FCC REPORT
(UNII)

Applicant: 8devices

Address of Applicant: Gedimino 47, Kaunas, LT-44242, Lithuania

Equipment Under Test (EUT)

Product Name: Broadband Digital Transmission System

Model No.: Jalapeno

FCC ID: Z9W-JLP

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

Date of sample receipt: 23. May, 2018

Date of Test: 23. May, to 17 Jul., 2018

Date of report issued: 18 Jul., 2018

Test Result: PASS*

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

Authorized Signature:

Bruce Zhang
Laboratory Manager

2 Version

Version No.	Date	Description
00	*18 Jul., 2018*	*Original*

Tested by: Mike.ou ***Date:*** *18 Jul., 2018*

Test Engineer

Reviewed by: Wimer Zhang ***Date:*** *18 Jul., 2018*

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) (ii) & (a) (3)	Pass
26dB Occupied Bandwidth	15.407 (a) (5)	Pass
6dB Emission Bandwidth	15.407(e)	Pass
Power Spectral Density	15.407 (a) (1) (ii) & (a) (2)& (a) (3)	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:	8devices
Address:	Gedimino 47, Kaunas, LT-44242, Lithuania
Manufacturer/ Factory:	8devices
Address:	Gedimino 47, Kaunas, LT-44242, Lithuania

5.2 General Description of E.U.T.

Product Name:	Broadband Digital Transmission System
Model No.:	Jalapeno
Operation Frequency:	Band 1: 5150MHz-5250MHz, Band 4: 5725MHz-5850MHz,
Channel numbers:	Band 1: 802.11a/802.11n20: 4, 802.11n40: 2, 802.11ac: 1 Band 4: 802.11a/802.11n20: 5, 802.11n40: 2, 802.11ac: 1
Channel separation:	802.11a/802.11n20: 20MHz, 802.11n40: 40MHz, 802.11ac: 80MHz
Modulation technology (IEEE 802.11a):	BPSK, QPSK, 16-QAM, 64-QAM
Modulation technology (IEEE 802.11n):	BPSK, QPSK, 16-QAM, 64-QAM
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 866.6Mbps
Antenna Type:	Antenna 0: Ceramic Antenna Antenna 1: Omni Antenna
Antenna gain:	Antenna 0: 3dBi Antenna 1: 10dBi

Operation Frequency each of channel					
Band 1					
802.11a/802.11n(HT20)		802.11n(HT40)		802.11ac	
Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180MHz	38	5190MHz	42	5210MHz
40	5200MHz	46	5230MHz		
44	5220MHz				
48	5240MHz				
Band 4					
802.11a/802.11n(HT20)		802.11n(HT40)		802.11ac	
Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5745MHz	151	5755MHz	155	5775MHz
153	5765MHz	159	5795MHz		
157	5785MHz				
161	5805MHz				
165	5825MHz				

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

Band 1					
802.11a/802.11n20		802.11n40		802.11ac	
Channel	Frequency	Channel	Frequency	Channel	Frequency
Lowest channel	5180MHz	Lowest channel	5190MHz	Middle channel	5210
Middle channel	5200MHz	Highest channel	5230MHz		
Highest channel	5240MHz				
Band 4					
802.11a/802.11n20		802.11n40		802.11ac	
Channel	Frequency	Channel	Frequency	Channel	Frequency
Lowest channel	5745MHz	Lowest channel	5755MHz	Middle channel	5775MHz
Middle channel	5785MHz	Highest channel	5795MHz		
Highest channel	5825MHz				

5.3 Test environment and test mode

Operating Environment:	
Temperature:	24.0 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010 mbar
Test mode:	
Continuously transmitting mode	Keep the EUT in 100% duty cycle transmitting with modulation.
We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:	
Per-scan all kind of data rate, and found the follow list were the worst case.	
Mode	Data rate
802.11a	6 Mbps
802.11n20	6.5 Mbps
802.11n40	13 Mbps

5.4 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC ID/DoC
DELL	PC	OPTIPLEX745	N/A	DoC
DELL	MONITOR	E178FPC	N/A	DoC
DELL	KEYBOARD	SK-8115	N/A	DoC
DELL	MOUSE	MOC5UO	N/A	DoC

5.5 Measurement Uncertainty

Parameters	Expanded Uncertainty
Conducted Emission (9kHz ~ 30MHz)	±2.22 dB (k=2)
Radiated Emission (9kHz ~ 30MHz)	±2.76 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	±4.28 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	±5.72 dB (k=2)
Radiated Emission (18GHz ~ 40GHz)	±2.88 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

Radiated Emission:					
Test Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date (mm-dd-yy)**	**Cal. Due date (mm-dd-yy)**
3m SAC	SAEMC	9m*6m*6m	966	07-22-2017	07-21-2020
Loop Antenna	SCHWARZBECK	FMZB1519B	00044	03-16-2018	03-15-2019
BiConiLog Antenna	SCHWARZBECK	VULB9163	497	03-16-2018	03-15-2019
Horn Antenna	SCHWARZBECK	BBHA9120D	916	03-16-2018	03-15-2019
EMI Test Software	AUDIX	E3	6.110919b	N/A	N/A
Pre-amplifier	HP	8447D	2944A09358	03-07-2018	03-06-2019
Pre-amplifier	CD	PAP-1G18	11804	03-07-2018	03-06-2019
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-07-2018	03-06-2019
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-07-2018	03-06-2019
Cable	ZDECL	Z108-NJ-NJ-81	1608458	03-07-2018	03-06-2019
Cable	MICRO-COAX	MFR64639	K10742-5	03-07-2018	03-06-2019
Cable	SUHNER	SUCOFLEX100	58193/4PE	03-07-2018	03-06-2019

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	03-07-2018	03-06-2019
Pulse Limiter	SCHWARZBECK	OSRAM 2306	9731	03-07-2018	03-06-2019
LISN	CHASE	MN2050D	1447	03-19-2018	03-18-2019
LISN	Rohde & Schwarz	ESH3-Z5	8438621/010	07-21-2017	07-20-2018
Cable	HP	10503A	N/A	03-07-2018	03-06-2019
EMI Test Software	AUDIX	E3	6.110919b	N/A	N/A

6 Test results and Measurement Data

6.1 Antenna requirement

Standard requirement:	FCC Part15 E Section 15.203 /407(a)

15.203 requirement:
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.
This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

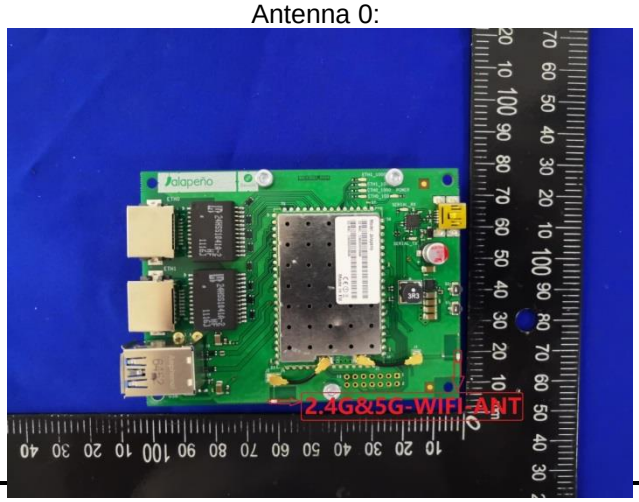
E.U.T Antenna:	

The product is a professionally installed device which has two types of antennas for the application. The antennas information as below table:

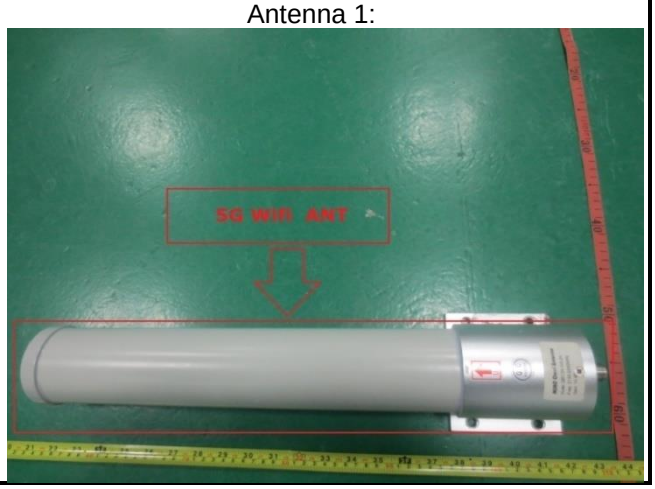
Antenna No.	Antenna Type	Antenna Gain (dBi)
Antenna 0	Ceramic Antenna	3
Antenna 1	Rod Antenna	10

According to above information, the antennas meet the requirements of this section

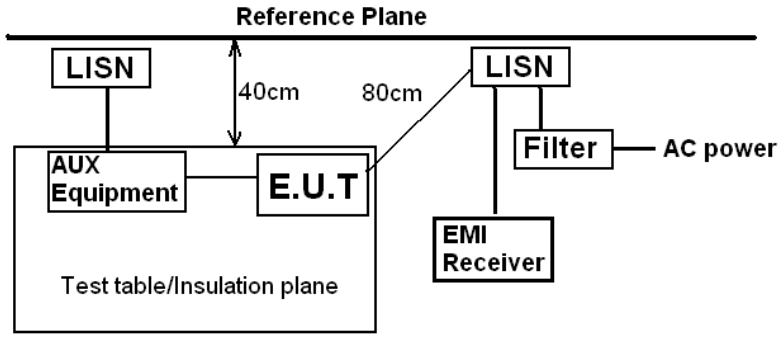
Antenna 0:



Antenna 1:

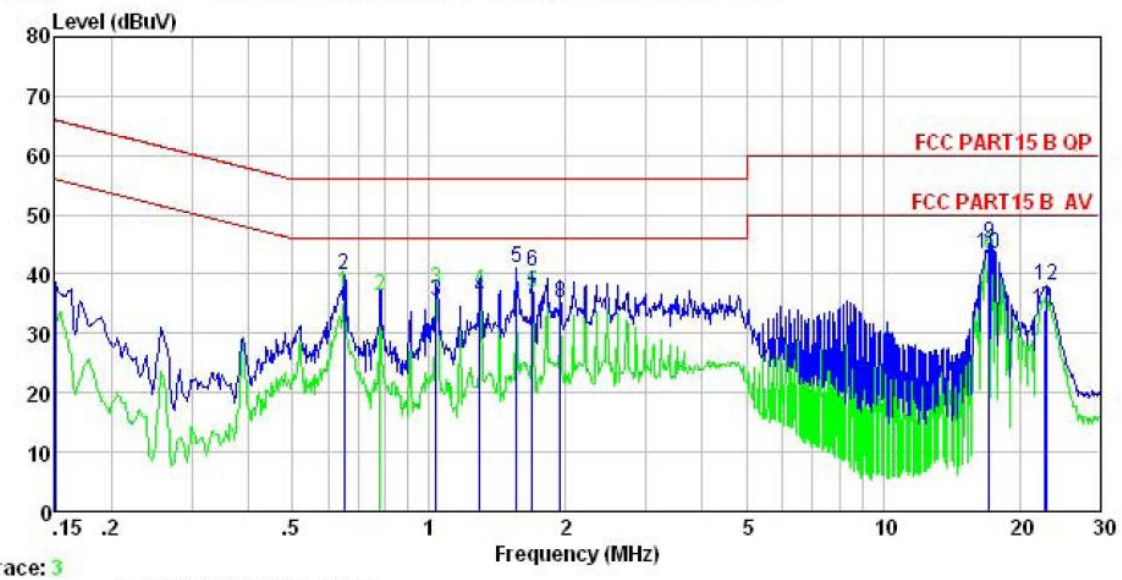


6.2 Conducted Emission

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:3dBi ANT

Test Phase: Line



Trace: 3

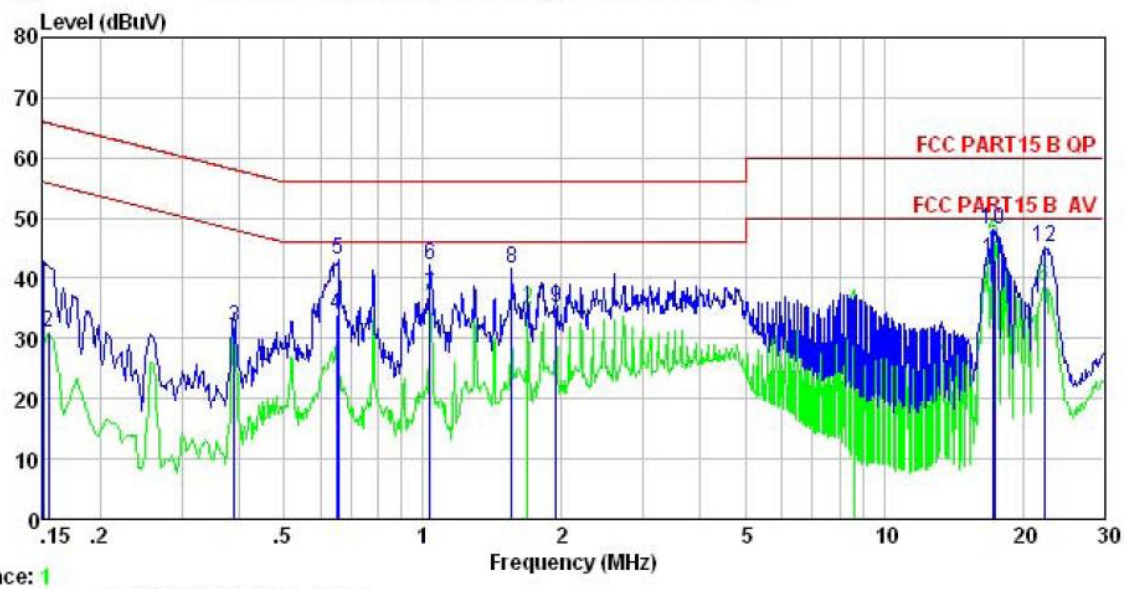
Site : CCIS Shielding Room
Condition : FCC PART15 B QP LISN LINE
EUT : Broadband Digital Transmission System
Model : Jalapeno
Test Mode : 5G Wifi Mode
Power Rating : AC 120/60Hz
Environment : Temp: 23 ℃ Huni:56% Atmos:101KPa
Test Engineer: Mike
Remark :

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.150	27.72	0.18	10.78	38.68	66.00	-27.32	QP
2	0.651	28.91	0.13	10.77	39.81	56.00	-16.19	QP
3	1.037	24.56	0.13	10.87	35.56	46.00	-10.44	Average
4	1.296	25.11	0.13	10.90	36.14	46.00	-9.86	Average
5	1.560	29.82	0.14	10.93	40.89	56.00	-15.11	QP
6	1.689	29.36	0.14	10.94	40.44	56.00	-15.56	QP
7	1.689	24.70	0.14	10.94	35.78	46.00	-10.22	Average
8	1.949	24.03	0.14	10.96	35.13	46.00	-10.87	Average
9	17.109	34.09	0.30	10.91	45.30	60.00	-14.70	QP
10	17.109	32.12	0.30	10.91	43.33	50.00	-6.67	Average
11	22.775	22.75	0.31	10.90	33.96	50.00	-16.04	Average
12	22.896	26.81	0.31	10.89	38.01	60.00	-21.99	QP

Notes:

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

Test Phase: Neutral



Trace: 1

Site : CCIS Shielding Room
Condition : FCC PART15 B QP LISN NEUTRAL
EUT : Broadband Digital Transmission System
Model : Jalapeno
Test Mode : 5G Wifi Mode
Power Rating : AC 120/60Hz
Environment : Temp: 23 'C Huni:56% Atmos:101KPa
Test Engineer: Mike
Remark :

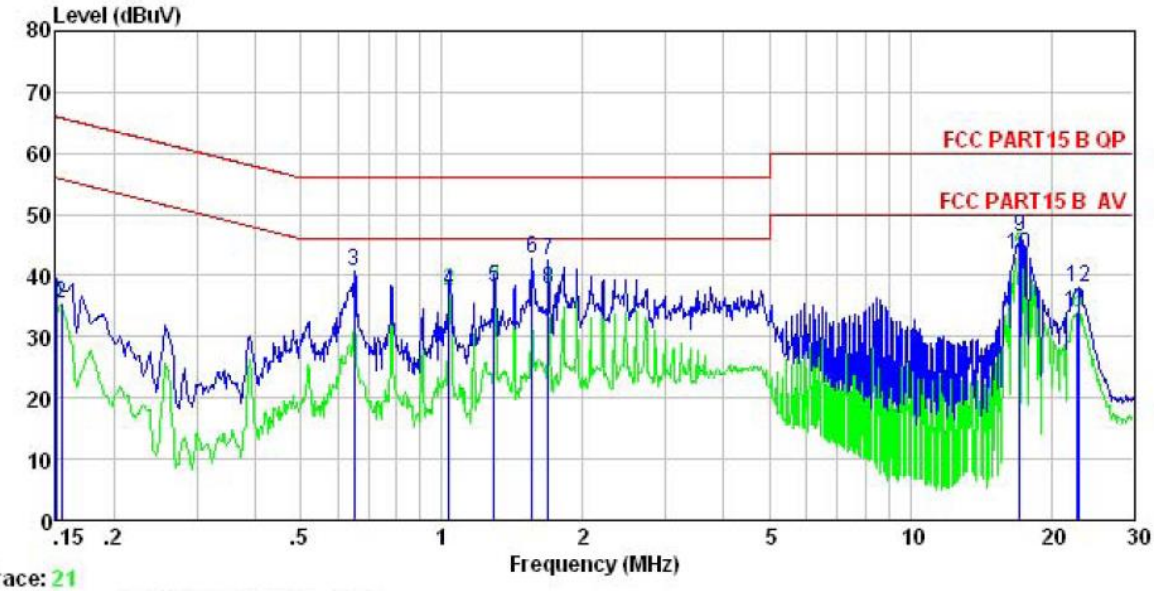
	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.150	30.90	0.99	10.78	42.67	66.00	-23.33	QP
2	0.154	19.50	0.70	10.78	30.98	55.78	-24.80	Average
3	0.389	20.57	0.62	10.72	31.91	48.08	-16.17	Average
4	0.651	22.66	0.63	10.77	34.06	46.00	-11.94	Average
5	0.654	31.42	0.97	10.77	43.16	56.00	-12.84	QP
6	1.037	30.31	0.97	10.87	42.15	56.00	-13.85	QP
7	1.037	25.72	0.67	10.87	37.26	46.00	-8.74	Average
8	1.560	29.71	0.98	10.93	41.62	56.00	-14.38	QP
9	1.949	23.41	0.67	10.96	35.04	46.00	-10.96	Average
10	17.291	36.31	0.80	10.91	48.02	60.00	-11.98	QP
11	17.383	31.52	0.69	10.92	43.13	50.00	-6.87	Average
12	22.298	33.46	0.68	10.90	45.04	60.00	-14.96	QP

Notes:

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

Measurement Data:10dBi ANT

Test Phase: Line



Trace: 21

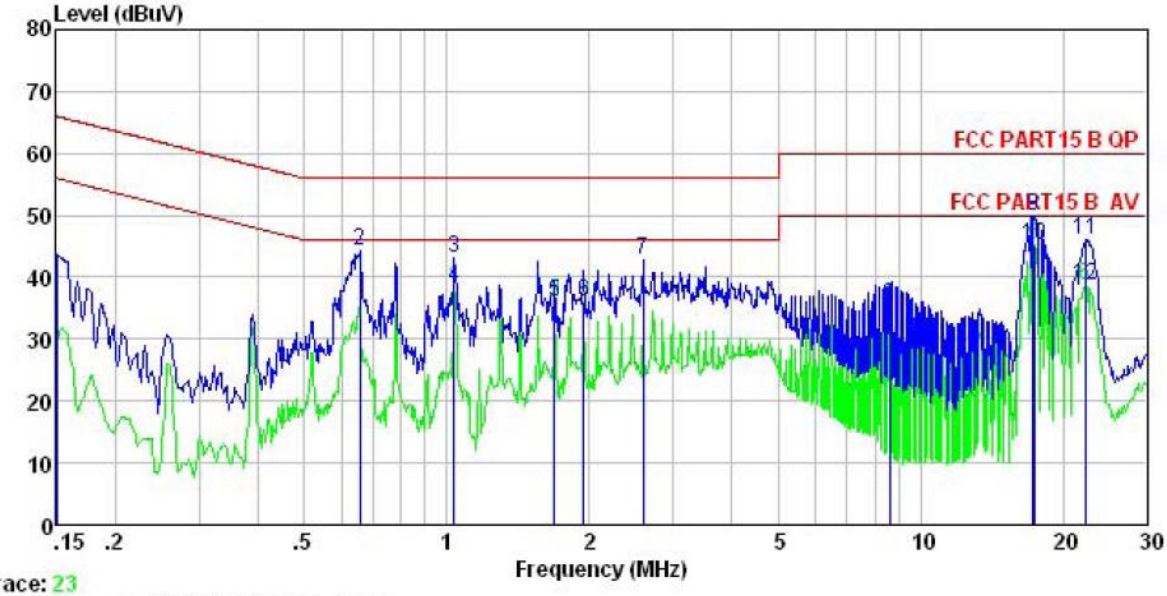
Site : CCIS Shielding Room
Condition : FCC PART15 B QP LISN LINE
EUT : Broadband Digital Transmission System
Model : Jalapeno
Test Mode : 5G Wifi Mode
Power Rating : AC 120/60Hz
Environment : Temp: 23 'C Huni:56% Atmos:101KPa
Test Engineer: Mike
Remark :

