FCC REPORT
(UNII)

Applicant:	Shen Zhen TPS technology Co., Ltd.
Address of Applicant:	3rd Floor, Kebixin Industrial Park, Fuyong Street, Baoan District, ShenZhen

Equipment Under Test (EUT)

Product Name:	Tablet PC
Model No.:	S7, S8, S9, S133, Q7, Q7S, Q8, Q8S, Q9, Q101, Q102, K7, K7S, K8, K8S, K10, K10S, SC10, C10, X20, K116, K133, X785
FCC ID:	2ATPX-S7
Applicable standards:	FCC CFR Title 47 Part 15 Subpart E Section 15.407
Date of sample receipt:	27 May, 2019
Date of Test:	27 May, to 17 Jun., 2019
Date of report issued:	21 Jun., 2019
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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2 Version

Version No.	Date	Description
00	*18 Jun., 2019*	*Original*
01	*21 Jun., 2019*	*Update page 69*

Tested by:	Mike.OU	***Date:***	*21Jun., 2019*
	Test Engineer		
Reviewed by:	Winner Zhang	***Date:***	*21 Jun., 2019*
	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) & (a) (2)	Pass
26dB Occupied Bandwidth	15.407 (a) (5)	Pass
6dB Emission Bandwidth	15.407(e)	Pass
Power Spectral Density	15.407 (a) (1) (iv) & (a) (2)	Pass
Band Edge	15.407(b)	Pass
Spurious Emission	15.407 (b) & 15.205 & 15.209	Pass
Frequency Stability	15.407(g)	Pass
Pass: The EUT complies with the essential requirements in the standard. *N/A: N/A: Not Applicable.*		

5 General Information

5.1 Client Information

Applicant:	Shen Zhen TPS technology Co., Ltd.
Address:	3rd Floor, Kebixin Industrial Park, Fuyong Street, Baoan District, ShenZhen
Manufacturer:	Shen Zhen TPS technology Co., Ltd.
Address:	3rd Floor, Kebixin Industrial Park, Fuyong Street, Baoan District, ShenZhen

5.2 General Description of E.U.T.

Product Name:	Tablet PC
Model No.:	S7, S8, S9, S133, Q7, Q7S, Q8, Q8S, Q9, Q101, Q102, K7, K7S, K8, K8S, K10, K10S, SC10, C10, X20, K116, K133, X785
Operation Frequency:	Band 1: 5150MHz-5250MHz, Band 2: 5250MHz-5350MHz
Channel numbers:	Band 1: 802.11a/n(HT20)/ac(HT20): 4, 802.11n(HT40)/ac(HT40): 2 Band 2: 802.11a/n(HT20)/ac(HT20): 4, 802.11n(HT40)/ac(HT40): 2
Channel separation:	802.11a/802.11n20: 20MHz, 802.11n40: 40MHz
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: 6.5Mbps, MCS1:13Mbps,MCS2:19.5Mbps, MCS3:26Mbps, MCS4:39Mbps, MCS5:52Mbps, MCS6:58.5Mbps, MCS7:65Mbps
Data speed (IEEE 802.11n40):	MCS0:15Mbps, MCS1:30Mbps, MCS2:45Mbps, MCS3:60Mbps, MCS4:90Mbps, MCS5:120Mbps, MCS6:135Mbps, MCS7:150Mbps
Data speed (IEEE 802.11ac):	Up to 150Mbps
Antenna Type:	Internal Antenna
Antenna gain:	1.9 dBi
Power supply:	Rechargeable Li-ion Battery DC3.7V-3000mAh
Remark:	The No.: S7, S8, S9, S133, Q7, Q7S, Q8, Q8S, Q9, Q101, Q102, K7, K7S, K8, K8S, K10, K10S, SC10, C10, X20, K116, K133, X785 were identical inside, the electrical circuit design, layout, components used and internal wiring, with only difference being model name and color for different customers.
Test Sample Condition:	The test samples were provided in good working order with no visible defects.

Operation Frequency each of channel					
Band 1					
802.11a/n(HT20)/ac(HT20)		802.11n(HT40)/ac(HT40)		802.11ac(HT80)(N/A)	
Channel	Frequency	Channel	Frequency	Channel	Frequency
	5180MHz	38	5190MHz		
40	5200MHz	46	5230MHz		
44	5220MHz				
48	5240MHz				
Band 2					
802.11a/n(HT20)/ac(HT20)		802.11n(HT40)/ac(HT40)		802.11ac(HT80)(N/A)	
Channel	Frequency	Channel	Frequency	Channel	Frequency
52	5260MHz	54	5270MHz		
56	5280MHz	62	5310MHz		
60	5300MHz				
64	5320MHz				

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/n(HT20)/ac(HT20)		802.11n(HT40)/ac(HT40)		802.11ac(HT80)(N/A)	
Channel	Frequency	Channel	Frequency	Channel	Frequency
Lowest	5180MHz	Lowest	5190MHz		
Middle	5200MHz	Highest	5230MHz		
Highest	5240MHz				
Band 2					
802.11a/n(HT20)/ac(HT20)		802.11n(HT40)/ac(HT40)		802.11ac(HT80)(N/A)	
Channel	Frequency	Channel	Frequency	Channel	Frequency
Lowest	5260MHz	Lowest	5270MHz		
Middle	5280MHz	Highest	5310MHz		
Highest	5320MHz				

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
802.11n(HT20)	6.5 Mbps
802.11n(HT40)	13 Mbps

5.4 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC ID/DoC
HENG DA	Adapter	MS-01	N/A	N/A

5.5 Measurement Uncertainty

Parameters	Expanded Uncertainty
Conducted Emission (9kHz ~ 30MHz)	±1.60 dB (k=2)
Radiated Emission (9kHz ~ 30MHz)	±3.12 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	±4.54 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	±5.84 dB (k=2)
Radiated Emission (18GHz ~ 40GHz)	±3.36 dB (k=2)

5.6 Related Submittal(s) / Grant (s)

This is an original grant, no related submittals and grants.

5.7 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

5.8 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

5.9 Test Instruments list

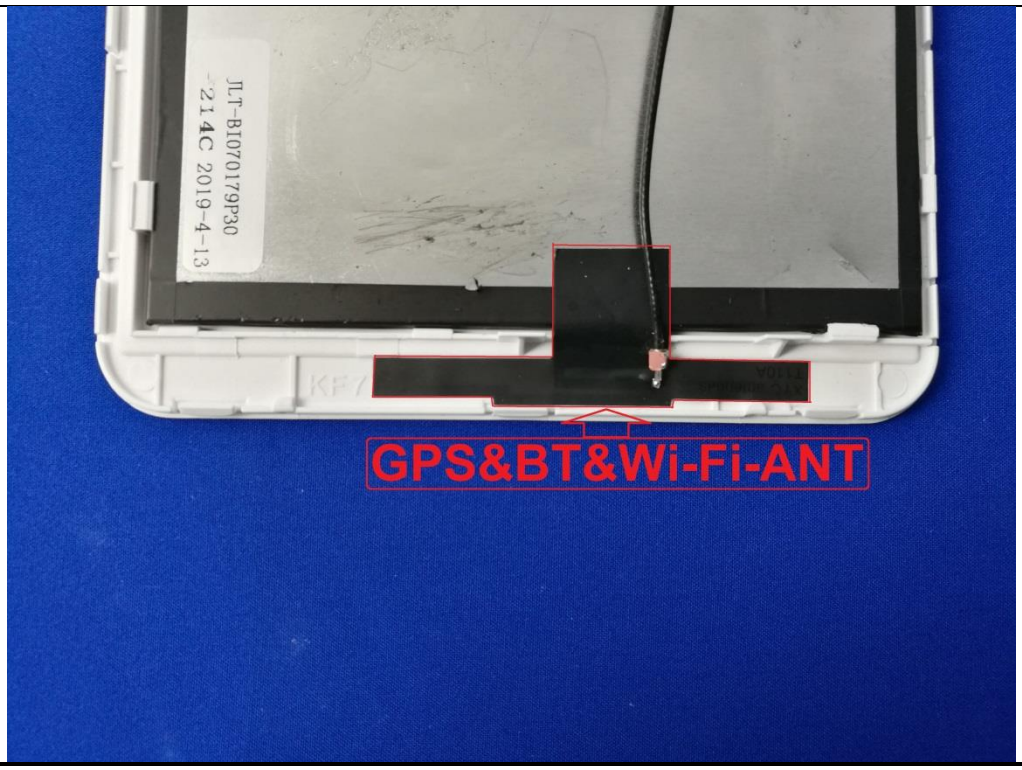
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	SAEMC	9m*6m*6m	966	07-22-2017	07-21-2020
BiConiLog Antenna	SCHWARZBECK	VULB9163	497	03-18-2019	03-17-2020
Biconical Antenna	SCHWARZBECK	VUBA9117	359	06-22-2017	06-21-2020
Horn Antenna	SCHWARZBECK	BBHA9120D	916	03-18-2019	03-17-2020
Horn Antenna	SCHWARZBECK	BBHA9120D	1805	06-22-2017	06-21-2020
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170582	11-21-2018	11-20-2019
EMI Test Software	AUDIX	E3	Version: 6.110919b		
Pre-amplifier	HP	8447D	2944A09358	03-18-2019	03-17-2020
Pre-amplifier	CD	PAP-1G18	11804	03-18-2019	03-17-2020
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-18-2019	03-17-2020
Spectrum analyzer	Rohde & Schwarz	FSP40	100363	11-21-2018	11-20-2019
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-18-2019	03-17-2020
Spectrum Analyzer	Agilent	N9020A	MY50510123	11-10-2018	11-09- 2019
Signal Generator	Rohde & Schwarz	SMX	835454/016	03-18-2019	03-17-2020
Signal Generator	R&S	SMR20	1008100050	03-18-2019	03-17-2020
RF Switch Unit	MWRFTEST	MW200	N/A	N/A	N/A
Test Software	MWRFTEST	MTS8200	Version: 2.0.0.0		
Cable	ZDECL	Z108-NJ-NJ-81	1608458	03-18-2019	03-17-2020
Cable	MICRO-COAX	MFR64639	K10742-5	03-18-2019	03-17-2020
Cable	SUHNER	SUCOFLEX100	58193/4PE	03-18-2019	03-17-2020
DC Power Supply	XinNuoEr	WYK-10020K	1409050110020	10-31-2018	10-30-2019
Temperature Humidity Chamber	HengPu	HPGDS-500	20140828008	09-24-2018	09-23-2019
Simulated Station	Rohde & Schwarz	CMW500	140493	07-16-2018	07-15-2019

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	03-18-2019	03-17-2020
Pulse Limiter	SCHWARZBECK	OSRAM 2306	9731	03-18-2019	03-17-2020
LISN	CHASE	MN2050D	1447	03-18-2019	03-17-2020
LISN	Rohde & Schwarz	ESH3-Z5	8438621/010	07-21-2018	07-20-2019
Cable	HP	10503A	N/A	03-18-2019	03-17-2020
EMI Test Software	AUDIX	E3	Version: 6.110919b		

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 Wi-Fi antenna is an Internal antenna which cannot replace by end-user, the best case gain of the antenna is 1.9 dBi.	



6.2 Conducted Emission

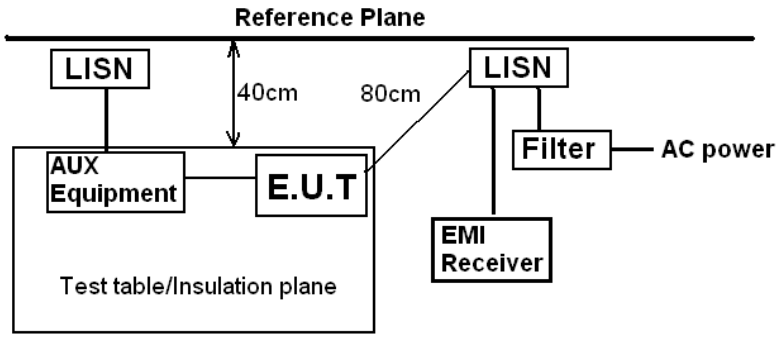
Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10: 2013
Test Frequency Range:	150kHz to 30MHz
Class / Severity:	Class B
Receiver setup:	RBW=9kHz, VBW=30kHz
Limit:	

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:

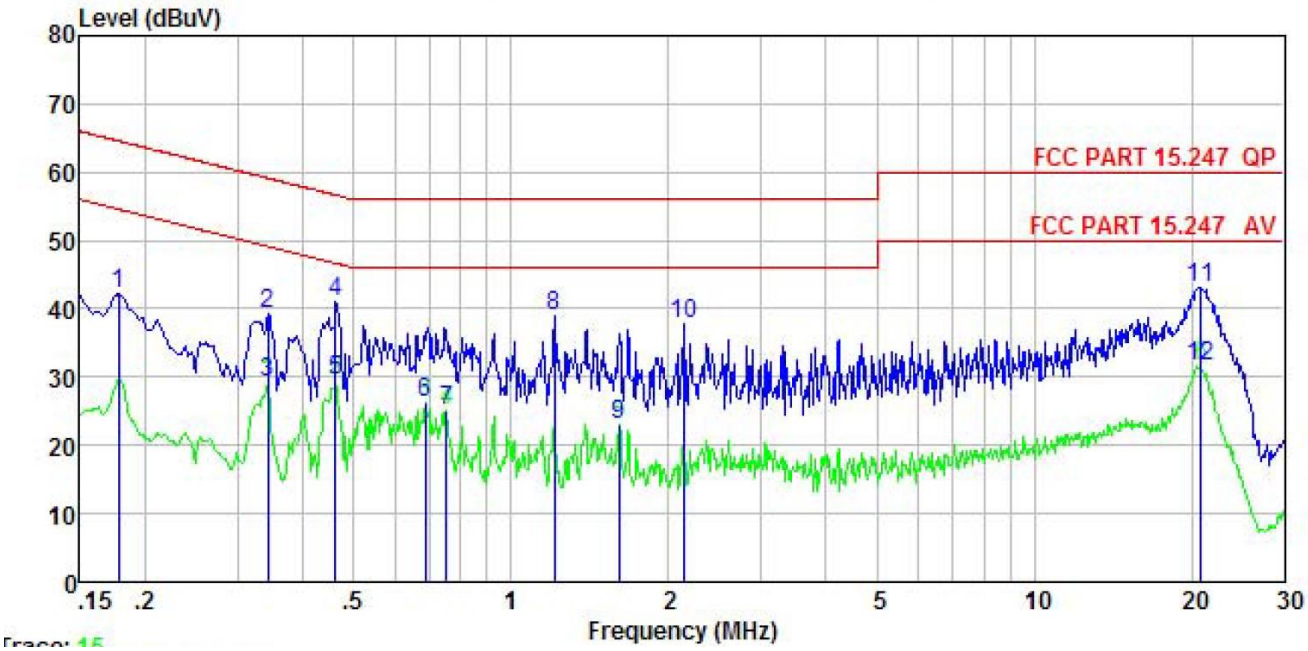


Remark:
E.U.T: Equipment Under Test
LISN: Line Impedence Stabilization Network
Test table height=0.8m

Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details.
Test results:	Passed

Measurement Data:

Product name:	Tablet PC	**Product model:**	S7
Test by:	Mike	**Test mode:**	5G Wi-Fi Tx mode
Test frequency:	150 kHz ~ 30 MHz	**Phase:**	Line
Test voltage:	AC 120 V/60 Hz	**Environment:**	Temp: 22.5℃ Huni: 55%

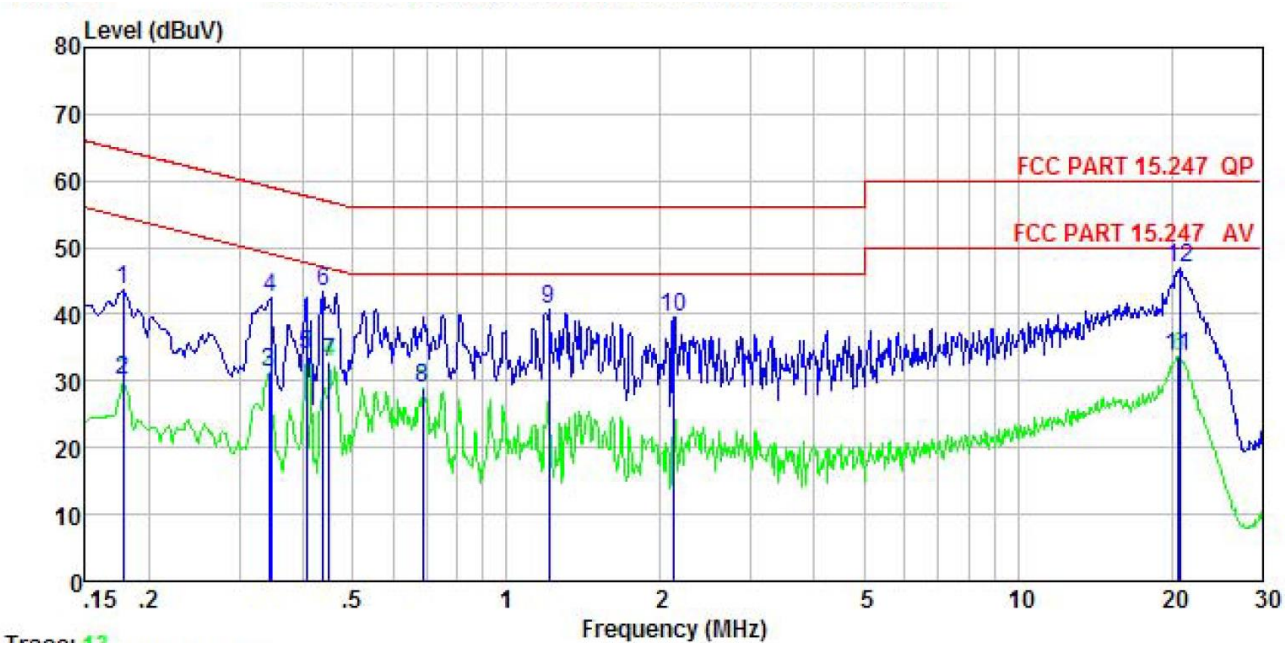


	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.178	32.00	-0.43	10.77	42.34	64.59	-22.25	QP
2	0.343	28.86	-0.38	10.73	39.21	59.13	-19.92	QP
3	0.343	18.74	-0.38	10.73	29.09	49.13	-20.04	Average
4	0.461	30.53	-0.38	10.74	40.89	56.67	-15.78	QP
5	0.461	19.28	-0.38	10.74	29.64	46.67	-17.03	Average
6	0.686	15.81	-0.38	10.77	26.20	46.00	-19.80	Average
7	0.751	14.81	-0.38	10.79	25.22	46.00	-20.78	Average
8	1.210	28.36	-0.39	10.89	38.86	56.00	-17.14	QP
9	1.610	12.48	-0.40	10.93	23.01	46.00	-22.99	Average
10	2.133	27.24	-0.41	10.95	37.78	56.00	-18.22	QP
11	20.814	33.19	-0.98	10.92	43.13	60.00	-16.87	QP
12	20.814	21.58	-0.98	10.92	31.52	50.00	-18.48	Average

Notes:

1. *An initial pre-scan was performed on the line 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.*

Product name:	Tablet PC	**Product model:**	S7
Test by:	Mike	**Test mode:**	5G Wi-Fi Tx mode
Test frequency:	150 kHz ~ 30 MHz	**Phase:**	Neutral
Test voltage:	AC 120 V/60 Hz	**Environment:**	Temp: 22.5℃ Huni: 55%

