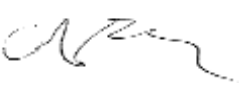



# RF TEST REPORT



**Report No.:** FCC\_SL17063001-RUC-018\_W52W58  
**Supersede Report No.:**

Applicant	:	Ruckus Wireless, Inc.
Product Name	:	T310 (C/D) Access Point
Model No.	:	T310
Test Standard	:	47 CFR 15.407
Test Method	:	ANSI C63.4: 2014 789033 D02 General UNII Test Procedures New Rules v01r02
FCC ID	:	S9GT310
IC ID	:	5912A-T310
Dates of test	:	08/21/2017-10/05/2017
Issue Date	:	10/06/2017
Test Result	:	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail
Equipment complied with the specification <input checked="" type="checkbox"/>		
Equipment did not comply with the specification <input type="checkbox"/>		

This Test Report is Issued Under the Authority of:	
	
<b>Cipher</b>	<b>Chen Ge</b>
Test Engineer	Engineer Reviewer
<b>This test report may be reproduced in full only</b> <b>Test result presented in this test report is applicable to the tested sample only</b>	

**Issued By:**  
**SIEMIC Laboratories**  
**775 Montague Expressway, Milpitas, 95035 CA**



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## Laboratory Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.



In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

### Accreditations for Conformity Assessment

Country/Region	Accreditation Body	Scope
USA	FCC, A2LA	EMC, RF/Wireless, Telecom
Canada	IC, A2LA, NIST	EMC, RF/Wireless, Telecom
Taiwan	BSMI, NCC, NIST	EMC, RF, Telecom, Safety
Hong Kong	OFTA, NIST	RF/Wireless, Telecom
Australia	NATA, NIST	EMC, RF, Telecom, Safety
Korea	KCC/RRA, NIST	EMI, EMS, RF, Telecom, Safety
Japan	VCCI, JATE, TELEC, RFT	EMI, RF/Wireless, Telecom
Mexico	NOM, COFETEL, Caniety	Safety, EMC, RF/Wireless, Telecom
Europe	A2LA, NIST	EMC, RF, Telecom, Safety
Israel	MOC, NIST	EMC, RF, Telecom, Safety

### Accreditations for Product Certifications

Country	Accreditation Body	Scope
USA	FCC TCB, NIST	EMC, RF, Telecom
Canada	IC FCB, NIST	EMC, RF, Telecom
Singapore	iDA, NIST	EMC, RF, Telecom
EU	NB	EMC & R&TTE Directive
Japan	MIC (RCB 208)	RF, Telecom
Hong Kong	OFTA (US002)	RF, Telecom

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## 1 Report Revision History

Report No.	Report Version	Description	Issue Date
FCC_SL17063001-RUC-018_W52W58	None	Original	10/06/2017

## 2 Executive Summary

The purpose of this test program was to demonstrate compliance of following product

Company: Ruckus Wireless, Inc.  
Product: T310 (C/D) Access Point  
Model: T310

against the current Stipulated Standards. The specified model product stated above has demonstrated compliance with the Stipulated Standard listed on 1<sup>st</sup> page.

## 3 Customer information

Applicant Name	:	Ruckus Wireless, Inc.
Applicant Address	:	350 West Java Drive, Sunnyvale, California 94089 U.S.A
Manufacturer Name	:	Ruckus Wireless, Inc.
Manufacturer Address	:	350 West Java Drive, Sunnyvale, California 94089 U.S.A

## 4 Test site information

Lab performing tests	SIEMIC Laboratories
Lab Address	775 Montague Expressway, Milpitas, CA 95035
FCC Test Site No.	881796
IC Test Site No.	4842D-2
VCCI Test Site No.	A0133

## 5 Modification

Index	Item	Description	Note
-	-	-	-

## 6 EUT Information

### 6.1 EUT Description

Product Name	T310 (C/D) Access Point
Model No.	T310
Trade Name	Ruckus
Serial No.	291706000098
Host Model No.	N/A
Input Power	100-240VAC 50/60Hz
Power Adapter Manu/Model	HK-AD-120A100-US
Power Adapter SN	N/A
Date of EUT received	08/20/2017
Equipment Class/ Category	DTS, UNII
Port/Connectors	PoE, Ethernet

### 6.2 Radio Description

Radio Type	802.11a	802.11n-20M	802.11n-40M	802.11ac-80M
Operating Frequency	5180-5240MHz 5745-5825MHz	5180-5240MHz 5745-5825MHz	5190-5230MHz 5755-5795MHz	5210MHz 5775MHz
Modulation	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Channel Spacing	20MHz	20MHz	40MHz	80MHz
Number of Channels	9	9	4	2
Antenna Type	PCB Antenna			
Antenna Gain (Peak)	5GHz: 3.5 dBi for Vertical 2 dBi for Horizontal			
Antenna Connector Type	U.FL			
Note	Two PCB antenna's, One dual band horizontal, and One dual band vertical antenna.			

Note: The AP supports Beamforming mode and the power setting for Beamforming and Non-Beamforming modes are the same.

**EUT Power level setting**

Mode	Frequency	ART Power Setting
802.11-a	5180	40
802.11-a	5200	44
802.11-a	5240	44
802.11-n-20	5180	40
802.11-n-20	5200	44
802.11-n-20	5240	44
802.11-n-40	5190	32
802.11-n-40	5230	44
802.11-ac-80	5210	32
802.11-a	5745	44
802.11-a	5785	44
802.11-a	5825	44
802.11-n-20	5745	44
802.11-n-20	5785	44
802.11-n-20	5825	44
802.11-n-40	5755	44
802.11-n-40	5795	44
802.11-ac-80	5775	44

Note: All data rate has been verified and worst case was used for all test items.

## 7 Supporting Equipment/Software and cabling Description

### 7.1 Supporting Equipment

Item	Supporting Equipment Description	Model	Serial Number	Manufacturer	Note
1	Laptop	VOSTRO 1520	26543939185	Dell	-

### 7.2 Cabling Description

Item	Connection Start		Connection Stop		Length / shielding Info		Note
	From	I/O Port	To	I/O Port	Length (m)	Shielding	
1	EUT	RJ45	Power Over Ethernet Injector	RJ45	>3m	N/A	-
2	Laptop	RJ45	Power Over Ethernet Injector	RJ45	>3m	N/A	

### 7.3 Test Software Description

Test Item	Software	Description
RF Testing	Command prompt	Set the EUT to transmit continuously in different test modes and channels



## 8 Test Summary

Test Item	Test standard		Test Method/Procedure	Pass / Fail
Restricted Band of Operation	FCC	15.205	ANSI C63.4 – 2014 789033 D02 General UNII Test Procedures New Rules v01r02	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> N/A
AC Conducted Emissions Voltage	FCC	15.207(a)	ANSI C63.4 – 2014	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> N/A

Test Item	Test standard		Test Method/Procedure	Pass / Fail
26 & 6 dB Emission Bandwidth	FCC	15.407 (a) (2)	789033 D02 General UNII Test Procedures New Rules v01r02	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> N/A
Maximum conducted Output Power	FCC	15.407 (a) (2)	789033 D02 General UNII Test Procedures New Rules v01r02	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> N/A
Power reduction (Antenna Gain > 6 dBi)	FCC	15.407 (a) (2)	-	<input type="checkbox"/> Pass <input checked="" type="checkbox"/> N/A
Band Edge and Radiated Spurious Emissions	FCC	15.407(b)(2), 15.407(b)(6)	ANSI C63.4 – 2014 789033 D02 General UNII Test Procedures New Rules v01r02	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> N/A
Power Spectral Density	FCC	15.407 (a) (2)	789033 D02 General UNII Test Procedures New Rules v01r02	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> N/A
Frequency Stability	FCC	15.407 (g)	-	<input type="checkbox"/> Pass <input checked="" type="checkbox"/> N/A
Transmit Power Control (TPC)	FCC	15.407 (h)(1)	-	<input type="checkbox"/> Pass <input checked="" type="checkbox"/> N/A
User Manual	FCC	-	-	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> N/A

Remark	<ol style="list-style-type: none"> <li>All measurement uncertainties are not taken into consideration for all presented test result.</li> <li>The applicant shall ensure frequency stability by showing that an emission is maintained within the band of operation under all normal operating conditions as specified in the user's manual.</li> </ol>
--------	---

## 9 Measurement Uncertainty

### 9.1 Conducted Emissions

The test is to measure the conducted emissions to the mains port of the EUT.

Some error sources that can contribute to the total uncertainty:

- Uncertainty of the receiver
- Uncertainty of the LISN
- Uncertainty of cables
- Uncertainty due to the mismatches
- Etc, see the below table for details

Source of Uncertainty	Value (dB)	Probability Distribution	Division	Sensitivity Coefficient	Expanded Uncertainty
Receiver Reading	0.12	Rectangular	1.732	1	0.069284
Cable Insertion Loss	0.21	Normal	2	1	0.105
Filter Insertion Loss	0.25	Normal	2	1	0.125
LISN Insertion Loss	0.40	Normal	2	1	0.20
Receiver CW accuracy	0.5	Rectangular	1.732	1	0.2886836
Pulse Amplitude Response	1.5	Rectangular	1.732	1	0.86605081
PRF Response	1.5	Rectangular	1.732	1	0.86605081
Mismatch LISN - Receiver	0.25	U-Shape	1.414	1	0.1768033
LISN Impedance	2.5	Triangular	2.449	1	1.0208248
Combined Standard Uncertainty					1.928133
<b>Expanded Uncertainty (K=2)</b>					<b>3.856266</b>

The total derived measurement uncertainty is +/- 3.86 dB.

### 9.2 Radiated Emissions (30MHz to 1GHz)

The test is to measure the radiated emissions of the EUT.

Some error sources that can contribute to the total uncertainty:

- Uncertainty of the receiver
- Uncertainty of the antenna
- Uncertainty of cables
- Uncertainty due to the mismatches
- NSA Calibration
- Etc., details see the below table

Source of Uncertainty	Value (dB)	Probability Distribution	Division	Sensitivity Coefficient	Expanded Uncertainty
Receiver Reading	0.12	Rectangular	1.732	1	0.069284
Cable Insertion Loss	0.21	Normal	2	1	0.105
Filter Insertion Loss	0.25	Normal	2	1	0.125
Antenna Factor	0.65	Normal	2	1	0.325
Receiver CW accuracy	0.5	Rectangular	1.732	1	0.2886836
Pulse Amplitude Response	1.5	Rectangular	1.732	1	0.86605081
PRF Response	1.5	Rectangular	1.732	1	0.86605081
Mismatch Filter - Receiver	0.25	U-Shape	1.414	1	0.1768033
NSA Calibration	4.0	U-Shape	1.414	1	2.8288543
Combined Standard Uncertainty					3.0059131
<b>Expanded Uncertainty (K=2)</b>					<b>6.0118262</b>

The total derived measurement uncertainty is +/- 6.00 dB.

### 9.3 Radiated Emissions (1GHz to 40GHz)

The test is to measure the radiated emissions of the EUT.

Some error sources that can contribute to the total uncertainty:

- Uncertainty of the receiver
- Uncertainty of the antenna
- Uncertainty of cables
- Uncertainty due to the mismatches
- VSWR Calibration
- Etc., details see the below table

Source of Uncertainty	Value (dB)	Probability Distribution	Division	Sensitivity Coefficient	Expanded Uncertainty
Receiver Reading	0.12	Rectangular	1.732	1	0.0692840
Cable Insertion Loss	0.21	Normal	2	1	0.1050000
Filter Insertion Loss	0.25	Normal	2	1	0.1250000
Antenna Factor	0.65	Normal	2	1	0.3250000
Receiver CW accuracy	0.5	Rectangular	1.732	1	0.2886836
Pulse Amplitude Response	1.5	Rectangular	1.732	1	0.8660508
PRF Response	1.5	Rectangular	1.732	1	0.8660508
Mismatch Filter - Receiver	0.25	U-Shape	1.414	1	0.1768033
VSWR Calibration	2.0	U-Shape	1.414	1	1.4144272
Combined Standard Uncertainty					4.2363
<b>Expanded Uncertainty (K=2)</b>					<b>8.4726</b>

The total derived measurement uncertainty is +/- 8.47 dB.

### 9.4 RF conducted measurement

The test is to measure the RF output power from the EUT.

Some error sources that can contribute to the total uncertainty:

- Uncertainty of the Reference Level Uncertainty
- Uncertainty of variable attenuators
- Uncertainty of cables
- Uncertainty due to the mismatches

Source of Uncertainty	Value (dB)	Probability Distribution	Division	Sensitivity Coefficient	Expanded Uncertainty
Reference Level	0.12	Rectangular	1.732	1	0.069284
Cable Insertion Loss	0.21	Normal	2	1	0.105
Attenuator	0.25	Normal	2	1	0.125
Mismatch	0.25	U-Shape	1.414	1	0.1768033
Combined Standard Uncertainty					0.476087
<b>Expanded Uncertainty (K=2)</b>					<b>0.952174</b>

The total derived measurement uncertainty is +/- 0.95 dB.

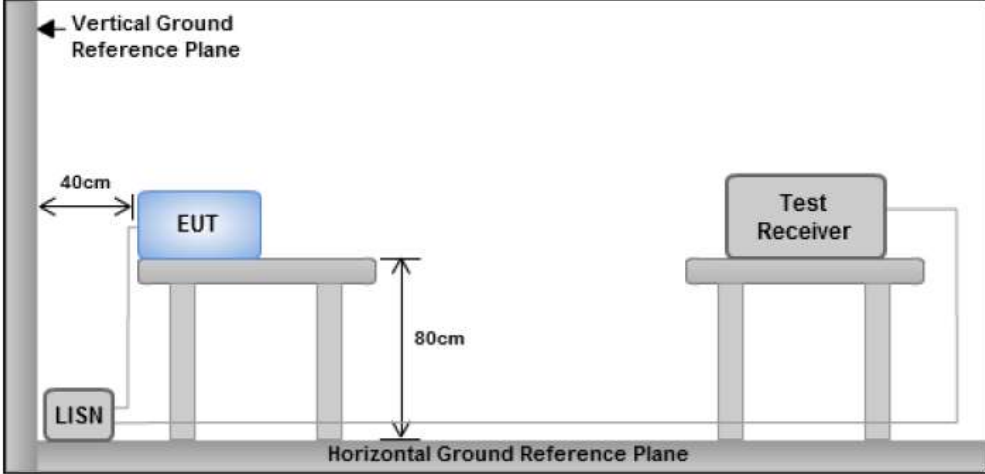
## 10 Measurements, Examination and Derived Results

### 10.1 Conducted Emissions

#### Conducted Emission Limit

Frequency ranges (MHz)	Limit (dBuV)	
	QP	Average
0.15 ~ 0.5	66 – 56	56 – 46
0.5 ~ 5	56	46
5 ~ 30	60	50

Spec	Item	Requirement	Applicable
15.207(a)	a)	For Low-power radio-frequency devices that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 $\mu$ H/50 ohms line impedance stabilization network (LISN). The lower limit applies at the boundary between the frequency ranges.	<input checked="" type="checkbox"/>

Test Setup	 <p style="text-align: center;"><b>Note: 1. Support units were connected to second LISN.</b> <b>2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes</b></p>
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Procedure	<ul style="list-style-type: none"> <li>- The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table, as shown in Annex B.</li> <li>- The power supply for the EUT was fed through a 50<math>\Omega</math>/50<math>\mu</math>H EUT LISN, connected to filtered mains.</li> <li>- The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.</li> <li>- All other supporting equipment was powered separately from another main supply.</li> </ul>
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Remark	EUT was tested at 120VAC, 60Hz
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Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail
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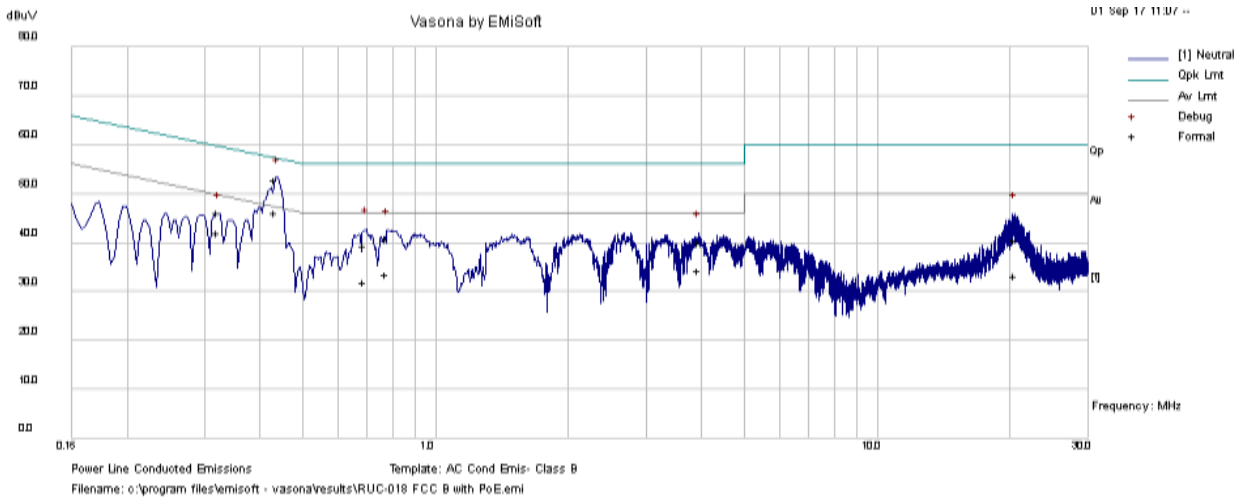
Test Data     Yes                       N/A

Test Plot     Yes (See below)               N/A

Test was done by **Kushal Shastri** at Conducted Emission test site.

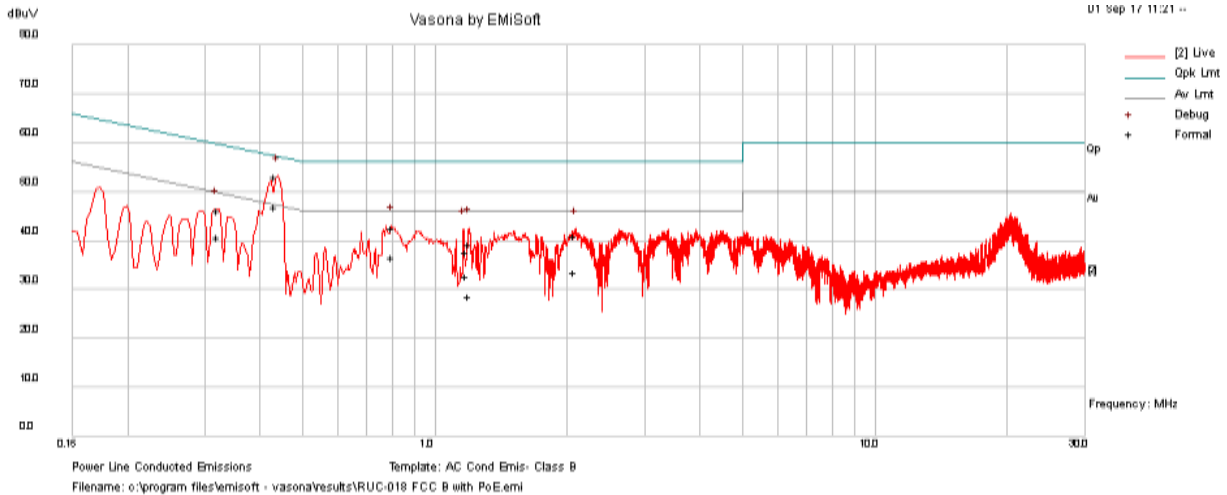
### Conducted Emission Test Results

Test specification:	Conducted Emissions			Result:	<input checked="" type="checkbox"/> Pass  <input type="checkbox"/> Fail
Environmental Conditions:	Temp(°C):	25.7			
	Humidity (%):	43.3			
	Atmospheric(mbar):	1014.9			
Mains Power:	120Vac, 60Hz				
Tested by:	Kushal Shastri				
Test Date:	08/21/2017-10/05/2017				
Remarks	Neutral- P.O.E Mode				



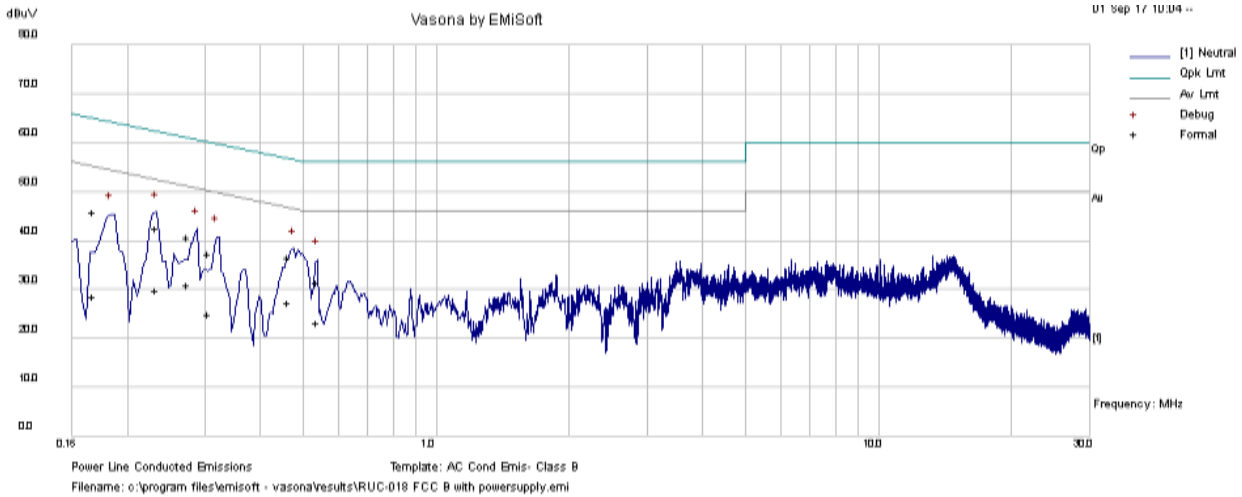
Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	Factors (dB)	Level (dBuV)	Measurement Type	Line / Neutral	Limit (dBuV)	Margin (dB)	Pass /Fail
0.432421	42.16	10.01	0.68	52.84	Quasi Peak	Neutral	57.21	-4.36	Pass
0.686549	28.78	10.01	0.56	39.35	Quasi Peak	Neutral	56	-16.65	Pass
0.771415	30.22	10.01	0.55	40.78	Quasi Peak	Neutral	56	-15.22	Pass
0.319527	35.24	10	0.81	46.06	Quasi Peak	Neutral	59.72	-13.66	Pass
3.932571	29.4	10.03	0.5	39.93	Quasi Peak	Neutral	56	-16.07	Pass
20.48071	29.82	10.07	0.67	40.56	Quasi Peak	Neutral	60	-19.44	Pass
0.432421	35.47	10.01	0.68	46.15	Average	Neutral	47.21	-1.06	Pass
0.686549	21.35	10.01	0.56	31.92	Average	Neutral	46	-14.08	Pass
0.771415	23.03	10.01	0.55	33.6	Average	Neutral	46	-12.4	Pass
0.319527	31.06	10	0.81	41.88	Average	Neutral	49.72	-7.84	Pass
3.932571	23.65	10.03	0.5	34.18	Average	Neutral	46	-11.82	Pass
20.48071	22.54	10.07	0.67	33.28	Average	Neutral	50	-16.72	Pass

Test specification:	Conducted Emissions			
Environmental Conditions:	Temp(°C):	25.7	Result:	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail
	Humidity (%):	43.3		
	Atmospheric(mbar):	1014.9		
Mains Power:	120Vac, 60Hz			
Tested by:	Kushal Shastri			
Test Date:	08/21/2017-10/05/2017			
Remarks	Live - P.O.E Mode			



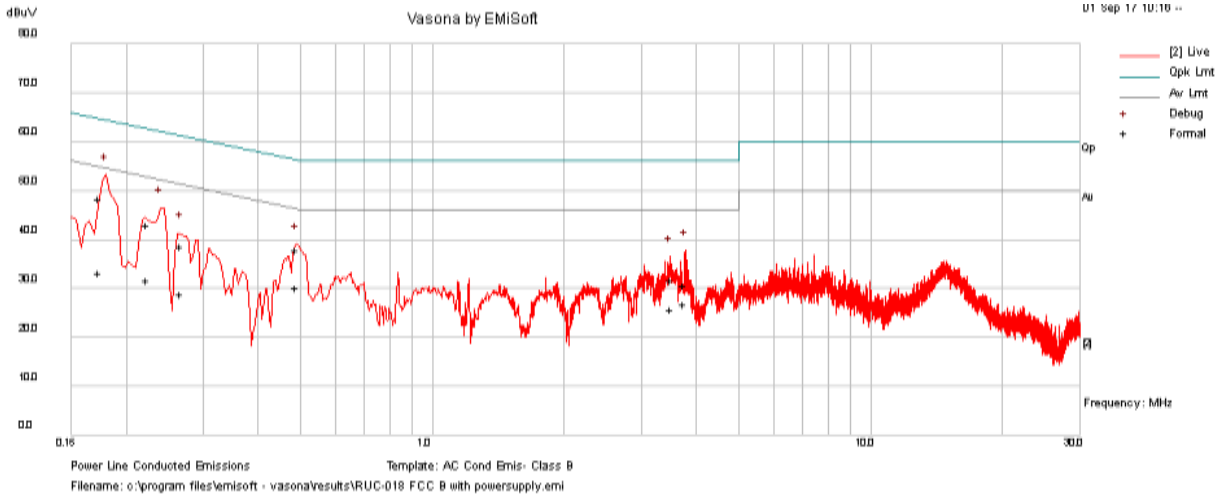
Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	Factors (dB)	Level (dBuV)	Measurement Type	Line / Neutral	Limit (dBuV)	Margin (dB)	Pass /Fail
0.432709	42.5	10.01	0.68	53.18	Quasi Peak	Live	57.2	-4.02	Pass
0.797327	32.02	10.01	0.55	42.58	Quasi Peak	Live	56	-13.42	Pass
0.320621	35.23	10	0.81	46.04	Quasi Peak	Live	59.69	-13.65	Pass
1.192701	28.73	10.02	0.52	39.27	Quasi Peak	Live	56	-16.73	Pass
2.080816	30.49	10.02	0.5	41.02	Quasi Peak	Live	56	-14.98	Pass
1.178802	27.07	10.02	0.52	37.6	Quasi Peak	Live	56	-18.4	Pass
0.432709	36.14	10.01	0.68	46.82	Average	Live	47.2	-0.38	Pass
0.797327	25.95	10.01	0.55	36.52	Average	Live	46	-9.48	Pass
0.320621	29.98	10	0.81	40.8	Average	Live	49.69	-8.89	Pass
1.192701	18.15	10.02	0.52	28.69	Average	Live	46	-17.31	Pass
2.080816	22.94	10.02	0.5	33.46	Average	Live	46	-12.54	Pass
1.178802	22.11	10.02	0.52	32.65	Average	Live	46	-13.35	Pass

Test specification:	Conducted Emissions				
Environmental Conditions:	Temp(°C):	25.7	Result:	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail
	Humidity (%):	43.3			
	Atmospheric(mbar):	1014.9			
Mains Power:	120Vac, 60Hz				
Tested by:	Kushal Shastri				
Test Date:	08/21/2017-10/05/2017				
Remarks	Neutral- Power Supply				



Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	Factors (dB)	Level (dBuV)	Measurement Type	Line / Neutral	Limit (dBuV)	Margin (dB)	Pass /Fail
0.23281	31.49	10	1.08	42.58	Quasi Peak	Neutral	62.35	-19.77	Pass
0.463756	25.99	10.01	0.65	36.65	Quasi Peak	Neutral	56.63	-19.97	Pass
0.273752	29.75	10	0.93	40.68	Quasi Peak	Neutral	61	-20.32	Pass
0.168108	34.22	10	1.52	45.75	Quasi Peak	Neutral	65.05	-19.3	Pass
0.305904	26.39	10	0.84	37.23	Quasi Peak	Neutral	60.08	-22.85	Pass
0.536705	20.9	10.01	0.61	31.52	Quasi Peak	Neutral	56	-24.48	Pass
0.23281	18.74	10	1.08	29.82	Average	Neutral	52.35	-22.52	Pass
0.463756	16.74	10.01	0.65	27.4	Average	Neutral	46.63	-19.22	Pass
0.273752	19.99	10	0.93	30.91	Average	Neutral	51	-20.09	Pass
0.168108	17.16	10	1.52	28.69	Average	Neutral	55.05	-26.37	Pass
0.305904	14.22	10	0.84	25.06	Average	Neutral	50.08	-25.02	Pass
0.536705	12.69	10.01	0.61	23.31	Average	Neutral	46	-22.69	Pass

Test specification:	Conducted Emissions			
Environmental Conditions:	Temp(°C):	25.7	Result:	<input checked="" type="checkbox"/> Pass  <input type="checkbox"/> Fail
	Humidity (%):	43.3		
	Atmospheric(mbar):	1014.9		
Mains Power:	120Vac, 60Hz			
Tested by:	Kushal Shastri			
Test Date:	08/21/2017-10/05/2017			
Remarks	Live- Power Supply			



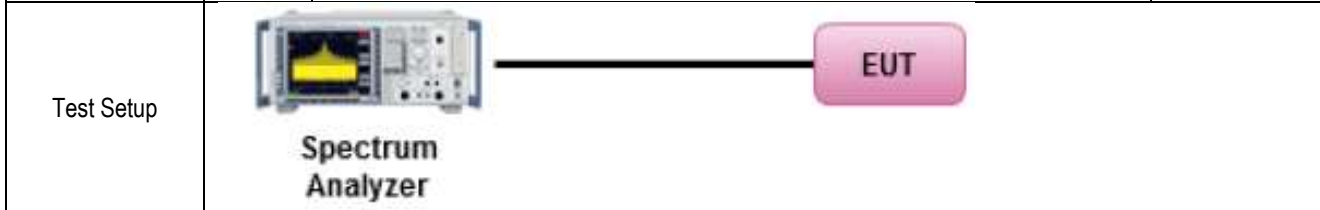
Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	Factors (dB)	Level (dBuV)	Measurement Type	Line / Neutral	Limit (dBuV)	Margin (dB)	Pass /Fail
0.173242	37.05	10	1.47	48.52	Quasi Peak	Live	64.8	-16.28	Pass
0.223118	31.77	10	1.13	42.9	Quasi Peak	Live	62.7	-19.8	Pass
0.48802	27.3	10.01	0.64	37.95	Quasi Peak	Live	56.2	-18.25	Pass
3.762982	20.11	10.03	0.5	30.65	Quasi Peak	Live	56	-25.35	Pass
3.501415	21.29	10.03	0.5	31.82	Quasi Peak	Live	56	-24.18	Pass
0.267331	27.61	10	0.94	38.56	Quasi Peak	Live	61.2	-22.64	Pass
0.173242	21.71	10	1.47	33.18	Average	Live	54.8	-21.62	Pass
0.223118	20.52	10	1.13	31.65	Average	Live	52.7	-21.05	Pass
0.48802	19.45	10.01	0.64	30.1	Average	Live	46.2	-16.1	Pass
3.762982	16.34	10.03	0.5	26.87	Average	Live	46	-19.13	Pass
3.501415	15.15	10.03	0.5	25.68	Average	Live	46	-20.32	Pass
0.267331	17.79	10	0.94	28.74	Average	Live	51.2	-22.46	Pass



## 10.2 26 dB Bandwidth & 6 dB Bandwidth

### Requirement(s):

Spec	Item	Requirement	Applicable
§ 15.407	-	26 dB Emission BW: Report only for reference.	<input checked="" type="checkbox"/>
	a) (2)	26 dB Emission BW: Report only for power limit calculation.	<input type="checkbox"/>
	e)	Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.	<input checked="" type="checkbox"/>



Test Procedure	<p>789033 D02 General UNII Test Procedures New Rules v01r02</p> <p><u>26dB Emission bandwidth measurement procedure (Other than 5.725-5.85 GHz)</u></p> <ul style="list-style-type: none"> <li>- Allow the trace to stabilize.</li> <li>- Use the spectrum analyzer built-in measurement function to determine the 26dB BW. <ul style="list-style-type: none"> <li>o Set RBW = around 1% of emission bandwidth</li> <li>o Set VBW &gt; RBW</li> <li>o Detector = Peak</li> <li>o Trace mode = max hold</li> </ul> </li> <li>- Capture the plot.</li> <li>- Repeat above steps for different test channel and other modulation type.</li> </ul> <p><u>6 dB Minimum emission bandwidth measurement procedure (for 5.725-5.85 GHz)</u></p> <ul style="list-style-type: none"> <li>- Allow the trace to stabilize.</li> <li>- Use the spectrum analyzer built-in measurement function to determine the 6dB BW. <ul style="list-style-type: none"> <li>o Set RBW = 100 KHz</li> <li>o Set VBW ≥ 3 x RBW</li> <li>o Detector = Peak</li> <li>o Trace mode = max hold</li> <li>o Sweep = auto couple</li> </ul> </li> <li>- Capture the plot.</li> <li>- Repeat above steps for different test channel and other modulation type.</li> </ul>		
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Test Date	08/21/2017-10/05/2017	Environmental condition	Temperature 22°C Relative Humidity 38% Atmospheric Pressure 1020mbar
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Remark	99% BW result is presented here to show the channels in 5.1GHz is not crossing to DFS channel since the 26 dB BW is too wide.
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Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail
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Test Data     Yes       N/A

Test Plot     Yes       N/A

**Test was done by Cipher at RF test site.**

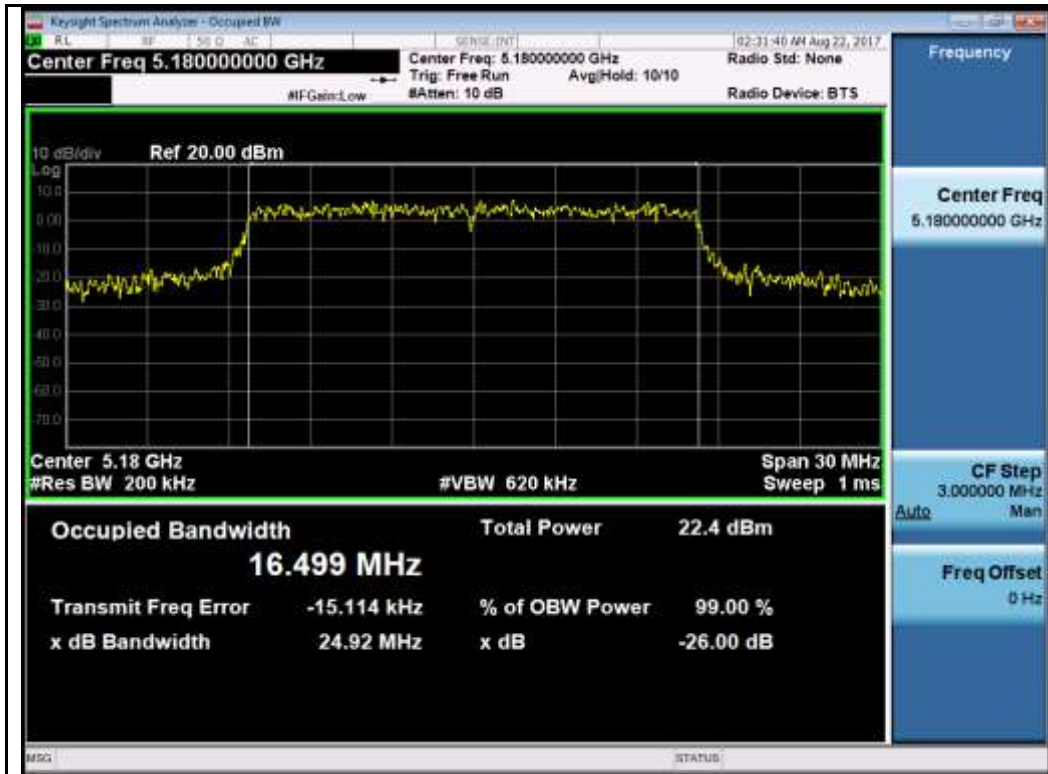
**26dB Bandwidth measurement result for 5.2GHz**

Type	Test mode	Freq (MHz)	CH	Result (MHz)	Limit (MHz)
26dB BW	802.11a	5180	Low	16.499	-
		5200	Mid	17.116	-
		5240	High	17.025	-
	802.11n-20	5180	Low	17.688	-
		5200	Mid	17.961	-
		5240	High	17.978	-
	802.11n-40	5190	Low	35.988	-
		5230	High	41.546	-
	802.11ac-80	5210	Mid	75.886	-

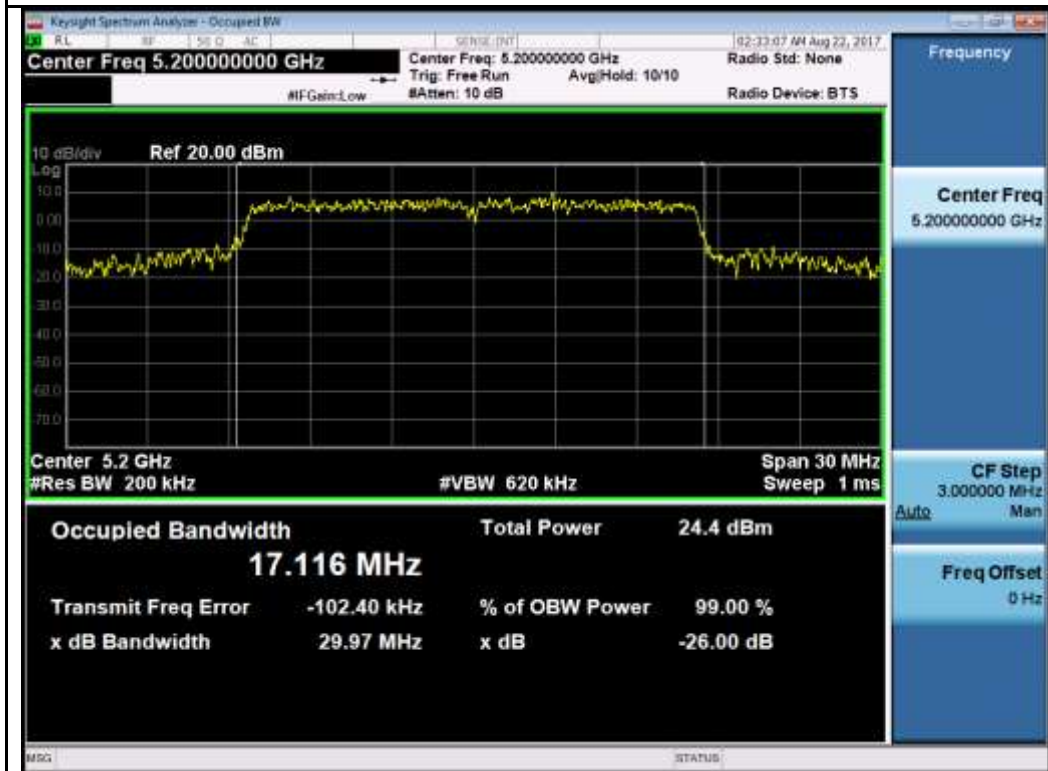
**6dB Bandwidth measurement result for 5.8GHz**

Type	Test mode	Freq (MHz)	CH	Result (MHz)	Limit (MHz)	Result
6dB BW	802.11a	5745	Low	16.469	≥0.5	Pass
		5785	Mid	15.743	≥0.5	Pass
		5825	High	14.756	≥0.5	Pass
	802.11n-20	5745	Low	17.756	≥0.5	Pass
		5785	Mid	17.726	≥0.5	Pass
		5825	High	17.672	≥0.5	Pass
	802.11n-40	5755	Low	33.770	≥0.5	Pass
		5795	High	35.984	≥0.5	Pass
	802.11ac-80	5775	Mid	76.391	≥0.5	Pass