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.150	28.72	0.18	10.78	39.68	66.00	-26.32	QP
2	0.154	24.61	0.18	10.78	35.57	55.78	-20.21	Average
3	0.651	29.91	0.13	10.77	40.81	56.00	-15.19	QP
4	1.037	26.56	0.13	10.87	37.56	46.00	-8.44	Average
5	1.296	27.11	0.13	10.90	38.14	46.00	-7.86	Average
6	1.560	31.82	0.14	10.93	42.89	56.00	-13.11	QP
7	1.689	31.36	0.14	10.94	42.44	56.00	-13.56	QP
8	1.689	26.70	0.14	10.94	37.78	46.00	-8.22	Average
9	17.109	35.09	0.30	10.91	46.30	60.00	-13.70	QP
10	17.109	32.12	0.30	10.91	43.33	50.00	-6.67	Average
11	22.775	22.75	0.31	10.90	33.96	50.00	-16.04	Average
12	22.896	26.81	0.31	10.89	38.01	60.00	-21.99	QP

Notes:

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

Test Phase: Neutral



Trace: 23

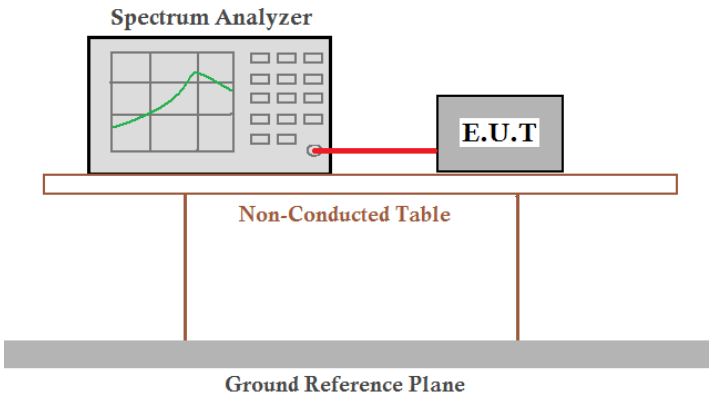
Site : CCIS Shielding Room
Condition : FCC PART15 B QP LISN NEUTRAL
EUT : Broadband Digital Transmission System
Model : Jalapeno
Test Mode : 5G Wifi Mode
Power Rating : AC 120/60Hz
Environment : Temp: 23 ℃ Huni:56% Atmos:101KPa
Test Engineer: Mike
Remark : 10dBi

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.150	31.90	0.99	10.78	43.67	66.00	-22.33	QP
2	0.654	32.42	0.97	10.77	44.16	56.00	-11.84	QP
3	1.037	31.31	0.97	10.87	43.15	56.00	-12.85	QP
4	1.037	26.72	0.67	10.87	38.26	46.00	-7.74	Average
5	1.689	24.35	0.67	10.94	35.96	46.00	-10.04	Average
6	1.949	24.41	0.67	10.96	36.04	46.00	-9.96	Average
7	2.594	30.83	0.99	10.93	42.75	56.00	-13.25	QP
8	8.592	23.86	0.69	10.88	35.43	50.00	-14.57	Average
9	17.291	38.31	0.80	10.91	50.02	60.00	-9.98	QP
10	17.383	33.52	0.69	10.92	45.13	50.00	-4.87	Average
11	22.298	34.46	0.68	10.90	46.04	60.00	-13.96	QP
12	22.298	27.14	0.69	10.90	38.73	50.00	-11.27	Average

Notes:

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

6.3 Conducted Output Power

Test Requirement:	FCC Part15 E Section 15.407 (a) (1) (ii) & (a) (3)
Test Method:	ANSI C63.10: 2013, KDB789033
Limit:	**Band 1:** 1W (For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.) **Band 4:** 1W (If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.).
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: 3dBi ANT

Band 1						
Mode	Test CH	Ant. Port	Conducted Output power(dBm)	Total power (dBm)	Limit (dBm)	Result
802.11a	Lowest	TX0	19.34	21.83	30.0	Pass
		TX1	18.23			
	Middle	TX0	19.68	22.65	30.0	Pass
		TX1	19.59			
	Highest	TX0	19.00	22.16	30.0	Pass
		TX1	19.29			
802.11n20	Lowest	TX0	19.32	22.02	30.0	Pass
		TX1	18.67			
	Middle	TX0	19.53	22.68	30.0	Pass
		TX1	19.80			
	Highest	TX0	18.93	22.20	30.0	Pass
		TX1	19.43			
802.11n40	Lowest	TX0	17.16	19.88	30.0	Pass
		TX1	16.56			
	Highest	TX0	19.05	21.88	30.0	Pass
		TX1	18.68			
802.11ac	Middle	TX0	17.40	20.31	30.0	Pass
		TX1	17.20			

Remark:

1. *Because transmit signals are correlated,* Directional gain = $G_{ANT} + 10\log(N_{ANT})$ dBi ,*So the Directional gain=3 + 10* $\log(2)$*=6 dBi*
2. *The directional Gain of antenna is not* greater *than 6 dBi, , so the limit of power is 30 dBm.*

Band 4						
Mode	Test CH	Ant. Port	Conducted Output power(dBm)	Total power (dBm)	Limit (dBm)	Result
802.11a	Lowest	TX0	19.43	22.40	30.0	Pass
		TX1	19.34			
	Middle	TX0	19.40	22.20	30.0	Pass
		TX1	18.96			
	Highest	TX0	19.15	22.18	30.0	Pass
		TX1	19.18			
802.11n20	Lowest	TX0	19.34	22.46	30.0	Pass
		TX1	19.55			
	Middle	TX0	19.30	22.25	30.0	Pass
		TX1	19.17			
	Highest	TX0	19.05	22.21	30.0	Pass
		TX1	19.34			
802.11n40	Lowest	TX0	19.33	22.09	30.0	Pass
		TX1	18.82			
	Highest	TX0	19.21	22.08	30.0	Pass
		TX1	18.93			
802.11ac	Middle	TX0	18.18	21.20	30.0	Pass
		TX1	18.19			

Remark:

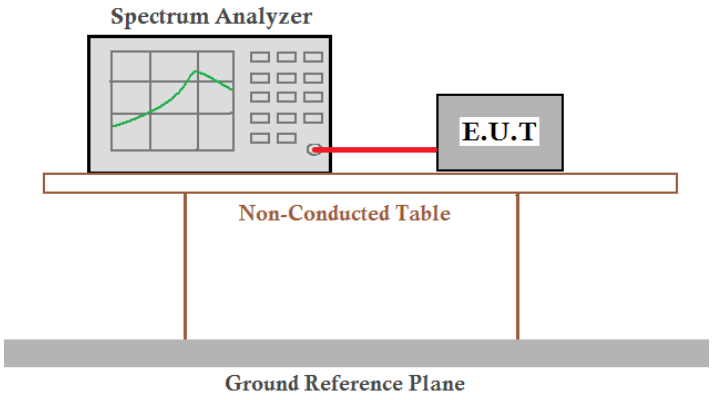
1. *Because transmit signals are correlated,* Directional gain = $G_{ANT} + 10\log(N_{ANT})$ dBi ,*So the Directional gain=3 + 10* $\log(2)$*=6 dBi*
2. *The directional Gain of antenna is not* greater *than 6 dBi, , so the limit of power is 30 dBm.*

Measurement Data:10dBi

Band 1						
Mode	Test CH	Ant. Port	Conducted Output power(dBm)	Total power (dBm)	Limit (dBm)	Result
802.11a	Lowest	TX0	19.00	21.19	23	Pass
		TX1	17.18			
	Middle	TX0	19.50	21.69	23	Pass
		TX1	17.68			
	Highest	TX0	19.29	22.29	23	Pass
		TX1	19.26			
802.11n20	Lowest	TX0	19.56	21.46	23	Pass
		TX1	16.96			
	Middle	TX0	19.35	22.52	23	Pass
		TX1	19.66			
	Highest	TX0	19.13	22.10	23	Pass
		TX1	19.05			
802.11n40	Lowest	TX0	14.93	17.14	23	Pass
		TX1	13.16			
	Highest	TX0	19.22	22.17	23	Pass
		TX1	19.10			
802.11ac	Middle	TX0	15.15	17.33	23	Pass
		TX1	13.28			
Remark:						
3. Because transmit signals are correlated, Directional gain = G_{ANT} + 10 log(N_{ANT}) dBi *,So the Directional gain=13+ 10* log(2)*=13 dBi*						
4. The directional Gain of antenna is not greater *than 6 dBi, , so the limit of power is 23 dBm.*						

Band 4						
Mode	Test CH	Ant. Port	Conducted Output power(dBm)	Total power (dBm)	Limit (dBm)	Result
802.11a	Lowest	TX0	19.37	22.33	23	Pass
		TX1	19.26			
	Middle	TX0	19.36	22.14	23	Pass
		TX1	18.89			
	Highest	TX0	19.09	22.13	23	Pass
		TX1	19.14			
802.11n20	Lowest	TX0	19.32	22.40	23	Pass
		TX1	19.46			
	Middle	TX0	19.24	22.20	23	Pass
		TX1	19.14			
	Highest	TX0	19.03	22.16	23	Pass
		TX1	19.26			
802.11n40	Lowest	TX0	19.21	21.87	23	Pass
		TX1	18.48			
	Highest	TX0	19.06	21.97	23	Pass
		TX1	18.86			
802.11ac	Middle	TX0	19.83	21.66	23	Pass
		TX1	17.01			
Remark:						
1. Because transmit signals are correlated, Directional gain = G_{ANT} + 10 log(N_{ANT}) dBi *,So the Directional gain=13+ 10* log(2)*=13 dBi*						
2. The directional Gain of antenna is not greater *than 6 dBi, , so the limit of power is 23 dBm.*						

6.4 Occupy Bandwidth

Test Requirement:	FCC Part15 E Section 15.407 (a) (5) and Section 15.407 (e)
Test Method:	ANSI C63.10:2013 and KDB 789033
Limit:	Band 1: N/A(26dB Emission Bandwidth and 99% Occupy Bandwidth) Band 4: N/A(26dB Emission Bandwidth and 99% Occupy Bandwidth) Band 4: >500kHz(6dB 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:TX0

Test Channel	26dB Emission Bandwidth (MHz)				Limit	Result
	802.11a	802.11n20	802.11n40	802.11ac		
Lowest	27.64	26.83	39.23	/	N/A	N/A
Middle	22.58	24.82	/	79.44		
Highest	20.18	20.88	39.03	/		
Test Channel	99% Occupy Bandwidth (MHz)				Limit	Result
	802.11a	802.11n20	802.11n40	802.11ac		
Lowest	18.03	18.71	36.26	/	N/A	N/A
Middle	17.36	18.38	/	75.86		
Highest	16.80	17.97	36.16	/		

Band 1:TX1

Test Channel	26dB Emission Bandwidth (MHz)				Limit	Result
	802.11a	802.11n20	802.11n40	802.11ac		
Lowest	25.93	25.41	41.29	/	N/A	N/A
Middle	25.50	24.30	/	83.36		
Highest	21.51	22.41	39.27	/		
Test Channel	99% Occupy Bandwidth (MHz)				Limit	Result
	802.11a	802.11n20	802.11n40	802.11ac		
Lowest	18.51	18.84	36.41	/	N/A	N/A
Middle	18.42	18.57	/	76.28		
Highest	18.17	18.15	36.27	/		

Band 4:TX0

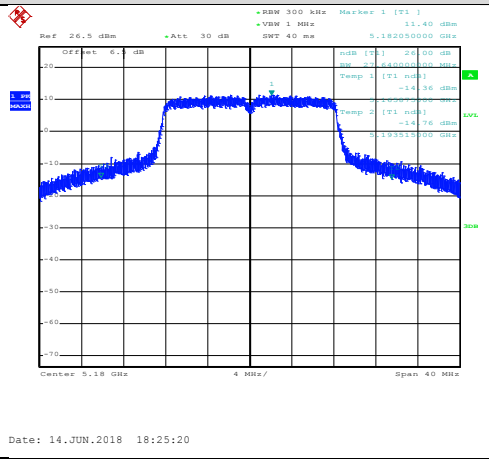
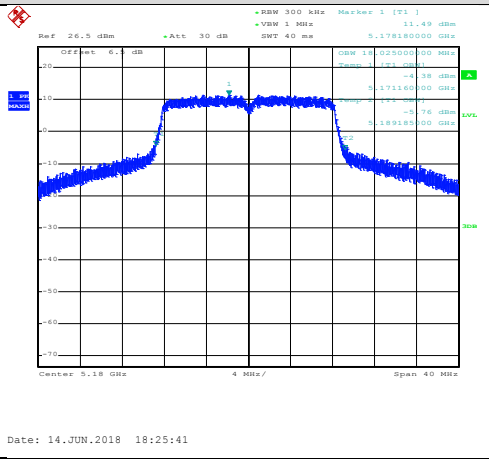
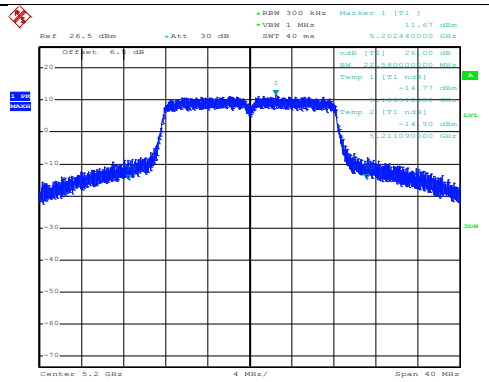
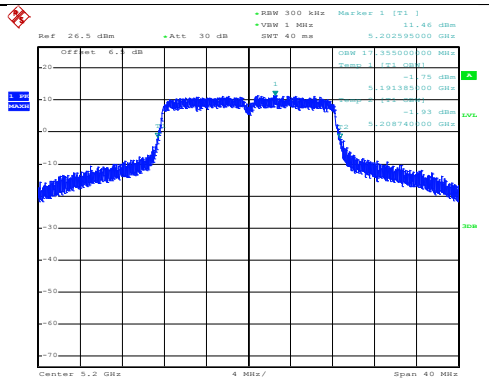
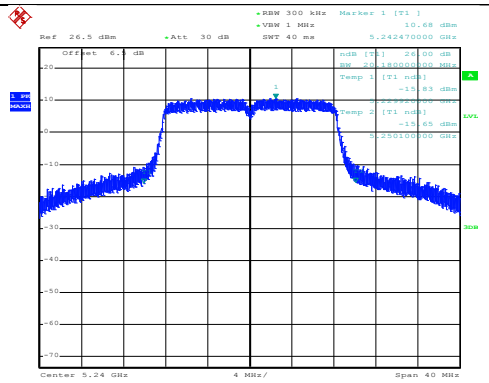
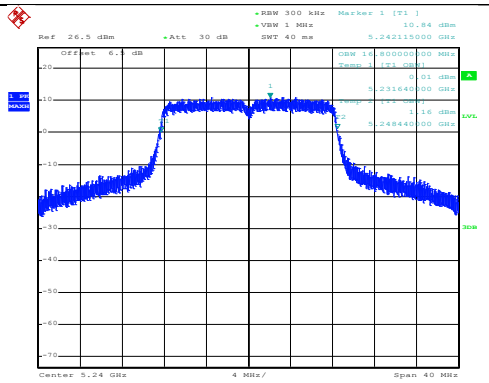
Test Channel	26dB Emission Bandwidth (MHz)				Limit	Result
	802.11a	802.11n20	802.11n40	802.11ac		
Lowest	20.82	19.97	38.82	/	N/A	N/A
Middle	23.69	19.89	/	80.48		
Highest	19.41	20.41	40.03	/		
Test Channel	99% Occupy Bandwidth (MHz)				Limit	Result
	802.11a	802.11n20	802.11n40	802.11ac		
Lowest	16.89	18.02	36.19	/	N/A	N/A
Middle	17.39	18.35	/	75.89		
Highest	20.50	20.32	36.38	/		
Test Channel	6dB Emission Bandwidth (MHz)				Limit	Result
	802.11a	802.11n20	802.11n40	802.11ac		
Lowest	16.48	17.52	35.36	---	>500kHz	Pass
Middle	16.48	17.76	---	74.56		
Highest	16.48	17.52	35.52	---		

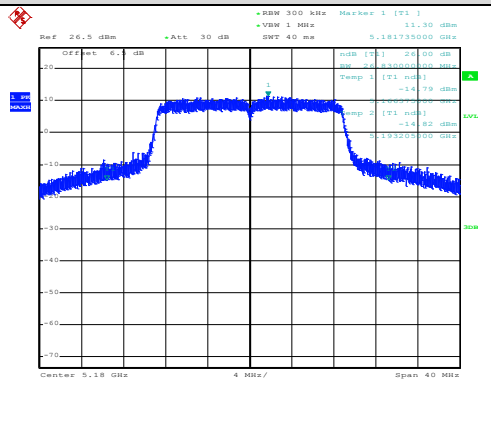
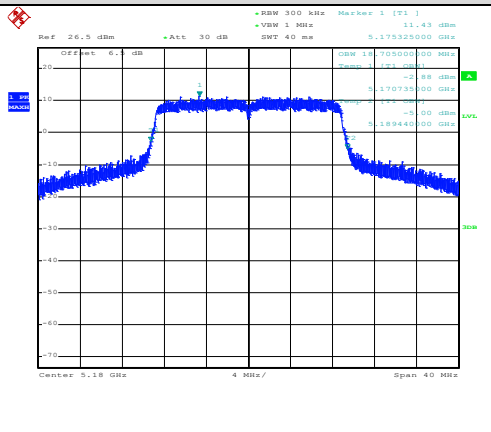
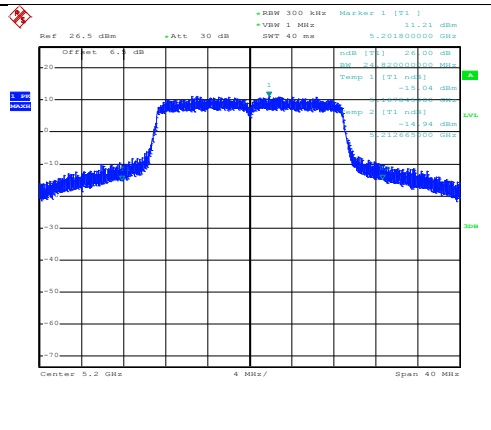
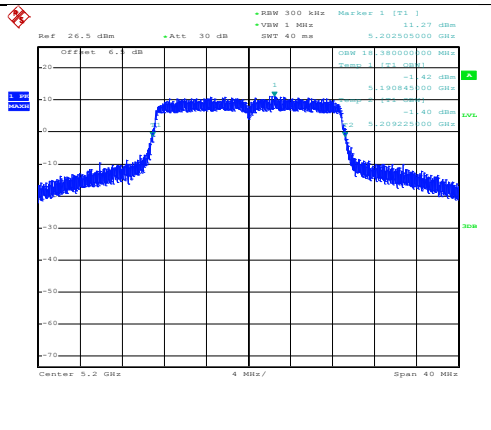
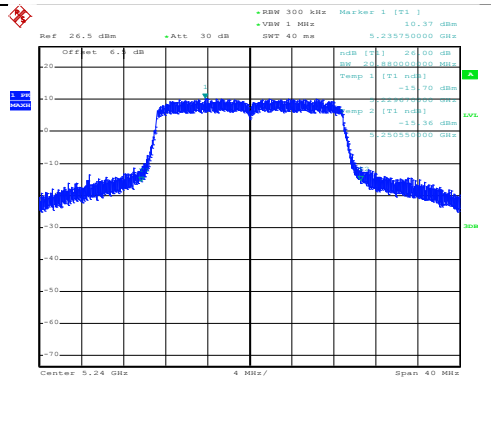
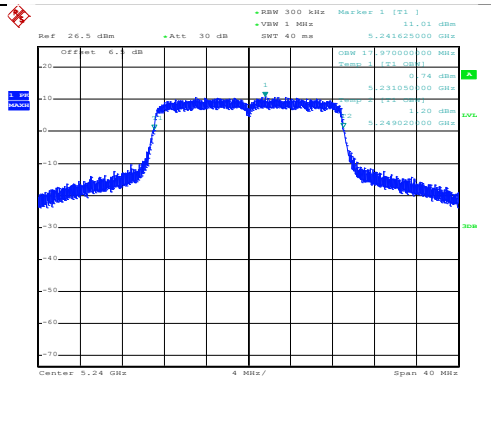
Band 4:TX1

