

TEST REPORT

FCC ID: 2ACOE-WG217

Product: WIFI module

Model No.: WG217

**Additional Model No.: WG217_ES, WG217_E6, WG217_E4, WG217_PS,
WG217_P6, WG217_P4**

Trade Mark: N/A

Report No.: TCT1890321E019

Issued Date: Apr. 02, 2019

Issued for:

**Skylab M&C Technology Co., Ltd.
6/F, Building 9, Lijincheng park, Gongye East Rd, Longhua St, Longhua
District, Shenzhen 518109, China**

Issued By:

**Shenzhen Tongce Testing Lab.
1B/F., Building 1, Yibaolai Industrial Park, Qiaotou, Fuyong, Baoan District,
Shenzhen, Guangdong, China**

TEL: +86-755-27673339

FAX: +86-755-27673332

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1. Test Certification

Product:	WIFI module
Model No.:	WG217
Additional Model:	WG217_ES, WG217_E6, WG217_E4, WG217_PS, WG217_P6, WG217_P4
Trade Mark:	N/A
Applicant:	Skylab M&C Technology Co., Ltd.
Address:	6/F, Building 9, Lijincheng park, Gongye East Rd, Longhua St, Longhua District, Shenzhen 518109, China
Manufacturer:	Skylab M&C Technology Co., Ltd.
Address:	6/F, Building 9, Lijincheng park, Gongye East Rd, Longhua St, Longhua District, Shenzhen 518109, China
Date of Test:	Mar. 22, 2019 – Apr. 01, 2019
Applicable Standards:	FCC CFR Title 47 Part 15 Subpart E Section 15.407: 2016 KDB662911 D01 Multiple Transmitter Output v02r01 KDB789033 D02 General U-NII Test Procedures New Rules v02

The above equipment has been tested by Shenzhen Tongce Testing Lab. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By:



Jerry Xie

Date:

Apr. 01, 2019

Reviewed By:



Beryl Zhao

Date:

Apr. 02, 2019

Approved By:



Tomsin

Date:

Apr. 02, 2019

2. Test Result Summary

Requirement	CFR 47 Section	Result
Antenna requirement	§15.203	PASS
AC Power Line Conducted Emission	§15.207	PASS
Maximum Conducted Output Power	§15.407(a) §2.1046	PASS
6dB Emission Bandwidth	§15.407(a) §2.1049	PASS
26dB Emission Bandwidth & 99% Occupied Bandwidth	§15.407(a) §2.1049	PASS
Power Spectral Density	§15.407(a)	PASS
Restricted Bands around fundamental frequency	§15.407(a)	PASS
Radiated Emission	§15.407(a) §2.1053	PASS
Frequency Stability	§15.407(g) §2.1055	PASS

Note:

1. PASS: Test item meets the requirement.
2. Fail: Test item does not meet the requirement.
3. N/A: Test case does not apply to the test object.
4. The test result judgment is decided by the limit of test standard.

3. EUT Description

Product:	WIFI module
Model No.:	WG217
Additional Model:	WG217_ES, WG217_E6, WG217_E4, WG217_PS, WG217_P6, WG217_P4
Trade Mark:	N/A
Hardware Version:	WG211_EVB
Software Version:	V1.05
Operation Frequency:	Band 1: 5180 MHz-5240 MHz band 3: 5745 MHz-5825 MHz
Channel Bandwidth:	802.11a: 20MHz 802.11n: 20MHz, 40MHz 802.11ac: 20MHz, 40MHz, 80MHz
Modulation Technology:	Orthogonal Frequency Division Multiplexing(OFDM)
Modulation Type	256QAM, 64QAM, 16QAM, BPSK, QPSK
Antenna Type:	PCB Antenna / External antenna
Antenna Gain:	PCB Antenna: 1.5dBi External antenna: 2 dBi
Power Supply:	DC 5.0V From PC
Remark:	1. There are two antenna types for the product, and the worst test data is reflected in the report. 2. All models above are identical in interior structure, electrical circuits and components, and just antennas and connectors are different for the marketing requirement.

Test Frequency each of channel**Band 1**

20MHz		40MHz		80MHz	
Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180	38	5190	42	5210
40	5200	46	5230		
48	5240				

Band 3

20MHz		40MHz		80MHz	
Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5745	151	5755	155	5775
157	5785	159	5795		
165	5825				

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

4. General Information

4.1. Test environment and mode

Operating Environment:

Temperature:	25.0 °C
Humidity:	56 % RH
Atmospheric Pressure:	1010 mbar

Test Mode:

Engineering mode:	Keep the EUT in continuous transmitting by select channel and modulations(The value of duty cycle is 100%)
-------------------	--

The sample was placed 0.8m/1.5m for below/above 1GHz above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Per-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

Mode	Data rate
802.11a	6 Mbps
802.11n(HT20)	6.5 Mbps
802.11n(HT40)	13.5 Mbps
802.11ac(HT20)	6.5 Mbps
802.11ac(HT40)	13.5 Mbps
802.11ac(HT80)	29.3 Mbps

Final Test Mode:

Operation mode:	Keep the EUT in continuous transmitting with modulation
-----------------	---

4.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
/	/	/	/	/

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.
3. For conducted measurements (Output Power, Emission Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.

5. Facilities and Accreditations

5.1. Facilities

The test facility is recognized, certified, or accredited by the following organizations:

- FCC - Registration No.: 645098

Shenzhen Tongce Testing Lab

The 3m Semi-anechoic chamber has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

- IC - Registration No.: 10668A-1

The 3m Semi-anechoic chamber of Shenzhen TCT Testing Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

5.2. Location

Shenzhen Tongce Testing Lab

Address: 1B/F., Building 1, Yibaolai Industrial Park, Qiaotou, Fuyong, Baoan District, Shenzhen, Guangdong, China

TEL: +86-755-27673339

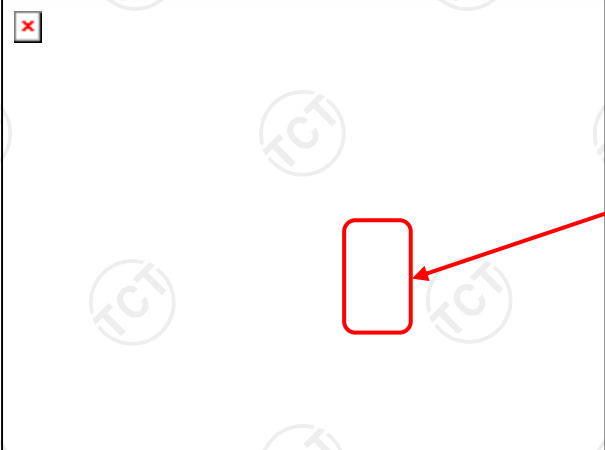
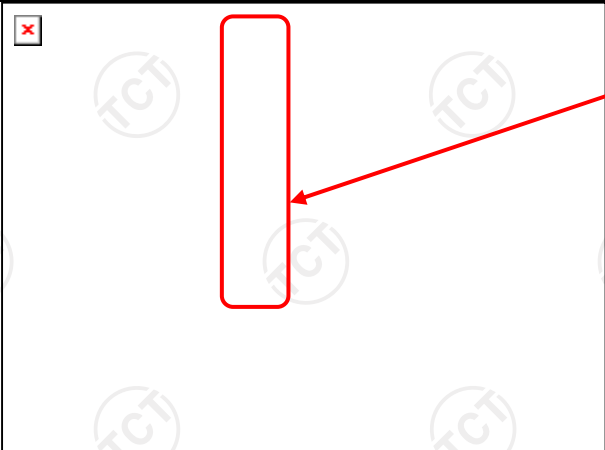
5.3. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission	$\pm 2.56\text{dB}$
2	RF power, conducted	$\pm 0.12\text{dB}$
3	Spurious emissions, conducted	$\pm 0.11\text{dB}$
4	All emissions, radiated(<1G)	$\pm 3.92\text{dB}$
5	All emissions, radiated(>1G)	$\pm 4.28\text{dB}$
6	Temperature	$\pm 0.1^{\circ}\text{C}$
7	Humidity	$\pm 1.0\%$

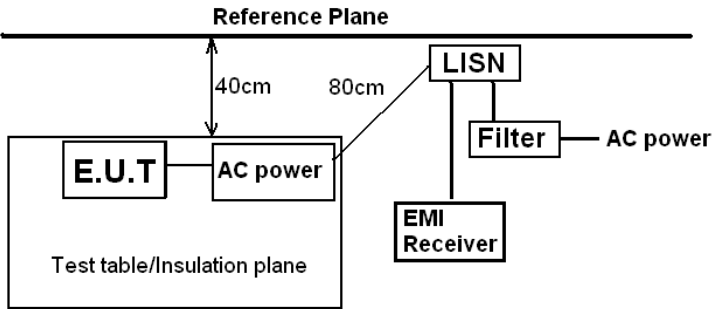
6. Test Results and Measurement Data

6.1. Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203 /247(c)
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.	
E.U.T Antenna:	
The WIFI antenna is PCB antenna which permanently attached, and the best case gain of the antenna is 1.5dBi.	
	
