

FCC REPORT

(UNII)

Applicant: Haier Information Technology(Shenzhen) Co., Ltd

Address of Applicant: ROOM B4 OF FLOOR 21, NO.3 TOWER BUILDING, CHINESE TECHNOLOGY RESEARCH PARK, CHINA TECHNOLOGY EXPLOITATION INSTITUTE, GAOXIN SOUTH FIRST STREET NO.009, NANSHAN DISTRICT, SHENZHEN CITY, GUANGDONG PROVINCE, CHINA

Equipment Under Test (EUT)

Product Name: laptop

Model No.: Y11C

Trade mark: Haier

FCC ID: 2ACZD-Y11C

Applicable standards: FCC CFR Title 47 Part 15 Subpart E Section 15.407

Date of sample receipt: 12 June, 2017

Date of Test: 12 June, to 11 July, 2017

Date of report issued: 11 July, 2017

Test Result: PASS*

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Bruce Zhang
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

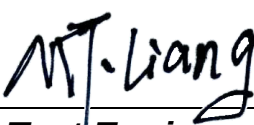
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This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

2 Version

Version No.	Date	Description
00	11 July, 2017	Original

Tested by:



Test Engineer

Date:

11 July, 2017

Reviewed by:



Project Engineer

Date:

11 July, 2017

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4 Test Summary

Test Item	Section in CFR 47
Antenna requirement	15.203/15.407 (g)
AC Power Line Conducted Emission	15.207
Conducted Peak Output Power	15.407 (a) (1) (iv) & (a) (3)
26dB Occupied Bandwidth	15.407 (a) (5)
6dB Emission Bandwidth	15.407(e)
Power Spectral Density	15.407 (a) (1) (iv) &(a) (3)
Band Edge	15.407(b)
Spurious Emission	15.205/15.209
Frequency Stability	15.407(g)

Pass: The EUT complies with the essential requirements in the standard.

5 General Information

5.1 Client Information

Applicant:	Haier Information Technology(Shenzhen) Co., Ltd
Address of Applicant:	ROOM B4 OF FLOOR 21, NO.3 TOWER BUILDING, CHINESE TECHNOLOGY RESEARCH PARK, CHINA TECHNOLOGY EXPLOITATION INSTITUTE, GAOXIN SOUTH FIRST STREET NO.009, NANSHAN DISTRICT, SHENZHEN CITY, GUANGDONG PROVINCE, CHINA
Manufacturer:	Haier Information Technology(Shenzhen) Co., Ltd
Address of Manufacturer:	ROOM B4 OF FLOOR 21, NO.3 TOWER BUILDING, CHINESE TECHNOLOGY RESEARCH PARK, CHINA TECHNOLOGY EXPLOITATION INSTITUTE, GAOXIN SOUTH FIRST STREET NO.009, NANSHAN DISTRICT, SHENZHEN CITY, GUANGDONG PROVINCE, CHINA
Factory:	CHUNGHSIN INTERNATIONAL ELECTRONICS CO., LTD.
Address of Factory:	618-2# Gongren West Road, Jiaojiang, Taizhou City, Zhejiang, PR.China

5.2 General Description of E.U.T.

Product Name:	laptop
Model No.:	Y11C
Operation Frequency:	Band 1: 5180MHz-5240MHz
Channel numbers:	Band 1: 802.11a/802.11n20: 4,802.11n40: 2,802.11ac:1
Channel separation:	802.11a/802.11n20: 20MHz, 802.11n40: 40MHz, 802.11ac : 80MHz
Modulation technology: (IEEE 802.11a)	BPSK, QPSK, 16-QAM, 64-QAM
Modulation technology: (IEEE 802.11n)	BPSK, QPSK, 16-QAM, 64-QAM
Modulation technology: (IEEE 802.11ac)	BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM
Data speed(IEEE 802.11a):	6Mbps, 9Mbps, 12Mbps, 18Mbps, 24Mbps, 36Mbps, 48Mbps, 54Mbps
Data speed (IEEE 802.11n20):	MCS0: 13Mbps, MCS1: 26Mbps, MCS2: 39Mbps, MCS3: 52Mbps, MCS4: 78Mbps, MCS5: 104Mbps, MCS6: 117Mbps, MCS7: 130Mbps
Data speed (IEEE 802.11n40):	MCS0: 30Mbps, MCS1: 60Mbps, MCS2: 90Mbps, MCS3: 120Mbps, MCS4: 180Mbps, MCS5: 240Mbps, MCS6: 270Mbps, MCS7: 300Mbps
Data speed (IEEE 802.11ac):	Up to 650Mbps
Antenna Type:	Internal Antenna
Antenna gain:	-3.46dBi
Power supply:	Rechargeable Li-ion Battery DC7.6V-5000mAh
AC adapter:	Adapter(1): Model: PS36A120Y3000H Input: AC100-240V, 50/60Hz, 1.0A Output: DC 12.0V, 3.0A Adapter(2): Model: EE1230-105 Input: AC100-240V, 50/60Hz, 0.5A

	Output: DC 12.0V, 3.0A Adapter(3): Model: SOY-1200300 Input: AC100-240V, 50/60Hz, 1.2A Output: DC 12.0V, 3.0A																											
	Due to marketing reasons the Model Y11C has three configurations, between them PCB board circuit design, layout, structure and appearance are the same, only the following configuration is different: <table><tr><th rowspan="2">Type</th><th colspan="3">Manufacturers (Model)</th></tr><tr><th>1#</th><th>2#</th><th>3#</th></tr><tr><td>Memory</td><td>Micron (MT52L512M32D2PF-107WT)</td><td>ELPIDA (EDFA232A2MA-JD-F-R)</td><td>BIWIN (BW52L512M32D2PF-107)</td></tr><tr><td>LCD</td><td>K&D (KD116N05-30NV-A008)</td><td>STARRY ELECTRONIC (20811160240024-03)</td><td>Qianhailingxian (LX 116N02-30NV-A04)</td></tr><tr><td>Hard Disk</td><td>WD (WD10SPZX)</td><td>Seagate (ST1000LM048)</td><td>WD (WD10SPZX)</td></tr><tr><td>Battery</td><td>3XUN (5849112)</td><td>3Xun ((5849112)</td><td>McNair (MLP5850110-2S)</td></tr><tr><td>Adapter</td><td>Flypower (PS36A120Y3000H)</td><td>ENGINE (EE1230-105)</td><td>SOY (SOY-1200300)</td></tr></table>	Type	Manufacturers (Model)			1#	2#	3#	Memory	Micron (MT52L512M32D2PF-107WT)	ELPIDA (EDFA232A2MA-JD-F-R)	BIWIN (BW52L512M32D2PF-107)	LCD	K&D (KD116N05-30NV-A008)	STARRY ELECTRONIC (20811160240024-03)	Qianhailingxian (LX 116N02-30NV-A04)	Hard Disk	WD (WD10SPZX)	Seagate (ST1000LM048)	WD (WD10SPZX)	Battery	3XUN (5849112)	3Xun ((5849112)	McNair (MLP5850110-2S)	Adapter	Flypower (PS36A120Y3000H)	ENGINE (EE1230-105)	SOY (SOY-1200300)
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Adapter	Flypower (PS36A120Y3000H)	ENGINE (EE1230-105)	SOY (SOY-1200300)																									

Operation Frequency each of channel

Band 1					
802.11a/802.11n20		802.11n40		802.11ac80	
Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180MHz	38	5190MHz	42	5210MHz
40	5200MHz	46	5230MHz		
44	5220MHz				
48	5240MHz				

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Band 1					
802.11a/802.11n20		802.11n40		802.11ac80	
Channel	Frequency	Channel	Frequency	Channel	Frequency
Lowest channel	5180MHz	Lowest channel	5190MHz	Middle channel	5210MHz
Middle channel	5200MHz	Highest channel	5230MHz		
Highest channel	5240MHz				

5.3 Test environment and mode

Operating Environment:	
Temperature:	24.0 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010 mbar
Test mode:	
Continuously transmitting mode	Keep the EUT in 100% duty cycle transmitting with modulation.
We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:	
Per-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.	
Mode	Data rate
802.11a	6Mbps
802.11n20	13Mbps
802.11n40	30Mbps
802.11ac	65Mbps
Final Test Mode:	
According to ANSI C63.4 standards, the test results are both the “worst case” and “worst setup” 6Mbps for 802.11a, 13Mbps for 802.11n20, 30Mbps for 802.11n40 and 65Mbps for 802.11ac. All test items for 802.11a, 802.11ac and 802.11n were performed with duty cycle above 98%, meet the requirements of KDB789033.	

5.4 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC ID/DoC
/	/	/	/	/

5.5 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

●**FCC- Registration No.: 817957**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 817957, February 27, 2012.

●**IC - Registration No.: 10106A-1**

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

●**CNAS - Registration No.: CNAS L6048**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

5.6 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.
 Address: No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,
 Bao'an District, Shenzhen, Guangdong, China
 Website: <http://www.ccis-cb.com>
 Tel: +86-755-23118282
 Fax: +86-755-23116366
 Email: info@ccis-cb.com

5.7 Measurement Uncertainty

Items	Expanded Uncertainty (Confidence of 95%)
Conducted Emission (9kHz ~ 30MHz)	2.14 dB (k=2)
Radiated Emission (9kHz ~ 30MHz)	4.24 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	4.35 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	4.44 dB (k=2)
Radiated Emission (18GHz ~ 26.5GHz)	4.56 dB (k=2)

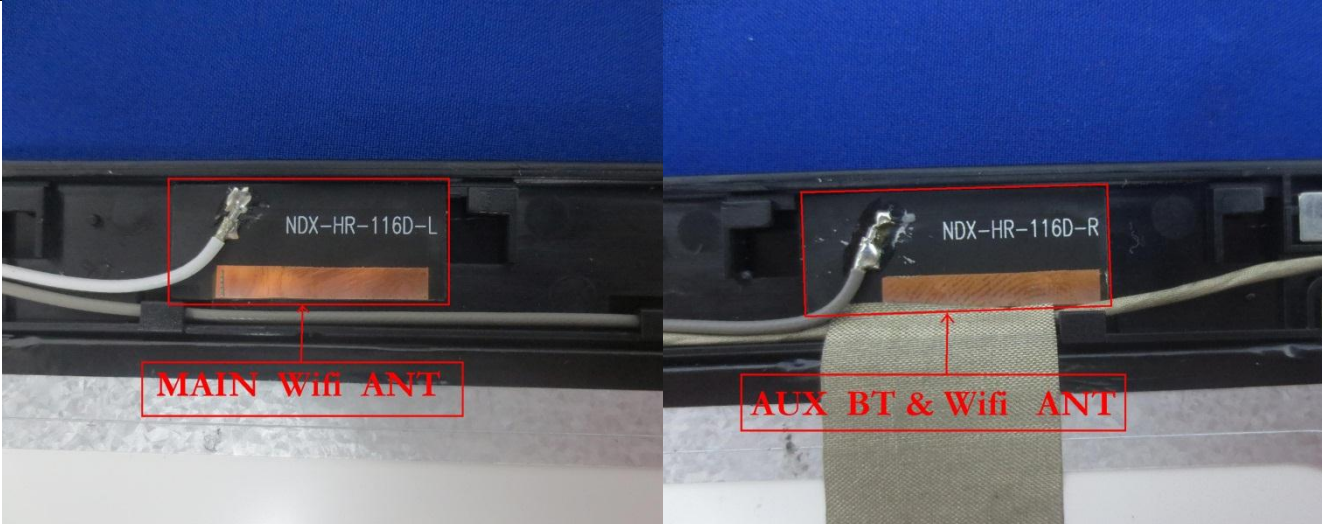
5.8 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
1	3m SAC	SAEMC	9(L)*6(W)* 6(H)	CCIS0001	08-23-2014	08-22-2017
2	BiConiLog Antenna	SCHWARZBECK	VULB9163	CCIS0005	02-25-2017	02-24-2018
3	Horn Antenna	SCHWARZBECK	BBHA9120D	CCIS0006	02-25-2017	02-24-2018
4	Pre-amplifier (10kHz-1.3GHz)	HP	8447D	CCIS0003	02-25-2017	02-24-2018
5	Pre-amplifier (1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	02-25-2017	02-24-2018
6	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	02-25-2017	02-24-2018
7	Horn Antenna	ETS-LINDGREN	3160	GTS217	02-25-2017	02-24-2018
8	Spectrum analyzer 9k-30GHz	Rohde & Schwarz	FSP30	CCIS0023	02-25-2017	02-24-2018
9	EMI Test Receiver	Rohde & Schwarz	ESRP7	CCIS0167	02-25-2017	02-24-2018
10	Loop antenna	Laplace instrument	RF300	EMC0701	02-25-2017	02-24-2018
11	EMI Test Software	AUDIX	E3	N/A	N/A	N/A

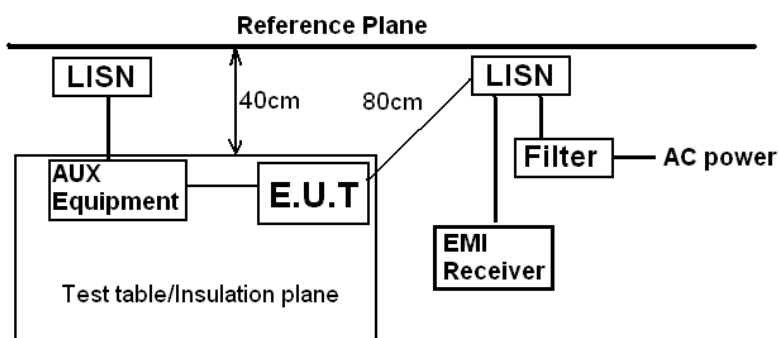
Conducted Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
1	Shielding Room	ZhongShuo Electron	11.0(L)x4.0(W)x3.0(H)	CCIS0061	08-23-2014	08-22-2017
2	EMI Test Receiver	Rohde & Schwarz	ESCI	CCIS0002	02-25-2017	02-24-2018
3	LISN	CHASE	MN2050D	CCIS0074	02-25-2017	02-24-2018
4	Coaxial Cable	CCIS	N/A	CCIS0086	02-25-2017	02-24-2018
5	EMI Test Software	AUDIX	E3	N/A	N/A	N/A

6 Test results and Measurement Data

6.1 Antenna requirement

Standard requirement:	FCC Part15 E Section 15.203 /407(a)
15.203 requirement: <i>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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</i> <i>This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.</i>	
E.U.T Antenna:	
<i>The WiFi antenna is an internal antenna which cannot replace by end-user, the best case gain of the antenna is -3.46 dBi.</i>	
	

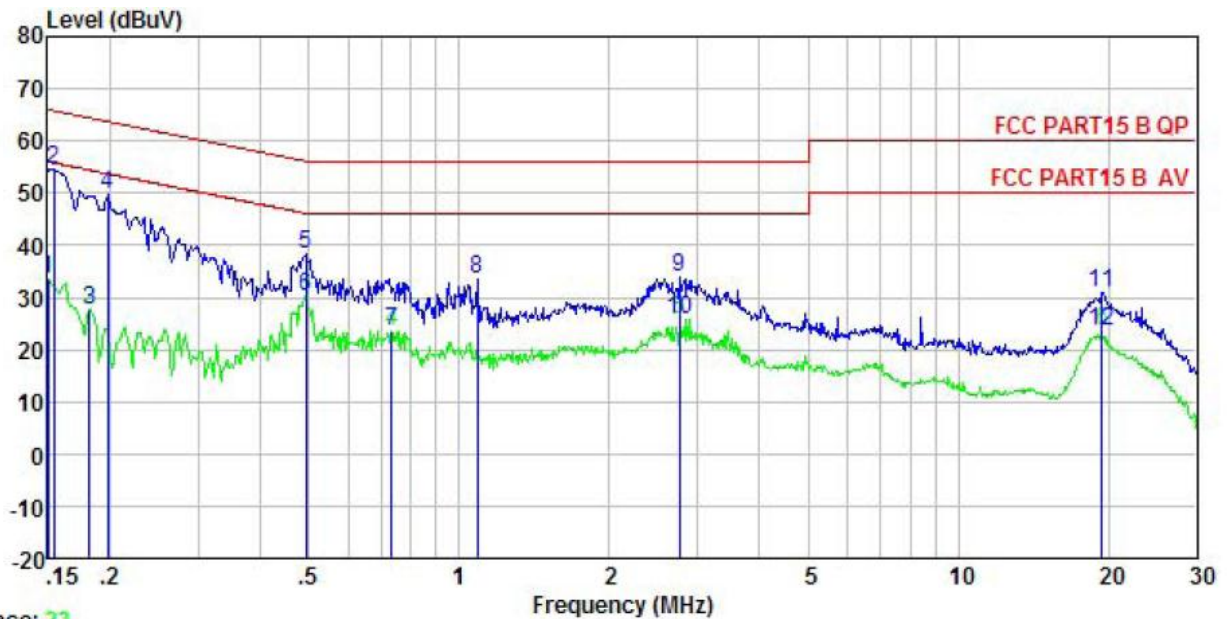
6.2 Conducted Emission

Test Requirement:	FCC Part15 C Section 15.207		
Test Method:	ANSI C63.10: 2013		
Test Frequency Range:	150kHz to 30MHz		
Class / Severity:	Class B		
Receiver setup:	RBW=9kHz, VBW=30kHz		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	
	0.15-0.5	66 to 56*	0.15-0.5
	0.5-5	56	0.5-5
	5-30	60	5-30
* Decreases with the logarithm of the frequency.			
Test procedure	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). It provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.		
Test setup:	 Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m		
Test Instruments:	Refer to section 5.8 for details		
Test mode:	Refer to section 5.3 for details.		
Test results:	Passed		

Measurement Data:

Configuration: 1#

Line:



Trace: 23

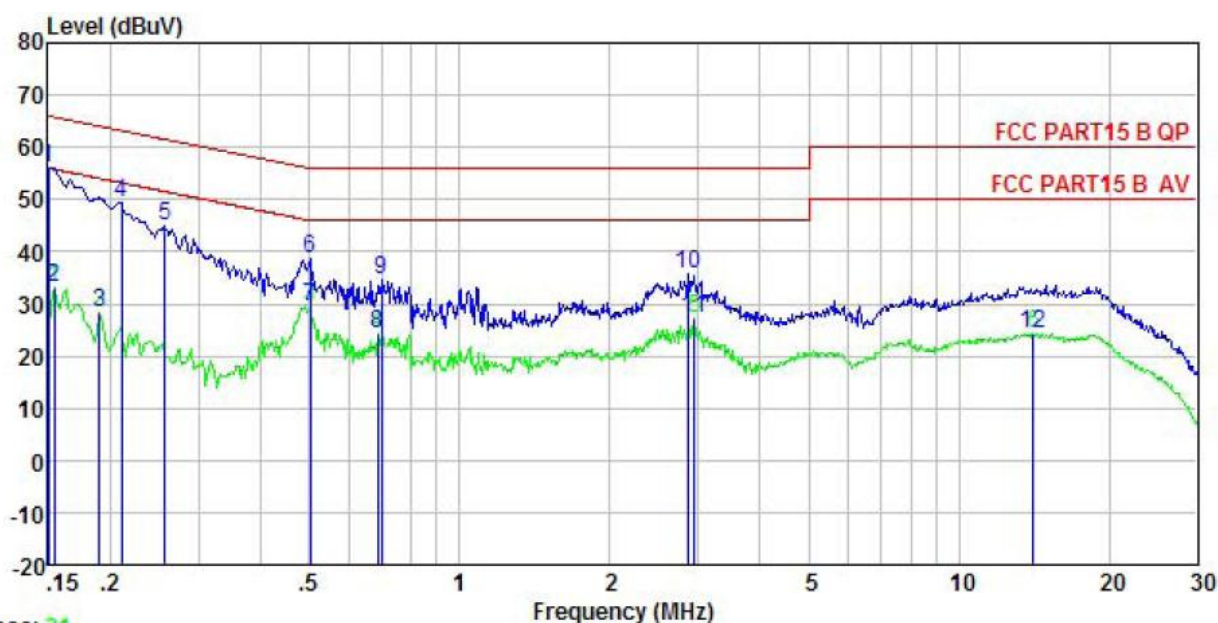
Site : CCIS Shielding Room
 Condition : FCC PART15 B QP LISN LINE
 EUT : laptop
 Model : Y11C
 Test Mode : 5G Wifi mode
 Power Rating : AC 120V/60Hz
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa
 Test Engineer: MT
 Remark : 1# adapter:PS36A120Y3000H

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.150	23.25	-0.56	10.78	33.47	56.00	-22.53	Average
2	0.154	44.33	-0.56	10.78	54.55	65.78	-11.23	QP
3	0.182	17.54	-0.53	10.77	27.78	54.42	-26.64	Average
4	0.198	39.37	-0.52	10.76	49.61	63.71	-14.10	QP
5	0.494	28.02	-0.49	10.76	38.29	56.10	-17.81	QP
6	0.494	20.00	-0.49	10.76	30.27	46.10	-15.83	Average
7	0.731	13.26	-0.48	10.78	23.56	46.00	-22.44	Average
8	1.088	23.22	-0.48	10.88	33.62	56.00	-22.38	QP
9	2.765	23.31	-0.44	10.93	33.80	56.00	-22.20	QP
10	2.765	15.30	-0.44	10.93	25.79	46.00	-20.21	Average
11	19.428	20.56	-0.50	10.93	30.99	60.00	-29.01	QP
12	19.428	12.95	-0.50	10.93	23.38	50.00	-26.62	Average

