

TEST REPORT

Reference No. : WTF18S11128945W003
FCC ID..... : BRWIX20
Applicant..... : Horizon Hobby, LLC
Address : 2904 Research Rd. Champaign, Illinois 61821 United States
Manufacturer : The same as above
Address : The same as above
Product Name : iX20
Model No. : iX20
Brand. : SPEKTRUM
Standards..... : FCC CFR47 Part 15 E Section 15.407: 2018
Date of Receipt sample..... : 2019-05-25
Date of Test..... : 2019-05-26 to 2019-06-09
Date of Issue : 2019-06-10
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.

Prepared By:

Waltek Services (Shenzhen) Co., Ltd.

Address: 1/F., Fukangtai Building, West Baima Road, Songgang Street, Baoan District, Shenzhen, Guangdong, China

Tel :+86-755-83551033

Fax:+86-755-83552400

Compiled by:

Ford Wang

Ford Wang / Project Engineer

Approved by:



Philip Zhong

Philip Zhong / Manager

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

	Page
1 COVER PAGE.....	1
2 LABORATORIES INTRODUCTION.....	2
3 CONTENTS	4
4 REVISION HISTORY	6
5 GENERAL INFORMATION.....	7
5.1 GENERAL DESCRIPTION OF E.U.T.	7
5.2 DETAILS OF E.U.T.	7
5.3 CHANNEL LIST	8
5.4 TEST MODE DESCRIPTION:.....	9
6 EQUIPMENT USED DURING TEST	12
6.1 EQUIPMENTS LIST	12
6.2 DESCRIPTION OF SUPPORT UNITS	13
6.3 MEASUREMENT UNCERTAINTY	13
6.4 TEST EQUIPMENT CALIBRATION	13
7 TEST SUMMARY	14
8 RADIATED EMISSIONS.....	15
8.1 EUT OPERATION.....	15
8.2 TEST SETUP	16
8.3 SPECTRUM ANALYZER SETUP	17
8.4 TEST PROCEDURE	18
8.5 CORRECTED AMPLITUDE & MARGIN CALCULATION	18
8.6 SUMMARY OF TEST RESULTS	19
9 DUTY CYCLE.....	35
9.1 SUMMARY OF TEST RESULTS	35
10 BAND EDGE	42
10.1 TEST PRODUCE	42
10.2 TEST RESULT	43
11 6 DB BANDWIDTH.....	55
11.1 TEST PROCEDURE:.....	55
11.2 TEST RESULT:	55
12 26 DB BANDWIDTH AND 99% OCCUPIED BANDWIDTH	63
12.1 TEST PROCEDURE:.....	63
12.2 TEST RESULT:	64
13 CONDUCTED OUTPUT POWER	79
13.1 TEST PROCEDURE:.....	79
13.2 TEST RESULT :	80
14 POWER SPECTRAL DENSITY	95
14.1 TEST PROCEDURE:.....	95
14.2 TEST RESULT:	96
15 FREQUENCY STABILITY.....	111
15.1 TEST PROCEDURE:.....	111
15.2 TEST RESULT:	112
16 ANTENNA REQUIREMENT	113
17 RF EXPOSURE.....	114

18	PHOTOGRAPHS OF TEST SETUP AND EUT.....	115
-----------	---	------------

4 Revision History

Test report No.	Date of Receipt sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTF18S11128 945W003	2019-05-25	2019-05-26 to 2019-06-09	2019-06-10	original	-	Valid

5 General Information

5.1 General Description of E.U.T.

Product:	iX20
Model(s):	iX20
Model Description:	N/A
Wi-Fi Specification:	2.4G-802.11b/g/n HT20 5G-802.11a/ n(HT20/40)/ac(HT20/40/80)
Bluetooth Version:	Bluetooth v4.0 with BLE
Hardware Version:	SW7883 Ver1.8
Software Version:	iX20.04251513
Highest frequency (Exclude Radio):	1.25GHz
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:	U-NII-1: 16.80dBm U-NII-3: 15.41dBm
Type of Modulation:	OFDM
Antenna installation:	internal permanent antenna
Antenna Gain:	U-NII-1: 1.5dBi U-NII-3: 1.5dBi
Ratings:	DC 5V, 2A by charge Jack DC 3.7V 10500mAh by battery

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	$\pm 1 \times 10^{-6}$
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)	N/A
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 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	$2400/F(\text{kHz})$	300	$10000 * 2400/F(\text{kHz})$	$20\log^{(2400/F(\text{kHz}))} + 80$
0.490 ~ 1.705	$24000/F(\text{kHz})$	30	$100 * 24000/F(\text{kHz})$	$20\log^{(24000/F(\text{kHz}))} + 40$
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	$20\log^{(500)}$

8.1 EUT Operation

Operating Environment :

Temperature: 23.5 °C

Humidity: 52.1 % RH

Atmospheric Pressure: 101.2kPa

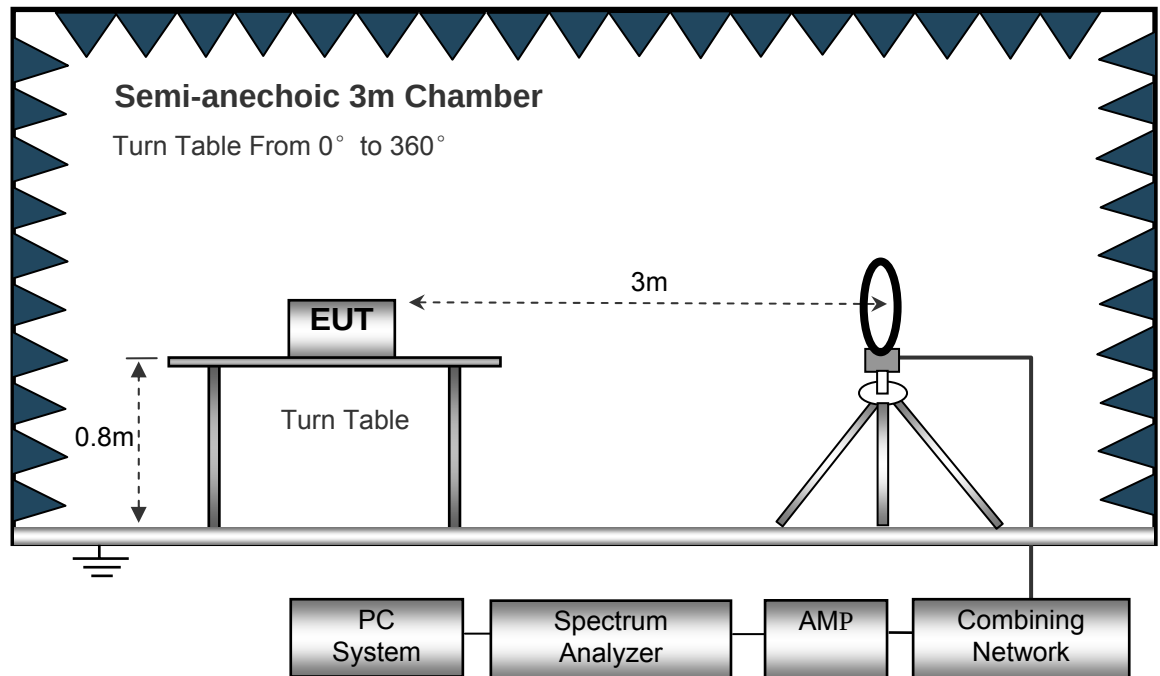
EUT Operation :

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

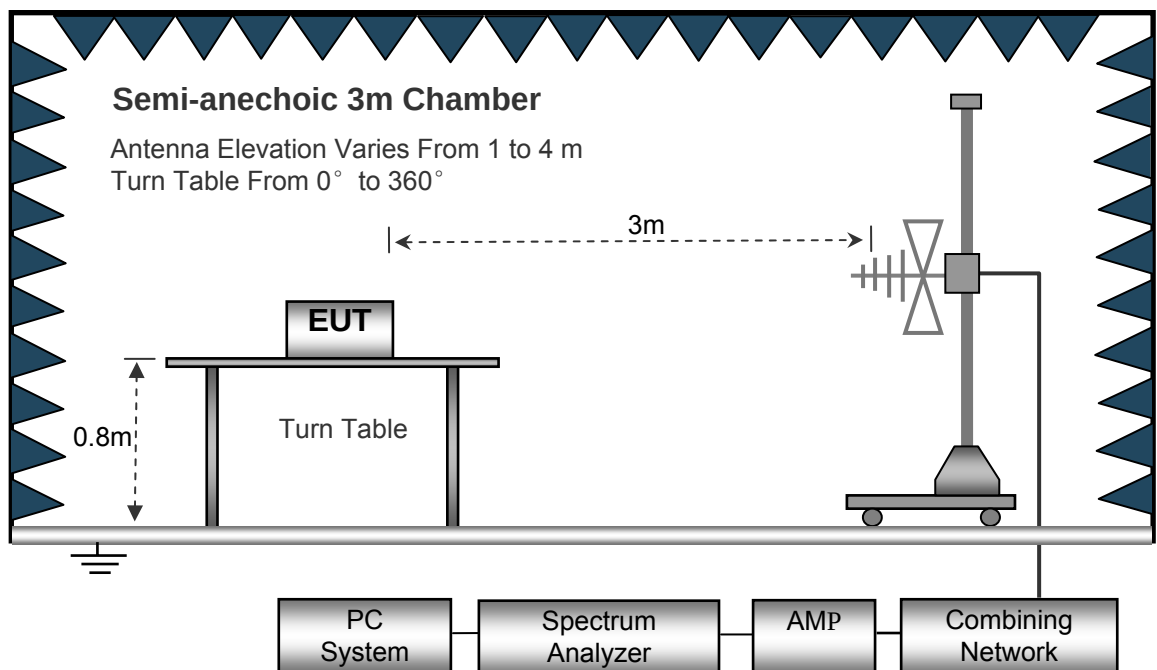
8.2 Test Setup

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

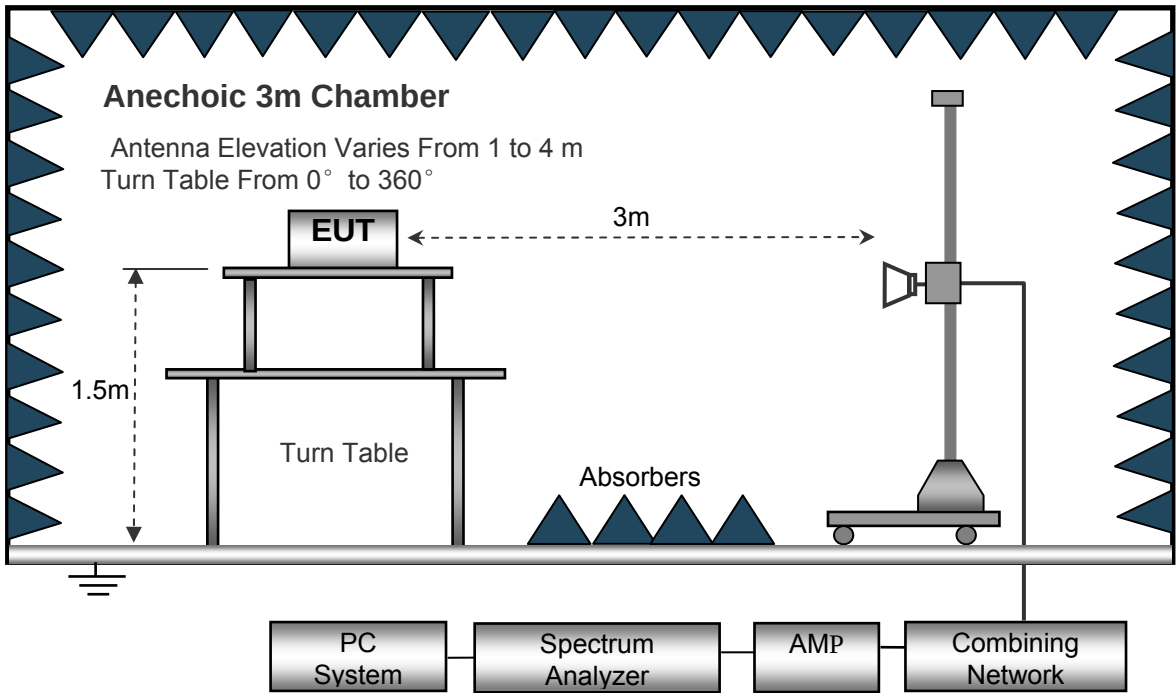
The test setup for emission measurement below 30MHz.



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



The test setup for emission measurement above 1 GHz.



8.3 Spectrum Analyzer Setup

Below 30MHz

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

30MHz ~ 1GHz

Sweep Speed Auto
DetectorPK
Resolution Bandwidth.....100kHz
Video Bandwidth.....300kHz

Above 1GHz

Sweep Speed Auto
DetectorPK
Resolution Bandwidth.....1MHz
Video Bandwidth.....3MHz
DetectorAve.
Resolution Bandwidth.....1MHz
Video Bandwidth.....10Hz

8.4 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 during radiated emissions above 1GHz measurement.