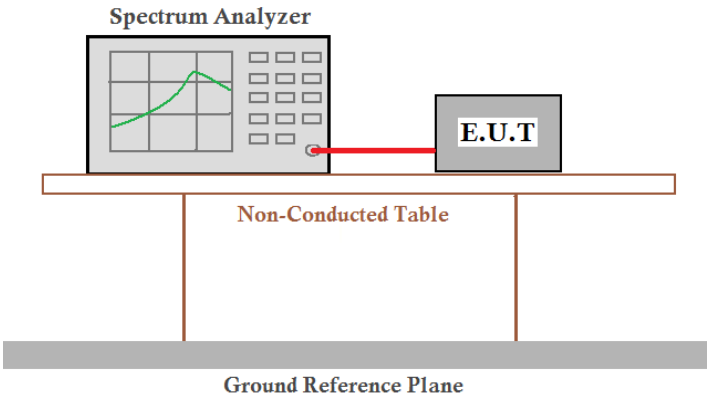


	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.178	33.51	-0.69	10.77	43.59	64.59	-21.00	QP
2	0.178	19.99	-0.69	10.77	30.07	54.59	-24.52	Average
3	0.343	21.32	-0.63	10.73	31.42	49.13	-17.71	Average
4	0.346	32.39	-0.64	10.73	42.48	59.05	-16.57	QP
5	0.406	23.97	-0.64	10.72	34.05	47.73	-13.68	Average
6	0.437	33.38	-0.64	10.74	43.48	57.11	-13.63	QP
7	0.449	22.67	-0.65	10.74	32.76	46.89	-14.13	Average
8	0.686	18.86	-0.64	10.77	28.99	46.00	-17.01	Average
9	1.210	30.53	-0.64	10.89	40.78	56.00	-15.22	QP
10	2.121	29.22	-0.67	10.95	39.50	56.00	-16.50	QP
11	20.594	24.23	-1.41	10.92	33.74	50.00	-16.26	Average
12	20.704	37.36	-1.42	10.92	46.86	60.00	-13.14	QP

Notes:

1. *An initial pre-scan was performed on the line 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) & (a)(2)
Test Method:	ANSI C63.10: 2013, KDB789033
Limit:	Band 1: 24dBm Band 2: 24dBm
Test setup:	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

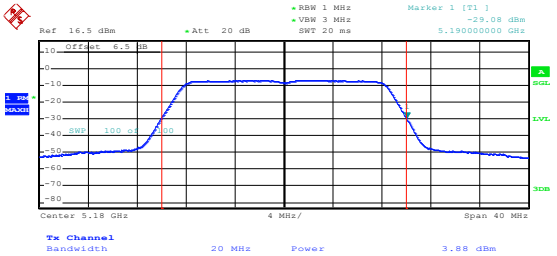
Band 1				
Mode	Test CH	Conducted Output power (dBm)	Limit (dBm)	Result
802.11a	Lowest	3.88	24.00	Pass
	Middle	3.81		
	Highest	3.84		
802.11n20	Lowest	3.97	24.00	Pass
	Middle	3.80		
	Highest	3.33		
802.11n40	Lowest	3.96	24.00	Pass
	Highest	3.68		
802.11ac20	Lowest	3.54	24.00	Pass
	Middle	3.18		
	Highest	3.32		
802.11ac40	Lowest	3.68	24.00	Pass
	Highest	3.25		

Band 2				
Mode	Test CH	Conducted Output power (dBm)	Limit (dBm)	Result
802.11a	Lowest	3.74	24.00	Pass
	Middle	3.95		
	Highest	3.39		
802.11n20	Lowest	3.49	24.00	Pass
	Middle	3.32		
	Highest	3.69		
802.11n40	Lowest	3.88	24.00	Pass
	Highest	3.91		
802.11ac20	Lowest	3.69	24.00	Pass
	Middle	3.94		
	Highest	3.89		
802.11ac40	Lowest	3.19	24.00	Pass
	Highest	3.49		

Test plot as follows:

Band 1:

802.11a



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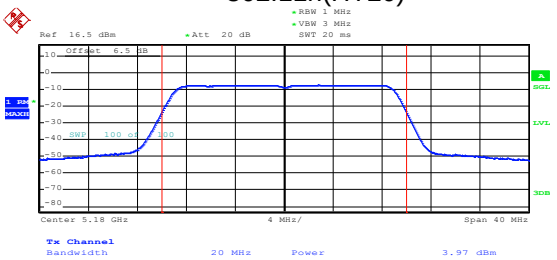
802.11n(HT20)



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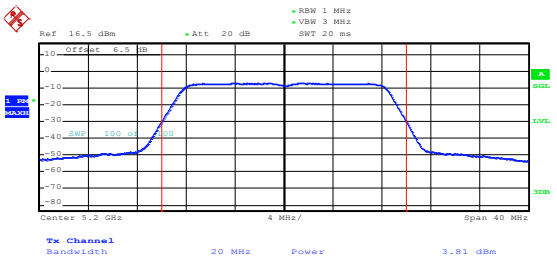
Lowest channel



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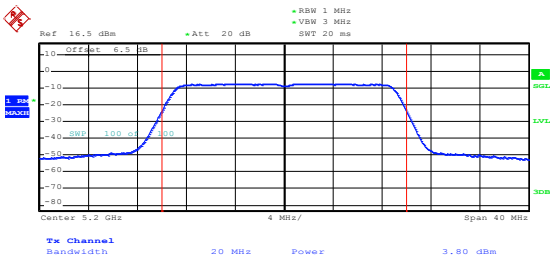
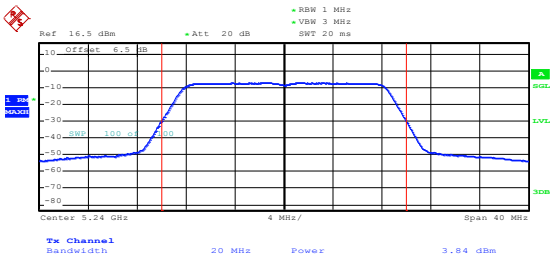
Lowest channel



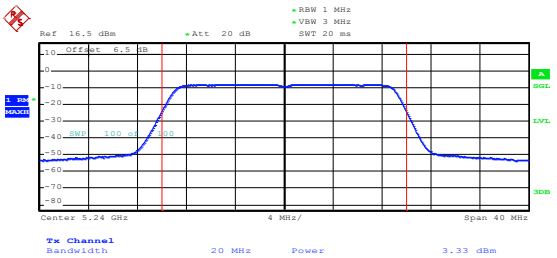
Date: 10.JUN.2019 19:12:01

Middle channel



Date: 10.JUN.2019 19:10:41

Middle channel

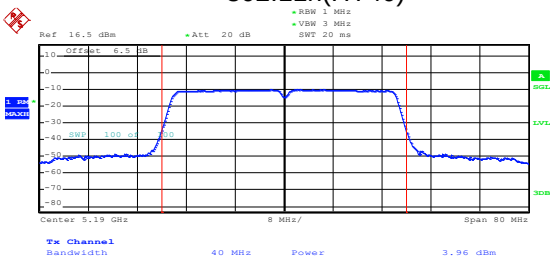


Date: 10.JUN.2019 19:11:32

Highest channel

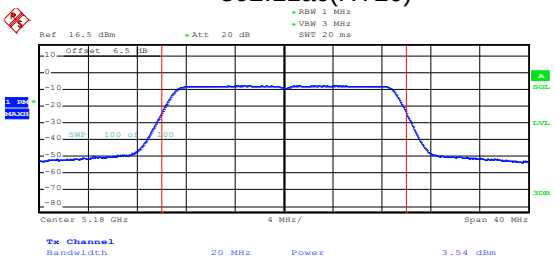
Highest channel

802.11n(HT40)



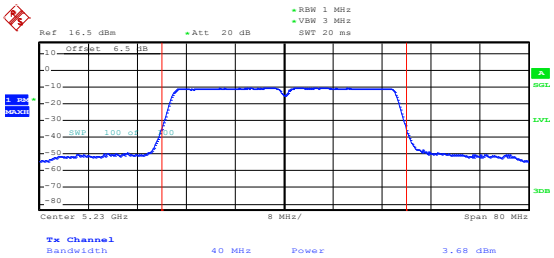
Date: 10.JUN.2019 19:28:00

802.11ac(HT20)



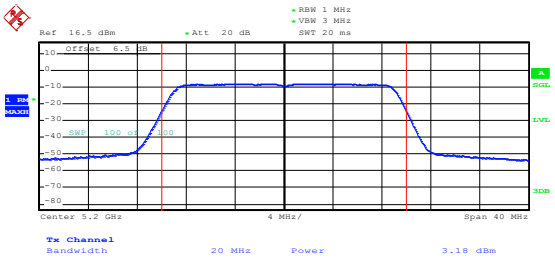
Date: 10.JUN.2019 19:21:59

Lowest channel



Date: 10.JUN.2019 19:28:23

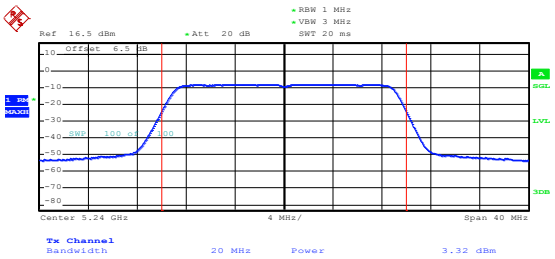
Lowest channel



Date: 10.JUN.2019 19:22:26

Highest channel

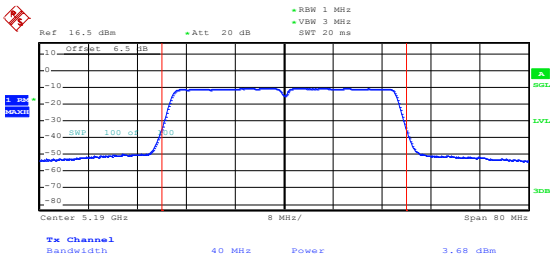
Middle channel



Date: 10.JUN.2019 19:22:56

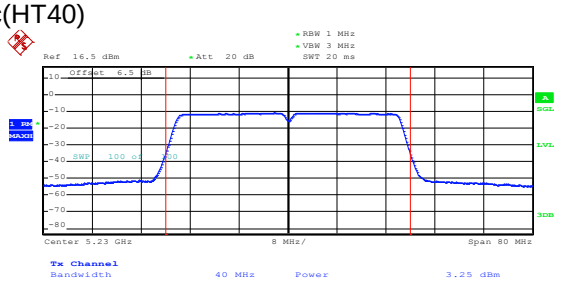
Highest channel

802.11ac(HT40)



Date: 10.JUN.2019 19:23:39

Lowest channel

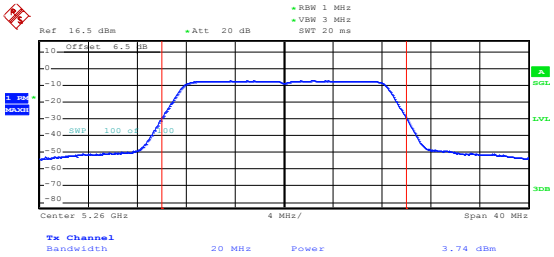


Date: 10.JUN.2019 19:24:13

Highest channel

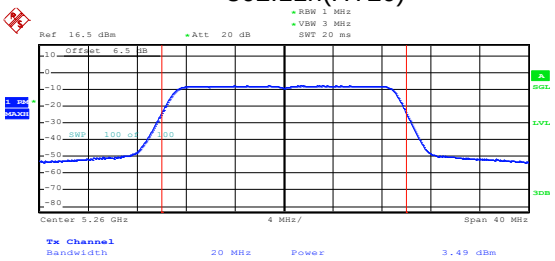
Band 2:

802.11a



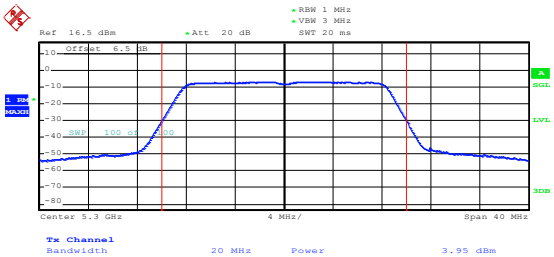
Date: 10.JUN.2019 19:15:37

802.11n(HT20)



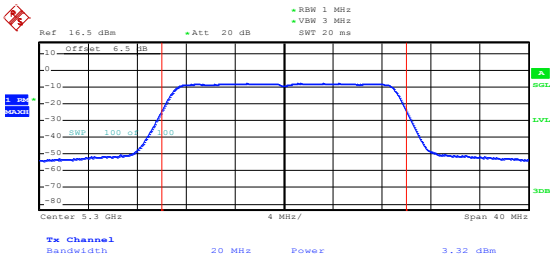
Date: 10.JUN.2019 19:19:08

Lowest channel



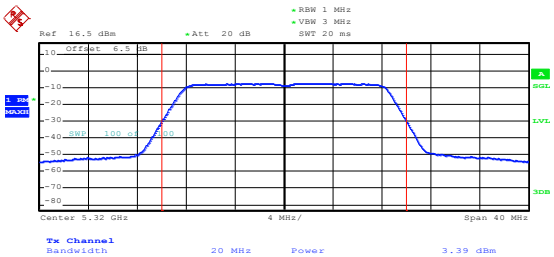
Date: 10.JUN.2019 19:16:23

Lowest channel



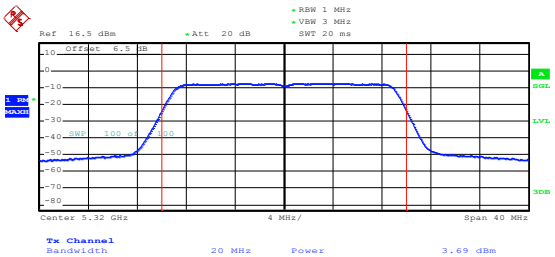
Date: 10.JUN.2019 19:17:51

Middle channel



Date: 10.JUN.2019 19:16:52

Middle channel

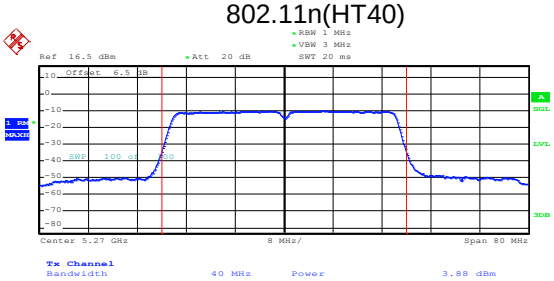


Date: 10.JUN.2019 19:17:20

Highest channel

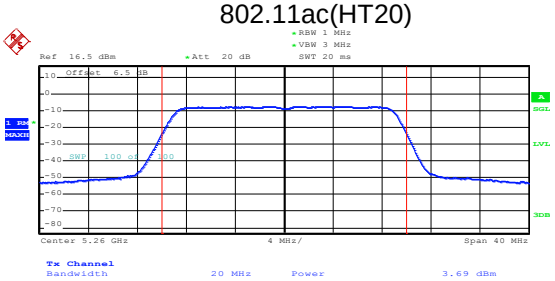
Highest channel

802.11n(HT40)



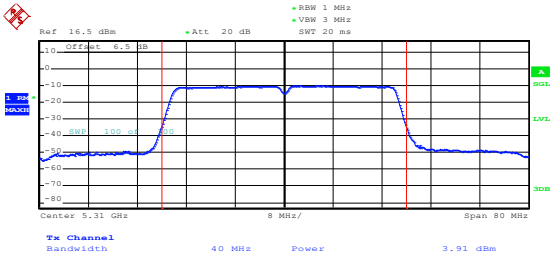
Date: 10.JUN.2019 19:27:19

802.11ac(HT20)



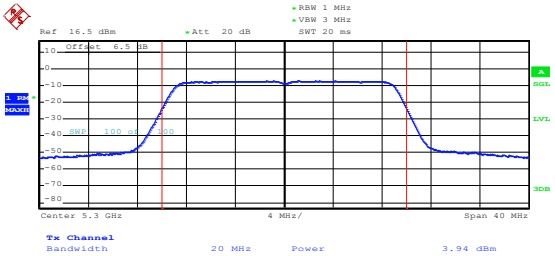
Date: 10.JUN.2019 19:19:44

Lowest channel



Date: 10.JUN.2019 19:26:37

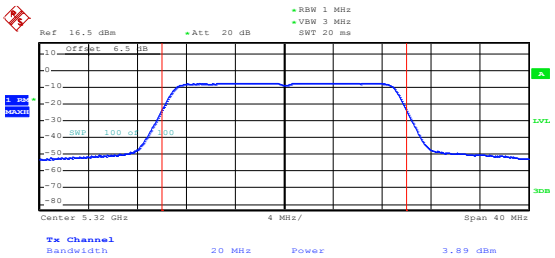
Lowest channel



Date: 10.JUN.2019 19:20:24

Highest channel

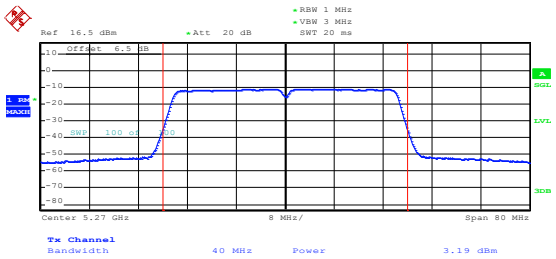
Middle channel



Date: 10.JUN.2019 19:21:11

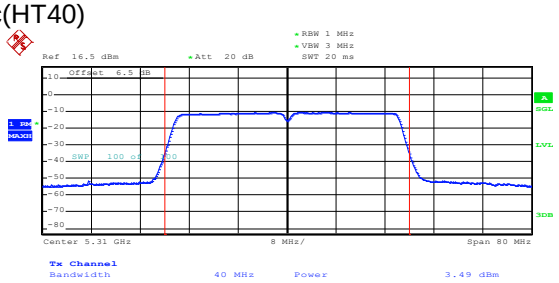
Highest channel

802.11ac(HT40)



Date: 10.JUN.2019 19:24:52

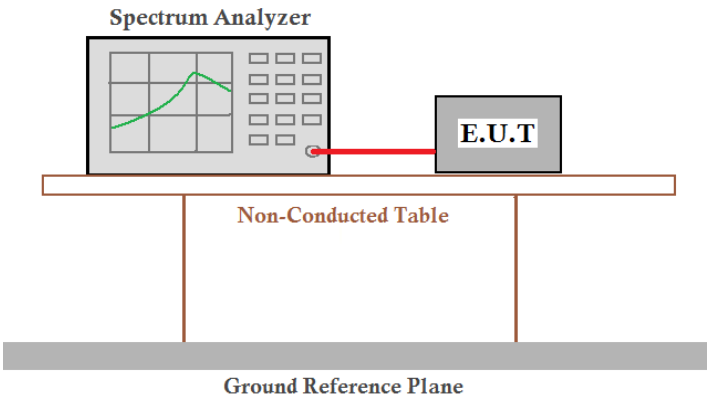
Lowest channel



Date: 10.JUN.2019 19:25:46

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 1/2/: N/A (26dB Emission Bandwidth and 99% Occupy Bandwidth)
Test setup:	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

Band 1:

Test Channel	26dB Emission Bandwidth (MHz)					Limit	Result
	802.11a	802.11n (HT20)	802.11n (HT40)	802.11ac (HT20)	802.11ac (HT40)		
Lowest	20.08	20.40	40.16	20.48	40.16	N/A	PASS
Middle	20.24	20.40	---	20.40	---		
Highest	20.16	20.40	40.16	20.40	40.16		
Test Channel	99% Occupy Bandwidth (MHz)					Limit	Result
	802.11a	802.11n (HT20)	802.11n (HT40)	802.11ac (HT20)	802.11ac (HT40)		
Lowest	17.12	18.00	36.32	18.00	36.32	N/A	PASS
Middle	17.20	18.00	---	18.00	---		
Highest	17.12	18.00	36.32	18.00	36.32		

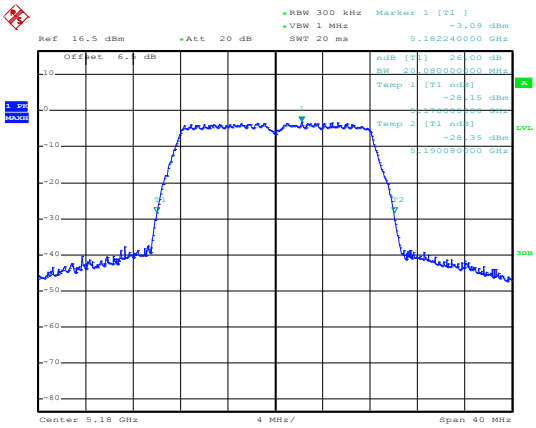
Band 2:

Test Channel	26dB Emission Bandwidth (MHz)					Limit	Result
	802.11a	802.11n (HT20)	802.11n (HT40)	802.11ac (HT20)	802.11ac (HT40)		
Lowest	20.16	20.40	40.00	20.40	40.00	N/A	PASS
Middle	20.16	20.40	---	20.40	---		
Highest	20.24	20.40	40.16	20.40	39.84		
Test Channel	99% Occupy Bandwidth (MHz)					Limit	Result
	802.11a	802.11n (HT20)	802.11n (HT40)	802.11ac (HT20)	802.11ac (HT40)		
Lowest	17.12	18.00	36.32	18.00	36.32	N/A	PASS
Middle	17.20	18.00	---	18.00	---		
Highest	17.20	18.00	36.32	18.00	36.32		

Test plot as follows:
Band 1:

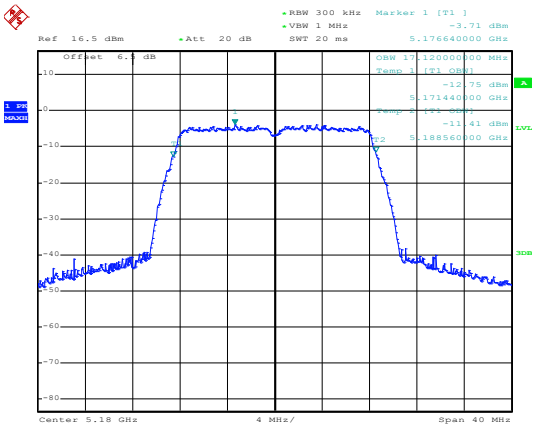
802.11a

26 dB EBW



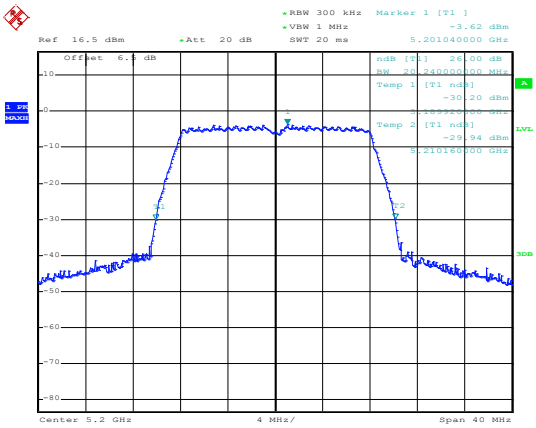
Date: 10.JUN.2019 19:53:50

99% OBW

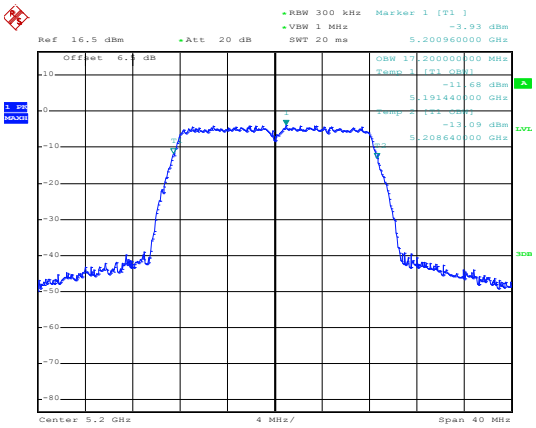


Date: 10.JUN.2019 19:57:28

Lowest channel

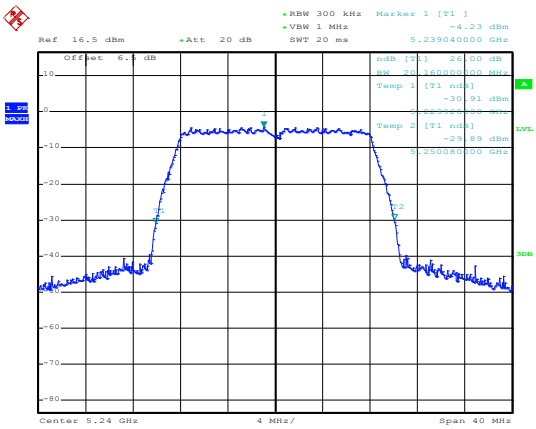


Date: 10.JUN.2019 19:54:31

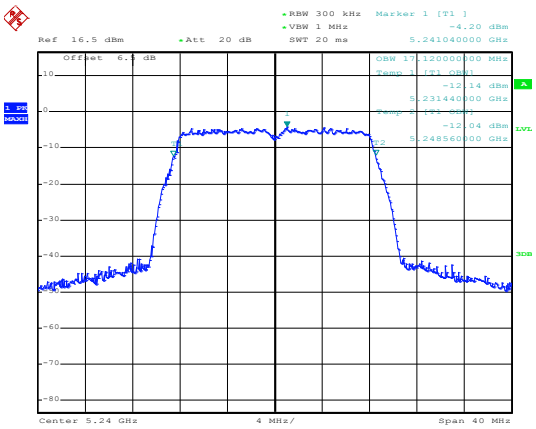


Date: 10.JUN.2019 19:57:08

Middle channel



Date: 10.JUN.2019 19:54:57

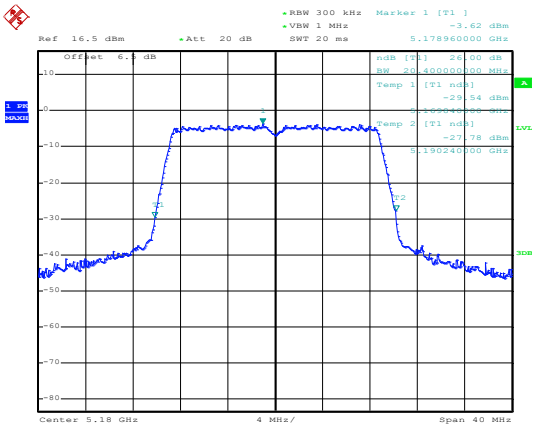


Date: 10.JUN.2019 19:56:46

Highest channel

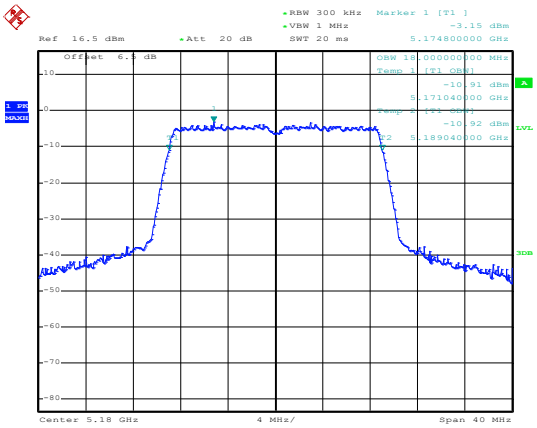
802.11n(HT20)

26 dB EBW



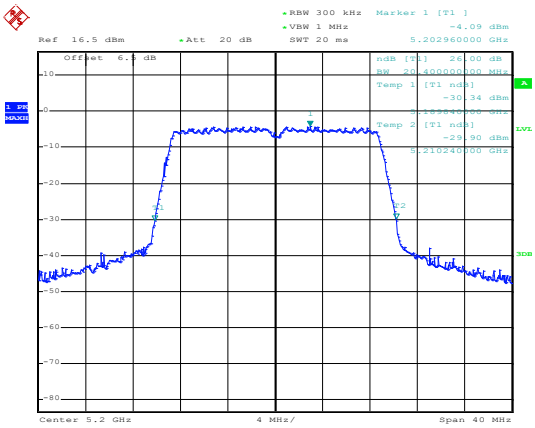
Date: 10.JUN.2019 19:59:13

99% OBW

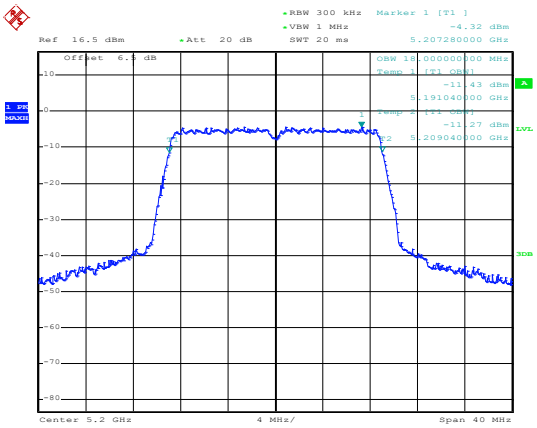


Date: 10.JUN.2019 19:59:01

Lowest channel

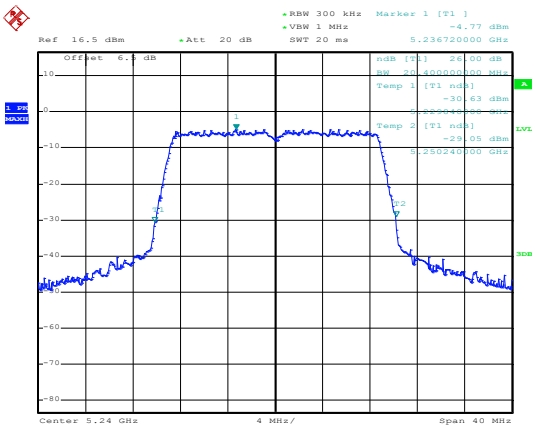


Date: 10.JUN.2019 19:59:42

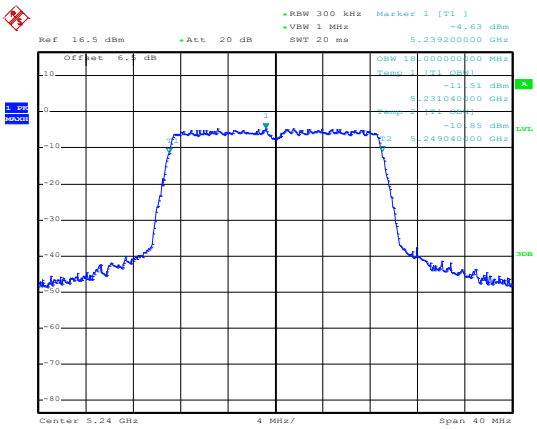


Date: 10.JUN.2019 20:00:14

Middle channel



Date: 10.JUN.2019 20:00:48

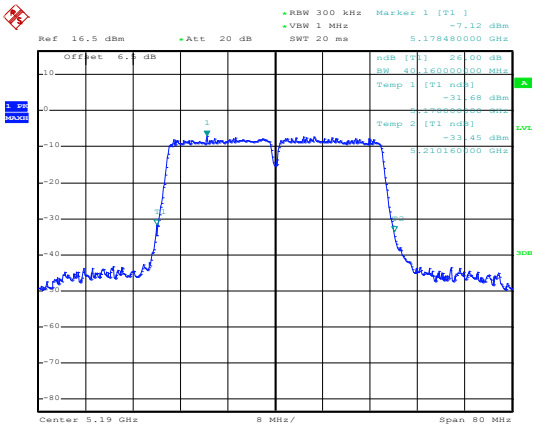


Date: 10.JUN.2019 20:00:38

Highest channel

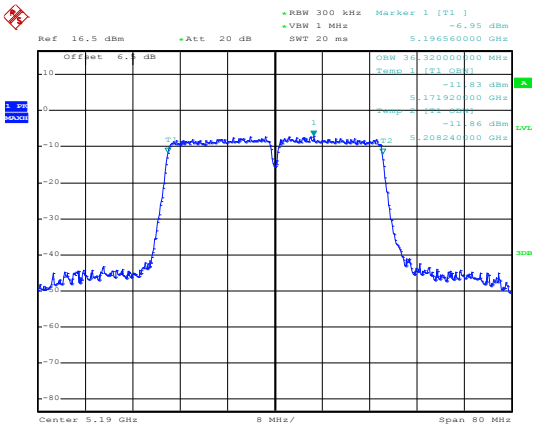
802.11n(HT40)

26 dB EBW



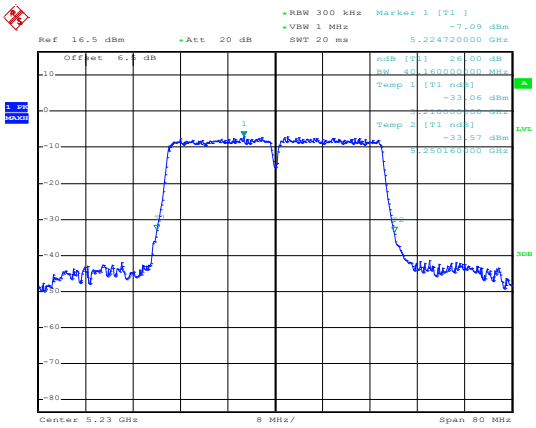
Date: 10.JUN.2019 20:19:09

99% OBW

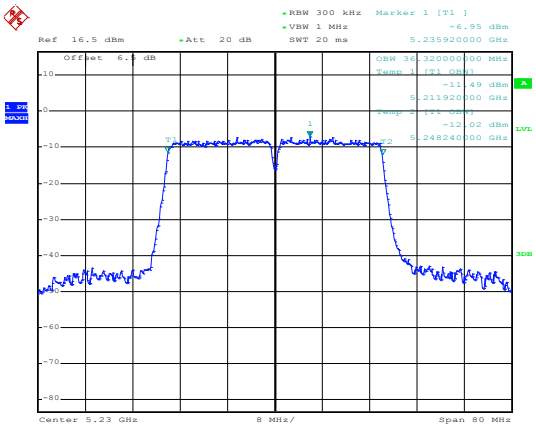


Date: 10.JUN.2019 20:23:20

Lowest channel



Date: 10.JUN.2019 20:19:39

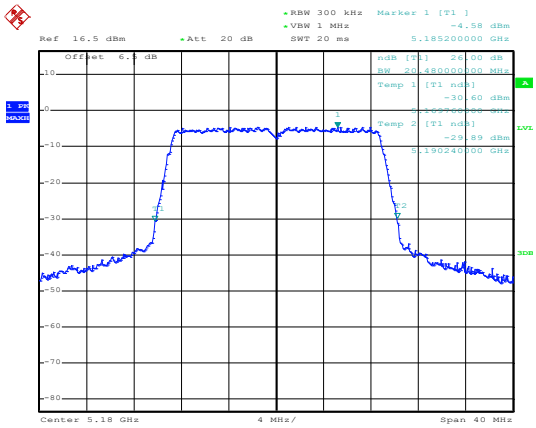


Date: 10.JUN.2019 20:23:51

Highest channel

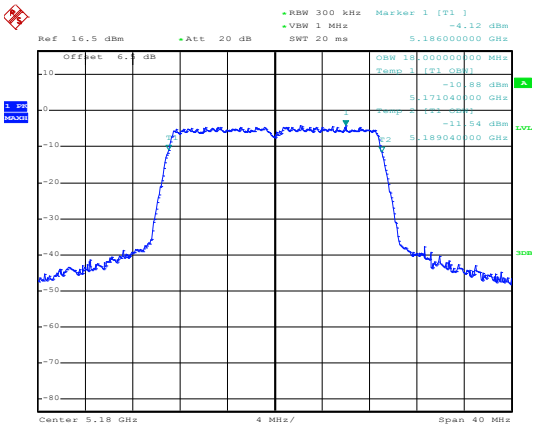
802.11ac(HT20)

26 dB EBW



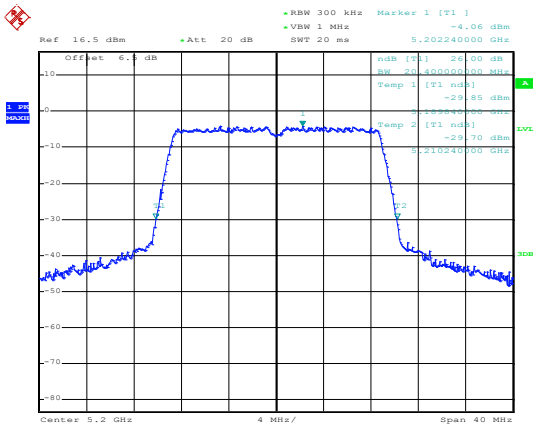
Date: 10.JUN.2019 20:04:42

99% OBW

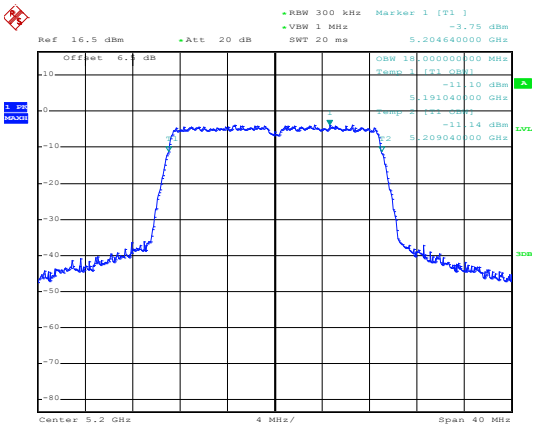


Date: 10.JUN.2019 20:04:27

Lowest channel

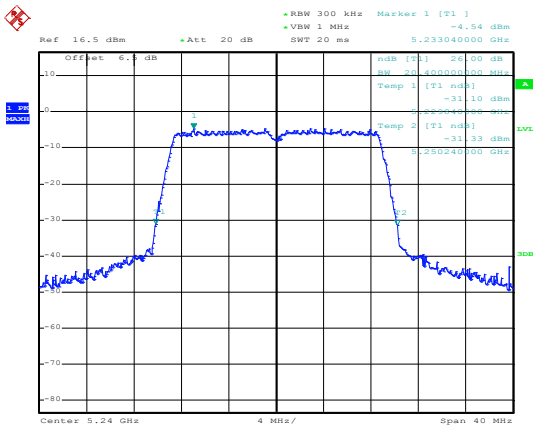


Date: 10.JUN.2019 20:05:01

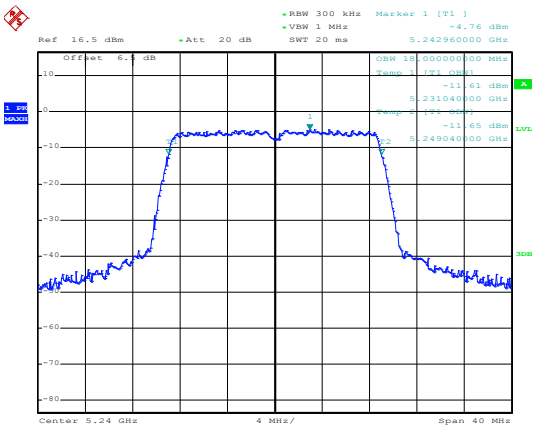


Date: 10.JUN.2019 20:05:12

Middle channel



Date: 10.JUN.2019 20:05:47

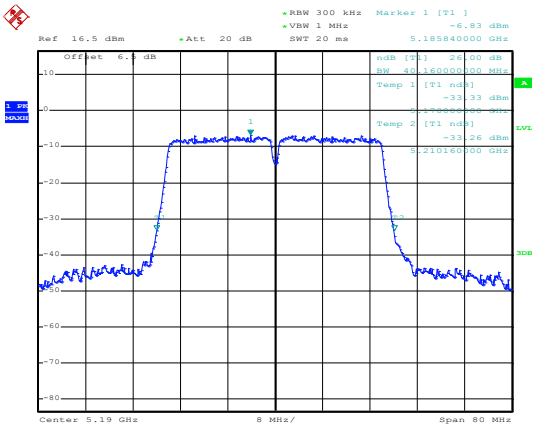


Date: 10.JUN.2019 20:05:36

Highest channel

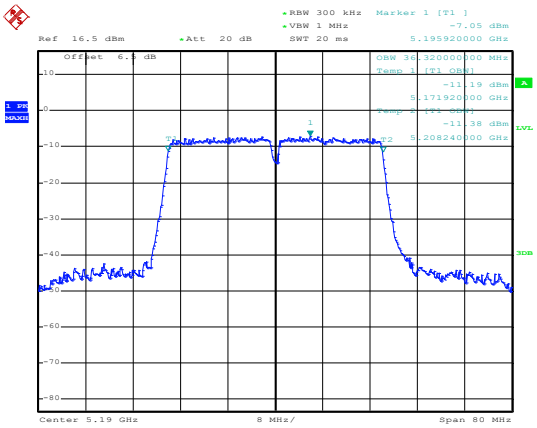
802.11ac(HT40)

