

TEST REPORT

Reference No. : WTD21D07068889W001
FCC ID : 2AYMI2021JJRC3
Applicant : GUANGDONG JIANJIAN INTELLIGENT TECHNOLOGY CO., LTD.
Address : No. 244, Huancui Road, Chenghai District, Shantou, Guangdong, China
Manufacturer : GUANGDONG JIANJIAN INTELLIGENT TECHNOLOGY CO., LTD.
Address : No. 244, Huancui Road, Chenghai District, Shantou, Guangdong, China
Product : DRONE
Model(s) : YG001
Standards : FCC CFR47 Part 15 E Section 15.407
Date of Receipt sample : 2021-07-12
Date of Test : 2021-07-12 to 2021-07-19
Date of Issue : 2021-07-28
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 Testing Group Co., Ltd.

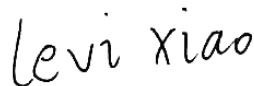
Address: No. 77, Houjie Section, Guantai Road, Houjie Town, Dongguan City, Guangdong, China

Tel: +86-769-2267 6998

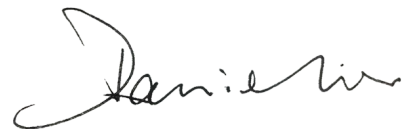
Fax: +86-769-2267 6828

Compiled by:

Approved by:



Levi Xiao / Project Engineer



Daniel Liu / Designated Reviewer

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3 Revision History

Test report No.	Date of Receipt sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTD21D07068889 W001	2021-07-12	2021-07-12 to 2021-07-19	2021-07-28	Original	-	Valid

4 General Information

4.1 General Description of E.U.T.

Product:	DRONE
Model(s):	YG001
Wi-Fi Specification:	5G-802.11a/n HT20 /n HT40
Hardware Version:	KY-XLL8813PRO-REV06
Software Version:	KY-XLL8813PRO-330REV04

4.2 Details of E.U.T.

Operation Frequency:	802.11a/n(HT20): U-NII-1: 5150-5250MHz, U-NII-3:5725-5850MHz 802.11n(HT40): U-NII-1: 5190-5230MHz, U-NII-3: 5755-5795MHz
Max. RF output power:	19.43dBm
Type of Modulation:	OFDM
Antenna installation:	internal permanent antenna
Antenna Gain:	0dBi
Ratings:	7.4V For Battery

4.3 Channel List

U-NII-1 (5.15-5.25GHz)			
channel	Frequency(MHz)	channel	Frequency(MHz)
36	5180	38	5190
40	5200	42	5210
44	5220	46	5230
48	5240		

U-NII-3 (5.725-5.85GHz)			
channel	Frequency(MHz)	channel	Frequency(MHz)
149	5745	151	5755
153	5765	155	5775
157	5785	159	5795
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):

channel	Frequency(MHz)	channel	Frequency(MHz)
36	5180	40	5200
48	5240		

channel	Frequency(MHz)	channel	Frequency(MHz)
52	5260	56	5280
64	5320		

channel	Frequency(MHz)	channel	Frequency(MHz)
100	5500	120	5600
140	5700		

channel	Frequency(MHz)	channel	Frequency(MHz)
149	5745	157	5785
165	5825		

For 802.11n(HT40)

channel	Frequency(MHz)	channel	Frequency(MHz)
38	5190	46	5230

channel	Frequency(MHz)	channel	Frequency(MHz)
151	5755	159	5795

4.4 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 "SecureCRTPortable.exe", Version 7.1.1.264

Test Items	Mode	Data Rate	TX/RX
Radiated Emissions	802.11a (HT20)	6 Mbps	TX
	802.11n (HT20/40)	MCS0	TX
Duty Cycle	802.11a (HT20)	6 Mbps	TX
	802.11n (HT20/40)	MCS0	TX
Band Edge	802.11a (HT20)	6 Mbps	TX
	802.11n (HT20/40)	MCS0	TX
6dB Bandwidth	802.11a (HT20)	6 Mbps	TX
	802.11n (HT20/40)	MCS0	TX
26dB Bandwidth and 99% Occupied Bandwidth	802.11a (HT20)	6 Mbps	TX
	802.11n (HT20/40)	MCS0	TX
Conducted Output Power	802.11a (HT20)	6 Mbps	TX
	802.11n (HT20/40)	MCS0	TX
Power Spectral Density	802.11a (HT20)	6 Mbps	TX
	802.11n (HT20/40)	MCS0	TX
Frequency Stability	Un-modulation	/	TX

4.5 Test Facility

The test facility has a test site registered with the following organizations:

ISED CAB identifier: CN0013. Test Firm Registration No.: 7760A.

Waltek Testing Group Co., Ltd. Has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration number 7760A, October 15, 2016.

FCC Designation No.: CN1201. Test Firm Registration No.: 523476.

Waltek Testing Group Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration number 523476, September 10, 2019.

5 Equipment Used during Test

5.1 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	2020-07-30	2021-07-29
2.	LISN	R&S	ENV216	101215	2020-07-30	2021-07-29
3.	Cable	Top	TYPE16(3.5M)	-	2020-07-30	2021-07-29
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	2020-07-30	2021-07-29
2.	LISN	SCHWARZBECK	NSLK 8128	8128-289	2020-07-30	2021-07-29
3.	Limiter	York	MTS-IMP-136	261115-001-0024	2020-07-30	2021-07-29
4.	Cable	LARGE	RF300	-	2020-07-30	2021-07-29
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	2020-07-30	2021-07-29
2	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	2020-07-30	2021-07-29
3	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	2020-07-30	2021-07-29
4	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	2020-07-30	2021-07-29
5	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	2020-07-30	2021-07-29
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	335	2020-07-30	2021-07-29
7	Broadband Preampfier	COMPLIANCE DIRECTION	PAP-1G18	2004	2020-07-30	2021-07-29
8	Coaxial Cable (above 1GHz)	Top	1GHz-25GHz	EW02014-7	2020-07-30	2021-07-29

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	2020-07-30	2021-07-29
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	2020-07-30	2021-07-29
3	Amplifier	Compliance pirection systems inc	PAP-0203	22024	2020-07-30	2021-07-29
4	Cable	HUBER+SUHNER	CBL2	525178	2020-07-30	2021-07-29
RF Conducted Testing						
Ite	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMC Analyzer (9k~26.5GHz)	Agilent	E7405A	MY45114943	2020-07-30	2021-07-29
2.	Spectrum Analyzer (9k~6GHz)	R&S	FSL6	100959	2020-07-30	2021-07-29
3.	Signal Analyzer (9k~26.5GHz)	Agilent	N9010A	MY50520207	2020-07-30	2021-07-29

5.2 Description of Support Units

Equipment	Manufacturer	Model No.	Series No.
Computer	Dell	K053	/
Mouse	Lenovo	AP01	/

5.3 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)

5.4 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.

6 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	--
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
Unwanted Emissions that fall Outside of the Restricted Bands	15.407(a)	PASS
Antenna Requirement	15.203	PASS
Maximum Permissible Exposure (Exposure of Humans to RF Fields)	1.1307(b)(1)	PASS

7 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	$20\log^{(500)}$

7.1 EUT Operation

Operating Environment :

Temperature: 23.5 ℃

Humidity: 52.1 % RH

Atmospheric Pressure: 101.2kPa

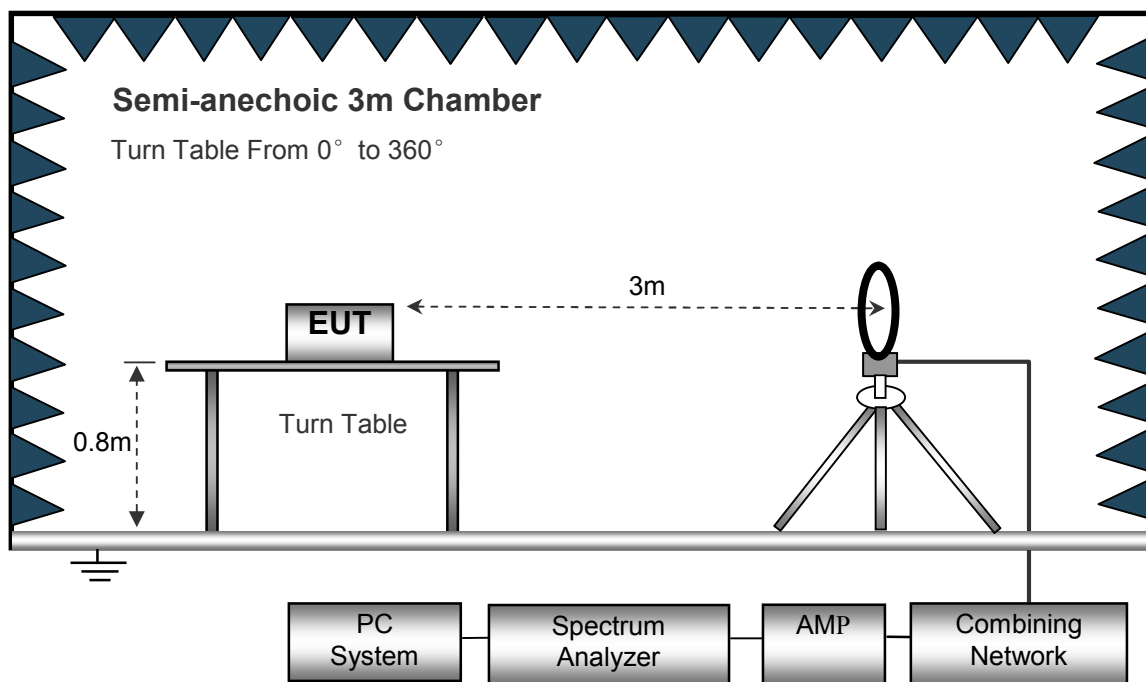
EUT Operation :

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

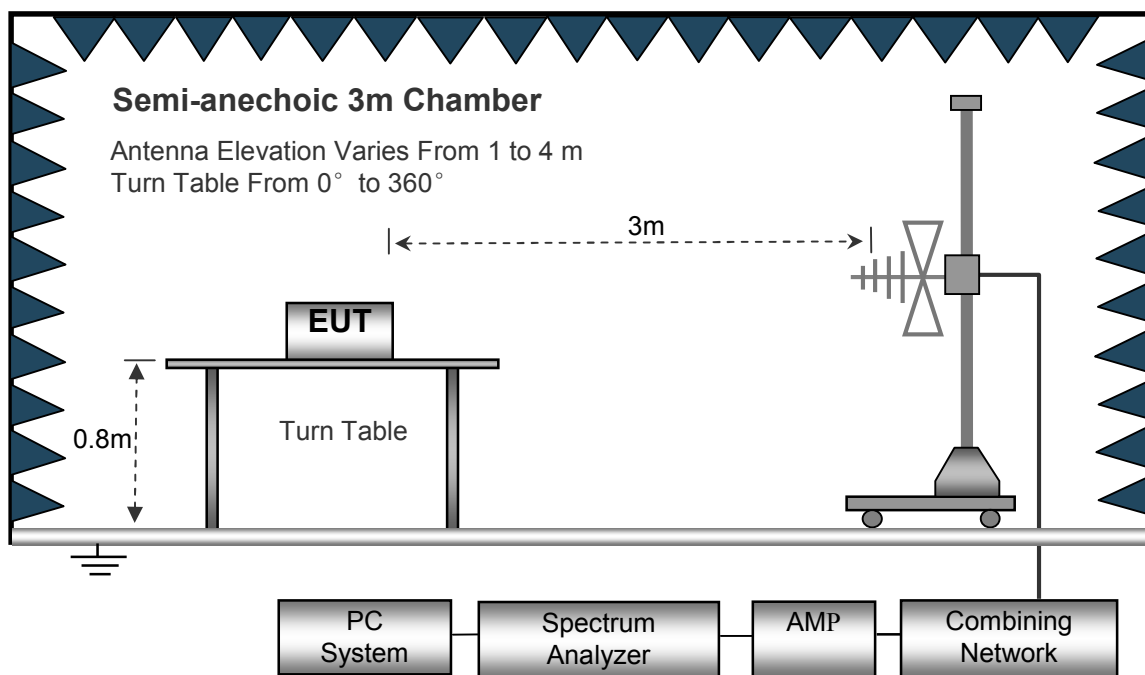
7.2 Test Setup

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

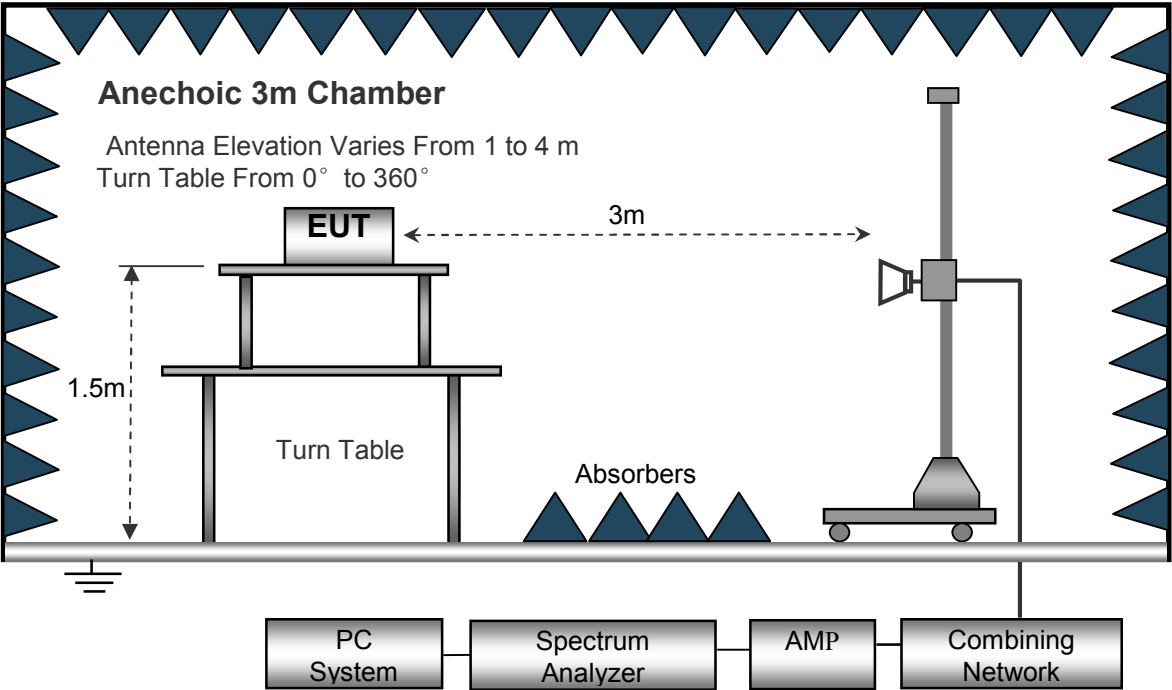
The test setup for emission measurement below 30MHz.



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



The test setup for emission measurement above 1 GHz.



7.3 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

7.4 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.

7.5 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:

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

7.6 Summary of Test Results

Test Frequency: 9KHz~30MHz

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

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	38.55	QP	111	1.1	H	-11.62	26.93	46.00	-19.07
223.45	35.83	QP	168	1.8	V	-11.62	24.21	46.00	-21.79
4521.52	50.51	PK	193	2.0	H	-2.03	48.48	74.00	-25.52
4521.52	46.25	Ave	193	2.0	H	-2.03	44.22	54.00	-9.78
5110.99	59.27	PK	59	1.2	H	-1.02	58.25	74.00	-15.75
5110.99	53.28	Ave	59	1.2	H	-1.02	52.26	54.00	-1.74
10360.00	40.83	PK	39	1.6	H	5.33	46.16	74.00	-27.84
10360.00	36.74	Ave	39	1.6	H	5.33	42.07	54.00	-11.93
802.11a U-NII-1 Middle channel 5200MHz									
223.45	37.23	QP	5	1.0	H	-11.62	25.61	46.00	-20.39
223.45	36.06	QP	96	1.4	V	-11.62	24.44	46.00	-21.56
4516.13	50.94	PK	265	1.2	H	-1.94	49.00	74.00	-25.00
4516.13	45.49	Ave	265	1.2	H	-1.94	43.55	54.00	-10.45
5129.56	60.68	PK	88	1.1	H	-1.06	59.62	74.00	-14.38
5129.56	55.16	Ave	88	1.1	H	-1.06	54.10	54.00	0.10
10400.00	41.77	PK	41	1.9	H	5.21	46.98	74.00	-27.02
10400.00	36.21	Ave	41	1.9	H	5.21	41.42	54.00	-12.58

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	37.51	QP	293	1.6	H	-11.62	25.89	46.00	-20.11
223.45	37.05	QP	334	1.3	V	-11.62	25.43	46.00	-20.57
4530.73	49.65	PK	336	1.4	H	-2.24	47.41	74.00	-26.59
4530.73	44.27	Ave	336	1.4	H	-2.24	42.03	54.00	-11.97
5133.42	61.70	PK	6	1.8	H	-1.09	60.61	74.00	-13.39
5133.42	56.41	Ave	6	1.8	H	-1.09	55.32	54.00	1.32
10480.00	40.05	PK	355	1.6	H	5.14	45.19	74.00	-28.81
10480.00	37.18	Ave	355	1.6	H	5.14	42.32	54.00	-11.68
802.11a U-NII-3 Low Channel 5745MHz									
223.45	36.07	QP	306	1.1	H	-11.62	24.45	46.00	-21.55
223.45	37.15	QP	173	1.5	V	-11.62	25.53	46.00	-20.47
4528.13	48.17	PK	192	1.7	H	-2.06	46.11	74.00	-27.89
4528.13	43.03	Ave	192	1.7	H	-2.06	40.97	54.00	-13.03
11490.00	41.85	PK	196	1.2	H	5.93	47.78	68.20	-20.42
11490.00	37.08	Ave	196	1.2	H	5.93	43.01	54.00	-10.99
5359.75	46.08	PK	14	1.3	H	-1.25	44.83	74.00	-29.17
5359.75	39.12	Ave	14	1.3	H	-1.25	37.87	54.00	-16.13

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	36.80	QP	256	1.6	H	-11.62	25.18	46.00	-20.82
223.45	36.98	QP	280	1.9	V	-11.62	25.36	46.00	-20.64
4501.75	47.51	PK	128	1.7	H	-2.03	45.48	74.00	-28.52
4501.75	42.52	Ave	128	1.7	H	-2.03	40.49	54.00	-13.51
11570.00	41.89	PK	296	1.3	H	5.81	47.70	68.20	-20.50
11570.00	35.93	Ave	296	1.3	H	5.81	41.74	54.00	-12.26
5366.86	46.61	PK	226	1.6	H	-1.22	45.39	74.00	-28.61
5366.86	39.18	Ave	226	1.6	H	-1.22	37.96	54.00	-16.04
802.11a U-NII-3 High channel 5825MHz									
223.45	37.08	QP	142	1.5	H	-11.62	25.46	46.00	-20.54
223.45	36.91	QP	178	1.6	V	-11.62	25.29	46.00	-20.71
4506.16	48.16	PK	276	1.6	H	-1.84	46.32	74.00	-27.68
4506.16	42.43	Ave	276	1.6	H	-1.84	40.59	54.00	-13.41
11650.00	42.23	PK	134	1.7	H	5.84	48.07	68.20	-20.13
11650.00	35.29	Ave	134	1.7	H	5.84	41.13	54.00	-12.87
5381.65	46.27	PK	343	1.5	H	-1.30	44.97	74.00	-29.03
5381.65	37.73	Ave	343	1.5	H	-1.30	36.43	54.00	-17.57

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	37.99	QP	65	1.1	H	-11.62	26.37	46.00	-19.63
223.45	37.01	QP	156	1.4	V	-11.62	25.39	46.00	-20.61
4517.34	49.19	PK	119	1.4	H	-2.14	47.05	74.00	-26.95
4517.34	41.70	Ave	119	1.4	H	-2.14	39.56	54.00	-14.44
5125.63	47.55	PK	150	1.4	H	-1.06	46.49	74.00	-27.51
5125.63	38.32	Ave	150	1.4	H	-1.06	37.26	54.00	-16.74
10360.00	42.11	PK	65	2.0	H	5.33	47.44	74.00	-26.56
10360.00	35.45	Ave	65	2.0	H	5.33	40.78	54.00	-13.22
802.11n(HT20) U-NII-1 Middle channel 5200MHz									
223.45	37.41	QP	275	1.1	H	-11.62	25.79	46.00	-20.21
223.45	38.19	QP	132	1.4	V	-11.62	26.57	46.00	-19.43
4512.13	49.51	PK	311	1.5	H	-2.12	47.39	74.00	-26.61
4512.13	41.05	Ave	311	1.5	H	-2.12	38.93	54.00	-15.07
5128.02	48.74	PK	101	1.5	H	-1.06	47.68	74.00	-26.32
5128.02	37.79	Ave	101	1.5	H	-1.06	36.73	54.00	-17.27
10400.00	41.56	PK	117	1.1	H	5.21	46.77	74.00	-27.23
10400.00	38.11	Ave	117	1.1	H	5.21	43.32	54.00	-10.68

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)
802.11n(HT20) U-NII-1 High channel 5240MHz									
223.45	36.91	QP	212	1.3	H	-11.62	25.29	46.00	-20.71
223.45	38.65	QP	128	1.3	V	-11.62	27.03	46.00	-18.97
4535.63	49.58	PK	44	1.9	H	-1.96	47.62	74.00	-26.38
4535.63	41.45	Ave	44	1.9	H	-1.96	39.49	54.00	-14.51
5117.75	48.01	PK	270	1.4	H	-1.06	46.95	74.00	-27.05
5117.75	37.74	Ave	270	1.4	H	-1.06	36.68	54.00	-17.32
10480.00	40.93	PK	50	2.0	H	5.14	46.07	74.00	-27.93
10480.00	37.65	Ave	50	2.0	H	5.14	42.79	54.00	-11.21
802.11n(HT20) U-NII-3 Low Channel 5745MHz									
223.45	38.73	QP	272	1.4	H	-11.62	27.11	46.00	-18.89
223.45	49.07	QP	282	1.1	V	-11.62	37.45	46.00	-8.55
4511.85	42.58	PK	113	1.1	H	-2.06	40.52	74.00	-33.48
4511.85	47.56	Ave	113	1.1	H	-2.06	45.50	54.00	-8.50
11490.00	34.62	PK	340	1.5	H	5.93	40.55	68.20	-27.65
11490.00	45.65	Ave	340	1.5	H	5.93	51.58	54.00	-2.42
5372.00	46.93	PK	135	1.6	H	-1.25	45.68	74.00	-28.32
5372.00	39.99	Ave	135	1.6	H	-1.25	38.74	54.00	-15.26

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	37.56	QP	197	1.4	H	-11.62	25.94	46.00	-20.06
223.45	48.09	QP	13	1.4	V	-11.62	36.47	46.00	-9.53
4510.13	43.27	PK	62	1.5	H	-2.03	41.24	74.00	-32.76
4510.13	47.61	Ave	62	1.5	H	-2.03	45.58	54.00	-8.42
11570.00	35.12	PK	160	1.7	H	5.81	40.93	68.20	-27.27
11570.00	47.06	Ave	160	1.7	H	5.81	52.87	54.00	-1.13
5357.01	46.72	PK	1	1.8	H	-1.22	45.50	74.00	-28.50
5357.01	39.27	Ave	1	1.8	H	-1.22	38.05	54.00	-15.95
802.11n(HT20) U-NII-3 High channel 5825MHz									
223.45	36.95	QP	257	1.9	H	-11.62	25.33	46.00	-20.67
223.45	49.16	QP	270	1.2	V	-11.62	37.54	46.00	-8.46
4530.80	42.62	PK	167	1.9	H	-1.84	40.78	74.00	-33.22
4530.80	46.99	Ave	167	1.9	H	-1.84	45.15	54.00	-8.85
11650.00	34.68	PK	159	1.4	H	5.84	40.52	68.20	-27.68
11650.00	47.11	Ave	159	1.4	H	5.84	52.95	54.00	-1.05
5369.07	45.35	PK	71	1.7	H	-1.30	44.05	74.00	-29.95
5369.07	39.14	Ave	71	1.7	H	-1.30	37.84	54.00	-16.16

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)
802.11n(HT40) U-NII-1 Low Channel 5190MHz									
223.45	35.58	QP	284	1.2	H	-11.62	23.96	46.00	-22.04
223.45	44.33	QP	78	1.6	V	-11.62	32.71	46.00	-13.29
4500.50	43.31	PK	326	1.9	H	-1.89	41.42	74.00	-32.58
4500.50	34.65	Ave	326	1.9	H	-1.89	32.76	54.00	-21.24
5136.15	46.73	PK	247	1.5	H	-1.06	45.67	74.00	-28.33
5136.15	39.02	Ave	247	1.5	H	-1.06	37.96	54.00	-16.04
10380.00	38.59	PK	78	1.3	H	5.26	43.85	74.00	-30.15
10380.00	33.75	Ave	78	1.3	H	5.26	39.01	54.00	-14.99
802.11n(HT40) U-NII-1 High channel 5230MHz									
223.45	35.44	QP	284	1.5	H	-11.62	23.82	46.00	-22.18
223.45	43.84	QP	237	1.4	V	-11.62	32.22	46.00	-13.78
4516.30	42.62	PK	307	1.6	H	-1.94	40.68	74.00	-33.32
4516.30	35.61	Ave	307	1.6	H	-1.94	33.67	54.00	-20.33
5130.52	47.57	PK	273	1.8	H	-1.06	46.51	74.00	-27.49
5130.52	38.82	Ave	273	1.8	H	-1.06	37.76	54.00	-16.24
10460.00	40.01	PK	345	1.3	H	5.28	45.29	74.00	-28.71
10480.00	35.97	Ave	345	1.3	H	5.28	41.25	54.00	-12.75

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	35.51	QP	146	1.1	H	-11.62	23.89	46.00	-22.11
223.45	43.04	QP	38	1.7	V	-11.62	31.42	46.00	-14.58
4529.75	40.16	PK	28	1.4	H	-1.96	38.20	74.00	-35.80
4529.75	34.30	Ave	28	1.4	H	-1.96	32.34	54.00	-21.66
11510.00	38.19	PK	145	1.6	H	5.88	44.07	68.20	-24.13
11510.00	34.72	Ave	145	1.6	H	5.88	40.60	54.00	-13.40
5386.40	45.68	PK	40	1.2	H	-1.01	44.67	74.00	-29.33
5386.40	39.68	Ave	40	1.2	H	-1.01	38.67	54.00	-15.33
802.11n(HT40) U-NII-3 High Channel 5795MHz									
223.45	34.85	QP	67	1.4	H	-11.62	23.23	46.00	-22.77
223.45	42.35	QP	223	1.9	V	-11.62	30.73	46.00	-15.27
4514.93	39.76	PK	221	1.6	H	-1.92	37.84	74.00	-36.16
4514.93	33.95	Ave	221	1.6	H	-1.92	32.03	54.00	-21.97
11590.00	41.10	PK	46	1.5	H	5.63	46.73	68.20	-21.47
11590.00	37.44	Ave	46	1.5	H	5.63	43.07	54.00	-10.93
5360.81	45.89	PK	309	1.3	H	-1.04	44.85	74.00	-29.15
5360.81	39.41	Ave	309	1.3	H	-1.04	38.37	54.00	-15.63

Test Frequency: 18GHz~40GHz

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

8 Duty cycle

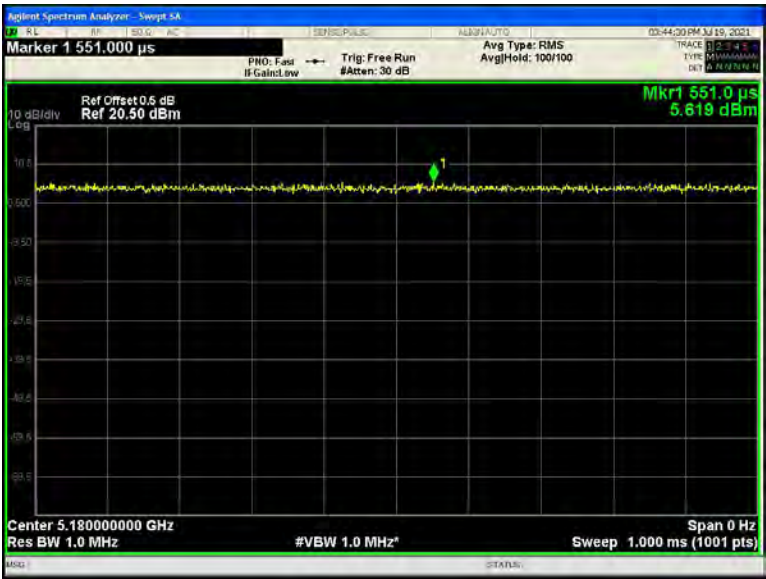
Test Requirement:	47 CFR Part 15C 15.407 KDB789033 D02 General U-NII Test Procedures New Rules v02r01, Section (B)
Test Method:	ANSI C63.10: 2013
Test Limit:	N/A
Test Result:	PASS
Remark:	Through Pre-scan, The duty cycle set for channel low, middle and high are same, and the duty cycle test is performed at channel low only.

8.1 Summary of Test Results

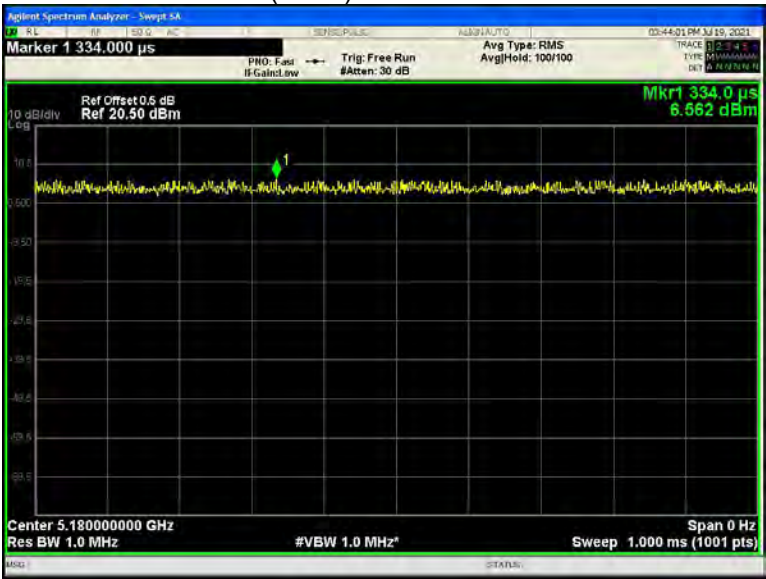
802.11a(HT20) mode			
channel	On time(ms)	Period(ms)	Duty Cycle(%)
36	100	100	100
149	100	100	100
802.11n(HT20) mode			
channel	On time(ms)	Period(ms)	Duty Cycle(%)
36	100	100	100
149	100	100	100
802.11n(HT40) mode			
channel	On time(ms)	Period(ms)	Duty Cycle(%)
38	100	100	100
151	100	100	100

Test result plots shown as follows:

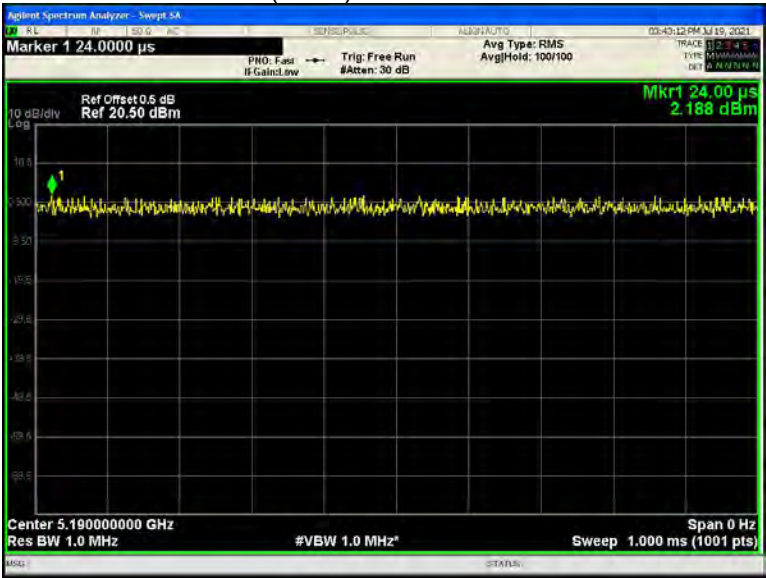
802.11a U-NII-1 Low channel



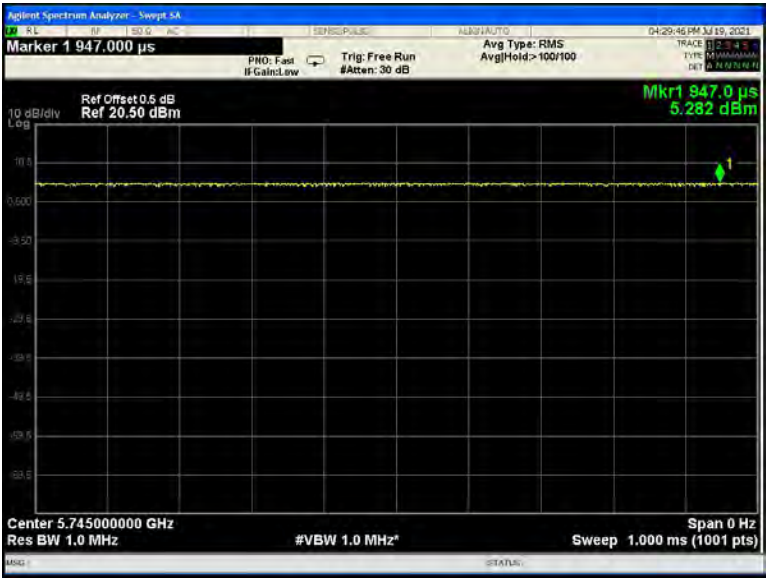
802.11n(HT20) U-NII-1 Low channel



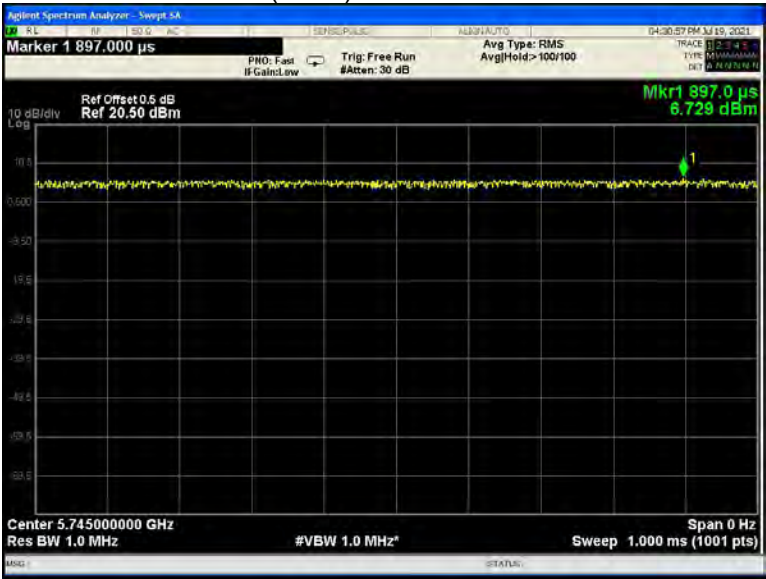
802.11n(HT40) U-NII-1 Low channel



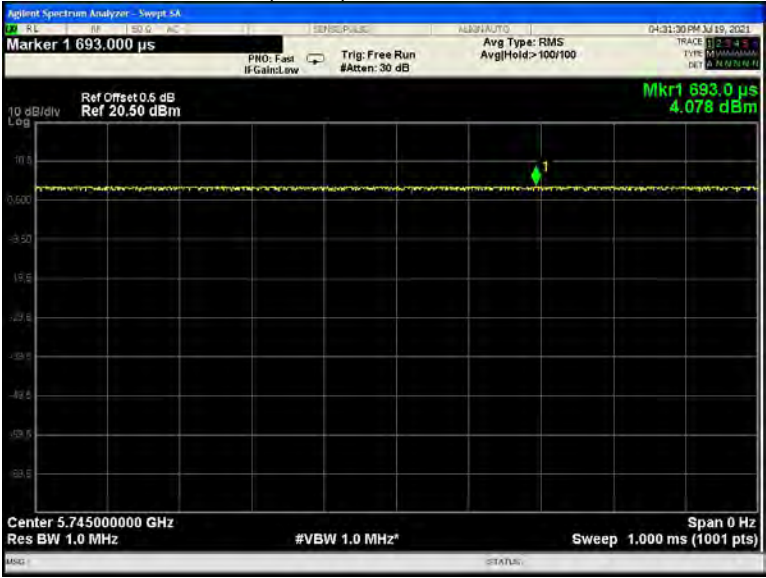
802.11a U-NII-3 Low channel



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



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



9 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 -27 dBm/MHz. (2 For transmitters operating in the 5.725-5.85 GHz band: (i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge. (ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.
Test Result:	PASS

9.1 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.

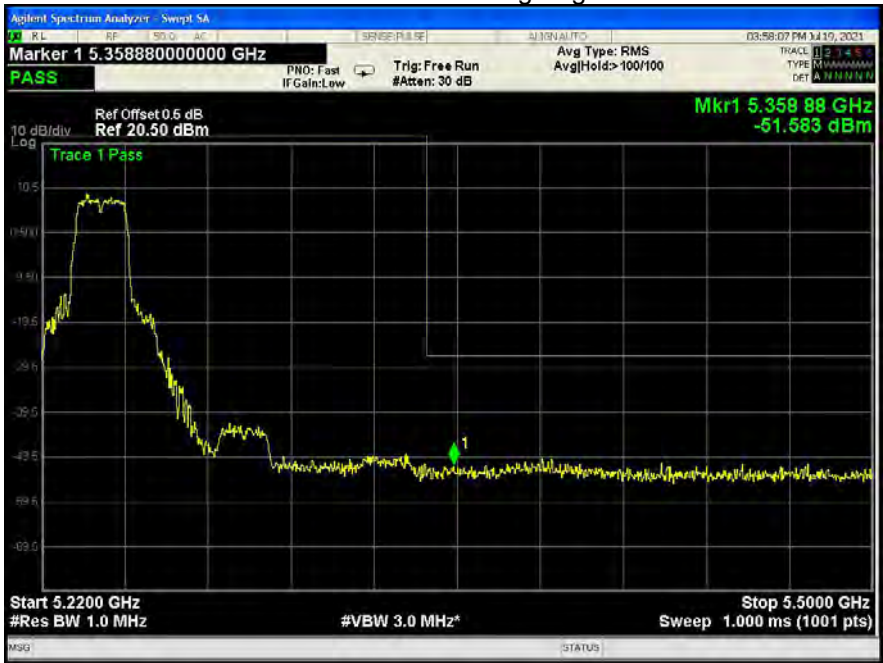
9.2 Test Result

Test result plots shown as follows:

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



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



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



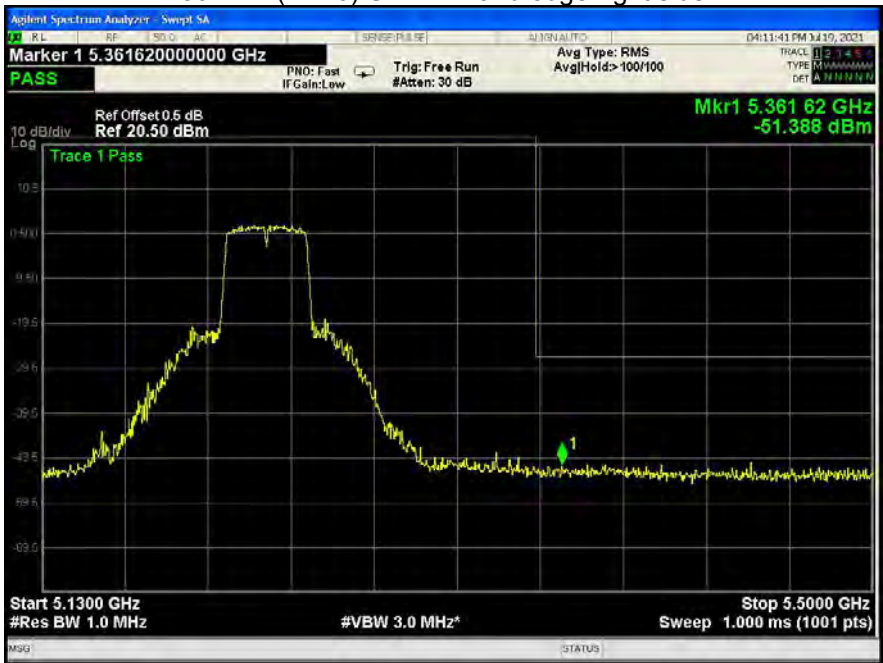
802.11n(HT20) U-NII-1 Band edge-right side



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



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



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



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



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



10 6 dB Bandwidth

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

10.1 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

10.2 Test Result:

Band	Operation mode	6 dB Bandwidth (MHz)		
		Low	Middle	High
U-NII-3	802.11a	16.38	16.38	16.35
	802.11n(HT20)	17.52	17.55	17.58
	802.11n(HT40)	35.94	/	36.00

Test result plots shown as follows:

802.11a U-NII-3 Low channel



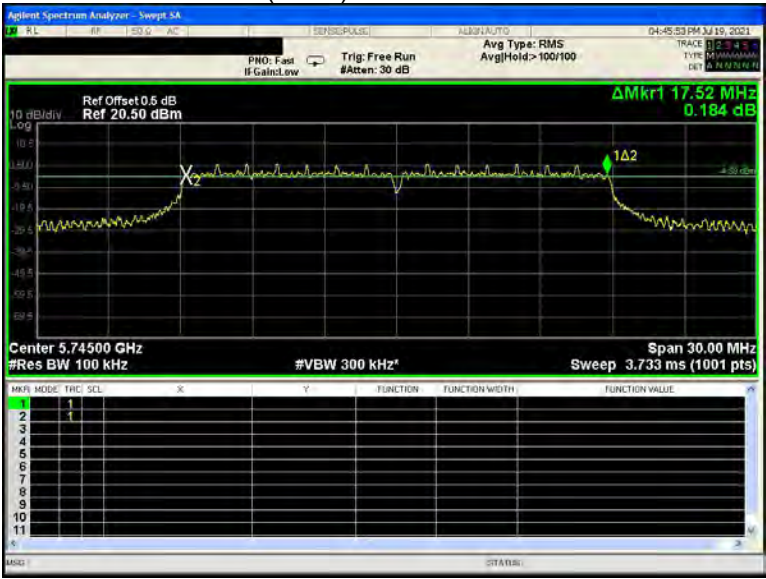
802.11a U-NII-3 Middle channel



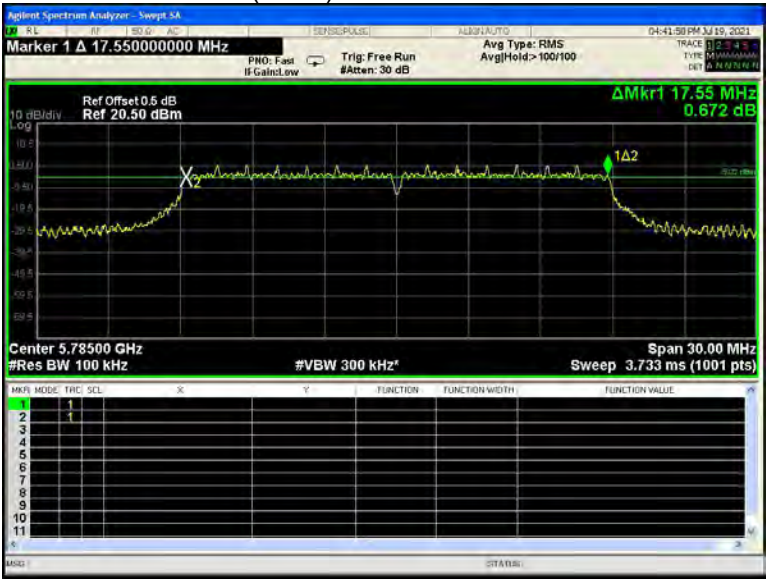
802.11a U-NII-3 High channel



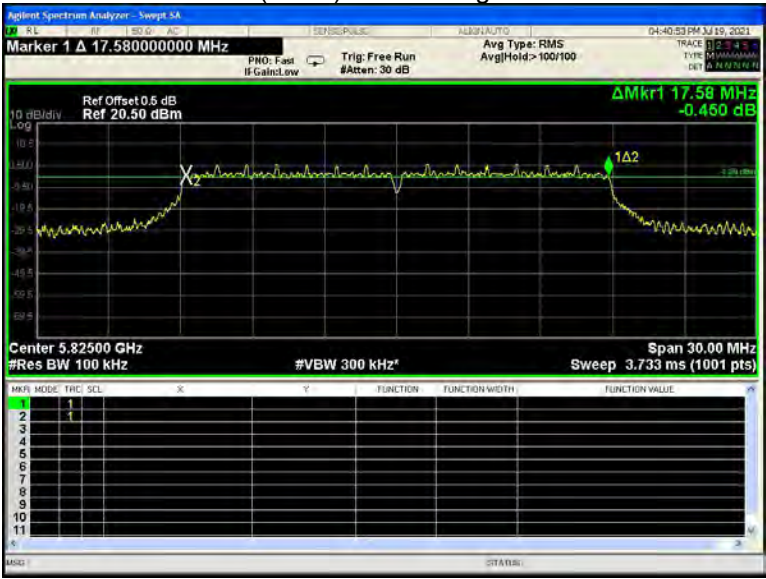
802.11n(HT20) U-NII-3 Low channel



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



11 26 dB Bandwidth and 99% Occupied Bandwidth

Test Requirement:	47 CFR Part 15C Section 15.407 (a)
Test Method:	KDB789033 D02 General U-NII Test Procedures New Rules v02r01 Section D
Test Limit:	No restriction limits
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 = 1% to 5% of the OBW, VBW = 3x RBW

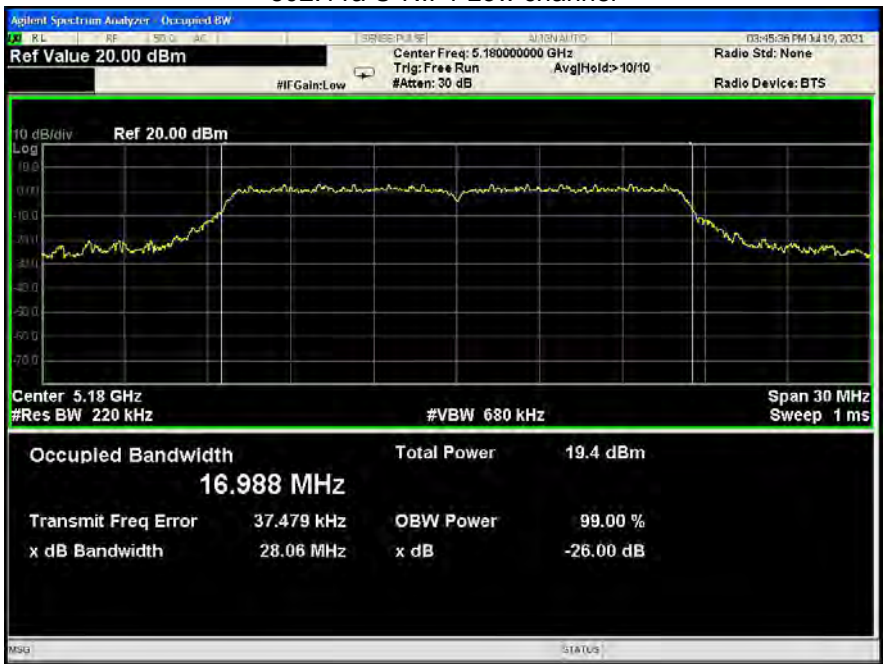
11.2 Test Result:

Band	Operation mode	26 dB Bandwidth (MHz)			99% Bandwidth (MHz)		
		Low	Middle	High	Low	Middle	High
U-NII-1	802.11a	28.06	27.98	27.64	16.988	16.899	16.838
	802.11n(HT20)	26.42	25.79	27.18	17.931	17.915	17.909
	802.11n(HT40)	50.78	/	58.27	36.401	/	36.455

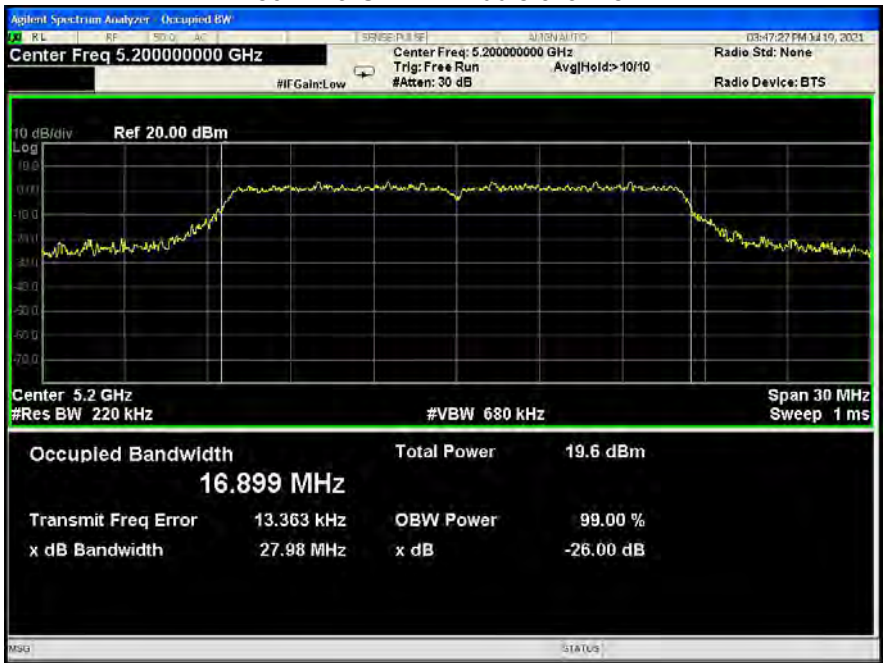
Band	Operation mode	26 dB Bandwidth (MHz)			99% Bandwidth (MHz)		
		Low	Middle	High	Low	Middle	High
U-NII-3	802.11a	29.23	25.64	26.78	17.122	16.895	16.943
	802.11n(HT20)	29.67	25.42	28.03	18.003	17.906	17.904
	802.11n(HT40)	59.71	/	59.84	36.585	/	36.453

Test result plots shown as follows:

802.11a U-NII-1 Low channel



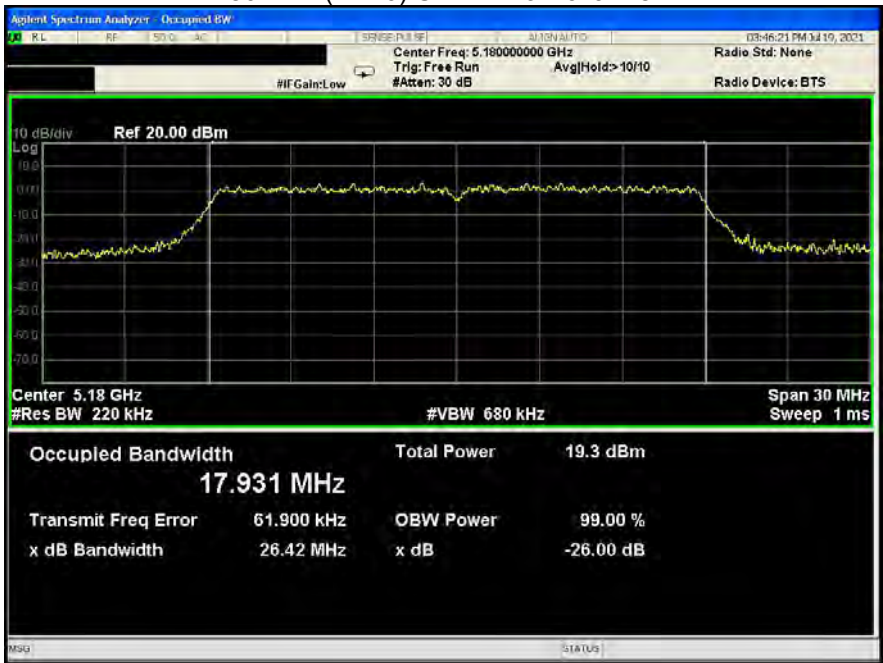
802.11a U-NII-1 Middle channel



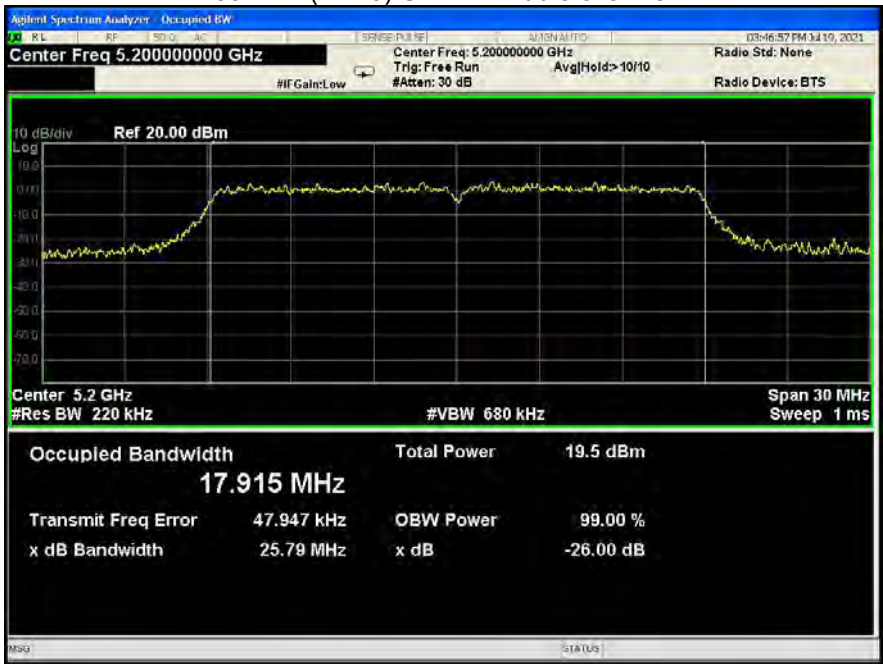
802.11a U-NII-1 High channel



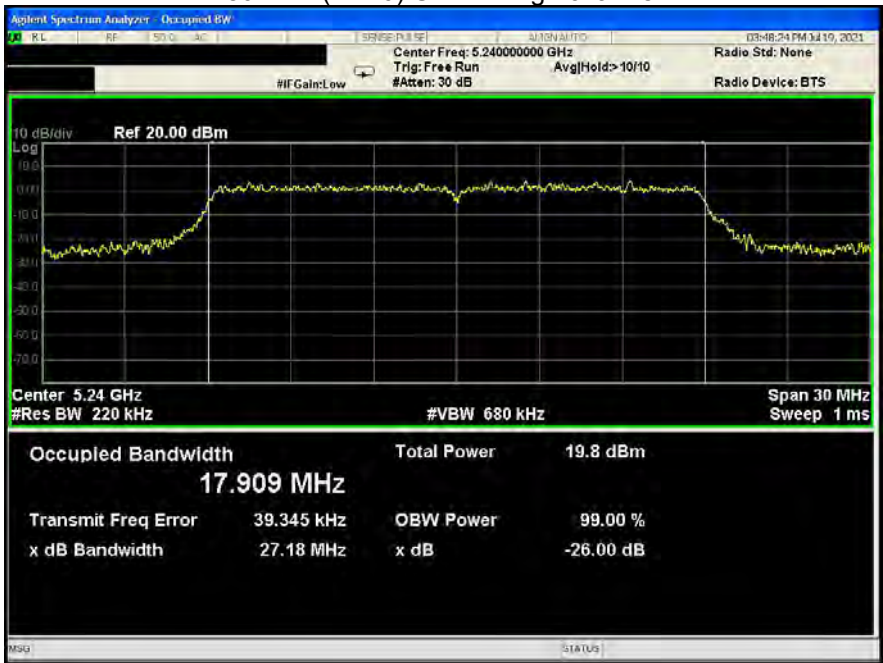
802.11n(HT20) U-NII-1 Low channel



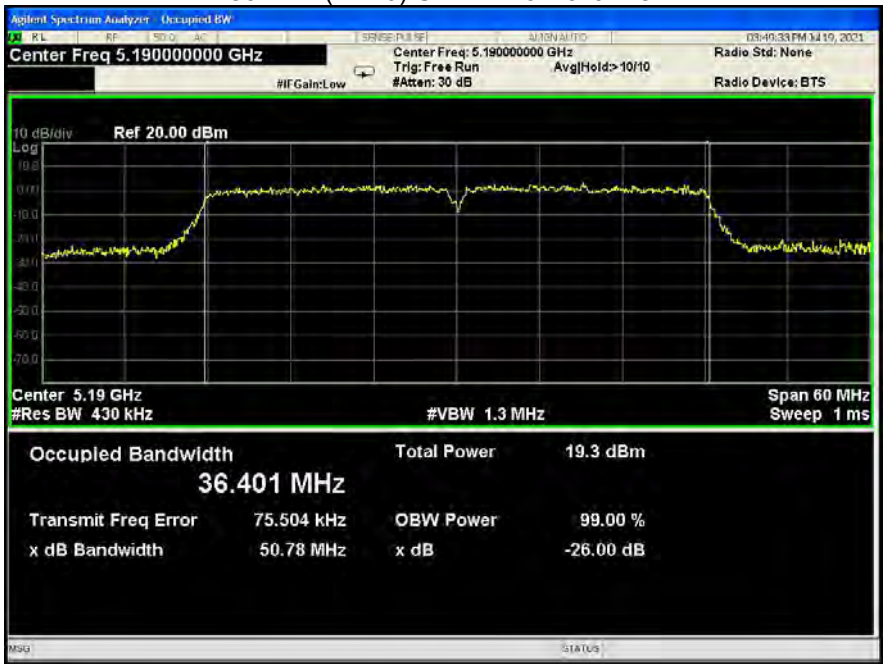
802.11n(HT20) U-NII-1 Middle channel



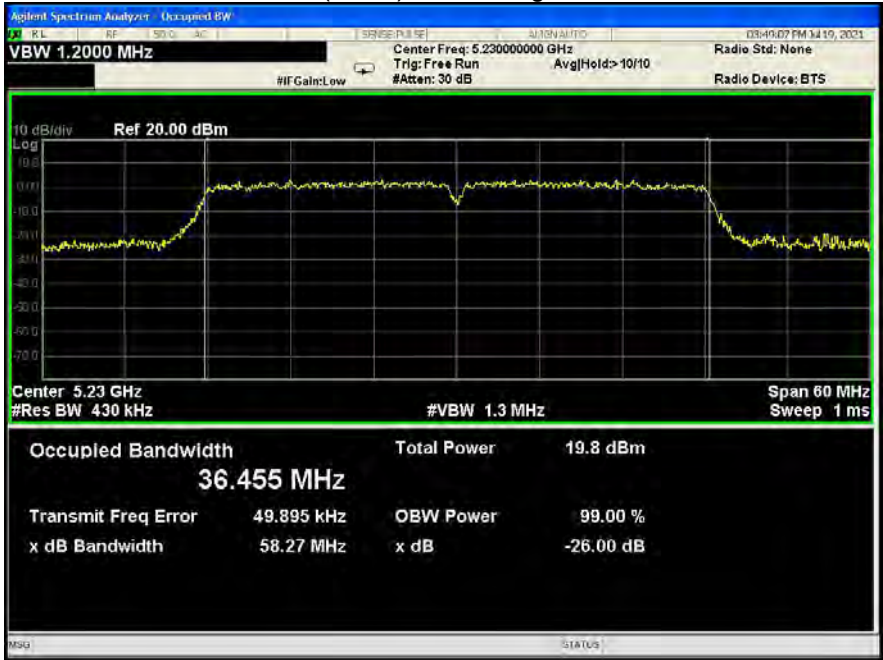
802.11n(HT20) U-NII-1 High channel



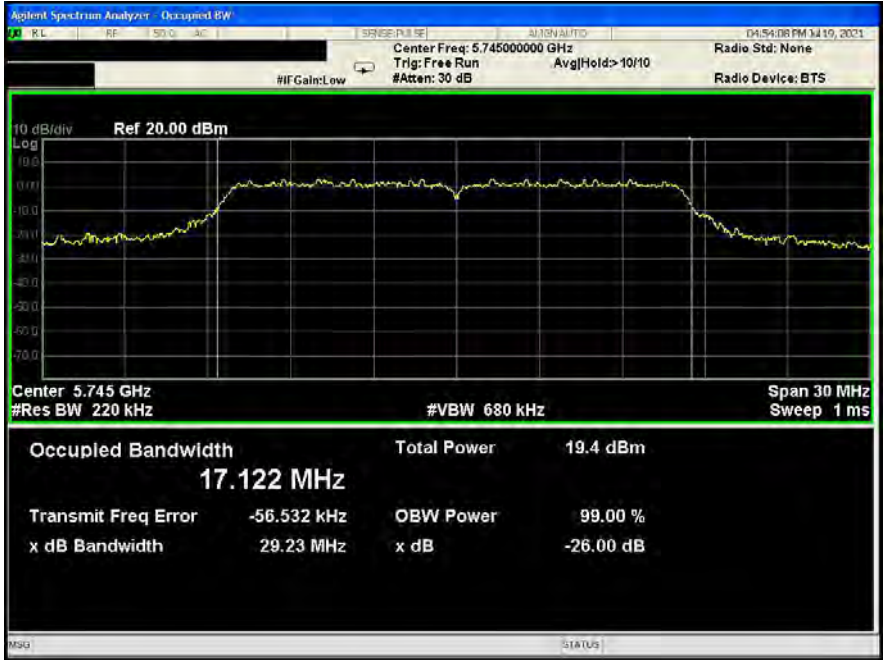
802.11n(HT40) U-NII-1 Low channel



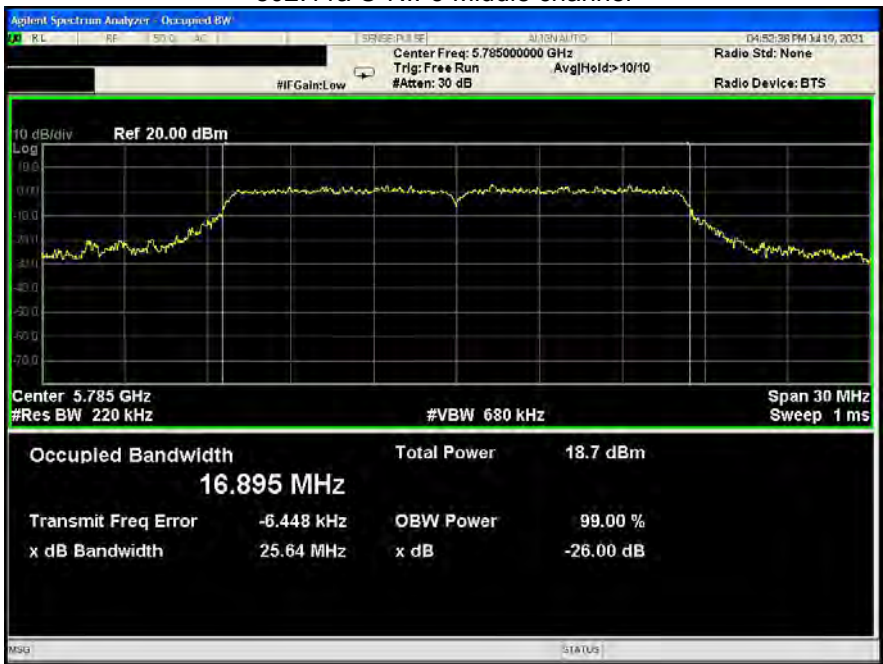
802.11n(HT40) U-NII-1 High channel



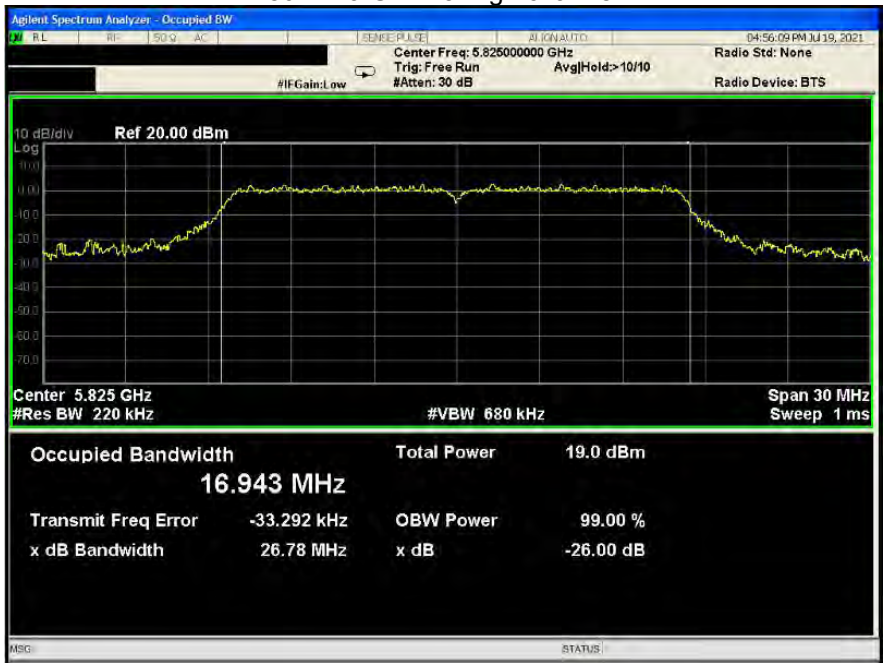
802.11a U-NII-3 Low channel



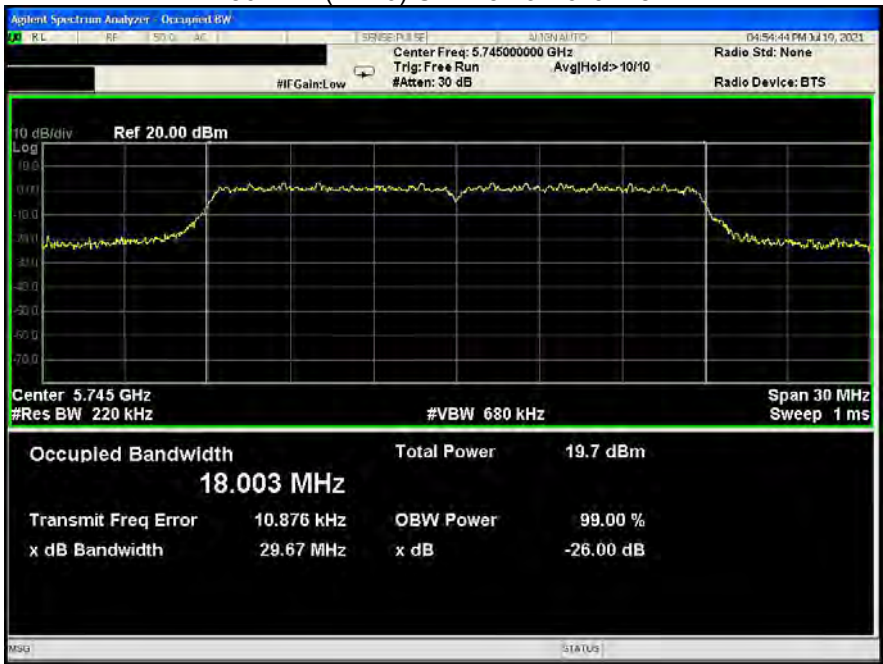
802.11a U-NII-3 Middle channel



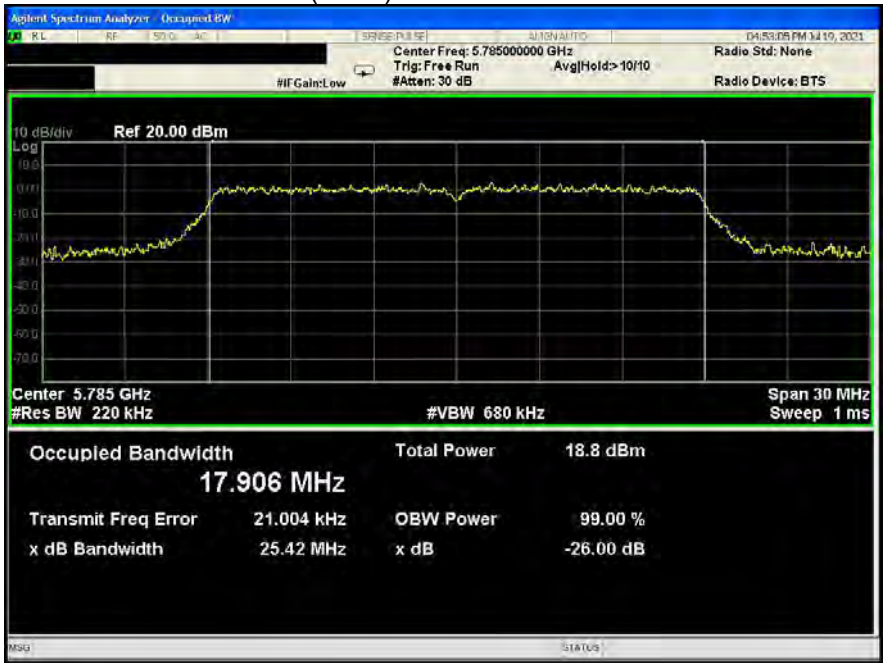
802.11a U-NII-3 High channel



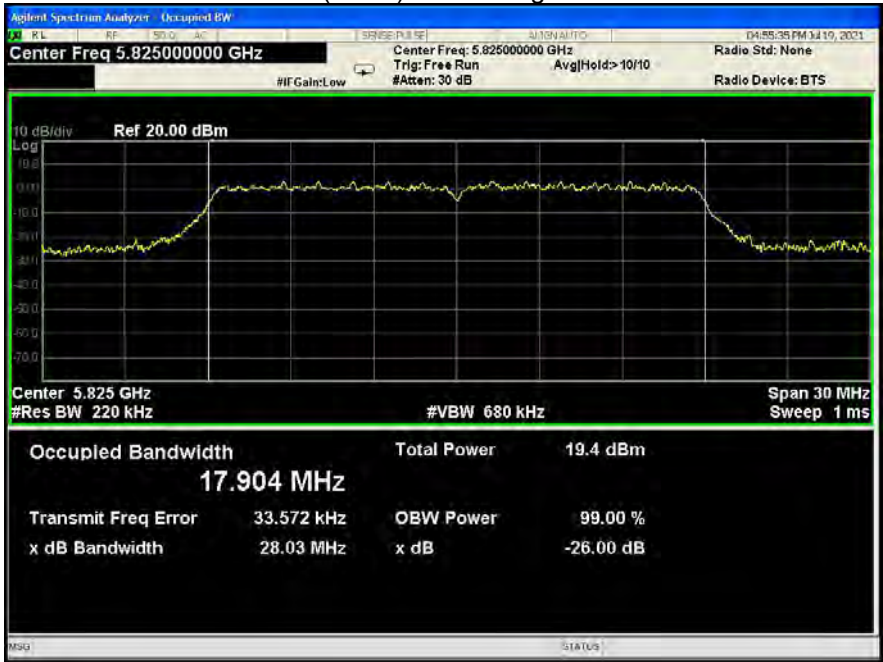
802.11n(HT20) U-NII-3 Low channel



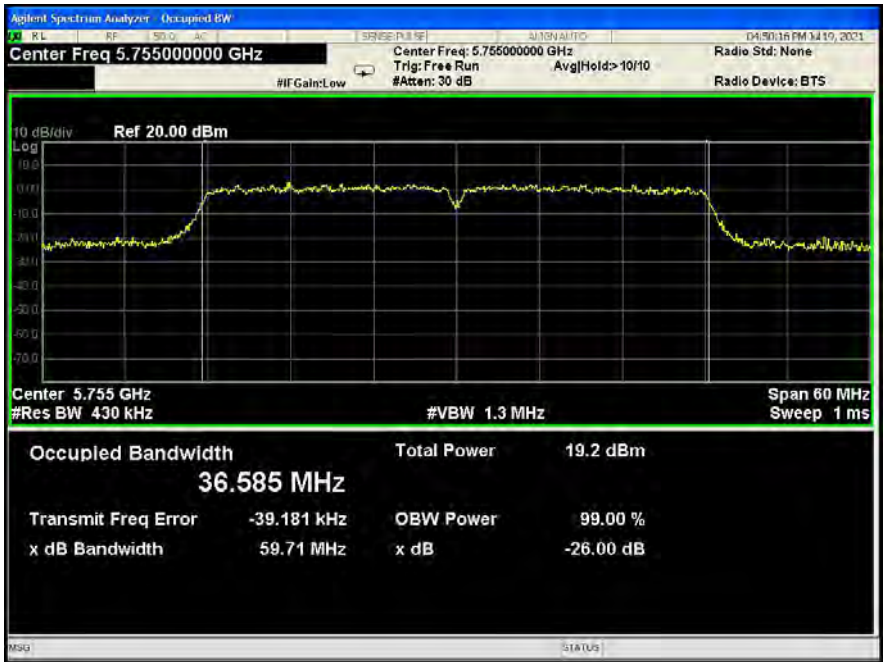
802.11n(HT20) U-NII-3 Middle channel



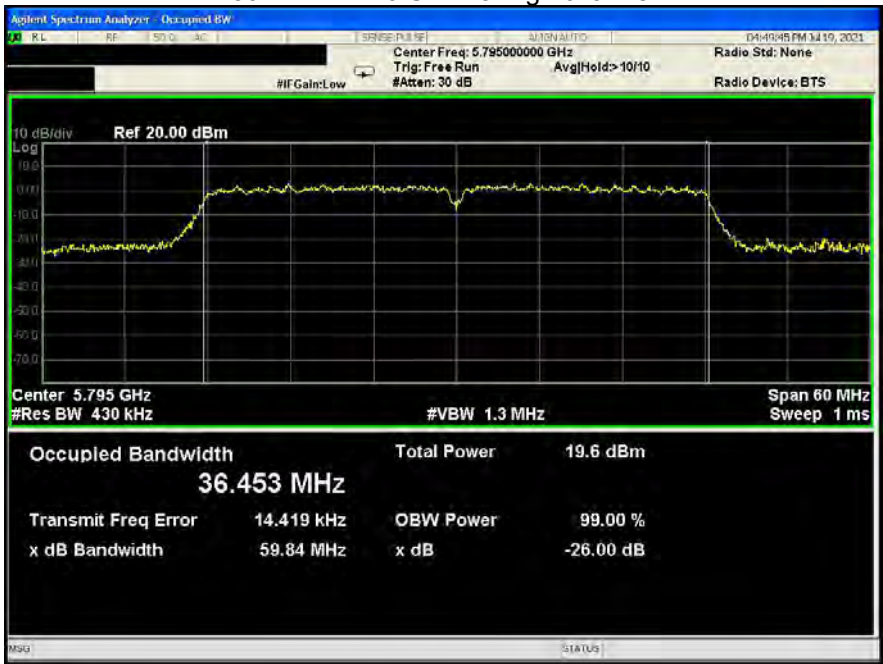
802.11n(HT20) U-NII-3 High channel



802.11n HT40 U-NII-3 Low channel



802.11n HT40 U-NII-3 High channel



12 Conducted Output Power

Test Requirement:	FCC CFR47 Part 15 Section 15.407(a) KDB789033 D02 General U-NII Test Procedures New Rules v02r01
Test Method:	Section E
Test Limit:	U-NII-1 250mW(24dBm) U-NII-3 1W(30dBm)
Test Result:	PASS Conducted output power= measurement power+10log(1/x) X is duty cycle=1, so 10log(1/1)=0
Remark:	Conducted output power= measurement power where B is the 26 dB emission bandwidth in megahertz

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 MHz. VBW = 3 MHz. Sweep = auto; Detector Function = Peak, Set the span to fully encompass the 99% occupied bandwidth.
3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

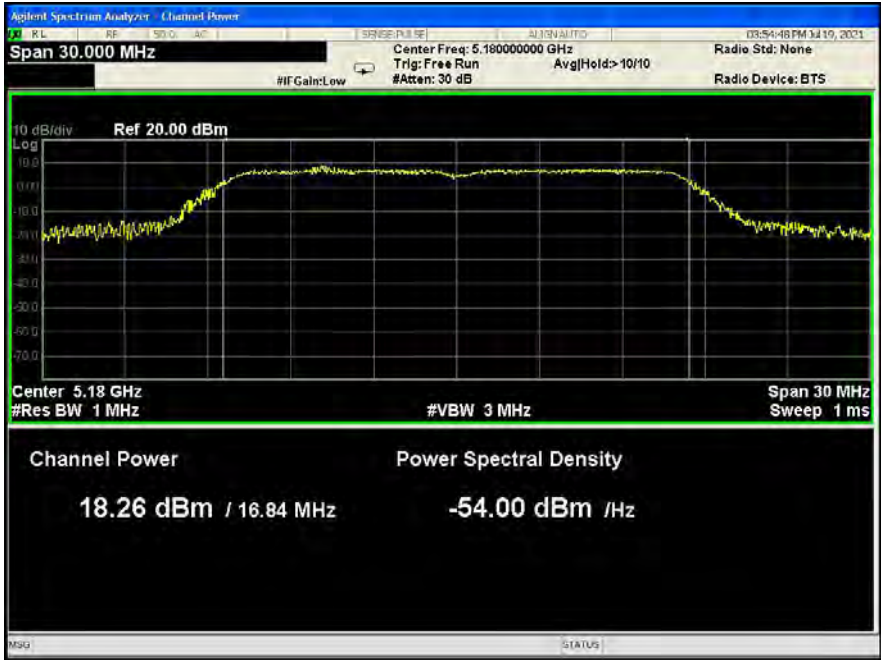
12.2 Test Result :

Band	Operation mode	Conducted Output Power (dBm)		
		Low channel	Middle channel	High channel
U-NII-1	802.11a	18.26	18.90	19.06
	802.11n(HT20)	18.35	18.73	19.08
	802.11n(HT40)	18.86	/	19.43

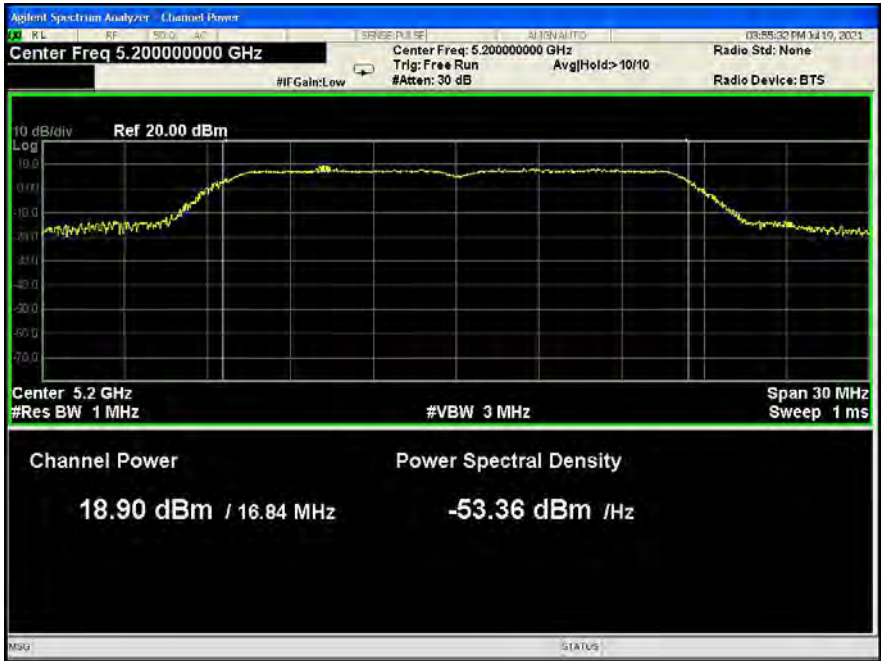
Band	Operation mode	Conducted Output Power (dBm)		
		Low channel	Middle channel	High channel
U-NII-3	802.11a	18.28	18.04	18.12
	802.11n(HT20)	18.05	18.05	18.12
	802.11n(HT40)	18.38	/	18.33

Test result plots shown as follows:

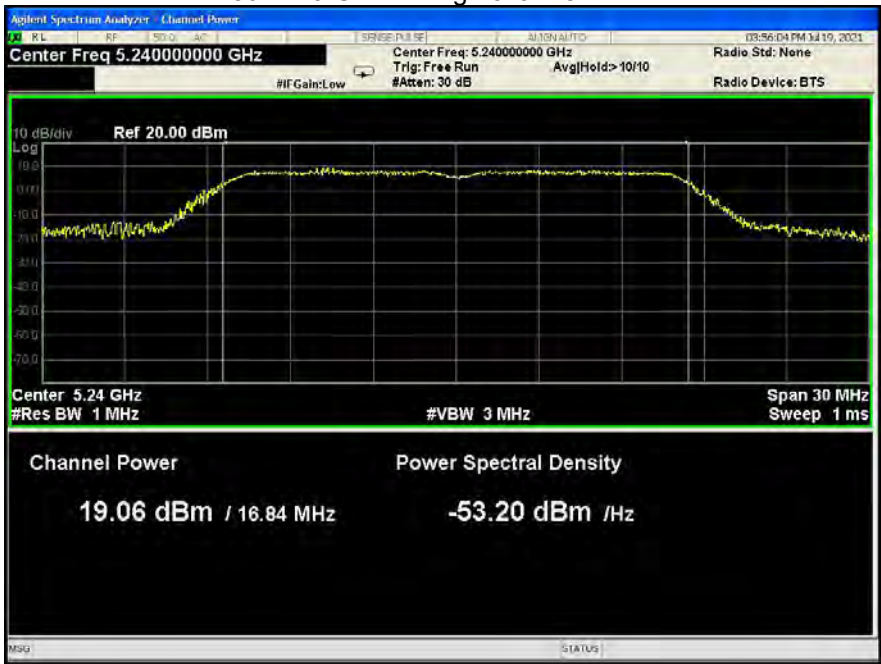
802.11a U-NII-1 Low channel



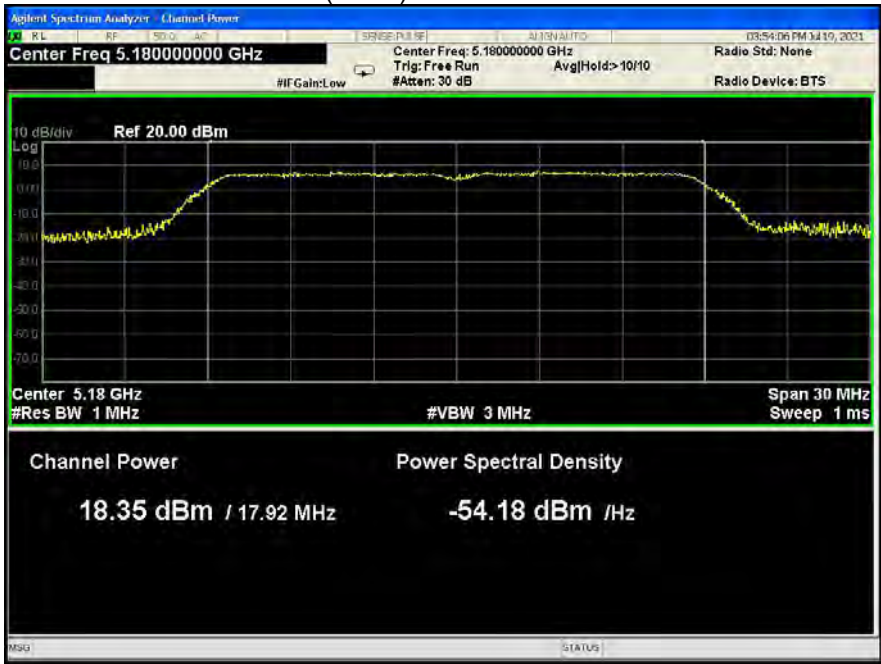
802.11a U-NII-1 Middle channel



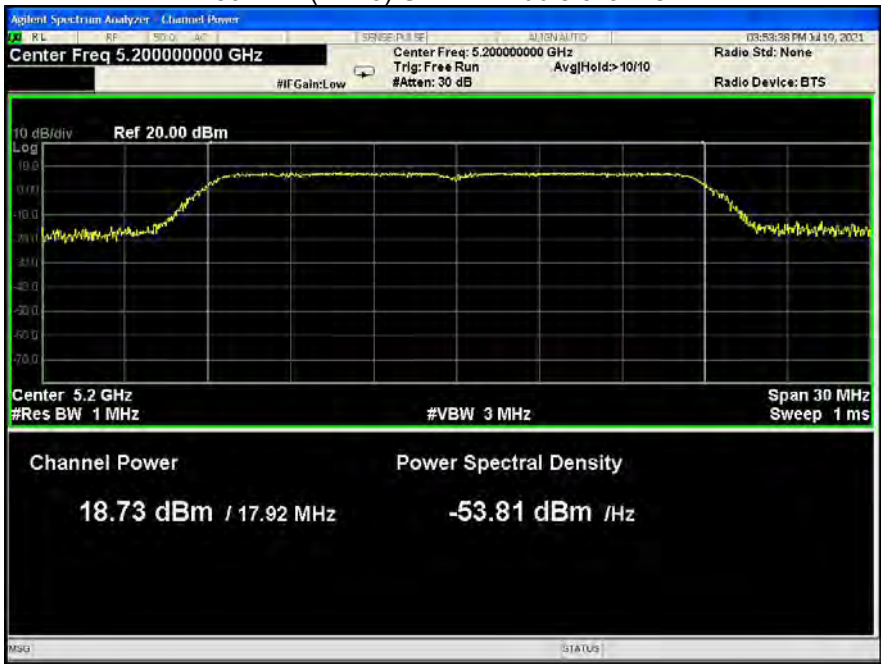
802.11a U-NII-1 High channel



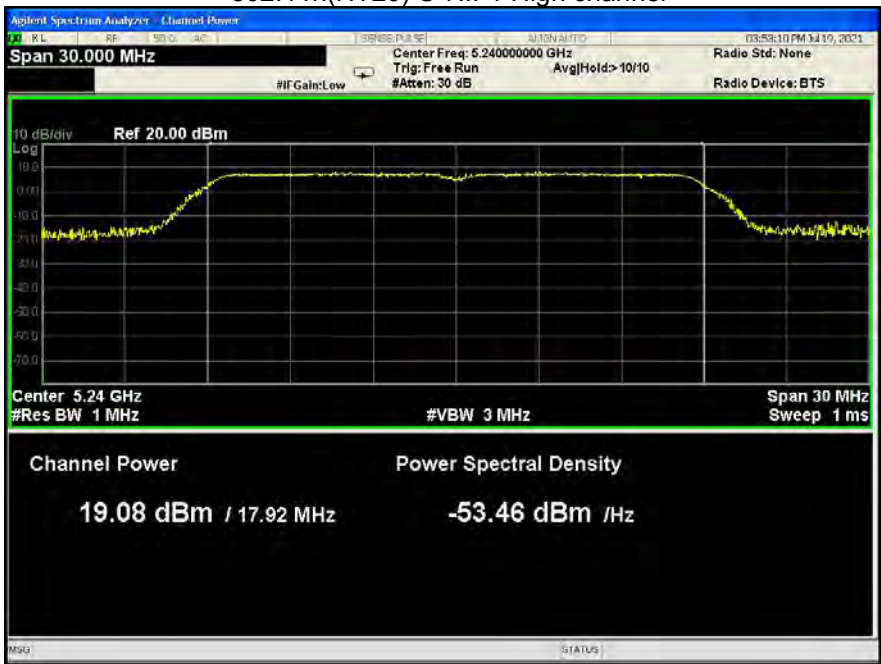
802.11n(HT20) U-NII-1 Low channel



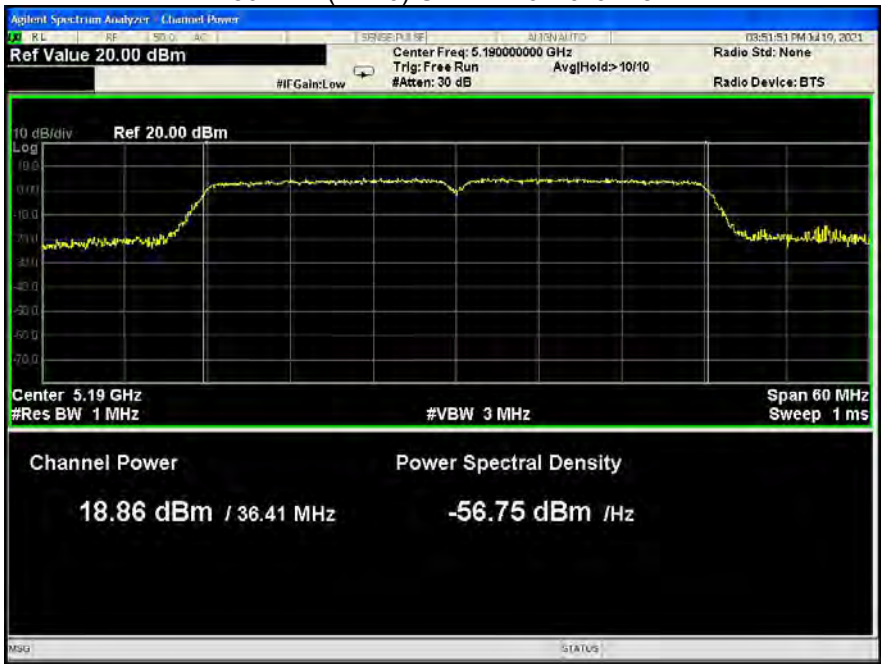
802.11n(HT20) U-NII-1 Middle channel



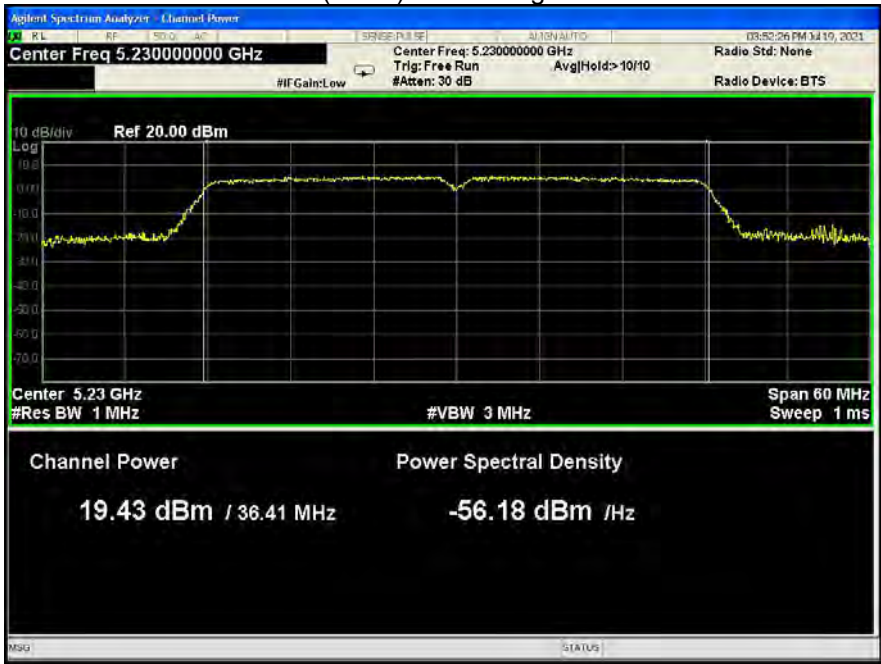
802.11n(HT20) U-NII-1 High channel



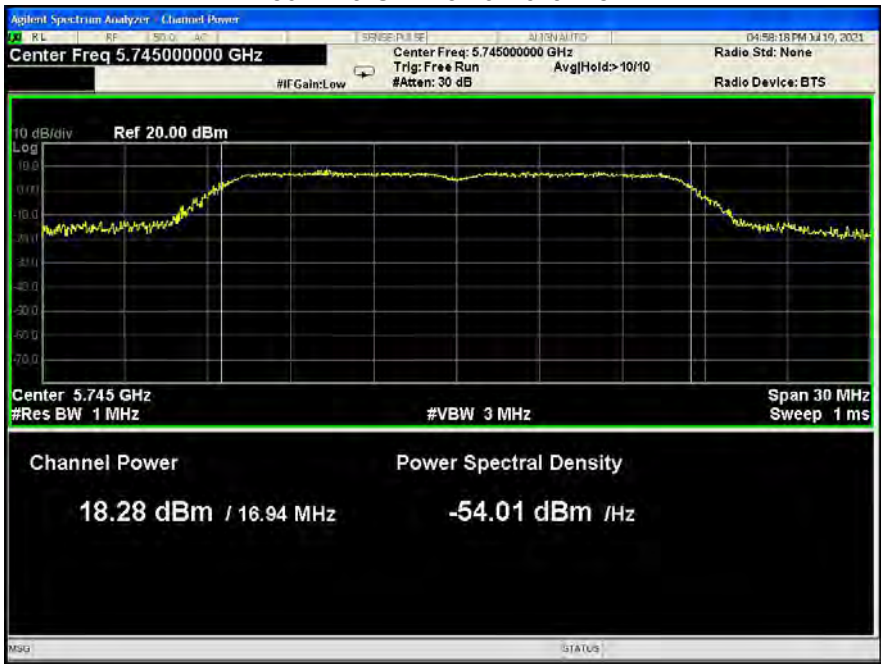
802.11n(HT40) U-NII-1 Low channel



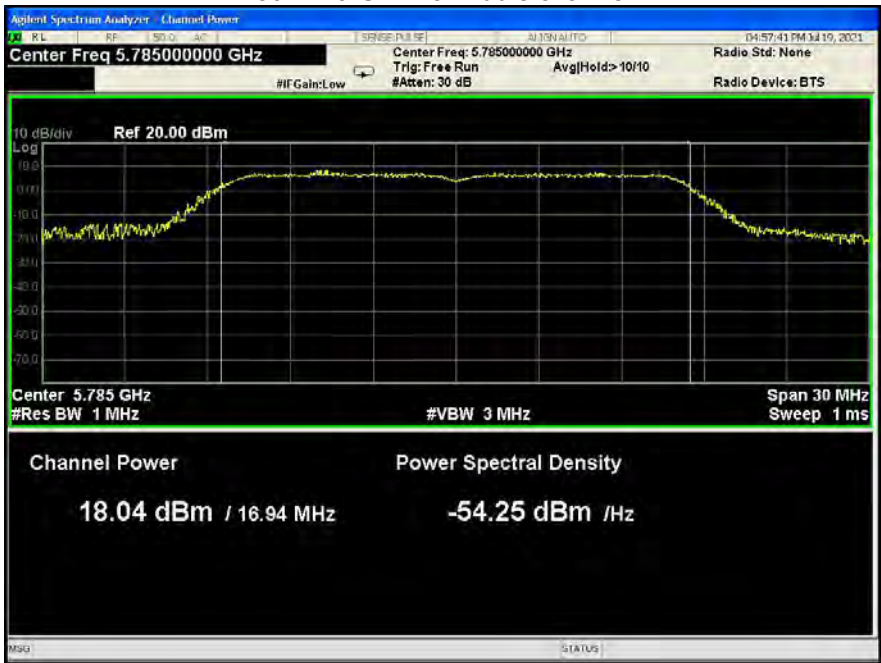
802.11n(HT40) U-NII-1 High channel



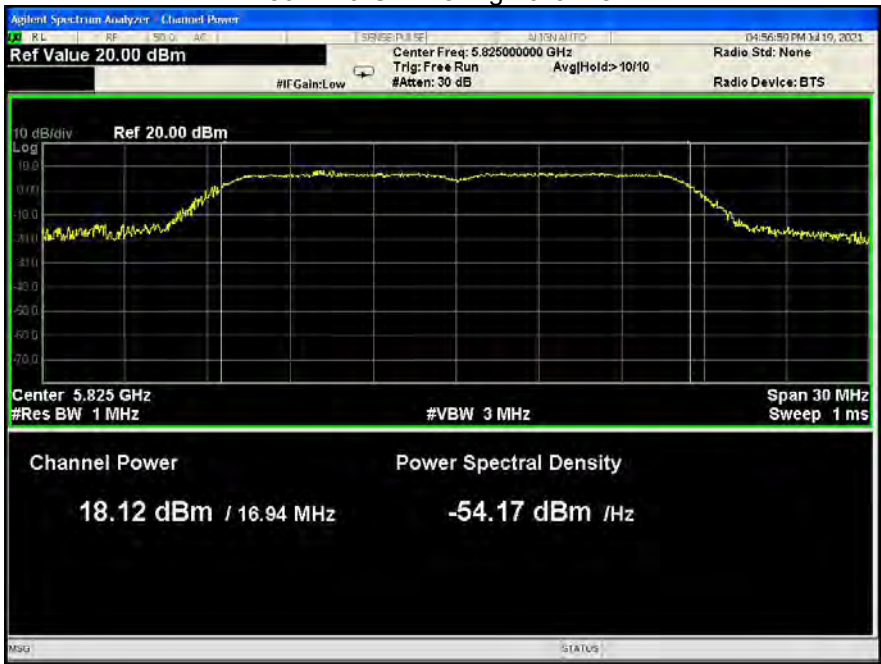
802.11a U-NII-3 Low channel



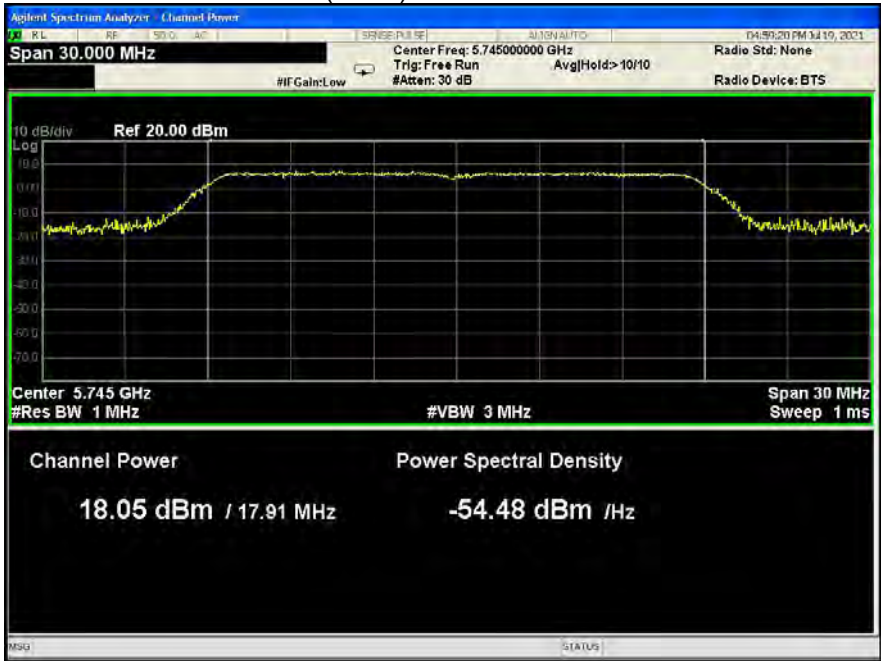
802.11a U-NII-3 Middle channel



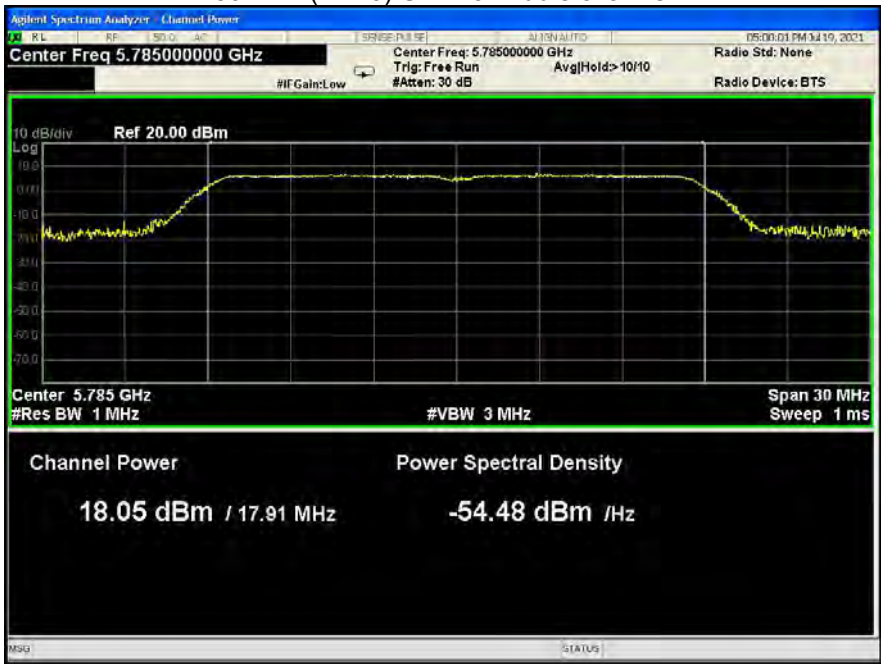
802.11a U-NII-3 High channel



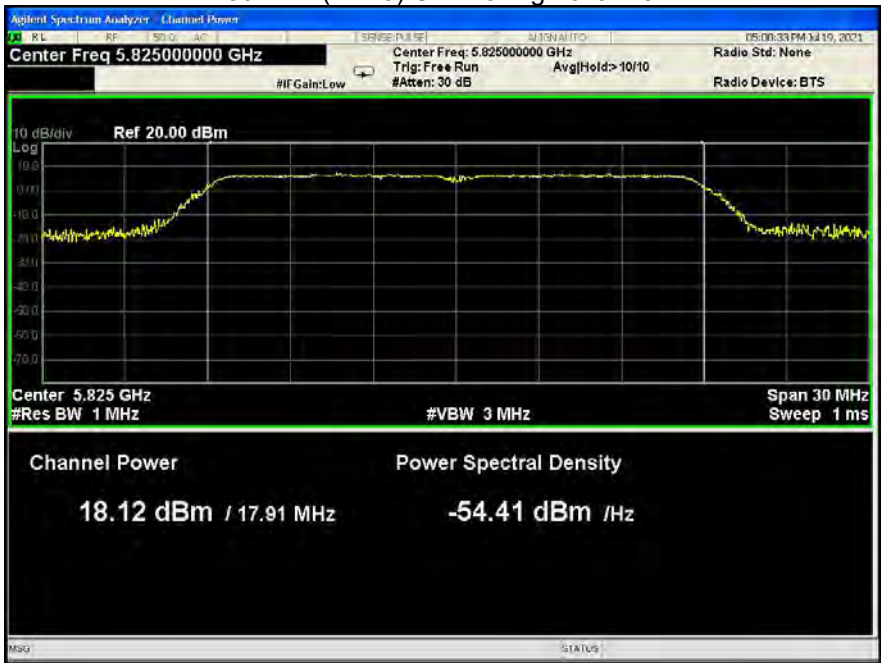
802.11n(HT20) U-NII-3 Low channel



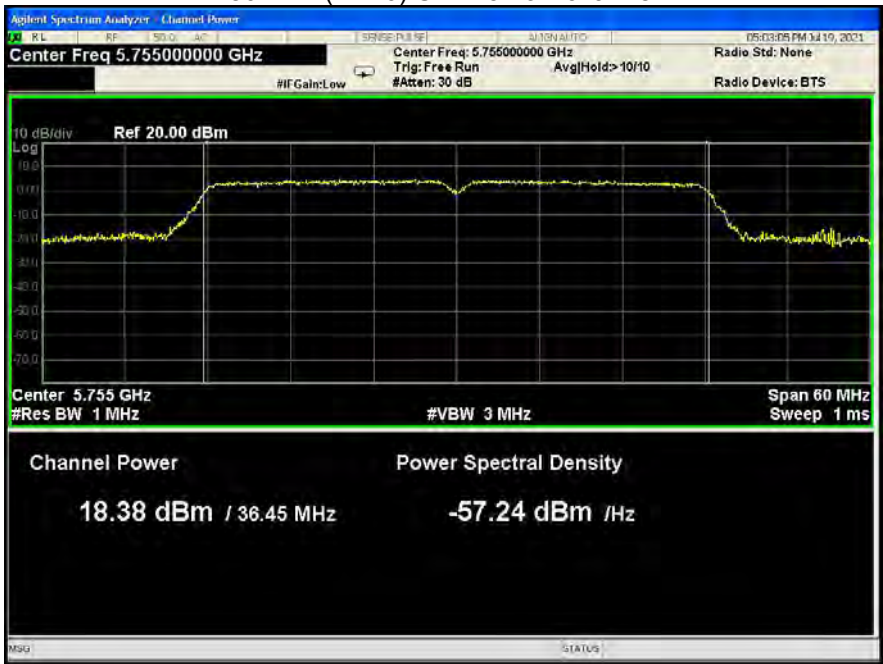
802.11n(HT20) U-NII-3 Middle channel



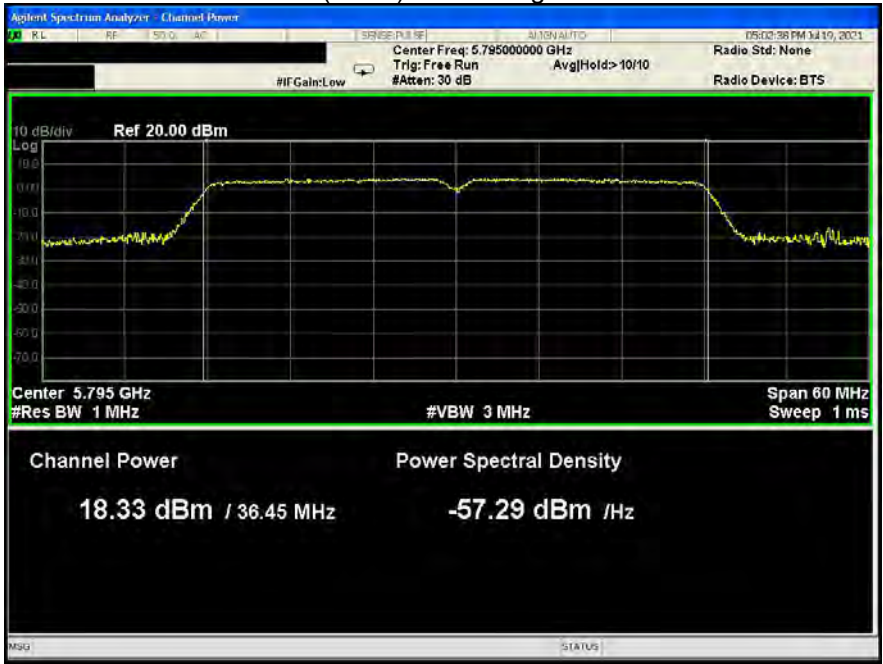
802.11n(HT20) U-NII-3 High channel



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



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



13 Power Spectral density

Test Requirement:	FCC CFR47 Part 15 Section 15.407(a)
Test Method:	KDB789033 D02 General U-NII Test Procedures New Rules v02r01, Section F
Test Limit:	$\leq 11.00\text{dBm/MHz}$ for Operation in the U-NII-1(5150MHz-5250MHz)of mobile device $\leq 30.00\text{dBm/500KHz}$ for Operation in the U-NII-3(5725MHz-5850MHz)of device
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:
U-NII-1
RBW = 1MHz, VBW $\geq 3 \times$ RBW Sweep = auto; Detector Function = Peak. Trace = Max hold.
U-NII-3
RBW = 510KHz, VBW $\geq 3 \times$ RBW Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section
Submit this plot.

13.2 Test Result:

Band	Operation mode	Power Spectral Density (dBm/MHz)		
		Low	Middle	High
U-NII-1	802.11a	9.045	9.292	9.174
	802.11n(HT20)	7.611	7.321	8.214
	802.11n(HT40)	5.302	/	5.720
	Limit	≤11.00dBm/MHz		

Band	Operation mode	Power Spectral Density (dBm/0.5MHz)		
		Low	Middle	High
U-NII-3	802.11a	5.576	5.328	5.467
	802.11n(HT20)	4.984	5.022	5.056
	802.11n(HT40)	2.537	/	2.779
	Limit	≤30.00dBm/0.5MHz		

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



802.11a 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



14 Frequency Stability

Test Requirement:	FCC CFR47 Part 15 Section 15.407(g)
Test Method:	ANSI C63.10:2013
Test Limit:	Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual or 20ppm.
Test Result:	PASS

15 Antenna Requirement

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

This device uses of one antennas that uses a specified coupling to the intentional radiator. Antenna connectors complied with the requirement.

16 Photographs of test setup and EUT.

Note: Please refer to appendix: Appendix- YG001-Photos.

=====End of Report=====