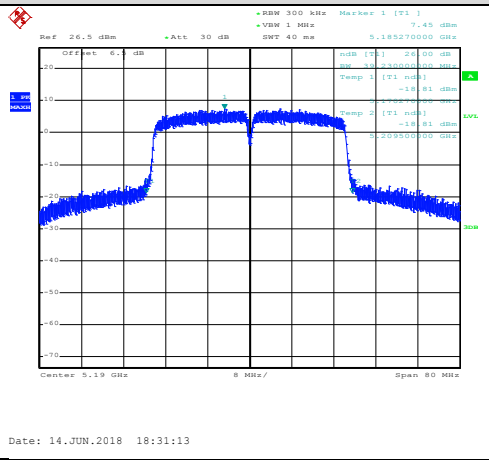
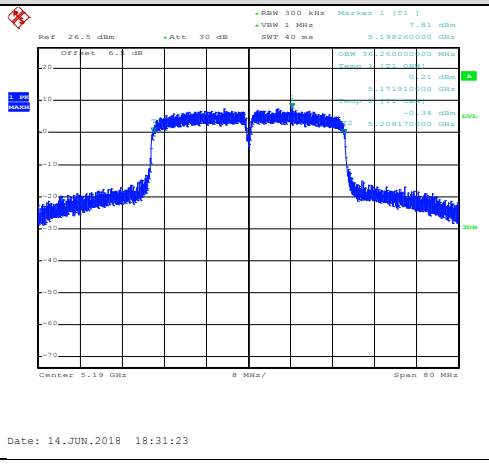
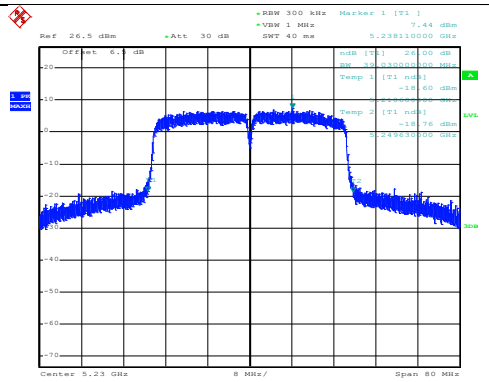
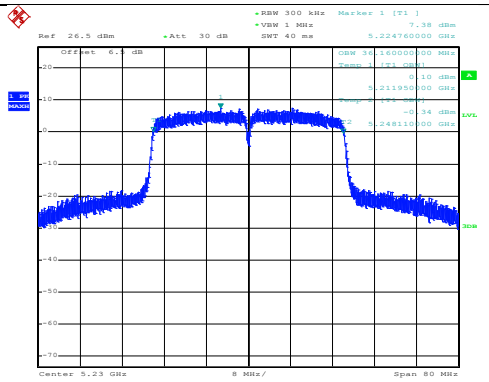
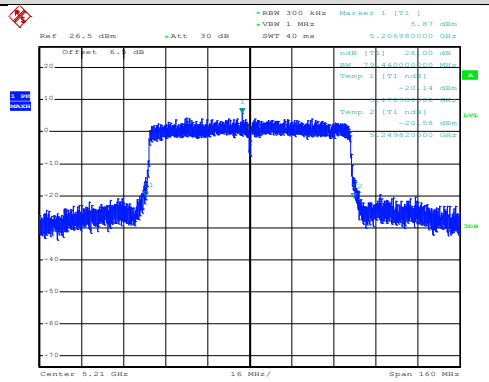
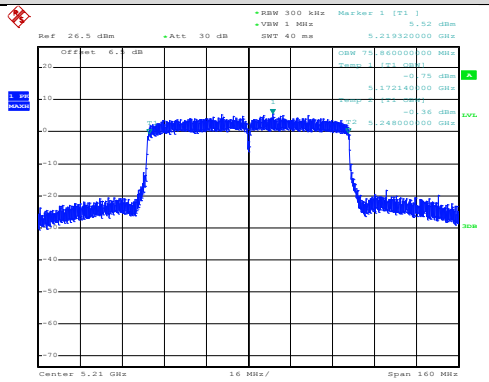
Test Channel	26dB Emission Bandwidth (MHz)				Limit	Result
	802.11a	802.11n20	802.11n40	802.11ac		
Lowest	19.45	19.95	39.08	/	N/A	N/A
Middle	19.36	19.96	/	80.34		
Highest	21.45	21.31	38.93	/		
Test Channel	99% Occupy Bandwidth (MHz)				Limit	Result
	802.11a	802.11n20	802.11n40	802.11ac		
Lowest	17.88	17.90	36.13	/	N/A	N/A
Middle	17.93	17.96	/	75.29		
Highest	18.50	18.56	36.23	/		
Test Channel	6dB Emission Bandwidth (MHz)				Limit	Result
	802.11a	802.11n20	802.11n40	802.11ac		
Lowest	16.48	17.76	35.36	---	>500kHz	Pass
Middle	16.56	17.76	---	75.84		
Highest	16.48	17.76	35.52	---		

Note: Only 80 MHz Bandwidth support by 802.11ac mode.

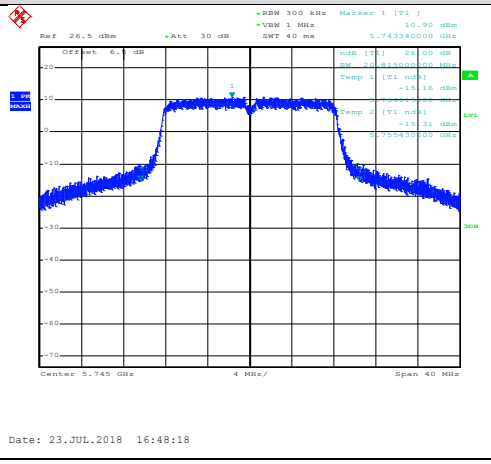
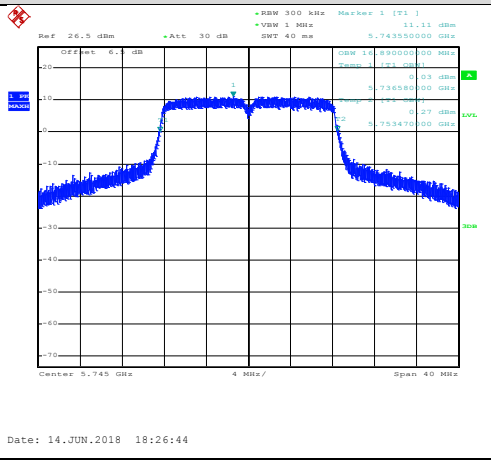
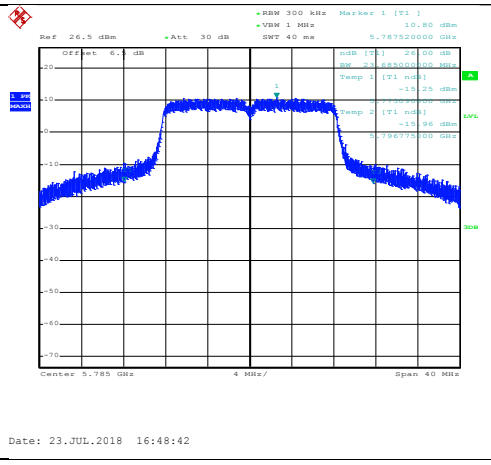
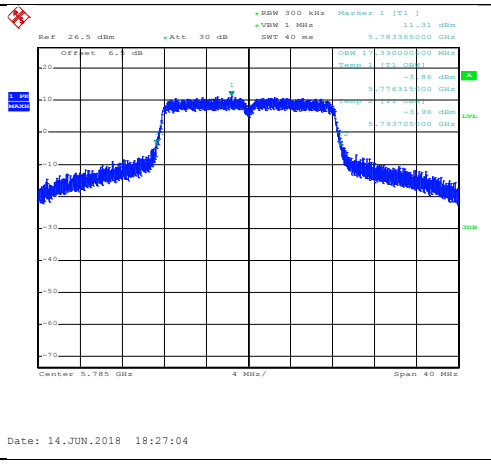
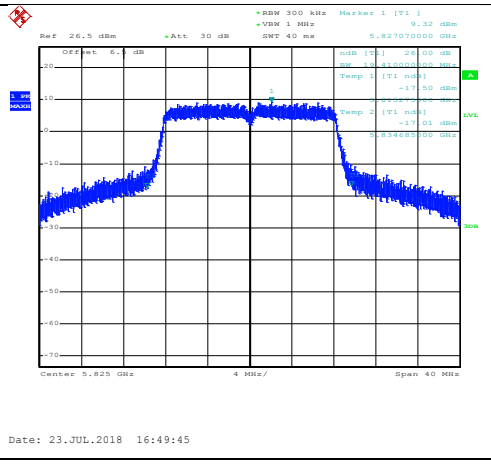
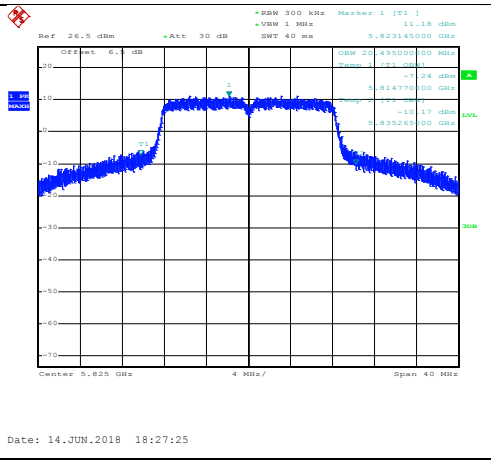
Test plot as follows:
Band 1:TX0

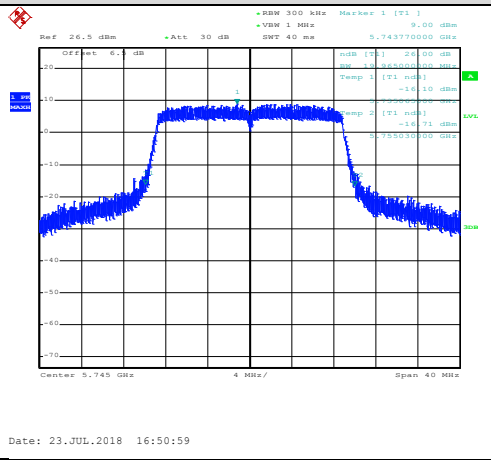
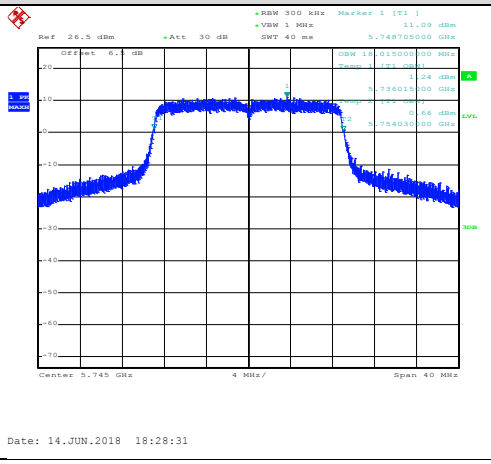
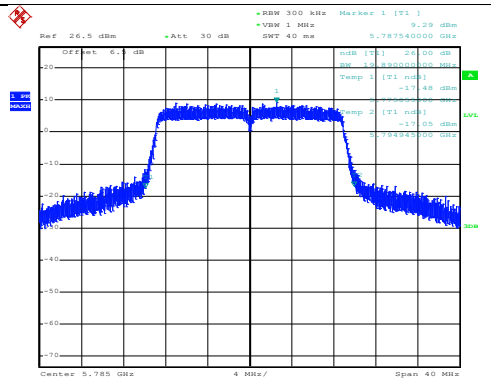
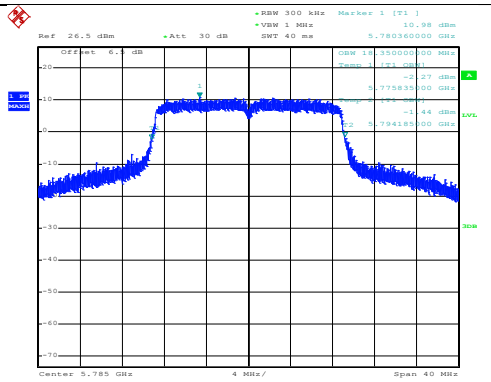
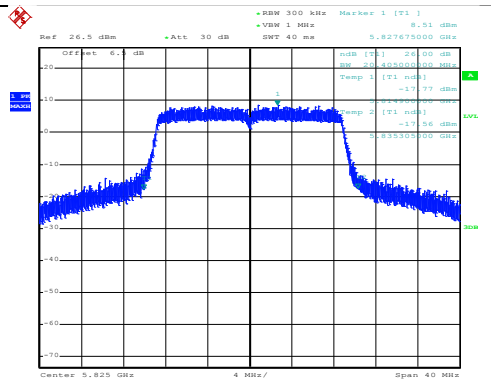
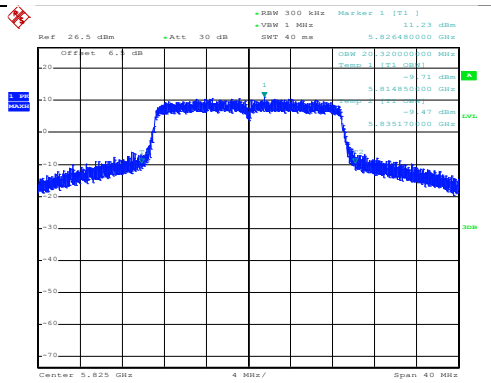
802.11a	
26 dB EBW	99% OBW
	
Date: 14.JUN.2018 18:25:20	Date: 14.JUN.2018 18:25:41
Lowest channel	
	
Date: 14.JUN.2018 18:24:55	Date: 14.JUN.2018 18:24:44
Middle channel	
	
Date: 14.JUN.2018 18:26:10	Date: 14.JUN.2018 18:25:59
Highest channel	

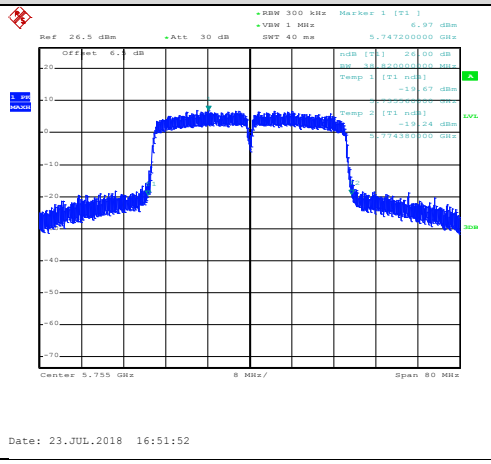
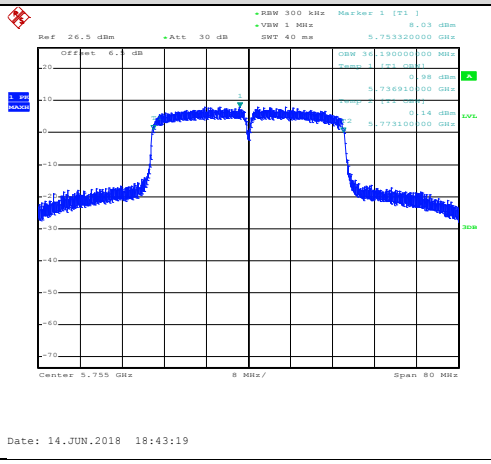
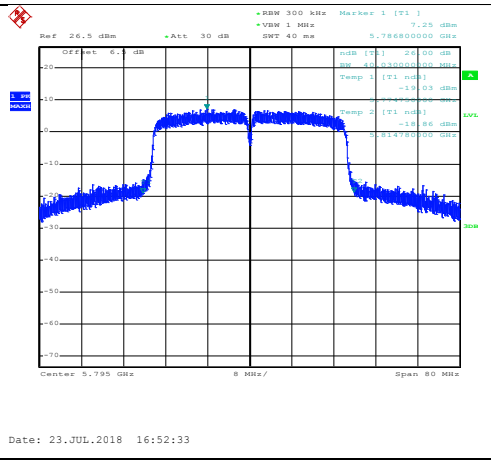
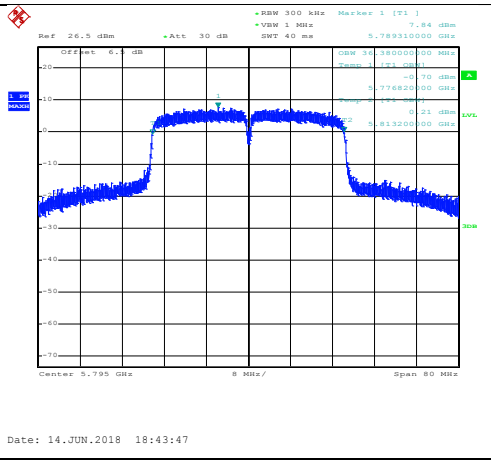
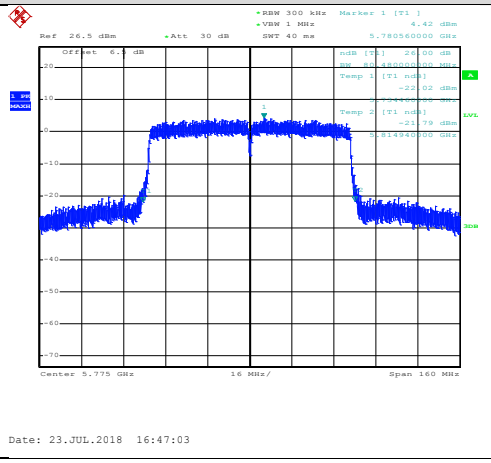
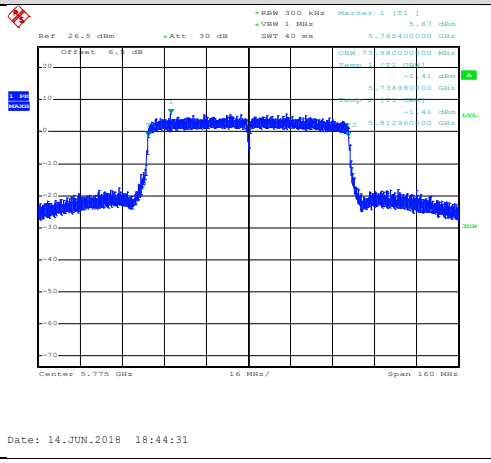
802.11n(HT20)	
26 dB EBW	99% OBW
	
Date: 14.JUN.2018 18:30:36	Date: 14.JUN.2018 18:30:23
Lowest channel	
	
Date: 14.JUN.2018 18:29:49	Date: 14.JUN.2018 18:30:01
Middle channel	
	
Date: 14.JUN.2018 18:29:29	Date: 14.JUN.2018 18:29:16
Highest channel	

802.11n(HT40)	
26 dB EBW	99% OBW
	
Date: 14.JUN.2018 18:31:13	Date: 14.JUN.2018 18:31:23
Lowest channel	
	
Date: 14.JUN.2018 18:31:55	Date: 14.JUN.2018 18:31:45
Highest channel	
802.11ac(HT80)	
26 dB EBW	99% OBW
	
Date: 23.JUL.2018 16:45:03	Date: 23.JUL.2018 16:45:20
Middleest channel	

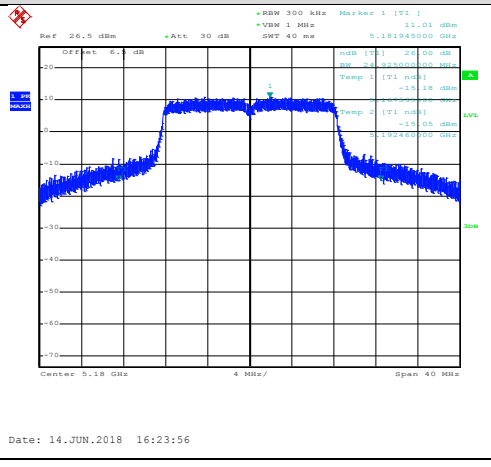
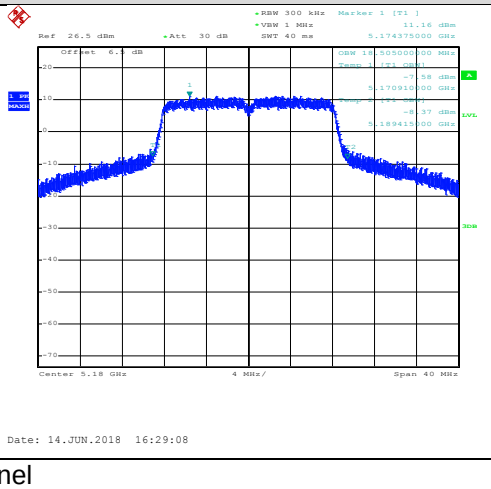
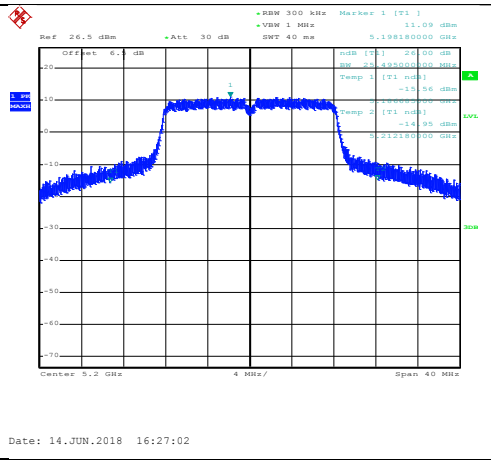
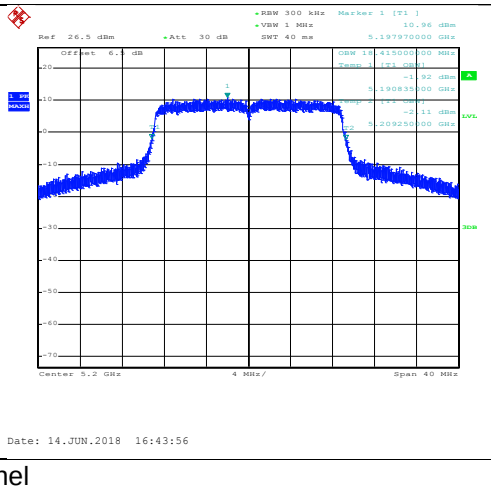
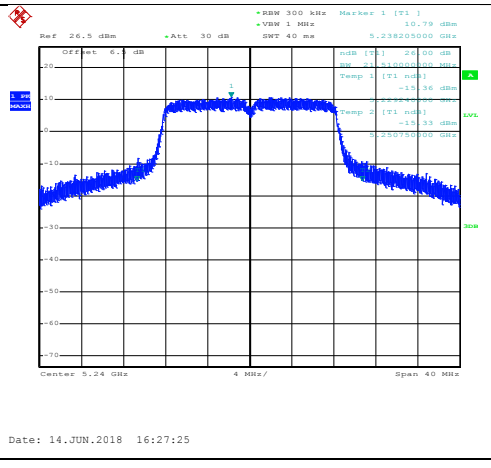
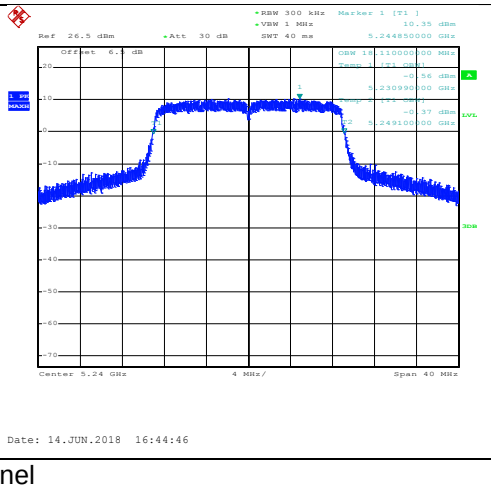
Band 4:TX0

