



**RF TEST REPORT for UNII device**  
**No. 150101400SHA-003**

Applicant : Aruba Networks, Inc  
1344 Crossman Ave. Sunnyvale, CA,94089  
Manufacturer : Aruba Networks, Inc  
1344 Crossman Ave. Sunnyvale, CA,94089  
Product Name : Wireless Access Point  
Type/Model : APIN0228

**SUMMARY**

The equipment complies with the requirements according to the following standard(s):

**47CFR Part 15 (2014):** Radio Frequency Devices (Subpart C)

**ANSI C63.4 (2009):** American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

Date of issue: Jan. 23, 2015

Prepared by:

Wade Zhang (*Project Engineer*)

Reviewed by:

Daniel Zhao (*Reviewer*)



**FCC ID: Q9DAPIN0228**  
**IC: 4675A-APIN0228**

## **Description of Test Facility**

Name: Intertek Testing Services Limited Shanghai  
Address: Building 86, No. 1198 Qinzhou Rd., North, Shanghai 200233, P.R. China

FCC Registration Number: 236597  
IC Assigned Code: 2042B-1

Name of contact: Jonny Jing  
Tel: +86 21 61278271  
Fax: +86 21 54262353

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## **1. General Information**

### **1.1 Applicant Information**

Applicant : Aruba Networks, Inc  
1344 Crossman Ave. Sunnyvale, CA,94089  
Name of contact : Rob Hastings  
Tel : (408) 990 2557  
Fax : /  
Email : rhastings@arubanetworks.com  
Manufacturer : Aruba Networks, Inc  
1344 Crossman Ave. Sunnyvale, CA,94089

### **1.2 Identification of the EUT**

Product Name : Wireless Access Point  
Type/model : APIN0228  
FCC ID : Q9DAPIN0228  
IC : 4675A-APIN0228

### 1.3 Technical specification

Operation Frequency : 5150 - 5250 MHz  
Band : 5725 - 5850 MHz

Type of Modulation : OFDM(BPSK,QPSK,16QAM,64QAM,256QAM)

Transfer Rate : 802.11a: 54.0/48.0/36.0/24.0/18.0/12.0/9.0/6.0Mbps  
802.11n: up to 450Mbps  
802.11ac: up to 1300.0Mbps

EUT Modes of Modulation : 802.11a;  
802.11n/ac 20, 40;  
802.11ac 80

Channel Number : 4 Channel for 5180~5240MHz for 11a/n/ac20;  
2 Channel for 5190~5230MHz for 11n/ac40;  
1 Channel for 5210MHz for 11ac80;  
5 Channel for 5745~5825MHz for 11a/n/ac20;  
2 Channel for 5755~5795MHz for 11n/ac40;  
1 Channel for 5775MHz for 11ac80;

Description of EUT : The EUT is a wireless access point, the device is a MIMO product, it has one main mode of assembly ways with different antennas, Each assembly way have the same schematic diagram, PCB layout and electronic construction, also have same electric parameters except its antennas.

Port identification : RJ45 ports 2;  
Console USB port 1.

Rating : DC 48V,0.6A (PoE)

Declared Temperature range : -40°C ~ 60°C

Category of EUT : Class B

EUT type :  Table top  Floor standing

Sample received date : Nov. 13, 2014

Sample Identification : /  
No

Date of test : Nov. 14, 2014 – Jan. 15, 2015

**Antenna chosen and test plan:**

By technical analysis and evaluation, the following models of antennas were chosen to perform the tests as representative.

Test Mode No.	Model	Type	Band(s)	Typical Gain	Conducted Test	Radiated Test
1	AP-ANT-1B	Omnidirectional	2.400 GHz - 2.500 GHz	3.8 dBi		
			4.900 GHz - 5.875 GHz	5.8 dBi		
2	AP-ANT-13B	Downtiltomni	2.400 GHz - 2.500 GHz	4.4dBi		
			4.900 GHz - 5.900 GHz	3.3dBi		✓
3	AP-ANT-16	Downtilt 3x3 MIMO omni	2.400 GHz - 2.500 GHz	3.9dBi		
			4.900 GHz - 5.900 GHz	4.7dBi		
4	AP-ANT-32	Omnidirectional	2.400-2.500 GHz	2.2 dBi		
			5.150-5.925 GHz	4.0 dBi		
5	AP-ANT-19	Dual band omni	2.400 GHz - 2.500 GHz	3.0 dBi		
			5.150 GHz - 5.875 GHz	6.0 dBi		
6	AP-ANT-20	Omnidirectional	2.400 GHz - 2.500 GHz	2.0 dBi		
			4.900 GHz - 5.875 GHz	2.0 dBi	✓ <sup>(1)</sup>	✓
7	AP-ANT-35	Multipolarized	4.9 GHz - 6.0 GHz	5 dBi min		
			2.4 GHz - 2.5 GHz			
8	AP-ANT-38	Multipolarized	4.9 GHz - 6.0 GHz	7.5 dBi min		
			2.4 GHz - 2.5 GHz			
9	AP-ANT-93	3x3 MIMO directional	5.150 GHz - 5.875 GHz	14.0 dBi		✓
10	ANT-3X3-D905	Multipolarized	2.4 GHz - 2.5 GHz	5 dBi min		
			4.9 GHz - 6.0 GHz			
11	ANT-3X3-D608	Multipolarized	2.4 GHz - 2.5 GHz	7.5 dBi min		
			4.9 GHz - 6.0 GHz			
12	ANT-3X3-2005	Omnidirectional	2.4 GHz - 2.5 GHz	5 dBi max		
13	ANT-3X3-5005	Omnidirectional	4.9 GHz - 5.875 GHz	5 dBi max		
14	ANT-3X3-5010	Omnidirectional	4.9 GHz - 5.875 GHz	10 dBi max		✓
15	ANT-3X3-5712	Multipolarized	4.900 GHz - 6.000 GHz	11.5 dBi min		
16	ANT-2X2-2314	Directional	2.400 GHz - 2.500 GHz	14.0 dBi		
17	ANT-2X2-5314	Directional	4.900 GHz - 5.875 GHz	14.0 dBi	✓	✓
18	ANT-2X2-2714	2x2 MIMO directional	2.400 GHz - 2.483 GHz	14.0 dBi		
19	AP-ANT-35A	Multipolarized	4.9 GHz - 6.0 GHz	5 dBi min		
			2.4 GHz - 2.5 GHz			
20	AP-ANT-1W	Omnidirectional	2.400 GHz - 2.500 GHz	3.8 dBi		
			4.900 GHz - 5.875 GHz	5.8 dBi		
21	ANT-3X3-D100	multi polarized	4.9 GHz - 6.0 GHz	5 dBi min		
			2.4 GHz - 2.5 GHz			

Note: (1) means the conducted test performed partially.

**MIMO Function Description:**

Freq. Band	Modulation	Tx/Rx Function	Beam forming
5150 - 5250 MHz 5725 - 5850 MHz	802.11a	3TX/3RX	NO
	802.11n/ac 20	3TX/3RX	YES
	802.11n/ac 40	3TX/3RX	YES
	802.11ac 80	3TX/3RX	YES

Test Mode No.	Model	Band(s)	Typical Gain	Beam Forming Gain(dBi)
1	AP-ANT-1B	2.400 GHz - 2.500 GHz	3.8 dBi	4.7
		4.900 GHz - 5.875 GHz	5.8 dBi	
2	AP-ANT-13B	2.400 GHz - 2.500 GHz	4.4dBi	4.7
		4.900 GHz - 5.900 GHz	3.3dBi	
3	AP-ANT-16	2.400 GHz - 2.500 GHz	3.9dBi	4.7
		4.900 GHz - 5.900 GHz	4.7dBi	
4	AP-ANT-32	2.400-2.500 GHz	2.2 dBi	4.7
		5.150-5.925 GHz	4.0 dBi	
5	AP-ANT-19	2.400 GHz - 2.500 GHz	3.0 dBi	4.7
		5.150 GHz - 5.875 GHz	6.0 dBi	
6	AP-ANT-20	2.400 GHz - 2.500 GHz	2.0 dBi	4.7
		4.900 GHz - 5.875 GHz	2.0 dBi	
7	AP-ANT-35	4.9 GHz - 6.0 GHz	5 dBi min	3
		2.4 GHz - 2.5 GHz		
8	AP-ANT-38	4.9 GHz - 6.0 GHz	7.5 dBi min	3
		2.4 GHz - 2.5 GHz		
9	AP-ANT-93	5.150 GHz - 5.875 GHz	14.0 dBi	3
10	ANT-3X3-D905	2.4 GHz - 2.5 GHz	5 dBi min	3
		4.9 GHz - 6.0 GHz		
11	ANT-3X3-D608	2.4 GHz - 2.5 GHz	7.5 dBi min	3
		4.9 GHz - 6.0 GHz		
12	ANT-3X3-2005	2.4 GHz - 2.5 GHz	5 dBi max	3
13	ANT-3X3-5005	4.9 GHz - 5.875 GHz	5 dBi max	3
14	ANT-3X3-5010	4.9 GHz - 5.875 GHz	10 dBi max	3
15	ANT-3X3-5712	4.900 GHz - 6.000 GHz	11.5 dBi min	3
16	ANT-2X2-2314	2.400 GHz - 2.500 GHz	14.0 dBi	3
17	ANT-2X2-5314	4.900 GHz - 5.875 GHz	14.0 dBi	3
18	ANT-2X2-2714	2.400 GHz - 2.483 GHz	14.0 dBi	3
19	AP-ANT-35A	4.9 GHz - 6.0 GHz	5 dBi min	3
		2.4 GHz - 2.5 GHz		
20	AP-ANT-1W	2.400 GHz - 2.500 GHz	3.8 dBi	4.7
		4.900 GHz - 5.875 GHz	5.8 dBi	
21	ANT-3X3-D100	4.9 GHz - 6.0 GHz	5 dBi min	3
		2.4 GHz - 2.5 GHz		

Note 1: For CDD transmissions, according KDB 662911 D01 Multiple Transmitter Output v02r01 f), the power measurements on IEEE 802.11 devices,  $Array\ Gain = 0\ dB$  (i.e., no array gain) for  $N_{ANT} \leq 4$ .

Note 2: when 802.11n/ac have beamforming function the Beamforming gain should calculate according KDB 662911 D01 Multiple Transmitter Output v02r01 c) (ii).

## 2. Test Specification

### 2.1 Instrument list

Equipment	Type	Manu.	Internal no.	Cal. Date	Due date
Test Receiver	ESCS 30	R&S	EC 2107	2014-10-20	2015-10-19
Test Receiver	ESIB 26	R&S	EC 3045	2014-10-19	2015-10-18
Test Receiver	ESCI 7	R&S	EC4501	2014-12-24	2015-12-23
Test Receiver	FSP40	R&S	/	2014-10-20	2015-10-19
Spectrum Analyzer	N9030	Agilent	EC4890	2014-10-20	2015-10-19
A.M.N.	ESH2-Z5	R&S	EC 3119	2015-1-8	2016-1-7
Bilog Antenna	CBL 6112D	TESEQ	EC 4206	2014-4-27	2015-4-26
Horn antenna	HF 906	R&S	EC 3049	2014-4-27	2015-4-26
Horn antenna	HAP18-26W		EC 4792-3	2014-4-9	2015-4-8
Pre-amplifier	Tpa0118-40	R&S	EC 4792-2	2014-4-11	2015-4-10
Semi-anechoic chamber	-	Albatross project	EC 3048	2014-5-11	2015-5-10
Therom-Hygrograph	ZJ1-2A	S.M.I.F.	EC 3323	2014-4-14	2015-4-13
Pressure meter	YM3	Shanghai Mengde	EC 3320	2014-6-13	2015-6-12
Multi-meter	179	FLUKE	EC 3226	2014-9-10	2015-9-9
Shielded room	-	Zhongyu	EC 2838	2015-1-11	2016-1-9
High Pass Filter	WHKX 1.0/15G-10SS	Wainwright	EC4297-1	2015-1-7	2016-1-6
High Pass Filter	WHKX 2.8/18G-12SS	Wainwright	EC4297-2	2015-1-7	2016-1-6
High Pass Filter	WHKX 7.0/1.8G-8SS	Wainwright	EC4297-3	2015-1-7	2016-1-6
Band Reject Filter	WRCGV 2400/2483- 2390/2493- 35/10SS	Wainwright	EC4297-4	2015-1-7	2016-1-6
Power sensor / Power meter	N1911A/N192 1A	Agilent	EC4318	2014-04-9	2015-04-8

### 2.2 Test Standard

47CFR Part 15:2014  
ANSI C63.4: 2009  
KDB 789033D02 (v01)  
KDB 662911 (V02R01)



### 2.3 Mode of operation during the test / Test peripherals used

While testing transmitting mode of EUT, the internal modulation and continuously transmission was applied.

The lowest, middle and highest channel were tested as representatives.

Freq. Band	Modulation	Lowest(MHz)	Middle(MHz)	Highest(MHz)
5150~5250MHz	802.11a	5180	5200	5240
	802.11 n/ac20	5180	5200	5240
	802.11 n/ac40	5190	/	5230
	802.11 ac80	/	5210	/

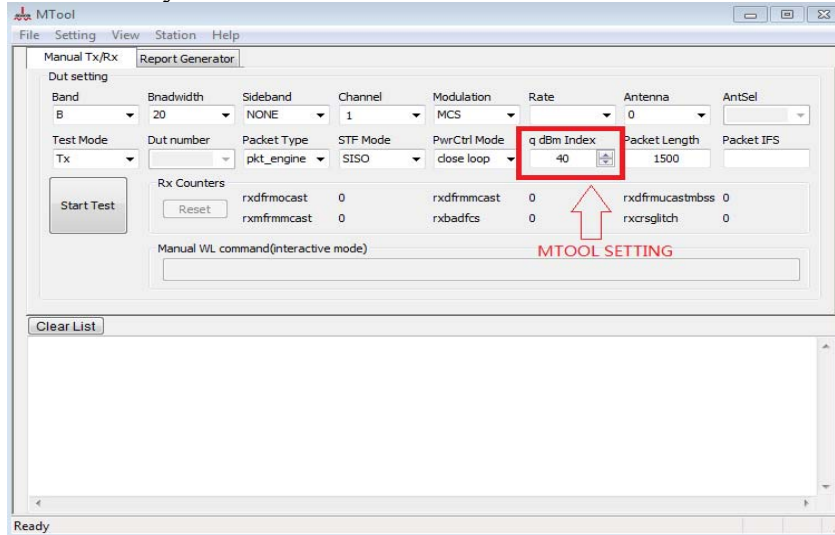
Freq. Band	Modulation	Lowest(MHz)	Middle(MHz)	Highest(MHz)
5725 - 5850MHz	802.11a	5745	5785	5825
	802.11 n/ac20	5745	5785	5825
	802.11 n/ac40	5755	/	5795
	802.11 ac80	/	5775	/

#### Test peripherals used:

Item No	Name	Band and Model	Description	S/No
1	Laptop computer	HP ProBook 6470b	100-240V AC 50/60Hz	NA
2	Controller	Aruba 650	100-240V AC 50/60Hz	NA
3	POE DC Power	PowerDsine PD-6555G300	Input:100-240Vac,50/60Hz,0.5A Output:57VDC 0.35A	NA
4	LAN Cable	/	1.5m un-shielding *2 10m un-shielding *4	NA

**Test software setting:**

The power level setting for 802.11a/n20/n40/ac20/ac40/ac80 is used with MTOOL software offered by the manufactory.



The power level setting for 802.11a/n20/n40/ac20/ac40/ac80 is used with the software offered by the manufactory.

Freq. Band	Mode	Frequency (MHz)	Software Setting	Power Expected (dBm)
5150 - 5250MHz (2dBi gain)	802.11a	5180	92	23
		5200	92	23
		5240	92	23
	802.11 n/ac20	5180	90	22.5
		5200	90	22.5
		5240	90	22.5
	802.11 n/ac40	5190	88	21
		5230	88	21
	802.11 ac80	5210	90	22.5

Freq. Band	Mode	Frequency (MHz)	Software Setting	Power Expected (dBm)
5725 - 5850MHz (2dBi gain)	802.11a	5745	94	23.5
		5785	94	23.5
		5825	94	23.5
	802.11 n/ac20	5745	90	22.5
		5785	90	22.5
		5825	90	22.5
	802.11 n/ac40	5755	91	22.75
		5795	91	22.75
	802.11 ac80	5775	90	22.5



Freq. Band	Mode	Frequency (MHz)	Software Setting	Power Expected (dBm)
5150 - 5250MHz (14dBi gain)	802.11a	5180	56	14
		5200	56	14
		5240	56	14
	802.11 n/ac20	5180	42	10.5
		5200	42	10.5
		5240	42	10.5
	802.11 n/ac40	5190	47	11.75
		5230	47	11.75
	802.11 ac80	5210	48	12

Freq. Band	Mode	Frequency (MHz)	Software Setting	Power Expected (dBm)
5725 - 5850MHz (14dBi gain)	802.11a	5745	72	18
		5785	72	18
		5825	72	18
	802.11 n/ac20	5745	59	14.75
		5785	59	14.75
		5825	59	14.75
	802.11 n/ac40	5755	57	14.25
		5795	57	14.25
	802.11 ac80	5775	59	14.75

Note:

1: When using different antennas, it has different power target setting (Mtool setting) by the manufactory to ensure compliance with the limit.

2: This is the function for conducted power with different antenna, max conducted power = min(max regulatory EIRP, board limit + antenna gain) – antenna gain, where the board limit is measured at the board so the antenna gain is not included.

**Data rate VS Power**

The pre-scan for the conducted power with all rates in each modulation and bands was used, and the worst case was found and used in all test cases.

802.11a	Data rate	6	9	12	18	24	36	48	54
	Port 0	<b>24.05</b>	23.54	24.03	24.02	23.98	23.94	23.93	23.91
	Port 1	<b>23.96</b>	23.77	23.9	23.87	23.84	23.81	23.79	23.75
	Port 2	<b>24.00</b>	23.91	23.84	23.82	23.8	23.78	23.78	23.77
802.11n/ac20	Data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
	Port 0+1+2	<b>27.04</b>	27.01	27.00	26.99	26.96	26.93	26.91	26.90
802.11n/ac40	Data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
	Port 0+1+2	<b>27.73</b>	27.70	26.98	26.96	26.95	26.94	26.93	26.90

802.11ac80	Data rate	NSS3									
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
	Port 0+1+2	<b>27.59</b>	27.57	27.57	27.56	27.52	27.51	27.51	27.48	27.46	27.41

After this pre-scan, we choose the following table of the data rate as the worst case.

Modulation	Worst case data rate
802.11a	6Mbps
802.11n/ac 20	MCS0
802.11n/ac 40	MCS0
802.11ac 80	MCS0NSS3

**Duty cycle:**

Duty cycle	On(ms)	On+Off (ms)	Duty cycle(x)	Duty cycle factor (dB)
802.11a	2.08	2.18	0.95	0.20
802.11n/ac20	0.679	0.773	0.88	0.56
802.11n/ac40	0.355	0.453	0.78	1.06
802.11ac80	0.194	0.222	0.87	0.59

### 2.3 Test Summary

**This report applies to tested sample only. This report shall not be reproduced in part without written approval of Intertek Testing Service Shanghai Limited.**

TEST ITEM	FCC REFERANCE	IC REFERANCE	RESULT
Maximum Conducted Output Power & EIRP	15.407(a)	RSS-210 Issue 8 Annex 9.2	Pass
Power spectral density	15.407(a)	RSS-210 Issue 8 Annex 9.2	Pass
Minimum 6dB Bandwidth	15.407(e)	/	Pass
Radiated emission	15.407 (b) 15.205, 15.209	RSS-210 Issue 8 Annex 9.2	Pass
Power line conducted emission	15.207	RSS-Gen Issue 3 Clause 7.2.4	Pass
Emission Bandwidth (99%)	-	RSS-210 Issue 8 Annex 9.2	Tested

### 3. Maximum Conducted Output Power & EIRP

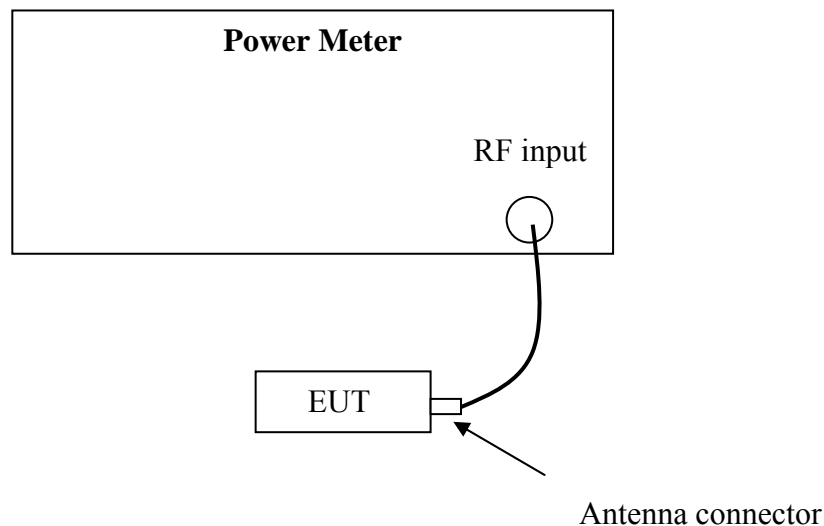
**Test result: Pass**

#### 3.1 Test limit

- For outdoor access point operating in 5150-5250MHz: 30dBm,  
Maximum EIRP at any elevation angle above 30 degrees  $\leq$ 21dBm;
- For indoor access point operating in 5150-5250MHz: 30dBm;
- For fixed point-to-point access point operating in 5150-5250MHz: 30dBm;
- For mobile and portable client devices operating in 5150-5250MHz: 24dBm;
- For device operating in 5.25-5.35 GHz and 5.47-5.725 GHz: 24dBm or 11dBm + 10logB  
(B is 26dB bandwidth);
- For device operating in 5.725-5.85 GHz: 30dBm

If the transmitting antenna of directional gain greater than 6dBi is used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi. If there have a beamforming type, the limit should be the less of original and original + 6 –antenna gain-beamforming gain.

#### 3.2 Test Configuration



#### 3.3 Test procedure and test setup

The power output per FCC §15.407(a) was measured on the EUT using a 50 ohm RF cable connected to spectrum analyzer and the measurement method refer to KDB 789033D02 v01: Method PM.

### 3.4 Test protocol

Temperature : 25 °C  
Relative Humidity : 55 %

#### 5.1 GHz Band Test mode 6:

Mode	Frequency (MHz)	Reading (dBm)			Duty cycle factor (dB)	Total Power (dBm)	Limit (dBm)	Margin (dB)
		Port 0	Port 1	Port 2				
802.11a	5180	23.56	22.91	23.16	0.20	28.19	30.00	1.81
	5200	23.62	22.11	23.29	0.20	28.02	30.00	1.98
	5240	22.75	23.35	23.41	0.20	28.15	30.00	1.85
802.11n/ac20	5180	22.22	22.60	22.69	0.56	27.84	29.30	1.46
	5200	22.71	22.74	22.72	0.56	28.06	29.30	1.24
	5240	22.60	22.22	22.33	0.56	27.72	29.30	1.58
802.11n/ac40	5190	21.57	21.67	21.97	1.06	27.57	29.30	1.73
	5230	21.86	21.33	21.23	1.06	27.31	29.30	1.99
802.11ac80	5210	21.02	21.69	22.01	0.59	26.95	29.30	2.35

#### 5.1 GHz Band Test mode 17:

Mode	Frequency (MHz)	Reading (dBm)			Duty cycle factor (dB)	Total Power (dBm)	Limit (dBm)	Margin (dB)
		Port 0	Port 1	Port 2				
802.11a	5180	15.23	15.58	15.67	0.20	20.47	22.00	1.53
	5200	15.31	15.48	15.55	0.20	20.42	22.00	1.58
	5240	16.28	15.52	15.57	0.20	20.77	22.00	1.23
802.11n/ac 20	5180	11.58	11.82	11.74	0.56	17.05	19.00	1.95
	5200	11.69	11.79	11.85	0.56	17.11	19.00	1.89
	5240	11.67	11.88	12.02	0.56	17.19	19.00	1.81
802.11n/ac 40	5190	12.19	12.67	12.65	1.06	18.34	19.00	0.66
	5230	12.41	12.88	12.89	1.06	18.56	19.00	0.44
802.11ac80	5210	12.97	13.21	13.28	0.59	18.52	19.00	0.48

**5.8 GHz Band Test mode 6:**

Test Mode	Frequency (MHz)	Reading (dBm)			Duty cycle factor (dB)	Total Power (dBm)	Limit (dBm)	Margin (dB)
		Port 0	Port 1	Port 2				
802.11a	5745	24.19	23.91	24.05	0.20	29.03	30.00	0.97
	5785	23.85	23.76	23.80	0.20	28.78	30.00	1.22
	5825	23.79	23.73	23.65	0.20	28.70	30.00	1.30
802.11n/ac20	5745	22.19	21.86	21.93	0.56	27.33	29.30	1.97
	5785	21.71	21.80	21.62	0.56	27.04	29.30	2.26
	5825	21.68	21.66	21.47	0.56	26.94	29.30	2.36
802.11n/ac40	5755	21.78	22.00	21.90	1.06	27.72	29.30	1.58
	5795	22.15	21.74	21.80	1.06	27.73	29.30	1.57
802.11ac80	5775	21.99	22.36	22.35	0.59	27.59	29.30	1.71

**5.8 GHz Band Test mode 17:**

Test Mode	Frequency (MHz)	Reading (dBm)			Duty cycle factor (dB)	Total Power (dBm)	Limit (dBm)	Margin (dB)
		Port0	Port 1	Port 2				
802.11a	5745	15.33	15.25	17.06	0.20	20.94	22.00	1.06
	5785	15.30	14.93	17.04	0.20	20.83	22.00	1.17
	5825	15.67	15.42	17.10	0.20	21.10	22.00	0.90
802.11n/ac20	5745	12.09	11.74	13.93	0.56	18.03	19.00	0.97
	5785	11.68	11.51	13.92	0.56	17.85	19.00	1.15
	5825	12.42	11.96	13.82	0.56	18.14	19.00	0.86
802.11n/ac40	5755	11.66	11.15	13.28	1.06	17.96	19.00	1.04
	5795	11.17	11.05	13.24	1.06	17.77	19.00	1.23
802.11ac80	5775	12.24	12.20	14.33	0.59	18.40	19.00	0.60

**Note:**

1. For antenna gain = 2.0 or 14.0dBi and with beam forming, the limit should be corrected.
2. Total power =  $10 * \lg(10^{\text{port } 0 / 10} + 10^{\text{port } 1 / 10} + 10^{\text{port } 2 / 10})$



#### 4. Power spectral density

Test result: Pass

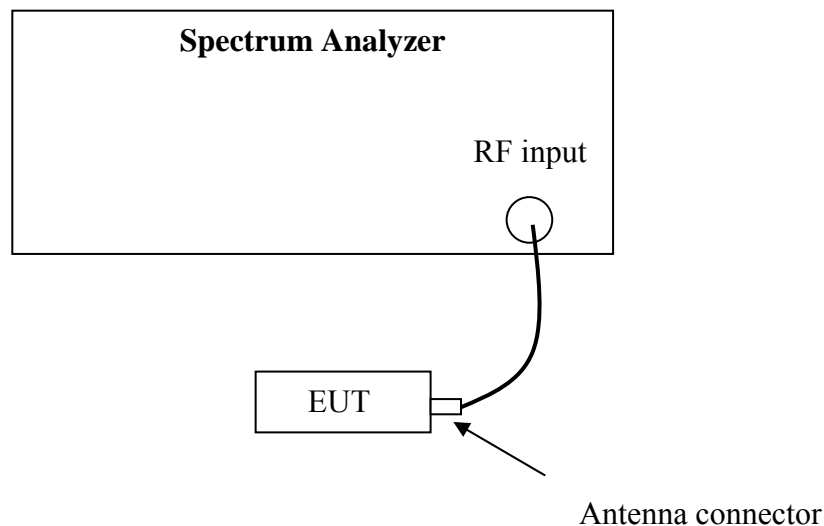
##### 4.1 Test limit

- For outdoor access point operating in 5150-5250MHz: 17dBm/MHz;
- For indoor access point operating in 5150-5250MHz: 17dBm/MHz;
- For fixed point-to-point access point operating in 5150-5250MHz: 17dBm/MHz;
- For mobile and portable client devices operating in 5150-5250MHz: 11dBm/MHz;
- For device operating in 5.25-5.35 GHz and 5.47-5.725 GHz: 11dBm/MHz;
- For device operating in 5.725-5.85 GHz: 30dBm/500kHz;

If the transmitting antenna of directional gain greater than 6dBi is used, the PSD shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

If there have a beamforming type, the limit should be the less of original and original + 6 – antenna gain-beamforming gain.

##### 4.2 Test Configuration



### **4.3 Test procedure and test setup**

The power spectral density per FCC §15.407(a) was measured from the antenna port of the EUT using a 50 ohm spectrum analyzer with the resolution bandwidth set at 1MHz, the video bandwidth set at 3 MHz (measurement method refer to KDB 789033D02 v01: section F).

Power spectral density was read directly and cable loss correction was added to the reading to obtain power at the EUT antenna terminals.

#### 4.4 Test Protocol

Temperature : 25 °C  
Relative Humidity : 55 %

##### 5.1 GHz Band Test mode 17:

Test mode	Frequency (MHz)	PSD (dBm)			Duty cycle factor (dB)	Max PSD (dBm)	Limit (dBm)	Margin (dB)
		Port 0	Port 1	Port 2				
802.11a	5180	3.41	3.95	3.89	0.20	4.15	4.20	0.05
	5200	3.24	3.86	3.83	0.20	4.06	4.20	0.14
	5240	3.41	3.84	3.83	0.20	4.04	4.20	0.16

Test mode	Frequency (MHz)	PSD (dBm)			Duty cycle factor (dB)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
		Port 0	Port 1	Port 2				
802.11 n/ac 20	5180	-0.17	0.15	0.33	0.56	5.44	6.00	0.56
	5200	-0.22	0.13	0.35	0.56	5.43	6.00	0.57
	5240	-0.14	0.40	0.20	0.56	5.49	6.00	0.51

Test mode	Frequency (MHz)	PSD (dBm)			Duty cycle factor (dB)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
		Port 0	Port 1	Port 2				
802.11 n/ac 40	5190	-1.74	-1.64	-1.51	1.06	4.20	6.00	1.80
	5230	-1.79	-1.70	-1.56	1.06	4.15	6.00	1.85

Test mode	Frequency (MHz)	PSD (dBm)			Duty cycle factor (dB)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
		Port 0	Port 1	Port 2				
802.11 ac80	5210	-4.65	-3.92	-3.82	0.59	1.25	6.00	4.75

5.8 GHz Band Test mode 17:

Test mode	Frequency (MHz)	PSD (dBm)			Duty cycle factor (dB)	Max PSD (dBm)	Limit (dBm)	Margin (dB)
		Port 0	Port 1	Port 2				
802.11a	5745	3.77	3.44	3.44	0.20	3.97	4.20	0.23
	5785	3.58	3.44	3.36	0.20	3.78	4.20	0.42
	5825	3.35	3.10	3.05	0.20	3.55	4.20	0.65

Test mode	Frequency (MHz)	PSD (dBm)			Duty cycle factor (dB)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
		Port 0	Port 1	Port 2				
802.11 n/ac 20	5745	0.67	0.29	0.29	0.56	5.76	19.00	13.24
	5785	0.22	-0.50	-0.32	0.56	5.14	19.00	13.86
	5825	-0.33	-0.26	0.10	0.56	5.17	19.00	13.83

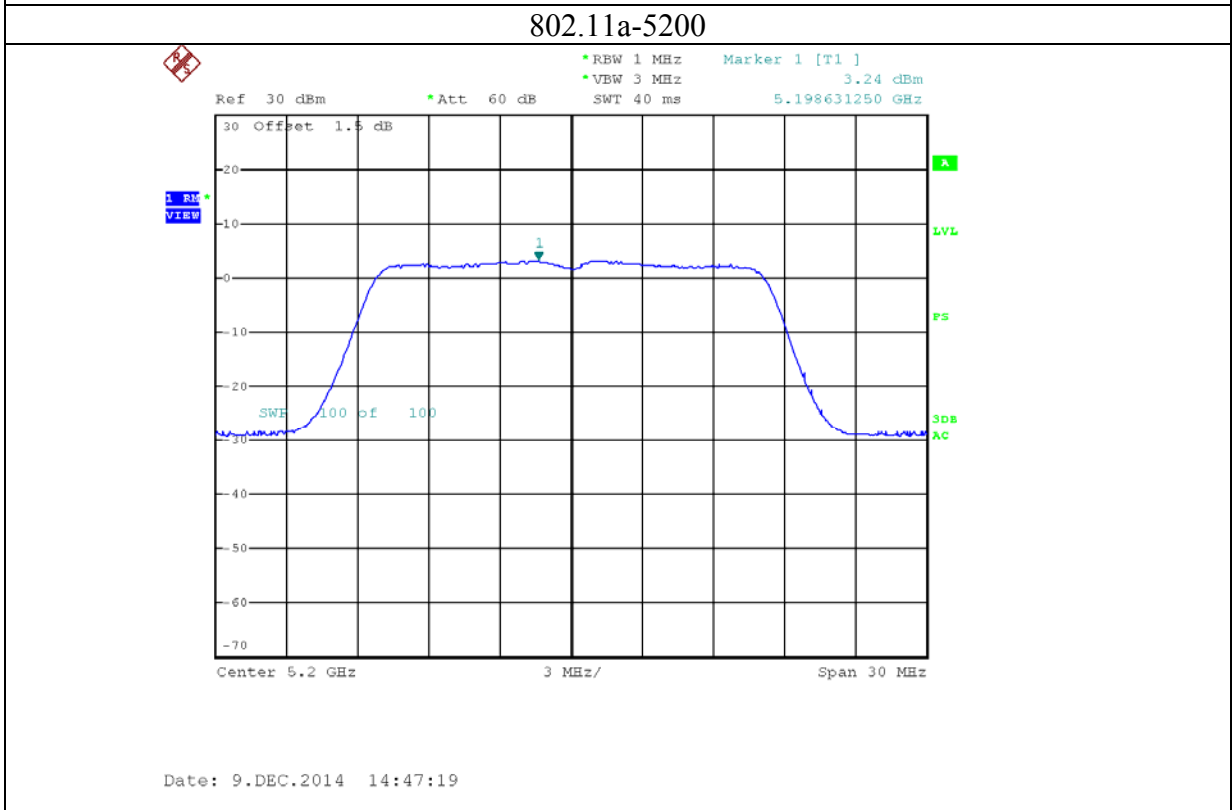
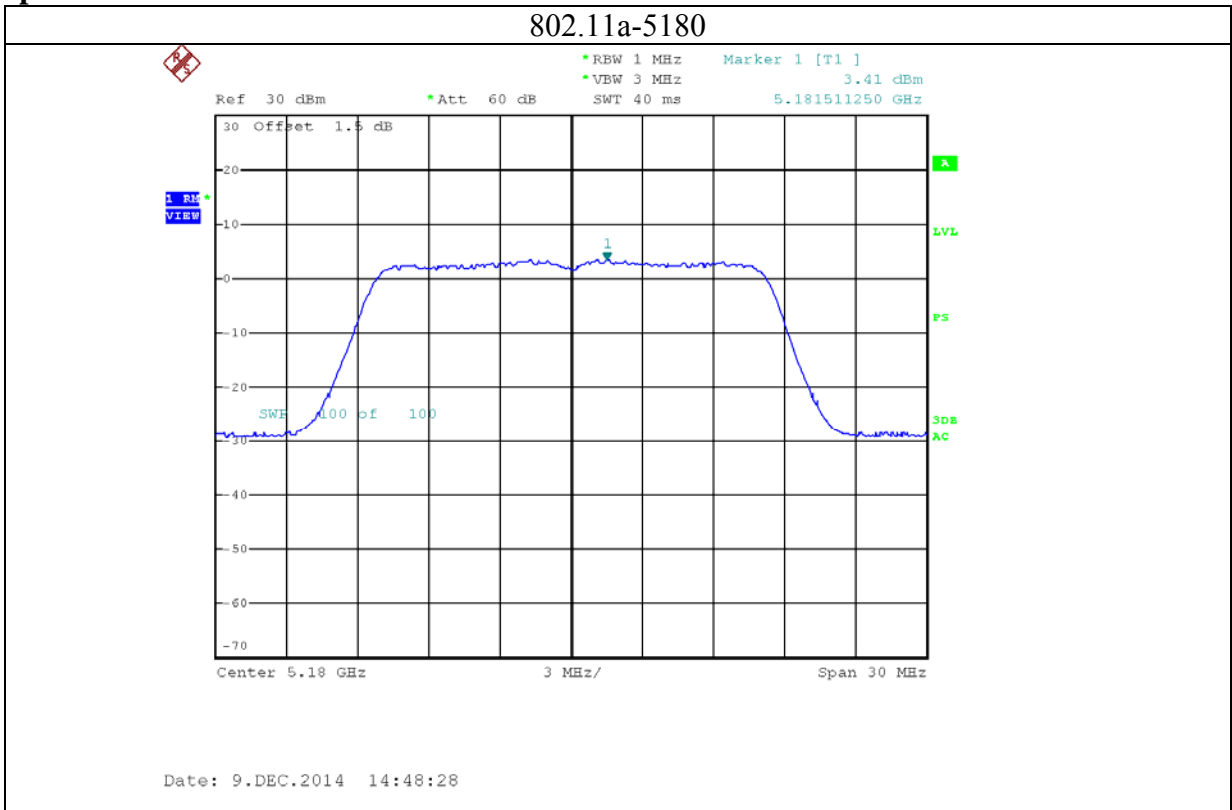
Test mode	Frequency (MHz)	PSD (dBm)			Duty cycle factor (dB)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
		Port 0	Port 1	Port 2				
802.11 n/ac 40	5755	-1.78	-1.88	-2.05	1.06	3.93	19.00	15.07
	5795	-1.99	-2.45	-2.08	1.06	3.66	19.00	15.34

