FCC TEST REPORT

Test report
On Behalf of
Shenzhen Zidoo Technology Co., Ltd.
For
SMART TV BOX
Model No.: H6 PRO, H6

FCC ID: 2AGN7-H6PRO

Prepared for :	**Shenzhen Zidoo Technology Co., Ltd.** **Room 12 D, Block A CENTRAL GREAT SEARCHINGS, Xixiang Avenue, BaoAn District, Shenzhen, Guangdong, P.R.C. 518100**
Prepared By :	**Shenzhen HUAK Testing Technology Co., Ltd.** **F1-008, Tai Yi Building, No.1, Haicheng West Road, Xixiang Street, Bao'an District, Shenzhen City, China**
Date of Test:	**Jun. 15, 2017 ~ Jun. 26, 2017**
Date of Report:	**Jun. 26, 2017**
Report Number:	**HK1700615041-E**

TEST RESULT CERTIFICATION

Applicant's name	:	Shenzhen Zidoo Technology Co., Ltd.
Address	:	Room 12 D, Block A CENTRAL GREAT SEARCHINGS, Xixiang Avenue, BaoAn District, Shenzhen, Guangdong, P.R.C. 518100
Manufacture's Name	:	Shenzhen Zidoo Technology Co., Ltd.
Address	:	Room 12 D, Block A CENTRAL GREAT SEARCHINGS, Xixiang Avenue, BaoAn District, Shenzhen, Guangdong, P.R.C. 518100

Product description

Trade Mark:		zidoo
Product name	:	SMART TV BOX
Model and/or type reference	:	H6 PRO, H6
Standards	:	FCC Rules and Regulations Part 15 Subpart C Section 15.407 ANSI C63.10: 2013

Date of Test	:	
Date (s) of performance of tests	:	Jun. 15, 2017 ~ Jun. 26, 2017
Date of Issue	:	Jun. 26, 2017
Test Result	:	**Pass**

Testing Engineer : Eric Xie

(Eric Xie)

Technical Manager : Dora Qin

(Dora Qin)

Authorized Signatory : Kait

(Kait Chen)

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OCCUPIED BANDWIDTH MEASUREMENT	COMPLIANT
POWER SPECTRAL DENSITY	COMPLIANT
PEAK OUTPUT POWEReak	COMPLIANT
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	SMART TV BOX
Model Name	H6 PRO
Serial No	H6
Model Difference	All model's the function, software and electric circuit are the same, only with a product color and model named different. Test sample model: H6 PRO.
FCC ID	2AGN7-H6PRO
Antenna Type	Integral Antenna
Antenna Gain	2 dBi
Operation frequency	802.11a/n 20:5180~5240 MHz; 5745~5825 MHz 802.11n 40: 5190~5230 MHz; 5755 MHz -5795 MHz
Number of Channels	802.11a/n20: 5.2G:4CH; 5.8G: 5CH 802.11n 40: 5.2G:2CH; 5.8G: 2CH
Modulation Type	CCK/OFDM/DBPSK/DAPSK
Power Source	DC power
Power Rating	DC5V form Adapter with AC 120V/60Hz

2.1.1 Carrier Frequency of Channels

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

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

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

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

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

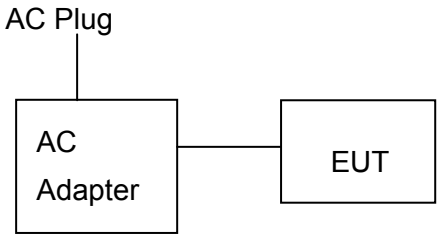
Transmitting mode for 802.11 n 40 with 5.2G
Low Channel: 5190MHz
High Channel: 5230MHz

Transmitting mode for 802.11 a/n 20 with 5.8G
Low Channel: 5745MHz
Middle Channel: 5785MHz
High Channel: 5825MHz

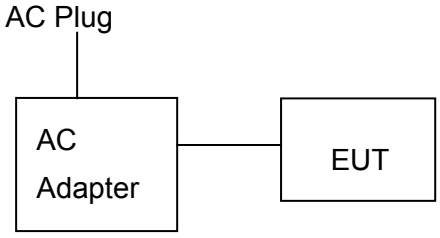
Transmitting mode for 802.11 n 40 with 5.8G
Low Channel: 5755MHz
High Channel: 5795MHz

2.2 DESCRIPTION OF TEST SETUP

Operation of EUT during conducted and below 1GHz Radiation testing:



Operation of EUT during 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	MY49911048	Feb. 18, 2017	1 Year
26.	Spectrum analyzer	Agilent	E4407B	MY46184326	Feb. 18, 2017	1 Year

3. CONDUCTED EMISSIONS TEST

3.1 Conducted Power Line Emission Limit

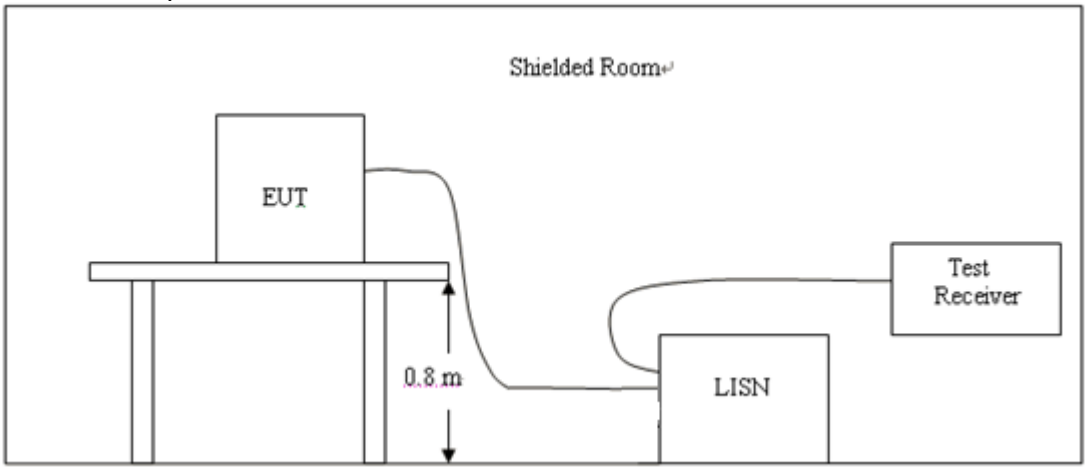
For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following

Frequency (MHz)	Maximum RF Line Voltage (dBμV)			
	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



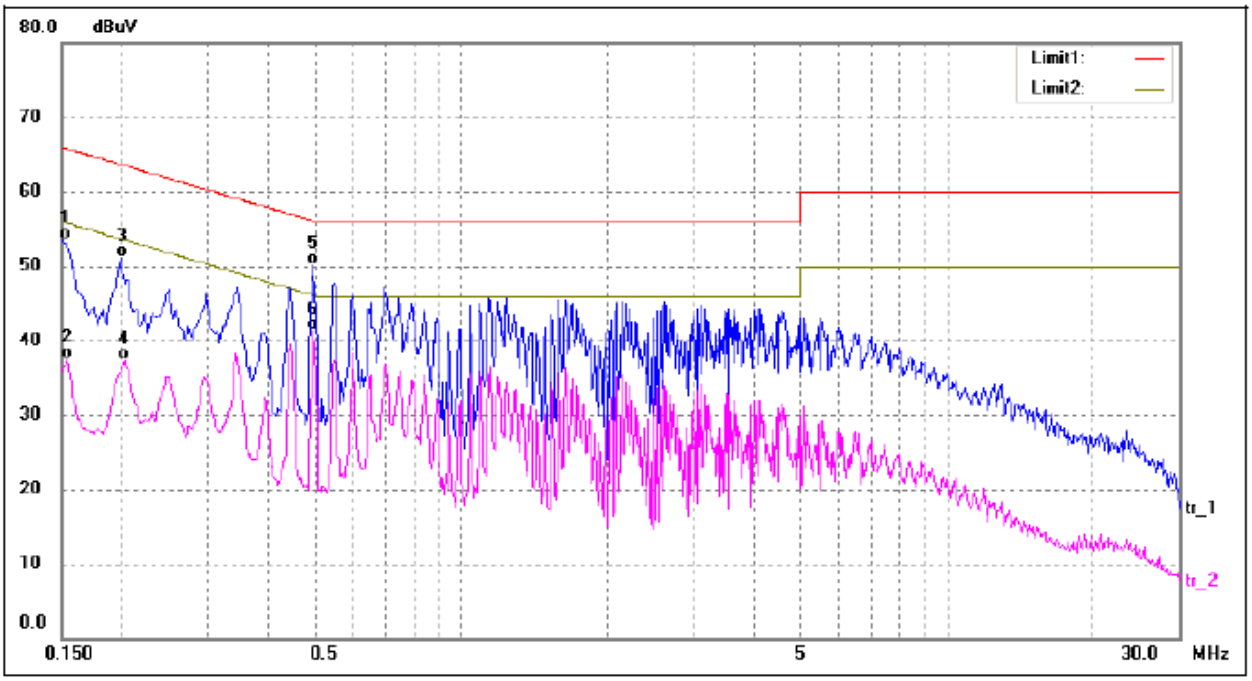
3.3 Test Procedure

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.

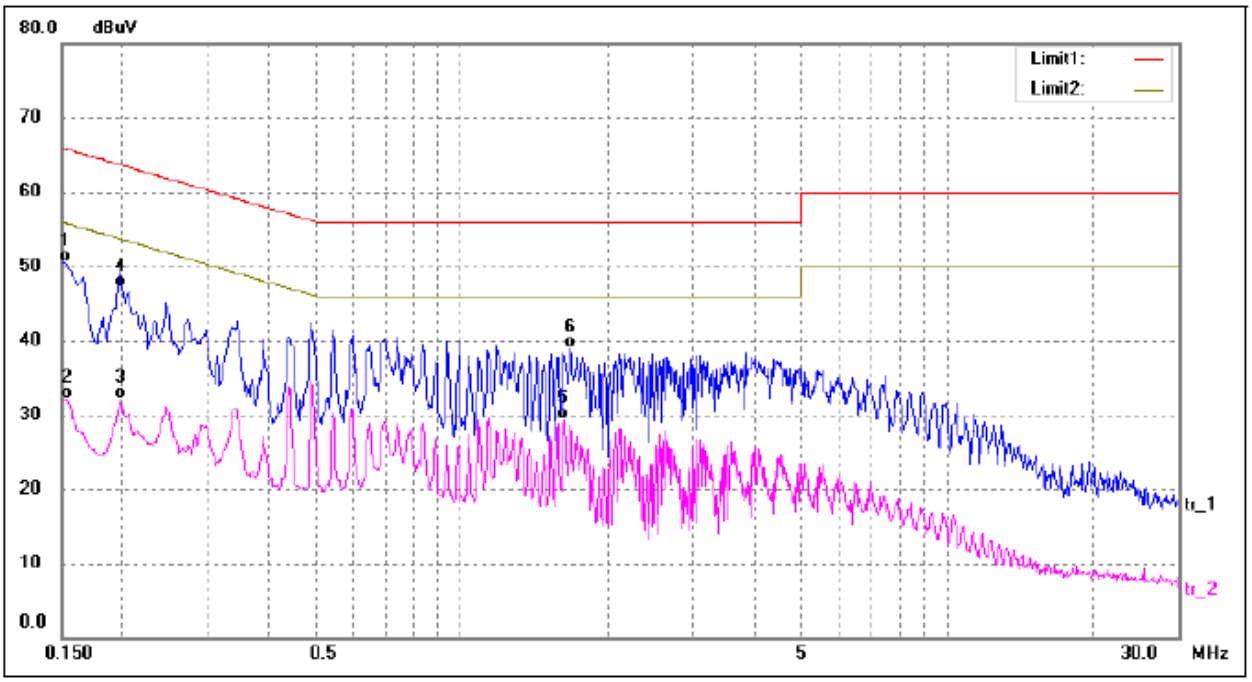
3.4 Test Result

PASS

All the test modes completed for test.



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1500	43.57	9.85	53.42	66.00	-12.58	QP
2	0.1540	27.69	9.85	37.54	55.78	-18.24	AVG
3	0.1980	41.30	9.80	51.10	63.69	-12.59	QP
4	0.2020	27.51	9.80	37.31	53.53	-16.22	AVG
5	0.4940	40.34	9.80	50.14	56.10	-5.96	QP
6*	0.4940	31.48	9.80	41.28	46.10	-4.82	AVG



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1*	0.1500	40.63	9.85	50.48	66.00	-15.52	QP
2	0.1540	22.29	9.85	32.14	55.78	-23.64	AVG
3	0.1980	22.30	9.80	32.10	53.69	-21.59	AVG
4	0.1997	37.37	9.80	47.17	63.62	-16.45	QP
5	1.6300	19.56	9.74	29.30	46.00	-16.70	AVG
6	1.6780	29.08	9.74	38.82	56.00	-17.18	QP

4 RADIATED EMISSION TEST

4.1 Radiation Limit

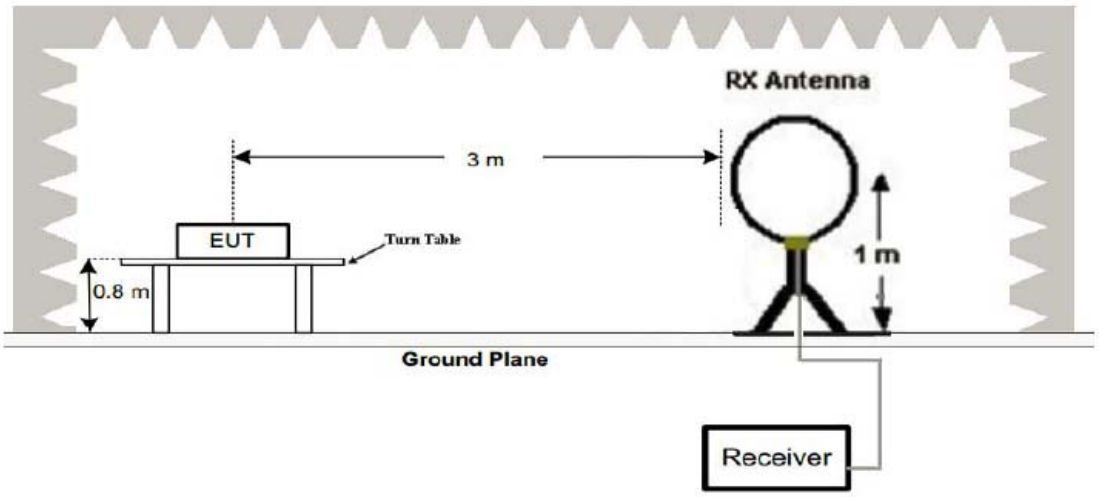
For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values：

Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
30-88	3	40	100
88-216	3	43.5	150
216-960	3	46	200
Above 960	3	54	500