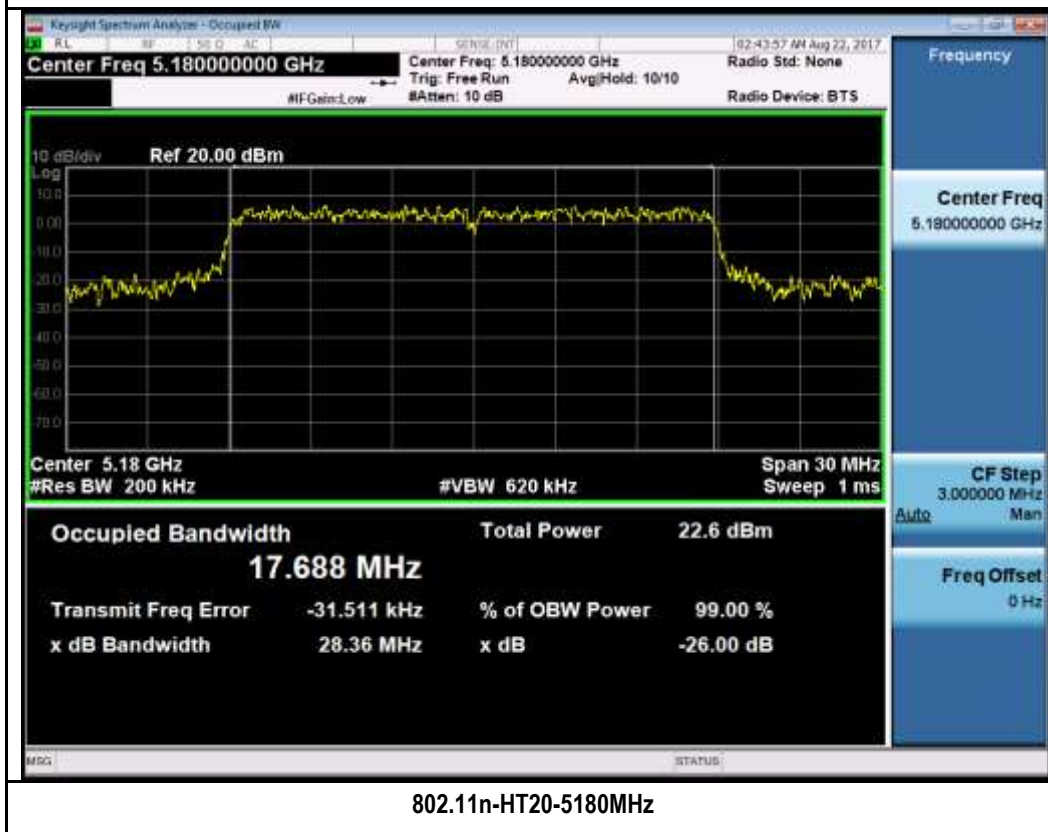
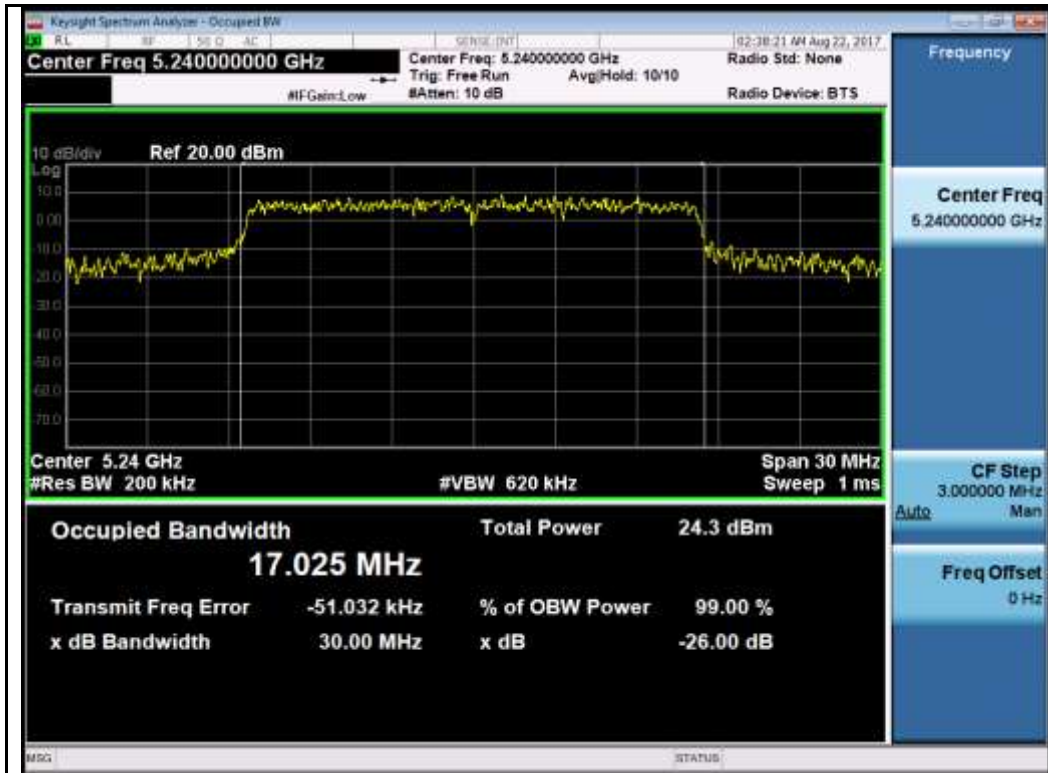
26dB Bandwidth Test Plots  
W52:

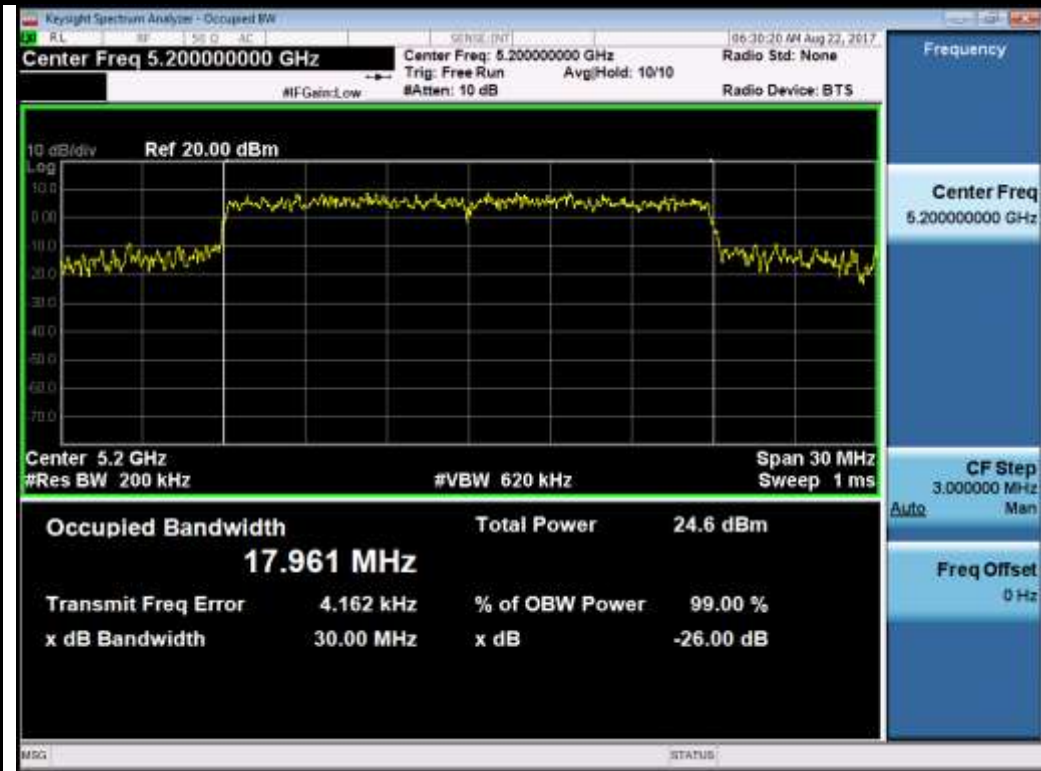


802.11a-5180MHz

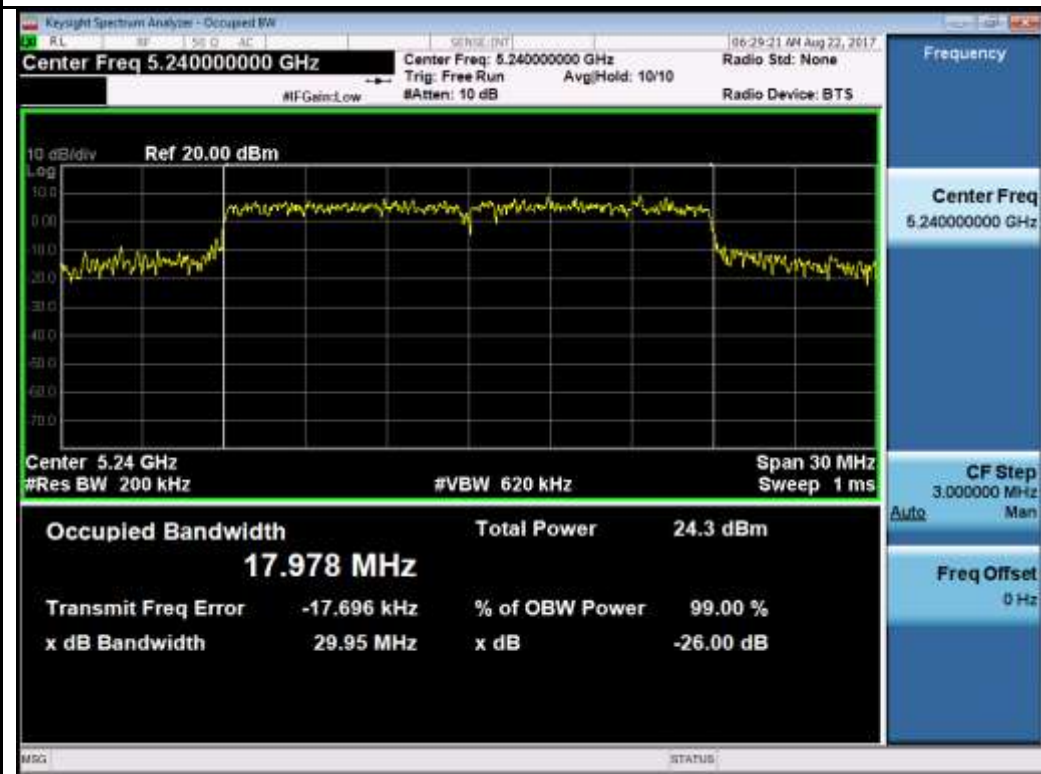


802.11a-5200MHz



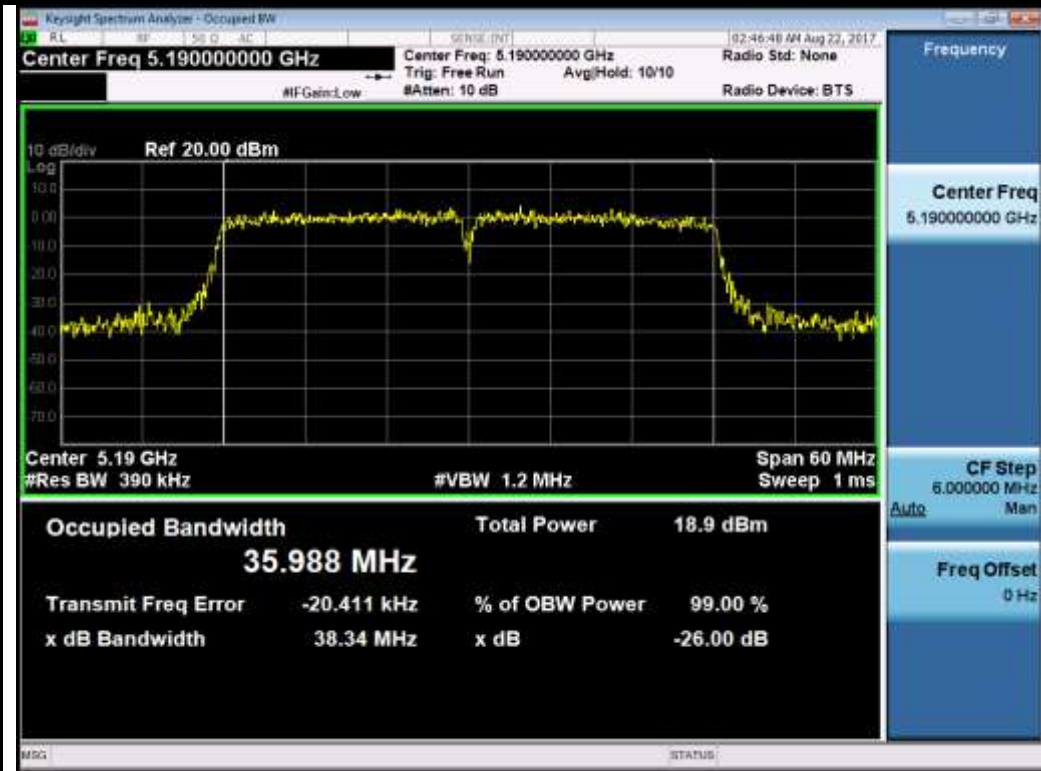


802.11n-HT20-5200MHz

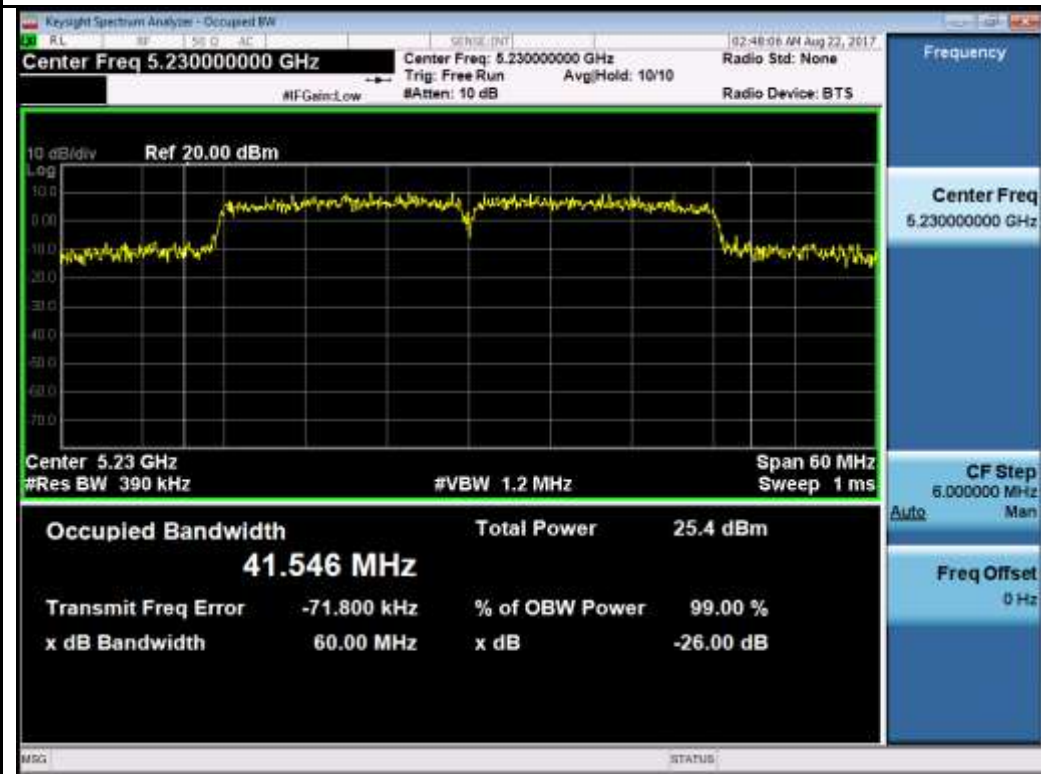


802.11n-HT20-5240MHz

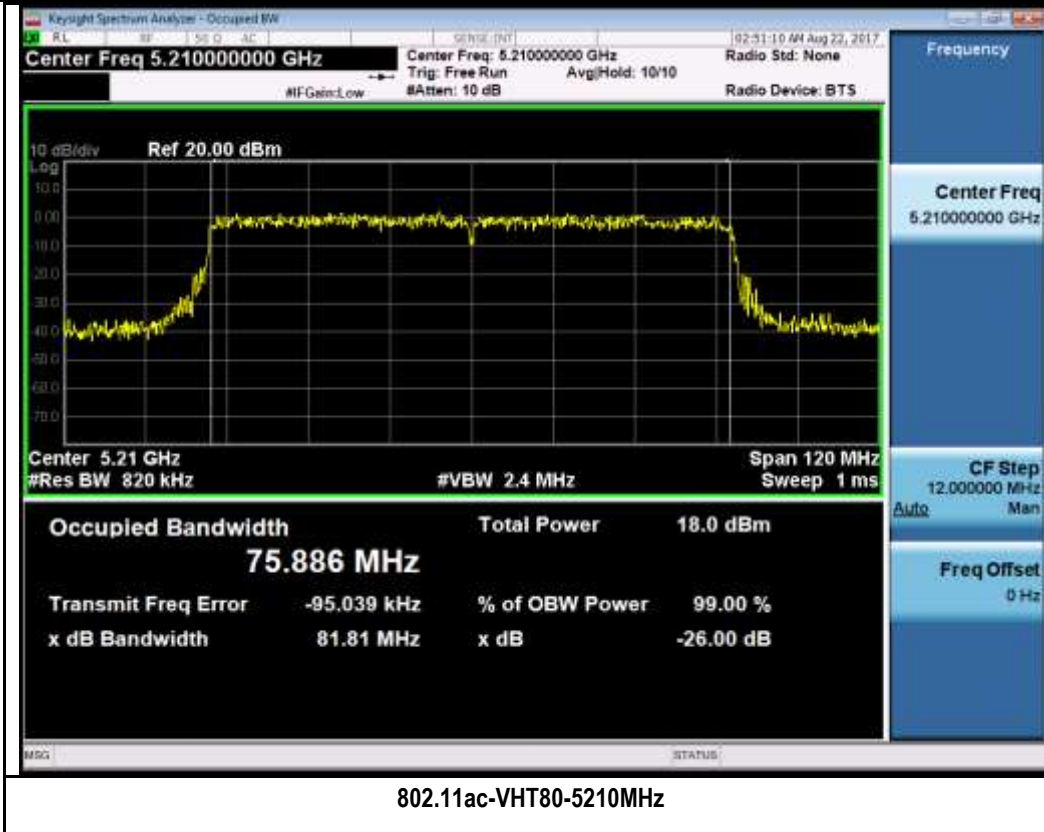




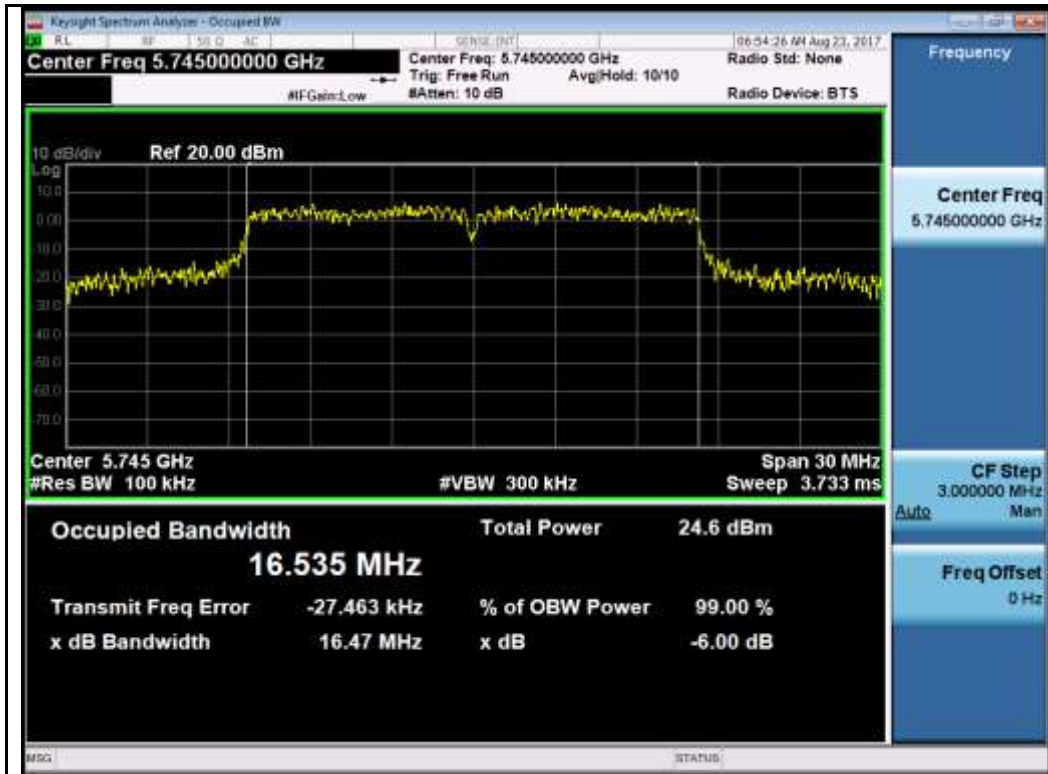
802.11n-HT40-5190MHz



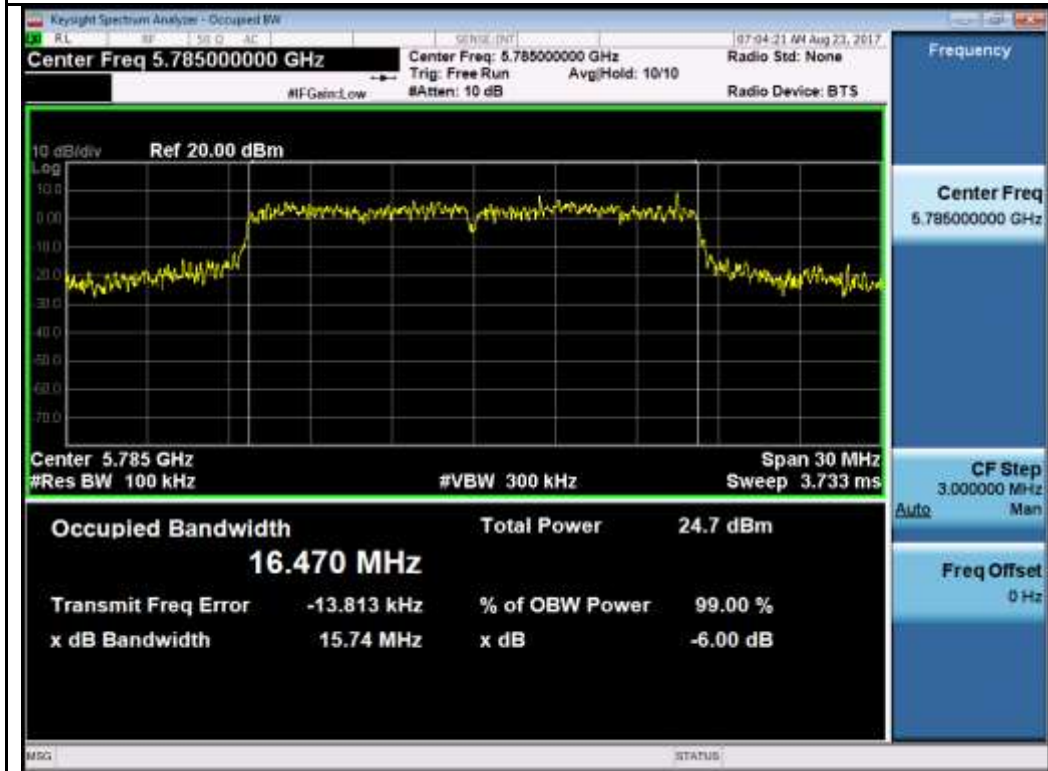
802.11n-HT40-5230MHz



**6dB Bandwidth Test Plots**  
**W58:**

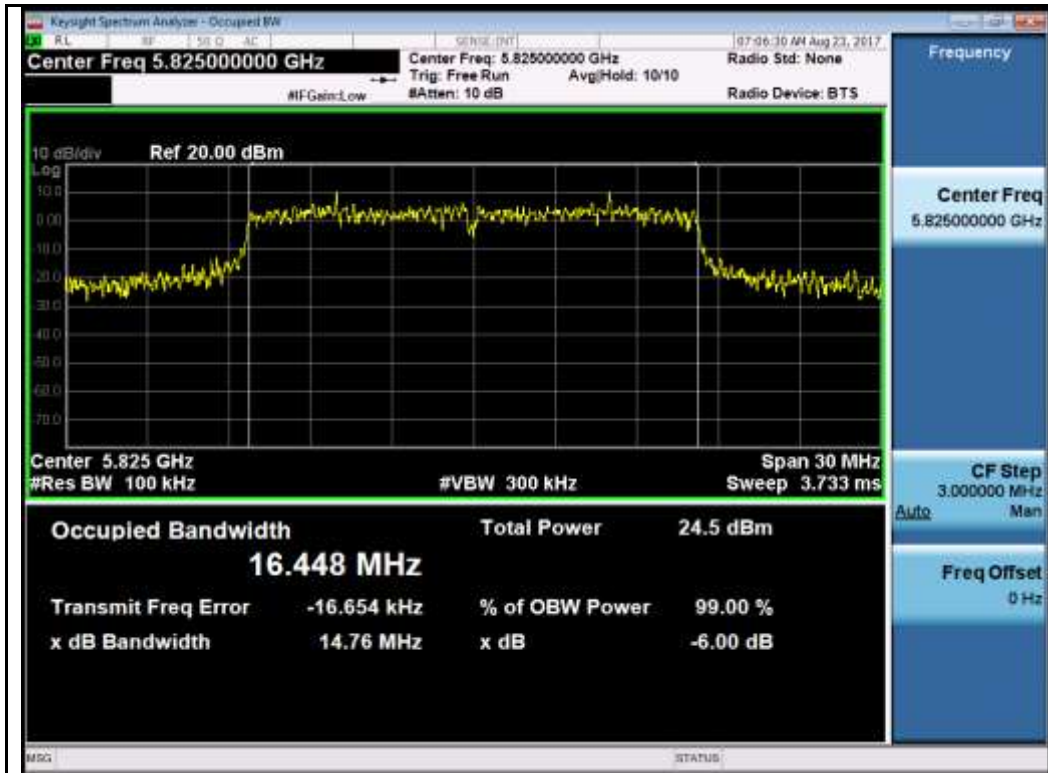


802.11a-5745MHz

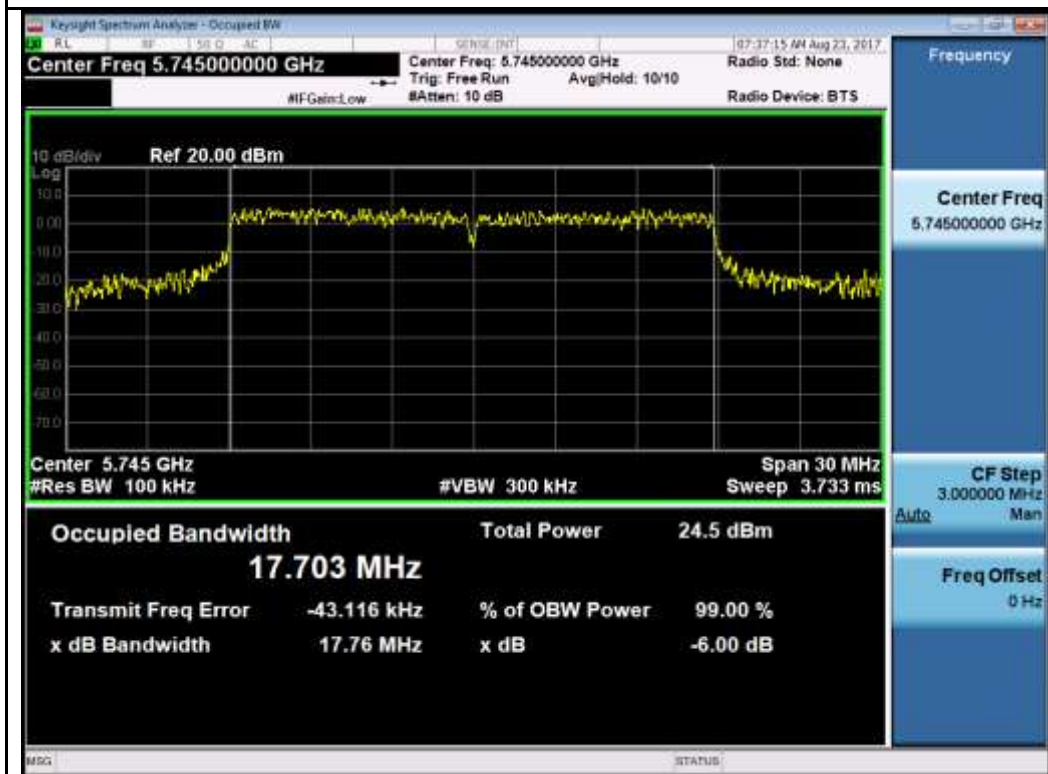


802.11a-5785MHz

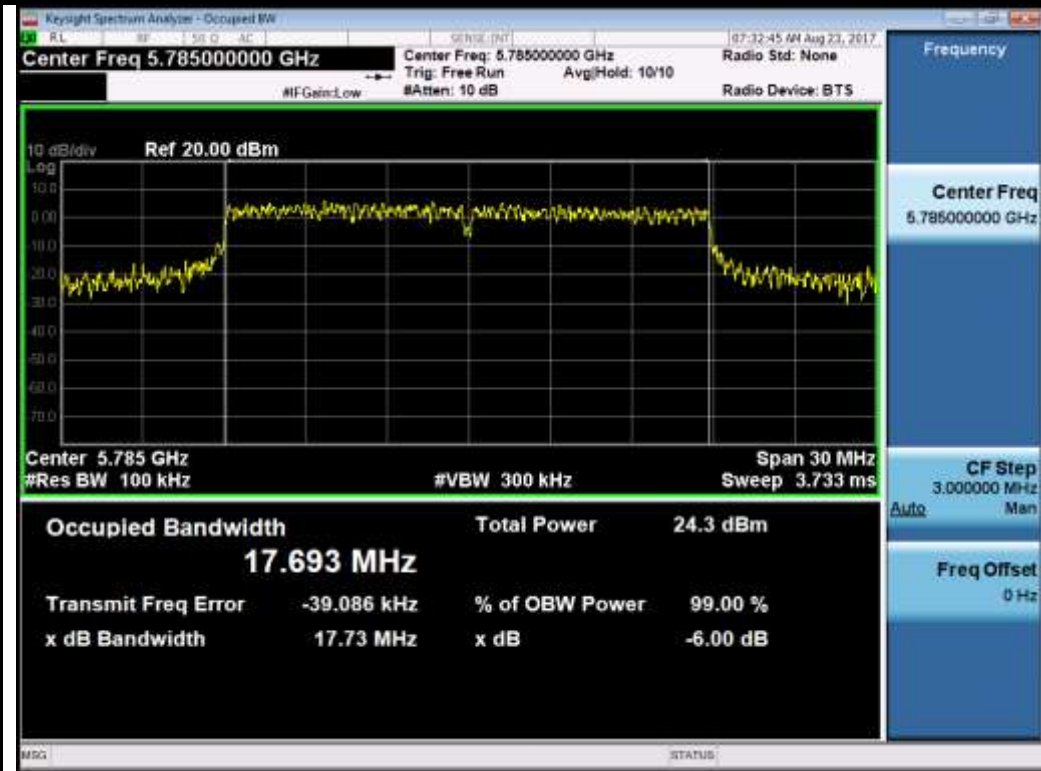




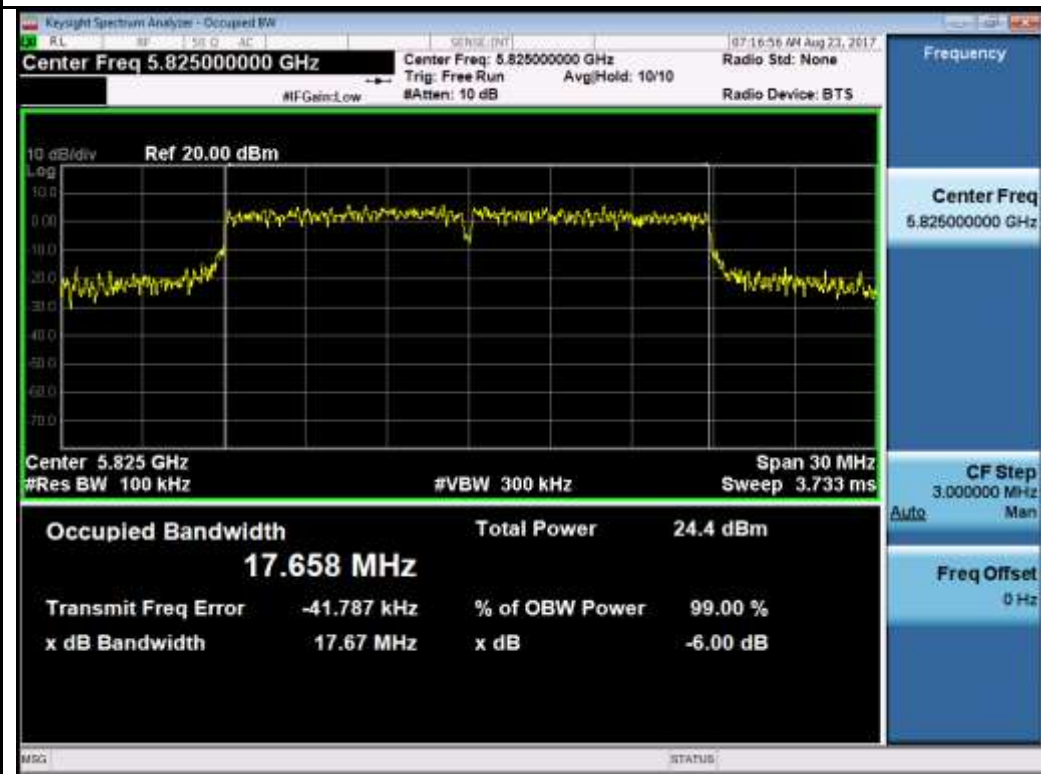
802.11a-5825MHz



802.11n-HT20-5745MHz



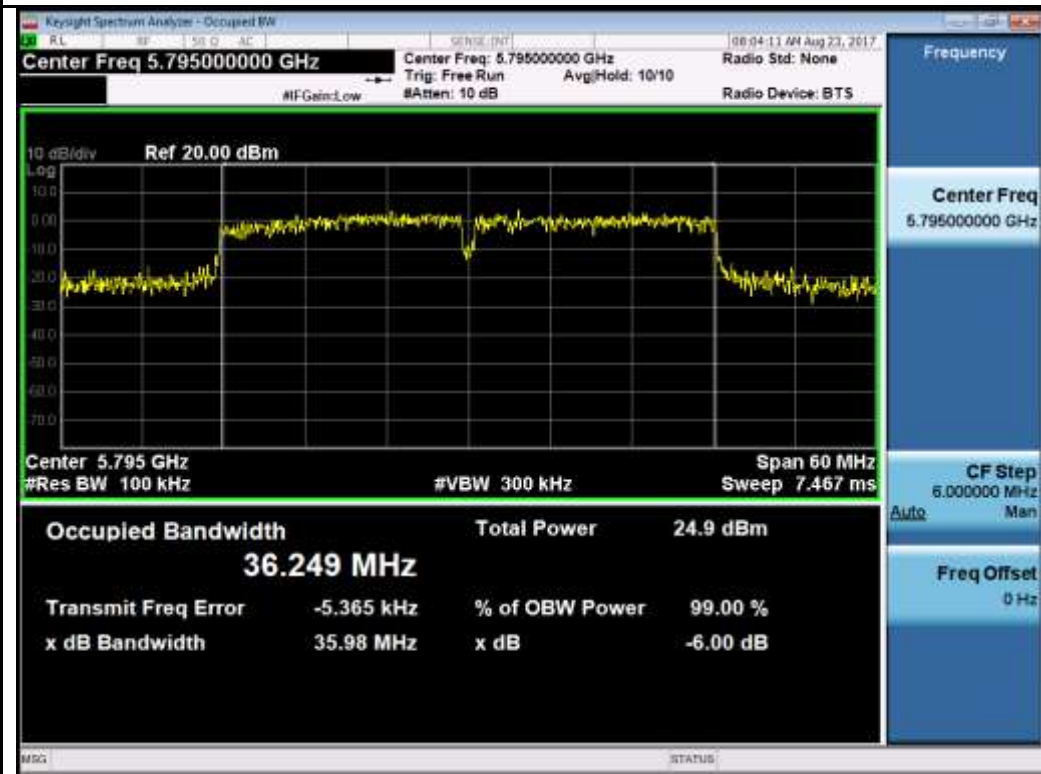
802.11n-HT20-5785MHz



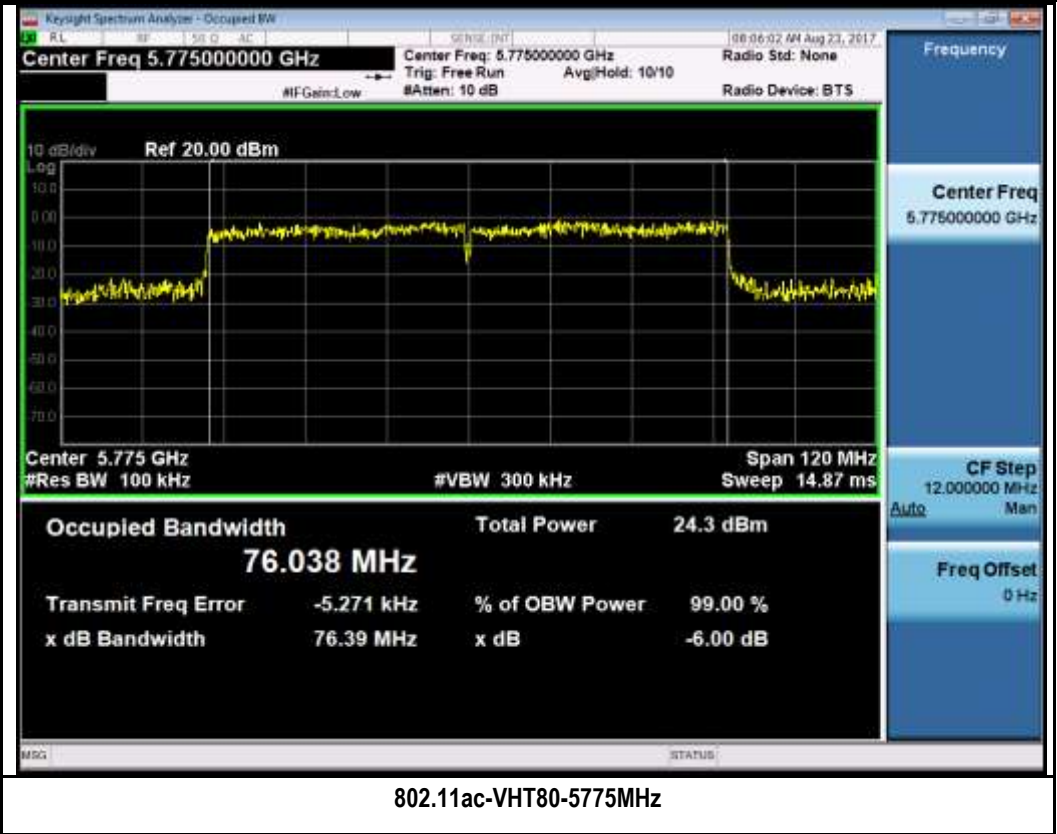
802.11n-HT20-5825MHz



802.11n-HT40-5755MHz



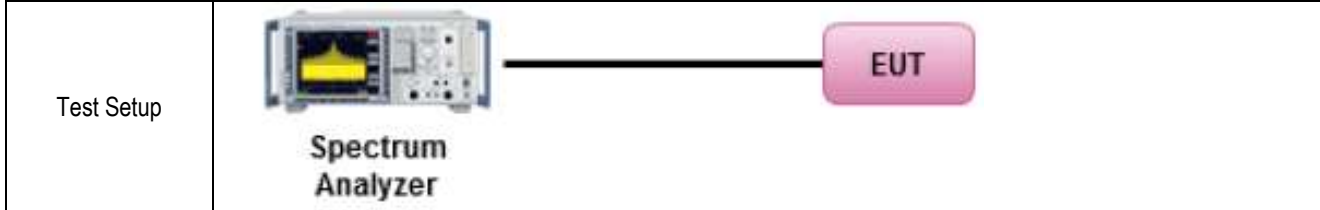
802.11n-HT40-5795MHz



### 10.3 Output Power

**Requirement(s):**

Spec	Item	Requirement	Applicable
§ 15.407	a)(1)(ii)	For an outdoor 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.	<input checked="" type="checkbox"/>
	a)(3)	For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.	<input checked="" type="checkbox"/>



Test Procedure	<p>789033 D02 General UNII Test Procedures New Rules v01r02</p> <p><u>Measurement using a Spectrum Analyzer or EMI Receiver (SA)</u> Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep):</p> <ul style="list-style-type: none"> <li>(i) Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.</li> <li>(ii) Set RBW = 1 MHz</li> <li>(iii) Set VBW = 3 MHz</li> <li>(iv) Number of points in sweep <math>\geq 2 \times \text{span} / \text{RBW}</math>. (This ensures that bin-to-bin spacing is <math>\leq \text{RBW}/2</math>, so that narrowband signals are not lost between frequency bins.)</li> <li>(v) Sweep time = auto.</li> <li>(vi) Detector = power averaging (rms), if available. Otherwise, use sample detector mode.</li> <li>(vii) If transmit duty cycle &lt; 98%, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle <math>\geq 98\%</math>, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to "free run."</li> <li>(viii) Trace average at least 100 traces in power averaging (rms) mode.</li> <li>(ix) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.</li> </ul>		
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Test Date	08/21/2017-10/05/2017	Environmental condition	Temperature 21°C Relative Humidity 40% Atmospheric Pressure 1019mbar
Remark	N/A		
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail		

**Test Data**     Yes                                       N/A

**Test Plot**     Yes (See below)                                       N/A

**Test was done by Cipher at RF test site.**



### Output Power measurement result for 5.2GHz

Type	Test mode	Freq (MHz)	CH	Conducted Power (dBm)			Limit (dBm)	Result
				Chain0	Chain1	Combined Power		
Output Power	802.11a	5180	Low	19.01	19.05	22.04	30	Pass
	802.11a	5200	Mid	20.56	20.49	23.53	30	Pass
	802.11a	5240	High	20.35	20.38	23.38	30	Pass
	802.11n-20M	5180	Low	19.05	19.22	22.15	30	Pass
	802.11n-20M	5200	Mid	21.06	20.89	23.99	30	Pass
	802.11n-20M	5240	High	20.56	20.91	23.75	30	Pass
	802.11n-40M	5190	Low	14.32	15.17	17.78	30	Pass
	802.11n-40M	5230	Mid	20.83	21.16	24.01	30	Pass
	802.11ac-80M	5210	High	15.36	15.08	18.23	30	Pass

### Output Power measurement result for 5.8GHz

Type	Test mode	Freq (MHz)	CH	Conducted Power (dBm)			Limit (dBm)	Result
				Chain0	Chain1	Combined Power		
Output Power	802.11a	5745	Low	20.72	21.01	23.88	30	Pass
	802.11a	5785	Mid	20.80	20.97	23.90	30	Pass
	802.11a	5825	High	20.92	20.46	23.71	30	Pass
	802.11n-20M	5745	Low	20.69	20.75	23.73	30	Pass
	802.11n-20M	5785	Mid	20.78	20.55	23.68	30	Pass
	802.11n-20M	5825	High	20.86	20.92	23.90	30	Pass
	802.11n-40M	5755	Low	21.69	21.80	24.75	30	Pass
	802.11n-40M	5795	Mid	21.18	21.98	24.61	30	Pass
		802.11ac-80M	5775	High	20.27	21.83	24.13	30

Note: Two chains are cross-polarized, additional gain is  $10 \log_{10}(NANT)=0\text{dB}, N=1$ , max directional gain of the EUT is 3.5dBi. No limit adjustment is needed. All the mode transmission is MIMO.

