

TEST REPORT

Reference No. : WTS18S02103047-2W
FCC ID..... : NZ3-WN535G3E
Applicant..... : Winstars Technology Limited
Address..... : Block 4, TaiSong Industrial Park, DaLang Street, LongHua Town,
Bao'an district,Shenzhen, China
Manufacturer : Winstars Technology Limited
Address..... : Block 4, TaiSong Industrial Park, DaLang Street, LongHua Town,
Bao'an district,Shenzhen, China
Product..... : Wireless AC1200 Extender
Model(s) : WS-WN535G3E, WL-WN535G3E
Standards..... : FCC CFR47 Part 15 C Section 15.407: 2017
Date of Receipt sample..... : 2018-02-09
Date of Test..... : 2018-02-10 to 2018-03-19
Date of Issue..... : 2018-03-26
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:

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2 Laboratories Introduction

Waltek Services (Shenzhen) Co., Ltd is a professional third-party testing and certification laboratory with multi-year product testing and certification experience, established strictly in accordance with ISO/IEC 17025 requirements, and accredited by ILAC (International Laboratory Accreditation Cooperation) member. A2LA (American Association for Laboratory Accreditation) of USA, 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), IC(Industry 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. ElectroMagnetic 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.

2.1 Test Facility

A. Accreditations for Conformity Assessment (International)

Country/Region	Accreditation Body	Scope	Note
USA	A2LA (Certificate No.: 4243.01)	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	International Services	WPC	-
Thailand		NTC	-
Singapore		IDA	-
Note:			
1. FCC Designation No.: CN1201. Test Firm Registration No.: 523476.			
2. IC Canada Registration No.: 7760A			

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 Revision History

Test report #	Date of Receipt sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTS18S02103047-2W	2018-02-09	2018-02-10 to 2018-03-19	2018-03-26	Original	-	Valid

4 Test Summary

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

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
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6 General Information

6.1 General Description of E.U.T

Product:	Wireless AC1200 Extender
Model(s):	WS-WN535G3E, WL-WN535G3E
Model Description:	Only the model names are different.
Operation Frequency:	IEEE 802.11a/ n(HT20/40)/ac(HT20/40/80): 5150MHz to 5250MHz IEEE 802.11a/ n(HT20/40)/ac(HT20/40/80): 5725MHz to 5850MHz
Type of modulation:	IEEE for 802.11a: OFDM(BPSK/QPSK/16QAM/64QAM) IEEE for 802.11n : OFDM(BPSK/QPSK/16QAM/64QAM) IEEE for 802.11ac : OFDM (BPSK/QPSK/16QAM/64QAM/256QAM)
The Lowest Oscillator:	25MHz
Antenna installation:	Integrated Antenna
Antenna Gain:	ANT3, ANT4: 3dBi

6.2 Details of E.U.T

Ratings	Input: DC 5V 2A (Adapter: Input:100-240V 50/60Hz, 0.25A Output:5.0V  2000mA)
Adapter	Model: P050W2000U

6.3 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

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 "MT76xxE_AP", Version 1, date 20140321.

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

7 Equipment Used during Test

7.1 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	2017-09-12	2018-09-11
2.	LISN	R&S	ENV216	101215	2017-09-12	2018-09-11
3.	Cable	Top	TYPE16(3.5M)	-	2017-09-12	2018-09-11
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	2017-09-12	2018-09-11
2.	LISN	SCHWARZBECK	NSLK 8128	8128-289	2017-09-12	2018-09-11
3.	Limitter	York	MTS-IMP-136	261115-001-0024	2017-09-12	2018-09-11
4.	Cable	LARGE	RF300	-	2017-09-12	2018-09-11
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	2017-09-14	2018-09-13
2	Ative Loop Antenna	Beijing Dazhi	ZN30900A	-	2017-10-16	2018-10-15
3	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	2017-04-09	2018-04-08
4	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	2017-09-12	2018-09-11
5	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	2017-04-09	2018-04-08
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	335	2017-09-14	2018-09-13
7	Broadband Preampfier	COMPLIANCE DIRECTION	PAP-1G18	2004	2017-04-13	2018-04-12
8	Coaxial Cable (above 1GHz)	Top	1GHz-25GHz	EW02014-7	2017-04-13	2018-04-12
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	2017-04-13	2018-04-12
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	2017-04-08	2018-04-07
3	Amplifier	Compliance pirection systems inc	PAP-0203	22024	2017-04-13	2018-04-12
4	Cable	HUBER+SUHNER	CBL2	525178	2017-04-13	2018-04-12
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	2017-09-14	2018-09-13
2.	Spectrum Analyzer (9k-6GHz)	R&S	FSL6	100959	2017-09-12	2018-09-11
3.	Signal Analyzer (9k~26.5GHz)	Agilent	N9010A	MY50520207	2017-09-12	2018-09-11

7.2 Description of Support Units

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

7.3 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 (A mains 150KHz~30MHz)

7.4 Test Equipment Calibration

All the test equipments used are valid and calibrated by GUANG ZHOU GRG METROLOGY & TEST CO., LTD. address is No.163, Pingyun Rd. West of Huangpu Ave, Tianhe District, Guangzhou, Guangdong, China.

8 Conducted Emission

Test Requirement:	FCC CFR 47 Part 15 Section 15.207
Test Method:	ANSI C63.10:2013
Test Result:	PASS
Frequency Range:	150kHz to 30MHz
Class/Severity:	Class B
Limit:	66-56 dB μ V between 0.15MHz & 0.5MHz 56 dB μ V between 0.5MHz & 5MHz 60 dB μ V between 5MHz & 30MHz
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth)

8.1 E.U.T. Operation

Operating Environment :

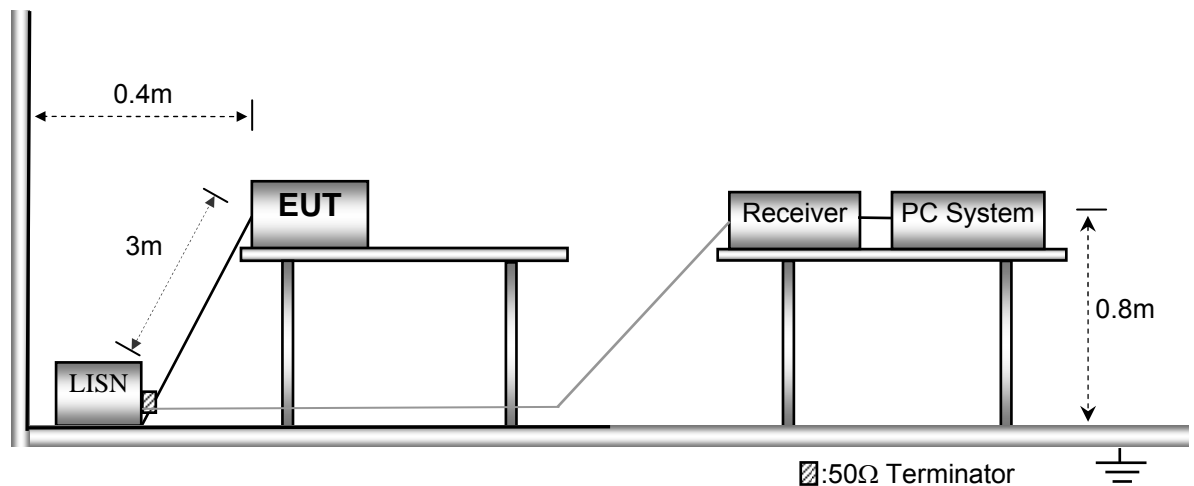
Temperature:	21.5 °C
Humidity:	51.9 % RH
Atmospheric Pressure:	101.2kPa

EUT Operation :

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

8.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10:2013.



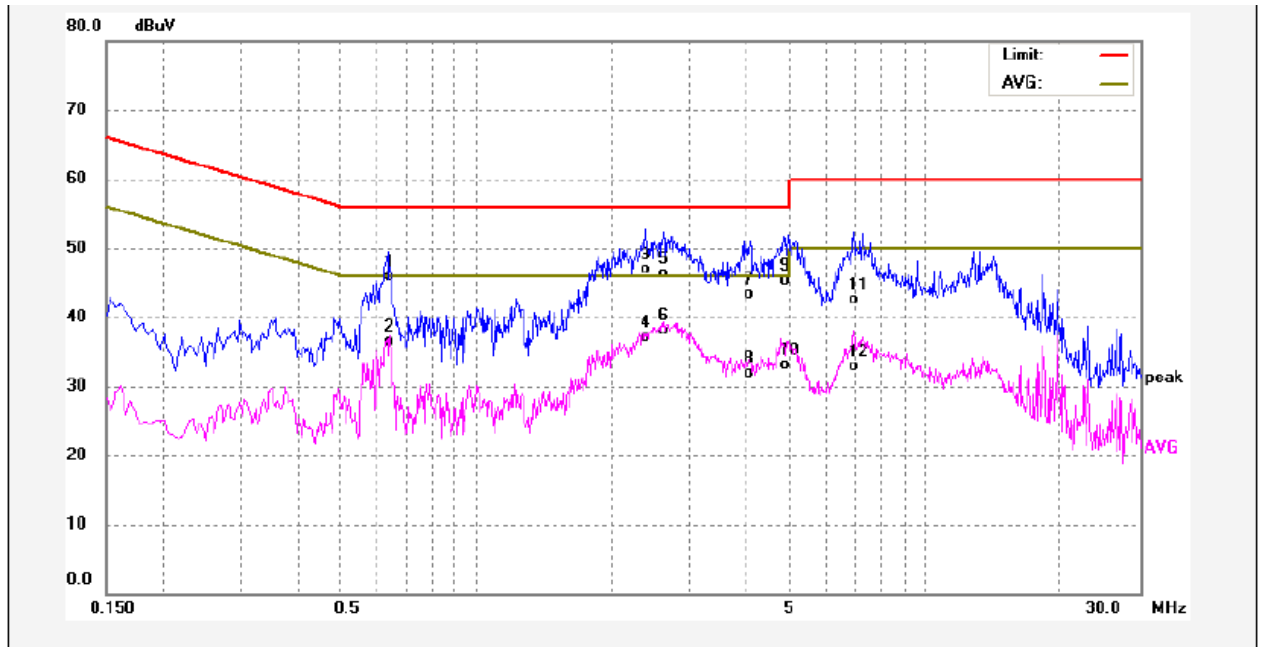
8.3 Measurement Description

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

8.4 Conducted Emission Test Result

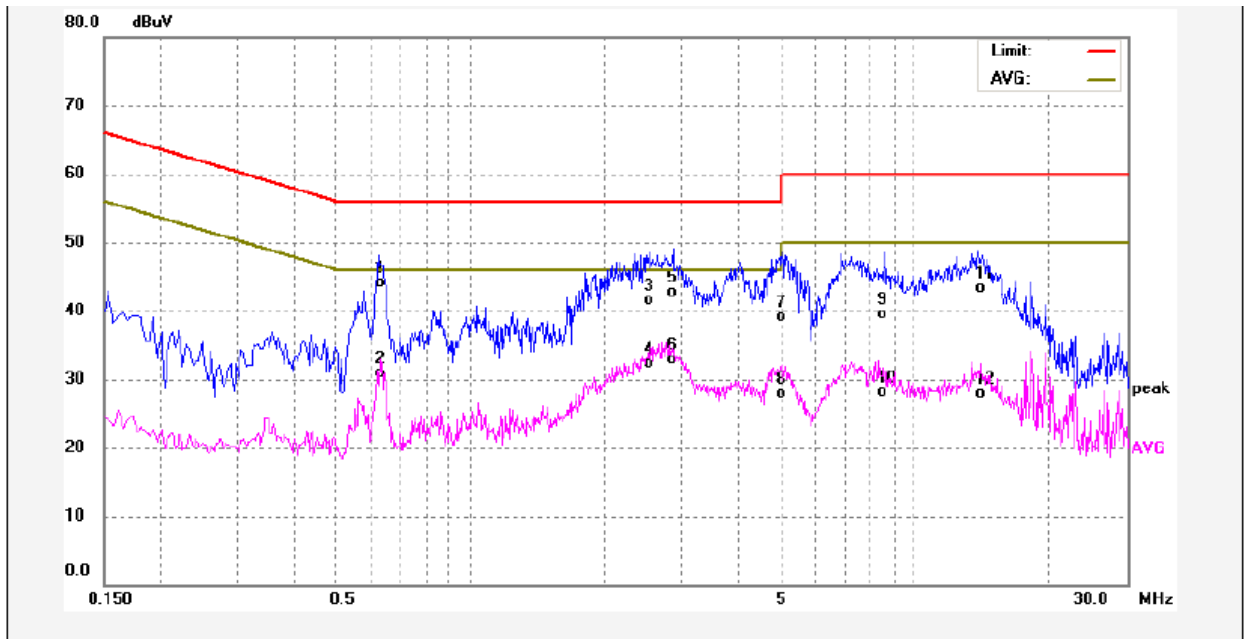
An initial pre-scan was performed on the live and neutral lines.

Live line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.6340	35.80	10.08	45.88	56.00	-10.12	QP	
2	0.6340	26.50	10.08	36.58	46.00	-9.42	AVG	
3	2.3860	36.70	10.22	46.92	56.00	-9.08	QP	
4	2.3860	26.81	10.22	37.03	46.00	-8.97	AVG	
5	2.6180	36.13	10.23	46.36	56.00	-9.64	QP	
6	2.6180	27.91	10.23	38.14	46.00	-7.86	AVG	
7	4.0860	33.03	10.27	43.30	56.00	-12.70	QP	
8	4.0860	21.62	10.27	31.89	46.00	-14.11	AVG	
9	4.9420	35.06	10.25	45.31	56.00	-10.69	QP	
10	4.9420	22.93	10.25	33.18	46.00	-12.82	AVG	
11	6.9420	32.32	10.28	42.60	60.00	-17.40	QP	
12	6.9420	22.57	10.28	32.85	50.00	-17.15	AVG	

Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.6220	33.99	10.07	44.06	56.00	-11.94	QP	
2	0.6220	20.85	10.07	30.92	46.00	-15.08	AVG	
3	2.5180	31.23	10.23	41.46	56.00	-14.54	QP	
4	2.5180	22.05	10.23	32.28	46.00	-13.72	AVG	
5	2.8620	32.50	10.24	42.74	56.00	-13.26	QP	
6	2.8620	22.58	10.24	32.82	46.00	-13.18	AVG	
7	5.0420	28.87	10.25	39.12	60.00	-20.88	QP	
8	5.0420	17.63	10.25	27.88	50.00	-22.12	AVG	
9	8.5700	29.24	10.33	39.57	60.00	-20.43	QP	
10	8.5700	17.73	10.33	28.06	50.00	-21.94	AVG	
11	13.9100	32.85	10.38	43.23	60.00	-16.77	QP	
12	13.9100	17.61	10.38	27.99	50.00	-22.01	AVG	

9 Radiated Emissions

Test Requirement: FCC CFR47 Part 15 Section 15.209 & 15.407

Test Method: ANSI C63.10:2013

Test Result: PASS

Measurement Distance: 3m

Limit:

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

9.1 EUT Operation

Operating Environment :

Temperature: 23.5 °C

Humidity: 52.1 % RH

Atmospheric Pressure: 101.2kPa

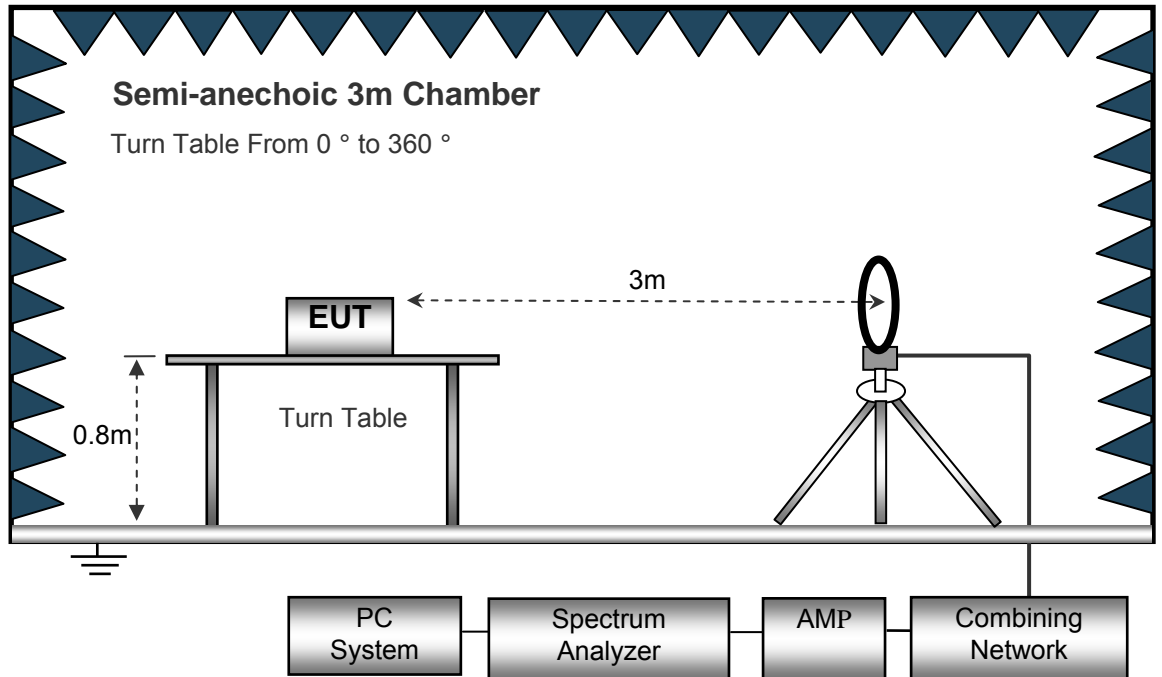
EUT Operation :

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

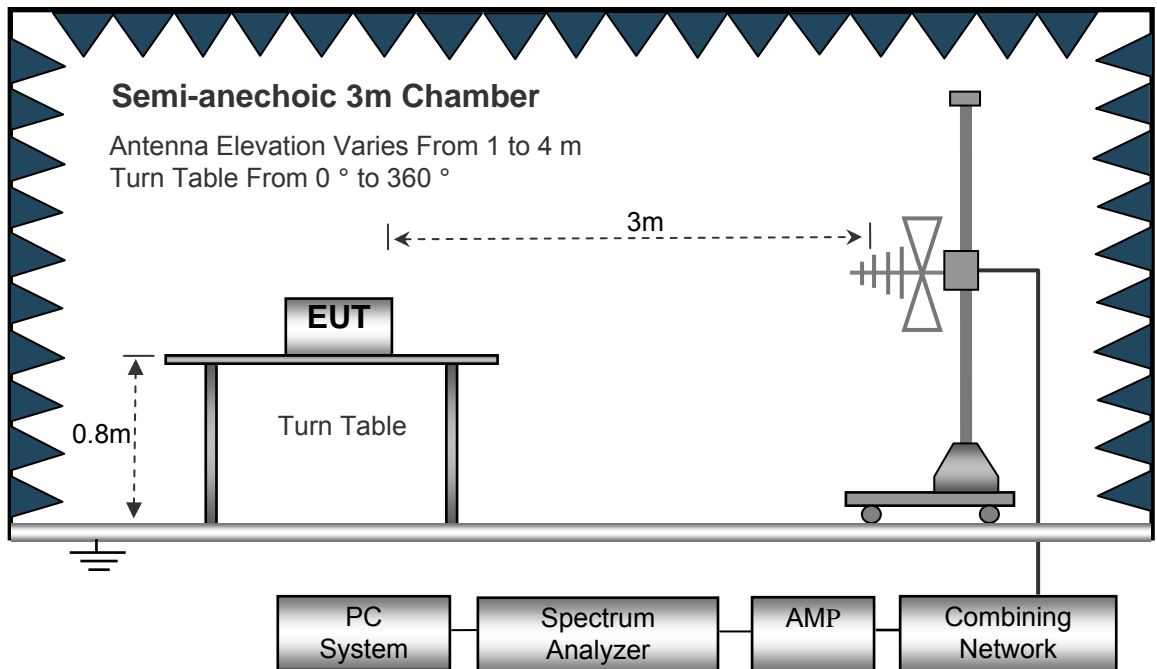
9.2 Test Setup

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

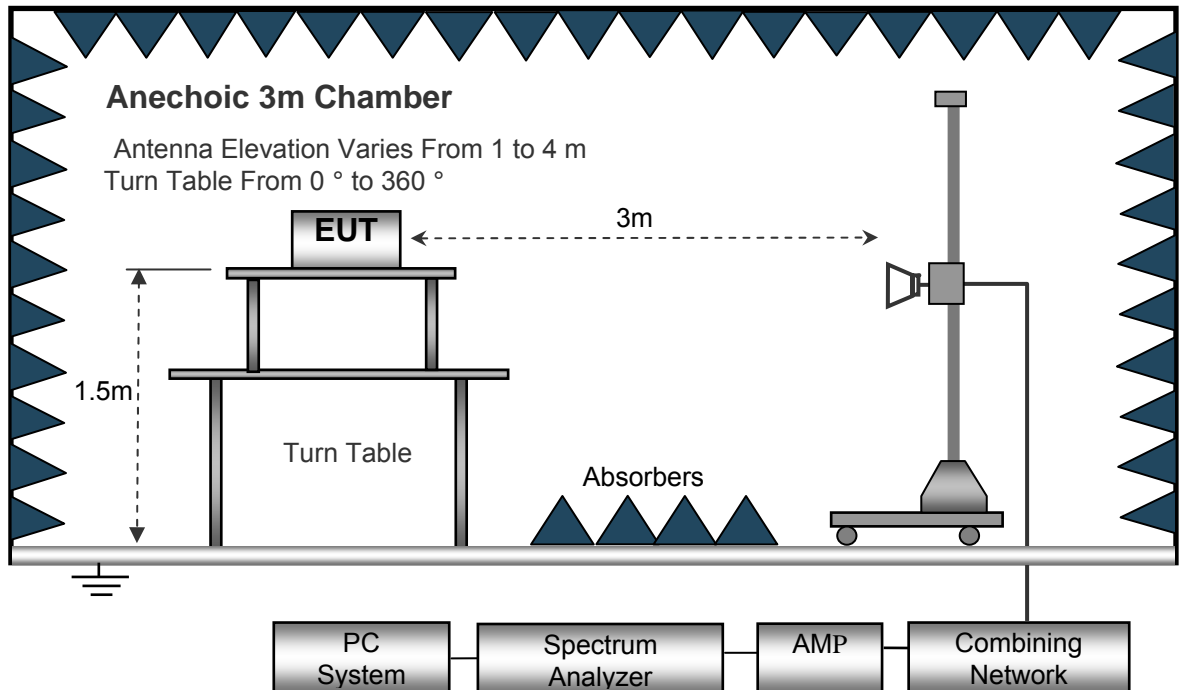
The test setup for emission measurement below 30MHz.