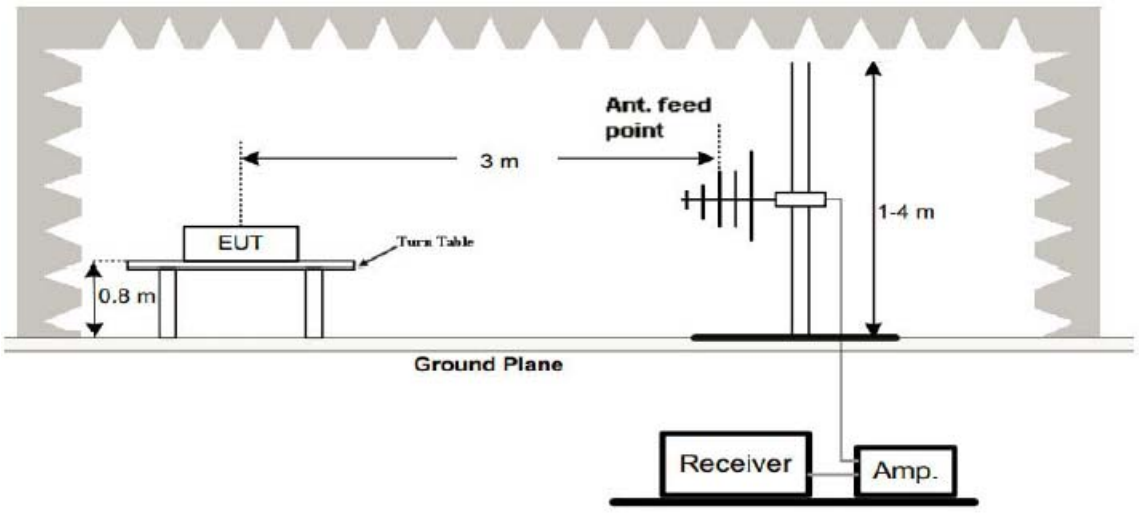
For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

4.2 Test Setup

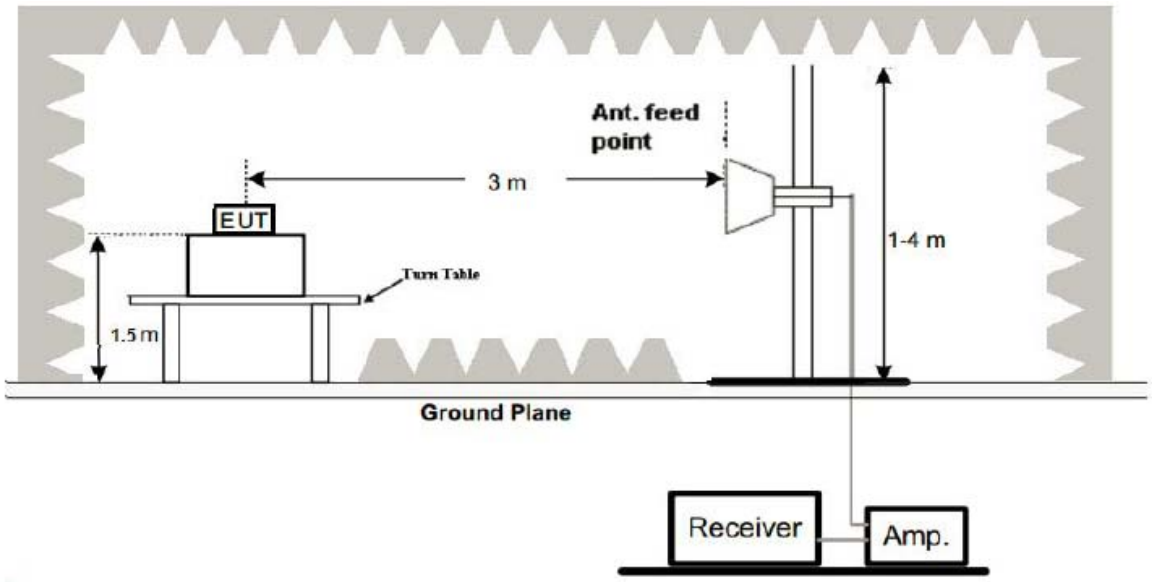
（1）Radiated Emission Test-Up Frequency Below 30MHz



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



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



4.3 Test Procedure

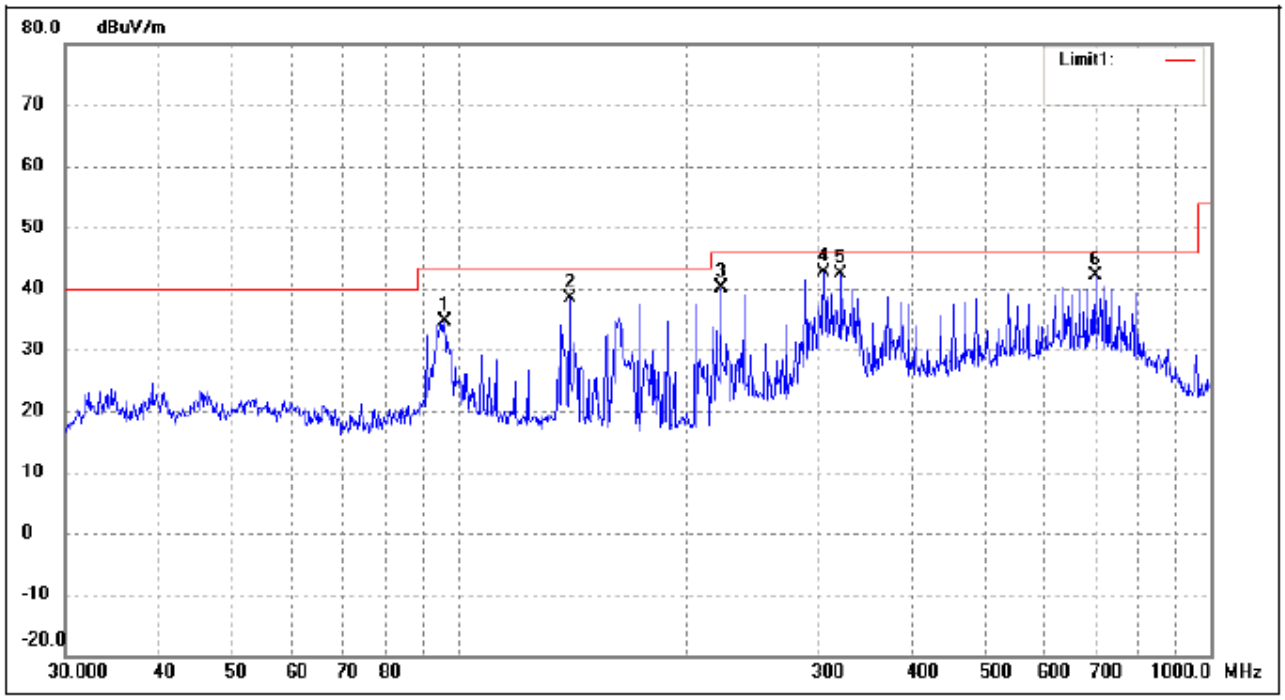
1. Below 1GHz measurement the EUT is placed on turntable which is 0.8m above ground plane. And above 1GHz measurement EUT was placed on low permittivity and low tangent turn table which is 1.5m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum 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

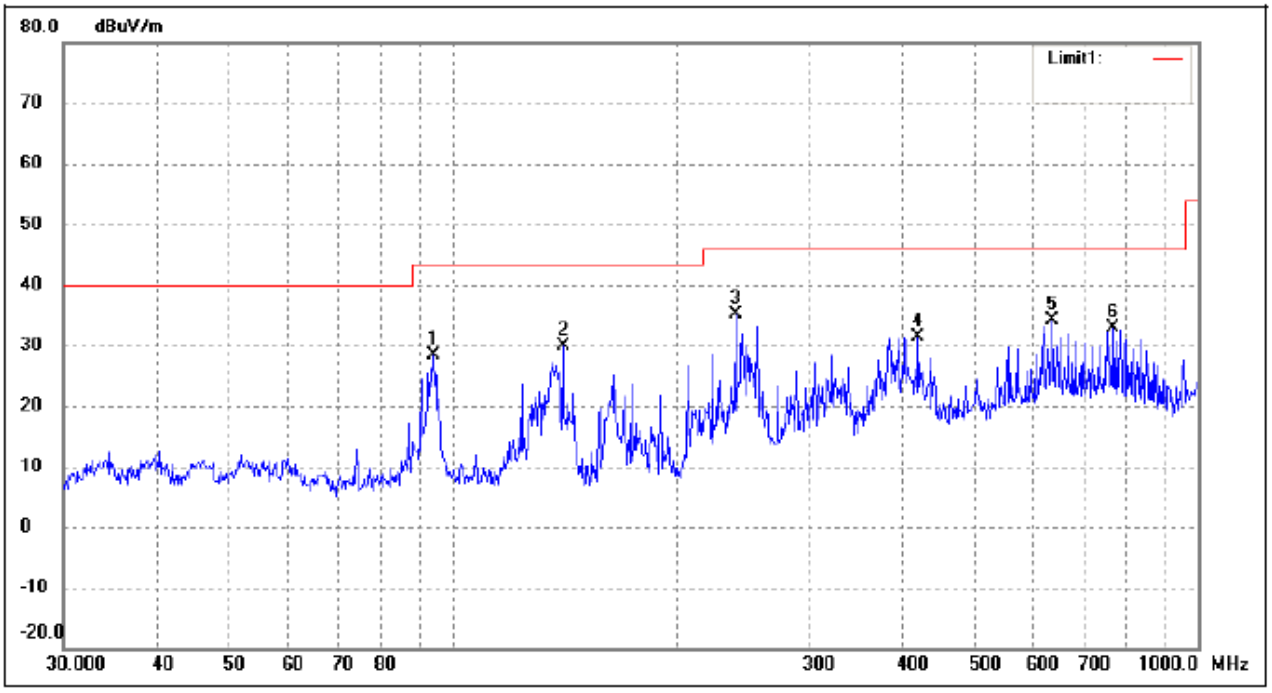
PASS
All the test modes completed for test. The worst case of Radiated Emission; the test data of this mode was reported.

Below 1GHz Test Results:
Antenna polarity: H



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	95.7622	54.70	-20.19	34.51	43.50	-8.99	327	100	peak
2	140.3420	59.68	-21.35	38.33	43.50	-5.17	93	100	peak
3	222.9501	56.86	-16.66	40.20	46.00	-5.80	120	100	peak
4	305.6800	55.25	-12.53	42.72	46.00	-3.28	111	100	peak
5	322.1886	54.65	-12.38	42.27	46.00	-3.73	281	100	peak
6	701.7609	46.82	-4.76	42.06	46.00	-3.94	262	100	peak

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	94.0979	48.82	-20.44	28.38	43.50	-15.12	212	100	peak
2	140.3421	51.33	-21.35	29.98	43.50	-13.52	100	100	peak
3	239.1473	50.83	-15.60	35.23	46.00	-10.77	181	100	peak
4	420.5803	42.75	-11.32	31.43	46.00	-14.57	95	100	peak
5	636.1340	38.37	-4.15	34.22	46.00	-11.78	163	100	peak
6	768.7482	37.05	-4.10	32.95	46.00	-13.05	274	100	peak

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	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3647	62.31	-4.59	57.72	74	-16.28	peak
3647	47.99	-4.59	43.4	54	-10.6	AVG
10360	52.27	3.74	56.01	74	-17.99	peak
10360	38.23	3.74	41.97	54	-12.03	AVG
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---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3647	60.03	-4.59	55.44	74	-18.56	peak
3647	45.54	-4.59	40.95	54	-13.05	AVG
10360	53.12	3.74	56.86	74	-17.14	peak
10360	38.53	3.74	42.27	54	-11.73	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3647	60.27	-4.59	55.68	74	-18.32	peak
3647	45.53	-4.59	40.94	54	-13.06	AVG
10400	52.51	3.74	56.25	74	-17.75	peak
10400	37.64	3.74	41.38	54	-12.62	AVG
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3647	60.08	-4.59	55.49	74	-18.51	peak
3647	46.24	-4.59	41.65	54	-12.35	AVG
10400	51.40	3.74	55.14	74	-18.86	peak
10400	38.21	3.74	41.95	54	-12.05	AVG
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---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3647	59.38	-4.59	54.79	74	-19.21	peak
3647	45.09	-4.59	40.5	54	-13.5	AVG
10480	51.39	3.75	55.14	74	-18.86	peak
10480	37.57	3.75	41.32	54	-12.68	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

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

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3647	62.43	-4.59	57.84	74	-16.16	peak
3647	49.19	-4.59	44.6	54	-9.4	AVG
10480	53.47	3.75	57.22	74	-16.78	peak
10480	40.40	3.75	44.15	54	-9.85	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 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.

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

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3054	61.83	-4.79	57.04	74	-16.96	peak
3054	48.38	-4.79	43.59	54	-10.41	AVG
10360	53.75	3.74	57.49	74	-16.51	peak
10360	39.01	3.74	42.75	54	-11.25	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3054	61.42	-4.79	56.63	74	-17.37	peak
3054	46.77	-4.79	41.98	54	-12.02	AVG
10360	52.34	3.74	56.08	74	-17.92	peak
10360	38.30	3.74	42.04	54	-11.96	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3054	60.98	-4.79	56.19	74	-17.81	peak
3054	47.92	-4.79	43.13	54	-10.87	AVG
10400	51.63	3.74	55.37	74	-18.63	peak
10400	38.38	3.74	42.12	54	-11.88	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3054	62.17	-4.79	57.38	74	-16.62	peak
3054	48.96	-4.79	44.17	54	-9.83	AVG
10400	52.75	3.74	56.49	74	-17.51	peak
10400	39.23	3.74	42.97	54	-11.03	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3054	61.37	-4.79	56.58	74	-17.42	peak
3054	46.55	-4.79	41.76	54	-12.24	AVG
10480	54.07	3.75	57.82	74	-16.18	peak
10480	40.88	3.75	44.63	54	-9.37	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

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

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3054	60.34	-4.79	55.55	74	-18.45	peak
3054	47.32	-4.79	42.53	54	-11.47	AVG
10480	53.90	3.75	57.65	74	-16.35	peak
10480	39.41	3.75	43.16	54	-10.84	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 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.

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

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3432	61.24	-5.21	56.03	74	-17.97	peak
3432	48.13	-5.21	42.92	54	-11.08	AVG
10380	53.91	3.74	57.65	74	-16.35	peak
10380	40.77	3.74	44.51	54	-9.49	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3432	60.30	-5.21	55.09	74	-18.91	peak
3432	46.66	-5.21	41.45	54	-12.55	AVG
10380	54.01	3.74	57.75	74	-16.25	peak
10380	39.68	3.74	43.42	54	-10.58	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3432	59.24	-5.21	54.03	74	-19.97	peak
3432	45.58	-5.21	40.37	54	-13.63	AVG
10460	50.76	3.75	54.51	74	-19.49	peak
10460	37.58	3.75	41.33	54	-12.67	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3432	59.34	-5.21	54.13	74	-19.87	peak
3432	44.48	-5.21	39.27	54	-14.73	AVG
10460	50.33	3.75	54.08	74	-19.92	peak
10460	35.80	3.75	39.55	54	-14.45	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 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.