8.5 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:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

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:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Limit}$$

8.6 Summary of Test Results

Test Frequency: 9KHz~30MHz

Frequency	Measurement results dBμV @3m	Detector PK/QP	Correct factor dB/m	Extrapolation factor dB	Measurement results (calculated) dBμV/m @30m	Limits dBμV/m @30m	Margin dB
(MHz)	Measurement results	Detector	Correct factor	Extrapolation factor	Measurement results (calculated)	Limits	Margin
U-NII-1:802.11a 5180MHz							
6.021	25.12	QP	21.84	40.00	6.96	29.54	-22.58
15.730	24.73	QP	21.35	40.00	6.08	29.54	-23.46
25.680	25.11	QP	20.67	40.00	5.78	29.54	-23.76
U-NII-1:802.11n20 5180MHz							
6.021	25.30	QP	21.84	40.00	7.14	29.54	-22.40
15.730	25.12	QP	21.35	40.00	6.47	29.54	-23.07
25.680	25.34	QP	20.67	40.00	6.01	29.54	-23.53
U-NII-1:802.11ac 20 5180MHz							
6.021	25.52	QP	21.84	40.00	7.36	29.54	-22.18
15.730	24.85	QP	21.35	40.00	6.20	29.54	-23.34
25.680	25.16	QP	20.67	40.00	5.83	29.54	-23.71
U-NII-1:802.11n40 5190MHz							
6.021	25.20	QP	21.84	40.00	7.04	29.54	-22.50
15.730	24.55	QP	21.35	40.00	5.90	29.54	-23.64
25.680	25.18	QP	20.67	40.00	5.85	29.54	-23.69
U-NII-1:802.11ac40 5190MHz							
6.021	25.61	QP	21.84	40.00	7.45	29.54	-22.09
15.730	25.20	QP	21.35	40.00	6.55	29.54	-22.99
25.680	24.97	QP	20.67	40.00	5.64	29.54	-23.90
U-NII-1:802.11ac80 5210MHz							
6.021	25.19	QP	21.84	40.00	7.03	29.54	-22.51
15.730	24.88	QP	21.35	40.00	6.23	29.54	-23.31
25.680	25.63	QP	20.67	40.00	6.30	29.54	-23.24

Frequency	Measurement results dBμV @3m	Detector PK/QP	Correct factor dB/m	Extrapolation factor dB	Measurement results (calculated) dBμV/m @30m	Limits dBμV/m @30m	Margin dB
(MHz)	Measurement results	Detector	Correct factor	Extrapolation factor	Measurement results (calculated)	Limits	Margin
U-NII-3 802.11a 5745MHz							
6.021	24.57	QP	21.84	40.00	6.41	29.54	-23.13
15.730	25.15	QP	21.35	40.00	6.50	29.54	-23.04
25.680	25.69	QP	20.67	40.00	6.36	29.54	-23.18
U-NII-3 802.11n20 5745MHz							
6.021	25.06	QP	21.84	40.00	6.90	29.54	-22.64
15.730	24.87	QP	21.35	40.00	6.22	29.54	-23.32
25.680	25.16	QP	20.67	40.00	5.83	29.54	-23.71
U-NII-3 802.11ac 5745MHz							
6.021	24.17	QP	21.84	40.00	6.01	29.54	-23.53
15.730	25.34	QP	21.35	40.00	6.69	29.54	-22.85
25.680	24.38	QP	20.67	40.00	5.05	29.54	-24.49
U-NII-3 802.11n40 5755MHz							
6.021	24.50	QP	21.84	40.00	6.34	29.54	-23.20
15.730	24.64	QP	21.35	40.00	5.99	29.54	-23.55
25.680	24.36	QP	20.67	40.00	5.03	29.54	-24.51
U-NII-3 802.11ac40 5755MHz							
6.021	25.69	QP	21.84	40.00	7.53	29.54	-22.01
15.730	24.58	QP	21.35	40.00	5.93	29.54	-23.61
25.680	24.51	QP	20.67	40.00	5.18	29.54	-24.36
U-NII-3 802.11ac80 5775MHz							
6.021	25.13	QP	21.84	40.00	6.97	29.54	-22.57
15.730	24.57	QP	21.35	40.00	5.92	29.54	-23.62
25.680	25.16	QP	20.67	40.00	5.83	29.54	-23.71

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	40.03	QP	169	1.2	H	-11.62	28.41	46.00	-17.59
223.45	37.44	QP	248	1.2	V	-11.62	25.82	46.00	-20.18
4529.49	51.00	PK	13	1.5	H	-2.03	48.97	74.00	-25.03
4529.49	46.21	Ave	13	1.5	H	-2.03	44.18	54.00	-9.82
5138.99	51.72	PK	290	1.3	H	-1.02	50.70	74.00	-23.30
5138.99	47.38	Ave	290	1.3	H	-1.02	46.36	54.00	-7.64
10360.00	39.60	PK	109	2.0	H	5.33	44.93	74.00	-29.07
10360.00	37.35	Ave	109	2.0	H	5.33	42.68	54.00	-11.32
802.11a U-NII-1 Middle channel 5200MHz									
223.45	40.79	QP	286	1.2	H	-11.62	29.17	46.00	-16.83
223.45	34.59	QP	164	1.2	V	-11.62	22.97	46.00	-23.03
4531.52	50.05	PK	246	1.8	H	-1.94	48.11	74.00	-25.89
4531.52	44.98	Ave	246	1.8	H	-1.94	43.04	54.00	-10.96
5120.05	53.58	PK	3	1.1	H	-1.06	52.52	74.00	-21.48
5120.05	50.80	Ave	3	1.1	H	-1.06	49.74	54.00	-4.26
10400.00	42.05	PK	110	1.6	H	5.21	47.26	74.00	-26.74
10400.00	36.17	Ave	110	1.6	H	5.21	41.38	54.00	-12.62

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	39.95	QP	62	1.9	H	-11.62	28.33	46.00	-17.67
223.45	35.57	QP	193	1.8	V	-11.62	23.95	46.00	-22.05
4519.26	50.96	PK	113	1.3	H	-2.24	48.72	74.00	-25.28
4519.26	48.45	Ave	113	1.3	H	-2.24	46.21	54.00	-7.79
5112.81	54.28	PK	191	1.2	H	-1.09	53.19	74.00	-20.81
5112.81	49.29	Ave	191	1.2	H	-1.09	48.20	54.00	-5.80
10480.00	41.00	PK	254	1.3	H	5.14	46.14	74.00	-27.86
10480.00	37.95	Ave	254	1.3	H	5.14	43.09	54.00	-10.91
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	40.69	QP	242	1.1	H	-11.62	29.07	46.00	-16.93
223.45	36.33	QP	355	1.9	V	-11.62	24.71	46.00	-21.29
4506.16	50.80	PK	147	1.6	H	-2.03	48.77	74.00	-25.23
4506.16	49.42	Ave	147	1.6	H	-2.03	47.39	54.00	-6.61
11570.00	39.31	PK	42	1.3	H	5.81	45.12	68.20	-23.08
11570.00	37.43	Ave	42	1.3	H	5.81	43.24	54.00	-10.76
5354.03	45.18	PK	210	1.5	H	-1.22	43.96	74.00	-30.04
5354.03	38.97	Ave	210	1.5	H	-1.22	37.75	54.00	-16.25
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	40.28	QP	291	2.0	H	-11.62	28.66	46.00	-17.34
223.45	35.09	QP	82	1.8	V	-11.62	23.47	46.00	-22.53
4508.61	52.10	PK	351	1.6	H	-2.14	49.96	74.00	-24.04
4508.61	48.04	Ave	351	1.6	H	-2.14	45.90	54.00	-8.10
5127.14	47.04	PK	94	1.9	H	-1.06	45.98	74.00	-28.02
5127.14	39.84	Ave	94	1.9	H	-1.06	38.78	54.00	-15.22
10360.00	39.35	PK	166	1.7	H	5.33	44.68	74.00	-29.32
10360.00	37.17	Ave	166	1.7	H	5.33	42.50	54.00	-11.50
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	33.68	QP	53	1.4	H	-11.62	22.06	46.00	-23.94
223.45	49.82	QP	156	1.8	V	-11.62	38.20	46.00	-7.80
4536.38	48.31	PK	87	1.1	H	-2.06	46.25	74.00	-27.75
4536.38	46.20	Ave	87	1.1	H	-2.06	44.14	54.00	-9.86
11490.00	36.34	PK	183	1.3	H	5.93	42.27	68.20	-25.93
11490.00	48.12	Ave	183	1.3	H	5.93	54.05	54.00	0.05
5374.17	46.89	PK	85	1.4	H	-1.25	45.64	74.00	-28.36
5374.17	38.58	Ave	85	1.4	H	-1.25	37.33	54.00	-16.67

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)
802.11n(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	33.66	QP	266	1.9	H	-11.62	22.04	46.00	-23.96
223.45	51.28	QP	265	1.3	V	-11.62	39.66	46.00	-6.34
4513.44	47.73	PK	162	1.3	H	-1.84	45.89	74.00	-28.11
4513.44	48.20	Ave	162	1.3	H	-1.84	46.36	54.00	-7.64
11650.00	37.35	PK	37	1.5	H	5.84	43.19	68.20	-25.01
11650.00	46.10	Ave	37	1.5	H	5.84	51.94	54.00	-2.06
5352.66	46.72	PK	258	1.5	H	-1.30	45.42	74.00	-28.58
5352.66	38.00	Ave	258	1.5	H	-1.30	36.70	54.00	-17.30

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	37.25	QP	180	2.0	H	-11.62	25.63	46.00	-20.37
223.45	47.81	QP	33	1.6	V	-11.62	36.19	46.00	-9.81
4534.03	42.00	PK	247	1.2	H	-1.89	40.11	74.00	-33.89
4534.03	31.34	Ave	247	1.2	H	-1.89	29.45	54.00	-24.55
5111.43	44.74	PK	247	1.5	H	-1.06	43.68	74.00	-30.32
5111.43	40.89	Ave	247	1.5	H	-1.06	39.83	54.00	-14.17
10380.00	38.46	PK	88	1.7	H	5.26	43.72	74.00	-30.28
10380.00	36.02	Ave	88	1.7	H	5.26	41.28	54.00	-12.72
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	36.17	QP	33	1.0	H	-11.62	24.55	46.00	-21.45
223.45	46.21	QP	129	1.2	V	-11.62	34.59	46.00	-11.41
4532.24	47.63	PK	334	1.6	H	-1.86	45.77	74.00	-28.23
4532.24	36.67	Ave	334	1.6	H	-1.86	34.81	54.00	-19.19
5114.71	40.38	PK	311	1.8	H	-1.06	39.32	74.00	-34.68
5114.71	35.03	Ave	311	1.8	H	-1.06	33.97	54.00	-20.03
10360.00	45.99	PK	353	1.8	H	5.33	51.32	74.00	-22.68
10360.00	37.20	Ave	353	1.8	H	5.33	42.53	54.00	-11.47
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	37.58	QP	357	1.9	H	-11.62	25.96	46.00	-20.04
223.45	48.46	QP	107	1.2	V	-11.62	36.84	46.00	-9.16
4528.91	43.70	PK	15	1.0	H	-1.88	41.82	74.00	-32.18
4528.91	33.36	Ave	15	1.0	H	-1.88	31.48	54.00	-22.52
11650.00	38.61	PK	233	1.1	H	5.84	44.45	68.20	-23.75
11650.00	37.13	Ave	233	1.1	H	5.84	42.97	54.00	-11.03
5350.86	45.91	PK	162	1.6	H	-1.06	44.85	74.00	-29.15
5350.86	38.51	Ave	162	1.6	H	-1.06	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)
802.11ac(HT40) U-NII-1 Low Channel 5190MHz									
223.45	33.93	QP	219	1.1	H	-11.62	22.31	46.00	-23.69
223.45	41.88	QP	83	1.1	V	-11.62	30.26	46.00	-15.74
4531.33	39.84	PK	139	1.1	H	-1.91	37.93	74.00	-36.07
4531.33	29.19	Ave	139	1.1	H	-1.91	27.28	54.00	-26.72
5113.74	46.99	PK	86	1.6	H	-1.06	45.93	74.00	-28.07
5113.74	40.06	Ave	86	1.6	H	-1.06	39.00	54.00	-15.00
10380.00	37.92	PK	119	1.1	H	5.26	43.18	74.00	-30.82
10380.00	36.32	Ave	119	1.1	H	5.26	41.58	54.00	-12.42
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	34.98	QP	127	1.4	H	-11.62	23.36	46.00	-22.64
223.45	40.06	QP	54	1.8	V	-11.62	28.44	46.00	-17.56
4524.52	39.45	PK	171	1.2	H	-1.86	37.59	74.00	-36.41
4524.52	27.30	Ave	171	1.2	H	-1.86	25.44	54.00	-28.56
11590.00	38.61	PK	224	1.6	H	5.63	44.24	68.20	-23.96
11590.00	37.04	Ave	224	1.6	H	5.63	42.67	54.00	-11.33
5383.59	46.04	PK	338	1.6	H	-1.03	45.01	74.00	-28.99
5383.59	39.94	Ave	338	1.6	H	-1.03	38.91	54.00	-15.09

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	40.47	QP	71	1.9	H	-11.62	28.85	46.00	-17.15
4524.52	40.13	QP	177	1.7	V	-11.62	28.51	46.00	-17.49
4519.57	27.23	PK	211	1.8	H	-1.88	25.35	74.00	-48.65
4519.57	38.56	Ave	211	1.8	H	-1.88	36.68	54.00	-17.32
5145.40	37.88	PK	58	1.4	H	-1.06	36.82	74.00	-37.18
5145.40	46.07	Ave	58	1.4	H	-1.06	45.01	54.00	-8.99
10420.00	39.22	PK	325	1.1	H	4.65	43.87	74.00	-30.13
10420.00	37.16	Ave	325	1.1	H	4.65	41.81	54.00	-12.19
802.11ac(HT80) U-NII-3 Low Channel 5775MHz									
223.45	34.12	QP	355	1.2	H	-11.62	22.50	74.00	-51.50
223.45	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
5364.28	42.71	PK	149	1.8	H	4.83	47.54	74.00	-26.46
5364.28	35.86	Ave	149	1.8	H	4.83	40.69	54.00	-13.31
11550.00	45.50	PK	82	1.1	H	-1.14	44.36	74.00	-29.64
11550.00	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.

9 Duty cycle

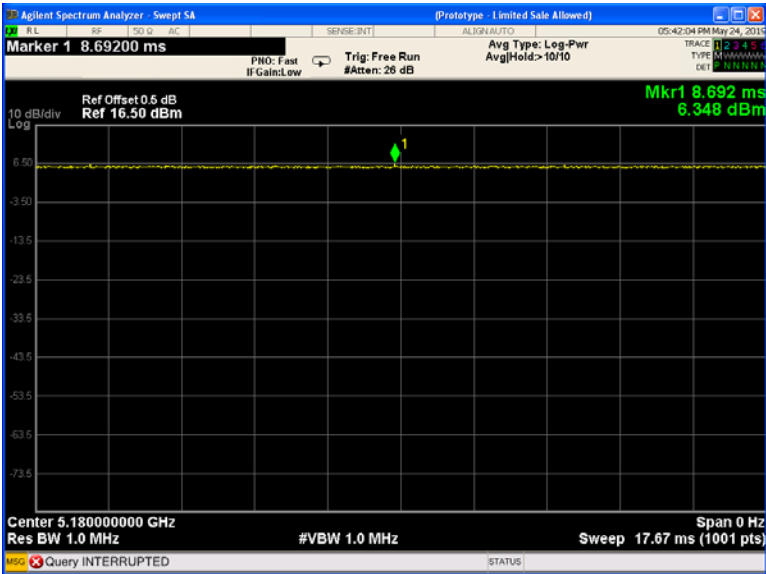
Test Requirement:	47 CFR Part 15C 15.407 KDB789033 D02 General U-NII Test Procedures New Rules v02r01, Section (B)
Test Method:	ANSI C63.10: 2013
Test Limit:	N/A
Test Result:	PASS
Remark:	Through Pre-scan, and found 802.11a at lowest channel is the worst case. Only the worst case is recorded in the report.

