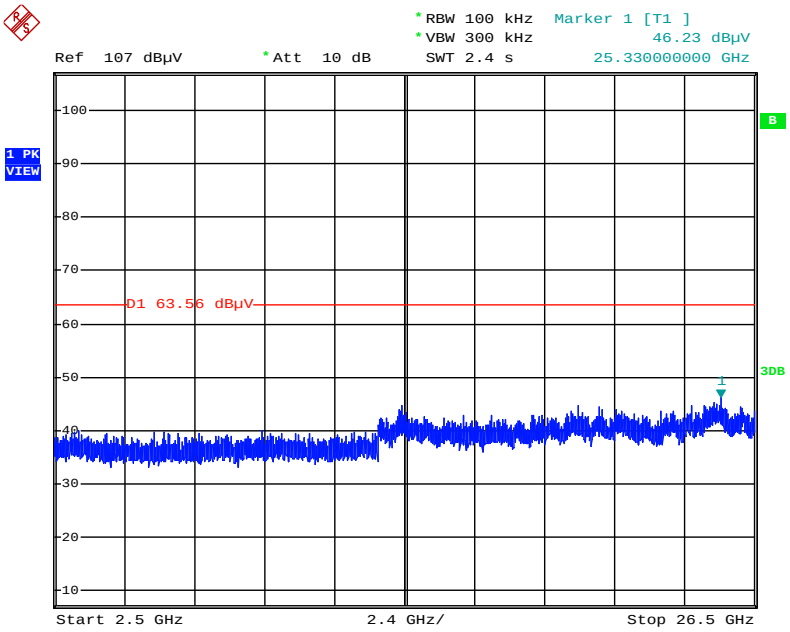
Date: 10.JAN.2015 17:11:01

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



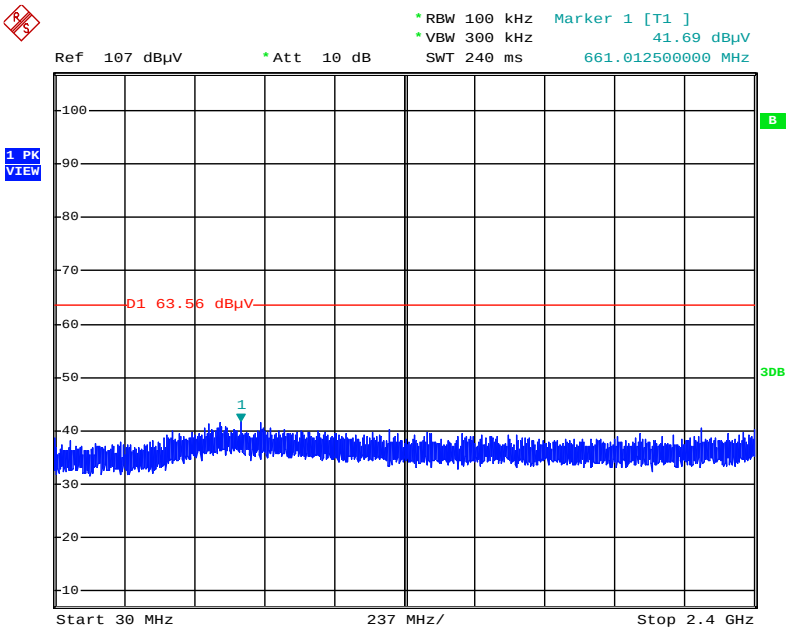
Date: 10.JAN.2015 17:12:48

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



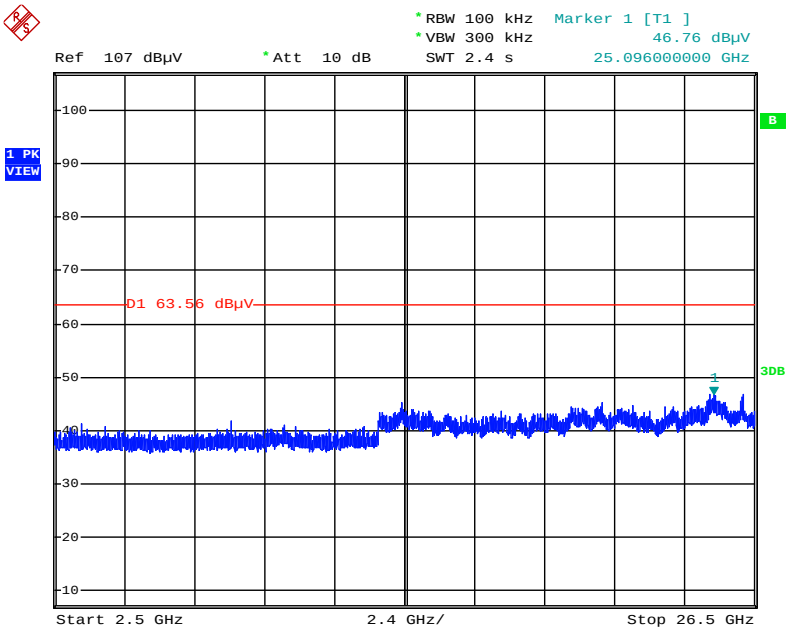
Date: 10.JAN.2015 17:14:43

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



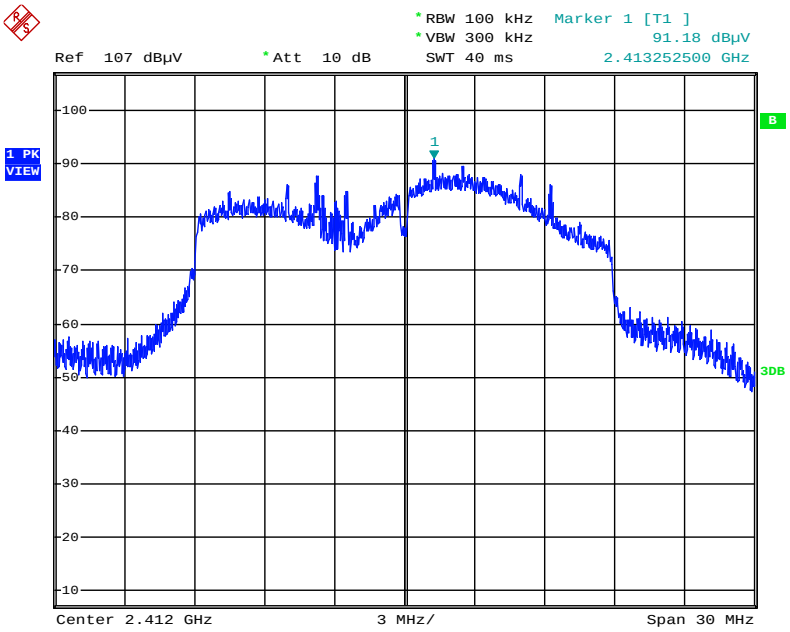
Date: 10.JAN.2015 17:16:17

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



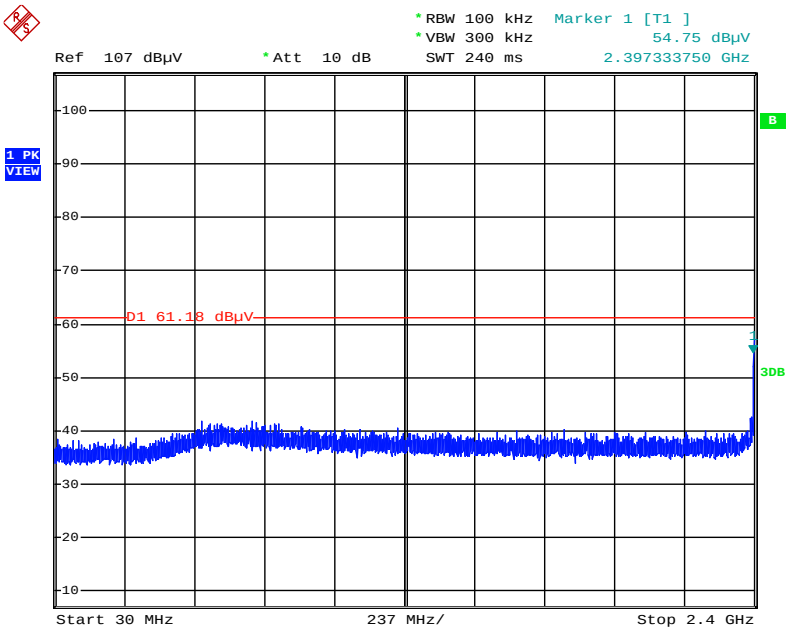
Date: 10.JAN.2015 17:17:54

Plot on Configuration IEEE 802.11n MCS0 HT20 / Reference Level



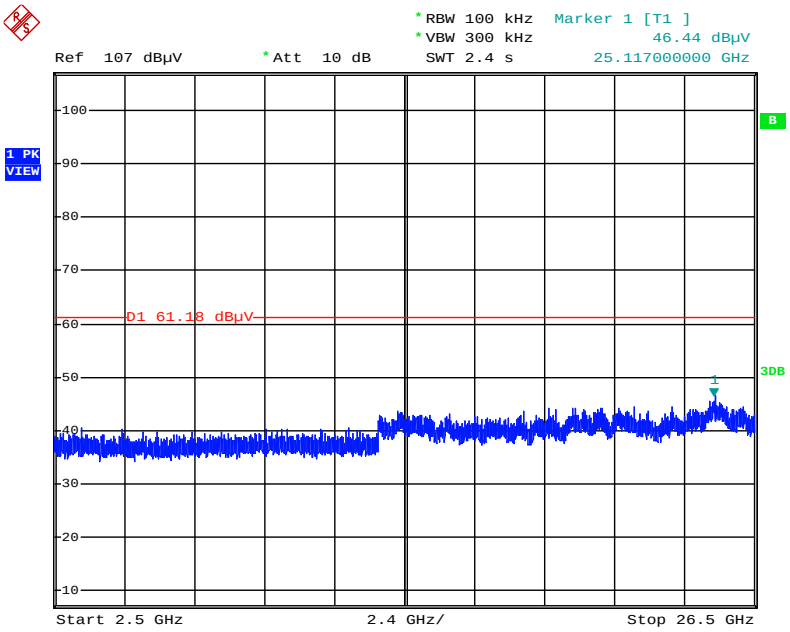
Date: 10.JAN.2015 17:24:45

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



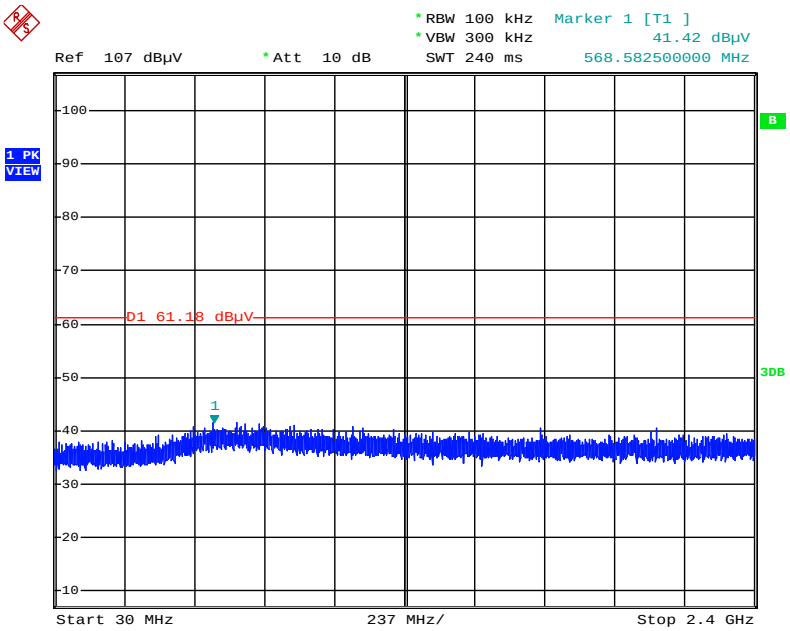
Date: 10.JAN.2015 17:28:01