26 dB EBW



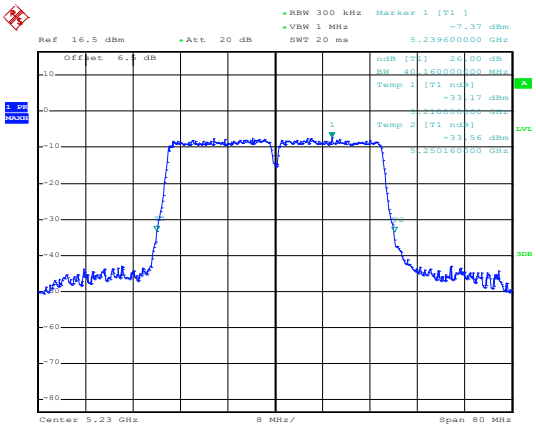
Date: 10.JUN.2019 20:06:20

99% OBW

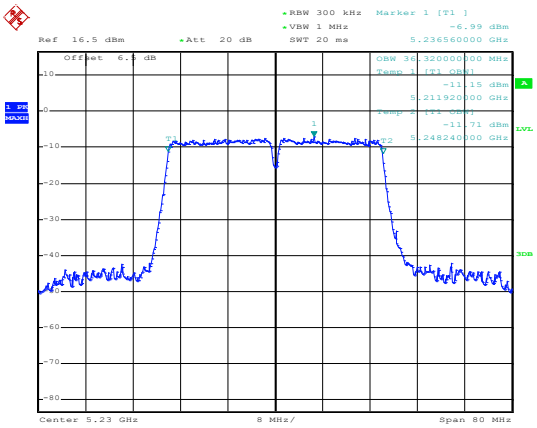


Date: 10.JUN.2019 20:06:29

Lowest channel



Date: 10.JUN.2019 20:07:01



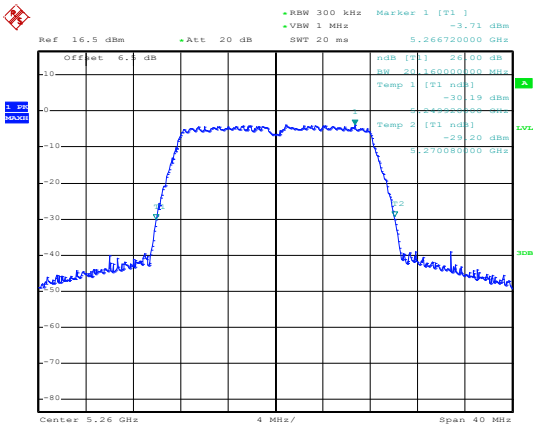
Date: 10.JUN.2019 20:06:53

Highest channel

Band 2:

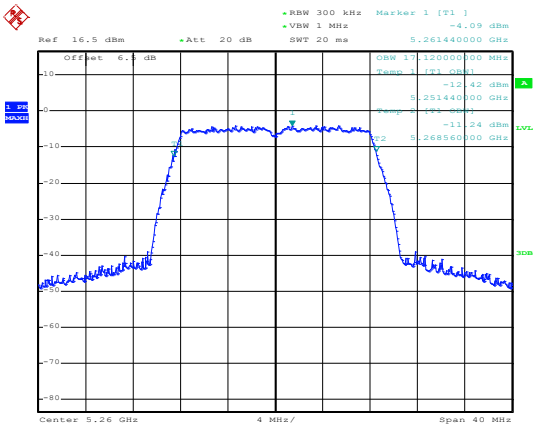
802.11a

26 dB EBW



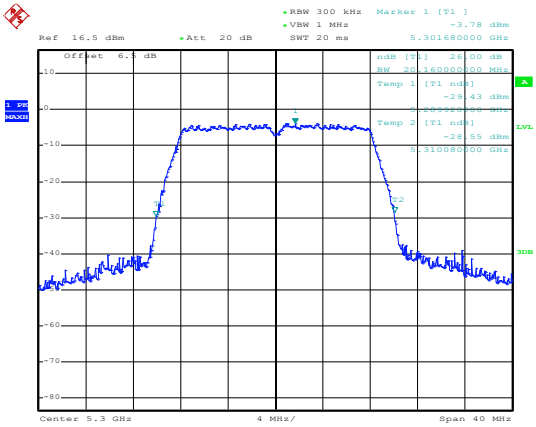
Date: 10.JUN.2019 19:55:27

99% OBW

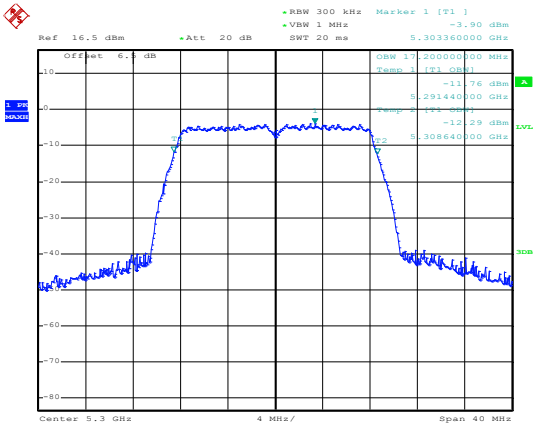


Date: 10.JUN.2019 19:56:23

Lowest channel

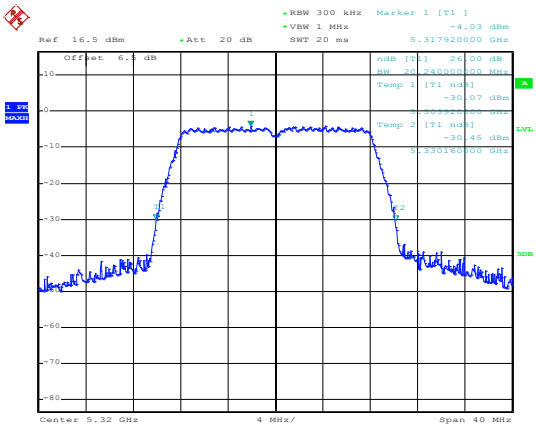


Date: 10.JUN.2019 19:58:03

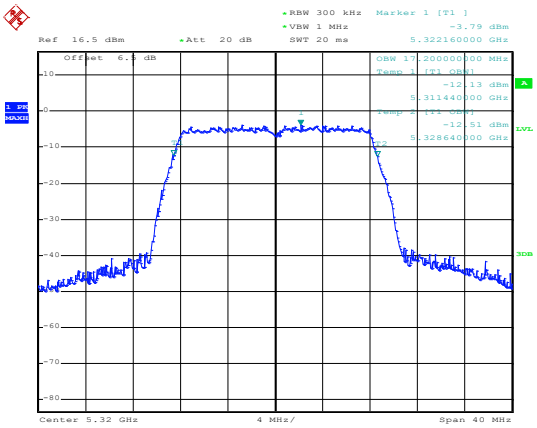


Date: 10.JUN.2019 19:57:52

Middle channel



Date: 10.JUN.2019 19:58:22

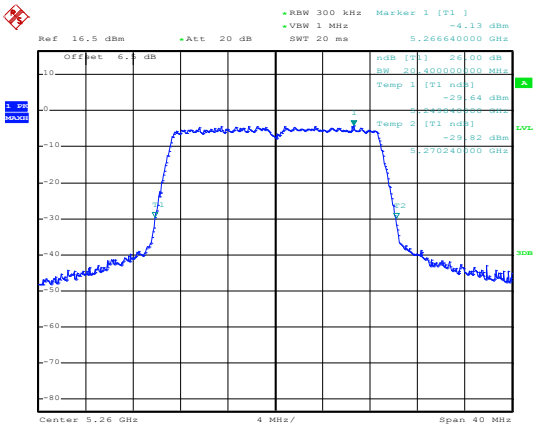


Date: 10.JUN.2019 19:58:32

Highest channel

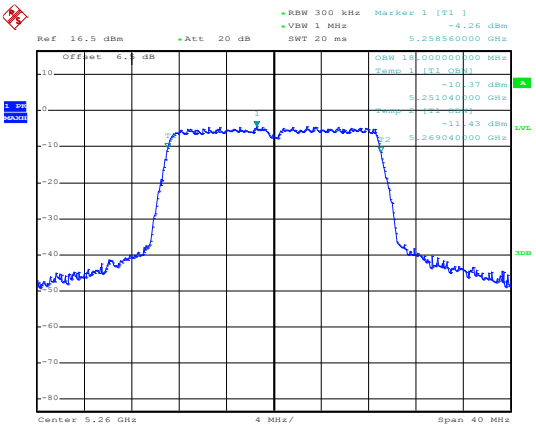
802.11n(HT20)

26 dB EBW



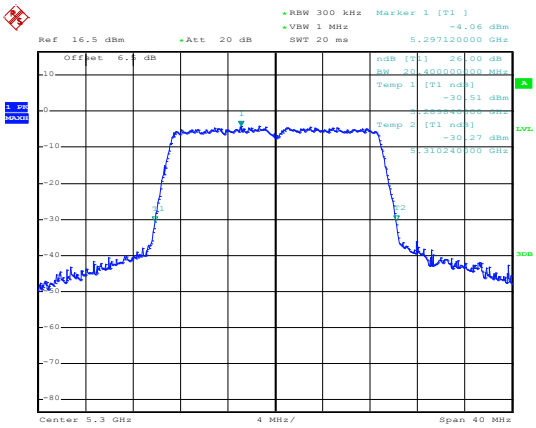
Date: 10.JUN.2019 20:01:16

99% OBW

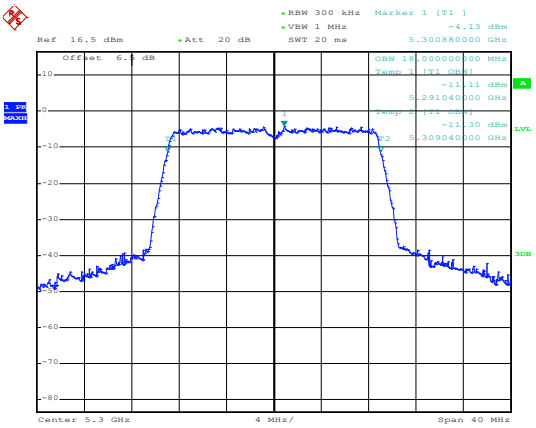


Date: 10.JUN.2019 20:01:26

Lowest channel

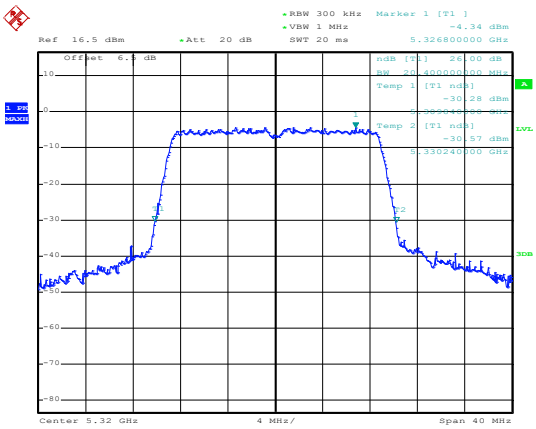


Date: 10.JUN.2019 20:01:59

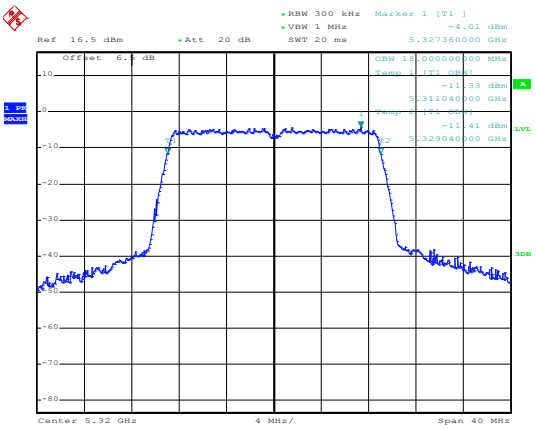


Date: 10.JUN.2019 20:01:49

Middle channel



Date: 10.JUN.2019 20:02:19

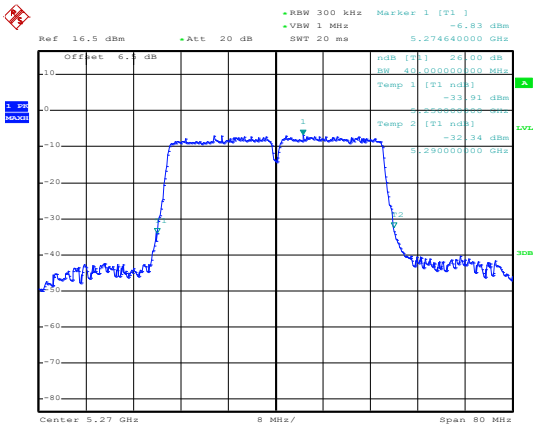


Date: 10.JUN.2019 20:02:30

Highest channel

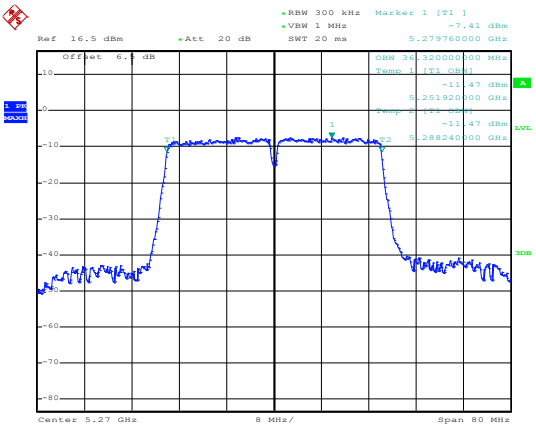
802.11n(HT40)

26 dB EBW



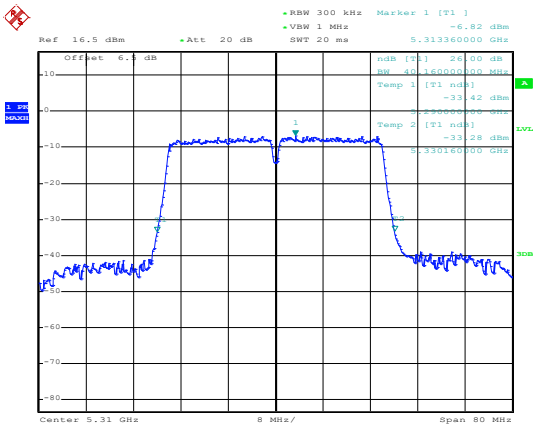
Date: 10.JUN.2019 20:17:11

99% OBW

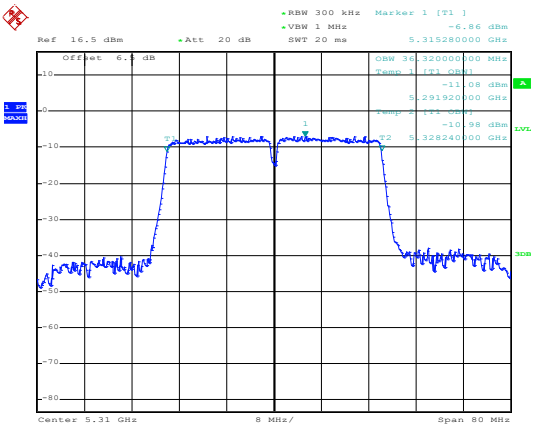


Date: 10.JUN.2019 20:17:22

Lowest channel



Date: 10.JUN.2019 20:18:27

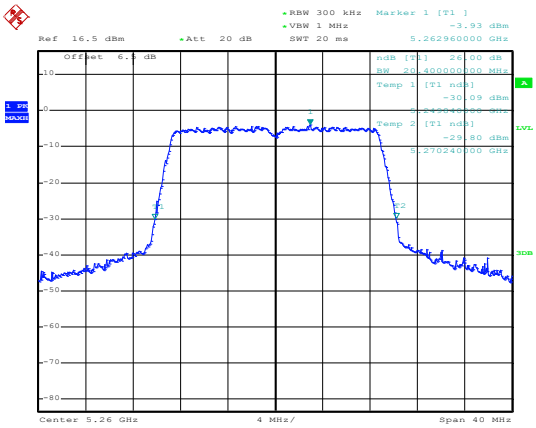


Date: 10.JUN.2019 20:17:44

Highest channel

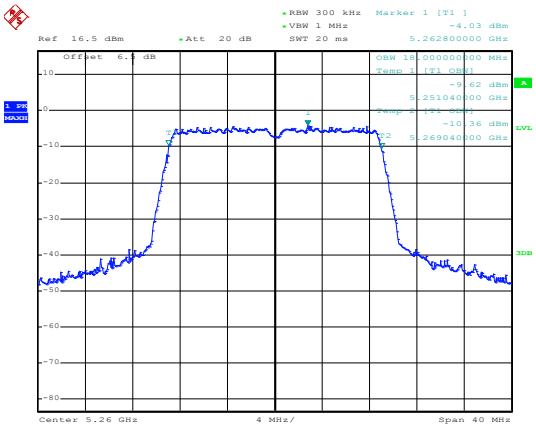
802.11ac(HT20)