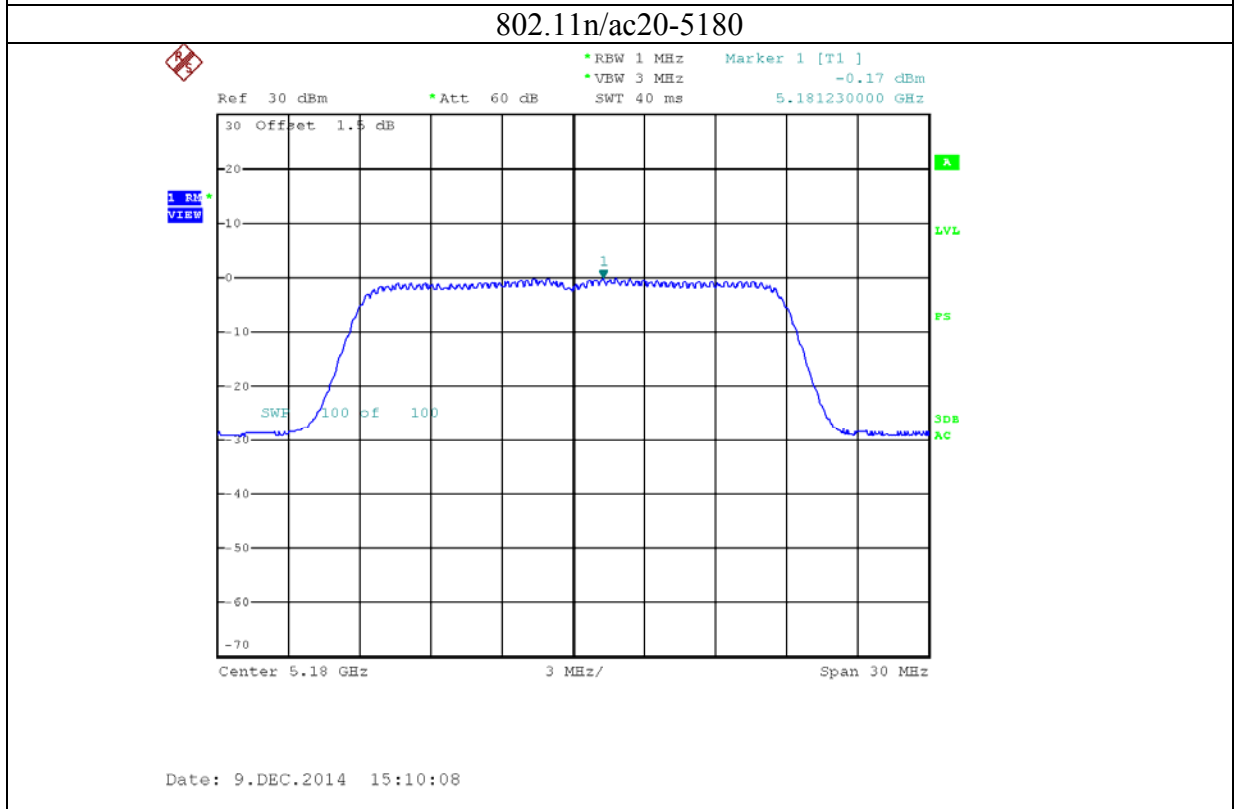
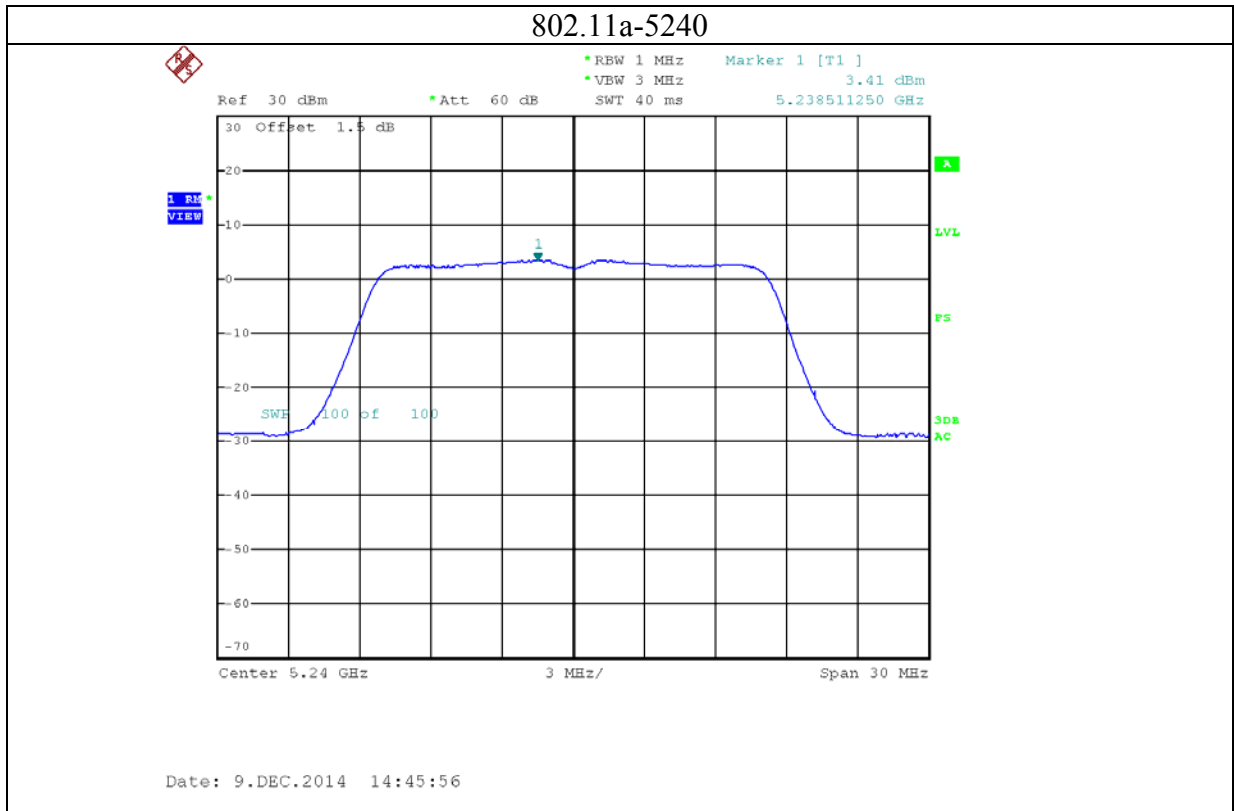
Test mode	Frequency (MHz)	PSD (dBm)			Duty cycle factor (dB)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
		Port 0	Port 1	Port 2				
802.11 ac80	5775	-5.25	-4.82	-4.64	0.59	0.46	19.00	18.54

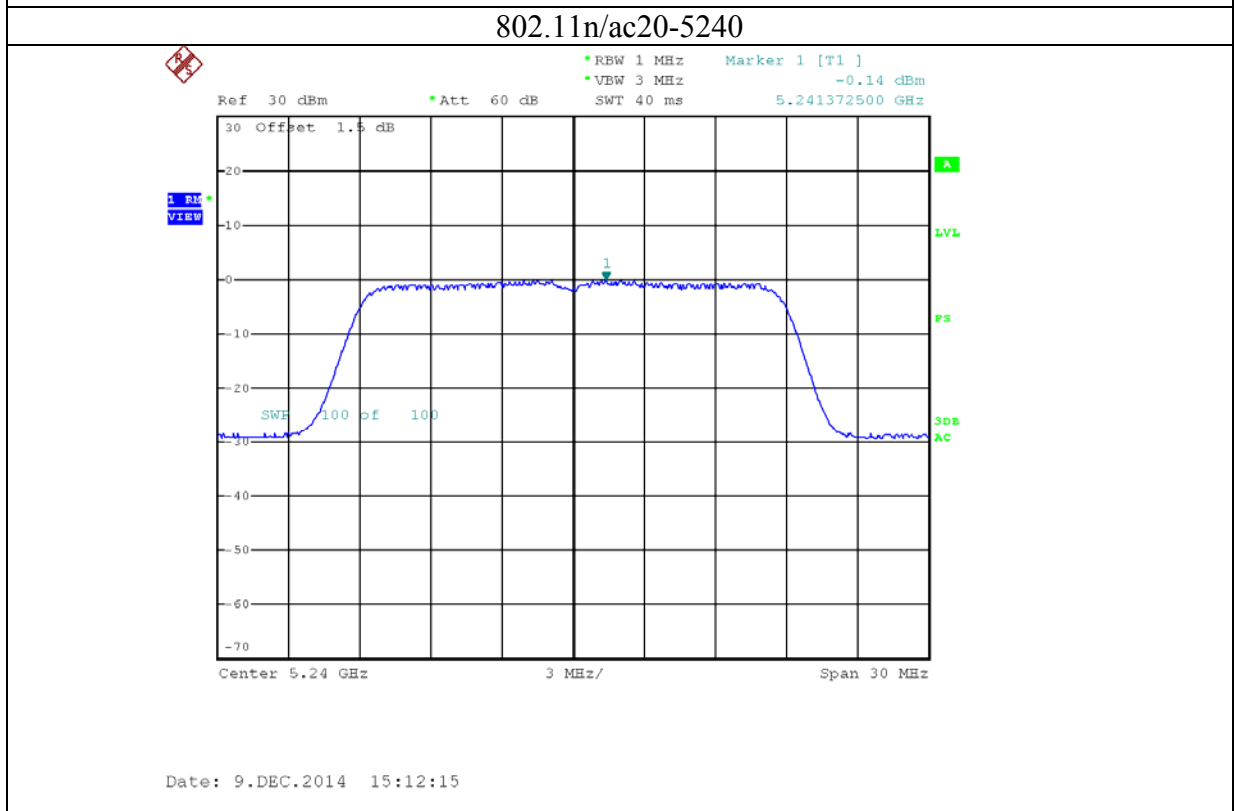
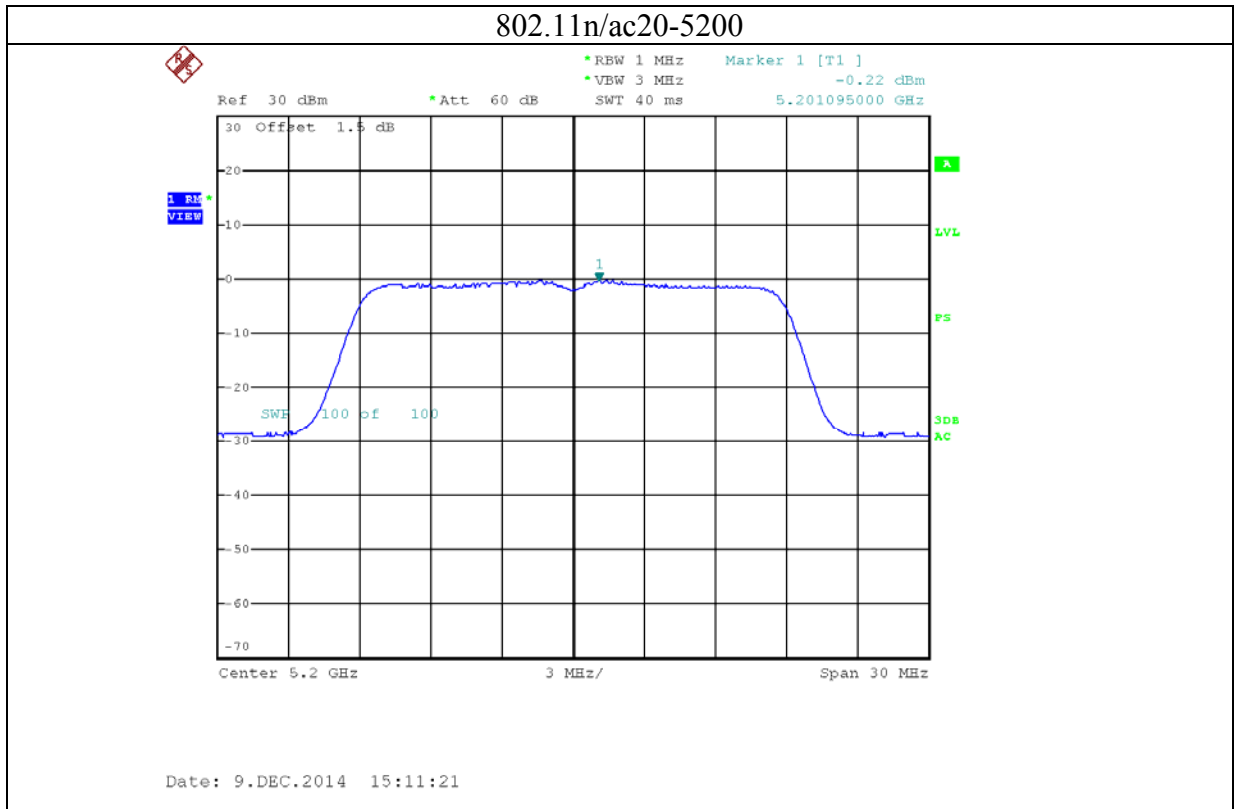
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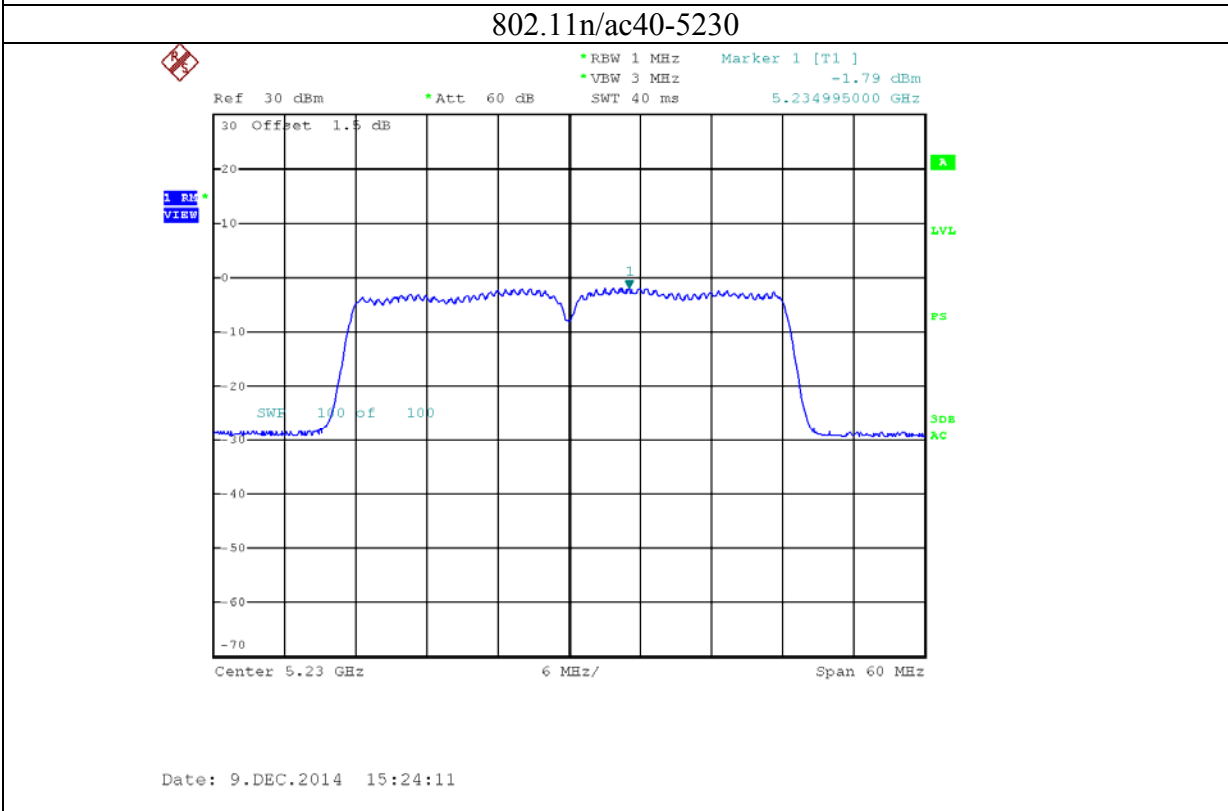
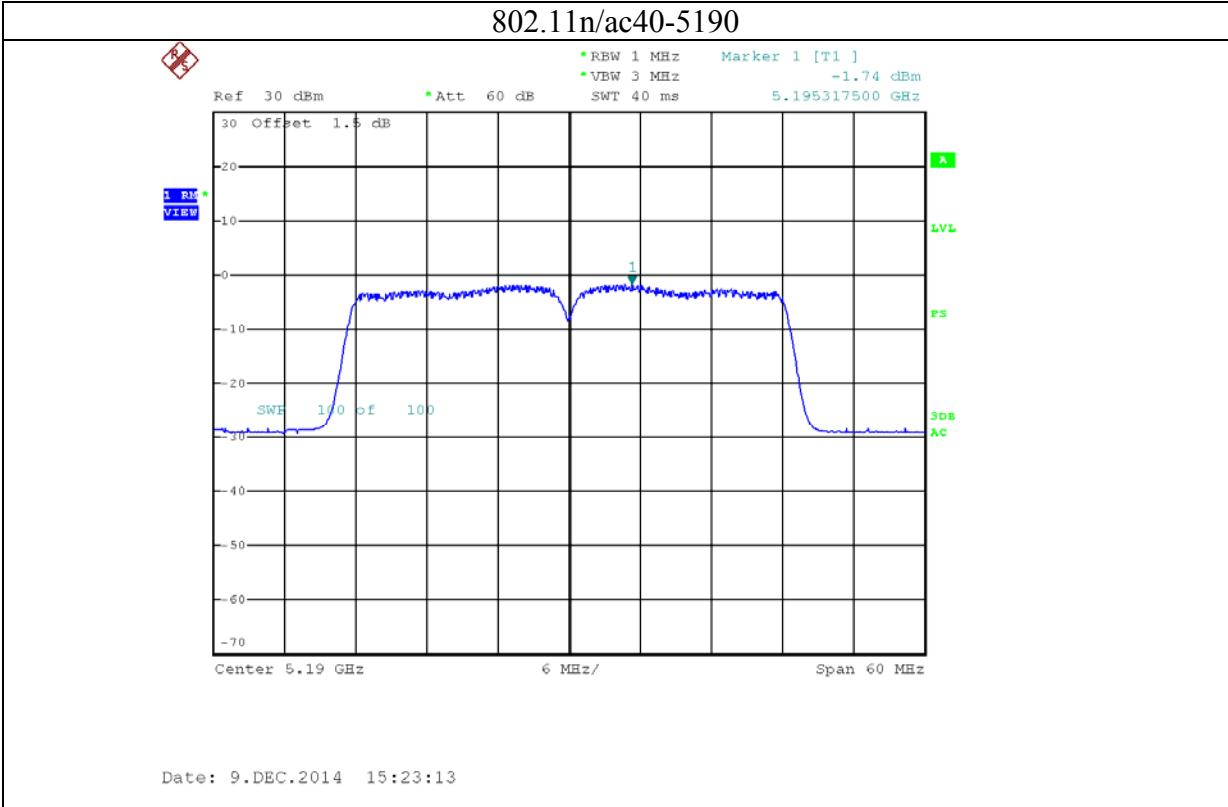
1. For antenna gain = 2.0 or 14.0dBi and with beam forming, the limit should be corrected.
2. Total PSD =  $10 * \lg(10^{\text{port } 0 / 10} + 10^{\text{port } 1 / 10} + 10^{\text{port } 2 / 10})$
3. For CDD transmissions, If all antennas have the same gain,  $G_{ANT}$ , Directional gain =  $G_{ANT} +$  Array Gain, where Array Gain is as follows.
  - For power spectral density (PSD) measurements on all devices,  
 $Array\ Gain = 10 \log(N_{ANT}/N_{SS})\ dB$ .

### 5.1 GHz Band Mode 17 port 0

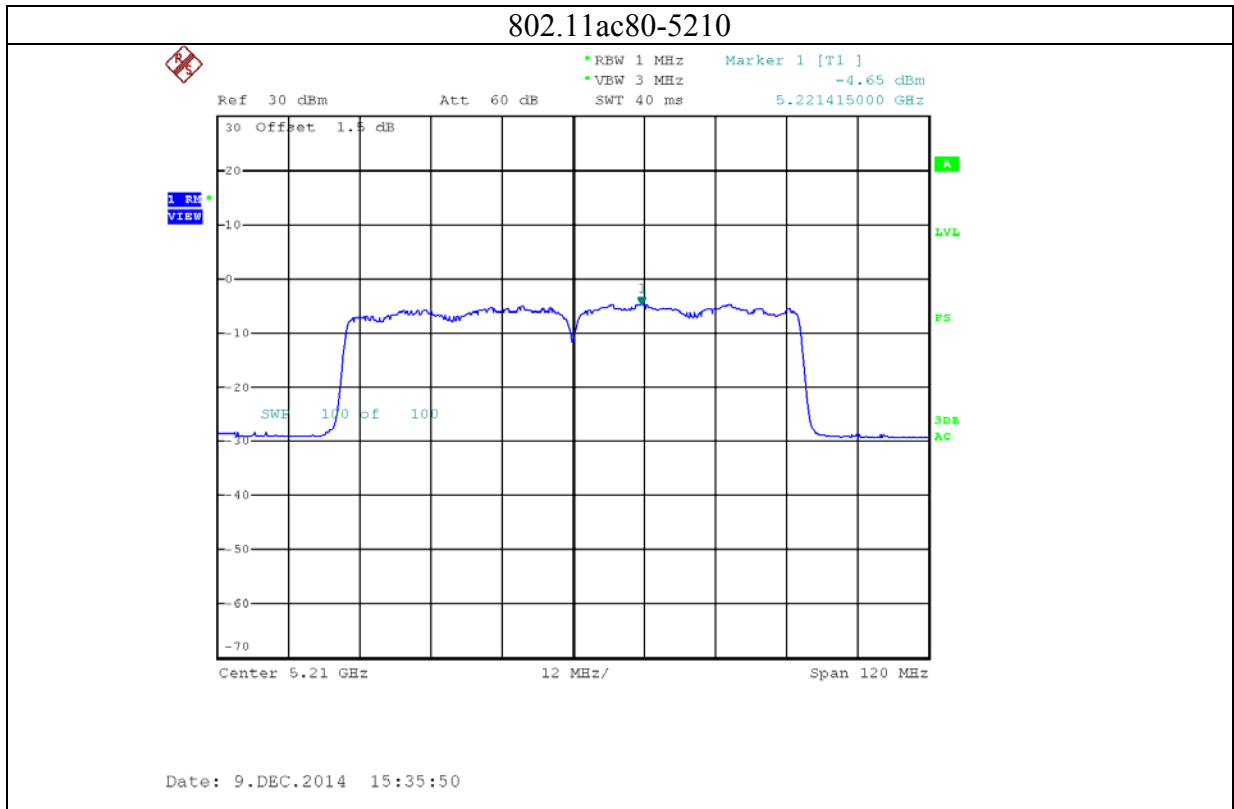




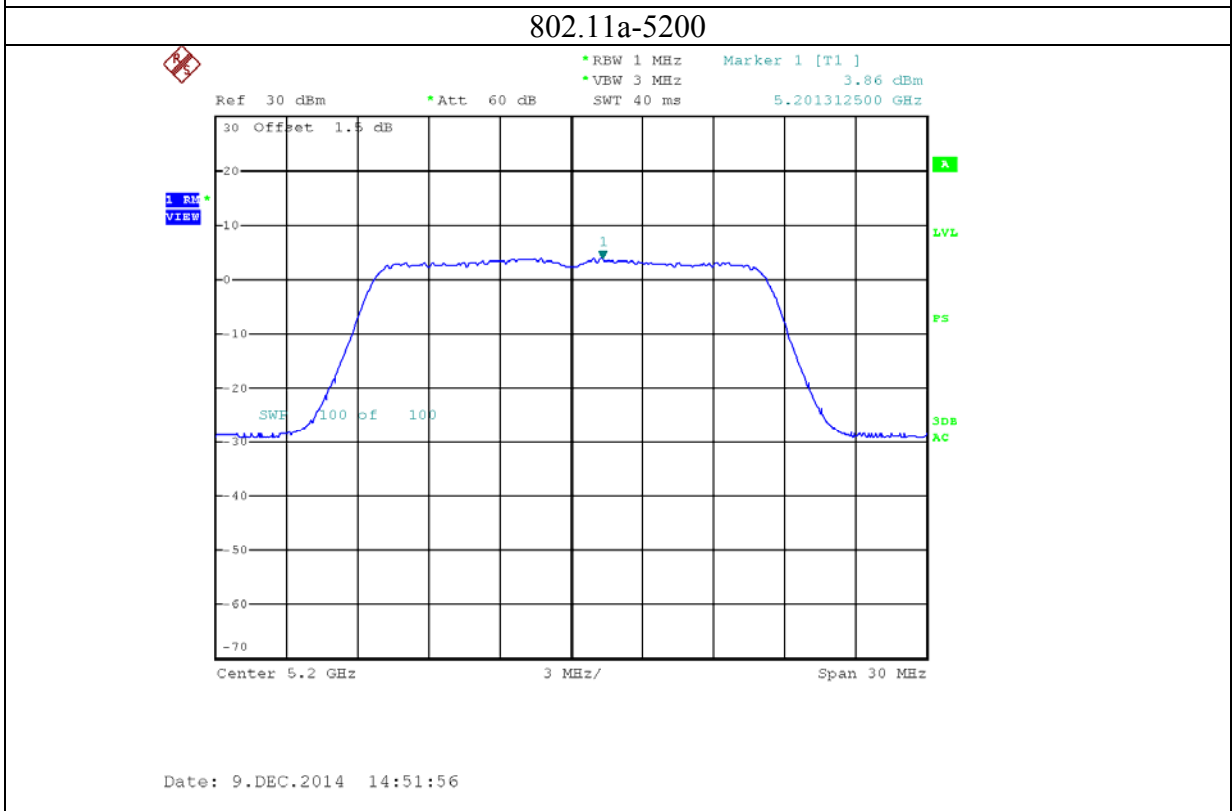
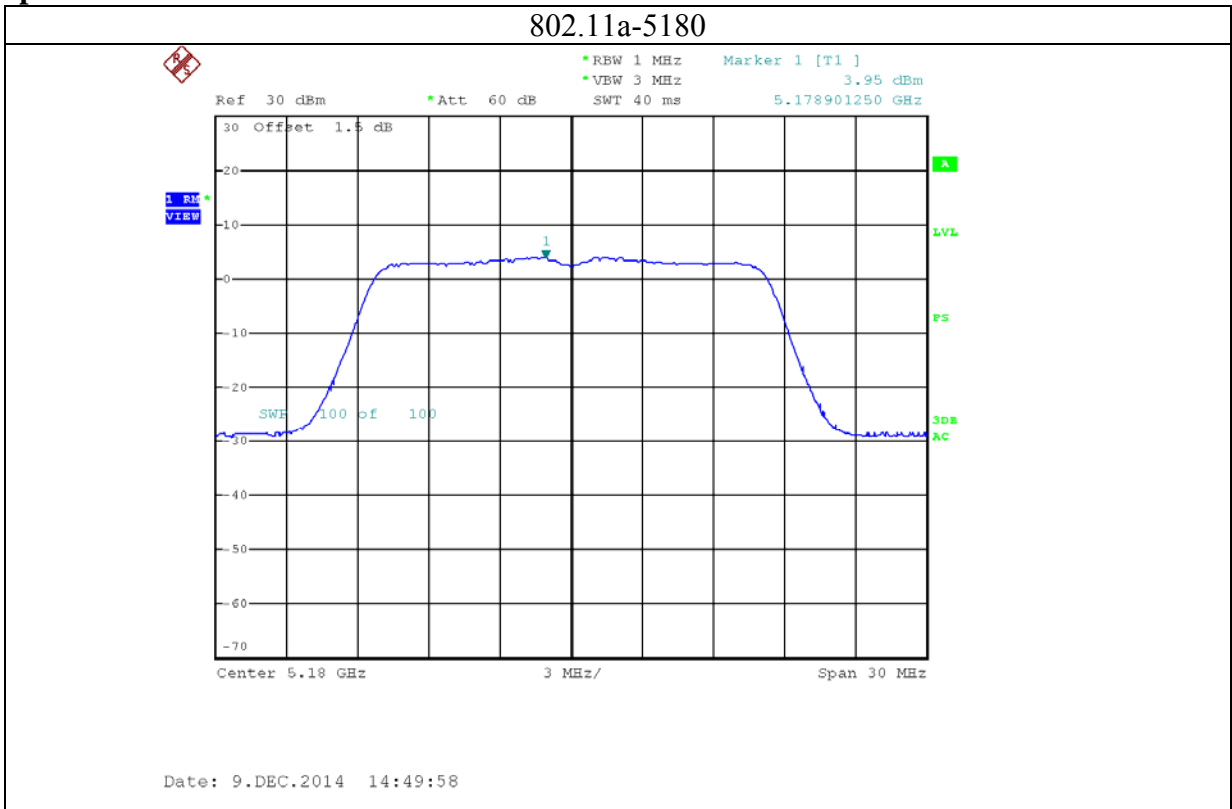


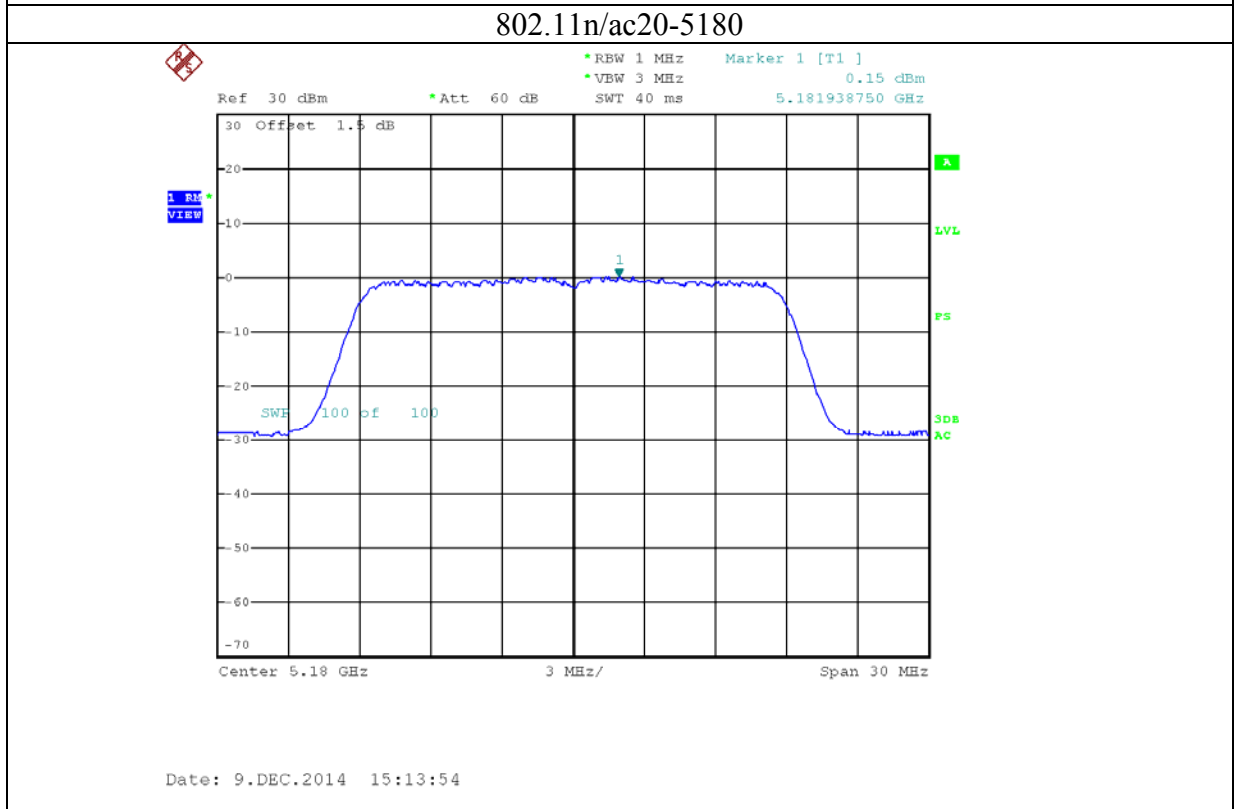
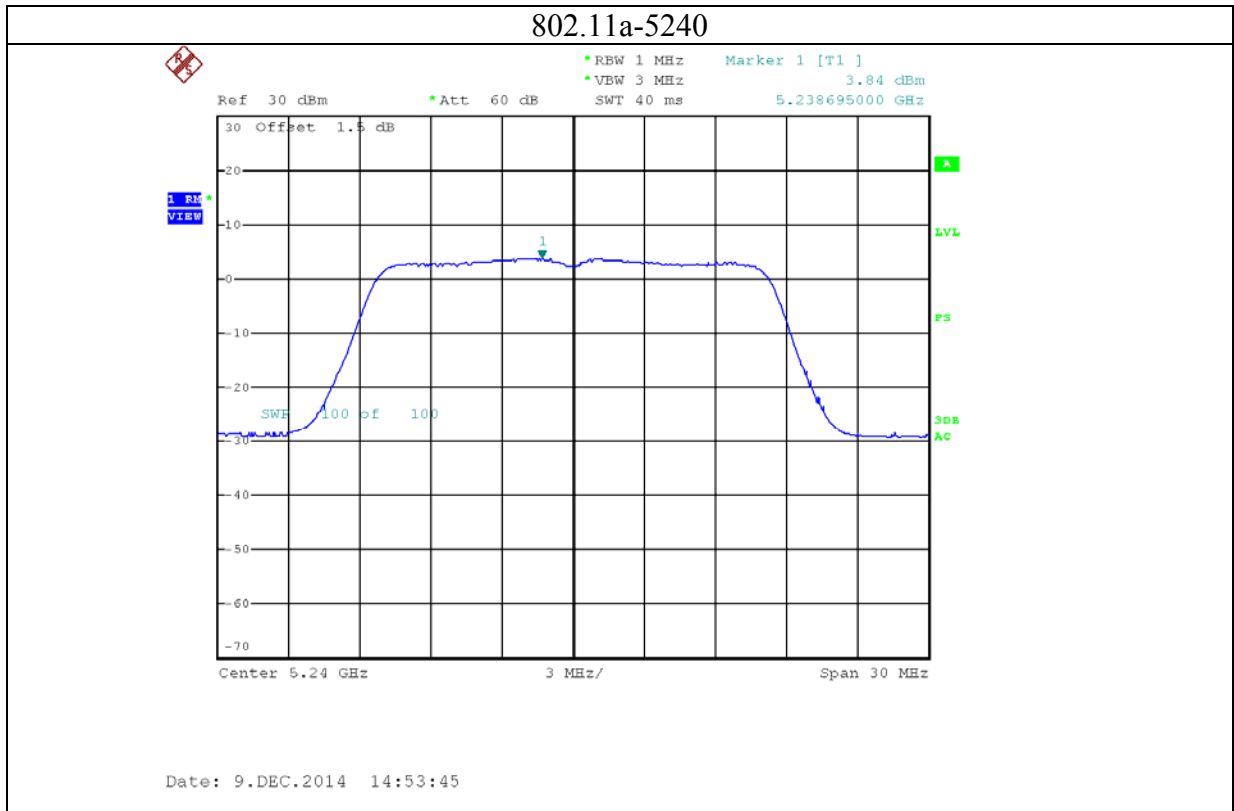


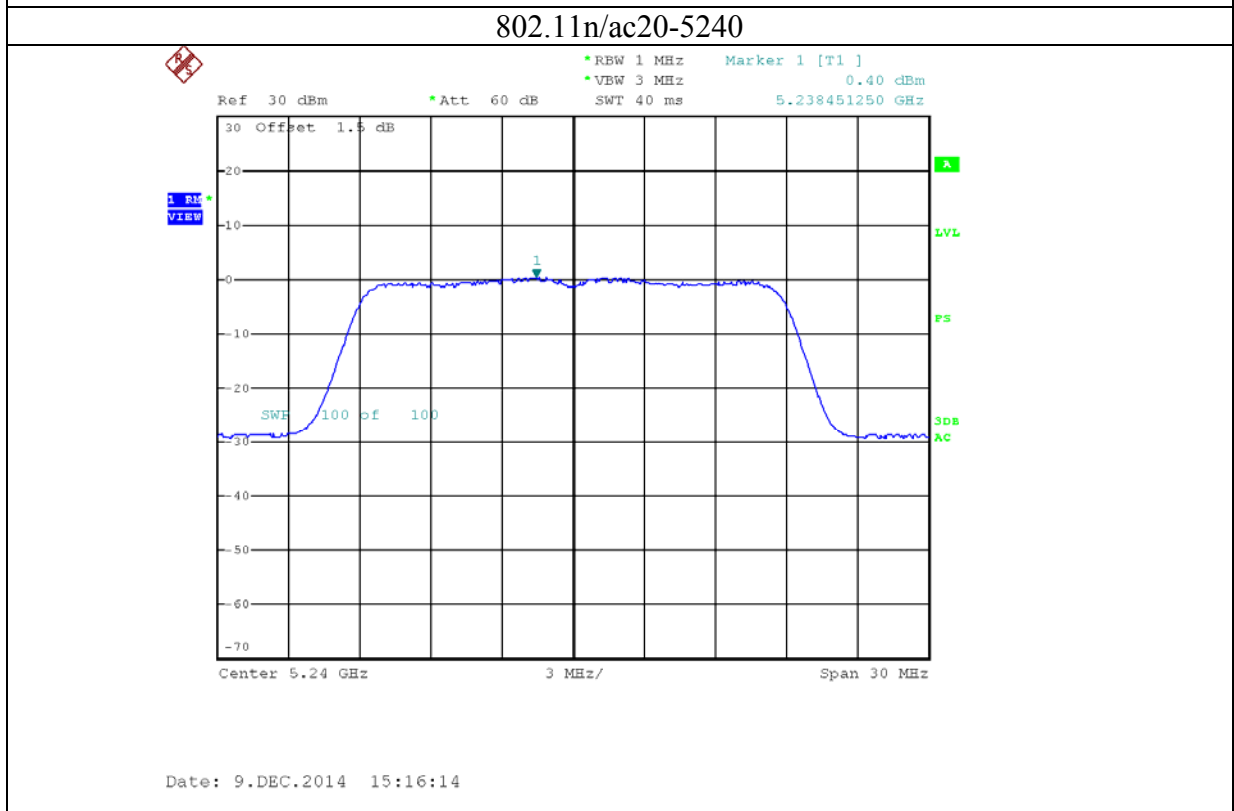
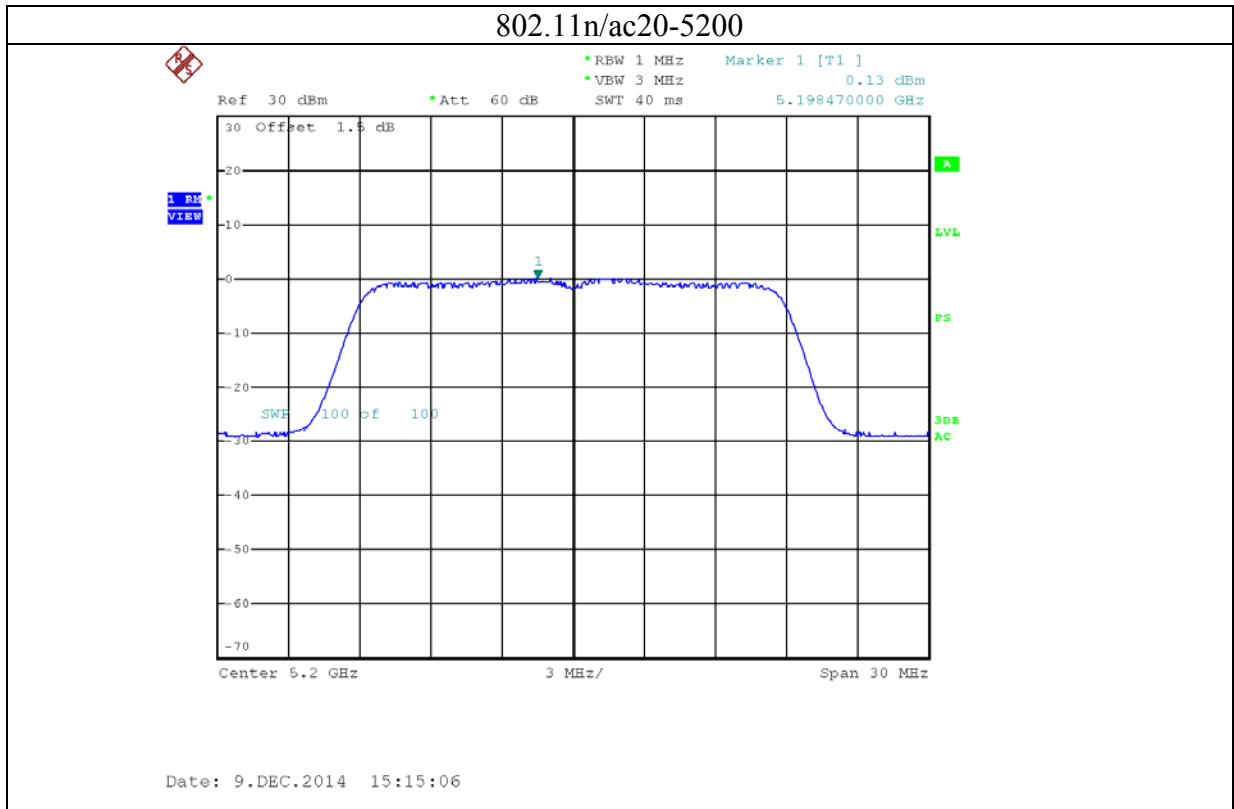


