



# FCC TEST REPORT

**Test report  
On Behalf of  
EPIC OPTIX, INC.  
For  
Aviation Head up display  
Model No.: EAGLE-1**

**FCC ID: 2ANM9-EAGLE1**

**Prepared for : EPIC OPTIX, INC.  
1419 Forest Drive Suite 201, Annapolis, MD. US. 21403**

**Prepared By : Shenzhen HUAK Testing Technology Co., Ltd.  
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District, Shenzhen City, China**

**Date of Test: Jun. 22, 2017 ~ Jun. 29, 2017  
Date of Report: Jun. 29, 2017  
Report Number: HK170622115-E**



## TEST RESULT CERTIFICATION

**Applicant's name** ..... : EPIC OPTIX, INC.

Address ..... : 1419 Forest Drive Suite 201, Annapolis, MD. US. 21403

**Manufacture's Name** ..... : EPIC AVIONICS. CO., LTD

Address ..... : 33-7, Eongmalli-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

### Product description

Trade Mark: Epic Eagle

Product name ..... : Aviation Head up display

Model and/or type reference : EAGLE-1

**Standards** ..... : FCC Rules and Regulations Part 15 Subpart C Section 15.407  
ANSI C63.10: 2013

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**Date of Test** .....

Date (s) of performance of tests ..... : Jun. 22, 2017 ~ Jun. 29, 2017

Date of Issue ..... : Jun. 29, 2017

Test Result ..... : **Pass**

Testing Engineer :

(Eric Xie)

Technical Manager :

(Dora Qin)

Authorized Signatory :

(Kait Chen)



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## 1. TEST SUMMARY

### 1.1 TEST PROCEDURES AND RESULTS

DESCRIPTION OF TEST	RESULT
CONDUCTED EMISSIONS TEST	COMPLIANT
RADIATED EMISSION TEST	COMPLIANT
BAND EDGE	COMPLIANT
FREQUENCY STABILITY	COMPLIANT
OCCUPIED BANDWIDTH MEASUREMENT	COMPLIANT
POWER SPECTRAL DENSITY	COMPLIANT
PEAK OUTPUT POWER	Reak
ANTENNA REQUIREMENT	COMPLIANT

### 1.2 TEST FACILITY

Test Firm : QTC Certification & Testing Co., Ltd.  
Certificated by FCC, Registration No.: 588523  
Address 2nd Floor, B1 Building, Fengyeyuan Industrial Plant, Liuxian 2st. Road,  
Xin'an Street, Bao'an District, Shenzhen, China

### 1.3 MEASUREMENT UNCERTAINTY

#### Measurement Uncertainty

Conducted Emission Expanded Uncertainty	= 2.23dB, k=2
Radiated emission expanded uncertainty(9kHz-30MHz)	= 3.08dB, k=2
Radiated emission expanded uncertainty(30MHz-1000MHz)	= 4.42dB, k=2
Radiated emission expanded uncertainty(Above 1GHz)	= 4.06dB, k=2



## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

Equipment	Aviation Head up display
Model Name	EAGLE-1
Serial No	N/A
Model Difference	N/A
FCC ID	2ANM9-EAGLE1
Antenna Type	Chip Antenna
Antenna Gain	1 dBi
Operation frequency	802.11a/n 20:5180~5240 MHz; 5745~5825 MHz 802.11n 40: 5190~5230 MHz; 5755 MHz -5795 MHz 802.11ac:5210 MHz ; 5775 MHz
Number of Channels	802.11a/n20: 5.2G:4CH; 5.8G: 5CH 802.11n 40: 5.2G:2CH; 5.8G: 2CH 802.11 ac: 5.2G:1CH; 5.8G: 1CH
Modulation Type	CCK/OFDM/DBPSK/DAPSK
Power Source	DC12V, 3A from adapter With AC 120V/60Hz
Power Rating	DC12V, 3A from adapter With AC 120V/60Hz

Note: EUT only support WIFI 5g BAND 1 and BAND 4 transmitter.



## 2.1.1 Carrier Frequency of Channels

<b>Channel List for 802.11 a/n 20 with 5.2G</b>							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	40	5200	44	5220	48	5240
/	/	/	/	/	/	/	/

<b>Channel List for 802.11 n 40 with 5.2G</b>							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	46	5230	/	/	/	/
/	/	/	/	/	/	/	/

<b>Channel List for 802.11 ac with 5.2G</b>							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	5210	/	/	/	/	/	/
/	/	/	/	/	/	/	/

<b>Channel List for 802.11 a/n 20 with 5.8G</b>							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
CH149	5745	CH157	5785	CH165	5825	/	/
CH153	5765	CH161	5805	/	/	/	/

<b>Channel List for 802.11 n 40 with 5.8G</b>							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
CH151	5755	CH159	5795	/	/	/	/
/	/	/	/	/	/	/	/

<b>Channel List for 802.11 ac with 5.8G</b>							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
CH155	5775	/	/	/	/	/	/
/	/	/	/	/	/	/	/

## Operation of EUT during testing

### Operating Mode

The mode is used: **Transmitting mode for 802.11 a/n 20 with 5.2G**

Low Channel: 5180MHz

Middle Channel: 5200MHz

High Channel: 5240MHz

### **Transmitting mode for 802.11 n 40 with 5.2G**

Low Channel: 5190MHz

High Channel: 5230MHz

### **Transmitting mode for 802.11 ac with 5.2G with 5.2G**

Low Channel: 5210MHz

### **Transmitting mode for 802.11 a/n 20 with 5.8G**

Low Channel: 5745MHz

Middle Channel: 5785MHz

High Channel: 5825MHz

### **Transmitting mode for 802.11 n 40 with 5.8G**

Low Channel: 5755MHz

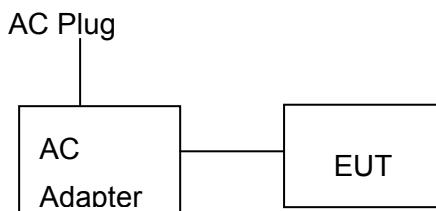
High Channel: 5795MHz

### **Transmitting mode for 802.11 ac with 5.2G with 5.8G**

Low Channel: 5775MHz

## 2.2 DESCRIPTION OF TEST SETUP

Operation of EUT during conducted testing and Radiation and Above1GHz Radiation testing:





### 2.3 MEASUREMENT INSTRUMENTS LIST

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Receiver	Rohde & Schwarz	ESCI	100627	Feb. 18, 2017	1 Year
2.	LISN	SchwarzBeck	NSLK 8126	8126377	Feb. 18, 2017	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Feb. 18, 2017	1 Year
4.	EMI Test Software ES-K1	Rohde & Schwarz	N/A	N/A	N/A	N/A
5.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Feb. 18, 2017	1 Year
6.	Trilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Feb. 18, 2017	1 Year
7.	Pre-amplifier	Compliance Direction	PAP-0203	22008	Feb. 18, 2017	1 Year
8.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
9.	EMI Receiver	Rohde & Schwarz	ESCI	100627	Feb. 18, 2017	1 Year
10.	LISN	SchwarzBeck	NSLK 8126	8126377	Feb. 18, 2017	1 Year
11.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Feb. 18, 2017	1 Year
12.	EMI Test Software ES-K1	Rohde & Schwarz	N/A	N/A	N/A	N/A
13.	EMI Receiver	Rohde & Schwarz	ESCI	100627	Feb. 18, 2017	1 Year
14.	EMI Receiver	Rohde & Schwarz	ESCI	100627	Feb. 18, 2017	1 Year
15.	LISN	SchwarzBeck	NSLK 8126	8126377	Feb. 18, 2017	1 Year
16.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Feb. 18, 2017	1 Year
17.	EMI Test Software ES-K1	Rohde & Schwarz	N/A	N/A	N/A	N/A
18.	Power Meter	R&S	NRVD	SEL0069	Feb. 18, 2017	1 Year
19.	Power Sensor	R&S	URV5-Z2	SEL0071	Feb. 18, 2017	1 Year
20.	Power Sensor	R&S	URV5-Z2	SEL0072	Feb. 18, 2017	1 Year
21.	Software EMC32	R&S	EMC32-S	SEL0082	N/A	N/A
22.	Log-periodic Antenna	Amplifier Reasearch	AAviation Head up display80	SEL0073	N/A	N/A
23.	Antenna Tripod	Amplifier Reasearch	TP1000A	SEL0074	N/A	N/A
24.	High Gain Horn Antenna	Amplifier Reasearch	AT4002A	SEL0075	N/A	N/A
25.	Spectrum analyzer	Agilent	N9020A	MY499110 048	Feb. 18, 2017	1 Year
26.	Spectrum analyzer	Agilent	E4407B	MY461843 26	Feb. 18, 2017	1 Year

### 3. CONDUCTED EMISSIONS TEST

#### 3.1 Conducted Power Line Emission Limit

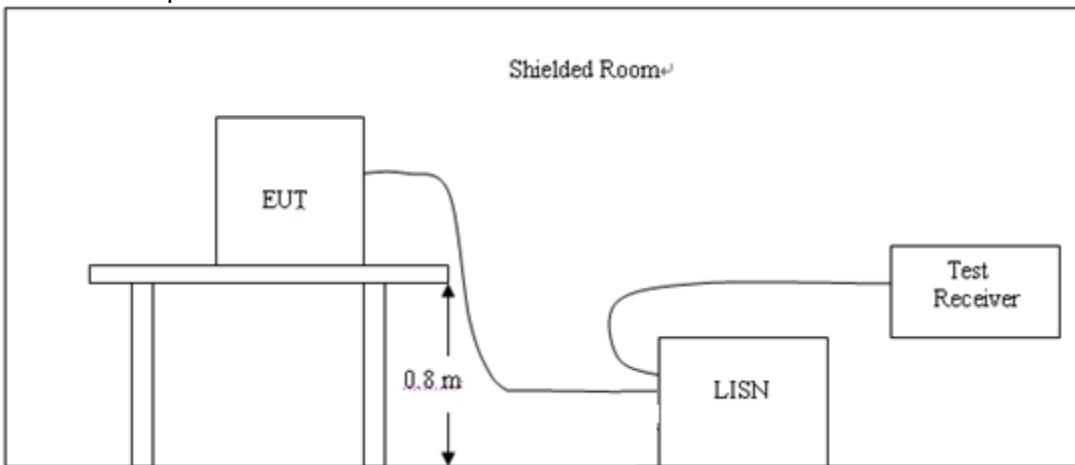
For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following

Frequency (MHz)	Maximum RF Line Voltage (dB $\mu$ V)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

\* Decreasing linearly with the logarithm of the frequency

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

#### 3.2 Test Setup



#### 3.3 Test Procedure

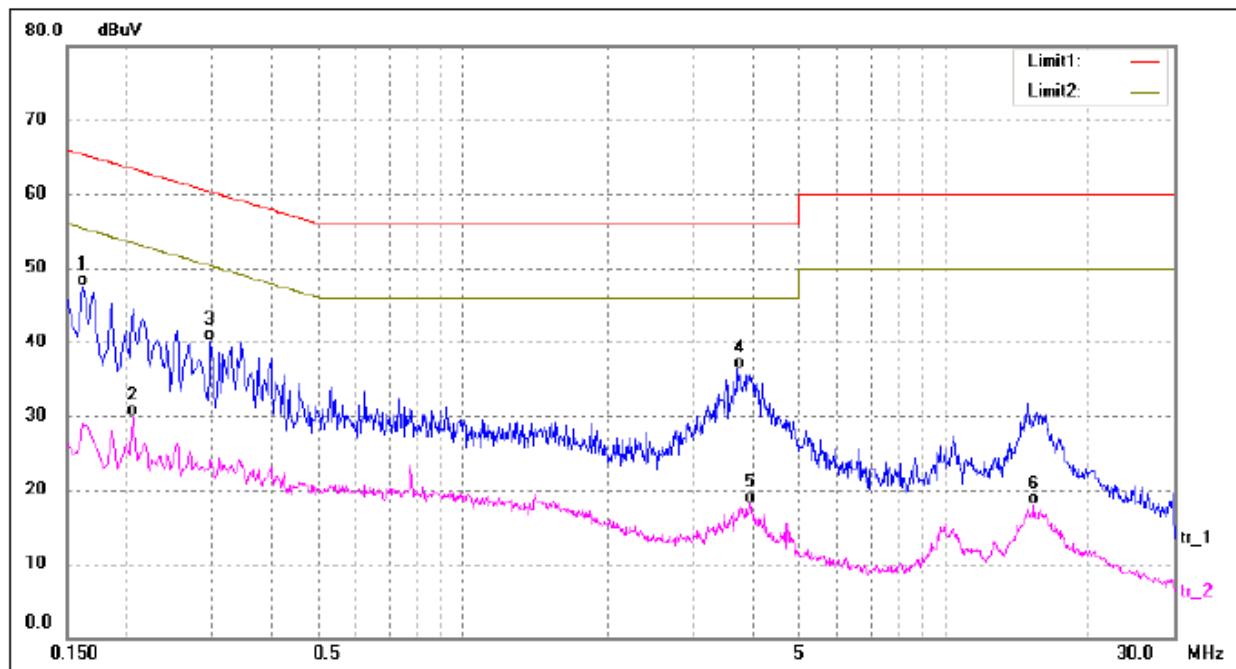
- 1, The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10.
- 2, Support equipment, if needed, was placed as per ANSI C63.10.
- 3, All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4, If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5, All support equipments received AC power from a second LISN, if any.
- 6, The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7, Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.

#### 3.4 Test Result

PASS

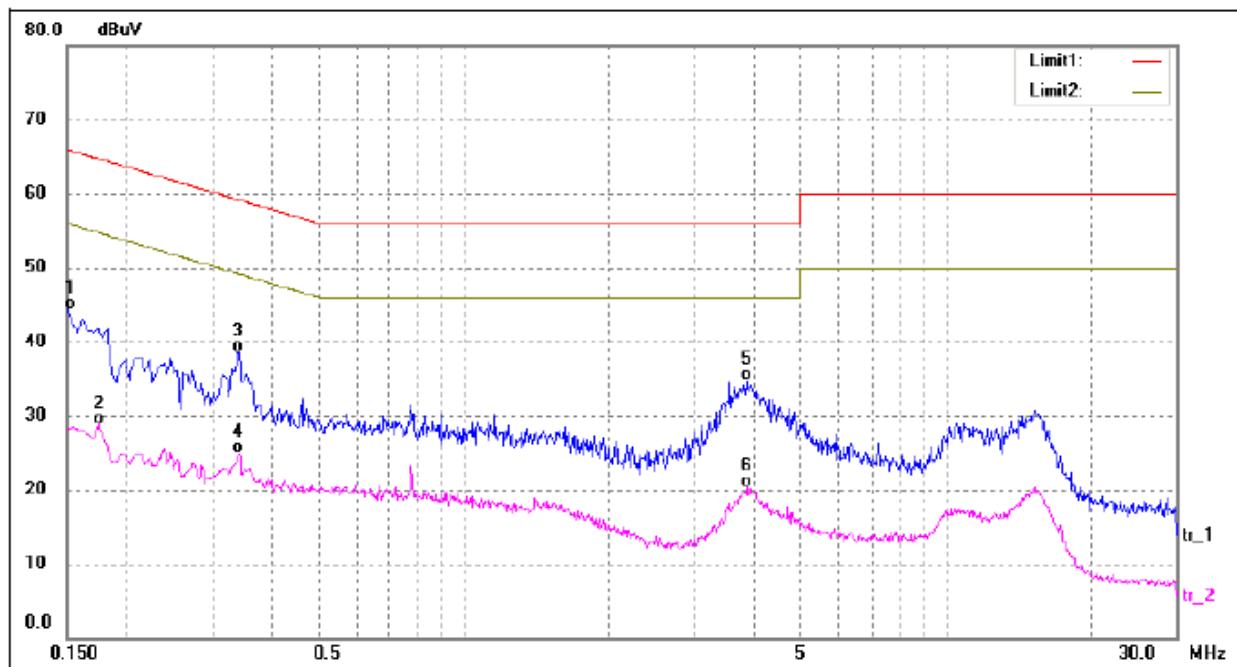
All the test modes completed for test.