The WIFI antenna is External antenna which is a broken antenna can be replaced by the user, and the best case gain of the antenna is 2dBi.	
	

6.2. Conducted Emission

6.2.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.207														
Test Method:	ANSI C63.10:2013														
Frequency Range:	150 kHz to 30 MHz														
Receiver setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto														
Limits:	<table><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBuV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>5-30</td><td>60</td><td>50</td></tr></table>	Frequency range (MHz)	Limit (dBuV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
Frequency range (MHz)	Limit (dBuV)														
	Quasi-peak	Average													
0.15-0.5	66 to 56*	56 to 46*													
0.5-5	56	46													
5-30	60	50													
Test Setup:	Reference Plane  Remark E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m														
Test Mode:	Tx Mode														
Test Procedure:	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.														
Test Result:	PASS														

6.2.2. Test Instruments

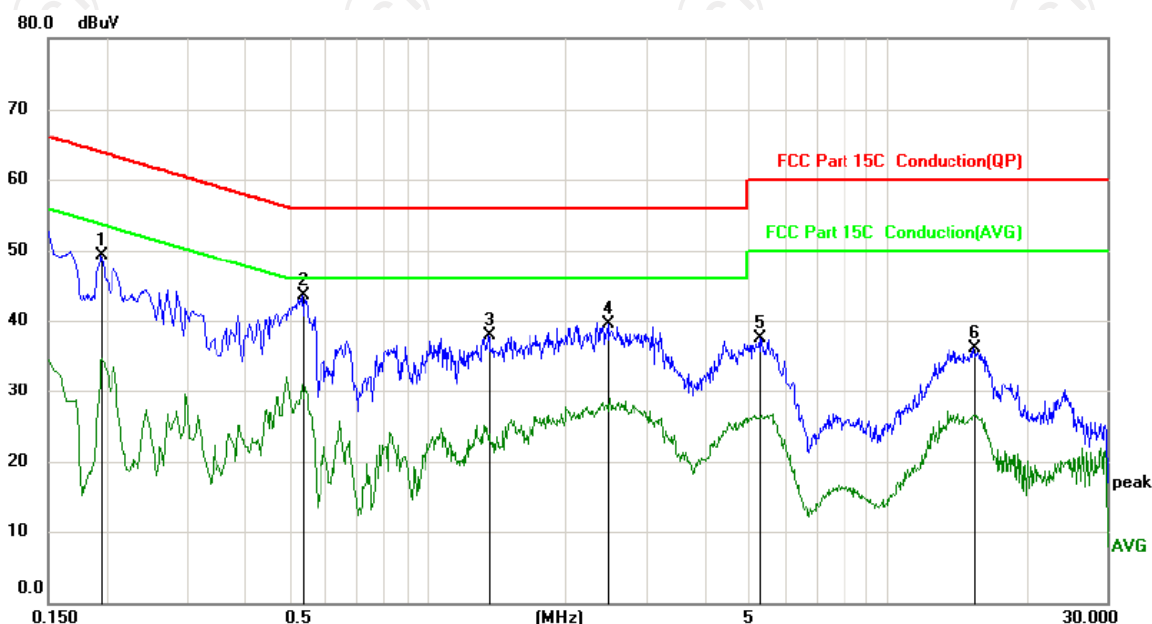
Conducted Emission Shielding Room Test Site (843)				
Equipment	Manufacturer	Model	Serial Number	Calibration Due
Test Receiver	R&S	ESPI	101402	Jul. 17, 2019
LISN	Schwarzbeck	NSLK 8126	8126453	Sep. 20, 2019
Coax cable (9KHz-30MHz)	TCT	CE-05	N/A	Sep. 16, 2019
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

6.2.3. Test data

Please refer to following diagram for individual

Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)



Site: Phase: **L1** Temperature: 25
Limit: FCC Part 15C Conduction(QP) Power: Humidity: 55 %

No.	Mk.	Freq. MHz	Reading Level dBμV	Correct Factor dB	Measure- ment dBμV	Limit dBμV	Over dB	Detector	Comment
1		0.1949	39.18	10.12	49.30	63.83	-14.53	peak	
2	*	0.5325	33.42	10.13	43.55	56.00	-12.45	peak	
3		1.3560	27.86	10.12	37.98	56.00	-18.02	peak	
4		2.4720	29.34	10.12	39.46	56.00	-16.54	peak	
5		5.2890	27.29	10.13	37.42	60.00	-22.58	peak	
6		15.3915	25.88	10.18	36.06	60.00	-23.94	peak	

Note:

Freq. = Emission frequency in MHz

Reading level (dBμV) = Receiver reading

Corr. Factor (dB) = LISN factor + Cable loss

Measurement (dBμV) = Reading level (dBμV) + Corr. Factor (dB)

Limit (dBμV) = Limit stated in standard

Margin (dB) = Measurement (dBμV) – Limits (dBμV)

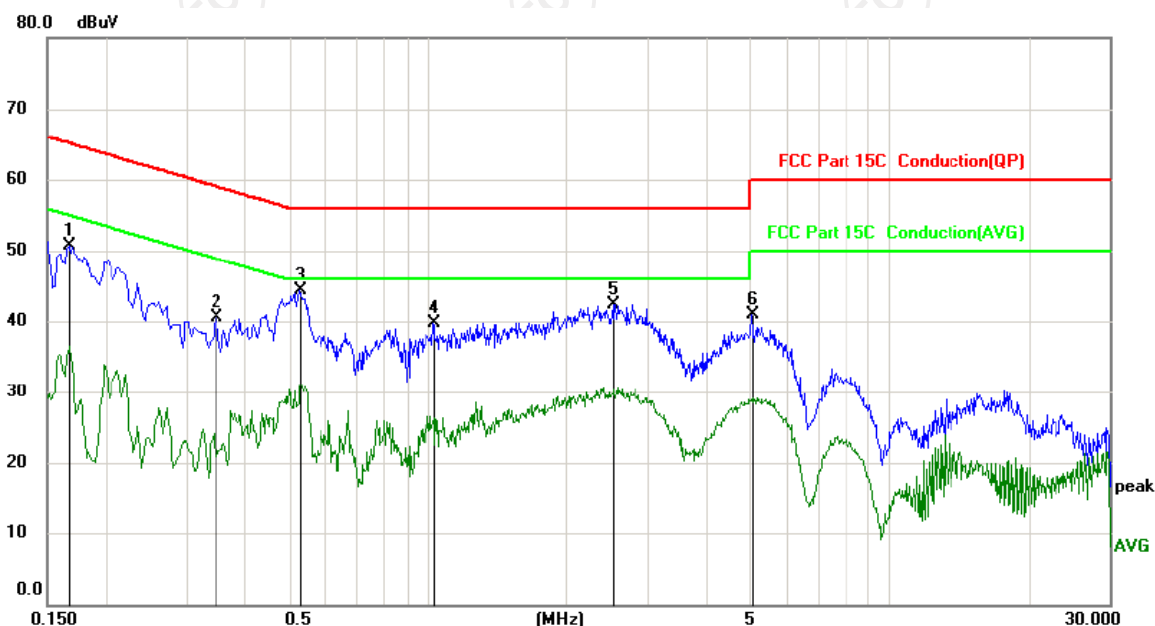
Q.P. =Quasi-Peak

AVG =average

*Any value more than 10dB below limit have not been specifically reported.