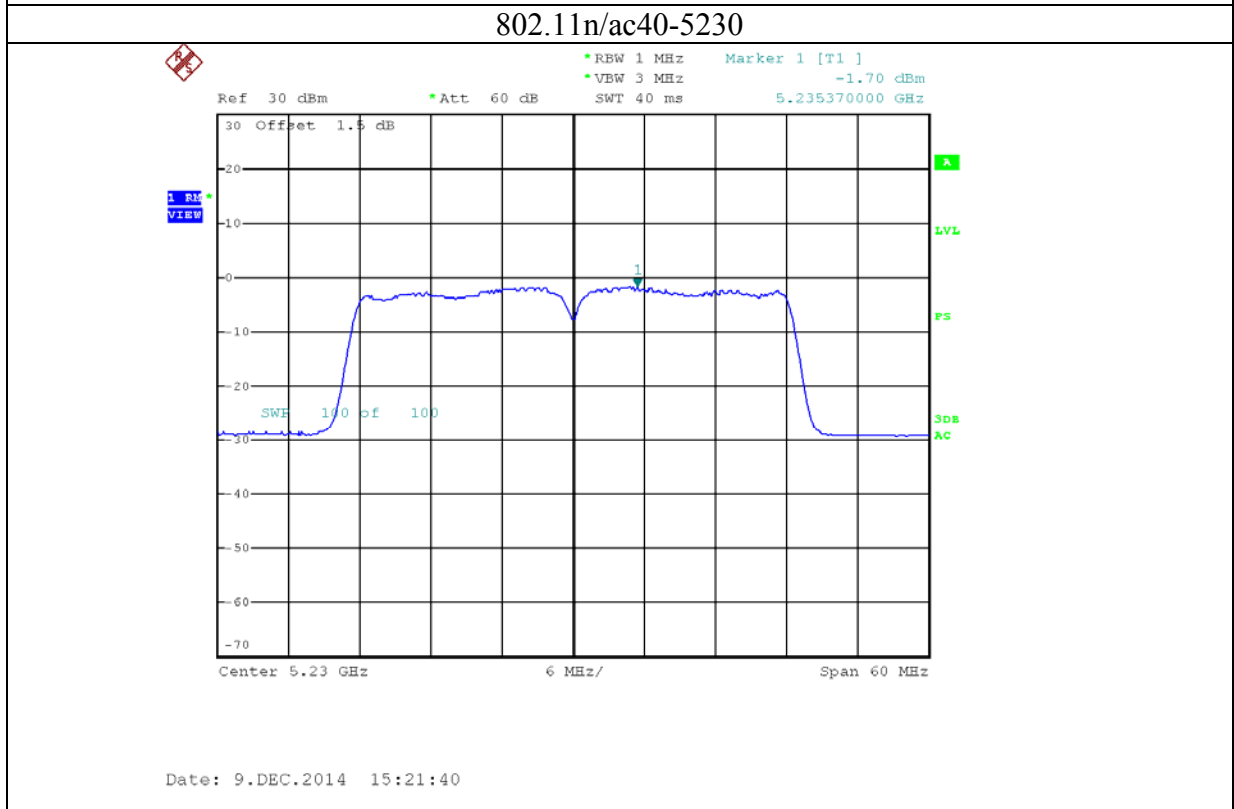
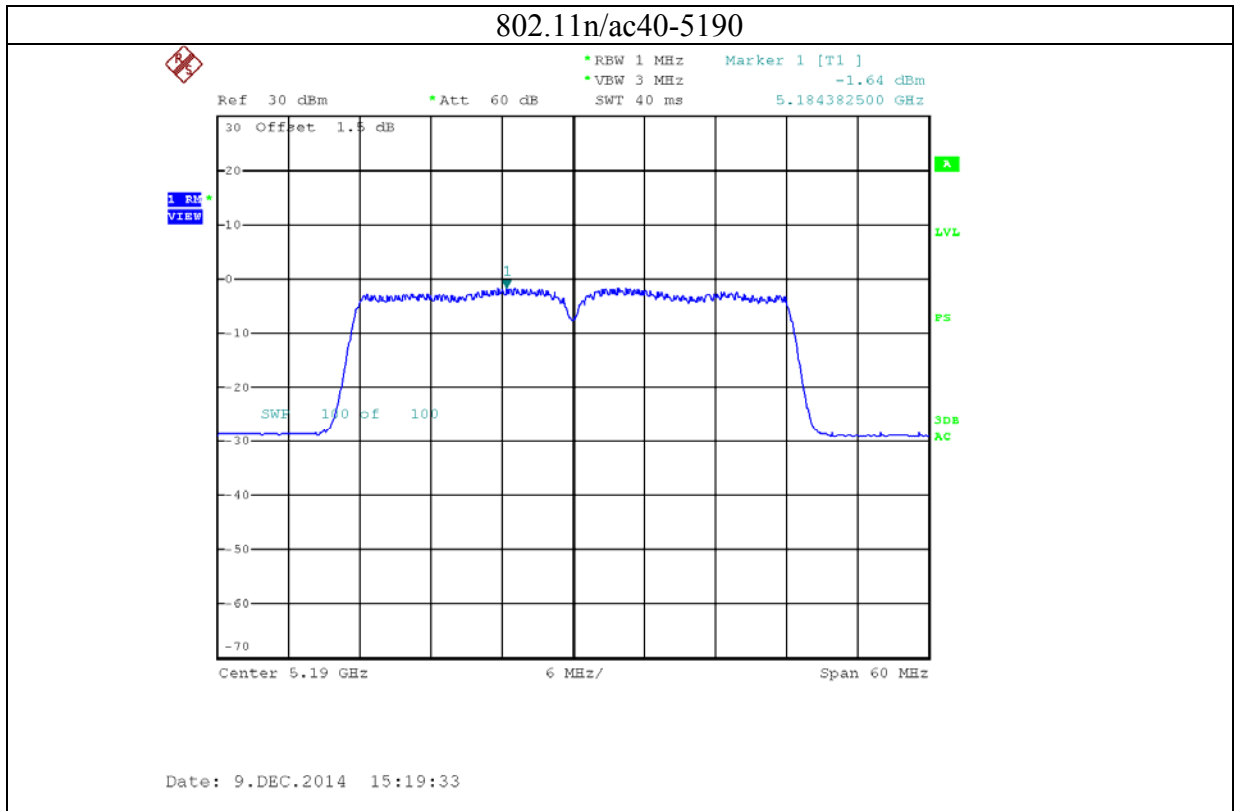


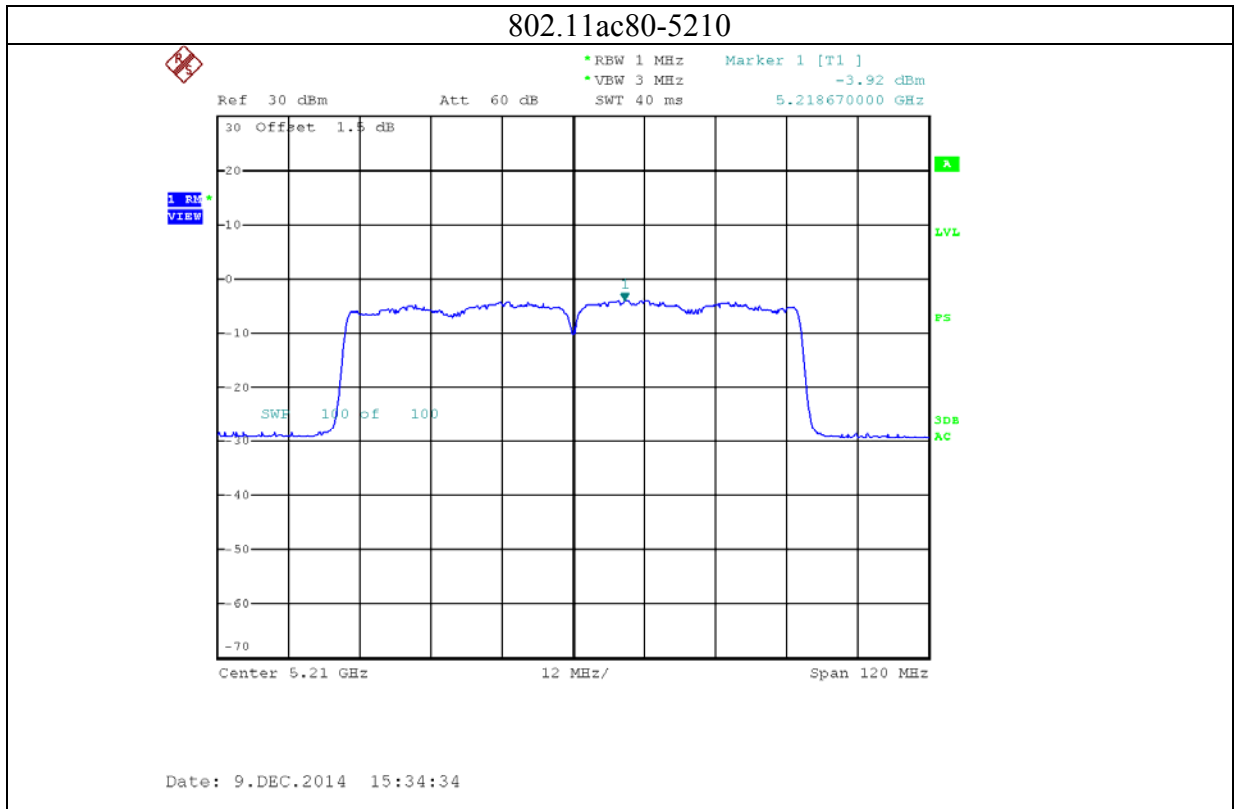
port 1



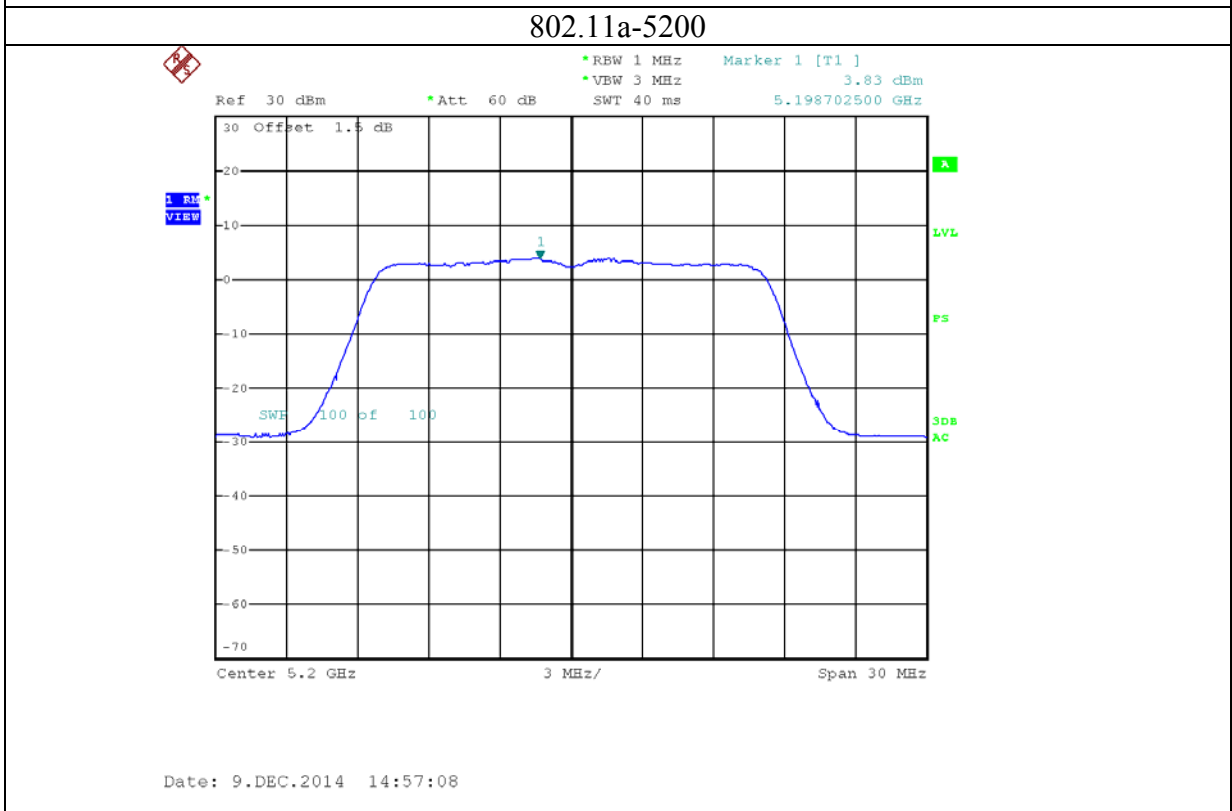
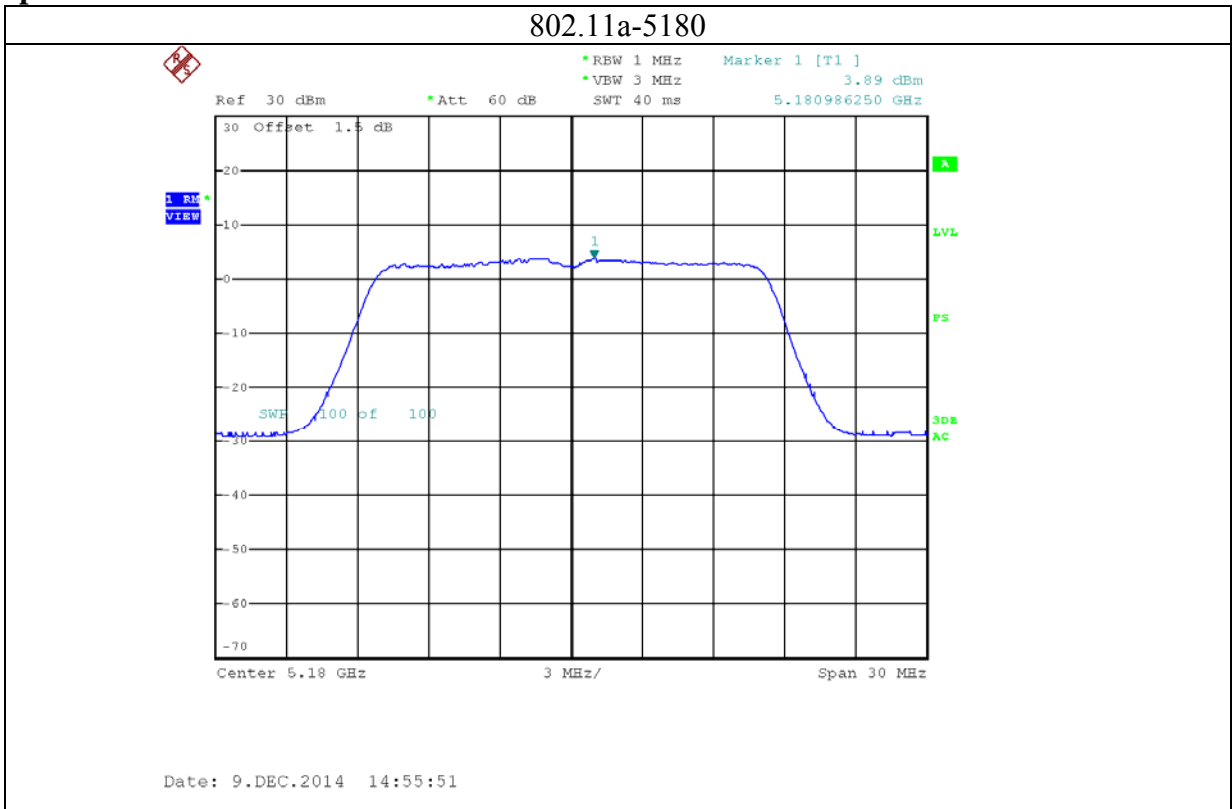


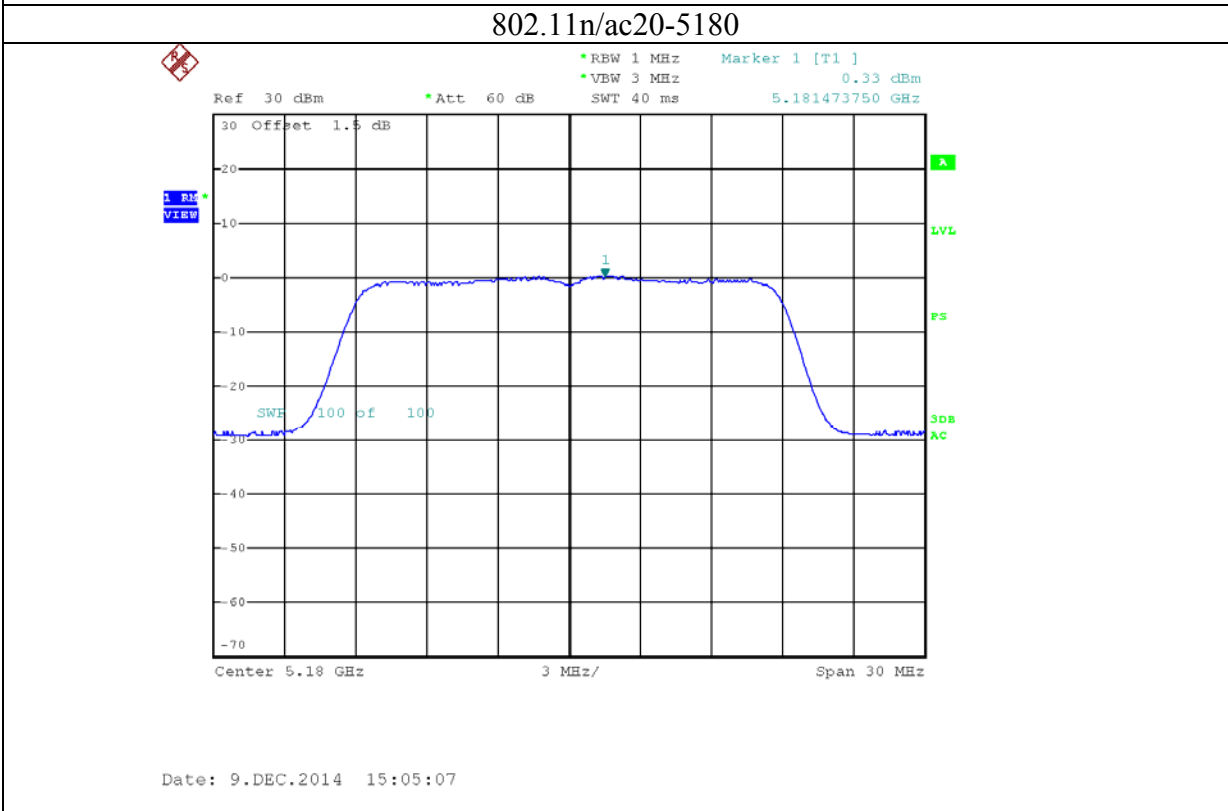
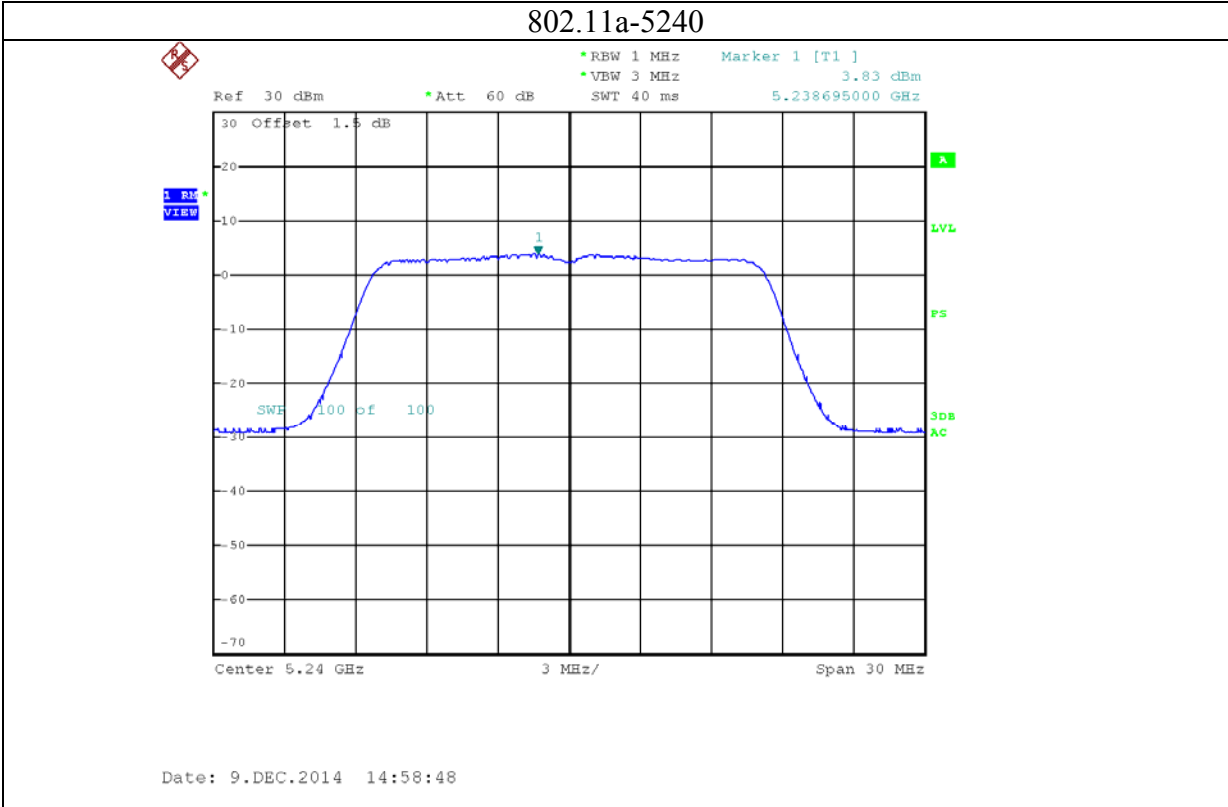




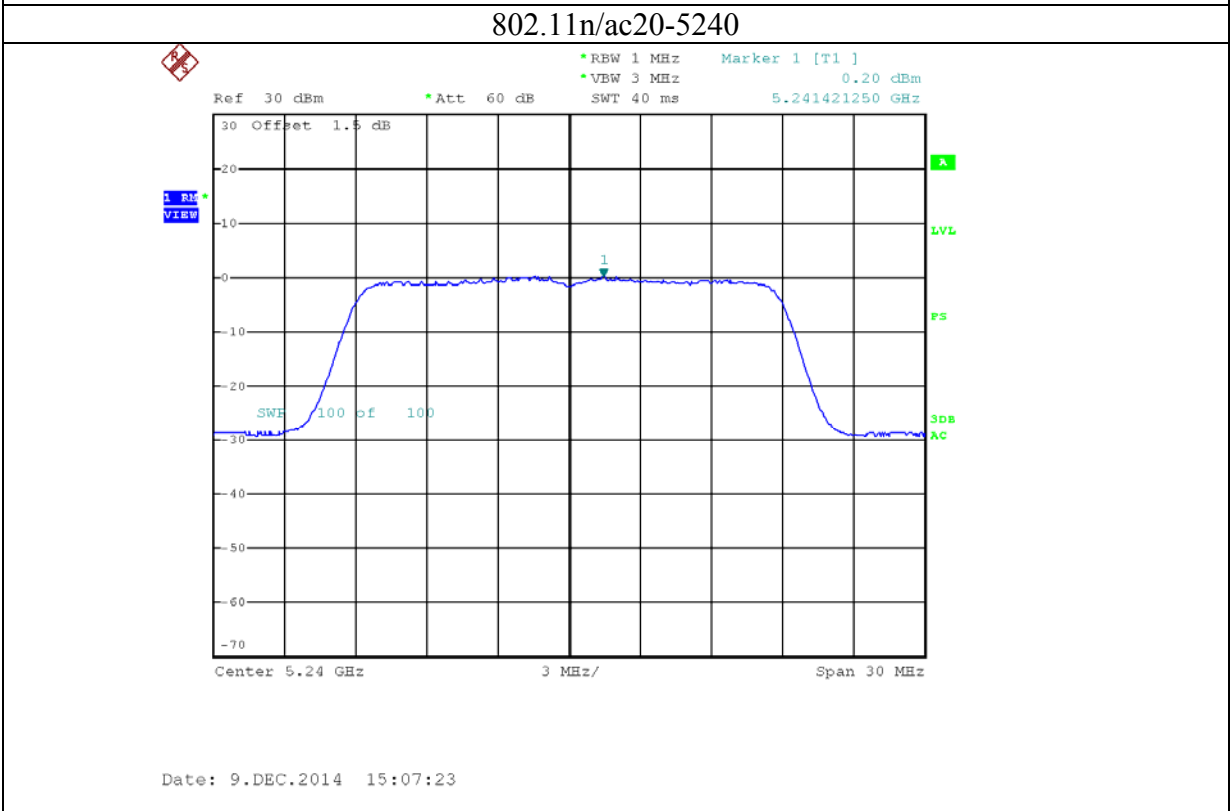
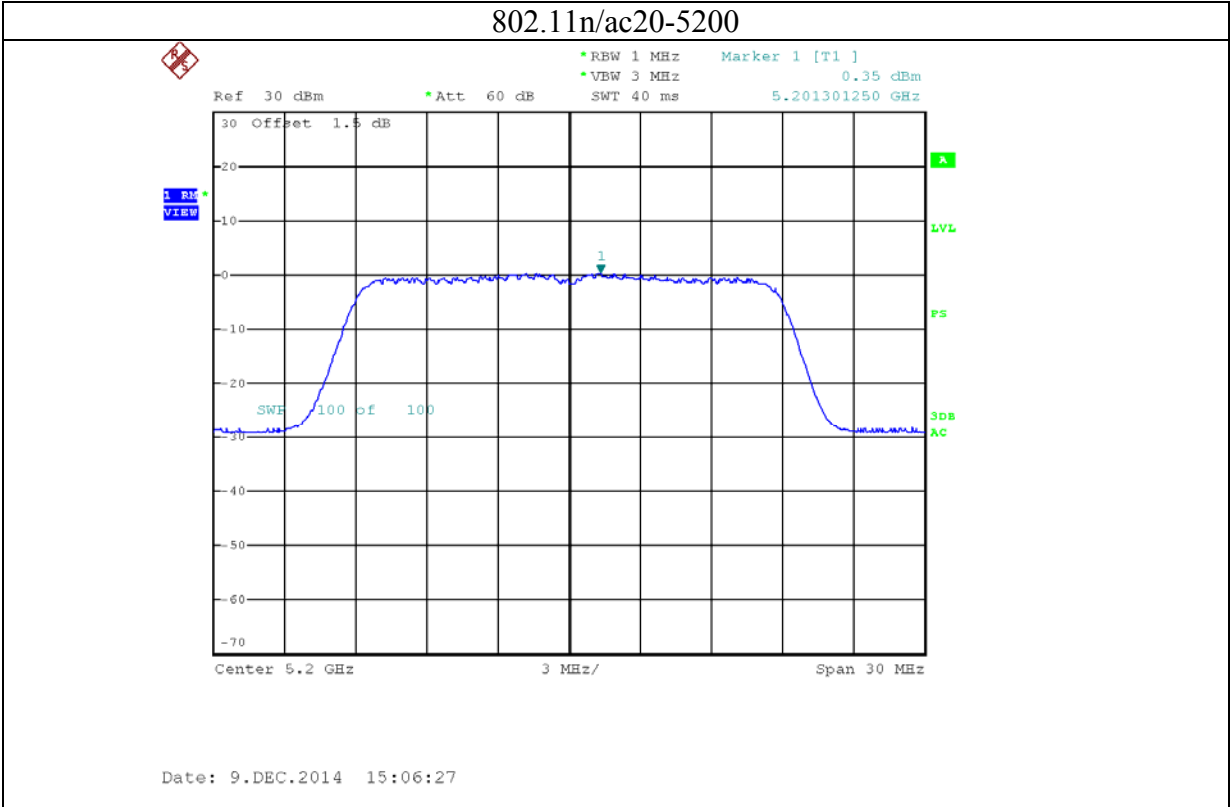


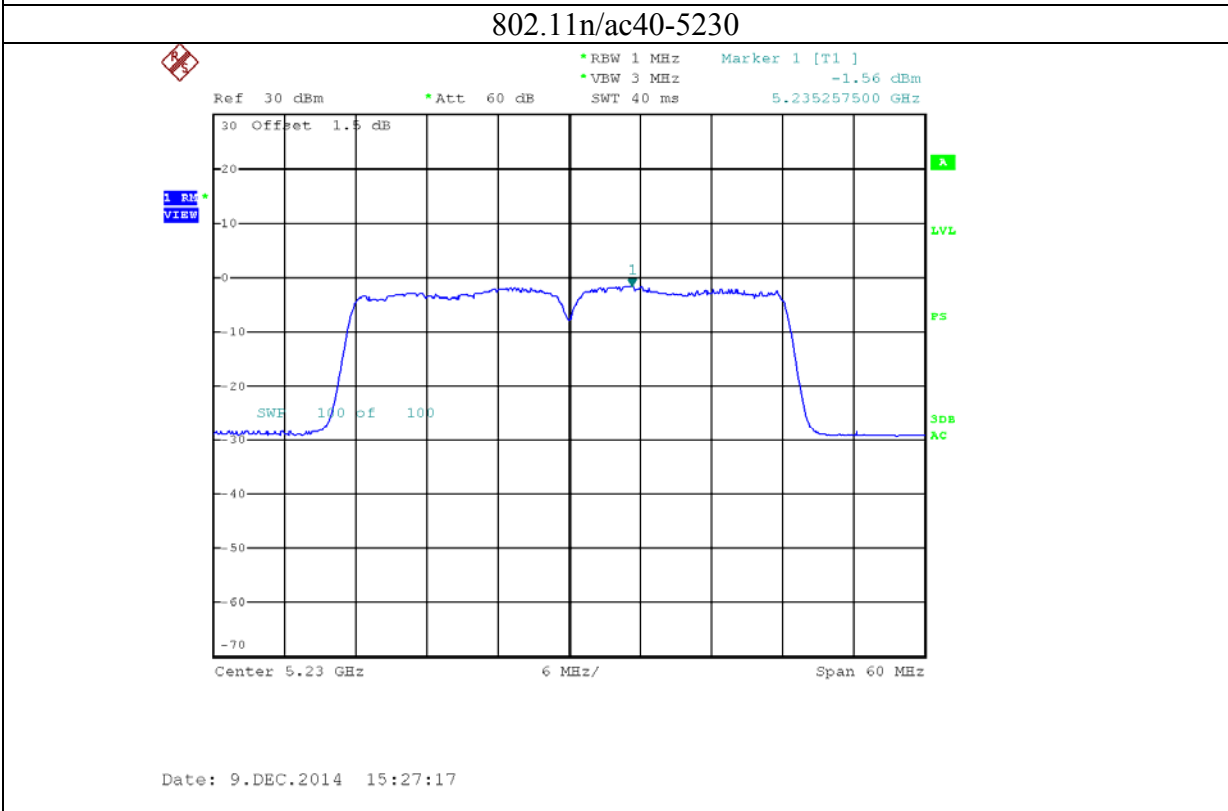
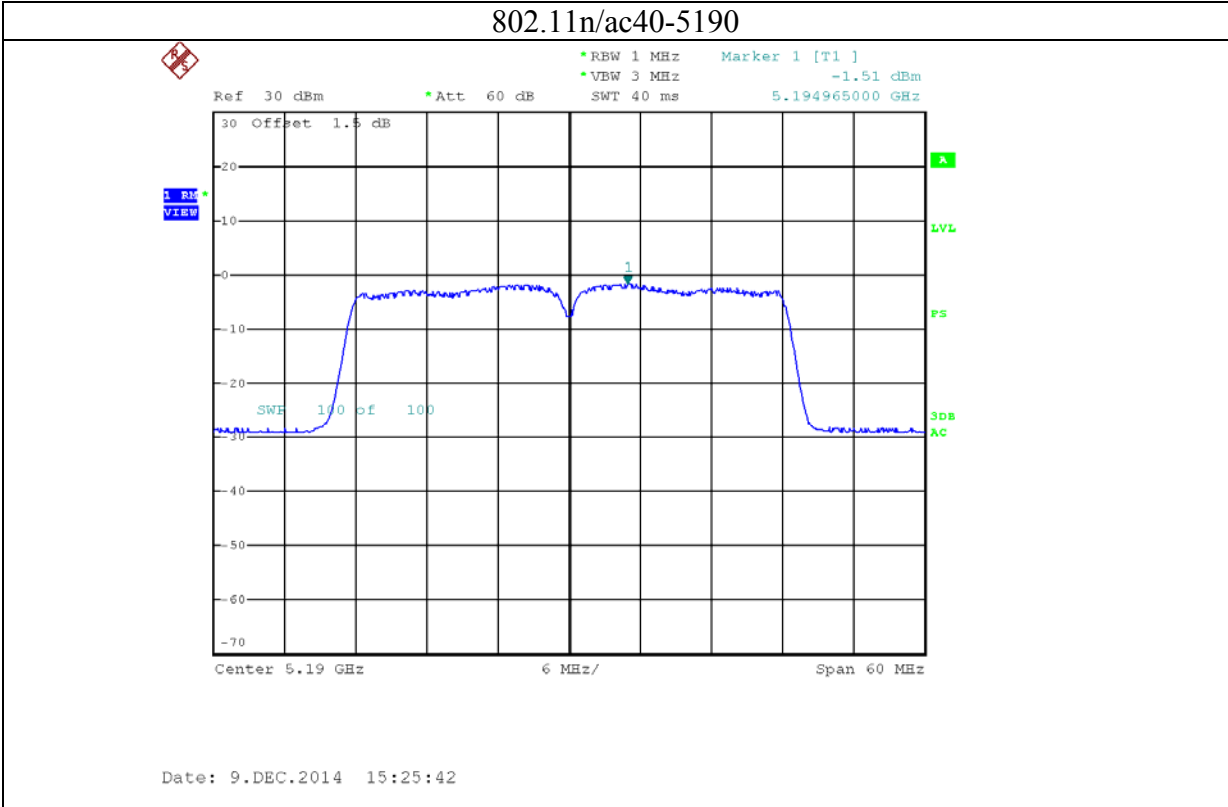
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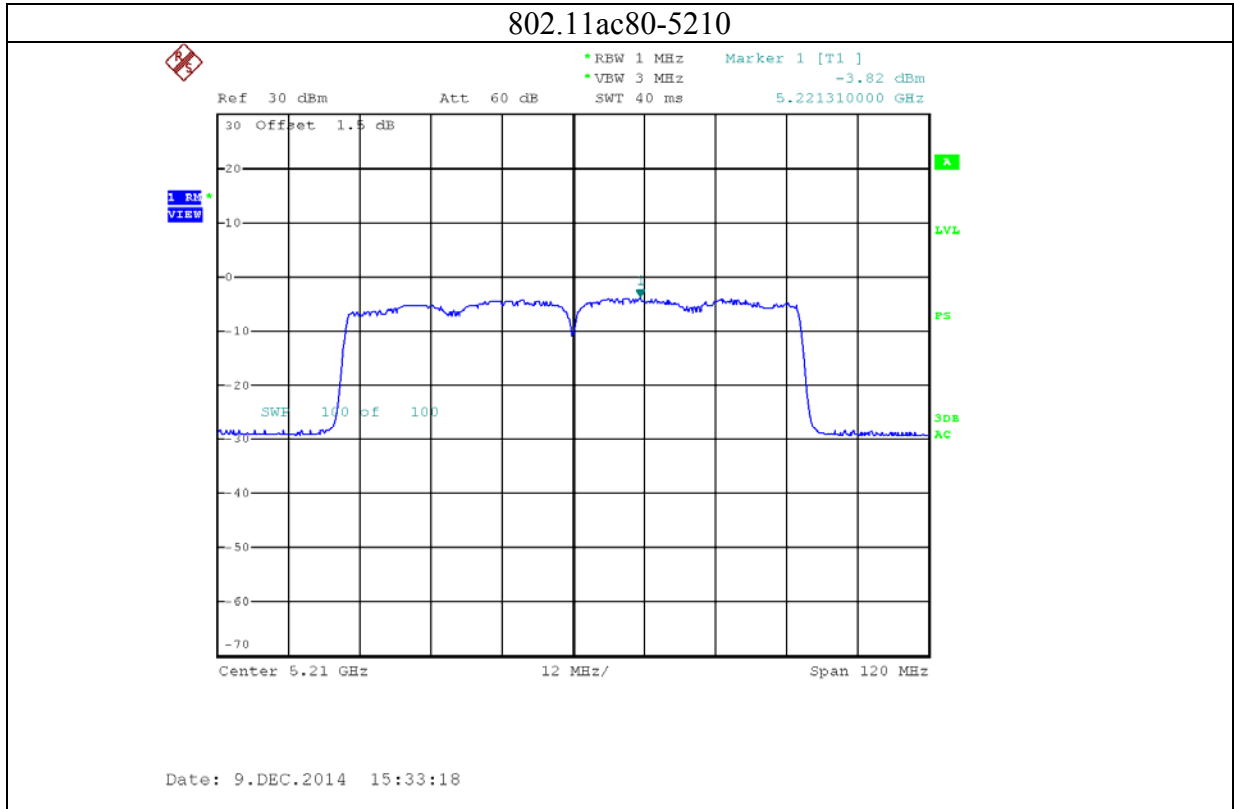