N



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1620	37.60	9.84	47.44	65.36	-17.92	QP
2	0.2060	20.13	9.80	29.93	53.37	-23.44	AVG
3	0.2980	30.22	9.80	40.02	60.30	-20.28	QP
4	3.7100	26.71	9.69	36.40	56.00	-19.60	QP
5	3.9500	8.35	9.69	18.04	46.00	-27.96	AVG
6	15.3740	8.24	9.62	17.86	50.00	-32.14	AVG

L



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	34.55	9.85	44.40	66.00	-21.60	QP
2	0.1740	18.97	9.83	28.80	54.77	-25.97	AVG
3*	0.3380	28.78	9.80	38.58	59.25	-20.67	QP
4	0.3420	15.09	9.80	24.89	49.15	-24.26	AVG
5	3.8420	24.93	9.69	34.62	56.00	-21.38	QP
6	3.8740	10.68	9.69	20.37	46.00	-25.63	AVG

## 4 RADIATED EMISSION TEST

### 4.1 Radiation Limit

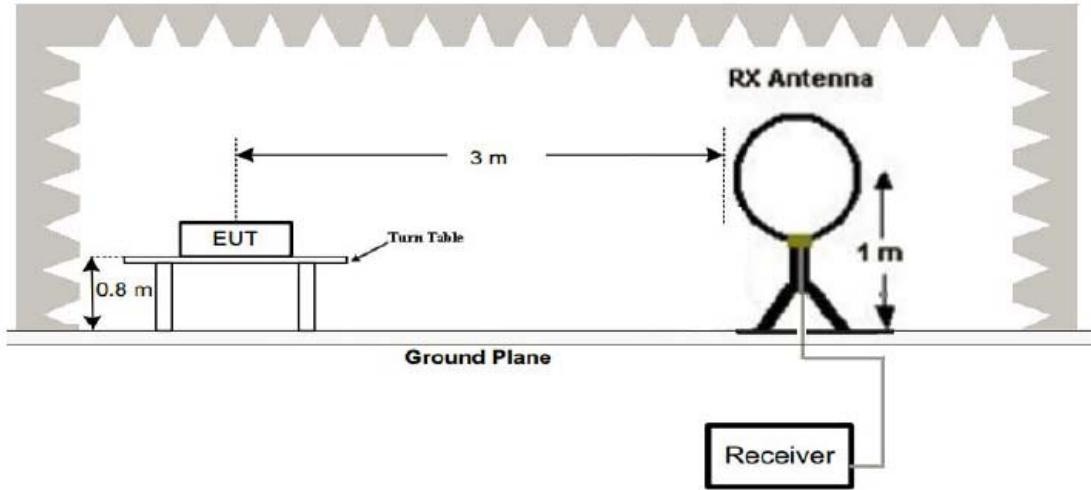
For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency (MHz)	Distance (Meters)	Radiated (dB $\mu$ V/m)	Radiated ( $\mu$ V/m)
30-88	3	40	100
88-216	3	43.5	150
216-960	3	46	200
Above 960	3	54	500

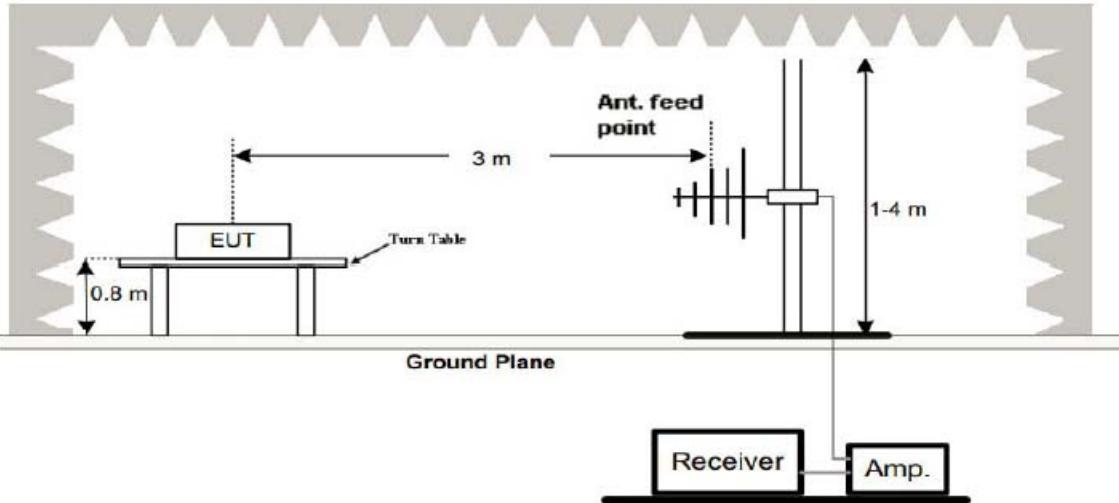
For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

### 4.2 Test Setup

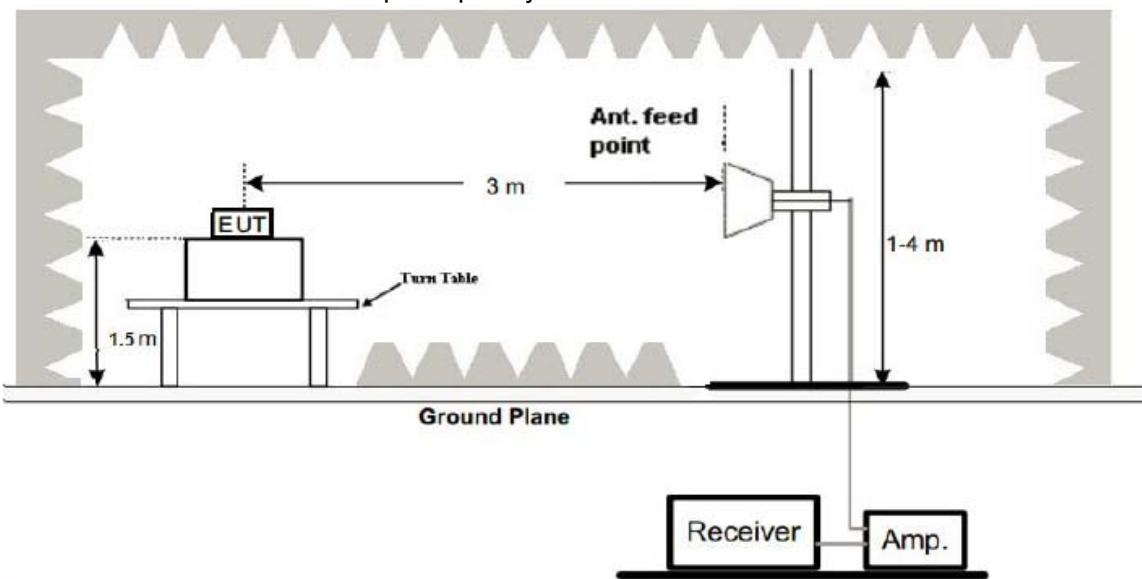
#### (1) Radiated Emission Test-Up Frequency Below 30MHz



#### (2) Radiated Emission Test-Up Frequency 30MHz~1GHz



## (3) Radiated Emission Test-Up Frequency Above 1GHz



## 4.3 Test Procedure

1. Below 1GHz measurement the EUT is placed on turntable which is 0.8m above ground plane. And above 1GHz measurement EUT was placed on low permittivity and low tangent turn table which is 1.5m above ground plane.
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 varied from 1m to 4m to find out the highest 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 test frequency range from 9KHz to 25GHz per FCC PART 15.33(a).

## Note:

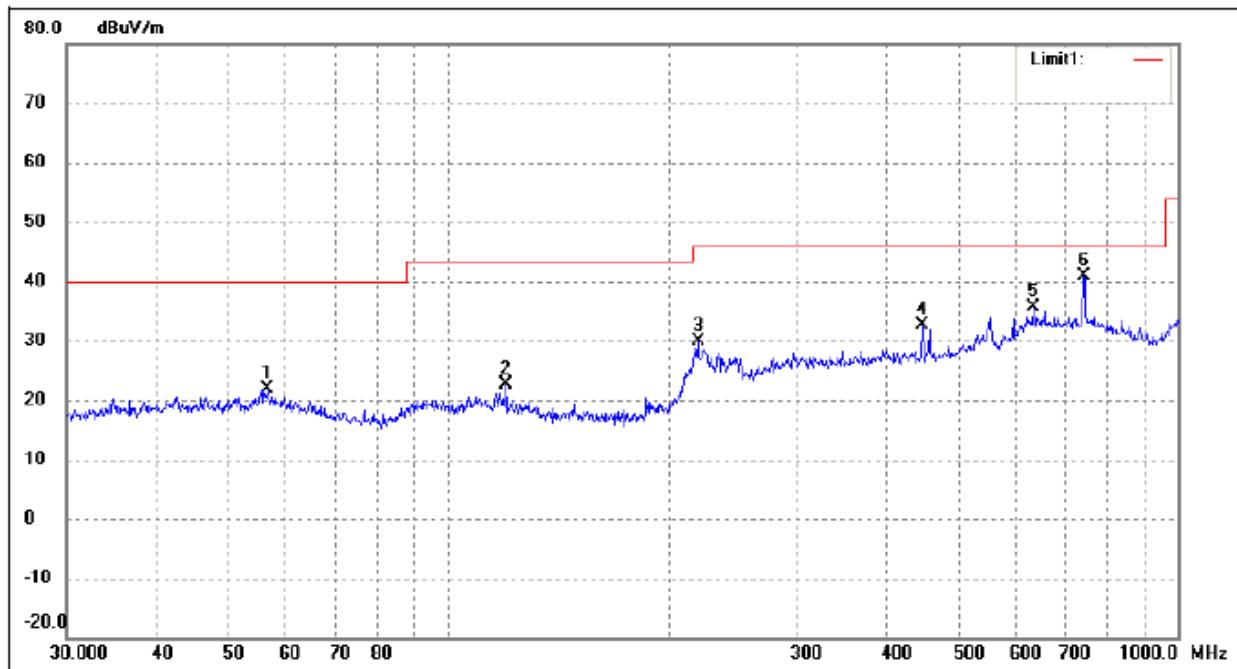
For battery operated equipment, the equipment tests shall be performed using a new battery.

## 4.4 Test Result

PASS

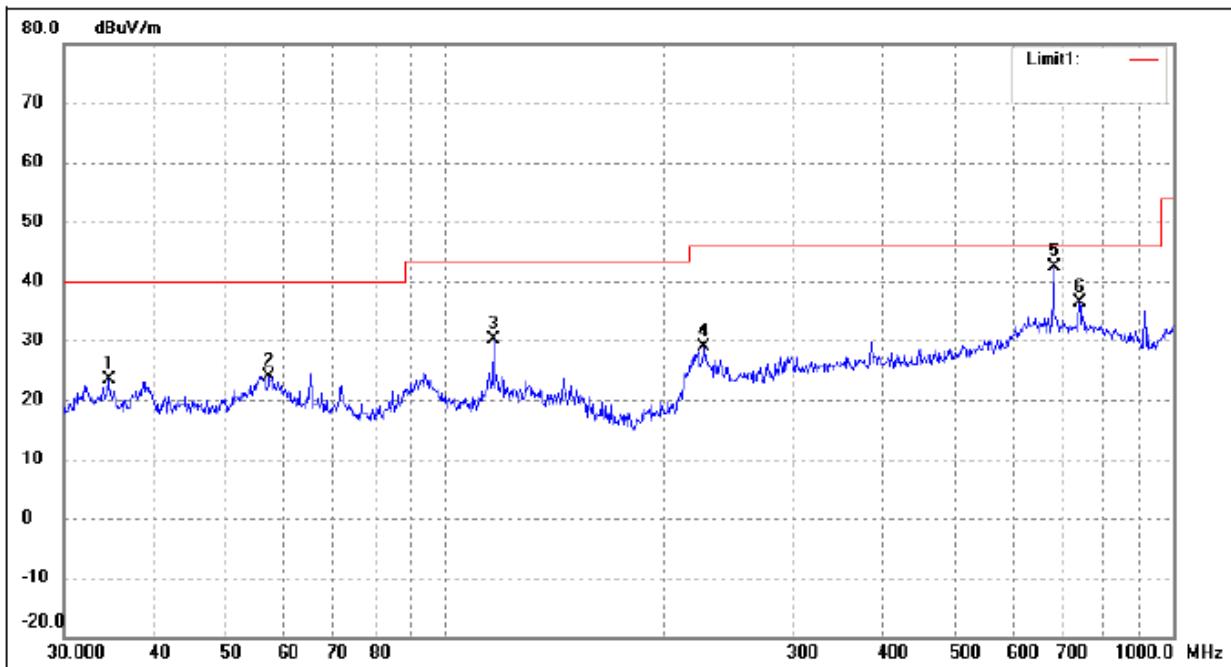
All the test modes completed for test. The worst case of Radiated Emission; the test data of this mode was reported.

Below 1GHz Test Results:  
Antenna polarity: H



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	56.5929	16.78	5.01	21.79	40.00	-18.21	157	100	ERP
2	119.8556	17.90	4.82	22.72	43.50	-20.78	111	100	ERP
3	219.8449	22.13	7.64	29.77	46.00	-16.23	148	100	ERP
4	446.4141	19.85	12.67	32.52	46.00	-13.48	98	100	ERP
5	633.9073	17.83	17.86	35.69	46.00	-10.31	251	100	ERP
6	742.2587	21.92	18.93	40.85	46.00	-5.15	157	100	ERP

Antenna polarity: V



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( )	Height (cm)	Remark
1	34.5173	19.23	4.11	23.34	40.00	-16.66	351	100	ERP
2	57.3923	18.98	4.99	23.97	40.00	-16.03	169	100	ERP
3	116.5401	25.22	4.83	30.05	43.50	-13.45	53	100	ERP
4	226.8936	20.68	8.10	28.78	46.00	-17.22	339	100	ERP
5	684.7454	23.97	18.33	42.30	46.00	-3.70	359	100	ERP
6	742.2587	17.33	18.93	36.26	46.00	-9.74	260	100	ERP

Remark:

- (1) Measuring frequencies from 9 KHz to the 1 GHz, Radiated emission test from 9KHz to 30MHz was verified, and no any emission was found except system noise floor.
- (2) \* denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (3) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.



## Above 1 GHz Test Results:

LOW CH 36 (802.11 a Mode with 5.2G)/5180

Horizontal:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3647	62.32	-4.59	57.73	74	-16.27	peak
3647	47.93	-4.59	43.34	54	-10.66	AVG
10360	50.38	3.74	54.12	74	-19.88	peak
10360	36.77	3.74	40.51	54	-13.49	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3647	61.01	-4.59	56.42	74	-17.58	peak
3647	47.57	-4.59	42.98	54	-11.02	AVG
10360	51.81	3.74	55.55	74	-18.45	peak
10360	38.35	3.74	42.09	54	-11.91	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



MID CH40 (802.11 a Mode with 5.2G)/5200

Horizontal:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3647	59.07	-4.59	54.48	74	-19.52	peak
3647	45.02	-4.59	40.43	54	-13.57	Avg
10400	51.70	3.74	55.44	74	-18.56	peak
10400	38.17	3.74	41.91	54	-12.09	Avg
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3647	61.64	-4.59	57.05	74	-16.95	peak
3647	47.09	-4.59	42.5	54	-11.5	Avg
10400	50.89	3.74	54.63	74	-19.37	peak
10400	36.48	3.74	40.22	54	-13.78	Avg
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



## HIGH CH 48 (802.11a Mode with 5.2G)/5240

Horizontal:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3647	59.45	-4.59	54.86	74	-19.14	peak
3647	45.31	-4.59	40.72	54	-13.28	AVG
10480	53.60	3.75	57.35	74	-16.65	peak
10480	39.58	3.75	43.33	54	-10.67	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3647	60.98	-4.59	56.39	74	-17.61	peak
3647	47.29	-4.59	42.7	54	-11.3	AVG
10480	53.83	3.75	57.58	74	-16.42	peak
10480	38.94	3.75	42.69	54	-11.31	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Remark:

- (1) Measuring frequencies from 1 GHz to the 25 GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (3) \* denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dB $\mu$ V/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dB $\mu$ V/m(PK Value) <54 dB $\mu$ V/m(AV Limit), the Average Detected not need to completed.