26 dB EBW



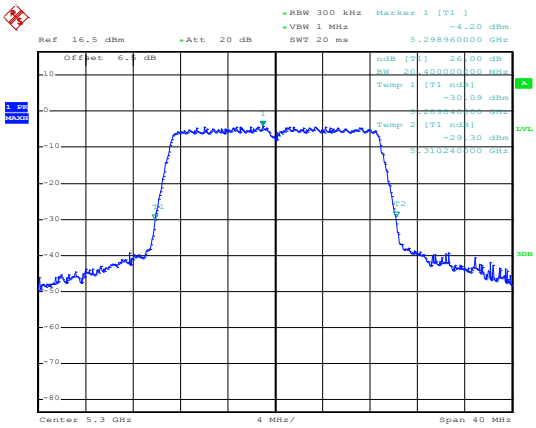
Date: 10.JUN.2019 20:21:30

99% OBW

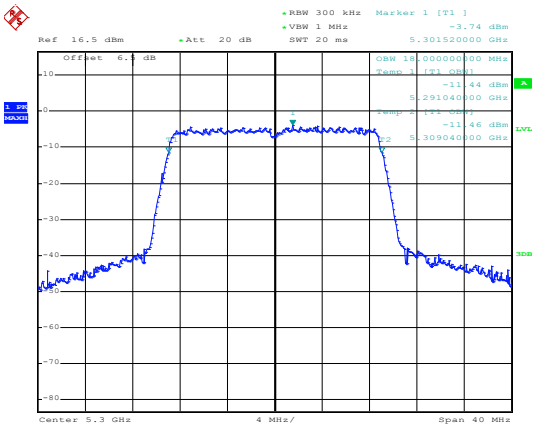


Date: 10.JUN.2019 20:04:01

Lowest channel

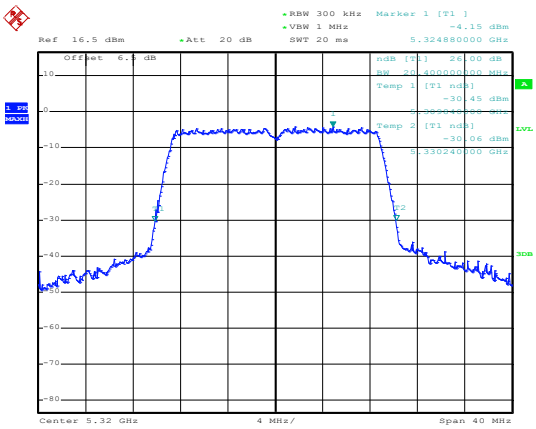


Date: 10.JUN.2019 20:03:30

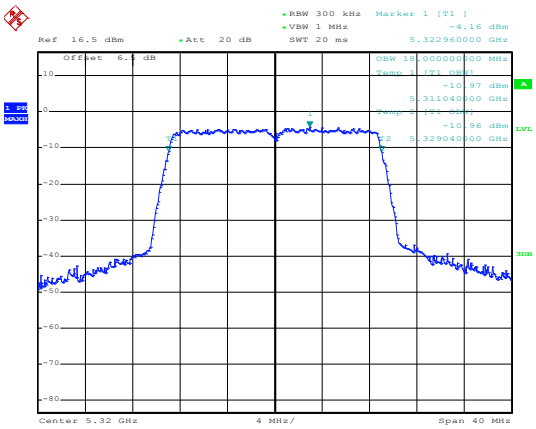


Date: 10.JUN.2019 20:03:38

Middle channel



Date: 10.JUN.2019 20:03:08

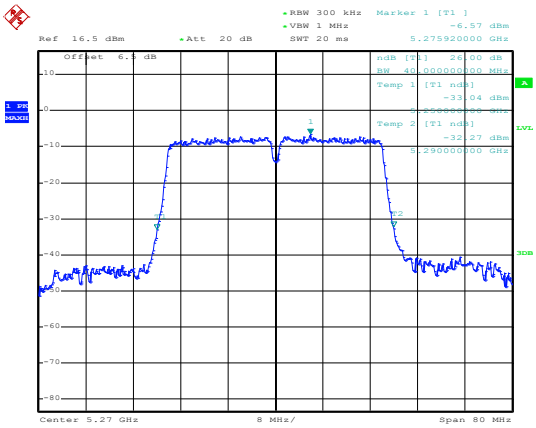


Date: 10.JUN.2019 20:02:49

Highest channel

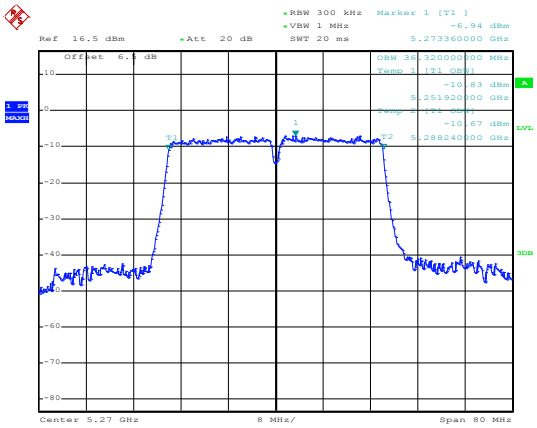
802.11ac(HT40)

26 dB EBW



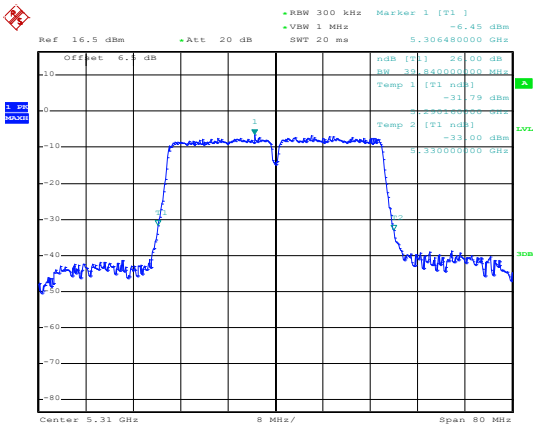
Date: 10.JUN.2019 20:08:09

99% OBW

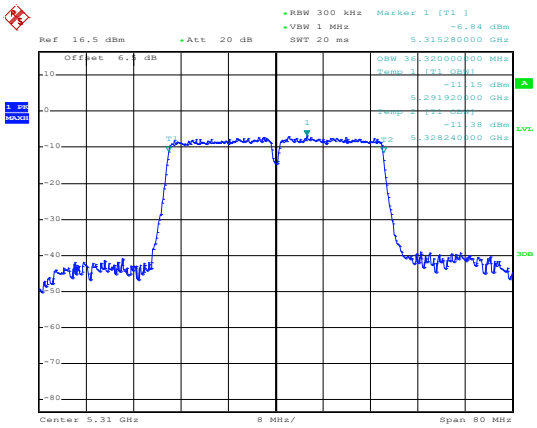


Date: 10.JUN.2019 20:08:01

Lowest channel



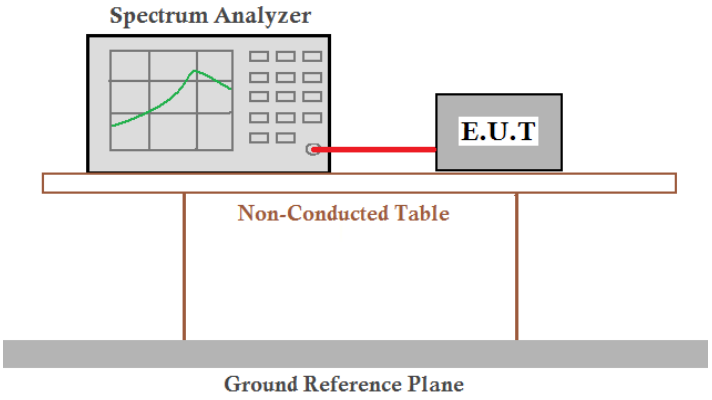
Date: 10.JUN.2019 20:07:32



Date: 10.JUN.2019 20:07:43

Highest channel

6.5 Power Spectral Density

Test Requirement:	FCC Part15 E Section 15.407 (a) (1) (iv) & (a) (2)
Test Method:	ANSI C63.10:2013, KDB 789033
Limit:	Band 1: 11 dBm/MHz Band 2: 11 dBm/MHz
Test setup:	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

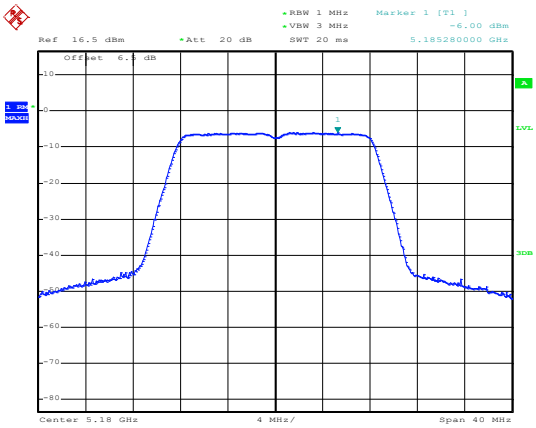
Band 1				
Mode	Test CH	PSD (dBm)	Limit (dBm)	Result
802.11a	Lowest	-6.00	11.00	Pass
	Middle	-6.72		
	Highest	-6.54		
802.11n(HT20)	Lowest	-6.19	11.00	Pass
	Middle	-6.75		
	Highest	-6.75		
802.11n(HT40)	Lowest	-9.51	11.00	Pass
	Highest	-9.42		
802.11ac(HT20)	Lowest	-6.80	11.00	Pass
	Middle	-6.70		
	Highest	-6.73		
802.11ac(HT40)	Lowest	-9.55	11.00	Pass
	Highest	-9.79		

Band 2				
Mode	Test CH	PSD (dBm)	Limit (dBm)	Result
802.11a	Lowest	-6.34	11.00	Pass
	Middle	-6.52		
	Highest	-6.56		
802.11n(HT20)	Lowest	-6.80	11.00	Pass
	Middle	-6.36		
	Highest	-6.76		
802.11n(HT40)	Lowest	-9.51	11.00	Pass
	Highest	-9.51		
802.11ac(HT20)	Lowest	-6.73	11.00	Pass
	Middle	-6.73		
	Highest	-6.76		
802.11ac(HT40)	Lowest	-9.76	11.00	Pass
	Highest	-9.48		

Test plot as follows:

Band 1

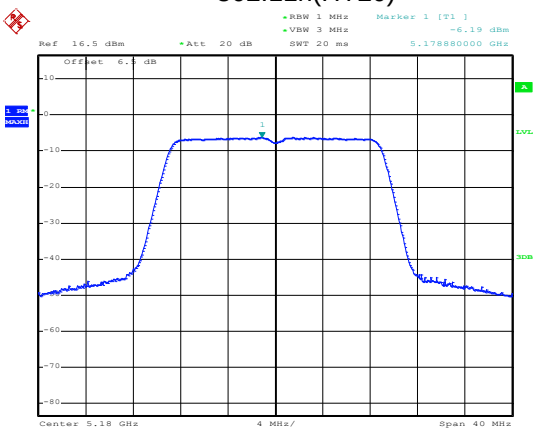
802.11a



Date: 10.JUN.2019 19:34:07

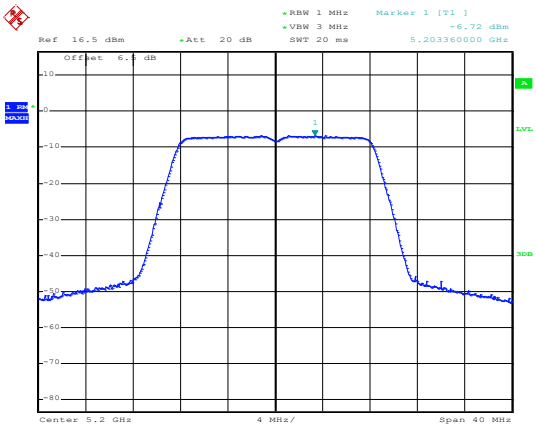
Lowest channel

802.11n(HT20)



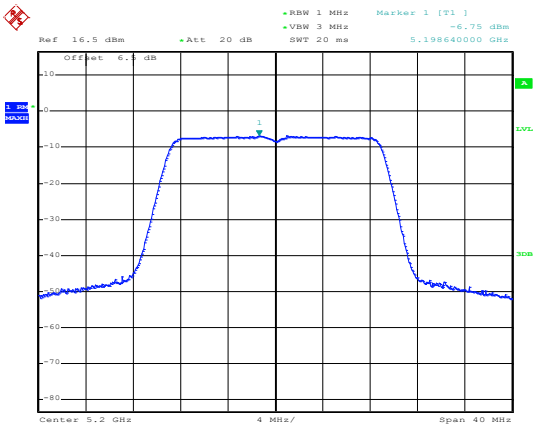
Date: 10.JUN.2019 19:38:25

Middle channel



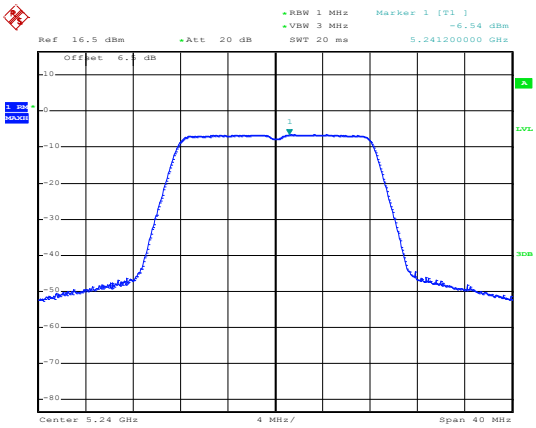
Date: 10.JUN.2019 19:34:33

Middle channel



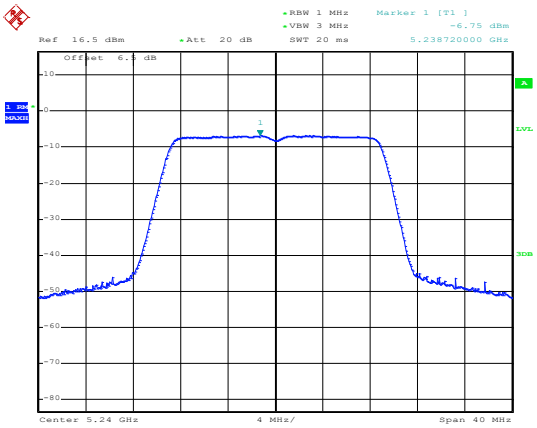
Date: 10.JUN.2019 19:38:48

Middle channel



Date: 10.JUN.2019 19:35:15

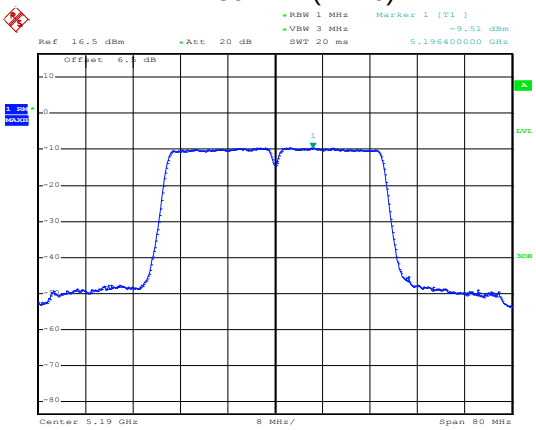
Highest channel



Date: 10.JUN.2019 19:39:26

Highest channel

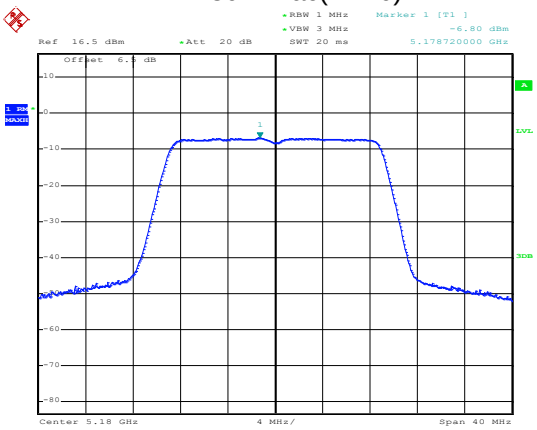
802.11n(HT40)



Date: 10.JUN.2019 19:50:05

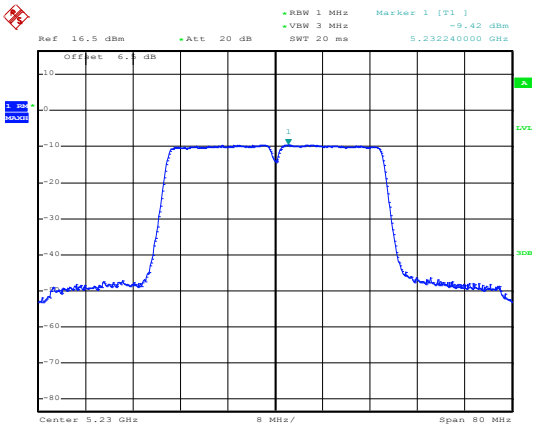
Lowest channel

802.11ac(HT20)



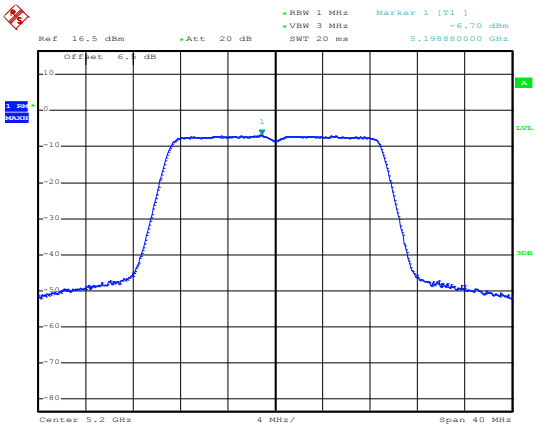
Date: 10.JUN.2019 19:45:32

Middle channel



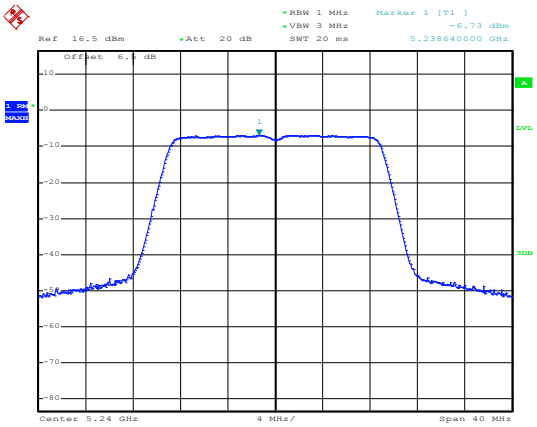
Date: 10.JUN.2019 19:50:45

Highest channel



Date: 10.JUN.2019 19:45:58

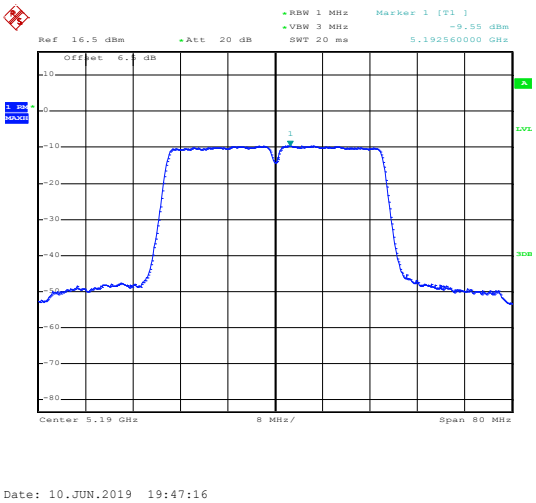
Middle channel



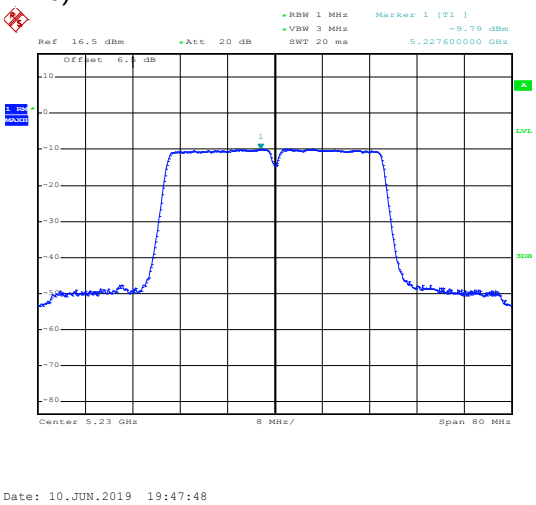
Date: 10.JUN.2019 19:46:41

Highest channel

802.11ac(HT40)



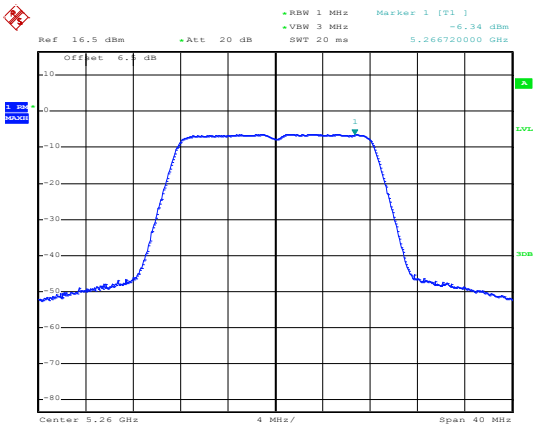
Lowest channel



Highest channel

Band 2

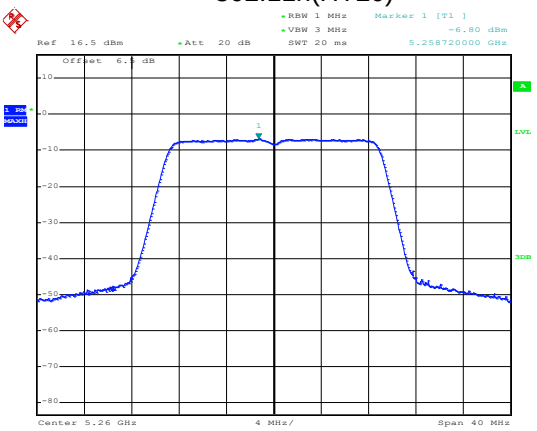
802.11a



Date: 10.JUN.2019 19:36:59

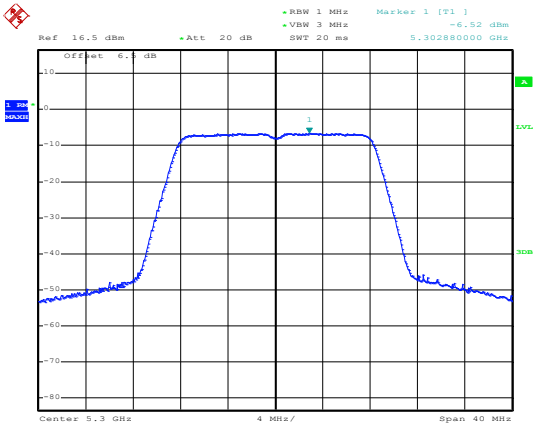
Lowest channel

802.11n(HT20)



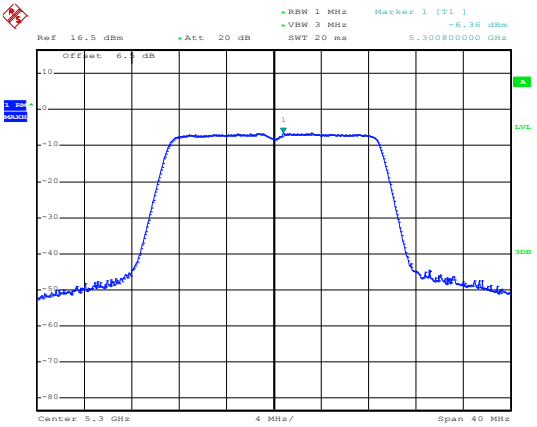
Date: 10.JUN.2019 19:40:12

Middle channel



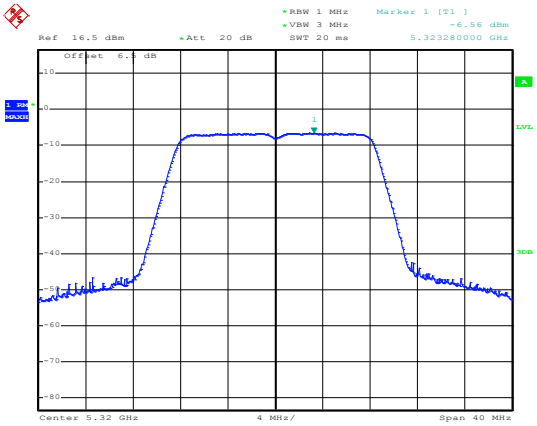
Date: 10.JUN.2019 19:36:31

Middle channel



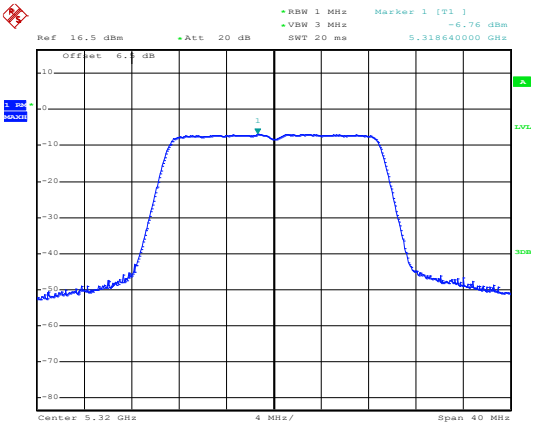
Date: 10.JUN.2019 19:41:27

Middle channel



Date: 10.JUN.2019 19:37:38

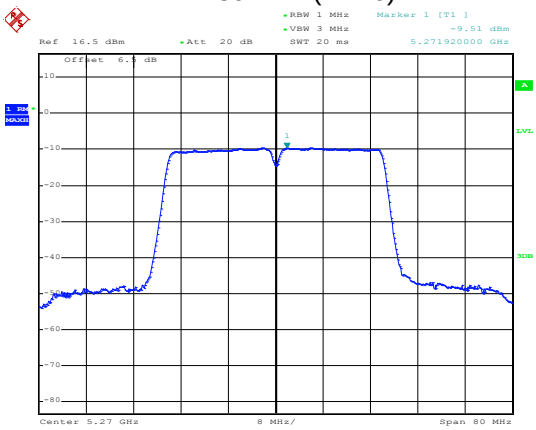
Highest channel



Date: 10.JUN.2019 19:42:07

Highest channel

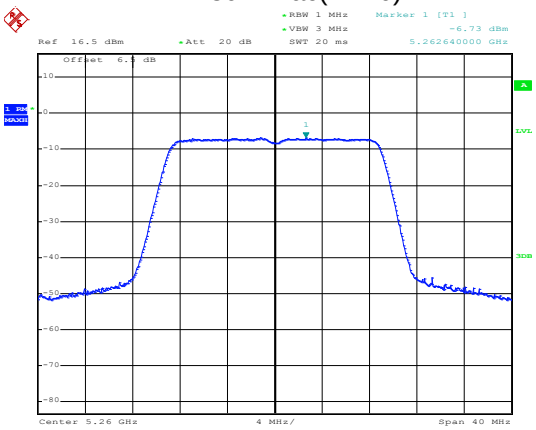
802.11n(HT40)



Date: 10.JUN.2019 19:49:39

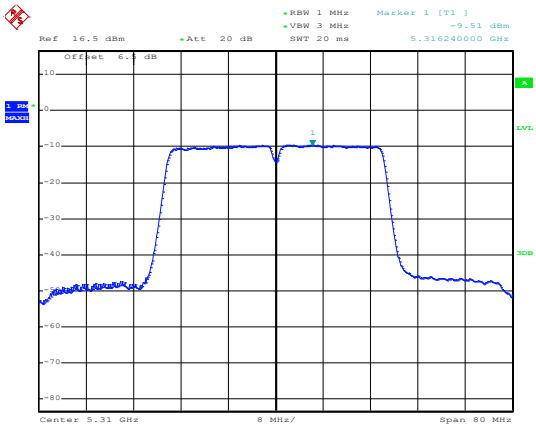
Lowest channel

802.11ac(HT20)



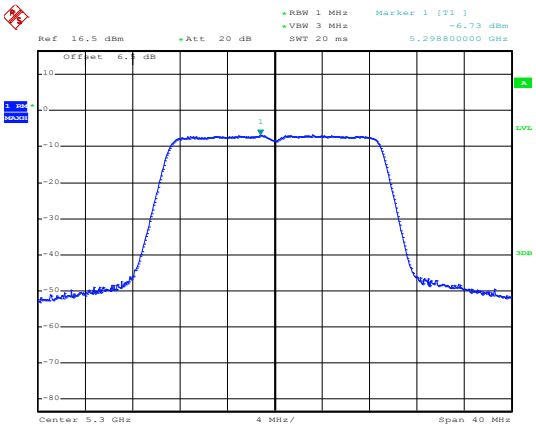
Date: 10.JUN.2019 19:45:02

Middle channel



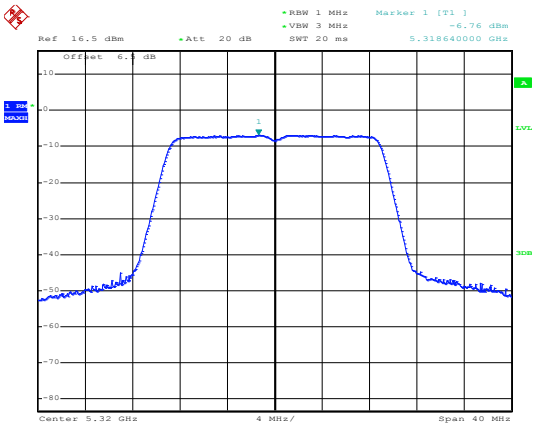
Date: 10.JUN.2019 19:49:08

Highest channel



Date: 10.JUN.2019 19:43:03

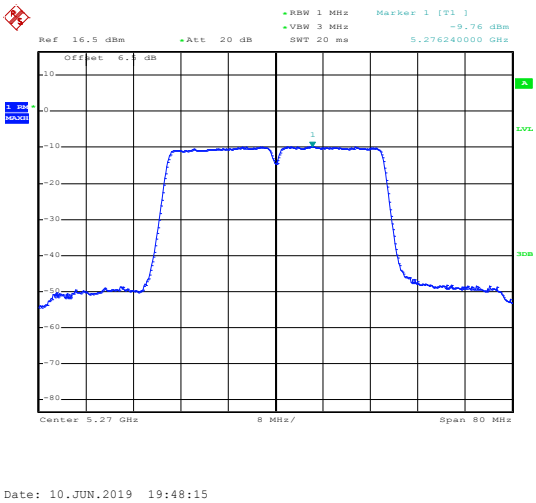
Middle channel



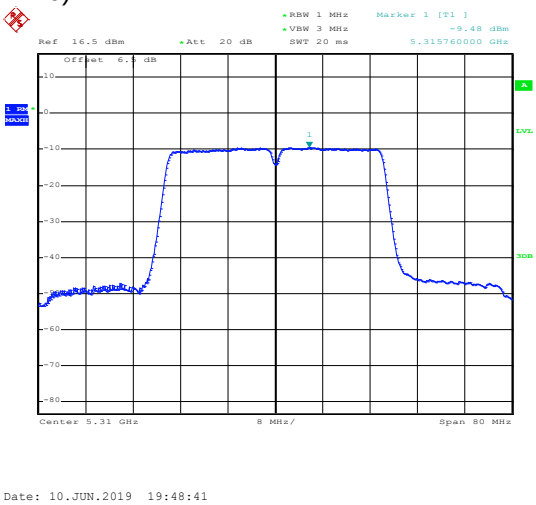
Date: 10.JUN.2019 19:42:39

Highest channel

802.11ac(HT40)



Lowest channel

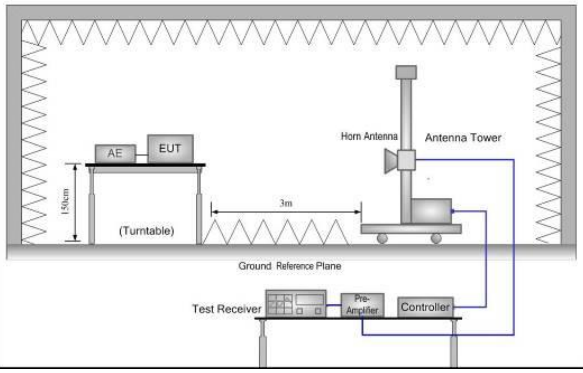


Highest channel

6.6 Band Edge

<table>
<tr><td>Test Requirement:</td><td colspan="4">FCC Part 15 E Section 15.407 (b)</td></tr>
<tr><td>Test Method:</td><td colspan="4">ANSI C63.10:2013 , KDB 789033</td></tr>
<tr><td rowspan="4">Receiver setup:</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Remark</td></tr>
<tr><td>Quasi-peak</td><td>120kHz</td><td>300kHz</td><td>Quasi-peak Value</td></tr>
<tr><td>RMS</td><td>1MHz</td><td>3MHz</td><td>Average Value</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td rowspan="6">Limit:</td><td colspan="2">Band</td><td>Limit (dBuV/m @3m)</td><td>Remark</td></tr>
<tr><td colspan="2" rowspan="2">Band 1/2/3</td><td>68.20</td><td>Peak Value</td></tr>
<tr><td>54.00</td><td>Average Value</td></tr>
<tr><td colspan="2" rowspan="2">Band 4</td><td>78.20</td><td>Peak Value</td></tr>
<tr><td>54.00</td><td>Average Value</td></tr>
<tr><td colspan="4">Band 4 limit:
For transmitters operating in the 5.725-5.85 GHz band:
All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasinglinearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

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=68.2 dBuV/m, for EIPR[dBm]=-27dBm.
E[dBμV/m] = EIRP[dBm] + 95.2=105.2 dBuV/m, for EIPR[dBm]=10dBm.
E[dBμV/m] = EIRP[dBm] + 95.2=110.8 dBuV/m, for EIPR[dBm]=15.6dBm.
E[dBμV/m] = EIRP[dBm] + 95.2=122.2 dBuV/m, for EIPR[dBm]=27dBm.</td></tr>
<tr><td>Test Procedure:</td><td colspan="4">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.</td></tr>
</table>

Test setup:		
Test Instruments:	Refer to section 5.9 for details	
Test mode:	Refer to section 5.3 for details	
Test results:	Passed	

Measurement Data (worst case):

Band 1:

Band 1 – 802.11a								
Test channel: Lowest channel								
Detector: Peak Value								
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
5150.00	49.27	36.23	10.96	40.06	56.40	68.20	-11.80	Horizontal
5150.00	49.36	36.23	10.96	40.06	56.49	68.20	-11.71	Vertical
Detector: Average Value								
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
5150.00	39.37	36.23	10.96	40.06	46.50	54.00	-7.50	Horizontal
5150.00	39.46	36.23	10.96	40.06	46.59	54.00	-7.41	Vertical
Test channel: Highest channel								
Detector: Peak Value								
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
5350.00	48.27	35.37	11.19	40.18	54.65	68.20	-13.55	Horizontal
5350.00	48.38	35.37	11.19	40.18	54.76	68.20	-13.44	Vertical
Detector: Average Value								
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
5350.00	38.43	35.37	11.19	40.18	44.81	54.00	-9.19	Horizontal
5350.00	38.67	35.37	11.19	40.18	45.05	54.00	-8.95	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.*

Band 1 – 802.11n(HT20)								
Test channel: Lowest channel								
Detector: 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
5150.00	48.89	36.23	10.96	40.06	56.02	68.20	-12.18	Horizontal
5150.00	48.64	36.23	10.96	40.06	55.77	68.20	-12.43	Vertical
Detector: 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
5150.00	37.46	36.23	10.96	40.06	44.59	54.00	-9.41	Horizontal
5150.00	37.29	36.23	10.96	40.06	44.42	54.00	-9.58	Vertical
Test channel: Highest channel								
Detector: Peak Value								
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
5350.00	48.07	35.37	11.19	40.18	54.45	68.20	-13.75	Horizontal
5350.00	48.31	35.37	11.19	40.18	54.69	68.20	-13.51	Vertical
Detector: Average Value								
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
5350.00	37.98	35.37	11.19	40.18	44.36	54.00	-9.64	Horizontal
5350.00	38.16	35.37	11.19	40.18	44.54	54.00	-9.46	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.*

Band 1 – 802.11n(HT40)								
Test channel: Lowest channel								
Detector: Peak Value								
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
5150.00	49.37	36.23	10.96	40.06	56.50	68.20	-11.70	Horizontal
5150.00	48.79	36.23	10.96	40.06	55.92	68.20	-12.28	Vertical
Detector: Average Value								
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
5150.00	38.97	36.23	10.96	40.06	46.10	54.00	-7.90	Horizontal
5150.00	38.16	36.23	10.96	40.06	45.29	54.00	-8.71	Vertical
Test channel: Highest channel								
Detector: Peak Value								
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
5350.00	47.36	35.37	11.19	40.18	53.74	68.20	-14.46	Horizontal
5350.00	46.89	35.37	11.19	40.18	53.27	68.20	-14.93	Vertical
Detector: Average Value								
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
5350.00	37.56	35.37	11.19	40.18	43.94	54.00	-10.06	Horizontal
5350.00	36.83	35.37	11.19	40.18	43.21	54.00	-10.79	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.*

Band 1 – 802.11ac(HT20)								
Test channel: Lowest channel								
Detector: Peak Value								
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
5150.00	49.13	36.23	10.96	40.06	56.26	68.20	-11.94	Horizontal
5150.00	48.67	36.23	10.96	40.06	55.80	68.20	-12.40	Vertical
Detector: Average Value								
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
5150.00	39.37	36.23	10.96	40.06	46.50	54.00	-7.50	Horizontal
5150.00	38.62	36.23	10.96	40.06	45.75	54.00	-8.25	Vertical
Test channel: Highest channel								
Detector: Peak Value								
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
5350.00	48.32	35.37	11.19	40.18	54.70	68.20	-13.50	Horizontal
5350.00	48.26	35.37	11.19	40.18	54.64	68.20	-13.56	Vertical
Detector: Average Value								
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
5350.00	37.95	35.37	11.19	40.18	44.33	54.00	-9.67	Horizontal
5350.00	37.43	35.37	11.19	40.18	43.81	54.00	-10.19	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.*

