

TEST REPORT

FCC ID: 2AC6AC66

Product: Mobile Data Terminal

Model No.: C66

Additional Model No.: N/A

Trade Mark: CHAINWAY®

Report No.: TCT190910E038

Issued Date: Sep. 30, 2019

Issued for:

Shenzhen Chainway Information Technology Co., Ltd.
9/F, Building 2, Daqian Industrial Park, Longchang Rd., District 67, Bao'an,
Shenzhen, China

Issued By:

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1. Test Certification

Product:	Mobile Data Terminal
Model No.:	C66
Additional Model No.:	N/A
Trade Mark:	CHAINWAY®
Applicant:	Shenzhen Chainway Information Technology Co., Ltd.
Address:	9/F, Building 2, Daqian Industrial Park, Longchang Rd., District 67, Bao'an, Shenzhen, China
Manufacturer:	Shenzhen Chainway Information Technology Co., Ltd.
Address:	9/F, Building 2, Daqian Industrial Park, Longchang Rd., District 67, Bao'an, Shenzhen, China
Date of Test:	Sep. 11, 2019 – Sep. 29, 2019
Applicable Standards:	FCC CFR Title 47 Part 15 Subpart E Section 15.407: 2016 KDB662911 D01 Multiple Transmitter Output v02r01r01 KDB789033 D02 General U-NII Test Procedures New Rules v02r01r01

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:



Brews Xu

Date:

Sep. 29, 2019

Reviewed By:



Beryl Zhao

Date:

Sep. 30, 2019

Approved By:



Tomsin

Date:

Sep. 30, 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:	Mobile Data Terminal
Model No.:	C66
Additional Model No.:	N/A
Trade Mark:	CHAINWAY®
Operation Frequency:	Band 1: 5180 MHz -5240 MHz Band 2A: 5260 MHz -5320 MHz Band 2C: 5500 MHz -5720 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:	Internal Antenna
Antenna Gain:	1.01dBi
Power Supply:	Rechargeable Li-ion Battery DC 3.8V
AC adapter:	Adapter Information: MODEL: DBS15Q INPUT: AC 100-240V, 50/60Hz, 0.5A OUTPUT: DC 5V, 3A / 9V, 2A / 12V, 1.5A

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 2A

20MHz		40MHz		80MHz	
Channel	Frequency	Channel	Frequency	Channel	Frequency
52	5260	54	5270	58	5290
60	5300	62	5310		
64	5320				

Band 2C

20MHz		40MHz		80MHz	
Channel	Frequency	Channel	Frequency	Channel	Frequency
100	5500	102	5510	106	5530
120	5600	118	5590	138	5690
144	5720	142	5710		

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%)
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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(VHT20)	6.5 Mbps
802.11ac(VHT40)	13.5 Mbps
802.11ac(VHT80)	29.3 Mbps

Final Test Mode:

Operation mode:	Keep the EUT in continuous transmitting with modulation
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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

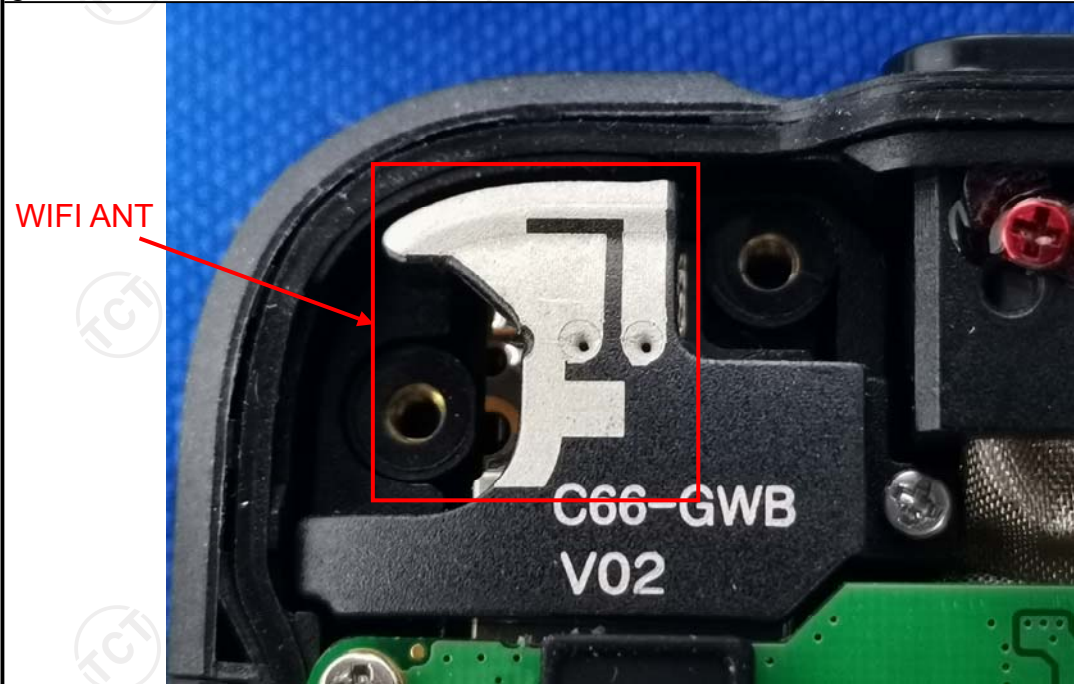
5.3. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded 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	$\pm 1.0\%$

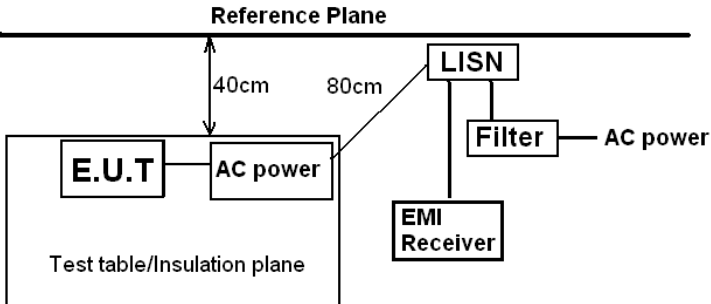
6. Test Results and Measurement Data

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 internal antenna which permanently attached, and the best case gain of the antenna is 1.01dBi.	
	

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:	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:	 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		

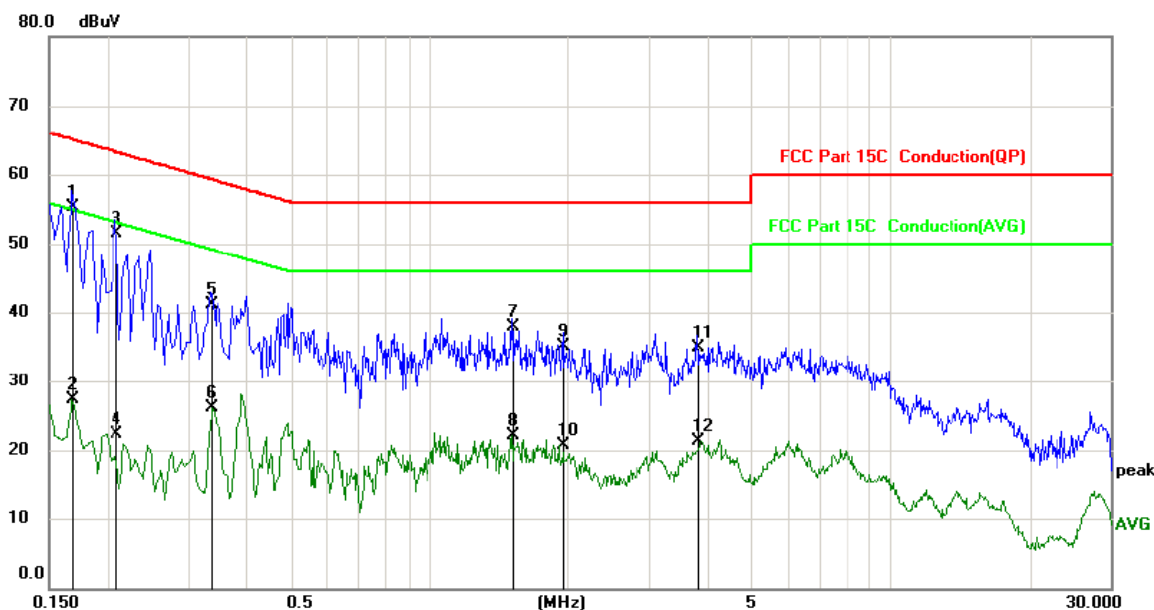
6.2.2. Test Instruments

Conducted Emission Shielding Room Test Site (843)				
Equipment	Manufacturer	Model	Serial Number	Calibration Due
Test Receiver	R&S	ESPI	101402	Jul. 29, 2020
LISN	Schwarzbeck	NSLK 8126	8126453	Sep. 11, 2020
Coax cable (9KHz-30MHz)	TCT	CE-05	N/A	Sep. 08, 2020
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

No.	Mk.	Freq. MHz	Reading Level dBμV	Correct Factor dB	Measure- ment dBμV	Limit dBμV	Over dB	Detector	Comment
1	*	0.1680	45.22	10.12	55.34	65.06	-9.72	QP	
2		0.1680	17.23	10.12	27.35	55.06	-27.71	AVG	
3		0.2085	41.36	10.13	51.49	63.26	-11.77	QP	
4		0.2085	12.25	10.13	22.38	53.26	-30.88	AVG	
5		0.3345	30.89	10.13	41.02	59.34	-18.32	QP	
6		0.3345	15.90	10.13	26.03	49.34	-23.31	AVG	
7		1.5090	27.85	10.12	37.97	56.00	-18.03	QP	
8		1.5090	12.05	10.12	22.17	46.00	-23.83	AVG	
9		1.9545	24.94	10.12	35.06	56.00	-20.94	QP	
10		1.9545	10.49	10.12	20.61	46.00	-25.39	AVG	
11		3.8130	24.74	10.13	34.87	56.00	-21.13	QP	
12		3.8130	11.11	10.13	21.24	46.00	-24.76	AVG	