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



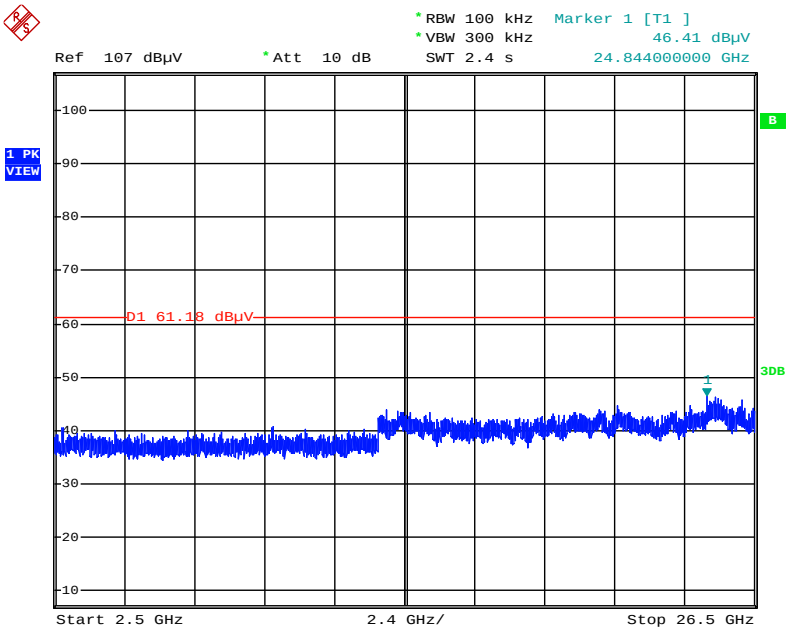
Date: 10.JAN.2015 17:30:15

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



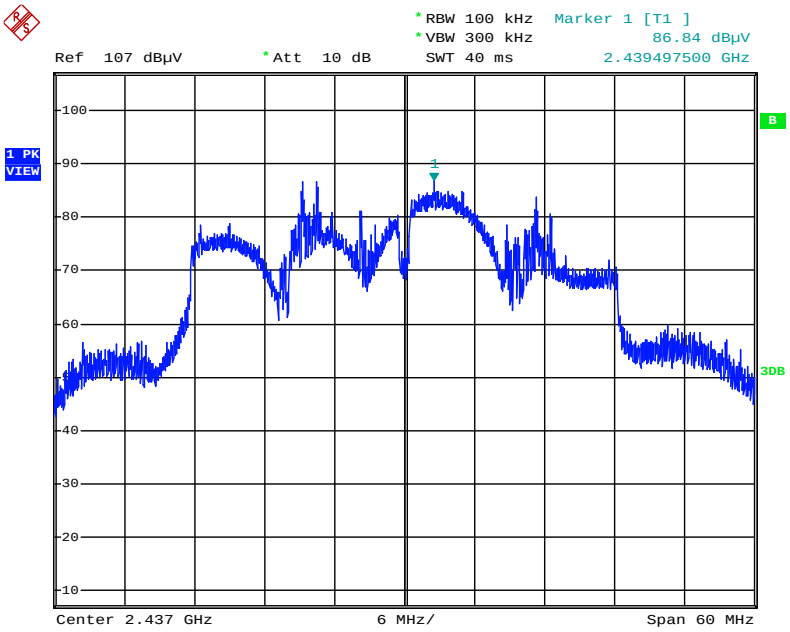
Date: 10.JAN.2015 17:32:40

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



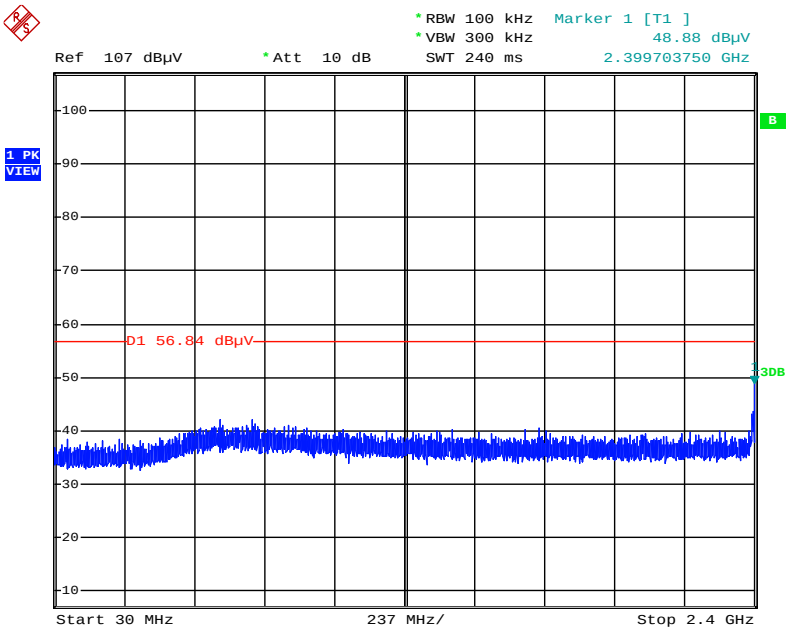
Date: 10.JAN.2015 17:34:25

Plot on Configuration IEEE 802.11n MCS0 HT40 / Reference Level



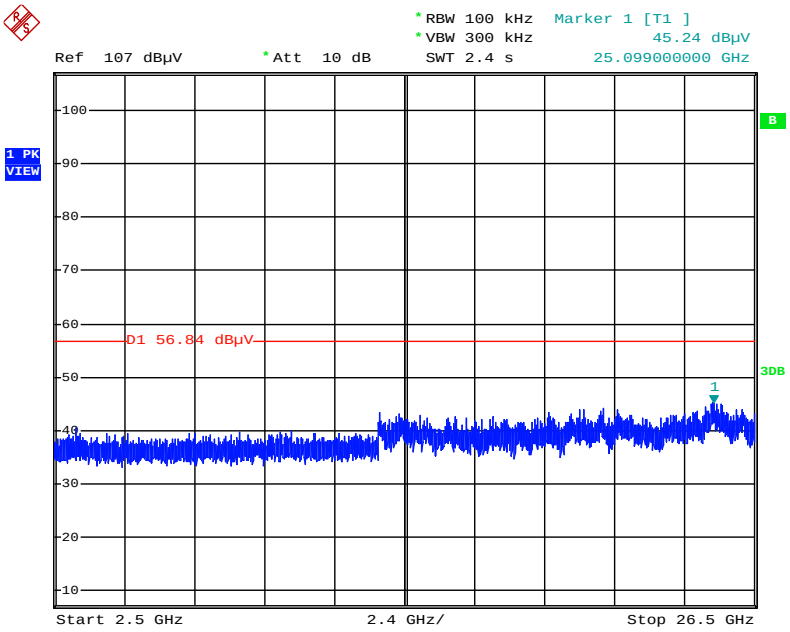
Date: 10.JAN.2015 17:38:47

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



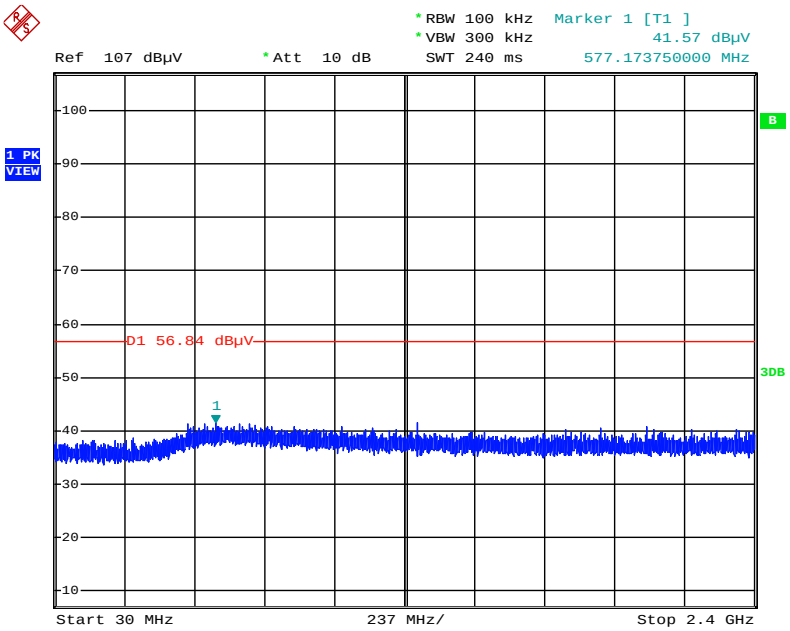
Date: 10.JAN.2015 17:41:04

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



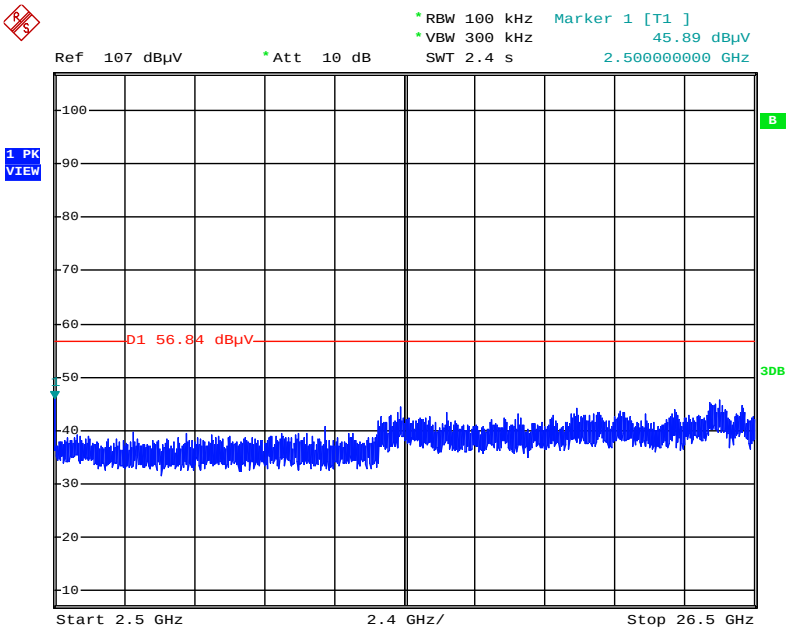
Date: 10.JAN.2015 17:42:09

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



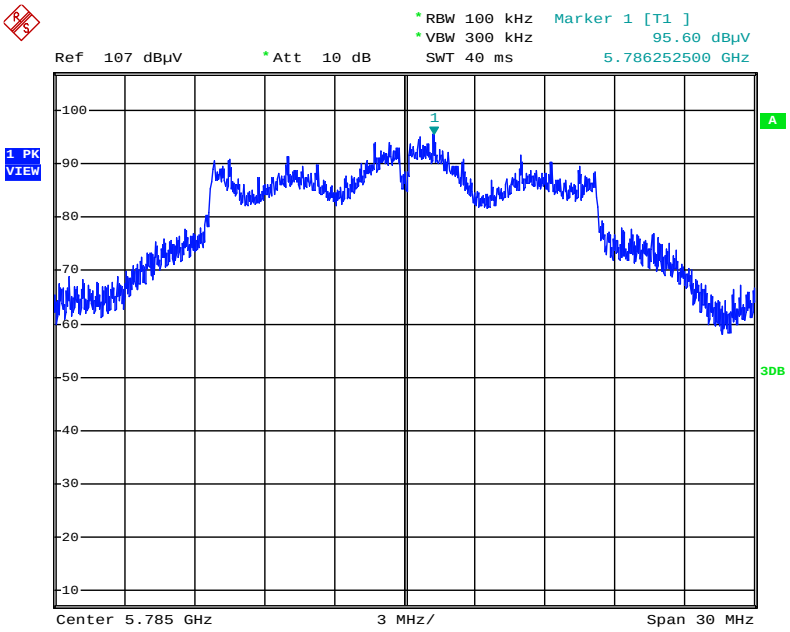
Date: 10.JAN.2015 17:43:41