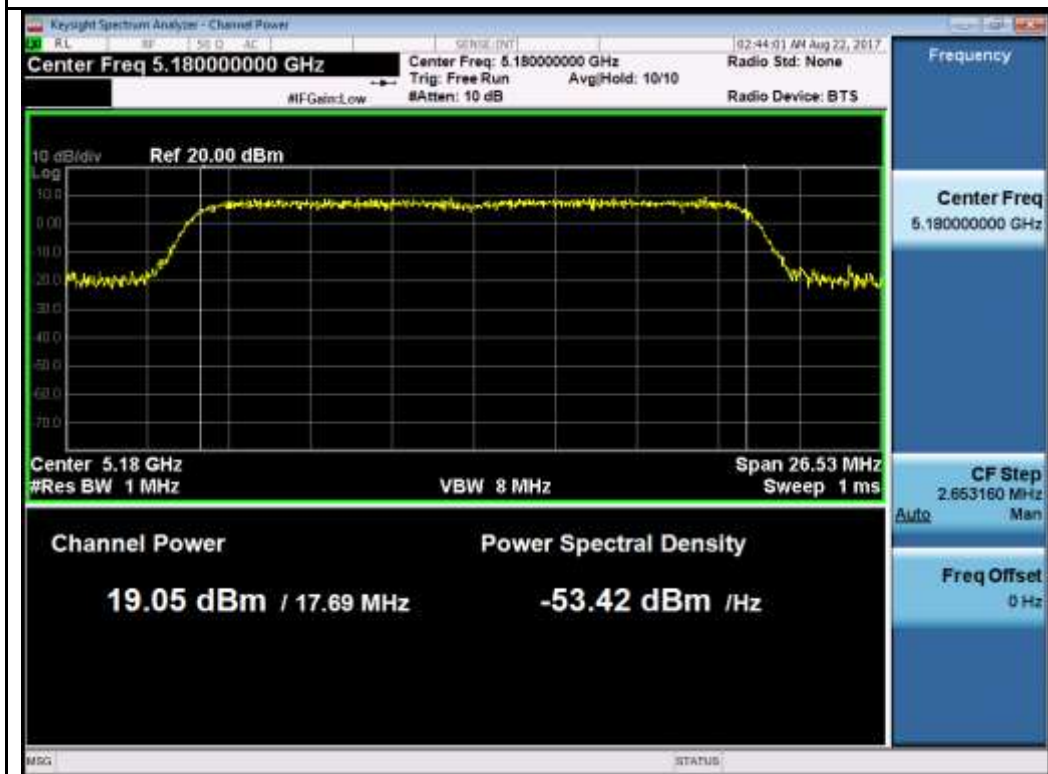
**Test Plot for W52:**

**Chain 0:**



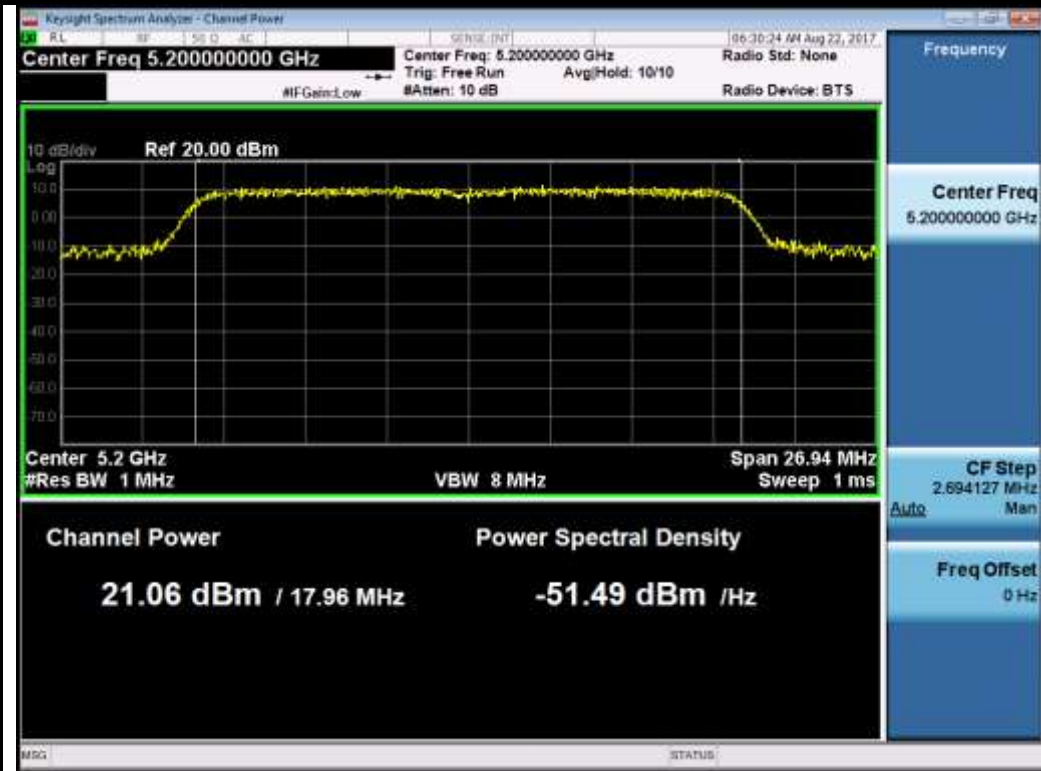


802.11a-5240MHz

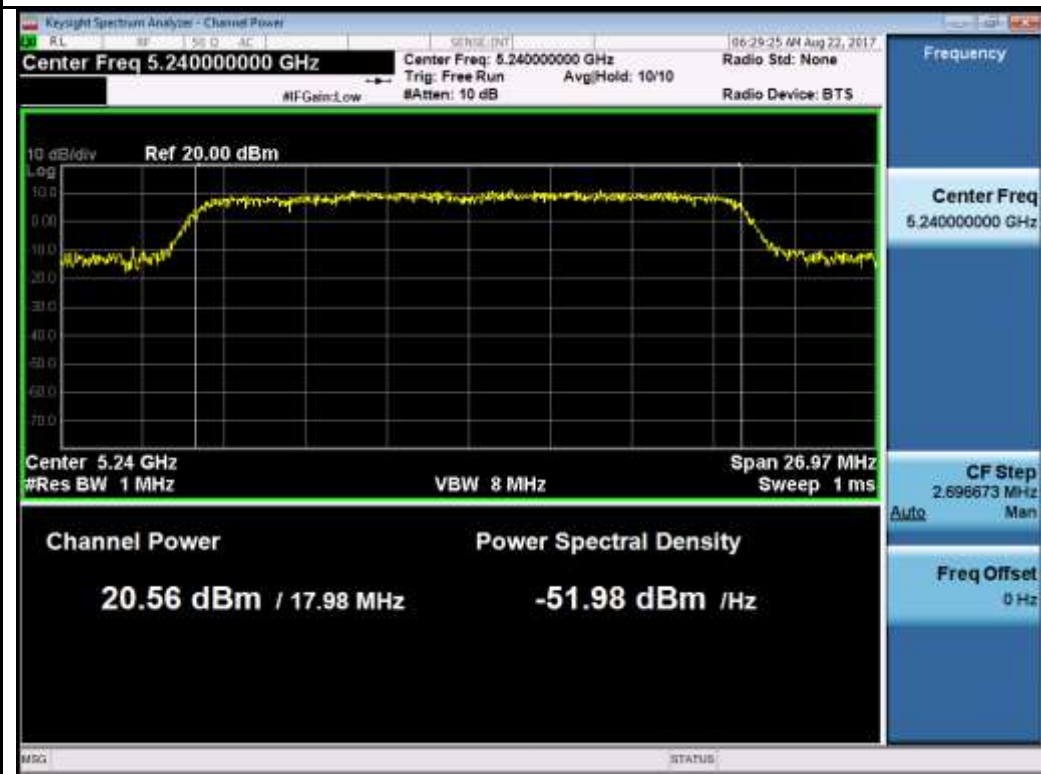


802.11n-HT20-5180MHz

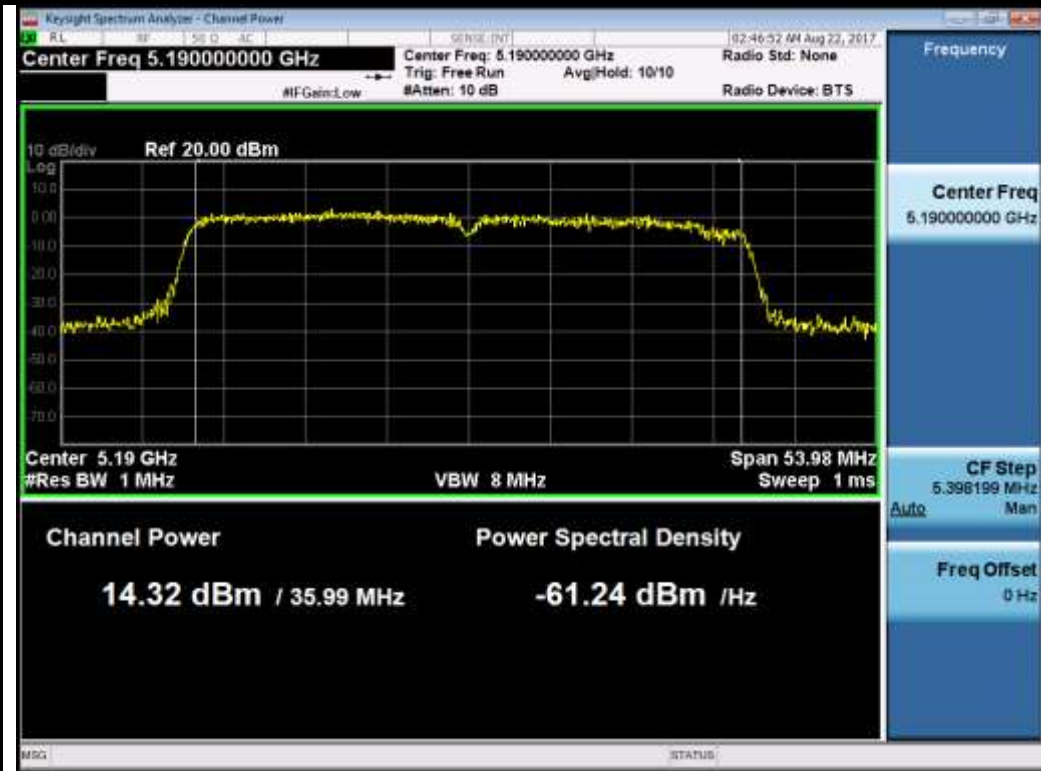




802.11n-HT20-5200MHz



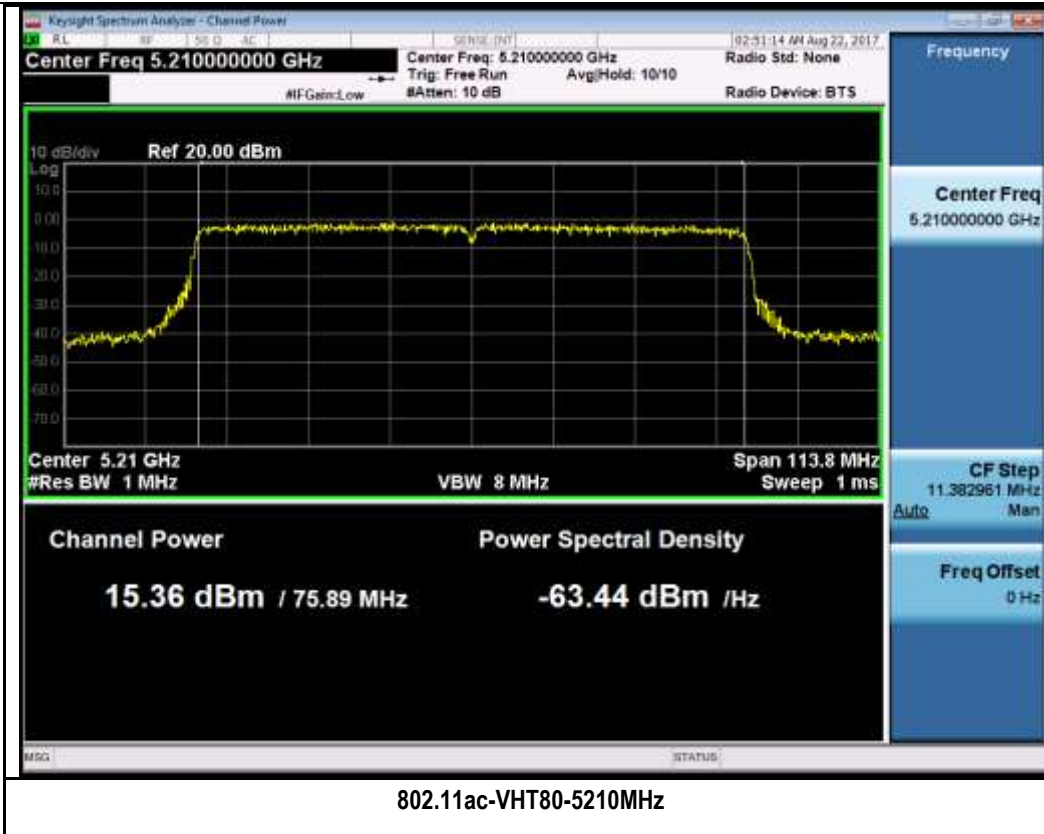
802.11n-HT20-5240MHz



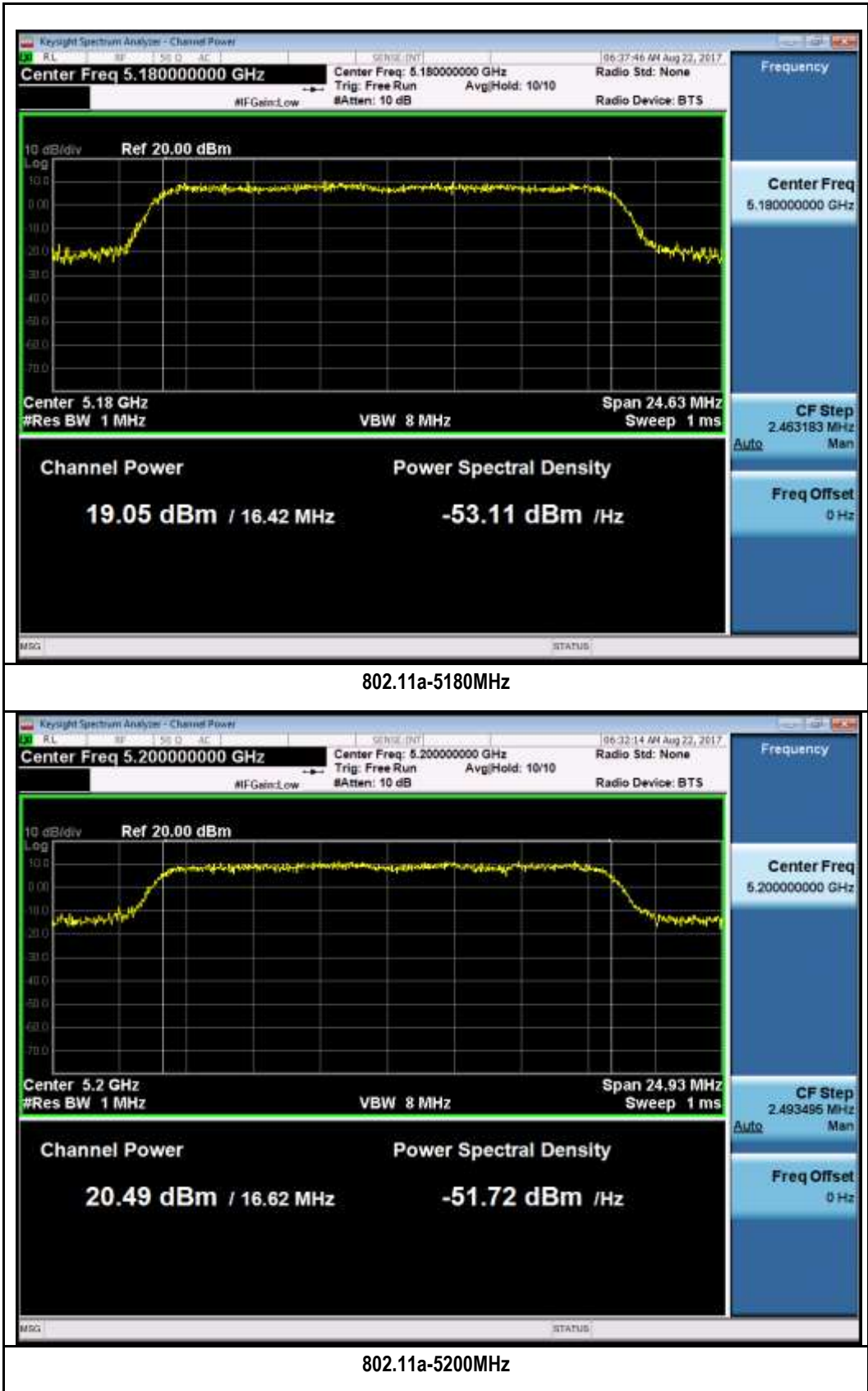
802.11n-HT40-5190MHz



802.11n-HT40-5230MHz

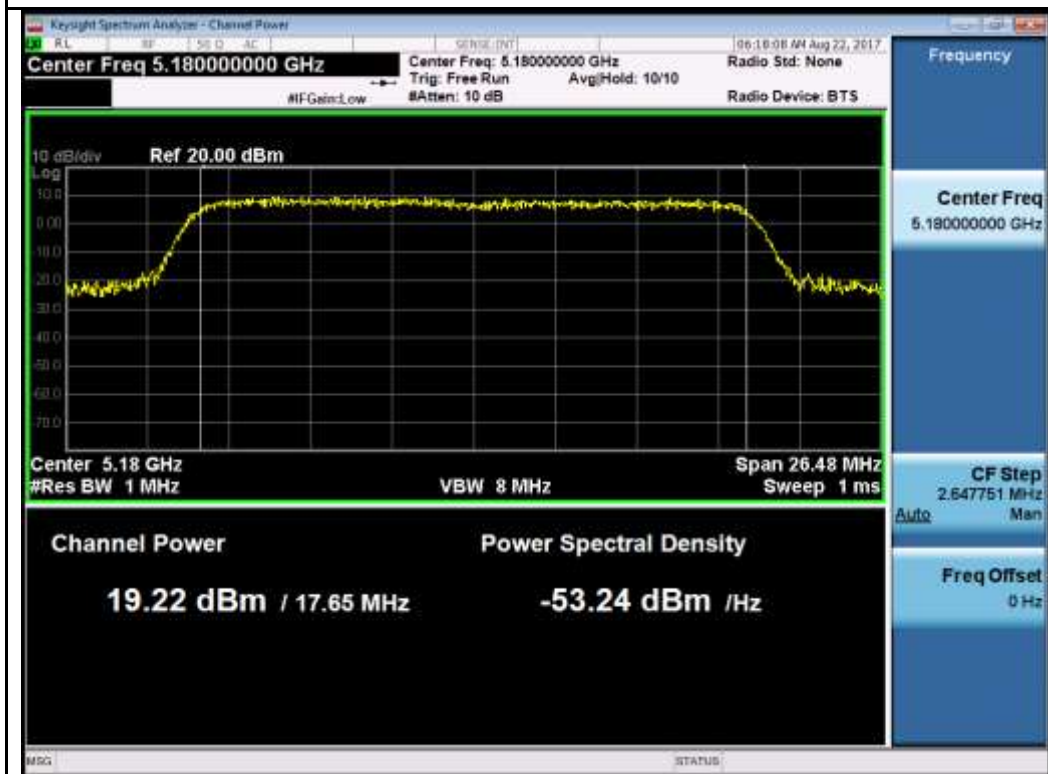


Chain 1:



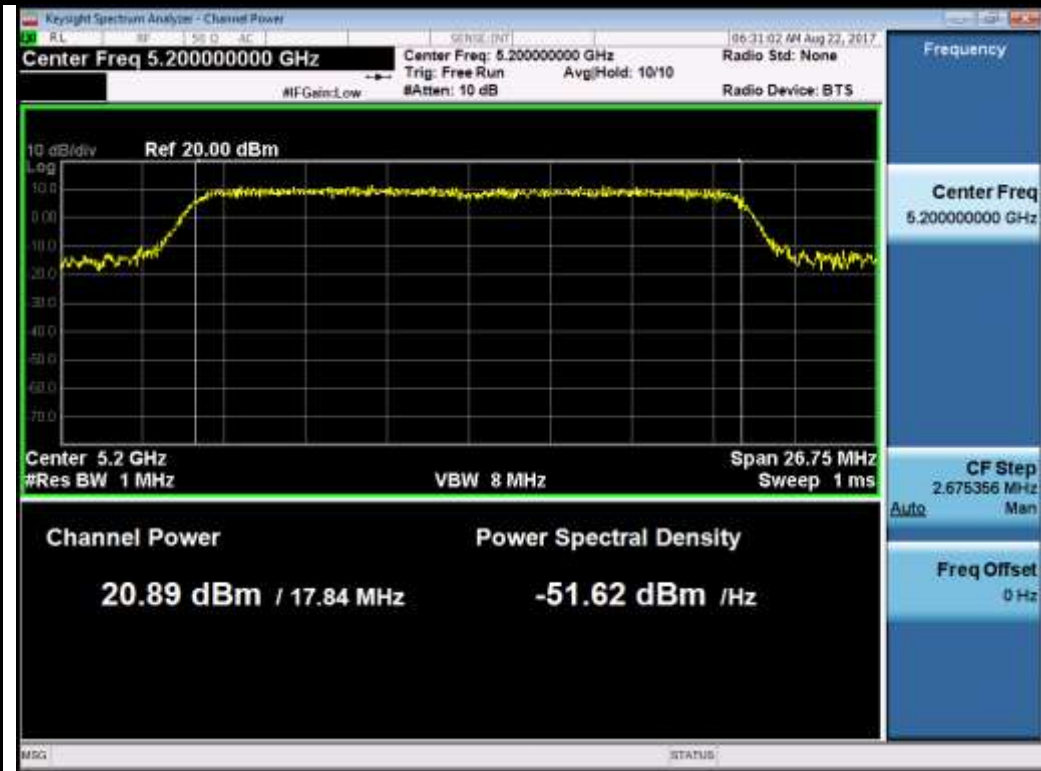


802.11a-5240MHz

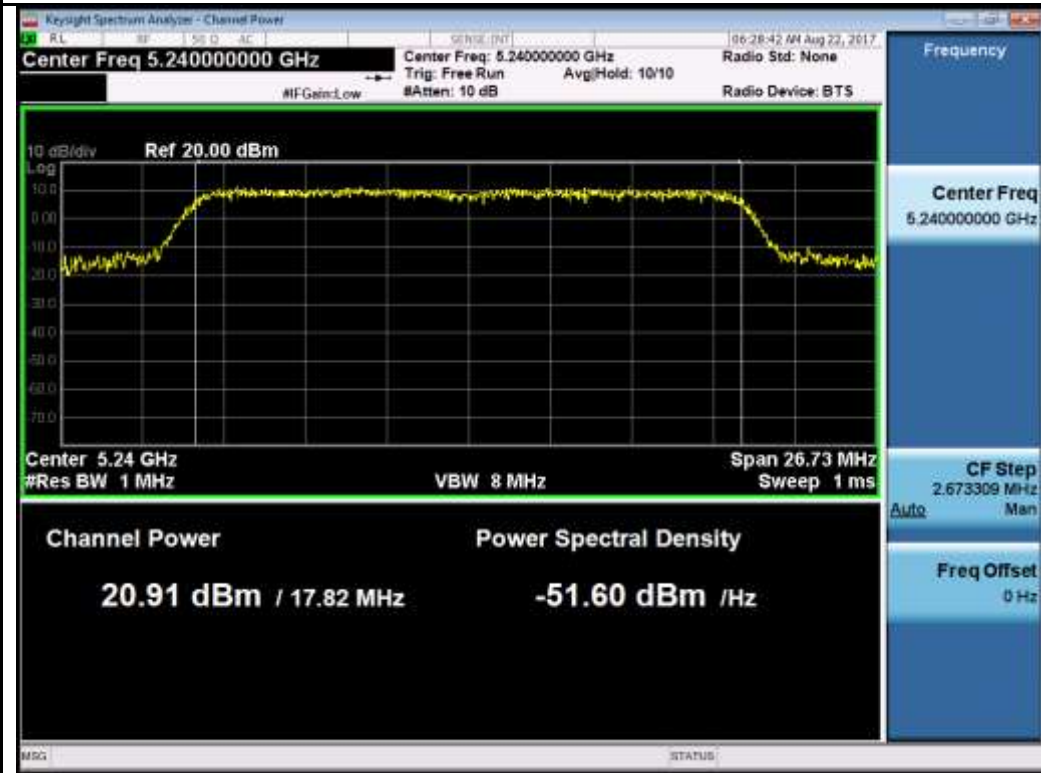


802.11n-HT20-5180MHz

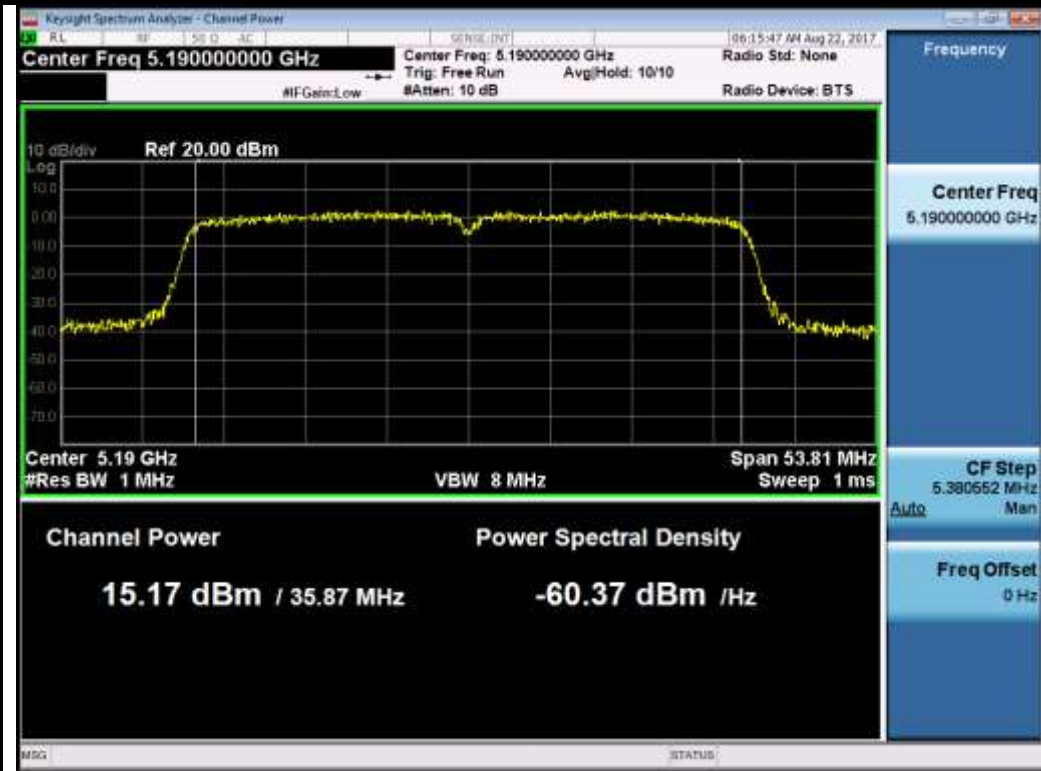




802.11n-HT20-5200MHz



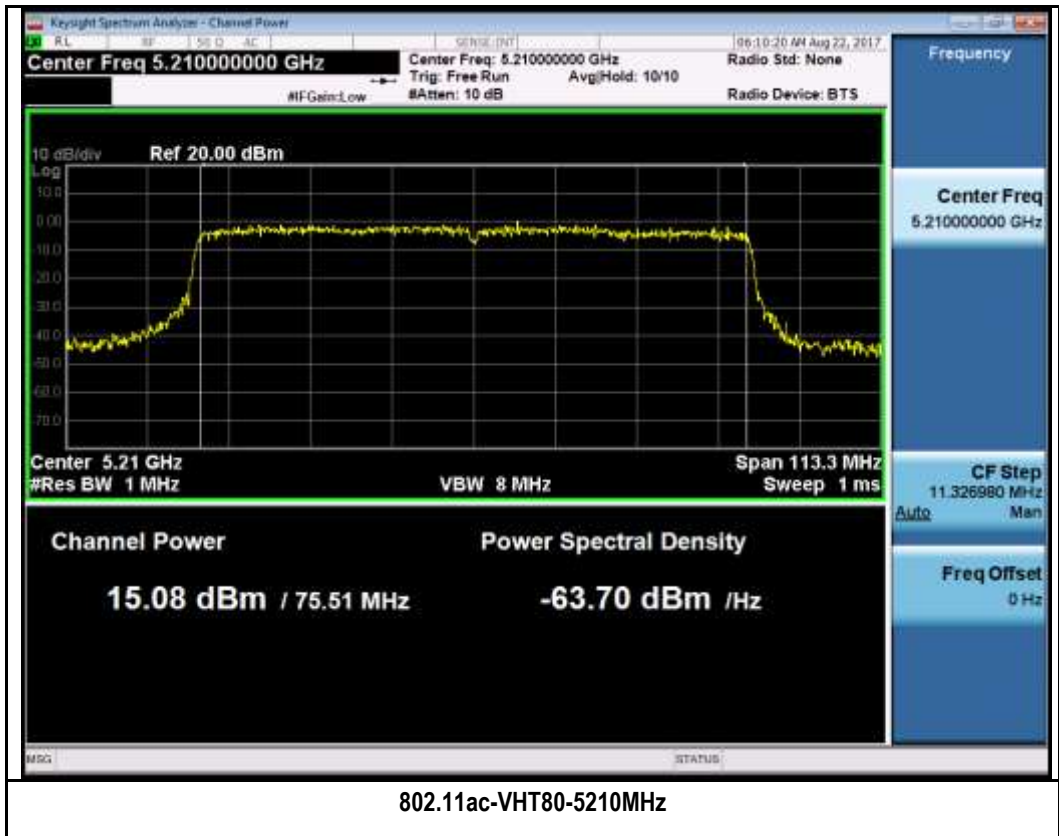
802.11n-HT20-5240MHz



802.11n-HT40-5190MHz



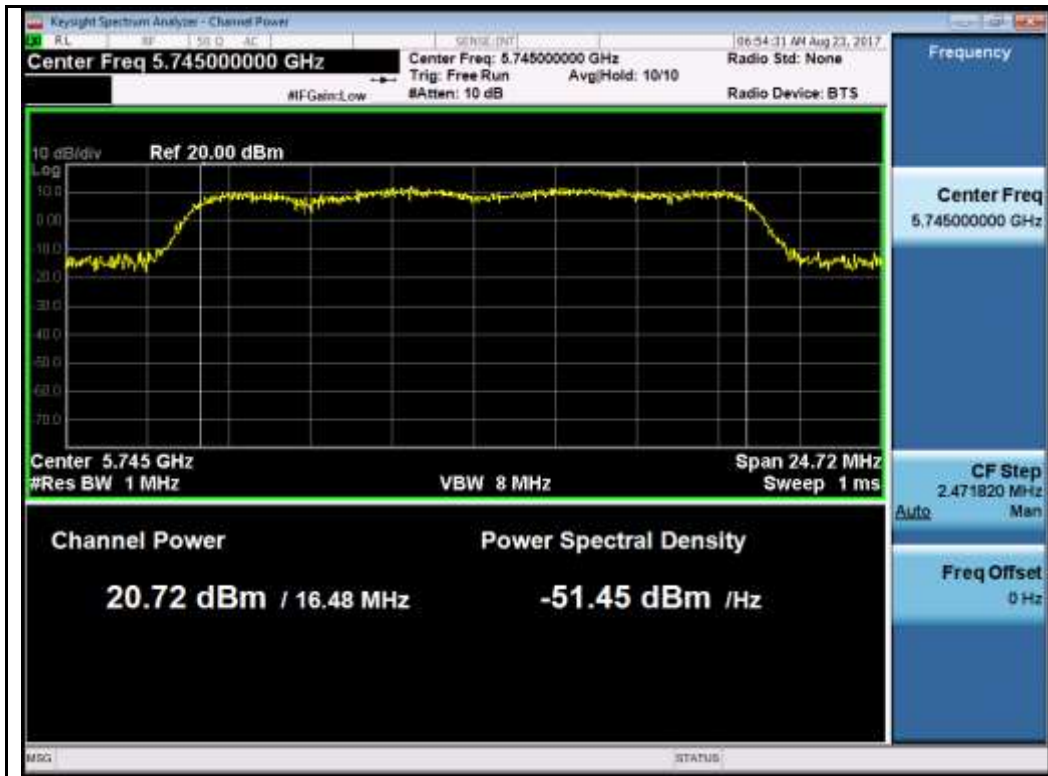
802.11n-HT40-5230MHz



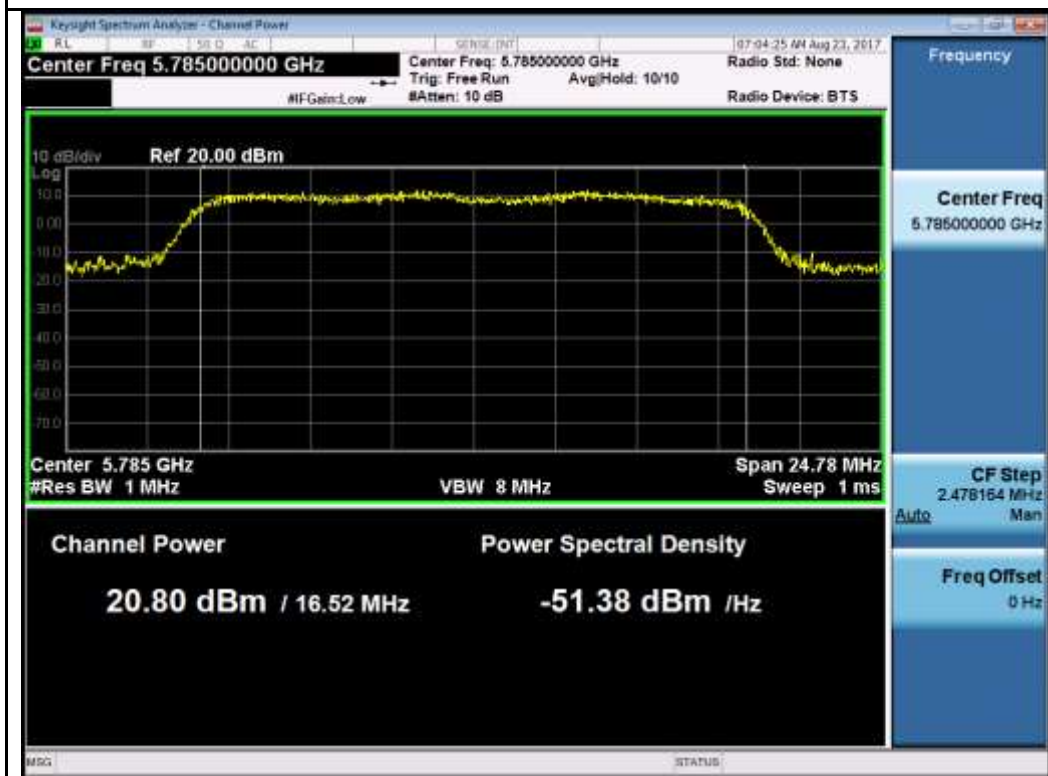


**Test Plot for W58:**

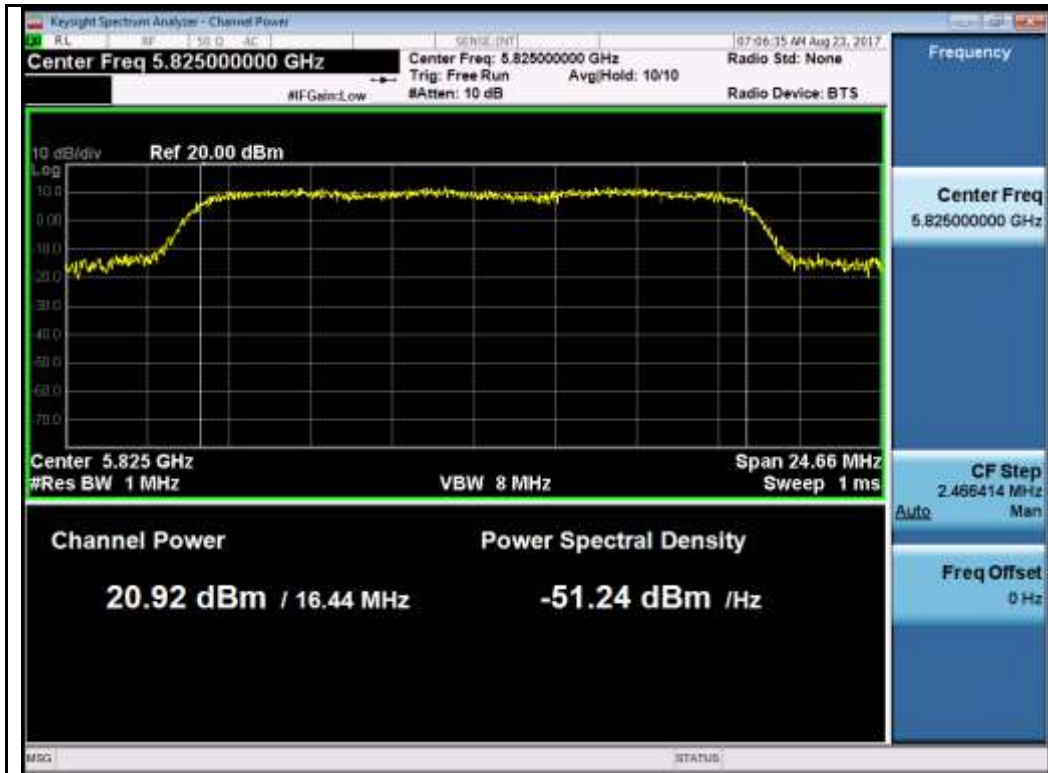
**Chain 0:**



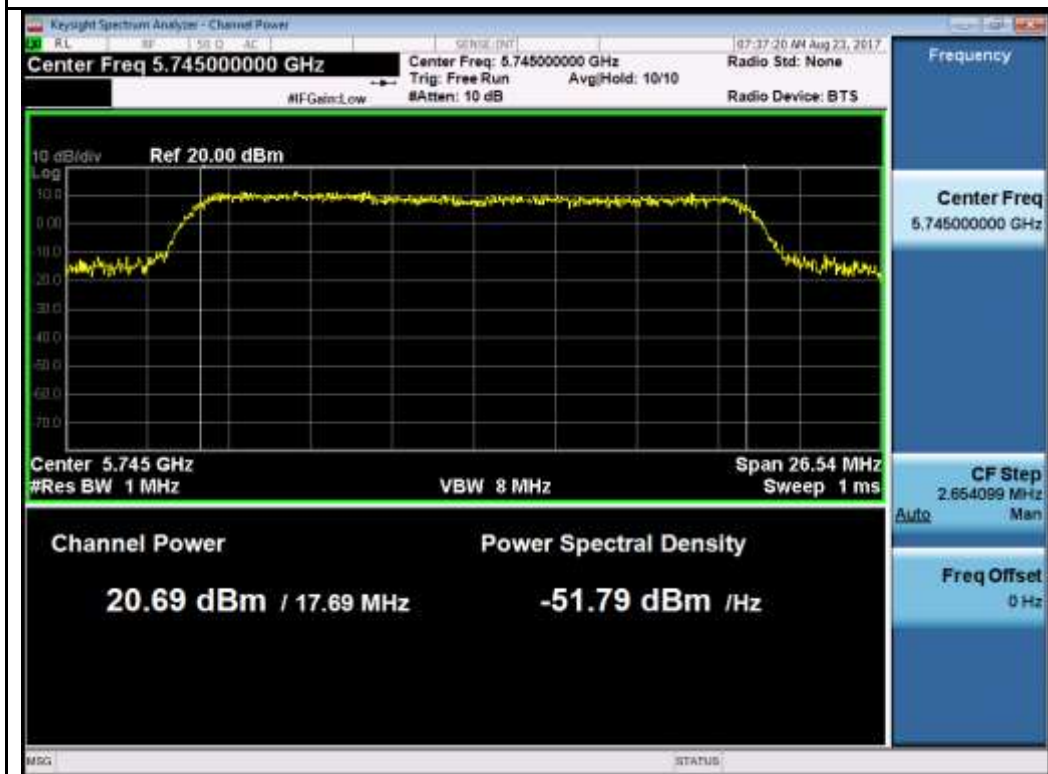
802.11a-5745MHz



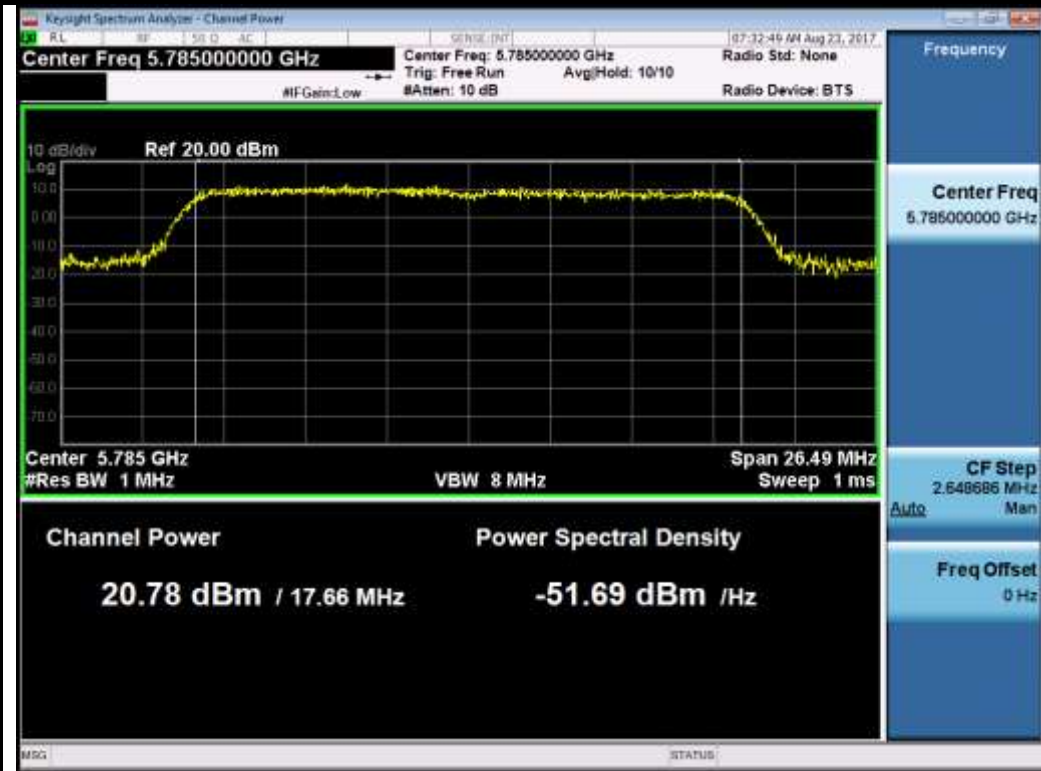
802.11a-5785MHz



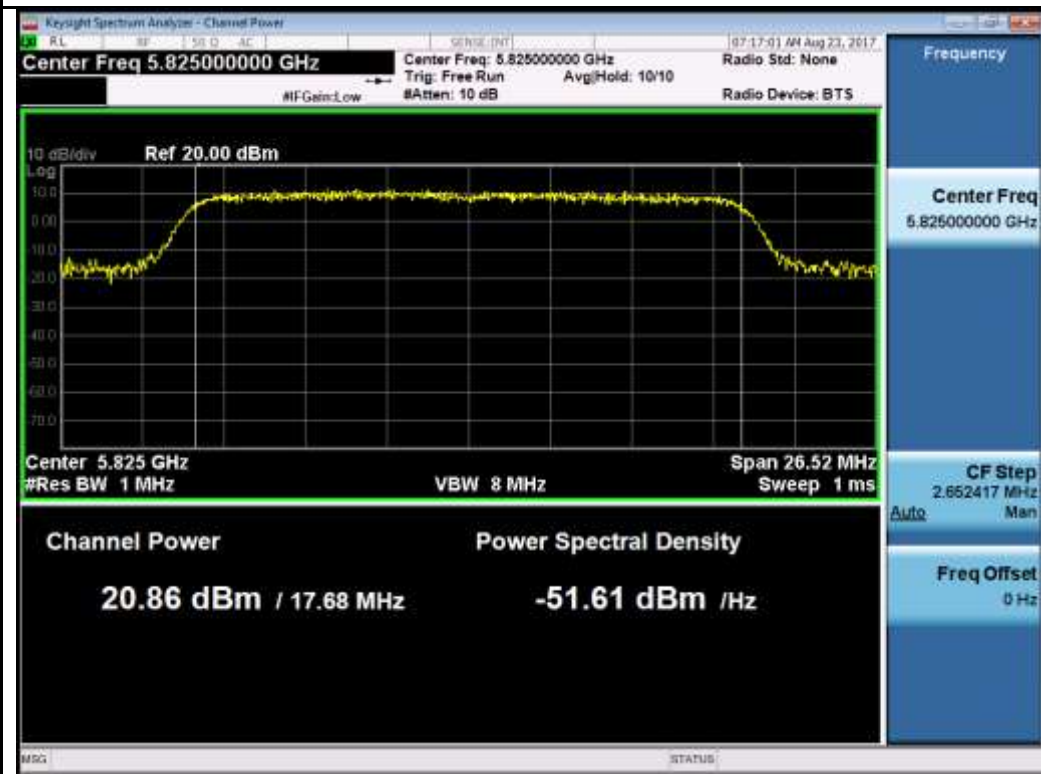
802.11a-5825MHz



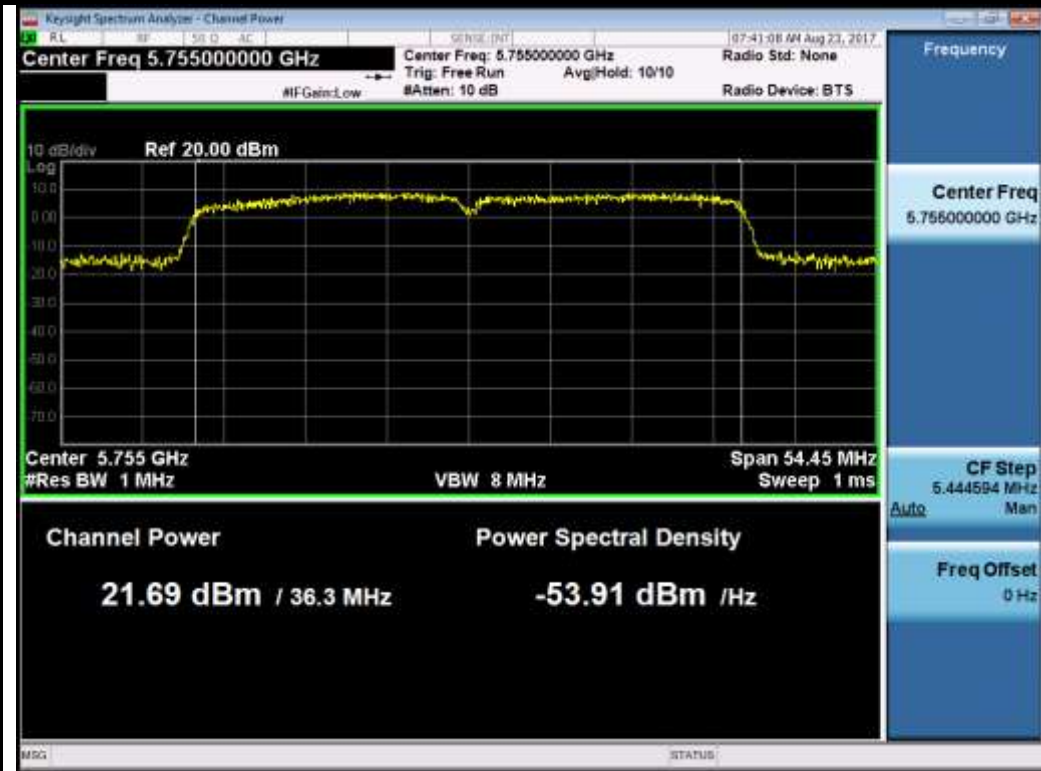
802.11n-HT20-5745MHz



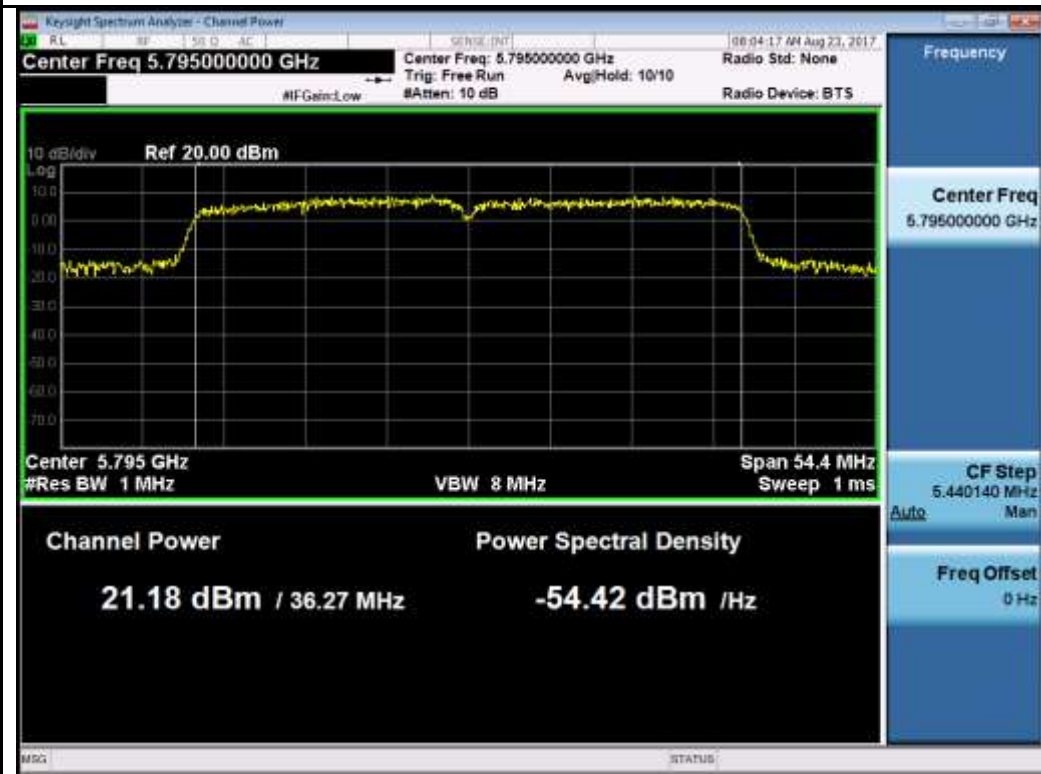
802.11n-HT20-5785MHz



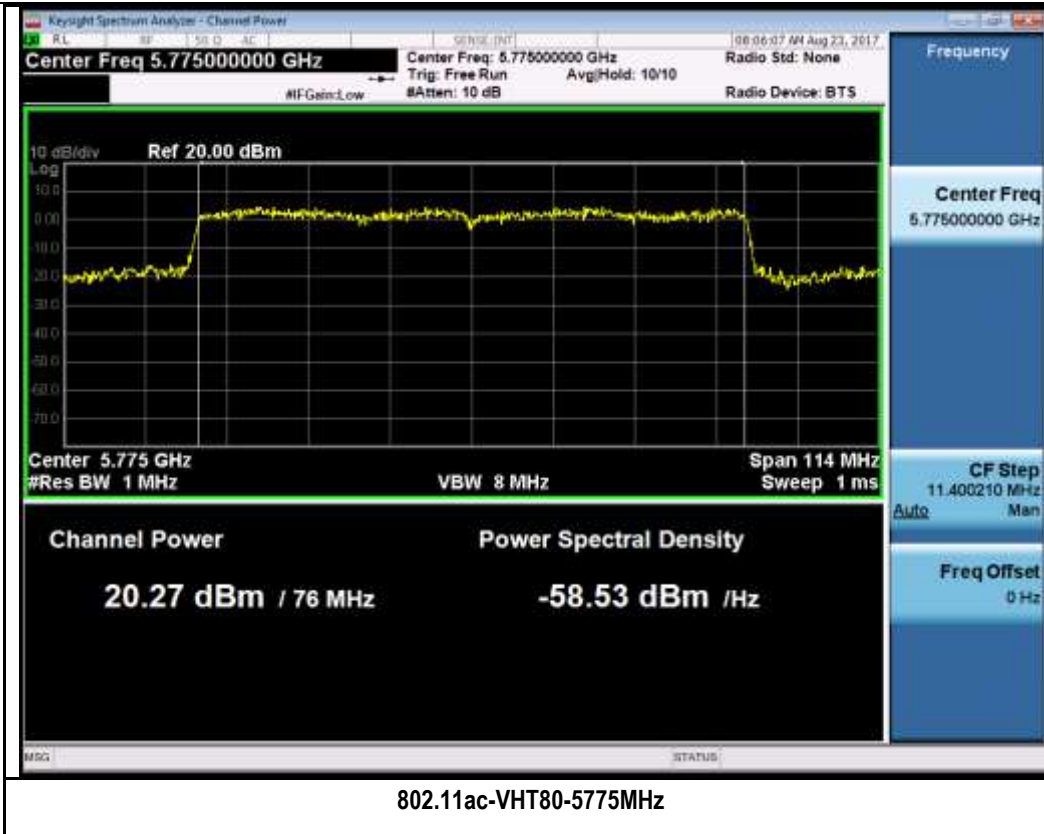
802.11n-HT20-5825MHz



802.11n-HT40-5755MHz

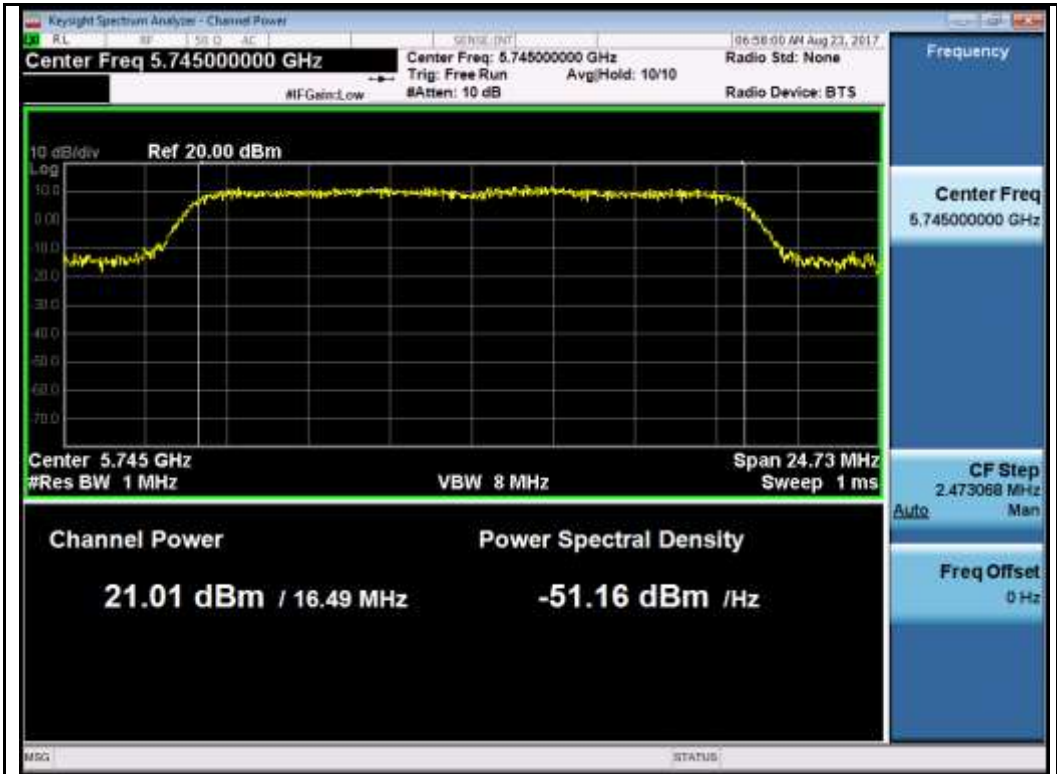


802.11n-HT40-5795MHz





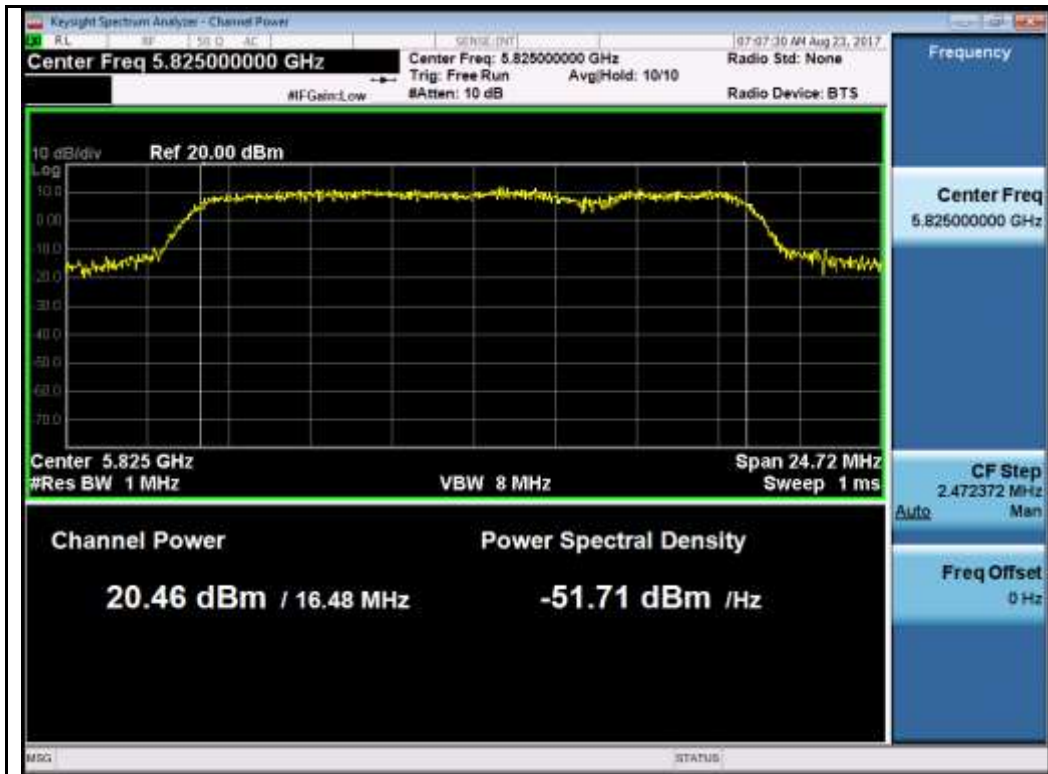
Chain 1:



802.11a-5745MHz



802.11a-5785MHz

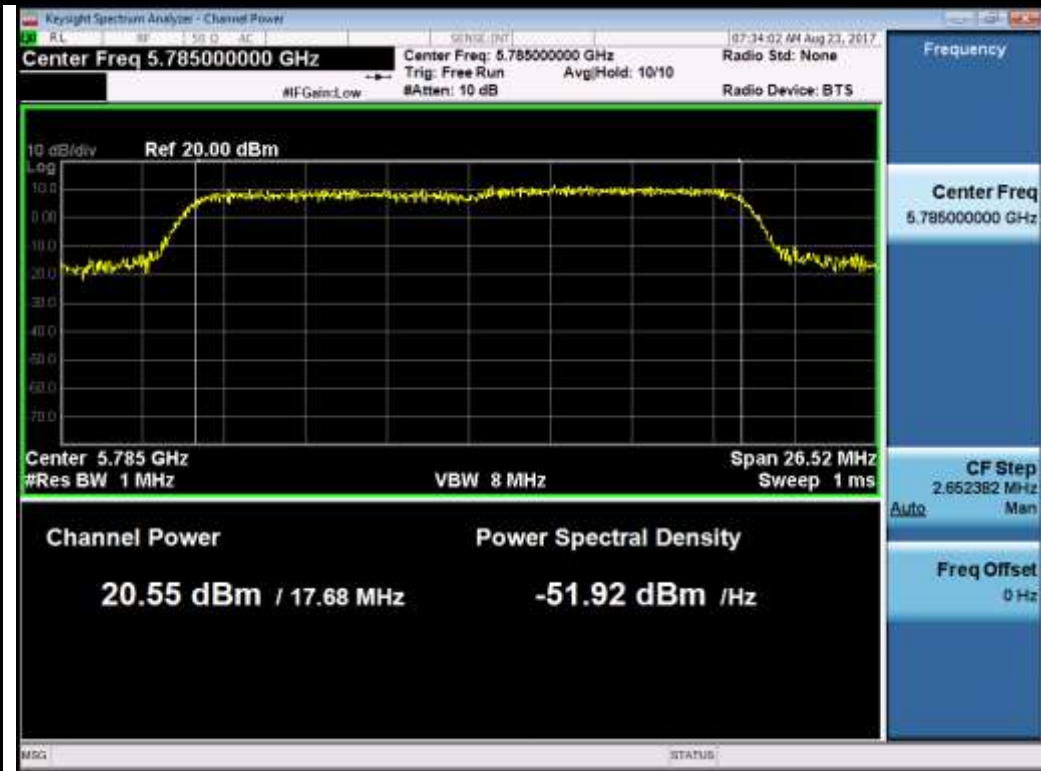


802.11a-5825MHz

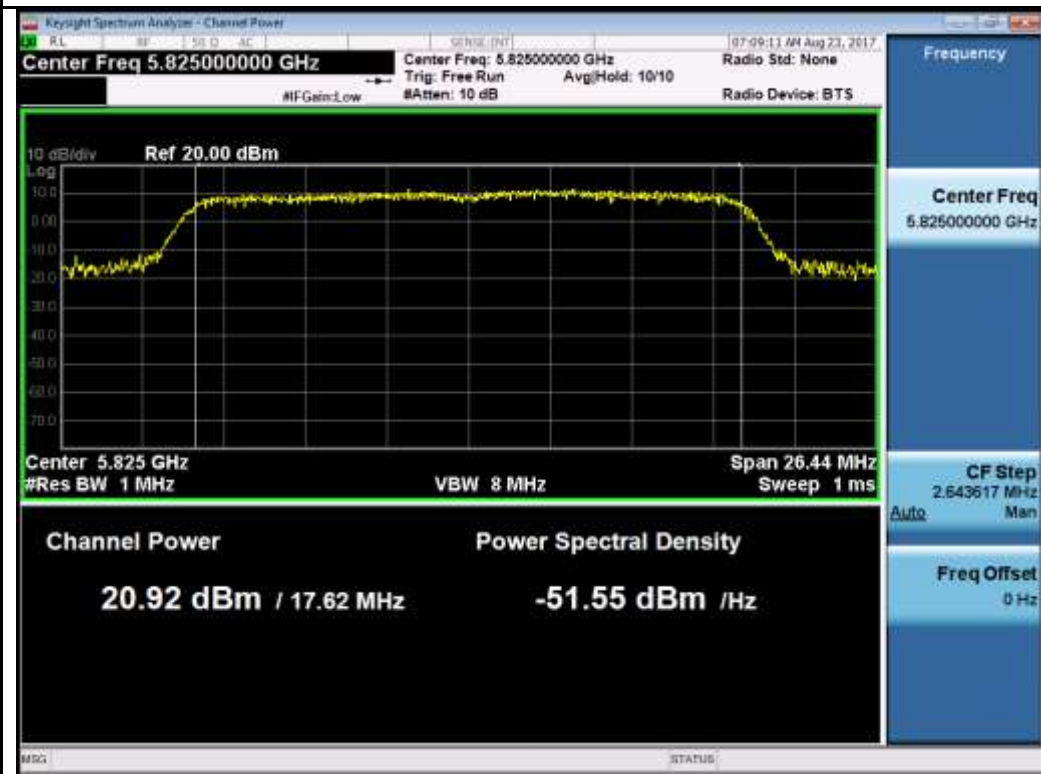


802.11n-HT20-5745MHz

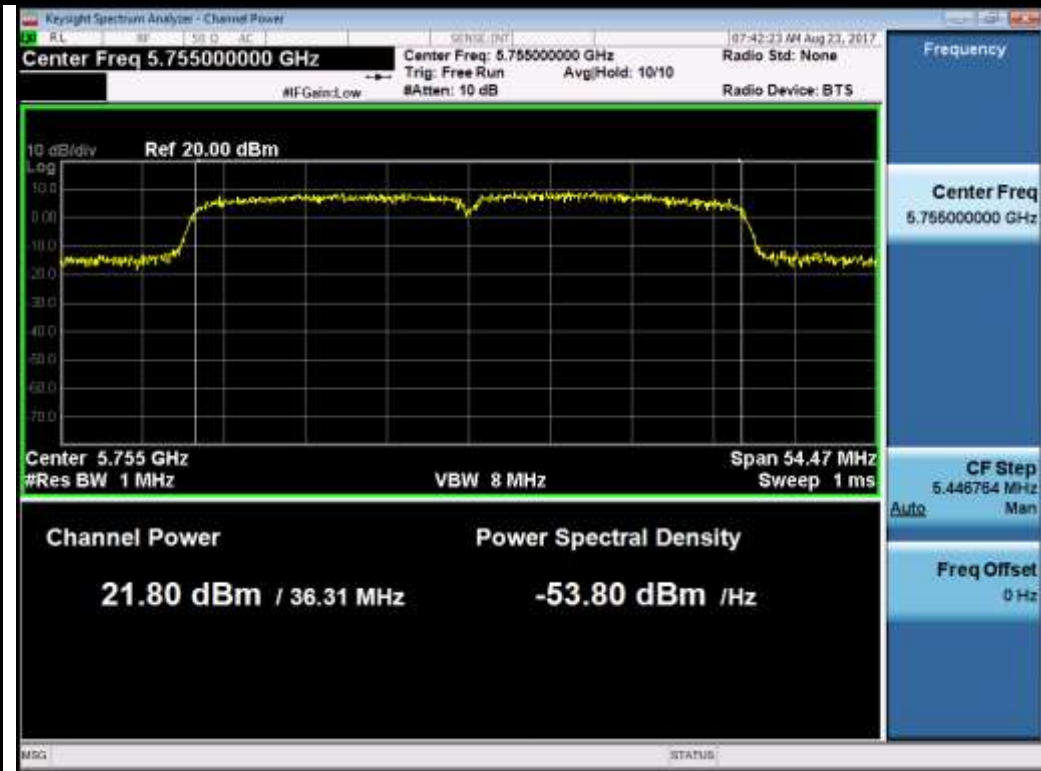




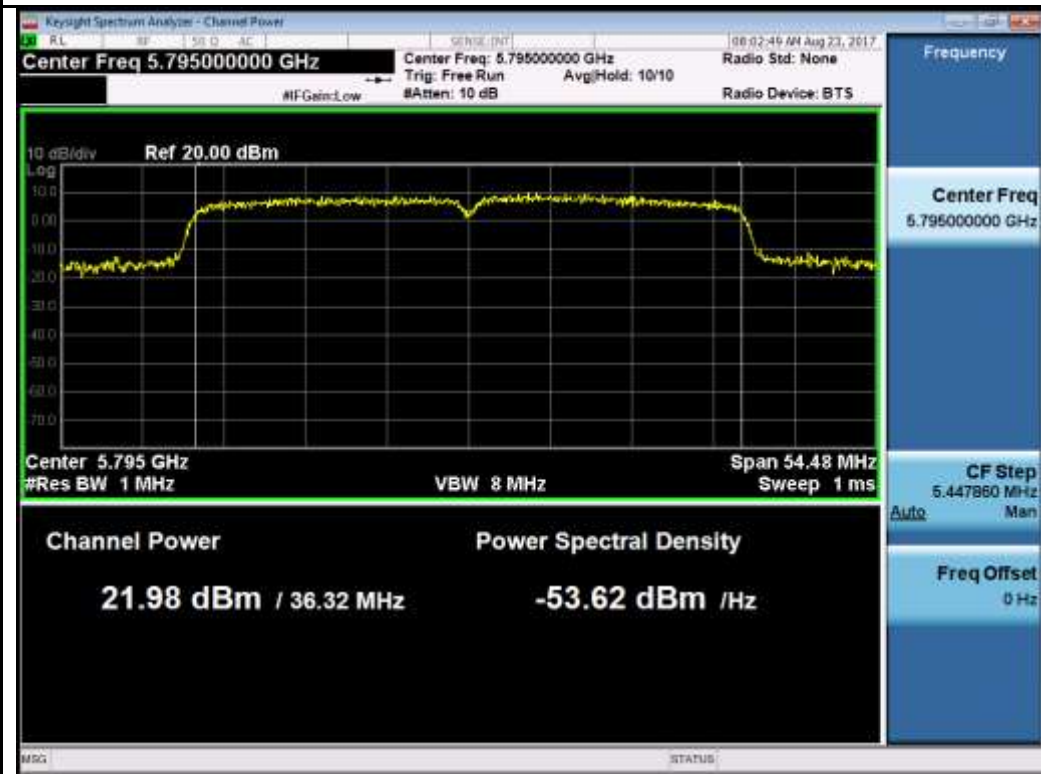
802.11n-HT20-5785MHz



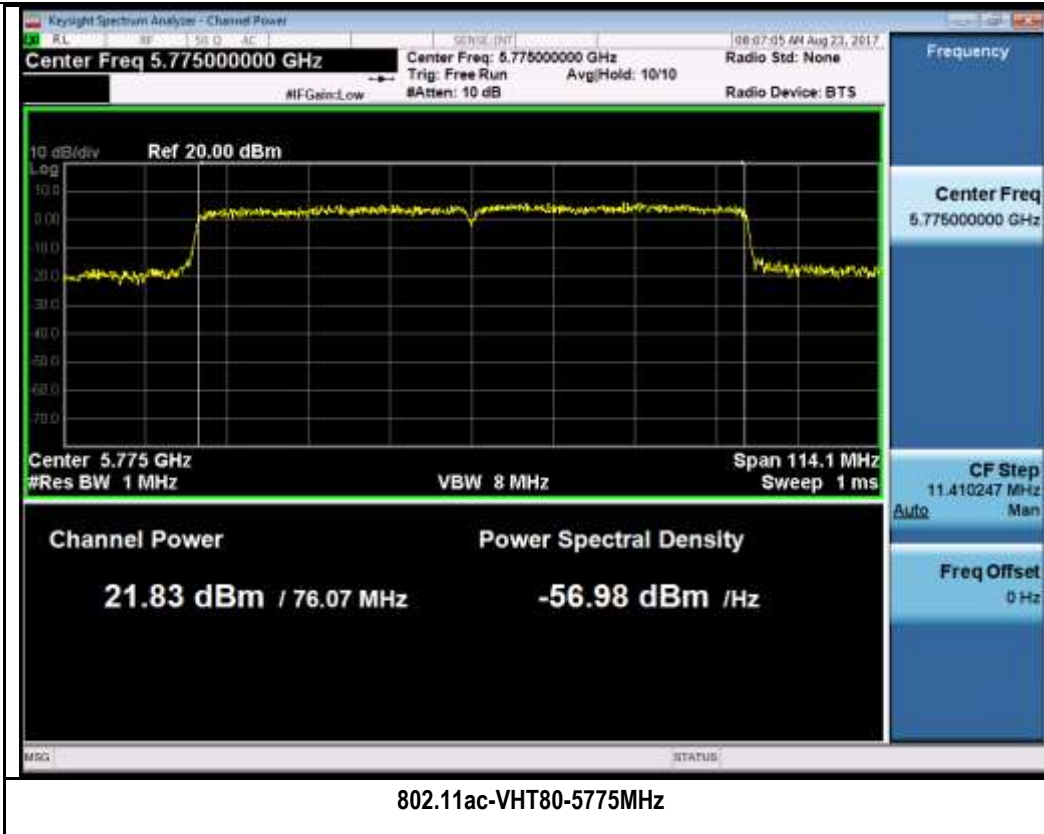
802.11n-HT20-5825MHz



802.11n-HT40-5755MHz

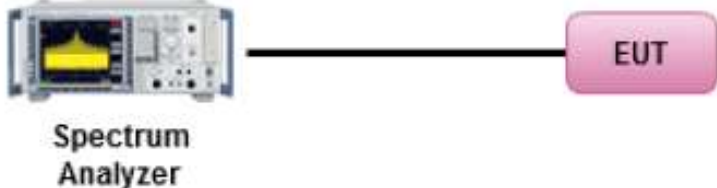


802.11n-HT40-5795MHz



### 10.4 Peak Spectral Density

**Requirement(s):**

Spec	Item	Requirement	Applicable
§ 15.407	a)(1)(i)	For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.	<input checked="" type="checkbox"/>
	a)(3)	For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.	<input checked="" type="checkbox"/>
Test Setup	 <p style="text-align: center;"><b>Spectrum Analyzer</b>      <b>EUT</b></p>		
Test Procedure	<p>789033 D02 General UNII Test Procedures New Rules v01r02, II.F. Method SA-1</p> <p><u>Maximum spectral density measurement procedure</u></p> <ul style="list-style-type: none"> <li>- Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.</li> <li>- Set RBW = 1 MHz</li> <li>- Set VBW ≥ 3 MHz</li> <li>- Detector = RMS.</li> <li>- Sweep time = auto couple.</li> <li>- Trace mode = max hold.</li> <li>- Trace average at least 100 traces in power averaging</li> <li>- Use the peak marker function to determine the maximum amplitude level within the RBW.</li> </ul> <p>Apply correction to the result if different RBW is used.</p>		
Test Date	08/21/2017-10/05/2017	Environmental condition	Temperature 22°C Relative Humidity 42% Atmospheric Pressure 1020mbar
Remark	N/A		
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail		

**Test Data**     Yes                       N/A

**Test Plot**     Yes (See below)             N/A

**Test was done by Cipher at RF test site.**

### PSD measurement result for 5.2GHz

Type	Test mode	Freq (MHz)	CH	Conducted PSD (dBm/MHz)			Limit (dBm)	Result
				Chain0	Chain1	Combined Power		
PSD	802.11a	5180	Low	6.867	7.051	9.970	17	Pass
	802.11a	5200	Mid	8.581	8.903	11.755	17	Pass
	802.11a	5240	High	8.172	8.708	11.459	17	Pass
	802.11n-20M	5180	Low	6.673	6.746	9.720	17	Pass
	802.11n-20M	5200	Mid	8.362	8.428	11.405	17	Pass
	802.11n-20M	5240	High	8.038	8.367	11.216	17	Pass
	802.11n-40M	5190	Low	0.135	0.217	3.186	17	Pass
	802.11n-40M	5230	Mid	6.153	6.282	9.228	17	Pass
	802.11ac-80M	5210	High	-4.205	-3.928	-1.054	17	Pass

### PSD measurement result for 5.8GHz

Test mode	Freq (MHz)	CH	Conducted PSD (dBm/100kHz)			Correction factor (dB)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
			Chain0	Chain1	Combined				
802.11a	5745	Low	1.284	1.410	4.358	6.99	11.348	30	Pass
	5785	Mid	1.312	1.237	4.285	6.99	11.275	30	Pass
	5825	High	1.713	1.468	4.603	6.99	11.593	30	Pass
802.11n-20	5745	Low	0.967	0.870	3.929	6.99	10.919	30	Pass
	5785	Mid	1.113	0.741	3.941	6.99	10.931	30	Pass
	5825	High	1.132	1.680	4.425	6.99	11.415	30	Pass
802.11n-40	5755	Low	-1.136	-1.246	1.820	6.99	8.810	30	Pass
	5795	High	-1.469	-1.138	1.710	6.99	8.700	30	Pass
802.11ac-80	5775	Mid	-5.035	-4.670	-1.838	6.99	5.152	30	Pass
Note	BW correction factor = $10\log(500\text{kHz}/\text{RBW})$ , RBW was set to 100kHz during test.								

**Correction factor=10\*log(500/100)=6.99**

Note: Two chains are cross-polarized, additional gain is  $10\log_{10}(\text{NANT})=0\text{dB}$ ,  $N=1$ , max directional gain of the EUT is 3.5dBi. No limit adjustment is needed. All the mode transmission is MIMO.