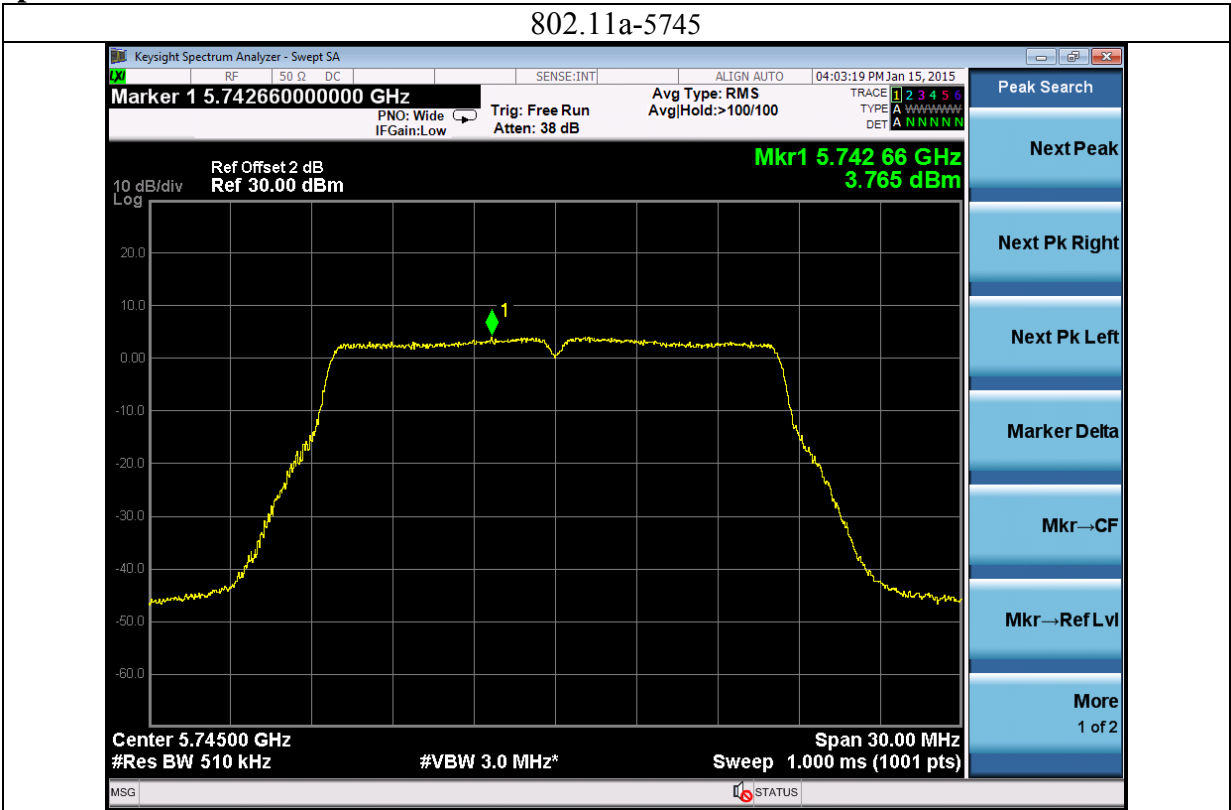






5.8 GHz Band Mode 17  
port 0

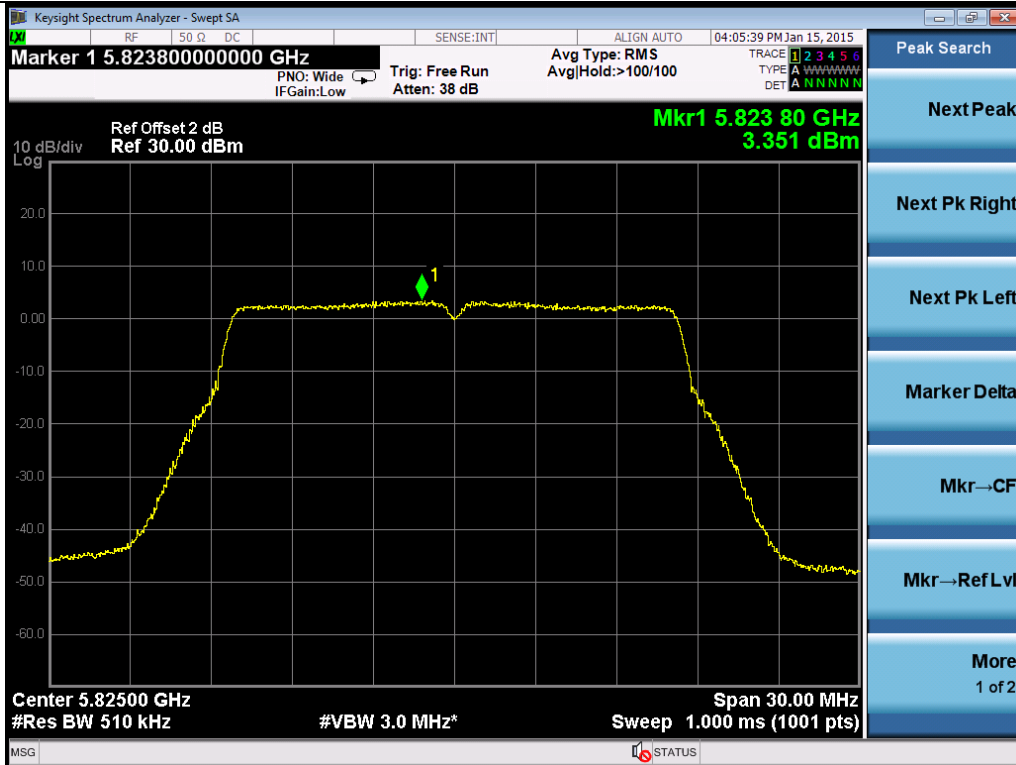
802.11a-5745



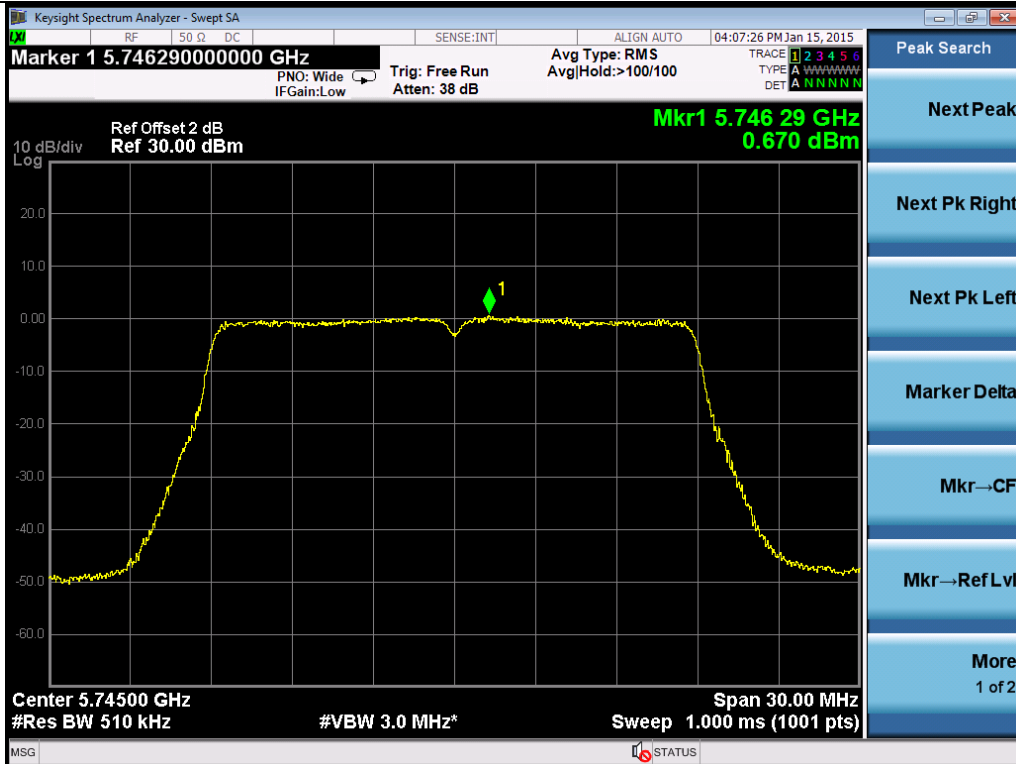
802.11a-5785



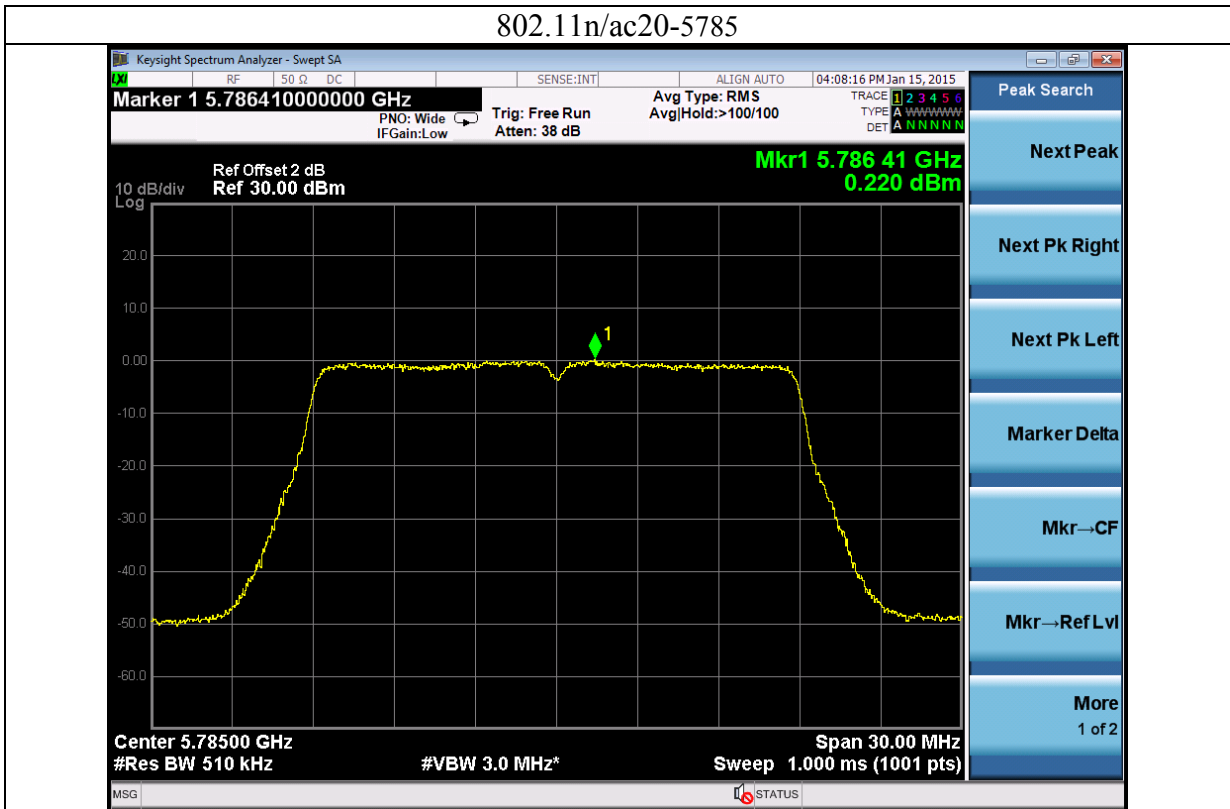
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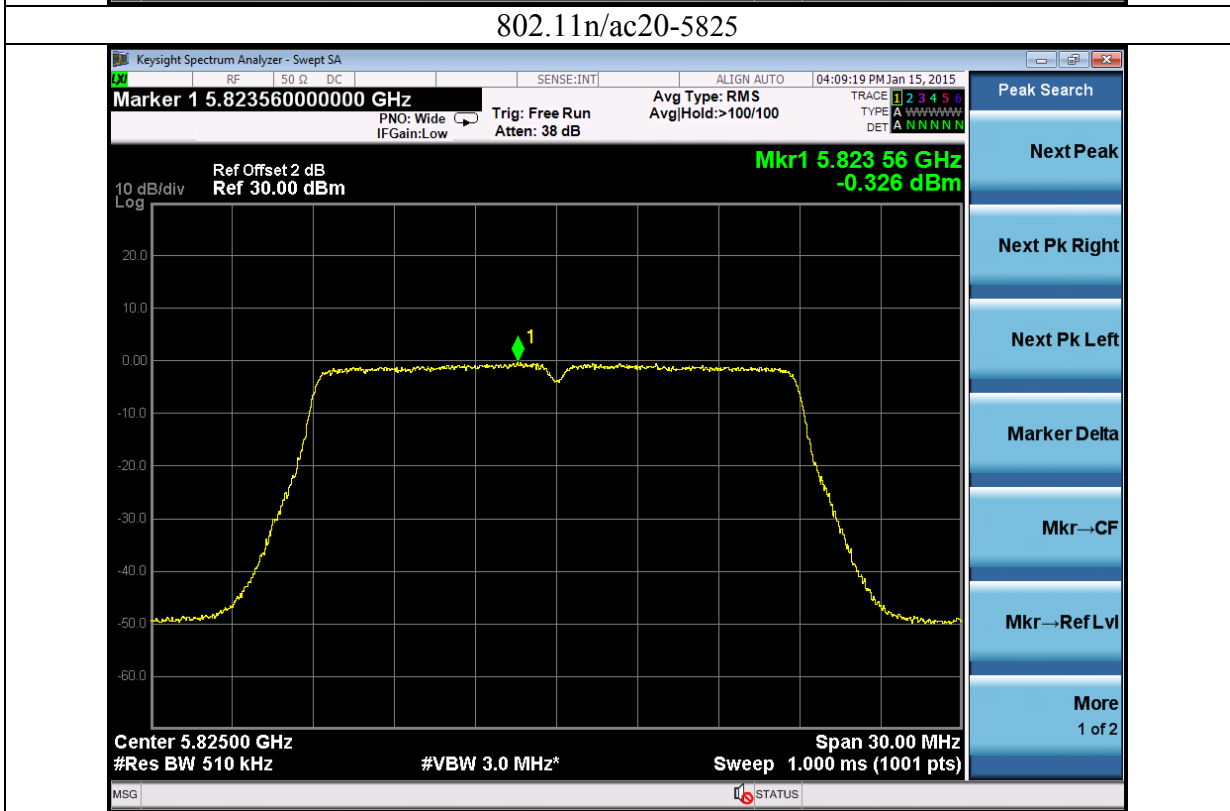
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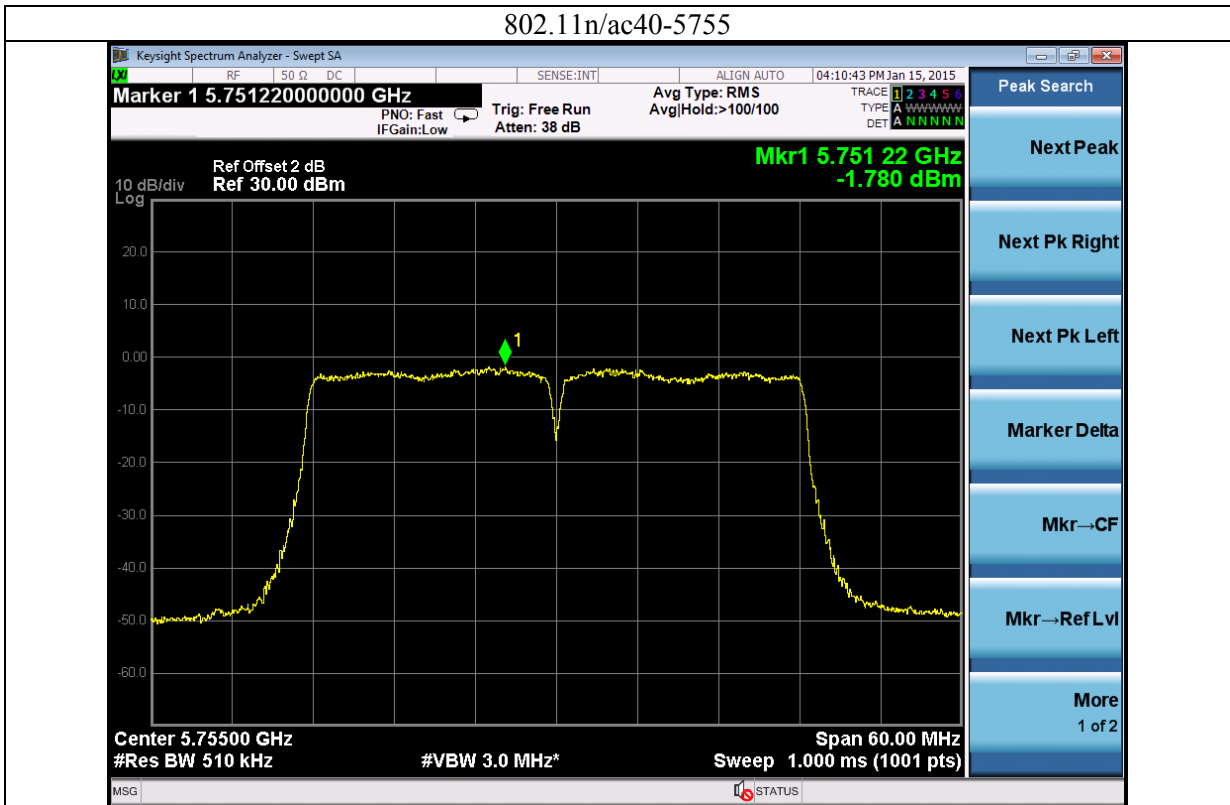
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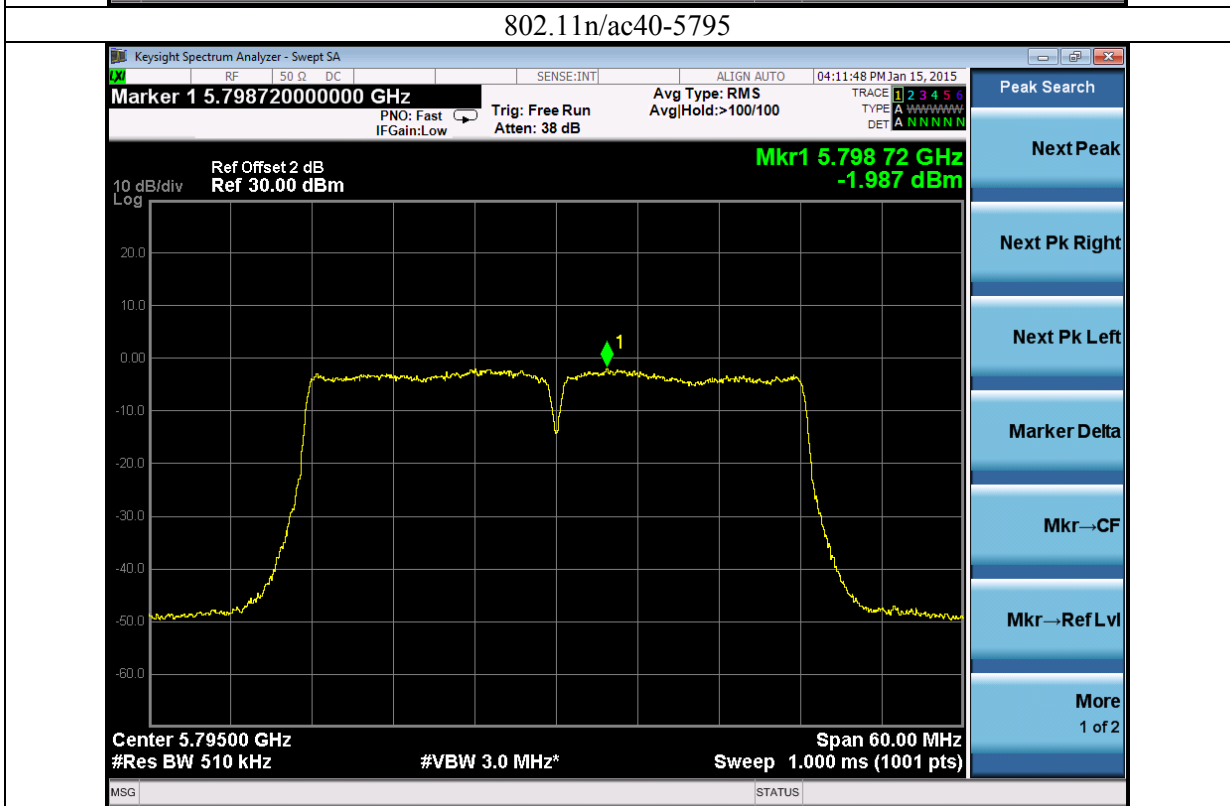
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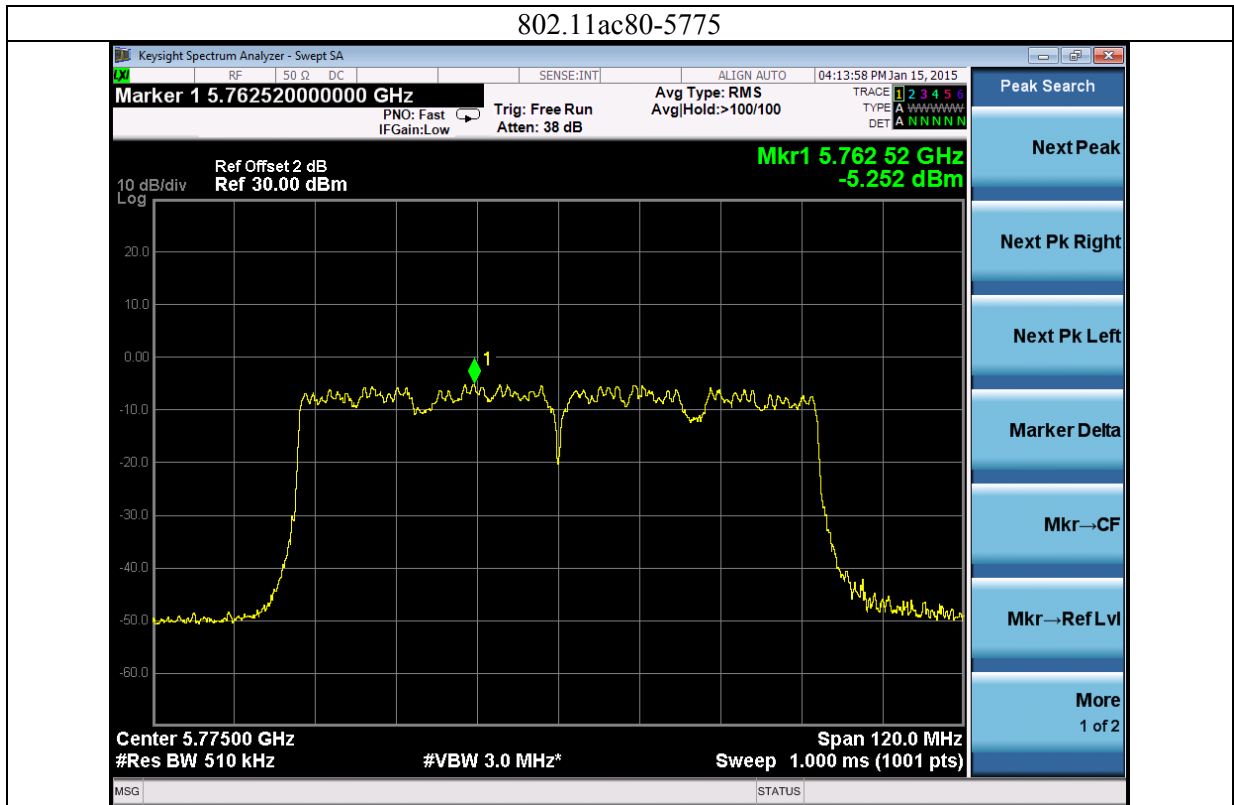


802.11n/ac40-5755



802.11n/ac40-5795

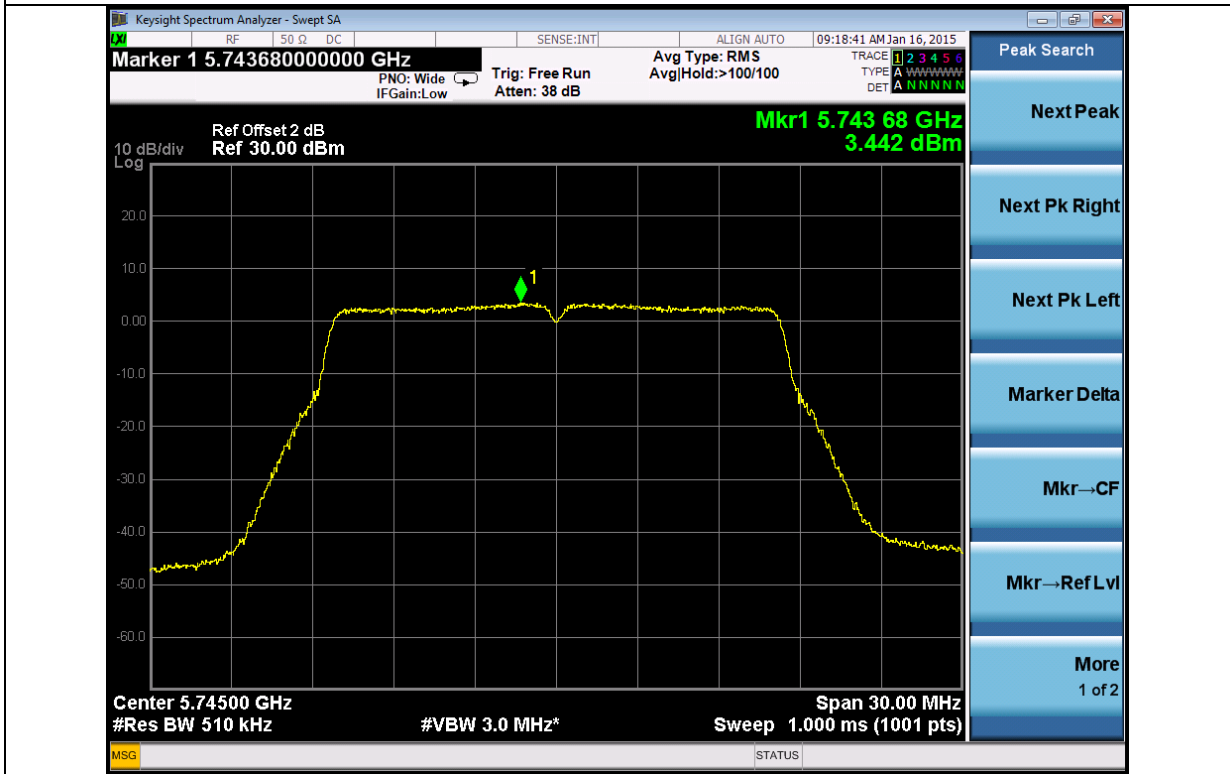






port 1

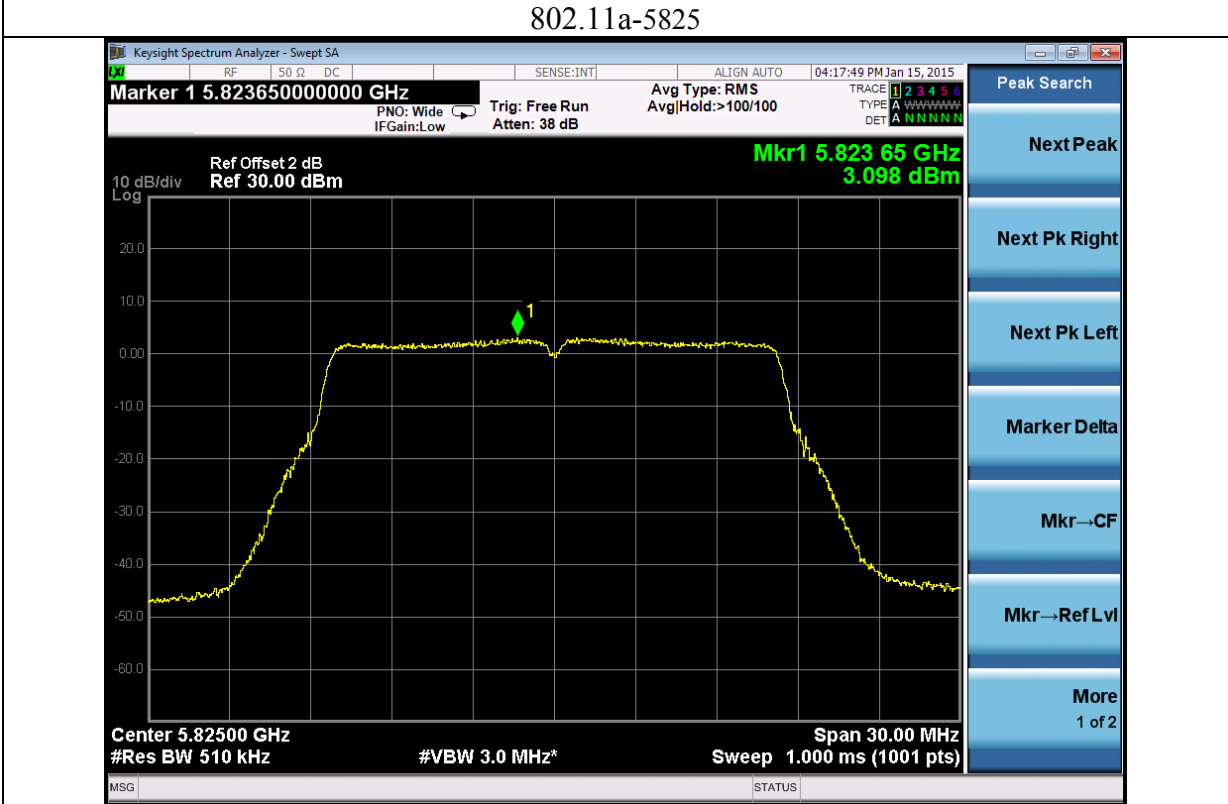
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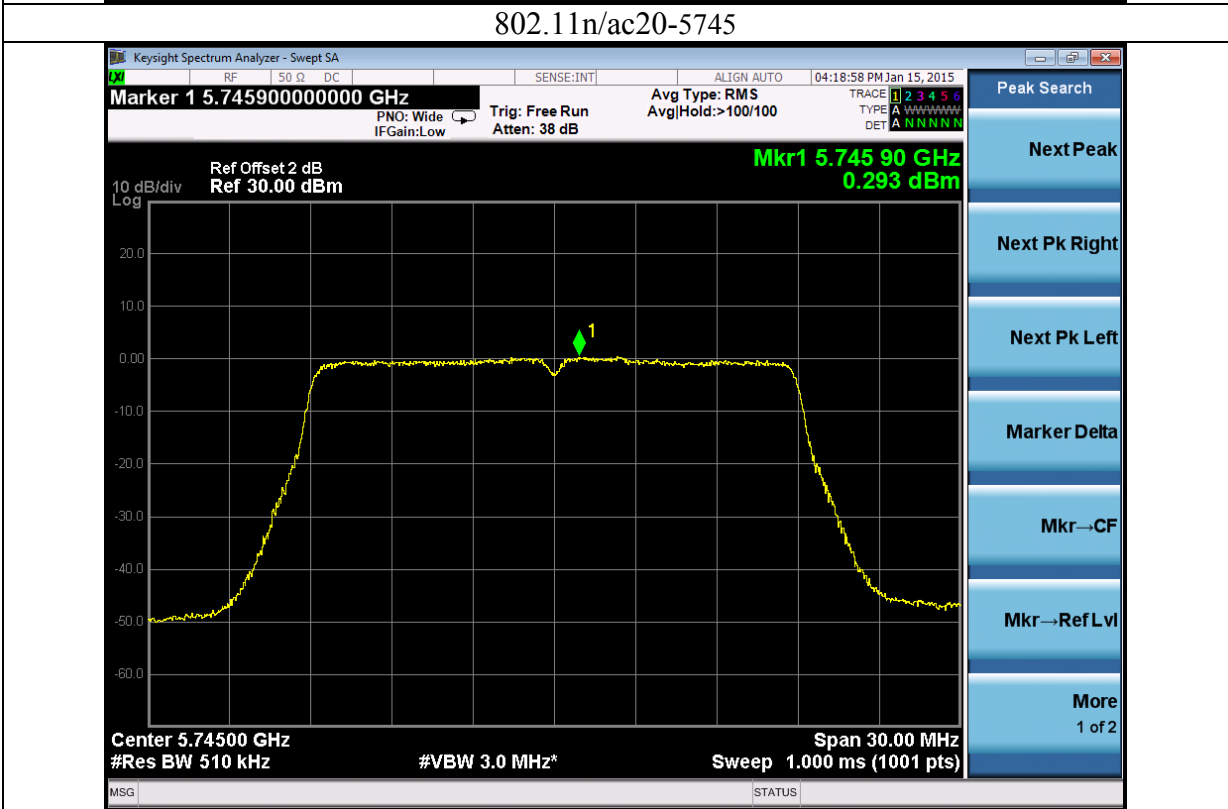
802.11a-5785



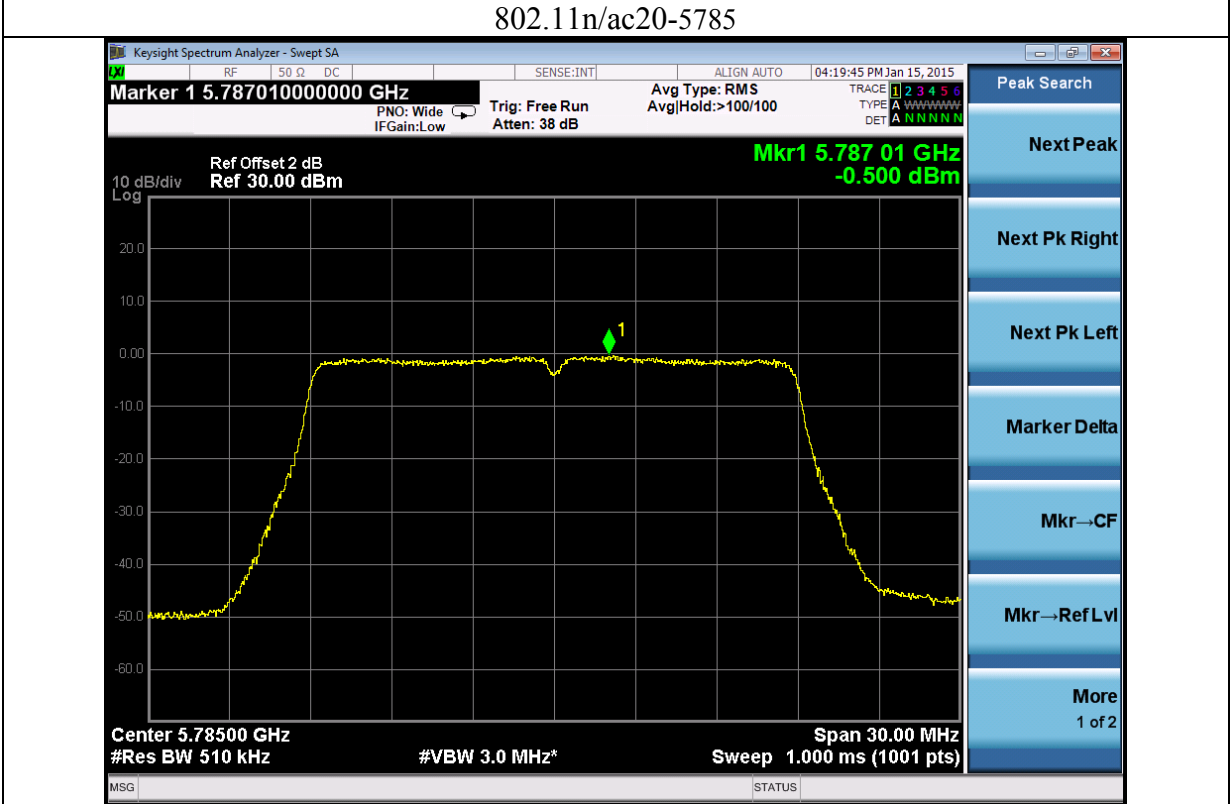
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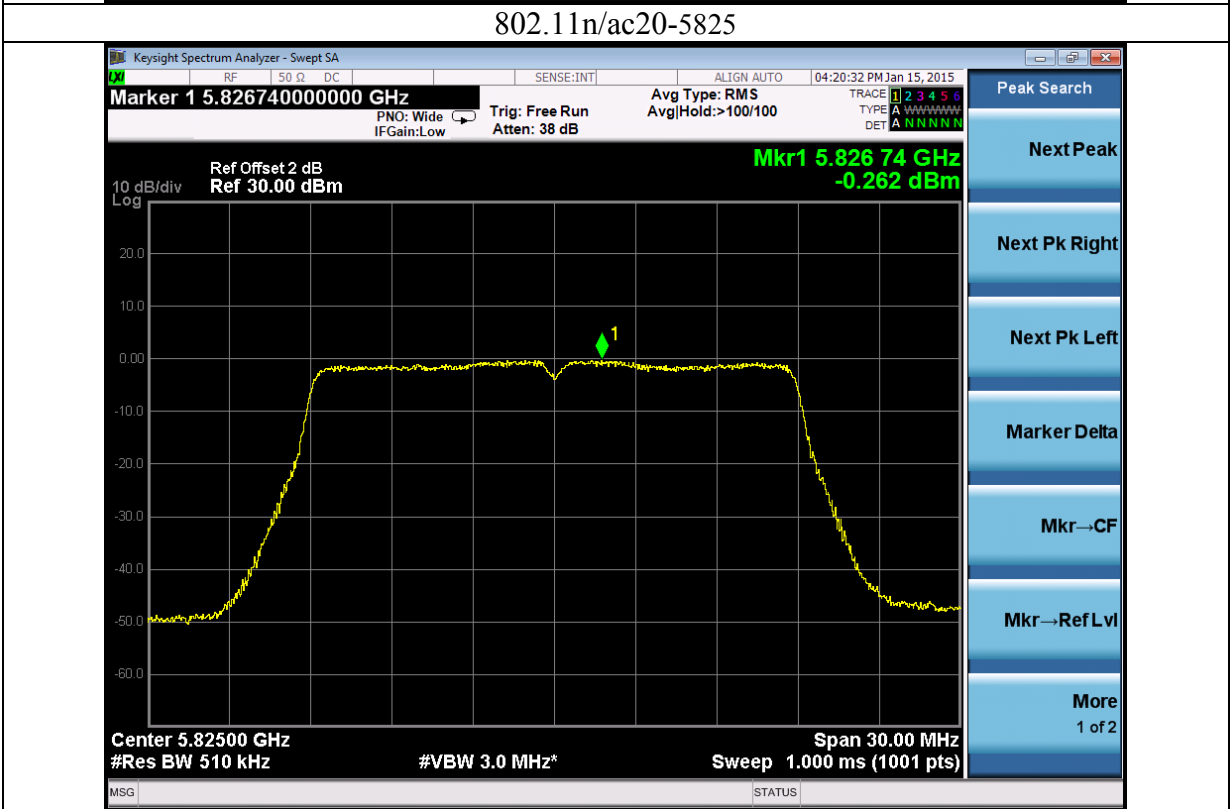
802.11n/ac20-5745



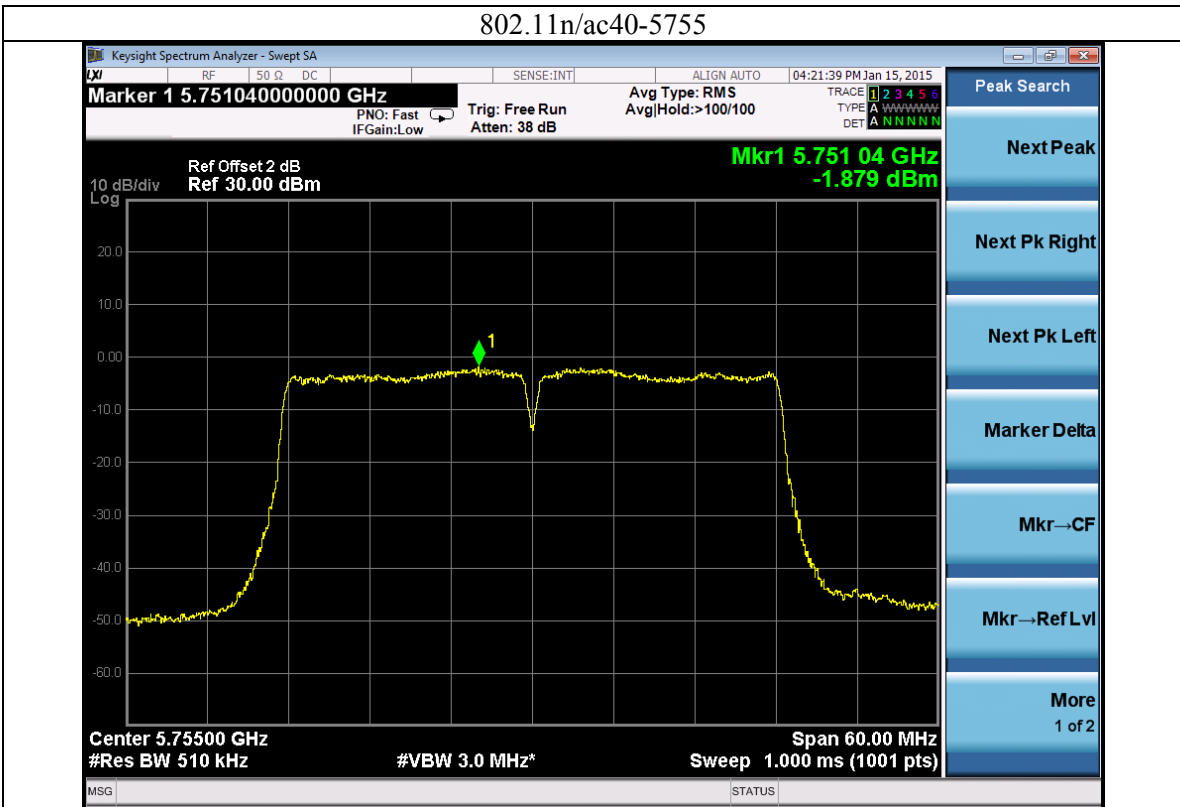
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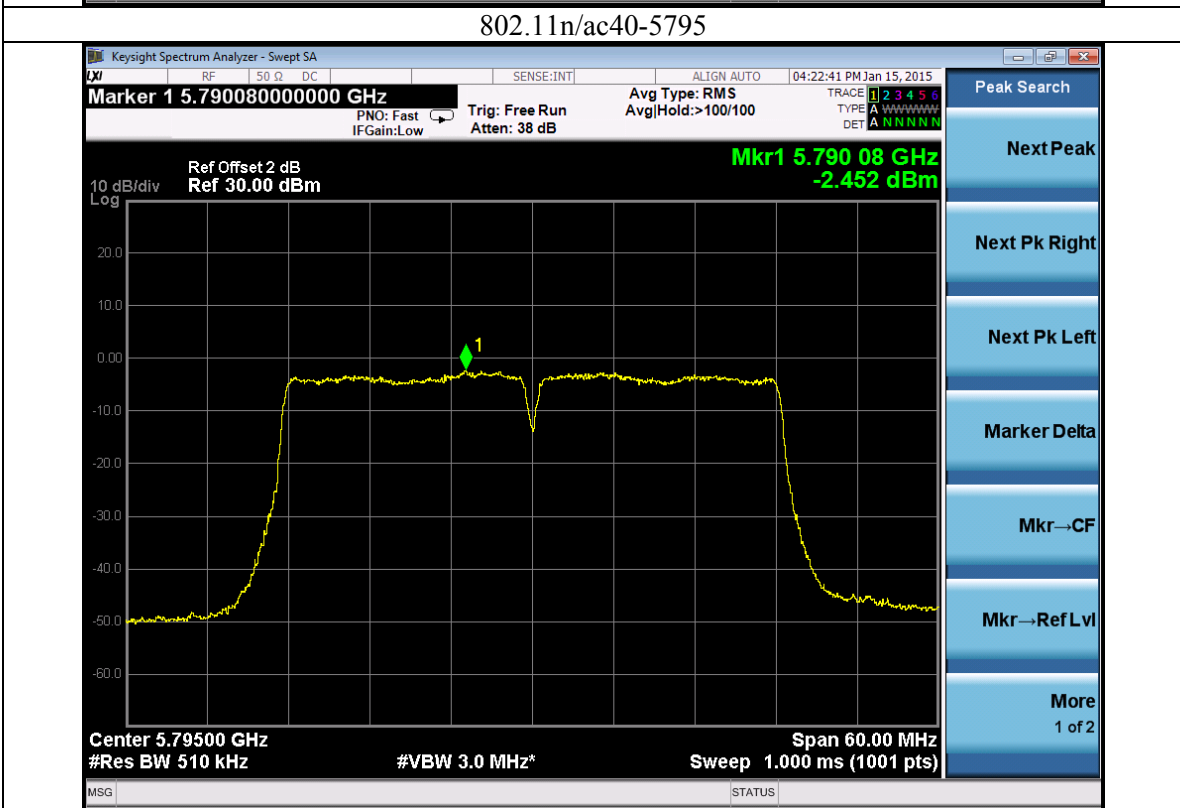
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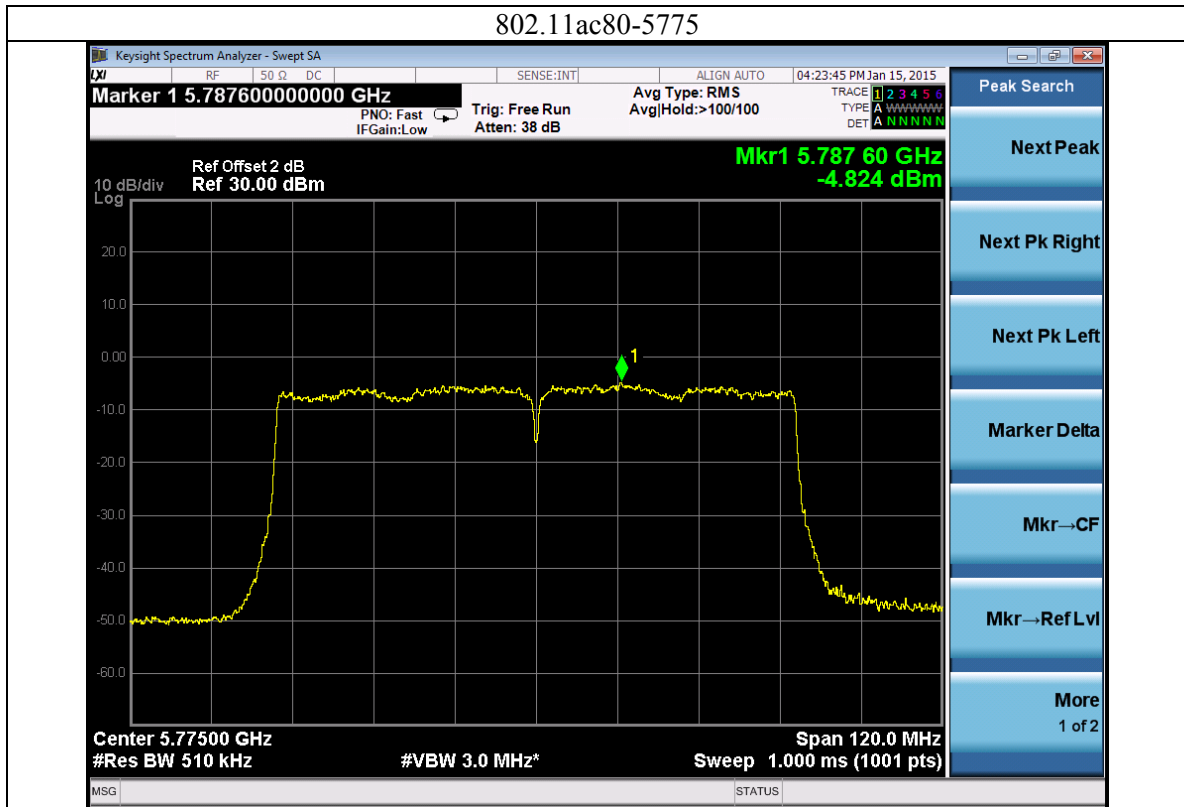