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



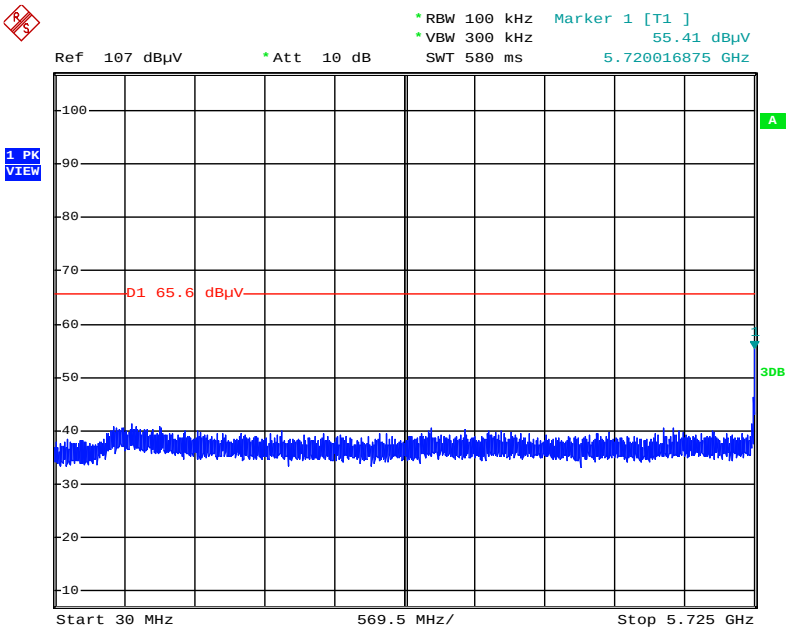
Date: 10.JAN.2015 17:44:10

Plot on Configuration IEEE 802.11a / Reference Level



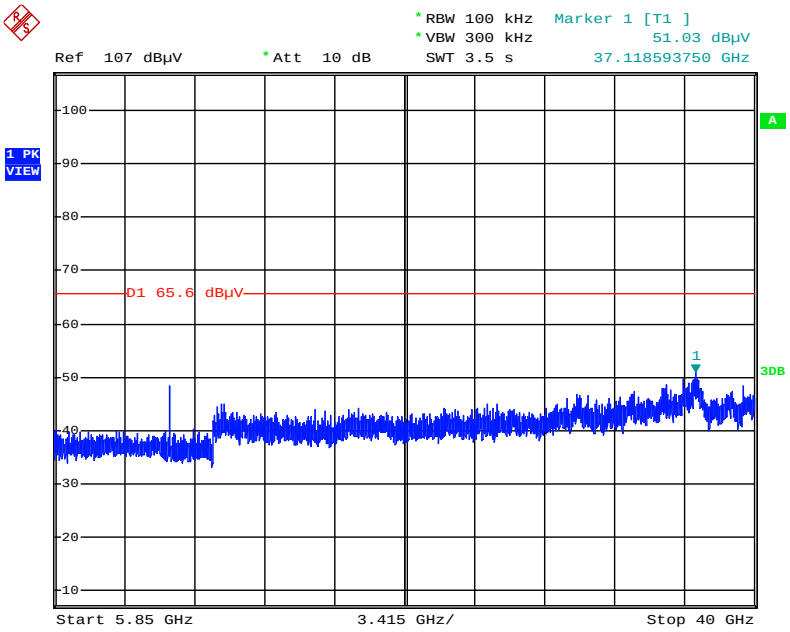
Date: 6.JAN.2015 01:03:49

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



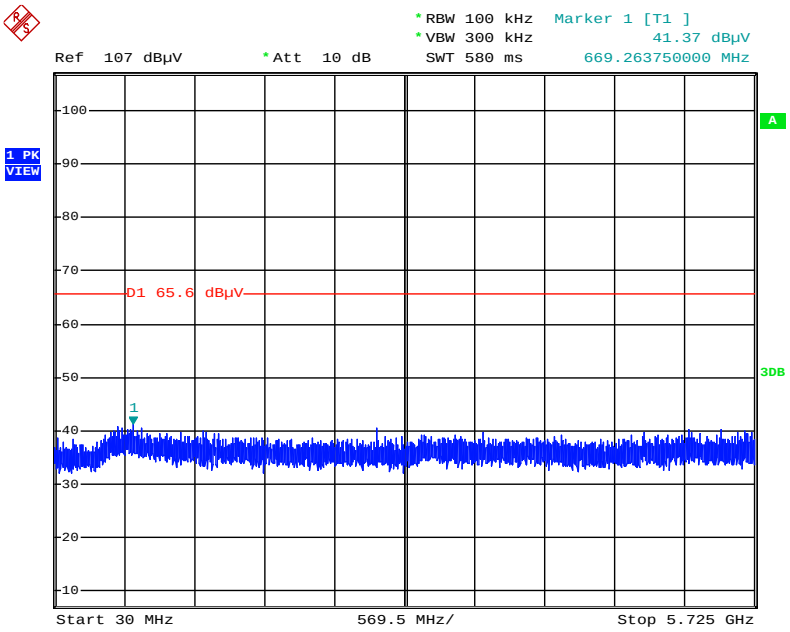
Date: 6.JAN.2015 01:10:02

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



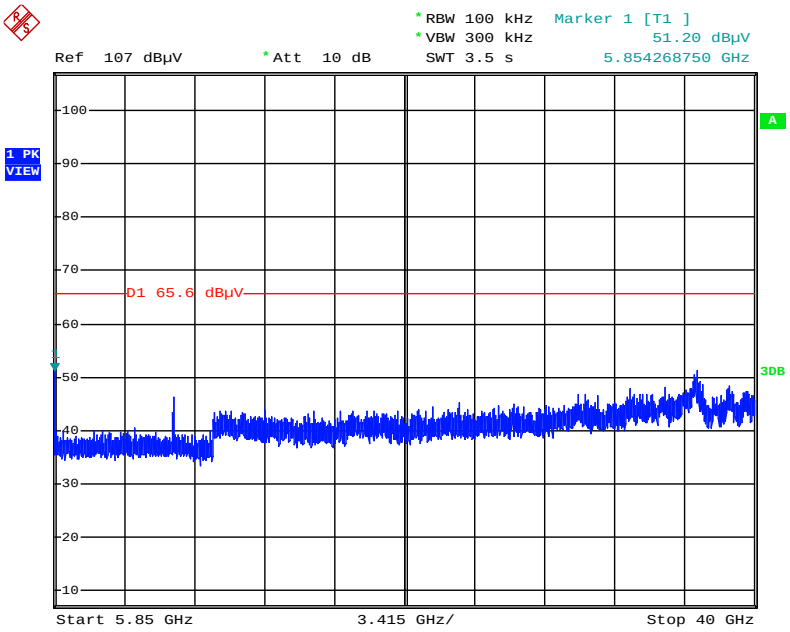
Date: 6.JAN.2015 01:10:46

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



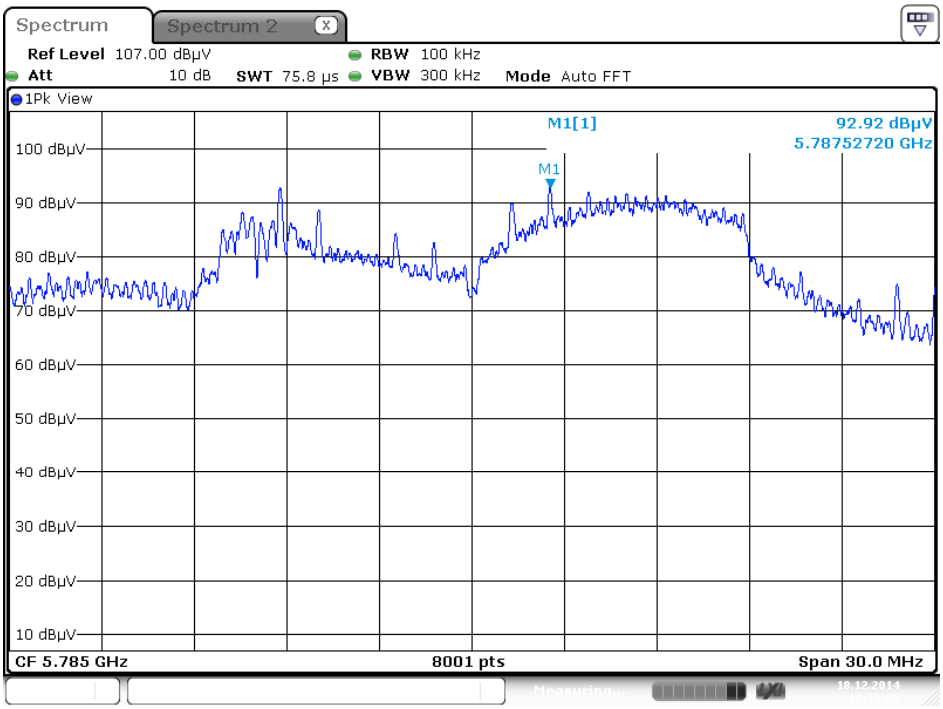
Date: 6.JAN.2015 01:07:10

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



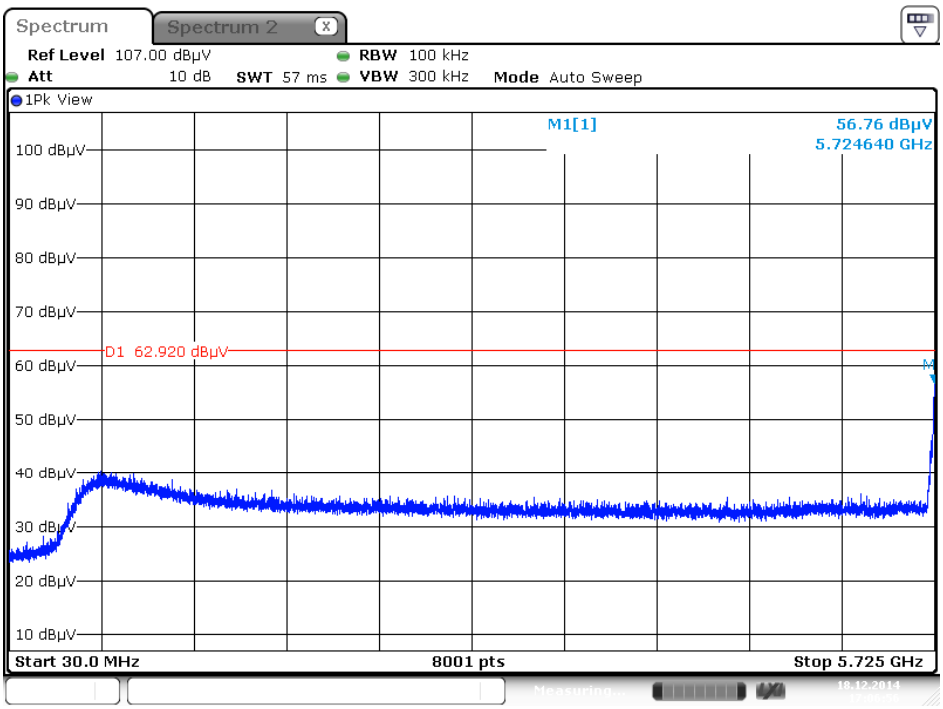
Date: 6.JAN.2015 01:07:46

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



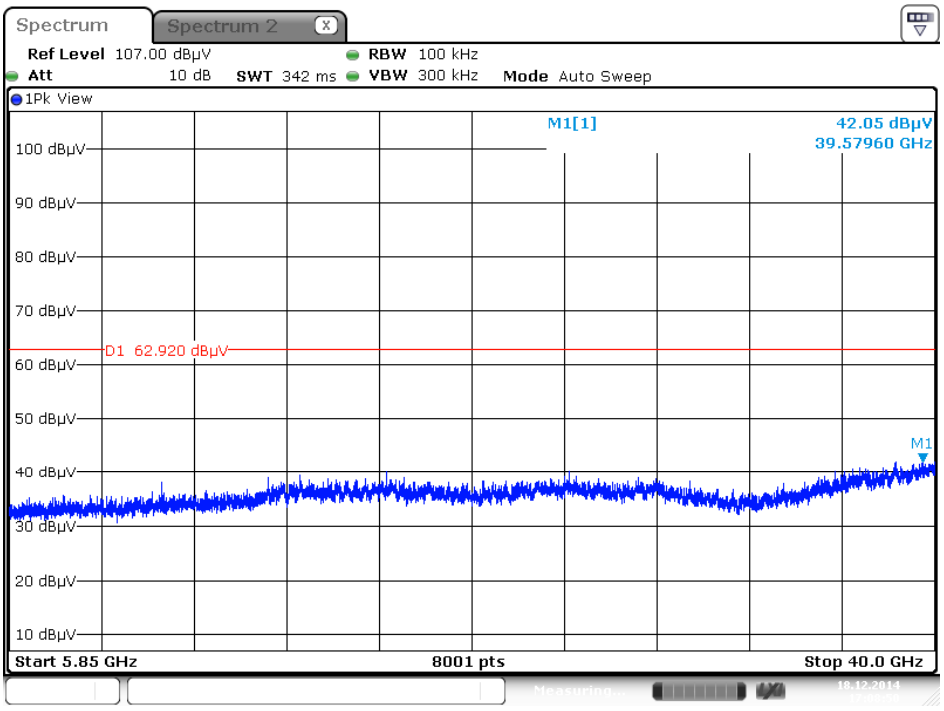