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



The test setup for emission measurement above 1 GHz.



9.3 Spectrum Analyzer Setup

Below 30MHz

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

30MHz ~ 1GHz

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

Above 1GHz

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

9.4 Test Procedure

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

9.5 Corrected Amplitude & Margin Calculation

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

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

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:

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

9.6 Summary of Test Results

FCC Part15.33: For an intentional radiator, the spectrum shall be investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to at least the frequency shown in this paragraph: If the intentional radiator operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

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 Fator	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dB μ V)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)
802.11n(HT20) U-NII-1 low Channel 5180MHz									
226.44	45.16	QP	118	1.9	H	-11.25	33.91	46	-12.09
226.44	45.12	QP	57	1.6	V	-11.25	33.87	46	-12.13
4512.94	44.31	PK	197	1.7	H	-1.54	42.77	74	-31.23
4512.94	42.48	Ave	23	1.7	H	-1.54	40.93	54	-13.07
5139.00	43.48	PK	347	1.7	H	-0.75	42.73	74	-31.27
5139.00	43.39	Ave	358	1.8	H	-0.75	42.64	54	-11.36
10360.00	40.46	PK	50	1.6	H	5.33	45.79	74	-28.21
10360.00	23.04	Ave	230	1.7	H	5.33	28.37	54	-25.63
15540.00	40.32	PK	225	1.4	H	5.29	45.61	74	-28.39
15540.00	31.51	Ave	86	1.9	H	5.29	36.80	54	-17.20
802.11n(HT20) U-NII-1 middle channel 5200MHz									
226.95	45.23	QP	299	1.2	H	-10.96	34.27	46	-11.73
226.95	44.92	QP	135	1.4	V	-10.96	33.96	46	-12.04
4513.36	43.73	PK	312	1.2	H	-1.64	42.09	74	-31.91
4513.36	43.14	Ave	166	1.9	H	-1.64	41.50	54	-12.50
5138.61	43.30	PK	311	1.7	H	-0.91	42.38	74	-31.62
5138.61	42.68	Ave	194	1.0	H	-0.91	41.77	54	-12.23
10400.00	40.95	PK	179	1.0	H	5.21	46.16	74	-27.84
10400.00	22.93	Ave	134	1.1	H	5.21	28.14	54	-25.86
15600.00	40.05	PK	216	1.0	H	5.30	45.35	74	-28.65
15600.00	31.83	Ave	253	1.9	H	5.30	37.13	54	-16.87

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Fator	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dB μ V)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)
802.11n(HT20) U-NII-1 High channel 5240MHz									
226.76	45.89	QP	106	1.5	H	-10.97	34.91	46	-11.09
226.76	45.04	QP	227	1.3	V	-10.97	34.07	46	-11.93
4512.73	43.88	PK	75	1.8	H	-1.56	42.32	74	-31.68
4512.73	42.83	Ave	137	1.1	H	-1.56	41.27	54	-12.73
5138.75	42.94	PK	150	1.1	H	-0.81	42.13	74	-31.87
5138.75	43.45	Ave	271	1.3	H	-0.81	42.64	54	-11.36
10480.00	40.96	PK	223	1.6	H	5.14	46.10	74	-27.90
10480.00	23.32	Ave	189	1.6	H	5.14	28.46	54	-25.54
15720.00	40.03	PK	79	1.1	H	5.10	45.13	74	-28.87
15720.00	31.35	Ave	41	1.9	H	5.10	36.45	54	-17.55
802.11n(HT20) U-NII-3 low Channel 5745MHz									
227.11	45.32	QP	267	1.5	H	-10.99	34.32	46	-11.68
227.11	44.79	QP	183	1.6	V	-10.99	33.79	46	-12.21
4512.67	43.97	PK	60	1.6	H	-1.80	42.18	74	-31.82
4512.67	42.46	Ave	99	1.6	H	-1.80	40.67	54	-13.33
5138.66	43.32	PK	265	1.0	H	-0.96	42.36	74	-31.64
5138.66	42.92	Ave	356	1.8	H	-0.96	41.96	54	-12.04
11490.00	40.24	PK	135	1.0	H	5.93	46.17	74	-27.83
11490.00	22.70	Ave	128	1.3	H	5.93	28.63	54	-25.37
17235.00	39.87	PK	281	2.0	H	10.35	50.22	74	-23.78
17235.00	31.34	Ave	207	1.8	H	10.35	41.69	54	-12.31

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Fator	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dB μ V)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)
802.11n(HT20) U-NII-3 middle channel 5785MHz									
227.05	45.40	QP	142	1.2	H	-11.13	34.27	46	-11.73
227.05	44.75	QP	231	1.8	V	-11.13	33.63	46	-12.37
4512.91	44.38	PK	50	1.4	H	-1.59	42.79	74	-31.21
4512.91	43.12	Ave	249	1.7	H	-1.59	41.52	54	-12.48
5138.96	42.58	PK	128	1.0	H	-0.95	41.63	74	-32.37
5138.96	43.39	Ave	135	1.7	H	-0.95	42.44	54	-11.56
11570.00	40.99	PK	24	1.0	H	5.81	46.80	74	-27.20
11570.00	22.67	Ave	358	1.6	H	5.81	28.48	54	-25.52
17355.00	39.97	PK	314	1.6	H	10.37	50.34	74	-23.66
17355.00	32.06	Ave	294	1.7	H	10.37	42.43	54	-11.57
802.11n(HT20) U-NII-3 High channel 5825MHz									
227.20	45.30	QP	271	1.2	H	-11.03	34.28	46	-11.72
227.20	44.70	QP	194	1.7	V	-11.03	33.67	46	-12.33
4512.72	43.60	PK	71	1.1	H	-1.68	41.93	74	-32.07
4512.72	42.78	Ave	269	1.6	H	-1.68	41.10	54	-12.90
5138.44	42.63	PK	68	1.6	H	-0.96	41.67	74	-32.33
5138.44	43.29	Ave	33	1.7	H	-0.96	42.34	54	-11.66
11650.00	40.21	PK	274	1.5	H	5.84	46.05	74	-27.95
11650.00	23.35	Ave	20	1.3	H	5.84	29.19	54	-24.81
17475.00	39.94	PK	38	1.6	H	10.41	50.35	74	-23.65
17475.00	31.65	Ave	187	1.3	H	10.41	42.06	54	-11.94

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Fator	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dB μ V)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)
802.11a(HT20) U-NII-1 low Channel 5180MHz									
227.10	45.64	QP	280	1.5	H	-11.20	34.44	46	-11.56
227.10	44.76	QP	110	1.6	V	-11.20	33.56	46	-12.44
4513.58	44.33	PK	95	1.6	H	-1.80	42.53	74	-31.47
4513.58	43.35	Ave	160	1.5	H	-1.80	41.55	54	-12.45
5138.57	43.39	PK	323	1.3	H	-0.94	42.44	74	-31.56
5138.57	43.20	Ave	64	1.7	H	-0.94	42.26	54	-11.74
10360.00	40.59	PK	315	1.1	H	5.33	45.92	74	-28.08
10360.00	22.48	Ave	1	1.2	H	5.33	27.81	54	-26.19
15540.00	40.21	PK	100	2.0	H	5.29	45.50	74	-28.50
15540.00	31.54	Ave	99	1.6	H	5.29	36.83	54	-17.17
802.11a(HT20) U-NII-1 middle channel 5200MHz									
226.93	45.83	QP	186	2.0	H	-11.15	34.69	46	-11.31
226.93	44.48	QP	223	1.6	V	-11.15	33.34	46	-12.66
4513.28	44.29	PK	294	1.4	H	-1.69	42.59	74	-31.41
4513.28	42.89	Ave	209	1.5	H	-1.69	41.20	54	-12.80
5138.14	42.73	PK	261	1.3	H	-0.91	41.81	74	-32.19
5138.14	43.45	Ave	205	1.7	H	-0.91	42.54	54	-11.46
10400.00	40.28	PK	61	1.3	H	5.21	45.49	74	-28.51
10400.00	22.58	Ave	42	1.5	H	5.21	27.79	54	-26.21
15600.00	40.02	PK	31	1.5	H	5.30	45.32	74	-28.68
15600.00	32.25	Ave	162	1.1	H	5.30	37.55	54	-16.45

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Fator	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dB μ V)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)
802.11a(HT20) U-NII-1 High channel 5240MHz									
226.91	46.00	QP	263	1.7	H	-11.18	34.81	46	-11.19
226.91	44.89	QP	128	1.2	V	-11.18	33.71	46	-12.29
4513.50	43.86	PK	1	1.8	H	-1.77	42.09	74	-31.91
4513.50	42.72	Ave	236	1.6	H	-1.77	40.95	54	-13.05
5138.31	43.14	PK	166	1.2	H	-0.79	42.34	74	-31.66
5138.31	43.30	Ave	210	1.7	H	-0.79	42.51	54	-11.49
10480.00	40.39	PK	126	2.0	H	5.14	45.53	74	-28.47
10480.00	22.61	Ave	242	1.6	H	5.14	27.75	54	-26.25
15720.00	39.82	PK	165	1.8	H	5.10	44.92	74	-29.08
15720.00	32.18	Ave	173	1.3	H	5.10	37.28	54	-16.72
802.11a(HT20) U-NII-3 low Channel 5745MHz									
226.66	45.92	QP	67	1.6	H	-11.15	34.78	46	-11.22
226.66	44.33	QP	69	1.4	V	-11.15	33.18	46	-12.82
4513.16	44.05	PK	263	1.9	H	-1.64	42.41	74	-31.59
4513.16	42.76	Ave	335	1.6	H	-1.64	41.12	54	-12.88
5138.18	42.76	PK	119	1.4	H	-0.84	41.92	74	-32.08
5138.18	43.23	Ave	270	1.1	H	-0.84	42.39	54	-11.61
11490.00	40.37	PK	286	1.6	H	5.93	46.30	74	-27.70
11490.00	22.94	Ave	259	1.9	H	5.93	28.87	54	-25.13
17235.00	40.33	PK	54	1.1	H	10.35	50.68	74	-23.32
17235.00	31.64	Ave	309	1.2	H	10.35	41.99	54	-12.01

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Fator	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(HT20) U-NII-3 middle channel 5785MHz									
226.56	45.98	QP	210	1.7	H	-11.02	34.96	46	-11.04
226.56	44.61	QP	195	1.7	V	-11.02	33.59	46	-12.41
4512.64	44.00	PK	182	1.1	H	-1.63	42.37	74	-31.63
4512.64	42.68	Ave	131	1.9	H	-1.63	41.04	54	-12.96
5138.26	43.51	PK	253	1.9	H	-0.73	42.78	74	-31.22
5138.26	42.64	Ave	64	1.9	H	-0.73	41.91	54	-12.09
11570.00	40.57	PK	163	1.1	H	5.81	46.38	74	-27.62
11570.00	22.41	Ave	248	1.3	H	5.81	28.22	54	-25.78
17355.00	40.21	PK	231	2.0	H	10.37	50.58	74	-23.42
17355.00	31.83	Ave	78	1.3	H	10.37	42.20	54	-11.80
802.11a(HT20) U-NII-3 High channel 5825MHz									
227.17	45.31	QP	30	1.6	H	-11.25	34.06	46	-11.94
227.17	44.75	QP	286	1.7	V	-11.25	33.50	46	-12.50
4512.80	43.93	PK	240	1.3	H	-1.67	42.26	74	-31.74
4512.80	42.51	Ave	35	1.3	H	-1.67	40.84	54	-13.16
5138.62	43.29	PK	137	1.6	H	-0.83	42.45	74	-31.55
5138.62	43.07	Ave	6	1.8	H	-0.83	42.24	54	-11.76
11650.00	40.15	PK	323	1.5	H	5.84	45.99	74	-28.01
11650.00	22.36	Ave	325	1.5	H	5.84	28.20	54	-25.80
17475.00	39.78	PK	209	1.6	H	10.41	50.19	74	-23.81
17475.00	31.47	Ave	110	1.7	H	10.41	41.88	54	-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)	(dB μ V)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)
802.11n(HT40) U-NII-1 low Channel 5190MHz									
227.23	45.57	QP	48	1.1	H	-11.20	34.37	46	-11.63
227.23	45.25	QP	1	1.2	V	-11.20	34.05	46	-11.95
4512.69	43.98	PK	149	1.4	H	-1.50	42.47	74	-31.53
4512.69	43.20	Ave	266	2.0	H	-1.50	41.69	54	-12.31
5138.22	43.16	PK	320	1.6	H	-0.86	42.30	74	-31.70
5138.22	42.80	Ave	348	1.4	H	-0.86	41.93	54	-12.07
10380.00	40.39	PK	248	1.5	H	5.26	45.65	74	-28.35
10380.00	22.43	Ave	78	1.2	H	5.26	27.69	54	-26.31
15570.00	39.70	PK	130	1.2	H	5.13	44.83	74	-29.17
15570.00	31.79	Ave	265	1.4	H	5.13	36.92	54	-17.08
802.11n(HT40) U-NII-1 High channel 5230MHz									
227.33	45.23	QP	121	1.7	H	-11.12	34.11	46	-11.89
227.33	44.66	QP	308	1.1	V	-11.12	33.53	46	-12.47
4512.83	44.29	PK	231	2.0	H	-1.63	42.66	74	-31.34
4512.83	43.34	Ave	172	2.0	H	-1.63	41.71	54	-12.29
5138.85	43.01	PK	316	1.1	H	-0.90	42.11	74	-31.89
5138.85	42.63	Ave	118	2.0	H	-0.90	41.73	54	-12.27
10460.00	41.00	PK	349	1.9	H	5.28	46.28	74	-27.72
10460.00	22.36	Ave	344	1.0	H	5.28	27.64	54	-26.36
15690.00	40.25	PK	312	1.9	H	5.02	45.27	74	-28.73
15690.00	31.61	Ave	4	1.6	H	5.02	36.63	54	-17.37

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dB μ V)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)
802.11n(HT40) U-NII-3 low Channel 5755MHz									
227.09	45.96	QP	31	1.7	H	-10.98	34.98	46	-11.02
227.09	44.53	QP	113	1.1	V	-10.98	33.55	46	-12.45
4512.65	43.60	PK	79	1.7	H	-1.69	41.92	74	-32.08
4512.65	42.70	Ave	13	2.0	H	-1.69	41.01	54	-12.99
5138.33	43.44	PK	97	1.2	H	-0.74	42.70	74	-31.30
5138.33	43.33	Ave	260	1.1	H	-0.74	42.59	54	-11.41
11510.00	41.14	PK	16	1.2	H	5.88	47.02	74	-26.98
11510.00	22.48	Ave	263	1.2	H	5.88	28.36	54	-25.64
17265.00	40.14	PK	77	1.6	H	10.42	50.56	74	-23.44
17265.00	31.79	Ave	336	1.5	H	10.42	42.21	54	-11.79
802.11n(HT40) U-NII-3 High channel 5795MHz									
227.02	45.53	QP	177	1.2	H	-11.19	34.34	46	-11.66
227.02	44.75	QP	162	1.2	V	-11.19	33.57	46	-12.43
4513.16	44.47	PK	51	1.4	H	-1.69	42.78	74	-31.22
4513.16	42.38	Ave	166	1.3	H	-1.69	40.69	54	-13.31
5138.86	43.26	PK	167	1.1	H	-0.89	42.37	74	-31.63
5138.86	43.10	Ave	311	1.5	H	-0.89	42.22	54	-11.78
11590.00	40.16	PK	147	1.4	H	5.63	45.79	74	-28.21
11590.00	22.42	Ave	31	1.5	H	5.63	28.05	54	-25.95
17385.00	40.35	PK	292	1.5	H	10.63	50.98	74	-23.02
17385.00	32.00	Ave	319	1.1	H	10.63	42.63	54	-11.37

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dB μ V)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)
802.11ac(HT40) U-NII-1 low Channel 5190MHz									
226.67	45.60	QP	239	1.0	H	-11.09	34.52	46	-11.48
226.67	45.30	QP	301	1.9	V	-11.09	34.21	46	-11.79
4513.05	43.54	PK	111	1.4	H	-1.70	41.84	74	-32.16
4513.05	42.93	Ave	22	1.3	H	-1.70	41.23	54	-12.77
5138.23	43.40	PK	258	1.5	H	-0.78	42.62	74	-31.38
5138.23	42.59	Ave	230	1.5	H	-0.78	41.81	54	-12.19
10380.00	40.44	PK	141	2.0	H	5.26	45.70	74	-28.30
10380.00	22.52	Ave	123	1.9	H	5.26	27.78	54	-26.22
15570.00	40.23	PK	133	1.3	H	5.13	45.36	74	-28.64
15570.00	32.03	Ave	216	1.3	H	5.13	37.16	54	-16.84
802.11ac(HT40) U-NII-1 High channel 5230MHz									
226.79	45.68	QP	46	1.6	H	-11.25	34.43	46	-11.57
226.79	44.91	QP	223	1.3	V	-11.25	33.66	46	-12.34
4513.53	44.07	PK	102	1.2	H	-1.50	42.57	74	-31.43
4513.53	42.39	Ave	33	1.3	H	-1.50	40.89	54	-13.11
5138.81	43.36	PK	246	1.9	H	-0.85	42.51	74	-31.49
5138.81	43.16	Ave	310	1.5	H	-0.85	42.30	54	-11.70
10460.00	40.36	PK	297	1.9	H	5.28	45.64	74	-28.36
10460.00	22.53	Ave	145	1.9	H	5.28	27.81	54	-26.19
15690.00	40.09	PK	203	1.8	H	5.02	45.11	74	-28.89
15690.00	32.13	Ave	45	2.0	H	5.02	37.15	54	-16.85