* is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz

Conducted Emission on Neutral Terminal of the power line (150 kHz to 30MHz)



Site: Phase: **N** Temperature: 25
Limit: FCC Part 15C Conduction(QP) Power: Humidity: 55 %

No.	Mk.	Freq. MHz	Reading Level dBμV	Correct Factor dB	Measure- ment dBμV	Limit dBμV	Over dB	Detector	Comment
1		0.1668	40.57	10.12	50.69	65.12	-14.43	peak	
2		0.3480	30.30	10.13	40.43	59.01	-18.58	peak	
3	*	0.5280	34.12	10.13	44.25	56.00	-11.75	peak	
4		1.0275	29.55	10.12	39.67	56.00	-16.33	peak	
5		2.5215	32.28	10.12	42.40	56.00	-13.60	peak	
6		5.0505	30.79	10.13	40.92	60.00	-19.08	peak	

Note:

Freq. = Emission frequency in MHz

Reading level (dBμV) = Receiver reading

Corr. Factor (dB) = LISN factor + Cable loss

Measurement (dBμV) = Reading level (dBμV) + Corr. Factor (dB)

Limit (dBμV) = Limit stated in standard

Margin (dB) = Measurement (dBμV) – Limits (dBμV)

Q.P. =Quasi-Peak

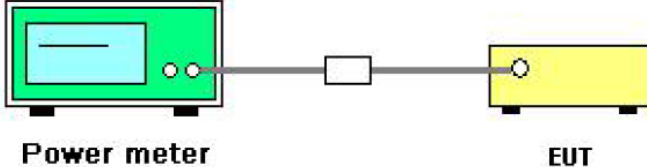
AVG =average

*Any value more than 10dB below limit have not been specifically reported.

* is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.

6.3. Maximum Conducted Output Power

6.3.1. Test Specification

Test Requirement:	FCC Part15 E Section 15.407(a)& Part 2 J Section 2.1046										
Test Method:	KDB662911 D01 Multiple Transmitter Output v02r01 KDB789033 D02 General UNII Test Procedures New Rules v02 Section E										
Limit:	<table border="1"> <thead> <tr> <th>Frequency Band (MHz)</th><th>Limit</th></tr> </thead> <tbody> <tr> <td>5150 - 5250</td><td>24dBm(250mW) for client device</td></tr> <tr> <td>5250 - 5350</td><td>24dBm(250mW)</td></tr> <tr> <td>5470 - 5725</td><td>24dBm(250mW)</td></tr> <tr> <td>5725 - 5850</td><td>30dBm(1W)</td></tr> </tbody> </table>	Frequency Band (MHz)	Limit	5150 - 5250	24dBm(250mW) for client device	5250 - 5350	24dBm(250mW)	5470 - 5725	24dBm(250mW)	5725 - 5850	30dBm(1W)
Frequency Band (MHz)	Limit										
5150 - 5250	24dBm(250mW) for client device										
5250 - 5350	24dBm(250mW)										
5470 - 5725	24dBm(250mW)										
5725 - 5850	30dBm(1W)										
Test Setup:	 The diagram illustrates the test setup. On the left is a green box labeled 'Power meter'. A cable connects it to a small white box labeled 'Attenuator'. Another cable connects the attenuator to a yellow box labeled 'EUT' (Equipment Under Test).										
Test Mode:	Transmitting mode with modulation										
Test Procedure:	1. The testing follows the Measurement Procedure of KDB789033 D02 General UNII Test Procedures New Rules v02 Section E, 3, a 2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement. 3. Set to the maximum power setting and enable the EUT transmit continuously. 5. Measure the conducted output power and record the results in the test report.										
Test Result:	PASS										
Remark:	Conducted output power= measurement power +10log(1/x) X is duty cycle=1, so 10log(1/1)=0 Conducted output power= measurement power										

6.3.2. Test Instruments

RF Test Room				
Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Sep. 20, 2019
Power Meter	Agilent	E4418B	GB43312526	Sep. 16, 2019
Power Sensor	Agilent	E9301A	MY41497725	Sep. 16, 2019
RF Cable (9KHz-40GHz)	TCT	RE-03	N/A	Sep. 20, 2019
Antenna Connector	TCT	RFC-03	N/A	Sep. 20, 2019

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

6.3.3. Test Data

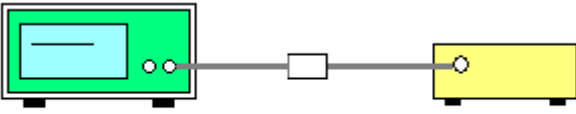
Configuration Band 1 (5150 - 5250 MHz)				
Mode	Test channel	Maximum Conducted (Average) Output Power (dBm)	FCC Limit (dBm)	Result
11a	CH36	11.78	24	PASS
11a	CH40	11.74	24	PASS
11a	CH48	10.60	24	PASS
11n(HT20)	CH36	9.72	24	PASS
11n(HT20)	CH40	10.56	24	PASS
11n(HT20)	CH48	8.34	24	PASS
11n(HT40)	CH38	10.19	24	PASS
11n(HT40)	CH46	8.49	24	PASS
11ac(HT20)	CH36	9.77	24	PASS
11ac(HT20)	CH40	10.05	24	PASS
11ac(HT20)	CH48	8.45	24	PASS
11ac(HT40)	CH38	10.05	24	PASS
11ac(HT40)	CH46	8.63	24	PASS
11ac(HT80)	CH42	6.53	24	PASS

Configuration Band 3 (5725 - 5850 MHz)

Mode	Test channel	Maximum Conducted (Average) Output Power (dBm)	FCC Limit (dBm)	Result
11a	CH149	3.99	30	PASS
11a	CH157	3.22	30	PASS
11a	CH165	2.91	30	PASS
11n(HT20)	CH149	1.80	30	PASS
11n(HT20)	CH157	0.88	30	PASS
11n(HT20)	CH165	0.50	30	PASS
11n(HT40)	CH151	1.61	30	PASS
11n(HT40)	CH159	0.88	30	PASS
11ac(HT20)	CH149	1.75	30	PASS
11ac(HT20)	CH157	1.05	30	PASS
11ac(HT20)	CH165	0.83	30	PASS
11ac(HT40)	CH151	1.70	30	PASS
11ac(HT40)	CH159	1.24	30	PASS
11ac(HT80)	CH155	-1.72	30	PASS

6.4. 6dB Emission Bandwidth

6.4.1. Test Specification

Test Requirement:	FCC CFR47 Part 15 Section 15.407(e)& Part 2 J Section 2.1049
Test Method:	KDB662911 D01 Multiple Transmitter Output v02r01 KDB789033 D02 General UNII Test Procedures New Rules v02 Section C
Limit:	>500kHz
Test Setup:	 Spectrum Analyzer EUT
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. KDB789033 D02 General UNII Test Procedures New Rules v02 Section C 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6dB bandwidth must be greater than 500 kHz. 4. Measure and record the results in the test report.
Test Result:	PASS

6.4.2. Test Instruments

RF Test Room				
Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Sep. 20, 2019
RF Cable (9KHz-40GHz)	TCT	RE-03	N/A	Sep. 20, 2019
Antenna Connector	TCT	RFC-03	N/A	Sep. 20, 2019

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

6.4.3. Test data

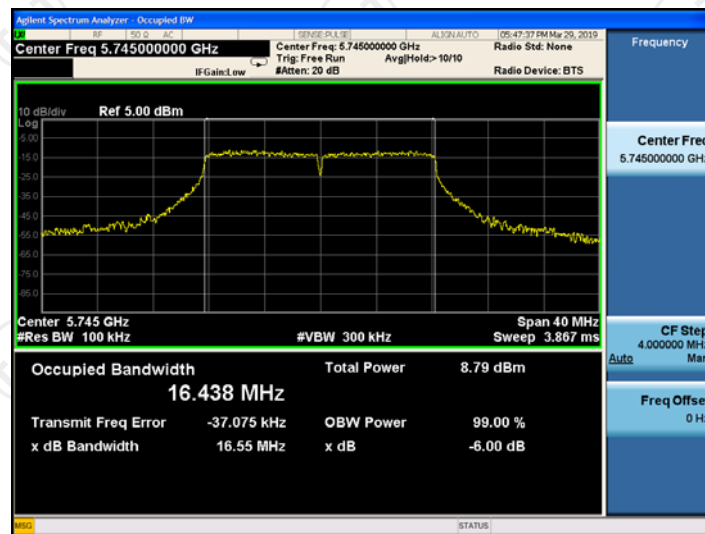
Band 3 (5725 - 5850 MHz)					
Mode	Test channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)	Result
11a	CH149	5745	16.55	0.5	PASS
11a	CH157	5785	16.54	0.5	PASS
11a	CH165	5825	16.55	0.5	PASS
11n(HT20)	CH149	5745	17.67	0.5	PASS
11n(HT20)	CH157	5785	17.70	0.5	PASS
11n(HT20)	CH165	5825	17.67	0.5	PASS
11n(HT40)	CH151	5755	36.44	0.5	PASS
11n(HT40)	CH159	5795	36.45	0.5	PASS
11ac(HT20)	CH149	5745	17.69	0.5	PASS
11ac(HT20)	CH157	5785	17.69	0.5	PASS
11ac(HT20)	CH165	5825	17.69	0.5	PASS
11ac(HT40)	CH151	5755	36.42	0.5	PASS
11ac(HT40)	CH159	5795	36.42	0.5	PASS
11ac(HT80)	CH155	5775	76.09	0.5	PASS