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

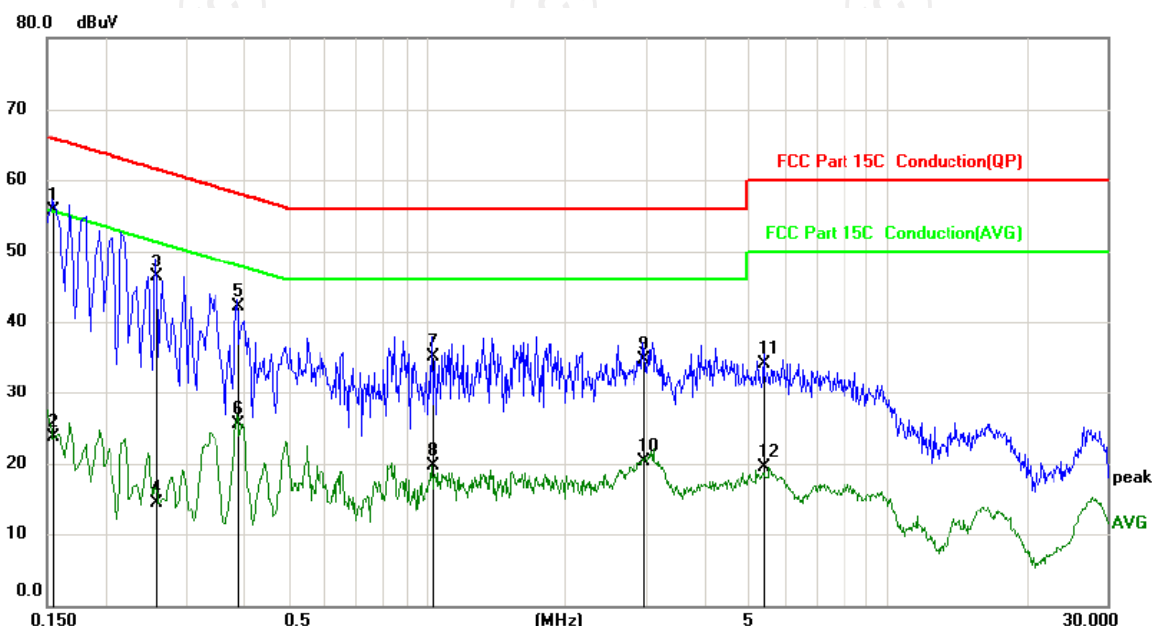
Margin (dB) = Measurement (dBμV) – Limits (dBμV)

Q.P. =Quasi-Peak

AVG =average

* 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
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over				
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment		
1	*	0.1545	45.52	10.12	55.64	65.75	-10.11	QP			
2		0.1545	13.57	10.12	23.69	55.75	-32.06	AVG			
3		0.2580	36.21	10.13	46.34	61.50	-15.16	QP			
4		0.2580	4.37	10.13	14.50	51.50	-37.00	AVG			
5		0.3885	31.89	10.13	42.02	58.10	-16.08	QP			
6		0.3885	15.30	10.13	25.43	48.10	-22.67	AVG			
7		1.0320	25.04	10.12	35.16	56.00	-20.84	QP			
8		1.0320	9.52	10.12	19.64	46.00	-26.36	AVG			
9		2.9580	24.64	10.12	34.76	56.00	-21.24	QP			
10		2.9580	10.26	10.12	20.38	46.00	-25.62	AVG			
11		5.4105	23.98	10.13	34.11	60.00	-25.89	QP			
12		5.4105	9.34	10.13	19.47	50.00	-30.53	AVG			

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)

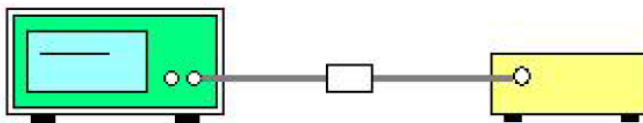
Q.P. =Quasi-Peak

AVG =average

* 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 v02r01r01 KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section E		
Limit:	Frequency Band (MHz)	Limit	
	5180 - 5240	24dBm(250mW) for client device	
	5260 - 5320	24dBm(250mW) or 11 dBm + 10 log B, B is the 26 dB emission bandwidth in megahertz	
	5470 - 5725	24dBm(250mW) or 11 dBm + 10 log B, B is the 26 dB emission bandwidth in megahertz	
	5745 - 5825	30dBm(1W)	
Test Setup:	 Power meter EUT		
Test Mode:	Transmitting mode with modulation		
Test Procedure:	1. The testing follows the Measurement Procedure of KDB789033 D02 General UNII Test Procedures New Rules v02r01 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

Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Sep. 11, 2020
Power Meter	Agilent	E4418B	GB43312526	Sep. 08, 2020
Power Sensor	Agilent	E9301A	MY41497725	Sep. 08, 2020
Coax cable (9KHz-40GHz)	TCT	RE-high-02	N/A	Sep. 08, 2020
Antenna Connector	TCT	RFC-03	N/A	Sep. 08, 2020

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 (5180 - 5240 MHz)				
Mode	Test channel	Maximum Conducted Output Power (dBm)	Limit (dBm)	Result
11a	CH36	9.87	24	PASS
11a	CH40	9.99	24	PASS
11a	CH48	10.24	24	PASS
11n(HT20)	CH36	10.12	24	PASS
11n(HT20)	CH40	10.15	24	PASS
11n(HT20)	CH48	10.25	24	PASS
11n(HT40)	CH38	7.15	24	PASS
11n(HT40)	CH46	7.37	24	PASS
11ac(HT20)	CH36	10.05	24	PASS
11ac(HT20)	CH40	10.06	24	PASS
11ac(HT20)	CH48	10.21	24	PASS
11ac(HT40)	CH38	7.09	24	PASS
11ac(HT40)	CH46	7.14	24	PASS
11ac(VHT80)	CH42	6.22	24	PASS

Configuration Band 2A (5260 - 5320 MHz)

Mode	Test channel	Maximum Conducted Output Power (dBm)	26 dB Bandwidth (MHz)	11dBm+ 10logB (dBm)	Limit (dBm)	Result
11a	CH52	10.54	21.71	24.37	24.00	PASS
11a	CH60	11.62	22.26	24.48	24.00	PASS
11a	CH64	11.93	21.83	24.39	24.00	PASS
11n(HT20)	CH52	10.52	22.28	24.48	24.00	PASS
11n(HT20)	CH60	11.67	22.35	24.49	24.00	PASS
11n(HT20)	CH64	12.07	22.26	24.48	24.00	PASS
11n(HT40)	CH54	7.92	48.77	27.88	24.00	PASS
11n(HT40)	CH62	7.85	48.73	27.88	24.00	PASS
11ac(VHT20)	CH52	10.53	22.26	24.48	24.00	PASS
11ac(VHT20)	CH60	11.52	22.29	24.48	24.00	PASS
11ac(VHT20)	CH64	12.00	22.06	24.44	24.00	PASS
11ac(VHT40)	CH54	7.70	48.72	27.88	24.00	PASS
11ac(VHT40)	CH62	7.69	48.76	27.88	24.00	PASS
11ac(VHT80)	CH58	7.36	83.85	30.24	24.00	PASS

Note : The maximum conducted output power shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz

Configuration Band 2C (5500 - 5720 MHz)

Mode	Test channel	Maximum Conducted Output Power (dBm)	26 dB Bandwidth (MHz)	11dBm+ 10logB (dBm)	Limit (dBm)	Result
11a	CH100	12.40	22.20	24.46	24.00	PASS
11a	CH120	11.99	21.99	24.42	24.00	PASS
11a	CH144	9.55	21.69	24.36	24.00	PASS
11n(HT20)	CH100	12.35	21.91	24.41	24.00	PASS
11n(HT20)	CH120	11.99	21.88	24.40	24.00	PASS
11n(HT20)	CH144	9.57	21.98	24.42	24.00	PASS
11n(HT40)	CH102	8.15	48.78	27.88	24.00	PASS
11n(HT40)	CH118	8.16	48.77	27.88	24.00	PASS
11n(HT40)	CH142	6.86	48.69	27.87	24.00	PASS
11ac(VHT20)	CH100	12.37	21.72	24.37	24.00	PASS
11ac(VHT20)	CH120	11.93	22.20	24.46	24.00	PASS
11ac(VHT20)	CH144	9.34	21.75	24.37	24.00	PASS
11ac(VHT40)	CH102	7.77	48.69	27.87	24.00	PASS
11ac(VHT40)	CH118	7.79	48.67	27.87	24.00	PASS
11ac(VHT40)	CH142	6.77	48.71	27.88	24.00	PASS
11ac(VHT80)	CH106	8.11	83.48	30.22	24.00	PASS
11ac(VHT80)	CH138	5.50	82.88	30.18	24.00	PASS

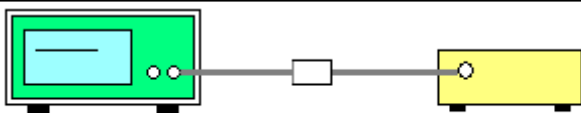
Note : The maximum conducted output power shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz

Configuration Band 3 (5745 - 5825 MHz)

Mode	Test channel	Maximum Conducted Output Power (dBm)	Limit (dBm)	Result
11a	CH149	8.66	30	PASS
11a	CH157	8.14	30	PASS
11a	CH165	7.92	30	PASS
11n(HT20)	CH149	8.70	30	PASS
11n(HT20)	CH157	8.10	30	PASS
11n(HT20)	CH165	7.85	30	PASS
11n(HT40)	CH151	5.64	30	PASS
11n(HT40)	CH159	5.34	30	PASS
11ac(VHT20)	CH149	8.72	30	PASS
11ac(VHT20)	CH157	8.21	30	PASS
11ac(VHT20)	CH165	7.85	30	PASS
11ac(VHT40)	CH151	5.52	30	PASS
11ac(VHT40)	CH159	5.12	30	PASS
11ac(VHT80)	CH155	5.16	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 v02r01r01 KDB789033 D02 General UNII Test Procedures New Rules v02r01 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 v02r01 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

Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Sep. 11, 2020
Coax cable (9KHz-40GHz)	TCT	RE-high-02	N/A	Sep. 08, 2020
Antenna Connector	TCT	RFC-03	N/A	Sep. 08, 2020

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

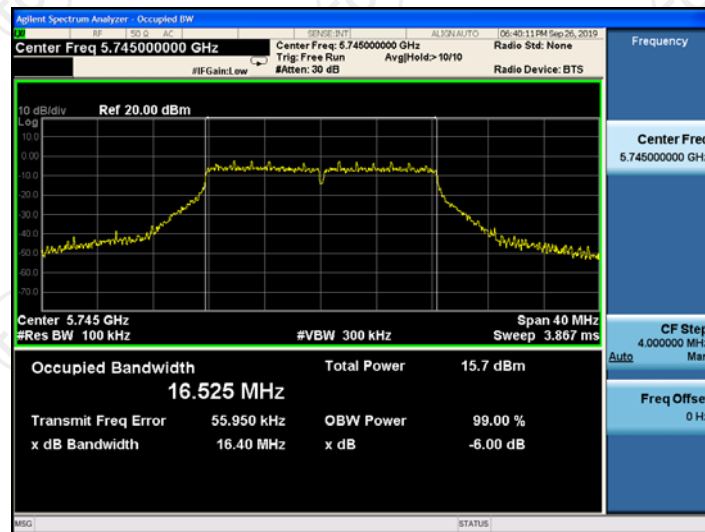
Band 3 (5745 - 5825 MHz)					
Mode	Test channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)	Result
11a	CH149	5745	16.40	0.5	PASS
11a	CH157	5785	16.38	0.5	PASS
11a	CH165	5825	16.45	0.5	PASS
11n(HT20)	CH149	5745	17.58	0.5	PASS
11n(HT20)	CH157	5785	17.63	0.5	PASS
11n(HT20)	CH165	5825	17.61	0.5	PASS
11n(HT40)	CH151	5755	35.25	0.5	PASS
11n(HT40)	CH159	5795	35.29	0.5	PASS
11ac(VHT20)	CH149	5745	17.59	0.5	PASS
11ac(VHT20)	CH157	5785	17.59	0.5	PASS
11ac(VHT20)	CH165	5825	17.61	0.5	PASS
11ac(VHT40)	CH151	5755	35.21	0.5	PASS
11ac(VHT40)	CH159	5795	35.18	0.5	PASS
11ac(VHT80)	CH155	5775	72.65	0.5	PASS

Test plots as follows:

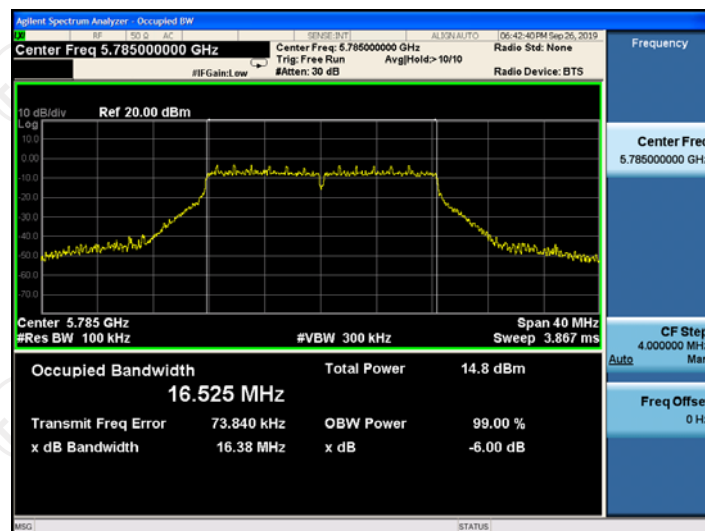
Band 3 (5725 – 5850 MHz)

11a

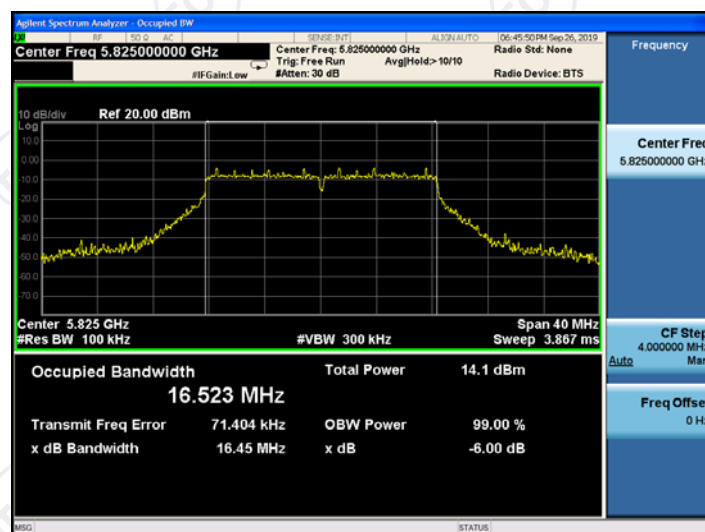
CH149



CH157

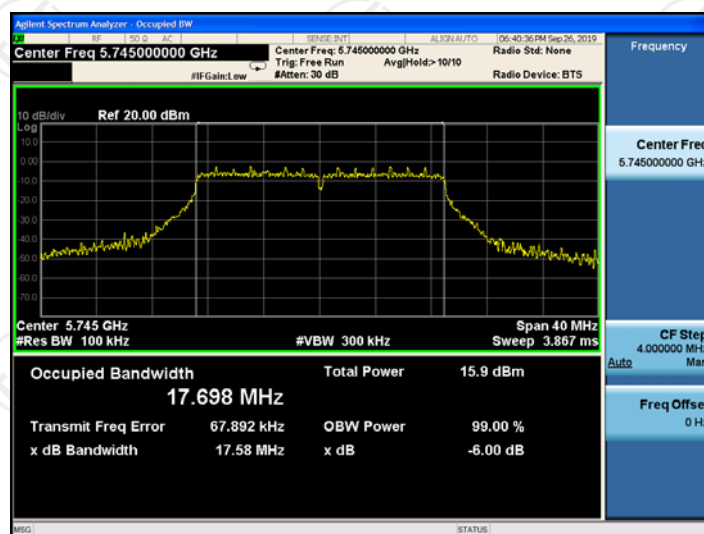


CH165

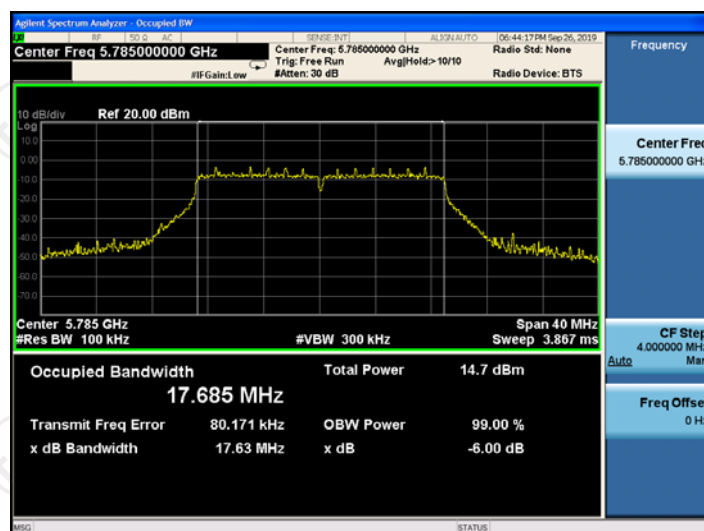


11n(HT20)

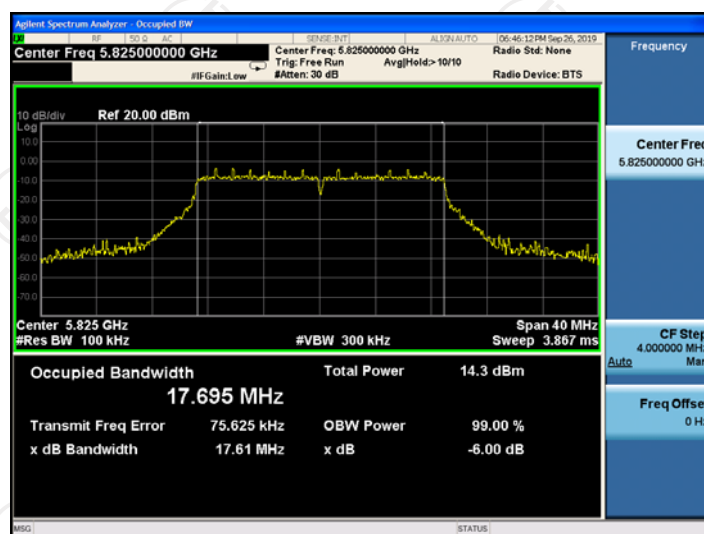
CH149



CH157

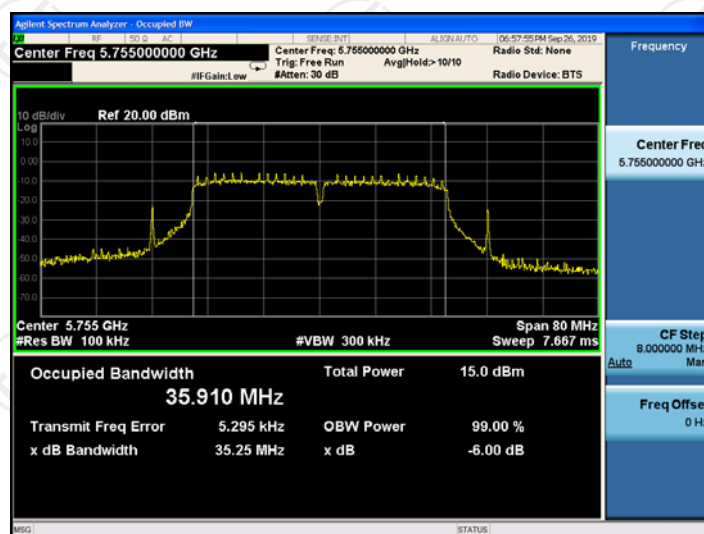


CH165

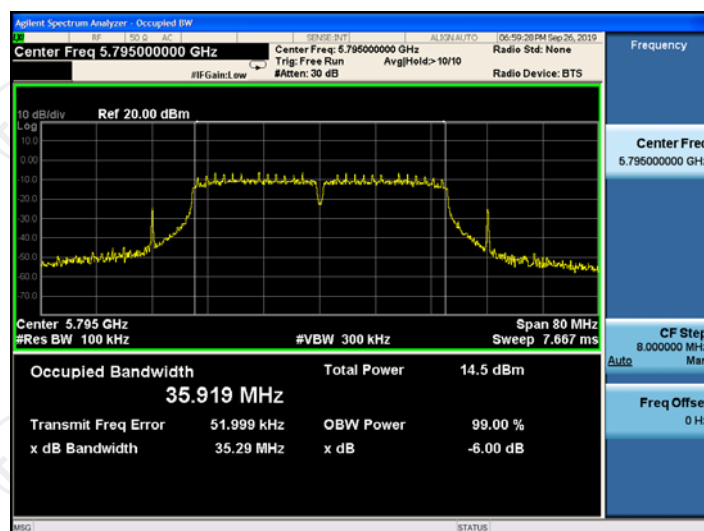


11n(HT40)

CH151

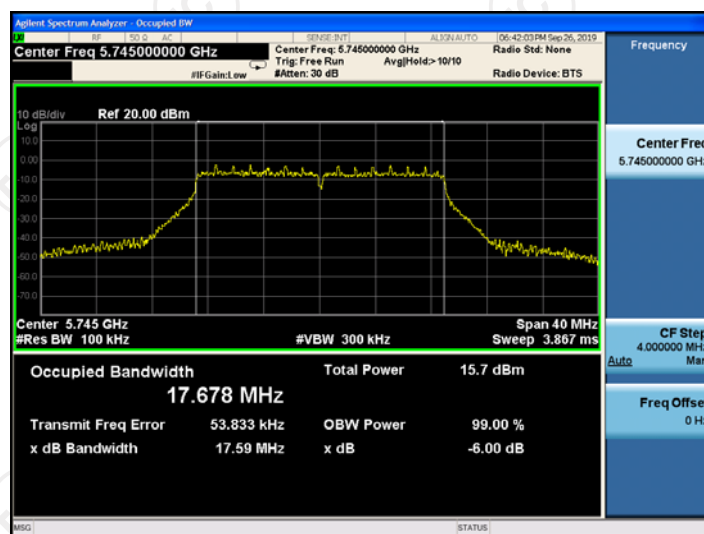


CH159

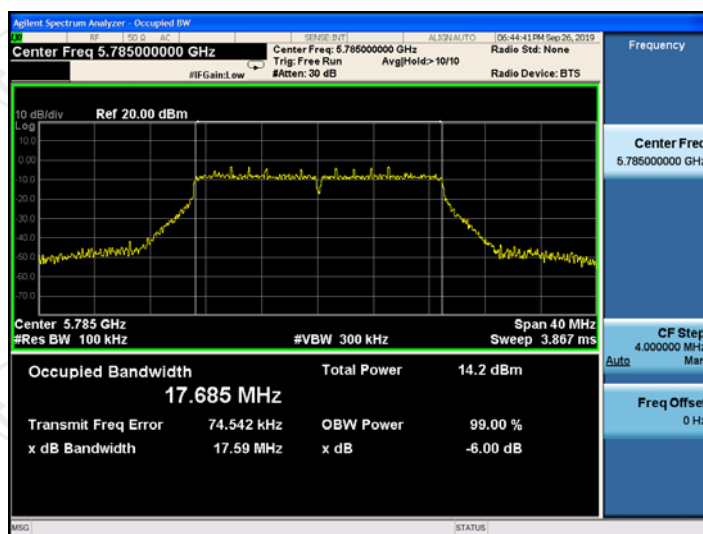


11ac(VHT20)

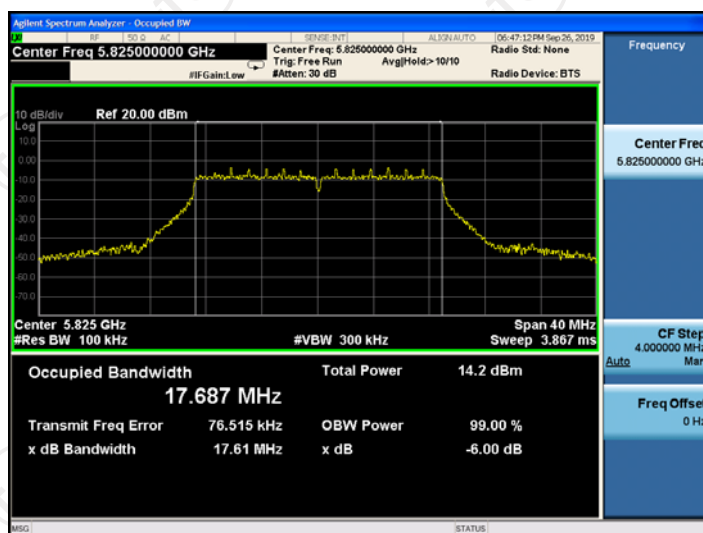
CH149



CH157

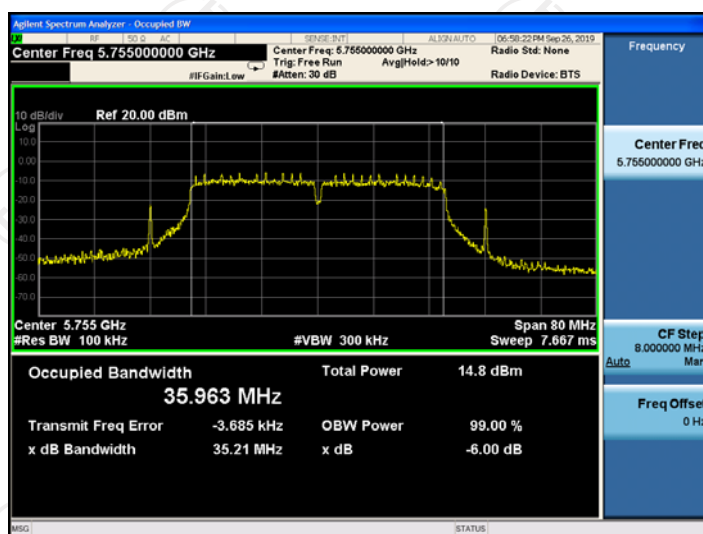


CH165

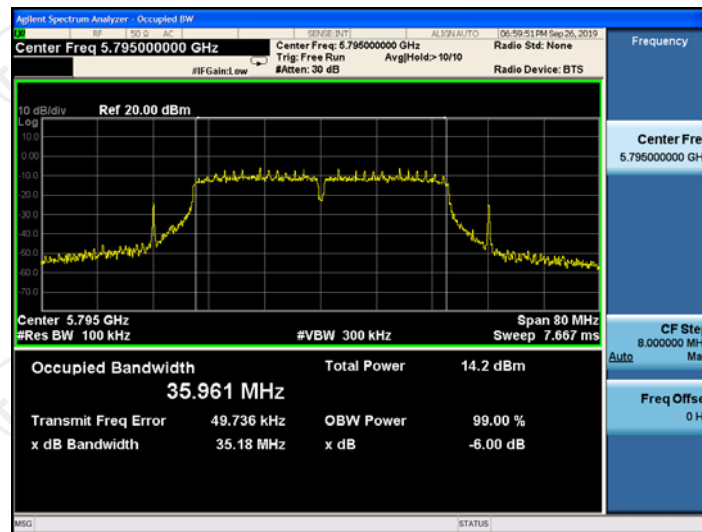


11ac(VHT40)

CH151

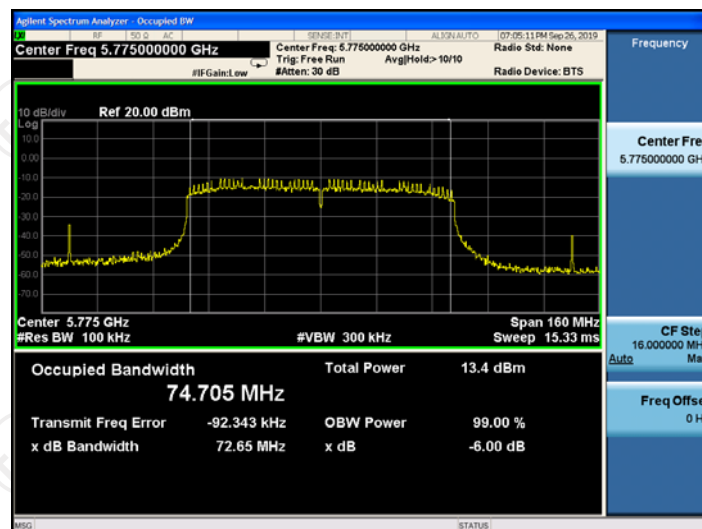


CH159



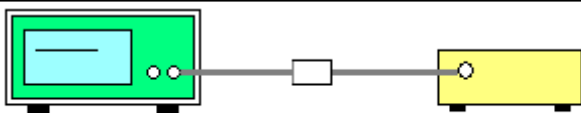
11ac(VHT80)

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 v02r01r01 KDB789033 D02 General UNII Test Procedures New Rules v02r01 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 v02r01 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) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW. 4. Measure and record the results in the test report.
Test Result:	PASS

6.5.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	N9020A	MY49100619	Sep. 11, 2020
Coax cable (9KHz-40GHz)	TCT	RE-high-02	N/A	Sep. 08, 2020
Antenna Connector	TCT	RFC-03	N/A	Sep. 08, 2020

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	22.13	17.027
11a	CH40	5200	21.60	16.921
11a	CH48	5240	21.91	17.002
11n(HT20)	CH36	5180	22.31	17.993
11n(HT20)	CH40	5200	22.35	18.029
11n(HT20)	CH48	5240	22.45	18.026
11n(HT40)	CH38	5190	48.85	36.346
11n(HT40)	CH46	5230	48.73	36.269
11ac(VHT20)	CH36	5180	21.89	18.038
11ac(VHT20)	CH40	5200	21.92	17.983
11ac(VHT20)	CH48	5240	22.13	18.017
11ac(VHT40)	CH38	5190	48.68	36.276
11ac(VHT40)	CH46	5230	48.76	36.272
11ac(VHT80)	CH42	5210	84.23	74.615

Band 2A

Mode	Test channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
11a	CH52	5260	21.71	17.007
11a	CH60	5300	22.26	16.947
11a	CH64	5320	21.83	16.907
11n(HT20)	CH52	5260	22.28	18.007
11n(HT20)	CH60	5300	22.35	17.996
11n(HT20)	CH64	5320	22.26	18.023
11n(HT40)	CH54	5270	48.77	36.293
11n(HT40)	CH62	5310	48.73	36.229
11ac(VHT20)	CH52	5260	22.26	18.040
11ac(VHT20)	CH60	5300	22.29	18.043
11ac(VHT20)	CH64	5320	22.06	18.068
11ac(VHT40)	CH54	5270	48.72	36.295
11ac(VHT40)	CH62	5310	48.76	36.248
11ac(VHT80)	CH58	5290	83.85	74.562

Band 2C

Mode	Test channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
11a	CH100	5500	22.20	16.993
11a	CH120	5600	21.99	17.027
11a	CH144	5720	21.69	16.964
11n(HT20)	CH100	5500	21.91	18.007
11n(HT20)	CH120	5600	21.88	17.989
11n(HT20)	CH144	5720	21.98	17.972
11n(HT40)	CH102	5510	48.78	36.192
11n(HT40)	CH118	5590	48.77	36.240
11n(HT40)	CH142	5710	48.69	36.258
11ac(VHT20)	CH100	5500	21.72	18.065
11ac(VHT20)	CH120	5600	22.20	18.033
11ac(VHT20)	CH144	5720	21.75	17.970
11ac(VHT40)	CH102	5510	48.69	36.309
11ac(VHT40)	CH118	5590	48.67	36.286
11ac(VHT40)	CH142	5710	48.71	36.270
11ac(VHT80)	CH106	5530	83.48	74.506
11ac(VHT80)	CH138	5690	82.88	74.285

Band 3

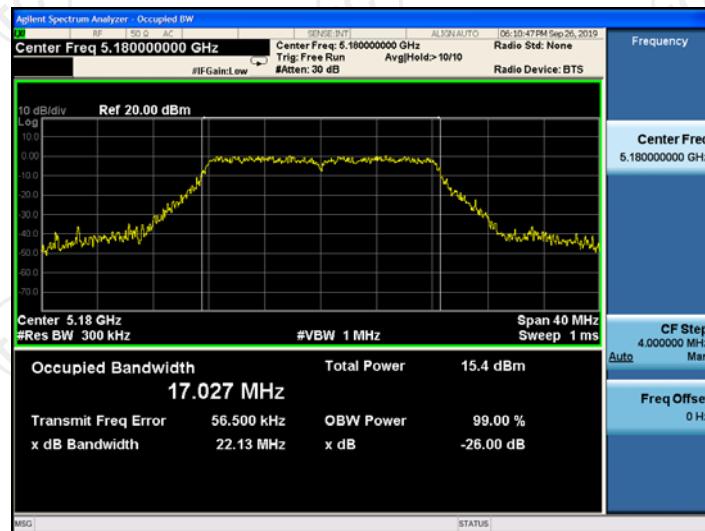
Mode	Test channel	Frequency (MHz)	99% Bandwidth (MHz)
11a	CH149	5745	16.961
11a	CH157	5785	17.028
11a	CH165	5825	17.003
11n(HT20)	CH149	5745	18.068
11n(HT20)	CH157	5785	18.008
11n(HT20)	CH165	5825	17.979
11n(HT40)	CH151	5755	36.259
11n(HT40)	CH159	5795	36.188
11ac(VHT20)	CH149	5745	17.996
11ac(VHT20)	CH157	5785	18.061
11ac(VHT20)	CH165	5825	18.032
11ac(VHT40)	CH151	5755	36.374
11ac(VHT40)	CH159	5795	36.282
11ac(VHT80)	CH155	5775	74.645

Test plots as follows:

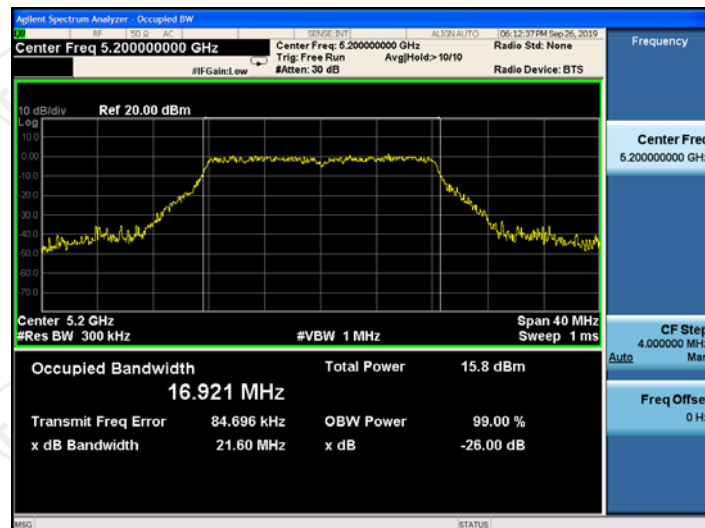
Band 1 (5180-5240 MHz)

11a

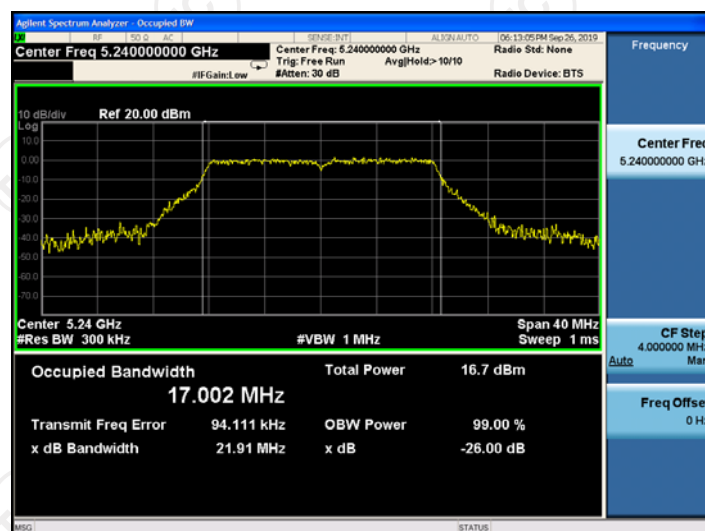
CH36



CH40

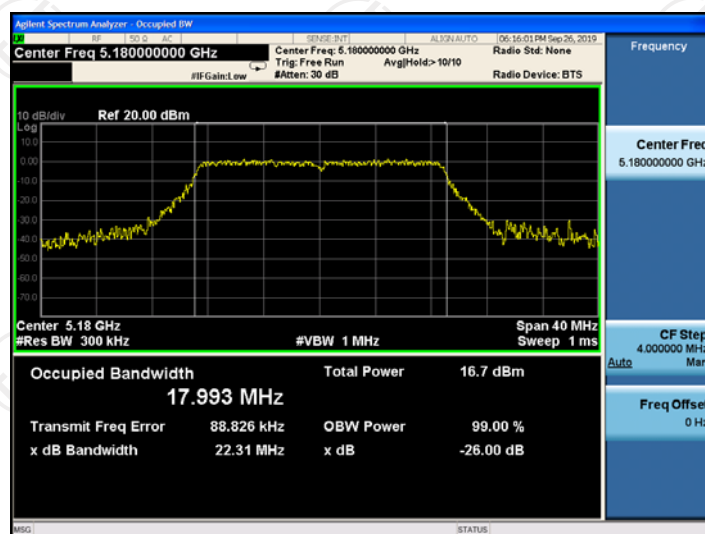


CH48

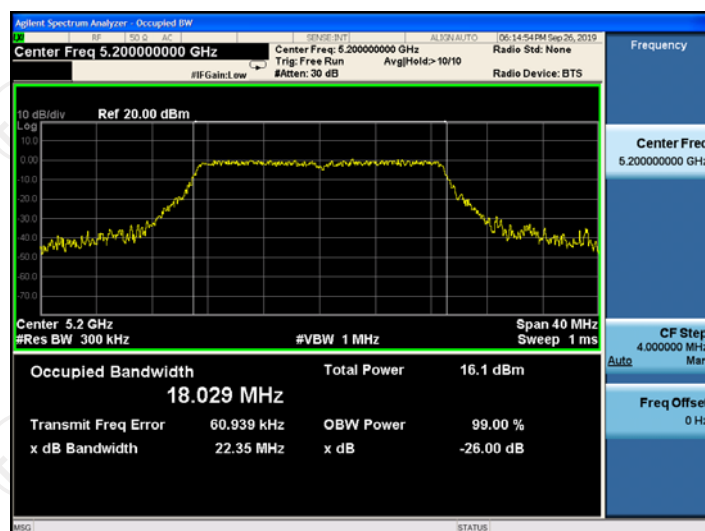


11n(HT20)

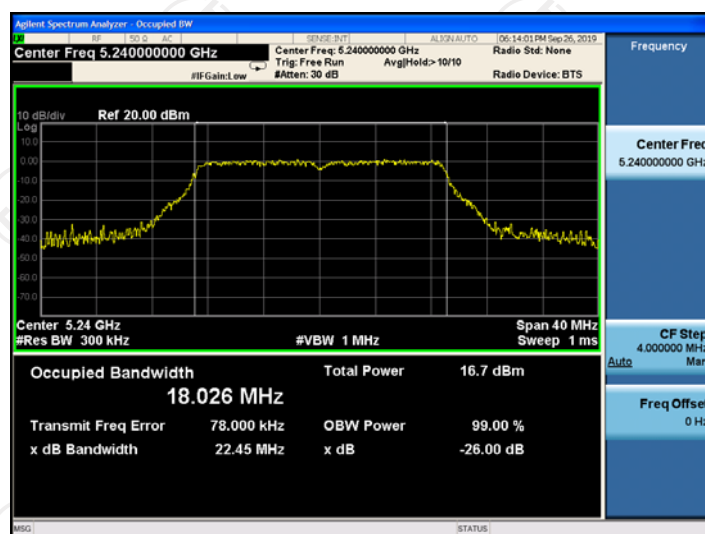
CH36



CH40

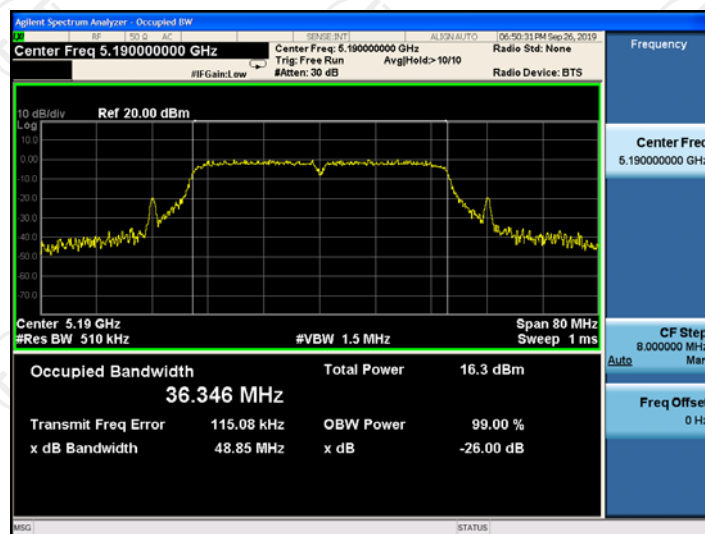


CH48

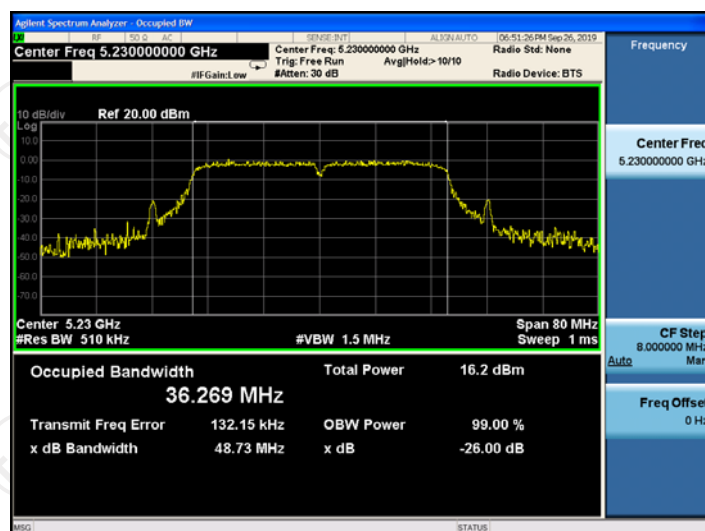


11n(HT40)

CH38

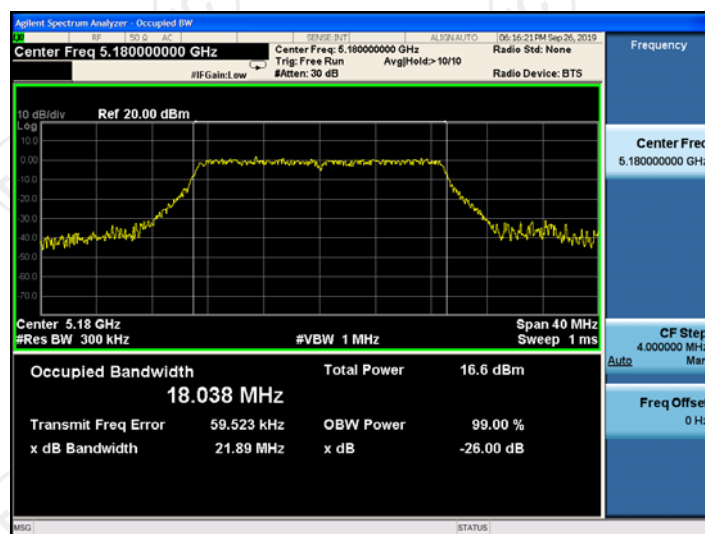


CH46

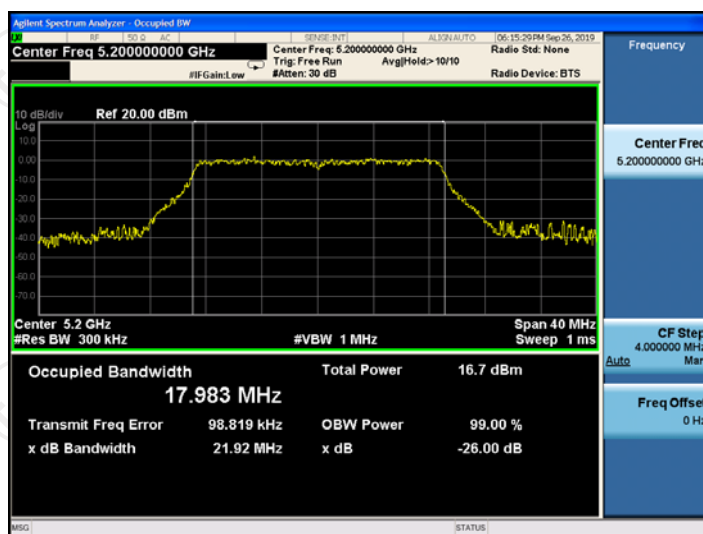


11ac(VHT20)

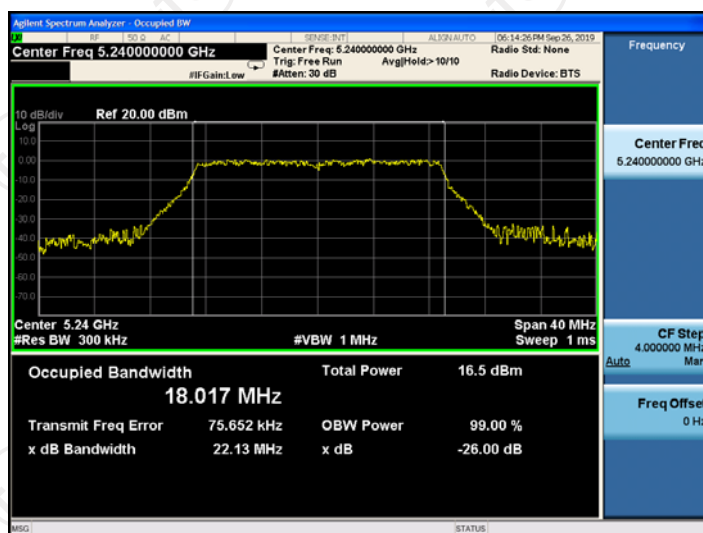
CH36



CH40

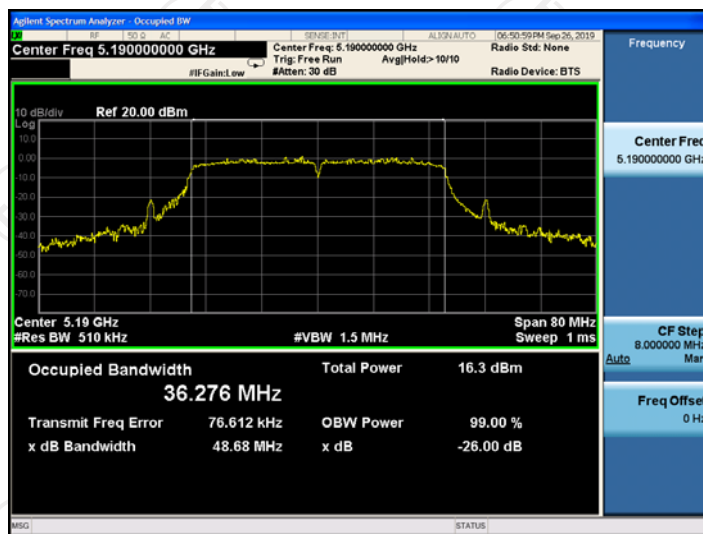


CH48

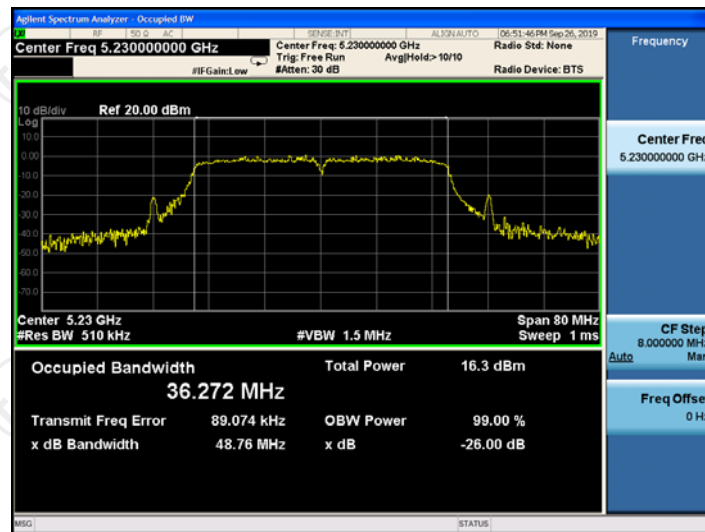


11ac(VHT40)

CH38

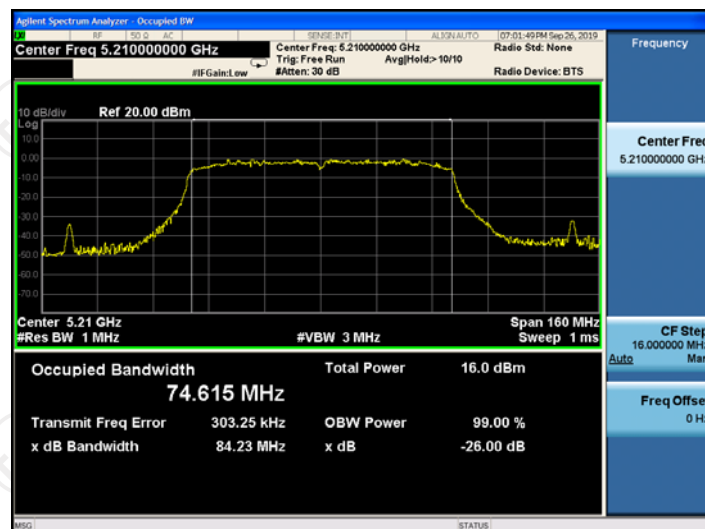


CH46



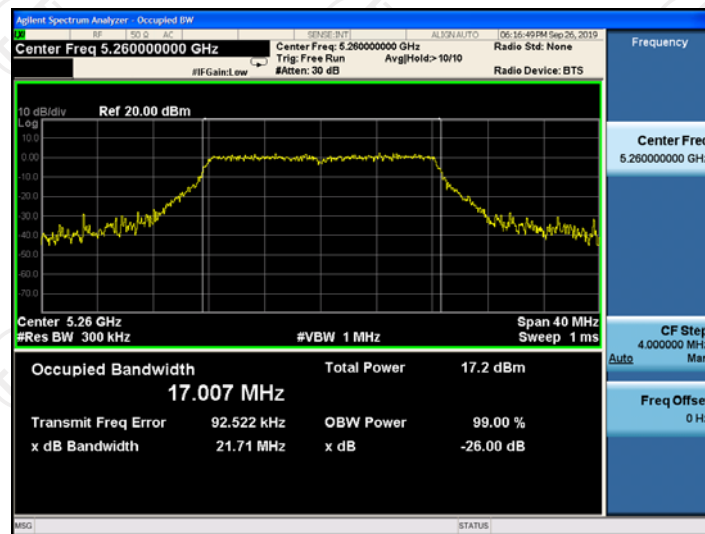
11ac(VHT80)

CH42

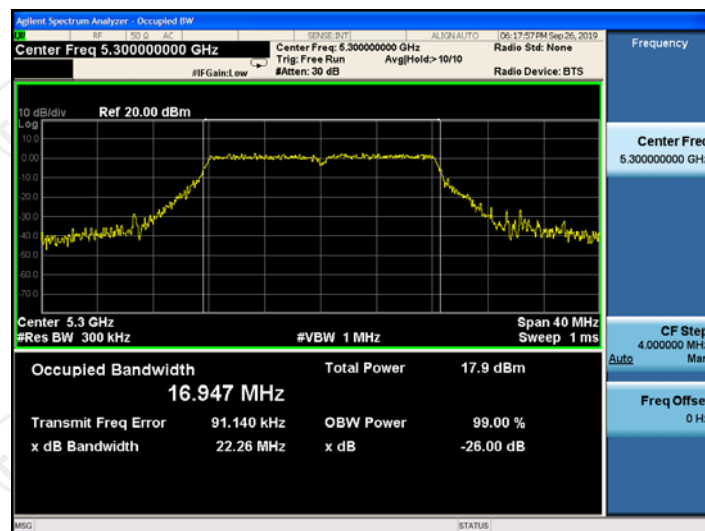


11a

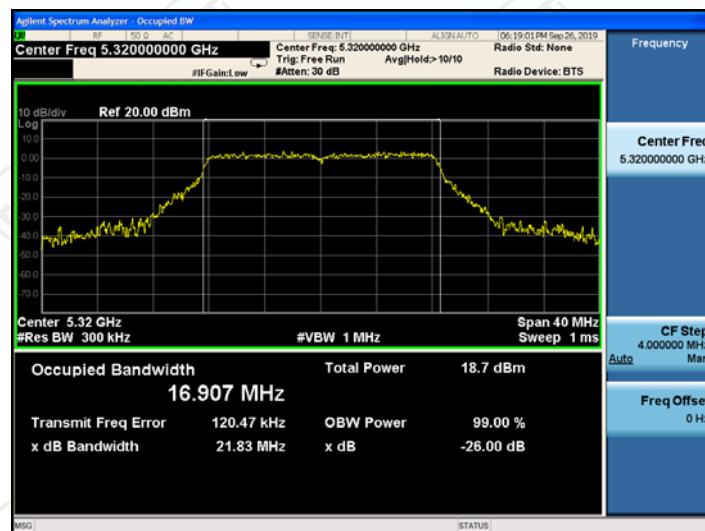
CH52



CH60

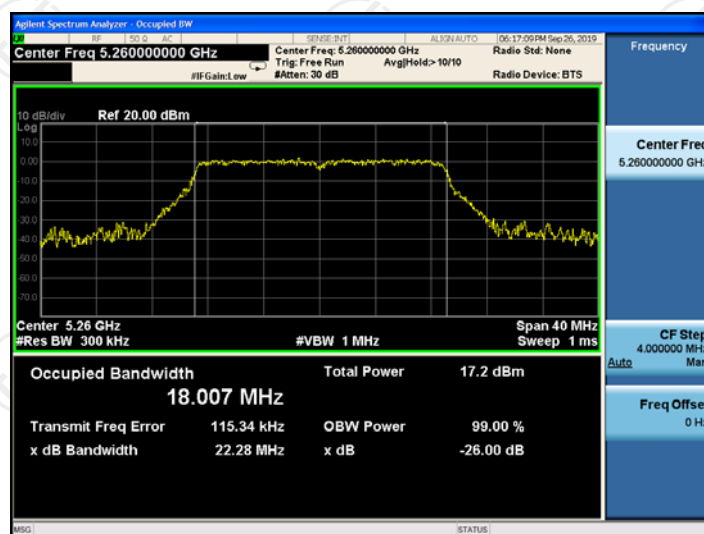


CH64

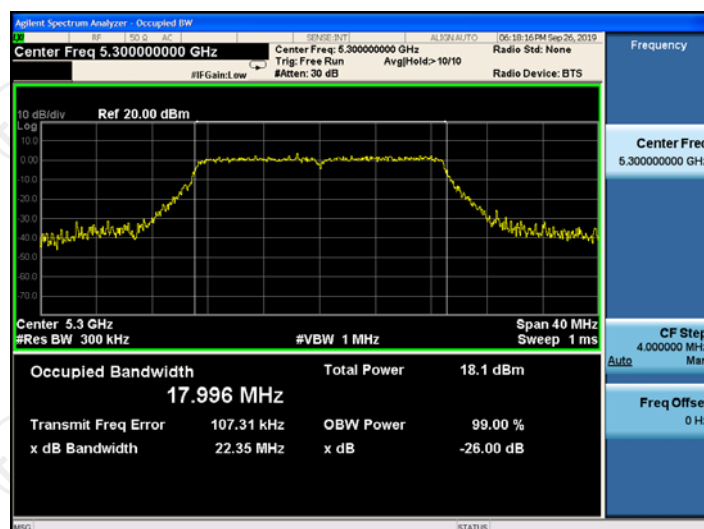


11n(HT20)

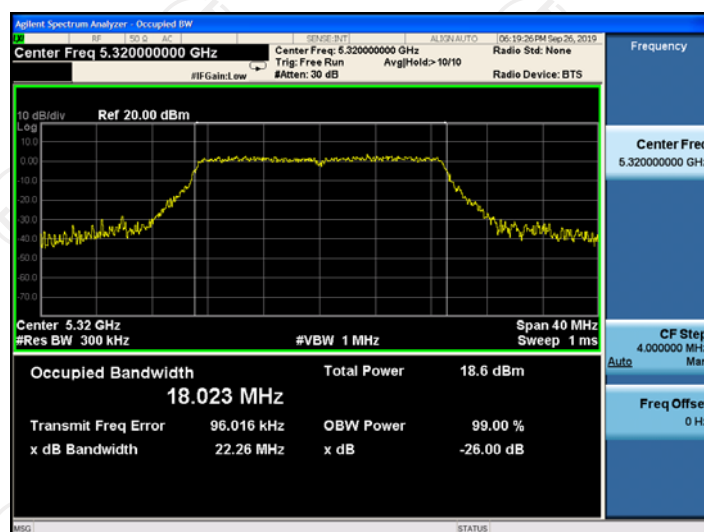
CH52



CH60

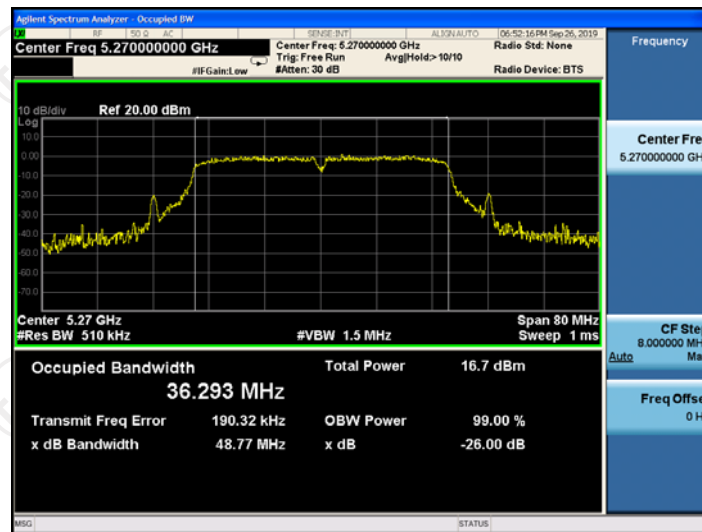


CH64

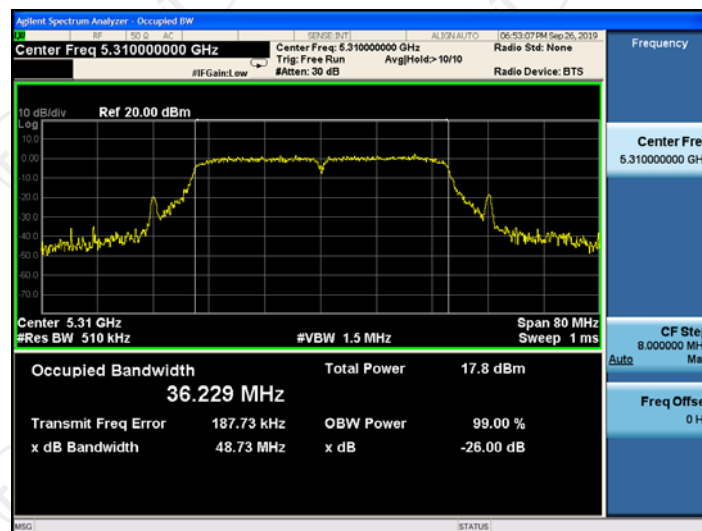


11n(HT40)

CH54

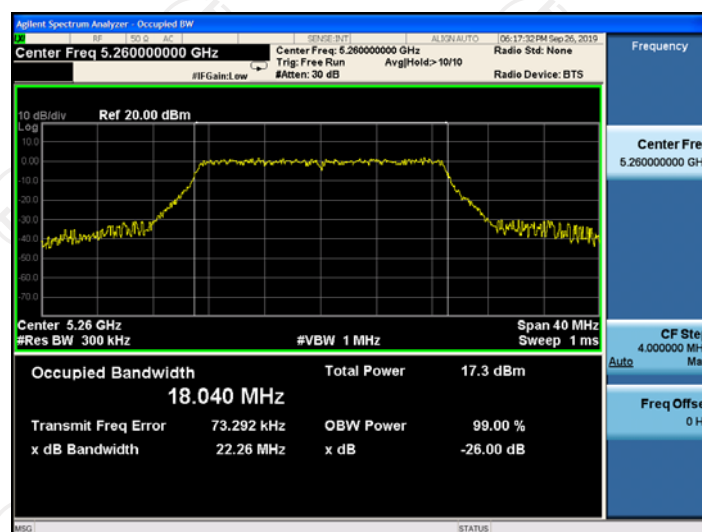


CH62

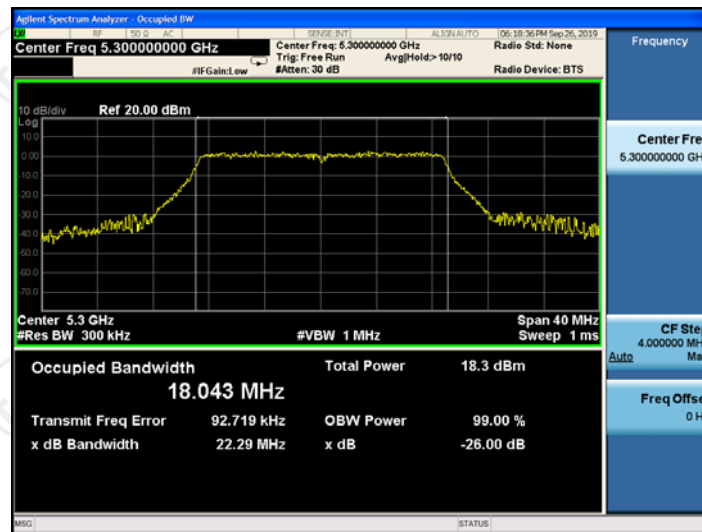


11ac(VHT20)

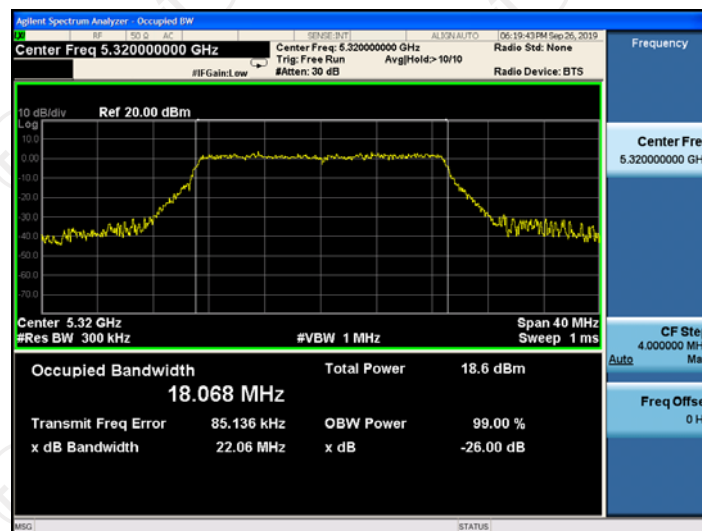
CH52



CH60

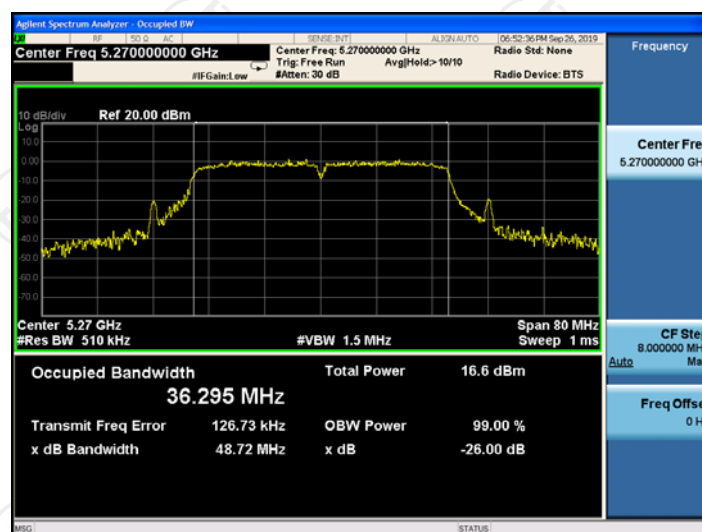


CH64

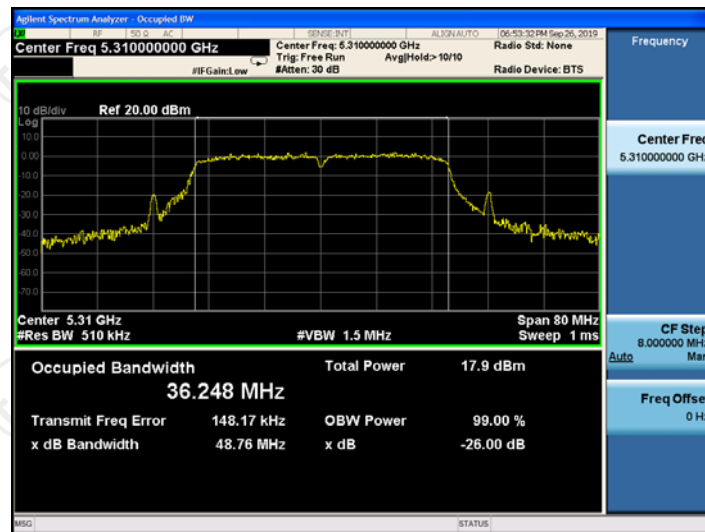


11ac(VHT40)

CH54



CH62



11ac(VHT80)

CH58