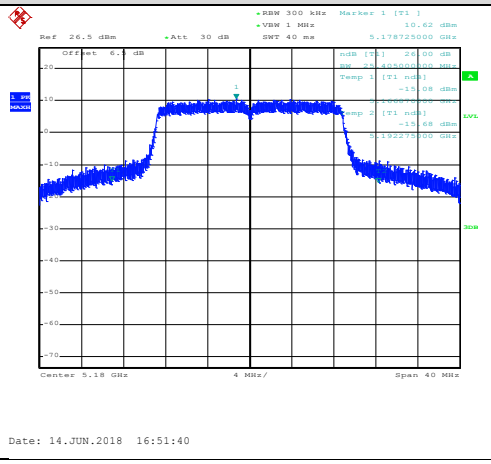
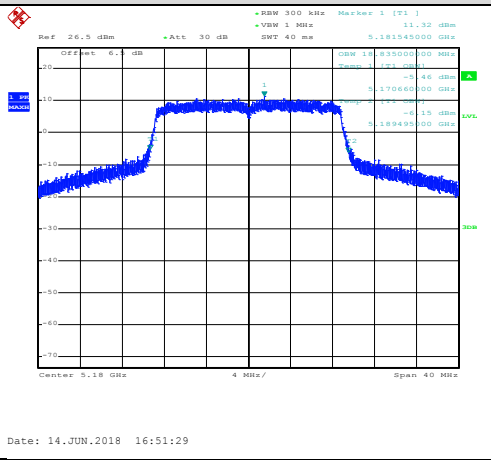
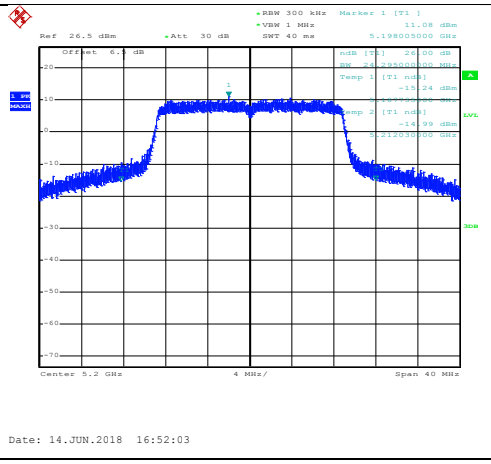
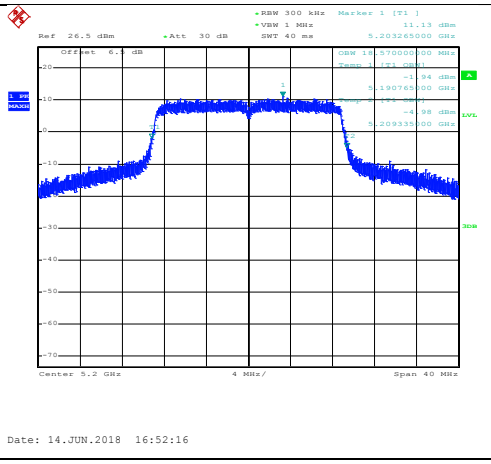
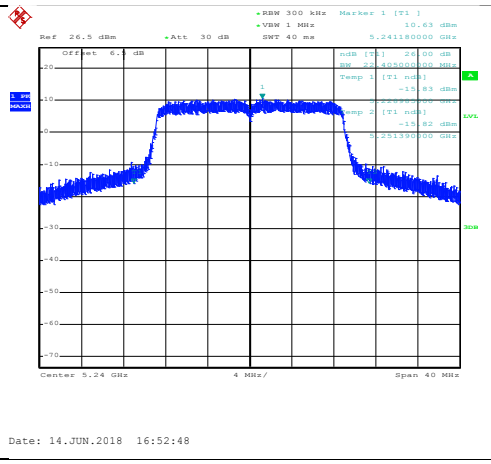
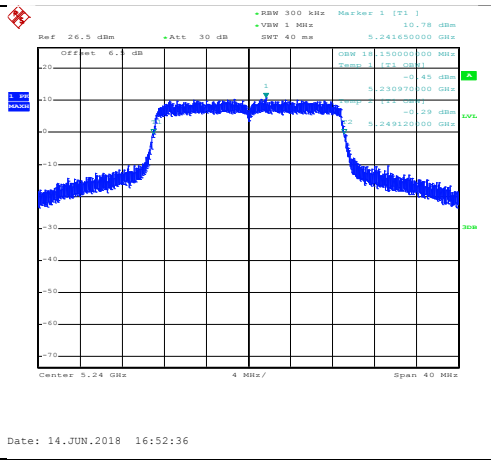
802.11a	
26 dB EBW	99% OBW
	
Date: 23.JUL.2018 16:48:18	Date: 14.JUN.2018 18:26:44
Lowest channel	
	
Date: 23.JUL.2018 16:48:42	Date: 14.JUN.2018 18:27:04
Middle channel	
	
Date: 23.JUL.2018 16:49:45	Date: 14.JUN.2018 18:27:25
Highest channel	

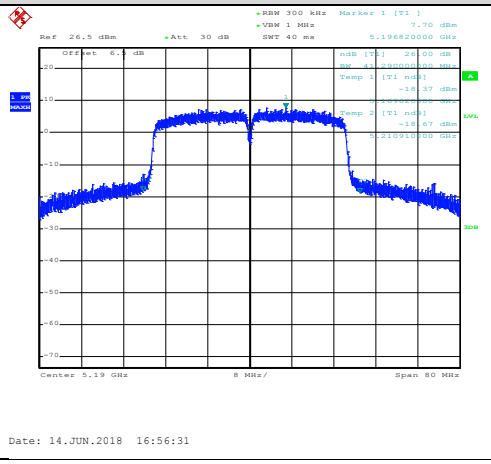
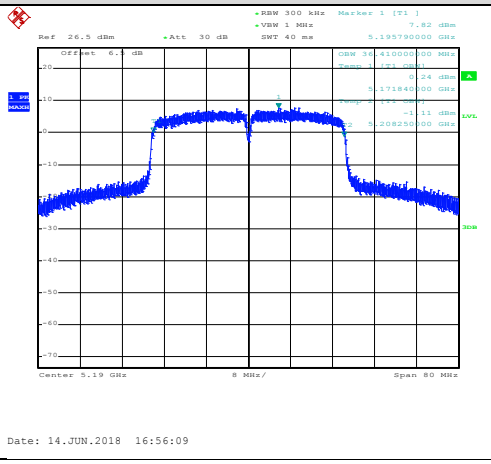
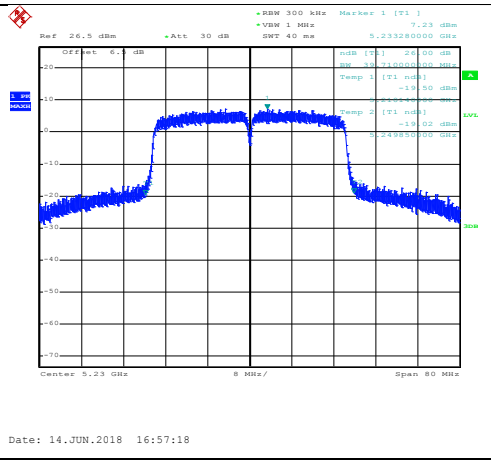
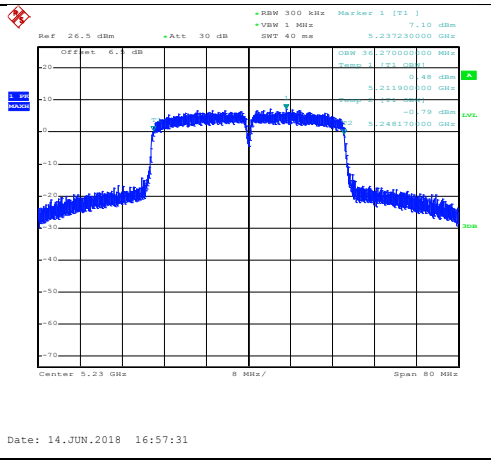
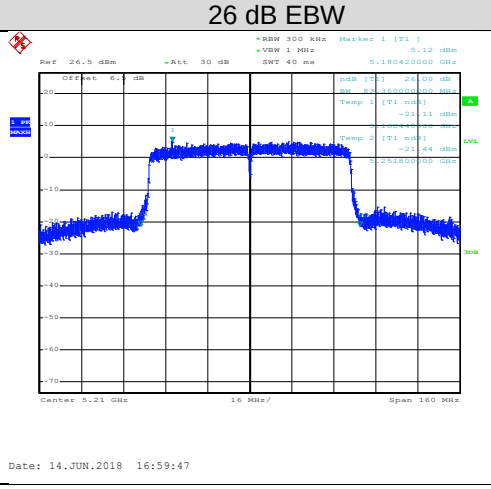
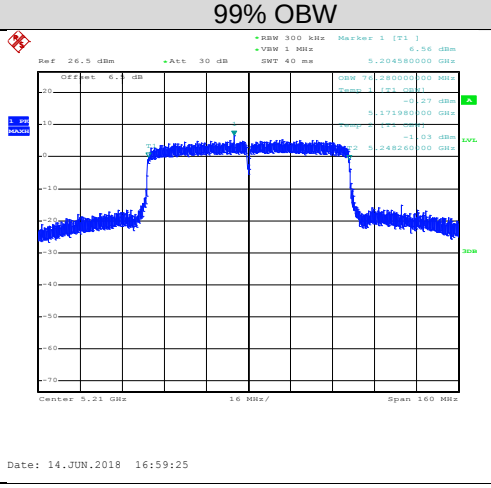
802.11n(HT20)	
26 dB EBW	99% OBW
	
Date: 23.JUL.2018 16:50:59	Date: 14.JUN.2018 18:28:31
Lowest channel	
	
Date: 23.JUL.2018 16:50:35	Date: 14.JUN.2018 18:28:10
Middle channel	
	
Date: 23.JUL.2018 16:50:11	Date: 14.JUN.2018 18:27:48
Highest channel	

802.11n(HT40)	
26 dB EBW	99% OBW
	
Date: 23.JUL.2018 16:51:52	Date: 14.JUN.2018 18:43:19
Lowest channel	
	
Date: 23.JUL.2018 16:52:33	Date: 14.JUN.2018 18:43:47
Highest channel	
802.11ac(HT80)	
26 dB EBW	99% OBW
	
Date: 23.JUL.2018 16:47:03	Date: 14.JUN.2018 18:44:31
Middle channel	

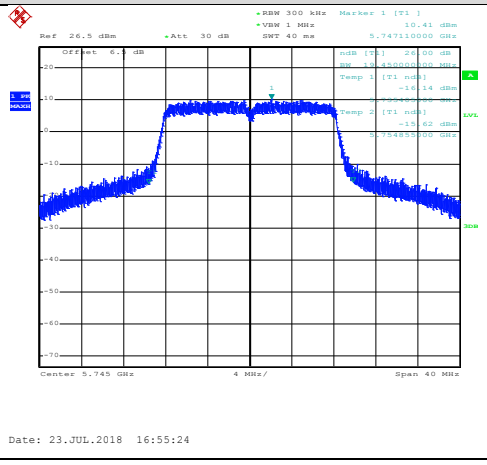
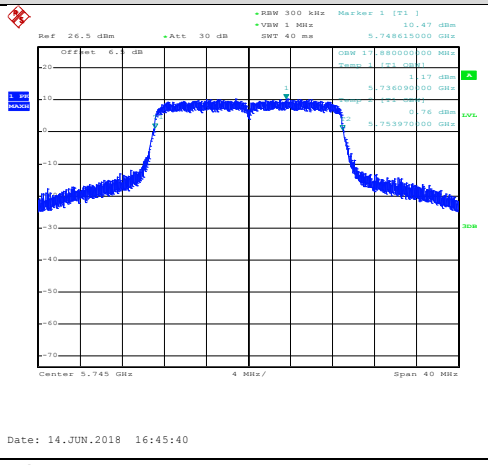
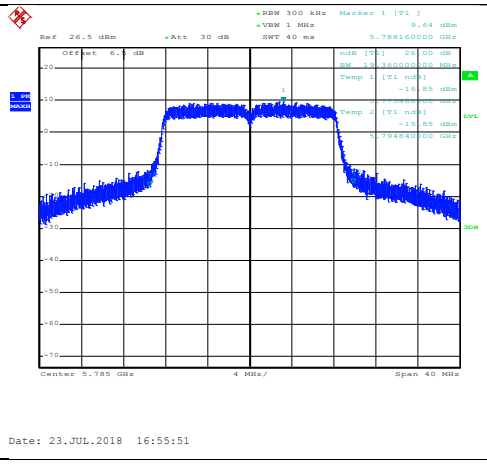
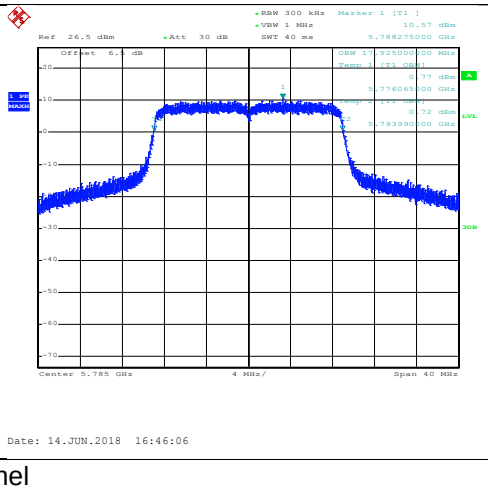
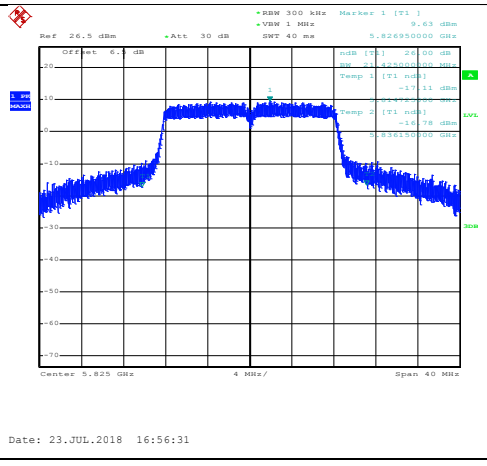
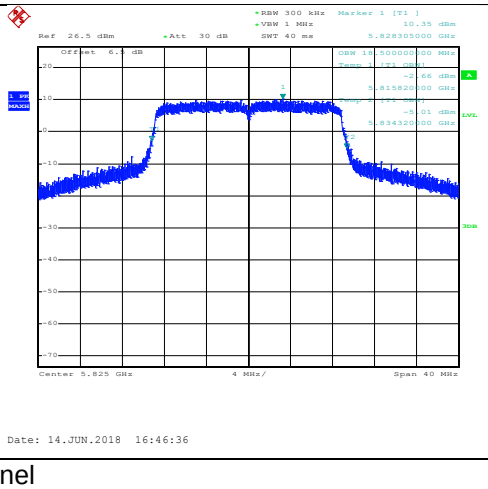
Band 1:TX1

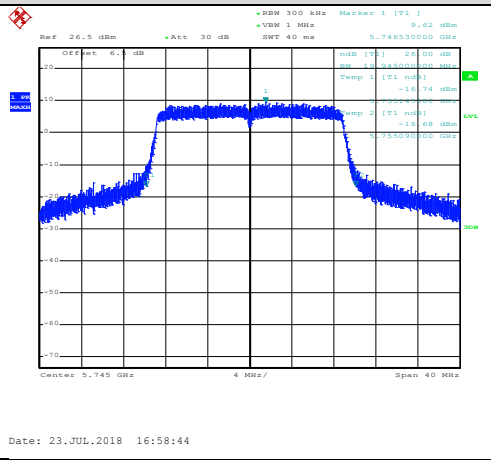
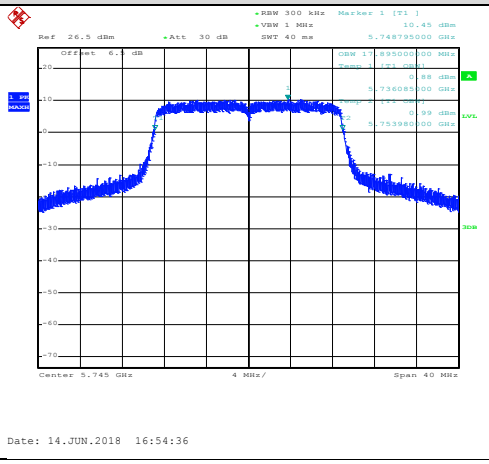
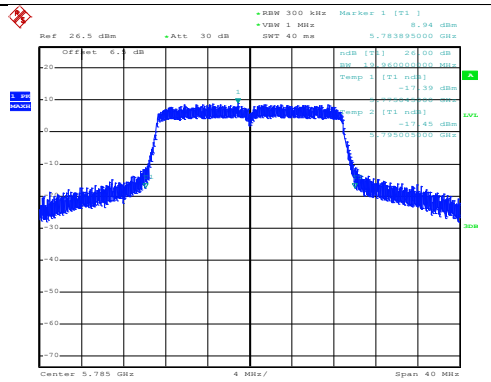
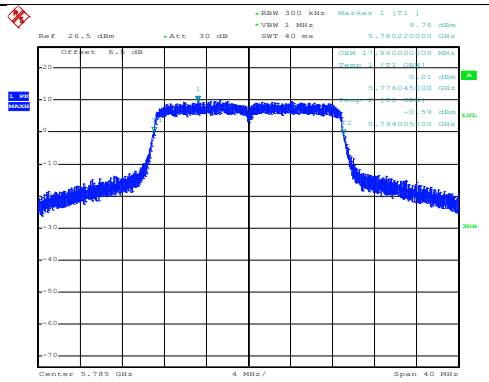
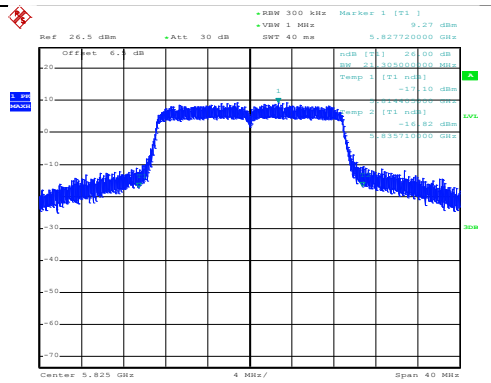
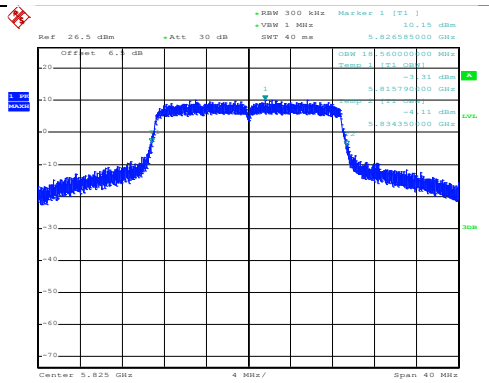
802.11a	
26 dB EBW	99% OBW
	