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dB μ V)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)
802.11ac(HT40) U-NII-3 low Channel 5755MHz									
227.23	45.59	QP	84	1.2	H	-10.99	34.60	46	-11.40
227.23	45.27	QP	66	1.7	V	-10.99	34.28	46	-11.72
4512.75	43.54	PK	162	1.9	H	-1.79	41.75	74	-32.25
4512.75	42.99	Ave	323	1.7	H	-1.79	41.20	54	-12.80
5138.78	43.35	PK	318	2.0	H	-0.81	42.54	74	-31.46
5138.78	43.32	Ave	172	1.3	H	-0.81	42.51	54	-11.49
11510.00	40.60	PK	356	1.6	H	5.88	46.48	74	-27.52
11510.00	22.46	Ave	74	1.9	H	5.88	28.34	54	-25.66
17265.00	40.13	PK	49	2.0	H	10.42	50.55	74	-23.45
17265.00	31.53	Ave	286	1.5	H	10.42	41.95	54	-12.05
802.11ac(HT40) U-NII-3 High channel 5795MHz									
227.10	45.97	QP	246	1.5	H	-10.99	34.98	46	-11.02
227.10	44.47	QP	92	1.5	V	-10.99	33.48	46	-12.52
4513.36	43.61	PK	274	2.0	H	-1.54	42.07	74	-31.93
4513.36	42.80	Ave	258	1.3	H	-1.54	41.26	54	-12.74
5138.14	42.86	PK	179	1.9	H	-0.89	41.98	74	-32.02
5138.14	42.64	Ave	350	1.1	H	-0.89	41.75	54	-12.25
11590.00	41.13	PK	115	1.2	H	5.63	46.76	74	-27.24
11590.00	23.00	Ave	92	1.4	H	5.63	28.63	54	-25.37
17385.00	39.59	PK	72	1.6	H	10.63	50.22	74	-23.78
17385.00	31.48	Ave	179	1.3	H	10.63	42.11	54	-11.89

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.407/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dB μ V)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)
802.11ac(HT80) U-NII-1 low Channel 5210MHz									
226.45	45.43	QP	83	1.2	H	-11.18	34.25	46	-11.75
226.45	45.11	QP	13	1.0	V	-11.18	33.93	46	-12.07
4512.87	44.27	PK	260	1.3	H	-1.77	42.50	74	-31.50
4512.87	42.66	Ave	279	1.5	H	-1.77	40.89	54	-13.11
5138.20	43.18	PK	50	1.3	H	-0.82	42.36	74	-31.64
5138.20	43.03	Ave	206	1.4	H	-0.82	42.21	54	-11.79
10420.00	40.93	PK	328	1.1	H	4.65	45.58	74	-28.42
10420.00	23.01	Ave	220	1.3	H	4.65	27.66	54	-26.34
15630.00	40.53	PK	355	1.9	H	5.10	45.63	74	-28.37
15630.00	31.91	Ave	44	1.3	H	5.10	37.01	54	-16.99
802.11ac(HT80) U-NII-3 low Channel 5775MHz									
226.63	46.00	QP	331	1.7	H	-11.13	34.87	46	-11.13
226.63	44.89	QP	348	1.6	V	-11.13	33.76	46	-12.24
4513.04	43.95	PK	254	1.6	H	-1.75	42.20	74	-31.80
4513.04	43.00	Ave	208	1.1	H	-1.75	41.26	54	-12.74
5139.04	43.24	PK	248	1.5	H	-0.95	42.29	74	-31.71
5139.04	43.37	Ave	305	1.5	H	-0.95	42.42	54	-11.58
11550.00	40.28	PK	45	1.3	H	4.83	45.11	74	-28.89
11550.00	22.60	Ave	1	1.4	H	4.83	27.43	54	-26.57
17325.00	39.77	PK	329	1.9	H	10.55	50.32	74	-23.68
17325.00	31.94	Ave	252	1.6	H	10.55	42.49	54	-11.51

Test Frequency: 18GHz~40GHz

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

10 Duty cycle

Test Requirement:	47 CFR Part 15C 15.407 and 789033 D02 General UNII Test Procedures New Rules v01, Section (B)
Test Method:	ANSI C63.10: 2013
Test Limit:	N/A
Test Result:	PASS
Remark:	Through Pre-scan, and found 802.11a at lowest channel is the worst case. Only the worst case is recorded in the report.

10.1 Summary of Test Results

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

Test result plots shown as follows:

ANT3

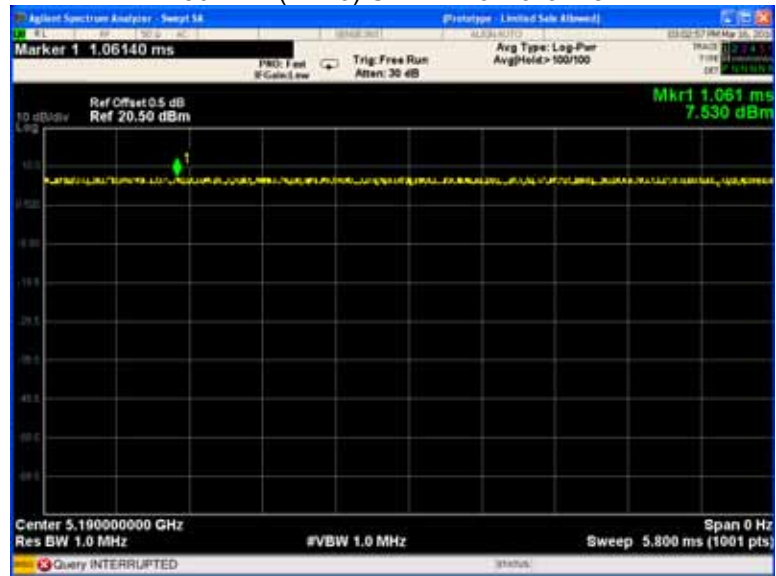
802.11a U-NII-1 Low channel



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



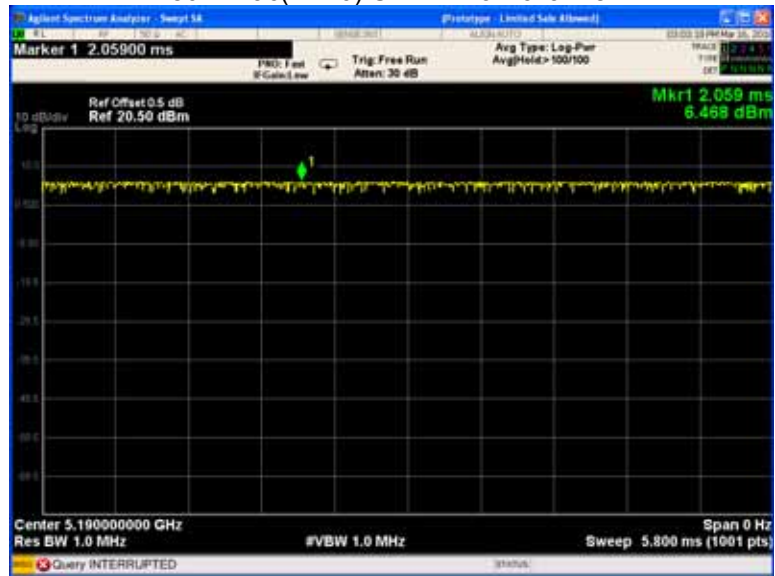
802.11n(HT40) U-NII-1 Low channel



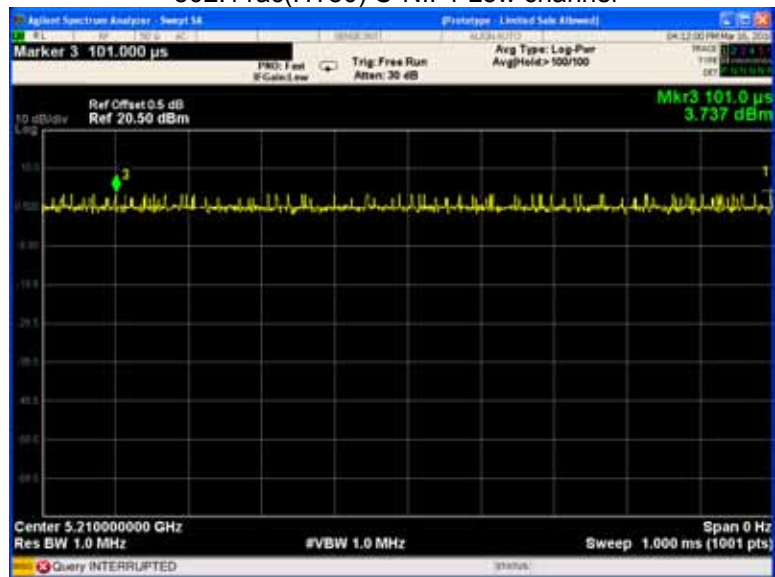
802.11ac(HT20) U-NII-1 Low channel



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



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



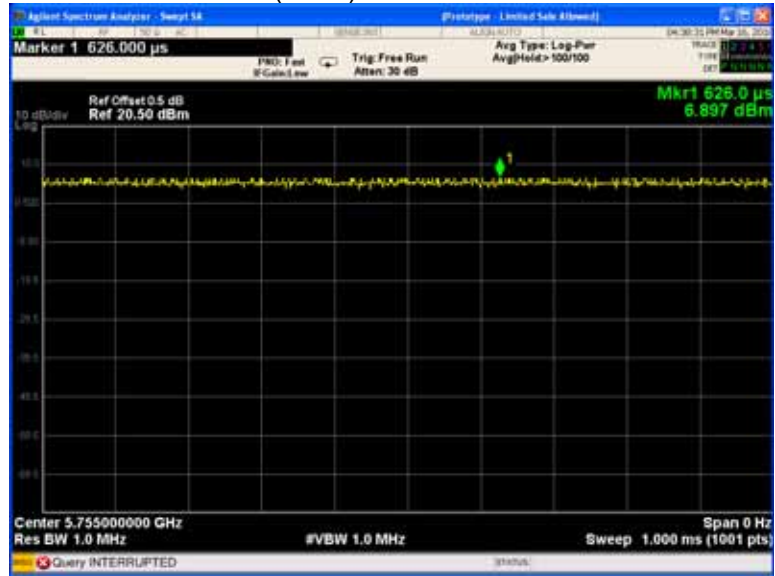
802.11a U-NII-3 Low channel



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



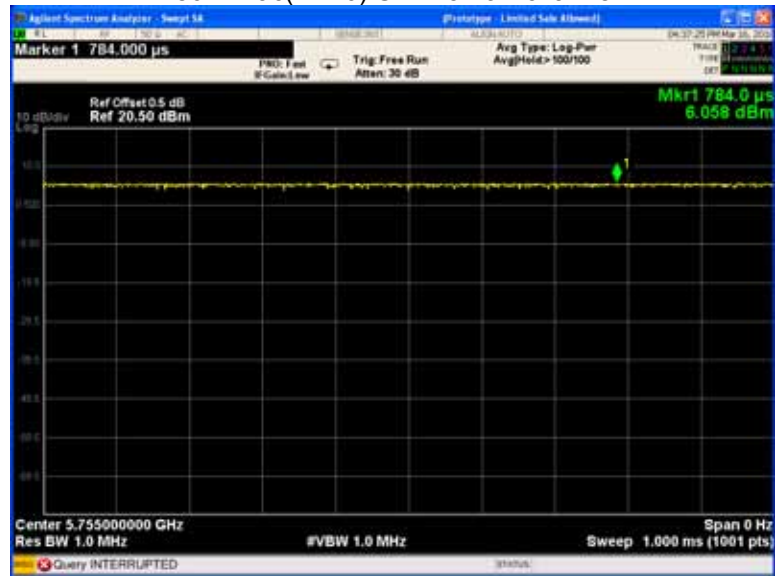
802.11n(HT40) U-NII-3 Low channel



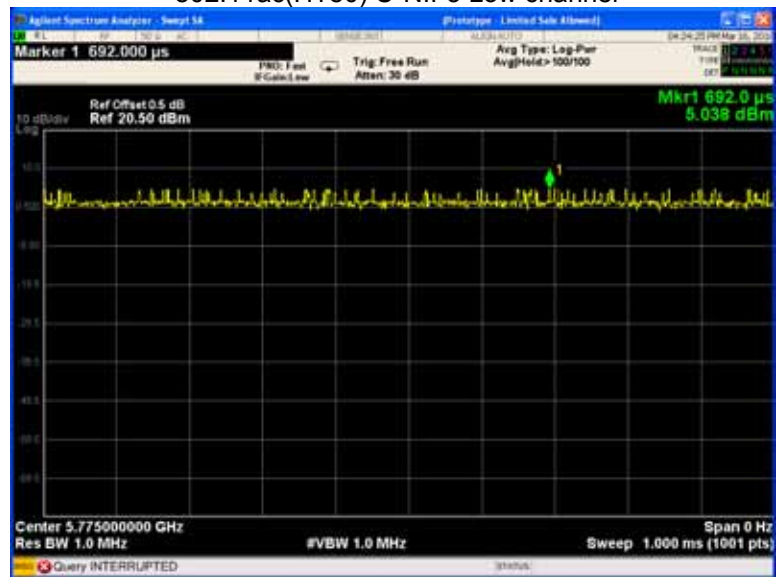
802.11ac(HT20) U-NII-3 Low channel



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



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



ANT4

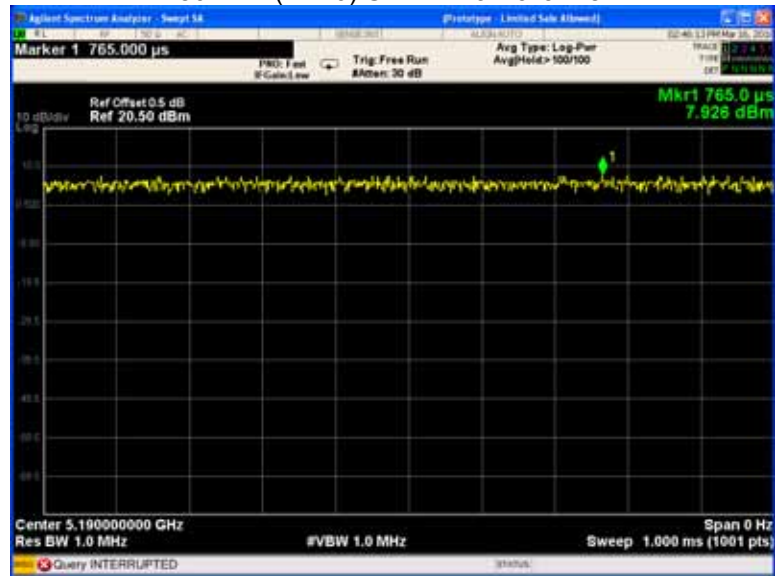
802.11a U-NII-1 Low channel



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



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



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



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



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



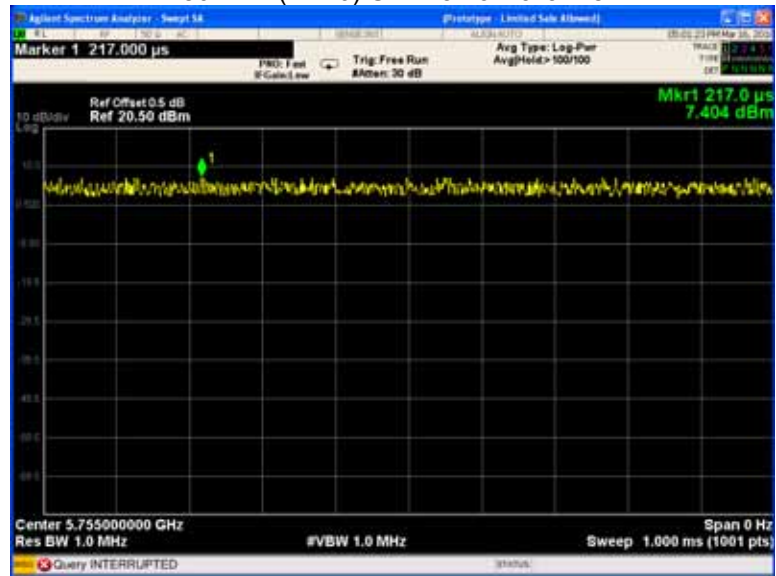
802.11a U-NII-3 Low channel



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



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



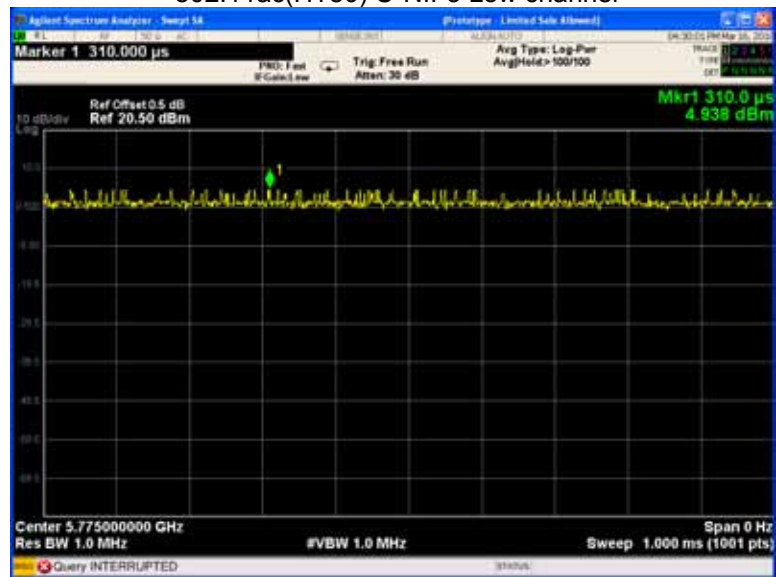
802.11ac(HT20) U-NII-3 Low channel



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



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



11 Band Edge

Test Requirement:	FCC CFR47 Part 15 Section 15.407
Test Method:	ANSI C63.10 2013
Test Limit:	(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz. (2) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of -27 dBm/MHz.
Test Result:	PASS

11.1 Test Produce

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

11.2 Test Result

Test result plots shown as follows:

ANT3

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



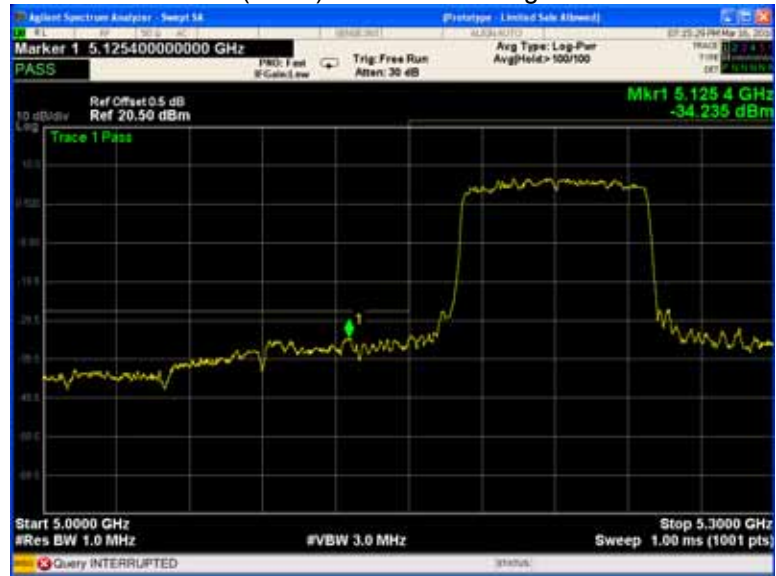
802.11ac(HT40) U-NII-3 Band edge-left side