Test plots as follows:

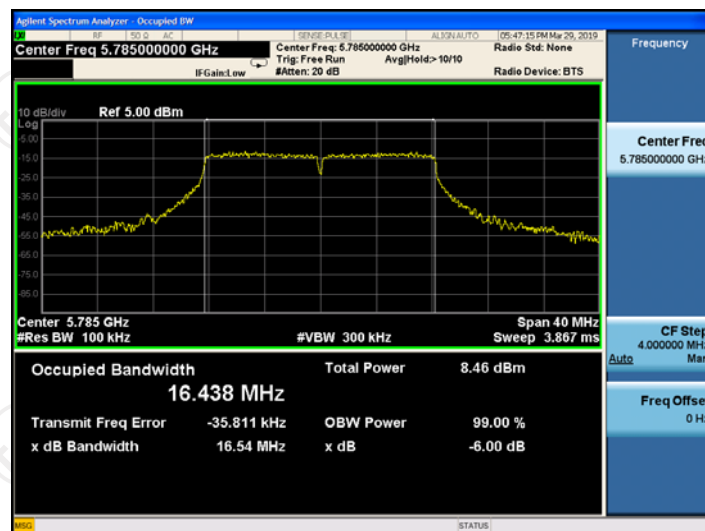
Band 3 (5725 – 5850 MHz)

11a

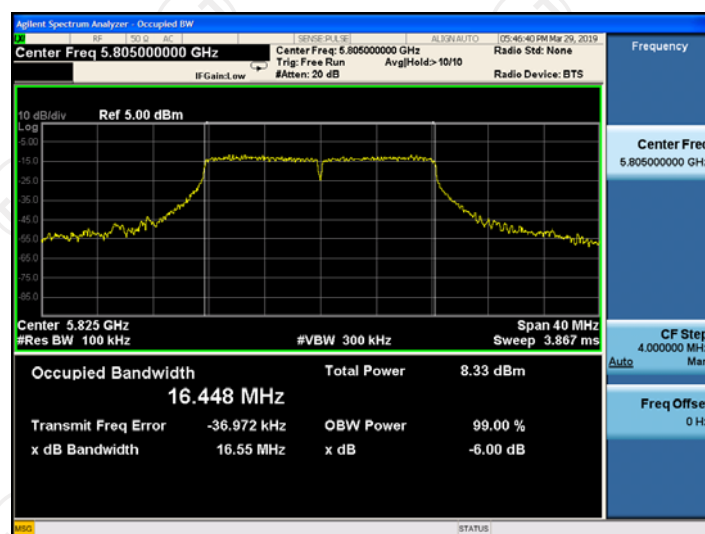
CH149



CH157

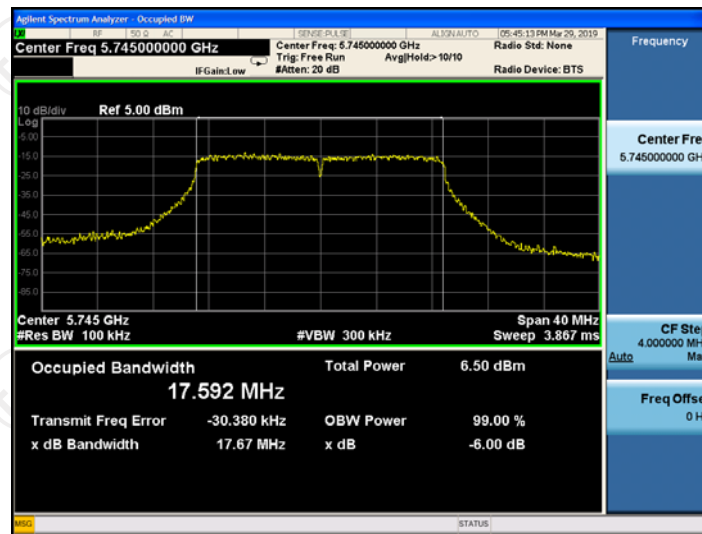


CH165

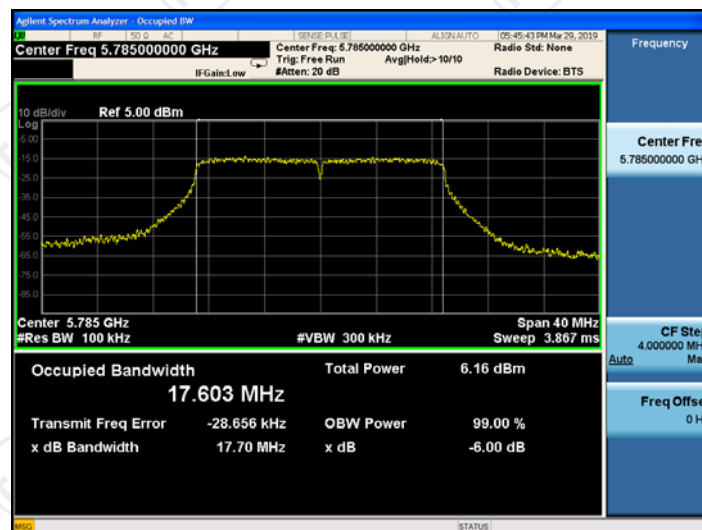


11n(HT20)