Test Plot for W52:

Chain 0:



802.11a-5180MHz





802.11a-5200MHz



802.11a-5240MHz



802.11n-HT20-5180MHz



802.11n-HT20-5200MHz



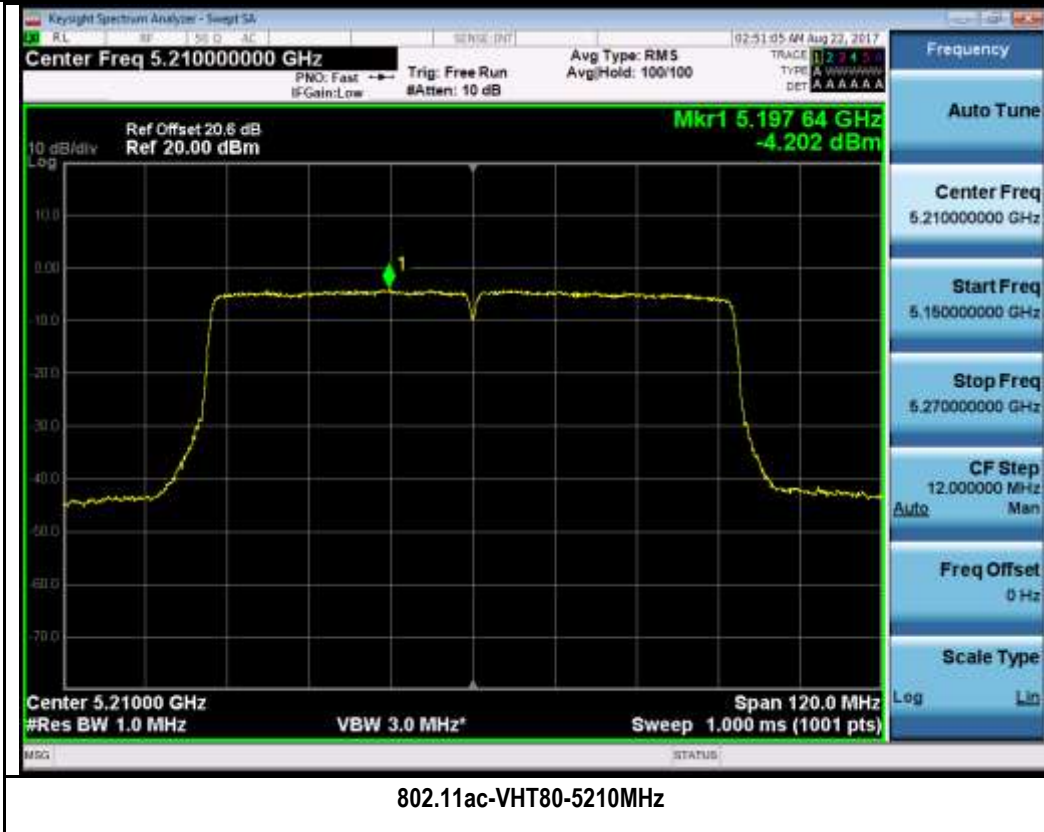
802.11n-HT20-5240MHz



802.11n-HT40-5190MHz

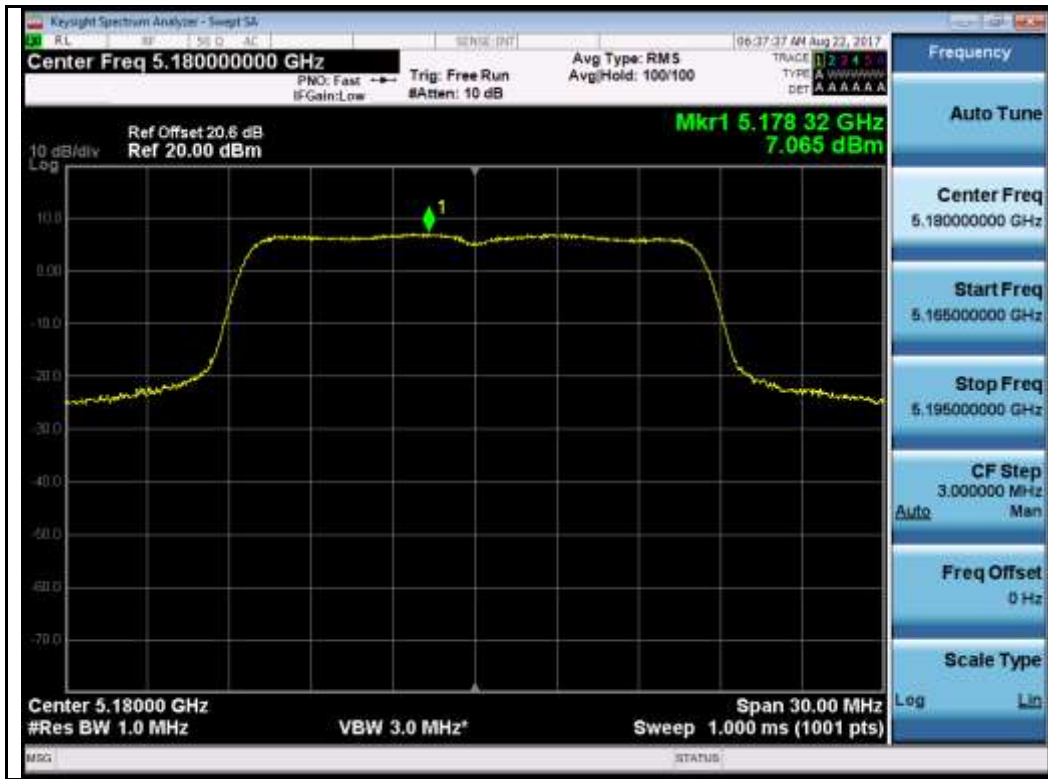


802.11n-HT40-5230MHz





Chain 1:



802.11a-5180MHz



802.11a-5200MHz



802.11a-5240MHz



802.11n-HT20-5180MHz





802.11n-HT20-5200MHz



802.11n-HT20-5240MHz



802.11n-HT40-5190MHz



802.11n-HT40-5230MHz

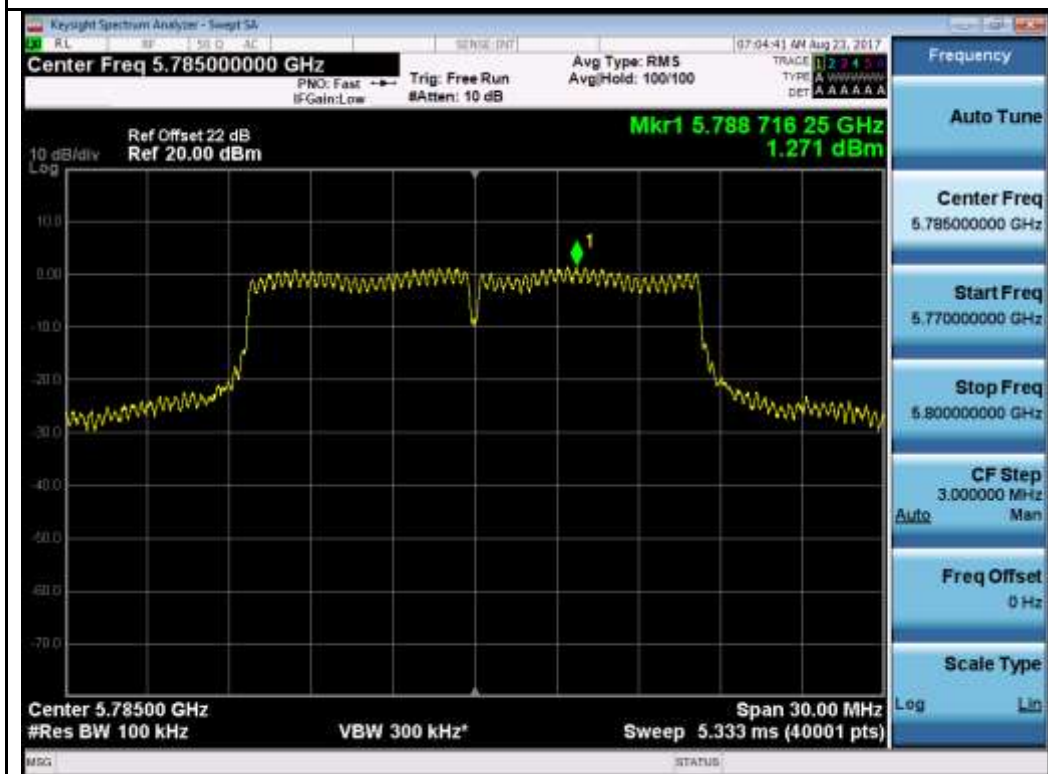


Test Plot for W58:

Chain 0:

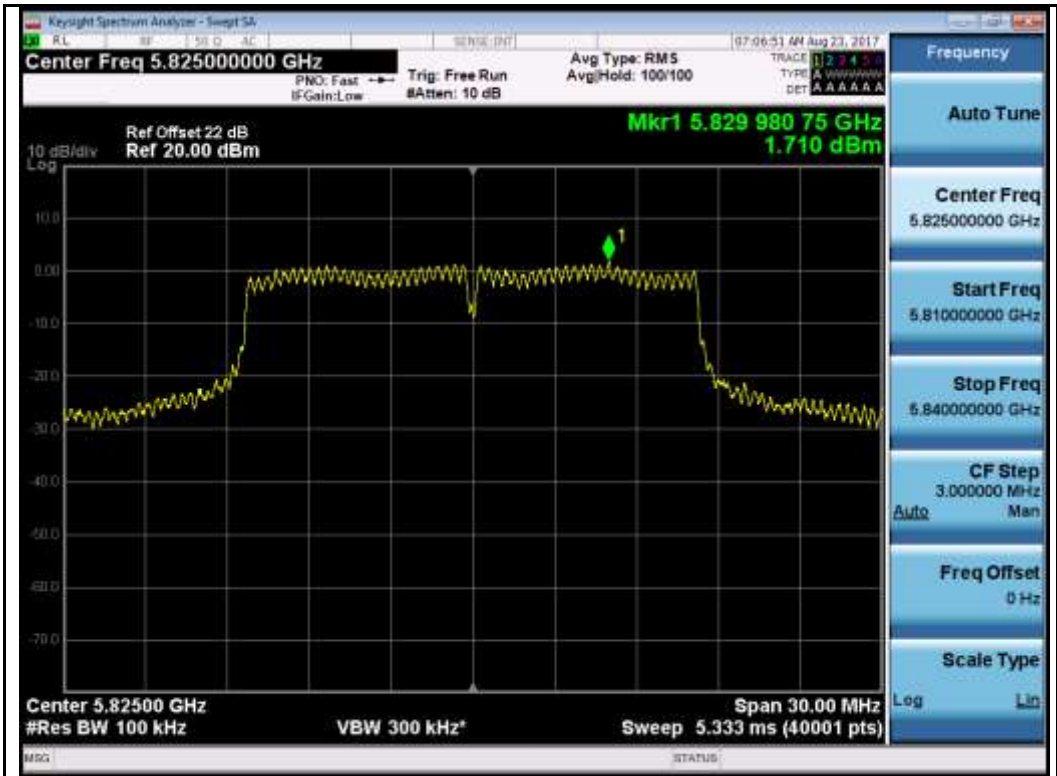


802.11a-5745MHz

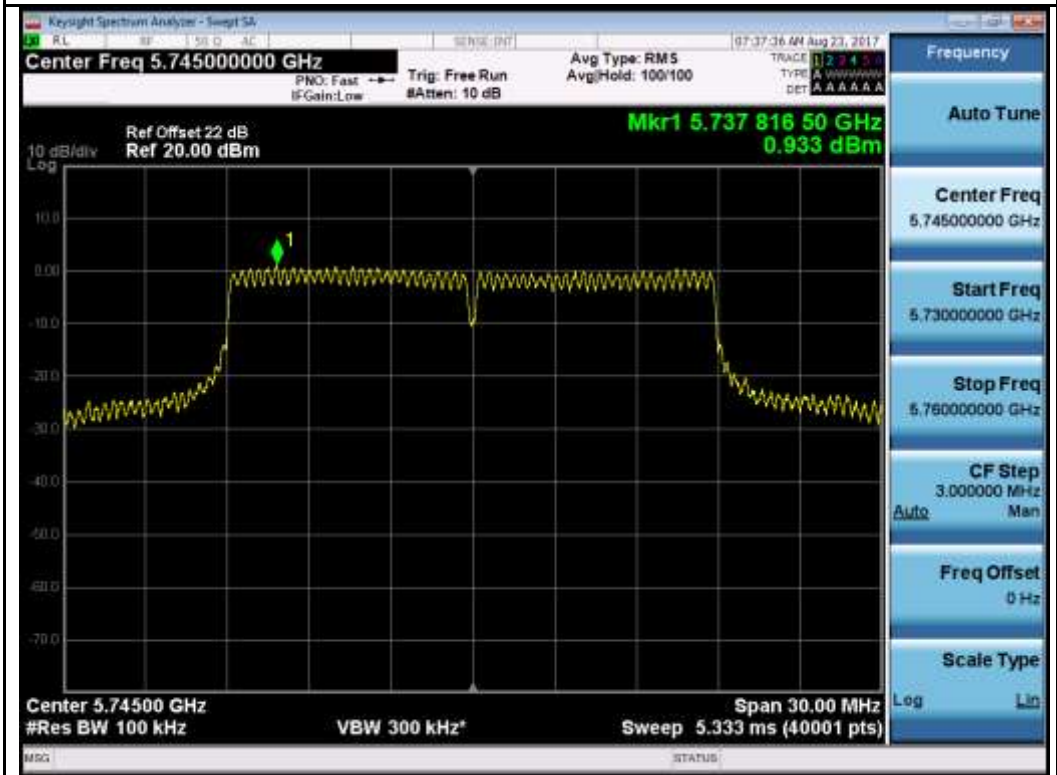


802.11a-5785MHz

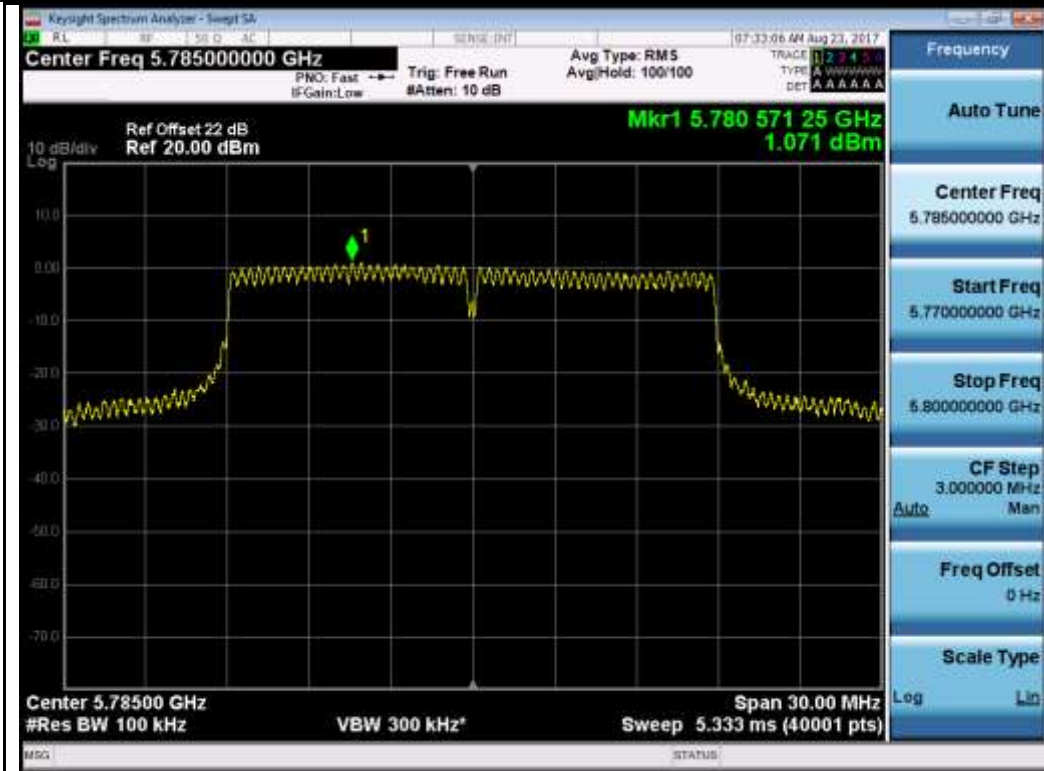




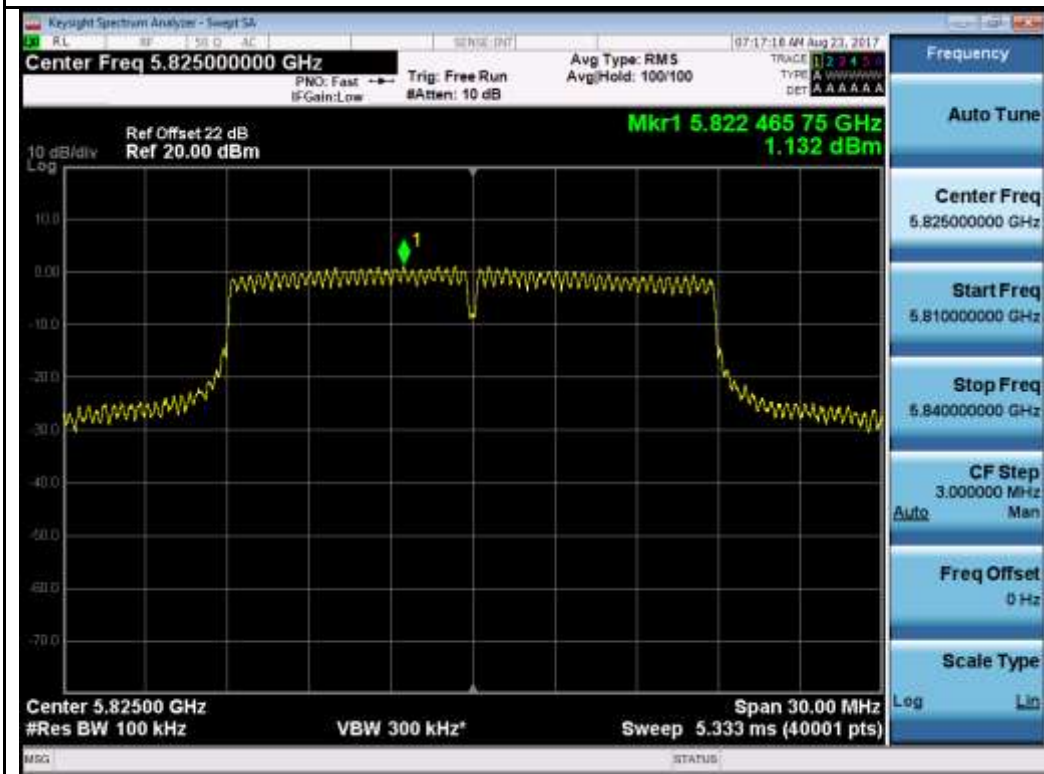
802.11a-5825MHz



802.11n-HT20-5745MHz

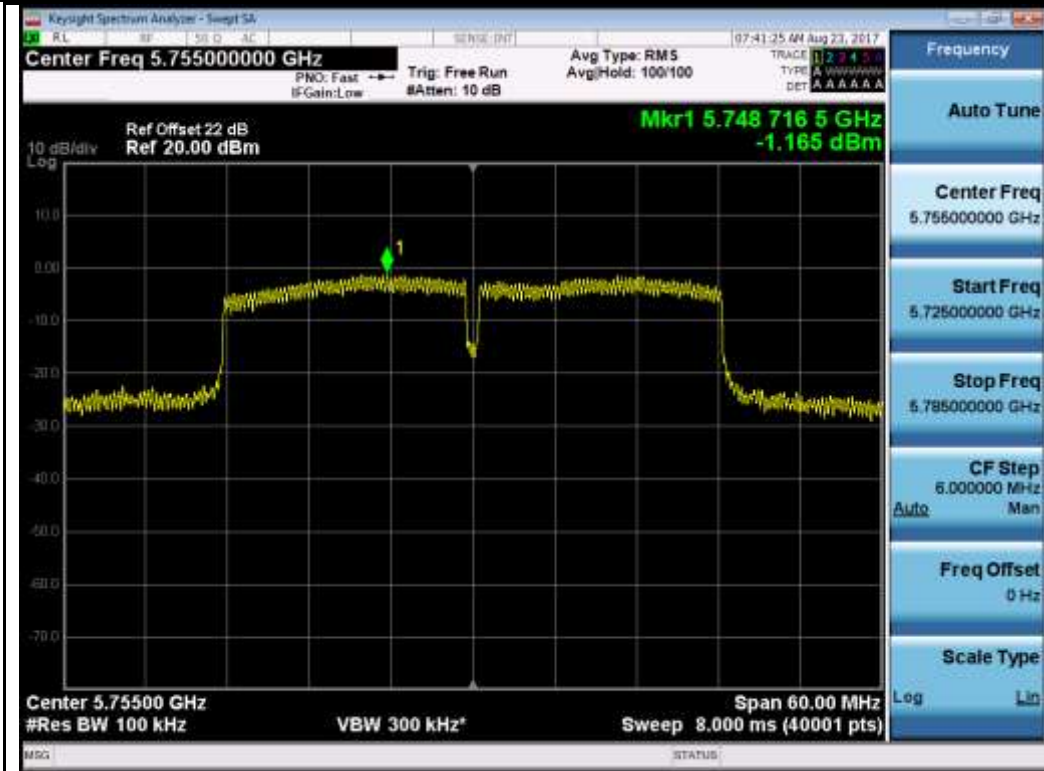


802.11n-HT20-5785MHz

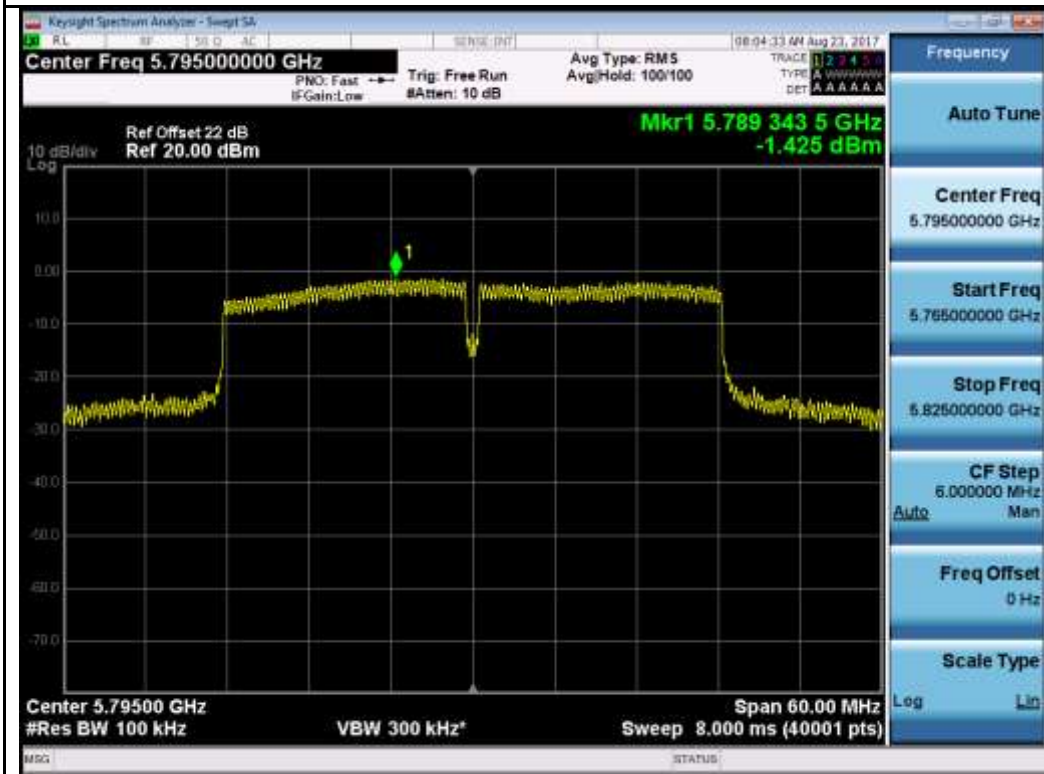


802.11n-HT20-5825MHz

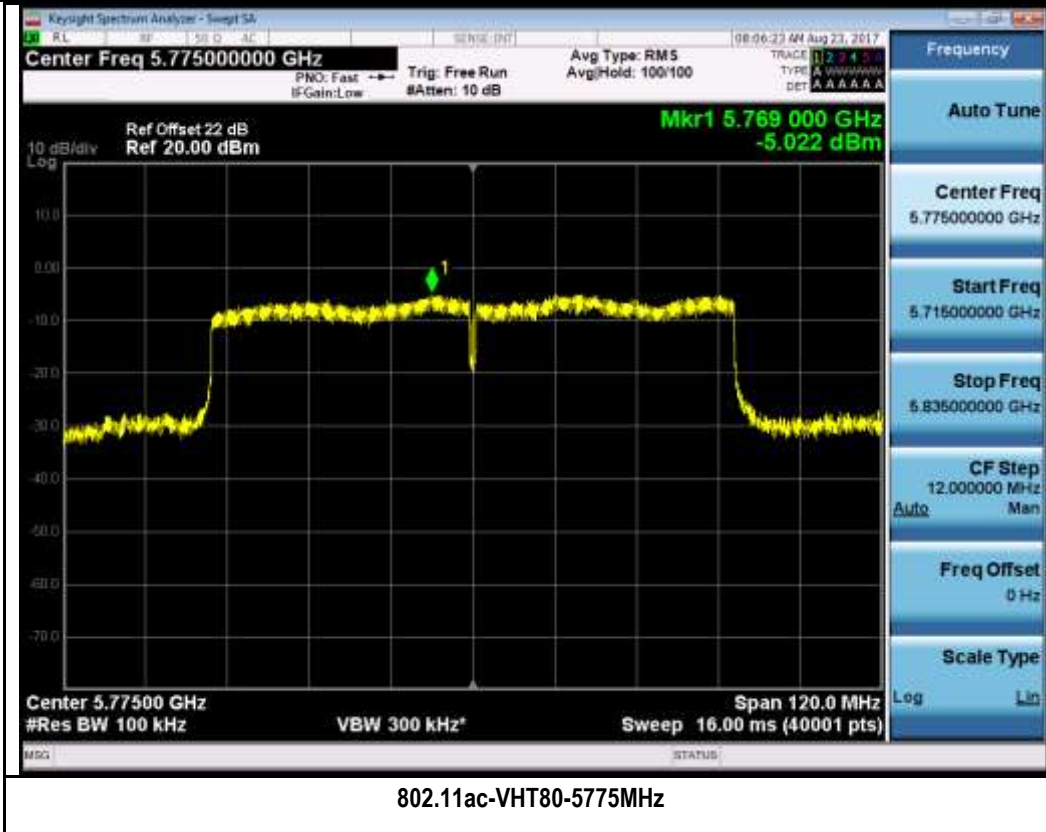




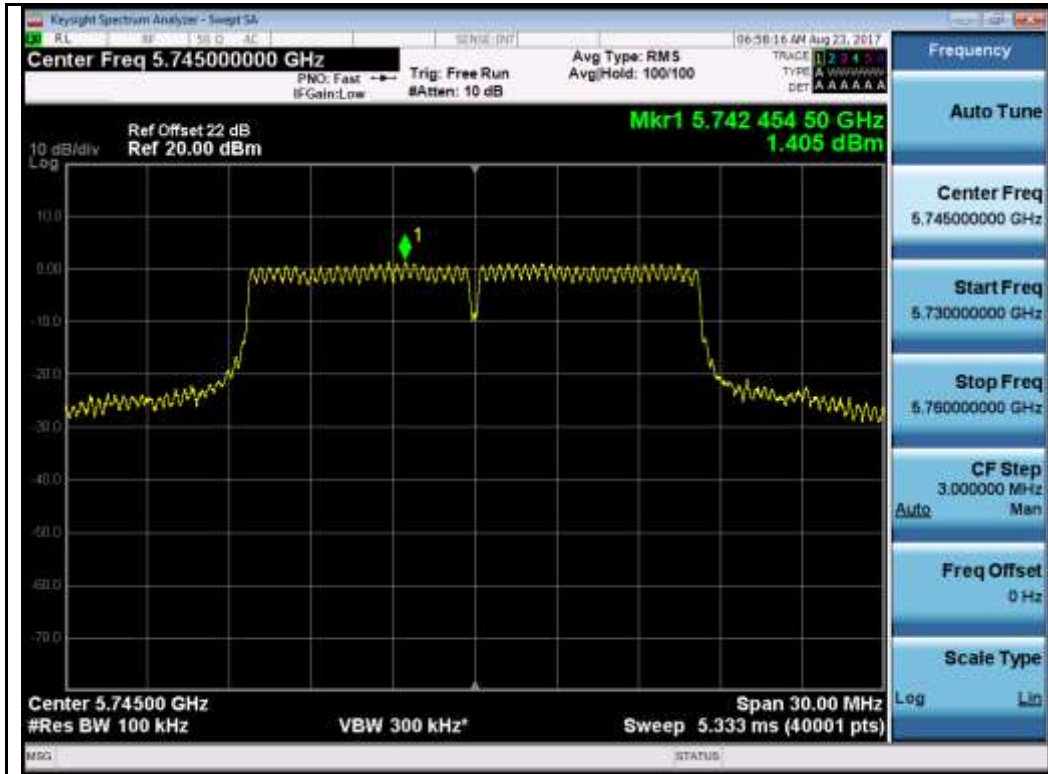
802.11n-HT40-5755MHz



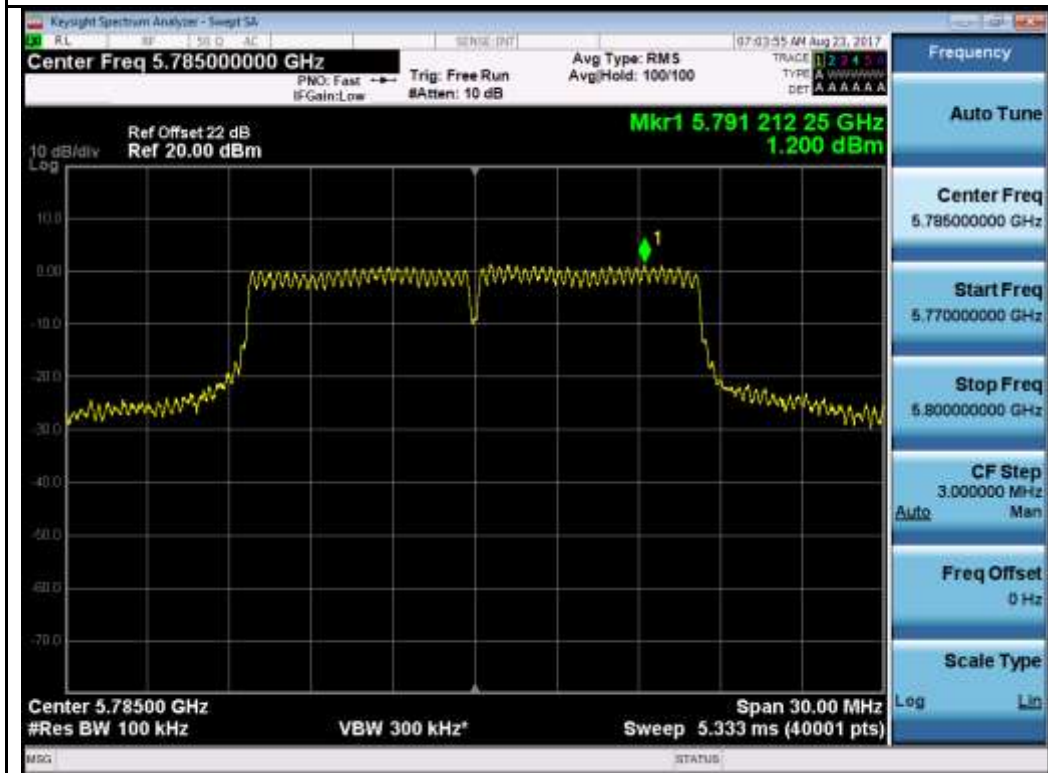
802.11n-HT40-5795MHz



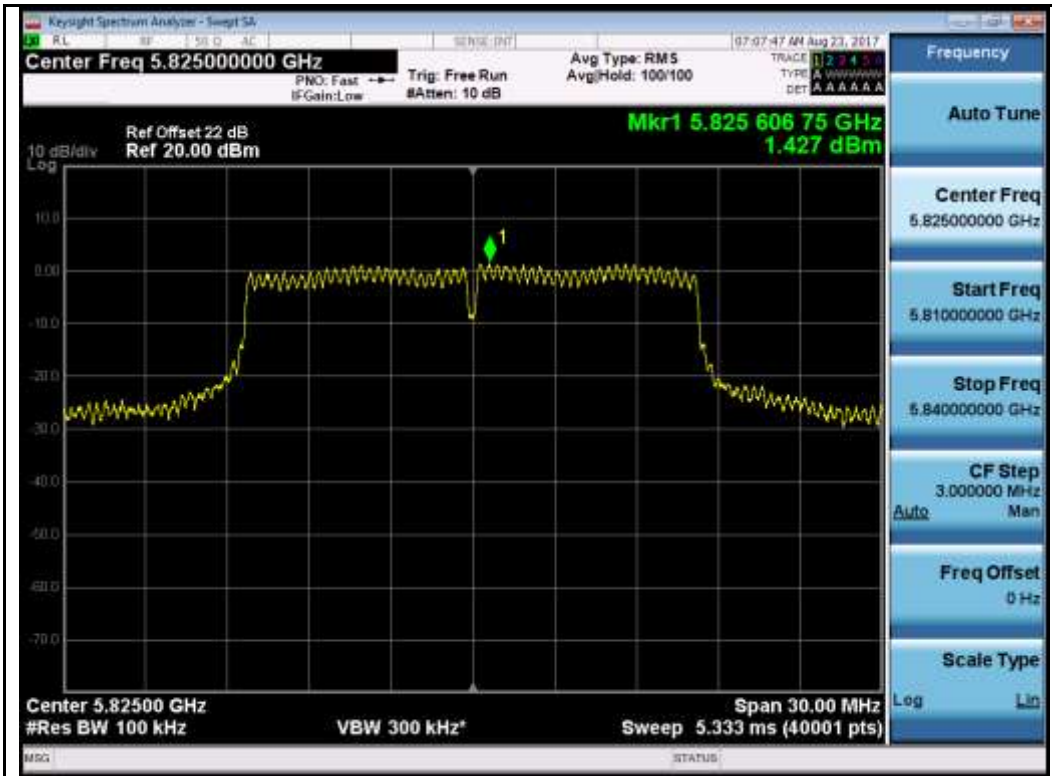
Chain 1:



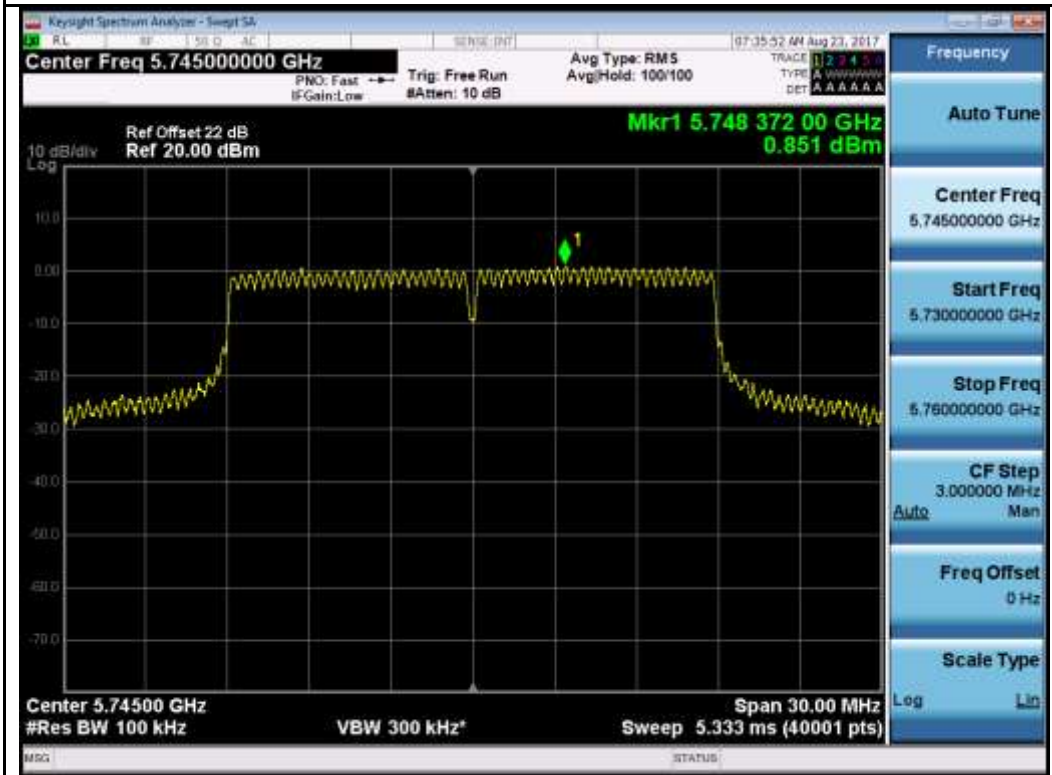
802.11a-5745MHz



802.11a-5785MHz

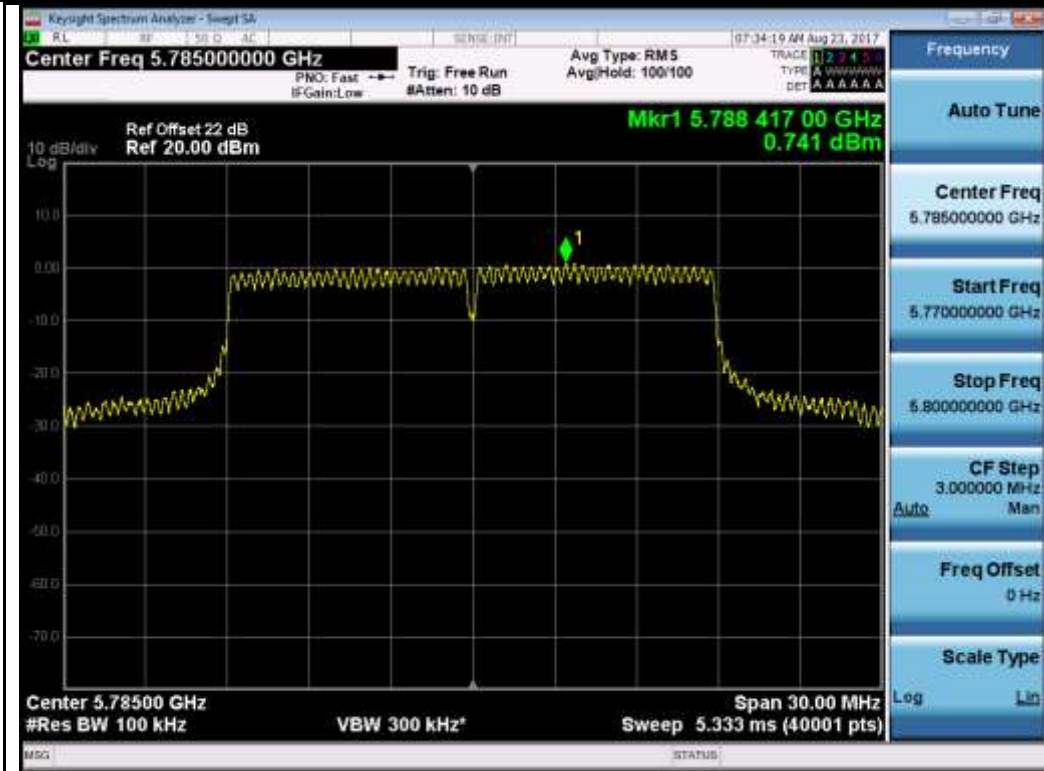


802.11a-5825MHz

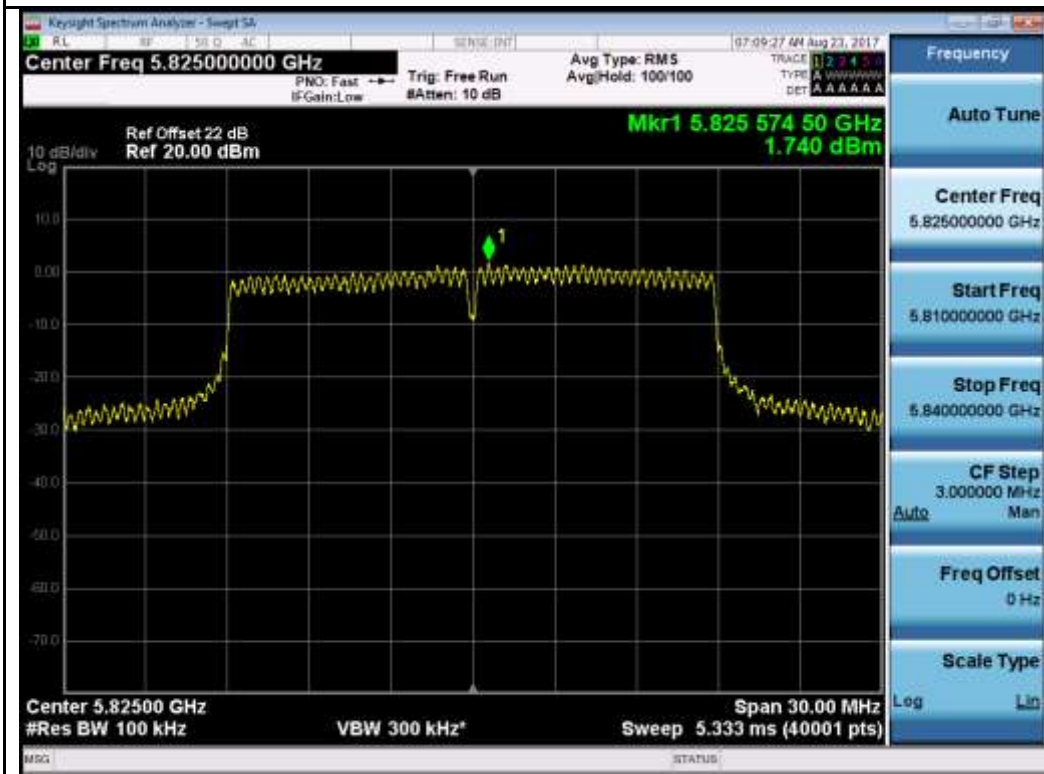


802.11n-HT20-5745MHz

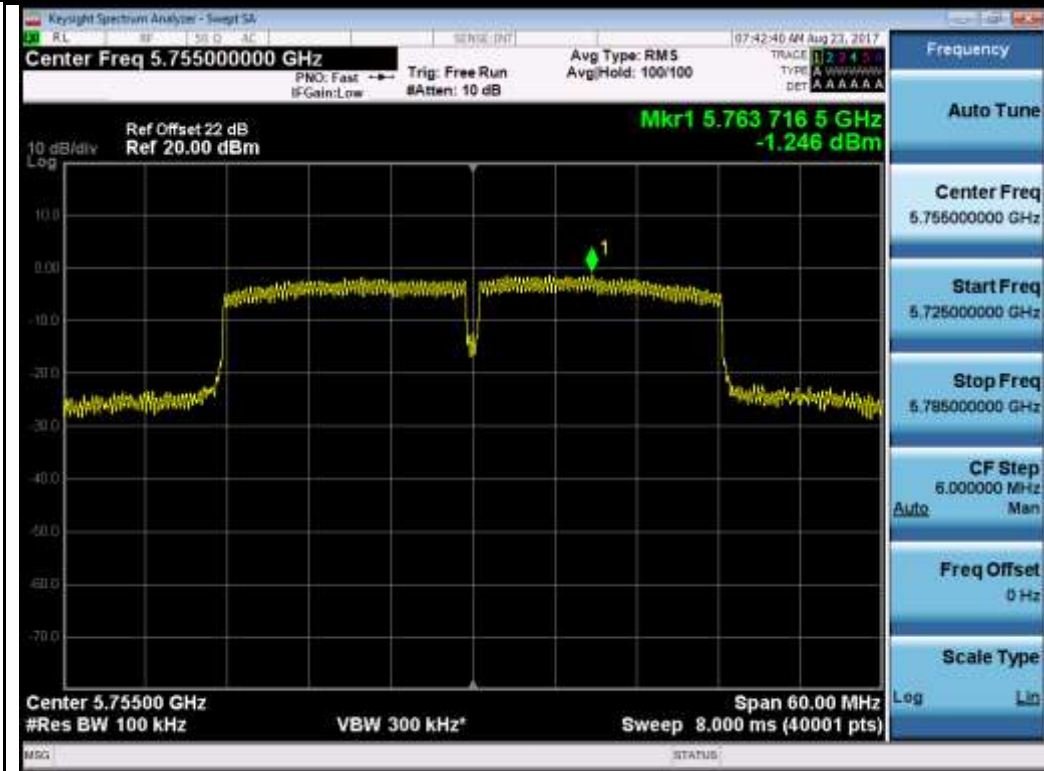




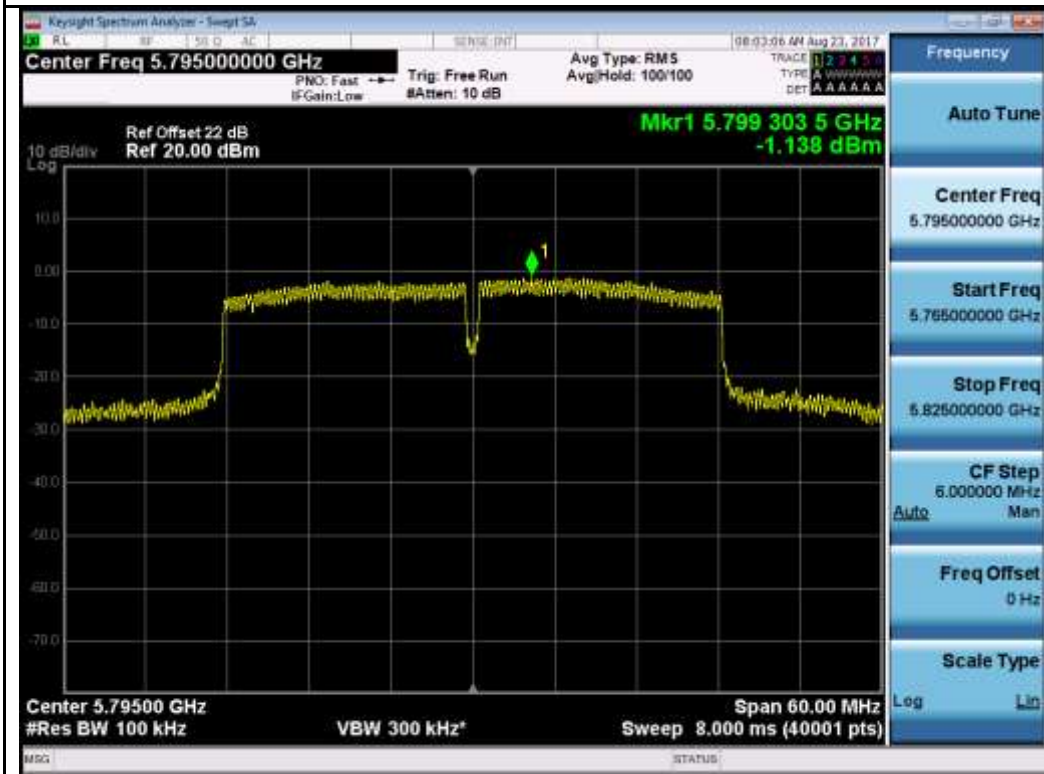
802.11n-HT20-5785MHz



802.11n-HT20-5825MHz



802.11n-HT40-5755MHz



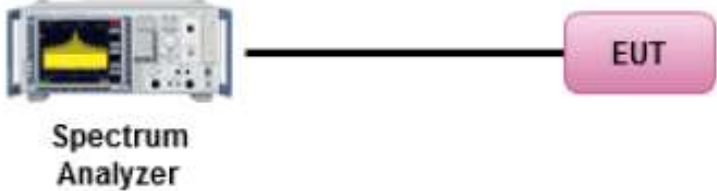
802.11n-HT40-5795MHz





## 10.5 Band Edge and Emission Mask Measurement

### Requirement(s):

Spec	Item	Requirement	Applicable
47CFR§ 15.407(b)(2), 15.407(b)(6)	(1)	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 EIRP of -27 dBm/MHz.	<input checked="" type="checkbox"/>
	(4)	For transmitters operating in the 5.725-5.825 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 increasing linearly 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.	<input checked="" type="checkbox"/>
Test Setup	 <p style="text-align: center;">Spectrum Analyzer      EUT</p>		
Procedure	<p>789033 D02 General UNII Test Procedures New Rules v01r02, II.F. Method SA-1</p> <p><u>Band Edge measurement:</u></p> <ul style="list-style-type: none"> <li>- For average emissions measurements, follow the procedures described in section II.G.6., "Procedures for Average Unwanted Emissions Measurements above 1000 MHz", except for the following changes:</li> <li>- Set RBW=100kHz</li> <li>- Set VBW=300kHz</li> <li>- Perform a band-power integration across the 1 MHz bandwidth in which the band-edge emission level is to be measured.</li> </ul>		
Remark	Antenna gain was added to the offset.		
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail		

