FCC REPORT
(UNII)

Applicant:	Shenzhen AlldoCube Technology and Science Co.,Ltd
Address of Applicant:	Building No.1, Suwang Industrial Park, Xiahenglang, Dalang, Longhua District, Shenzhen, China

Equipment Under Test (EUT)

Product Name:	Tablet PC
Model No.:	i1101, KNOTE
Trade mark:	ALLDOCUBE
FCC ID:	2AKO6ADC03
Applicable standards:	FCC CFR Title 47 Part 15 Subpart E Section 15.407
Date of sample receipt:	02 Nov., 2017
Date of Test:	02 Nov., to 21 Nov., 2017
Date of report issued:	22 Nov., 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.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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2 Version

Version No.	Date	Description
00	*22 Nov., 2017*	Original

Tested by: Carey Chen ***Date:*** *22 Nov., 2017*

Test Engineer

Reviewed by: Winner Zhang ***Date:*** *22 Nov., 2017*

Project Engineer

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4 Test Summary

Test Item	Section in CFR 47	Test Result
Antenna requirement	15.203/15.407 (a)	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.407 (a) (1) (iv)	Pass
26dB Occupied Bandwidth	15.407 (a) (5)	Pass
Power Spectral Density	15.407 (a) (1) (iv)	Pass
Band Edge	15.407(b)	Pass
Spurious Emission	15.205/15.209	Pass
Frequency Stability	15.407(g)	Pass
Pass: The EUT complies with the essential requirements in the standard.		

5 General Information

5.1 Client Information

Applicant:	Shenzhen AlldoCube Technology and Science Co.,Ltd
Address:	Building No.1,Suwang Industrial Park, Xiahenglang,Dalang,Longhua District,Shenzhen,China
Manufacturer/ Factory:	Shenzhen Alldocube Technology and science Co., LTD
Address:	Building No.1,Suwang Industrial Park, Xiahenglang,Dalang,Longhua District,Shenzhen,China

5.2 General Description of E.U.T.

Product Name:	Tablet PC
Model No.:	i1101, KNOTE
Operation Frequency:	Band 1: 5150MHz-5250MHz
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:	-4.78 dBi
Power supply:	Rechargeable Li-ion Battery DC7.6V/4000mAh
AC adapter:	Model:AK36WG-120025U Input: AC100-240V, 50/60Hz, 0.8A Output: DC 12V, 2.5A
Remark:	Model No.: i1101, KNOTE were identical inside, the electrical circuit design, layout, components used and internal wiring, with only difference being model name.

Operation Frequency each of channel					
Band 1					
802.11a/802.11n20		802.11n40		802.11ac	
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		802.11ac	
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 test 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, and found the follow list were the worst case.	
Mode	Data rate
802.11a	6 Mbps
802.11n20	13 Mbps
802.11n40	30 Mbps
802.11ac	58.5 Mbps

5.4 Description of Support Units

The EUT has been tested as an independent unit.

5.5 Measurement Uncertainty

Parameters	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 ~ 40GHz)	4.56 dB (k=2)

5.6 Laboratory Facility

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

- **FCC - Registration No.: 727551**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been accredited as a testing laboratory by FCC (Federal Communications Commission). The Registration No. is 727551.

- **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.

- **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: https://portal.a2la.org/scopepdf/4346-01.pdf

5.7 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
Tel: +86-755-23118282, Fax: +86-755-23116366
Email: info@ccis-cb.com, Website: http://www.ccis-cb.com

5.8 Test Instruments list

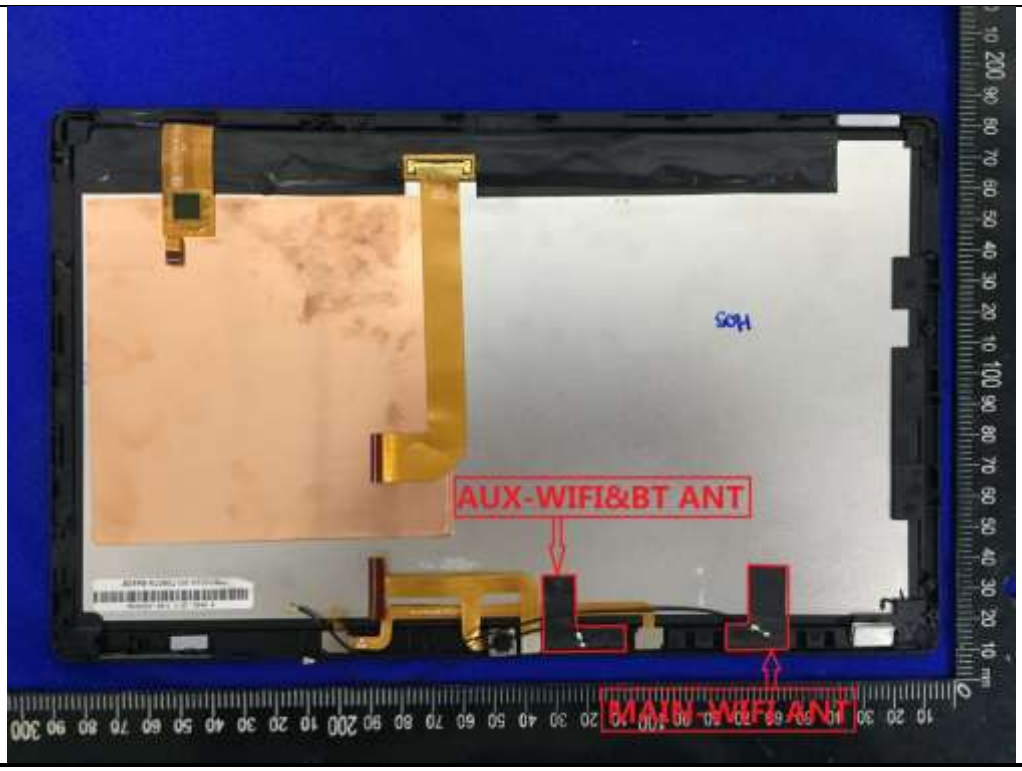
Radiated Emission:					
Test Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date (mm-dd-yy)**	**Cal. Due date (mm-dd-yy)**
3m SAC	SAEMC	9m*6m*6m	966	07-22-2017	07-21-2020
Loop Antenna	SCHWARZBECK	FMZB1519B	00044	02-25-2017	02-24-2018
BiConiLog Antenna	SCHWARZBECK	VULB9163	497	02-25-2017	02-24-2018
Horn Antenna	SCHWARZBECK	BBHA9120D	916	02-25-2017	02-24-2018
EMI Test Software	AUDIX	E3	6.110919b	N/A	N/A
Pre-amplifier	HP	8447D	2944A09358	02-25-2017	02-24-2018
Pre-amplifier	CD	PAP-1G18	11804	02-25-2017	02-24-2018
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	02-25-2017	02-24-2018
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	02-25-2017	02-24-2018
Cable	ZDECL	Z108-NJ-NJ-81	1608458	02-25-2017	02-24-2018
Cable	MICRO-COAX	MFR64639	K10742-5	02-25-2017	02-24-2018
Cable	SUHNER	SUCOFLEX100	58193/4PE	02-25-2017	02-24-2018

Conducted Emission:					
Test Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date (mm-dd-yy)**	**Cal. Due date (mm-dd-yy)**
EMI Test Receiver	Rohde & Schwarz	ESCI	101189	02-25-2017	02-24-2018
Pulse Limiter	SCHWARZBECK	OSRAM 2306	9731	02-25-2017	02-24-2018
LISN	CHASE	MN2050D	1447	02-25-2017	02-24-2018
LISN	Rohde & Schwarz	ESH3-Z5	8438621/010	07-21-2017	07-20-2018
Cable	HP	10503A	N/A	02-25-2017	02-24-2018
EMI Test Software	AUDIX	E3	6.110919b	N/A	N/A

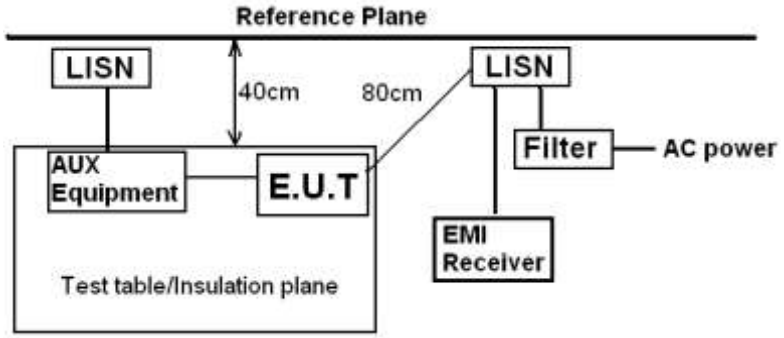
6 Test results and Measurement Data

6.1 Antenna requirement

Standard requirement:	FCC Part15 E Section 15.203 /407(a)
15.203 requirement: 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. 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.	
E.U.T Antenna:	
The WiFi antenna is an Internal Antenna which cannot replace by end-user, the best case gain of the antenna is -4.78 dBi.	

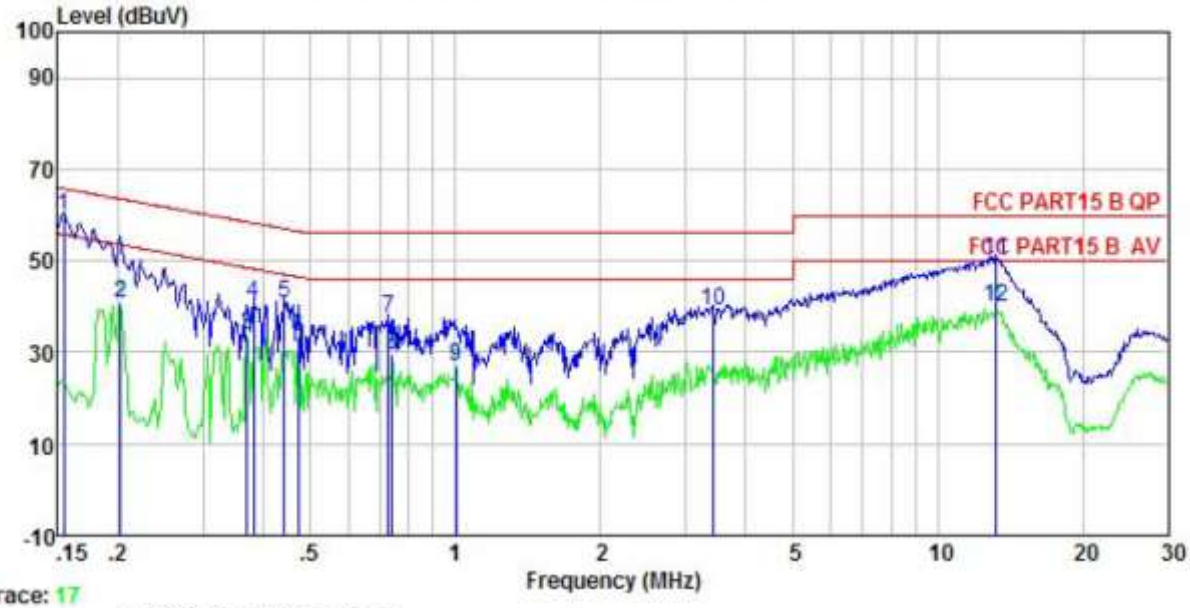


6.2 Conducted Emission

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 Impedence 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:

Line:



Trace: 17

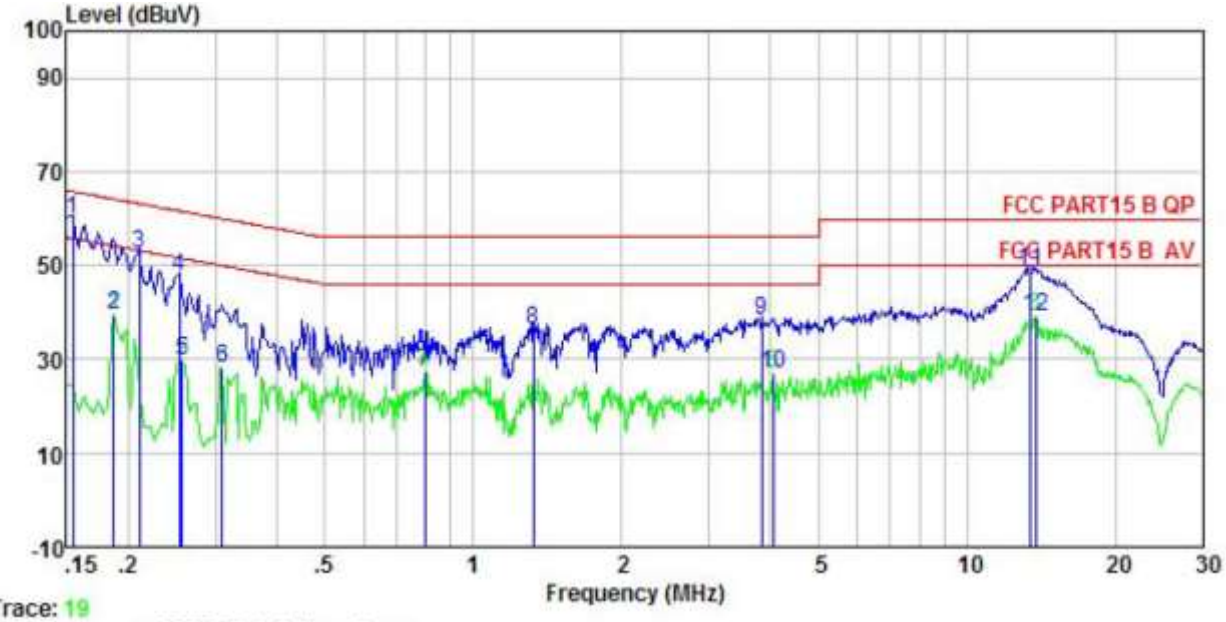
Site : CCIS Shielding Room
Condition : FCC PART15 B QP LISN LINE
EUT : Tablet PC
Model : i1101
Test Mode : 5G-WIFI mode
Power Rating : AC 120V/50Hz
Environment : Temp: 23 ℃ Huni:56% Atmos:101KPa
Test Engineer: Carey
Remark :

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.154	49.51	-0.56	10.78	59.73	65.78	-6.05	QP
2	0.202	30.33	-0.52	10.76	40.57	53.54	-12.97	Average
3	0.369	23.58	-0.50	10.73	33.81	48.52	-14.71	Average
4	0.381	30.68	-0.50	10.72	40.90	58.25	-17.35	QP
5	0.442	30.62	-0.50	10.74	40.86	57.02	-16.16	QP
6	0.471	23.35	-0.49	10.75	33.61	46.49	-12.88	Average
7	0.727	27.07	-0.48	10.78	37.37	56.00	-18.63	QP
8	0.739	19.07	-0.48	10.79	29.38	46.00	-16.62	Average
9	1.005	16.68	-0.49	10.87	27.06	46.00	-18.94	Average
10	3.417	28.71	-0.38	10.91	39.24	56.00	-16.76	QP
11	13.267	39.66	-0.44	10.91	50.13	60.00	-9.87	QP
12	13.267	29.56	-0.44	10.91	40.03	50.00	-9.97	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: 19

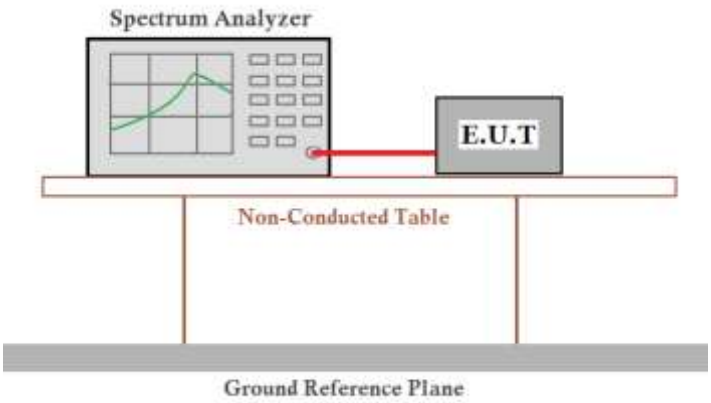
Site : CCIS Shielding Room
Condition : FCC PART15 B QP LISN NEUTRAL
EUT : Tablet PC
Model : i1101
Test Mode : 5G-WIFI mode
Power Rating : AC 120V/50Hz
Environment : Temp: 23 ℃ Huni:56% Atmos:101KPa
Test Engineer: Carey
Remark :

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.154	49.37	-0.38	10.78	59.77	65.78	-6.01	QP
2	0.186	29.14	-0.35	10.76	39.55	54.20	-14.65	Average
3	0.211	42.25	-0.34	10.76	52.67	63.18	-10.51	QP
4	0.253	37.03	-0.33	10.75	47.45	61.64	-14.19	QP
5	0.258	19.27	-0.33	10.75	29.69	51.51	-21.82	Average
6	0.310	17.65	-0.32	10.74	28.07	49.97	-21.90	Average
7	0.796	16.96	-0.30	10.81	27.47	46.00	-18.53	Average
8	1.324	25.81	-0.28	10.91	36.44	56.00	-19.56	QP
9	3.840	27.53	-0.20	10.89	38.22	56.00	-17.78	QP
10	4.049	16.23	-0.21	10.89	26.91	46.00	-19.09	Average
11	13.479	38.09	-0.13	10.91	48.87	60.00	-11.13	QP
12	13.768	28.31	-0.17	10.91	39.05	50.00	-10.95	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

6.3 Conducted Output Power

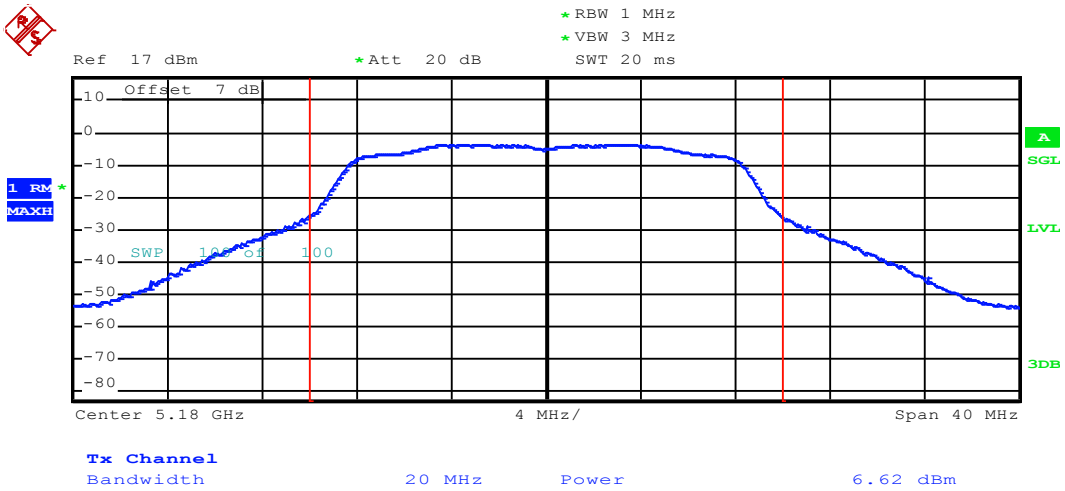
Test Requirement:	FCC Part15 E Section 15.407 (a) (1) (iv)
Test Method:	ANSI C63.10: 2013, KDB789033
Limit:	Band 1: 24dBm
Test setup:	
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

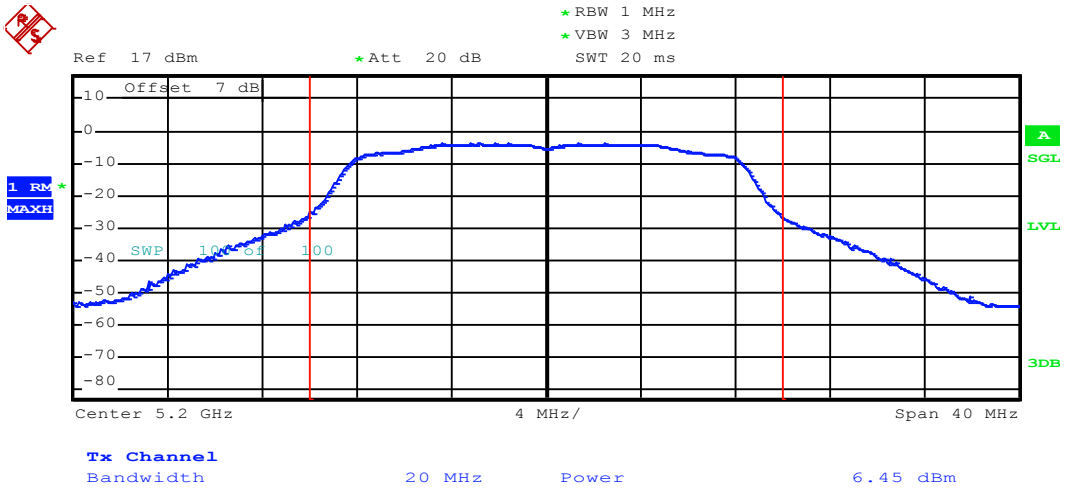
Mode	Test CH	Ant. Port	Conducted Output power (dBm)	Total power (dBm)	Limit (dBm)	Result
802.11a	Lowest	AUX	6.62	/	24.00	Pass
		MAIN	6.88			
	Middle	AUX	6.45	/		
		MAIN	6.85			
	Highest	AUX	6.38	/		
		MAIN	6.54			
802.11n20	Lowest	AUX	3.35	6.24	24.00	Pass
		MAIN	3.11			
	Middle	AUX	3.21	6.10		
		MAIN	2.97			
	Highest	AUX	3.17	6.16		
		MAIN	3.13			
802.11n40	Lowest	AUX	2.90	5.90	24.00	Pass
		MAIN	2.87			
	Highest	AUX	2.73	5.85		
		MAIN	2.94			
802.11ac80	Middle	AUX	2.63	5.58	24.00	Pass
		MAIN	2.51			

Test plot as follows:
AUX Antenna Port:

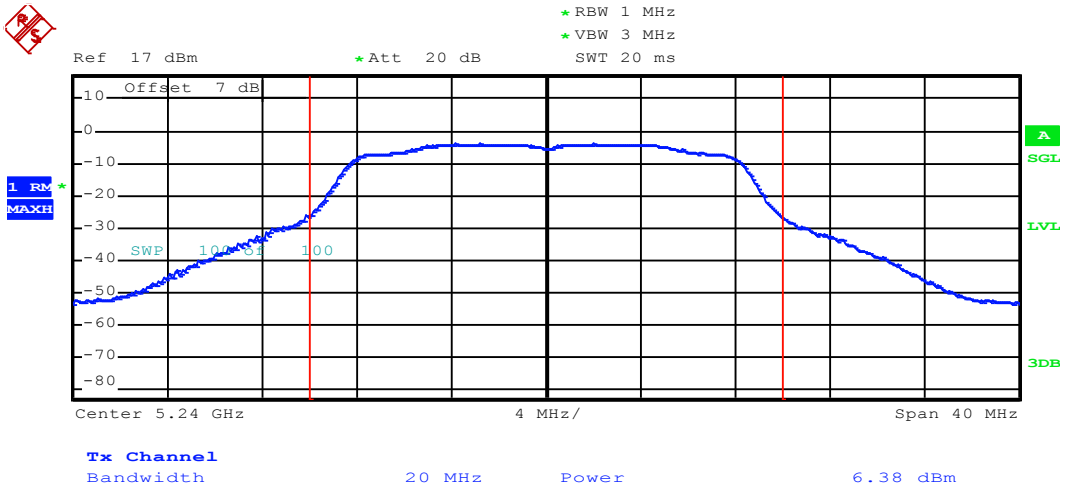
Test mode: 802.11a



Lowest channel

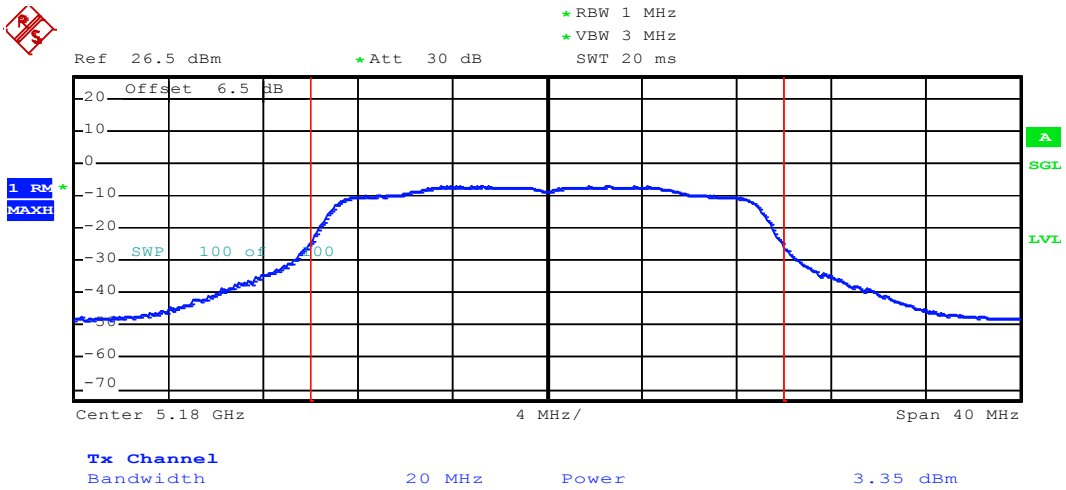


Middle channel

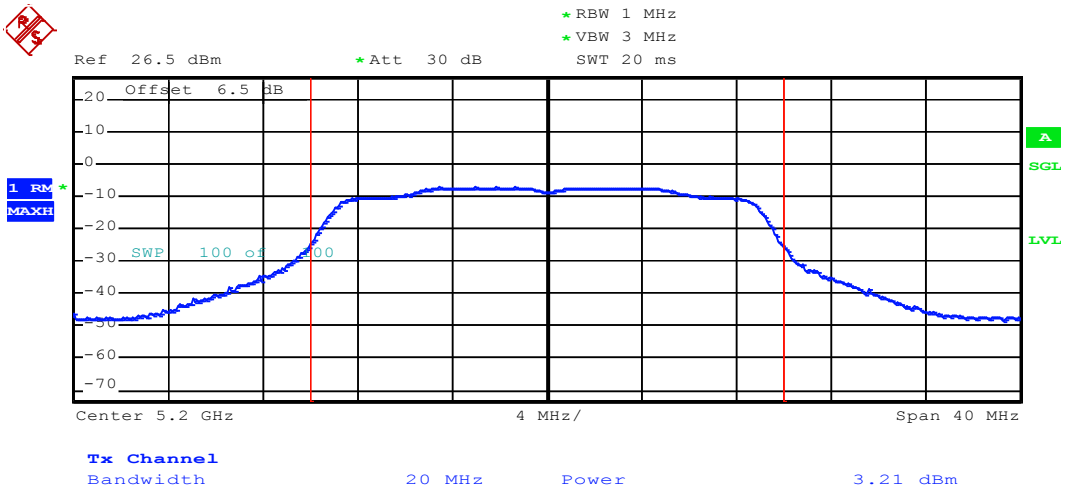


Highest channel

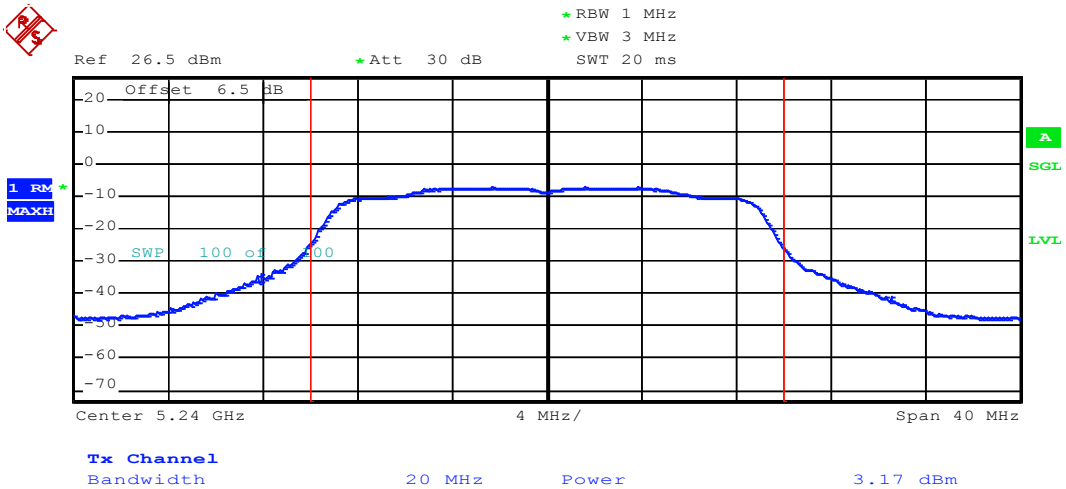
Test mode: 802.11n(H20)



Lowest channel

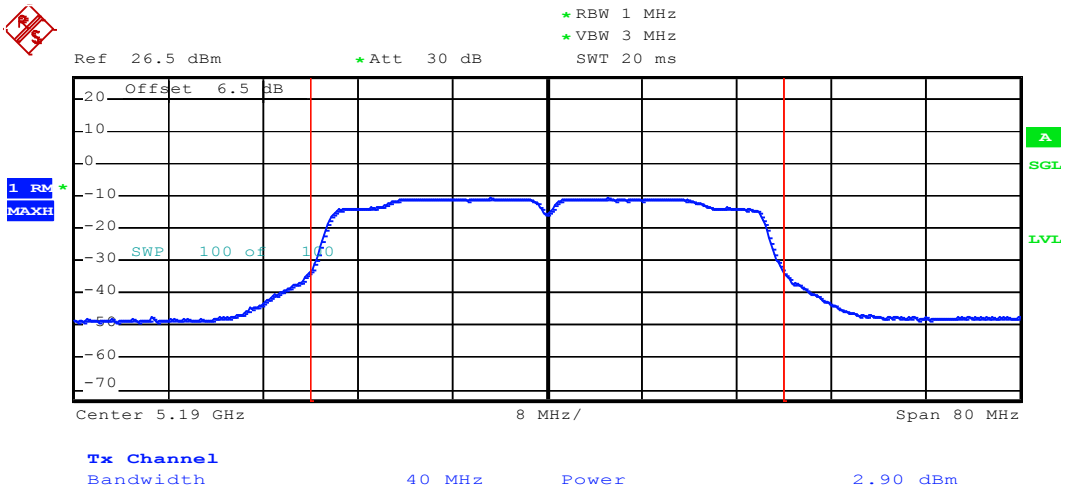


Middle channel

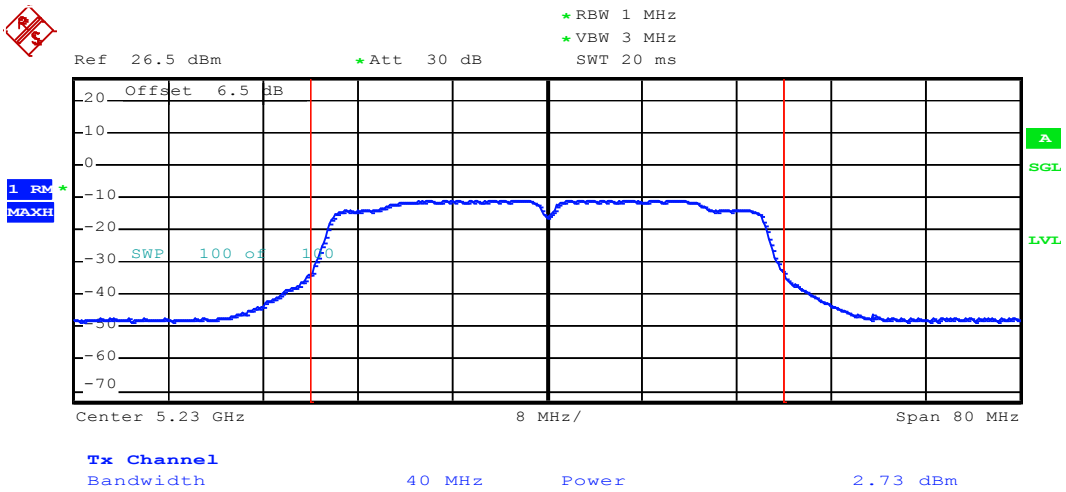


Highest channel

Test mode: 802.11n(H40)

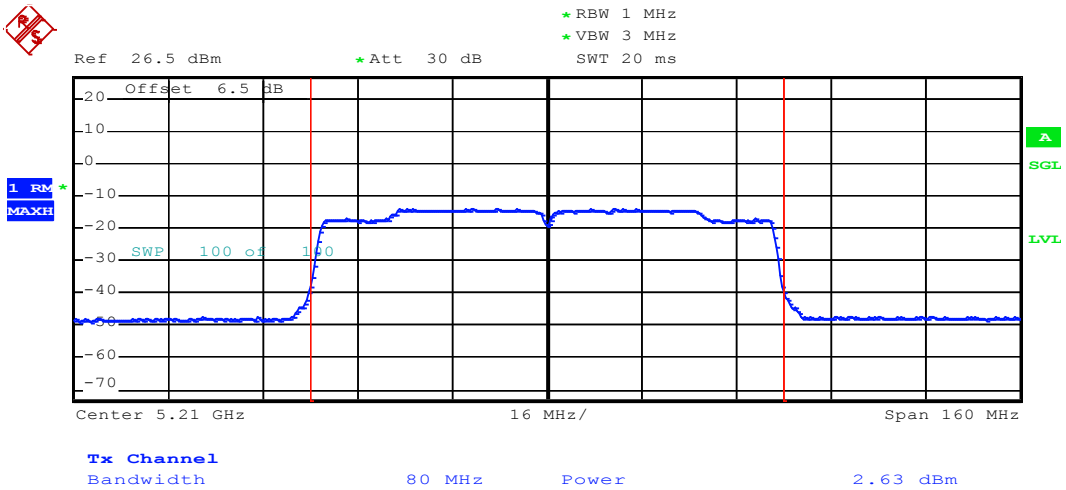


Lowest channel



Highest channel

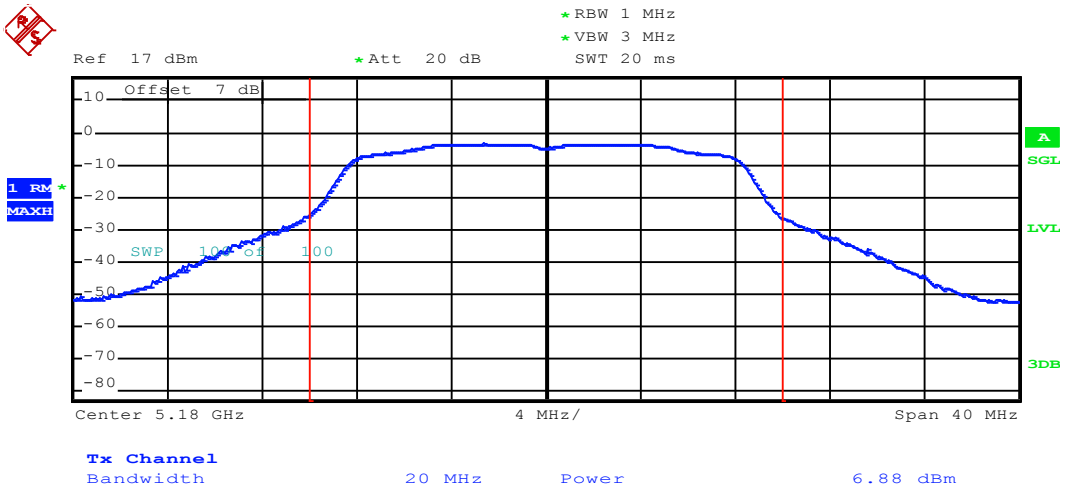
Test mode: 802.11ac80



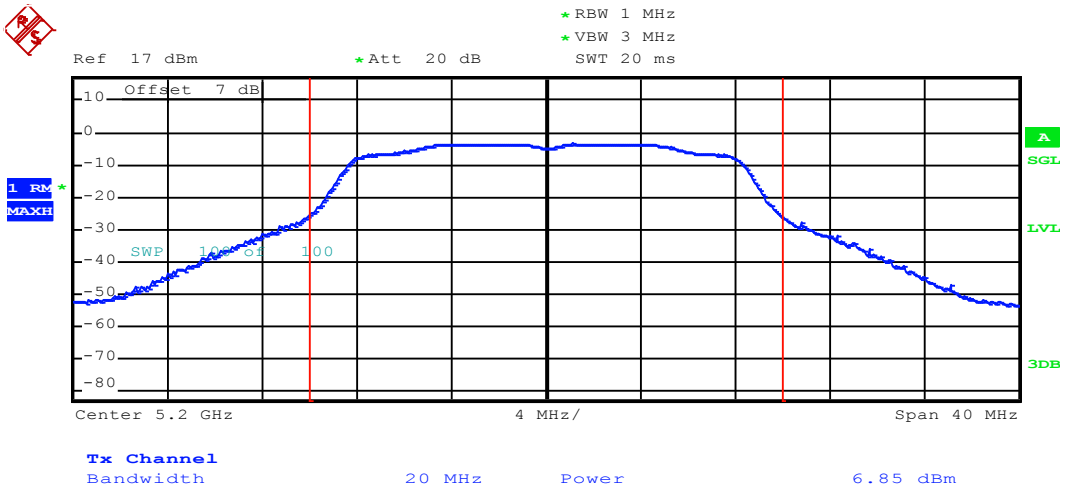
Middle channel

MAIN Antenna Port:

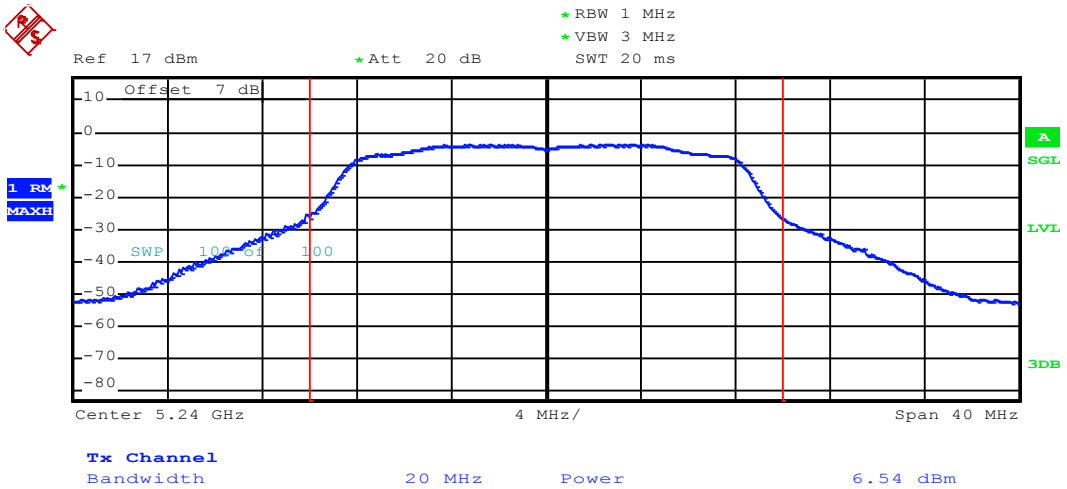
Test mode: 802.11a



Lowest channel

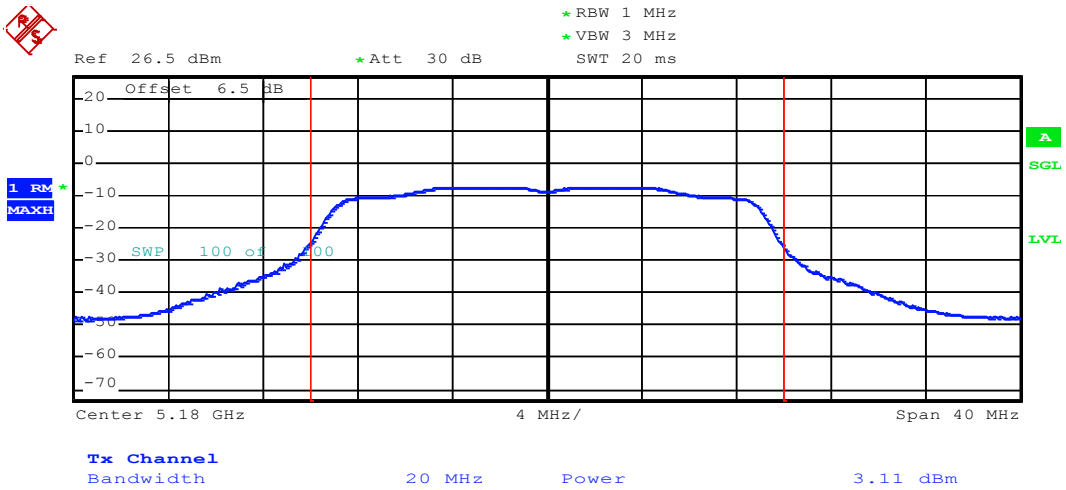


Middle channel

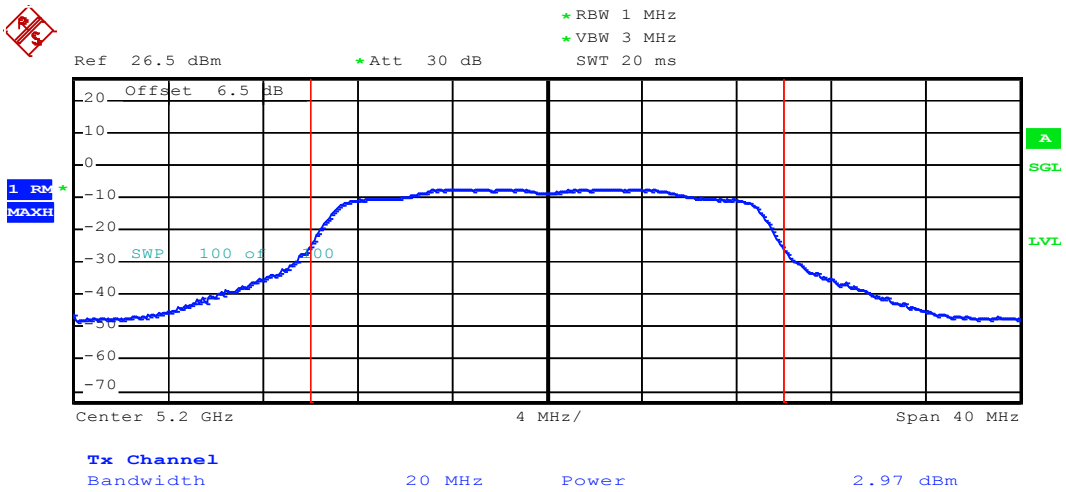


Highest channel

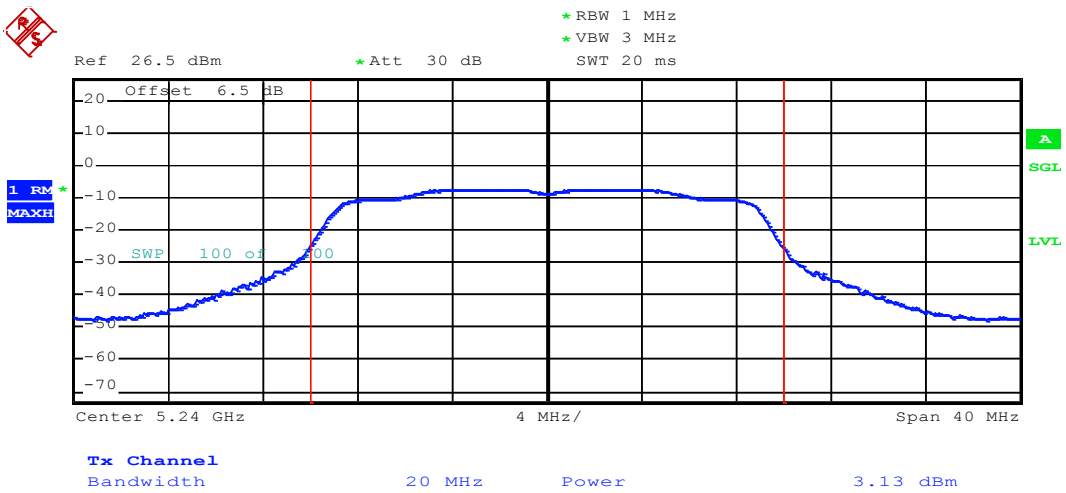
Test mode: 802.11n(H20)



Lowest channel

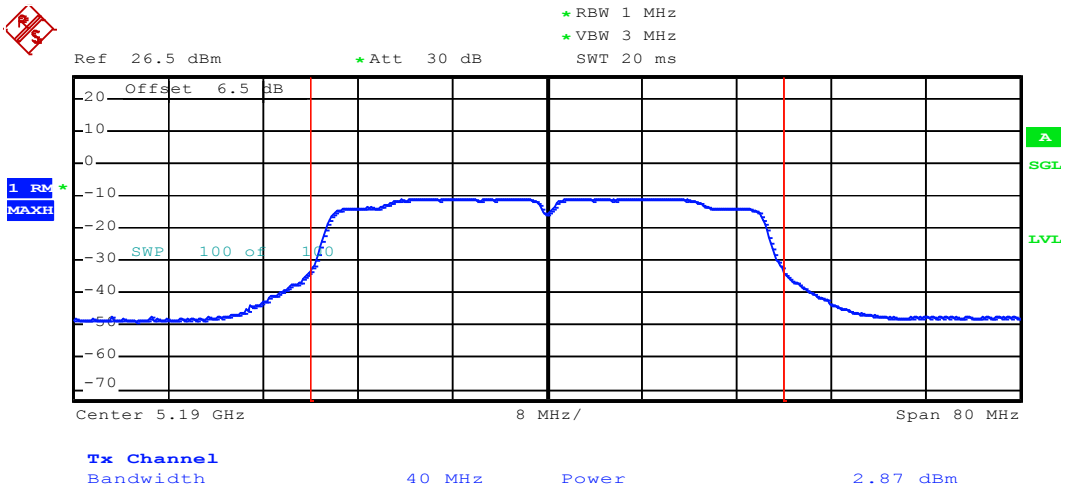


Middle channel

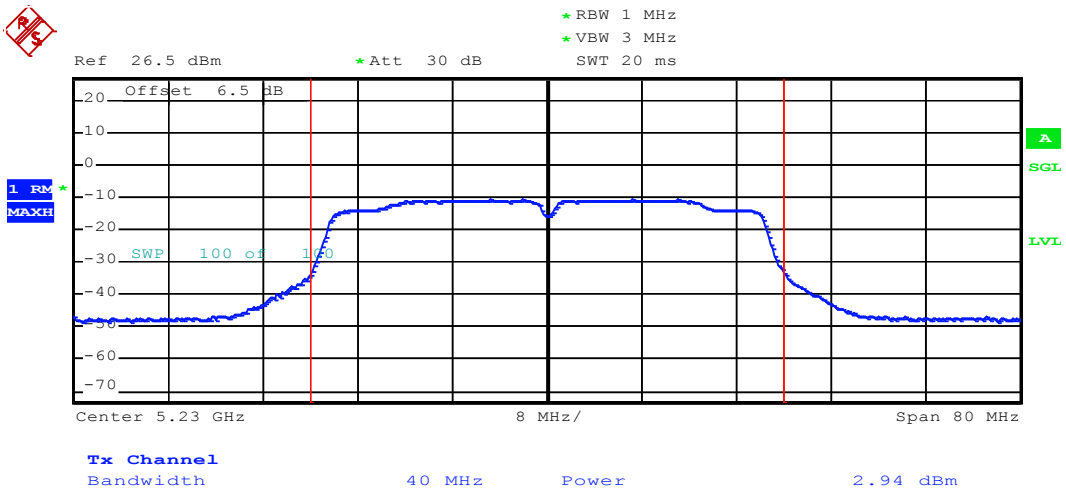


Highest channel

Test mode: 802.11n(H40)

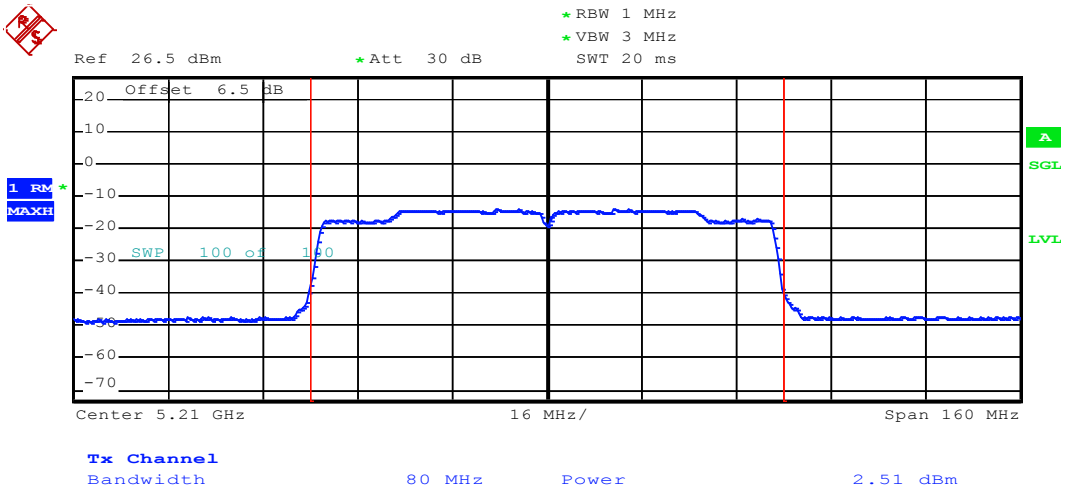


Lowest channel



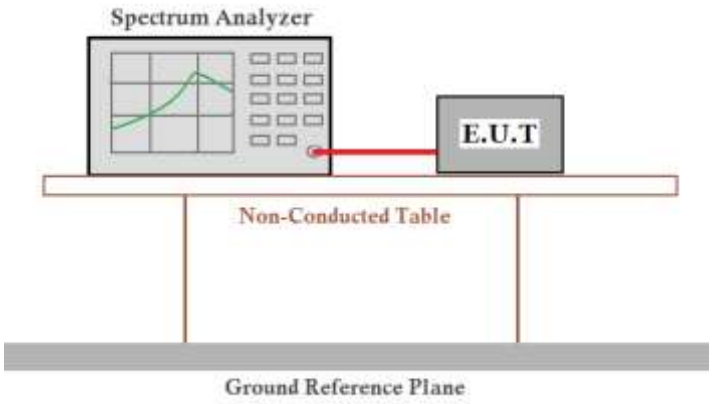
Highest channel

Test mode: 802.11ac80



Middle channel

6.4 Occupy Bandwidth

Test Requirement:	FCC Part15 E Section 15.407 (a) (5)
Test Method:	ANSI C63.10:2013 and KDB 789033
Limit:	Band 1: N/A (26dB Emission Bandwidth and 99% Occupy Bandwidth)
Test setup:	
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:
AUX Antenna Port:

Test Channel	26dB Emission Bandwidth (MHz)				Limit	Result
	802.11a	802.11n20	802.11n40	802.11ac80		
Lowest	24.24	23.20	42.56	---	N/A	PASS
Middle	23.12	23.52	---	79.36		
Highest	19.60	19.84	39.44	---		
Test Channel	99% Occupy Bandwidth (MHz)				Limit	Result
	802.11a	802.11n20	802.11n40	802.11ac80		
Lowest	16.88	17.92	36.16	---	N/A	PASS
Middle	16.88	17.92	---	75.52		
Highest	16.80	17.92	36.16	---		

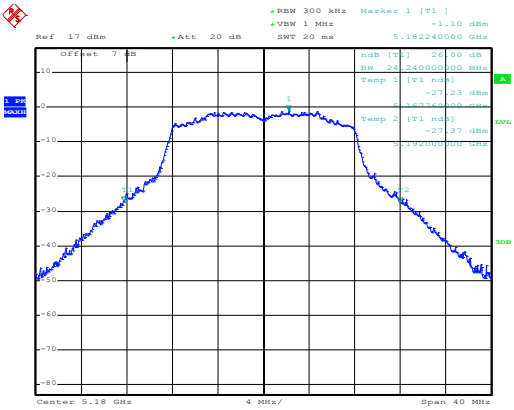
MAIN Antenna Port:

Test Channel	26dB Emission Bandwidth (MHz)				Limit	Result
	802.11a	802.11n20	802.11n40	802.11ac80		
Lowest	23.36	24.40	42.88	---	N/A	PASS
Middle	23.52	24.16	---	79.68		
Highest	18.42	19.68	40.16	---		
Test Channel	99% Occupy Bandwidth (MHz)				Limit	Result
	802.11a	802.11n20	802.11n40	802.11ac80		
Lowest	16.96	18.00	36.16	---	N/A	PASS
Middle	16.88	17.92	---	75.52		
Highest	16.80	18.00	36.16	---		

Test plot as follows:
AUX Antenna Port:

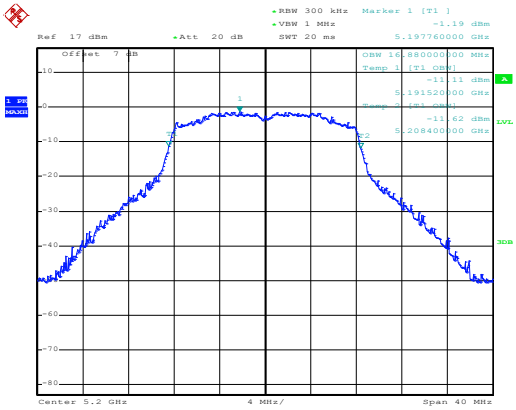
802.11a

26 dB EBW



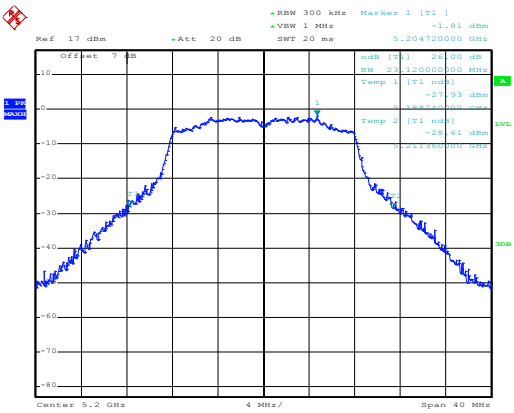
Date: 14.NOV.2017 06:33:29

99% OBW

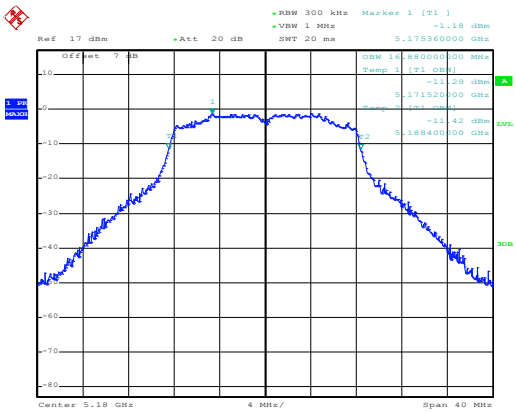


Date: 14.NOV.2017 06:40:01

Lowest channel

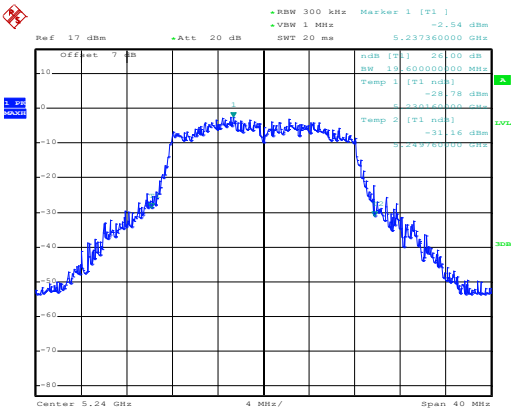


Date: 14.NOV.2017 06:33:43

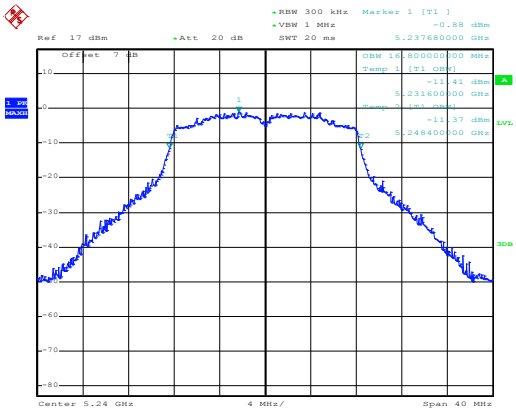


Date: 14.NOV.2017 06:40:21

Middle channel



Date: 14.NOV.2017 06:34:06

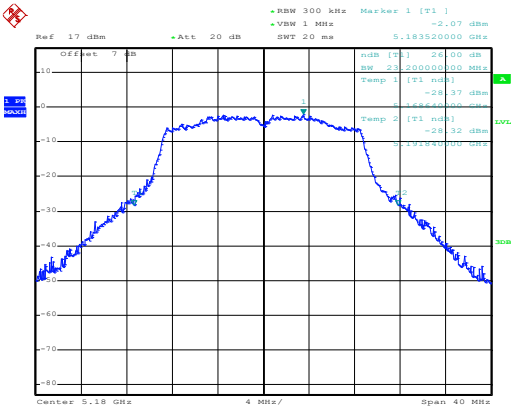


Date: 14.NOV.2017 06:39:46

Highest channel

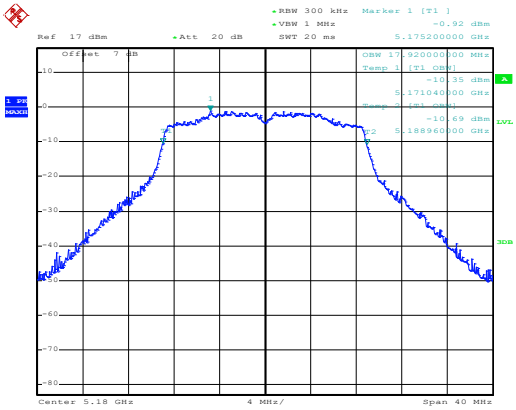
802.11n20

26dB EBW



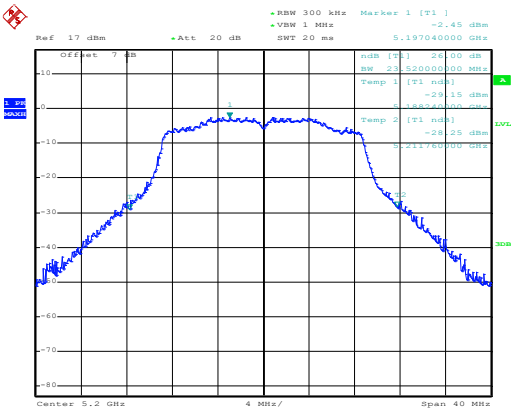
Date: 14.NOV.2017 06:35:11

99% OBW

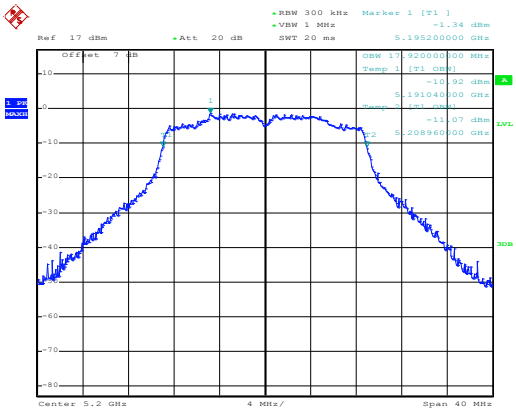


Date: 14.NOV.2017 06:39:02

Lowest channel

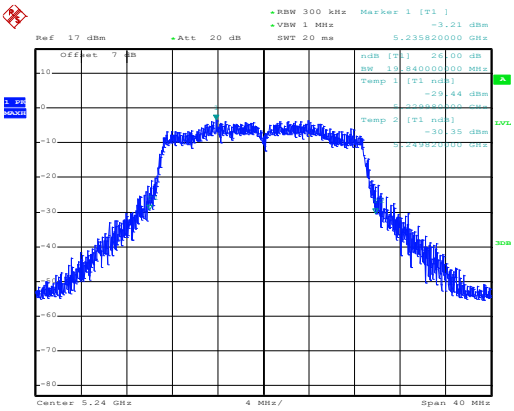


Date: 14.NOV.2017 06:34:57

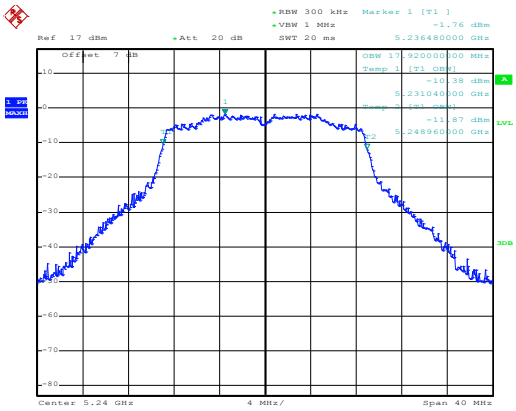


Date: 14.NOV.2017 06:39:15

Middle channel



Date: 14.NOV.2017 06:34:34

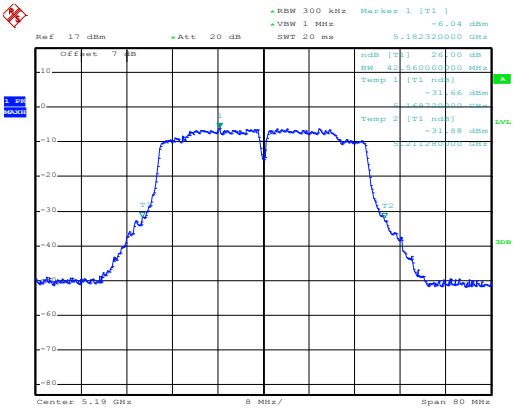


Date: 14.NOV.2017 06:39:28

Highest channel

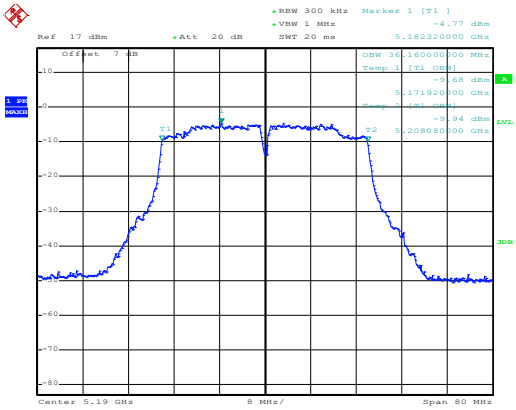
802.11n40

26dB EBW



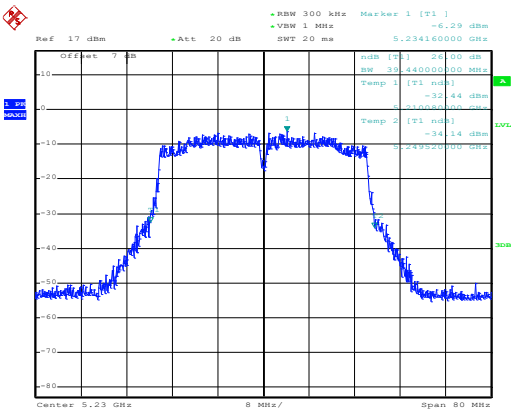
Date: 14.NOV.2017 06:35:34

99% OBW

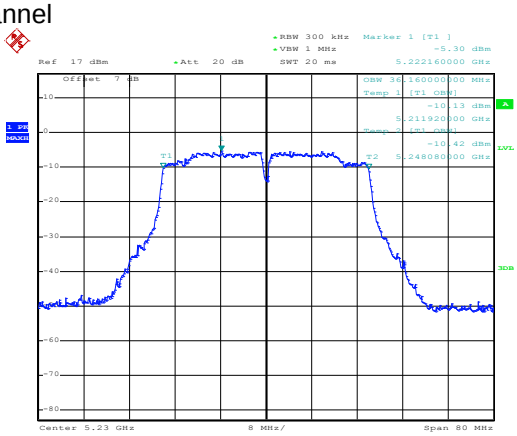


Date: 14.NOV.2017 06:38:20

Lowest channel



Date: 14.NOV.2017 06:36:04

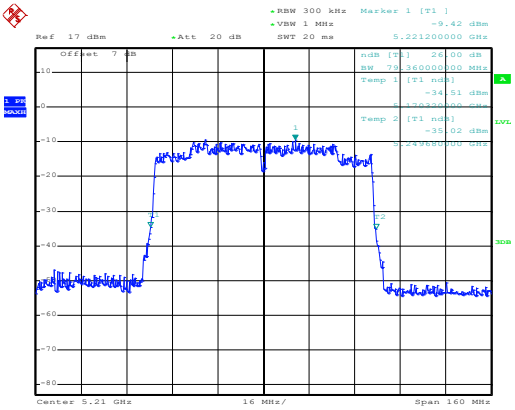


Date: 14.NOV.2017 06:38:35

Highest channel

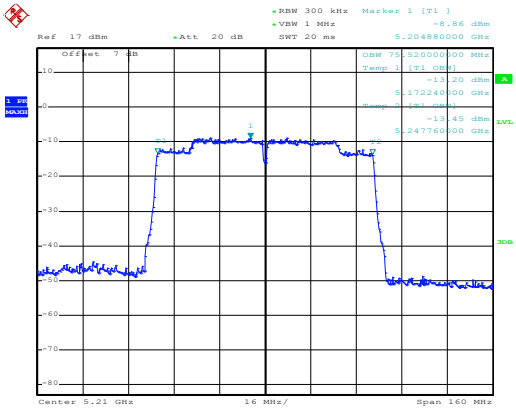
802.11ac80

26dB EBW



Date: 14.NOV.2017 06:36:35

99% OBW



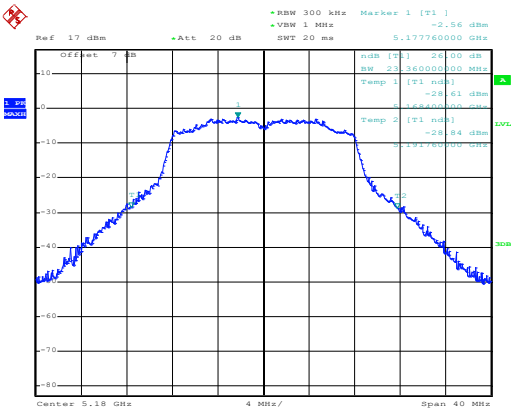
Date: 14.NOV.2017 06:36:50

Middle channel

MAIN Antenna Port:

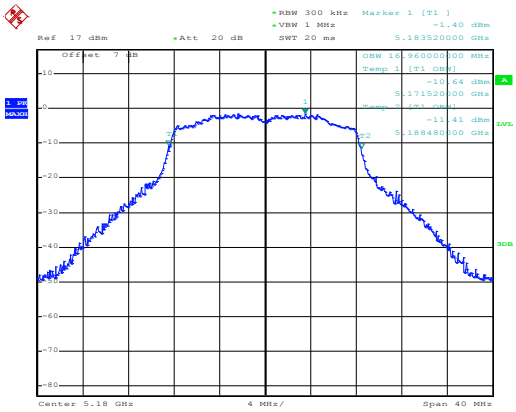
802.11a

26 dB EBW



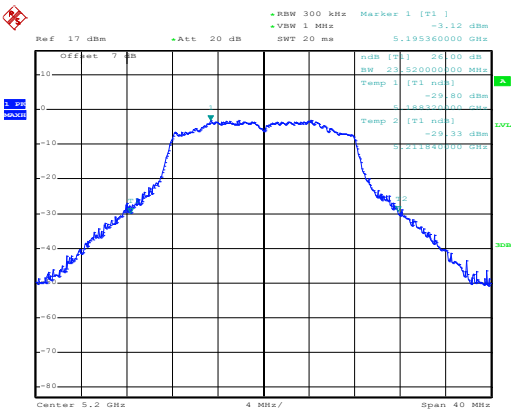
Date: 14.NOV.2017 06:25:59

99% OBW

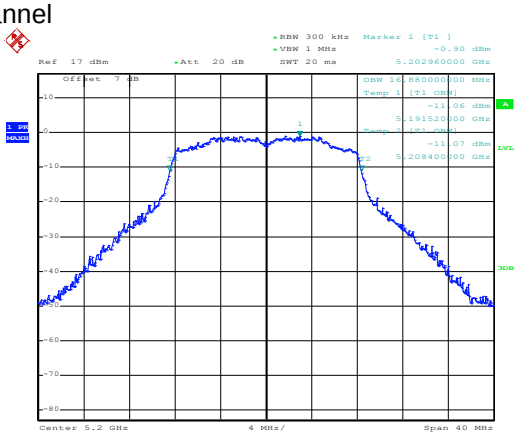


Date: 14.NOV.2017 06:10:44

Lowest channel

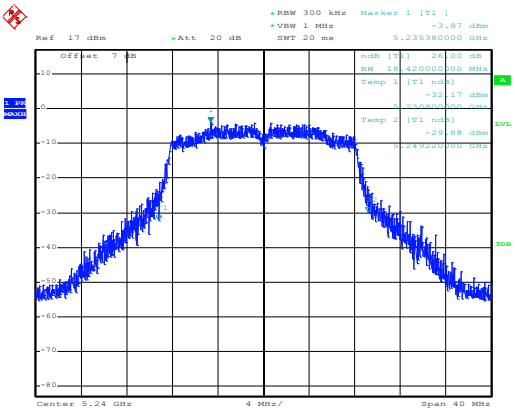


Date: 14.NOV.2017 06:25:42

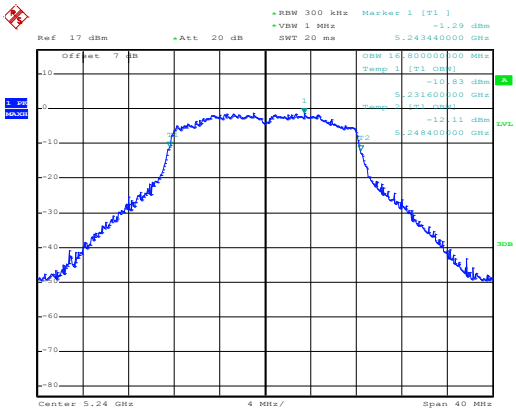


Date: 14.NOV.2017 06:10:59

Middle channel



Date: 14.NOV.2017 06:25:20

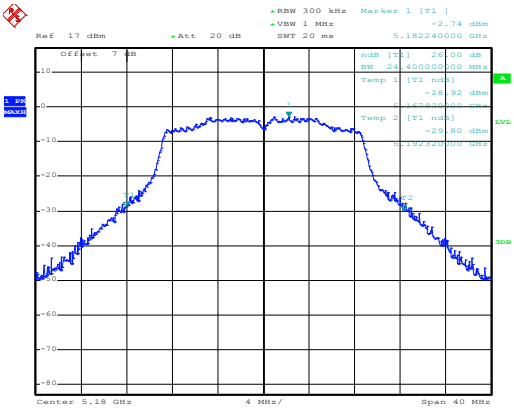


Date: 14.NOV.2017 06:11:11

Highest channel

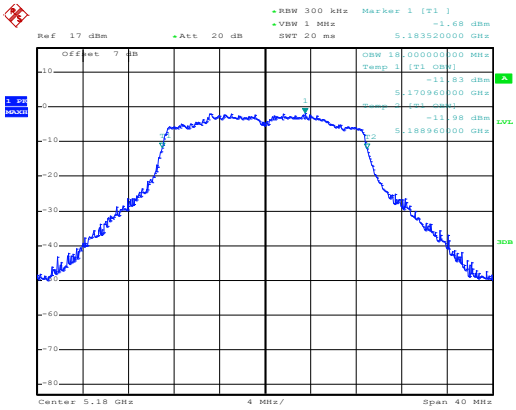
802.11n20

26dB EBW



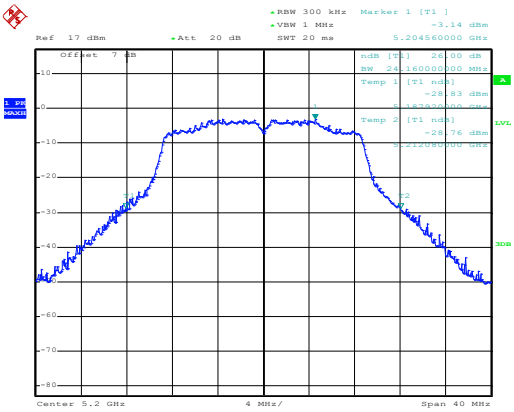
Date: 14.NOV.2017 06:15:15

99% OBW

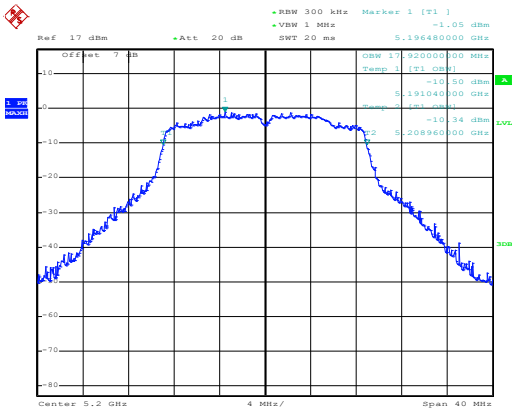


Date: 14.NOV.2017 06:11:51

Lowest channel

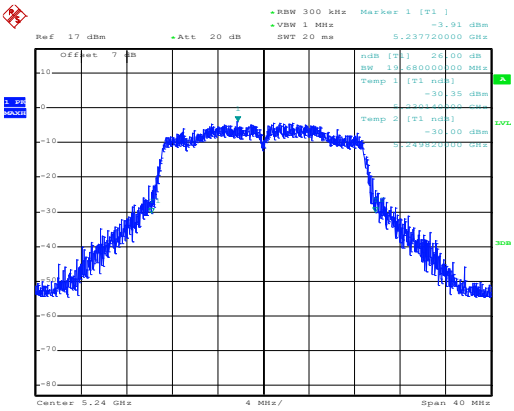


Date: 14.NOV.2017 06:15:30

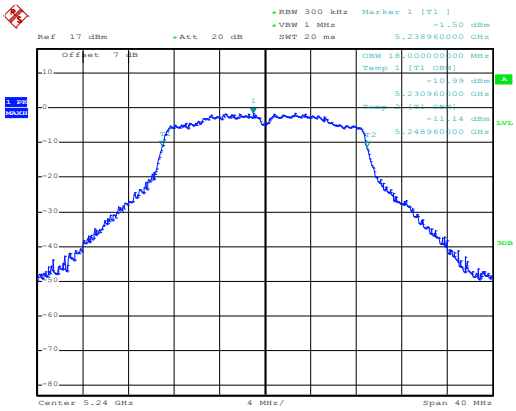


Date: 14.NOV.2017 06:11:39

Middle channel



Date: 14.NOV.2017 06:24:36

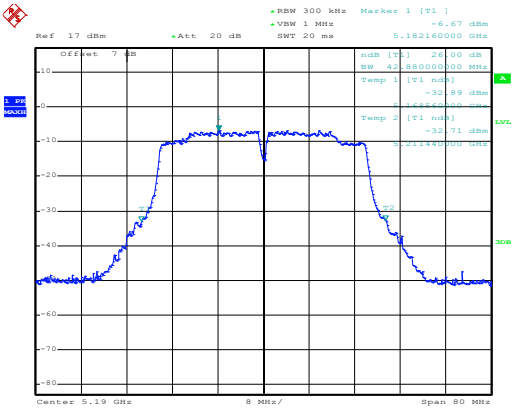


Date: 14.NOV.2017 06:11:27

Highest channel

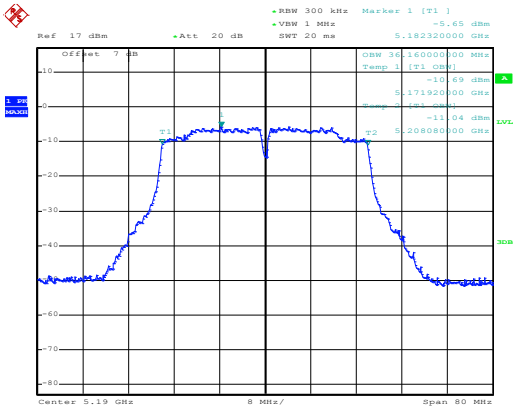
802.11n40

26dB EBW



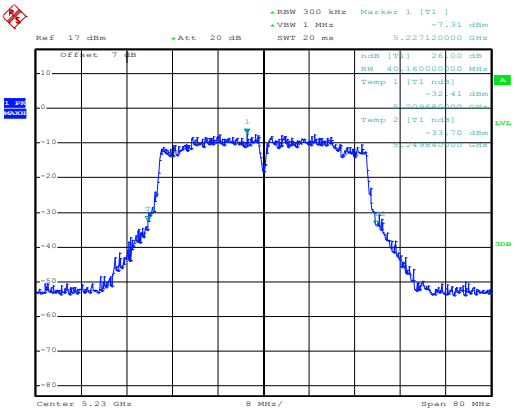
Date: 14.NOV.2017 06:13:41

99% OBW

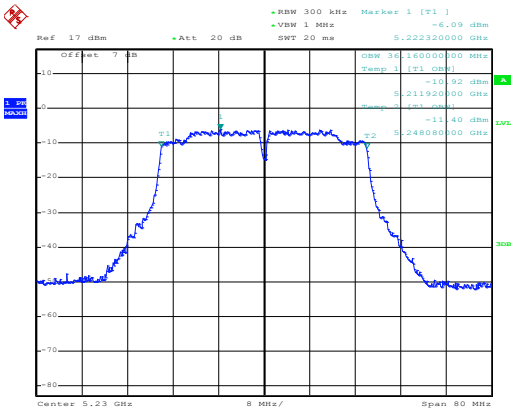


Date: 14.NOV.2017 06:12:07

Lowest channel



Date: 14.NOV.2017 06:14:54

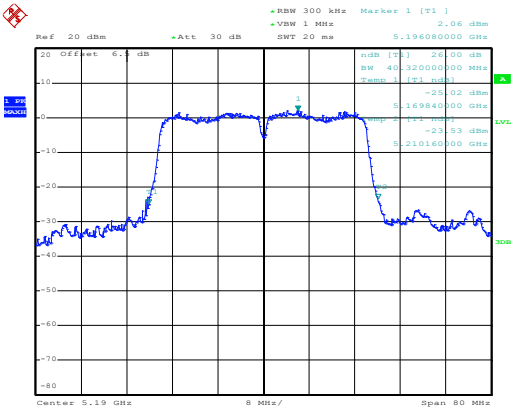


Date: 14.NOV.2017 06:12:18

Highest channel

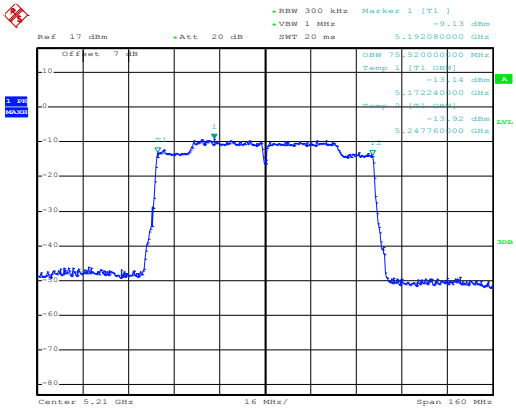
802.11ac80

26dB EBW



Date: 2.JUL.2017 17:13:56

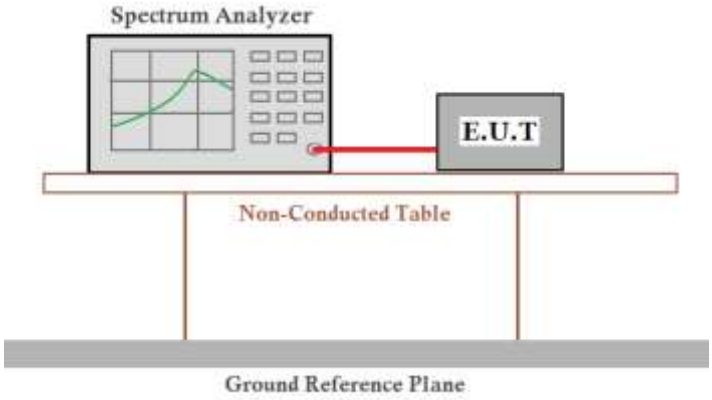
99% OBW



Date: 14.NOV.2017 06:12:49

Middle channel

6.5 Power Spectral Density

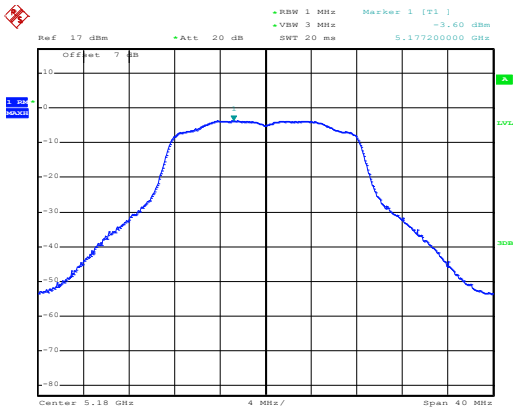
Test Requirement:	FCC Part15 E Section 15.407 (a) (1) (iv)
Test Method:	ANSI C63.10:2013, KDB 789033
Limit:	Band 1: 11 dBm/MHz
Test setup:	
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

Mode	Test CH	Ant. Port	PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Result
802.11a	Lowest	AUX	-3.60	/	11.00	Pass
		MAIN	-4.06			
	Middle	AUX	-2.89	/		
		MAIN	-3.53			
	Highest	AUX	-2.85	/		
		MAIN	-3.67			
802.11n20	Lowest	AUX	-3.92	-1.16	11.00	Pass
		MAIN	-4.44			
	Middle	AUX	-3.20	-0.47		
		MAIN	-3.79			
	Highest	AUX	-3.19	-0.63		
		MAIN	-4.15			
802.11n40	Lowest	AUX	-6.97	-4.26	11.00	Pass
		MAIN	-7.59			
	Highest	AUX	-7.25	-4.62		
		MAIN	-8.05			
802.11ac80	Middle	AUX	-10.45	-7.45	11.00	Pass
		MAIN	-10.47			

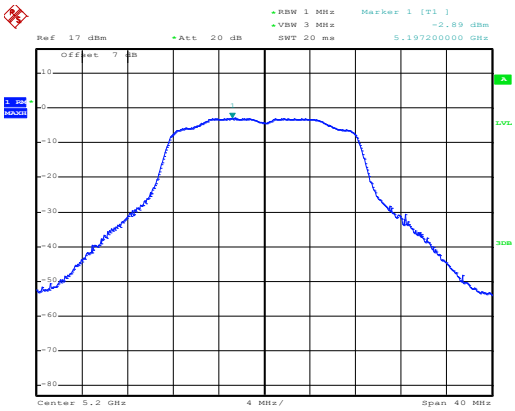
Test plot as follows:
AUX Antenna Port:

Test mode:802.11a



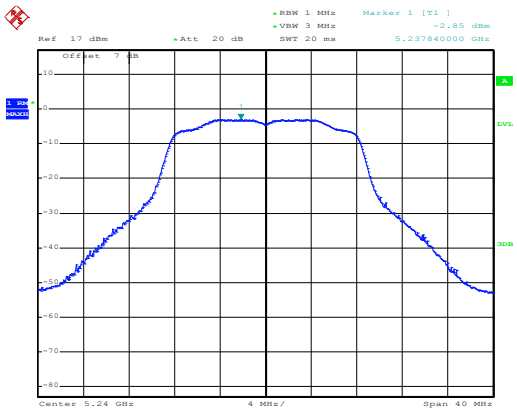
Date: 14.NOV.2017 06:40:49

Lowest channel



Date: 14.NOV.2017 06:41:04

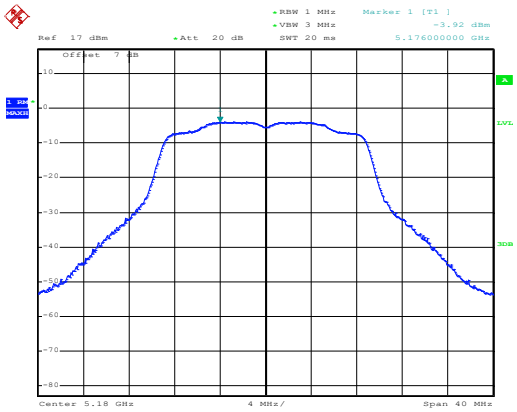
Middle channel



Date: 14.NOV.2017 06:41:16

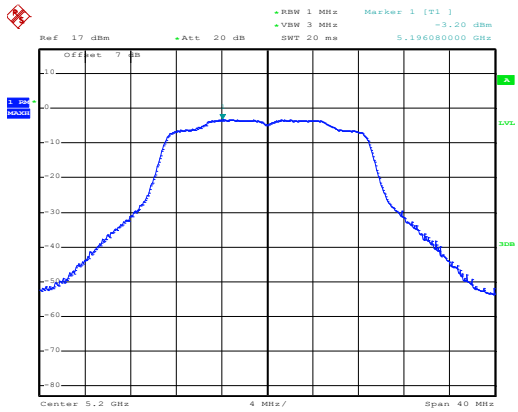
Highest channel

Test mode:802.11n20



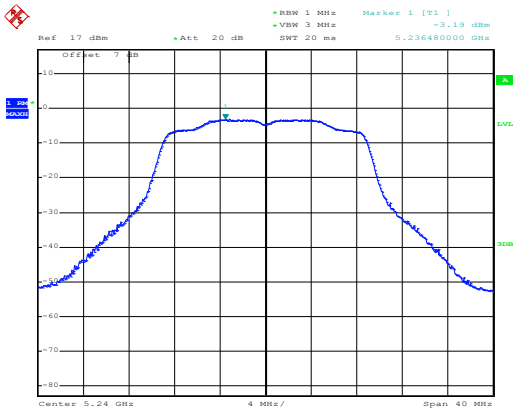
Date: 14.NOV.2017 06:42:25

Lowest channel



Date: 14.NOV.2017 06:41:55

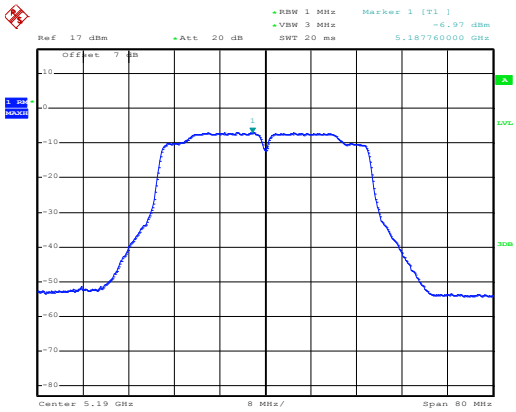
Middle channel



Date: 14.NOV.2017 06:41:33

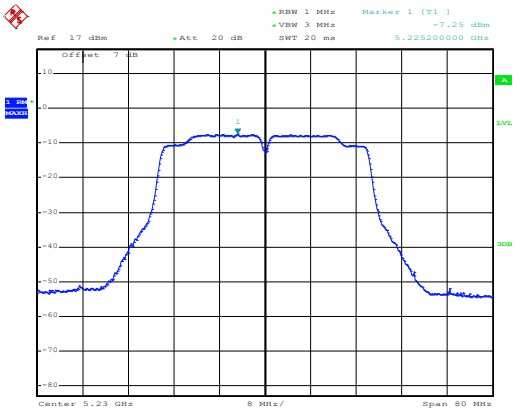
Highest channel

Test mode:802.11n40



Date: 14.NOV.2017 06:42:57

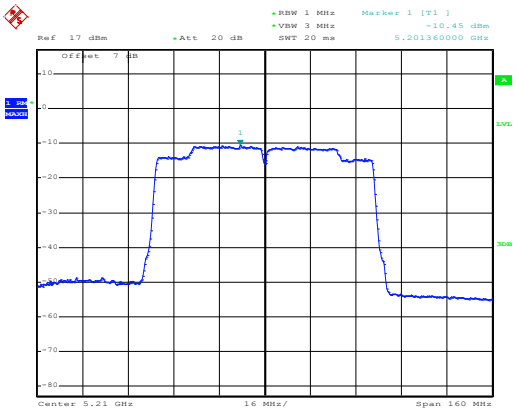
Lowest channel



Date: 14.NOV.2017 06:43:12

Highest channel

Test mode:802.11ac80

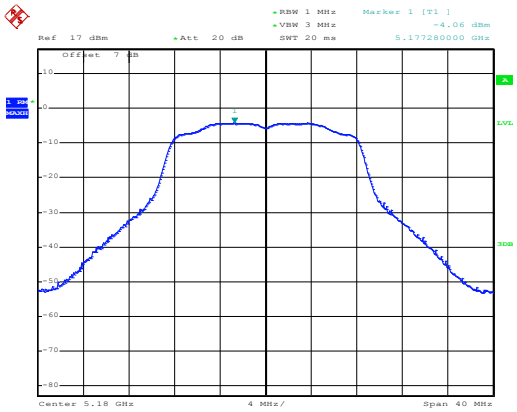


Date: 14.NOV.2017 06:43:51

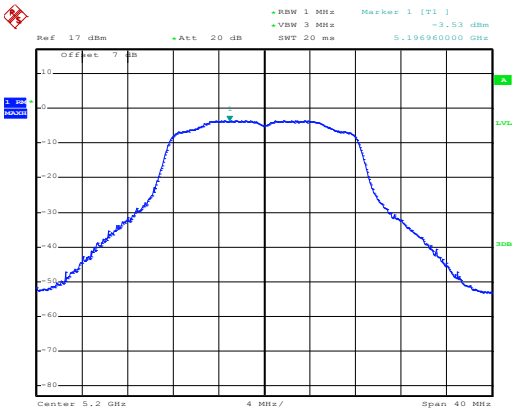
Middle channel

MAIN Antenna Port:

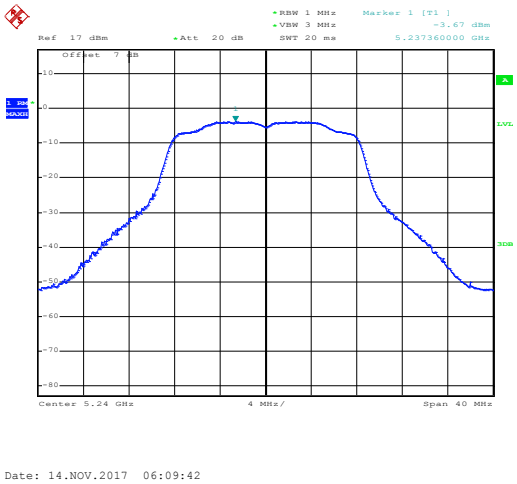
Test mode:802.11a



Lowest channel

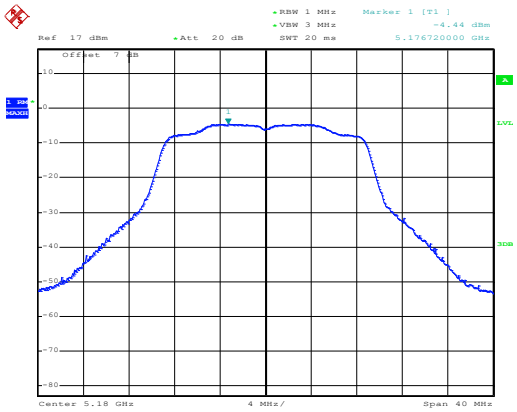


Middle channel



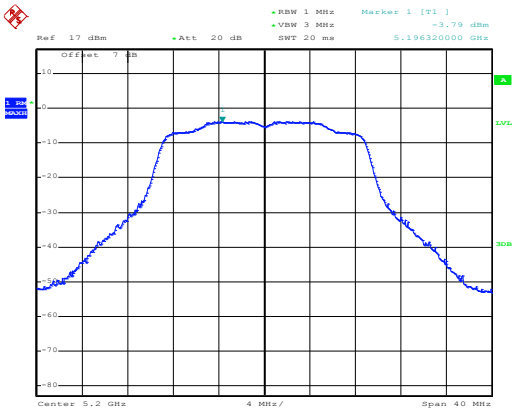
Highest channel

Test mode:802.11n20



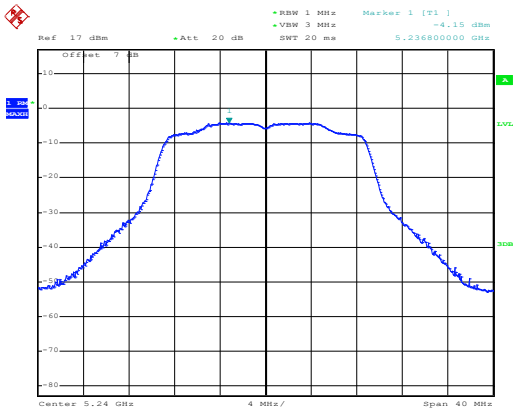
Date: 14.NOV.2017 06:09:00

Lowest channel



Date: 14.NOV.2017 06:09:15

Middle channel

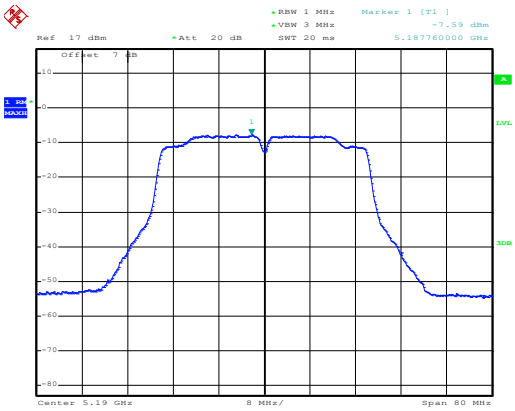


Date: 14.NOV.2017 06:09:26

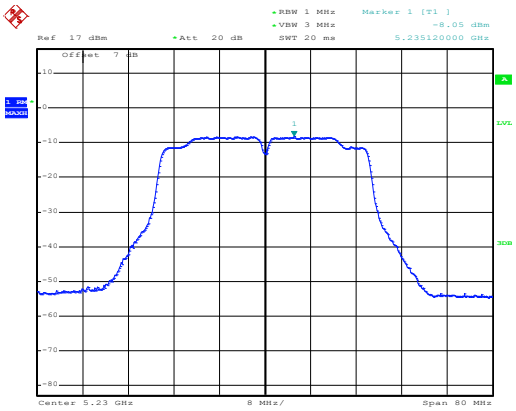
Highest channel

Highest channel

Test mode:802.11n40



Date: 14.NOV.2017 06:08:23

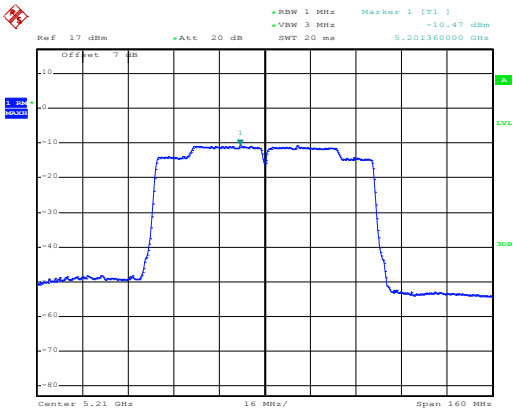


Date: 14.NOV.2017 06:08:38

Lowest channel

Highest channel

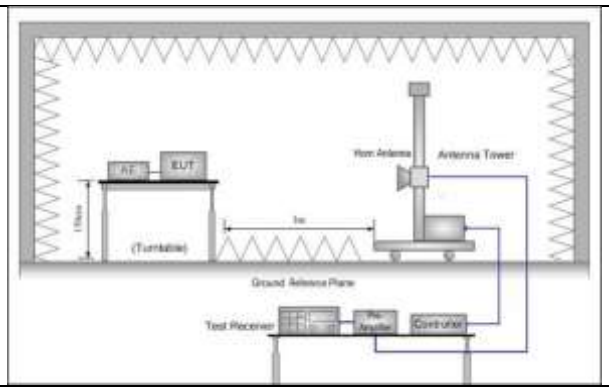
Test mode:802.11ac80



Date: 14.NOV.2017 06:07:54

Middle channel

Band Edge

Test Requirement:	FCC Part 15 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 1/2/3	68.20		Peak Value
		54.00		Average Value
	Band 4	78.20		Peak Value
		54.00		Average Value
	Remark: 1. Band 1/2/3 limit: E[dBμV/m] = EIRP[dBm] + 95.2=68.2 dBuV/m, for EIPR[dBm]=-27dBm. 2. Band 4 limit: E[dBμV/m] = EIRP[dBm] + 95.2=78.2 dBuV/m, for EIPR[dBm]=-17dBm.			
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8 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, which was 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 rotatable 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 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			

AUX Antenna:

802.11a									
Test channel		Lowest				Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factot (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	45.72	31.38	7.05	3.36	41.93	45.58	68.20	-22.62	Horizontal
5150.00	46.15	31.38	7.05	3.36	41.93	46.01	68.20	-22.19	Vertical
802.11a									
Test channel		Lowest				Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factot (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	35.43	31.38	7.05	3.36	41.93	35.29	54.00	-18.71	Horizontal
5150.00	36.46	31.38	7.05	3.36	41.93	36.32	54.00	-17.68	Vertical
802.11a									
Test channel		Highest				Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factot (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	45.72	30.82	7.11	3.38	41.89	45.14	68.20	-23.06	Horizontal
5350.00	46.34	30.82	7.11	3.38	41.89	45.76	68.20	-22.44	Vertical
802.11a									
Test channel		Highest				Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factot (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	35.43	30.82	7.11	3.38	41.89	34.85	54.00	-19.15	Horizontal
5350.00	36.86	30.82	7.11	3.38	41.89	36.28	54.00	-17.72	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.*

MAIN Antenna:

802.11a									
Test channel		Lowest				Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factot (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	45.40	31.38	7.05	3.36	41.93	45.26	68.20	-22.94	Horizontal
5150.00	46.15	31.38	7.05	3.36	41.93	46.01	68.20	-22.19	Vertical
802.11a									
Test channel		Lowest				Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factot (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	35.42	31.38	7.05	3.36	41.93	35.28	54.00	-18.72	Horizontal
5150.00	36.43	31.38	7.05	3.36	41.93	36.29	54.00	-17.71	Vertical
802.11a									
Test channel		Highest				Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factot (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	45.46	30.82	7.11	3.38	41.89	44.88	68.20	-23.32	Horizontal
5350.00	46.71	30.82	7.11	3.38	41.89	46.13	68.20	-22.07	Vertical
802.11a									
Test channel		Highest				Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factot (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	35.48	30.82	7.11	3.38	41.89	34.90	54.00	-19.10	Horizontal
5350.00	36.17	30.82	7.11	3.38	41.89	35.59	54.00	-18.41	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.*

MIMO Antenna:

802.11n20									
Test channel		Lowest				Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factot (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	46.96	31.38	7.05	3.36	41.93	46.82	68.20	-21.38	Horizontal
5150.00	46.56	31.38	7.05	3.36	41.93	46.42	68.20	-21.78	Vertical
802.11n20									
Test channel		Lowest				Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factot (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	36.43	31.38	7.05	3.36	41.93	36.29	54.00	-17.71	Horizontal
5150.00	36.32	31.38	7.05	3.36	41.93	36.18	54.00	-17.82	Vertical
802.11n20									
Test channel		Highest				Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factot (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	46.34	30.82	7.11	3.38	41.89	45.76	68.20	-22.44	Horizontal
5350.00	46.52	30.82	7.11	3.38	41.89	45.94	68.20	-22.26	Vertical
802.11n20									
Test channel		Highest				Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factot (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	36.13	30.82	7.11	3.38	41.89	35.55	54.00	-18.45	Horizontal
5350.00	36.54	30.82	7.11	3.38	41.89	35.96	54.00	-18.04	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.*

802.11n40									
Test channel		Lowest				Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factot (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	46.53	31.38	7.05	3.36	41.93	46.39	68.20	-21.81	Horizontal
5150.00	46.34	31.38	7.05	3.36	41.93	46.20	68.20	-22.00	Vertical
802.11n40									
Test channel		Lowest				Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factot (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	36.32	31.38	7.05	3.36	41.93	36.18	54.00	-17.82	Horizontal
5150.00	36.17	31.38	7.05	3.36	41.93	36.03	54.00	-17.97	Vertical
802.11n40									
Test channel		Highest				Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factot (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	46.26	30.82	7.11	3.38	41.89	45.68	68.20	-22.52	Horizontal
5350.00	46.43	30.82	7.11	3.38	41.89	45.85	68.20	-22.35	Vertical
802.11n40									
Test channel		Highest				Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factot (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	36.46	30.82	7.11	3.38	41.89	35.88	54.00	-18.12	Horizontal
5350.00	36.85	30.82	7.11	3.38	41.89	36.27	54.00	-17.73	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.*

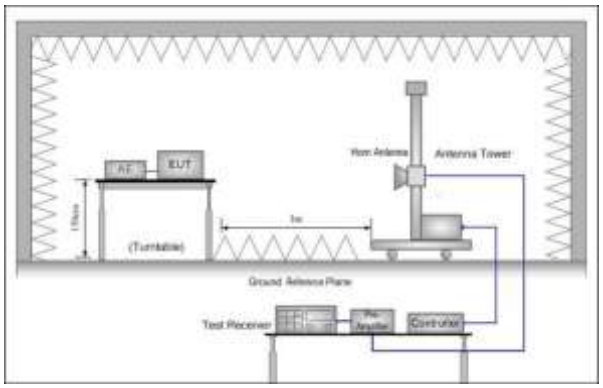
802.11ac80									
Test channel		Middle				Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factot (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	46.56	31.38	7.05	3.36	41.93	46.42	68.20	-21.78	Horizontal
5150.00	46.67	31.38	7.05	3.36	41.93	46.53	68.20	-21.67	Vertical
802.11ac80									
Test channel		Middle				Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factot (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5150.00	36.64	31.38	7.05	3.36	41.93	36.50	54.00	-17.50	Horizontal
5150.00	36.46	31.38	7.05	3.36	41.93	36.32	54.00	-17.68	Vertical
802.11ac80									
Test channel		Middle				Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factot (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	46.33	30.82	7.11	3.38	41.89	45.75	68.20	-22.45	Horizontal
5350.00	46.43	30.82	7.11	3.38	41.89	45.85	68.20	-22.35	Vertical
802.11ac80									
Test channel		Middle				Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factot (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5350.00	36.86	30.82	7.11	3.38	41.89	36.28	54.00	-17.72	Horizontal
5350.00	36.84	30.82	7.11	3.38	41.89	36.26	54.00	-17.74	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.*

6.6 Spurious Emission

6.6.1 Restricted Band

Test Requirement:	FCC Part15 E Section 15.407(b)				
Test Method:	ANSI C63.10: 2013				
Test Frequency Range:	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, which was 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 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				

AUX Antenna of 802.11a:

Test channel		Lowest				Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	46.42	29.30	6.80	3.29	42.05	43.76	74.00	-30.24	Horizontal
4500.00	46.99	29.30	6.80	3.29	42.05	44.33	74.00	-29.67	Vertical
Test channel		Lowest				Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	36.56	29.30	6.80	3.29	42.05	33.90	54.00	-20.10	Horizontal
4500.00	36.51	29.30	6.80	3.29	42.05	33.85	54.00	-20.15	Vertical
Test channel		Highest				Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5460.00	45.43	30.54	7.18	3.39	41.85	44.69	74.00	-29.31	Horizontal
5460.00	46.82	30.54	7.18	3.39	41.85	46.08	74.00	-27.92	Vertical
Test channel		Highest				Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5460.00	35.53	30.54	7.18	3.39	41.85	34.79	54.00	-19.21	Horizontal
5460.00	36.43	30.54	7.18	3.39	41.85	35.69	54.00	-18.31	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.*

MAIN Antenna of 802.11a:

Test channel		Lowest				Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	46.01	29.30	6.80	3.29	42.05	43.35	74.00	-30.65	Horizontal
4500.00	46.15	29.30	6.80	3.29	42.05	43.49	74.00	-30.51	Vertical
Test channel		Lowest				Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	36.91	29.30	6.80	3.29	42.05	34.25	54.00	-19.75	Horizontal
4500.00	36.22	29.30	6.80	3.29	42.05	33.56	54.00	-20.44	Vertical
Test channel		Highest				Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5460.00	45.63	30.54	7.18	3.39	41.85	44.89	74.00	-29.11	Horizontal
5460.00	46.15	30.54	7.18	3.39	41.85	45.41	74.00	-28.59	Vertical
Test channel		Highest				Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5460.00	35.48	30.54	7.18	3.39	41.85	34.74	54.00	-19.26	Horizontal
5460.00	36.42	30.54	7.18	3.39	41.85	35.68	54.00	-18.32	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.*

MIMO Antenna:
802.11n-HT20

Test channel		Lowest				Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	46.96	29.30	6.80	3.29	42.05	44.30	74.00	-29.70	Horizontal
4500.00	46.53	29.30	6.80	3.29	42.05	43.87	74.00	-30.13	Vertical
Test channel		Lowest				Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	36.72	29.30	6.80	3.29	42.05	34.06	54.00	-19.94	Horizontal
4500.00	36.14	29.30	6.80	3.29	42.05	33.48	54.00	-20.52	Vertical
Test channel		Highest				Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5460.00	46.42	30.54	7.18	3.39	41.85	45.68	74.00	-28.32	Horizontal
5460.00	46.97	30.54	7.18	3.39	41.85	46.23	74.00	-27.77	Vertical
Test channel		Highest				Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5460.00	36.42	30.54	7.18	3.39	41.85	35.68	54.00	-18.32	Horizontal
5460.00	36.85	30.54	7.18	3.39	41.85	36.11	54.00	-17.89	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.*

802.11n-HT40

Test channel		Lowest				Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	46.56	29.30	6.80	3.29	42.05	43.90	74.00	-30.10	Horizontal
4500.00	46.86	29.30	6.80	3.29	42.05	44.20	74.00	-29.80	Vertical
Test channel		Lowest				Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	36.43	29.30	6.80	3.29	42.05	33.77	54.00	-20.23	Horizontal
4500.00	36.26	29.30	6.80	3.29	42.05	33.60	54.00	-20.40	Vertical
Test channel		Highest				Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5460.00	46.85	30.54	7.18	3.39	41.85	46.11	74.00	-27.89	Horizontal
5460.00	46.26	30.54	7.18	3.39	41.85	45.52	74.00	-28.48	Vertical
Test channel		Highest				Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5460.00	36.86	30.54	7.18	3.39	41.85	36.12	54.00	-17.88	Horizontal
5460.00	36.54	30.54	7.18	3.39	41.85	35.80	54.00	-18.20	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.*

802.11ac-HT80

Test channel		Middle				Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	46.46	29.30	6.80	3.29	42.05	43.80	74.00	-30.20	Horizontal
4500.00	46.74	29.30	6.80	3.29	42.05	44.08	74.00	-29.92	Vertical
Test channel		Middle				Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4500.00	36.44	29.30	6.80	3.29	42.05	33.78	54.00	-20.22	Horizontal
4500.00	36.29	29.30	6.80	3.29	42.05	33.63	54.00	-20.37	Vertical
Test channel		Middle				Level		Peak	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5460.00	46.61	30.54	7.18	3.39	41.85	45.87	74.00	-28.13	Horizontal
5460.00	46.12	30.54	7.18	3.39	41.85	45.38	74.00	-28.62	Vertical
Test channel		Middle				Level		Average	
Frequency (MHz)	Read Level (dBuV/m)	Antenna Factor (dB)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
5460.00	36.99	30.54	7.18	3.39	41.85	36.25	54.00	-17.75	Horizontal
5460.00	36.85	30.54	7.18	3.39	41.85	36.11	54.00	-17.89	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.*

6.6.2 Unwanted Emissions out of the Restricted Bands

Test Requirement:	FCC Part15 C Section 15.209 and 15.205
Test Method:	ANSI C63.10: 2013
Test Frequency Range:	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:

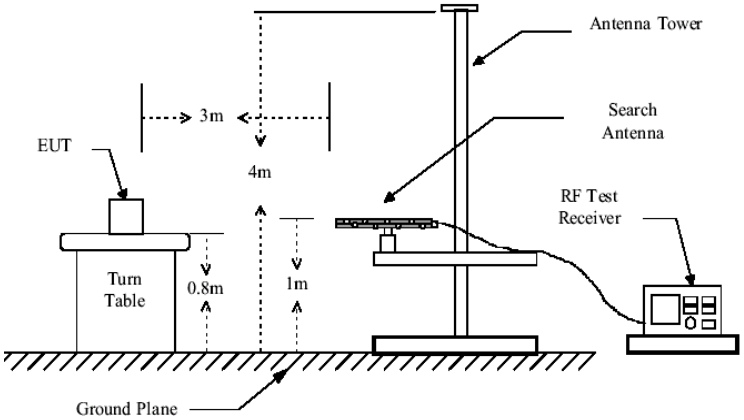
Frequency	Limit (dBuV/m @3m)	Remark
30MHz-88MHz	40.0	Quasi-peak Value
88MHz-216MHz	43.5	Quasi-peak Value
216MHz-960MHz	46.0	Quasi-peak Value
960MHz-1GHz	54.0	Quasi-peak Value
Above 1GHz	68.20	Peak Value
	54.00	Average Value

Remark:
Above 1GHz limit:
E[dBμV/m] = EIRP[dBm] + 95.2=68.2 dBuV/m, for EIPR[dBm]=-27dBm.

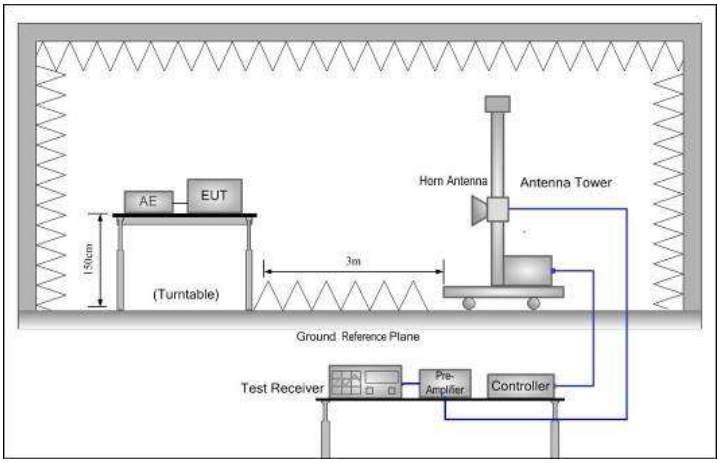
Test Procedure:

1. The EUT was placed on the top of a rotating table 0.8m(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, which was 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 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: Below 1GHz



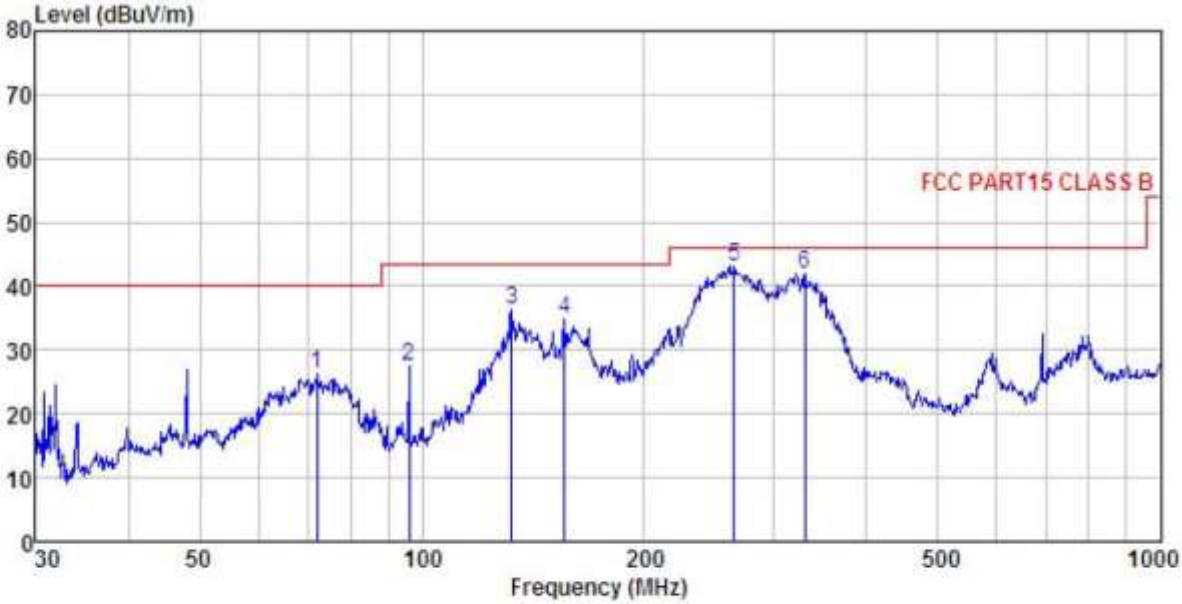
Above 1GHz



Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Below 1GHz

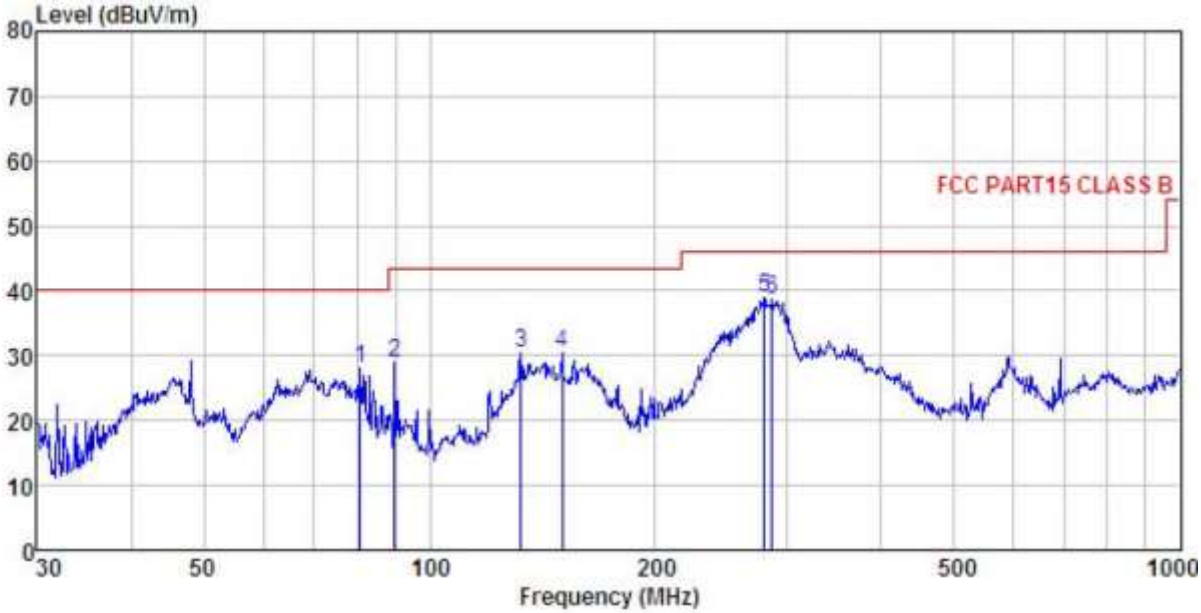
Horizontal:



Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163(30M2G) HORIZONTAL
EUT : Tablet PC
Model : 11101
Test mode : 5G-WIFI Mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.5℃ Huni:55%
Test Engineer: Carey
REMARK :

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	72.084	44.42	9.86	1.56	29.70	26.14	40.00	-13.86	QP
2	96.099	43.30	11.67	2.00	29.55	27.42	43.50	-16.08	QP
3	132.221	54.64	8.54	2.32	29.32	36.18	43.50	-7.32	QP
4	155.910	53.02	8.56	2.56	29.17	34.97	43.50	-8.53	QP
5	264.746	56.40	12.43	2.85	28.51	43.17	46.00	-2.83	QP
6	330.195	53.72	13.80	3.04	28.52	42.04	46.00	-3.96	QP

Vertical:



Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163(30M2G) VERTICAL
EUT : Tablet PC
Model : 11101
Test mode : 5G-WIFI mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.5℃ Huni:55%
Test Engineer: Carey
REMARK :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	80.927	46.93	8.92	1.69	29.63	27.91	40.00	-12.09	QP
2	89.905	45.99	10.60	2.04	29.57	29.06	43.50	-14.44	QP
3	132.221	48.86	8.54	2.32	29.32	30.40	43.50	-13.10	QP
4	150.011	48.61	8.50	2.52	29.22	30.41	43.50	-13.09	QP
5	279.044	51.87	12.72	2.88	28.49	38.98	46.00	-7.02	QP
6	285.978	51.28	12.97	2.90	28.47	38.68	46.00	-7.32	QP

Above 1GHz:
AUX Antenna Port:

802.11a mode Lowest channel (Peak Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	46.69	36.95	9.82	5.31	41.97	56.80	68.20	-11.40	Vertical
10400.00	46.54	36.95	9.82	5.31	41.97	56.65	68.20	-11.55	Horizontal
802.11a mode Lowest channel (Average Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	36.97	36.95	9.82	5.31	41.97	47.08	54.00	-6.92	Vertical
10400.00	36.12	36.95	9.82	5.31	41.97	46.23	54.00	-7.77	Horizontal

802.11a mode Middle channel (Peak Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	46.51	36.96	9.85	5.33	41.95	56.70	68.20	-11.50	Vertical
10400.00	46.78	36.96	9.85	5.33	41.95	56.97	68.20	-11.23	Horizontal
802.11a mode Middle channel (Average Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	36.93	36.96	9.85	5.33	41.95	47.12	54.00	-6.88	Vertical
10400.00	36.48	36.96	9.85	5.33	41.95	46.67	54.00	-7.33	Horizontal

802.11a mode Highest channel (Peak Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	46.89	37.00	9.96	5.37	41.88	57.34	68.20	-10.86	Vertical
10400.00	46.97	37.00	9.96	5.37	41.88	57.42	68.20	-10.78	Horizontal
802.11a mode Highest channel (Average Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	36.14	37.00	9.96	5.37	41.88	46.59	54.00	-7.41	Vertical
10400.00	36.55	37.00	9.96	5.37	41.88	47.00	54.00	-7.00	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.*

MAIN Antenna of 802.11a:

802.11a mode Lowest channel (Peak Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	46.00	36.95	9.82	5.31	41.97	56.11	68.20	-12.09	Vertical
10400.00	46.44	36.95	9.82	5.31	41.97	56.55	68.20	-11.65	Horizontal
802.11a mode Lowest channel (Average Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	36.57	36.95	9.82	5.31	41.97	46.68	54.00	-7.32	Vertical
10400.00	36.94	36.95	9.82	5.31	41.97	47.05	54.00	-6.95	Horizontal

802.11a mode Middle channel (Peak Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	46.54	36.96	9.85	5.33	41.95	56.73	68.20	-11.47	Vertical
10400.00	46.74	36.96	9.85	5.33	41.95	56.93	68.20	-11.27	Horizontal
802.11a mode Middle channel (Average Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	36.38	36.96	9.85	5.33	41.95	46.57	54.00	-7.43	Vertical
10400.00	36.05	36.96	9.85	5.33	41.95	46.24	54.00	-7.76	Horizontal

802.11a mode Highest channel (Peak Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	46.89	37.00	9.96	5.37	41.88	57.34	68.20	-10.86	Vertical
10400.00	46.97	37.00	9.96	5.37	41.88	57.42	68.20	-10.78	Horizontal
802.11a mode Highest channel (Average Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	36.14	37.00	9.96	5.37	41.88	46.59	54.00	-7.41	Vertical
10400.00	36.55	37.00	9.96	5.37	41.88	47.00	54.00	-7.00	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.*

MIMO Antenna:

802.11n20 mode Lowest channel (Peak Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	46.27	36.95	9.82	5.31	41.97	56.38	68.20	-11.82	Vertical
10400.00	46.69	36.95	9.82	5.31	41.97	56.80	68.20	-11.40	Horizontal
802.11n20 mode Lowest channel (Average Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	36.47	36.95	9.82	5.31	41.97	46.58	54.00	-7.42	Vertical
10400.00	36.13	36.95	9.82	5.31	41.97	46.24	54.00	-7.76	Horizontal

802.11n20 mode Middle channel (Peak Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	46.88	36.96	9.85	5.33	41.95	57.07	68.20	-11.13	Vertical
10400.00	46.43	36.96	9.85	5.33	41.95	56.62	68.20	-11.58	Horizontal
802.11n20 mode Middle channel (Average Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	36.29	36.96	9.85	5.33	41.95	46.48	54.00	-7.52	Vertical
10400.00	36.38	36.96	9.85	5.33	41.95	46.57	54.00	-7.43	Horizontal

802.11n20 mode Highest channel (Peak Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	46.54	37.00	9.96	5.37	41.88	56.99	68.20	-11.21	Vertical
10400.00	46.17	37.00	9.96	5.37	41.88	56.62	68.20	-11.58	Horizontal
802.11n20 mode Highest channel (Average Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	36.24	37.00	9.96	5.37	41.88	46.69	54.00	-7.31	Vertical
10400.00	36.46	37.00	9.96	5.37	41.88	46.91	54.00	-7.09	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.*

802.11n40 mode Lowest channel (Peak Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	46.82	36.96	9.85	5.32	41.95	57.00	68.20	-11.20	Vertical
10400.00	46.32	36.96	9.85	5.32	41.95	56.50	68.20	-11.70	Horizontal
802.11n40 mode Lowest channel (Average Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	36.89	36.96	9.85	5.32	41.95	47.07	54.00	-6.93	Vertical
10400.00	36.22	36.96	9.85	5.32	41.95	46.40	54.00	-7.60	Horizontal

802.11n40 mode Highest channel (Peak Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	46.28	36.97	9.89	5.34	41.93	56.55	68.20	-11.65	Vertical
10400.00	46.85	36.97	9.89	5.34	41.93	57.12	68.20	-11.08	Horizontal
802.11n40 mode Highest channel (Average Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	36.49	36.97	9.89	5.34	41.93	46.76	54.00	-7.24	Vertical
10400.00	36.47	36.97	9.89	5.34	41.93	46.74	54.00	-7.26	Horizontal

Remark:

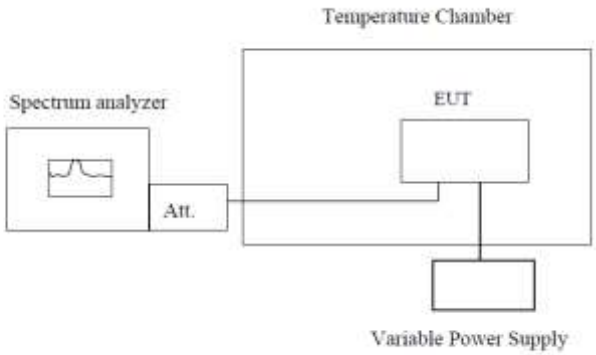
1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

802.11ac80 mode Middle channel (Peak Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	44.15	36.97	9.89	5.34	41.93	54.42	68.20	-13.78	Vertical
10400.00	45.13	36.97	9.89	5.34	41.93	55.40	68.20	-12.80	Horizontal
802.11ac80 mode Middle channel (Average Value)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Aux Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400.00	34.65	36.97	9.89	5.34	41.93	44.92	54.00	-9.08	Vertical
10400.00	35.15	36.97	9.89	5.34	41.93	45.42	54.00	-8.58	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.*

6.7 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 ofEUT. 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
Test results:	Passed

Measurement Data (the worst channel):
Voltage vs. Frequency Stability (Lowest channel=5180MHz)

Test conditions		Frequency(MHz)	Max. Deviation (ppm)
Temp(℃)	Voltage(dc)		
20	6.5V	5179.997643	0.45
	7.6V	5179.974779	4.87
	8.7V	5179.963951	6.96

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

Test conditions		Frequency(MHz)	Max. Deviation (ppm)
Voltage(dc)	Temp(℃)		
7.6V	-20	5179.987033	2.50
	-10	5179.995377	0.89
	0	5179.968421	6.10
	10	5179.987556	2.40
	20	5179.996681	0.64
	30	5179.974290	4.96
	40	5179.963775	6.99
	50	5179.974929	4.84