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



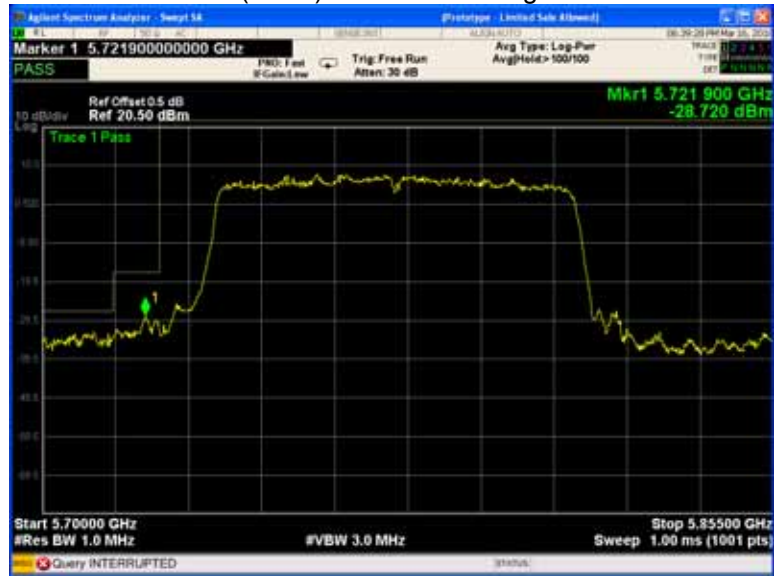
802.11ac(HT80) U-NII-1 Band edge-left side



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



ANT4

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



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



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



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



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



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



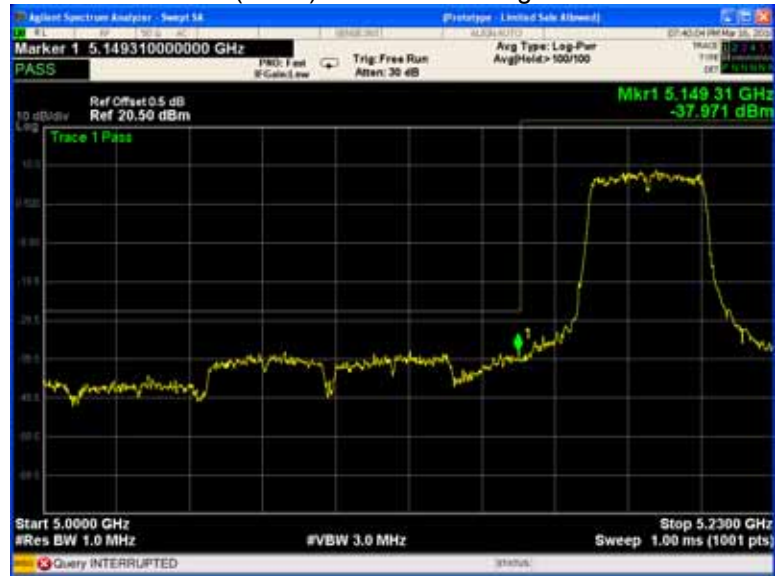
802.11n(HT20) U-NII-3 Band edge-left side



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



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



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



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



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



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



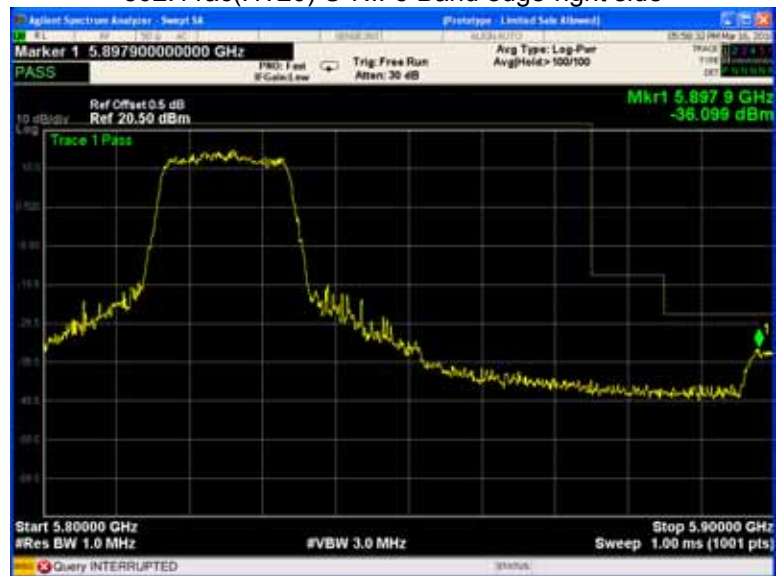
802.11ac(HT20) U-NII-1 Band edge-right side



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



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



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



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



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



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



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



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



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



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



12 6 dB Bandwidth

Test Requirement:	FCC CFR47 Part 15 Section 15.407(e) KDB662911 D01 Multiple Transmitter Output v02r01
Test Method:	KDB789033 D02 General UNII Test Procedures New Rules v01 Section C
Test Limit:	≥ 500 kHz
Test Result:	PASS

12.1 Test Procedure:

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

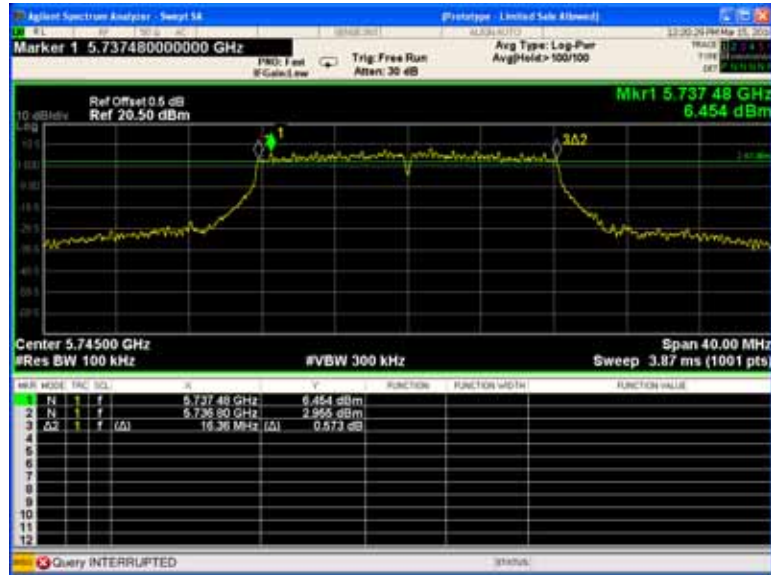
12.2 Test Result:

Band	Operation mode	6 dB Bandwidth (MHz)		
		Low	Middle	High
ANT3 U-NII-3	802.11a	16.36	16.28	16.32
	802.11n(HT20)	17.48	17.44	17.56
	802.11n(HT40)	36.24	/	36.06
	802.11ac(HT20)	17.56	17.56	17.64
	802.11ac(HT40)	36.24	/	36.18
	802.11ac(HT80)	75.12	/	/
ANT4 U-NII-3	802.11a	16.28	16.28	16.28
	802.11n(HT20)	17.56	17.48	17.52
	802.11n(HT40)	36.24	/	36.36
	802.11ac(HT20)	17.52	17.44	17.60
	802.11ac(HT40)	36.24	/	36.36
	802.11ac(HT80)	76.08	/	/

Test result plots shown as follows:

ANT3

802.11a U-NII-3 Low channel



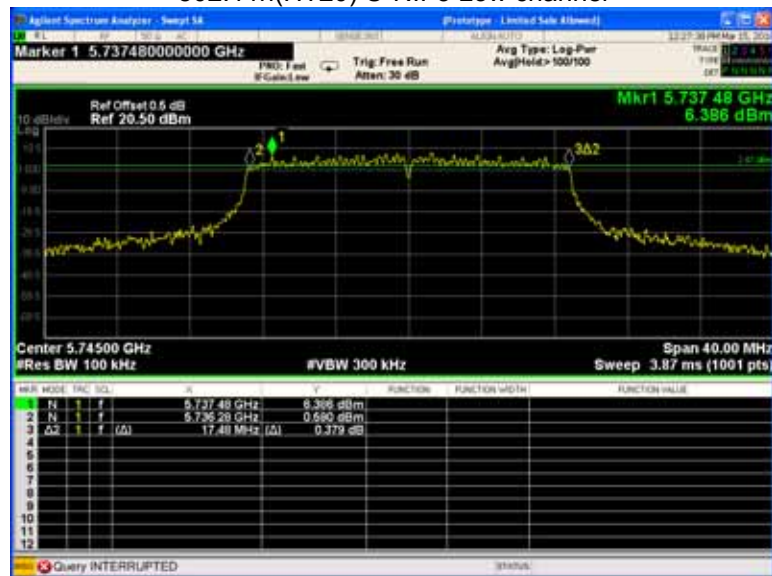
802.11a U-NII-3 Middle channel



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



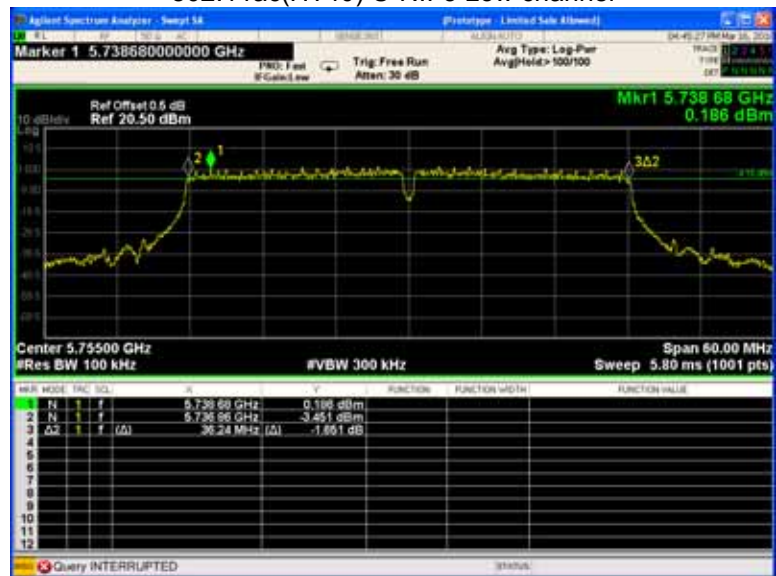
802.11ac(HT20) U-NII-3 Middle channel



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



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



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

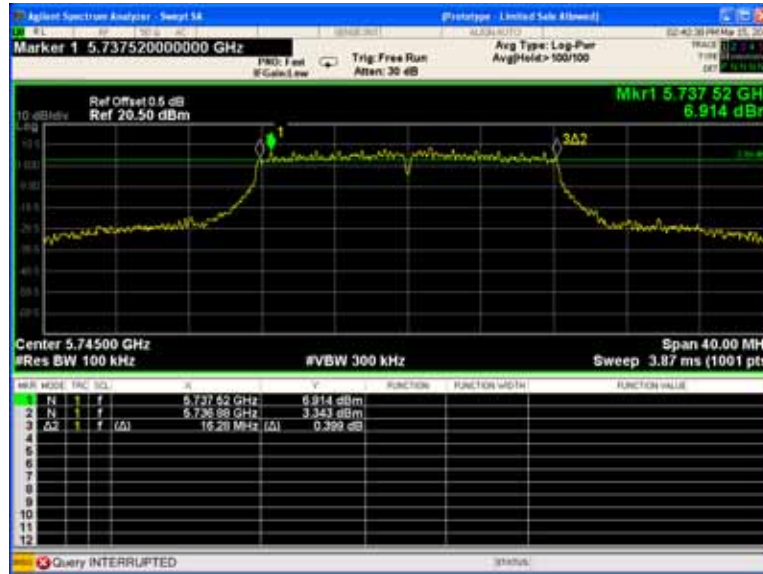


802.11ac(HT80) U-NII-3 Low channel



ANT4

802.11a U-NII-3 Low channel



802.11a U-NII-3 Middle channel



802.11a U-NII-3 High channel



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



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



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



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



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



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



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



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



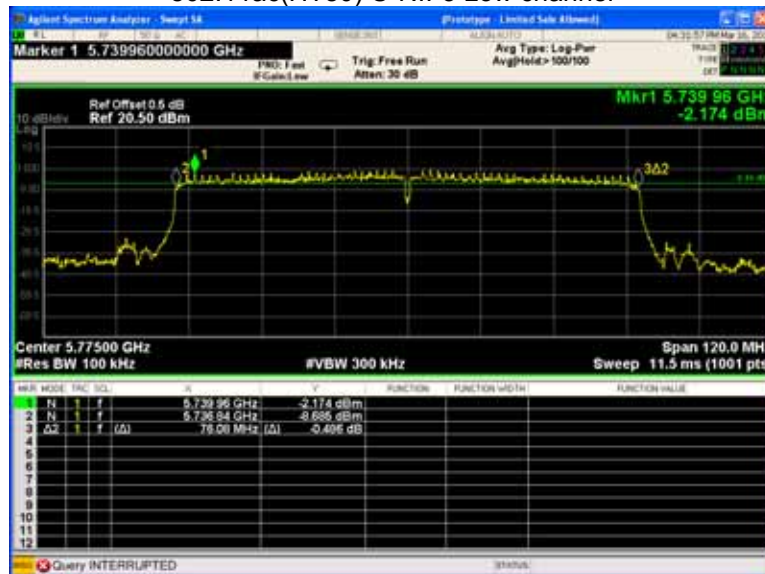
802.11ac(HT40) U-NII-3 Low channel



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



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



13 26 dB Bandwidth and 99% Occupied Bandwidth

Test Requirement:	47 CFR Part 15C Section 15.407 (a) KDB662911 D01 Multiple Transmitter Output v02r01
Test Method:	KDB789033 D02 General UNII Test Procedures New Rules v01 Section D
Test Limit:	No restriction limits
Test Result:	PASS

13.1 Test Procedure:

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

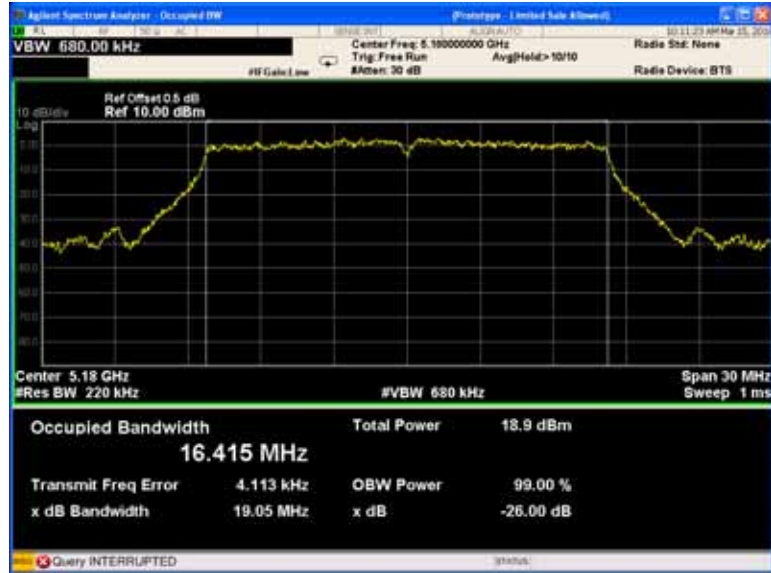
13.2 Test Result:

Band	Operation mode	26 dB Bandwidth (MHz)			99% Bandwidth (MHz)		
		Low	Middle	High	Low	Middle	High
ANT3 U-NII-1	802.11a	19.05	18.94	19.23	16.415	16.404	16.403
	802.11n(HT20)	19.49	19.44	19.55	17.46	17.457	17.448
	802.11n(HT40)	39.17	/	39.52	36.064	/	36.077
	802.11ac(HT20)	19.21	19.61	19.60	17.454	17.464	17.463
	802.11ac(HT40)	39.33	/	40.02	36.093	/	36.061
	802.11ac(HT80)	80.43	/	/	75.033	/	/
ANT3 U-NII-3	802.11a	18.57	18.28	18.18	16.358	16.357	16.377
	802.11n(HT20)	19.04	18.86	18.86	17.461	17.445	17.45
	802.11n(HT40)	39.56	/	39.72	36.071	/	36.054
	802.11ac(HT20)	19.47	19.29	19.58	17.459	17.465	17.432
	802.11ac(HT40)	39.59	/	39.13	36.06	/	36.040
	802.11ac(HT80)	80.54	/	/	74.94	/	/
ANT4 U-NII-1	802.11a	19.22	18.90	19.16	16.419	16.410	16.414
	802.11n(HT20)	19.58	19.62	19.19	17.464	17.481	17.433
	802.11n(HT40)	39.88	/	39.44	36.085	/	36.036
	802.11ac(HT20)	19.67	19.45	19.19	17.437	17.462	17.446
	802.11ac(HT40)	39.83	/	39.50	36.060	/	36.058
	802.11ac(HT80)	80.53	/	/	74.949	/	/
ANT4 U-NII-3	802.11a	18.55	18.30	18.51	16.363	16.359	16.347
	802.11n(HT20)	19.01	18.86	18.80	17.429	17.464	17.423
	802.11n(HT40)	39.17	/	39.52	35.956	/	36.005
	802.11ac(HT20)	19.36	19.46	19.35	17.476	17.460	17.443
	802.11ac(HT40)	39.72	/	39.12	36.046	/	36.006
	802.11ac(HT80)	80.56	/	/	74.880	/	/

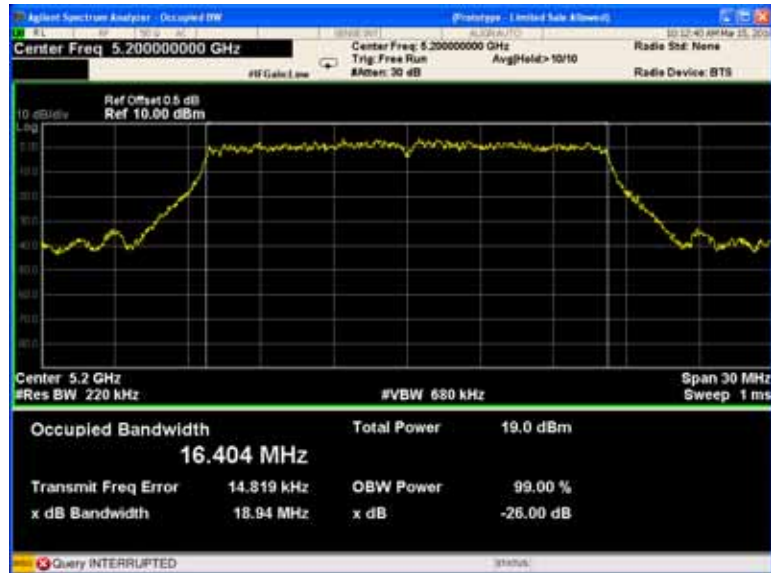
Test result plots shown as follows:

ANT3

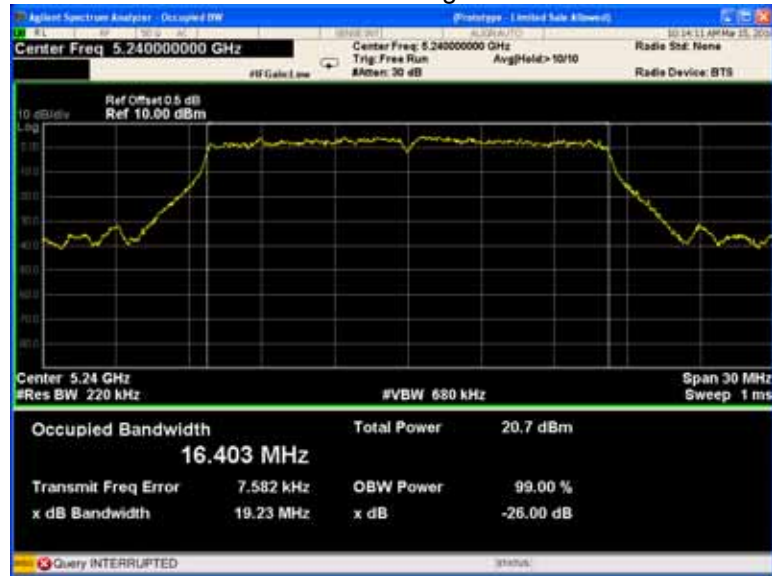
802.11a U-NII-1 Low channel



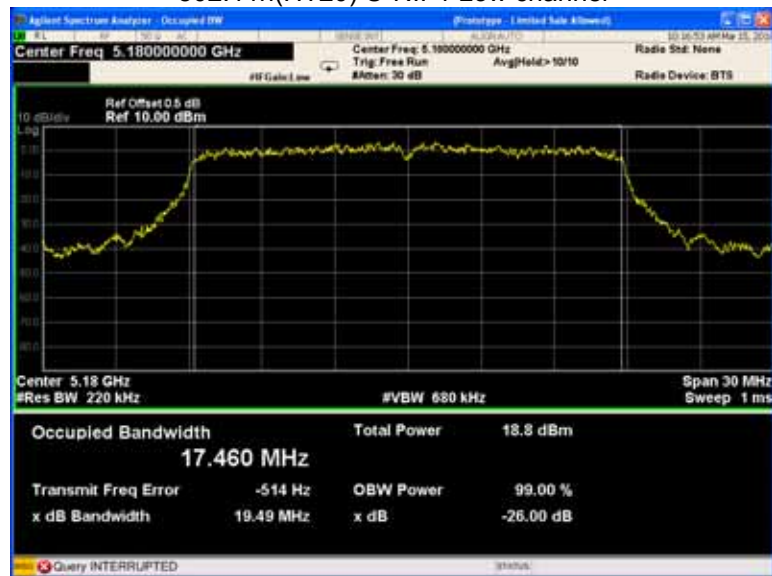
802.11a U-NII-1 Middle channel



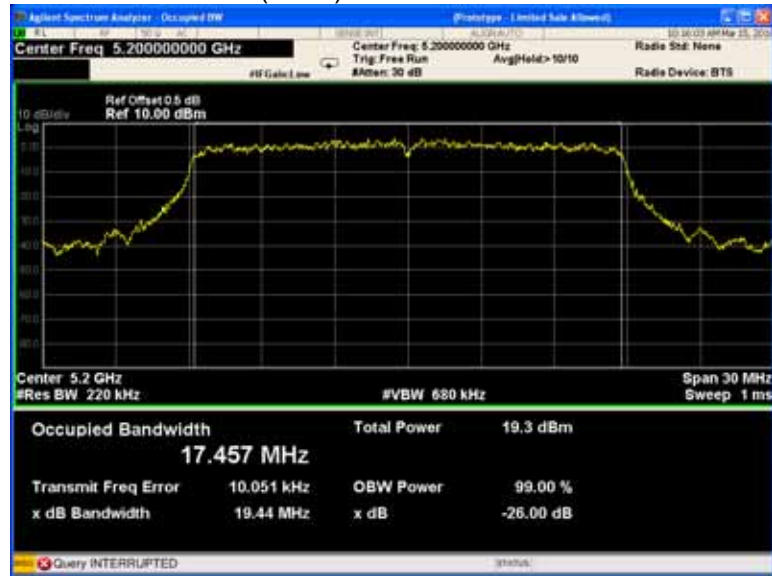
802.11a U-NII-1 High channel



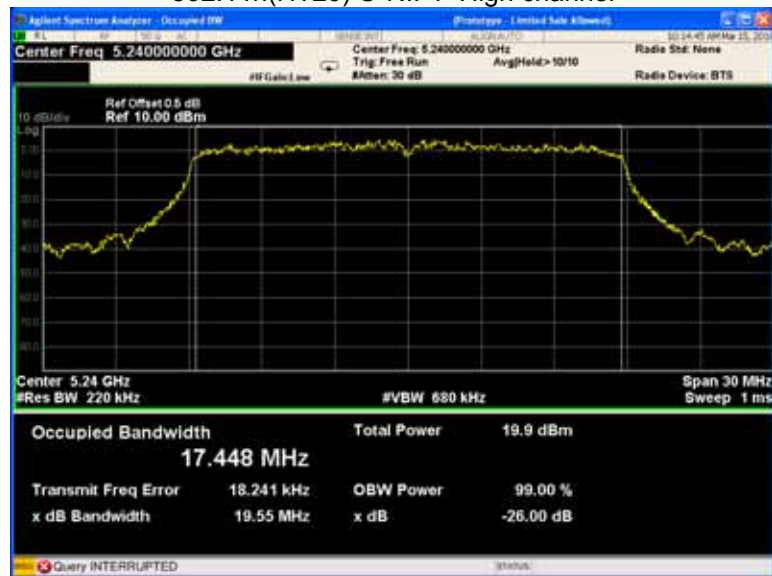
802.11n(HT20) U-NII-1 Low channel



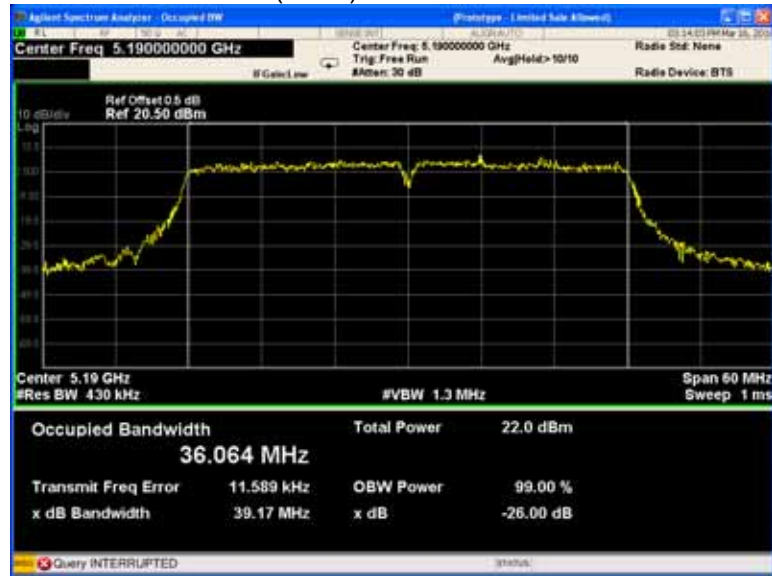
802.11n(HT20) U-NII-1 Middle channel



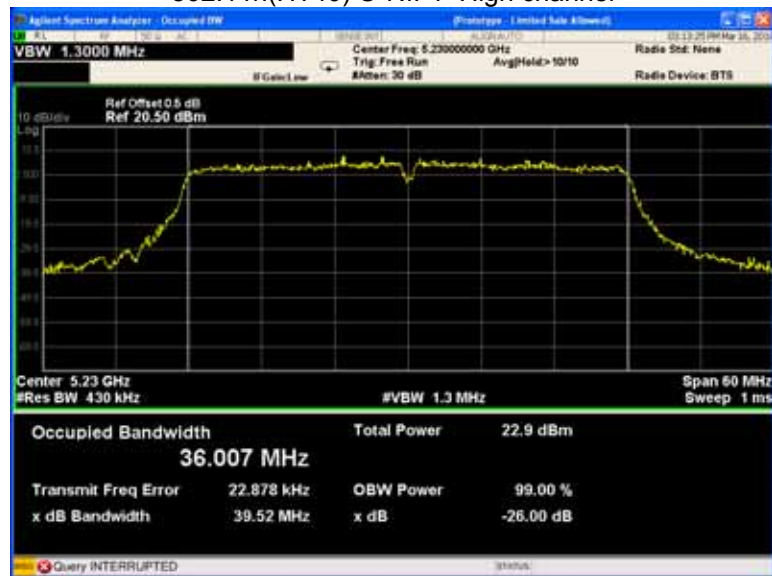
802.11n(HT20) U-NII-1 High channel



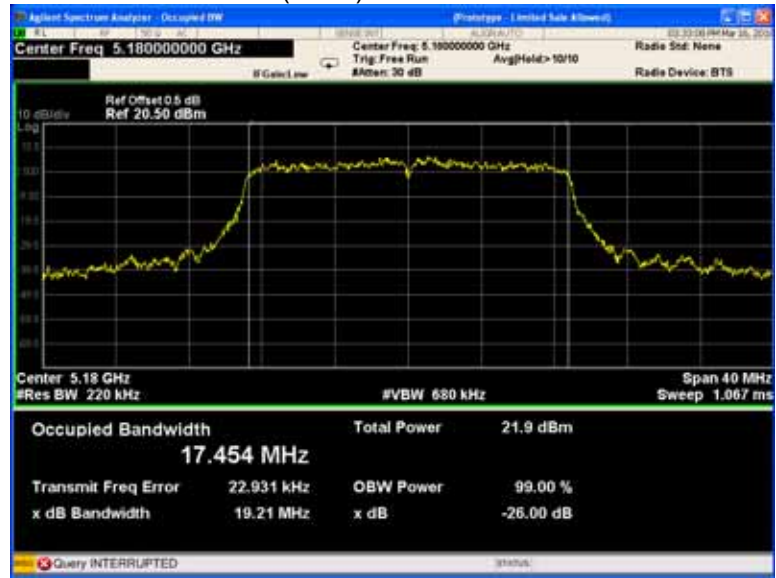
802.11n(HT40) U-NII-1 Low channel



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



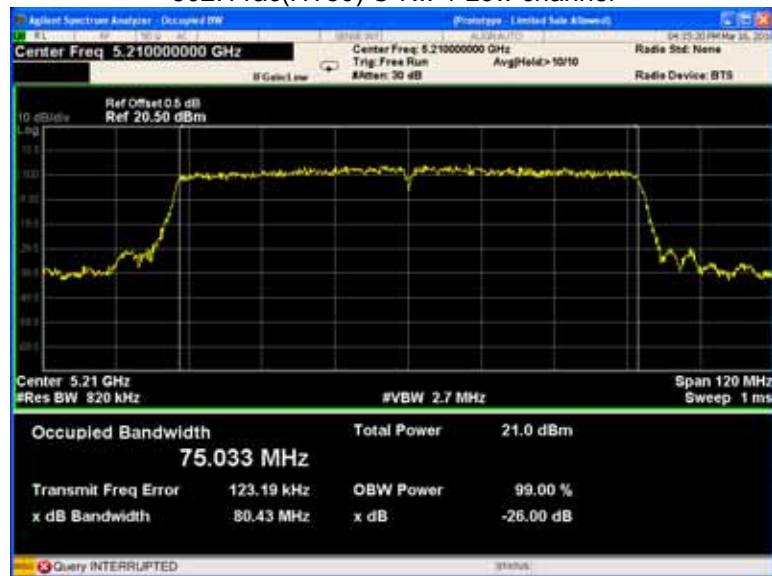
802.11ac(HT40) U-NII-1 Low channel



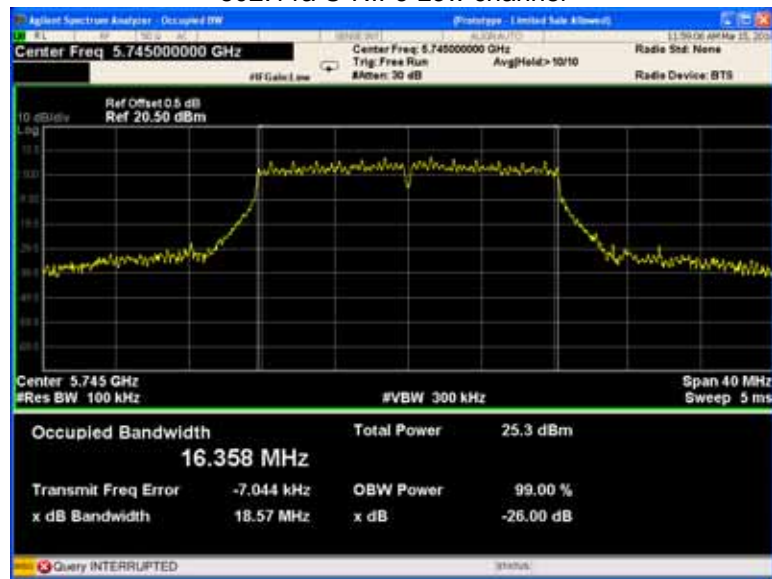
802.11n(HT40) U-NII-1 High channel



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



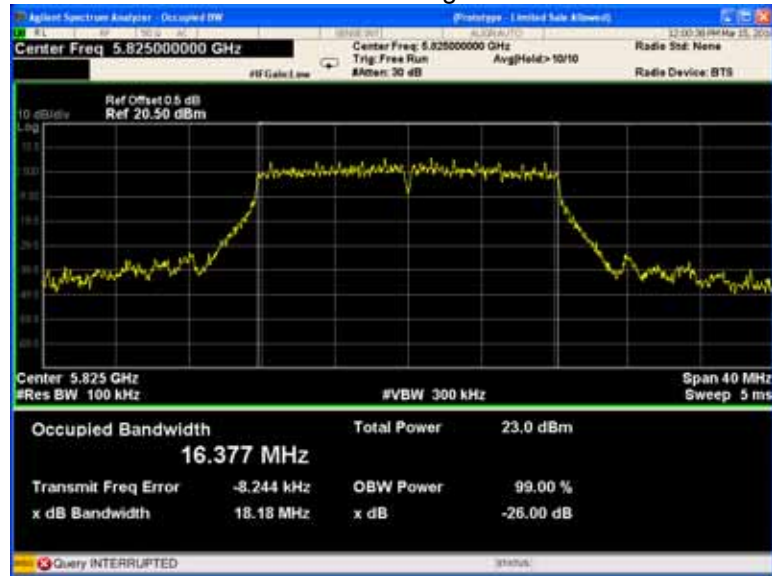
802.11a U-NII-3 Low channel



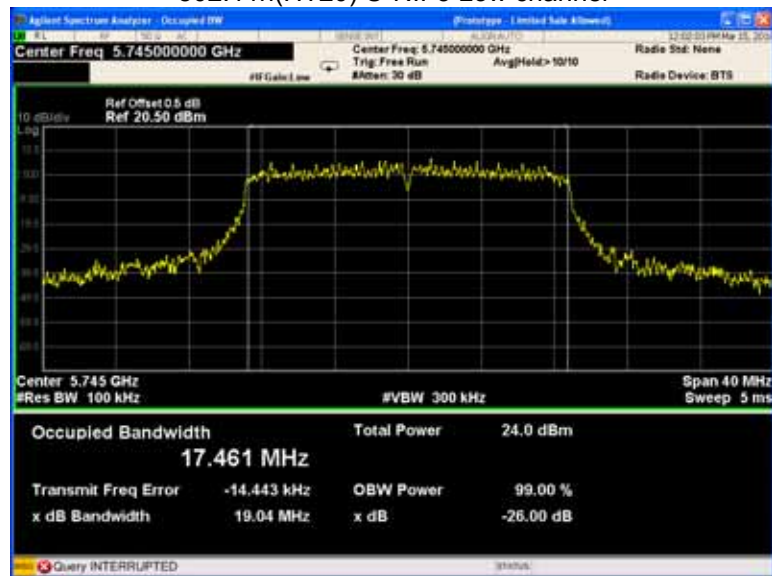
802.11a U-NII-3 Middle channel



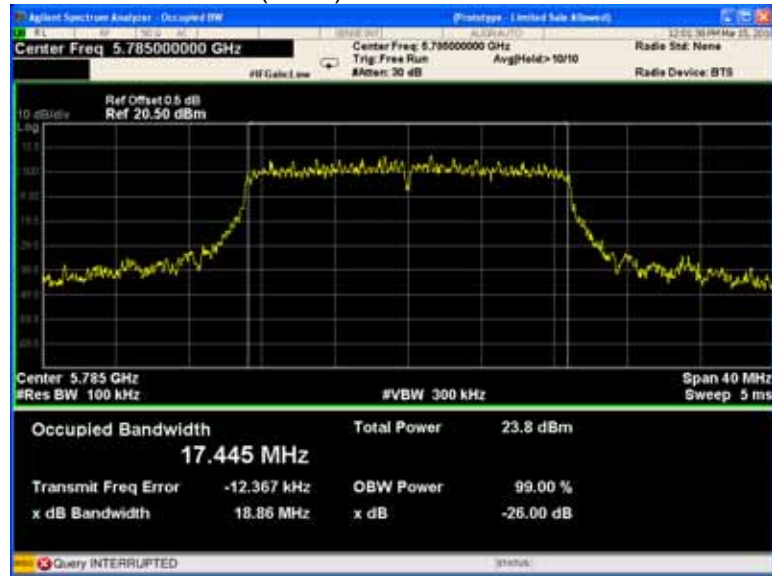
802.11a U-NII-3 High channel



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



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



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



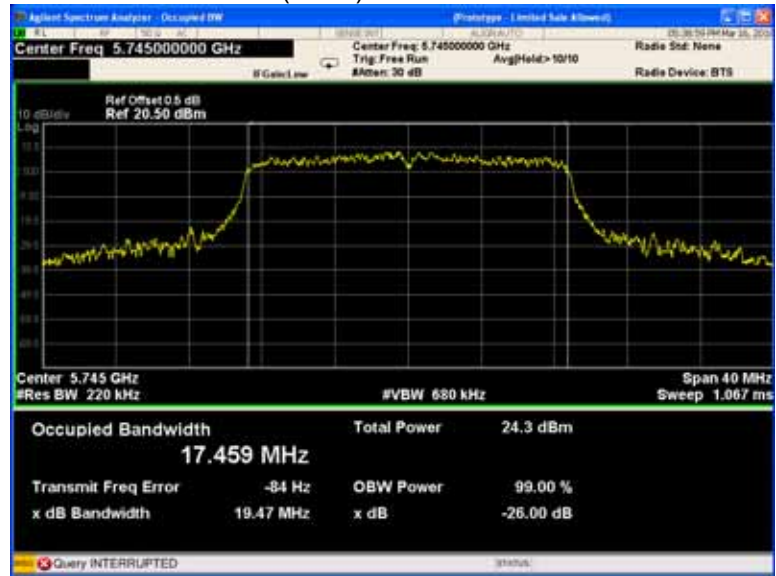
802.11n(HT40) U-NII-3 Low channel



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



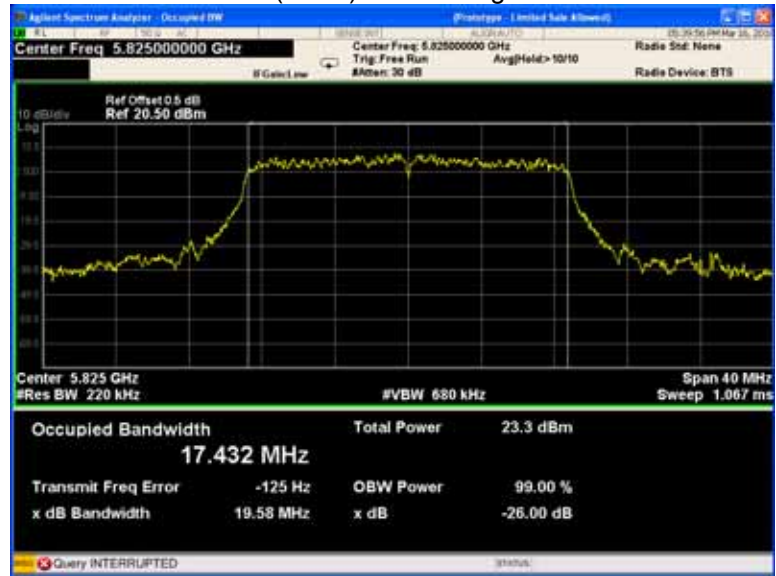
802.11ac(HT20) U-NII-3 Low channel



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



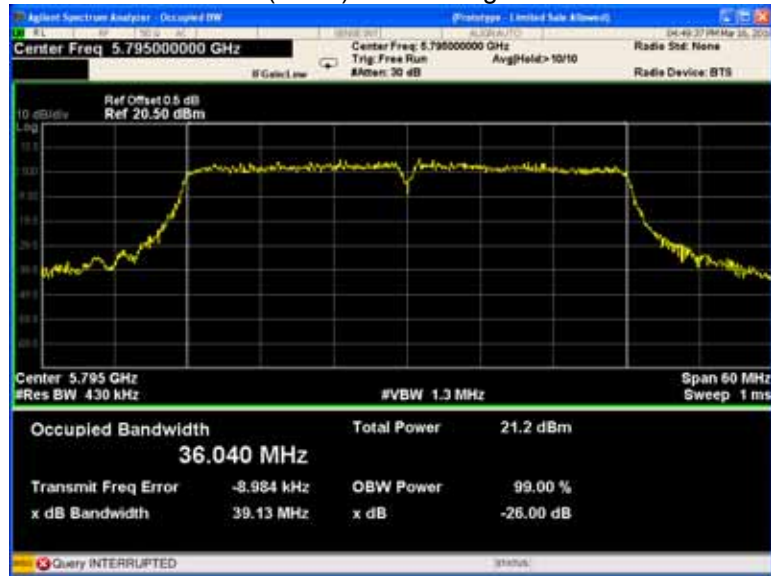
802.11ac(HT20) U-NII-3 High channel



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



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

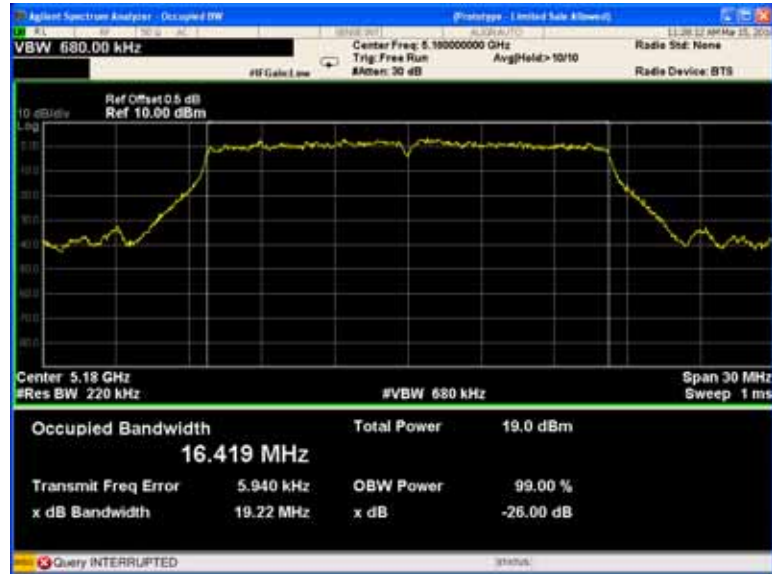


802.11ac(HT80) U-NII-3 Low channel

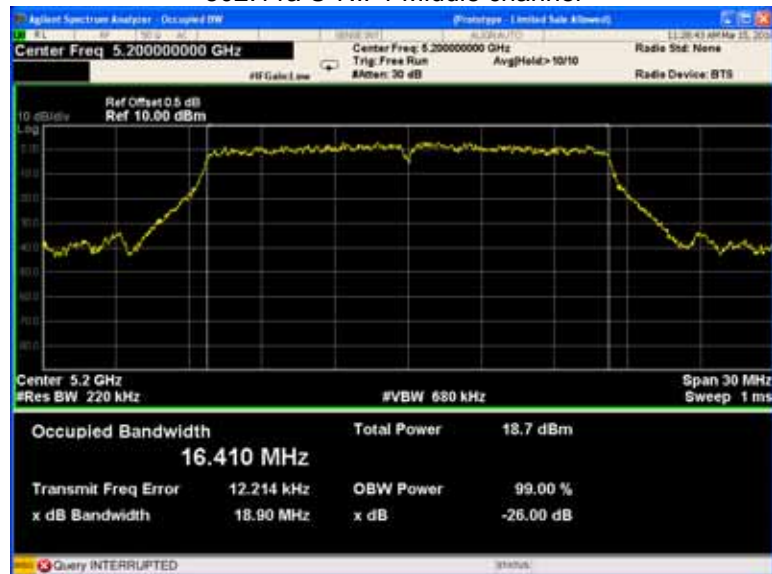


ANT4

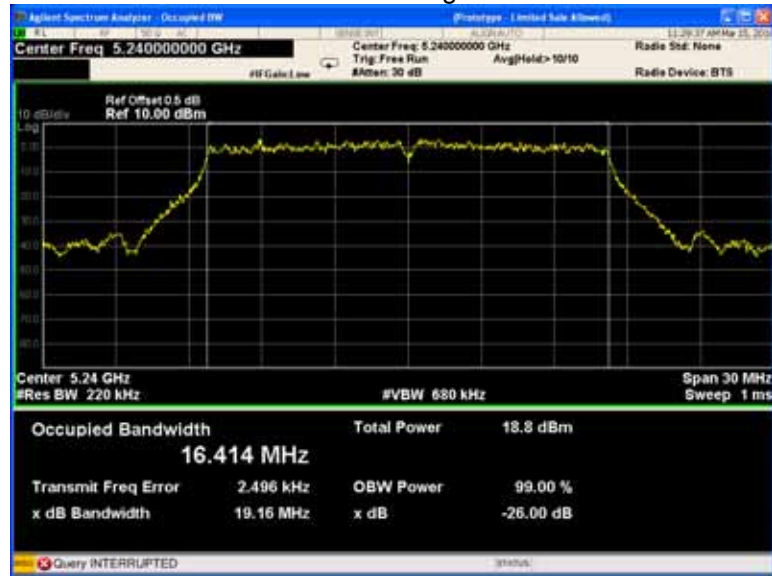
802.11a U-NII-1 Low channel



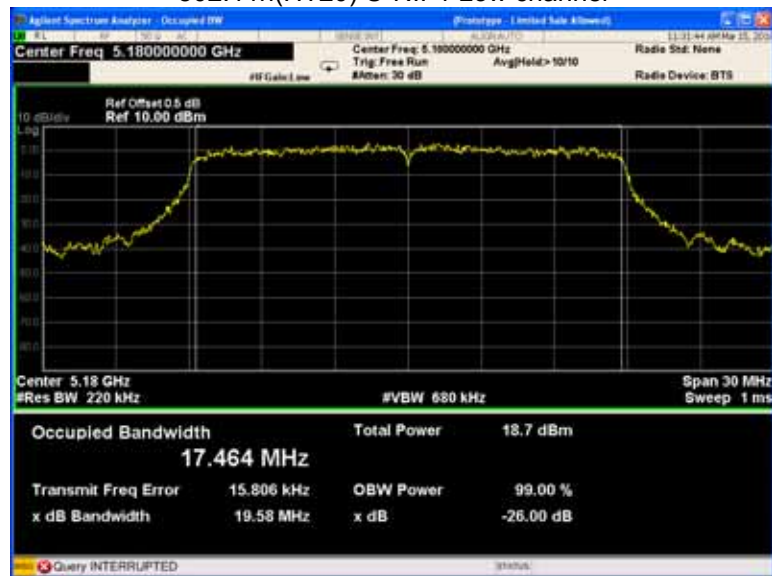
802.11a U-NII-1 Middle channel



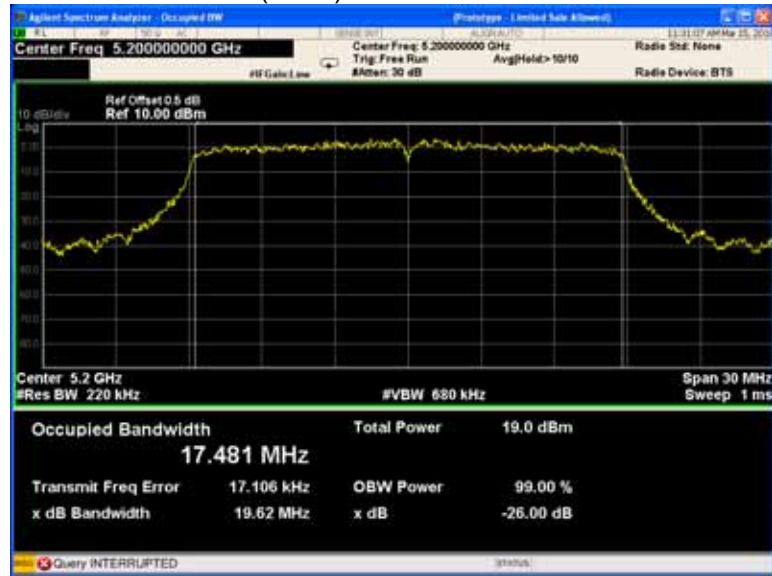
802.11a U-NII-1 High channel



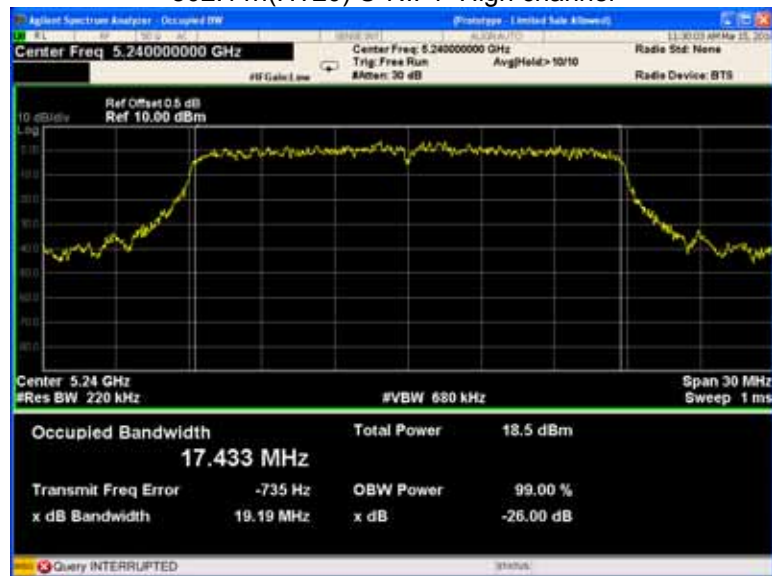
802.11n(HT20) U-NII-1 Low channel



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



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



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



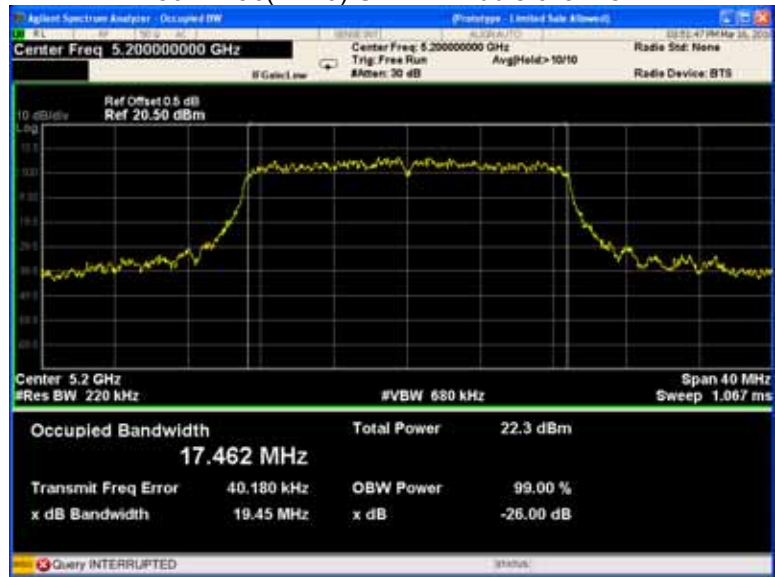
802.11n(HT40) U-NII-1 High channel



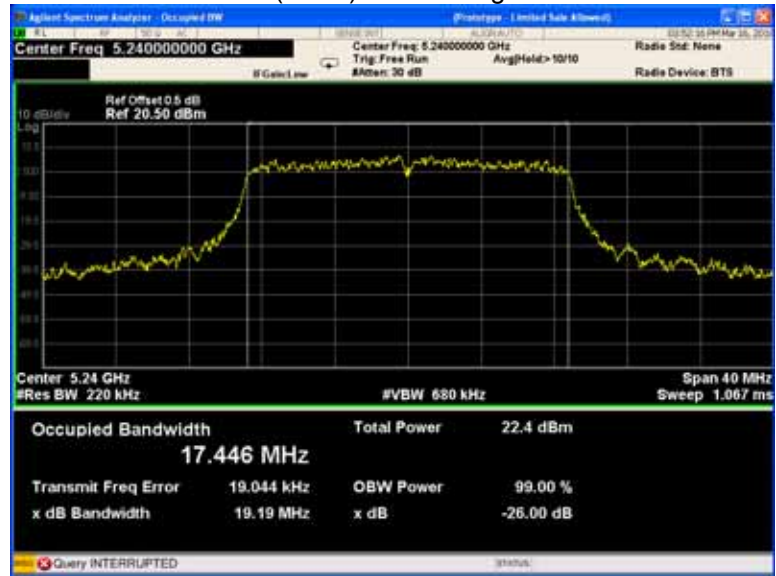
802.11ac(HT20) U-NII-1 Low channel



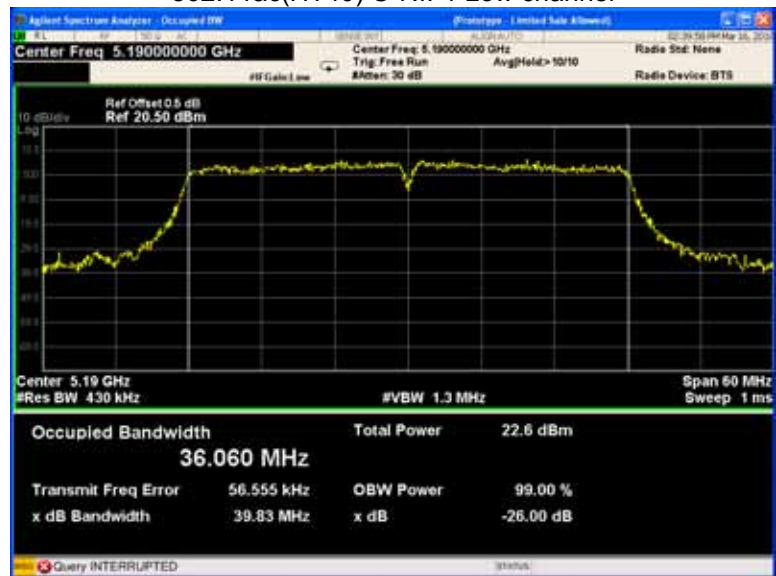
802.11ac(HT20) U-NII-1 Middle channel



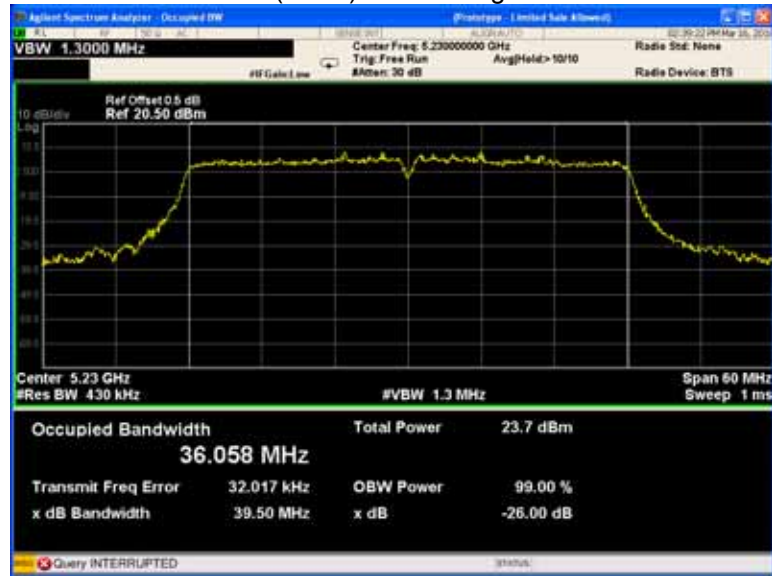
802.11ac(HT20) U-NII-1 High channel



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



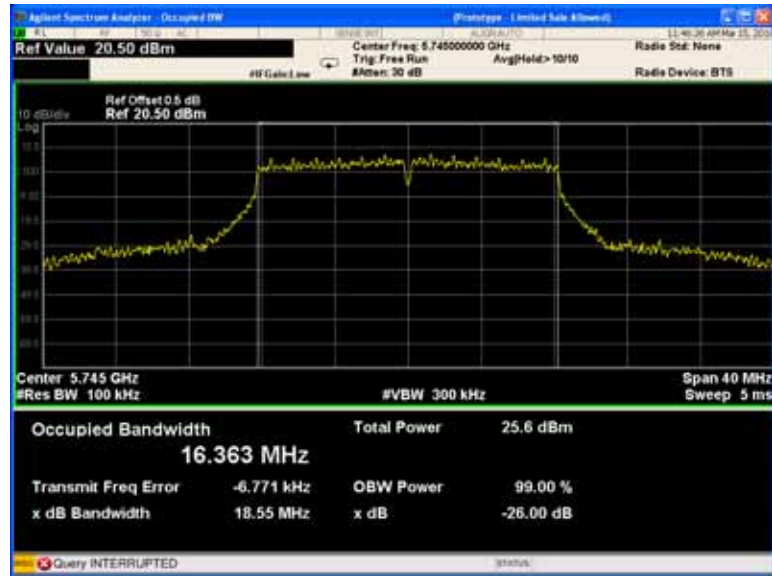
802.11ac(HT40) U-NII-1 High channel



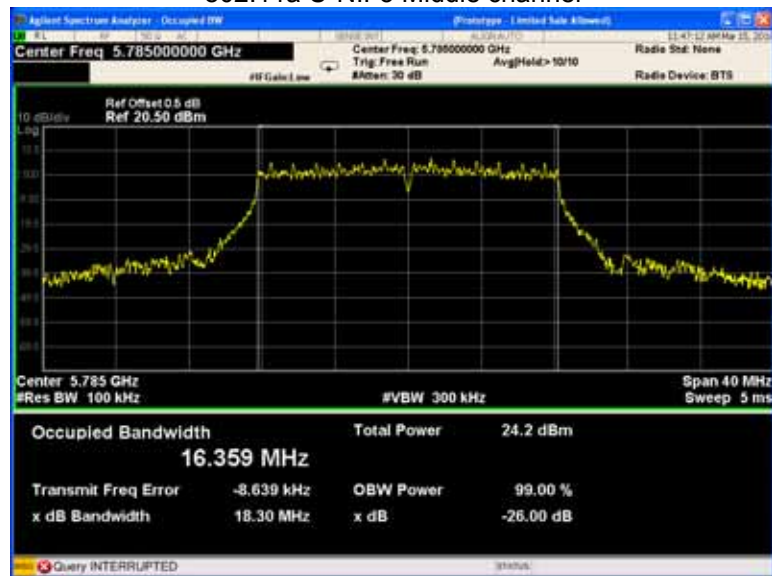
802.11ac(HT80) U-NII-1 Low channel



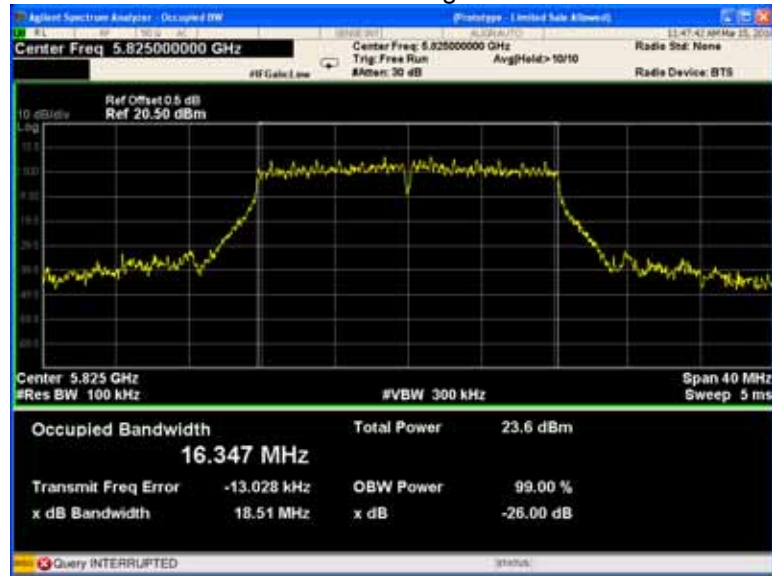
802.11a U-NII-3 Low channel



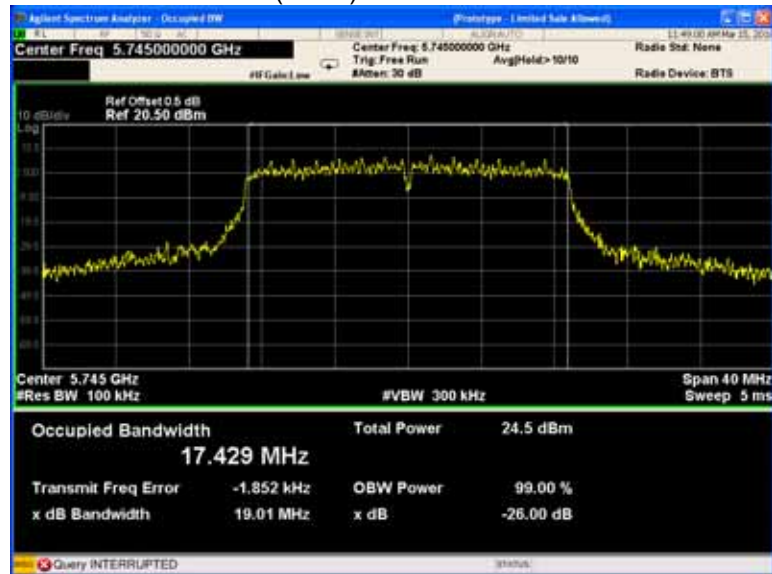
802.11a U-NII-3 Middle channel



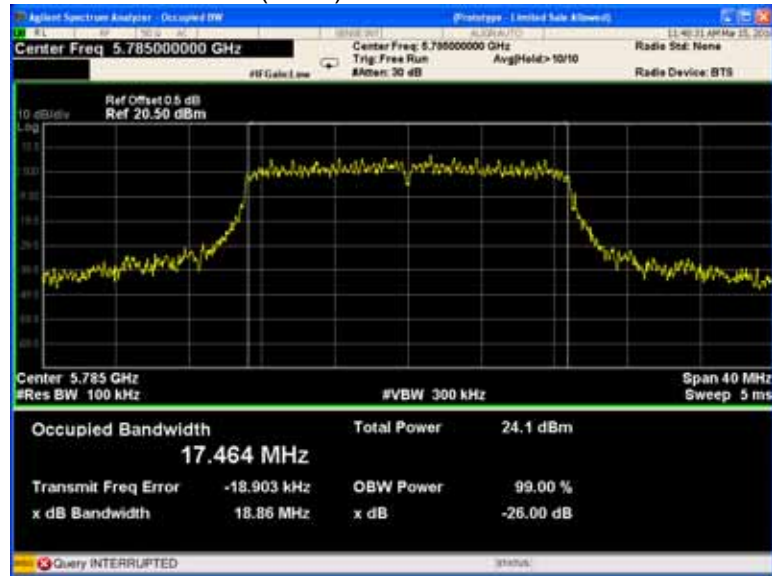
802.11a U-NII-3 High channel



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



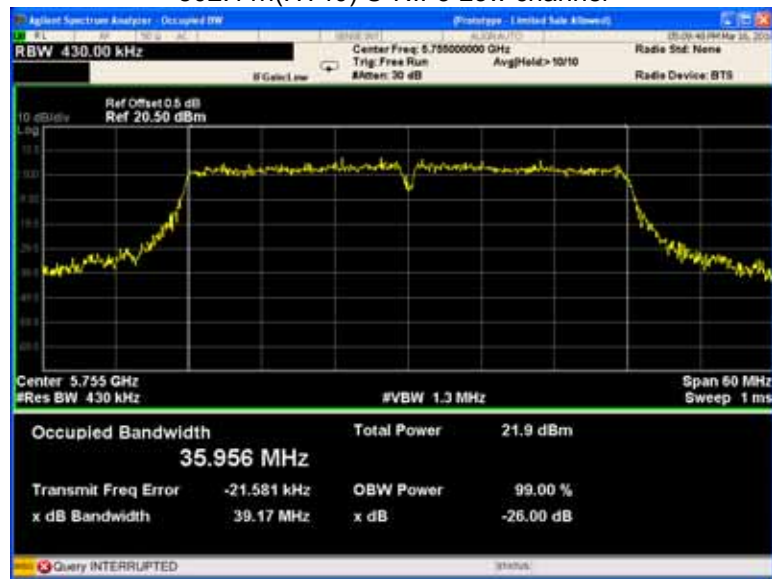
802.11n(HT20) U-NII-3 Middle channel



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



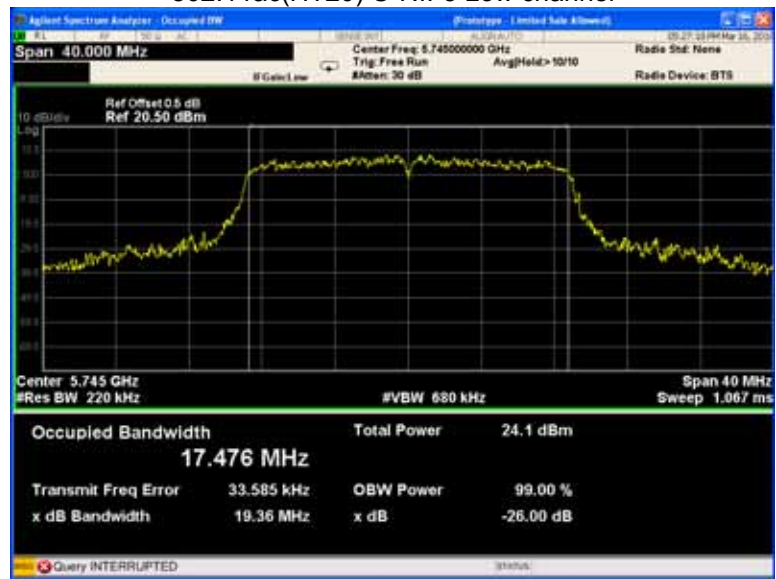
802.11n(HT40) U-NII-3 Low channel



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



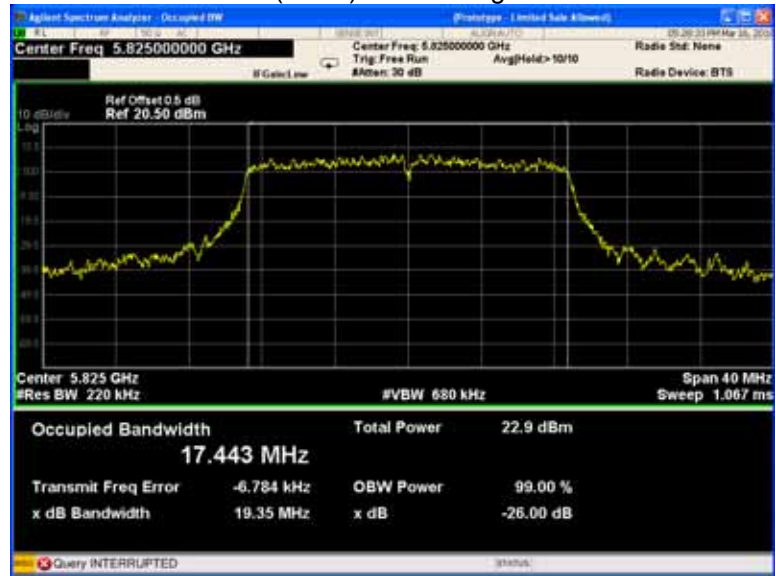
802.11ac(HT20) U-NII-3 Low channel



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



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



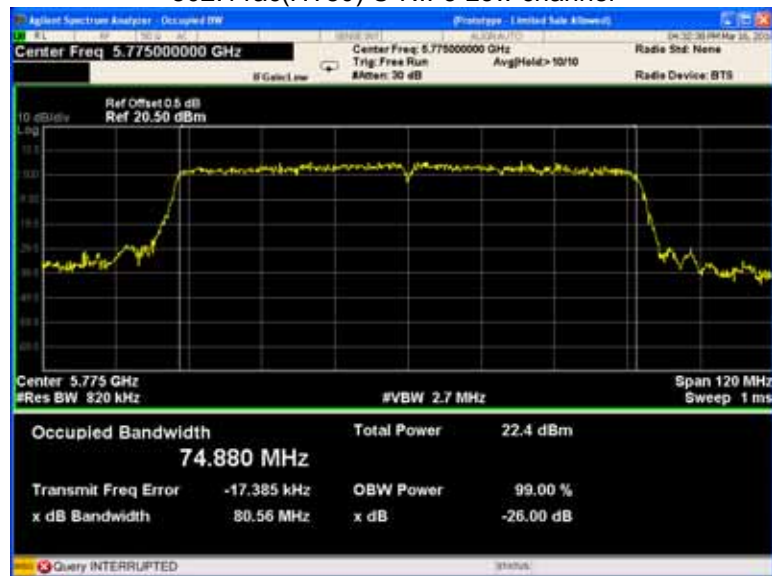
802.11ac(HT40) U-NII-3 Low channel



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



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



14 Conducted Output Power

Test Requirement:	FCC CFR47 Part 15 Section 15.407(a) KDB662911 D01 Multiple Transmitter Output v02r01
Test Method:	KDB789033 D02 General UNII Test Procedures New Rules v01 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)
Remark:	X is duty cycle=1, so 10log(1/1)=0 Conducted output power= measurement power

14.1 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 DTS bandwidth.
3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

14.2 Test Result :

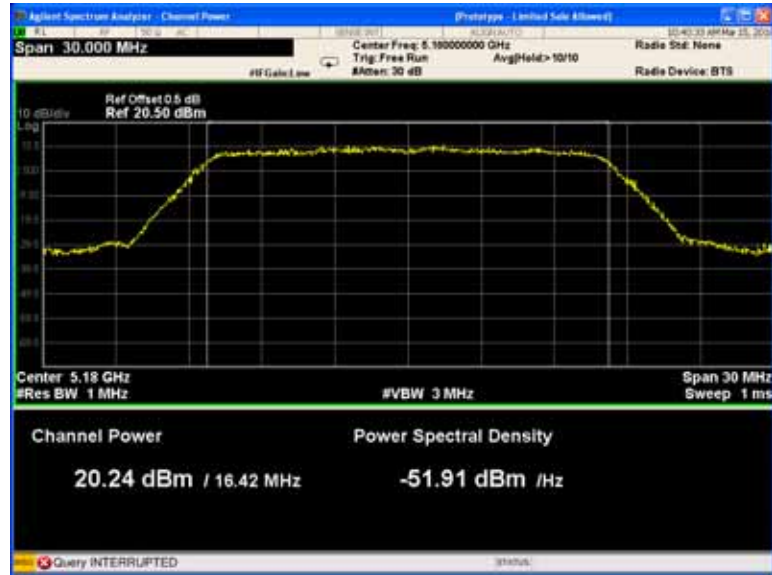
Band	Operation mode	CH	Conducted Output Power (dBm)		
			ANT0	ANT1	Total
U-NII-1	802.11a	Low	20.24	20.04	23.15
		Middle	20.18	20.04	23.12
		High	20.38	20.09	23.25
	802.11n(HT20)	Low	20.05	20.01	23.04
		Middle	20.12	20.03	23.09
		High	20.43	20.05	23.25
	802.11n(HT40)	Low	20.69	20.52	23.62
		Middle	/	/	/
		High	20.95	20.28	23.64
	802.11ac(HT20)	Low	20.69	20.80	23.76
		Middle	20.74	20.14	23.46
		High	20.79	20.67	23.74
	802.11ac(HT40)	Low	20.54	20.66	23.61
		Middle	/	/	/
		High	20.33	20.73	23.54
	802.11ac(HT80)	Low	20.46	20.43	23.46
		Middle	/	/	/
		High	/	/	/
U-NII-3	802.11a	Low	25.21	25.48	28.36
		Middle	25.08	25.32	28.21
		High	25.16	25.03	28.11
	802.11n(HT20)	Low	24.77	25.23	28.02
		Middle	24.56	25.11	27.85
		High	24.43	25.03	27.75
	802.11n(HT40)	Low	24.48	24.40	27.45
		Middle	/	/	/
		High	24.14	24.18	27.17
	802.11ac(HT20)	Low	24.07	25.05	27.60
		Middle	24.66	24.37	27.53
		High	24.07	23.98	27.04
	802.11ac(HT40)	Low	24.35	24.00	27.19
		Middle	/	/	/
		High	24.66	24.26	27.47
	802.11ac(HT80)	Low	21.07	21.74	24.43
		Middle	/	/	/
		High	/	/	/

* All transmit signals are completely uncorrelated with each other, Directional gain = G_{ANT} which is less than 6dBi. So the limit does not be reduced.

Test result plots shown as follows:

ANT3

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



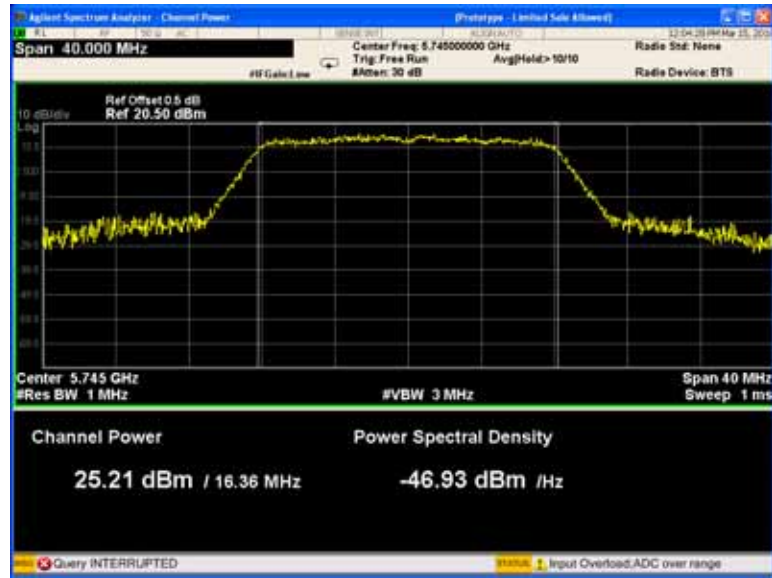
802.11ac(HT40) U-NII-1 High channel



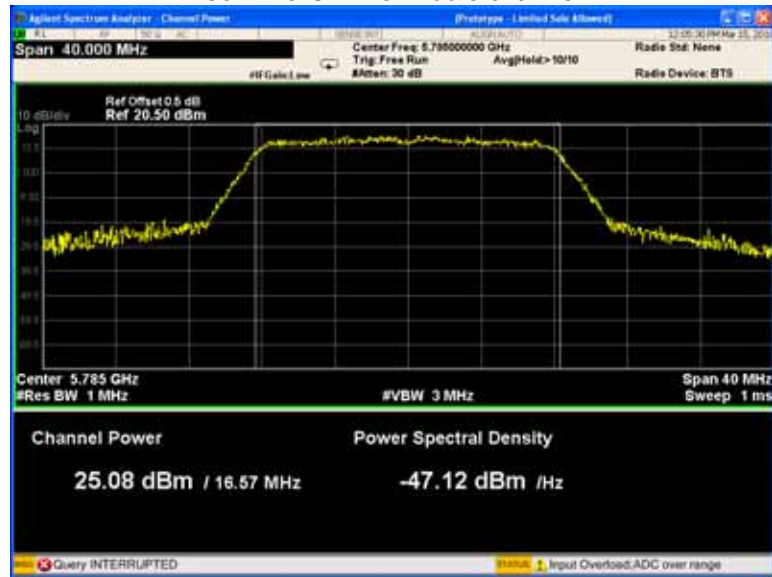
802.11ac(HT80) U-NII-1 Low channel



802.11a U-NII-3 Low channel



802.11a U-NII-3 Middle channel



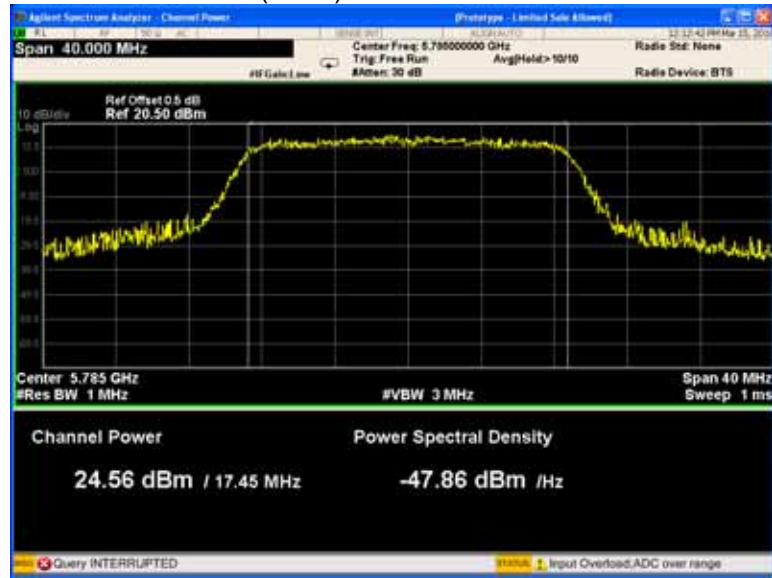
802.11a U-NII-3 High channel



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



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



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



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



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



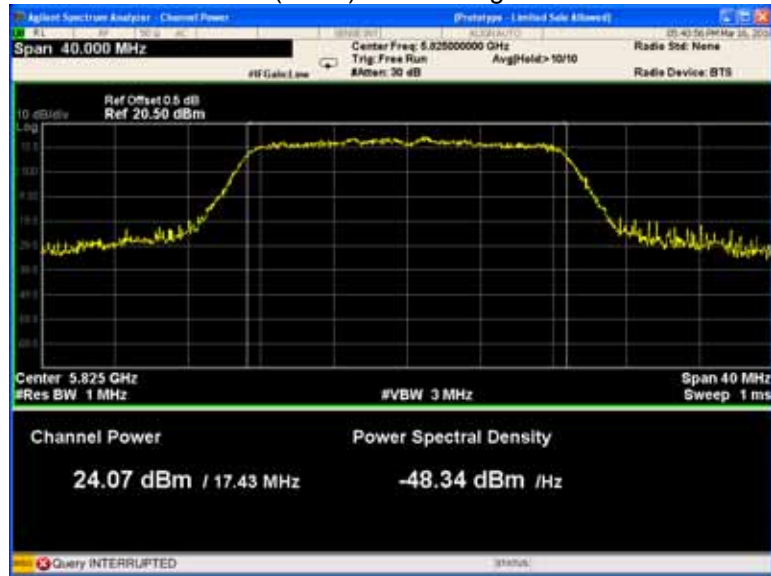
802.11ac(HT20) U-NII-3 Low channel



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



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



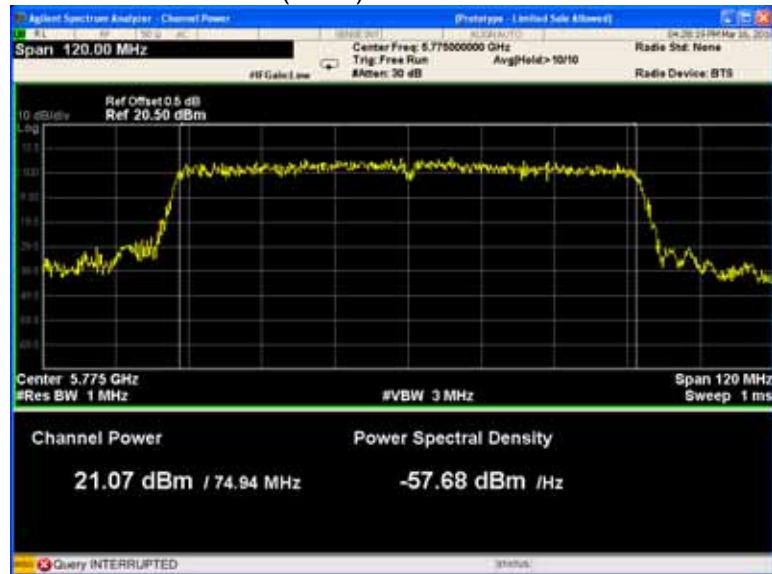
802.11ac(HT40) U-NII-3 Low channel



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



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



ANT4

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



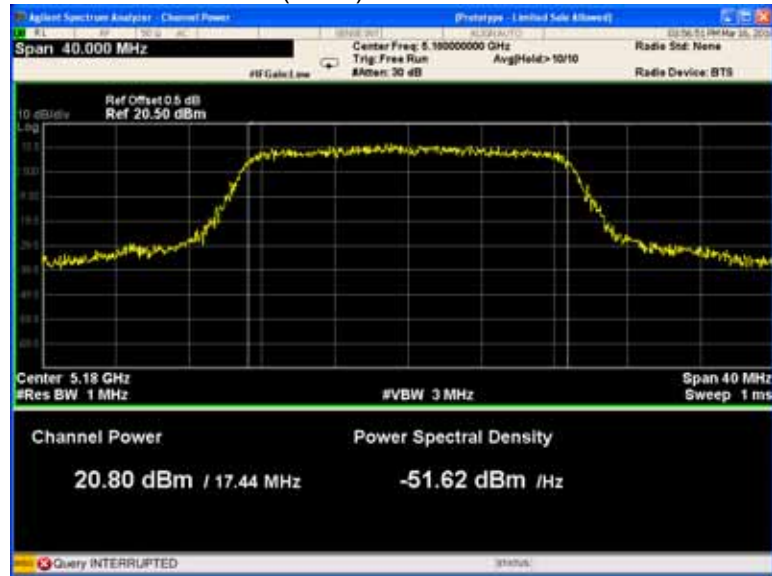
802.11n(HT40) U-NII-1 Low channel



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



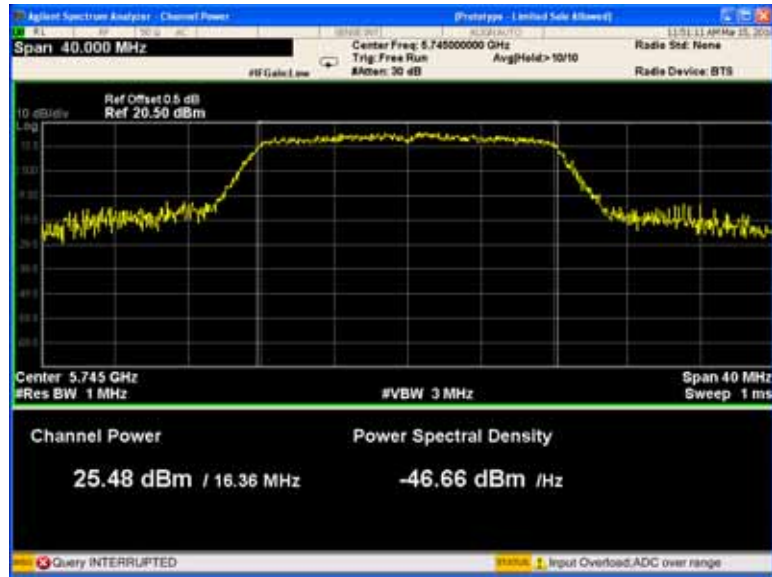
802.11ac(HT40) U-NII-1 High channel



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



802.11a U-NII-3 Low channel



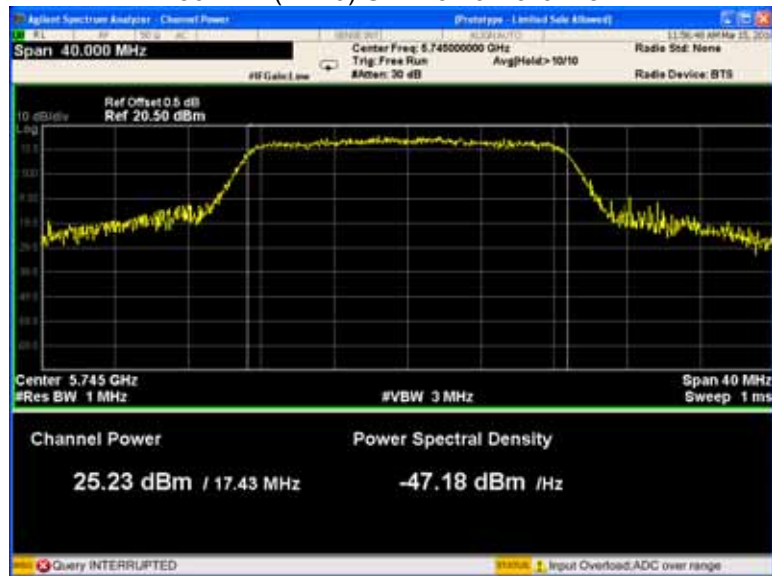
802.11a U-NII-3 Middle channel



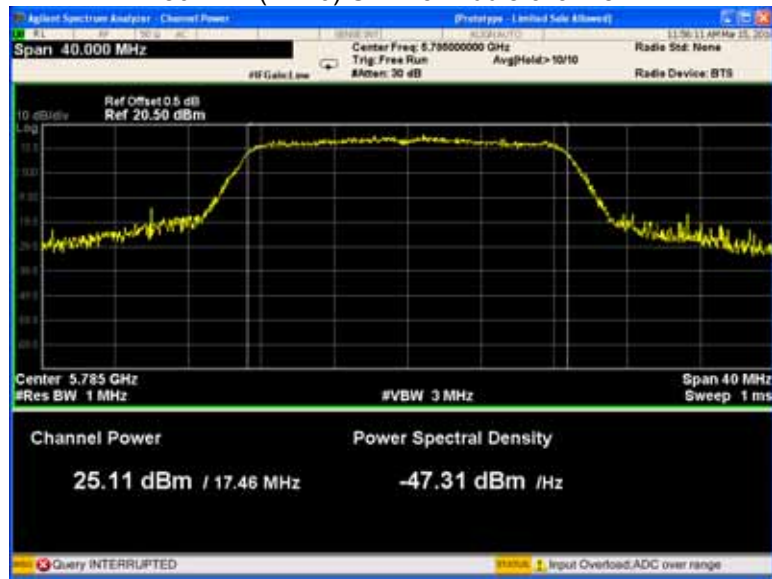
802.11a U-NII-3 High channel



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



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



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



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



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



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



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



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



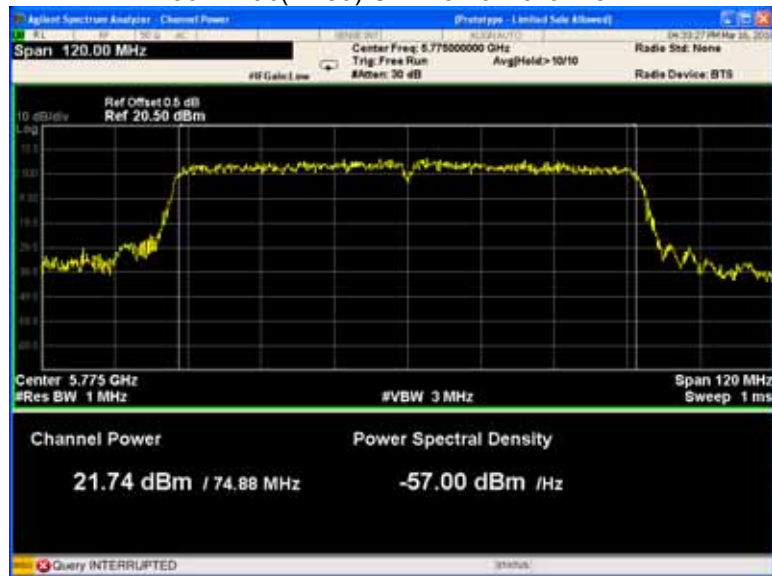
802.11ac(HT40) U-NII-3 Low channel



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



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



15 Power Spectral density

Test Requirement:	FCC CFR47 Part 15 Section 15.407(a) KDB662911 D01 Multiple Transmitter Output v02r01
Test Method:	KDB789033 D02 General UNII Test Procedures New Rules v01, Section F
Test Limit:	≤11.00dBm/MHz for Operation in the U-NII-1(5150MHz-5250MHz)of mobile device ≤30.00dBm/500KHz for Operation in the U-NII-3(5725MHz- 5850MHz)of device
Test Result:	PASS

15.1 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 3* RBW Sweep = auto; Detector Function = Peak. Trae = Max hold.
U-NII-3
RBW = 510KHz, VBW 3* RBW Sweep = auto; Detector Function = Peak. Trae = Max hold.
3. Allow the trae to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjaent channels. The limit is specified in one of the subparagraphs of this Section
Submit this plot.

15.2 Test Result:

Band	Operation mode	CH	Power Spectral Density (dBm/MHz)		
			ANT0	ANT1	Total
U-NII-1	802.11a	Low	10.651	9.923	9.23
		Middle	10.532	10.882	9.62
		High	10.591	10.788	10.36
	802.11n(HT20)	Low	10.268	9.677	10.27
		Middle	10.540	10.792	10.39
		High	10.392	10.332	10.54
	802.11n(HT40)	Low	10.668	10.086	10.52
		Middle	/	/	/
		High	10.714	10.690	10.61
	802.11ac(HT20)	Low	7.507	6.926	7.36
		Middle	7.347	6.656	7.54
		High	6.556	6.126	6.81
	802.11ac(HT40)	Low	10.269	10.004	10.28
		Middle	/	/	/
		High	10.258	10.825	10.57
	802.11ac(HT80)	Low	5.838	8.498	7.46
		Middle	/	/	/
		High	/	/	/
	Limit		≤11.00dBm/MHz		

Band	Operation mode	CH	Power Spectral Density (dBm/500KHz)		
			ANT0	ANT1	Total
U-NII-3	802.11a	Low	13.074	14.683	14.360
		Middle	12.914	13.181	13.524
		High	11.067	12.583	12.867
	802.11n(HT20)	Low	13.860	14.490	13.462
		Middle	13.683	13.734	13.643
		High	11.376	13.306	13.365
	802.11n(HT40)	Low	6.462	7.903	7.852
		Middle	/	/	/
		High	7.318	8.731	7.628
	802.11ac(HT20)	Low	11.808	13.020	13.286
		Middle	12.462	12.890	12.637
		High	11.868	11.723	11.621
	802.11ac(HT40)	Low	8.225	7.531	8.526
		Middle	/	/	/
		High	5.706	8.326	8.648
	802.11ac(HT80)	Low	4.550	3.926	4.563
		Middle	/	/	/
		High	/	/	/
Limit		≤30.00dBm/500KHz			

* All transmit signals are completely uncorrelated with each other, Directional gain = G_{ANT} which is less than 6dBi. So the limit does not be reduced.

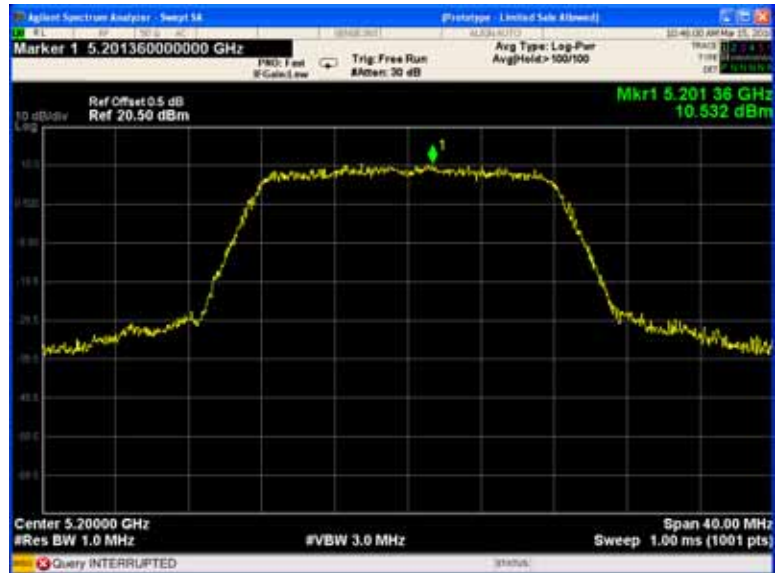
Test result plots shown as follows:

ANT3

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



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



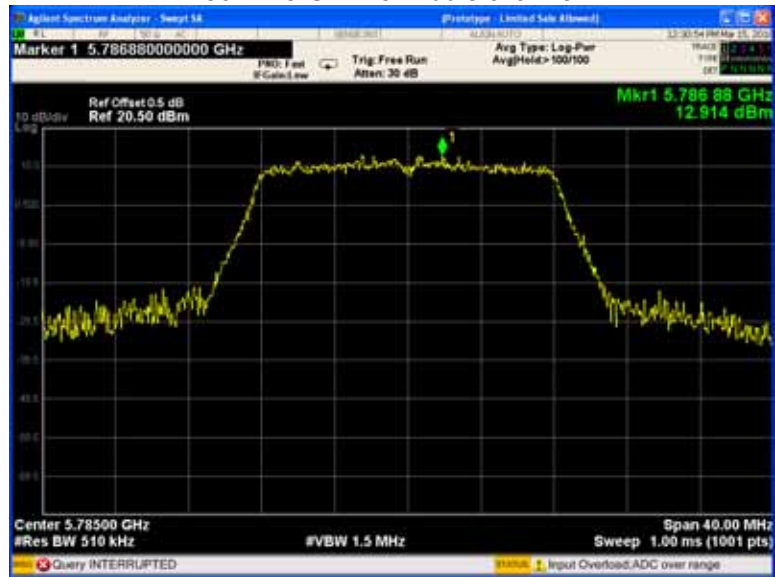
802.11ac(HT80) U-NII-1 Low channel



802.11a U-NII-3 Low channel



802.11a U-NII-3 Middle channel



802.11a U-NII-3 High channel



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



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



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



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



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



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



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

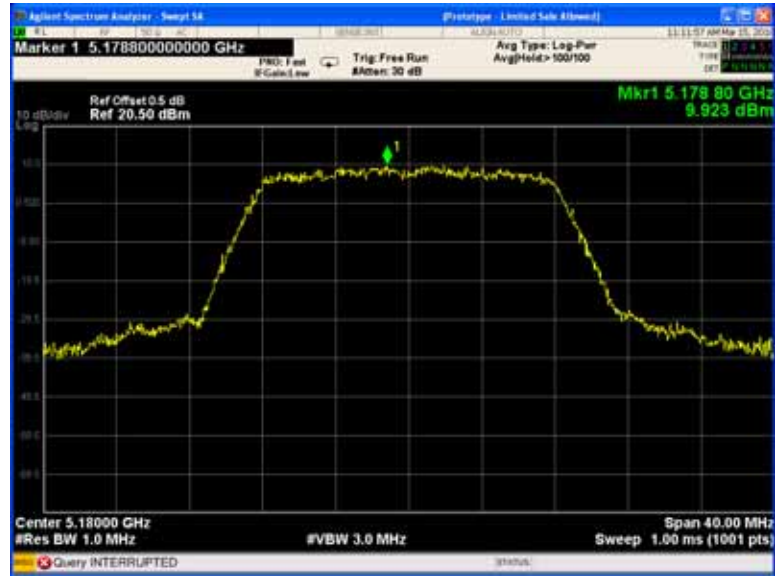


802.11ac(HT80) U-NII-3 Low channel



ANT 4

802.11a U-NII-1 Low channel



802.11a U-NII-1 Middle channel



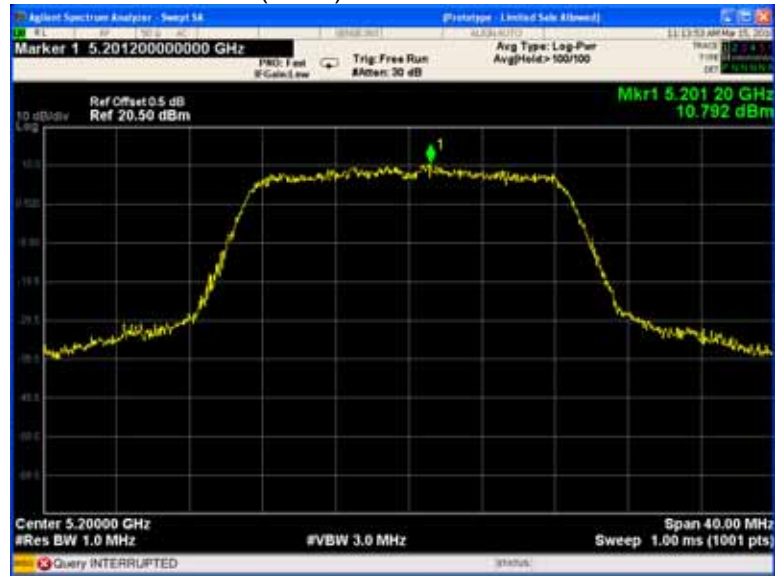
802.11a U-NII-1 High channel



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



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



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



802.11a U-NII-3 Low channel



802.11a U-NII-3 Middle channel



802.11a U-NII-3 High channel



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



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



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



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



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



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



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



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



16 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

16.1 Test Procedure:

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
EUT have transmitted absence of unmodulation signal and fixed channelise. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings. f_c is declaring of channel frequency. Then the frequency error formula is $(f_c - f) / f_c \times 10^6$ ppm and the limit is less than ± 20 ppm The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value.
2. Extreme temperature rule is 0°C~ 35°C.

16.2 Test Result:

U-NII-1 Test Frequency:5180MHz				
Temperature ()	Power Supply (VAC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	120	/	/	/
45		1829	2.1862	20
30		1829	2.1862	20
20		1827	2.1838	20
10		1830	2.1874	20
0		1826	2.1826	20
-10		1826	2.1826	20
-15		1818	2.1731	20
-30		/	/	/
20		108	1833	2.1910
20	132	1827	2.1838	20

U-NII-3 Test Frequency:5785MHz				
Temperature ()	Power Supply (VAC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	120	/	/	/
45		1909	2.2819	20
30		1903	2.2747	20
20		1906	2.2783	20
10		1899	2.2699	20
0		1912	2.2854	20
-10		1910	2.2831	20
-15		1897	2.2675	20
-30		/	/	/
20		108	1907	2.2795
20	132	1899	2.2699	20

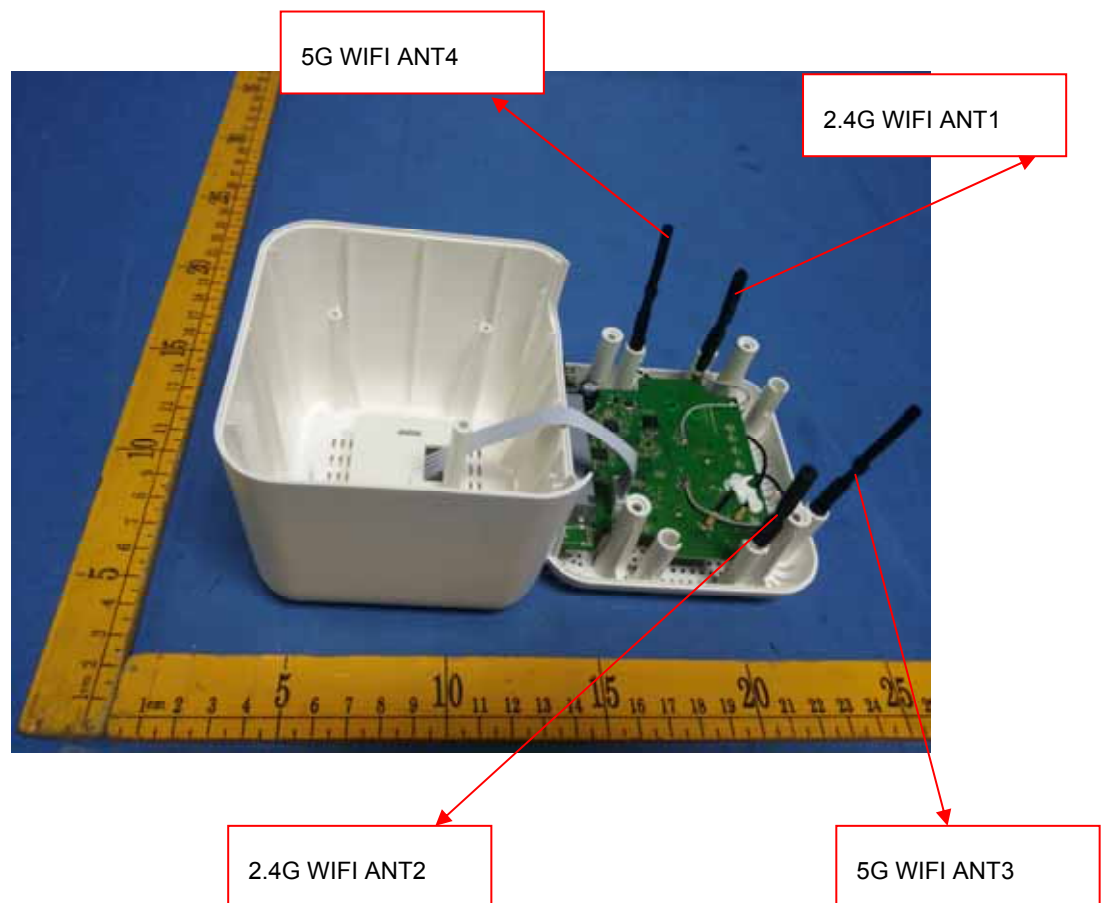
17 Antenna Requirement

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 two antennas that use a specified coupling to the intentional radiator. Antenna connectors complied with the requirement.

Result:

The EUT have four Integrated Antenna, meets the requirements of FCC 15.203.



18 SAR Evaluation

Please refer to SAR report.

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