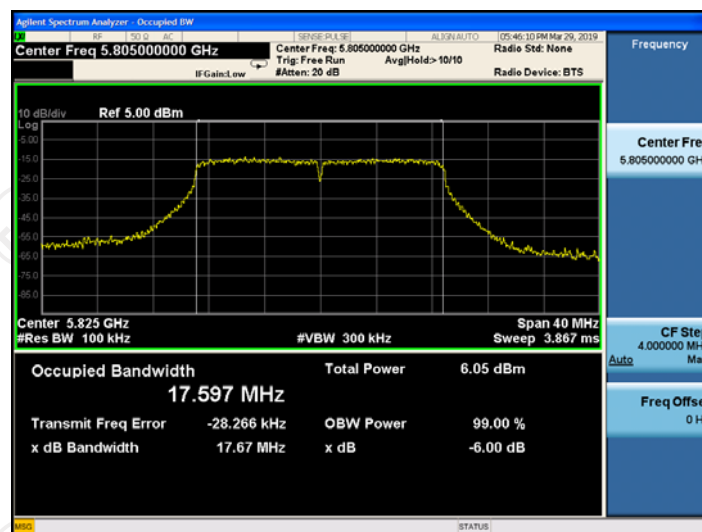
CH149



CH157

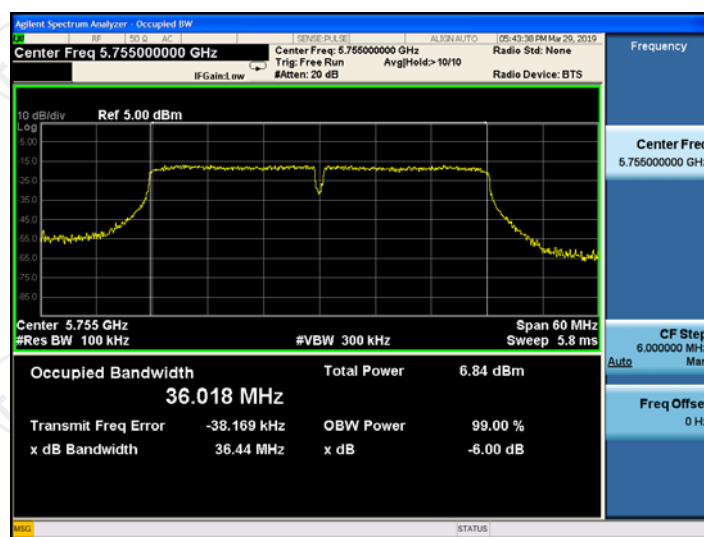


CH165

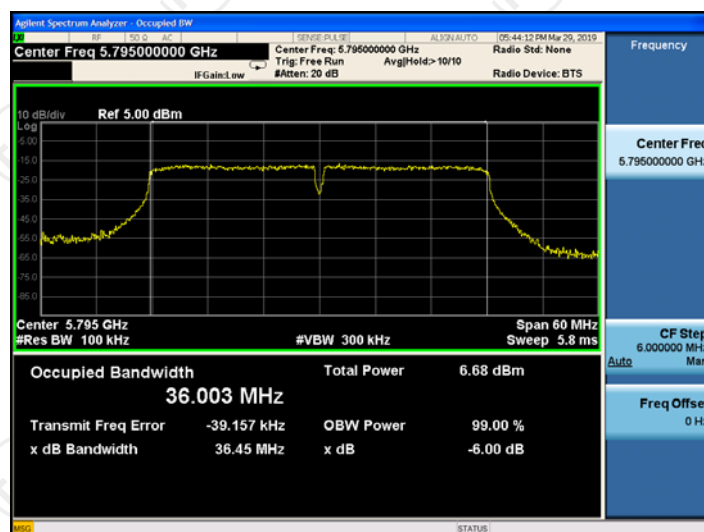


11n(HT40)

CH151

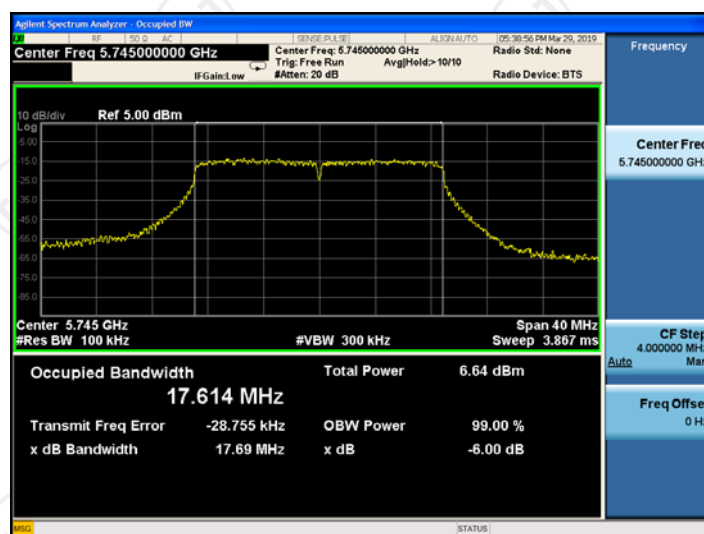


CH159

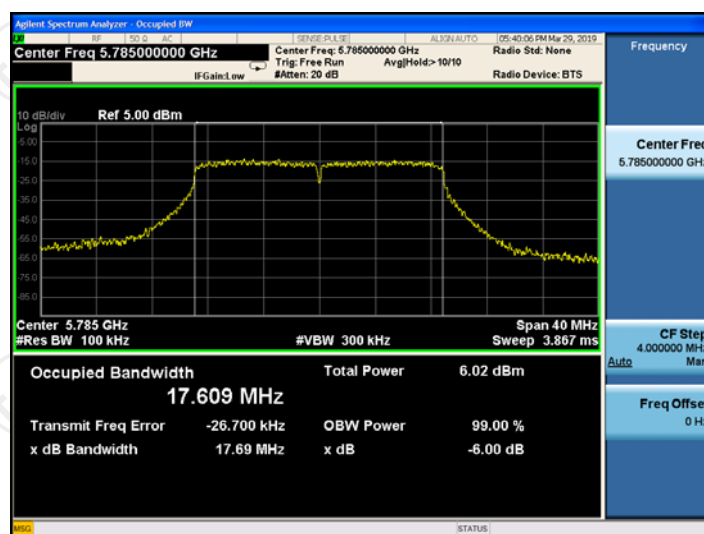


11ac(HT20)

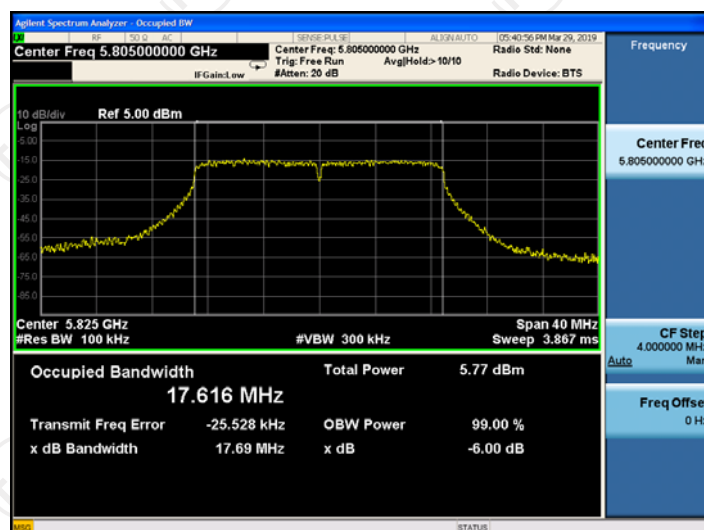
CH149



CH157

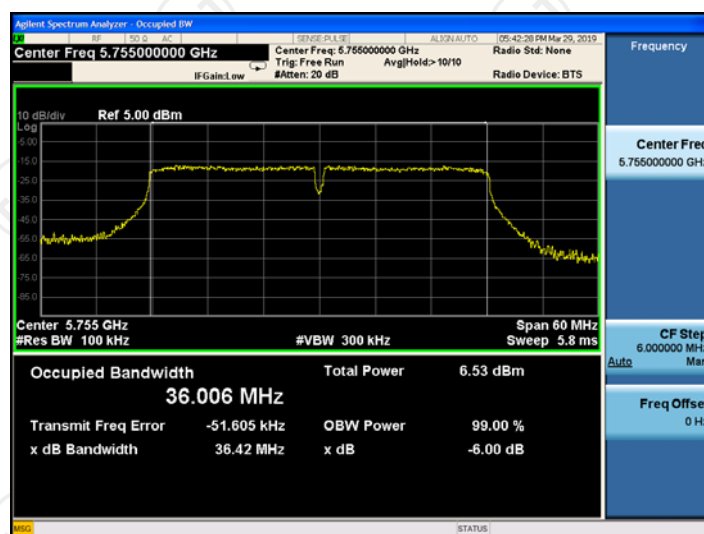


CH165

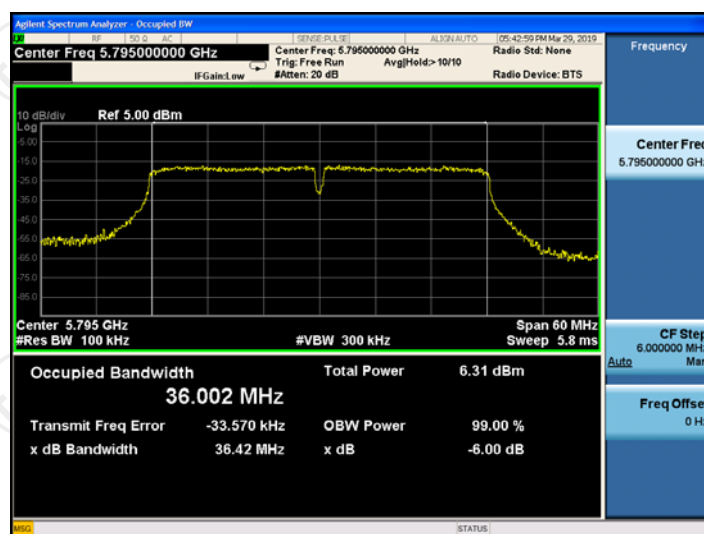


11ac(HT40)