LOW CH 36 (802.11 n20 Mode with 5.2G)/5180

Horizontal:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3054	61.84	-4.79	57.05	74	-16.95	peak
3054	47.57	-4.79	42.78	54	-11.22	AVG
10360	50.69	3.74	54.43	74	-19.57	peak
10360	36.42	3.74	40.16	54	-13.84	AVG
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3054	61.53	-4.79	56.74	74	-17.26	peak
3054	47.81	-4.79	43.02	54	-10.98	AVG
10360	50.74	3.74	54.48	74	-19.52	peak
10360	37.10	3.74	40.84	54	-13.16	AVG
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



MID CH40 (802.11 n20 Mode with 5.2G)/5200

Horizontal:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3054	59.07	-4.79	54.28	74	-19.72	peak
3054	44.26	-4.79	39.47	54	-14.53	Avg
10400	53.74	3.74	57.48	74	-16.52	peak
10400	40.09	3.74	43.83	54	-10.17	Avg
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3054	61.05	-4.79	56.26	74	-17.74	peak
3054	47.87	-4.79	43.08	54	-10.92	Avg
10400	52.49	3.74	56.23	74	-17.77	peak
10400	38.67	3.74	42.41	54	-11.59	Avg
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



## HIGH CH 48 (802.11 n20 Mode with 5.2G)/5240

Horizontal:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3054	61.53	-4.79	56.74	74	-17.26	peak
3054	46.86	-4.79	42.07	54	-11.93	AVG
10480	53.26	3.75	57.01	74	-16.99	peak
10480	39.43	3.75	43.18	54	-10.82	AVG
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3054	60.16	-4.79	55.37	74	-18.63	peak
3054	46.68	-4.79	41.89	54	-12.11	AVG
10480	50.64	3.75	54.39	74	-19.61	peak
10480	37.06	3.75	40.81	54	-13.19	AVG
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Remark:

- (1) Measuring frequencies from 1 GHz to the 25 GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (3) \* denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dB $\mu$ V/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dB $\mu$ V/m(PK Value) <54 dB $\mu$ V/m(AV Limit), the Average Detected not need to completed.



## LOW CH38 (802.11n40 Mode with 5.2G)/5190

Horizontal:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3432	59.34	-5.21	54.13	74	-19.87	peak
3432	45.81	-5.21	40.6	54	-13.4	AVG
10380	50.69	3.74	54.43	74	-19.57	peak
10380	35.80	3.74	39.54	54	-14.46	AVG
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3432	61.54	-5.21	56.33	74	-17.67	peak
3432	48.32	-5.21	43.11	54	-10.89	AVG
10380	50.32	3.74	54.06	74	-19.94	peak
10380	35.56	3.74	39.3	54	-14.7	AVG
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



## HIGH CH46 (802.11n40 Mode with 5.2G)/5230

Horizontal:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3432	59.75	-5.21	54.54	74	-19.46	peak
3432	45.36	-5.21	40.15	54	-13.85	AVG
10460	51.88	3.75	55.63	74	-18.37	peak
10460	38.39	3.75	42.14	54	-11.86	AVG
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3432	62.22	-5.21	57.01	74	-16.99	peak
3432	49.14	-5.21	43.93	54	-10.07	AVG
10460	50.37	3.75	54.12	74	-19.88	peak
10460	35.62	3.75	39.37	54	-14.63	AVG
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Remark:

- (1) Measuring frequencies from 1 GHz to the 25 GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (3) \* denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dB $\mu$ V/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dB $\mu$ V/m(PK Value) <54 dB $\mu$ V/m(AV Limit), the Average Detected not need to completed.



## LOW CH 42 (802.11ac Mode with 5.2G)/5210

Horizontal:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
2921	63.32	-6.18	57.14	74	-16.86	peak
2921	48.86	-6.18	42.68	54	-11.32	AVG
10420	54.02	3.75	57.77	74	-16.23	peak
10420	40.40	3.75	44.15	54	-9.85	AVG
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
2921	63.90	-6.18	57.72	74	-16.28	peak
2921	50.44	-6.18	44.26	54	-9.74	AVG
10420	51.00	3.75	54.75	74	-19.25	peak
10420	36.27	3.75	40.02	54	-13.98	AVG
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Remark:

- (1) Measuring frequencies from 1 GHz to the 25 GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (3) \* denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dB $\mu$ V/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dB $\mu$ V/m(PK Value) <54 dB $\mu$ V/m(AV Limit), the Average Detected not need to completed.



## LOW CH 149 (802.11 a Mode with 5.8G)/5745

Horizontal:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3647	58.96	-4.59	54.37	74	-19.63	peak
3647	44.55	-4.59	39.96	54	-14.04	AVG
11490	52.34	4.21	56.55	74	-17.45	peak
11490	37.77	4.21	41.98	54	-12.02	AVG
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3647	59.48	-4.59	54.89	74	-19.11	peak
3647	44.95	-4.59	40.36	54	-13.64	AVG
11490	51.66	4.21	55.87	74	-18.13	peak
11490	38.13	4.21	42.34	54	-11.66	AVG
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



## MID CH157 (802.11 a Mode with 5.8G)/5785

Horizontal:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3647	61.93	-4.59	57.34	74	-16.66	peak
3647	47.90	-4.59	43.31	54	-10.69	Avg
11570	50.58	4.21	54.79	74	-19.21	peak
11570	35.82	4.21	40.03	54	-13.97	Avg
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3647	61.05	-4.59	56.46	74	-17.54	peak
3647	46.92	-4.59	42.33	54	-11.67	Avg
11570	53.57	4.21	57.78	74	-16.22	peak
11570	39.00	4.21	43.21	54	-10.79	Avg
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



## HIGH CH 165 (802.11a Mode with 5.8G)/5825

Horizontal:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3647	60.34	-4.59	55.75	74	-18.25	peak
3647	46.90	-4.59	42.31	54	-11.69	AVG
11650	49.42	4.84	54.26	74	-19.74	peak
11650	35.08	4.84	39.92	54	-14.08	AVG
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3647	59.78	-4.59	55.19	74	-18.81	peak
3647	45.77	-4.59	41.18	54	-12.82	AVG
11650	51.43	4.84	56.27	74	-17.73	peak
11650	36.60	4.84	41.44	54	-12.56	AVG
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Remark:

- (1) Measuring frequencies from 1 GHz to the 25 GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (3) \* denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dB $\mu$ V/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dB $\mu$ V/m(PK Value) <54 dB $\mu$ V/m(AV Limit), the Average Detected not need to completed.



## LOW CH 149 (802.11 n20 Mode with 5.8G)/5745

Horizontal:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3054	59.21	-4.79	54.42	74	-19.58	peak
3054	45.54	-4.79	40.75	54	-13.25	AVG
11490	51.03	4.21	55.24	74	-18.76	peak
11490	36.99	4.21	41.2	54	-12.8	AVG
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3054	60.18	-4.79	55.39	74	-18.61	peak
3054	47.00	-4.79	42.21	54	-11.79	AVG
11490	51.40	4.21	55.61	74	-18.39	peak
11490	36.51	4.21	40.72	54	-13.28	AVG
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



MID CH157 (802.11 n20 Mode with 5.8G)/5785

Horizontal:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3054	59.91	-4.79	55.12	74	-18.88	peak
3054	45.67	-4.79	40.88	54	-13.12	Avg
11570	52.23	4.21	56.44	74	-17.56	peak
11570	39.00	4.21	43.21	54	-10.79	Avg
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3054	60.43	-4.79	55.64	74	-18.36	peak
3054	47.30	-4.79	42.51	54	-11.49	Avg
11570	49.88	4.21	54.09	74	-19.91	peak
11570	36.52	4.21	40.73	54	-13.27	Avg
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



## HIGH CH 165 (802.11 n20 Mode with 5.8G)/5825

Horizontal:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3054	62.46	-4.79	57.67	74	-16.33	peak
3054	48.43	-4.79	43.64	54	-10.36	Avg
11650	51.41	4.84	56.25	74	-17.75	peak
11650	37.12	4.84	41.96	54	-12.04	Avg
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3054	59.14	-4.79	54.35	74	-19.65	peak
3054	46.07	-4.79	41.28	54	-12.72	Avg
11650	50.01	4.84	54.85	74	-19.15	peak
11650	36.95	4.84	41.79	54	-12.21	Avg
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Remark:

- (1) Measuring frequencies from 1 GHz to the 25 GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (3) \* denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dB $\mu$ V/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dB $\mu$ V/m(PK Value) <54 dB $\mu$ V/m(AV Limit), the Average Detected not need to completed.



## LOW CH151 (802.11n40 Mode with 5.8G)/5755

Horizontal:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3432	62.05	-5.21	56.84	74	-17.16	peak
3432	48.19	-5.21	42.98	54	-11.02	AVG
11510	52.81	4.21	57.02	74	-16.98	peak
11510	39.34	4.21	43.55	54	-10.45	AVG
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3432	60.56	-5.21	55.35	74	-18.65	peak
3432	46.13	-5.21	40.92	54	-13.08	AVG
11510	50.83	4.21	55.04	74	-18.96	peak
11510	37.67	4.21	41.88	54	-12.12	AVG
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



## HIGH CH159 (802.11n40 Mode with 5.8G)/5795

Horizontal:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3432	60.58	-5.21	55.37	74	-18.63	peak
3432	46.87	-5.21	41.66	54	-12.34	AVG
11590	50.91	4.21	55.12	74	-18.88	peak
11590	37.87	4.21	42.08	54	-11.92	AVG
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3432	62.34	-5.21	57.13	74	-16.87	peak
3432	49.08	-5.21	43.87	54	-10.13	AVG
11590	52.26	4.21	56.47	74	-17.53	peak
11590	38.98	4.21	43.19	54	-10.81	AVG
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Remark:

- (1) Measuring frequencies from 1 GHz to the 25 GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (3) \* denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dB $\mu$ V/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dB $\mu$ V/m(PK Value) <54 dB $\mu$ V/m(AV Limit), the Average Detected not need to completed.



## LOW CH 155 (802.11ac Mode with 5.8G)/5775

Horizontal:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3872	61.15	-4.36	56.79	74	-17.21	peak
3872	47.10	-4.36	42.74	54	-11.26	AVG
11550	52.91	3.75	56.66	74	-17.34	peak
11550	38.78	3.75	42.53	54	-11.47	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
3872	58.69	-4.36	54.33	74	-19.67	peak
3872	43.97	-4.36	39.61	54	-14.39	AVG
11550	50.32	4.21	54.53	74	-19.47	peak
11550	35.51	4.21	39.72	54	-14.28	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Remark:

- (1) Measuring frequencies from 1 GHz to the 25 GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (3) \* denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dB $\mu$ V/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dB $\mu$ V/m(PK Value) <54 dB $\mu$ V/m(AV Limit), the Average Detected not need to completed.



## 5 BAND EDGE

### 5.1 Limits

FCC PART 15.247 Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

Except as shown in paragraph (7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

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 5.25-5.35 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.
3. For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
4. 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.
5. The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.
6. Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.
7. The provisions of §15.205 apply to intentional radiators operating under this section.
8. When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits

### 5.2 Test Procedure

The band edge compliance of RF radiated emission should be measured by following the guidance in ANSI C63.10 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW to 100KHz and VBM to 300KHz to measure the peak field strength and set RBW to 1MHz and VBW to 10Hz to measure the average radiated field strength. The conducted RF band edge was measured by using a spectrum analyzer. Set span wide enough to capture the highest in-band emission and the emission at the band edge. Set RBW to 100 KHz and VBW to 300 KHz, to measure the conducted peak band edge.

### 5.3 Test Result

**PASS.**



Radiated Band Edge Test:  
Operation Mode: 802.11a Mode with 5.2G TX CH Low  
Horizontal

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5150	51.17	-2.49	48.68	74	-25.32	peak
5150	/	-2.49	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5150	51.82	-2.49	49.33	74	-24.67	peak
5150	/	-2.49	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: TX CH High with 5.2G  
Horizontal

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5250	53.52	-2.28	51.24	74	-22.76	peak
5250	/	-2.28	/	54	/	AVG
5350	47.13	-2.11	45.02	74	-28.98	peak
5350	/	-2.11	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5250	53.15	-2.28	50.87	74	-23.13	peak
5250	/	-2.28	/	54	/	AVG
5350	48.92	-2.11	46.81	74	-27.19	peak
5350	/	-2.11	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: 802.11n20 Mode with 5.2G TX CH Low  
Horizontal

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5150	51.26	-2.49	48.77	74	-25.23	peak
5150	/	-2.49	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5150	50.77	-2.49	48.28	74	-25.72	peak
5150	/	-2.49	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: TX CH High with 5.2G  
Horizontal

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5250	51.41	-2.28	49.13	74	-24.87	peak
5250	/	-2.28	/	54	/	AVG
5350	50.36	-2.11	48.25	74	-25.75	peak
5350	/	-2.11	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5250	51.66	-2.28	49.38	74	-24.62	peak
5250	/	-2.28	/	54	/	AVG
5350	48.16	-2.11	46.05	74	-27.95	peak
5350	/	-2.11	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: 802.11 n40 Mode with 5.2G TX CH Low  
Horizontal

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5150	52.05	-2.49	49.56	74	-24.44	peak
5150	/	-2.49	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5150	52.66	-2.49	50.17	74	-23.83	peak
5150	/	-2.49	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: TX CH High with 5.2G  
Horizontal

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5250	51.47	-2.28	49.19	74	-24.81	peak
5250	/	-2.28	/	54	/	AVG
5350	49.39	-2.11	47.28	74	-26.72	peak
5350	/	-2.11	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5250	51.86	-2.28	49.58	74	-24.42	peak
5250	/	-2.28	/	54	/	AVG
5350	48.93	-2.11	46.82	74	-27.18	peak
5350	/	-2.11	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: 802.11ac Mode with 5.2G TX CH Low Horizontal

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5150	51.93	-2.49	49.44	74	-24.56	peak
5150	/	-2.49	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5150	52.38	-2.49	49.89	74	-24.11	peak
5150	/	-2.49	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: TX CH High with 5.2G  
Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB $\mu$ V)	(dB)	(dB $\mu$ V/m)	(dB $\mu$ V/m)	(dB)	
5250	51.59	-2.28	49.31	74	-24.69	peak
5250	/	-2.28	/	54	/	AVG
5350	48.24	-2.11	46.13	74	-27.87	peak
5350	/	-2.11	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB $\mu$ V)	(dB)	(dB $\mu$ V/m)	(dB $\mu$ V/m)	(dB)	
5250	54.11	-2.28	51.83	74	-22.17	peak
5250	/	-2.28	/	54	/	AVG
5350	49.34	-2.11	47.23	74	-26.77	peak
5350	/	-2.11	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: 802.11a Mode with 5.8G TX CH Low  
Horizontal

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5460	54.38	-2.06	52.32	74	-21.68	peak
5460	/	-2.06	/	54	/	AVG
5725	49.31	-1.96	47.35	74	-26.65	peak
5725	/	-1.96	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5460	52.07	-2.06	50.01	74	-23.99	peak
5460	/	-2.06	/	54	/	AVG
5725	49.81	-1.96	47.85	74	-26.15	peak
5725	/	-1.96	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: TX CH High with 5.8G  
Horizontal

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5850	50.23	-1.97	48.26	74	-25.74	peak
5850	/	-1.97	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5850	50.26	-1.97	48.29	74	-25.71	peak
5850	/	-1.97	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: 802.11n20 Mode with 5.8G TX CH Low  
Horizontal

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5460	53.42	-2.06	51.36	74	-22.64	peak
5460	/	-2.06	/	54	/	AVG
5725	49.00	-1.96	47.04	74	-26.96	peak
5725	/	-1.96	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5460	53.51	-2.06	51.45	74	-22.55	peak
5460	/	-2.06	/	54	/	AVG
5725	49.00	-1.96	47.04	74	-26.96	peak
5725	/	-1.96	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: TX CH High with 5.8G  
Horizontal

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5850	52.24	-1.97	50.27	74	-23.73	peak
5850	/	-1.97	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5850	52.69	-1.97	50.72	74	-23.28	peak
5850	/	-1.97	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: 802.11n40 Mode with 5.8G TX CH Low Horizontal

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5460	52.89	-2.06	50.83	74	-23.17	peak
5460	/	-2.06	/	54	/	AVG
5725	51.48	-1.96	49.52	74	-24.48	peak
5725	/	-1.96	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5460	53.75	-2.06	51.69	74	-22.31	peak
5460	/	-2.06	/	54	/	AVG
5725	49.28	-1.96	47.32	74	-26.68	peak
5725	/	-1.96	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: TX CH High with 5.8G  
Horizontal

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5850	51.52	-1.97	49.55	74	-24.45	peak
5850	/	-1.97	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5850	50.31	-1.97	48.34	74	-25.66	peak
5850	/	-1.97	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: 802.11ac Mode with 5.8G TX CH Low  
Horizontal

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5460	52.18	-2.06	50.12	74	-23.88	peak
5460	/	-2.06	/	54	/	AVG
5725	50.84	-1.96	48.88	74	-25.12	peak
5725	/	-1.96	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5460	52.50	-2.06	50.44	74	-23.56	peak
5460	/	-2.06	/	54	/	AVG
5725	51.74	-1.96	49.78	74	-24.22	peak
5725	/	-1.96	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Operation Mode: TX CH High with 5.8G  
Horizontal

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5850	52.75	-1.97	50.78	74	-23.22	peak
5850	/	-1.97	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB $\mu$ V)	Factor (dB)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector Type
5850	51.74	-1.97	49.77	74	-24.23	peak
5850	/	-1.97	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



## 6 FREQUENCY STABILITY

### 6.1 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 user's manual.

### 6.2 Test Procedure

1. The transmitter output (antenna port) was connected to the spectrum analyser. EUT have transmitted absence of modulation signal and fixed channelize. 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  $\pm 20$  ppm (IEEE802.11a specification). 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  $-30^{\circ}\text{C} \sim 50^{\circ}\text{C}$ .

### 6.3 Measurement Equipment Used

Same as Radiated Emission Measurement

### 6.4 Test Result

**PASS**

All the test modes completed for test.



Mode	Voltage (V)	FHL (5180MHz)	Deviation (KHz)	FHH (5240MHz)	Deviation (KHz)
5.2G Band	132 V	5179.984	16	5239.989	11
	120 V	5179.987	13	5239.987	13
	108 V	5179.982	18	5239.981	19

Mode	Temperature (°C)	FHL (5180MHz)	Deviation (KHz)	FHH (5240MHz)	Deviation (KHz)
5.2G Band	-30	5179.965	35	5239.959	41
	-20	5179.953	47	5239.953	47
	-10	5179.977	23	5239.976	24
	0	5179.976	24	5239.979	21
	10	5179.974	26	5239.975	25
	20	5179.988	12	5239.988	12
	30	5179.975	25	5239.974	26
	40	5179.971	29	5239.975	25
	50	5179.964	36	5239.968	32



Mode	Voltage (V)	FHL (5745MHz)	Deviation (KHz)	FHH (5825MHz)	Deviation (KHz)
5.8G Band	132 V	5744.984	16	5824.982	18
	120 V	5744.981	19	5824.984	16
	108 V	5744.989	11	5824.989	11

Mode	Temperature (°C)	FHL (5745MHz)	Deviation (KHz)	FHH (5825MHz)	Deviation (KHz)
5.8G Band	-30	5744.953	47	5824.957	43
	-20	5744.967	33	5824.967	33
	-10	5744.971	29	5824.975	25
	0	5744.975	25	5824.974	26
	10	5744.978	22	5824.979	21
	20	5744.982	18	5824.986	14
	30	5744.976	24	5824.975	25
	40	5744.979	21	5824.972	28
	50	5744.965	35	5824.961	39



## 7 OCCUPIED BANDWIDTH MEASUREMENT

### 7.1 Test Limit

Please refer section 15.407

For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz

### 7.2 Test Procedure

Details see the KDB558074 D01 Meas Guidance

a) The bandwidth is measured at an amplitude level reduced 26dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

b) The test receiver set  $RBW = 1\text{-}5\% EBW$ ,  $VBW \geq 3RBW$ , Sweep time set auto, detail see the test plot.

### 7.3 Measurement Equipment Used

Same as Radiated Emission Measurement

### 7.4 Test Result

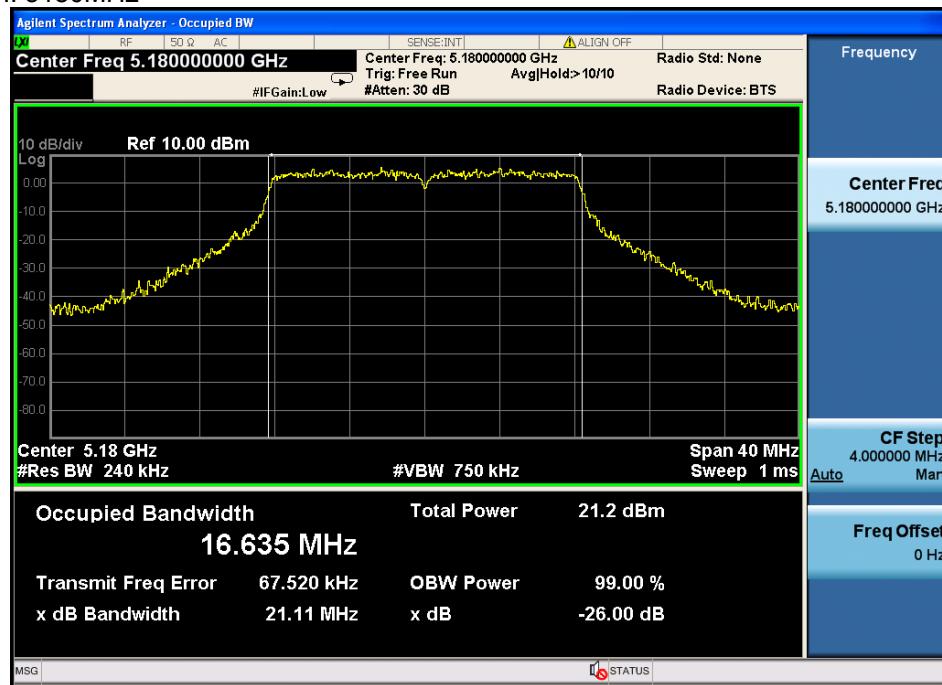
**PASS**

All the test modes completed for test.

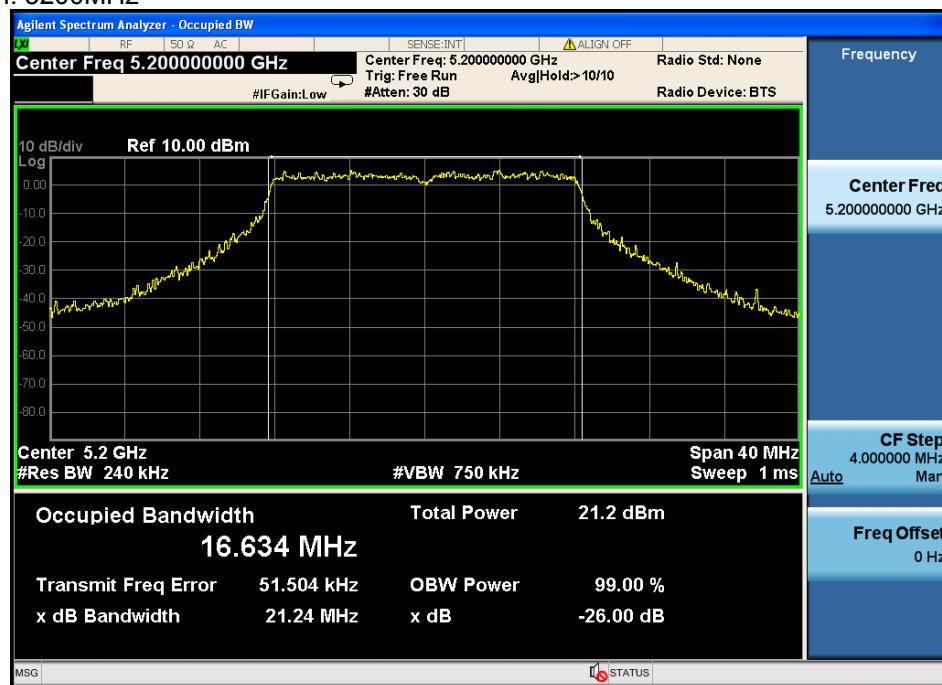
## TX 802.11a Mode with 5.2G

Frequency	26dB Bandwidth (MHz)	Channel Separation (MHz)	Result
5180 MHz	21.11	/	PASS
5200 MHz	21.24	/	PASS
5240 MHz	22.55	/	PASS

CH: 5180MHz

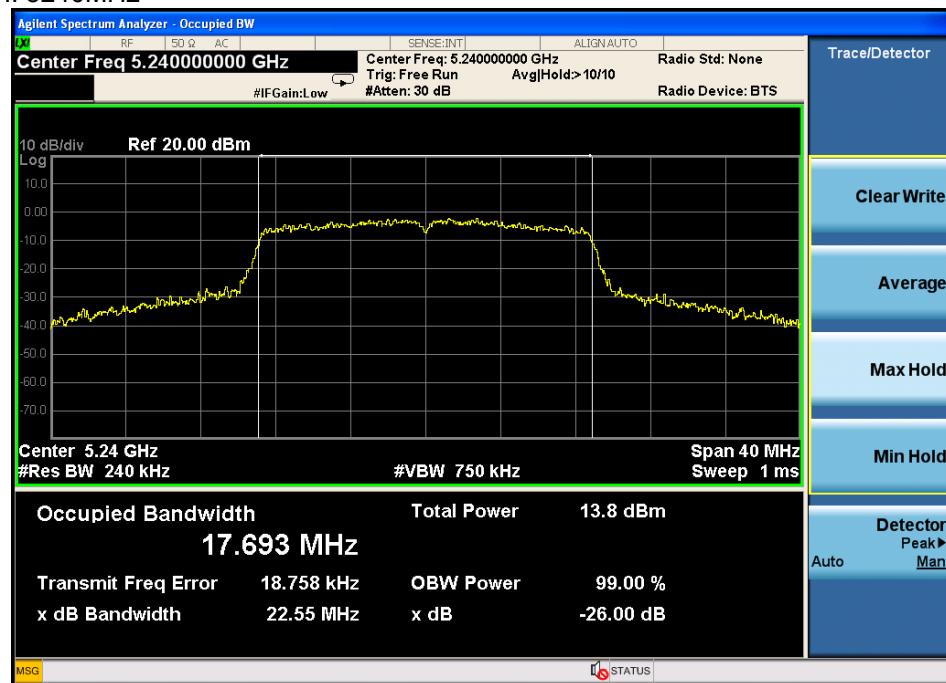


CH: 5200MHz





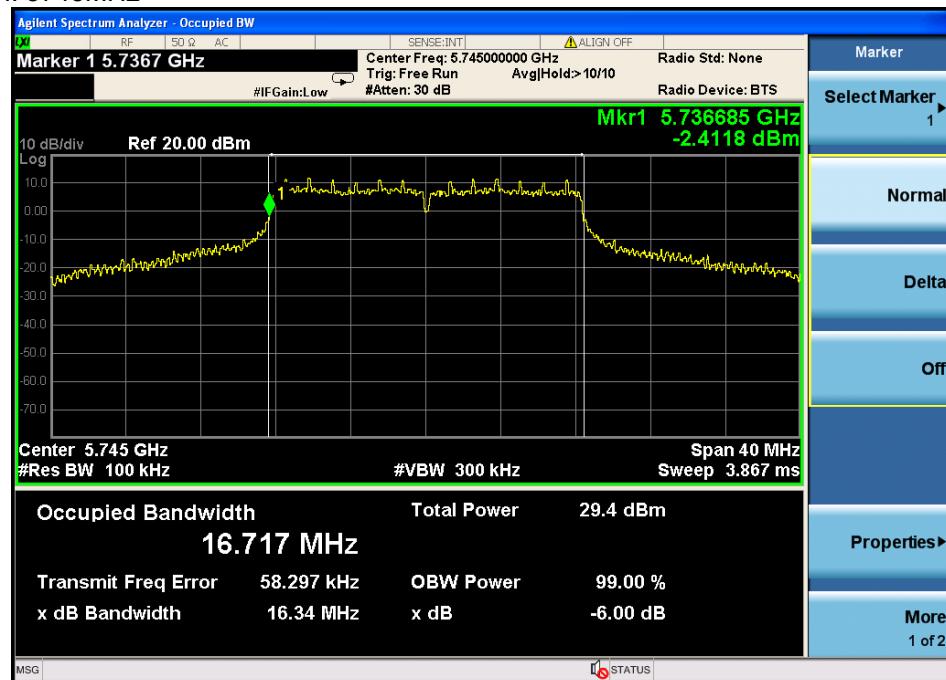
CH: 5240MHz



TX 802.11a Mode with 5.8G

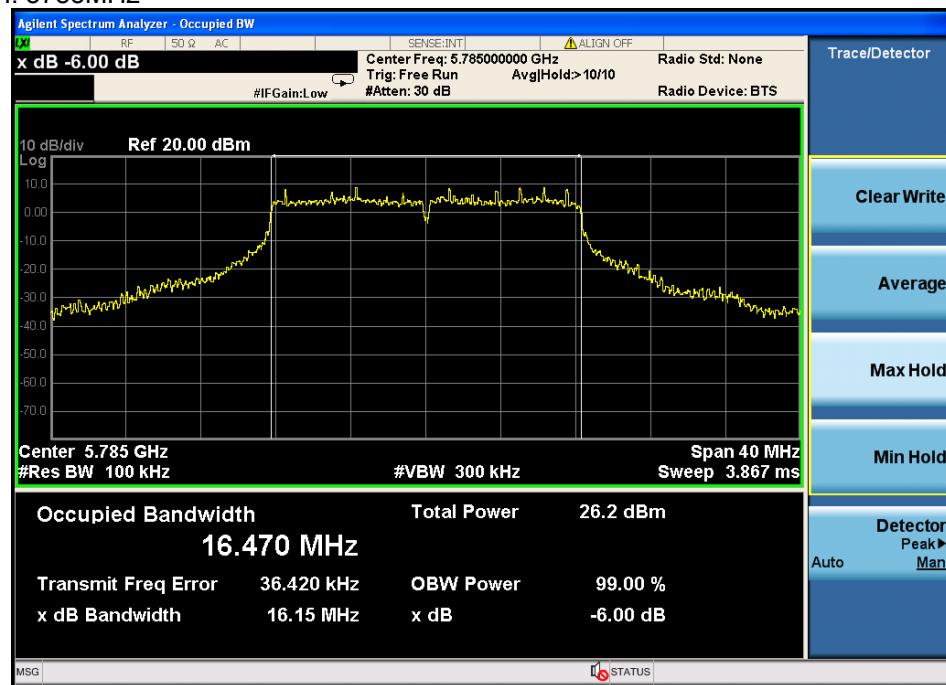
Frequency	6dB Bandwidth (MHz)	Channel Separation (MHz)	Result
5745 MHz	16.34	/	PASS
5785 MHz	16.15	/	PASS
5825 MHz	16.30	/	PASS

