



TEST REPORT

APPLICANT : Shenzhen Chainway Information
Technology Co., Ltd.

PRODUCT NAME : Mobile Data Terminal

MODEL NAME : C6000

BRAND NAME : CHAINWAY

FCC ID : 2AC6AC6000B

STANDARD(S) : 47 CFR Part 15 Subpart E

RECEIPT DATE : 2020-11-20

TEST DATE : 2020-12-12 to 2020-12-28

ISSUE DATE : 2021-01-27

Edited by: Peng Mi
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Peng Huarui (Supervisor)

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DIRECTORY

- 1. Technical Information 3
 - 1.1. Applicant and Manufacturer Information 3
 - 1.2. Equipment Under Test (EUT) Description 3
 - 1.3. Modulation Type and Data Rate of EUT 5
 - 1.4. The Channel Number and Frequency 6
 - 1.5. Test Standards and Results 7
 - 1.6. Environmental Conditions 8
- 2. 47 CFR Part 15E Requirements 9
 - 2.1. Antenna Requirement 9
 - 2.2. Duty Cycle of the Test Signal 10
 - 2.3. Maximum Conducted Output Power 15
 - 2.4. Emission Bandwidth 20
 - 2.5. Peak Power Spectral Density 47
 - 2.6. Frequency Stability 75
 - 2.7. Conducted Emission 77
 - 2.8. Restricted Frequency Bands 81
 - 2.9. Radiated Emission 98
- Annex A Test Uncertainty 120
- Annex B Testing Laboratory Information 121

Change History		
Version	Date	Reason for change
1.0	2021-01-27	First edition



1. Technical Information


Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	Shenzhen Chainway Information Technology Co., Ltd.
Applicant Address:	9F Building 2, Daqian Industrial Park, District 67, XingDong Community, Xin'an Street, Bao'an District, Shenzhen, Guangdong, China
Manufacturer:	Shenzhen Chainway Information Technology Co., Ltd.
Manufacturer Address:	9F Building 2, Daqian Industrial Park, District 67, XingDong Community, Xin'an Street, Bao'an District, Shenzhen, Guangdong, China

1.2. Equipment Under Test (EUT) Description

Product Name:	Mobile Data Terminal
Serial No.:	(N/A, marked #1 by test site)
Hardware Version:	PCBA-C6000M-62MB-V20
Software Version:	H205XOA.C6000_E3AX.A3.AD10.WVGA.CN.FTM.MV3224.P 1.20200921.ATA
Modulation Technology:	OFDM
Modulation Mode:	802.11a, 802.11n (HT20), 802.11n (HT40) 802.11ac (VHT20), 802.11ac (VHT40), 802.11ac (VHT80),
Operating Frequency Range:	5180MHz-5240MHz; 5260MHz-5320MHz; 5745MHz-5825MHz
Channel Number:	Refer to 1.3
Antenna Type:	PIFA Antenna
Antenna Gain:	-0.30dBi

Accessory Information:	Battery	
	Brand Name:	Hixon
	Model No.:	J314
	Serial No.:	(N/A, marked #1 by test site)
	Capacity:	4200mAh
	Rated Voltage:	3.80V
	Charge Limit:	4.35V
	Manufacturer:	Hixon(Shenzhen) Technology Limited
	AC Adapter	
	Brand Name:	
	Model No.:	NA010050020
	Serial No.:	(N/A, marked #1 by test site)
	Rated Output:	5V $\overline{=}$ 2A
	Rated Input:	100-240V~50/60Hz, 0.5A
	Manufacturer:	Shenzhen Shi Ying Yuan Electronics Co., Ltd.

Note 1: WIFI hotspot does not support U-NII band.

Note 2: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.



1.3. Modulation Type and Data Rate of EUT

Modulation Technology	Modulation Type	Data Rate (Mbps) ^{Note1}
OFDM (802.11a)	BPSK	6/9
	QPSK	12/18
	16QAM	24/36
	64QAM	48/54
OFDM (802.11n)	BPSK	6.5
	QPSK	13/19.5
	16QAM	26/39
	64QAM	52/58.5/65
OFDM (802.11ac)	BPSK	6.5
	QPSK	13/19.5
	16QAM	26/39
	64QAM	52/58.5/65
	256QAM	78

Note1: The worst-case mode (black bold) in all data rates has been determined during the pre-scan, only the test data of the worst-case were recorded in this report.



1.4. The Channel Number and Frequency

Frequency Range: 5150MHz-5250MHz				
Bandwidth	Channel	Frequency (MHz)	Channel	Frequency (MHz)
20MHz	36	5180	40	5200
	44	5220	48	5240
40MHz	38	5190	46	5230
80MHz	42	5210		
Frequency Range: 5250MHz-5350MHz				
Bandwidth	Channel	Frequency (MHz)	Channel	Frequency (MHz)
20MHz	52	5260	56	5280
	60	5300	64	5320
40MHz	54	5270	62	5310
80MHz	58	5290		
Frequency Range: 5725MHz-5825MHz				
Bandwidth	Channel	Frequency (MHz)	Channel	Frequency (MHz)
20MHz	149	5745	153	5765
	157	5785	161	5805
	165	5825		
40MHz	151	5775	159	5795
80MHz	155	5775		

Note 1: The black bold channels were selected for test.



1.5. Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart E (U-NII band) for the EUT FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 15(5-1-14 Edition)	Radio Frequency Devices

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Test Date	Test Engineer	Result	Method determination /Remark
1	15.203	Antenna Requirement	N/A	N/A	PASS	No deviation
2	ANSI C63.10	Duty Cycle of the Test Signal	Dec 16, 2020	Ouyang Feng	PASS	No deviation
3	15.407(a)	Maximum Conducted Output Power	Dec 28, 2020	Ouyang Feng	PASS	No deviation
4	15.407(a)(e)	Emission Bandwidth	Dec 16, 2020	Ouyang Feng	PASS	No deviation
5	15.407(a)	Peak Power Spectral Density	Dec 16, 2020	Ouyang Feng	PASS	No deviation
6	15.407(g)	Frequency Stability	Dec 16, 2020	Ouyang Feng	PASS	No deviation
7	15.207	Conducted Emission	Dec 19, 2020	Huang Zhiye	PASS	No deviation
8	15.407(b)	Restricted Frequency Bands	Dec 11&16, 2020	Peng Xuwei	PASS	No deviation
9	15.407(b)	Radiated Emission	Dec 12, 2020	Peng Xuwei	PASS	No deviation

Note 1: The DFS test report was documented in a separate report (Report No.: SZ20110290W05).

Note 2: The tests of Conducted Emission and Radiated Emission were performed according to the method of measurements prescribed in ANSI C63.102013.

Note 3: These RF tests were performed according to the method of measurements prescribed in KDB789033 D02 v01r03.



Note 4: The path loss during the RF test is calibrated to correct the results by the offset setting in the test equipments. The ref offset 12.5dB contains two parts that cable loss 2.5dB and Attenuator 10dB.

Note 5: Additions to, deviation, or exclusions from the method shall be judged in the "method determination" column of add, deviate or exclude from the specific method shall be explained in the "Remark" of the above table.

Note 6: When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% risk level.

1.6. Environmental Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15-35
Relative Humidity (%):	30-60
Atmospheric Pressure (kPa):	86-106



2.47 CFR Part 15E Requirements

2.1. Antenna Requirement

2.1.1. Applicable Standard

According to FCC 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

2.1.2. Test Result: Compliant

The EUT has a permanently and irreplaceable attached antenna. Please refer to the EUT internal photos.

2.2. Duty Cycle of the Test Signal

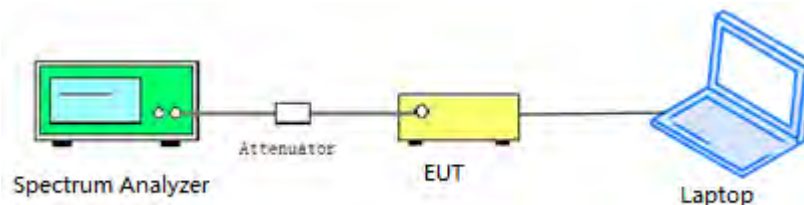
2.2.1. Requirement

Preferably, all measurements of maximum conducted (average) output power will be performed with the EUT transmitting continuously (i.e., with a duty cycle of greater than or equal to 98%). When continuous operation cannot be realized, then the use of sweep triggering/signal gating techniques can be used to ensure that measurements are made only during transmissions at the maximum power control level. Such sweep triggering/signal gating techniques will require knowledge of the minimum transmission duration (T) over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation. Sweep triggering/signal gating techniques can then be used if the measurement/sweep time of the analyzer can be set such that it does not exceed T at any time that data are being acquired (i.e., no transmitter OFF-time is to be considered).

When continuous transmission cannot be achieved and sweep triggering/signal gating cannot be implemented, alternative procedures are provided that can be used to measure the average power; however, they will require an additional measurement of the transmitter duty cycle (D). Within this sub clause, the duty cycle refers to the fraction of time over which the transmitter is ON and is transmitting at its maximum power control level. The duty cycle is considered to be constant if variations are less than $\pm 2\%$; otherwise, the duty cycle is considered to be nonconstant.

2.2.2. Test Description

Test Setup:



The EUT is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

2.2.3. Test Procedure

KDB 789033 Section B was used in order to prove compliance.

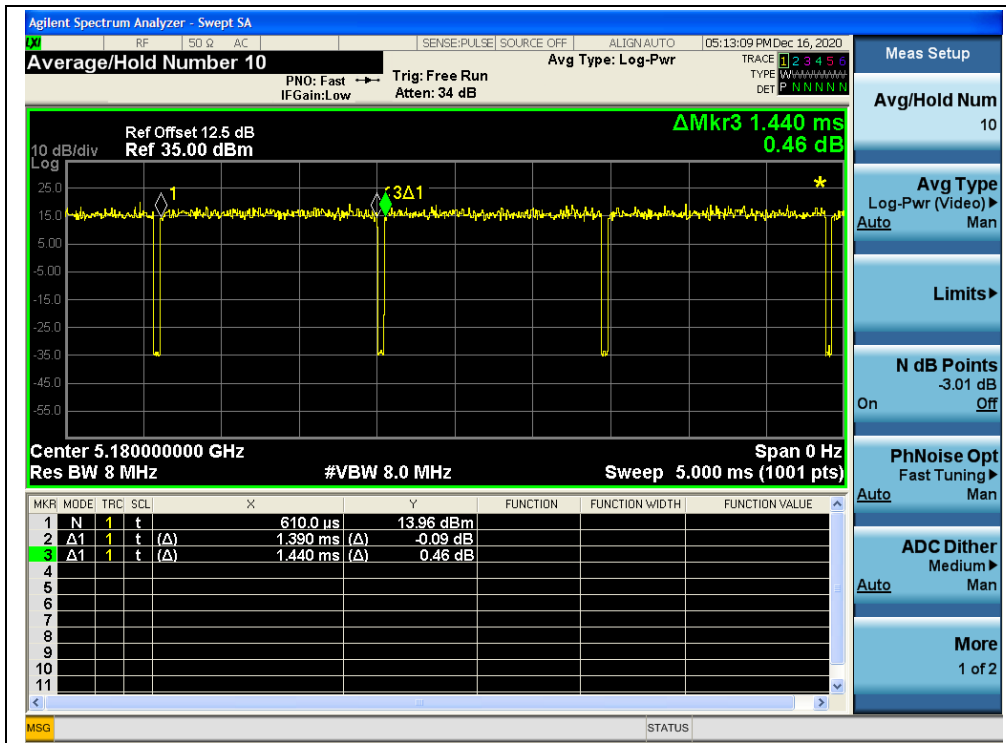


2.2.4. Test Result

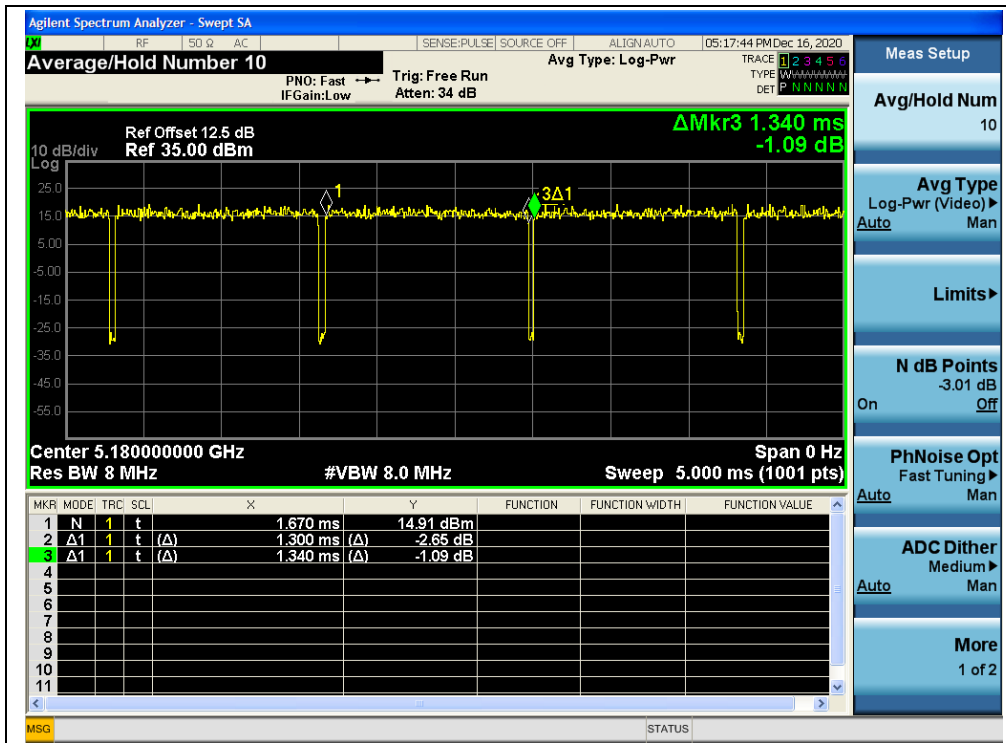
A. Test Verdict:

Test Mode	Duty Cycle (%) (D)	Duty Factor (10*log[1/D])
802.11a	96.53	0.15
802.11n (HT20)	97.01	0.13
802.11n (HT40)	93.53	0.29
802.11ac (VHT20)	98.13	0.08
802.11ac (VHT40)	93.56	0.29
802.11ac (VHT80)	88.04	0.55

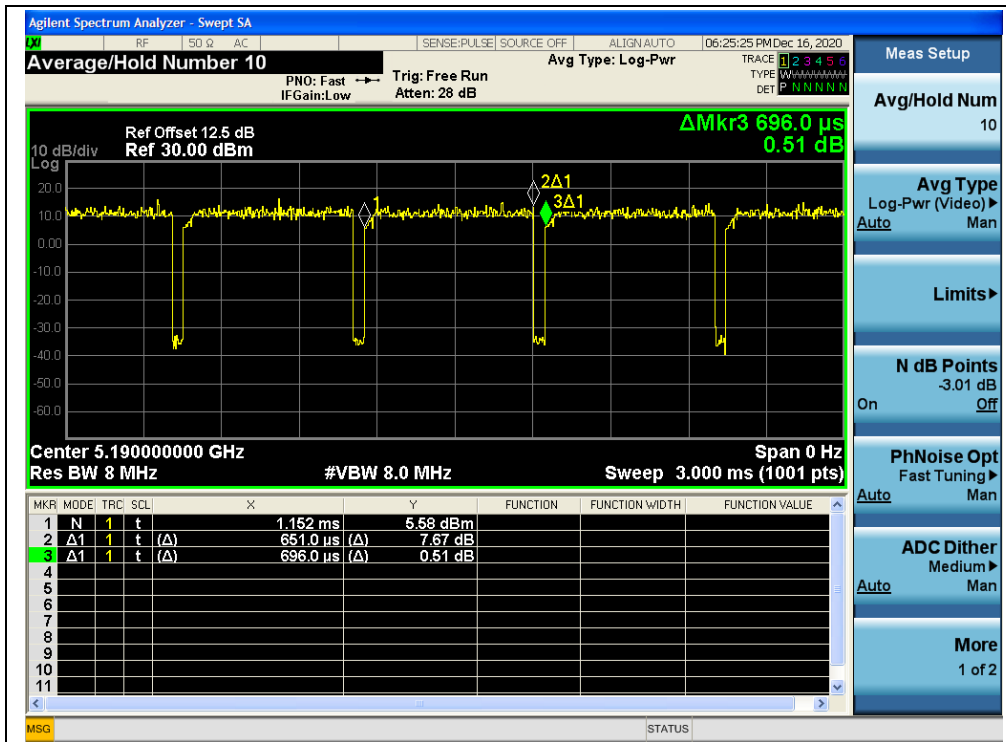
B. Test Plot:



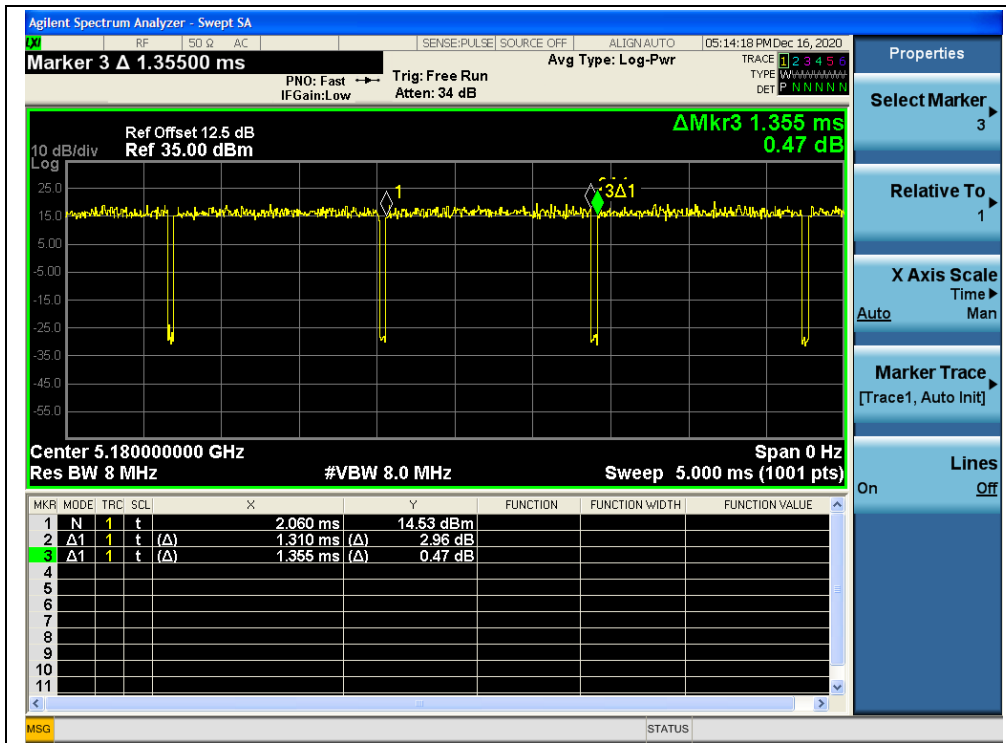
(Channel 36, 5180MHz, 802.11a)



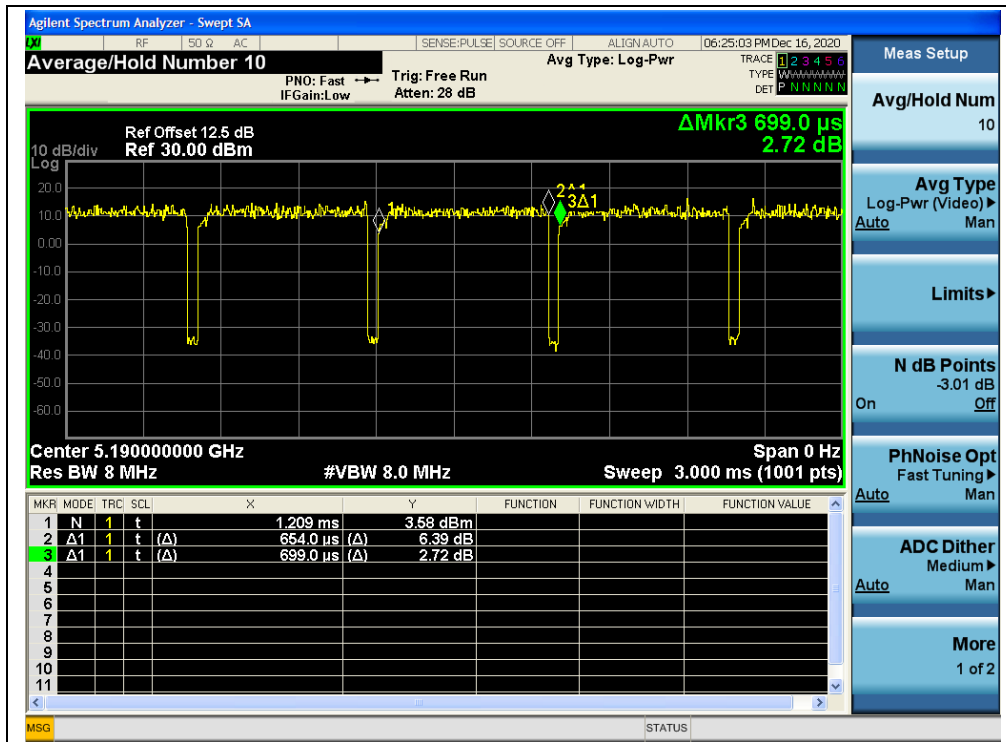
(Channel 36, 5180MHz, 802.11n (HT20))



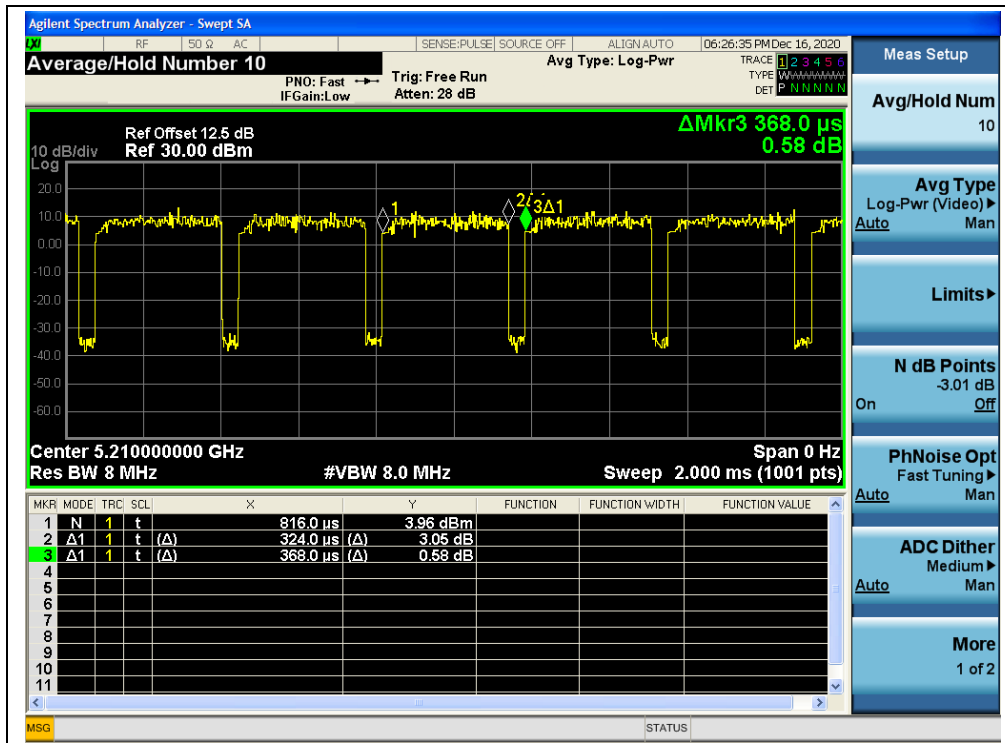
(Channel 38, 5190MHz, 802.11n (HT40))



(Channel 36, 5180MHz, 802.11ac (VHT20))



(Channel 38, 5190MHz, 802.11ac (VHT40))



(Channel 42, 5210MHz, 802.11ac (VHT80))

2.3. Maximum Conducted Output Power

2.3.1. Requirement

(1) 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 250mW provided the maximum antenna gain does not exceed 6dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250mW or $11\text{dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

If transmitting antennas of directional gain greater than 6dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

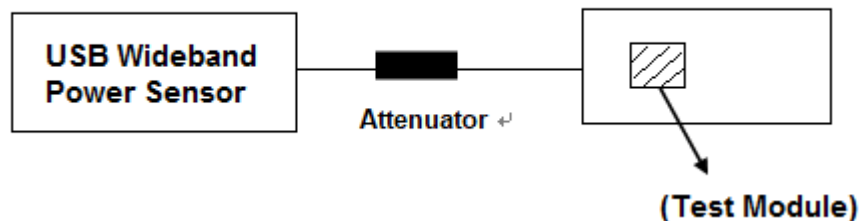
(4) According to KDB662911D01 Measure-and-sum technique, the conducted emission level (e.g., transmit power or power in specified bandwidth) is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically to determine the total emission level from the device. Summing is performed in units that are directly proportional to power.