Notes:

1. An initial pre-scan was performed on the live and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss.

Neutral:



Trace: 21

Site : CCIS Shielding Room
 Condition : FCC PART15 B QP LISN NEUTRAL
 EUT : laptop
 Model : Y11C
 Test Mode : 5G Wifi mode
 Power Rating : AC 120V/60Hz
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa
 Test Engineer: MT
 Remark : 1# adapter:PS36A120Y3000H

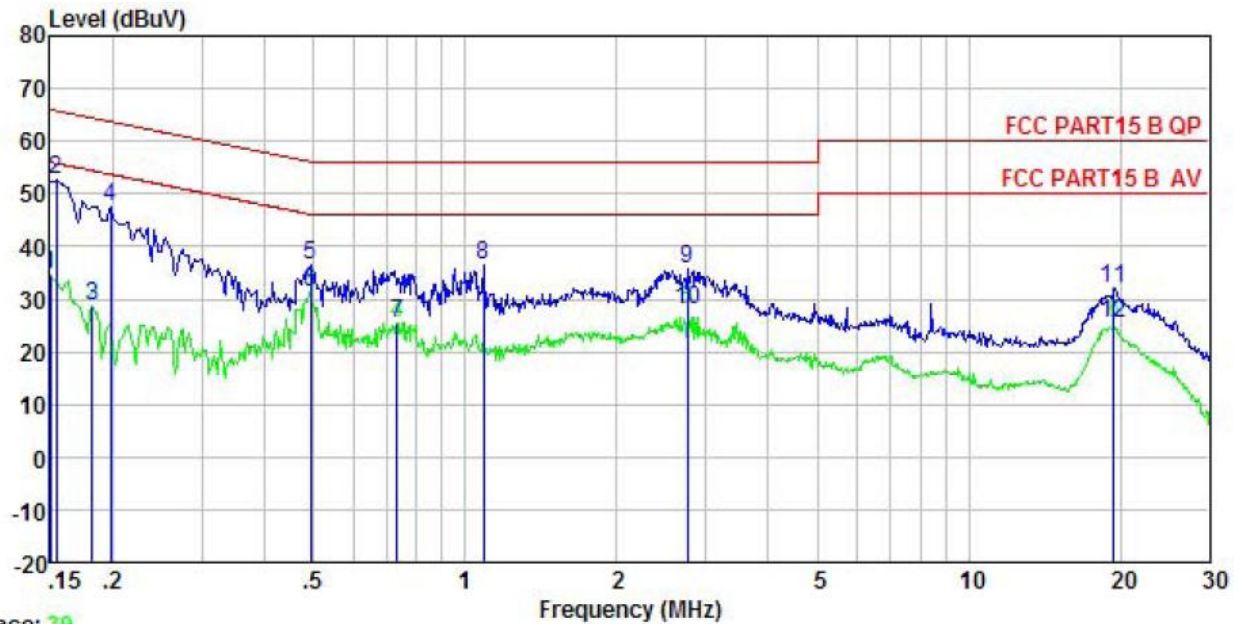
	Freq	Read	LISN	Cable	Level	Limit	Over	
	MHz	dBuV	Factor	Loss	dBuV	Line	Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.150	45.68	-0.38	10.78	56.08	66.00	-9.92	QP
2	0.154	22.75	-0.38	10.78	33.15	55.78	-22.63	Average
3	0.190	17.80	-0.35	10.76	28.21	54.02	-25.81	Average
4	0.211	39.05	-0.34	10.76	49.47	63.18	-13.71	QP
5	0.258	34.47	-0.33	10.75	44.89	61.51	-16.62	QP
6	0.502	28.05	-0.30	10.76	38.51	56.00	-17.49	QP
7	0.502	18.87	-0.30	10.76	29.33	46.00	-16.67	Average
8	0.686	13.78	-0.30	10.77	24.25	46.00	-21.75	Average
9	0.697	23.97	-0.30	10.77	34.44	56.00	-21.56	QP
10	2.869	24.84	-0.21	10.92	35.55	56.00	-20.45	QP
11	2.946	16.42	-0.20	10.92	27.14	46.00	-18.86	Average
12	14.063	13.76	-0.21	10.91	24.46	50.00	-25.54	Average

Notes:

1. An initial pre-scan was performed on the live and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level =Receiver Read level + LISN Factor + Cable Loss.

Configuration: 2#

Line:



Trace: 39

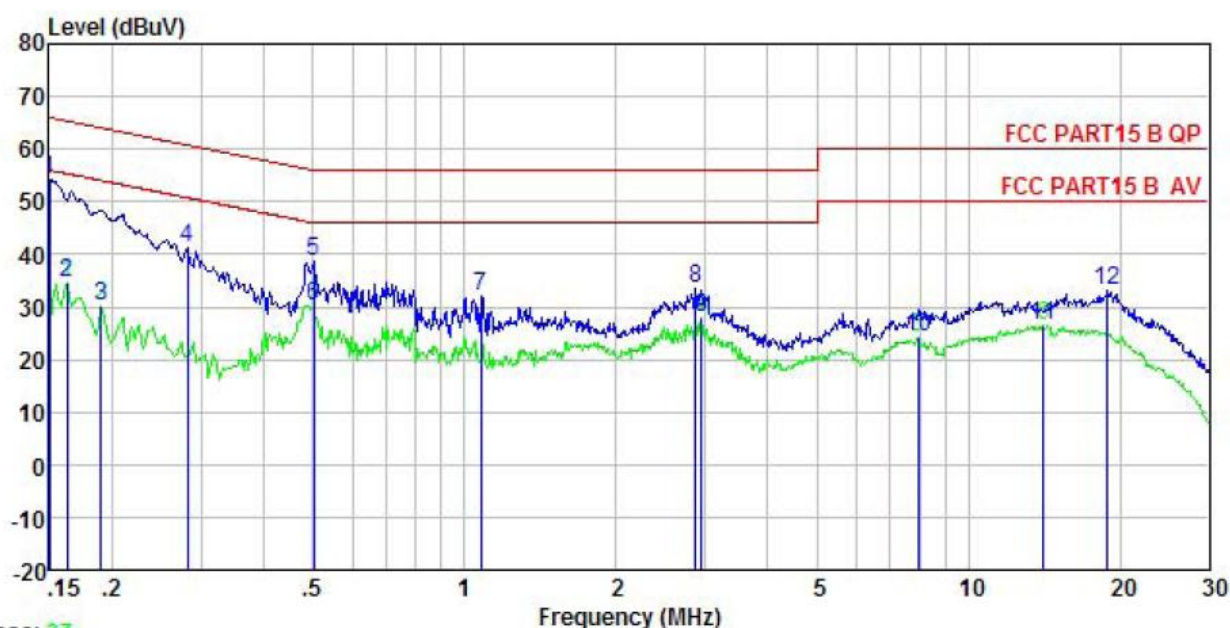
Site : CCIS Shielding Room
 Condition : FCC PART15 B QP LISN LINE
 EUT : laptop
 Model : Y11C
 Test Mode : 5G Wifi mode
 Power Rating : AC 120V/60Hz
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa
 Test Engineer: MT
 Remark : 2# adapter:EE1230-105

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.150	24.25	-0.56	10.78	34.47	56.00	-21.53	Average
2	0.154	42.33	-0.56	10.78	52.55	65.78	-13.23	QP
3	0.182	18.54	-0.53	10.77	28.78	54.42	-25.64	Average
4	0.198	37.37	-0.52	10.76	47.61	63.71	-16.10	QP
5	0.494	26.02	-0.49	10.76	36.29	56.10	-19.81	QP
6	0.494	21.00	-0.49	10.76	31.27	46.10	-14.83	Average
7	0.731	15.26	-0.48	10.78	25.56	46.00	-20.44	Average
8	1.088	26.22	-0.48	10.88	36.62	56.00	-19.38	QP
9	2.765	25.31	-0.44	10.93	35.80	56.00	-20.20	QP
10	2.765	17.30	-0.44	10.93	27.79	46.00	-18.21	Average
11	19.428	21.56	-0.50	10.93	31.99	60.00	-28.01	QP
12	19.428	14.95	-0.50	10.93	25.38	50.00	-24.62	Average

Notes:

1. An initial pre-scan was performed on the live and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level =Receiver Read level + LISN Factor + Cable Loss.

Neutral:



Trace: 37

Site : CCIS Shielding Room
 Condition : FCC PART15 B QP LISN NEUTRAL
 EUT : laptop
 Model : Y11C
 Test Mode : 5G Wifi mode
 Power Rating : AC 120V/60Hz
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa
 Test Engineer: MT
 Remark : 2# adapter:EE1230-105

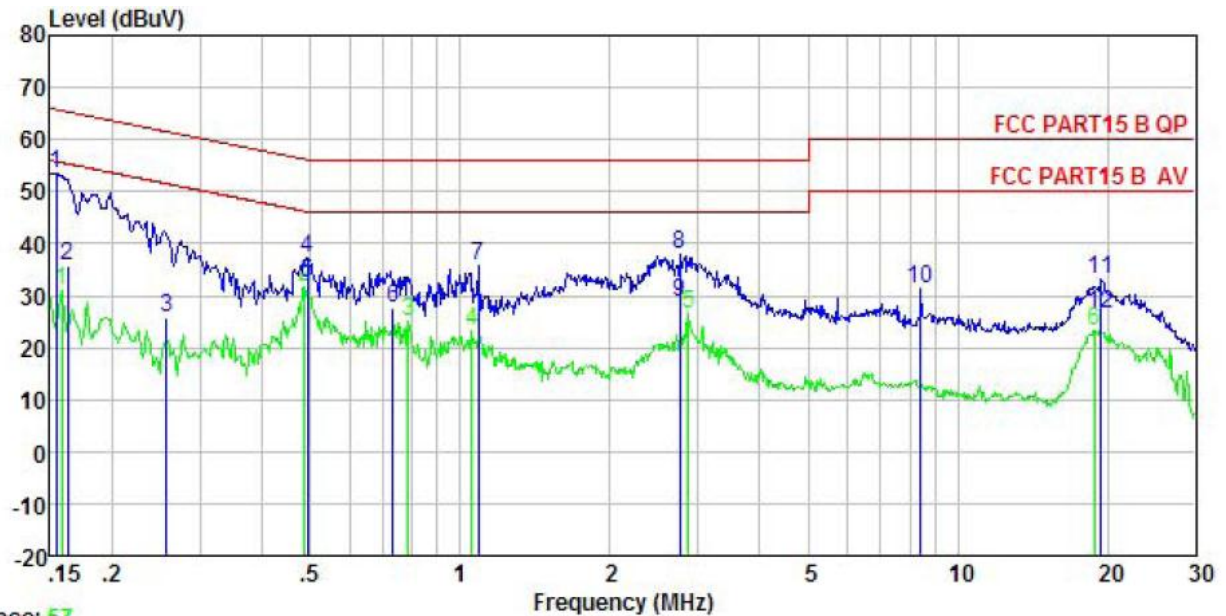
	Freq	Read	LISN	Cable	Level	Limit	Over	
	MHz	Level	Factor	Loss	dBuV	Line	Limit	Remark
		dBuV	dB	dB	dBuV	dBuV	dB	
1	0.150	43.68	-0.38	10.78	54.08	66.00	-11.92	QP
2	0.162	24.40	-0.37	10.77	34.80	55.34	-20.54	Average
3	0.190	19.80	-0.35	10.76	30.21	54.02	-23.81	Average
4	0.282	30.85	-0.32	10.74	41.27	60.76	-19.49	QP
5	0.502	28.05	-0.30	10.76	38.51	56.00	-17.49	QP
6	0.502	19.87	-0.30	10.76	30.33	46.00	-15.67	Average
7	1.077	21.47	-0.29	10.88	32.06	56.00	-23.94	QP
8	2.869	22.84	-0.21	10.92	33.55	56.00	-22.45	QP
9	2.946	17.42	-0.20	10.92	28.14	46.00	-17.86	Average
10	7.935	13.13	0.22	10.85	24.20	50.00	-25.80	Average
11	14.063	15.76	-0.21	10.91	26.46	50.00	-23.54	Average
12	18.920	22.55	-0.45	10.92	33.02	60.00	-26.98	QP

Notes:

1. An initial pre-scan was performed on the live and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss.

Configuration: 3#

Line:



Trace: 57

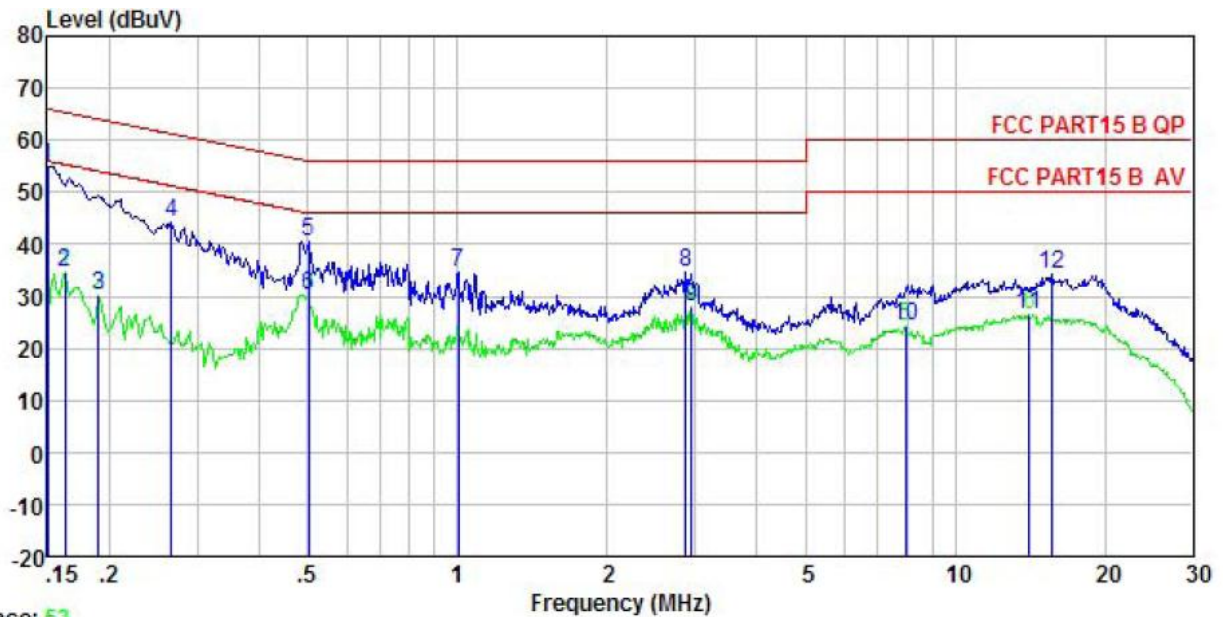
Site : CCIS Shielding Room
 Condition : FCC PART15 B QP LISN LINE
 EUT : laptop
 Model : Y11C
 Test Mode : 5G Wifi mode
 Power Rating : AC 120V/60Hz
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa
 Test Engineer: MT
 Remark : 3# adapter:SOY-1200300

	Freq	Read	LISN	Cable	Limit	Over	
	MHz	Level	Factor	Loss	Line	Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dB	
1	0.154	43.33	-0.56	10.78	53.55	65.78	-12.23 QP
2	0.162	25.44	-0.55	10.77	35.66	55.34	-19.68 Average
3	0.258	15.52	-0.51	10.75	25.76	51.51	-25.75 Average
4	0.494	27.02	-0.49	10.76	37.29	56.10	-18.81 QP
5	0.494	22.00	-0.49	10.76	32.27	46.10	-13.83 Average
6	0.731	17.26	-0.48	10.78	27.56	46.00	-18.44 Average
7	1.088	25.22	-0.48	10.88	35.62	56.00	-20.38 QP
8	2.765	27.31	-0.44	10.93	37.80	56.00	-18.20 QP
9	2.765	18.30	-0.44	10.93	28.79	46.00	-17.21 Average
10	8.412	20.33	0.06	10.87	31.26	60.00	-28.74 QP
11	19.428	22.56	-0.50	10.93	32.99	60.00	-27.01 QP
12	19.428	15.95	-0.50	10.93	26.38	50.00	-23.62 Average

Notes:

1. An initial pre-scan was performed on the live and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss.

Neutral:



Trace: 53

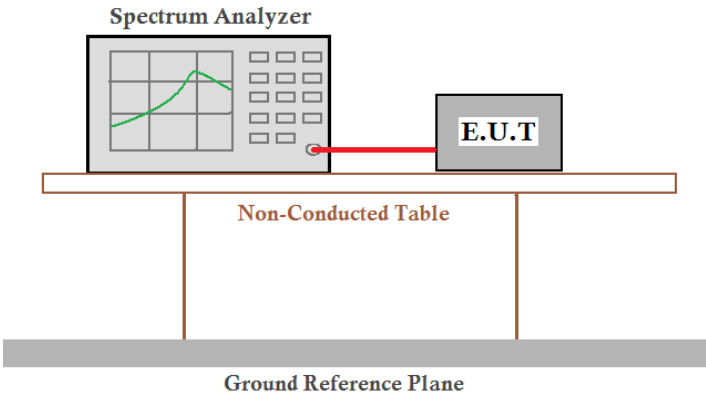
Site : CCIS Shielding Room
 Condition : FCC PART15 B QP LISN NEUTRAL
 EUT : laptop
 Model : Y11C
 Test Mode : 5G Wifi mode
 Power Rating : AC 120V/60Hz
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa
 Test Engineer: MT
 Remark : 3# adapter:SOY-1200300

	Read	LISN	Cable	Limit	Over	
Freq	Level	Factor	Loss	Line	Limit	Remark
MHz	dBuV	dB	dB	dBuV	dB	
1	0.150	44.68	-0.38	10.78	55.08	66.00 -10.92 QP
2	0.162	24.40	-0.37	10.77	34.80	55.34 -20.54 Average
3	0.190	19.80	-0.35	10.76	30.21	54.02 -23.81 Average
4	0.266	33.64	-0.33	10.75	44.06	61.25 -17.19 QP
5	0.502	30.05	-0.30	10.76	40.51	56.00 -15.49 QP
6	0.502	19.87	-0.30	10.76	30.33	46.00 -15.67 Average
7	1.005	24.02	-0.29	10.87	34.60	56.00 -21.40 QP
8	2.869	23.84	-0.21	10.92	34.55	56.00 -21.45 QP
9	2.946	17.42	-0.20	10.92	28.14	46.00 -17.86 Average
10	7.935	13.13	0.22	10.85	24.20	50.00 -25.80 Average
11	14.063	15.76	-0.21	10.91	26.46	50.00 -23.54 Average
12	15.635	23.83	-0.34	10.90	34.39	60.00 -25.61 QP

Notes:

1. An initial pre-scan was performed on the live and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level =Receiver Read level + LISN Factor + Cable Loss.