Date: 14.JUN.2018 16:23:56	Date: 14.JUN.2018 16:29:08
Lowest channel	
	
Date: 14.JUN.2018 16:27:02	Date: 14.JUN.2018 16:43:56
Middle channel	
	
Date: 14.JUN.2018 16:27:25	Date: 14.JUN.2018 16:44:46
Highest channel	

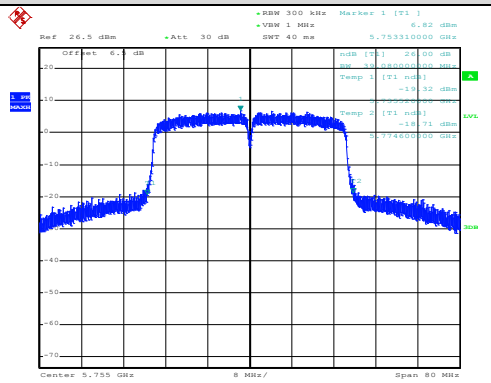
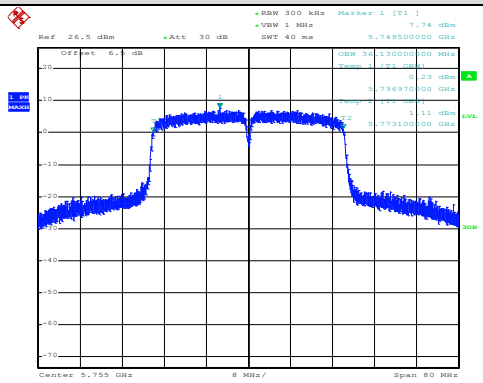
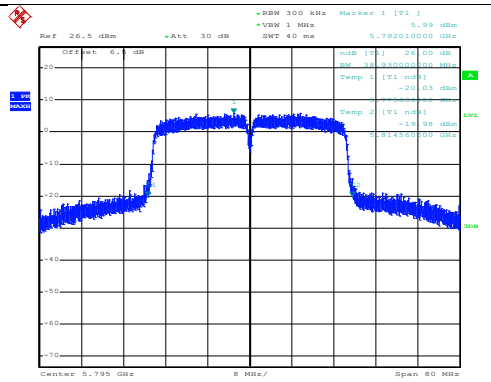
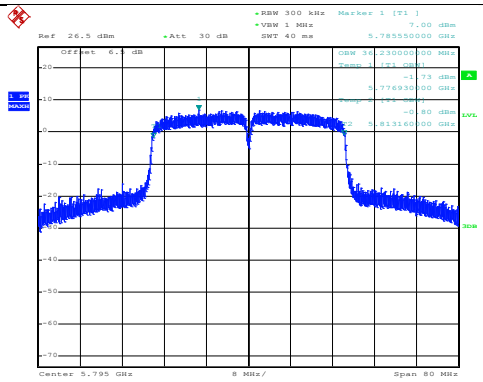
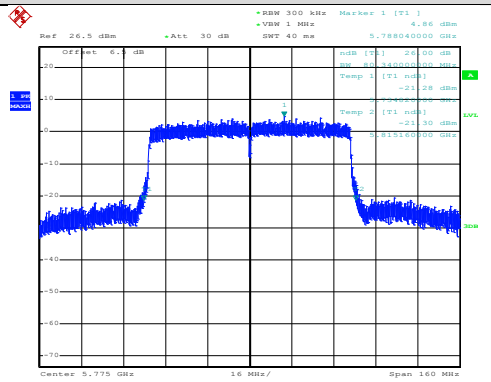
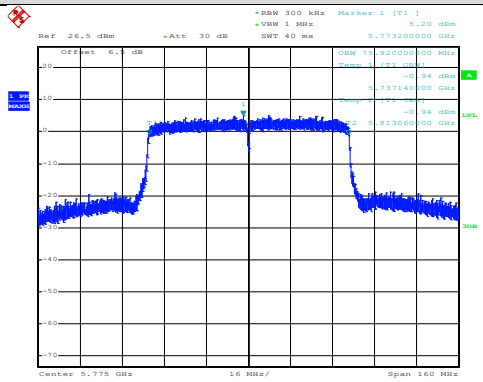
802.11n(HT20)	
26 dB EBW	99% OBW
	
Date: 14.JUN.2018 16:51:40	Date: 14.JUN.2018 16:51:29
Lowest channel	
	
Date: 14.JUN.2018 16:52:03	Date: 14.JUN.2018 16:52:16
Middle channel	
	
Date: 14.JUN.2018 16:52:48	Date: 14.JUN.2018 16:52:36
Highest channel	

802.11n(HT40)	
26 dB EBW	99% OBW
	
Date: 14.JUN.2018 16:56:31	Date: 14.JUN.2018 16:56:09
Lowest channel	
	
Date: 14.JUN.2018 16:57:18	Date: 14.JUN.2018 16:57:31
Highest channel	
802.11ac(HT80)	
26 dB EBW	99% OBW
	
Date: 14.JUN.2018 16:59:47	Date: 14.JUN.2018 16:59:25
Middle channel	

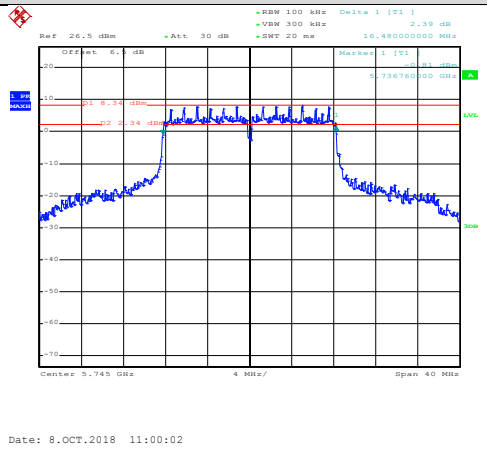
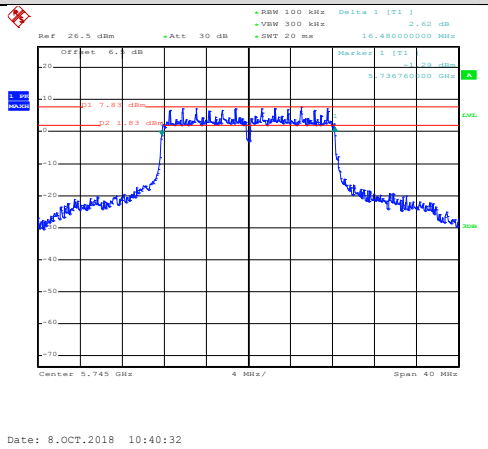
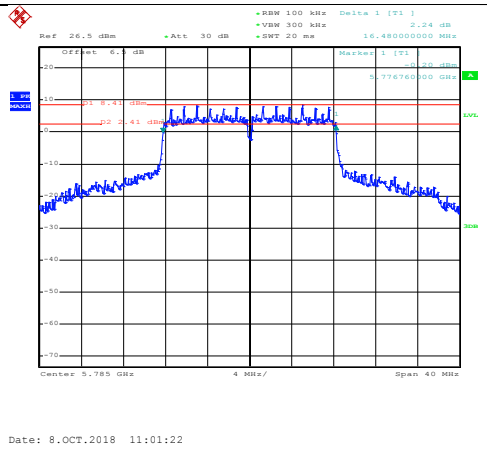
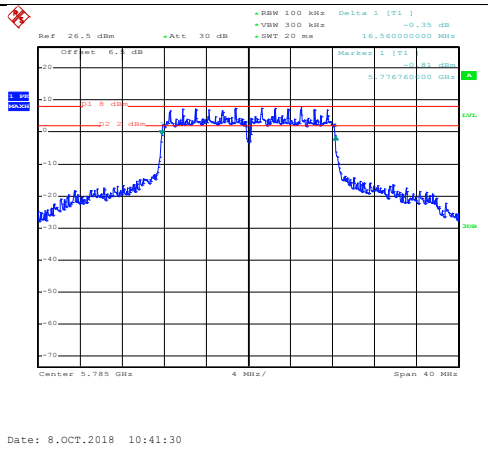
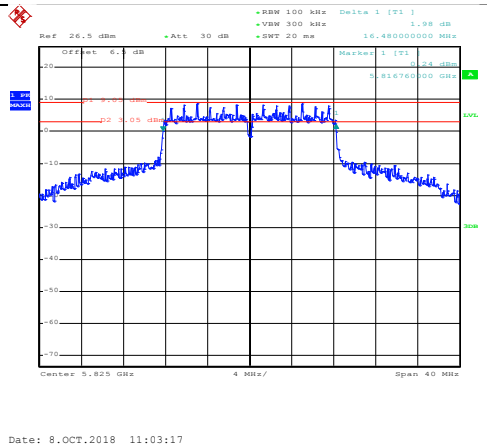
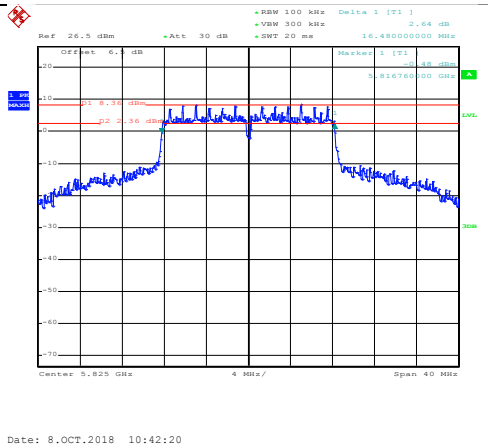
Band 4:TX1

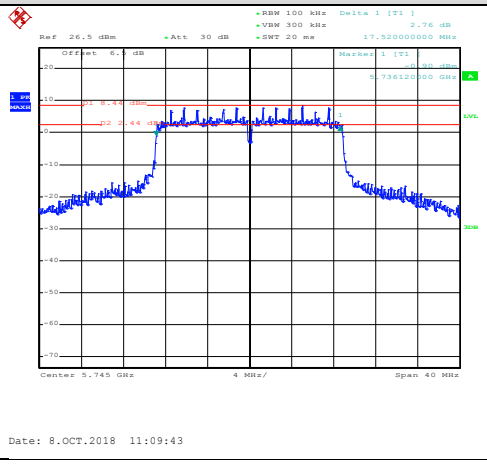
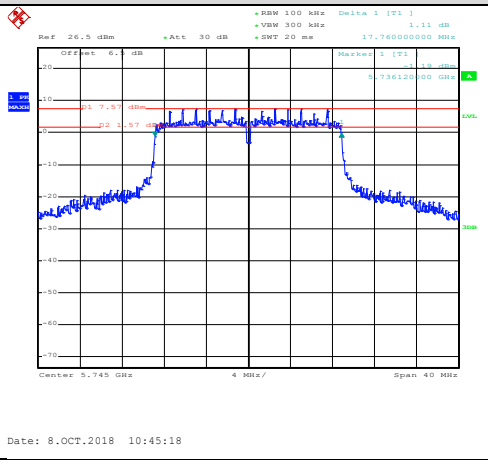
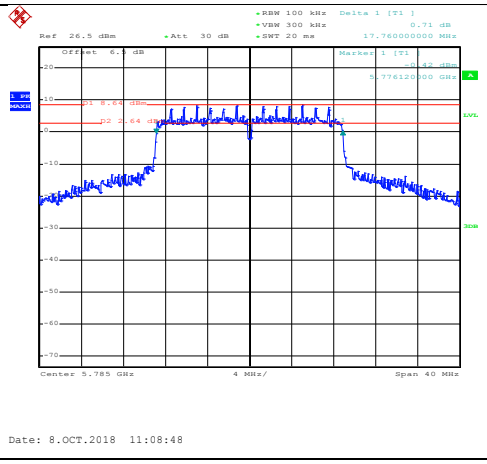
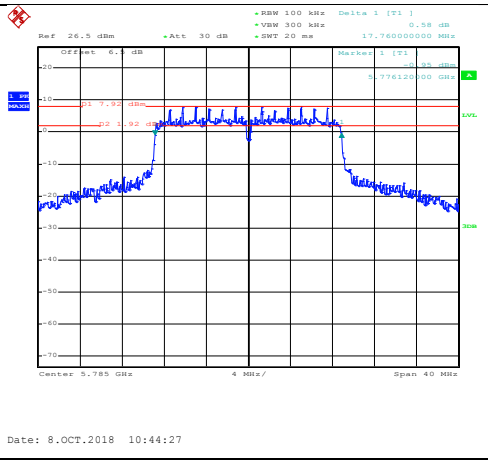
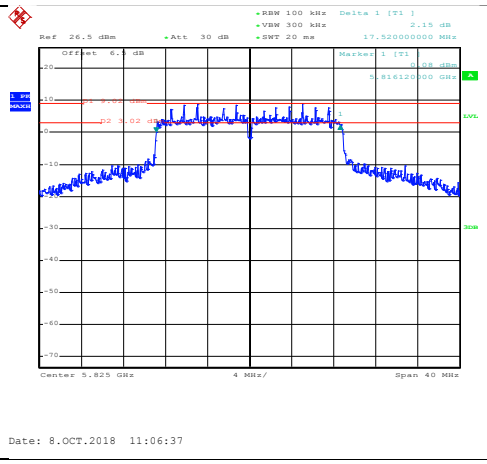
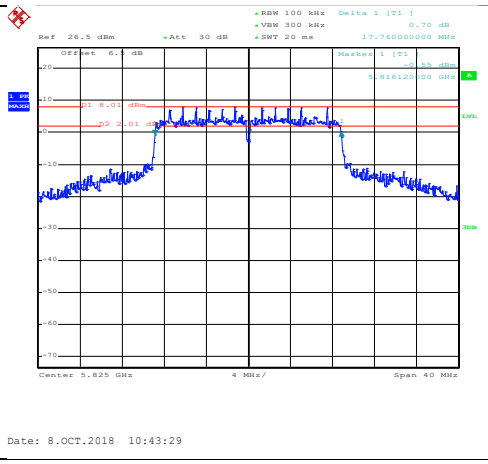
802.11a	
26 dB EBW	99% OBW
	
Date: 23.JUL.2018 16:55:24	Date: 14.JUN.2018 16:45:40
Lowest channel	
	
Date: 23.JUL.2018 16:55:51	Date: 14.JUN.2018 16:46:06
Middle channel	
	
Date: 23.JUL.2018 16:56:31	Date: 14.JUN.2018 16:46:36
Highest channel	

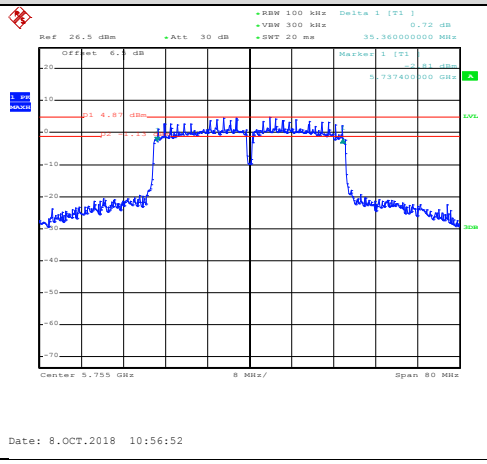
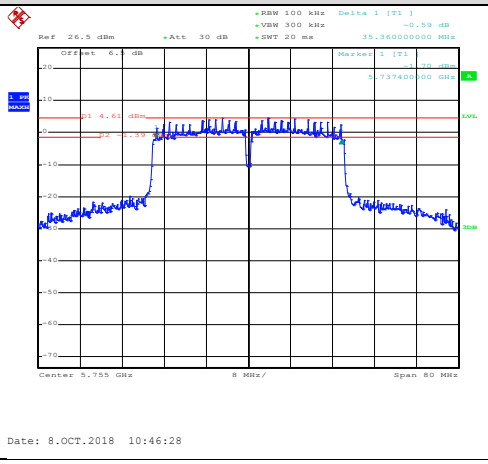
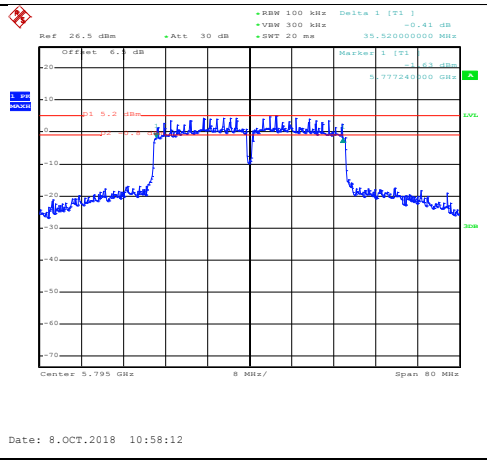
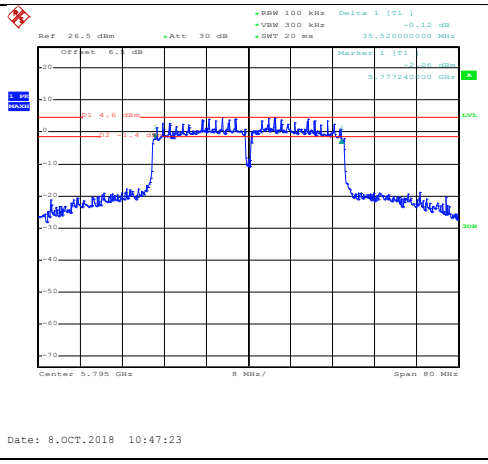
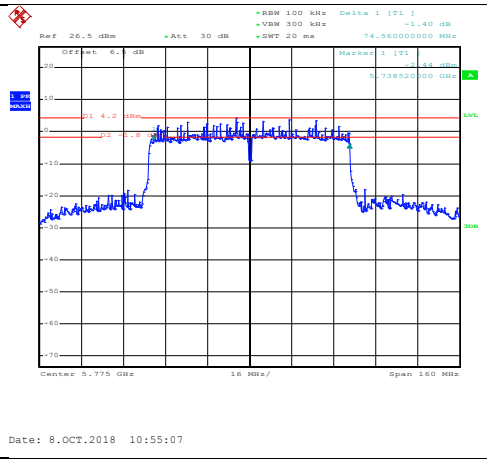
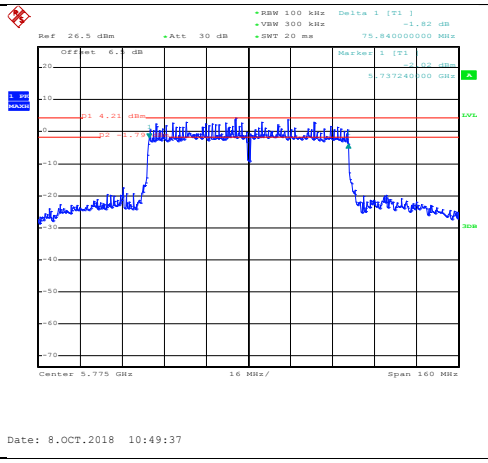
802.11n(HT20)	
26 dB EBW	99% OBW
	
Date: 23.JUL.2018 16:58:44	Date: 14.JUN.2018 16:54:36
Lowest channel	
	
Date: 23.JUL.2018 16:57:25	Date: 14.JUN.2018 16:54:54
Middle channel	
	
Date: 23.JUL.2018 16:59:07	Date: 14.JUN.2018 16:55:14
Highest channel	

802.11n(HT40)	
26 dB EBW	99% OBW
	
Date: 23.JUL.2018 16:53:51	Date: 14.JUN.2018 16:58:12
Lowest channel	
	
Date: 23.JUL.2018 16:53:20	Date: 14.JUN.2018 16:58:37
Highest channel	
802.11ac(HT80)	
26 dB EBW	99% OBW
	
Date: 23.JUL.2018 16:54:26	Date: 14.JUN.2018 17:00:28
Middle channel	

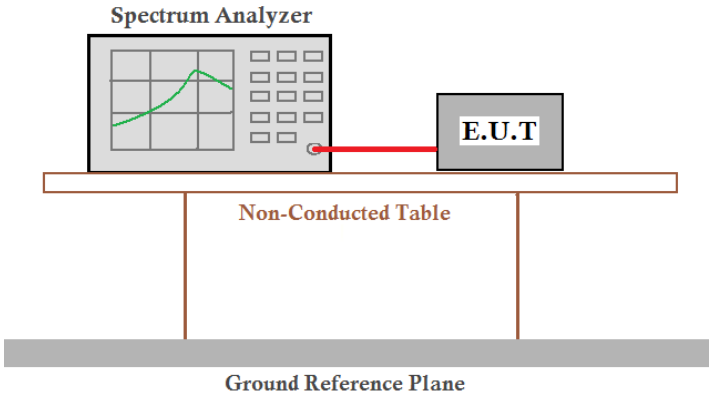
Band 4: 6 dB EBW

802.11a	
TX 0	TX1
6 dB EBW	6 dB EBW
	
Date: 8.OCT.2018 11:00:02	Date: 8.OCT.2018 10:40:32
Lowest channel	
	
Date: 8.OCT.2018 11:01:22	Date: 8.OCT.2018 10:41:30
Middle channel	
	
Date: 8.OCT.2018 11:03:17	Date: 8.OCT.2018 10:42:20
Highest channel	

802.11n-HT20	
TX 0	TX1
6 dB EBW	6 dB EBW
	
Lowest channel	
	
Middle channel	
	
Highest channel	

802.11n-HT40	
TX 0	TX1
6 dB EBW	6 dB EBW
	
Lowest channel	
	
Highest channel	
802.11ac	
TX 0	TX 1
	
Middle channel	

6.5 Power Spectral Density

Test Requirement:	FCC Part15 E Section 15.407 (a) (1) (ii) & (a)(3)
Test Method:	ANSI C63.10:2013, KDB 789033
Limit:	**Band 1:** 17 dBm/MHz (The maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.); **Band 4:** 30dBm/500kHz (The maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.)
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:3dBi ANT

Band 1

Mode	Test Channel	Ant. Port	PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Result
802.11a	Lowest	TX0	8.86	11.72	17	Pass
		TX1	8.56			
	Middle	TX0	8.71	11.59	17	Pass
		TX1	8.44			
	Highest	TX0	8.21	11.18	17	Pass
		TX1	8.13			
802.11n20	Lowest	TX0	8.36	11.24	17	Pass
		TX1	8.09			
	Middle	TX0	8.58	11.32	17	Pass
		TX1	8.02			
	Highest	TX0	7.71	10.73	17	Pass
		TX1	7.73			
802.11n40	Lowest	TX0	5.24	7.91	17	Pass
		TX1	4.54			
	Highest	TX0	5.19	7.74	17	Pass
		TX1	4.21			
802.11ac	Middle	TX0	2.96	5.56	17	Pass
		TX1	2.10			

Remark:

1. *Because transmit signals are correlated,* Directional gain = $G_{ANT} + 10\log(N_{ANT})$ dBi ,*So the Directional gain=3 + 10* $\log(2)$*=6 dBi*
2. *The directional Gain of antenna is not* greater *than 6 dBi, , so the limit of PSD is 17 dBm.*

Band 4

Mode	Test Channel	Ant. Port	PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Result
802.11a	Lowest	TX0	11.90	14.99	30	Pass
		TX1	12.05			
	Middle	TX0	11.46	14.80	30	Pass
		TX1	12.10			
	Highest	TX0	12.10	15.19	30	Pass
		TX1	12.25			
802.11n20	Lowest	TX0	12.13	15.49	30	Pass
		TX1	13.13			
	Middle	TX0	13.21	15.49	30	Pass
		TX1	11.61			
	Highest	TX0	12.08	15.52	30	Pass
		TX1	12.90			
802.11n40	Lowest	TX0	8.44	11.50	30	Pass
		TX1	8.53			
	Highest	TX0	8.23	11.36	30	Pass
		TX1	8.46			
802.11ac	Middle	TX0	5.84	9.21	30	Pass
		TX1	6.51			