(5) According to KDB 662911 D01, the directional gain = $G_{\text{ANT}} + 10\log(N_{\text{ANT}})\text{dBi}$, where G_{ANT} is the antenna gain in dBi, N_{ANT} is the number of outputs.

2.3.2. Test Description

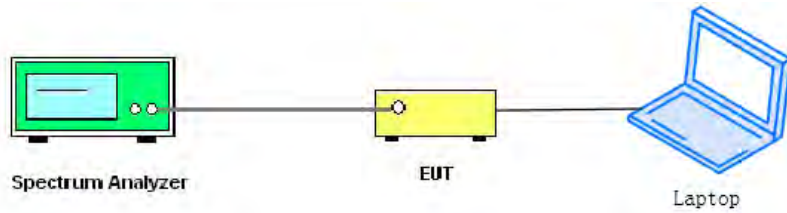
Section E) 3) of KDB 789033 defines a methodology using a USB Wideband Power Sensor.

Test Setup:



The EUT (Equipment under the test) which is coupled to the USB Wideband Power Sensor; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading, all test result in USB Wideband Power Sensor.

For ac (VHT80) mode power



The EUT (Equipment under the test) is coupled to the Spectrum analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading, all test result in Spectrum analyzer.

2.3.3.Limits

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz.

Mode	Band	Channel (MHz)	26dB BW (MHz)	$11+10\log(26\text{dB BW})$	Limits (dBm)
a	UNII-2a	5260	21.11	24.24	24.00
		5300	20.83	24.19	24.00
		5320	21.02	24.23	24.00
n20	UNII-2a	5260	21.19	24.26	24.00
		5300	21.30	24.28	24.00
		5320	21.63	24.35	24.00
ac20	UNII-2a	5260	21.30	24.28	24.00
		5300	21.53	24.33	24.00
		5320	21.37	24.30	24.00



2.3.4. Test Result

Maximum Average Conducted Output Power

802.11a Mode

Frequency (MHz)	Average Power				Limit		Verdict
	Measured	Duty Factor	Duty factor Calculated		dBm	W	
	dBm		dBm	W			
5180	9.52	0.15	9.67	0.009	24	0.25	PASS
5220	10.12		10.27	0.011			
5240	10.95		11.10	0.013			
5260	10.33		10.48	0.011			
5300	10.05		10.20	0.010			
5320	10.51		10.66	0.012			
5745	7.47		7.62	0.006	30	1	
5785	7.87		8.02	0.006			
5825	8.93		9.08	0.008			

802.11n (HT20) Mode

Frequency (MHz)	Average Power				Limit		Verdict
	Measured	Duty Factor	Duty factor Calculated		dBm	W	
	dBm		dBm	W			
5180	10.26	0.13	10.39	0.011	24	0.25	PASS
5220	10.80		10.93	0.012			
5240	11.33		11.46	0.014			
5260	11.06		11.19	0.013			
5300	10.68		10.81	0.012			
5320	10.83		10.96	0.012			
5745	7.57		7.70	0.006	30	1	
5785	8.14		8.27	0.007			
5825	8.99		9.12	0.008			



802.11n (HT40) Mode

Frequency (MHz)	Average Power				Limit		Verdict
	Measured	Duty Factor	Duty factor Calculated		dBm	W	
	dBm		dBm	W			
5190	10.18	0.29	10.47	0.011	24	0.25	PASS
5230	10.64		10.93	0.012			
5270	10.60		10.89	0.012			
5310	10.15		10.44	0.011			
5755	7.34		7.63	0.006	30	1	
5795	8.25		8.54	0.007			

802.11ac (VHT20) Mode

Frequency (MHz)	Average Power				Limit		Verdict
	Measured	Duty Factor	Duty factor Calculated		dBm	W	
	dBm		dBm	W			
5180	10.04	0.08	10.12	0.010	24	0.25	PASS
5220	10.58		10.66	0.012			
5240	11.01		11.09	0.013			
5260	10.71		10.79	0.012			
5300	10.48		10.56	0.011			
5320	10.71		10.79	0.012			
5745	7.61		7.69	0.006	30	1	
5785	8.10		8.18	0.007			
5825	8.89		8.97	0.008			

802.11ac (VHT40) Mode

Frequency (MHz)	Average Power				Limit		Verdict
	Measured	Duty Factor	Duty factor Calculated		dBm	W	
	dBm		dBm	W			
5190	8.16	0.29	8.45	0.007	24	0.25	PASS
5230	8.72		9.01	0.008			
5270	8.55		8.84	0.008			
5310	8.26		8.55	0.007			
5755	5.35		5.64	0.004	30	1	
5795	8.97		9.26	0.008			

**802.11ac (VHT80) Mode**

Frequency (MHz)	Average Power				Limit		Verdict
	Measured	Duty Factor	Duty factor Calculated		dBm	W	
	dBm		dBm	W			
5210	7.64	0.55	8.19	0.007	24	0.25	PASS
5290	7.86		8.41	0.007			
5775	4.96		5.51	0.004	30	1	

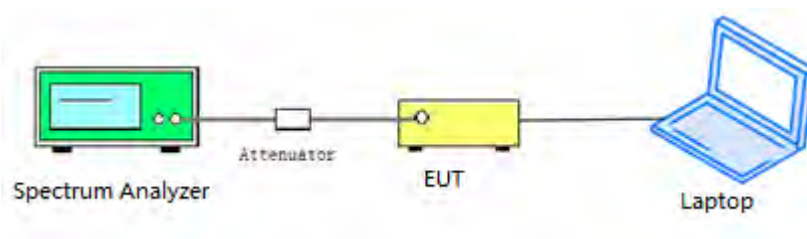
2.4. Emission Bandwidth

2.4.1. Requirement

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. Determination of the emissions bandwidth is based on the use of measurement instrumentation employing a peak detector function with an instrument resolution bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement. Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

2.4.2. Test Description

Test Setup:



The EUT is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50 Ohm; the path loss as the factor is calibrated to correct the reading.

2.4.3. Test Procedure

1. KDB 789033 Section C) 1) Emission Bandwidth was used in order to prove compliance
 - a) Set RBW = approximately 1% of the emission bandwidth.
 - b) Set VBW > RBW.
 - c) Detector = Peak.
 - d) Trace mode = max hold.
 - e) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
2. KDB 789033 Section C) 2) minimum emission bandwidth for the band 5.725-5.85GHz was used in order to prove compliance.
Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.715-5.85 GHz. The following procedure shall be used for measuring this bandwidth:



- a) Set RBW = 100 kHz.
- b) Set video bandwidth (VBW) $\geq 3 \times$ RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

2.4.4. Test Result

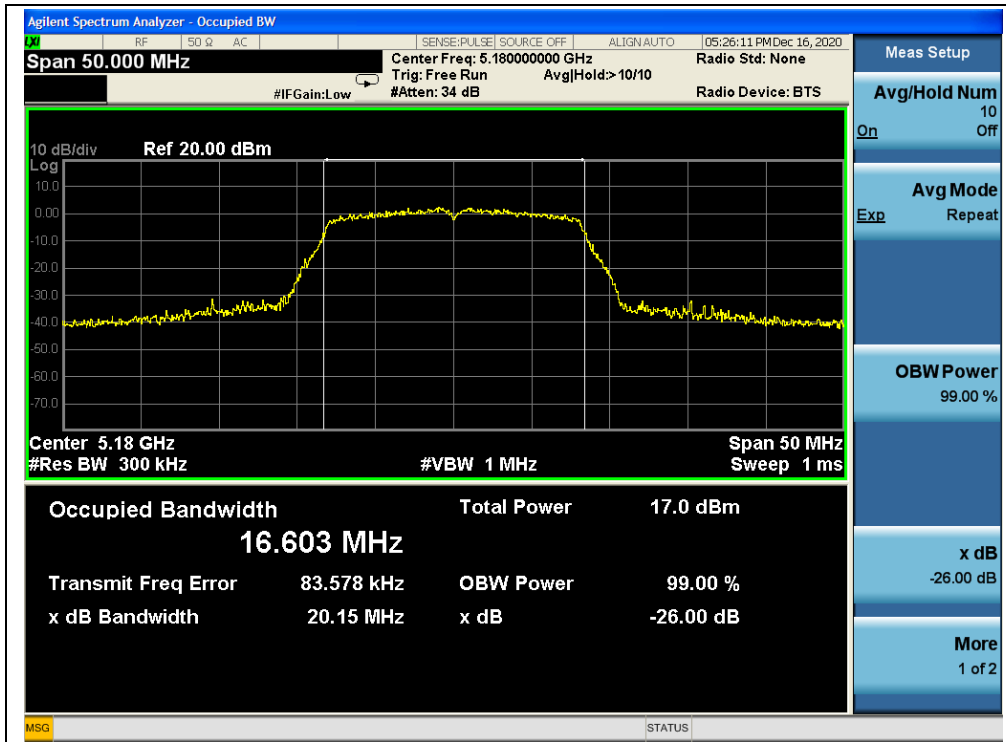
802.11a Mode

A. Test Verdict:

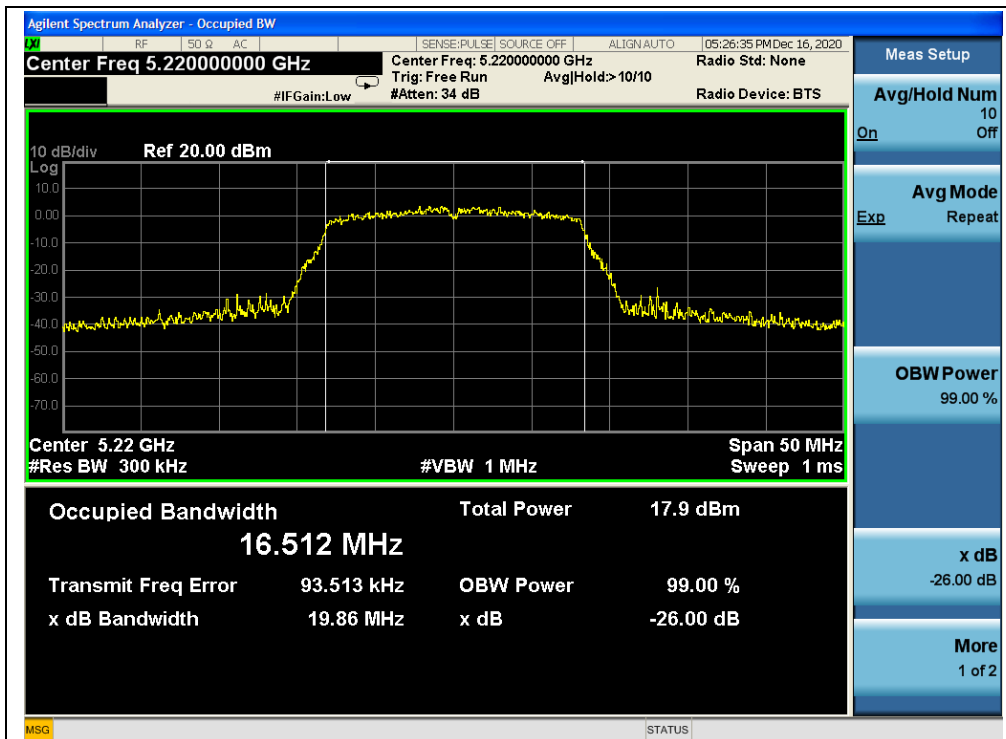
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
36	5180	20.15
44	5220	19.86
48	5240	19.77
52	5260	20.16
60	5300	19.99
64	5320	19.99
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)
149	5745	15.12
157	5785	14.64
165	5825	15.70



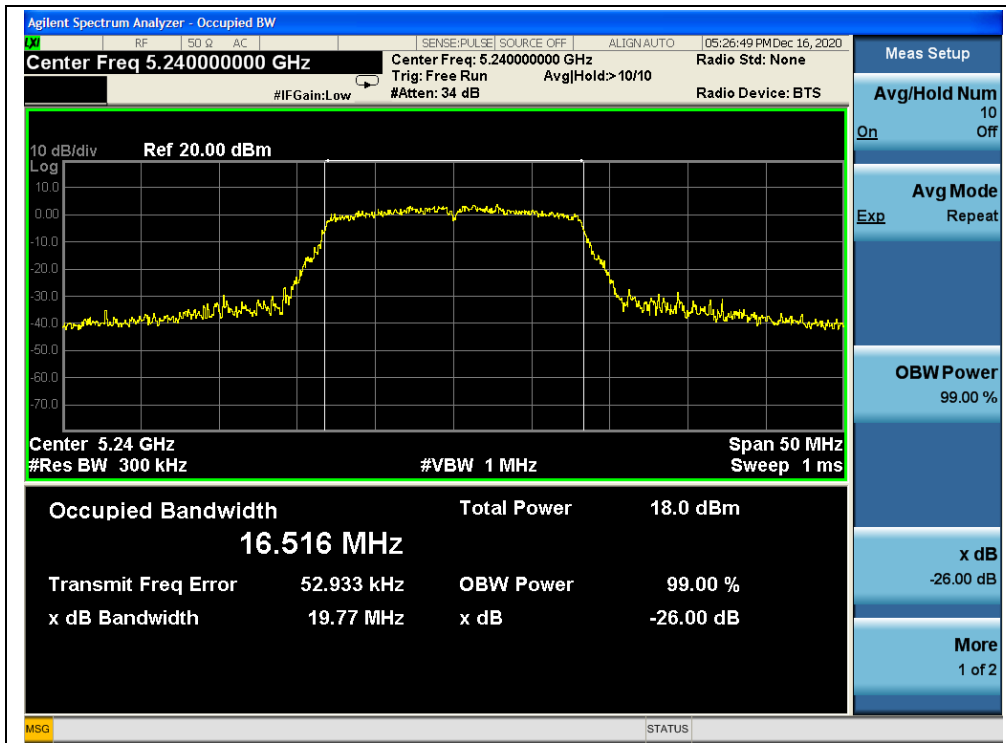
B.Test Plot:



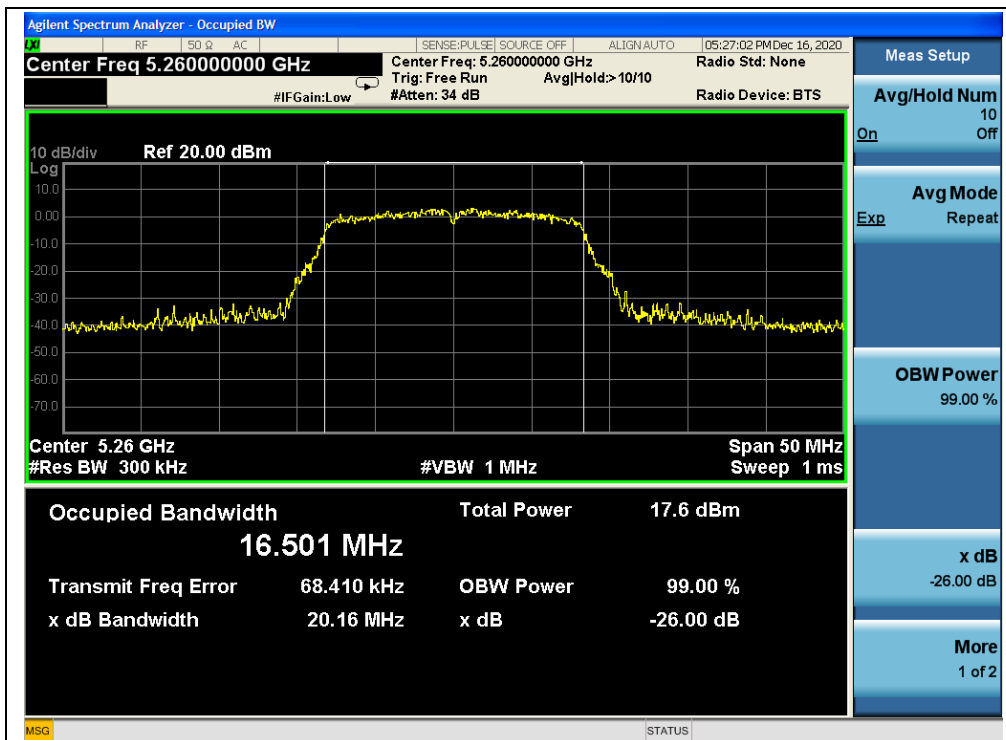
(Channel 36, 5180MHz, 802.11a)



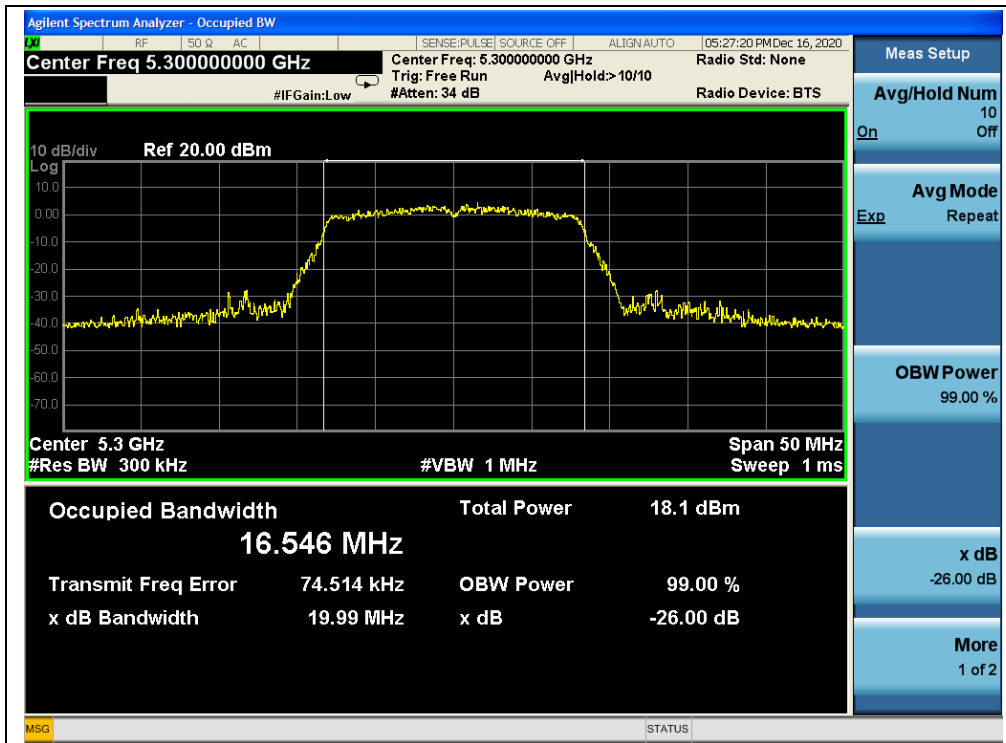
(Channel 44, 5220 MHz, 802.11a)



(Channel 48, 5240MHz, 802.11a)



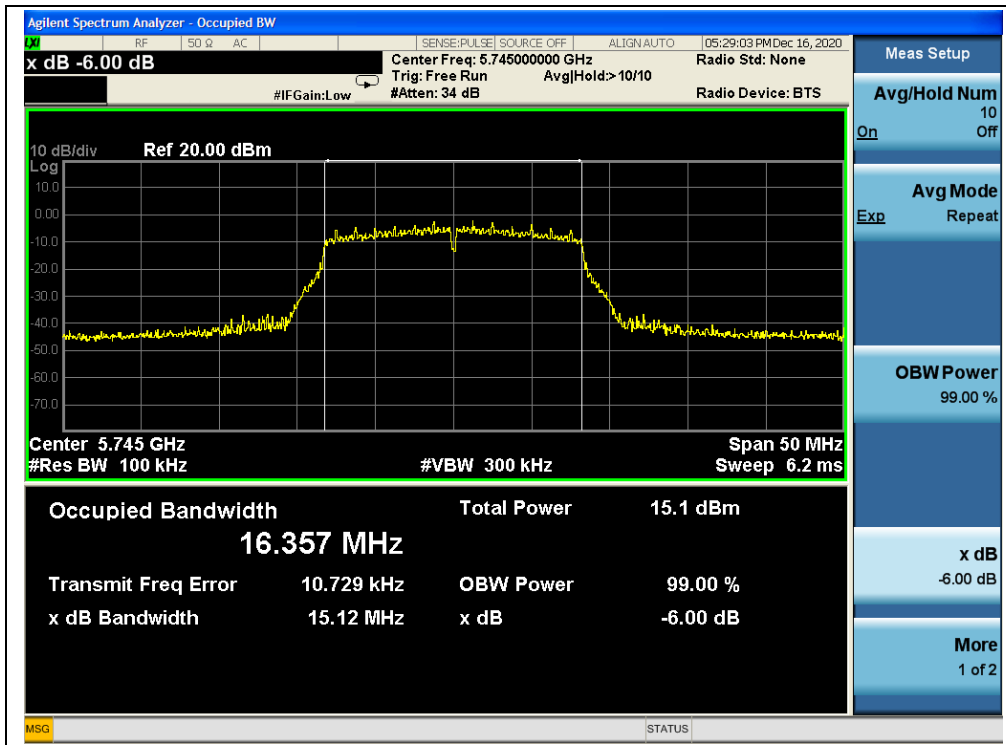
(Channel 52, 5260MHz, 802.11a)