CH151

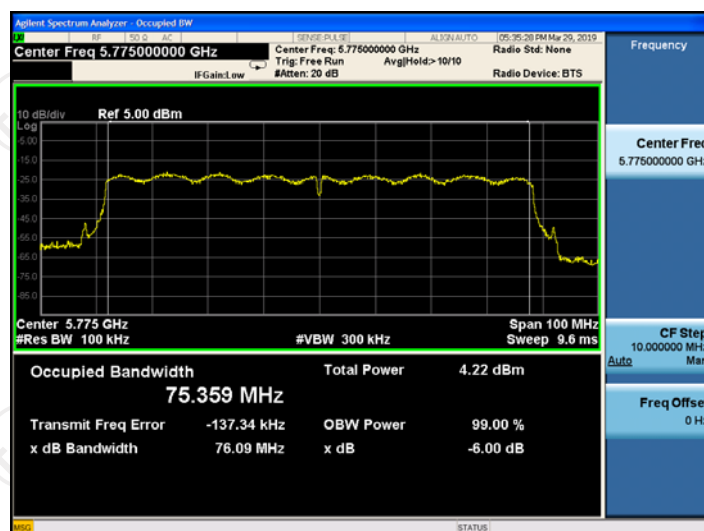


CH159



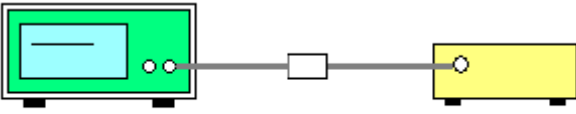
11ac(HT80)

CH155



6.5. 26dB Bandwidth and 99% Occupied Bandwidth

6.5.1. Test Specification

Test Requirement:	47 CFR Part 15C Section 15.407 (a)& Part 2 J Section 2.1049
Test Method:	KDB662911 D01 Multiple Transmitter Output v02r01 KDB789033 D02 General UNII Test Procedures New Rules v02 Section D
Limit:	No restriction limits
Test Setup:	 Spectrum Analyzer EUT
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. KDB789033 D02 General UNII Test Procedures New Rules v02 Section D 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. 4. Measure and record the results in the test report.
Test Result:	PASS

6.5.2. Test Instruments

RF Test Room				
Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Sep. 20, 2019
RF Cable (9KHz-26.5GHz)	TCT	RE-06	N/A	Sep. 20, 2019
Antenna Connector	TCT	RFC-01	N/A	Sep. 20, 2019

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

6.5.3. Test data

Band 1

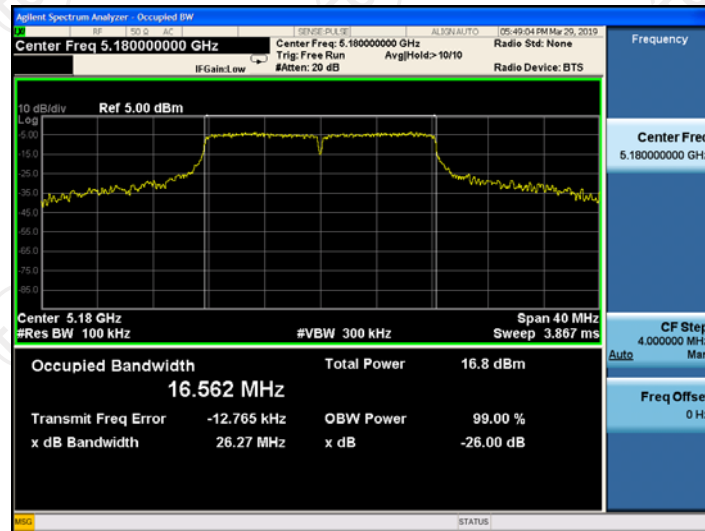
Mode	Test channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
11a	CH36	5180	26.27	16.56
11a	CH40	5200	25.67	16.53
11a	CH48	5240	21.00	16.46
11n(HT20)	CH36	5180	20.89	17.60
11n(HT20)	CH40	5200	20.40	17.62
11n(HT20)	CH48	5240	20.26	17.61
11n(HT40)	CH38	5190	40.08	36.04
11n(HT40)	CH46	5230	39.65	36.01
11ac(HT20)	CH36	5180	21.51	17.63
11ac(HT20)	CH40	5200	20.78	17.64
11ac(HT20)	CH48	5240	20.54	17.61
11ac(HT40)	CH38	5190	41.95	36.04
11ac(HT40)	CH46	5230	39.66	36.03
11ac(HT80)	CH42	5210	79.14	75.30

Test plots as follows:

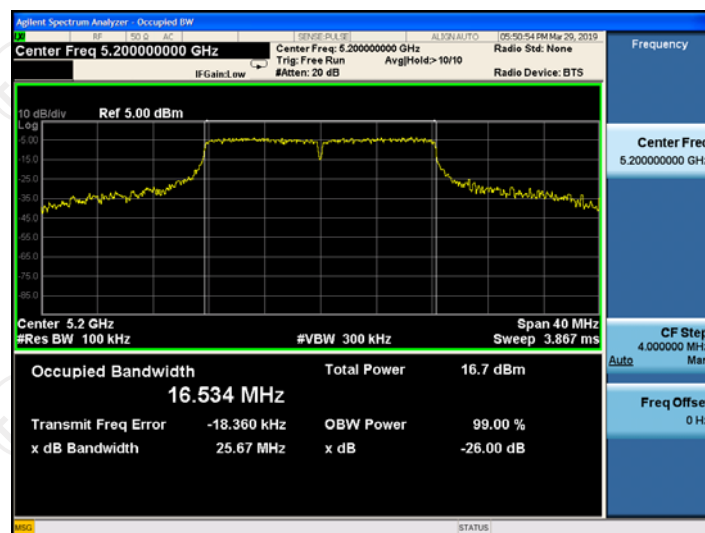
Band 1 (5180-5240 MHz)