Date: 18.DEC.2014 16:59:06

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



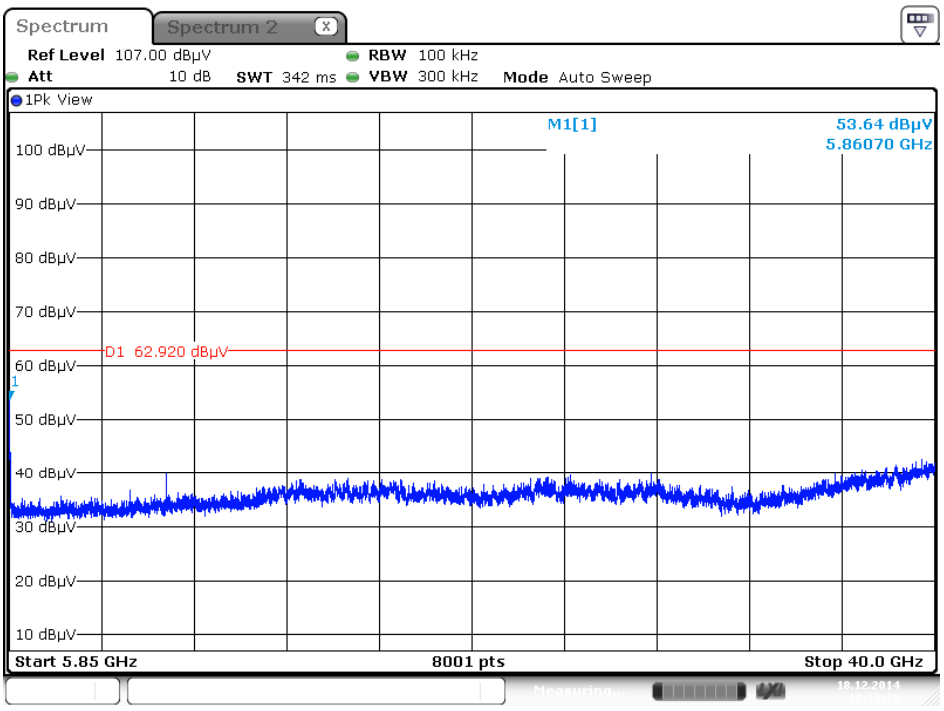
Date: 18.DEC.2014 17:06:56

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



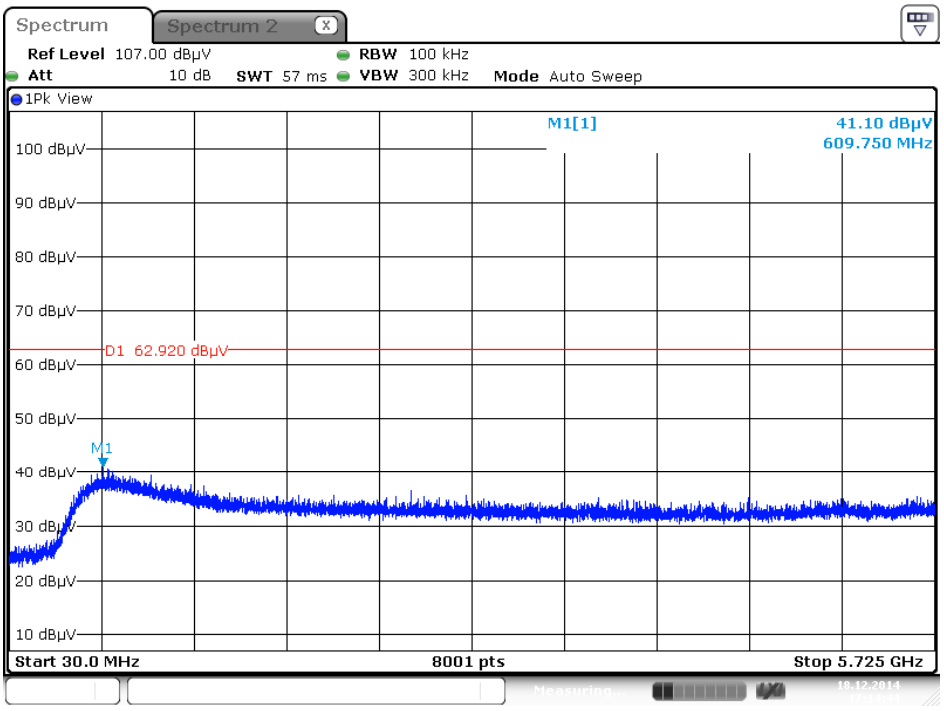
Date: 18.DEC.2014 17:08:50

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



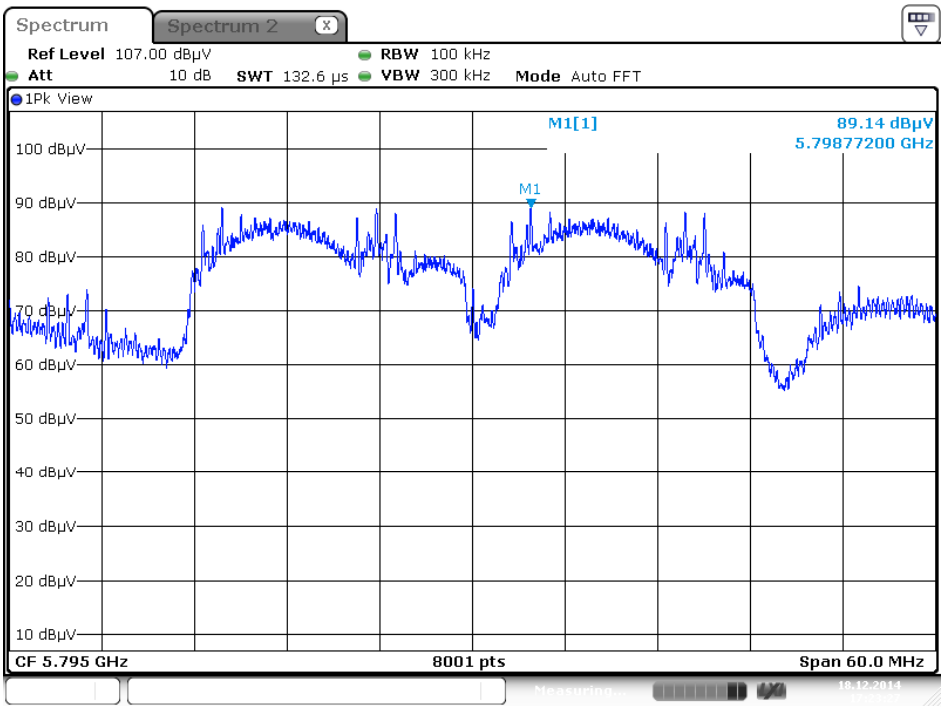
Date: 18.DEC.2014 17:13:10

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



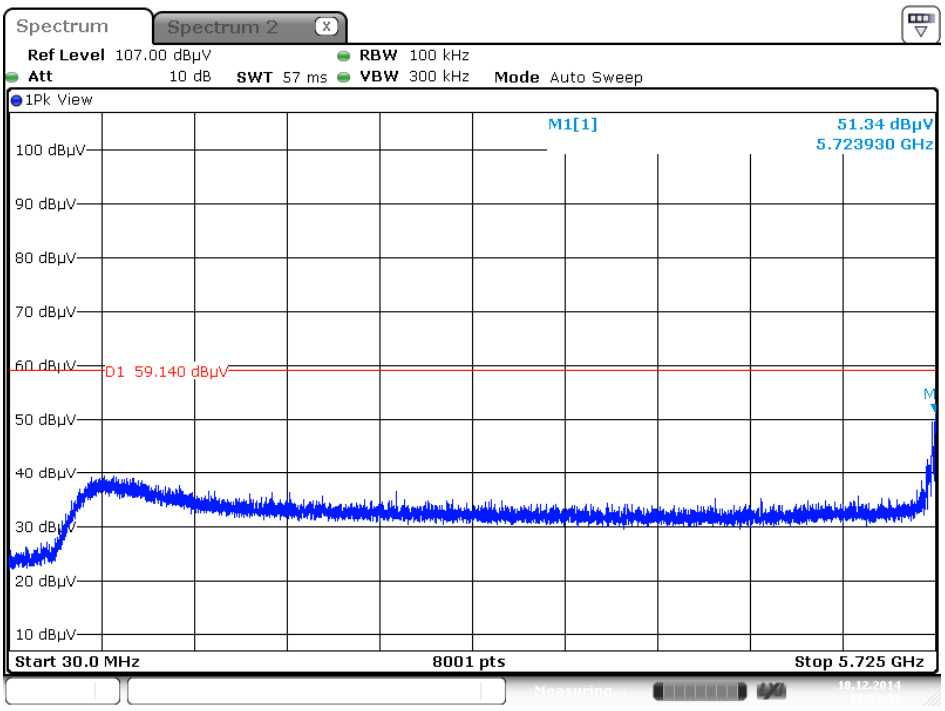
Date: 18.DEC.2014 17:14:45

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



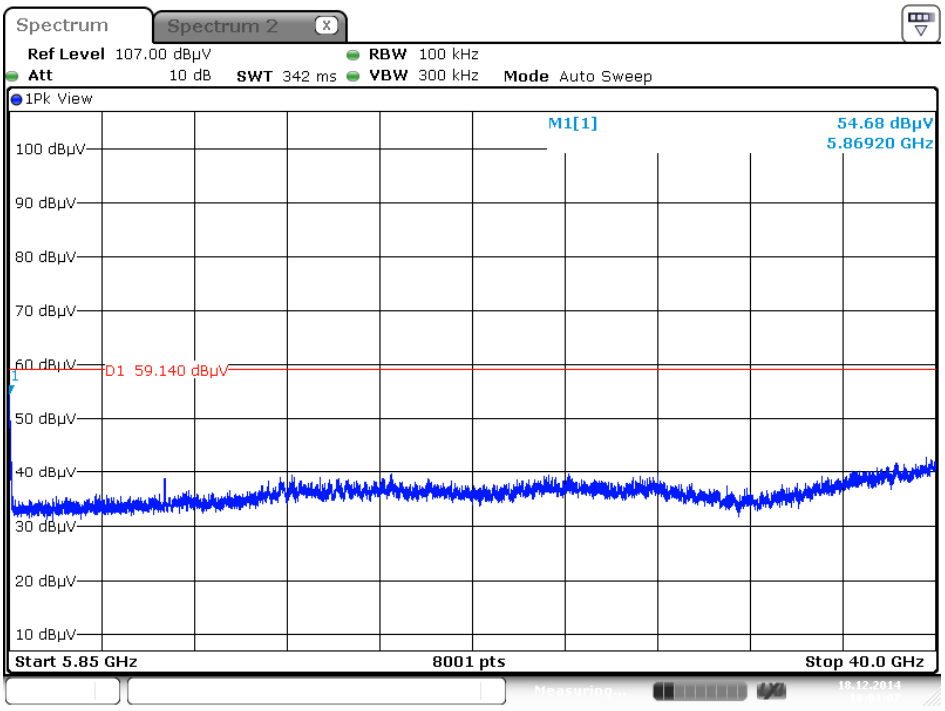
Date: 18.DEC.2014 17:23:27

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



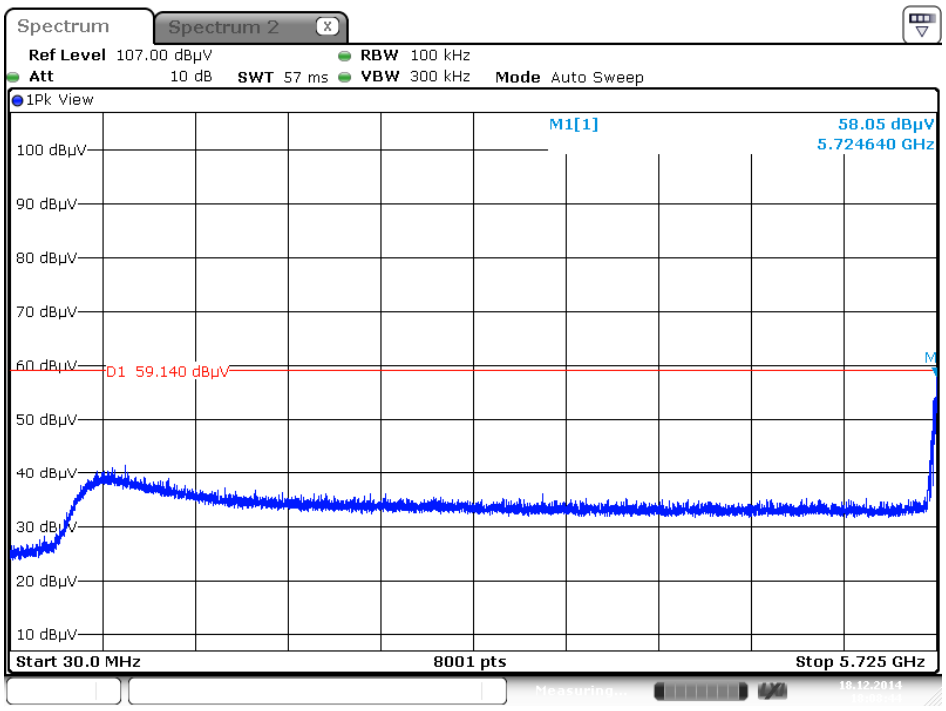
Date: 18.DEC.2014 17:59:32

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



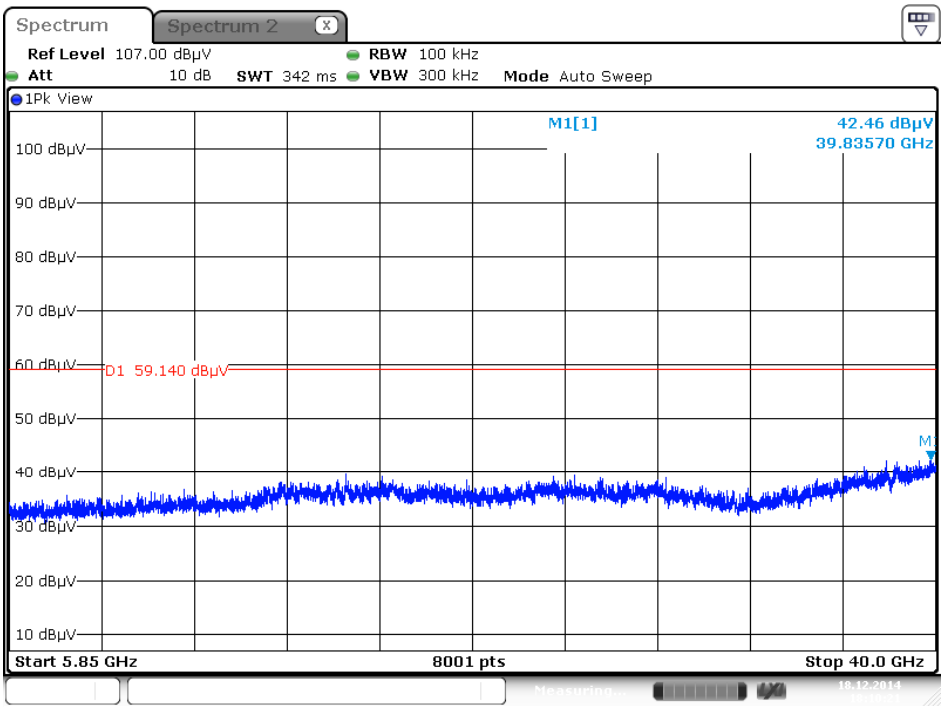