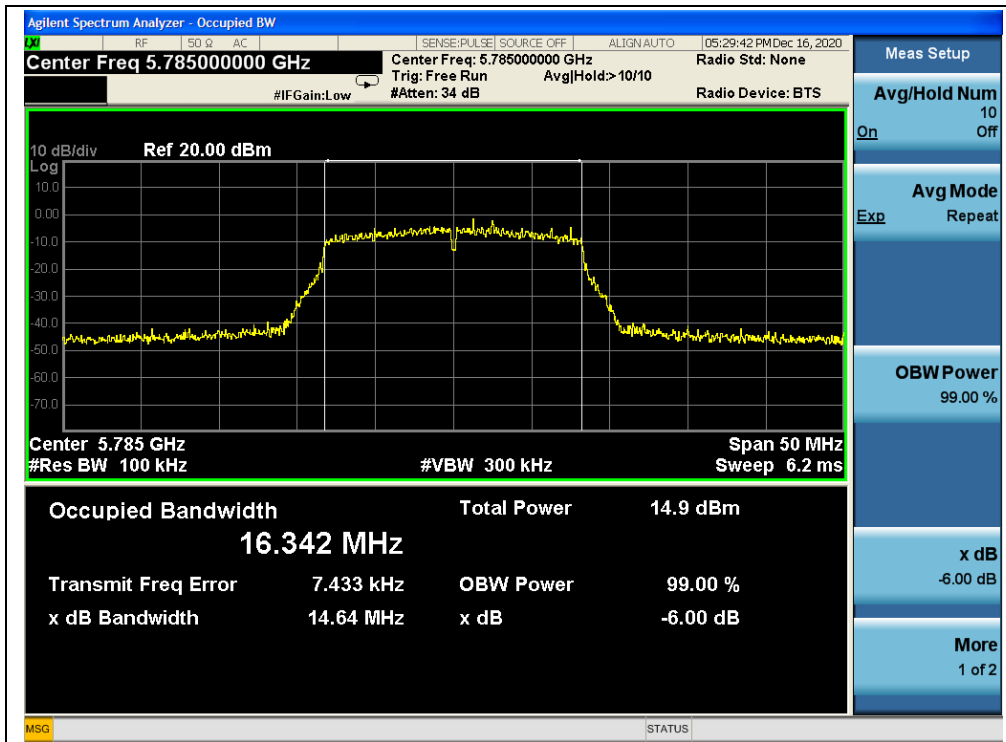
(Channel 60, 5300 MHz, 802.11a)



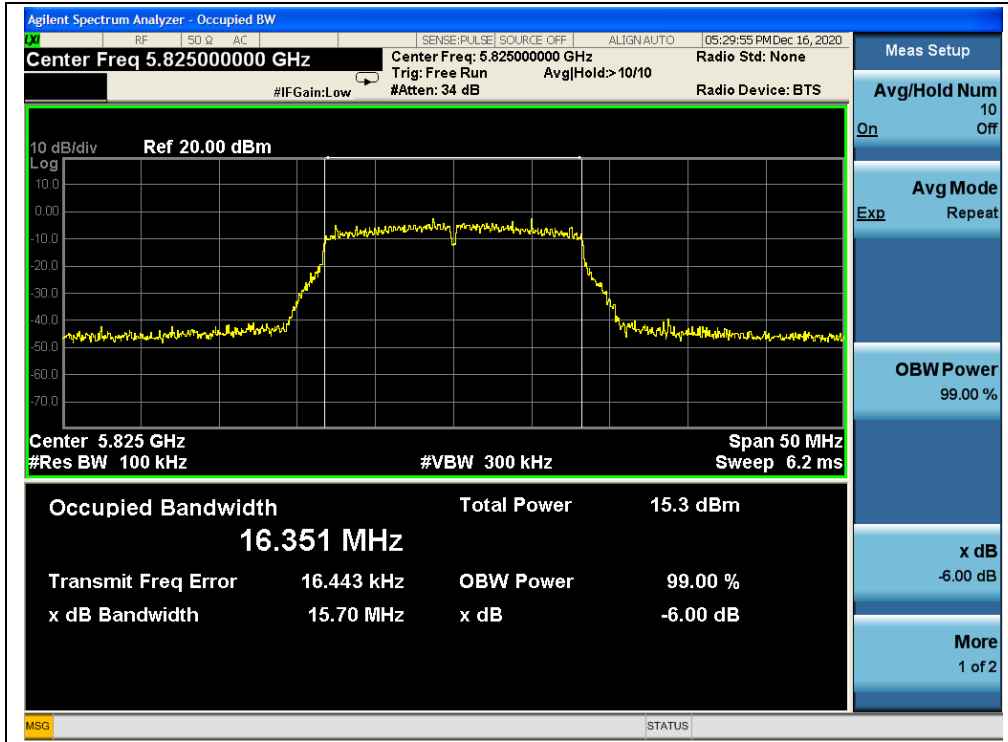
(Channel 64, 5320MHz, 802.11a)



(Channel 149,5745MHz, 802.11a)



(Channel 157,5785MHz, 802.11a)



(Channel 165, 5825MHz, 802.11a)

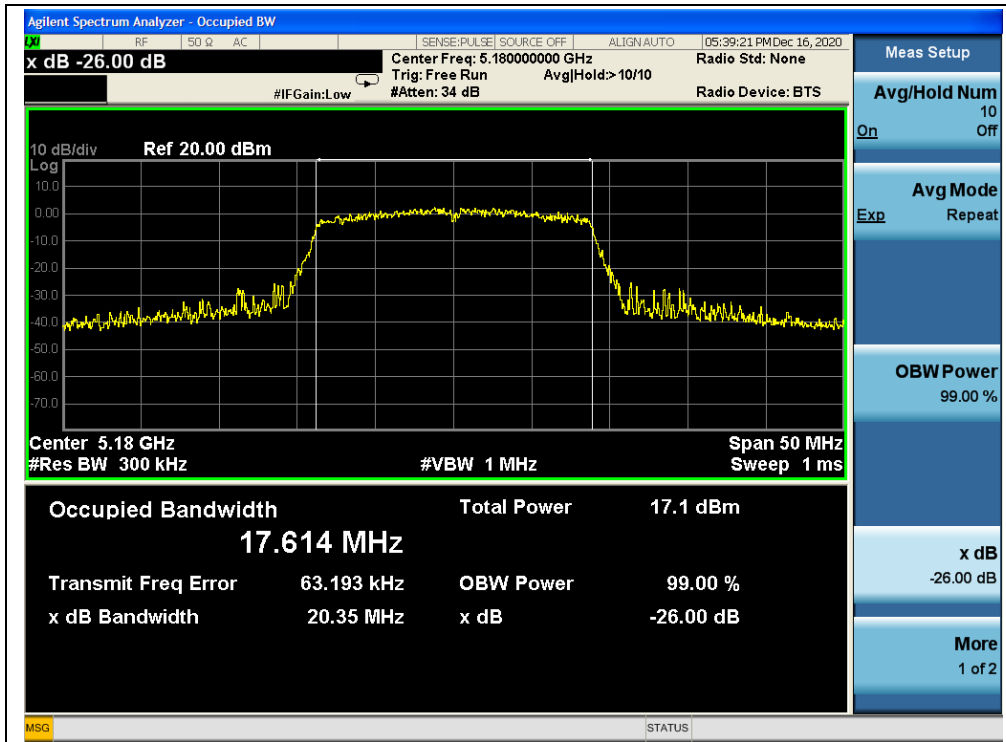


802.11n (HT20) Mode

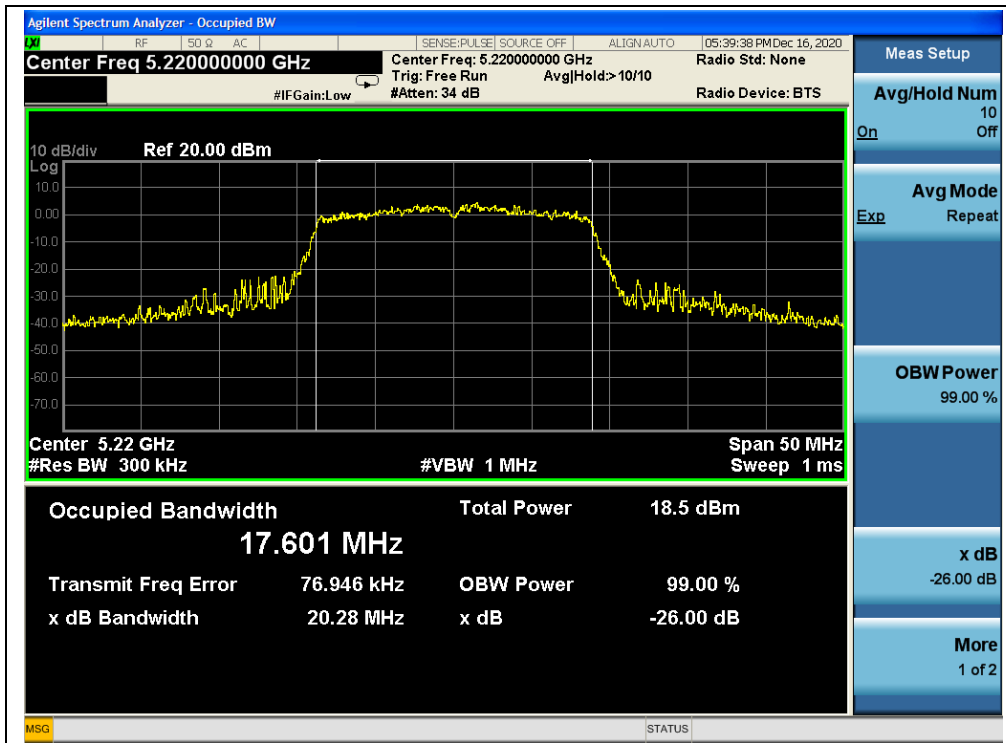
A. Test Verdict:

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
36	5180	20.35
44	5220	20.28
48	5240	20.56
52	5260	20.25
60	5300	20.36
64	5320	20.03
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)
149	5745	15.68
157	5785	15.29
165	5825	15.06

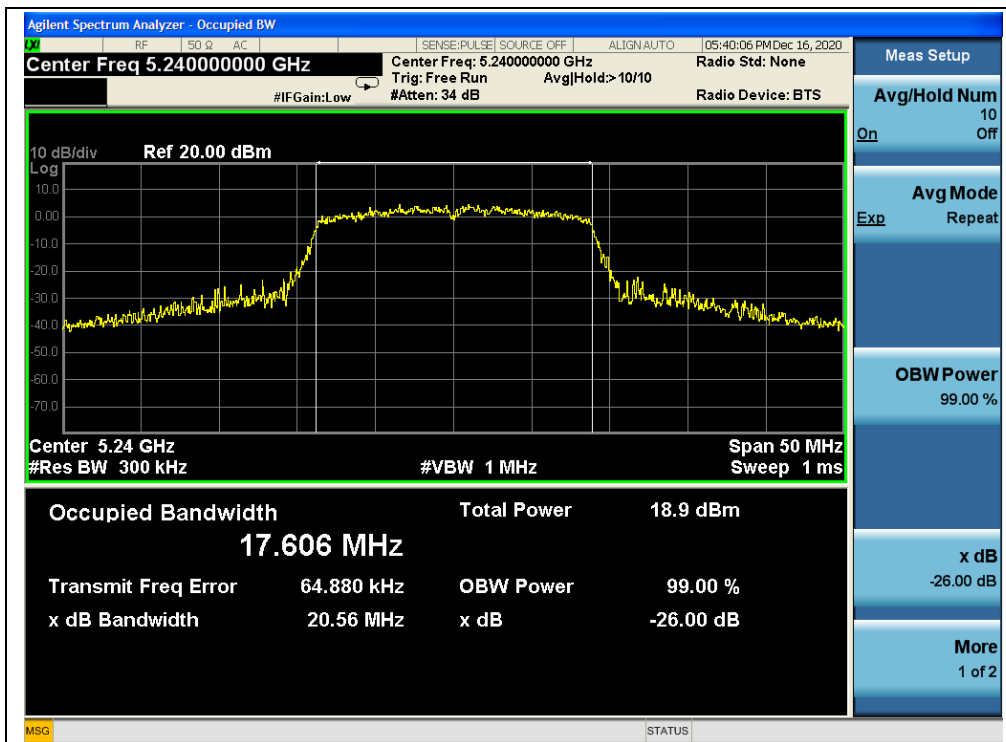
B. Test Plot:



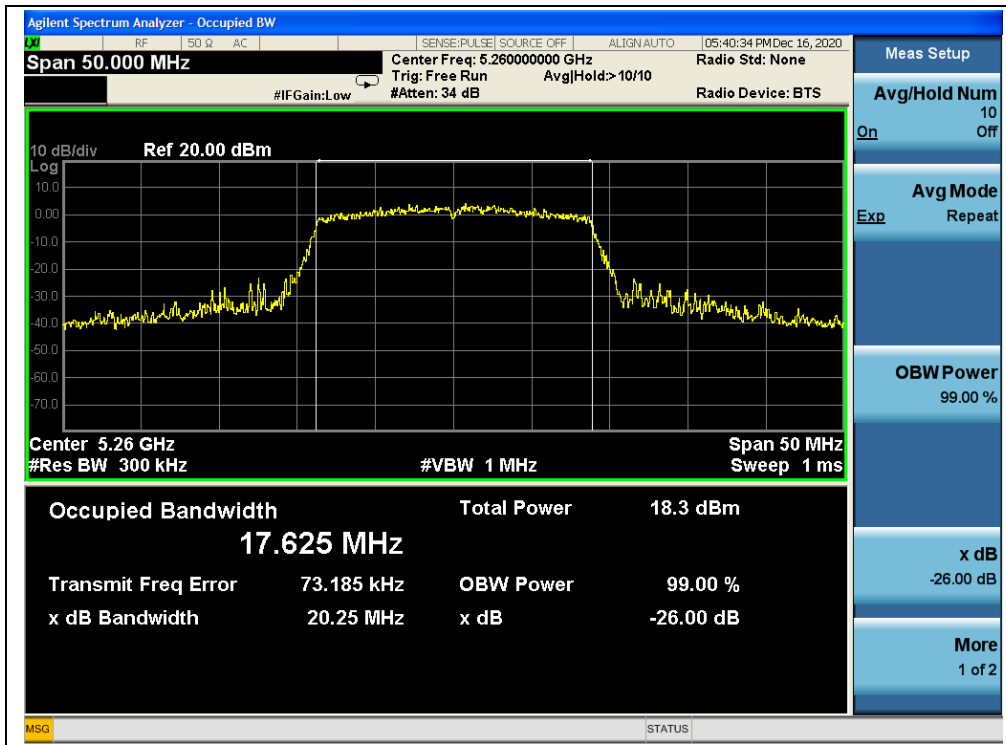
(Channel 36, 5180MHz, 802.11n (HT20))



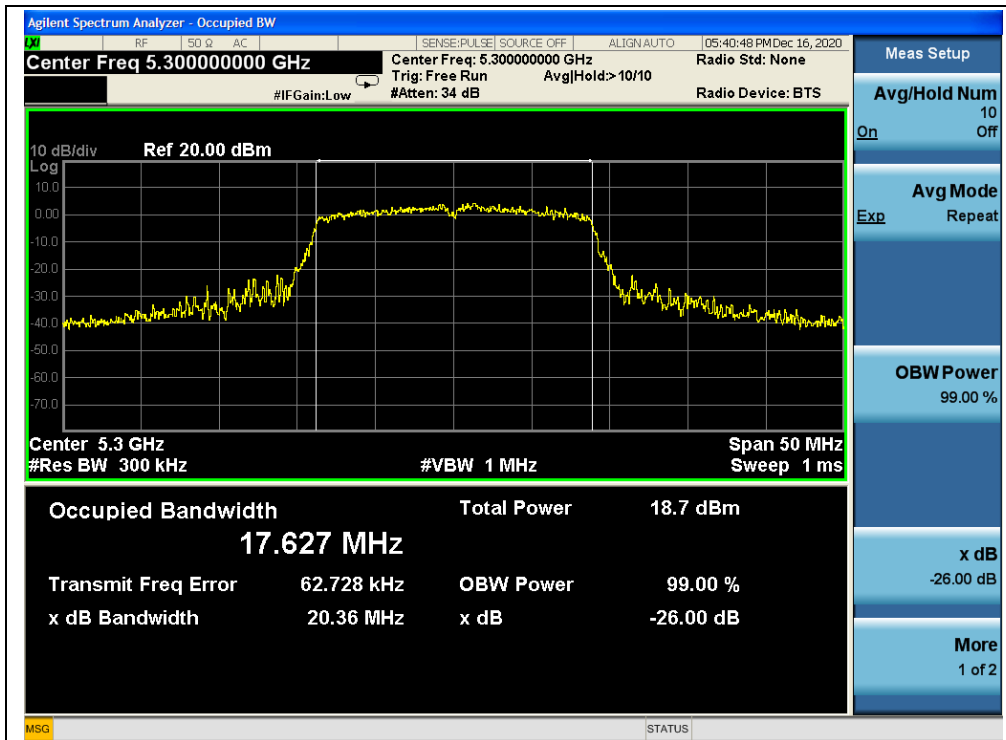
(Channel 44, 5220MHz, 802.11n (HT20))



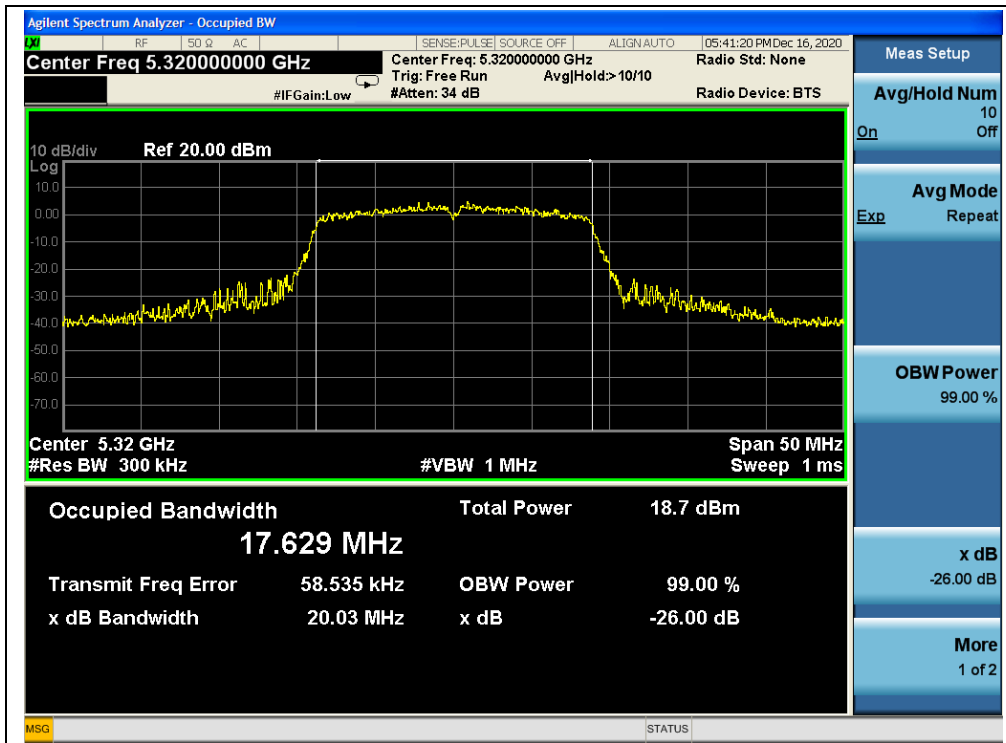
(Channel 48, 5240MHz, 802.11n (HT20))



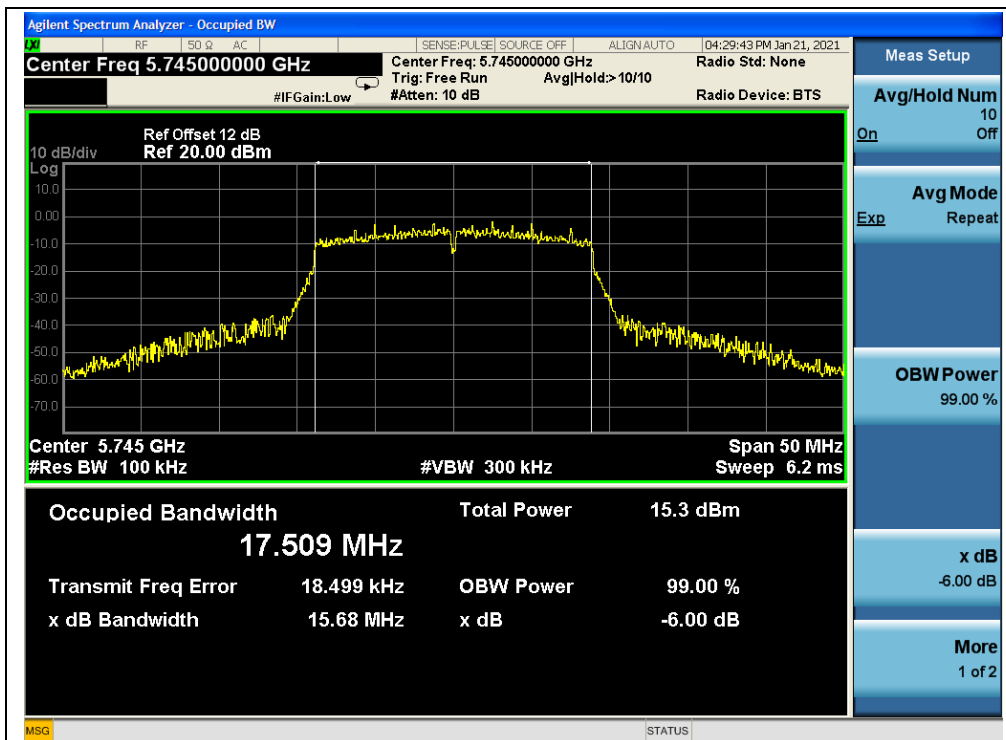
(Channel 52, 5260MHz, 802.11n (HT20))



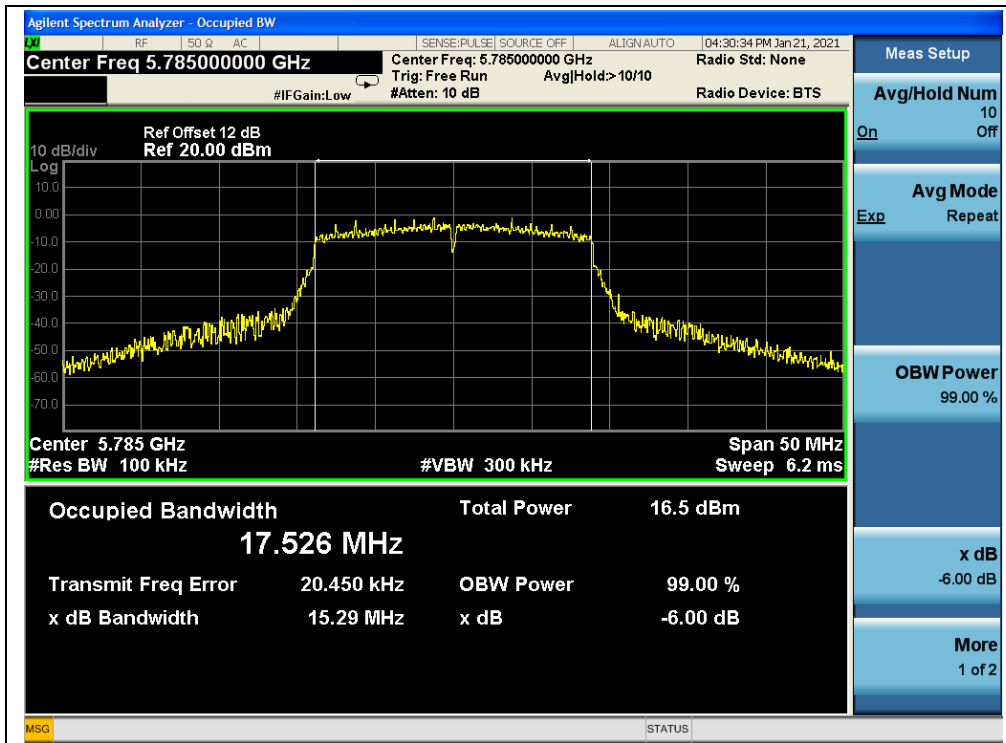
(Channel 60, 5300MHz, 802.11n (HT20))



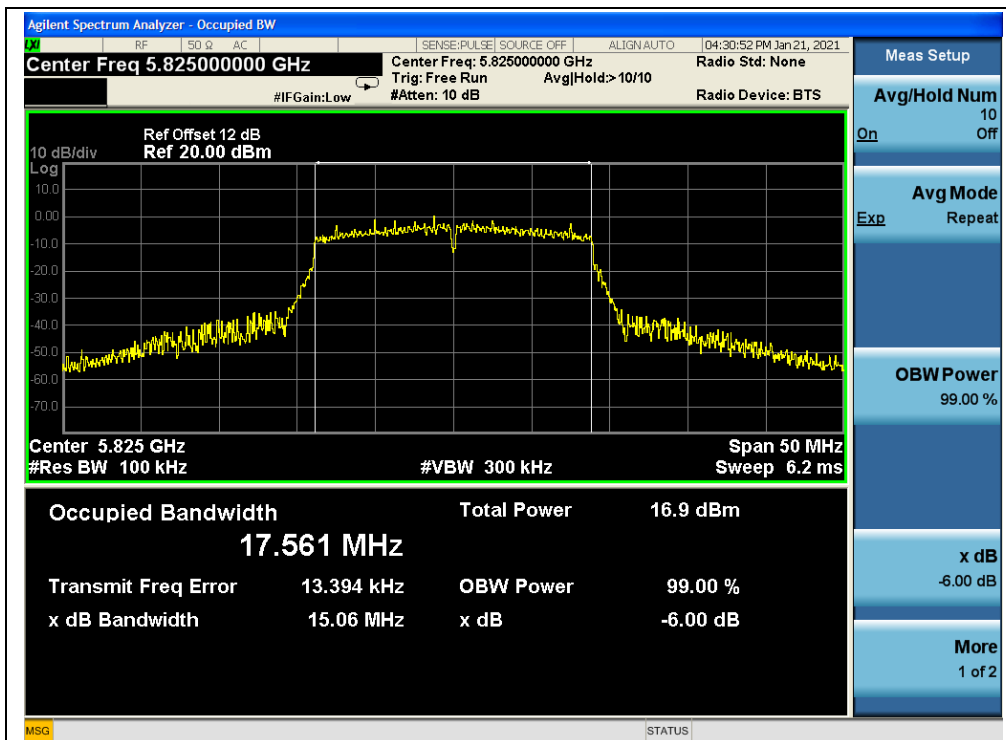
(Channel 64, 5320MHz, 802.11n (HT20))



(Channel 149, 5745MHz, 802.11 n (HT20))



(Channel 157, 5785MHz, 802.11 n (HT20))



(Channel 165, 5825MHz, 802.11 n (HT20))

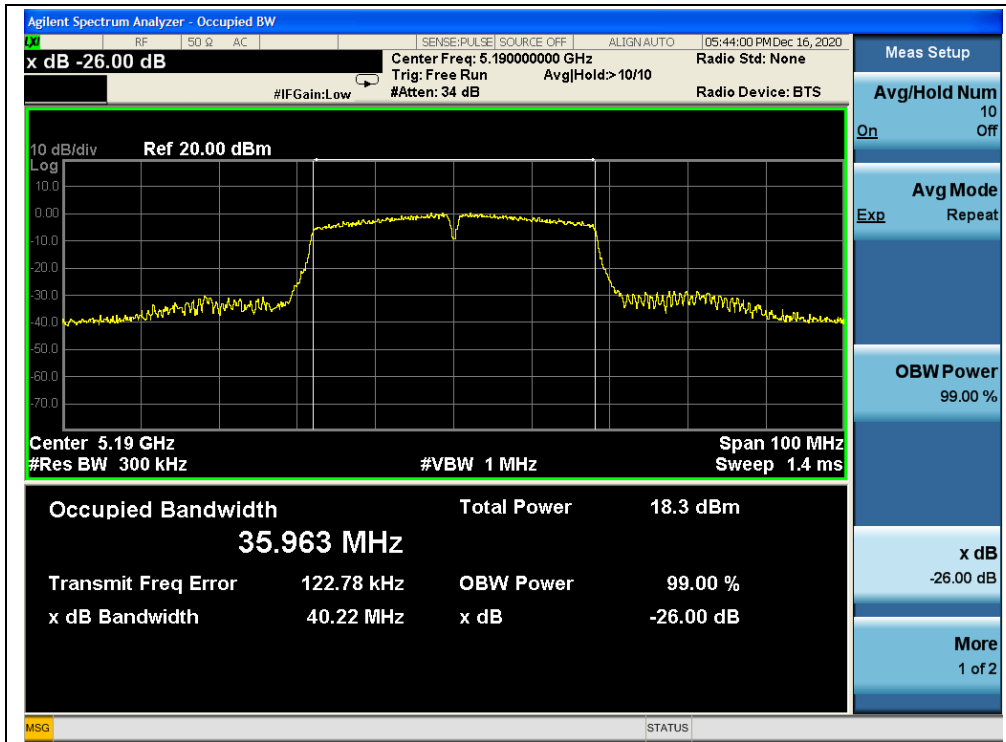


802.11n (HT40) Test mode

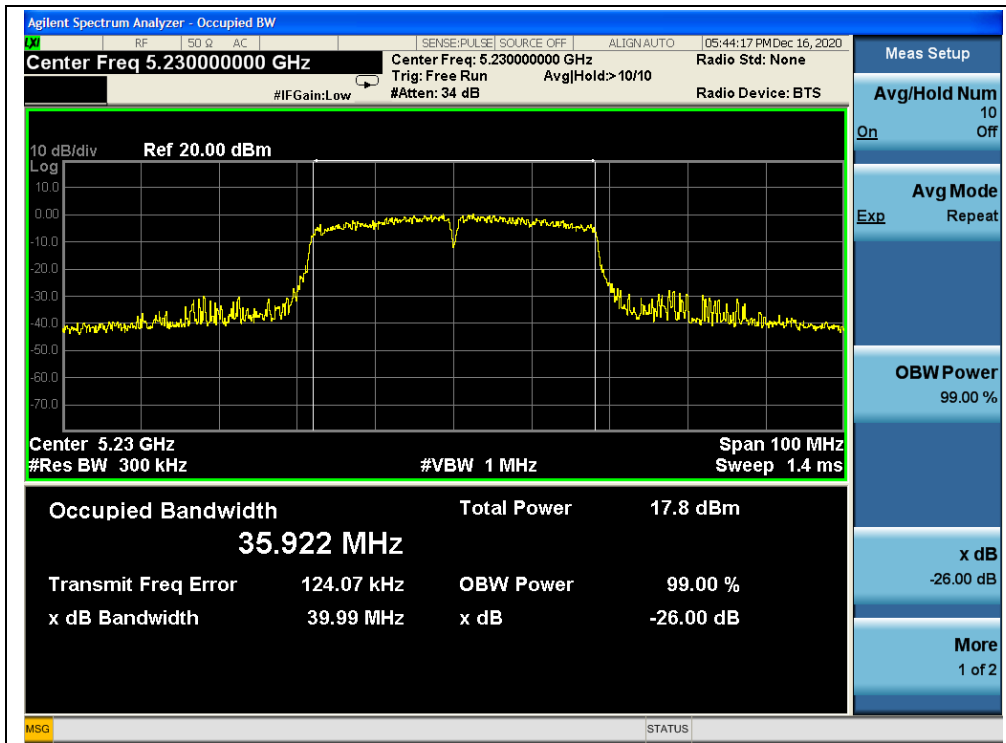
A. Test Verdict:

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
38	5190	40.22
46	5230	39.99
54	5270	39.97
62	5310	39.81
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)
151	5755	35.11
159	5795	35.02

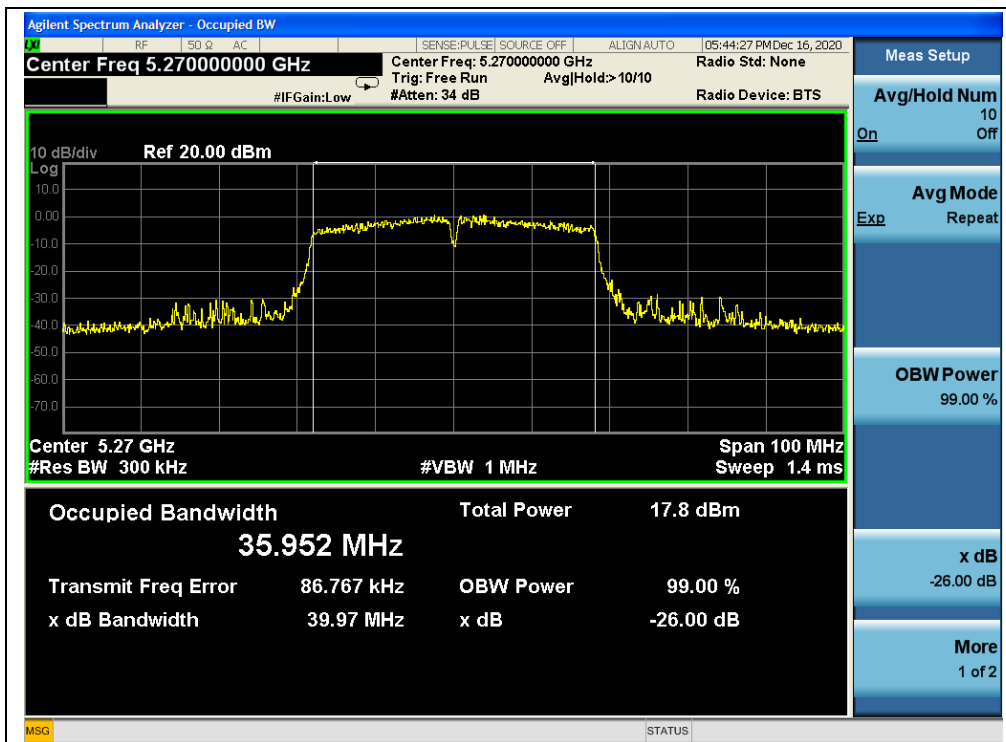
B. Test Plot:



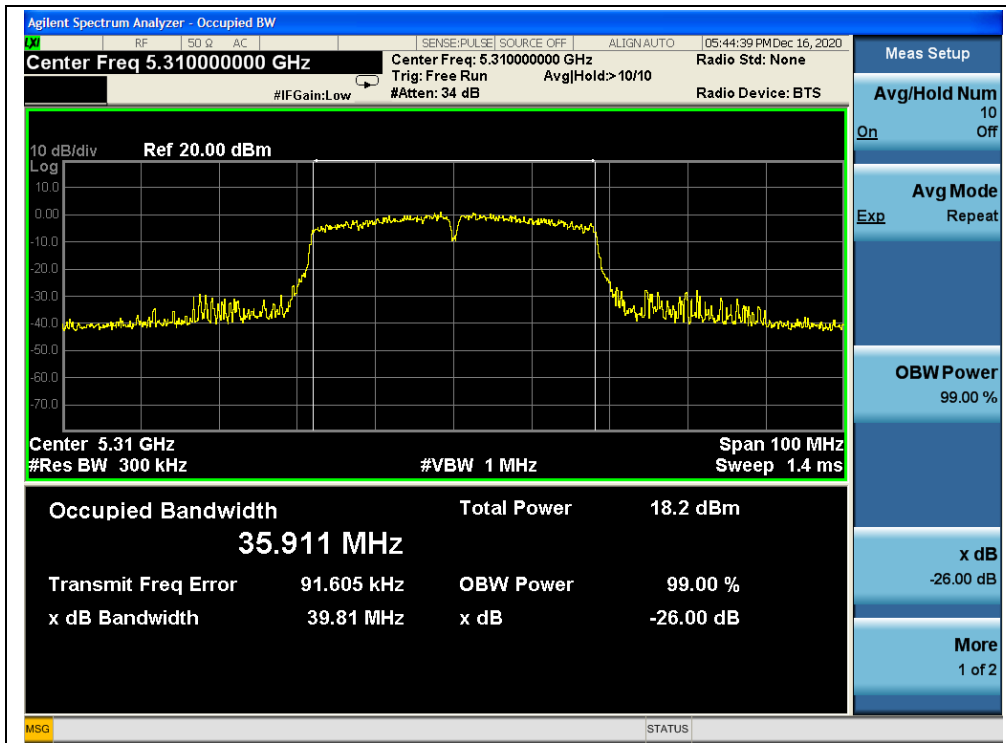
(Channel 38, 5190MHz, 802.11n (HT40))



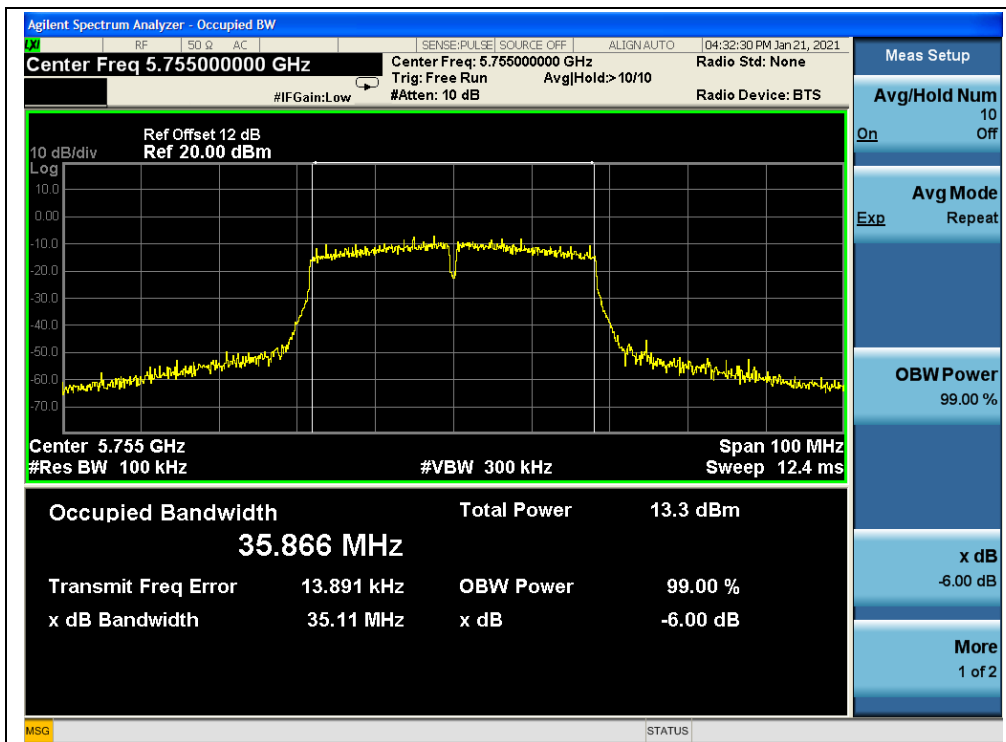
(Channel 46, 5230MHz, 802.11n (HT40))



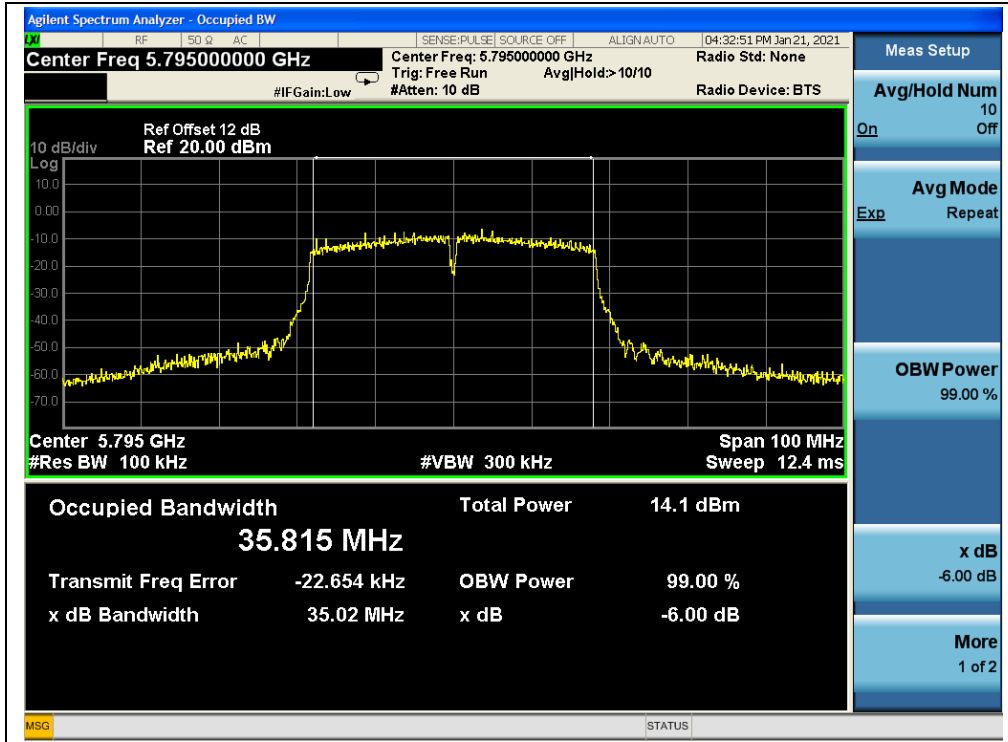
(Channel 54, 5270MHz, 802.11n (HT40))



(Channel 62, 5310MHz, 802.11n (HT40))



(Channel 151, 5755MHz, 802.11n (HT40))



(Channel 159, 5795MHz, 802.11n (HT40))

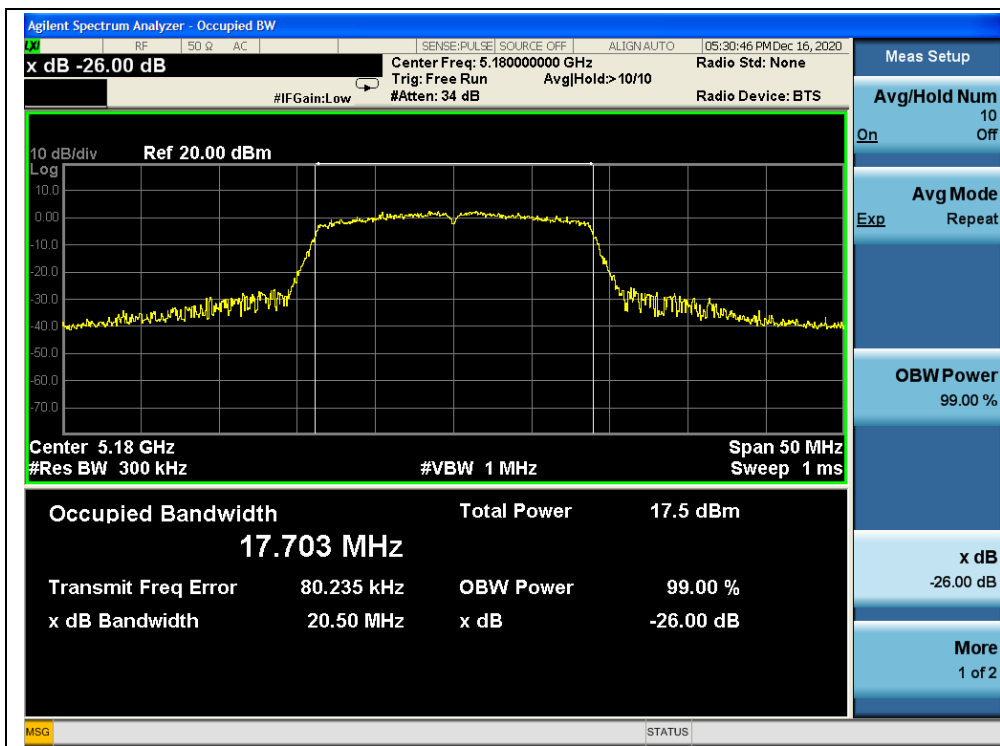


802.11ac (VHT20) Mode

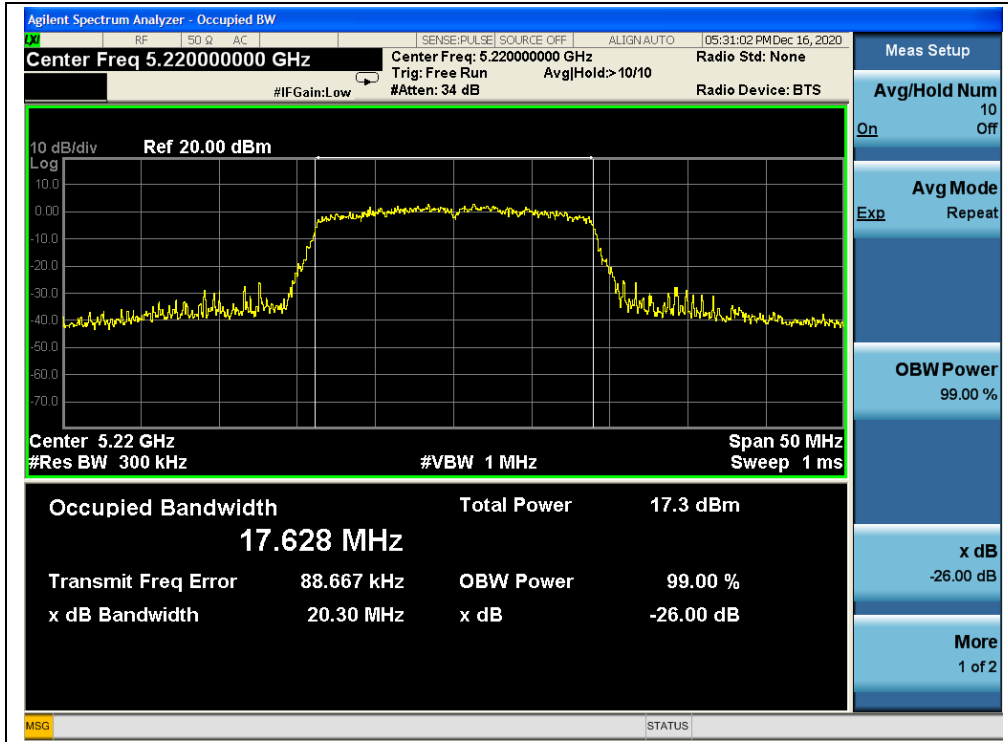
A. Test Verdict:

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
36	5180	20.50
44	5220	20.30
48	5240	20.19
52	5260	20.09
60	5300	19.75
64	5320	19.51
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)
149	5745	15.45
157	5785	15.41
165	5825	15.14

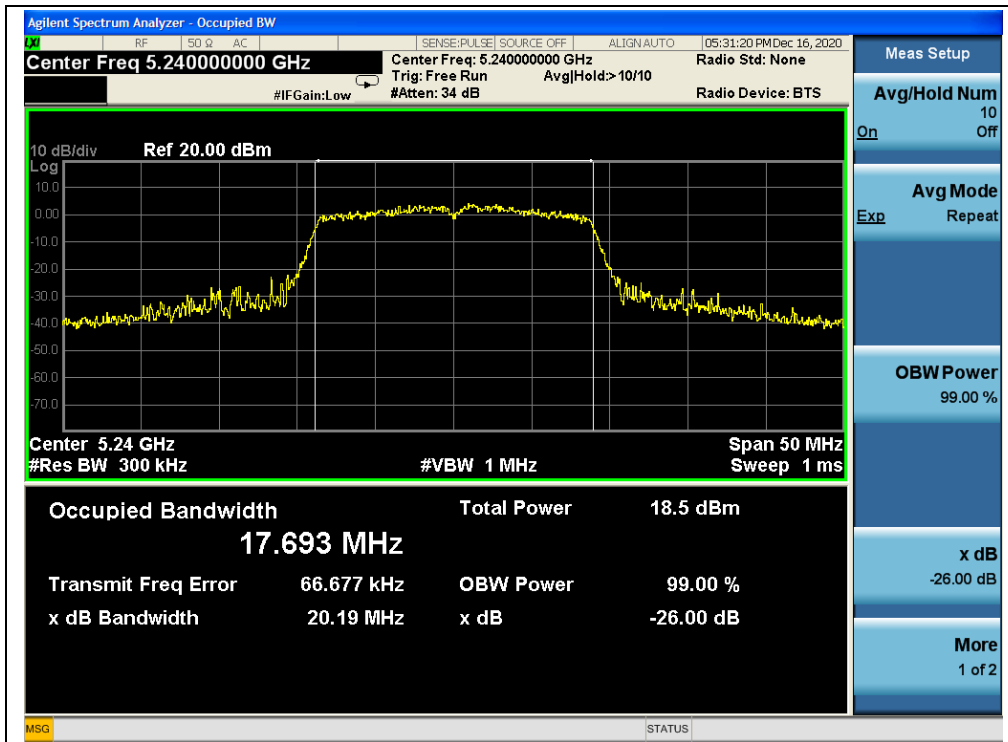
B. Test Plot:



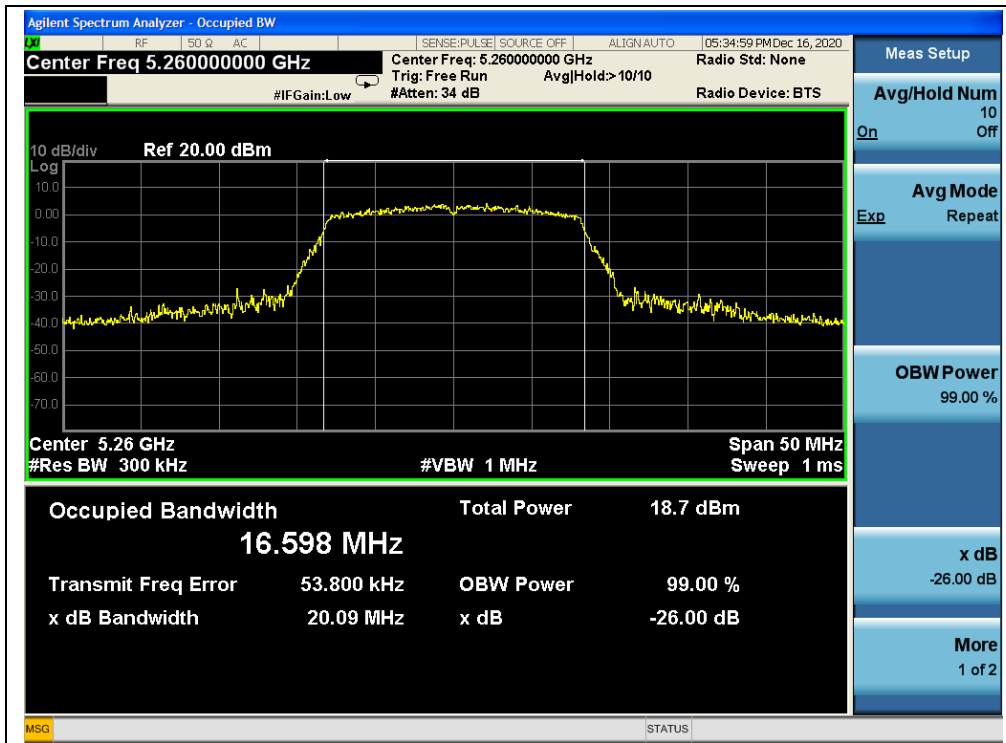
(Channel 36, 5180MHz, 802.11ac (VHT20))



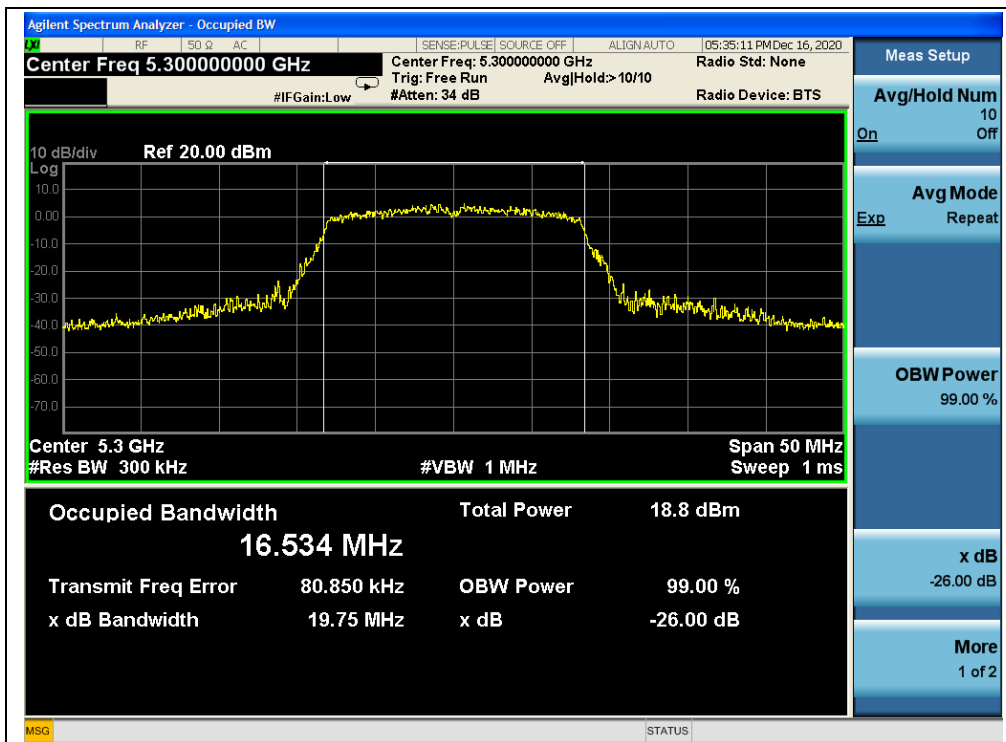
(Channel 44, 5220MHz, 802.11ac (VHT20))



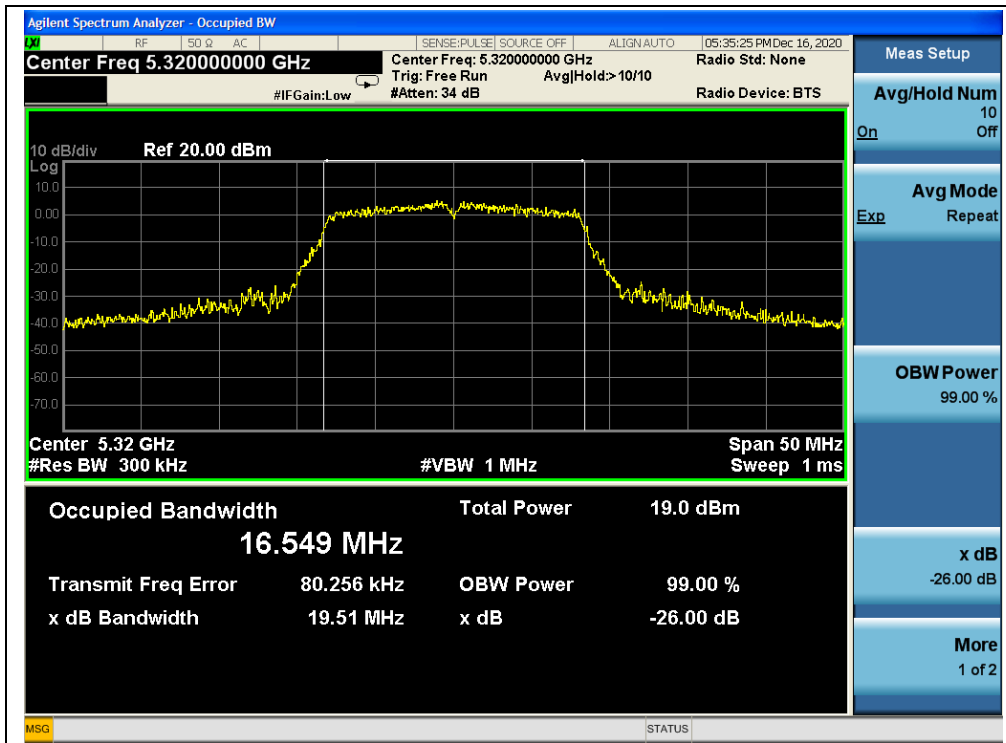
(Channel 48, 5240MHz, 802.11ac (VHT20))



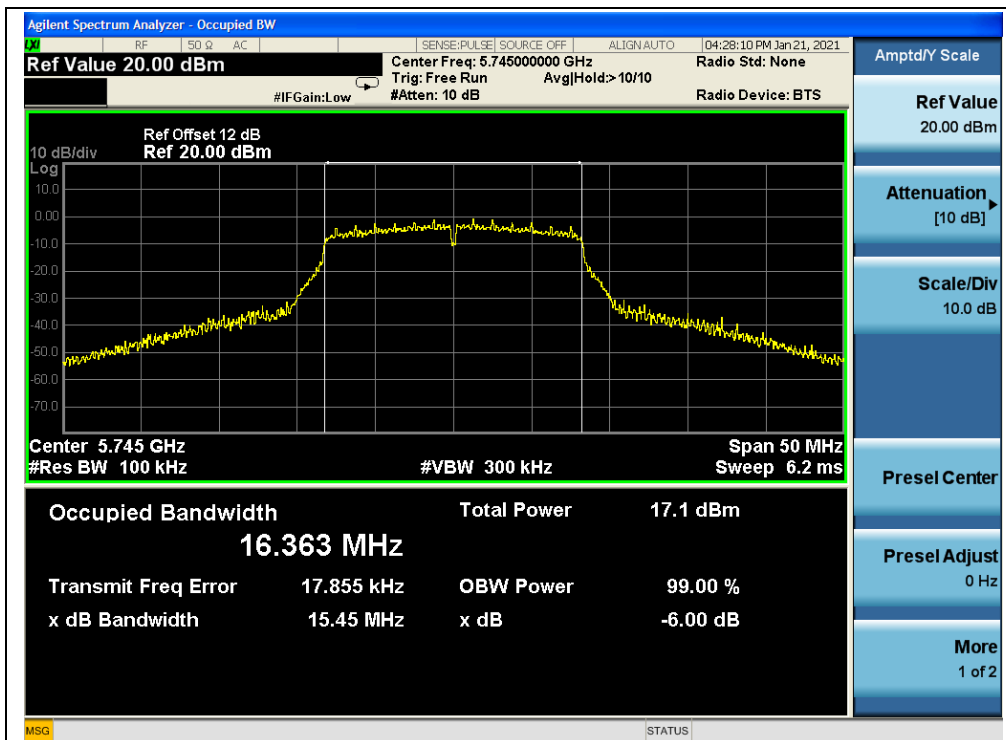
(Channel 52, 5260MHz, 802.11ac (VHT20))



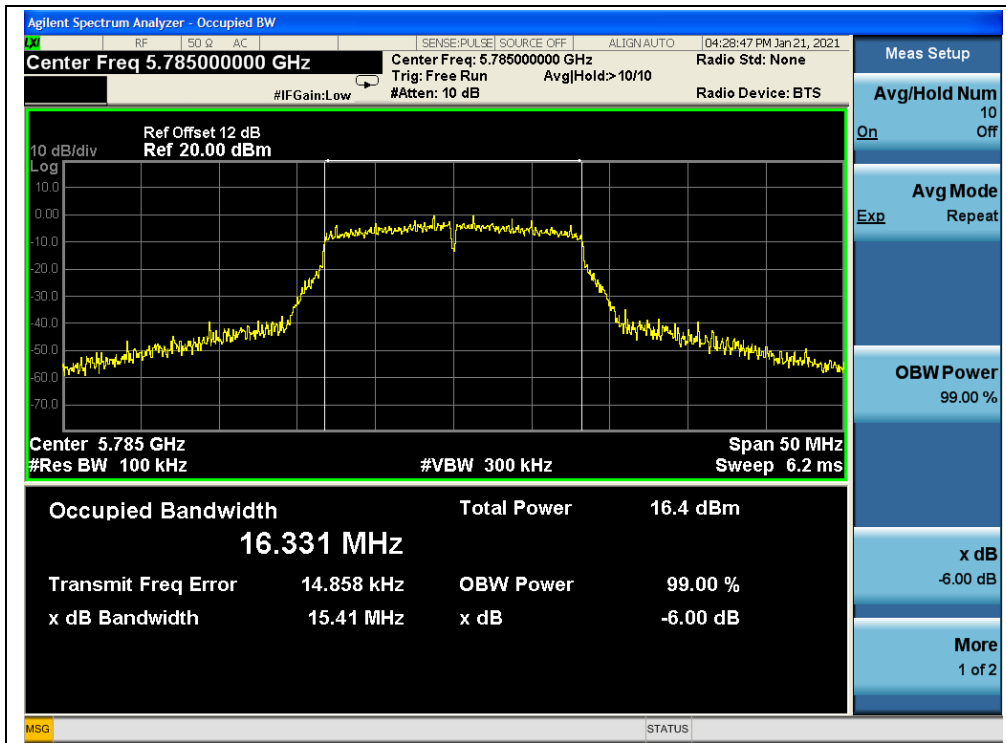
(Channel 60, 5300MHz, 802.11ac (VHT20))



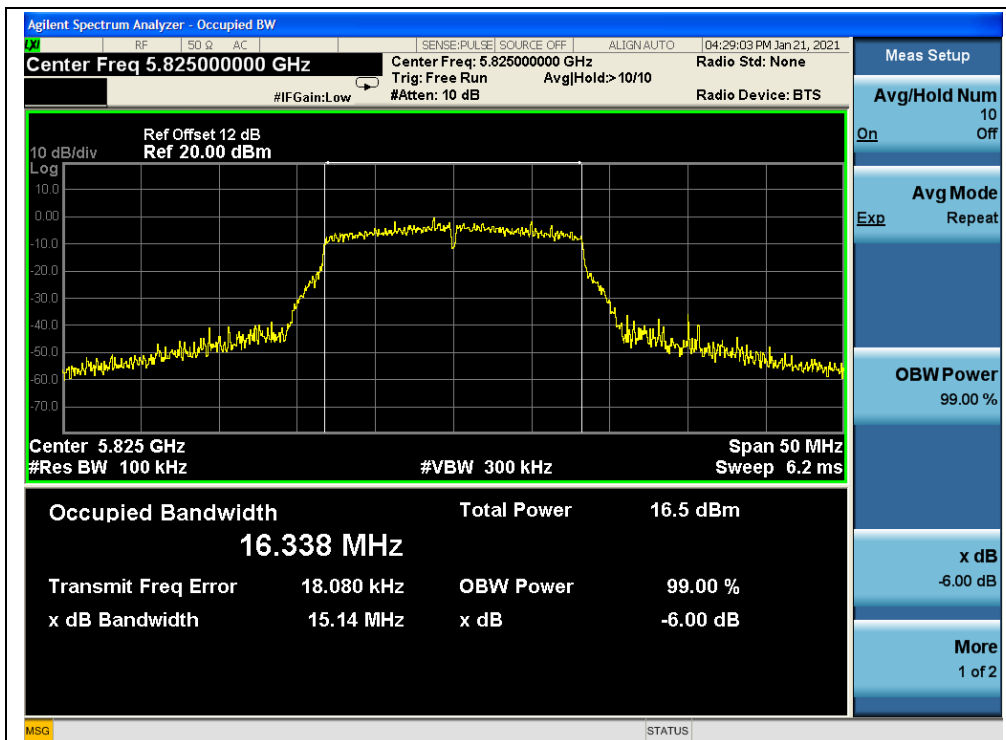
(Channel 64, 5320MHz, 802.11ac (VHT20))



(Channel 149, 5745MHz, 802.11 ac (VHT20))



(Channel 157, 5785MHz, 802.11 ac (VHT20))



(Channel 165, 5825MHz, 802.11 ac (VHT20))

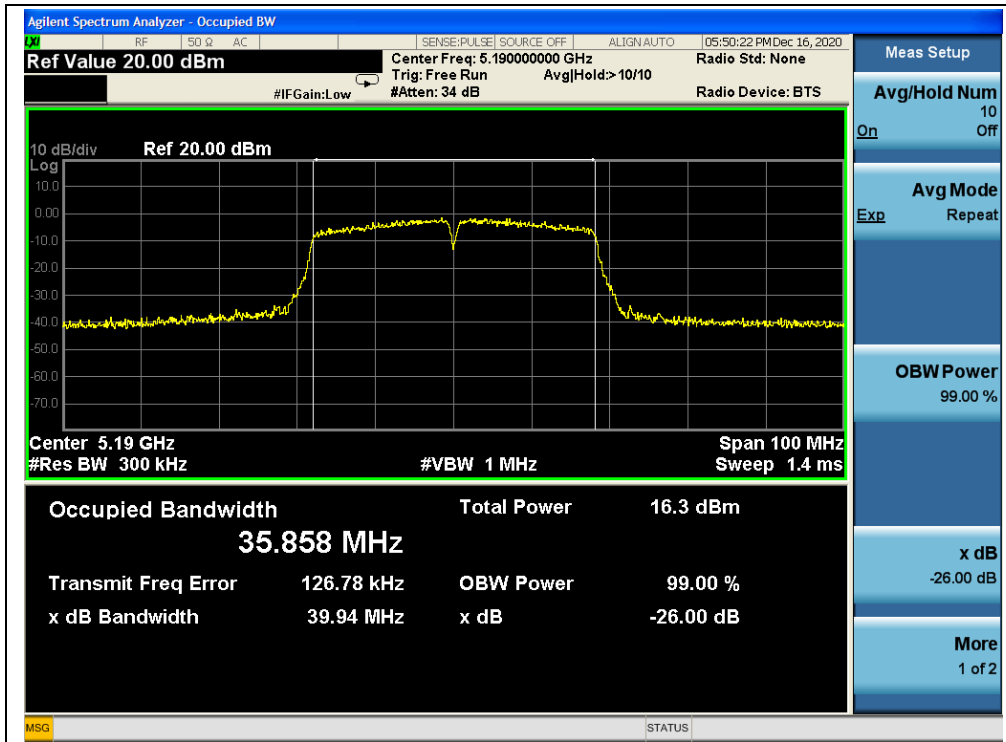


802.11ac (VHT40) Mode

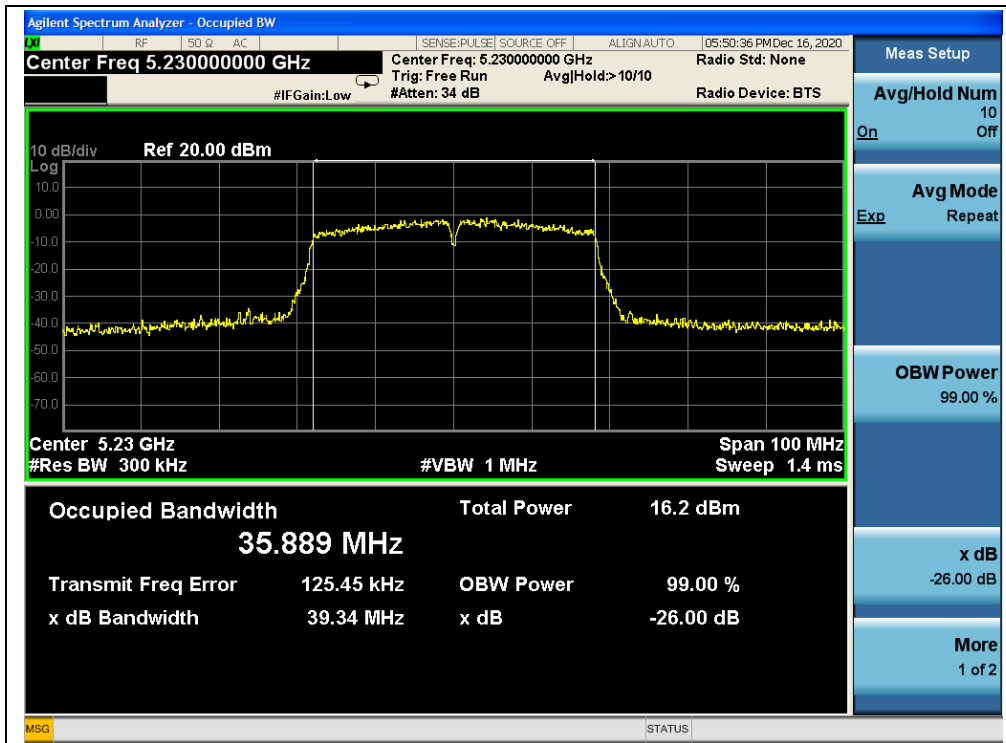
A. Test Verdict:

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
38	5190	39.94
46	5230	39.34
54	5270	39.42
62	5310	39.55
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)
151	5755	35.11
159	5795	33.93