Band 1 – 802.11ac(HT40)								
Test channel: Lowest channel								
Detector: Peak Value								
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
5150.00	48.76	36.23	10.96	40.06	55.89	68.20	-12.31	Horizontal
5150.00	48.25	36.23	10.96	40.06	55.38	68.20	-12.82	Vertical
Detector: Average Value								
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
5150.00	38.72	36.23	10.96	40.06	45.85	54.00	-8.15	Horizontal
5150.00	38.12	36.23	10.96	40.06	45.25	54.00	-8.75	Vertical
Test channel: Highest channel								
Detector: Peak Value								
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
5350.00	48.37	35.37	11.19	40.18	54.75	68.20	-13.45	Horizontal
5350.00	48.15	35.37	11.19	40.18	54.53	68.20	-13.67	Vertical
Detector: Average Value								
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
5350.00	38.12	35.37	11.19	40.18	44.50	54.00	-9.50	Horizontal
5350.00	38.24	35.37	11.19	40.18	44.62	54.00	-9.38	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.*

Band 2:

Band 2 – 802.11a								
Test channel: Lowest channel								
Detector: Peak Value								
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
5250.00	48.93	36.14	11.12	40.11	56.08	68.20	-12.12	Horizontal
5250.00	48.39	36.14	11.12	40.11	55.54	68.20	-12.66	Vertical
Detector: Average Value								
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
5250.00	38.41	36.14	11.12	40.11	45.56	54.00	-8.44	Horizontal
5250.00	38.61	36.14	11.12	40.11	45.76	54.00	-8.24	Vertical
Test channel: Highest channel								
Detector: Peak Value								
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
5350.00	48.23	35.37	11.19	40.18	54.61	68.20	-13.59	Horizontal
5350.00	49.35	35.37	11.19	40.18	55.73	68.20	-12.47	Vertical
Detector: Average Value								
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
5350.00	38.37	35.37	11.19	40.18	44.75	54.00	-9.25	Horizontal
5350.00	38.49	35.37	11.19	40.18	44.87	54.00	-9.13	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.*

Band 2 – 802.11n(HT20)								
Test channel: Lowest channel								
Detector: Peak Value								
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
5250.00	49.27	36.14	11.12	40.11	56.42	68.20	-11.78	Horizontal
5250.00	49.43	36.14	11.12	40.11	56.58	68.20	-11.62	Vertical
Detector: Average Value								
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
5250.00	39.37	36.14	11.12	40.11	46.52	54.00	-7.48	Horizontal
5250.00	39.46	36.14	11.12	40.11	46.61	54.00	-7.39	Vertical
Test channel: Highest channel								
Detector: Peak Value								
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
5350.00	48.35	35.37	11.19	40.18	54.73	68.20	-13.47	Horizontal
5350.00	48.27	35.37	11.19	40.18	54.65	68.20	-13.55	Vertical
Detector: Average Value								
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
5350.00	38.31	35.37	11.19	40.18	44.69	54.00	-9.31	Horizontal
5350.00	38.16	35.37	11.19	40.18	44.54	54.00	-9.46	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.*

Band 2 – 802.11n(HT40)								
Test channel: Lowest channel								
Detector: Peak Value								
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
5250.00	49.38	36.14	11.12	40.11	56.53	68.20	-11.67	Horizontal
5250.00	49.52	36.14	11.12	40.11	56.67	68.20	-11.53	Vertical
Detector: Average Value								
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
5250.00	39.37	36.14	11.12	40.11	46.52	54.00	-7.48	Horizontal
5250.00	39.46	36.14	11.12	40.11	46.61	54.00	-7.39	Vertical
Test channel: Highest channel								
Detector: Peak Value								
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
5350.00	49.72	35.37	11.19	40.18	56.10	68.20	-12.10	Horizontal
5350.00	49.78	35.37	11.19	40.18	56.16	68.20	-12.04	Vertical
Detector: Average Value								
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
5350.00	39.14	35.37	11.19	40.18	45.52	54.00	-8.48	Horizontal
5350.00	38.94	35.37	11.19	40.18	45.32	54.00	-8.68	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.*

Band 2 – 802.11ac(HT20)								
Test channel: Lowest channel								
Detector: Peak Value								
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
5250.00	49.86	36.14	11.12	40.11	57.01	68.20	-11.19	Horizontal
5250.00	49.38	36.14	11.12	40.11	56.53	68.20	-11.67	Vertical
Detector: Average Value								
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
5250.00	39.34	36.14	11.12	40.11	46.49	54.00	-7.51	Horizontal
5250.00	39.12	36.14	11.12	40.11	46.27	54.00	-7.73	Vertical
Test channel: Highest channel								
Detector: Peak Value								
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
5350.00	48.74	35.37	11.19	40.18	55.12	68.20	-13.08	Horizontal
5350.00	48.53	35.37	11.19	40.18	54.91	68.20	-13.29	Vertical
Detector: Average Value								
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
5350.00	38.37	35.37	11.19	40.18	44.75	54.00	-9.25	Horizontal
5350.00	38.56	35.37	11.19	40.18	44.94	54.00	-9.06	Vertical

Remark:

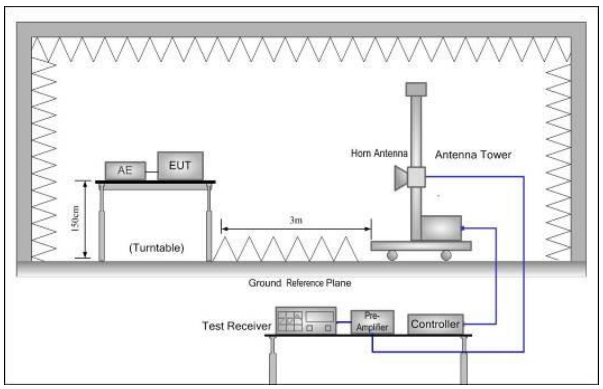
1. *Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

Band 2 – 802.11ac(HT40)								
Test channel: Lowest channel								
Detector: Peak Value								
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
5250.00	48.79	36.14	11.12	40.11	55.94	68.20	-12.26	Horizontal
5250.00	48.92	36.14	11.12	40.11	56.07	68.20	-12.13	Vertical
Detector: Average Value								
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
5250.00	38.46	36.14	11.12	40.11	45.61	54.00	-8.39	Horizontal
5250.00	39.01	36.14	11.12	40.11	46.16	54.00	-7.84	Vertical
Test channel: Highest channel								
Detector: Peak Value								
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
5350.00	48.79	35.37	11.19	40.18	55.17	68.20	-13.03	Horizontal
5350.00	48.64	35.37	11.19	40.18	55.02	68.20	-13.18	Vertical
Detector: Average Value								
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
5350.00	38.27	35.37	11.19	40.18	44.65	54.00	-9.35	Horizontal
5350.00	38.46	35.37	11.19	40.18	44.84	54.00	-9.16	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.*

6.7 Spurious Emission

6.7.1 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 5.9 for details				
Test mode:	Refer to section 5.3 for details				
Test results:	Passed				

Measurement Data (worst case):

Band 1:

Band 1 – 802.11a								
Test channel: Lowest channel								
Detector: Peak Value								
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	47.61	34.50	6.80	42.05	46.86	74.00	-27.14	Horizontal
4500.00	47.86	34.50	6.80	42.05	47.11	74.00	-26.89	Vertical
Detector: Average Value								
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	37.64	34.50	6.80	42.05	36.89	54.00	-17.11	Horizontal
4500.00	37.12	34.50	6.80	42.05	36.37	54.00	-17.63	Vertical
Test channel: Highest channel								
Detector: Peak Value								
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	47.56	34.90	7.18	41.85	47.79	74.00	-26.21	Horizontal
5460.00	47.68	34.90	7.18	41.85	47.91	74.00	-26.09	Vertical
Detector: Average Value								
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	37.19	34.90	7.18	41.85	37.42	54.00	-16.58	Horizontal
5460.00	37.34	34.90	7.18	41.85	37.57	54.00	-16.43	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.*

Band 1 – 802.11n(HT20)								
Test channel: Lowest channel								
Detector: Peak Value								
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	47.52	34.50	6.80	42.05	46.77	74.00	-27.23	Horizontal
4500.00	47.38	34.50	6.80	42.05	46.63	74.00	-27.37	Vertical
Detector: Average Value								
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	37.56	34.50	6.80	42.05	36.81	54.00	-17.19	Horizontal
4500.00	37.24	34.50	6.80	42.05	36.49	54.00	-17.51	Vertical
Test channel: Highest channel								
Detector: Peak Value								
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	47.83	34.90	7.18	41.85	48.06	74.00	-25.94	Horizontal
5460.00	47.86	34.90	7.18	41.85	48.09	74.00	-25.91	Vertical
Detector: Average Value								
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	37.24	34.90	7.18	41.85	37.47	54.00	-16.53	Horizontal
5460.00	37.16	34.90	7.18	41.85	37.39	54.00	-16.61	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.*

Band 1 – 802.11n(HT40)								
Test channel: Lowest channel								
Detector: Peak Value								
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	47.58	34.50	6.80	42.05	46.83	74.00	-27.17	Horizontal
4500.00	47.63	34.50	6.80	42.05	46.88	74.00	-27.12	Vertical
Detector: Average Value								
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	37.86	34.50	6.80	42.05	37.11	54.00	-16.89	Horizontal
4500.00	37.34	34.50	6.80	42.05	36.59	54.00	-17.41	Vertical
Test channel: Highest channel								
Detector: Peak Value								
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	47.96	34.90	7.18	41.85	48.19	74.00	-25.81	Horizontal
5460.00	47.83	34.90	7.18	41.85	48.06	74.00	-25.94	Vertical
Detector: Average Value								
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	37.56	34.90	7.18	41.85	37.79	54.00	-16.21	Horizontal
5460.00	37.38	34.90	7.18	41.85	37.61	54.00	-16.39	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.*

Band 1 – 802.11ac(HT20)								
Test channel: Lowest channel								
Detector: Peak Value								
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	47.83	34.50	6.80	42.05	47.08	74.00	-26.92	Horizontal
4500.00	48.31	34.50	6.80	42.05	47.56	74.00	-26.44	Vertical
Detector: Average Value								
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	37.56	34.50	6.80	42.05	36.81	54.00	-17.19	Horizontal
4500.00	37.92	34.50	6.80	42.05	37.17	54.00	-16.83	Vertical
Test channel: Highest channel								
Detector: Peak Value								
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	47.89	34.90	7.18	41.85	48.12	74.00	-25.88	Horizontal
5460.00	48.24	34.90	7.18	41.85	48.47	74.00	-25.53	Vertical
Detector: Average Value								
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	37.56	34.90	7.18	41.85	37.79	54.00	-16.21	Horizontal
5460.00	37.81	34.90	7.18	41.85	38.04	54.00	-15.96	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.*

Band 1 – 802.11ac(HT40)								
Test channel: Lowest channel								
Detector: Peak Value								
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	48.86	34.50	6.80	42.05	48.11	74.00	-25.89	Horizontal
4500.00	47.96	34.50	6.80	42.05	47.21	74.00	-26.79	Vertical
Detector: Average Value								
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	37.85	34.50	6.80	42.05	37.10	54.00	-16.90	Horizontal
4500.00	37.86	34.50	6.80	42.05	37.11	54.00	-16.89	Vertical
Test channel: Highest channel								
Detector: Peak Value								
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	48.37	34.90	7.18	41.85	48.60	74.00	-25.40	Horizontal
5460.00	48.73	34.90	7.18	41.85	48.96	74.00	-25.04	Vertical
Detector: Average Value								
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	38.31	34.90	7.18	41.85	38.54	54.00	-15.46	Horizontal
5460.00	38.26	34.90	7.18	41.85	38.49	54.00	-15.51	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.*

Band 2:

Band 2 – 802.11a								
Test channel: Lowest channel								
Detector: Peak Value								
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	48.23	34.50	6.80	42.05	47.48	74.00	-26.52	Horizontal
4500.00	48.11	34.50	6.80	42.05	47.36	74.00	-26.64	Vertical
Detector: Average Value								
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	38.24	34.50	6.80	42.05	37.49	54.00	-16.51	Horizontal
4500.00	37.94	34.50	6.80	42.05	37.19	54.00	-16.81	Vertical
Test channel: Highest channel								
Detector: Peak Value								
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	48.16	34.90	7.18	41.85	48.39	74.00	-25.61	Horizontal
5460.00	48.06	34.90	7.18	41.85	48.29	74.00	-25.71	Vertical
Detector: Average Value								
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	38.37	34.90	7.18	41.85	38.60	54.00	-15.40	Horizontal
5460.00	37.92	34.90	7.18	41.85	38.15	54.00	-15.85	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.*

Band 2 – 802.11n(HT20)								
Test channel: Lowest channel								
Detector: Peak Value								
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	47.56	34.50	6.80	42.05	46.81	74.00	-27.19	Horizontal
4500.00	47.64	34.50	6.80	42.05	46.89	74.00	-27.11	Vertical
Detector: Average Value								
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	37.26	34.50	6.80	42.05	36.51	54.00	-17.49	Horizontal
4500.00	37.34	34.50	6.80	42.05	36.59	54.00	-17.41	Vertical
Test channel: Highest channel								
Detector: Peak Value								
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	48.41	34.90	7.18	41.85	48.64	74.00	-25.36	Horizontal
5460.00	48.53	34.90	7.18	41.85	48.76	74.00	-25.24	Vertical
Detector: Average Value								
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	37.86	34.90	7.18	41.85	38.09	54.00	-15.91	Horizontal
5460.00	37.61	34.90	7.18	41.85	37.84	54.00	-16.16	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.*

Band 2 – 802.11n(HT40)								
Test channel: Lowest channel								
Detector: Peak Value								
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	47.79	34.50	6.80	42.05	47.04	74.00	-26.96	Horizontal
4500.00	47.91	34.50	6.80	42.05	47.16	74.00	-26.84	Vertical
Detector: Average Value								
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	37.86	34.50	6.80	42.05	37.11	54.00	-16.89	Horizontal
4500.00	37.49	34.50	6.80	42.05	36.74	54.00	-17.26	Vertical
Test channel: Highest channel								
Detector: Peak Value								
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	47.81	34.90	7.18	41.85	48.04	74.00	-25.96	Horizontal
5460.00	47.91	34.90	7.18	41.85	48.14	74.00	-25.86	Vertical
Detector: Average Value								
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	37.48	34.90	7.18	41.85	37.71	54.00	-16.29	Horizontal
5460.00	37.81	34.90	7.18	41.85	38.04	54.00	-15.96	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.*

Band 2 – 802.11ac(HT20)								
Test channel: Lowest channel								
Detector: Peak Value								
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	47.59	34.50	6.80	42.05	46.84	74.00	-27.16	Horizontal
4500.00	47.83	34.50	6.80	42.05	47.08	74.00	-26.92	Vertical
Detector: Average Value								
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	37.34	34.50	6.80	42.05	36.59	54.00	-17.41	Horizontal
4500.00	37.86	34.50	6.80	42.05	37.11	54.00	-16.89	Vertical
Test channel: Highest channel								
Detector: Peak Value								
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	47.39	34.90	7.18	41.85	47.62	74.00	-26.38	Horizontal
5460.00	47.83	34.90	7.18	41.85	48.06	74.00	-25.94	Vertical
Detector: Average Value								
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	37.96	34.90	7.18	41.85	38.19	54.00	-15.81	Horizontal
5460.00	37.48	34.90	7.18	41.85	37.71	54.00	-16.29	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.*

Band 2 – 802.11ac(HT40)								
Test channel: Lowest channel								
Detector: Peak Value								
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	48.34	34.50	6.80	42.05	47.59	74.00	-26.41	Horizontal
4500.00	48.19	34.50	6.80	42.05	47.44	74.00	-26.56	Vertical
Detector: Average Value								
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	38.37	34.50	6.80	42.05	37.62	54.00	-16.38	Horizontal
4500.00	38.06	34.50	6.80	42.05	37.31	54.00	-16.69	Vertical
Test channel: Highest channel								
Detector: Peak Value								
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	47.98	34.90	7.18	41.85	48.21	74.00	-25.79	Horizontal
5460.00	47.86	34.90	7.18	41.85	48.09	74.00	-25.91	Vertical
Detector: Average Value								
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	37.69	34.90	7.18	41.85	37.92	54.00	-16.08	Horizontal
5460.00	37.61	34.90	7.18	41.85	37.84	54.00	-16.16	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.*

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
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

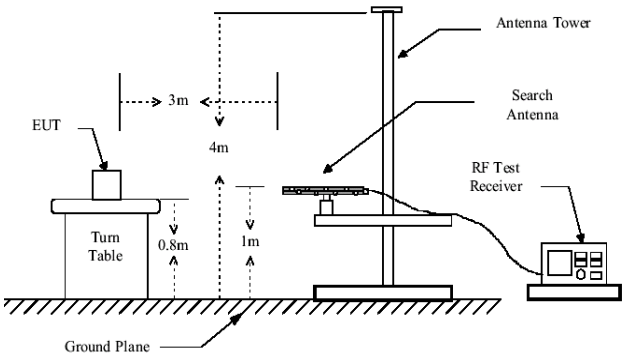
Remark:
Above 1GHz limit:
E[dBμV/m] = EIRP[dBm] + 95.2=68.2 dBuV/m, for EIPR[dBm]=-27dBm.

Test Procedure:

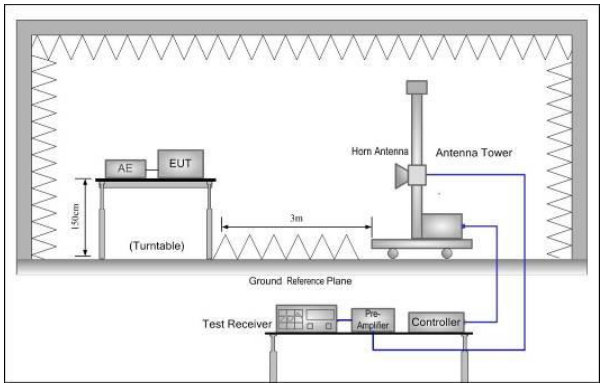
1. The EUT was placed on the top of a rotating table 0.8m(below 1GHz)/1.5m(above 1GHz) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted 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



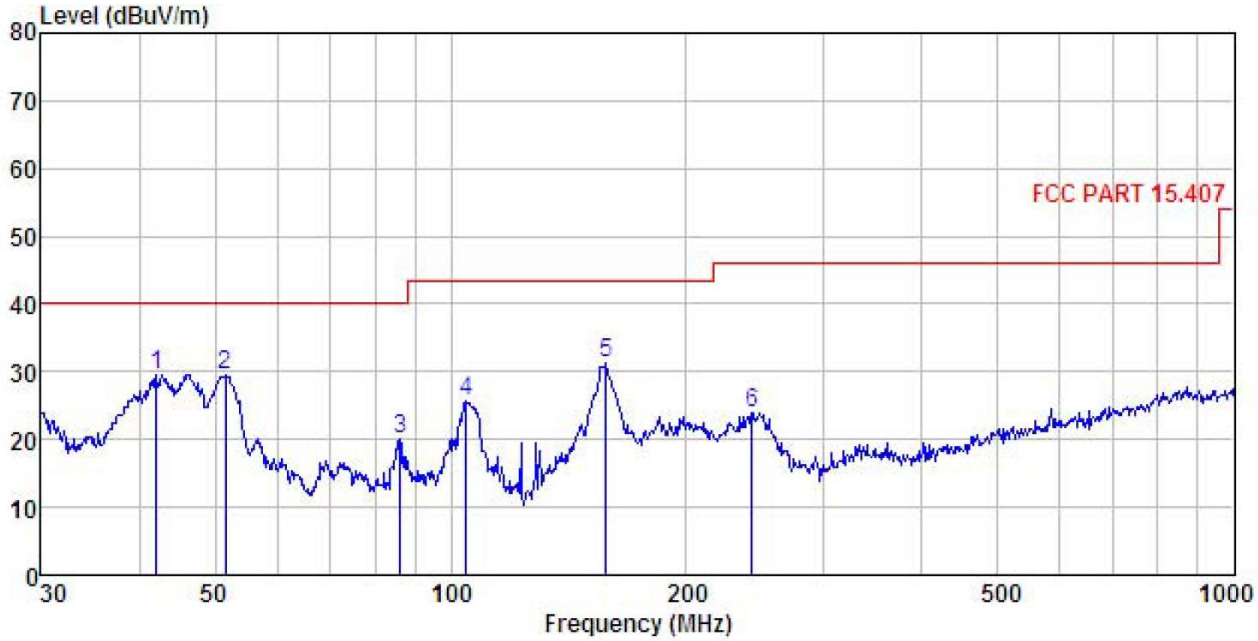
Above 1GHz

	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data (worst case):

Below 1GHz

Product Name:	Tablet PC	**Product model:**	S7
Test By:	Mike	**Test mode:**	5G Wi-Fi Tx mode
Test Frequency:	30 MHz ~ 1 GHz	**Polarization:**	Vertical
Test Voltage:	AC 120/60Hz	**Environment:**	Temp: 24℃ Huni: 57%

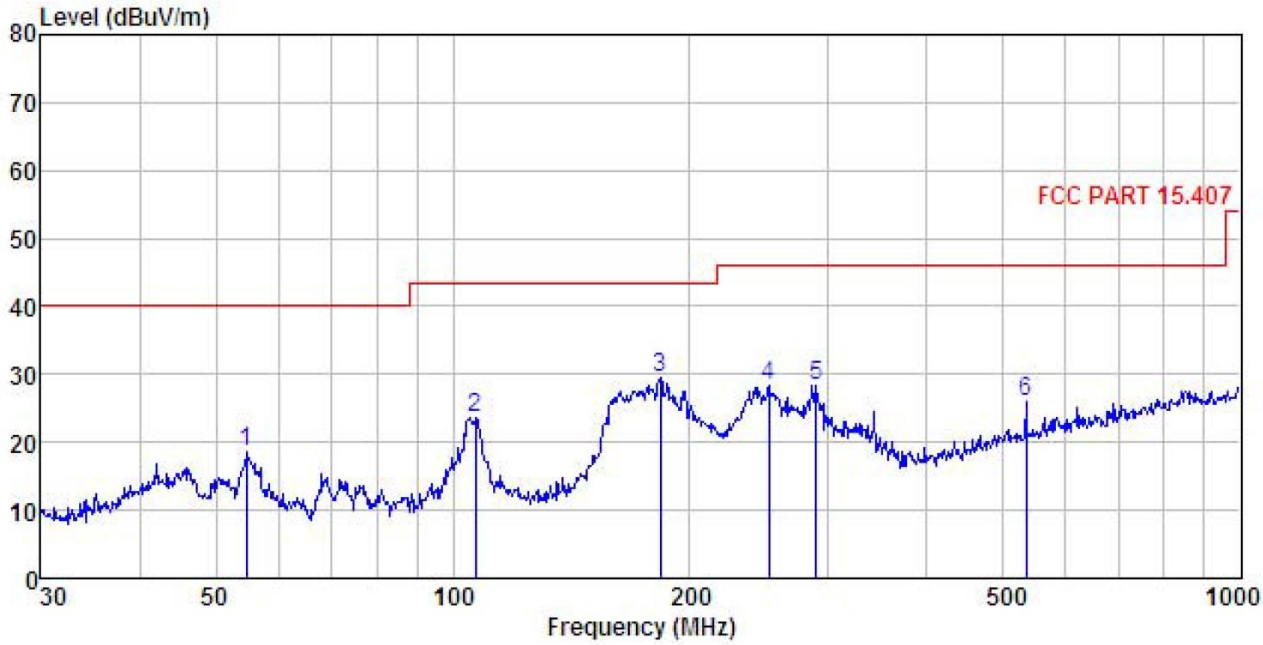


	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	42.154	45.86	12.36	1.25	29.88	29.59	40.00	-10.41	QP
2	51.481	46.09	11.94	1.27	29.81	29.49	40.00	-10.51	QP
3	86.200	38.71	8.98	1.91	29.59	20.01	40.00	-19.99	QP
4	104.536	41.16	12.12	1.99	29.50	25.77	43.50	-17.73	QP
5	158.112	48.51	9.22	2.57	29.15	31.15	43.50	-12.35	QP
6	242.525	37.29	12.42	2.82	28.58	23.95	46.00	-22.05	QP

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.*

Product Name:	Tablet PC	**Product model:**	S7
Test By:	Mike	**Test mode:**	5G Wi-Fi Tx mode
Test Frequency:	30 MHz ~ 1 GHz	**Polarization:**	Horizontal
Test Voltage:	AC 120/60Hz	**Environment:**	Temp: 24℃ Huni: 57%



	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	54.643	35.34	11.62	1.34	29.80	18.50	40.00	-21.50	QP
2	106.759	39.20	11.94	2.02	29.48	23.68	43.50	-19.82	QP
3	183.201	45.49	10.08	2.75	28.95	29.37	43.50	-14.13	QP
4	252.063	41.31	12.74	2.82	28.54	28.33	46.00	-17.67	QP
5	289.002	40.63	13.41	2.91	28.47	28.48	46.00	-17.52	QP
6	533.832	32.96	18.33	3.80	29.05	26.04	46.00	-19.96	QP

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.*

Above 1GHz:
Band 1:

Band 1 – 802.11a								
Test channel: Lowest channel								
Detector: 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	46.37	40.10	15.37	41.34	60.50	68.20	-7.70	Vertical
10360.00	47.82	40.10	15.37	41.34	61.95	68.20	-6.25	Horizontal
Detector: Average 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	36.51	40.10	15.37	41.34	50.64	54.00	-3.36	Vertical
10360.00	36.74	40.10	15.37	41.34	50.87	54.00	-3.13	Horizontal
Test channel: Middle channel								
Detector: 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	47.25	40.00	15.42	41.27	61.40	68.20	-6.80	Vertical
10400.00	47.38	40.00	15.42	41.27	61.53	68.20	-6.67	Horizontal
Detector: Average 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	37.16	40.00	15.42	41.27	51.31	54.00	-2.69	Vertical
10400.00	37.08	40.00	15.42	41.27	51.23	54.00	-2.77	Horizontal
Test channel: Highest channel								
Detector: 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	47.53	39.70	15.55	41.10	61.68	68.20	-6.52	Vertical
10480.00	46.98	39.70	15.55	41.10	61.13	68.20	-7.07	Horizontal
Detector: Average 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	37.51	39.70	15.55	41.10	51.66	54.00	-2.34	Vertical
10480.00	37.86	39.70	15.55	41.10	52.01	54.00	-1.99	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.*

Band 1 – 802.11n(HT20)								
Test channel: Lowest channel								
Detector: 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	47.15	40.10	15.37	41.34	61.28	68.20	-6.92	Vertical
10360.00	46.83	40.10	15.37	41.34	60.96	68.20	-7.24	Horizontal
Detector: Average 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	37.24	40.10	15.37	41.34	51.37	54.00	-2.63	Vertical
10360.00	36.91	40.10	15.37	41.34	51.04	54.00	-2.96	Horizontal
Test channel: Middle channel								
Detector: 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	46.97	40.00	15.42	41.27	61.12	68.20	-7.08	Vertical
10400.00	46.73	40.00	15.42	41.27	60.88	68.20	-7.32	Horizontal
Detector: Average 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	36.92	40.00	15.42	41.27	51.07	54.00	-2.93	Vertical
10400.00	36.23	40.00	15.42	41.27	50.38	54.00	-3.62	Horizontal
Test channel: Highest channel								
Detector: 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	47.58	39.70	15.55	41.10	61.73	68.20	-6.47	Vertical
10480.00	47.62	39.70	15.55	41.10	61.77	68.20	-6.43	Horizontal
Detector: Average 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	37.24	39.70	15.55	41.10	51.39	54.00	-2.61	Vertical
10480.00	37.16	39.70	15.55	41.10	51.31	54.00	-2.69	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.*

Band 1 – 802.11n(HT40)								
Test channel: Lowest channel								
Detector: 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	46.73	40.00	15.42	41.31	60.84	68.20	-7.36	Vertical
10380.00	47.31	40.00	15.42	41.31	61.42	68.20	-6.78	Horizontal
Detector: Average 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	37.12	40.00	15.42	41.31	51.23	54.00	-2.77	Vertical
10380.00	37.54	40.00	15.42	41.31	51.65	54.00	-2.35	Horizontal
Test channel: Highest channel								
Detector: 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	46.82	39.80	15.51	41.17	60.96	68.20	-7.24	Vertical
10460.00	46.89	39.80	15.51	41.17	61.03	68.20	-7.17	Horizontal
Detector: Average 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	36.98	39.80	15.51	41.17	51.12	54.00	-2.88	Vertical
10460.00	36.47	39.80	15.51	41.17	50.61	54.00	-3.39	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.*

Band 1 – 802.11ac(HT20)								
Test channel: Lowest channel								
Detector: 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	46.77	40.10	15.37	41.34	60.90	68.20	-7.30	Vertical
10360.00	46.35	40.10	15.37	41.34	60.48	68.20	-7.72	Horizontal
Detector: Average 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	36.74	40.10	15.37	41.34	50.87	54.00	-3.13	Vertical
10360.00	36.48	40.10	15.37	41.34	50.61	54.00	-3.39	Horizontal
Test channel: Middle channel								
Detector: 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	46.69	40.00	15.42	41.27	60.84	68.20	-7.36	Vertical
10400.00	46.83	40.00	15.42	41.27	60.98	68.20	-7.22	Horizontal
Detector: Average 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	36.71	40.00	15.42	41.27	50.86	54.00	-3.14	Vertical
10400.00	36.28	40.00	15.42	41.27	50.43	54.00	-3.57	Horizontal
Test channel: Highest channel								
Detector: 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	46.79	39.70	15.55	41.10	60.94	68.20	-7.26	Vertical
10480.00	46.67	39.70	15.55	41.10	60.82	68.20	-7.38	Horizontal
Detector: Average 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	36.81	39.70	15.55	41.10	50.96	54.00	-3.04	Vertical
10480.00	36.79	39.70	15.55	41.10	50.94	54.00	-3.06	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.*

Band 1 – 802.11ac(HT40)								
Test channel: Lowest channel								
Detector: 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	46.79	40.00	15.42	41.31	60.90	68.20	-7.30	Vertical
10380.00	46.82	40.00	15.42	41.31	60.93	68.20	-7.27	Horizontal
Detector: Average 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	36.81	40.00	15.42	41.31	50.92	54.00	-3.08	Vertical
10380.00	36.19	40.00	15.42	41.31	50.30	54.00	-3.70	Horizontal
Test channel: Highest channel								
Detector: 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	46.77	39.80	15.51	41.17	60.91	68.20	-7.29	Vertical
10460.00	46.82	39.80	15.51	41.17	60.96	68.20	-7.24	Horizontal
Detector: Average 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	36.82	39.80	15.51	41.17	50.96	54.00	-3.04	Vertical
10460.00	36.54	39.80	15.51	41.17	50.68	54.00	-3.32	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.*

Band 2:

Band 2 – 802.11a								
Test channel: Lowest channel								
Detector: 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
10520.00	47.83	40.10	9.82	41.97	55.78	68.20	-12.42	Vertical
10520.00	48.67	40.10	9.82	41.97	56.62	68.20	-11.58	Horizontal
Detector: Average 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
10520.00	37.53	40.10	9.82	41.97	45.48	54.00	-8.52	Vertical
10520.00	38.24	40.10	9.82	41.97	46.19	54.00	-7.81	Horizontal
Test channel: Middle channel								
Detector: 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
10560.00	48.79	40.00	9.85	41.95	56.69	68.20	-11.51	Vertical
10560.00	48.37	40.00	9.85	41.95	56.27	68.20	-11.93	Horizontal
Detector: Average 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
10560.00	38.37	40.00	9.85	41.95	46.27	54.00	-7.73	Vertical
10560.00	38.24	40.00	9.85	41.95	46.14	54.00	-7.86	Horizontal
Test channel: Highest channel								
Detector: 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
10640.00	48.89	39.70	9.96	41.88	56.67	68.20	-11.53	Vertical
10640.00	47.61	39.70	9.96	41.88	55.39	68.20	-12.81	Horizontal
Detector: Average 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
10640.00	38.96	39.70	9.96	41.88	46.74	54.00	-7.26	Vertical
10640.00	37.46	39.70	9.96	41.88	45.24	54.00	-8.76	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.*

Band 2 – 802.11n(HT20)								
Test channel: Lowest channel								
Detector: 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
10520.00	48.36	40.10	9.82	41.97	56.31	68.20	-11.89	Vertical
10520.00	48.41	40.10	9.82	41.97	56.36	68.20	-11.84	Horizontal
Detector: Average 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
10520.00	38.26	40.10	9.82	41.97	46.21	54.00	-7.79	Vertical
10520.00	38.43	40.10	9.82	41.97	46.38	54.00	-7.62	Horizontal
Test channel: Middle channel								
Detector: 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
10560.00	49.27	40.00	9.85	41.95	57.17	68.20	-11.03	Vertical
10560.00	49.19	40.00	9.85	41.95	57.09	68.20	-11.11	Horizontal
Detector: Average 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
10560.00	39.37	40.00	9.85	41.95	47.27	54.00	-6.73	Vertical
10560.00	39.53	40.00	9.85	41.95	47.43	54.00	-6.57	Horizontal
Test channel: Highest channel								
Detector: 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
10640.00	49.21	39.70	9.96	41.88	56.99	68.20	-11.21	Vertical
10640.00	48.79	39.70	9.96	41.88	56.57	68.20	-11.63	Horizontal
Detector: Average 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
10640.00	39.37	39.70	9.96	41.88	47.15	54.00	-6.85	Vertical
10640.00	38.46	39.70	9.96	41.88	46.24	54.00	-7.76	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.*

Band 2 – 802.11n(HT40)								
Test channel: Lowest channel								
Detector: 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
10540.00	48.76	39.64	10.05	41.89	56.56	68.20	-11.64	Vertical
10540.00	49.27	39.64	10.05	41.89	57.07	68.20	-11.13	Horizontal
Detector: Average 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
10540.00	38.56	39.64	10.05	41.89	46.36	54.00	-7.64	Vertical
10540.00	38.97	39.64	10.05	41.89	46.77	54.00	-7.23	Horizontal
Test channel: Highest channel								
Detector: 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
10620.00	48.79	39.73	10.16	41.95	56.73	68.20	-11.47	Vertical
10620.00	48.97	39.73	10.16	41.95	56.91	68.20	-11.29	Horizontal
Detector: Average 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
10620.00	38.23	39.73	10.16	41.95	46.17	54.00	-7.83	Vertical
10620.00	38.49	39.73	10.16	41.95	46.43	54.00	-7.57	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.*

Band 2 – 802.11ac(HT20)								
Test channel: Lowest channel								
Detector: 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
10520.00	48.99	40.10	9.82	41.97	56.94	68.20	-11.26	Vertical
10520.00	48.63	40.10	9.82	41.97	56.58	68.20	-11.62	Horizontal
Detector: Average 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
10520.00	39.06	40.10	9.82	41.97	47.01	54.00	-6.99	Vertical
10520.00	38.62	40.10	9.82	41.97	46.57	54.00	-7.43	Horizontal
Test channel: Middle channel								
Detector: 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
10560.00	49.37	40.00	9.85	41.95	57.27	68.20	-10.93	Vertical
10560.00	48.76	40.00	9.85	41.95	56.66	68.20	-11.54	Horizontal
Detector: Average 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
10560.00	40.06	40.00	9.85	41.95	47.96	54.00	-6.04	Vertical
10560.00	39.34	40.00	9.85	41.95	47.24	54.00	-6.76	Horizontal
Test channel: Highest channel								
Detector: 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
10640.00	49.87	39.70	9.96	41.88	57.65	68.20	-10.55	Vertical
10640.00	49.28	39.70	9.96	41.88	57.06	68.20	-11.14	Horizontal
Detector: Average 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
10640.00	39.61	39.70	9.96	41.88	47.39	54.00	-6.61	Vertical
10640.00	38.56	39.70	9.96	41.88	46.34	54.00	-7.66	Horizontal

Remark:

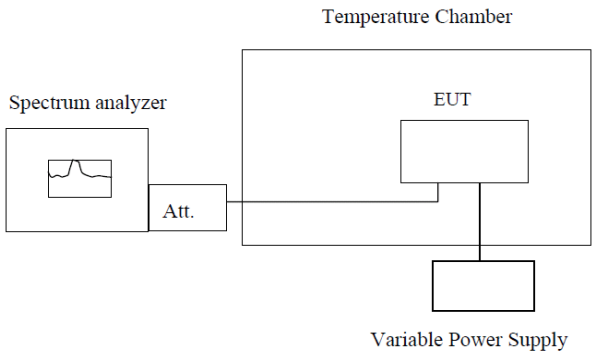
1. *Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

Band 2 – 802.11ac(HT40)								
Test channel: Lowest channel								
Detector: 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
10540.00	48.72	39.64	10.05	41.89	56.52	68.20	-11.68	Vertical
10540.00	48.38	39.64	10.05	41.89	56.18	68.20	-12.02	Horizontal
Detector: Average 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
10540.00	39.35	39.64	10.05	41.89	47.15	54.00	-6.85	Vertical
10540.00	38.13	39.64	10.05	41.89	45.93	54.00	-8.07	Horizontal
Test channel: Highest channel								
Detector: 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
10620.00	49.81	39.73	10.16	41.95	57.75	68.20	-10.45	Vertical
10620.00	49.48	39.73	10.16	41.95	57.42	68.20	-10.78	Horizontal
Detector: Average 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
10620.00	39.71	39.73	10.16	41.95	47.65	54.00	-6.35	Vertical
10620.00	38.96	39.73	10.16	41.95	46.90	54.00	-7.10	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 5.9 for details
Test mode:	Refer to section 5.3 for details
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	3.5V	5179.997643	0.45
	3.7V	5179.974779	4.87
	4.2V	5179.963951	6.96

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

Test conditions		Frequency(MHz)	Max. Deviation (ppm)
Voltage(ac)	Temp(℃)		
3.7V	-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

Band 2:

Voltage vs. Frequency Stability (Lowest channel=5260MHz)

Test conditions		Frequency(MHz)	Max. Deviation (ppm)
Temp(℃)	Voltage(ac)		
20	3.5V	5259.968471	5.99
	3.7V	5259.996387	0.69
	4.2V	5259.993659	1.21

Temperature vs. Frequency Stability (Lowest channel=5260MHz)

Test conditions		Frequency(MHz)	Max. Deviation (ppm)
Voltage(ac)	Temp(℃)		
3.7V	-20	5259.996412	0.68
	-10	5259.984786	2.89
	0	5259.996328	0.70
	10	5259.981478	3.52
	20	5259.996480	0.67
	30	5259.969578	5.78
	40	5259.979896	3.82
	50	5259.956548	8.26