6.3 Conducted Output Power

Test Requirement:	FCC Part15 E Section 15.407 (a) (1) (ii) & (a) (3)
Test Method:	ANSI C63.10: 2013, KDB789033
Limit:	Band 1: 24dBm
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer, shown with a green trace on its screen, is connected to an E.U.T. (Equipment Under Test) by a red cable. Both the Spectrum Analyzer and the E.U.T. are positioned on a 'Non-Conducted Table'. This table is supported by two vertical legs and rests on a 'Ground Reference Plane', which is represented by a thick grey horizontal bar at the bottom of the setup.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

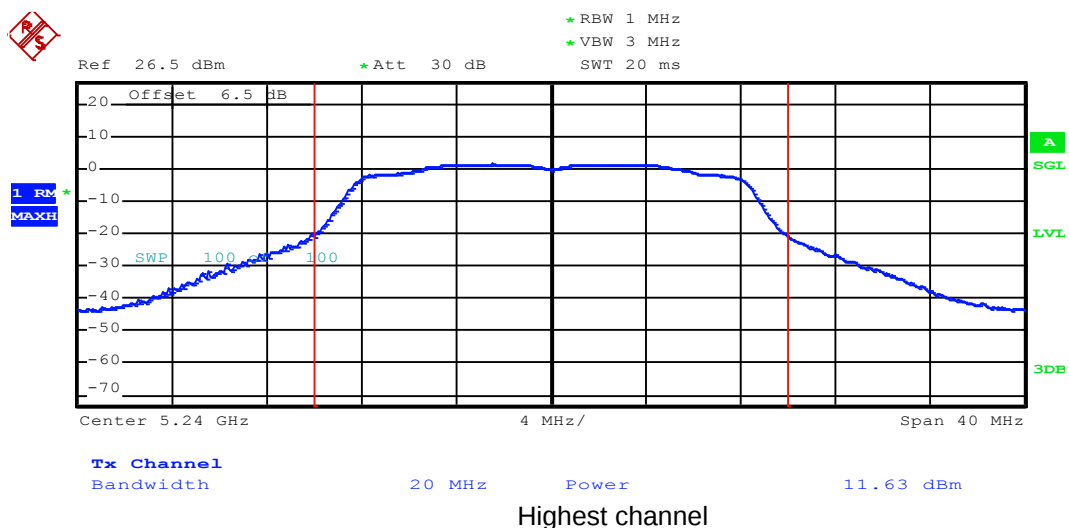
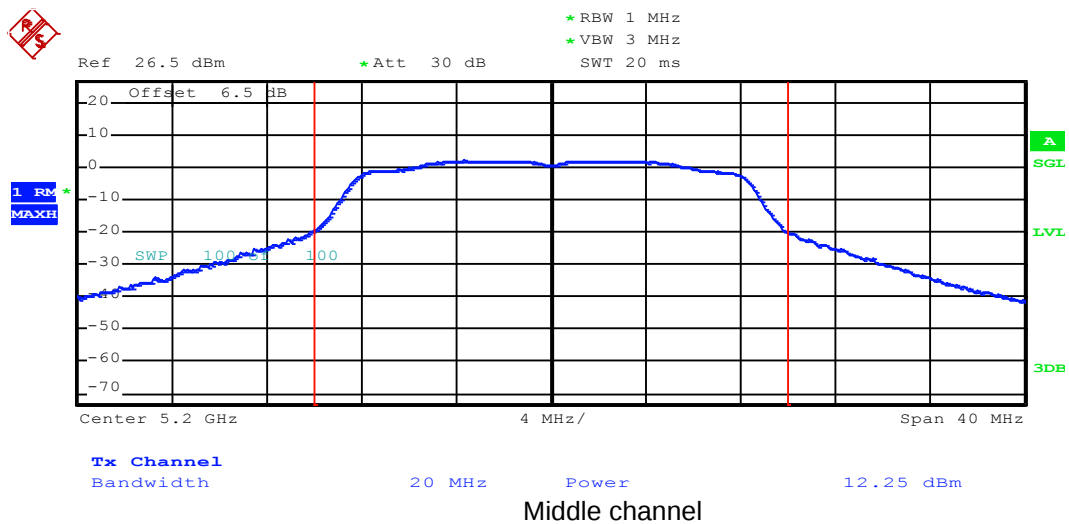
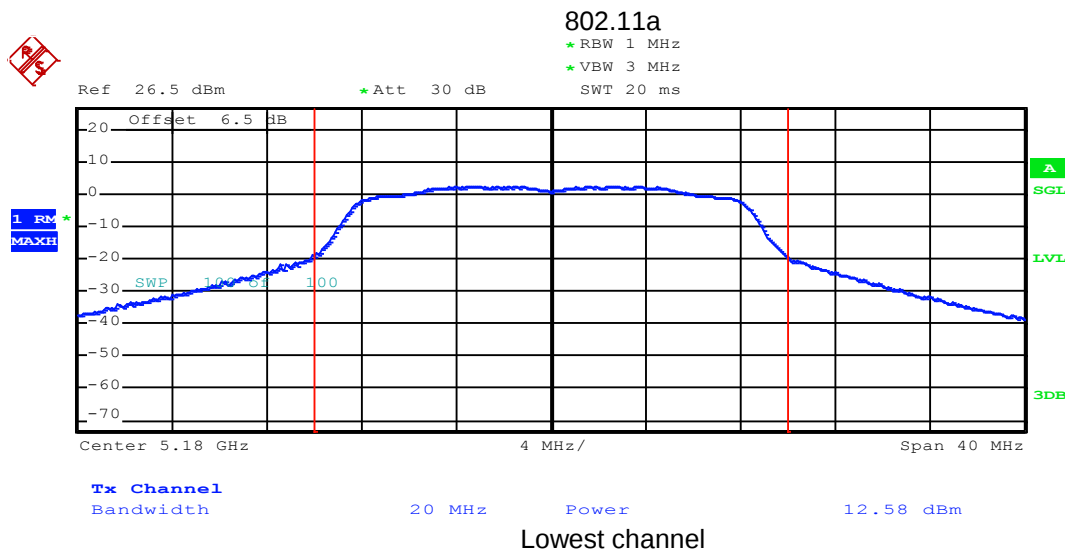
Band1

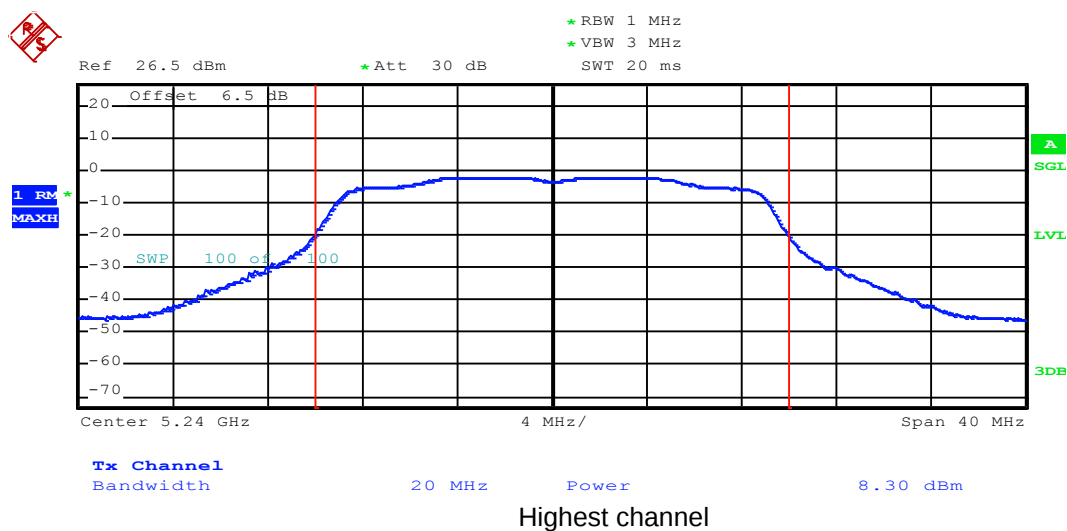
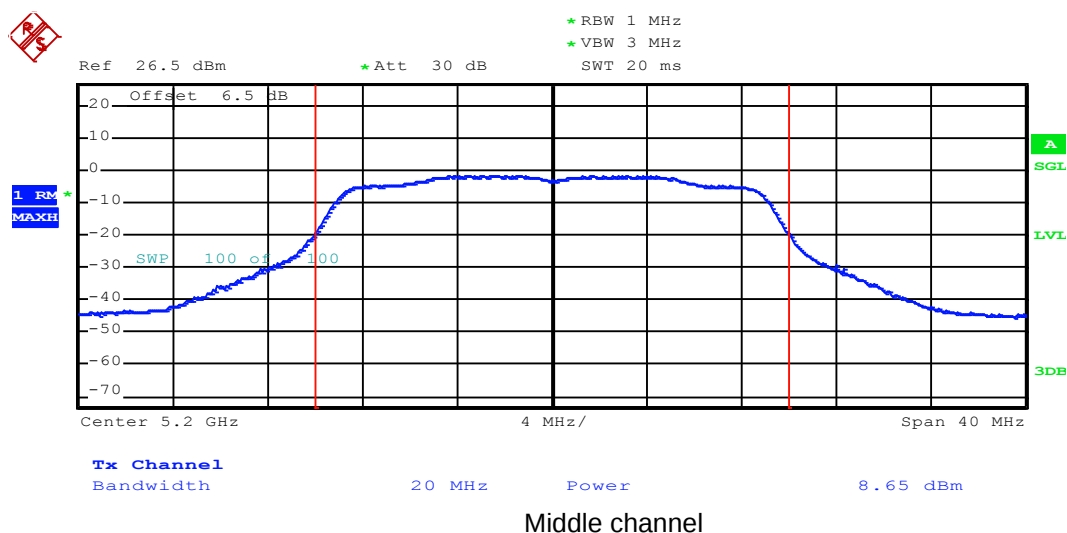
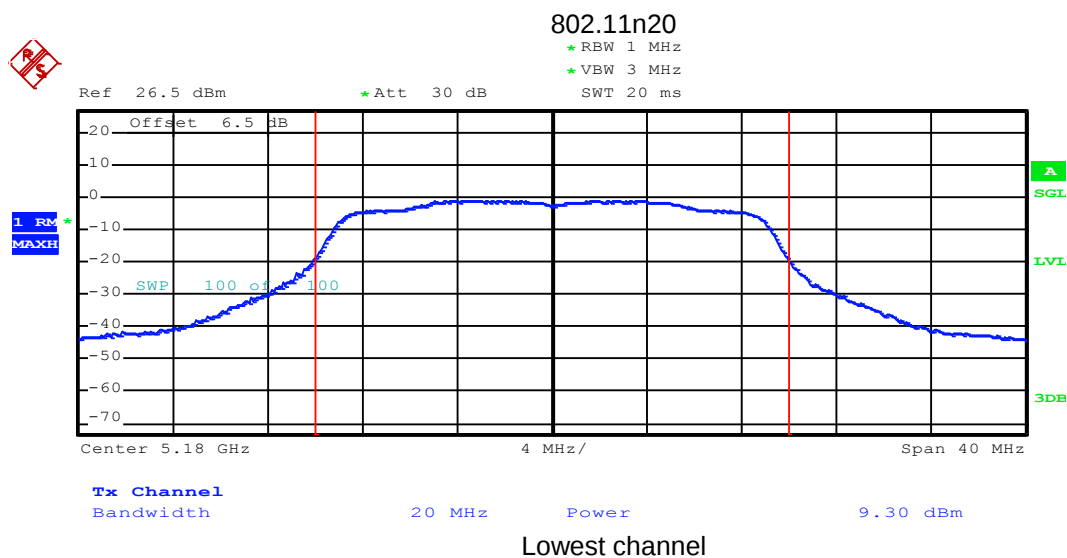
Mode	Test CH	Ant. Port	Conducted Output power (dBm)	Total power (dBm)	Limit (dBm)	Result
802.11a	Lowest	AUX	12.58	/	24.00	Pass
		MAIN	12.13			
	Middle	AUX	12.25	/	24.00	Pass
		MAIN	12.39			
	Highest	AUX	11.63	/	24.00	Pass
		MAIN	11.43			
802.11n20	Lowest	AUX	9.30	11.85	24.00	Pass
		MAIN	8.33			
	Middle	AUX	8.65	11.39	24.00	Pass
		MAIN	8.10			
	Highest	AUX	8.30	11.18	24.00	Pass
		MAIN	8.04			
802.11n40	Lowest	AUX	8.66	11.47	24.00	Pass
		MAIN	8.24			
	Highest	AUX	8.41	11.28	24.00	Pass
		MAIN	8.12			
802.11ac80	Middle	AUX	8.00	11.09	24.00	Pass
		MAIN	8.16			

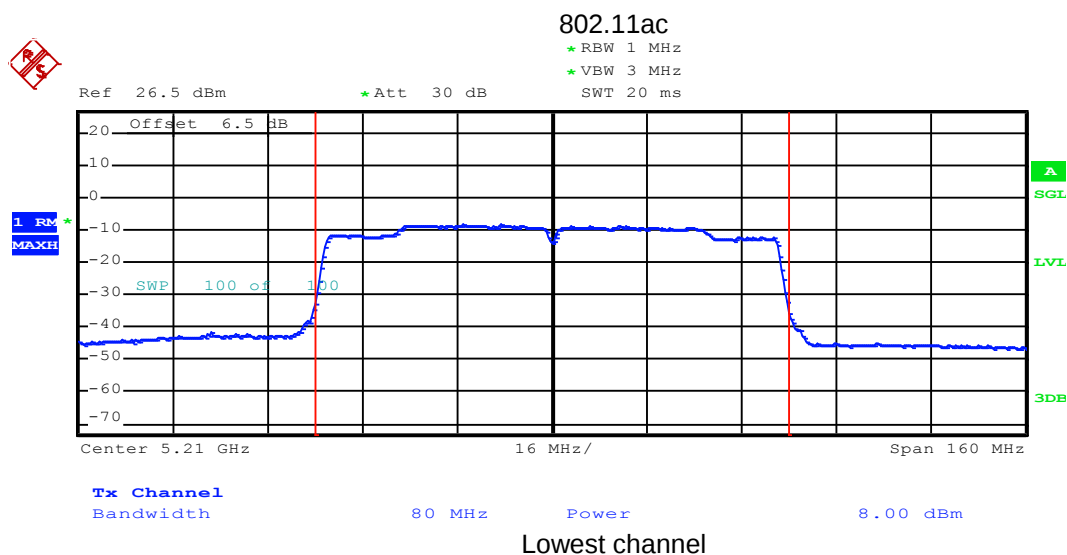
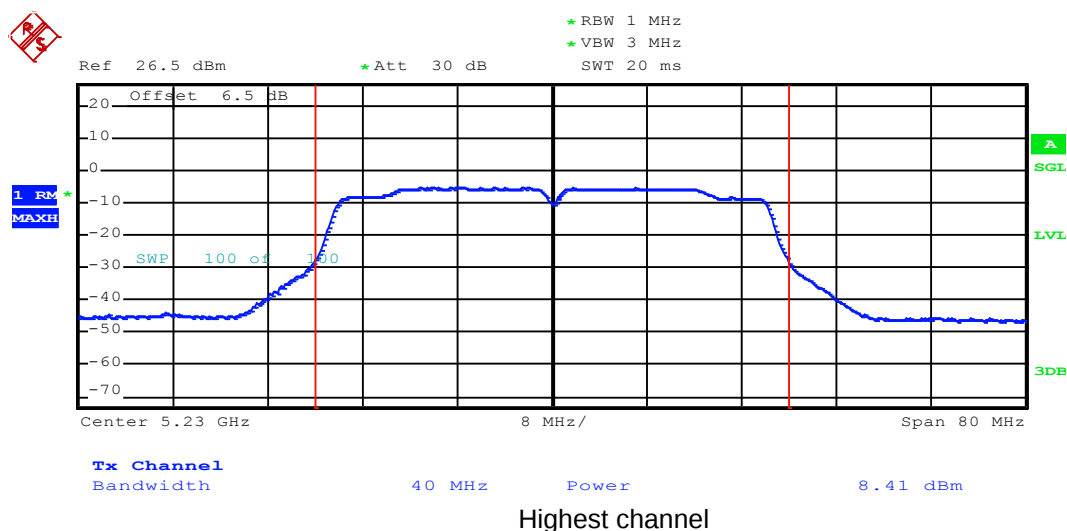
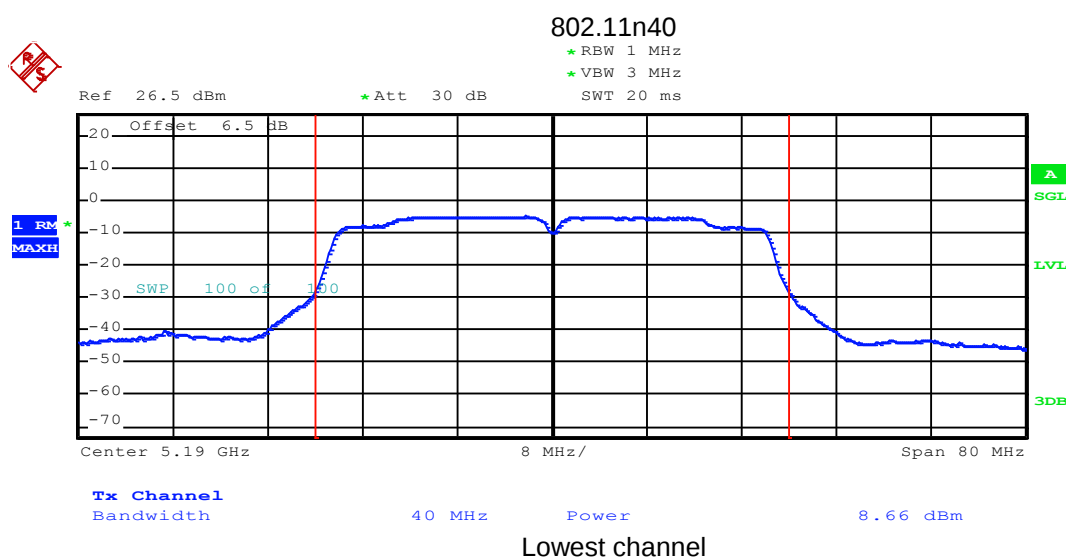
Test plot as follows:

Band 1

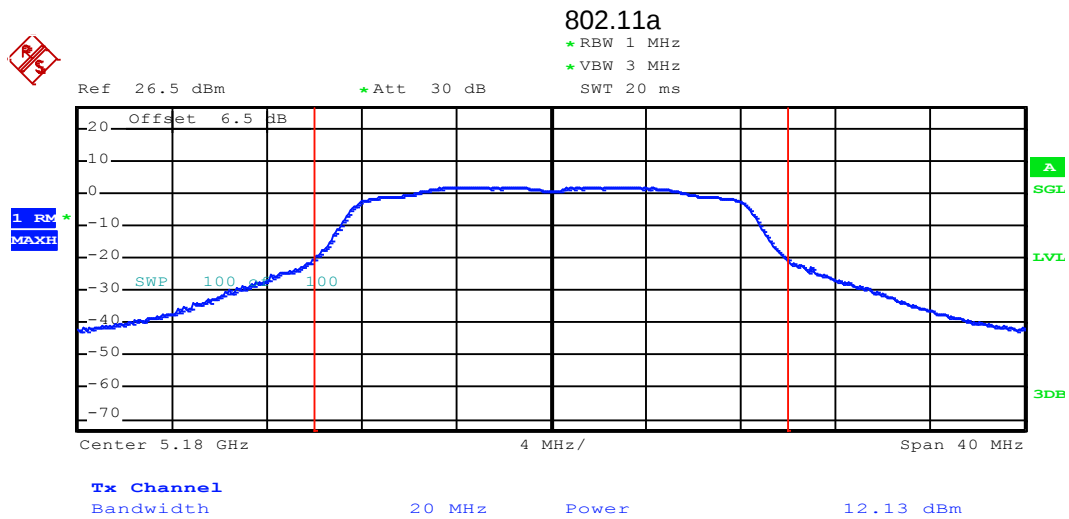
AUX Antenna Port:



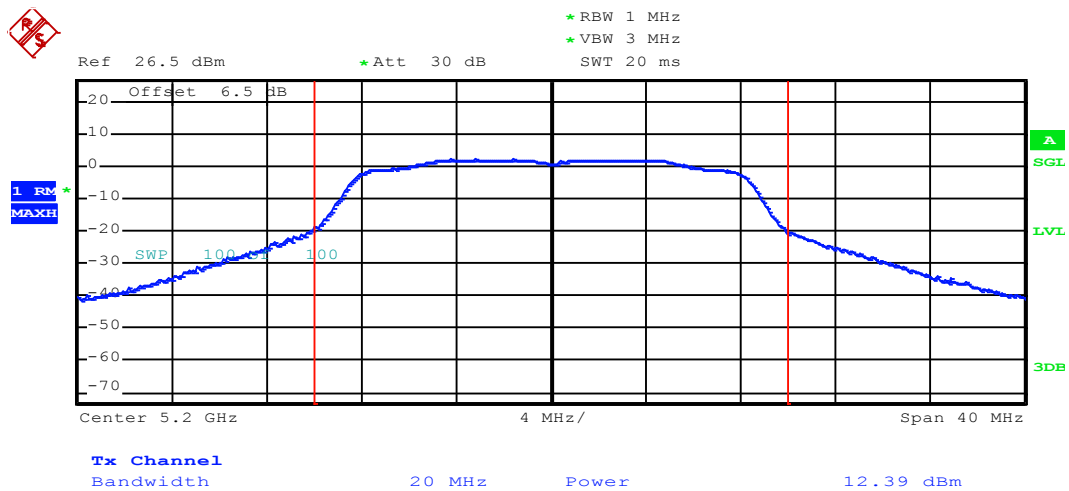




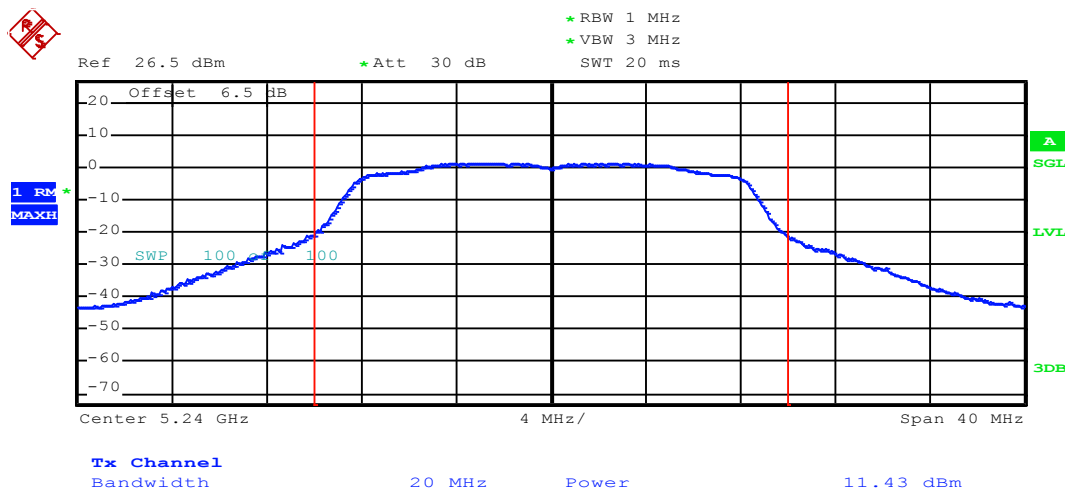
MAIN Antenna Port:



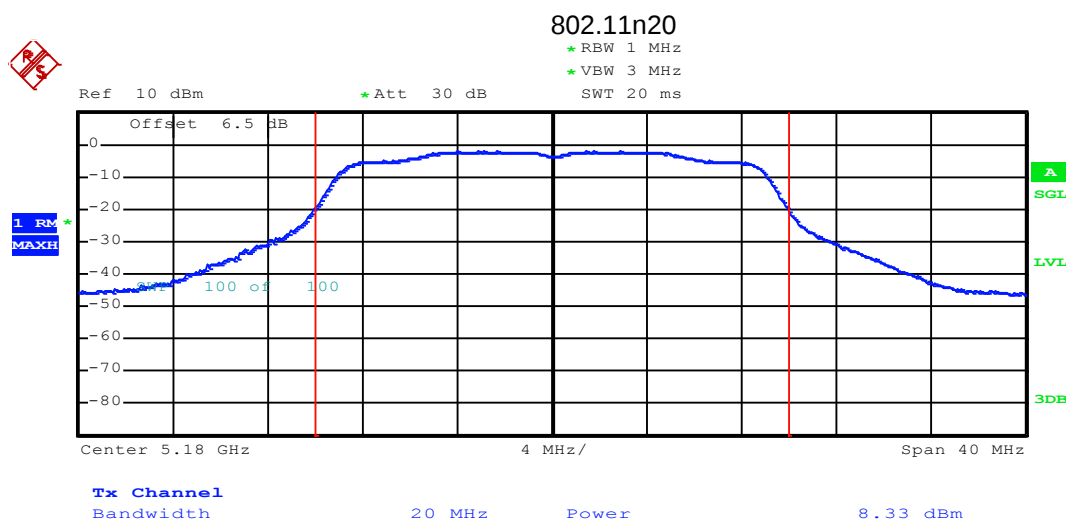
Lowest channel



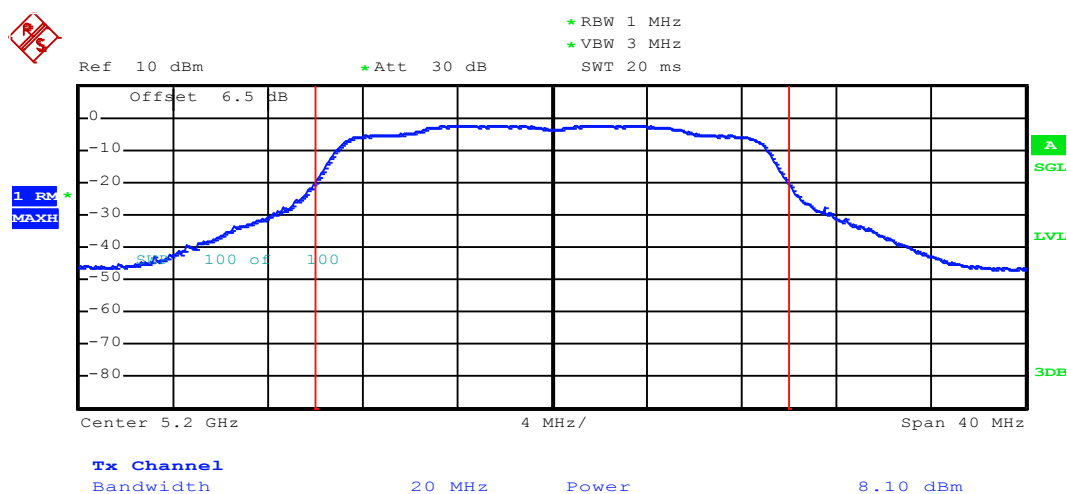
Middle channel



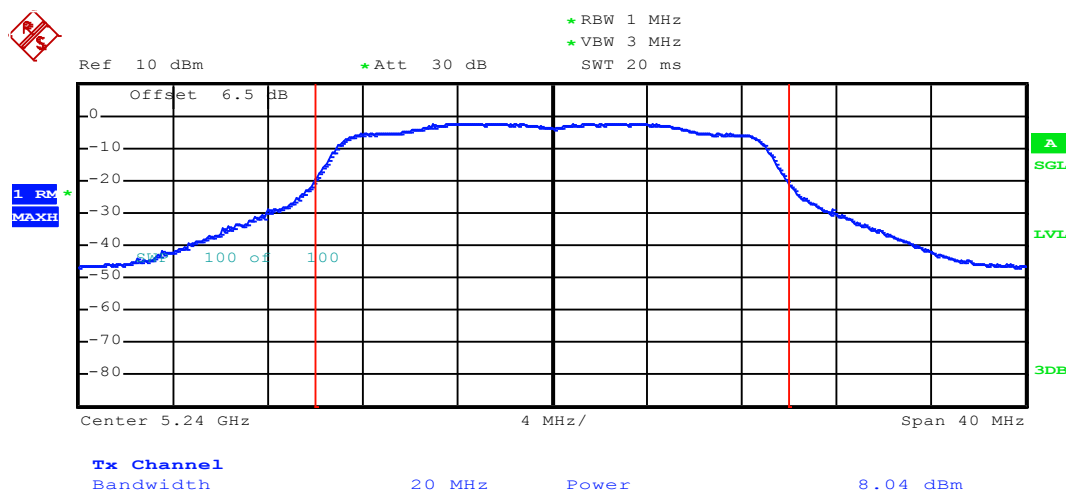
Highest channel



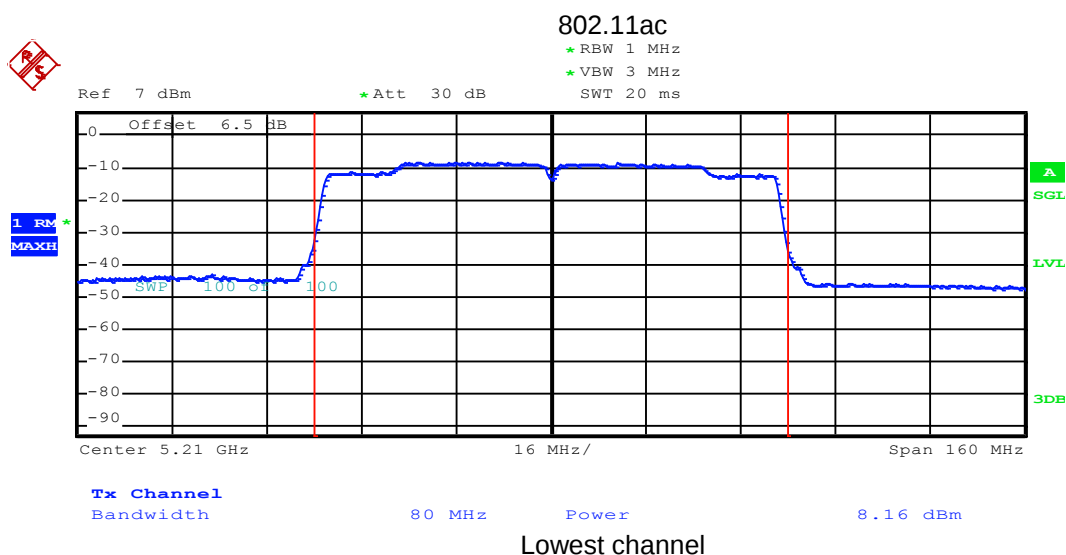
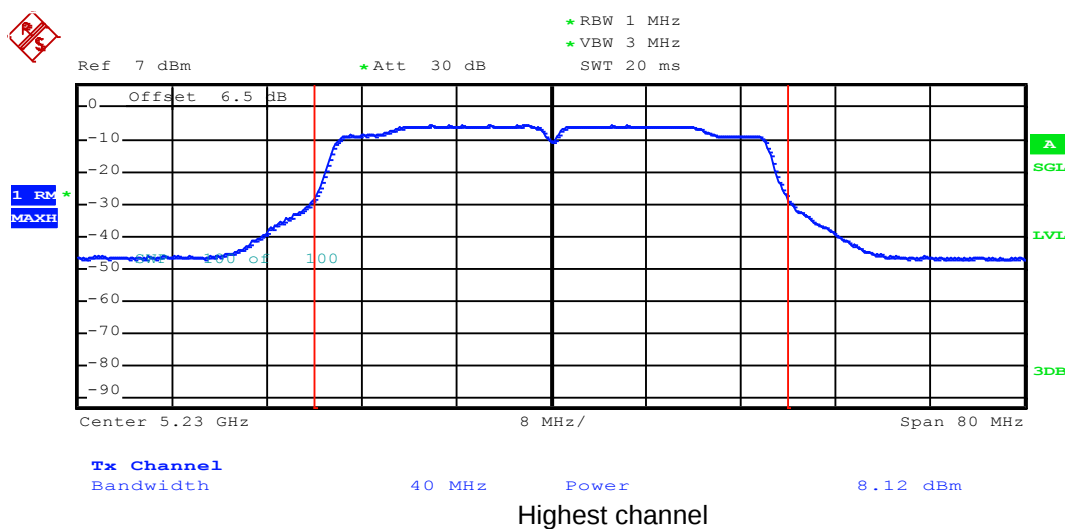
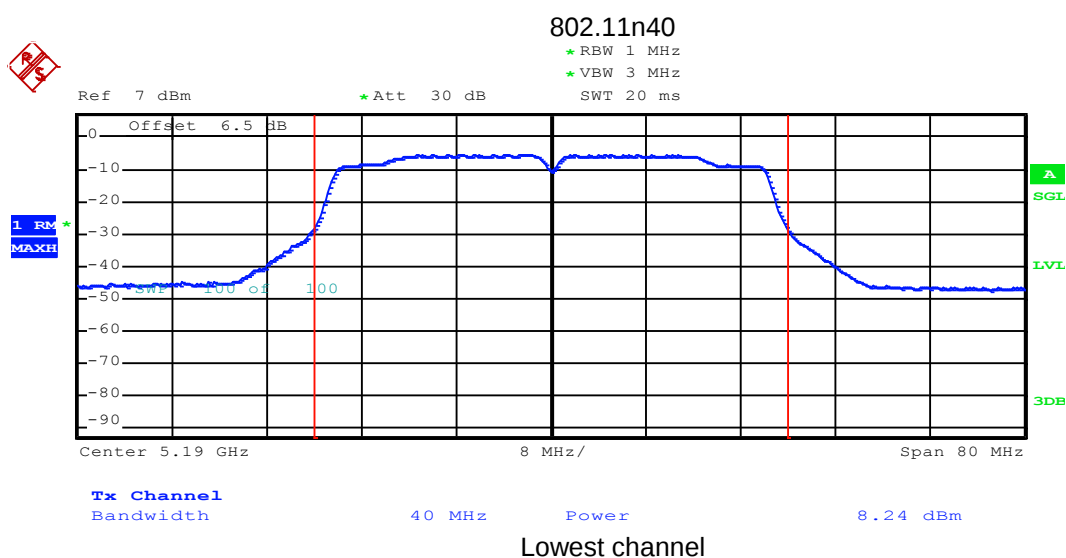
Lowest channel



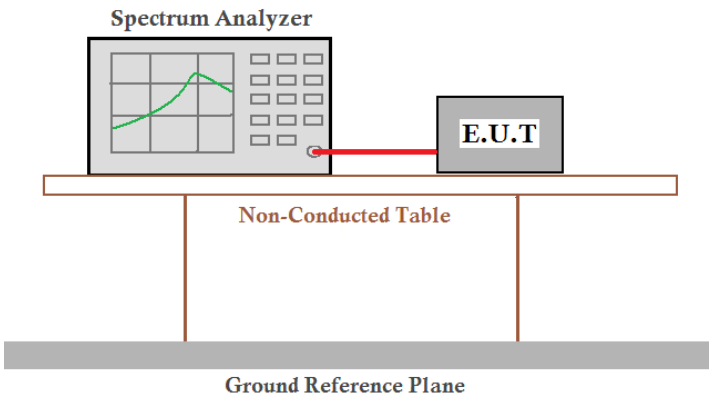
Middle channel



Highest channel



6.4 Occupy Bandwidth

Test Requirement:	FCC Part15 E Section 15.407 (a) (5) and Section 15.407 (e)
Test Method:	ANSI C63.10:2013 and KDB 789033
Limit:	Band 1: N/A(26dB Emission Bandwidth and 99% Occupy Bandwidth)
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer, shown with a grid and a green curve on its screen, is connected to an E.U.T (Equipment Under Test) box by a red cable. Both the Spectrum Analyzer and the E.U.T are positioned on a Non-Conducted Table, which is a rectangular platform supported by two vertical legs. Below the table, a thick grey horizontal bar represents the Ground Reference Plane.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

Band 1:

AUX Antenna Port:

Test Channel	26dB Emission Bandwidth (MHz)				Limit	Result
	802.11a	802.11n20	802.11n40	802.11ac		
Lowest	23.68	24.36	41.68	---	N/A	N/A
Middle	23.68	23.20	---	80.32		
Highest	19.88	19.62	39.60	---		
Test Channel	99% Occupy Bandwidth (MHz)				Limit	Result
	802.11a	802.11n20	802.11n40	802.11ac		
Lowest	16.96	17.96	36.16	---	N/A	N/A
Middle	16.88	17.92	---	75.84		
Highest	16.88	17.88	36.08	---		

MAIN Antenna Port:

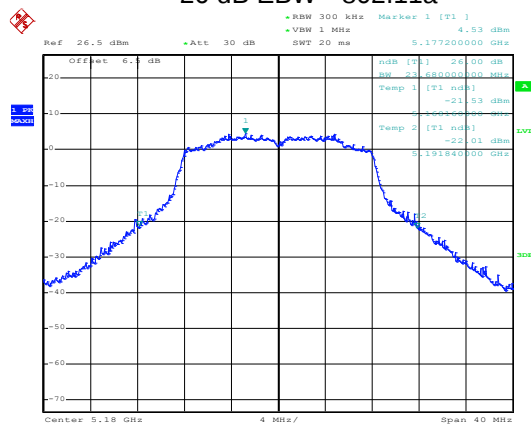
Test Channel	26dB Emission Bandwidth (MHz)				Limit	Result
	802.11a	802.11n20	802.11n40	802.11ac		
Lowest	23.60	22.56	42.16	---	N/A	N/A
Middle	24.16	23.32	---	79.68		
Highest	19.72	19.80	39.44	---		
Test Channel	99% Occupy Bandwidth (MHz)				Limit	Result
	802.11a	802.11n20	802.11n40	802.11ac		
Lowest	16.96	17.88	36.16	---	N/A	N/A
Middle	16.96	17.96	---	75.52		
Highest	16.84	17.96	36.16	---		

Test plot as follows:

Band 1:

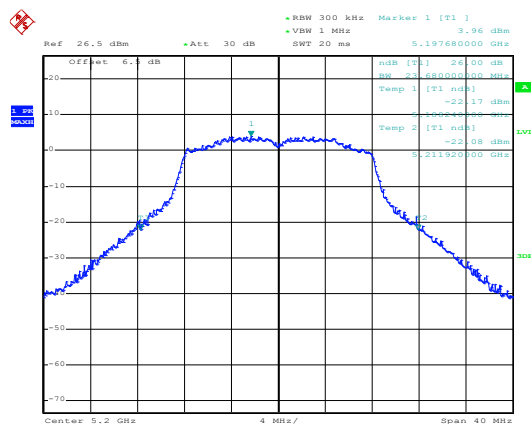
AUX Antenna Port:

26 dB EBW - 802.11a



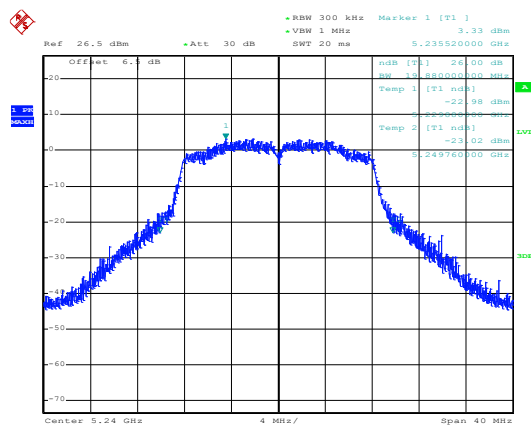
Date: 1.JUL.2017 11:31:12

Lowest channel



Date: 1.JUL.2017 11:31:46

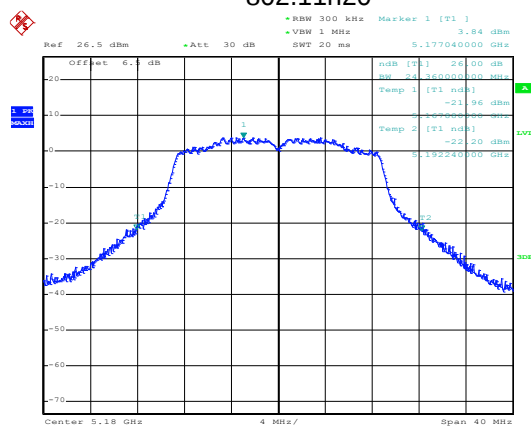
Middle channel



Date: 1.JUL.2017 11:33:40

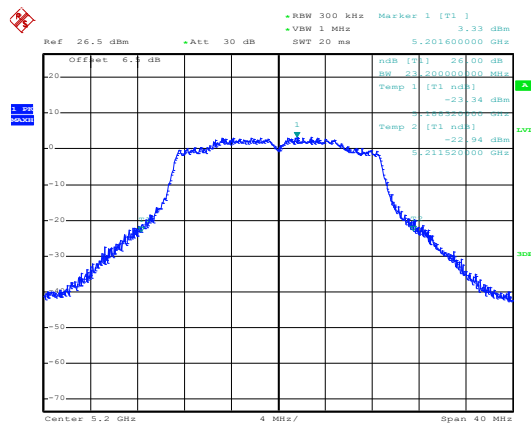
Highest channel

802.11n20



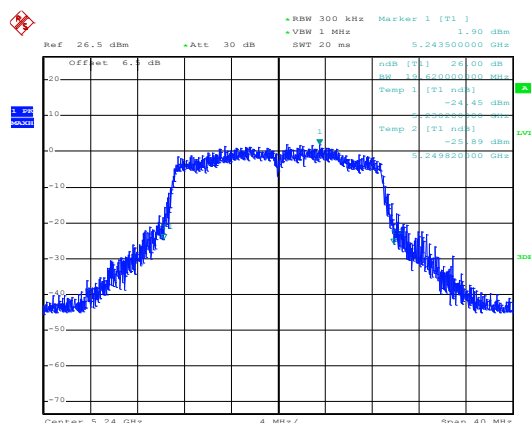
Date: 1.JUL.2017 11:36:40

Lowest channel



Date: 1.JUL.2017 11:35:50

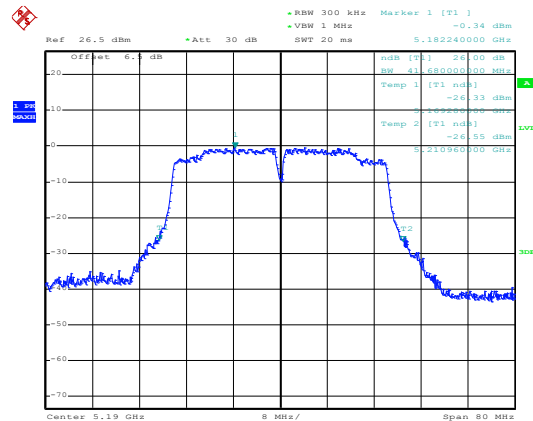
Middle channel



Date: 1.JUL.2017 11:34:52

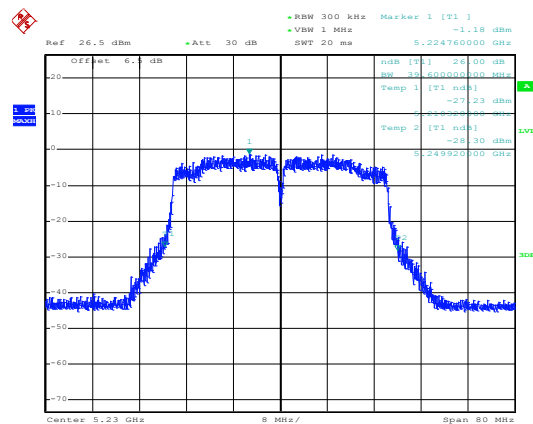
Highest channel

802.11n40



Date: 1.JUL.2017 11:37:44

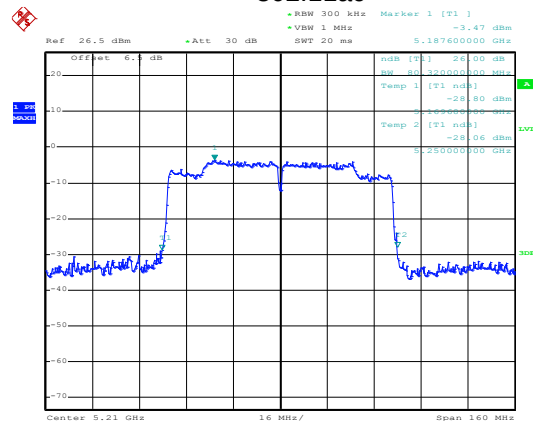
Lowest channel



Date: 1.JUL.2017 11:38:35

Highest channel

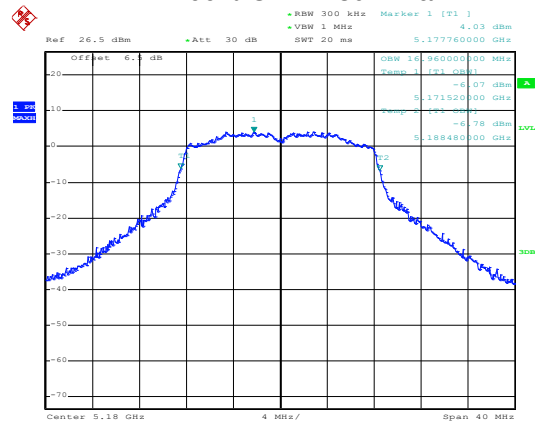
802.11ac



Date: 1.JUL.2017 11:29:58

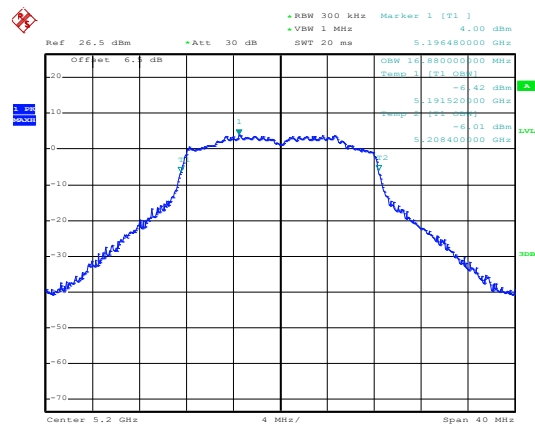
Middle channel

99% OBW - 802.11a



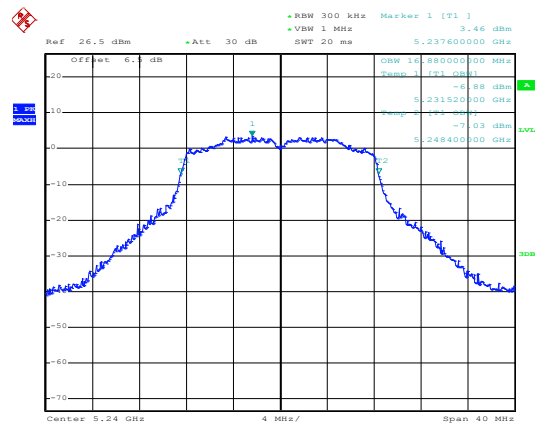
Date: 1.JUL.2017 11:31:02

Lowest channel



Date: 1.JUL.2017 11:32:07

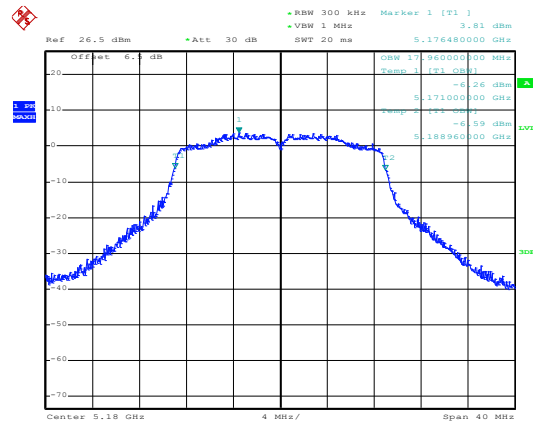
Middle channel



Date: 1.JUL.2017 11:32:38

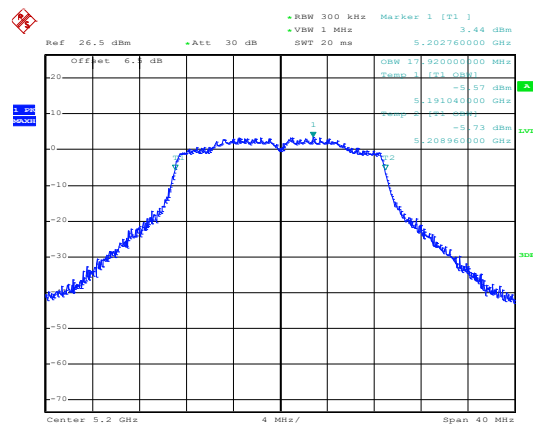
Highest channel

802.11n20



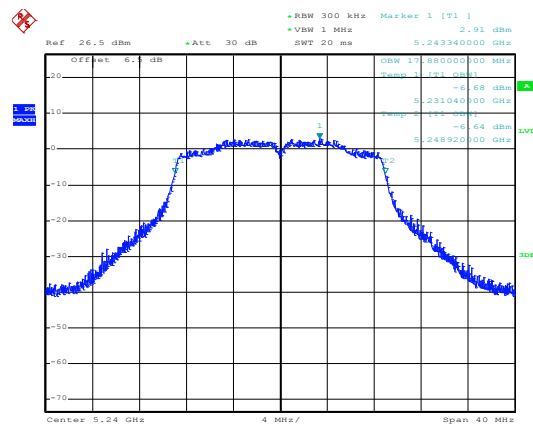
Date: 1.JUL.2017 11:36:56

Lowest channel



Date: 1.JUL.2017 11:35:41

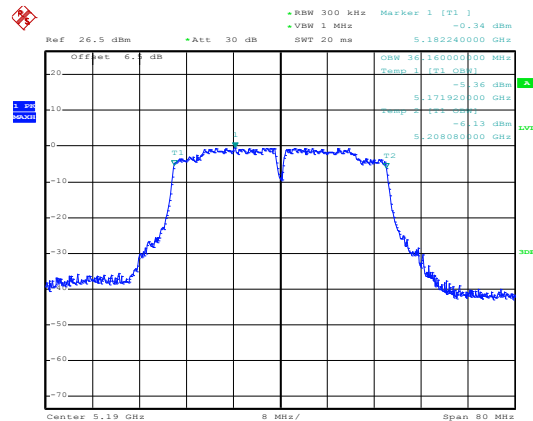
Middle channel



Date: 1.JUL.2017 11:35:11

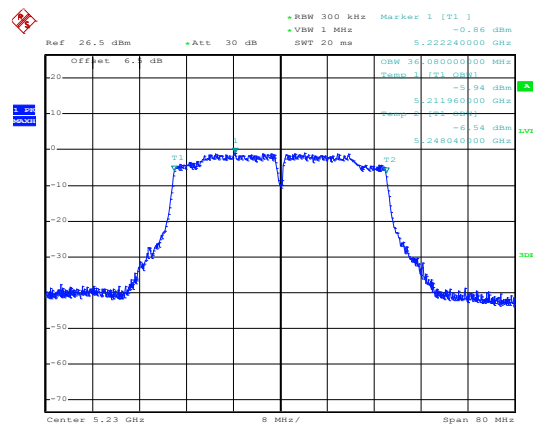
Highest channel

802.11n40



Date: 1.JUL.2017 11:37:34

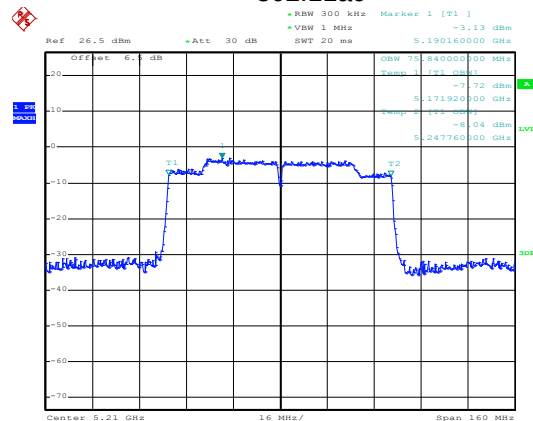
Lowest channel



Date: 1.JUL.2017 11:38:57

Highest channel

802.11ac

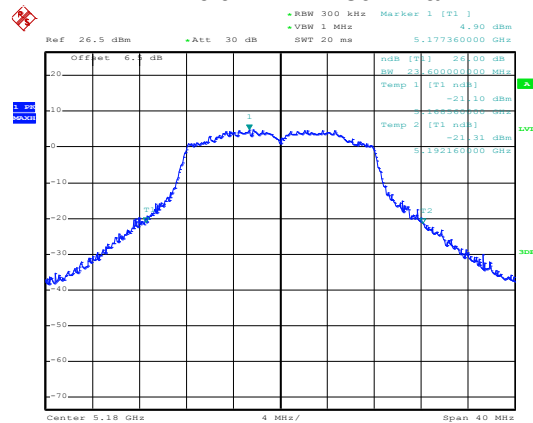


Date: 1.JUL.2017 11:30:17

Middle channel

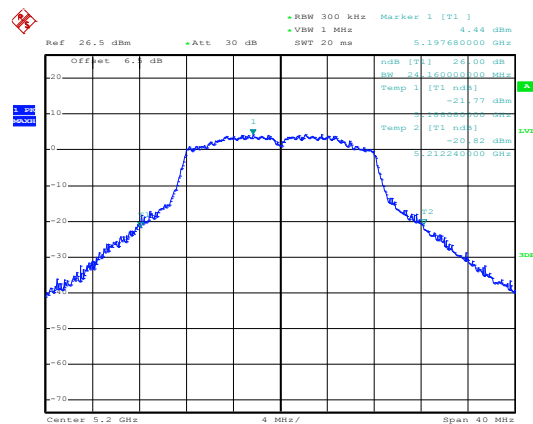
MAIN Antenna Port:

26 dB EBW - 802.11a



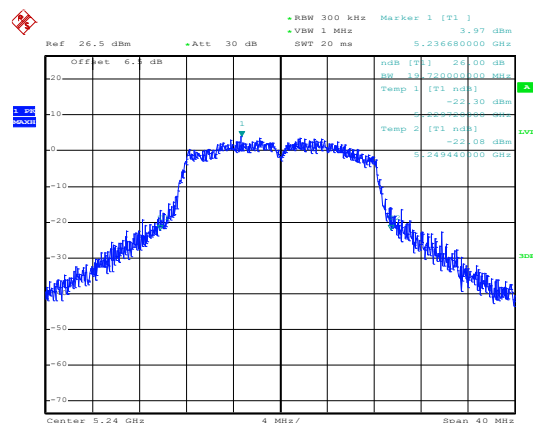
Date: 1.JUL.2017 10:56:54

Lowest channel



Date: 1.JUL.2017 10:57:41

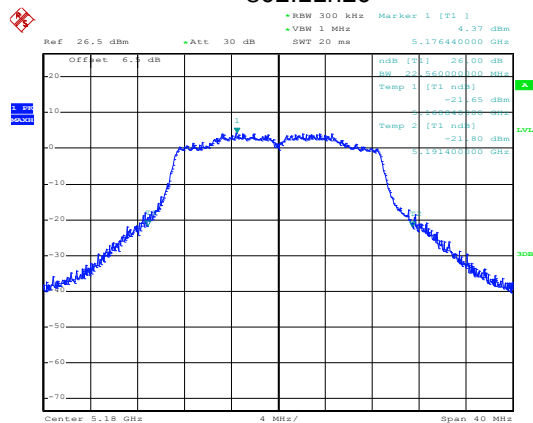
Middle channel



Date: 1.JUL.2017 10:59:19

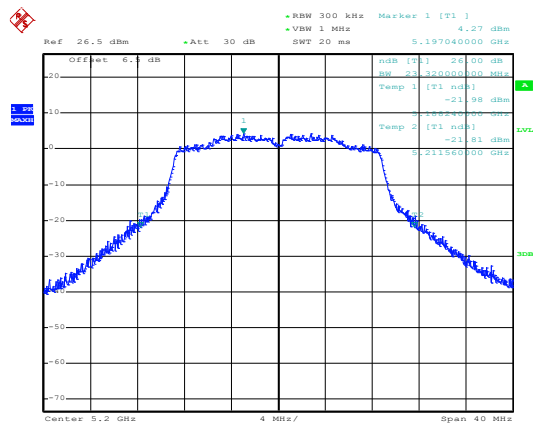
Highest channel

802.11n20



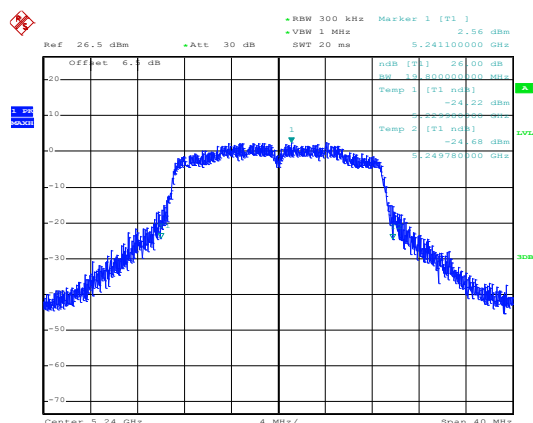
Date: 1.JUL.2017 11:02:59

Lowest channel



Date: 1.JUL.2017 11:03:56

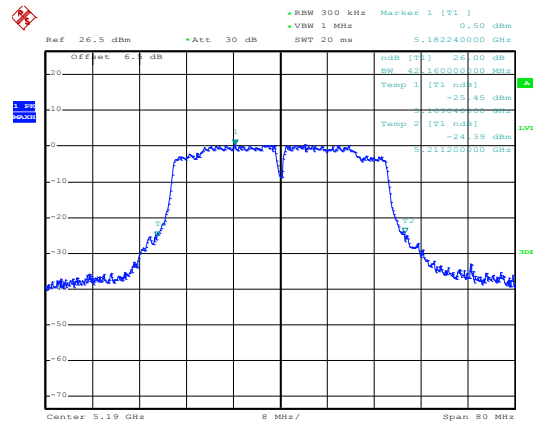
Middle channel



Date: 1.JUL.2017 11:02:18

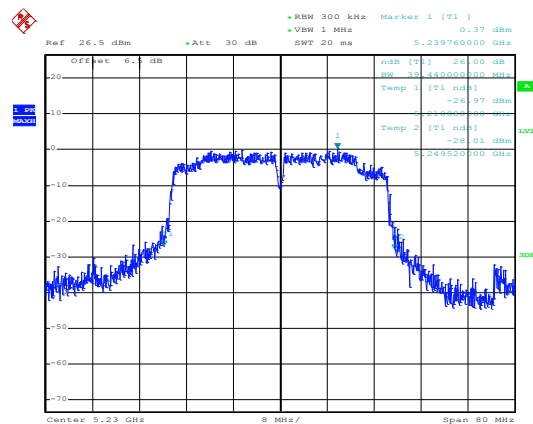
Highest channel

802.11n40



Date: 1.JUL.2017 11:04:30

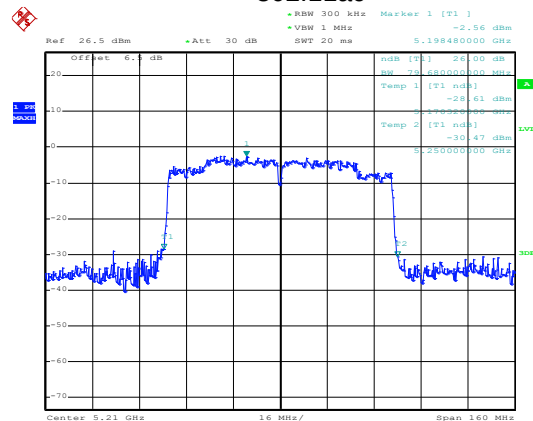
Lowest channel



Date: 1.JUL.2017 11:05:30

Highest channel

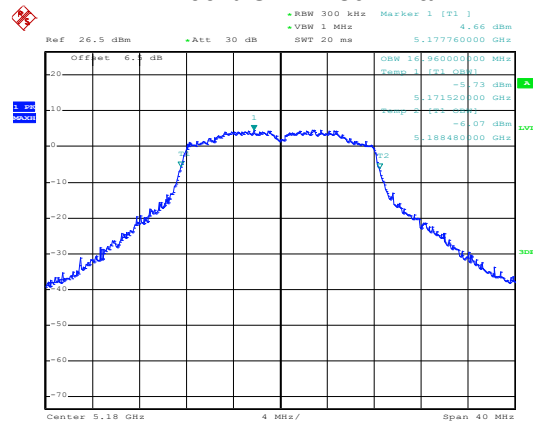
802.11ac



Date: 1.JUL.2017 10:54:43

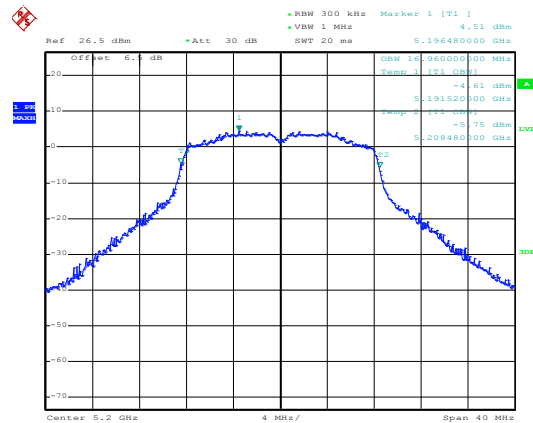
Middle channel

99% OBW - 802.11a



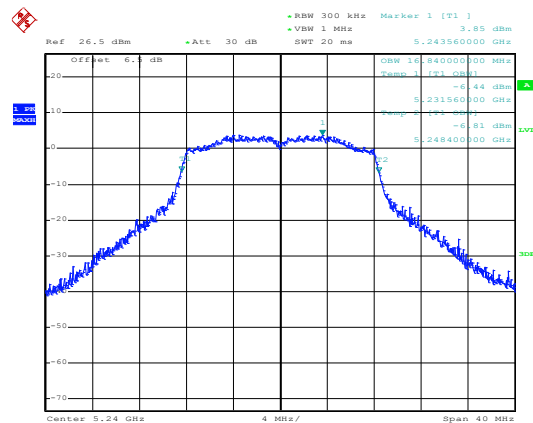
Date: 1.JUL.2017 10:57:08

Lowest channel



Date: 1.JUL.2017 10:57:29

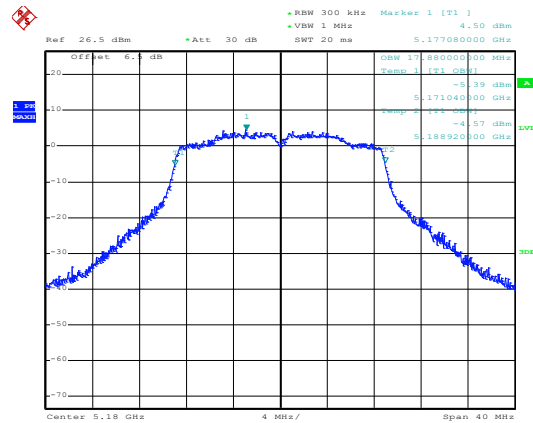
Middle channel



Date: 1.JUL.2017 10:59:37

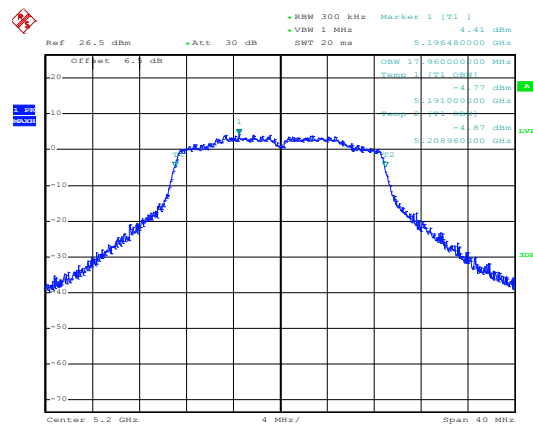
Highest channel

802.11n20



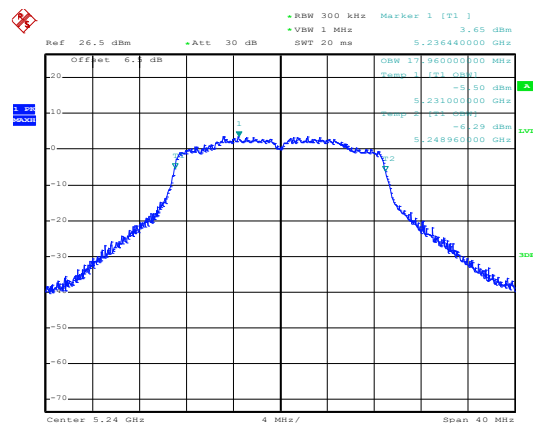
Date: 1.JUL.2017 11:03:23

Lowest channel



Date: 1.JUL.2017 11:03:47

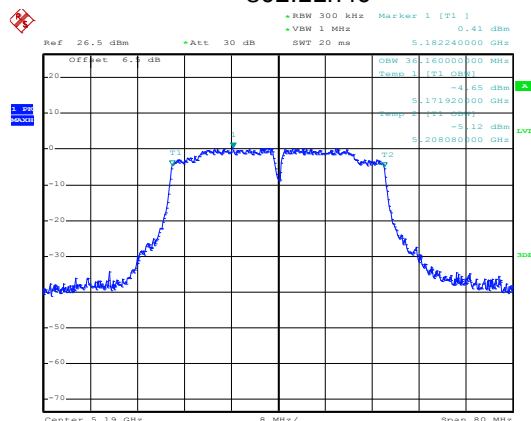
Middle channel



Date: 1.JUL.2017 11:00:12

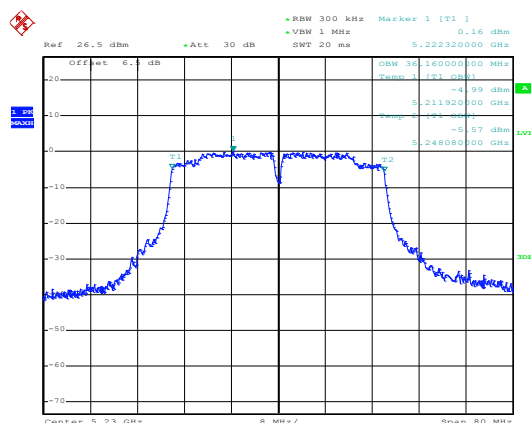
Highest channel

802.11n40



Date: 1.JUL.2017 11:04:41

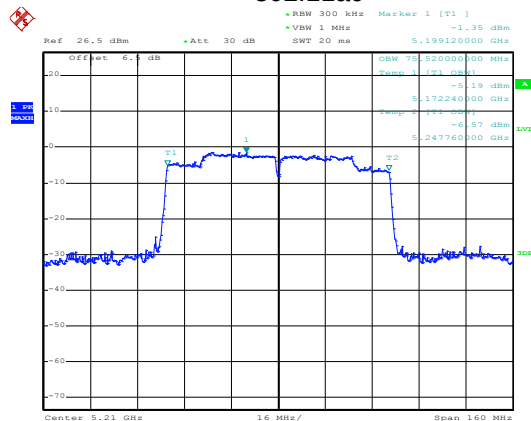
Lowest channel



Date: 1.JUL.2017 11:05:03

Highest channel

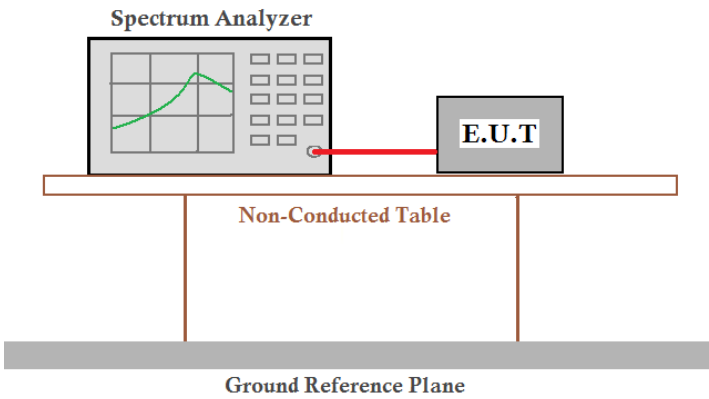
802.11ac



Date: 1.JUL.2017 10:53:55

Middle channel

6.5 Power Spectral Density

Test Requirement:	FCC Part15 E Section 15.407 (a) (1) (ii) &(a) (3)
Test Method:	ANSI C63.10:2013, KDB 789033
Limit:	Band 1: 11 dBm/MHz
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer, shown with a grid and a green curve on its screen, is connected to an E.U.T. (Equipment Under Test) box by a red cable. Both the Spectrum Analyzer and the E.U.T. are positioned on a 'Non-Conducted Table', which is a rectangular platform supported by two vertical legs. Below this table is a 'Ground Reference Plane', represented by a thick grey horizontal bar.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

Band 1:

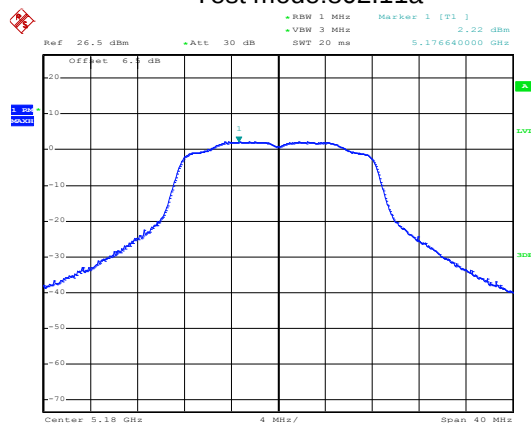
Mode	Test Channel	Ant. Port	PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Result
802.11a	Lowest	TX1	2.22	/	11.00	Pass
		TX2	2.24			
	Middle	TX1	2.15	/	11.00	Pass
		TX2	1.89			
	Highest	TX1	1.48	/	11.00	Pass
		TX2	1.30			
802.11n 20	Lowest	TX1	-1.72	1.71	11.00	Pass
		TX2	-0.91			
	Middle	TX1	-1.60	2.16	11.00	Pass
		TX2	-0.21			
	Highest	TX1	-2.40	1.06	11.00	Pass
		TX2	-1.55			
802.11n 40	Lowest	TX1	-4.71	-1.58	11.00	Pass
		TX2	-4.48			
	Highest	TX1	-5.03	-1.73	11.00	Pass
		TX2	-4.46			
802.11ac80	Middle	TX1	-8.02	-4.58	11.00	Pass
		TX2	-7.20			

Test plot as follows:

Band 1:

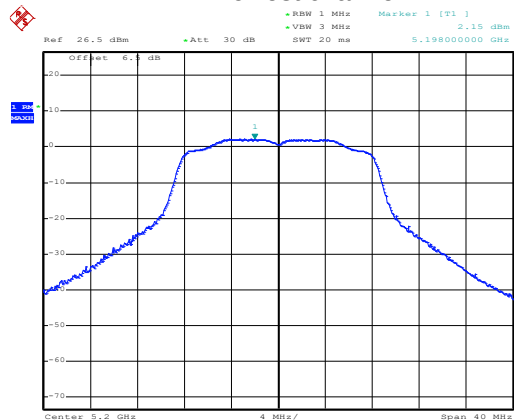
AUX Antenna Port:

Test mode:802.11a



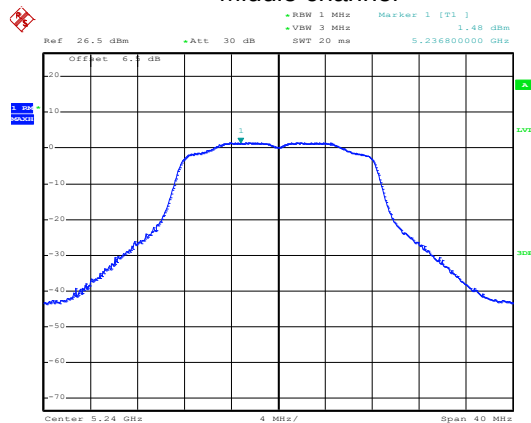
Date: 1.JUL.2017 11:23:46

Lowest channel



Date: 1.JUL.2017 11:24:08

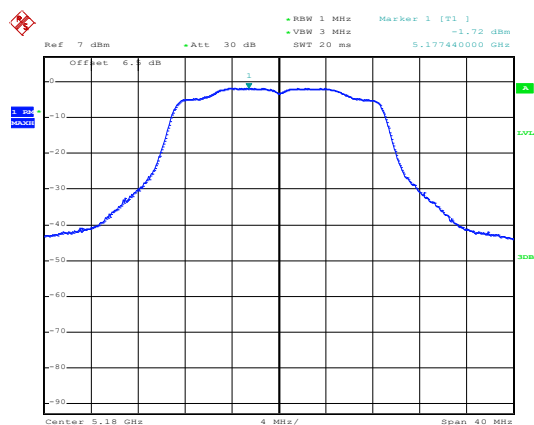
Middle channel



Date: 1.JUL.2017 11:24:27

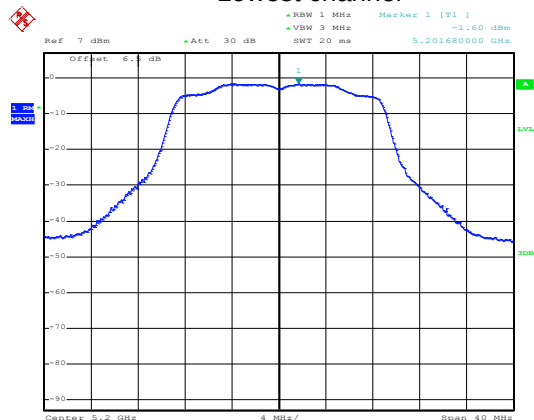
Highest channel

Test mode:802.11n20



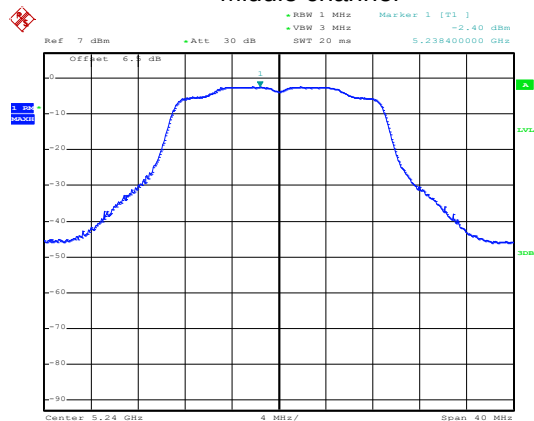
Date: 1.JUL.2017 14:01:08

Lowest channel



Date: 1.JUL.2017 14:01:38

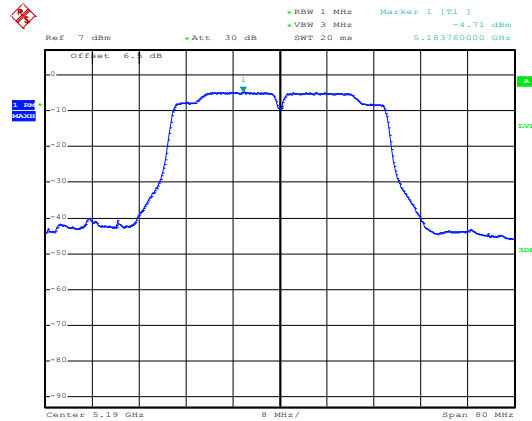
Middle channel



Date: 1.JUL.2017 14:01:58

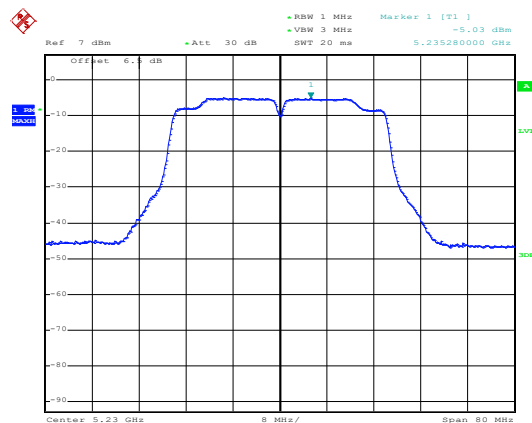
Highest channel

Test mode:802.11n40



Date: 1.JUL.2017 13:58:23

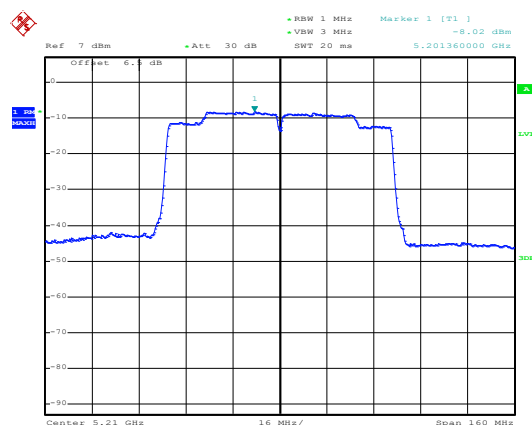
Lowest channel



Date: 1.JUL.2017 13:58:47

Highest channel

Test mode:802.11ac

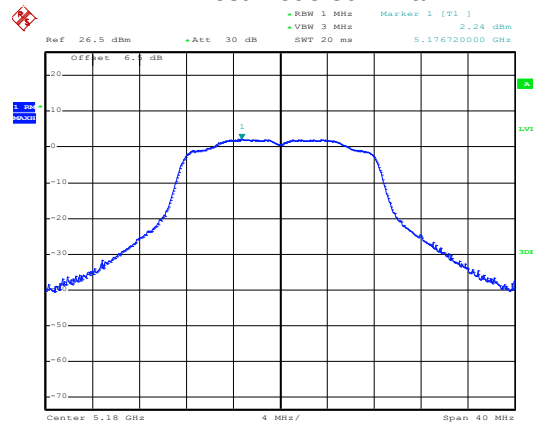


Date: 1.JUL.2017 13:57:32

Middle channel

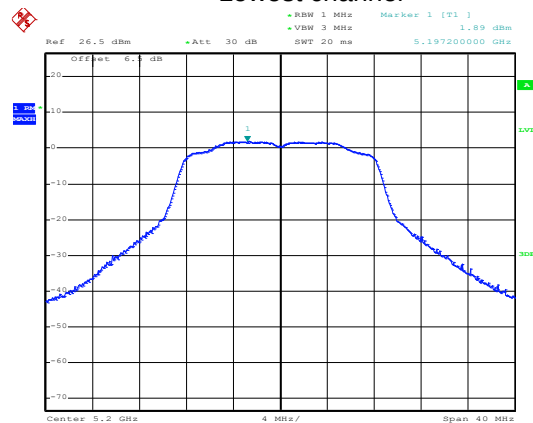
MAIN Antenna Port:

Test mode:802.11a



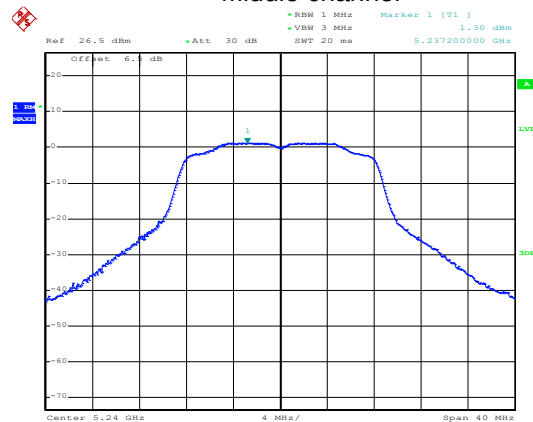
Date: 1.JUL.2017 11:16:45

Lowest channel



Date: 1.JUL.2017 11:17:35

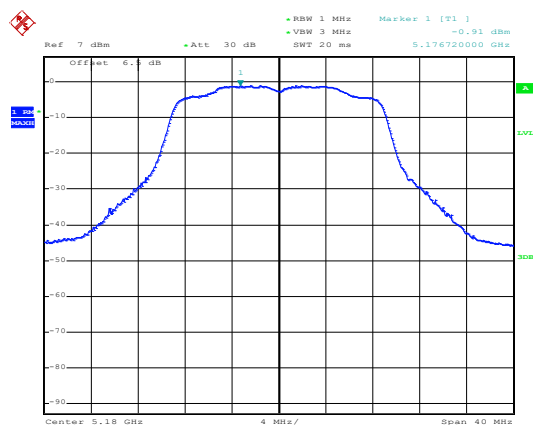
Middle channel



Date: 1.JUL.2017 11:17:56

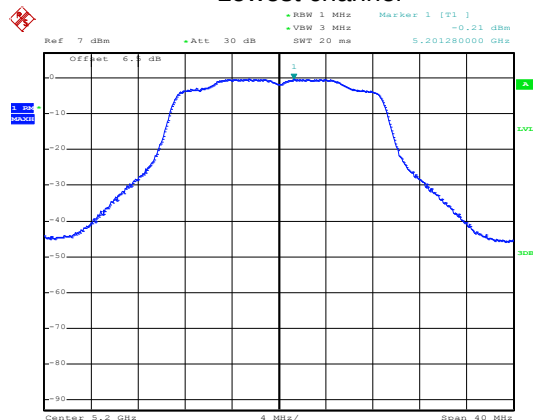
Highest channel

Test mode:802.11n20



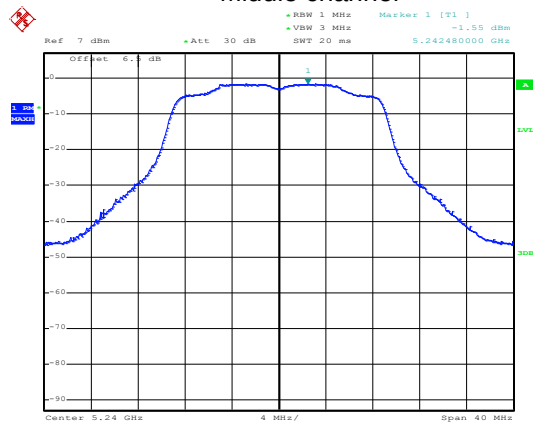
Date: 1.JUL.2017 14:06:09

Lowest channel



Date: 1.JUL.2017 14:05:51

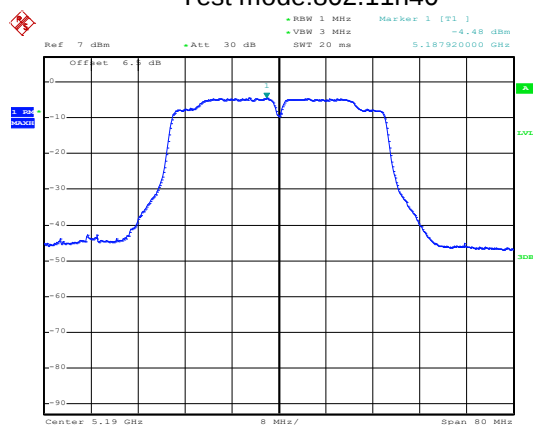
Middle channel



Date: 1.JUL.2017 14:03:35

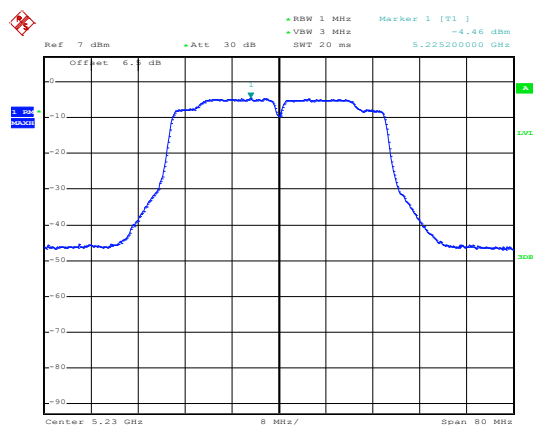
Highest channel

Test mode:802.11n40



Date: 1.JUL.2017 14:06:43

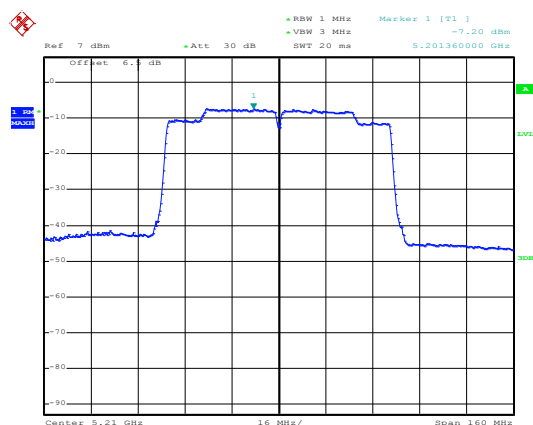
Lowest channel



Date: 1.JUL.2017 14:07:00

Highest channel

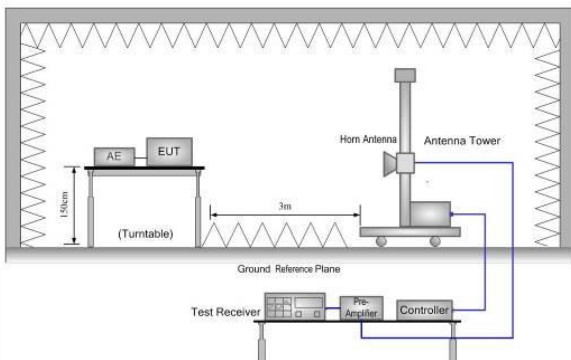
Test mode:802.11ac



Date: 1.JUL.2017 14:07:39

Middle channel

6.6 Band Edge

Test Requirement:	FCC Part15 E Section 15.407 (b)			
Test Method:	ANSI C63.10:2013 , KDB 789033			
Receiver setup:	Detector	RBW	VBW	Remark
	Quasi-peak	120kHz	300kHz	Quasi-peak Value
	RMS	1MHz	3MHz	Average Value
Limit:	Band		Limit (dBuV/m @3m)	Remark
	Band 1		68.20	Peak Value
			54.00	Average Value
	Remark:			
1. Band 1 limit: E[dBuV/m] = EIRP[dBm] + 95.2=68.2 dBuV/m,for EIPR[dBm]=-27dBm.				
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8 meters above the groundat a 3 meter camber. The table was rotated 360 degrees todetermine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, whichwas mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and thenthe antenna was tuned to heights from 1 meter to 4 meters and the rotatablewas turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and SpecifiedBandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.			
Test setup:				
Test Instruments:	Refer to section 5.8 for details			
Test mode:	Refer to section 5.3 for details			
Test results:	Passed			

Band 1:

Test Mode: 802.11a for AUX Antenna

802.11a								
Test channel		Lowest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	43.01	36.23	7.05	41.93	44.36	68.20	-23.84	Horizontal
5150.00	41.65	36.23	7.05	41.93	43.00	68.20	-25.20	Vertical
802.11a								
Test channel		Lowest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	32.71	36.23	7.05	41.93	34.06	54.00	-19.94	Horizontal
5150.00	32.03	36.23	7.05	41.93	33.38	54.00	-20.62	Vertical
802.11a								
Test channel		Highest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	42.69	35.37	7.11	41.89	43.28	68.20	-24.92	Horizontal
5350.00	42.58	35.37	7.11	41.89	43.17	68.20	-25.03	Vertical
802.11a								
Test channel		Highest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	33.09	35.37	7.11	41.89	33.68	54.00	-20.32	Horizontal
5350.00	31.13	35.37	7.11	41.89	31.72	54.00	-22.28	Vertical

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Test Mode: 802.11a for MAIN Antenna

802.11a								
Test channel		Lowest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	44.25	36.23	7.05	41.93	45.60	68.20	-22.60	Horizontal
5150.00	42.36	36.23	7.05	41.93	43.71	68.20	-24.49	Vertical
802.11a								
Test channel		Lowest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	32.65	36.23	7.05	41.93	34.00	54.00	-20.00	Horizontal
5150.00	32.78	36.23	7.05	41.93	34.13	54.00	-19.87	Vertical
802.11a								
Test channel		Highest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	43.65	35.37	7.11	41.89	44.24	68.20	-23.96	Horizontal
5350.00	43.21	35.37	7.11	41.89	43.80	68.20	-24.40	Vertical
802.11a								
Test channel		Highest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	33.74	35.37	7.11	41.89	34.33	54.00	-19.67	Horizontal
5350.00	32.25	35.37	7.11	41.89	32.84	54.00	-21.16	Vertical

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Test Mode: 802.11n-HT20 for MIMO Antenna

802.11n-HT20								
Test channel		Lowest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	43.17	36.23	7.05	41.93	44.52	68.20	-23.68	Horizontal
5150.00	41.85	36.23	7.05	41.93	43.20	68.20	-25.00	Vertical
802.11n-HT20								
Test channel		Lowest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	33.03	36.23	7.05	41.93	34.38	54.00	-19.62	Horizontal
5150.00	31.76	36.23	7.05	41.93	33.11	54.00	-20.89	Vertical
802.11n-HT20								
Test channel		Highest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	41.78	35.37	7.11	41.89	42.37	68.20	-25.83	Horizontal
5350.00	42.19	35.37	7.11	41.89	42.78	68.20	-25.42	Vertical
802.11n-HT20								
Test channel		Highest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	33.58	35.37	7.11	41.89	34.17	54.00	-19.83	Horizontal
5350.00	32.19	35.37	7.11	41.89	32.78	54.00	-21.22	Vertical

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Test Mode: 802.11n-HT40 for MIMO Antenna

802.11n-HT40								
Test channel		Lowest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	43.69	36.23	7.05	41.93	45.04	68.20	-23.16	Horizontal
5150.00	42.07	36.23	7.05	41.93	43.42	68.20	-24.78	Vertical
802.11n-HT40								
Test channel		Lowest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	31.05	36.23	7.05	41.93	32.40	54.00	-21.60	Horizontal
5150.00	32.28	36.23	7.05	41.93	33.63	54.00	-20.37	Vertical
802.11n-HT40								
Test channel		Highest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	42.17	35.37	7.11	41.89	42.76	68.20	-25.44	Horizontal
5350.00	41.89	35.37	7.11	41.89	42.48	68.20	-25.72	Vertical
802.11n-HT40								
Test channel		Highest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	32.39	35.37	7.11	41.89	32.98	54.00	-21.02	Horizontal
5350.00	33.14	35.37	7.11	41.89	33.73	54.00	-20.27	Vertical

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Test Mode: 802.11ac-HT80 for MIMO Antenna

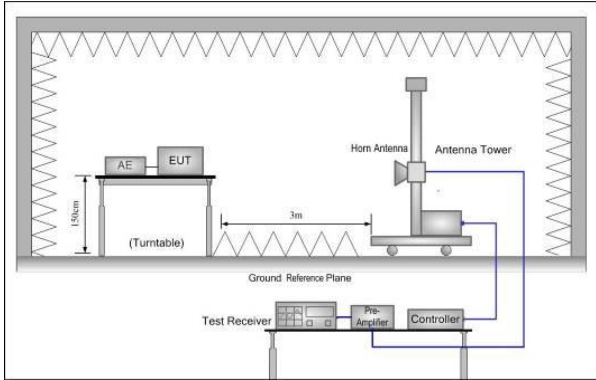
802.11ac-HT80								
Test channel		Lowest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	45.03	36.23	10.96	40.06	52.16	68.20	-16.04	Horizontal
5150.00	41.17	36.23	10.96	40.06	48.30	68.20	-19.90	Vertical
802.11ac-HT80								
Test channel		Lowest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	31.36	36.23	10.96	40.06	38.49	54.00	-15.51	Horizontal
5150.00	32.42	36.23	10.96	40.06	39.55	54.00	-14.45	Vertical
802.11ac-HT80								
Test channel		Highest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	43.01	35.37	11.19	40.18	49.39	68.20	-18.81	Horizontal
5350.00	40.58	35.37	11.19	40.18	46.96	68.20	-21.24	Vertical
802.11ac-HT80								
Test channel		Highest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	34.58	35.37	11.19	40.18	40.96	54.00	-13.04	Horizontal
5350.00	35.76	35.37	11.19	40.18	42.14	54.00	-11.86	Vertical

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

6.7 Spurious Emission

6.7.1 Restricted Band

Test Requirement:	FCC Part15 E Section 15.407(b)				
Test Method:	ANSI C63.10: 2013				
TestFrequencyRange:	Band 1: 4.5 GHz to 5.15 GHz and 5.35GHz to 5.46GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		RMS	1MHz	3MHz	Average Value
Limit:	Frequency	Limit (dBuV/m @3m)		Remark	
	Above 1GHz	74.00		Peak Value	
		54.00		Average Value	
Test Procedure:	1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, whichwas mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limitspecified, then testing could be stopped and the peak values of the EUT wouldbe reported. Otherwise the emissions that did not have 10dB margin would bere-tested one by one using peak, quasi-peak or average method as specified andthen reported in a data sheet.				
Test setup:					
Test Instruments:	Refer to section 5.8 for details				
Test mode:	Refer to section 5.3 for details				
Test results:	Passed				

Band 1:**Test Mode: 802.11a for AUX Antenna**

Test channel		Lowest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	43.59	34.50	6.80	42.05	42.84	74.00	-31.16	Horizontal
4500.00	42.27	34.50	6.80	42.05	41.52	74.00	-32.48	Vertical
Test channel		Lowest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	33.03	34.50	6.80	42.05	32.28	54.00	-21.72	Horizontal
4500.00	31.12	34.50	6.80	42.05	30.37	54.00	-23.63	Vertical
Test channel		Highest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5460.00	42.25	34.90	7.18	41.85	42.48	74.00	-31.52	Horizontal
5460.00	41.79	34.90	7.18	41.85	42.02	74.00	-31.98	Vertical
Test channel		Highest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5460.00	32.51	34.90	7.18	41.85	32.74	54.00	-21.26	Horizontal
5460.00	33.17	34.90	7.18	41.85	33.40	54.00	-20.60	Vertical

Remark:

1. *Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

Test Mode: 802.11a for MAIN Antenna

Test channel		Lowest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	43.64	34.50	6.80	42.05	42.89	74.00	-31.11	Horizontal
4500.00	43.99	34.50	6.80	42.05	43.24	74.00	-30.76	Vertical
Test channel		Lowest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	33.25	34.50	6.80	42.05	32.50	54.00	-21.50	Horizontal
4500.00	32.69	34.50	6.80	42.05	31.94	54.00	-22.06	Vertical
Test channel		Highest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5460.00	42.98	34.90	7.18	41.85	43.21	74.00	-30.79	Horizontal
5460.00	42.74	34.90	7.18	41.85	42.97	74.00	-31.03	Vertical
Test channel		Highest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5460.00	32.54	34.90	7.18	41.85	32.77	54.00	-21.23	Horizontal
5460.00	32.98	34.90	7.18	41.85	33.21	54.00	-20.79	Vertical

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Test Mode: 802.11n-HT20 for MIMO Antenna

Test channel		Lowest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	42.83	34.50	6.80	42.05	42.08	74.00	-31.92	Horizontal
4500.00	42.58	34.50	6.80	42.05	41.83	74.00	-32.17	Vertical
Test channel		Lowest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	32.22	34.50	6.80	42.05	31.47	54.00	-22.53	Horizontal
4500.00	32.17	34.50	6.80	42.05	31.42	54.00	-22.58	Vertical
Test channel		Highest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5460.00	43.36	34.90	7.18	41.85	43.59	74.00	-30.41	Horizontal
5460.00	42.18	34.90	7.18	41.85	42.41	74.00	-31.59	Vertical
Test channel		Highest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5460.00	32.02	34.90	7.18	41.85	32.25	54.00	-21.75	Horizontal
5460.00	31.75	34.90	7.18	41.85	31.98	54.00	-22.02	Vertical

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Test Mode: 802.11n-HT40 for MIMO Antenna

Test channel		Lowest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	41.35	34.50	6.80	42.05	40.60	74.00	-33.40	Horizontal
4500.00	42.23	34.50	6.80	42.05	41.48	74.00	-32.52	Vertical
Test channel		Lowest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	31.19	34.50	6.80	42.05	30.44	54.00	-23.56	Horizontal
4500.00	32.57	34.50	6.80	42.05	31.82	54.00	-22.18	Vertical
Test channel		Highest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5460.00	42.49	34.90	7.18	41.85	42.72	74.00	-31.28	Horizontal
5460.00	42.07	34.90	7.18	41.85	42.30	74.00	-31.70	Vertical
Test channel		Highest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5460.00	31.20	34.90	7.18	41.85	31.43	54.00	-22.57	Horizontal
5460.00	32.48	34.90	7.18	41.85	32.71	54.00	-21.29	Vertical

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Test Mode: 802.11ac-HT80 for MIMO Antenna

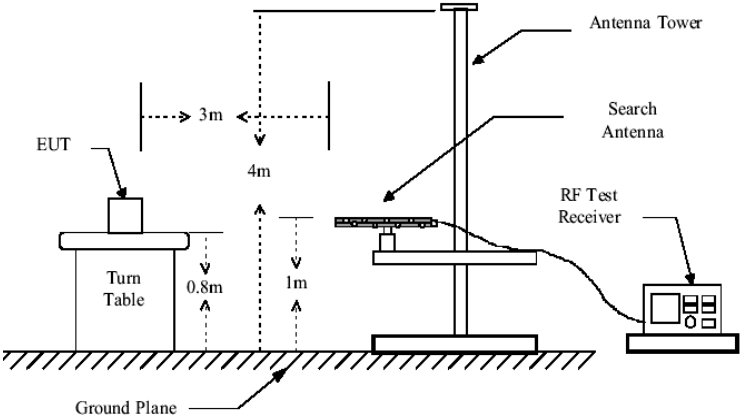
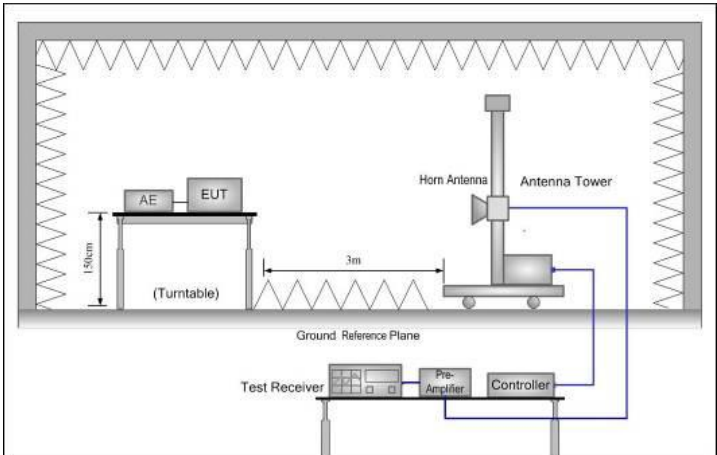
Test channel		Lowest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	42.26	34.50	10.22	40.67	46.31	74.00	-27.69	Horizontal
4500.00	41.87	34.50	10.22	40.67	45.92	74.00	-28.08	Vertical
Test channel		Lowest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	31.12	34.50	10.22	40.67	35.17	54.00	-18.83	Horizontal
4500.00	32.28	34.50	10.22	40.67	36.33	54.00	-17.67	Vertical
Test channel		Highest			Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5460.00	42.25	34.90	11.32	40.23	48.24	74.00	-25.76	Horizontal
5460.00	41.18	34.90	11.32	40.23	47.17	74.00	-26.83	Vertical
Test channel		Highest			Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5460.00	33.03	34.90	11.32	40.23	39.02	54.00	-14.98	Horizontal
5460.00	32.29	34.90	11.32	40.23	38.28	54.00	-15.72	Vertical

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

6.7.2 Unwanted Emissions out of the Restricted Bands

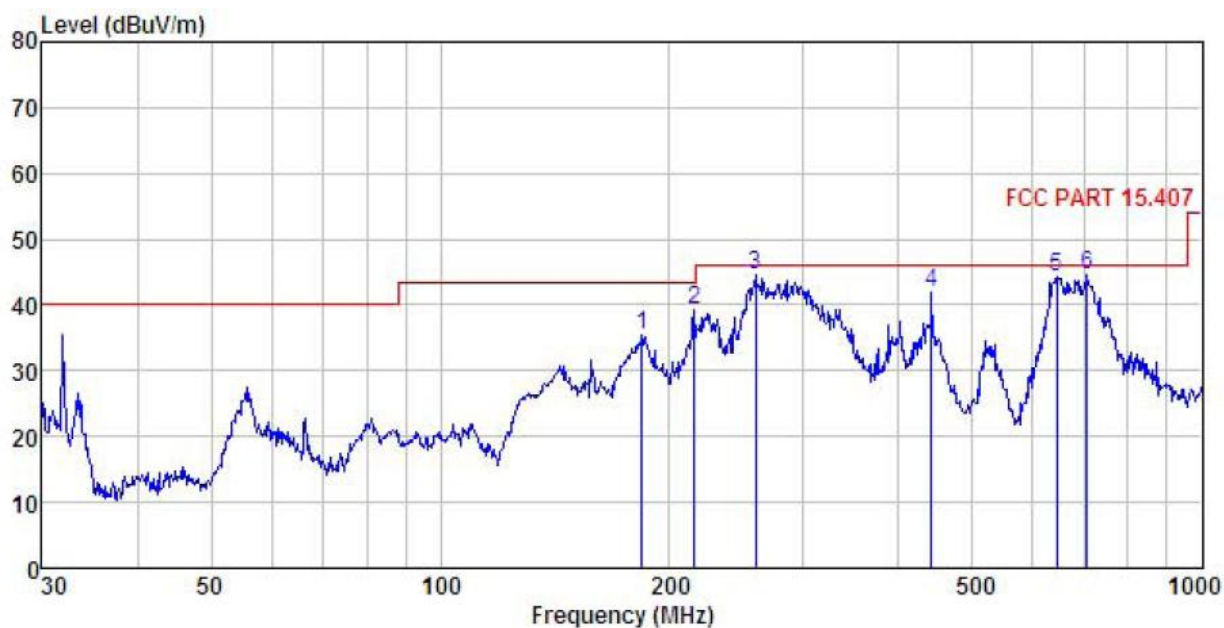
Test Requirement:	FCC Part15 C Section 15.209 and 15.205				
Test Method:	ANSI C63.10:2013				
TestFrequencyRange:	30MHz to 40GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	100kHz	300kHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		RMS	1MHz	3MHz	Average Value
Limit:	Frequency		Limit (dBuV/m @3m)		Remark
	30MHz-88MHz		40.0		Quasi-peak Value
	88MHz-216MHz		43.5		Quasi-peak Value
	216MHz-960MHz		46.0		Quasi-peak Value
	960MHz-1GHz		54.0		Quasi-peak Value
	Above 1GHz		68.20		Peak Value
			54.00		Average Value
	Remark: Above 1GHz limit: $E[dB\mu V/m] = EIRP[dBm] + 95.2=68.2 \text{ dBuV/m,for } EIPR[dBm]=-27dBm.$				
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8m(below 1GHz)/1.5m(above 1GHz) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, whichwas mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limitspecified, then testing could be stopped and the peak values of the EUT wouldbe reported. Otherwise the emissions that did not have 10dB margin would bere-tested one by one using peak, quasi-peak or average method as specified andthen reported in a data sheet.				

Test setup:	Below 1GHz  Above 1GHz 
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Below 1GHz

Configuration: 1#

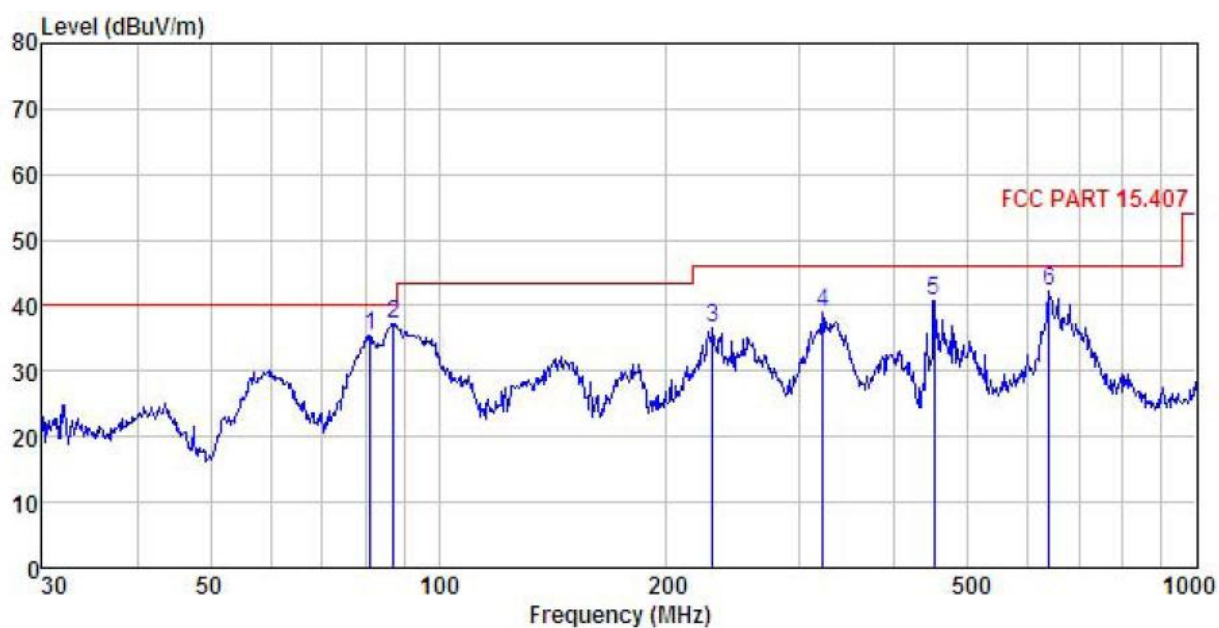
Horizontal:



Site : 3m chamber
 Condition : FCC PART 15.407 3m VULB9163(30M2G) HORIZONTAL
 EUT : laptop
 Model : Y11C
 Test mode : 5G Wifi Mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: MT
 REMARK : 1# adapter:PS36A120Y3000H

	Freq	ReadAntenna	Cable	Preamp	Limit	Over	
	Level	Factor	Loss	Factor	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m
							dB
1	183.844	51.68	9.86	2.75	28.94	35.35	43.50
2	215.268	53.73	11.30	2.85	28.73	39.15	43.50
3	259.234	57.81	12.33	2.83	28.52	44.45	46.00
4	441.743	52.13	15.60	3.18	28.86	42.05	46.00
5	645.120	50.82	18.52	3.87	28.79	44.42	46.00
6	706.700	49.86	19.15	4.20	28.64	44.57	46.00

Vertical:

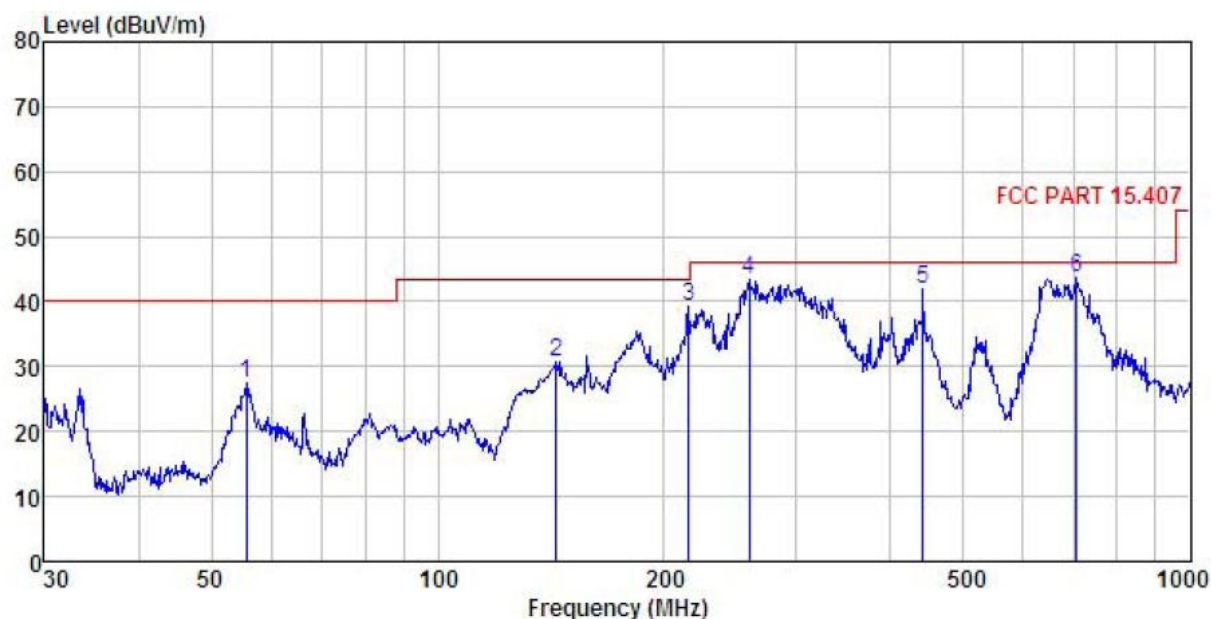


Site : 3m chamber
 Condition : FCC PART 15.407 3m VULB9163(30M2G) VERTICAL
 EUT : laptop
 Model : Y11C
 Test mode : 5G Wifi Mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: MT
 REMARK : 1# adapter:PS36A120Y3000H

	Freq	Level	ReadAntenna	Cable	Preamp	Limit	Over	
	MHz	dBuV	Factor	Loss	Factor	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	81.212	54.58	8.92	1.69	29.63	35.56	40.00	-4.44 QP
2	87.112	54.73	10.18	1.91	29.59	37.23	40.00	-2.77 QP
3	230.099	51.01	11.51	2.83	28.65	36.70	46.00	-9.30 QP
4	321.061	50.78	13.57	3.01	28.50	38.86	46.00	-7.14 QP
5	451.135	50.78	15.59	3.21	28.87	40.71	46.00	-5.29 QP
6	638.369	48.67	18.55	3.88	28.81	42.29	46.00	-3.71 QP

Configuration: 2#

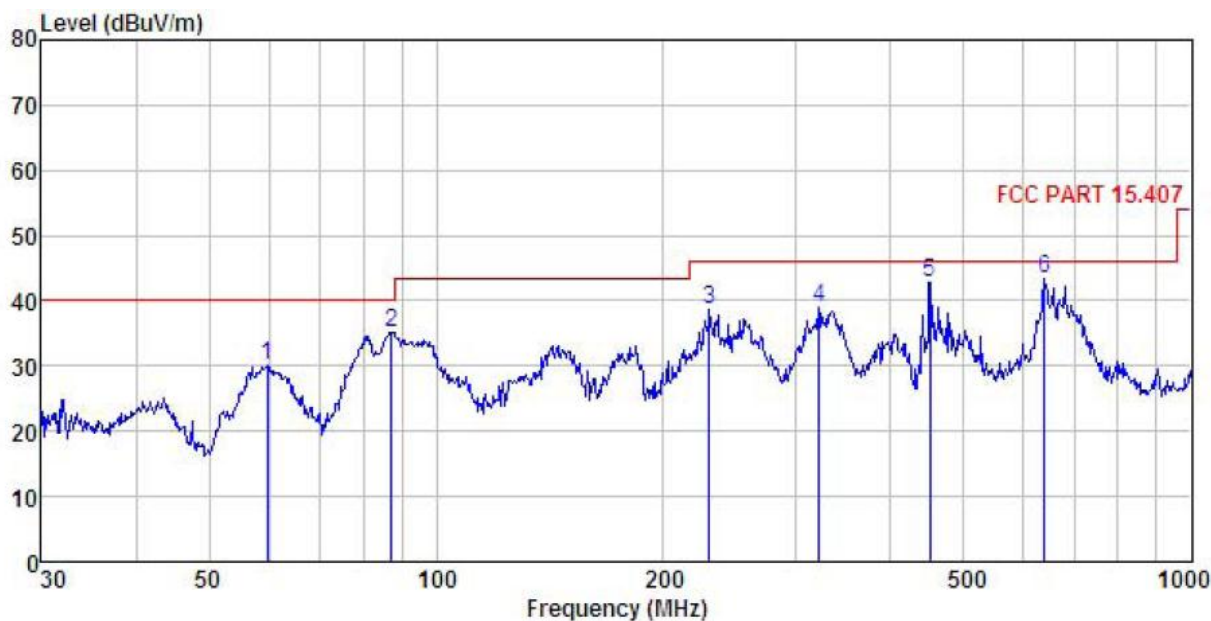
Horizontal:



Site : 3m chamber
 Condition : FCC PART 15.407 3m VULB9163(30M2G) HORIZONTAL
 EUT : laptop
 Model : Y11C
 Test mode : 5G Wifi Mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: MT
 REMARK : 2# adapter:EE1230-105

	Freq	ReadAntenna Level	Cable Factor	Preamp Loss	Level	Limit	Over	
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	55.609	42.55	13.44	1.36	29.80	27.55	40.00	-12.45 QP
2	143.830	49.15	8.38	2.44	29.25	30.72	43.50	-12.78 QP
3	215.268	53.73	11.30	2.85	28.73	39.15	43.50	-4.35 QP
4	259.234	56.81	12.33	2.83	28.52	43.45	46.00	-2.55 QP
5	441.743	52.13	15.60	3.18	28.86	42.05	46.00	-3.95 QP
6	706.700	48.86	19.15	4.20	28.64	43.57	46.00	-2.43 QP

Vertical:

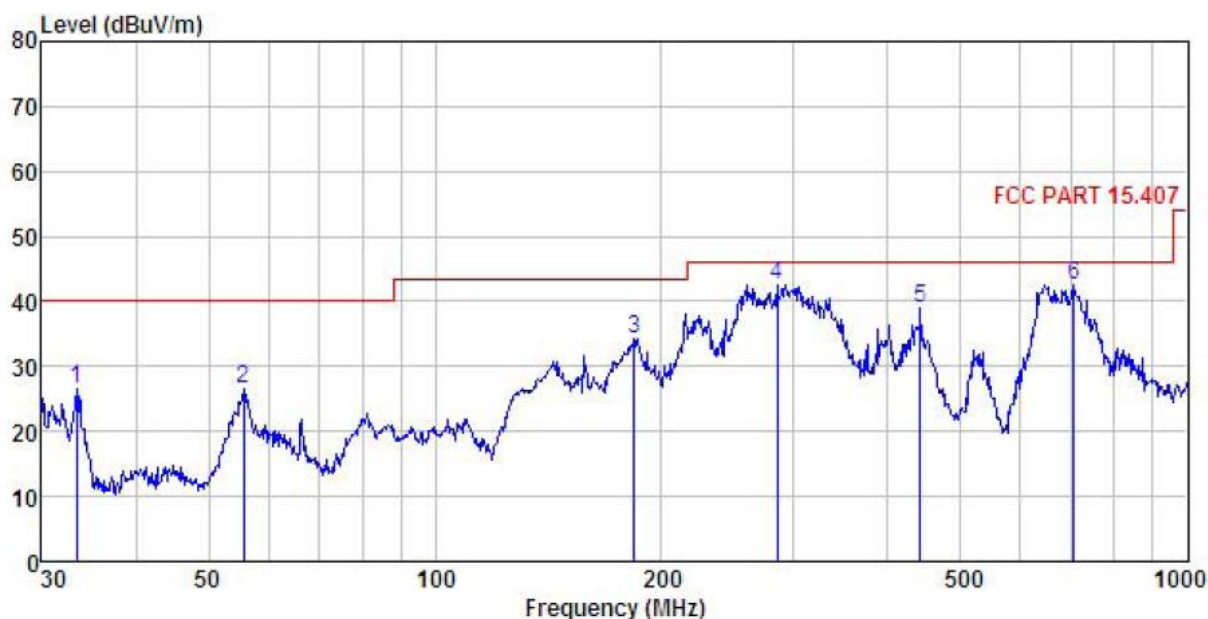


Site : 3m chamber
Condition : FCC PART 15.407 3m VULB9163(30M2G) VERTICAL
EUT : laptop
Model : Y11C
Test mode : 5G Wifi Mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Humi:55%
Test Engineer: MT
REMARK : 2# adapter:EE1230-105

	Freq	ReadAntenna	Cable	Preamp	Limit	Over	
	Level	Factor	Loss	Factor	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m
1	59.649	45.59	12.80	1.38	29.77	30.00	40.00
2	87.112	52.73	10.18	1.91	29.59	35.23	40.00
3	230.099	53.01	11.51	2.83	28.65	38.70	46.00
4	321.061	50.78	13.57	3.01	28.50	38.86	46.00
5	451.135	52.78	15.59	3.21	28.87	42.71	46.00
6	638.369	49.67	18.55	3.88	28.81	43.29	46.00

Configuration: 3#

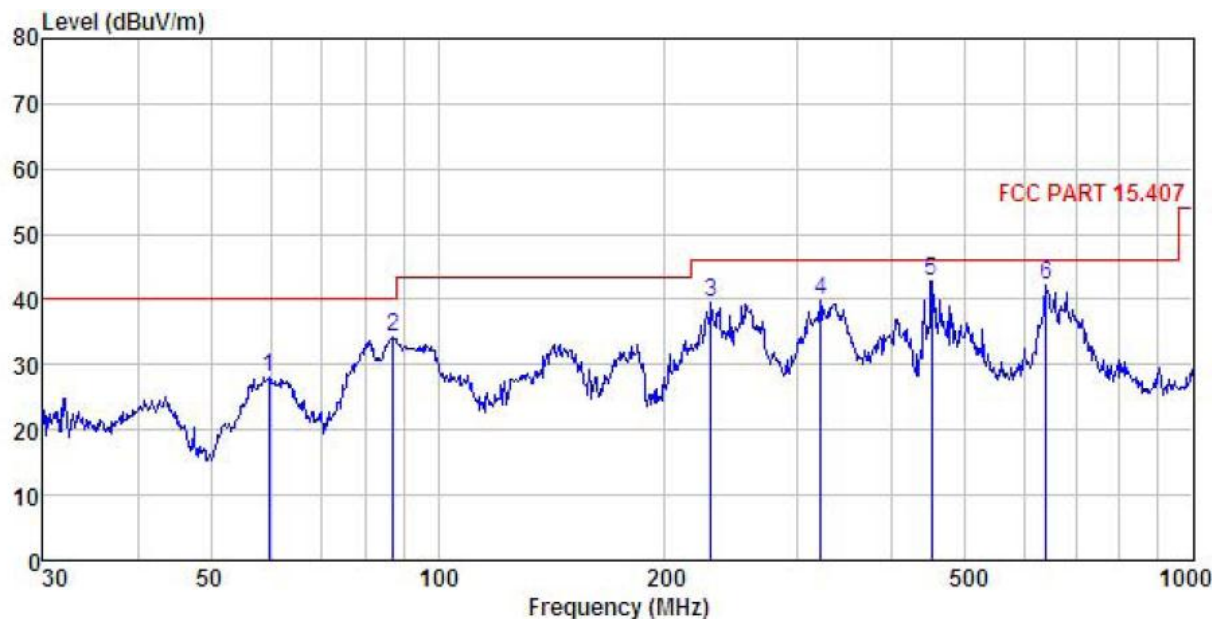
Horizontal:



Site : 3m chamber
 Condition : FCC PART 15.407 3m VULB9163(30M2G) HORIZONTAL
 EUT : laptop
 Model : Y11C
 Test mode : 5G Wifi Mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25.5°C Humi:55%
 Test Engineer: MT
 REMARK : 3# adapter:SOY-1200300

	Freq	Read	Antenna	Cable	Preamp	Level	Limit	Over	
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	33.328	43.75	11.67	0.98	29.96	26.44	40.00	-13.56	QP
2	55.609	41.55	13.44	1.36	29.80	26.55	40.00	-13.45	QP
3	183.844	50.68	9.86	2.75	28.94	34.35	43.50	-9.15	QP
4	284.977	55.28	12.91	2.90	28.48	42.61	46.00	-3.39	QP
5	441.743	49.13	15.60	3.18	28.86	39.05	46.00	-6.95	QP
6	706.700	47.86	19.15	4.20	28.64	42.57	46.00	-3.43	QP

Vertical:



Site : 3m chamber
Condition : FCC PART 15.407 3m VULB9163(30M2G) VERTICAL
EUT : laptop
Model : Y11C
Test mode : 5G Wifi Mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Humi:55%
Test Engineer: MT
REMARK : 3# adapter:SOY-1200300

	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over	
	MHz	Level	Factor	Loss	Factor	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	59.649	43.59	12.80	1.38	29.77	28.00	40.00	-12.00 QP
2	87.112	51.73	10.18	1.91	29.59	34.23	40.00	-5.77 QP
3	230.099	54.01	11.51	2.83	28.65	39.70	46.00	-6.30 QP
4	321.061	51.78	13.57	3.01	28.50	39.86	46.00	-6.14 QP
5	451.135	52.78	15.59	3.21	28.87	42.71	46.00	-3.29 QP
6	638.369	48.67	18.55	3.88	28.81	42.29	46.00	-3.71 QP

Above 1GHz:

Test Mode: 802.11a for AUX Antenna

802.11a mode Lowest channel (Peak Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10360.00	48.31	40.10	9.82	41.97	56.26	68.20	-11.94	Vertical
10360.00	48.29	40.10	9.82	41.97	56.24	68.20	-11.96	Horizontal
802.11a mode Lowest channel (AverageValue)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10360.00	38.72	40.10	9.82	41.97	46.67	54.00	-7.33	Vertical
10360.00	39.87	40.10	9.82	41.97	47.82	54.00	-6.18	Horizontal

802.11a mode Middle channel (Peak Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	49.01	40.00	9.85	41.95	56.91	68.20	-11.29	Vertical
10400.00	48.57	40.00	9.85	41.95	56.47	68.20	-11.73	Horizontal
802.11a mode Middle channel (AverageValue)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	40.01	40.00	9.85	41.95	47.91	54.00	-6.09	Vertical
10400.00	39.62	40.00	9.85	41.95	47.52	54.00	-6.48	Horizontal

802.11a mode Highest channel (Peak Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10480.00	48.23	39.70	9.96	41.88	56.01	68.20	-12.19	Vertical
10480.00	48.17	39.70	9.96	41.88	55.95	68.20	-12.25	Horizontal
802.11a mode Highest channel (AverageValue)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10480.00	39.62	39.70	9.96	41.88	47.40	54.00	-6.60	Vertical
10480.00	40.01	39.70	9.96	41.88	47.79	54.00	-6.21	Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Test Mode: 802.11a for MAIN Antenna

802.11a mode Lowest channel (Peak Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10360.00	48.65	40.10	9.82	41.97	56.60	68.20	-11.60	Vertical
10360.00	48.65	40.10	9.82	41.97	56.60	68.20	-11.60	Horizontal
802.11a mode Lowest channel (AverageValue)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10360.00	38.65	40.10	9.82	41.97	46.60	54.00	-7.40	Vertical
10360.00	38.74	40.10	9.82	41.97	46.69	54.00	-7.31	Horizontal

802.11a mode Middle channel (Peak Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	49.63	40.00	9.85	41.95	57.53	68.20	-10.67	Vertical
10400.00	49.25	40.00	9.85	41.95	57.15	68.20	-11.05	Horizontal
802.11a mode Middle channel (AverageValue)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	40.32	40.00	9.85	41.95	48.22	54.00	-5.78	Vertical
10400.00	40.25	40.00	9.85	41.95	48.15	54.00	-5.85	Horizontal

802.11a mode Highest channel (Peak Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10480.00	48.66	39.70	9.96	41.88	56.44	68.20	-11.76	Vertical
10480.00	48.62	39.70	9.96	41.88	56.40	68.20	-11.80	Horizontal
802.11a mode Highest channel (AverageValue)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10480.00	39.55	39.70	9.96	41.88	47.33	54.00	-6.67	Vertical
10480.00	39.74	39.70	9.96	41.88	47.52	54.00	-6.48	Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Test Mode: 802.11n-HT20 for MIMO Antenna

802.11n20 mode Lowest channel (Peak Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10360.00	48.51	40.10	9.82	41.97	56.46	68.20	-11.74	Vertical
10360.00	49.03	40.10	9.82	41.97	56.98	68.20	-11.22	Horizontal
802.11n20 mode Lowest channel (AverageValue)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10360.00	39.11	40.10	9.82	41.97	47.06	54.00	-6.94	Vertical
10360.00	40.25	40.10	9.82	41.97	48.20	54.00	-5.80	Horizontal

802.11n20 mode Middle channel (Peak Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	49.12	40.00	9.85	41.95	57.02	68.20	-11.18	Vertical
10400.00	48.27	40.00	9.85	41.95	56.17	68.20	-12.03	Horizontal
802.11n20 mode Middle channel (AverageValue)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	40.05	40.00	9.85	41.95	47.95	54.00	-6.05	Vertical
10400.00	39.27	40.00	9.85	41.95	47.17	54.00	-6.83	Horizontal

802.11n20 mode Highest channel (Peak Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10480.00	47.71	39.70	9.96	41.88	55.49	68.20	-12.71	Vertical
10480.00	48.03	39.70	9.96	41.88	55.81	68.20	-12.39	Horizontal
802.11n20 mode Highest channel (AverageValue)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10480.00	40.12	39.70	9.96	41.88	47.90	54.00	-6.10	Vertical
10480.00	39.65	39.70	9.96	41.88	47.43	54.00	-6.57	Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Test Mode: 802.11n-HT40 for MIMO Antenna

802.11n40 mode Lowest channel (Peak Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10380.00	48.63	40.00	9.85	41.95	56.53	68.20	-11.67	Vertical
10380.00	48.42	40.00	9.85	41.95	56.32	68.20	-11.88	Horizontal
802.11n40 mode Lowest channel (AverageValue)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10380.00	39.64	40.00	9.85	41.95	47.54	54.00	-6.46	Vertical
10380.00	38.81	40.00	9.85	41.95	46.71	54.00	-7.29	Horizontal

802.11n40 mode Highest channel (Peak Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10460.00	48.78	39.80	9.92	41.90	56.60	68.20	-11.60	Vertical
10460.00	49.62	39.80	9.92	41.90	57.44	68.20	-10.76	Horizontal
802.11n40 mode Highest channel (AverageValue)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10460.00	39.57	39.80	9.92	41.90	47.39	54.00	-6.61	Vertical
10460.00	40.32	39.80	9.92	41.90	48.14	54.00	-5.86	Horizontal

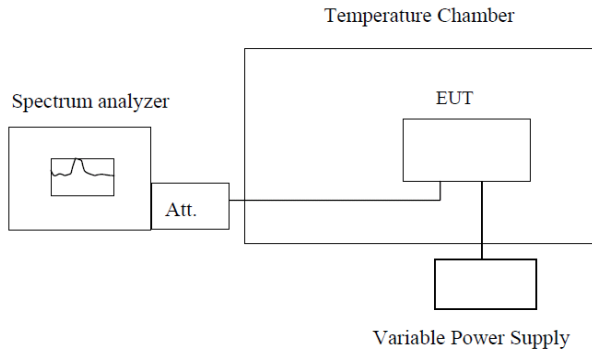
Test Mode: 802.11ac-HT80 for MIMO Antenna

802.11ac-HT80MHz mode Middle channel (Peak Value)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10420.00	43.71	39.90	15.46	41.24	57.83	68.20	-10.37	Vertical
10420.00	42.25	39.90	15.46	41.24	56.37	68.20	-11.83	Horizontal
802.11ac-HT80MHz mode Middle channel (AverageValue)								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10420.00	34.15	39.90	15.46	41.24	48.27	54.00	-5.73	Vertical
10420.00	32.07	39.90	15.46	41.24	46.19	54.00	-7.81	Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

6.8 Frequency stability

Test Requirement:	FCC Part15 E Section 15.407 (g)
Limit:	Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.
Test setup:	 Note : Measurement setup for testing on Antenna connector
Test procedure:	1. The EUT is installed in an environment test chamber with external power source. 2. Set the chamber to operate at 50 centigrade and external power source to output at nominal voltage of EUT. 3. A sufficient stabilization period at each temperature is used prior to each frequency measurement. 4. When temperature is stabled, measure the frequency stability. 5. The test shall be performed under -30 to 50 centigrade and 85 to 115 percent of the nominal voltage. Change setting of chamber and external power source to complete all conditions.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details, and all channels have been tested, only shows the worst channel data in this report.
Test results:	Passed

Measurement Data (the worst channel):

Band 1:

Voltage vs. Frequency Stability (Lowest channel=5180MHz)

Test conditions		Frequency(MHz)	Max. Deviation (ppm)
Temp(℃)	Voltage(ac)		
20	6.46V	5179.987151	2.48
	7.60V	5179.965890	6.58
	8.74V	5179.948265	9.99

Temperature vs. Frequency Stability (Lowest channel=5180MHz)

Test conditions		Frequency(MHz)	Max. Deviation (ppm)
Voltage(ac)	Temp(℃)		
7.60V	-20	5179.978960	4.06
	-10	5179.963846	6.98
	0	5179.998412	0.31
	10	5179.925681	14.35
	20	5179.977849	4.28
	30	5179.936592	12.24
	40	5179.945866	10.45
	50	5179.998825	0.23