802.11n/ac40-5755



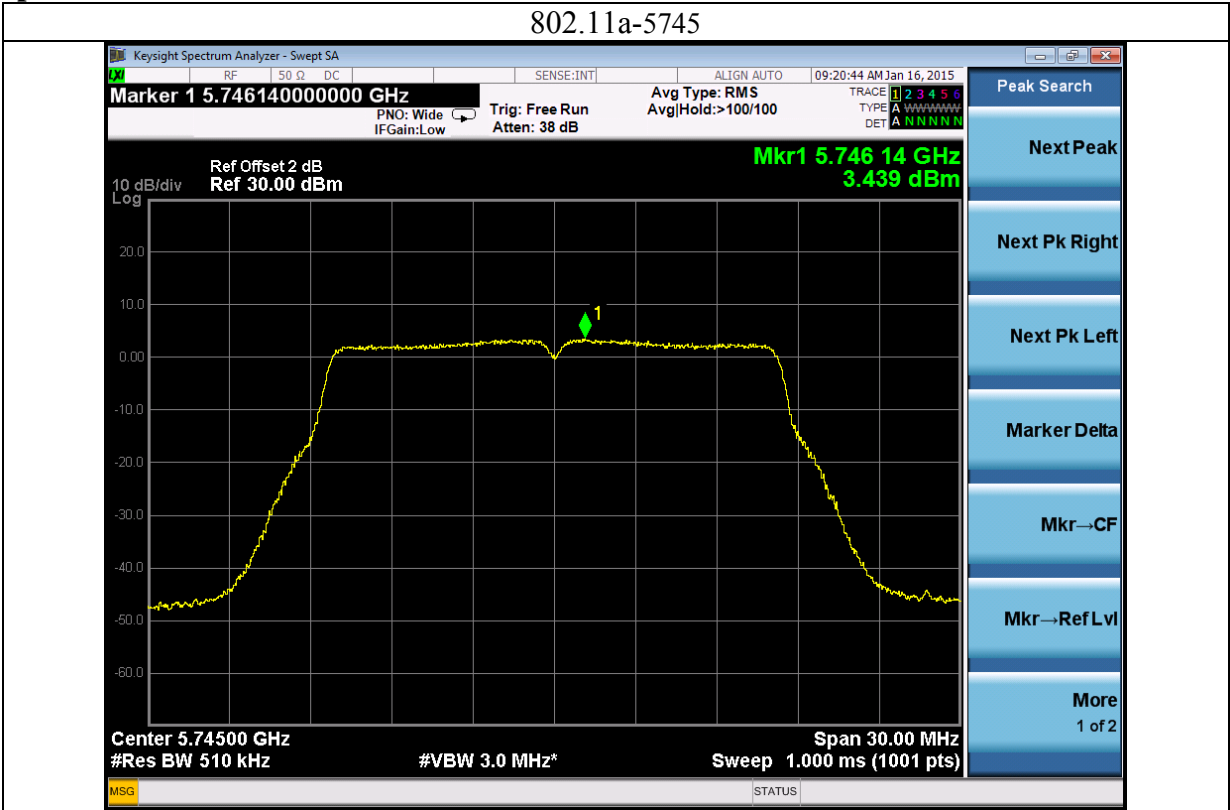
802.11n/ac40-5795



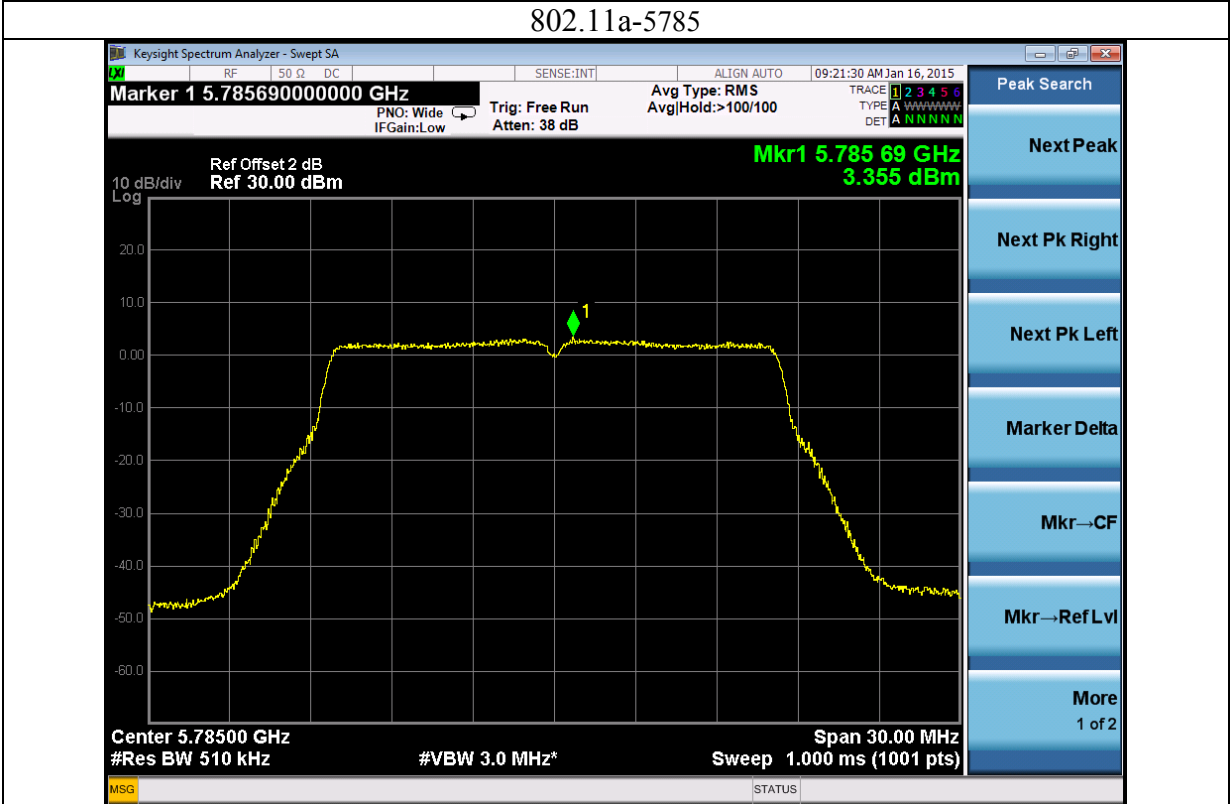


port 2

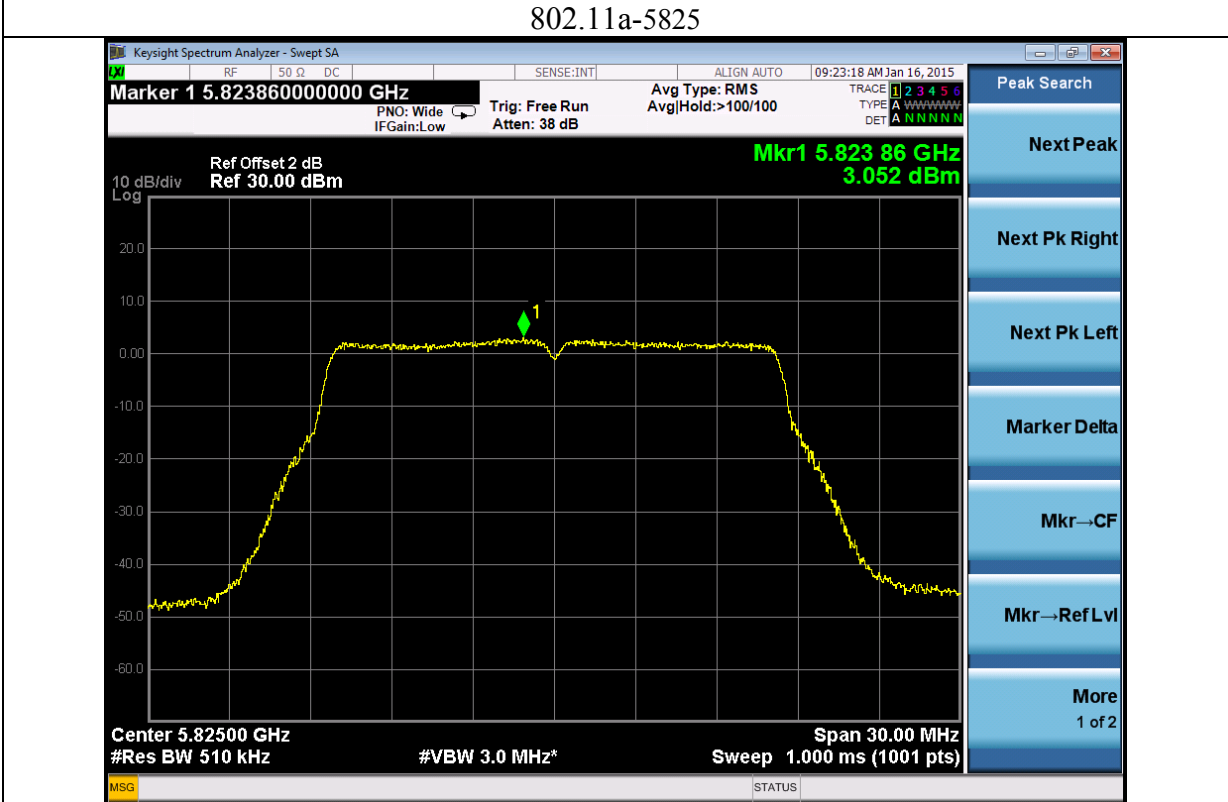
802.11a-5745



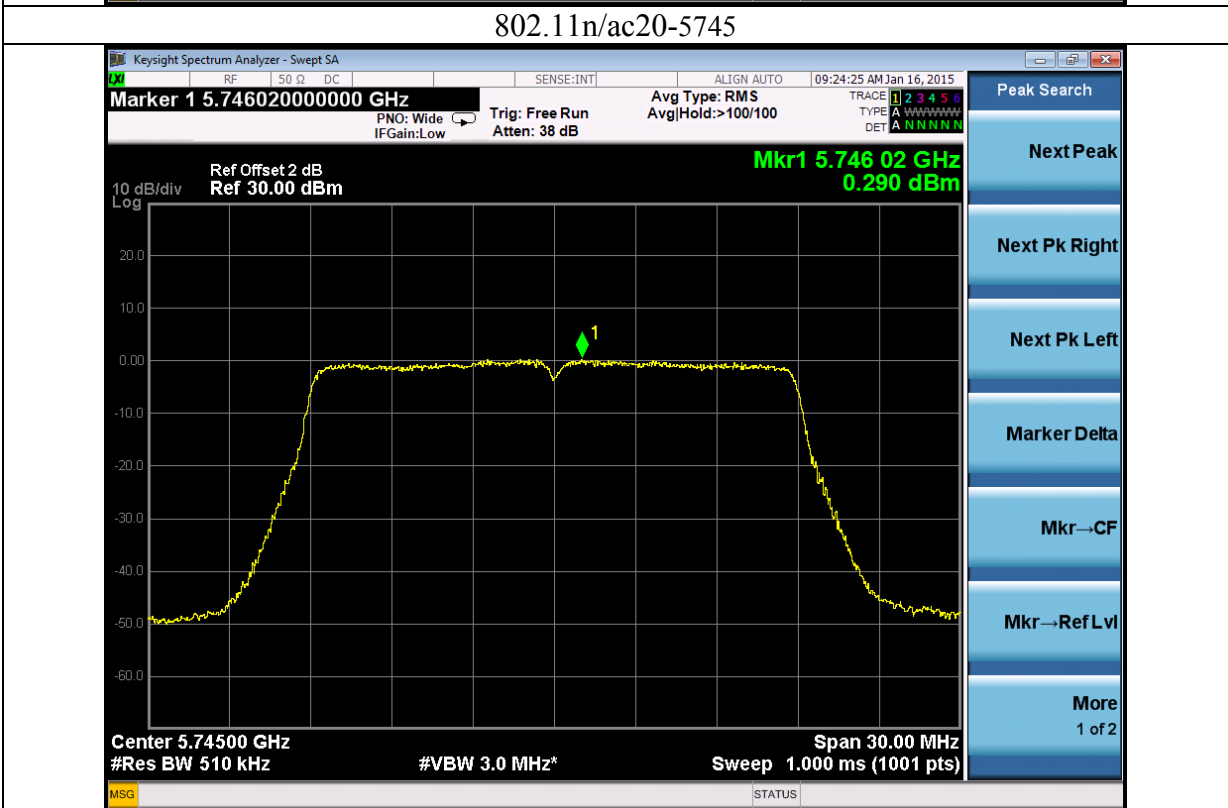
802.11a-5785



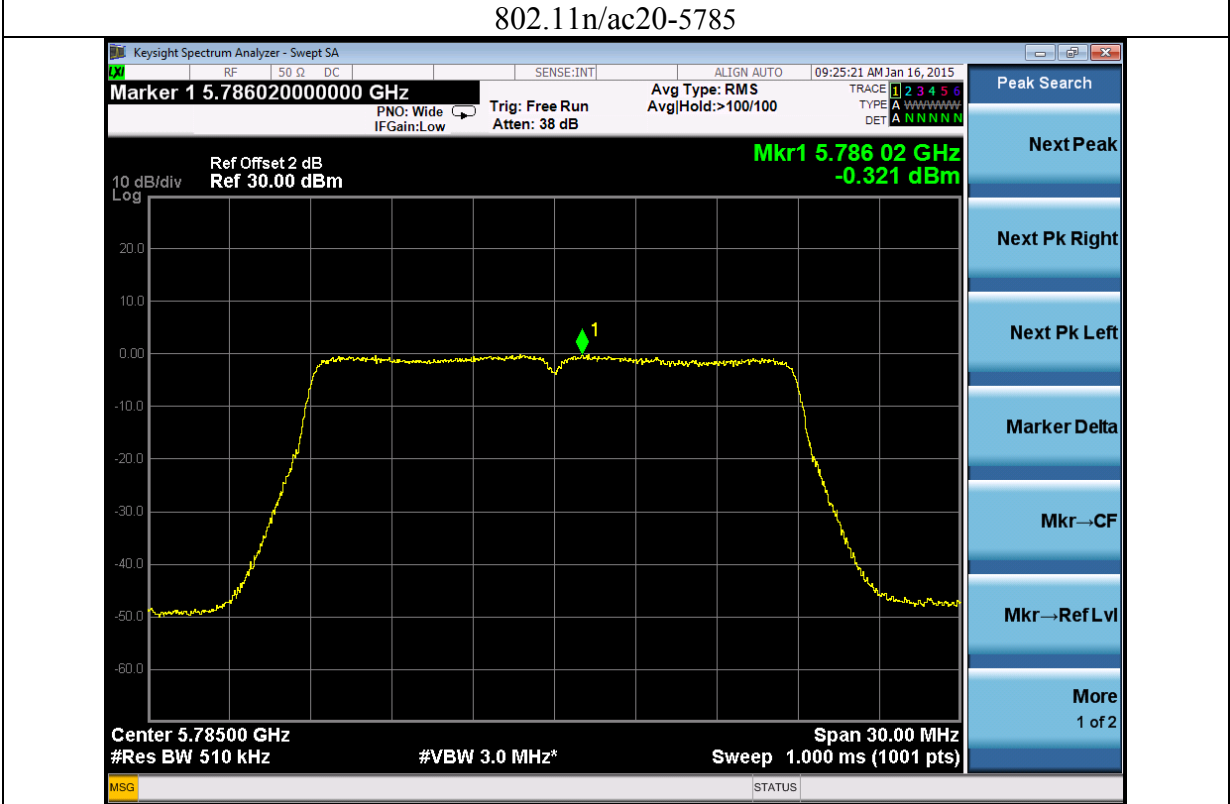
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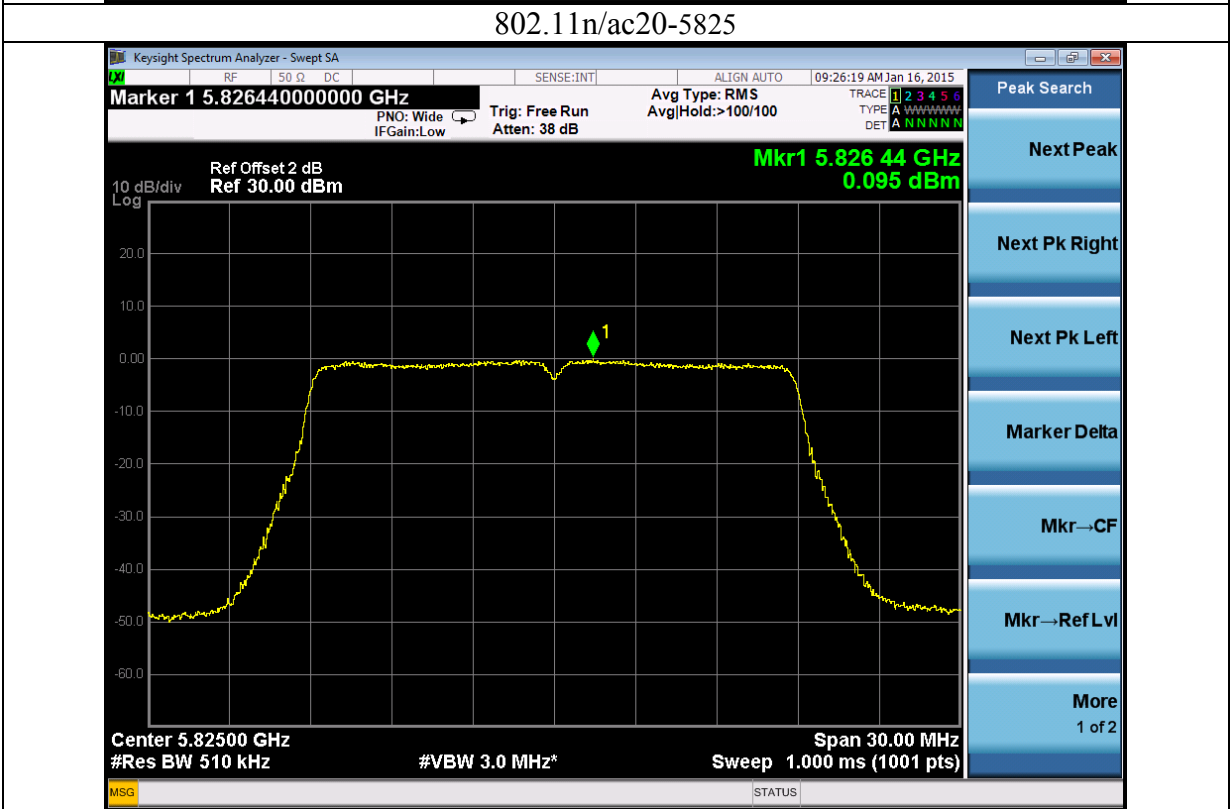
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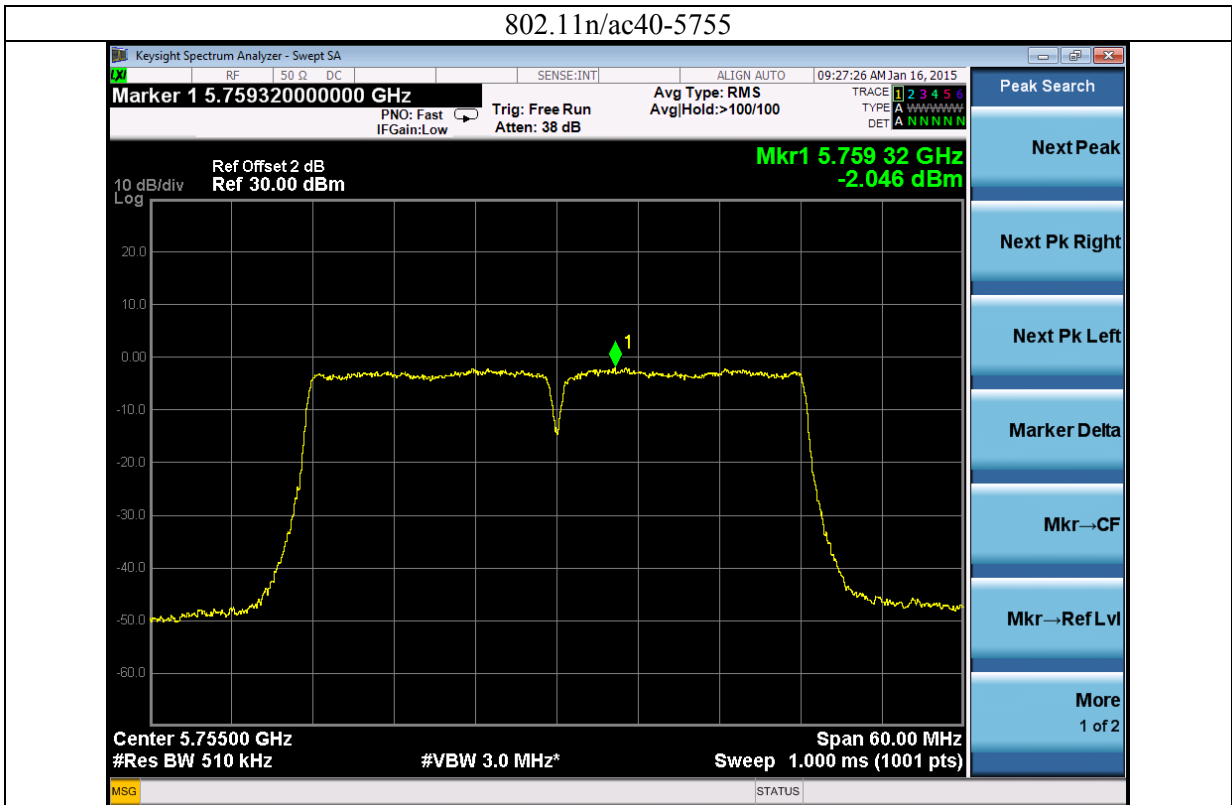


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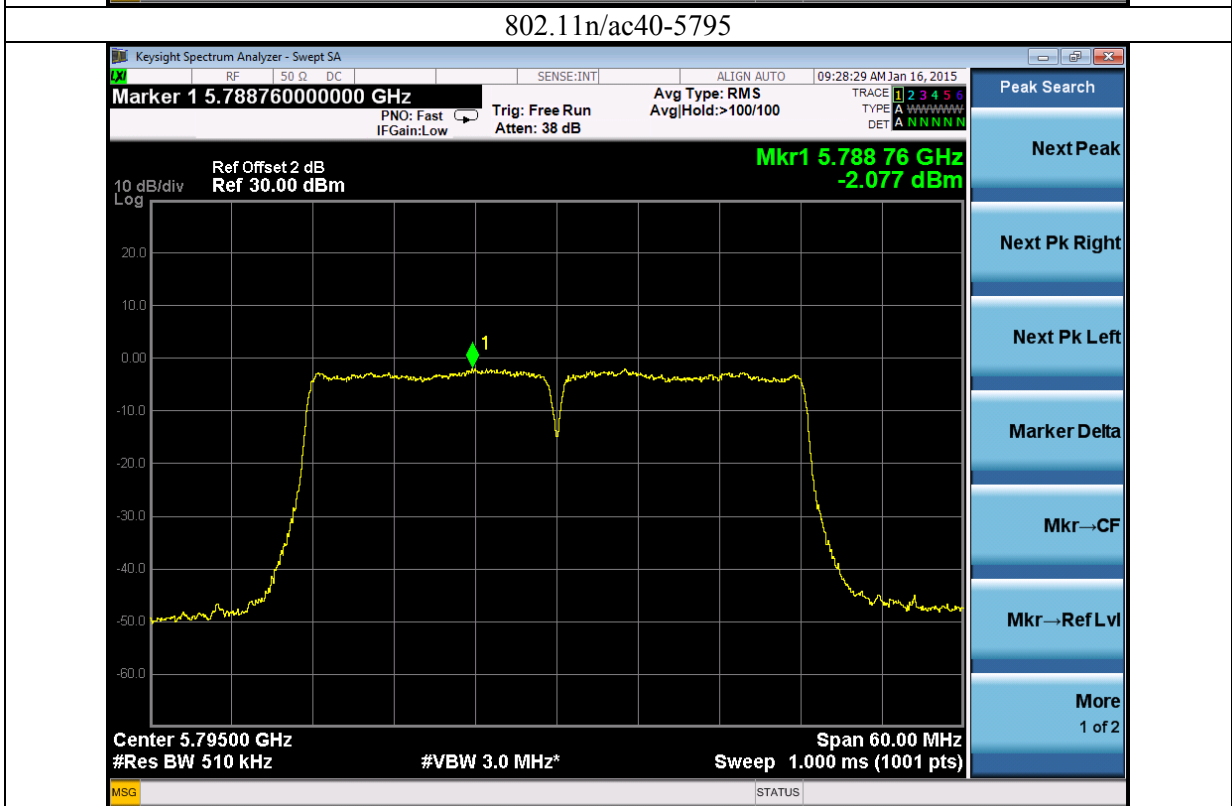


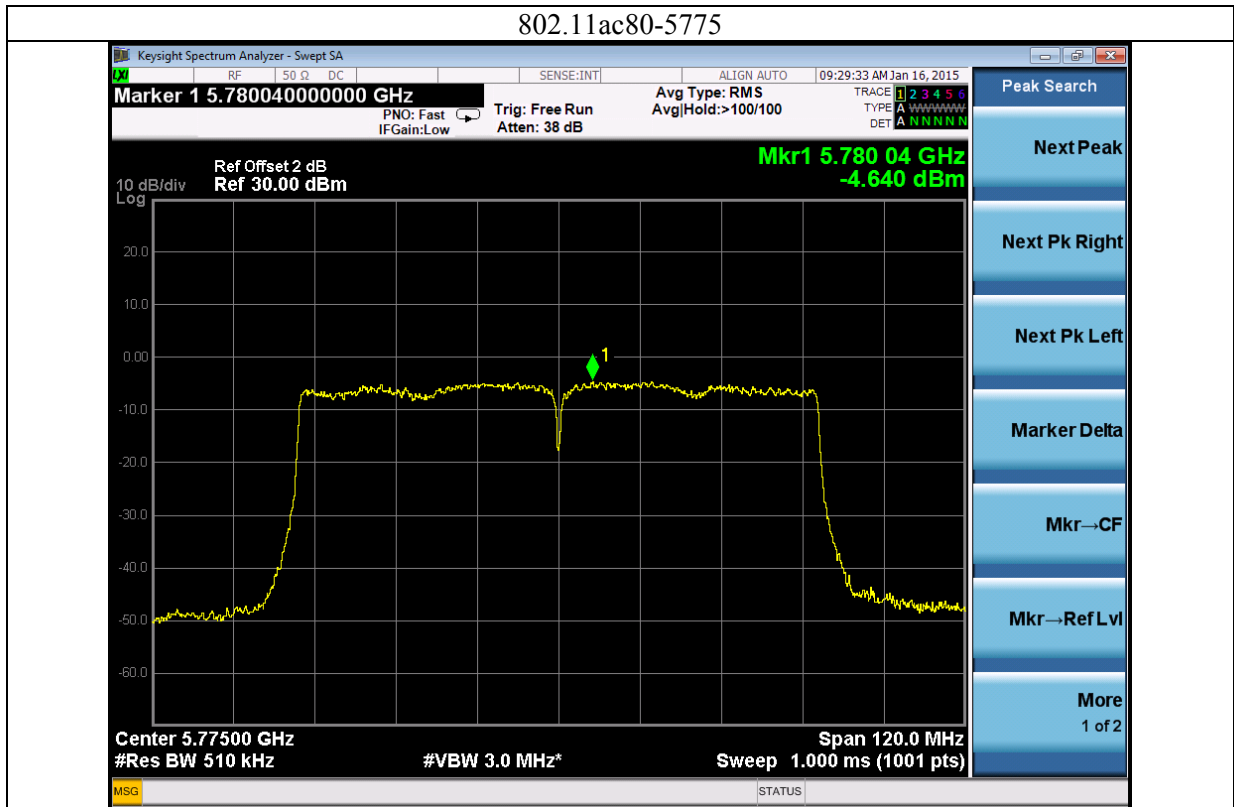


802.11n/ac40-5755



802.11n/ac40-5795





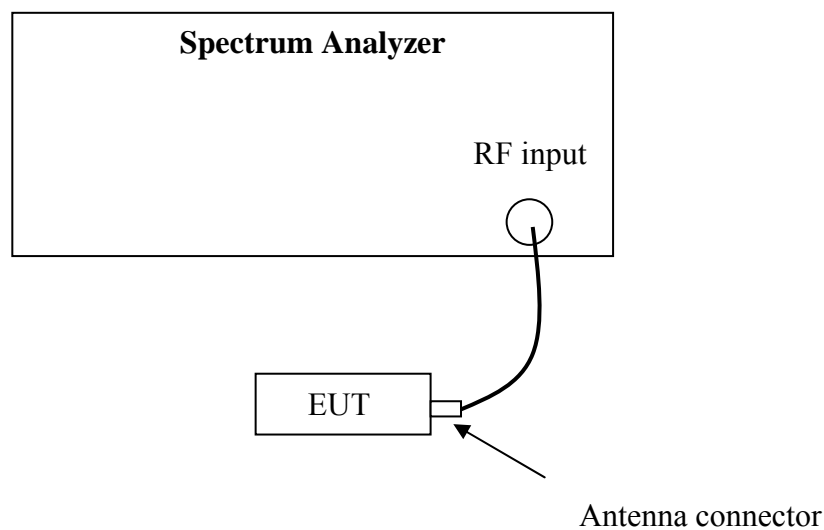
## 5. Minimum 6dB Bandwidth

Test result: PASS

### 5.1 Limit

For systems using digital modulation techniques that may operate in the 5725 - 5850 MHz band, the minimum 6 dB bandwidth shall be at least 500 kHz.

### 5.2 Test Configuration



### 5.3 Test Procedure and test setup

The power spectrum density per FCC §15.407(a)(6) was measured from the antenna port of the EUT. Using a 50ohm spectrum analyzer (measurement method refers to KDB 789033D02: Section C).

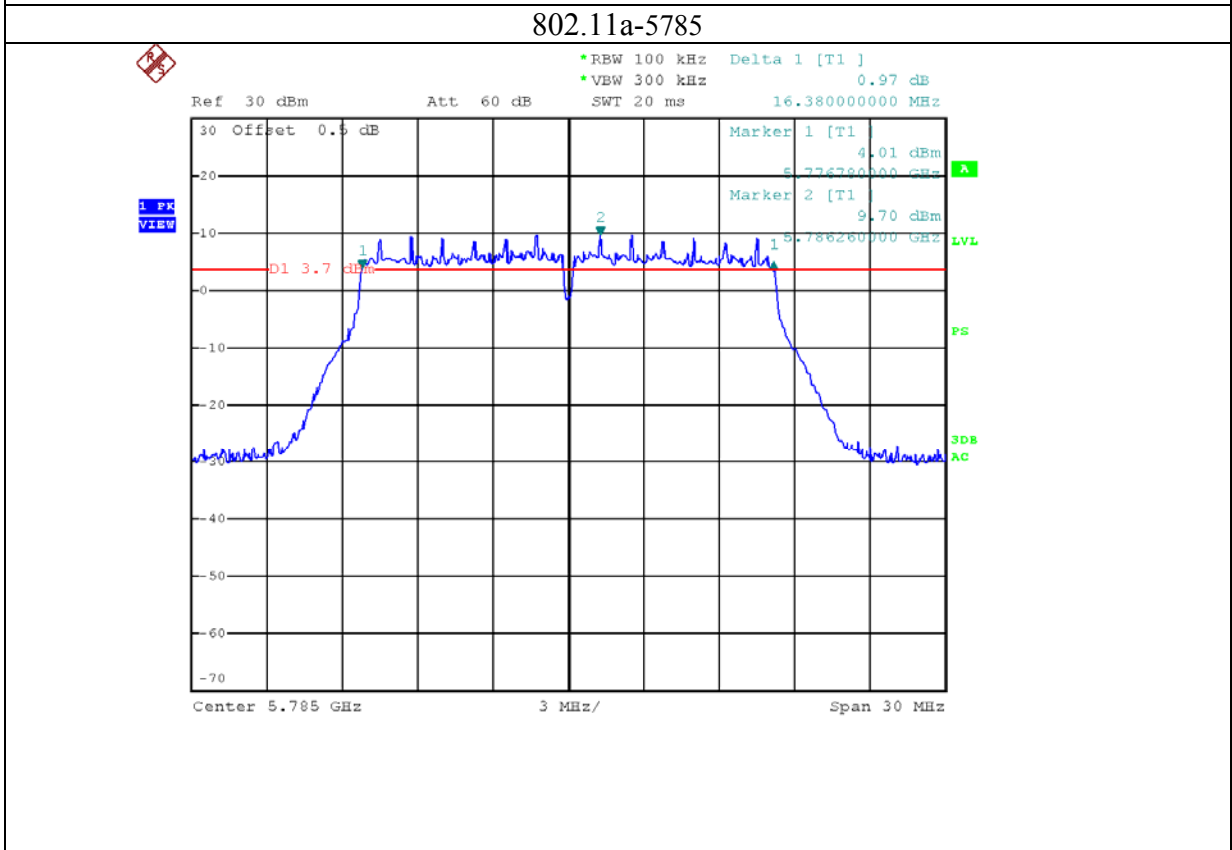
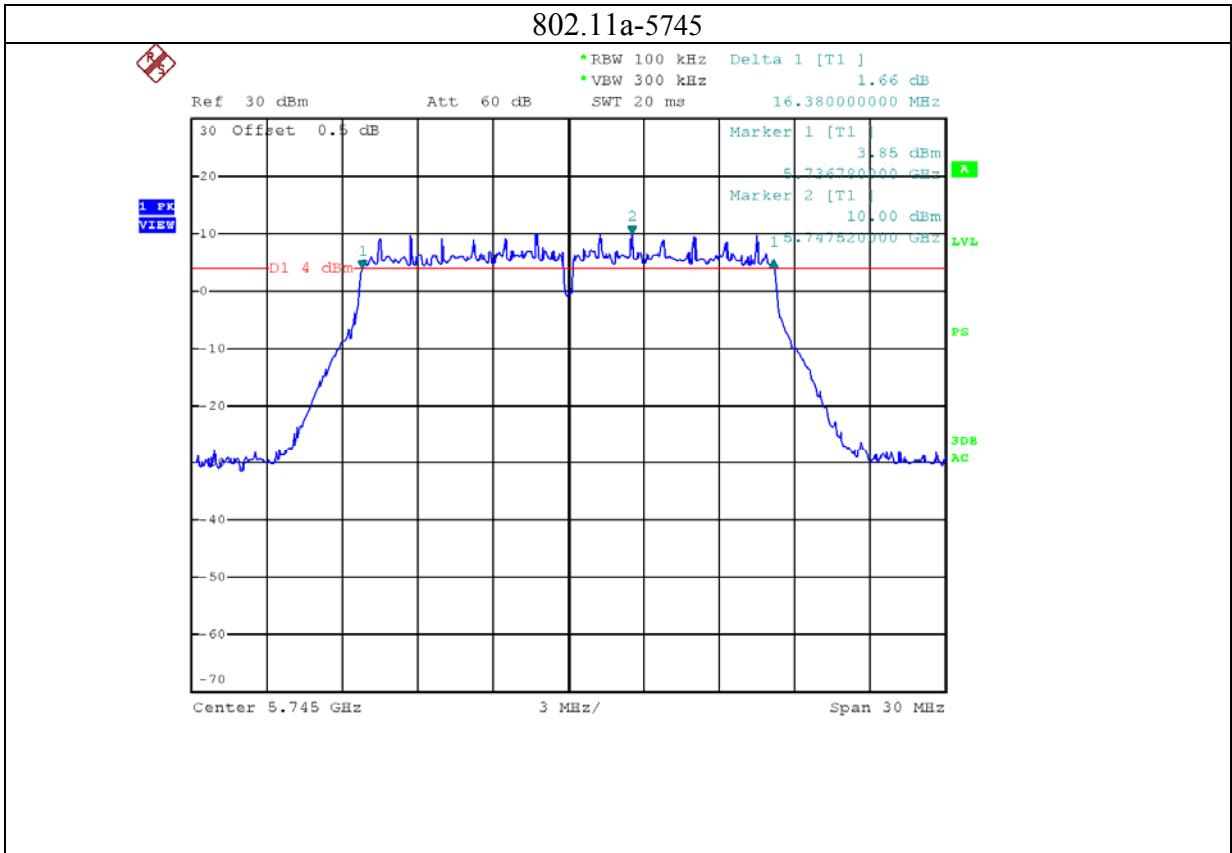


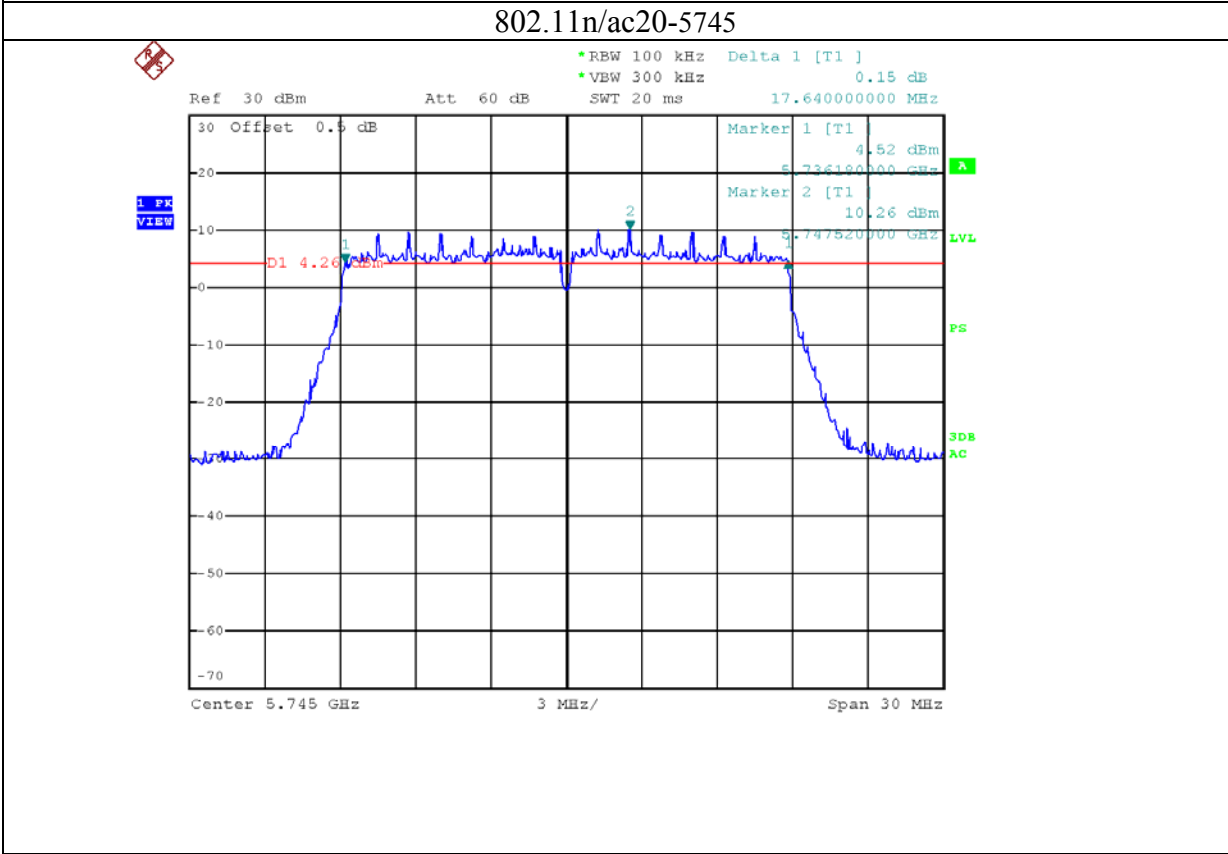
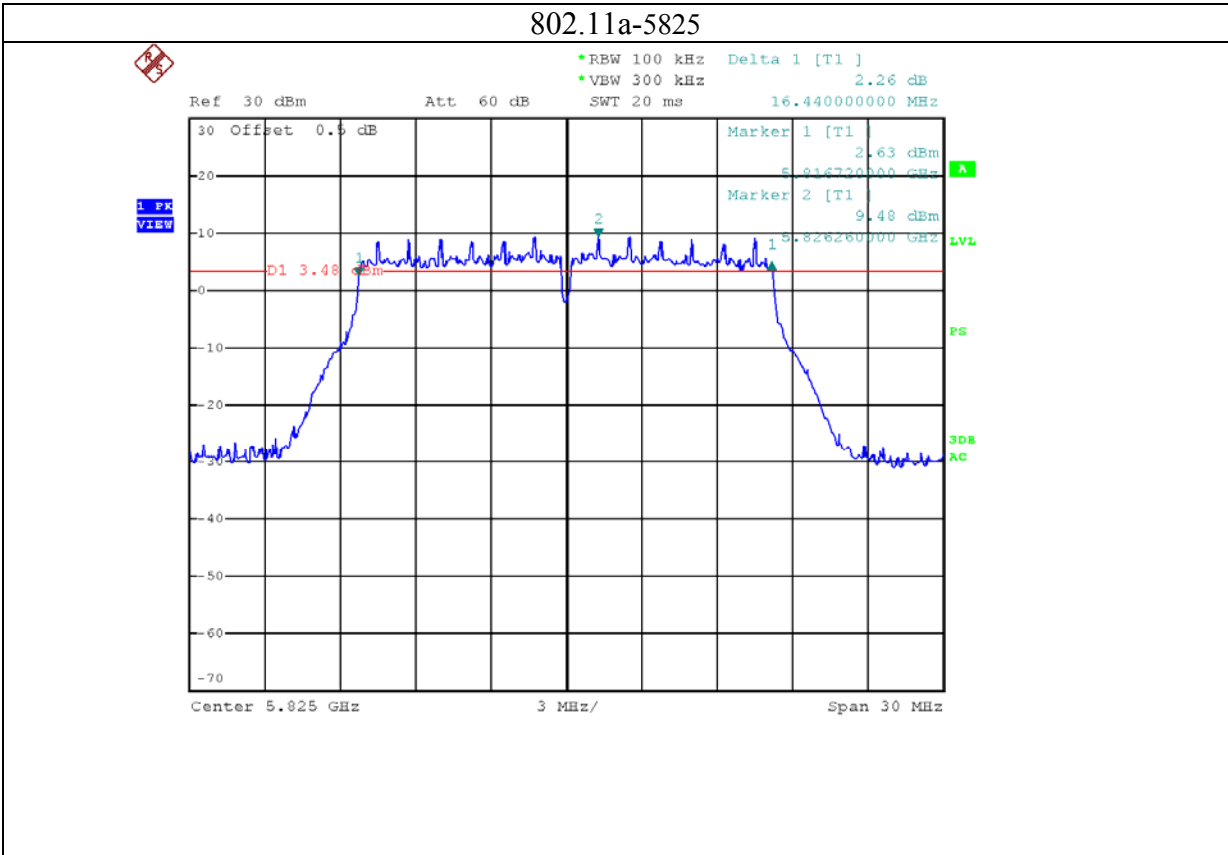
### 5.4 Test Protocol

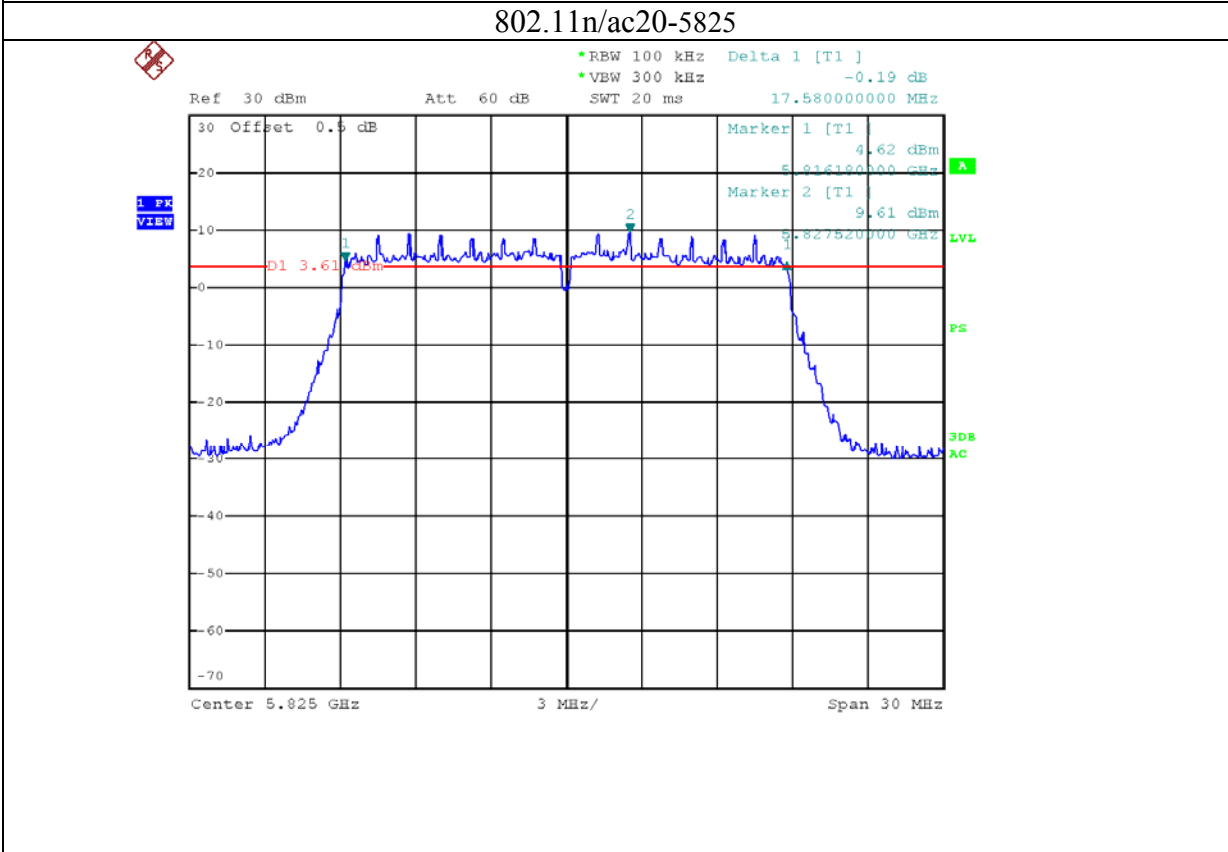
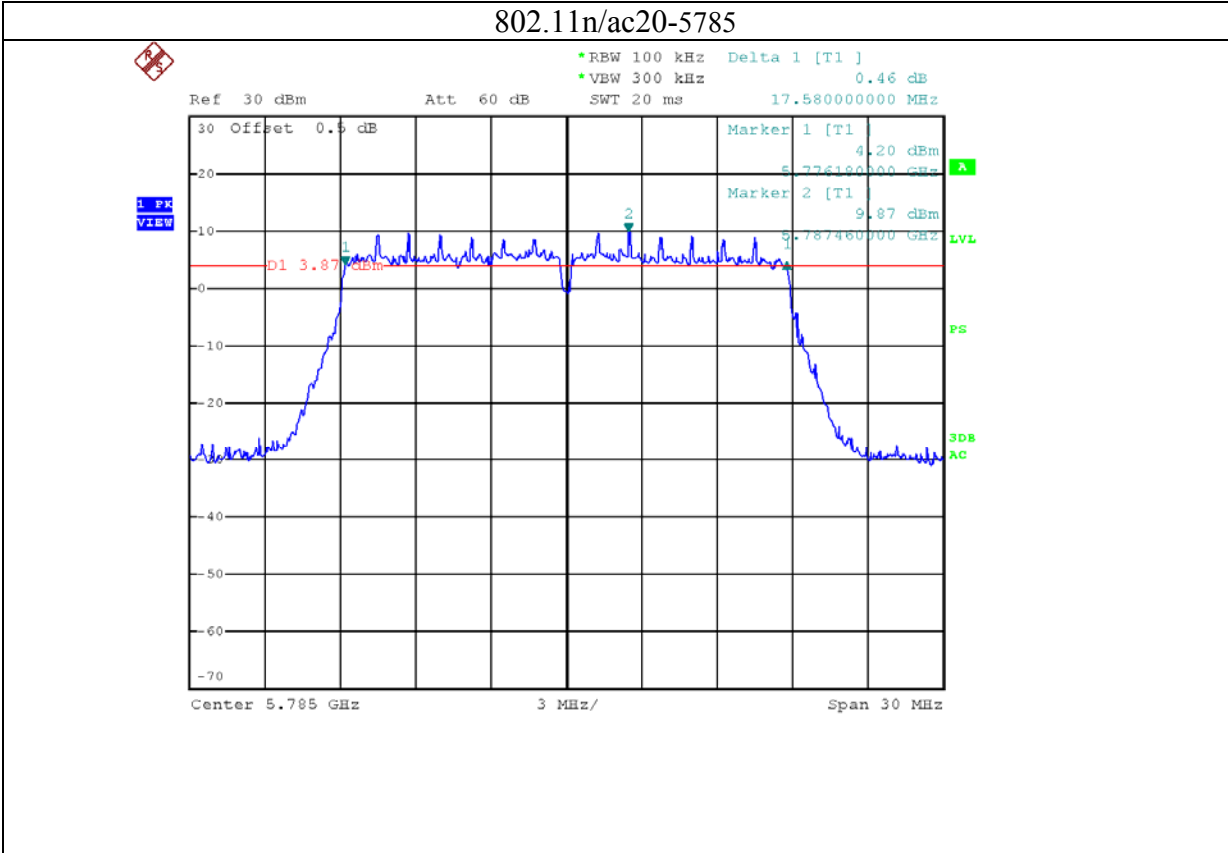
Temperature : 25 °C  
Relative Humidity : 55 %

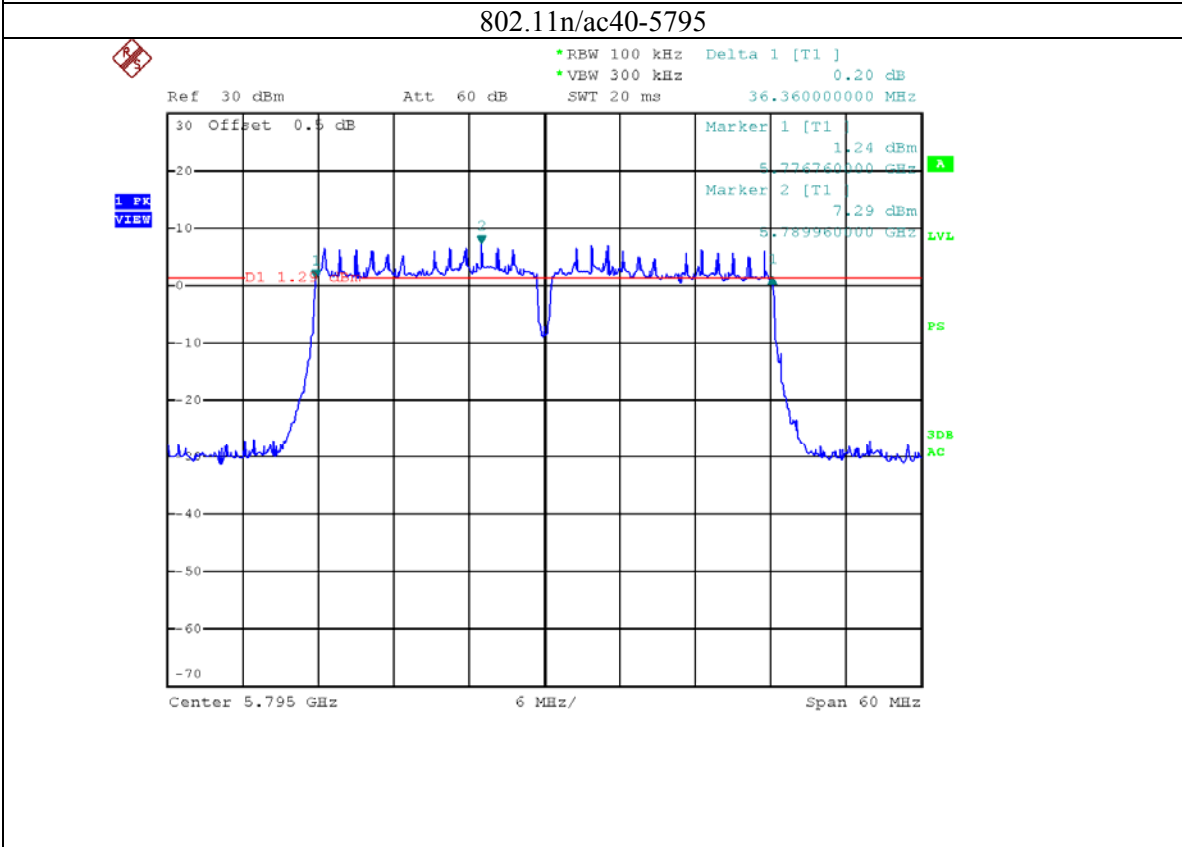
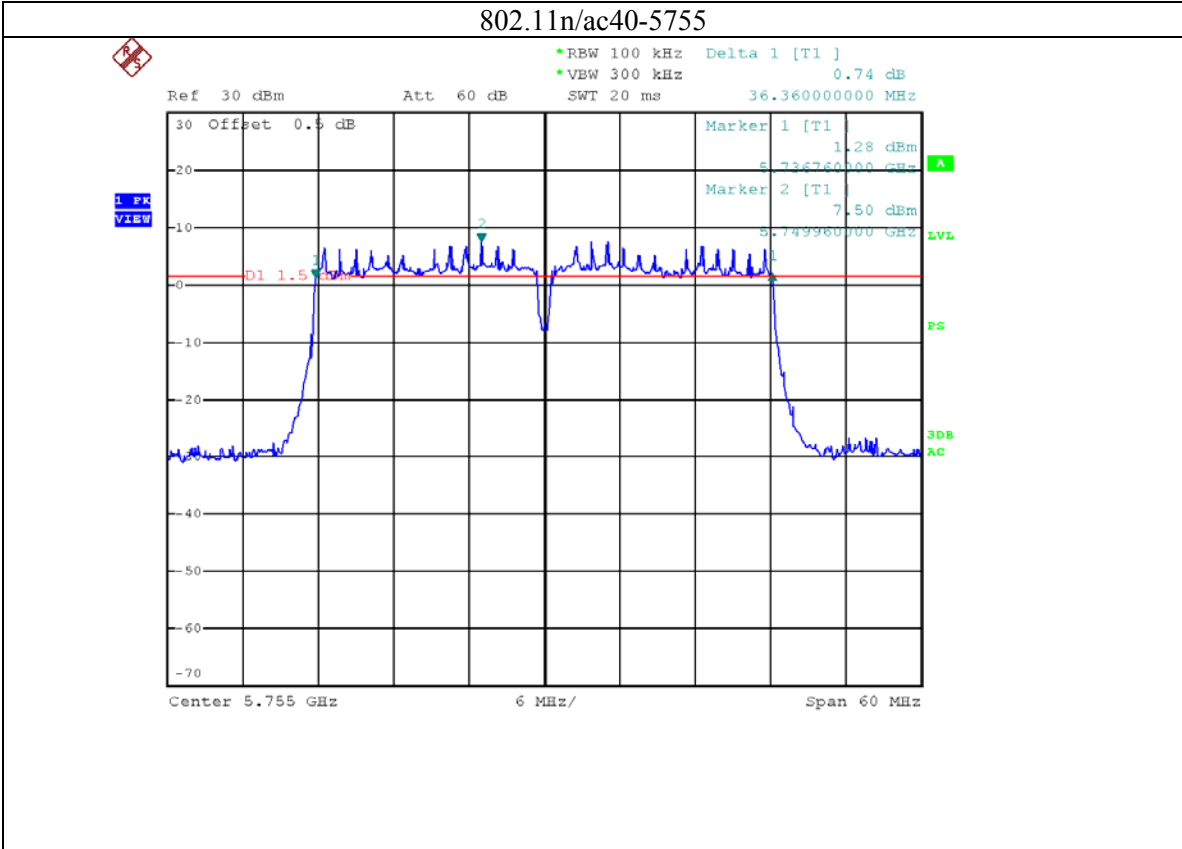
Modulation	Frequency (MHz)	Minimum 6dB Bandwidth (MHz)			Limits (MHz)
		Port0	Port 1	Port 2	
802.11a	5745	16.38	16.44	16.44	> 0.5
	5785	16.38	16.38	16.44	> 0.5
	5825	16.44	16.38	16.38	> 0.5
802.11n/ac20	5745	17.64	17.70	17.64	> 0.5
	5785	17.58	17.58	17.64	> 0.5
	5825	17.58	17.64	17.64	> 0.5
802.11n/ac40	5755	36.36	36.48	36.36	> 0.5
	5795	36.36	36.36	36.36	> 0.5
802.11ac80	5775	76.08	76.32	76.32	> 0.5

Port 0

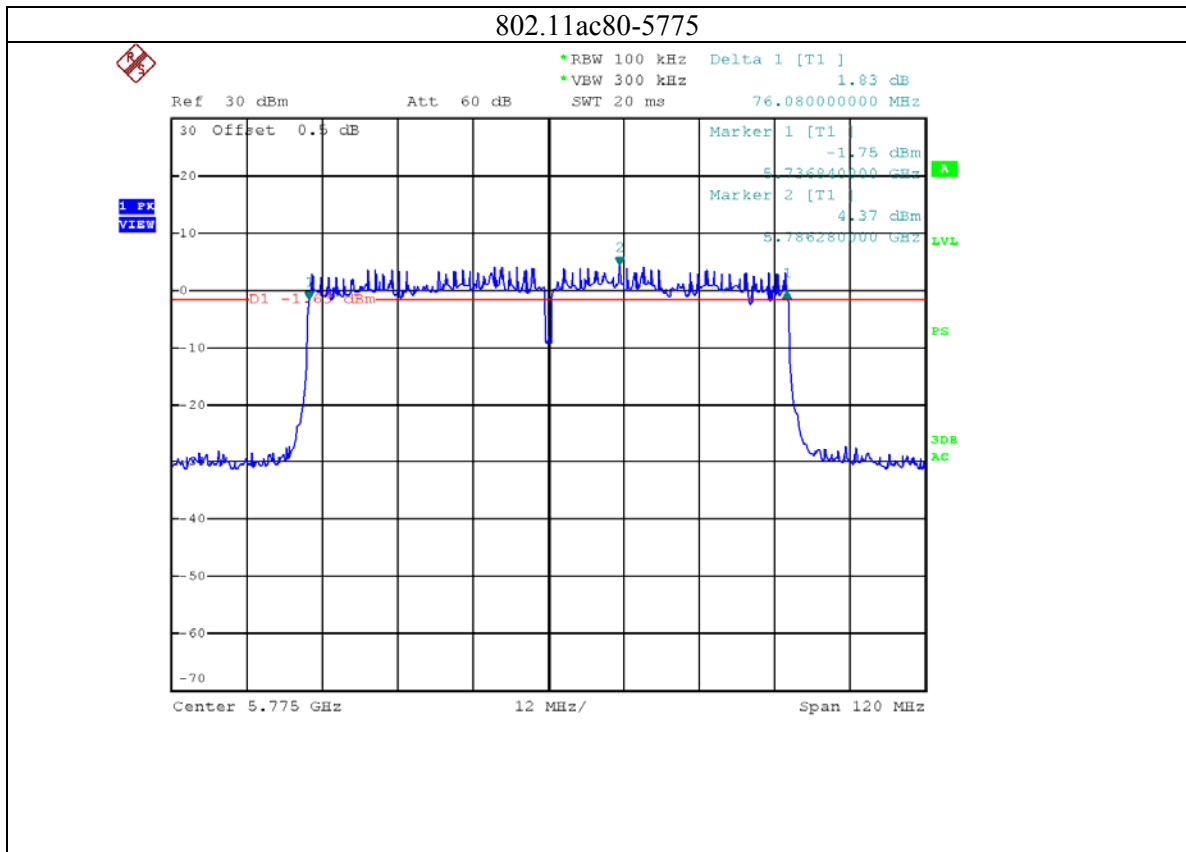




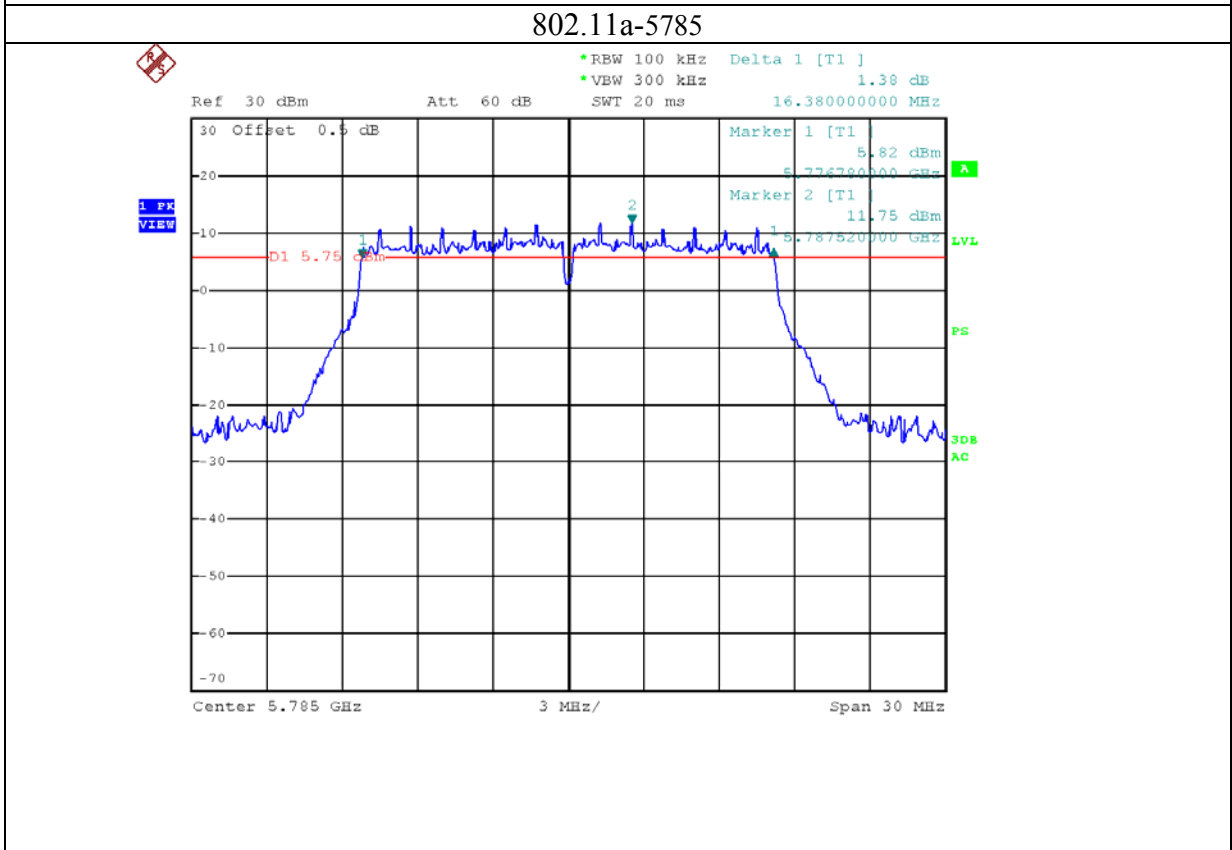
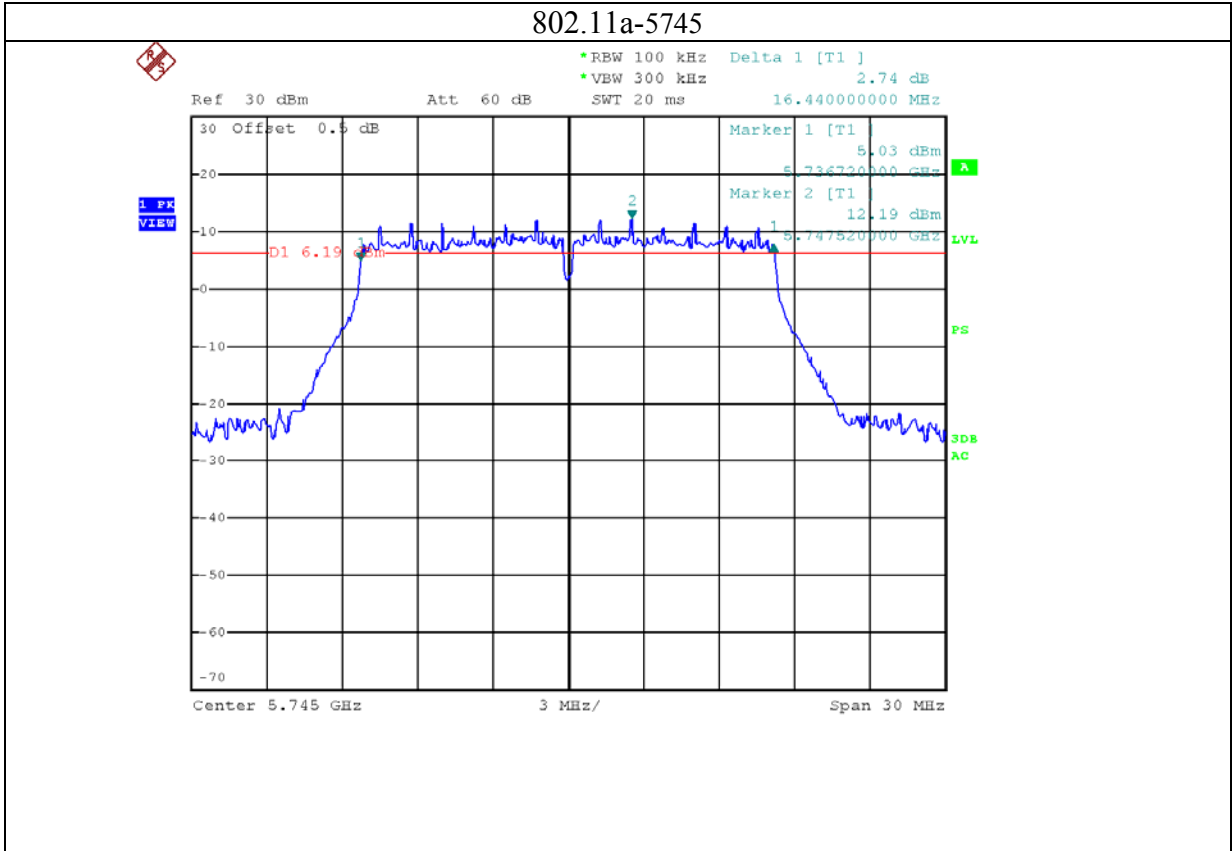


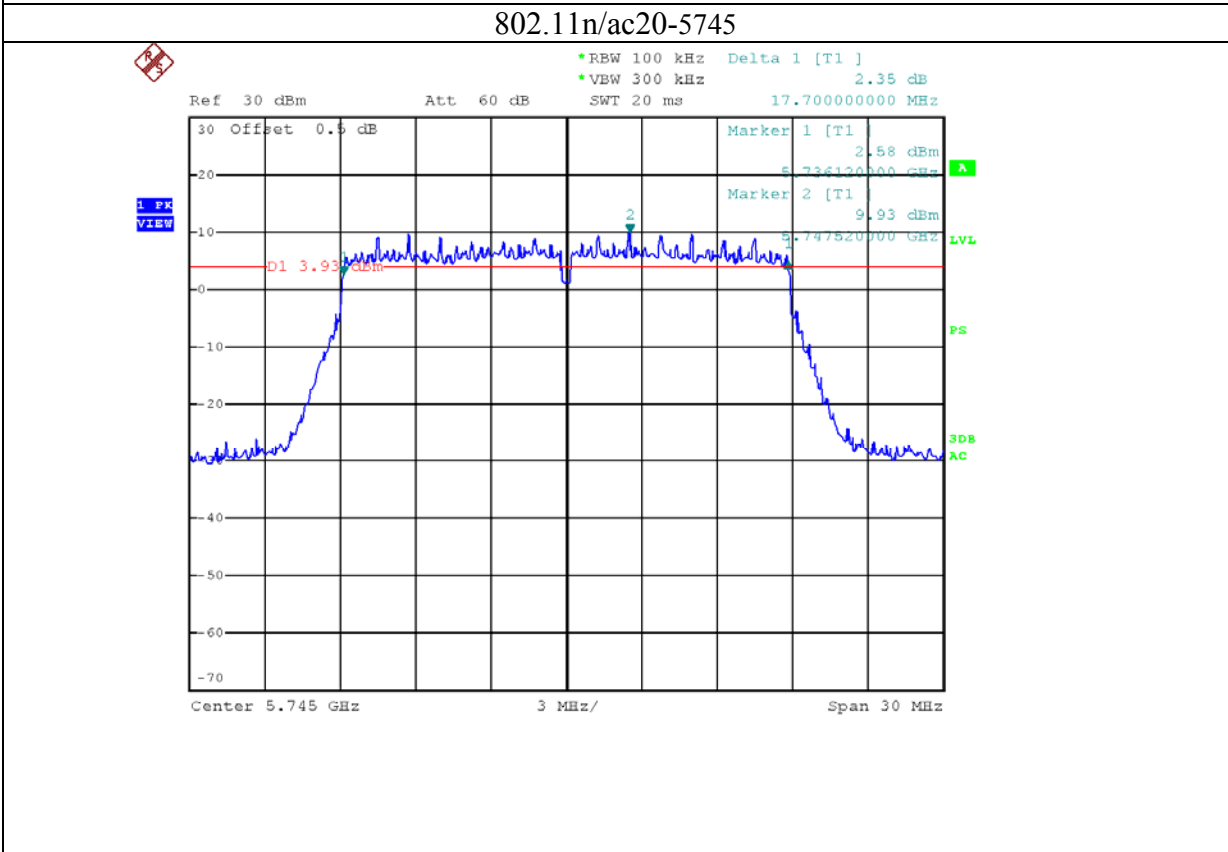
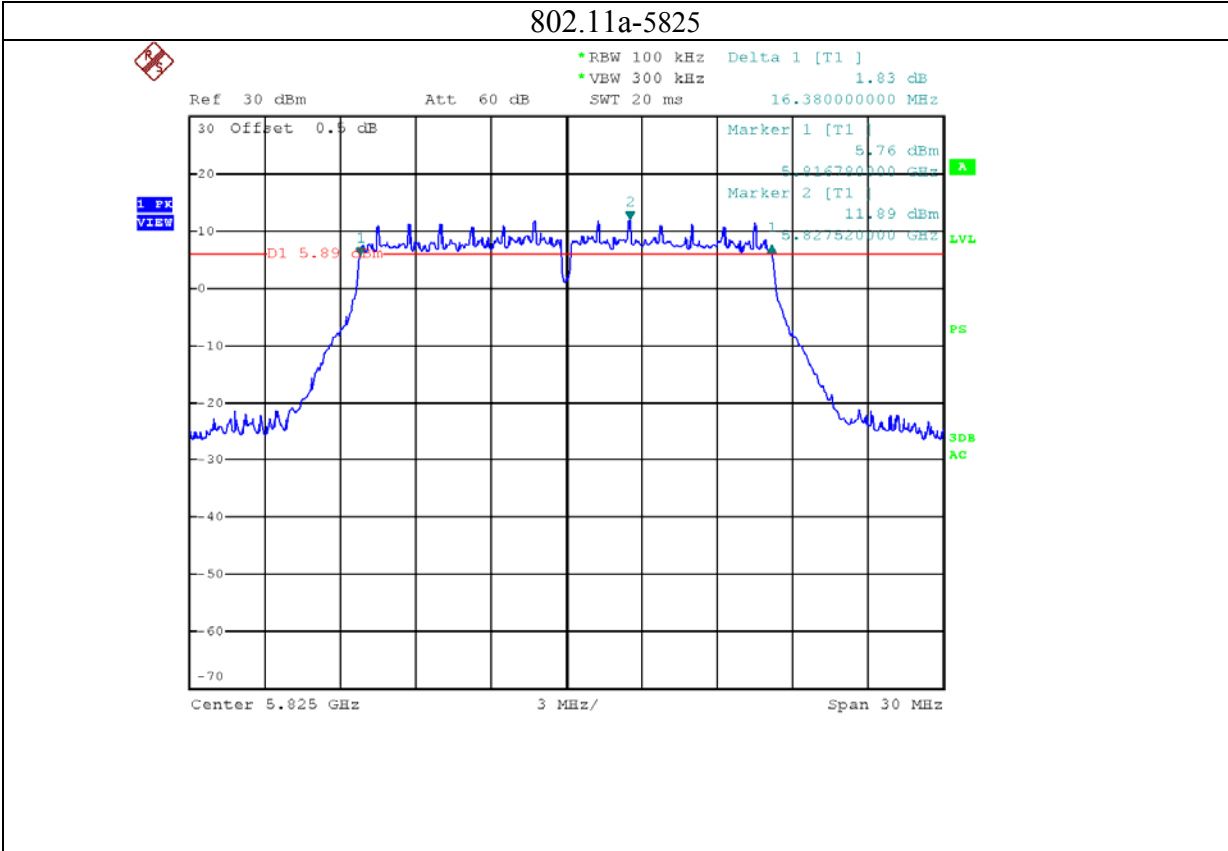


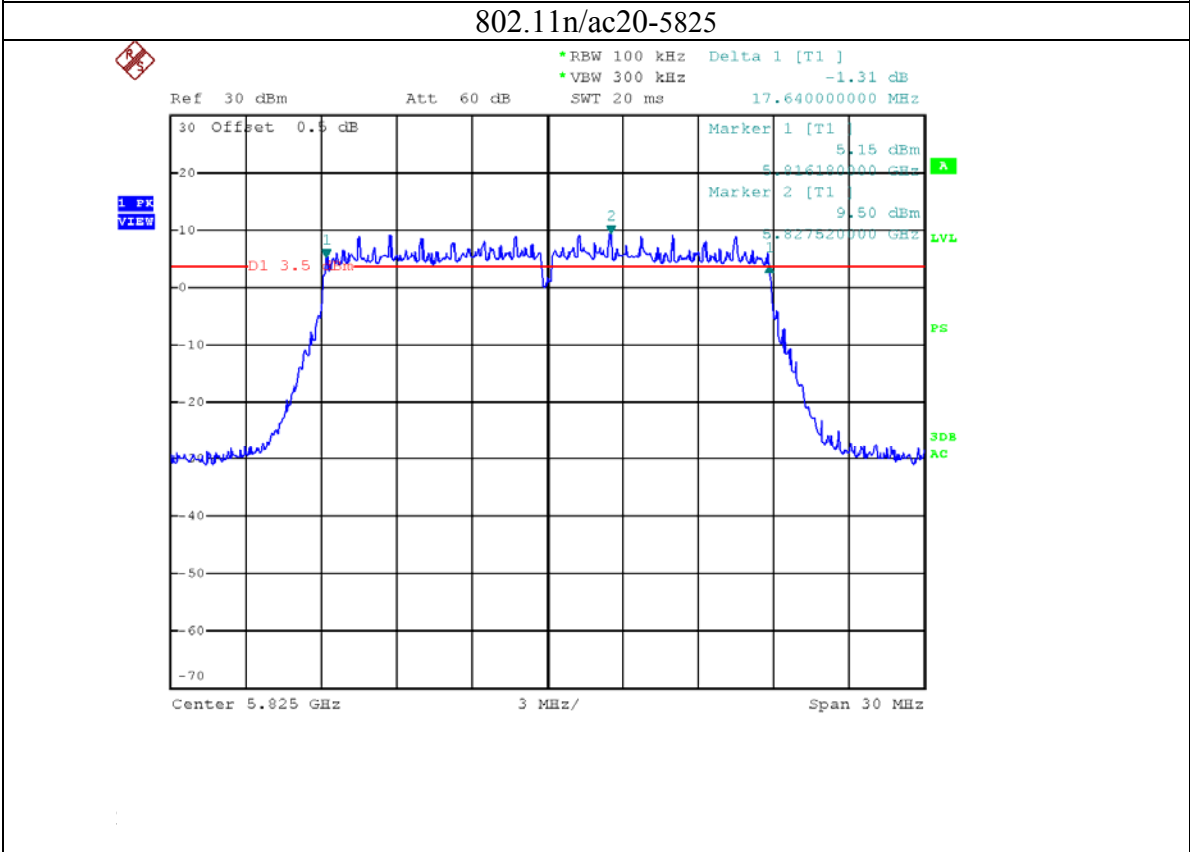
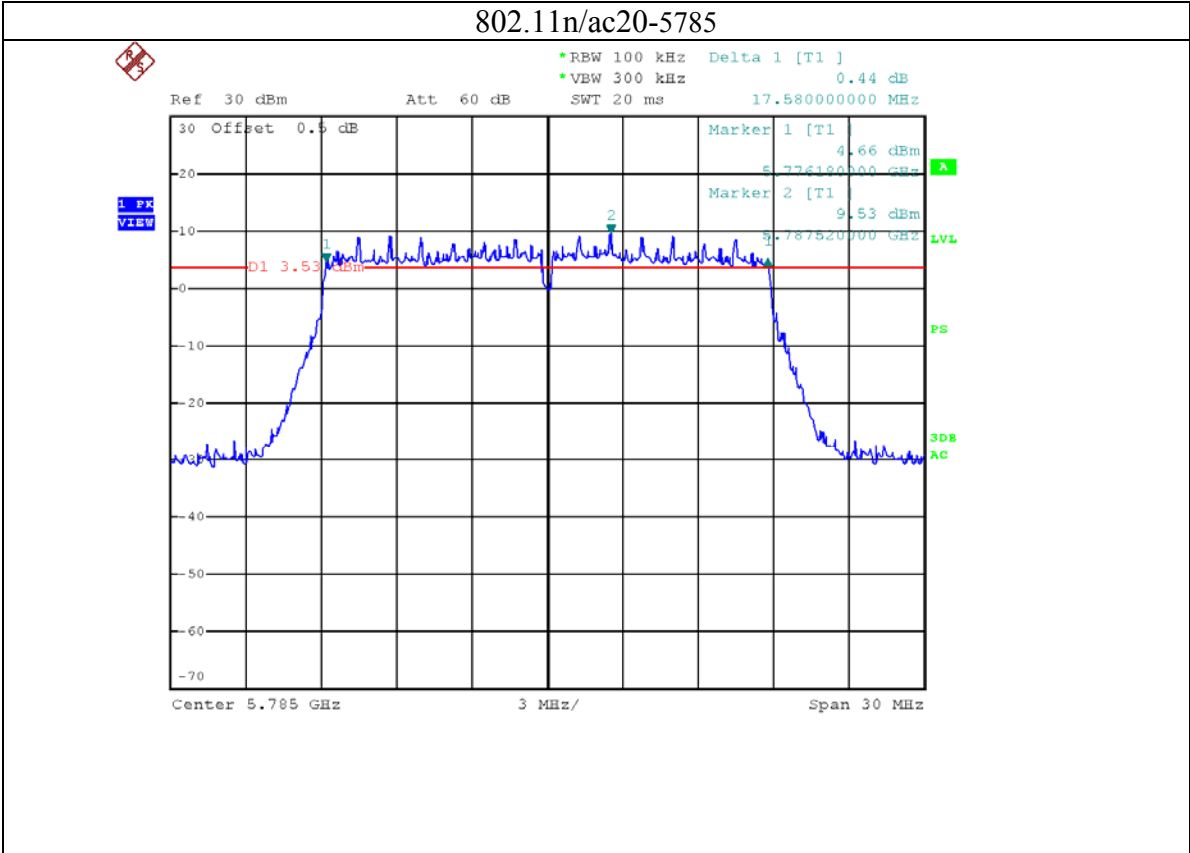


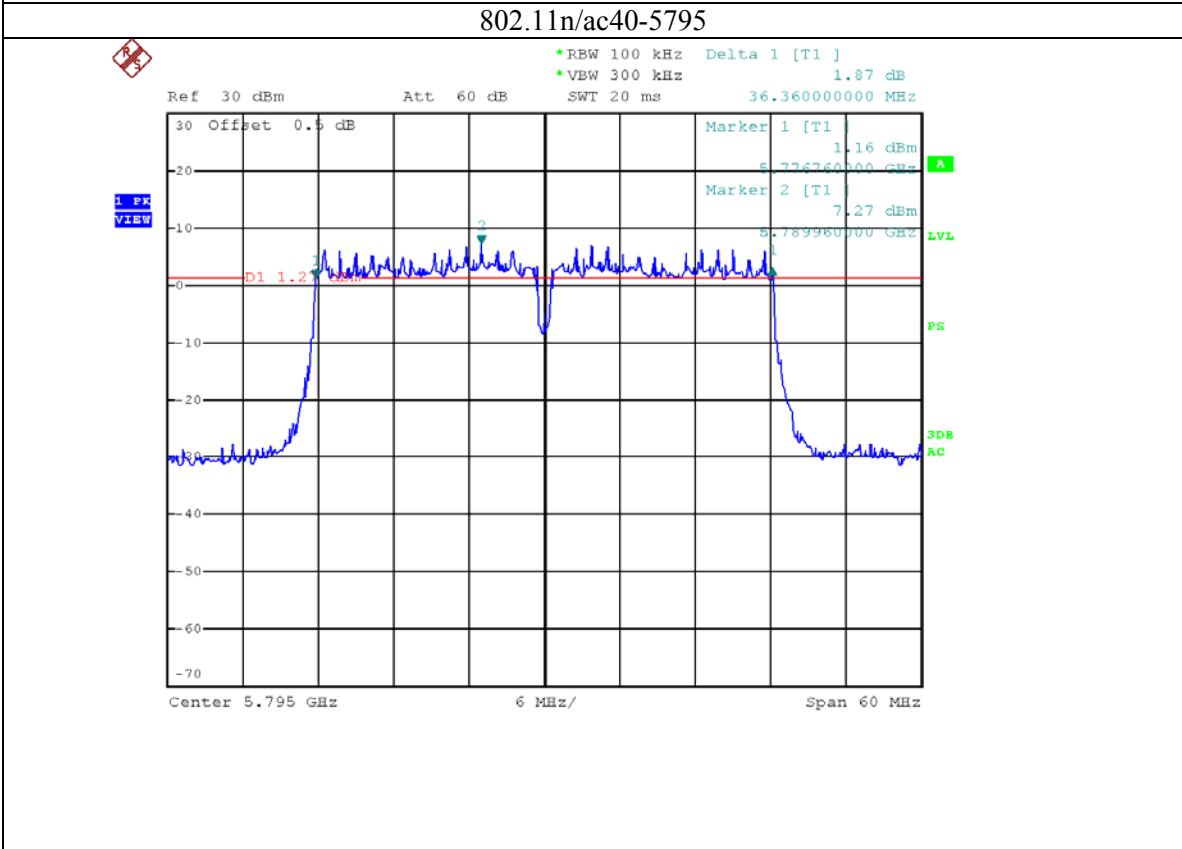
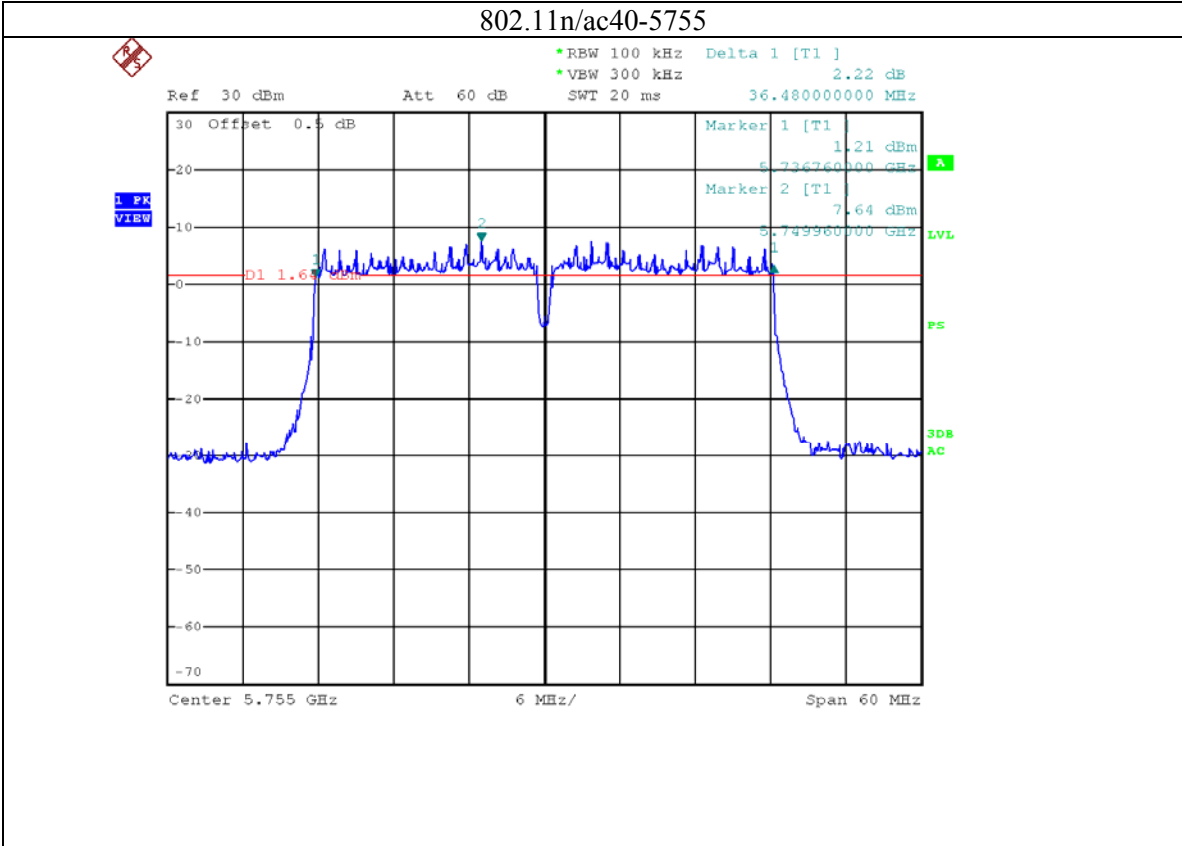


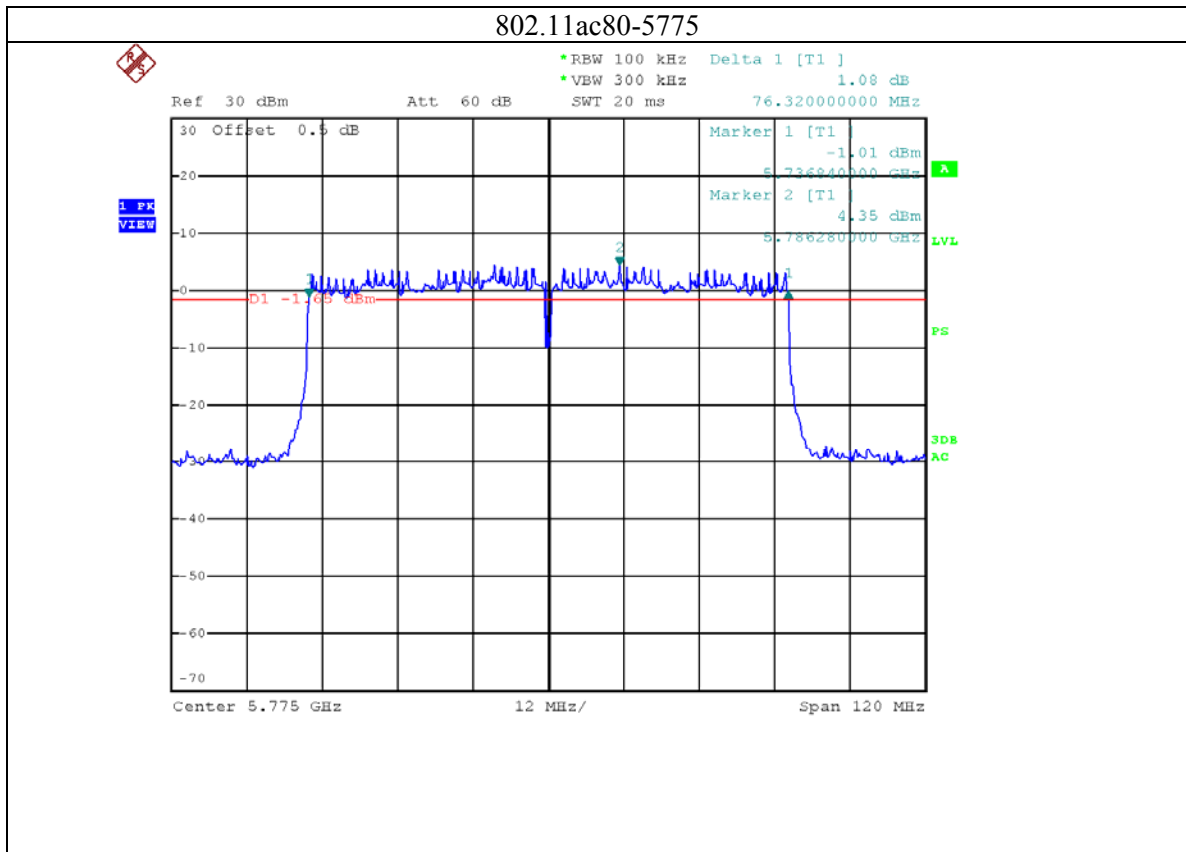
**Port 1**



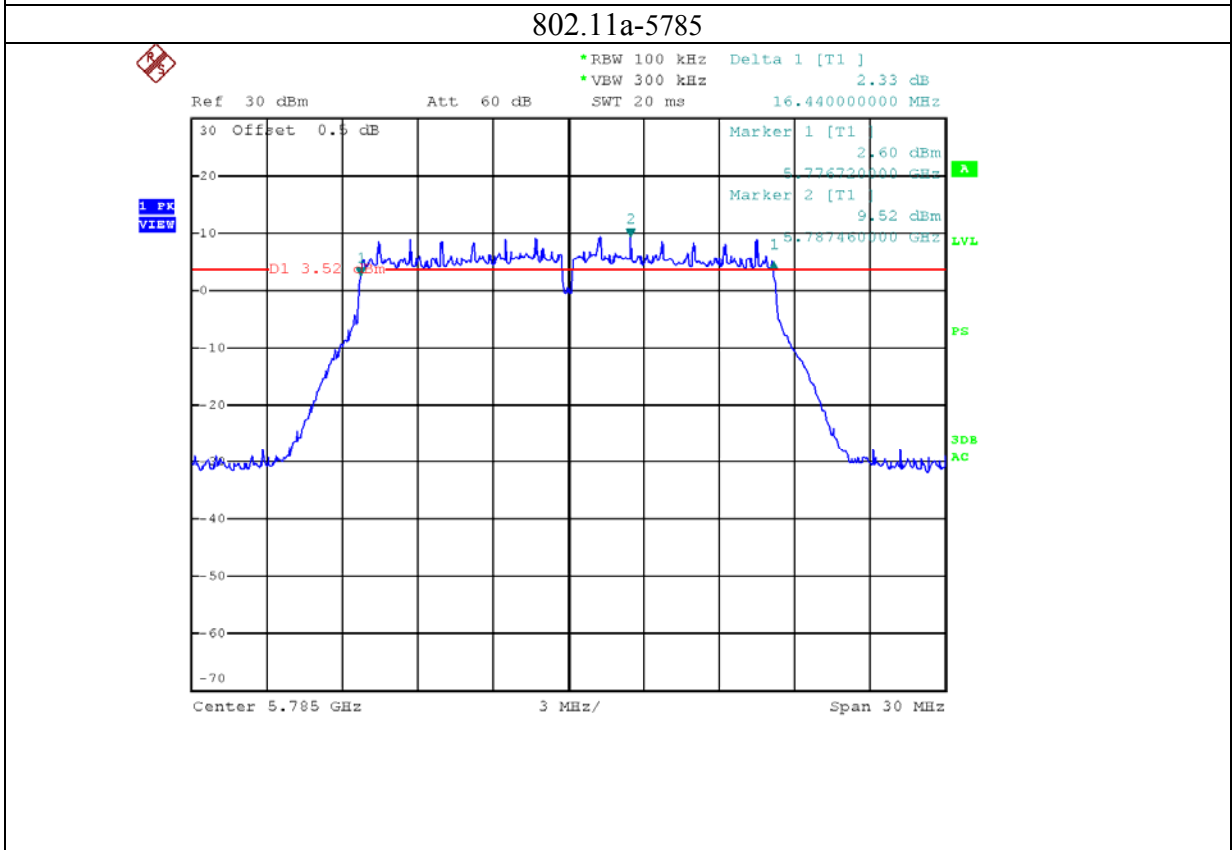
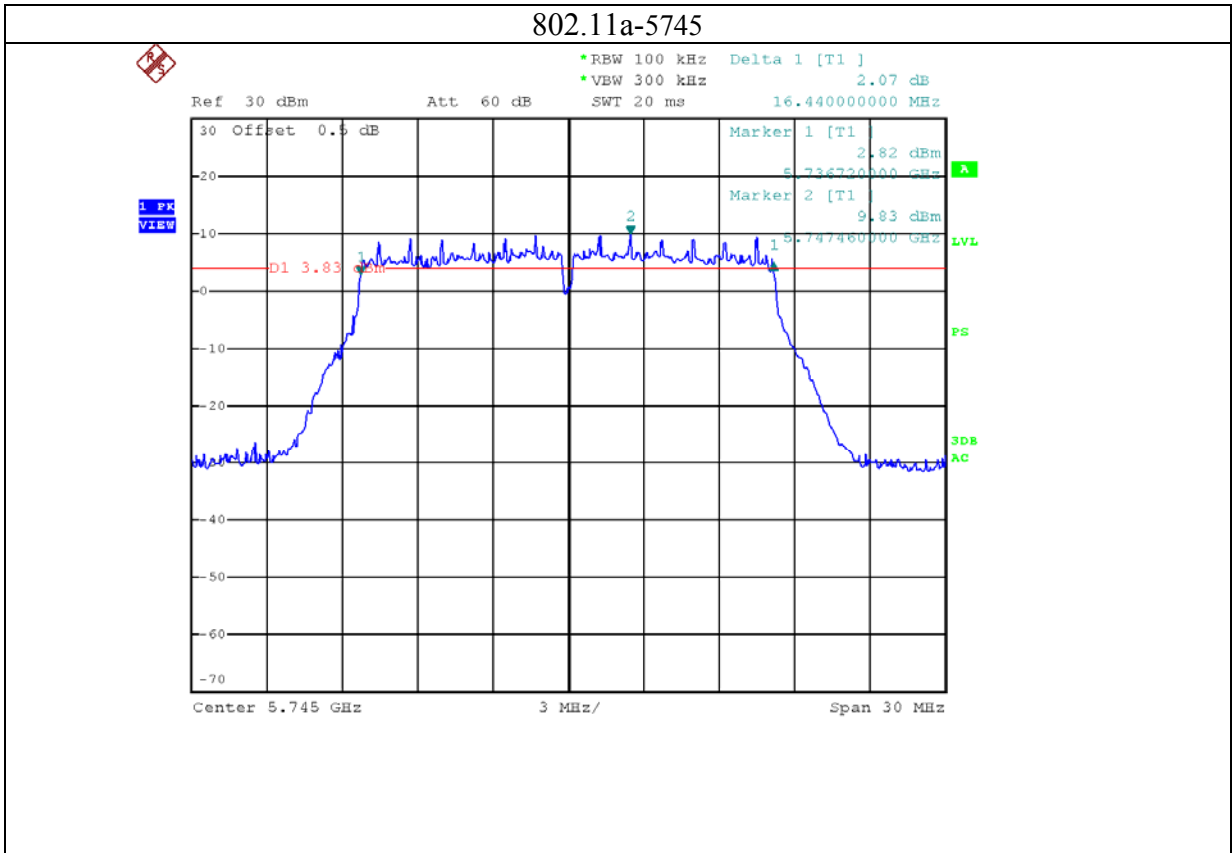


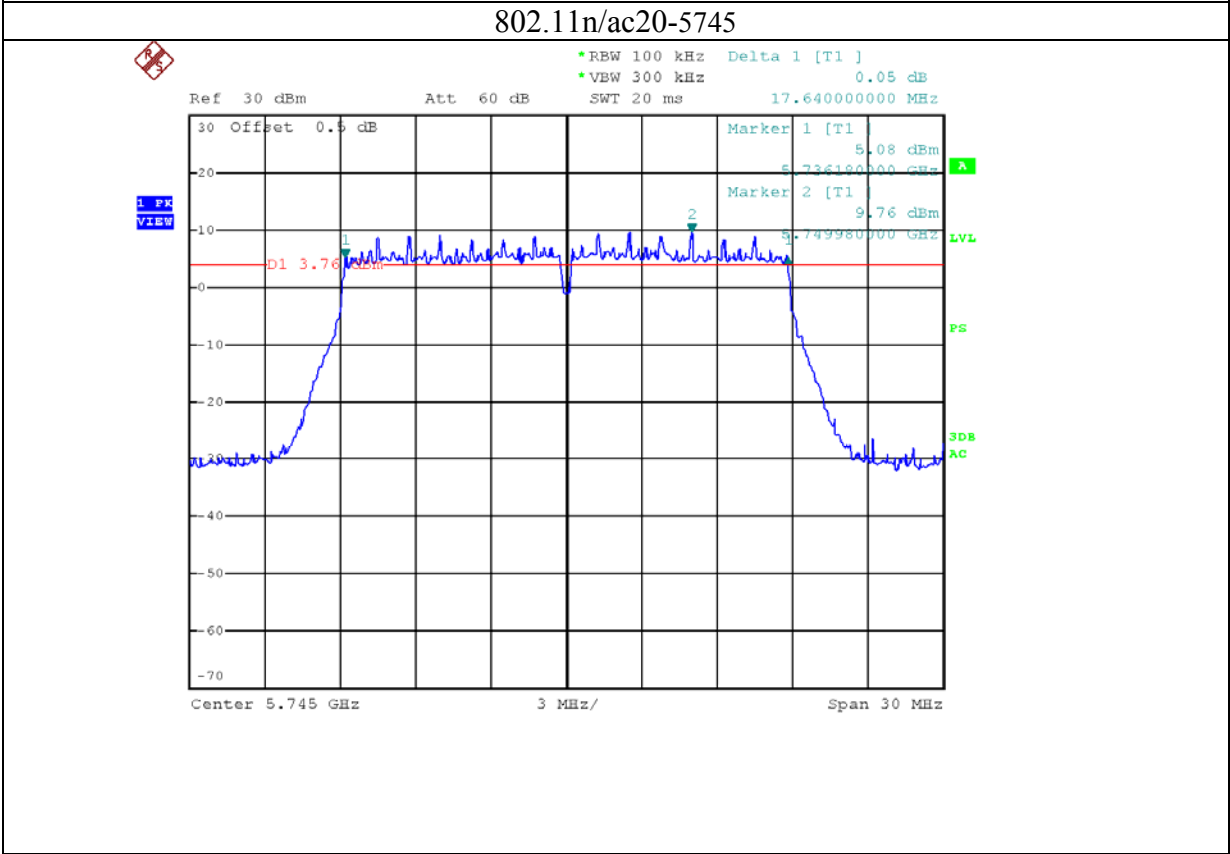
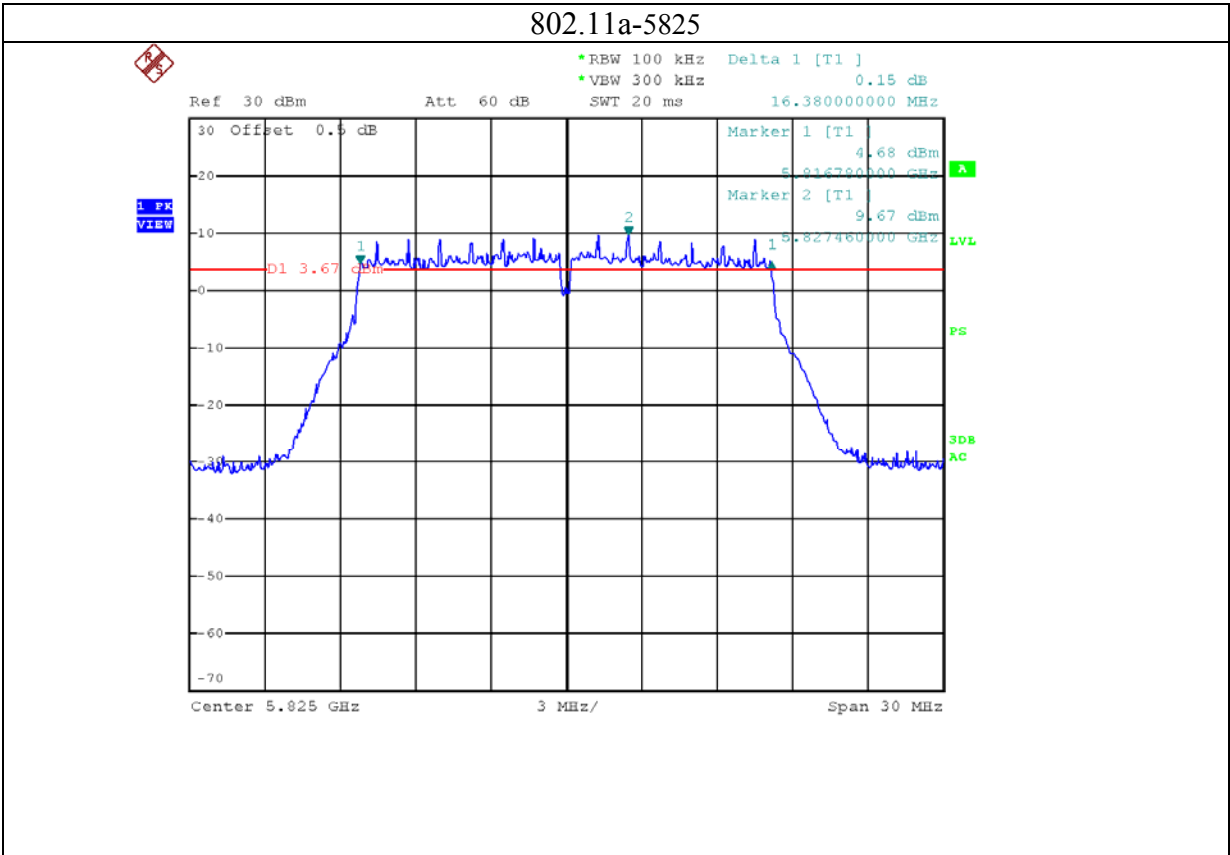




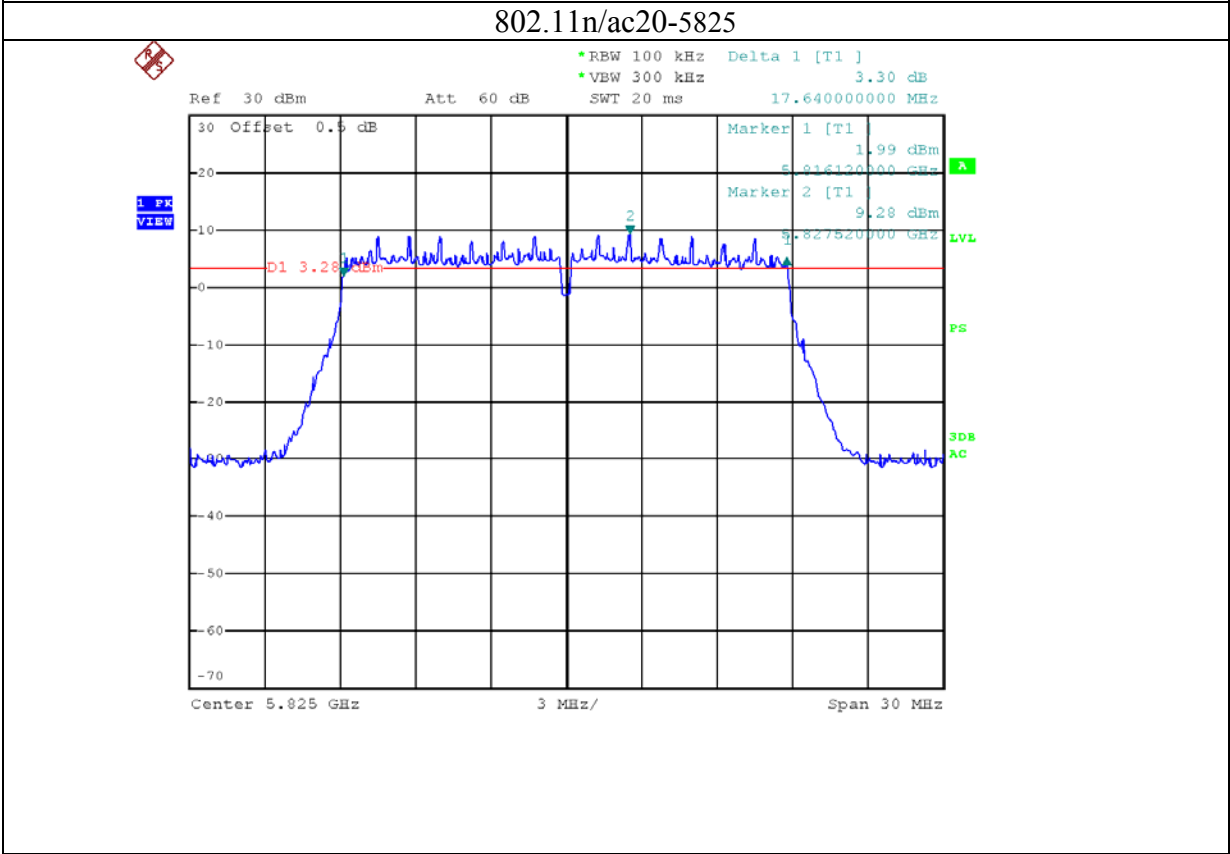
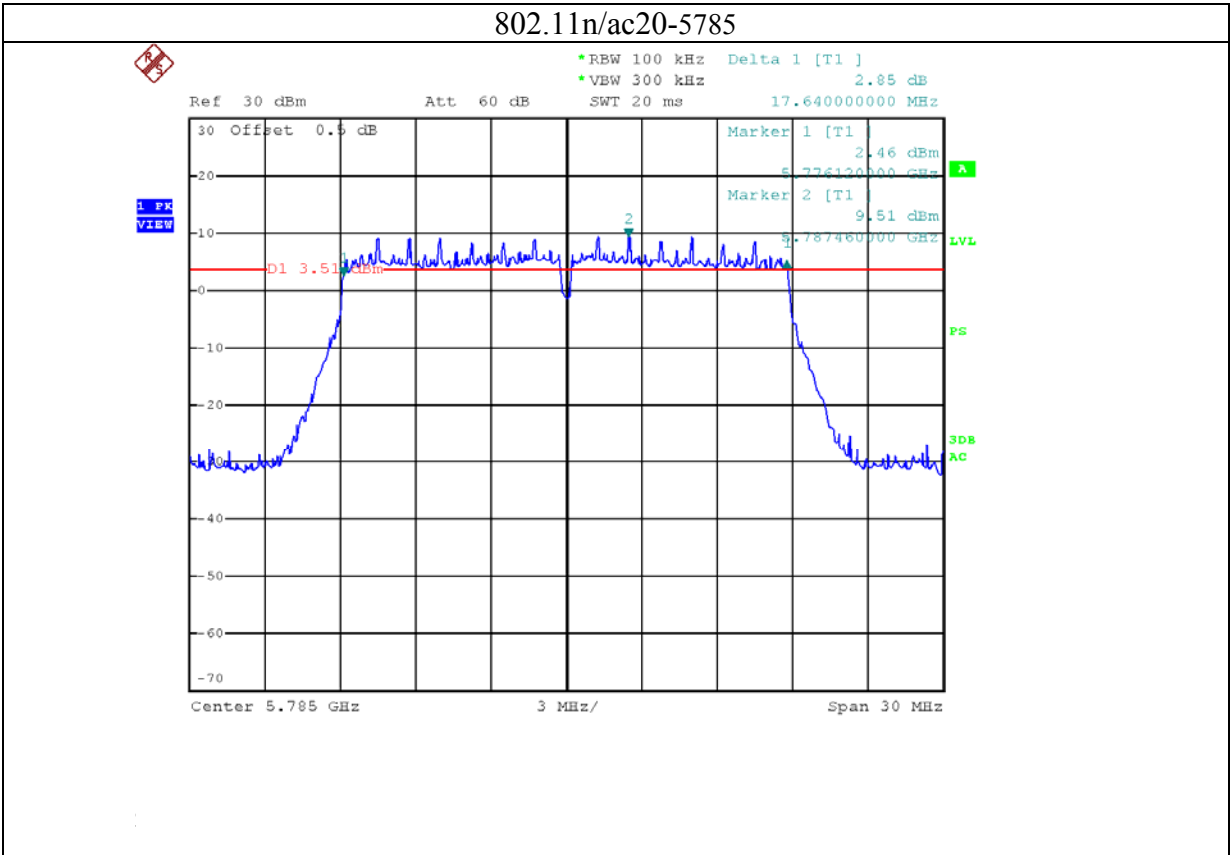


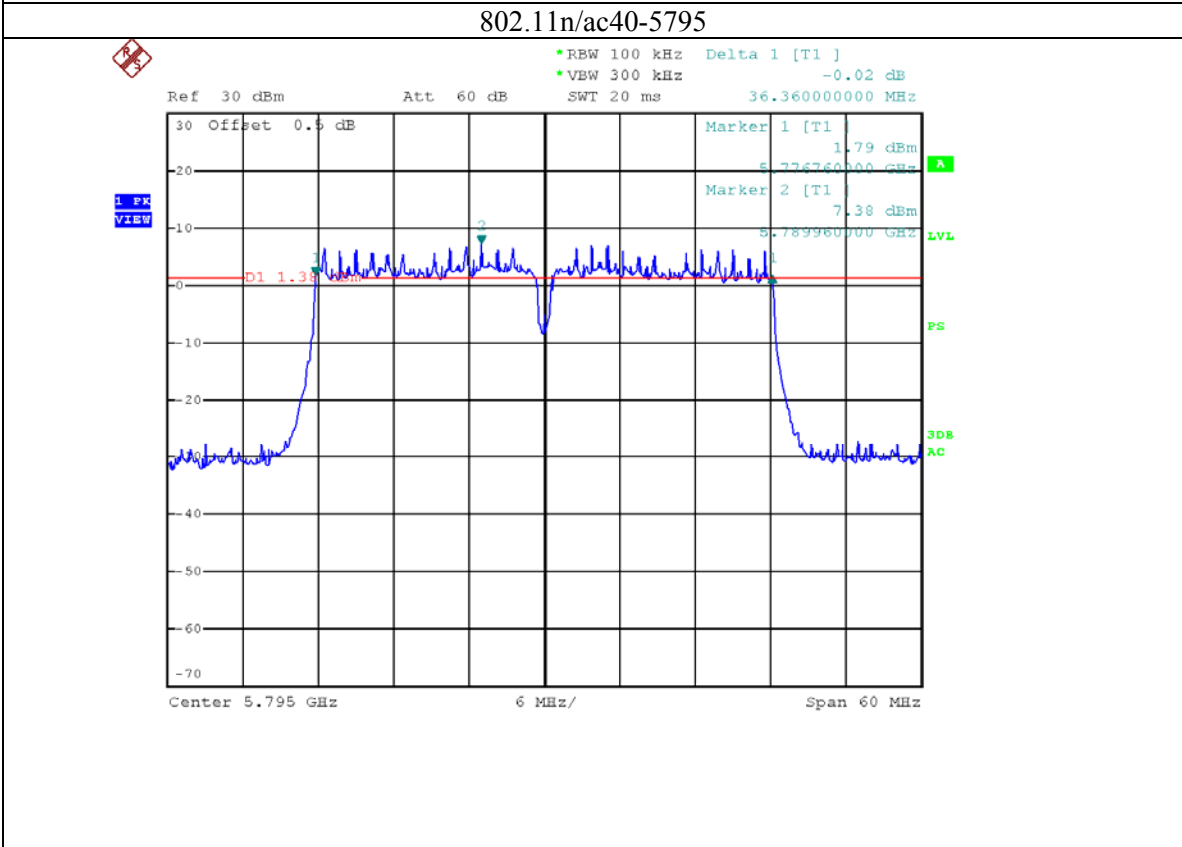
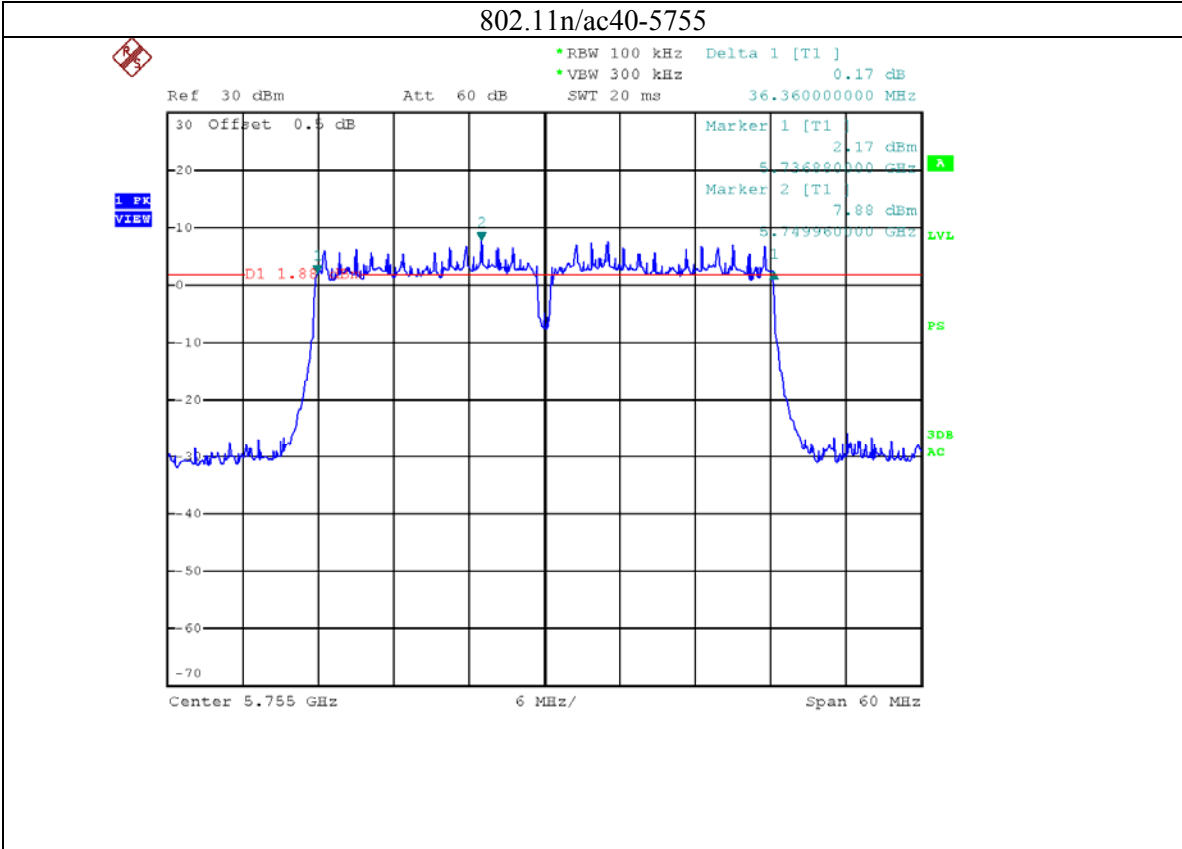
Port 2

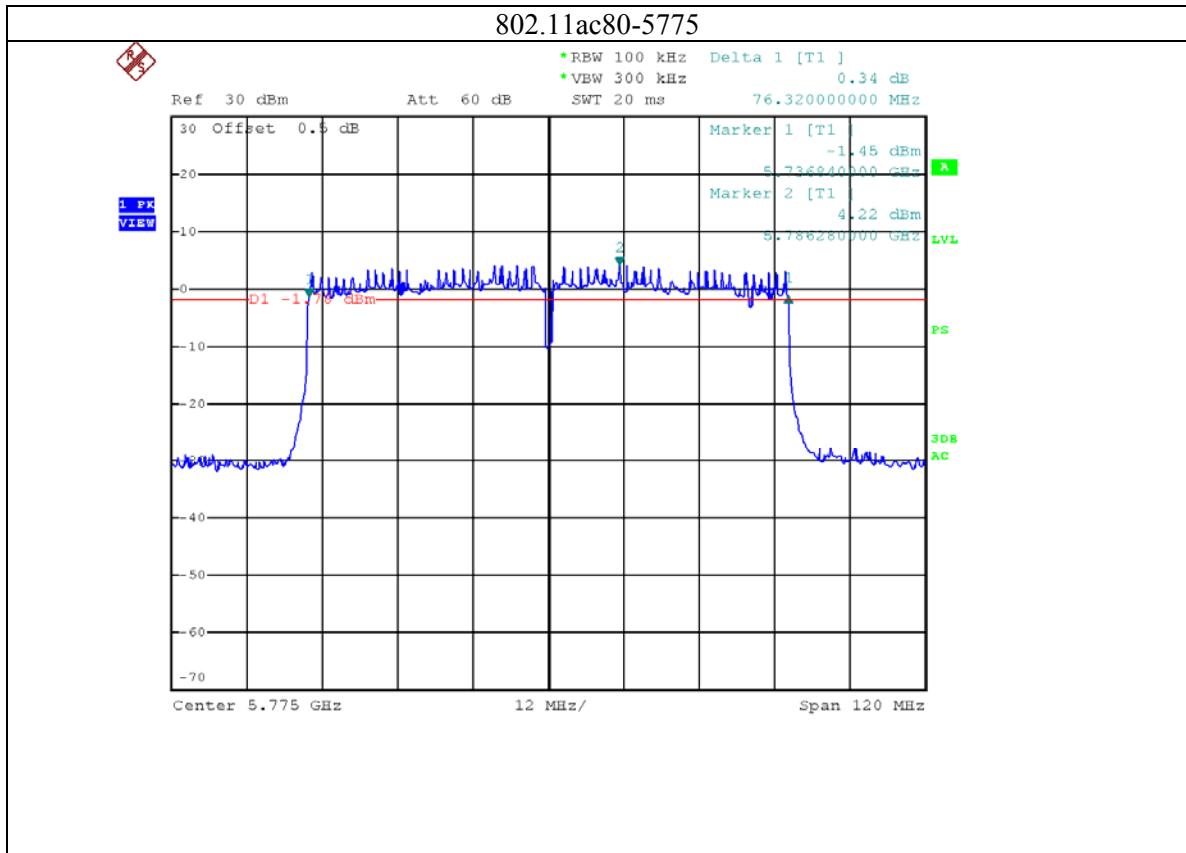












## 6. Radiated emission

**Test result: PASS**

### 6.1 Test limit

6.1.1 The radiated emissions which are lower than 1GHz or fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) showed as below:

Frequency (MHz)	Field Strength (dBuV/m)	Measurement Distance (m)
30 - 88	40.0	3
88 - 216	43.5	3
216 - 960	46.0	3
Above 960	54.0	3

6.1.2 The emission which is outside the restrict bands, should comply with the EIRP limit as below:

For transmitters operating in the 5.15–5.25 / 5.25 – 5.35 / 5.47 – 5.725 GHz band: all emissions outside of the 5.15 – 5.35 / 5.47 – 5.725 GHz band shall not exceed an EIRP of -27dBm/MHz.

EIRP Limit (dBm)	Equivalent Field Strength (3m) (dBμV/m)
-27	68.20

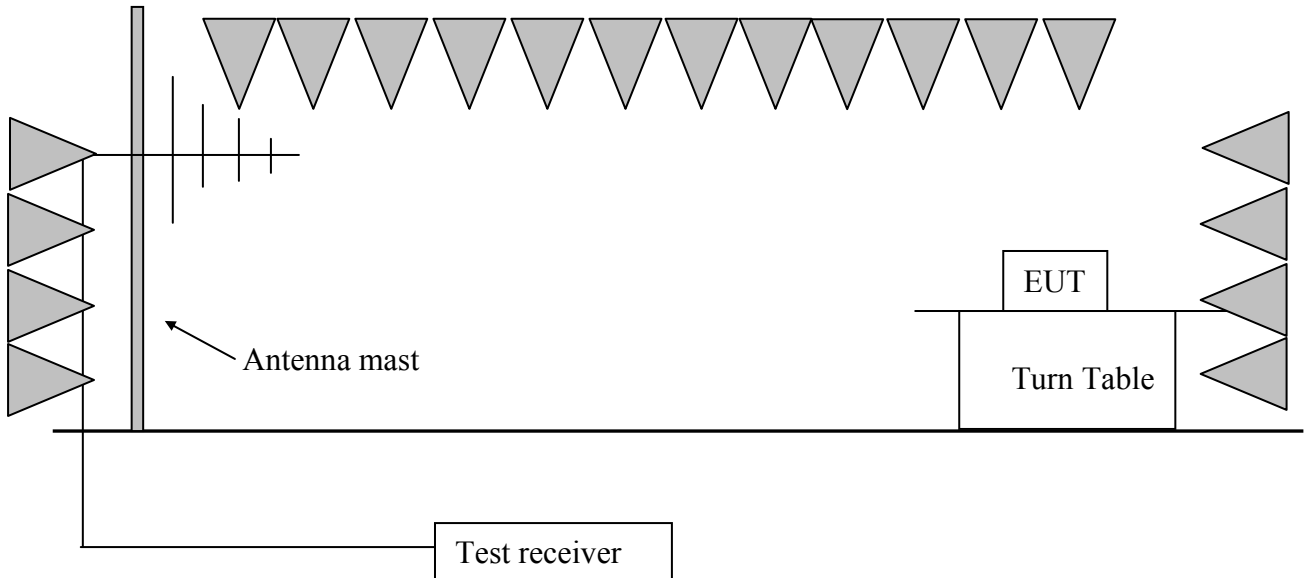
For transmitters operating in the 5.725 – 5.85GHz band: emission among 5.715 – 5.725GHz & 5.85 – 5.86GHz shall not exceed an EIRP of -17dBm/MHz all emissions outside band shall not exceed an EIRP of -27dBm/MHz.