Date: 18.DEC.2014 18:01:07

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



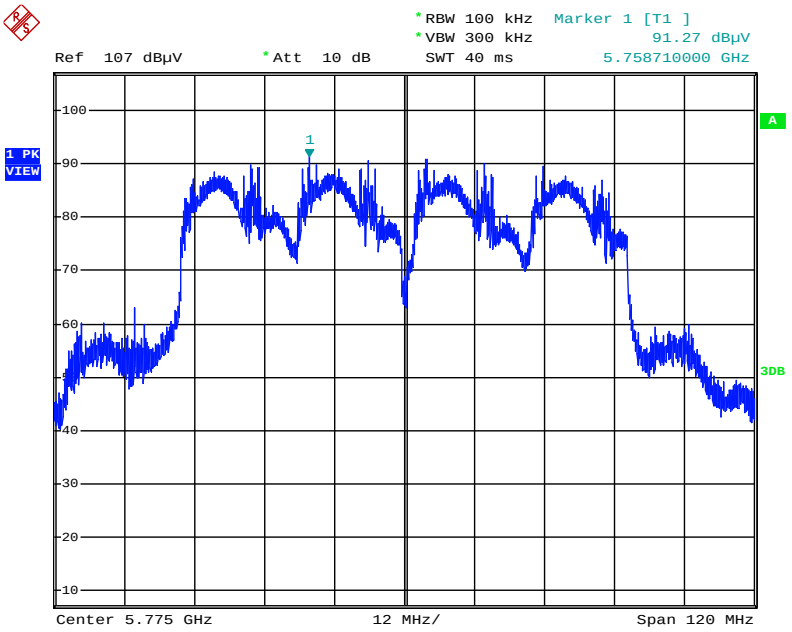
Date: 18.DEC.2014 18:08:44

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



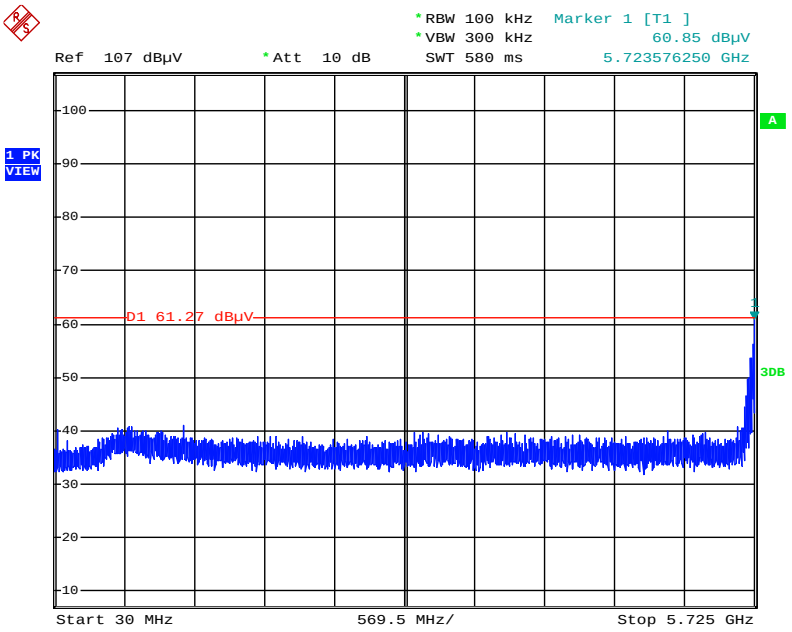
Date:18.DEC.2014 18:10:21

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



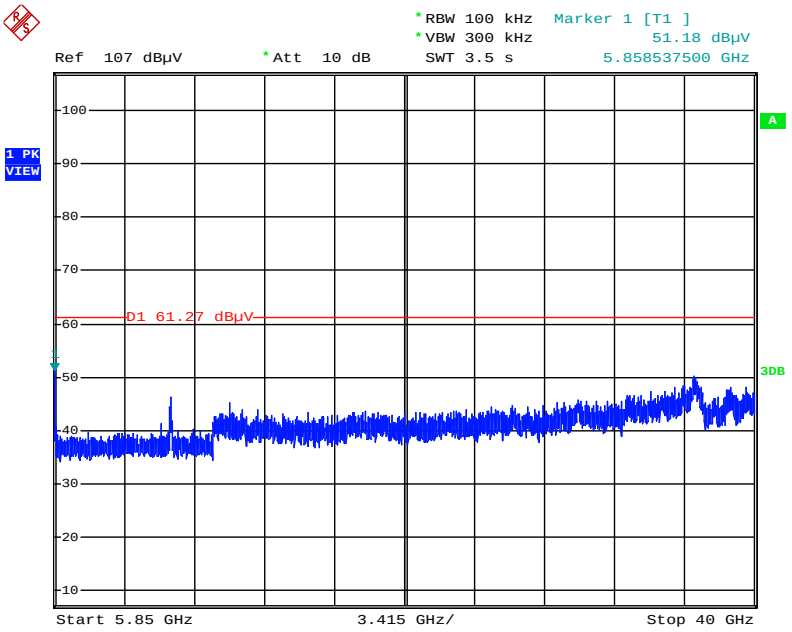
Date: 6.JAN.2015 00:40:12

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



Date: 6.JAN.2015 00:42:59

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



Date: 6.JAN.2015 00:43:48

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,

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. 23, 2014	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127650	9kHz ~ 30MHz	Nov. 17, 2014	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127478	9kHz ~ 30MHz	Nov. 17, 2014	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	Dec. 04, 2014	Conduction (CO01-CB)
Software	Audix	E3	5.410e	-	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	May 26, 2014	Radiation (03CH01-CB)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Jul. 28, 2014	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz~18GHz	Oct. 28, 2014	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Aug. 22, 2014	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Nov. 15, 2014	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02009	1GHz ~ 26.5GHz	Dec. 17, 2014	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 25, 2014	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100080	9kHz ~ 40GHz	Oct. 15, 2014	Radiation (03CH01-CB)
EMI Test Receiver	Agilent	N9038A	MY52260140	9kHz ~ 30MHz	Jan. 23, 2014	Radiation (03CH01-CB)
EMI Test Receiver	R&S	ESR26	101289	9kHz~26GHz	Aug. 22, 2014	Radiation (03CH01-CB)
Turn Table	INN CO	CO 2000	N/A	0 ~ 360 degree	N.C.R.	Radiation (03CH01-CB)
Antenna Mast	INN CO	CO 2000	N/A	1 m - 4 m	N.C.R.	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz - 1 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-1	N/A	1 GHz – 26.5 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-2	N/A	1 GHz – 26.5 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-3	N/A	1 GHz - 40 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-4	N/A	1 GHz - 40 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
Signal analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec.12, 2014	Conducted (TH01-CB)
RF Power Divider	Woken	2 Way	0120A02056002D	2GHz ~ 18GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Power Divider	Woken	3 Way	MDC2366	2GHz ~ 18GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Power Divider	Woken	4 Way	0120A04056002D	2GHz ~ 18GHz	Nov. 15, 2014	Conducted (TH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
RF Cable-high	Woken	High Cable-7	-	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-8	-	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-9	-	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-10	-	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-11	-	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
Power Sensor	Anritsu	MA2411B	1126203	300MHz~40GHz	Oct. 06, 2014	Conducted (TH01-CB)
Power Meter	Anritsu	ML2495A	1210004	300MHz~40GHz	Oct. 06, 2014	Conducted (TH01-CB)

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

NCR means Non-Calibration required.

6. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	2.4 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%