9.1 Summary of Test Results

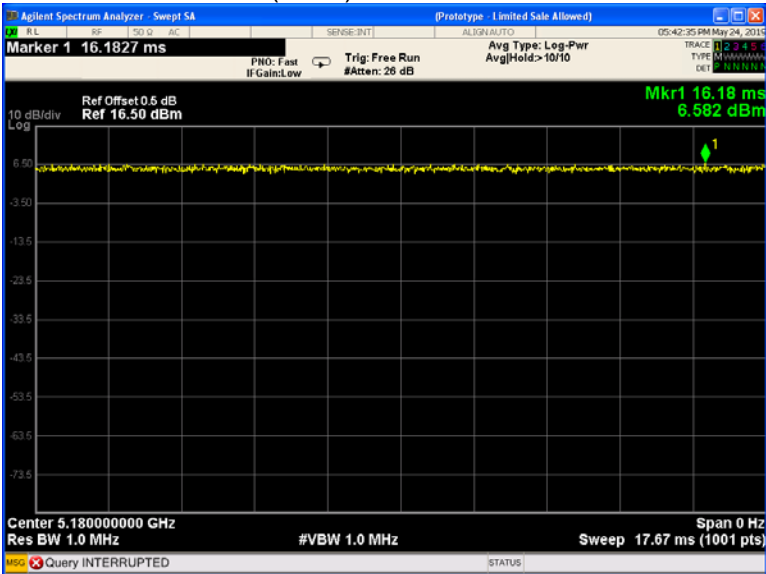
802.11a mode			
channel	On time(ms)	Period(ms)	Duty Cycle(%)
36	100	100	100
149	100	100	100
802.11n(HT20) mode			
channel	On time(ms)	Period(ms)	Duty Cycle(%)
36	100	100	100
149	100	100	100
802.11n(HT40) mode			
channel	On time(ms)	Period(ms)	Duty Cycle(%)
38	100	100	100
151	100	100	100
802.11ac(HT20)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