EIRP Limit (dBm)	Equivalent Field Strength (3m) (dBμV/m)
-27	68.20
-17	78.20

Assessed with 15.209(a):

Frequency (MHz)	Field Strength (dBuV/m)	Measurement Distance (m)
30 - 88	40.0	3
88 - 216	43.5	3
216 - 960	46.0	3
Above 960	54.0	3

## 6.2 Test Configuration



## 6.3 Test procedure and test setup

The measurement was applied in a semi-anechoic chamber. While testing for spurious emission higher than 1GHz, if applied, the pre-amplifier would be equipped just at the output terminal of the antenna.

The EUT and simulators were placed on a 0.8m high wooden turntable above the horizontal metal ground plane. The turn table rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on an antenna mast. The antenna moved up and down between from 1 meter to 4 meters to find out the maximum emission level.

The EUT was tested according to KDB 789033D02: Section G.

The radiated emission was measured using the Spectrum Analyzer with the resolutions bandwidth set as:

RBW = 100kHz, VBW = 300kHz (30MHz~1GHz)

RBW = 1MHz, VBW = 3MHz (>1GHz for PK);

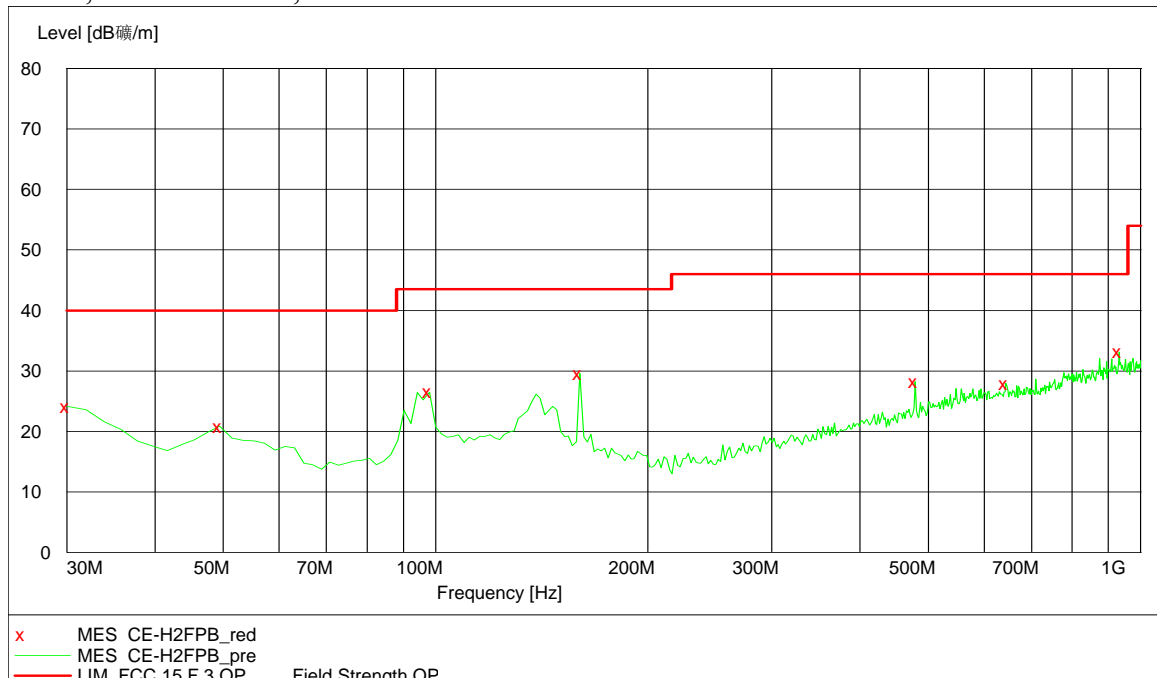
RBW = 1MHz, VBW = 10Hz (>1GHz for AV);

### 6.4 Test protocol

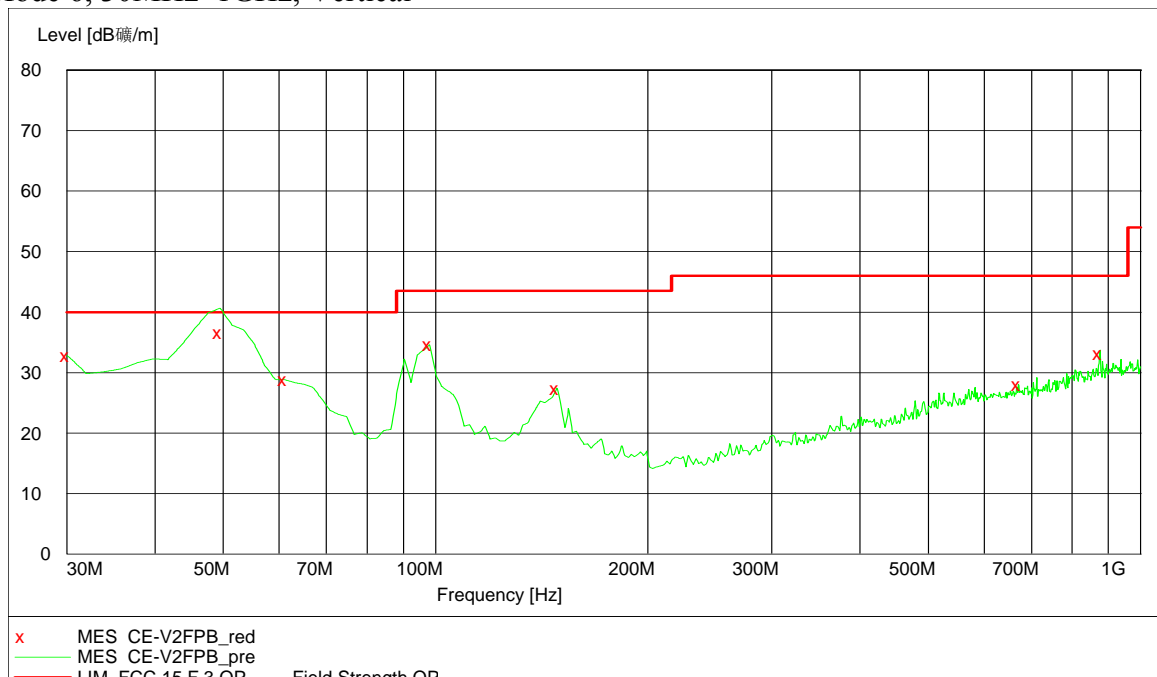
Temperature : 25 °C  
Relative Humidity : 55 %

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

#### Mode 6, 30MHz~1GHz, Horizontal



#### Mode 6, 30MHz~1GHz, Vertical



Mode 6, 30MHz~1GHz, Test data:

Polarization	Frequency (MHz)	Measured level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
H	30.00	24.1	40.0	15.9	PK
	49.44	20.8	40.0	19.2	PK
	98.04	26.5	43.5	17.0	PK
	160.24	29.6	43.5	13.9	PK
	479.04	28.2	46.0	17.8	PK
	644.27	27.9	46.0	18.1	PK
	931.96	33.1	46.0	12.9	PK
V	30.00	32.8	40.0	7.2	PK
	49.44	36.7	40.0	3.3	QP
	61.10	28.8	40.0	11.2	PK
	98.04	34.6	43.5	8.9	PK
	148.58	27.4	43.5	16.1	PK
	671.48	28.0	46.0	18.0	PK
	875.59	33.2	46.0	12.8	PK

Note: The test model 6 was chosen to perform the bellow 1GHz tests as representative.

**Test result above 1GHz:**

The emission was conducted from 1GHz to 25GHz.

Within 5GHz band, we tested mode 2, 6, 9, 14, 17 for this product, and listed mode 2, 6, 14, 17 in this report

**Test data >1GHz:**

**5.1GHz band Mode 2:**

1: 802.11a

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5150	52.47	74	0.10	100	210	21.53	PK
		39.15	54	0.10	100	210	14.85	AV
	5180	114.30	-	0.10	100	210	-	PK
		105.70	-	0.10	100	210	-	AV
	10360	45.10	74	12.20	100	210	28.90	PK
		35.10	54	12.20	100	210	18.90	AV
Note:	5180MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5200	114.40	-	0.10	100	210	-	PK
		103.50	-	0.10	100	210	-	AV
	10400	45.40	74	12.20	100	210	28.60	PK
		35.10	54	12.20	100	210	18.80	AV
Note:	5200MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5240	114.70	-	0.10	100	210	-	PK
		105.00	-	0.10	100	210	-	AV
	10480	45.10	74	12.20	100	210	28.90	PK
		35.60	54	12.20	100	210	18.40	AV
Note:	5240MHz is fundamental signal.							



2: 802.11n/ac20

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5150	54.44	74	0.10	100	210	19.56	PK
		39.35	54	0.10	100	210	14.65	AV
	5180	112.80	-	0.10	100	210	-	PK
		101.50	-	0.10	100	210	-	AV
	10360	45.30	74	12.20	100	210	28.70	PK
		37.30	54	12.20	100	210	16.70	AV
Note:	5180MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5200	114.50	-	0.10	100	210	-	PK
		105.20	-	0.10	100	210	-	AV
	10400	46.30	74	12.20	100	210	27.70	PK
		36.20	54	12.20	100	210	17.80	AV
Note:	5200MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5240	114.90	-	0.10	100	210	-	PK
		104.10	-	0.10	100	210	-	AV
	10480	46.60	74	12.20	100	210	27.40	PK
		36.60	54	12.20	100	210	17.40	AV
Note:	5240MHz is fundamental signal.							

3: 802.11n/ac40

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5150	52.55	74	0.10	100	210	21.45	PK
		39.89	54	0.10	100	210	14.11	AV
	5190	105.80	-	0.10	100	210	-	PK
		97.30	-	0.10	100	210	-	AV
	10380	45.50	74	12.20	100	210	28.50	PK
		37.10	54	12.20	100	210	16.90	AV
Note:	5190MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5230	106.20	-	0.10	100	210	-	PK
		95.70	-	0.10	100	210	-	AV
	10460	45.20	74	12.20	100	210	28.80	PK
		36.10	54	12.20	100	210	17.90	AV
Note:	5230MHz is fundamental signal.							

4: 802.11ac80

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5150	62.45	74	0.10	100	210	11.55	PK
		41.08	54	0.10	100	210	12.92	AV
	5210	103.10	-	0.10	100	210	-	PK
		89.60	-	0.10	100	210	-	AV
	10420	45.40	74	12.20	100	210	28.60	PK
		36.50	54	12.20	100	210	17.50	AV
Note:	5210MHz is fundamental signal.							

**5.1GHz band Mode 6:**

1: 802.11a

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5150	64.12	74	0.10	100	210	9.88	PK
		49.67	54	0.10	100	210	4.33	AV
	5180	115.10	-	0.10	100	210	-	PK
		103.50	-	0.10	100	210	-	AV
	10360	45.50	74	12.20	100	210	28.50	PK
		35.10	54	12.20	100	210	18.60	AV
Note:	5180MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5200	114.70	-	0.10	100	210	-	PK
		103.10	-	0.10	100	210	-	AV
	10400	45.30	74	12.20	100	210	28.70	PK
		35.20	54	12.20	100	210	18.80	AV
Note:	5200MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5240	114.90	-	0.10	100	210	-	PK
		104.00	-	0.10	100	210	-	AV
	10480	45.20	74	12.20	100	210	28.80	PK
		35.20	54	12.20	100	210	18.80	AV
Note:	5240MHz is fundamental signal.							

2: 802.11n/ac20

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5150	64.31	74	0.10	100	210	9.69	PK
		49.28	54	0.10	100	210	4.72	AV
	5180	109.60	-	0.10	100	210	-	PK
		98.50	-	0.10	100	210	-	AV
	10360	45.20	74	12.20	100	210	28.80	PK
		37.70	54	12.20	100	210	16.30	AV
Note:	5180MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5200	112.90	-	0.10	100	210	-	PK
		102.10	-	0.10	100	210	-	AV
	10400	46.50	74	12.20	100	210	27.50	PK
		36.20	54	12.20	100	210	17.80	AV
Note:	5200MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5240	111.90	-	0.10	100	210	-	PK
		102.20	-	0.10	100	210	-	AV
	10480	46.10	74	12.20	100	210	27.90	PK
		36.10	54	12.20	100	210	17.90	AV
Note:	5240MHz is fundamental signal.							

3: 802.11n/ac40

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5150	64.32	74	0.10	100	210	9.68	PK
		49.49	54	0.10	100	210	4.51	AV
	5190	104.20	-	0.10	100	210	-	PK
		93.20	-	0.10	100	210	-	AV
	10380	45.50	74	12.20	100	210	28.50	PK
		37.10	54	12.20	100	210	16.90	AV
Note:	5190MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5230	105.10	-	0.10	100	210	-	PK
		93.40	-	0.10	100	210	-	AV
	10460	45.10	74	12.20	100	210	28.90	PK
		36.50	54	12.20	100	210	17.50	AV
Note:	5230MHz is fundamental signal.							

4: 802.11ac80

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5150	71.08	74	0.10	100	210	2.92	PK
		49.71	54	0.10	100	210	4.29	AV
	5210	101.80	-	0.10	100	210	-	PK
		86.70	-	0.10	100	210	-	AV
	10420	45.50	74	12.20	100	210	28.50	PK
		36.30	54	12.20	100	210	17.70	AV
Note:	5210MHz is fundamental signal.							

**5.1GHz band Mode 14:**

1: 802.11a

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5150	52.23	74	0.10	100	210	21.77	PK
		39.44	54	0.10	100	210	14.56	AV
	5180	114.30	-	0.10	100	210	-	PK
		105.60	-	0.10	100	210	-	AV
	10360	45.10	74	12.20	100	210	28.90	PK
		35.10	54	12.20	100	210	18.90	AV
Note:	5180MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5200	113.60	-	0.10	100	210	-	PK
		102.80	-	0.10	100	210	-	AV
	10400	45.40	74	12.20	100	210	28.60	PK
		35.10	54	12.20	100	210	18.80	AV
Note:	5200MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5240	115.70	-	0.10	100	210	-	PK
		106.00	-	0.10	100	210	-	AV
	10480	45.10	74	12.20	100	210	28.90	PK
		35.60	54	12.20	100	210	18.40	AV
Note:	5240MHz is fundamental signal.							

2: 802.11n/ac20

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5150	54.43	74	0.10	100	210	19.57	PK
		39.25	54	0.10	100	210	14.75	AV
	5180	112.70	-	0.10	100	210	-	PK
		102.40	-	0.10	100	210	-	AV
	10360	45.30	74	12.20	100	210	28.70	PK
		37.30	54	12.20	100	210	16.70	AV
Note:	5180MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5200	114.80	-	0.10	100	210	-	PK
		104.50	-	0.10	100	210	-	AV
	10400	46.30	74	12.20	100	210	27.70	PK
		36.20	54	12.20	100	210	17.80	AV
Note:	5200MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5240	113.80	-	0.10	100	210	-	PK
		104.20	-	0.10	100	210	-	AV
	10480	46.60	74	12.20	100	210	27.40	PK
		36.60	54	12.20	100	210	17.40	AV
Note:	5240MHz is fundamental signal.							

3: 802.11n/ac40

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5150	52.25	74	0.10	100	210	21.75	PK
		39.49	54	0.10	100	210	14.51	AV
	5190	105.20	-	0.10	100	210	-	PK
		98.90	-	0.10	100	210	-	AV
	10380	45.50	74	12.20	100	210	28.50	PK
		37.10	54	12.20	100	210	16.90	AV
Note:	5190MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5230	105.10	-	0.10	100	210	-	PK
		96.30	-	0.10	100	210	-	AV
	10460	45.20	74	12.20	100	210	28.80	PK
		36.10	54	12.20	100	210	17.90	AV
Note:	5230MHz is fundamental signal.							

4: 802.11ac80

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5150	61.47	74	0.10	100	210	12.53	PK
		43.74	54	0.10	100	210	10.26	AV
	5210	103.40	-	0.10	100	210	-	PK
		92.30	-	0.10	100	210	-	AV
	10420	45.40	74	12.20	100	210	28.60	PK
		36.50	54	12.20	100	210	17.50	AV
Note:	5210MHz is fundamental signal.							



**5.1GHz band Mode 17:**

1: 802.11a

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5150	63.45	74	0.10	100	210	10.55	PK
		49.07	54	0.10	100	210	4.93	AV
	5180	114.70	-	0.10	100	210	-	PK
		102.60	-	0.10	100	210	-	AV
	10360	45.50	74	12.20	100	210	28.50	PK
		35.20	54	12.20	100	210	18.80	AV
Note:	5180MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5200	113.50	-	0.10	100	210	-	PK
		101.30	-	0.10	100	210	-	AV
	10400	45.40	74	12.20	100	210	28.60	PK
		35.30	54	12.20	100	210	18.70	AV
Note:	5200MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5240	114.50	-	0.10	100	210	-	PK
		102.10	-	0.10	100	210	-	AV
	10480	45.50	74	12.20	100	210	28.50	PK
		35.70	54	12.20	100	210	18.30	AV
Note:	5240MHz is fundamental signal.							

2: 802.11n/ac20

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5150	64.16	74	0.10	100	210	9.84	PK
		49.07	54	0.10	100	210	4.93	AV
	5180	107.30	-	0.10	100	210	-	PK
		95.80	-	0.10	100	210	-	AV
	10360	45.50	74	12.20	100	210	28.50	PK
		37.90	54	12.20	100	210	16.10	AV
Note:	5180MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5200	108.20	-	0.10	100	210	-	PK
		96.40	-	0.10	100	210	-	AV
	10400	46.10	74	12.20	100	210	27.90	PK
		36.70	54	12.20	100	210	17.30	AV
Note:	5200MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5240	105.80	-	0.10	100	210	-	PK
		95.10	-	0.10	100	210	-	AV
	10480	45.10	74	12.20	100	210	28.90	PK
		36.40	54	12.20	100	210	17.60	AV
Note:	5240MHz is fundamental signal.							

3: 802.11n/ac40

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5150	64.67	74	0.10	100	210	9.33	PK
		49.24	54	0.10	100	210	4.76	AV
	5190	103.50	-	0.10	100	210	-	PK
		91.20	-	0.10	100	210	-	AV
	10380	45.60	74	12.20	100	210	28.40	PK
		36.10	54	12.20	100	210	17.90	AV
Note:	5190MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5230	102.40	-	0.10	100	210	-	PK
		92.80	-	0.10	100	210	-	AV
	10460	45.20	74	12.20	100	210	28.80	PK
		36.30	54	12.20	100	210	17.70	AV
Note:	5230MHz is fundamental signal.							

4: 802.11ac80

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5150	66.86	74	0.10	100	210	7.14	PK
		49.54	54	0.10	100	210	4.46	AV
	5210	101.30	-	0.10	100	210	-	PK
		88.20	-	0.10	100	210	-	AV
	10420	45.10	74	12.20	100	210	28.90	PK
		36.90	54	12.20	100	210	17.10	AV
Note:	5210MHz is fundamental signal.							

### 5.8GHz Mode 2

1: 5.8G band 802.11a

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5745	121.50	-	0.40	100	190	-	PK
		113.70	-	0.40	100	190	-	AV
	11490	45.50	74	12.90	100	190	28.50	PK
		35.60	54	12.90	100	190	18.40	AV
Note:	5745MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5785	120.30	-	0.40	100	190	-	PK
		111.30	-	0.40	100	190	-	AV
	11570	45.40	74	12.90	100	190	28.60	PK
		35.20	54	12.90	100	190	18.80	AV
Note:	5785MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5825	120.50	-	0.40	100	190	-	PK
		112.40	-	0.40	100	190	-	AV
	11650	45.30	74	12.90	100	190	28.70	PK
		35.30	54	12.90	100	190	18.70	AV
Note:	5825MHz is fundamental signal.							

2: 5.8G band 802.11n/ac20

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5745	122.40	-	0.40	100	190	-	PK
		114.60	-	0.40	100	190	-	AV
	11490	46.30	74	12.90	100	190	27.70	PK
		37.40	54	12.90	100	190	16.60	AV
Note:	5745MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5785	121.00	-	0.40	100	190	-	PK
		112.90	-	0.40	100	190	-	AV
	11570	46.10	74	12.90	100	190	27.90	PK
		37.20	54	12.90	100	190	16.80	AV
Note:	5785MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5825	121.30	-	0.40	100	190	-	PK
		113.60	-	0.40	100	190	-	AV
	11650	46.10	74	12.90	100	190	27.90	PK
		36.90	54	12.90	100	190	17.10	AV
Note:	5825MHz is fundamental signal.							

3: 5.8G band 802.11n/ac40

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5755	118.20	-	0.40	100	190	-	PK
		107.40	-	0.40	100	190	-	AV
	11510	45.50	74	12.90	100	190	28.50	PK
		37.30	54	12.90	100	190	16.70	AV
Note:	5755MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5795	118.90	-	0.40	100	190	-	PK
		107.20	-	0.40	100	190	-	AV
	11590	45.30	74	12.90	100	190	28.70	PK
		36.80	54	12.90	100	190	17.20	AV
Note:	5795MHz is fundamental signal.							

4: 5.8G band 802.11ac80

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5775	116.50	-	0.40	100	190	-	PK
		105.30	-	0.40	100	190	-	AV
	11550	45.10	74	12.90	100	190	28.90	PK
		36.40	54	12.90	100	190	17.60	AV
Note:	5775MHz is fundamental signal.							

### 5.8GHz Mode 6

1: 5.8G band 802.11a

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5745	121.30	-	0.40	100	190	-	PK
		112.80	-	0.40	100	190	-	AV
	11490	45.30	74	12.90	100	190	28.70	PK
		35.80	54	12.90	100	190	18.20	AV
Note:	5745MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5785	121.20	-	0.40	100	190	-	PK
		113.30	-	0.40	100	190	-	AV
	11570	45.50	74	12.90	100	190	28.50	PK
		35.50	54	12.90	100	190	18.50	AV
Note:	5785MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5825	120.50	-	0.40	100	190	-	PK
		112.80	-	0.40	100	190	-	AV
	11650	45.10	74	12.90	100	190	28.90	PK
		35.80	54	12.90	100	190	18.20	AV
Note:	5825MHz is fundamental signal.							

2: 5.8G band 802.11n/ac20

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5745	121.30	-	0.40	100	190	-	PK
		112.40	-	0.40	100	190	-	AV
	11490	44.70	74	12.90	100	190	29.30	PK
		37.50	54	12.90	100	190	16.50	AV
Note:	5745MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5785	119.60	-	0.40	100	190	-	PK
		112.70	-	0.40	100	190	-	AV
	11570	45.80	74	12.90	100	190	28.20	PK
		36.20	54	12.90	100	190	17.80	AV
Note:	5785MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuV/m)	Limit (dBuV/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5825	121.20	-	0.40	100	190	-	PK
		112.60	-	0.40	100	190	-	AV
	11650	45.10	74	12.90	100	190	28.90	PK
		35.90	54	12.90	100	190	18.10	AV
Note:	5825MHz is fundamental signal.							



3: 5.8G band 802.11n/ac40

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5755	118.70	-	0.40	100	190	-	PK
		112.40	-	0.40	100	190	-	AV
	11510	45.50	74	12.90	100	190	28.50	PK
		37.30	54	12.90	100	190	16.70	AV
Note:	5755MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5795	119.40	-	0.40	100	190	-	PK
		109.20	-	0.40	100	190	-	AV
	11590	45.40	74	12.90	100	190	28.60	PK
		36.90	54	12.90	100	190	17.10	AV
Note:	5795MHz is fundamental signal.							

4: 5.8G band 802.11ac80

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5775	117.20	-	0.40	100	190	-	PK
		106.70	-	0.40	100	190	-	AV
	11550	45.10	74	12.90	100	190	28.90	PK
		36.30	54	12.90	100	190	17.70	AV
Note:	5775MHz is fundamental signal.							

### 5.8GHz Mode 14

1: 5.8G band 802.11a

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5745	116.80	-	0.40	100	190	-	PK
		103.70	-	0.40	100	190	-	AV
	11490	45.20	74	12.90	100	190	28.80	PK
		35.60	54	12.90	100	190	18.40	AV
Note:	5745MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5785	116.60	-	0.40	100	190	-	PK
		106.30	-	0.40	100	190	-	AV
	11570	45.40	74	12.90	100	190	28.60	PK
		35.50	54	12.90	100	190	18.50	AV
Note:	5785MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5825	113.40	-	0.40	100	190	-	PK
		105.50	-	0.40	100	190	-	AV
	11650	46.20	74	12.90	100	190	27.80	PK
		36.20	54	12.90	100	190	17.80	AV
Note:	5825MHz is fundamental signal.							

2: 5.8G band 802.11n/ac20

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5745	119.30	-	0.40	100	190	-	PK
		107.50	-	0.40	100	190	-	AV
	11490	45.30	74	12.90	100	190	28.70	PK
		35.50	54	12.90	100	190	18.50	AV
Note:	5745MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5785	116.70	-	0.40	100	190	-	PK
		105.40	-	0.40	100	190	-	AV
	11570	45.40	74	12.90	100	190	28.60	PK
		35.40	54	12.90	100	190	18.60	AV
Note:	5785MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5825	116.90	-	0.40	100	190	-	PK
		107.40	-	0.40	100	190	-	AV
	11650	45.40	74	12.90	100	190	28.60	PK
		35.90	54	12.90	100	190	18.10	AV
Note:	5825MHz is fundamental signal.							

3: 5.8G band 802.11n/ac40

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5755	114.50	-	0.40	100	190	-	PK
		103.50	-	0.40	100	190	-	AV
	11510	42.40	74	12.90	100	190	27.60	PK
		36.10	54	12.90	100	190	17.90	AV
Note:	5755MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5795	117.80	-	0.40	100	190	-	PK
		107.50	-	0.40	100	190	-	AV
	11590	44.90	74	12.90	100	190	29.10	PK
		36.20	54	12.90	100	190	17.80	AV
Note:	5795MHz is fundamental signal.							

4: 5.8G band 802.11ac80

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5775	115.30	-	0.40	100	190	-	PK
		105.20	-	0.40	100	190	-	AV
	11550	46.30	74	12.90	100	190	27.70	PK
		36.10	54	12.90	100	190	17.90	AV
Note:	5775MHz is fundamental signal.							

### 5.8GHz Mode 17

1: 5.8G band 802.11a

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5745	119.80	-	0.40	100	190	-	PK
		110.70	-	0.40	100	190	-	AV
	11490	45.30	74	12.90	100	190	28.70	PK
		35.50	54	12.90	100	190	18.50	AV
Note:	5745MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5785	119.40	-	0.40	100	190	-	PK
		110.20	-	0.40	100	190	-	AV
	11570	45.30	74	12.90	100	190	28.70	PK
		35.50	54	12.90	100	190	18.50	AV
Note:	5785MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5825	121.70	-	0.40	100	190	-	PK
		112.50	-	0.40	100	190	-	AV
	11650	46.10	74	12.90	100	190	27.90	PK
		36.80	54	12.90	100	190	17.20	AV
Note:	5825MHz is fundamental signal.							

2: 5.8G band 802.11n/ac20

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5745	119.60	-	0.40	100	190	-	PK
		110.20	-	0.40	100	190	-	AV
	11490	45.70	74	12.90	100	190	28.30	PK
		36.50	54	12.90	100	190	17.50	AV
Note:	5745MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5785	119.50	-	0.40	100	190	-	PK
		113.20	-	0.40	100	190	-	AV
	11570	45.70	74	12.90	100	190	28.30	PK
		36.40	54	12.90	100	190	17.60	AV
Note:	5785MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5825	119.20	-	0.40	100	190	-	PK
		109.30	-	0.40	100	190	-	AV
	11650	45.30	74	12.90	100	190	28.70	PK
		36.90	54	12.90	100	190	17.10	AV
Note:	5825MHz is fundamental signal.							

3: 5.8G band 802.11n/ac40

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5755	117.70	-	0.40	100	190	-	PK
		106.30	-	0.40	100	190	-	AV
	11510	46.50	74	12.90	100	190	27.50	PK
		36.30	54	12.90	100	190	17.70	AV
Note:	5755MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5795	115.90	-	0.40	100	190	-	PK
		106.30	-	0.40	100	190	-	AV
	11590	44.70	74	12.90	100	190	29.30	PK
		36.70	54	12.90	100	190	17.30	AV
Note:	5795MHz is fundamental signal.							

4: 5.8G band 802.11ac80

Polarity	Frequency (MHz)	Measured level (dBuv/m)	Limit (dBuv/m)	Factor (dB)	Antenna (cm)	Turn table (deg)	Margin (dB)	Remark
Ver/Hor	5775	115.40	-	0.40	100	190	-	PK
		102.50	-	0.40	100	190	-	AV
	11550	46.10	74	12.90	100	190	27.90	PK
		36.50	54	12.90	100	190	17.50	AV
Note:	5775MHz is fundamental signal.							

Remark:

1. For fundamental & restrict emission test, no amplifier is employed.
2. Factor = Antenna Factor + Cable Loss (-Amplifier, is employed);
3. Measure level = Reading Level + Factor;
4. Over Limit = Measure level – limit;
5. If the PK reading is lower than AV limit, the AV test can be elided.

Example:

Assuming Antenna Factor = 30.20dB/m, Cable Loss = 2.00dB,  
Gain of Preamplifier = 32.00dB, Original Receiver Reading level = 10dBuV.  
Then Factor = 30.20 + 2.00 – 32.00 = 0.20dB/m;  
Measure level = 10dBuV + 0.20dB/m = 10.20dBuV/m  
Assuming limit = 54dBuV/m, Measure level = 10.20dBuV/m,  
then Over Limit = 10.20 - 54= -43.80dBuV/m



## 7. Power line conducted emission

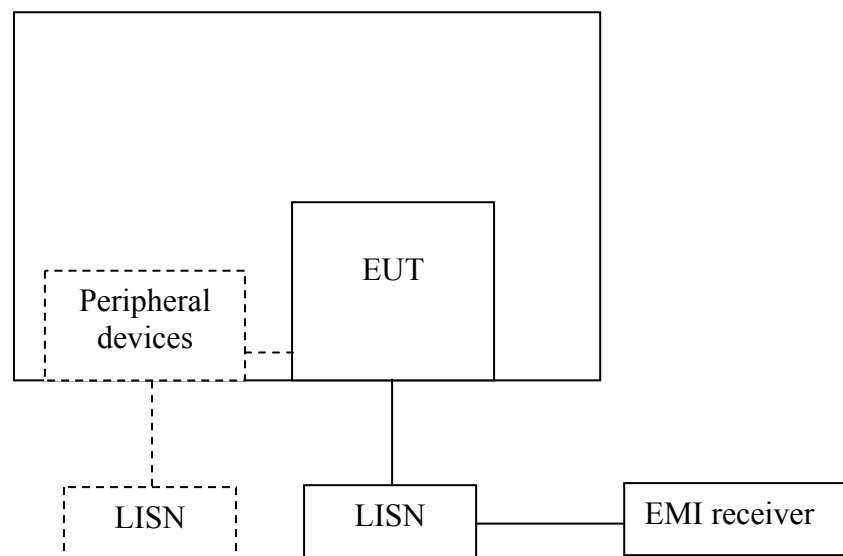
Test result: Pass

### 7.1 Limit

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	QP	AV
0.15-0.5	66 to 56*	56 to 46 *
0.5-5	56	46
5-30	60	50

\* Decreases with the logarithm of the frequency.

### 7.2 Test configuration



For table top equipment, wooden support is 0.8m height table

For floor standing equipment, wooden support is 0.1m height rack.

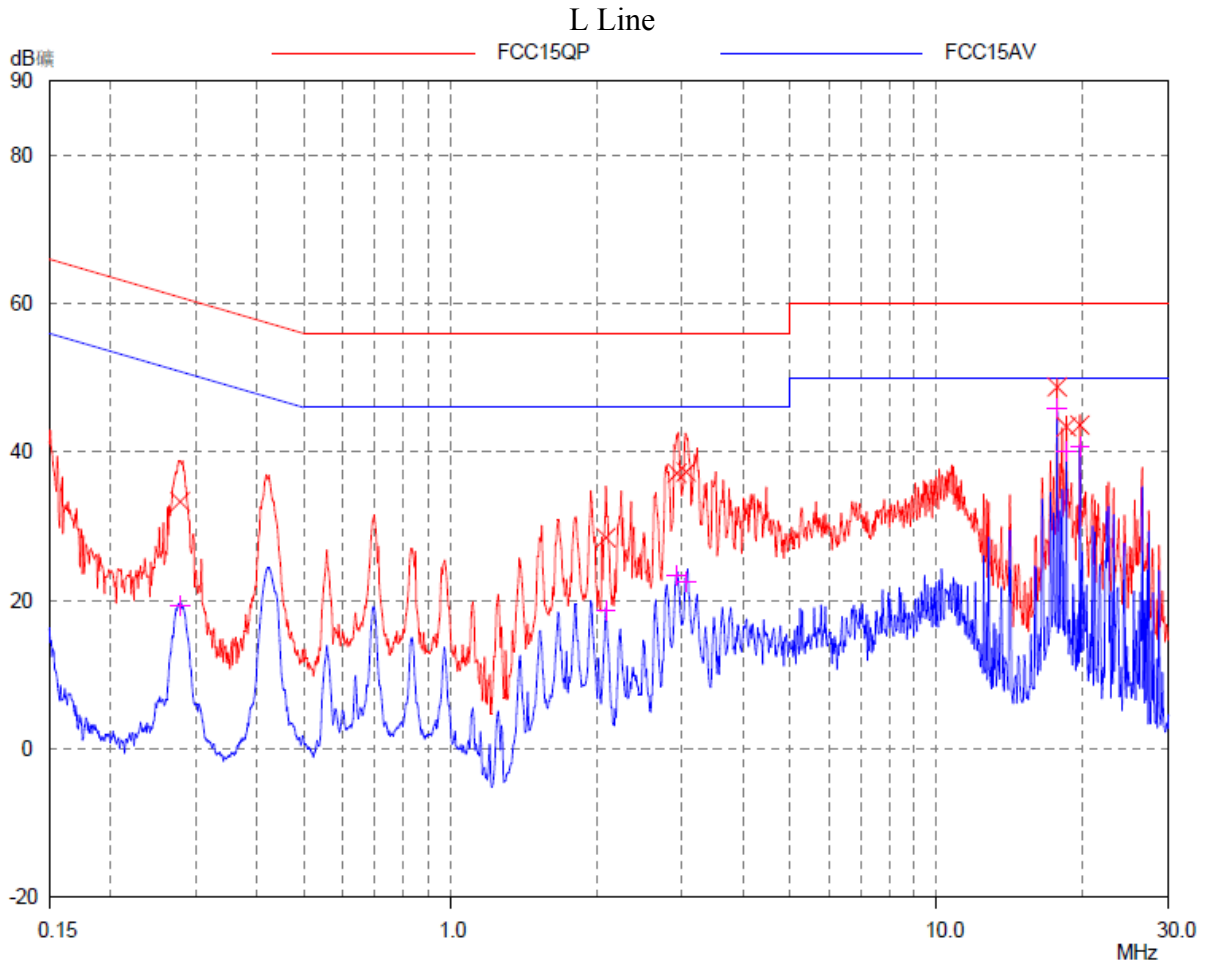
### **7.3 Test procedure and test set up**

The EUT are connected to the main power through a line impedance stabilization network (LISN). This provides a 50Ω/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50Ω/50uH coupling impedance with 50Ω termination.

Both sides (Line and Neutral) of AC 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 C63.4 on conducted measurement. The bandwidth of the test receiver is set at 9 kHz.

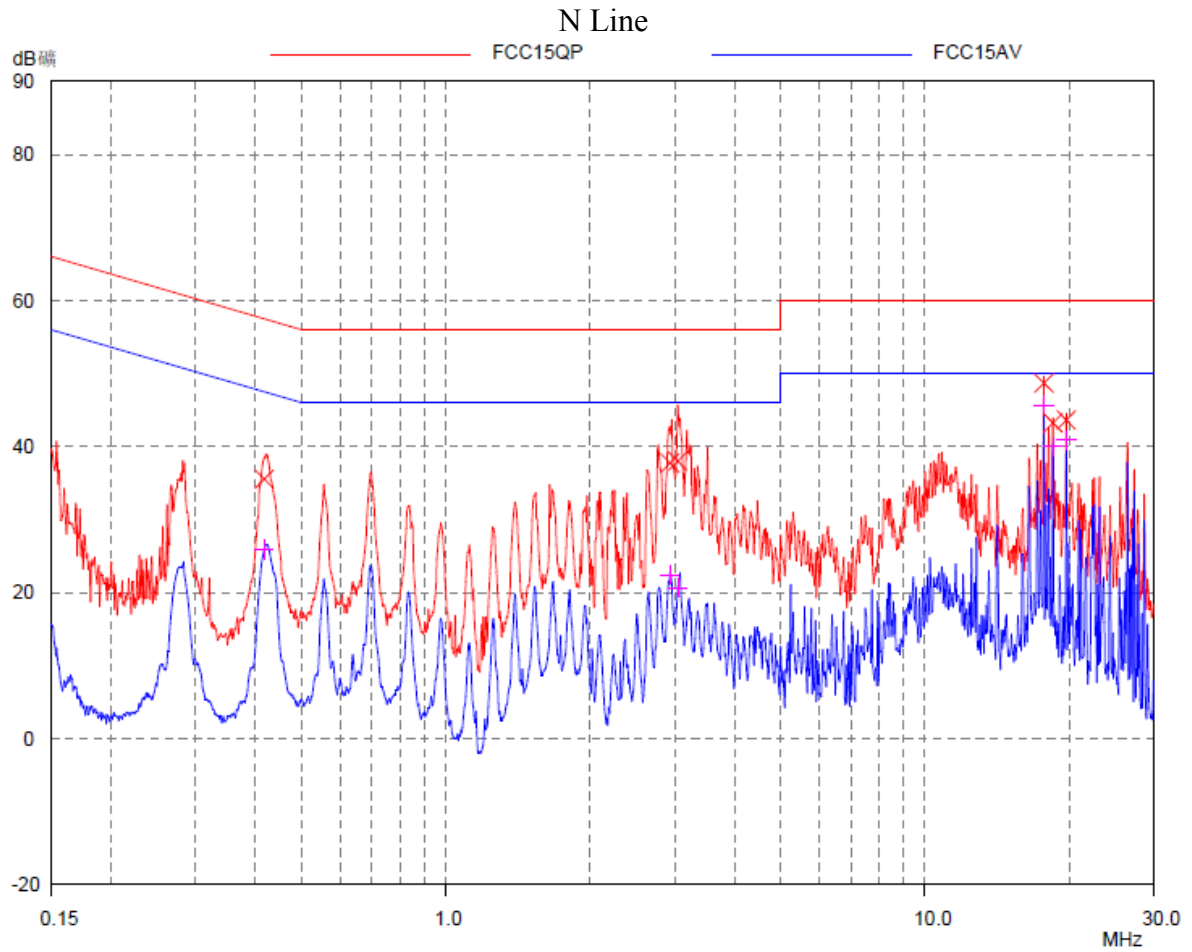
### 7.4 Test protocol

Temperature : 25 °C  
Relative Humidity : 55 %



#### Test Data:

Frequency (MHz)	Quasi-peak			Average		
	level dB(μV)	Limit dB(μV)	Margin (dB)	level dB(μV)	limit dB(μV)	Margin (dB)
0.28	33.32	60.86	27.54	19.34	50.86	31.52
2.09	28.47	56.00	27.53	18.67	46.00	27.33
2.92	37.14	56.00	18.86	23.30	46.00	22.70
3.06	37.33	56.00	18.67	22.50	46.00	23.50
17.70	48.77	60.00	11.23	45.85	50.00	4.15
18.49	43.41	60.00	16.59	40.15	50.00	9.85
19.71	43.63	60.00	16.37	40.77	50.00	9.23



**Test Data:**

Frequency (MHz)	Quasi-peak			Average		
	level dB(μV)	Limit dB(μV)	Margin (dB)	level dB(μV)	limit dB(μV)	Margin (dB)
0.42	35.56	57.51	21.95	25.90	47.51	21.61
2.94	37.76	56.00	18.24	22.47	46.00	23.53
3.04	38.02	56.00	17.98	20.70	46.00	25.30
17.70	48.69	60.00	11.31	45.70	50.00	4.30
18.49	43.27	60.00	16.73	39.95	50.00	10.05
19.71	43.63	60.00	16.37	40.90	50.00	9.10

### Appendix: Test Graph of Duty Cycle