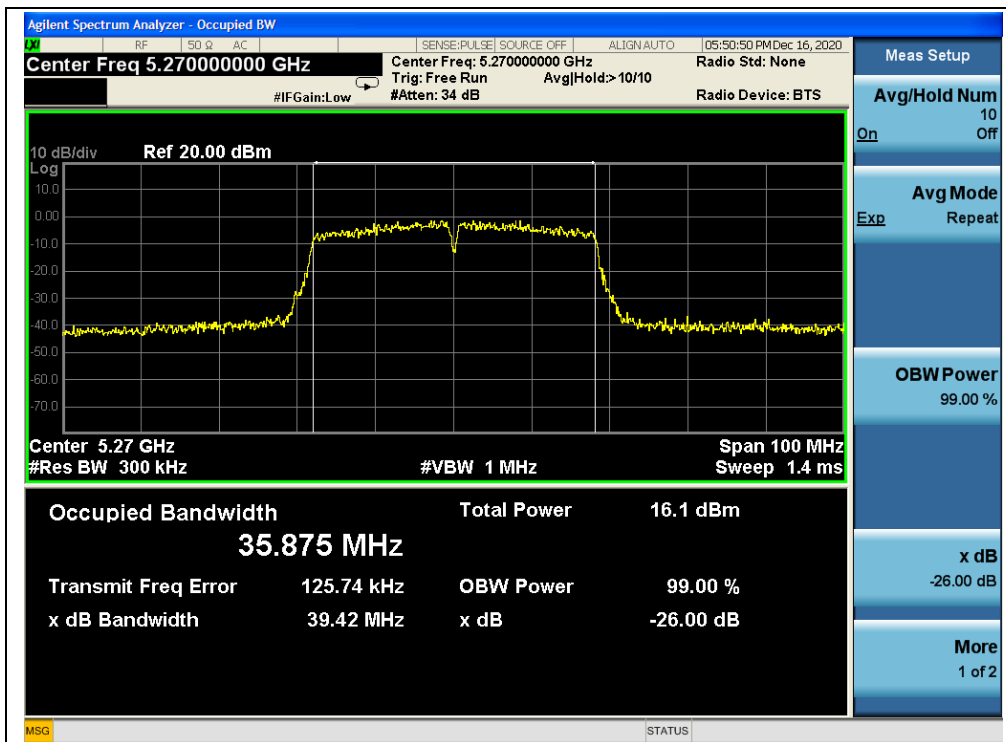
B. Test Plot:



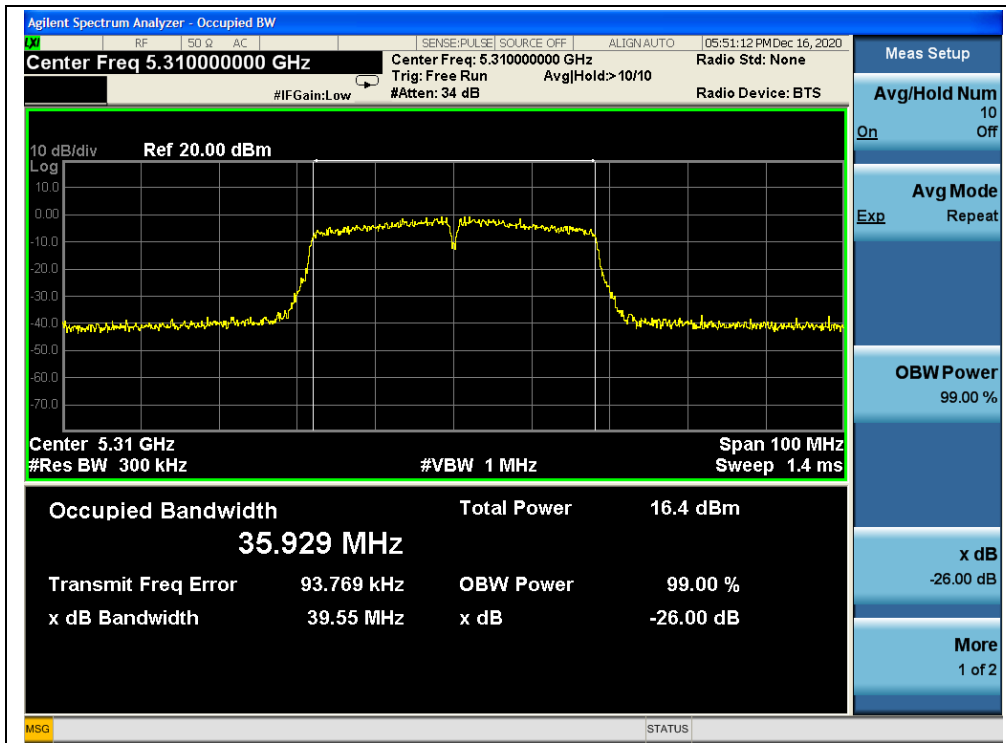
(Channel 38, 5190MHz, 802.11ac (VHT40))



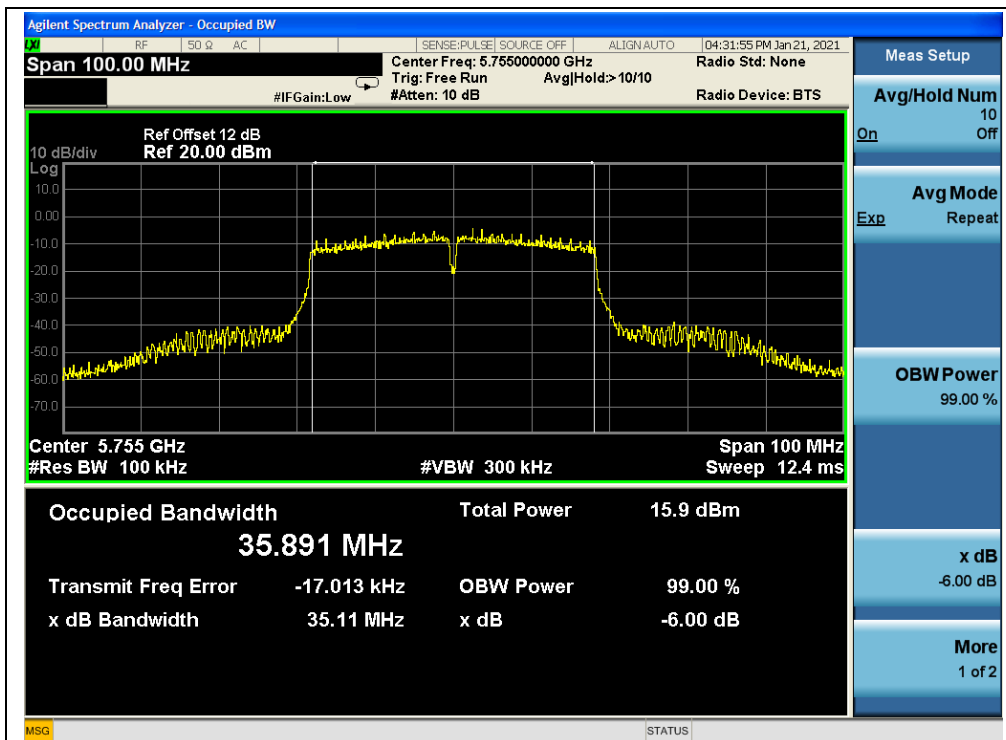
(Channel 46, 5230MHz, 802.11ac (VHT40))



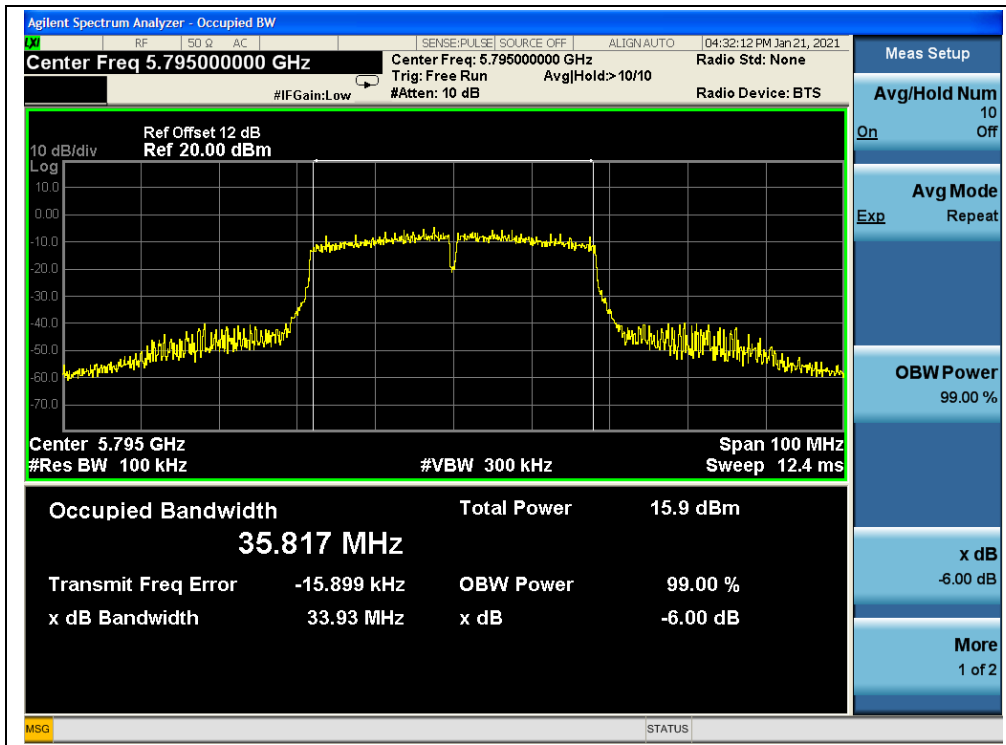
(Channel 54, 5270MHz, 802.11ac (VHT40))



(Channel 62, 5310MHz, 802.11ac (VHT40))



(Channel 151, 5755MHz, 802.11ac (VHT40))



(Channel 159, 5795MHz, 802.11ac (VHT40))

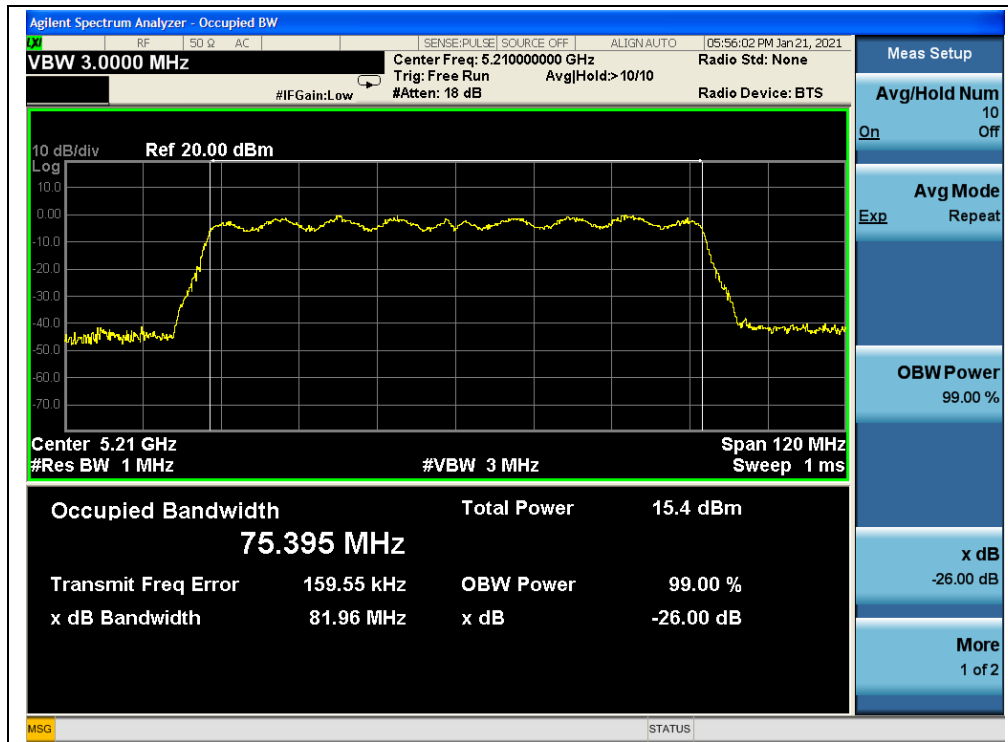


802.11ac (VHT80) Mode

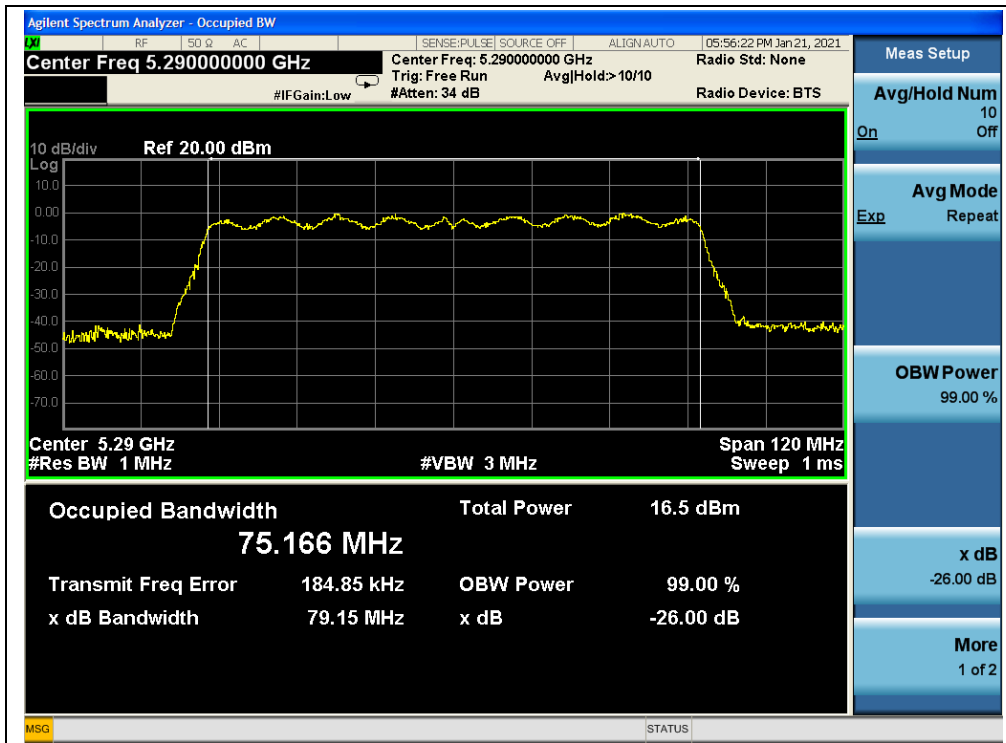
A. Test Verdict:

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
42	5210	81.96
58	5290	79.15
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)
155	5775	73.87

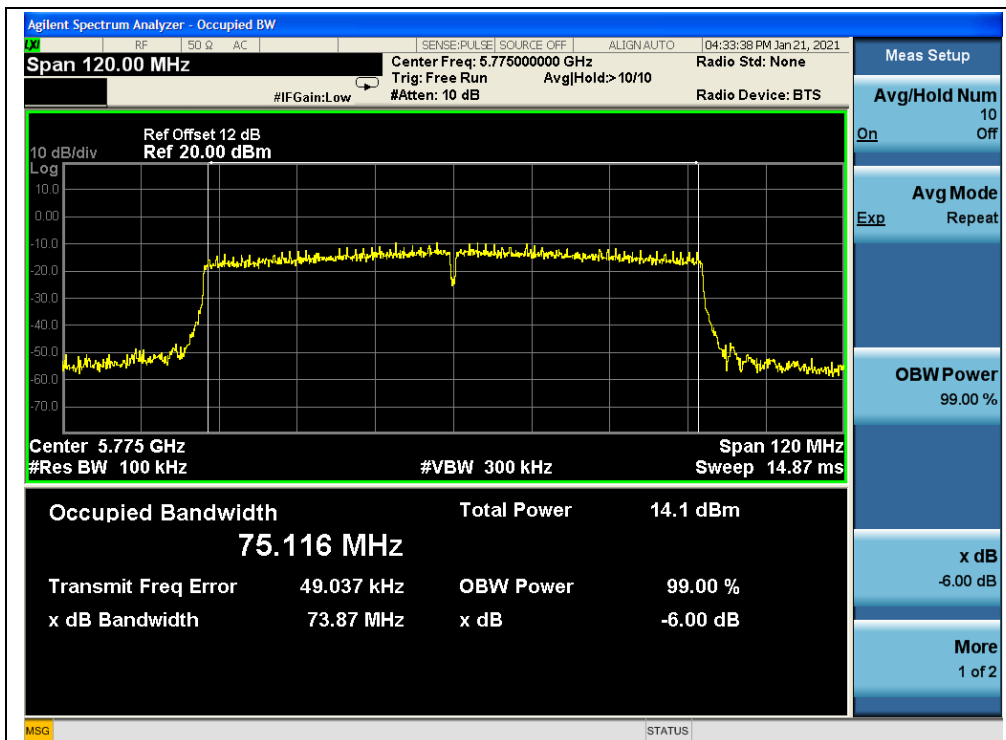
B. Test Plot:



(Channel 42, 5210MHz, 802.11ac (VHT80))



(Channel 58, 5290MHz, 802.11ac (VHT80))



(Channel 155, 5775MHz, 802.11ac (VHT80))

2.5. Peak Power Spectral Density

2.5.1. Requirement

(1) For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band.

(3) For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30dBm in any 500kHz band.

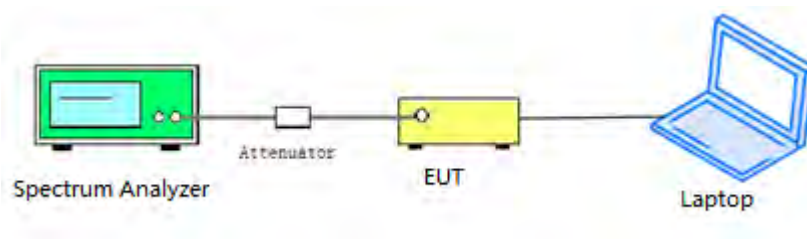
If transmitting antennas of directional gain greater than 6dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

(4) According to KDB662911D01 Measure-and-sum technique, the conducted emission level (e.g., transmit power or power in specified bandwidth) is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically to determine the total emission level from the device. Summing is performed in units that are directly proportional to power.

(5) According to KDB 662911 D01, the directional gain = $G_{ANT} + 10\log(N_{ANT})$ dBi, where G_{ANT} is the antenna gain in dBi, N_{ANT} is the number of outputs.

2.5.2. Test Description

Test Setup:



The EUT is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

**2.5.3.Test Procedure**

KDB 789033 Section F) Maximum Power Spectral Density (PSD) Method SA-3 was used in order to prove compliance

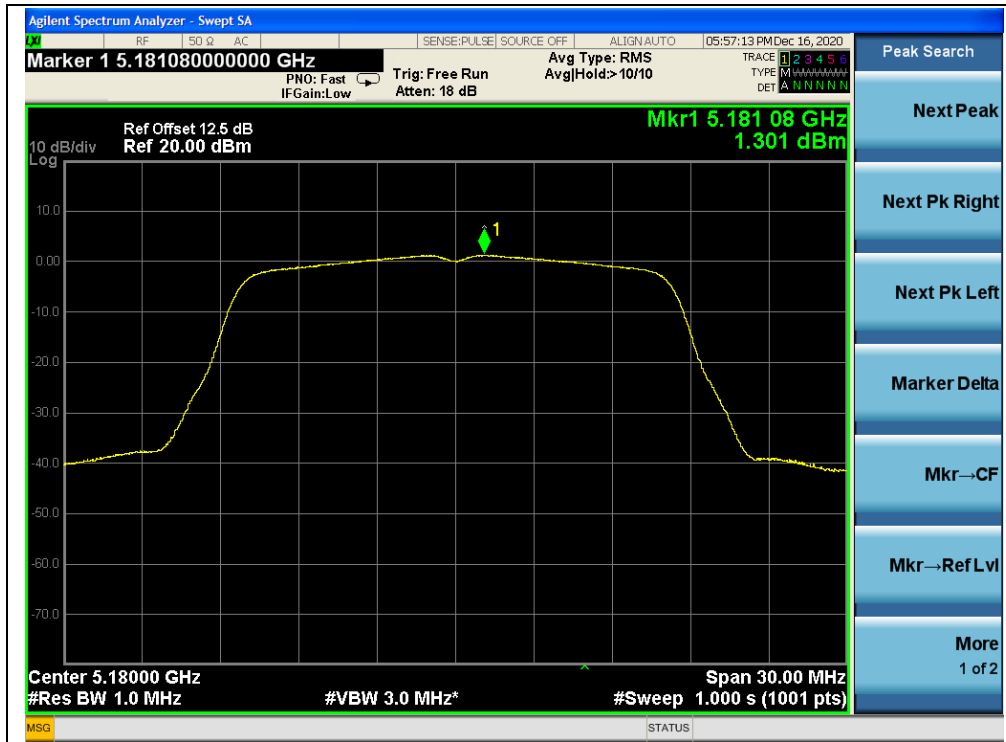
- 1) Set span to encompass the entire 26-dB emission bandwidth
- 2) Set RBW = 1MHz. Set VBW \geq 3MHz
- 3) Number of points in sweep \geq 2 Span / RBW. Sweep time = auto
- 4) Detector = Peak
- 5) Trace mode=Max hold
- 6) Record the max value

2.5.4.Test Result**802.11a Mode****A.Test Verdict:**

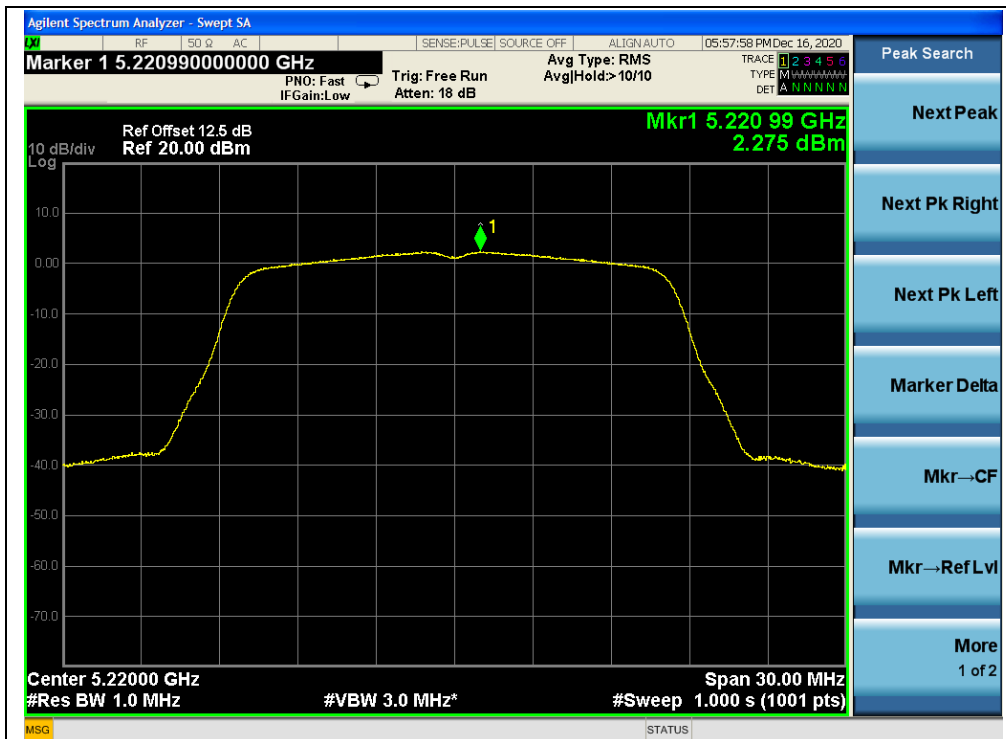
Channel	Frequency (MHz)	Measured PPSD (dBm/MHz)	Duty Factor	Corrected PPSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
36	5180	1.30	0.15	1.45	11	PASS
44	5220	2.28		2.43		
48	5240	2.78		2.93		
52	5260	2.45		2.60		
60	5300	2.45		2.60		
64	5320	3.22		3.37		
Channel	Frequency (MHz)	Measured PPSD (dBm/500KHz)	Duty Factor	Corrected PPSD (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
149	5745	-2.75	0.15	-2.60	30	PASS
157	5785	-2.38		-2.23		
165	5825	-1.98		-1.83		