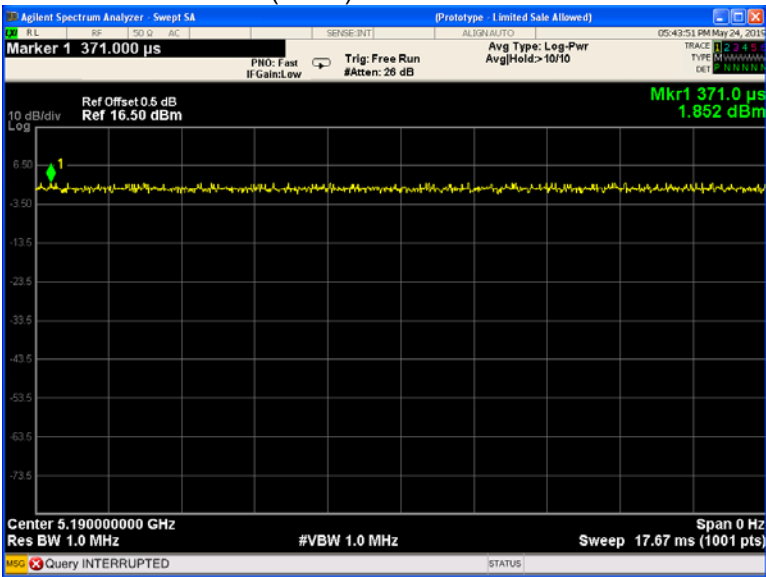
802.11a U-NII-1 Low channel



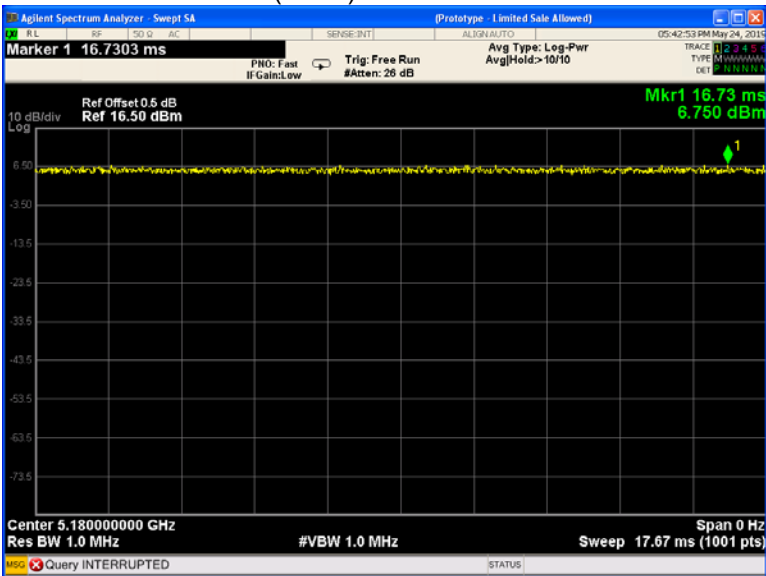
802.11n(HT20) U-NII-1 Low channel



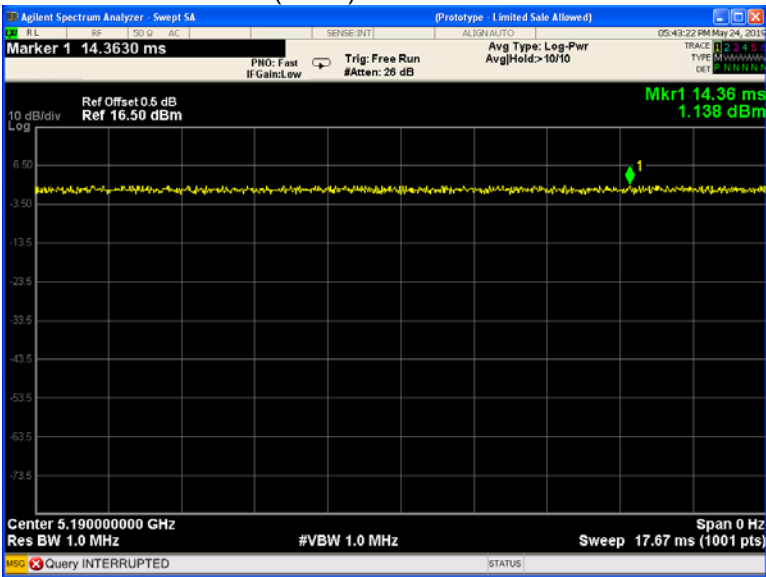
802.11n(HT40) U-NII-1 Low channel



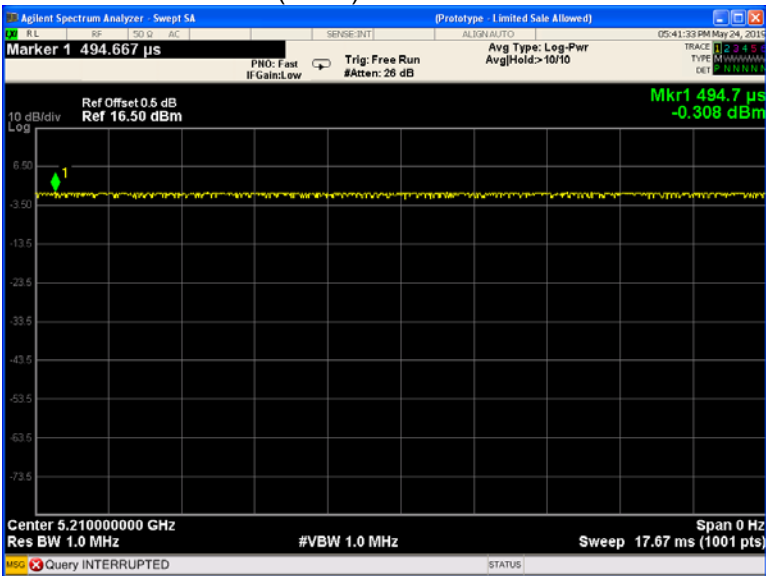
802.11ac(HT20) U-NII-1 Low channel



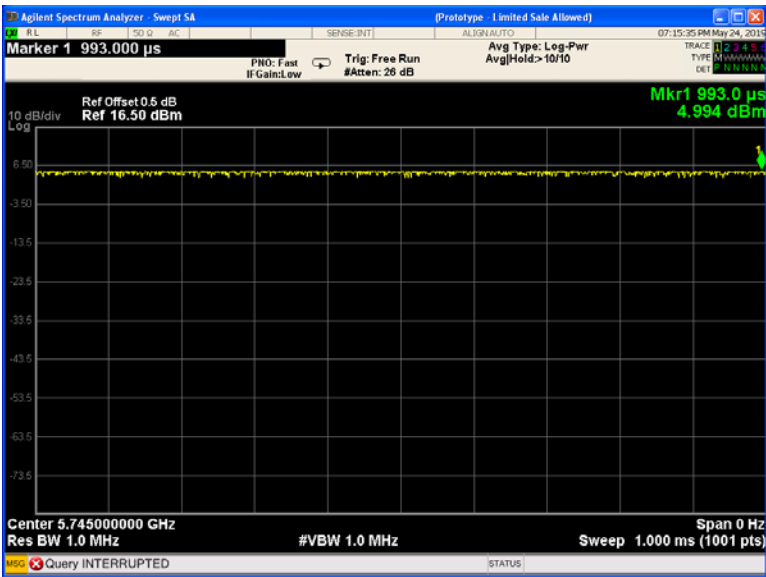
802.11ac(HT40) U-NII-1 Low channel



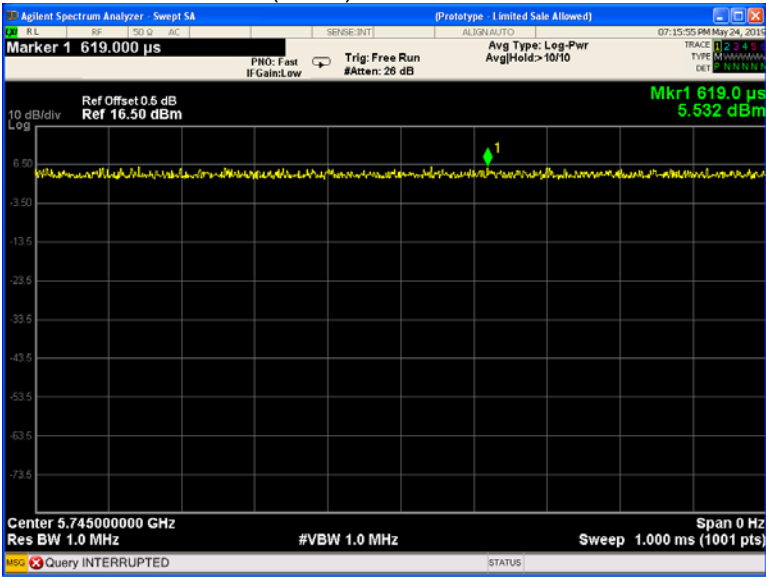
802.11ac(HT80) U-NII-1 Low channel



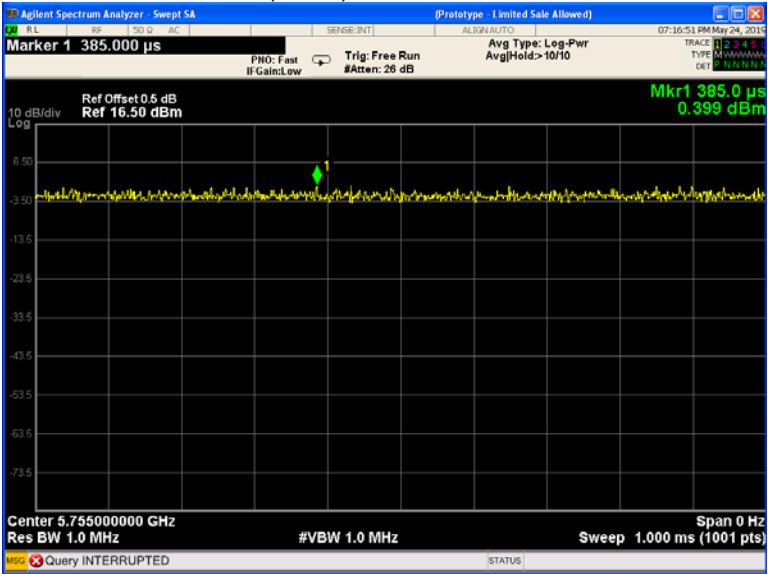
802.11a U-NII-3 Low channel



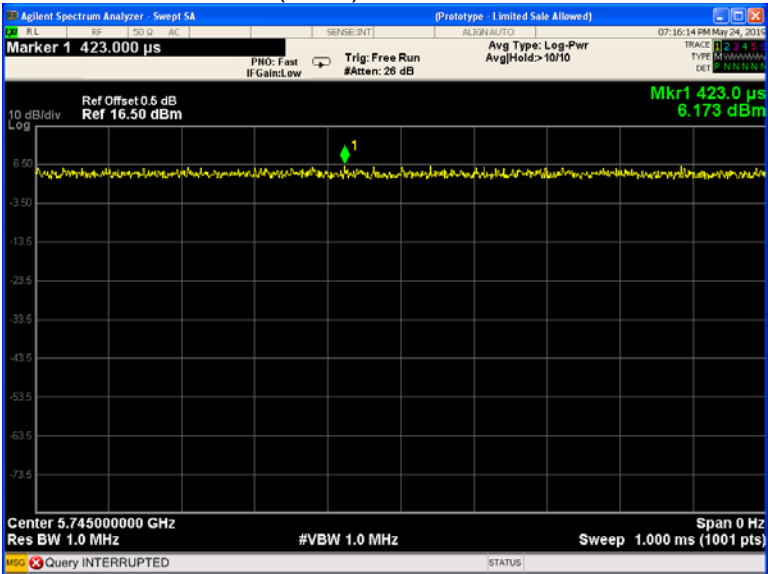
802.11n(HT20) U-NII-3 Low channel



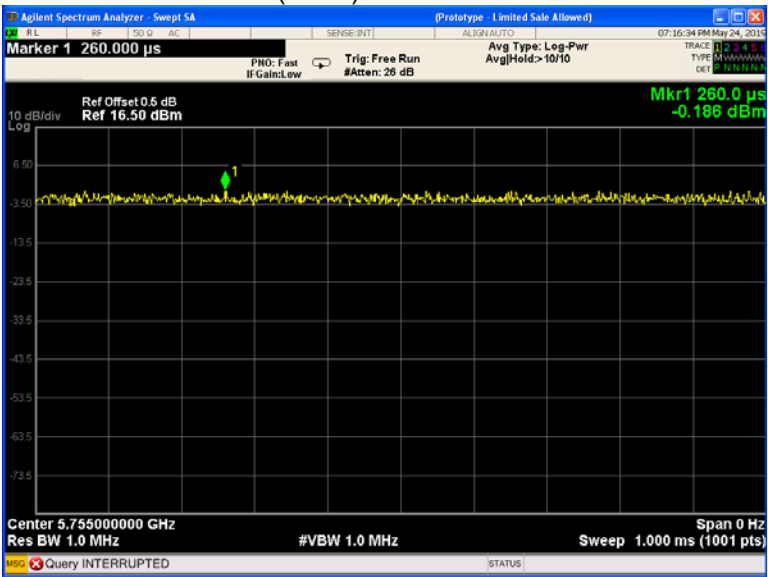
802.11n(HT40) U-NII-3 Low channel



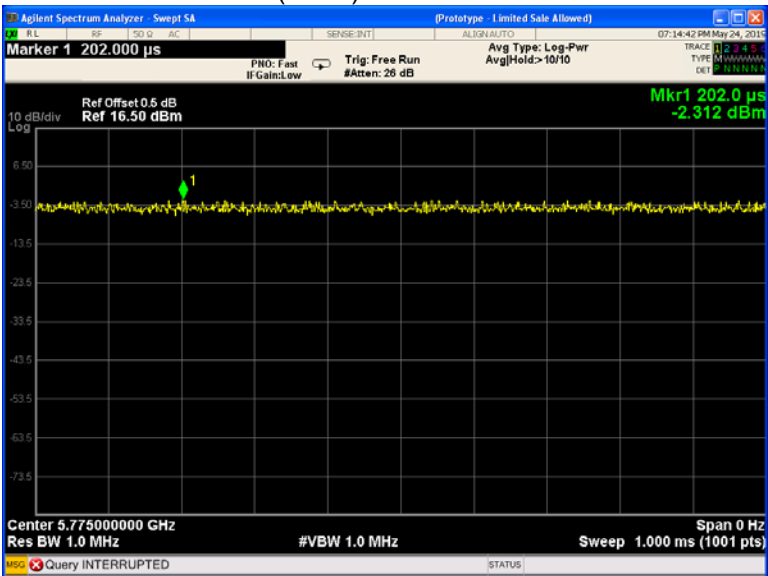
802.11ac(HT20) U-NII-3 Low channel



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



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



10 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

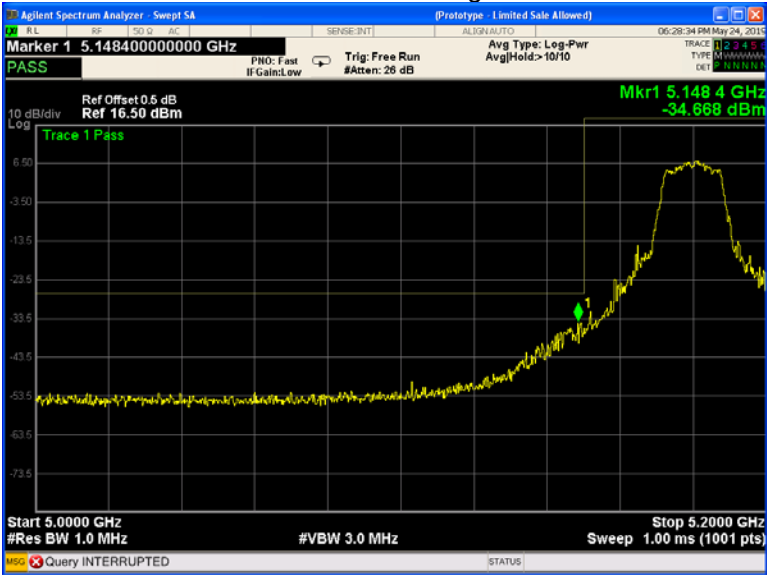
10.1 Test Produce

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.

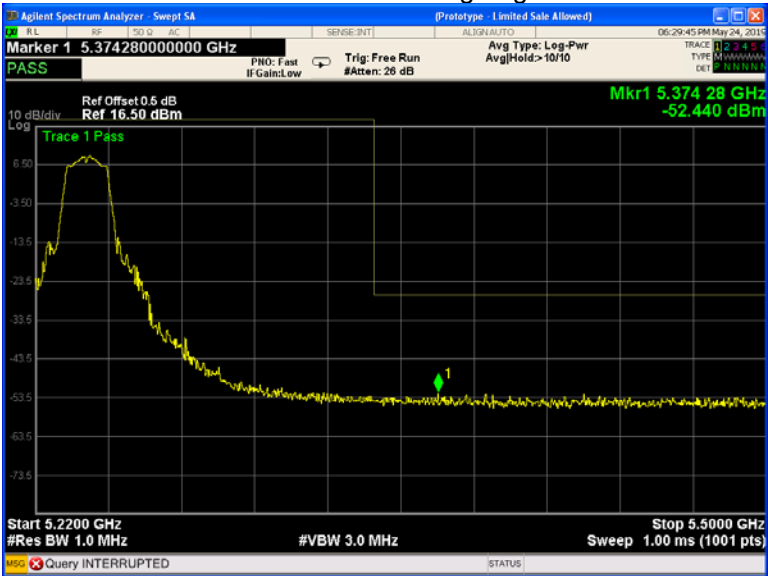
10.2 Test Result

Test result plots shown as follows:

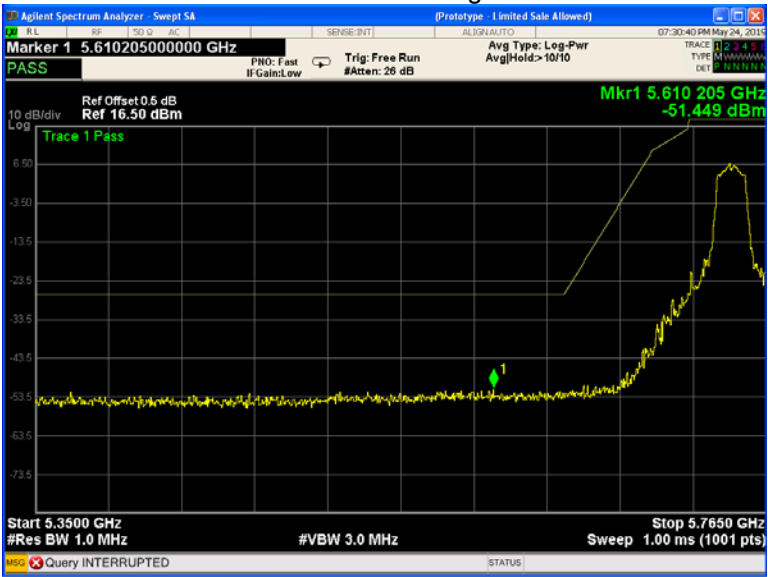
802.11a U-NII-1 Band edge-left side



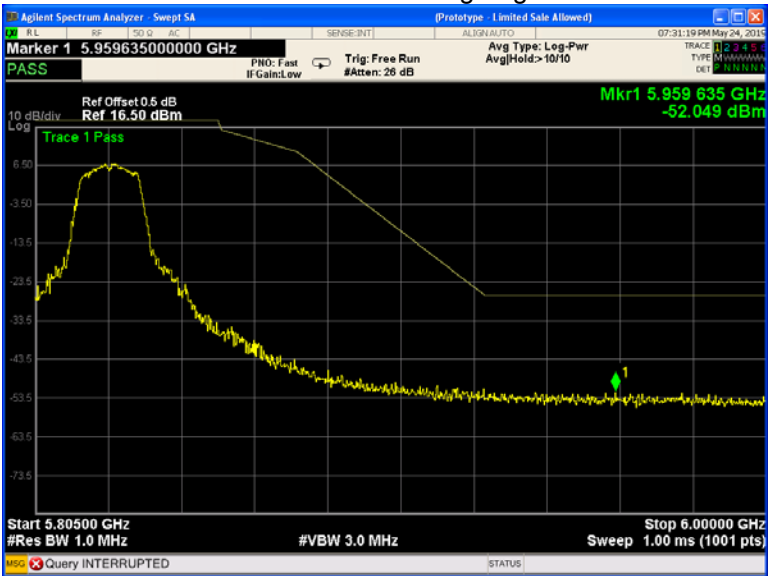
802.11a U-NII-1 Band edge-right side



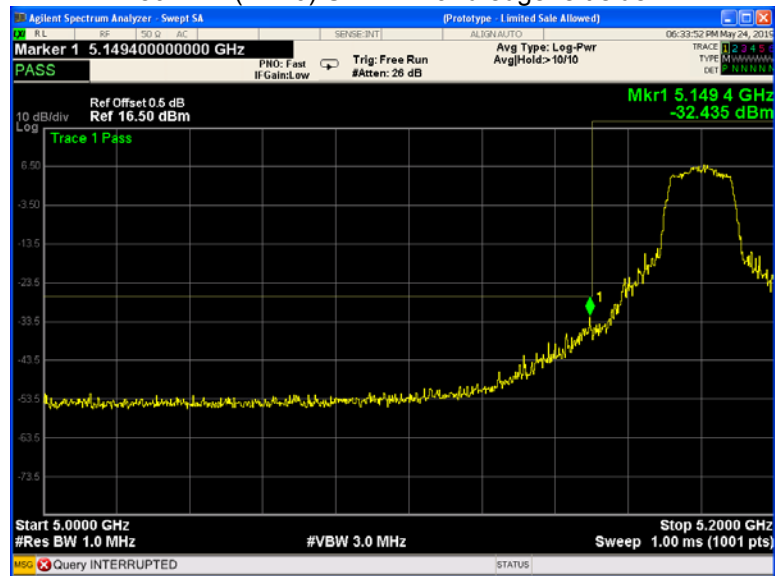
802.11a U-NII-3 Band edge-left side



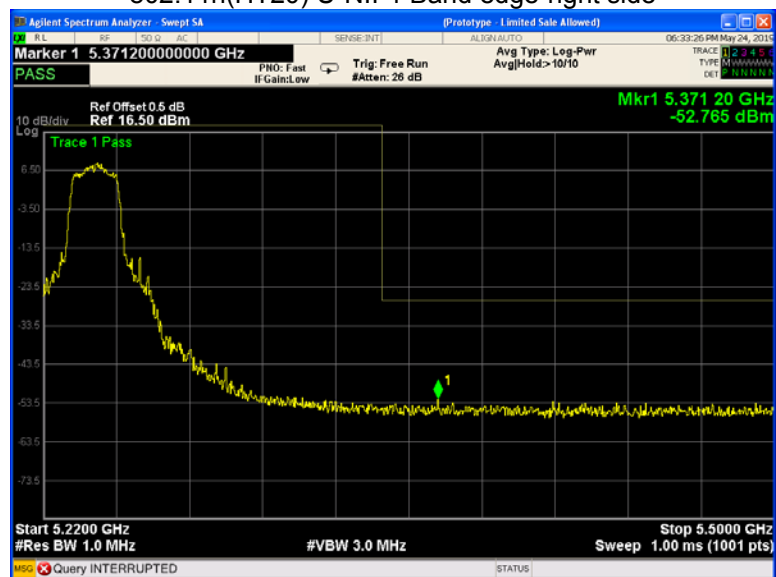
802.11a U-NII-3 Band edge-right side



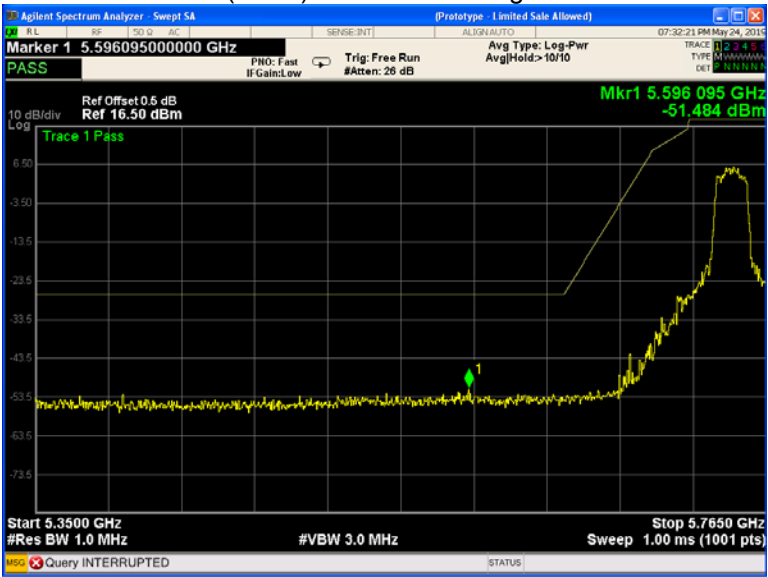
802.11n(HT20) U-NII-1 Band edge-left side



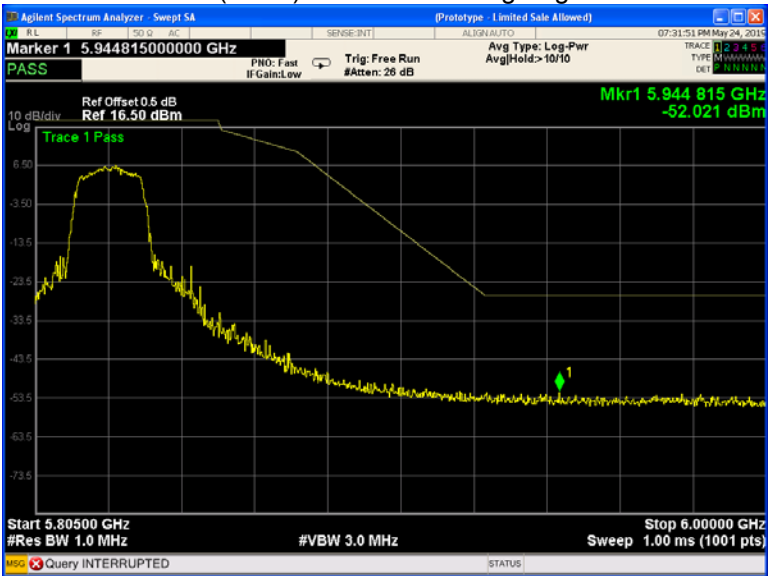
802.11n(HT20) U-NII-1 Band edge-right side