CH: 5745MHz

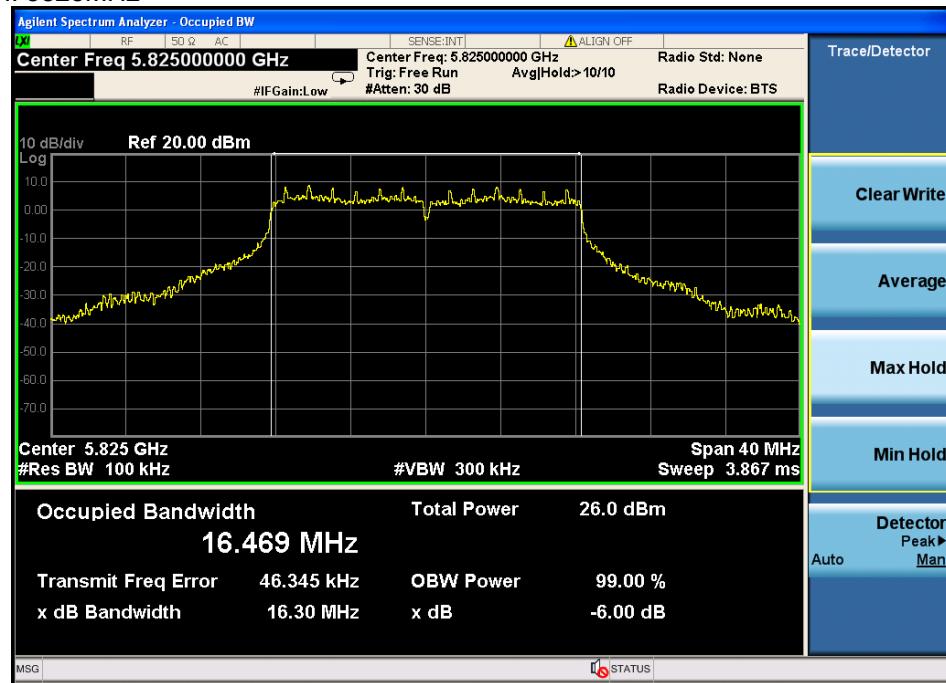




CH: 5785MHz



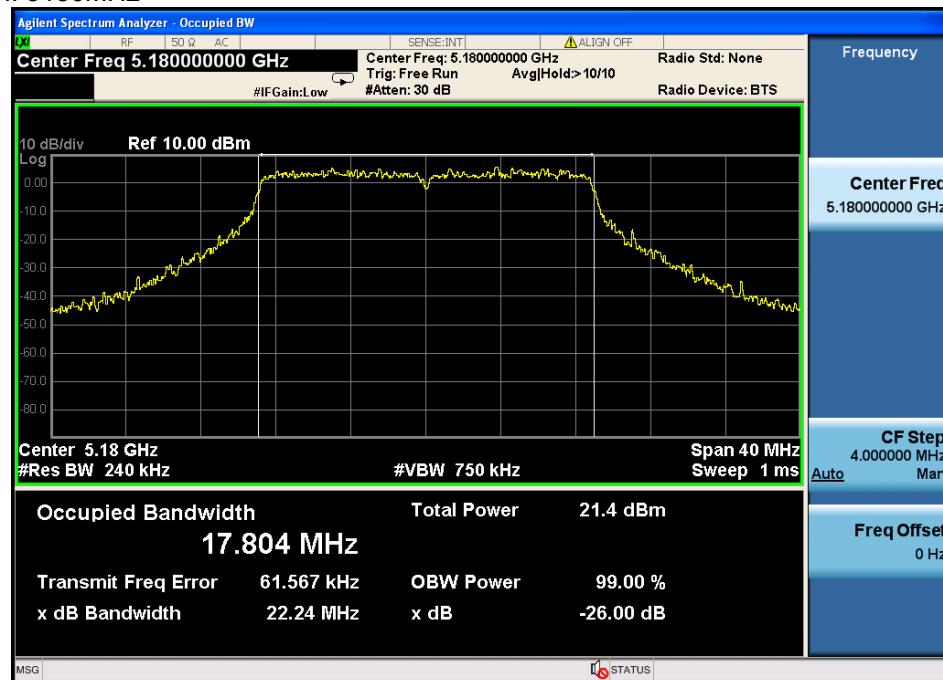
CH: 5825MHz



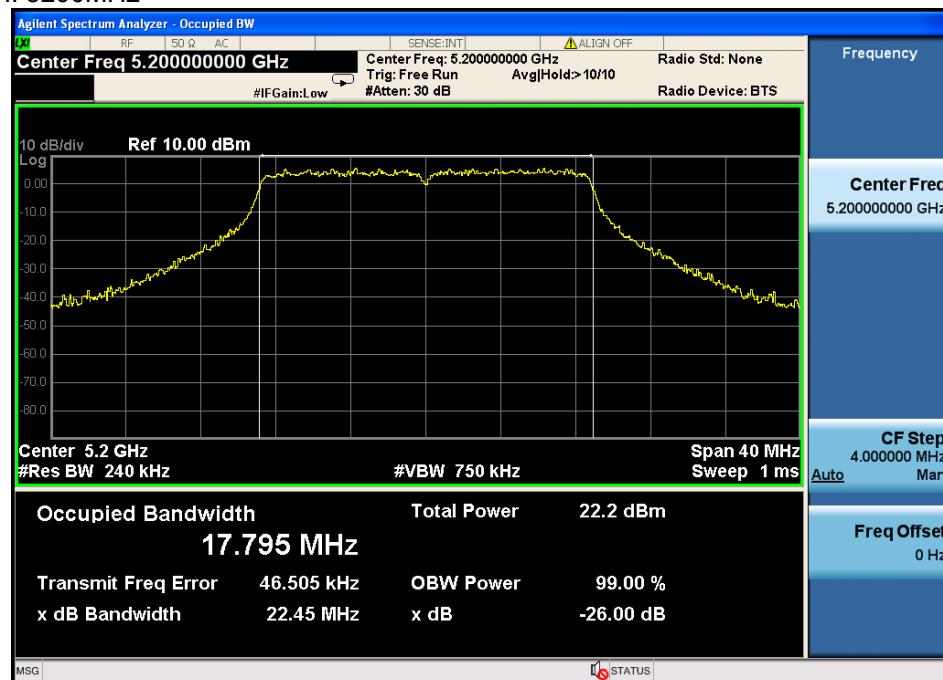
## TX 802.11n20 Mode with 5.2G

Frequency	26dB Bandwidth (MHz)	Channel Separation (MHz)	Result
5180 MHz	22.24	/	PASS
5200 MHz	22.45	/	PASS
5240 MHz	22.77	/	PASS

CH: 5180MHz

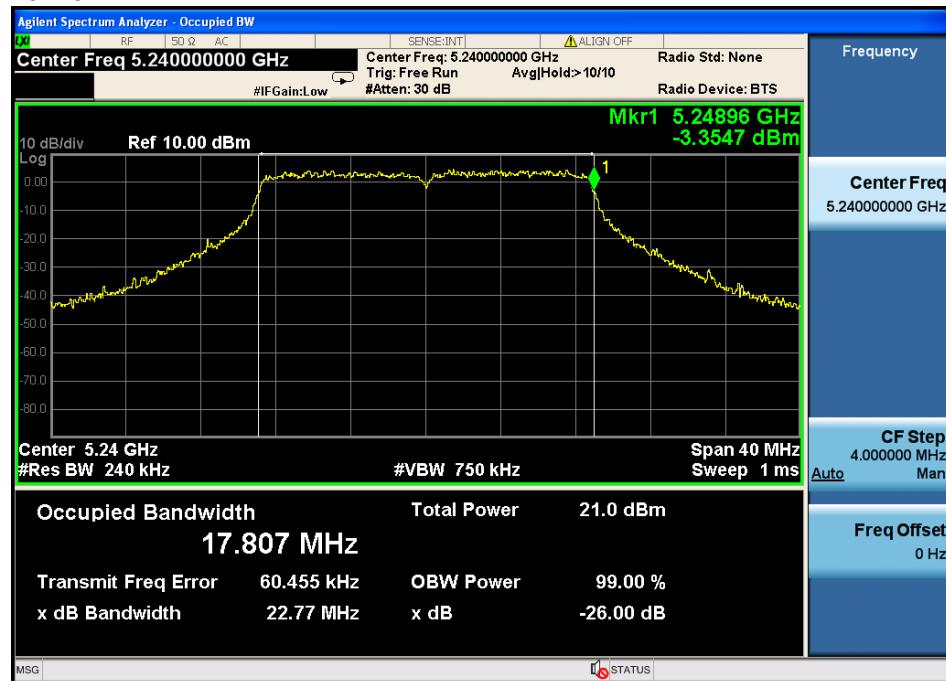


CH: 5200MHz





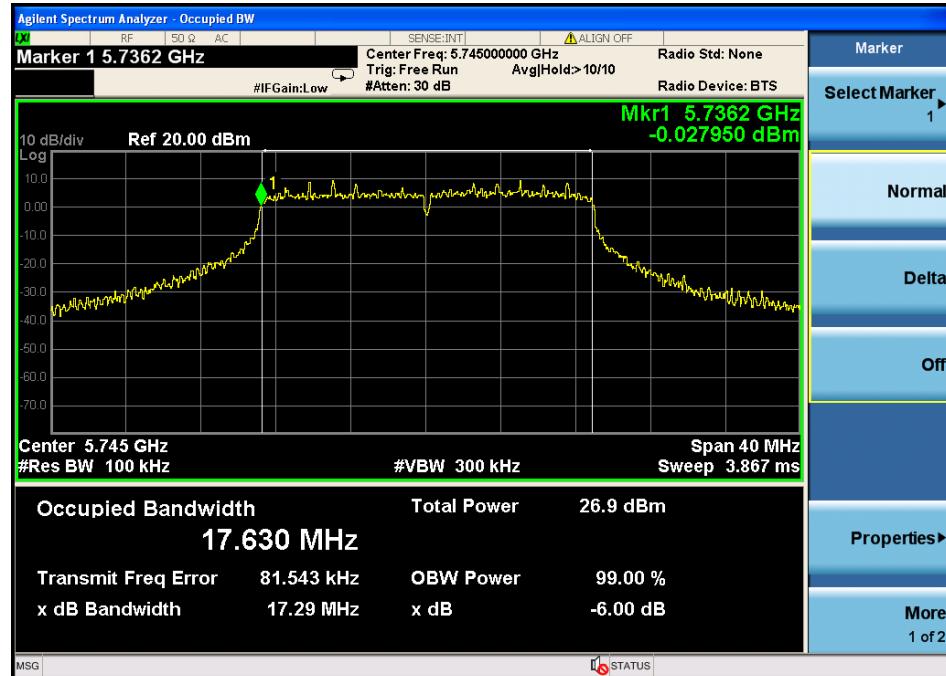
CH: 5240MHz



TX 802.11n20 Mode with 5.8G

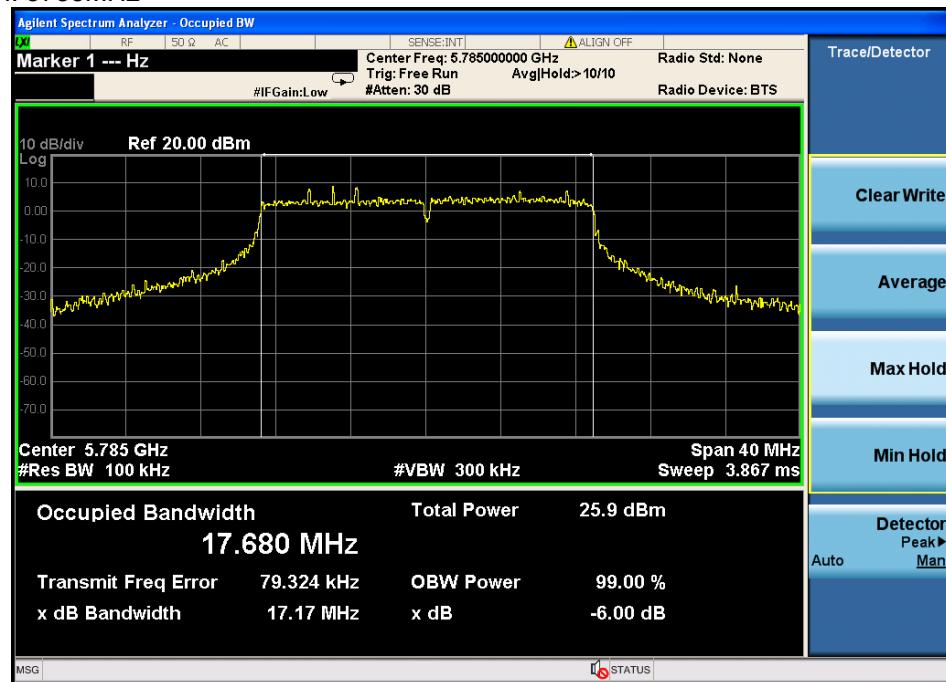
Frequency	6dB Bandwidth (MHz)	Channel Separation (MHz)	Result
5745 MHz	17.29	/	PASS
5785 MHz	17.17	/	PASS
5825 MHz	16.32	/	PASS

CH: 5745MHz

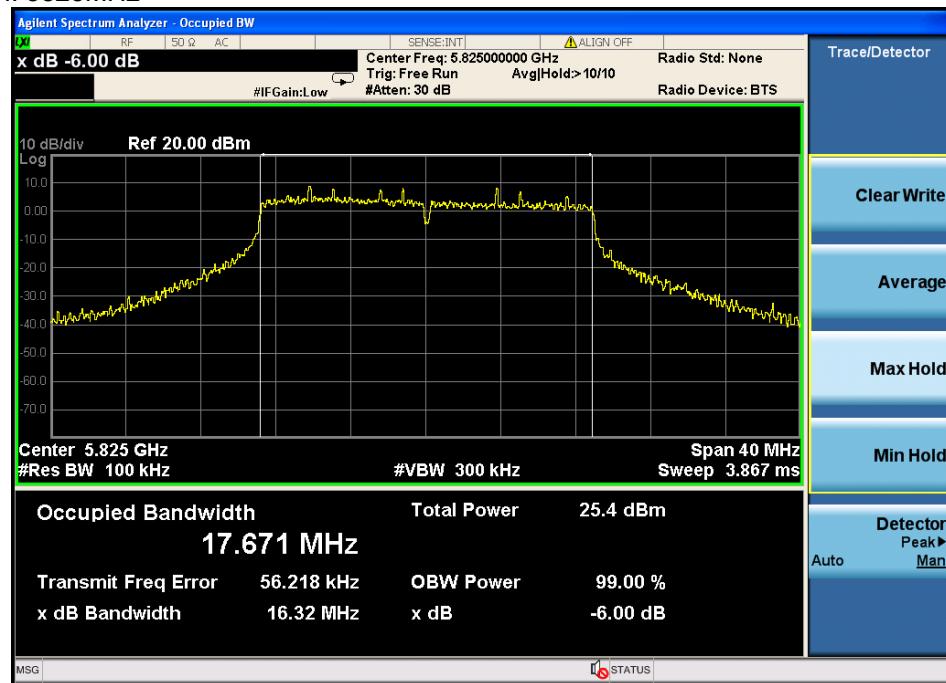




CH: 5785MHz



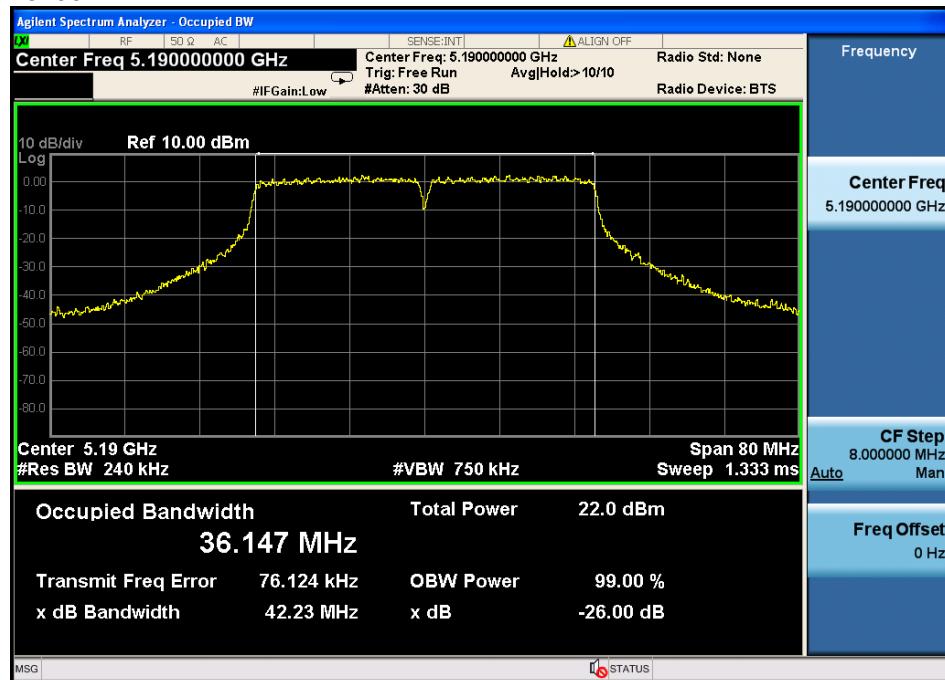
CH: 5825MHz



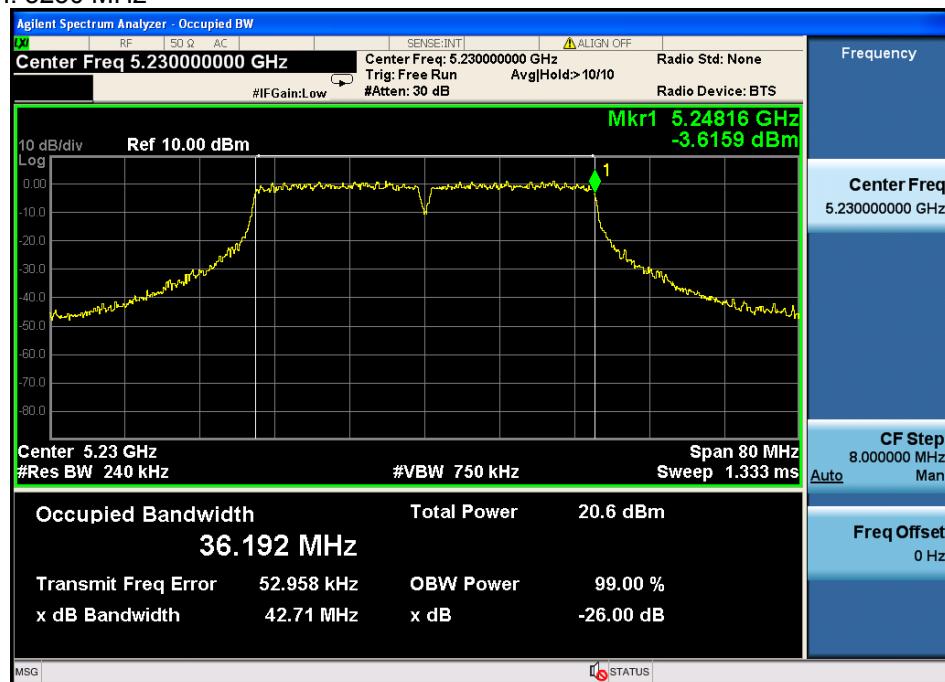
## TX 802.11n40 Mode with 5.2G

Frequency	26dB Bandwidth (MHz)	Channel Separation (MHz)	Result
5190 MHz	42.23	/	PASS
5230 MHz	42.71	/	PASS

CH: 5190 MHz



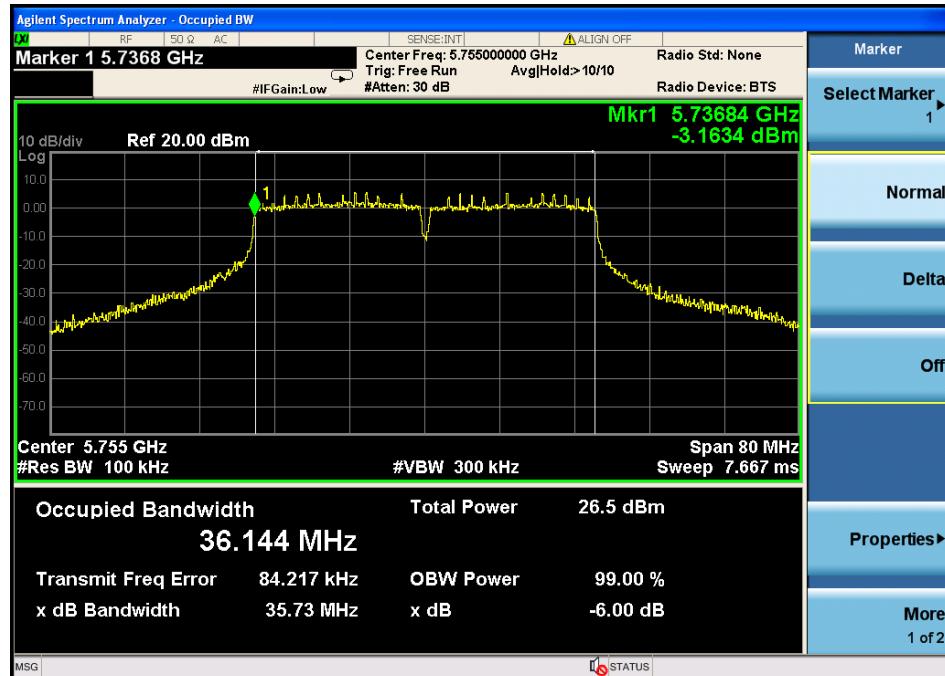
CH: 5230 MHz



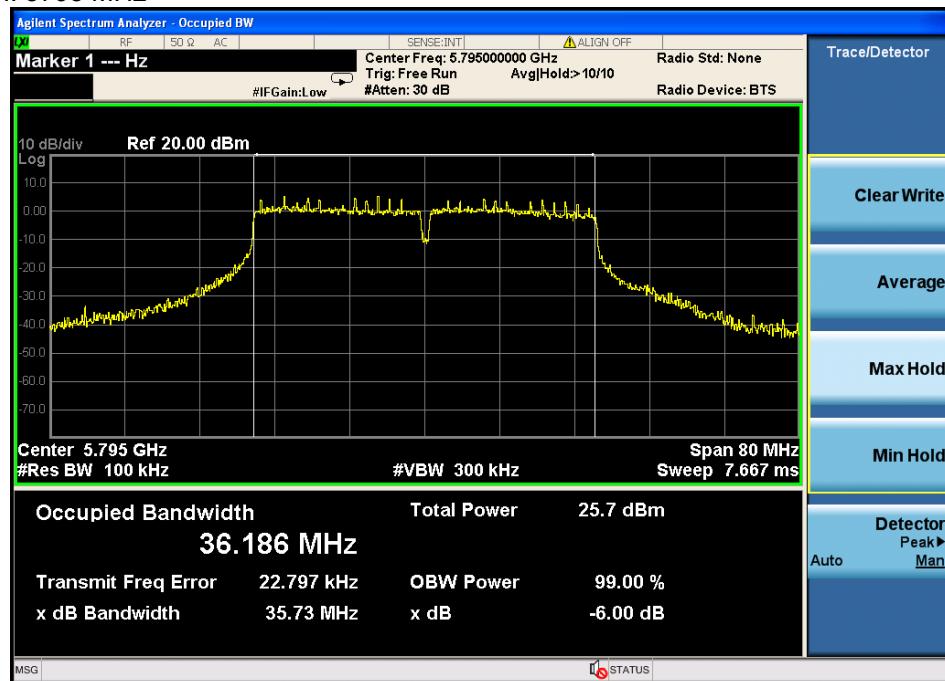
## TX 802.11n40 Mode with 5.8G

Frequency	6dB Bandwidth (MHz)	Channel Separation (MHz)	Result
5755 MHz	35.73	/	PASS
5795 MHz	35.73	/	PASS

CH: 5755 MHz



CH: 5795 MHz



TX 802.11ac Mode with 5.2G			
Frequency	26dB Bandwidth (MHz)	Channel Separation (MHz)	Result
5210 MHz	82.11	/	PASS

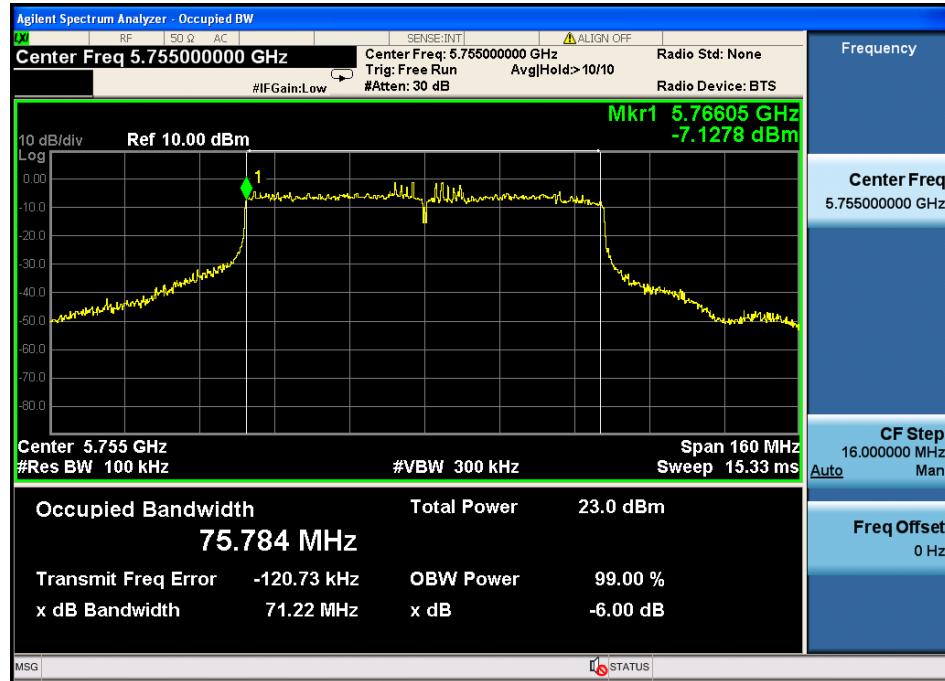
CH: 5210MHz





TX 802.11ac Mode with 5.8G			
Frequency	6dB Bandwidth (MHz)	Channel Separation (MHz)	Result
5775 MHz	71.22	/	PASS

CH: 5775MHz





## 8 POWER SPECTRAL DENSITY TEST

### 8.1 Test Limit

#### Band 5150-5250MHz

For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi

#### Band 5725-5850MHz

The maximum conducted output power shall not exceed 1 W. The power spectral density shall not exceed 30 dBm in any 500 kHz band

### 8.2 Test Procedure

Details see the KDB558074 DTS Meas Guidance V03

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = 1MHz, VBW = 3MHz, span=5-30%EBW, detail see the test plot.
4. Record the max reading.
5. Repeat the above procedure until the measurements for all frequencies are completed.

### 8.3 Measurement Equipment Used

Same as Radiated Emission Measurement

### 8.4 Test Result

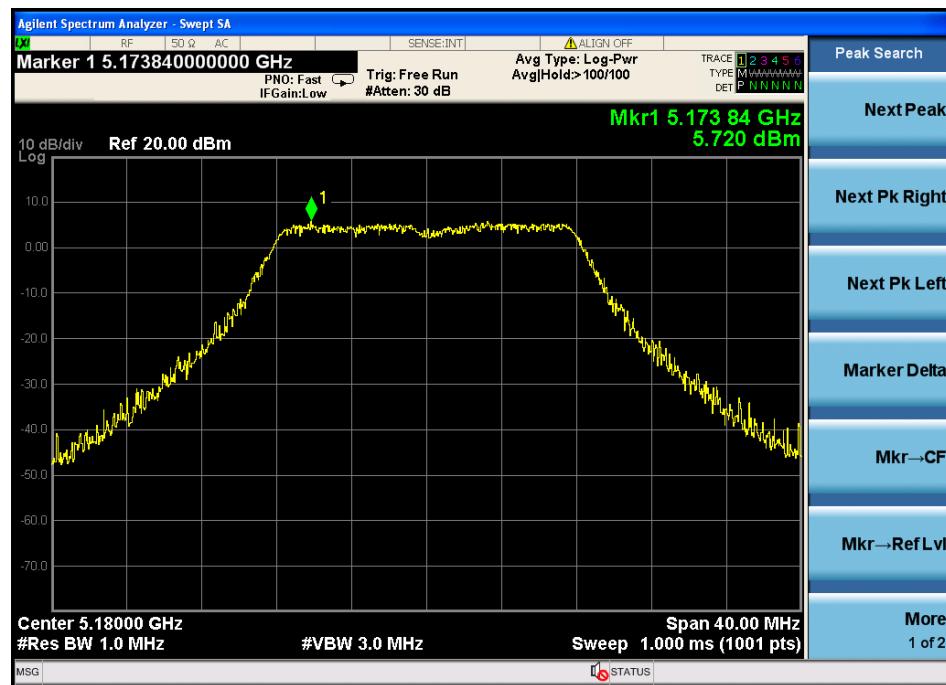
**PASS**

All the test modes completed for test.

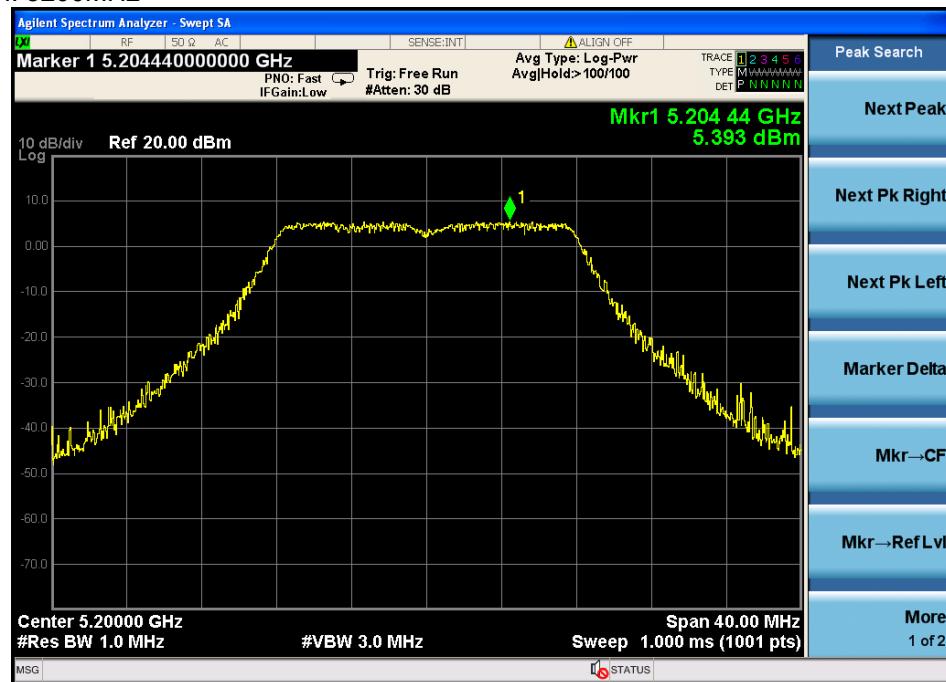


TX 802.11a Mode			
Frequency	Power Density (dBm)	Limit (dBm)	Result
5180 MHz	5.720	11	PASS
5200 MHz	5.393	11	PASS
5240 MHz	4.430	11	PASS
5745 MHz	6.818	30	PASS
5785 MHz	12.860	30	PASS
5825 MHz	5.302	30	PASS

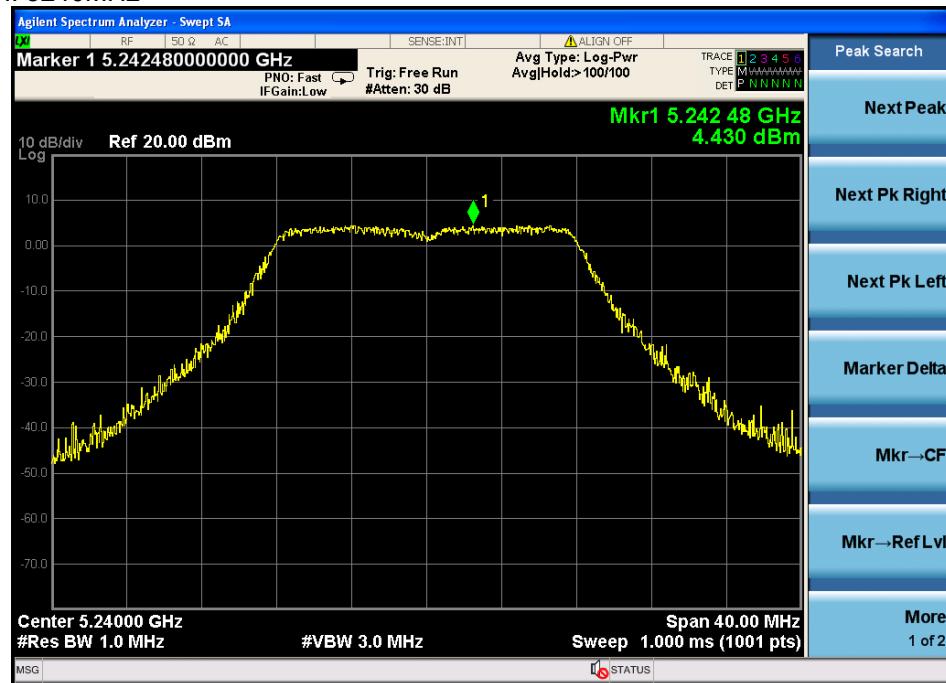
CH: 5180MHz



CH: 5200MHz

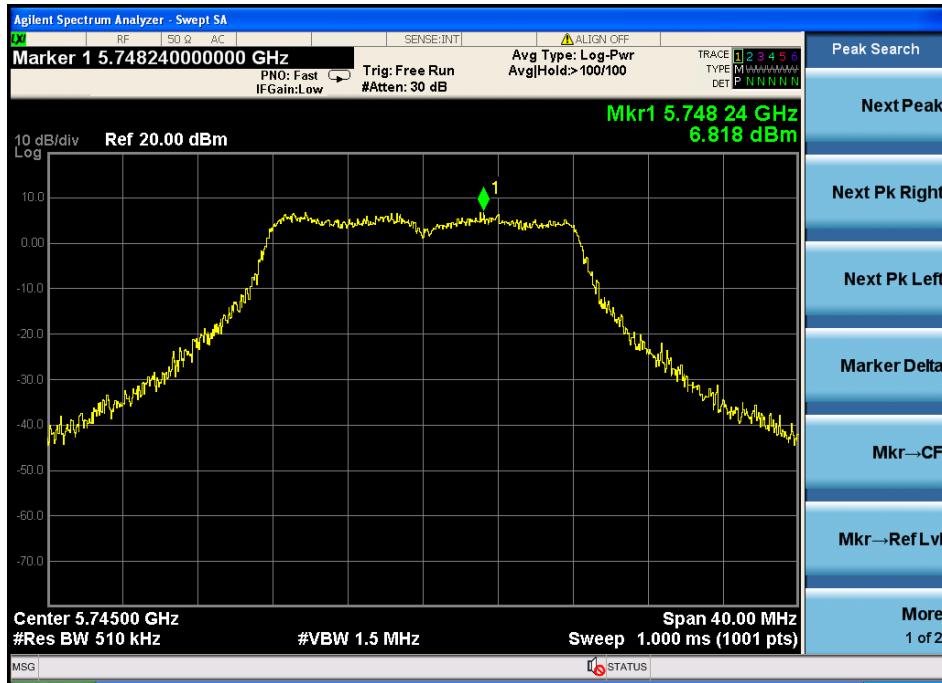


CH: 5240MHz

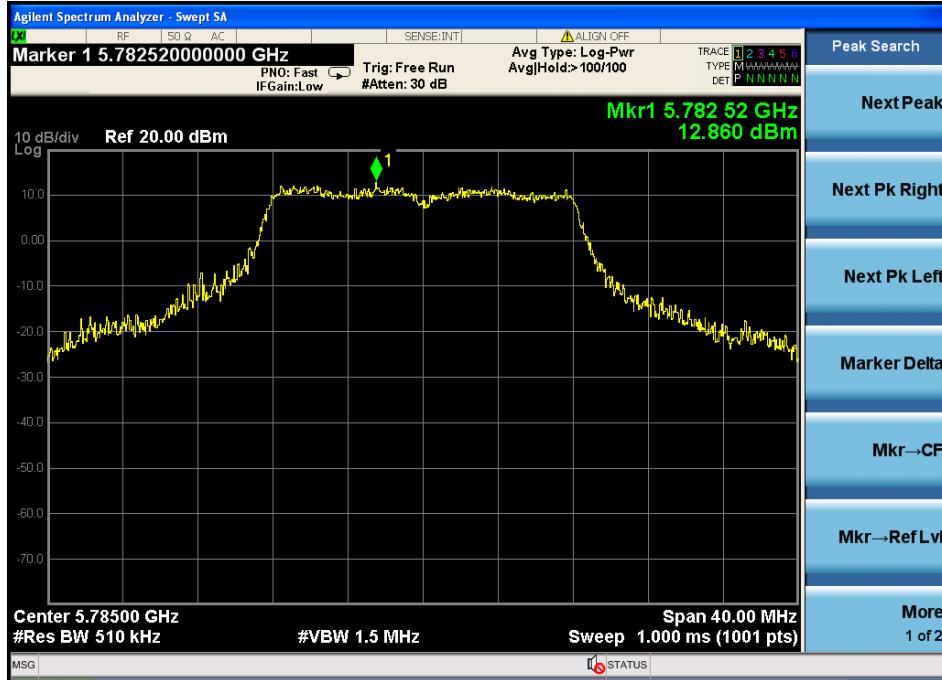




CH: 5745MHz



CH: 5785MHz



CH: 5825MHz

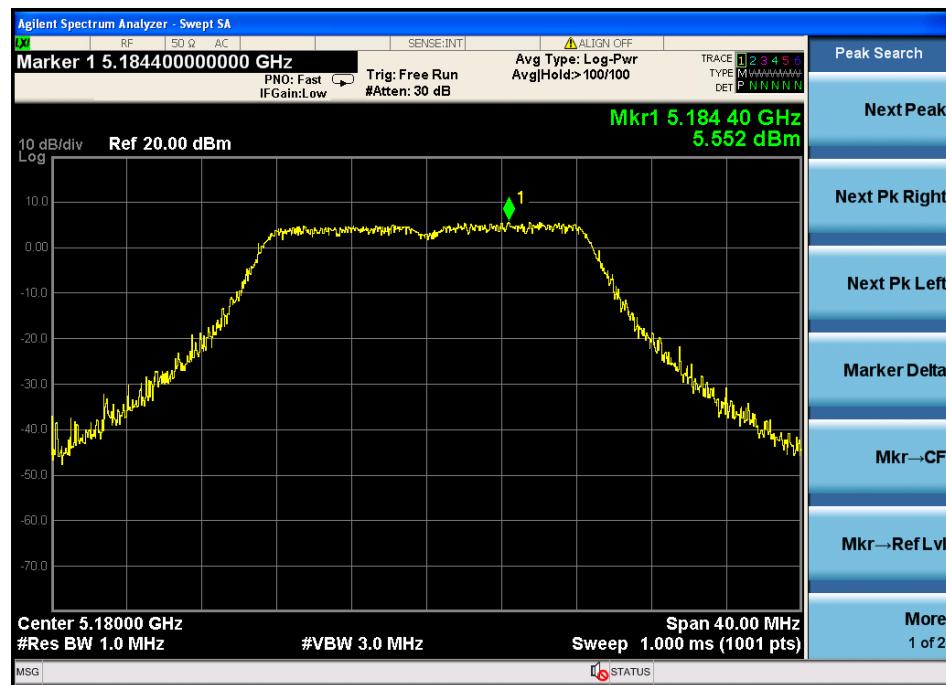




## TX 802.11n20 Mode with 5.2G

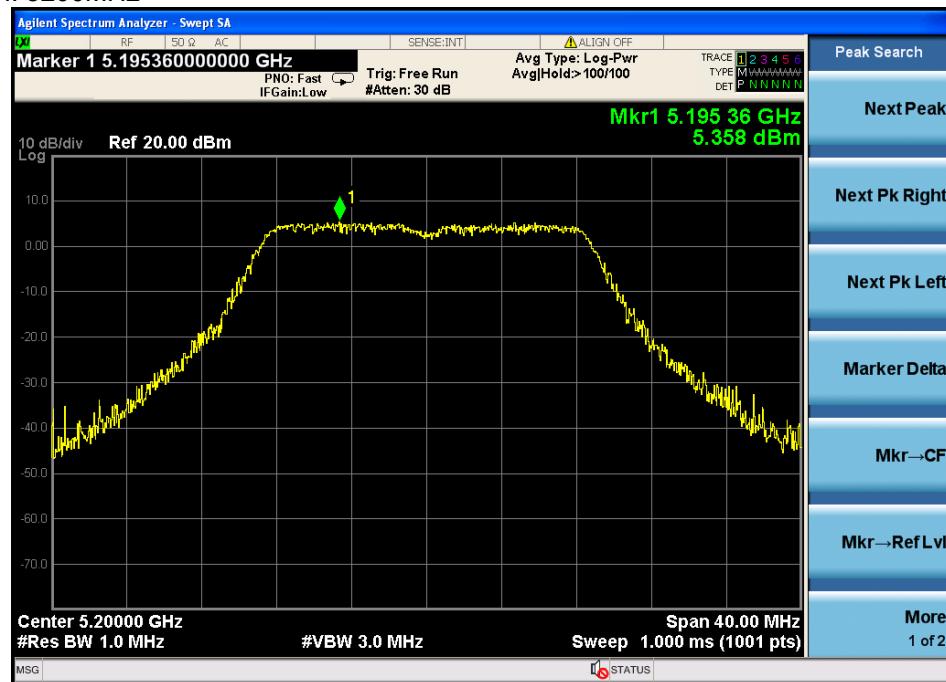
Frequency	Power Density (dBm)	Limit (dBm)	Result
5180 MHz	5.552	11	PASS
5200 MHz	5.358	11	PASS
5240 MHz	4.110	11	PASS
5745 MHz	6.817	30	PASS
5785 MHz	11.244	30	PASS
5825 MHz	4.666	30	PASS

CH: 5180MHz

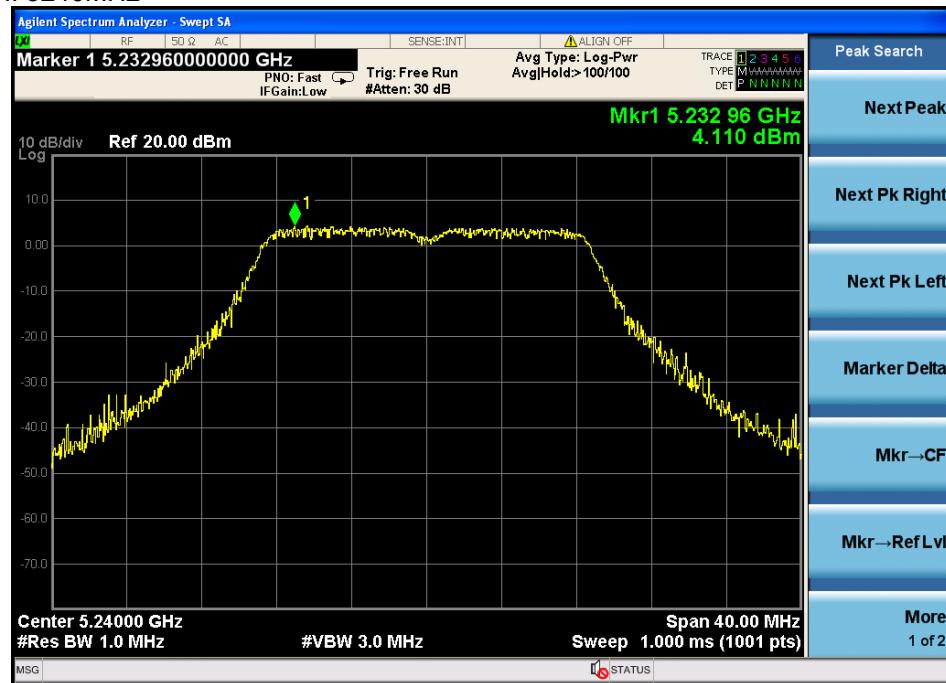




CH: 5200MHz

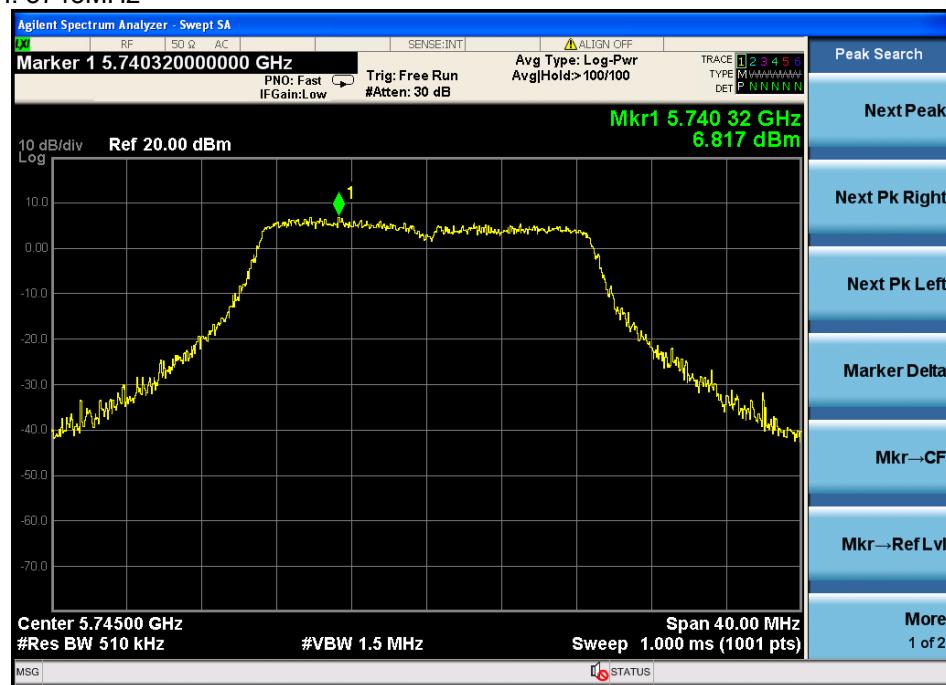


CH: 5240MHz

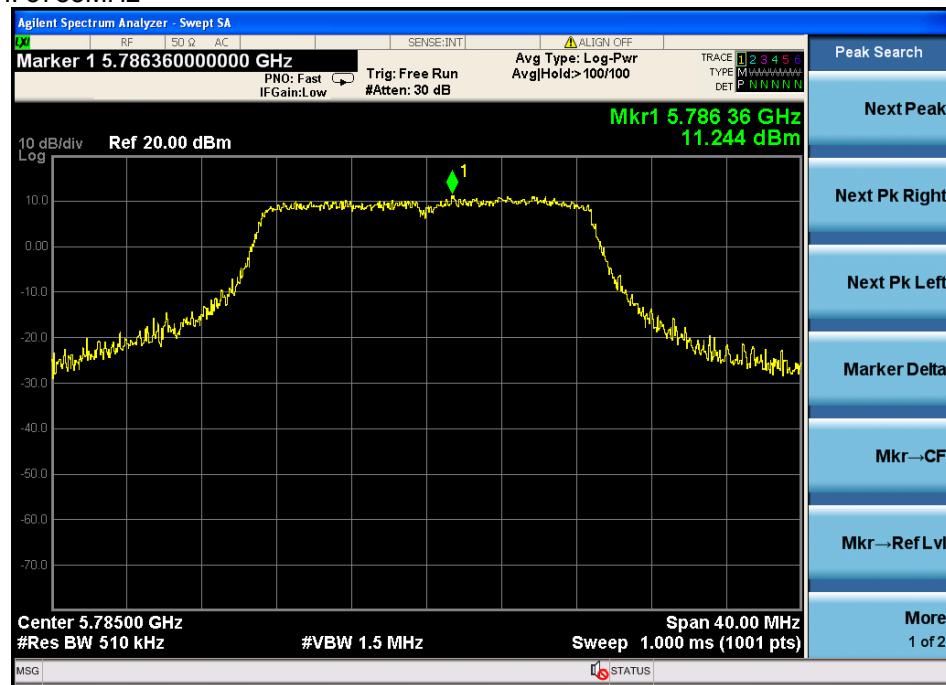




CH: 5745MHz

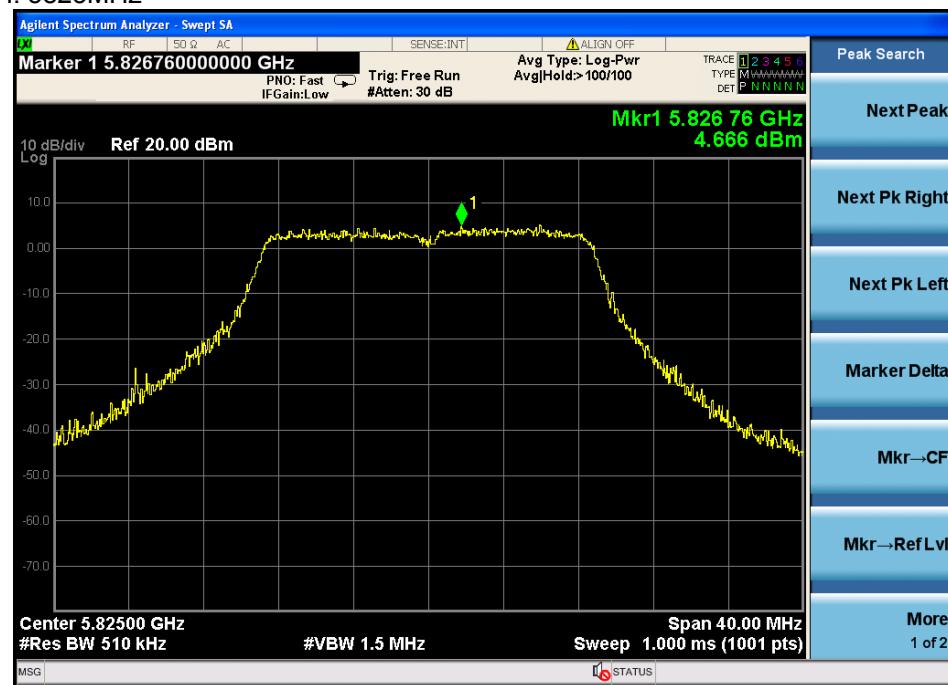


CH: 5785MHz





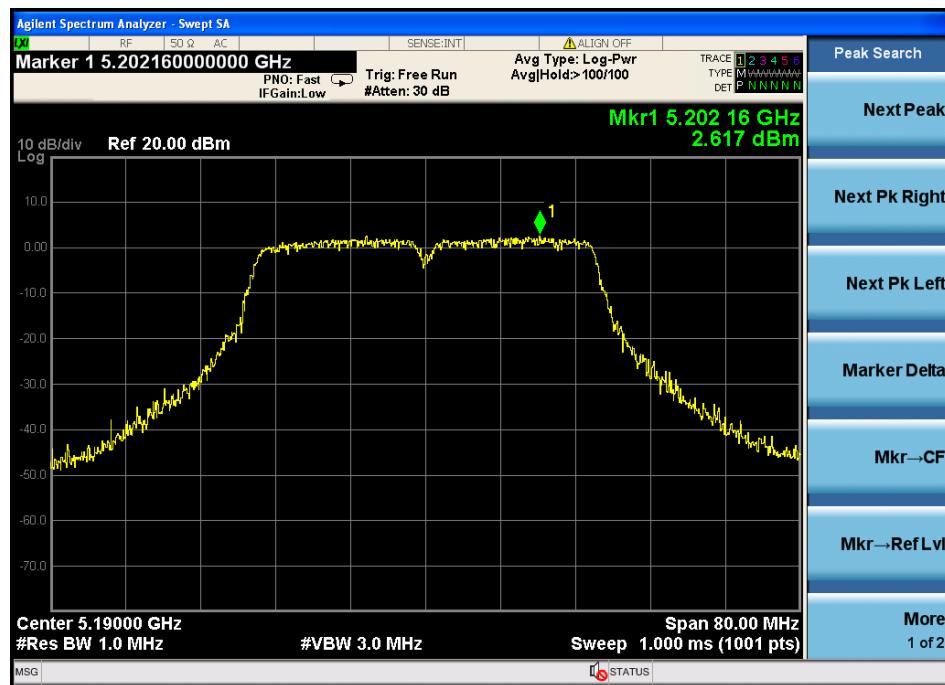
CH: 5825MHz



## TX 802.11n40 Mode with 5.2G

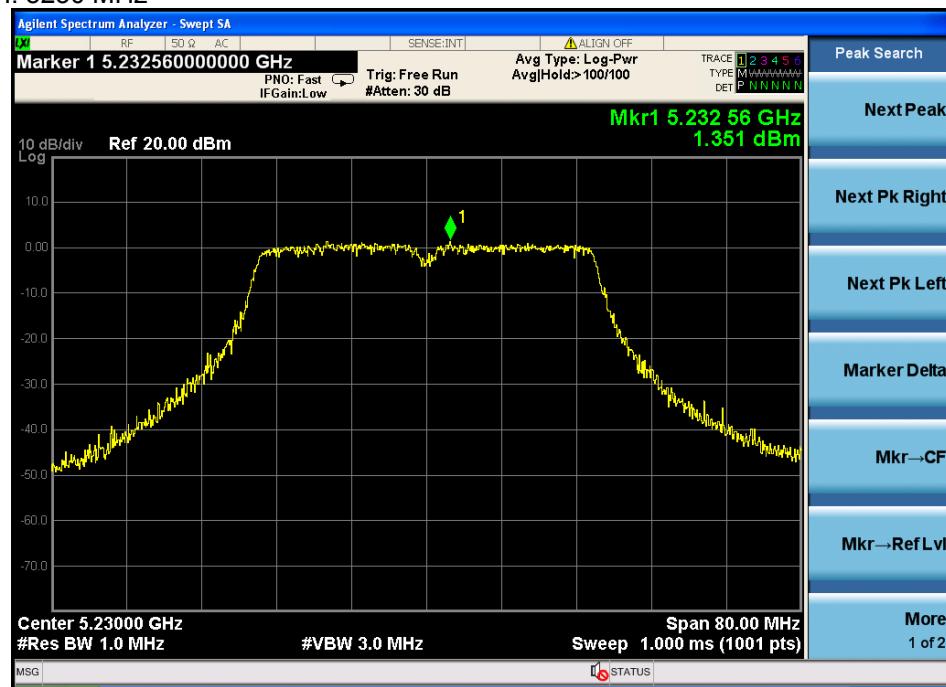
Frequency	Power Density (dBm)	Limit (dBm)	Result
5190 MHz	2.617	11	PASS
5230 MHz	1.351	11	PASS
5755 MHz	6.035	30	PASS
5795 MHz	5.889	30	PASS

CH: 5190 MHz





CH: 5230 MHz



CH: 5745 MHz





CH: 5795 MHz

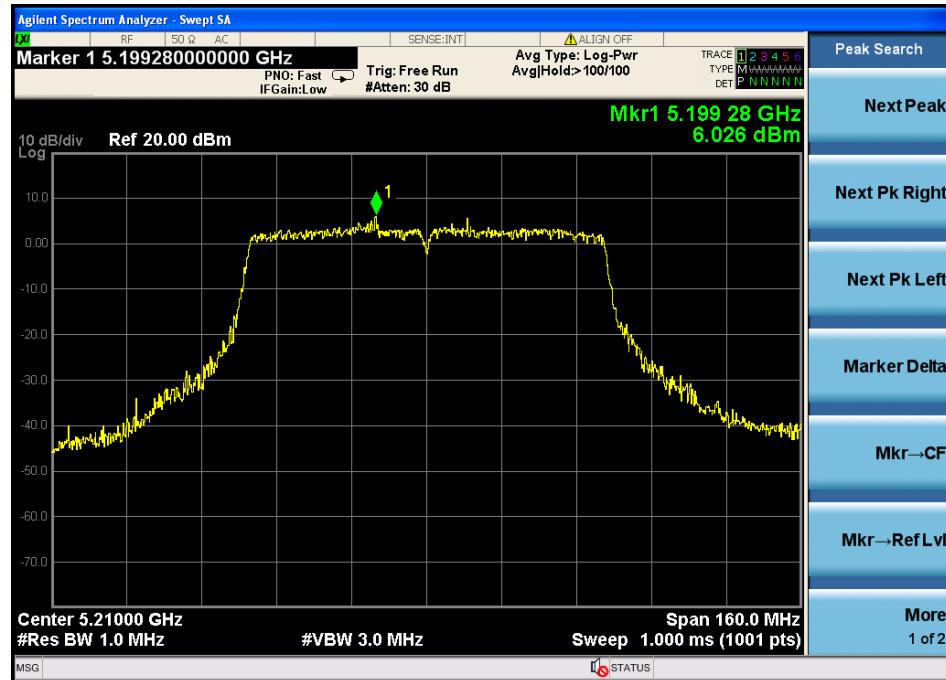




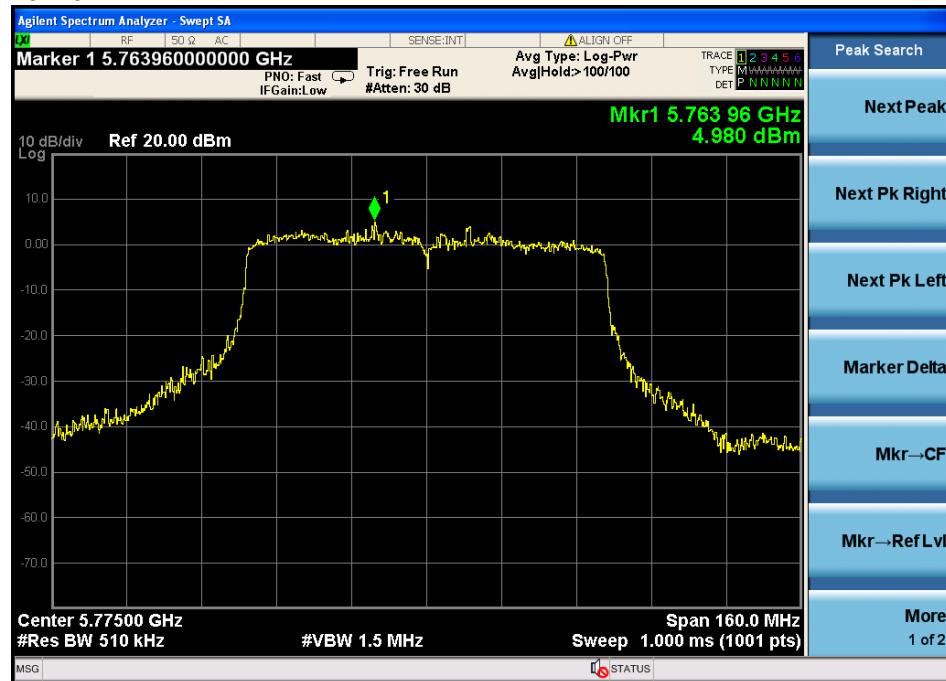
## TX 802.11ac Mode

Frequency	Power Density (dBm)	Limit (dBm)	Result
5210 MHz	6.026	11	PASS
5775 MHz	4.980	30	PASS

CH: 5210MHz



CH: 5775MHz





## 9 PEAK OUTPUT POWER TEST

### 9.1 Test Limit

#### Band 5150-5250MHz

For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi

#### Band 5725-5850MHz

The maximum conducted output power shall not exceed 1 W. The power spectral density shall not exceed 30 dBm in any 500 kHz band

### 9.2 Test Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. The EUT was directly connected to the Power meter.

### 9.3 Measurement Equipment Used

Same as Radiated Emission Measurement

### 9.4 Test Result

**PASS**

All the test modes completed for test.



<b>TX 802.11a Mode with 5.2G</b>			
Test Channe	Frequency	Maximum Peak Conducted Output Power	LIMIT
	(MHz)	(dBm)	dBm
CH36	5180	16.82	24
CH40	5200	16.92	24
CH48	5240	16.91	24
<b>TX 802.11n20 Mode with 5.2G</b>			
CH36	5180	16.88	24
CH40	5200	16.63	24
CH48	5240	16.64	24
<b>TX 802.11n40 Mode with 5.2G</b>			
CH38	5190	16.57	24
CH46	5230	16.58	24
<b>TX 802.11ac Mode with 5.2G</b>			
CH42	5210	15.77	24
<b>TX 802.11a Mode with 5.8G</b>			
Test Channe	Frequency	Maximum Peak Conducted Output Power	LIMIT
	(MHz)	(dBm)	dBm
CH149	5745	16.91	30
CH157	5785	16.91	30
CH165	5825	16.83	30
<b>TX 802.11n20 Mode with 5.8G</b>			
CH149	5745	16.54	30
CH157	5785	16.63	30
CH165	5825	16.45	30
<b>TX 802.11n40 Mode with 5.8G</b>			
CH151	5755	16.28	30
CH159	5795	16.41	30
<b>TX 802.11ac Mode with 5.8G</b>			
CH155	5775	15.59	30



## 10 ANTENNA REQUIREMENT

### **Standard Applicable**

For intentional device, according to FCC 47 CFR Section 15.203, 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. And according to FCC 47 CFR Section 15.249, if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

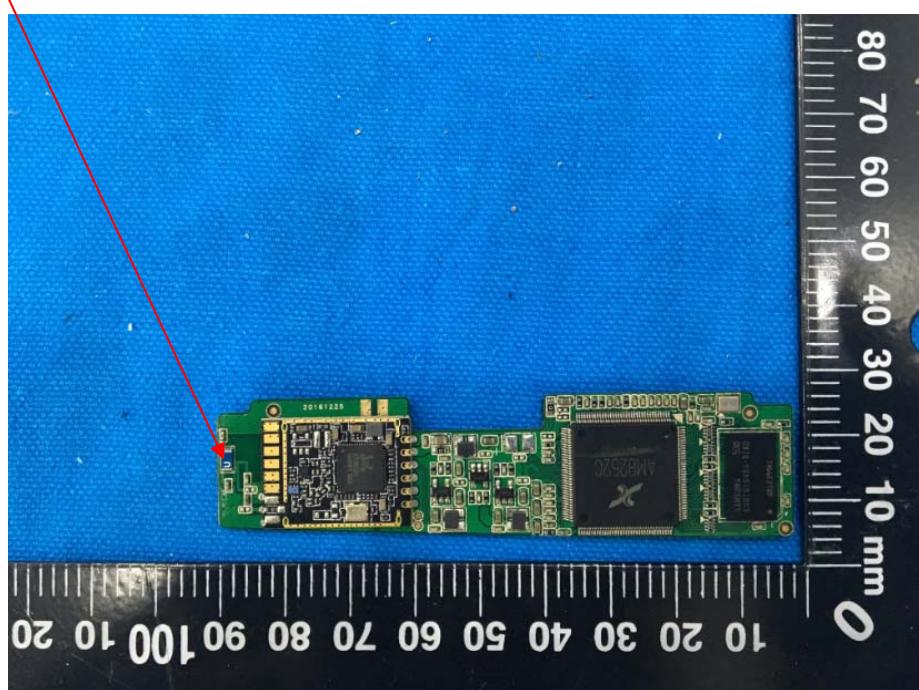
### **Refer to statement below for compliance.**

The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

### **Antenna Connected Construction**

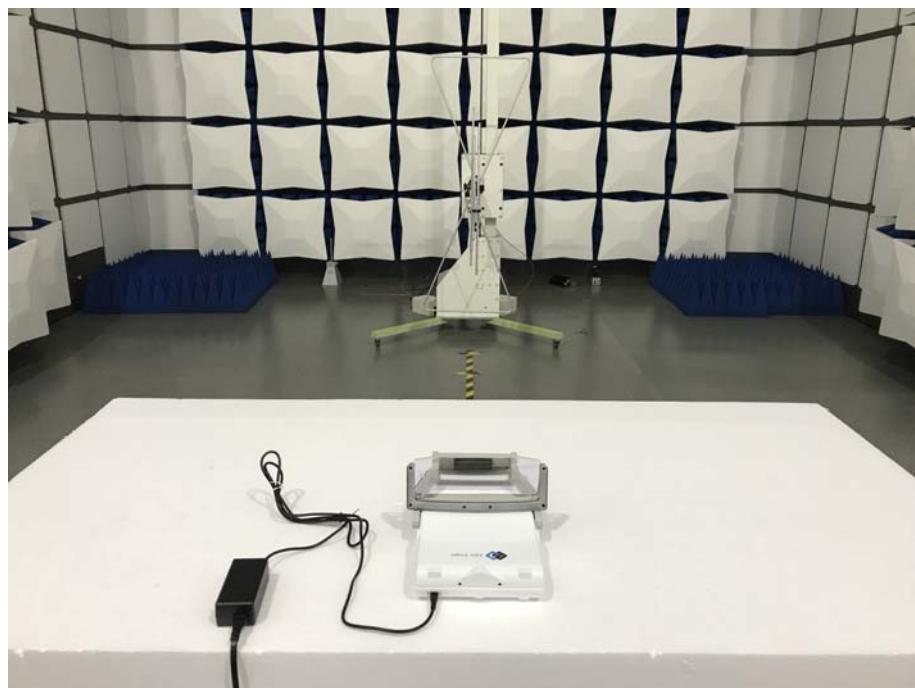
The antenna used in this product is a Chip Antenna, The directional gains of antenna used for transmitting is 1dBi.

#### 5G WIFI ANTENNA



## 11 PHOTOGRAPH OF TEST

### 11.1 Radiated Emission



## 11.2 Conducted Emission