Remark:

1. *Because transmit signals are correlated,* Directional gain = $G_{ANT} + 10\log(N_{ANT})$ dBi ,*So the Directional gain=3 + 10* $\log(2)$*=6 dBi*
2. *The directional Gain of antenna is not* greater *than 6 dBi, , so the limit of PSD is 30 dBm.*

Measurement Data:10dBi ANT

Band 1

Mode	Test Channel	Ant. Port	PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Result
802.11a	Lowest	TX0	7.47	9.89	10.00	Pass
		TX1	6.19			
	Middle	TX0	7.47	9.81	10.00	Pass
		TX1	6.01			
	Highest	TX0	7.29	9.64	10.00	Pass
		TX1	5.84			
802.11n20	Lowest	TX0	7.20	9.34	10.00	Pass
		TX1	5.25			
	Middle	TX0	7.75	9.91	10.00	Pass
		TX1	5.83			
	Highest	TX0	6.82	9.32	10.00	Pass
		TX1	5.73			
802.11n40	Lowest	TX0	0.65	3.00	10.00	Pass
		TX1	-0.80			
	Highest	TX0	0.35	4.94	10.00	Pass
		TX1	3.08			
802.11ac	Middle	TX0	-2.20	-0.11	10.00	Pass
		TX1	-4.28			

Remark:

1. *Because transmit signals are correlated,* Directional gain = $G_{ANT} + 10\log(N_{ANT})$ dBi ,*So the Directional gain=13+ 10* $\log(2)$*=13 dBi*
2. *The directional Gain of antenna is not* greater *than 6 dBi, , so the limit of PSD is 10 dBm*

Band 4

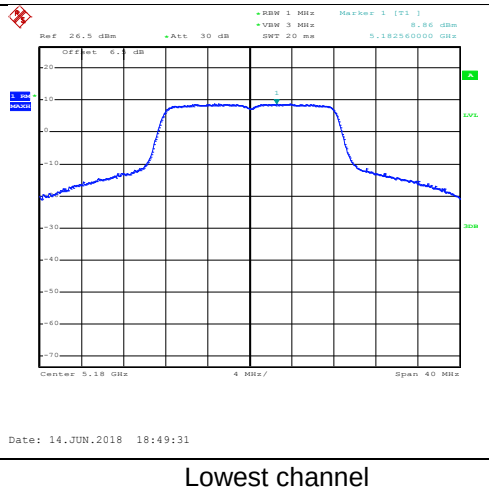
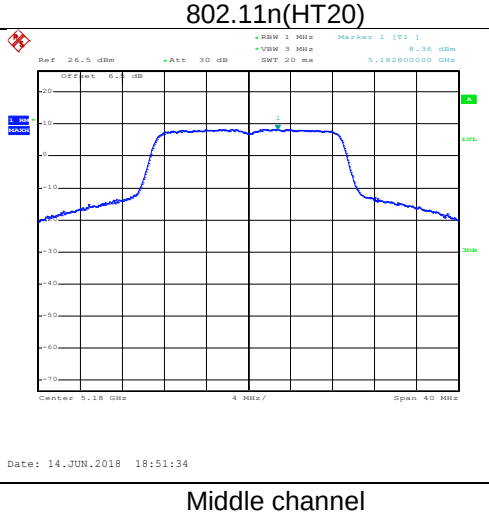
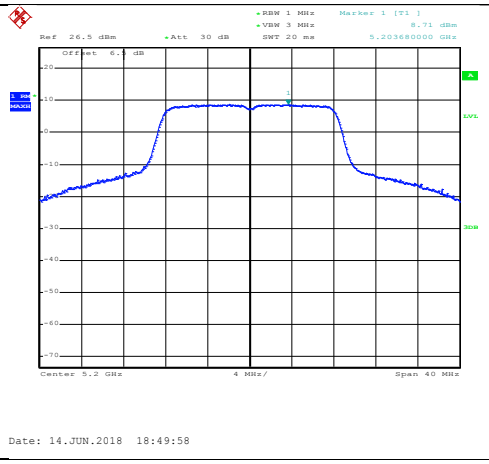
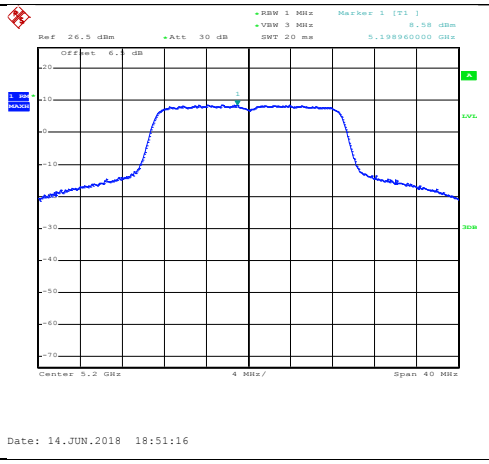
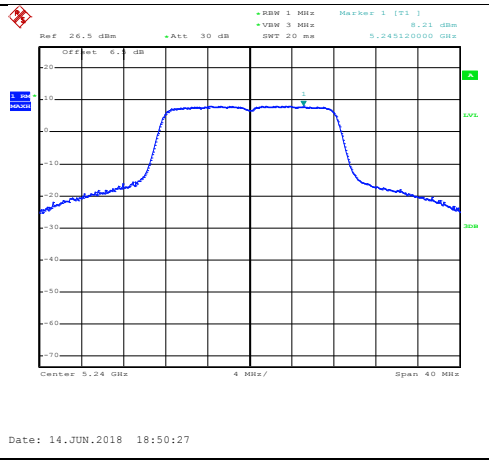
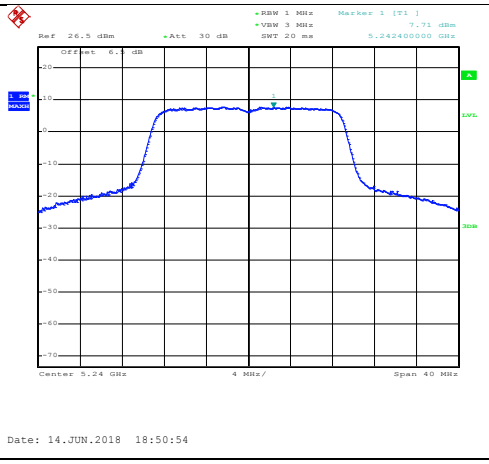
Mode	Test Channel	Ant. Port	PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Result
802.11a	Lowest	TX0	11.48	14.38	23.00	Pass
		TX1	11.25			
	Middle	TX0	11.30	14.18	23.00	Pass
		TX1	11.04			
	Highest	TX0	11.31	14.24	23.00	Pass
		TX1	11.14			
802.11n20	Lowest	TX0	12.11	14.88	23.00	Pass
		TX1	11.62			
	Middle	TX0	11.75	14.73	23.00	Pass
		TX1	11.68			
	Highest	TX0	11.93	14.55	23.00	Pass
		TX1	11.10			
802.11n40	Lowest	TX0	8.67	11.33	23.00	Pass
		TX1	7.93			
	Highest	TX0	8.52	10.98	23.00	Pass
		TX1	7.33			
802.11ac	Middle	TX0	6.17	8.32	23.00	Pass
		TX1	4.23			

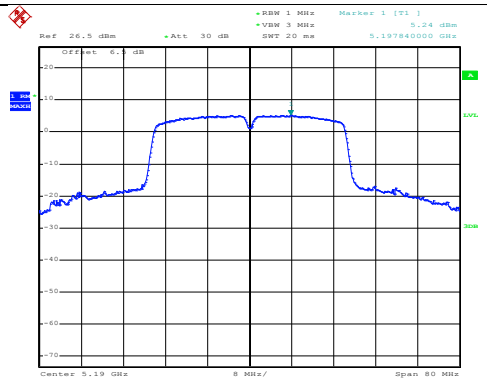
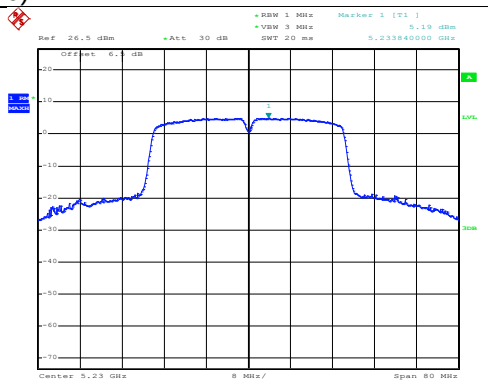
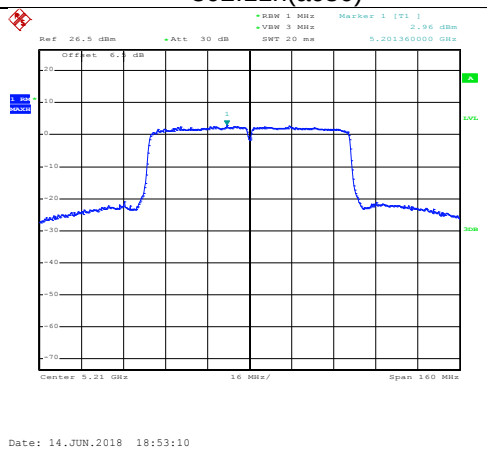
Remark:

3. *Because transmit signals are correlated,* Directional gain = $G_{ANT} + 10\log(N_{ANT})$ dBi ,*So the Directional gain=13+ 10* $\log(2)$*=13 dBi*
4. *The directional Gain of antenna is not* greater *than 6 dBi, , so the limit of PSD is 23 dBm*

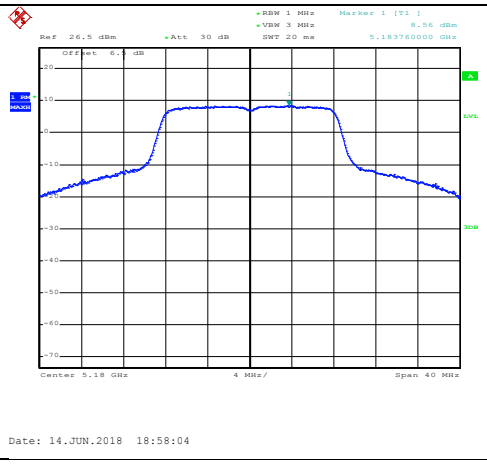
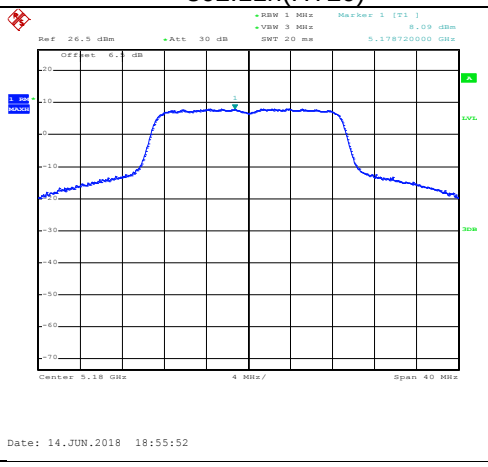
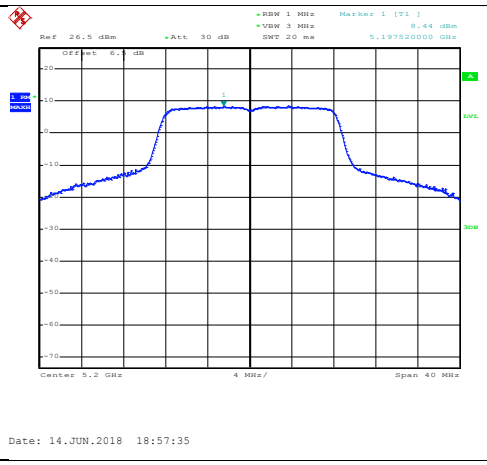
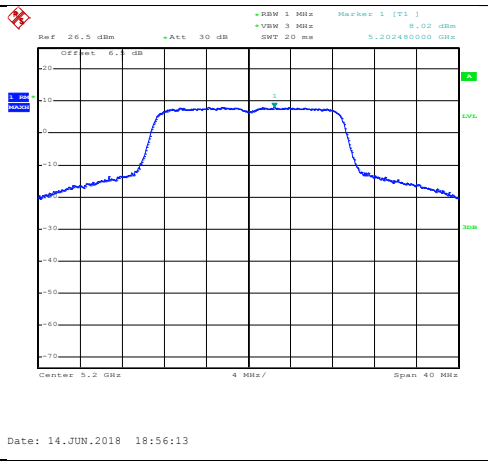
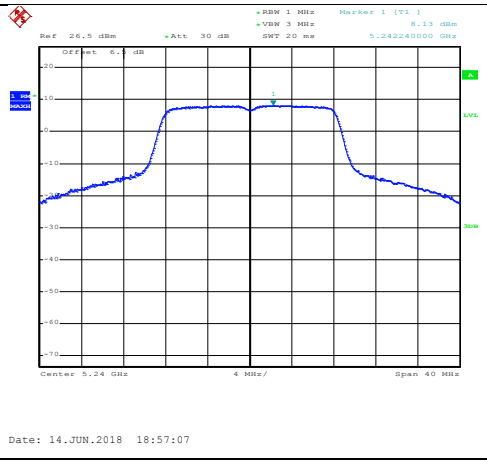
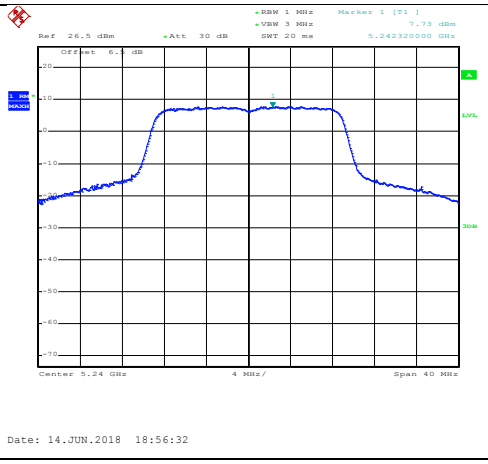
Test plot as follows:3dBi ANT

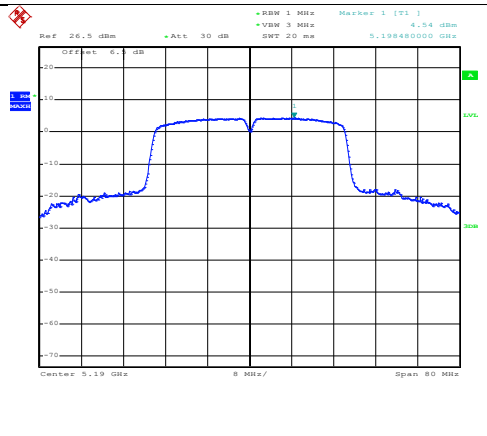
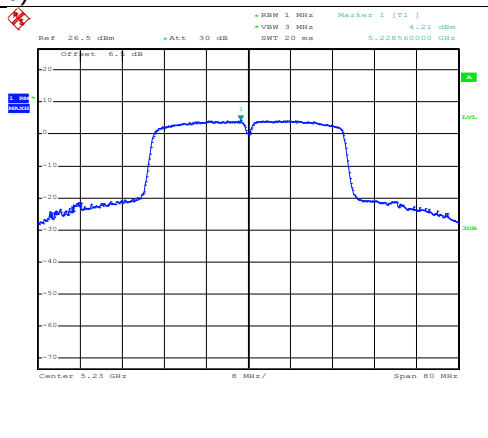
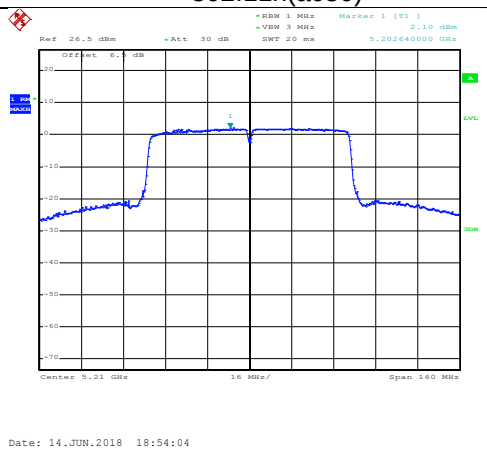
TX0

Band 1	
802.11a	802.11n(HT20)
	
Lowest channel	Middle channel
	
Middle channel	Middle channel
	
Highest channel	Highest channel

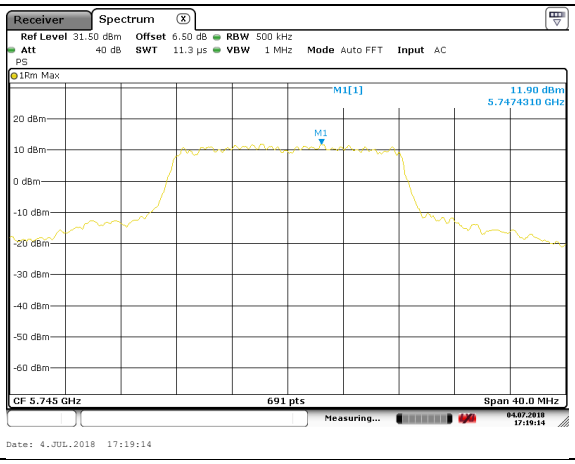
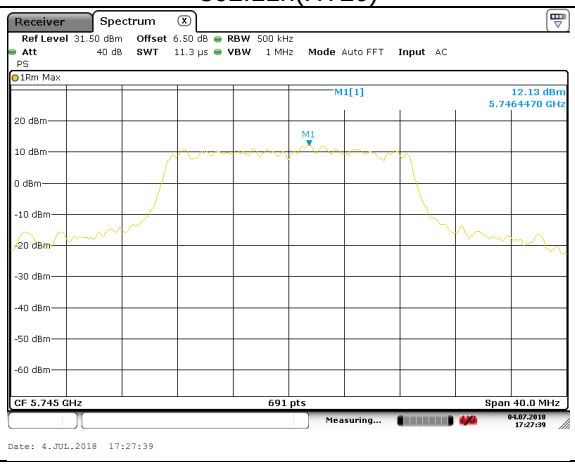
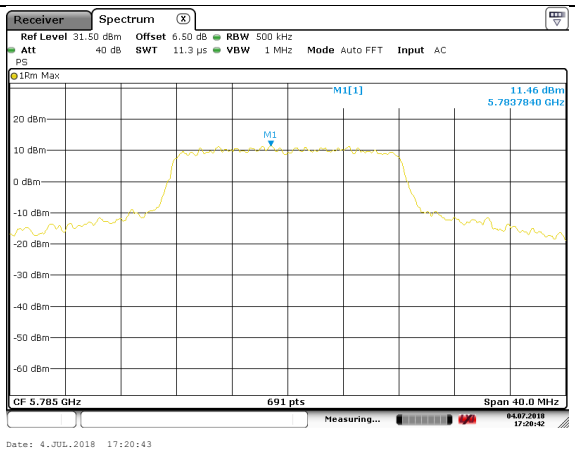
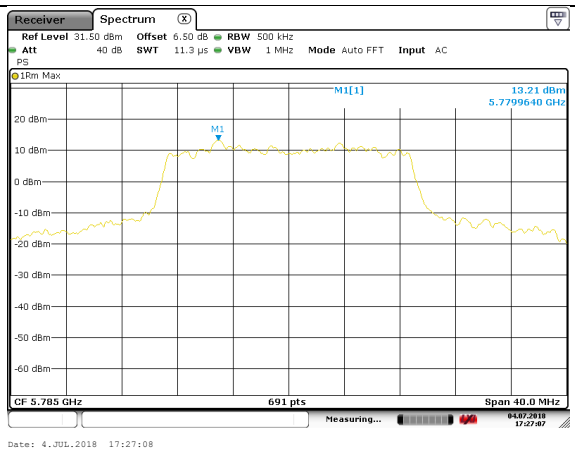
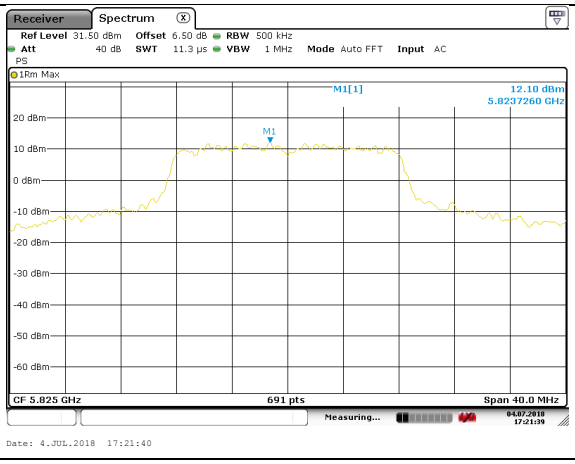
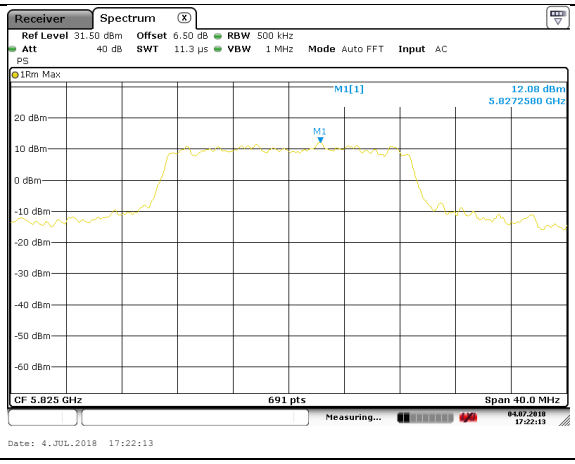
802.11n(HT40)	
	
