TEST REPORT

Reference No.	:	WTS19S01006323-2W V1
FCC ID	:	2AJ9O-SWV733B2
Applicant	:	Lidl US, LLC
Address	:	3500 S. Clark Street Arlington Virginia 22202, United States
Manufacturer	:	Winstars Technology Limited
Address	:	Block 1-5, TaiSong Industrial Park, DaLang community, DaLang Street, Longhua District, Shenzhen, China
Product Name	:	WiFi Range EXtender
Model No. .	:	SWV 733 B2
Brand.		SILVER CREST
Standards	:	FCC CFR47 Part 15 E Section 15.407: 2017
Date of Receipt sample	:	2019-01-25
Date of Test	:	2019-01-26 to 2019-02-17
Date of Issue	:	2019-05-05
Test Result	:	**Pass**

Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company.
The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

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2 Laboratories Introduction

Waltek Services (Shenzhen) Co., Ltd is a professional third-party testing and certification laboratory with multi-year product testing and certification experience, established strictly in accordance with ISO/IEC 17025 requirements, and accredited by ILAC (International Laboratory Accreditation Cooperation) member. A2LA (American Association for Laboratory Accreditation, the certification number is 4243.01) of USA, CNAS (China National Accreditation Service for Conformity Assessment, the registration number is L3110) of China. Meanwhile, Waltek has got recognition as registration and accreditation laboratory from EMSD (Electrical and Mechanical Services Department), and American Energy star, FCC (The Federal Communications Commission), CEC (California energy efficiency), ISED (Innovation, Science and Economic Development Canada). It's the strategic partner and data recognition laboratory of international authoritative organizations, such as Intertek (ETL-SEMKO), TÜV Rheinland, TÜV SÜD, etc.

Waltek Services (Shenzhen) Co., Ltd is one of the largest and the most comprehensive third party testing laboratory in China. Our test capability covered four large fields: safety test. Electro Magnetic Compatibility (EMC), and energy performance, wireless radio. As a professional, comprehensive, justice international test organization, we still keep the scientific and rigorous work attitude to help each client satisfy the international standards and assist their product enter into globe market smoothly.

Test Facility:

A. Accreditations for Conformity Assessment (International)

Country/Region	Scope Covered By	Scope	Note
USA	ISO/IEC 17025	FCC ID \ DOC \ VOC	1
Canada		IC ID \ VOC	2
Japan		MIC-T \ MIC-R	-
Europe		EMCD \ RED	-
Taiwan		NCC	-
Hong Kong		OFCA	-
Australia		RCM	-
India		WPC	-
Thailand		NTC	-
Singapore		IDA	-
Note: 1. FCC Designation No.: CN1201. Test Firm Registration No.: 523476. 2. ISED CAB identifier: CN0013			

B. TCBs and Notify Bodies Recognized Testing Laboratory.

Recognized Testing Laboratory of …	Notify body number
TUV Rheinland	Optional.
Intertek	
TUV SUD	
SGS	
Phoenix Testlab GmbH	0700
Element Materials Technology Warwick Ltd	0891
Timco Engineering, Inc.	1177
Eurofins Product Service GmbH	0681

3 Contents

4 Revision History

Test report No.	Date of Receipt sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTS19S01006323-2W	2019-01-25	2019-01-26 to 2019-02-17	2019-02-18	original	-	Replaced
WTS19S01006323-2W V1	2019-01-25	2019-01-26 to 2019-02-17	2019-05-05	Version 1	Updated	Valid

5 General Information

5.1 General Description of E.U.T.

Product:	WiFi Range EXtender
Model(s):	SWV 733 B2
Model Description:	N/A
Wi-Fi Specification:	2.4G-802.11b/g/n HT20/n HT40 5G-802.11a/ n(HT20/40)/ac(HT20/40/80)
Hardware Version:	WS-WN578A2-A-V1.2
Software Version:	RT76A2.V4330.180626
Highest frequency (Exclude Radio):	580MHz
Storage Location:	Internal Storage
Note:	N/A

5.2 Details of E.U.T.

Operation Frequency:	802.11a/ n(HT20/40)/ac(HT20/40/80): 5150MHz to 5250MHz 802.11a/ n(HT20/40)/ac(HT20/40/80): 5725MHz to 5850MHz
Max. RF output power:	Band I: 18.91dBm Band IV: 16.83dBm
Type of Modulation:	OFDM
Antenna installation:	internal permanent antenna
Antenna Gain:	Band I: 2.5dBi Band IV: 2.5dBi
Ratings:	Input: AC 120V, 60Hz 0.1A

5.3 Channel List

U-NII-1 (5.15-5.25GHz)		U-NII-3 (5.725-5.85GHz)	
channel	**Frequency(MHz)**	**channel**	**Frequency(MHz)**
36	5180	149	5745
38	5190	151	5755
40	5200	153	5765
42	5210	155	5785
44	5220	157	5785
46	5230	159	5795
48	5240	161	5805
		165	5825

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

For 802.11a/n(HT20)/ac(HT20):

channel	**Frequency(MHz)**	**channel**	**Frequency(MHz)**
36	5180	149	5745
40	5200	157	5785
48	5240	165	5825

For 802.11 n(HT40)/ac(HT40):

channel	**Frequency(MHz)**	**channel**	**Frequency(MHz)**
38	5190	151	5755
46	5230	159	5795

For 802.11 ac(HT80):

channel	**Frequency(MHz)**	**channel**	**Frequency(MHz)**
42	5210	155	5775

5.4 Test Mode Description:

During testing, Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.
Transmitting duty cycle is no less 98%.
The software is installed in operation system, named “RFTestTool.apk” ,Version 1,date 20160518.

Test Items	Mode	Data Rate	Channel	TX/RX
Radiated Emissions	802.11a	6 Mbps	U-NII-1 36/40/48 U-NII-3 149/155/165	TX
	802.11n(HT20)	MCS0	U-NII-1 36/40/48 U-NII-3 149/155/165	TX
	802.11n(HT40)	MCS0	U-NII-1 38/46 U-NII-3 151/159	TX
	802.11ac(HT20)	MCS0	U-NII-1 36/40/48 U-NII-3 149/155/165	TX
	802.11ac(HT40)	MCS0	U-NII-1 38/46 U-NII-3 151/159	TX
	802.11ac(HT80)	MCS0	U-NII-1 42 U-NII-3 155	TX
Duty Cycle	802.11a	6 Mbps	U-NII-1 36/40/48 U-NII-3 149/155/165	TX
	802.11n(HT20)	MCS0	U-NII-1 36/40/48 U-NII-3 149/155/165	TX
	802.11n(HT40)	MCS0	U-NII-1 38/46 U-NII-3 151/159	TX
	802.11ac(HT20)	MCS0	U-NII-1 36/40/48 U-NII-3 149/155/165	TX
	802.11ac(HT40)	MCS0	U-NII-1 38/46 U-NII-3 151/159	TX
	802.11ac(HT80)	MCS0	U-NII-1 42 U-NII-3 155	TX
Band Edge	802.11a	6 Mbps	U-NII-1 36/40/48 U-NII-3 149/155/165	TX
	802.11n(HT20)	MCS0	U-NII-1 36/40/48 U-NII-3 149/155/165	TX
	802.11n(HT40)	MCS0	U-NII-1 38/46 U-NII-3 151/159	TX
	802.11ac(HT20)	MCS0	U-NII-1 36/40/48 U-NII-3 149/155/165	TX
	802.11ac(HT40)	MCS0	U-NII-1 38/46 U-NII-3 151/159	TX

	802.11ac(HT80)	MCS0	U-NII-1 42 U-NII-3 155	TX
6dB Bandwidth	802.11a	6 Mbps	U-NII-1 36/40/48 U-NII-3 149/155/165	TX
	802.11n(HT20)	MCS0	U-NII-1 36/40/48 U-NII-3 149/155/165	TX
	802.11n(HT40)	MCS0	U-NII-1 38/46 U-NII-3 151/159	TX
	802.11ac(HT20)	MCS0	U-NII-1 36/40/48 U-NII-3 149/155/165	TX
	802.11ac(HT40)	MCS0	U-NII-1 38/46 U-NII-3 151/159	TX
	802.11ac(HT80)	MCS0	U-NII-1 42 U-NII-3 155	TX
26dB Bandwidth and 99% Occupied Bandwidth	802.11a	6 Mbps	U-NII-1 36/40/48 U-NII-3 149/155/165	TX
	802.11n(HT20)	MCS0	U-NII-1 36/40/48 U-NII-3 149/155/165	TX
	802.11n(HT40)	MCS0	U-NII-1 38/46 U-NII-3 151/159	TX
	802.11ac(HT20)	MCS0	U-NII-1 36/40/48 U-NII-3 149/155/165	TX
	802.11ac(HT40)	MCS0	U-NII-1 38/46 U-NII-3 151/159	TX
	802.11ac(HT80)	MCS0	U-NII-1 42 U-NII-3 155	TX
Conducted Output Power	802.11a	6 Mbps	U-NII-1 36/40/48 U-NII-3 149/155/165	TX
	802.11n(HT20)	MCS0	U-NII-1 36/40/48 U-NII-3 149/155/165	TX
	802.11n(HT40)	MCS0	U-NII-1 38/46 U-NII-3 151/159	TX
	802.11ac(HT20)	MCS0	U-NII-1 36/40/48 U-NII-3 149/155/165	TX
	802.11ac(HT40)	MCS0	U-NII-1 38/46 U-NII-3 151/159	TX
	802.11ac(HT80)	MCS0	U-NII-1 42 U-NII-3 155	TX
Power Spectral Density	802.11a	6 Mbps	U-NII-1 36/40/48 U-NII-3 149/155/165	TX
	802.11n(HT20)	MCS0	U-NII-1 36/40/48 U-NII-3 149/155/165	TX

	802.11n(HT40)	MCS0	U-NII-1 38/46 U-NII-3 151/159	TX
	802.11ac(HT20)	MCS0	U-NII-1 36/40/48 U-NII-3 149/155/165	TX
	802.11ac(HT40)	MCS0	U-NII-1 38/46 U-NII-3 151/159	TX
	802.11ac(HT80)	MCS0	U-NII-1 42 U-NII-3 155	TX
Frequency Stability	Un-modulation	/	U-NII-1 36/40/48 U-NII-3 149/155/165	TX

6 Equipment Used during Test

6.1 Equipments List

Conducted Emissions Test Site 1#						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1.	EMI Test Receiver	R&S	ESCI	100947	2018-09-14	2019-09-13
2.	LISN	R&S	ENV216	101215	2018-09-14	2019-09-13
3.	Cable	Top	TYPE16(3.5M)	-	2018-09-14	2019-09-13
Conducted Emissions Test Site 2#						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1.	EMI Test Receiver	R&S	ESCI	101155	2018-09-14	2019-09-13
2.	LISN	SCHWARZBECK	NSLK 8128	8128-289	2018-09-14	2019-09-13
3.	Limiter	York	MTS-IMP-136	261115-001-0024	2018-09-14	2019-09-13
4.	Cable	LARGE	RF300	-	2018-09-14	2019-09-13
3m Semi-anechoic Chamber for Radiation Emissions Test site 1#						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1	EMC Analyzer	Agilent	E7405A	MY45114943	2018-09-14	2019-09-13
2	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	2018-09-14	2019-09-13
3	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	2018-09-14	2019-09-13
4	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	2018-09-14	2019-09-13
5	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	2018-09-14	2019-09-13
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	335	2018-09-14	2019-09-13
7	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	2018-09-14	2019-09-13
8	Coaxial Cable (above 1GHz)	Top	1GHz-25GHz	EW02014-7	2018-09-14	2019-09-13
3m Semi-anechoic Chamber for Radiation Emissions Test site 2#						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No**	**Last Calibration Date**	**Calibration Due Date**
1	Test Receiver	R&S	ESCI	101296	2018-09-14	2019-09-13
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	2018-09-14	2019-09-13
3	Amplifier	Compliance pirection systems inc	PAP-0203	22024	2018-09-14	2019-09-13

4	Cable	HUBER+SUHNER	CBL2	525178	2018-09-14	2019-09-13
RF Conducted Testing						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1.	EMC Analyzer (9k~26.5GHz)	Agilent	E7405A	MY45114943	2018-09-14	2019-09-13
2.	Spectrum Analyzer (9k-6GHz)	R&S	FSL6	100959	2018-09-14	2019-09-13
3.	Signal Analyzer (9k~26.5GHz)	Agilent	N9010A	MY50520207	2018-09-14	2019-09-13

6.2 Description of Support Units

Equipment	Manufacturer	Model No.	Series No.
/	/	/	/

6.3 Measurement Uncertainty

Parameter	Uncertainty
Radio Frequency	± 1 x 10^{-6}
RF Power	± 1.0 dB
RF Power Density	± 2.2 dB
Radiated Spurious Emissions test	± 5.03 dB (30M~1000MHz)
	± 5.47 dB (1000M~25000MHz)
Conducted Spurious Emissions test	± 3.64 dB (AC mains 150KHz~30MHz)

6.4 Test Equipment Calibration

All the test equipments used are valid and calibrated by CEPREI Certification Body that address is No.110 Dongguan Zhuang RD. Guangzhou, P.R.China.

7 Test Summary

Test Items	Test Requirement	Result
Conducted Emissions	15.207(a)	PASS
Radiated Emissions	15.407(a) 15.205(a) 15.209(a)	PASS
Duty Cycle	KDB 789033	PASS
6dB Bandwidth	15.407(a)	PASS
26 dB Emission Bandwidth & 99% Occupied Bandwidth	15.407(a)	PASS
Maximum Conducted Output Power	15.407(a)	PASS
Power Spectral Density	15.407(a)	PASS
Restricted bands around fundamental frequency	15.407(a)	PASS
Antenna Requirement	15.203	PASS
Maximum Permissible Exposure (Exposure of Humans to RF Fields)	1.1307(b)(1)	PASS

8 Conducted Emission

Test Requirement: FCC CFR 47 Part 15 Section 15.207

Test Method: ANSI C63.10:2013

Test Result: PASS

Frequency Range: 150kHz to 30MHz

Class/Severity: Class B

Limit:

Frequency (MHz)	Limit (dBμV)	
	Quasi-peak	Average
0.15 to 0.5	66 to 56*	56 to 46*
0.5 to 5	56	46
5 to 30	60	50

8.1 E.U.T. Operation

Operating Environment **:**

Temperature: 21.5 °C

Humidity: 51.9 % RH

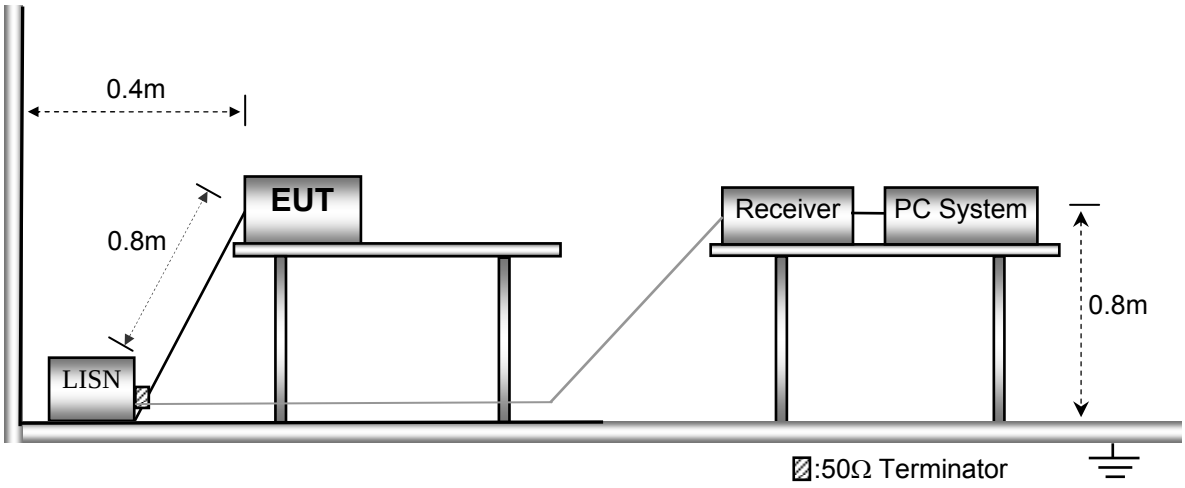
Atmospheric Pressure: 101.2kPa

EUT Operation **:**

The test was performed in TX transmitting mode, the test data were shown in the report.

8.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.4.



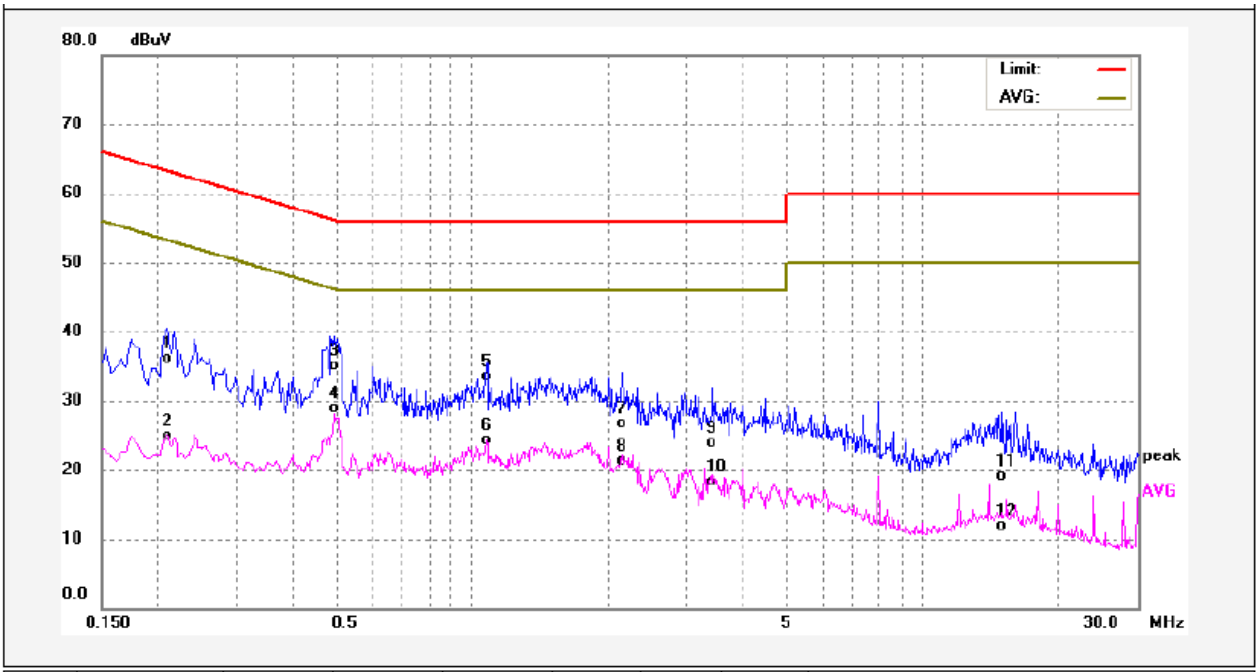
8.3 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

8.4 Conducted Emission Test Result

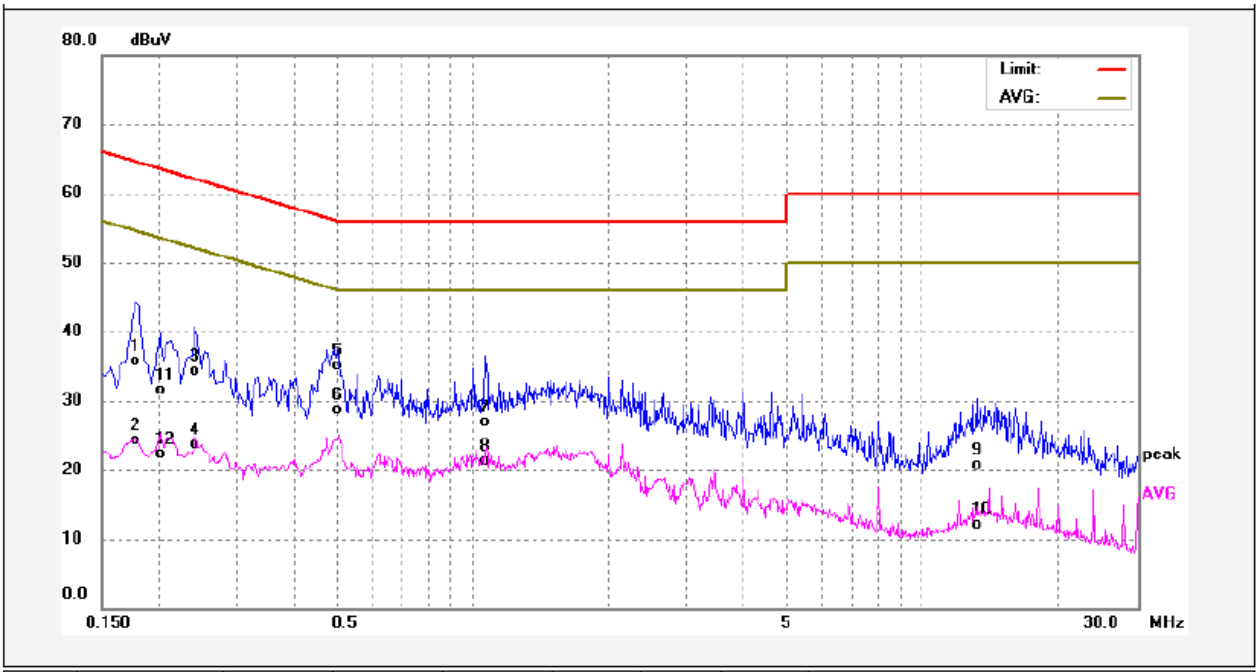
An initial pre-scan was performed on the live and neutral lines. only the worst data (802.11n20 mode middle channel) were reported.

Live line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.2100	25.72	10.34	36.06	63.20	-27.14	QP	
2	0.2100	14.55	10.34	24.89	53.20	-28.31	AVG	
3	0.4940	24.59	10.42	35.01	56.10	-21.09	QP	
4	0.4940	18.52	10.42	28.94	46.10	-17.16	AVG	
5	1.0740	23.14	10.44	33.58	56.00	-22.42	QP	
6	1.0740	13.88	10.44	24.32	46.00	-21.68	AVG	
7	2.1540	16.11	10.59	26.70	56.00	-29.30	QP	
8	2.1540	10.80	10.59	21.39	46.00	-24.61	AVG	
9	3.4060	13.14	10.73	23.87	56.00	-32.13	QP	
10	3.4060	7.51	10.73	18.24	46.00	-27.76	AVG	
11	15.0500	8.15	10.88	19.03	60.00	-40.97	QP	
12	15.0500	1.03	10.88	11.91	50.00	-38.09	AVG	

Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1780	25.43	10.30	35.73	64.57	-28.84	QP	
2	0.1780	13.99	10.30	24.29	54.57	-30.28	AVG	
3	0.2420	24.01	10.38	34.39	62.02	-27.63	QP	
4	0.2420	13.27	10.38	23.65	52.02	-28.37	AVG	
5	0.4940	24.72	10.42	35.14	56.10	-20.96	QP	
6	0.4940	18.34	10.42	28.76	46.10	-17.34	AVG	
7	1.0660	16.52	10.44	26.96	56.00	-29.04	QP	
8	1.0660	10.92	10.44	21.36	46.00	-24.64	AVG	
9	13.1739	9.78	11.01	20.79	60.00	-39.21	QP	
10	13.1739	1.01	11.01	12.02	50.00	-37.98	AVG	
11	0.2020	21.18	10.33	31.51	63.52	-32.01	QP	
12	0.2020	11.95	10.33	22.28	53.52	-31.24	AVG	

9 Radiated Emissions

Test Requirement: FCC CFR47 Part 15 Section 15.209 & 15.407

Test Method: ANSI C63.10:2013

Test Result: PASS

Measurement Distance: 3m

Limit:

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Distance	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	$20\log^{(2400/F(kHz))} + 80$
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	$20\log^{(24000/F(kHz))} + 40$
1.705 ~ 30	30	30	100 * 30	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

9.1 EUT Operation

Operating Environment **:**

Temperature: 23.5 °C

Humidity: 52.1 % RH

Atmospheric Pressure: 101.2kPa

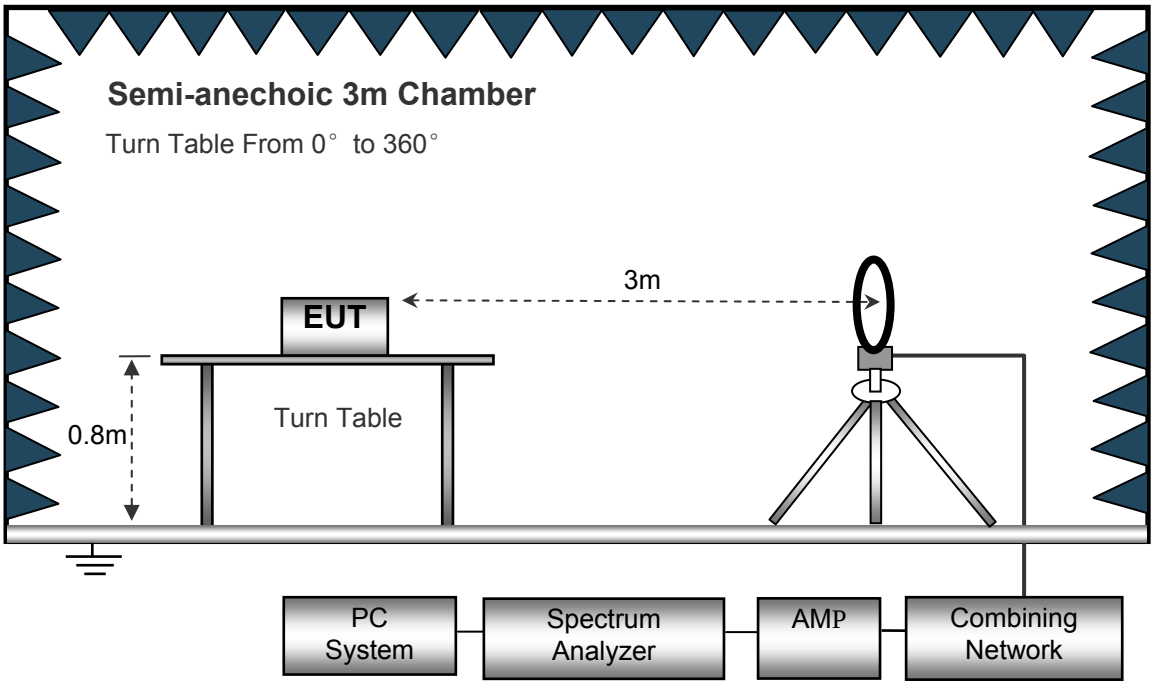
EUT Operation **:**

The test was performed in transmitting mode, the test data were shown in the report.

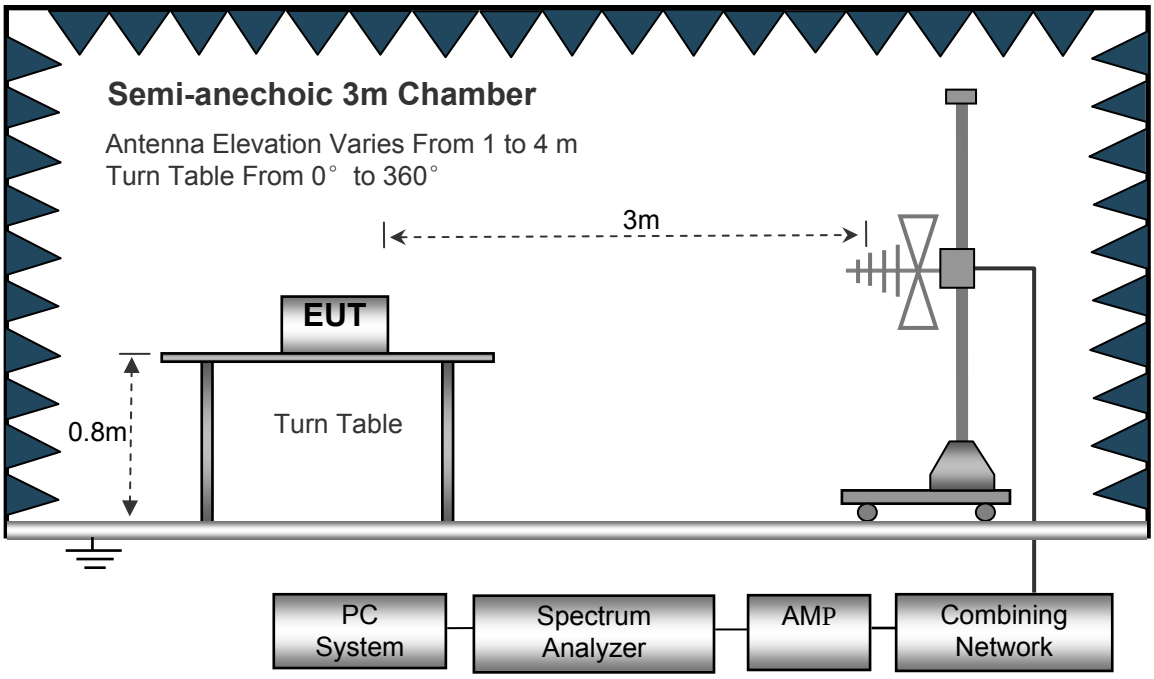
9.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.10: 2013.

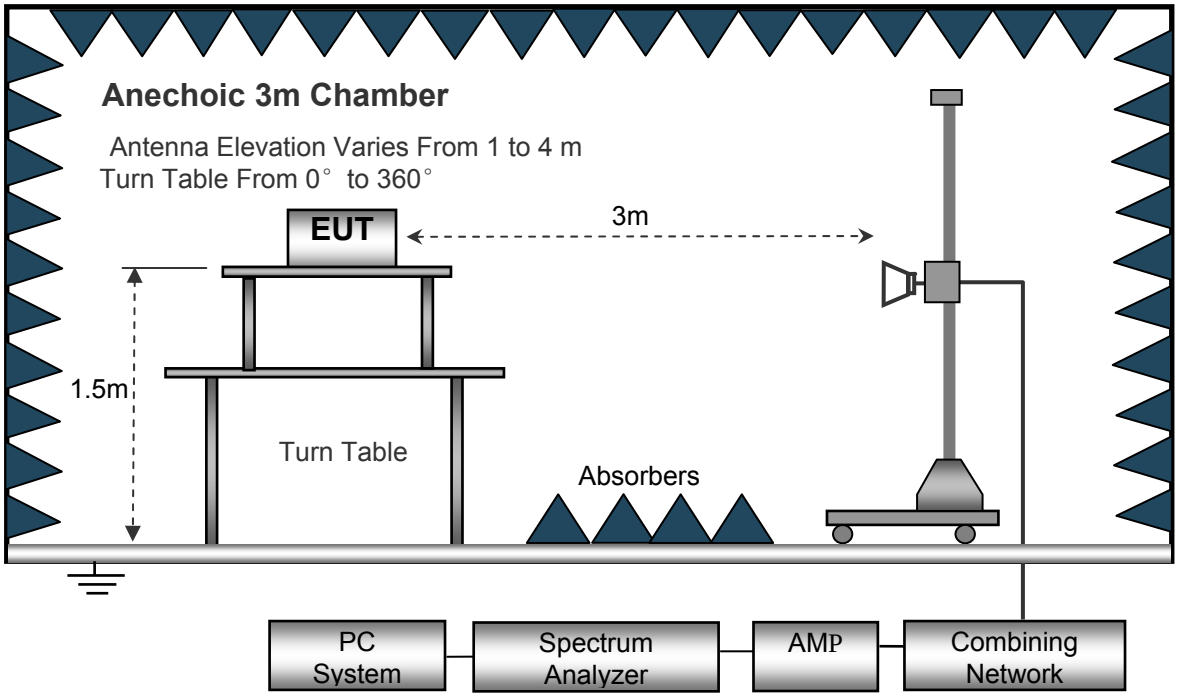
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.



9.3 Spectrum Analyzer Setup

Below 30MHz

Sweep Speed ..... Auto
IF Bandwidth..... 10kHz
Video Bandwidth..... 10kHz
Resolution Bandwidth..... 10kHz

30MHz ~ 1GHz

Sweep Speed ..... Auto
Detector ..... PK
Resolution Bandwidth..... 100kHz
Video Bandwidth..... 300kHz

Above 1GHz

Sweep Speed ..... Auto
Detector ..... PK
Resolution Bandwidth..... 1MHz
Video Bandwidth..... 3MHz
Detector ..... Ave.
Resolution Bandwidth..... 1MHz
Video Bandwidth..... 10Hz

9.4 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane for below 1GHz and 1.5m for above 1GHz.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are performed in X,Y and Z axis positioning(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand),the worst condition was tested putting the eut in X axis,so the worst data were shown as follow.
8. A 2.4GHz high –pass filter is used druing radiated emissions above 1GHz measurement.

9.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – Limit

9.6 Summary of Test Results

Test Frequency: 32.768kHz~30MHz

Frequency (MHz)	Measurement results	Detector	Correct factor	Extrapolation factor	Measurement results (calculated)	Limits	Margin
	dBµV @3m	PK/QP	dB/m	dB	dBµV/m @30m	dBµV/m @30m	dB
25.685	24.02	QP	20.55	40.00	4.57	29.54	-24.97

Test Frequency : 30MHz ~ 18GHz

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBµV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBµV/m)	(dBµV/m)	(dB)
802.11a U-NII-1 Low Channel 5180MHz									
223.45	41.05	QP	176	1.7	H	-11.62	29.43	46.00	-16.57
223.45	36.26	QP	275	1.5	V	-11.62	24.64	46.00	-21.36
4511.01	50.44	PK	293	1.8	H	-2.03	48.41	74.00	-25.59
4511.01	46.32	Ave	293	1.8	H	-2.03	44.29	54.00	-9.71
5128.63	52.53	PK	130	1.4	H	-1.02	51.51	74.00	-22.49
5128.63	48.18	Ave	130	1.4	H	-1.02	47.16	54.00	-6.84
10360.00	41.08	PK	248	1.7	H	5.33	46.41	74.00	-27.59
10360.00	36.85	Ave	248	1.7	H	5.33	42.18	54.00	-11.82
802.11a U-NII-1 Middle channel 5200MHz									
223.45	40.56	QP	341	1.4	H	-11.62	28.94	46.00	-17.06
223.45	37.13	QP	269	1.9	V	-11.62	25.51	46.00	-20.49
4534.48	50.86	PK	237	1.4	H	-1.94	48.92	74.00	-25.08
4534.48	46.57	Ave	237	1.4	H	-1.94	44.63	54.00	-9.37
5138.69	53.86	PK	225	1.2	H	-1.06	52.80	74.00	-21.20
5138.69	47.89	Ave	225	1.2	H	-1.06	46.83	54.00	-7.17
10400.00	41.79	PK	166	2.0	H	5.21	47.00	74.00	-27.00
10400.00	38.12	Ave	166	2.0	H	5.21	43.33	54.00	-10.67

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11a U-NII-1 High channel 5240MHz									
223.45	39.33	QP	308	1.5	H	-11.62	27.71	46.00	-18.29
223.45	35.16	QP	48	1.8	V	-11.62	23.54	46.00	-22.46
4502.74	49.98	PK	298	1.7	H	-2.24	47.74	74.00	-26.26
4502.74	43.84	Ave	298	1.7	H	-2.24	41.60	54.00	-12.40
5148.25	54.67	PK	138	1.0	H	-1.09	53.58	74.00	-20.42
5148.25	50.36	Ave	138	1.0	H	-1.09	49.27	54.00	-4.73
10480.00	42.03	PK	118	1.4	H	5.14	47.17	74.00	-26.83
10480.00	35.42	Ave	118	1.4	H	5.14	40.56	54.00	-13.44
802.11a U-NII-3 Low Channel 5745MHz									
223.45	39.11	QP	339	1.4	H	-11.62	27.49	46.00	-18.51
223.45	33.84	QP	97	2.0	V	-11.62	22.22	46.00	-23.78
4504.10	49.22	PK	114	1.3	H	-2.06	47.16	74.00	-26.84
4504.10	44.02	Ave	114	1.3	H	-2.06	41.96	54.00	-12.04
11490.00	43.05	PK	327	1.5	H	5.93	48.98	74.00	-25.02
11490.00	37.22	Ave	327	1.5	H	5.93	43.15	54.00	-10.85
5352.43	46.70	PK	116	1.1	H	-1.25	45.45	74.00	-28.55
5352.43	37.57	Ave	116	1.1	H	-1.25	36.32	54.00	-17.68

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11a U-NII-3 Middle channel 5785MHz									
223.45	37.86	QP	197	1.2	H	-11.62	26.24	46.00	-19.76
223.45	33.33	QP	359	1.1	V	-11.62	21.71	46.00	-24.29
4505.68	49.64	PK	301	1.1	H	-2.03	47.61	74.00	-26.39
4505.68	44.19	Ave	301	1.1	H	-2.03	42.16	54.00	-11.84
11570.00	42.39	PK	67	1.2	H	5.81	48.20	74.00	-25.80
11570.00	37.03	Ave	67	1.2	H	5.81	42.84	54.00	-11.16
5350.34	45.93	PK	234	1.9	H	-1.22	44.71	74.00	-29.29
5350.34	39.54	Ave	234	1.9	H	-1.22	38.32	54.00	-15.68
802.11a U-NII-3 High channel 5825MHz									
223.45	36.43	QP	134	1.3	H	-11.62	24.81	46.00	-21.19
223.45	33.58	QP	238	1.1	V	-11.62	21.96	46.00	-24.04
4506.47	49.90	PK	27	1.2	H	-1.84	48.06	74.00	-25.94
4506.47	45.26	Ave	27	1.2	H	-1.84	43.42	54.00	-10.58
11650.00	40.65	PK	188	1.5	H	5.84	46.49	74.00	-27.51
11650.00	36.39	Ave	188	1.5	H	5.84	42.23	54.00	-11.77
5355.40	46.85	PK	4	1.3	H	-1.30	45.55	74.00	-28.45
5355.40	38.75	Ave	4	1.3	H	-1.30	37.45	54.00	-16.55

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11n(HT20) U-NII-1 Low Channel 5180MHz									
223.45	37.91	QP	161	1.6	H	-11.62	26.29	46.00	-19.71
223.45	34.78	QP	354	1.5	V	-11.62	23.16	46.00	-22.84
4501.82	48.54	PK	162	1.4	H	-2.14	46.40	74.00	-27.60
4501.82	45.07	Ave	162	1.4	H	-2.14	42.93	54.00	-11.07
5112.78	46.91	PK	258	1.3	H	-1.06	45.85	74.00	-28.15
5112.78	38.62	Ave	258	1.3	H	-1.06	37.56	54.00	-16.44
10360.00	42.12	PK	37	1.6	H	5.33	47.45	74.00	-26.55
10360.00	34.80	Ave	37	1.6	H	5.33	40.13	54.00	-13.87
802.11n(HT20) U-NII-1 Middle channel 5200MHz									
223.45	39.01	QP	173	1.6	H	-11.62	27.39	46.00	-18.61
223.45	33.92	QP	233	1.9	V	-11.62	22.30	46.00	-23.70
4536.90	49.22	PK	143	1.5	H	-2.12	47.10	74.00	-26.90
4536.90	46.16	Ave	143	1.5	H	-2.12	44.04	54.00	-9.96
5140.65	46.27	PK	228	1.6	H	-1.06	45.21	74.00	-28.79
5140.65	38.03	Ave	228	1.6	H	-1.06	36.97	54.00	-17.03
10400.00	42.80	PK	21	1.9	H	5.21	48.01	74.00	-25.99
10400.00	36.07	Ave	21	1.9	H	5.21	41.28	54.00	-12.72