11a

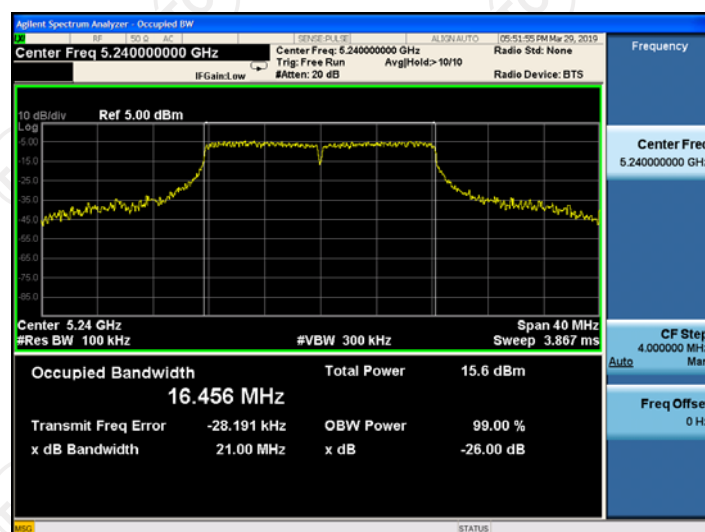
CH36



CH40

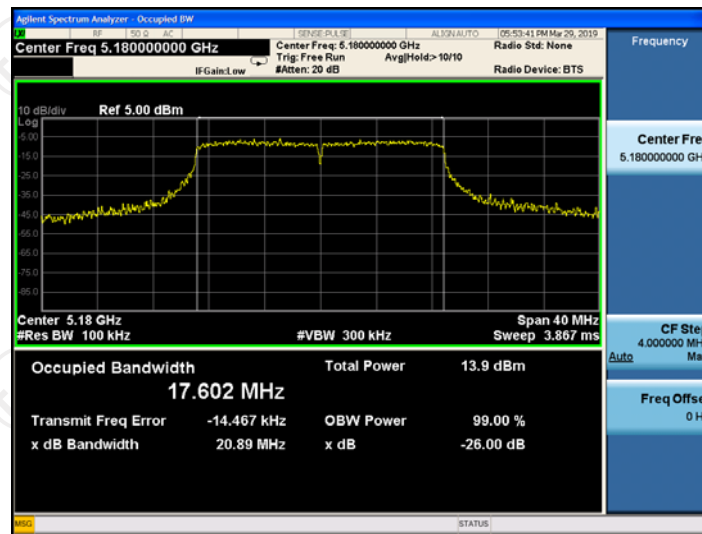


CH48

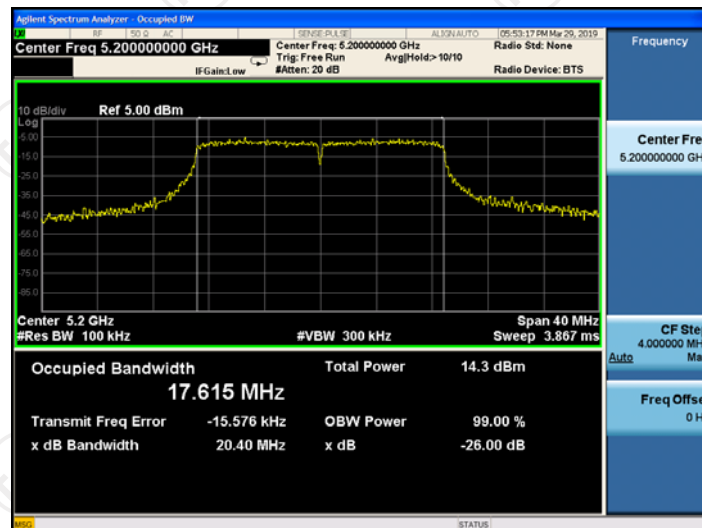


11n(HT20)

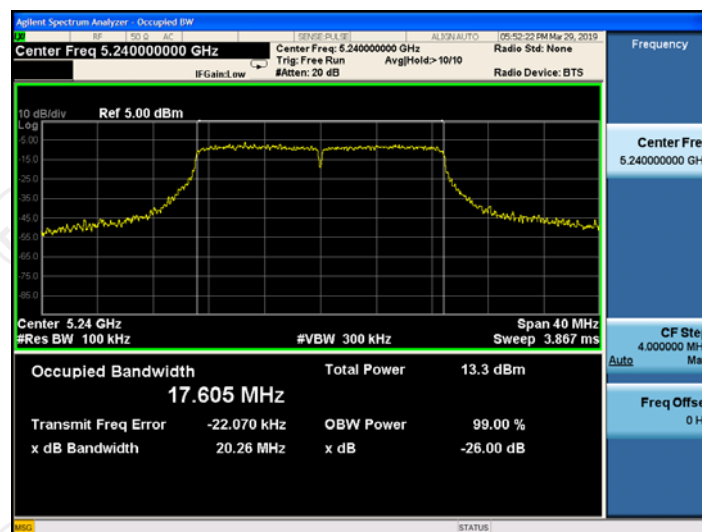
CH36



CH40

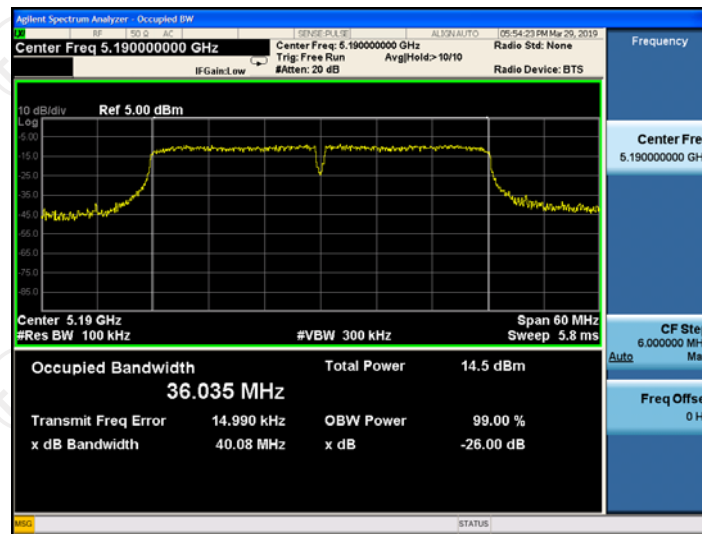


CH48

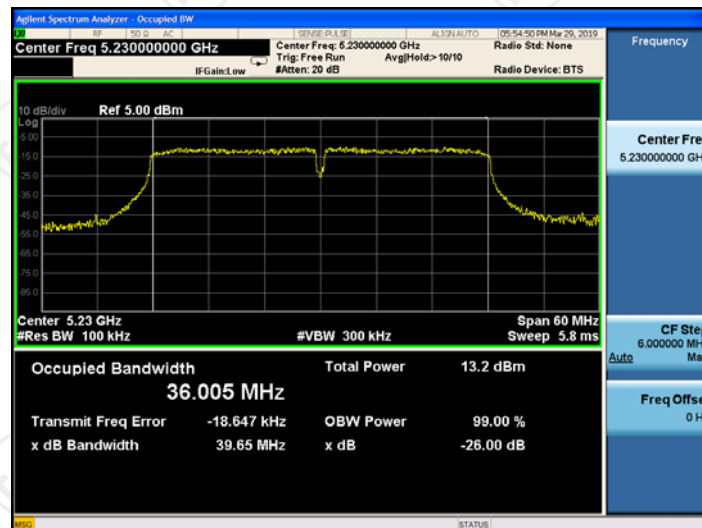


11n(HT40)

CH38

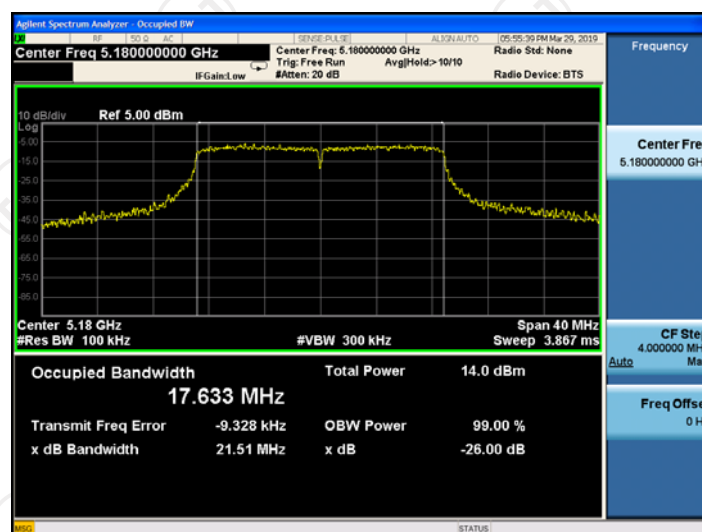


CH46

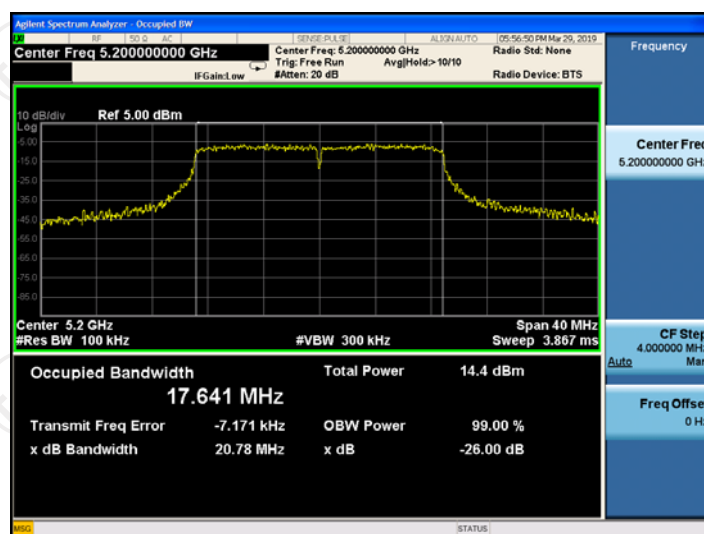


11ac(HT20)