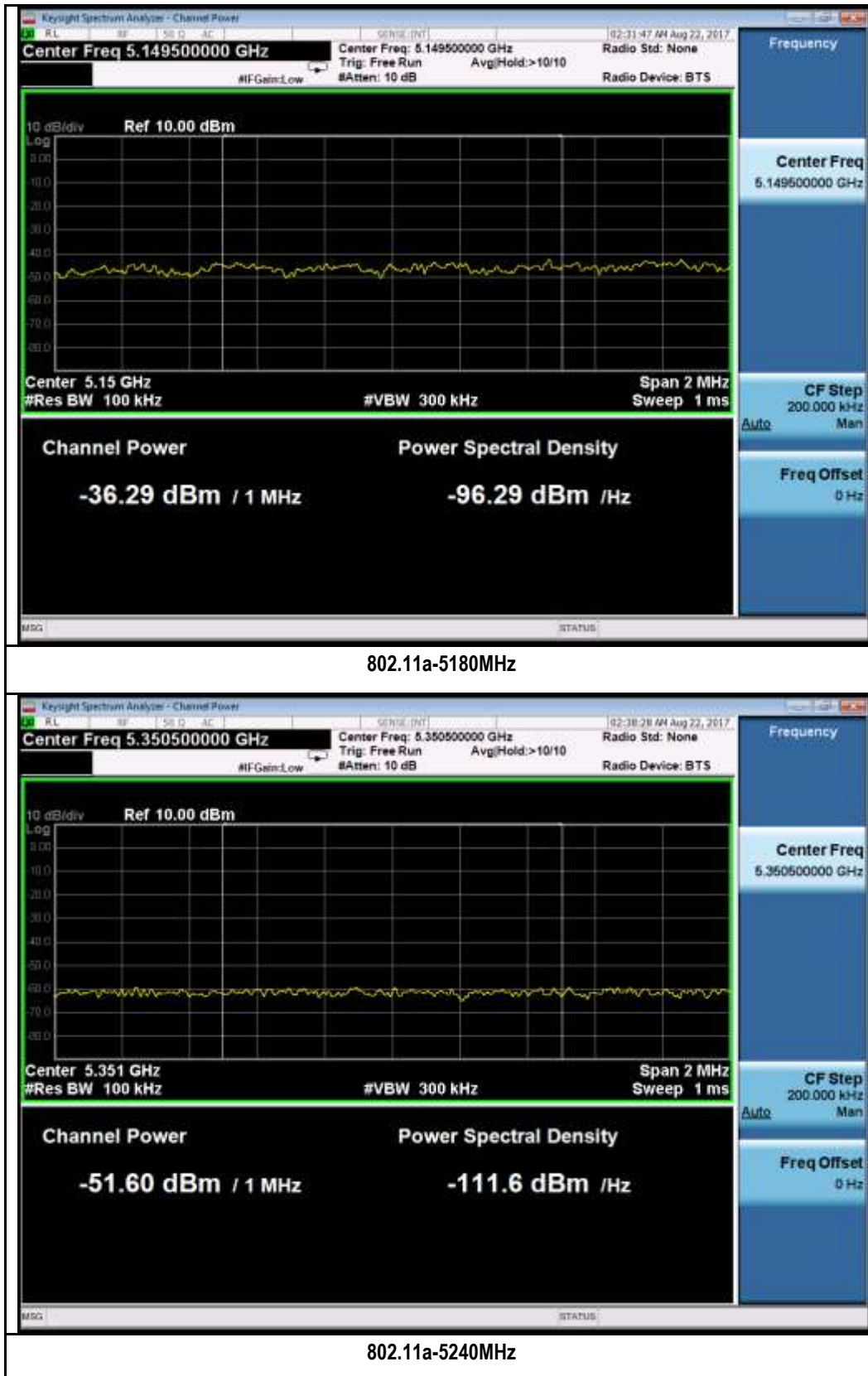
**Test Data**    Yes (See below)       N/A

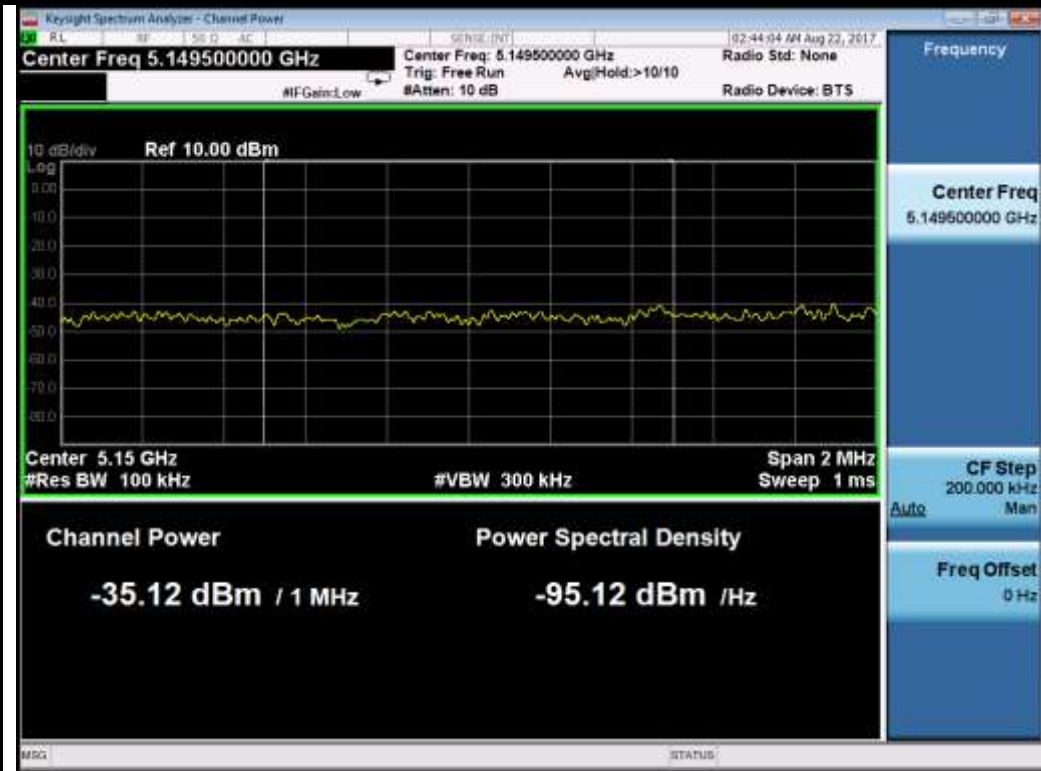
**Test Plot**    Yes (See below)       N/A

**Test was done by Cipher at RF test site.**

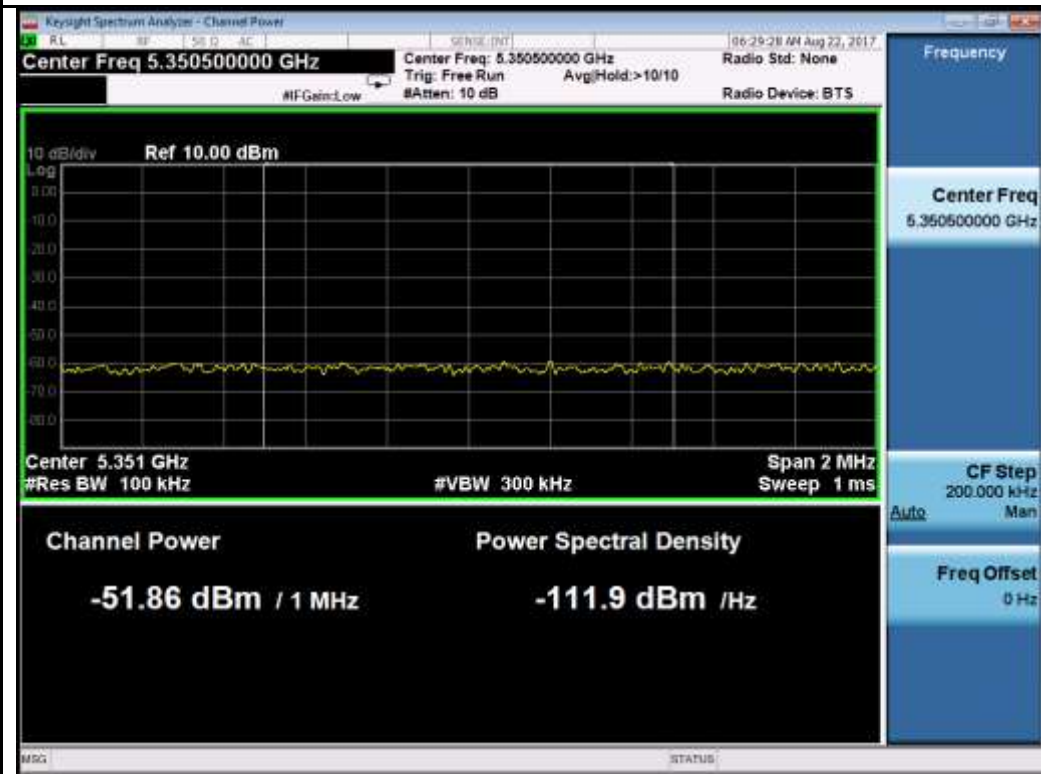
Test Plot for W52:

Chain 0:

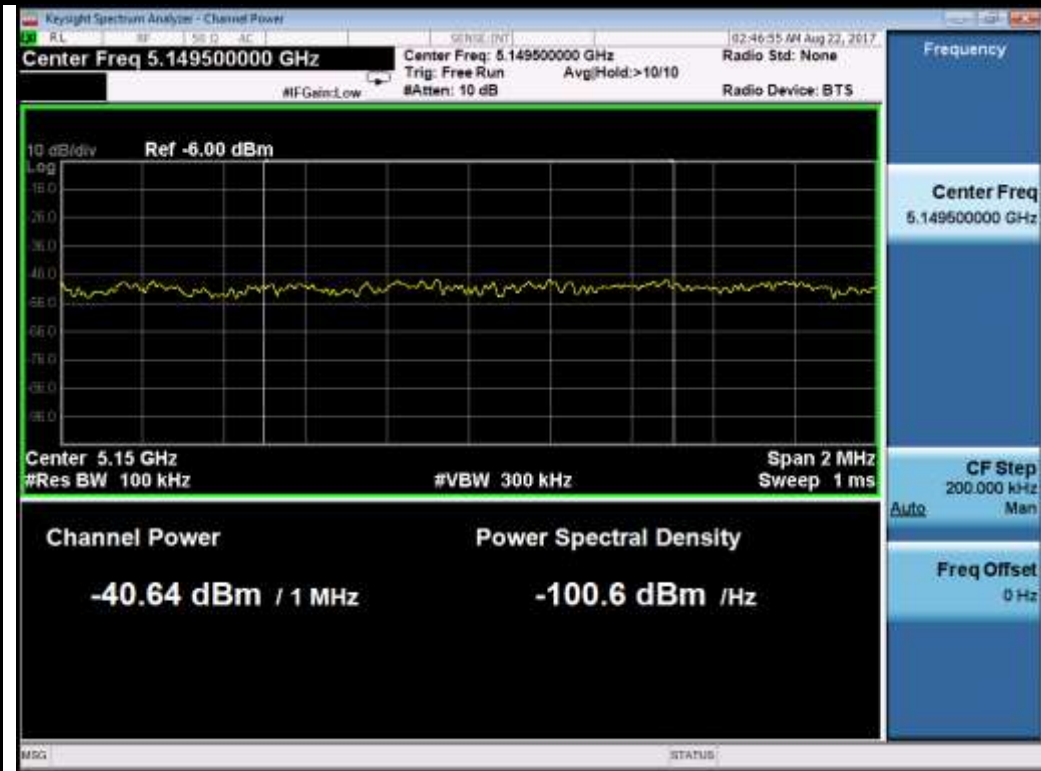




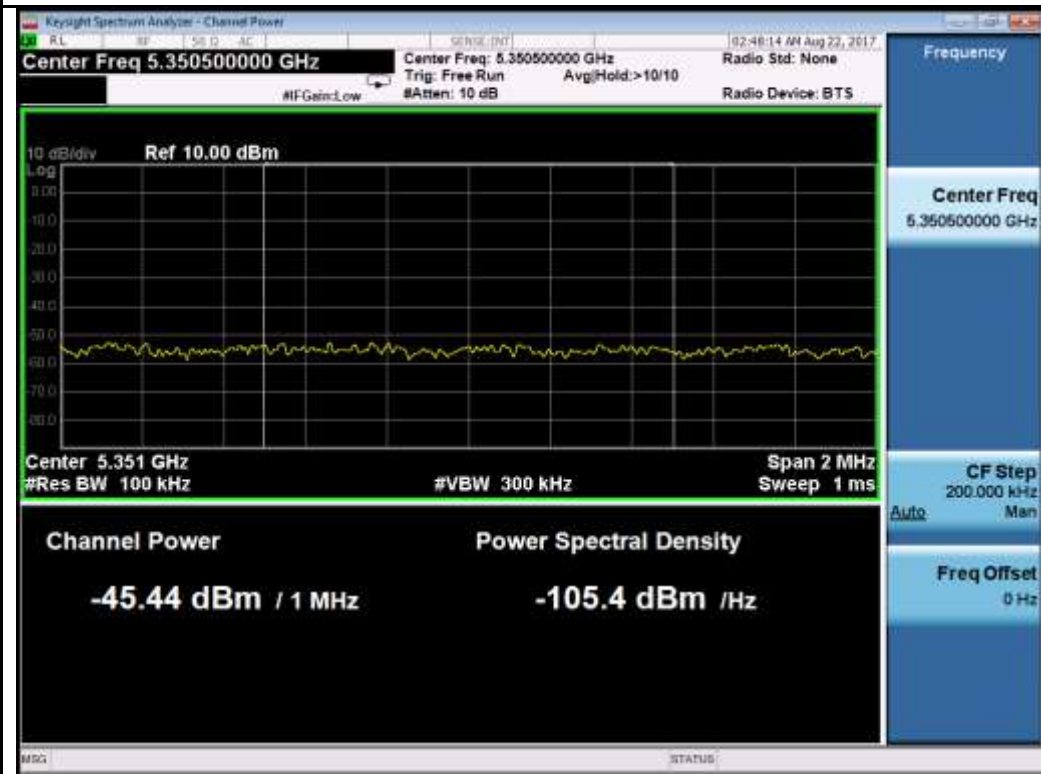
802.11n-HT20-5180MHz



802.11n-HT20-5240MHz

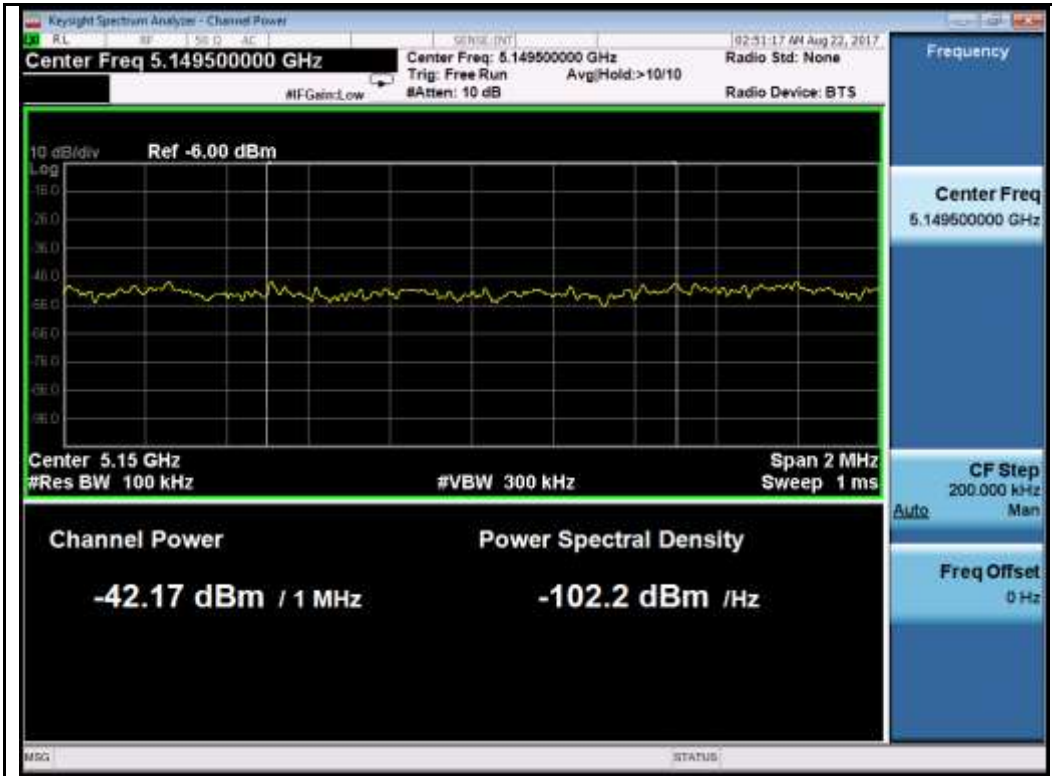


802.11n-HT40-5190MHz

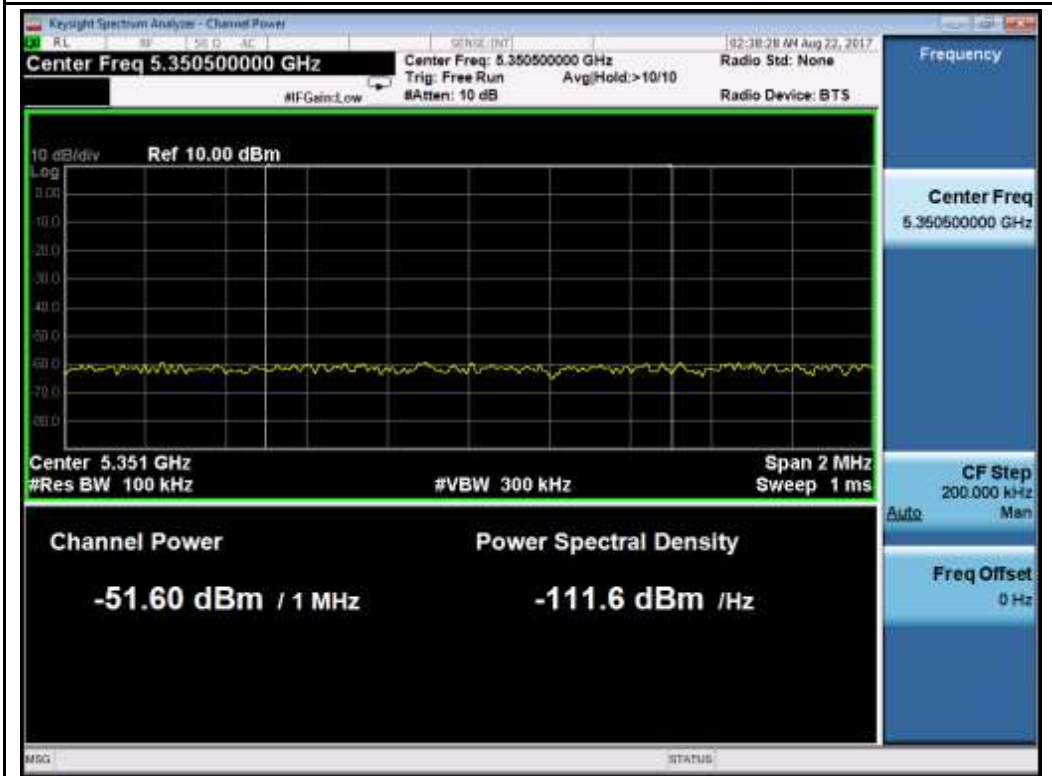


802.11n-HT40-5230MHz





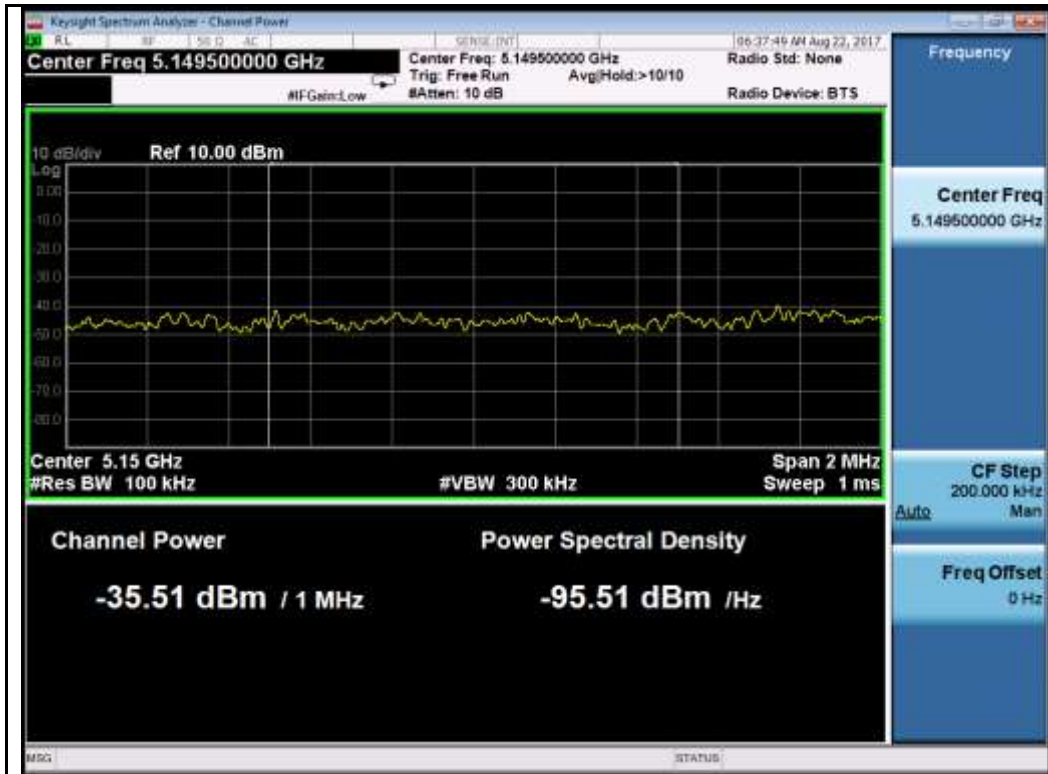
802.11ac-VHT80-5210MHz



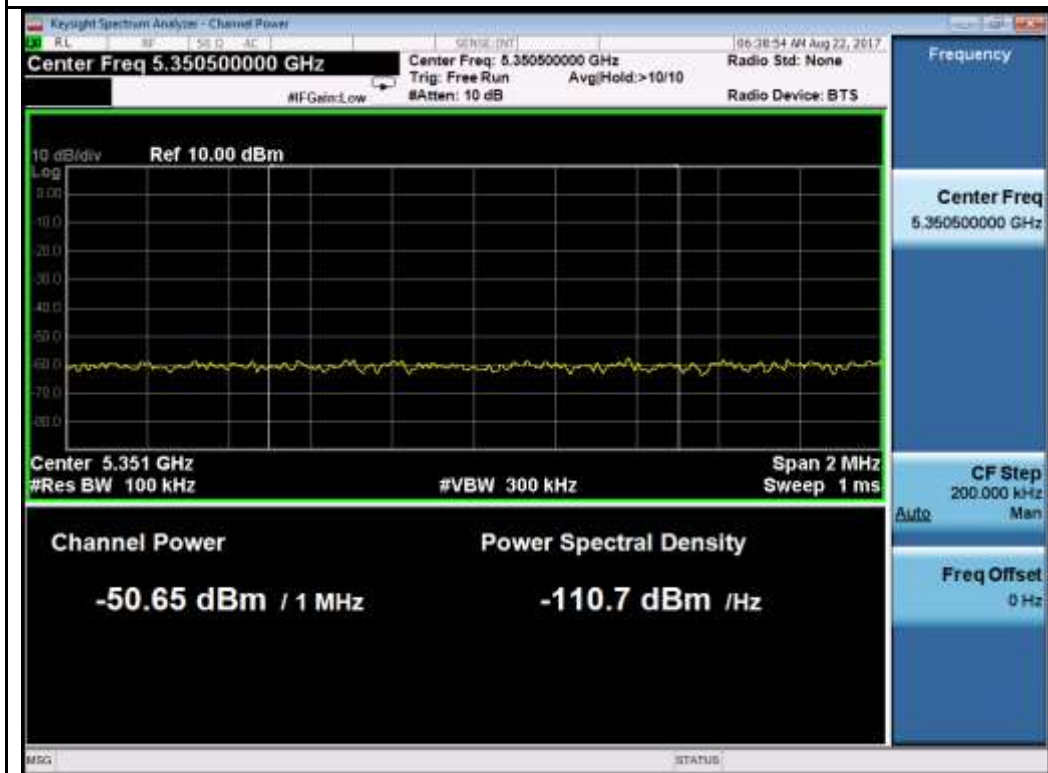
802.11ac-VHT80-5210MHz



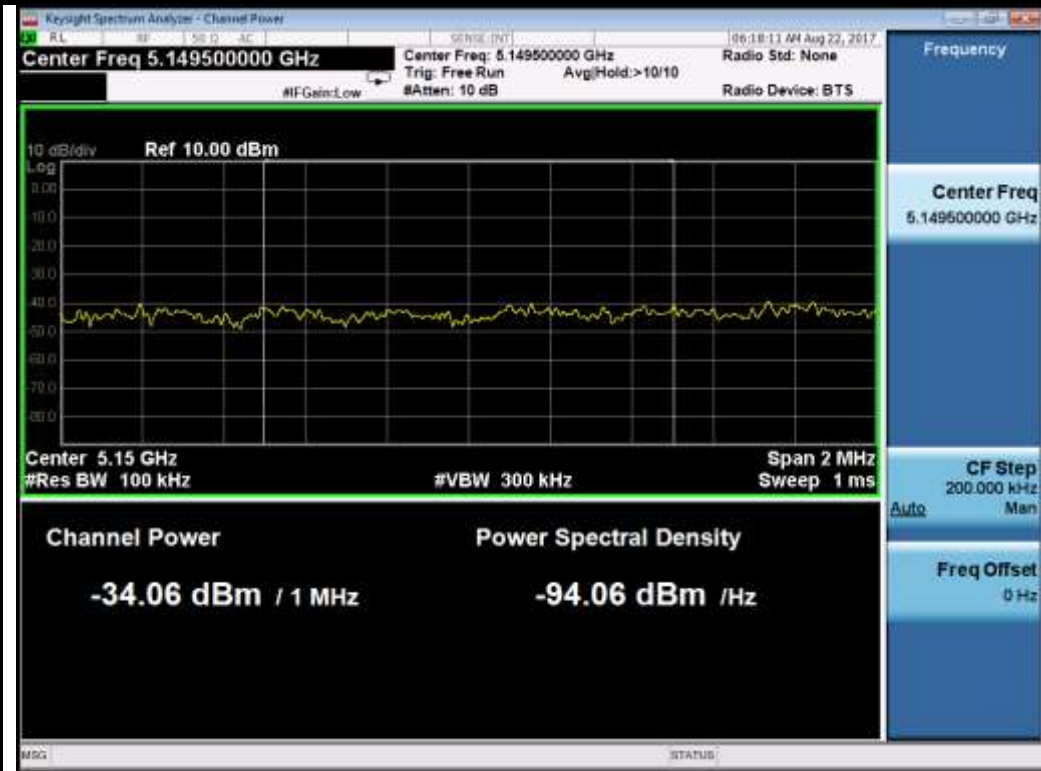
**Chain 1:**



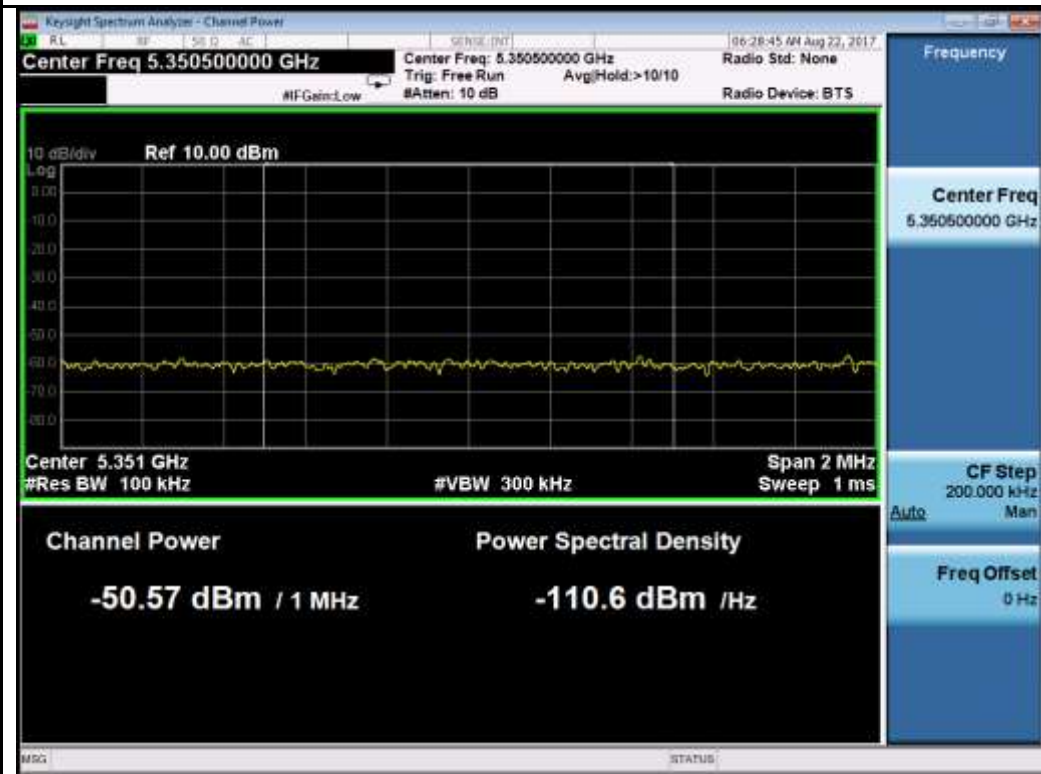
802.11a-5180MHz



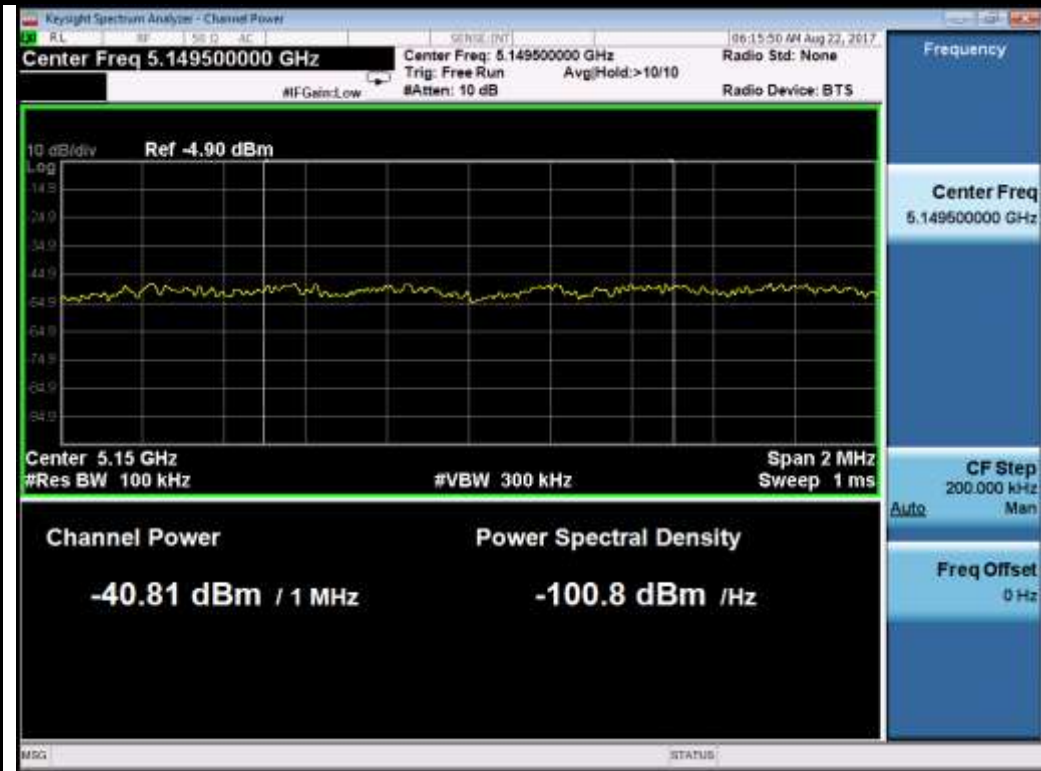
802.11a-5240MHz



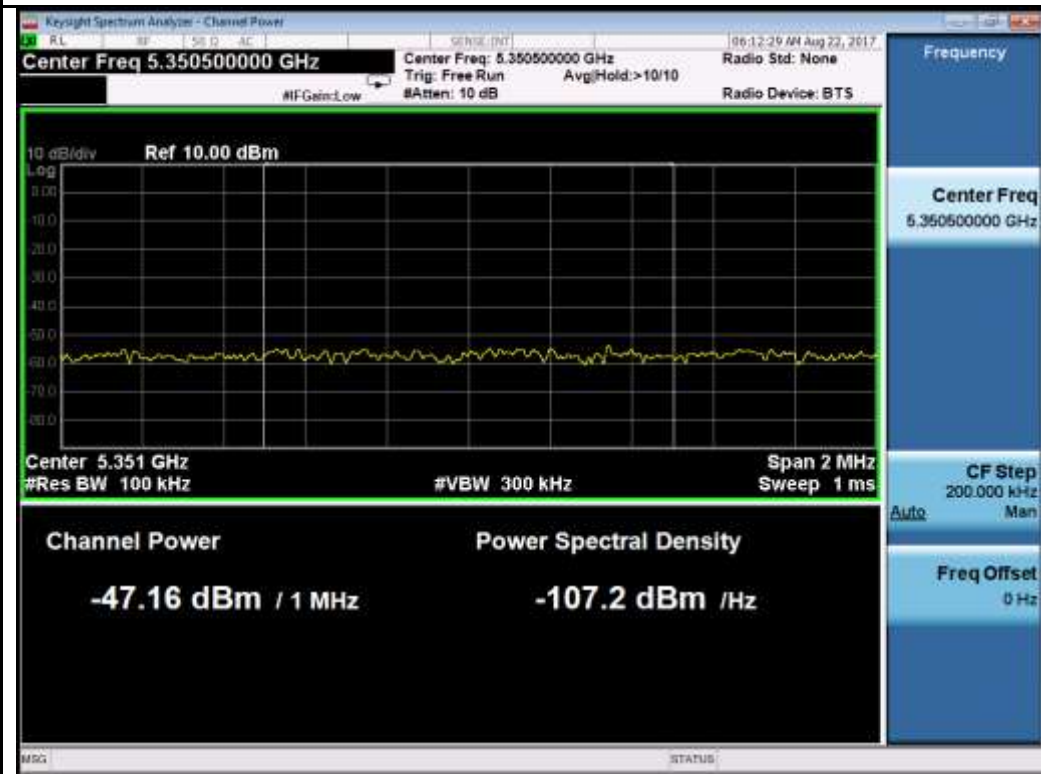
802.11n-HT20-5180MHz



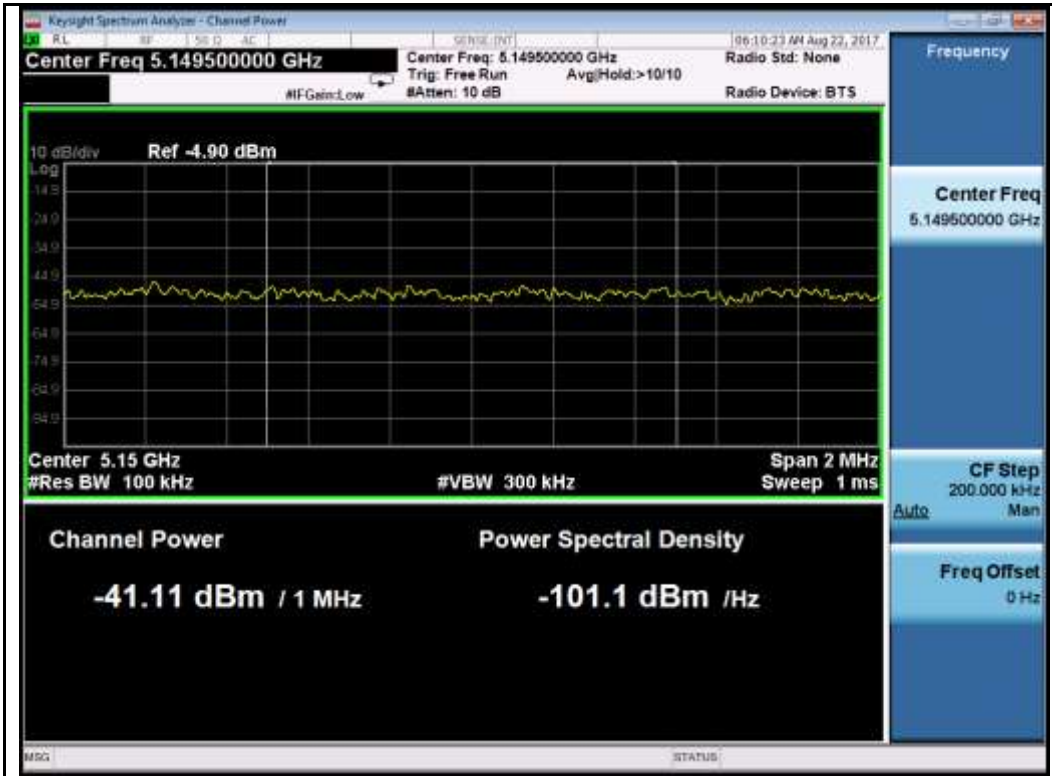
802.11n-HT20-5240MHz



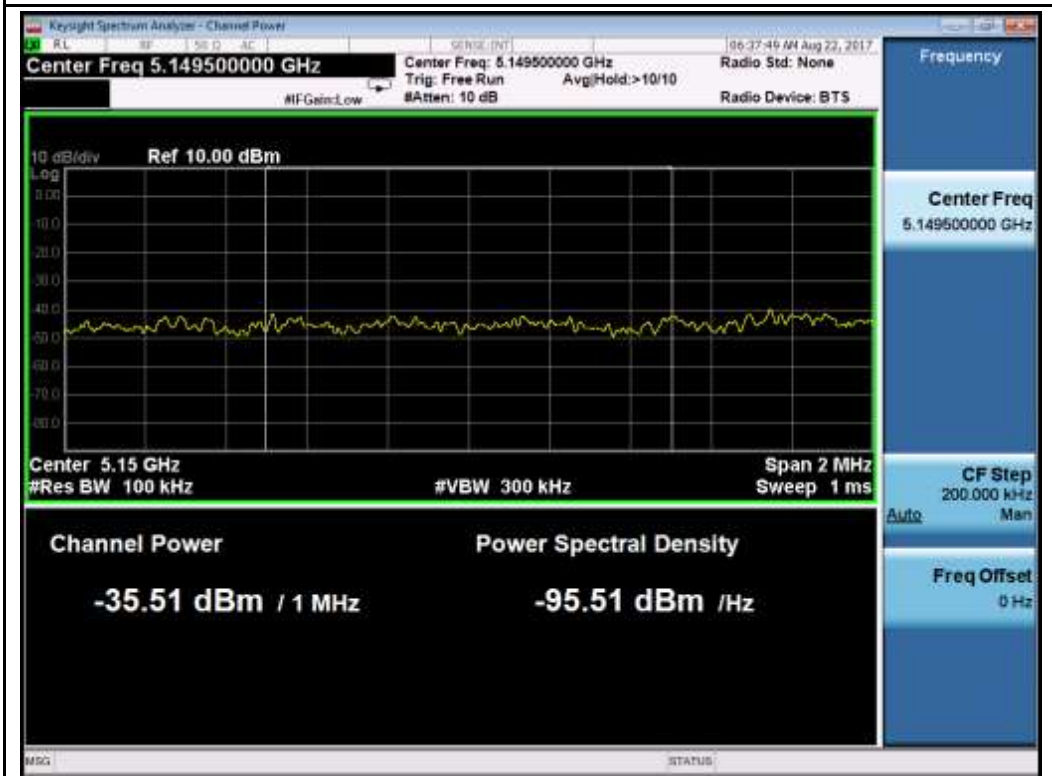
802.11n-HT40-5190MHz



802.11n-HT40-5230MHz



802.11ac-VHT80-5210MHz

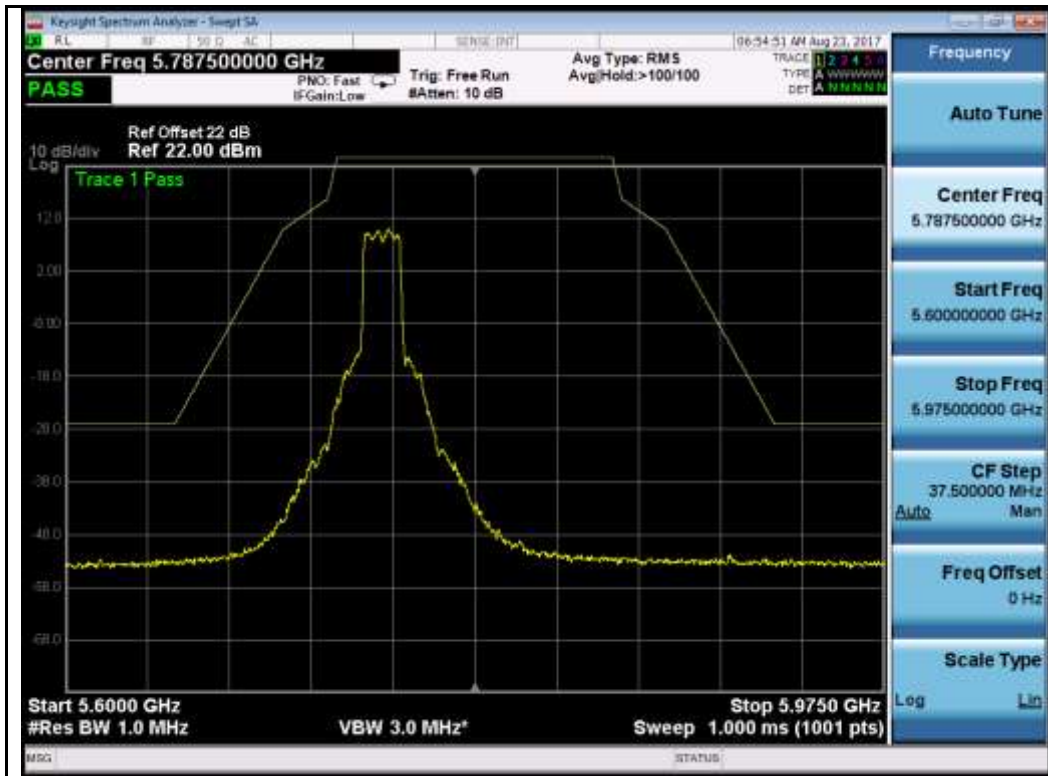


802.11ac-VHT80-5210MHz

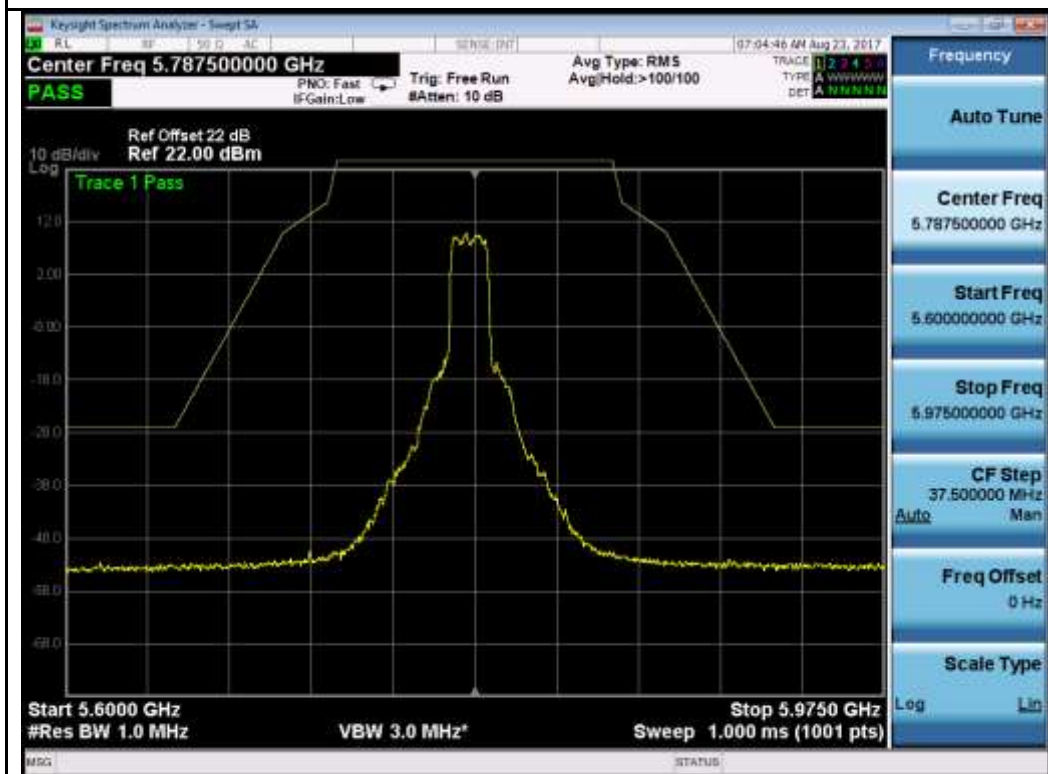


Test Plot for W58:

Chain 0:

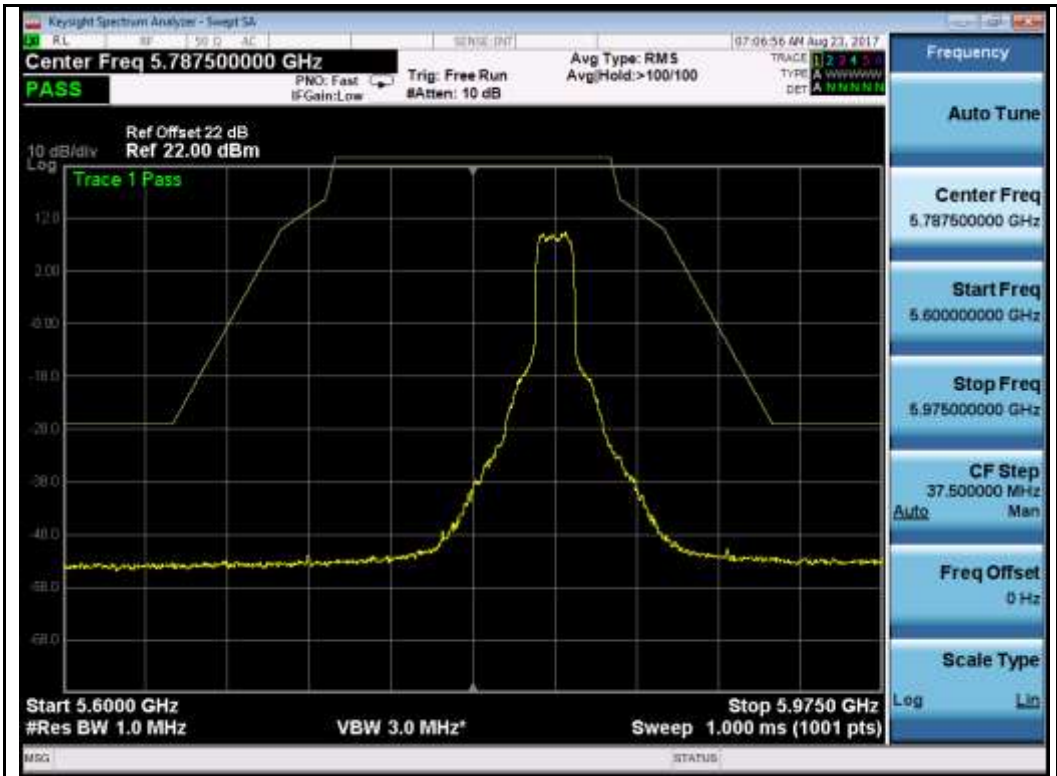


802.11a-5745MHz

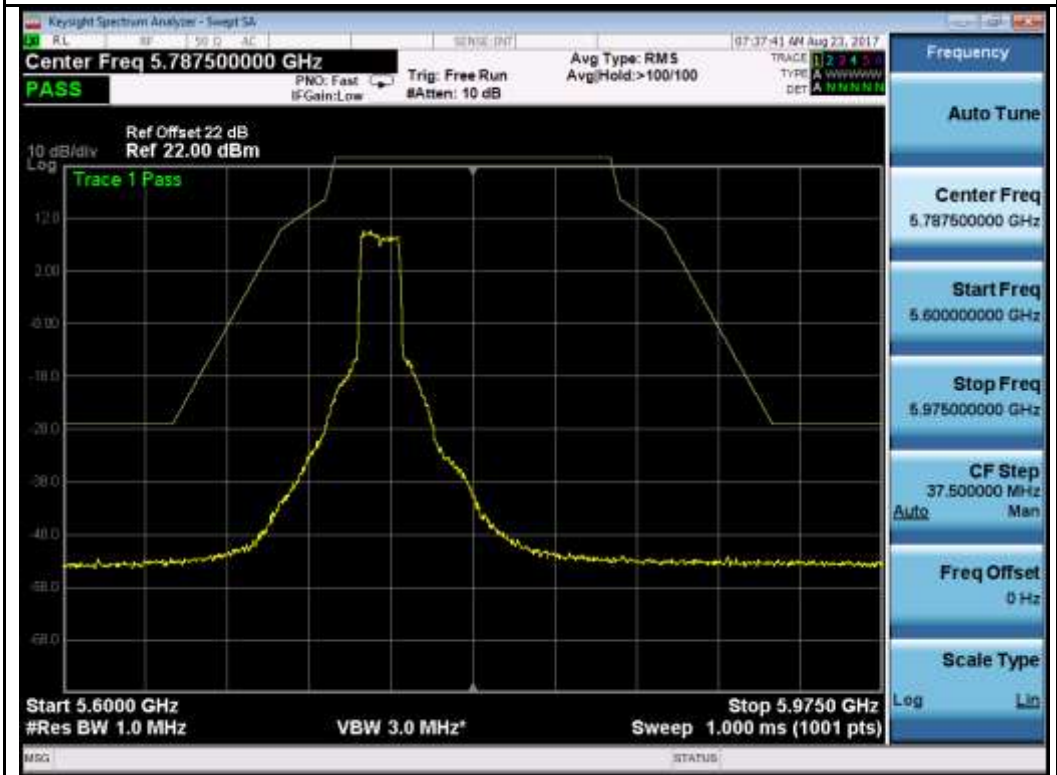


802.11a-5785MHz

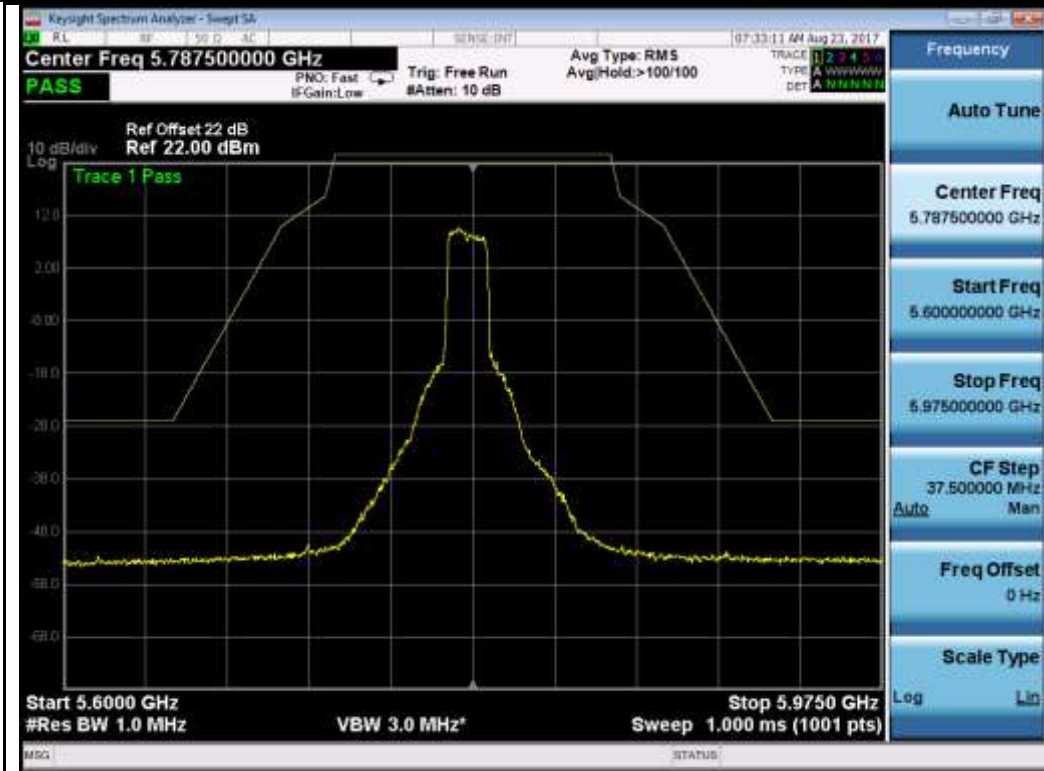




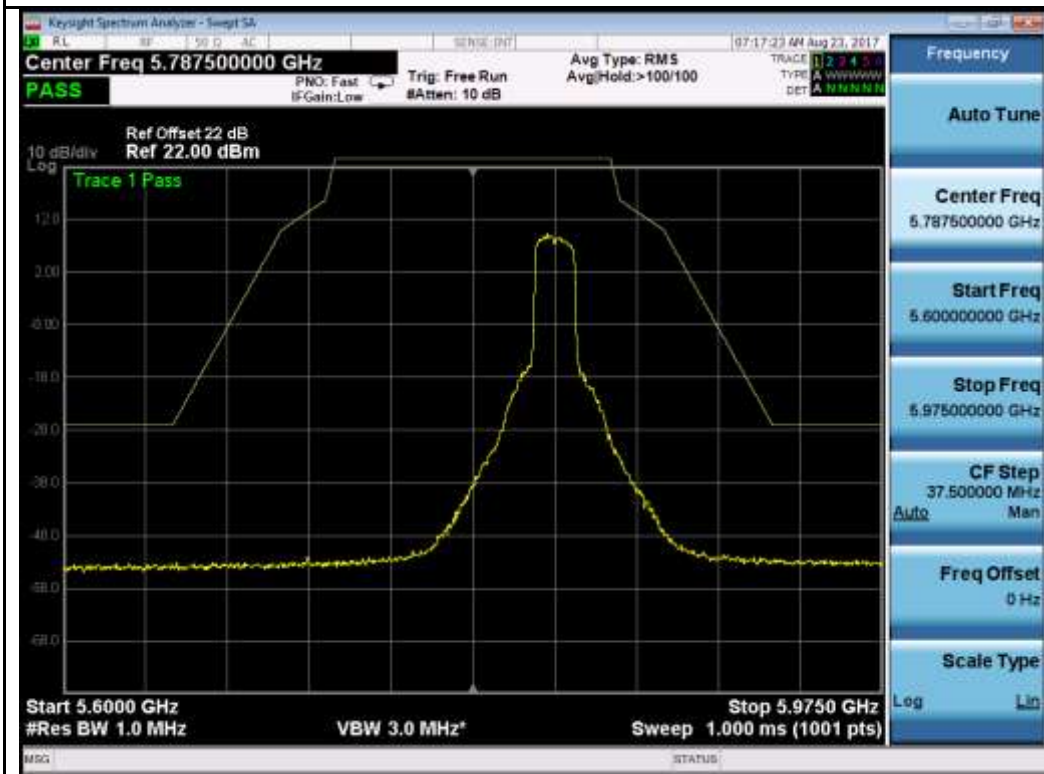
802.11a-5825MHz



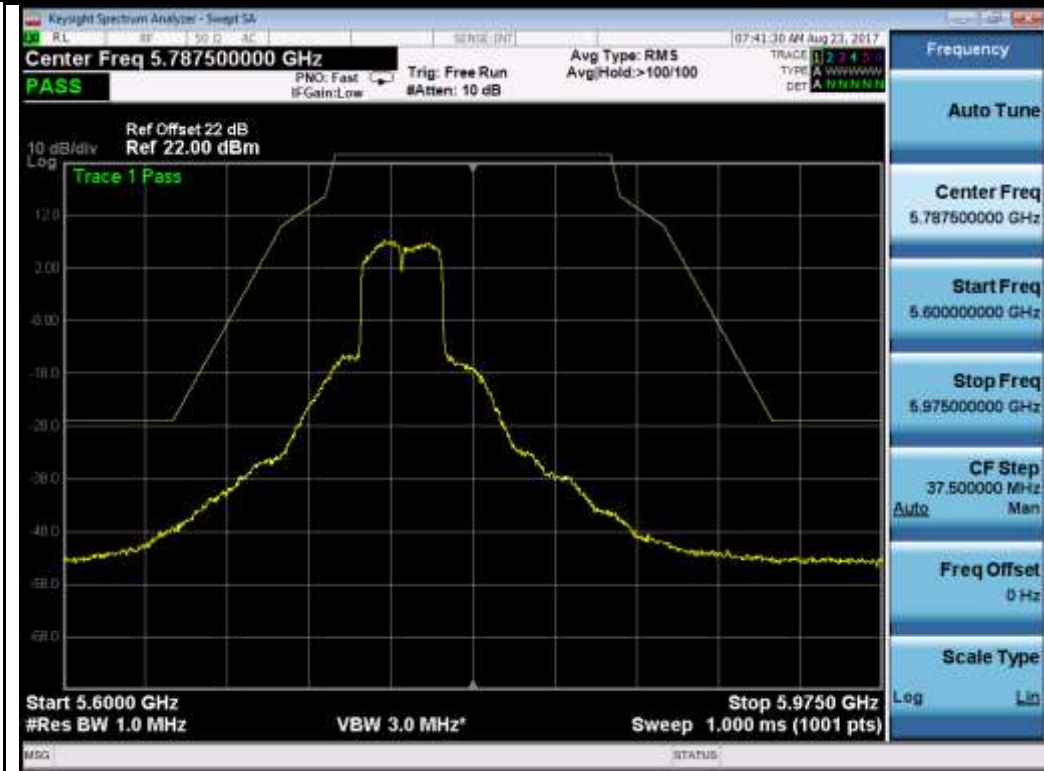
802.11n-HT20-5745MHz



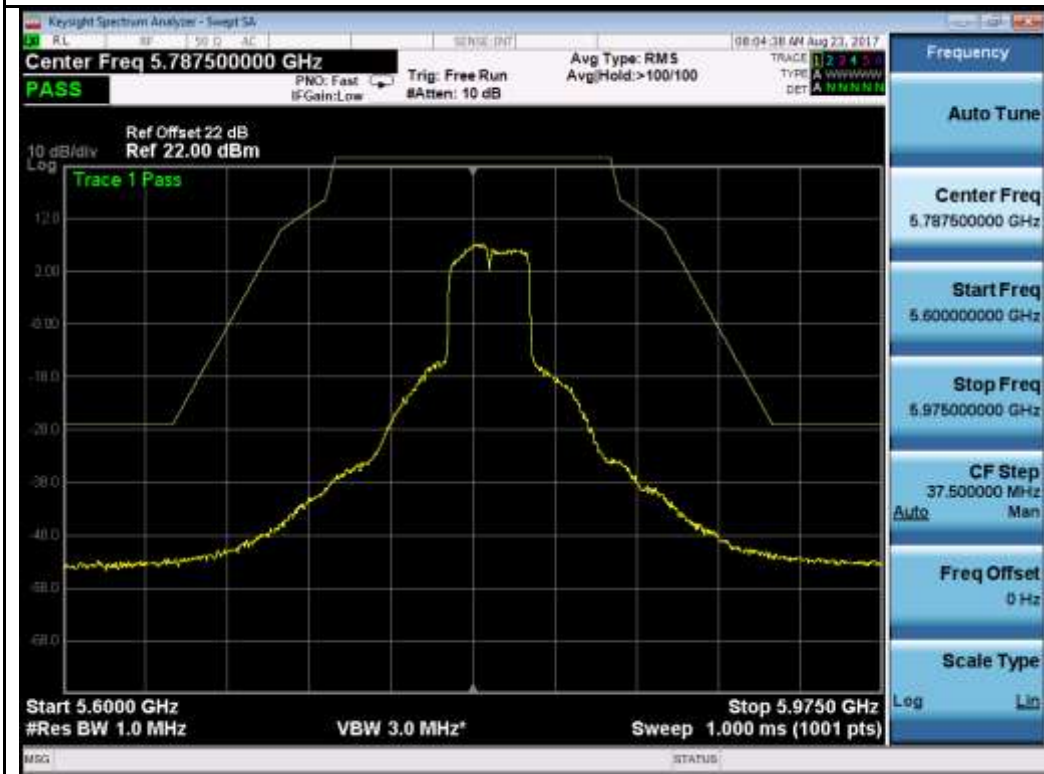
802.11n-HT20-5785MHz



802.11n-HT20-5825MHz



802.11n-HT40-5755MHz



802.11n-HT40-5795MHz

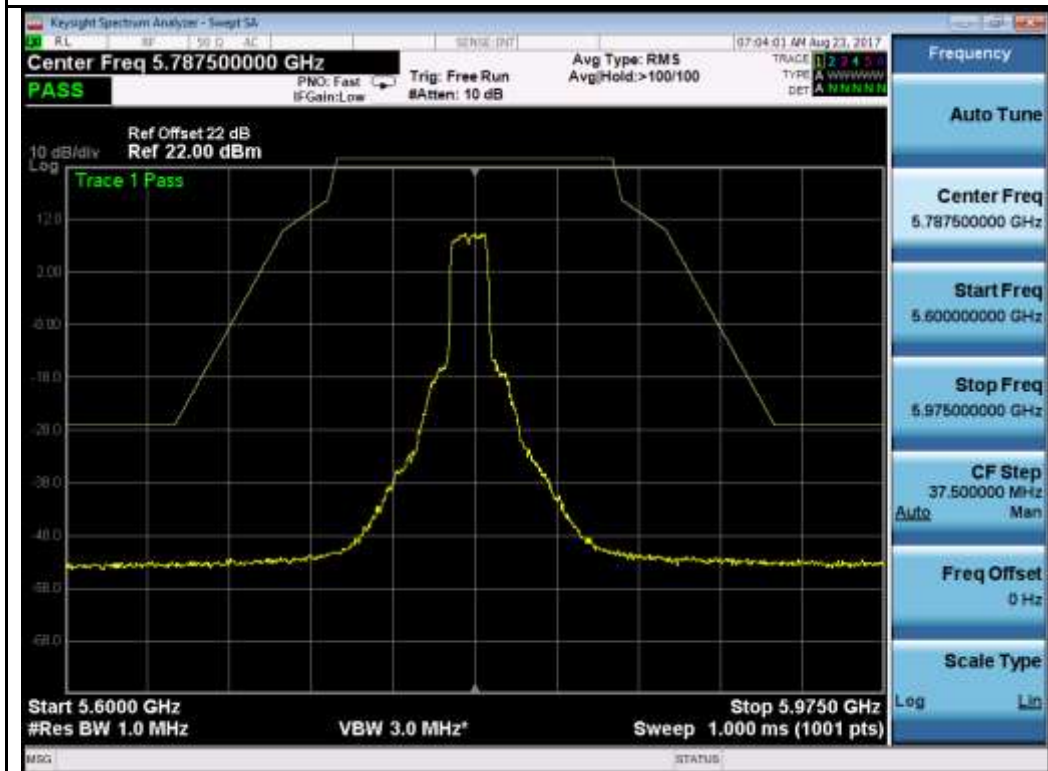




Chain 1:

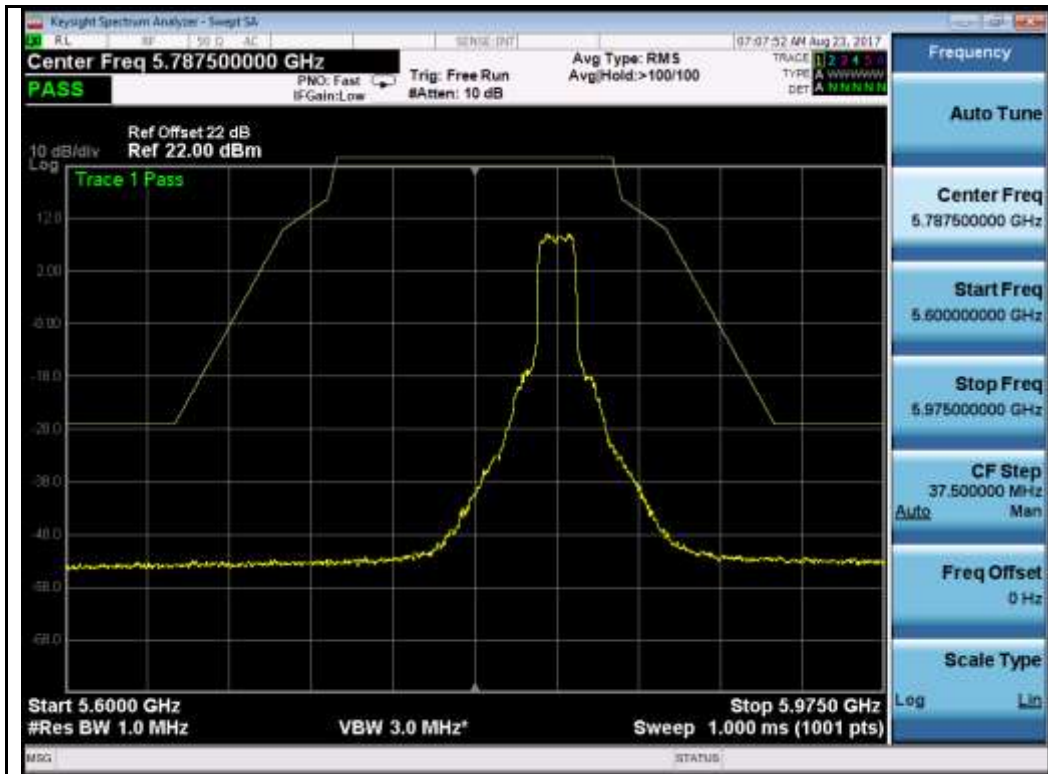


802.11a-5745MHz

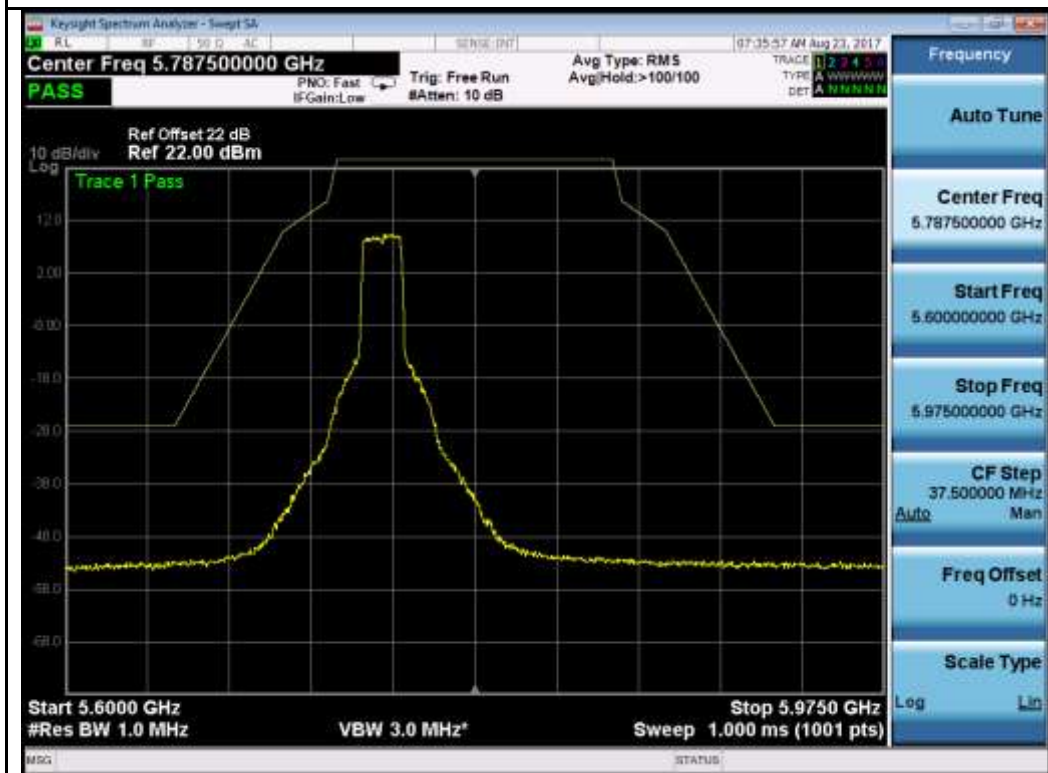


802.11a-5785MHz

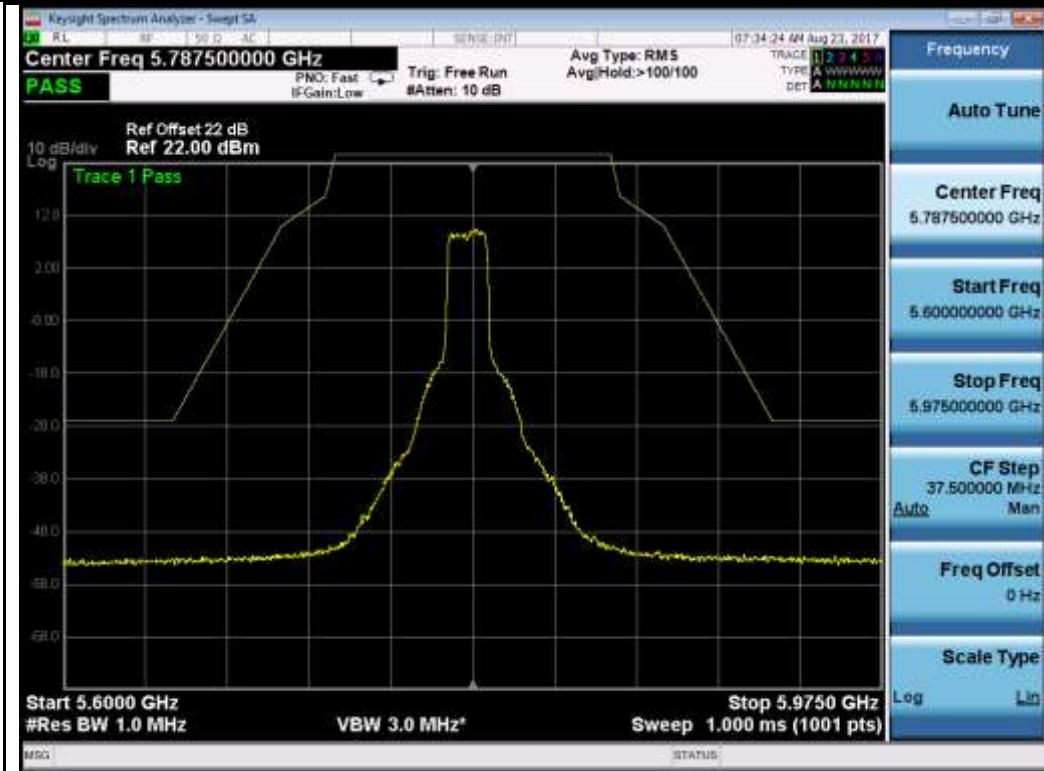




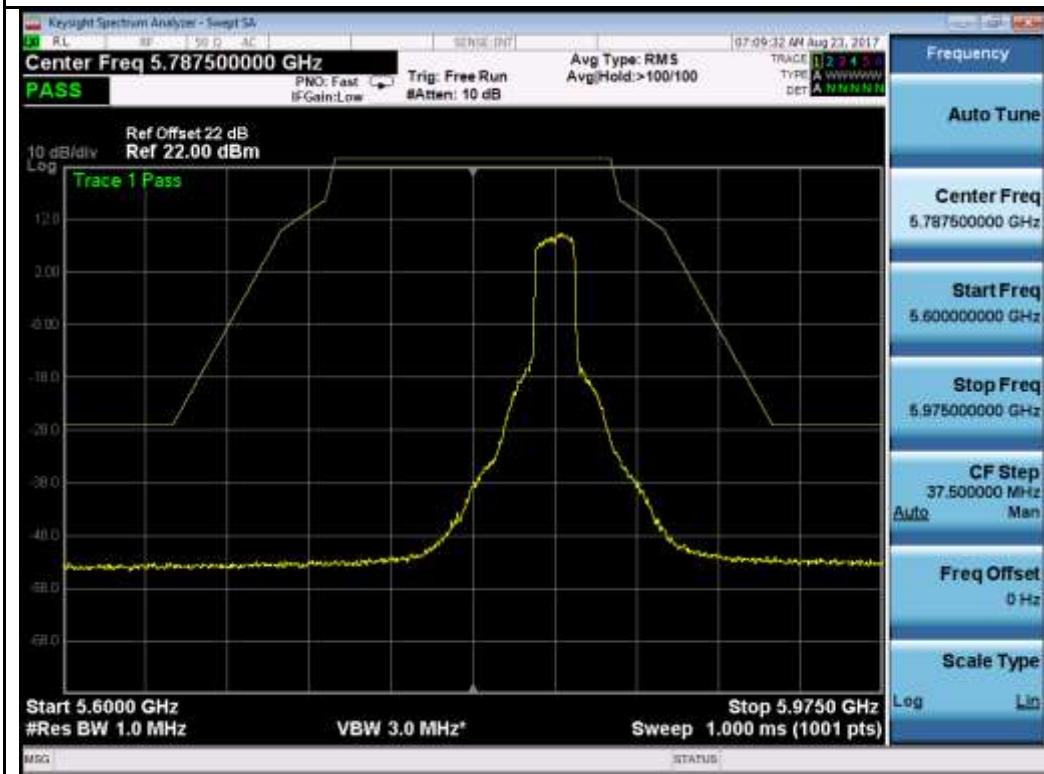
802.11a-5825MHz



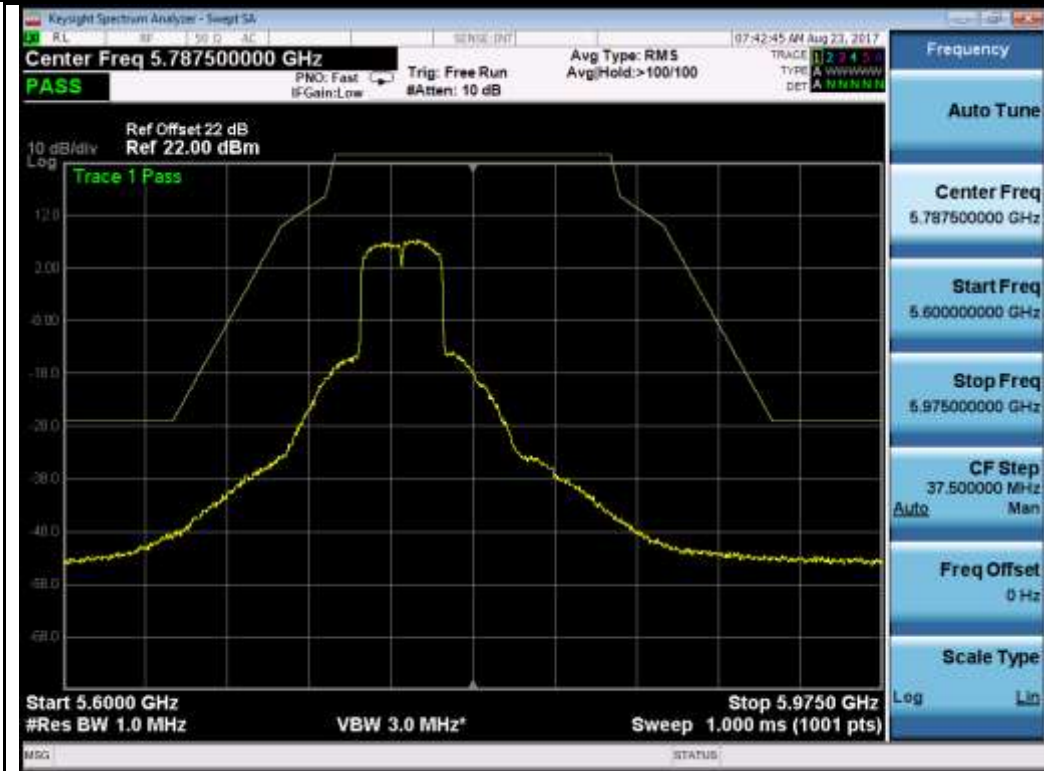
802.11n-HT20-5745MHz



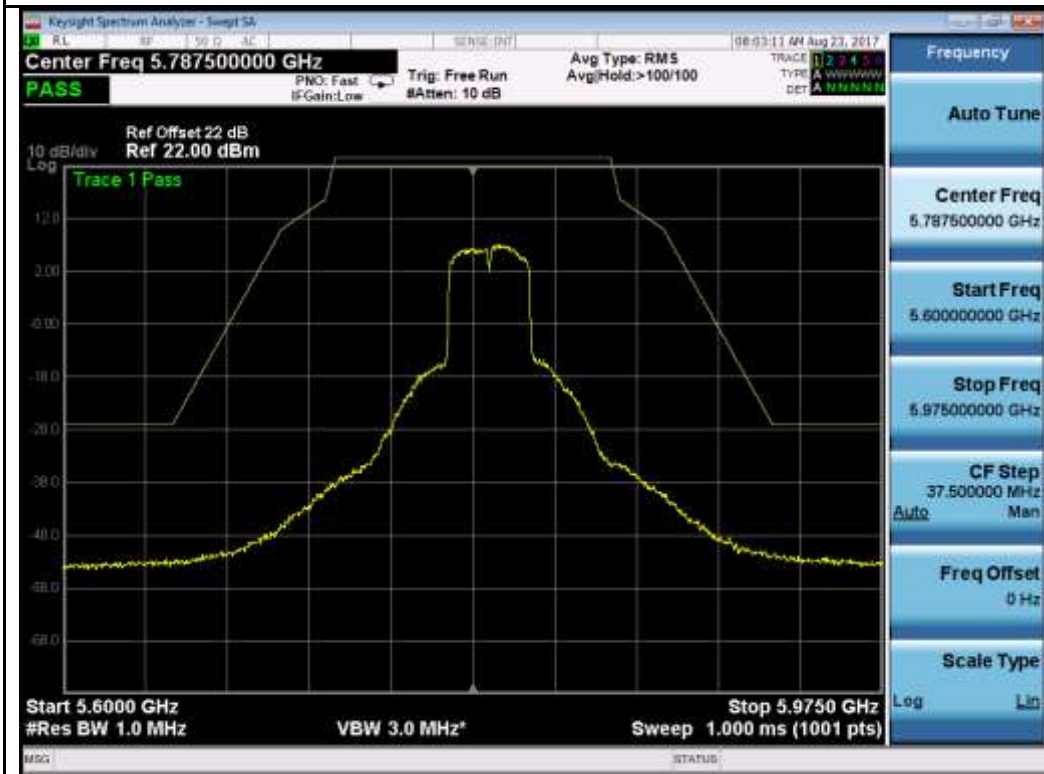
802.11n-HT20-5785MHz



802.11n-HT20-5825MHz



802.11n-HT40-5755MHz

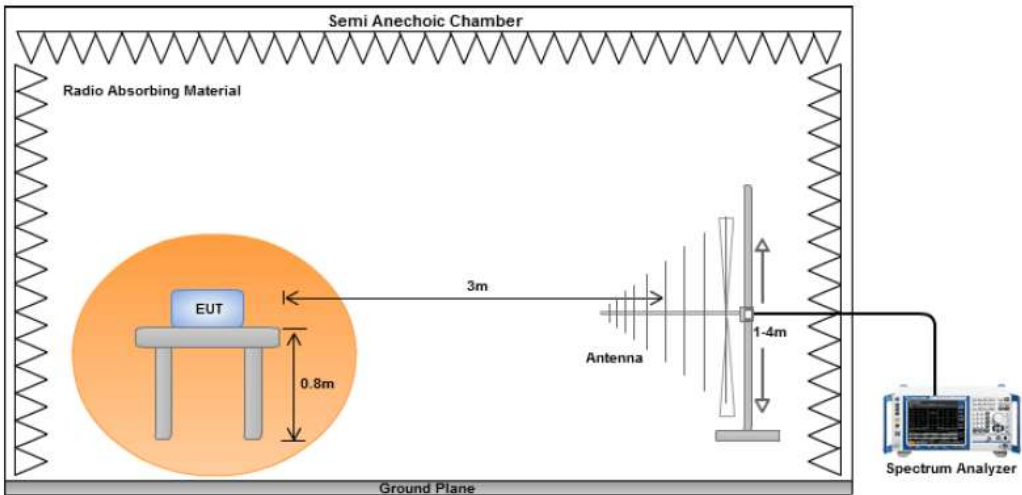


802.11n-HT40-5795MHz



### 10.6 Radiated Emissions below 1GHz

**Requirement(s):**

Spec	Requirement	Applicable										
47CFR§ 15.407(b) 15.209 (a)	<p>Except higher limit as specified elsewhere in other section, the emissions from the low-power radio-frequency devices shall not exceed the field strength levels specified in the following table and the level of any unwanted emissions shall not exceed the level of the fundamental emission. The tighter limit applies at the band edges</p> <table border="1"> <thead> <tr> <th>Frequency range (MHz)</th> <th>Field Strength (uV/m)</th> </tr> </thead> <tbody> <tr> <td>30 – 88</td> <td>100</td> </tr> <tr> <td>88 – 216</td> <td>150</td> </tr> <tr> <td>216 960</td> <td>200</td> </tr> <tr> <td>Above 960</td> <td>500</td> </tr> </tbody> </table>	Frequency range (MHz)	Field Strength (uV/m)	30 – 88	100	88 – 216	150	216 960	200	Above 960	500	☒
Frequency range (MHz)	Field Strength (uV/m)											
30 – 88	100											
88 – 216	150											
216 960	200											
Above 960	500											
Test Setup												
Procedure	<ol style="list-style-type: none"> <li>The EUT was switched on and allowed to warm up to its normal operating condition.</li> <li>The test was carried out at the selected frequency points obtained from the EUT characterisation. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner: <ol style="list-style-type: none"> <li>Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen.</li> <li>The EUT was then rotated to the direction that gave the maximum emission.</li> <li>Finally, the antenna height was adjusted to the height that gave the maximum emission.</li> </ol> </li> <li>A Quasi-peak measurement was then made for that frequency point.</li> <li>Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.</li> </ol>											
Remark	The EUT was scanned up to 1GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case.											
Result	☒ Pass      ☐ Fail											

**Test Data**    ☒ Yes (See below)      ☐ N/A

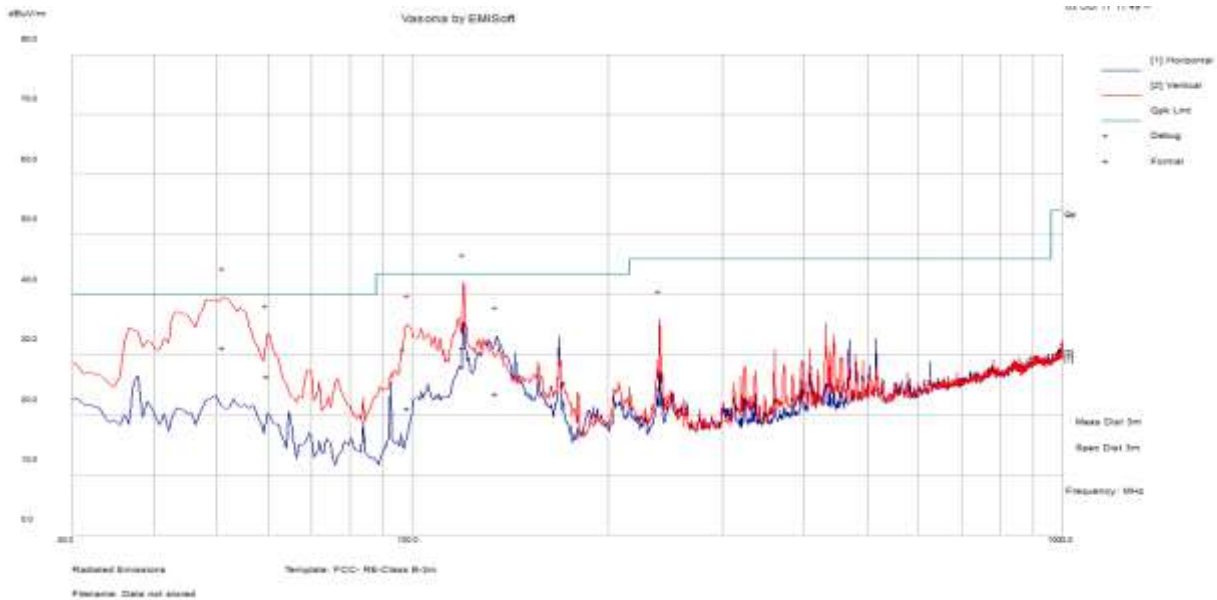
**Test Plot**    ☒ Yes (See below)      ☐ N/A

**Test was done by Shuo Zhang at 10m chamber.**



### Radiated Emission Test Results (Below 1GHz)

Test specification	below 1GHz			Result	Pass
Environmental Conditions:	Temp (°C):	23			
	Humidity (%)	46			
	Atmospheric (mbar):	1017			
Mains Power:	120VAC, 60Hz				
Tested by:	Shuo Zhang				
Test Date:	08/21/2017-10/05/2017				
Remarks:	802.11ac – VHT80, 5210MHz				



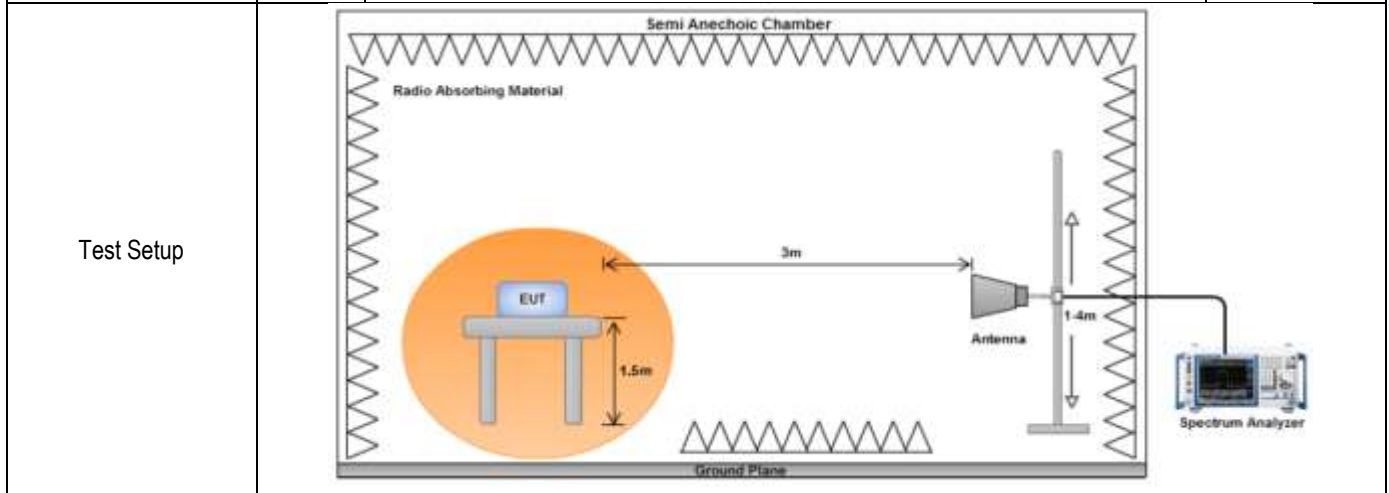
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
51.25	46.89	11.59	-27.26	31.22	Quasi Max	V	111	112	40	-8.78	Pass
119.97	41.83	12.25	-22.86	31.23	Quasi Max	V	136	110	43.5	-12.27	Pass
59.95	43.15	11.66	-28.35	26.46	Quasi Max	V	218	220	40	-13.54	Pass
98.63	35.47	12.02	-26.41	21.09	Quasi Max	V	130	330	43.5	-22.41	Pass
239.98	36.23	13.08	-24.87	24.44	Quasi Max	V	131	162	46	-21.56	Pass
134.79	34.3	12.34	-23.1	23.55	Quasi Max	H	239	111	43.5	-19.96	Pass

Note: Both horizontal and vertical polarities were investigated. The results above show only the worst case.

### 10.7 Radiated Spurious Emissions above 1GHz

**Requirement(s):**

Spec	Item	Requirement	Applicable
47CFR§ 15.407(b)(2), 15.407(b)(6)	(1)	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 EIRP of -27 dBm/MHz.	<input checked="" type="checkbox"/>
	(2)	For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band.	<input type="checkbox"/>
	(3)	For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz.	<input type="checkbox"/>
	(4)	For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27 dBm/MHz.	<input checked="" type="checkbox"/>
	(5)	Restricted band, emission must also comply with the radiated emission limits specified in 15.209	<input checked="" type="checkbox"/>



<b>Procedure</b>	<ol style="list-style-type: none"> <li>1. The EUT was switched on and allowed to warm up to its normal operating condition.</li> <li>2. The test was carried out at the selected frequency points obtained from the EUT characterisation. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner:             <ol style="list-style-type: none"> <li>a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen.</li> <li>b. The EUT was then rotated to the direction that gave the maximum emission.</li> <li>c. Finally, the antenna height was adjusted to the height that gave the maximum emission.</li> </ol> </li> <li>3. An average measurement was then made for that frequency point.</li> <li>4. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.</li> </ol>
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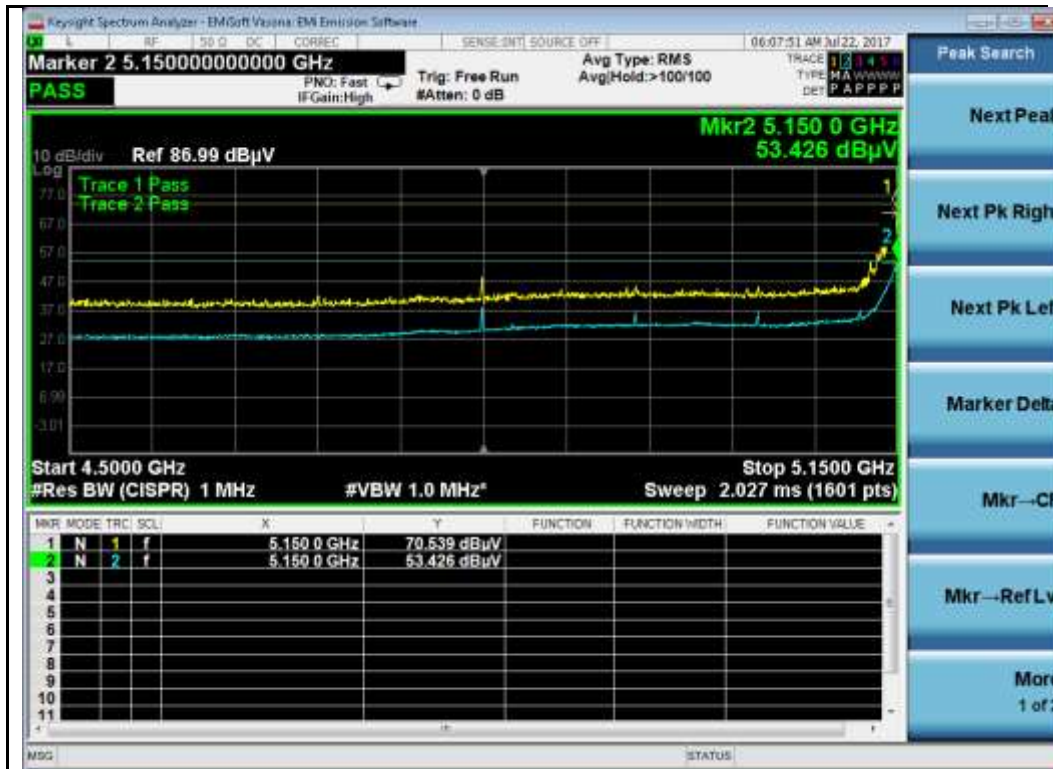
<b>Remark</b>	The EUT was scanned up to 40GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case.
<b>Result</b>	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail

**Test Data**     Yes (See below)       N/A

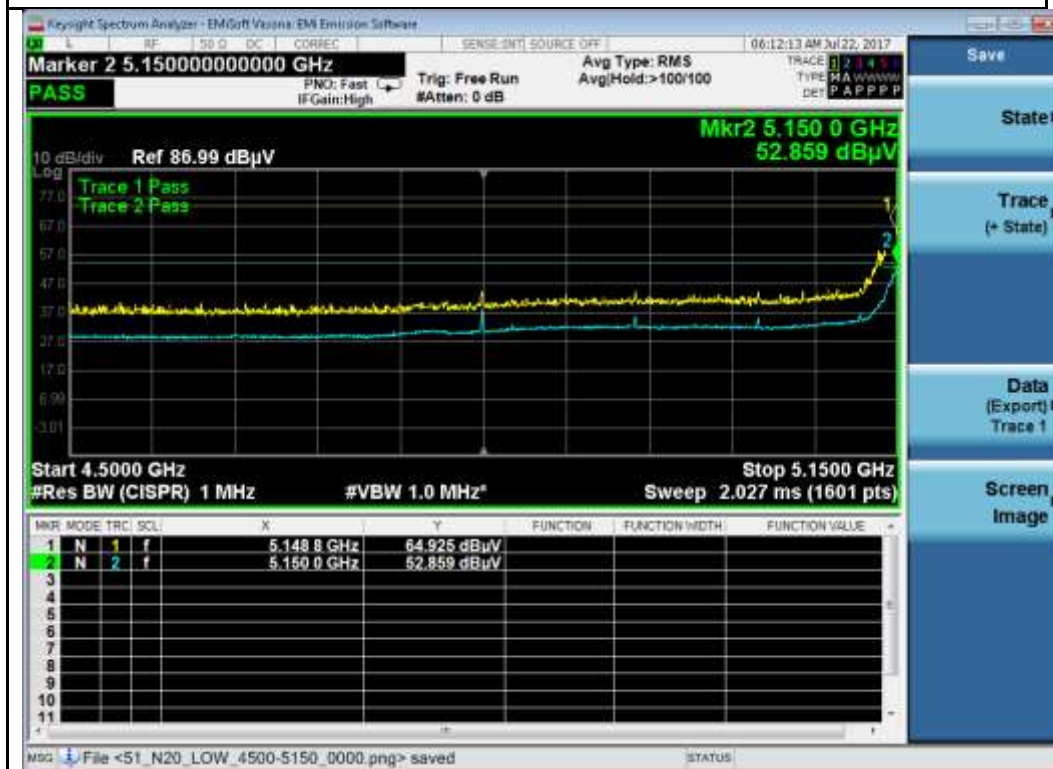
**Test Plot**     Yes (See below)       N/A

**Test was done by Shuo Zhang at 10m chamber.**

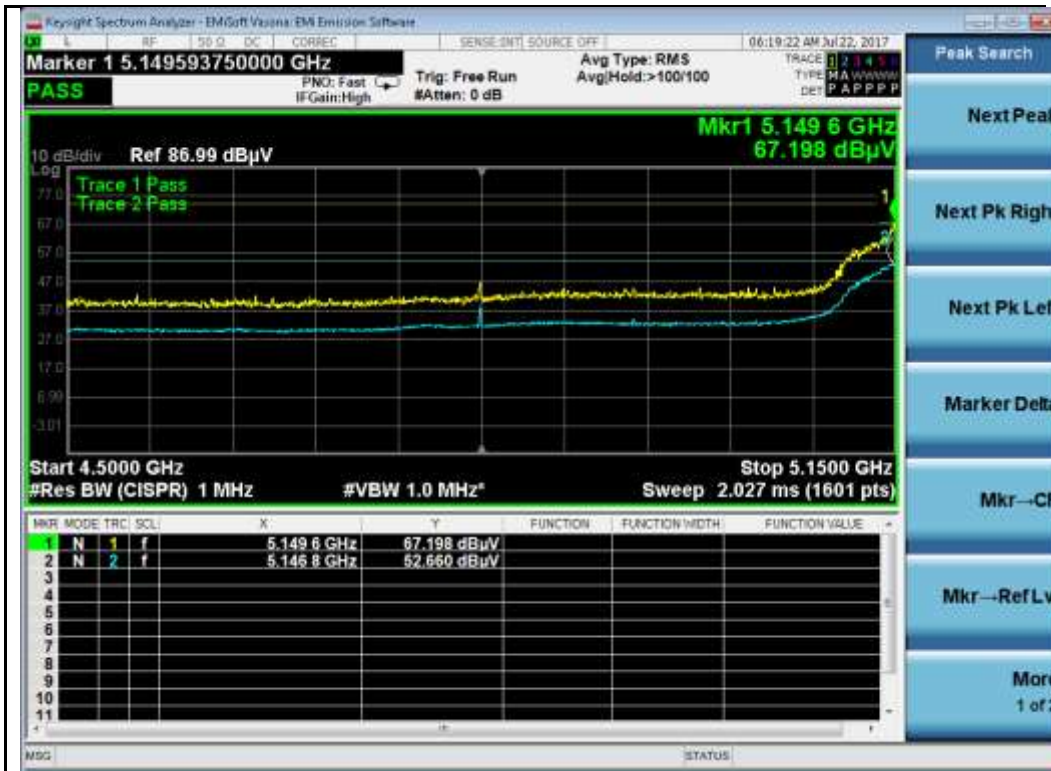
**Restricted Band Measurement Plots:**



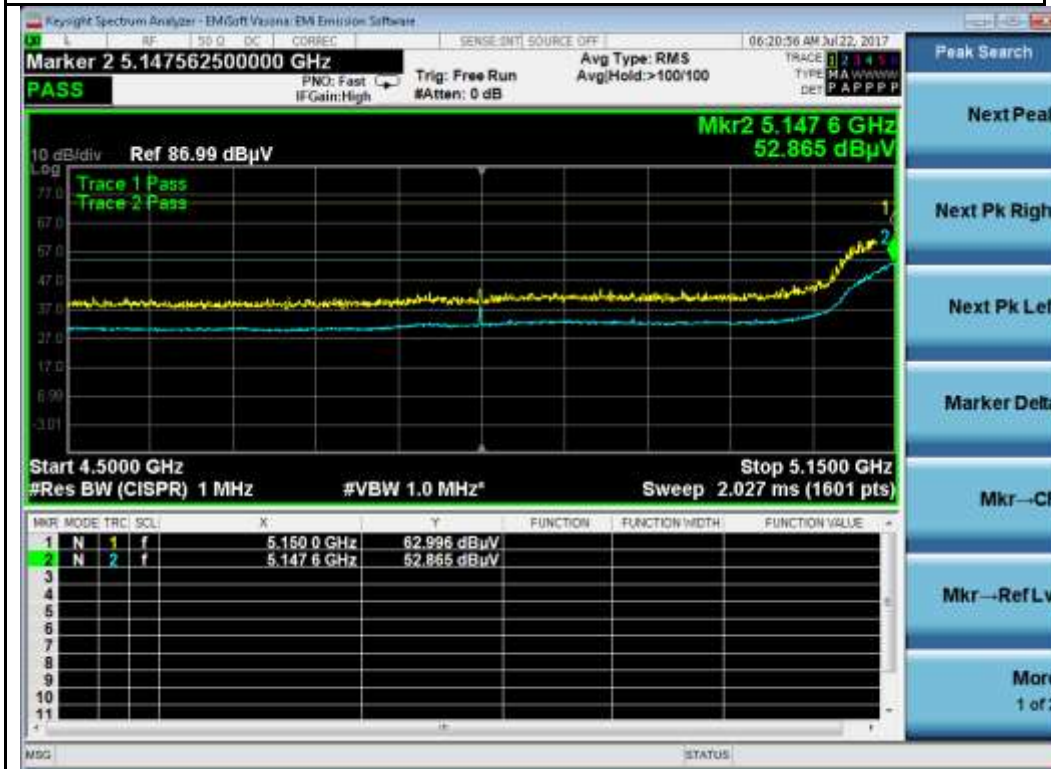
802.11a-5180MHz



802.11n-HT20 5180MHz



802.11n-HT40 5190MHz



802.11ac-VHT80 5210MHz

## Radiated Emission Test Results (Above 1GHz)

### 1GHz-40GHz – 802.11a – 5180MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
10358.66	52.27	6.69	2.14	61.1	Peak Max	V	232	317	74	-12.9	Pass
6906.59	49.14	5.21	0.85	55.19	Peak Max	V	309	229	74	-18.81	Pass
1989.46	41.04	2.74	-6.09	37.7	Peak Max	H	197	335	74	-36.3	Pass
10358.66	38.46	6.69	2.14	47.29	Average Max	V	232	317	54	-6.71	Pass
6906.59	44.57	5.21	0.85	50.62	Average Max	V	309	229	54	-3.38	Pass
1989.46	28.22	2.74	-6.09	24.88	Average Max	H	197	335	54	-29.12	Pass

### 1GHz-40GHz – 802.11a – 5200MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
6933.19	48.41	5.21	0.89	54.52	Peak Max	H	286	227	74	-19.49	Pass
6933.19	41.99	5.21	0.89	48.1	Average Max	H	286	227	54	-5.9	Pass
10401.11	34.32	6.71	2.17	43.19	Average Max	V	161	3	54	-10.81	Pass
10401.11	48.95	6.71	2.17	57.83	Peak Max	V	161	3	74	-16.17	Pass
13991.02	25.72	8.09	6.42	40.22	Average Max	V	153	195	54	-13.78	Pass
13991.02	38.08	8.09	6.42	52.58	Peak Max	V	153	195	74	-21.42	Pass

### 1GHz-40GHz – 802.11a – 5240MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
10479.67	48.15	6.75	2.45	57.35	Peak Max	V	280	323	74	-16.65	Pass
6986.68	48.37	5.23	0.99	54.59	Peak Max	V	280	226	74	-19.41	Pass
13670.84	37.84	8.63	6.04	52.51	Peak Max	H	177	49	74	-21.49	Pass
10479.67	34.64	6.75	2.45	43.84	Average Max	V	280	323	54	-10.16	Pass
6986.68	42.8	5.23	0.99	49.01	Average Max	V	280	226	54	-4.99	Pass
13670.84	25.59	8.63	6.04	40.25	Average Max	H	177	49	54	-13.75	Pass



**1GHz-40GHz – 802.11n-20M – 5180MHz**

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
10360.93	48.3	6.69	2.15	57.14	Peak Max	H	224	323	74	-16.86	Pass
6906.71	48.41	5.21	0.85	54.46	Peak Max	V	237	224	74	-19.54	Pass
13722.97	37.53	8.54	6.15	52.22	Peak Max	H	304	139	74	-21.78	Pass
10360.93	35.14	6.69	2.15	43.97	Average Max	H	224	323	54	-10.03	Pass
6906.71	43.42	5.21	0.85	49.47	Average Max	V	237	224	54	-4.53	Pass
13722.97	25.55	8.54	6.15	40.24	Average Max	H	304	139	54	-13.76	Pass

**1GHz-40GHz – 802.11n-20M – 5200MHz**

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
10394.38	49.79	6.71	2.16	58.65	Peak Max	H	226	309	74	-15.35	Pass
6933.38	48.55	5.21	0.89	54.66	Peak Max	H	254	228	74	-19.34	Pass
13564.99	36.83	8.81	6.22	51.86	Peak Max	H	161	76	74	-22.14	Pass
10394.38	36.56	6.71	2.16	45.42	Average Max	H	226	309	54	-8.58	Pass
6933.38	42.05	5.21	0.89	48.16	Average Max	H	254	228	54	-5.84	Pass
13564.99	24.89	8.81	6.22	39.92	Average Max	H	161	76	54	-14.08	Pass

**1GHz-40GHz – 802.11n-20M – 5240MHz**

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
10476.53	46.08	6.75	2.44	55.27	Peak Max	V	192	192	74	-18.73	Pass
6986.60	48.96	5.23	0.99	55.18	Peak Max	V	257	228	74	-18.82	Pass
13970.06	37.98	8.12	6.38	52.49	Peak Max	H	283	96	74	-21.52	Pass
10476.53	33.11	6.75	2.44	42.29	Average Max	V	192	192	54	-11.71	Pass
6986.60	43.03	5.23	0.99	49.24	Average Max	V	257	228	54	-4.76	Pass
13970.06	25.66	8.12	6.38	40.17	Average Max	H	283	96	54	-13.84	Pass

**1GHz-40GHz – 802.11n-40M – 5190MHz**

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
10376.29	42.24	6.7	2.15	51.09	Peak Max	V	147	274	74	-22.91	Pass
6920.02	48.26	5.21	0.87	54.34	Peak Max	H	298	231	74	-19.66	Pass
13950.89	38.5	8.15	6.35	53	Peak Max	H	242	148	74	-21	Pass
10376.29	26.88	6.7	2.15	35.73	Average Max	V	147	274	54	-18.27	Pass
6920.02	44.08	5.21	0.87	50.16	Average Max	H	298	231	54	-3.84	Pass
13950.89	25.6	8.15	6.35	40.11	Average Max	H	242	148	54	-13.89	Pass

**1GHz-40GHz – 802.11n-40M – 5230MHz**

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
10454.62	48.17	6.74	2.36	57.27	Peak Max	V	159	243	74	-16.74	Pass
13829.48	37.79	8.36	6.53	52.67	Peak Max	H	244	207	74	-21.33	Pass
6973.17	46.74	5.22	0.96	52.92	Peak Max	H	241	227	74	-21.08	Pass
10454.62	30.99	6.74	2.36	40.08	Average Max	V	159	243	54	-13.92	Pass
13829.48	25.3	8.36	6.53	40.19	Average Max	H	244	207	54	-13.81	Pass
6973.17	40.69	5.22	0.96	46.88	Average Max	H	241	227	54	-7.12	Pass

**1GHz-40GHz – 802.11ac-80M – 5210MHz**

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
6946.65	47.61	5.22	0.92	53.75	Peak Max	H	267	226	74	-20.26	Pass
13870.63	37.38	8.29	6.38	52.05	Peak Max	V	107	315	74	-21.95	Pass
9647.14	39.12	6.56	1.26	46.94	Peak Max	V	147	205	74	-27.06	Pass
6946.65	42.77	5.22	0.92	48.9	Average Max	H	267	226	54	-5.1	Pass
13870.63	25.47	8.29	6.38	40.13	Average Max	V	107	315	54	-13.87	Pass
9647.14	26.97	6.56	1.26	34.79	Average Max	V	147	205	54	-19.21	Pass

**1GHz-40GHz – 802.11a – 5745MHz**

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
17586.42	38.68	8.02	11.16	57.86	Peak Max	V	146	192	74	-16.14	Pass
11488.49	48.05	7.69	2.67	58.41	Peak Max	H	207	344	74	-15.59	Pass
7659.933	42.87	5.61	0.79	49.27	Peak Max	V	190	272	74	-24.74	Pass
17586.42	26.84	8.02	11.16	46.03	Average Max	V	146	192	54	-7.97	Pass
11488.49	36.35	7.69	2.67	46.71	Average Max	H	207	344	54	-7.29	Pass
7659.933	35.54	5.61	0.79	41.94	Average Max	V	190	272	54	-12.07	Pass

**1GHz-40GHz - 802.11a– 5785MHz**

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
8842.36	39.34	5.99	1.35	46.68	Peak Max	V	105	128	74	-27.32	Pass
8842.36	26.97	5.99	1.35	34.3	Average Max	V	105	128	54	-19.7	Pass
11570.53	36.55	7.76	2.85	47.16	Average Max	H	199	159	54	-6.84	Pass
11570.53	50.4	7.76	2.85	61.01	Peak Max	H	199	159	74	-12.99	Pass
17356.92	26.6	8.06	10.59	45.26	Average Max	V	161	24	54	-8.75	Pass
17356.92	39.14	8.06	10.59	57.8	Peak Max	V	161	24	74	-16.21	Pass

**1GHz-40GHz - 802.11a - 5825MHz**

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11644.35	43.96	7.81	2.86	54.63	Peak Max	H	116	293	74	-19.38	Pass
17475.17	38.94	8	10.62	57.56	Peak Max	V	102	199	74	-16.44	Pass
4823.75	45.31	4.17	-2.06	47.42	Peak Max	V	148	325	74	-26.58	Pass
11644.35	28.92	7.81	2.86	39.59	Average Max	H	116	293	54	-14.42	Pass
17475.17	26.74	8	10.62	45.36	Average Max	V	102	199	54	-8.64	Pass
4823.75	39.22	4.17	-2.06	41.33	Average Max	V	148	325	54	-12.67	Pass

**1GHz-40GHz – 802.11n-20M – 5745MHz**

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11487.84	46.32	7.69	2.67	56.68	Peak Max	H	176	257	74	-17.32	Pass
17233.9	38.04	8.12	8.66	54.81	Peak Max	V	146	48	74	-19.19	Pass
7660.26	41.84	5.61	0.79	48.24	Peak Max	V	180	262	74	-25.77	Pass
11487.84	32.28	7.69	2.67	42.64	Average Max	H	176	257	54	-11.36	Pass
17233.9	26.59	8.12	8.66	43.36	Average Max	V	146	48	54	-10.64	Pass
7660.26	33.42	5.61	0.79	39.82	Average Max	V	180	262	54	-14.18	Pass

**1GHz-40GHz - 802.11n-20M– 5785MHz**

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11560.7	44.85	7.75	2.82	55.42	Peak Max	V	192	320	74	-18.58	Pass
17650.06	38.15	8.05	11.41	57.62	Peak Max	V	101	233	74	-16.39	Pass
4823.533	45.29	4.17	-2.06	47.4	Peak Max	V	190	13	74	-26.61	Pass
11560.7	31	7.75	2.82	41.57	Average Max	V	192	320	54	-12.43	Pass
17650.06	26.58	8.05	11.41	46.05	Average Max	V	101	233	54	-7.96	Pass
4823.533	38.81	4.17	-2.06	40.92	Average Max	V	190	13	54	-13.08	Pass

**1GHz-40GHz - 802.11n-20M - 5825MHz**

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
17476.67	38.46	8	10.61	57.07	Peak Max	H	186	356	74	-16.93	Pass
11646.35	46.64	7.81	2.85	57.3	Peak Max	V	189	346	74	-16.7	Pass
4823.468	45.31	4.17	-2.06	47.41	Peak Max	V	169	332	74	-26.59	Pass
17476.67	26.71	8	10.61	45.32	Average Max	H	186	356	54	-8.68	Pass
11646.35	27.84	7.81	2.85	38.5	Average Max	V	189	346	54	-15.5	Pass
4823.468	39.11	4.17	-2.06	41.21	Average Max	V	169	332	54	-12.79	Pass

**1GHz-40GHz – 802.11n-40M – 5755MHz**

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
17264.47	38.5	8.1	9.25	55.85	Peak Max	V	174	271	74	-18.15	Pass
11517.01	46.51	7.72	2.66	56.9	Peak Max	H	177	334	74	-17.1	Pass
4823.328	44.72	4.17	-2.06	46.83	Peak Max	V	141	317	74	-27.18	Pass
17264.47	26.73	8.1	9.25	44.08	Average Max	V	174	271	54	-9.93	Pass
11517.01	30.56	7.72	2.66	40.94	Average Max	H	177	334	54	-13.06	Pass
4823.328	37.71	4.17	-2.06	39.82	Average Max	V	141	317	54	-14.18	Pass

**1GHz-40GHz - 802.11n-40M– 5795MHz**

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
17384.54	38.57	8.04	10.91	57.53	Peak Max	H	130	31	74	-16.47	Pass
11591.89	46.11	7.77	2.93	56.82	Peak Max	H	185	163	74	-17.18	Pass
8276.175	38.97	5.9	1.08	45.96	Peak Max	V	143	314	74	-28.04	Pass
17384.54	26.68	8.04	10.91	45.64	Average Max	H	130	31	54	-8.36	Pass
11591.89	32.61	7.77	2.93	43.31	Average Max	H	185	163	54	-10.69	Pass
8276.175	27.06	5.9	1.08	34.04	Average Max	V	143	314	54	-19.96	Pass

**1GHz-40GHz - 802.11ac-80M - 5775MHz**
















Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
17831.19	38.59	8.12	10.82	57.53	Peak Max	V	110	199	74	-16.47	Pass
11500.96	39.72	7.71	2.6	50.03	Peak Max	V	195	83	74	-23.97	Pass
7702.834	38.38	5.66	0.75	44.79	Peak Max	V	160	78	74	-29.22	Pass
17831.19	26.52	8.12	10.82	45.46	Average Max	V	110	199	54	-8.54	Pass
11500.96	27.23	7.71	2.6	37.54	Average Max	V	195	83	54	-16.46	Pass
7702.834	26.49	5.66	0.75	32.89	Average Max	V	160	78	54	-21.11	Pass










## Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Cycle	Cal Due	In use
<b>Conducted Emissions</b>						
R & S Receiver	ESIB 40	100179	06/08/2017	1 Year	06/08/2018	<input checked="" type="checkbox"/>
CHASE LISN	MN2050B	1018	08/07/2017	1 Year	08/07/2018	<input checked="" type="checkbox"/>
<b>Radiated Emissions</b>						
R & S Receiver	ESIB 40	1018	08/07/2017	1 Year	08/07/2018	<input checked="" type="checkbox"/>
Bi-Log antenna (30MHz~2GHz)	JB1	A030702	08/12/2017	1 Year	08/12/2018	<input checked="" type="checkbox"/>
Horn Antenna (1GHz~26GHz)	3115	100059	08/25/2017	1 Year	08/25/2018	<input checked="" type="checkbox"/>
3 Meters SAC	3M	N/A	08/08/2017	1 Year	08/08/2018	<input checked="" type="checkbox"/>
10 Meters SAC	10M	N/A	09/05/2017	1 Year	09/05/2018	<input checked="" type="checkbox"/>
<b>RF Conducted Measurement</b>						
Spectrum Analyzer	N9010A	10SL0219	08/20/2017	1 Year	08/20/2018	<input checked="" type="checkbox"/>
R & S Receiver	ESIB 40	100179	06/08/2017	1 Year	06/08/2018	<input checked="" type="checkbox"/>
ETS-Lingren USB RF Power Sensor	7002-006	10SL0190	09/03/2017	1 Year	09/03/2018	<input checked="" type="checkbox"/>

## Annex B. SIEMIC Accreditation

Accreditations	Document	Scope / Remark
ISO 17025 (A2LA)		Please see the documents for the detailed scope
ISO Guide 65 (A2LA)		Please see the documents for the detailed scope
TCB Designation		<a href="#">A1</a> , <a href="#">A2</a> , <a href="#">A3</a> , <a href="#">A4</a> , <a href="#">B1</a> , <a href="#">B2</a> , <a href="#">B3</a> , <a href="#">B4</a> , C
FCC DoC Accreditation		FCC Declaration of Conformity Accreditation
FCC Site Registration		3 meter site
FCC Site Registration		10 meter site
IC Site Registration		3 meter site
IC Site Registration		10 meter site
EU NB		<b>Radio &amp; Telecommunications Terminal Equipment:</b> EN45001 – EN ISO/IEC 17025
		<b>Electromagnetic Compatibility:</b> EN45001 – EN ISO/IEC 17025
Singapore iDA CB(Certification Body)		<a href="#">Phase I</a> , <a href="#">Phase II</a>
Vietnam MIC CAB Accreditation		Please see the document for the detailed scope
Hong Kong OFCA		<b>(Phase II)</b> OFCA Foreign Certification Body for Radio and Telecom
		<b>(Phase I)</b> Conformity Assessment Body for Radio and Telecom
Industry Canada CAB		<b>Radio:</b> Scope A – All Radio Standard Specification in Category I
		<b>Telecom:</b> CS-03 Part I, II, V, VI, VII, VIII

Japan Recognized Certification Body Designation		<p><b>Radio:</b> A1. Terminal equipment for purpose of calling</p> <p><b>Telecom:</b> B1. Specified radio equipment specified in Article 38-2, Paragraph 1, Item 1 of the Radio Law</p>
Korea CAB Accreditation		<p><b>EMI:</b> KCC Notice 2008-39, RRL Notice 2008-3: CA Procedures for EMI KN22: Test Method for EMI</p> <p><b>EMS:</b> KCC Notice 2008-38, RRL Notice 2008-4: CA Procedures for EMS KN24, KN61000-4-2, -4-3, -4-4, -4-5, -4-6, -4-8, -4-11: Test Method for EMS</p> <p><b>Radio:</b> RRL Notice 2008-26, RRL Notice 2008-2, RRL Notice 2008-10, RRL Notice 2007-49, RRL Notice 2007-20, RRL Notice 2007-21, RRL Notice 2007-80, RRL Notice 2004-68</p> <p><b>Telecom:</b> President Notice 20664, RRL Notice 2007-30, RRL Notice 2008-7 with attachments 1, 3, 5, 6; President Notice 20664, RRL Notice 2008-7 with attachment 4</p>
Taiwan NCC CAB Recognition		LP0002, PSTN01, ADSL01, ID0002, IS6100, CNS14336, PLMN07, PLMN01, PLMN08
Taiwan BSMI CAB Recognition		CNS 13438
Japan VCCI		<p>R-3083: Radiation 3 meter site</p> <p>C-3421: Main Ports Conducted Interference Measurement</p> <p>T-1597: Telecommunication Ports Conducted Interference Measurement</p>
Australia CAB Recognition		<p><b>EMC:</b> AS/NZS CISPR 11, AS/NZS CISPR 14.1, AS/NZS CISPR22, AS/NZS 61000.6.3, AS/NZS 61000.6.4</p> <p><b>Radio communications:</b> AS/NZS 4281, AS/NZS 4268, AS/NZS 4280.1, AS/NZS 4280.2, AS/NZS 4295, AS/NZS 4582, AS/NZS 4583, AS/NZS 4769.1, AS/NZS 4769.2, AS/NZS 4770, AS/NZS 4771</p> <p><b>Telecommunications:</b> AS/ACIF S002:05, AS/ACIF S003:06, AS/ACIF S004:06, AS/ACIF S006:01, AS/ACIF S016:01, AS/ACIF S031:01, AS/ACIF S038:01, AS/ACIF S040:01, AS/ACIF S041:05, AS/ACIF S043.2:06, AS/ACIF S60950.1</p>
Australia NATA Recognition		AS/ACIF S002, AS/ACIF S003, AS/ACIF S004, AS/ACIF S006, AS/ACIF S016, AS/ACIF S031, AS/ACIF S038, AS/ACIF S040, AS/ACIF S041, AS/ACIF S043.2