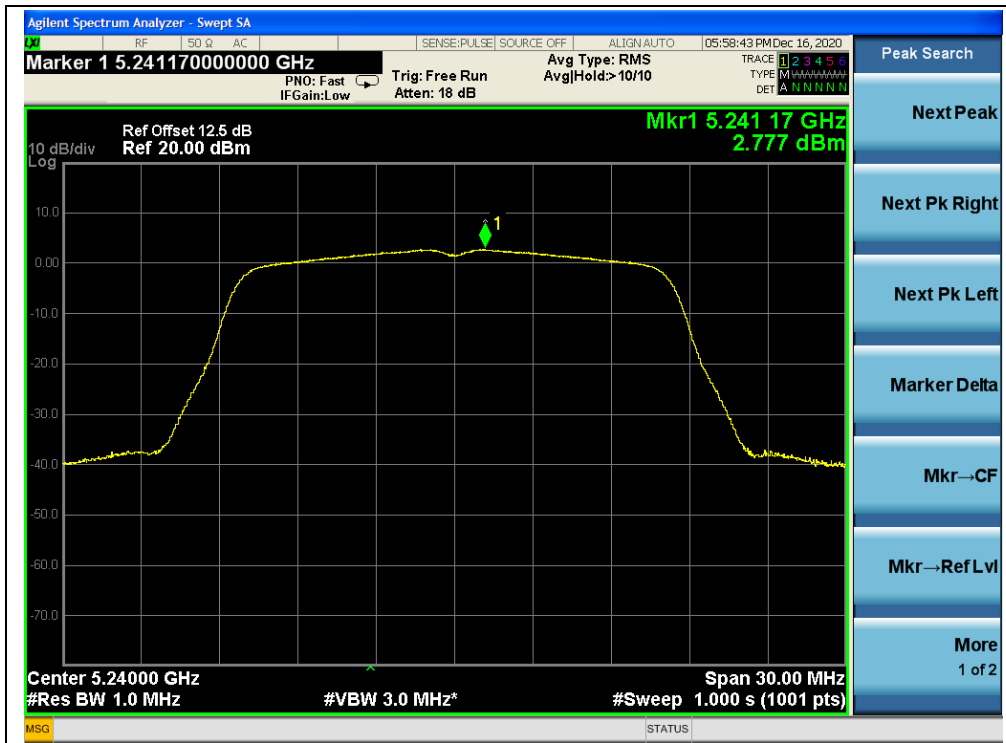
B.Test Plot:



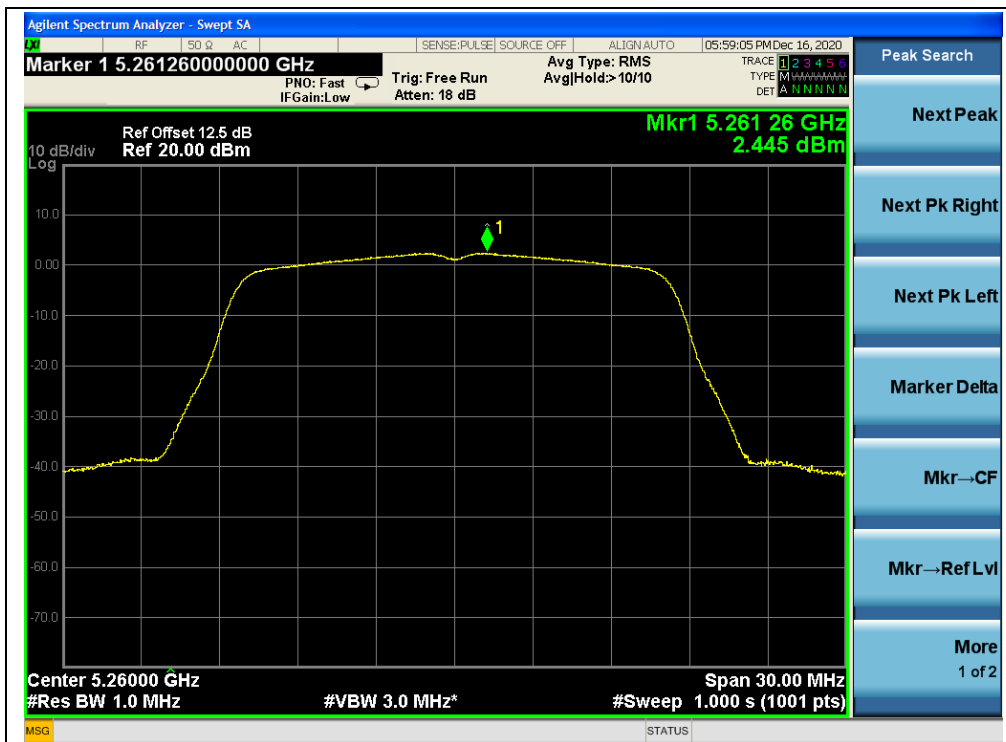
(Channel 36, 5180MHz, 802.11a)



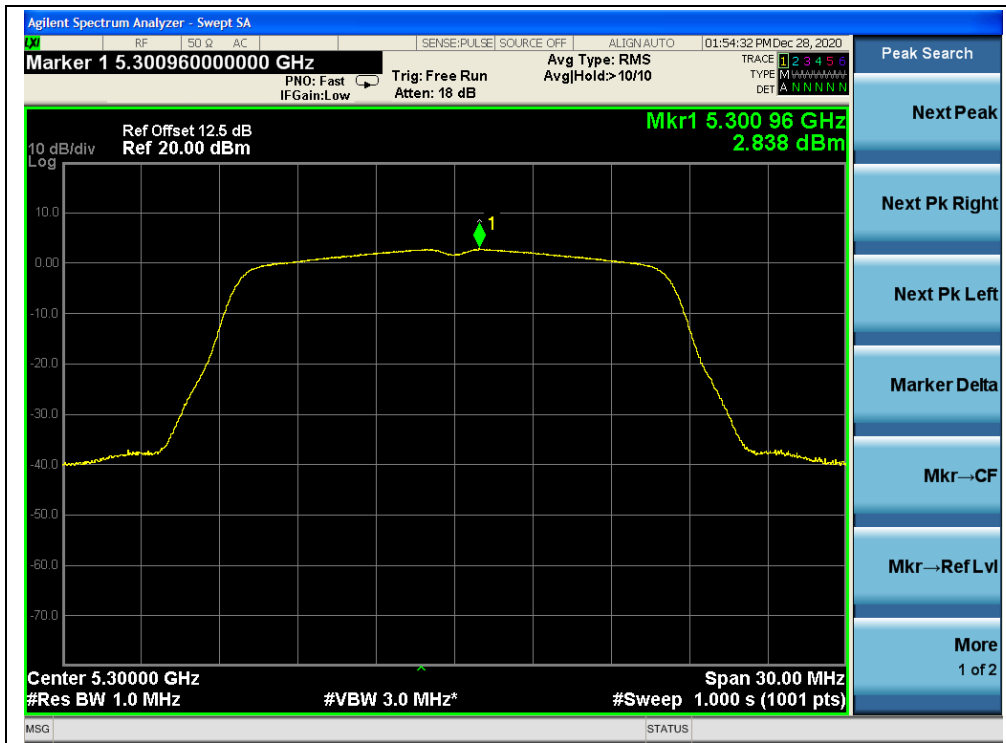
(Channel 44, 5220MHz, 802.11a)



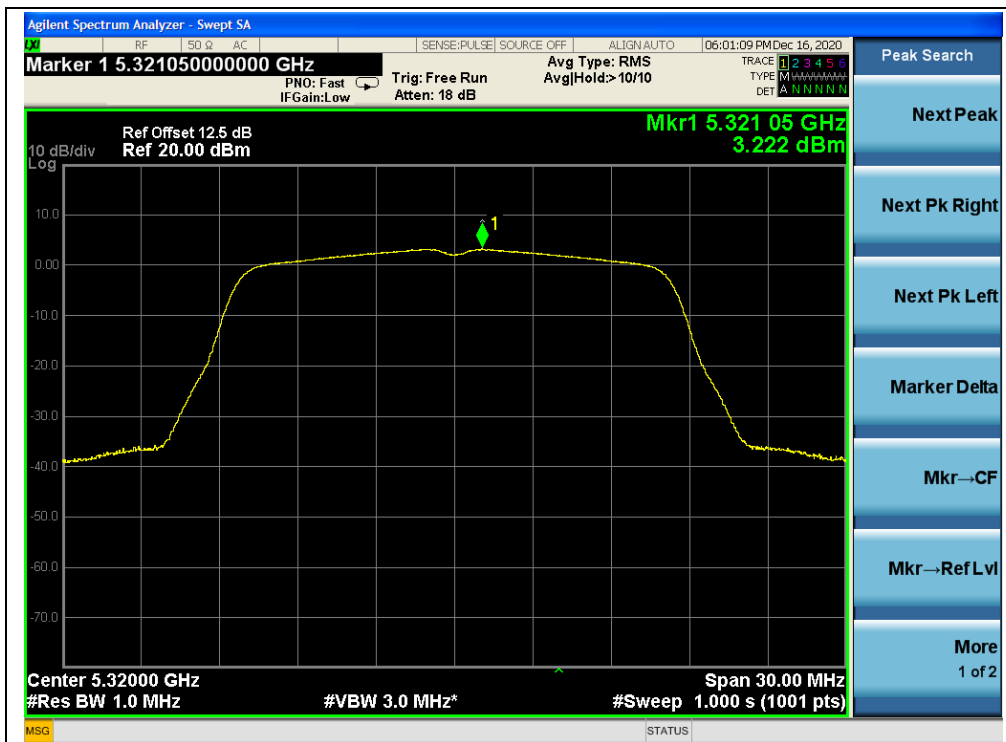
(Channel 48, 5240MHz, 802.11a)



(Channel 52, 5260MHz, 802.11a)



(Channel 60, 5300MHz, 802.11a)



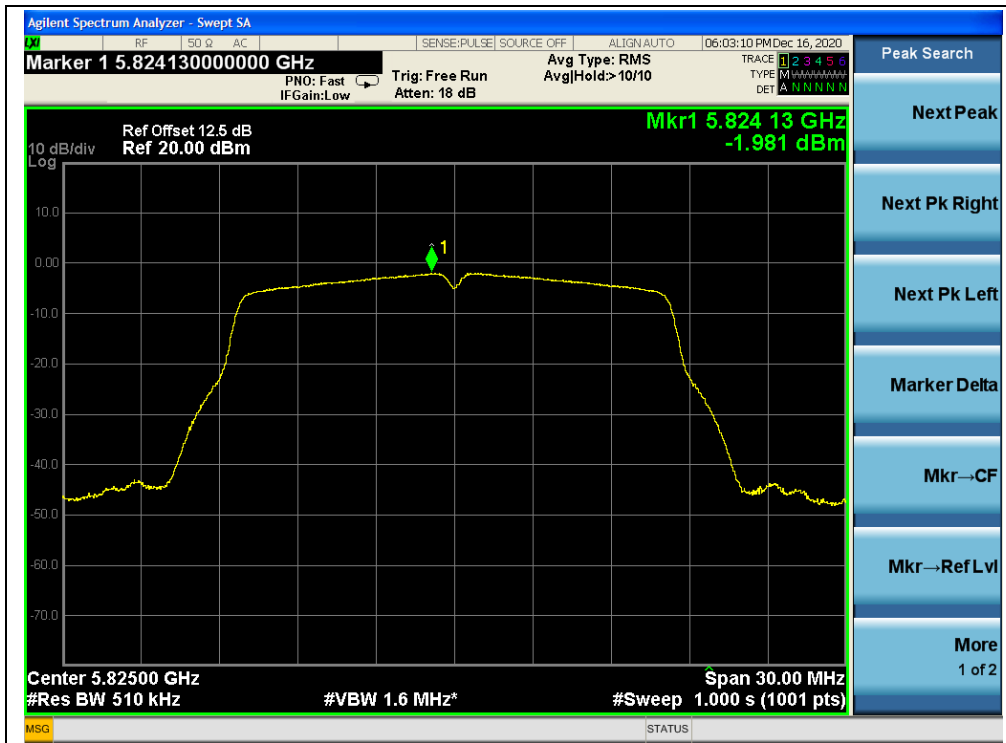
(Channel 64, 5320MHz, 802.11a)



(Channel 149, 5745MHz, 802.11a)



(Channel 157, 5785MHz, 802.11a)



(Channel 165, 5825MHz, 802.11a)

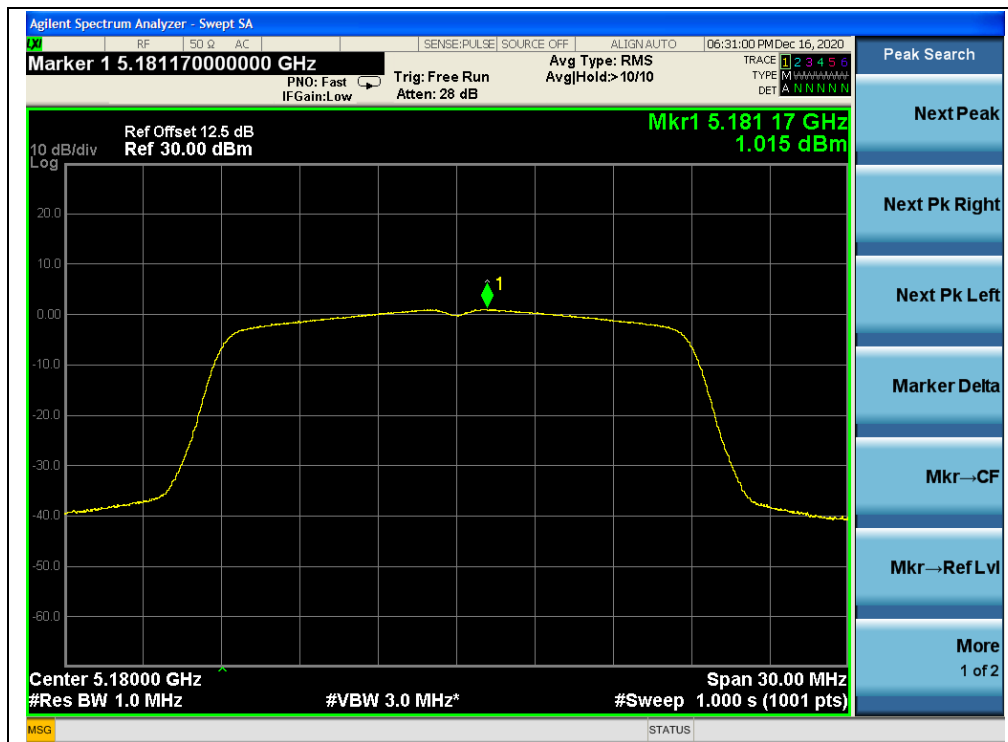


802.11n (HT20) Mode

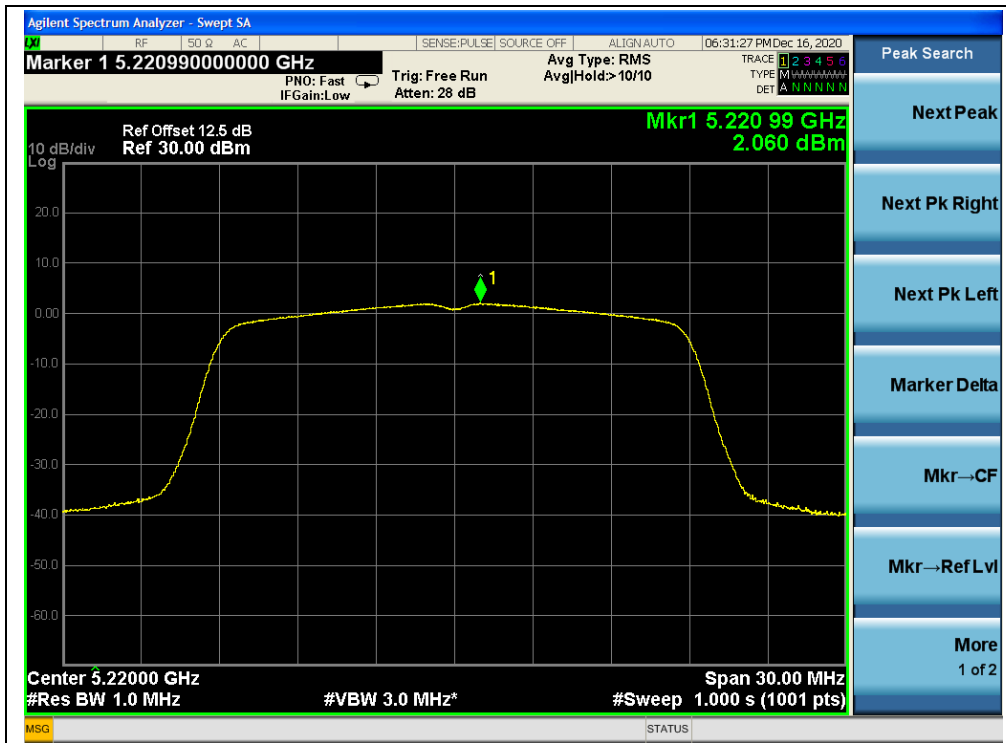
A.Test Verdict:

Channel	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Corrected PSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
36	5180	1.02	0.13	1.15	11	PASS
44	5220	2.06		2.19		
48	5240	2.84		2.97		
52	5260	2.16		2.29		
60	5300	2.87		3.00		
64	5320	3.06		3.19		
Channel	Frequency (MHz)	Measured PSD (dBm/500KHz)	Duty Factor	Corrected (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
149	5745	-3.01	0.13	-2.88	30	PASS
157	5785	-2.69		-2.56		
165	5825	-2.48		-2.35		

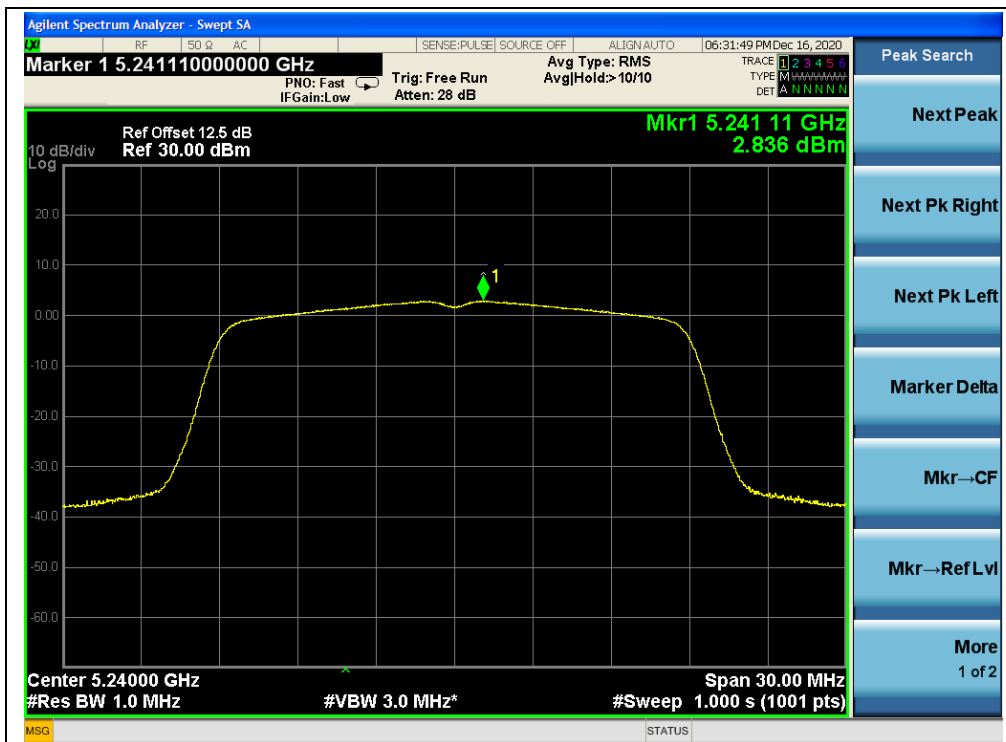
B.Test Plot:



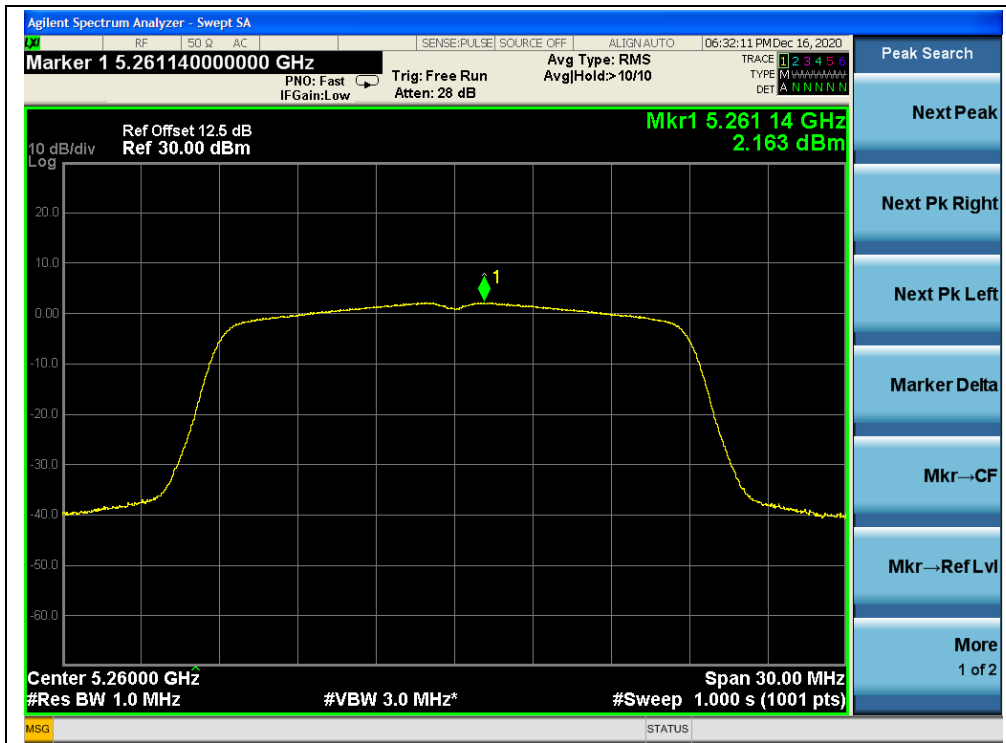
(Channel 36, 5180MHz, 802.11n (HT20))