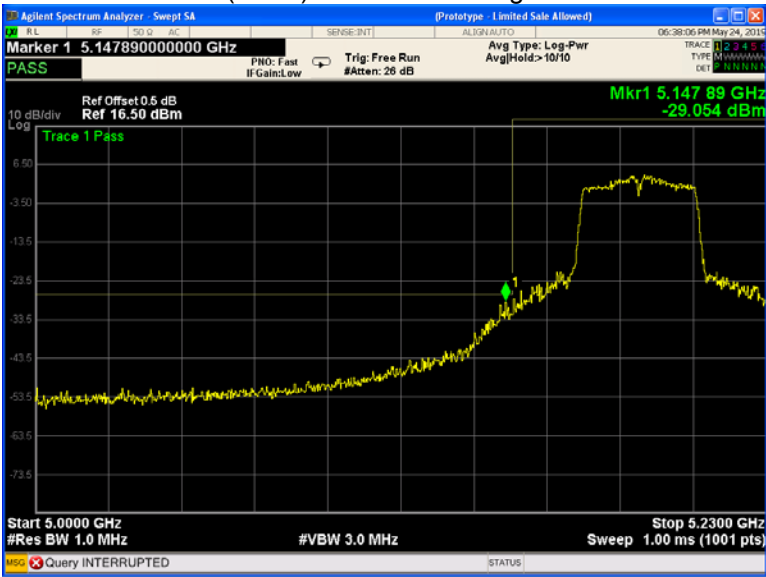
802.11n(HT20) U-NII-3 Band edge-left side



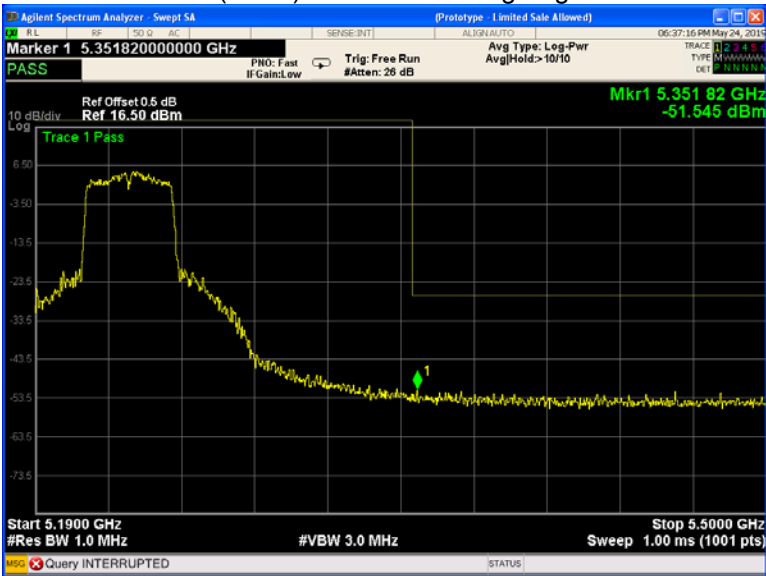
802.11n(HT20) U-NII-3 Band edge-right side



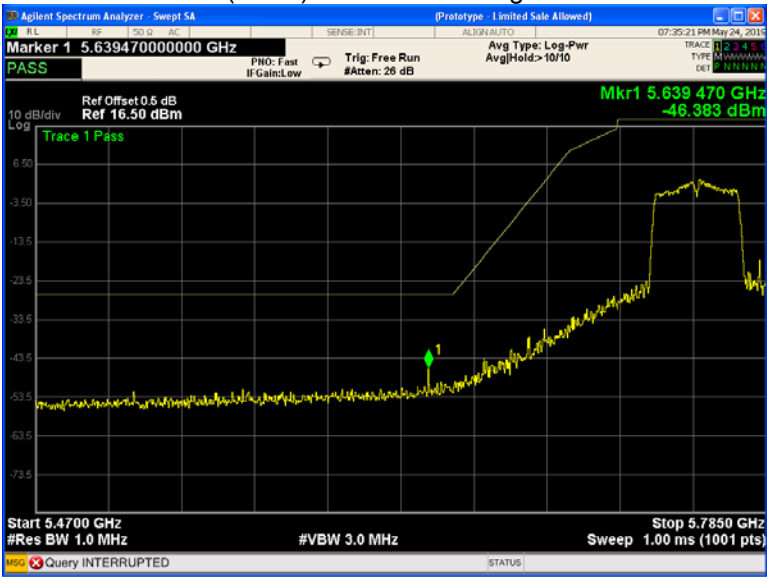
802.11n(HT40) U-NII-1 Band edge-left side



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



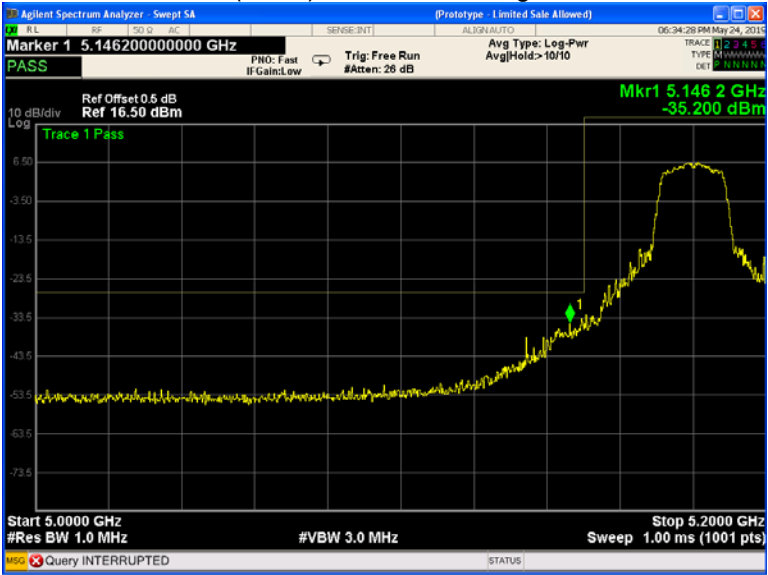
802.11n(HT40) U-NII-3 Band edge-left side



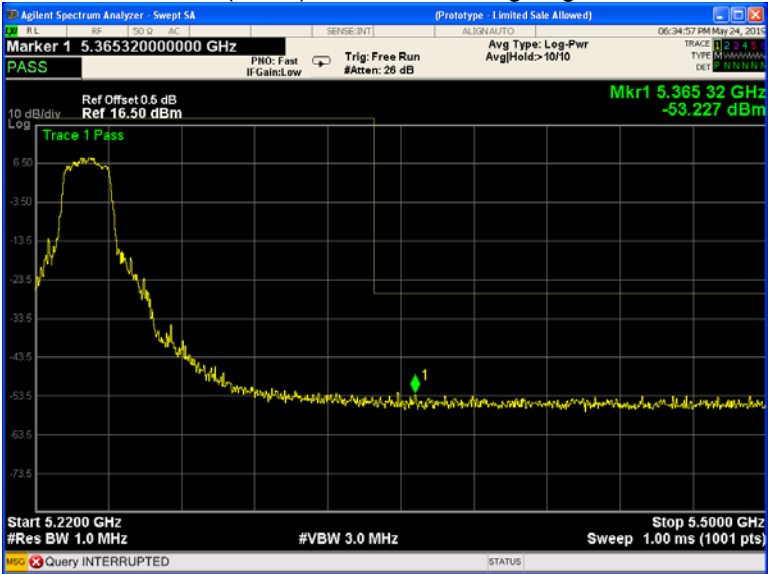
802.11n(HT40) U-NII-3 Band edge-right side



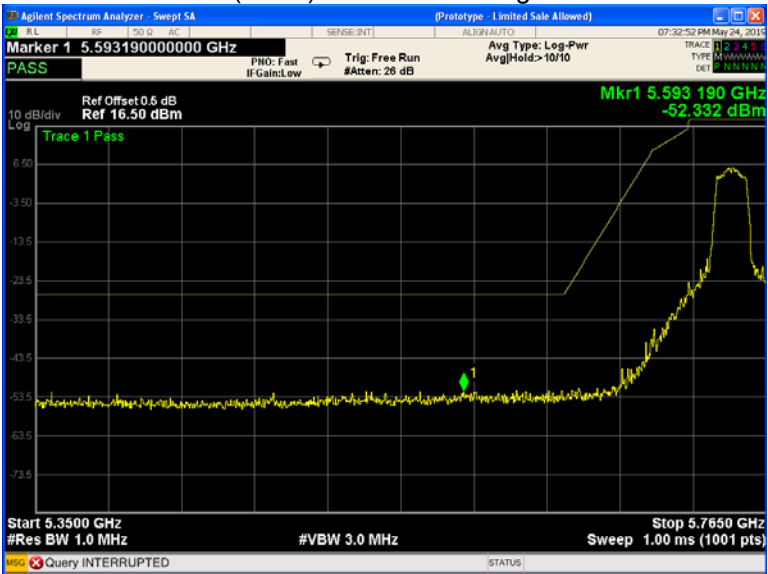
802.11ac(HT20) U-NII-1 Band edge-left side



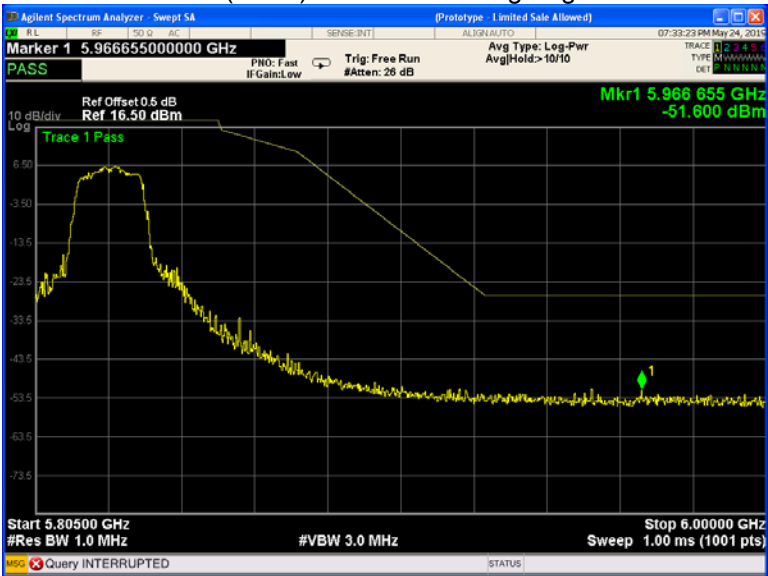
802.11ac(HT20) U-NII-1 Band edge-right side



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



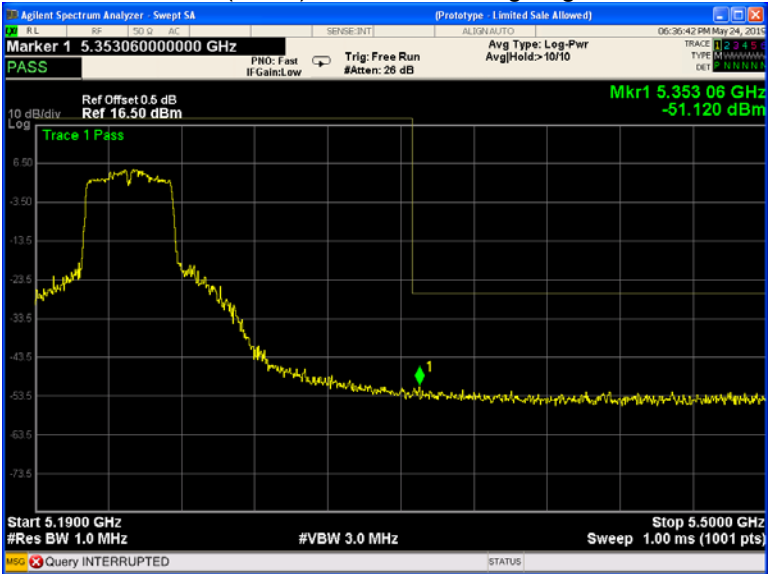
802.11ac(HT20) U-NII-3 Band edge-right side



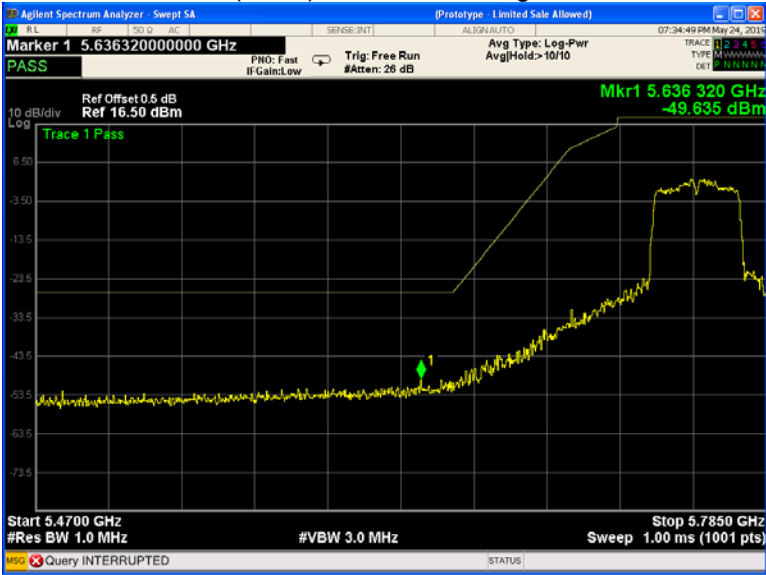
802.11ac(HT40) U-NII-1 Band edge-left side



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



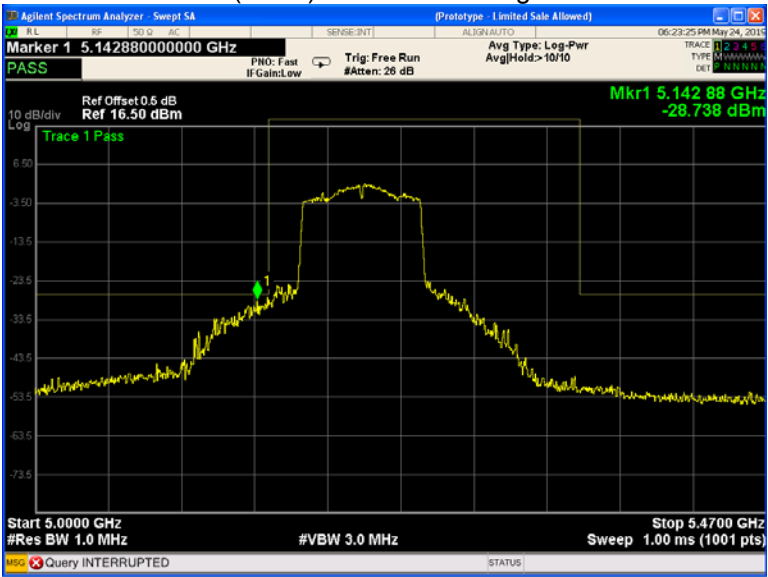
802.11ac(HT40) U-NII-3 Band edge-left side



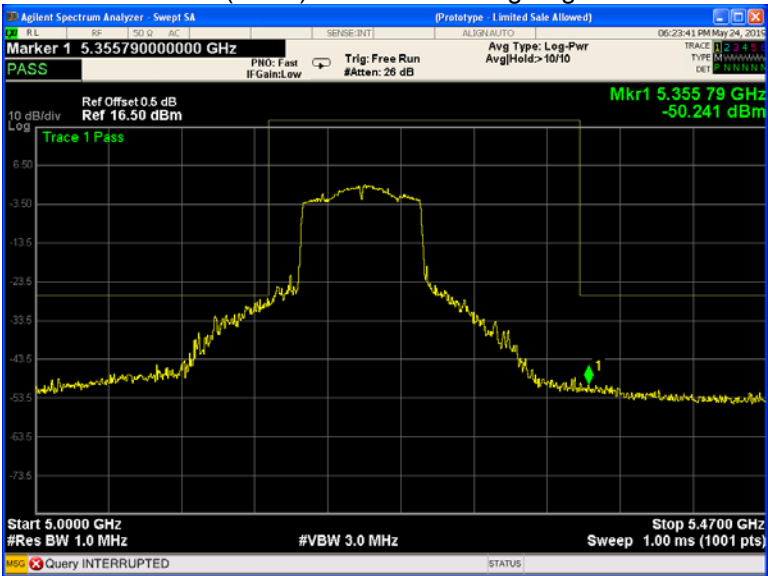
802.11ac(HT40) U-NII-3 Band edge-right side



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



11 6 dB Bandwidth

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

11.1 Test Procedure:

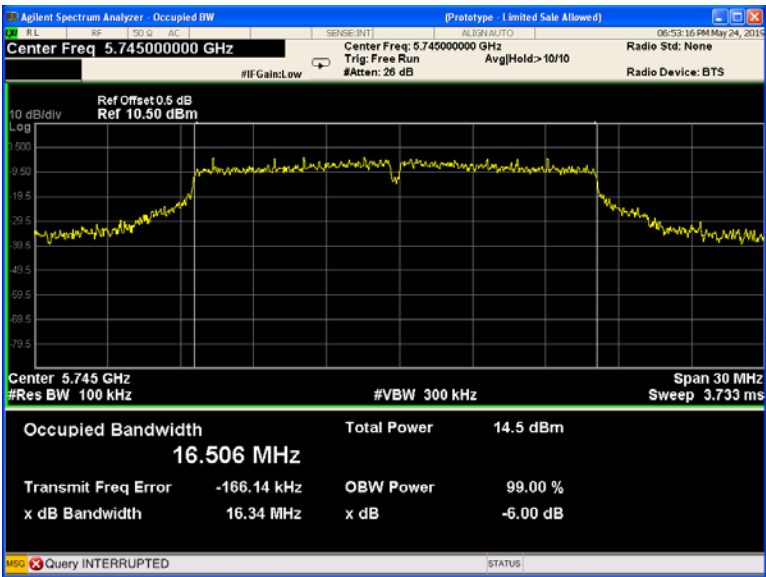
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz

11.2 Test Result:

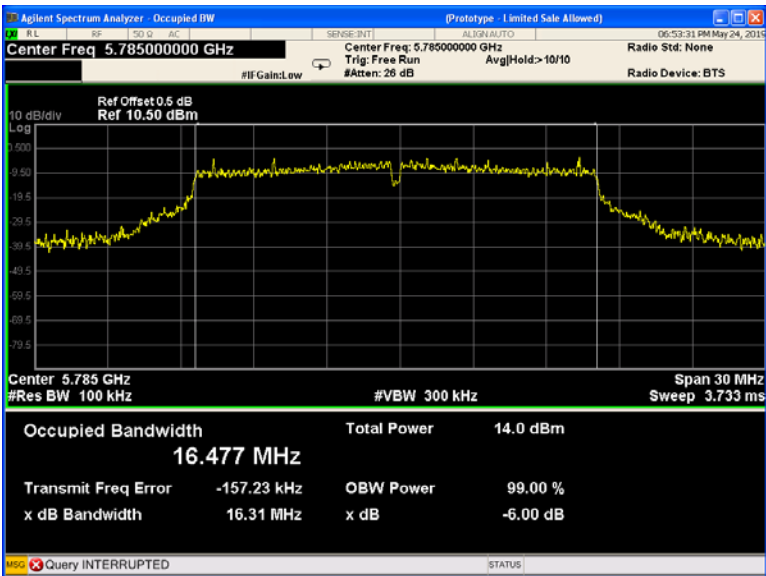
Band	Operation mode	6 dB Bandwidth (MHz)		
		Low	Middle	High
U-NII-3	802.11a	16.34	16.31	16.32
	802.11n(HT20)	16.79	15.88	17.15
	802.11n(HT40)	35.79	/	35.73
	802.11ac(HT20)	16.79	15.88	17.15
	802.11ac(HT40)	35.79	/	35.73
	802.11ac(HT80)	75.71	/	/

Test result plots shown as follows:

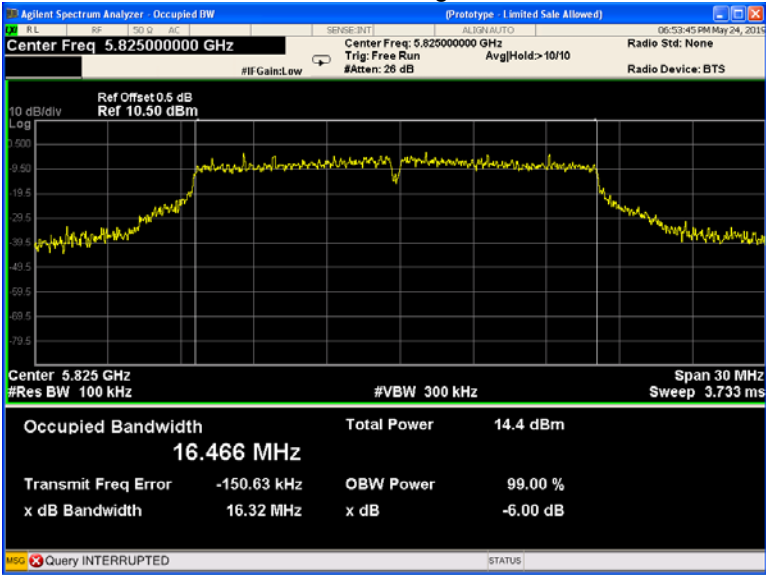
802.11a U-NII-3 Low channel



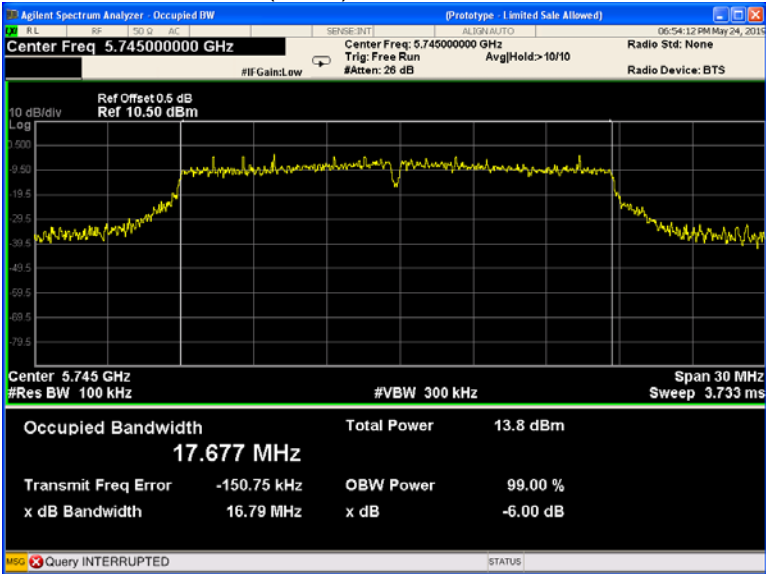
802.11a U-NII-3 Middle channel



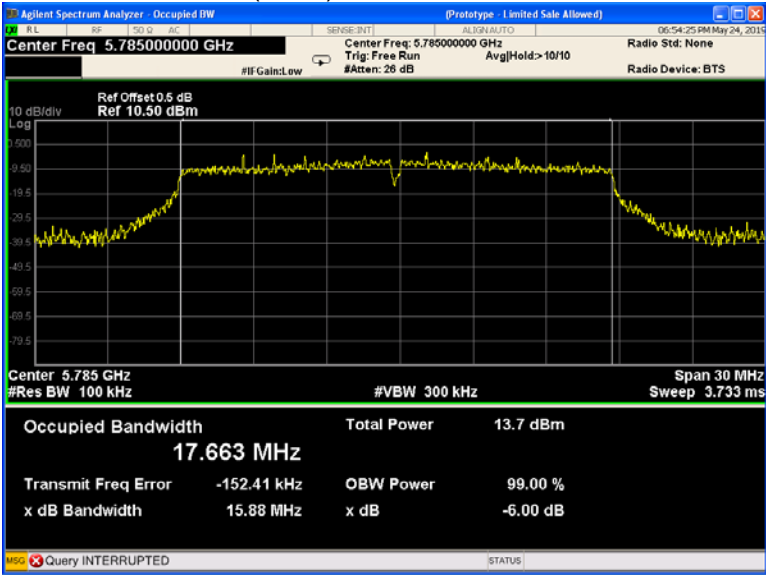
802.11a U-NII-3 High channel



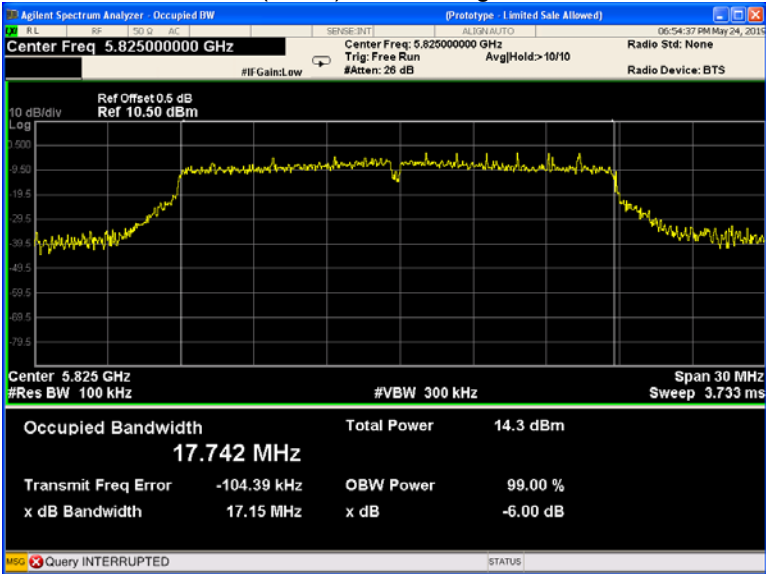
802.11n(HT20) U-NII-3 Low channel



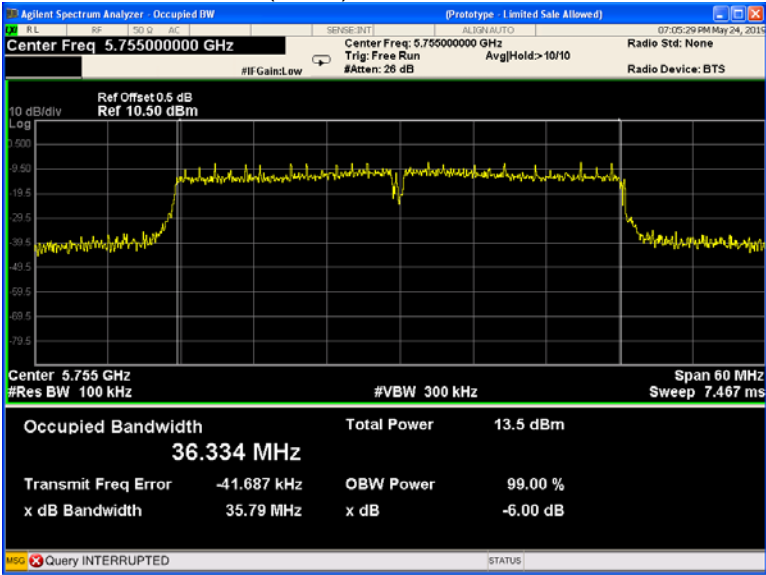
802.11n(HT20) U-NII-3 Middle channel



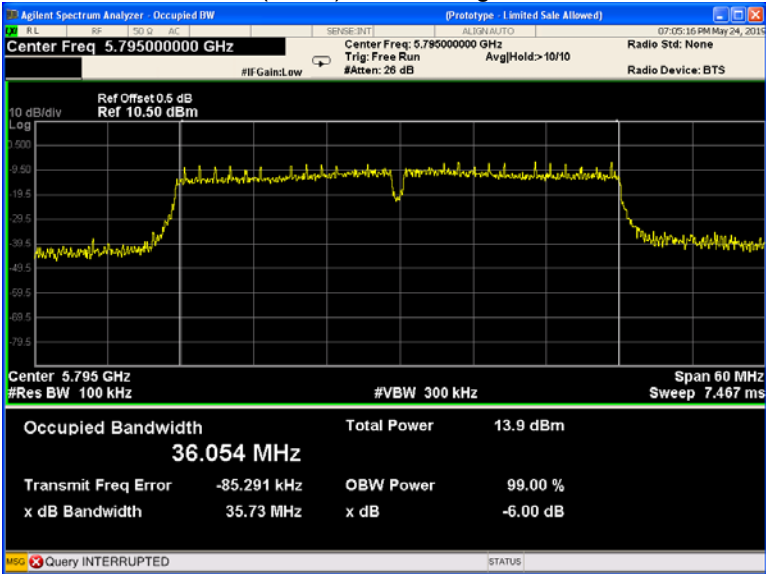
802.11n(HT20) U-NII-3 High channel



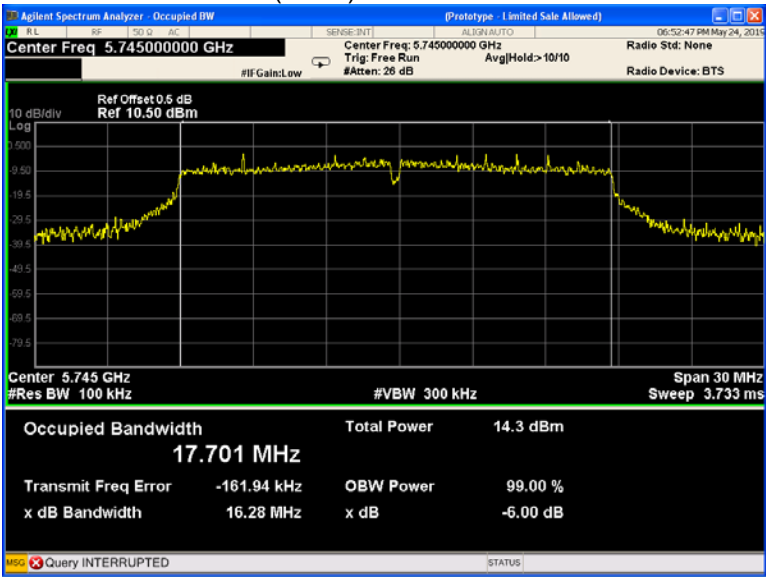
802.11n(HT40) U-NII-3 Low channel



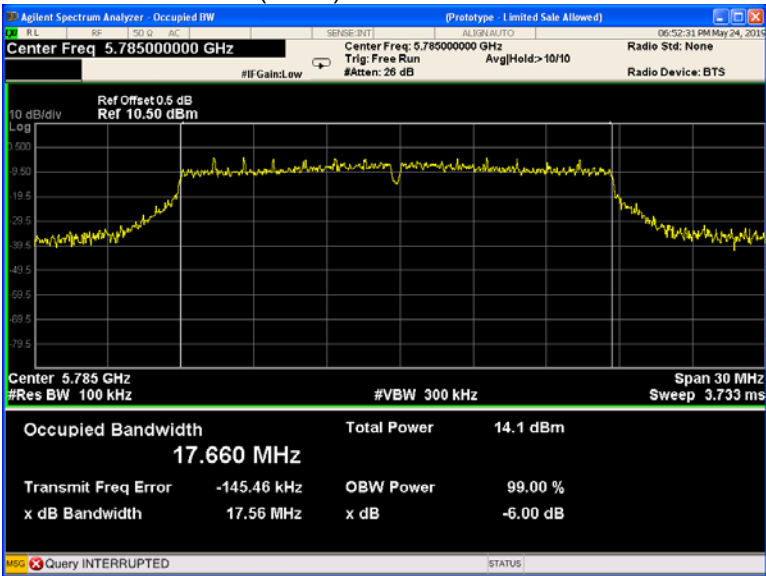
802.11n(HT40) U-NII-3 High channel



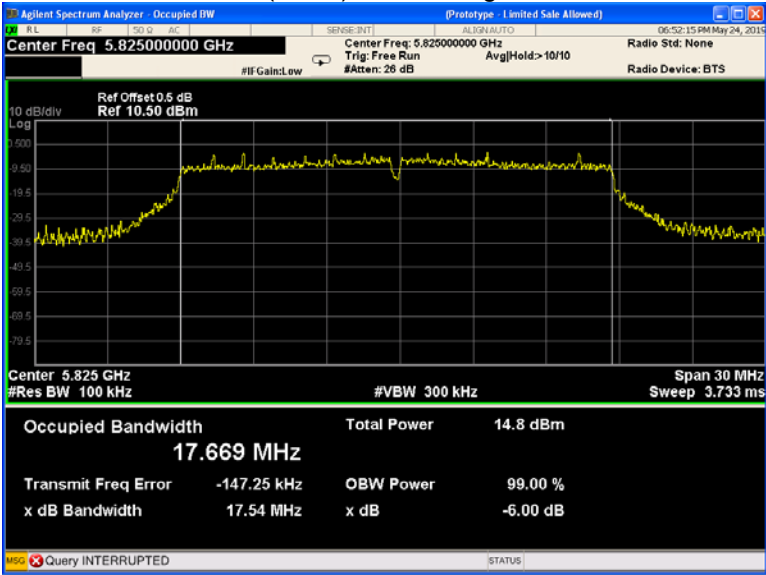
802.11ac(HT20) U-NII-3 Low channel



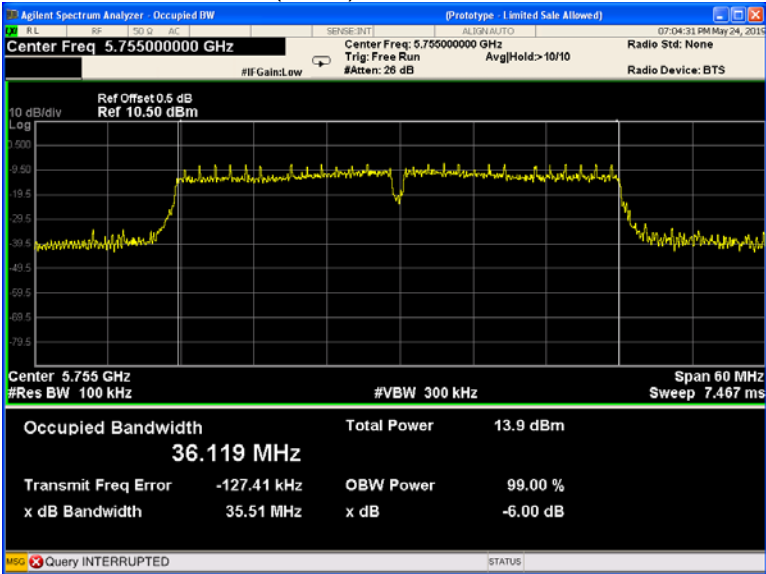
802.11ac(HT20) U-NII-3 Middle channel



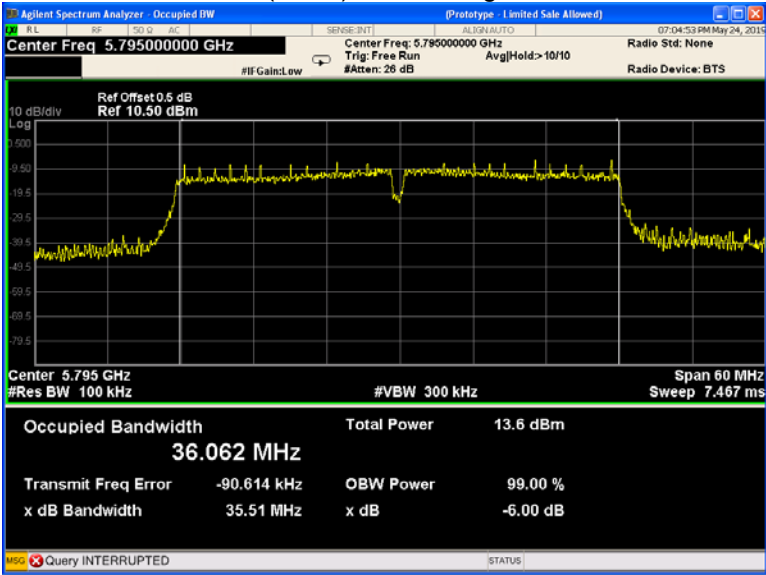
802.11ac(HT20) U-NII-3 High channel



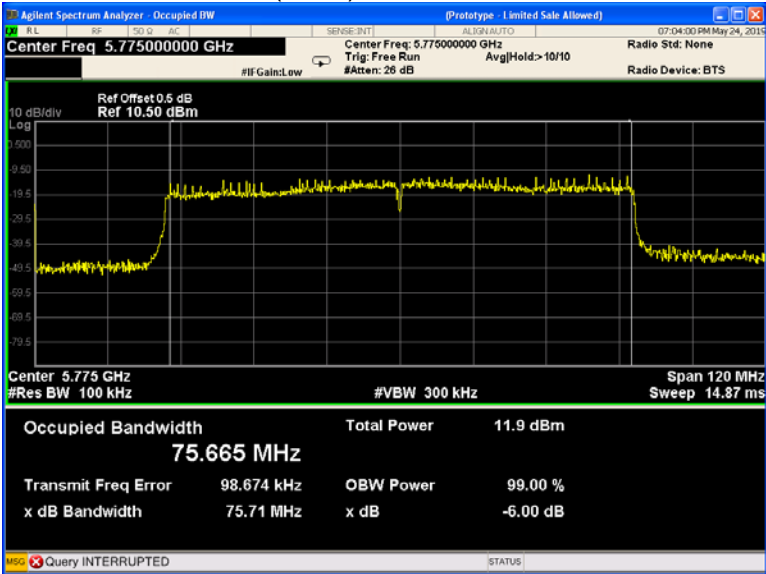
802.11ac(HT40) U-NII-3 Low channel



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



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



12 26 dB Bandwidth and 99% Occupied Bandwidth

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

12.1 Test Procedure:

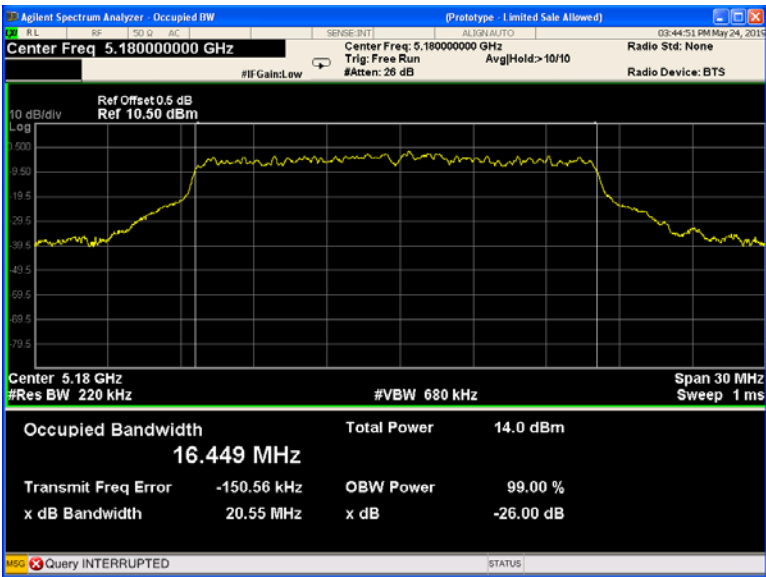
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 1% to 5% of the OBW, VBW = 3x RBW

12.2 Test Result:

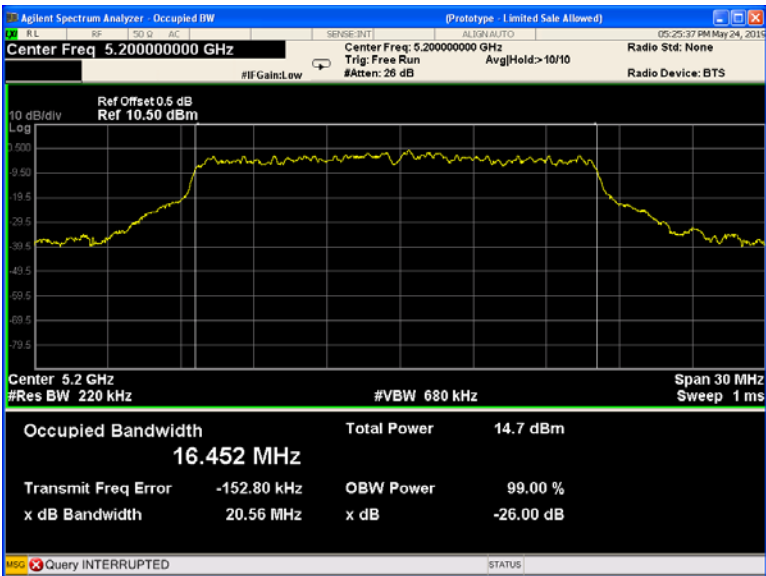
Band	Operation mode	26 dB Bandwidth (MHz)			99% Bandwidth (MHz)		
		Low	Middle	High	Low	Middle	High
U-NII-1	802.11a	20.55	20.56	20.60	16.449	16.452	16.446
	802.11n(HT20)	25.54	26.75	25.83	17.927	17.908	17.893
	802.11n(HT40)	51.47	/	45.17	36.262	/	36.269
	802.11ac(HT20)	28.82	24.87	26.69	17.930	17.861	17.816
	802.11ac(HT40)	48.80	/	42.12	36.352	/	36.313
	802.11ac(HT80)	83.99	/	/	75.491	/	/
U-NII-3	802.11a	22.40	23.69	21.131	16.747	16.711	6.691
	802.11n(HT20)	27.25	22.43	22.09	17.836	17.748	17.797
	802.11n(HT40)	47.360	/	49.42	36.325	/	36.366
	802.11ac(HT20)	25.76	22.50	23.28	17.839	17.838	17.841
	802.11ac(HT40)	44.36	/	44.41	36.320	/	36.245
	802.11ac(HT80)	93.92	/	/	75.452	/	/

Test result plots shown as follows:

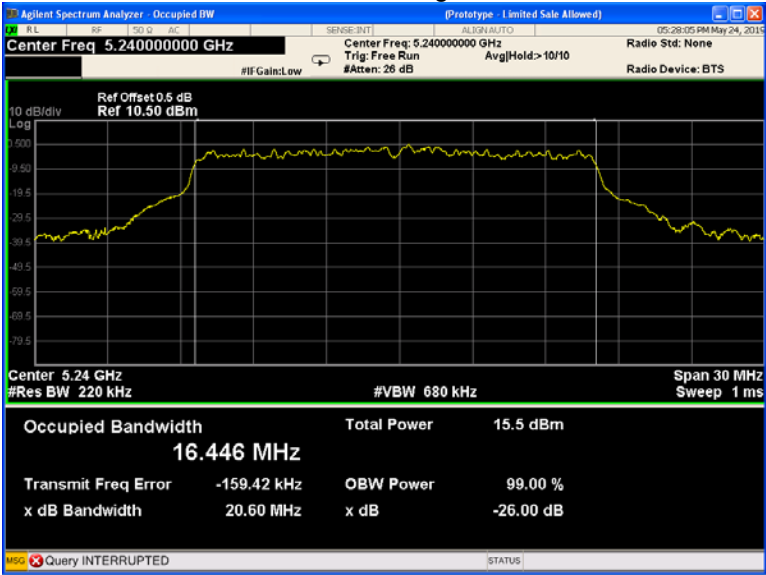
802.11a U-NII-1 Low channel



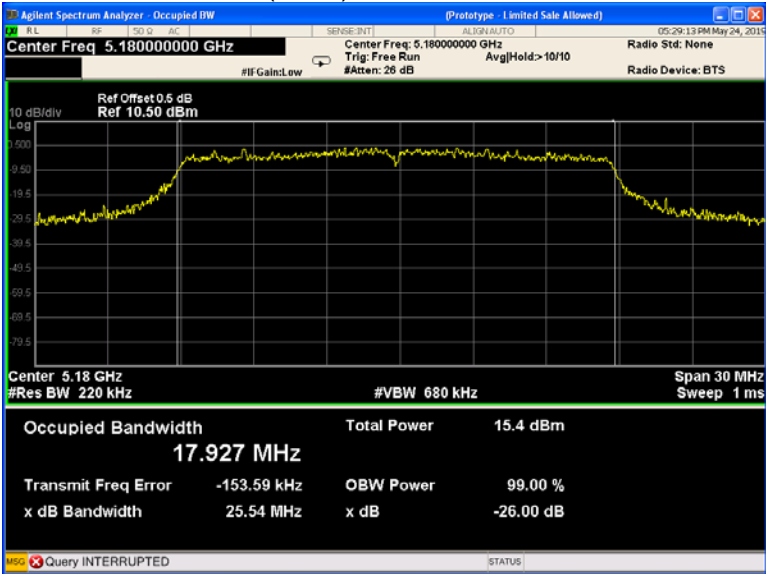
802.11a U-NII-1 Middle channel



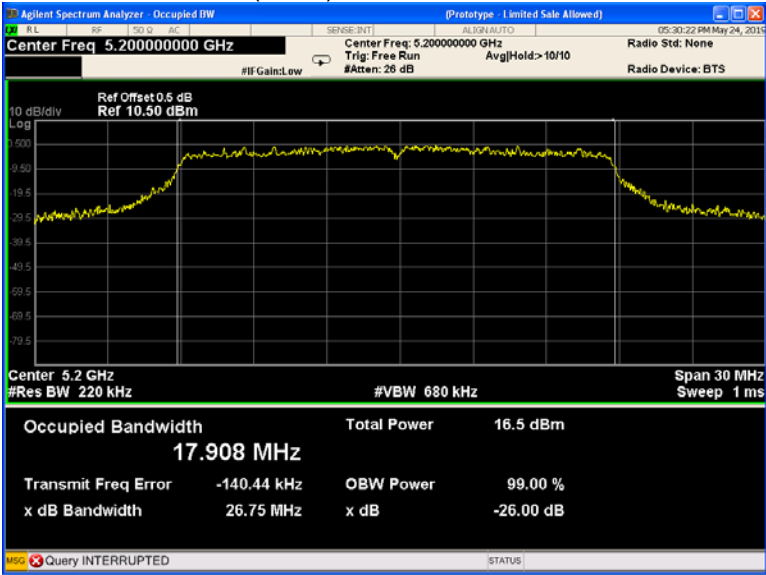
802.11a U-NII-1 High channel



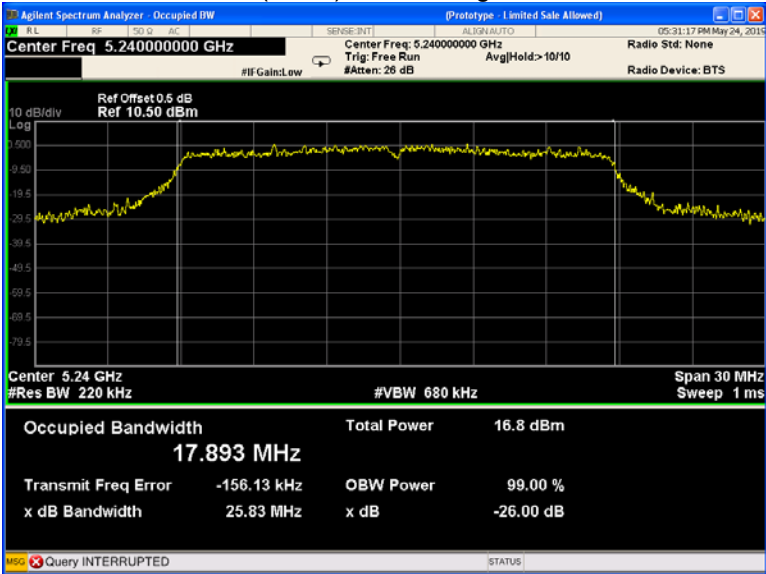
802.11n(HT20) U-NII-1 Low channel



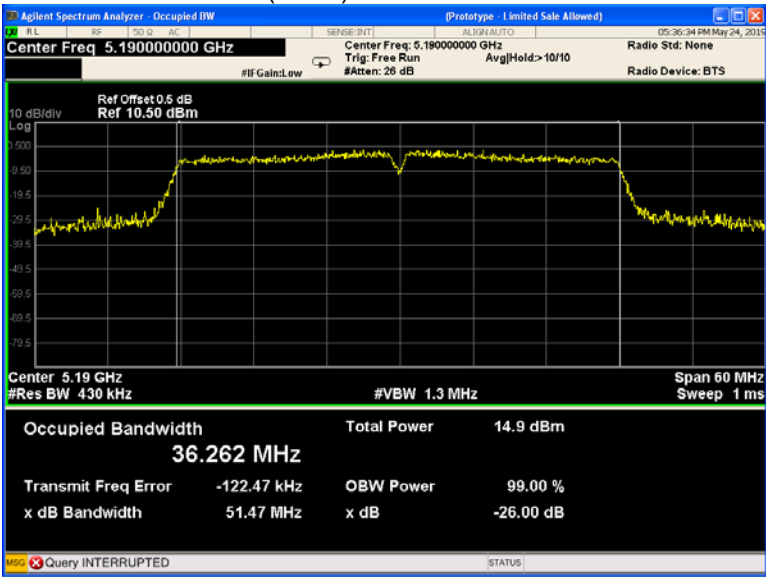
802.11n(HT20) U-NII-1 Middle channel



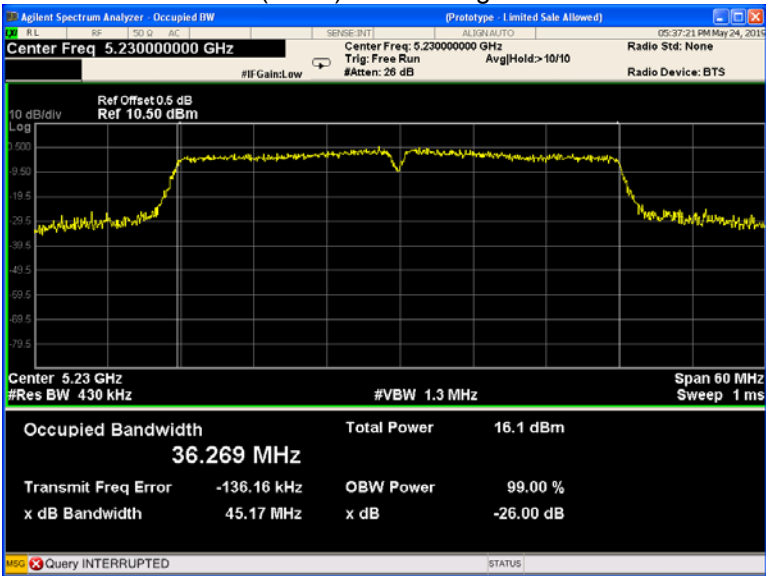
802.11n(HT20) U-NII-1 High channel



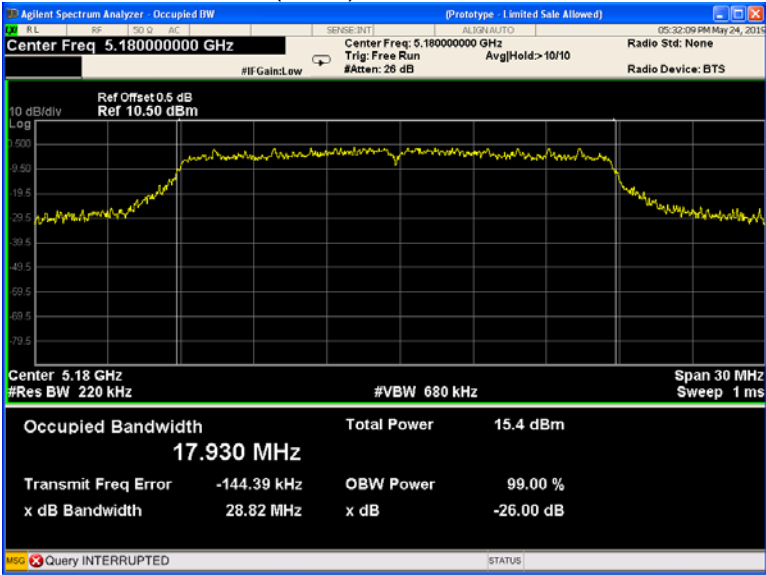
802.11n(HT40) U-NII-1 Low channel



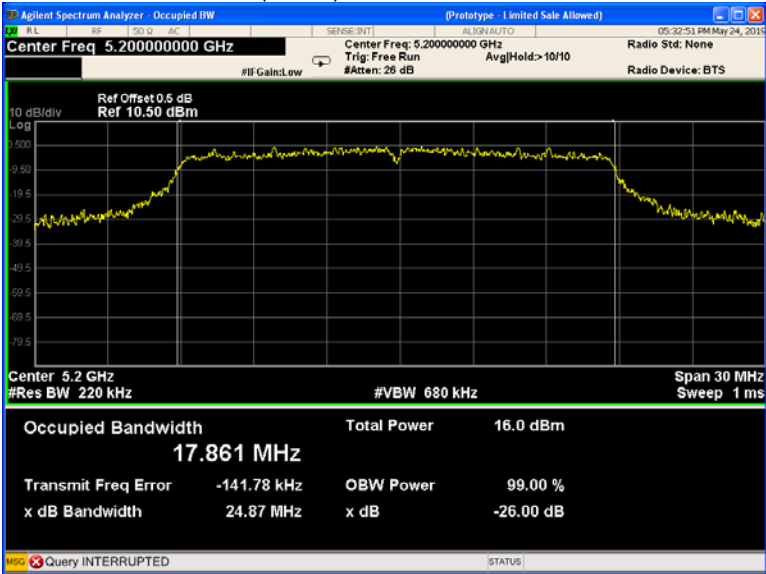
802.11n(HT40) U-NII-1 High channel



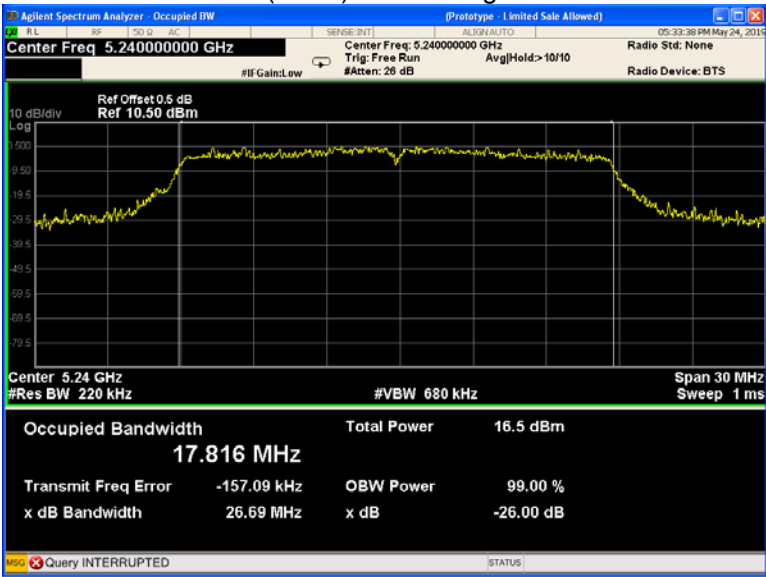
802.11ac(HT20) U-NII-1 Low channel



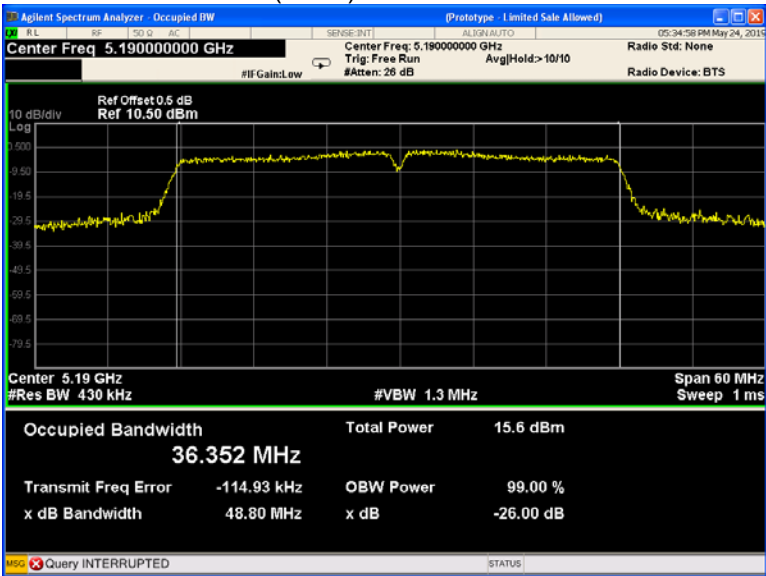
802.11ac(HT20) U-NII-1 Middle channel



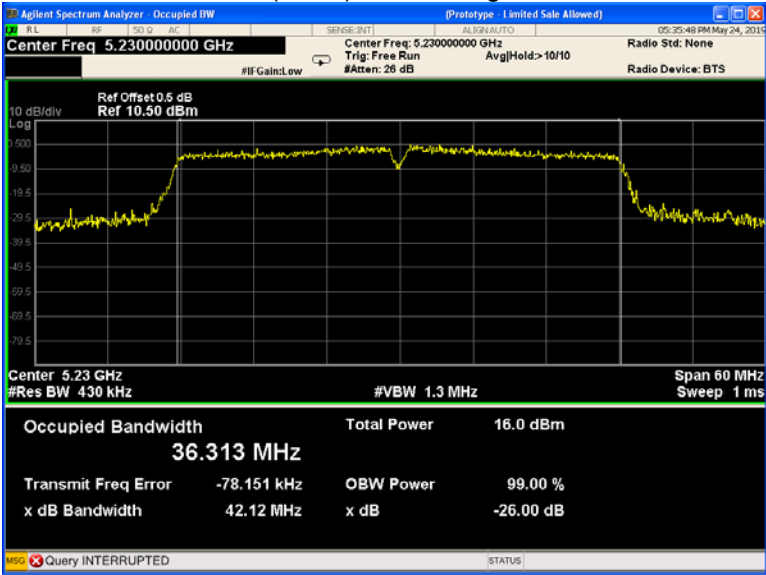
802.11ac(HT20) U-NII-1 High channel



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