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

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3647	61.62	-4.59	57.03	74	-16.97	peak
3647	46.95	-4.59	42.36	54	-11.64	AVG
11570	51.80	4.21	56.01	74	-17.99	peak
11570	38.52	4.21	42.73	54	-11.27	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3647	61.37	-4.59	56.78	74	-17.22	peak
3647	47.65	-4.59	43.06	54	-10.94	AVG
11570	53.56	4.21	57.77	74	-16.23	peak
11570	38.84	4.21	43.05	54	-10.95	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3647	61.68	-4.59	57.09	74	-16.91	peak
3647	47.16	-4.59	42.57	54	-11.43	AVG
11570	50.38	4.21	54.59	74	-19.41	peak
11570	36.87	4.21	41.08	54	-12.92	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3647	59.12	-4.59	54.53	74	-19.47	peak
3647	44.57	-4.59	39.98	54	-14.02	AVG
11570	52.00	4.21	56.21	74	-17.79	peak
11570	38.94	4.21	43.15	54	-10.85	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3647	58.65	-4.59	54.06	74	-19.94	peak
3647	43.93	-4.59	39.34	54	-14.66	AVG
11650	49.21	4.84	54.05	74	-19.95	peak
11650	35.95	4.84	40.79	54	-13.21	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

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

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3647	61.74	-4.59	57.15	74	-16.85	peak
3647	47.87	-4.59	43.28	54	-10.72	AVG
11650	49.49	4.84	54.33	74	-19.67	peak
11650	35.10	4.84	39.94	54	-14.06	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 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.

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

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3054	62.15	-4.79	57.36	74	-16.64	peak
3054	47.52	-4.79	42.73	54	-11.27	AVG
11570	50.13	4.21	54.34	74	-19.66	peak
11570	35.58	4.21	39.79	54	-14.21	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3054	61.80	-4.79	57.01	74	-16.99	peak
3054	48.44	-4.79	43.65	54	-10.35	AVG
11570	53.50	4.21	57.71	74	-16.29	peak
11570	39.04	4.21	43.25	54	-10.75	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3054	62.65	-4.79	57.86	74	-16.14	peak
3054	49.07	-4.79	44.28	54	-9.72	AVG
11570	52.13	4.21	56.34	74	-17.66	peak
11570	37.77	4.21	41.98	54	-12.02	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3054	60.47	-4.79	55.68	74	-18.32	peak
3054	46.21	-4.79	41.42	54	-12.58	AVG
11570	52.56	4.21	56.77	74	-17.23	peak
11570	38.95	4.21	43.16	54	-10.84	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3054	59.44	-4.79	54.65	74	-19.35	peak
3054	45.81	-4.79	41.02	54	-12.98	AVG
11650	51.85	4.84	56.69	74	-17.31	peak
11650	37.02	4.84	41.86	54	-12.14	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

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

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3054	61.44	-4.79	56.65	74	-17.35	peak
3054	47.28	-4.79	42.49	54	-11.51	AVG
11650	49.55	4.84	54.39	74	-19.61	peak
11650	34.79	4.84	39.63	54	-14.37	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 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.

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

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3432	61.33	-5.21	56.12	74	-17.88	peak
3432	47.00	-5.21	41.79	54	-12.21	AVG
11510	52.44	4.21	56.65	74	-17.35	peak
11510	39.11	4.21	43.32	54	-10.68	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3432	62.69	-5.21	57.48	74	-16.52	peak
3432	49.24	-5.21	44.03	54	-9.97	AVG
11510	50.26	4.21	54.47	74	-19.53	peak
11510	36.81	4.21	41.02	54	-12.98	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3432	62.74	-5.21	57.53	74	-16.47	peak
3432	49.31	-5.21	44.1	54	-9.9	AVG
11590	51.00	4.21	55.21	74	-18.79	peak
11590	37.38	4.21	41.59	54	-12.41	AVG
---	---	---	---	---	---	---
---	---	---	---	---	---	---

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

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
3432	60.36	-5.21	55.15	74	-18.85	peak
3432	45.62	-5.21	40.41	54	-13.59	AVG
11590	52.40	4.21	56.61	74	-17.39	peak
11590	38.06	4.21	42.27	54	-11.73	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 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/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	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
5150	51.17	-2.49	48.68	74	-25.37	peak
5150	/	-2.49	/	54	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
5150	51.82	-2.49	49.33	74	-24.43	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)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
5250	53.52	-2.28	51.24	74	-22.89	peak
5250	/	-2.28	/	54	/	AVG
5350	47.13	-2.11	45.02	74	-27.77	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)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
5250	53.15	-2.28	50.87	74	-23.44	peak
5250	/	-2.28	/	54	/	AVG
5350	48.92	-2.11	46.81	74	-28.44	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	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
5150	51.26	-2.49	48.77	74	-23.62	peak
5150	/	-2.49	/	54	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
5150	50.77	-2.49	48.28	74	-25.67	peak
5150	/	-2.49	/	54	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Operation Mode: TX CH High with 5.2G

Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
5250	51.41	-2.28	49.13	74	-22.59	peak
5250	/	-2.28	/	54	/	AVG
5350	50.36	-2.11	48.25	74	-28.83	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)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
5250	51.66	-2.28	49.38	74	-23.75	peak
5250	/	-2.28	/	54	/	AVG
5350	48.16	-2.11	46.05	74	-25.51	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	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
5150	52.05	-2.49	49.56	74	-22.73	peak
5150	/	-2.49	/	54	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
5150	52.66	-2.49	50.17	74	-24.52	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)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
5250	51.47	-2.28	49.19	74	-22.31	peak
5250	/	-2.28	/	54	/	AVG
5350	49.39	-2.11	47.28	74	-25.39	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)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
5250	51.86	-2.28	49.58	74	-22.36	peak
5250	/	-2.28	/	54	/	AVG
5350	48.93	-2.11	46.82	74	-28.21	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	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
5460	54.38	-2.06	52.32	74	-22.42	peak
5460	/	-2.06	/	54	/	AVG
5725	49.31	-1.96	47.35	74	-26.57	peak
5725	/	-1.96	/	54	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
5460	52.07	-2.06	50.01	74	-22.36	peak
5460	/	-2.06	/	54	/	AVG
5725	49.81	-1.96	47.85	74	-24.69	peak
5725	/	-1.96	/	54	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Operation Mode: TX CH High with 5.8G

Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
5850	50.23	-1.97	48.26	74	-23.94	peak
5850	/	-1.97	/	54	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
5850	50.26	-1.97	48.29	74	-23.17	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	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
5460	53.42	-2.06	51.36	74	-21.64	peak
5460	/	-2.06	/	54	/	AVG
5725	49.00	-1.96	47.04	74	-24.97	peak
5725	/	-1.96	/	54	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
5460	53.51	-2.06	51.45	74	-23.73	peak
5460	/	-2.06	/	54	/	AVG
5725	49.00	-1.96	47.04	74	-26.91	peak
5725	/	-1.96	/	54	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Operation Mode: TX CH High with 5.8G

Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
5850	52.24	-1.97	50.27	74	-23.31	peak
5850	/	-1.97	/	54	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
5850	52.69	-1.97	50.72	74	-23.99	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	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
5460	52.89	-2.06	50.83	74	-22.59	peak
5460	/	-2.06	/	54	/	AVG
5725	51.48	-1.96	49.52	74	-26.24	peak
5725	/	-1.96	/	54	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
5460	53.75	-2.06	51.69	74	-22.17	peak
5460	/	-2.06	/	54	/	AVG
5725	49.28	-1.96	47.32	74	-26.39	peak
5725	/	-1.96	/	54	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Operation Mode: TX CH High with 5.8G

Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
5850	51.52	-1.97	49.55	74	-25.14	peak
5850	/	-1.97	/	54	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
5850	50.31	-1.97	48.34	74	-25.17	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. fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 106 ppm and the limit is less than ±20ppm (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°C~50°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	5179.989	11	5239.984	16
	108 V	5179.984	16	5239.981	19

Mode	Temperature (℃)	FHL (5180MHz)	Deviation (KHz)	FHH (5240MHz)	Deviation (KHz)
5.2G Band	-30	5179.952	48	5239.953	47
	-20	5179.952	48	5239.955	45
	-10	5179.974	26	5239.971	29
	0	5179.976	24	5239.977	23
	10	5179.975	25	5239.976	24
	20	5179.987	13	5239.984	16
	30	5179.979	21	5239.979	21
	40	5179.979	21	5239.974	26
	50	5179.962	38	5239.961	39

Mode	Voltage (V)	FHL (5745MHz)	Deviation (KHz)	FHH (5825MHz)	Deviation (KHz)
5.8G Band	132 V	5744.982	18	5824.984	16
	120 V	5744.983	17	5824.986	14
	108 V	5744.989	11	5824.985	15

Mode	Temperature (℃)	FHL (5745MHz)	Deviation (KHz)	FHH (5825MHz)	Deviation (KHz)
5.8G Band	-30	5744.967	33	5824.964	36
	-20	5744.952	48	5824.969	31
	-10	5744.978	22	5824.975	25
	0	5744.974	26	5824.971	29
	10	5744.971	29	5824.972	28
	20	5744.981	19	5824.989	11
	30	5744.978	22	5824.977	23
	40	5744.974	26	5824.975	25
	50	5744.966	34	5824.961	39

7 OCCUPIED BANDWIDTH MEASUREMENT

7.1 Test Limit

Please refer section15.407

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 = 1-5 % EBW, VBW≥3RBW, Sweep time set auto, detail see the test plot.

7.3 Measurement Equipment Used

Same as Radiated Emission Measurement

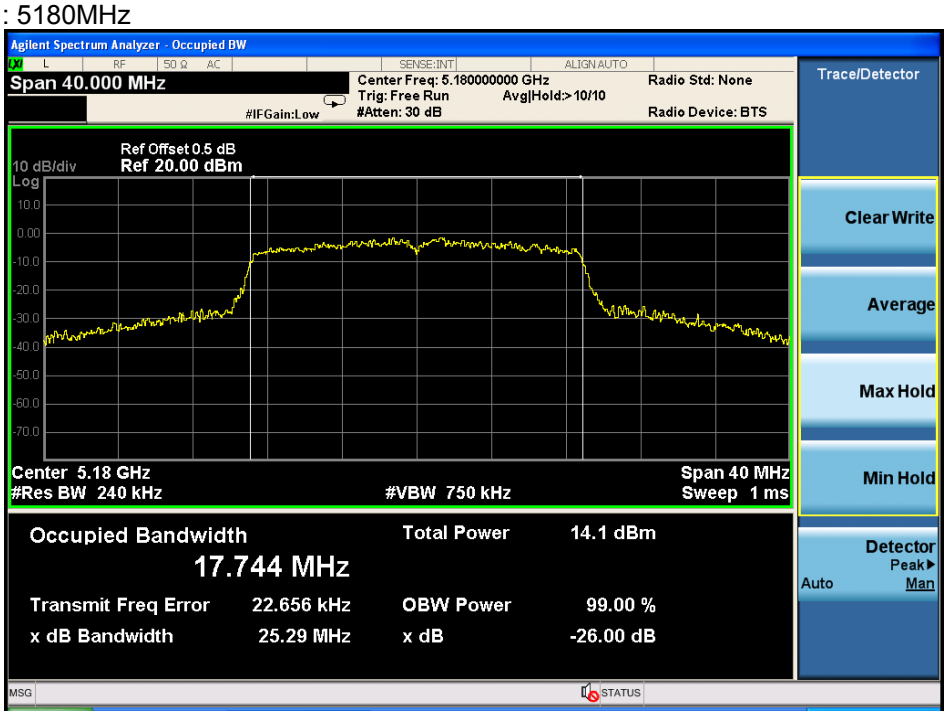
7.4 Test Result

PASS

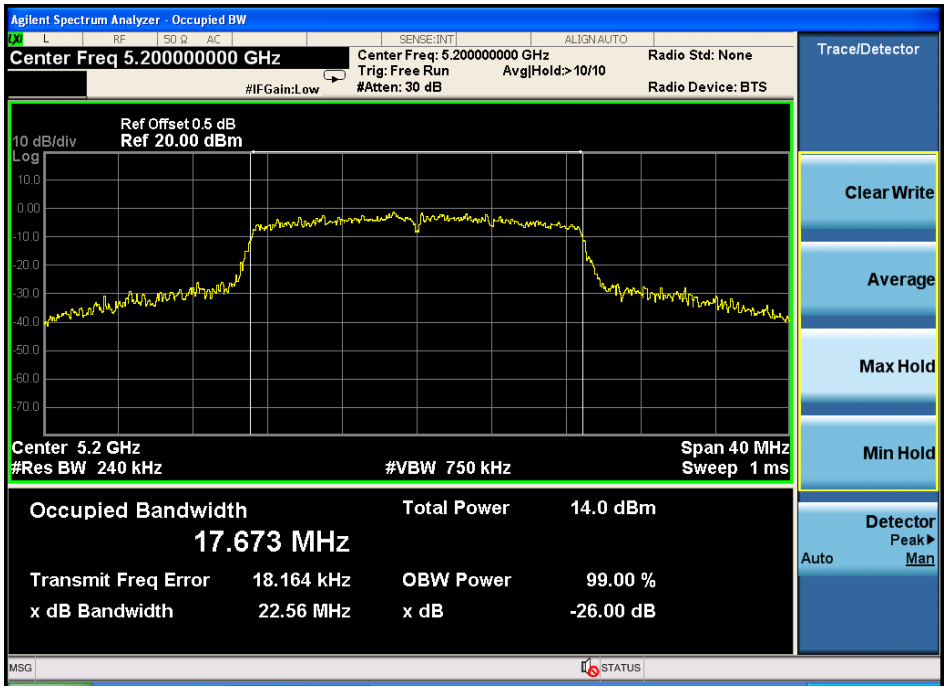
All the test modes completed for test.