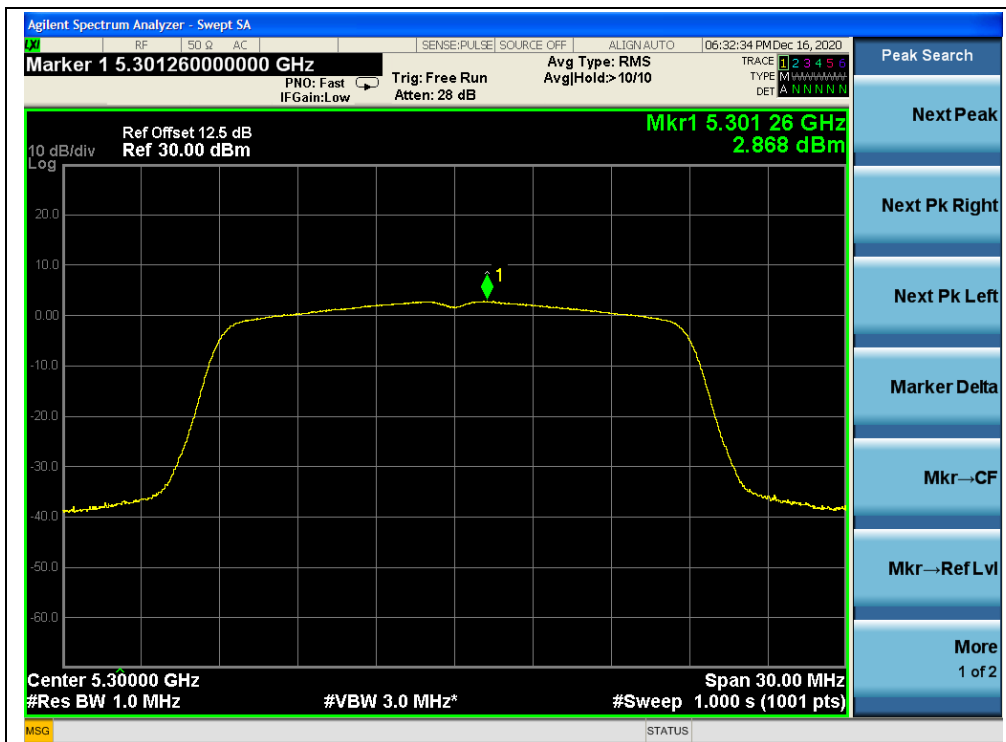
(Channel 44, 5220MHz, 802.11n (HT20))



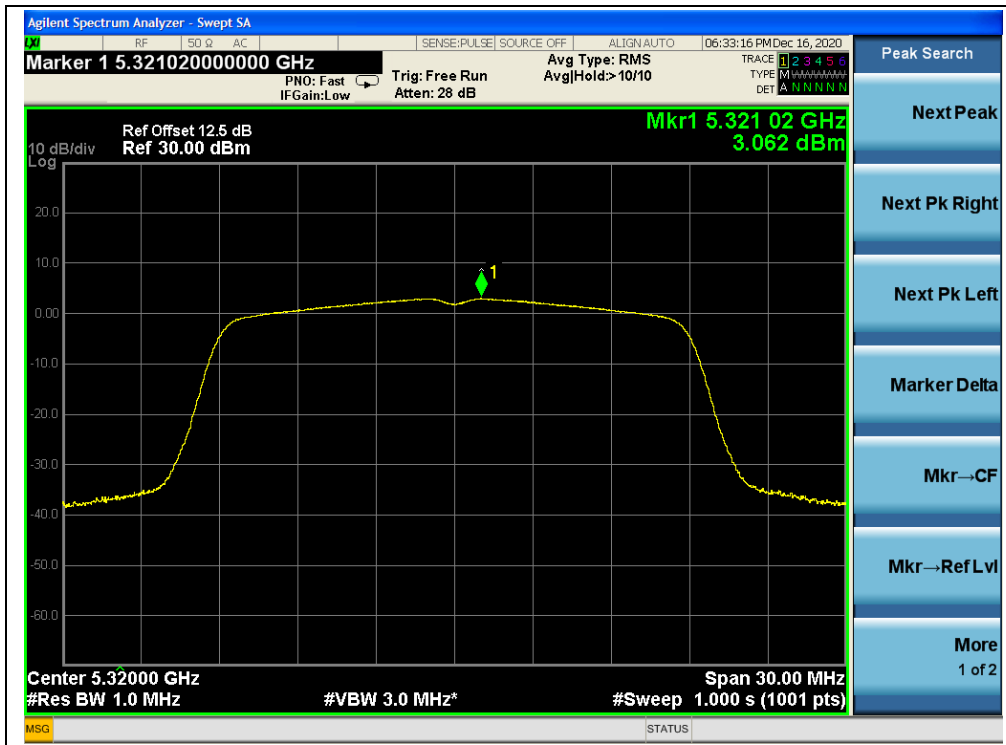
(Channel 48, 5240MHz, 802.11n (HT20))



(Channel 52, 5260MHz, 802.11n (HT20))



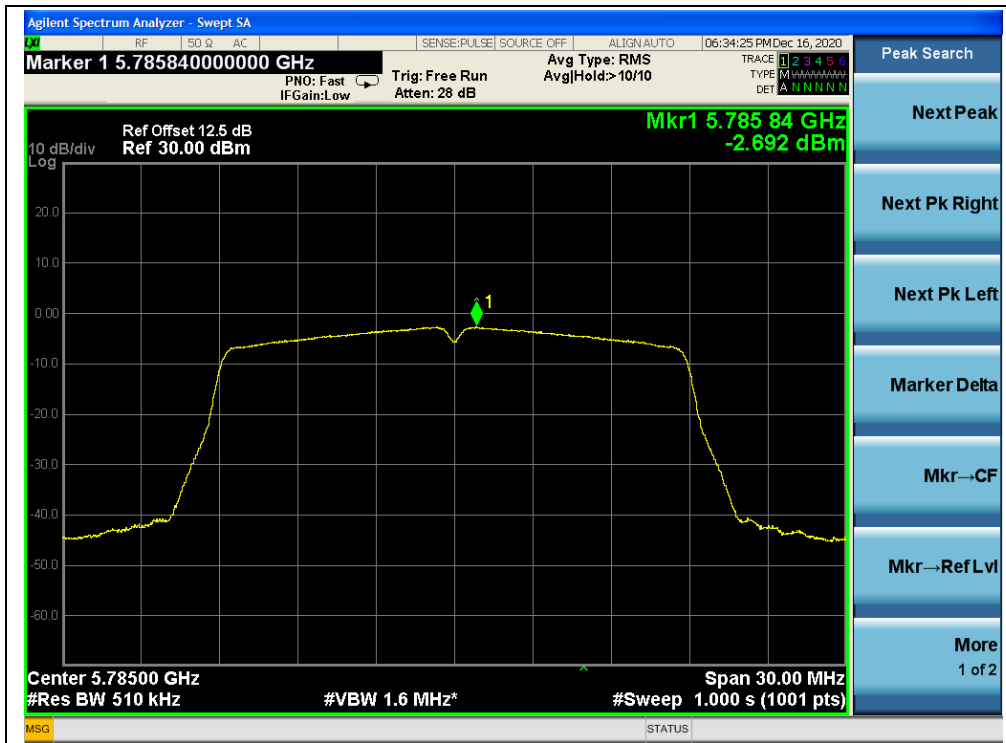
(Channel 60, 5300MHz, 802.11n (HT20))



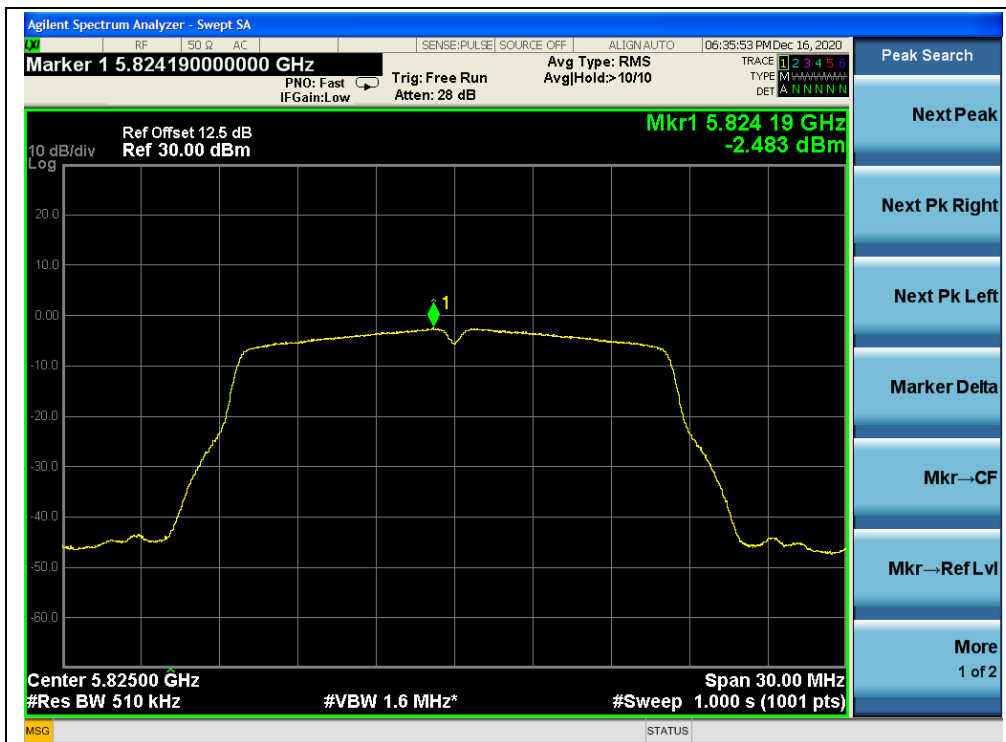
(Channel 64, 5320MHz, 802.11n (HT20))



(Channel 149, 5745MHz, 802.11n (HT20))



(Channel 157, 5785MHz, 802.11n (HT20))



(Channel 165, 5825MHz, 802.11n (HT20))

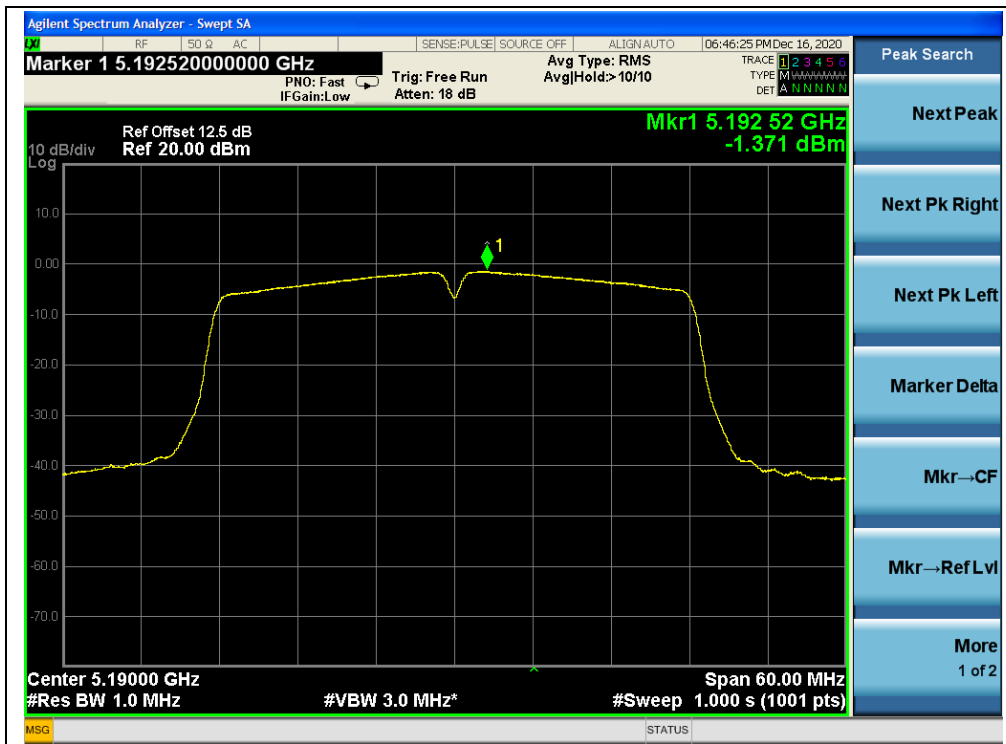


802.11n (HT40) Mode

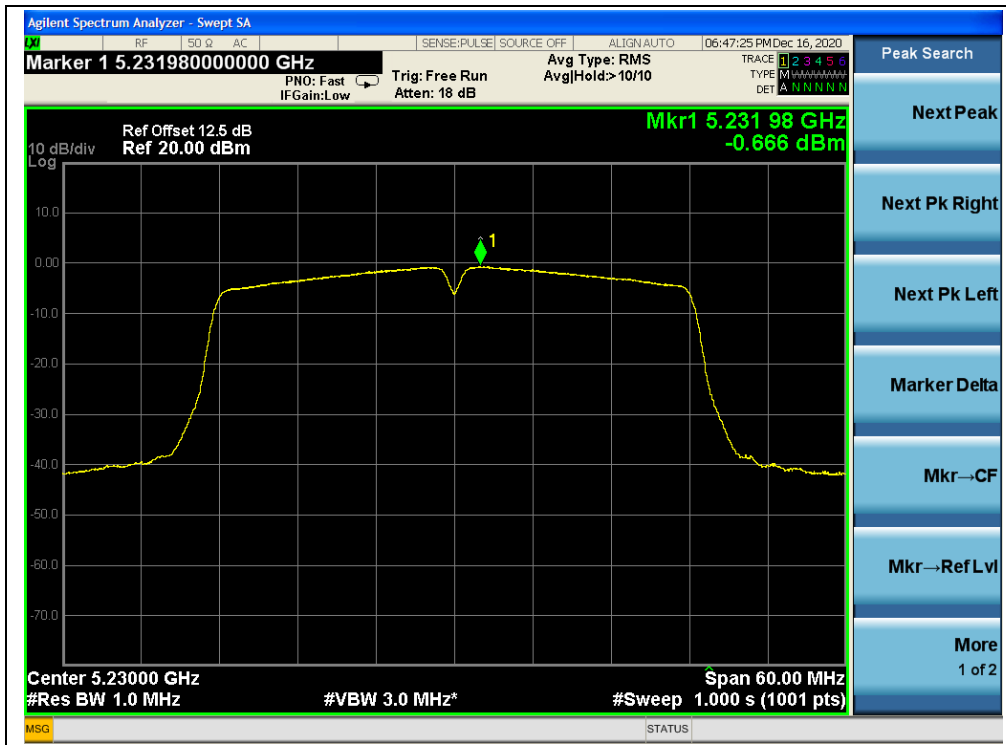
A. Test Verdict:

Channel	Frequency (MHz)	Measured PSD (dBm/MHz)	Duty Factor	Corrected PSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
38	5190	-1.37	0.29	-1.08	11	PASS
46	5230	-0.67		-0.38		
54	5270	-0.66		-0.37		
62	5310	0.01		0.30		
Channel	Frequency (MHz)	Measured PSD (dBm/500KHz)	Duty Factor	Corrected (dBm/500KHz)	Limit (dBm/500KHz)	Verdict
151	5755	0.01	0.29	0.30	30	PASS
159	5795	-6.04		-5.75		

B. Test Plot:



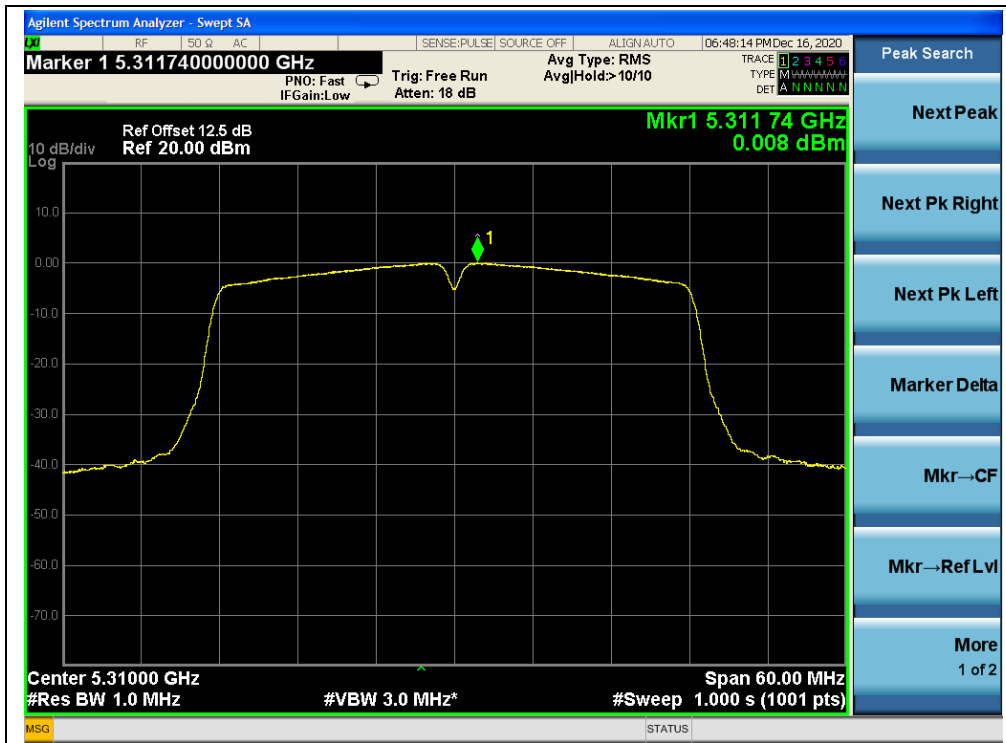
(Channel 38, 5190MHz, 802.11n (HT40))



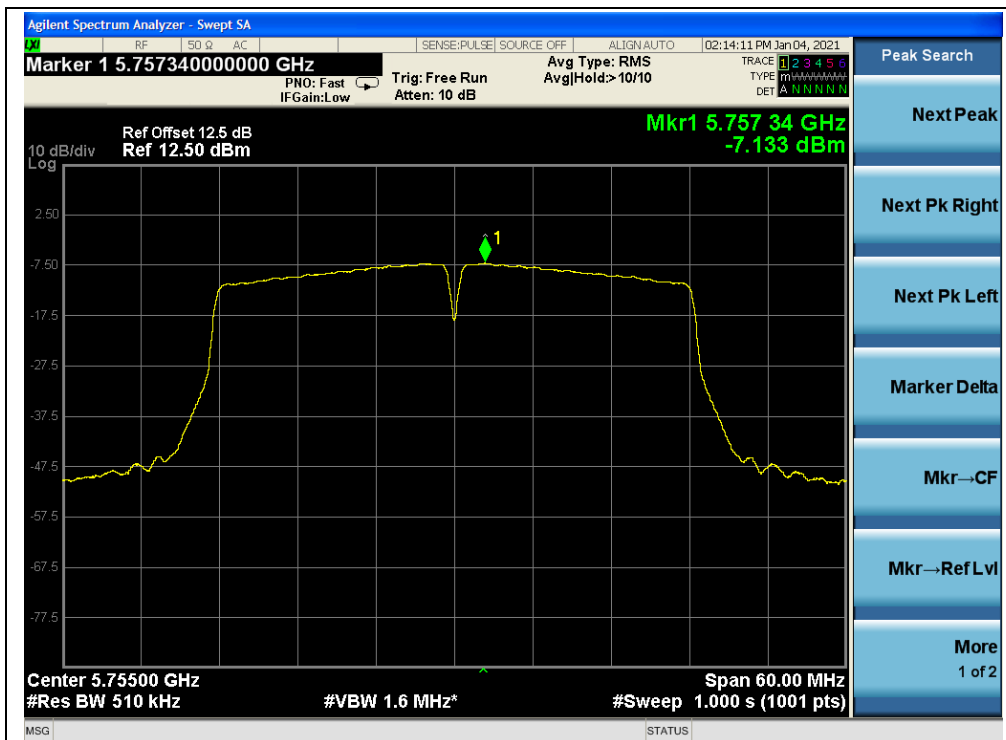
(Channel 46, 5230MHz, 802.11n (HT40))



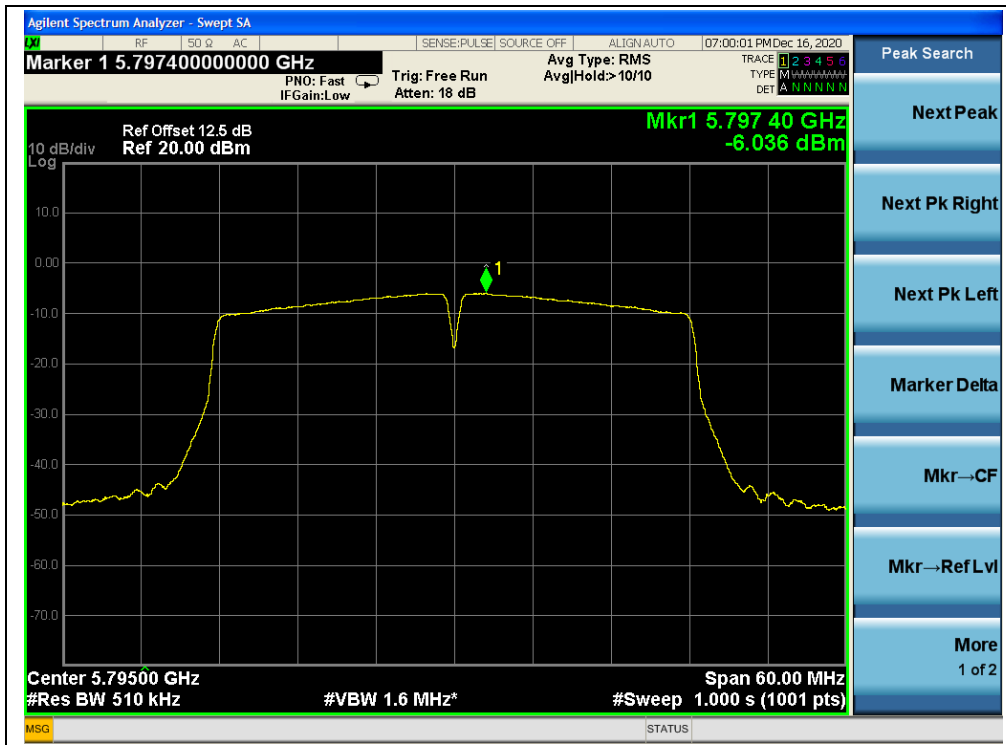
(Channel 54, 5270MHz, 802.11n (HT40))



(Channel 62, 5310MHz, 802.11n (HT40))



(Channel 151, 5755MHz, 802.11n (HT40))



(Channel 159, 5795MHz, 802.11n (HT40))