Lowest channel	Highest channel
802.11n(ac80)	
	
Middle channel	

TX1

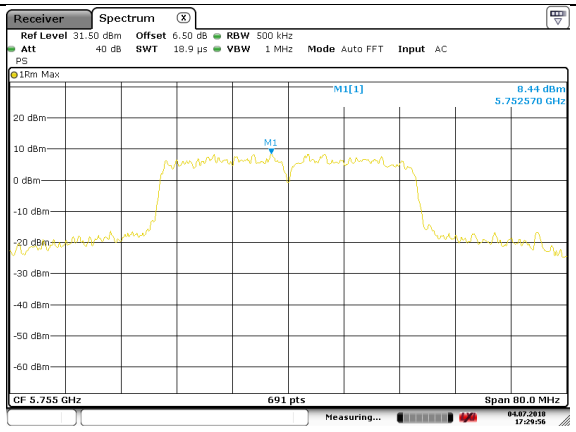
Band 1	
802.11a	802.11n(HT20)
	
Lowest channel	Middle channel
	
Middle channel	Middle channel
	
Highest channel	Highest channel

802.11n(HT40)	
	
Lowest channel	Highest channel
802.11n(ac80)	
	
Middle channel	

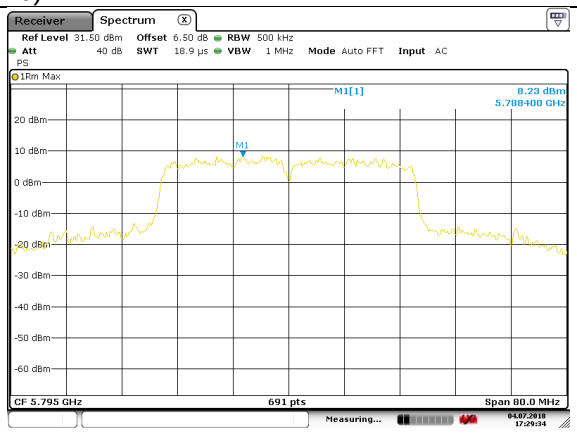
TX0

Band 4	
802.11a	802.11n(HT20)
	
Lowest channel	Middle channel
	
Middle channel	Middle channel
	
Highest channel	Highest channel

802.11n(HT40)

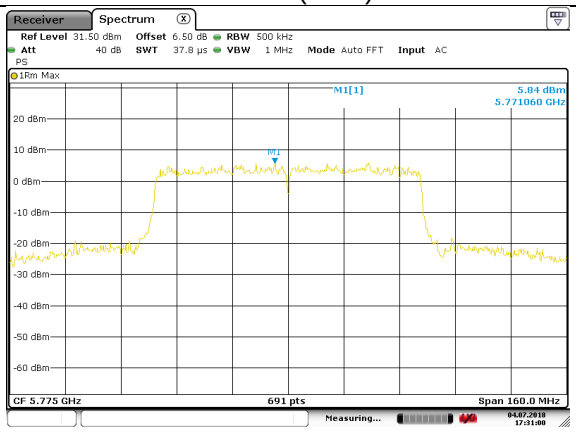


Lowest channel



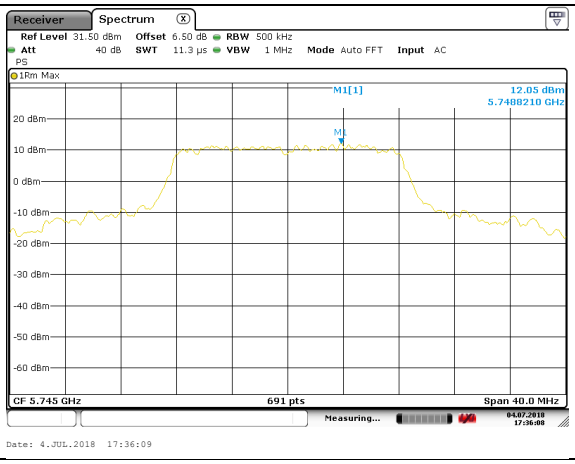
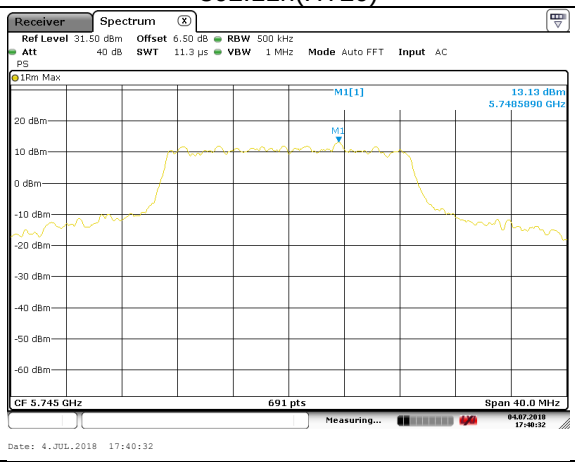
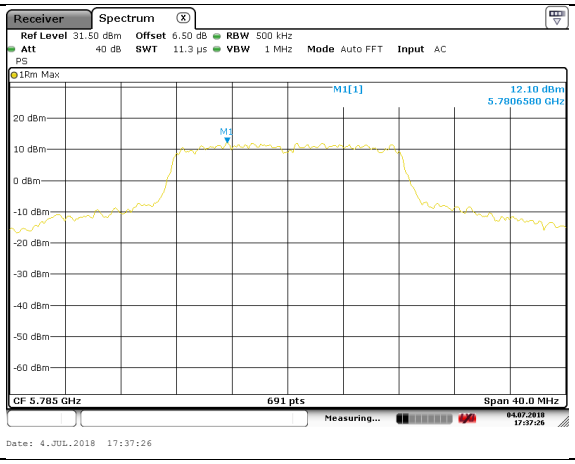
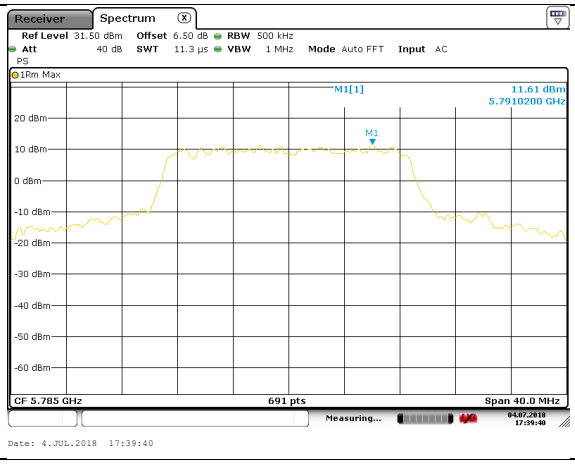
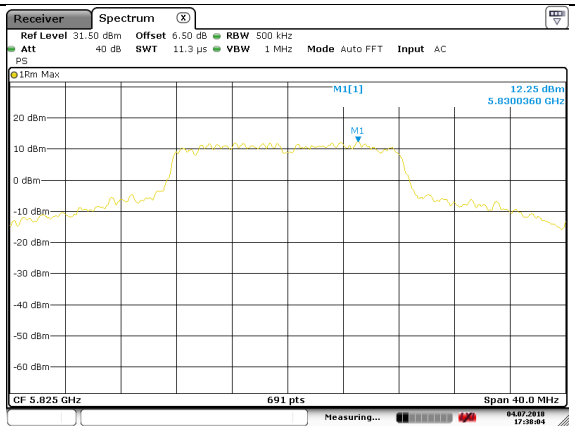
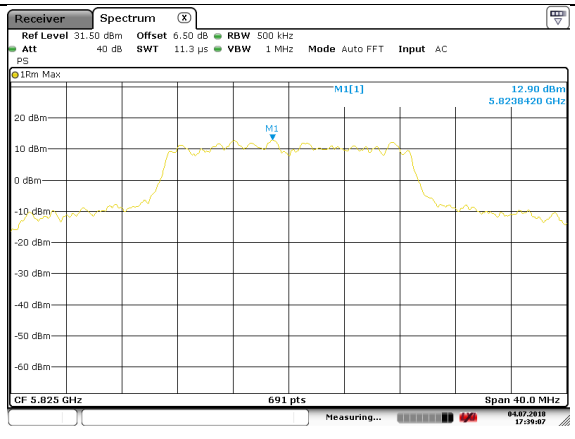
Highest channel

802.11n(ac80)

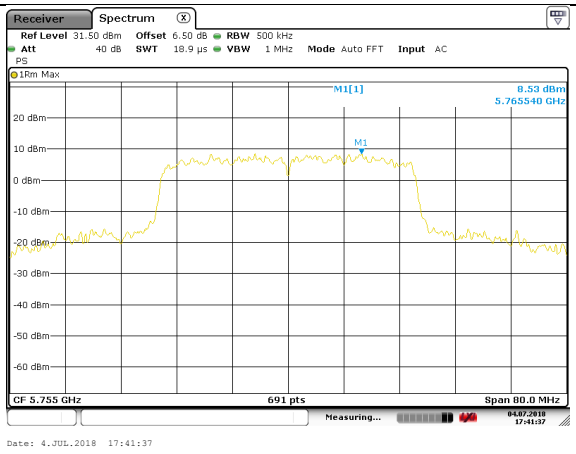


Middle channel

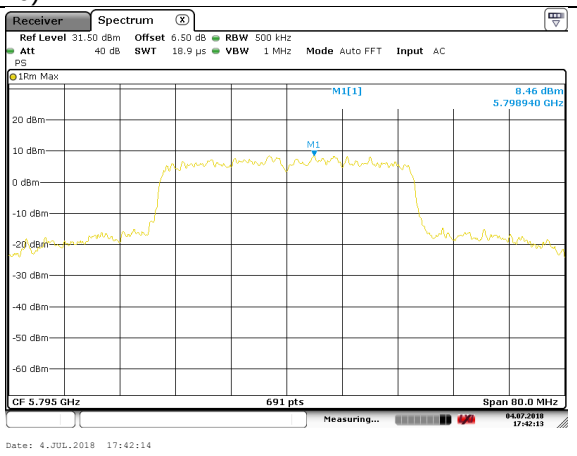
TX1

Band 4	
802.11a	802.11n(HT20)
	
Lowest channel	Middle channel
	
Middle channel	Middle channel
	
Highest channel	Highest channel

802.11n(HT40)

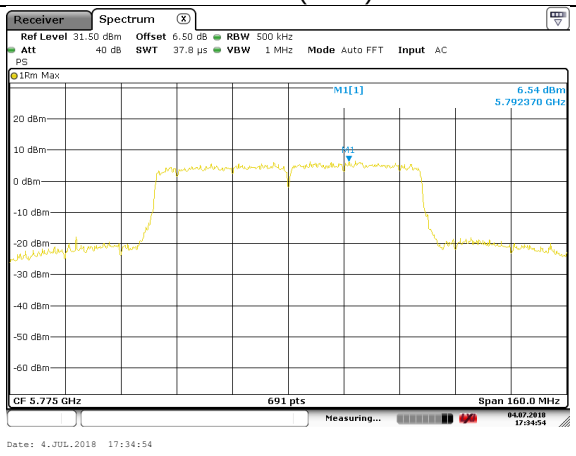


Lowest channel



Highest channel

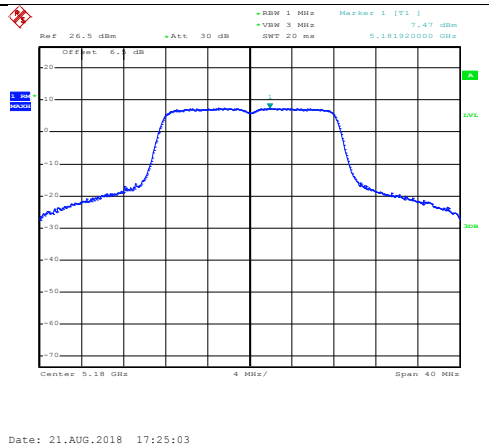
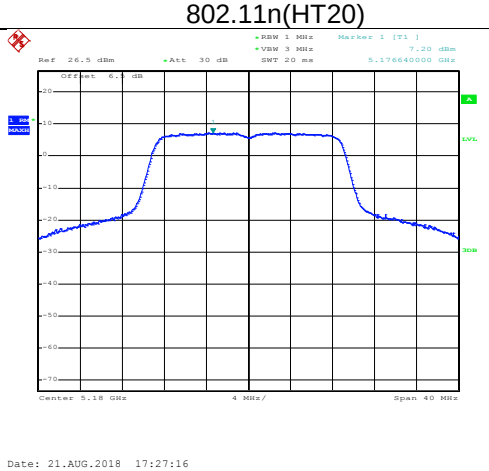
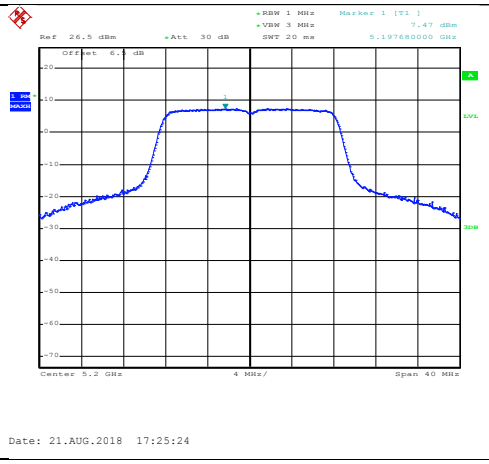
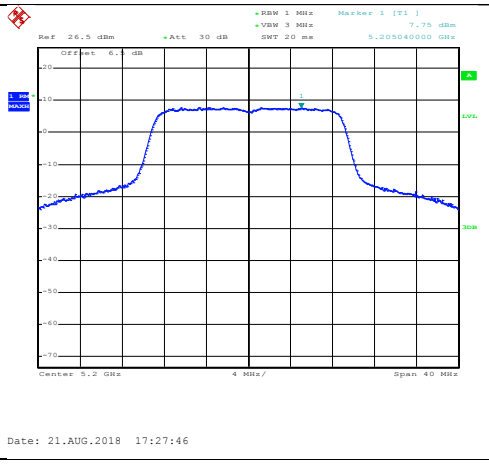
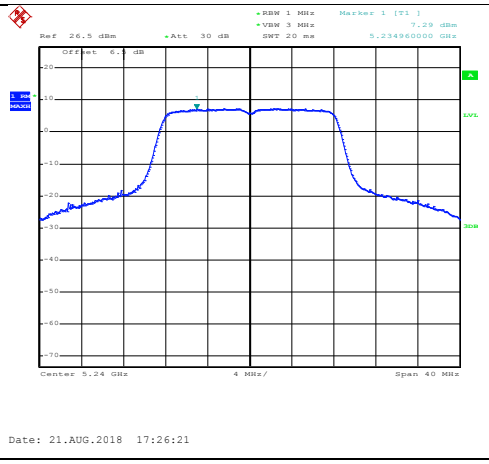
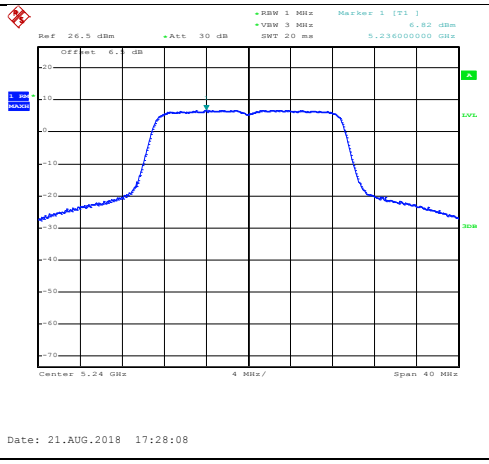
802.11n(ac80)

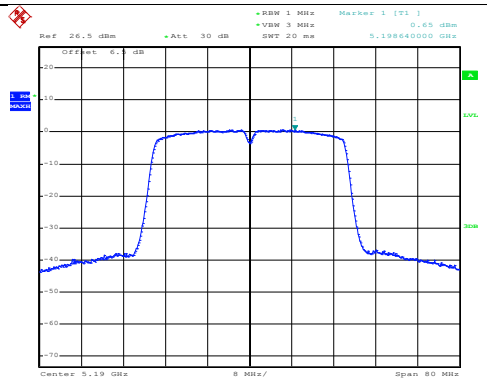
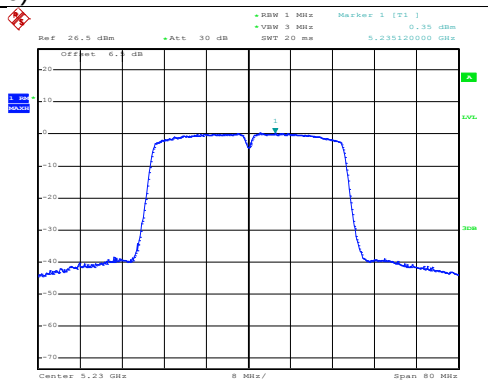
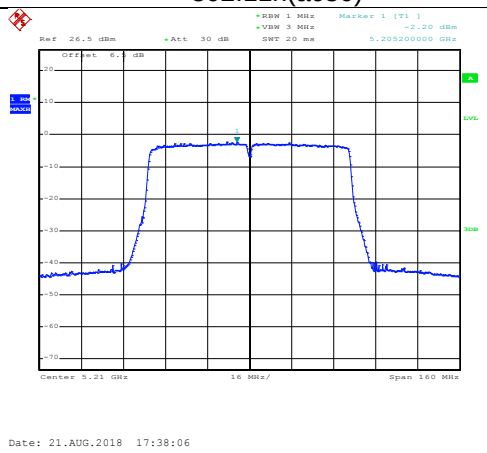


Middle channel

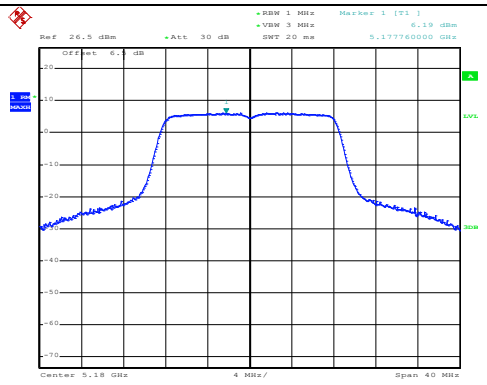
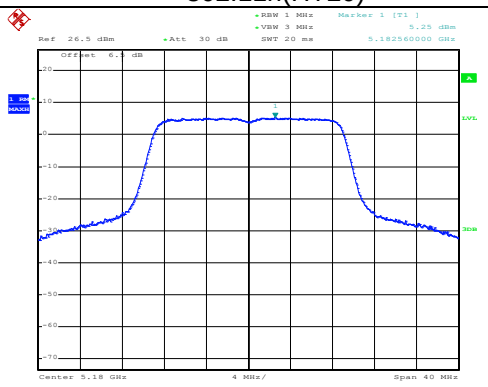
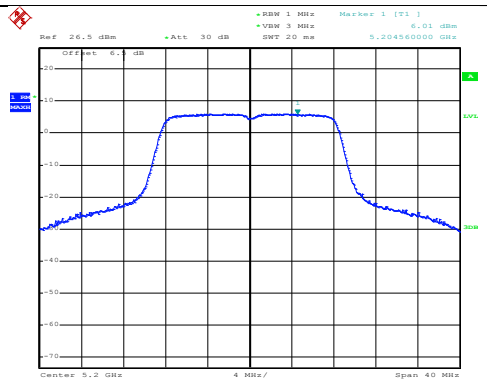
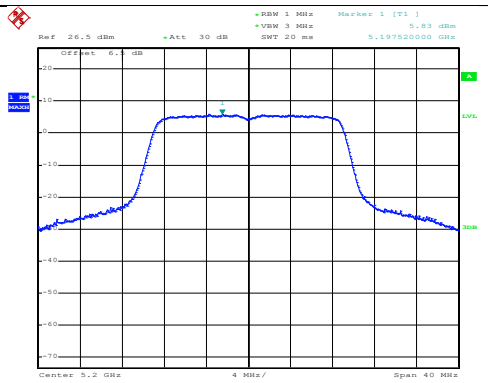
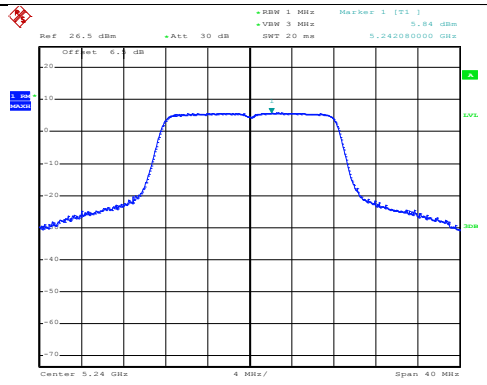
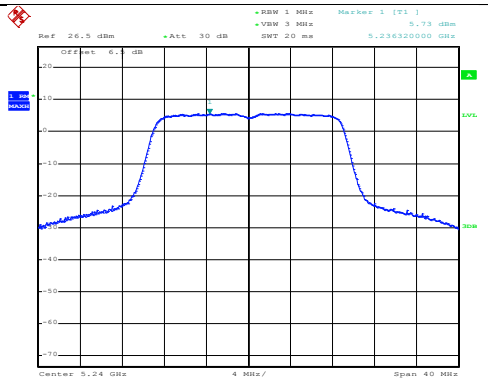
Test plot as follows:10dBi ANT