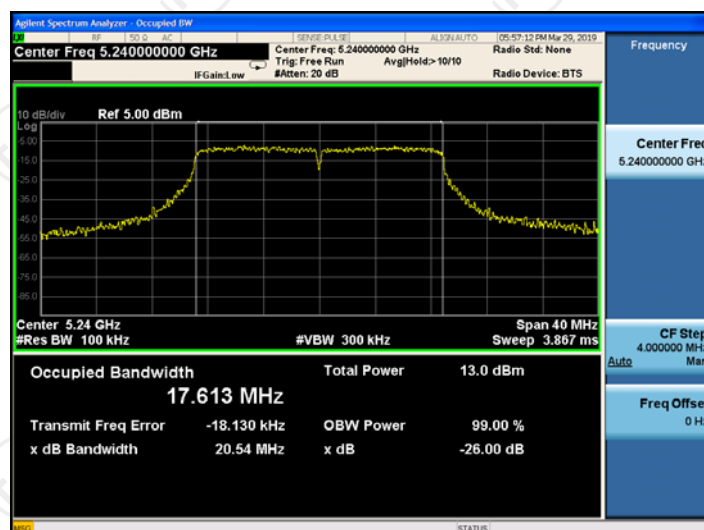
CH36



CH40

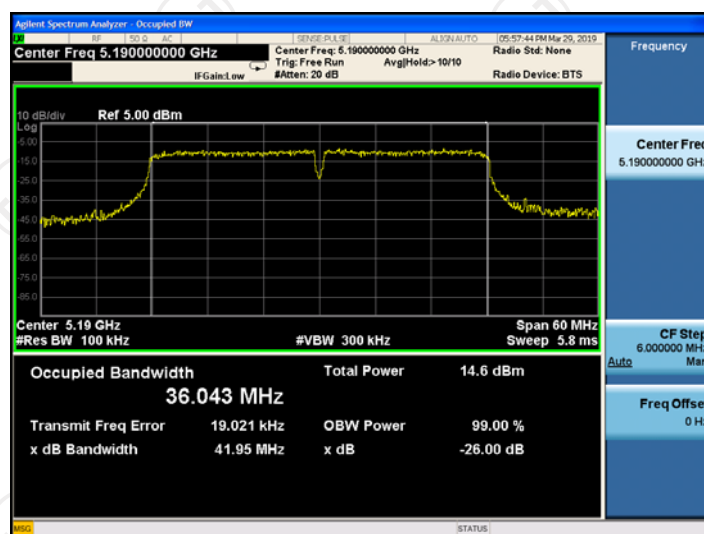


CH48

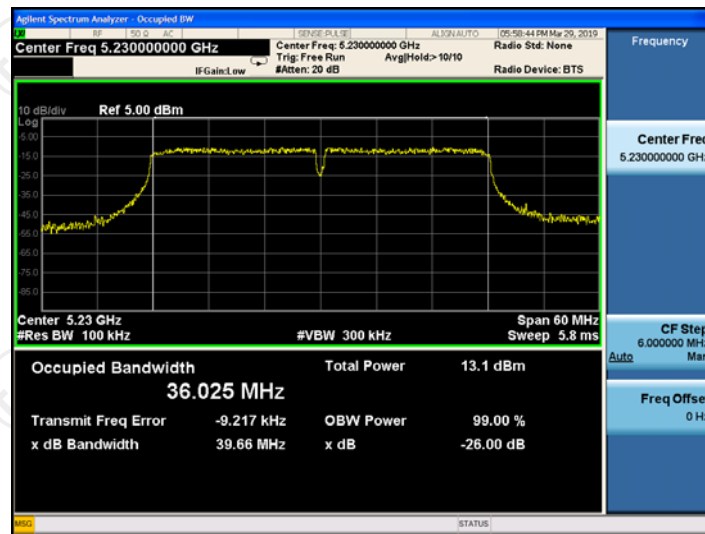


11ac(HT40)

CH38

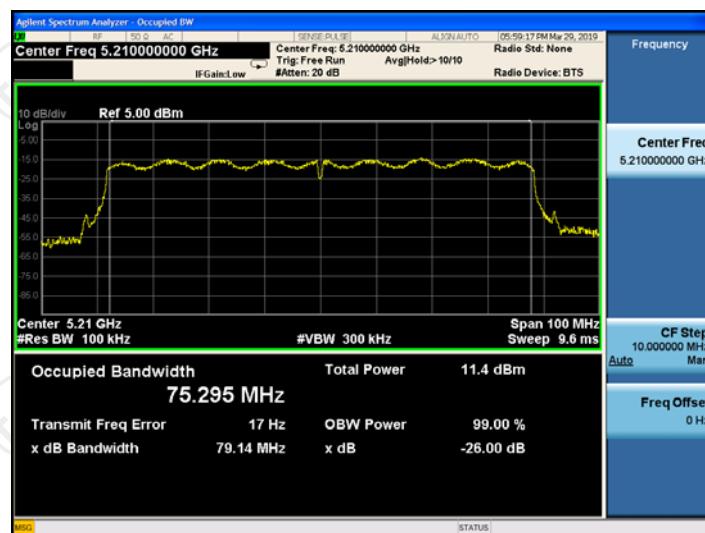


CH46



11ac(HT80)

CH42



6.6. Power Spectral Density

6.6.1. Test Specification

Test Requirement:	FCC Part15 E Section 15.407 (a)
Test Method:	KDB662911 D01 Multiple Transmitter Output v02r01 KDB789033 D02 General UNII Test Procedures New Rules v02 Section F
Limit:	$\leq 11.00\text{dBm/MHz}$ for Band 1 5150MHz-5250MHz(client device) $\leq 11.00\text{dBm/MHz}$ for Band 2A&2C 5250-5350&5470-5725 $\leq 30.00\text{dBm/500KHz}$ for Band 3 5725MHz-5850MHz The e.i.r.p spectral density for Band 1 5150MHz – 5250 MHz should not exceed 10dBm/MHz
Test Setup:	 Spectrum Analyzer EUT
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. Set the spectrum analyzer or EMI receiver span to view the entire emission bandwidth. 1. Set RBW = 510 kHz/1 MHz, VBW $\geq 3 \times \text{RBW}$, Sweep time = Auto, Detector = RMS. 2. Allow the sweeps to continue until the trace stabilizes. 3. Use the peak marker function to determine the maximum amplitude level. 4. The E.I.R.P spectral density used radiated test method. At a test site that has been validated using the procedures of ANSI C63.4 or the latest CISPR 16-1-4 for measurements above 1 GHz, so as to simulate a near free-space environment.
Test Result:	PASS

6.6.2. Test Instruments

RF Test Room				
Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Sep. 20, 2019
RF Cable (9KHz-40GHz)	TCT	RE-03	N/A	Sep. 20, 2019
Antenna Connector	TCT	RFC-03	N/A	Sep. 20, 2019

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

6.6.3. Test data

Configuration Band 1 (5180-5240 MHz)				
Mode	Test channel	Power Spectral Density	Limit (dBm/MHz)	Result
11a	CH36	-0.18	11	PASS
11a	CH40	0.00	11	PASS
11a	CH48	-1.46	11	PASS
11n(HT20)	CH36	-3.18	11	PASS
11n(HT20)	CH40	-2.73	11	PASS
11n(HT20)	CH48	-4.08	11	PASS
11n(HT40)	CH38	-5.90	11	PASS
11n(HT40)	CH46	-6.87	11	PASS
11ac(HT20)	CH36	-2.77	11	PASS
11ac(HT20)	CH40	-2.68	11	PASS
11ac(HT20)	CH48	-3.85	11	PASS
11ac(HT40)	CH38	-5.68	11	PASS
11ac(HT40)	CH46	-6.93	11	PASS
11ac(HT80)	CH42	-10.79	11	PASS

Configuration Band 3 (5745-5825MHz)

Mode	Test channel	Power Spectral Density	Limit (dBm/MHz)	Result
11a	CH52	-10.50	30	PASS
11a	CH60	-11.27	30	PASS
11a	CH64	-11.37	30	PASS
11n(HT20)	CH52	-13.18	30	PASS
11n(HT20)	CH60	-13.97	30	PASS
11n(HT20)	CH64	-14.15	30	PASS
11n(HT40)	CH54	-16.72	30	PASS
11n(HT40)	CH62	-16.84	30	PASS
11ac(HT20)	CH52	-13.50	30	PASS
11ac(HT20)	CH60	-13.18	30	PASS
11ac(HT20)	CH64	-13.99	30	PASS
11ac(HT40)	CH54	-16.39	30	PASS
11ac(HT40)	CH62	-16.81	30	PASS
11ac(HT80)	CH58	-21.17	30	PASS

Test plots as follows: