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

Product Name	Wireless-AC1900 Dual Band Gigabit Router
Brand Name	ASUS
Model No.	RT-AC68U, RT-AC68R, RT-AC68W, RT-AC68P, TM-AC1900, RT-AC1900, RT-AC68U V2
Test Rule Part(s)	47 CFR FCC Part 15 Subpart C § 15.247
Test Freq. Range	2400 ~ 2483.5MHz / 5725 ~ 5850MHz
Received Date	Dec. 04, 2013
Final Test Date	Dec. 10, 2014
Submission Type	Class II Change

Statement

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

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

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

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.10-2013**, **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.

TAF
Testing Laboratory
1190

Table of Contents

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR3D0426-03AA	Rev. 01	Initial issue of report	Dec. 26, 2014

1. CERTIFICATE OF COMPLIANCE

Product Name	:	Wireless-AC1900 Dual Band Gigabit Router
Brand Name	:	ASUS
Model No.	:	RT-AC68U, RT-AC68R, RT-AC68W, RT-AC68P, TM-AC1900, RT-AC1900, RT-AC68U V2
Applicant	:	ASUSTeK COMPUTER INC.
Test Rule Part(s)	:	47 CFR FCC Part 15 Subpart C § 15.247

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Dec. 04, 2013 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	12.70 dB
4.2	15.247(b)(3)	Maximum Conducted Output Power	Complies	1.03 dB
4.3	15.247(d)	Radiated Emissions	Complies	2.10 dB
4.4	15.247(d)	Band Edge Emissions	Complies	1.01 dB
4.5	15.203	Antenna Requirements	Complies	-

3. GENERAL INFORMATION

3.1. Product Details

IEEE 802.11n/ac

Items	Description
Product Type	WLAN (3TX, 3RX)
Radio Type	Intentional Transceiver
Power Type	From power adapter
Modulation	see the below table for IEEE 802.11ac/ac
Data Modulation	For 802.11n: OFDM (BPSK / QPSK / 16QAM / 64QAM) For 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)
Data Rate (Mbps)	see the below table for IEEE 802.11n/ac
Frequency Range	2400 ~ 2483.5MHz / 5725 ~ 5850MHz
Channel Number	For 2.4GHz Band: 11 for 20MHz bandwidth ; 7 for 40MHz bandwidth For 5GHz Band: 5 for 20MHz bandwidth ; 2 for 40MHz bandwidth ; 1 for 80MHz bandwidth
Maximum Conducted Output Power	For non-beamforming function: For 2.4GHz Band: 802.11ac MCS0/Nss1 (VHT20): 27.17 dBm ; 802.11ac MCS0/Nss1 (VHT40): 22.34 dBm For 5GHz Band: 802.11ac MCS0/Nss1 (VHT20): 28.64 dBm ; 802.11ac MCS0/Nss1 (VHT40): 28.53 dBm ; 802.11ac MCS0/Nss1 (VHT80): 26.27 dBm For beamforming function: For 2.4GHz Band: 802.11ac MCS0/Nss1 (VHT20): 25.92 dBm ; 802.11ac MCS0/Nss1 (VHT40): 21.57 dBm For 5GHz Band: 802.11ac MCS0/Nss1 (VHT20): 26.26 dBm ; 802.11ac MCS0/Nss1 (VHT40): 26.20 dBm ; 802.11ac MCS0/Nss1 (VHT80): 26.25 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

IEEE 802.11a/b/g

Items	Description
Product Type	WLAN (3TX, 3RX)
Radio Type	Intentional Transceiver
Power Type	From power adapter
Modulation	DSSS for IEEE 802.11b ; OFDM for IEEE 802.11a/g
Data Modulation	DSSS (BPSK / QPSK / CCK) ; OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data Rate (Mbps)	DSSS (1/ 2/ 5.5/11) ; OFDM (6/9/12/18/24/36/48/54)
Frequency Range	2400 ~ 2483.5MHz / 5725 ~ 5850MHz
Channel Number	11b/g: 11 ; 11a: 5
Maximum Conducted Output Power	11b: 26.57 dBm ; 11g: 27.94 dBm ; 11a: 28.62 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Band width Mode	Description	
IEEE 802.11a	☐ With beamforming	☒ Without beamforming
IEEE 802.11b	☐ With beamforming	☒ Without beamforming
IEEE 802.11g	☐ With beamforming	☒ Without beamforming
IEEE 802.11n	☒ With beamforming	☐ Without beamforming
IEEE 802.11ac	☒ With beamforming	☐ Without beamforming

Antenna and Band width

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

IEEE 11n/ac Spec.

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

3.2. Accessories

Power	Brand	Model	Rating
Adapter 1	PIE	AD890326	Input: 100-240Vac, 50/60Hz, 0.8A Output: 19Vdc, 1.75A
Adapter 2	ENERTRONIX	EXA1206UH	Input: 100-240Vac, 50-60Hz, 1.0A Output: 19Vdc, 1.75A
Adapter 3	Delta	ADP-33AW B	Input: 100-240Vac～1A 50-60Hz Output: 19Vdc, 1.75A
Other			
RJ-45 cable*1: Shielded, 1.5m			

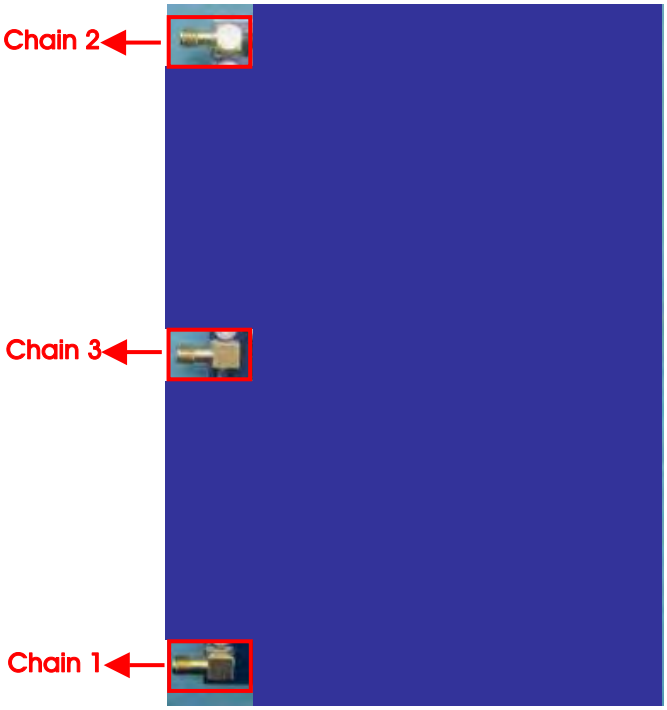
3.3. Table for Filed Antenna

Set	Brand	P/N	Antenna Type	Connector	Gain (dBi)		
					2.4GHz	5GHz	
						Band 1	Band 4
1	PSA	RFDPA141000SBLB802	Dipole Antenna	Reverse SMA	1.91	4.04	3.94
2	M.gear	C660-510333-A (SRF20141699)	Dipole Antenna	Reverse SMA	1.51	2.76	3.29

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

These antennas can be used as transmitting and receiving antenna.

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



3.4. Table for Carrier Frequencies

For 2.4GHz Band:

There are two bandwidth systems.

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

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

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

For 5GHz Band:

There are three bandwidth systems.

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

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

For 80MHz bandwidth systems, use Channel 155.

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

3.5. Table for Test Modes

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

For 2.4GHz Band:

Test Items	Mode	Data Rate	Channel	Chain
AC Power Line Conducted Emissions	CTX	-	-	-
Maximum Conducted Output Power	11ac VHT20	MCS0/Nss1	1/6/11	1+2+3
	11ac VHT40	MCS0/Nss1	3/6/9	1+2+3
	11b/CCK	1 Mbps	1/6/11	1+2+3
	11g/BPSK	6 Mbps	1/6/11	1+2+3
Radiated Emissions Below 1GHz	CTX	-	-	-
Radiated Emissions Above 1GHz	11ac VHT20	MCS0/Nss1	1/6/11	1+2+3
	11ac VHT40	MCS0/Nss1	3/6/9	1+2+3
	11b/CCK	1 Mbps	1/6/11	1+2+3
	11g/BPSK	6 Mbps	1/6/11	1+2+3
Band Edge Emissions	11ac VHT20	MCS0/Nss1	1/6/11	1+2+3
	11ac VHT40	MCS0/Nss1	3/6/9	1+2+3
	11b/CCK	1 Mbps	1/6/11	1+2+3
	11g/BPSK	6 Mbps	1/6/11	1+2+3

For 5GHz Band:

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

Note 1: VHT20/VHT40 covers HT20/HT40, due to same modulation.

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

Note 3: Radiated Emission above 1GHz and Band Edge Emissions were tested based on original Conducted Output Power.

The following test modes were performed for all tests:

For AC Power Line Conducted Emissions test:

The EUT has two SKU (SKU 1 and SKU 2). After evaluating, SKU1 was the worst case, Consequently, measurement for Conducted Emission will follow this same test mode

Mode 1. EUT (SKU1) + 2.4GHz + Adapter 2

Mode 2. EUT (SKU1) + 5GHz + Adapter 2

Mode 2 has been evaluated to be the worst case among Mode 1~2, thus measurement for Mode 3~4 will follow this same test mode.

Mode 3. EUT (SKU1) + 5GHz + Adapter 3

Mode 4. EUT (SKU1) + 5GHz + Adapter 1

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

For Radiated Emissions Below 1GHz test:

The EUT has two SKU (SKU 1 and SKU 2). After evaluating, SKU1 was the worst case, Consequently, measurement for Radiated Emission <Below 1GHz> will follow this same test mode

Mode 1. EUT (SKU1) + 2.4GHz + Adapter 2

Mode 2. EUT (SKU1) + 5GHz + Adapter 2

Mode 1 has been evaluated to be the worst case among Mode 1~2, thus measurement for Mode 3~4 will follow this same test mode.

Mode 3. EUT (SKU1) + 2.4GHz + Adapter 1

Mode 4. EUT (SKU1) + 2.4GHz + Adapter 3

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

For Radiated Emissions Above 1GHz test:

The EUT has two SKU (SKU 1 and SKU 2). not affect more than above 1GHz test, so test SKU1.

Mode 1: CTX-Standing

3.6. Table for Multiple List

1. There are two kinds of appearances (black and white) of this EUT with 7 models which are identical to each other in all aspects except for the following table:

Brand Name	Model Name	Description
ASUS	RT-AC68U	All the models are identical, the difference model for difference brand served as marketing strategy.
	RT-AC68R	
	RT-AC68W	
	RT-AC68P	
	TM-AC1900	
	RT-AC1900	
	RT-AC68U V2	

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

2. The EUT has two SKU which are identical to each other in all aspects except for the following table:

SKU / Description	SKU1	SKU2
Vendor	NET SWAPN(FCE)	MINGTEK
LAN port transformer (Model No.)	FCE_NS771802	HN18101CG
WAN port transformer (Model No.)	FCE_NS773602	HN36201CG
Spec	DIP 10/100/1000 BASE-T	1GB DUAL DIP

3.7. Table for Class II Change

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

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

Report No.	Modifications	Performance Checking
FR3D0426-03AA	(1) Change chip from BCM4360KMLG to BCM43602KMLG. From radio perspective, they are same RF feature. The only differences are adding low power feature and CPU performance to BCM43602KMLG. (2) Add a set of same type antenna with lower gain: C660-510333-A (SRF20141699). (3) Add an adapter (Brand: Delta / Model: ADP-33AW B). (4) Add a model name: RT-AC68U V2.	1. AC Power Line Conducted Emissions 2. Radiated Emissions 3. Band Edge Emissions

3.8. 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).

3.9. Table for Supporting Units

For Test Site No: CO01-CB and TH-01-CB

Support Unit	Brand	Model	FCC ID
NB	DELL	E6430	DoC

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

Support Unit	Brand	Model	FCC ID
NB	DELL	M1330	DoC

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

For non-beamforming function:

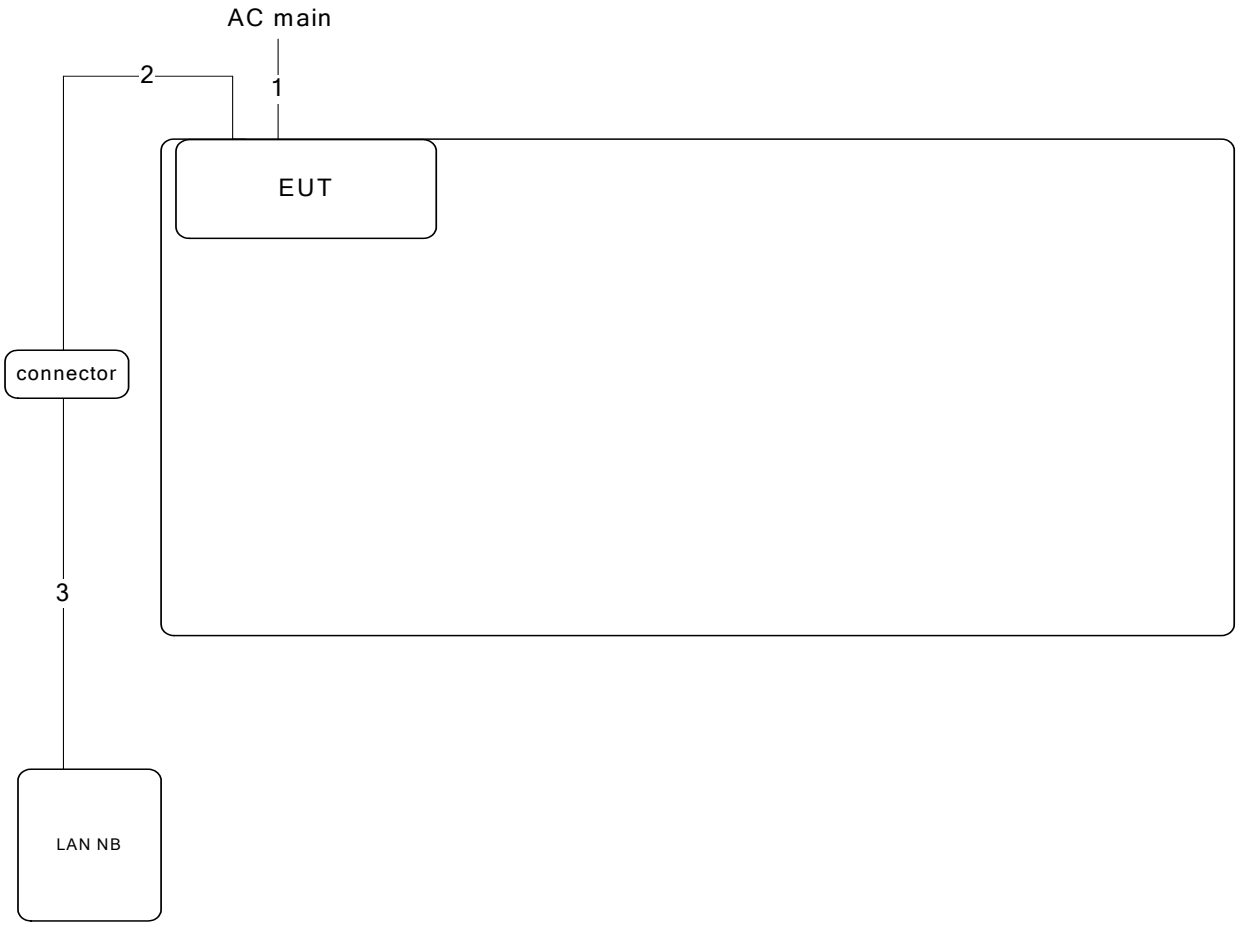
Support Unit	Brand	Model	FCC ID
NB	DELL	M1330	DoC

For Beamforming function:

Support Unit	Brand	Model	FCC ID
NB	DELL	M1330	DoC
NB	DELL	M1340	DoC
WiFi USB Adapter	NETGEAR	A6200	PY312200200

3.10. Test Configurations

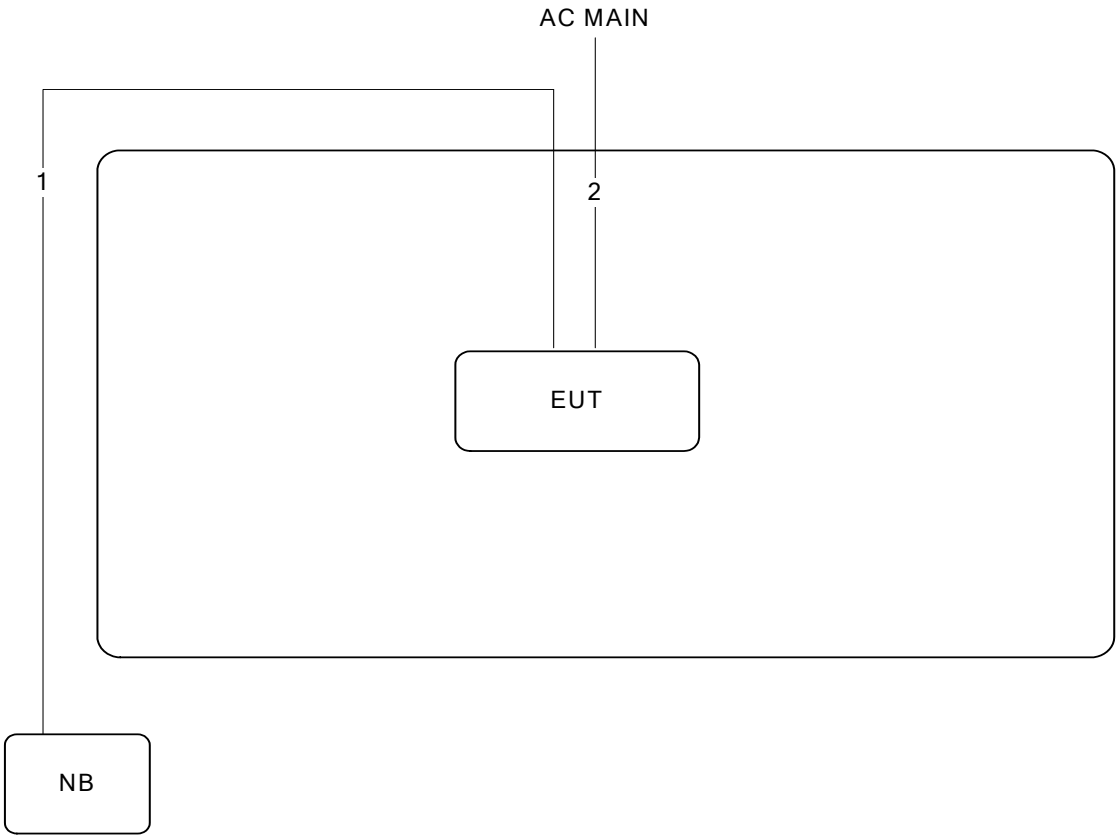
3.10.1. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	2.4m
2	RJ-45 cable	Yes	1.5m
3	RJ-45 cable	Yes	10m

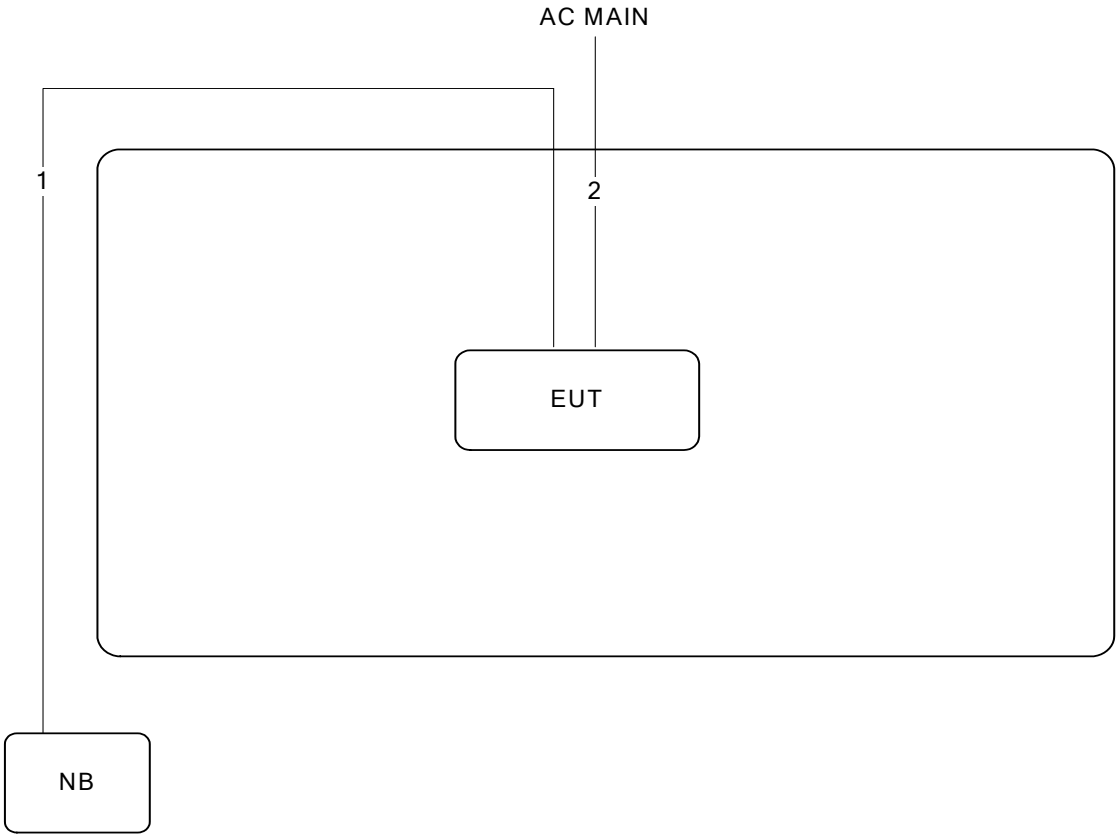
3.10.2. Radiation Emissions Test Configuration

Test Configuration: 30MHz~1GHz



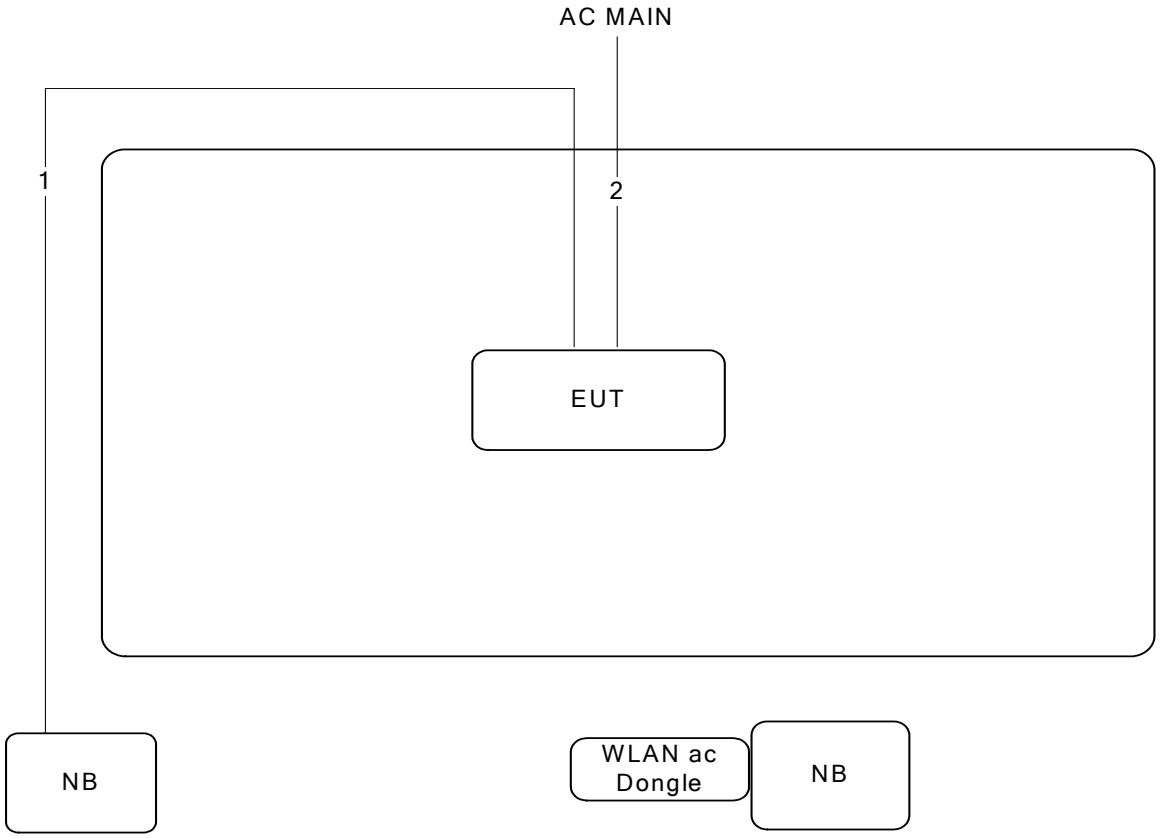
Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	RJ-45 cable	No	10m

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



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

Test Configuration: above 1GHz / For beamforming function:



Item	Connection	Shielded	Length
1	Power cable	No	1.5m
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

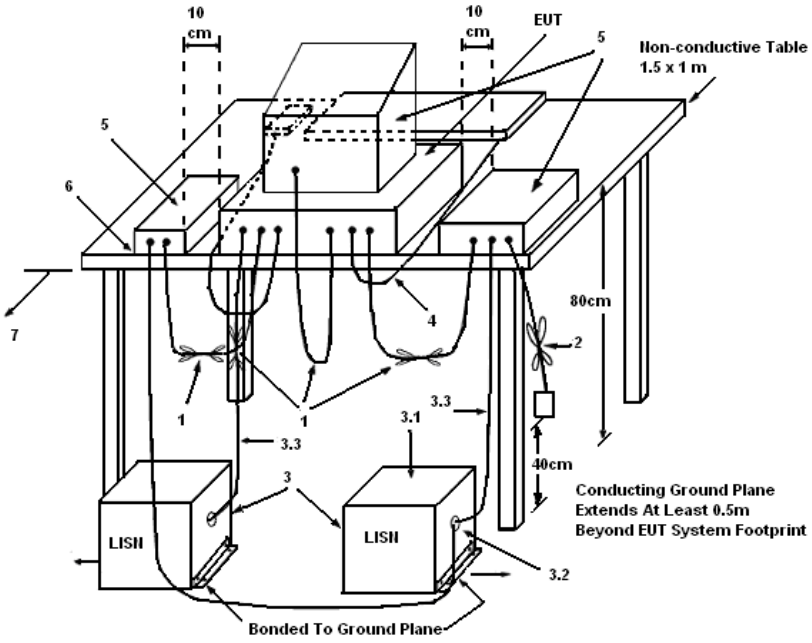
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

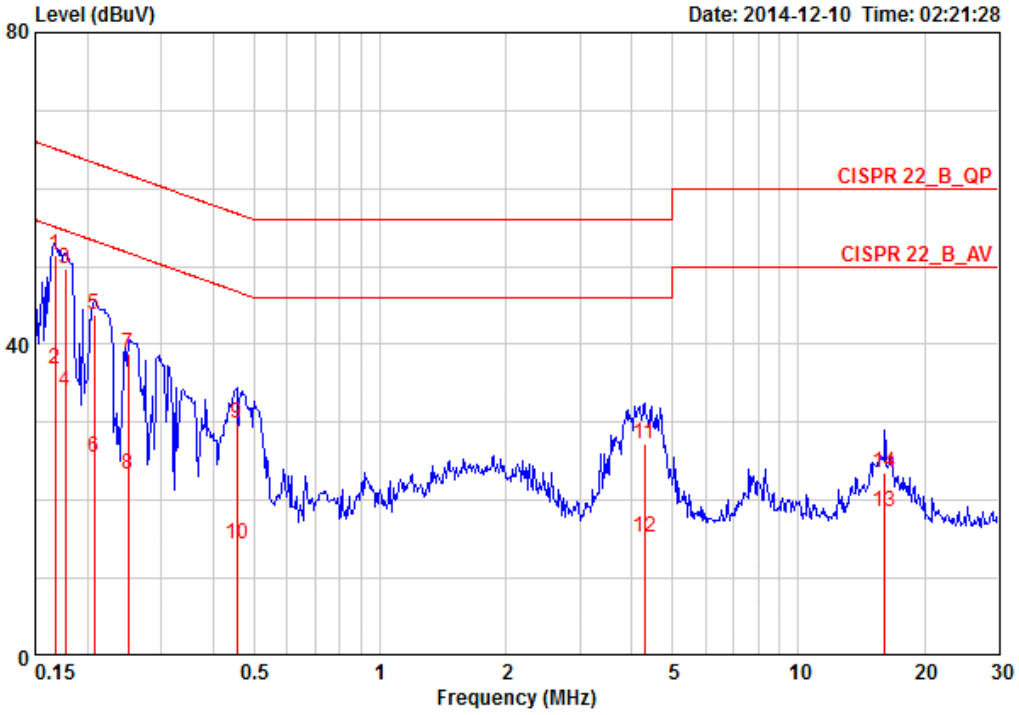
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

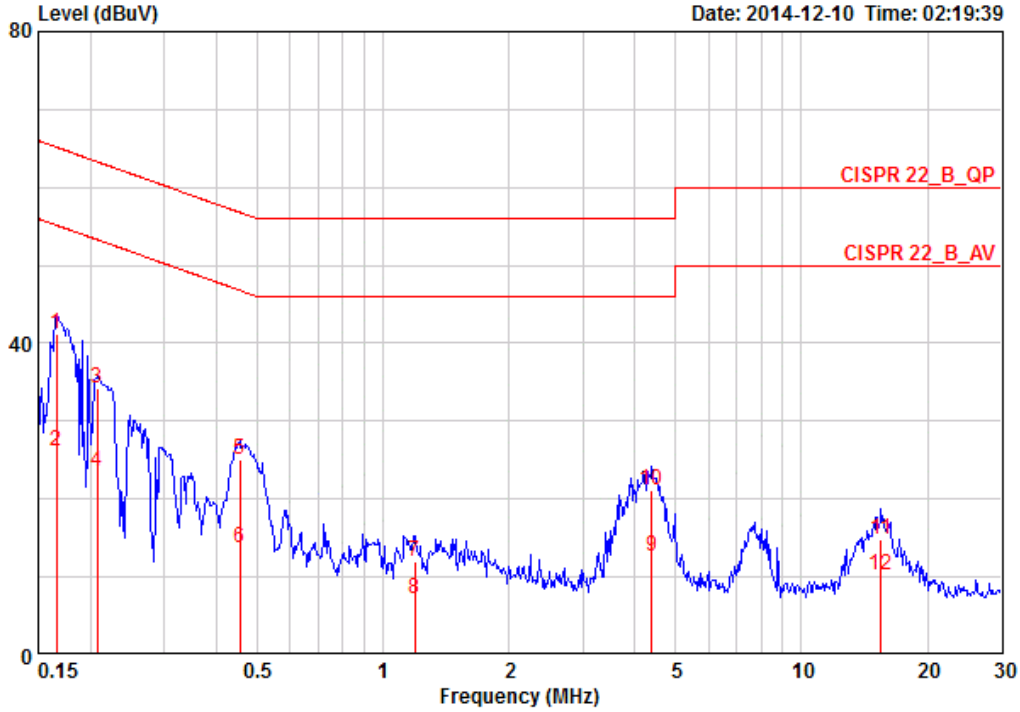
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	26°C	Humidity	58%
Test Engineer	Parody Lin	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 @	0.16765	51.38	-13.70	65.08	41.44	9.77	0.16	QP	LINE
2 @	0.16765	36.79	-18.29	55.08	26.85	9.77	0.16	AVERAGE	LINE
3 @	0.17678	49.66	-14.98	64.64	39.72	9.78	0.16	QP	LINE
4 @	0.17678	33.91	-20.73	54.64	23.97	9.78	0.16	AVERAGE	LINE
5 @	0.20723	43.75	-19.57	63.32	33.80	9.78	0.17	QP	LINE
6	0.20723	25.59	-27.73	53.32	15.64	9.78	0.17	AVERAGE	LINE
7 @	0.25078	38.75	-22.98	61.73	28.80	9.78	0.17	QP	LINE
8	0.25078	23.26	-28.47	51.73	13.31	9.78	0.17	AVERAGE	LINE
9	0.45395	29.91	-26.89	56.80	19.96	9.77	0.18	QP	LINE
10	0.45395	14.47	-32.33	46.80	4.52	9.77	0.18	AVERAGE	LINE
11	4.292	27.35	-28.65	56.00	17.34	9.70	0.31	QP	LINE
12	4.292	15.25	-30.75	46.00	5.24	9.70	0.31	AVERAGE	LINE
13	16.055	18.44	-31.56	50.00	8.48	9.50	0.46	AVERAGE	LINE
14	16.055	23.60	-36.40	60.00	13.64	9.50	0.46	QP	LINE

Temperature	26°C	Humidity	58%
Test Engineer	Parody Lin	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	0.16589	41.28	-23.88	65.16	31.20	9.92	0.16	QP	NEUTRAL
2	0.16589	26.26	-28.90	55.16	16.18	9.92	0.16	AVERAGE	NEUTRAL
3	0.20723	34.15	-29.17	63.32	24.06	9.92	0.17	QP	NEUTRAL
4	0.20723	23.45	-29.87	53.32	13.36	9.92	0.17	AVERAGE	NEUTRAL
5	0.45395	25.06	-31.74	56.80	14.97	9.91	0.18	QP	NEUTRAL
6	0.45395	13.74	-33.06	46.80	3.65	9.91	0.18	AVERAGE	NEUTRAL
7	1.191	12.07	-43.93	56.00	1.94	9.92	0.21	QP	NEUTRAL
8	1.191	7.23	-38.77	46.00	-2.90	9.92	0.21	AVERAGE	NEUTRAL
9	4.384	12.63	-33.37	46.00	2.47	9.85	0.31	AVERAGE	NEUTRAL
10	4.384	21.09	-34.91	56.00	10.93	9.85	0.31	QP	NEUTRAL
11	15.470	14.91	-45.09	60.00	4.73	9.73	0.45	QP	NEUTRAL
12	15.470	10.25	-39.75	50.00	0.07	9.73	0.45	AVERAGE	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

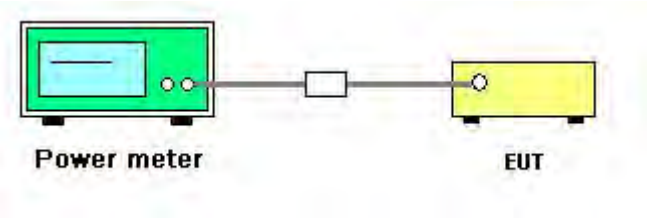
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

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	Wen Chao	Configurations	IEEE 802.11ac
Test Date	Jul. 24, 2014	Test Function	Non-beamforming function

For 2.4GHz Band

Configuration IEEE 802.11ac MCS0/Nss1 VHT20

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
1	2412 MHz	17.09	18.26	17.36	22.37	30.00	Complies
6	2437 MHz	22.12	22.81	22.23	27.17	30.00	Complies
11	2462 MHz	16.01	16.98	16.33	21.23	30.00	Complies

Configuration IEEE 802.11ac MCS0/Nss1 VHT40

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
3	2422 MHz	13.77	14.72	13.85	18.91	30.00	Complies
6	2437 MHz	17.28	18.09	17.27	22.34	30.00	Complies
9	2452 MHz	15.08	15.67	15.12	20.07	30.00	Complies

For 5GHz Band

Configuration IEEE 802.11ac MCS0/Nss1 VHT20

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
149	5745 MHz	23.92	23.75	23.92	28.64	30.00	Complies
157	5785 MHz	23.91	23.71	23.8	28.58	30.00	Complies
165	5825 MHz	23.94	23.77	23.81	28.61	30.00	Complies

Configuration IEEE 802.11ac MCS0/Nss1 VHT40

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
151	5755 MHz	23.18	22.92	22.95	27.79	30.00	Complies
159	5795 MHz	23.82	23.62	23.83	28.53	30.00	Complies

Configuration IEEE 802.11ac MCS0/Nss1 VHT80

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
155	5775 MHz	21.33	21.42	21.73	26.27	30.00	Complies

Temperature	26°C	Humidity	63%
Test Engineer	Wen Chao	Configurations	IEEE 802.11a/b/g
Test Date	Jul. 24, 2014	Test Function	Non-beamforming function

Configuration IEEE 802.11b

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
1	2412 MHz	17.41	18.64	17.29	22.60	30.00	Complies
6	2437 MHz	21.28	22.32	21.72	26.57	30.00	Complies
11	2462 MHz	19.94	20.54	20.02	24.95	30.00	Complies

Configuration IEEE 802.11g

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
1	2412 MHz	18.01	19.12	18.03	23.19	30.00	Complies
6	2437 MHz	22.91	23.55	23.02	27.94	30.00	Complies
11	2462 MHz	17.47	18.21	17.33	22.46	30.00	Complies

Configuration IEEE 802.11a

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
149	5745 MHz	23.91	23.74	23.84	28.60	30.00	Complies
157	5785 MHz	23.93	23.72	23.88	28.62	30.00	Complies
165	5825 MHz	23.89	23.68	23.91	28.60	30.00	Complies

Temperature	26°C	Humidity	63%
Test Engineer	Wen Chao	Configurations	IEEE 802.11ac
Test Date	Jul. 24, 2014	Test Function	Beamforming function

For 2.4GHz Band

Configuration IEEE 802.11ac MCS0/Nss1 VHT20

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
1	2412 MHz	16.33	17.88	16.43	21.71	29.32	Complies
6	2437 MHz	20.71	21.82	20.83	25.92	29.32	Complies
11	2462 MHz	16.52	17.58	16.63	21.71	29.32	Complies

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

Configuration IEEE 802.11ac MCS0/Nss1 VHT40

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
3	2422 MHz	13.73	15.01	14.47	19.21	29.32	Complies
6	2437 MHz	16.21	17.2	16.92	21.57	29.32	Complies
9	2452 MHz	14.46	15.68	15.33	19.96	29.32	Complies

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

For 5GHz Band

Configuration IEEE 802.11ac MCS0/Nss1 VHT20

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
149	5745 MHz	21.72	21.48	21.25	26.26	27.29	Complies
157	5785 MHz	21.66	21.45	21.09	26.18	27.29	Complies
165	5825 MHz	21.53	21.47	21.19	26.17	27.29	Complies

Note: Directional gain= $10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.71dBi>6dBi, so limit=30 – (8.71 – 6)=27.29dBm.

Configuration IEEE 802.11ac MCS0/Nss1 VHT40

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
151	5755 MHz	21.61	21.51	21.14	26.20	27.29	Complies
159	5795 MHz	21.52	21.46	21.17	26.16	27.29	Complies

Note: Directional gain= $10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.71dBi>6dBi, so limit=30 – (8.71 – 6)=27.29dBm.

Configuration IEEE 802.11ac MCS0/Nss1 VHT80

Channel	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
155	5775 MHz	21.62	21.54	21.28	26.25	27.29	Complies

Note: Directional gain= $10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =8.71dBi>6dBi, so limit=30 – (8.71 – 6)=27.29dBm.

4.3. Radiated Emissions Measurement

4.3.1. Limit

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

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

4.3.2. Measuring Instruments and Setting

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

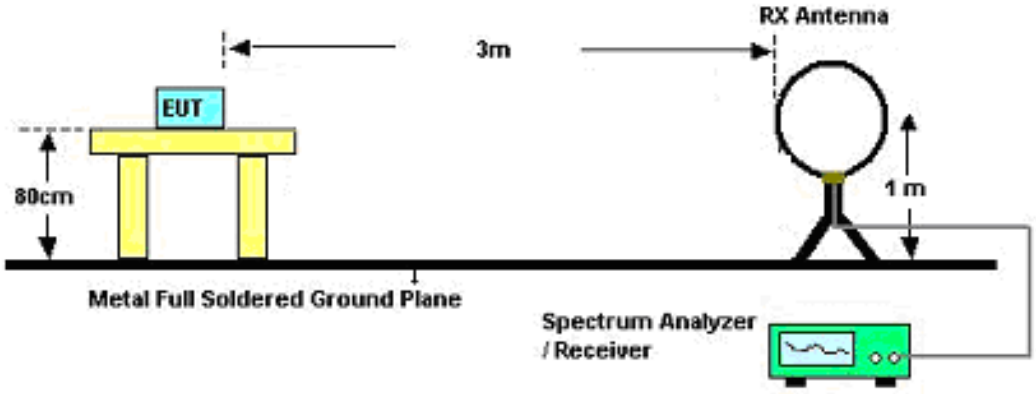
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1GHz / RBW 120kHz for QP

4.3.3. Test Procedures

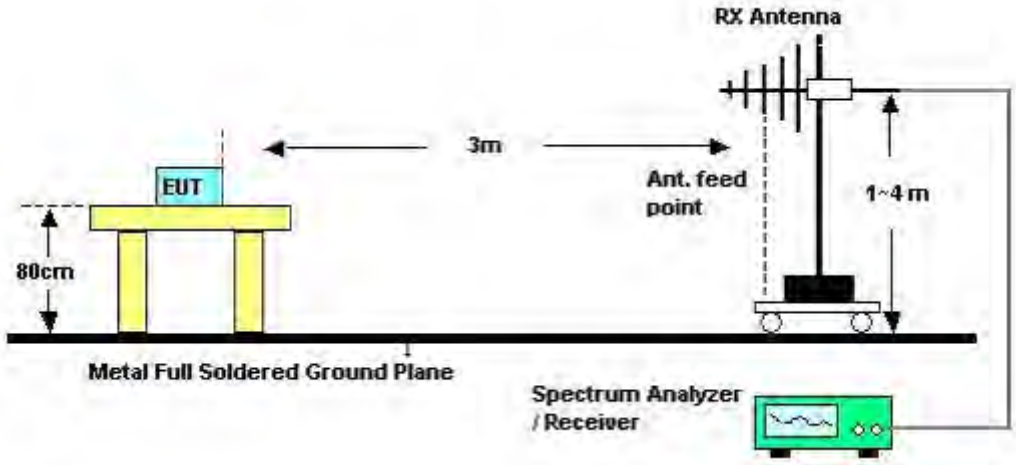
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting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

4.3.4. Test Setup Layout

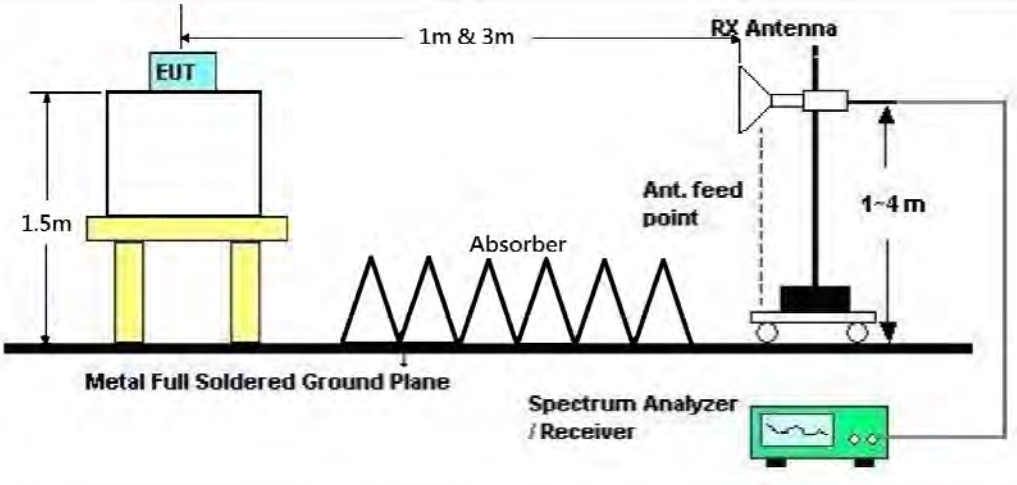
For Radiated Emissions: 9kHz ~30MHz



For Radiated Emissions: 30MHz~1GHz



For Radiated Emissions: Above 1GHz



4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

For non-beamforming function:

The EUT was programmed to be in continuously transmitting mode.

For beamforming function:

The EUT was programmed to be in beamforming transmitting mode.

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

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	CTX
Test Date	Dec. 08, 2014	Test Mode	Mode 3

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.

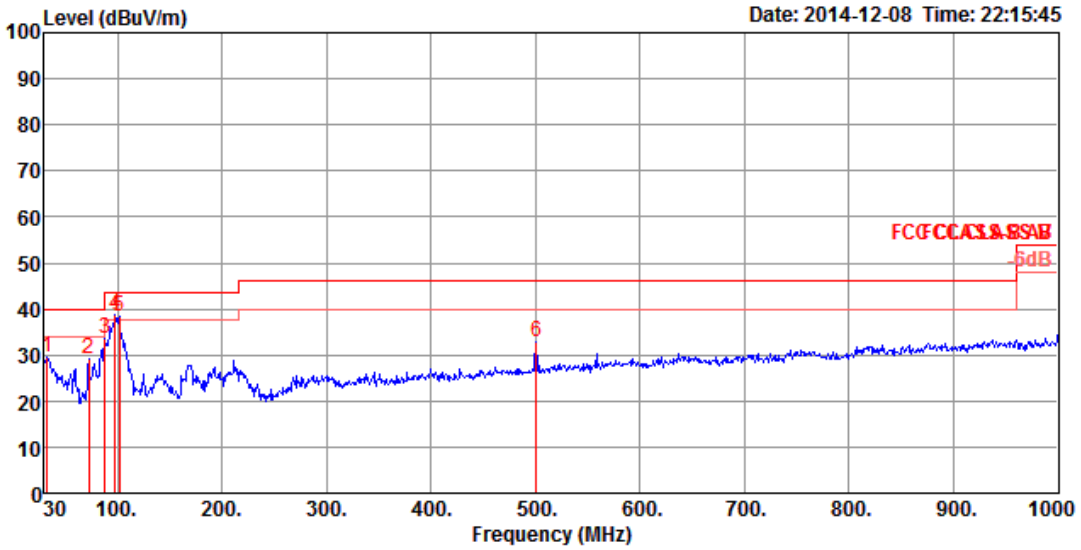
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

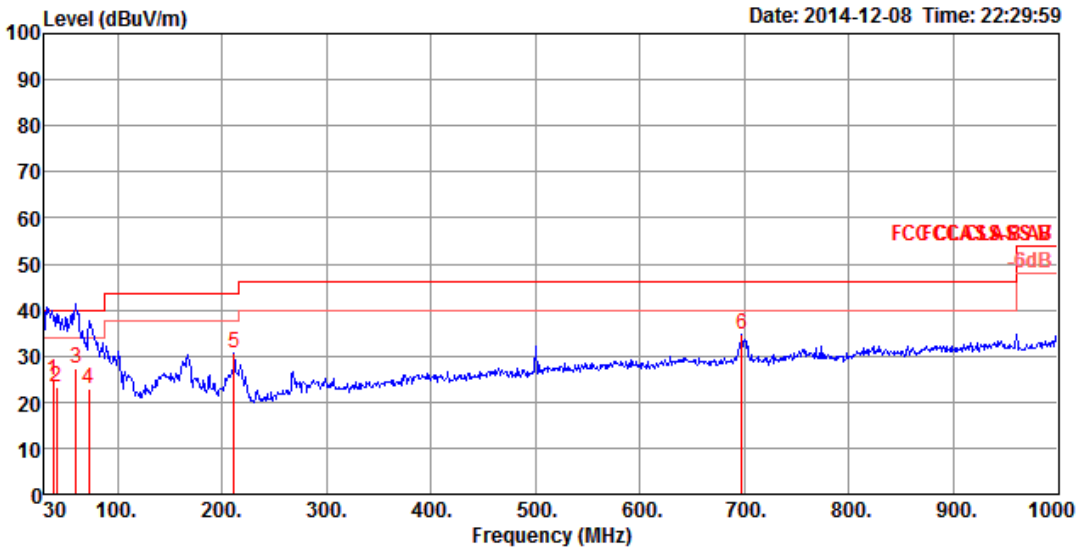
Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	CTX
Test Mode	Mode 3		

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	32.91	29.62	40.00	-10.38	43.07	0.48	18.30	32.23	Peak	150	123	HORIZONTAL
2	72.68	29.26	40.00	-10.74	53.75	0.74	7.02	32.25	Peak	400	311	HORIZONTAL
3	88.20	33.62	43.50	-9.88	56.15	0.82	8.88	32.23	Peak	200	122	HORIZONTAL
4	97.90	38.85	43.50	-4.65	59.49	0.86	10.72	32.22	Peak	300	311	HORIZONTAL
5	101.78	38.26	43.50	-5.24	58.32	0.87	11.34	32.27	Peak	400	99	HORIZONTAL
6	500.45	32.83	46.00	-13.17	45.22	1.96	17.80	32.15	Peak	150	242	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	38.76	24.89	40.00	-15.11	41.82	0.55	14.81	32.29	QP	123	246	VERTICAL
2	41.71	23.31	40.00	-16.69	41.92	0.57	13.10	32.28	QP	100	130	VERTICAL
3	60.20	27.29	40.00	-12.71	52.02	0.67	6.90	32.30	QP	100	157	VERTICAL
4	72.77	22.88	40.00	-17.12	47.35	0.74	7.03	32.24	QP	174	254	VERTICAL
5	211.39	30.59	43.50	-12.91	50.58	1.27	10.79	32.05	Peak	100	197	VERTICAL
6	697.36	34.65	46.00	-11.35	44.92	2.29	19.69	32.25	Peak	150	13	VERTICAL

Note:

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

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

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

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

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 1 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Non-beamforming function

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	4818.52	45.36	74.00	-28.64	41.33	5.87	33.36	35.20	Peak	164	244	HORIZONTAL
2	4819.80	32.78	54.00	-21.22	28.72	5.87	33.39	35.20	Average	164	244	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4822.01	37.60	54.00	-16.40	33.54	5.87	33.39	35.20	Average	182	25	VERTICAL
2	4822.49	51.35	74.00	-22.65	47.29	5.87	33.39	35.20	Peak	182	25	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 6 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4874.39	34.35	54.00	-19.65	30.15	5.92	33.48	35.20	Average	101	39	HORIZONTAL
2	4874.96	46.57	74.00	-27.43	42.37	5.92	33.48	35.20	Peak	101	39	HORIZONTAL
3	7305.52	49.93	74.00	-24.07	41.74	7.13	36.48	35.42	Peak	100	129	HORIZONTAL
4	7317.76	36.95	54.00	-17.05	28.73	7.14	36.51	35.43	Average	100	129	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	4874.55	43.88	54.00	-10.12	39.68	5.92	33.48	35.20	Average	184	359	VERTICAL
2	4875.19	56.47	74.00	-17.53	52.27	5.92	33.48	35.20	Peak	184	359	VERTICAL
3	7312.15	38.26	54.00	-15.74	30.05	7.13	36.51	35.43	Average	132	14	VERTICAL
4	7318.50	49.97	74.00	-24.03	41.75	7.14	36.51	35.43	Peak	132	14	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 11 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Non-beamforming function

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	4923.04	45.97	74.00	-28.03	41.62	5.97	33.58	35.20	Peak	197	308	HORIZONTAL
2	4929.67	33.27	54.00	-20.73	28.92	5.97	33.58	35.20	Average	197	308	HORIZONTAL
3	7376.42	51.47	74.00	-22.53	43.15	7.16	36.61	35.45	Peak	126	54	HORIZONTAL
4	7390.33	37.23	54.00	-16.77	28.91	7.17	36.61	35.46	Average	126	54	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	4921.98	49.21	74.00	-24.79	44.86	5.97	33.58	35.20	Peak	193	354	VERTICAL
2	4924.58	36.61	54.00	-17.39	32.26	5.97	33.58	35.20	Average	193	354	VERTICAL
3	7389.27	37.40	54.00	-16.60	29.08	7.17	36.61	35.46	Average	181	284	VERTICAL
4	7394.75	50.29	74.00	-23.71	41.94	7.17	36.64	35.46	Peak	181	284	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 3 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Non-beamforming function

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	4835.89	46.18	74.00	-27.82	42.11	5.88	33.39	35.20	Peak	172	129	HORIZONTAL
2	4837.01	32.79	54.00	-21.21	28.69	5.88	33.42	35.20	Average	172	129	HORIZONTAL
3	7259.81	49.98	74.00	-24.02	41.86	7.10	36.43	35.41	Peak	176	72	HORIZONTAL
4	7274.49	36.67	54.00	-17.33	28.52	7.11	36.45	35.41	Average	176	72	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	4842.14	48.26	74.00	-25.74	44.16	5.88	33.42	35.20	Peak	199	6	VERTICAL
2	4844.71	34.36	54.00	-19.64	30.26	5.88	33.42	35.20	Average	199	6	VERTICAL
3	7263.24	50.21	74.00	-23.79	42.09	7.10	36.43	35.41	Peak	183	317	VERTICAL
4	7275.01	36.73	54.00	-17.27	28.58	7.11	36.45	35.41	Average	183	317	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 6 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Non-beamforming function

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	4869.39	46.15	74.00	-27.85	41.98	5.92	33.45	35.20	Peak	171	59	HORIZONTAL
2	4883.46	32.99	54.00	-21.01	28.79	5.92	33.48	35.20	Average	171	59	HORIZONTAL
3	7319.53	36.92	54.00	-17.08	28.70	7.14	36.51	35.43	Average	131	320	HORIZONTAL
4	7319.62	49.87	74.00	-24.13	41.65	7.14	36.51	35.43	Peak	131	320	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4875.51	48.82	74.00	-25.18	44.62	5.92	33.48	35.20	Peak	181	360	VERTICAL
2	4879.55	36.13	54.00	-17.87	31.93	5.92	33.48	35.20	Average	181	360	VERTICAL
3	7304.62	50.12	74.00	-23.88	41.93	7.13	36.48	35.42	Peak	190	38	VERTICAL
4	7319.85	36.86	54.00	-17.14	28.64	7.14	36.51	35.43	Average	190	38	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 9 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Non-beamforming function

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	4899.22	45.25	54.00	-8.75	41.01	5.93	33.51	35.20	Average	206	307	HORIZONTAL
2	4900.15	32.76	54.00	-21.24	28.52	5.93	33.51	35.20	Average	207	307	HORIZONTAL
3	7347.25	37.15	54.00	-16.85	28.88	7.15	36.56	35.44	Average	138	144	HORIZONTAL
4	7349.53	50.79	74.00	-23.21	42.51	7.16	36.56	35.44	Peak	138	144	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	4892.14	45.96	74.00	-28.04	41.72	5.93	33.51	35.20	Peak	178	26	VERTICAL
2	4906.89	34.06	54.00	-19.94	29.77	5.95	33.54	35.20	Average	178	26	VERTICAL
3	7334.85	50.19	74.00	-23.81	41.95	7.15	36.53	35.44	Peak	250	182	VERTICAL
4	7390.94	37.57	54.00	-16.43	29.25	7.17	36.61	35.46	Average	204	182	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Non-beamforming function

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	11490.75	46.37	54.00	-7.63	32.71	9.24	39.50	35.08	Average	135	105	HORIZONTAL
2	11491.04	58.84	74.00	-15.16	45.18	9.24	39.50	35.08	Peak	135	105	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	11489.42	61.97	74.00	-12.03	48.31	9.24	39.50	35.08	Peak	173	86	VERTICAL
2	11490.00	48.71	54.00	-5.29	35.05	9.24	39.50	35.08	Average	173	86	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Non-beamforming function

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	11566.18	46.33	54.00	-7.67	32.68	9.26	39.48	35.09	Average	140	106	HORIZONTAL
2	11571.39	58.25	74.00	-15.75	44.61	9.26	39.47	35.09	Peak	140	106	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	11568.73	48.17	54.00	-5.83	34.53	9.26	39.47	35.09	Average	182	277	VERTICAL
2	11573.94	60.69	74.00	-13.31	47.04	9.26	39.47	35.08	Peak	182	277	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Non-beamforming function

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	11649.54	45.19	54.00	-8.81	31.54	9.28	39.44	35.07	Average	137	257	HORIZONTAL
2	11653.94	58.59	74.00	-15.41	44.94	9.28	39.44	35.07	Peak	137	257	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	11650.52	46.77	54.00	-7.23	33.12	9.28	39.44	35.07	Average	183	87	VERTICAL
2	11650.64	58.96	74.00	-15.04	45.31	9.28	39.44	35.07	Peak	183	87	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Non-beamforming function

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	11510.81	56.27	74.00	-17.73	42.62	9.25	39.50	35.10	Peak	146	104	HORIZONTAL
2	11511.22	44.19	54.00	-9.81	30.54	9.25	39.50	35.10	Average	146	104	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	11509.83	58.33	74.00	-15.67	44.68	9.25	39.50	35.10	Peak	176	86	VERTICAL
2	11509.94	46.08	54.00	-7.92	32.43	9.25	39.50	35.10	Average	176	86	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Non-beamforming function

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	11590.72	44.50	54.00	-9.50	30.84	9.27	39.47	35.08	Average	223	80	HORIZONTAL
2	11591.22	57.60	74.00	-16.40	43.94	9.27	39.47	35.08	Peak	223	80	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	11593.91	45.73	54.00	-8.27	32.07	9.27	39.47	35.08	Average	245	213	VERTICAL
2	11594.28	58.49	74.00	-15.51	44.83	9.27	39.47	35.08	Peak	245	213	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Non-beamforming function

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	11547.11	55.65	74.00	-18.35	41.99	9.26	39.49	35.09	Peak	158	76	HORIZONTAL
2	11561.69	42.97	54.00	-11.03	29.32	9.26	39.48	35.09	Average	158	76	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	11540.45	57.07	74.00	-16.93	43.41	9.26	39.49	35.09	Peak	180	82	VERTICAL
2	11549.83	44.15	54.00	-9.85	30.49	9.26	39.49	35.09	Average	180	82	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11b CH 1 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Non-beamforming function

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	4824.00	38.67	54.00	-15.33	35.50	3.31	33.56	33.70	40	100	Average	HORIZONTAL
2	4824.02	47.46	74.00	-26.54	44.29	3.31	33.56	33.70	40	100	Peak	HORIZONTAL
3	7235.48	46.81	74.00	-27.19	40.20	4.06	36.48	33.93	337	100	Peak	HORIZONTAL
4	7236.35	33.65	54.00	-20.35	27.04	4.06	36.48	33.93	337	100	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	4824.00	53.88	74.00	-20.12	50.71	3.31	33.56	33.70	1	197	Peak	VERTICAL
2	4824.00	50.98	54.00	-3.02	47.81	3.31	33.56	33.70	1	197	Average	VERTICAL
3	7235.41	33.98	54.00	-20.02	27.37	4.06	36.48	33.93	334	100	Average	VERTICAL
4	7236.32	47.43	74.00	-26.57	40.82	4.06	36.48	33.93	334	100	Peak	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11b CH 6 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4874.00	42.18	54.00	-11.82	37.98	5.92	33.48	35.20	Average	100	20	HORIZONTAL
2	4874.08	49.00	74.00	-25.00	44.80	5.92	33.48	35.20	Peak	100	20	HORIZONTAL
3	7310.69	49.52	74.00	-24.48	41.31	7.13	36.51	35.43	Peak	100	327	HORIZONTAL
4	7311.69	36.81	54.00	-17.19	28.60	7.13	36.51	35.43	Average	100	327	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4873.94	54.80	74.00	-19.20	50.60	5.92	33.48	35.20	Peak	194	4	VERTICAL
2	4874.00	51.90	54.00	-2.10	47.70	5.92	33.48	35.20	Average	194	4	VERTICAL
3	7308.53	50.18	74.00	-23.82	41.97	7.13	36.51	35.43	Peak	155	62	VERTICAL
4	7311.75	37.38	54.00	-16.62	29.17	7.13	36.51	35.43	Average	155	62	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11b CH 11 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Non-beamforming function

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	4923.90	47.39	74.00	-26.61	43.95	3.35	33.76	33.67	32	208	Peak	HORIZONTAL
2	4924.00	38.94	54.00	-15.06	35.50	3.35	33.76	33.67	32	208	Average	HORIZONTAL
3	7386.67	34.18	54.00	-19.82	27.34	4.06	36.85	34.07	346	100	Average	HORIZONTAL
4	7386.76	47.51	74.00	-26.49	40.67	4.06	36.85	34.07	346	100	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	4923.98	50.77	54.00	-3.23	47.33	3.35	33.76	33.67	4	179	Average	VERTICAL
2	4924.02	53.96	74.00	-20.04	50.52	3.35	33.76	33.67	4	179	Peak	VERTICAL
3	7394.56	47.03	74.00	-26.97	40.20	4.06	36.85	34.08	332	100	Peak	VERTICAL
4	7396.00	34.40	54.00	-19.60	27.57	4.06	36.85	34.08	332	100	Average	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11g CH 1 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Non-beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4824.06	32.88	54.00	-21.12	28.82	5.87	33.39	35.20	Average	226	310	HORIZONTAL
2	4824.87	45.93	74.00	-28.07	41.87	5.87	33.39	35.20	Peak	226	310	HORIZONTAL
3	7228.12	49.05	74.00	-24.95	40.99	7.08	36.37	35.39	Peak	191	290	HORIZONTAL
4	7241.22	36.64	54.00	-17.36	28.55	7.09	36.40	35.40	Average	191	290	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4825.99	39.59	54.00	-14.41	35.53	5.87	33.39	35.20	Average	204	10	VERTICAL
2	4827.01	53.08	74.00	-20.92	49.02	5.87	33.39	35.20	Peak	204	10	VERTICAL
3	7240.01	49.91	74.00	-24.09	41.82	7.09	36.40	35.40	Peak	193	294	VERTICAL
4	7242.03	36.76	54.00	-17.24	28.67	7.09	36.40	35.40	Average	193	294	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11g CH 6 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Non-beamforming function

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	4866.53	46.46	74.00	-27.54	42.31	5.90	33.45	35.20	Peak	137	29	HORIZONTAL
2	4875.22	34.80	54.00	-19.20	30.60	5.92	33.48	35.20	Average	137	29	HORIZONTAL
3	7309.40	50.45	74.00	-23.55	42.24	7.13	36.51	35.43	Peak	223	340	HORIZONTAL
4	7316.61	36.92	54.00	-17.08	28.70	7.14	36.51	35.43	Average	223	340	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	4876.02	44.81	54.00	-9.19	40.61	5.92	33.48	35.20	Average	192	16	VERTICAL
2	4876.89	57.70	74.00	-16.30	53.50	5.92	33.48	35.20	Peak	192	16	VERTICAL
3	7316.48	38.09	54.00	-15.91	29.87	7.14	36.51	35.43	Average	182	94	VERTICAL
4	7320.90	50.11	54.00	-3.89	41.89	7.14	36.51	35.43	Average	182	94	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11g CH 11 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Non-beamforming function

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	4930.41	33.45	54.00	-20.55	29.10	5.97	33.58	35.20	Average	172	104	HORIZONTAL
2	4930.99	46.43	74.00	-27.57	42.08	5.97	33.58	35.20	Peak	172	104	HORIZONTAL
3	7393.31	36.26	54.00	-17.74	27.91	7.17	36.64	35.46	Average	151	340	HORIZONTAL
4	7395.42	51.04	74.00	-22.96	42.69	7.17	36.64	35.46	Peak	151	340	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4924.96	36.19	54.00	-17.81	31.84	5.97	33.58	35.20	Average	178	348	VERTICAL
2	4926.24	49.20	74.00	-24.80	44.85	5.97	33.58	35.20	Peak	178	348	VERTICAL
3	7379.46	50.29	74.00	-23.71	41.97	7.16	36.61	35.45	Peak	188	42	VERTICAL
4	7389.62	37.26	54.00	-16.74	28.94	7.17	36.61	35.46	Average	188	42	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11a CH 149 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Non-beamforming function

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	11486.21	46.59	54.00	-7.41	32.93	9.24	39.50	35.08	Average	122	104	HORIZONTAL
2	11487.45	58.87	74.00	-15.13	45.21	9.24	39.50	35.08	Peak	122	104	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	11489.91	48.55	54.00	-5.45	34.89	9.24	39.50	35.08	Average	169	247	VERTICAL
2	11489.97	61.04	74.00	-12.96	47.38	9.24	39.50	35.08	Peak	169	247	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11a CH 157 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Non-beamforming function

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	11568.26	46.17	54.00	-7.83	32.53	9.26	39.47	35.09	Average	125	108	HORIZONTAL
2	11569.48	58.82	74.00	-15.18	45.18	9.26	39.47	35.09	Peak	125	108	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	11566.41	48.61	54.00	-5.39	34.96	9.26	39.48	35.09	Average	147	238	VERTICAL
2	11575.62	61.98	74.00	-12.02	48.33	9.26	39.47	35.08	Peak	147	238	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11a CH 165 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Non-beamforming function

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	11649.59	57.92	74.00	-16.08	44.27	9.28	39.44	35.07	Peak	151	254	HORIZONTAL
2	11649.83	45.02	54.00	-8.98	31.37	9.28	39.44	35.07	Average	151	254	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	11647.34	47.14	54.00	-6.86	33.49	9.28	39.44	35.07	Average	150	280	VERTICAL
2	11647.39	59.66	74.00	-14.34	46.01	9.28	39.44	35.07	Peak	150	280	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 1 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 24, 2014	Test Function	Beamforming function

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	4837.46	45.87	74.00	-28.13	41.77	5.88	33.42	35.20	Peak	145	232	HORIZONTAL
2	4838.11	33.23	54.00	-20.77	29.13	5.88	33.42	35.20	Average	145	232	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	4824.07	38.01	54.00	-15.99	33.95	5.87	33.39	35.20	Average	204	1	VERTICAL
2	4827.91	50.26	74.00	-23.74	46.20	5.87	33.39	35.20	Peak	204	1	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 6 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 24, 2014	Test Function	Beamforming function

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4871.28	33.89	54.00	-20.11	29.69	5.92	33.48	35.20	Average	132	341	HORIZONTAL
2	4886.21	46.38	74.00	-27.62	42.17	5.93	33.48	35.20	Peak	132	341	HORIZONTAL
3	7293.75	37.28	54.00	-16.72	29.10	7.12	36.48	35.42	Average	151	246	HORIZONTAL
4	7324.95	50.28	74.00	-23.72	42.04	7.14	36.53	35.43	Peak	151	246	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4875.51	42.34	54.00	-11.66	38.14	5.92	33.48	35.20	Average	175	340	VERTICAL
2	4876.49	55.24	74.00	-18.76	51.04	5.92	33.48	35.20	Peak	175	340	VERTICAL
3	7292.65	49.85	74.00	-24.15	41.67	7.12	36.48	35.42	Peak	158	280	VERTICAL
4	7299.83	37.28	54.00	-16.72	29.09	7.13	36.48	35.42	Average	158	280	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 11 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 24, 2014	Test Function	Beamforming function

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	4922.84	48.31	74.00	-25.69	43.96	5.97	33.58	35.20	Peak	168	27	HORIZONTAL
2	4923.25	36.42	54.00	-17.58	32.07	5.97	33.58	35.20	Average	168	27	HORIZONTAL
3	7381.49	51.12	74.00	-22.88	42.80	7.16	36.61	35.45	Peak	166	4	HORIZONTAL
4	7386.46	37.73	54.00	-16.27	29.41	7.17	36.61	35.46	Average	166	4	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4924.26	48.05	74.00	-25.95	43.70	5.97	33.58	35.20	Peak	107	25	VERTICAL
2	4925.74	35.04	54.00	-18.96	30.69	5.97	33.58	35.20	Average	107	25	VERTICAL
3	7391.07	50.71	74.00	-23.29	42.39	7.17	36.61	35.46	Peak	150	50	VERTICAL
4	7392.69	37.59	54.00	-16.41	29.24	7.17	36.64	35.46	Average	150	50	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 3 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 24, 2014	Test Function	Beamforming function

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	4836.82	33.37	54.00	-20.63	29.27	5.88	33.42	35.20	Average	140	265	HORIZONTAL
2	4840.30	46.04	74.00	-27.96	41.94	5.88	33.42	35.20	Peak	140	265	HORIZONTAL
3	7273.41	49.65	74.00	-24.35	41.50	7.11	36.45	35.41	Peak	156	202	HORIZONTAL
4	7285.62	37.21	74.00	-36.79	29.06	7.12	36.45	35.42	Peak	156	202	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	4828.66	46.27	74.00	-27.73	42.21	5.87	33.39	35.20	Peak	115	310	VERTICAL
2	4848.69	34.02	54.00	-19.98	29.92	5.88	33.42	35.20	Average	115	310	VERTICAL
3	7274.28	49.69	74.00	-24.31	41.54	7.11	36.45	35.41	Peak	134	299	VERTICAL
4	7285.16	37.35	54.00	-16.65	29.20	7.12	36.45	35.42	Average	134	299	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 6 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 24, 2014	Test Function	Beamforming function

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	4870.59	46.13	74.00	-27.87	41.96	5.92	33.45	35.20	Peak	143	56	HORIZONTAL
2	4886.97	33.46	54.00	-20.54	29.25	5.93	33.48	35.20	Average	143	56	HORIZONTAL
3	7313.08	50.43	74.00	-23.57	42.22	7.13	36.51	35.43	Peak	165	133	HORIZONTAL
4	7329.47	37.42	54.00	-16.58	29.18	7.14	36.53	35.43	Average	165	133	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	4878.17	46.66	74.00	-27.34	42.46	5.92	33.48	35.20	Peak	126	146	VERTICAL
2	4889.05	33.50	54.00	-20.50	29.26	5.93	33.51	35.20	Average	8960	146	VERTICAL
3	7294.56	37.42	54.00	-16.58	29.24	7.12	36.48	35.42	Average	139	84	VERTICAL
4	7312.74	50.16	74.00	-23.84	41.95	7.13	36.51	35.43	Peak	139	84	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 9 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 24, 2014	Test Function	Beamforming function

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	4886.69	33.53	54.00	-20.47	29.32	5.93	33.48	35.20	Average	160	149	HORIZONTAL
2	4893.99	46.42	74.00	-27.58	42.18	5.93	33.51	35.20	Peak	160	149	HORIZONTAL
3	7345.23	50.41	74.00	-23.59	42.14	7.15	36.56	35.44	Peak	147	196	HORIZONTAL
4	7347.72	37.67	54.00	-16.33	29.40	7.15	36.56	35.44	Average	147	196	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	4887.68	46.11	74.00	-27.89	41.90	5.93	33.48	35.20	Peak	212	54	VERTICAL
2	4890.51	33.85	54.00	-20.15	29.61	5.93	33.51	35.20	Average	212	54	VERTICAL
3	7341.70	37.70	54.00	-16.30	29.43	7.15	36.56	35.44	Average	157	128	VERTICAL
4	7344.77	50.26	74.00	-23.74	41.99	7.15	36.56	35.44	Peak	157	128	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 149 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 24, 2014	Test Function	Beamforming function

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	11476.93	45.11	54.00	-8.89	31.46	9.23	39.50	35.08	Average	116	109	HORIZONTAL
2	11476.93	58.35	74.00	-15.65	44.70	9.23	39.50	35.08	Peak	116	109	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	11489.13	62.01	74.00	-11.99	48.35	9.24	39.50	35.08	Peak	183	173	VERTICAL
2	11490.04	47.99	54.00	-6.01	34.33	9.24	39.50	35.08	Average	183	173	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 157 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 24, 2014	Test Function	Beamforming function

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	11559.87	43.95	54.00	-10.05	30.30	9.26	39.48	35.09	Average	112	256	HORIZONTAL
2	11559.99	56.84	74.00	-17.16	43.19	9.26	39.48	35.09	Peak	112	256	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	11569.25	61.15	74.00	-12.85	47.51	9.26	39.47	35.09	Peak	137	271	VERTICAL
2	11570.00	46.82	54.00	-7.18	33.18	9.26	39.47	35.09	Average	137	271	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 165 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 24, 2014	Test Function	Beamforming function

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	11638.75	57.02	74.00	-16.98	43.37	9.28	39.44	35.07	Peak	113	105	HORIZONTAL
2	11643.01	43.93	54.00	-10.07	30.28	9.28	39.44	35.07	Average	113	105	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	11643.71	45.23	54.00	-8.77	31.58	9.28	39.44	35.07	Average	131	271	VERTICAL
2	11644.96	58.98	74.00	-15.02	45.33	9.28	39.44	35.07	Peak	131	271	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 151 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 24, 2014	Test Function	Beamforming function

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	11495.18	43.90	54.00	-10.10	30.24	9.24	39.50	35.08	Average	134	121	HORIZONTAL
2	11522.79	56.21	74.00	-17.79	42.56	9.25	39.49	35.09	Peak	134	121	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	11508.38	58.57	74.00	-15.43	44.92	9.25	39.50	35.10	Peak	155	272	VERTICAL
2	11509.54	45.40	54.00	-8.60	31.75	9.25	39.50	35.10	Average	155	272	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 159 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 24, 2014	Test Function	Beamforming function

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	11582.07	43.82	54.00	-10.18	30.17	9.26	39.47	35.08	Average	139	106	HORIZONTAL
2	11583.92	57.28	74.00	-16.72	43.62	9.27	39.47	35.08	Peak	139	106	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	11588.44	44.74	54.00	-9.26	31.08	9.27	39.47	35.08	Average	140	278	VERTICAL
2	11589.42	58.21	74.00	-15.79	44.55	9.27	39.47	35.08	Peak	140	278	VERTICAL

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT80 CH 155 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 24, 2014	Test Function	Beamforming function

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	11550.41	42.24	54.00	-11.76	28.59	9.26	39.48	35.09	Average	144	101	HORIZONTAL
2	11561.58	57.63	74.00	-16.37	43.98	9.26	39.48	35.09	Peak	144	101	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	11543.98	43.24	54.00	-10.76	29.58	9.26	39.49	35.09	Average	138	281	VERTICAL
2	11547.86	57.27	74.00	-16.73	43.61	9.26	39.49	35.09	Peak	138	281	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.

4.4. Emissions Measurement

4.4.1. 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

4.4.2. Measuring Instruments and Setting

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

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	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

4.4.3. Test Procedures

For Radiated band edges Measurement:

1. The test procedure is the same as section 4.3.3, only the frequency range investigated is limited to 100MHz around band edges.

For Radiated Out of Band Emission Measurement:

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

4.4.4. Test Setup Layout

For Radiated band edges Measurement:

This test setup layout is the same as that shown in section 4.3.4.

For Radiated Out of Band Emission Measurement:

This test setup layout is the same as that shown in section 4.3.4.

4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

For non-beamforming function:

The EUT was programmed to be in continuously transmitting mode.

For beamforming function:

The EUT was programmed to be in beamforming transmitting mode.

4.4.7. Test Result of Band Edge and Fundamental Emissions

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Non-beamforming function

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2389.36	70.75	74.00	-3.25	38.61	4.09	28.05	0.00	Peak	191	2	VERTICAL
2	2390.00	52.59	54.00	-1.41	20.45	4.09	28.05	0.00	Average	191	2	VERTICAL
3	2404.79	106.98			74.78	4.11	28.09	0.00	Average	191	2	VERTICAL
4	2414.40	118.75			86.55	4.11	28.09	0.00	Peak	191	2	VERTICAL

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

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2389.56	70.15	74.00	-3.85	38.01	4.09	28.05	0.00	Peak	214	176	VERTICAL
2	2390.00	50.63	54.00	-3.37	18.49	4.09	28.05	0.00	Average	214	176	VERTICAL
3	2429.63	122.94			90.69	4.12	28.13	0.00	Peak	214	176	VERTICAL
4	2444.69	111.63			79.32	4.13	28.18	0.00	Average	214	176	VERTICAL
5	2483.82	69.48	74.00	-4.52	37.06	4.16	28.26	0.00	Peak	214	176	VERTICAL
6	2485.42	52.76	54.00	-1.24	20.30	4.16	28.30	0.00	Average	214	176	VERTICAL

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

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2454.47	107.26			74.90	4.14	28.22	0.00	Average	230	358	VERTICAL
2	2454.63	119.76			87.40	4.14	28.22	0.00	Peak	230	358	VERTICAL
3	2484.30	52.02	54.00	-1.98	19.60	4.16	28.26	0.00	Average	230	358	VERTICAL
4	2485.10	72.89	74.00	-1.11	40.43	4.16	28.30	0.00	Peak	230	358	VERTICAL

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

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 3, 6, 9 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Non-beamforming function

Channel 3

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2384.50	66.20	74.00	-7.80	34.07	4.08	28.05	0.00	Peak	193	358	VERTICAL
2	2389.68	52.81	54.00	-1.19	20.67	4.09	28.05	0.00	Average	193	358	VERTICAL
3	2433.54	114.92			82.67	4.12	28.13	0.00	Peak	193	358	VERTICAL
4	2434.82	101.74			69.44	4.12	28.18	0.00	Average	193	358	VERTICAL

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

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2389.68	70.30	74.00	-3.70	38.16	4.09	28.05	0.00	Peak	212	2	VERTICAL
2	2390.00	51.67	54.00	-2.33	19.53	4.09	28.05	0.00	Average	212	2	VERTICAL
3	2444.69	104.80			72.49	4.13	28.18	0.00	Average	212	2	VERTICAL
4	2448.22	117.54			85.23	4.13	28.18	0.00	Peak	212	2	VERTICAL
5	2483.82	71.37	74.00	-2.63	38.95	4.16	28.26	0.00	Peak	212	2	VERTICAL
6	2485.42	52.16	54.00	-1.84	19.70	4.16	28.30	0.00	Average	212	2	VERTICAL

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

Channel 9

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2454.89	103.16			70.80	4.14	28.22	0.00	Average	232	360	VERTICAL
2	2454.89	114.43			82.07	4.14	28.22	0.00	Peak	232	360	VERTICAL
3	2484.69	52.99	54.00	-1.01	20.57	4.16	28.26	0.00	Average	232	360	VERTICAL
4	2484.69	71.09	74.00	-2.91	38.67	4.16	28.26	0.00	Peak	232	360	VERTICAL

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

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11b CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Non-beamforming function

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	2387.20	48.38	54.00	-5.62	17.68	2.21	28.49	0.00	191	209	Average	VERTICAL
2	2388.00	59.57	74.00	-14.43	28.87	2.21	28.49	0.00	191	209	Peak	VERTICAL
3	2413.60	118.60			87.85	2.22	28.53	0.00	191	209	Peak	VERTICAL
4	2413.80	113.00			82.25	2.22	28.53	0.00	191	209	Average	VERTICAL

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

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2389.52	59.98	74.00	-14.02	27.84	4.09	28.05	0.00	Peak	200	354	VERTICAL
2	2390.00	49.21	54.00	-4.79	17.07	4.09	28.05	0.00	Average	200	354	VERTICAL
3	2435.24	117.21			84.91	4.12	28.18	0.00	Average	200	354	VERTICAL
4	2436.04	120.60			88.30	4.12	28.18	0.00	Peak	200	354	VERTICAL
5	2483.50	50.80	54.00	-3.20	18.38	4.16	28.26	0.00	Average	200	354	VERTICAL
6	2483.98	62.81	74.00	-11.19	30.39	4.16	28.26	0.00	Peak	200	354	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	2460.20	112.50			81.63	2.24	28.63	0.00	190	198	Average	VERTICAL
2	2460.60	118.12			87.25	2.24	28.63	0.00	190	198	Peak	VERTICAL
3	2483.50	50.79	54.00	-3.21	19.86	2.26	28.67	0.00	190	198	Average	VERTICAL
4	2485.10	62.35	74.00	-11.65	31.42	2.26	28.67	0.00	190	198	Peak	VERTICAL

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

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11g CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Non-beamforming function

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2387.00	72.38	74.00	-1.62	40.24	4.09	28.05	0.00	Peak	216	2	VERTICAL
2	2389.89	51.71	54.00	-2.29	19.57	4.09	28.05	0.00	Average	216	2	VERTICAL
3	2413.60	110.72			78.52	4.11	28.09	0.00	Average	216	2	VERTICAL
4	2414.08	121.25			89.05	4.11	28.09	0.00	Peak	216	2	VERTICAL

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

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2388.60	51.45	54.00	-2.55	19.31	4.09	28.05	0.00	Average	201	357	VERTICAL
2	2389.24	69.28	74.00	-4.72	37.14	4.09	28.05	0.00	Peak	201	357	VERTICAL
3	2438.60	115.44			83.13	4.13	28.18	0.00	Average	201	357	VERTICAL
4	2439.24	125.96			93.65	4.13	28.18	0.00	Peak	201	357	VERTICAL
5	2483.80	52.82	54.00	-1.18	20.40	4.16	28.26	0.00	Average	201	357	VERTICAL
6	2488.92	70.87	74.00	-3.13	38.40	4.17	28.30	0.00	Peak	201	357	VERTICAL

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

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2454.47	108.93			76.57	4.14	28.22	0.00	Average	213	6	VERTICAL
2	2464.08	119.40			87.04	4.14	28.22	0.00	Peak	213	6	VERTICAL
3	2483.50	51.59	54.00	-2.41	19.17	4.16	28.26	0.00	Average	213	6	VERTICAL
4	2483.82	72.76	74.00	-1.24	40.34	4.16	28.26	0.00	Peak	213	6	VERTICAL

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

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT20 CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Beamforming function

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2388.12	71.01	74.00	-2.99	38.87	4.09	28.05	0.00	Peak	217	0	VERTICAL
2	2390.00	49.20	54.00	-4.80	17.06	4.09	28.05	0.00	Average	217	0	VERTICAL
3	2413.01	120.46			88.26	4.11	28.09	0.00	Peak	217	0	VERTICAL
4	2413.16	107.38			75.18	4.11	28.09	0.00	Average	217	0	VERTICAL

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

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2389.55	61.67	74.00	-12.33	29.53	4.09	28.05	0.00	Peak	100	181	VERTICAL
2	2390.00	45.96	54.00	-8.04	13.82	4.09	28.05	0.00	Average	100	181	VERTICAL
3	2444.24	119.60			87.29	4.13	28.18	0.00	Peak	100	181	VERTICAL
4	2445.10	106.78			74.47	4.13	28.18	0.00	Average	100	181	VERTICAL
5	2484.66	47.69	54.00	-6.31	15.27	4.16	28.26	0.00	Average	100	181	VERTICAL
6	2484.66	65.39	74.00	-8.61	32.97	4.16	28.26	0.00	Peak	100	181	VERTICAL

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

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2463.59	108.39			76.03	4.14	28.22	0.00	Average	211	0	VERTICAL
2	2467.79	120.70			88.34	4.14	28.22	0.00	Peak	211	0	VERTICAL
3	2483.79	51.35	54.00	-2.65	18.93	4.16	28.26	0.00	Average	211	0	VERTICAL
4	2484.66	72.73	74.00	-1.27	40.31	4.16	28.26	0.00	Peak	211	0	VERTICAL

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

Temperature	26°C	Humidity	68%
Test Engineer	Lucas Huang	Configurations	IEEE 802.11ac MCS0/Nss1 VHT40 CH 3, 6, 9 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 22, 2014	Test Function	Beamforming function

Channel 3

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2389.71	66.10	74.00	-7.90	33.96	4.09	28.05	0.00	Peak	226	284	VERTICAL
2	2390.00	49.46	54.00	-4.54	17.32	4.09	28.05	0.00	Average	226	284	VERTICAL
3	2425.18	98.77			66.52	4.12	28.13	0.00	Average	226	284	VERTICAL
4	2427.21	112.59			80.34	4.12	28.13	0.00	Peak	226	284	VERTICAL

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

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2379.58	66.84	74.00	-7.16	34.75	4.08	28.01	0.00	Peak	236	4	VERTICAL
2	2389.42	49.01	54.00	-4.99	16.87	4.09	28.05	0.00	Average	236	4	VERTICAL
3	2439.32	103.95			71.64	4.13	28.18	0.00	Average	236	4	VERTICAL
4	2443.08	118.26			85.95	4.13	28.18	0.00	Peak	236	4	VERTICAL
5	2483.79	66.73	74.00	-7.27	34.31	4.16	28.26	0.00	Peak	236	4	VERTICAL
6	2484.08	49.66	54.00	-4.34	17.24	4.16	28.26	0.00	Average	236	4	VERTICAL

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

Channel 9

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2387.11	46.01	54.00	-7.99	13.87	4.09	28.05	0.00	Average	218	359	VERTICAL
2	2389.71	58.79	74.00	-15.21	26.65	4.09	28.05	0.00	Peak	218	359	VERTICAL
3	2448.82	102.02			69.71	4.13	28.18	0.00	Average	218	359	VERTICAL
4	2450.26	116.04			83.73	4.13	28.18	0.00	Peak	218	359	VERTICAL
5	2483.50	51.34	54.00	-2.66	18.92	4.16	28.26	0.00	Average	218	359	VERTICAL
6	2484.66	70.69	74.00	-3.31	38.27	4.16	28.26	0.00	Peak	218	359	VERTICAL

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

Note:

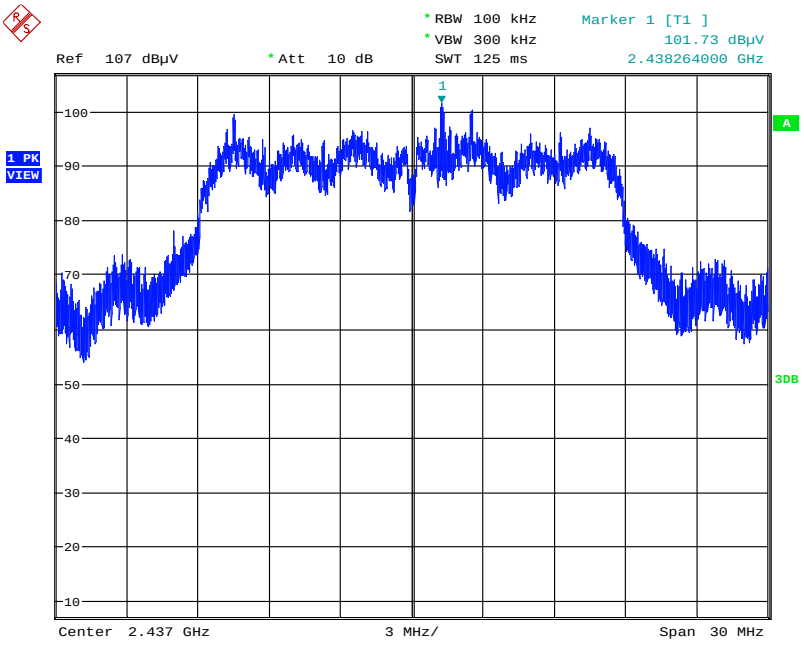
Emission level (dBuV/m) = 20 log Emission level (uV/m).

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

For Emission not in Restricted Band

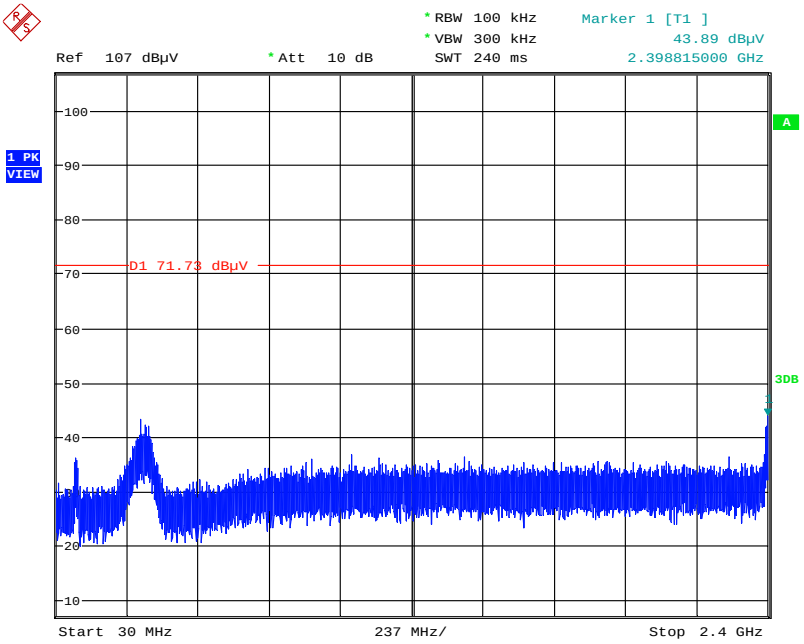
For non-beamforming function:

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



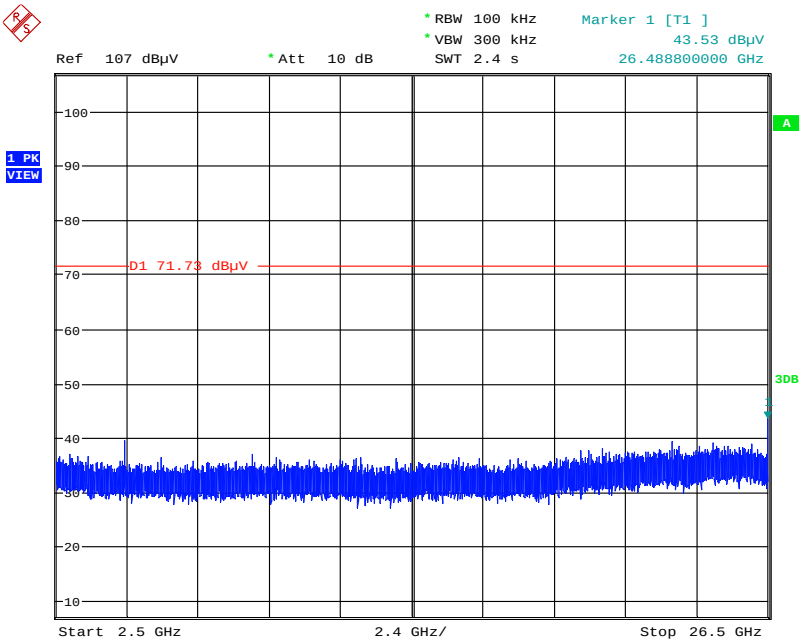
Date: 22.NOV.2014 00:53:11

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



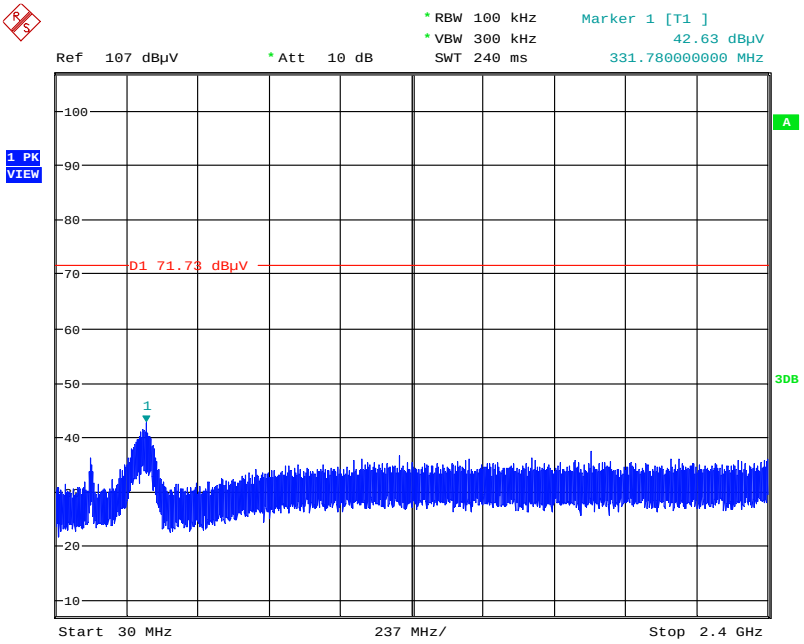
Date: 22.NOV.2014 00:54:02

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



Date: 22.NOV.2014 00:54:28

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



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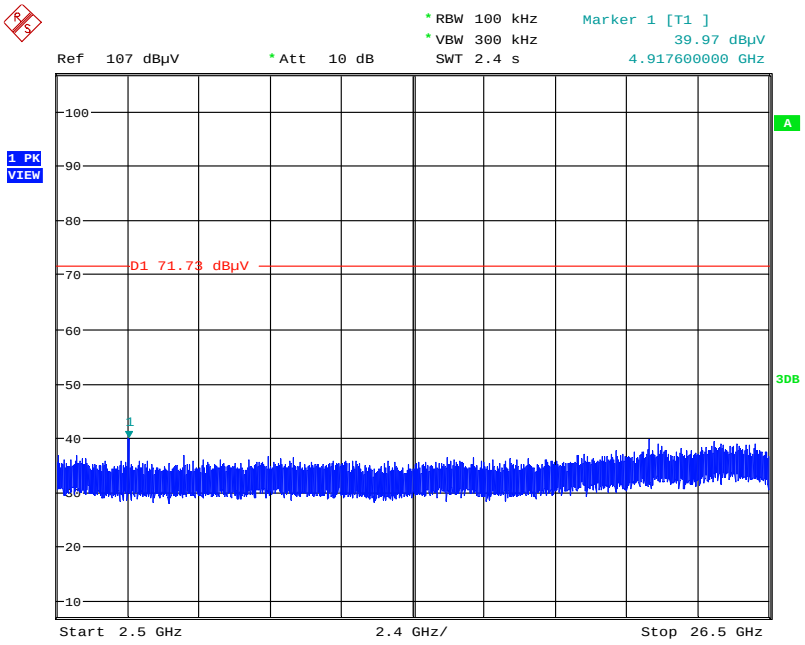
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 11 / 2500MHz~26500MHz (down 30dBc)



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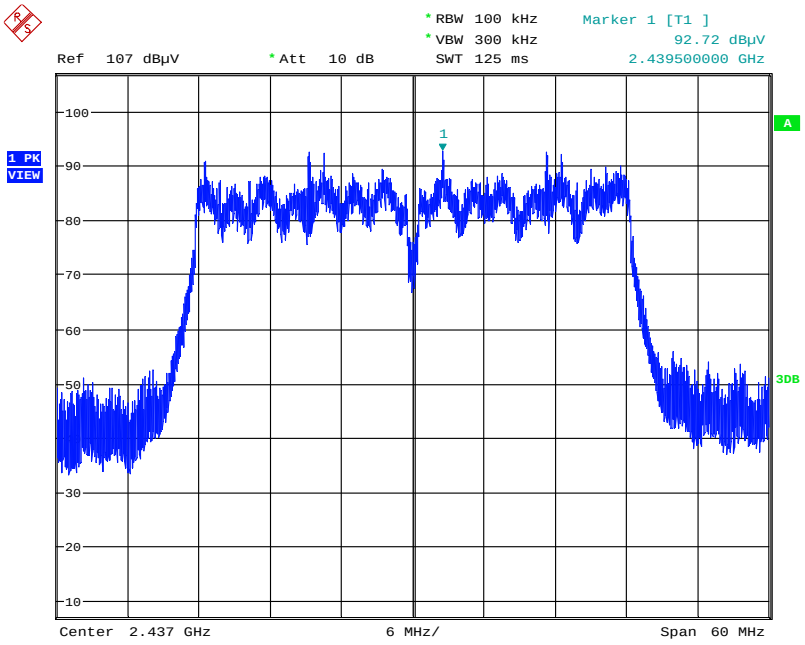
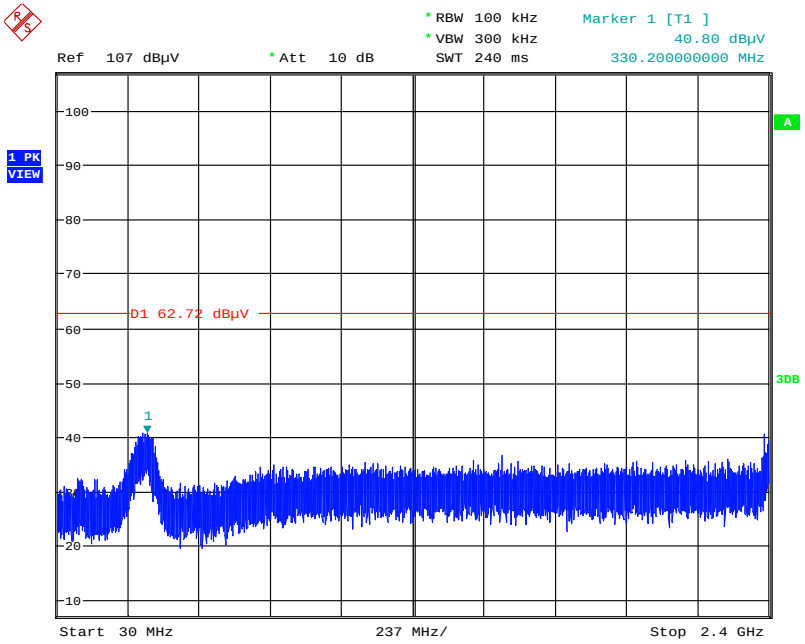
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT40 / Reference Level



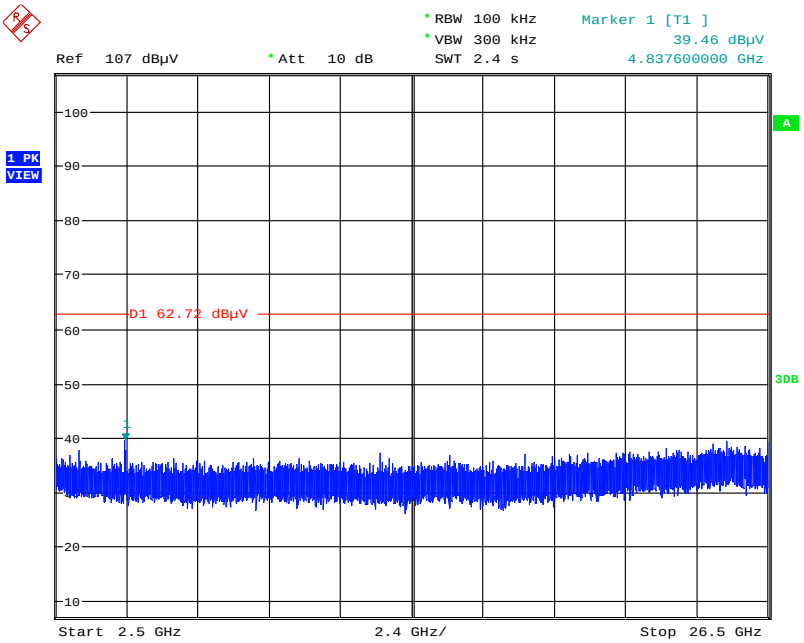
Date: 22.NOV.2014 00:56:27

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



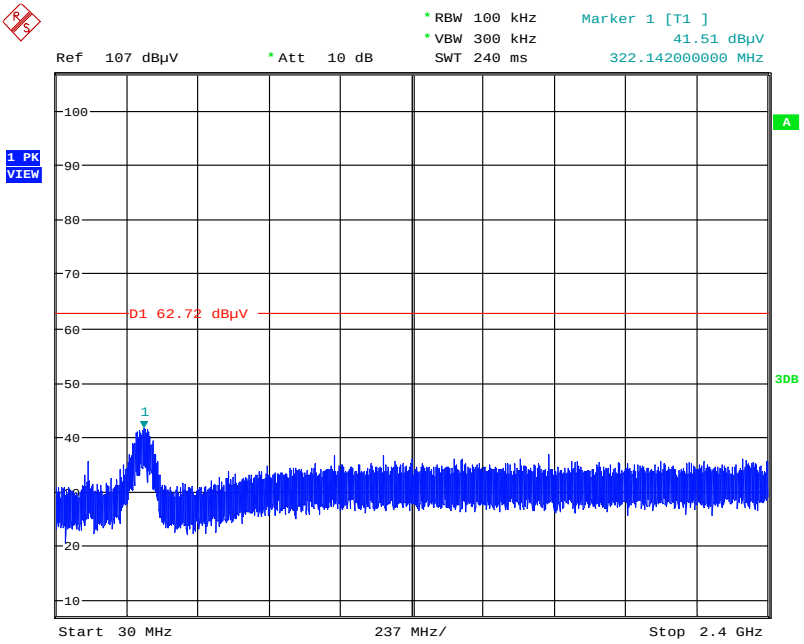
Date: 22.NOV.2014 00:57:20

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



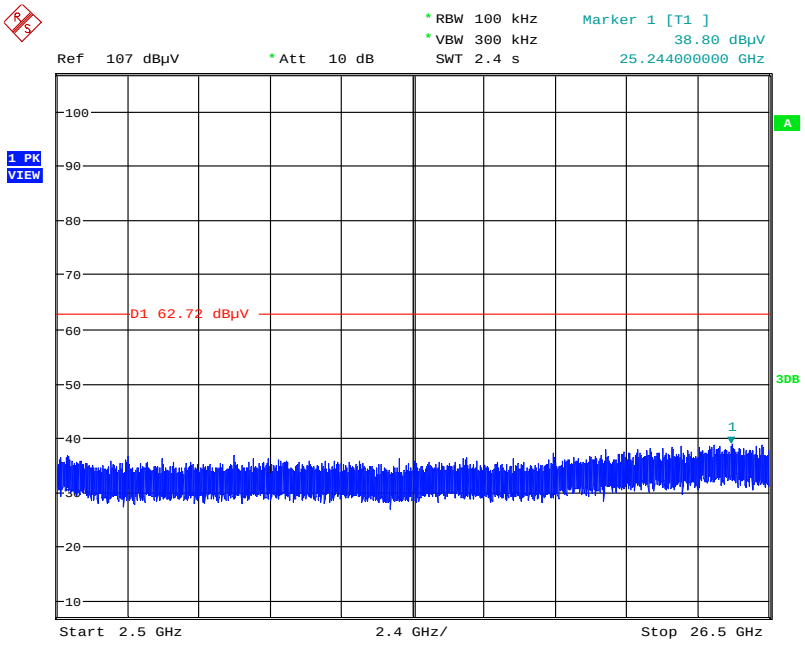
Date: 22.NOV.2014 00:57:42

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



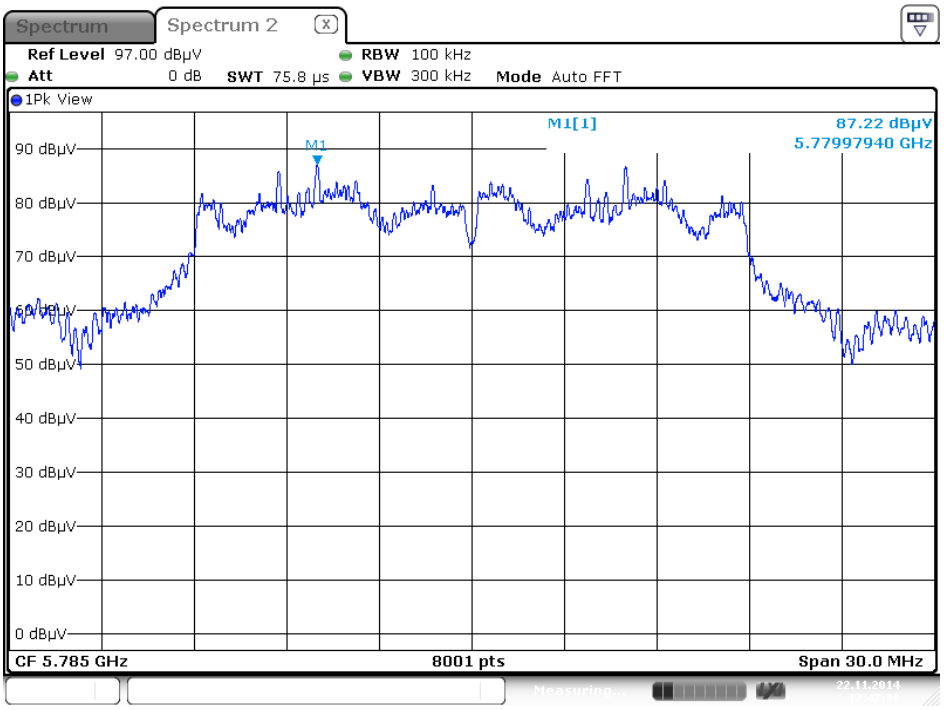
Date: 22.NOV.2014 00:58:35

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



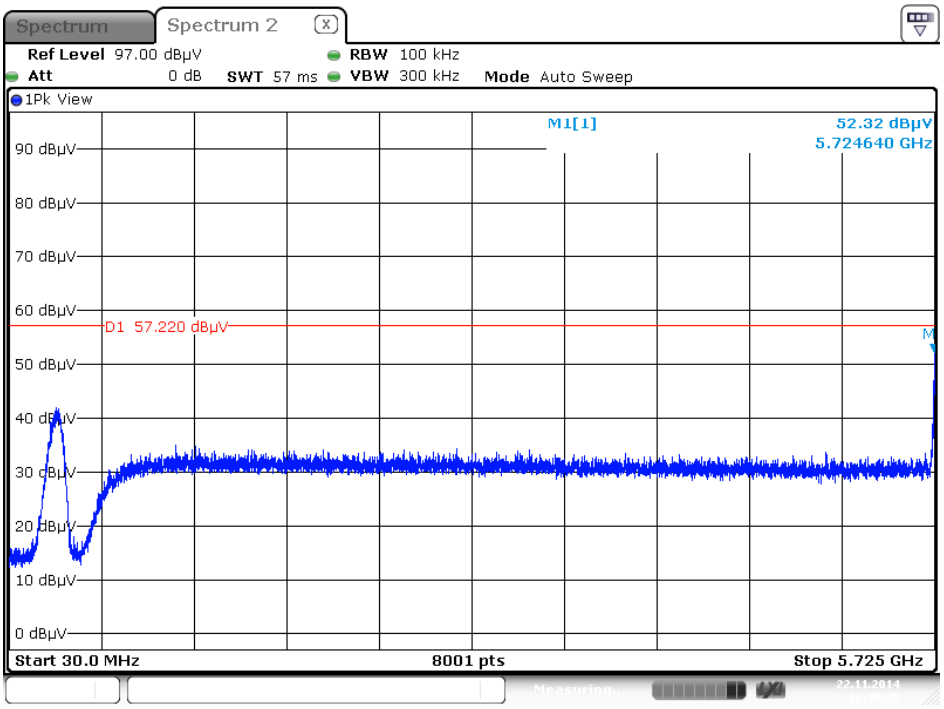
Date: 22.NOV.2014 00:58:08

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



Date: 22.NOV.2014 12:47:38

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



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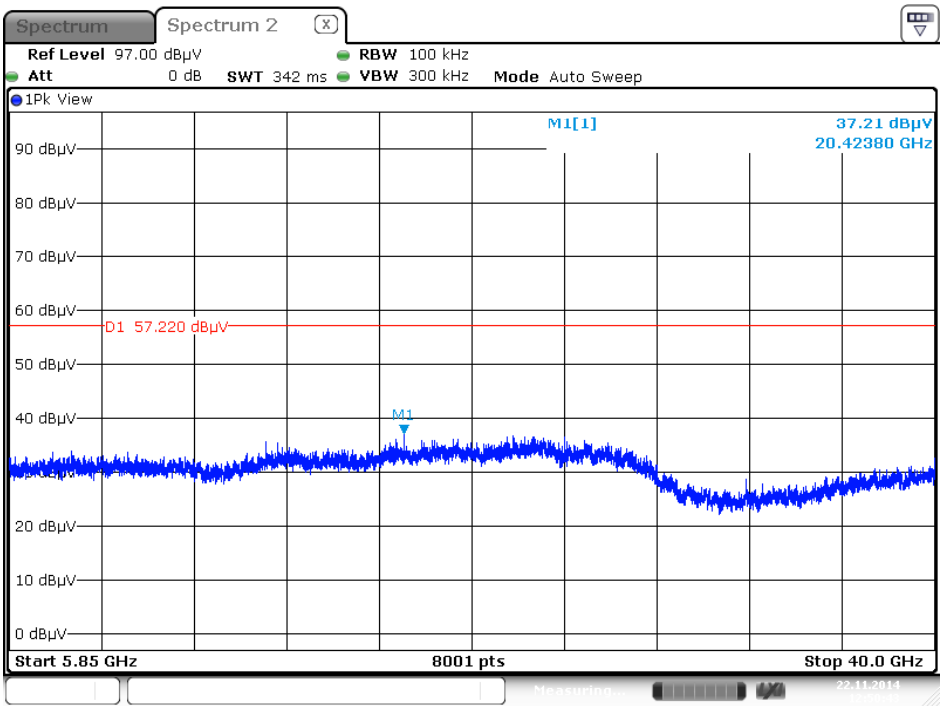
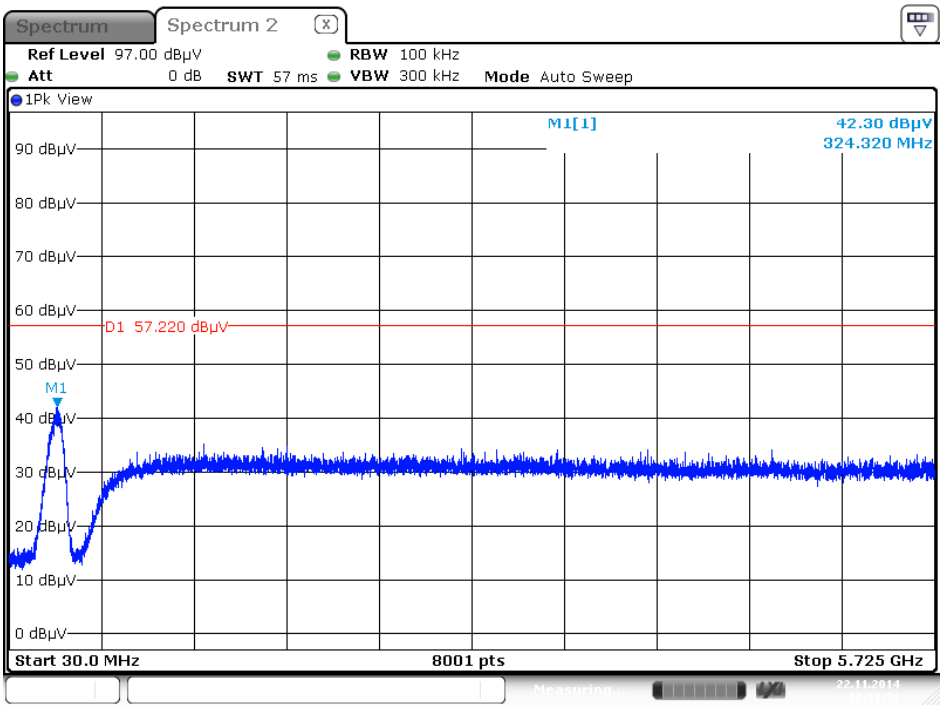
Plot on Configuration IEEE 802.11ac MCS0/Nss1 VHT20 / CH 149 / 5850MHz~40000MHz (down 30dBc)



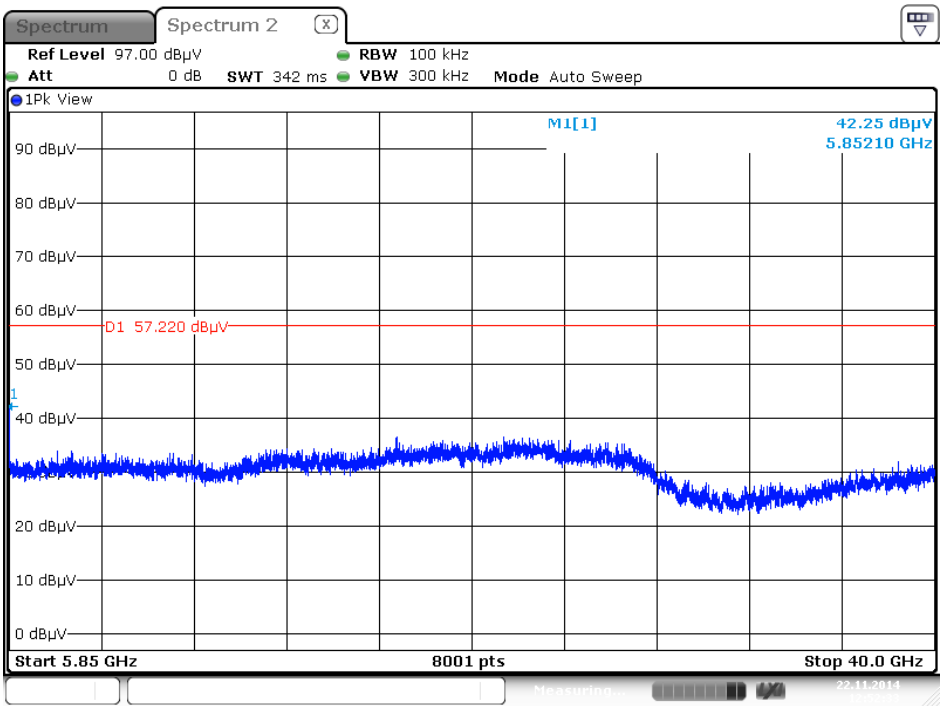
Date: 22.NOV.2014 12:50:43

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



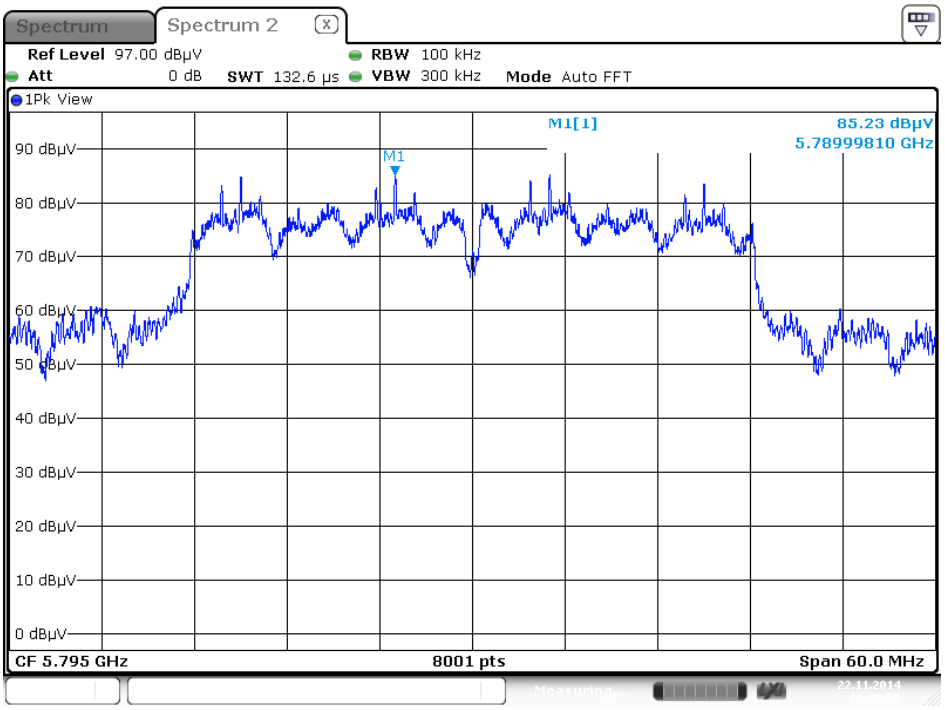
Date: 22.NOV.2014 12:51:51

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



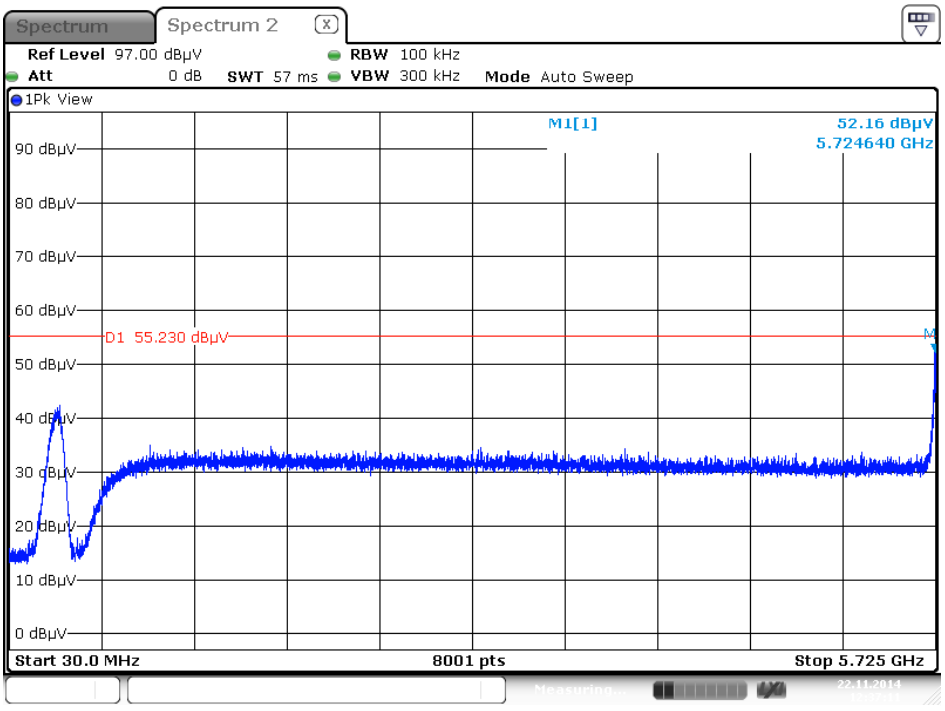
Date: 22.NOV.2014 12:52:33

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



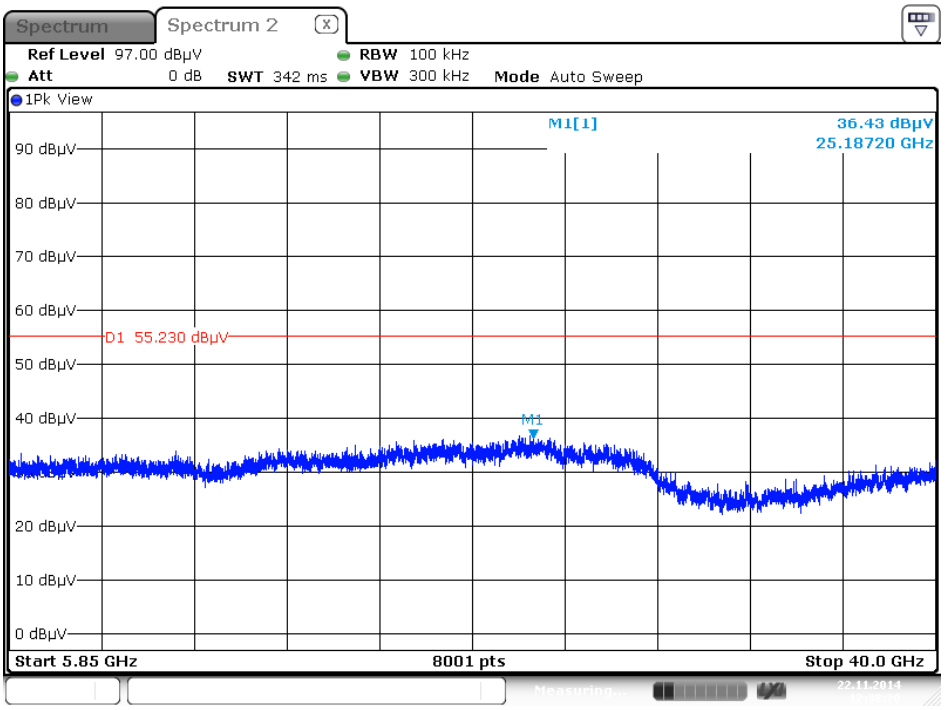
Date: 22.NOV.2014 12:31:00

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



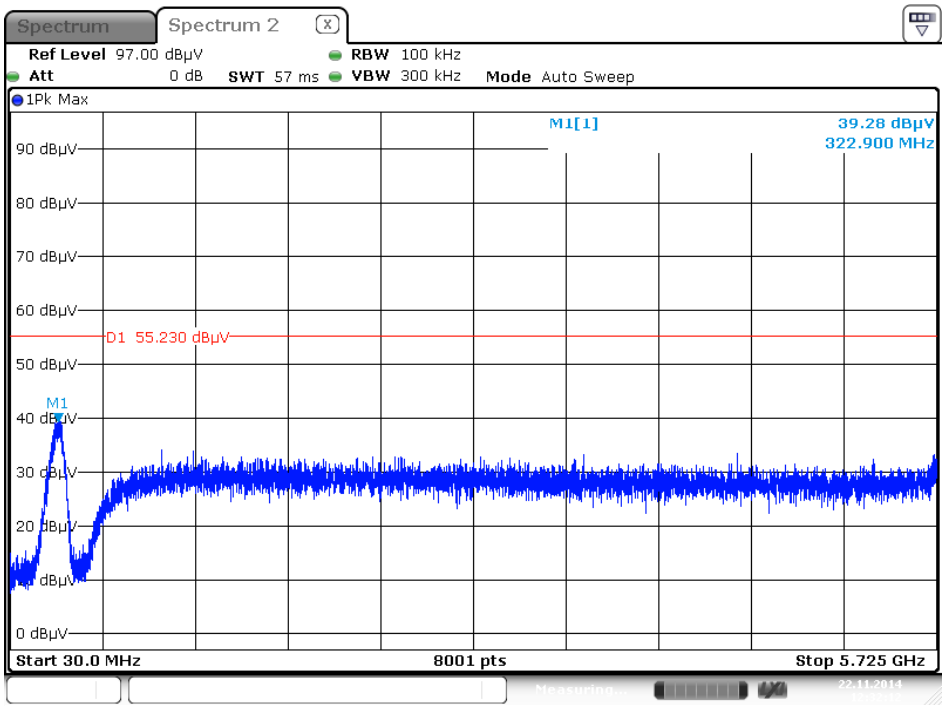
Date: 22.NOV.2014 12:37:11

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



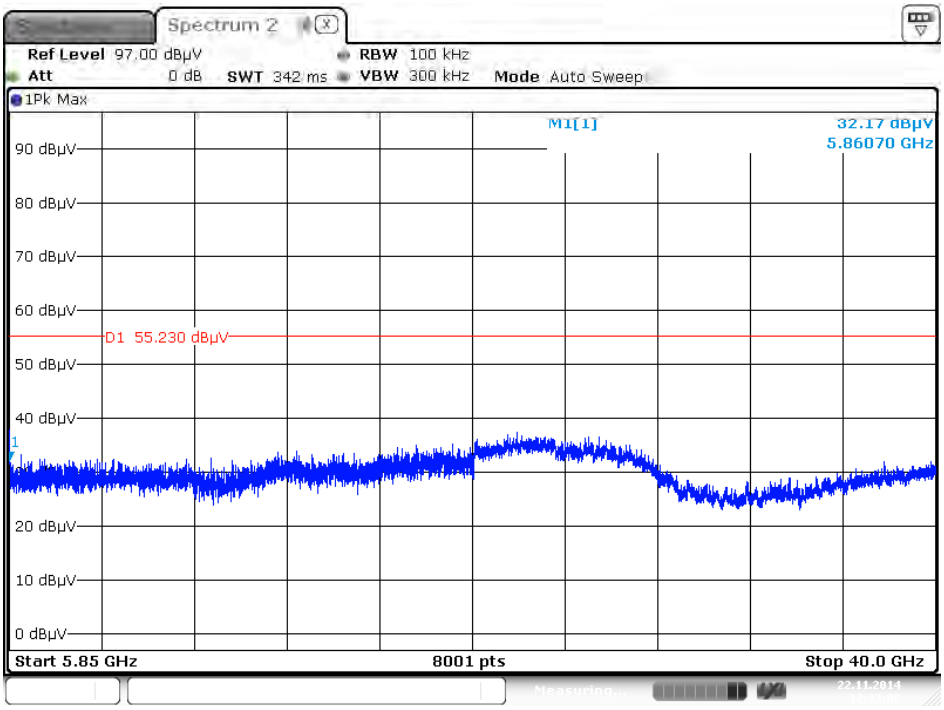
Date: 22.NOV.2014 12:38:21

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



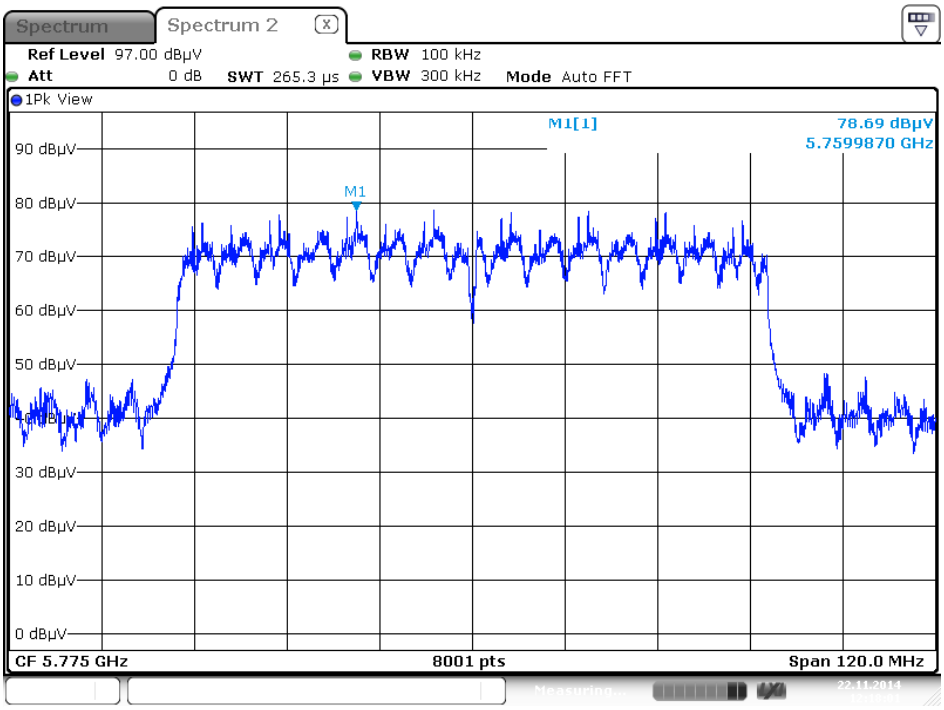
Date: 22.NOV.2014 12:32:12

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



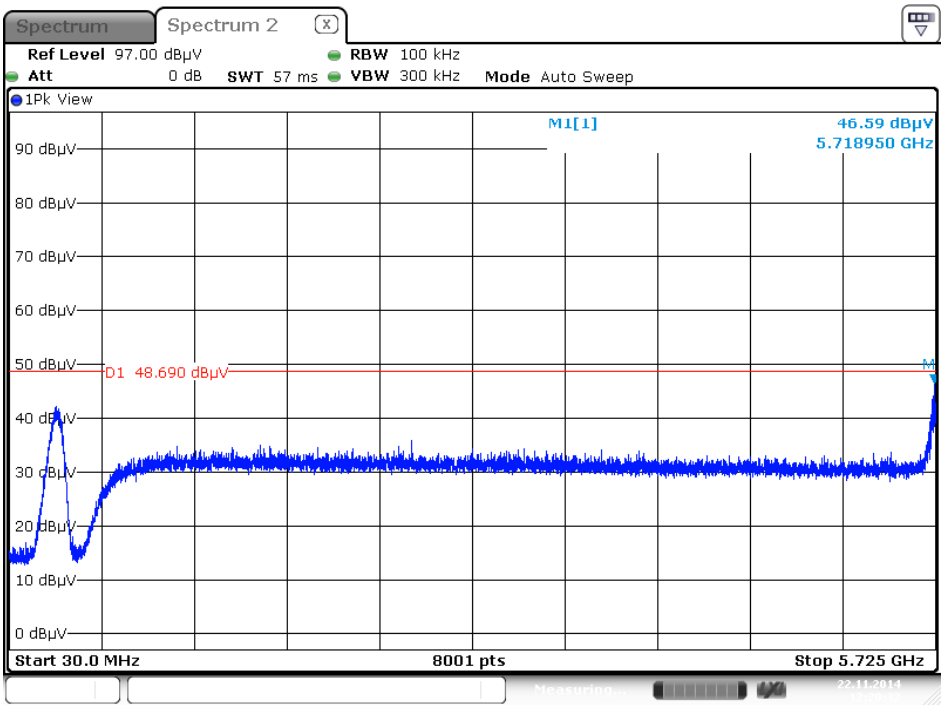
Date: 22.NOV.2014 12:33:08

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



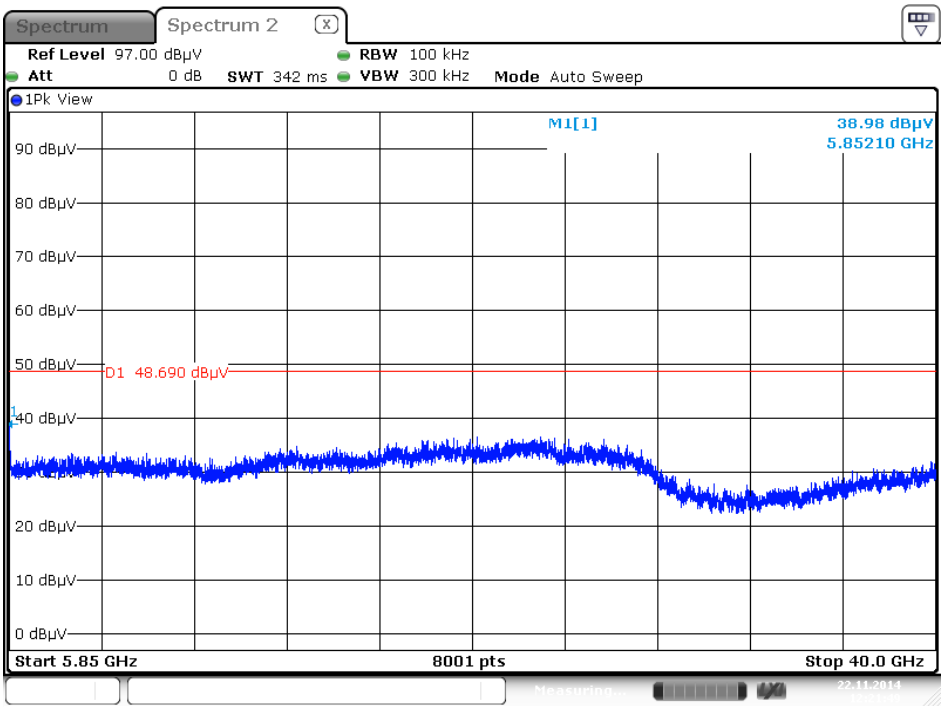
Date: 22.NOV.2014 12:18:01

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



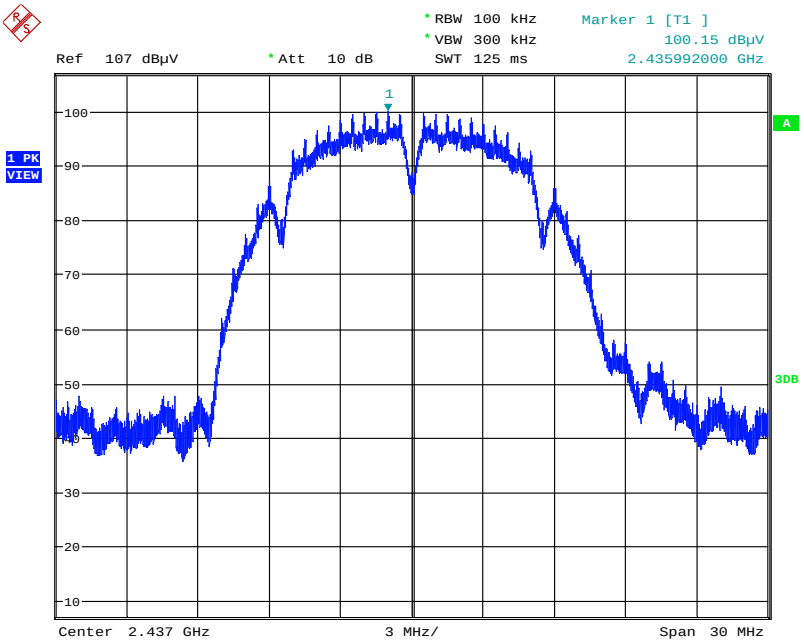
Date: 22.NOV.2014 12:20:32

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



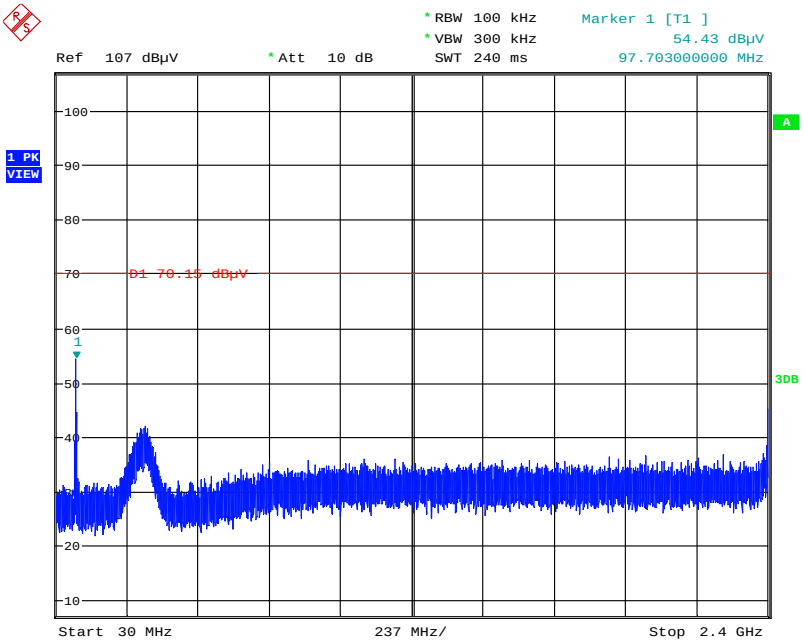
Date: 22.NOV.2014 12:21:49

Plot on Configuration IEEE 802.11b / Reference Level



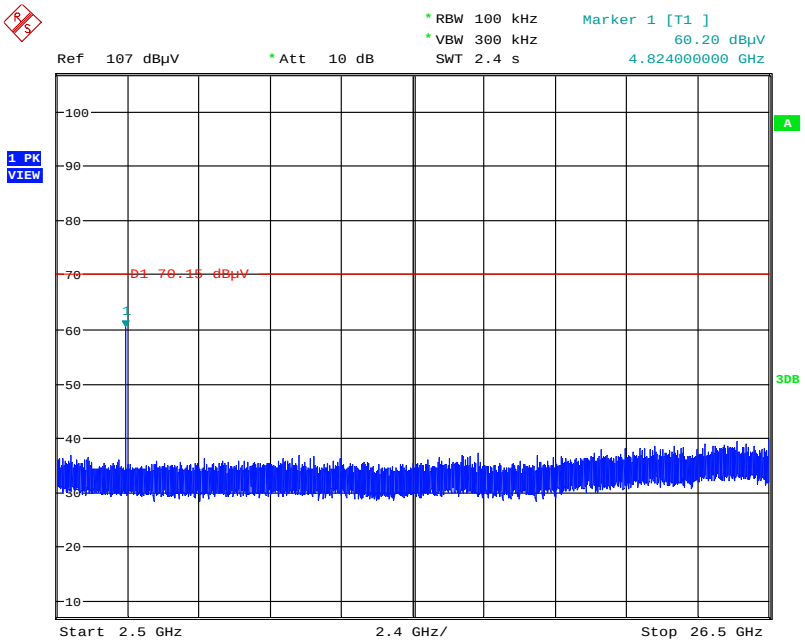
Date: 22.NOV.2014 00:44:28

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



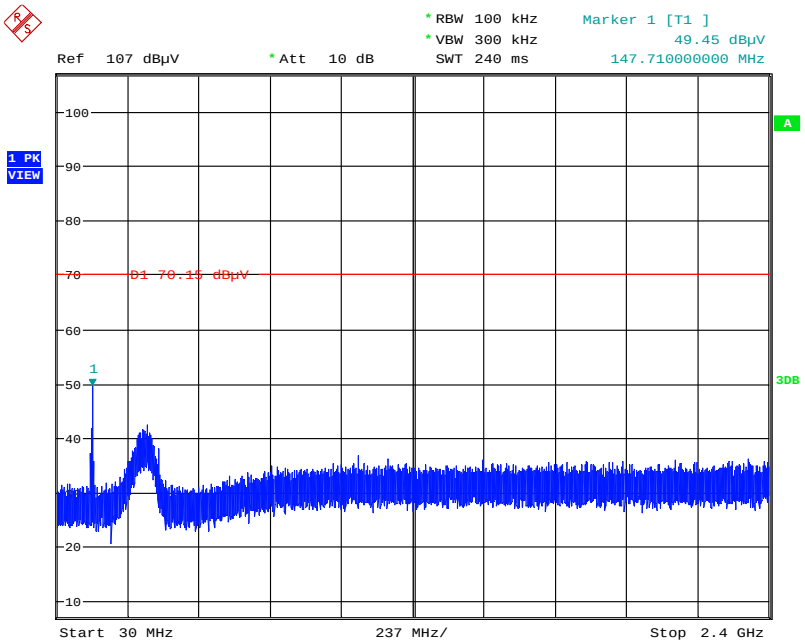
Date: 22.NOV.2014 00:45:37

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



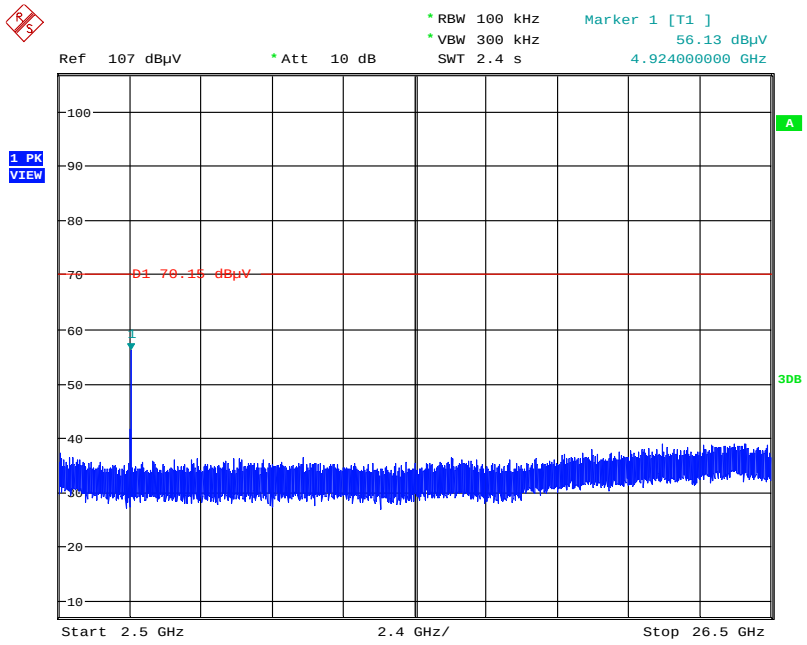
Date: 22.NOV.2014 00:46:06

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



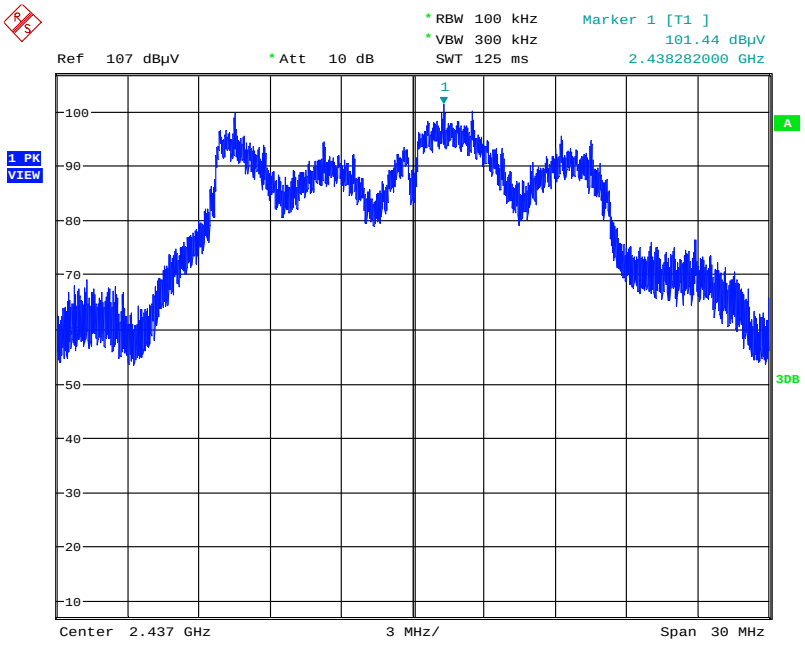
Date: 22.NOV.2014 00:47:12

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



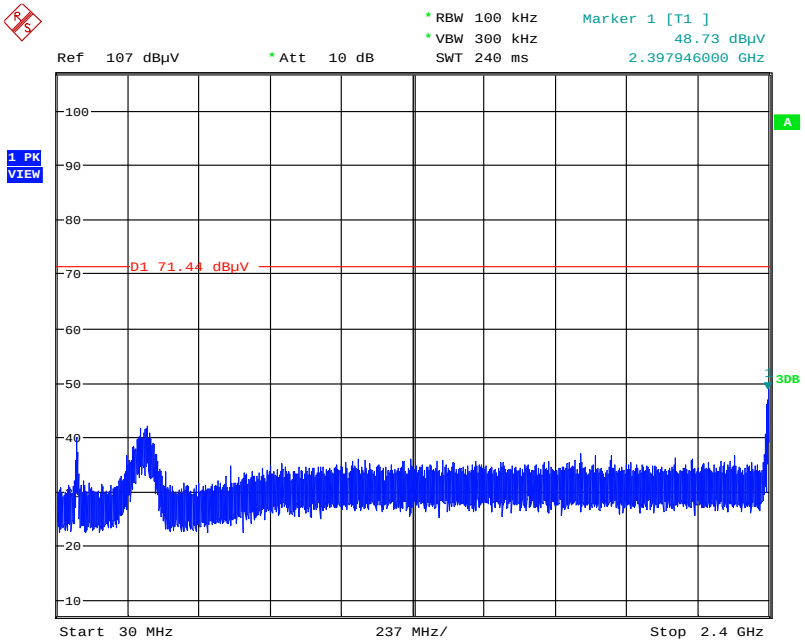
Date: 22.NOV.2014 00:46:47

Plot on Configuration IEEE 802.11g / Reference Level



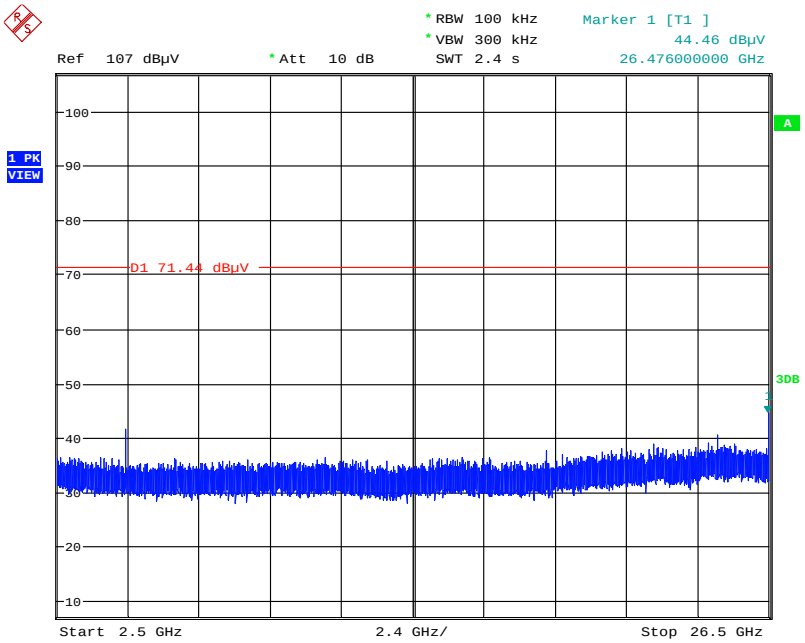
Date: 22.NOV.2014 00:49:12

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



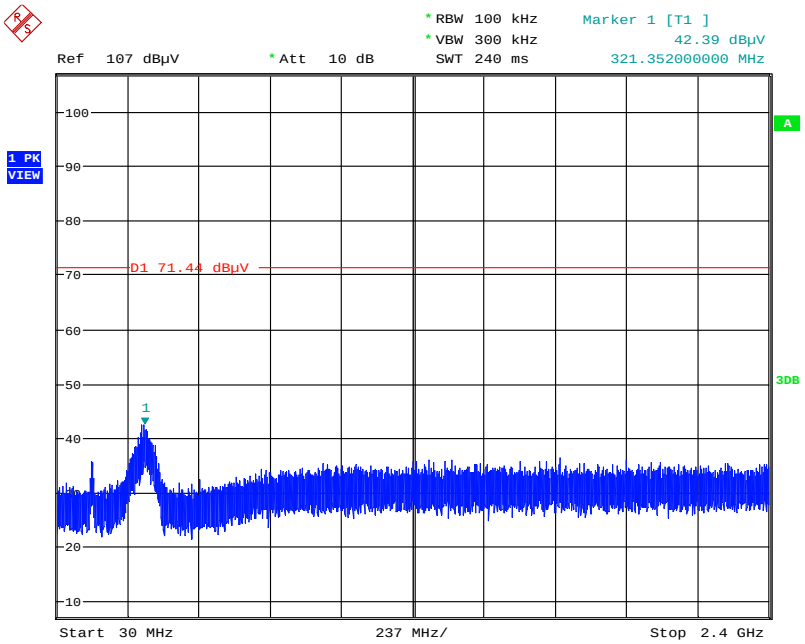
Date: 22.NOV.2014 00:50:01

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



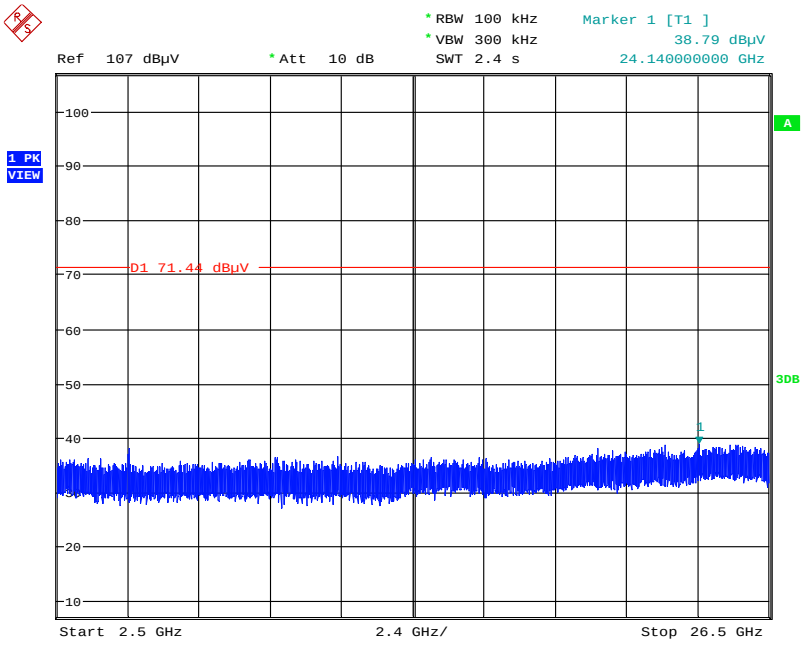
Date: 22.NOV.2014 00:50:33

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



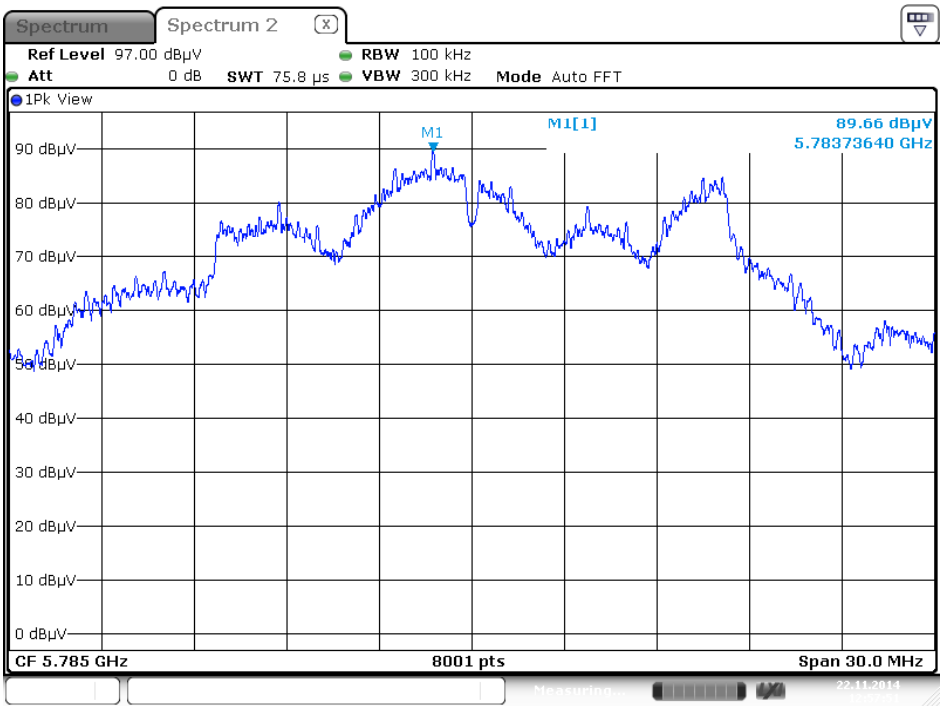
Date: 22.NOV.2014 00:51:54

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



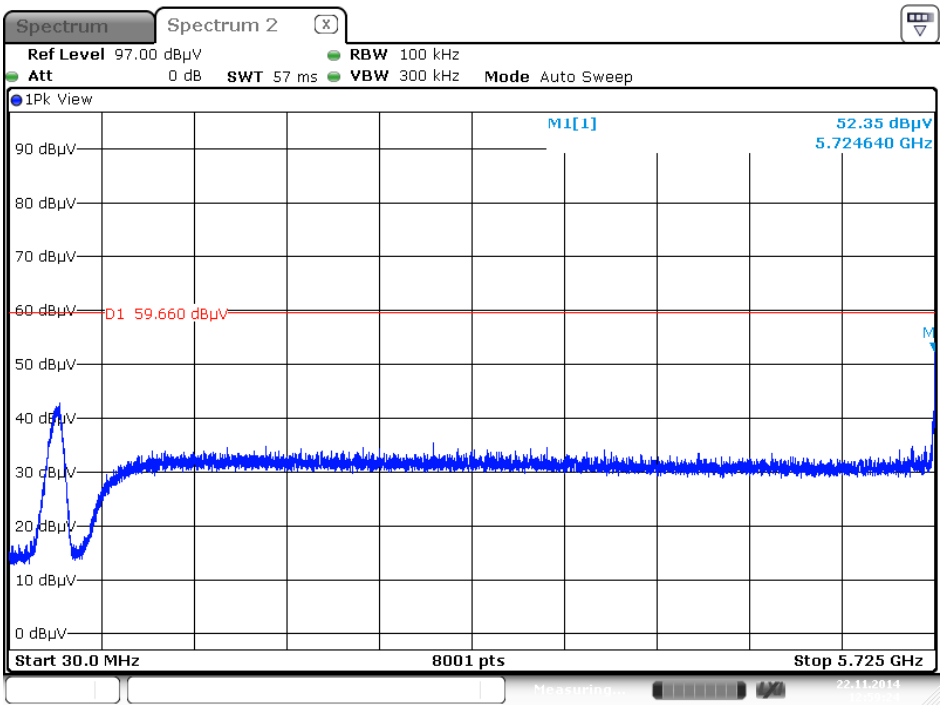
Date: 22.NOV.2014 00:51:28

Plot on Configuration IEEE 802.11a / Reference Level



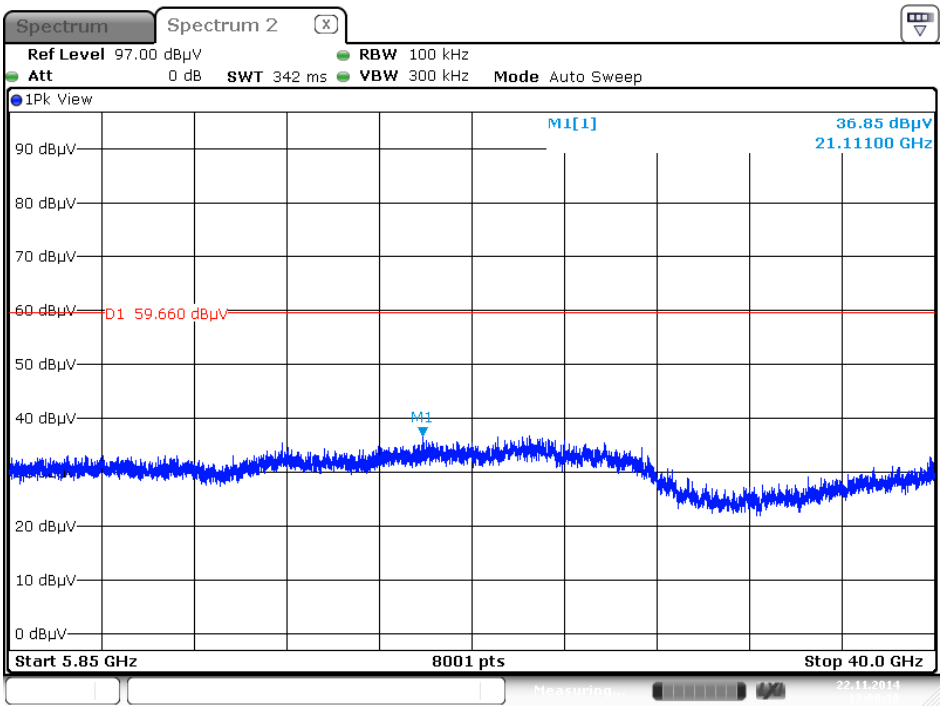
Date: 22.NOV.2014 12:57:50

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



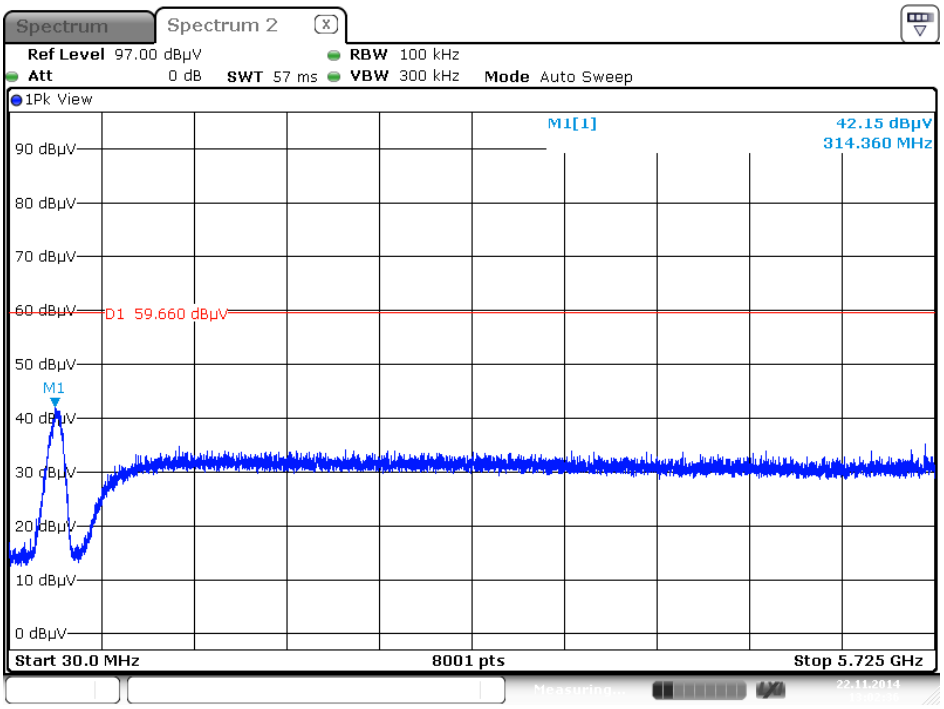
Date: 22.NOV.2014 12:59:24

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



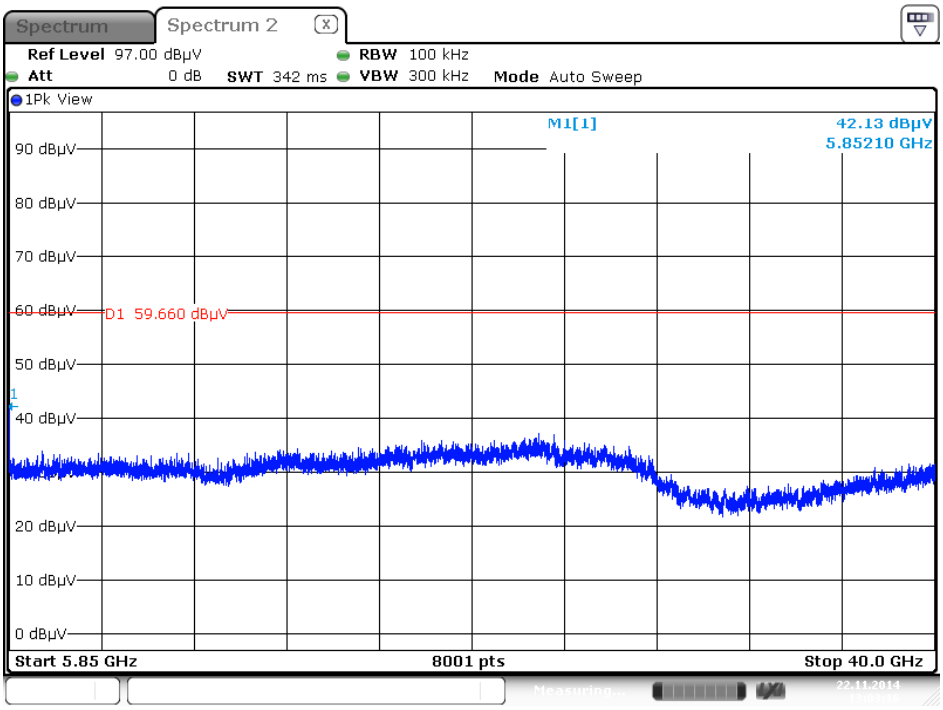
Date: 22.NOV.2014 13:00:09

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



Date: 22.NOV.2014 13:02:36

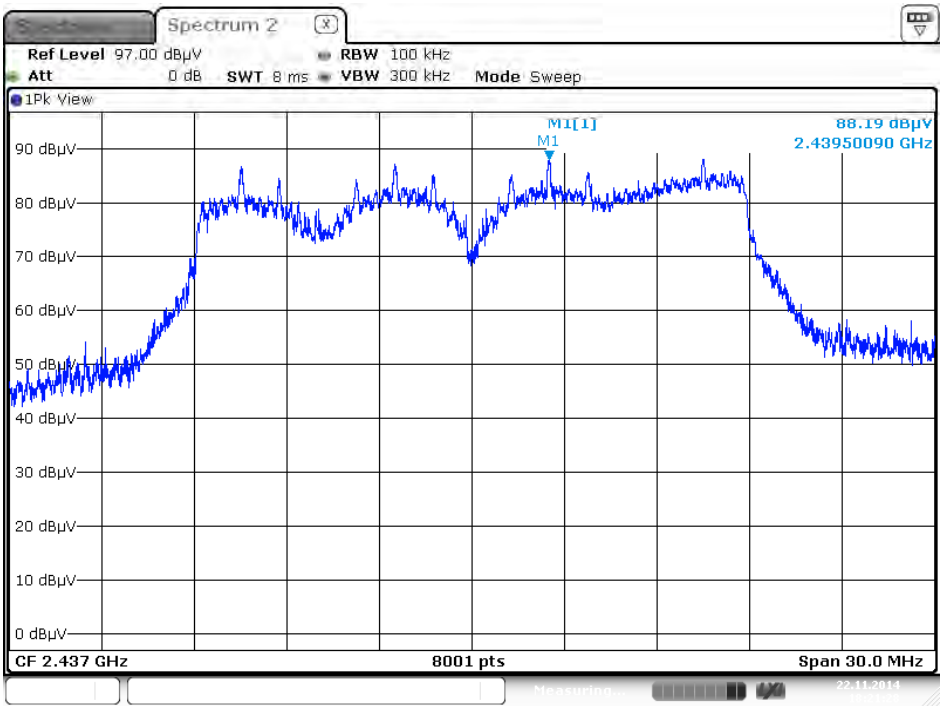
Plot on Configuration IEEE 802.11a / CH 165 / 5850MHz~40000MHz (down 30dBc)



Date: 22.NOV.2014 13:03:17

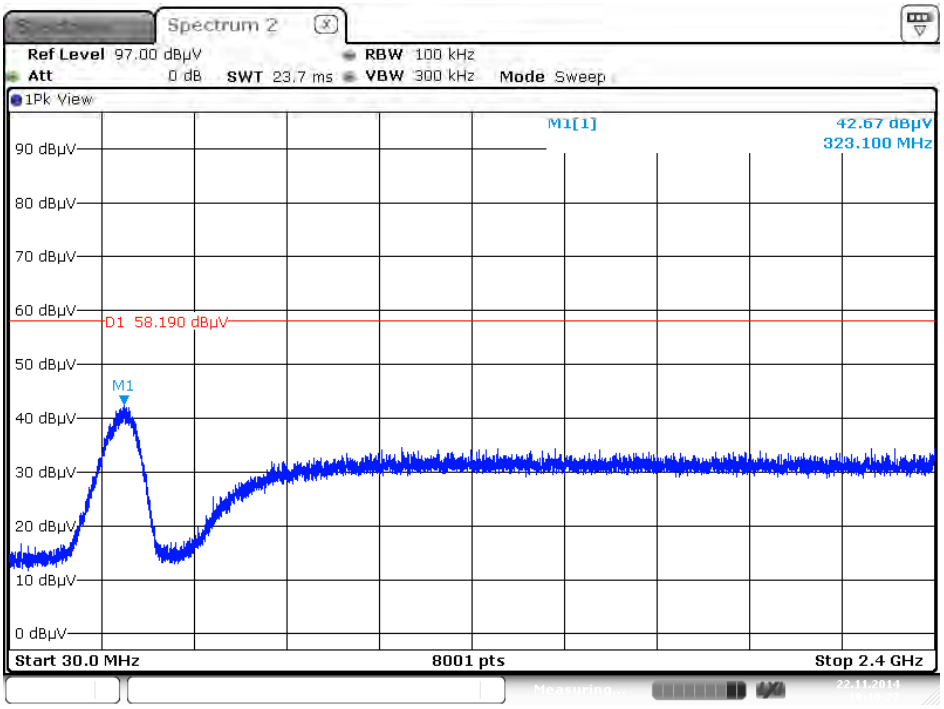
For beamforming function:

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



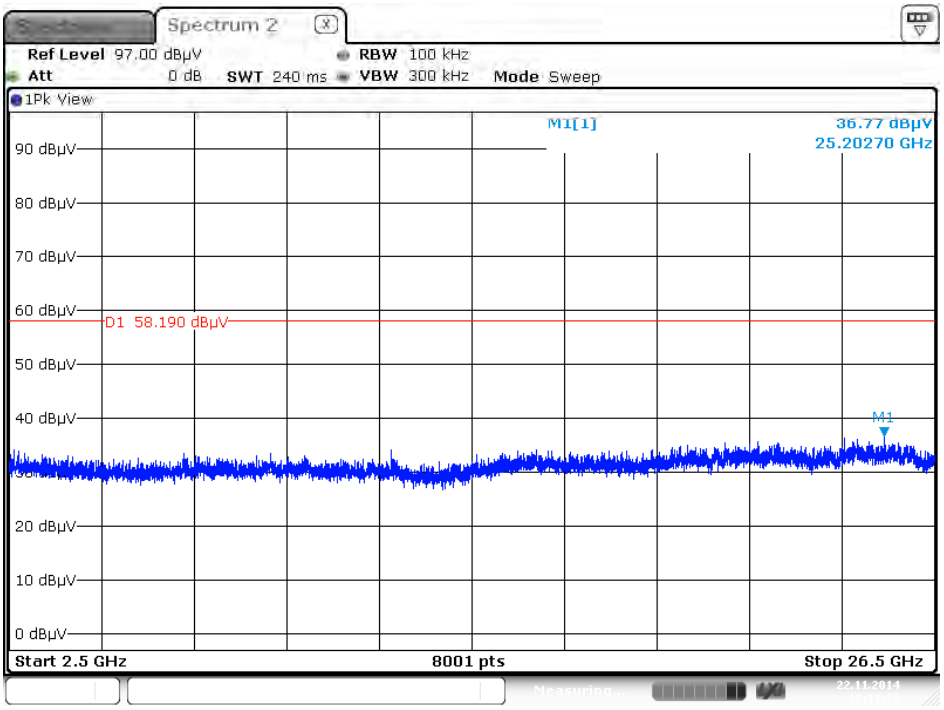
Date: 22.NOV.2014 18:21:28

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



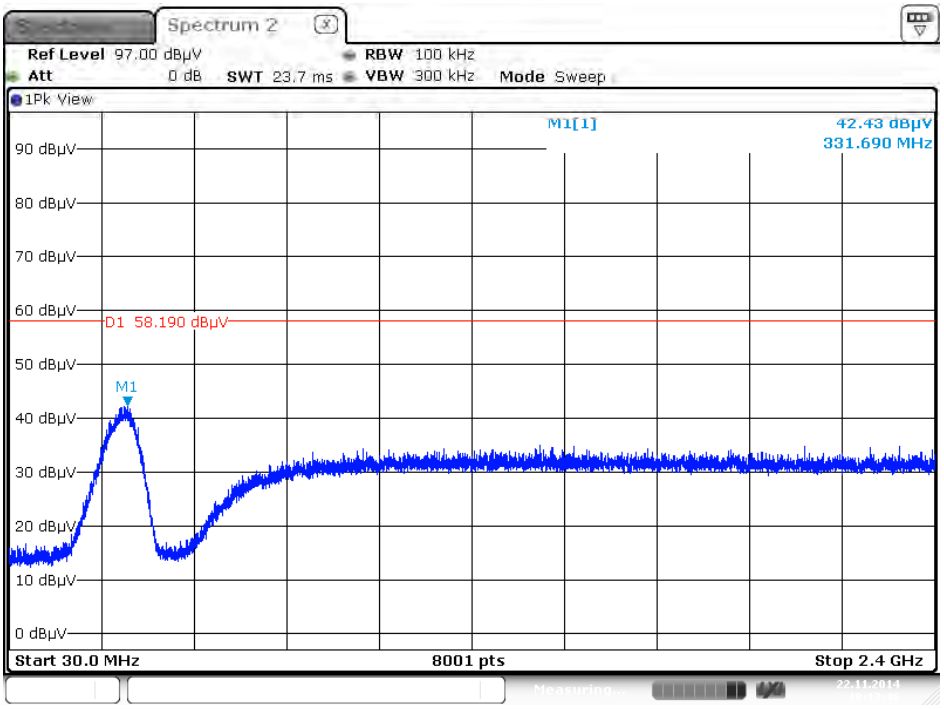
Date: 22.NOV.2014 18:10:27

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



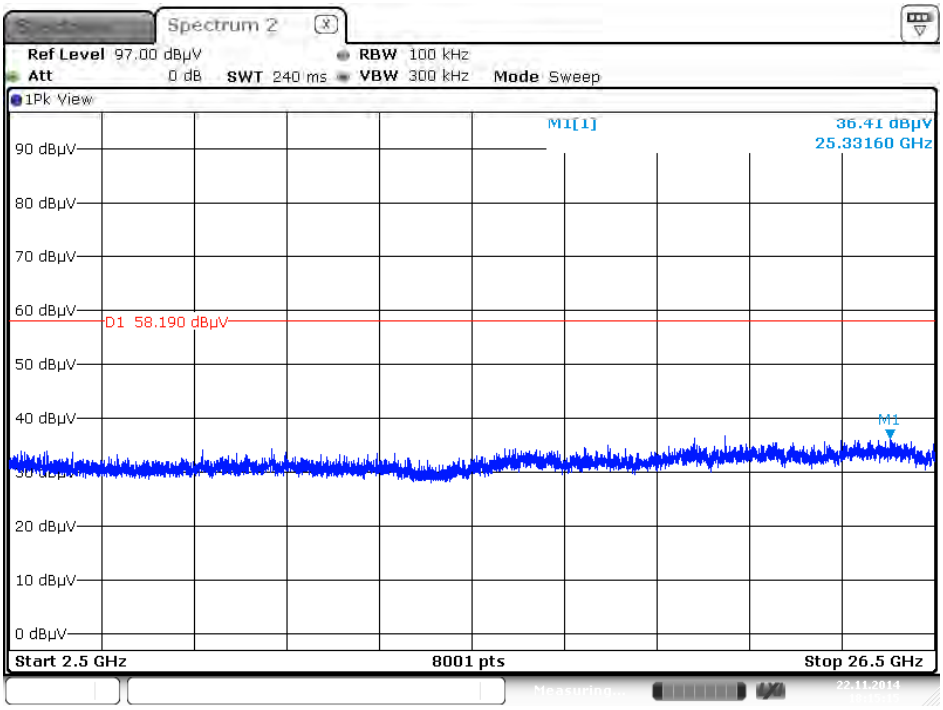
Date: 22.NOV.2014 18:11:23

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



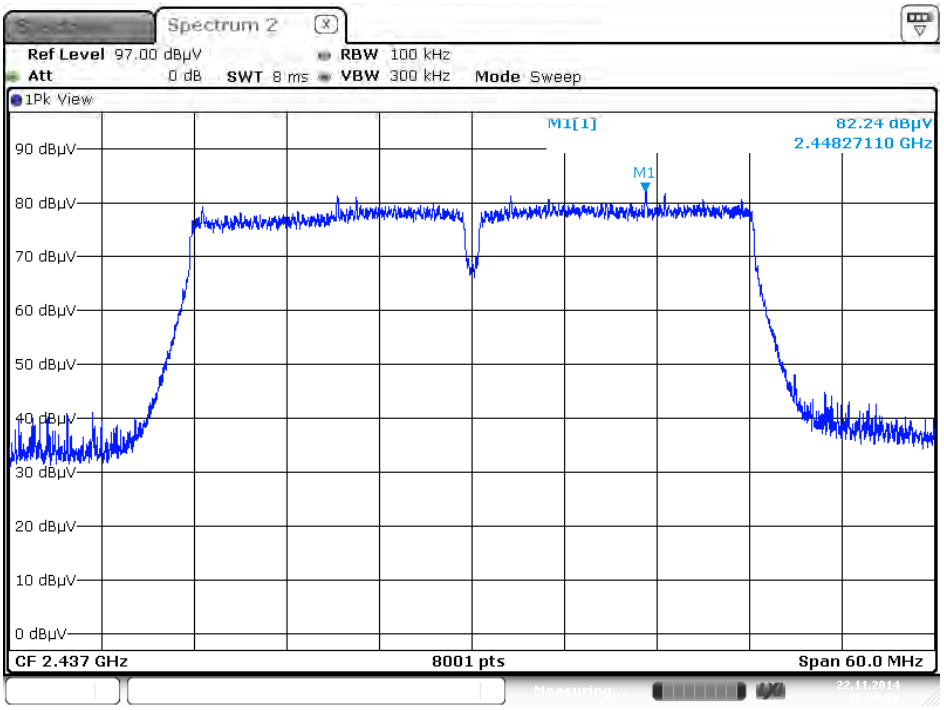
Date: 22.NOV.2014 18:13:47

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



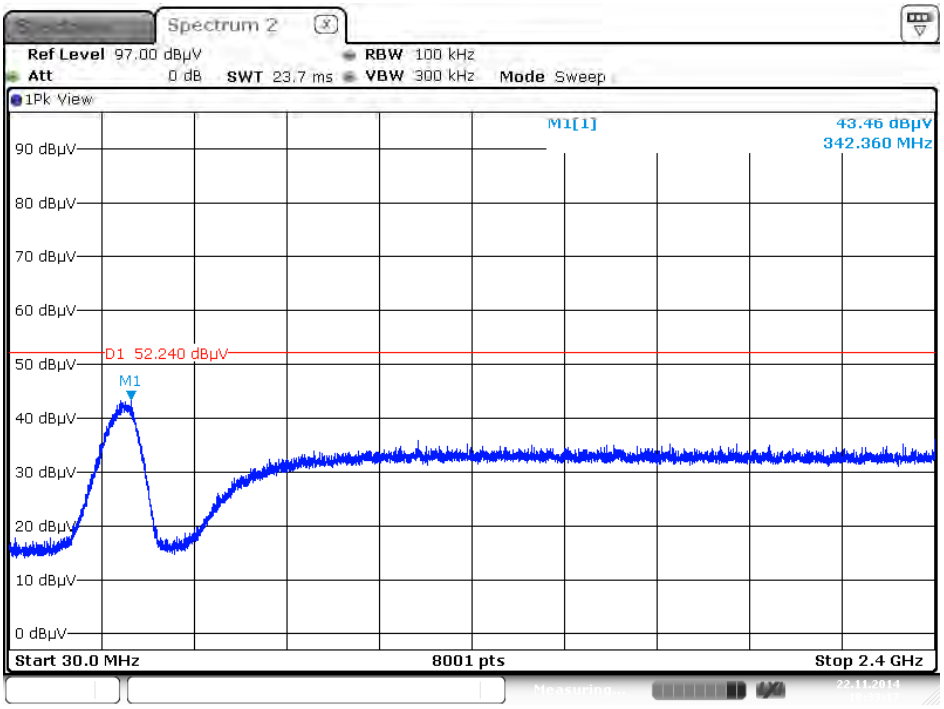
Date: 22.NOV.2014 18:15:15

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



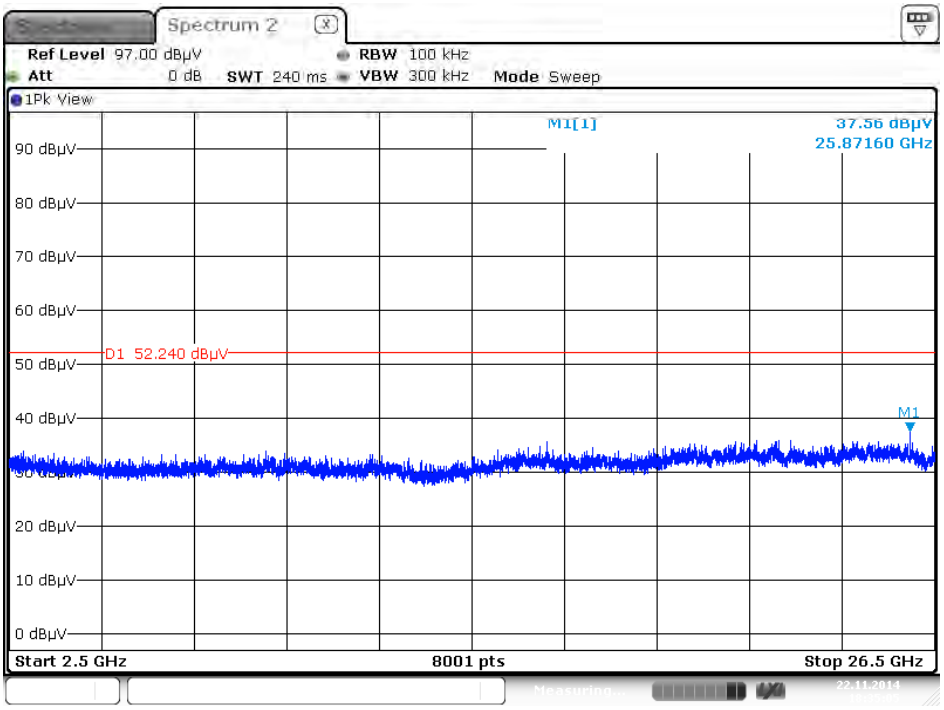
Date: 22.NOV.2014 18:29:38

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



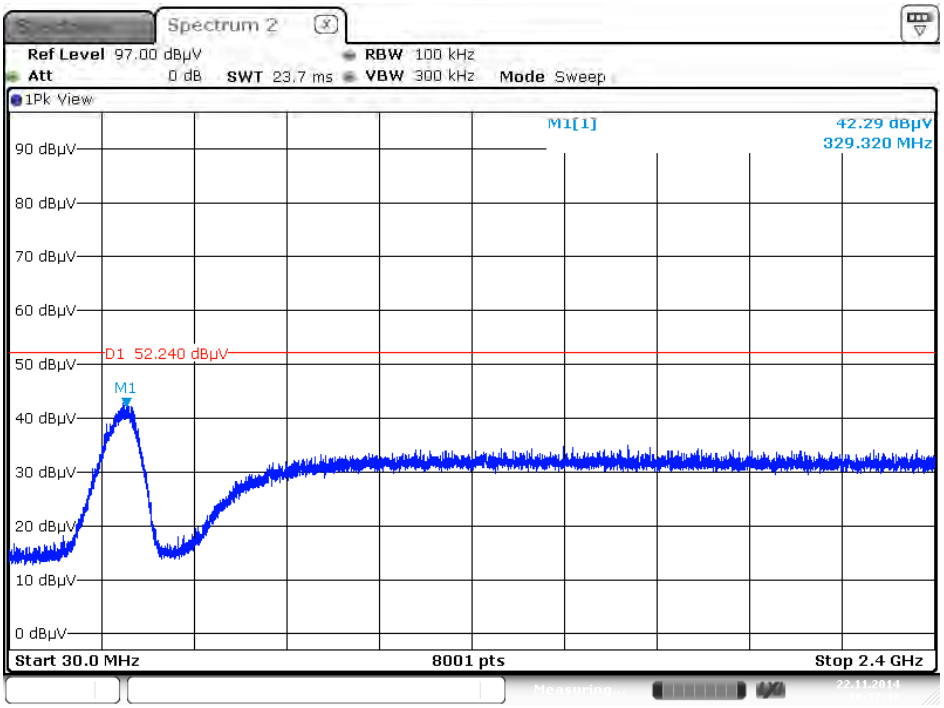
Date: 22.NOV.2014 18:33:17

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



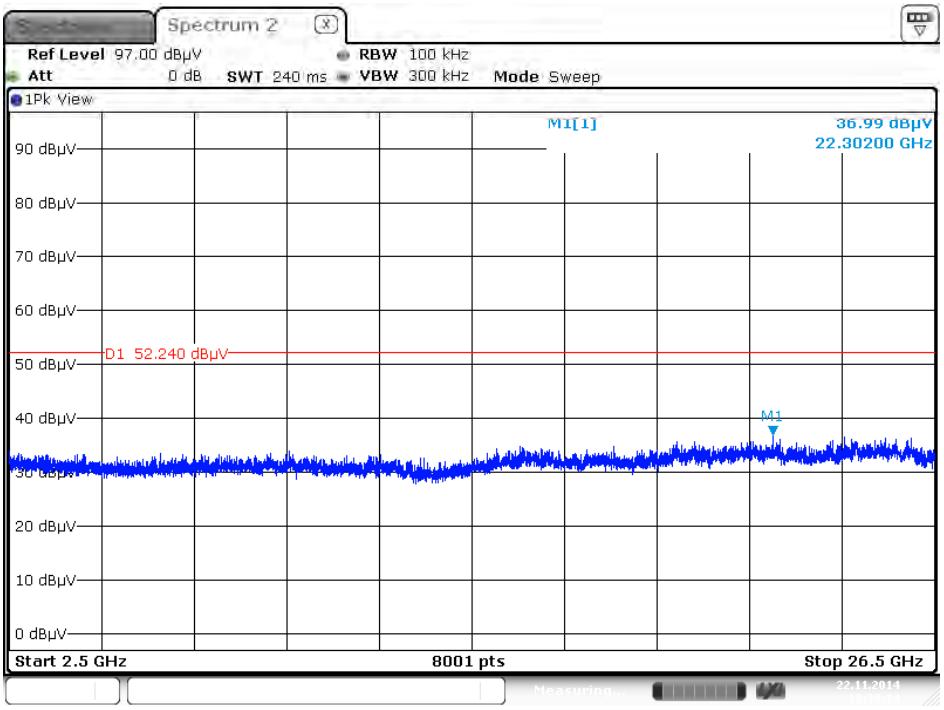
Date: 22.NOV.2014 18:35:05

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



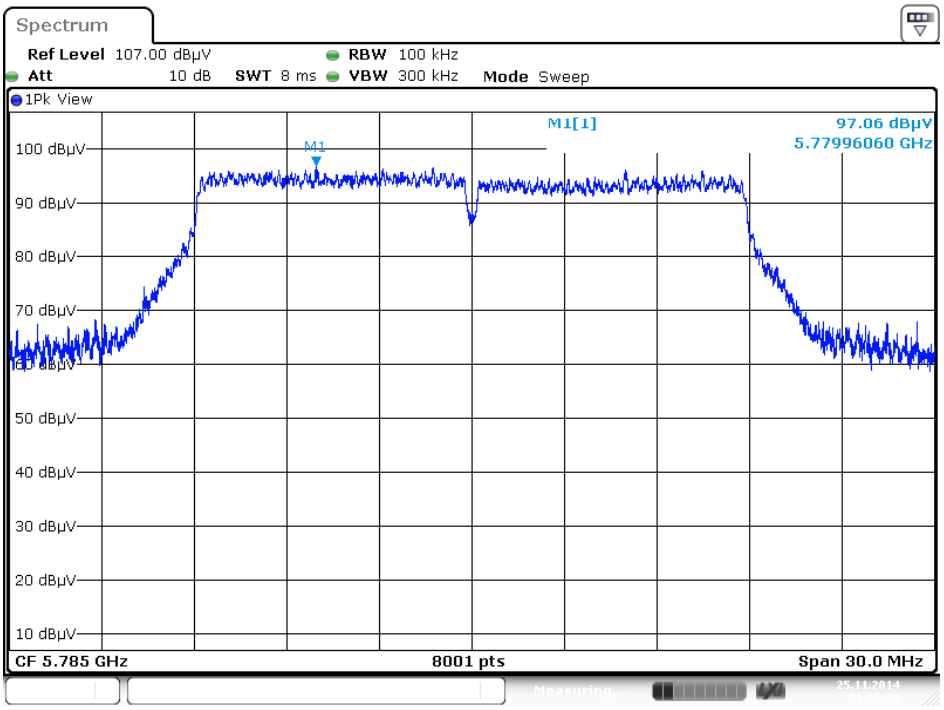
Date: 22.NOV.2014 18:37:48

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



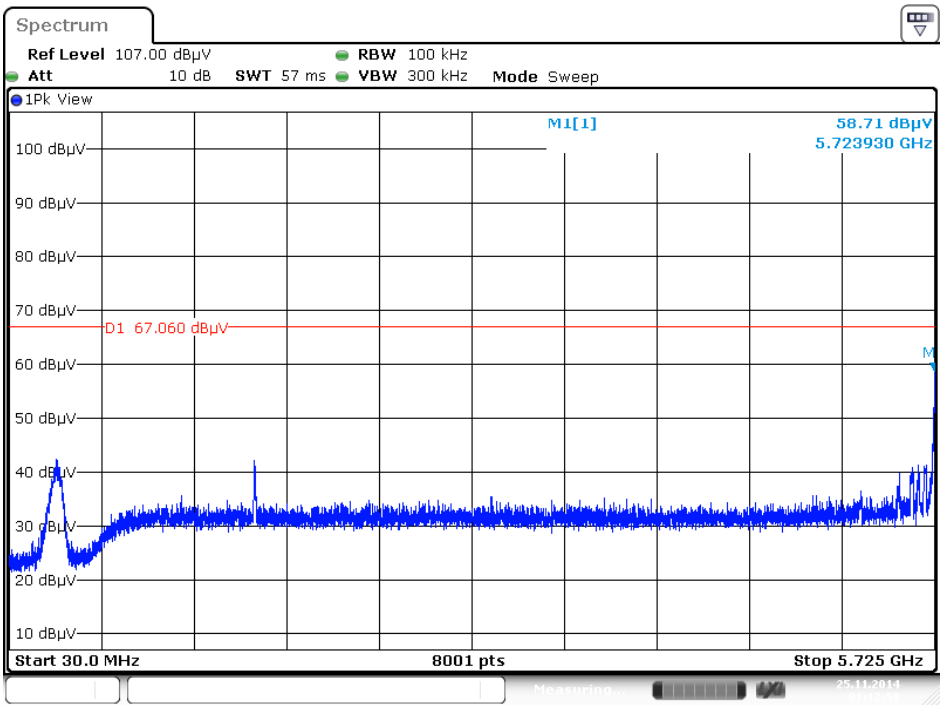
Date: 22.NOV.2014 18:39:14

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



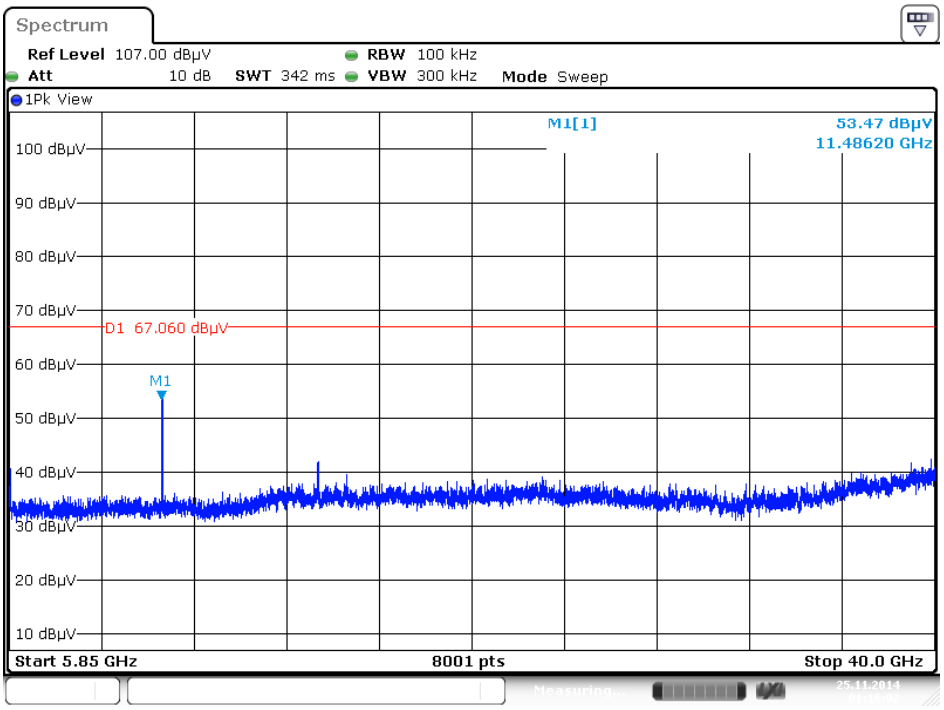
Date: 25.NOV.2014 01:05:30

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



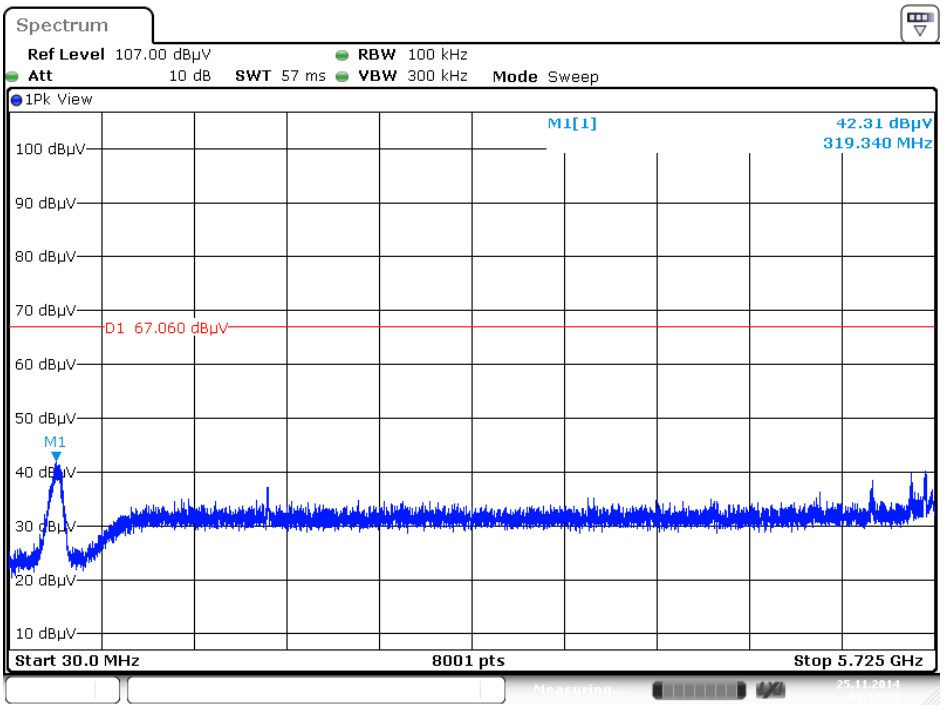
Date: 25.NOV.2014 01:12:59

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



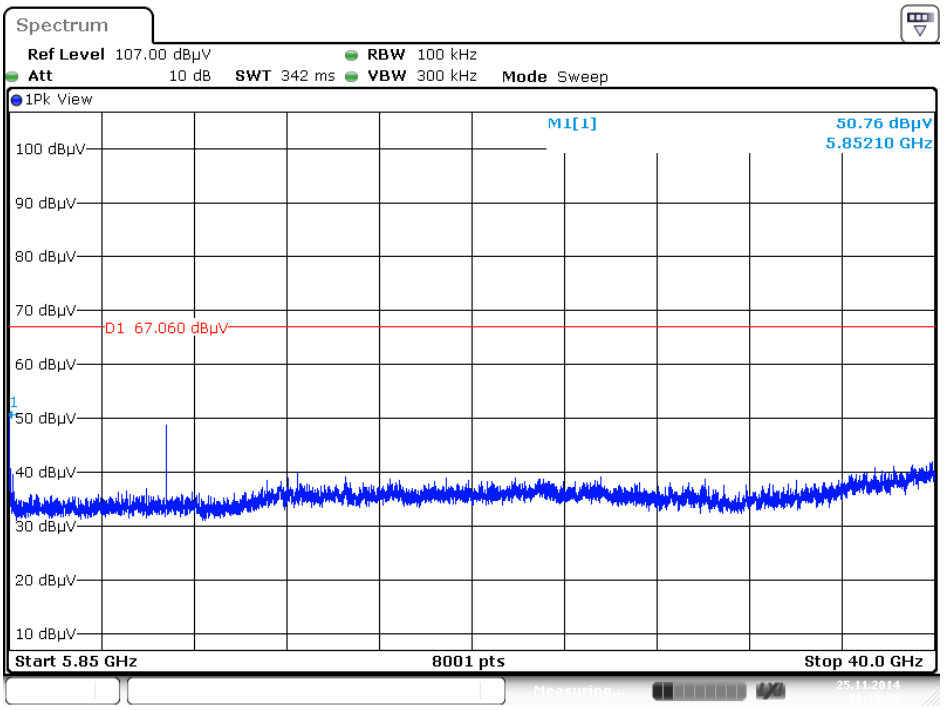
Date: 25.NOV.2014 01:16:02

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



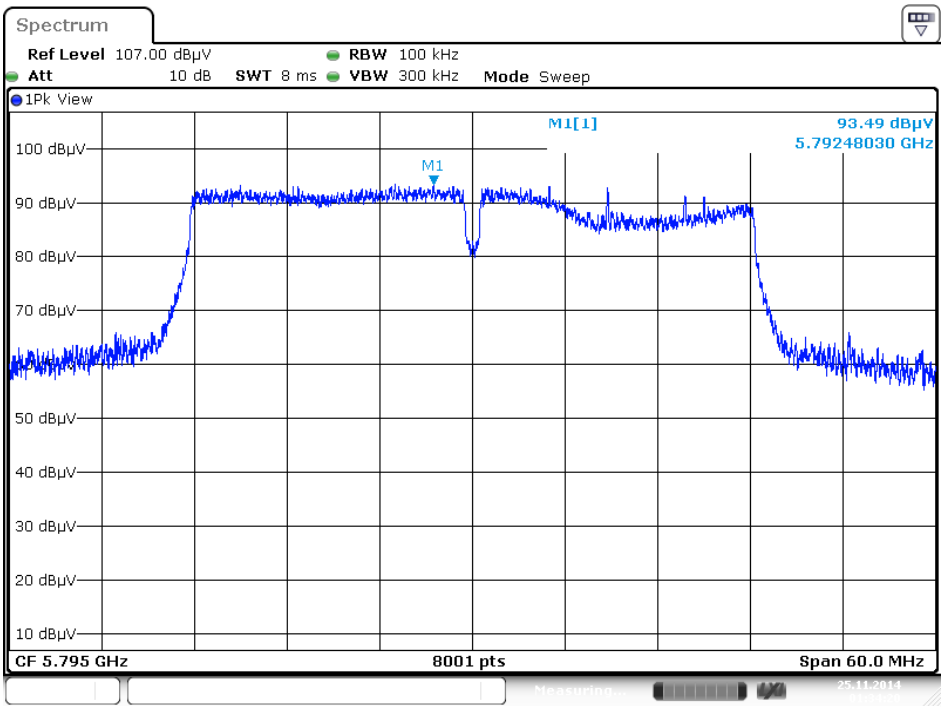
Date: 25.NOV.2014 01:18:20

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



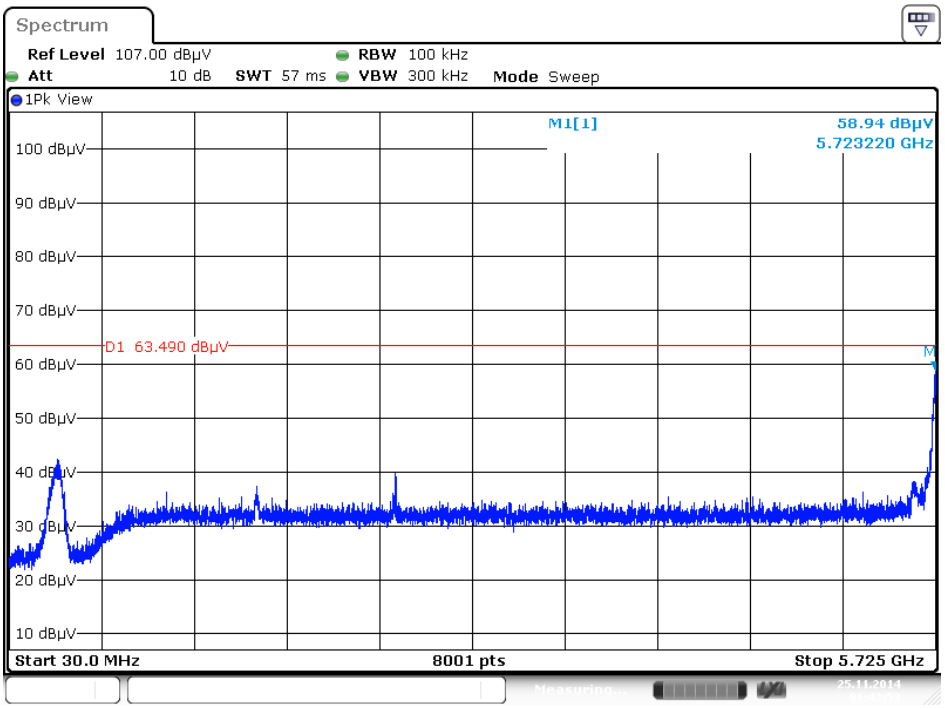
Date: 25.NOV.2014 01:19:26

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



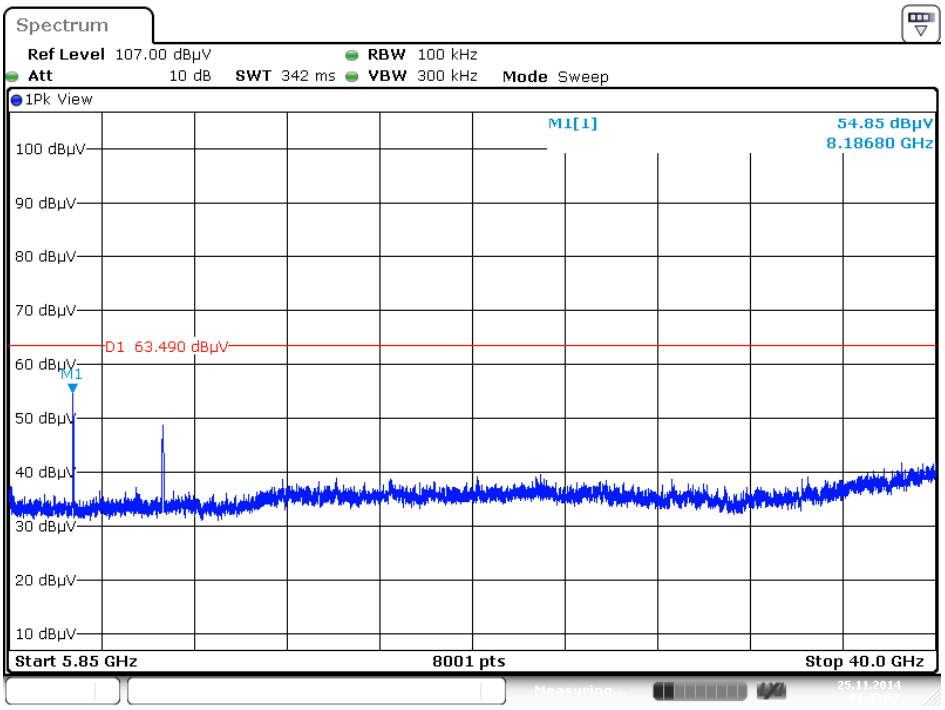
Date: 25.NOV.2014 01:34:20

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



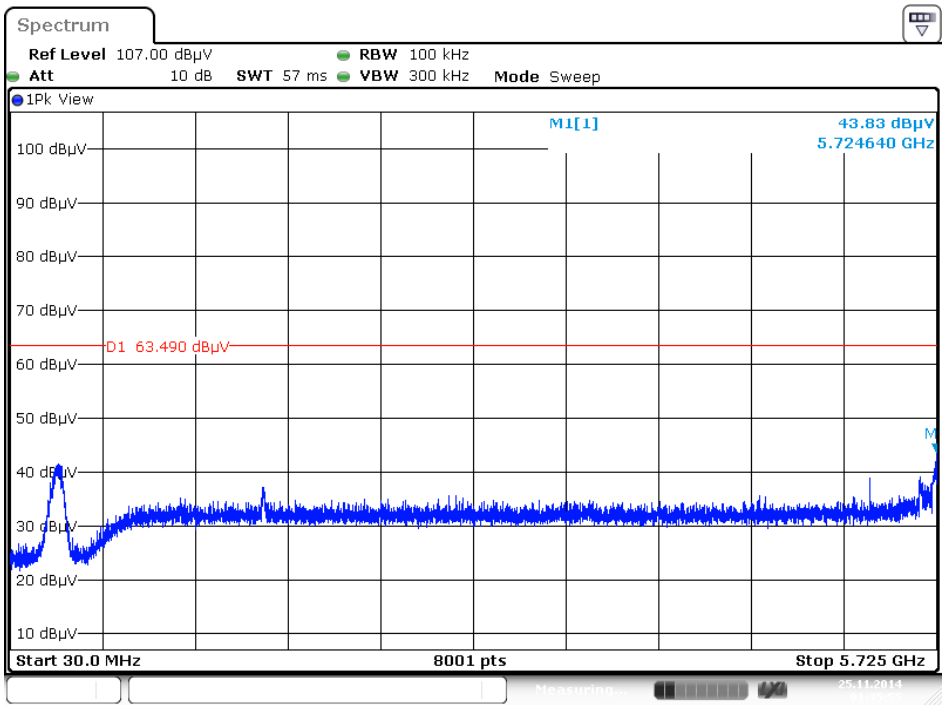
Date: 25.NOV.2014 01:42:53

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



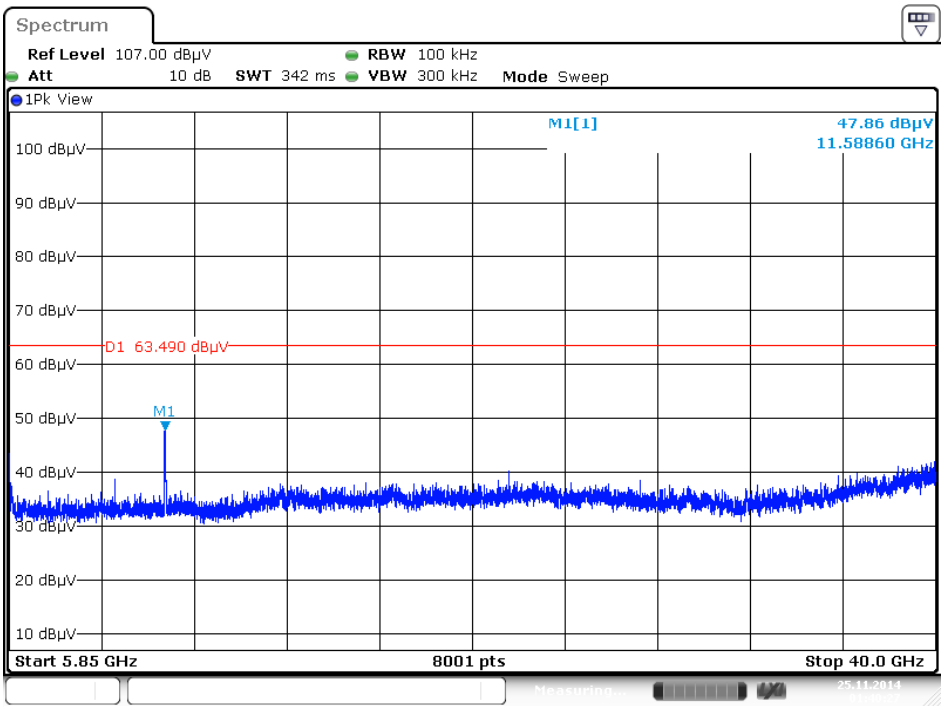
Date: 25.NOV.2014 01:43:57

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



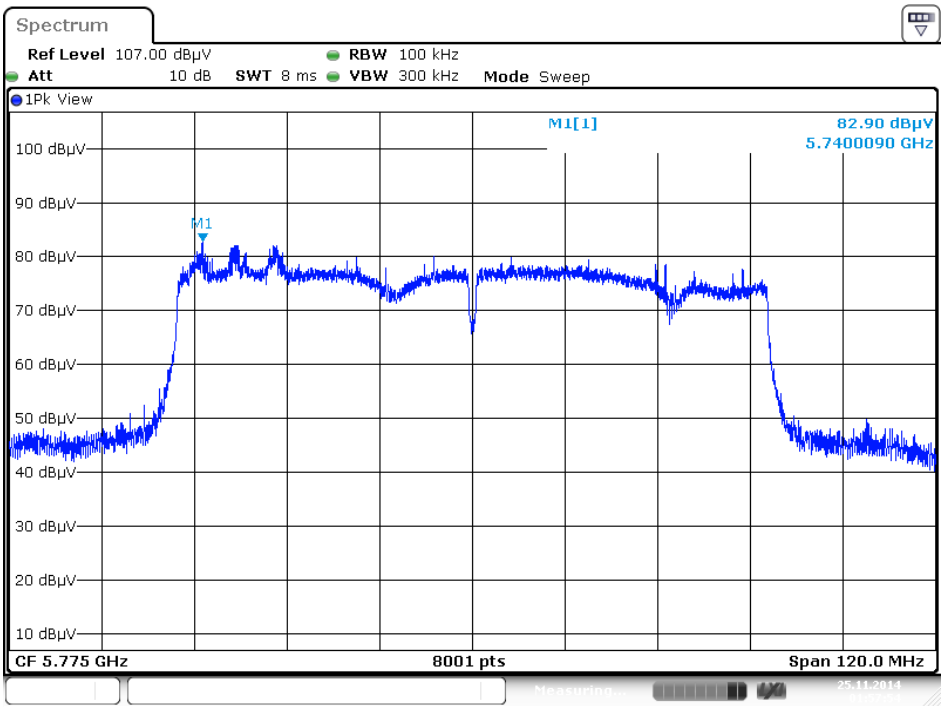
Date: 25.NOV.2014 01:35:55

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



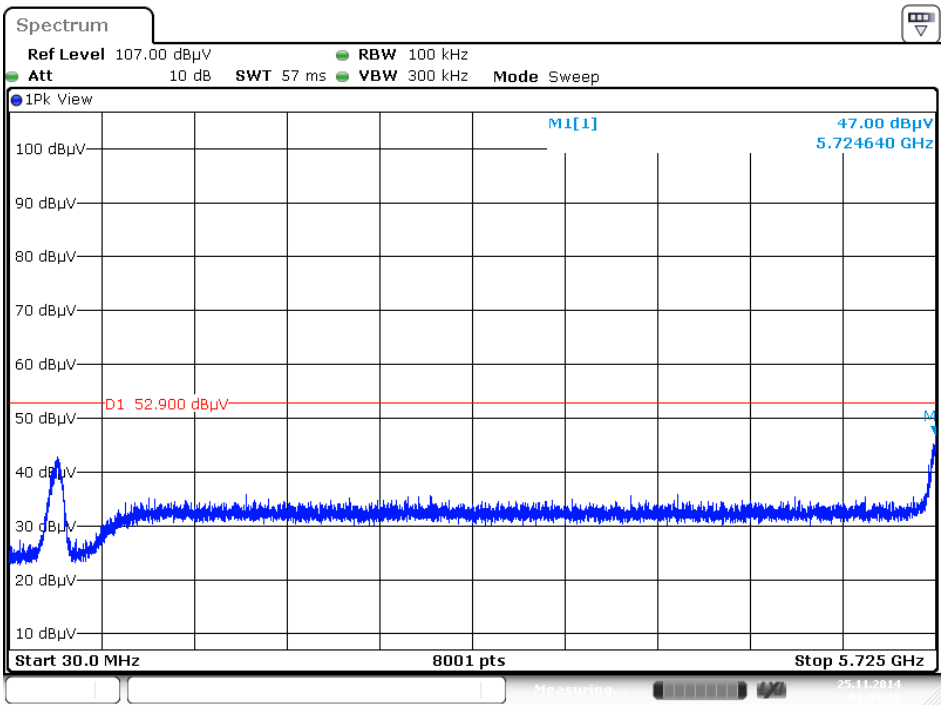
Date: 25.NOV.2014 01:40:27

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



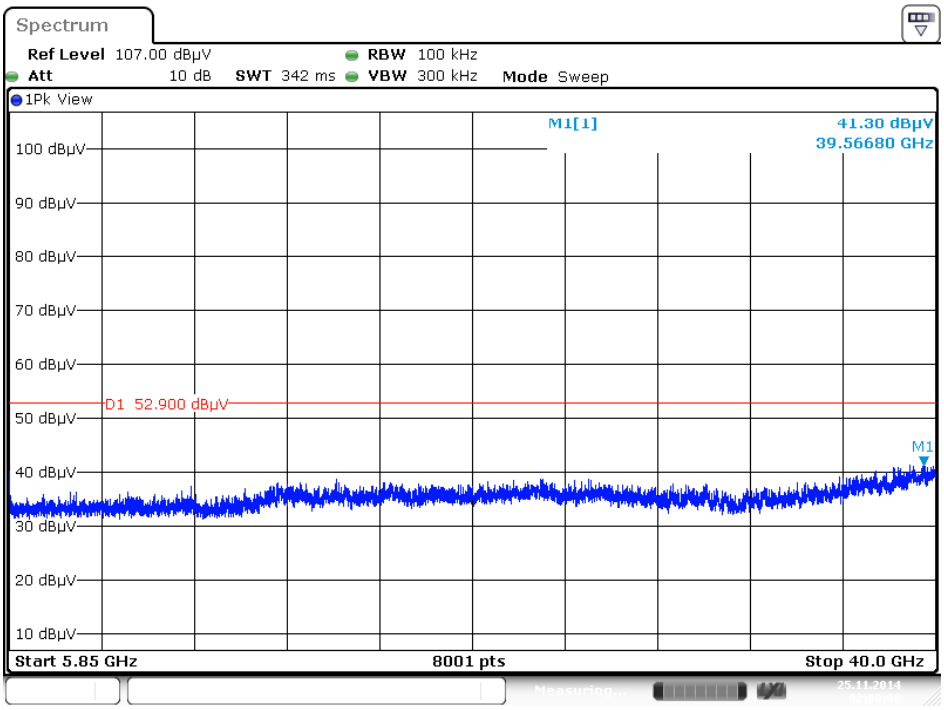
Date: 25.NOV.2014 01:57:55

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



Date: 25.NOV.2014 01:59:20

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



Date: 25.NOV.2014 02:00:07

4.5. Antenna Requirements

4.5.1. Limit

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

4.5.2. 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	3008A02310	1GHz ~ 26.5GHz	Dec. 16, 2013	Radiation (03CH01-CB)
Pre-Amplifier	MITEQ	TTA1840-35-HG	1864479	18GHz ~ 40GHz	Apr. 22, 2014	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100080	9kHz ~ 40GHz	Oct. 15, 2014	Radiation (03CH01-CB)
EMI Test Receiver	Agilent	N9038A	MY52260123	9kHz ~ 8GHz	Dec. 12, 2013	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-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	Nov. 29, 2013	Conducted (TH01-CB)
Signal analyzer	Agilent	N9010A	MY52220519	10Hz~44GHz	Dec. 11, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-7	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-8	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-9	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-10	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
RF Cable-high	Woken	High Cable-11	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
Power Sensor	Anritsu	MA2411B	0917223	300MHz~40GHz	Sep. 18, 2013	Conducted (TH01-CB)
Power Meter	Anritsu	ML2495A	1035008	300MHz~40GHz	Sep. 18, 2013	Conducted (TH01-CB)

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

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

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

6. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty	Remark
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%