TX 802.11a Mode with 5.2G			
Frequency	**26dB Bandwidth (MHz)**	**Channel Separation (MHz)**	**Result**
5180 MHz	25.29	/	**PASS**
5200 MHz	22.56	/	**PASS**
5240 MHz	22.15	/	**PASS**

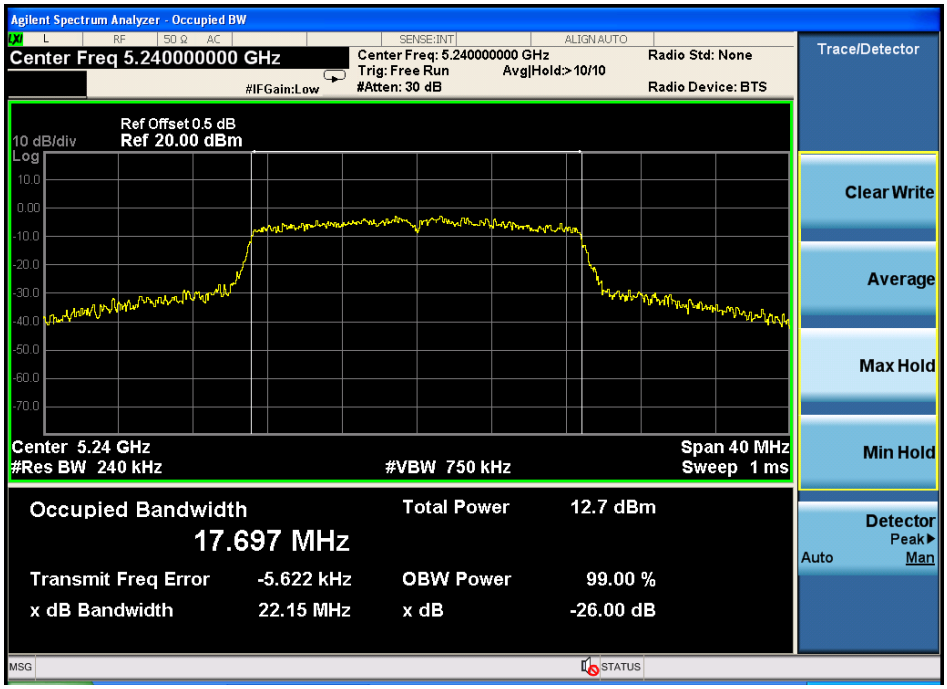
CH: 5180MHz



CH: 5200MHz

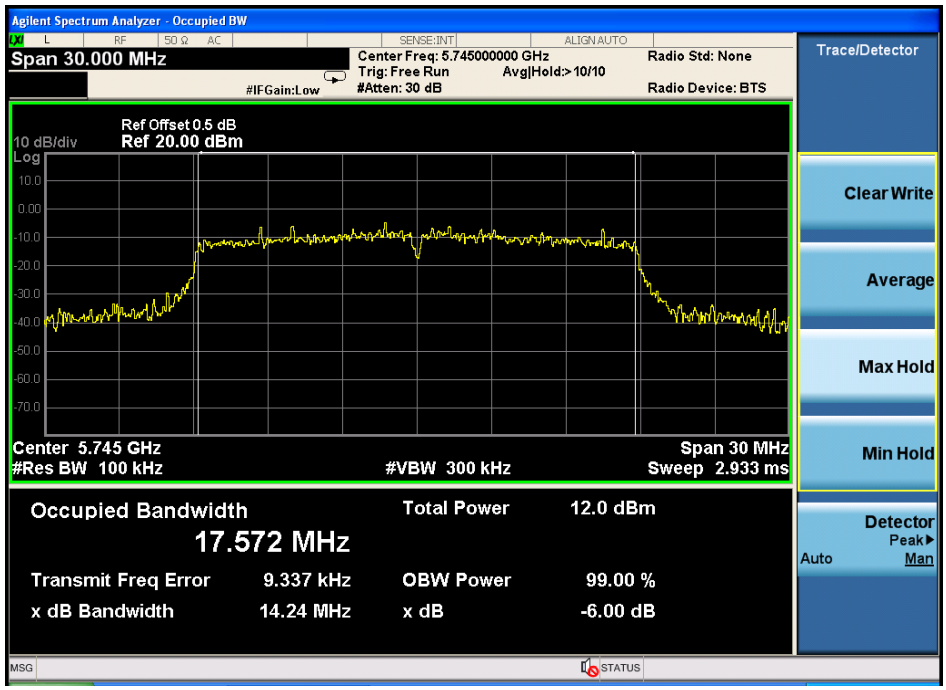


CH: 5240MHz

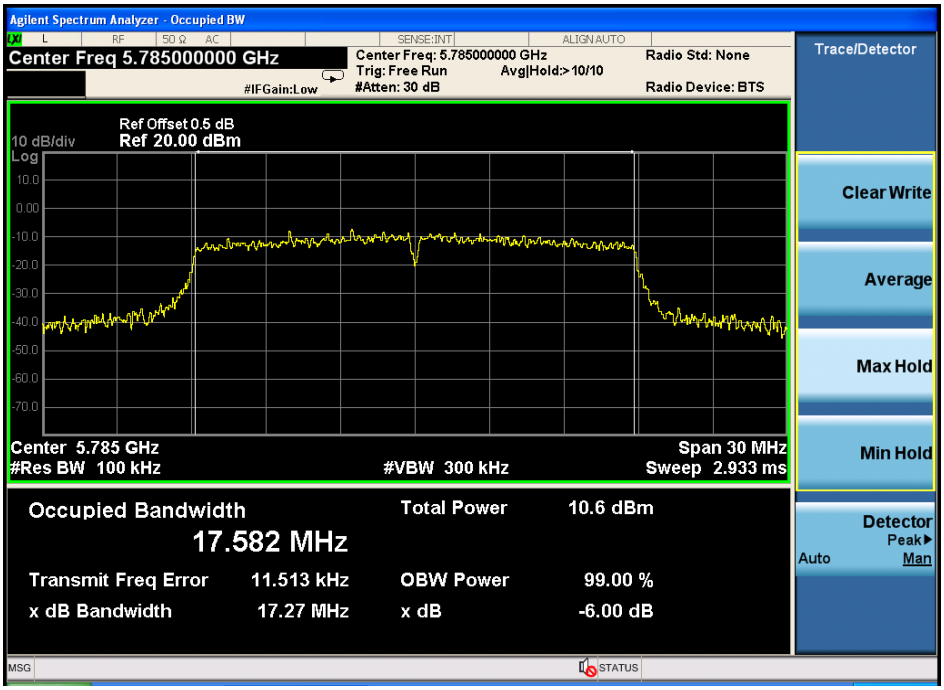


TX 802.11a Mode with 5.8G			
Frequency	**6dB Bandwidth (MHz)**	**Channel Separation (MHz)**	**Result**
5745 MHz	14.24	/	**PASS**
5785 MHz	17.27	/	**PASS**
5825 MHz	15.73	/	**PASS**

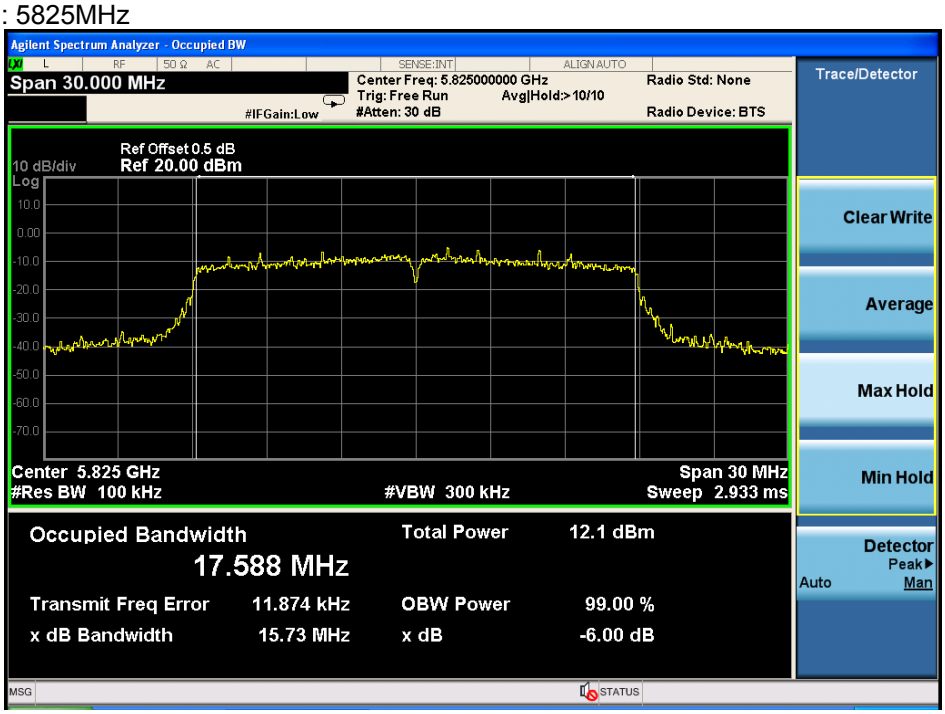
CH: 5745MHz



CH: 5785MHz

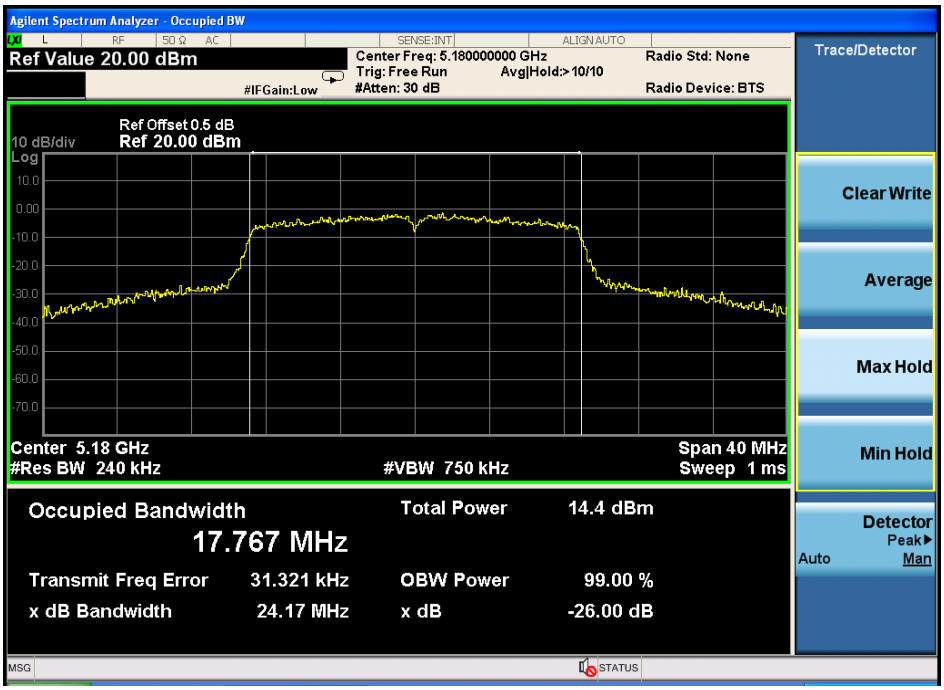


CH: 5825MHz

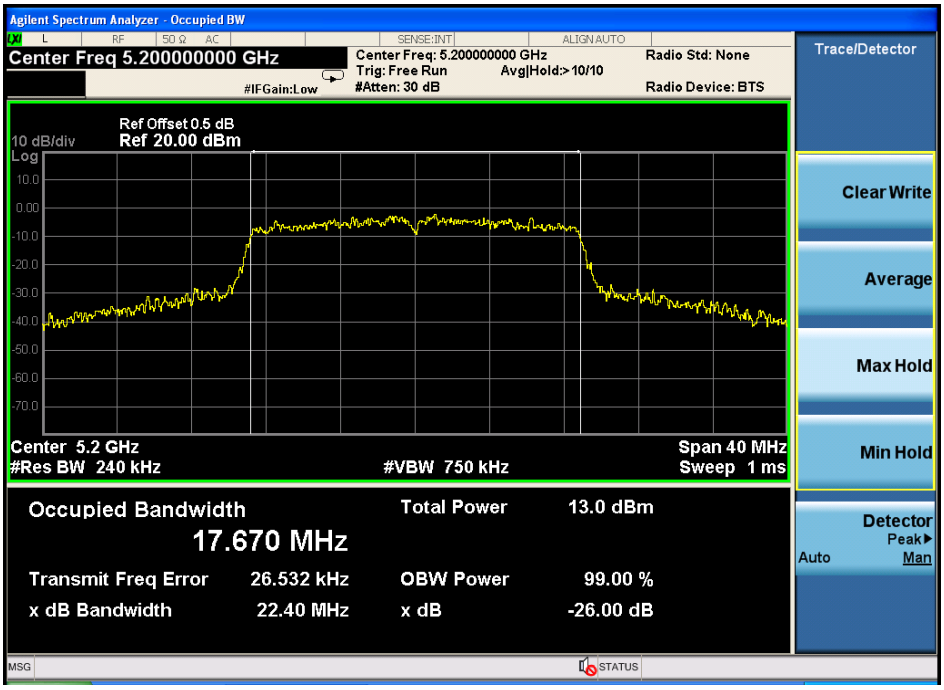


TX 802.11n20 Mode with 5.2G			
Frequency	**26dB Bandwidth (MHz)**	**Channel Separation (MHz)**	**Result**
5180 MHz	24.17	/	**PASS**
5200 MHz	22.40	/	**PASS**
5240 MHz	20.60	/	**PASS**