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11n(HT20) U-NII-1 High channel 5240MHz									
223.45	39.96	QP	68	1.7	H	-11.62	28.34	46.00	-17.66
223.45	33.13	QP	22	1.1	V	-11.62	21.51	46.00	-24.49
4512.97	48.22	PK	257	1.6	H	-1.96	46.26	74.00	-27.74
4512.97	45.88	Ave	257	1.6	H	-1.96	43.92	54.00	-10.08
5117.00	46.13	PK	30	1.8	H	-1.06	45.07	74.00	-28.93
5117.00	37.05	Ave	30	1.8	H	-1.06	35.99	54.00	-18.01
10480.00	41.17	PK	162	1.4	H	5.14	46.31	74.00	-27.69
10480.00	36.78	Ave	162	1.4	H	5.14	41.92	54.00	-12.08
802.11n(HT20) U-NII-3 Low Channel 5745MHz									
223.45	38.74	QP	114	1.0	H	-11.62	27.12	46.00	-18.88
223.45	32.93	QP	1	1.7	V	-11.62	21.31	46.00	-24.69
4528.18	46.98	PK	330	2.0	H	-1.85	45.13	74.00	-28.87
4528.18	44.16	Ave	330	2.0	H	-1.85	42.31	54.00	-11.69
11490.00	40.72	PK	328	1.9	H	5.93	46.65	74.00	-27.35
11490.00	34.03	Ave	328	1.9	H	5.93	39.96	54.00	-14.04
5365.50	45.76	PK	114	1.5	H	-1.01	44.75	74.00	-29.25
5365.50	37.06	Ave	114	1.5	H	-1.01	36.05	54.00	-17.95

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11n(HT20) U-NII-3 Middle channel 5785MHz									
223.45	38.19	QP	295	1.9	H	-11.62	26.57	46.00	-19.43
223.45	33.03	QP	303	1.2	V	-11.62	21.41	46.00	-24.59
4507.05	46.06	PK	219	1.9	H	-1.89	44.17	74.00	-29.83
4507.05	44.49	Ave	219	1.9	H	-1.89	42.60	54.00	-11.40
11570.00	42.16	PK	90	2.0	H	5.81	47.97	74.00	-26.03
11570.00	35.03	Ave	90	2.0	H	5.81	40.84	54.00	-13.16
5378.03	46.83	PK	189	1.6	H	-1.04	45.79	74.00	-28.21
5378.03	39.99	Ave	189	1.6	H	-1.04	38.95	54.00	-15.05
802.11n(HT20) U-NII-3 High channel 5825MHz									
223.45	37.19	QP	266	1.2	H	-11.62	25.57	46.00	-20.43
223.45	32.94	QP	238	1.6	V	-11.62	21.32	46.00	-24.68
4505.36	45.70	PK	182	1.4	H	-1.97	43.73	74.00	-30.27
4505.36	43.93	Ave	182	1.4	H	-1.97	41.96	54.00	-12.04
11650.00	42.30	PK	89	1.9	H	5.84	48.14	74.00	-25.86
11650.00	35.48	Ave	89	1.9	H	5.84	41.32	54.00	-12.68
5352.16	46.88	PK	109	1.3	H	-1.12	45.76	74.00	-28.24
5352.16	39.77	Ave	109	1.3	H	-1.12	38.65	54.00	-15.35

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11n(HT40) U-NII-1 Low Channel 5190MHz									
223.45	39.25	QP	313	1.4	H	-11.62	27.63	46.00	-18.37
223.45	32.75	QP	244	1.6	V	-11.62	21.13	46.00	-24.87
4506.90	39.13	PK	6	1.8	H	-1.89	37.24	74.00	-36.76
4506.90	39.39	Ave	6	1.8	H	-1.89	37.50	54.00	-16.50
5127.16	45.66	PK	189	1.5	H	-1.06	44.60	74.00	-29.40
5127.16	39.80	Ave	189	1.5	H	-1.06	38.74	54.00	-15.26
10380.00	39.66	PK	122	1.1	H	5.26	44.92	74.00	-29.08
10380.00	34.53	Ave	122	1.1	H	5.26	39.79	54.00	-14.21
802.11n(HT40) U-NII-1 High channel 5230MHz									
223.45	40.38	QP	173	1.0	H	-11.62	28.76	46.00	-17.24
223.45	33.60	QP	197	2.0	V	-11.62	21.98	46.00	-24.02
4507.99	38.61	PK	64	1.3	H	-1.94	36.67	74.00	-37.33
4507.99	34.99	Ave	64	1.3	H	-1.94	33.05	54.00	-20.95
5148.79	47.24	PK	175	1.6	H	-1.06	46.18	74.00	-27.82
5148.79	38.33	Ave	175	1.6	H	-1.06	37.27	54.00	-16.73
10480.00	42.10	PK	98	1.2	H	5.28	47.38	74.00	-26.62
10480.00	36.23	Ave	98	1.2	H	5.28	41.51	54.00	-12.49

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11n(HT40) U-NII-3 Low Channel 5755MHz									
223.45	41.46	QP	239	1.8	H	-11.62	29.84	74.00	-44.16
223.45	34.05	QP	233	1.7	V	-11.62	22.43	74.00	-51.57
4536.61	37.23	PK	154	1.3	H	-1.96	35.27	74.00	-38.73
4536.61	33.12	Ave	154	1.3	H	-1.96	31.16	54.00	-22.84
11510.00	39.07	PK	95	2.0	H	5.88	44.95	74.00	-29.05
11510.00	33.93	Ave	95	2.0	H	5.88	39.81	54.00	-14.19
5361.29	46.35	PK	336	1.2	H	-1.01	45.34	74.00	-28.66
5361.29	37.09	Ave	336	1.2	H	-1.01	36.08	54.00	-17.92
802.11n(HT40) U-NII-3 High channel 5795MHz									
223.45	42.24	QP	250	1.4	H	-11.62	30.62	74.00	-43.38
223.45	35.00	QP	265	1.2	V	-11.62	23.38	74.00	-50.62
4538.78	37.27	PK	98	1.1	H	-1.92	35.35	74.00	-38.65
4538.78	33.15	Ave	98	1.1	H	-1.92	31.23	54.00	-22.77
11590.00	42.07	PK	182	1.5	H	5.63	47.70	74.00	-26.30
11590.00	35.50	Ave	182	1.5	H	5.63	41.13	54.00	-12.87
5379.25	46.45	PK	256	1.7	H	-1.04	45.41	74.00	-28.59
5379.25	39.44	Ave	256	1.7	H	-1.04	38.40	54.00	-15.60

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11ac(HT20) U-NII-1 Low Channel 5180MHz									
223.45	38.32	QP	273	1.2	H	-11.62	26.70	46.00	-19.30
223.45	33.86	QP	43	1.4	V	-11.62	22.24	46.00	-23.76
4538.56	43.02	PK	185	1.9	H	-1.86	41.16	74.00	-32.84
4538.56	42.55	Ave	185	1.9	H	-1.86	40.69	54.00	-13.31
5121.90	45.20	PK	106	1.2	H	-1.06	44.14	74.00	-29.86
5121.90	39.37	Ave	106	1.2	H	-1.06	38.31	54.00	-15.69
10360.00	40.79	PK	180	1.6	H	5.33	46.12	74.00	-27.88
10360.00	34.62	Ave	180	1.6	H	5.33	39.95	54.00	-14.05
802.11ac(HT20) U-NII-1 Middle channel 5200MHz									
223.45	39.29	QP	246	1.2	H	-11.62	27.67	46.00	-18.33
223.45	33.82	QP	37	2.0	V	-11.62	22.20	46.00	-23.80
4526.69	43.22	PK	27	1.8	H	-1.82	41.40	74.00	-32.60
4526.69	42.56	Ave	27	1.8	H	-1.82	40.74	54.00	-13.26
5115.13	46.03	PK	195	1.5	H	-1.06	44.97	74.00	-29.03
5115.13	40.87	Ave	195	1.5	H	-1.06	39.81	54.00	-14.19
10400.00	42.18	PK	338	1.9	H	5.21	47.39	74.00	-26.61
10400.00	36.67	Ave	338	1.9	H	5.21	41.88	54.00	-12.12

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11ac(HT20) U-NII-1 High channel 5240MHz									
223.45	39.24	QP	346	1.5	H	-11.62	27.62	46.00	-18.38
223.45	34.80	QP	134	1.4	V	-11.62	23.18	46.00	-22.82
4519.50	43.03	PK	167	1.4	H	-1.81	41.22	74.00	-32.78
4519.50	43.01	Ave	167	1.4	H	-1.81	41.20	54.00	-12.80
5122.32	47.31	PK	303	1.3	H	-1.06	46.25	74.00	-27.75
5122.32	40.75	Ave	303	1.3	H	-1.06	39.69	54.00	-14.31
10480.00	41.80	PK	52	1.5	H	5.14	46.94	74.00	-27.06
10480.00	35.40	Ave	52	1.5	H	5.14	40.54	54.00	-13.46
802.11ac(HT20) U-NII-3 Low Channel 5745MHz									
223.45	38.92	QP	49	1.3	H	-11.62	27.30	46.00	-18.70
223.45	34.49	QP	221	1.2	V	-11.62	22.87	46.00	-23.13
4503.04	41.31	PK	106	2.0	H	-1.92	39.39	74.00	-34.61
4503.04	41.82	Ave	106	2.0	H	-1.92	39.90	54.00	-14.10
11490.00	40.05	PK	252	1.9	H	5.93	45.98	74.00	-28.02
11490.00	33.97	Ave	252	1.9	H	5.93	39.90	54.00	-14.10
5384.27	46.11	PK	267	2.0	H	-1.03	45.08	74.00	-28.92
5384.27	38.78	Ave	267	2.0	H	-1.03	37.75	54.00	-16.25

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11ac(HT20) U-NII-3 Middle channel 5785MHz									
223.45	39.73	QP	326	1.5	H	-11.62	28.11	46.00	-17.89
223.45	34.07	QP	60	1.5	V	-11.62	22.45	46.00	-23.55
4525.33	41.40	PK	25	1.5	H	-1.97	39.43	74.00	-34.57
4525.33	42.19	Ave	25	1.5	H	-1.97	40.22	54.00	-13.78
11570.00	41.71	PK	322	1.0	H	5.81	47.52	74.00	-26.48
11570.00	36.95	Ave	322	1.0	H	5.81	42.76	54.00	-11.24
5357.26	46.04	PK	211	1.2	H	-1.05	44.99	74.00	-29.01
5357.26	38.79	Ave	211	1.2	H	-1.05	37.74	54.00	-16.26
802.11ac(HT20) U-NII-3 High channel 5825MHz									
223.45	40.27	QP	300	1.3	H	-11.62	28.65	46.00	-17.35
223.45	33.48	QP	239	1.1	V	-11.62	21.86	46.00	-24.14
4535.36	41.97	PK	149	1.2	H	-1.88	40.09	74.00	-33.91
4535.36	41.84	Ave	149	1.2	H	-1.88	39.96	54.00	-14.04
11650.00	41.30	PK	332	1.8	H	5.84	47.14	74.00	-26.86
11650.00	35.69	Ave	332	1.8	H	5.84	41.53	54.00	-12.47
5360.82	46.78	PK	261	1.0	H	-1.06	45.72	74.00	-28.28
5360.82	39.90	Ave	261	1.0	H	-1.06	38.84	54.00	-15.16

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11ac(HT40) U-NII-1 Low Channel 5190MHz									
223.45	42.47	QP	145	1.7	H	-11.62	30.85	74.00	-43.15
223.45	34.72	QP	22	1.7	V	-11.62	23.10	74.00	-50.90
4500.14	35.59	PK	141	1.2	H	-1.91	33.68	74.00	-40.32
4500.14	30.29	Ave	141	1.2	H	-1.91	28.38	54.00	-25.62
5126.98	46.05	PK	108	1.5	H	-1.06	44.99	74.00	-29.01
5126.98	41.09	Ave	108	1.5	H	-1.06	40.03	54.00	-13.97
10380.00	39.59	PK	151	1.9	H	5.26	44.85	74.00	-29.15
10380.00	34.79	Ave	151	1.9	H	5.26	40.05	54.00	-13.95
802.11ac(HT40) U-NII-1 High channel 5230MHz									
223.45	42.93	QP	199	1.7	H	-11.62	31.31	74.00	-42.69
223.45	34.22	QP	185	1.5	V	-11.62	22.60	74.00	-51.40
4503.44	36.59	PK	293	1.4	H	-1.93	34.66	74.00	-39.34
4503.44	31.09	Ave	293	1.4	H	-1.93	29.16	54.00	-24.84
5146.22	46.91	PK	119	1.4	H	-1.06	45.85	74.00	-28.15
5146.22	42.33	Ave	119	1.4	H	-1.06	41.27	54.00	-12.73
10460.00	40.89	PK	87	2.0	H	5.28	46.17	74.00	-27.83
10480.00	36.20	Ave	87	2.0	H	5.28	41.48	54.00	-12.52

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11ac(HT40) U-NII-3 Low Channel 5755MHz									
223.45	42.52	QP	159	1.9	H	-11.62	30.90	74.00	-43.10
223.45	35.33	QP	292	1.9	V	-11.62	23.71	74.00	-50.29
4536.79	35.47	PK	244	1.4	H	-1.92	33.55	74.00	-40.45
4536.79	29.88	Ave	244	1.4	H	-1.92	27.96	54.00	-26.04
11510.00	40.00	PK	208	2.0	H	5.88	45.88	74.00	-28.12
11510.00	33.47	Ave	208	2.0	H	5.88	39.35	54.00	-14.65
5360.66	45.48	PK	317	1.4	H	-1.07	44.41	74.00	-29.59
5360.66	38.82	Ave	317	1.4	H	-1.07	37.75	54.00	-16.25
802.11ac(HT40) U-NII-3 High channel 5795MHz									
223.45	42.13	QP	24	1.6	H	-11.62	30.51	74.00	-43.49
223.45	34.98	QP	110	1.6	V	-11.62	23.36	74.00	-50.64
4524.10	34.49	PK	256	1.1	H	-1.86	32.63	74.00	-41.37
4524.10	29.45	Ave	256	1.1	H	-1.86	27.59	54.00	-26.41
11590.00	42.63	PK	347	1.1	H	5.63	48.26	74.00	-25.74
11590.00	36.04	Ave	347	1.1	H	5.63	41.67	54.00	-12.33
5386.14	45.10	PK	180	1.6	H	-1.03	44.07	74.00	-29.93
5386.14	39.76	Ave	180	1.6	H	-1.03	38.73	54.00	-15.27

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
802.11ac(HT80) U-NII-1 Low Channel 5210MHz									
223.45	35.80	QP	14	1.1	H	-11.62	24.18	54.00	-29.82
4524.10	33.98	QP	200	1.2	V	-11.62	22.36	54.00	-31.64
4534.47	28.57	PK	298	1.9	H	-1.88	26.69	74.00	-47.31
4534.47	42.75	Ave	298	1.9	H	-1.88	40.87	54.00	-13.13
5110.53	37.86	PK	332	1.9	H	-1.06	36.80	74.00	-37.20
5110.53	45.69	Ave	332	1.9	H	-1.06	44.63	54.00	-9.37
10420.00	41.85	PK	82	1.3	H	4.65	46.50	74.00	-27.50
10420.00	35.78	Ave	82	1.3	H	4.65	40.43	54.00	-13.57
802.11ac(HT80) U-NII-3 Low Channel 5775MHz									
4524.10	34.12	QP	355	1.2	H	-11.62	22.50	74.00	-51.50
4534.47	29.23	QP	84	1.4	V	-11.62	17.61	74.00	-56.39
4535.74	43.22	PK	192	1.6	H	-1.85	41.37	74.00	-32.63
4535.74	42.71	Ave	192	1.6	H	-1.85	40.86	54.00	-13.14
11550.00	42.71	PK	149	1.8	H	4.83	47.54	74.00	-26.46
11550.00	35.86	Ave	149	1.8	H	4.83	40.69	54.00	-13.31
5364.28	45.50	PK	82	1.1	H	-1.14	44.36	74.00	-29.64
5364.28	37.31	Ave	82	1.1	H	-1.14	36.17	54.00	-17.83

Test Frequency: 18GHz~40GHz

The measurements were more than 20 dB below the limit and not reported.

10 Duty cycle

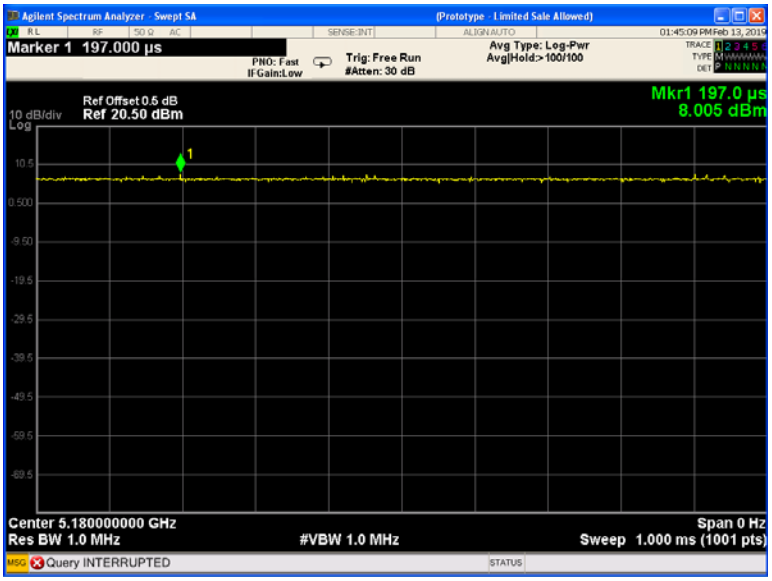
Test Requirement:	47 CFR Part 15C 15.407 KDB789033 D02 General U-NII Test Procedures New Rules v02r01, Section (B)
Test Method:	ANSI C63.10: 2013
Test Limit:	N/A
Test Result:	PASS
Remark:	Through Pre-scan, and found 802.11a at lowest channel is the worst case. Only the worst case is recorded in the report.

10.1 Summary of Test Results

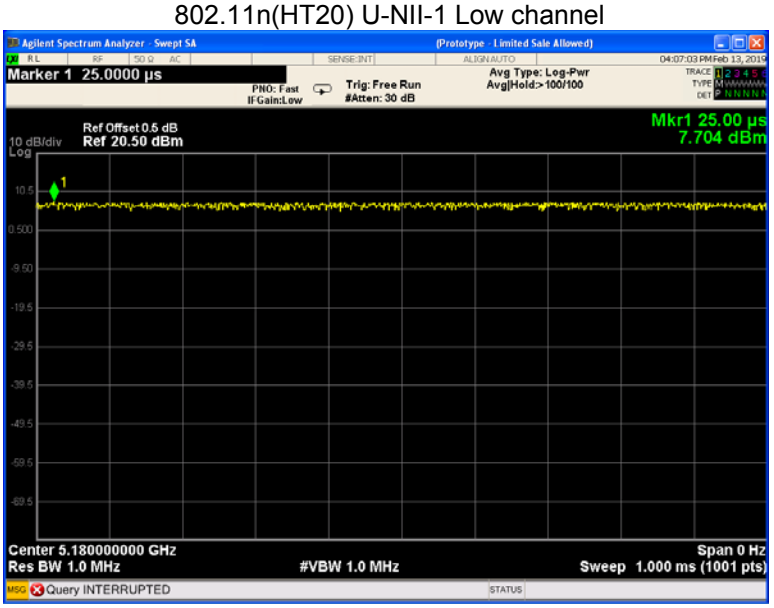
802.11a mode			
channel	On time(ms)	Period(ms)	Duty Cycle(%)
36	100	100	100
149	100	100	100
802.11n(HT20) mode			
channel	On time(ms)	Period(ms)	Duty Cycle(%)
36	100	100	100
149	100	100	100
802.11n(HT40) mode			
channel	On time(ms)	Period(ms)	Duty Cycle(%)
38	100	100	100
151	100	100	100
802.11ac(HT20) mode			
channel	On time(ms)	Period(ms)	Duty Cycle(%)
36	100	100	100
149	100	100	100
802.11ac(HT40) mode			
channel	On time(ms)	Period(ms)	Duty Cycle(%)
38	100	100	100
151	100	100	100
802.11ac(HT80) mode			
channel	On time(ms)	Period(ms)	Duty Cycle(%)
42	100	100	100
155	100	100	100

Test result plots shown as follows:

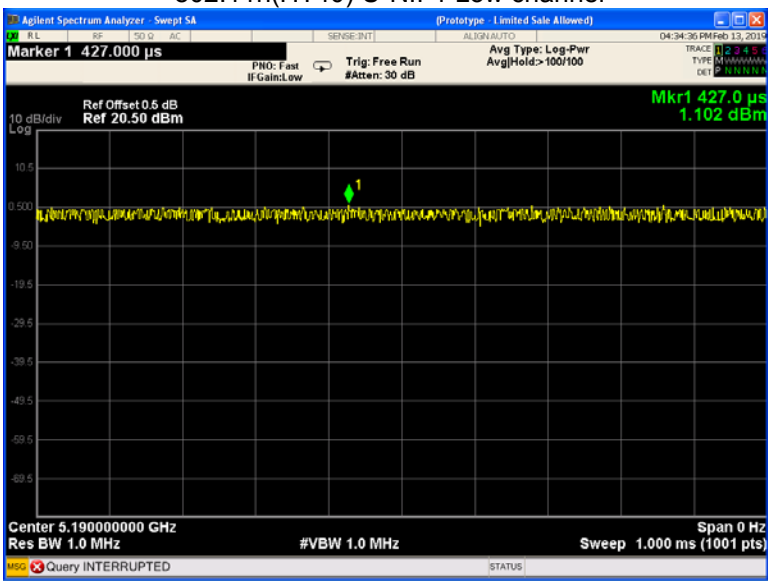
802.11a U-NII-1 Low channel



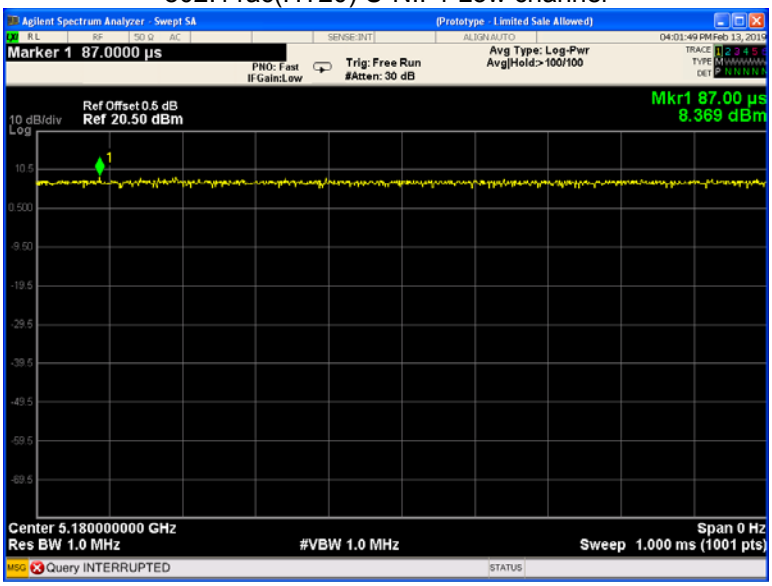
802.11n(HT20) U-NII-1 Low channel



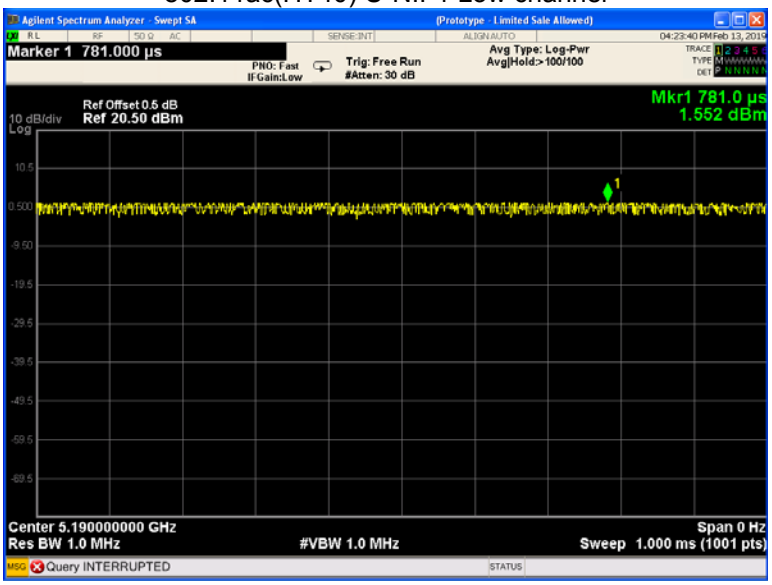
802.11n(HT40) U-NII-1 Low channel



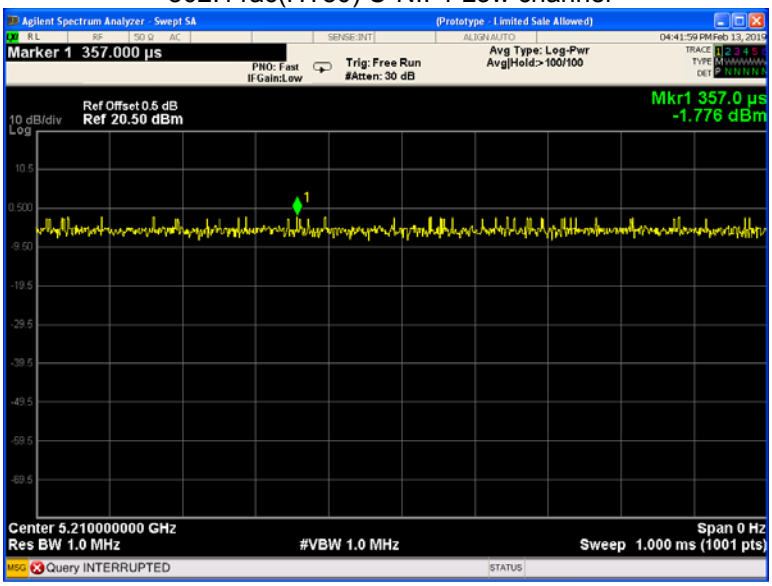
802.11ac(HT20) U-NII-1 Low channel



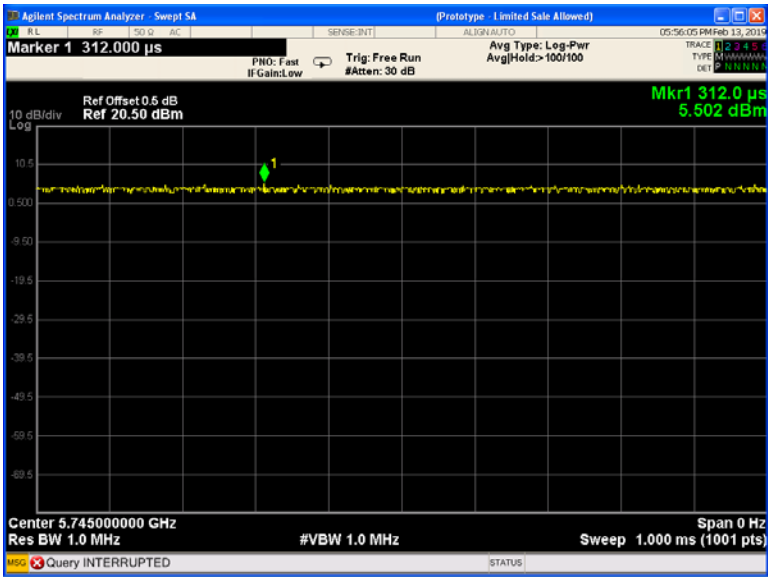
802.11ac(HT40) U-NII-1 Low channel



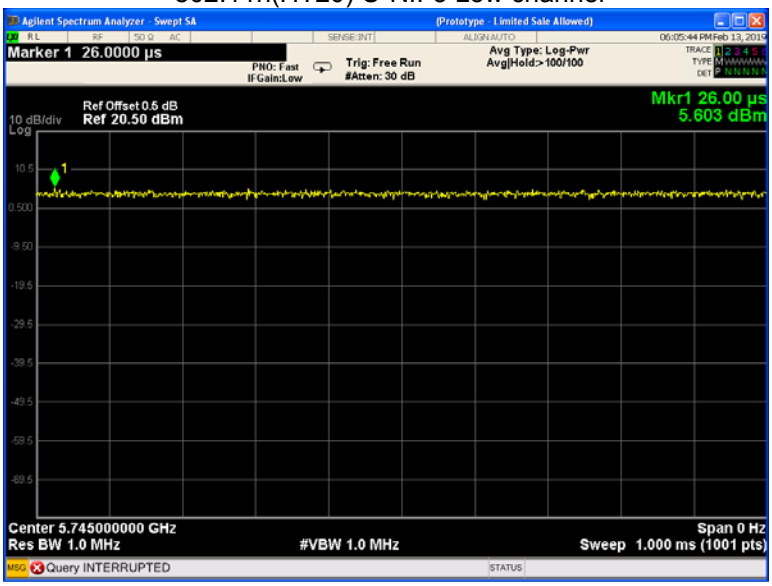
802.11ac(HT80) U-NII-1 Low channel



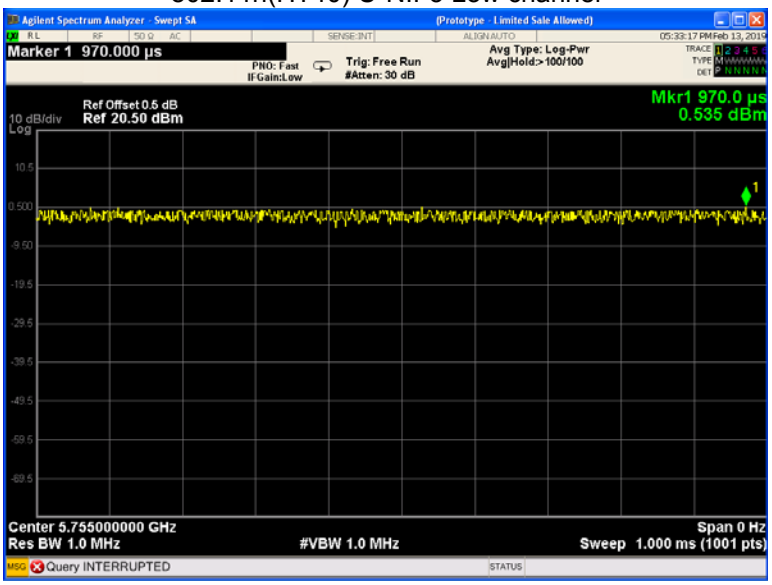
802.11a U-NII-3 Low channel



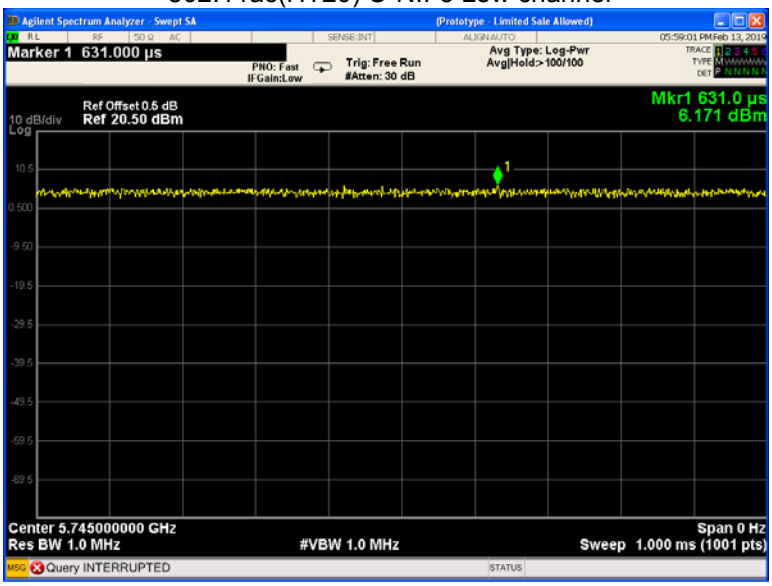
802.11n(HT20) U-NII-3 Low channel



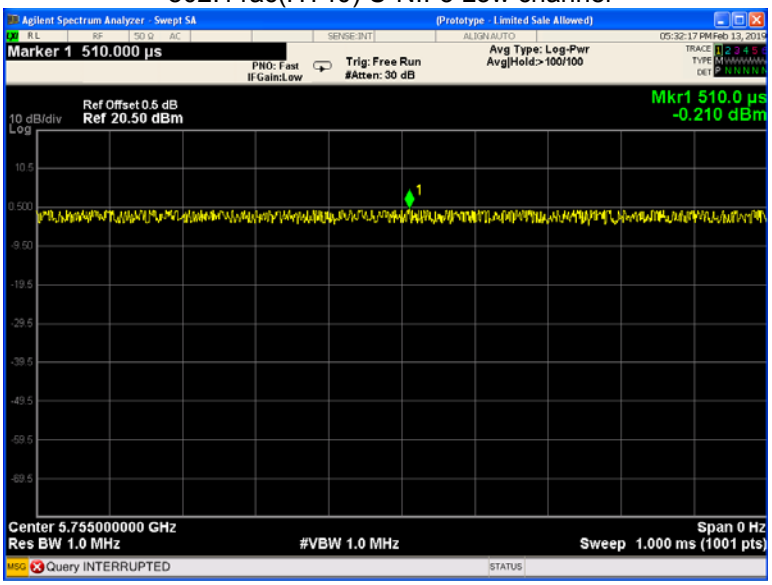
802.11n(HT40) U-NII-3 Low channel



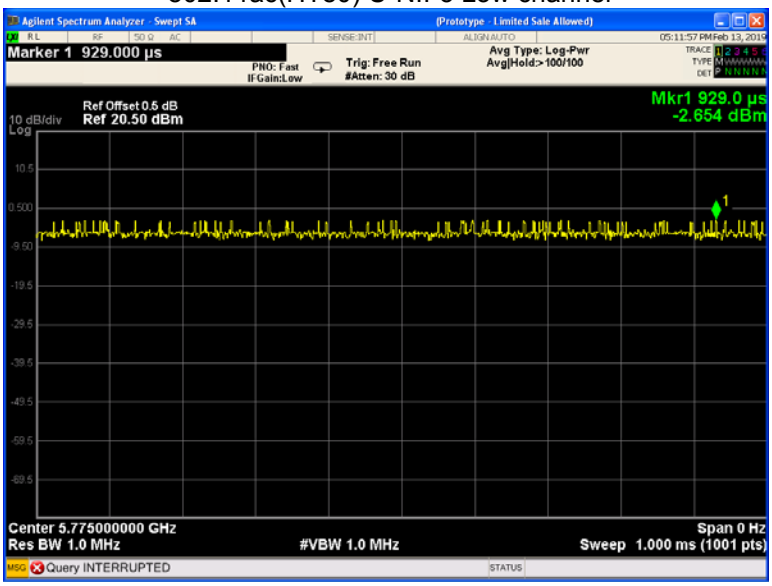
802.11ac(HT20) U-NII-3 Low channel



802.11ac(HT40) U-NII-3 Low channel



802.11ac(HT80) U-NII-3 Low channel



11 Band Edge

Test Requirement:	FCC CFR47 Part 15 Section 15.407
Test Method:	ANSI C63.10 2013
Test Limit:	(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 e.i.r.p. of −27dBm/MHz. (2) For transmitters operating in the 5.725-5.85 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 e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.
Test Result:	PASS

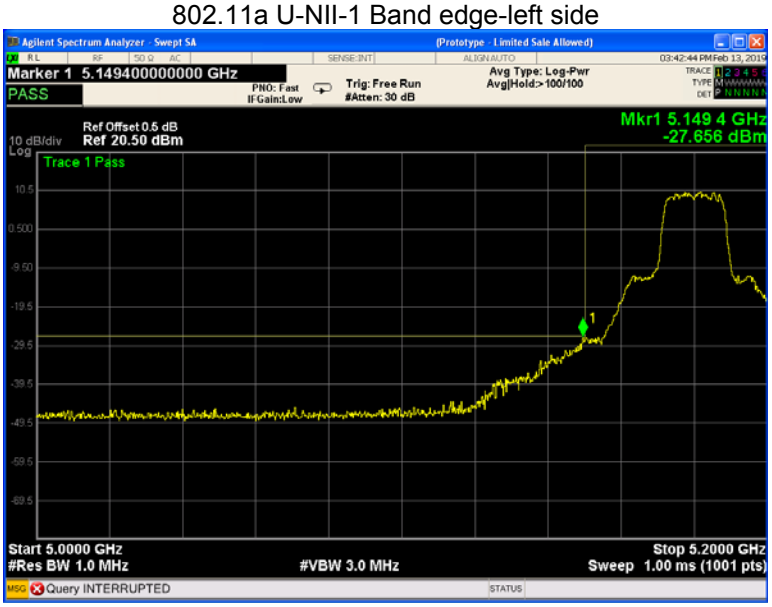
11.1 Test Produce

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

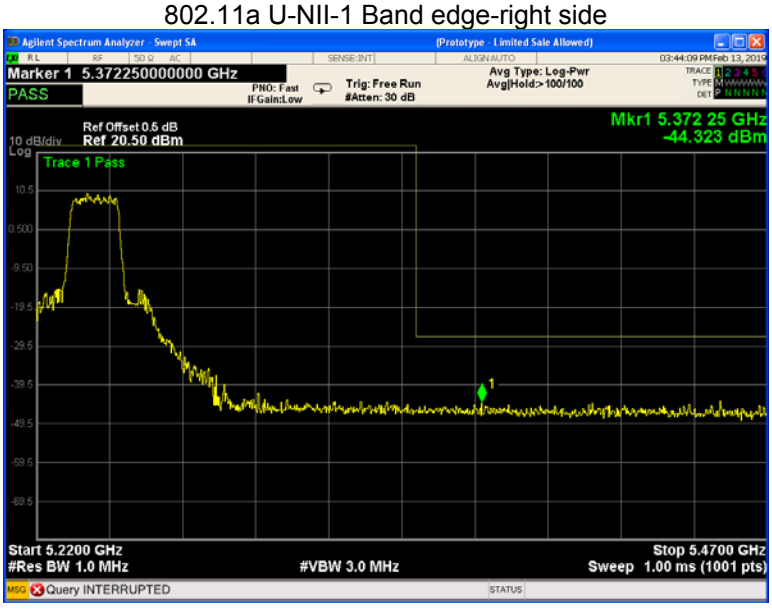
11.2 Test Result

Test result plots shown as follows:

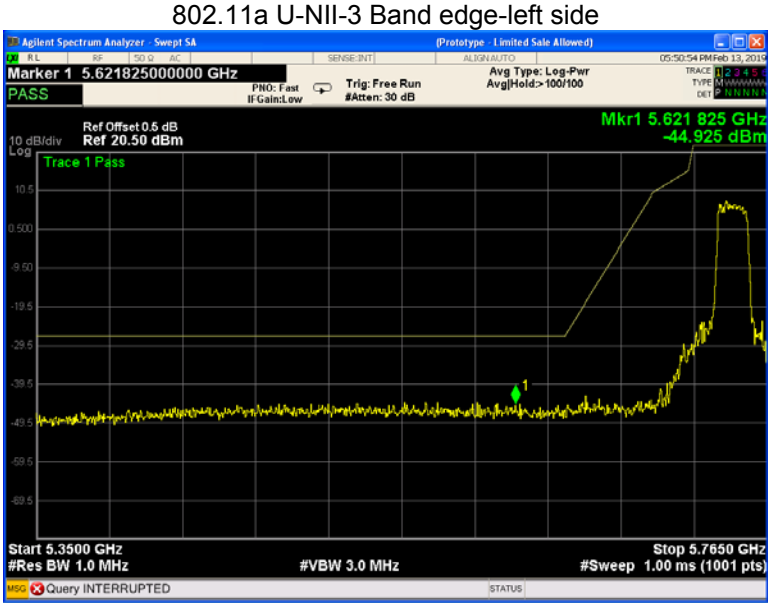
802.11a U-NII-1 Band edge-left side



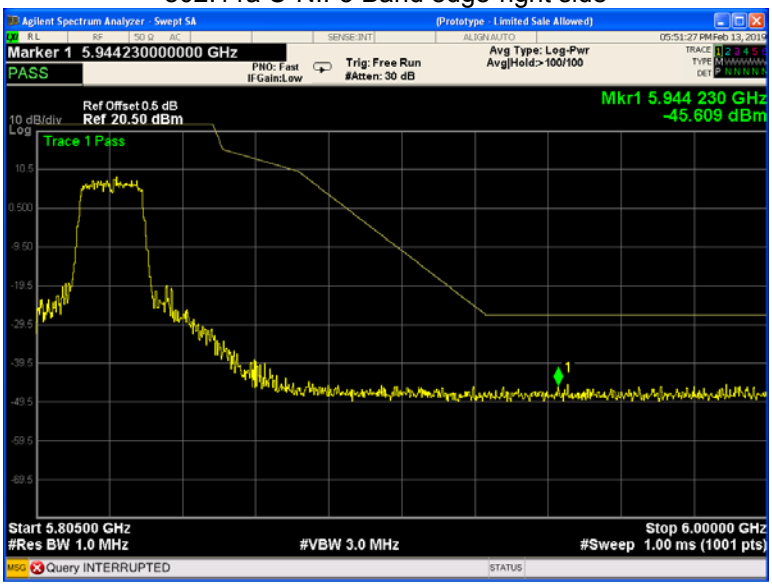
802.11a U-NII-1 Band edge-right side



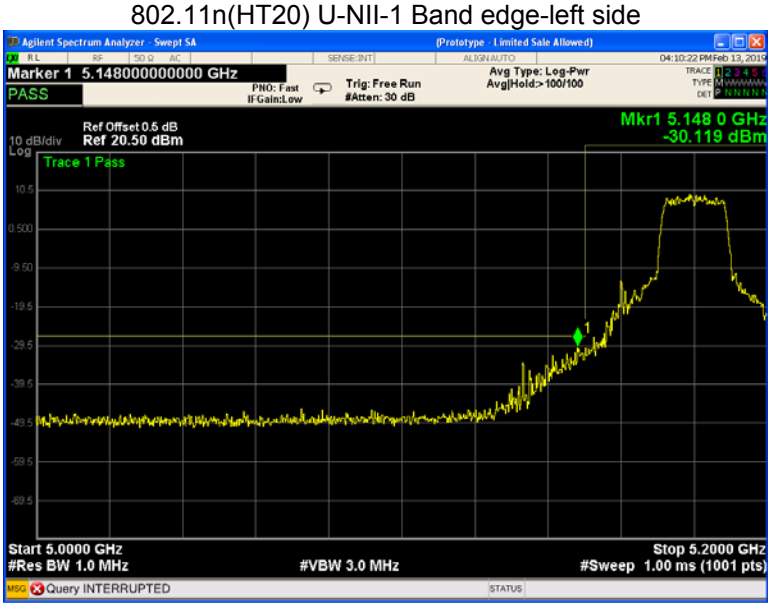
802.11a U-NII-3 Band edge-left side



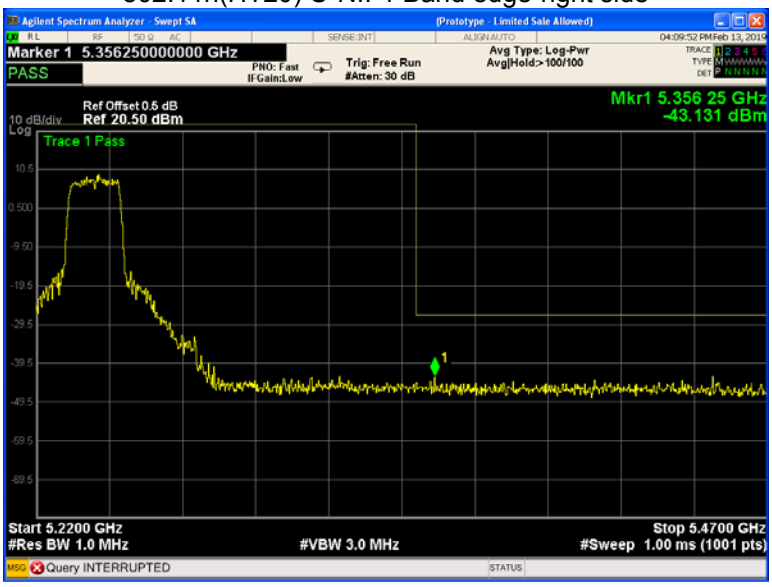
802.11a U-NII-3 Band edge-right side



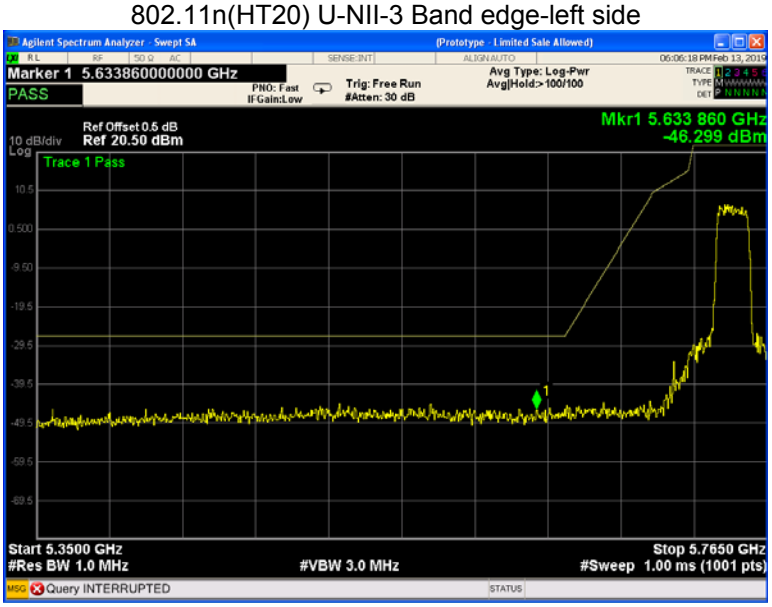
802.11n(HT20) U-NII-1 Band edge-left side



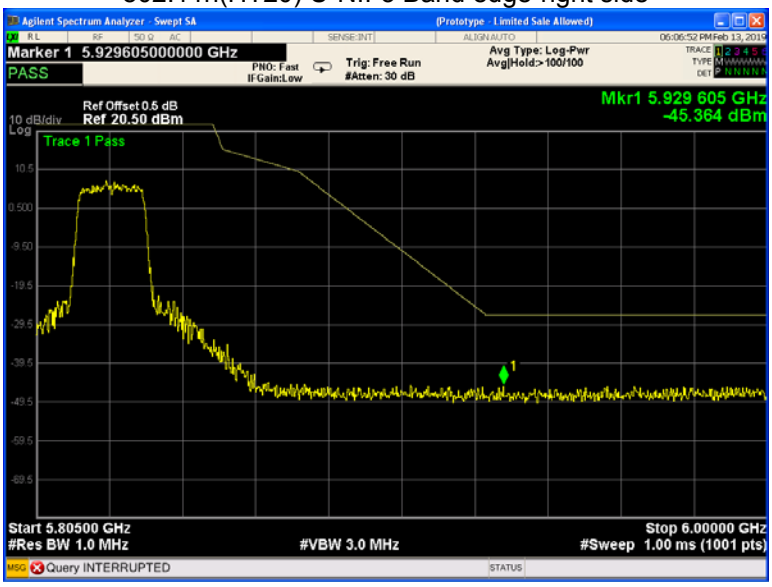
802.11n(HT20) U-NII-1 Band edge-right side



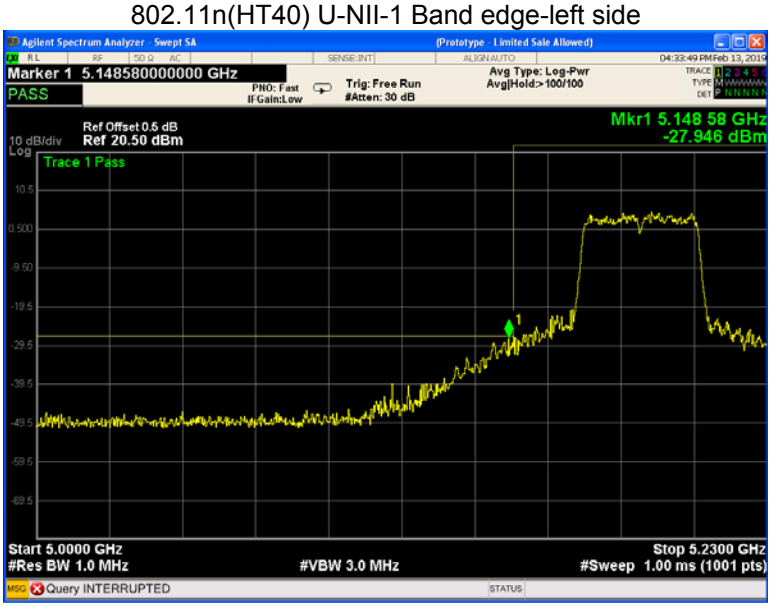
802.11n(HT20) U-NII-3 Band edge-left side



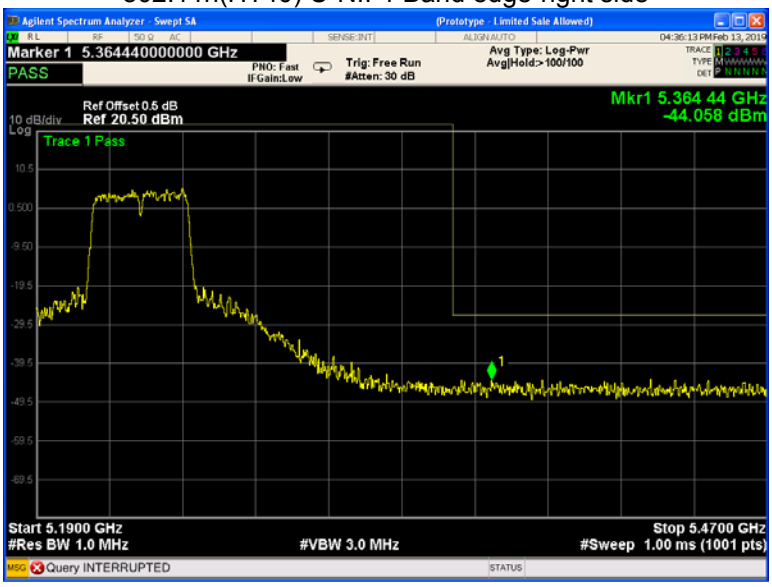
802.11n(HT20) U-NII-3 Band edge-right side



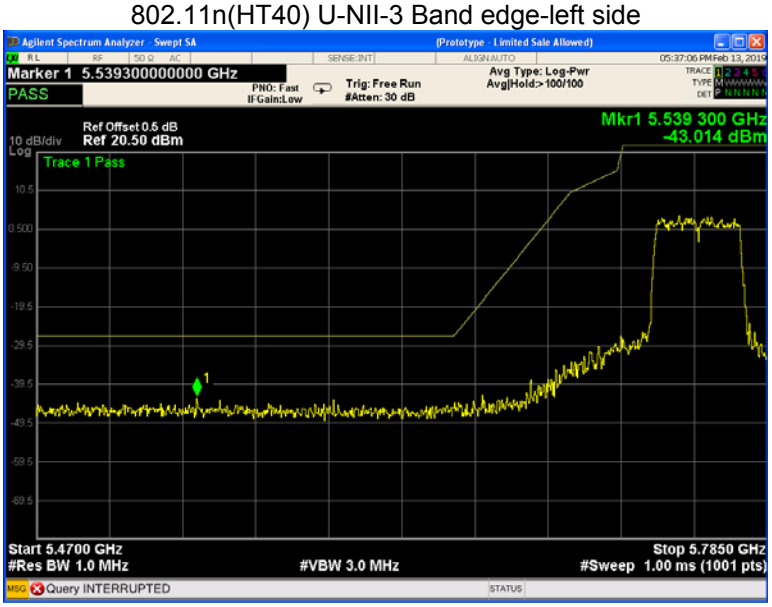
802.11n(HT40) U-NII-1 Band edge-left side



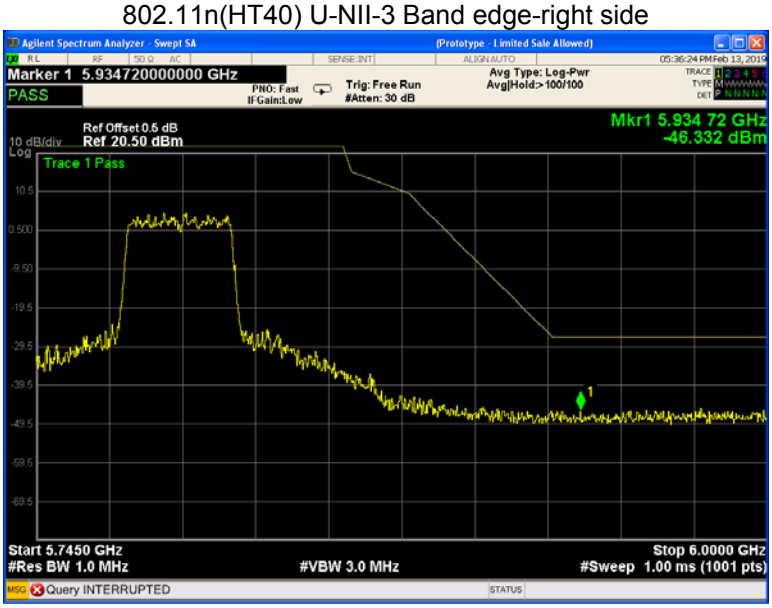
802.11n(HT40) U-NII-1 Band edge-right side



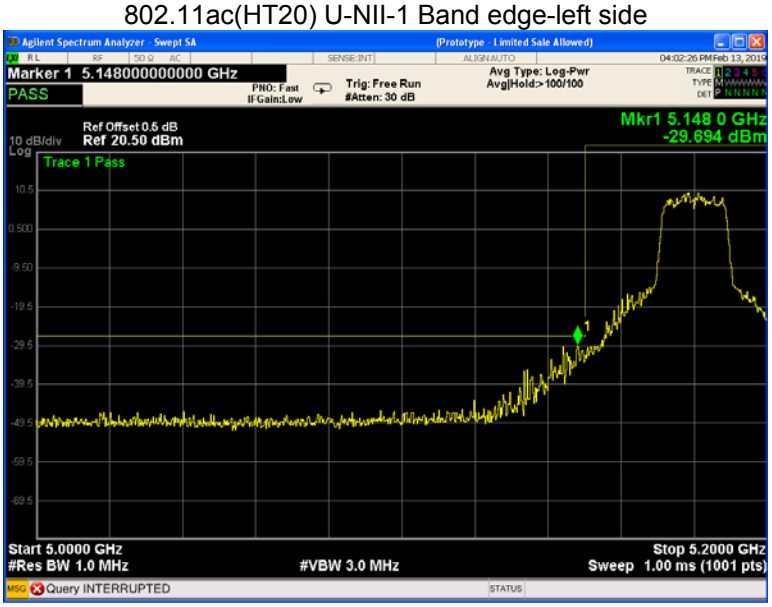
802.11n(HT40) U-NII-3 Band edge-left side



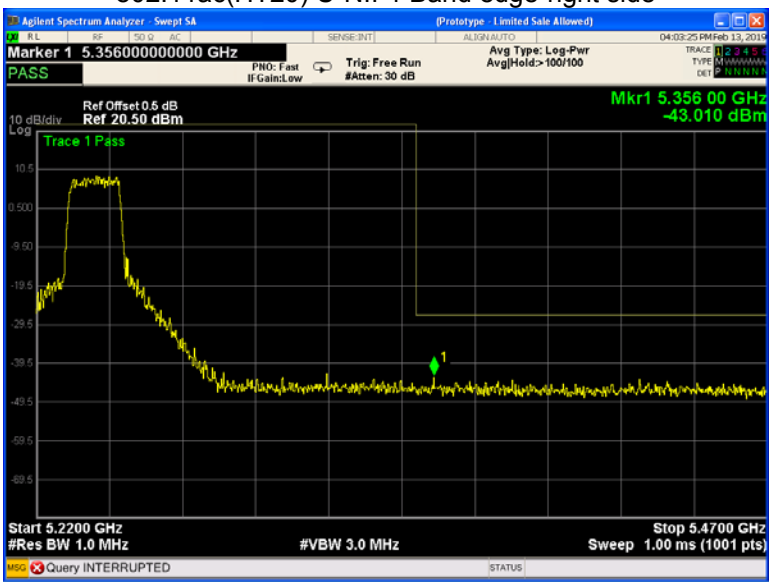
802.11n(HT40) U-NII-3 Band edge-right side



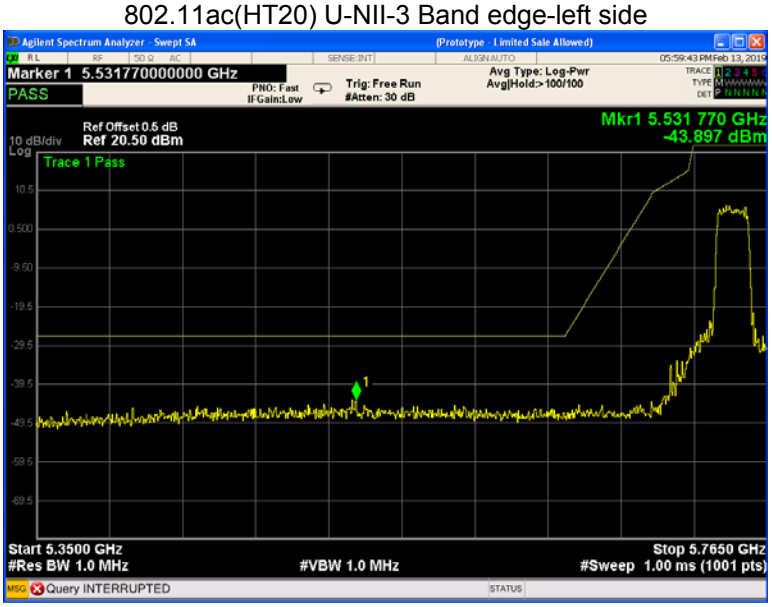
802.11ac(HT20) U-NII-1 Band edge-left side



802.11ac(HT20) U-NII-1 Band edge-right side

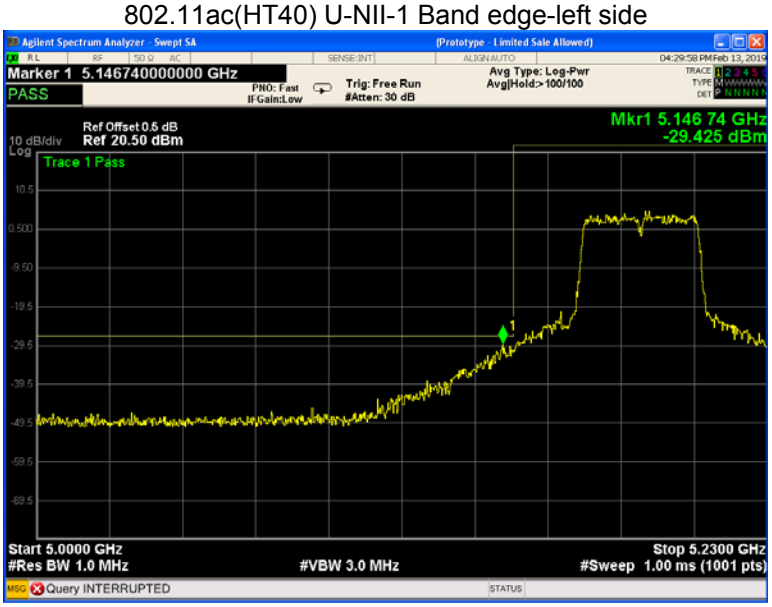


802.11ac(HT20) U-NII-3 Band edge-left side

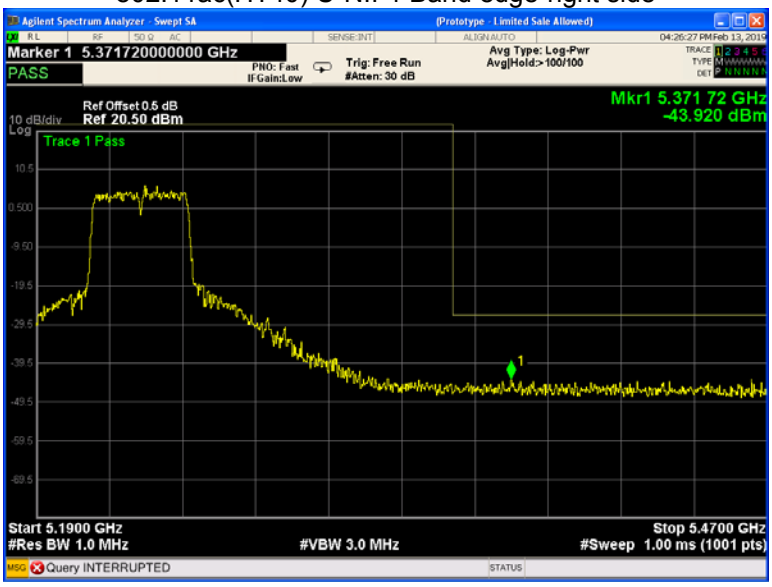


802.11ac(HT20) U-NII-3 Band edge-right side

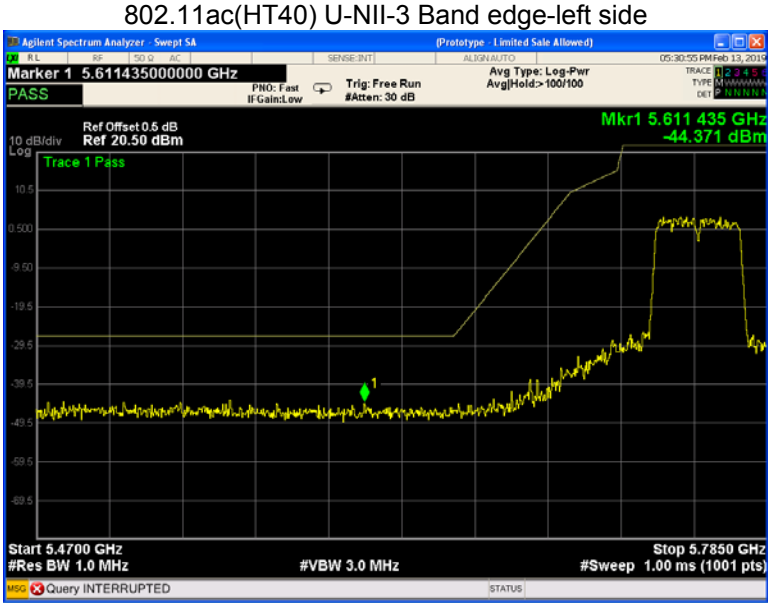
802.11ac(HT40) U-NII-1 Band edge-left side



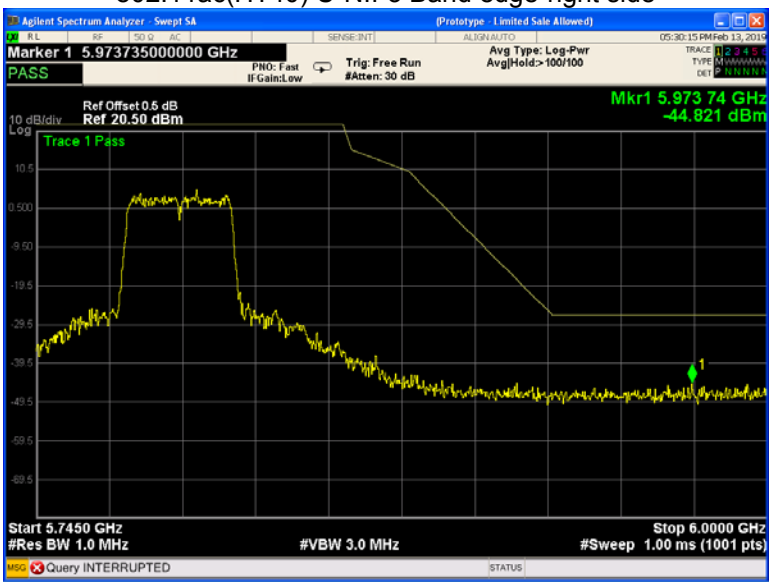
802.11ac(HT40) U-NII-1 Band edge-right side



802.11ac(HT40) U-NII-3 Band edge-left side

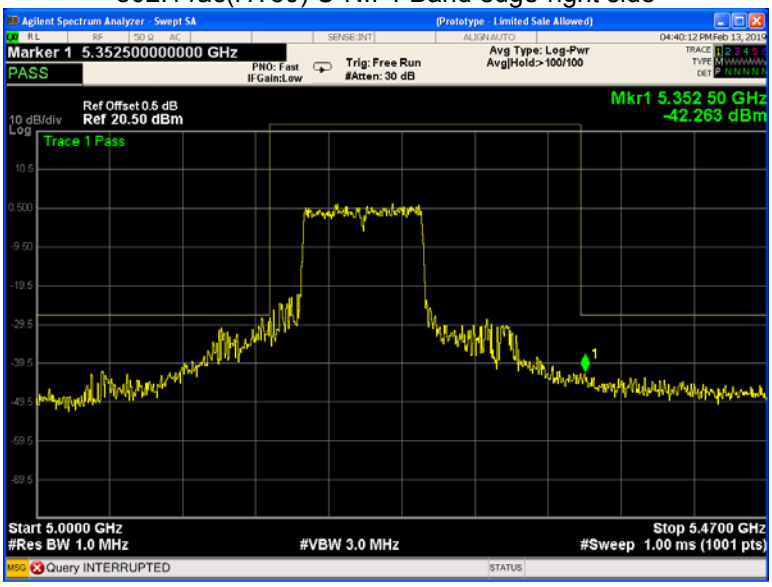


802.11ac(HT40) U-NII-3 Band edge-right side



802.11ac(HT80) U-NII-1 Band edge-left side

802.11ac(HT80) U-NII-1 Band edge-right side



802.11ac(HT80) U-NII-3 Band edge-left side

802.11ac(HT80) U-NII-3 Band edge-right side

12 6 dB Bandwidth

Test Requirement:	FCC CFR47 Part 15 Section 15.407(e)
Test Method:	KDB662911 D01 Multiple Transmitter Output v02r01 KDB789033 D02 General U-NII Test Procedures New Rules v02r01 Section C
Test Limit:	≥ 500 kHz
Test Result:	PASS

12.1 Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;

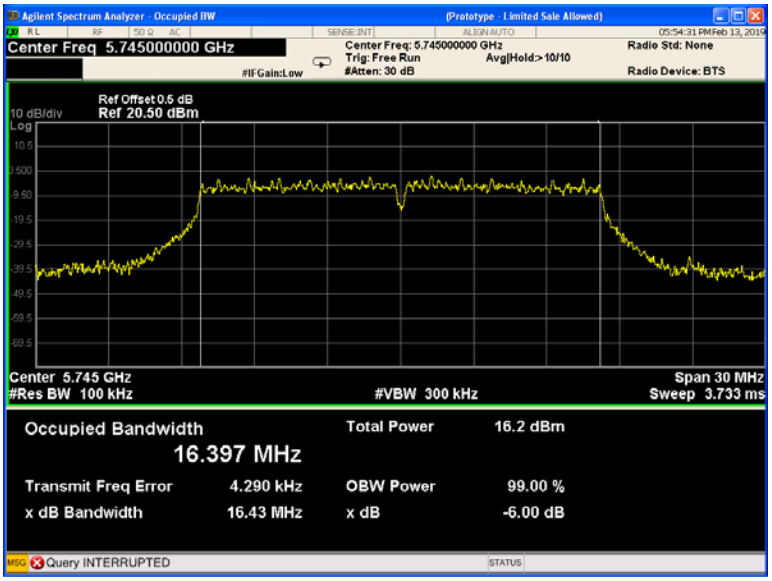
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz

12.2 Test Result:

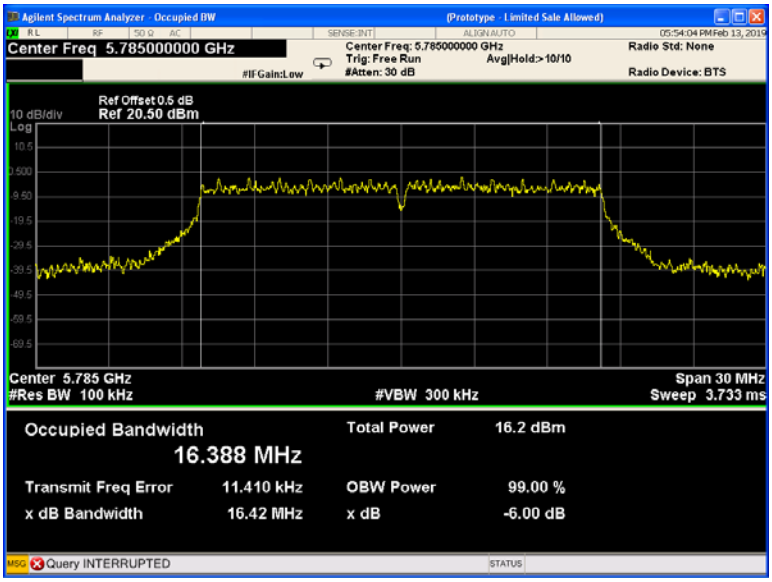
Band	Operation mode	6 dB Bandwidth (MHz)		
		Low	Middle	High
U-NII-3	802.11a	16.43	16.42	16.39
	802.11n(HT20)	17.45	17.43	17.22
	802.11n(HT40)	35.71	/	35.79
	802.11ac(HT20)	17.56	17.31	17.20
	802.11ac(HT40)	35.96	/	36.35
	802.11ac(HT80)	75.48	/	/

Test result plots shown as follows:

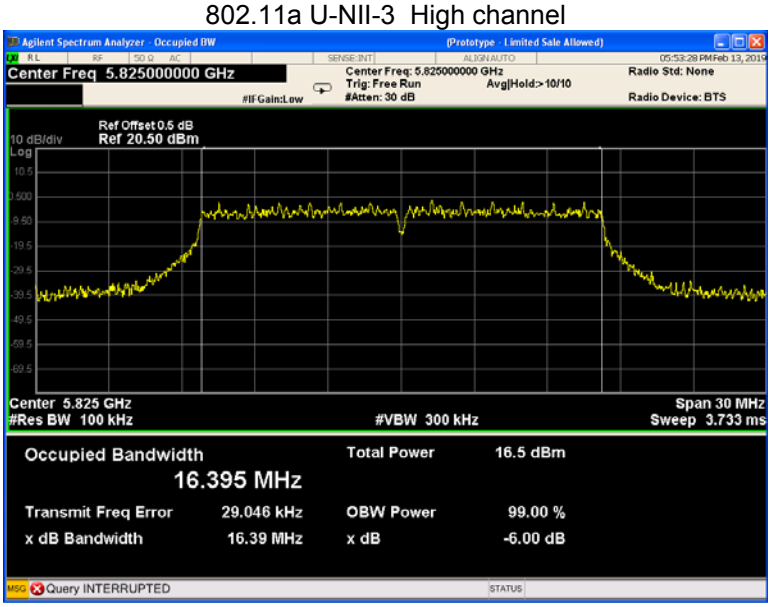
802.11a U-NII-3 Low channel



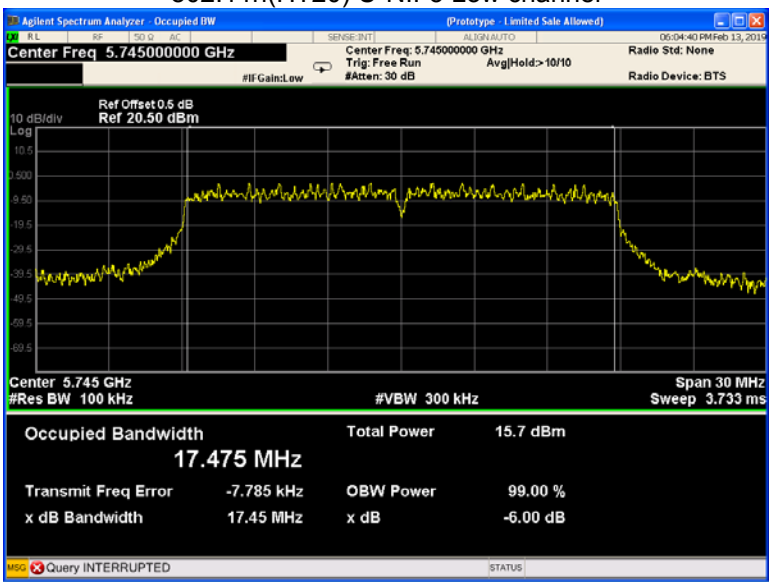
802.11a U-NII-3 Middle channel



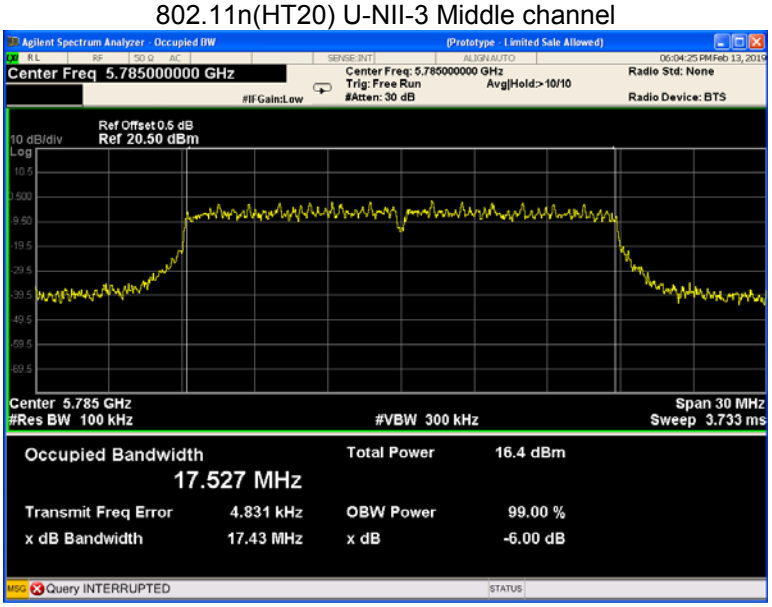
802.11a U-NII-3 High channel



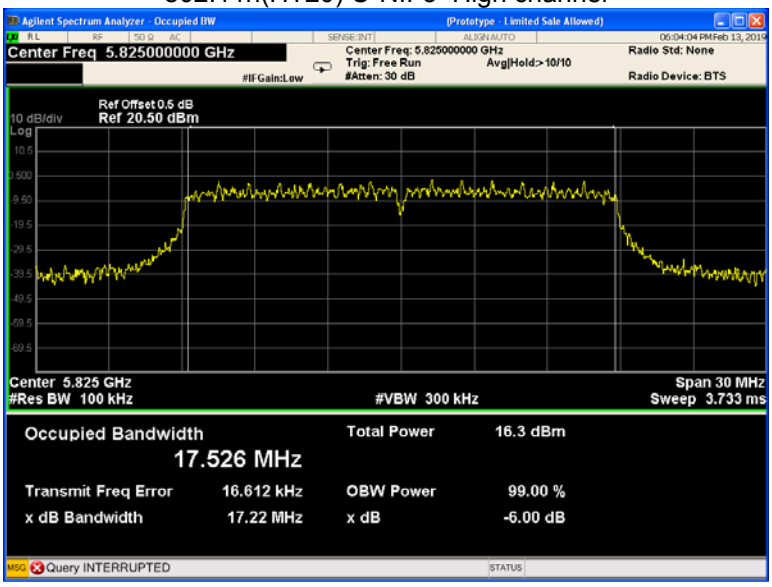
802.11n(HT20) U-NII-3 Low channel



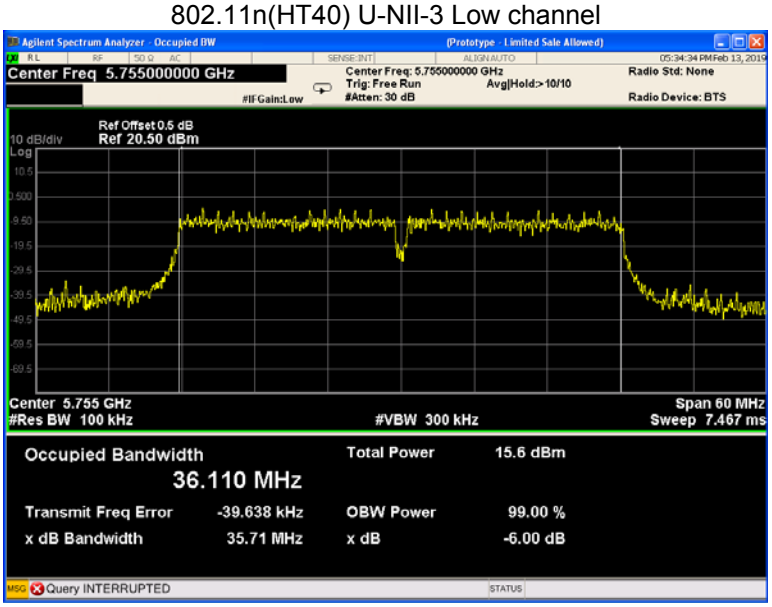
802.11n(HT20) U-NII-3 Middle channel



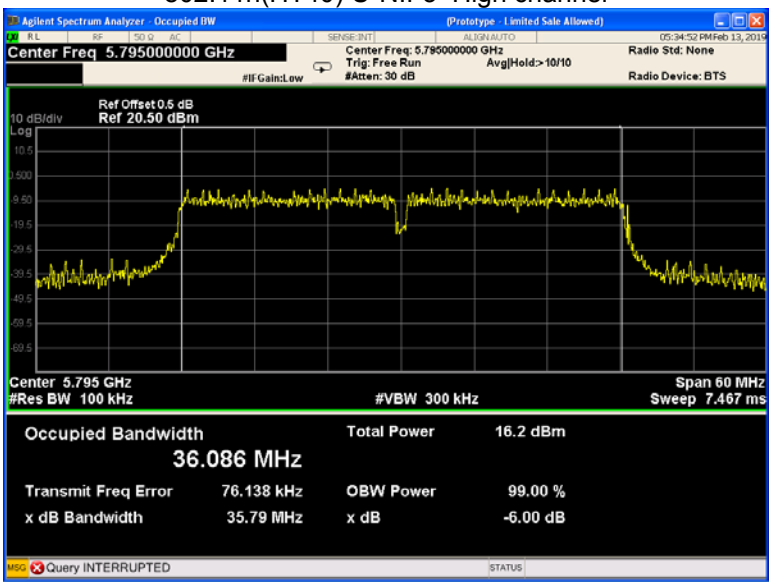
802.11n(HT20) U-NII-3 High channel



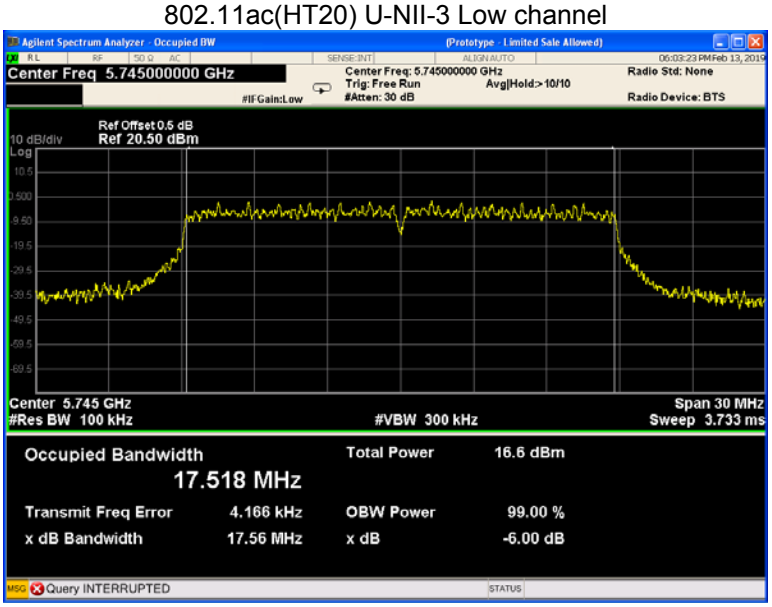
802.11n(HT40) U-NII-3 Low channel



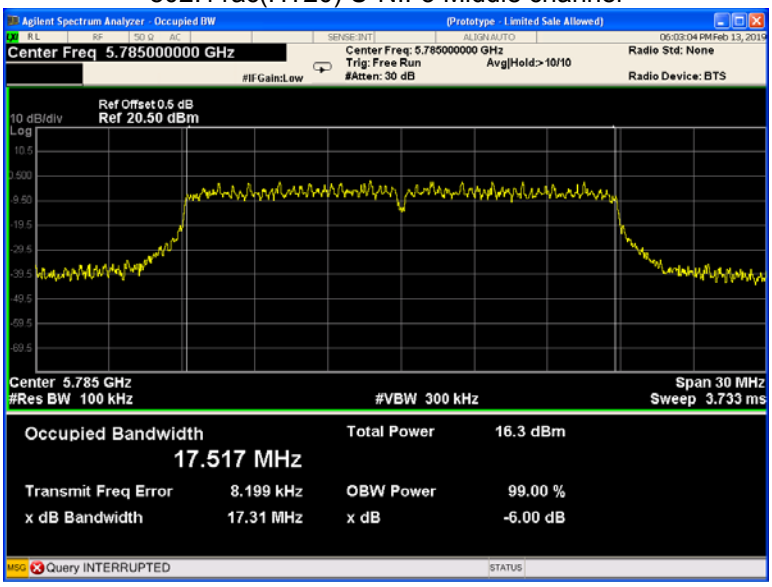
802.11n(HT40) U-NII-3 High channel



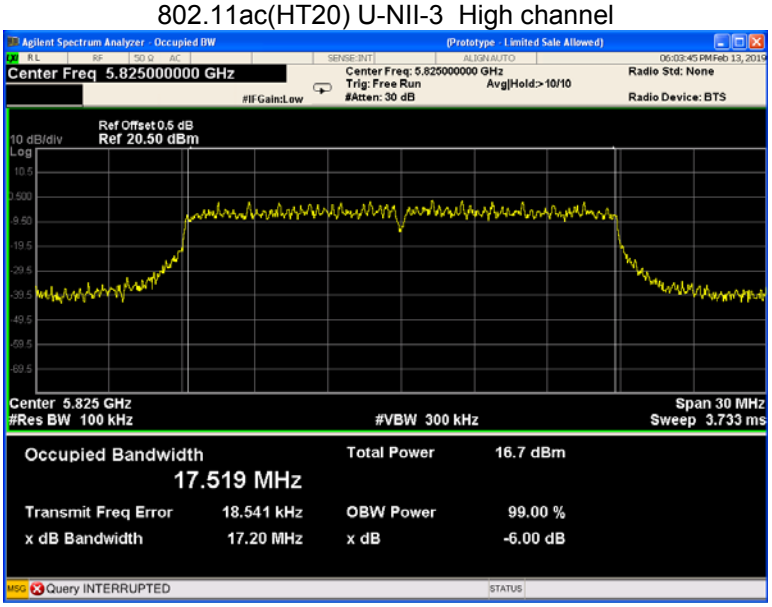
802.11ac(HT20) U-NII-3 Low channel



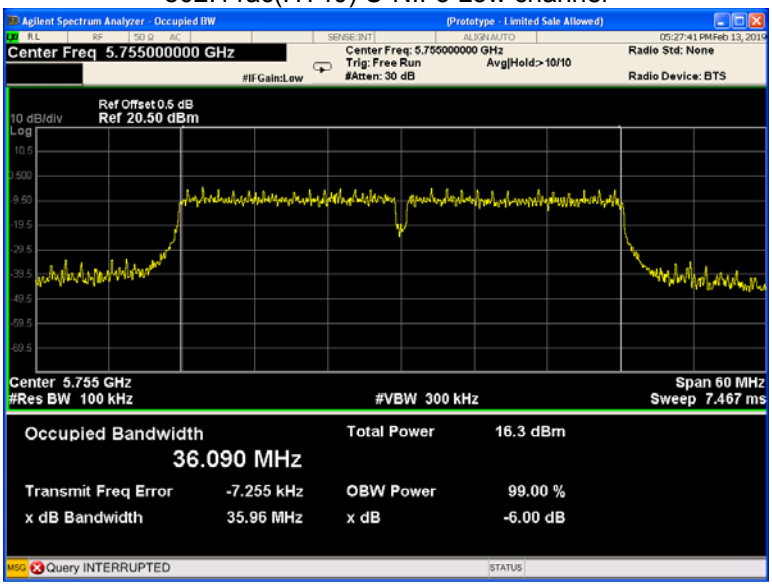
802.11ac(HT20) U-NII-3 Middle channel



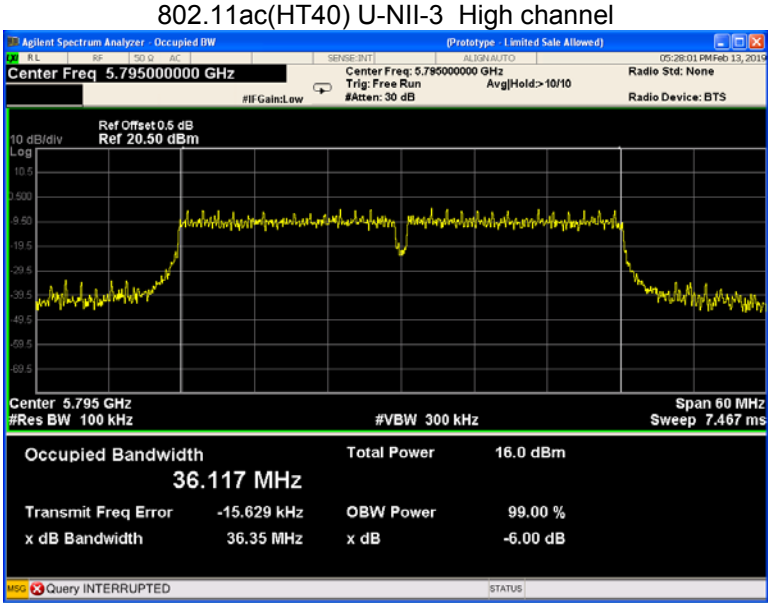
802.11ac(HT20) U-NII-3 High channel



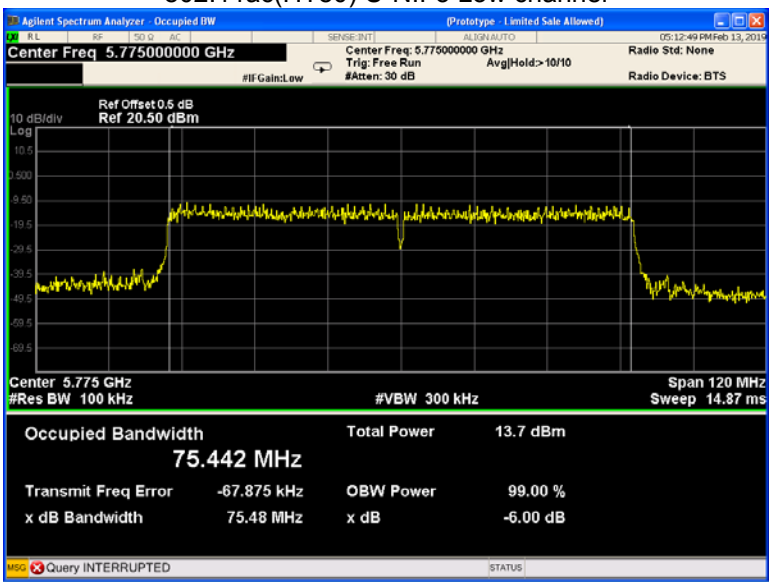
802.11ac(HT40) U-NII-3 Low channel



802.11ac(HT40) U-NII-3 High channel



802.11ac(HT80) U-NII-3 Low channel



13 26 dB Bandwidth and 99% Occupied Bandwidth

Test Requirement:	47 CFR Part 15C Section 15.407 (a)
Test Method:	KDB662911 D01 Multiple Transmitter Output v02r01 KDB789033 D02 General U-NII Test Procedures New Rules v02r01 Section D
Test Limit:	No restriction limits
Test Result:	PASS

13.1 Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;

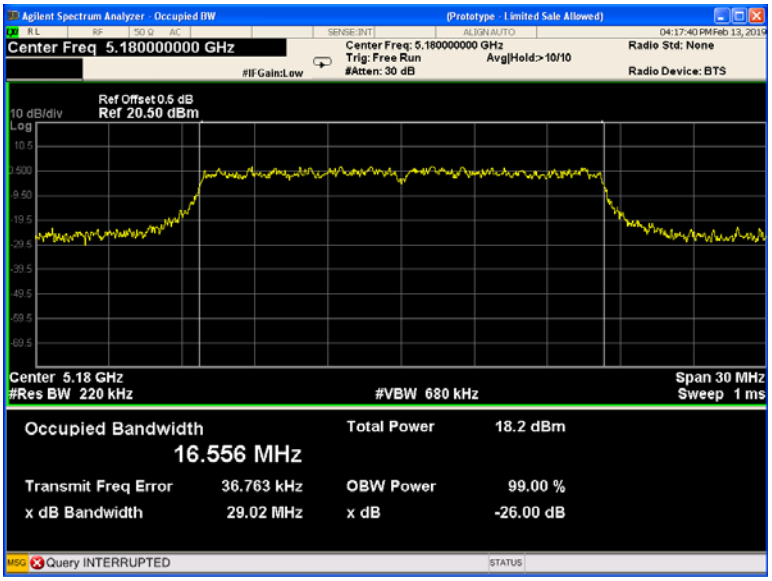
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz

13.2 Test Result:

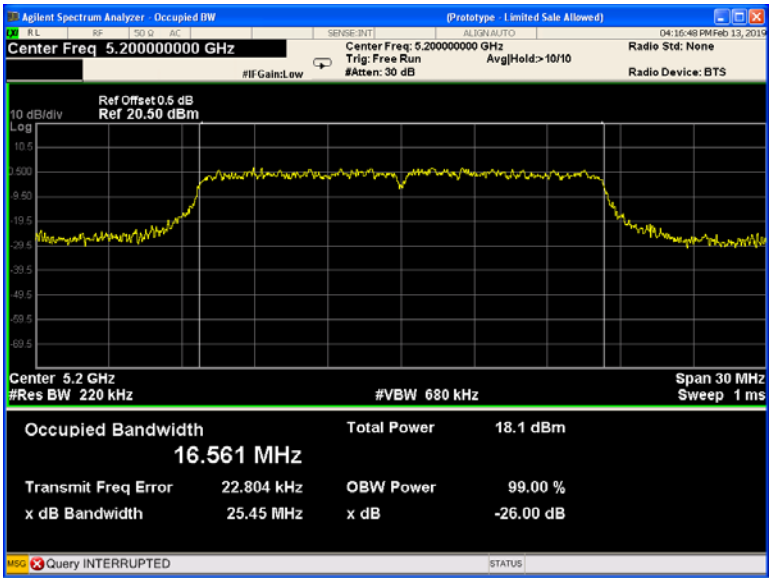
Band	Operation mode	26 dB Bandwidth (MHz)			99% Bandwidth (MHz)		
		Low	Middle	High	Low	Middle	High
U-NII-1	802.11a	29.02	25.45	20.14	16.561	16.436	16.504
	802.11n(HT20)	26.38	20.86	20.39	17.590	17.606	17.565
	802.11n(HT40)	39.83	/	40.00	36.237	/	36.210
	802.11ac(HT20)	29.08	24.11	20.43	17.621	17.602	17.547
	802.11ac(HT40)	39.49	/	39.46	36.203	/	36.235
	802.11ac(HT80)	87.10	/	/	75.598	/	/
U-NII-3	802.11a	19.44	19.58	19.37	14.476	16.493	16.495
	802.11n(HT20)	19.59	19.80	19.86	17.556	17.552	17.532
	802.11n(HT40)	39.66	/	39.81	36.211	/	36.265
	802.11ac(HT20)	19.61	19.73	20.15	17.557	17.523	17.516
	802.11ac(HT40)	39.46	/	40.00	36.146	/	36.226
	802.11ac(HT80)	81.57	/	/	75.657	/	/

Test result plots shown as follows:

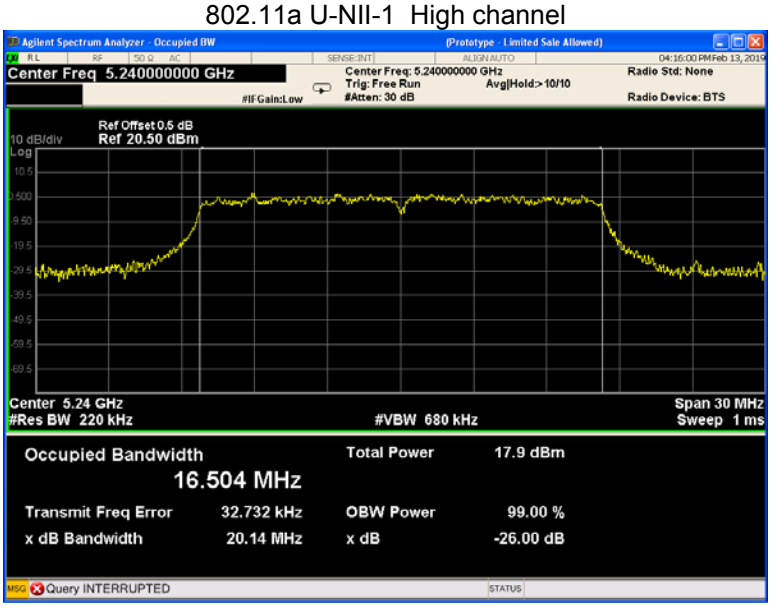
802.11a U-NII-1 Low channel



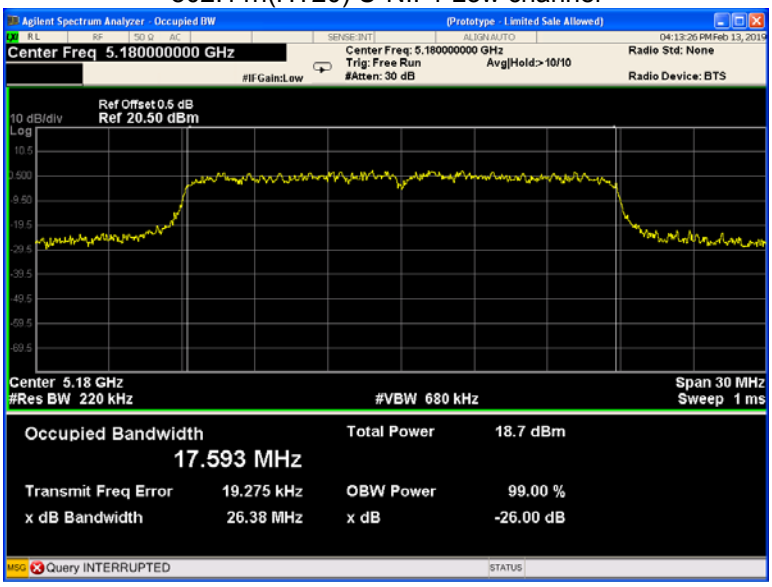
802.11a U-NII-1 Middle channel



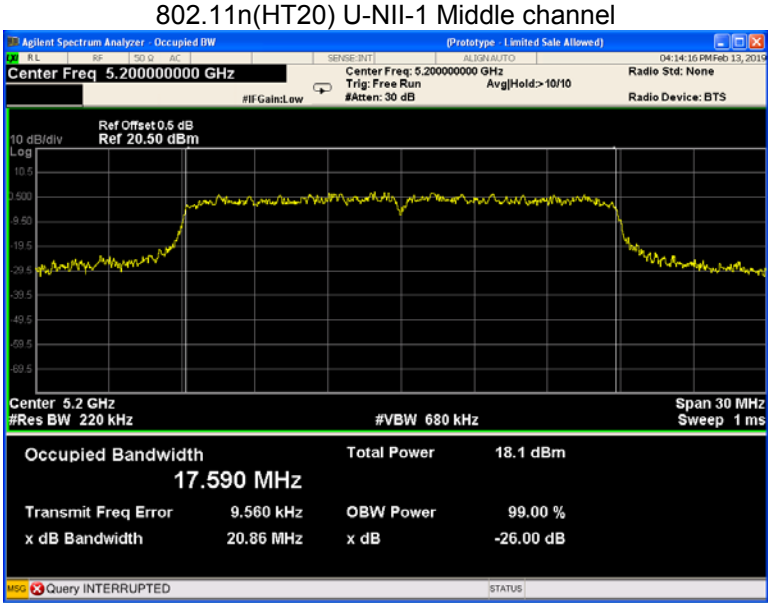
802.11a U-NII-1 High channel



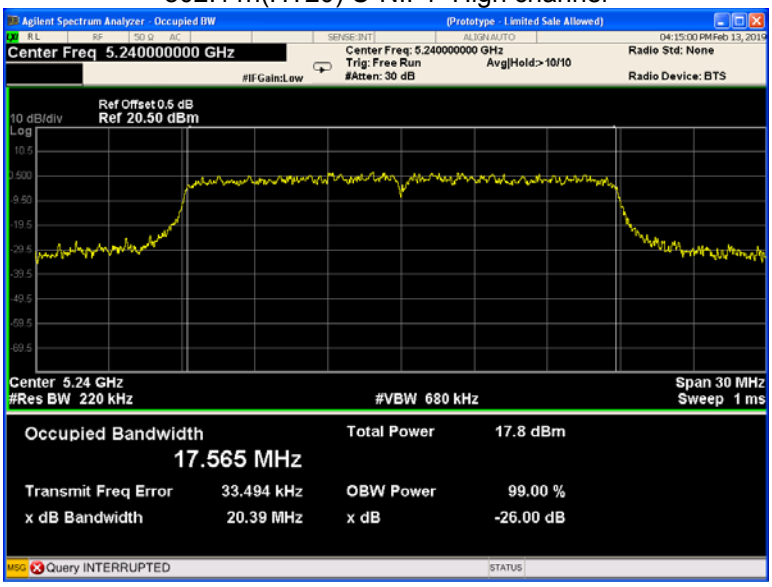
802.11n(HT20) U-NII-1 Low channel



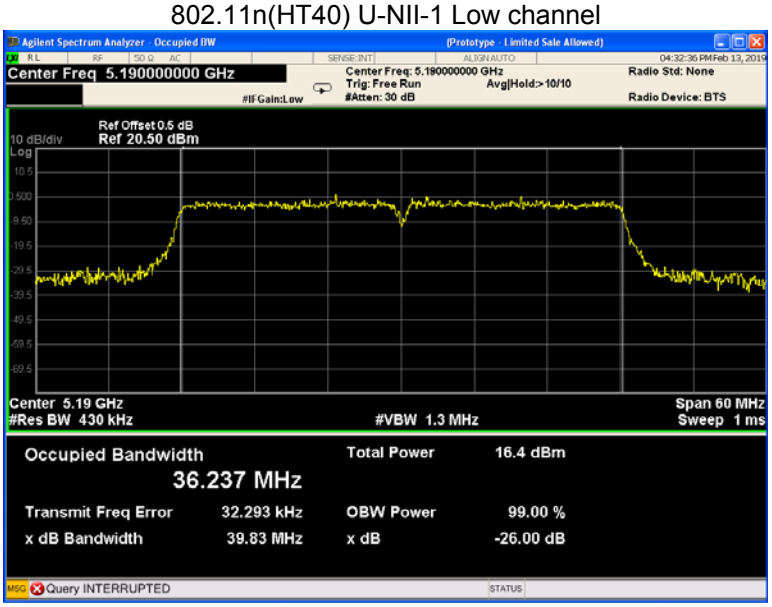
802.11n(HT20) U-NII-1 Middle channel



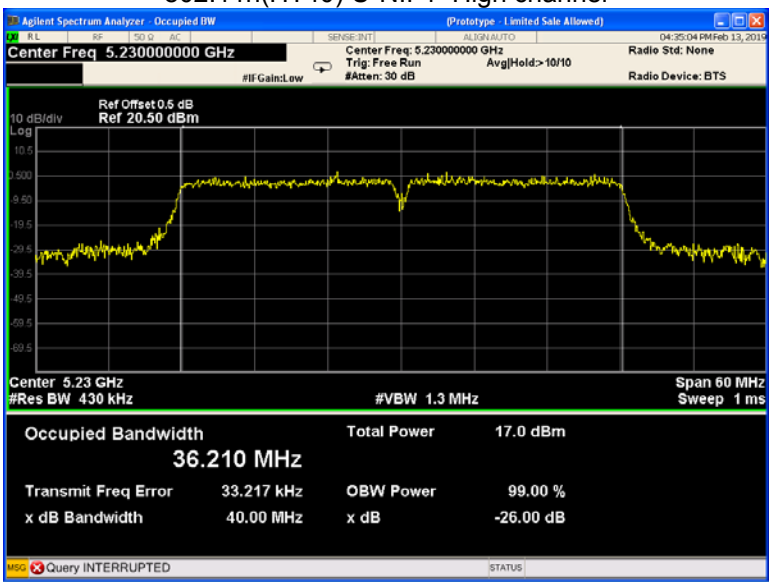
802.11n(HT20) U-NII-1 High channel



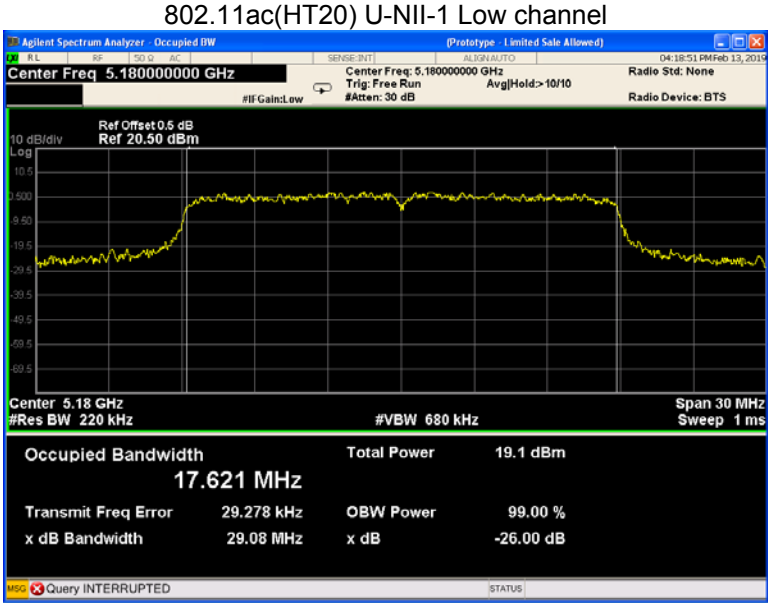
802.11n(HT40) U-NII-1 Low channel



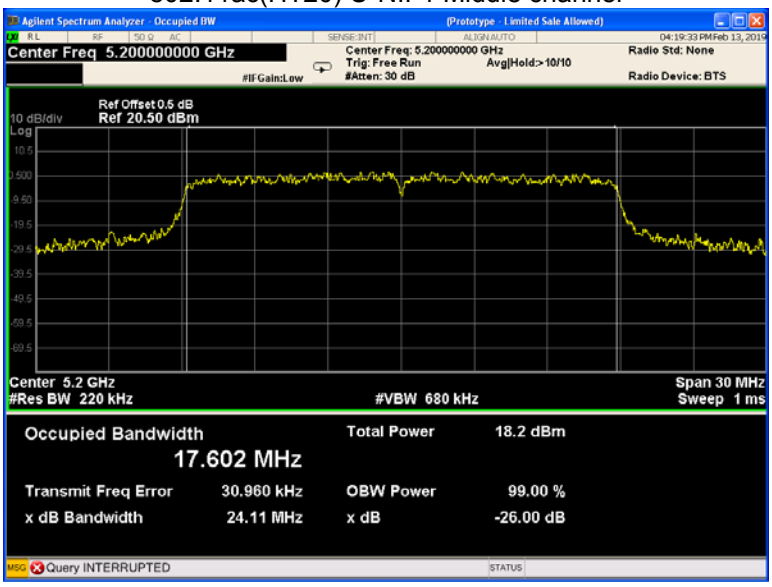
802.11n(HT40) U-NII-1 High channel



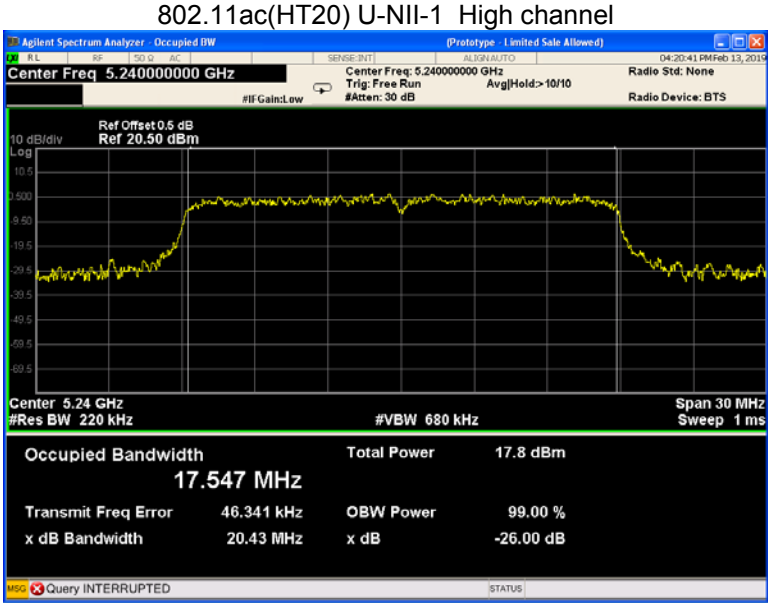
802.11ac(HT20) U-NII-1 Low channel



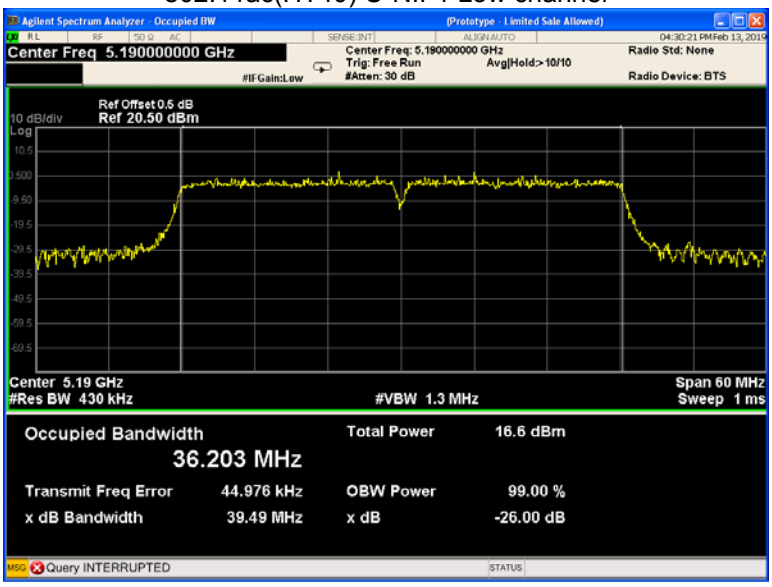
802.11ac(HT20) U-NII-1 Middle channel



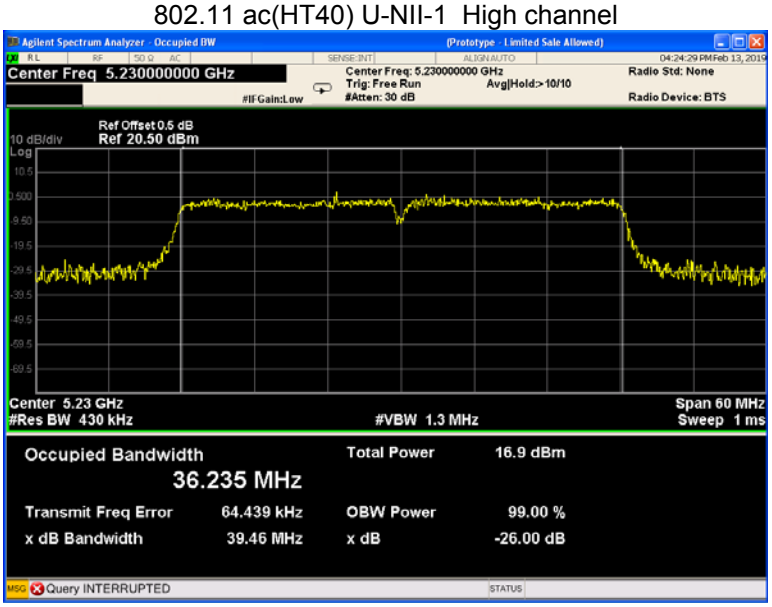
802.11ac(HT20) U-NII-1 High channel



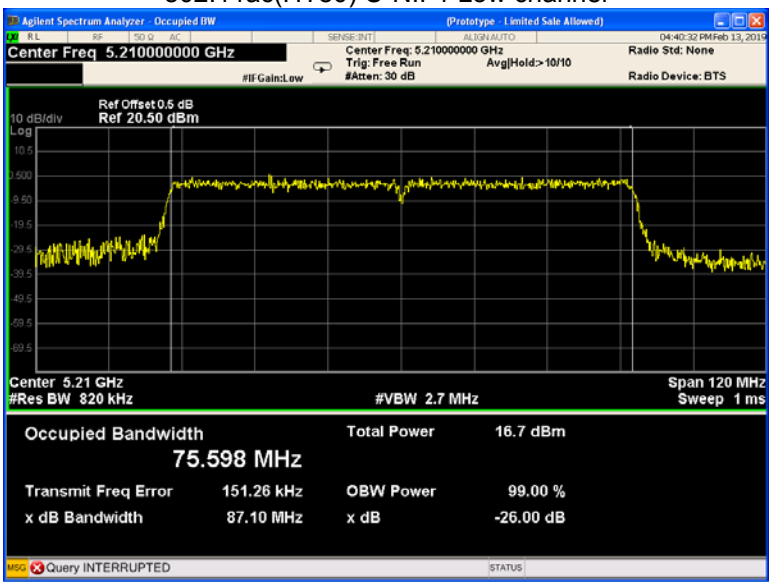
802.11ac(HT40) U-NII-1 Low channel



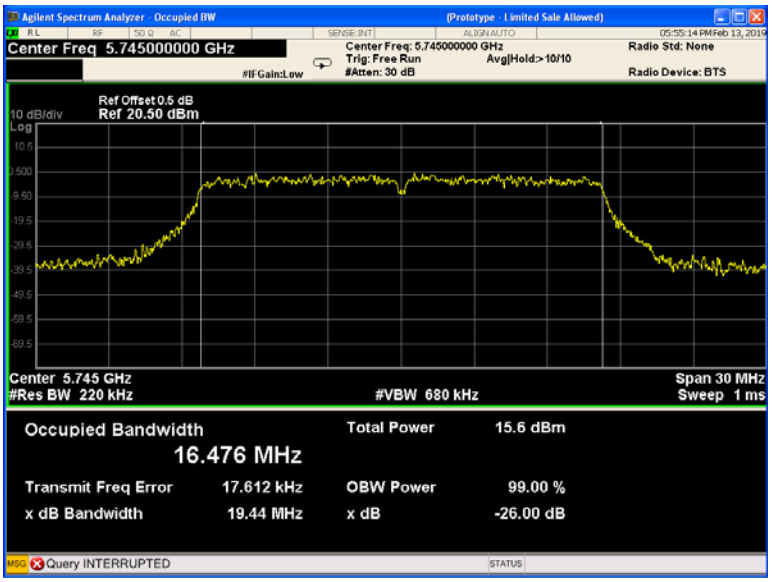
802.11 ac(HT40) U-NII-1 High channel



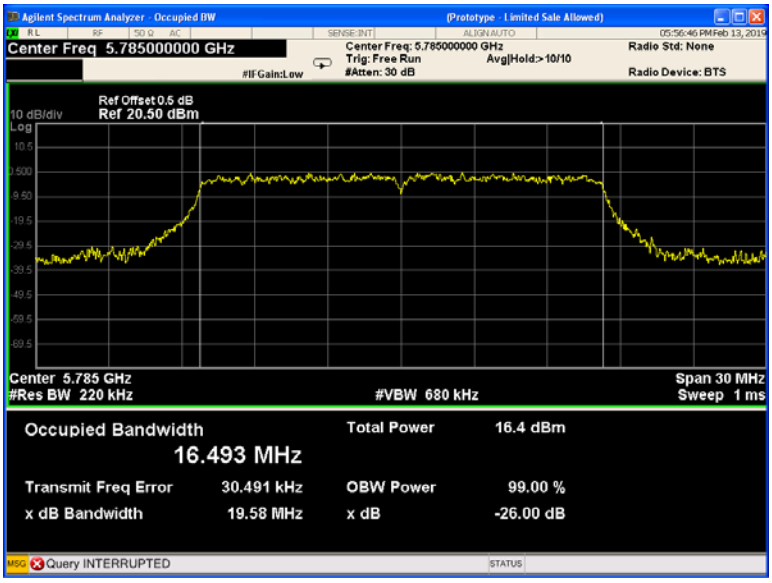
802.11ac(HT80) U-NII-1 Low channel



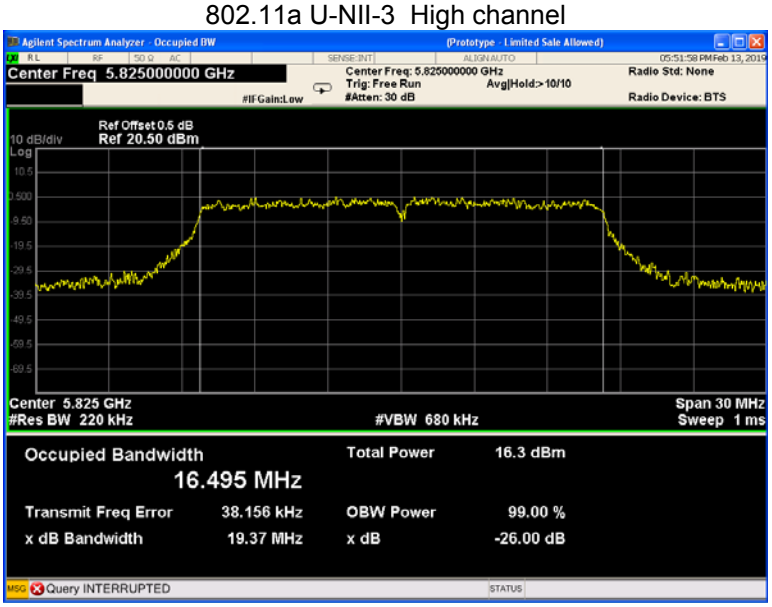
802.11a U-NII-3 Low channel



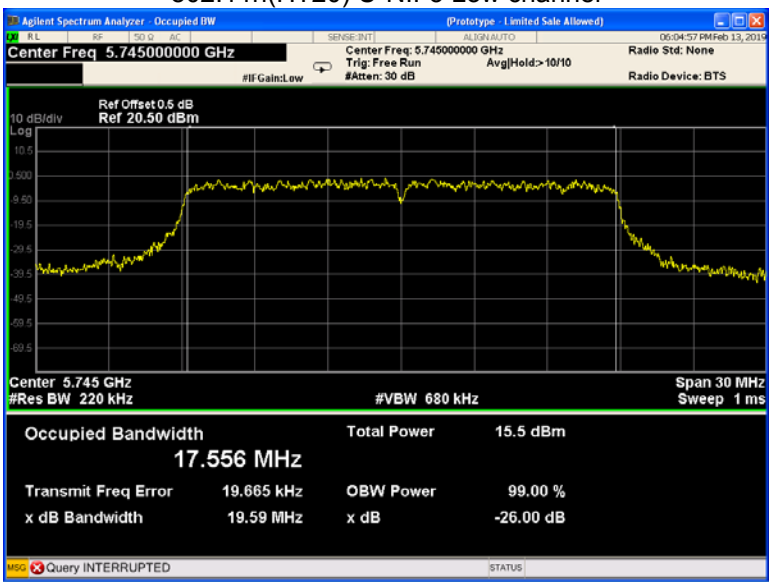
802.11a U-NII-3 Middle channel



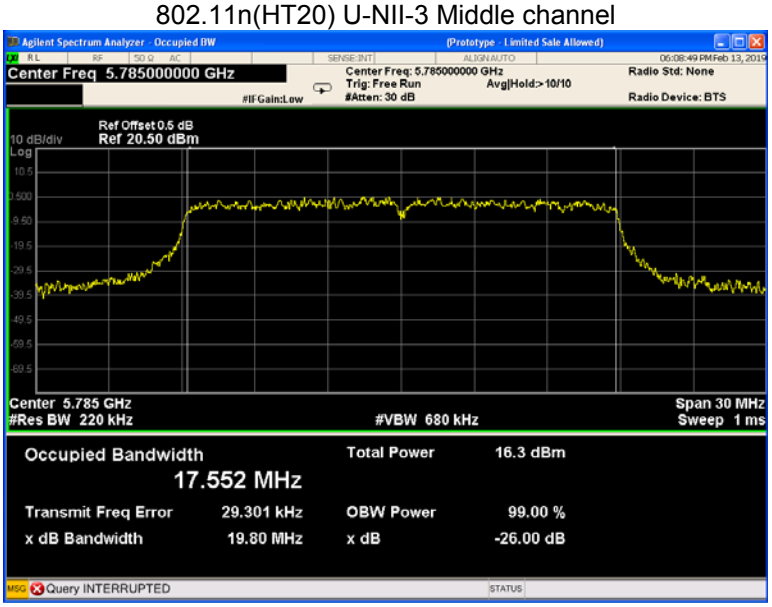
802.11a U-NII-3 High channel



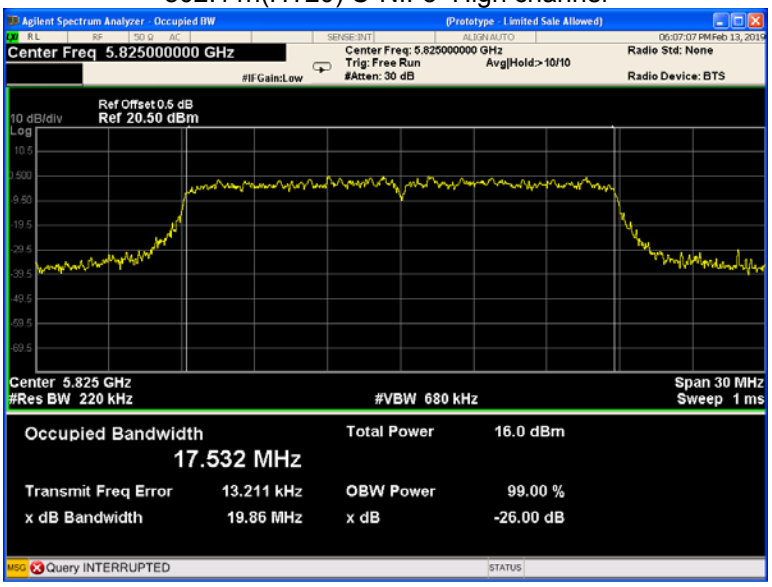
802.11n(HT20) U-NII-3 Low channel



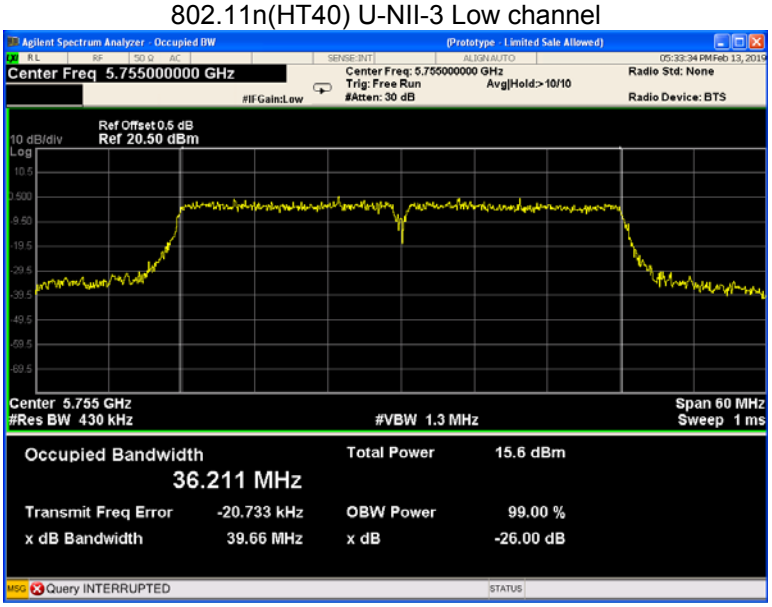
802.11n(HT20) U-NII-3 Middle channel



802.11n(HT20) U-NII-3 High channel



802.11n(HT40) U-NII-3 Low channel



802.11n(HT40) U-NII-3 High channel