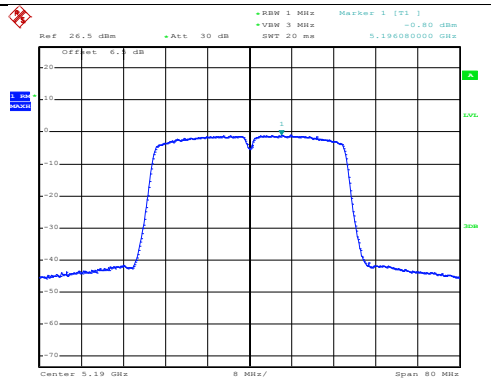
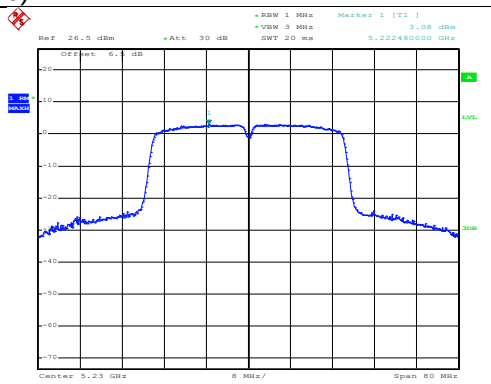
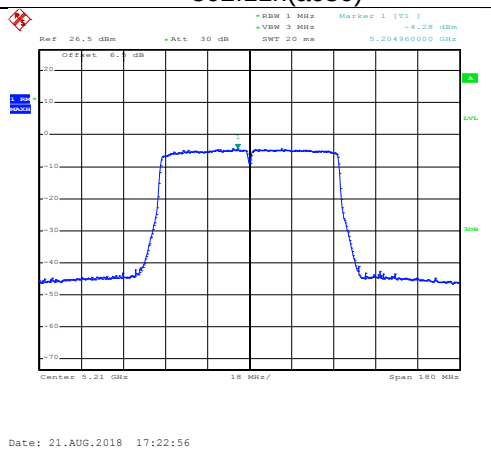
TX0

Band 1	
802.11a	802.11n(HT20)
	
Lowest channel	Middle channel
	
Middle channel	Middle channel
	
Highest channel	Highest channel

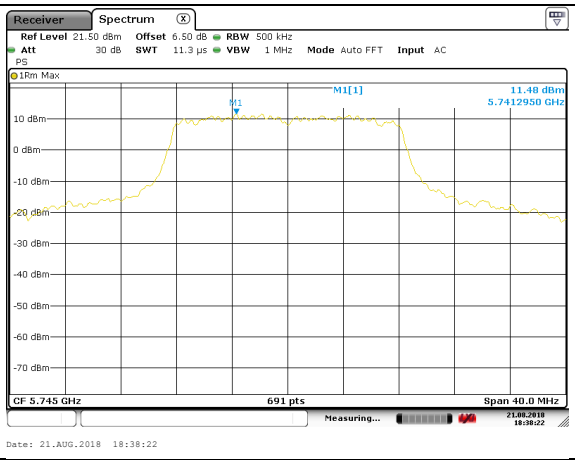
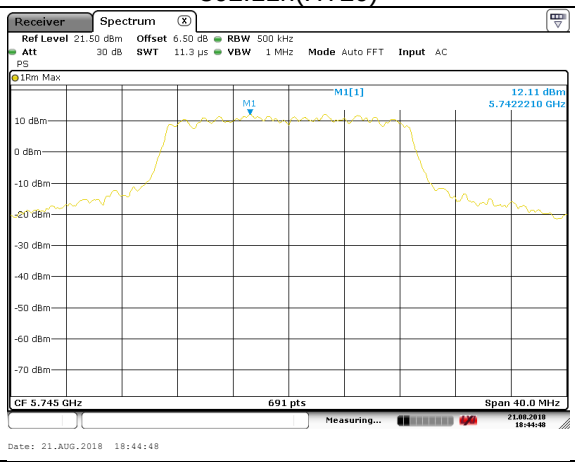
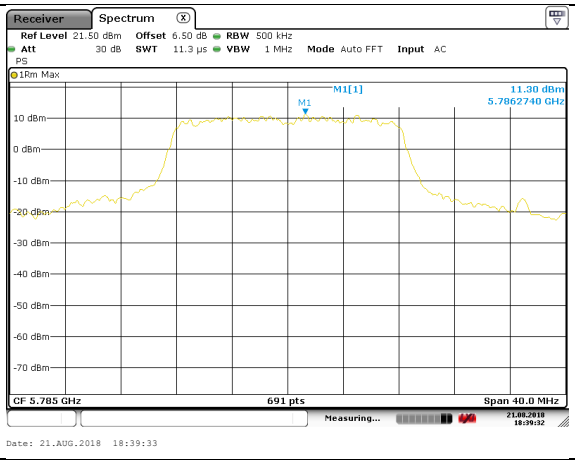
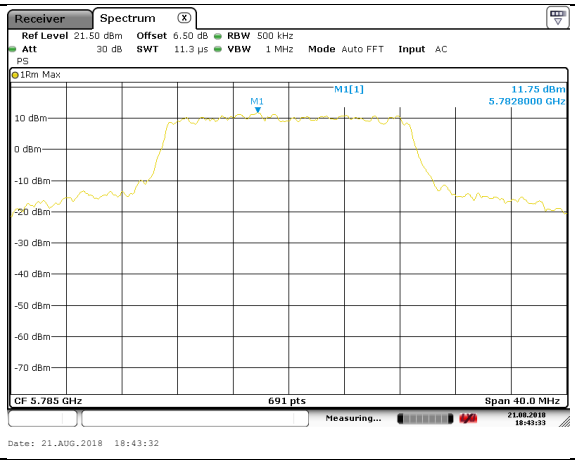
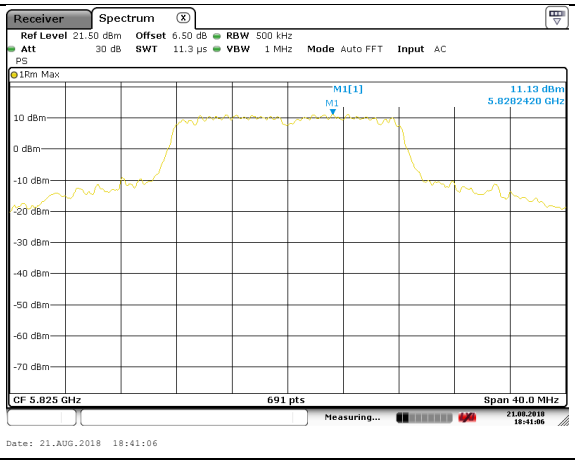
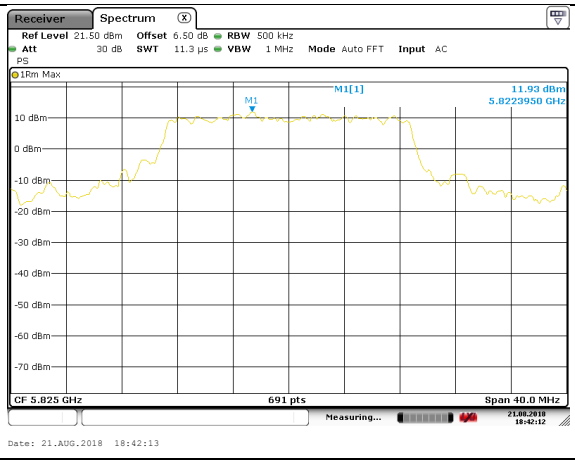
802.11n(HT40)	
	
Lowest channel	Highest channel
802.11n(ac80)	
	
Middle channel	

TX1

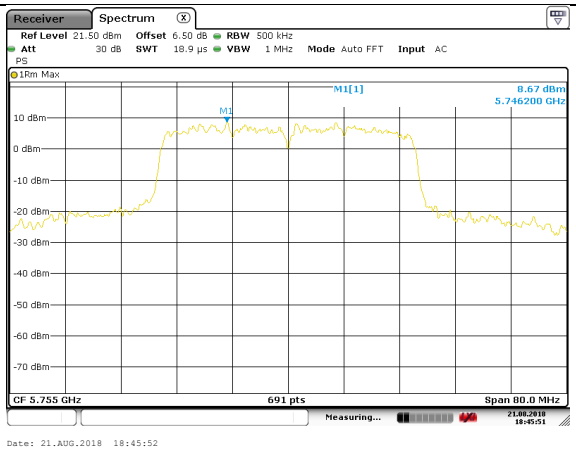
Band 1	
802.11a	802.11n(HT20)
	
Lowest channel	Middle channel
	
Middle channel	Middle channel
	
Highest channel	Highest channel

802.11n(HT40)	
	
Lowest channel	Highest channel
802.11n(ac80)	
	
Middle channel	

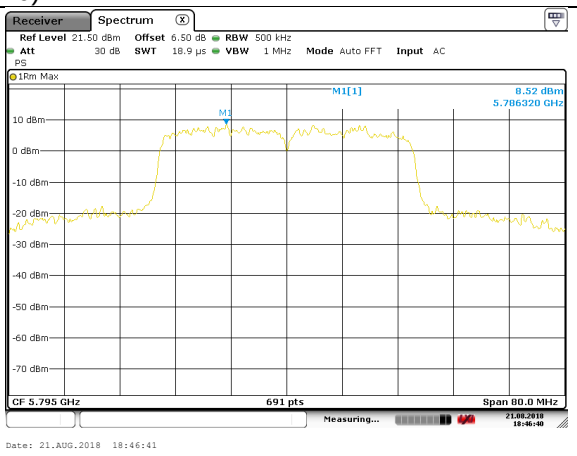
TX0

Band 4	
802.11a	802.11n(HT20)
	
Lowest channel	Middle channel
	
Middle channel	Middle channel
	
Highest channel	Highest channel

802.11n(HT40)

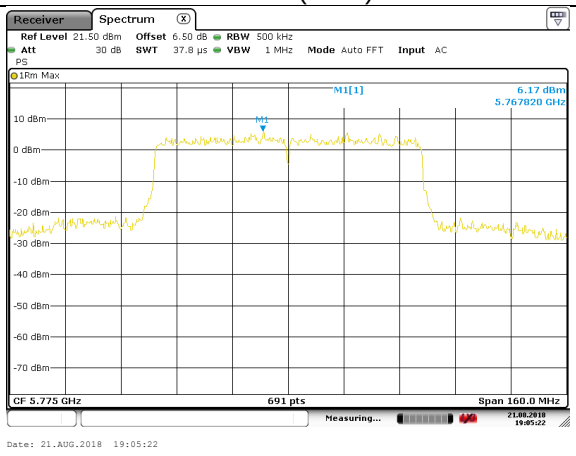


Lowest channel



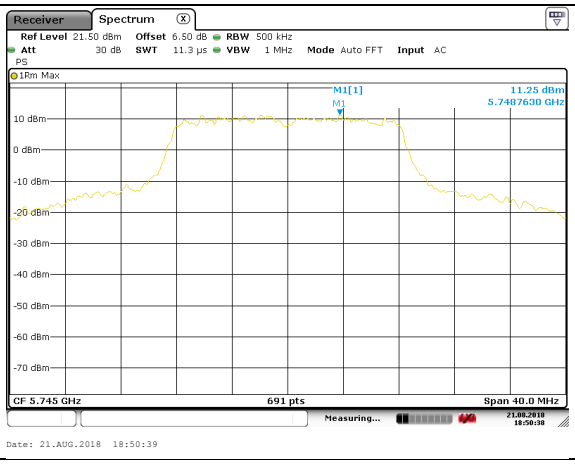
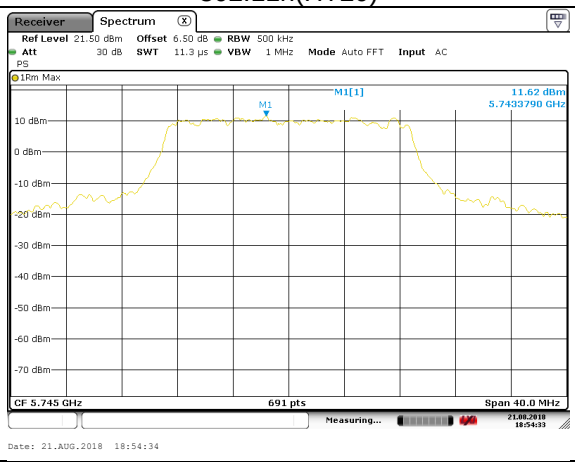
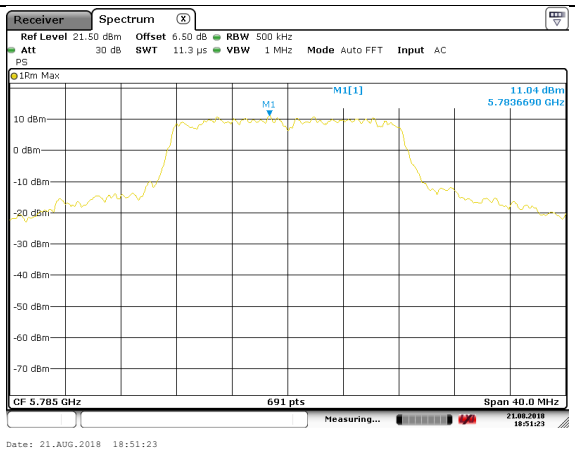
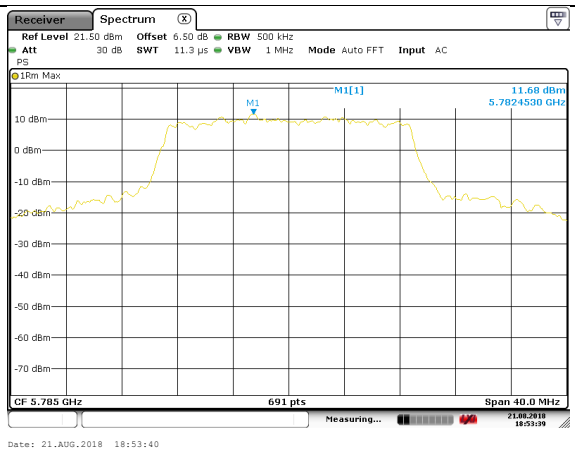
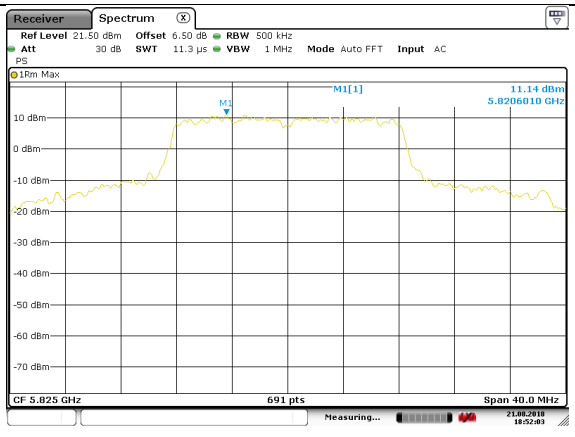
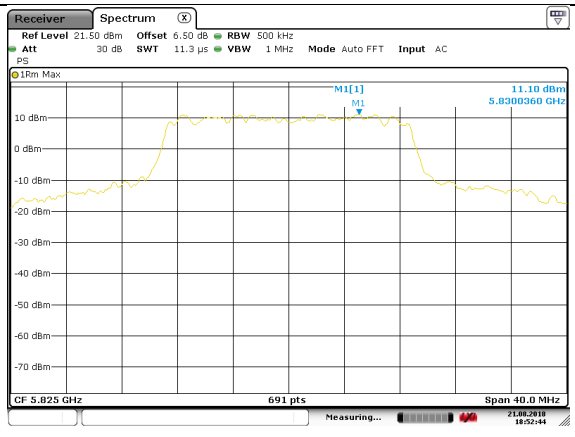
Highest channel

802.11n(ac80)

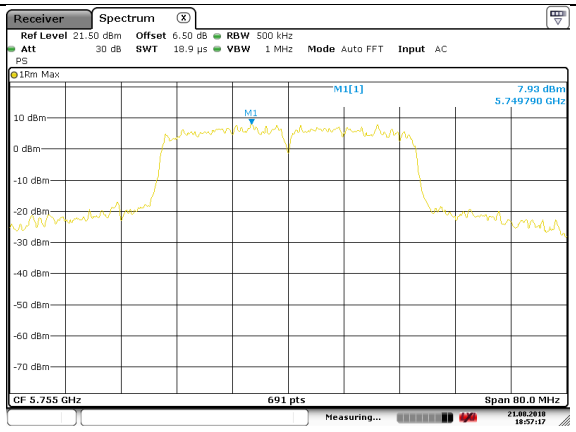


Middle channel

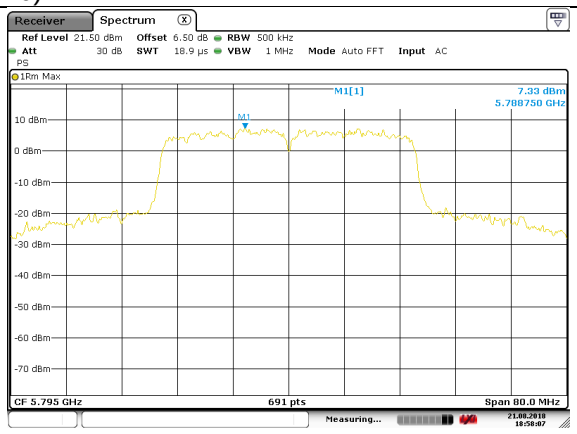
TX1

Band 4	
802.11a	802.11n(HT20)
	
Lowest channel	Middle channel
	
Middle channel	Middle channel
	
Highest channel	Highest channel

802.11n(HT40)

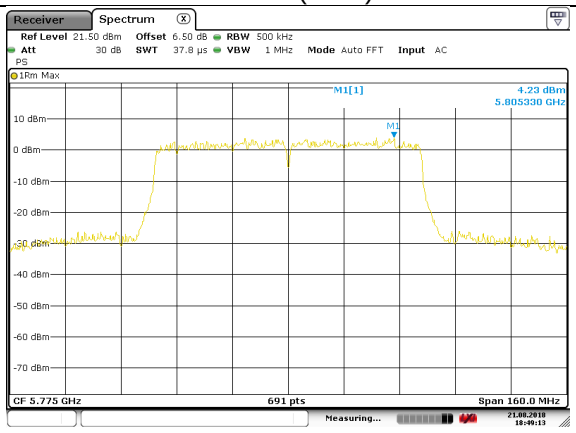


Lowest channel



Highest channel

802.11n(ac80)

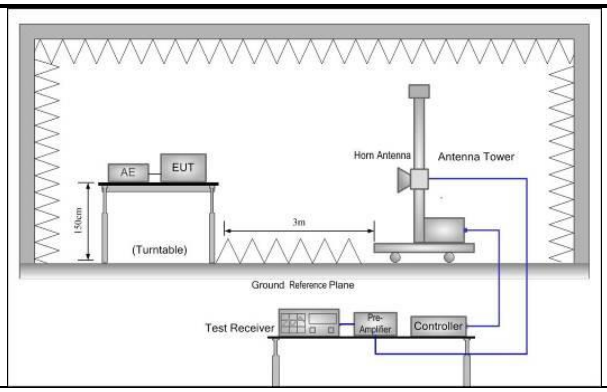


Middle channel

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>Receiver setup:</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Remark</td></tr>
<tr><td></td><td>Quasi-peak</td><td>120kHz</td><td>300kHz</td><td>Quasi-peak Value</td></tr>
<tr><td></td><td>RMS</td><td>1MHz</td><td>3MHz</td><td>Average Value</td></tr>
<tr><td></td><td colspan="4">Band 1 limit:
For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
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 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):3dBi ANT

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	56.80	32.06	7.05	41.93	53.98	68.20	-14.22	Horizontal
5150.00	62.05	32.06	7.05	41.93	59.23	68.20	-8.97	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	46.34	32.06	7.05	41.93	43.52	54.00	-10.48	Horizontal
5150.00	51.99	32.06	7.05	41.93	49.17	54.00	-4.83	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
5350.00	53.12	32.25	7.11	41.89	50.59	68.20	-17.61	Horizontal
5350.00	54.34	32.25	7.11	41.89	51.81	68.20	-16.39	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	43.26	32.25	7.11	41.89	40.73	54.00	-13.27	Horizontal
5350.00	44.31	32.25	7.11	41.89	41.78	54.00	-12.22	Vertical

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.

2. The emission levels of other frequencies are very lower than the limit and not show in test report.

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	60.09	32.06	7.05	41.93	57.27	68.20	-10.93	Horizontal
5150.00	62.13	32.06	7.05	41.93	59.31	68.20	-8.89	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	40.79	32.06	7.05	41.93	37.97	54.00	-16.03	Horizontal
5150.00	48.29	32.06	7.05	41.93	45.47	54.00	-8.53	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	53.09	32.25	7.11	41.89	50.56	68.20	-17.64	Horizontal
5350.00	54.48	32.25	7.11	41.89	51.95	68.20	-16.25	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	43.23	32.25	7.11	41.89	40.70	54.00	-13.30	Horizontal
5350.00	44.21	32.25	7.11	41.89	41.68	54.00	-12.32	Vertical

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.

2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

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	63.01	32.06	7.05	41.93	60.19	68.20	-8.01	Horizontal
5150.00	69.02	32.06	7.05	41.93	66.20	68.20	-2.00	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	46.61	32.06	7.05	41.93	43.79	54.00	-10.21	Horizontal
5150.00	53.16	32.06	7.05	41.93	50.34	54.00	-3.66	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	53.11	32.25	7.11	41.89	50.58	68.20	-17.62	Horizontal
5350.00	54.52	32.25	7.11	41.89	51.74	68.20	-16.49	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	43.21	32.25	7.11	41.89	40.68	54.00	-13.32	Horizontal
5350.00	44.46	32.25	7.11	41.89	41.93	54.00	-12.07	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.