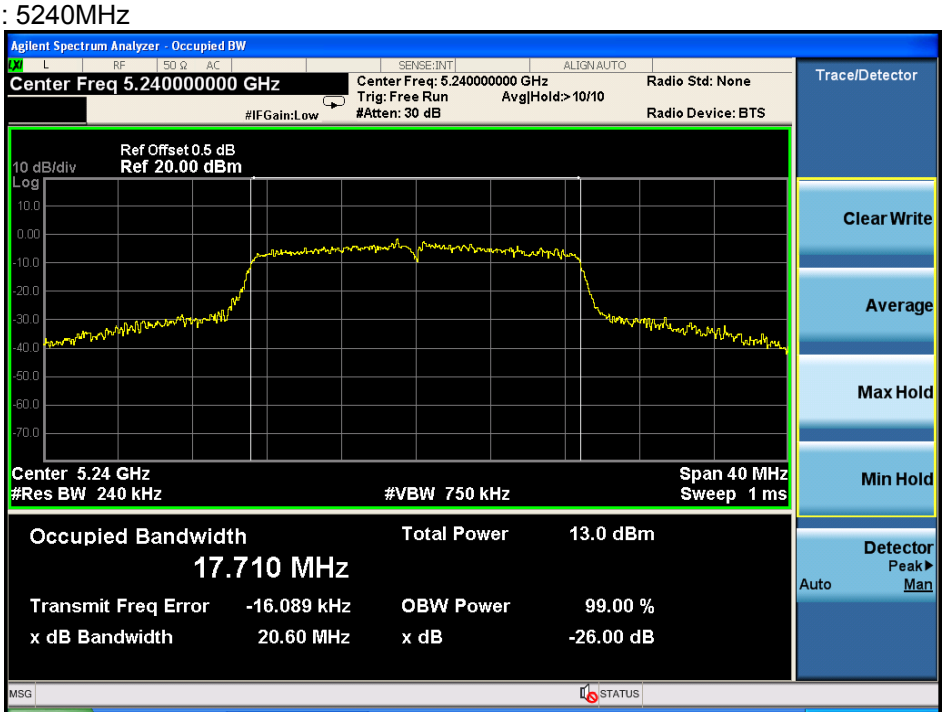
CH: 5180MHz



CH: 5200MHz

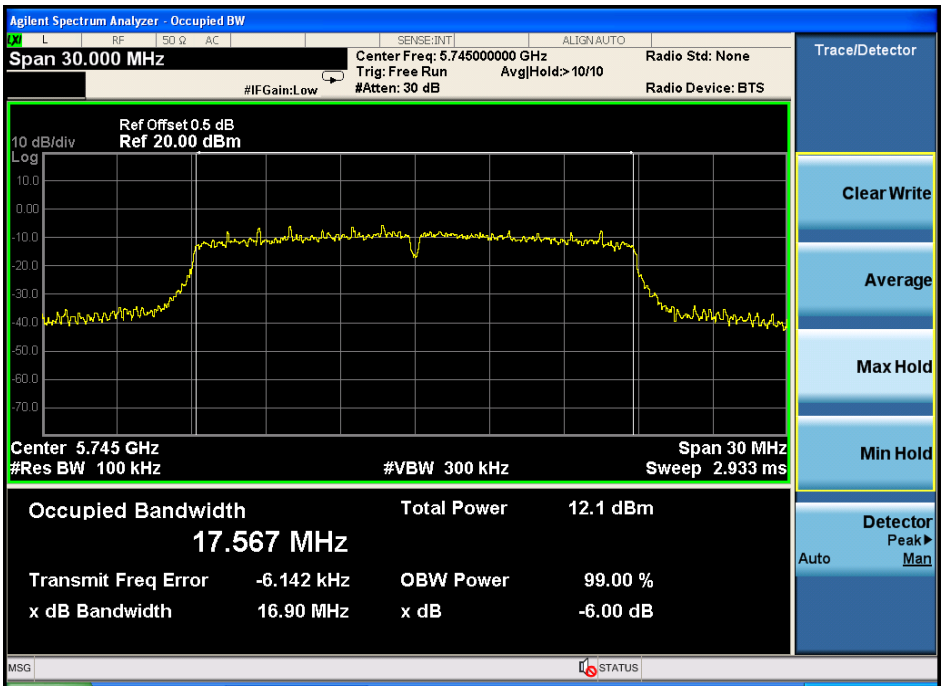


CH: 5240MHz

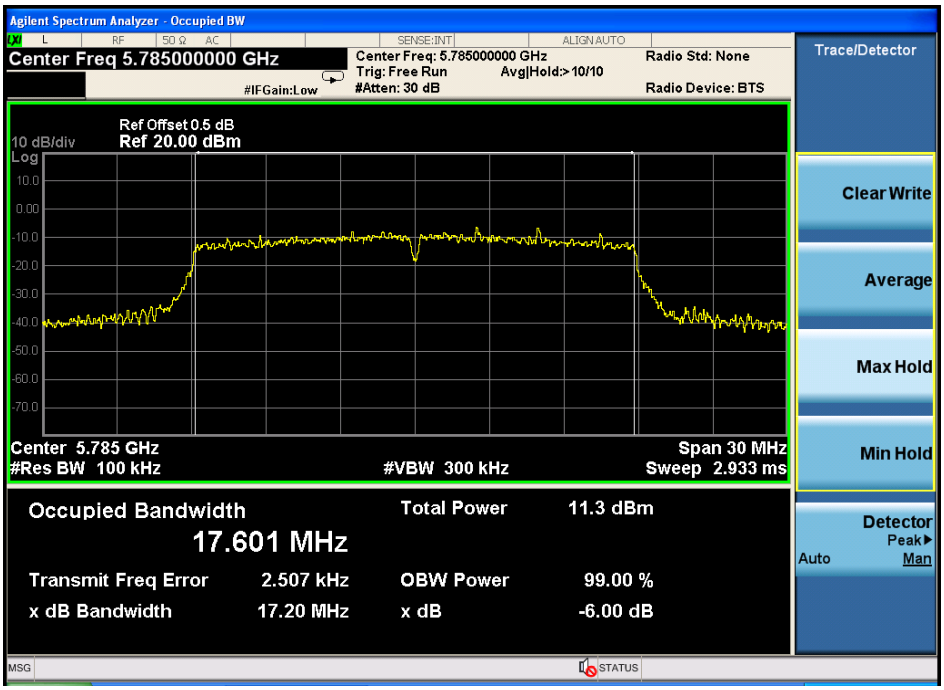


TX 802.11n20 Mode with 5.8G			
Frequency	**6dB Bandwidth (MHz)**	**Channel Separation (MHz)**	**Result**
5745 MHz	16.90	/	**PASS**
5785 MHz	17.20	/	**PASS**
5825 MHz	15.09	/	**PASS**

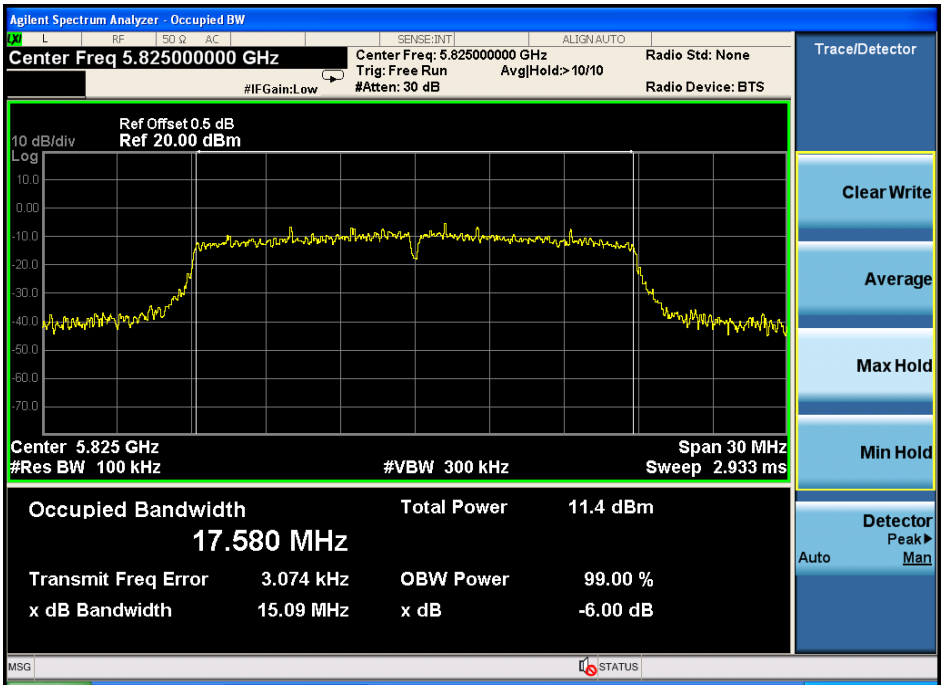
CH: 5745MHz



CH: 5785MHz

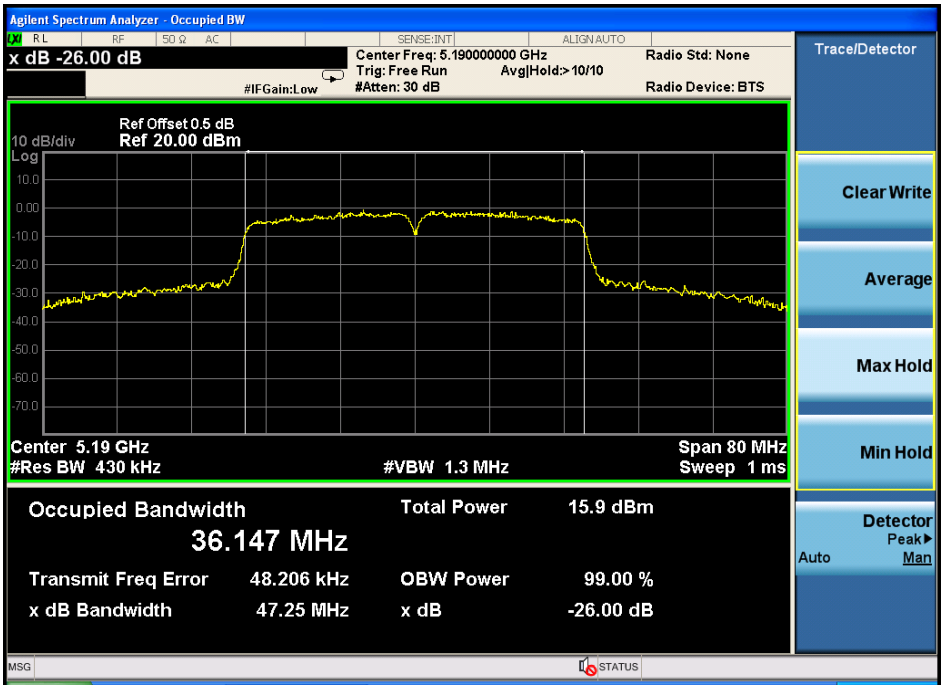


CH: 5825MHz

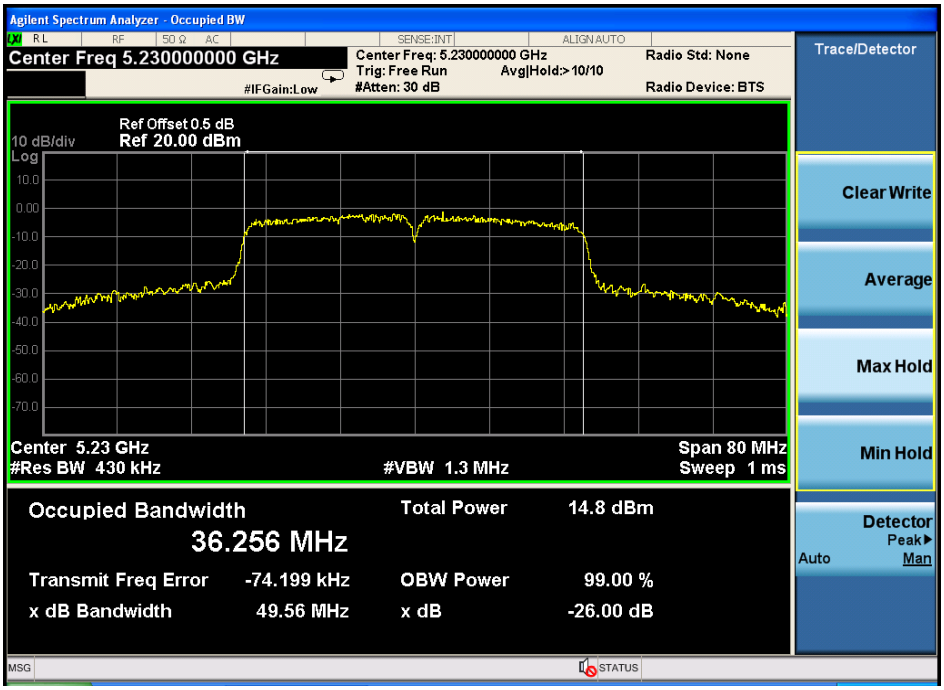


TX 802.11n40 Mode with 5.2G			
Frequency	**26dB Bandwidth (MHz)**	**Channel Separation (MHz)**	**Result**
5190 MHz	47.25	/	**PASS**
5230 MHz	49.56	/	**PASS**

CH: 5190 MHz

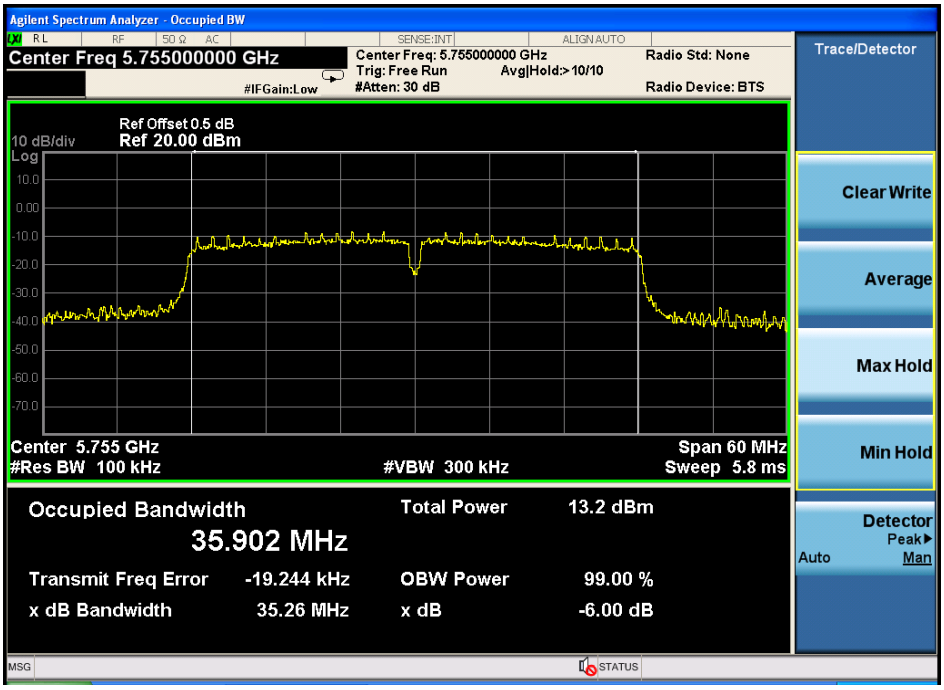


CH: 5230 MHz

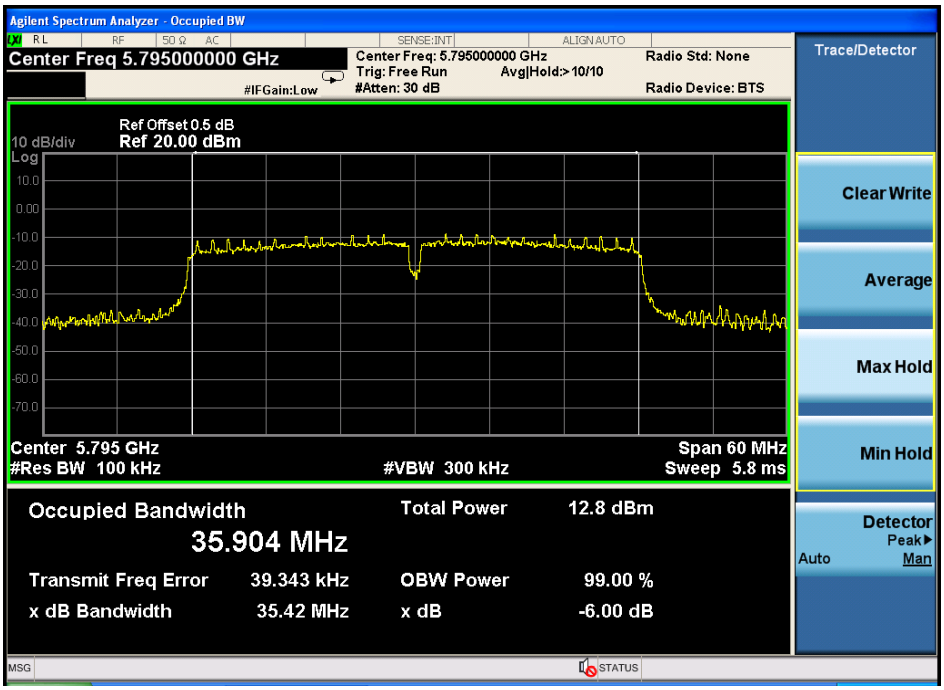


TX 802.11n40 Mode with 5.8G			
Frequency	**6dB Bandwidth (MHz)**	**Channel Separation (MHz)**	**Result**
5755 MHz	35.26	/	**PASS**
5795 MHz	35.42	/	**PASS**

CH: 5755 MHz



CH: 5795 MHz



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

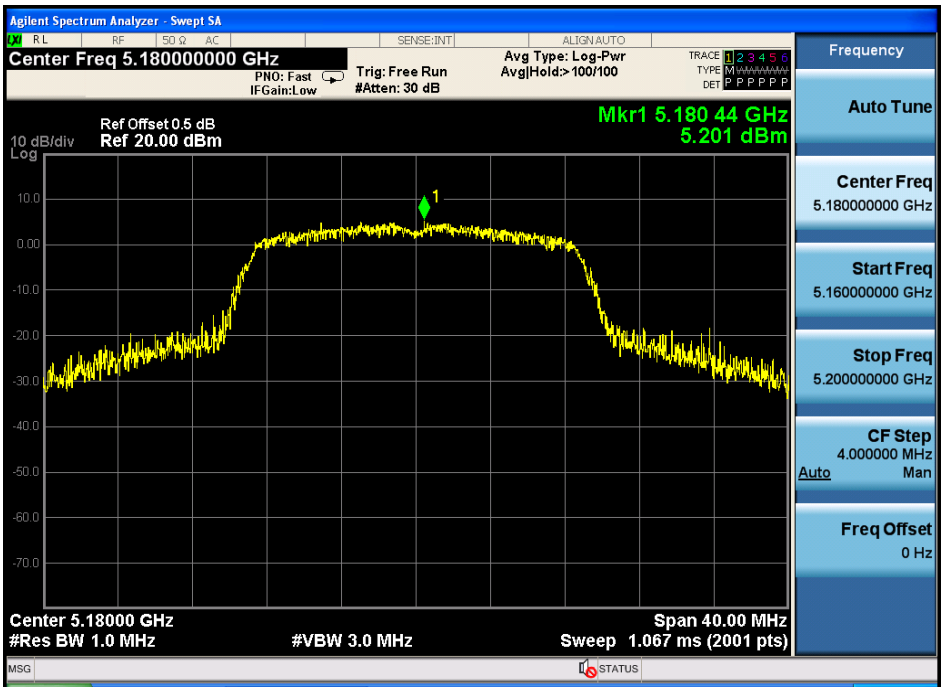
8.4 Test Result

PASS

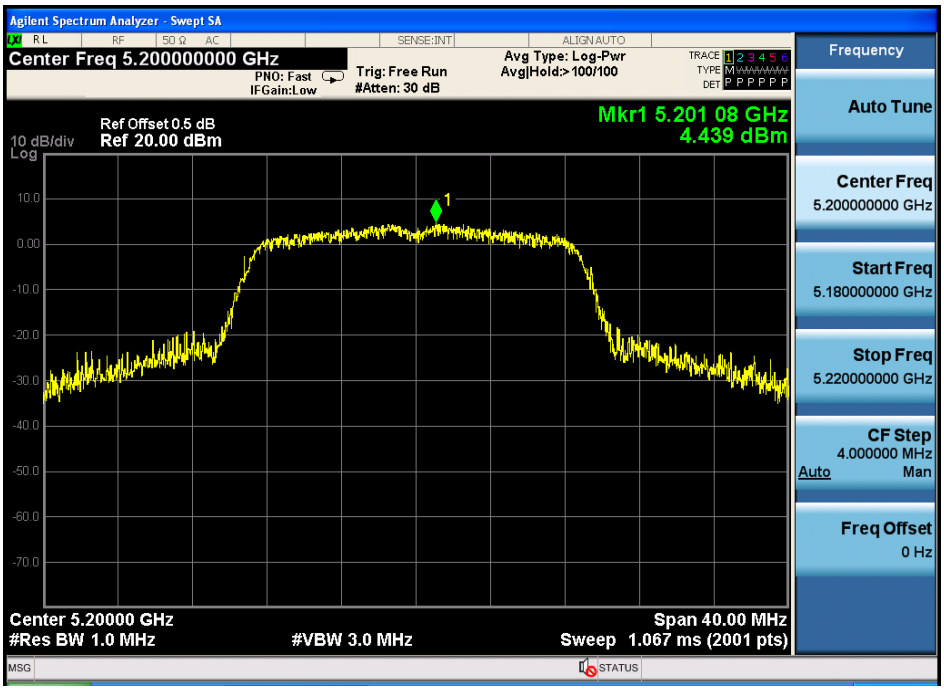
All the test modes completed for test.

TX 802.11a Mode			
Frequency	**Power Density (dBm)**	**Limit (dBm)**	**Result**
5180 MHz	5.201	11	**PASS**
5200 MHz	4.439	11	**PASS**
5240 MHz	4.459	11	**PASS**
5745 MHz	0.411	30	**PASS**
5785 MHz	-0.628	30	**PASS**
5825 MHz	0.189	30	**PASS**

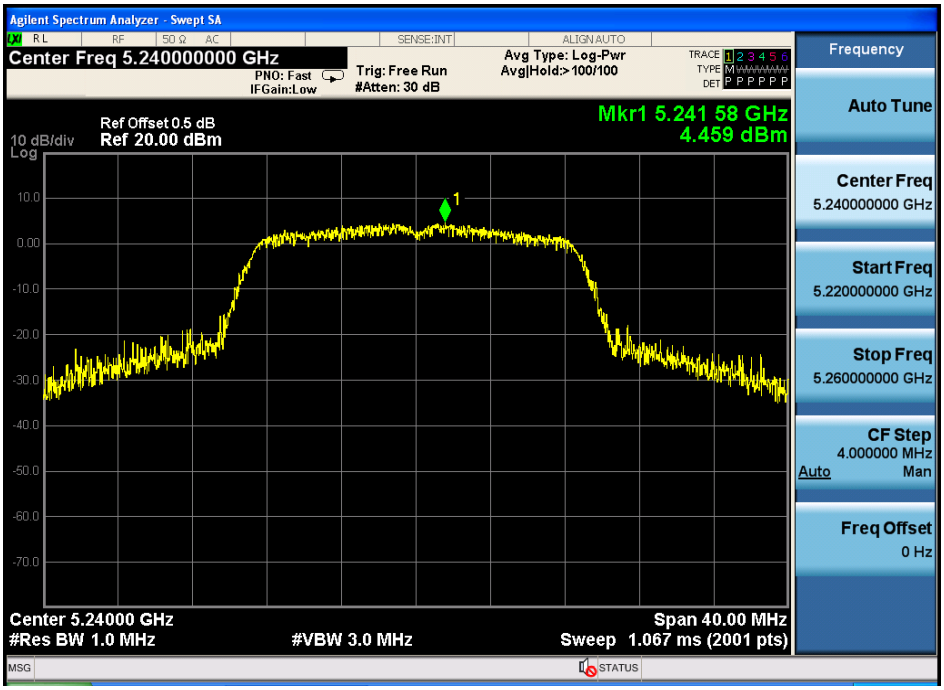
CH: 5180MHz



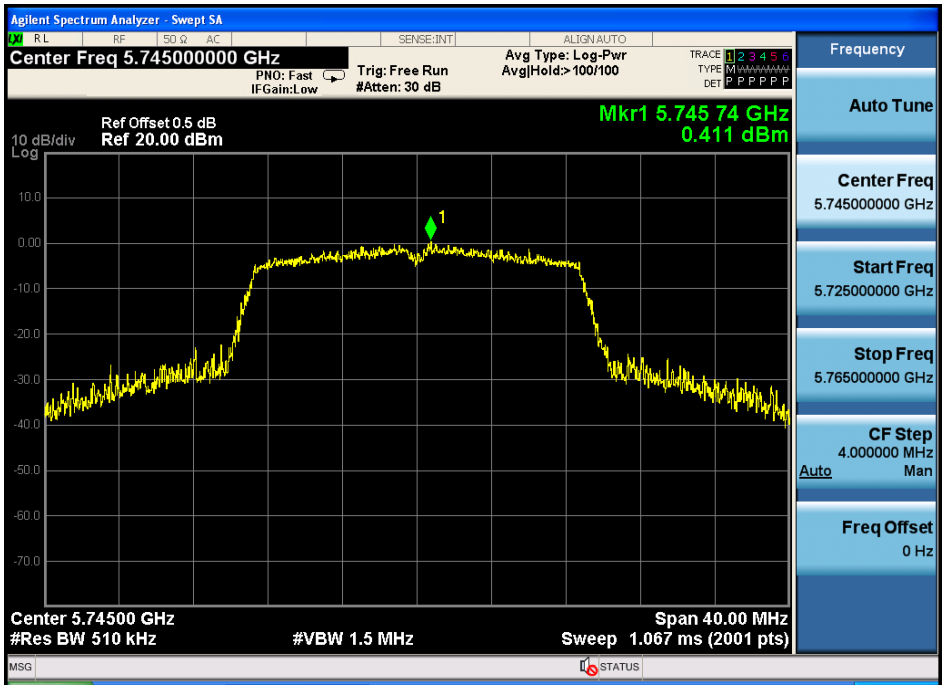
CH: 5200MHz



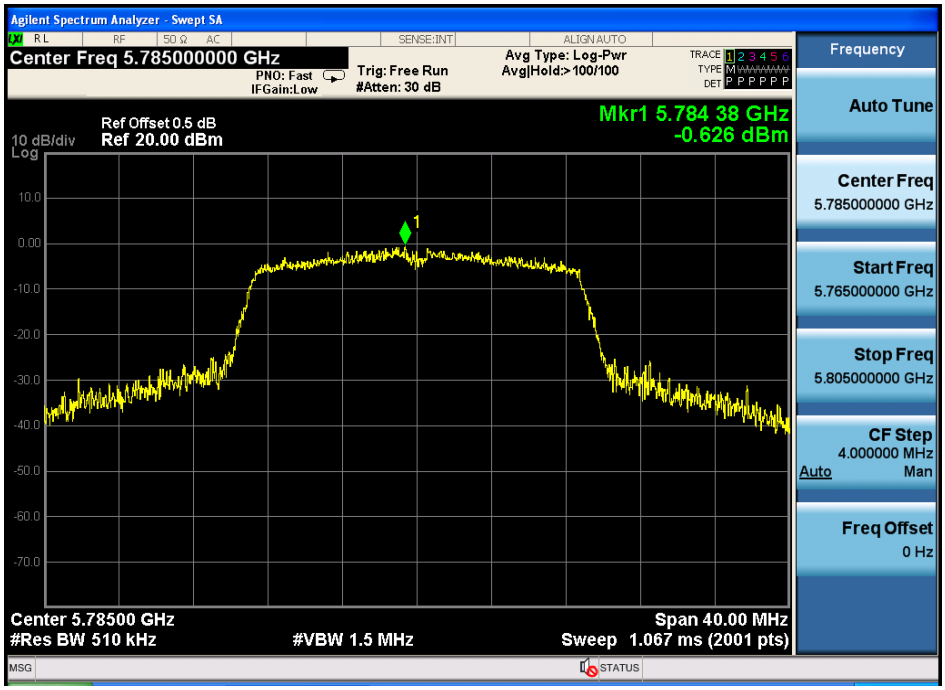
CH: 5240MHz



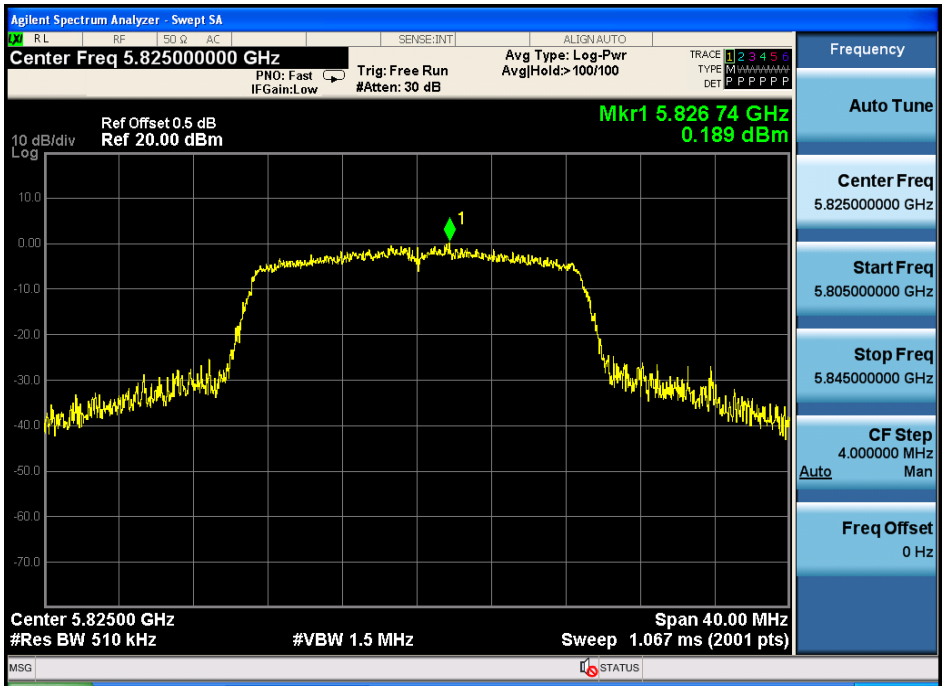
CH: 5745MHz



CH: 5785MHz

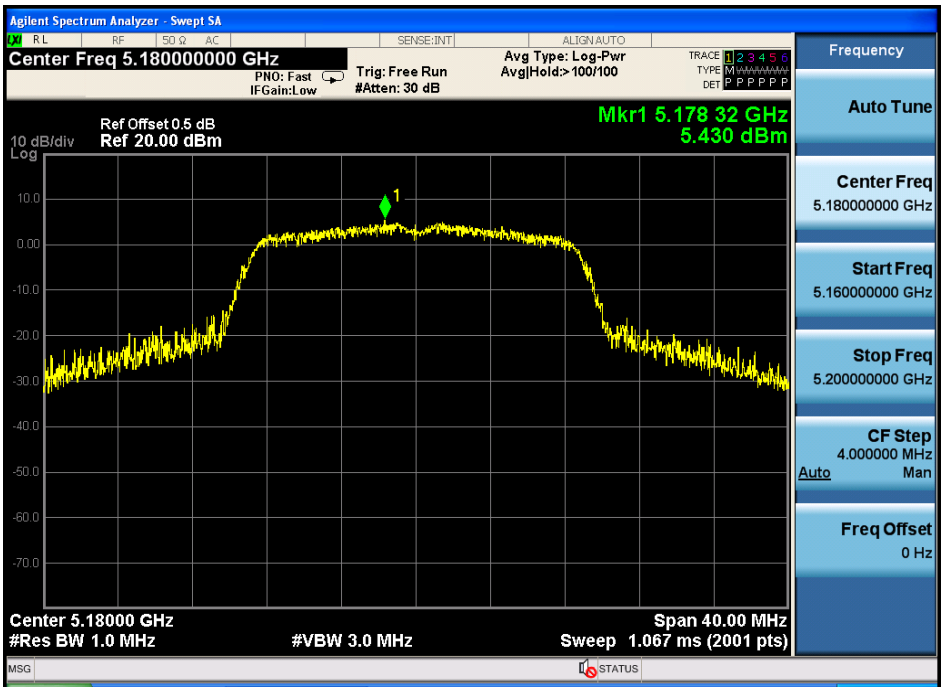


CH: 5825MHz

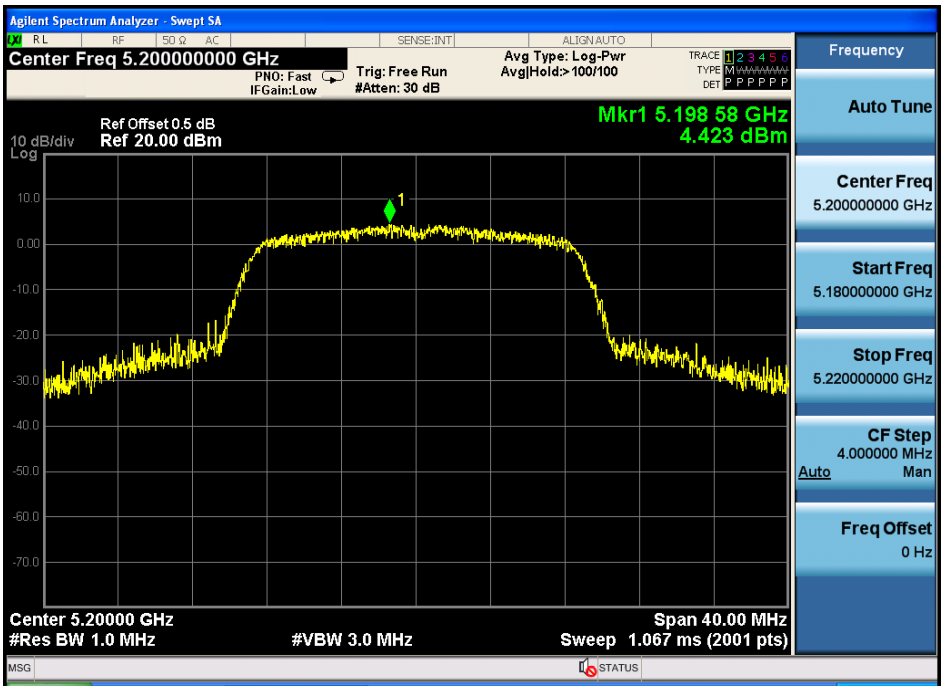

Agilent Spectrum Analyzer - Swept SA
Center Freq 5.825000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ref Offset 0.5 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 5.826 74 GHz
0.189 dBm
Center 5.82500 GHz
#Res BW 510 kHz
#VBW 1.5 MHz
Span 40.00 MHz
Sweep 1.067 ms (2001 pts)
Frequency
Auto Tune
Center Freq
5.825000000 GHz
Start Freq
5.805000000 GHz
Stop Freq
5.845000000 GHz
CF Step
4.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

TX 802.11n20 Mode with 5.2G			
Frequency	**Power Density (dBm)**	**Limit (dBm)**	**Result**
5180 MHz	5.430	11	**PASS**
5200 MHz	4.423	11	**PASS**
5240 MHz	4.594	11	**PASS**
5745 MHz	-1.033	30	**PASS**
5785 MHz	-1.378	30	**PASS**
5825 MHz	-0.443	30	**PASS**

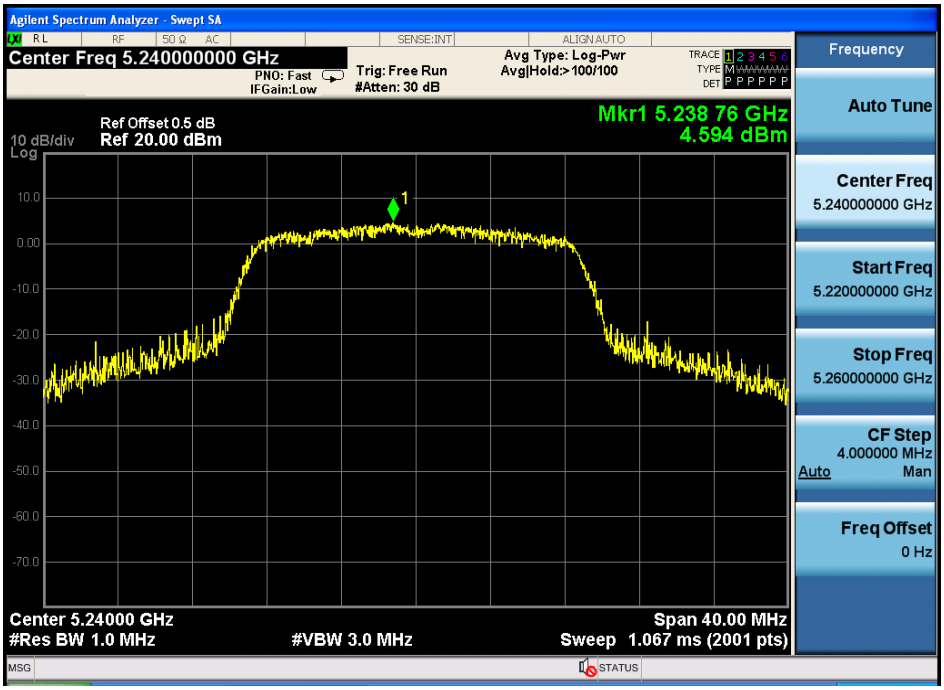
CH: 5180MHz



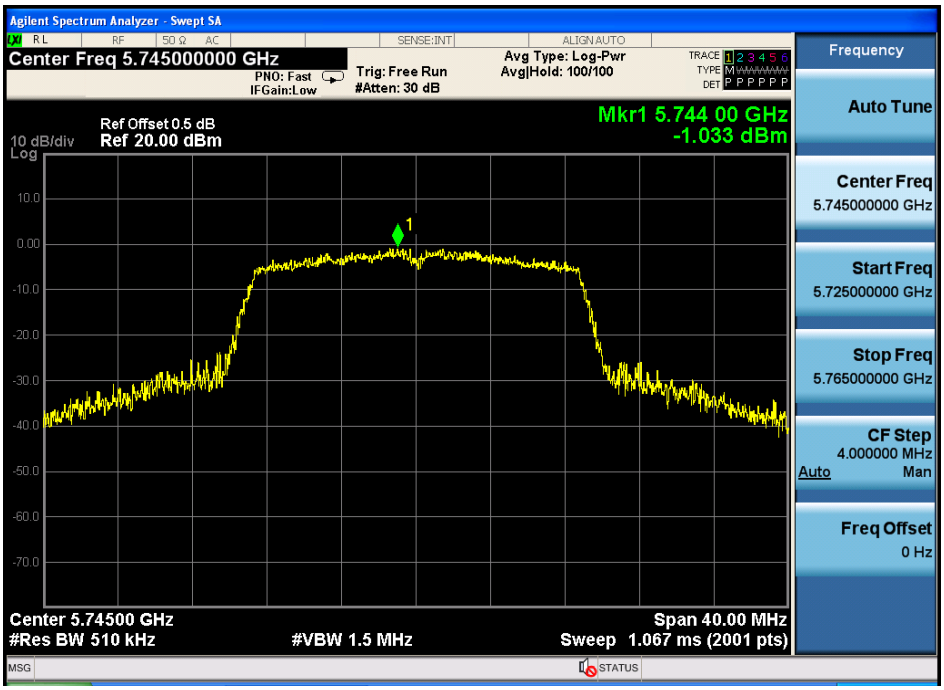
CH: 5200MHz



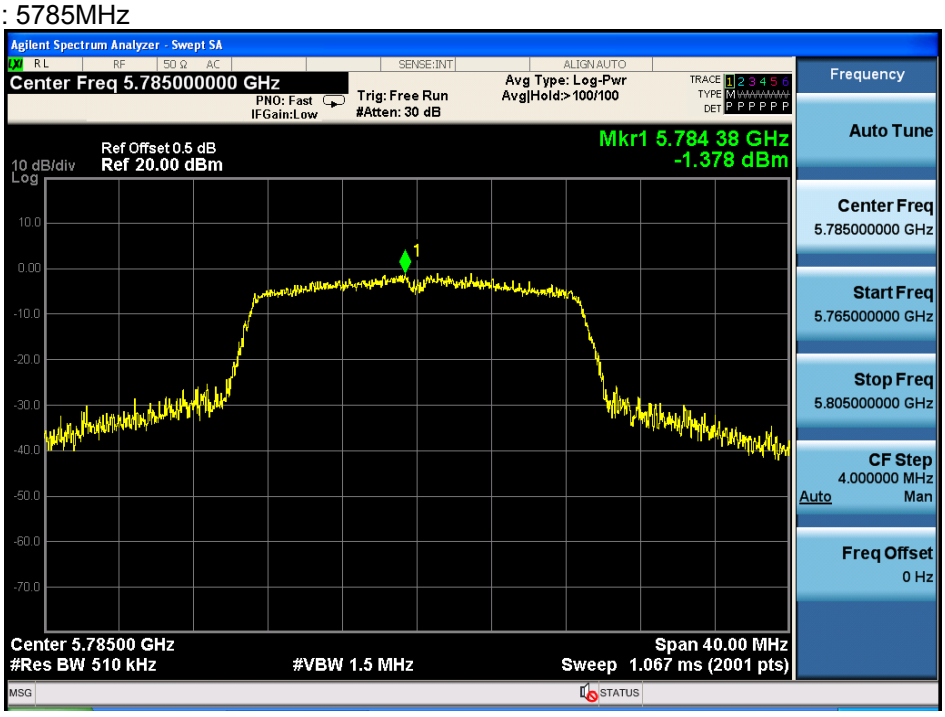
CH: 5240MHz



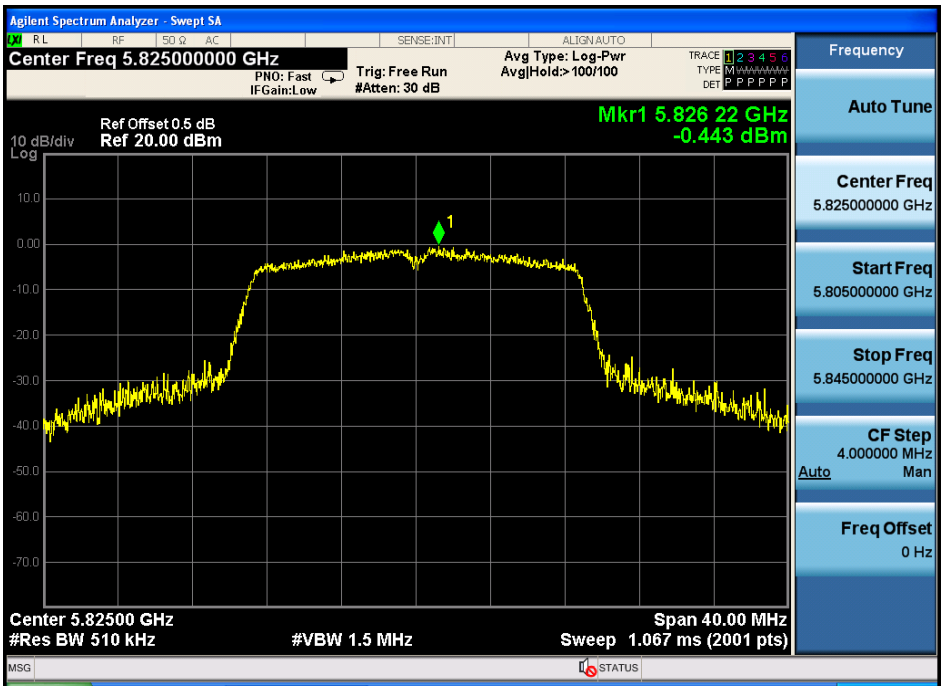
CH: 5745MHz



CH: 5785MHz

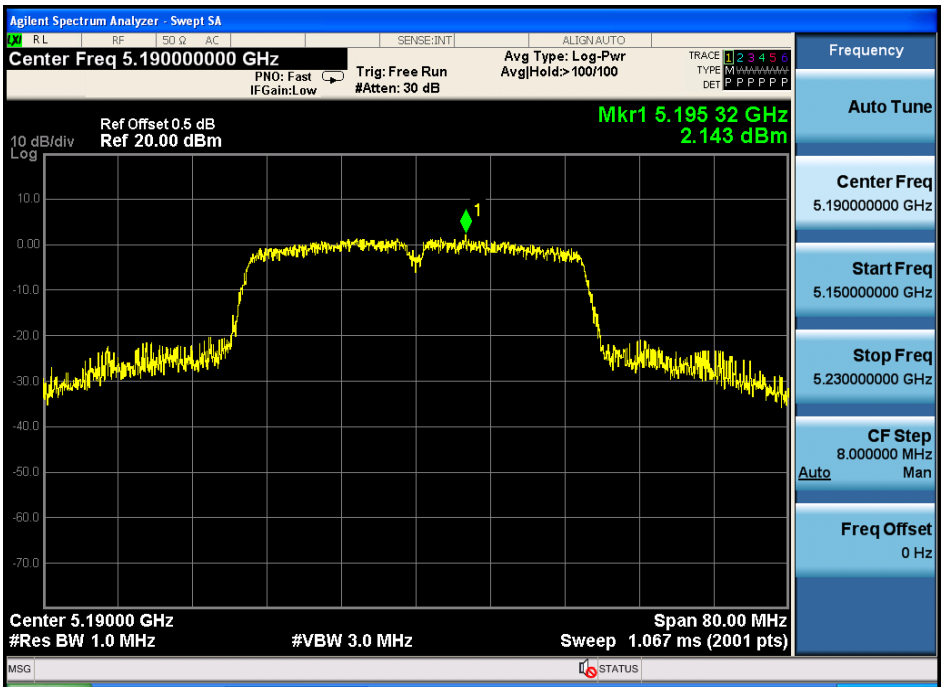


CH: 5825MHz

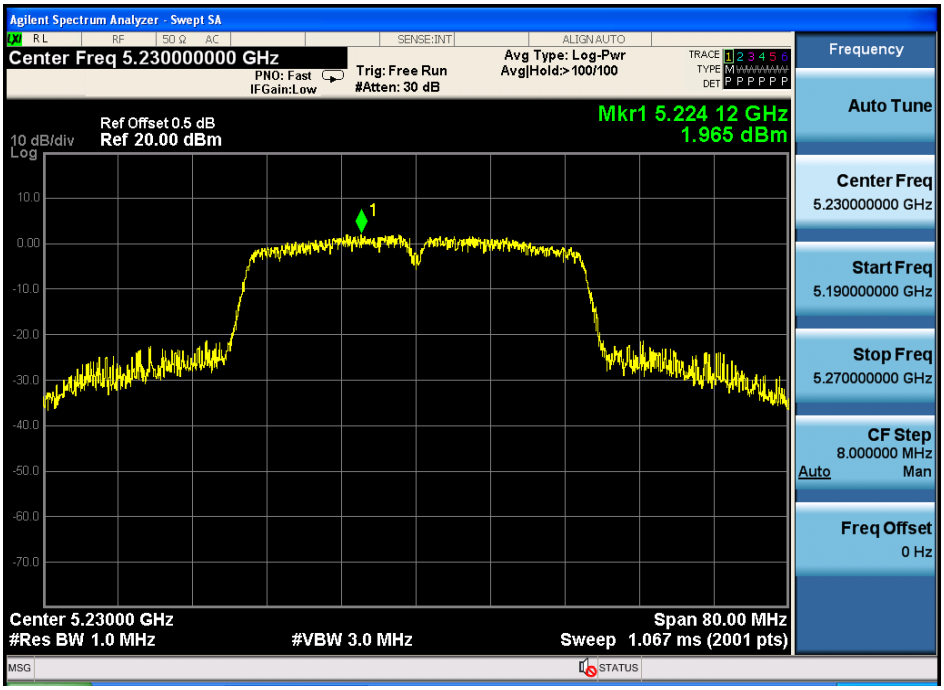

Agilent Spectrum Analyzer - Swept SA
Center Freq 5.825000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ref Offset 0.5 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 5.826 22 GHz
-0.443 dBm
Center 5.82500 GHz
#Res BW 510 kHz
#VBW 1.5 MHz
Span 40.00 MHz
Sweep 1.067 ms (2001 pts)
Frequency
Auto Tune
Center Freq
5.825000000 GHz
Start Freq
5.805000000 GHz
Stop Freq
5.845000000 GHz
CF Step
4.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

TX 802.11n40 Mode with 5.2G			
Frequency	**Power Density (dBm)**	**Limit (dBm)**	**Result**
5190 MHz	2.143	11	**PASS**
5230 MHz	1.965	11	**PASS**
5755 MHz	-3.299	30	**PASS**
5795 MHz	-2.965	30	**PASS**

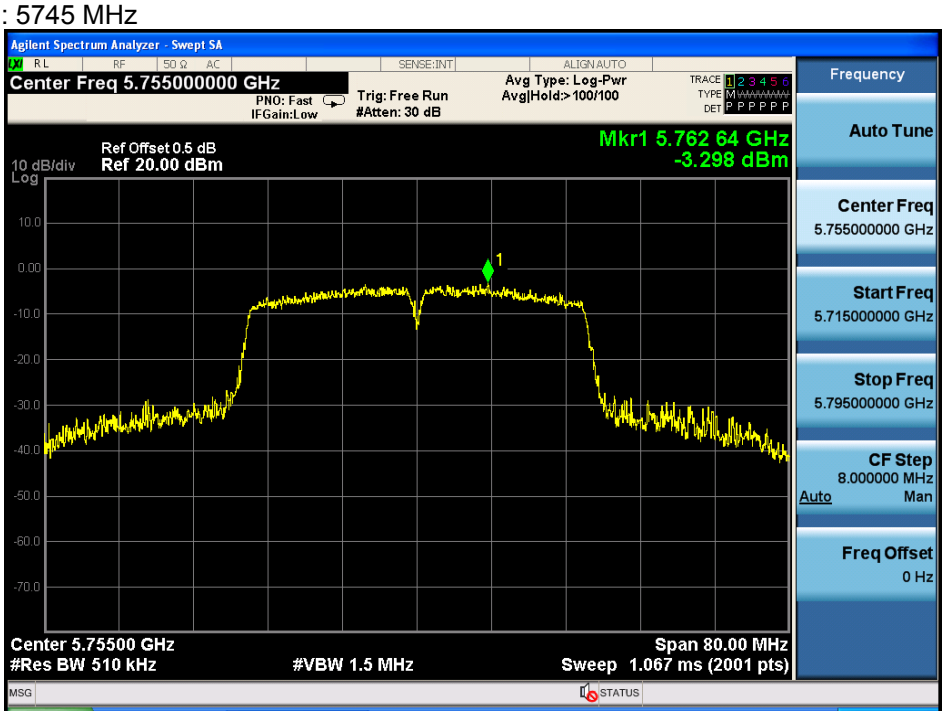
CH: 5190 MHz



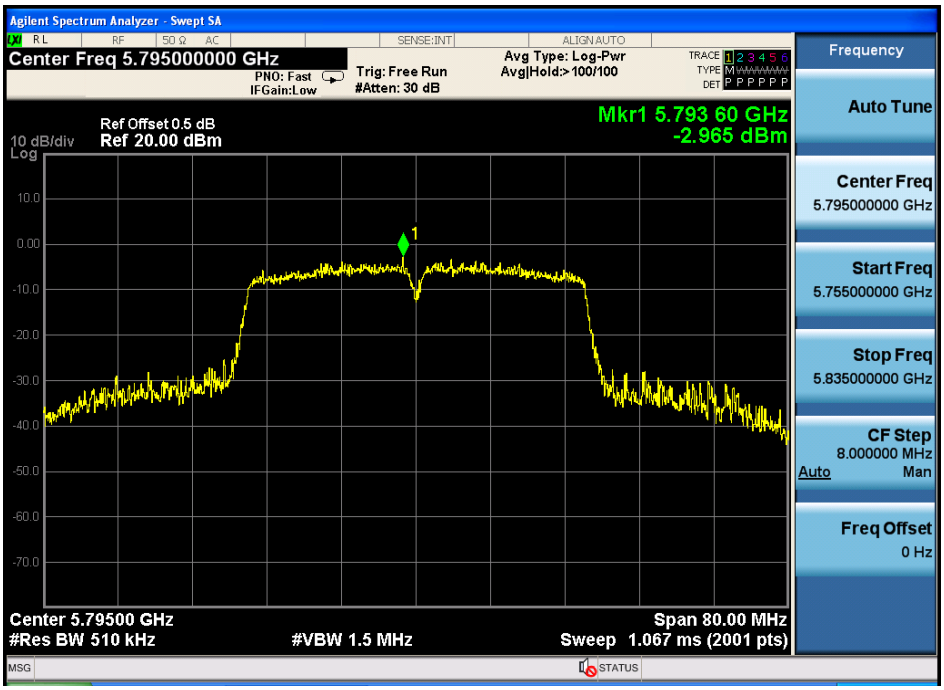
CH: 5230 MHz



CH: 5745 MHz



CH: 5795 MHz


Agilent Spectrum Analyzer - Swept SA
Center Freq 5.795000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Ref Offset 0.5 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 5.793 60 GHz
-2.965 dBm
Center 5.79500 GHz
#Res BW 510 kHz
#VBW 1.5 MHz
Span 80.00 MHz
Sweep 1.067 ms (2001 pts)
Frequency
Auto Tune
Center Freq
5.795000000 GHz
Start Freq
5.755000000 GHz
Stop Freq
5.835000000 GHz
CF Step
8.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

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.

TX 802.11a Mode with 5.2G			
Test Channe	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)	LIMIT dBm
CH36	5180	17.83	24
CH40	5200	17.82	24
CH48	5240	17.83	24
TX 802.11n20 Mode with 5.2G			
CH36	5180	17.76	24
CH40	5200	17.67	24
CH48	5240	17.87	24
TX 802.11n40 Mode with 5.2G			
CH38	5190	16.92	24
CH46	5230	16.76	24

TX 802.11a Mode with 5.8G			
Test Channe	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)	LIMIT dBm
CH149	5745	17.72	30
CH157	5785	17.71	30
CH165	5825	17.93	30
TX 802.11n20 Mode with 5.8G			
CH149	5745	17.57	30
CH157	5785	17.58	30
CH165	5825	17.52	30
TX 802.11n40 Mode with 5.8G			
CH151	5755	16.89	30
CH159	5795	16.64	30

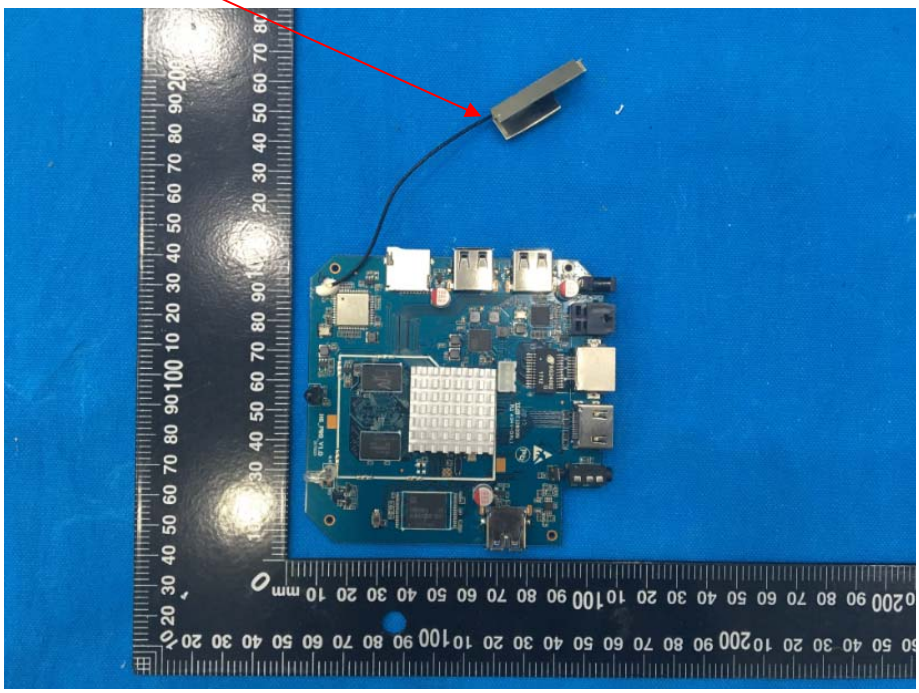
10 ANTENNA REQUIREMENT

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.

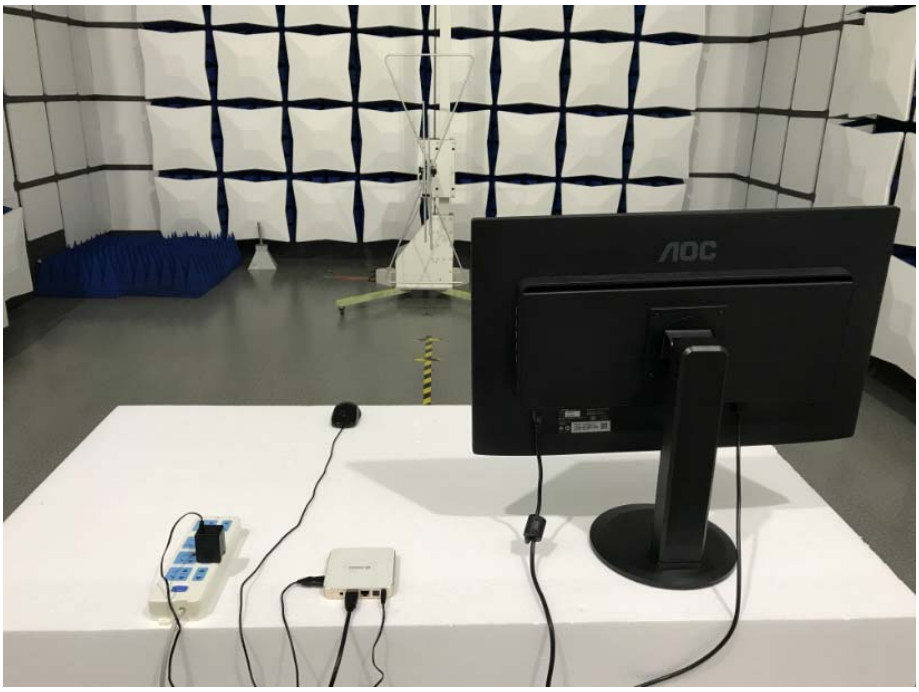
Antenna Connected Construction
The antenna used in this product is a Integral Antenna, The directional gains of antenna used for transmitting is 2dBi.

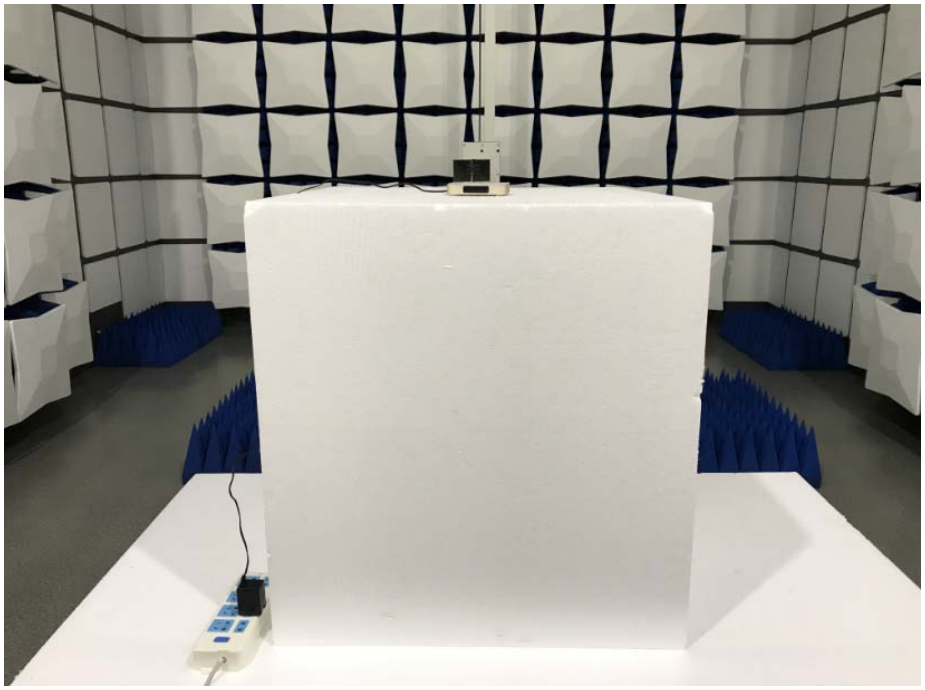
5G WIFI ANTENNA



11 PHOTOGRAPH OF TEST

11.1 Radiated Emission





11.2 Conducted Emission